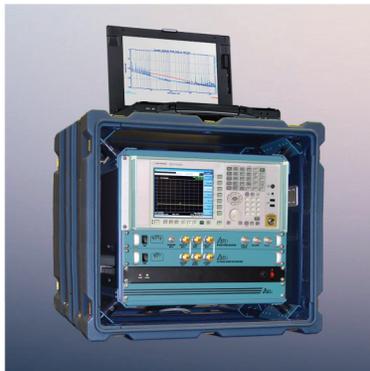
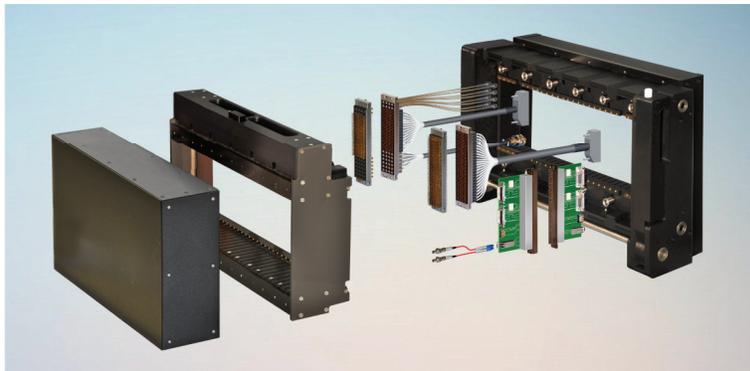


# 2026 PRODUCT CATALOG



ADVANCED TESTING TECHNOLOGIES, INC.

<b>Supplier and Service Point Name, Address, and Phone Number</b>	Advanced Testing Technologies, Inc. 110 Ricefield Lane Hauppauge, New York 11788-2008 1-(631) 231-8777 1-(800) ATTI-VXI (288-4894) 1-(631) 231-7174 Fax	
<b>Contract Administration Source</b>	Velma Galletta or Mr. Eli Levi Executive Vice President	
<b>Business Size</b>	Small Business	
<b>Maximum Order</b>	Unlimited	
<b>Minimum Order</b>	1 Unit	
<b>Geographic Coverage</b>	48 Contiguous States, District of Columbia, Alaska, Hawaii, Puerto Rico, and International	
<b>Point of Production</b>	110 Ricefield Lane Hauppauge, New York 11788-2008	
<b>Payment Terms</b>	Net 30	
<b>Foreign Items</b>	None	
<b>Time of Delivery</b>	<b>Item</b>	<b>Delivery</b>
	BRAT® Test Systems and Options	6 Months ARO
	Equipment	1 Year ARO
	Software	1 Year ARO
	TPS	To 36 Months ARO
	Expedited Delivery	Not applicable
	Urgent Requirements	Not applicable
<b>F.O.B. Origin</b>		
<b>Ordering Address</b>	Advanced Testing Technologies, Inc. 110 Ricefield Lane Hauppauge, New York 11788-2008 ATTN.: Velma Galletta	
<b>Payment Address</b>	Same as above ATTN.: Velma Galletta	
<b>Warranty Provisions</b>	Commercial Warranty: 1. ATTI provides a 15 day warranty for repairs and calibrations. 2. ATTI provides a 6 month warranty for new products.	
<b>Export Packing Charges</b>	None	
<b>Terms and Conditions of Repair and Maintenance</b>	Available upon request	
<b>Terms and Conditions of Installation</b>	Available upon request	

<b>Terms and Conditions of Test Program Sets (TPS)</b>	Available upon request
<b>Terms and Conditions of Repair Parts Indicating Date of Parts Price Lists and Any Discounts from List Prices</b>	Available upon request
<b>List of Service and Distribution Points</b>	Hauppauge, New York
<b>Standard Software License Terms and Conditions Apply to Catalog Items as Indicated in the Item Nomenclature</b>	Appendix A
<b>Test Program Set (TPS) Terms and Conditions</b>	Appendix B
<b>BRAT Contractor Support - BRAT Tester All Inclusive Support and Repairs Terms and Conditions</b>	Appendix C
<b>Leasing</b>	Appendix D
<b>BRAT Contractor Support - BRAT Tester All Inclusive Support, Repair and Calibration Terms and Conditions</b>	Appendix E
<b>Obsolescence Mitigation</b>	Appendix G
<b>Products - Without Qualification Test Procedures and Reverse Engineering</b>	Appendix H
<b>Sustaining Engineering with Obsolescence Mitigation - Base Year</b>	Appendix I
<b>Sustaining Engineering with Obsolescence Mitigation - Option Year</b>	Appendix J
<b>Cable and DDSM Repairs - Special Conditions</b>	Appendix K
<b>BRAT Repair and Maintenance Support</b>	Appendix L

# ATE Product Catalog - Contents

Test Systems .....	3	Sustaining Engineering with Obsolescence Mitigation -	
The BRAT® 90.....	3	Option Year .....	67
The BRAT® B107 Analog/Digital Tester.....	5	Sustaining Engineering for Equipment Obsolescence .....	67
The BRAT® Option B511 .....	6	Sustaining Engineering Obsolescence Mitigation Tasks.....	67
DA-1 ATS Test System .....	7	Development Software .....	68
DA-2 ATS Test System .....	8	Runtime Software .....	70
RF-1 ATS Test System.....	9	System Software Utilities.....	71
Warranties .....	10	Calibration and Alignment Adjustment Routines.....	72
Calibrators .....	10	Calibration and Alignment Adjustment Routines - ITA .....	72
HVA ITA.....	11	Calibration Software and ITA .....	73
The ENVID GEN-510.....	12	Software Upgrades .....	73
Video Generators.....	13	TPS Upgrades .....	74
Enhanced Video Systems .....	14	Software .....	74
EPVGA Custom Packaging.....	15	Calibration Services.....	75
Video Redisplay Tool .....	17	Tester Decommissioning and Equipment Commissioning .....	76
Vid-Soft.....	19	Evaluation Services.....	77
Digital Video Testing .....	21	Engineering Investigation, Software Updates, and TPS Updates.....	77
Hand Held Video Tester .....	22	BRAT® Tester Repairs .....	77
Transmission Medium Verification Instrument.....	22	Repair Actions .....	77
Video Multiplexer/Video Distribution.....	22	Cable Repairs.....	77
Mass Interconnect Products.....	23	ITA Repairs and Investigations.....	78
PXI/PXIe Insert.....	26	Test Services .....	78
Integrated PXI-VXI Combo Chassis.....	28	Products Overhaul.....	78
PXIe Instrument Interface.....	29	Repair Services .....	79
VXI Instrument Interface .....	30	BRAT Repair and Maintenance Engineering Services .....	81
Parallel Automated Development System (PADS).....	31	BRAT Repair and Maintenance Support .....	81
Repair and Manufacturing Capabilities.....	32	Repair Service Analysis.....	88
Flight Line Phase Noise Tester (FLNT) for Radar Systems .....	34	Repair and Calibration Services (where applicable).....	90
MMS 70340A/70341A OMR RF Source .....	34	Full Service Repair and Calibration.....	91
Z51 Digital VXI Module .....	35	BRAT® Tester Contractor Support.....	91
VXI.....	37	Full Service Calibration - Modules.....	91
LXI.....	42	Full Service Repair for Electrical, Mechanical, and Electronic	
PXI.....	43	Components.....	93
MMS .....	44	Full Service Repair Services (Replacement Instrument	
Instruments .....	45	Acceptable).....	93
RFIU.....	46	Full Service Components.....	95
IEEE-488 .....	48	Maintenance Repair Support.....	102
Equipment.....	52	Maintenance.....	102
Common Parts .....	57	Maintenance Services.....	103
Hardware Upgrades.....	57	Installation, Repairs, and Kits .....	104
Interface Test Adapters .....	57	BRAT® Equipment Installation and Checkout.....	104
Communication/Navigation.....	58	Support .....	104
Transportable .....	59	Management and Logistic Support.....	105
PC-Based .....	59	TPS Rehosting .....	105
Manuals .....	60	Retrofit Kits.....	105
Auxiliary.....	60	ITA Retrofit .....	106
Pneumatic.....	63	ATE Modernization Kits .....	106
Modified/Refurbished.....	63	Instrument Replacement Kits.....	107
Functional Equivalent Obsolescence Mitigation Replacement .....	64	Instrument Replacement Kit Installation and Integration .....	107
Avionics.....	65	First Article Test .....	107
Without Qualification Test Procedures and Reverse Engineering .....	65	BRAT® Test and Verification.....	107
Sustaining Engineering with Obsolescence Mitigation - Base Year ...	66	BRAT® Cable Sets .....	107

# ATE Product Catalog - Contents

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Cables.....	108	Appendix C-2 - BRAT Contractor Support - Full Service Calibration .....	C7
Parts and Assemblies .....	108	Appendix C-3 - BRAT Contractor Support - Full Service Cables, Connectors, Adapters, and Others.....	C9
Connectors .....	109	Appendix D - Leasing .....	D1
TPS and ITA Training Using the BRAT® .....	110	Appendix E - BRAT Contractor Support - BRAT Tester All Inclusive Support, Repair and Calibration Terms and Conditions.....	E1
Proprietary Repair Documents.....	110	Appendix E-1 - BRAT Contractor Support - Full Service Repair and Calibration (FSR&C).....	E4
Proprietary Procedure Manuals .....	110	Appendix G - Obsolescence Mitigation .....	G1
Training and System Maintenance.....	111	Appendix H - Products - Without Qualification Test Procedures and Reverse Engineering .....	H1
Test Program Sets (TPS) .....	112	Appendix I - Sustaining Engineering with Obsolescence Mitigation - Base Year .....	I1
Ancillary Equipment.....	113	Appendix J - Sustaining Engineering with Obsolescence Mitigation - Option Year.....	J1
Test Program Modules.....	114	Appendix K - Cable and DDSM Repairs - Special Conditions.....	K1
ATTI Company Profile .....	115	Appendix L - BRAT Repair and Maintenance Support.....	L1
ATTI Worldwide Support .....	115		
ATTI Offices.....	115		
Appendix A - ATTI Software License Agreement.....	A1		
Appendix B - Test Program Sets (TPS) - Terms and Conditions.....	B1		
Appendix C - BRAT Contractor Support - BRAT Tester All Inclusive Support and Repairs Terms and Conditions .....	C1		
Appendix C-1 - BRAT Contractor Support - Full Service Repair Services .....	C5		

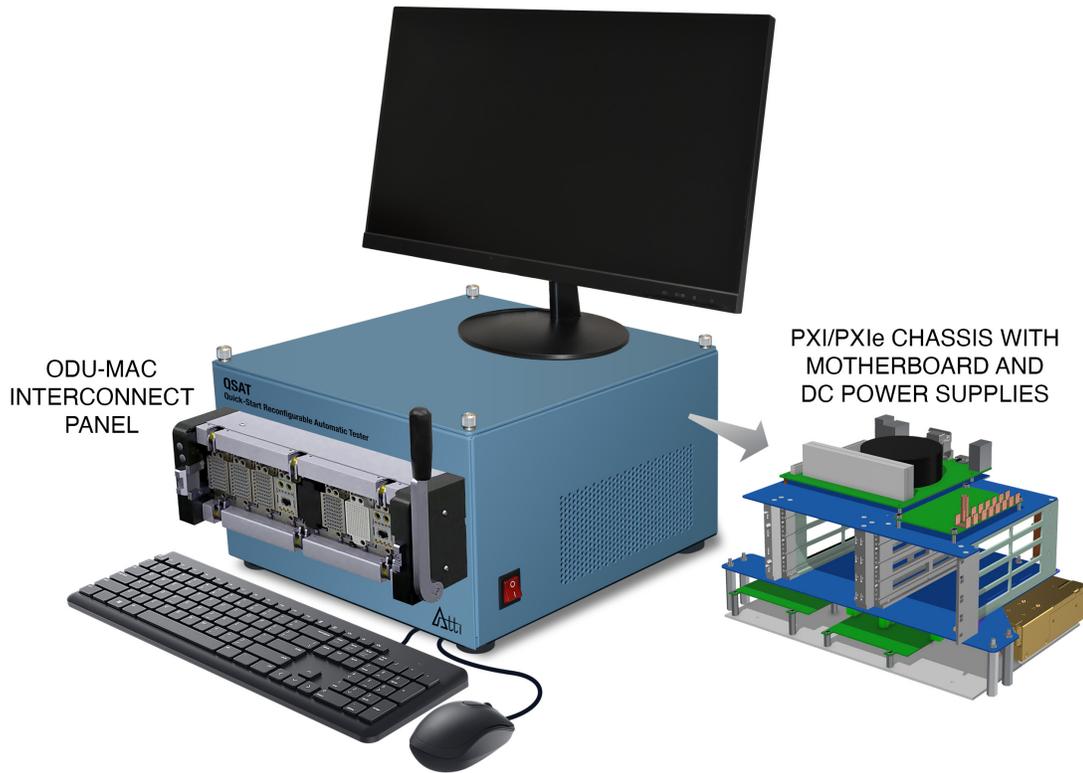
# Test Systems

## The BRAT® 90

### QUICK-START RECONFIGURABLE AUTOMATIC TESTER

#### Compact, Efficient Desktop Tester with Customer-Configurable PXI/PXIe Chassis

- Software Subject to License Agreement (Refer to Appendix A)



### BRAT 90 Quick-Start Reconfigurable Automatic Tester

- Leveraging PADS Technologies for Applying General Purpose Testing
- PXI/PXIe Chassis – 8 Slots with Cabled I/O Controller
- Mini ITX Motherboard 8th Generation or Better Intel CPU with Monitor, Full Keyboard, Detached Mouse
- 4 Fully Programmable DC Power Supplies; 32 V @ 5 A Each
- ODU-MAC Black Line Modular Contact Interface – Signal, Power, Coax
- Quick-Release Top Panel for Easy Maintenance Access

### Options Available for the BRAT® 90

Software Subject to License Agreement (Refer to Appendix A)

- Option 90-02** BRAT 90 Quick-Start Option 02 - Package the Quick-Start Test System in a Ruggedized 19 Inch Rack and Stack Equipment Transit Case.
- Option 90-03** BRAT 90 Quick-Start Option 03 - Configure the Quick-Start Test System with the ATTI MIL-STD-1760 Munitions Instrument Suite.
- Option 90-04** BRAT 90 Quick-Start Option 04 - Add a 7U Transportable Three Phase Power Supply with Facility Power Distribution and Signal Conditioning Unit.

# Test Systems

## The BRAT® 90

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### QUICK-START RECONFIGURABLE AUTOMATIC TESTER

#### Compact, Efficient Desktop Tester with Customer-Configurable PXI/PXIe Chassis

- Software Subject to License Agreement (Refer to Appendix A)

#### Options Available for the BRAT® 90

- Option 90-05** BRAT 90 Quick-Start Option 05 - Add a 5U Transportable case to facilitate reconfiguring, upgrading, and adding assets to option 90-03 and option 90-04 to facilitate automation for simultaneous ASI testing and loading. This option also converts the input power to 240 VAC universal single phase from three phase.
- Option 90-10** BRAT 90 Option 90-10 - ETS Instrument Suite
- Option 90-11** BRAT 90 Option 90-11 - ETS Panel Interface (4 NSIUs)
- Option 90-12** BRAT 90 Option 90-12 - Transient Voltage Suppressor (TVS)/Data Acquisition Control (DAC) Testing Switch
- Option 90-13** BRAT 90 Option 90-13 Instrument Case and Interface modification moving cables and replacing mounting hardware to increase room for cable routing; includes securing hardware and brackets to move, mount, and fasten assemblies, switch boxes, and connectors.
- BRAT 90, Option 02,03,04,05,12** BRAT 90 Quick-Start Reconfigurable Automatic Tester - SW subject to License (Appendix A)
- BRAT Bomber** BRAT Bomber Rack - SW subject to License (Appendix A)
- LRSO ATS Rack** (Appendix A)
- BRAT TVS Tester** BRAT TVS Tester - SW subject to License (Appendix A)

# The BRAT® B107 Analog/Digital Tester

**REPLACES B105 W/ OPTIONS** - Software Subject to License Agreement (Refer to Appendix A)



The Benchtop Reconfigurable Automatic Tester (BRAT®) is an economical Commercial-Off-The-Shelf (COTS), flexible test system, based on an open architecture of commercial equipment in a modular design. Its primary use is as Automatic Test Equipment (ATE), either through test programming languages or by the use of the latest object-oriented graphical programming environments. The physical Benchtop Reconfigurable assembly allows easy access to all of the modules as well as room for expansion/ reconfiguring, and makes transporting simple. The interface provides over 400 universal analog test points, 192 dynamic digital test points, 32 static digital test points, and 20 two-wire, 50 Ω dedicated RF paths, reducing the number and complexity of ITAs.

## The Major Components of the B107 are Listed Below:

Part Number	Description	Quantity
<b>Analog/Digital</b>		
92103987-01	VXI Mainframe	2
92103986-01	VXI Mainframe Command Module	1
92105233-03	VXI-MXI-3 Command Module	1
92103860-03	6½-Digit High-Accuracy Multimeter	1
93000078-01	High-Performance Universal Counter	1
93000080-01	Arbitrary Function Generator	1
92104021-01	Precision PLL Waveform Generator	1
92104022-01	300 MS/s Frequency Agile Waveform Generator	1
93000570-01	Digital Functional Test (32 Pin Groups)	1
93000326-01	Dynamic Digital (32 Pin Groups)	5
93000068-01	QUAD 8-Bit Digital Input/Output Latch	1
94001249-01	5 GS/s Digital Phosphor Oscilloscope	1
93000506-01	32-Channel, 5 A, Form C Switch	1
92103855-05	Synchro/Resolver Simulator and Indicator	1
04000067-01	Serial Bus Analyzer/Simulator	1
04000009-10	Rack Mount Computer	1

Part Number	Description	Quantity
<b>Power</b>		
93000550-50	Three-Phase AC Programmable Power Supply with Power Factor Correction	1
94000887-01	DC Power Supply Frame	2
94000888-01	0 to 7 V Module for DC Power Supply	2
94000889-01	0 to 20 V Module for DC Power Supply	2
94000890-01	0 to 32 V Module for DC Power Supply	2
95000043-01	0 to 40 V Module for DC Power Supply	3
95000045-01	0 to 160 V Module for DC Power Supply	1
94000891-01	0 to 320 V Module for DC Power Supply	1
94100500-30	Electronic Power Control Center - BRAT®	1
92103974-10	Electronic Load Kit	1
96000020-01	Programmable Electronic Load	1

## Software

40001RT	Runtime Software for Virtual Spectrum Analyzer
95000037-01RT	Runtime Software for Fault Dictionary, D20
95000341-01RT	Runtime Software for Guided Probe, D20
00006	BRAT® Logistics Tool (BLT), single-user version

# The BRAT® Option B511

**AIR DATA TEST SET SYSTEM** - Software Subject to License Agreement (Refer to Appendix A)



**B511-100**  
(Shown with  
Option B511-200)



**B511**



**B511-400**

The BRAT® Option B511 is an option to the BRAT® Test System utilizing Commercial-Off-The-Shelf (COTS) equipment. The system is used to augment the existing BRAT® capabilities to test rate of change of altitude or pressure. Air Data Test Set System is a user-friendly, self-contained, computerized, high-accuracy pressure management system integrated into a compact, stand-alone unit or transportable unit (for flight line use) that does not require any source of shop air or vacuum pumps. BRAT® Option B511 can measure an input or control an output pressure and display the results as steady state altitude or air speed, or as rate of change of altitude or air speed. Information for both pressure channels is provided on a color VGA display. There are ten different display screens that provide user information. Results can be displayed in English or Metric. BRAT® Option B511 can perform internal self tests, indicating any errors to the operator. The test set can be used to conduct:

- Dynamic tests
- Quantitative tests
- Pneumatic leak tests

## Specifications

Range:	Ps: -4000 to 100,000 feet (103.5 inches HgA) Pt: 20 to 1000 knots
Accuracy:	0.01% FS including linearity, hysteresis, repeatability, and temperature after zeroing at operating temperature
Resolution:	Pressure up to 1 ppm Altitude 0.1 foot
Response Time:	Less than 0.2 seconds for FS step with no digital filtering
Warm-Up:	Approximately 45 minutes to achieve full accuracy
Zero Drift:	0.01% FS max. 1 week
Span Drift:	0.01% FS max. 90 days
Internal Pump:	Direct drive, low noise, permanently lubricated and sealed bearings

## Options Available for the BRAT® Option B511

Software Subject to License Agreement (Refer to Appendix A)

- Option B511-100** Option 100 for the BRAT® Option B511
  - Converts the Test System to the transportable version
- Option B511-200** Option 200 for the BRAT® Option B511
  - Laptop Computer
- Option B511-300** Option 300 for the BRAT® Option B511
  - Transportable Computer
- Option B511-400** Option 400 for the BRAT® Option B511
  - Converts the Test System to a towable unit

# DA-1 ATS Test System



**DA-1 ATS**

The DA-1 ATS is an economical Commercial-Off-The Shelf (COTS) build-to-print tester. The test station is compliant with the published drawing package. The system does not include software.

**The Major Components of the DA-1 ATS are Listed Below:**

Reference Number	Description	Units Per Assembly
200625630-10	Associated Hardware	1
200625700-10	Self Test ITA and Associated Hardware	1
200625848-10	DC Power Supply 9	1
200625851-10	DC Power Supply 8	1
200625852-10	Modular Power System 2	1
200625856-10	Modular Power System 1	1
200625862-10	Arbitrary Function Generator	1
200625866-01	150 Watt Load	2
200625866-03	250 Watt Load	2
200625866-05	300 Watt Load	2
200625881	VXI CPM Controller	1
200625883-10	VXI Relay Card 1	1
200625887	VXI Serial Card	1
200625888	VXI Counter/Timer	1
200625889	VXI Relay Card 2	1
200625893	VXI Relay Card 3	1
200625897	VXI AWG	2
200625898	VXI DMM	1
200625899	VXI Synchro/Resolver	1
200625901-10	Cross Point Matrix	1
200625916	Digital Test Instrument	7
200625920	Digital Test Instrument Controller	1
200625924	Probe Assembly	1
200625927-10	Pulse Generator	1
200625974-10	Oscilloscope	1
200626005-10	Double Tier Interface	1
200626010	Latch Kit	1

**Options Available for the DA-1 ATS**

- Option 1 Self Test**
  - Requires Customer Software
- Option 2 Calibration**
  - Requires Customer Software
- Option 3 Customer Logo Silkscreen**
  - Provided Upon Customer Request

# DA-2 ATS Test System



**DA-2 ATS**

The DA-2 ATS is an economical Commercial-Off-The Shelf (COTS) build-to-print tester. The test station is compliant with the published drawing package. The system does not include software.

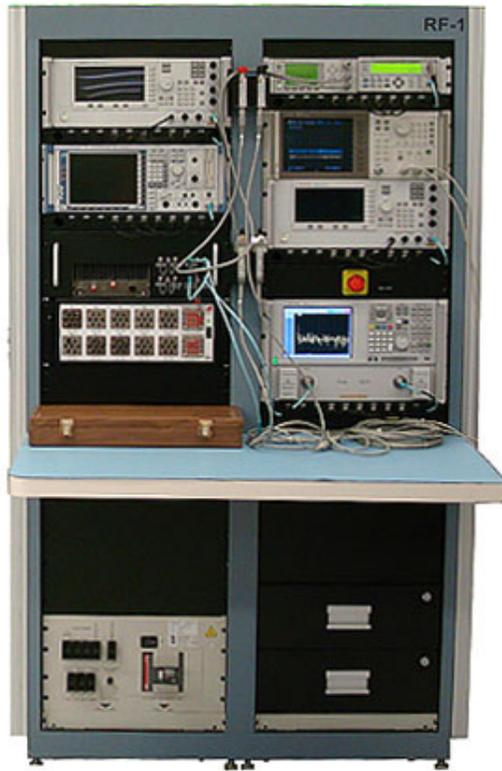
## The Major Components of the DA-2 ATS are Listed Below:

Reference Number	Description	Units Per Assembly
200625630-20	Associated Hardware	1
200625700-10	Self Test ITA and Associated Hardware	1
200625848-10	DC Power Supply 9	1
200625851-10	DC Power Supply 8	1
200625852-10	Modular Power System 2	1
200625856-10	Modular Power System 1	1
200625862-10	Arbitrary Function Generator	1
200625866-01	150 Watt Load	2
200625866-03	250 Watt Load	2
200625866-05	300 Watt Load	2
200625881	VXI CPM Controller	1
200625883-10	VXI Relay Card 1	1
200625887	VXI Serial Card	1
200625888	VXI Counter/Timer	1
200625889	VXI Relay Card 2	1
200625893	VXI Relay Card 3	1
200625897	VXI AWG	2
200625898	VXI DMM	1
200625899	VXI Synchro/Resolver	1
200625901-20	Cross Point Matrix	1
200625916	Digital Test Instrument	11
200625920	Digital Test Instrument Controller	1
200625924	Probe Assembly	1
200625927-10	Pulse Generator	1
200625974-10	Oscilloscope	1
200626005-20	Double Tier Interface	1
200626010	Latch Kit	1

## Options Available for the DA-2 ATS

- Option 1 Self Test**
  - Requires Customer Software
- Option 2 Calibration**
  - Requires Customer Software
- Option 3 Customer Logo Silkscreen**
  - Provided Upon Customer Request

# RF-1 ATS Test System



**RF-1 ATS**

The RF-1 ATS is an economical Commercial-Off-The Shelf (COTS) build-to-print tester. The test station is compliant with the published drawing package. The system does not include software.

**The Major Components of the RF-1 ATS are Listed Below:**

Reference Number	Description	Units Per Assembly
200625636-10	Main RF Amplifier	1
200625651-10	RF-1 Associated Hardware	1
200626054-10	RF Switching	1
200626063	Spectrum Analyzer	1
200626065-10	RF Signal Generator #1	1
200626068	Frequency Distribution Amplifier	1
200626072-10	Vector Network Analyzer	1
200626075-10	RF Signal Generator #2	1
200626078-10	Scalar Network Analyzer	1
200626081-10	Power Meter and Microwave Counter	1
200626193	Noise Source	1

### Options Available for the RF-1 ATS

- Option 1 Self Test**
  - Requires Customer Software
- Option 2 Calibration**
  - Requires Customer Software
- Option 3 Customer Logo Silkscreen**
  - Provided Upon Customer Request

# Warranties

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WCAL	BRAT Calibration of Calibration Instruments Warranty
WENVID GEN-510-1	Extended Warranty for ENVID-GEN-510, 1 Year
WENVID GEN-510-2	Extended Warranty for ENVID-GEN-510, 2 Years
WENVID GEN-510-3	Extended Warranty for ENVID-GEN-510, 3 Years
WENVID GEN-510 OPT 3-1	Extended Warranty for ENVID-GEN-510 OPT 3, 1 Year
WENVID GEN-510 OPT 3-2	Extended Warranty for ENVID-GEN-510 OPT 3, 2 Years
WENVID GEN-510 OPT 3-3	Extended Warranty for ENVID-GEN-510 OPT 3, 3 Years

## BRAT Equipment Unconditional Warranty

ATTI warrants that all equipment delivered shall be free from defects in materials and workmanship. ATTI shall, for a period of 6 months from the date of delivery, repair, correct, or replace any equipment which proves to be defective.

ATTI has the option to repair the equipment at the customer's facility, ATTI's facility, or at a third party facility. All shipping charges for returning the unit to ATTI are not included. ATTI will pay the shipping charges for the return of the repaired item.

This warranty is voided if unauthorized modifications to the equipment hardware or software are performed.

# Calibrators

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**TOR132**

## PA2000

PATEC Core Unit (software not included)

## TOR132

Digital Torque Calibrator

- Provides digital readout for calibration of torque wrenches

# HVA ITA

**HIGH VOLTAGE ASSEMBLY ITA** - Terms and Conditions Apply (Refer to Appendix B)



**HVA ITA**

The High Voltage Assembly ITA (HVA ITA) is a Traveling Wave Tube (TWT) Power Supply. It provides the high voltage cathode voltage and grid pulse signals necessary to operate a TWT during test. The HVA ITA provides control and monitoring circuitry for TWT Unit Under Test and fully simulates the radar system environment. The HVA ITA is available as a fully integrated element of a Test Program Set or as a stand-alone test adapter for integration by the end-user. The HVA ITA can be produced for a variety of bias voltage ranges, duty cycles, pulse repetition frequencies, and pulse widths.

# The ENVID GEN-510

## ENHANCED VXI PROGRAMMABLE VIDEO GENERATOR AND ANALYZER

This product is protected by one or more of the following patents: 6396536, 6502045, 7180477, 7253792, 7289159, 7495674, 7768533, 7978218, 8131529, 8356282, 8489381, 8497908, 8655617, 8648869, 8643725, 8782558, 8788228, 8817109, 8817110, 8860759.



**ENVID GEN-510**



**ENVID GEN-510  
(Shown with Option 3)**



**ENVID GEN-515/508  
(Enhanced VXI Programmable Video Generator and Analyzer -  
Stand-Alone Rack Mount Option)**

The PVGA series of video test instruments from Advanced Testing Technologies, Inc. provide a suite of many diverse independent video modules within a single VXI instrument to offer a comprehensive solution set for video generating and acquisition requirements in a UUT test environment.

The ENVID GEN-510 Enhanced Programmable Video Generator and Analyzer (ePVGA) is a fifth generation video instrument providing unparalleled coverage to new and legacy video requirements. As the successor to the legacy VID GEN-502 instrument, the ENVID GEN-510 has full backwards compatibility with existing 502 software applications and incorporates new and useful features. The PVGA instruments are deployed world-wide and are successfully supporting the B-1B, B-2, F-15, C-17, Eurofighter, T-50, MFoCs family of computer systems, and other diverse military platforms.

The ePVGA is the world's only commercially available multi-format video generator and multi-format video acquisition device supporting RGB composite video (interlaced or progressive scan), raster/stroke video (XYZ), mixed video (composite/raster and stroke interleaved), rectilinear scan video (unmodulated or modulated), LVDS, DVI, HDMI, DVI, 3G-SDI, DisplayPort and image acquisition redisplay,

As a self-sufficient instrument, the ePVGA represents a lower cost of ownership over a la carte generic instrumentation, such as arbitrary waveform generators, by eliminating the need for complex signal switching between instruments, integration of software interfaces from multiple vendors, difficult synchronization and the need for ancillary signal sources. Reduced nonrecurring development man-hours directly provide the benefit of shorter TPS development times and lower expenses. The new ePVGA integrated software tool environment also supports the goal of shorter TPS development times.

With video instrument obsolescence issues arising, careful attention was given to supporting legacy video requirements, making the ePVGA an excellent replacement candidate. The availability of digital video generation also makes the ePVGA an excellent candidate for new state-of-the-art platforms as well. The PVGA series of instruments are equipped with Windows-compatible drivers.

# Video Generators

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(The following products are protected by one or more of the following patents: 6396536, 6502045, 7180477, 7253792, 7289159, 7495674, 7768533, 7978218)

## **ENVID GEN-508**

Enhanced VXI Programmable Video Generator and Analyzer - Stand Alone, Rack Mount Option

## **ENVID GEN-510**

Enhanced VXI Programmable Video Generator and Analyzer

## **ENVID GEN-510 Option 2**

Automatic Code Generation (requires ENVID GEN-510)

## **ENVID GEN-510 Option 3**

DVI/HDMI Digital Video (requires ENVID GEN-510)

## **ENVID GEN-510 Option 3-A**

Display Port (requires ENVID GEN-510 Option 3)

## **ENVID GEN-510 Option 4**

Video Redisplay (Hardware Based) (requires ENVID GEN-510)

## **ENVID GEN-510 Option 5**

Video System Cable (requires ENVID GEN-510)

## **ENVID GEN-510 Option 6**

Funnel Adapter

## **ENVID GEN-510 Option 7**

VID-SOFT Integrated Software Development and Testing Environment (requires ENVID GEN-510)

## **ENVID GEN-510 Option 9**

Video VXI EPVGA LVDS (Low Voltage Differential Signaling)

## **ENVID GEN-510 Option 10**

NGATS EVS EPVGA CCA (requires ENVID GEN-510 with Opt 03 and 07)

## **ENVID GEN-510 Option 11**

NGATS EVS CTI CCA

## **ENVID GEN-510 Option 12**

Conversion from One Slot to Two Slot

## **20203000-10**

NGATS ENVID GEN-510 System Cable Kit

## **ENVID GEN-515**

Enhanced VXI Programmable Video Generator and Analyzer - Stand-Alone Rack Mount Option (includes Option 3 (DVI/HDMI) and Option 7 (Vidsoft))

## **ENVID GEN-515 Option 1**

2 x 16 Digital Video Distribution Amplifier

## **ENVID GEN-515 Option 2**

6 x 1 Digital Video Multiplexer

## **ENVID GEN-515 Option 3-A**

Display Port (requires ENVID GEN-515)

## **ENVID GEN-520**

Enhanced VXI Programmable Video Generator and Analyzer with DVI/HDMI, Display Port and Vid-Soft

# Enhanced Video Systems

This product is protected by one or more of the following patents: 6396536, 6502045, 7180477, 7253792, 7289159, 7495674, 7768533, 7978218, 8131529, 8356282, 8489381, 8497908, 8655617, 8648869, 8643725, 8782558, 8788228, 8817109, 8817110, 8860759.



## Enhanced Video Systems

The Enhanced Programmable Video Generator and Analyzer (PVGA) provides the user with a highly flexible video test instrument. VXI, rackmount, and handheld options available.

### Supports Advanced and Legacy DoD Video Applications in:

- HUDs
- Radars
- MPDs/MFDs
- Sonars
- FLIR

### Aircraft Actively Supported:

- A-10
- B-1B
- B-2
- C-17
- F-15
- MQ-1 Predator
- MQ-9 Reaper

### Custom Configurations:

- Interfaces
  - VXI
  - LAN
  - USB
  - MXI-Express
- Packaging
  - Rackmount
  - Standalone
- Switching
  - Multiplexing
  - Distribution

The VTS System integrates our most cutting edge instruments with sophisticated video switching and distribution systems through the best performing Mass Interconnect Panel commercially available, the IEEE-1505 standard. Our system design guarantees full video bandwidth to/from device under test.

The camera and controller interface are available to fully automate video display testing, which will improve test integrity and throughput.

The VTS capabilities are based on our unique, patented video test products that are relied upon throughout the Mil-Aero industry.

Widely known for our precision integration of legacy analog capabilities, we have incorporated support for digital standards propagating in systems today. Many of these video systems use complex serial data transmission techniques. To support the need to also properly test their physical protocols, we incorporated transmission path interrogation and analysis capabilities. This ensures your test engineers can properly isolate and identify the complex failures attributable to signal path and high speed data integrity failure.

## Basic Video Test System Capabilities

### SDI Digital Video Support

- SD SDI Digital Video Generator
- HD SDI Digital Video Generator
- SD SDI Digital Video Acquisition
- HD SDI Digital Video Acquisition
- SDI Payload Emulator
- SDI Payload Analyzer
- Fiber Connectivity

### DVI Digital Video Support

- SD Digital Video Generator
- HD Digital Video Generator
- SD Digital Video Acquisition
- HD Digital Video Acquisition
- E-EDID Emulator
- E-EDID Analyzer

### Analog Video Support

- Primary Composite Video Generator
- Secondary Composite Video Generator
- Stroke Video Generator
- Raster Video Generator
- Mixed Video Generator
- Analog Acquisition
- NTSC/S-Video Generator
- NTSC/S-Video Acquisition
- Flat Panel Display Generator (LVDS)
- Flat Panel Display Acquisition (LVDS)
- Analog Real-Time Redisplay
- Video Redisplay Tool
- High Voltage Stroke Outputs
- RGB Bitmap Generation
- RGB High Resolution Color Acquisition

# Enhanced Video Systems

## VidSOFT

- VidSOFT Tool Suite Framework
- Automatic Code Generation Tool
- VSA (Virtual Spectrum Analyzer)
- Golden Image Analysis & Verification
- VRT (Video Redisplay Tool)
- Macro Generation Wizard
- Analog & Digital Pattern Generation Wizard
- Test Sequencer Wizard & ATML SQL Engine
- Video Measurement Analysis Library
- Protocol ID w/Metrics
- Sample ANSI-C project with Media
- Sample LABView Project with Media
- ePVGA Driver(s) DLL with Media

## IEEE-1505.3 Mass Interconnect Panel

### Redisplay Monitor

#### Bulk Power Supplies

- 5V, 12V & 24V DC
- 2 x 16 Digital Video Distribution Amp
- 16 x 1 Digital Video Multiplexer
- 1 x 8 Analog Video Distribution Amp
- 8 x 1 Analog Video Multiplexer
- TLT Analog Suite
- 2GSa/Sec Digitizing Oscilloscope
- DMM

## Optional Video Test System Capabilities

### Option 1

- 2 x 16 SDI Video Distribution Amp
- 16 x 2 SDI Video Multiplexer

### Option 2

- 2 x 32 Fiber Optic Video Distribution Amp
- 32 x 2 Fiber Optic Video Multiplexer

### Option 3

- 4 Port USB/KVM Analyzer

### Option 4

- Camera Sensor & Controller

### Option 5

- TLT Analog Suite Extension
- 6 GHz Pattern Generator
- Instrument Grade 4 x 32 Crosspoint Switch
- High Isolation 4 x 128 Relay Switch
- 6 GHz VNA to cable testing
- 6 GHz PNA to cable testing
- Fiber Cable Analyzer

# EPVGA Custom Packaging

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**ENVID GEN-515/508**



**Stand Alone Desktop EPVGA**

The ATTI Enhanced Programmable Video Generator and Analyzer (ePVGA) Stand Alone/Rack Mount is a true instrument integrating multiple function, multiple output video generation, and video-specific digitizer/analyzer capabilities into a complete general purpose test platform for military or commercial applications. It is housed in a 2U rack-mount chassis for full stand alone capability.

### Supports Advanced and Legacy DoD Video Applications in:

- HUDs
- Radars
- MPDs/MFDs
- Sonars

### Aircraft Actively Supported:

- A-10
- B-1B
- B-2
- C-17
- F-15
- MQ-1 Predator
- MQ-9 Reaper

# EPVGA Custom Packaging

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## ePVGA Features

- Multiple autonomous video functions
- Compatible with analog and digital video systems
- Automatic run time alignment of all analog parameters
- Sophisticated control structure provides the ability to simulate dynamic and interactive displays
- Continuous video acquisition image redisplay via host PC monitor
- Straightforward interfacing with complex UUTs such as HUDs and MPDs/MFDs
- Graphical interface panel with automatic software generation
- Dual configuration analog outputs and digital I/O (differential, single-ended)
- NTSC and S-Video video format generation
- All timing parameters support single pixel resolution
- Expanded digital video capture resolution (24 bit)
- Expanded video generation rates (composite to 125 MHz) and Raster/Stroke acquisition rates (to 40 MHz), DVI/HDMI/DisplayPort/SDI (to 162 MHz)
- Expanded I/O suite of signals - two standard digital 100-pin connectors and one 44-pin D-Sub 150 Ohm differential I/O connector
- Three additional remote sense pairs
- Additional user programmable timing signals for UUT synchronization
- Plug & Play compatible
- IVI and LXI compatible
- Multiple DoD ATS Standards Compliance
- Built-in test
- New daughter board capability to support future expandability such as DVI and real-time image acquisition redisplay via external monitor

## Mode Summary

- Dual Composite Video Generators
- Raster Video
- Modulated Raster Video

- Stroke Video
- Mixed Video
- DVI, HDMI, DisplayPort, HD-SDI Video
- Video Frame Capture
- Continuous Capture Redisplay
- Automatic Image Verification

## Interface Options

- MXI-2
- IEEE
- USB
- LXI
- MXI Express
- LAN

## ePVGA Summary

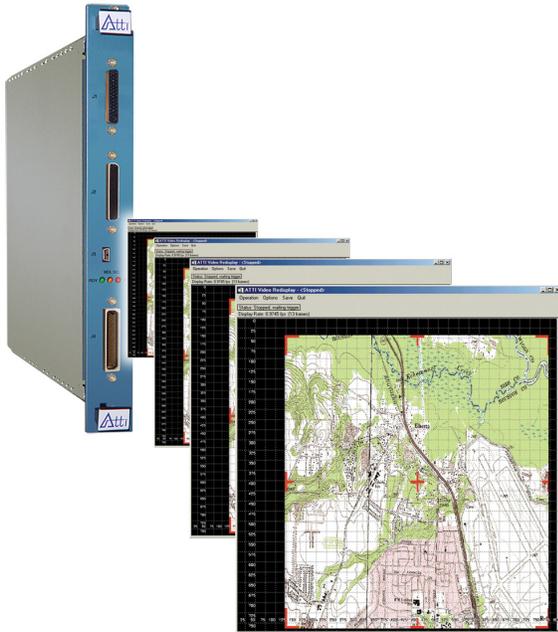
In order to meet the requirements of military video testing, all components of the ePVGA were created with the same design philosophy - total flexibility to handle both standard and nonstandard test requirements, and the ability to perform as a standalone unit. The ePVGA is a mature field proven design developed from decades of field experience. The ePVGA has been selected by several major aerospace companies in support of the B-1B, F-15, C-17, Eurofighter, T-50, and Predator/Reaper UAV aircraft. The requirements of these technically diverse systems are met by the ePVGA.

Whether considered as a legacy instrument replacement or for new testing capability, the ePVGA represents tangible and realizable benefits. By leveraging a full set of ancillary outputs, flexible external controls and standalone capability, the customer realizes a significantly higher level of capability, simpler interface test adapters, shorter TPS development times and elimination of the need for supplemental instrumentation. The combination of these advantages translates directly into reduced test development costs making the ePVGA an attractive video testing solution.

# Video Redisplay Tool

## SOFTWARE FOR EPVGA FAMILY OF INSTRUMENTS (AVAILABLE AS PART OF OPTION 7)

This product is protected by one or more of the following patents: 6396536, 6502045, 7180477, 7253792, 7289159, 7495674, 7768533, 7978218.



- VXI Plug & Play compatible - automatic VXI scan and recognition of all installed PVGA units
- Adjustable display enhancements to optimize image viewing (brightness, gamma, clipping, palette inversion)
- Up to 8X image magnification or 4X image reduction
- Frame averaging capability to reduce image noise
- Still image or motion video archive capability (BMP, JPEG, TIF, MPEG)
- Grid overlays and cursor XY tracking indicate the positional accuracy of image components
- Color or B/W palette selection
- Continuous or finite frame count captures
- Programmable viewing template size and position

## Full Spectrum Video Redisplay

Transforms All EPVGAs Into a Virtual Display Monitor for the Presentation of any UUT Video Image

- B/W Composite Video
- RGB Composite Video
- FLIR Video
- LVDS Video
- Raster XYZ Video
- Stroke XYZ Video
- DVI Video
- HDMI Video
- DisplayPort
- HD-SDI Video

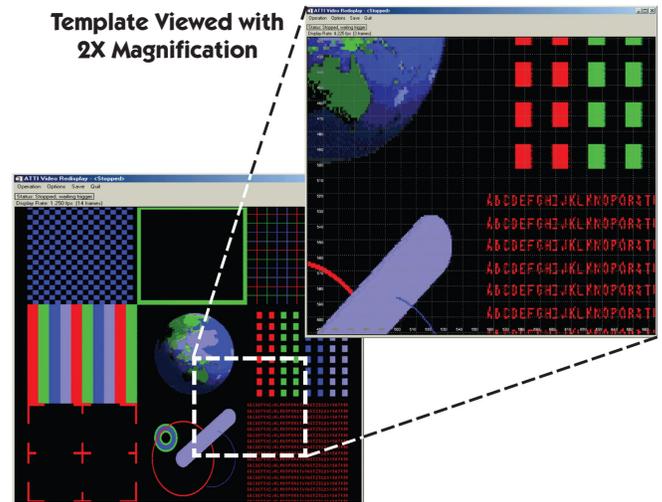
## Overview

The ATTI Video Redisplay Tool (VRT) is a standard program that interfaces directly with the ATTI Programmable Video Generator and Analyzer (PVGA). In normal operation, the PVGA functions as a highly flexible video frame grabber with operational modes that support a broad range of video formats. The Video Redisplay Tool serves as an extension to the capabilities of the video frame grabber by adding a graphical interface, continuous near real time image reconstruction, image enhancement, and visual redisplay on the host computer's monitor. By utilizing assets already present on the testing platform, the physical requirement for an external display unit to monitor signals generated by the instrumentation under test is eliminated. The PVGA and VRT combine to form a complete solution set for the generation and acquisition of video signals within the confines of a single VXI instrument.

## Features

- Upgrades all PVGA capture modes to continuous operation with near real time display on the host PC monitor
- Simple to operate – turnkey operation

Template Viewed with 2X Magnification



Actual RGB Composite Video Capture

## Description

The ATTI Video Redisplay Tool expands upon the power of the ATTI Programmable Video Generator and Analyzer by providing value-added features previously unavailable in the VXI form factor. The ATTI PVGA is a true VXI instrument integrating multiple function, multiple output video generation, and video-specific digitizer/analyzer capabilities into a complete general purpose test platform for military or commercial applications. The capacity of the PVGA to operate with nonstandard military video variants is unsurpassed, both in the generation and analysis modes of operation. The PVGA acquisition unit is capable of capturing the following video modes:

1. Composite Video (1 wire (B/W) analog)
2. Composite Video (3 wire (RGB) analog)
3. Composite Video (digital - 16M colors: 3 channels, 8 bits per channel)
4. Raster Video (3 wire - scanned XYZ)
5. Stroke Video (3 wire - direct XYZ)
6. DVI Video
7. HDMI Video
8. DisplayPort Video
9. HD-SDI Video

# Video Redisplay Tool

## SOFTWARE FOR EPVGA FAMILY OF INSTRUMENTS (AVAILABLE AS PART OF OPTION 7)

The software driver for the PVGA provides single-frame capture capability with numerous measurement modes. Once the PVGA has been programmed by the PVGA driver, the Video Redisplay Tool is designed to take direct control of the PVGA and automatically interlace the frame capture sequence with simultaneous data uploads. Upon completion of each data upload, the image is manipulated by the VRT post-processor where it may be enhanced, magnified, or averaged. Finally, the processed image is presented to the operator in a scalable window on the host computer's monitor.

The benefits of the PVGA-VRT package are several:

1. The elimination of bulky auxiliary display units (hot mockups) used to present UUT video images
2. The elimination of all storage, transport, mounting, alignment, and wiring issues associated with auxiliary display units
3. All video test functionality occupies a single VXI slot
4. Unlike many commercial instruments, the flexibility of the PVGA-VRT frame acquisition unit allows capture and display operations over an extremely wide range of video standards and variants

### Summary

The ATTI Video Redisplay Tool was designed to be a unique and effective software enhancement to the PVGA video test instrument. With no additional hardware requirements, the PVGA is transformed into a virtual imaging monitor capable of viewing a wide range of video standards and variants over a wide range of video formats.

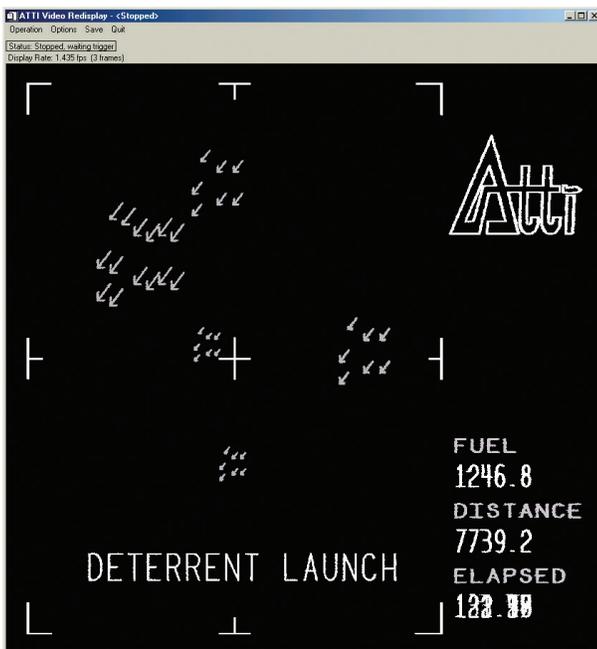
### Mode Summary

#### Analog

- B/W Composite Video Redisplay
- RGB Composite Video Redisplay
- LVDS Video Redisplay
- Raster Video Redisplay
- Modulated Raster Redisplay
- Stroke Video Redisplay

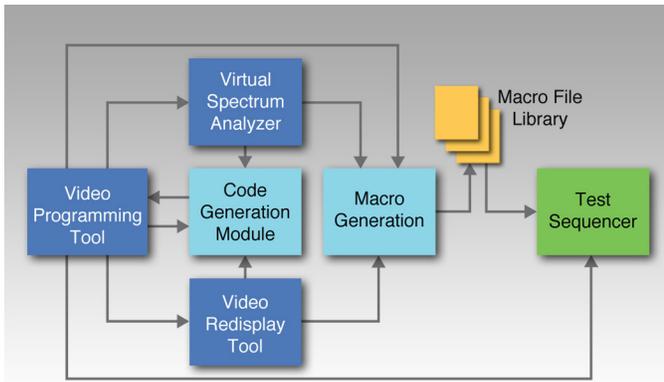
#### Digital

- DVI Video Redisplay
- HDMI Video Redisplay
- DisplayPort Video Redisplay
- SDI Video Redisplay



Actual Stroke Video Capture

## INTEGRATED VIDEO DEVELOPMENT SOFTWARE OVERVIEW (VID GEN-510 OPTION 7)



Video testing and validation remains a complex issue in today's commercial and military world. In this era of military downsizing, a single instrument should be able to:

- Satisfy all legacy and emerging military video requirements
- Generate and capture all military video formats (composite, raster, stroke video, DVI, LVDS, HDMI, DisplayPort)
- Measure timing, amplitude parameters, as well as, automatically validate image content of the captured video
- View the captured video on either the host computer monitor or a standard SVGA monitor in real-time
- Automatically generate code with macro playback capability for accelerated TPS development
- Operate in manual (troubleshooting), embedded (TPS) or standalone (production line) configurations

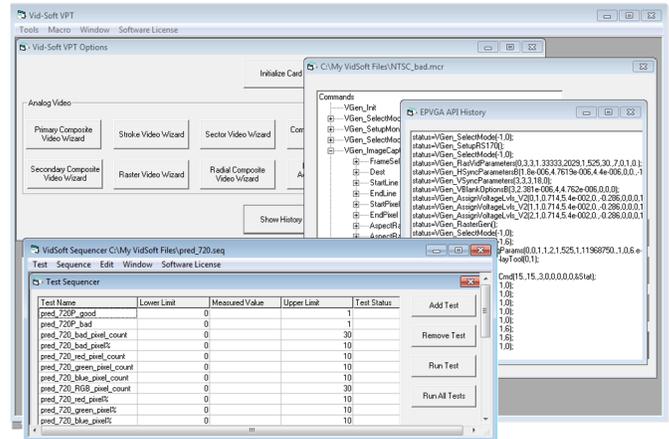
Commercial video generation and analysis testing solutions often require multiple, sometimes inadequate, test instruments to fulfill the video generation and analysis suite required by most military airframes. Though not as diverse as military applications, commercial requirements face similar difficulties, such as image content validation. Historically, image content analysis depends on operator defined voltage measurements at known time intervals in order to perform a rudimentary evaluation.

There exists a need for a unified hardware and software video toolkit which is a) versatile enough to interface with sophisticated military platforms, b) have the capability to expediently validate the broad format spectrum of military and commercial equipment and c) have the versatility to function as a standalone module or be integrated into an existing test bench environment.

Recognizing this requirement, **the VIDGEN-510 is now available with the VID-SOFT software package.** The VID-SOFT package is a natural extension to the capabilities of the 510 instrument. VID-SOFT is a comprehensive integrated development environment designed to accelerate test development, minimize or eliminate manual programming, and offer powerful automated and visual tools with which to automatically validate video formats and video image content without resorting to extensive signal analysis.

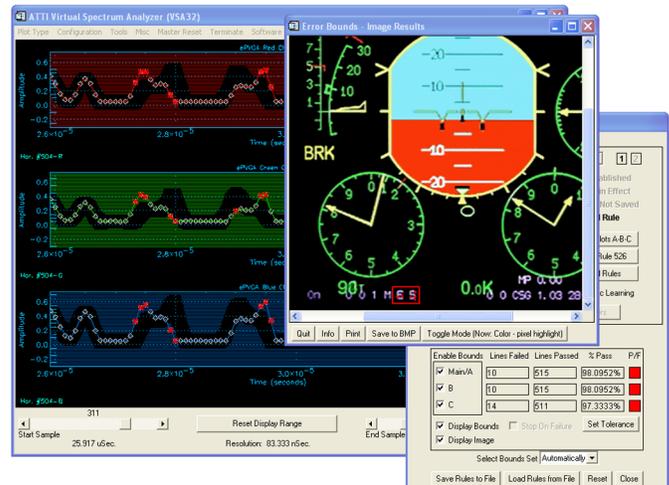
VID-SOFT is comprised of 4 software tools developed by ATI:

1) **The Video Programming Tool (VPT)** provides a graphical interface to the VidGen-510 offering point-and-click programming for accelerated software development, the ability to save programming steps to a macro for external playback via a single function call, and automatic API code generation for the ePVGA and other software modules keyed from entries selected the graphical interface.



Video Programming Tool (VPT)

2) Image content validation has been conspicuously missing in automatic test instrumentation despite its importance in identifying video UUT anomalies. Due to the complexity of executing content validation methods, the best industry implementations rely on simple manufacturer-specified test patterns, simple measurements and predominately, manual image inspection. Unfortunately, even simple image analysis can result in false positives. UUT anomalies can produce degraded signals (i.e. rise/fall times, noise, spikes, clipping, ringing, amplitude) or minor image defects that are not easily detected during a simple 'crosshatch image' bench test, but will be visible and flagged by a pilot looking at a complex situational display in the cockpit. Electronic template testing will remove manual image inspection methods.



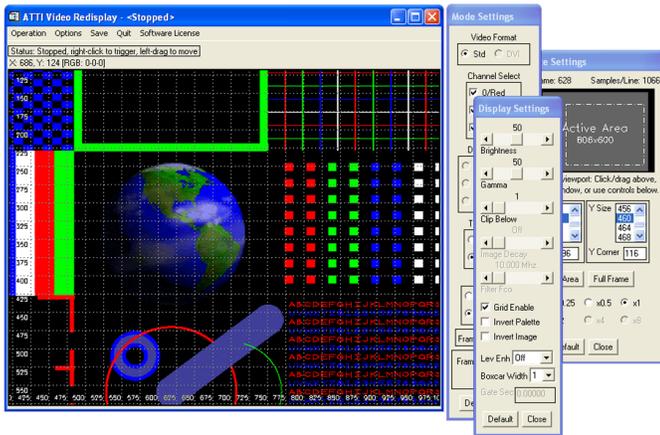
VSA Image Results W/Isolated Failure Depicted

## INTEGRATED VIDEO DEVELOPMENT SOFTWARE OVERVIEW (VID GEN-510 OPTION 7)

The **Virtual Spectrum Analyzer tool (VSA)** provides waveform-based analysis and patented automatic image validation of composite, raster/stroke and digital video images. The VSA provides a single step method to easily characterize a known-good signal from one or more UUTs and compare that 'golden' electronic template to a (video) signal under test for completely automated signal verification encompassing voltage, timing and image content criteria resulting in a pass or fail status. In addition, the VSA will reconstruct the image under test and highlight the portion of the image that is not in compliance to assist with fault isolation of the underlying subsystem. The VSA removes manual image inspection methods for all video signals, but will also excel with any complex electronic waveform.

3) The **Video Redisplay Tool (VRT)** provides software-based video image redisplay on the host computer's monitor capable of viewing composite video, raster video, stroke video formats for operator-in-the-loop testing.

4) The **Video Test Sequencer (VTS)** provides a standalone application to develop and execute user-developed test macros and sequences developed with the VPT and compare measurement results to established limits. The VTS may be invoked externally for integration into any software environment. Together, the VIDGEN-510 instrument and the VID-SOFT software provide unique capabilities within a single slot VXI card that are not matched by any commercial instrument vendor. As a video instrument, the 510 is: a) Capable of composite, raster, stroke, parallel digital, DVI, HDMI, DisplayPort and HD-SDI video generation, acquisition and image redisplay. b) Capable of automatically defining and performing 'electronic template' video testing. c) Designed to interface with diverse discrete signals from military platforms. d) A suitable candidate for all new and legacy military testers.



Video Redisplay Tool (VRT)

# Digital Video Testing

## ENHANCED PROGRAMMABLE VIDEO GENERATOR & ANALYZER OFFERING THE BROADEST VIDEO SUPPORT OF ANY COMMERCIALLY AVAILABLE GENERATION AND ACQUISITION INSTRUMENT

This product is protected by one or more of the following patents: 6396536, 6502045, 7180477, 7253792, 7289159, 7495674, 7768533, 7978218.



### ENVID GEN-510 W/Option 3

All 510 Features Plus HDMI, DVI, and SDI Video Generation and Acquisition

### ENVID GEN-510 W/Option 3A

All 510 W/Option 3 Features Plus DisplayPort Video Generation and Acquisition

### General Specification

- Simultaneous Generation and Capture Operation
- Generation Frame buffer: 8MB
- Acquisition Frame buffer: 8MB
- State-of-the-art factory re-programmable FPGAs for upgrading and feature enhancements

### DVI/HDMI/DisplayPort Specifications

- HDMI generation and acquisition for all HD formats at resolutions up to UXGA (1600 x 1200 at 60 Hz)
- Fully HDMI 1.4 compliant
- Maximum TMDS clock frequency of 225 MHz
- RGB 8:8:8 bit and YCbCr 8:8:8 bit capability
- Full info-frame capture and insertion
- Supports custom info-frame data structures
- Video generator capable of displaying dynamic overlays
- DVI 1.0 downward compatibility including standard definition (SD) modes (progressive/interlaced)
- DDC hardware supports custom EDIDs up to 2KB structures at 128 bytes per block
- Supports CEA-861 video formats
- EDID capture and analysis available
- Auxiliary connectors for audio capture available for future expansion
- Integrated cable length compensation

### SDI Specifications

- Generation and acquisition supports SMPTE 425M (A/B), 424M, 292, 259M-C specifications
- Simultaneous generation and acquisition possible
- Operation from 270 Mb/s through 2.970Gb/s
- Ancillary data extraction and insertion
- Copper PHY connection via BNC connectors
- Separate XMIT and RCV optical modules
- Optional Fiber-optic SDI available. Removable SFP modules can be provided
- Hardware based SMPTE video processing: TRS calculation/insertion, line number calculation/insertion, CRC calculation/insertion
- Integrated cable driver
- Lossless RGB 8:8:8 video data format
- Mixed copper/optical modes

# Hand Held Video Tester



**Hand Held Video Tester**

The hand held video tester is our world class video hardware and VIDSoft suite integrated to a micro PC via ATTI's slot-0 service. The intent of the slot-0 service is to eliminate the bottleneck of VISA and PCI bridging. The slot-0 service allows our register-based instrument to be controlled with memory class speed and functionality of the open MS-Windows API.

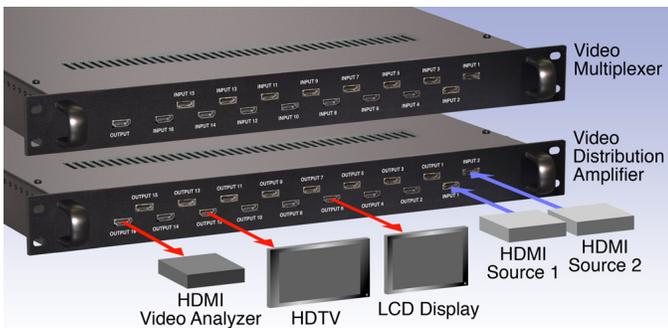
# Transmission Medium Verification Instrument



**Transmission Medium Verification Instrument**

Designed for automatic verification of all TMDS pairs in digital video cabling targeting: DVI/HDMI/SDI with application to legacy technologies. Incorporates concepts from eye diagram testing, bit error rate and time domain reflectivity. Detects signal degradation/failure caused by impedance mismatches, crosstalk and continuity/anti-continuity. Integrated multiplexer for automated selection of any TMDS signal pair for full reference eye diagram characterization testing.

