DEVISER®

Ensuring Tomorrow's Communication Networks

Wireless

www.deviserinstruments.com

About Deviser Instruments

Headquartered in San Jose, California, Deviser Instruments brings an extensive portfolio of innovative, high-quality, value-packed test and measurement solutions to communications service providers and equipment manufacturers worldwide. For more than 25 years, communications service providers have relied on Deviser's products to deliver reliable, high-performance cable, satellite, wireless, fiber optic, and telecommunications services to their customers. Over the last 12 years, Deviser has been an OEM supplier of test equipment to tier 1 communications service providers in North and South America.

Leveraging a large engineering team, a 247,000 ft.^{2} R&D and manufacturing facility, and a comprehensive on-site EMC laboratory and test facility, Deviser Instruments designs and manufactures reliable and highly-accurate test and measurements solutions developed through a culture of innovation. This enables Deviser Instruments to deliver leading-edge solutions that not only address the needs of their customers today, but to anticipate the requirements of technological advancements in the communications industry. Deviser's reliable and highly-accurate test and measurement solutions not only enable communications service providers to maximize customer experience and satisfaction, but they also help increase profits by reducing CAPEX and OPEX.

By packing more features into its products, Deviser reduces the amount of test equipment required to turn up the network. The accuracy and reliability of the products ensures that the job is done correctly the first time, reducing the need for multiple truck rolls. Robust feature sets, enhanced capabilities, and affordable price points enable Deviser's products to deliver an industry-leading price-to-performance ratio to offer service providers an unparalleled level of value and quality.

What Sets Us Apart

Deviser's focus on customer requirements, customer satisfaction, and technical innovation sets us apart from competitive alternatives. Key reasons why so many communications service providers and equipment manufacturers choose Deviser solutions include:

Industry-Leading Experience

Over 25 years' experience developing and delivering a wide range of communications test and measurement solutions, combined with knowledgeable, dedicated and experienced personnel working closely together to create innovative, high-performance, feature-packed solutions for our customers.

Broad Portfolio of Industry-Leading Solutions

Deviser offers a comprehensive portfolio of communications test and measurement solutions, from wireless, fiber optics, cable, telecommunications, satellite, terrestrial and RF & microwave services.

Innovative Engineering and Leading Edge Technologies

We take pride in delivering leading-edge technology and solutions by seeking out ideas and opportunities through our customers to deliver the finest quality and best value to our customers. Our 150+ engineers are focused on gaining knowledge of next-generation technologies, which results in delivering the latest technologies and innovative analysis tools for ensuring future networks.

Quality Manufacturing

Deviser's 247,000 ft.^{2} manufacturing facility is ISO 9001 Quality Systems approved. This strict process guarantees that every step is controlled, from receiving orders to the manufacturing and delivery of products and solutions to customers. All products are 100% tested to ensure that they meet quality standards. We have a full EMC laboratory in house and all of our test equipment is calibrated annually and traced back to the China National Institute of Metrology & Telecommunication Metrology Center of MIIT to comply with the International Standard of Metrology.

Reliability, Service & Support

Deviser's focus on detail results in the development and manufacture of high quality products, geared for reliable performance and low maintenance, resulting in a low cost of ownership to its customers. Our global support team, with service centers in US, Belgium and China, allows our customers to receive localized support, facilitating and speeding up service.

DS1620-1U
Rack Mount SpectrumPROFILER™

Key Benefits

- Eliminates trips to difficult remote locations
- Monitor multiple sites from one centralized location
- Intuitive menu structure enables ease of use
- Quickly detects signal interference

Specifications

Frequency	
Frequency Range	9 KHz – 3.0 GHz
Resolution	1 Hz
Frequency Uncertainty	± 1 ppm
Reference Aging	± 1 ppm/year
Temperature Drift	± 1 ppm/°C
Spectral Purity	95 dBc @ 10kHz
Sweep Time	60ms (Full Span) 10µs to 1000s (Zero Span)
Resolution Bandwidth	1 Hz to 3 MHz
Video Bandwidth	1 Hz to 1 MHz
Amplitude Accuracy	± 1.0 dB, typ.
Dynamic Range	70 dB, intermod free
Noise Floor (DANL)	-158 dBm @1Hz
Preamp Off	-148 dBm
Preamp On	-158 dBm
Attenuator	0 to 55 dB, 5dB steps
Pre-Amplifier	+18 dB gain
Data Points	10-10,000 points, settable
Single Button Measurements	Occ BW, Channel Power, ACPR
CE Compliant	Yes
Connectors	
RF Input, N(f)	+30dBm (1W), max
Connectivity	
USB	1.1
LAN	10M/100M
Display	
Type / Size	TFT LCD / 6.5" (640 x 480)
Data Storage	
Internal	4Gb (upgradeable to 100Gb)
Environment	
Operating Temperature	-10°C to + 55 °C
Storage Temperature	-40 °C to + 80°C
Maximum Humidity	95% RH
Altitude	4600 meters
Size & Weight	
Size	483 mm x 399 mm x 178 mm (19 x 15.7 x 7.0 in)
Weight	16 lbs.
Standard Accessories	
Ethernet Cable	6190.0500.19
AC Power Cord	6290.0500.04
CD, SpectumPROFILER Emulator	6120.0600.06
User's Guide	6120.0600.08
Optional Accessories	
Attenuator, 10W, 6 dB, N(m) to N(f), 6 GHz	DATT-6NFNM-10-6
Attenuator, 50W, 30 dB, N(m) to N(f), 6 GHz	DATT-6NFNM-50-30
Attenuator, 100W, 40 dB, N(m) to N(f), 6 GHz	DATT-6NFNM-100-40
Adapter Kit (NMDM, NFDM, NMDF, NFDF, DFDF, DFDM 90°)	DPAK-6G100
Adapter, N (m) to SMA (f)	DPA-6NMSF
Adapter , N(f) to SMA (m)	DPA-6NFSM

Remotely monitor and analyze the performance of multiple sites from one centralized location.

