

# Radio Analysis Modules for OneAdvisor 800 Wireless

Automated fiber end-face inspection and analysis for pluggable devices

RA09MB-0 | RA18MB-0 | RA32MB-0 | RA44MB-0



## Specification\* Conditions

The specifications apply under these conditions:

- The instrument has been turned on for at least 15 minutes.
- The instrument is operating within a valid calibration period.
- Data with no tolerance are considered typical values.
- Typical and nominal values are defined as follows:
  - Typical: An average value representing 80% of the performance of production units.
  - Nominal: A general, descriptive term or parameter.

## Frequency and Time Specification

Part	Frequency Range	
RA09MB-0	9 kHz to 9 GHz	
RA18MB-0	9 kHz to 18.5 GHz	
RA32MB-0	9 kHz to 32 GHz	
RA44MB-0	9 kHz to 44 GHz	
Frequency Reference		
Accuracy	±0.05 ppm (0°C to 50°C or 32°F to 122°F) + aging	
Accuracy which GPS	±10 ppb	GPS lock
	±20 ppb	Hold over (72 hours)
Aging	±0.5 ppm/year, ±25 ppb with GPS	
Frequency readout accuracy (start, stop, center, marker)		
	± (readout frequency x frequency reference accuracy + RBW center	horizontal resolution = frequency span/trace #
	+ 0.5 x horizontal resolution + 2 Hz)	RBW center = 15% x RBW
Frequency Span		
Range	0 Hz (zero span)	
	9 kHz to max frequency of each module (9, 18.5, 32, 44 GHz)	
Resolution	1 Hz	
Accuracy	± (2 x RBW centering + horizontal resolution)	
Sweep time readout	The time required to complete a sweep from start to finish, including tuning, data acquisition and process	
Trace Update		Nominal
Trace Update	25 traces/sec	Span = 260 MHz, RBW = 100 kHz
Sweep Time		Nominal
Range	0.4 ms to 1000 sec	
	24 µs to 200 sec	zero span
Accuracy	±2%	zero span
Type	Continuous, Single	
Points	501, 1001, 1501, 2001, 3001, 5001, 10001	
Mode	Gated sweep (requires option RA-GNSS), Normal, Fast	

Trigger		
Trigger source	Free run, video, external	
Trigger delay	Range: 0 to 200 sec, Resolution: 6 $\mu$ s	
Resolution Bandwidth (RBW)	Nominal	
Range	1 Hz to 10 MHz (1-3-10 sequence)	-3 dB bandwidth
Accuracy	$\pm 10\%$	
Video Bandwidth (VBW)	Nominal	
Range	1 Hz to 10 MHz (1-3-10 sequence)	-3 dB bandwidth
Accuracy	$\pm 10\%$	

### Amplitude Accuracy and Range Specifications

Amplitude Range		
Measurement range	9 kHz to 18.5 GHz: DANL to +25 dBm	
	> 18.5 GHz to 32 GHz: DANL to +20 dBm (RA32MB-0)	
	> 18.5 GHz to 44 GHz: DANL to +20 dBm (RA44MB-0)	
Input attenuator range	9 kHz to 18.5 GHz: 0 to 55 dB in 5 dB steps	
	> 18.5 GHz to 32 GHz: 0 to 50 dB in 5 dB steps (RA32MB-0)	
	> 18.5 GHz to 44 GHz: 0 to 50 dB in 5 dB steps (RA44MB-0)	
Preamplifier		
Frequency range	10 MHz to 9 GHz	(RA09MB-0)
	10 MHz to 18.5 GHz	(RA18MB-0)
	10 MHz to 32 GHz	(RA32MB-0)
	10 MHz to 44 GHz	(RA44MB-0)
Gain	20 dB	
Max RF Input Operating Level		
Maximum RF Input Level (Average CW power)	9 kHz to 18.5 GHz: +25 dBm, $\pm 50$ VDC (RA18MB-0)	
	> 18.5 GHz to 32 GHz: +20 dBm, $\pm 50$ VDC (RA32MB-0)	
	> 18.5 GHz to 44 GHz: +20 dBm, $\pm 50$ VDC (RA44MB-0)	

## Amplitude Accuracy and Range Specifications continued

<b>Display Range</b>		
Log/Linear scale	10 divisions	
	1 to 20 dB/division in 1 dB	
Scale units	dBm, dBV, dBmV, dB $\mu$ V, V, mV, W, mW	
<b>Reference Level</b>		
Range	-150 to +100 dBm	
Resolution	Log scale: 0.1 dB	
	Linear scale: 1 % of reference level	
<b>Trace</b>		
Detectors	Normal, positive peak, negative peak, sample, average (RMS)	
Number	6	
States	Clear/write, maximum hold, minimum hold, capture, load, blank, trace math, trace info	
Functions	Time expired maximum hold and minimum hold, trace math, trace info	
<b>Marker</b>		
Type	Normal, delta, delta pair, marker table	
Number	6	
Functions	Noise marker, frequency count	
Marker to	Peak, next peak, next peak right, next peak left, min search, always peak	
	Center, start, stop	
Audio beep	Tone variation based on signal strength	
Marker table	Display 6 markers	
<b>Absolute Amplitude Accuracy</b>		
Preamplifier OFF: input signal $\geq$ -50 dBm, auto-coupled, 15-minute warm-up		
Preamplifier ON: -90 dBm < input signal < -50 dBm, auto-coupled, 15-minute warm-up		
20° to 30°C	250 kHz to 18.5 GHz	$\pm 1.0$ dB, $\pm 0.5$ dB (T)
	> 18.5 GHz to 32 GHz (RA32MB-0)	$\pm 1.5$ dB, $\pm 0.8$ dB (T)
	> 18.5 GHz to 44 GHz (RA44MB-0)	$\pm 1.5$ dB, $\pm 0.8$ dB (T)
-10° to 55°C	250 kHz to 12 GHz	$\pm 1.5$ dB, $\pm 1.0$ dB (T)
	> 12 GHz to 18.5 GHz	$\pm 1.7$ dB, $\pm 1.2$ dB (T)
	> 18.5 GHz to 32 GHz	$\pm 2.0$ dB, $\pm 1.5$ dB (T)
	> 18.5 GHz to 36 GHz	$\pm 2.0$ dB, $\pm 1.5$ dB (T)
	> 36 GHz to 44 GHz	$\pm 2.5$ dB, $\pm 1.5$ dB (T)

Amplitude Accuracy and Range Specifications continued

Input VSWR		
10 MHz to 18.5 GHz	1.5:1	@ 10 dB Attenuation with Normal mode
> 18.5 GHz to 22 GHz	1.5:1	
> 22 GHz to 32 GHz	1.7:1	
> 22 GHz to 44 GHz	1.7:1	

Dynamic Range Specifications

Display Average Noise Level (DANL)			
1 Hz RBW, 1 Hz VBW, 50 Ω termination, 0 dB attenuation, RMS detector			
High Linear Mode (Preamplifier Off)	10 MHz to 7 GHz	-134 dBm, -139 dBm (T)	
	> 7 GHz to 14.7 GHz	-130 dBm, -135 dBm (T)	
	> 14.7 GHz to 18.5 GHz	-128 dBm, -134 dBm (T)	
	> 18.5 GHz to 22.5 GHz	-125 dBm, -130 dBm (T)	
	> 22.5 GHz to 32 GHz	-117 dBm, -122 dBm (T)	
	> 32 GHz to 40 GHz	-110 dBm, -117 dBm (T)	
	> 40 GHz to 44 GHz	-105 dBm, -112 dBm (T)	
Normal Mode (Preamplifier Off)	10 MHz to 7 GHz	-137 dBm, -141 dBm (T)	
	> 7 GHz to 14.7 GHz	-134 dBm, -138 dBm (T)	
	> 14.7 GHz to 18.5 GHz	-131 dBm, -137 dBm (T)	
	> 18.5 GHz to 32 GHz	-133 dBm, -137 dBm (T)	
	> 32 GHz to 40 GHz	-130 dBm, -137 dBm (T)	
	> 40 GHz to 44 GHz	-125 dBm, -133 dBm (T)	
Preamplifier On	10 MHz to 7 GHz	-158 dBm, -161 dBm (T)	Preamp 1
	> 7 GHz to 14.7 GHz	-155 dBm, -158 dBm (T)	Preamp 1
	> 14.7 GHz to 18.5 GHz	-150 dBm, -153 dBm (T)	Preamp 1
	> 18.5 GHz to 32 GHz	-158 dBm, -161 dBm (T)	Preamp 1
	> 32 GHz to 44 GHz	-148 dBm, -152 dBm (T)	Preamp 1
	10 MHz to 7 GHz	-163 dBm, -166 dBm (T)	Preamp 1 and 2
	> 7 GHz to 14.8 GHz	-160 dBm, -163 dBm (T)	Preamp 1 and 2
	> 14.8 GHz to 18.5 GHz	-157 dBm, -160 dBm (T)	Preamp 1 and 2
	> 18.5 GHz to 32 GHz	-158 dBm, -163 dBm (T)	Preamp 1 and 2
	> 32 GHz to 44 GHz	-155 dBm, -160 dBm (T)	Preamp 1 and 2

Dynamic Range Specifications continued

Second Harmonic Distortion			
	10 MHz to 9.25 GHz	< -75 dBc, typical	Input -30 dBm, peak detector, high linearity mode
	9.25 GHz to 16 GHz	< -75 dBc, typical	
	16 GHz to 22 GHz	< -72 dBc, typical	
Third-Order Inter-Modulation (Third-Order Intercept: TOI)			
	10 MHz to 8 GHz	+16 dBm, typical	High Linearity Mode
	> 8 GHz to 18.5 GHz	+20 dBm, typical	
	> 18.5 GHz to 22 GHz	+15 dBm, typical	
	> 22 GHz to 32 GHz	+20 dBm, typical	
	> 22 GHz to 44 GHz	+20 dBm, typical	
Spur Free Dynamic Range			
	2/3 (TOI-DANL) in 1 Hz RBW	> 105 dB, 107 dB (T)	@ 2 GHz

Dynamic Range Specifications continued

Spurious		
Inherent residual response	Input terminated, 0 dB attenuation, Preamp off	
	Sweep Tuned: 10 kHz RBW, 1 kHz VBW, RMS detector, Normal Mode	
	Real time: RBW: 30 kHz, VBW: 30 kHz, Peak detector, Span = 100 MHz, Normal Mode	
	<b>9 kHz to 6 GHz</b>	
	Sweep tuned: -95 dBm	Typical
	Exceptions: -90 dBm @ 244.378 MHz	
	Real time: -75 dBm	Typical
	Exceptions: -70 dBm @ 5386 MHz	
	Notice Spurs: -80 dBm @ 27.785 MHz, 38.375 MHz, 127.68 MHz, 1795.34 MHz, 2909 MHz	
	<b>&gt; 6 GHz to 18.5 GHz</b>	
	Sweep tune: -85 dBm	Typical
	Notice spurs: -90 dBm @ 6.163 GHz, 10.665 GHz, 12.50 GHz, 14.220 GHz	
	Real time: -70 dBm	Typical
	<b>&gt; 18.5 GHz to 32 GHz</b>	
	Sweep tune: -85 dBm Typical	Typical
	Notice spurs: -90 dBm @ 19.750 GHz	
	Real time: -70 dBm	Typical
	<b>&gt; 32 GHz to 33 GHz</b>	
	Sweep tune: -85 dBm	Typical
	Real time: -70 dBm	Typical
<b>&gt; 33 GHz to 44 GHz</b>		
Sweep tune: -85 dBm	Typical	
Real time: -65 dBm	Typical	