# Video Multiplexer/Video Distribution



**Video Multiplexer/Video Distribution Interface with External Equipment**

## Video Multiplexer

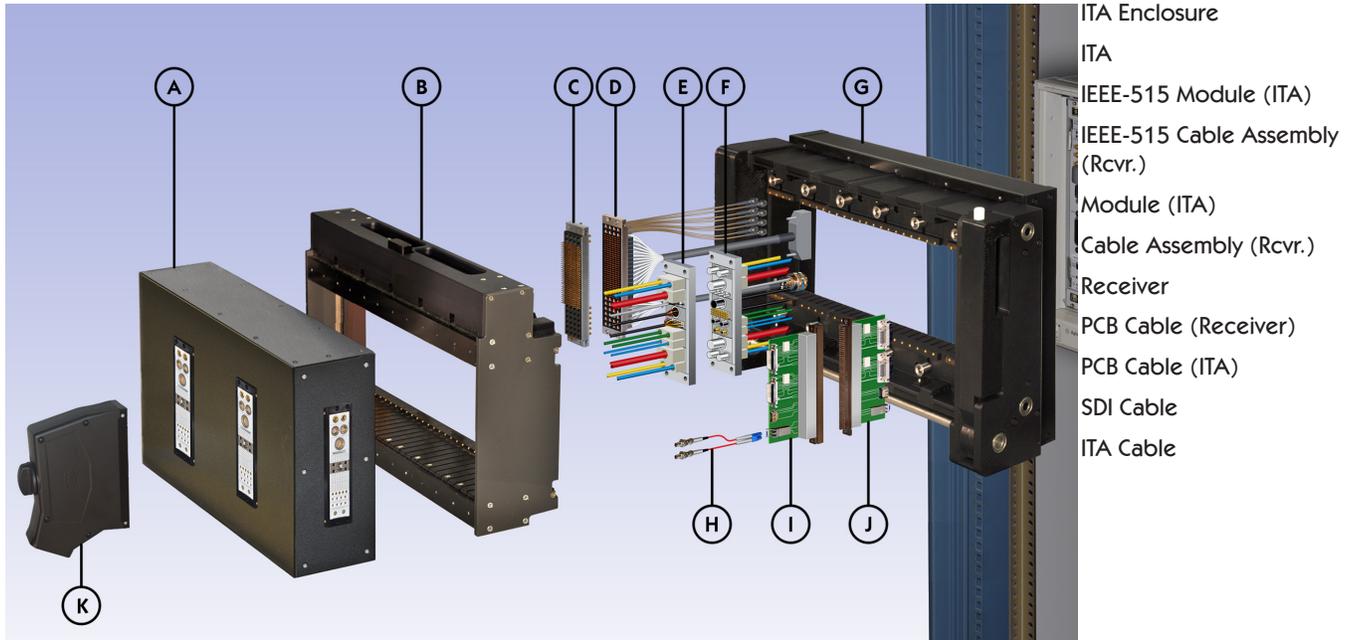
- 16 Input, 1 Output HDMI/DVI Multiplexer
- Input Equalization & Termination Options
- Output Termination & De-Emphasis Options

## Video Distribution Amplifier

- 2 Input, 16 Output HDMI/DVI Video Distribution Amplifier
- Full EDID Pass-Through Capabilities
- Retiming Option for Clock Data Recovery and Reduced Clock Jitter
- De-Emphasis Options to Compensate for Signal Losses

# Mass Interconnect Products

## RECONFIGURABLE MODULAR MASS INTERCONNECT PANEL



### IEEE-1505 Mass Interconnect Panel Configurations

Mass Interconnect Panels are available in the following configurations:

- 4-Slot
- 8-Slot
- 12-Slot
- 16-Slot
- 20-Slot
- 24-Slot
- 2 x 8-Slot
- 2 x 8-Slot (2-Rack)

### Patch Panels - RFI Receiver Components

#### Receiver Frames

20134006-10	4-Slot IEEE-1505 Receiver
20134006-30	8-Slot IEEE-1505 Receiver
20134006-50	12-Slot IEEE-1505 Receiver
20134006-70	16-Slot IEEE-1505 Receiver
20134006-110	24-Slot IEEE-1505 Receiver
20134008-10	29-Slot NGATS Receiver
20134095-110	24-Slot Dual Drive IEEE-1505 Receiver
20134095-130	24-Slot IEEE-1505 Receiver 1
20134600-10	Receiver, IEEE-1505 (29 Slot Dual Drive Aluminum)

#### Modules Without Contacts

193-312	Power Module (59 Position)
193-322	Power Module (152 Position)
193-412	Coax Module (59 Position)
193-422	Coax Module (152 Position)
07030149-07	Female Housing (4 Position)
07030149-11	Female Housing (10 Position)
20134003-03	Female Coax Housing (4 Position)
20134005-03	Female Power Housing (4 Position)
20134465-01	Connector, Elec, Power Module, 4 Slot, 23 A, (307 Position)
20134468-01	Connector, Elec, RF Module, Coax, 4 Slot, 7 GHz, (170 Position)

20134474-01	200 Pin Connector Block (attaches to RFI 200 pin connector block) (minimum order - 5)
20134479-01	200 Pin Connector Block
20134480-10	Power Module, 4 Slots Wide
20134481-10	RF (Coax) Module, 4 Slots Wide
20134482-10	Power Module, 4 Slots Wide, Connector Saver
20134483-10	RF Coax Module, 4 Slots Wide, Connector Saver
20134486-01	RF Mod, Receiver, 4 Slot, 7 GHz #8, 174 Position, Cover Plate
20134193-10	Receiver Latch/Hook Retrofit Kit

#### Modules With Contacts

193-210	Signal Contact (200 Position, Shrouded Box Posts)
193-240	Signal Contact (200 Position, PCB Straight)
193-242	Signal Contact (200 Position, PCB Right Angle)
193-250	Signal Contact (200 Position, PCB Transition to 4 x 25 x 2 Ejection Header)
193-252	Signal Contact (200 Position, PCB Extender)
04000265-10	Connector (500 Contact, Female)
04000328-10	Connector (200 Contact, Female)
20134467-01	Connector, Elec, Signal Module (200 Position, Female)
20134470-01	Connector, Signal Module, Rear Mount (200 Position, Female)

#### Contacts

00002492-01	Socket (RG316, DC-3 GHz)
07030159-03	Signal Contact (Female, 0.25 Sq. Tail)
20134001-01	Signal Contact (Female, Solder)
20134001-03	Signal Contact (Female, PCB)
20134002-03	Coax Contact (RG405/T-Flex, Female)
20134004-03	Power Contact (12-14 AWG, Female)
20134477-01	Coax Contact for the RFI Coax Block (14 AWG Wire) (minimum order - 25)
20134484-01	Power Contact, Connector Saver Type (minimum order - 5)
20134485-01	Coax Contact Assembly, Connector Saver Type (minimum order - 25)

# Mass Interconnect Products

## RECONFIGURABLE MODULAR MASS INTERCONNECT PANEL

### Unterminated Patchcords (see Note 1)

196-002-96	Signal Hyperboloid 4 Block with Eight Feet of 18-28 AWG
196-110-96	Signal Box Pin with Eight Feet of 18-28 AWG (per 100)
196-342-96	Power with Eight Feet of 14 AWG
196-412-96	Coax with Eight Feet of RG316
196-414-96	Coax with Eight Feet of RG178

**Note 1** - Custom parts - available upon request.

### Terminated Patchcords (see Note 1)

196-342-96L	Power with Eight Feet of 14 AWG to Lug
196-412-96B	Coax with Eight Feet of RG316 to BNC
196-412-96S	Coax with Eight Feet of RG316 to SMA
196-414-96B	Coax with Eight Feet of RG178 to BNC
196-414-96S	Coax with Eight Feet of RG178 to SMA

**Note 1** - Custom parts - available upon request.

### Protective Covers

191-504	4-Slot Receiver Cover
191-509	9-Slot Receiver Cover
191-524	24-Slot Receiver Cover
191-529	29-Slot Receiver Cover

### Mounting Kits (19 Inch)

191-404	4-Slot Dual Drive Mount
191-409	9-Slot Dual Drive Mount
191-429	29-Slot Dual Drive Mount
20134045-10	24-Slot Dual Drive Mount

### Connector Components

04000267-01	End Cap, Connector
04000267-02	End Cap, Connector

### Patch Panels - RFI Receiver Assemblies

#### Custom Assemblies (see Note 1)

(This product is protected by the following patent: 7297031 B2)

20134200-10	IEEE-1505 Receiver Assembly (This product is protected by the following patent: 7297031 B2)
20134200-30	IEEE-1505 Receiver Assembly (This product is protected by the following patent: 7297031 B2)
20251001-10	IEEE-1505 Receiver Assembly, 12 lot - ODU Connectors (This product is protected by the following patent: 7297031 B2)

**Note 1** - On-site source inspection required.

### Patch Panels - VDATS Receiver Components

#### Patchcords (see Note 1)

20170500-10	Prototype (0.100) Center to RG178 VDATS Receiver/Socket (minimum order - 100)
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**Note 1** - Custom parts - available upon request.

### Patch Panels - ITA/Fixture/Plug/Male

#### ITA Frames

20134007-10	4-Slot IEEE-1505 ITA
20134007-50	24-Slot IEEE-1505 ITA
20134009-10	29-Slot NGATS ITA
20134500-10	29-Slot IEEE-1505 ITA

### Modules Without Contacts

193-323	Power Module (59 Position)
193-325	Power Module (152 Position)

193-413	Coax Module (59 Position)
193-425	Coax Module (152 Position)
07030149-01	Male Housing (4 Position)
07030149-05	Male Housing (10 Position)
20134003-01	Male Coax Housing (4 Position)
20134005-01	Male Power Housing (4 Position)

### Modules With Contacts

193-201	Signal Contact (200 Position, Shrouded Hyperboloid Pins)
193-211	Signal Contact (200 Position, Shrouded Box Posts)
193-241	Signal Contact (200 Position, PCB Straight)
193-243	Signal Contact (200 Position, PCB Right Angle)
193-251	Signal Contact (200 Position, PCB Transition to 4 x 25 x 2 Ejection Header)
193-253	Signal Contact (200 Position, PCB Extender)
04000265-30	Connector (500 Contact, Male)
04000328-30	Connector (200 Contact, Male)

### Contacts

00002493-07	Pin (RG316, Double Braided DC-3 GHz)
07030160-05	Signal Contact (Male, 0.25 Sq. Tail) (minimum order - 100)
07030161-01	Signal Contact (Male, Crimp)
20134004-01	Power Contact (12-14 AWG, Male)
20134466-01	Power Contact (14 AWG, 23 A) Crimp-for Power Mdl 1
20134469-01	Coax Contact, RF (7 GHz, RG-316) Crimp-for RF Mdl 193-441
20134475-01	Signal Contact for the 200 Pin Connector Block
20134476-01	Power Contact for the RFI Power Block (14 AWG Wire)

### Unterminated Patchcords (see Note 1)

196-003-96	Signal Hyperboloid x 4 Block with Three Feet of 18-28 AWG
196-111-36	Signal Box Pin with Three Feet of 18-28 AWG
196-343-36	Power with Three Feet of 14 AWG
196-413-36	Coax with Three Feet of RG316
196-415-36	Coax with Three Feet of RG178

**Note 1** - Custom parts - available upon request.

### Terminated Patchcords (see Note 1)

196-343-36L	Power with Three Feet of 14 AWG to Lug
196-413-36B	Coax with Three Feet of RG316 to BNC
196-413-36S	Coax with Three Feet of RG316 to SMA
196-415-36B	Coax with Three Feet of RG178 to BNC
196-415-36S	Coax with Three Feet of RG178 to SMA

**Note 1** - Custom parts - available upon request.

### Protective Covers

192-304	4-Slot ITA Cover
192-309	9-Slot ITA Cover
192-324	24-Slot ITA Cover
192-329	29-Slot ITA Cover

### Cover Enclosures (see Note 1)

192-104	4-Slot Dual Drive Mount
192-109	9-Slot Dual Drive Mount
192-124	24-Slot Dual Drive Mount
192-129	29-Slot Dual Drive Mount

**Note 1** - Custom parts - available upon request.

# Mass Interconnect Products

## RECONFIGURABLE MODULAR MASS INTERCONNECT PANEL

### Backshell Enclosures (see Note 1)

192-104-3	4-Slot Dual Drive Three-Inch Backshell
192-104-6	4-Slot Dual Drive Six-Inch Backshell
192-109-3	9-Slot Dual Drive Three-Inch Backshell
192-109-6	9-Slot Dual Drive Six-Inch Backshell
192-124-3	24-Slot Dual Drive Three-Inch Backshell
192-124-6	24-Slot Dual Drive Six-Inch Backshell
192-129-3	29-Slot Dual Drive Three-Inch Backshell
192-129-6	29-Slot Dual Drive Six-Inch Backshell

**Note 1** - Custom parts - available upon request.

### Screw Down Panel Enclosures (see Note 1)

192-104A-6	4-Slot Dual Drive Six-Inch Box
192-104A-12	4-Slot Dual Drive Twelve-Inch Box
192-104A-18	4-Slot Dual Drive Eighteen-Inch Box
192-109A-6	9-Slot Dual Drive Six-Inch Box
192-109A-12	9-Slot Dual Drive Twelve-Inch Box
192-109A-18	9-Slot Dual Drive Eighteen-Inch Box
192-124A-6	24-Slot Dual Drive Six-Inch Box
192-124A-12	24-Slot Dual Drive Twelve-Inch Box
192-124A-18	24-Slot Dual Drive Eighteen-Inch Box
192-129A-6	29-Slot Dual Drive Six-Inch Box
192-129A-12	29-Slot Dual Drive Twelve-Inch Box
192-129A-18	29-Slot Dual Drive Eighteen-Inch Box
192-129A-24	29-Slot Dual Drive Twenty-Four-Inch Box

**Note 1** - Custom parts - available upon request.

### Hinged Panel Enclosures (see Note 1)

192-104B-6	4-Slot Dual Drive Six-Inch Box
192-104B-12	4-Slot Dual Drive Twelve-Inch Box
192-104B-18	4-Slot Dual Drive Eighteen-Inch Box
192-109B-6	9-Slot Dual Drive Six-Inch Box
192-109B-12	9-Slot Dual Drive Twelve-Inch Box
192-109B-18	9-Slot Dual Drive Eighteen-Inch Box
192-124B-6	24-Slot Dual Drive Six-Inch Box
192-124B-12	24-Slot Dual Drive Twelve-Inch Box
192-124B-18	24-Slot Dual Drive Eighteen-Inch Box
192-129B-6	29-Slot Dual Drive Six-Inch Box
192-129B-12	29-Slot Dual Drive Twelve-Inch Box
192-129B-18	29-Slot Dual Drive Eighteen-Inch Box
192-129B-24	29-Slot Dual Drive Twenty-Four-Inch Box

**Note 1** - Custom parts - available upon request.

### Connector Components

04000267-03	End Cap, Connector
04000267-04	End Cap, Connector

### Patch Panels - ITA/Fixture/Plug/Male Assemblies

#### Custom Assemblies (see Note 1)

20134300-10	IEEE-1505 ITA Assembly
20134300-30	IEEE-1505 ITA Assembly
20134300-50	IEEE-1505 ITA Assembly
20251002-10	IEEE-1505 ITA Assembly, 12 Slot - ODU Connectors
20134063-10	ITA Enclosure, 24 Slot, Dual Drive, Twelve-Inch Box
20134102-10	Interface Test Adapter Box Modification (Modified)
20134102-30	Interface Test Adapter Box Modification (Modified)
20134102-50	Interface Test Adapter Box Modification (Modified)

**Note 1** - On-site source inspection required.

### Patch Panels - VDATS ITA/Fixture/Plug/Male Assemblies

#### Patchcords (see Note 1)

20170501-10	Prototype (0.100) Center to RG178 VDATS Plug/Pin (minimum order - 50)
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**Note 1** - Custom parts - available upon request.

### Patch Panels - Common Parts

#### Modules Without Contacts

193-000-50	Header (50 Position)
07030149-13	Pin Housing, Spacer 1W, Receiver/Fixture
07030149-15	Pin Housing, Spacer 2W, Receiver/Fixture
07030149-17	Pin Housing, Spacer 2.5W, Receiver/Fixture

#### Modules With Contacts

20134082-10	Pin Housing, 10 Sq. Tail Signal Loaded, Receiver
20134083-10	Pin Housing, 10 Sq. Tail Signal Loaded, Fixture

#### Contacts

201016461-01	Signal Contact (Box Crimp Type) (per 100)
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#### Protective Covers

20134072-01	1-Slot Wide Cover
20134072-03	2-Slot Wide Cover
20134072-05	3-Slot Wide Cover
20134072-07	4-Slot Wide Cover
20134073-110	24-Slot Cover Assembly, Fixture
20134074-110	24-Slot Cover Assembly, Receiver
20134180-10	Cover Assembly, Ball Lock Engagement

#### Tooling

20134080-10	Receiver, Coax Extraction Tool Assembly
20134081-01	Receiver, Coax Replacement Tip
20134084-01	Socket Positioner
20134085-01	Pin Positioner
20134528-10	Ball Lock Emergency Release (minimum order - 5)
20134532-10	Coax Block Tool

#### Connectors

04000266-01	Rail, Connector
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VPC is a trademark of Virginia Panel Corporation. Mac Panel is a trademark of MAC Panel Company.

#### Hardware

96000183-01	Receiver, 200 Pin, Header, Mounting Screw (minimum order - 100)
96000183-05	Mounting Screw, 200 Pin Header (Rear Mount Mod) (minimum order - 100)
96000184-01	Mounting Screw, 200 Pin Header (minimum order - 100)
96000184-05	Mounting Screw, 200 Pin Header (Rear Mount Mod) (minimum order - 100)
96000184-13	Receiver, 200 Pin, Header, Mounting Screw (minimum order - 100)
96000184-15	Mounting Screw, 200 Pin Header (minimum order - 100)

# PXI/PXIe Insert

**VXI Module Replacement Using PXI/PXIe** Protected by one or more of the following patents: 9480184, 9488673, 9295169.



## PXI/PXIe Insert in VXI Chassis

(Base System Controller Module Included. Other Modules Shown for Reference Only)

- Gen 2/Gen 3 Speeds
- 4 Lane (x4)/8 Lane (x8) Bandwidth
- Directly Replace Obsolete VXI with PXI or PXIe
- Avoid Unnecessary Replacement of VXI Instruments
- Lower Lifecycle Costs
- Reduce ECP/ECN Costs
- Simplify Replacement Cabling
- Reduce T.O. Changes Necessary

Where:

- Space is limited and at a premium
- An ATS design is fielded in quantity
- Facility power is fixed or limited, and
- Time, budget & technical risk matters
- Supports logistic management of size and scope of DMS projects:
  - Replace one, two, or an entire suite of obsolete VXI assets

The PXI/PXIe Insert was designed to be mounted in a standard VXI chassis. The unit functions as a VXI-to-PXI converter that allows the user to replace obsolete VXI instruments with PXI or PXIe instruments potentially in a Form Fit Function replacement solution. This is a simple way to incorporate PXI/PXIe instruments into any VXI chassis. Also available for MMS systems.

These products do not require any micro-code overhead or complex development.

The PXI/PXIe insert is a target product for the Mil-Aero and DoD customers sustaining legacy VXI systems requiring replacement of obsolete instruments or requiring modernization using PXI/PXIe instruments.

Additionally, ATTI may be capable of designing any required replacement native VXI instrument.

Use the PXIe insert to bridge the older VXI bus to new PXIe bus architecture. This allows modern PXIe instruments to be inserted in an older VXI chassis. No need for complete replacement of even the working VXI instruments.

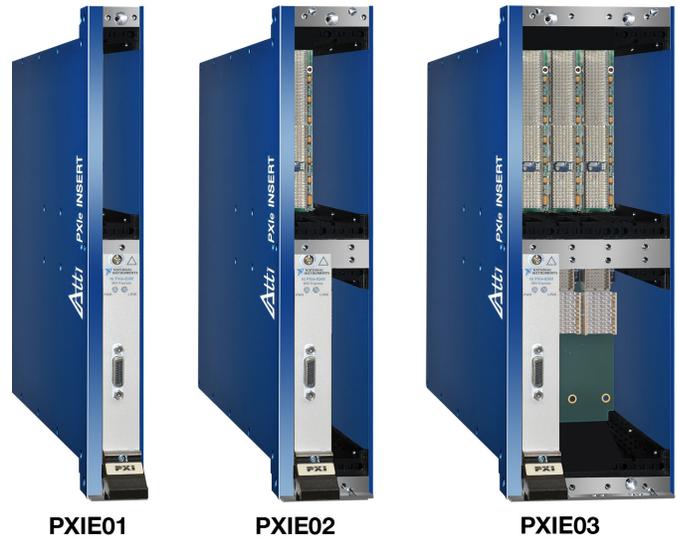
PXIe insert technology installed into a VXI chassis is the most direct and potentially most cost-effective means to replace older VXI instruments with new PXIe instruments.

Adoption of the PXI Insert can simplify major modifications to fielded test systems that directly translate to reducing and possibly eliminating some risks. Major modifications to fielded automated test stations present significant risks such as:

- Substantial cost & schedule risk
- Maintaining system performance risk
- Breaking existing TPSs (\$millions in sunk cost) risk
- New technology (PXIe) insertion into your test station (extensive hardware & software change) risk

ATTI's VXI to PXIe insert is a PXIe-format chassis inserted directly into slots vacated by obsolete VXI instrumentation.

- Can eliminate the need for a major acquisition to mitigate VXI obsolescence
- Enables the continued use of VXI chassis and supportable VXI instruments
- Minimizes ECP changes to test station hardware and software
- Supports the goal of maintaining the existing test system interface
  - This further reduces risk of TPS impact and provides cost avoidance to applied system utilities and application test programs.



## PXI/PXIe Insert Sizes Available

### VXI to PXI/PXIe Converter Chassis

- |       |  |
|-------|--|
| PXI01 | VXI to PXI Converter Chassis - 1 VXI/2 PXI Slot with Controller (does not include instrument(s)) |
| PXI02 | VXI to PXI Converter Chassis - 2 VXI/4 PXI Slot with Controller (does not include instrument(s)) |
| PXI03 | VXI to PXI Converter Chassis - 3 VXI/8 PXI Slot with Controller (does not include instrument(s)) |

# PXI/PXIe Insert

## PXI/PXIe Insert Resolves VXI DMS

PXIE01	VXI to PXIe Converter Chassis - 1 VXI/2 PXIe Slot with Controller (does not include instrument(s))
PXIE02	VXI to PXIe Converter Chassis - 2 VXI/4 PXIe Slot with Controller (does not include instrument(s))
PXIE03	VXI to PXIe Converter Chassis - 3 VXI/8 PXIe Slot with Controller and Filler Panels (does not include instrument(s))
PXIE03 Option 1	VXI to PXIe Converter Chassis, High Power Option - 3 VXI/8 PXIe Slot with Controller (does not include instrument(s))
PXIE03 Option 2	PXIe Digital Multimeter and High Performance Counter Timer with Filler Panels, VDAts ATS (requires purchase of PXIE03)
PXIC03	VXI to PXI & PXIe Converter Chassis - 3 VXI/4 PXI & 4 PXIe Slots with Controller (does not include instrument(s))
VXI-PXI-PXIe-10	VXI to PXI/PXIe Conversion Chassis, 3 VXI/4 PXI and 4 PXIe, with Controller and PXIe Signal Conditioning CCA

### Options - VXI to PXI/PXIe Converter Chassis

PXIe Option 01	PXI-8370 MXI 4 Lane (replaces Single Lane)
PXIe Option 02	PXI-8381 MXI 8 Lane (replaces Single Lane)
PXIe Option 03	PXI-8398 MXI 16 Lane (replaces Single Lane)
PXIe Option 04	PXI-8301 Thunderbolt
PXIe Option 05	3.3 V I/O (PXI only)
PXIe Option 06	Credit, Not to Include the Controller

### VXI-PXI-PXIe Insertion Kits 93006H0800

GPATS PXIe Insertion Kit - The Insertion Kit is a direct and cost-effective means to replace obsolete instruments with new, commercially available PXIe instruments. The GPATS PXIe Insertion Kit is mounted in the VIPER/T or TETS primary VXI chassis (see Note 1). The GPATS PXIe Insertion Kit includes an 8 slot PXIe chassis, replacement PXIe instrumentation, a PXIe Signal Conditioning Card, interface cabling, adapters, and mounting hardware. The kit replaces obsolete VXI instruments: Digital Multimeter (E1412A/4252), Counter Timer (E1420B), Digital Storage Oscilloscope (E1428A/ZT1428A), Function generator (3152), and Arbitrary Waveform Generator (E1445) (see Note 2).

**Note 1** - TETS upgrade requires purchase of VXI-PXI-PXIe Opt 01

**Note 2** - Variations of this kit replacing other obsolete VXI instruments are available.

### VXI-PXI-PXIe Opt 01

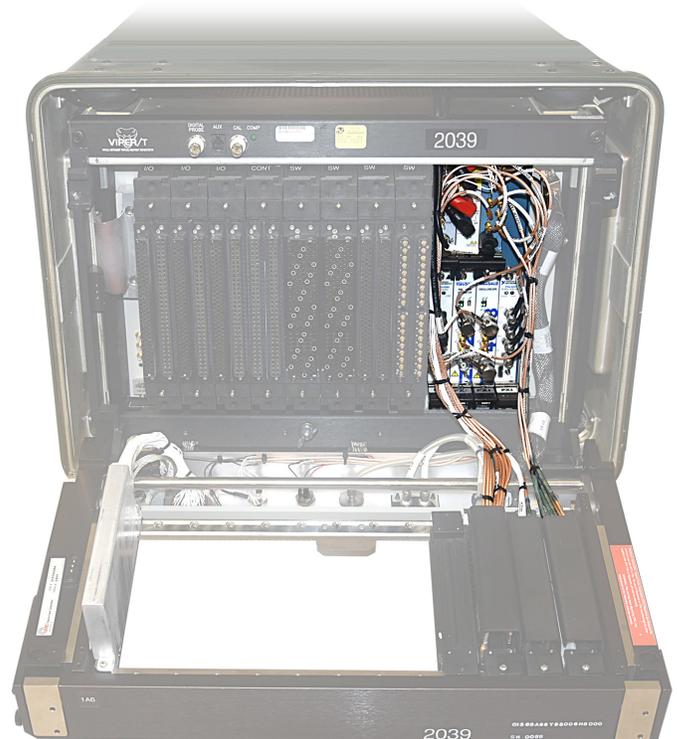
Restraining Assembly

### PXIe Cable Set

Interface Cable Set for PXIe Insertion Kit Instruments

### PXIe Bundle

PXIe GPATs-USMC Instruments Bundle consisting of PXIe Oscilloscope, PXIe Digital Multimeter, PXIe Function Generator, PXIe Counter Timer, PXIe Arbitrary Function Generator, and PXIe Signal Conditioning CCA



**PXI/PXIe Insert Installed in USMC VIPER/T Test System**

# Integrated PXI-VXI Combo Chassis

## Integrates PXI and VXI



### PXI/VXI Combo Chassis

The Integrated PXI-VXI Combo Chassis is a hybrid chassis designed to be mounted in a standard instrument rack. The unit contains eight PXI or PXIe slots and ten VXI slots.

- Add New Capability in an Existing Rack Space
- Configuration Flexibility to Support New and Upgraded System Requirements
- Avoid Unnecessary Replacement of VXI Instruments
- Lower Lifecycle Costs
- Reduce ECP/ECN Costs
- Simplify Replacement Cabling
- Reduce T.O. Changes Necessary
- Instantly Create Hybrid Test Solutions

The unit allows the user to integrate existing VXI equipment with PXI/PXIe instrument modules, allowing multiple technologies to work side by side within a compact footprint. Also allows PXI/PXIe modules to be integrated with VME equipment.

The PXI/PXIe insert is a target product for the Mil-Aero and DoD customers faced with reduced support equipment budgets and legacy VXI systems requiring sustainment or requiring modernization with new capabilities.

These products do not require any micro-code overhead or complex development. Additionally, ATTI may be capable of designing any required replacement native VXI or VME instrument.

# PXIe Instrument Interface

## For Migrating To PXIe Modular Instruments

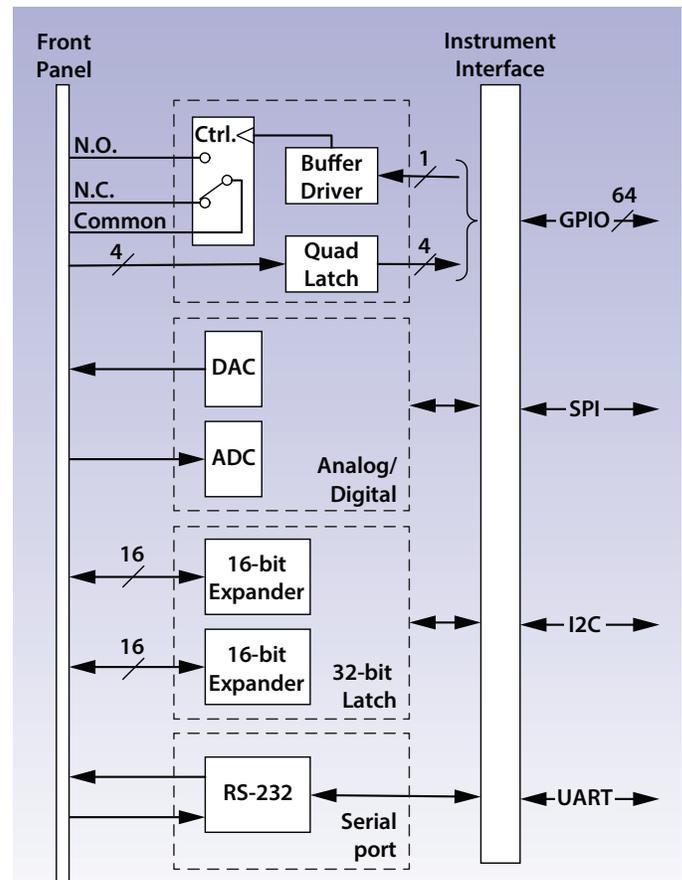


**PXIe Instrument Interface**

### Streamline New Development of PXIe Assets

The PXIe instrument interface from ATTI provides a robust building block enabling test engineers to streamline new development of PXIe assets; or to migrate legacy special test equipment to the new PXIe standard. This product was designed to support the integration of special test functions into PXIe assets without intense hardware and software knowledge of both PCIe and PXIe design requirements. This product reduces the risk of PXIe instrument development from your test development or test migration schedule. The ATTI PXIe instrument interface provides ready to use GPIO, I2C, SPI and UART capabilities. The ATTI PXIe evaluation board option includes complete project data for example, a detailed schematic, bill of material and Visual Studio source code. The evaluation board offers functional examples that implement common test and control assets such as Form-C relays, multi pin bidirectional latch, data conversion and serial RS-232 data comm.

Initial integration support is provided with more in-depth engineering services available upon request.



Each box above provides buffering/ isolation to FPGA signal I/O

### 32-bit Latch (and demo examples)

- Reduce PXIe instrument development time & risk
- Command & Control through SPI, I2C, GPIO or UART interfaces
- Command & Control GUI provided with documented API
- Electrical interface definition for customer project footprint
- PCB design rules for customer project footprint
- Mechanical design rules for customer project footprint

# VXI Instrument Interface

## For Migrating To VXI Modular Instruments



**VXI Instrument Interface**

### Replace Obsolete VXI Interfaces

The VXI instrument interface from ATTI provides a mature building block designed for test engineers to replace obsolete VXI interfaces, using register, memory or word serial protocols. This product is designed to support the integration special test functions into VXI assets without intense hardware and software knowledge of VXI design requirements. This product reduces the risk of VXI instrument sustainment from your test development or test migration schedule. The ATTI VXI instrument interface is compatible with register and memory mapped instrument command and control and supports an expandable SCPI parser.

Initial integration support is provided with more in-depth engineering services available upon request.

- Extend the life of your VXI investment
- Reduce VXI instrument development time & risk
- Command & Control through standard VXI interfaces
  - Register, Memory Mapped and Word Serial Protocol
  - SCPI parser supported
- Electrical interface definition for customer project footprint
- PCB design rules for customer project footprint
- Mechanical design rules for customer project footprint

# Parallel Automated Development System (PADS)

## Parallel Testing Using Automated Waveform Technology

Protected by one or more of the following patents: 9480184, 9488673, 9295169.



### Parallel Automated Development System (PADS)

ATTI's parallel test system is the most efficient functional test system available.

#### A smaller, faster test system that:

- Reduces test program set (TPS) development time
- Increases Test Quality/Thoroughness/Fault Accuracy
- Reduces Test/Repair Times
- Provides a significant Reduction in ATE Size/Footprint
- Reduces TPS development time/cost
- Reduces station and ITA footprint
- Provides a two-fold or more increase in production throughput
- Features automated fault dictionary generation
- Increases the probability of intermittent fault detection
- Features Automated Code Generation (ACG) for macro execution and export
- Features new hardware architecture that eliminates switching subsystems
- Features new software architecture that streamlines development and test execution
- Reduces ITA complexity, size, and cost

The ATTI Parallel Automated Development System (PADS) is a revolutionary new tester ideally suited for testing mixed signal units/devices under test (UUTs/DUTs). PADS can deliver significant benefits at reduced costs compared to common general purpose testers. At the heart of the tester are its simultaneously available mixed signal stimulus and acquisition assets. The parallel analog system is typically configured with sixty-eight (68) channels, the parallel digital system with one hundred twenty-eight (128) channels and the parallel power system with four programmable power channels. The PADS tester combines an intelligent mix of proprietary technologies in a small affordable test system.

The PADS toolset is a Graphic User Interface (GUI) based development system, which requires no coding, drawing or connecting by the user. The tight integration of the software is ground breaking and frees the TPS developer to direct their efforts toward test integration.

The PADS approach makes expensive and time consuming diagnostic routines and manual probing a thing of the past. ATTI's combined technologies enable component fault identification through our patented waveform analytics, signal intelligence analysis and model automation.

The strength of the system lies in the synchronization and analysis of waveforms using ATTI's patented Automated Waveform Analysis (AWA) tool and its "for test" extension features. The AWA is a key part in a suite of game changing software which fully characterizes mixed signal data from UUTs/DUTs.

The ability to automate the characterization of UUTs/DUTs will significantly reduce costly reverse engineering, specifically when little or no documentation is available. Using the tool set, the test engineer can characterize "known good" assemblies and populate fault libraries using their test engineering skill set knowing where and how to insert detectable faults.

PADS can be deployed as a supplemental maintenance tool or an ideal new technology replacement for obsolete general purpose or dedicated test systems. The footprint and rugged packaging of PADS allows for unprecedented sustainment flexibility.

The software suite keeps accurate and editable details of the test engineer's test setups and sequences. Using exportable text, application program interface (API) based code is generated by the system's GUI panels. The ACG engine continuously documents macro functionality of the GUI panels for the user. This can be used to support user tasks such as configuration management and revision tracking controls.

During production testing, test waveforms captured during TPS execution are aligned and verified against signal models. If the verification fails, the fault signature library is automatically evaluated against the current waveform. The faulty component(s) are identified to the operator through a GUI panel.

#### PADS can be used to produce a cost effective solution for:

- Systems with limited data available allowing you to build "useable" TPS
- Newly unsupported or homeless UUTs due to:
  - Extended life cycles where no support was planned
  - Products outliving the repair support in place

General purpose testers commonly use large patch panel interfaces. While well suited for testing a multitude of assemblies, they are not desirable for small scale UUTs/DUTs. Particularly when evaluating interface test adapter (ITA) fixturing, complexity, size or cost. The PADS mechanical engineering advances are significant cost, time and space savers for users when contrasted to common patch panel interfaces or ITAs. The PADS fixturing is more appropriately sized for these types of UUTs/DUTs resulting in simpler, more cost effective ITAs. PADS ITAs are most often a single printed circuit board (PCB), Printed Wire Assembly (PWA) or just a single cable. PADS mechanical advances also include an adjustable circuit card assembly (CCA) holding fixture when desired.

# Repair and Manufacturing Capabilities



**SRU Under Test**



**LRU Under Test**

Users of military aircraft often discover that equipment and systems on their platforms are no longer supported by the Original Equipment Manufacturers (OEM). Having developed upgraded equipment and systems, the OEM may find it impractical to continue to provide repairs and support to the older model and may suggest that users upgrade to the newer system. Budget and scheduling constraints may make it difficult to perform timely system upgrades. Operators of these platforms may exhaust their equipment spares, limiting their

usage for critical mission operations. To prevent this, users can use third party repair sources, restoring the spare equipment pool and thereby providing additional time to obtain budget and schedule OEM suggested upgrades.

Advanced Testing Technologies Inc. (ATTI), a manufacturer of Automatic Test Equipment (ATE) and developer of Test Program Sets (TPSS), has developed test and repair capability for hundreds of Line Replaceable Units (LRU) and Support Replaceable Units (SRU). As a developer of TPS and repair capability, ATTI has secured a library of support documentation, specifications and manufacturers data. Through analysis and reverse engineering, ATTI has developed an unparalleled knowledge of hundreds of LRUs and SRUs on the E-3 AWACS, C-130 and other military aircraft. Our TPS and repair capability gives us first hand knowledge and experience with Radar, Radio, and Intercom systems and well as flight instruments such as Altimeters, Airspeed and Heading Indicators and Inertial Navigation equipment.

ATTI maintains a library of technical data that includes OEM drawings, technical orders, critical item specifications, and test specifications for thousands of LRU and SRUs on airborne platforms.

ATTI is expert at locating hard to find and unique parts necessary for the repair and manufacture of airborne equipment. This has enabled us to successfully repair equipment that otherwise might have been deemed unserviceable due to lack of parts availability. In some cases, ATTI has built entire Circuit Card Assemblies to the original specification using OEM parts and PCB design data. We have repaired hundreds of avionic circuit cards, assemblies, and avionic LRUs. We have performed repairs for the US Air Force, US Navy, private companies and many Foreign Military Sales (FMS) customers.

In addition to repairs, ATTI has experience in building replacement SRUs for airborne equipment. When the OEM indicated that the items were obsolete and no longer supported, ATTI successfully manufactured new SRUs for the Vertical Deflection Amplifiers P/N 130211-10 and Video Processor P/N 130209-10 for the AWACS Color Monitor. The illustrations below depict two (2) Vertical Deflection Amplifiers: an original Hazeltine manufactured SRU, and an SRU built by ATTI to the original drawings and specification.

ATTI's expertise in test, repair and manufacturing provided the customer with the means to maintain and repair their aircraft when the OEM would no longer provide support.

# Repair and Manufacturing Capabilities

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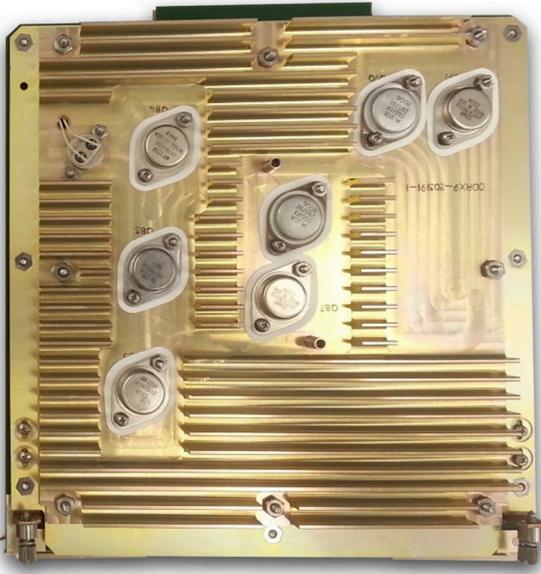
**OEM Circuit Card Assembly**



**ATTI Circuit Card Assembly**



**OEM Amplifier Assembly**



**ATTI Amplifier Assembly**

# Flight Line Phase Noise Tester (FLNT) for Radar Systems



## Flight Line Phase Noise Tester (FLNT)

### Features

- The integrated components of the FLNT automatically make the required phase noise measurements, determine pass/fail, and display the results on the computer.
- ATTI's Flight Line Tester can test LRUs to the required Phase Noise Levels.
- LRUs can be tested on the aircraft, or in a back-shop.
- Failing LRUs can be sent for repair with accurate identification of the fault.

### Phase Noise Test Requirements

- Elevated phase noise reduces Doppler radar system target detection.
  - Reference paper published at the Military Sensing Symposium Tri-Services Radar, July 2014 detailed the impact of phase noise on target detection: "Modeling the Effect of Phase Noise on Pulse Doppler Radar Target Detection".
- Modeled results confirm that even small increases in phase noise have significant impact on target detection.
- ATTI is in development of a diagnostic tool based on the video technique that:
  - Acquires test point data coincident with performance testing
  - Uses an automated signal capture and bounds check to validate diagnostic waveform criteria
  - Utilizes fault signatures for the isolation of failed components
  - Continuously improves the diagnostic callouts based on actual test and effective repair experience

### US Patents:

**9,007,259**

Flight Line Noise Tester

**8,248,297**

Phase Noise Measurement System and Method

**8,269,529**

Low Phase Noise RF Signal Generating System And Phase Noise Measurement Calibrating Method

## MMS 70340A/70341A OMR RF Source



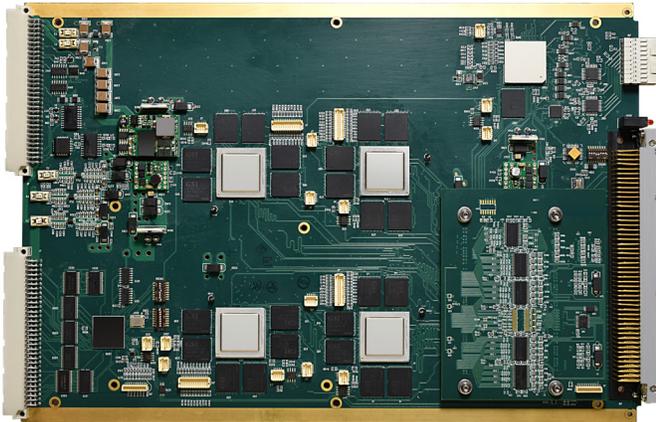
### MMS 70340A

This four-slot MMS system provides the source capabilities necessary to meet BRAT replacement requirements. The module is also available in a single "U" rack mount option. The module utilizes the ATTI slot-0 service to enable remote programming. A GUI is provided to allow manual operator control. This system is a target product for Mil-Aero and DoD customers faced with reduced support equipment modernization budgets and legacy MMS systems requiring sustainment. Eliminates the need to replace MMS chassis or find rack space to incorporate a new chassis or framework. Does not require any micro-code overhead or complex development. Other RF sources and packaging available, for example: HP83752 RF Source.

- 100% Integrated into Existing System
- 100% Support for Every TPS
- 100% Supported by System Software

# Z51 Digital VXI Module

## 50 MHz (TTL/CMOS) DYNAMIC DIGITAL SUBSYSTEMS



**Z51 Circuit Card Assembly**

A 50 MHz Digital Word Generator (DWG) that is a digital subsystem that executes diagnostic and/or functional test sequences in a standard VXI chassis. It is a suitable replacement for obsolete HP/Agilent 75000 Series C, Model D20 Digital Functional Test System, HP/Agilent E1450A Timing Modules, E1451A Pattern I/O Modules, E1452A Terminating Pattern I/O Modules, E1453A Timing Pods, E1454A Pattern I/O Pods, E1455A Timing Pods, and E1456A Pattern I/O Pods. It is also a 20 MHz Digital replacement, and an Interface Technologies replacement. Supports LASAR TAP files.

- Superior LRU/WRA Support
- 64 Bidirectional Channels Per Card
- 1 Megabit of Memory Per Channel
- Serial or Parallel Mode
- Master/Slave Timing Per Card in Chassis
- Cards Run Independent or Synchronized
- Trigger/Controls & Qualifiers Per Card
- Graphic Vector & Timing Editor
- Discrete Levels to Specification as Required

### Characteristics & Specifications

#### Pattern Rate

Rate	727 uHz - 50 MHz
Placement Resolution	10.0 pS
Pin Skew	< 3 nS Typical

#### Sequencer Specifications

Memory Depth Per Pin	1 Mega-Vector
Independent Memories:	
PAT MEM/Ram	
8 Response	1 Mega-Patterns
8 Stimulus	1 Mega-Patterns
8 Reference	1 Mega-Patterns
Timing	
Seq RAM	1 Mega-Vector
Timing Cycle RAM	32 Bits x 16 K
Continuous/Loop Pattern	Yes

#### Sequencer Specifications (continued)

Real-time Compare	Yes
Stop on Error	Yes
Stop on Error Bit	Yes
Breakpoints	Yes
Output Markers	Yes
Trigger	Yes
Conditions	Yes

#### Timebase Specifications

Minimum Timing Cycle Duration	20 nS or 4 Subcycle
Maximum Timing Cycle Duration	16K Timing Cycles
Timing Cycle Resolution	1 Subcycle
Minimum Timing SubCycle Period	5 nS / 6.25 nS
Maximum Timing SubCycle Period	83.8 mS
SubCycle Period Resolution	5 nS / 6.25 nS
SubCycle Period Accuracy	1 PPM

#### Control Timing/Pod Specifications

Minimum Edge Timing Delay	0 Subcycles
Maximum Edge Timing Delay	Timing Cycle Duration - 1 Subcycle
Edge Timing Resolution	1 Subcycle
Minimum Programmable Pulse Width	10.0 nS
RiseTime	<5 nS, typical
FallTime	<5 nS, typical
Sustained Output Current	+/- 24 mA
Logic High, Open Circuit	5 V, minimum
Logic High, Sourcing 24mA	2.5 V, minimum
Logic Low, Open Circuit	0.1 V, maximum
Logic Low, Sinking 24mA	0.44 V, maximum

#### Triggers & Timing Port Specifications

Input Sources	8 VXI TTL Buses, 2 VXI ECL Buses, 2 Front Panel
Slopes	Programmable
Qualifiers	Boolean expression, up to 10 'Q' inputs, 1 end if ready
'Q' Input High	>2.0 V (internal pull-up)
'Q' Input Low	< 0.8 V at < 150 uA
'Q' Input Capacitance	<10 pF
'Q' Inputs Latency	70 nS Typical
Front-panel TTL High	>2.0 V (internal 50 K pull-up)
Front-panel TTL Low	< 0.8 V at < 25.0 mA
Front-panel TTL Capacitance	<10 pF
Minimum TTL Trigger Pulse Width	6 nS
Minimum ECL Trigger Pulse Width	no ECL front panel
Minimum Time Between Triggers	10.0 nS + Programmed Trigger Delay
Programmable Delay	0 to 327.68 uS in 5 nS steps or 0 to 409.59375 uS in 6.25 nS steps
Output Marker	Anywhere

# Z51 Digital VXI Module

## 50 MHz (TTL/CMOS) DYNAMIC DIGITAL SUBSYSTEMS

### Output Port Specifications\*

Sustained Output Current	+/- 24 mA
Logic High, Open Circuit	5 V, minimum
Logic High, Sourcing 24mA	2.5 V, minimum
Logic Low, Open Circuit	0.1 V, maximum
Logic Low, Sinking 24mA	0.44 V, maximum
Capacitance (disabled)	30 pF, maximum
Leakage Current (disabled)	120 uA, maximum
RiseTime	>6.5 nS
FallTime	>7.0 nS
Tri-state Input Delay	8 nS, typical

### Input Port Specifications\*

Logic Low	<0.8 V at <150uA
Logic High	>2.0 V (internal pull up)
Real-Time Compare Mask	Static don't care pins
Real-Time Compare Control	Vector by Vector enabling
Sample format	Edge

\*Custom levels by specification only

## 01001599-01

### USB Controller

- VXIBus 3.0 features including A64 addressing and 2eVME protocol
- 32 MB/s sustained throughput across USB and VXI
- Word-serial accelerator
- USB 2.0-compatible, including "hot plug-in" capability
- Direct trigger and interrupt control
- External VXI CLK10 synchronization

## 04000044-01

### Universal Power Meter

- Dual channel power meter, peak or CW operation
- > 150 readings per second
- Frequency range: 10 MHz to 40 GHz, sensor dependent
- Power dynamic range: 90 dB, sensor dependent
- 1 mW power reference

## 07030001-10

### Z50 Digital VXI Module

- 50 MHz (TTL/CMOS) Dynamic Digital Subsystems

## 07040060-01

### VXI-MXI Express Trigger Board

- Remote Control for VXI
- Data Rate: 2.5 Gbps

## 08020005-01

### Bus Simulator

TPS compatible replacement instrument for obsolete ESTS instrument Bus Simulator

- 2 channels, transformer coupled
- 32 20-bit words per message
- Manchester Bi-phase compatible
- 40 V (p-p) max.

## 08020006-01

### Counter/Timer/Digitizer

TPS compatible replacement instrument for obsolete ESTS instrument Counter/Timer/Digitizer

- 2 channels
- DC to > 100 MHz BW
- Better than  $\pm 25$  mV sensitivity
- $> \pm 7$  V into 50  $\Omega$
- $> \pm 100$  V into 1 M $\Omega$

## 08020007-01

### High Density (TTL-I/O) Card

TPS compatible replacement instrument for obsolete ESTS instrument High Density (TTL-I/O) Card

- 256 TTL compatible pins
- Source/Sink 24 mA max.
- Programmable in groups of 8

## 08020008-01

### Arbitrary Function Generator

TPS compatible replacement instrument for obsolete ESTS instrument Arbitrary Function Generator

- 2 channels
- Arbitrary plus 6 built-in waveforms
- $\pm 7$  Vdc to > 25 MHz

## 08020010-01

### Form C Relay Card

TPS compatible replacement instrument for obsolete ESTS instrument Form C Relay Card

- 32 SPDT Form C relays
- 4 A continuous max.
- Closed contact resistance < 1.0  $\Omega$

## 08020015-01

### Scanner Multiplexer

TPS compatible replacement instrument for obsolete ESTS instrument Scanner Multiplexer

- 96 2-wire paths
- 48 4-wire paths
- 1 A max. current

## 08020016-01

### Power Meter

TPS compatible replacement instrument for obsolete ESTS instrument Power Meter

- CW and peak sensors
- Frequency range: 10 MHz to 18 GHz
- Amplitude range: -70 to + 20 dBm

## 08020017-01

### High Speed DWG

TPS compatible replacement instrument for obsolete ESTS instrument High Speed DWG

- 96 stimulus/response pins or 48 bi-directional pins @ > 20 MHz
- Multi-mode operation
- LASAR TAP interface
- > 1 M memory depth

## 08020019-01

### RF Generator #2

TPS compatible replacement instrument for obsolete ESTS instrument RF Generator #2

- 10 MHz to 18 GHz with 1 Hz resolution
- +12 to -90 dBm with 0.1 dB resolution
- AM, FM, and PM modulation

## 08020100-10

### Advanced Video System

TPS compatible replacement instrument for obsolete ESTS instrument Advanced Video System

- 9 channels; 6 output, 3 input
- Frequency range: 1 Hz to 50 MHz
- Pixel time:  $> 1/\text{frequency}$
- Pixel depth: > 4 bits

## 08020101-10

### H009

TPS compatible replacement instrument for obsolete ESTS instrument H009

- 1 channel, dual-port relay controlled
- Manchester Bi-phase compatible
- 40 V (p-p) max.

**08020103-10****Rubidium Reference**

TPS compatible replacement instrument for obsolete ESTS instrument Rubidium Reference

- 10 MHz ( $< \pm 0.02$  Hz)
- 1 to 2 V (p-p) into 50  $\Omega$

**08020104-10****Digital Multimeter**

TPS compatible replacement instrument for obsolete ESTS instrument Digital Multimeter

- 6.5 digits
- 200 V peak max. input
- Accuracies specified through 1 MHz

**20202001-10****Z51 Digital VXI Module (Replaces Z50 Circuit Card Assembly. See Z50 Circuit Card Assembly for description)**

- 50 MHz (TTL/CMOS) Dynamic Digital Subsystems

**92103848-01****Pattern Pod**

- Extends measurement accuracy to a DUT located up to 2 meters from the front panel
- Each pod buffers the input and output signals for 2 of the 4 pattern I/O modules
- 2 pods are required for each pattern I/O module
- Provides input for tri-state control and external clock

**92103849-01****C-Size Mainframe with Command Module**

- 13-slot mainframe for VXI plug-in modules
- Handles advanced command interpreter
- Provides cooling, power, digital communication interface bus
- Expanded memory options available

**92103850-01****160 MHz Timing I/O Module**

- Provides control signals for the DUT and timing for the sequence of patterns that are generated or recorded by the pattern I/O modules
- Provides 12 pattern clocks
- 2-slot width

**92103851-01****20 MHz Pattern I/O Module**

- 32 I/O pins (4 ports of 8 bits each)
- Maximum 20 MHz pattern rate using an external clock
- 64K segmentable pattern depth
- Each port can output, record, or perform a real-time compare
- Programmatic or triggered tri-state on the fly
- 1-slot width

**92103852-01****Terminating 20 MHz Pattern I/O Module**

- 32 I/O pins (4 ports of 8 bits each)
- Maximum 20 MHz pattern rate using an external clock
- 64K segmentable pattern depth

- Each port can output, record, or perform a real-time compare
- Programmatic or triggered tri-state on the fly
- Terminates the pattern clock lines
- 1-slot width

**92103855-03****Synchro/Resolver Simulator and Indicator**

- Independent digital to synchro channel and synchro to digital channel
- Dynamic rate and directions
- Programmable
- Reference Input: 26 or 115 V rms
- Signal I/O: 11.8, 26, and 90 V L-L
- 1-slot width

**92103897-01****Timing Pod**

- Extends measurement accuracy to a DUT located up to 2 meters from the front panel
- An active device which improves the ability to drive DUT inputs and minimizes loading on DUT outputs
- Buffers the 8 control signals out to the DUT as well as the 10 'Q' lines, a ready line, and a trigger line into the timing I/O module

**92105232-01****MXI-3 VXI Bus Interface Kit**

- VXI-PCI8340
- Copper
- 10 m
- MXI-3 VXIbus Interface Kit for PCI

**92105233-03****VXI-MXI-3 Command Module**

- VXI-8340
- Single or Dual-Port
- Copper Cable
- VXI MXI-3 Interface Module

**93000CCA-10****BRAT<sup>®</sup> Switch Cards (BRAT<sup>®</sup> 105)****93000068-01****QUAD 8-Bit Digital Input/Output Latch**

- 4 independently programmable 8-bit ports
- TTL compatible I/O and control lines for GPIO handshake modes
- Block mode transfer - 325 Kbytes/s
- 1-slot width

**93000075-01****Relay Matrix**

- 4 × 64, 8 × 32, or 16 × 16 2-wire switching matrix
- Expand row and columns to make larger matrices with an optional cable or special expansion terminal module
- 1-slot width

**93000076-01****RF Multiplexer**

- Six 1 × 4 multiplexers
- 50 Ω or 75 Ω characteristic impedance
- Switch signals up to 3 GHz
- 1-slot width

**93000077-01****6½-Digit Digital Multimeter**

- Functions: DCV, ACV, 2- and 4-wire Ω, frequency, and period
- 1-slot width

**93000079-01****1-GSa/s Digitizing Oscilloscope**

- 2 channels, 1 GSa/s max. sample rate
- 250 MHz bandwidth, single-shot or repetitive
- 1-slot width

**93000080-01****Arbitrary Function Generator**

- 13-bit resolution, 40 MSa/s
- 256K sample memory with sequencer (custom waveforms)
- Phase continuous frequency hopping
- Linear or logarithmic frequency sweeping
- 1-slot width

**93000081-01****21 MHz Synthesized Function/Sweep Generator**

- Sine, square, triangle, negative and positive ramps, DC, and TTL clock waveforms
- Amplitude and phase modulation
- Multi-interval sweep and multi-marker mode
- 2-slot width

**93000157-01****64-Channel Scanning A/D Converter**

- 16-bit resolution, 100 KSa/s max. sample rate
- Input options: DC volts, temperature, resistance, and strain gauge
- 1-slot width

**93000326-01****Dynamic Digital (32 Pin Groups)**

- 32 I/O pins (4 ports of 8 bits each)
- 20 MHz pattern rate
- 64K segmentable pattern depth
- Each port can output, record, or perform a real-time compare
- TTL/CMOS/ECL compatible logic
- 2 associated pods

**93000326-03****TTL Assembly, Dynamic Digital (32 Pin Groups)**

- TTL compatible logic
- 32 I/O pins

**93000326-05****CMOS Assembly, Dynamic Digital (32 Pin Groups)**

- CMOS compatible
- 32 I/O pins

**93000326-07****ECL Assembly, Dynamic Digital (32 Pin Groups)**

- ECL compatible logic
- 32 I/O pins

**93000326-09****Programmable Assembly, Dynamic Digital (32 Pin Groups)**

- ECL/TTL/CMOS compatible logic levels
- 32 I/O pins

**93000570-01****Digital Functional Test**

- 160 MHz timing module
- 32 I/O pins (reference P/N 93000326-01)
- 2-slot width
- 1 associated timing pod

**95000014-01****Peak, CW Power Meter**

- 10 MHz to 18 GHz
- Dual channel
- -70 to +20 dBm (CW sensor)
- -20 to +20 dBm, peak
- -30 to +20 dBm, CW (pulse sensor)
- 1-slot width

**95000015-01****Frequency Counter**

- 100 Hz to 20 GHz frequency coverage (expanded coverage available)
- -15 dBm to +7 dBm input power range
- Pulse and CW frequency measurements
- Pulse parameter measurements performed
- 1-slot width

**95000016-01****Rubidium Frequency Standard**

- 10 MHz
- 1 V rms into 50 Ω
- 5 × 10<sup>-11</sup> initial accuracy
- 5 × 10<sup>-11</sup>/month aging
- multiple outputs for system synchronization
- 1-slot width

**95000020-01****VXI Programmable Loads**

- 10 A, 75 V, 50 W
- Constant current
- Constant resistance
- Short circuit
- Pulsed loading
- 1-slot width

## 95000022-01

### VXI Dual-Channel Pulse Generator

- 10 Hz to 100 MHz
- Programmable pulse widths or duty cycles
- 24 V p-p programmable amplitude
- Period: 3.3 ns to 100 ms
- Delay: 0 ns to period
- 1-slot width

## 95000023-01

### VXI Programmable Level Digital I/O Pins

- Output HI level: -5 V to +15 V
- Output LO level: +5 V to -15 V
- Input HI threshold: -5 V to +15 V
- Input LO threshold: +5 V to -15 V
- 192 bidirectional 3-state pins
- May be synchronized to yield up to 1152 pin digital interface
- Memory depth: 32K
- Speed: 25 MHz
- 1-slot width

## 95000024-01

### RF Control Module

- Interface to VXI frequency synthesizers
- Controls from 1 to 8 modules
- Contains 10 MHz time base
- 1-slot width

## 95000025-01

### Microwave Frequency Synthesizer

- 2 to 12 GHz
- -90 to +10 dBm
- Amplitude, frequency, and pulse modulation
- Interfaces with downconverter to extend frequency range down to 10 MHz
- 2-slot width

## 95000026-01

### Downconverter Adapter

- 10 MHz to 2 GHz
- -90 to +5 dBm
- Amplitude, frequency, and pulse modulation
- Interfaces with microwave frequency synthesizer to provide greater frequency coverage
- 1-slot width

## 95000027-01

### VXI RF Multiplexer Module

- Configurable: 16-1 × 4, 8-1 × 9, 4-1 × 19, 2-1 × 39, 1-1 × 79
- 200 Vdc, 0.5 A, 10 W per channel
- Bandwidth (-3 dB): 200 MHz
- SWR (50 Ω): < 1.3:1 at 100 MHz
- 1-slot width

## 95000028-01

### VXI Power Switching Module

- 20 DPST relays
- 350 Vac, 8 A, 240 W per channel
- 1-slot width

## 95000029-01

### VXI Open Collector Driver Module

- 96 channels at 32 Vdc, 200 mA per channel
- 1-slot width

## 95000031-01

### Enhanced VXI Dual-Channel Pulse Generator

- 10 Hz to 300 MHz
- Programmable pulse widths or duty cycles
- 24 V p-p programmable amplitude
- Period: 3.3 ns to 100 ms
- Delay: 0 ns to period
- 1-slot width

## 95000035-01

### RF/Microwave VXI Chassis

- Heavily shielded
- Low noise linear power supply
- 35 watts per slot

## 95000038-01

### VXI Expansion Rack

Provides the ability to enhance an existing system with an expansion rack which contains a VXI high power mainframe and command module. The VXI expansion rack can accommodate two additional C-size VXI mainframes for a total of up to three VXI mainframes in the expansion rack.

