VIAVI

3515 Series

Portable Radio Communications Test Set

VIAVI

VIAVI Solutions

The VIAVI Solutions 3515 is a first-line radio test set designed to verify that portable radios, man-pack radios, vehicle, and aircraft radios are mission ready. The 3515 includes the instruments and features needed to solve field testing problems for modern radios, including digital radios.

This powerful and expandable test set offers optional capabilities to automate test applications, a spectrum analyzer for signal monitoring and an oscilloscope for audio signal analysis.

Features

- Lightweight and portable at 8 pounds
- Meets MIL-PRF-28800F, Class II environmental specifications
- Automated test applications guide novice users through the radio test process, step-by-step
- Includes the instrumentation and testing functionality needed for testing antennas, coax cables, transmitters, receivers, and audio system
- Over-the-air radio testing
- Standard instruments included in the 3515:
  - RF Signal Generator
  - RF Receiver
  - Modulation Meters
  - SINAD/Distortion Meter
  - Audio Generators
  - RF Power Meters

Benefits

- Reduces "No Fault Found" cost
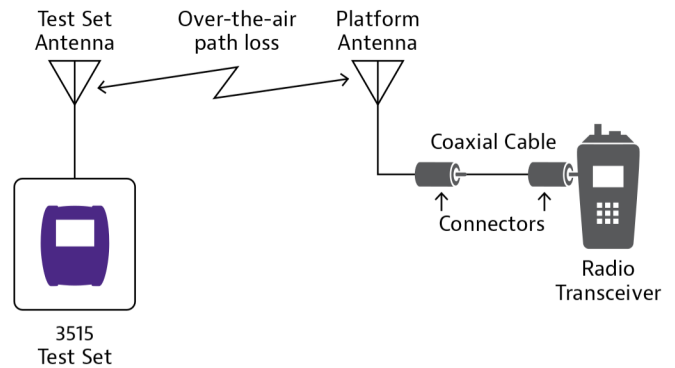- Reduces test equipment footprint

Applications

- EPLRS
- SADL
- P25

The 3515 tests the radio in its normal operation mode without having to disconnect any radio components to take measurements. It acts as an external radio and tests through your radios' antenna to perform a complete system operation check.

The 3515 provides detailed and accurate measurements of critical parameters; such as transmit power, frequency error, modulation, and receiver sensitivity to ensure peak radio operation throughout the mission.

Previous generation field testers, such as through-line watt meters and others, require opening the system and "breaking" connections within the radio signal path to insert the tester. This invasive activity requires extra time, causes disruption to deployment activities and is a source for test-induced failures.

VIAVI Solutions understands that in today's market digital communications are just as important as voice communications. The 3515 verifies digital radios over-the-air and non-intrusively. The 3515 supports EPLRS, SADL, and P25 radios.