**Dynamic Range Specifications continued**

Input-related Spurious	0 dB attenuation, Preamp off	
	Sweep tuned: Peak detector, Span < 1 GHz, 1 kHz RBW, 100 Hz VBW, Normal Mode, carrier offset > 5 MHz	
	<b>9 kHz to 18.5 GHz</b>	-25 dBm Input signal
	Sweep tune: -70 dBc	Typical
	<b>&gt; 18.5 GHz to 32 GHz</b>	-30 dBm Input signal
	Sweep tune: -65 dBc	Typical
	<b>&gt; 32 GHz to 33 GHz</b>	-30 dBm Input signal
	Sweep tune: -65 dBc	Typical
	<b>&gt; 33 GHz to 44 GHz</b>	-30 dBm Input signal
Sweep tune: -60 dBc	Typical	
LO Feedthrough to Input	9 kHz to 18.5 GHz: <-80 dBm	
	>18.5 GHz to 32 GHz: <-70 dBm	
	>18.5 GHz to 44 GHz: <-70 dBm	

**Single Sideband (SSB) Phase Noise**

SSB Phase Noise	-102 dBc/Hz, -105 dBc/Hz (T) @ 10 kHz offset	@ 1 GHz, Input level -18 dBm, RMS detector, Normal Mode
	-106 dBc/Hz, -109 dBc/Hz (T) @ 100 kHz offset	
	-117 dBc/Hz, -120 dBc/Hz (T) @ 1 MHz offset	



Measurements

Measurement	
Channel Power	Channel power
	Spectral Density
	PAR (Peak to Average Ratio)
Occupied Bandwidth	Occupied bandwidth
	Integrated power
	Occupied power
	x dB bandwidth
Spectrum Emission Mask	Reference power
	Peak level at defined range
Adjacent Channel Power (ACP)	Reference power
	Absolute power at defined frequency offset
	Relative power at defined frequency offset
Multi-ACP (Adjacent Channel Power)	Reference power at lowest defined frequency
	Reference power at highest defined frequency
	Absolute power at defined frequency offset
	Relative power at defined frequency offset
Spurious Emissions	Peak power at defined range
	Frequency of peak power at defined range
Total Harmonic Distortion	Power level at each harmonic
	% of THD
Field Strength	Field strength power at markers
AM/FM Audio Demodulation	CW, AM, FM with configurable dwell time
Route Map	RSSI
	ACP

## Internal RF Power Meter

General Parameters	
Display range	-100 to +100 dBm
Offset range	0 to 60 dB
Resolution	0.01 dB or 0.1 x W (x = m, μ, p)
Frequency range	RA09MB-0: 10 MHz to 9 GHz
	RA18MB-0: 10 MHz to 18.5 GHz
	RA32MB-0: 10 MHz to 32 GHz
	RA44 MB-0: 10 MHz to 44 GHz
Span	1 kHz to max frequency of each option
Dynamic range	10 MHz to 18.5 GHz: -100 to +25 dBm
	> 18.5 GHz to 32 GHz: -100 to +20 dBm
	> 18.5 GHz to 44 GHz: -100 to +20 dBm
Accuracy	Same as spectrum analyzer

## External RF Power Sensor (Requires External RF Power Sensor)

General Parameters		
Display Range	-100 to +100 dBm	
Offset Range	0 to 60 dB	
Resolution	0.01 dB or 0.1 x W (x = m, μ, p)	
<b>Model</b>	<b>JD731B</b>	<b>JD733A</b>
Frequency Range	300 MHz to 3.8 GHz	150 MHz to 3.5 GHz
Dynamic Range	Average: 0.15 to 150 W	Average: 0.1 to 50 W
	Peak: 4 to 400 W	Peak: 0.1 to 50 W
Measurement Type	Forward/Reverse average power, Forward peak power, VSWR	
Accuracy	Forward Power ±(4% of reading + 0.05 W), CW condition at 15 to 35°C (59 to 95°F)	
Connector Type	Type-N female on both ends	

**External RF Power Sensor (Requires External RF Power Sensor) continued**

<b>Terminating Power Sensor</b>			
<b>Model</b>	<b>JD732B</b>	<b>JD734B</b>	<b>JD736B</b>
Measurement Type	Average	Peak	Average and Peak
Frequency Range	20 MHz to 3.8 GHz		
Dynamic Range	-30 to + 20 dBm		
Accuracy	±7%		
Connector Type	Type-N female		

**Bluetooth Connectivity (Option ONA-MF-BT)**

<b>General Parameters</b>	
Interface Type	Build-in type
Mode	Personal area network (PAN)
	File transfer profile (FTP)

**WiFi Connectivity (Option ONA-MF-WIFI)**

<b>General Parameters</b>	
Interface Type	Build-in type
Interface Standard	IEEE 802.11 b/g/n
Wireless Mode	Infrastructure mode
Internet Protocol Version	IPv4, IPv6

## GNSS Connectivity (Option RA-GNSS)

GNSS receiver type		
	Built-in type	
GNSS Time And Location		
GNSS Information	Latitude, Longitude, Satellite, Status, GNSS System, Sky Plot, Signal Strength	
GNSS Time And Location	Time, Latitude, and Longitude on display	
	Time, Latitude, and Longitude on trace	
High-Frequency Accuracy GNSS Lock		
GNSS Lock	±10 ppb	
Hold Over for 3 Days	±20 ppb (0 to 50°C)	15 minutes after satellite locked
Connector	SMA, female	
Optional Antenna	SMA (m), 3.3 VDC or 5 VDC	
	JD71050351 Single Band GNSS Antenna	
	G700050391 Mag Mount Dual Band GNSS Antenna	

## Route Map

General Parameters		
Mode	Spectrum analyzer and OTA Analysis (LTE, DSS, NSA, and 5G)	
Plot Method	Time, position, GNSS	
Plot Legend	User definable range	
Map Type	Outdoor (position information embedded)	Maps created with JDMapCreator
	Indoor (No position information embedded)	
Measurement Item	Mode dependent	

## Online Route Map (RA-ORM)

General Parameters		
Mode	Spectrum analyzer and OTA Analysis (LTE, DSS, NSA, and 5G)	
Plot Method	GNSS position	
Plot Legend	User definable range	
Map Type	Open street map	
Measurement Item	Mode dependent	

## Real Time Spectrum Analysis (Option RA-RTSA-100)

Frequency range		
RA09MB-0	9 kHz to 9 GHz	
RA18MB-0	9 kHz to 18.5 GHz	
RA32MB-0	9 kHz to 32 GHz	
RA44MB-0	9 kHz to 44 GHz	
Frequency Span		
	110 MHz real time	Supports panoramic persistence view
Acquisition		
IF Bandwidth	110 MHz	
Resolution Bandwidth	30 kHz to 10 MHz	Depends on span, 1-3-10 sequence
A/D Converter	2929.12 Msps, 14 bits	
FFT Lengths	8192 or 2024	
Maximum Acquisition Time	1000 ms	
Minimum IQ Resolution	8.138 ns	
Probability of Intercept (POI)	Normal: 33.59 $\mu$ s; High: 1.92 $\mu$ s	Span: 110 MHz
Spectrum Display		
Trace Detectors	Normal, positive peak, negative peak, sample, average (RMS)	
Trace Number	6	
Trace States	Clear/write, maximum hold, minimum hold, capture, load, blank	
Marker Type	Normal, delta, delta pair, marker table	
Marker Number	6	
Marker To	Peak, next peak, next peak right, next peak left, min search, always peak Center, start, stop	
Audio Beep	Tone variation based on signal strength	
Marker Table	Displays 6 markers	

Persistence Spectrum Display	
Spectrum Processing Rate	≤ Max 15,000/s
DPX Bitmap Resolution	201 x 801
Marker Information	Frequency, amplitude, signal density
Dwell Time Per Step	100 ms to 100 s
Trace Processing	Color-graded bitmap, +Peak, -Peak, average
Trace Length	801
Marker Type	Normal, delta, marker table
Marker Number	6
Marker To	Peak, next peak, next peak right, next peak left, min search, always peak Center, start, stop
Audio Beep	Tone variation based on signal strength
Marker Table	Displays 6 markers
Persistence Spectrogram Display	
Trace Detection, Trace Length, Memory Depth	+Peak, -Peak, Average (RMS)
Time Resolution Per Line	100 ms to 1sec, user selectable

## IQ Waveform Capture (Option RA-IQ-CAP)

<b>Mode</b>	Realtime spectrum analyzer
Maximum Bandwidth	110 MHz
Maximum Sample Rate	122.88 Msps
Total Capture Size	3.89 GB

### IQ Capture

Bandwidth (MHz)	IQ sample Rate (Msps)	Capture time
110	122.88	8.29 sec
79	81.92	12.44 sec
50	61.44	16.59 sec
20	30.72	33.19 sec
10	15.36	1 min 6 sec
5	7.68	2 min 12 sec
2.5	3.84	4 min 25 sec
1.3	1.92	9 min 51 sec

## Interference Analysis (Option RA-IA)

### Measurement

Spectrum Analyzer	Sound indicator, interference ID, spectrum recorder
Spectrogram	Collect up to 72 hours of data
RSSI	Collect up to 72 hours of data
Interference Finder	Power measurements on geographical maps based on GPS geo-coordinates and antenna azimuth (requires Antenna Advisor JD70050007)
Radar Chart	Power measurements on radar chart based on antenna azimuth (requires Antenna Advisor JD70050007)
Spectrum Replayer	Plays back recorded spectrum with OneAdvisor 800