## 95000048-01

### 20 GHz Synthesized Signal Generator

- 0.01 to 20 GHz frequency range
- 1 Hz resolution
- +13 to -90 dBm leveled output power
- 0.1 dB power resolution
- AM, pulse, and complex modulation
- 3-slot width

## 95000049-01

### Synchro/Resolver Simulator and Indicator

- 3 independent digital to synchro channels and synchro to digital channels (custom configurable)
- Dynamic rate and directions
- 1-slot width

## 95000050-01

### ARINC-429 Test/Simulation and Monitor Card

- Up to 10 ARINC-429 channels
- Variable Tx amplitude control per Tx channel
- Programmable rise/fall time per Tx channel
- Programmable Tx inter-word gap (sync) time
- 32K × 8 true dual-port RAM (8- and 16-bit transfers)
- User definable Tx and Rcv buffer sizes per channel
- 2 modes of receiver/monitor data storage modes (Sequential and Lookup Table)
- ARINC filter table
- Error injection (per block)
- Error detection (per ARINC word)
- Interrupt and polling capabilities in all modes
- 1-slot width

**95000051-01****ARINC-629 (DATAC) Simulation and Test Board**

- 16/8-bit data bus
- Time tagging of messages
- ARINC-629 compatible Serial Interface Module (SIM) (standard)
- Open collector TTL (standard)
- 128K × 16 double buffered data ram (dual ported)
- 1-slot width

**95650020-10****Driver Simulator**

- 2-axis, closed loop actuator control
- 3 open collector power switches ( $\leq 3$  A @ 32 Vdc)
- 1-slot width

**95650095-10****Stimulus MUX IAU CCA**

- Interfaces with P/N 92103858-03 VXI switch
- Allows customization of P/N 92103858-03 to provide the following multiplex configurations:
  - 2 × 128
  - 4 × 64
  - 8 × 32

**95650095-30****Stimulus MUX IAU CCA**

- Interfaces with P/N 92103858-03 VXI switch
- Allows customization of P/N 92103858-03 to provide the following multiplex configurations:
  - 2 × 128
  - 4 × 64
  - 8 × 32

**95650095-50****Stimulus MUX IAU CCA**

- Interfaces with P/N 92103858-03 VXI switch
- Allows customization of P/N 92103858-03 to provide the following multiplex configurations:
  - 2 × 128
  - 4 × 64
  - 8 × 32

**95650585-10****Digital Driver Simulator Module**

- 2-axis, analog closed-loop motor control
- 3 high-side, open-collector general purpose drivers capable of delivering up to 3 amperes per driver
- 2 switched, high-side, open-collector actuator drivers capable of delivering 1 ampere per driver
- Analog (LVDT) positional feedback inputs

**96000001-01****50 MHz Digital Interface Timing Module**

- Full 50 MHz data rate
- Store up to 32 different test programs
- Dual-Processor architecture
- 64K vectors
- Maximum of 20 modules per controller
- Multilevel triggering for logic analysis
- Message based commands for easy test program development
- A32/D32 binary transfer for high speed down loads
- 1-slot width

**96000001-03****50 MHz Timing/Control Module**

- Full 50 MHz data rate
- Store up to 32 different test programs
- Dual-Processor architecture
- 64K vectors
- Maximum of 20 modules per controller
- Multilevel triggering for logic analysis
- A32/D32 binary transfer for high speed down loads
- SR5510 with Option 005

**96000002-01****50 MHz TTL/CMOS/ECL Pattern Module**

- 32 input and 32 output pins per module
- Full 50 MHz data rate
- 64K vectors per channel
- RAM-backed and algorithmic pattern generation
- NRZ, RZ, RONE, RTC, and RI output data formats supported
- 16 stimulus timing generators per module
- 2 response generators per module
- 100 ps edge placement resolution
- 1-slot width

**96000005-01****32-Bit Array Processor**

- Dual TMS320C30 processors
- 33 MFLOP peak rate
- Signal processing and imaging libraries
- 2 to 8 Mbytes on board memory
- VME 32-bit DMA master and shared memory interface
- 1-slot width

**96000007-03****50 MHz Variable I/O Module, 504 Configured, Dual Termination**

- 16 input and 16 output pins per module
- Full 50 MHz data rate
- 64K vectors per channel
- RAM-backed and algorithmic pattern generation
- NRZ, RZ, RONE, RTC, and RI output data formats supported
- 8 stimulus timing generators per module
- 2 response generators per module
- 100 ps edge placement resolution
- 1-slot width

# VXI

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## 96000012-01

### 32-Channel Differential ECL I/O Module

- 32 input and 32 output pins per module
- Full 50 MHz data rate
- 64K vectors per channel
- RAM-backed and algorithmic pattern generation
- 16 stimulus timing generators per module
- 2 response generators per module
- 100 ps edge placement resolution

## 96000013-01

### Timing Module Extension Card (Dual)

- This unit increases the number of 5000 Series VXI cards the 5010 Timing Module can control

## 96000013-03

### Timing Module Extension Card (Single)

- This unit increases the number of 5000 Series VXI cards the 5010 Timing Module can control

## 96000014-01

### High Power Mainframe - 6 Slots

- 6-slot mainframe for VXI plug-in modules
- Handles advanced command interpreter
- Provides cooling, power, digital communication interface bus

## 96000014-03

### High Power Mainframe - 13 Slots

- 13-slot mainframe for VXI plug-in modules
- Handles advanced command interpreter
- Provides cooling, power, digital communication interface bus

## 96000016-01

### VXI-MXI-2 Kit (With Cable)

- Standard MXI-2 interface kit. Provides a slot 0 MXI-2 controller and PCI card controller, and associated software

## 96000016-03

### VXI-MXI-2 Kit (Without Cable)

- Standard MXI-2 interface kit. Provides a slot 0 MXI-2 controller and PCI card controller, and associated software

## 96000017-01

### VXI-MXI-2 Extender

- Standard MXI-2 interface extender. Provides a slot 0 controller

## 96000017-03

### VXI-MXI-3 Extender

- Standard MXI-3 interface extender. Provides a slot 0 controller

## 96000137-10

### RFI ECL Module I/O CCA

## 98000100-30

### Programmable Video Generator and Analyzer Module (A-10)

- Stroke Video (XYZ) functions integrated into a single-slot, C-sized, register-based VXI instrument
- $\pm 20$  V differential outputs (line to line) into  $75 \Omega$  with 16-bit resolution
- Automatic run time alignment accurate to  $0.05\% \pm 2.5$  mV
- Sophisticated control structure provides the ability to simulate dynamic and interactive displays
- Standard Stroke Video (XYZ) programming simplified with predefined macros
- User programmable timing pulses for internal/external synchronization
- Plug and Play compatible
- Built-in test
- All input/output via standard connectors - MCX 75 W coax (analog) and D-sub 62-pin (digital)
- Turn-key operation

# LXI

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## 07040025-01

### Portable Oscilloscope

- 500 MHz Bandwidth
- 4 Channels
- 4 GSa/s Maximum Sample Rate (when two channels are interleaved)

**09010001-10**

Dual Programmable DC Source - 30 W

**09010002-10**

Custom DC Controller - Programmable

**09010003-10**

Custom DC Slave - 28 V

**09010004-10**

Custom DC Slave - 24 V

**09010005-10**

Custom DC Slave - U500420

**93006P0300****PXIe Digital Multimeter**

- Replaces VXI Digital Multimeter (E1412A/4252)
- Digits of Resolution: 7.5
- DC Voltage Range: -1000 V to 1000 V
- DC Current Range: -3 A to 3 A
- Maximum Sample Rate: 1.8 MS/s
- Basic DC Voltage Accuracy: 12 ppm

**93006P0500****PXIe Counter Timer**

- Replaces VXI Counter Timer (E1420B)
- Frequency Measurement: 235 MHz
- Resolution: 9 digits per second
- Time Interval Resolution: 1 ns (100 ps with averaging)
- Trigger Resolution: 2.5 mV
- Programmable Measurement Timeout
- Arming Modes: 9

**93006P0700****PXIe Signal Conditioning CCA**

- Provides utility functions and interfacing required for the proper operation of the PXIe Insertion Kit

**PXIe-100****PXI Conditioner Module with USB**

- Provides interface functions for VXI PXI/PXIe Insertion Kit

**PXIe-200**

PXIe Instrument Interface Development Support

**PXIe-202**

PXIe Instrument Interface Production Board (PXIe-200 required)

**PXI Cable Set**

Interface Cable Set for PXIe Insertion Kit Instruments

**PXI Bundle**

PXIe GPATs-USMC Instrument Bundle consisting of PXIe Oscilloscope, PXIe Digital Multimeter, PXI Function Generator, PXIe Counter Timer, PXIe Arbitrary Function Generator, and PXIe Signal Conditioning CCA

## 93000151-01

### Local Oscillator

- Master control module for spectrum analyzers, lightwave signal analyzers, other systems
- Synthesized local oscillator for excellent phase noise, stability, frequency accuracy
- Adds processing power, markers, trace math, other features
- 2-slot width

## 93000153-01

### Graphics Display

- Menu-driven human interface
- Provides manual interface and control for system of up to 31 MMS instruments or 255 MMS modules
- High resolution graphics including traces, text, and markers
- Sends graphics directly to printer or plotter
- Horizontal sweep rate: 24.5 KHz  $\pm$ 1%
- 3-slot width

## 93000154-01

### Digitizer

- 20 megasamples per second, 10 bits
- 256K memory
- Waveform recorder and oscilloscope features
- Up to 8 channels
- Improves analyzer sweep times
- 1-slot width

## 93000155-01

### Power Meter

- 100 KHz to 50 GHz, sensor dependent
- -70 to +44 dBm power range
- $\pm$ 0.5% accuracy in linear mode;  $\pm$ 0.02 dB accuracy in logarithmic mode
- Single channel
- 1-slot width

## 93000156-01

### Modular Synthesized Signal Generator

- Synthesized signal generator with add-on frequency extension
- 1 to 20 GHz frequency range (optional frequency extension to 10 MHz)
- +13 to -90 dBm amplitude range
- 55 dBc harmonic suppression; no subharmonics
- 4-slot width
- 1 KHz frequency resolution

## 93000156-03

### Modular Synthesized Signal Generator with 1 Hz Resolution

- Synthesized signal generator with add-on frequency extension
- 1 to 20 GHz frequency range (optional frequency extension to 10 MHz)
- Frequency resolution to 1 Hz
- +13 to -90 dBm amplitude range
- 55 dBc harmonic suppression; no subharmonics
- 4-slot width

## 93000156-03A

### Modular Synthesized Signal Generator 1 Hz Resolution Upgrade

- Frequency resolution to 1 Hz

## 93000172-01

### RF Section (100 Hz to 22 GHz)

- Fundamentally mixed broadband input conversion for analyzers
- Highest sensitivity for greater dynamic range
- Continuously peaked, dynamically tracking preselector
- 70 dB, 1-dB-step attenuator (5-dB-step option)
- 2-slot width

## 93000200-03

### Preamplifier with Low End Frequency Option (100 KHz to 26.5 GHz)

- Boosts sensitivity of analyzers by 15 to 25 dB
- -156 dBm sensitivity at 2.9 GHz
- -150 dBm sensitivity at 22 GHz
- 100 KHz low end frequency coverage
- Provides drive signal for excess noise source
- Built-in switches for preamplifier bypass
- 1-slot width

## 93000201-01

### System Mainframe

- 8-slot mainframe for MMS plug-in modules
- Provides cooling, power, digital communication interface buses (MSIB and HP-IB)
- Compatible with standard EIA racks
- Good EMC performance and rugged structural design make it suitable for sensitive measurements in tough industrial environments
- Optional 400 Hz power line operation

## 93000284-01

### Digitizing Oscilloscope

- 4-input, 2-channel operation
- 500 MHz repetitive bandwidth
- 20 megasamples per second for single-shot measurement to 2 MHz
- Up to 40 dB isolation between channels
- Accuracies > 1.5%
- 2-slot width

## 93000293-01

### Power Sensor

- Frequency range: 10 MHz to 18 GHz
- Measurement range: 0.1 nW to 10  $\mu$ W (-70 to -20 dBm)

## 94000982-01

### Precision Frequency Reference with Internal Amplifier

- 10 MHz to 100 MHz precision reference signals phase-locked to ovenized oscillator
- $5 \times 10^{-10}$ /day stability
- Lock to 1, 2, 5, or 10 MHz external reference
- Precision distribution amplifiers
- 1-slot width

## 94000982-03

### Precision Frequency Reference

- 10 MHz to 100 MHz precision reference signals phase-locked to ovenized oscillator
- $5 \times 10^{-10}$ /day stability
- Lock to 1, 2, 5, or 10 MHz external reference
- Optional precision distribution amplifiers, reference locked outputs
- 1-slot width

## 94001238-01

### Optical Spectrum Analyzer

## 95000005-03A

### Precision Frequency Reference Internal Amplifier Upgrade

- Optional precision distribution amplifiers

## 95000006-01

### Universal Counter

- 100 MHz, 200 MHz, 2.4 GHz inputs
- Minimum sensitivity of 100 mV p-p
- Built-in TCXO
- Built-in functions: frequency, period, time interval, rise and fall times, ratios, totalize, pulse width, AC/DC voltage minimum and maximum
- 1-slot width

## 95000007-01

### Carrier Noise Test Set

- Amplitude and phase noise measurements performed when used with a spectrum analyzer
- 10 MHz to 18 GHz frequency coverage
- $\pm 2$  dB measurement accuracy
- 6- to 8-slot width

## 95000009-01

### RF Section (100 Hz to 2.9 GHz)

- Broadband input conversion for spectrum analyzers, lightwave signal analyzers, other systems
- Broadband, low noise mixer for high dynamic range
- 70 dB, 10-dB-step attenuator (5-dB-step option)
- 1-slot width

## 96000003-01

### Tracking Generator (20 Hz to 2.9 GHz)

- Use with spectrum analyzer for scalar analysis
- Use as RF source for CW or swept signals
- Stimulus response capability to measure gain, frequency response, and return loss
- 2-slot width

## 96000003-03

### Tracking Generator (2.7 GHz to 18 GHz)

- Same description as 96000003-01
- 3-slot width

## Instruments

20205001-10	Handheld Microwave Combination Analyzer (See Note 1)
20205002-10	Signal and Spectrum Analyzer (See Note 2)
20205003-10	Microwave Signal Generator (See Note 3)
20214000-01	Vector Signal Generator (See Note 4)

**Note 1:** Includes VNA Transmission/ Reflection, Full 2-Ports S-Parameters, Spectrum Analyzer, Pre-amplifier, Interference Analyzer and Spectrogram, GPS Receiver, Real-Time Spectrum Analyzer (RTSA), Analog Demodulation, Indoor and Outdoor Mapping, Coaxial Adapters and Electronic Calibration (ECal) Module

**Note 2:** Includes Preamplifier, LO/IF Connections for External Mixer, Real-Time Spectrum Analyzer, I/Q Memory Extension, Resolution Bandwidth, Pulse Measurement, Analog Modulation Analysis (AM/

FM/PM), Vector Signal Analysis, Transient Measurement Application, Transient Chirp Measurement, Transient Hop Measurement, Harmonic Mixers, Horn Antenna and Adapter

**Note 3:** Includes Frequency Extension, Touch Display, High Power Output, Ultra-High Output Power, High Performance Pulse Modulator, Pulse Generator, Multifunction Generator, AM/FM/PM, Ramp Sweep, Remote Control GPIB and USB, Rack Adapter, Test Port Adapters and Mixers

**Note 4:** Includes Frequency Range: 110 kHz to 20 GHz for RF path, Signal routing and baseband main module, two I/Q paths to RF section, Qty (2) Baseband generator with real-time coder and ARB, Qty (2) Baseband extension to 160 MHz RF bandwidth, Multifunction Generator, AM/FM/PhiM, Qty (2) Additional white Gaussian noise

## 03000003-01

### Output Switch Module

- Routes various signal generation signals to the RF interface for use in connecting these signals to a radio receiver, a GPS receiver, etc.
- Contains some of the common signal generation signals for testing the ATCRBS instrument, and is also used as the output function for wraparound testing of the communication/navigation instrumentation
- An upconversion process is provided to extend the frequency range of the embedded equipment

## 07040313-90

### RF Controller (Comm/Nav)

- Message based IEEE-488 controller
- Provides control of RFIU modules via internal RFIU system bus
- Receives analog and digital data from RFIU modules
- Contains 68000 series microprocessor and associated RAM and ROM

## 93000221-10

### RF Measurement #2

- Programmable attenuation/gain from -81 to +30 dB (DC to 18 GHz)
- VSWR measurement (2 to 18 GHz)
- Signal routing (DC to 18 GHz)
- 2-slot width

## 93000277-10

### RF Stimulus

- Power amplification (2 to 18 GHz)
- Signal + noise generation (0.01 to 18 GHz)
- Tunable oscillator (2 to 6 GHz)
- Signal routing (DC to 18 GHz)
- 1-slot width

## 93000280-10

### RF Demodulator

- Phase demodulation and amplification (S band) for residual phase noise measurements
- AM demodulation and amplification (S band) for amplitude noise measurements
- Frequency downconversion (2 to 18 GHz)
- Signal routing (DC to 18 GHz)
- 1-slot width

## 93000318-10

### Synchronizer #1

- DC to 40 MHz
- 9 outputs
- 4 ns resolution
- Internal or external clock and trigger
- Differential ECL and TTL outputs
- 1-slot width

## 93000543-04

### Power Factor Correction Upgrade

- Corrects input power factor to better than 0.99

## 94000104-10

### RF Interface Unit (RFIU) Mainframe

#### Basic Configuration

- 8-slot wide RF mainframe (containing the necessary power supplies, motherboard, and cooling elements)

## 94000279-270

### Microcontroller CCA (BRAT® 520)

- Controls the operating modes for the output switch module, the measurement switch module, and any additional modules inserted into the RFIU of the BRAT® 520 that are utilized in support of navigation and communications testing requirements

## 94000603-10

### RF Measurement #1

- Programmable attenuation/gain from -81 to +30 dB (DC to 18 GHz)
- Logarithmic amplification/detection and frequency discrimination
- Signal routing (DC to 18 GHz)
- 2-slot width

## 94000604-10

### RF Converter

- Frequency up/down conversion (1 to 18 GHz)
- Power amplification (0.01 to 18 GHz)
- High resolution differential phase signal and signal + noise generation (0.01 to 18 GHz)
- Signal routing (DC to 18 GHz)
- 2-slot width

## 94000605-10

### RF Output

- Programmable filtering (1 to 18 GHz)
- Broadband amplification (2 to 18 GHz)
- VSWR measurement (0.1 to 18 GHz)
- Signal routing (DC to 18 GHz)
- 2-slot width

## 94000606-10

### RF Controller (BRAT® 305/405)

- Message based IEEE-488 controller
- Provides control of RFIU modules via internal RFIU system bus
- Receives analog and digital data from RFIU modules
- Contains 68000 series microprocessor and associated RAM and ROM

## 94000606-50

### RF Controller (JTIDS)

- Message based IEEE-488 controller
- Provides control of RFIU modules via internal RFIU system bus
- Receives analog and digital data from RFIU modules
- Contains 68000 series microprocessor and associated RAM and ROM

## 94000606-70

### RF Controller (JSTARS)

- Message based IEEE-488 controller
- Provides control of RFIU modules via internal RFIU system bus
- Receives analog and digital data from RFIU modules
- Contains 68000 series microprocessor and associated RAM and ROM

## 94100554-10

### Phase Balance Module

- Pulsed phase measurement of RF signals relative to a reference signal
- Pulse modulation and amplification of RF signals
- RF and IF signal switching and conditioning

## 94100766-10

### Timing Generator Module

- Precise programmable timing pulse outputs
- Free running or external-triggered 10 MHz crystal oscillator timing source
- Differential TTL and ECL outputs

## 96740045-10

### L-Band Signal Conditioning Module

- Signal switching from DC to 2 GHz
- Narrow-band amplification
- Programmable attenuation
- Mixer up conversion for 75 MHz, 348 MHz, and L-band synthesis
- Mixer down conversion for 75 MHz, 348 MHz, and L-band analysis
- RF detection diodes
- YIG oscillator for BIT testing

## 96740070-10

### Reference Generator Module

- 10 MHz input phase-locked to standard RF rack
- 1.5, 2.5, 5, 8, 10, 12, 73.75, and 348 MHz phase-locked outputs for UUT and test equipment frequency reference
- RF detection diode for BIT testing

## 96740103-10

### CPSM Modulator/Demodulator Module

- Signal switching from DC to 1 GHz
- Noise source for noise injection
- Continuous phase shift modulator (CPSM) for Link-16 messages simulation
- Continuous phase shift modulation demodulator for Link-16 messages analysis
- RF detection diode for BIT testing

## 97000001-10

### KPA Synchronizer

- DC to 40 MHz
- 9 outputs
- 4 ns resolution
- Internal or external clock and trigger
- Differential ECL and TTL outputs
- 1-slot width

## 00002412-03

### Electronic Load

- Power: 4000 W
- Voltage: 400 Vdc
- Current: 600 A

## 02000259-01

### Programmable DC Electronic Load

- 4000 W DC load
- Constant current mode
- Constant voltage mode
- Constant power mode
- Constant resistance mode
- 500 Vdc max. voltage

## 02000259-03

### Upgraded Programmable DC Electronic Load

- 4000 W DC load
- Constant current mode
- Constant voltage mode
- Constant power mode
- Constant resistance mode
- 500 Vdc max. voltage

## 04000045-01

### CW Power Sensor

- 10 MHz to 18 GHz
- -70 to +20 dBm

## 04000046-01

### Peak Power Sensor

- 45 MHz to 18 GHz
- -20 to +20 dBm, peak
- -30 to +20 dBm, CW

## 08020003-01

### RF Generator #1

- TPS compatible replacement instrument for obsolete ESTS instrument
- RF Generator #1
- 10 MHz to 18 GHz with 1 Hz resolution
- +13 to -90 dBm with 0.1 dB resolution
- AM, FM, and PM modulation

## 08020011-01

### DC Power Supply

- TPS compatible replacement instrument for obsolete ESTS instrument
- DC Power Supply
- 6 channels independently programmable
- 5, 32 V max., 10 mV resolution
- 5, 6.25 A max., 10 mA resolution
- 1 ADM/DAC high-voltage slave

## 08020012-01

### AC Power Supply

- TPS compatible replacement instrument for obsolete ESTS instrument
- AC Power Supply
- 4 channels independently programmable
- 4 auxiliary channels follow main
- Main output: 0 to 135 Vac
- Auxiliary output: 0 to 30.5 Vac
- Frequency range: < 350 Hz to > 1 KHz

## 08020013-01

### High Voltage DC Power Supply

- TPS compatible replacement instrument for obsolete ESTS instrument
- High Voltage DC Power Supply
- 1 channel ADM/DAC controlled
- 200 V max.
- 12 A max.

## 08020014-01

### Spectrum Analyzer

- TPS compatible replacement instrument for obsolete ESTS instrument
- Spectrum Analyzer
- 30 Hz to 18 GHz
- +30 dBm to noise floor reference
- RBW 1 Hz to 2 MHz

## 92103573-01

### Single-Phase AC Programmable Power Supply

- AC supply 350 VA
- Frequency:
  - Range: 0 to 5 KHz
  - Resolution: 1 Hz
- Amplitude (350 VA max.):
  - Range: 0 to 260 Vac
  - Resolution: 0.1 Vac

## 92103598-01

### IEEE Card

- Standard IEEE-488.2 interface

## 92103598-03

### IEEE Card

- Standard IEEE-488.2 interface

## 92105229-01

### IEEE Card Upgrade

- Replaces existing IEEE card as a result of Windows™ upgrade
- Includes removal of old card and installation of new card
- Requires P/N 3105SU-1, or P/N 3105SU-2, or P/N 3105SU-3

## 93000069-01

### A/B to C-Size Module Carrier

## 93001001-10

### KPA Synchronizer Simulator

- Radar pulsed repetition frequency simulator and recycler

## 94000855-01

### Microwave Signal Generator

- Frequency:
  - Range: 10 MHz to 18 GHz
  - Resolution: 0.1 Hz
- +10 to -120 dBm amplitude range
- Excellent spectrum purity
- Modulation capabilities (pulse, AM, FM)
- Rack mountable

## 94000887-01

### DC Power Supply Frame

- Rack mountable
- Can hold up to 6 DC modules, any combination (94000888-01, 94000889-01, 94000890-01, 94000891-01, 95000042-01, 95000043-01, 95000044-01, 95000045-01)

## 94000890-01

### 0 to 32 V Module for DC Power Supply

- 6.25 A max.
- 200 W
- For use in 94000887-01

## 94000969-01

### Agile Signal Generator

- 252 KHz to 1030 MHz frequency range
- 15 ms frequency switching
- Stand-alone control of frequency agility
- Specified performance while fast hopping
- FM rates to 10 MHz, deviations to 20 MHz
- Low spurious and phase noise
- Rack mountable

## 94001246-01

### VXI Microwave Synthesizer, 10 MHz to 20 GHz

- Frequency range: 10 MHz to 20 GHz
- Output power: -90 to +20 dBm
- AM, FM and pulse modulation
- I/Q modulation (40 MHz bandwidth)

## 94001253-03

### Microwave Synthesizer

- Frequency range: 10 to 18 GHz (1 MHz resolution)
- Output power: +10 to -110 dBm (0.1 dB resolution)
- Internal/External modulations: AM, FM, PM

## 94100508-01

### Dual High Current AC Power Supply

- Programmable single-phase or 3-phase output
- 0 to 312 V rms Line to Neutral
- 26 A at 270 V per phase
- DC or 40 Hz to 5 KHz

## 94100750-01

### Power Distribution Unit

- For use with Master and Slave Three-Phase Power Supplies
- Provides interconnect between Master and Slave

## 94100751-01

### Three-Phase Power Supply (Master)

- For use with Power Distribution Unit and Slave Three-Phase Power Supply
- Range: 0 to 312 Vac
- Frequency: DC to 5 KHz
- Rack mountable

## 94100752-01

### Three-Phase Power Supply (Slave)

- For use with Power Distribution Unit and Master Three-Phase Power Supply
- Range: 0 to 312 Vac
- Frequency: DC to 5 KHz
- Rack mountable

## 94101177-01

### 136-Channel Logic Analyzer

- Channel count: 136
- Timing analysis speed: 250 MHz
- State analysis speed: 150 MHz
- Memory depth: 2 M

## 95000010-01

### Traveling Wave Tube Amplifier

- 8 to 12.4 GHz
- 40 dB minimum gain
- +43 dBm (20 watts) minimum output power
- Rack mountable

## 95000011-01

### High-Performance Signal Generator

- 100 KHz to 1.0575 GHz
- 1 Hz resolution
- -140 to +20 dBm output power
- Phase, amplitude, frequency, and pulse modulation
- Rack mountable

## 95000012-01

### Spectrum Analyzer

- 100 Hz to 1.5 GHz
- -135 to +30 dBm
- 20 ms to 1500 s sweep times
- Rack mountable

## 95000013-01

### Frequency Counter

- DC to 1.3 GHz
- 100 mV to 1 V rms dynamic range
- $\pm 5$  Vdc max.
- Rack mountable

## 95000017-01

### RF Network Analyzer

- 0.1 to 500 MHz
- Integrated source
- Full accuracy enhancement
- Transmission and reflection measurements (amplitude and phase) performed
- Rack mountable

## 95000018-03

### Microwave Network Analyzer

- 50 MHz to 20 GHz
- Integrated source
- Full accuracy enhancement
- Transmission and reflection measurements (amplitude and phase) performed
- Time domain capability
- Rack mountable
- Frequency offset mode
- Calibration kit

## 95000042-01

### 0 to 10 V Module for DC Power Supply

- 12 A max.
- 120 W
- For use in 94000887-01

## 95000043-01

### 0 to 40 V Module for DC Power Supply

- 5 A max.
- 200 W
- For use in 94000887-01

## 95000044-01

### 0 to 80 V Module for DC Power Supply

- 2.5 A max.
- 200 W
- For use in 94000887-01

## 95000045-01

### 0 to 160 V Module for DC Power Supply

- 1.25 A max.
- 200 W
- For use in 94000887-01

## 95000450-10

### Auxiliary RF Signal Processor/Matrix

- Switching and attenuation DC to 18 GHz
- HF synthesis, low noise target generator (optional), and amplification

## 95000450-50

### Auxiliary RF Signal Processor/Matrix

- Switching and attenuation DC to 18 GHz
- HF synthesis, low noise target generator, and amplification

## 95000524-10

### Phase Noise Measurement Drawer

- Measures phase noise at frequencies between 150 MHz (VHF) and 10.5 GHz (X band)
- Measures AM noise at frequencies between 150 MHz and 10.5 GHz
- Generates low noise signal outputs between 10 MHz and 10.5 GHz
- Provides signal switching, downconversion, amplification
- Unit is housed in a rack-mountable drawer

## 95001000-10

### Target Generator/Dual-HF Synthesizer, Including Virtual Spectrum Analyzer Software Utility

- Provides stable low spurious, highly stable programmable waveforms, and triggering functions
- Provides additional dual-HF synthesizer capability

## 95650134-10

### Rack Mount Oscilloscope

## 95650138-10

### Cable Tester Assembly

- Computer controlled system
- Tests products ranging from aircraft cables to complex black boxes
- Provides real-time, on-line control over testing
- Flexibility in programmable stimulus for insulation and continuity testing

## 95650138-30

### Cable Tester Assembly

## 95650701-01

### Digital Oscilloscope

- 4-channel operation
- 500 MHz bandwidth

## 96000021-01

### 1 KW Programmable Power Supply

- 0 to 33 Vdc @ 33 A max.
- Load, line resolution: 33 mV, 33 mA
- Programming resolution: voltage, current: 0.03% F.S.
- Programming accuracy:
  - voltage:  $\pm 0.05\% + 0.4\%$  of  $V_{OUT}$  max.
  - current:  $\pm 0.01\% + 0.4\%$  of  $I_{OUT}$  max.

## 96740017-05

### Peak Power Meter

- High resolution color display
- Front panel menu or IEEE remote operation
- Pulsed RF measurements from -24 to +20 dBm
- CW measurements from -34 to +20 dBm
- Balanced diode sensing for even-order harmonic suppression
- 1 MHz sampling rate
- 1 GHz internal calibrator

## 96740017-07

### Dual-Channel Peak Power Meter

- CW and pulsed RF signals
- Peak and average power
- 500 MHz to 18 GHz
- -40 to +20 dBm (pulsed)
- -50 to +20 dBm (CW)

## 96740021-01

### Frequency Synthesizer

- Front panel controls or BCD remote operation
- Frequency hopping:  $< 1 \mu s$
- Frequency range: 0.01 to 4.6 GHz
- Power output: to 10 dBm
- Direct analog synthesis using 10 MHz source

## 96740021-05

### Frequency Synthesizer

- Front panel controls or BCD remote operation
- Frequency hopping:  $< 200 ns$
- Frequency range: 0.01 to 3.0 GHz
- Power output: to 10 dBm
- Direct analog synthesis using 10 MHz source
- Improved reliability

## L9668-111-020-17

### Data Acquisition and Control Mainframe

# Equipment

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**00002299-01**

## **VSWR Adjustable Waveguide**

**02200108-01**

### **Air Data Test Set**

- Simultaneously measures an input pressure and controls an output pressure
- Displays input and output pressure parameters as steady state altitude or airspeed or as rate of change of altitude or airspeed
- Provides 2 pneumatic outputs (Ps and Pt)
- Altitude can be displayed in feet or meters
- Airspeed can be displayed in knots, MPH, ft/s, m/s, km/Hr, Mach
- Pressure can be programmed or read in inches Hg, PSI, mBar, kPa
- Static pressure (Ps) output has a range of 0 to 32.15 inches HgA
- Total Pressure (Pt) output has a range of -0.5 to 73.55 inches Hg
- Operates in local or remote mode

**02200207-10**

### **Compressor/Vacuum Pump Case Assembly**

**02300521-10**

### **Controller Case Assembly with Controller (BRAT® 514A)**

- Used to position camera
- Provides power for system
- Provides communication from computer

**04000197-10**

### **Switch Assembly**

- BRAT® universal analog crosspoint switch assembly

**05001000-10**

### **Antenna Mass Simulator**

- Provides the capability required to test Antenna Servo Electronics systems

**07030141-10**

### **Bridge Card Assembly**

- Provides communication between three Z50 modules

**07030400-10**

### **CCA, ZIF Pod 1**

- Provides interface between BRAT J1 and instrument subsystem

**07030428-01**

### **AC to DC Converter, 5 V**

- Power: 60 W
- Input Voltage: Single Phase
- Output Voltage: 5 V
- Output Current: 8 A

**07030450-10**

### **CCA, ZIF Pod 2**

- Provides interface between BRAT J2 and instrument subsystem

**08010009-10**

### **Liquid Cooling System**

- A liquid cooling cart for use with high power RF systems
- Supplies liquid coolant
- Remote On and Off
- Coolant types: Coolanol 25 or PAO
- Coolant flow of 2.5 gal/min
- Interconnecting hoses and cables

**20172173-10**

### **Power Supply Plate**

**20182000-10**

### **LVDS-TTL Conversion Board**

- Includes integration support to adjust LVDS-TTL Conversion Board design so that it fully and successfully works in the MFoCS ITA until integration is complete. Requires MFoCS LRU to be supplied for testing purposes to verify validity of LVDS-TTL Conversion Board. (Drawings not included) (Minimum Purchase: 2)

**20182100-10**

### **LVDS-TTL Conversion Board (Does not include integration support)**

**20224310-01**

### **2 Channel Oscilloscope / AFG**

**20224311-01**

### **Vector Network Analyzer**

**20224314-01**

### **80 Channel Switch**

**20224316-01**

### **Single Channel 1553**

**20224318-01**

### **1 x 20 16A Switch Mod.**

**20224319-01**

### **1 x 64 Multiplexer Switch Mod.**

**20224320-01**

### **9 x 8 Multiplexer Switch Mod.**

**20224322-01**

### **Digital Multimeter**

**20224326-10**

### **1 x 16 RF Mux, Altered**

**20224335-01**

### **Multifunction I/O (PXIe 6375)**

**20224337-10**

### **1 x 4 RF Mux, Altered**

**20224377-01**

### **4 Channel 1553**

**20224384-01**

### **1 x 8PT 75 Ohm SW**

**20224385-01**

### **1 x 16 75 Ohm Switch**

**20224386-01**

### **1 x 8PT 50 Ohm SW**

**20224415-01**

### **AC Power Supply (750W 1 Phase)**

# Equipment

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20224415-03

AC Power Supply (1500W3 Phase)

20224415-05

AC Power Supply (1500W 3 Phase)

20224450-10

DC Power Supply Assy

20224606-01

Programmable DC Electronic Load

20224608-10

Mainframe, 6 Slot

20224710-10

High Current CCA, A1

20224710-30

High Current CCA, A2

20224720-10

High Current CCA, A5

20224730-10

A3 PXIe Switch Card CCA

20224730-30

High Current CCA, A4

20224740-10

A6 Switching CCA

20224802-01

75 Ohm F Thru Calibration Kit for General Purpose up to 3 GHz

92103782-01

Waveform Generator

94100500-10

**Electronic Power Control Center - BRAT® with Rubidium**

- Power up sequencing of single-phase/3-phase power input to outlets
- Elapsed time indicator
- Emergency stop for removing power from configured outlets
- Monitoring of AC line inputs for dropout/reversed phases
- Rubidium oscillator with 3 high-isolation outputs for common stable time reference

94100500-30

**Electronic Power Control Center - BRAT®**

- Power up sequencing of single-phase/3-phase power input to outlets
- Elapsed time indicator
- Emergency stop for removing power from configured outlets
- Monitoring of AC line inputs for dropout/reversed phases

94100500-50

**Electronic Power Control Center - Single Phase**

- Power up sequencing of single-phase power input to outlets
- Elapsed time indicator
- Emergency stop for removing power from configured outlets

94100500-70

**Electronic Power Control Center - RF Rack**

- Power up sequencing of single-phase power input to outlets
- Elapsed time indicator
- Emergency stop for removing power from configured outlets

94100500-90

**Electronic Power Control Center - BRAT® with Rubidium**

- Power up sequencing of single-phase/3-phase power input to outlets
- Elapsed time indicator
- Emergency stop for removing power from configured outlets
- Monitoring of AC line inputs for dropout/reversed phases
- Rubidium oscillator with 3 high-isolation outputs for common stable time reference

94100500-110

**Electronic Power Control Center - BRAT®**

- Power up sequencing of single-phase/3-phase power input to outlets
- Elapsed time indicator
- Emergency stop for removing power from configured outlets
- Monitoring of AC line inputs for dropout/reversed phases

94100500-150

**Electronic Power Control Center - RF Rack**

- Power up sequencing of single-phase power input to outlets
- Elapsed time indicator
- Emergency stop for removing power from configured outlets

94100500-190

**Electronic Power Control Center - Single Phase with Rubidium (with Internal Drops)**

- Power up sequencing of single-phase power input to outlets
- Elapsed time indicator
- Emergency stop for removing power from configured outlets
- Rubidium oscillator with 3 high-isolation outputs for common stable time reference

94100500-230

**Electronic Power Control Center - Single Phase with Rubidium (with Rear Multi-Coax)**

- Power up sequencing of single-phase power input to outlets
- Elapsed time indicator
- Emergency stop for removing power from configured outlets
- Rubidium oscillator with 3 high-isolation outputs for common stable time reference

# Equipment

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## 94100500-250

### Electronic Power Control Center - Single Phase with Rubidium (with Rear Multi-Coax)

- Power up sequencing of single-phase power input to outlets
- Elapsed time indicator
- Emergency stop for removing power from configured outlets
- Rubidium oscillator with 3 high-isolation outputs for common stable time reference

## 94100500-370

### Electronic Power Control Center - RF Rack

- Power up sequencing of single-phase power input to outlets
- Elapsed time indicator
- Emergency stop for removing power from configured outlets

## 94100500-410

### Electronic Power Control Center

## 94100671-10

### Waveguide Pressurization Unit and Blower Assembly

- Super-dried compressed air at 15 psi
- Forced air up to 270 cfm (free delivery)
- Monitored outputs: 3 (blower pressure, blower air flow, compressed air pressure)

## 94100671-30

### Waveguide Pressurization Unit

- Super-dried compressed air at 15 psi

## 94101013-10

### Phase Noise Measurement System Reference Source Unit

- Generates RF reference signals in UHF, L, and X bands
- Coherent UHF, L-band, and X-band outputs from external reference source
- Simultaneous fixed-frequency outputs with individually controlled amplitudes

## 94101013-50

### Phase Noise Measurement System Reference Source Unit with Option 02

- Generates RF reference signals in UHF, L, and X bands
- Coherent UHF, L-band, and X-band outputs from external reference source
- Simultaneous fixed-frequency outputs with individually controlled amplitudes
- Increases the programmable COHO frequency coverage
- Noise source injection testing
- 2-tone RF signal generation
- Increased programmable attenuation
- Increased switching capabilities

## 94101013-OPT02

### Phase Noise Measurement System Reference Source Unit Option 02 - Broadband Upgrade

## 94101130-01

### Phase Noise Measurement System

- Measures phase and amplitude noise on both CW and pulsed RF signals at carrier frequencies between 10 MHz and 18 GHz
- Measures absolute phase noise, additive phase noise, and amplitude phase noise
- Measures noise at any offsets between 0.01 Hz and 40 MHz

## 94101201-10

### Logic Analyzer Case Assembly

- High speed digital logic analyzer for use in analyzing complex digital waveforms
- 102 Channels
- 200 MHz State mode operation
- 800 MHz Timing mode operation

## 95650141-10

### Remote Control Panel

## 95650142-10

### Three-Phase Power Distribution System

- EMI/RFI filter
- 14 Outlets
- Remote power on/off
- Circuit breakers for each phase
- Rack mountable

## 95650143-10

### Single-Phase Power Distribution System

- EMI/RFI filter
- 8 outlets
- Remote power on/off
- Circuit breaker protection
- Rack mountable

## 95650715-01

### LAN Switch

## 95650725-01

### UPS Battery

## 96000169-10

### 1.2 MHz Low Pass Filter Assembly

## 96000169-30

### 2.2 MHz Low Pass Filter Assembly

## 96000170-10

### 1.9 MHz Low Pass Filter Assembly

## 98715001-01

### DC Power Supply

- Resolution: 12 bits
- Range: 1 × 0 to 600 Vdc @ 1.7 A

## 98715001-03

### DC Power Supply

- Resolution: 12 bits
- Range: 1 × 0 to 60 Vdc @ 16 A

# Equipment

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## 98715002-01

### Relay Matrix

- Format: 32 × 8 switched pairs
- Voltage: 200 Vdc max.
- Current: 1.5 A carry, 0.5 A switch
- Bandwidth: 50 MHz

## 98715003-01

### Form C Relays

- Relays: 48 Form C relays
- Voltage: 220 V switch
- Current: 0.5 A switch
- Bandwidth: 50 MHz at -3 dB
- Power: 1.25 KVA max.

## 98715004-01

### Rail Generator for 98715005-01

- Levels: 4 output voltage levels, 4 input voltage levels
- Range: -4 Vdc to +7 Vdc

## 98715005-01

### Programmable Level Dynamic Digital Unit

- Pins: 32 input, 32 output (options for additional pins)
- Skew: 15 ns max.
- Edge: Resolution 100 ps, accy ±2 ns
- Clock: 25 MHz pattern rate, 16 format clocks
- Memory: 7 @ 64K each (output, 3-state, out algorithm, expect, mask, in algorithm, record)
- Levels: Programmable

## 98715006-01

### Variable I/O Module for 98715005-01

- Output drivers: 32 programmable channels
- Input receivers: 32 programmable channels

## 98715007-01

### Static Digital Latch

- Pins: 64 input, 64 output
- Input threshold level: Programmable -32 to +32 V
- Output level: Internal pull up to 5 V or external to +42 V (max.)
- Output sink current: 250 mA

## 98715008-01

### Programmable Resistance Module

- Channels: 1
- Accuracy: 0.1%
- Resolution: 0.1 Ω
- Range: 0 to 1 MΩ

## 98715011-01

### Power Digital to Analog Converter

- Channels: 4
- Voltage range: ±4 Vdc or ±(0 to 40) Vdc
- Resolution: 16 bits
- Current: 0 to 300 mA

## 98715012-01

### Arbitrary Waveform Generator

- Channels: 1 output channel
- Frequency range: 1.0 MHz to 25 MHz
- Amplitude (1 MΩ): 20 mV to 22 V p-p
- Amplitude (50 Ω): 10 mV to 11 V p-p
- Standard waveforms: 8 (sin, triangle, square, pulse, pos ramp, neg ramp, arbitrary, DC)
- Custom waveforms: 64K points, 12-bit data, 50 MHz data rate
- Modulation modes: 6 (FM, PM, AM, PSK, FSK, PWM)

## 98715013-01

### Dual-Pulse, Arbitrary Function Generator

- Channels: 2 pulse channels, 1 arbitrary channel
- Frequency range: 10 Hz to 50 MHz
- Amplitude (50 Ω): 5.0 mV p-p to 22.0 V p-p
- Pulse period: 10.0 ns to 1.0 s
- Pulse width: 10.0 ns to 1.0 s
- Pulse delay: 120 ns to 1.0 s
- Rise/fall times: 3.0 ns to 150 ns
- Modes: 6 (normal, trig, delay trig, burst, gated)

## 98715014-01

### Blower Assembly

- Flow rate: 270 CFM @ 0" water  
160 CFM @ 3" water
- Monitored signals: 3 (temp, press, flow rate)

## 98715015-01

### DC Power Supply

- Resolution: 12 bits
- Range: 1 × 0 to 300 Vdc @ 15 A

## 98715017-01

### Rack Blower Assembly

- Flow rate: 320 CFM

## CNTX-1

### Control Device (Requires ATTI Software License Agreement (Appendix A applies))

- Provides interface to BRAT® tester and TPS (includes CPIN)

## DCSS-10

### Dual-Channel Satellite Simulator/Converter

- Provides independent uplink and downlink functions between a 70 MHz IF carrier and UHF frequencies
- Synthesized local oscillators allow frequency tuning while providing low group delay and flat frequency response
- Gain and frequency control can be adjusted locally via front panel
- Stand-alone instrument with remote Ethernet programming/control
- Installed in a ruggedized case for lab or field use

## LPF-2009090

### Low Power Filter Production

- Contingent upon a total quantity of 700 or greater, in lots of 75 to 150

# Equipment

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## 20216000-01 Centrifugal Fan/Compressor Assembly (F-15 Form-Fit-Function Replacement)



The Centrifugal Fan/Compressor Assembly provides the US Air Force with a Form-Fit-Function replacement for the F-15 Centrifugal Fan NSN 4140-01-432-3808. It provides forced air cooling and wave guide pressurization in a portable shock resistant transit case. The blower will supply 100 CFM @ 8.4" H<sub>2</sub>O of forced air cooling; the compressor will supply 30 PSI of wave guide pressurization. The unit will operate on 115VAC 40-400Hz, 20 A power. The blower and compressor are operated by separate switches, each with its own indicator LED showing operational status; the compressor is outfitted with a gauge to indicate wave guide pressure.

### Specifications

<b>Forced Air (Blower)</b>	100 CF/M @ 8.4" H <sub>2</sub> O Pressure
<b>Compressed Air</b>	30 +/- 1 PSI
<b>Blower Hose</b>	8 Ft, 2.5 Inch Diameter
<b>Hose Adapter Assembly</b>	2.5 Inch hose inlet
<b>Blower Control</b>	Switch and Indicator LED
<b>Forced Air (Blower) Filter</b>	Removable 100 Micron
<b>Compressor Hose</b>	10 Ft, 0.5 Inch Diameter
<b>Compressor Control</b>	Switch and Indicator LED
<b>Compressor Gauge</b>	0-60 PSI
<b>Power Source</b>	115 VAC 40-400 Hz, 20 A
<b>Power Cord</b>	15 Ft Power Cord, 14 AWG
<b>Signal Cable</b>	25 Ft Signal Cable
<b>Transit Case</b>	Self-Contained with Foam cutouts for accessories

# Common Parts

## Computer Common Parts

### 92105223-COM Computer Common Parts

92105099-01	Graphics Card
94000868-01	1.44 MB Floppy Drive
94100564-01	PCI Network Card
94100706-01	DVD-ROM Player
94100956-01	PS/2 Mouse - BRAT® 100
94100957-01	PS/2 Keyboard - BRAT® 100

## BRAT® Common Parts

### 92105224-COM BRAT® Common Parts

02200110-01	Female Pipe Coupler
02200114-01	Coupler Protector
02200116-01	General Purpose Coupler
02200118-01	Male Bulkhead Connector
02200122-01	Filter/Regulator Gauge
02200123-01	Expander/Adapter
02200140-01	Filter/Regulator with Gauge
04000043-01	Angle Brackets
04000057-01	Side Panel
04000058-01	Bottom Panel
04000059-01	Joining Kit
92103674-01	Duplex AC Outlet
92103692-01	Amber Neon Lamp
92103925-01	Elapsed Time Meter
92103926-01	ETM Bezel
92103930-01	Single-Phase Circuit Breaker
92103962-01	Double Wheel Caster

92103964-01	Three-Phase Circuit Breaker
93000165-03	20 A IEC Connector
93000521-30	Wiring Duct Cover - Modified
93000547-01	Three-Phase Power Plug
94100172-01	Cable Shield - BRAT® 405
94100172-03	Cable Shield - BRAT® 405
94100293-01	BNC Jack to Type N Jack Bulkhead Adapter
94100344-01	Left Inlet Connector Lock
94100344-02	Right Inlet Connector Lock
94100345-01	Left Outlet Connector Lock
94100345-02	Right Outlet Connector Lock
94100411-01	Cable Retainer
94100422-01	100 Ω Coaxial Cable - 24"
95000658-01	Inrush Current Limiter
96000033-01	200 Position Pin Header with .533 Tails for RFI Receiver
96000171-01	Type N Plug to SMA Jack Adapter
96200051-01	Connector Spacer
96200051-03	Connector Spacer
96238203-01	Female to Female GPIB Bulkhead Connector
96238204-01	Male to Male In-line GPIB Cable
MS27502F25C	Electrical Connector Cover
WC596/42-2	Power Plug

## Hardware

### 92105225-COM Hardware (Loose Hardware such as Screws, Nuts, Bolts, Lugs, etc.)

04000040-01	Hardware Kit
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# Hardware Upgrades

95650730-01	BRAT®/MPTS Controller Windows XP Upgrade, Computer, and Keyboard	96000001-UPG	BRAT® Option 504 Controller I/O Upgrade - Increased Memory
95650730-03	BRAT®/MPTS Controller Windows 10 Upgrade, Computer, and Keyboard		

# Interface Test Adapters

## SRU ITAs

1. Analog TPS Development
2. Digital TPS Development
3. Electro Optic TPS Development
4. Analog/Digital Hybrid TPS Development
5. RF TPS Development

Each of these groups consist of ten levels ranging from Complexity 1 to Complexity 10, with level 10 the most complex. Within each complexity, nine additional subcomplexity levels exist.  
Example: Analog TPS Development SRU ITA - Complexity 5.0 to 5.9

## LRU ITAs

1. Analog TPS Development
2. Digital TPS Development
3. Electro Optic TPS Development
4. Analog/Digital Hybrid TPS Development
5. RF TPS Development

Each of these groups consist of ten levels ranging from Complexity 1 to Complexity 10, with level 10 the most complex. Within each complexity, nine additional subcomplexity levels exist.  
Example: Analog TPS Development LRU ITA - Complexity 5.0 to 5.9

# Communication/Navigation

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## 01000500-01

### Dual-Channel Satellite Simulator

- Low noise RF output from -158 to -88 dBm
- Simulation of any GPS (NAVSTAR or GLONASS satellite)
- User uploadable NAV data with dynamic z-count for exact satellite simulation
- User control of Doppler velocity, acceleration, and jerk
- Outputs C/A code, code chip clock, epoch sync, NAV data, and NAV data clock
- Complete technical manual provided with calibration and maintenance procedures
- Full remote control via available LabVIEW™ driver
- Provision for external frequency reference
- Single-channel or dual-channel models available
- Input power: 100 to 130 Vac, 200 to 250 Vac, 47 to 63 Hz
- Rack mountable

## 01000501-01

### Signal Generator

- Avionics modes supported: VOR, LOC, GS, MB, COMM, SELCAL, ADF
- Rear panel video
- Front panel control of video level for use with NAV converters
- Front panel store and recall: 49 setups per mode, 294 total
- Digital Signal Processing (DSP) assures stability and accuracy
- IEEE-488 interface standard - full bus control of all features
- FCC Type Accepted - for use in free radiation
- Output power range: -120 to +7 dBm
- Rack mountable

## 01000502-01

### Navigation Support Instrument

- ATRCBS and Mode S Transponders
  - Transmission and reception of Mode S Extended Length Messages (ELM)
  - Transmission and reception of Comm-C and Comm-D Datalink Messages
  - 2 transmit channels for top and bottom antenna diversity testing
  - Ability to simulate any Mode A, C, S, and Intermode Interrogation
  - Ability to measure all key reply parameters: Pulse Timing, Power, Frequency, % Reply, Squitter, etc.
- Distance Measuring Equipment
  - Ground Station Simulation
  - Velocity to 10,000 knots
  - Distance to 400 nmi
  - Ability to measure all key RF parameters and vary reply pulse parameters
- Power requirements: 93 to 264 Vac, 45 to 440 Hz
- IFF and TACAN
- Rack mountable

## 01000503-01

### Audio Demodulator (Spectrum Analyzer)

- 250 KHz to 1 GHz RF generator
- Duplex operation
- 250 KHz to 1 GHz receiver
- 10 Hz to 40 KHz AF generator
- 250 KHz to 1 GHz spectrum analyzer
- 1 MHz oscilloscope
- 10 Hz to 40 KHz AF counter
- Digital data generator
- 250 KHz to 1 GHz RF counter
- Rack mountable

## 01000503-03

### Audio Demodulator (Accessory Module)

- Same description as 01000503-01
- Adds VHF and SATCOM testing capabilities, including Have Quick spread spectrum options

## 03000004-01

### Measurement Switch Module

- Routes UUT or communication/navigation generated signals to the specified test instrument for the purpose of measuring the signals or UUT being evaluated
- Some signal conditioning circuitry and self test circuitry is also included in this module to support self testing of specific signals under test

## 03000005-10

### Noise Figure Meter with Noise Source

- Used to measure noise figures on communications receivers, components, etc.
- Provides a NIST traceable excess noise level such that the noise figure meter is calibrated at the system level

# Transportable

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## Transportable Cases for BRAT® Test Systems

The transportable tester utilizes ruggedized cases to protect the test equipment for transport and from harsh environmental conditions. The cases protect the equipment from a transit drop of 18 inches. They have a geometric configuration which permits stacking and are equipped with front and rear covers. The covers have provisions for storage of cables and other accessories. The cases are fitted with pressure equalizing valves and are equipped with hinged handles to facilitate easy carrying as well as stacking.

94100260-10      Transportable RF Upgrade  
94100261-10      Transportable VXI Case

## 94100524-10

### Phase Noise Drawer Case Assembly

- Includes phase noise case and phase noise measurement #2

## 95100200-10

### RFIU Phase Noise Case with SPD

- Includes RFIU case and mainframe, RF measurement #1, phase noise measurement module, RF output, auxiliary signal processor/matrix, power sensor

# PC-Based

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## 92105234-01

### MXI-3 Interface Board

## 94000864-01

### MIL-STD-1553A/B Bus Analyzer

- Operating modes:
  - Bus controller
  - Multiple RT
  - Bus monitor
  - Programmable response time
  - Dual bus
- Programmable parameters:
  - Response time
  - Message rate
  - Amplitude
  - Error injection

## 95000047-01

### Digital to Synchro Resolver

- 3 independent digital to synchro channels (custom configurable)
- Dynamic rate and directions

## 95000047-03

### Synchro Resolver to Digital

- 3 independent synchro to digital channels (custom configurable)
- Dynamic rate and directions

## 95000056-01

### ARINC-429 Test/Simulation and Monitor Card

- Up to 10 ARINC-429 channels
- Variable Tx amplitude control per Tx channel
- Programmable rise/fall time per Tx channel
- Programmable Tx inter-word gap (sync) time
- 32K × 8 true dual-port RAM (8- and 16-bit transfers)
- User definable Tx and Rcv buffer sizes per channel
- 2 modes of receiver/monitor data storage modes (Sequential and Lookup Table)
- ARINC filter table
- Error injection (per block)
- Error detection (per ARINC word)
- Interrupt and polling capabilities in all modes

## 95000057-01

### ARINC-629 (DATAC) Simulation and Test Board

- 16/8-bit data bus
- Time tagging of messages
- ARINC-629 compatible Serial Interface Module (SIM) (standard)
- Open collector TTL (standard)
- 128K × 16 double buffered data ram (dual ported)

## 96000025-01

### PCI-MXI-2 Card

- PCI-MXI-2 Circuit Card Assembly
- Hardware Registration Card
- Product Guide

# Manuals

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## P/N 10

### BRAT® 100/300 Series Technical Manual

Operations and maintenance instructions with illustrated parts breakdown for BRAT® 100 series and BRAT® 300 series

## P/N 20

### BRAT® 200/400 Series Technical Manual

Operations and maintenance instructions with illustrated parts breakdown for BRAT® 200 series and BRAT® 400 series

## P/N 50

### BRAT® Option B504 Technical Manual

Operations and maintenance instructions with illustrated parts breakdown

## P/N 51

### BRAT® Option B507 Technical Manual

Operations and maintenance instructions with illustrated parts breakdown

## OEM Manuals

OEM manuals are available from outside vendors. Call for pricing.

# Auxiliary

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## 00002004-30

### Monitor Assembly

## 02200127-01

### Pitot Adapter

- Used to connect the BRAT® B511 Air Data Test Set to the 1C-130-A/B aircraft pitot tube (G-model tube)

## 02200128-01

### Static Adapter

- Used to connect the BRAT® B511 Air Data Test Set static line to the 1C-130-A/B aircraft static vent (flush mounted)

## 02200134-01

### 1/8 HP Compressor

- Supplies up to 50 psi of air

## 02300504-01

### Dash Cable

- Interface between controller and camera

## 02300508-01

### Combination HUD Fixture/Alignment Tool

- Used to align system before testing HUD

## 02300509-01

### Light Shroud

## 02300515-01

### Boresight Bench

- Used to mount HUD

## 02300518-01

### 9" Black and White Monitor

## 02300522-10

### Transport/Camera Assembly

- Mounts on Boresight Bench (P/N 02300515-01)

## 04000041-01

### Rack Assembly

## 04000042-01

### Rack Assembly

## 05300003-10

### TACAN Programmed Integrated Circuit

## 08020102-10

### Power Control Unit

TPS compatible replacement instrument for obsolete ESTS instrument Power Control Unit

- Input volt range: 103 to 129 V rms
- Input frequency range: 47.5 to 440 Hz
- Single phase feed

## 20213001-01

### 32 GHz FieldFox Microwave Spectrum Analyzer

- With Remote Control Capability, USB Power Sensor Measurements Versus Frequency, USB Power Sensor Support, DC Bias Variable-Voltage Source, Built-In Power Meter, and ANSI Z540-1-1994 Calibration

## 92103563-10

### Benchtop Assembly

## 92103594-30

### Computer w/o Monitor

## 92103974-10

### Electronic Load Kit

- Cabling and connectors to handle signals above 15 A for up to 4 electronic load modules

## 92104000-70

### Refurbished BRAT Control Assembly

## 92104001-01

### Printer

# Auxiliary

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**92104011-01**

**17" Monitor**

**92104100-10**

**Extractor Tool (minimum 2)**

**92105237-01**

**18.1" LCD Monitor**

**93000042-01**

**400 Hz Three-Phase Power Conditioner and Distribution Box**

- Rack mountable

**94000292-70**

**Accessory Assembly**

- A modified drawer specifically designed for the BRAT® B512
- Stores accessories such as RF adapters and tools used for connecting and disconnecting the RFIU modules

**94000753-10**

**Storage Drawer Assembly**

**94000901-01**

**2000 VA Uninterruptible Power Supply**

- 2 battery packs

**94000902-01**

**Battery Pack for 94000901-01**

**94100243-01**

**Female Quick-Disconnect Connector (180 Pins)**

**94100312-30**

**Transportable Computer w/o Monitor**

**94100378-10**

**Table Assembly**

**94100548-01**

**IDE Hot Swap Tray**

**94100550-01**

**IDE Hot Swap Tray - Solenoid Lock Option**

**94100562-01**

**Hard Disk Drive**

**94101001-03**

**Keyboard with Touchpad**

**94101239-10**

**BRAT®-Ready Replacement Hard Drive (for licensees only)**

- BRAT® controller-compatible hard drive preloaded with a purchased BRAT® software upgrade (P/N 3105SU-1, or P/N 3105SU-2, or P/N 3105SU-3)

**95000021-01**

**Rack Mountable Programmable Loads**

- 6 loads per chassis, can be paralleled
- 60 A, 450 V, 300 W
- Constant current
- Constant resistance
- Short circuit
- Pulsed loading

**95000030-01**

**Quick Disconnect High Density Interface**

- Modular Connector System
  - 380 signal pins per module
  - 220 signal pins and 24 power pins per module
  - 220 signal pins and 24 coaxial pins per module
- High Current Capability
  - 20 A - power pins
  - 3 A - signal pins
- High Frequency Capability
  - 2 GHz - coaxial pins

**95000039-01**

**Mobile Work Surface**

Features extra large 14-gauge steel top with antistatic work surface and ESD mat. Rugged 16-gauge sides and all welded steel construction ensure added strength and long life. Provides keyed handle lock storage compartments for holding fixtures, adapters, and tools. Contains locking wheel casters with 4000 lb. capacity. Optional convenience outlets, cooling fans, and cooling fixtures.