Radio Systems and Platform

Below is a partial list of radio systems and models that may be tested with the 3515 Series equipment. Some test require optional testing application scripts and/or accessories. The 3515 performs radio tests without encryption and without COMSEC.
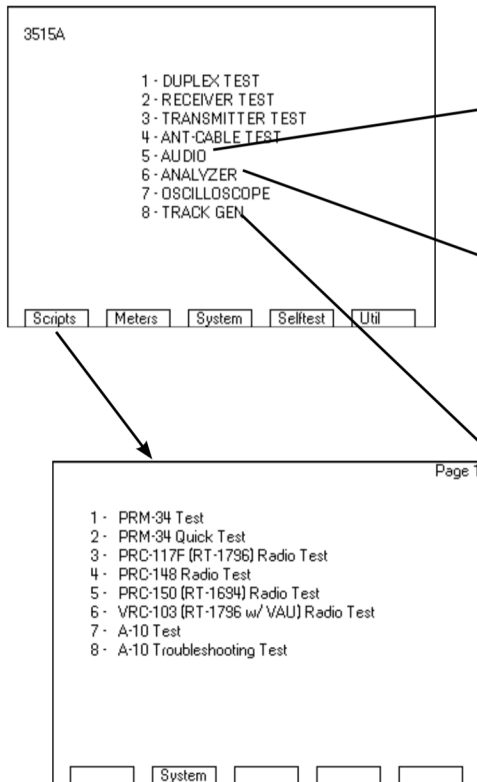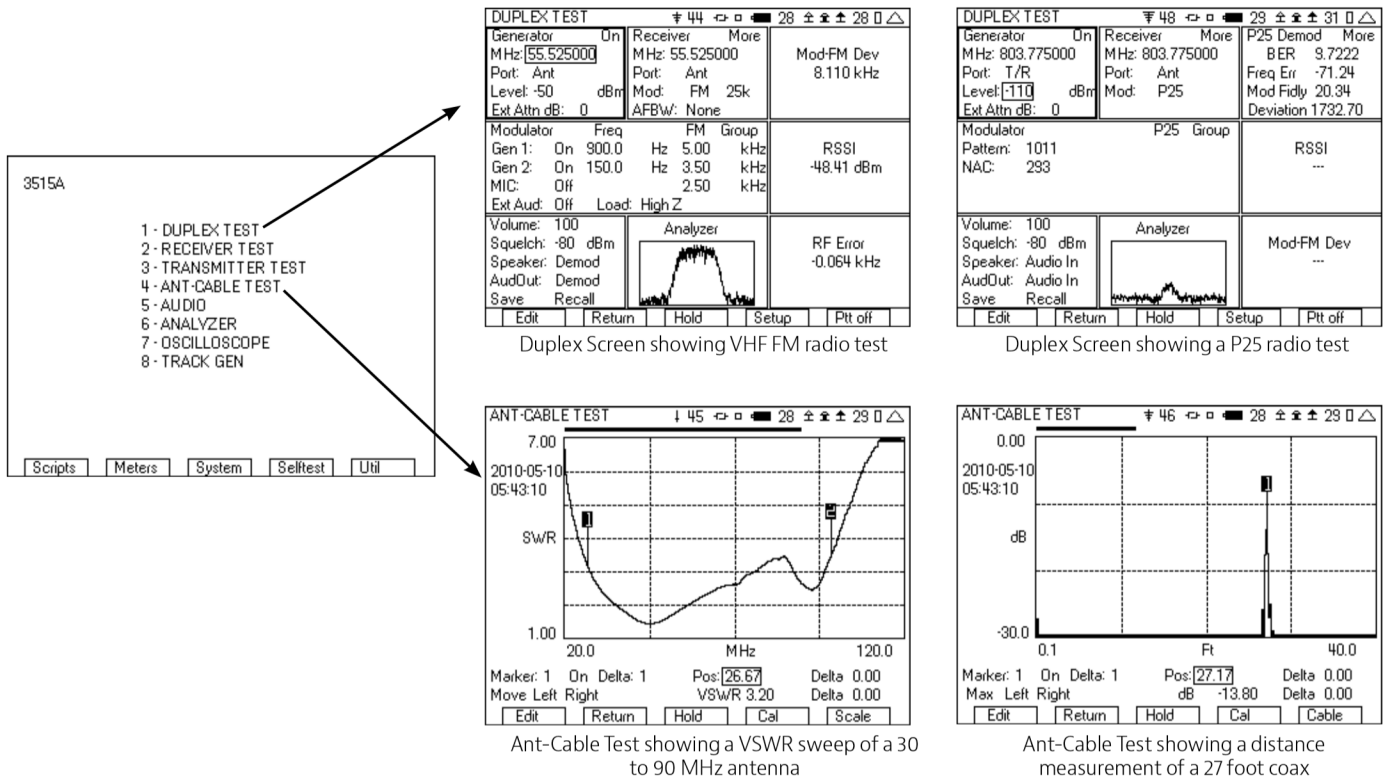
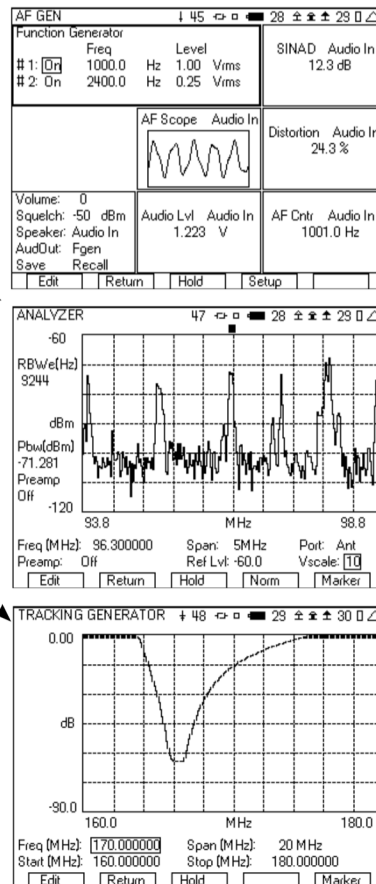| Radio System	In Vehicle Test	In Aircraft Test	Manual Test	Antenna/Coax Test
VHF Ground COMMS (SINGGARS, others)	▪	▪	▪	▪
VHF Airborne COMMS		▪	▪	▪
UHF Airborne COMMS		▪	▪	▪
UHF SATCOM/SLOS/BLOS	▪	▪	▪	▪
EPLRS/SAD	▪	▪	▪	▪
Public Safety/APCO-P25	▪	▪	▪	▪