## RFoCPRI Interference Analysis (Option RA-RFOCPRI-2T08)

General Parameters		
Optical Interface	Dual QSFP or SFP (supports all MSA compliant SFP modules)	
Line Rates	CPRI Rates 2 to 8	
Resolution Bandwidth (RBW)	Range: 10 kHz to 100 kHz, 7.5 kHz	-3 dB bandwidth, Steps: 1-3-10
	Accuracy $\pm 10\%$	Nominal
Video Bandwidth (VBW)	Range: 10 kHz to 100 kHz, 7.5 kHz	-3 dB bandwidth, Steps: 1-3-10
	Accuracy $\pm 10\%$	Nominal
CPRI Parameters	IQ Sample width	4 to 20 bits
	Mapping Method	1 and 3
	Bandwidth	3.84 MHz x N, where N=1 to 8
	TX clock	Internal, External, Recovered
	Port Type	Master, Slave
Measurements		
Link Status	LOS, LOF, SDI, RAI, Optic RX Level	Port 1 and Port 2
SFP Information	Wavelength, Vendor, Vendor PN, Vendor Rev, Power level type, Diagnostic byte, Nominal rate, Min rate, Max RX level, Max TX level	Port 1 and Port 2
Interference Analyzer	Spectrum	Single, Dual, and Quad Chart
	Spectrogram	Single and Dual Spectrogram Chart with 2D or 3D diagrams
	Interference ID	
	Sound Indicator	
	PRB Table	
	Spectrum Replayer	
	IQ Activity Scan	



### Gated Sweep (Option RA-GSS)

General Parameters	
Gate Method	Gated FFT
Gated Delay Range	0 to 100 ms
Gated Length	1 us to 100 ms
Trigger Source	External, Internal and GNSS

### TDD Auto Gated Sweep (Option RA-TAGS)

General Parameters	
Mode	LTE-TDD and 5G NR
Configuration	LTE: Auto detection of frame format
	5G NR: Slot format Standalone mode: Auto detection External, Internal and GNSS Non standalone mode: Manual detection
Gated Length	0 to 13 Symbols

General Parameters		
Spectrum	Persistent Spectrum	RSSI
Spectrogram	Persistent spectrogram	Interference Finder Radar chart
Spectrum Replayer	Playback recorded data using OneAdvisor 800	

### Channel Scanner (Option RA-CS)

General Parameters	
Frequency Range	RA09MB-0: 10 MHz to 9 GHz
	RA18MB-0: 10 MHz to 18.5 GHz
	RA32MB-0: 10 MHz to 32 GHz
	RA44MB-0: 10 MHz to 44 GHz
Measurement Range	10 MHz to 18.5 GHz: -110 to +25 dBm
	> 18.5 GHz to 32 GHz: -110 to +20 dBm (RA32MB-0)
	> 18.5 GHz to 44 GHz: -110 to +20 dBm (RA44MB-0)
Measurements	Channel scanner: 1 to 20 channels
	Frequency scanner: 1 to 20 frequencies
	Customer scanner: 1 to 20 channels or frequencies
	Route map

**Blind Scanner DSS/LTE/NR (Option RA-BS)**

General Parameters		
Frequency Range	LTE: 100 MHz to 6 GHz	
	NR: FR1 Band: 410 MHz to 7.125 GHz, FR2 Band: 24 GHz to 44 GHz	
Minimum Detectable Level	LTE: -125 dBm	SS-RSRP
	NR: FR1 Band: -129 dBm, FR2 Band: -110 dBm	
Input Signal Level	FR1 Band: Up to +25 dBm, FR2 Band: Up to +20 dBm	
Supported Bandwidth	Up to 100 MHz	
Sub-Carrier Spacing (SCS)	LTE & DSS: 15 kHz	
	NR: FR1 Band: 15 kHz and 30 kHz, FR2 Band: 120 kHz and 240 kHz	
CP Type for LTE	Normal and Extended	
Frame Period for NR and DSS	5, 10, 20, 40, 80, 160 ms	

Measurements		
NR	LTE	DSS
SS-RSRP	SS-RSRP	SS-RSRP
Carrier Center Frequency	Duplex type	Duplex type
SSB Frequency	Carrier Frequency	Carrier Frequency
Carrier Bandwidth	Carrier Bandwidth	Carrier Bandwidth
MCC*/MNC*	MCC/MNC	MCC/MNC
Cell Identity*	Cell Identity	Cell Identity

\*5G NR standalone mode only

## EMF Analysis (Options RA-EMF-SA)

General parameters	
Supported Antenna	G700050381: 400 MHz to 6 GHz Isotropic Antenna (VIAVI)
	G700050366: 650 MHz – 4 GHz (VIAVI)
	G700050367: 650 MHz – 6 GHz (VIAVI)
	USLP9143: 300 MHz – 7 GHz (Schwarzbeck)
	USLP9143B: 200 MHz – 7 GHz (Schwarzbeck)
	USLP9142: 800 MHz – 5 GHz (Schwarzbeck)
Measurement Time	1 – 60 minutes
Dwell Time	1 – 60 seconds
Units	dB $\mu$ V/m, dBmV/m, dBV/m, V/m, W/m <sup>2</sup> , dBm/m <sup>2</sup> , A/m, dBA/m, mW/cm <sup>2</sup> , %
Frequency Error	$\pm$ 10 Hz + ref freq accuracy, 99% confidence level

**EMF Analysis (Options RA-EMF-SA) continued**

Limit	ICNIRP 2020 Occupational
	ICNIRP 2020 General Public
	ARPANSA Occupational
	ARPANSA General Public
	BGV B11 Exposure area 1
	26. BImSchV General Public
	FCC 1997 Occupational
	FCC 1997 General Public
	ICNIRP 1998 Occupational
	ICNIRP 1998 General Public
	IEEE C95.1 2005 Upper Tier
	IEEE C95.1 2005 General Public
	Italy CM 2003 Exposure
	Italy CM 2003 Attention
	Safety Code 6 (2015) Uncontrolled
	Safety Code 6 (2015) Controlled
	Safety Code 6 (2009) Uncontrolled
	Safety Code 6 (2009) Controlled
	Safety Code 6 (99-EHD-237) Exposed Workers
	Safety Code 6 (99-EHD-237) General Public

Measurements	
<b>Spectrum (Integrated Power)</b> Isotropic* EMF Power: Max, Min Accumulated Isotropic* EMF Power: Avg	<b>Scanner</b> EMF power of multiple frequency Bands Chart and Table View

\* Requires Isotropic Antenna, G700050381

## EMF Analysis for 5G NR (Option RA-EMF-5G NR or RA-5G NR-OTA)

General Parameters	
Frequency Range	FR1 Band: 410 MHz to 7.125 GHz, Antenna dependent
	FR2 Band: 24 GHz to 44 GHz, Antenna dependent
Input Signal Range	FR1 Band: -60 to +25 dBm
	FR2 Band: -60 to +20 dBm
Supported Bandwidth	5 MHz, 10 MHz, 15 MHz, 20 MHz, 25 MHz, 30 MHz, 40 MHz, 50 MHz, 60 MHz, 70 MHz,
	80 MHz, 90 MHz, and 100 MHz
Supported Antenna	G700050381: 400 MHz to 6 GHz Isotropic Antenna (VIAVI)
	G700050366: 650 MHz - 4 GHz (VIAVI)
	G700050367: 650 MHz - 6 GHz (VIAVI)
	USLP9143: 300 MHz - 7 GHz (Schwarzbeck)
	USLP9143B: 200 MHz - 7 GHz (Schwarzbeck)
	USLP9142: 800 MHz - 5 GHz (Schwarzbeck)
Measurement Time	1 - 60 minutes
Dwell Time	1 - 60 seconds
Units	dB $\mu$ V/m, dBmV/m, dBV/m, V/m, W/m <sup>2</sup> , dBm/m <sup>2</sup> , A/m, dBA/m, mW/cm <sup>2</sup> , %
Frequency Error	$\pm$ 10 Hz + ref freq accuracy, 99% confidence level

EMF Analysis for 5G NR (Option RA-EMF-5G NR or RA-5G NR-OTA) continued

Limit	ICNIRP 2020 Occupational
	ICNIRP 2020 General Public
	ARPANSA Occupational
	ARPANSA General Public
	BGV B11 Exposure area 1
	26. BImSchV General Public
	FCC 1997 Occupational
	FCC 1997 General Public
	ICNIRP 1998 Occupational
	ICNIRP 1998 General Public
	IEEE C95.1 2005 Upper Tier
	IEEE C95.1 2005 General Public
	Italy CM 2003 Exposure
	Italy CM 2003 Attention
	Safety Code 6 (2015) Uncontrolled
	Safety Code 6 (2015) Controlled
	Safety Code 6 (2009) Uncontrolled
	Safety Code 6 (2009) Controlled
	Safety Code 6 (99-EHD-237) Exposed Workers
	Safety Code 6 (99-EHD-237) General Public

**Measurements**

<p><b>5G NR Beam Analysis</b></p> <p>RSRP Isotropic* EMF Power: Current, Max, Min, Avg</p> <p>Extrapolated Isotropic* EMF Power: Current, Max, Min, Avg</p>	<p><b>5G NR Traffic Analysis</b></p> <p>Mode: Auto, Manual, Whole frame</p> <p>Extrapolated Isotropic* EMF Power: Current, Max, Min, Avg</p>
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\* Requires option RA-EMF-SA  
 \*\* Requires Isotropic Antenna, G700050381

## LTE/LTE-A FDD Analysis (Option RA-LTEFDD-SIA and RA-LTEFDD-OTA)

General Parameters		
Frequency Range	9KHz to 9, 18.5, 32, 44 GHz based on radio analysis module	
Minimum Detectable Level	-125 dBm	S-SS RSRP
Input Signal Range	-75 to +25 dBm	
Channel Power Accuracy	±1.0dB (typical)	
Supported Bandwidths	1.4, 3, 5, 10, 15, and 20 MHz	
Frequency Error	±0.05 ppm	
Residual EVM	2.0% (typical)	@ -20dBm

### Measurements

#### RF Analysis

<p><b>Channel Power</b></p> <ul style="list-style-type: none"> <li>• Channel Power</li> <li>• Spectral Density</li> <li>• Peak to average power</li> </ul> <p><b>Occupied Bandwidth</b></p> <ul style="list-style-type: none"> <li>• Occupied bandwidth</li> <li>• Integrated power</li> <li>• Occupied power</li> </ul> <p><b>Spurious Emissionss</b></p> <ul style="list-style-type: none"> <li>• Multiple Frequency Range (up to 20)</li> <li>• Measurement Bandwidth</li> <li>• Peak Frequency</li> <li>• Power Limit (Low / High)</li> <li>• Peak Level</li> </ul>	<p><b>ACLR</b></p> <ul style="list-style-type: none"> <li>• Reference power</li> <li>• Abs power at defined range</li> <li>• Rel power at defined range</li> </ul> <p><b>Multi-ACLR</b></p> <ul style="list-style-type: none"> <li>• Lowest reference power</li> <li>• Highest reference power</li> <li>• Abs power at defined range</li> <li>• Rel power at defined range</li> </ul> <p><b>Spectrum Emission Mask</b></p> <ul style="list-style-type: none"> <li>• Reference power</li> <li>• Peak level at defined range</li> </ul>
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LTE/LTE-A FDD Analysis (Option RA-LTEFDD-SIA and RA-LTEFDD-OTA) continued