**95650071-03**

**Rack Mount Keyboard**

**95650132-10**

**Rack Mount Computer Assembly**

- Stand-alone personal computer
- Operates at a minimum 66 MHz
- Interfaces to the instrument modules via IEEE-488 bus
- MS-DOS and Windows™ based computer with a minimum of 16 MB of RAM, 1 GB of hard disk memory, and a 1.4 MB 3½ inch floppy disk drive

**95650132-50**

**Rack Mount Computer Assembly**

**95650140-10**

**Rack Mount Monitor**

**95650140-50**

**Rack Mount Monitor Assembly**

# Auxiliary

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## 95650702-01 Laser Jet Printer

## 95650704-01 Rack Mount Computer

## 95650705-01 Rack Mount Keyboard

## 96000015-01 Current Sharing Power Supply

- Provides additional 5 V current for high power VXI chassis requirements

## 96000015-03 AC Current Sharing Power Supply

- Provides additional 5 V current for high power VXI chassis requirements

## 96301002-01 30 dB Attenuator (DC-3000 MHz)

## 96648122-10 BRAT RF Interface Cable Assembly

## 96648302-10 Differential Driver CCA

## 96740956-110 High Frequency Probe Kit

- Contains a high frequency probe, oscilloscope probes, and a DMM probe as well as test leads, DIP clips, and assorted test accessories

## 99000328-10 Rack Mount LCD Keyboard and 18.1" Monitor

### AVS

#### Advanced Video System Board Assembly

- Multi-format video display generator and video image acquisition/analyzer system
- Display generator supports composite video with any sync format, rectilinear and polar raster, multi-image interactive stroke, and mixed video (stroke over composite or stroke over raster)
- Acquisition/analyzer supports all video formats and sync processor/analyzer functions

## BRAT 90 - Dolly ATS Industrial Steel Dolly (1,600 lb. Capacity)

## BRATNET SERV BRATNet® Server Application

- Web-based BRATNet® server for up to 10 users (software only)

## CU-101 Multimedia/NT Computer

- DVD
- CD-ROM rewrite
- Removable hard drive
- Zip drive
- Ethernet card
- NT software

### DAC

#### DAC/Utility Switch Board Assembly

- 8 Digital/Analog Converters (DACs) function as DC reference generators
- 32 Form C relays used for utility switching

### VI

#### Virtual Instrument Board Assembly

Card can be configured to function as:

- Single-channel arbitrary function generator that supports standard (sine, triangle, square, pulsed DC, DC) and user defined custom waveshapes up to 25 MHz
- 2-channel digitizer with 12-bit or 8-bit amplitude sampling accuracy up to 100 MHz
- 2-channel counter/timer that supports standard functions (frequency, period/period average, PRF, time interval, rise/fall time) measurements from DC to 100 MHz

# Pneumatic

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00071002-10	Valve Driver CCA	L9668-111-030-02	Check Valve
00071006-10	Actuator Driver CCA	L9668-111-030-03	Check Valve
L9668-111-014-01	RV Operator	L9668-111-030-04	Check Valve
L9668-111-014-03	RV Operator	L9668-111-053-01	Solenoid Valve
L9668-111-024-01	2-Way NO Shutoff Valve	L9668-111-054-01	Filter Regulator
L9668-111-024-02	2-Way NC Shutoff Valve	L9668-111-054-11	Filter Replacement
L9668-111-024-03	3-Way Shutoff Valve (Return Port 1)	L9668-111-057-01	Restrictor Orifice
L9668-111-024-04	3-Way Shutoff Valve (Return Port 2)	L9668-111-057-02	Restrictor Orifice
L9668-111-025-01	Gas Regulator	L9668-111-057-03	Restrictor Orifice
L9668-111-025-02	Gas Regulator	L9668-111-057-04	Restrictor Orifice
L9668-111-025-03	Gas Regulator	L9668-111-060-01	Gauge Protector
L9668-111-026-01	Air Regulator		
L9668-111-026-02	Air Regulator		

# Modified/Refurbished

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## 08020001-01

### RF Generator #1 (Modified/Refurbished)

TPS compatible refurbishment of obsolete ESTS instrument RF Generator #1

- 10 MHz to 18 GHz with 1 Hz resolution
- +13 to -90 dBm with 0.1 dB resolution
- AM, FM, and PM modulation

## 08020002-01

### Signal Analyzer (CNTS) (Modified/Refurbished)

TPS compatible refurbishment of obsolete ESTS instrument Signal Analyzer (CNTS)

- Carrier frequency range: 5 MHz to 18 GHz
- +10 to -20 dBm AM noise measurement range
- +5 to +1.5 dBm FM noise measurement range

## 08020014-03

### Spectrum Analyzer (Modified/Refurbished)

TPS compatible refurbishment of obsolete ESTS instrument Spectrum Analyzer

- 30 Hz to 18 GHz
- +30 dBm to noise floor reference
- RBW 1 Hz to 2 MHz

## 08020018-01

### RF Generator #2 (Modified/Refurbished)

TPS compatible refurbishment of obsolete ESTS instrument RF Generator #2

- 10 MHz to 18 GHz with 1 Hz resolution
- +12 to -90 dBm with 0.1 dB resolution
- AM, FM, and PM modulation

## 08020020-01

### RF Counter (Modified/Refurbished)

TPS compatible refurbishment of obsolete ESTS instrument RF Counter

- 100 Hz to 18 GHz frequency range (CW and peak)
- -14 to +7 dBm
- 3 discrete bands

# Functional Equivalent Obsolescence Mitigation Replacement

Software Subject to License Agreement (Refer to Appendix A)

Obsolescence Mitigation Replacements (OMR) are functional instrument replacements specifically designed to support the requirements of the entire BRAT® family of testers. They are warranted to provide greater than 90% assurance to satisfy all fielded TPS requirements. There is a one-time LRU or SRU TPS certification charge. TPS OMR certifications are valid for all future OMR parts. Minimum purchases required. Additional terms and conditions apply.

07040300-10	Synchro/Resolver Simulator and Indicator Obsolescence Mitigation Replacement	07040410-10	Antenna Mass Simulator Spare Obsolescence Mitigation Replacement
07040306-10	PSA Series Spectrum Analyzer with Video Assembly Obsolescence Mitigation Replacement	07040411-10	Transportable BRAT 205 Section Obsolescence Mitigation Replacement
07040308-10	Channel 1 or Channel 2 RF Source Obsolescence Mitigation Replacement	07040412-10	Transportable BRAT 205 Section Custom Kit Obsolescence Mitigation Replacement
07040310-10	Channel 3 RF Source Obsolescence Mitigation Replacement	07040415-10	Digital Subsystem Obsolescence Mitigation Replacement
07040311-10	Microwave Network Analyzer Obsolescence Mitigation Replacement	07040417-10	BRAT 100/200 Sweep Generator Obsolescence Mitigation Replacement
07040312-10	RF Interface Unit (RFIU) Mainframe Obsolescence Mitigation Replacement	07040419-10	BRAT 300/400 Power Meter Obsolescence Mitigation Replacement
07040313-10	RF Controller (RF Deck) Obsolescence Mitigation Replacement	07040420-10	BRAT 100/300 Control Assembly Obsolescence Mitigation Replacement
07040313-30	RF Controller (Phase Noise) Obsolescence Mitigation Replacement	07040421-10	BRAT 200/400 Control Assembly Obsolescence Mitigation Replacement
07040314-10	RF Measurement #1 Obsolescence Mitigation Replacement	07040422-10	BRAT 300/400 Power & 10 MHz Reference Distribution Assembly Obsolescence Mitigation Replacement
07040315-10	RF Converter Obsolescence Mitigation Replacement	07040423-10	BRAT 300/400 RF Signal Processor & Distribution Obsolescence Mitigation Replacement
07040316-10	RF Output Obsolescence Mitigation Replacement	07040424-10	Pulse/CW Microwave Frequency Counter Obsolescence Mitigation Replacement
07040317-10	Phase Noise Measurement Module (Enhanced) Obsolescence Mitigation Replacement	07040425-10	BRAT 512 Three-Phase High Power Subsystem Obsolescence Mitigation Replacement
07040351-10	Phase Balance Measurement Module Obsolescence Mitigation Replacement	07040426-10	BRAT 512 Timing Generator Module Obsolescence Mitigation Replacement
07040353-10	Chassis Assembly, Wave Guide Pressurization and Blower Obsolescence Mitigation Replacement	07040427-10	BRAT 100/200 Static Latch Obsolescence Mitigation Replacement
07040358-50	Phase Noise Sys Reference Source Unit Obsolescence Mitigation Replacement	07040428-10	BRAT 100/200 Multiplexer Pack (1.2.4) Obsolescence Mitigation Replacement
07040359-30	Rackmount Phase Noise Measurement System Obsolescence Mitigation Replacement w/ BRAT Forward & Backward Compatibility Verification	07040429-10	BRAT 100/200 RF Multiplexer Pack (5.6) Obsolescence Mitigation Replacement
07040373-10	300 Series RF Rack Obsolescence Mitigation Replacement	07040430-10	BRAT VXI Counter Timer Obsolescence Mitigation Replacement
07040374-10	300 Series Stimulus Obsolescence Mitigation Replacement	07040432-10	BRAT 100/200 Matrix Pack (3) Obsolescence Mitigation Replacement
07040375-10	300 Series Measurement Obsolescence Mitigation Replacement	07040434-10	Form C Switch Module Obsolescence Mitigation Replacement
07040394-10	BRAT 305B Obsolescence Mitigation Replacement Tester Kit	07040436-10	BRAT 100/200 VXI Chassis with Controller Obsolescence Mitigation Replacement
07040395-10	BRAT 105 Obsolescence Mitigation Replacement Tester Kit	07040438-10	Dual/Single Channel Peak Power Meter with Sensors Obsolescence Mitigation Replacement w/ BRAT Forward & Backward Compatibility Verification
07040396-10	Transportable BRAT 405B Obsolescence Mitigation Replacement Tester Kit	07040439-10	Frequency Synthesizer Obsolescence Mitigation Replacement w/ BRAT Forward & Backward Compatibility Verification
07040404-10	Blower Assembly Obsolescence Mitigation Replacement	07040440-10	Power Supply, Programmable AC, High Current Obsolescence Mitigation Replacement
07040405-10	Logic Analyzer Obsolescence Mitigation Replacement	07040441-10	Control Assembly with Monitor, Keyboard, and Mouse Obsolescence Mitigation Replacement
07040407-10	400 Series RF Rack Obsolescence Mitigation Replacement Tester Kit	20130442-10	Spectrum Analyzer Obsolescence Mitigation Replacement w/ BRAT Forward & Backward Compatibility Verification
07040408-10	BRAT Option 512 X-Band Phase Noise High power RF Test System Obsolescence Mitigation Replacement Tester Kit	20130443-10	BRAT 300/400 Digitizing Oscilloscope Obsolescence Mitigation Replacement w/ BRAT Forward & Backward Compatibility Verification
07040409-10	DC Power Supply Obsolescence Mitigation Replacement Tester Kit	07040444-10	BRAT Analog VXI Core Obsolescence Mitigation Replacement w/ BRAT Forward & Backward Compatibility Verification

# Functional Equivalent Obsolescence Mitigation Replacement

Software Subject to License Agreement (Refer to Appendix A)

07040445-10	BRAT 100/200 Enhanced Digital System Obsolescence Mitigation Replacement	07040450-10	MMS Digitizing Oscilloscope Obsolescence Mitigation Replacement w/ BRAT Forward & Backward Compatibility Verification
07040446-10	BRAT Digital Multimeter Obsolescence Mitigation Replacement, Provides for PXI/PXIe Insert	07040451-10	High Power Sensor Obsolescence Mitigation Replacement w/BRAT Forward & Backward Compatibility Verification
07040447-10	BRAT Digital Oscilloscope Obsolescence Mitigation Replacement, Provides for PXI/PXIe Insert	07040452-10	Frequency Counter Obsolescence Mitigation Replacement w/ BRAT Forward & Backward Compatibility Verification
07040448-10	BRAT Arbitrary Function Generator Obsolescence Mitigation Replacement, Provides for PXI/PXIe Insert	07040453-10	BRAT Synthesized Function/Sweep Generator
07040449-10	BRAT VXI Counter Timer Obsolescence Mitigation Replacement, Provides for PXI/PXIe Insert		

## Avionics

### Retrofit for Mission Audio Panel (NSN #5831-01-010-3519)

A detailed study has been performed to identify hardware components that present reliability problems and have become obsolete and unmaintainable. A methodology is used to retrofit the existing component subassemblies with new technology that maintains the form, fit, and function of the OEM specifications. This method of

new technology insertion provides benefits of extended service life, enhanced utilization, reduced maintenance costs, improved reliability, and obsolescence neutral. Existing Test Program Sets (TPS) will be modified for continued support.

MAP-5831-01-010-3519 Retrofit for Mission Audio Panel

## Without Qualification Test Procedures and Reverse Engineering

92103858-03-woQTP&RE	Stimulus/Measurement Matrix Module without QTP and RE	95650702-01-woQTP&RE	Laser Jet Printer without QTP and RE
92103860-03-woQTP&RE	6 1/2-Digit Multimeter Module without QTP and RE	95650705-01-woQTP&RE	Rack Mount Keyboard without QTP and RE
95650140-10-woQTP&RE	Rack Mount Monitor without QTP and RE	95650715-01-woQTP&RE	LAN Switch without QTP and RE
95650142-10-woQTP&RE	Three-Phase Power Distribution System without QTP and RE	95650725-01-woQTP&RE	UPS Battery without QTP and RE
95650143-10-woQTP&RE	Single-Phase Power Distribution System without QTP and RE	L9668-111-013-01-woQTP&RE	DC Motor Controller without QTP and RE
95650153-10-woQTP&RE	Uninterruptible Power Supply without QTP and RE	L9668-111-013-03-woQTP&RE	DC Motor Controller without QTP and RE
95650701-01-woQTP&RE	Digital Oscilloscope without QTP and RE	L9668-111-014-01-woQTP&RE	RV Operator without QTP and RE
		L9668-111-014-03-woQTP&RE	RV Operator without QTP and RE

# Sustaining Engineering with Obsolescence Mitigation - Base Year

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SEOM-B-01	Sustaining Engineering with Obsolescence Mitigation - Initial Obsolescence Assessment, Recurring Monitoring, and 3 Obsolete Parts Annually - Complexity 1.0	SEOM-B-05	Sustaining Engineering with Obsolescence Mitigation - Initial Obsolescence Assessment, Recurring Monitoring, and 7 Obsolete Parts Annually - Complexity 5.0
SEOM-B-02	Sustaining Engineering with Obsolescence Mitigation - Initial Obsolescence Assessment, Recurring Monitoring, and 4 Obsolete Parts Annually - Complexity 2.0	SEOM-B-06	Sustaining Engineering with Obsolescence Mitigation - Initial Obsolescence Assessment, Recurring Monitoring, and 8 Obsolete Parts Annually - Complexity 6.0
SEOM-B-03	Sustaining Engineering with Obsolescence Mitigation - Initial Obsolescence Assessment, Recurring Monitoring, and 5 Obsolete Parts Annually - Complexity 3.0	SEOM-B-07	Sustaining Engineering with Obsolescence Mitigation - Initial Obsolescence Assessment, Recurring Monitoring, and 9 Obsolete Parts Annually - Complexity 7.0
SEOM-B-04	Sustaining Engineering with Obsolescence Mitigation - Initial Obsolescence Assessment, Recurring Monitoring, and 6 Obsolete Parts Annually - Complexity 4.0		

## Sustaining Engineering with Obsolescence Mitigation - Option Year

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SEOM-O-01	Sustaining Engineering with Obsolescence Mitigation - Recurring Monitoring and 3 Obsolete Parts Annually - Complexity 1.0	SEOM-O-05	Sustaining Engineering with Obsolescence Mitigation - Recurring Monitoring and 7 Obsolete Parts Annually - Complexity 5.0
SEOM-O-02	Sustaining Engineering with Obsolescence Mitigation - Recurring Monitoring and 4 Obsolete Parts Annually - Complexity 2.0	SEOM-O-06	Sustaining Engineering with Obsolescence Mitigation - Recurring Monitoring and 8 Obsolete Parts Annually - Complexity 6.0
SEOM-O-03	Sustaining Engineering with Obsolescence Mitigation - Recurring Monitoring and 5 Obsolete Parts Annually - Complexity 3.0	SEOM-O-07	Sustaining Engineering with Obsolescence Mitigation - Recurring Monitoring and 9 Obsolete Parts Annually - Complexity 7.0
SEOM-O-04	Sustaining Engineering with Obsolescence Mitigation - Recurring Monitoring and 6 Obsolete Parts Annually - Complexity 4.0		

## Sustaining Engineering for Equipment Obsolescence

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SE-IOM	Sustaining Engineering - Initial Obsolescence Assessment	SE-ROM-2018	Sustaining Engineering - Recurring Obsolescence Mitigation - 2018
SE-OMT	Sustaining Engineering - Obsolescence Mitigation Tasks (price is per unit/part)	SE-ROM-2019	Sustaining Engineering - Recurring Obsolescence Mitigation - 2019
SE-ROM-2016	Sustaining Engineering - Recurring Obsolescence Mitigation - 2016	SE-ROM-2020	Sustaining Engineering - Recurring Obsolescence Mitigation - 2020
SE-ROM-2017	Sustaining Engineering - Recurring Obsolescence Mitigation - 2017		

## Sustaining Engineering Obsolescence Mitigation Tasks

(Task is for Reverse Engineering and Qualification Test Procedure for a MPTS Qualified Replacement Part due to Obsolescence)

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SE-OMT-1	Sustaining Engineering - Obsolescence Mitigation Tasks - Complexity 1.0	SE-OMT-3	Sustaining Engineering - Obsolescence Mitigation Tasks - Complexity 3.0
SE-OMT-2	Sustaining Engineering - Obsolescence Mitigation Tasks - Complexity 2.0	SE-OMT-4	Sustaining Engineering - Obsolescence Mitigation Tasks - Complexity 4.0

# Development Software

Software Subject to License Agreement (Refer to Appendix A)

## Development Environment

00001	TCASE® Development System
00002	TestExec
00003	TBASIC®
00004	PROLIN - Program Language Translator Case Tool
00005	BRAT® Level Access Manager (BLAM)
00006	BRAT® Logistics Tool (BLT), single-user version
00007	BRAT® Logistics Tool (BLT), network version (five users)

## Development Software

11067	Development Software for BRAT® 67
11067/100	Development Software for BRAT® 67 Option 100
11070	Development Software for BRAT® 70
11090	Development Software for BRAT® 90
11101M	Development Software for BRAT® Option B201M
10103	Development Software for BRAT® B103, including computer
11103	Development Software for BRAT® B103
10105	Development Software for BRAT® B105, including computer
11105	Development Software for BRAT® B105
10303C	Development Software for BRAT® B303C, including computer
11303C	Development Software for BRAT® B303C
10305B	Development Software for BRAT® B305B, including computer
11305B	Development Software for BRAT® B305B
11305BJ	Development Software for BRAT® 305BJ - JTIDS
10306	Development Software for BRAT® B306, including computer
11306	Development Software for BRAT® B306
10307	Development Software for BRAT® 307, including computer
11307	Development Software for BRAT® 307
11307BJ	Development Software for BRAT® RF307BJ - JTIDS
10308	Development Software for BRAT® 308, including computer
11308	Development Software for BRAT® 308
11406	Development Software for BRAT® R406
10504	Development Software for BRAT® Option B504, including computer
11504	Development Software for BRAT® Option B504
11504/100	Development Software for BRAT® Option B504 Option 100 (Requires P/N 11504)
11504/500	Development Software for BRAT® Option B504 Option 500 (Requires P/N 11504 and P/N 11504/100)
11507	Development Software for BRAT® Option B507
11511	Development Software for BRAT® Option B511
11512A	Development Software for BRAT® Option B512
11514	Development Software for BRAT® Option B514
11520D	Development Software for BRAT® Option B520
11520/100D	Development Software for BRAT® Option B520-100
11520/200D	Development Software for BRAT® Option B520-200
11535	Development Software for BRAT® Option 535
10HCATS	Development Software for HCATS, including computer
11HCATS	Development Software for HCATS

## Site Licenses

30000	Site license for 20-user development system software, including all drivers for the BRAT® B303C and BRAT® B305B, including computers
31000	Site license for 20-user development system software, including all drivers for the BRAT® B303C and BRAT® B305B

## Other Software

40001	<b>Virtual Spectrum Analyzer Software Utility</b> <ul style="list-style-type: none"><li>- Windows™-based spectral analysis utility program</li><li>- Flexible graphical interface - controllable via TestBasic</li><li>- High-performance mathematical library</li><li>- Multiple plotting modes including histograms, FFT, power spectrum, and correlation modes</li><li>- Multiple measurement modes including RMS voltage, frequency, and peak detection/ranking</li><li>- Ability to operate on 3 simultaneous signals in a 2 dimensional matrix</li></ul>
40002	TCASE® Analog Simulator
40005	Video Redisplay Tool
95000034-01	LASAR Post Processor, D20
95000034-03	LASAR Post Processor, BRAT® Option B504
95000034-05	LASAR Post Processor, BRAT® Option B504/500
95000034-07	LASAR Post Processor, HCATS
95000037-01	Fault Dictionary, D20
95000037-03	Fault Dictionary, BRAT® Option B504
95000037-05	Fault Dictionary, BRAT® Option B504/500
95000037-07	Fault Dictionary, HCATS
95000341-01	Guided Probe, D20
95000341-03	Guided Probe, BRAT® Option B504
95000341-05	Guided Probe, BRAT® Option B504/500
95000341-07	Guided Probe, HCATS

# Development Software

Software Subject to License Agreement (Refer to Appendix A)

## Other Software

95000672 **On-Board Avionic System Analyzer-Troubleshooter Executive**  
The On-Board Avionic System Analyzer-Troubleshooter Executive software can continually monitor bus traffic, capture data, and provide protocol/message status. The Executive displays the data collected in a user-friendly, context sensitive format. Data can be viewed immediately or stored and analyzed later. A powerful troubleshooting aid for maintainers, the tool provides insight into areas normally not covered in typical operational checkout procedures. For example, 1553B bus transactions and the interactions among Integrated Avionic Systems.

- The software runs under Windows™ 95/98/Me or Windows™ NT/2000 on any PC that supports these operating systems and is Windows™ Plug and Play compliant
- The software can support multiple BUS architectures such as 1553B and various ARINC and serial protocols
- Passive analyzer displays BUS errors
- The software provides multiple hardware vendor support such as Ballard and Excalibur
- Multiple Windows™ OS APIs allow easy expandability for other hardware vendors and their serial BUS products
- Multiple Windows™ OS APIs allow additional customization of captured data. Refer to Data Word Formatting

Advanced users can use the troubleshooting and diagnostic capability to help maintain integrated avionics systems, subsystems, and sensors.

95000673 **Data Word Formatting**  
Data Word Formatting translates and groups encoded binary data from each unique data word into plain text, graphic images, or combinations of the two based on user requirements. Where applicable, upper and lower limit values can be set for comparison. The On Board Avionic System Analyzer-Troubleshooter Executive uses the Data Word Formatting packets activated by the user when they are found in the monitored data stream. The Data Word Formatting packets are designed and grouped based on system (avionic) functional Area, LRU, or mode. They are reviewed and approved by the user. Multiple unique words can be simultaneously monitored and continually updated.

## Instrument Drivers

21003 BRAT® VXI Common Instrument Driver  
21004 BRAT® High Speed Digital MXI Common Instrument Driver  
21005 BRAT® High Power Supply Common Instrument Driver  
21006 Option 500 DSP Common Instrument Driver  
22000 BRAT® RF Rack Common Instrument Driver  
22002 RFIU #2 Instrument Driver (RF Output, RF Converter, RF Measurement)  
22003 RFIU #3 Instrument Driver (RF Output, RF Measurement, RF Converter, RF Phase Noise)

## Instrument Drivers

20000 Single-Phase AC Power Supply Instrument Driver  
20001 Three-Phase AC Power Supply Instrument Driver  
20002 DC Power Supply Instrument Driver  
20003 QUAD 8-Bit Latch Instrument Driver  
20004 6½-Digit Digital Multimeter Instrument Driver  
20005 Universal Counter Instrument Driver  
20006 Digitizing Oscilloscope Instrument Driver  
20007 Arbitrary Function Generator Instrument Driver  
20008 Function Sweep Generator Instrument Driver  
20009 Dynamic Digital Test System Instrument Driver  
20010 Synchro/Resolver Instrument Driver  
20011 Form C Switch Instrument Driver  
20012 50 MHz Dynamic Digital Test System Instrument Driver  
20013 Microwave Signal Generator Instrument Driver  
20014 Power Sensor Instrument Driver  
20020 MXI Digital Multimeter Instrument Driver  
20021 High Power DC Power Supply Instrument Driver  
20022 5 MB Word Instrument Driver for Option 500  
20023 MXI PDTG Instrument Driver for Option 500  
20024 Microwave Network Analyzer Instrument Driver  
20025 Programmable Electronic Load Instrument Driver  
20026 MIL-STD-1553 Instrument Driver  
20027 Auxiliary RF Signal Processor Instrument Driver  
20028 Variable Gain Amplifier Instrument Driver  
20029 Relay Matrix Switch Instrument Driver  
20031 Pneumatic Terminal Instrument Driver  
20032 DC Power 600 V, 1.5 A Instrument Driver  
20033 Matrix Switch Instrument Driver  
20034 Form C Switch, 5 A Instrument Driver  
20035 Digital Rail Generator Instrument Driver  
20036 Digital Discrete Module Instrument Driver  
20037 Discrete Latch Instrument Driver  
20038 Programmable Resistor Instrument Driver  
20039 Phase Angle Voltmeter Instrument Driver  
20040 Synchro Resolver Instrument Driver  
20041 Power DAC Instrument Driver  
20042 Arbitrary Waveform Generator Instrument Driver  
20043 Dual-Pulse, Arbitrary Generator Instrument Driver  
20044 Power Amplifier Instrument Driver  
20045 Digital Stimulus/Response Instrument Driver  
20046 50 MHz Timing/Control Instrument Driver  
20047 Smart Serial Communication (5539) Instrument Driver  
20048 VXI Programmable Video Generator and Analyzer Instrument Driver  
20050 Peak Power Meter Instrument Driver  
20051 Frequency Synthesizer Instrument Driver  
20052 Power Amplifier Instrument Driver  
20060 Phase Noise Measurement System Instrument Driver  
20061 Phase Noise Measurement System Reference Source Instrument Driver  
20062 Dual-Channel Peak Power Meter Instrument Driver  
20063 Frequency Counter Instrument Driver  
20064 Dual Three-Phase AC Power Supply Instrument Driver  
20070 NAV/COMM Signal Generator Instrument Driver  
20071 ATC/DME Signal Generator Instrument Driver  
20072 RC Test System Instrument Driver  
20073 RC Half Quick Test System Instrument Driver  
20074 Dual-Signal Satellite Simulator Instrument Driver  
22004 RFIU JTIDS Instrument Driver  
22005 RFIU Option 512 Instrument Driver

# Runtime Software

Software Subject to License Agreement (Refer to Appendix A)

## Runtime Environment

00001RT	TCASE® Runtime System
00002RT	TestExec
00003RT	TBASIC®
00004RT	PROLIN - Program Language Translator Case Tool

## Runtime Software

11010200	Software Phase Noise Utility
11067/100RT	Runtime Software for BRAT 67 Option 100
11067RT	Runtime Software for BRAT 67
11070RT	Runtime Software for BRAT 70
11090RT	Runtime Software for BRAT 90
11105RT	Runtime Software for BRAT B105
11303RT	Runtime Software for BRAT B303C
11305BJRT	Runtime Software for BRAT 305BJ - JTIDS
11305RT	Runtime Software for BRAT B305B
11306RT	Runtime Software for BRAT B306
11504/100RT	Runtime Software for BRAT Option B504 Option 100 (Requires P/N 11504RT)
11504/500RT	Runtime Software for BRAT Option B504 Option 500 (Requires P/N 11504RT and P/N 11504/100RT)
11504RT	Runtime Software for BRAT Option B504
11507RT	Runtime Software for BRAT Option B507
11512RT	Runtime Software for BRAT Option B512
11520/100RTN	Runtime Software for BRAT Option B520-100
11520/200RTN	Runtime Software for BRAT Option B520-200
11520RTN	Runtime Software for BRAT Option B520
40001RT	Runtime Software for Virtual Spectrum Analyzer
95000034-01RT	Runtime Software for LASAR Post Processor, D20
95000034-03RT	Runtime Software for LASAR Post Processor, BRAT Option B504
95000034-05RT	Runtime Software for LASAR Post Processor, BRAT Option B504/500
95000034-07RT	Runtime Software for LASAR Post Processor, HCATS
95000037-01RT	Runtime Software for Fault Dictionary, D20
95000037-03RT	Runtime Software for Fault Dictionary, BRAT Option B504
95000037-05RT	Runtime Software for Fault Dictionary, BRAT Option B504/500
95000037-07RT	Runtime Software for Fault Dictionary, HCATS
95000341-01RT	Runtime Software for Guided Probe, D20
95000341-03RT	Runtime Software for Guided Probe, BRAT Option B504
95000341-05RT	Runtime Software for Guided Probe, BRAT Option B504/500
95000341-07RT	Runtime Software for Guided Probe, HCATS

## Instrument Panels

23000RT	Single-Phase AC Power Supply Instrument Panel
23001RT	Three-Phase AC Power Supply Instrument Panel
23002RT	DC Power Supply Instrument Panel
23003RT	QUAD 8-Bit Latch Instrument Panel
23004RT	6-1/2 Digit Digital Multimeter Instrument Panel
23005RT	Universal Counter Instrument Panel
23006RT	Digitizing Oscilloscope Instrument Panel
23007RT	Arbitrary Function Generator Instrument Panel
23008RT	Function Sweep Generator Instrument Panel
23009RT	Digital Test Development Tool Instrument Panel
23010RT	Synchro/Resolver Instrument Panel
23011RT	Virtual Panel for Terminal Mode Instrument Panel
23012RT	Stimulus MUX IAU 1 Instrument Panel
23013RT	VXI Variable Gain Amplifier Instrument Panel
23014RT	Pneumatic Instrument Panel
23015RT	Form C Instrument Panel
23016RT	1553 VXI Instrument Panel
24001RT	BRAT RF Switches Instrument Panel
24003RT	BRAT VXI Switches Instrument Panel
24009RT	1 KW DC Power Supply Instrument Panel
24010RT	DC Power Supply Electronic Load Instrument Panel
24011RT	Digital Stimulus/Response Development Instrument Panel
34016RT	RFIU Virtual Panels (Enhanced Phase Noise Measurement Module)

# Runtime Software

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Software Subject to License Agreement (Refer to Appendix A)

## Instrument Drivers

20048RT	VXI Programmable Video Generator and Analyzer Instrument Driver
20050RT	Peak Power Meter Instrument Driver
20051RT	Frequency Synthesizer Instrument Driver
20052RT	Power Amplifier Instrument Driver
20060RT	Phase Noise Measurement System Instrument Driver
20061RT	Phase Noise Measurement System Reference Source Instrument Driver
20062RT	Dual-Channel Peak Power Meter Instrument Driver
20063RT	Frequency Counter Instrument Driver
20064RT	Dual Three-Phase AC Power Supply Instrument Driver
20070RT	NAV/COMM Signal Generator Instrument Driver
20071RT	ATC/DME Signal Generator Instrument Driver
20072RT	RC Test System Instrument Driver
20073RT	RC Half Quick Test System Instrument Driver
20074RT	Dual-Signal Satellite Simulator Instrument Driver
22004RT	RFIU JTIDS Instrument Driver
22005RT	RFIU Option 512 Instrument Driver

## System Software Utilities

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Software Subject to License Agreement (Refer to Appendix A)

This group consists of six levels of development ranging from Complexity 0 to Complexity 5, with level 5 the most complex. Within each complexity, nine additional subcomplexity levels exist.  
Example: Software Utilities - Complexity 3.0 to 3.9

# Calibration and Alignment Adjustment Routines

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Software Subject to License Agreement (Refer to Appendix A)

CA92103572-01	DC Power Supply #1 Calibration and Alignment	CA94000604-10	RF Converter Calibration and Alignment
CA92103572-05	DC Power Supply #2 Calibration and Alignment	CA94000605-10(303)	RF Output for BRAT® 303C Calibration and Alignment
CA93000077-01	6½-Digit Digital Multimeter Calibration and Alignment	CA94000605-10(305)	RF Output for BRAT® 305B/405B Calibration and Alignment
CA93000078-01	High-Performance Universal Counter Calibration and Alignment	CA94000833-01	Frequency Extension Module Calibration and Alignment
CA93000079-01	1-GSa/s Digitizing Oscilloscope Calibration and Alignment	CA94000855-01	Microwave Signal Generator Calibration and Alignment
CA93000080-01	Arbitrary Function Generator Calibration and Alignment	CA94100554-10	Phase Balance Module Calibration and Alignment
CA93000081-01	21 MHz Synthesized Function/Sweep Generator Calibration and Alignment	CA94100604-01	Frequency Counter Calibration and Alignment
CA93000152-01	IF Section (100 KHz to 3 MHz) Calibration and Alignment	CA95000018-03	Microwave Network Analyzer Calibration and Alignment
CA93000156-03(SYN1)	Modular Synthesized Signal Generator with 1 Hz Resolution Calibration and Alignment	CA95000049-01	Synchro/Resolver Simulator and Indicator Calibration and Alignment
CA93000156-03(SYN2)	Modular Synthesized Signal Generator with 1 Hz Resolution Calibration and Alignment	CA96740017-05	Peak Power Meter Calibration and Alignment
CA93000173-01	IF Section (10 Hz to 300 KHz) Calibration and Alignment	CA96740017-07	Dual-Channel Peak Power Meter Calibration and Alignment
CA93000284-01	Digitizing Oscilloscope Calibration and Alignment	CA96740021-01	Frequency Synthesizer Calibration and Alignment
CA94000603-10(303)	RF Measurement #1 for BRAT® 303C Calibration and Alignment	CA96740045-10	L-Band Signal Conditioning Module Calibration and Alignment
CA94000603-10(305)	RF Measurement #1 for BRAT® 305B/405B Calibration and Alignment	CA96740103-10	CPSM Modulator/Demodulator Module Calibration and Alignment

# Calibration and Alignment Adjustment Routines - ITA

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Software Subject to License Agreement (Refer to Appendix A)

These groups consist of ten levels of development ranging from Complexity 1 to Complexity 10, with level 10 the most complex. Within each complexity, nine additional subcomplexity levels exist.  
Example: BRAT® 105/205 Software Alignment ITA - Complexity 4.0 to 4.9

BRAT® 105/205 Software Alignment ITA  
BRAT® 303/305/405 Software Alignment ITA

# Calibration Software and ITA

Software Subject to License Agreement (Refer to Appendix A)

305/307/RF305BJ CAL SW-ITA	BRAT® 305/307 and RF305BJ Calibration Software and ITA	307/407/RF307BJ/RF407BJ CAL SW-ITA	BRAT® 307/407 and RF307BJ/RF407BJ Calibration Software and ITA
305/307/RF305BJ CAL SW-ITA-S	BRAT® 305/307 and RF305BJ Calibration Software and ITA - Single User Only	307/407/RF307BJ/RF407BJ CAL SW-ITA-S	BRAT® 307/407 and RF307BJ/RF407BJ Calibration Software and ITA - Single User Only

# Software Upgrades

Software Subject to License Agreement (Refer to Appendix A)

11105RT-U	Runtime Software for BRAT® B105, Version 2.0	3105PD-2	<b>BRAT® RT System Software Distribution (Medium) (Single User)</b> - Software distribution of enhancements and/or software deficiency corrections covering a period of up to 12 months or 20 incidents. Distribution pack contains new master DVD(s) for the applicable BRAT® system software installation media set.
11306-U	Development Software for BRAT® B306, Version 2.0		
12303CRT-U	Runtime Software for BRAT® B303C with Option 03/04/05, Version 2.0		
12305BRT-U	Runtime Software for BRAT® B305B with Option 03/04/05, Version 2.0		
12306-U	Development Software for BRAT® B306 with Option 03/04/05, Version 2.0		
31000-U	Site license for 20-user development system software, including all drivers for the BRAT® B303C and BRAT® B305B, Version 2.0	3105PD-3	<b>BRAT® RT System Software Distribution (Major) (Single User)</b> - Software distribution of enhancements and/or software deficiency corrections covering a period of up to 24 months or 40 incidents. Distribution pack contains new master DVD(s) for the applicable BRAT® system software installation media set.
3105LC-1	BRAT Runtime Software Logistics Consolidation		
3105M-1	BRAT® Software Development Maintenance for BRAT® 307		
3105M-2	BRAT® Software Development Maintenance for BRAT® RF307BJ		
3105PD-0	<b>BRAT® RT System Software Distribution (Basic) (Single User)</b>		
3105PD-1	<b>BRAT® RT System Software Distribution (Minor) (Single User)</b> - Software distribution of enhancements and/or software deficiency corrections covering a period of up to 6 months or 10 incidents. Distribution pack contains new master DVD(s) for the applicable BRAT® system software installation media set.		

# TPS Upgrades

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Terms and Conditions Apply (Refer to Appendix B)

The modified BRAT® Test Program will replace noncompliant code with compliant code. This does not include travel or travel related per diem, site verification test or installation, or program management coordination. Call to establish your TPS category.

610TPSUG	TPS Noncompliant Conversion (SRU Minor)
620TPSUG	TPS Noncompliant Conversion (SRU Medium)
630TPSUG	TPS Noncompliant Conversion (SRU Major)
640TPSUG	TPS Noncompliant Conversion (LRU Minor)
650TPSUG	TPS Noncompliant Conversion (LRU Medium)
660TPSUG	TPS Noncompliant Conversion (LRU Major)
TPS-INV-01	Test Program Set Investigation (Minor)
TPS-INV-02	Test Program Set Investigation (Major)

## Software

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Software Subject to License Agreement (Refer to Appendix A)

The following software options are available for all 100/200 series and 300/400 series BRAT® Test Systems:

### Option 10

- 40001RT Runtime Software for Virtual Spectrum Analyzer

### Option 11

- 95000037-01RT Runtime Software for Fault Dictionary, D20
- 95000341-01RT Runtime Software for Guided Probe, D20

# Calibration Services

## Full Service Calibration - Modules

FSC01001522-01	IFF/TACAN Transponder/Interrogator Full Service Calibration Services	FSC94000606-70	RF Controller (JSTARS) Full Service Calibration Services
FSC01001527-10	Comm/Nav Module Full Service Calibration Services	FSC94000855-01	Microwave Signal Generator Full Service Calibration Services
FSC02000259-01	Programmable DC Electronic Load Full Service Calibration Services	FSC94000982-01	Precision Frequency Reference with Internal Amplifier Full Service Calibration Services
FSC02000206-10	Air Data Test Set Case Assembly Full Service Calibration Services	FSC94001013-01	50 MHz Attenuator Full Service Calibration Services
FSC02200207-10	Compressor/Vacuum Pump Case Assembly Full Service Calibration Services	FSC94100554-10	Phase Balance Module Full Service Calibration Services
FSC07040317-10	Phase Noise Measurement Module (Enhanced) Obsolescence Mitigation Replacement Full Service Calibration Services	FSC94100604-01	Frequency Counter Full Service Calibration Services
FSC93000077-01	6 1/2-Digit Digital Multimeter Full Service Calibration Services	FSC94100766-10	Timing Generator Module Full Service Calibration Services
FSC93000078-01	High-Performance Universal Counter Full Service Calibration Services	FSC94101013-50	Phase Noise Measurement System Reference Source Unit Full Service Calibration Services
FSC93000079-01	1-GSa/s Digitizing Oscilloscope Full Service Calibration Services	FSC94101130-01	Phase Noise Measurement System Full Service Calibration Services
FSC93000080-01	Arbitrary Function Generator Full Service Calibration Services	FSC94101177-01	136-Channel Logic Analyzer Full Service Calibration Services
FSC93000081-01	21 MHz Synthesized Function/Sweep Generator Full Service Calibration Services	FSC95000018-03	Microwave Network Analyzer Full Service Calibration Services
FSC93000151-01	Local Oscillator Full Service Calibration Services	FSC95000049-01	Synchro/Resolver Simulator and Indicator Full Service Calibration Services
FSC93000152-01	IF Section (100 KHz to 3 MHz) Full Service Calibration Services	FSC95000340-01	Calibration Kit for Microwave Network Analyzer Full Service Calibration Services
FSC93000154-01	Digitizer Full Service Calibration Services	FSC96740017-01	Peak Power Meter Full Service Calibration Services
FSC93000155-01	Power Meter Full Service Calibration Services	FSC96740017-03	Peak Power Meter Full Service Calibration Services
FSC93000172-01	RF Section (100 Hz to 22 GHz) Full Service Calibration Services	FSC96740019-01	Peak Power Sensor Full Service Calibration Services
FSC93000173-01	IF Section (10 Hz to 300 KHz) Full Service Calibration Services	FSC96740019-03	Peak Power Sensor Full Service Calibration Services
FSC93000200-01	Preamplifier (26.5 GHz) Full Service Calibration Services	FSC96740021-01	Frequency Synthesizer Full Service Calibration Services
FSC93000221-10	RF Measurement #2 Full Service Calibration Services	FSC96740045-10	L-Band Signal Conditioning Module Full Service Calibration Services
FSC93000284-01	Digitizing Oscilloscope Full Service Calibration Services	FSC96740070-10	Reference Generator Module Full Service Calibration Services
FSC93000293-01	Power Sensor Full Service Calibration Services	FSC96740103-10	CPSM Modulator/Demodulator Module Full Service Calibration Services
FSC93000293-03	Power Sensor Full Service Calibration Services	FSCBRAT B303C OMR-1	BRAT B303C Enhanced Obsolescence Mitigation Replacement Full Service Calibration Services (Including all Calibratable Instruments in BRAT B303C)
FSC93000318-10	Synchronizer #1 Full Service Calibration Services	FSCBRAT B303C OMR	BRAT B303C Enhanced Obsolescence Mitigation Replacement Full Service Calibration Services (Including a Separately Calibrated Enhanced Phase Noise Measurement Module and a Separately Calibrated RF Controller [Enhanced Phase Noise])
FSC93000499-01	Microwave Radiation Detector Full Service Calibration Services	FSCBRAT B303C(V1)	BRAT B303C(V1) Enhanced Full Service Calibration Services (excluding Phase Noise Measurement Module)
FSC94000603-10	RF Measurement #1 Full Service Calibration Services		
FSC94000604-10	RF Converter Full Service Calibration Services		
FSC94000605-10	RF Output Full Service Calibration Services		
FSC94000606-10	RF Controller (BRAT 305/405) Full Service Calibration Services		
FSC94000606-50	RF Controller (JTIDS) Full Service Calibration Services		

# Calibration Services

## Full Service Calibration Services - Systems (Verification/Validation Only)

Includes Calibration, Calibration Services, Receiving, Inspection, Testing, QA, and Shipping

FSCS70 ON	BRAT 70 Full Service Calibration Services - On Site (see Note 1)
FSCS105 ON	BRAT 105 Full Service Calibration Services - On Site (see Note 1)
FSCS105 OFF	BRAT 105 Full Service Calibration Services - Off Site
FSCS105-C5 ON	BRAT 105 (C-5) Full Service Calibration Services - On Site (see Note 1)
FSCS105-C5 OFF	BRAT 105 (C-5) Full Service Calibration Services - Off Site
FSCS205 ON	BRAT 205 Full Service Calibration Services - On Site (see Note 1)
FSCS205 OFF	BRAT 205 Full Service Calibration Services - Off Site
FSCS303 ON	BRAT 303 Full Service Calibration Services - On Site (see Note 1)
FSCS303 OFF	BRAT 303 Full Service Calibration Services - Off Site
FSCS303RF ON	BRAT 303RF (RF Rack only) Full Service Calibration Services - On Site (see Note 1)
FSCS303RF OFF	BRAT 303RF (RF Rack only) Full Service Calibration Services - Off Site
FSCS305 ON	BRAT 305 Full Service Calibration Services - On Site (see Note 1)
FSCS305 OFF	BRAT 305 Full Service Calibration Services - Off Site
FSCS305BJ ON	BRAT 305BJ - JTIDS Full Service Calibration Services - On Site (see Note 1)
FSCS305BJ OFF	BRAT 305BJ - JTIDS Full Service Calibration Services - Off Site

FSCS405 ON	BRAT 405 Full Service Calibration Services - On Site (see Note 1)
FSCS405 OFF	BRAT 405 Full Service Calibration Services - Off Site
FSCS405J ON	BRAT 405J - JTIDS Full Service Calibration Services - On Site (see Note 1)
FSCS405J OFF	BRAT 405J - JTIDS Full Service Calibration Services - Off Site
FSCS520-400 ON	BRAT 520-400 Full Service Calibration Services - On Site (see Note 1)
FSCS520-400 OFF	BRAT 520-400 Full Service Calibration Services - Off Site
FSCSBRATB303C ON	BRAT B303C Enhanced Full Service Calibration Services - On Site
FSCSBRATB303C OFF	BRAT B303C Enhanced Full Service Calibration Services - Off Site

**Note 1** - Available at Warner Robins and Hill Air Force Bases

## Calibration Services - Modules (Verification/Validation Only)

Includes Calibration, Calibration Services, Receiving, Inspection, Testing, QA, and Shipping

B303C CPIN UPGRD	Calibration/Verification CPIN Revision for CCB & Metrology Coordination. This does not include Enhanced Phase Noise Testing.
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## Calibration Services

Includes Calibration, Calibration Services, Receiving, Inspection, Testing, QA, and Shipping

LRSO-ATS-CAL	LRSO ATS Calibration Includes Tester Calibration, Technical Management & Support, Customer Service Telephone Support, Supply Chain Management, and OEM/Vendor Subcontract Management
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# Tester Decommissioning and Equipment Commissioning

## TESTER DISMANTLING, EQUIPMENT EVALUATION, CERTIFICATION, INVENTORY, AND STORAGE

Includes BRAT® tester receiving and inspection, perform self-test, calibration, and instrument OEM certification testing, dismantle equipment, document working and nonworking equipment, catalog and inventory working equipment, generate repair authorization request for nonworking equipment, instrument retest and calibrate as necessary, issue Certificate of Conformance (C of C), coordinate disposition of unused bulk items, generate report - new GFE inventory, repair authorizations, and equipment disposition.

TDEC BRAT105	BRAT® 105 Tester Dismantling, Equipment Evaluation, Certification, Inventory, and Storage
TDEC BRAT305B	BRAT® 305B Tester Dismantling, Equipment Evaluation, Certification, Inventory, and Storage
TDEC BRAT405B	BRAT® 405B Tester Dismantling, Equipment Evaluation, Certification, Inventory, and Storage
TDEC RF305	BRAT® 305 RF Tester Dismantling, Equipment Evaluation, Certification, Inventory, and Storage
TDEC RF405	BRAT® 405 RF Tester Dismantling, Equipment Evaluation, Certification, Inventory, and Storage

## Evaluation Services

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EV130209-10	Circuit Card Assembly Evaluation Services	EV96000001-01	SR5010A Timing Control Module Evaluation Services
EV130213-10	Circuit Card Assembly Evaluation Services		
EV680R360G01	Radar Test Set Evaluation Services	EVVIDGEN-500 Series	VXI Programmable Video Generator Evaluation Services
EV93000550-30	Three-Phase AC Programmable Power Supply Evaluation Services (final repair price to be determined)	EVZ50	Z50 Digital VXI Module Evaluation Services
EV93000550-70	Three-Phase AC Programmable Power Supply Evaluation Services, European Power (final repair price to be determined)		

## Engineering Investigation, Software Updates, and TPS Updates

EI-SU-TPSU-00     Engineering Investigations (EIs), Software Updates (EISU), and TPS Updates (minor) address test equipment anomalies, software deficiencies, performance issues, and modifications/upgrades. Tasks include: identify, develop, and integrate corrective actions, and demonstrate performance compliance.

## BRAT® Tester Repairs

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**Price excludes travel and does not include repair or replacement of defective electronic test instruments or replacement of cables**

The BRAT® Tester Repairs consist of five levels ranging from Complexity 1 to Complexity 5, with level 5 the most complex. Within each complexity, nine additional subcomplexity levels exist.

Example: BRAT® Tester Repair - Complexity 3.0 to 3.9

## Repair Actions

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RAHVA ITA-1	HVA ITA Repair Action (up to 5 single event repaired per ITA) - 1 ITA
RAHVA ITA-2	HVA ITA Repair Action (up to 5 single event repaired per ITA) - 2 ITA
RAHVA ITA-3	HVA ITA Repair Action (up to 5 single event repaired per ITA) - 3 ITA
RAHVA ITA-4	HVA ITA Repair Action (up to 5 single event repaired per ITA) - 4 ITA

## Cable Repairs

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**Includes Interface Outside Cables, Self Test and System Cables**

This group consists of eight levels ranging from Complexity 0 to Complexity 7, with level 7 the most complex. Within each complexity, nine additional subcomplexity levels exist.

Example: Cable Repairs - Complexity 5.0 to 5.9 (special conditions apply)

# ITA Repairs and Investigations

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## Interface Test Adapter (ITA) Repair includes the following:

Verification of ITA hardware failure (duplicate failure); pack/ship ITA hardware to ATTI repair facility in Hauppauge, New York; ITA failure diagnosis; repair or replace faulty ITA components, CCAs, or cable assemblies (at ATTI's discretion); ITA repair verification using ITA self test; ship ITA to user site; repair verification at user site using ITA self test (demonstrate failure-free self test).

ITAs exist in various levels of complexity. ITA Repair prices are based upon six (6) levels of ITA complexity.

ITA EVAL-01	ITA Evaluation
ITA RPR-1	Repair of ITA Complexity Level 1
ITA RPR-2	Repair of ITA Complexity Level 2
ITA RPR-3	Repair of ITA Complexity Level 3
ITA RPR-4	Repair of ITA Complexity Level 4
ITA RPR-5	Repair of ITA Complexity Level 5
ITA RPR-6	Repair of ITA Complexity Level 6
ITA RPR-00002200	Transmitter ITA
ITA RPR-00002250	High Power Combiner
ITA RPR-00002300	Receiver ITA
ITA RPR-00002350	Exciter ITA
ITA RPR-00002400	Antenna Servo Electronics
ITA RPR-00220050	Frequency Agile Filter ITA
ITA RPR-00220200	Flight Station Unit/Crew Member Terminal ITA
ITA RPR-00220300	General Interface Terminal ITA

## Test Services

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TC93000081-01	21 MHz Synthesized Function/Sweep Generator Test Services	TC93001221-01	MMS Spectrum Analyzer Test Services (70908, 70900, 70902, 70903, 70620)
TC93000284-01	Digitizing Oscilloscope Test Services		
TC93003850-01	D20 Digital Instruments Test Services (One E1450, Four E1451s, One E1452, One E1453, and Ten E1454s)		

## Products Overhaul

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OHL94000104-10	RF Interface Unit (RFIU) Mainframe, Overhaul	OHL94000605-10	RF Output, Overhaul
OHL94000603-10	RF Measurement #1, Overhaul	OHL94000606-10	RF Controller (BRAT 305/405), Overhaul
OHL94000604-10	RF Converter, Overhaul	OHL95000450-10	Auxiliary RF Signal Processor/Matrix, Overhaul

# Repair Services

## Includes Repairs, Repair Services, Receiving, Inspection, Testing, QA, and Shipping

RS00002201-10	CCA, Transmitter ITA Repair Services	RS92103858-03	Stimulus/Measurement Matrix Module Repair Services
RS00002219-10	Pressure Transducer Repair Services	RS92103860-03	6 1/2-Digit High-Accuracy Multimeter Repair Services
RS00002270-10	Waveguide Repair Services	RS93000499-01	Microwave Radiation Detector Repair Services
RS00002324-10	Cable Assembly, W11 Repair Services	RS94100500-410	Electronic Power Control Center Repair Services (Requires P/N ATS-TD1)
RS00002327-10	Cable Assembly, W14 Repair Services	RS94100588-01	Switch, Emergency Stop Repair Services
RS00002333-10	Cable Assembly, W22 Repair Services	RS95650020-10	Driver Simulator Repair Services
RS00071002-10	Valve Driver CCA Repair Services	RS95650053-01	VXI Variable Gain Amplifier Repair Services
RS00071006-10	Actuator Driver CCA Repair Services	RS95650095-10	Stimulus MUX IAU CCA Repair Services
RS00220316-10	Cable Assembly, W4 Repair Services	RS95650095-30	Stimulus MUX IAU CCA Repair Services
RS130209-10	Circuit Card Assembly Repair Services	RS95650095-50	Rack Mount Computer Assembly Repair Services
RS130213-10	Circuit Card Assembly Repair Services	RS95650132-03	Rack Mount Computer Assembly Repair Services
RS20172173-10	Power Supply Plate Repair Services (Requires P/N ATS-TD2)	RS95650132-05	Rack Mount Computer Assembly Repair Services
RS20224310-01	2 Channel Oscilloscope / AFG Repair Services (Requires P/N ATS-TD2)	RS95650132-30	Rack Mount Computer Assembly Repair Services
RS20224311-01	Vector Network Analyzer Repair Services (Requires P/N ATS-TD2)	RS95650132-50	Rack Mount Computer Assembly Repair Services
RS20224314-01	80 Channel Switch Repair Services (Requires P/N ATS-TD2)	RS95650134-10	Rack Mount Oscilloscope Repair Services
RS20224316-01	Single Channel 1553 Repair Services (Requires P/N ATS-TD2)	RS95650138-30	Cable Tester Assembly Repair Services
RS20224317-01	6 Slot Mainframe Repair Services (Requires P/N ATS-TD2)	RS95650142-10	Three-Phase Power Distribution System Repair Services
RS20224318-01	1 x 20 16 A Switch Mod. Repair Services (Requires P/N ATS-TD2)	RS95650143-10	Single-Phase Power Distribution System Repair Services
RS20224319-01	1 x 64 Multiplexer Switch Mod. Repair Services (Requires P/N ATS-TD2)	RS95650153-10	Uninterruptible Power Supply Repair Services
RS20224320-01	9 x 8 Multiplexer Switch Mod. Repair Services (Requires P/N ATS-TD2)	RS95650582-03	Monitor Repair Services
RS20224322-01	Digital Multimeter Repair Services (Requires P/N ATS-TD2)	RS95650585-30	Digital Driver Simulator Repair Services
RS20224326-10	1 x 16 RF Mux, Altered Repair Services (Requires P/N ATS-TD2)	RS95650701-01	Digital Oscilloscope Repair Services
RS20224335-01	Multifunction I/O (PXle 6375) Repair Services (Requires P/N ATS-TD2)	RS95650702-01	Printer Repair Services
RS20224337-10	1 x 4 RF Mux, Altered Repair Services (Requires P/N ATS-TD2)	RS95650703-01	Monitor Repair Services
RS20224377-01	4 Channel 1553 Repair Services (Requires P/N ATS-TD2)	RS95650704-01	Rack Mount Computer Repair Services
RS20224384-01	1 x 8PT 75 Ohm SW Repair Services (Requires P/N ATS-TD2)	RS95650705-01	Keyboard Repair Services
RS20224385-01	1 x 16 75 Ohm Switch Repair Services (Requires P/N ATS-TD2)	RS96000021-05	0 to 600 Vdc Power Supply Repair Services
RS20224386-01	1 x 8pt 50 Ohm SW Repair Services (Requires P/N ATS-TD2)	RS96221056-130	Test Cable, N to N Repair Services
RS20224415-01	AC Power Supply (750W 1 Phase) Repair Services (Requires P/N ATS-TD1)	RS96648363-10	Input/Output Drawer Assembly Repair Services
RS20224415-03	AC Power Supply (1500W3 Phase) Repair Services (Requires P/N ATS-TD3)	RS96648365-10	High Voltage Isolated Load Assembly Repair Services
RS20224415-05	AC Power Supply (1500W 3 Phase) Repair Services (Requires P/N ATS-TD3)	RS96648400-10	Low Voltage Isolated Load Assembly Repair Services
RS20224450-10	DC Power Supply Assy. Repair Services (Requires P/N ATS-TD1)	RS96648428-10	Lamp Driver CCA Repair Services
RS20224606-01	Programmable DC Electric Load Repair Services (Requires P/N ATS-TD3)	RS96648730-21	Switching Regulator Enclosure Assembly Repair Services
RS20224608-10	Resistor Load Assy. Repair Services (Requires P/N ATS-TD3)	RS96648818-21	Cathode Monitor Control CCA Repair Services
RS20230002-01	Load Module Assembly (717720650-039) Assembly Repair Services (minimum of four (4) repairs)	RS96648819-21	Cathode Monitor Relay Assembly Repair Services
RS680R360G01	Radar Test Set Repair Services	RS96648834-21	Video Selector CCA Repair Services
		RS96648840-21	Ground Deck Pulser CCA Repair Services
		RS96648843-21	Clock Driver CCA Repair Services
		RS96648846-21	Protection and Control CCA Repair Services
		RS96648919-10	ITA Cable Set Repair Services
		RS96648920-10	Frame Harness Assembly Repair Services
		RSAVS	Advanced Video System Board Assembly Repair Services
		RSCOMP-01	Computer Repair Services - Complexity 1.0 (6 months repair turnaround)
		RSCOMP-02	Computer Repair Services - Complexity 2.0 (7 months repair turnaround)

# Repair Services

RSCOMP-03	Computer Repair Services - Complexity 3.0 (8 months repair turnaround)	RSL9668-111-024-03	3-Way Shutoff Valve (Return Port 1) Repair Services
RSCOMP-04	Computer Repair Services - Complexity 4.0 (9 months repair turnaround)	RSL9668-111-024-04	3-Way Shutoff Valve (Return Port 2) Repair Services
RSDAC	DAC/Utility Switch Board Assembly Repair Services	RSL9668-111-025-01	Gas Regulator Repair Services
RSDDM-01	Digital Driver Simulator Module Repair Services - Complexity 1	RSL9668-111-025-02	Gas Regulator Repair Services
RSDDM-02	Digital Driver Simulator Module Repair Services - Complexity 2	RSL9668-111-025-03	Gas Regulator Repair Services
RSDDM-03	Digital Driver Simulator Module Repair Services - Complexity 3	RSL9668-111-026-01	Air Regulator Repair Services
RSDDM-04	Digital Driver Simulator Module Repair Services - Complexity 4	RSL9668-111-026-02	Air Regulator Repair Services
RSDSM-01	DSM Repair Services - Complexity 1.0 (6 months repair turnaround)	RSL9668-111-027-01	Metering Valve Repair Services
RSDSM-02	DSM Repair Services - Complexity 2.0 (7 months repair turnaround)	RSL9668-111-027-02	Metering Valve Repair Services
RSDSM-03	DSM Repair Services - Complexity 3.0 (8 months repair turnaround)	RSL9668-111-027-03	Metering Valve Repair Services
RSDSM-04	DSM Repair Services - Complexity 4.0 (9 months repair turnaround)	RSL9668-111-028-01	Flowmeter Repair Services
RSHVAITA	Maintenance Action Repair Services	RSL9668-111-028-02	Flowmeter Repair Services
RSITA-HVA1RPR	One CCA for the HVA ITA Repair Services	RSL9668-111-028-03	Flow Signal Conditioner Repair Services
RSITA-HVA2RPR	Two CCAs for the HVA ITA Repair Services	RSL9668-111-030-01	Check Valve Repair Services
RSITA-HVA3RPR	Three CCAs for the HVA ITA Repair Services	RSL9668-111-030-02	Check Valve Repair Services
RSITATOPLEVEL	Interface Test Adapter Functional Verification Repair Services	RSL9668-111-030-03	Check Valve Repair Services
RSL92105101	Dongle Repair Services	RSL9668-111-030-04	Check Valve Repair Services
RSL9668-111-011-01	Pressure Gauge Repair Services	RSL9668-111-031-01	Temperature Probe Repair Services
RSL9668-111-011-02	Pressure Gauge Repair Services	RSL9668-111-032-01	Manual Shutoff Valve Repair Services
RSL9668-111-012-01	12 Vdc Power Supply Repair Services	RSL9668-111-033-11	Pushbutton Repair Services
RSL9668-111-013-01	DC Motor Controller Repair Services	RSL9668-111-033-12	Illuminated Button Repair Services
RSL9668-111-013-03	DC Motor Controller Repair Services	RSL9668-111-033-13	Lamp Repair Services
RSL9668-111-014-01	RV Operator Repair Services	RSL9668-111-036-01	24 Vdc Power Supply Repair Services
RSL9668-111-014-03	RV Operator Repair Services	RSL9668-111-037-01	45 Vdc Power Supply Repair Services
RSL9668-111-015-01	Pressure Gauge Repair Services	RSL9668-111-039-01	Power Outlet Strip Repair Services
RSL9668-111-015-02	Pressure Gauge Repair Services	RSL9668-111-041-01	Fuse (Qty. 8) Repair Services
RSL9668-111-016-01	Pressure Transducer Repair Services	RSL9668-111-041-03	Fuse (Qty. 8) Repair Services
RSL9668-111-016-02	Pressure Transducer Repair Services	RSL9668-111-043-01	Control Relay Repair Services
RSL9668-111-016-03	Pressure Transducer Repair Services	RSL9668-111-053-01	Solenoid Valve Repair Services
RSL9668-111-016-04	Pressure Transducer Repair Services	RSL9668-111-054-01	Filter Regulator Repair Services
RSL9668-111-016-05	Pressure Transducer Repair Services	RSL9668-111-054-11	Filter Replacement Repair Services
RSL9668-111-020-11	DC Strain Conditioner Repair Services	RSL9668-111-055-01	Hour meter Repair Services
RSL9668-111-020-13	DCV Input Card Repair Services	RSL9668-111-057-01	Restrictor Orifice Repair Services
RSL9668-111-020-15	Frequency Input Card Repair Services	RSL9668-111-057-02	Restrictor Orifice Repair Services
RSL9668-111-020-19	Quad DC Strain Gauge Card Repair Services	RSL9668-111-057-03	Restrictor Orifice Repair Services
RSL9668-111-021-01	16-Channel Circuit Card Repair Services	RSL9668-111-057-04	Restrictor Orifice Repair Services
RSL9668-111-021-02	AC Output Relay Repair Services	RSL9668-111-058-01	Ullage Volume Repair Services
RSL9668-111-021-03	AC Input Relay Repair Services	RSL9668-111-060-01	Gauge Protector Repair Services
RSL9668-111-021-04	DC Output Relay Repair Services	RSL9668-111-061-01	Circuit Breaker Repair Services
RSL9668-111-022-01	Surface Mount Temperature Transducer Repair Services	RSPNC01	Phase Noise Calibrator Repair Services - Complexity 1.0
RSL9668-111-023-01	Gas Filter Repair Services	RSPNC02	Phase Noise Calibrator Repair Services - Complexity 2.0
RSL9668-111-023-11	Replacement Filter Repair Services	RSPNC03	Phase Noise Calibrator Repair Services - Complexity 3.0
RSL9668-111-024-01	2-Way NO Shutoff Valve Repair Services	RSPNC04	Phase Noise Calibrator Repair Services - Complexity 4.0
RSL9668-111-024-02	2-Way NC Shutoff Valve Repair Services	RVIDGEN-500 Series	VXI Programmable Video Generator Repair Services
		RVIDGEN-502 Option 5	Characterization Module Repair Services
		RVIDGEN-510 CNTR	VXI Programmable Video Generator Repair Services, Five (5) Year Contract/Per Card
		RVIDGEN-510 Option 6	Funnel Adapter Repair Services
		RSVI	Virtual Instrument Board Assembly Repair Services

# BRAT Repair and Maintenance Engineering Services

**Includes Engineering Services, Site Support, Diminishing Manufacturing Sources, and Obsolescence Forecasting**

## Engineering Services - BRAT On-Site Support (BOSS)

BRAT On-Site Support (BOSS) consists of five levels ranging from Complexity 1 to Complexity 5, with level 5 the most complex. Within each complexity, nine additional subcomplexity levels exist.  
Example: BOSS-3 BRAT On-Site Support - Complexity 3.0 to 3.9

## Engineering Services – Obsolescence Forecasting (OF)

Obsolescence Forecasting (OF) consists of five levels ranging from Complexity 1 to Complexity 5, with level 5 the most complex. Within each complexity, nine additional subcomplexity levels exist.