Conventional AM/FM COMMS	▪	▪	▪	▪
Audio and Intercom	▪	▪	▪	
Force Protection	▪		▪	▪
Life Support	▪	▪	▪	▪
Ground Radio Models	**OTA Test**	**Troubleshooting**	**Manual Test**	**Antenna/Coax Test**
RT-1523()	▪	▪	▪	▪
PRC-117F	▪	▪	▪	▪
PRC-148	▪	▪	▪	▪
PRC-150	▪	▪	▪	▪
PRC-152	▪	▪	▪	▪
VRC-103	▪	▪	▪	▪
VRC-110	▪	▪	▪	▪
Airborne Radio Models	**OTA Test**	**Troubleshooting**	**Manual Test**	**Antenna/Coax Test**
ARC-164	▪	▪	▪	▪
ARC-186	▪	▪	▪	▪
ARC-190	▪	▪	▪	▪
ARC-201	▪	▪	▪	▪
ARC-210	▪	▪	▪	▪
ARC-222	▪	▪	▪	▪
ARC-231	▪	▪	▪	▪
Data Radio Models	**OTA Test**	**Troubleshooting**	**Manual Test**	**Antenna/Coax Test**
RT-1720G (EPLRS/SADL)	▪	▪	▪	▪
RT-1922 (EPLRS/SADL)	▪	▪	▪	▪