Signal Analysis (RA-LTEFDD-SIA)	
<p><b>Constellation</b></p> <ul style="list-style-type: none"> <li>• MBSFN*, RS power,</li> <li>• PDSCH/Data EVM for QPSK, 16QAM, 64QAM, 128QAM, 256QAM</li> <li>• Data EVM RMS and Peak</li> <li>• Frequency error; time error</li> </ul> <p><b>Data Channel</b></p> <ul style="list-style-type: none"> <li>• Physical Cell ID, Group ID, Sector ID</li> <li>• Resource block power</li> <li>• IQ Diagram of Current Block</li> <li>• Resource block power</li> <li>• Modulation format</li> <li>• IQ origin offset</li> <li>• EVM RMS and Peak</li> </ul> <p><b>Power vs. Time (Frame)</b></p> <ul style="list-style-type: none"> <li>• Physical Cell ID, Group ID, Sector ID</li> <li>• Frame average power</li> <li>• IQ origin offset; time offset</li> <li>• Subframe power</li> <li>• First and second slot power</li> </ul> <p><b>Control Channel</b></p> <ul style="list-style-type: none"> <li>• Physical Cell ID, Group ID, Sector ID, MBSFN*</li> <li>• Channel Summary Table (Channel, EVM, Power, Modulation Type)</li> <li>• Control channel IQ diagram, modulation format, frequency error, IQ origin offset, EVM RMS and Peak</li> </ul> <p><b>Carrier Aggregation</b></p> <ul style="list-style-type: none"> <li>• Component carriers (up to 5): Power, P-SS, S-SS, PBCH, RS power and EVM, Data QPSK, 16, 64, 256 QAM power and EVM, MBSFN RS* power and EVM, Physical Cell ID, Frequency Error, Time Alignment Error, Antenna port</li> </ul>	<p><b>Frame</b></p> <ul style="list-style-type: none"> <li>• Physical Cell ID, Group ID, Sector ID, MBSFN*</li> <li>• Frame power</li> <li>• Channel Summary Table (EVM, Abs/Rel Power, Modulation Type)</li> <li>• Subframe Summary (OFDM Symbol Power, Frequency Error, Data EVM RMS and Peak, RS EVM RMS and Peak, IQ Imbalance)</li> </ul> <p><b>Subframe</b></p> <ul style="list-style-type: none"> <li>• Physical Cell ID, Group ID, Sector ID, MBSFN*</li> <li>• Subframe Power</li> <li>• Channel Summary Table (EVM, Abs/Rel Power, Modulation Type)</li> <li>• Subframe Summary (OFDM Symbol Power, Frequency Error, Time Error, Data EVM RMS and Peak, RS EVM RMS and Peak, IQ Imbalance)</li> </ul> <p><b>Data Allocation Map</b></p> <ul style="list-style-type: none"> <li>• Data Allocation vs Frame</li> <li>• Frame Data Utilization</li> <li>• OFDM Symbol Power</li> <li>• Data Allocation vs Subframe</li> <li>• Subframe Data Utilization</li> <li>• Resource Block Power</li> </ul> <p><b>Time Alignment Error</b></p> <ul style="list-style-type: none"> <li>• Physical Cell ID, Group ID, Sector ID</li> <li>• Time Alignment Error</li> <li>• Antenna 0,1,2,3: RS Power, RS EVM, RS Delta Time</li> </ul> <p><b>Power Statistics CCDF</b></p> <ul style="list-style-type: none"> <li>• Average Power, Max Power, Crest Factor</li> </ul>

\*Measurement is performed with MBMS is transmitted



LTE/LTE-A FDD Analysis (Option RA-LTEFDD-SIA and RA-LTEFDD-OTA) continued

OTA Analysis (RA-LTEFDD-OTA)	
<p><b>OTA Channel Scanner</b></p> <ul style="list-style-type: none"> <li>• Bar Graph for Channel Power, RSRP</li> <li>• Table Summary (PCI, Channel Power, RSSI, RSRP, RSRQ, RS SINR, S-SS RSSI, Time Error, Frequency Error, Antenna Port, Time Error Trend)</li> </ul> <p><b>OTA ID Scanner</b></p> <ul style="list-style-type: none"> <li>• Bar Graph for RSPR, S-SS RSSI, RSRQ, S-SS Ec/Io, RS SINR</li> <li>• Table Summary (PCI, RSRP, RSRQ, P-SS SNR, RS SINR, S-SS RSSI, P-SS RSRP, S-SS RSRP, S-SS Ec/Io, Time Error)</li> </ul> <p><b>OTA Multipath Profile</b></p> <ul style="list-style-type: none"> <li>• Physical Cell ID, Group ID, Sector ID</li> <li>• Ant 0,1,2,3: RS Relative Power, Delay</li> </ul> <p><b>OTA Route Map</b></p> <ul style="list-style-type: none"> <li>• RSRP, RSRQ, RS SINR, S-SS RSSI, P-SS RSRP, S-SS RSRP, S-SS Ec/Io, P-SS SNR</li> </ul>	<p><b>OTA Control Channel</b></p> <ul style="list-style-type: none"> <li>• Physical Cell ID, Group ID, Sector ID, MBSFN*, RS Power Trend</li> <li>• Control Channel Table (P-SS, S-SS Power and EVM, PBCH, PCFICH Power, PBCH, PCFICH EVM, RS0, RS1, RS2, RS4 Power and EVM)</li> <li>• Frequency Error, Time Offset</li> <li>• Time Alignment Error</li> </ul> <p><b>OTA Datagram</b></p> <ul style="list-style-type: none"> <li>• Datagram</li> <li>• Resource Block Power</li> <li>• Data Utilization</li> </ul> <p><b>Freq/Time/Power Variation</b></p> <ul style="list-style-type: none"> <li>• Frequency, Time Error Trend</li> <li>• Frequency, Time Error</li> <li>• RS Power Trend</li> <li>• RS 0,1,2,3 Power</li> </ul>

\*Measurement is performed with MBMS is transmitted

## LTE/LTE-A TDD Analysis (Option RA-LTETDD-SIA and RA-LTETDD-OTA)

General Parameters		
Frequency Range	9KHz to 9, 18.5, 32, 44 GHz based on radio analysis module	
Minimum Detectable Level	-125 dBm	S-SS RSRP
Input Signal Range	-75 to +25 dBm	
Channel Power Accuracy	±1.0dB (typical)	
Supported Bandwidths	1.4, 3, 5, 10, 15, and 20 MHz	
Frequency Error	±0.05 ppm	
Residual EVM	2.0% (typical)	@ -20dBm

Measurements	
RF Analysis	
<p><b>Channel Power</b></p> <ul style="list-style-type: none"> <li>Channel Power</li> <li>Spectral Density</li> <li>Peak to average power</li> </ul> <p><b>Occupied Bandwidth</b></p> <ul style="list-style-type: none"> <li>Occupied bandwidth</li> <li>Integrated power</li> <li>Occupied power</li> </ul> <p><b>Spurious Emissionss</b></p> <ul style="list-style-type: none"> <li>Reference power</li> <li>Peak level at defined range</li> </ul>	<p><b>ACLR</b></p> <ul style="list-style-type: none"> <li>Reference power</li> <li>Abs power at defined range</li> <li>Rel power at defined range</li> </ul> <p><b>Multi-ACLR</b></p> <ul style="list-style-type: none"> <li>Lowest reference power</li> <li>Highest reference power</li> <li>Abs power at defined range</li> <li>Rel power at defined range</li> </ul> <p><b>Spectrum Emission Mask</b></p> <ul style="list-style-type: none"> <li>Reference power</li> <li>Peak level at defined range</li> </ul>

## LTE/LTE-A TDD Analysis (Option RA-LTETDD-SIA and RA-LTETDD-OTA) continued

Signal Analysis (RA-LTETDD-SIA)	
<p><b>Constellation</b></p> <ul style="list-style-type: none"> <li>MBSFN*, RS power,</li> <li>PDSCH/Data EVM for QPSK, 16QAM, 64QAM, 128QAM, 256QAM</li> <li>Data EVM RMS and Peak</li> <li>Frequency error; time error</li> </ul> <p><b>Data Channel</b></p> <ul style="list-style-type: none"> <li>Physical Cell ID, Group ID, Sector ID</li> <li>Resource block power</li> <li>IQ Diagram of Current Block</li> <li>Resource block power</li> <li>Modulation format</li> <li>IQ origin offset</li> <li>EVM RMS and Peak</li> </ul> <p><b>Control Channel</b></p> <ul style="list-style-type: none"> <li>Physical Cell ID, Group ID, Sector ID, MBSFN*</li> <li>Channel Summary Table (Channel, EVM, Power, Modulation Type)</li> <li>Control channel IQ diagram, modulation format, frequency error, IQ origin offset, EVM RMS and Peak</li> </ul> <p><b>Subframe</b></p> <ul style="list-style-type: none"> <li>Physical Cell ID, Group ID, Sector ID, MBSFN*</li> <li>Subframe Power</li> <li>Channel Summary Table (EVM, Abs/Rel Power, Modulation Type)</li> <li>Subframe Summary (OFDM Symbol Power, Frequency Error, Time Error, Data EVM RMS and Peak, RS EVM RMS and Peak, IQ Imbalance)</li> </ul> <p><b>Power Statistics CCDF</b></p> <ul style="list-style-type: none"> <li>Average Power, Max Power, Crest Factor</li> </ul>	<p><b>Power vs. Time (Frame)</b></p> <ul style="list-style-type: none"> <li>Physical Cell ID, Group ID, Sector ID</li> <li>Frame average power</li> <li>IQ origin offset; time offset</li> <li>UPPTS power, DWPTS power</li> <li>Subframe power</li> <li>First and second slot power</li> <li>GP power</li> </ul> <p><b>Power vs. Time (Slot)</b></p> <ul style="list-style-type: none"> <li>Physical Cell ID, Group ID, Sector ID</li> <li>Slot average power</li> <li>Transition period length</li> <li>Off power</li> </ul> <p><b>Carrier Aggregation</b></p> <ul style="list-style-type: none"> <li>Component carriers (up to 5): Power, P-SS, S-SS, PBCH, RS power and EVM, Data QPSK, 16, 64, 256 QAM power and EVM, MBSFN RS* power and EVM, Physical Cell ID, Frequency Error, Time Alignment Error, Antenna port</li> </ul> <p><b>Data Allocation Map</b></p> <ul style="list-style-type: none"> <li>Data Allocation vs Frame</li> <li>Frame Data Utilization</li> <li>OFDM Symbol Power</li> <li>Data Allocation vs Subframe</li> <li>Subframe Data Utilization</li> <li>Resource Block Power</li> </ul> <p><b>Time Alignment Error</b></p> <ul style="list-style-type: none"> <li>Physical Cell ID, Group ID, Sector ID</li> <li>Time Alignment Error</li> <li>Antenna 0,1,2,3: RS Power, RS EVM, RS Delta Time</li> </ul>