Example: OF-3 Diminishing Manufacturing Sources & Obsolescence Forecasting - Complexity 3.0 to 3.9

# BRAT Repair and Maintenance Support:

## CABLE ASSEMBLIES REPLACEMENT

### BRAT Cables Category 1

#### BRAT Cables Category 1 Replacements

01000199-30Cb1	B520 I/O Cable Assembly Full Service Components	02200219-30Cb12	Air Data Test Set Hose Assembly Full Service Components
01000199-50Cb1	B520 I/O Cable Assembly Full Service Components	02200219-50Cb12	Air Data Test Set Hose Assembly Full Service Components
01000199-70Cb1	B520 I/O Cable Assembly Full Service Components	02200219-70Cb12	Air Data Test Set Hose Assembly Full Service Components
02000133-10Cb1	Isolated GPIB Expander Assembly Full Service Components	02200219-90Cb12	Air Data Test Set Hose Assembly Full Service Components
02200208-10Cb1	Power Distribution Panel Assembly Full Service Components	02200220-10Cb12	Compressor/Vacuum Pump Hose Assembly Full Service Components
94100238-10Cb1	160-Pin, 50 Ohm Point to Point Cable Full Service Components	02200220-30Cb12	Compressor/Vacuum Pump Hose Assembly Full Service Components
94100799-10Cb1	AC Power Interface Drawer Assembly Full Service Components	02200220-50Cb12	Compressor/Vacuum Pump Hose Assembly Full Service Components
96000063-10Cb1	RFI Receiver Panel Full Service Components	02200221-10Cb12	Compressor/Vacuum Pump Hose Assembly Full Service Components
96000063-30Cb1	RFI Receiver Panel Full Service Components	02300525-10Cb12	Video Cable Assembly Full Service Components
96000097-10Cb1	Self Test Plug Full Service Components	02300536-10Cb12	Power Input Cable Assembly Full Service Components

### BRAT Cables Category 2

#### BRAT Cables Category 2 Replacements

00002602-10Cb12	RF Detector Cable Assembly Full Service Components	02300537-01Cb12	Boresight Bench Leg (Left) Full Service Components
02000114-10Cb12	Digital Interconnect Cable Full Service Components	02300537-02Cb12	Boresight Bench Leg (Right) Full Service Components
02000116-10Cb12	Cable Assembly Full Service Components	02300537-03Cb12	Boresight Bench Leg (Center) Full Service Components
02000117-10Cb12	Cable Assembly Full Service Components	92103566-10Cb12	System Cable Full Service Components
02000117-30Cb12	Cable Assembly Full Service Components	92103582-10Cb12	System Cable Full Service Components
02000117-50Cb12	Cable Assembly Full Service Components	92103583-30Cb12	System Cable Full Service Components
02000117-70Cb12	Cable Assembly Full Service Components	92103583-50Cb12	System Cable Full Service Components
02000120-10Cb12	Cable Assembly Full Service Components	92103748-10Cb12	DC Power and VXI Synchro Self Test Cable Full Service Components
02000122-10Cb12	Cable Assembly Full Service Components	92103749-10Cb12	High Frequency Self Test Cable Full Service Components
02000124-10Cb12	Cable Assembly Full Service Components	92103750-10Cb12	Four-Wire Resistance Self Test Cable Full Service Components
02000125-10Cb12	Cable Assembly Full Service Components	92103751-10Cb12	Two-Wire Resistance Self Test Cable Full Service Components
02000129-10Cb12	Power Cable Full Service Components	92103770-10Cb12	Shorting Plug Self Test Cable Full Service Components
02200210-10Cb12	PT Exhaust Pressure Hose Assembly Full Service Components	92103877-10Cb12	One-Wire Resistance Self Test Cable Full Service Components
02200210-30Cb12	PS Exhaust Pressure Hose Assembly Full Service Components	92103878-10Cb12	Static Digital Self Test Cable Full Service Components
02200211-10Cb12	PT Hose Assembly Full Service Components	92103879-10Cb12	Dynamic Digital Self Test Cable Full Service Components
02200211-30Cb12	PS Hose Assembly Full Service Components	92103903-10Cb12	N/A Synchro Self Test Cable Full Service Components
02200216-01Cb12	Air Data Test Set Rear Panel Full Service Components	92103914-10Cb12	BRAT Power Cable Full Service Components
02200217-10Cb12	Compressor/Vacuum Pump Rear Panel Assembly Full Service Components	92103916-10Cb12	Self Test Cable Full Service Components
02200218-10Cb12	Air Supply Hose Assembly Full Service Components		
02200219-10Cb12	Air Data Test Set Hose Assembly Full Service Components		





# BRAT Repair and Maintenance Support:

## CABLE ASSEMBLIES REPLACEMENT

92103820-50Cb14	System Cable Full Service Components	93000217-10Cb14	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service Components
92103820-70Cb14	System Cable Full Service Components	93000217-30Cb14	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service Components
92103820-90Cb14	System Cable Full Service Components	93000217-50Cb14	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service Components
92103820-110Cb14	System Cable Full Service Components	93000217-70Cb14	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service Components
92103820-130Cb14	System Cable Full Service Components	93000217-90Cb14	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service Components
92103820-150Cb14	System Cable Full Service Components	93000319-10Cb14	Type N Plug to Type N Plug Semi-Rigid Coaxial Cable Full Service Components
92103820-170Cb14	System Cable Full Service Components	93000320-10Cb14	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service Components
92103820-190Cb14	System Cable Full Service Components	94000283-10Cb14	BNC Bulkhead Jack to SMB Bulkhead Jack Flexible Coaxial Cable Full Service Components
92103820-210Cb14	System Cable Full Service Components	94000289-10Cb14	Type N Bulkhead Jack to SMA Bulkhead Jack Flexible Coaxial Cable Full Service Components
92103820-230Cb14	System Cable Full Service Components	94000429-10Cb14	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service Components
92103820-250Cb14	System Cable Full Service Components	94000429-30Cb14	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service Components
92103820-270Cb14	System Cable Full Service Components	94000429-50Cb14	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service Components
92103821-10Cb14	SMB Plug to BNC Plug Cable Full Service Components	94000429-70Cb14	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service Components
92103821-30Cb14	SMB Plug to BNC Plug Cable Full Service Components	94000429-90Cb14	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service Components
92103821-50Cb14	SMB Plug to BNC Plug Cable Full Service Components	94000429-110Cb14	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service Components
92103821-70Cb14	SMB Plug to BNC Plug Cable Full Service Components	94000429-130Cb14	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service Components
92103821-90Cb14	SMB Plug to BNC Plug Cable Full Service Components	94000429-150Cb14	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service Components
92103821-110Cb14	SMB Plug to BNC Plug Cable Full Service Components	94000431-30Cb14	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components
92103821-130Cb14	SMB Plug to BNC Plug Cable Full Service Components	94000431-50Cb14	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components
92103821-150Cb14	SMB Plug to BNC Plug Cable Full Service Components	94000431-70Cb14	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components
92103821-170Cb14	SMB Plug to BNC Plug Cable Full Service Components	94000431-90Cb14	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components
92103821-190Cb14	SMB Plug to BNC Plug Cable Full Service Components	94000431-110Cb14	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components
92103821-210Cb14	SMB Plug to BNC Plug Cable Full Service Components	94000431-130Cb14	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components
92103821-230Cb14	SMB Plug to BNC Plug Cable Full Service Components	94000431-150Cb14	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components
92103821-250Cb14	SMB Plug to BNC Plug Cable Full Service Components	94000431-170Cb14	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components
92103821-270Cb14	SMB Plug to BNC Plug Cable Full Service Components	94000431-190Cb14	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components
92103821-290Cb14	SMB Plug to BNC Plug Cable Full Service Components		
92103870-10Cb14	BNC Component Holder Full Service Components		
93000205-10Cb14	Type N Plug to SMA Jack Semi-Rigid Coaxial Cable Full Service Components		
93000207-10Cb14	Type N Plug to SMA Jack Semi-Rigid Coaxial Cable Full Service Components		
93000211-10Cb14	Type N Plug to Type N Plug Semi-Rigid Coaxial Cable Full Service Components		
93000214-10Cb14	Type N Plug to Type N Plug Semi-Rigid Coaxial Cable Full Service Components		
93000215-10Cb14	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service Components		
93000215-30Cb14	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service Components		
93000215-50Cb14	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service Components		
93000215-70Cb14	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service Components		
93000215-90Cb14	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service Components		

# BRAT Repair and Maintenance Support:

## CABLE ASSEMBLIES REPLACEMENT

94000431-210Cbl4	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	94000841-150Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
94000431-230Cbl4	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	94000841-170Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
94000431-250Cbl4	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	94000841-190Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
94000431-270Cbl4	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	94000841-210Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
94000431-290Cbl4	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	94000841-230Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
94000431-310Cbl4	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	94000841-250Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
94000431-330Cbl4	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	94000841-270Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
94000431-350Cbl4	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	94000841-290Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
94000431-370Cbl4	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	94000841-310Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
94000431-390Cbl4	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	94000841-330Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
94000431-410Cbl4	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	94000841-350Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
94000431-430Cbl4	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	94000841-370Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
94000436-10Cbl4	Right Angle SMA Plug to Right Angle SMA Plug Flexible Coaxial Cable Full Service Components	94000885-30Cbl4	Type N Plug to SMA Plug Flexible Coaxial Cable Full Service Components
94000836-10Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components	94000942-10Cbl4	Right Angle SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
94000836-30Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components	94100176-10Cbl4	Strain Relief Cable Full Service Components
94000836-50Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components	94100176-30Cbl4	Strain Relief Cable Full Service Components
94000836-70Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components	94100176-50Cbl4	Strain Relief Cable Full Service Components
94000836-90Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components	94100176-70Cbl4	Strain Relief Cable Full Service Components
94000841-10Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components	94100257-10Cbl4	RF Power Cord Full Service Components
94000841-30Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components	94100257-30Cbl4	RF Power Cord (10 A - Europe) Full Service Components
94000841-50Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components	94100257-50Cbl4	RF Power Cord (16/21 A - US) Full Service Components
94000841-70Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components	94100678-10Cbl4	Blower Cable Full Service Components
94000841-90Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components	94100723-10Cbl4	Waveguide and Blower Assembly Cable Full Service Components
94000841-110Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components	94100865-10Cbl4	Facility Ground Cable Full Service Components
94000841-130Cbl4	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components	94101036-10Cbl4	Blower Hose Assembly Full Service Components
		95000279-10Cbl4	SMA Plug to SMA Plug Coaxial Cable Full Service Components
		95000279-30Cbl4	SMA Plug to SMA Plug Coaxial Cable Full Service Components
		95000279-50Cbl4	SMA Plug to SMA Plug Coaxial Cable Full Service Components
		95000279-70Cbl4	SMA Plug to SMA Plug Coaxial Cable Full Service Components
		95000279-90Cbl4	SMA Plug to SMA Plug Coaxial Cable Full Service Components
		95000279-110Cbl4	SMA Plug to SMA Plug Coaxial Cable Full Service Components
		95000279-130Cbl4	SMA Plug to SMA Plug Coaxial Cable Full Service Components
		95000279-150Cbl4	SMA Plug to SMA Plug Coaxial Cable Full Service Components
		95000279-170Cbl4	SMA Plug to SMA Plug Coaxial Cable Full Service Components
		95000279-190Cbl4	SMA Plug to SMA Plug Coaxial Cable Full Service Components

# BRAT Repair and Maintenance Support:

## CABLE ASSEMBLIES REPLACEMENT

95000279-210Cb14	SMA Plug to SMA Plug Coaxial Cable Full Service Components	96000050-10Cb14	Bus Bar Ground Cable Full Service Components
95000279-250Cb14	SMA Plug to SMA Plug Coaxial Cable Full Service Components	96000050-30Cb14	Bus Bar Ground Cable Full Service Components
95000279-270Cb14	SMA Plug to SMA Plug Coaxial Cable Full Service Components	96000053-10Cb14	Power Supply Cable Full Service Components
95000279-290Cb14	SMA Plug to SMA Plug Coaxial Cable Full Service Components	96000060-10Cb14	2-Pin Point to Point Cable Full Service Components
95000279-310Cb14	SMA Plug to SMA Plug Coaxial Cable Full Service Components	96200033-10Cb14	Switch 4 to Switch 3 Cable Full Service Components
95000279-330Cb14	SMA Plug to SMA Plug Coaxial Cable Full Service Components	96200037-10Cb14	BNC to Header Cable Full Service Components
95000280-10Cb14	Right Angle SMB Plug to Right Angle SMB Plug Coaxial Cable Full Service Components	96200038-10Cb14	Switch 3 to Arb Cable Full Service Components
95000281-10Cb14	SMB Plug to SMB Plug Coaxial Cable Full Service Components	96200039-10Cb14	Switch 3 to Switch 5 Cable Full Service Components
95000619-10Cb14	SMB Plug to SMA Plug Coaxial Cable Full Service Components	96740309-10Cb14	Cable Assembly Full Service Components
96000049-10Cb14	AC Power Cable Full Service Components	97881021-30Cb14	BNC Plug to BNC Plug Cable Full Service Components
		98307257-10Cb14	TPS Case Assembly (1 Compartment) Full Service Components

# BRAT Repair and Maintenance Support:

## INSTRUMENTS REPAIR AND CALIBRATION

### BRAT CLS Category 1

#### Repair and Calibration of BRAT Instruments: Category 1

01001599-01 Cat 1	USB Controller Full Service Repair Services	94000887-01 Cat 1	DC Power Supply Frame Full Service Repair Services
02000259-01 Cat 1	Programmable DC Electronic Load Full Service Repair Services	94000888-01 Cat 1	0 to 7 V Module for DC Power Supply Full Service Repair Services
02200132-10 Cat 1	Vacuum Pump (Modified) Full Service Repair Services	94000889-01 Cat 1	0 to 20 V Module for DC Power Supply Full Service Repair Services
02200132-30 Cat 1	Vacuum Pump (Modified) Full Service Repair Services	94000890-01 Cat 1	0 to 32 V Module for DC Power Supply Full Service Repair Services
02200132-50 Cat 1	Compressor (Modified) Full Service Repair Services	94000891-01 Cat 1	0 to 320 V Module for DC Power Supply Full Service Repair Services
02300509-01 Cat 1	Light Shroud Full Service Repair Services	94100312-10 Cat 1	Computer Assembly (BRAT 205/405) Full Service Repair Services
92103573-01 Cat 1	Single-Phase AC Programmable Power Supply Full Service Repair Services	94100500-370/-50 Cat 1	Electronic Power Control Center - RF Rack/Single Phase Full Service Repair Services
92103848-01 Cat 1	Pattern Pod Full Service Repair Services	94100750-01 Cat 1	Power Distribution Unit Full Service Repair Services
92103897-01 Cat 1	Timing Pod Full Service Repair Services	95000019-03 Cat 1	MIL-STD-1553A/B Bus Analyzer Simulator Full Service Repair Services
92103986-01 Cat 1	VXI Mainframe Command Module Full Service Repair Services	95000045-01 Cat 1	0 to 160 V Module for DC Power Supply Full Service Repair Services
92103987-01 Cat 1	VXI Mainframe Full Service Repair and Calibration Services	96000001-01 Cat 1	50 MHz Digital Interface Timing Module Full Service Repair Services
92104000-10 Cat 1	Computer Assembly (BRAT 105/305) Full Service Repair Services	96000002-01 Cat 1	50 MHz TTL/CMOS/ECL Pattern Module Full Service Repair Services
93000042-01 Cat 1	400 Hz Three-Phase Power Conditioner and Distribution Box Full Service Repair Services	96000007-01 Cat 1	50 MHz Variable Level Pattern Module Full Service Repair Services
93000068-01 Cat 1	QUAD 8-Bit Digital Input/Output Latch Full Service Repair Services	96000013-01 Cat 1	Timing Module Extension Card (Dual) Full Service Repair Services
93000069-01 Cat 1	A/B to C-Size Module Carrier Full Service Repair Services	96000013-03 Cat 1	Timing Module Extension Card (Single) Full Service Repair Services
93000074-01 Cat 1	64-Channel Relay Multiplexer Full Service Repair Services	96000014-01 Cat 1	High Power Mainframe - 6 Slots Full Service Repair Services
93000076-01 Cat 1	RF Multiplexer Full Service Repair Services	96000014-03 Cat 1	High Power Mainframe - 13 Slots Full Service Repair Services
93000293-01 Cat 1	Power Sensor Full Service Repair and Calibration Services	96000016-01 Cat 1	VXI-MXI-2 Kit Full Service Repair Services
93000293-03 Cat 1	Power Sensor Full Service Repair and Calibration Services	96000017-01 Cat 1	VXI-MXI-2 Extender Full Service Repair Services
93000506-01 Cat 1	32-Channel, 5 A, Form C Switch Full Service Repair Services		

# BRAT Repair and Maintenance Support:

## INSTRUMENTS REPAIR AND CALIBRATION

96000020-01 Cat 1	Programmable Electronic Load Full Service Repair Services	95000049-01 Cat 2	Synchro/Resolver Simulator and Indicator Full Service Repair and Calibration Services
96000021-01 Cat 1	1 KW Programmable Power Supply Full Service Repair Services	95000340-01 Cat 2	Microwave Network Analyzer Calibration Kit Full Service Repair and Calibration Services
96000105-01 Cat 1	PCI-MXI-2 CCA Full Service Repair Services	95000450-10 Cat 2	Auxiliary RF Signal Processor/Matrix Full Service Repair Services
96740017-01 Cat 1	Peak Power Meter Full Service Repair and Calibration Services	95000450-50 Cat 2	Auxiliary RF Signal Processor/Matrix Full Service Repair Services
96740019-01 Cat 1	Peak Power Sensor Full Service Repair and Calibration Services	96000001-03 Cat 2	50 MHz Timing/Control Module Full Service Repair Services
96740019-03 Cat 1	Peak Power Sensor Full Service Repair and Calibration Services	96000012-01 Cat 2	32-Channel Differential ECL I/O Module Full Service Repair Services
98000100-30 Cat 1	Programmable Video Generator and Analyzer Module (A-10) Full Service Repair Services	96000015-01 Cat 2	Current Sharing Power Supply Full Service Repair Services
98715045-01 Cat 1	Blower Assembly Full Service Repair Services	96740017-03 Cat 2	Peak Power Meter Full Service Repair and Calibration Services

### BRAT CLS Category 2

#### Repair and Calibration of BRAT Instruments: Category 2

02200108-01 Cat 2	Air Data Test Set Full Service Repair Services
02200207-10 Cat 2	Compressor/Vacuum Pump Case Assembly Full Service Repair and Calibration Services
02300503-01 Cat 2	Controller Full Service Repair Services
02300508-01 Cat 2	Combination HUD Fixture/Alignment Tool Full Service Repair Services
02300515-01 Cat 2	Boresight Bench Full Service Repair Services
02300522-10 Cat 2	Transport/Camera Assembly Full Service Repair Services
02300530-01 Cat 2	C-Size VXI Mainframe - 4 Slots Full Service Repair Services
92103850-01 Cat 2	160 MHz Timing I/O Module Full Service Repair Services
92103851-01 Cat 2	20 MHz Pattern I/O Module Full Service Repair Services
92103852-01 Cat 2	Terminating 20 MHz Pattern I/O Module Full Service Repair Services
92103855-01 Cat 2	Synchro/Resolver Simulator and Indicator Full Service Repair Services
93000075-01 Cat 2	Relay Matrix Full Service Repair Services
93000077-01 Cat 2	6½-Digit Digital Multimeter Full Service Repair and Calibration Services
93000078-01 Cat 2	High-Performance Universal Counter Full Service Repair and Calibration Services
93000079-01 Cat 2	1-GSa/s Digitizing Oscilloscope Full Service Repair and Calibration Services
93000151-01 Cat 2	Local Oscillator Full Service Repair and Calibration Services
93000153-01 Cat 2	Graphics Display Full Service Repair Services
93000154-01 Cat 2	Digitizer Full Service Repair and Calibration Services
93000155-01 Cat 2	Power Meter Full Service Repair and Calibration Services
93000201-01 Cat 2	System Mainframe Full Service Repair Services
93000284-01 Cat 2	Digitizing Oscilloscope Full Service Repair and Calibration Services
93000550-30 Cat 2	Three-Phase AC Programmable Power Supply Full Service Repair Services
94000982-01 Cat 2	Precision Frequency Reference with Internal Amplifier Full Service Repair and Calibration Services
94100500-130 Cat 2	Electronic Power Control Center - Single Phase Full Service Repair Services
94100604-01 Cat 2	Frequency Counter Full Service Repair and Calibration Services

### BRAT CLS Category 3

#### Repair and Calibration of BRAT Instruments: Category 3

01001527-10 Cat 3	Comm/Nav Module Full Service Repair and Calibration Services
02200206-10 Cat 3	Air Data Test Set Case Assembly Full Service Repair and Calibration Services
07030001-10 Cat 3	Z50 Digital VXI Module Full Service Repair Services
07040313-10 Cat 3	RF Controller (RF Deck) Obsolescence Mitigation Replacement - SW subject to License Full Service Repair Services
07040313-30 Cat 3	RF Controller (Enhanced Phase Noise) Obsolescence Mitigation Replacement - SW subject to License Full Service Repair Services
07040313-90 Cat 3	RF Controller (Comm/Nav) Full Service Repair Services
93000080-01 Cat 3	Arbitrary Function Generator Full Service Repair and Calibration Services
93000152-01 Cat 3	IF Section (100 KHz to 3 MHz) Full Service Repair and Calibration Services
93000156-03 Cat 3	Modular Synthesized Signal Generator with 1 Hz Resolution Full Service Repair and Calibration Services
93000172-01 Cat 3	RF Section (100 Hz to 22 GHz) Full Service Repair and Calibration Services
93000173-01 Cat 3	IF Section (10 Hz to 300 KHz) Full Service Repair and Calibration Services
93000200-01 Cat 3	Preamplifier (26.5 GHz) Full Service Repair and Calibration Services
94000104-10 Cat 3	RF Interface Unit (RFIU) Mainframe Full Service Repair Services
94000603-10 Cat 3	RF Measurement #1 Full Service Repair and Calibration Services
94000604-10 Cat 3	RF Converter Full Service Repair and Calibration Services
94000605-10 Cat 3	RF Output Full Service Repair and Calibration Services
94000833-01 Cat 3	Frequency Extension Module Full Service Repair and Calibration Services
94000855-01 Cat 3	Microwave Signal Generator Full Service Repair and Calibration Services
94100554-10 Cat 3	Phase Balance Module Full Service Repair and Calibration Services
94100751-01 Cat 3	Three-Phase Power Supply (Master) Full Service Repair Services

# BRAT Repair and Maintenance Support:

## INSTRUMENTS REPAIR AND CALIBRATION

94100752-01 Cat 3	Three-Phase Power Supply (Slave) Full Service Repair Services	94000606-50 Cat 4	RF Controller (JTIDS) Full Service Repair and Calibration Services
94100766-10 Cat 3	Timing Generator Module Full Service Repair and Calibration Services	94000606-70 Cat 4	RF Controller (JSTARS) Full Service Repair and Calibration Services
94101013-50 Cat 3	Phase Noise Measurement System Reference Source Unit Full Service Repair and Calibration Services	94101130-01 Cat 4	Phase Noise Measurement System Full Service Repair and Calibration Services
96740045-10 Cat 3	L-Band Signal Conditioning Module Full Service Repair and Calibration Services	94101177-01 Cat 4	136-Channel Logic Analyzer Full Service Repair and Calibration Services
96740070-10 Cat 3	Reference Generator Module Full Service Repair and Calibration Services	95000018-03 Cat 4	Microwave Network Analyzer Full Service Repair and Calibration Services
96740103-10 Cat 3	CPSM Modulator/Demodulator Module Full Service Repair and Calibration Services	96740021-01 Cat 4	Frequency Synthesizer Full Service Repair and Calibration Services

### BRAT CLS Category 4

#### Repair and Calibration of BRAT Instruments: Category 4

93000081-01 Cat 4	21 MHz Synthesized Function/Sweep Generator Full Service Repair and Calibration Services
94000606-10 Cat 4	RF Controller (BRAT 305/405) Full Service Repair and Calibration Services

### BRAT CLS Category 5

#### Repair and Calibration of BRAT Instruments: Category 5

01001522-01 Cat 5	IFF/TACAN Transponder/Interrogator Full Service Repair and Calibration Services
02000136-01 Cat 5	RF Pulse Amplifier Full Service Repair Services
07040317-10 Cat 5	Phase Noise Measurement Module (Enhanced) Obsolescence Mitigation Replacement - SW subject to License Full Service Repair and Calibration Services
96740022-03 Cat 5	Power Amplifier Full Service Repair Services

## Repair Service Analysis

Provided in Addition to Equipment/Instrument Repair. RSA is a Failure Reporting and Analysis Service which Provides Reporting, Classifying, Analyzing Failures, and Examination of Possible Corrective Actions in Response to those Failures.

RSA95650020-10	Driver Simulator Repair Service Analysis
RSA95650053-01	VXI Variable Gain Amplifier Repair Service Analysis
RSA95650095-10	Stimulus MUX IAU CCA Repair Service Analysis
RSA95650095-30	Stimulus MUX IAU CCA Repair Service Analysis
RSA95650095-50	Stimulus MUX IAU CCA Repair Service Analysis
RSA95650132-03	Rack Mount Computer Assembly Repair Service Analysis
RSA95650132-05	Rack Mount Computer Assembly Repair Service Analysis
RSA95650132-30	Rack Mount Computer Assembly Repair Service Analysis
RSA95650132-50	Rack Mount Computer Assembly Repair Service Analysis
RSA95650134-10	Rack Mount Oscilloscope Repair Service Analysis
RSA95650138-30	Cable Tester Assembly Repair Service Analysis
RSA95650142-10	Three-Phase Power Distribution System Repair Service Analysis
RSA95650143-10	Single-Phase Power Distribution System Repair Service Analysis
RSA95650153-10	Uninterruptible Power Supply Repair Service Analysis
RSA95650582-03	Monitor Repair Service Analysis
RSA95650701-01	Digital Oscilloscope Repair Service Analysis

RSA95650702-01	Laser Jet Printer Repair Service Analysis
RSA95650703-01	Monitor Repair Service Analysis
RSA95650705-01	Rack Mount Keyboard Repair Service Analysis
RSAL9668-111-011-01	Pressure Gauge Repair Service Analysis
RSAL9668-111-011-02	Pressure Gauge Repair Service Analysis
RSAL9668-111-012-01	12 Vdc Power Supply Repair Service Analysis
RSAL9668-111-013-01	DC Motor Controller Repair Service Analysis
RSAL9668-111-013-03	DC Motor Controller Repair Service Analysis
RSAL9668-111-014-01	RV Operator Repair Service Analysis
RSAL9668-111-014-03	RV Operator Repair Service Analysis
RSAL9668-111-015-01	Pressure Gauge Repair Service Analysis
RSAL9668-111-015-02	Pressure Gauge Repair Service Analysis
RSAL9668-111-016-01	Pressure Transducer Repair Service Analysis
RSAL9668-111-016-02	Pressure Transducer Repair Service Analysis
RSAL9668-111-016-03	Pressure Transducer Repair Service Analysis
RSAL9668-111-016-04	Pressure Transducer Repair Service Analysis
RSAL9668-111-016-05	Pressure Transducer Repair Service Analysis
RSAL9668-111-020-11	DC Strain Conditioner Repair Service Analysis
RSAL9668-111-020-13	DCV Input Card Repair Service Analysis
RSAL9668-111-020-15	Frequency Input Card Repair Service Analysis
RSAL9668-111-020-19	Quad DC Strain Gauge Card Repair Service Analysis
RSAL9668-111-021-01	16-Channel Circuit Card Repair Service Analysis
RSAL9668-111-021-02	AC Output Relay Repair Service Analysis
RSAL9668-111-021-03	AC Input Relay Repair Service Analysis
RSAL9668-111-021-04	DC Output Relay Repair Service Analysis
RSAL9668-111-022-01	Surface Mount Temperature Transducer Repair Service Analysis
RSAL9668-111-023-01	Gas Filter Repair Service Analysis
RSAL9668-111-023-11	Replacement Filter Repair Service Analysis

# Repair Service Analysis

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RSAL9668-111-024-01	2-Way NO Shutoff Valve Repair Service Analysis	RSAL9668-111-032-01	Manual Shutoff Valve Repair Service Analysis
RSAL9668-111-024-02	2-Way NC Shutoff Valve Repair Service Analysis	RSAL9668-111-033-11	Pushbutton Repair Service Analysis
RSAL9668-111-024-03	3-Way Shutoff Valve (Return Port 1) Repair Service Analysis	RSAL9668-111-033-12	Illuminated Button Repair Service Analysis
RSAL9668-111-024-04	3-Way Shutoff Valve (Return Port 2) Repair Service Analysis	RSAL9668-111-033-13	Lamp Repair Service Analysis
RSAL9668-111-025-01	Gas Regulator Repair Service Analysis	RSAL9668-111-036-01	24 Vdc Power Supply Repair Service Analysis
RSAL9668-111-025-02	Gas Regulator Repair Service Analysis	RSAL9668-111-037-01	45 Vdc Power Supply Repair Service Analysis
RSAL9668-111-026-01	Air Regulator Repair Service Analysis	RSAL9668-111-039-01	Power Outlet Strip Repair Service Analysis
RSAL9668-111-026-02	Air Regulator Repair Service Analysis	RSAL9668-111-041-01	Fuse (Qty. 8) Repair Service Analysis
RSAL9668-111-027-01	Metering Valve Repair Service Analysis	RSAL9668-111-041-03	Fuse (Qty. 8) Repair Service Analysis
RSAL9668-111-027-02	Metering Valve Repair Service Analysis	RSAL9668-111-043-01	Control Relay Repair Service Analysis
RSAL9668-111-027-03	Metering Valve Repair Service Analysis	RSAL9668-111-053-01	Solenoid Valve Repair Service Analysis
RSAL9668-111-028-01	Flowmeter Repair Service Analysis	RSAL9668-111-054-01	Filter Regulator Repair Service Analysis
RSAL9668-111-028-02	Flowmeter Repair Service Analysis	RSAL9668-111-054-11	Filter Replacement Repair Service Analysis
RSAL9668-111-028-03	Flow Signal Conditioner Repair Service Analysis	RSAL9668-111-055-01	Hour meter Repair Service Analysis
RSAL9668-111-030-01	Check Valve Repair Service Analysis	RSAL9668-111-057-01	Restrictor Orifice Repair Service Analysis
RSAL9668-111-030-02	Check Valve Repair Service Analysis	RSAL9668-111-057-02	Restrictor Orifice Repair Service Analysis
RSAL9668-111-030-03	Check Valve Repair Service Analysis	RSAL9668-111-057-03	Restrictor Orifice Repair Service Analysis
RSAL9668-111-030-04	Check Valve Repair Service Analysis	RSAL9668-111-057-04	Restrictor Orifice Repair Service Analysis
RSAL9668-111-031-01	Temperature Probe Repair Service Analysis	RSAL9668-111-058-01	Ullage Volume Repair Service Analysis
		RSAL9668-111-060-01	Gauge Protector Repair Service Analysis
		RSAL9668-111-061-01	Circuit Breaker Repair Service Analysis

# Repair and Calibration Services (where applicable)

RCS02000136-01	RF Pulse Amplifier Repair/Cal Services	RCS94000605-10	RF Output Repair/Cal Services
RCS02000259-01	Programmable DC Electronic Load Repair/Cal Services	RCS94000606-10	RF Controller (BRAT 305/405) Repair/Cal Services
RCS92103572-01	DC Power Supply #1 Repair/Cal Services	RCS94000606-30	RF Controller (BRAT 303/403) Repair/Cal Services
RCS92103572-05	DC Power Supply #2 Repair/Cal Services	RCS94000606-50	RF Controller (JTIDS) Repair/Cal Services
RCS92103573-01	Single-Phase AC Programmable Power Supply Repair/Cal Services	RCS94000606-70	RF Controller (JSTARS) Repair/Cal Services
RCS92103848-01	Pattern Pod Repair/Cal Services	RCS94000833-01	Frequency Extension Module Repair/Cal Services
RCS92103849-01	C-Size Mainframe with Command Module Repair/Cal Services	RCS94000855-01	Microwave Signal Generator Repair/Cal Services
RCS92103850-01	160 MHz Timing I/O Module Repair/Cal Services	RCS94000887-01	DC Power Supply Frame Repair/Cal Services
RCS92103851-01	20 MHz Pattern I/O Module Repair/Cal Services	RCS94000888-01	0 to 7 V Module for DC Power Supply Repair/Cal Services
RCS92103852-01	Terminating 20 MHz Pattern I/O Module Repair/Cal Services	RCS94000889-01	0 to 20 V Module for DC Power Supply Repair/Cal Services
RCS92103855-01	Synchro/Resolver Simulator and Indicator Repair/Cal Services	RCS94000890-01	0 to 32 V Module for DC Power Supply Repair/Cal Services
RCS92103897-01	Timing Pod Repair/Cal Services	RCS94000891-01	0 to 320 V Module for DC Power Supply Repair/Cal Services
RCS92103986-01	VXI Mainframe Command Module Repair/Cal Services	RCS94000982-01	Precision Frequency Reference with Internal Amplifier Repair/Cal Services
RCS92103987-01	VXI Mainframe Repair/Cal Services	RCS94100018-10	Modified Power Supply Repair/Cal Services
RCS93000042-01	400 Hz Three-Phase Power Conditioner and Distribution Box Repair/Cal Services	RCS94100554-10	Phase Balance Module Repair/Cal Services
RCS93000068-01	QUAD 8-Bit Digital Input/Output Latch Repair/Cal Services	RCS94100604-01	Frequency Counter Repair/Cal Services
RCS93000069-01	A/B to C-Size Module Carrier Repair/Cal Services	RCS94100671-10	Waveguide Pressurization Unit and Blower Assembly Repair/Cal Services
RCS93000074-01	64-Channel Relay Multiplexer Repair/Cal Services	RCS94100750-01	Power Distribution Unit Repair/Cal Services
RCS93000075-01	Relay Matrix Repair/Cal Services	RCS94100751-01	Three-Phase Power Supply (Master) Repair/Cal Services
RCS93000076-01	RF Multiplexer Repair/Cal Services	RCS94100752-01	Three-Phase Power Supply (Slave) Repair/Cal Services
RCS93000077-01	6 1/2-Digit Digital Multimeter Repair/Cal Services	RCS94100766-10	Timing Generator Module Repair/Cal Services
RCS93000078-01	High-Performance Universal Counter Repair/Cal Services	RCS94101013-10	Phase Noise Measurement System Reference Source Unit Repair/Cal Services
RCS93000079-01	1-GSa/s Digitizing Oscilloscope Repair/Cal Services	RCS94101013-50	Phase Noise Measurement System Reference Source Unit with Option 02 Repair/Cal Services
RCS93000080-01	Arbitrary Function Generator Repair/Cal Services	RCS94101130-01	Phase Noise Measurement System Repair/Cal Services
RCS93000081-01	21 MHz Synthesized Function/Sweep Generator Repair/Cal Services	RCS94101177-01	136-Channel Logic Analyzer Repair/Cal Services
RCS93000151-01	Local Oscillator Repair/Cal Services	RCS94101201-10	Logic Analyzer Case Assembly Repair/Cal Services
RCS93000152-01	IF Section (100 KHz to 3 MHz) Repair/Cal Services	RCS95000018-03	Microwave Network Analyzer Repair/Cal Services
RCS93000153-01	Graphics Display Repair/Cal Services	RCS95000019-03	MIL-STD-1553A/B Bus Analyzer Simulator Repair/Cal Services
RCS93000154-01	Digitizer Repair/Cal Services	RCS95000045-01	0 to 160 V Module for DC Power Supply Repair/Cal Services
RCS93000155-01	Power Meter Repair/Cal Services	RCS95000049-01	Synchro/Resolver Simulator and Indicator Repair/Cal Services
RCS93000156-03	Modular Synthesized Signal Generator with 1 Hz Resolution Repair/Cal Services	RCS95000340-01	Calibration Kit for the Microwave Network Analyzer Repair/Cal Services
RCS93000172-01	RF Section (100 Hz to 22 GHz) Repair/Cal Services	RCS95000450-10	Auxiliary RF Signal Processor/Matrix Repair/Cal Services
RCS93000173-01	IF Section (10 Hz to 300 KHz) Repair/Cal Services	RCS95000450-50	Auxiliary RF Signal Processor/Matrix Repair/Cal Services
RCS93000200-01	Preamplifier (26.5 GHz) Repair/Cal Services	RCS96000014-01	High Power Mainframe - 6 Slots Repair/Cal Services
RCS93000201-01	System Mainframe Repair/Cal Services	RCS96000014-03	High Power Mainframe - 13 Slots Repair/Cal Services
RCS93000284-01	Digitizing Oscilloscope Repair/Cal Services	RCS96000015-01	Current Sharing Power Supply Repair/Cal Services
RCS93000293-01	Power Sensor Repair/Cal Services	RCS96000015-03	AC Current Sharing Power Supply Repair/Cal Services
RCS93000293-03	Power Sensor Repair/Cal Services	RCS96000016-01	VXI-MXI-2 Kit Repair/Cal Services
RCS93000506-01	32-Channel, 5 A, Form C Switch Repair/Cal Services	RCS96000017-01	VXI-MXI-2 Extender Repair/Cal Services
RCS93000550-30	Three-Phase AC Programmable Power Supply Repair/Cal Services	RCS96000020-01	Programmable Electronic Load Repair/Cal Services
RCS93000550-50	Three-Phase AC Programmable Power Supply with Power Factor Correction Repair/Cal Services	RCS96000022-01	Programmable Load Power Supply Repair/Cal Services
RCS94000104-10	RF Interface Unit (RFIU) Mainframe Repair/Cal Services		
RCS94000603-10	RF Measurement #1 Repair/Cal Services		
RCS94000604-10	RF Converter Repair/Cal Services		

## Repair and Calibration Services (where applicable)

RCS96740017-01	Peak Power Meter Repair/Cal Services	RCS96740045-10	L-Band Signal Conditioning Module Repair/Cal Services
RCS96740017-03	Peak Power Meter Repair/Cal Services	RCS96740070-10	Reference Generator Module Repair/Cal Services
RCS96740019-01	Peak Power Sensor Repair/Cal Services	RCS96740103-10	CPSM Modulator/Demodulator Module Repair/Cal Services
RCS96740019-03	Peak Power Sensor Repair/Cal Services	RCS98715045-01	Blower Assembly Repair/Cal Services
RCS96740021-01	Frequency Synthesizer Repair/Cal Services		
RCS96740022-01/03	Power Amplifier Repair/Cal Services		

## Full Service Repair and Calibration

FSR&C1	Instrument Complexity Level 1.0	FSR&C6	Instrument Complexity Level 6.0
FSR&C2	Instrument Complexity Level 2.0	FSR&C7	Instrument Complexity Level 7.0
FSR&C3	Instrument Complexity Level 3.0	FSR&C8	Instrument Complexity Level 8.0
FSR&C4	Instrument Complexity Level 4.0	FSR&C9	Instrument Complexity Level 9.0
FSR&C5	Instrument Complexity Level 5.0	FSR&C10	Instrument Complexity Level 10.0

## BRAT® Tester Contractor Support

Terms and Conditions Apply (Refer to Appendix C, C-1, C-2, C-3)

BRTSS&R-60-3MO	BRAT® Tester All Inclusive Support & Repairs - up to 60 Testers (for 3 months)	BRTSS&R-90-6MO	BRAT® Tester All Inclusive Support & Repairs - up to 90 Testers (for 6 months)
BRTSS&R-90-3MO	BRAT® Tester All Inclusive Support & Repairs - up to 90 Testers (for 3 months)	BRTSS&R-13	FY13 BRAT® Tester All Inclusive Support & Repairs - up to 60 Testers (for 12 months)
BRTSS&R-60-6MO	BRAT® Tester All Inclusive Support & Repairs - up to 60 Testers (for 6 months)	BRTSS&RA-13	FY13 BRAT® Tester All Inclusive Support & Repairs - 61 to 90 Testers (for 12 months)

## Full Service Calibration - Modules

Terms and Conditions Apply (Refer to Appendix C)

FSC01001522-01	IFF/TACAN Transponder/Interrogator Full Service Calibration Services	FSC20224415-01	AC Power Supply (750W 1 Phase) Full Service Calibration Services
FSC01001527-10	Comm/Nav Module Full Service Calibration Services	FSC20224415-03	AC Power Supply (1500W 3 Phase) Full Service Calibration Services
FSC02000259-01	Programmable DC Electronic Load Full Service Calibration Services	FSC20224415-05	AC Power Supply (1500W 3 Phase) Full Service Calibration Services
FSC02200206-10	Air Data Test Set Case Assembly Full Service Calibration Services	FSC20224606-01	Programmable DC Electronic Load Full Service Calibration Services
FSC02200207-10	Compressor/Vacuum Pump Case Assembly Full Service Calibration Services	FSC93000077-01	6 1/2-Digit Digital Multimeter Full Service Calibration Services
FSC07040317-10	Phase Noise Measurement Module (Enhanced) Obsolescence Mitigation Replacement Full Service Calibration Services	FSC93000078-01	High-Performance Universal Counter Full Service Calibration Services
FSC20172173-10	Power Supply Plate Full Service Calibration Services	FSC93000079-01	1-GSa/s Digitizing Oscilloscope Full Service Calibration Services
FSC20224310-01	2 Channel Oscilloscope / AFG Full Service Calibration Services	FSC93000080-01	Arbitrary Function Generator Full Service Calibration Services
FSC20224311-01	Vector Network Analyzer Full Service Calibration Services	FSC93000081-01	21 MHz Synthesized Function/Sweep Generator Full Service Calibration Services
FSC20224322-01	Digital Multimeter Full Service Calibration Services	FSC93000151-01	Local Oscillator Full Service Calibration Services
FSC20224326-10	1 x 16 RF Mux, Altered Full Service Calibration Services	FSC93000152-01	IF Section (100 KHz to 3 MHz) Full Service Calibration Services
FSC20224335-01	Multifunction I/O Full Service Calibration Services	FSC93000154-01	Digitizer Full Service Calibration Services
		FSC93000155-01	Power Meter Full Service Calibration Services
		FSC93000172-01	RF Section (100 Hz to 22 GHz) Full Service Calibration Services

# Full Service Calibration - Modules

Terms and Conditions Apply (Refer to Appendix C)

FSC93000173-01	IF Section (10 Hz to 300 KHz) Full Service Calibration Services	FSC94101177-01	136-Channel Logic Analyzer Full Service Calibration Services
FSC93000200-01	Preamplifier (26.5 GHz) Full Service Calibration Services	FSC95000018-03	Microwave Network Analyzer Full Service Calibration Services
FSC93000221-10	RF Measurement #2 Full Service Calibration Services	FSC95000049-01	Synchro/Resolver Simulator and Indicator Full Service Calibration Services
FSC93000284-01	Digitizing Oscilloscope Full Service Calibration Services	FSC95000340-01	Calibration Kit for Microwave Network Analyzer Full Service Calibration Services
FSC93000293-01	Power Sensor Full Service Calibration Services	FSC96740017-01	Peak Power Meter Full Service Calibration Services
FSC93000293-03	Power Sensor Full Service Calibration Services	FSC96740017-03	Peak Power Meter Full Service Calibration Services
FSC93000318-10	Synchronizer #1 Full Service Calibration Services	FSC96740019-01	Peak Power Sensor Full Service Calibration Services
FSC93000499-01	Microwave Radiation Detector Full Service Calibration Services	FSC96740019-03	Peak Power Sensor Full Service Calibration Services
FSC94000603-10	RF Measurement #1 Full Service Calibration Services	FSC96740021-01	Frequency Synthesizer Full Service Calibration Services
FSC94000604-10	RF Converter Full Service Calibration Services	FSC96740045-10	L-Band Signal Conditioning Module Full Service Calibration Services
FSC94000605-10	RF Output Full Service Calibration Services	FSC96740070-10	Reference Generator Module Full Service Calibration Services
FSC94000606-10	RF Controller (BRAT 305/405) Full Service Calibration Services	FSC96740103-10	CPSM Modulator/Demodulator Module Full Service Calibration Services
FSC94000606-50	RF Controller (JTIDS) Full Service Calibration Services	FSCBRAT B303C OMR	BRAT B303C Enhanced Obsolescence Mitigation Replacement Full Service Calibration Services (Including a Separately Calibrated Enhanced Phase Noise Measurement Module and a Separately Calibrated RF Controller [Enhanced Phase Noise])
FSC94000606-70	RF Controller (JSTARS) Full Service Calibration Services	FSCBRAT B303C OMR-1	BRAT B303C Enhanced Obsolescence Mitigation Replacement Full Service Calibration Services (Including all Calibratable Instruments in BRAT B303C)
FSC94000855-01	Microwave Signal Generator Full Service Calibration Services	FSCBRAT B303C(V1)	BRAT B303C(V1) Enhanced Full Service Calibration Services (excluding Phase Noise Measurement Module)
FSC94000982-01	Precision Frequency Reference with Internal Amplifier Full Service Calibration Services		
FSC94001013-01	50 MHz Attenuator Full Service Calibration Services		
FSC94100554-10	Phase Balance Module Full Service Calibration Services		
FSC94100604-01	Frequency Counter Full Service Calibration Services		
FSC94100766-10	Timing Generator Module Full Service Calibration Services		
FSC94101013-50	Phase Noise Measurement System Reference Source Unit Full Service Calibration Services		
FSC94101130-01	Phase Noise Measurement System Full Service Calibration Services		

**Note 1** - Available at Warner Robins and Hill Air Force Bases

# Full Service Repair for Electrical, Mechanical, and Electronic Components

## INSTRUMENTS, ELECTRICAL AND MECHANICAL ASSEMBLIES, FIXTURES, AND COMPONENTS

This group consists of six levels ranging from Complexity 0 to Complexity 5, with level 5 the most complex. Within each complexity, nine additional subcomplexity levels exist.

Example: Electrical, Mechanical, and Electronic Components Full Service Repair - Complexity 3.0 to 3.9

## Full Service Repair Services (Replacement Instrument Acceptable)

Terms and Conditions Apply (Refer to Appendix C)

FSR01001522-01	IFF/TACAN Transponder/Interrogator Full Service Repair Services	FSR92103852-01	Terminating 20 MHz Pattern I/O Module Full Service Repair Services
FSR01001527-10	Comm/Nav Module Full Service Repair Services	FSR92103855-01	Synchro/Resolver Simulator and Indicator Full Service Repair Services
FSR01001599-01	USB Controller Full Service Repair Services	FSR92103897-01	Timing Pod Full Service Repair Services
FSR02000136-01	RF Pulse Amplifier Full Service Repair Services	FSR92103986-01	VXI Mainframe Command Module Full Service Repair Services
FSR02000259-01	Programmable DC Electronic Load Full Service Repair Services	FSR92103987-01	VXI Mainframe Full Service Repair Services
FSR02200108-01	Air Data Test Set Full Service Repair Services	FSR92104000-10	Computer Assembly (BRAT 105/305) Full Service Repair Services
FSR02200132-10	Vacuum Pump (Modified) Full Service Repair Services	FSR93000042-01	400 Hz Three-Phase Power Conditioner and Distribution Box Full Service Repair Services
FSR02200132-30	Vacuum Pump (Modified) Full Service Repair Services	FSR93000068-01	QUAD 8-Bit Digital Input/Output Latch Full Service Repair Services
FSR02200132-50	Compressor (Modified) Full Service Repair Services	FSR93000069-01	A/B to C-Size Module Carrier Full Service Repair Services
FSR02200206-10	Air Data Test Set Case Assembly Full Service Repair Services	FSR93000074-01	64-Channel Relay Multiplexer Full Service Repair Services
FSR02200207-10	Compressor/Vacuum Pump Case Assembly Full Service Repair Services	FSR93000075-01	Relay Matrix Full Service Repair Services
FSR02300503-01	Controller Full Service Repair Services	FSR93000076-01	RF Multiplexer Full Service Repair Services
FSR02300508-01	Combination HUD Fixture/Alignment Tool Full Service Repair Services	FSR93000077-01	6 1/2-Digit Digital Multimeter Full Service Repair Services
FSR02300509-01	Light Shroud Full Service Repair Services	FSR93000078-01	High-Performance Universal Counter Full Service Repair Services
FSR02300515-01	Boresight Bench Full Service Repair Services	FSR93000079-01	1-GSa/s Digitizing Oscilloscope Full Service Repair Services
FSR02300522-10	Transport/Camera Assembly Full Service Repair Services	FSR93000080-01	Arbitrary Function Generator Full Service Repair Services
FSR02300530-01	C-Size VXI Mainframe - 4 Slots Full Service Repair Services	FSR93000081-01	21 MHz Synthesized Function/Sweep Generator Full Service Repair Services
FSR07030001-10	Z50 Digital VXI Module Full Service Repair Services	FSR93000151-01	Local Oscillator Full Service Repair Services
FSR07040313-10	RF Controller (RF Deck) Obsolescence Mitigation Replacement Full Service Repair Services	FSR93000152-01	IF Section (100 KHz to 3 MHz) Full Service Repair Services
FSR07040313-30	RF Controller (Enhanced Phase Noise) Obsolescence Mitigation Replacement - SW subject to License - Full Service Repair Services	FSR93000153-01	Graphics Display Full Service Repair Services
FSR07040313-90	RF Controller (Comm/Nav) Full Service Repair Services	FSR93000154-01	Digitizer Full Service Repair Services
FSR07040317-10	Phase Noise Measurement Module (Enhanced) Obsolescence Mitigation Replacement Full Service Repair Services	FSR93000155-01	Power Meter Full Service Repair Services
FSR92103573-01	Single-Phase AC Programmable Power Supply Full Service Repair Services	FSR93000172-01	RF Section (100 Hz to 22 GHz) Full Service Repair Services
FSR92103848-01	Pattern Pod Full Service Repair Services	FSR93000173-01	IF Section (10 Hz to 300 KHz) Full Service Repair Services
FSR92103850-01	160 MHz Timing I/O Module Full Service Repair Services	FSR93000200-01	Preamplifier (26.5 GHz) Full Service Repair Services
FSR92103851-01	20 MHz Pattern I/O Module Full Service Repair Services	FSR93000201-01	System Mainframe Full Service Repair Services
		FSR93000284-01	Digitizing Oscilloscope Full Service Repair Services

# Full Service Repair Services (Replacement Instrument Acceptable)

Terms and Conditions Apply (Refer to Appendix C)

FSR93000293-01	Power Sensor Full Service Repair Services	FSR96000001-01	50 MHz Digital Interface Timing Module Full Service Repair Services
FSR93000293-03	Power Sensor Full Service Repair Services	FSR96000001-03	50 MHz Timing/Control Module Full Service Repair Services
FSR93000506-01	32-Channel, 5 A, Form C Switch Full Service Repair Services	FSR96000002-01	50 MHz TTL/CMOS/ECL Pattern Module Full Service Repair Services
FSR93000550-30	Three-Phase AC Programmable Power Supply Full Service Repair Services	FSR96000007-01	50 MHz Variable Level Pattern Module Full Service Repair Services
FSR94000104-10	RF Interface Unit (RFIU) Mainframe Full Service Repair Services	FSR96000012-01	32-Channel Differential ECL I/O Module Full Service Repair Services
FSR94000603-10	RF Measurement #1 Full Service Repair Services	FSR96000013-01	Timing Module Extension Card (Dual) Full Service Repair Services
FSR94000604-10	RF Converter Full Service Repair Services	FSR96000013-03	Timing Module Extension Card (Single) Full Service Repair Services
FSR94000605-10	RF Output Full Service Repair Services	FSR96000014-01	High Power Mainframe - 6 Slots Full Service Repair Services
FSR94000606-10	RF Controller (BRAT 305/405) Full Service Repair Services	FSR96000014-03	High Power Mainframe - 13 Slots Full Service Repair Services
FSR94000606-50	RF Controller (JTIDS) Full Service Repair Services	FSR96000015-01	Current Sharing Power Supply Full Service Repair Services
FSR94000606-70	RF Controller (JSTARS) Full Service Repair Services	FSR96000016-01	VXI-MXI-2 Kit Full Service Repair Services
FSR94000855-01	Microwave Signal Generator Full Service Repair Services	FSR96000017-01	VXI-MXI-2 Extender Full Service Repair Services
FSR94000887-01	DC Power Supply Frame Full Service Repair Services	FSR96000020-01	Programmable Electronic Load Full Service Repair Services
FSR94000888-01	0 to 7 V Module for DC Power Supply Full Service Repair Services	FSR96000021-01	1 KW Programmable Power Supply Full Service Repair Services
FSR94000889-01	0 to 20 V Module for DC Power Supply Full Service Repair Services	FSR96000105-01	PCI-MXI-2 CCA Full Service Repair Services
FSR94000890-01	0 to 32 V Module for DC Power Supply Full Service Repair Services	FSR96648363-10	Input/Output Drawer Assembly Full Service Repair
FSR94000891-01	0 to 320 V Module for DC Power Supply Full Service Repair Services	FSR96648365-10	High Voltage Isolated Load Assembly Full Service Repair
FSR94000982-01	Precision Frequency Reference with Internal Amplifier Full Service Repair Services	FSR96648400-10	Low Voltage Isolated Load Assembly Full Service Repair
FSR94100312-10	Computer Assembly (BRAT 205/405) Full Service Repair Services	FSR96648428-10	Lamp Driver CCA Full Service Repair
FSR94100500-130	Electronic Power Control Center - Single Phase Full Service Repair Services	FSR96648730-10	Switching Regulator Enclosure Assembly Full Service Repair
FSR94100500-370/-50	Electronic Power Control Center - RF Rack/Single Phase Full Service Repair Services	FSR96648818-10	Cathode Monitor Control Assembly CCA Full Service Repair
FSR94100554-10	Phase Balance Module Full Service Repair Services	FSR96648819-10	Cathode Monitor Relay Assembly Full Service Repair
FSR94100604-01	Frequency Counter Full Service Repair Services	FSR96648834-10	Video Selector CCA Full Service Repair
FSR94100750-01	Power Distribution Unit Full Service Repair Services	FSR96648840-10	Ground Deck Pulser CCA Full Service Repair
FSR94100751-01	Three-Phase Power Supply (Master) Full Service Repair Services	FSR96648843-10	Clock Driver CCA Full Service Repair
FSR94100752-01	Three-Phase Power Supply (Slave) Full Service Repair Services	FSR96648846-10	Protection & Control CCA Full Service Repair
FSR94100766-10	Timing Generator Module Full Service Repair Services	FSR96648919-10	ITA Cable Set Full Service Repair
FSR94101013-50	Phase Noise Measurement System Reference Source Unit Full Service Repair Services	FSR96648920-10	Frame Harness Assembly Full Service Repair
FSR94101130-01	Phase Noise Measurement System Full Service Repair Services	FSR96740017-01	Peak Power Meter Full Service Repair Services
FSR94101177-01	136-Channel Logic Analyzer Full Service Repair Services	FSR96740017-03	Peak Power Meter Full Service Repair Services
FSR95000018-03	Microwave Network Analyzer Full Service Repair Services	FSR96740019-01	Peak Power Sensor Full Service Repair Services
FSR95000019-03	MIL-STD-1553A/B Bus Analyzer Simulator Full Service Repair Services	FSR96740019-03	Peak Power Sensor Full Service Repair Services
FSR95000045-01	0 to 160 V Module for DC Power Supply Full Service Repair Services	FSR96740021-01	Frequency Synthesizer Full Service Repair Services
FSR95000049-01	Synchro/Resolver Simulator and Indicator Full Service Repair Services	FSR96740022-03	Power Amplifier Full Service Repair Services
FSR95000340-01	Microwave Network Analyzer Calibration Kit Full Service Repair Services	FSR96740045-10	L-Band Signal Conditioning Module Full Service Repair Services
FSR95000450-10	Auxiliary RF Signal Processor/Matrix Full Service Repair Services	FSR96740070-10	Reference Generator Module Full Service Repair Services
FSR95000450-50	Auxiliary RF Signal Processor/Matrix Full Service Repair Services	FSR96740103-10	CPSM Modulator/Demodulator Module Full Service Repair Services
		FSR98000100-30	Programmable Video Generator and Analyzer Module (A-10) Full Service Repair Services
		FSR98715045-01	Blower Assembly Full Service Repair Services

# Full Service Components

## CABLES, CONNECTORS, AND ADAPTERS - COMPLEXITY LEVEL 1 - Terms and Conditions Apply (Refer to Appendix C)

<b>FSP92105226-COM1</b>	<b>Cables, Connectors, and Adapters - Complexity Level 1 Full Service Components</b>	FSP02200208-10	Power Distribution Panel Assembly Full Service Components
FSP01000199-30	B520 I/O Cable Assembly Full Service Components	FSP94100238-10	160-Pin, 50 Ohm Point to Point Cable Full Service Components
FSP01000199-50	B520 I/O Cable Assembly Full Service Components	FSP94100799-10	AC Power Interface Drawer Assembly Full Service Components
FSP01000199-70	B520 I/O Cable Assembly Full Service Components	FSP96000063-10	RFI Receiver Panel Full Service Components
FSP02000133-10	Isolated GPIB Expander Assembly Full Service Components	FSP96000063-30	RFI Receiver Panel Full Service Components
		FSP96000097-10	Self Test Plug Full Service Components

# Full Service Components

## CABLES, CONNECTORS, AND ADAPTERS - COMPLEXITY LEVEL 2 - Terms and Conditions Apply (Refer to Appendix C)

<b>FSP92105226-COM2</b>	<b>Cables, Connectors, and Adapters - Complexity Level 2 Full Service Components</b>	FSP02200219-90	Air Data Test Set Hose Assembly Full Service Components
FSP00002602-10	RF Detector Cable Assembly Full Service Components	FSP02200220-10	Compressor/Vacuum Pump Hose Assembly Full Service Components
FSP02000114-10	Digital Interconnect Cable Full Service Components	FSP02200220-30	Compressor/Vacuum Pump Hose Assembly Full Service Components
FSP02000116-10	Cable Assembly Full Service Components	FSP02200220-50	Compressor/Vacuum Pump Hose Assembly Full Service Components
FSP02000117-10	Cable Assembly Full Service Components	FSP02200221-10	Compressor/Vacuum Pump Hose Assembly Full Service Components
FSP02000117-30	Cable Assembly Full Service Components	FSP02300525-10	Video Cable Assembly Full Service Components
FSP02000117-50	Cable Assembly Full Service Components	FSP02300536-10	Power Input Cable Assembly Full Service Components
FSP02000117-70	Cable Assembly Full Service Components	FSP02300537-01	Boresight Bench Leg (Left) Full Service Components
FSP02000120-10	Cable Assembly Full Service Components	FSP02300537-02	Boresight Bench Leg (Right) Full Service Components
FSP02000122-10	Cable Assembly Full Service Components	FSP02300537-03	Boresight Bench Leg (Center) Full Service Components
FSP02000124-10	Cable Assembly Full Service Components	FSP92103566-10	System Cable Full Service Components
FSP02000125-10	Cable Assembly Full Service Components	FSP92103582-10	System Cable Full Service Components
FSP02000129-10	Power Cable Full Service Components	FSP92103583-30	System Cable Full Service Components
FSP02200210-10	PT Exhaust Pressure Hose Assembly Full Service Components	FSP92103583-50	System Cable Full Service Components
FSP02200210-30	PS Exhaust Pressure Hose Assembly Full Service Components	FSP92103748-10	DC Power and VXI Synchro Self Test Cable Full Service Components
FSP02200211-10	PT Hose Assembly Full Service Components	FSP92103749-10	High Frequency Self Test Cable Full Service Components
FSP02200211-30	PS Hose Assembly Full Service Components	FSP92103750-10	Four-Wire Resistance Self Test Cable Full Service Components
FSP02200216-01	Air Data Test Set Rear Panel Full Service Components	FSP92103751-10	Two-Wire Resistance Self Test Cable Full Service Components
FSP02200217-10	Compressor/Vacuum Pump Rear Panel Assembly Full Service Components	FSP92103770-10	Shorting Plug Self Test Cable Full Service Components
FSP02200218-10	Air Supply Hose Assembly Full Service Components	FSP92103877-10	One-Wire Resistance Self Test Cable Full Service Components
FSP02200219-10	Air Data Test Set Hose Assembly Full Service Components		
FSP02200219-30	Air Data Test Set Hose Assembly Full Service Components		
FSP02200219-50	Air Data Test Set Hose Assembly Full Service Components		
FSP02200219-70	Air Data Test Set Hose Assembly Full Service Components		