3515ARM

Easy to Use - Powerful Test Capabilities

As shown below from actual screen displays, the 3515 provides an easy-to-use human interface and powerful radio testing capabilities, including application scripts that reduce or eliminate the learning curve. All the instructions for a test may be put into the application and the test results can be saved for documentation, data, and analysis.

Duplex Screen showing VHF FM radio test

Duplex Screen showing a P25 radio test

Ant-Cable Test showing a VSWR sweep of a 30 to 90 MHz antenna

Ant-Cable Test showing a distance measurement of a 27 foot coax

Audio Test showing a typical stimulus and response of an audio intercom

Spectrum Analyzer monitoring over the air showing multiple transmitters

Script applications provide extended test capabilities for specific model of radio of specific vehicle or aircraft

Tracking Generator display of a band-pass filter

Selected Specifications

RF Signal Generator

Frequency	2MHz to 1 GHz
Output Level	T/R port: -50 to -120 dBm
	ANT port: -30 to -90 dBm
	SWR port: -5 to -65 dBm
FM Deviation	
Internal Source	Off, 0 Hz to 100 kHz
External	FM Inputs AUDIO GEN, MIC IN, AUDIO IN

AFGEN 1 AND AFGEN 2

Range	0.0 Hz to 20.0 kHz

RF Receiver

Frequency Range	2 MHz to 1 GHz
Input Amplitude	Minimum Input Level, Audio Sensitivity
	T/R: typical, 10 db SINAD - 70dBm
	ANT: typical 10 dB SINAD (-110 dBm with pre amp)
Maximum Input Level	T/R: +43 dBm
	ANT: +20 dBm for 10 seconds
RF Frequency Error Meter	
Range	±200 kHz
RSSI Indicator	
Display Range	dBm: -120 dBm to +43 dBm (+53 dBm with Ext Attn)
	Watts: 10pW to 20 W (200 W with Ext Attn)
RF Power Meter	
Display Range	Ext Attn, 0 dBm: 0 to 43 dBm (0 to 20 W)
	Ext Attn, 20 dBm: 0 to 53 dBm (0 to 200 W)
Maximum Input Level	No external attenuator
	20 W/43 dBm for 10 minutes at +25°C or until thermal alarm
FM Deviation Meter	
Display Range	0 Hz to ±100 kHz
AM Percent Meter	
Display Range	0% to 100%

Antenna/ Cable Test

Frequency Range	2.0 MHz to 1000.0 MHz
VSWR Range	1.00 to 7.00
Return Loss	
Range	0.0 to -50.0 dB
Cable Loss	
Range	0.0 to -50.0 dB
Distance to Fault Range	3 ft to >300 ft

Audio Meters

AUDIO INPUT (EXT AUDIN)	
Source	BNC
Frequency Range	300 Hz to 10 kHz
Level Range	0.2 Vp-p to 5 Vp-p
SINAD METER	
Sources	AUDIO IN, DEMOD
Display Range	0 to 40 dB
Distortion Meter	
Sources	AUDION IN, DEMOD
Display Range	0 to 100%

Audio Frequency Counter

Range	15 Hz to 20 kHz

Audio Frequency Level Meter

Sources	AUDIO IN, DVM
Input Level	Audio In: 10 mV rms to 30 V rms DVM: 10 mV rms to 30 V rms

Spectrum Analyzer

Frequency	
Range	2 MHz to 1 GHz
Span	10 kHz to 5 MHz in 1,2,5 sequence
Vertical scales	2, 5, 10, 15, and 20 dB/division
Effective RBW	
Range	20 Hz to 25 kHz
Displayed Average Noise Level (DANL)	-120 dBm (Typical, 10 kHz span) -136 dBm with pre-amp enabled

Oscilliscope

Source	DVM, Audio In, Demod
Display Level	-50 to +50 V
Horizontal	0.5 ms/div to 0.1 sec/div1
Vertical	10 mV to 10 V per div

Timebase (Standard)

Temperature Stability	±0.15 ppm
Aging	±500 ppb (year 1) ±300 ppb/year (after year 1)
Warm-up time	5 min.

Audio Frequency Counter

Range	15 Hz to 20 kHz
Audio Frequency Level Meter	
Sources	AUDIO IN, DVM
Input Level	Audio In: 10 mV rms to 30 V rms DVM: 10 mV rms to 30 V rms

Environmental / Physical

Overall Dimensions	9.1 x 11.2 x 2.8 in.
Weight	Less than 8 lbs. (3515 unit)

Selected Specifications continued

Environmental / Temperature	
Storage	-51°C to +71°C storage
External DC Operation	-20°C to +55°C (battery removed, contingent upon applied RF power over time[1])
Battery Operation	-20°C to +40°C (typical based on internal temperature rise and usage of the instrument[1]).

Note: Battery to be charged at battery temperatures only between 0°C and +45°C

Certifications	
MIL-PRF-28800F CLASS 2 for the following:	Humidity, Altitude, Shock, Vibration, Bench Handling, Salt fog, Splash proof, Acoustic noise, Explosive atmosphere, Fungus resistance, Dust resistance, Drip proof, Solar radiation

EMC		
Emissions	Mil-PRF-28800F	
	EN61326: 1998 class A	
	EN61000-3-2	
	EN61000-3-3	
Immunity	Mil-PRF-28800F	
	EN61326: 1998	
	EN61000-6-1	
Safety	UL61010-1	
	Installation Category II	
	Pollution degree 2	

Configurations, Accessories, Options, and Warranty

The 3515 Series Test Sets are available in several configurations. These different configurations have been made to support customer usage and/or contractual items. Contact VIAVI Solutions if you have questions regarding items within these configurations.

- Included indicates the item is contained within the specified configuration.

- Optional indicates the item is not contained within the specified configuration, but may be purchased as an add-on option.

- Dash ("-") indicates the item is not contained within the configuration and is not available as an option.