\*Measurement is performed with MBMS is transmitted

LTE/LTE-A TDD Analysis (Option RA-LTETDD-SIA and RA-LTETDD-OTA) continued

<b>OTA Analysis (RA-LTEFDD-OTA)</b>	
<p><b>OTA Channel Scanner</b></p> <ul style="list-style-type: none"> <li>• Bar Graph for Channel Power, RSRP</li> <li>• Table Summary (PCI, Channel Power, RSSI, RSRP, RSRQ, RS SINR, S-SS RSSI, Time Error, Frequency Error, Antenna Port, Time Error Trend)</li> </ul> <p><b>OTA ID Scanner</b></p> <ul style="list-style-type: none"> <li>• Bar Graph for RSPR, S-SS RSSI, RSRQ, S-SS Ec/Io, RS SINR</li> <li>• Table Summary (PCI, RSRP, RSRQ, P-SS SNR, RS SINR, S-SS RSSI, P-SS RSRP, S-SS RSRP, S-SS Ec/Io, Time Error)</li> </ul> <p><b>OTA Multipath Profile</b></p> <ul style="list-style-type: none"> <li>• Physical Cell ID, Group ID, Sector ID</li> <li>• Ant 0,1,2,3: RS Relative Power, Delay</li> </ul> <p><b>OTA Route Map</b></p> <ul style="list-style-type: none"> <li>• RSRP, RSRQ, RS SINR, S-SS RSSI, P-SS RSRP, S-SS RSRP, S-SS Ec/Io, P-SS SNR</li> </ul>	<p><b>OTA Control Channel</b></p> <ul style="list-style-type: none"> <li>• Physical Cell ID, Group ID, Sector ID, MBSFN*, RS Power Trend</li> <li>• Control Channel Table (P-SS, S-SS Power and EVM, PBCH, PCFICH Power, PBCH, PCFICH EVM, RS0, RS1, RS2, RS4 Power and EVM)</li> <li>• Frequency Error, Time Offset</li> <li>• Time Alignment Error</li> </ul> <p><b>OTA Datagram</b></p> <ul style="list-style-type: none"> <li>• Datagram</li> <li>• Resource Block Power</li> <li>• Data Utilization</li> </ul> <p><b>Freq/Time/Power Variation</b></p> <ul style="list-style-type: none"> <li>• Frequency, Time Error Trend</li> <li>• Frequency, Time Error</li> <li>• RS Power Trend</li> <li>• RS 0,1,2,3 Power</li> </ul>

\*Measurement is performed with MBMS is transmitted

## DSS Analysis (Option RA-DSS-SIA and RA-DSS-OTA)

General Parameters		
Frequency Range	9KHz to 9, 18.5, 32, 44 GHz based on radio analysis module	
Minimum Detectable Level	LTE: -125 dBm	S-SS RSRP
	NR: -110 dBm	
Input Signal Range	-70 to +25 dBm	
Supported Bandwidths	1.4, 3, 5, 10, 15, and 20 MHz	
Frequency Error	±0.05 ppm	
Residual EVM	2.0% (typical)	@ -20dBm

### Measurements

RF Analysis	
<p><b>Channel Power</b></p> <ul style="list-style-type: none"> <li>Channel Power</li> <li>Spectral Density</li> <li>Peak to average power</li> </ul> <p><b>Occupied Bandwidth</b></p> <ul style="list-style-type: none"> <li>Occupied bandwidth</li> <li>Integrated power</li> <li>Occupied power</li> </ul> <p><b>Spurious Emissionss</b></p> <ul style="list-style-type: none"> <li>Reference power</li> <li>Peak level at defined range</li> </ul>	<p><b>ACLR</b></p> <ul style="list-style-type: none"> <li>Reference power</li> <li>Abs power at defined range</li> <li>Rel power at defined range</li> </ul> <p><b>Multi-ACLR</b></p> <ul style="list-style-type: none"> <li>Lowest reference power</li> <li>Highest reference power</li> <li>Abs power at defined range</li> <li>Rel power at defined range</li> </ul> <p><b>Spectrum Emission Mask</b></p> <ul style="list-style-type: none"> <li>Peak frequency and level at defined range</li> </ul>

DSS Analysis (Option RA-DSS-SIA and RA-DSS-OTA) continued

Signal Analysis (RA-DSS-SIA)	
<p><b>Constellation</b></p> <ul style="list-style-type: none"> <li>• RS power, PBCH DMRS power</li> <li>• PDSCH LTE, NR EVM for QPSK, 16QAM, 64QAM, 128QAM, 256QAM</li> <li>• LTE, NR Data EVM RMS and Peak</li> <li>• Frequency error; time error</li> </ul> <p><b>Subframe</b></p> <ul style="list-style-type: none"> <li>• LTE, NR physical cell ID, group and sector ID</li> <li>• Subframe Power</li> <li>• Bar graph for aggregated RE and RS power</li> <li>• Channel Summary Table                             <ul style="list-style-type: none"> <li>- LTE: P-SS, S-SS, PBCH, RS, PDFICH, PHICH, PDCCH, Data QPSK, 16QAM, 64QAM, 256QAM</li> <li>- NR: P-SS, PBCH, DMRS, PBCH, PDCCH DMRS, Data QPSK, 16QAM, 64QAM, 128QAM, 256QAM</li> </ul> </li> <li>• Subframe Summary (OFDM Symbol Power, Frequency Error, Time Error, Data EVM RMS and Peak, RS EVM RMS and Peak, IQ Imbalance)</li> </ul> <p><b>Time Alignment Error</b></p> <ul style="list-style-type: none"> <li>• LTE, NR Physical Cell ID, Group ID, Sector ID</li> <li>• Time Alignment Error</li> <li>• RS power difference</li> <li>• Antenna 0,1,2,3: RS Power, RS EVM, RS Delta Time</li> </ul>	<p><b>Channel Mapper</b></p> <ul style="list-style-type: none"> <li>• LTE, NR Physical Cell ID, Group ID and Sector ID</li> <li>• LTE channel allocation in RB (P-SS, S-SS, PBCH, RS, PDFICH, PHICH, PDCCH)</li> <li>• NR channel allocation in RB (P-SS, S-SS, PBCH, PBCH DMRS, PDCCH, PDSCH)</li> </ul> <p><b>Frame</b></p> <ul style="list-style-type: none"> <li>• LTE, NR physical cell ID, group and sector ID</li> <li>• Frame average power</li> <li>• Channel Summary Table                             <ul style="list-style-type: none"> <li>- LTE EVM, Power, Modulation Type and REG/RB: P-SS, S-SS, PBCH, RS, PCIFCH, PHICH, PDCCH, RS, PDSCH</li> <li>- NR EVM, Power, Modulation Type and REG/RB:: P-SS, S-SS, PBCH, PBCH DMRS, PDCCH, PDCCH DMRS, PDSCH DMRS</li> </ul> </li> <li>• Frame Summary: OFDM Symbol Power, Frequency Error, Time Error, Time Error, Data EVM RMS and Peak, RS EVM RMS and Peak</li> </ul> <p><b>Control Channel</b></p> <ul style="list-style-type: none"> <li>• LTE EVM, Power, Modulation Type, Constellation, Frequency Error, IQ origin offset, EVM RMS and Peak: P-SS, S-SS, PBCH, RS, PCIFCH, PHICH, PDCCHSS</li> <li>• NR EVM, Power, Modulation Type, Constellation, Frequency Error, IQ origin offset, EVM RMS and Peak: P-SS, S-SS, PBCH, PBCH DMRS, PDCCH, PDCCH DMRS</li> </ul>

DSS Analysis (Option RA-DSS-SIA and RA-DSS-OTA) continued

OTA Analysis (RA-DSS-OTA)	
<p><b>OTA Channel Scanner</b></p> <ul style="list-style-type: none"> <li>• Bar Graph for Channel Power, RSRP</li> <li>• Table Summary (PCI, Channel Power, RSSI, RSRP, RSRQ, RS SINR, S-SS RSSI, Time Error, Frequency Error, Antenna Port, Time Error Trend)</li> </ul> <p><b>OTA ID Scanner</b></p> <ul style="list-style-type: none"> <li>• Bar Graph for LTE: RSPR, S-SS RSSI, RS SINR; NR: P-SS, S-SS RSRP, S-SS SINR</li> <li>• Table Summary (PCI, RSRP, RSRQ, P-SS SNR, RS SINR, S-SS RSSI, P-SS RSRP, S-SS RSRP, S-SS Ec/Io, Time Error)</li> </ul> <p><b>OTA Multipath Profile</b></p> <ul style="list-style-type: none"> <li>• LTE, NR Physical Cell ID, Group ID, Sector ID</li> <li>• LTE Ant 0,1,2,3: RS Relative Power, Delay</li> <li>• NR P-SS, S-SS: RS Relative Power, Delay</li> </ul> <p><b>OTA Route Map</b></p> <ul style="list-style-type: none"> <li>• PCI, RSRP, RSRQ, RS SINR, RS SNR</li> <li>• Power vs. Time (Frame)</li> <li>• Physical Cell ID, Group ID, Sector ID</li> <li>• Frame average power</li> <li>• IQ origin offset; time offset</li> <li>• Subframe power</li> <li>• First and second slot power</li> </ul>	<p><b>OTA Control Channel</b></p> <ul style="list-style-type: none"> <li>• LTE, NR Physical Cell ID, Group ID, Sector ID</li> <li>• RS Power Trend LTE: RS0 and RS1; NR: P-SS, S-SS</li> <li>• Table Summary LTE: P-SS, S-SS, PBCH; NR: P-SS, S-SS, PBCH power and EVM RMS</li> <li>• Frequency Error, Time Offset</li> <li>• Time Alignment Error</li> </ul> <p><b>OTA Datagram</b></p> <ul style="list-style-type: none"> <li>• Datagram</li> <li>• Resource Block Power</li> <li>• Data Utilization</li> </ul> <p><b>Freq/Time/Power Variation</b></p> <ul style="list-style-type: none"> <li>• Frequency, Time Error Trend</li> <li>• Frequency, Time Error</li> <li>• RS Power Trend</li> <li>• RS 0,1 Power</li> </ul> <p><b>Power vs. Time (Slot)</b></p> <ul style="list-style-type: none"> <li>• Physical Cell ID, Group ID, Sector ID</li> <li>• Slot average power</li> <li>• Transition period length</li> <li>• Off power</li> </ul>

## 5G NR Signal Analysis (Options RA-5G NR-OTA and RA-5G NR-OTA)

General Parameters		
Frequency Range	9KHz to 9, 18.5, 32, 44 GHz based on radio analysis module	
Minimum Detectable Level	FR1 Band: -120 dBm	S-SS RSRP
	FR2 Band: -110 dBm	
Input Signal Range	FR1 Band: -75 to +25 dBm	
	FR2 Band: -70 to +20 dBm	
Supported Bandwidths	Up to 100 MHz	
Frequency Error	±0.05 ppm	
Residual EVM	2.0% (typical)	@ -20dBm