# Full Service Components

## CABLES, CONNECTORS, AND ADAPTERS - COMPLEXITY LEVEL 2 - Terms and Conditions Apply (Refer to Appendix C)

FSP92103878-10	Static Digital Self Test Cable Full Service Components	FSP94100777-10	Auxiliary AC Output Cable Full Service Components
FSP92103879-10	Dynamic Digital Self Test Cable Full Service Components	FSP94100864-10	Cable Assembly Full Service Components
FSP92103903-10	N/A Synchro Self Test Cable Full Service Components	FSP94101108-10	Emergency Stop Cable Full Service Components
FSP92103914-10	BRAT® Power Cable Full Service Components	FSP94101204-10	Adapter CCA Full Service Components
FSP92103916-10	Self Test Cable Full Service Components	FSP94101204-30	Adapter CCA Full Service Components
FSP92103917-10	Power Supply Cable Full Service Components	FSP96000038-10	6-Module Front Panel Full Service Components
FSP92103927-10	Custom Switch Self Test Cable Full Service Components	FSP96000067-10	Power Output Cable Full Service Components
FSP92103940-10	Power Distribution Panel Full Service Components	FSP96000072-01	Straight/Bulkhead MXI-2 Cable Full Service Components
FSP92103940-30	Power Distribution Panel Full Service Components	FSP96000089-10	Self Test Cable Full Service Components
FSP92103940-90	Power Distribution Panel Full Service Components	FSP96000094-10	Power Output Bulkhead Cable Full Service Components
FSP92103940-130	Power Distribution Panel Full Service Components	FSP96000143-10	Shorting Plug - Option 500 Full Service Components
FSP92103940-210	Power Distribution Panel Full Service Components	FSP96000148-10	RFI-VXI I/O Cable Assembly Full Service Components
FSP94000500-50	RF Coaxial Cable Full Service Components	FSP96000148-30	RFI-VXI I/O Cable Assembly Full Service Components
FSP94100017-10	DC Power Output Cable Full Service Components	FSP96000148-50	RFI-VXI I/O Cable Assembly Full Service Components
FSP94100019-10	AC Power Output Cable Full Service Components	FSP96000150-10	DCPS Loads Cable Assembly Full Service Components
FSP94100121-10	AC I/O Cable Full Service Components	FSP96000151-10	DCPS Loads Cable Assembly Full Service Components
FSP94100134-10	DC I/O Cable Full Service Components	FSP96000152-10	ECL Module I/O Cable Assembly Full Service Components
FSP94100184-10	MMS Interconnect Cable Full Service Components	FSP96000160-10	Timing Module I/O Cable Assembly Full Service Components
FSP94100189-10	MMS 3 I/O Cable Full Service Components	FSP96000173-10	504 Self Test Case Assembly Full Service Components
FSP94100195-10	RFIU I/O Cable Full Service Components	FSP96200010-10	1330 Latch Cable Full Service Components
FSP94100204-10	DCPS External Channel Cable Full Service Components	FSP96200013-10	CCA Housing Full Service Components
FSP94100206-10	MSIB Cable Full Service Components	FSP96200013-30	CCA Housing Full Service Components
FSP94100206-30	MSIB Cable Full Service Components	FSP96200013-50	CCA Housing Full Service Components
FSP94100209-10	MSIB Interconnect Cable Full Service Components	FSP96200013-70	CCA Housing Full Service Components
FSP94100223-10	Syn 3 I/O Cable Full Service Components	FSP96200013-90	CCA Housing Full Service Components
FSP94100233-10	Point to Point Twisted Pair Cable Full Service Components	FSP96200026-10	30-Pin, 50 Ω Point to Point Cable Full Service Components
FSP94100233-30	Point to Point Twisted Pair Cable Full Service Components	FSP96200027-10	30-Pin, Twisted Pair Cable Full Service Components
FSP94100234-10	50 Ω Point to Point Cable Full Service Components	FSP96200028-10	24-Pin, 50 Ω Point to Point Cable Full Service Components
FSP94100234-30	50 Ω Point to Point Cable Full Service Components	FSP96200029-10	24-Pin, Twisted Pair Cable Full Service Components
FSP94100239-10	VXI I/O Cable Full Service Components	FSP96200045-10	System Cable Full Service Components
FSP94100241-10	VXI I/O Cable Full Service Components	FSP96740304-10	RF Cable Assembly Full Service Components
FSP94100244-10	VXI I/O Cable Full Service Components	FSP96740310-10	Cable Assembly Full Service Components
FSP94100249-10	Power Cable Full Service Components	FSP96740432-10	Reference Self Test Cable Full Service Components
FSP94100329-10	DC Load I/O Cable Full Service Components	FSP96740433-10	Frequency Self Test Cable Full Service Components
FSP94100390-10	Point to Point Twisted Pair Cable Full Service Components	FSP96740996-10	CPSM Self Test Cable Full Service Components
FSP94100391-10	50 Ω Point to Point Cable Full Service Components	FSP96741022-10	ECL Self Test Cable Full Service Components
FSP94100776-10	Auxiliary AC Control Cable Full Service Components	FSP96741081-10	Termination Plug Full Service Components

# Full Service Components

## CABLES, CONNECTORS, AND ADAPTERS - COMPLEXITY LEVEL 3 - Terms and Conditions Apply (Refer to Appendix C)

### FSP92105226-COM3 Cables, Connectors, and Adapters - Complexity Level 3 Full Service Components

FSP02000113-10	Peak Power and Frequency Cable Full Service Components	FSP94100202-10	DC Master/Slave Cable Full Service Components
FSP02000134-10	Power Cable Full Service Components	FSP94100221-10	Syn 3 Cable Full Service Components
FSP02200214-01	Service Access Panel Full Service Components	FSP94100227-10	Three-Phase Power I/O Cable Full Service Components
FSP02300505-01	Accessory Cable Full Service Components	FSP94100237-10	Point to Point Cable Full Service Components
FSP02300517-10	BNC to BNC Cable Assembly Full Service Components	FSP94100318-10	SPD Cable Full Service Components
FSP92103911-10	DC Voltage Test Self Test Cable Full Service Components	FSP94100328-10	Electronic Load Output Cable Full Service Components
FSP92103915-10	BNC Plug to BNC Plug Self Test Cable Full Service Components	FSP94100342-10	IEEE Extension Cable Full Service Components
FSP92103915-30	BNC Plug to BNC Plug Self Test Cable Full Service Components	FSP94100352-10	DB25 Male/Female Cable Full Service Components
FSP92103931-10	RF Self Test Cable Full Service Components	FSP94100357-10	Printer Case Full Service Components
FSP92103932-10	Type N to Type N RF Cable Full Service Components	FSP94100373-10	Comm Port I/O Cable Full Service Components
FSP92103932-50	Type N to Type N RF Cable Full Service Components	FSP94100407-10	Power Module Cable Full Service Components
FSP92103937-10	VXI Precision Resistor Full Service Components	FSP94100420-10	Type N Plug to Type N Plug Cable Full Service Components
FSP92103975-30	Electronic Load I/O Cable Full Service Components	FSP94100421-10	SMA Plug to Type N Bulkhead Armored Cable Assembly Full Service Components
FSP92103990-10	SPD I-Q/Atten Self Test Cable Full Service Components	FSP94100428-10	Computer Cooling Fan Full Service Components
FSP92105070-10	DDP Self Test Cable Assembly Full Service Components	FSP94100429-10	Reset Switch Full Service Components
FSP94000714-10	RF Cable Full Service Components	FSP94100430-10	Computer LED Full Service Components
FSP94100101-10	Three-Phase AC Power Input Cable Full Service Components	FSP94100572-10	IF I/O Cable Full Service Components
FSP94100174-10	MMS 1 I/O Cable Full Service Components	FSP94100573-10	Type N to Type N Bulkhead Cable Full Service Components
FSP94100175-10	AC Power Input Cable Full Service Components	FSP94100586-10	Power Sensor Cable Full Service Components
FSP94100175-30	AC Power Input Cable Full Service Components	FSP94100586-30	Power Sensor Cable Full Service Components
FSP94100175-50	AC Power Input Cable Full Service Components	FSP94100679-10	Waveguide and Blower Assembly Cable Full Service Components
FSP94100175-70	AC Power Input Cable Full Service Components	FSP94100744-10	Inner Auxiliary AC Control Cable Full Service Components
FSP94100185-30	Power Input Cable Full Service Components	FSP94100745-10	Auxiliary AC Power Output Cable Full Service Components
FSP94100185-50	Power Input Cable Full Service Components	FSP94100778-10	Auxiliary AC Slave Cable Full Service Components
FSP94100188-10	MMS 2 I/O Cable Full Service Components	FSP94100780-10	SW PDU Control Cable Full Service Components
FSP94100192-10	BNC to SMB Cable Full Service Components	FSP94100866-10	Power Input Cable Full Service Components
		FSP94101100-10	Rear Panel Assembly Full Service Components
		FSP95000600-10	Type N Plug to SMA Plug Signal Processor Drawer Self Test Cable Full Service Components

# Full Service Components

## CABLES, CONNECTORS, AND ADAPTERS - COMPLEXITY LEVEL 3 - Terms and Conditions Apply (Refer to Appendix C)

FSP95000601-10	SMA Plug to SMA Plug Signal Processor Drawer Test Cable Full Service Components	FSP96200041-10	Ground Cable Full Service Components
FSP95000602-10	TNC Plug to SMA Plug Signal Processor Drawer Test Cable Full Service Components	FSP96200050-10	Switch 2 to Switch 3 Cable Full Service Components
FSP95000603-10	Type N Plug to TNC Plug Armored Test Cable Full Service Components	FSP96200059-10	Station Ground Cable Full Service Components
FSP95000603-30	Type N Plug to TNC Plug Armored Test Cable Full Service Components	FSP96648240-30	SMA Plug to SMB Plug RF Cable Assembly Full Service Components
FSP96000059-10	32-Pin Point to Point Cable Full Service Components	FSP96740292-10	Cable Assembly Full Service Components
FSP96000068-10	DCPS Loads Cable Full Service Components	FSP96740293-10	Cable Assembly Full Service Components
FSP96000068-30	DCPS Loads Cable Full Service Components	FSP96740294-10	Cable Assembly Full Service Components
FSP96000069-10	Sense and Signal Cable Full Service Components	FSP96740295-10	Cable Assembly Full Service Components
FSP96000071-01	Right Angle/Bulkhead MXI-2 Cable Full Service Components	FSP96740311-10	Cable Assembly Full Service Components
FSP96000144-10	200-Pin Shorting Plug CCA Full Service Components	FSP96740311-30	Cable Assembly Full Service Components
FSP96200031-10	Switch 1 to Switch 2 Cable Full Service Components	FSP96740311-50	Cable Assembly Full Service Components
FSP96200032-10	Switch 1 to DMM Cable Full Service Components	FSP96740311-70	Cable Assembly Full Service Components
		FSP96740312-10	Cable Assembly Full Service Components
		FSP96740313-10	Cable Assembly Full Service Components
		FSP96740437-10	RF Self Test Cable Full Service Components
		FSP96740437-30	RF Self Test Cable Full Service Components
		FSP96740437-50	RF Self Test Cable Full Service Components
		FSP99000049-30	Rear Panel Assembly Full Service Components

# Full Service Components

## CABLES, CONNECTORS, AND ADAPTERS - COMPLEXITY LEVEL 4 - Terms and Conditions Apply (Refer to Appendix C)

<b>FSP92105226-COM4 Cables, Connectors, and Adapters - Complexity Level 4 Full Service Components</b>			
FSP02000109-10	Remote ON/OFF Cable Full Service Components	FSP92103870-10	BNC Component Holder Full Service Components
FSP02000119-10	Cable Assembly Full Service Components	FSP93000205-10	Type N Plug to SMA Jack Semi-Rigid Coaxial Cable Full Service Components
FSP02000119-30	Cable Assembly Full Service Components	FSP93000207-10	Type N Plug to SMA Jack Semi-Rigid Coaxial Cable Full Service Components
FSP02000121-10	Cable Assembly Full Service Components	FSP93000211-10	Type N Plug to Type N Plug Semi-Rigid Coaxial Cable Full Service Components
FSP02000123-10	Cable Assembly Full Service Components	FSP93000214-10	Type N Plug to Type N Plug Semi-Rigid Coaxial Cable Full Service Components
FSP02000141-10	BNC Plug to BNC Plug Cable Full Service Components	FSP93000215-10	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service Components
FSP92103570-10	System Cable Full Service Components	FSP93000215-30	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service Components
FSP92103570-30	System Cable Full Service Components	FSP93000215-50	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service Components
FSP92103570-50	System Cable Full Service Components	FSP93000215-70	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service Components
FSP92103570-70	System Cable Full Service Components	FSP93000215-90	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service Components
FSP92103696-01	GPIB Cable Full Service Components	FSP93000217-10	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service Components
FSP92103820-10	System Cable Full Service Components	FSP93000217-30	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service Components
FSP92103820-30	System Cable Full Service Components	FSP93000217-50	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service Components
FSP92103820-50	System Cable Full Service Components	FSP93000217-70	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service Components
FSP92103820-70	System Cable Full Service Components	FSP93000217-90	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service Components
FSP92103820-90	System Cable Full Service Components	FSP93000319-10	Type N Plug to Type N Plug Semi-Rigid Coaxial Cable Full Service Components
FSP92103820-110	System Cable Full Service Components	FSP93000320-10	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service Components
FSP92103820-130	System Cable Full Service Components	FSP94000283-10	BNC Bulkhead Jack to SMB Bulkhead Jack Flexible Coaxial Cable Full Service Components
FSP92103820-150	System Cable Full Service Components	FSP94000289-10	Type N Bulkhead Jack to SMA Bulkhead Jack Flexible Coaxial Cable Full Service Components
FSP92103820-170	System Cable Full Service Components	FSP94000429-10	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service Components
FSP92103820-190	System Cable Full Service Components	FSP94000429-30	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service Components
FSP92103820-210	System Cable Full Service Components	FSP94000429-50	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service Components
FSP92103820-230	System Cable Full Service Components	FSP94000429-70	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service Components
FSP92103820-250	System Cable Full Service Components	FSP94000429-90	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service Components
FSP92103820-270	System Cable Full Service Components	FSP94000429-110	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service Components
FSP92103821-10	SMB Plug to BNC Plug Cable Full Service Components	FSP94000429-130	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service Components
FSP92103821-30	SMB Plug to BNC Plug Cable Full Service Components	FSP94000429-150	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service Components
FSP92103821-50	SMB Plug to BNC Plug Cable Full Service Components	FSP94000431-30	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components
FSP92103821-70	SMB Plug to BNC Plug Cable Full Service Components	FSP94000431-50	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components
FSP92103821-90	SMB Plug to BNC Plug Cable Full Service Components		
FSP92103821-110	SMB Plug to BNC Plug Cable Full Service Components		
FSP92103821-130	SMB Plug to BNC Plug Cable Full Service Components		
FSP92103821-150	SMB Plug to BNC Plug Cable Full Service Components		
FSP92103821-170	SMB Plug to BNC Plug Cable Full Service Components		
FSP92103821-190	SMB Plug to BNC Plug Cable Full Service Components		
FSP92103821-210	SMB Plug to BNC Plug Cable Full Service Components		
FSP92103821-230	SMB Plug to BNC Plug Cable Full Service Components		
FSP92103821-250	SMB Plug to BNC Plug Cable Full Service Components		
FSP92103821-270	SMB Plug to BNC Plug Cable Full Service Components		
FSP92103821-290	SMB Plug to BNC Plug Cable Full Service Components		

# Full Service Components

## CABLES, CONNECTORS, AND ADAPTERS - COMPLEXITY LEVEL 4 - Terms and Conditions Apply (Refer to Appendix C)

FSP94000431-70	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	FSP94000841-90	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
FSP94000431-90	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	FSP94000841-110	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
FSP94000431-110	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	FSP94000841-130	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
FSP94000431-130	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	FSP94000841-150	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
FSP94000431-150	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	FSP94000841-170	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
FSP94000431-170	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	FSP94000841-190	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
FSP94000431-190	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	FSP94000841-210	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
FSP94000431-210	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	FSP94000841-230	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
FSP94000431-230	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	FSP94000841-250	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
FSP94000431-250	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	FSP94000841-270	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
FSP94000431-270	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	FSP94000841-290	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
FSP94000431-290	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	FSP94000841-310	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
FSP94000431-310	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	FSP94000841-330	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
FSP94000431-330	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	FSP94000841-350	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
FSP94000431-350	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	FSP94000841-370	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
FSP94000431-370	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	FSP94000885-30	Type N Plug to SMA Plug Flexible Coaxial Cable Full Service Components
FSP94000431-390	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	FSP94000942-10	Right Angle SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components
FSP94000431-410	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	FSP94100176-10	Strain Relief Cable Full Service Components
FSP94000431-430	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service Components	FSP94100176-30	Strain Relief Cable Full Service Components
FSP94000436-10	Right Angle SMA Plug to Right Angle SMA Plug Flexible Coaxial Cable Full Service Components	FSP94100176-50	Strain Relief Cable Full Service Components
FSP94000836-10	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components	FSP94100176-70	Strain Relief Cable Full Service Components
FSP94000836-30	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components	FSP94100257-10	RF Power Cord Full Service Components
FSP94000836-50	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components	FSP94100257-30	RF Power Cord (10 A - Europe) Full Service Components
FSP94000836-70	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components	FSP94100257-50	RF Power Cord (16/21 A - US) Full Service Components
FSP94000836-90	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components	FSP94100678-10	Blower Cable Full Service Components
FSP94000841-10	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components	FSP94100723-10	Waveguide and Blower Assembly Cable Full Service Components
FSP94000841-30	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components	FSP94100865-10	Facility Ground Cable Full Service Components
FSP94000841-50	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components	FSP94101036-10	Blower Hose Assembly Full Service Components
FSP94000841-70	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service Components	FSP95000279-10	SMA Plug to SMA Plug Coaxial Cable Full Service Components
		FSP95000279-30	SMA Plug to SMA Plug Coaxial Cable Full Service Components
		FSP95000279-50	SMA Plug to SMA Plug Coaxial Cable Full Service Components
		FSP95000279-70	SMA Plug to SMA Plug Coaxial Cable Full Service Components
		FSP95000279-90	SMA Plug to SMA Plug Coaxial Cable Full Service Components

# Full Service Components

## CABLES, CONNECTORS, AND ADAPTERS - COMPLEXITY LEVEL 4 - Terms and Conditions Apply (Refer to Appendix C)

FSP95000279-110	SMA Plug to SMA Plug Coaxial Cable Full Service Components	FSP95000281-10	SMB Plug to SMB Plug Coaxial Cable Full Service Components
FSP95000279-130	SMA Plug to SMA Plug Coaxial Cable Full Service Components	FSP95000619-10	SMB Plug to SMA Plug Coaxial Cable Full Service Components
FSP95000279-150	SMA Plug to SMA Plug Coaxial Cable Full Service Components	FSP96000049-10	AC Power Cable Full Service Components
FSP95000279-170	SMA Plug to SMA Plug Coaxial Cable Full Service Components	FSP96000050-10	Bus Bar Ground Cable Full Service Components
FSP95000279-190	SMA Plug to SMA Plug Coaxial Cable Full Service Components	FSP96000050-30	Bus Bar Ground Cable Full Service Components
FSP95000279-210	SMA Plug to SMA Plug Coaxial Cable Full Service Components	FSP96000053-10	Power Supply Cable Full Service Components
FSP95000279-250	SMA Plug to SMA Plug Coaxial Cable Full Service Components	FSP96000060-10	2-Pin Point to Point Cable Full Service Components
FSP95000279-270	SMA Plug to SMA Plug Coaxial Cable Full Service Components	FSP96200033-10	Switch 4 to Switch 3 Cable Full Service Components
FSP95000279-290	SMA Plug to SMA Plug Coaxial Cable Full Service Components	FSP96200037-10	BNC to Header Cable Full Service Components
FSP95000279-310	SMA Plug to SMA Plug Coaxial Cable Full Service Components	FSP96200038-10	Switch 3 to Arb Cable Full Service Components
FSP95000279-330	SMA Plug to SMA Plug Coaxial Cable Full Service Components	FSP96200039-10	Switch 3 to Switch 5 Cable Full Service Components
FSP95000280-10	Right Angle SMB Plug to Right Angle SMB Plug Coaxial Cable Full Service Components	FSP96740309-10	Cable Assembly Full Service Components
		FSP97881021-30	BNC Plug to BNC Plug Cable Full Service Components
		FSP98307257-10	TPS Case Assembly (1 Compartment) Full Service Components

# Full Service Components

## BRAT® COMMON PARTS - Terms and Conditions Apply (Refer to Appendix C)

<b>FSP92105224-COM</b>	<b>BRAT Common Parts Full Service Components</b>	FSP94100344-02	Right Inlet Connector Lock Full Service Components
FSP02200140-01	Filter/Regulator with Gauge Full Service Components	FSP94100345-01	Left Outlet Connector Lock Full Service Components
FSP93000521-30	Wiring Duct Cover - Modified Full Service Components	FSP94100345-02	Right Outlet Connector Lock Full Service Components
FSP94100172-01	Cable Shield - BRAT 405 Full Service Components	FSP94100411-01	Cable Retainer Full Service Components
FSP94100172-03	Cable Shield - BRAT 405 Full Service Components	FSP96200051-01	Connector Spacer Full Service Components
FSP94100344-01	Left Inlet Connector Lock Full Service Components	FSP96200051-03	Connector Spacer Full Service Components

# Full Service Components

## OTHER - Terms and Conditions Apply (Refer to Appendix C)

FSP02300504-01	Dash Cable Full Service Components	FSP07040317-10	Phase Noise Measurement Module (Enhanced) Obsolescence Mitigation Replacement - SW subject to License (App. A) Full Service Components
FSP02300518-01	9" Black and White Monitor Full Service Components	FSP94100327-10	Rack Mount Display 18.1 in. Full Service Components
FSP07040313-10	RF Controller (RF Deck) Obsolescence Mitigation Replacement - SW subject to License (App. A) Full Service Components	FSP96000016-03	VXI-MXI-2 Kit (Without Cable) Full Service Components

# Maintenance Repair Support

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RSFTB-UPGRADE 1	HVAITA Upgrade to Factory Test Bed	RSITAHMU-2019	Maintenance Repair Support - ITA Hot Mock Up (HMU) and Mock Up Card Repairs (12 months or any portion thereof)
RSFTB-UPGRADE 2	HVAITA Upgrade to Factory Test Bed	RSITAHMU-2020	Maintenance Repair Support - ITA Hot Mock Up (HMU) and Mock Up Card Repairs (12 months or any portion thereof)
RSHVAITA-SPARES	Maintenance Repair Support - Spares Replacement	RSITAHMU-2021	Maintenance Repair Support - ITA Hot Mock Up (HMU) and Mock Up Card Repairs (12 months or any portion thereof)
RSITAHMU-2013	Maintenance Repair Support - ITA Hot Mock Up (HMU) and Mock Up Card Repairs (12 months or any portion thereof)	RSITAHMU-2022	Maintenance Repair Support - ITA Hot Mock Up (HMU) and Mock Up Card Repairs (12 months or any portion thereof)
RSITAHMU-2014	Maintenance Repair Support - ITA Hot Mock Up (HMU) and Mock Up Card Repairs (12 months or any portion thereof)	RSITAHMU-2023	Maintenance Repair Support - ITA Hot Mock Up (HMU) and Mock Up Card Repairs (12 months or any portion thereof)
RSITAHMU-2015	Maintenance Repair Support - ITA Hot Mock Up (HMU) and Mock Up Card Repairs (12 months or any portion thereof)	RSITAHMU-2024	Maintenance Repair Support - ITA Hot Mock Up (HMU) and Mock Up Card Repairs (12 months or any portion thereof)
RSITAHMU-2016	Maintenance Repair Support - ITA Hot Mock Up (HMU) and Mock Up Card Repairs (12 months or any portion thereof)	RSITAHMU-2025	Maintenance Repair Support - ITA Hot Mock Up (HMU) and Mock Up Card Repairs (12 months or any portion thereof)
RSITAHMU-2017	Maintenance Repair Support - ITA Hot Mock Up (HMU) and Mock Up Card Repairs (12 months or any portion thereof)		
RSITAHMU-2018	Maintenance Repair Support - ITA Hot Mock Up (HMU) and Mock Up Card Repairs (12 months or any portion thereof)		

# Maintenance

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MRSHVAITA-13	HVA ITA Maintenance (no more than 20 repairs per year)	MRSHVAITA-22	HVA ITA Maintenance (no more than 20 repairs per year)
MRSHVAITA-14	HVA ITA Maintenance (no more than 20 repairs per year)	MRSHVAITA-23	HVA ITA Maintenance (no more than 20 repairs per year)
MRSHVAITA-15	HVA ITA Maintenance (no more than 20 repairs per year)	MRSHVAITA-24	HVA ITA Maintenance (no more than 20 repairs per year)
MRSHVAITA-16	HVA ITA Maintenance (no more than 20 repairs per year)	MRSHVAITA-25	HVA ITA Maintenance (no more than 20 repairs per year)
MRSHVAITA-17	HVA ITA Maintenance (no more than 20 repairs per year)	MRSHVAITA-13A	HVA ITA Maintenance (no more than 30 repairs per year)
MRSHVAITA-18	HVA ITA Maintenance (no more than 20 repairs per year)	MRSHVAITA-14A	HVA ITA Maintenance (no more than 30 repairs per year)
MRSHVAITA-19	HVA ITA Maintenance (no more than 20 repairs per year)	MRSHVAITA-15A	HVA ITA Maintenance (no more than 30 repairs per year)
MRSHVAITA-20	HVA ITA Maintenance (no more than 20 repairs per year)	MRSHVAITA-16A	HVA ITA Maintenance (no more than 30 repairs per year)
MRSHVAITA-21	HVA ITA Maintenance (no more than 20 repairs per year)	MRSHVAITAINS-13	HVA ITA Indemnity Coverage



# Installation, Repairs, and Kits

## Installation, Repairs, and Kits

07020001-10	MAP/SAP Replacement Circuit Card
07020002-10	MAP/SAP Front Panel/Switch Replacement Assembly
07020003-10	MAP/SAP Audio Digital Encoder Replacement Circuit Card
07040700-10	Phase Noise Cable Set Kit
B511 PNL INSTL	Installation of B511 Recessed Panel Kit (excludes travel and per diem)
B511 PNL KIT	B511 Recessed Panel Kit
DCPS INTERCONNECT	Power Supply Cable with Installation (excludes travel and per diem)
DCPS J8 300 KIT	DCPS Cable Extension J8 Kit for B105/B303C/B305B
DCPS J8 400 KIT	DCPS Cable Extension J8 Kit for R205/R405B
DCPS J21 KIT	Electronic Load I/O Cable with Installation (excludes travel and per diem)
INSTL MAJOR	Major Installation
INSTL MINOR	Minor Installation
J8 EXT D INSTL	Installation of DCPS Cable Extension J8 Kit for B105/B303C/B305B/R205/R405B (excludes travel and per diem)
LPADC INSTL	Installation of Low Power ADC Subsystem Retrofit Kit for Waveform Digitizers
RAM UPGR INSTL	Installation of RAM Upgrade Kit (excludes travel and per diem)
RAM UPGR KIT	RAM Upgrade Kit
RK EXCKSEL	External Clock Select Board Retrofit Assembly Kit

## Low Power ADC Subsystem Retrofit Kit for Waveform Digitizers

Frequently, existing test instrumentation utilizes hardware components that have become obsolete and unmaintainable. In particular, some waveform digitizers use high power Electron Bombarded Semiconductor (EBS) tubes for their Analog-Digital-Conversion (ADC) subsystem. These EBS tubes are subject to obsolescence. EBS requirements for high voltage power decrease reliability to unacceptable levels. Retrofit Kits are utilized to overcome these obsolescence problems.

### RK LPADC Low Power ADC Subsystem Retrofit Kit for Waveform Digitizers

Retrofit existing test instrument ADC subsystem with new technology that is functionally equivalent with superior reliability. Benefits of test instrument retrofit include extended service life, enhanced utilization, reduced maintenance costs, improved reliability, and obsolescence neutral. Features of the Low Power ADC Subsystem Retrofit Kit include dual 8-bit ADCs, 500 Msps sampling rate per channel, low power requirement (3.3 V and 2.25 V), built-in-test and calibration, gray or binary output data formats, and flexible configuration.

### RP LPADC Repair of Low Power ADC Subsystem Retrofit Kit for Waveform Digitizers

## BRAT® Equipment Installation and Checkout

This group consists of five levels ranging from Complexity 1 to Complexity 5, with level 5 the most complex. Within each complexity, nine additional subcomplexity levels exist.

Example: BRAT® Equipment Installation and Checkout - Complexity 3.0 to 3.9

## Support

ENGRS-100	Engineering Support, Engineering Testing, Integrating, and Debugging Software - up to 100 hours TPS #4 Software Support	FSE-01	Field Service Engineer
ENGRS-200	Engineering Support, Engineering Testing, Integrating, and Debugging Software - up to 200 hours TPS #4 Software Support	FSE-02	Field Service Engineer (Annual Price - 2017)
ENGRS-300	Engineering Support, Engineering Testing, Integrating, and Debugging Software - up to 300 hours TPS #4 Software Support	FSE-03	Field Service Engineer (Annual Price - 2018)
ENGRS-400	Engineering Support, Engineering Testing, Integrating, and Debugging Software - up to 400 hours TPS #4 Software Support	FSE-04	Field Service Engineer (Annual Price - 2019)
ENGRS-500	Engineering Support, Engineering Testing, Integrating, and Debugging Software - up to 500 hours TPS #4 Software Support	FSE-05	Field Service Engineer (Annual Price - 2020)
		FSE-06	Field Service Engineer (Annual Price - 2021)
		SP BETATek7612D	BETA Technical Support
		SP BRATNET	Installation and Logistics Support and Maintenance for BRATNet and BLT
		SP JTIDS	BRAT TPS Engineering Software Support - 1000 Hours
		SP LPADC	On-Site Engineering Support for ADC Retrofit Kit Verification - 5 Days
		SP VIDEO	Technical Support for Video Card - 10 Hours

# Management and Logistic Support

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LRSO ATS Maintenance Logistic and Management Support - Includes logistics management and support, customer interface, GFE management, spares management, customer service telephone support, supply chain management, and OEM/vendor subcontract management for instrument maintenance.

LRSO L&M Support - 2ATS           2ATS  
LRSO L&M Support - 4ATS           4ATS  
LRSO L&M Support - 6ATS           6ATS

## TPS Rehosting

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Terms and Conditions Apply (Refer to Appendix B)

R307/308                    TPS Rehosting (307/308)  
RPNC                        TPS Rehosting (Phase Noise Instrument)

## Retrofit Kits

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Retrofit Kits are utilized to overcome obsolescence problems in SRUs, LRUs, Test Instrumentation (TI), etc. These problems include obsolete parts, obsolete circuit card assemblies, and obsolete subassemblies. The kits may utilize alternate parts implementations, alternate equivalent repackaged parts (altered items), redesigned PLDs [Xilinx, Quick Logic, Altera, Wise (controller with embedded memory design), Zetex (analog design)], re-engineered analog components, etc. These may be quantified as simple, mid-complexity, complex, and very complex designs and equivalent kitting. These efforts usually require manufacturing, mechanical design (drawing changes, drawings, packaging), electrical design, manufacturing test support, purchasing, QA, and shipping and receiving (all required corporate departments). The engineering level of effort and the expertise of the engineer vary from experienced to very senior, with their knowledge base being narrow (digital only or digital and analog, through all levels of microwave engineering and software development, including PLD or microprocessor design). In all instances a thorough analysis and evaluation of the UUT, test instrument, or component must be made with an understanding of its function relative to system and UUT (SRU/LRU) operation. These analyses include reading technical orders, schematics, specifications, design documents, ICDs, etc.

### Simple Retrofit Kit - SRU

Analog, Digital, or Microwave component replacement with equivalent non-re-engineered component. Thermal stress testing will be performed where applicable to qualify component.

### Simple Retrofit Kit - LRU/TI

Analog, Digital, or Microwave component replacement with equivalent non-re-engineered component. Thermal stress testing will be performed where applicable to qualify component.

### Mid-Complexity Retrofit Kit - Analog, Digital, or Microwave - SRU

Replace as necessary functional equivalent parts in a different form factor that utilize adapters to mount components, making them appear to be form, fit, and function equivalent.

### Mid-Complexity Retrofit Kit - Analog, Digital, or Microwave - LRU/TI

Replace as necessary functional equivalent parts in a different form factor that utilize adapters to mount components, making them appear to be form, fit, and function equivalent.

### Mid-Complexity Retrofit Kit - Hybrid (Analog, Digital, Microwave - any combination) - SRU

Replace as necessary subassembly or multiple subassemblies with replacement components/subassemblies which are functionally equivalent. Interfacing may require interfacing with voltage, clocks, input-output circuits, and example memory circuits. Change orders or TOPS pages to current O&M and/or service manuals or to UUT (SRU/LRU) manuals and configuration drawings may be necessary. Verification via system test procedures ensures compliance with the original specifications and functionality of the modified UUT or test equipment component.

### Mid-Complexity Retrofit Kit - Hybrid (Analog, Digital, Microwave - any combination) - LRU/TI

Replace as necessary subassembly or multiple subassemblies with replacement components/subassemblies which are functionally equivalent. Interfacing may require interfacing with voltage, clocks, input-output circuits, and example memory circuits. Change orders or TOPS pages to current O&M and/or service manuals or to UUT (SRU/LRU) manuals and configuration drawings may be necessary. Verification via system test procedures ensures compliance with the original specifications and functionality of the modified UUT or test equipment component.

# Retrofit Kits

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## **Complex Retrofit Kit - Hybrid (Analog and Digital) - SRU**

Replace a subassembly or multiple subassemblies with replacement components/subassemblies which are functionally equivalent. Where necessary, change interfacing with voltage, clocks, input-output circuits, and memory circuits. Verification to system test procedures will be performed. In addition, TOPS pages will be provided.

## **Complex Retrofit Kit - Hybrid (Analog and Digital) - LRU/TI**

Replace a subassembly or multiple subassemblies with replacement components/subassemblies which are functionally equivalent. Where necessary, change interfacing with voltage, clocks, input-output circuits, and memory circuits. Verification to system test procedures will be performed. In addition, TOPS pages will be provided.

## **Complex Retrofit Kit - Microwave - SRU**

Redesign of an obsolete component or subassembly/assembly as required. Modified component/subassembly/assembly will be validated to function with its I/O (power and RF), including power draw for VCXOs, amplifiers, etc. Retrofit will meet AM/PM modulation requirements and VSWR specifications, power level specifications, and current draw specifications. A final test will be performed in the unit and drawings will be updated. ECNs will be generated or TOPS pages will be added to reflect the new configuration.

## **Complex Retrofit Kit - Microwave - LRU/TI**

Redesign of an obsolete component or subassembly/assembly as required. Modified component/subassembly/assembly will be validated to function with its I/O (power and RF), including power draw for VCXOs, amplifiers, etc. Retrofit will meet AM/PM modulation requirements and VSWR specifications, power level specifications, and current draw specifications. A final test will be performed in the unit and drawings will be updated. ECNs will be generated or TOPS pages will be added to reflect the new configuration.

These groups consist of five levels of development ranging from Complexity 1 to Complexity 5, with level 5 the most complex. Within each complexity, nine additional subcomplexity levels exist.

Example: Simple Retrofit Kit - SRU - Complexity 4.0 to 4.9

# ITA Retrofit

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## **ITA Retrofit - Complex Rollup**

These groups consist of six levels of development ranging from Complexity 1 to Complexity 6, with level 6 the most complex. Within each complexity, nine additional subcomplexity levels exist.

Example: Retrofit Digital Complex Rollup - LRU ITA - Complexity 4.0 to 4.9

Retrofit Digital Complex Rollup

Retrofit Electro Optic Complex Rollup

Retrofit Analog/Digital Hybrid Complex Rollup

Retrofit RF Complex Rollup

# ATE Modernization Kits

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Software Subject to License Agreement (Refer to Appendix A)

## **Modernization of ATE Systems**

Modernization of an existing/obsolete ATE tester using a computer/controller can be performed using the Modernization Kit, where the modernized tester will be able to test and utilize existing TPSs and ITAs. The Modernization Kit provides for the replacement of the obsolete computers and equipment through the use of COTS software, emulators, and/or tester equipment to ensure the integrity of the TPSs and ITAs.

Levels of complexity categorize the Modernization Kits. Complexity is determined by the quantity and intricacy of the equipment/instruments to be modernized. The Modernization Kits consist of nine levels ranging from Complexity 1 to Complexity 9, with level 9 the most complex. Within each complexity, nine additional subcomplexity levels exist. Example: Modernization Kit - Complexity 2.0 to 2.9

### **MK-131 Modernization Kit - Complexity 1.0 to 1.9**

This kit includes the replacement of an obsolete computer/controller and up to a total of six Analog/Digital/Video/Hybrid IEEE programmable instruments or assemblies. The Modernization Kit instruments/assemblies may be rack mountable, VXI, or configured assemblies.

### **MK-132 Modernization Kit - Complexity 2.0 to 2.9**

This kit includes the replacement of an obsolete computer/controller and up to a total of eight Analog/Digital/Video/Hybrid IEEE programmable instruments or assemblies. The Modernization Kit instruments/assemblies may be rack mountable, VXI, or configured assemblies.

# ATE Modernization Kits

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Software Subject to License Agreement (Refer to Appendix A)

**MK-133 Modernization Kit - Complexity 3.0 to 3.9**  
This kit includes the replacement of an obsolete computer/controller and up to a total of eight Analog/Digital/Video/Hybrid/RF (up to two RF instruments) IEEE programmable instruments or assemblies. The Modernization Kit instruments/assemblies may be rack mountable, VXI, or configured assemblies.

**MK-135 Modernization Kit - Complexity 5.0 to 5.9**

**MK-136 Modernization Kit - Complexity 6.0 to 6.9**

**MK-137 Modernization Kit - Complexity 7.0 to 7.9**

**MK-138 Modernization Kit - Complexity 8.0 to 8.9**

**MK-134 Modernization Kit - Complexity 4.0 to 4.9**  
This kit includes the replacement of an obsolete computer/controller and up to a total of ten Analog/Digital/Video/Hybrid/RF (up to four RF instruments) IEEE programmable instruments or assemblies. The Modernization Kit instruments/assemblies may be rack mountable, VXI, or configured assemblies.

**MK-139 Modernization Kit - Complexity 9.0 to 9.9**

## Instrument Replacement Kits

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This group consists of five levels ranging from Complexity 0 to Complexity 4, with level 4 the most complex. Within each complexity, nine additional subcomplexity levels exist.

Example: Instrument Replacement Kit - Complexity 3.0 to 3.9

## Instrument Replacement Kit Installation and Integration

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This group consists of five levels ranging from Complexity 0 to Complexity 4, with level 4 the most complex. Within each complexity, nine additional subcomplexity levels exist.

Example: Instrument Replacement Kit Installation and Integration - Complexity 3.0 to 3.9

## First Article Test

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This group consists of five levels ranging from Complexity 0 to Complexity 4, with level 4 the most complex. Within each complexity, nine additional subcomplexity levels exist.

Example: First Article Test - Complexity 3.0 to 3.9

## BRAT<sup>®</sup> Test and Verification

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This group consists of six levels ranging from Complexity 0 to Complexity 5, with level 5 the most complex. Within each complexity, nine additional subcomplexity levels exist.

Example: BRTV 3 - Complexity 3.0 to 3.9

## BRAT<sup>®</sup> Cable Sets

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9300COAX-10 Coax Cable Set (BRAT<sup>®</sup> 105)  
93000PWR-10 Power Cable Set (BRAT<sup>®</sup> 105)  
93000SYS-10 System Cable Set (BRAT<sup>®</sup> 105)

# Cables

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This group consists of six levels of development ranging from Complexity 0 to Complexity 5, with level 5 the most complex. Within each complexity, nine additional subcomplexity levels exist.

CABLE-00Cable - Complexity 0.0 to 0.9

CABLE-01Cable - Complexity 1.0 to 1.9

CABLE-02Cable - Complexity 2.0 to 2.9

CABLE-03Cable - Complexity 3.0 to 3.9

CABLE-04Cable - Complexity 4.0 to 4.9

CABLE-05Cable - Complexity 5.0 to 5.9

## Parts and Assemblies

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### 92103660-30

#### PDP Subscriber CCA - FPGA

- Form, Fit, and Function Replacement for P/N 92103660-10 (minimum order - 2)

### 92103663-30

#### SICM Audio Distribution CCA - FPGA

- Form, Fit, and Function Replacement for P/N 92103663-10 (minimum order - 2)

### 92104033-10

#### PDP Subscriber CCA - FPGA

- Form, Fit, and Function Replacement for P/N 92103660-10 (minimum order - 2)

### 92104045-10

#### SICM Audio Distribution CCA - FPGA

- Form, Fit, and Function Replacement for P/N 92103663-10 (minimum order - 2)

### 93006H2916

#### Cable Assembly, Special Purpose, Electrical S/R, I/O

### 93006N2114

#### Shorting Plug Adapter

### 93006N2800

#### Block Upgrade Synchro Resolver Retrofit Kit (no metal plate)

### 96000021-05

#### 0 to 600 Vdc Power Supply

- Provides 425 volts required to generate high voltage for traveling wave tube cathode

### 96648363-10

#### Input/Output Drawer Assembly

- Main conduit for interfacing ITA to BRAT during test
- Provides AC and DC power distribution
- Routes all digital and analog measurement signals

### 96648365-10

#### High Voltage Isolated Load Assembly

- A high voltage dummy load within a metal enclosure used for test, measurement, and adjustment of UUT cathode high voltage

### 96648400-10

#### Low Voltage Isolated Load Assembly

- A low voltage version of High Voltage Isolated Load Assembly (P/N 96648365-10)

### 96648730-21

#### Switching Regulator Enclosure Assembly

- Provides high voltage switching

### 96648818-21

#### Cathode Monitor Control CCA

- Digital interface to Cathode Monitor Relay Assembly (P/N 96648819-10)

### 96648819-21

#### Cathode Monitor Relay Assembly

- Enables High Voltage Assembly (HVA) ITA to automatically switch from Traveling Wave Tube (TWT) to dummy loads during test

### 96648834-21

#### Video Selector CCA

- A 24 x 2 channel video selector
- Allows HVA ITA to route video signals

### 96648840-21

#### Ground Deck Pulser CCA

- Provides grid on and off drive pulses to UUT
- Produces woofer drive pulse

### 96648843-21

#### Clock Driver CCA

- Provides switching regulator power supply clock drive
- Receives HVA cathode regulator feedback signal
- Generates modulation pulse

# Parts and Assemblies

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## 96648846-21

### Protection and Control CCA

- Contains monitoring and control circuitry for safe operation of ITA and UUT during test

## 96648919-10

### ITA Cable Set

- Contains all cables necessary to connect UUT to ITA and ITA to BRAT test system

## 96648920-10

### Frame Harness Assembly

- Includes blower, cabinet harness, transformer assembly, inner connector assembly, turret assembly (CCAs not included), and all chassis items

## L9668-111-013-01

### DC Motor Controller

## L9668-111-013-03

### DC Motor Controller

## L9668-111-031-01

### Temperature Probe

## L9668-111-033-11

### Pushbutton

## L9668-111-033-12

### Illuminated Button

## L9668-111-033-13

### Lamp

## L9668-111-039-0

### Power Outlet Strip

## L9668-111-043-01

### Control Relay

# Connectors

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03009600-10	B504-100 Patch Panel Connector Replacement Assembly
200521124-01	Connector, Plug (minimum order - 3)
200521124-03	Connector, Plug (minimum order - 3)
200521124-05	Connector, Plug (minimum order - 3)
200626917-01	Connector, Mount, CBBC ITA (minimum order - 3)
200626983-01	Connector, Mount, Tailored I/O ITA (minimum order - 3)
200818354-01	Connector, Mount, E3 DDP Plain Text Processor (minimum order - 3)
94100691-01	Coupler, Plug with Barb, Acetal, Panel Mount (1/8 x 3/16) (minimum order - 3)
95650487-10	Interstage Connector

## CTI101

### Fixture Starter Kit

Facilitates rapid TPS interface prototyping. Kit includes:

- One 152-position power contact connector without contacts
- Two 152-position coaxial contact connectors without contacts
- One 59-position coaxial contact connector without contacts
- Two 59-position power contact connectors without contacts
- 17 200-position general purpose connectors with 0.325-inch tail
- One 29-slot protective fixture cover
- One 29-slot width IEEE-1505 CTI compliant fixture
- One 8-inch deep fixture enclosure

## CTI101-1

### Power and Coaxial Pins for CTI101

Facilitates rapid TPS interface prototyping and reuse of wires. Kit includes:

- Coaxial contacts, crimp type
- Power contacts, crimp type
- General purpose box pins, crimp type
- 2 x 25 stackable headers

## **TPS and ITA Training Using the BRAT®**

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This group consists of five levels of training ranging from Complexity 1 to Complexity 5, with level 5 the most complex. Within each complexity, nine additional subcomplexity levels exist.

Example: TPS and ITA Training Using the BRAT® - Complexity 1.0 to 1.9

## **Proprietary Repair Documents**

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This group consists of six levels ranging from Complexity 0 to Complexity 5, with level 5 the most complex. Within each complexity, nine additional subcomplexity levels exist.

Example: Repair Document for Proprietary Information (40 pages) - Complexity 3.0 to 3.9

## **Proprietary Procedure Manuals**

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This group consists of six levels ranging from Complexity 0 to Complexity 5, with level 5 the most complex. Within each complexity, nine additional subcomplexity levels exist.

Example: Procedure Manual for Proprietary Information (20 pages) - Complexity 1.0 to 1.9

# Training and System Maintenance

## Training

AT-105	Advanced Training - BRAT® 105 Maintenance (up to 5 students)
AT-305B	Advanced Training - BRAT® 305B Maintenance (up to 5 students)
AT-405	Advanced Operation and Maintenance Training (up to 5 students)
T-401	Theoretical RF Training Course - 6 weeks of classroom training on theoretical aspects of radio frequency, microwave, and other high level theories
T-402	TCASE® and TBASIC® Software Training - 3 weeks of fundamental software training for TPS development
T-402A	Intermediate TCASE® and TBASIC® Software Training (5 student minimum)
T-403	On-the-Job BRAT® Training Course - 3 weeks of training on the BRAT® Test System
T-404	Practical TPS Development - 4 months of hands-on training on actual TPS development utilizing Units Under Test (UUTs)
T-405	Operation and Maintenance Training - 1 week of training on the basic operation and maintenance of the BRAT® Test System
T-407	BRAT® 407 Operation and Maintenance Training
T-RF407BJ	BRAT® RF407BJ (JTIDS BRAT®) Operation Training
TRN -	
O&M4WK	4 Week Training Class to be Conducted at ATTI in Hauppauge, NY
V-303C	BRAT® 303C Operation and Maintenance Training
V-305B	BRAT® 305B Operation and Maintenance Training
V-307	BRAT® 307 Operation and Maintenance Training
V-511B	BRAT® 511 Operation and Maintenance Training
V-520B	BRAT® 520 Operation and Maintenance Training
V-RF305BJ	BRAT® RF305BJ Operation Training
V-RF307BJ	BRAT® RF307BJ (JTIDS BRAT®) Operation Training

## Contractor Support

### Complete System Support

Support of all equipment and software for the BRAT® Test System, including on-site visits as needed.

## Self Test Kits

94100258-10	Self Test VXI Case - Case only
94100258-30	Self Test RF Case - Case only
94100264-10	Self Test VXI Kit - Includes cables and case
94100264-30	Self Test RF Kit - Includes cables and case
94100264-70	Self Test RF Kit without Microwave Network Analyzer Calibration Kit - Includes cables and case
94101102-10	Self Test JSTARS Kit - Includes cables and case

## Data Packages

The Logistic Data Package (LDP) is a customized technical data package used to support an end item and consists of available data for performing end item training or maintenance. The LDP may include engineering support data, flow charts, ITA assembly drawings, parts lists, illustrations, technical data sheets, test procedures, test data, wiring lists, and schematics. This group consists of five levels ranging from Complexity 1 to Complexity 5, with level 5 the most complex.

LDP-1	Logistic Data Package - Complexity 1
LDP-2	Logistic Data Package - Complexity 2
LDP-3	Logistic Data Package - Complexity 3
LDP-4	Logistic Data Package - Complexity 4
LDP-5	Logistic Data Package - Complexity 5

## Documentation

PNC-CAL-DOC-ASSY	Phase Noise Calibrator Repair Documentation to Assembly/Module Level
PNC-CAL-DOC-COMPONENT	Phase Noise Calibrator Repair Documentation to Piece-Part Level

## Reports

This group consists of six minor and six major levels, each ranging from Complexity 0 to Complexity 5, with level 5 the most complex. Within each complexity, nine additional subcomplexity levels exist.

Example: Report (Minor) - Complexity 3.0 to 3.9

## Technical Orders

This group consists of eleven levels ranging from Complexity 0 to Complexity 10, with level 10 the most complex. Within each complexity, nine additional subcomplexity levels exist.

Example: Technical Orders - Complexity 1.0 to 1.9

## Technical Order Changes

This group consists of eleven levels ranging from Complexity 0 to Complexity 10, with level 10 the most complex. Within each complexity, nine additional subcomplexity levels exist.

Example: Technical Manual Change Pages or Supplements - Complexity 5.0 to 5.9

## Technical Studies

This group consists of six levels ranging from Complexity 0 to Complexity 5, with level 5 the most complex. Within each complexity, nine additional subcomplexity levels exist.

Example: Technical Studies - Complexity 3.0 to 3.9

## Microelectronics Simulation Analysis for TPS Development

Terms and Conditions Apply (Refer to Appendix B)

This group consists of ten levels ranging from Complexity 0 to Complexity 9, with level 9 the most complex. Within each complexity, nine additional subcomplexity levels exist.

Example: Microelectronics Simulation Analysis for TPS Development - SRU - Complexity 5.0 to 5.9

# Training and System Maintenance

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## Microelectronics Simulation Analysis for TPS Development - Go/NoGo - SRU

This group consists of six levels ranging from Complexity 0 to Complexity 5, with level 5 the most complex. Within each complexity, nine additional subcomplexity levels exist.

Example: Microelectronics Simulation Analysis for TPS Development - Go/NoGo - SRU - Complexity 3.0 to 3.9

## Microelectronics Simulation Analysis for TPS Development - Go/NoGo - LRU

This group consists of six levels ranging from Complexity 1 to Complexity 6, with level 6 the most complex. Within each complexity, nine additional subcomplexity levels exist.

Example: Microelectronics Simulation Analysis for TPS Development - Go/NoGo - LRU - Complexity 3.0 to 3.9

## Test Program Sets (TPS)

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Terms and Conditions Apply (Refer to Appendix B)

### TPS Development

Each grouping may consist of 15 levels of development ranging from Complexity 0 to Complexity 14, with level 14 the most complex.

Within each complexity, nine additional subcomplexity levels exist.

Example: RF TPS Development - LRU - Complexity 4.0 to 4.9

### PADS TPS Development - SRU

Each grouping may consist of 5 levels of development ranging from Complexity 1 to Complexity 5, with level 5 the most complex. Within each complexity, nine additional subcomplexity levels exist.

Example: PADS TPS Development - SRU - Complexity 4.0 to 4.9

### PADS TPS Development - LRU

Each grouping may consist of 5 levels of development ranging from Complexity 1 to Complexity 5, with level 5 the most complex. Within each complexity, nine additional subcomplexity levels exist.

Example: PADS TPS Development - LRU - Complexity 4.0 to 4.9

### SRUs

- 1) Analog TPS Development
- 2) Digital TPS Development
- 3) Electro Optic TPS Development
- 4) Analog/Digital Hybrid TPS Development
- 5) RF TPS Development
- 6) Upgrade TBASIC to TBASIC
- 7) Rehost Analog TPS Development
- 8) Rehost Digital TPS Development
- 9) Rehost Analog/Digital Hybrid TPS Development
- 10) Rehost RF TPS Development

### LRUs

- 1) Analog TPS Development
- 2) Digital TPS Development
- 3) Electro Optic TPS Development
- 4) Analog/Digital Hybrid TPS Development
- 5) RF TPS Development
- 6) Upgrade TBASIC to TBASIC
- 7) Rehost Analog TPS Development
- 8) Rehost Digital TPS Development
- 9) Rehost Analog/Digital Hybrid TPS Development
- 10) Rehost RF TPS Development

### TPS Updates - Minor - SRUs

- 1) Analog TPS Updates for TPS Obsolescence Mitigation
- 2) Digital TPS Updates for TPS Obsolescence Mitigation
- 3) Electro Optic TPS Updates for TPS Obsolescence Mitigation
- 4) Analog/Digital Hybrid TPS Updates for TPS Obsolescence Mitigation
- 5) RF TPS Updates for TPS Obsolescence Mitigation

### TPS Updates - Minor - LRUs

- 1) Analog TPS Updates for TPS Obsolescence Mitigation
- 2) Digital TPS Updates for TPS Obsolescence Mitigation
- 3) Electro Optic TPS Updates for TPS Obsolescence Mitigation
- 4) Analog/Digital Hybrid TPS Updates for TPS Obsolescence Mitigation
- 5) RF TPS Updates for TPS Obsolescence Mitigation

### SRU ITAs

- 1) Analog TPS Development
- 2) Digital TPS Development
- 3) Electro Optic TPS Development
- 4) Analog/Digital Hybrid TPS Development
- 5) RF TPS Development

### LRU ITAs

- 1) Analog TPS Development
- 2) Digital TPS Development
- 3) Electro Optic TPS Development
- 4) Analog/Digital Hybrid TPS Development
- 5) RF TPS Development

### Complex Rollup ITAs

- 1) Digital Complex Rollup
- 2) Electro Optic Complex Rollup
- 3) Analog/Digital Hybrid Complex Rollup
- 4) RF Complex Rollup

### Variant TPS Development

This group consists of 11 levels of development ranging from Complexity 0 to Complexity 10, with level 10 the most complex.

Within each complexity, nine additional subcomplexity levels exist.

Example: Variant TPS Development - Complexity 1.0 to 1.9

# Test Program Sets (TPS)

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## Very Complex ITA Enhancements

The Very Complex ITA Enhancements consist of five levels ranging from Complexity 1 to Complexity 5, with level 5 the most complex. Within each complexity, nine additional subcomplexity levels exist. Example: Very Complex ITA Enhancement - Complexity 1.0 to 1.9

## Holding Fixtures for LRU/SRU

Contact ATTI for a description of Complexity Levels.

### 92103985-10

#### CSU (Central Switching Unit) ITA Upgraded Cable Set

## Ancillary Equipment

Ancillary Equipment is used in support of LRU and SRU ITAs, and ATE equipment.

This group consists of nine levels of equipment ranging from Complexity 1 to Complexity 9, with level 9 the most complex. Within each complexity, nine additional subcomplexity levels exist. Example: Ancillary Equipment- Complexity 1.0 to 1.9

## Analog Test Program Set Update - SRU

This group consists of ten levels ranging from Complexity 1 to Complexity 10, with level 10 the most complex. Within each complexity, nine additional subcomplexity levels exist. Example: Analog Test Program Set Update - SRU - Complexity 1.0 to 1.9

## Digital Test Program Set Update - SRU

This group consists of ten levels ranging from Complexity 1 to Complexity 10, with level 10 the most complex. Within each complexity, nine additional subcomplexity levels exist. Example: Digital Test Program Set Update - SRU - Complexity 1.0 to 1.9

## Analog Test Program Set Update - LRU

This group consists of ten levels ranging from Complexity 1 to Complexity 10, with level 10 the most complex. Within each complexity, nine additional subcomplexity levels exist. Example: Analog Test Program Set Update - SRU - Complexity 1.0 to 1.9

## Digital Test Program Set Update - LRU

This group consists of ten levels ranging from Complexity 1 to Complexity 10, with level 10 the most complex. Within each complexity, nine additional subcomplexity levels exist. Example: Digital Test Program Set Update - SRU - Complexity 1.0 to 1.9

## Electro Optic Test Program Set Update - LRU

This group consists of ten levels ranging from Complexity 1 to Complexity 10, with level 10 the most complex. Within each complexity, nine additional subcomplexity levels exist. Example: Electro Optic Test Program Set Update - SRU - Complexity 1.0 to 1.9

## Analog/Digital Hybrid Test Program Set Update - LRU

This group consists of ten levels ranging from Complexity 1 to Complexity 10, with level 10 the most complex. Within each complexity, nine additional subcomplexity levels exist. Example: Analog/Digital Hybrid Test Program Set Update - SRU - Complexity 1.0 to 1.9

## RF Test Program Set Update - LRU

This group consists of ten levels ranging from Complexity 1 to Complexity 10, with level 10 the most complex. Within each complexity, nine additional subcomplexity levels exist. Example: RF Test Program Set Update - SRU - Complexity 1.0 to 1.9

# Ancillary Equipment

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Software Subject to License Agreement (Refer to Appendix A)

Ancillary Equipment is used in support of LRU and SRU ITAs, and ATE equipment.

This group consists of nine levels of equipment ranging from Complexity 1 to Complexity 9, with level 9 the most complex. Within each complexity, nine additional subcomplexity levels exist. Example: Ancillary Equipment - Complexity 1.0 to 1.9

## Instruments

20205001-10	Handheld Microwave Combination Analyzer (See Note 1)
20205002-10	Signal and Spectrum Analyzer (See Note 2)
20205003-10	Microwave Signal Generator (See Note 3)

### Note 1:

Includes VNA Transmission/ Reflection, Full 2-Ports S-Parameters, Spectrum Analyzer, Pre-amplifier, Interference Analyzer and Spectrogram, GPS Receiver, Real-Time Spectrum Analyzer (RTSA), Analog Demodulation, Indoor and Outdoor Mapping, Coaxial Adapters and Electronic Calibration (ECal) Module

### Note 2:

Includes Preamplifier, LO/IF Connections for External Mixer, Real Time Spectrum Analyzer, I/Q Memory Extension, Resolution Bandwidth, Pulse Measurement, Analog Modulation Analysis (AM/FM/PM), Vector Signal Analysis, Transient Measurement Application, Transient Chirp Measurement, Transient Hop Measurement, Harmonic Mixers, Horn Antenna and Adapter

### Note 3:

Includes Frequency Extension, Touch Display, High Power Output, Ultra-High Output Power, High Performance Pulse Modulator, Pulse Generator, Multifunction Generator, AM/FM/PM, Ramp Sweep, Remote Control GPIB and USB, Rack Adapter, Test Port Adapters and Mixers

# Test Program Modules

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## TP End to End Functional Test Modules

The BRAT® Test Program developed will provide functional validation of an assembly based on customer supplied documentation. This does not include hardware (e.g., Interface Test Adaptors), documentation (e.g., technical orders), travel or travel related per diem, or site verification test or installation. Call to establish your TPM category.

1210TPFT	TP End to End Functional Test Module (SRU Minor)
1211TPFT	TP End to End Functional Test Module (SRU Medium)
1212TPFT	TP End to End Functional Test Module (SRU Major)
1213TPFT	TP End to End Functional Test Module (LRU Minor)
1214TPFT	TP End to End Functional Test Module (LRU Medium)
1215TPFT	TP End to End Functional Test Module (LRU Major)

## TP Diagnostic Test Modules

The BRAT® Test Program developed will add diagnostics to a TP End to End Functional Test Module based on customer supplied documentation. This does not include hardware (e.g., Interface Test Adaptors), documentation (e.g., technical orders), travel or travel related per diem, or site verification test or installation. Call to establish your TPM category.

1220TPDT	TP Diagnostic Test Module (SRU Minor)
1221TPDT	TP Diagnostic Test Module (SRU Medium)
1222TPDT	TP Diagnostic Test Module (SRU Major)
1223TPDT	TP Diagnostic Test Module (LRU Minor)
1224TPDT	TP Diagnostic Test Module (LRU Medium)
1225TPDT	TP Diagnostic Test Module (LRU Major)

## TP Support Hardware Modules

The BRAT® Test Program support hardware will provide the physical elements necessary to interconnect the unit to be tested to the BRAT® test station. This does not include documentation (e.g., technical orders), travel or travel related per diem, or site verification test or installation. Call to establish your TPM category.

1230TPSH	TP Support Hardware Module (SRU Minor)
1231TPSH	TP Support Hardware Module (SRU Medium)
1232TPSH	TP Support Hardware Module (SRU Major)
1233TPSH	TP Support Hardware Module (LRU Minor)
1234TPSH	TP Support Hardware Module (LRU Medium)
1235TPSH	TP Support Hardware Module (LRU Major)

## TP Support Documentation Modules

The BRAT® Test Program documentation developed will support the use and sustainment for the maintenance of the item tested and/or repaired based on best commercial practice or customer supplied requirements. This does not include hardware (e.g., Interface Test Adaptors), travel or travel related per diem, or site verification test or installation. Call to establish your TPM category.