Configuration

Configuration	Description
3515AR	Portable Radio Test Set - AR Configuration (NSN - 6625-01-572-6346)
3515ARM	Portable Radio Test Set - ARM Configuration (NSN - 6625-01-617-3401)
3515 AR-EP (See Export Warning)	Portable Radio Test Set - AR-EP Configuration (NSN - 6625-01-618-8588)
3515N (See Export Warning)	Portable Radio Test Set - USMC (Navy) Configuration (NSN - 6625-01-538-0285)

1 - Consider the use of the instrument for thermal operating temperature. All thermal ratings are dependent upon applied RF power. The 3515 will alarm once the internal temperature exceeds safety limits. Applying power continuously in high ambient temperature environment will result in a heat build-up within the instrument. The 3515 is rated for 20 W (+43 dBm) for 10 minutes at +25° C or until thermal alarm sounds. Exceeding these conditions will result in thermal shutdown.

Ordering Information

Equipment	Order Number	NSN	3515AR	3515ARM	3515 AR-EP	3515N
Test Set, 3515AR (Base unit)	3515AR	6625-01-572-6346	Included	Included	Included	–
Test Set, 3515N	3515N	6625-01-538-0285	–	–	–	Included
Flip Cover	63966	6625-01-6218676	Included	Included	Included	Optional
Accessories						
Adapter (BNC-F to TNC-M, qty 5)	23758	5935-00-701-2215 5935-01-552-1849	Included	Included	Included	Included
Adapter (N-F to BNC-F)	23770	5935-01-505-4115	Included	Included	Included	Included
Adapter (N-F to BNC-M)	23769	5935-01-505-4191	Included	Included	Included	Included
Adapter (N-M to BNC-F)	20327	5935-00-821-6126	Included	Included	Included	Included
Adapter (N-M to TNC-M)	23762	5935-01-453-5761	Included	Included	Included	Included
Airborne Adapter Kit	63972		Optional	Included	Optional	Optional
Adapter, TPS-M to BNC-F	86064	5935-00-491-6302	Optional	Included	Optional	Optional
Adapter, TPS-F to BNC-M	86065	5935-00-785-9024	Optional	Included	Optional	Optional
Adapter, BNC-F to BNC-F	86066	5935-01-507-1732	Optional	Included	Optional	Optional
Adapter, HN-F to BNC-M	86067		Optional	Included	Optional	Optional
Adapter, TNC-F to TNC-F	86068	6060-01-569-1025	Optional	Included	Optional	Optional
Adapter, TNC-M to TNC-M	86069	5935-01-544-7750	Optional	Included	Optional	Optional
Cable, ICS to Audio	85893	6625-01-6206316	Optional	Included	Optional	Optional
Cable, H-250 to ICS	85892	6625-01-6206328	Optional	Included	Optional	Optional
Antenna (BNC) (2 to 30 MHz)	9138		Included	Included	Optional	Included
Antenna (BNC) (450 MHz)	9147		Included	Included	Optional	Included
Antenna (TNC) (30 to 90 MHz)	9151		Included	Included	Optional	Included
Antenna (TNC, 30 to 512 MHz, Flex)	88336		Optional	Optional	Optional	Optional
Antenna (TNC, 30 to 512 MHz, 13")	89173		Optional	Included (Qty 2)	Included (Qty 2)	Optional
Antenna (TNC, 100 to 1000 MHz, 12")	89174		Optional	Optional	Optional	Optional
Attenuator (20 dB/150 W)	38242	5985-01-292-2384	Included	Included	Included	Included
Attenuator (20 dB/50 W)	38240		Included	Included	Included	Included
Battery, Spare	67076		Optional	Optional	Optional	Optional
BER Test Cable	62408		–	–	–	Included
Cable (BNC) (M-M) (48 in, qty 2)	62368		Included	Included	Included	Included
Cable (TNC) (M-M) (48 in)	62398		Included	Included	Included	Included
Case, Accessory 35xx series	91597		Included	Included	Included	Included
Case, Soft-Sided Carrying	10192		Included	–	–	Included
Case, Transit (Pelican)	91600	6625-01-5409690	Optional	Included	Included	Optional
Case Transit, 35XX Series, Black	91706		Optional	–	Included	Optional
Comm Breakout Box	64598	6110-01-572-7127	Included	Included	Included	Included
Desktop, Stand	63656		Optional	Optional	Optional	Optional
Directional Coupler Kit (20 - 200 MHz)	63964		Optional	Optional	Optional	Optional
External DC Power Supply	67374		Included	Included	Included	Included
Fuse (5 A, 32 Vdc, Type F, qty 2)	56080	5920-01-414-6983	Included	Included	Included	Included
Handset (Speaker/Mic)	64606	6625-01-577-5101	Included	Included	Included	Optional
Manual, Getting Started 3515AR (Paper)	6134		Included	Included	Included	–
Manual, Maintenance 3515AR (CD)	6133		Optional	Optional	Optional	–
Manual, Operation 3515AR (CD)	6132		Included	Included	Included	–
Manual, System 3515 AR-EP (CD)	91921		–	–	Included	–