Measurements	
<i>RF Analysis</i>	
<p><b>Channel Power</b></p> <ul style="list-style-type: none"> <li>Channel Power, EIRP</li> <li>Spectral Density</li> <li>Peak to average power</li> </ul> <p><b>Occupied Bandwidth</b></p> <ul style="list-style-type: none"> <li>Occupied bandwidth</li> <li>Integrated power</li> <li>Occupied power</li> </ul> <p><b>Spectrum Emission Mask</b></p> <ul style="list-style-type: none"> <li>Reference power</li> <li>Peak level at defined range</li> </ul>	<p><b>ACLR</b></p> <ul style="list-style-type: none"> <li>Reference power</li> <li>Abs power at defined range</li> <li>Rel power at defined range</li> </ul> <p><b>Multi-ACLR</b></p> <ul style="list-style-type: none"> <li>Lowest reference power</li> <li>Highest reference power</li> <li>Abs power at defined range</li> <li>Rel power at defined range</li> </ul> <p><b>Spurious Emissions</b></p> <ul style="list-style-type: none"> <li>Peak frequency and level at defined range</li> </ul>



5G NR Signal Analysis (Options RA-5GNR-OTA and RA-5GNR-OTA) continued

Signal Analysis (RA-DSS-SIA)	
<p><b>Constellation</b></p> <ul style="list-style-type: none"> <li>S-SS power, Data SCS, PCI, SSB index, SSB periodicity</li> <li>PDSCH EVM: QPSK, 16QAM, 64QAM, 256QAM</li> <li>Data EVM: RMS and Peak</li> <li>Error: Frequency and Time</li> </ul> <p><b>Power vs Time (Slot)</b></p> <ul style="list-style-type: none"> <li>NR Physical Cell ID</li> <li>Slot power graph for aggregated RE power with Downlink and Uplink areas</li> <li>Symbol Average Power OFF to ON and ON to OFF: Transition, Transition Period Length, Off Power</li> </ul>	<p><b>Allocation Mapper</b></p> <ul style="list-style-type: none"> <li>NR Physical Cell ID</li> <li>NR channel allocation in a frame RB / Slot: SSB area</li> <li>Frame and Slot: Power and Utilization</li> </ul> <p><b>Power vs Time (Frame)</b></p> <ul style="list-style-type: none"> <li>NR Physical Cell ID</li> <li>Frame power graph for aggregated RE power with Uplink, Downlink, and Flexible Slot areas</li> <li>Frame Average Power: IQ Origin Offset, Time Error, and Slot Power</li> </ul>
OTA Analysis (RA-DSS-OTA)	
<p><b>Beam Analyzer</b></p> <ul style="list-style-type: none"> <li>Channel Power</li> <li>Power PCI Graph: S-SS RSRP, P-SS RSRP, S-SS SINR</li> <li>Table Summary (PCI, SSB Index, S-SS RSRP, P-SS RSRP, P-SS SNR, S-SS SINR, S-SS RSRQ, S-SS RSSI, PBCH DM-RS, PBCH, Time Error)</li> <li>Constellation: PBCH, PBCH DM-RS</li> </ul> <p><b>Carrier Scanner (up to 8)</b></p> <ul style="list-style-type: none"> <li>Bar Power Graph: S-SS RSRP, Channel Power</li> <li>Table Summary: PCI, SSB Index, Center Frequency, S-SS RSRP, P-SS RSRP, Channel Power, PBCH EVM, Frequency Error, Time Error, PBCH DM-RS EVM, PBCH DM-RS RSRP, MCC/MNC, Cell Identity</li> <li>Constellation: PBCH, PBCH DM-RS</li> <li>MIB Information</li> </ul> <p><b>Route Map</b></p> <ul style="list-style-type: none"> <li>PCI, P-SS RSRP, S-SS RSRP, S-SS RSRQ, S-SS SINR, PCI Dominance</li> </ul>	<p><b>Beam Availability Index</b></p> <ul style="list-style-type: none"> <li>NR Physical Cell ID</li> <li>SSB Power Graph</li> <li>Summary Table: PCI, SSB Index, SSB Power, P-SS RSRP, S-SS RSRP, S-SS SINR, S-SS RSSI, PBCH RSRP, PBCH EVM, PBCH DM-RS EVM, PBCH DM-RS RSRP, SSB EIRP, Path Loss</li> <li>Constellation: PBCH, PBCH DM-RS</li> </ul> <p><b>Freq/Time/Power Variation</b></p> <ul style="list-style-type: none"> <li>Variation Trend: Frequency, Time Error, Frequency / Time, Power</li> <li>Frequency Variation Value</li> <li>Time Variation Value</li> </ul> <p><b>Multipath Profile</b></p> <ul style="list-style-type: none"> <li>NR Physical Cell ID, Group ID, Sector ID</li> <li>Relative Power and Delay Graph: P-SS and S-SS</li> <li>Multipath Table (up to 6) of Relative Power and Delay: P-SS and S-SS</li> </ul>

## 5G NR Cell Phase Synchronization (RA-5GNR-CPS)

General Parameters		
Frequency Range	9KHz to 9, 18.5, 32, 44 GHz based on radio analysis module	
Minimum Detectable Level	FR1 Band: -120 dBm	S-SS RSRP
	FR2 Band: -110 dBm	
Input Signal Level	FR1 Band: -75 to +25 dBm	
	FR2 Band: -70 to +20 dBm	
Supported Bandwidths	Up to 100 MHz	
Measurements		
<b>Sync Analysis</b>	<b>Route Map</b>	
Cell phase graph by PCI (up to 5)	Cell phase heat map	
Cell phase table (PCI, S-SS RSRP, Sync Error, Time Error, S-SS SINR, S-SS RSRQ)	Primary PCI (PCI value, Time Error, S-SS RSRP)	
	Second PCI (PCI, Time Error, Sync Error, S-SS RSRP)	

## 5G RAN Analysis (RA-5GNR-RAN)

General Parameters		
Frequency Range	9KHz to 9, 18.5, 32, 44 GHz based on radio analysis module	
Minimum Detectable Level	FR1 Band: -120 dBm	S-SS RSRP
	FR2 Band: -110 dBm	
Input Signal Level	FR1 Band: -75 to +25 dBm	
	FR2 Band: -70 to +20 dBm	
Supported Bandwidths	Up to 100 MHz	
Channel Power Accuracy	±1.0 dB typical	
Supported Bandwidths	Up to 100 MHz	
Frequency Error	±0.05 ppm	
Residual EVM	2.0% typical	@ -20 dBm

**5G RAN Analysis (RA-5GNR-RAN) continued****5G NR Signal Analysis****Beam Analyzer**

- Channel Power
- Power PCI Graph: S-SS RSRP, P-SS RSRP, S-SS SINR
- Table Summary (PCI, SSB Index, S-SS RSRP, P-SS RSRP, P-SS SNR, S-SS SINR, S-SS RSRQ, S-SS RSSI, PBCH DM-RS, PBCH, Time Error)
- Constellation: PBCH, PBCH DM-RS

**Freq/Time/Power Variation**

- Variation Trend: Frequency, Time Error, Frequency / Time, Power
- Frequency Variation Value
- Time Variation Value

**Allocation Mapper**

- NR Physical Cell ID.
- NR channel allocation in a frame RB / Slot: SSB area
- Frame and Slot: Power and Utilization

**Real-time Spectrum Analysis (RtSA)****RtSA Persistent Spectrum**

- POI High and Normal
- Persistent bitmap color

**RtSA Persistent Spectrogram**

- POI High and Normal
- Persistent bitmap color
- Spectrogram view (2D and 3D)

**TDD Auto Gated Spectrum (TAGS)****TAGS Spectrum**

- Spectrum analysis triggered with 5G frame

**TAGS Spectrogram**

- Spectrogram analysis triggered with 5G frame
- Spectrogram view (2D and 3D)

**TAGS Persistent Spectrum**

- Persistent spectrum analysis triggered with 5G frame

**TAGS Persistent Spectrogram**

- Persistent spectrogram analysis triggered with 5G frame
- Persistent spectrogram view (2D and 3D)

## 5G NR TM Signal Analysis for Release 15 and 16 (RA-5G NR-TM)

General Parameters		
Frequency Range	9KHz to 9, 18.5, 32, 44 GHz based on radio analysis module	
Minimum Detectable Level	FR1 Band: -120 dBm	S-SS RSRP
	FR2 Band: -110 dBm	
Input Signal Level	FR1 Band: -75 to +25 dBm	
	FR2 Band: -70 to +20 dBm	
Channel Power Accuracy	±1.0 dB typical	
Supported Bandwidths	Up to 100 MHz	
Frequency Error	±0.05 ppm	
Residual EVM	2.0 % typical	@ -20 dBm
Standard	3GPP TS 38.141 series V15.2.0, V15.4.0, v1640, v16.5.0	

### Measurements

<p><b>BS Output Power</b></p> <ul style="list-style-type: none"> <li>• BS output power, EIRP power</li> <li>• Spectral Density</li> <li>• Peak to average power</li> </ul> <p><b>Occupied Bandwidth</b></p> <ul style="list-style-type: none"> <li>• Occupied Bandwidth</li> <li>• Integrated Power</li> <li>• Occupied Power</li> </ul> <p><b>ACLR</b></p> <ul style="list-style-type: none"> <li>• Reference power</li> <li>• Abs power at defined range</li> <li>• Rel power at defined range</li> </ul> <p><b>Multi-ACLR</b></p> <ul style="list-style-type: none"> <li>• Lowest reference power</li> <li>• Highest reference power</li> <li>• Abs power at defined range</li> <li>• Rel power at defined range</li> </ul>	<p><b>Operating Band Unwanted Emissions</b></p> <ul style="list-style-type: none"> <li>• Reference Power</li> <li>• Peak Level at defined range</li> </ul> <p><b>Transmitter Spurious Emissions</b></p> <ul style="list-style-type: none"> <li>• Peak frequency and level at defined range</li> </ul> <p><b>Transmit ON/OFF Power</b></p> <ul style="list-style-type: none"> <li>• Symbol Average Power</li> <li>• Transition Period Length OFF power</li> </ul> <p><b>Modulation Quality</b></p> <ul style="list-style-type: none"> <li>• PDSCH EVM: QPSK, 16QAM, 64QAM, 256QAM</li> <li>• Frequency Error</li> <li>• RE Power</li> <li>• OFDM Symbol Power</li> </ul> <p><b>MIMO Time Alignment Error</b></p> <ul style="list-style-type: none"> <li>• Time alignment error</li> <li>• PDSH DM-RS power difference</li> <li>• Antenna 1000,1001: PDSH DM-RS power, Time offset</li> <li>• Antenna 1000/1001: Time offset trend</li> </ul>
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**NSA OTA Analysis (Option RA-NSA-OTA)**