1240TPSD	TP Support Documentation Module (SRU Minor)
1241TPSD	TP Support Documentation Module (SRU Medium)
1242TPSD	TP Support Documentation Module (SRU Major)
1243TPSD	TP Support Documentation Module (LRU Minor)
1244TPSD	TP Support Documentation Module (LRU Medium)
1245TPSD	TP Support Documentation Module (LRU Major)

# ATTI Company Profile

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The corporation:

- has designed, developed, and manufactured ATE since 1987
- has delivered and supported many test systems in both the commercial and military sectors
- is an innovator in developing and implementing VXI technology solutions
- has developed over one thousand Test Program Sets, covering the test spectrum from simple to extremely complex
- has numerous satisfied customers, including:
  - Agusta, Italy
  - Argon ST
  - Astronics Test Systems
  - Aviall
  - BAE Systems
  - Boeing
  - Esclas, Turkey
  - Havelsan, Turkey
  - Hellenic Air Force
  - Japanese Air Force
  - KLM Royal Dutch Airlines
  - Lockheed Martin
  - NATO
  - Northrop Grumman
  - Palomar Products. Inc.
  - Pioneering Decisive Solutions (PIDESO)
  - Royal Saudi Air Force
  - Teradyne, Inc.
  - Tyonek
  - US Air Force
  - US Army
  - US Marine Corps
  - US Navy

## ATTI Worldwide Support

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The corporation:

- has developed Obsolescence Mitigation Replacement (OMR) technology which represents ATTI's corporate commitment to customer use and TPS investment in our test systems
- has delivered BRAT® test systems worldwide
- offers one of the most experienced service, training, and support teams in the world
- has worked with our customers solving diverse test challenges in digital, analog, and RF applications
- is committed to total hardware and software support including service, spares, upgrades, documentation, training, and configuration control
- has the financial efficacy to guarantee long-term commitments

## ATTI Offices

**ATTI is an Equal Opportunity Employer**

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### Corporate Headquarters

110 Ricefield Lane, Hauppauge, NY 11788 - phone: (631) 231-8777, 1-800-ATTI-VXI, fax: (631) 231-7174  
<https://www.attinet.com>, e-mail: [atti@attinet.com](mailto:atti@attinet.com)

### Field Offices

**Warner Robins, GA** 109 Constitution Drive, Warner Robins, GA 31088 - phone: (478) 953-6356, fax: (478) 953-6494  
**Layton, UT** 2985 N 935 E, Suite 1, Layton, UT 84041 phone: (801) 771-7259

# Appendix A

## ATTI Software License Agreement Terms and Conditions

This Software License Agreement is entered into by and between ICS Systems, Inc. (“**ATTI**”) and the Government of the United States of America (“**Licensee**”) effective as of the date that the Licensee purchases any software product on this GSA schedule.

Licensee has acquired the right to use one or more of the following: ATTI TCASE Run-Time Software (protected by Mitigator® Technology), ATTI TCASE Development Software (protected by Mitigator® Technology), a TCASE update or upgrade or other ATTI software (collectively, the “**Software**”). This License Agreement governs any and all Software in use by the Licensee. The Software may be provided with user manuals and other materials provided by Advanced Testing Technologies, Inc. (“**ATTI**”) that describe one or more aspects of the Software (collectively, the “**Documentation**”). ATTI has provided or will provide to Licensee a USB device that is required to run the Software (the “**Dongle**”). The Licensee will use the Software at a U.S. Government facility (the “**Designated Facility**”).

### 1. GRANT OF LICENSE

1.1 ATTI hereby grants to Licensee a single user license to use the Software in object code form only on one computer at one time. The Software must be used with the Dongle installed in the computer and may only be used at a Designated Facility. The Software must be used in accordance with Documentation. Licensee shall not make any Software available on any timesharing, service bureau, rental or similar basis. Licensee shall not disassemble, decompile, decrypt, extract or reverse engineer any Software (including, for example, monitoring the inputs and outputs of the Software in whole or in part for the purpose of understanding the operation of the Software), nor cause or permit anyone else to do so. The term “Software” includes both the object and source code versions, all executable files, drivers and utilities, and all updates, modifications or adaptations made to the Software by any person or party.

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1.3 All Software and Documentation are and shall remain the exclusive property of ATTI, and are restricted by U.S. copyright laws and international treaty provisions. Licensee shall have no rights in the Software or Documentation, other than the license granted hereunder. ATTI reserves all rights with respect to the Software and Documentation under all applicable laws for the protection of proprietary information, including, but not limited to, trade secrets, copyrights, trademarks and patents.

1.4 Except as otherwise provided in this Agreement, Licensee shall not cause or permit copying, reproduction or disclosure of any portion of the Software or any Documentation, or the delivery or distribution of any part thereof to any third person or entity, for any purpose whatsoever, without the prior written permission of ATTI; provided, however, that Licensee may disclose Software and the Documentation to a contractor, company or consultant providing services for Licensee (“**Contractor**”) for use at a Designated Facility in order to perform work for Licensee, provided Contractor agrees in writing to the terms and conditions of this Agreement and such written agreement is delivered to ATTI at least 30 days prior to access by the Contractor. Licensee may transfer its rights under this License on a permanent basis provided (a) Licensee transfers this License, the software and documentation and retains no copies, (b) the recipient agrees to the terms of this License Agreement, and (c) Licensee notifies ATTI in writing of the name, address and business activity of the transferee at least 30 days before the proposed transfer. ATTI shall have the right to prohibit a proposed transfer to a competitor of ATTI or on other reasonable grounds.

### 2. OBLIGATIONS OF ATTI

2.1 ATTI warrants that for a period of six (6) months after the date of this Agreement (“**Warranty Period**”), the Software will conform, in all material respects, to the Documentation. Any material deviation between the Software and the Documentation is referred to herein as an “**Error**.” ATTI shall use commercially reasonable efforts to correct Errors at no charge to Licensee, provided that the Error is brought to ATTI’s attention, in writing, during the Warranty Period. Errors may be corrected by ATTI by providing to Licensee appropriate media containing corrected versions of the affected ATTI Software. ATTI does not warrant that the Software will operate uninterrupted or be error-free.

**2.2 The warranty set forth in section 2.1 is the sole and exclusive warranty made by ATTI with respect to the software and the sole and exclusive remedy of licensee in the event the software fails to conform, in all material respects, to its documentation, and all other warranties, express or implied, including, without limitation, warranties of merchantability or fitness for a particular purpose, are hereby expressly disclaimed. In no event shall ATTI be liable for any incidental, special, consequential or exemplary damages, irrespective of whether ATTI has been informed of, knew of, or**

# Appendix A

## ATTI Software License Agreement Terms and Conditions

should have known of the likelihood of such damages. ATTI' liability for any loss whatsoever, regardless of the cause, shall not exceed the license fees paid to ATTI for the use of the software.

2.3 ATTI will indemnify and hold Licensee harmless against any damages finally awarded against Licensee to the extent such damages are based on any claim that the Software, or any portion thereof, infringes a patent, trademark, copyright, trade secret or other proprietary right of a third party, provided that Licensee provides ATTI with timely written notice of the claim. In the event any Software is held to infringe, ATTI shall, at its option and sole expense, (a) obtain for Licensee a license to continue using the Software, (b) modify or replace the Software so that it is non-infringing, or (c) refund the license fees paid to ATTI for the Software, based on five (5) year straight line depreciation from the date of installation. ATTI shall have no obligation for any claim of infringement based, in whole or in part on Licensee's combination or use of the Software with software or equipment not furnished by ATTI or a modification to the Software made by Licensee. This Section states ATTI' exclusive responsibility and liability with respect to infringement claims arising out of Licensee's use of the Software.

### 3. COVENANTS AND OBLIGATIONS OF CONTRACTOR

3.1 Prior to access or use of the Software, Contractor shall deliver to ATTI, at P.O. Box 12391, Hauppauge, New York 11788, its written agreement to all covenants and obligations of the Licensee contained in this Agreement, including without limitations the restrictions on the use of the Software in Section 1. Further, Contractor agrees to the provisions in paragraph (c) of DFARS 252.227-7025. If Contractor desires rights to create or modify test program sets ("TPSs"), Contractor must license TCASE Development Software from ATTI before Contractor may use the Software to create or modify TPSs. Contractor may not, without written permission by ATTI, replace, modify, update, wrap or bypass through any means any of the Software in part or in whole.

3.2 Contractor shall defend, indemnify and hold ATTI and its subcontractors, affiliates from and third party vendors harmless from all losses, damages, costs, and expenses, and Contractor shall pay ATTI' attorneys' fees and court costs to defend or pursue a claim, arising from or in connection with (a) the use of the Software in a manner not intended or prescribed in the Documentation or the misuse of the Software by Contractor, or (b) any breach of any representation or covenant of Contractor under this Agreement.

3.3 Any and all disputes between ATTI and Contractor shall be governed by, construed in accordance with and enforceable under the applicable Federal laws, rules and regulations and the State laws governing a commercial agreement between private contracting parties entered into and performed in the State of New York.

3.4 Contractor agrees that any breach of Article 1 by Contractor would irreparably harm ATTI and monetary damages would be inadequate compensation. Contractor agrees that ATTI will be entitled to injunctive relief without the obligation to post bond.

### 4. GENERAL PROVISIONS

4.1 This Agreement shall become effective on the effective date first set forth above and shall continue in full force and effect until terminated upon thirty (30) days written notice. Articles 2 and 3 shall survive termination and will remain binding after the termination of this Agreement.

4.2 Licensee may terminate this Agreement at any time with or without cause. ATTI may terminate this Agreement upon any breach of Article 1, if Licensee has been provided with notice and reasonable opportunity to cure said breach. Upon termination of this Agreement, Licensee shall promptly purge all copies of the Software from any computers and storage device and return to ATTI or destroy all originals and copies of the Documentation and back-up copies of the Software. At ATTI' request, Licensee shall certify that it has complied fully with its obligation under this Section.

4.3 This Agreement represents, constitutes and expresses the entire agreement between the parties with respect to the use of the Software and supersedes any previous oral or written communications, representations, understandings or agreements with respect thereto. If any provision of the Agreement is declared to be invalid, the parties agree that such invalidity shall not affect the validity of the remaining provisions of this Agreement, and further agree to substitute for the invalid provision a valid provision which approximates the intent and economic effect of the invalid provisions as closely as possible. This Agreement: (a) is subject to the Contract Disputes Act of 1978 and the Disputes clause of the Contract, if any; and (b) shall be governed by and construed in accordance with the laws and regulations governing contracts by the United States Government. Licensee shall abide by all laws, rules and regulations applicable to the Software, including all export controls laws and regulations.

# Appendix B

## Test Program Sets (TPS) - Terms and Conditions

### TPS Development

Each grouping may consist of 15 levels of development ranging from Complexity 0 to Complexity 14, with level 14 the most complex. Within each complexity, nine additional subcomplexity levels exist. Example: RF TPS Development - LRU - Complexity 4.0 to 4.9

### Microelectronics Simulation Analysis (MESA) for TPS Development

MESA is defined as the Digital or Analog Simulation files necessary to supply stimulus and the expected output of a digital or analog SRU. These digital or analog stimulus and response patterns or signatures can be generated by either Automatic Test Program Generation (ATPG), Automatic Waveform Analysis (AWA) generation, or Manual Test Program Generation (MTPG). Automatic Waveform Analysis or LASAR generates the corresponding output response files used to make the Automatic Test Equipment (ATE) digital or analog patterns or signatures. On complex circuits with hybrids and gate arrays, the internal circuitry of these chips must be modeled separately or purchased. MTPG requires an intimate knowledge of the functional characteristics of all the SRU circuits. During MTPG, engineering may need to analyze the SRU circuitry and develop a functional and timing relationship between circuits. These stimulus and response patterns or signatures are used to develop the executable code utilized by ATE. Complexity is assigned from 0-6. MESA is complete when all circuits in the SRU have been modeled with either Automated Waveform Analysis, ATPG, or MTPG and the resulting digital or analog patterns or signature files have been converted which can be utilized by the ATE.

### SRUs

- 1) Analog TPS Development
- 2) Digital TPS Development
- 3) Electro Optic TPS Development
- 4) Analog/Digital Hybrid TPS Development
- 5) RF TPS Development
- 6) Upgrade TBASIC® to TBASIC®
- 7) Rehost Analog TPS Development
- 8) Rehost Digital TPS Development
- 9) Rehost Analog/Digital Hybrid TPS Development
- 10) Rehost RF TPS Development

### LRUs

- 1) Analog TPS Development
- 2) Digital TPS Development
- 3) Electro Optic TPS Development
- 4) Analog/Digital Hybrid TPS Development
- 5) RF TPS Development
- 6) Upgrade TBASIC® to TBASIC®
- 7) Rehost Analog TPS Development
- 8) Rehost Digital TPS Development
- 9) Rehost Analog/Digital Hybrid TPS Development
- 10) Rehost RF TPS Development

### TPS Updates - Minor - SRUs

- 1) Analog TPS Updates for TPS Obsolescence Mitigation
- 2) Digital TPS Updates for TPS Obsolescence Mitigation
- 3) Electro Optic TPS Updates for TPS Obsolescence Mitigation
- 4) Analog/Digital Hybrid TPS Updates for TPS Obsolescence Mitigation
- 5) RF TPS Updates for TPS Obsolescence Mitigation

### TPS Updates - Minor - LRUs

- 1) Analog TPS Updates for TPS Obsolescence Mitigation
- 2) Digital TPS Updates for TPS Obsolescence Mitigation
- 3) Electro Optic TPS Updates for TPS Obsolescence Mitigation
- 4) Analog/Digital Hybrid TPS Updates for TPS Obsolescence Mitigation
- 5) RF TPS Updates for TPS Obsolescence Mitigation

### SRU ITAs

- 1) Analog TPS Development
- 2) Digital TPS Development
- 3) Electro Optic TPS Development
- 4) Analog/Digital Hybrid TPS Development
- 5) RF TPS Development

### LRU ITAs

- 1) Analog TPS Development
- 2) Digital TPS Development
- 3) Electro Optic TPS Development
- 4) Analog/Digital Hybrid TPS Development
- 5) RF TPS Development

### Complex Rollup ITAs

- 1) Digital Complex Rollup
- 2) Electro Optic Complex Rollup
- 3) Analog/Digital Hybrid Complex Rollup
- 4) RF Complex Rollup

### PADS TPS Development for SRUs or LRUs

This group consists of five levels of development ranging from Complexity 1 to Complexity 5, with level 5 the most complex. Within each complexity, nine additional subcomplexity levels exist. Example: PADS TPS Development - SRU - Complexity 1.0 to 1.9

### Variant TPS Development

This group consists of 11 levels of development ranging from Complexity 0 to Complexity 10, with level 10 the most complex. Within each complexity, nine additional subcomplexity levels exist. Example: Variant TPS Development - Complexity 1.0 to 1.9

### Very Complex ITA Enhancements

The Very Complex ITA Enhancements consist of five levels ranging from Complexity 1 to Complexity 5, with level 5 the most complex. Within each complexity, nine additional subcomplexity levels exist. Example: Very Complex ITA Enhancement - Complexity 1.0 to 1.9

### Holding Fixtures for LRU/SRU

Contact ATTI for a description of Complexity Levels.

### 92103985-10

### CSU (Central Switching Unit) ITA Upgraded Cable Set

### TPS Upgrades

### TPS Rehosting

# Appendix B

## Test Program Sets (TPS) - Terms and Conditions

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### General

Commercial price for TPS consists of either TPS with Diagnostics or Go/NoGo TPS which includes two (2) Program and Technical reviews and acceptance to be held at ATTI facility. Commercial price includes TPS installation and checkout at one designated Buyer's facility. Conus only, non-conus travel and per diem extra.

TPS Complexity is based upon the UUT technical evaluation using furnished data. Estimates of TPS Complexity and completion do not include reverse engineering of TPS requirements. The Buyer must provide complete technical data (Technical Order, Schematics, Test Procedures, Wire Lists, Parts Lists, and Test Requirements Document).

### Buyer Furnished Equipment and Data

The Buyer shall provide two (2) UUTs of each configuration 60 days ARO for the duration of the contract.

The Buyer is responsible for UUT Maintenance and Repair.

The Buyer is responsible to provide UUT data consisting of Schematics, Wire Lists, Test Specifications, and Specification Control Drawings.

The Buyer shall provide the ATE system (BRAT® or PADS) for TPS integration 60 days ARO for the duration of the program. Buyer must provide ATE Users Guide, Programming Manual, Specifications sufficient for TPS development.

### TPS Acceptance Testing

TPS Acceptance Testing shall be performed at ATTI facilities using ATTI commercial ATP.

Acceptance Testing consists of fault insertion and end-to-end testing. The Buyer shall select five (5) faults per UUT for the fault insertion part of the Acceptance Test.

### TPS Documentation

TPS includes ITA Drawings (sufficient for ITA repair), and TPS Test Strategy Report.

Additional Buyer requested data, such as Technical Manuals, Test Requirements Documents, Logistic Support Documentation is not included, and must be separately priced.

### TPS Delivery

The following delivery schedule applies:

**Complexity 4 - 6 TPS:** up to 12 months

**Complexity 0 - 3 TPS:** up to 6 months

Contact ATTI for a description of Complexity Levels.

### Travel

Additional charges for travel and per diem will be in accordance with the Joint Travel Regulations and permission from Buyer.

# Appendix C

## BRAT Contractor Support

### BRAT Tester All Inclusive Support and Repairs Terms and Conditions

#### Description

These Commercial items provide program management, logistics services, repair, calibration, maintenance, data tracking of BRAT equipment, and software support (software deficiency updates). Customer generated Trouble Reports (TRs) are used to initiate contractor maintenance actions. These Commercial items provide Program Services (described below) and individual BRAT Trouble Report (TR) equipment maintenance, repair, and/or calibration.

#### Period of Performance

This Commercial item provides the following services for a period of performance based upon the BRAT Tester Contractor Support item chosen (i.e., 3 months, 6 months, 12 months).

#### Program Services

ATTI will coordinate resources which will consist of repairs, calibration; maintenance scheduling, reporting, tracking; and status reports. Logistics Services consist of program and administrative efforts in support of equipment maintenance, repair, and calibration; and Trouble Reporting (TR) system status updates.

#### Customer Furnished Equipment (CFE) Management

The Customer will provide CFE in support of this contract. CFE will include BRAT testers, PATEC, and an instrument spares pool inventory. The CFE will consist of BRAT R405B, BRAT 405BJ, PATEC, and the rotatable spares pool stored as CFE at ATTI in New York. The CFE BRAT testers and PATEC will be used by ATTI to verify TR replacement and to perform calibration verification. The CFE spares pool inventory will be used to support repair and calibration TRs. Customer may add additional spares as it deems necessary.

ATTI will provide for the stocking, storing, and inventorying of CFE and/or Contractor Acquired Property (CAP). ATTI will maintain an inventory database of all Customer Furnished Equipment (CFE). The ATTI CFE Database System is maintained and updated with all the information and movement associated with each asset as it travels between ATTI, the vendors used for repairs and calibrations and the various Customer sites as required by ATTI's Policies and Procedures.

ATTI is responsible for return to the Customer only the quantity of property identified in the CFE inventory schedule.

#### Common Maintenance Activity System (CMAS), BRAT Edition

Under this Commercial item, the Customer will continue to provide ATTI access to the CMAS, BRAT Edition. For the maintenance and support of BRAT failed items, ATTI will use the ATTI TR Tracker in conjunction with the CMAS BRAT Edition trouble reporting system provided by the Customer.

All BRAT users from the different Customer sites will report product failures as Trouble Reports (TR) through CMAS. A TR is generated by BRAT

users when equipment in the field fails and requires instrument repair, instrument calibration, and/or cable assembly replacement. ATTI will monitor the CMAS on a daily basis and use the ATTI TR Tracker System to track failed units from TR inception, through item repair, to TR closure.

The ATTI TR Tracker System will monitor events according to contract specifications including:

- Contract Information
- Routes: Shipping route for the item in the unique TR.
- Locations: Entry of the locations of the testers. This information must be provided to ATTI by the BRAT PMO.
- Models: Entry of the tester's type.
- Stations/CLIN/ACRN: Entry of Stations part number, SN, Model, the group using the tester and the fund allocation with the CLIN and ACRN as provided for in the contract.
- Repair/Cal Prices: Entry of the prices by fiscal year.

#### REPAIR Trouble Report (TR)

The following procedure applies for Repair TRs:

##### Procedure

The procedure for the TR Process is a four (4) step process identified below:

1. The TR is Initiated and Posted by the BRAT Users in CMAS
  - For calibratable instruments the BRAT user is required to place two TRs, one for calibration and one for repair.
  - For non-calibratable instruments the BRAT user is required to place one TR for repair.
  - For cable assemblies the BRAT user is required to place one TR for replacement of each item.
2. The TR is placed "In Work" and Approved in CMAS
  - After BRAT user TR posting, the Customer C.O.R. (Contracting Officer Representative) is required to approve it by placing the TR "In Work".
  - ATTI is automatically notified of a pending TR by a system generated email.
  - ATTI also tracks the CMAS on a daily basis for new TRs.
3. The TR is advanced to "Action Taken" in CMAS
  - The TR is advanced to the next process (Action Taken) upon receipt of a request for a replacement instrument or cable assembly. The process to complete the repair is as follows:
    - The TR gets entered into the ATTI TR Tracker System.
    - A replacement unit is pulled from the Customer (CFE) spares and is tested according to the TR requirement:
      - Repaired/Replacement Instrument
      - Cable Assembly Replacement
    - The replacement instrument is shipped to the Customer via a commercial shipper or to ATTI's field offices and

# Appendix C

## BRAT Contractor Support

### BRAT Tester All Inclusive Support and Repairs Terms and Conditions

the item will be drop shipped by ATTI's personnel. A print out of the Self Test results, along with shipping documentation (DD 1149) is included with the unit.

- Cable assembly's replacements will be shipped with shipping documentation (DD 1149).
- Upon receipt of the item by Customer personnel, ATTI will advance the TR status in CMAS to "Action Taken" and update the TR System to internally closed status. An e-mail is automatically generated upon Customer signature receipt.
- Upon delivery or receipt of the replacement unit, the Customer will either ship the defective unit or give it directly to the field ATTI personnel. In turn, ATTI will repair or replace the defective unit.
- All of the actions taken on every single TR are tracked in the ATTI TR Tracker System.

#### 4. The TR is Closed in CMAS

- Upon receipt of the item by the Customer and the Action Taken is updated by ATTI, the TR is closed by the Customer C.O.R. It is required that the TR is closed within seven (7) days.
- ATTI is notified by an automatically generated email.
- ATTI updates the ATTI TR Tracker System with the Customer closed date.
- Once the TR is Customer Closed, ATTI accounting personnel is notified by email.
- The TR is then invoiced.
- The TR will be considered satisfied with the self test print out for the replacement part.

A Repair TR will be considered satisfied with the delivery of a successful self test print out for the replacement instrument. The applicable TR will be closed.

#### Repair Items

Appendix C-1, Full Service Repair Services list details the Repair items by description and Commercial part number covered by this Commercial service. Appendix C-3, Full Service Cable Assemblies list details the BRAT Cable Assemblies and miscellaneous BRAT System Assemblies by description and Commercial part number covered by this Commercial service. If the repair item or the cable assembly is not listed, it is not included.

#### **CALIBRATION Trouble Report (TR)**

Each Instrument Calibration requires a Customer generated TR. All calibrated instruments require a Calibration TR to be submitted with each Repair TR submitted.

The following procedure applies for Calibration TRs:

#### Procedure

The procedure for the BRAT instrument Calibration TR Process is a four (4) step process identified below:

1. The TR is Initiated and Posted by the BRAT Users in CMAS
  - Instruments requiring Repair which are also calibration items require two (2) TRs. The BRAT user is required to submit one Calibration TR and one Repair TR.
2. The TR is placed "In Work" and Approved in CMAS
  - After BRAT user TR posting, the Customer C.O.R. (Contracting Officer Representative) is required to approve it by placing the TR "In Work".
  - ATTI is automatically notified of a pending TR by a system generated email.
  - ATTI also tracks the CMAS on a daily basis for new TRs.
3. The TR is advanced to "Action Taken" in CMAS
  - The TR is advanced to the next process (Action Taken) upon receipt of a request for replacement calibrated instrument. The process to complete the calibration is as follows:
    - The TR gets entered into the ATTI TR Tracker System.
    - An instrument is pulled from the Customer (CFE) spares and is tested according to the TR requirement:
      - Calibration (PATEC)
    - The replacement calibrated instrument is shipped to the Customer via a commercial shipper or to ATTI's field offices and the item will be drop shipped by ATTI's personnel. A print out of the Calibration results along with shipping documentation (DD 1149) is included with the unit.
    - Upon receipt of the item by Customer personnel, ATTI will advance the TR status in CMAS to "Action Taken" and update the TR System to internally closed status. An e-mail is automatically generated upon Customer signature receipt.
    - Upon delivery or receipt of the replacement calibrated instrument, the Customer will either ship the defective unit or give it directly to the field ATTI personnel. In turn, ATTI will calibrate as required.
    - All of the actions taken on every single TR is tracked in the ATTI TR Tracker System.
4. The TR is Closed in CMAS
  - Upon receipt of the item by the Customer and the Action Taken is updated by ATTI, the TR is closed by the Customer C.O.R. It is required that the TR is closed within seven (7) days.
  - ATTI is notified by an automatically generated email.
  - ATTI updates the ATTI TR Tracker System with the Customer closed date.
  - Once the TR is Customer Closed, ATTI accounting personnel is notified by email.

# Appendix C

## BRAT Contractor Support

### BRAT Tester All Inclusive Support and Repairs Terms and Conditions

- The TR is then invoiced.
- The TR will be considered satisfied with the Calibration test print out for the replacement instrument.

A Calibration TR will be considered satisfied with the delivery of a successful calibration print out for the replacement instrument. The applicable TR will be closed.

#### Calibration Items

Appendix C-2, Full Service Calibration list details the BRAT instruments by instrument description and Commercial part number covered by this Commercial service. If the calibration item is not listed, it is not included.

#### Installation Failure

In cases where a replacement item fails upon installation, the user will generate a new TR.

#### Items Beyond Repair

Equipment may be deemed unrepairable or beyond repair due to information obtained from and provided to ATTI by the OEM. Commercial documentation supporting the non-repairability and/or non-supportability of an item will be provided to the BRAT PMO. The Customer will provide instructions for the non-repairable item.

#### Turn Around Time (TAT)

ATTI will ensure all TRs are completed and/or resolved within 15 working days from the date the TR is approved for contractor action. If ATTI is unable to resolve the failure within 15 working days, ATTI will provide the Customer an explanation of the problem with an estimated repair date. TAT commences on the TR approval date in CMAS and is concluded by delivery to Customer custody.

#### SOFTWARE

(Applicable only to BRAT Tester Contractor Support - All Inclusive)

#### Scope – Software Updates

This Commercial item provides BRAT software updates necessary to support operational use of the BRAT. The software updates will be provided in support of potential BRAT software problems (software problem reports) or deficiencies (software deficiency reports). The updates will consist of BRAT commercial software, as well as, updates to Customer owned software; and will be limited to existing TPS' and existing hardware. All proposed software changes will be approved by the Customer. Deliverables will be provided as new CPINs.

The following table identifies the ATTI COTS software and Customer owned software included in this Commercial item:

#### ATTI Commercial Software

Noun	CPIN
S/W Development System	85T BRAT/SOFTWAREDEVELOPMENT-S001-00A
BRAT General Purpose ATS	85T-BRAT/WINXGENPUR/ATS-F001-00A
BRAT Self-Test	85T-BRAT/SELFTEST-S001-00A

ATTI commercial (COTS) software is subject to applicable ATTI license agreements and will be provided as runtime software only (does not include source code).

#### Customer Owned Software

Noun	CPIN
Calibration TPS	85T-BRAT/CALIBRATION-S001-00A/D
BRAT Alignment TPS	85T-BRAT/ALIGNMENT-S001-00A/D
Customer owned BRAT TPS	

Updates to Customer software will be provided with unlimited rights.

#### Software Deficiency Report (SDR) Identification and Submission

ATTI will perform software investigation of reported potential software deficiencies of BRAT COTS software and Customer owned software. Software deficiency reports (SDRs) requiring investigation may be submitted by the Customer or ATTI. SDRs will be limited to existing TPS' and hardware. The BRAT Program Office (BPO) will provide work authorization for all new SDRs and will filter and prioritize SDR investigation prior to ATTI investigation and resolution. ATTI will determine the root cause of the SDR(s) and provide recommended solution(s). ATTI will perform investigation, perform testing, and provide a resolution. The Customer will provide technical data pertinent to the SDR(s) to the maximum extent possible. There may be situations where additional data gathering will be required by the contractor in order to adequately determine the root cause of the SDR and to develop a solution. The potential need for this additional data gathering by ATTI will be dictated by the level of detail required by the contractor to resolve the SDR.

#### Integration and Testing

ATTI will conduct integration and testing of the proposed software changes, iteratively evaluate the test results, perform quality audit of the software, and provide a new CPIN when software updates are needed. In cases where a software update is not required, a report will be provided to the Customer detailing the cause of the SDR and a recommended resolution. Integration and testing will be performed using necessary hardware, software, and documentation.

# Appendix C

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## BRAT Contractor Support

### BRAT Tester All Inclusive Support and Repairs Terms and Conditions

#### BRAT COTS Software

Applicable BRAT COTS software includes instrument drivers, test executive and self-test. Updates to the BRAT COTS software are to be integrated, tested, and verified on a configured BRAT tester. Software updates will be provided as runtime software (CPIN) only and does not include source code.

#### Customer Owned Software

1. BRAT Calibration and Alignment Software - Updates to the BRAT Calibration and Alignment Software will be performed using the configured BRAT tester, PATEC, and the existing Calibration and Alignment CPIN software. The Customer must provide ATTI the latest approved CPIN software and ITA hardware when requested by ATTI. Software updates will be provided as a revised CPIN including source and executable code (CPIN -00A/D). Documentation updates will be limited to T.O. red-lined changes, if required.
2. UUT TPS on the BRAT - Applicable BRAT UUT TPS' consist of existing approved LRU or SRU CPINs. Integration testing will be performed using a configured BRAT system capable of supporting the UUT TPS. The Customer must provide ATTI the latest approved CPIN software, a functional UUT, and ITA hardware when requested by ATTI. Software updates will be provided as a revised CPIN including source and executable code (CPIN -00A/D). Documentation updates will be limited to T.O. red-lined changes, if required.

#### **Acceptance Test**

ATTI will conduct acceptance testing in accordance with an Acceptance Test Procedure (ATP), which will provide for performance testing and verification. The ATP will provide pass/fail criteria for the acceptance testing. The tests will be conducted at the ATTI's facility, Hauppauge, New York. A final Acceptance Test Report summarizing the results of the acceptance testing will be submitted and will constitute finalization of the item.

# Appendix C-1

## BRAT Contractor Support

### Full Service Repair Services (Replacement Instrument Acceptable)

ATTI P/N	DESCRIPTION	ATTI P/N	DESCRIPTION
FSR01001522-01	IFF/TACAN Transponder/Interrogator Full Service Repair Services	FSR92103855-01	Synchro/Resolver Simulator and Indicator Full Service Repair Services
FSR01001527-10	Comm/Nav Module Full Service Repair Services	FSR92103897-01	Timing Pod Full Service Repair Services
FSR01001599-01	USB Controller Full Service Repair Services	FSR92103986-01	VXI Mainframe Command Module Full Service Repair Services
FSR02000136-01	RF Pulse Amplifier Full Service Repair Services	FSR92103987-01	VXI Mainframe Full Service Repair Services
FSR02000259-01	Programmable DC Electronic Load Full Service Repair Services	FSR93000042-01	400 Hz Three-Phase Power Conditioner and Distribution Box Full Service Repair Services
FSR02200108-01	Air Data Test Set Full Service Repair Services	FSR93000068-01	QUAD 8-Bit Digital Input/Output Latch Full Service Repair Services
FSR02200132-10	Vacuum Pump (Modified) Full Service Repair Services	FSR93000069-01	A/B to C-Size Module Carrier Full Service Repair Services
FSR02200132-30	Vacuum Pump (Modified) Full Service Repair Services	FSR93000074-01	64-Channel Relay Multiplexer Full Service Repair Services
FSR02200132-50	Compressor (Modified) Full Service Repair Services	FSR93000075-01	Relay Matrix Full Service Repair Services
FSR02200206-10	Air Data Test Set Case Assembly Full Service Repair Services	FSR93000076-01	RF Multiplexer Full Service Repair Services
FSR02200207-10	Compressor/Vacuum Pump Case Assembly Full Service Repair Services	FSR93000077-01	6½-Digit Digital Multimeter Full Service Repair Services
FSR02300503-01	Controller Full Service Repair Services	FSR93000078-01	High-Performance Universal Counter Full Service Repair Services
FSR02300508-01	Combination HUD Fixture/Alignment Tool Full Service Repair Services	FSR93000079-01	1-GSa/s Digitizing Oscilloscope Full Service Repair Services
FSR02300509-01	Light Shroud Full Service Repair Services	FSR93000080-01	Arbitrary Function Generator Full Service Repair Services
FSR02300515-01	Boresight Bench Full Service Repair Services	FSR93000081-01	21 MHz Synthesized Function/Sweep Generator Full Service Repair Services
FSR02300522-10	Transport/Camera Assembly Full Service Repair Services	FSR93000151-01	Local Oscillator Full Service Repair Services
FSR02300530-01	C-Size VXI Mainframe - 4 Slots Full Service Repair Services	FSR93000152-01	IF Section (100 KHz to 3 MHz) Full Service Repair Services
FSR07030001-10	Z50 Digital VXI Module Full Service Repair Services	FSR93000153-01	Graphics Display Full Service Repair Services
FSR07040313-10	RF Controller (RF Deck) Obsolescence Mitigation Replacement - SW subject to License (Appendix A) Full Service Repair Services	FSR93000154-01	Digitizer Full Service Repair Services
FSR07040313-30	RF Controller (Enhanced Phase Noise) Obsolescence Mitigation Replacement - SW subject to License (Appendix A) Full Service Repair Services	FSR93000155-01	Power Meter Full Service Repair Services
FSR07040313-90	RF Controller (Comm/Nav) Full Service Repair Services	FSR93000156-03	Modular Synthesized Signal Generator with 1 Hz Resolution Full Service Repair Services
FSR07040317-10	Phase Noise Measurement Module (Enhanced) Obsolescence Mitigation Replacement - SW subject to License (Appendix A) Full Service Repair Services	FSR93000172-01	RF Section (100 Hz to 22 GHz) Full Service Repair Services
FSR92103573-01	Single-Phase AC Programmable Power Supply Full Service Repair Services	FSR93000173-01	IF Section (10 Hz to 300 KHz) Full Service Repair Services
FSR92103848-01	Pattern Pod Full Service Repair Services	FSR93000200-01	Preamplifier (26.5 GHz) Full Service Repair Services
FSR92103850-01	160 MHz Timing I/O Module Full Service Repair Services	FSR93000201-01	System Mainframe Full Service Repair Services
FSR92103851-01	20 MHz Pattern I/O Module Full Service Repair Services	FSR93000284-01	Digitizing Oscilloscope Full Service Repair Services
FSR92103852-01	Terminating 20 MHz Pattern I/O Module Full Service Repair Services	FSR93000293-01	Power Sensor Full Service Repair Services
		FSR93000293-03	Power Sensor Full Service Repair Services
		FSR93000506-01	32-Channel, 5 A, Form C Switch Full Service Repair Services
		FSR93000550-30	Three-Phase AC Programmable Power Supply Full Service Repair Services
		FSR94000104-10	RF Interface Unit (RFIU) Mainframe Full Service Repair Services

# Appendix C-1

## BRAT Contractor Support

### Full Service Repair Services (Replacement Instrument Acceptable)

ATTI P/N	DESCRIPTION	ATTI P/N	DESCRIPTION
FSR94000603-10	RF Measurement #1 Full Service Repair Services	FSR95000049-01	Synchro/Resolver Simulator and Indicator Full Service Repair Services
FSR94000604-10	RF Converter Full Service Repair Services	FSR95000340-01	Microwave Network Analyzer Calibration Kit Full Service Repair Services
FSR94000605-10	RF Output Full Service Repair Services	FSR95000450-10	Auxiliary RF Signal Processor/Matrix Full Service Repair Services
FSR94000606-10	RF Controller (BRAT 305/405) Full Service Repair Services	FSR95000450-50	Auxiliary RF Signal Processor/Matrix Full Service Repair Services
FSR94000606-50	RF Controller (JTIDS) Full Service Repair Services	FSR96000001-01	50 MHz Digital Interface Timing Module Full Service Repair Services
FSR94000606-70	RF Controller (JSTARS) Full Service Repair Services	FSR96000001-03	50 MHz Timing/Control Module Full Service Repair Services
FSR94000833-01	Frequency Extension Module Full Service Repair Services	FSR96000002-01	50 MHz TTL/CMOS/ECL Pattern Module Full Service Repair Services
FSR94000855-01	Microwave Signal Generator Full Service Repair Services	FSR96000007-01	50 MHz Variable Level Pattern Module Full Service Repair Services
FSR94000887-01	DC Power Supply Frame Full Service Repair Services	FSR96000012-01	32-Channel Differential ECL I/O Module Full Service Repair Services
FSR94000888-01	0 to 7 V Module for DC Power Supply Full Service Repair Services	FSR96000013-01	Timing Module Extension Card (Dual) Full Service Repair Services
FSR94000889-01	0 to 20 V Module for DC Power Supply Full Service Repair Services	FSR96000013-03	Timing Module Extension Card (Single) Full Service Repair Services
FSR94000890-01	0 to 32 V Module for DC Power Supply Full Service Repair Services	FSR96000014-01	High Power Mainframe - 6 Slots Full Service Repair Services
FSR94000891-01	0 to 320 V Module for DC Power Supply Full Service Repair Services	FSR96000014-03	High Power Mainframe - 13 Slots Full Service Repair Services
FSR94000982-01	Precision Frequency Reference with Internal Amplifier Full Service Repair Services	FSR96000015-01	Current Sharing Power Supply Full Service Repair Services
FSR94100500-130	Electronic Power Control Center - Single Phase Full Service Repair Services	FSR96000016-01	VXI-MXI-2 Kit Full Service Repair Services
FSR94100500-370/50	Electronic Power Control Center - RF Rack/Single Phase Full Service Repair Services	FSR96000017-01	VXI-MXI-2 Extender Full Service Repair Services
FSR94100554-10	Phase Balance Module Full Service Repair Services	FSR96000020-01	Programmable Electronic Load Full Service Repair Services
FSR94100604-01	Frequency Counter Full Service Repair Services	FSR96000021-01	1 KW Programmable Power Supply Full Service Repair Services
FSR94100750-01	Power Distribution Unit Full Service Repair Services	FSR96000105-01	PCI-MXI-2 CCA Full Service Repair Services
FSR94100751-01	Three-Phase Power Supply (Master) Full Service Repair Services	FSR96740017-01	Peak Power Meter Full Service Repair Services
FSR94100752-01	Three-Phase Power Supply (Slave) Full Service Repair Services	FSR96740017-03	Peak Power Meter Full Service Repair Services
FSR94100766-10	Timing Generator Module Full Service Repair Services	FSR96740019-01	Peak Power Sensor Full Service Repair Services
FSR94101013-50	Phase Noise Measurement System Reference Source Unit Full Service Repair Services	FSR96740019-03	Peak Power Sensor Full Service Repair Services
FSR94101130-01	Phase Noise Measurement System Full Service Repair Services	FSR96740021-01	Frequency Synthesizer Full Service Repair Services
FSR94101177-01	136-Channel Logic Analyzer Full Service Repair Services	FSR96740022-03	Power Amplifier Full Service Repair Services
FSR95000018-03	Microwave Network Analyzer Full Service Repair Services	FSR96740045-10	L-Band Signal Conditioning Module Full Service Repair Services
FSR95000019-03	MIL-STD-1553A/B Bus Analyzer Simulator Full Service Repair Services	FSR96740070-10	Reference Generator Module Full Service Repair Services
FSR95000045-01	0 to 160 V Module for DC Power Supply Full Service Repair Services	FSR96740103-10	CPSM Modulator/Demodulator Module Full Service Repair Services
		FSR98000100-30	Programmable Video Generator and Analyzer Module (A-10) Full Service Repair Services
		FSR98715045-01	Blower Assembly Full Service Repair Services

## Appendix C-2

### BRAT Contractor Support Full Service Calibration

ATTI P/N	DESCRIPTION	ATTI P/N	DESCRIPTION
<b>Full Service Calibration - Modules</b>			
FSCBRAT B303C(V1)	BRAT B303C(V1) Enhanced Full Service Calibration Services (excluding Phase Noise Measurement Module)	FSC94000603-10	RF Measurement #1 Full Service Calibration Services
FSC01001522-01	IFF/TACAN Transponder/Interrogator Full Service Calibration Services	FSC94000604-10	RF Converter Full Service Calibration Services
FSC01001527-10	Comm/Nav Module Full Service Calibration Services	FSC94000605-10	RF Output Full Service Calibration Services
FSC02000259-01	Programmable DC Electronic Load Full Service Calibration Services	FSC94000606-10	RF Controller (BRAT 305/405) Full Service Calibration Services
FSC02200206-10	Air Data Test Set Case Assembly Full Service Calibration Services	FSC94000606-50	RF Controller (JTIDS) Full Service Calibration Services
FSC02200207-10	Compressor/Vacuum Pump Case Assembly Full Service Calibration Services	FSC94000606-70	RF Controller (JSTARS) Full Service Calibration Services
FSC93000077-01	6½-Digit Digital Multimeter Full Service Calibration Services	FSC94000833-01	Frequency Extension Module Full Service Calibration Services
FSC93000078-01	High-Performance Universal Counter Full Service Calibration Services	FSC94000855-01	Microwave Signal Generator Full Service Calibration Services
FSC93000079-01	1-GSa/s Digitizing Oscilloscope Full Service Calibration Services	FSC94000982-01	Precision Frequency Reference with Internal Amplifier Full Service Calibration Services
FSC93000080-01	Arbitrary Function Generator Full Service Calibration Services	FSC94001013-01	50 MHz Attenuator Full Service Calibration Services
FSC93000081-01	21 MHz Synthesized Function/Sweep Generator Full Service Calibration Services	FSC94100554-10	Phase Balance Module Full Service Calibration Services
FSC93000151-01	Local Oscillator Full Service Calibration Services	FSC94100604-01	Frequency Counter Full Service Calibration Services
FSC93000152-01	IF Section (100 KHz to 3 MHz) Full Service Calibration Services	FSC94100766-10	Timing Generator Module Full Service Calibration Services
FSC93000154-01	Digitizer Full Service Calibration Services	FSC94101013-50	Phase Noise Measurement System Reference Source Unit Full Service Calibration Services
FSC93000155-01	Power Meter Full Service Calibration Services	FSC94101130-01	Phase Noise Measurement System Full Service Calibration Services
FSC93000156-03	Modular Synthesized Signal Generator with 1 Hz Resolution Full Service Calibration Services	FSC94101177-01	136-Channel Logic Analyzer Full Service Calibration Services
FSC93000172-01	RF Section (100 Hz to 22 GHz) Full Service Calibration Services	FSC95000018-03	Microwave Network Analyzer Full Service Calibration Services
FSC93000173-01	IF Section (10 Hz to 300 KHz) Full Service Calibration Services	FSC95000049-01	Synchro/Resolver Simulator and Indicator Full Service Calibration Services
FSC93000200-01	Preamplifier (26.5 GHz) Full Service Calibration Services	FSC95000340-01	Calibration Kit for Microwave Network Analyzer Full Service Calibration Services
FSC93000221-10	RF Measurement #2 Full Service Calibration Services	FSC96740017-01	Peak Power Meter Full Service Calibration Services
FSC93000284-01	Digitizing Oscilloscope Full Service Calibration Services	FSC96740017-03	Peak Power Meter Full Service Calibration Services
FSC93000293-01	Power Sensor Full Service Calibration Services	FSC96740019-01	Peak Power Sensor Full Service Calibration Services
FSC93000293-03	Power Sensor Full Service Calibration Services	FSC96740019-03	Peak Power Sensor Full Service Calibration Services
FSC93000318-10	Synchronizer #1 Full Service Calibration Services	FSC96740021-01	Frequency Synthesizer Full Service Calibration Services
FSC93000499-01	Microwave Radiation Detector Full Service Calibration Services		

## Appendix C-2

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### BRAT Contractor Support Full Service Calibration

ATTI P/N	DESCRIPTION
<b>Full Service Calibration Services - Systems</b>	
FSC96740045-10	L-Band Signal Conditioning Module Full Service Calibration Services
FSC96740070-10	Reference Generator Module Full Service Calibration Services
FSC96740103-10	CPSM Modulator/Demodulator Module Full Service Calibration Services
FSCS70 ON	BRAT 70 Full Service Calibration Services - On Site
FSCS105 ON	BRAT 105 Full Service Calibration Services - On Site
FSCS105 OFF	BRAT 105 Full Service Calibration Services - Off Site
FSCS105-C5 ON	BRAT 105 (C-5) Full Service Calibration Services - On Site
FSCS105-C5 OFF	BRAT 105 (C-5) Full Service Calibration Services - Off Site
FSCS205 ON	BRAT 205 Full Service Calibration Services - On Site
FSCS205 OFF	BRAT 205 Full Service Calibration Services - Off Site
FSCS303 ON	BRAT 303 Full Service Calibration Services - On Site
FSCS303 OFF	BRAT 303 Full Service Calibration Services - Off Site
FSCS303RF ON	BRAT 303RF (RF Rack only) Full Service Calibration Services - On Site
FSCS303RF OFF	BRAT 303RF (RF Rack only) Full Service Calibration Services - Off Site
FSCS305 ON	BRAT 305 Full Service Calibration Services - On Site
FSCS305 OFF	BRAT 305 Full Service Calibration Services - Off Site
FSCS305BJ ON	BRAT 305BJ - JTIDS Full Service Calibration Services - On Site
FSCS305BJ OFF	BRAT 305BJ - JTIDS Full Service Calibration Services - Off Site
FSCS405 ON	BRAT 405 Full Service Calibration Services - On Site
FSCS405 OFF	BRAT 405 Full Service Calibration Services - Off Site
FSCS405J ON	BRAT 405J - JTIDS Full Service Calibration Services - On Site
FSCS405J OFF	BRAT 405J - JTIDS Full Service Calibration Services - Off Site
FSCS520-400 ON	BRAT 520-400 Full Service Calibration Services - On Site
FSCS520-400 OFF	BRAT 520-400 Full Service Calibration Services - Off Site

# Appendix C-3

## BRAT Contractor Support

### Full Service Cables, Connectors, Adapters, and Others (Replacement Item Acceptable)

ATTI P/N	DESCRIPTION	ATTI P/N	DESCRIPTION
<b>Cables, Connectors, and Adapters - Complexity Level 1</b>		<b>Cables, Connectors, and Adapters - Complexity Level 2</b>	
<b>FSP92105226-COM1</b>	<b>Cables, Connectors, and Adapters - Complexity Level 1 Full Service</b>	FSP02200221-10	Compressor/Vacuum Pump Hose Assembly Full Service
FSP01000199-30	B520 I/O Cable Assembly Full Service	FSP02300525-10	Video Cable Assembly Full Service
FSP01000199-50	B520 I/O Cable Assembly Full Service	FSP02300536-10	Power Input Cable Assembly Full Service
FSP01000199-70	B520 I/O Cable Assembly Full Service	FSP02300537-01	Boresight Bench Leg (Left) Full Service
FSP02000133-10	Isolated GPIB Expander Assembly Full Service	FSP02300537-02	Boresight Bench Leg (Right) Full Service
FSP02200208-10	Power Distribution Panel Assembly Full Service	FSP02300537-03	Boresight Bench Leg (Center) Full Service
FSP94100238-10	160-Pin, 50 Ω Point to Point Cable Full Service	FSP92103566-10	System Cable Full Service
FSP94100799-10	AC Power Interface Drawer Assembly Full Service	FSP92103582-10	System Cable Full Service
FSP96000063-10	RFI Receiver Panel Full Service	FSP92103583-30	System Cable Full Service
FSP96000063-30	RFI Receiver Panel Full Service	FSP92103583-50	System Cable Full Service
FSP96000097-10	Self Test Plug Full Service	FSP92103748-10	DC Power and VXI Synchro Self Test Cable Full Service
<b>Cables, Connectors, and Adapters - Complexity Level 2</b>		FSP92103749-10	High Frequency Self Test Cable Full Service
<b>FSP92105226-COM2</b>	<b>Cables, Connectors, and Adapters - Complexity Level 2 Full Service</b>	FSP92103750-10	Four-Wire Resistance Self Test Cable Full Service
FSP00002602-10	RF Detector Cable Assembly Full Service	FSP92103751-10	Two-Wire Resistance Self Test Cable Full Service
FSP02000114-10	Digital Interconnect Cable Full Service	FSP92103770-10	Shorting Plug Self Test Cable Full Service
FSP02000116-10	Cable Assembly Full Service	FSP92103877-10	One-Wire Resistance Self Test Cable Full Service
FSP02000117-10	Cable Assembly Full Service	FSP92103878-10	Static Digital Self Test Cable Full Service
FSP02000117-30	Cable Assembly Full Service	FSP92103879-10	Dynamic Digital Self Test Cable Full Service
FSP02000117-50	Cable Assembly Full Service	FSP92103903-10	N/A Synchro Self Test Cable Full Service
FSP02000117-70	Cable Assembly Full Service	FSP92103914-10	BRAT Power Cable Full Service
FSP02000120-10	Cable Assembly Full Service	FSP92103916-10	Self Test Cable Full Service
FSP02000122-10	Cable Assembly Full Service	FSP92103917-10	Power Supply Cable Full Service
FSP02000124-10	Cable Assembly Full Service	FSP92103927-10	Custom Switch Self Test Cable Full Service
FSP02000125-10	Cable Assembly Full Service	FSP92103940-10	Power Distribution Panel Full Service
FSP02000129-10	Power Cable Full Service	FSP92103940-30	Power Distribution Panel Full Service
FSP02200210-10	PT Exhaust Pressure Hose Assembly Full Service	FSP92103940-90	Power Distribution Panel Full Service
FSP02200210-30	PS Exhaust Pressure Hose Assembly Full Service	FSP92103940-130	Power Distribution Panel Full Service
FSP02200211-10	PT Hose Assembly Full Service	FSP92103940-210	Power Distribution Panel Full Service
FSP02200211-30	PS Hose Assembly Full Service	FSP94000500-50	RF Coaxial Cable Full Service
FSP02200216-01	Air Data Test Set Rear Panel Full Service	FSP94100017-10	DC Power Output Cable Full Service
FSP02200217-10	Compressor/Vacuum Pump Rear Panel Assembly Full Service	FSP94100019-10	AC Power Output Cable Full Service
FSP02200218-10	Air Supply Hose Assembly Full Service	FSP94100121-10	AC I/O Cable Full Service
FSP02200219-10	Air Data Test Set Hose Assembly Full Service	FSP94100134-10	DC I/O Cable Full Service
FSP02200219-30	Air Data Test Set Hose Assembly Full Service	FSP94100184-10	MMS Interconnect Cable Full Service
FSP02200219-50	Air Data Test Set Hose Assembly Full Service	FSP94100189-10	MMS 3 I/O Cable Full Service
FSP02200219-70	Air Data Test Set Hose Assembly Full Service	FSP94100195-10	RFIU I/O Cable Full Service
FSP02200219-90	Air Data Test Set Hose Assembly Full Service	FSP94100204-10	DCPS External Channel Cable Full Service
FSP02200220-10	Compressor/Vacuum Pump Hose Assembly Full Service	FSP94100206-10	MSIB Cable Full Service
FSP02200220-30	Compressor/Vacuum Pump Hose Assembly Full Service	FSP94100206-30	MSIB Cable Full Service
FSP02200220-50	Compressor/Vacuum Pump Hose Assembly Full Service	FSP94100209-10	MSIB Interconnect Cable Full Service
		FSP94100223-10	Syn 3 I/O Cable Full Service
		FSP94100233-10	Point to Point Twisted Pair Cable Full Service
		FSP94100233-30	Point to Point Twisted Pair Cable Full Service
		FSP94100234-10	50 Ω Point to Point Cable Full Service
		FSP94100234-30	50 Ω Point to Point Cable Full Service

# Appendix C-3

## BRAT Contractor Support

### Full Service Cables, Connectors, Adapters, and Others (Replacement Item Acceptable)

ATTI P/N	DESCRIPTION
<b>Cables, Connectors, and Adapters - Complexity Level 2</b>	
FSP94100239-10	VXI I/O Cable Full Service
FSP94100241-10	VXI I/O Cable Full Service
FSP94100244-10	VXI I/O Cable Full Service
FSP94100249-10	Power Cable Full Service
FSP94100329-10	DC $\Omega$ Load I/O Cable Full Service
FSP94100390-10	Point to Point Twisted Pair Cable Full Service
FSP94100391-10	50 $\Omega$ Point to Point Cable Full Service
FSP94100776-10	Auxiliary AC Control Cable Full Service
FSP94100777-10	Auxiliary AC Output Cable Full Service
FSP94100864-10	Cable Assembly Full Service
FSP94101108-10	Emergency Stop Cable Full Service
FSP94101204-10	Adapter CCA Full Service
FSP94101204-30	Adapter CCA Full Service
FSP96000038-10	6-Module Front Panel Full Service
FSP96000067-10	Power Output Cable Full Service
FSP96000072-01	Straight/Bulkhead MXI-2 Cable Full Service
FSP96000089-10	Self Test Cable Full Service
FSP96000094-10	Power Output Bulkhead Cable Full Service
FSP96000143-10	Shorting Plug - Option 500 Full Service
FSP96000148-10	RFI-VXI I/O Cable Assembly Full Service
FSP96000148-30	RFI-VXI I/O Cable Assembly Full Service
FSP96000148-50	RFI-VXI I/O Cable Assembly Full Service
FSP96000150-10	DCPS Loads Cable Assembly Full Service
FSP96000151-10	DCPS Loads Cable Assembly Full Service
FSP96000152-10	ECL Module I/O Cable Assembly Full Service
FSP96000160-10	Timing Module I/O Cable Assembly Full Service
FSP96000173-10	504 Self Test Case Assembly Full Service
FSP96200010-10	1330 Latch Cable Full Service
FSP96200013-10	CCA Housing Full Service

ATTI P/N	DESCRIPTION
<b>Cables, Connectors, and Adapters - Complexity Level 2</b>	
FSP96200013-30	CCA Housing Full Service
FSP96200013-50	CCA Housing Full Service
FSP96200013-70	CCA Housing Full Service
FSP96200013-90	CCA Housing Full Service
FSP96200026-10	30-Pin, 50 $\Omega$ Point to Point Cable Full Service
FSP96200027-10	30-Pin, Twisted Pair Cable Full Service
FSP96200028-10	24-Pin, 50 $\Omega$ Point to Point Cable Full Service
FSP96200029-10	24-Pin, Twisted Pair Cable Full Service
FSP96200045-10	System Cable Full Service
FSP96740304-10	RF Cable Assembly Full Service
FSP96740310-10	Cable Assembly Full Service
FSP96740432-10	Reference Self Test Cable Full Service
FSP96740433-10	Frequency Self Test Cable Full Service
FSP96740996-10	CPSM Self Test Cable Full Service
FSP96741022-10	ECL Self Test Cable Full Service
FSP96741081-10	Termination Plug Full Service

#### BRAT Common Parts

ATTI P/N	DESCRIPTION
<b>BRAT Common Parts Full Service</b>	
FSP02200140-01	Filter/Regulator with Gauge Full Service
FSP93000521-30	Wiring Duct Cover - Modified Full Service
FSP94100172-01	Cable Shield - BRAT 405 Full Service
FSP94100172-03	Cable Shield - BRAT 405 Full Service
FSP94100344-01	Left Inlet Connector Lock Full Service
FSP94100344-02	Right Inlet Connector Lock Full Service
FSP94100345-01	Left Outlet Connector Lock Full Service
FSP94100345-02	Right Outlet Connector Lock Full Service
FSP94100411-01	Cable Retainer Full Service
FSP96200051-01	Connector Spacer Full Service
FSP96200051-03	Connector Spacer Full Service

# Appendix C-3

## BRAT Contractor Support

### Full Service Cables, Connectors, Adapters, and Others (Replacement Item Acceptable)

ATTI P/N	DESCRIPTION
<b>Cables, Connectors, and Adapters - Complexity Level 3</b>	
<b>FSP92105226-COM3</b>	<b>Cables, Connectors, and Adapters - Complexity Level 3 Full Service</b>
FSP02000113-10	Peak Power and Frequency Cable Full Service
FSP02000134-10	Power Cable Full Service
FSP02200214-01	Service Access Panel Full Service
FSP02300505-01	Accessory Cable Full Service
FSP02300517-10	BNC to BNC Cable Assembly Full Service
FSP92103911-10	DC Voltage Test Self Test Cable Full Service
FSP92103915-10	BNC Plug to BNC Plug Self Test Cable Full Service
FSP92103915-30	BNC Plug to BNC Plug Self Test Cable Full Service
FSP92103931-10	RF Self Test Cable Full Service
FSP92103932-10	Type N to Type N RF Cable Full Service
FSP92103932-50	Type N to Type N RF Cable Full Service
FSP92103937-10	VXI Precision Resistor Full Service
FSP92103975-30	Electronic Load I/O Cable Full Service
FSP92103990-10	SPD I-Q/Atten Self Test Cable Full Service
FSP92105070-10	DDP Self Test Cable Assembly Full Service
FSP94000714-10	RF Cable Full Service
FSP94100101-10	Three-Phase AC Power Input Cable Full Service
FSP94100174-10	MMS 1 I/O Cable Full Service
FSP94100175-10	AC Power Input Cable Full Service
FSP94100175-30	AC Power Input Cable Full Service
FSP94100175-50	AC Power Input Cable Full Service
FSP94100175-70	AC Power Input Cable Full Service
FSP94100185-30	Power Input Cable Full Service
FSP94100185-50	Power Input Cable Full Service
FSP94100188-10	MMS 2 I/O Cable Full Service
FSP94100192-10	BNC to SMB Cable Full Service
FSP94100202-10	DC Master/Slave Cable Full Service
FSP94100221-10	Syn 3 Cable Full Service
FSP94100227-10	Three-Phase Power I/O Cable Full Service
FSP94100237-10	Point to Point Cable Full Service
FSP94100318-10	SPD Cable Full Service
FSP94100328-10	Electronic Load Output Cable Full Service
FSP94100342-10	IEEE Extension Cable Full Service
FSP94100352-10	DB25 Male/Female Cable Full Service
FSP94100357-10	Printer Case Full Service
FSP94100373-10	Comm Port I/O Cable Full Service
FSP94100407-10	Power Module Cable Full Service
FSP94100420-10	Type N Plug to Type N Plug Cable Full Service
FSP94100421-10	SMA Plug to Type N Bulkhead Armored Cable Assembly Full Service
FSP94100428-10	Computer Cooling Fan Full Service
FSP94100429-10	Reset Switch Full Service
FSP94100430-10	Computer LED Full Service
FSP94100572-10	IF I/O Cable Full Service

ATTI P/N	DESCRIPTION
<b>Cables, Connectors, and Adapters - Complexity Level 3</b>	
FSP94100573-10	Type N to Type N Bulkhead Cable Full Service
FSP94100586-10	Power Sensor Cable Full Service
FSP94100586-30	Power Sensor Cable Full Service
FSP94100679-10	Waveguide and Blower Assembly Cable Full Service
FSP94100744-10	Inner Auxiliary AC Control Cable Full Service
FSP94100745-10	Auxiliary AC Power Output Cable Full Service
FSP94100778-10	Auxiliary AC Slave Cable Full Service
FSP94100780-10	SW PDU Control Cable Full Service
FSP94100866-10	Power Input Cable Full Service
FSP94101100-10	Rear Panel Assembly Full Service
FSP95000600-10	Type N Plug to SMA Plug Signal Processor Drawer Self Test Cable Full Service
FSP95000601-10	SMA Plug to SMA Plug Signal Processor Drawer Test Cable Full Service
FSP95000602-10	TNC Plug to SMA Plug Signal Processor Drawer Test Cable Full Service
FSP95000603-10	Type N Plug to TNC Plug Armored Test Cable Full Service
FSP95000603-30	Type N Plug to TNC Plug Armored Test Cable Full Service
FSP96000059-10	32-Pin Point to Point Cable Full Service
FSP96000068-10	DCPS Loads Cable Full Service
FSP96000068-30	DCPS Loads Cable Full Service
FSP96000069-10	Sense and Signal Cable Full Service
FSP96000071-01	Right Angle/Bulkhead MXI-2 Cable Full Service
FSP96000144-10	200-Pin Shorting Plug CCA Full Service
FSP96200031-10	Switch 1 to Switch 2 Cable Full Service
FSP96200032-10	Switch 1 to DMM Cable Full Service
FSP96200041-10	Ground Cable Full Service
FSP96200050-10	Switch 2 to Switch 3 Cable Full Service
FSP96200059-10	Station Ground Cable Full Service
FSP96648240-30	SMA Plug to SMB Plug RF Cable Assembly Full Service
FSP96740292-10	Cable Assembly Full Service
FSP96740293-10	Cable Assembly Full Service
FSP96740294-10	Cable Assembly Full Service
FSP96740295-10	Cable Assembly Full Service
FSP96740311-10	Cable Assembly Full Service
FSP96740311-30	Cable Assembly Full Service
FSP96740311-50	Cable Assembly Full Service
FSP96740311-70	Cable Assembly Full Service
FSP96740312-10	Cable Assembly Full Service
FSP96740313-10	Cable Assembly Full Service
FSP96740437-10	RF Self Test Cable Full Service
FSP96740437-30	RF Self Test Cable Full Service
FSP96740437-50	RF Self Test Cable Full Service
FSP99000049-30	Rear Panel Assembly Full Service