Accessories Continued	Order Number	NSN	3515AR	3515ARM	3515 AR-EP	3515N
Manual, Getting Started 3515N (Paper)	6126		-	-	-	Included
Manual, Maintenance 3515N (CD)	6118		-	-	-	Optional
Manual, Operation 3515N (CD)	6114		-	-	-	Included
Power Cable (DC NATO)	62406		Included	-	-	Included
Power Cables (AC, 3-wire leads)	27516		-	-	-	-
Power Cables (AC, Cont. Europe)	27480		-	-	-	-
Power Cables (AC, N. America)	27478		-	-	Included	-
Power Cables (AC, UK)	27477		-	-	-	-
Power Cable (DC Cigarette Lighter)	62404		-	-	Included	-
Short-Open-Lead Calibrator	38245	6625-01-572-5285	Included	Included	Included	Included
Tripod Dolly Stand	67474 6361 63659		Optional	Optional	Optional	Optional
USB Flash Drive	67327		Included	Included	Included	Included
USMC Documentation	-		-	-	-	Included
USMC Labeling	-		-	-	-	Included
Site Survey Software	63927		Optional	Optional	Optional	Optional
Power Cable (AC)	62302		Included	Included	-	Included
Options						
Spectrum Analyzer	35XXOPT01		Included	Included	Included	Optional
Oscilloscope	35XXOPT02		Included	Included	Included	Optional
Script Language (includes training info)	3515OPT05		Included	Included	Included	Optional
P25 Test	35XXOPT07		Optional	Optional	Optional	Optional
Tracking Generator	35XXOPT08		Optional	Optional	Optional	Optional
DPMR Test	35XXOPT09		Optional	Optional	Optional	Optional
ARIB T98 Test	35XXOPT10		Optional	Optional	Optional	Optional
AR Test System	3515AROPT24		Optional	Included	Optional	Optional
PRM-34 Application	3515OPT25		Included	Included	Optional	Optional
NXDN Test	35XXOPT33		Optional	Optional	Optional	Optional
DMR Test	35XXOPT34		Optional	Optional	Optional	Optional
Warranty						
Standard Warranty, 24 months	-		Included	Included	Included	Included
1 Year Extended Hardware Warranty + ANSI No-Cert Calibrations	84345		Optional	Optional	Optional	Optional
3 Year Extended Hardware Warranty + ANSI No-Cert Calibrations	84347		Optional	Optional	Optional	Optional
1 Year Extended Hardware Warranty + Certified Calibrations	84346		Optional	Optional	Optional	Optional
3 Year Extended Hardware Warranty + Certified Calibrations	84348		Optional	Optional	Optional	Optional

Export Control and Warning

VIAVI Solutions military products are controlled for export under the International Traffic in Arms Regulations (ITAR). A license from the U.S. Department of State is required prior to the export of this product from the United States. This product may not be sold or proposed or offered for sale to certain countries including: Belarus, Burma, China, Cuba, Haiti, Iran, Liberia, Libya, North Korea, Somalia, Syria, Sudan, and Vietnam. See ITAR 126.1 for complete information.

VIAVI Solutions

Contact Us +1 316 522 4987
AvComm.Sales@viavisolutions.com

To reach the Viavi office nearest you, visit viavisolutions.com/contact

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