General Parameters		
Frequency Range	9KHz to 9, 18.5, 32, 44 GHz based on radio analysis module	
Minimum Detectable Level	LTE: -125dBm	S-SS RSRP
	NR FR1 Band: -120dBm	
	NR FR2 Band: -110dBm	
Input Signal Level	FR1 Band: -75 to +25 dBm	
	FR2 Band: -70 to +20 dBm	
Channel Power Accuracy	±1.0 dB typical	
Supported Bandwidths	Up to 100 MHz	
Frequency Error	±0.05 ppm	
Residual EVM	2.0 % typical	@ -20 dBm

Measurements		
<p><b>NSA Analyzer</b> <b>(up to 8 LTE or NR carriers)</b></p> <ul style="list-style-type: none"> <li>• Fast mode: Strongest PCI</li> <li>• Normal mode: Multi PCIs</li> <li>• LTE Power Bar Graph: RSRP, S-SS RSSI, RS SINR, RSRQ, S-SS Ec/Io, RS SINR</li> <li>• LTE Power Table: PCI, RSRP, RSRQ, P-SS SNR, RS SINR, R-SS RSSI, P-SS RSRP, S-SS RSRP, S-SS Ec/Io, Time Error</li> <li>• NR Power Bar Graph: S-SS RSRP, P-SS RSRP, S-SS SINR</li> <li>• NR Power Table: PCI, SSB Index, S-SS RSRP, P-SS RSRP, P-SS SNR, S-SS SINR, S-SS RSRQ, S-SS RSSI, PBCH DM-RS RSRP / EVM, Time Error</li> </ul>	<p><b>NSA Scanner</b> <b>(up to 8 LTE or NR carriers)</b></p> <ul style="list-style-type: none"> <li>• Fast mode: Strongest PCI</li> <li>• Normal mode: Multi PCIs</li> <li>• NR Power Bar Graph: Channel power, S-SS RSRP</li> <li>• NR Power Table: PCI, SSB Index, Center Freq, S-SS RSRP, P-SS RSRP, Channel PWR, PBCH EVM, Freq Error, Time Error, S-SS RSSI, PBCH DM-RS EVM, PBCH DM-RS RSRP</li> <li>• LTE Power Table: PCI, Antenna, Center Freq, S-SS RSRP, P-SS RSRP, Channel PWR, RS EVM, Freq Error, Time Error, S-SS RSSI, RSRP</li> </ul>	<p><b>Route Map</b> <b>(up to 8 LTE or NR carriers)</b></p> <ul style="list-style-type: none"> <li>• Fast mode: Strongest PCI</li> <li>• Normal mode: Multi PCIs</li> <li>• RSRP, RSRQ, SINR, SNR, PCI Dominance</li> </ul>

## Ethernet

Test Interfaces/Bit Rates	
10M/100M/1000M Electrical LAN	Option: CA10M1GE
10GigE LAN	Option: CA10GELAN
25GigE LAN	Option: CA25GE
40GigE LAN	Option: CA40GE
50GigE LAN	Option: CA50GE
100GigE LAN	Option: CA100GE
Interface Type	
10M, 1, 10, 25 GigE LAN	SFP/SFP+/SFP28: Port 1 and Port 2
40, 50, 100 GigE LAN	QSFP: Port 1 and Port 2
General	
Line Rate Traffic Tx and RX for all Interfaces	
Single Stream Generation / Analysis	
Multiple Streams Generation / Analysis	
Layer 2	
Layer 3 Single Stream (IPv4 and IPv6), Multiple Streams (IPv4)	
Dual Simultaneous Tests	Option: CADUALAPPS
Capture up to 10GigE	Option: CA10GCAPTURE
Capture up to 25GigE	Option: CA25GCAPTURE
Capture up to 40, 50, 100 GigE	Option: CA100GCAPTURE
Capture Memory 256MB per port	
Modes Of Operation	
Terminate	
Loopback	
Timing	
Recovered from Rx	
Internal (Stratum 3)	
Recovered from External	
Ethernet and IP Layer	
Layer 2 (802.3 and DIX)	
Layer 3 (IPv4)	
VLAN (Single tag)	

**Ethernet continued**

<b>Workflows</b>
RFC 2544
Y.1564
QuickCheck
Optics Self-Test
Cable Test
5G NR Discovery
<b>Measurements</b>
Throughput
Frame Loss
Roundtrip Delay
Packet Jitter

**General Information**

<b>RF In</b>		
Connect Type	9 kHz to 9 GHz: Type-N female	(RA09MB-0)
	9 kHz to 18.5 GHz: Type-N female	(RA18MB-0)
	9 kHz to 32 GHz: Type-N female/2.92 mm male	(RA32MB-0)
	9 kHz to 44 GHz: Type-N female/2.92 mm male	(RA44MB-0)
Impedance	50 Ω	Nominal
Damage Level	+27 dBm, ±50 VDC	Average CW power
<b>Trigger In/Out, GNSS</b>		
Connect Type	SMA, female	
Impedance	50 Ω	Nominal
<b>Reference In</b>		
Connect Type	SMA, female	
Impedance	50 Ω	Nominal
Frequency	10 MHz, 13 MHz, 15 MHz	
Input Range	-5 to +5 dBm	
<b>SFP Cage</b>		
SFP/QSFP	2 ports	

General Information continued

<b>Battery Operation</b>		
Type	14.4 V, 6800 mAh (Lithium ion)	Accepts two additional PEM (Power Expansion module)
Operation Time	Standard: > 1:30 hours, mode, frequency dependent	Typical
	Optional (Two PEMs): > 3:40 hours, mode, frequency dependent	Typical
	New battery with fully charged battery	
<b>Operating Temperature</b>		
AC Power	0 to 40°C (32 to 104°F)	Battery charging
Battery	-10 to 55°C (14 to 131°F)	
<b>Storage Temperature</b>		
-20 to 60°C (4 to 140°F)		
<b>Maximum Humidity</b>		
95% RH (noncondensing)		
<b>Environmental</b>		
Altitude	4,572 m (15,000 ft)	
Vibration Random	MIL-PRF-28800F Class 2	
Shock	MIL-PRF-28800F	
Bench Handling	MIL-PRF-28800F	
Transit Drop	MIL-PRF-28800F Class 2	
<b>EMC</b>		
IEC/EN 61326-1:2006 (complies with European EMC)		
ISPR11:2009 +A1:2010		
<b>ESD</b>		
IEC/EN 61000-4-2		
<b>Size and Weight (standard configuration with OneAdvisor 800)</b>		
Weight (with internal battery)	RA09MB-0: < 4.52 kg (9.96 lb.)	
	RA18MB-0: < 4.52 kg (9.96 lb.)	
	RA32MB-0: < 4.9 kg (10.8 lb.)	
	RA44MB-0: < 4.9 kg (10.8 lb.)	
Weight (with one battery)	279 X 170 X 117 mm (10.9 x 6.7 x 4.6 in)	
<b>Recommended calibration cycle</b>		
Recommended Calibration Cycle	1 year	



## Ordering Information

Part number	Description	
ONA-800A	OneAdvisor ONA 800A Mainframe with Display	Requires one radio analysis module
RA09MB-0	Spectrum Analyzer Module 9 kHz to 9 GHz with Pluggable optics 100GE HW	
RA18MB-0	Spectrum Analyzer Module 9 kHz to 18 GHz with Pluggable optics 100GE HW	
RA32MB-0	Spectrum Analyzer Module 9 kHz to 32 GHz with Pluggable optics 100GE HW	
RA44MB-0	Spectrum Analyzer Module 9 kHz to 44 GHz with Pluggable optics 100GE HW	
Other External Modules		
CAA06MA	6 GHz Cable and Antenna Analyzer Module	
CAA06MB	6 GHz Cable and Antenna Analyzer Module with Bias Power	
ONA-MF2-PEM	Power Expansion Module	
C5TEM-R2	Timing Module w/ Rubidium Oscillator and Multi-Frequency/Constellation Antenna	
Options		
ONA-MF-BT	Bluetooth Connectivity	
ONA-MF-WIFI	Wi-Fi Connectivity	
SAA-ADVISOR	Smart Access Anywhere for Remote Control	
ONA-CAA-2P*	2 Port Transmission Measurement	Requires: CAA06MA or CAA06MB
ONA-CAA-RFS*	RF CW Source	Requires: CAA06MA or CAA06MB
RA-PAA	Post Analysis Application Connectivity for OneAdvisor Radio Analysis	
RA-GNSS	GNSS Connectivity	Requires: JD71050351 or G700050391
RA-ORM*	Online Route Map	
RA-RTSA-100*	Realtime Spectrum Analysis 100 MHz	
RA-IQ-CAP*	IQ Waveform Capture	Requires: RA-RTSA-100
RA-IA*	Interference Analysis	
RA-RFOCPRI-2T08*	RFoCPRI Line Rates 2 to 8 for Interference Analysis	
RA-GSS*	Gated Sweep Spectrum	
RA-TAGS*	TDD Auto Gated Spectrum	
RA-EMF-SA*	EMF Analysis	
RA-EMF-5GNR*	EMF Analysis for 5G NR	Requires: RA-EMF-SA
RA-BS*	DSS/LTE/NR Blind Scanner	

## Ordering Information continued

Part number	Description	
<b>Options continued</b>		
RA-CS*	Channel Scanner	
RA-5G NR-OTA*	5G NR OTA Analysis	
RA-5G NR-SIA*	5G NR Signal Analysis	
RA-5G NR-CPS*	5G NR Cell Phase Synchronization	Requires: RA-5G NR-OTA or RA-5G NR-RAN
RA-5G NR-RAN*	5G RAN Analysis	
RA-5G NR-TM*	5G NR TM Signal Analysis for Releases 15 and 16	
RA-NSA-OTA*	NSA OTA Analysis	Requires: RA-5G NR-OTA or RA-5G NR-RAN
RA-LTEFDD-OTA*	LTE/LTE-A FDD OTA Analysis	
RA-LTEFDD-SIA*	LTE/LTE-A FDD Signal Analysis	
RA-LTETDD-OTA*	LTE/LTE-A TDD OTA Analysis	
RA-LTETDD-SIA*	LTE/LTE-A TDD Signal Analysis	
RA-DSS-OTA*	DSS OTA Analysis	Requires: RA-LTEFDD-OTA or RA-LTETDD-OTA
RA-DSS-SIA*	DSS Signal Analysis	Requires: A-LTEFDD-SIA or RA-LTETDD-SIA
CA100GE*	100GE including KR4 and KP4 FEC Test Option	
CA50GE*	50GE Test Option	
CA40GE*	40 Gigabit Ethernet Test Option	
CA25GE*	25GE Test Option	
CA10GELAN*	10 Gigabit Ethernet LAN Test Option	
CA10M1GE*	Up to 1 Gigabit Ethernet Test Option	
CA10GCAPTURE*	10GE and 1GE Capture Test Option	
CA25GCAPTURE*	25GE Capture Test Option	
CA50GCAPTURE*	50GE Capture Test Option	
CA100GCAPTURE*	100GE and 40GE Capture Test Option	
CADUALAPPS*	OneAdvisor Transport Dual Application up to 200G Test Option	