# Appendix C-3

## BRAT Contractor Support

### Full Service Cables, Connectors, Adapters, and Others (Replacement Item Acceptable)

ATTI P/N	DESCRIPTION	ATTI P/N	DESCRIPTION
<b>Cables, Connectors, and Adapters - Complexity Level 4</b>		<b>Cables, Connectors, and Adapters - Complexity Level 4</b>	
<b>FSP92105226-COM4</b>	<b>Cables, Connectors, and Adapters - Complexity Level 4 Full Service</b>	FSP93000214-10	Type N Plug to Type N Plug Semi-Rigid Coaxial Cable Full Service
FSP02000109-10	Remote ON/OFF Cable Full Service	FSP93000215-10	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service
FSP02000119-10	Cable Assembly Full Service	FSP93000215-30	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service
FSP02000119-30	Cable Assembly Full Service	FSP93000215-50	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service
FSP02000121-10	Cable Assembly Full Service	FSP93000215-70	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service
FSP02000123-10	Cable Assembly Full Service	FSP93000215-90	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service
FSP02000141-10	BNC Plug to BNC Plug Cable Full Service	FSP93000217-10	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service
FSP92103570-10	System Cable Full Service	FSP93000217-30	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service
FSP92103570-30	System Cable Full Service	FSP93000217-50	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service
FSP92103570-50	System Cable Full Service	FSP93000217-70	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service
FSP92103570-70	System Cable Full Service	FSP93000217-90	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service
FSP92103696-01	GPIB Cable Full Service	FSP93000319-10	Type N Plug to Type N Plug Semi-Rigid Coaxial Cable Full Service
FSP92103820-10	System Cable Full Service	FSP93000320-10	BNC Plug to BNC Plug Semi-Rigid Coaxial Cable Full Service
FSP92103820-30	System Cable Full Service	FSP94000283-10	BNC Bulkhead Jack to SMB Bulkhead Jack Flexible Coaxial Cable Full Service
FSP92103820-50	System Cable Full Service	FSP94000289-10	Type N Bulkhead Jack to SMA Bulkhead Jack Flexible Coaxial Cable Full Service
FSP92103820-70	System Cable Full Service	FSP94000429-10	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service
FSP92103820-90	System Cable Full Service	FSP94000429-30	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service
FSP92103820-110	System Cable Full Service	FSP94000429-50	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service
FSP92103820-130	System Cable Full Service	FSP94000429-70	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service
FSP92103820-150	System Cable Full Service	FSP94000429-90	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service
FSP92103820-170	System Cable Full Service	FSP94000429-110	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service
FSP92103820-190	System Cable Full Service	FSP94000429-130	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service
FSP92103820-210	System Cable Full Service	FSP94000429-150	Right Angle SMB Plug to SMB Plug Flexible Coaxial Cable Full Service
FSP92103820-230	System Cable Full Service	FSP94000431-30	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service
FSP92103820-250	System Cable Full Service		
FSP92103820-270	System Cable Full Service		
FSP92103821-10	SMB Plug to BNC Plug Cable Full Service		
FSP92103821-30	SMB Plug to BNC Plug Cable Full Service		
FSP92103821-50	SMB Plug to BNC Plug Cable Full Service		
FSP92103821-70	SMB Plug to BNC Plug Cable Full Service		
FSP92103821-90	SMB Plug to BNC Plug Cable Full Service		
FSP92103821-110	SMB Plug to BNC Plug Cable Full Service		
FSP92103821-130	SMB Plug to BNC Plug Cable Full Service		
FSP92103821-150	SMB Plug to BNC Plug Cable Full Service		
FSP92103821-170	SMB Plug to BNC Plug Cable Full Service		
FSP92103821-190	SMB Plug to BNC Plug Cable Full Service		
FSP92103821-210	SMB Plug to BNC Plug Cable Full Service		
FSP92103821-230	SMB Plug to BNC Plug Cable Full Service		
FSP92103821-250	SMB Plug to BNC Plug Cable Full Service		
FSP92103821-270	SMB Plug to BNC Plug Cable Full Service		
FSP92103821-290	SMB Plug to BNC Plug Cable Full Service		
FSP92103870-10	BNC Component Holder Full Service		
FSP93000205-10	Type N Plug to SMA Jack Semi-Rigid Coaxial Cable Full Service		
FSP93000207-10	Type N Plug to SMA Jack Semi-Rigid Coaxial Cable Full Service		
FSP93000211-10	Type N Plug to Type N Plug Semi-Rigid Coaxial Cable Full Service		

# Appendix C-3

## BRAT Contractor Support

### Full Service Cables, Connectors, Adapters, and Others (Replacement Item Acceptable)

ATTI P/N	DESCRIPTION	ATTI P/N	DESCRIPTION
<b>Cables, Connectors, and Adapters - Complexity Level 4</b>		<b>Cables, Connectors, and Adapters - Complexity Level 4</b>	
FSP94000431-50	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service	FSP94000836-70	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service
FSP94000431-70	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service	FSP94000836-90	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service
FSP94000431-90	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service	FSP94000841-10	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service
FSP94000431-110	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service	FSP94000841-30	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service
FSP94000431-130	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service	FSP94000841-50	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service
FSP94000431-150	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service	FSP94000841-70	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service
FSP94000431-170	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service	FSP94000841-90	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service
FSP94000431-190	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service	FSP94000841-110	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service
FSP94000431-210	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service	FSP94000841-130	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service
FSP94000431-230	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service	FSP94000841-150	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service
FSP94000431-250	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service	FSP94000841-170	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service
FSP94000431-270	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service	FSP94000841-190	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service
FSP94000431-290	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service	FSP94000841-210	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service
FSP94000431-310	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service	FSP94000841-230	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service
FSP94000431-330	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service	FSP94000841-250	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service
FSP94000431-350	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service	FSP94000841-270	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service
FSP94000431-370	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service	FSP94000841-290	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service
FSP94000431-390	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service	FSP94000841-310	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service
FSP94000431-410	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service	FSP94000841-330	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service
FSP94000431-430	Right Angle SMB Plug to Right Angle SMB Plug Flexible Coaxial Cable Full Service	FSP94000841-350	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service
FSP94000436-10	Right Angle SMA Plug to Right Angle SMA Plug Flexible Coaxial Cable Full Service	FSP94000841-370	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service
FSP94000836-10	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service	FSP94000885-30	Type N Plug to SMA Plug Flexible Coaxial Cable Full Service
FSP94000836-30	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service	FSP94000942-10	Right Angle SMA Plug to SMA Plug Flexible Coaxial Cable Full Service
FSP94000836-50	SMA Plug to SMA Plug Flexible Coaxial Cable Full Service	FSP94100176-10	Strain Relief Cable Full Service
		FSP94100176-30	Strain Relief Cable Full Service
		FSP94100176-50	Strain Relief Cable Full Service

# Appendix C-3

## BRAT Contractor Support

### Full Service Cables, Connectors, Adapters, and Others (Replacement Item Acceptable)

ATTI P/N	DESCRIPTION
<b>Cables, Connectors, and Adapters - Complexity Level 4</b>	
FSP94100176-70	Strain Relief Cable Full Service
FSP94100257-10	RF Power Cord Full Service
FSP94100257-30	RF Power Cord (10 A - Europe) Full Service
FSP94100257-50	RF Power Cord (16/21 A - US) Full Service
FSP94100678-10	Blower Cable Full Service
FSP94100723-10	Waveguide and Blower Assembly Cable Full Service
FSP94100865-10	Facility Ground Cable Full Service
FSP94101036-10	Blower Hose Assembly Full Service
FSP95000279-10	SMA Plug to SMA Plug Coaxial Cable Full Service
FSP95000279-30	SMA Plug to SMA Plug Coaxial Cable Full Service
FSP95000279-50	SMA Plug to SMA Plug Coaxial Cable Full Service
FSP95000279-70	SMA Plug to SMA Plug Coaxial Cable Full Service
FSP95000279-90	SMA Plug to SMA Plug Coaxial Cable Full Service
FSP95000279-110	SMA Plug to SMA Plug Coaxial Cable Full Service
FSP95000279-130	SMA Plug to SMA Plug Coaxial Cable Full Service
FSP95000279-150	SMA Plug to SMA Plug Coaxial Cable Full Service
FSP95000279-170	SMA Plug to SMA Plug Coaxial Cable Full Service
FSP95000279-190	SMA Plug to SMA Plug Coaxial Cable Full Service
FSP95000279-210	SMA Plug to SMA Plug Coaxial Cable Full Service
FSP95000279-250	SMA Plug to SMA Plug Coaxial Cable Full Service
FSP95000279-270	SMA Plug to SMA Plug Coaxial Cable Full Service
FSP95000279-290	SMA Plug to SMA Plug Coaxial Cable Full Service

ATTI P/N	DESCRIPTION
<b>Cables, Connectors, and Adapters - Complexity Level 4</b>	
FSP95000279-310	SMA Plug to SMA Plug Coaxial Cable Full Service
FSP95000279-330	SMA Plug to SMA Plug Coaxial Cable Full Service
FSP95000280-10	Right Angle SMB Plug to Right Angle SMB Plug Coaxial Cable Full Service
FSP95000281-10	SMB Plug to SMB Plug Coaxial Cable Full Service
FSP95000619-10	SMB Plug to SMA Plug Coaxial Cable Full Service
FSP96000049-10	AC Power Cable Full Service
FSP96000050-10	Bus Bar Ground Cable Full Service
FSP96000050-30	Bus Bar Ground Cable Full Service
FSP96000053-10	Power Supply Cable Full Service
FSP96000060-10	2-Pin Point to Point Cable Full Service
FSP96200033-10	Switch 4 to Switch 3 Cable Full Service
FSP96200037-10	BNC to Header Cable Full Service
FSP96200038-10	Switch 3 to Arb Cable Full Service
FSP96200039-10	Switch 3 to Switch 5 Cable Full Service
FSP96740309-10	Cable Assembly Full Service
FSP97881021-30	BNC Plug to BNC Plug Cable Full Service
FSP98307257-10	TPS Case Assembly (1 Compartment) Full Service
<b>Other</b>	
FSP02300504-01	Dash Cable Full Service
FSP02300518-01	9" Black and White Monitor Full Service
FSP07040313-10	RF Controller (RF Deck) Obsolescence Mitigation Replacement - SW subject to License (Appendix A) Full Service
FSP07040317-10	Phase Noise Measurement Module (Enhanced) Obsolescence Mitigation Replacement - SW subject to License (Appendix A) Full Service
FSP94100327-10	Rack Mount Display 18.1 in. Full Service
FSP96000016-03	VXI-MXI-2 Kit (Without Cable) Full Service

# Appendix D

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## Leasing

### TPS, ITA, Holding Fixture, or Tester - SW subject to License (Appendix A)

#### Leasing:

TPS, ITA, Holding Fixture, or Tester - SW subject to License (Appendix A)

#### Cost:

Item price plus 25% paid over 3 years

#### Leasing is to be paid in advance as follows:

1st Year - 45%

2nd Year - 35%

3rd Year - 20%

#### Term:

Minimum two-year lease

#### Purchase Option:

At the end of the 3rd year lease, purchase price is 4% of the 3-year total lease price.

The price does not include repair, maintenance, or calibration.



# Appendix E

## BRAT Contractor Support

### BRAT Tester All Inclusive Support, Repair and Calibration Terms and Conditions

#### Description

These Commercial items provide program management, logistics services, repair, calibration, maintenance, data tracking of BRAT equipment, and software support (software deficiency updates). Customer generated Trouble Reports (TRs) are used to initiate contractor maintenance actions. These Commercial items provide Program Services (described below) and individual BRAT Trouble Report (TR) equipment maintenance, repair, and/or calibration.

#### Period of Performance

This Commercial item provides the following services for a period of performance based upon the BRAT Tester Contractor Support item chosen (i.e., 3 months, 6 months, 12 months).

#### Program Services

ATTI will coordinate resources which will consist of repairs, calibration, maintenance scheduling, reporting, tracking, and status reports. Logistics Services consist of program and administrative efforts in support of equipment maintenance, repair, and calibration; and Trouble Reporting (TR) system status updates.

#### Customer Furnished Equipment (CFE) Management

The Customer will provide CFE in support of this contract. CFE will include BRAT testers, PATEC, and an instrument spares pool inventory. The CFE will consist of BRAT R405B, BRAT 405BJ, PATEC, and the rotatable spares pool stored as CFE at ATTI in New York. The CFE BRAT testers and PATEC will be used by ATTI to verify TR replacement and to perform calibration verification. The CFE spares pool inventory will be used to support repair and calibration TRs. Customer may add additional spares as it deems necessary.

ATTI will provide for the stocking, storing, and inventorying of CFE and/or Contractor Acquired Property (CAP). ATTI will maintain an inventory database of all Customer Furnished Equipment (CFE). The ATTI CFE Database System is maintained and updated with all the information and movement associated with each asset as it travels between ATTI, the vendors used for repairs and calibrations and the various Customer sites as required by ATTI's Policies and Procedures.

#### Common Maintenance Activity System (CMAS), BRAT Edition

Under this Commercial item, the Customer will continue to provide ATTI access to the CMAS, BRAT Edition. For the maintenance and support of BRAT failed items, ATTI will use the ATTI TR Tracker in conjunction with the CMAS BRAT Edition trouble reporting system provided by the Customer.

All BRAT users from the different Customer sites will report product failures as Trouble Reports (TR) through CMAS. A TR is generated by BRAT users when equipment in the field fails and requires instrument repair, instrument calibration, and/or cable assembly replacement. ATTI will monitor the CMAS on a daily basis and use the ATTI TR Tracker System to track failed units from TR inception, through item repair, to TR closure.

The ATTI TR Tracker System will monitor events according to contract specifications including:

- Contract Information
- Routes: Shipping route for the item in the unique TR.
- Locations: Entry of the locations of the testers. This information must be provided to ATTI by the BRAT PMO.
- Models: Entry of the tester's type.
- Stations/CLIN/ACRN: Entry of Stations part number, SN, Model, the group using the tester and the fund allocation with the CLIN and ACRN as provided for in the contract.
- Repair/Cal Prices: Entry of the prices by fiscal year.

#### Full Service Repair and Calibration (FSR&C) Trouble Report (TR)

The following procedure applies for TRs:

#### Procedure

The procedure for the TR Process is a four (4) step process identified below:

1. The TR is Initiated and Posted by the BRAT Users in CMAS
  - The BRAT user is required to place a TR for the Instrument Complexity Level (FSR&C1 thru FSR&C10) which lists the particular instrument requiring service.
  - In CMAS, the BRAT user is also required to specify the Part Number (PN) and Serial Number (SN) of the item requiring service.
  - For cable assemblies the BRAT user is required to place one TR for replacement of each item.
2. The TR is placed "In Work" and Approved in CMAS
  - After BRAT user TR posting, the Customer C.O.R. (Contracting Officer Representative) is required to approve it by placing the TR "In Work".
  - ATTI is automatically notified of a pending TR by a system generated email.
  - ATTI also tracks the CMAS on a daily basis for new TRs.
3. The TR is advanced to "Action Taken" in CMAS
  - The TR is advanced to the next process (Action Taken) upon receipt of a request for a replacement instrument or cable assembly. The process to complete the service is as follows:
    - The TR gets entered into the ATTI TR Tracker System.
    - A replacement unit is pulled from the Customer (CFE) spares and is tested according to the TR requirement:
      - Repaired and Calibrated, if calibratable, Replacement Instrument
      - Cable Assembly Replacement
    - The replacement instrument is shipped to the Customer via a commercial shipper or to ATTI's field offices and the item will be drop shipped by ATTI's personnel. A print out of the Self Test and Calibration results, along with shipping documentation (DD 1149) is included with the unit.

# Appendix E

## BRAT Contractor Support

### BRAT Tester All Inclusive Support, Repair and Calibration Terms and Conditions

- Cable assembly's replacements will be shipped with shipping documentation (DD 1149).
- Upon receipt of the item by Customer personnel, ATTI will advance the TR status in CMAS to "Action Taken" and update the TR System to internally closed status. An e-mail is automatically generated upon Customer signature receipt.
- Upon delivery or receipt of the replacement unit, the Customer will either ship the defective unit or give it directly to the field ATTI personnel. In turn, ATTI will ship the defective unit to the OEM or vendor of choice for repair and calibration. Failed replacement components from the repaired units will not be maintained and tracked. Unit exchanges are acceptable for repairs.
- All of the actions taken on every single TR are tracked in the ATTI TR Tracker System.

#### 4. The TR is Closed in CMAS

- Upon receipt of the item by the Customer and the Action Taken is updated by ATTI, the TR is closed by the Customer C.O.R. It is required that the TR is closed within seven (7) days.
- ATTI is notified by an automatically generated email.
- ATTI updates the ATTI TR Tracker System with the Customer closed date.
- Once the TR is Customer Closed, ATTI accounting personnel is notified by email.
- The TR is then invoiced using the WAWF.
- The TR will be considered satisfied with the self test and, where applicable, the calibration print out for the replacement part.

A Full Service Repair and Calibration TR will be considered satisfied with the delivery of a successful self test and, where applicable, calibration print out for the replacement instrument. The applicable TR will be closed.

#### Full Service Repair and Calibration Items

Appendix E-1, Full Service Repair and Calibration (FSR&C), identifies the different Instrument Complexity levels. In addition, the BRAT items are listed by Part Number and Description under each Complexity level. If the instrument is not listed within one of the Complexity Levels (FRS&C1 thru FSR&C10), it is not included.

#### Installation Failure

In cases where a replacement item fails upon installation, the user will generate a new TR.

#### Items Beyond Repair

Equipment may be deemed unrepairable or beyond repair due to information obtained from and provided to ATTI by the OEM. Commercial documentation supporting the non-repairability and/or non-supportability of an item will be provided to the BRAT PMO. The Customer will provide instructions for the non-repairable item.

#### Turn Around Time (TAT)

ATTI will ensure all TRs are completed and/or resolved within 15 working days from the date the TR is approved for contractor action. If ATTI is unable to resolve the failure within 15 working days, with the exception for the items requiring extended repair times identified in the contract PWS. ATTI will provide the Customer an explanation of the problem with an estimated repair date. TAT commences on the TR approval date in CMAS and is concluded by delivery to Customer custody.

#### SOFTWARE

(Applicable only to BRAT Tester Contractor Support - All Inclusive)

#### Scope – Software Updates

This Commercial item provides BRAT software updates necessary to support operational use of the BRAT. The software updates will be provided in support of potential BRAT software problems (software problem reports) or deficiencies (software deficiency reports). The updates will consist of BRAT commercial software, as well as, updates to Customer owned software; and will be limited to existing TPS' and existing hardware. All proposed software changes will be approved by the Customer. Deliverables will be provided as new CPINs.

The following table identifies the ATTI COTS software and Customer owned software included in this Commercial item:

#### ATTI Commercial Software

Noun	CPIN
S/W Development System	85T BRAT/SOFTWAREDEVELOPMENT-S001-00A
BRAT General Purpose ATS	85T-BRAT/WINXGENPUR/ATS-F001-00A
BRAT Self-Test	85T-BRAT/SELFTEST-S001-00A

ATTI commercial (COTS) software is subject to applicable ATTI license agreements and will be provided as runtime software only (does not include source code).

#### Customer Owned Software

Noun	CPIN
Calibration TPS	85T-BRAT/CALIBRATION-S001-00A/D
BRAT Alignment TPS	85T-BRAT/ALIGNMENT-S001-00A/D
Customer owned BRAT TPS	

Updates to Customer software will be provided with unlimited rights.

# Appendix E

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## BRAT Contractor Support

### BRAT Tester All Inclusive Support, Repair and Calibration Terms and Conditions

#### Software Deficiency Report (SDR) Identification and Submission

ATTI will perform software investigation of reported potential software deficiencies of BRAT COTS software and Customer owned software. Software deficiency reports (SDRs) requiring investigation may be submitted by the Customer or ATTI. SDRs will be limited to existing TPS' and hardware. The BRAT Program Office (BPO) will provide work authorization for all new SDRs and will filter and prioritize SDR investigation prior to ATTI investigation and resolution. ATTI will determine the root cause of the SDR(s) and provide recommended solution(s). ATTI will perform investigation, perform testing, and provide a resolution. The Customer will provide technical data pertinent to the SDR(s) to the maximum extent possible. There may be situations where additional data gathering will be required by the contractor in order to adequately determine the root cause of the SDR and to develop a solution. The potential need for this additional data gathering by ATTI will be dictated by the level of detail required by the contractor to resolve the SDR.

#### Integration and Testing

ATTI will conduct integration and testing of the proposed software changes, iteratively evaluate the test results, perform quality audit of the software, and provide a new CPIN when software updates are needed. In cases where a software update is not required, a report will be provided to the Customer detailing the cause of the SDR and a recommended resolution. Integration and testing will be performed using necessary hardware, software, and documentation.

#### BRAT COTS Software

Applicable BRAT COTS software includes instrument drivers, test executive and self-test. Updates to the BRAT COTS software are to be integrated, tested, and verified on a configured BRAT tester. Software updates will be provided as runtime software (CPIN) only and does not include source code.

#### Customer Owned Software

1. BRAT Calibration and Alignment Software - Updates to the BRAT Calibration and Alignment Software will be performed using the configured BRAT tester, PATEC, and the existing Calibration and Alignment CPIN software. The Customer must provide ATTI the latest approved CPIN software and ITA hardware when requested by ATTI. Software updates will be provided as a revised CPIN including source and executable code (CPIN -00A/D). Documentation updates will be limited to T.O. red-lined changes, if required.
2. UUT TPS on the BRAT - Applicable BRAT UUT TPS' consist of existing approved LRU or SRU CPINs. Integration testing will be performed using a configured BRAT system capable of supporting the UUT TPS. The Customer must provide ATTI the latest approved CPIN software, a functional UUT, and ITA hardware when requested by ATTI. Software updates will be provided as a revised CPIN including source and executable code (CPIN -00A/D). Documentation updates will be limited to T.O. red-lined changes, if required.

#### Acceptance Test

ATTI will conduct acceptance testing in accordance with an Acceptance Test Procedure (ATP), which will provide for performance testing and verification. The ATP will provide pass/fail criteria for the acceptance testing. The tests will be conducted at the ATTI's facility, Hauppauge, New York. A final Acceptance Test Report summarizing the results of the acceptance testing will be submitted and will constitute finalization of the item.

# Appendix E-1

## BRAT Contractor Support

### Full Service Repair and Calibration (FSR&C) (Replacement Instrument Acceptable)

ATTI P/N	DESCRIPTION	ATTI P/N	DESCRIPTION
<b>FSR&amp;C1</b>	<b>Instrument Complexity Level 1</b>	<b>FSR&amp;C6</b>	<b>Instrument Complexity Level 6</b>
02000259-01	Programmable DC Electronic Load	93000153-01	Graphics Display
92103848-01	Pattern Pod	93000201-01	System Mainframe
92103897-01	Timing Pod	93000284-01	Digitizing Oscilloscope
93000293-01	Power Sensor	93000550-30	Three-Phase AC Programmable Power Supply
93000293-03	Power Sensor	95000340-01	Microwave Network Analyzer Calibration Kit
94000888-01	0 to 7 V Module for DC Power Supply	95000450-10	Auxiliary RF Signal Processor/Matrix
94000889-01	0 to 20 V Module for DC Power Supply	95000450-50	Auxiliary RF Signal Processor/Matrix
94000890-01	0 to 32 V Module for DC Power Supply		
94000891-01	0 to 320 V Module for DC Power Supply	<b>FSR&amp;C7</b>	<b>Instrument Complexity Level 7</b>
94100500-370/-50	Electronic Power Control Center - RF Rack/ Single Phase	07030001-10	Z50 Digital VXI Module
95000019-03	MIL-STD-1553A/B Bus Analyzer Simulator	93000080-01	Arbitrary Function Generator
95000045-01	0 to 160 V Module for DC Power Supply	93000152-01	IF Section (100 KHz to 3 MHz)
		93000156-03	Modular Synthesized Signal Generator with 1 Hz Resolution
<b>FSR&amp;C2</b>	<b>Instrument Complexity Level 2</b>	93000173-01	IF Section (10 Hz to 300 KHz)
92103986-01	VXI Mainframe Command Module	94000104-10	RF Interface Unit (RFIU) Mainframe
93000068-01	QUAD 8-Bit Digital Input/Output Latch	94000833-01	Frequency Extension Module
93000069-01	A/B to C-Size Module Carrier	94100751-01	Three-Phase Power Supply (Master)
93000506-01	32-Channel, 5 A, Form C Switch	94100752-01	Three-Phase Power Supply (Slave)
94000887-01	DC Power Supply Frame		
<b>FSR&amp;C3</b>	<b>Instrument Complexity Level 3</b>	<b>FSR&amp;C8</b>	<b>Instrument Complexity Level 8</b>
92103987-01	VXI Mainframe	93000172-01	RF Section (100 Hz to 22 GHz)
93000074-01	64-Channel Relay Multiplexer	93000200-01	Preamplifier (26.5 GHz)
93000076-01	RF Multiplexer	94000603-10	RF Measurement #1
94100750-01	Power Distribution Unit	94000604-10	RF Converter
96740017-01	Peak Power Meter	94000605-10	RF Output
96740017-03	Peak Power Meter	94000855-01	Microwave Signal Generator
96740019-01	Peak Power Sensor	94100554-10	Phase Balance Module
96740019-03	Peak Power Sensor	94100766-10	Timing Generator Module
98715045-01	Blower Assembly	94101013-50	Phase Noise Measurement System Reference Source Unit
<b>FSR&amp;C4</b>	<b>Instrument Complexity Level 4</b>	<b>FSR&amp;C9</b>	<b>Instrument Complexity Level 9</b>
92103855-01	Synchro/Resolver Simulator and Indicator	07040313-10	RF Controller (RF Deck) Obsolescence Mitigation Replacement - SW subject to License (Appendix A)
93000078-01	High-Performance Universal Counter	93000081-01	21 MHz Synthesized Function/Sweep Generator
93000154-01	Digitizer	94000606-10	RF Controller (BRAT 305/405)
93000155-01	Power Meter	94000606-50	RF Controller (JTIDS)
94000982-01	Precision Frequency Reference with Internal Amplifier	94000606-70	RF Controller (JSTARS)
94100604-01	Frequency Counter	94101177-01	136-Channel Logic Analyzer
<b>FSR&amp;C5</b>	<b>Instrument Complexity Level 5</b>	95000018-03	Microwave Network Analyzer
92103850-01	160 MHz Timing I/O Module	96740045-10	L-Band Signal Conditioning Module
92103851-01	20 MHz Pattern I/O Module	96740070-10	Reference Generator Module
92103852-01	Terminating 20 MHz Pattern I/O Module	96740103-10	CPSM Modulator/Demodulator Module
93000079-01	1-GSa/s Digitizing Oscilloscope		
94100500-130	Electronic Power Control Center - Single Phase	<b>FSR&amp;C10</b>	<b>Instrument Complexity Level 10</b>
95000049-01	Synchro/Resolver Simulator and Indicator	94101130-01	Phase Noise Measurement System
<b>FSR&amp;C6</b>	<b>Instrument Complexity Level 6</b>	96740021-01	Frequency Synthesizer
93000075-01	Relay Matrix	96740022-03	Power Amplifier
93000077-01	6 1/2-Digit Digital Multimeter		
93000151-01	Local Oscillator		

# Appendix G

## Obsolescence Mitigation

The cost to procure parts includes factory equipment and labor costs to mitigate parts obsolescence and enable the qualification of replacement parts when necessary. The following procedure is used:

- Obsolescence monitoring and tracking for all parts
- Identify parts approaching obsolescence or already obsolete
- Qualification Acceptance Test Procedures for parts when necessary
- Reverse engineer to qualify replacement parts when necessary

ATTI P/N	DESCRIPTION	ATTI P/N	DESCRIPTION
<b>Products</b>		<b>Products</b>	
92103858-03	Stimulus/Measurement Matrix Module	L9668-111-016-05	Pressure Transducer
92103860-03	6½-Digit Multimeter Module	L9668-111-020-17	Data Acquisition and Control Mainframe
92103986-01	VXI Mainframe Command Module	L9668-111-023-01	Gas Filter
92103986-03	VXI Mainframe Command Module with Expanded Memory	L9668-111-023-11	Replacement Filter
92103987-01	VXI Mainframe	L9668-111-024-01	2-Way NO Shutoff Valve
94000890-01	0 to 32 V Module for DC Power Supply	L9668-111-024-02	2-Way NC Shutoff Valve
95000043-01	0 to 40 V Module for DC Power Supply	L9668-111-024-03	3-Way Shutoff Valve (Return Port 1)
95650053-01	VXI Variable Gain Amplifier	L9668-111-024-04	3-Way Shutoff Valve (Return Port 2)
95650095-10	Stimulus MUX IAU CCA	L9668-111-025-01	Gas Regulator
95650095-30	Stimulus MUX IAU CCA	L9668-111-025-02	Gas Regulator
95650095-50	Stimulus MUX IAU CCA	L9668-111-025-03	Gas Regulator
95650140-50	Rack Mount Monitor Assembly	L9668-111-026-01	Air Regulator
95650142-10	Three-Phase Power Distribution System	L9668-111-026-02	Air Regulator
95650143-10	Single-Phase Power Distribution System	L9668-111-027-01	Metering Valve
95650153-10	Uninterruptible Power Supply	L9668-111-027-02	Metering Valve
95650585-10	Digital Driver Simulator Module	L9668-111-027-03	Metering Valve
95650701-01	Digital Oscilloscope	L9668-111-028-01	Flowmeter
95650702-01	Laser Jet Printer	L9668-111-028-02	Flowmeter
95650704-01	Rack Mount Computer	L9668-111-028-03	Flow Signal Conditioner
95650705-01	Rack Mount Keyboard	L9668-111-030-01	Check Valve
95650715-01	LAN Switch	L9668-111-030-02	Check Valve
95650725-01	UPS Battery	L9668-111-030-03	Check Valve
L9668-111-011-01	Pressure Gauge	L9668-111-030-04	Check Valve
L9668-111-011-02	Pressure Gauge	L9668-111-032-01	Manual Shutoff Valve
L9668-111-014-01	RV Operator	L9668-111-053-01	Solenoid Valve
L9668-111-014-03	RV Operator	L9668-111-054-01	Filter Regulator
L9668-111-015-01	Pressure Gauge	L9668-111-054-11	Filter Replacement
L9668-111-015-02	Pressure Gauge	L9668-111-057-01	Restrictor Orifice
L9668-111-016-01	Pressure Transducer	L9668-111-057-02	Restrictor Orifice
L9668-111-016-02	Pressure Transducer	L9668-111-057-03	Restrictor Orifice
L9668-111-016-03	Pressure Transducer	L9668-111-057-04	Restrictor Orifice
L9668-111-016-04	Pressure Transducer	L9668-111-058-01	Ullage Volume
		L9668-111-060-01	Gauge Protector

# Appendix G

## Obsolescence Mitigation

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ATTI P/N	DESCRIPTION
<b>Parts and Assemblies</b>	
L9668-111-012-01	12 Vdc Power Supply
L9668-111-013-01	DC Motor Controller
L9668-111-013-03	DC Motor Controller
L9668-111-020-11	DC Strain Conditioner
L9668-111-020-12	RTD Conditioner
L9668-111-020-13	DCV Input Card
L9668-111-020-14	Logic I/O Card
L9668-111-020-15	Frequency Input Card
L9668-111-020-16	Central Processor Card
L9668-111-020-19	Quad DC Strain Gauge Card
L9668-111-021-01	16-Channel Circuit Card
L9668-111-021-02	AC Output Relay
L9668-111-021-03	AC Input Relay
L9668-111-021-04	DC Output Relay
L9668-111-022-01	Surface Mount Temperature Transducer
L9668-111-031-01	Temperature Probe
L9668-111-031-03	Temperature Probe
L9668-111-036-01	24 Vdc Power Supply
L9668-111-037-01	45 Vdc Power Supply
L9668-111-043-01	Control Relay
L9668-111-055-01	Hourmeter
L9668-111-061-01	Circuit Breaker

# Appendix H

## Products - Without Qualification Test Procedures and Reverse Engineering

The cost to procure parts is based upon the use of an MPTS tester as GFE and includes: cost allocations of factory equipment consisting of the Leak/Pressure test console and Flow test console; cost allocations for facility modifications for Leak/Pressure and Flow consoles; cost allocations for ancillary equipment such as He and Ni for testing, and labor to purchase parts, perform inspections, manage GFE, test, and qualify replacement parts.

ATTI P/N	DESCRIPTION	ATTI P/N	DESCRIPTION
<b>Products - Without Qualification Test Procedures and Reverse Engineering</b>		<b>Products - Without Qualification Test Procedures and Reverse Engineering</b>	
92103858-03-woQTP&RE	Stimulus/Measurement Matrix Module without QTP and RE	L9668-111-021-01-woQTP&RE	16-Channel Circuit Card without QTP and RE
92103860-03-woQTP&RE	6½-Digit Multimeter Module without QTP and RE	L9668-111-021-02-woQTP&RE	AC Output Relay without QTP and RE
95650140-10-woQTP&RE	Rack Mount Monitor without QTP and RE	L9668-111-021-03-woQTP&RE	AC Input Relay without QTP and RE
95650142-10-woQTP&RE	Three-Phase Power Distribution System without QTP and RE	L9668-111-021-04-woQTP&RE	DC Output Relay without QTP and RE
95650143-10-woQTP&RE	Single-Phase Power Distribution System without QTP and RE	L9668-111-022-01-woQTP&RE	Surface Mount Temperature Transducer without QTP and RE
95650153-10-woQTP&RE	Uninterruptible Power Supply without QTP and RE	L9668-111-024-01-woQTP&RE	2-Way NO Shutoff Valve without QTP and RE
95650701-01-woQTP&RE	Digital Oscilloscope without QTP and RE	L9668-111-024-02-woQTP&RE	2-Way NC Shutoff Valve without QTP and RE
95650702-01-woQTP&RE	Laser Jet Printer without QTP and RE	L9668-111-024-03-woQTP&RE	3-Way Shutoff Valve (Return Port 1) without QTP and RE
95650705-01-woQTP&RE	Rack Mount Keyboard without QTP and RE	L9668-111-024-04-woQTP&RE	3-Way Shutoff Valve (Return Port 2) without QTP and RE
95650715-01-woQTP&RE	LAN Switch without QTP and RE	L9668-111-025-01-woQTP&RE	Gas Regulator without QTP and RE
95650725-01-woQTP&RE	UPS Battery without QTP and RE	L9668-111-025-02-woQTP&RE	Gas Regulator without QTP and RE
L9668-111-011-01-woQTP&RE	Pressure Gauge without QTP and RE	L9668-111-025-03-woQTP&RE	Gas Regulator without QTP and RE
L9668-111-011-02-woQTP&RE	Pressure Gauge without QTP and RE	L9668-111-026-01-woQTP&RE	Air Regulator without QTP and RE
L9668-111-012-01-woQTP&RE	12 Vdc Power Supply without QTP and RE	L9668-111-026-02-woQTP&RE	Air Regulator without QTP and RE
L9668-111-013-01-woQTP&RE	DC Motor Controller without QTP and RE	L9668-111-027-01-woQTP&RE	Metering Valve without QTP and RE
L9668-111-013-03-woQTP&RE	DC Motor Controller without QTP and RE	L9668-111-027-02-woQTP&RE	Metering Valve without QTP and RE
L9668-111-014-01-woQTP&RE	RV Operator without QTP and RE	L9668-111-027-03-woQTP&RE	Metering Valve without QTP and RE
L9668-111-014-03-woQTP&RE	RV Operator without QTP and RE	L9668-111-028-01-woQTP&RE	Flowmeter without QTP and RE
L9668-111-015-01-woQTP&RE	Pressure Gauge without QTP and RE	L9668-111-028-02-woQTP&RE	Flowmeter without QTP and RE
L9668-111-015-02-woQTP&RE	Pressure Gauge without QTP and RE	L9668-111-028-03-woQTP&RE	Flow Signal Conditioner without QTP and RE
L9668-111-016-01-woQTP&RE	Pressure Transducer without QTP and RE	L9668-111-030-01-woQTP&RE	Check Valve without QTP and RE
L9668-111-016-02-woQTP&RE	Pressure Transducer without QTP and RE	L9668-111-030-02-woQTP&RE	Check Valve without QTP and RE
L9668-111-016-03-woQTP&RE	Pressure Transducer without QTP and RE	L9668-111-030-03-woQTP&RE	Check Valve without QTP and RE
L9668-111-016-04-woQTP&RE	Pressure Transducer without QTP and RE	L9668-111-030-04-woQTP&RE	Check Valve without QTP and RE
L9668-111-016-05-woQTP&RE	Pressure Transducer without QTP and RE	L9668-111-031-03-woQTP&RE	Temperature Probe without QTP and RE
L9668-111-020-11-woQTP&RE	DC Strain Conditioner without QTP and RE	L9668-111-032-01-woQTP&RE	Manual Shutoff Valve without QTP and RE
L9668-111-020-12-woQTP&RE	RTD Conditioner without QTP and RE	L9668-111-036-01-woQTP&RE	24 Vdc Power Supply without QTP and RE
L9668-111-020-13-woQTP&RE	DCV Input Card without QTP and RE	L9668-111-037-01-woQTP&RE	45 Vdc Power Supply without QTP and RE
L9668-111-020-14-woQTP&RE	Logic I/O Card without QTP and RE	L9668-111-053-01-woQTP&RE	Solenoid Valve without QTP and RE
L9668-111-020-15-woQTP&RE	Frequency Input Card without QTP and RE	L9668-111-054-01-woQTP&RE	Filter Regulator without QTP and RE
L9668-111-020-16-woQTP&RE	Central Processor Card without QTP and RE	L9668-111-057-01-woQTP&RE	Restrictor Orifice without QTP and RE
L9668-111-020-19-woQTP&RE	Quad DC Strain Gauge Card without QTP and RE	L9668-111-057-02-woQTP&RE	Restrictor Orifice without QTP and RE
		L9668-111-057-03-woQTP&RE	Restrictor Orifice without QTP and RE
		L9668-111-057-04-woQTP&RE	Restrictor Orifice without QTP and RE



# Appendix I

## Sustaining Engineering with Obsolescence Mitigation - Base Year

This item provides automatic test equipment (tester) obsolescence management and mitigation of obsolete equipment to sustain tester operational readiness. It provides sustaining engineering to: 1) perform the tester's initial obsolescence assessment; 2) perform recurring monitoring and tracking to identify equipment nearing the end of its life cycle; and 3) mitigate tester obsolescence with replacement parts. Category complexity is based upon the number of obsolete parts anticipated to require replacement. Sustaining Engineering with Obsolescence Mitigation Base Year includes tester initial obsolescence assessment which is not included in annual options.

Initial Obsolescence Assessment consists of: establish list of parts for vendor inquiries, review drawings, establish parts baseline and spreadsheet, survey vendors for parts availability, and identify obsolete parts or end of production date for each part.

Recurring Obsolescence Monitoring consists of: monitor and track equipment obsolescence, monitor negative performance trends, perform quarterly vendor survey, update parts database, research replacement parts, prepare parts obsolescence information for annual report, configuration management.

Obsolescence Mitigation tasks performed consist of: research alternate sources for replacement parts (estimated number of parts annually), contact vendors for alternate part, obtain and review alternate part specifications, notify the customer a tester modification is required, travel to tester site for part qualification, perform on-site replacement part qualification using tester, impact assessment - determine functional performance compliance and determine form/fit factor compliance, develop calibration procedure using leak/pressure console and/or flow console, perform calibration testing using pressure/leak console and or flow console at ATTI, determine Statement of Impact, determine recommendation to mitigate obsolescence, develop cost estimate to mitigate obsolescence, generate Obsolescence Alert Notice to customer, generate Engineering Change Proposal (ECP).

ATTI P/N	DESCRIPTION
SEOM-B-01	Sustaining Engineering with Obsolescence Mitigation - Initial Obsolescence Assessment, Recurring Monitoring, and 3 Obsolete Parts Annually - Complexity 1.0
SEOM-B-02	Sustaining Engineering with Obsolescence Mitigation - Initial Obsolescence Assessment, Recurring Monitoring, and 4 Obsolete Parts Annually - Complexity 2.0
SEOM-B-03	Sustaining Engineering with Obsolescence Mitigation - Initial Obsolescence Assessment, Recurring Monitoring, and 5 Obsolete Parts Annually - Complexity 3.0
SEOM-B-04	Sustaining Engineering with Obsolescence Mitigation - Initial Obsolescence Assessment, Recurring Monitoring, and 6 Obsolete Parts Annually - Complexity 4.0

ATTI P/N	DESCRIPTION
SEOM-B-05	Sustaining Engineering with Obsolescence Mitigation - Initial Obsolescence Assessment, Recurring Monitoring, and 7 Obsolete Parts Annually - Complexity 5.0
SEOM-B-06	Sustaining Engineering with Obsolescence Mitigation - Initial Obsolescence Assessment, Recurring Monitoring, and 8 Obsolete Parts Annually - Complexity 6.0
SEOM-B-07	Sustaining Engineering with Obsolescence Mitigation - Initial Obsolescence Assessment, Recurring Monitoring, and 9 Obsolete Parts Annually - Complexity 7.0



# Appendix J

## Sustaining Engineering with Obsolescence Mitigation - Option Year

This item provides automatic test equipment (tester) obsolescence management and mitigation of obsolete equipment to sustain tester operational readiness. It provides sustaining engineering to: 1) perform recurring monitoring and tracking to identify equipment nearing the end of its life cycle; and 2) mitigate tester obsolescence with replacement parts. Category complexity is based upon the number of obsolete parts anticipated to require replacement. Sustaining Engineering with Obsolescence Mitigation Option Year does not include tester initial obsolescence assessment.

Recurring Obsolescence Monitoring consists of: monitor and track equipment obsolescence, monitor negative performance trends, perform quarterly vendor survey, update parts database, research replacement parts, prepare parts obsolescence information for annual report, configuration management.

Obsolescence Mitigation tasks performed consist of: research alternate sources for replacement parts (estimated number of parts annually), contact vendors for alternate part, obtain and review alternate part specifications, notify the customer a tester modification is required, travel to tester site for part qualification, perform on-site replacement part qualification using tester, impact assessment - determine functional performance compliance and determine form/fit factor compliance, develop calibration procedure using leak/pressure console and/or flow console, perform calibration testing using pressure/leak console and/or flow console at ATTI, determine Statement of Impact, determine recommendation to mitigate obsolescence, develop cost estimate to mitigate obsolescence, generate Obsolescence Alert Notice to customer, generate Engineering Change Proposal (ECP).

<b>ATTI P/N</b>	<b>DESCRIPTION</b>
SEOM-O-01	Sustaining Engineering with Obsolescence Mitigation - Recurring Monitoring and 3 Obsolete Parts Annually - Complexity 1.0
SEOM-O-02	Sustaining Engineering with Obsolescence Mitigation - Recurring Monitoring and 4 Obsolete Parts Annually - Complexity 2.0
SEOM-O-03	Sustaining Engineering with Obsolescence Mitigation - Recurring Monitoring and 5 Obsolete Parts Annually - Complexity 3.0
SEOM-O-04	Sustaining Engineering with Obsolescence Mitigation - Recurring Monitoring and 6 Obsolete Parts Annually - Complexity 4.0
SEOM-O-05	Sustaining Engineering with Obsolescence Mitigation - Recurring Monitoring and 7 Obsolete Parts Annually - Complexity 5.0
SEOM-O-06	Sustaining Engineering with Obsolescence Mitigation - Recurring Monitoring and 8 Obsolete Parts Annually - Complexity 6.0
SEOM-O-07	Sustaining Engineering with Obsolescence Mitigation - Recurring Monitoring and 9 Obsolete Parts Annually - Complexity 7.0



# Appendix K

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## Cable and DDSM Repairs - Special Conditions

1. W42 requires CFM Contacts (P/N 95640490-01 used as required for repairs). CFM will be retained or returned at customer's request.
2. W44 requires CFM Contacts (P/N 95640490-01 and P/N 5999-00-492-8911 used as required for repairs) and 9-Pin Circular Connector (P/N 5935-01-360-8691 used as required for repairs). CFM will be retained or returned at customer's request.
3. W91 Self Test Plug requires CFM Pins (P/N 5999-00-178-9887 and P/N 5999-00-178-9888 used as required for repairs) and Circular Connector (P/N 95650442-01 used as required for repairs). CFM will be retained or returned at customer's request.
4. ATTI to have available for use the CFE DITMCO Tester to test the repairs performed on the cables.
5. Additional CFM required for ATTI:
  - a. One set of Shorting Plugs W81 thru W103 as follows:
    1. W81 (x14)
    2. W82 thru W86 (x1 each)
    3. W87 (x3)
    4. W88 (x6)
    5. W89 thru W93 (x1 each)
    6. W94 (x13)
    7. W95 (x4)
    8. W96 (x7)
    9. W97 (x2)
    10. W98 (x1)
    11. W100 (x1)
    12. W103 (x2)
  - b. One set of Self Test Plugs as follows:
    1. W204
    2. W205
    3. W206
    4. W207
  - c. CFM listed in 5a and 5b, above, to be returned to customer upon completion of cable repairs.
6. DDSM repair is priced at a complexity level of 1 thru 4. Based on the complexity of the DDSM, the level is to be determined during the repair process.



# Appendix L

## BRAT Repair and Maintenance Support

### 1.0 Description of Services

This Appendix outlines the tasks and duties required of ATTI to provide BRAT repair & maintenance support for applicable BRAT configurations identified in this document and managed by Automatic Test Systems Division at Robins AFB, GA. ATTI shall provide program management, supply chain management, spares management, BRAT repair and maintenance, Management & Logistics reporting/analysis, Engineering Services (consisting of on-site support & obsolescence forecasting) and the BRAT 5 Year Repair Plan, in support of 26 stations located USAF user sites.

ATTI will accomplish all tasks necessary to ensure system component availability and system performance of the BRAT hardware and software in support of all customers provided for under this contract. This SOW provides for maintenance, repair, and calibration of BRAT instruments. This will be accomplished in accordance with the BRAT Performance Specification, the appropriate acceptance/verification test procedures and will maintain current BRAT configuration baseline.

ATTI will perform tasks IAW TR Orders issued indicating instrument category/ part number(s) needing repair, and quantity.

### 1.1 Definitions

The following paragraphs define Repairs.

#### 1.1.1 Instrument Repair

Instrument repair is defined as an instrument exchange between the user and ATTI where the User submits a faulty instrument and receives a serviceable instrument.

#### 1.1.2 BRAT Repair

BRAT Repair is defined as an instrument exchange between the user and ATTI where the User submits a faulty instrument which will be repaired by the use of an alternate instrument which successfully pass self-test and can be calibrated.

### 2.0 BRAT Maintenance Support Program

#### 2.1 Program Support

Program support will cover necessary operational support and ancillary functions ATTI shall provide in connection with repair, calibration, technical support, and assistance to BRAT users. These functions include: program management, logistics support, customer technical support, Quality Assurance (QA), BRAT CCB participation, and Engineering services consisting of Site Support, Obsolescence Forecasting, and the BRAT 5 Year Repair Plan.

#### 2.2 Program Management

ATTI will provide program management for this effort. ATTI will establish a single point of contact for this function and allocate ATTI's assets and personnel, provide scheduling, reporting, tracking, coordination of all repairs, calibrations, and supporting activities with

the users and BRAT Program Office to fulfill the requirements of the contract. ATTI will prepare a monthly status report describing the status/ progress of tasks outlined in the SOW. The report will summarize tasks and activities concluded during the previous month, the tasks started, tasks in progress, tasks completed, and tasks planned to start during the next reporting period. Program concerns/issues that are or may impact resources/schedule/cost shall be reported along with program impacts to cost and/or schedule. In addition to presenting the impacts, ATTI will recommend corrective actions.

### 2.3 Repair and Maintenance Support

ATTI shall provide repair and calibration services as required to support the BRAT and the ancillary equipment associated with the tester including instruments, cable assemblies, and BRAT self-test interface test adapters. ATTI shall provide fully serviceable parts that are free of quality defects. All repaired parts shall be fully functional to ensure that each repaired instrument passes BRAT self-test and for a calibratable instrument, calibration verification. ATTI shall ensure that all parts repaired and provided to using locations are configured properly for use within the BRAT tester and in accordance with the BRAT latest configuration.

ATTI shall perform BRAT self-test and, if required, calibration verification of all parts in the GFE BRAT to ensure proper functionality in the BRAT. ATTI shall track the repair process from trouble Report submittal to delivery of the repaired asset to the users and return of the defective instruments to the GFP Spares Pool. ATTI will report all service requests, PQDRs/QDRs, and repairs for each month in the monthly Contractor's Progress, Status, and Management Report.

### 2.4 BRAT Repair Plan

There may be situations where repairs cannot be completed due to parts obsolescence, this topic is further discussed in SOW Addendum A.

SOW Addendum A for BRAT Repair Plan and Proposal identifies BRAT instruments of particular concern and a recommended plan for continued BRAT repairs using government approved alternate instruments. The plan commences with an engineering services technical study, integration, test, and qualification. Through these actions, government approved alternate instruments will be qualified at the government's request via a Delivery Order contract.

### 2.5 Beyond Economical Repair

A unit is considered BER if the total repair cost and labor exceed 75% above the GSA repair price for the current Period of Performance. GFP spare parts that are declared BER by ATTI shall be reported to the PCO, in writing via electronic mail, within five (5) business days of BER identification. GFP spare parts that are deemed BER shall be coordinated through the PCO and the DCMA Quality Assurance Representative (QAR) for final approval prior to disposal. ATTI shall obtain written concurrence from DCMA for all parts determined by the Contractor to be BER. All such determinations, including the basis for determination, repair/replacements required, including prices, and the DCMA written concurrence shall be

# Appendix L

## BRAT Repair and Maintenance Support

provided by the Contractor to the PCO within five (5) business days of DCMA written concurrence. The PCO shall provide approval/disapproval of the request for BER items and any necessary disposition instructions associated with the authorized BER.

### 3.0 Government-Furnished Equipment and Property (GFP):

The Government will provide GFE in support of this contract. GFE will include BRAT testers, PATEC and PATEC Spares. The GFP consist of an instrument spares pool inventory. The GFE will consist of a BRAT R405B, a BRAT 405BJ, a PATEC Calibrator, and the rotatable spares pool stored as GFP in Hauppauge, New York. The GFE and GFP are identified in Attachment A Spares Pool. The GFE BRAT testers & PATEC will be used by ATTI to verify TR instrument replacement and to perform calibration verification. The GFE spares pool inventory will be used to support repair and calibration TRs. Government may add additional spares as it deems necessary.

The Government will provide the parts necessary to sustain the PATEC with support from the AFTMETCAL and ATS Program Office.

### 3.1 Reporting of Government Property

ATTI shall create and maintain records of all Government property accountable to the contract. ATTI shall record receipt and return of GFP in the Item Unique Identification (IUID) Registry and IAW FAR 52.245-1.

### 3.2 Return of Loaned Property

When the Government loaned property is no longer required for the performance of this contract, ATTI shall, in writing, request disposition instructions from the SOS-LCO for GFE and BPO for GFP through the ACO. At the end of the loan period, the Contractor shall comply with the disposition instructions provided to the ACO by the SOS-LCO or BPO.

### 4.0 Contractor Logistics Support

ATTI will provide the required contractor logistics support functions to maintain the operational readiness of the BRAT testers. The support functions include GFE management IAW FAR 52.245-1, Supply Chain Management, Spares Management, Customer Service Technical Support, IUID marking/tracking, Quality Assurance, and Packing/Shipping, and Engineering Services consisting of On-Site Support, Obsolescence Forecasting, and the BRAT 5 Year Repair Plan.

### 4.1 Supply Chain Management

ATTI shall provide SCM of the supported BRAT systems by ensuring the Turnaround time (TAT) for repairs is on average fifteen days from the Contractor's receipt of a TR with the exception of certain instruments identified in Attachment C Instruments with Extended Turn Around Time where the TAT is expected to be longer and as specified in Attachment C. A business day is defined as normal business hours, Monday through Friday, not to include holidays. ATTI shall keep an accurate and detailed record of all TRs and GFP requisitions on a monthly basis and it includes: the date of all part requisitions, part number and description, test station number, location and requestor, date the requested part was

shipped (to include supporting documentation), date repairable/faulty part was received from user (date of follow-up on parts due in), date the part was shipped for repair, date repaired part received and tested, and the date the part was returned to the spares pool. This information is to be included each month in the Contractor's Progress, Status, and Management Report. All the data should remain in each month's status report from the date of requisition until the part is returned to the spares pool and all dates have been recorded.

### 4.2 Spares Management

ATTI shall provide parts support for repair of the supported BRAT systems for the contract period of performance IAW FAR 52.245. ATTI shall store, manage, and control BRAT instruments at a centralized parts storage location. ATTI shall cover shipping, to include packaging and shipping costs, to user locations and the return shipment of BRAT instruments to the centralized storage location. ATTI shall work closely with the BRAT user to coordinate return of faulty spares to the centralized storage location to meet TAT requirements. ATTI shall keep an accurate and detailed record of each GFP Spares Pool transaction as they occur. The records include the date of the transactions, part number and description, test station number, location and requestor; date the requested part was shipped (to include supporting documentation), date repairable/faulty part was received from user (date of follow-up on parts due in), and the date the repaired part was returned to the spares pool. This information is to be included each month in the Contractor's Progress, Status, and Management Report. The Contractor shall keep an accurate account of all requests monthly, as well as, a cumulative basis from award of contract.

ATTI shall ensure that all BRAT instruments provided to user locations are configured properly for use within the BRAT application. ATTI shall be responsible for packaging and shipping costs for all GFP upon termination or expiration of the contract. The Contractor shall keep an accurate account of all spares monthly. ATTI shall provide a Contractor's Progress, Status, and Management Report, outlining the progress of repair actions in monthly increments beginning the first full month after contract award and each month thereafter.

### 4.3 Customer Technical Support

ATTI will maintain and make available to the Government the necessary technical expertise to satisfy BRAT support needs including user telephone support and technical POC e-mail address or electronic workflow box for correspondences.

### 4.4 On-Site Support

ATTI will provide On-Site Support on an as needed basis, to provide BRAT tester troubleshooting and maintenance support at user sites when requested by the Government. Upon request, Robins AFB depot and JSTARS maintenance shop on-site support shall be provided by the ATTI field office at Warner Robins, GA. On-Site Support outside of Robins AFB, GA shall be limited to two (2) site visits annually.

# Appendix L

## BRAT Repair and Maintenance Support

### 4.5 Item Unique Identification & Marking Requirement:

The IUID marking requirement applies to DoD contractors through clause DFARS 252.211-7003. The Item Unique Identification (IUID) is the process of marking an item that is Government Property with a system of data which discloses possession and ownership. This information is registered and forwarded to the IUID Registry as supporting evidence for internal Government finance, property, and logistics management requirements.

### 4.6 Diminishing Manufacturing Sources (DMS) and Obsolescence Forecasting

ATTI shall provide advance notification of anticipated obsolescence of the supported BRAT system by conducting a as needed survey of all vendors performing repairs or supplying BRAT replacement piece parts. The resulting analysis shall identify parts that are obsolete, scheduled to become obsolete, or no longer commercially available and the subsequent impact on BRAT instrument maintenance. Components surveyed shall include hardware and firmware, as defined in the BRAT TOs, which may affect the form, fit, and/or function of the system.

ATTI shall perform obsolescence mitigation analysis of likely BRAT alternate instrument solutions, potential procurement of materials, form-fit-function compatibility, last date of repair action, or other obsolescence solutions, in order to determine the course of action. Survey results, obsolescence issues, and solutions shall be documented in the Technical Report. ATTI shall provide plans and recommendations to the government addressing BRAT Obsolescence Mitigation Repairs. Refer to SOW Addendum A for BRAT Obsolescence Mitigation Repair Plan and Proposal.

### 4.7 Quality Assurance (QA)

ATTI shall ensure the quality of services and maintain high workmanship standards through our AS9100D certified Quality Management System which ensures product quality through inspections, audits, and reporting.

### 4.8 Packaging

The Contractor shall package and mark material in accordance with the contract/order Air Force Materiel Command (AFMC) Form 158, Packaging Requirements, and applicable Government regulations.

### 4.9 Travel

In instances where ATTI personnel are required to travel to a user location, other than WR, to assist in BRAT system troubleshooting and maintenance, ATTI must obtain approval from the PCO prior to travel. ATTI shall submit a monthly status report detailing activities performed during travel.

### 4.10 Period of Performance

The period of performance for this contract is (5) five years including a basic (1) one year period with (4) four one-year options.

### 4.11 Location of Performance

ATTI is required to support the BRAT testers identified in Addendum B of this Appendix. BRAT equipment maintenance and calibration will be performed at the ATTI facilities.

### 5.0 Trouble Reporting

ATTI shall track and report repair activities in performance of contract requirements. ATTI shall maintain a database for the TRs to include frequency of failures and analysis of trends. Negative repair trends shall be identified as early as possible and resolved to maintain TAT as stated in the PWS. The PCO shall be informed within 10 business days of any unresolved issue that will impact TAT. ATTI shall prepare and submit Failure Summary and Analysis Tracking Reports.

### 5.1 TR Requests and Submittal

The government BRAT POC will provide ATTI a list of TRs as required by the field personnel, via e-mail in an .xls worksheet. A TR is generated by the BRAT users and a TR number is assigned by the Govt POC whenever an equipment failure occurs in the field and requires instrument repair, instrument calibration, and/or cable assembly replacement. ATTI shall use the TR Tracker System to track failed units from TR inception, through item repair, to TR closure.

### 5.2 Repair Trouble Reports

The following procedure applies to repair TRs:

The procedure for TR process is a four (4) step process identified below:

1. The TR is initiated and posted by the BRAT User
  - One TR is required for each repair/calibration based on the Categories identified within this Appendix.
  - For cable assemblies the BRAT User is required to place 1 TR for replacement based on the Cables Categories identified within this Appendix.
2. The TR is approved upon receipt of the .xls worksheet
  - After the BRAT user posts a TR, the Government C.O.R. (Contracting Officer Representative) is required to approve it.
  - ATTI is then notified of a pending TR via e-mail from the COR.
  - ATTI monitors e-mails on a daily basis for new TRs.
  - Upon approval of the TR, The process to complete the repair is as follows:
    - The TR gets entered into the ATTI TR Tracker System.
    - A replacement unit is pulled from the government (GFP) spares and is tested according to the TR requirement:
      - Repaired/Replacement Instrument
      - Cable Assembly Replacement
    - The replacement instrument is shipped to the customer via a commercial shipper or to ATTI's field offices and the item will be drop shipped by ATTI's personnel. A printout of the Self-Test and/or calibration results, along with a Government DD 1149 is included with the unit.
    - Cable assembly's replacements will be shipped with a DD 1149.
    - Upon receipt of the item, the Government personnel will sign the

# Appendix L

## BRAT Repair and Maintenance Support

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DD1149 and return it to ATTI, ATTI will advance the TR status to "Action Taken" and update the TR System to internally closed status. An e-mail is generated by the ATTI Program Manager requesting TR Closure by the BRAT COR.

- Upon delivery or receipt of the replacement unit, the customer will either ship the defective unit or give it directly to the field ATTI personnel. In turn, ATTI will repair or replace the defective unit.
- All of the actions taken on every single TR are tracked in the ATTI TR Tracker System.

### 3. The TR is Closed

- Upon receipt of the item by the customer and the Action Taken is updated by ATTI, the TR is closed by the Government C.O.R. It is required that the TR is closed within seven (7) days.
- ATTI is notified of the TR Closure via email by the Government COR.
- ATTI updates the ATTI TR Tracker System with the Government closed date.
- Once the TR is Government Closed, ATTI accounting personnel is notified by email.
- The TR is then invoiced through the WAWF system.
- The TR will be considered satisfied with the delivery of a successful self-test print out for the replacement part.

A TR will be considered satisfied with the delivery of a successful Self Test and/or Calibration/Verification results print out for the replacement instrument. The applicable TR will be closed.

### 6.0 Optional Tasks

This SOW provides optional BRAT tasks to be exercised and funded as necessary by the Government.

### 6.1 BRAT Training

A separate contract line item shall be available for the government to fund BRAT Operation and Maintenance (O&M) Training. Upon government request, ATTI shall prepare and provide the government with a proposal to perform BRAT O&M Training. The proposal will address the site location, number of students permitted, and course length.

Upon Government approval, ATTI shall conduct BRAT O&M Training. Upon successful completion, each student will receive a certificate of completion.