\*Options also available as floating and timed license

Optional Accessories

RF Cables	
G700050530	RF cable DC to 8 GHz Type-N(m) to Type-N(m), 1.0 m
G700050531	RF cable DC to 8 GHz Type-N(m) to Type-N(f), 1.5 m
G700050532	RF cable DC to 8 GHz Type-N(m) to Type-N(f), 3.0 m
G710050533	RF cable DC to 18 GHz Type-N(m) to SMA(m), 1.5 m
G710050534	RF cable DC to 18 GHz Type-N(m) to QMA(m), 1.5 m
G710050535	RF cable DC to 18 GHz Type-N(m) to SMB(m), 1.5 m
G710050536	RF cable DC to 6 GHz Type-N(m) to DIN(f), 1.5 m
G710050537	RF cable DC to 4 GHz Type-N(m) to 1.0/2.3(m), 1.5 m
G700050540	Phase-stable RF cable w grip DC to 6 GHz Type-N(m) to Type-N(f), 1.5 m
G700050541	Phase-stable RF cable w grip DC to 6 GHz Type-N(m) to DIN(f), 1.5 m
G700050550	RF cable DC to 40 GHz, K(m) to K(m), 0.8 m
G700050551	RF cable DC to 40 GHz, K(m) to K(f), 0.8 m
G700050552	RF cable DC to 40 GHz, K(m) to K(f), 1.5 m
RF Antennas	
G700050340	Mag Mount RF omni antenna Type-K(f), 24 GHz to 40 GHz
G700050342	Mag mount RF omni antenna with LNA; Type-K(f), 24 GHz to 40 GHz
G700050343	Factory upgrade of existing G700050340 with LNA
G700050345	Mag Mount RF Omni Antenna 617-960/1700-6000 MHz 8 ft. LL-195 with N-plug
G700050349	RF Omni Antenna 600 MHz to 6 GHz with SMA to N Adapter
G700050350	RF omni antenna Type-N(m), 3300 to 3800 MHz
G700050353	RF omni antenna Type-N(m), 806 to 896 MHz
G700050354	RF omni antenna Type-N(m), 870 to 960 MHz
G700050355	RF omni antenna Type-N(m), 1710 to 2170 MHz
G700050356	RF omni antenna Type-N(m), 720 to 800 MHz
G700050357	RF omni antenna Type-N(m), 2300 to 2700 MHz
G700050359	RF omni antenna Type N-m; 2.4 to 2.5 GHz; 5.1 to 5.9 GHz
G700050363	RF yagi antenna Type-N(f), 1750 to 2390 MHz, 10.2 dBd
G700050365	RF yagi antenna Type-N(f), 866 to 960 MHz, 9.8 dBd

## Optional Accessories continued

G700050366	RF Log Periodic antenna SMA(f), 700 to 4000 MHz, 1.85 dBd
G700050367	RF Log Periodic antenna SMA(f), 700 to 6000 MHz, 2.85 dBd
G700050381	Isotropic Antenna Type-N(m), 400 MHz to 6 GHz
G700050370	RF directional horn antenna kit, K(f), 26.5 GHz to 40 GHz, 15 dBi
G700050371	RF directional horn antenna kit, K(f), 22 GHz to 33 GHz, 20 dBi
G700050390	SMA mount Single Band GNSS antenna
JD71050351	Mag Mount Single Band GNSS Antenna
G700050391	Mag Mount Dual Band GNSS Antenna
<b>RF Adapters</b>	
G700050571	Adapter Type-N(m) to DIN(f), DC to 7.5 GHz, 50 $\Omega$
G700050572	Adapter DIN(m) to DIN(m), DC to 7.5 GHz, 50 $\Omega$
G700050573	Adapter Type-N(m) to SMA(f), DC to 18 GHz, 50 $\Omega$
G700050574	Adapter Type-N(m) to BNC(f), DC to 4 GHz, 50 $\Omega$
G700050575	Adapter Type-N(f) to Type-N(f), DC to 18 GHz 50 $\Omega$
G700050576	Adapter Type-N(m) to DIN(m), DC to 7.5 GHz, 50 $\Omega$
G700050577	Adapter Type-N(f) to DIN(f), DC to 7.5 GHz, 50 $\Omega$
G700050578	Adapter Type-N(f) to DIN(m), DC to 7.5 GHz, 50 $\Omega$
G700050579	Adapter DIN(f) to DIN(f), DC to 7.5 GHz, 50 $\Omega$
G700050580	Adapter Type-N(m) to Type-N(m), DC to 11 GHz 50 $\Omega$
G700050581	Adapter N(m) to QMA(f), DC to 6 GHz, 50 $\Omega$
G700050582	Adapter N(m) to QMA(m), DC to 6 GHz, 50 $\Omega$
G700050583	Adapter N(m) to 4.1/9.5 MINI DIN (f), DC to 6 GHz, 50 $\Omega$
G700050584	Adapter N(m) to 4.1/9.5 MINI DIN (m), DC to 6 GHz, 50 $\Omega$
G700050585	Adapter N(m) to 4.3-10 (f), DC to 6 GHz, 50 $\Omega$
G700050586	Adapter N(m) to 4.3-10 (m), DC to 6 GHz, 50 $\Omega$
G700050587	Adapter N(f) to SMA (f), DC to 18 GHz, 50 $\Omega$
<b>RF Filters</b>	
G700050601	Bandpass filter 696 MHz to 716 MHz, N(m) to N(f), 50 $\Omega$
G700050602	Bandpass filter 776 MHz to 788 MHz, N(m) to N(f), 50 $\Omega$
G700050603	Bandpass filter 806 MHz to 849 MHz, N(m) to N(f), 50 $\Omega$
G700050604	Bandpass filter 1710 MHz to 1755 MHz, N(m) to N(f), 50 $\Omega$

## Optional Accessories continued

G700050605	Bandpass filter 1850 MHz to 1910 MHz, N(m) to N(f), 50 $\Omega$
G700050606	Bandpass filter 703 MHz to 748 MHz, N(m) to N(f), 50 $\Omega$
G700050607	Bandpass filter 832 MHz to 862 MHz, N(m) to N(f), 50 $\Omega$
G700050608	Bandpass filter 880 MHz to 915 MHz, N(m) to N(f), 50 $\Omega$
G700050609	Bandpass filter 1710 MHz to 1785 MHz, N(m) to N(f), 50 $\Omega$
G700050610	Bandpass filter 1920 MHz to 1980 MHz, N(m) to N(f), 50 $\Omega$
G700050611	Bandpass filter 2500 MHz to 2570 MHz, N(m) to N(f), 50 $\Omega$
G700050612	Bandpass filter 663 MHz to 698 MHz, N(m) to N(f), 50 $\Omega$
G700050613	Bandpass filter 3300 MHz to 3800 MHz, N(m) to N(f), 50 $\Omega$
G700050614	Bandpass filter 788 MHz to 798 MHz, N(m) to N(f), 50 $\Omega$
G700050615	Bandpass filter 2305 MHz to 2315 MHz, N(m) to N(f), 50 $\Omega$
G700050616	Bandpass Filter 3300 MHz to 4200 MHz, N(m) to N(f), 50 $\Omega$
G700050617	Bandpass Filter 2570 MHz to 2620 MHz; N Male to N Female; 50 $\Omega$
G700050618	Bandpass Filter 2496 MHz to 2690 MHz; N Male to N Female; 50 $\Omega$
G700050619	Bandpass Filter 1695 MHz to 1710 MHz; N Male to N Female; 50 $\Omega$
<b>RF Calibrators</b>	
JD78050509	Y- Calibration Kit Type-N(m), DC TO 6 GHz, 50 $\Omega$
JD78050510	Y- Calibration Kit DIN(m), DC to 6 GHz, 50 $\Omega$
JD70050509	EZ-CAL Kit Type-N(m), DC to 6 GHz, 50 $\Omega$
<b>RF Power Sensors</b>	
JD731B	Directional power sensor (peak and average power) 300 to 3800 MHz
JD732B	Terminating power sensor (Average Power) 20 to 3800 MHz
JD733A	Directional power sensor (peak and average power) 150 to 3500 MHz
JD734B	Terminating power sensor (peak power) 20 to 3800 MHz
JD736B	Terminating power sensor (average/peak power) 20 to 3800 MHz

## Optional Accessories continued

<b>RF Miscellaneous</b>	
G710050581	Attenuator 40 dB, 100 W, DC to 4 GHz (unidirectional)
G710050585	RF directional coupler, 700 to 4000 MHz, 30 dB, 50 W Input/output; Type-N(m) to Type-N(f), tap off; Type-N(f)
G710050586	RF combiner, 700 to 4000 MHz, Type-N(f) to Type-N(m)
G710050587	4x1 RF combiner, 700 to 4000 MHz, Type-N(f) to Type-N(m)
JD70050007	Antenna Advisor handle (requires directional antenna)
<b>General</b>	
G700050150	98 Wh Lithium-Ion Battery
G700050128	OneAdvisor 800 120 Watts DC to DC Car Cigarette Lighter Charger Adapter
G700050127	OneAdvisor 800 AC/DC Power Adapter 160 W, 19 V
G700050701	OneAdvisor 800 with RA/SPA module hard carrying case with wheels
ONA-800A-SCCL	OneAdvisor 800 Large Soft Carrying Case for RA Module
ONA-800A-WCL	OneAdvisor 800 Large Wrap Case for RA Module
ONA-800A-BP	OneAdvisor 800 Backpack
ONA-800A-BC	OneAdvisor 800 Back Cover
ONA-800A-HS	Hand Strap for OneAdvisor 800
ONA-800A-FC	Front Cover for OneAdvisor 800

## VIAVI Care Support Plans

### Increase your productivity for up to 5 years with optional VIAVI Care Support Plans:

- Maximize your time with on-demand training, priority technical application support and rapid service.
- Maintain your equipment for peak performance at a low, predictable cost.

Plan availability depends on product and region. Not all plans are available for each product or in every region. To find out which VIAVI Care Support Plan options are available for this product in your region, contact your local representative or visit: [viavisolutions.com/viavicareplan](https://viavisolutions.com/viavicareplan)

### Features

\*5-year plans only

Plan	Objective	Technical Assistance	Factory Repair	Priority Service	Self-paced Training	5 Year Battery and Bag Coverage	Factory Calibration	Accessory Coverage	Express Loaner
 BronzeCare	Technician Efficiency	Premium	✓	✓	✓				
 SilverCare	Maintenance & Measurement Accuracy	Premium	✓	✓	✓	✓*	✓		
 MaxCare	High Availability	Premium	✓	✓	✓	✓*	✓	✓	✓



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