Designed specifically for wireless communications engineers who manage multiple sites, many of which are in difficult to access locations, the DS1620 Rack Mount SpectrumPROFILER enables you to remotely monitor and analyze the performance of multiple sites from one centralized location over an Ethernet connection from any computer on your network, whether in the same room or half way around the world.

Key Features

- Minimal Rack Space Required: only 1 RU
- Diagnose issues over your ethernet connection
- Fast, Accurate and Sensitive: > 70 dB Dynamic Range and -158 dBm Noise Floor
- Excellent Spectral Purity: -95 dBc
- Dual spectrum and spectrogram measurements
- Spectrum recording and replay
- Redundant power supply

Measurements

- Spectrum Analysis
- Spectrogram (waterfall)
- Occupied Bandwidth (OBW)
- Channel Power
- Adjacent Channel Leakage Ratio
- Field Strength

Optional Measurements Modes

- Interference Analysis (DML-110)

E8600B/E8400B SpectrumPROFILER™
Spectrum & Signal Analyzer

Key Benefits

- Handheld, lightweight, rugged design that withstands harsh environments and lighting conditions
- Intuitive menu structure enables ease of use and quick measurements
- Quickly identifies, locates and maps signal interference
- Performs comprehensive signal analysis for complete site profile and monitoring of signal environment
- Occupied Bandwidth, Channel Power and ACPR
- Dual spectrum and spectrogram measurements
- Verify RF transmission

Verify RF Transmission. Identify and locate signal interference. Confirm coverage.

Today's wireless spectrum is shared among different communications systems and services including mobile communications, mobile radios, paging, wireless local-area networks and digital video broadcasting. In additional to licensed systems, the spectrum is also shared with unlicensed transmitters and signal impairments such as reflections and fading. The combination of all these signals creates a very complex environment which must be first cleared and routinely monitored in order to maximize service performance.

Designed specifically for wireless communications field engineers and technicians, the E8400B/ E8600B SpectrumPROFILER provides all necessary measurement functions and performance to accurately characterize the signal environment - in addition to clearing, detecting, identifying and locating signal interference - in a lightweight, handheld instrument.

Measurements

- Spectrum Analysis
- Channel Power
- Occupied Bandwidth (OBW)
- Adjacent Channel Leakage Ratio (ACLR)
- Field Strength
- FM/AM

Optional Measurements Modes

- Interference Analyzer (DML-110)
- Coverage Mapping (DML-120)
- High Precision Power Meter (DML-015)
- Tracking Generator (DML-035)
- GPS (DML-999)
- LTE FDD Analyzer (DML-803)
- LTE FDD Air Interface Test (DML-804)
- LTE TDD Analyzer (DML-805)
- LTE TDD Air Interface Test (DML-806)

Specifications

Frequency	
Frequency Range	9 kHz – 4.4 GHz (E8400B) 9 kHz – 6.0 GHz (E8600B)
Resolution	1 Hz
Aging	<± 1.0ppm/yr
Frequency Span	1 kHz to 6 GHz in 1-2-5 sequence (automode), and 0 Hz (zero span)
Bandwidth	
Resolution Bandwidth (RBW)	1 Hz to 3 MHz in 1-3 sequence (auto or manually selectable)
Video Bandwidth (VBW)	1 Hz to 3 MHz in 1-3 sequence (auto or manually selectable)
Spectral Purity (Phase Noise)	
@ 1 kHz Offset from carrier	-90 dBc/Hz
@ 10 kHz Offset from carrier	-100 dBc/Hz
@ 100 kHz Offset from carrier	-105 dBc/Hz
Amplitude	
Dynamic Range	>100 dB
Measurement Range	DANL to maximum safe input level
Maximum Safe Input	+30dBm (peak power, input attenuation > 15dB), 50VDC
Amplitude Accuracy	≤ ± 1.0 dB
Attenuator Range	0 dB to 55 dB in 1 dB steps
Displayed Average Noise Level (DANL)	
(Input terminated, RBW = 10 kHz, Attn = 0 dBm, Avg Detector)	
Preamp Off	≤ -148 dBm, typical (1MHz – 1GHz) ≤ -138 dBm, typical (1GHz – 6GHz)
Preamp On	≤ -160 dBm, typical (1MHz – 1GHz) ≤ -154 dBm, typical (1GHz – 6GHz)
Connectors	
RF In	Type N, female, 50Ω
RF In Damage	+30dBm, ± 50 VDC.
Connectivity	
USB host	Type A, 1-Port (connect flash drive for data transfer)
USB client	5-pin mini-B (connect to PC for data transfer)
LAN	10M/100M LAN
Display	
Type / Size	TFT LCD / 8.4" (800 x 600)
Data Storage	
Internal	1 GB, > 2000 saved measurement files
External	Limited by size of USB flash drive
Battery	
Type	Li-Ion, 11.1V, 5.2AH
Operation	> 4 hours, continuous; 8 hrs, idle
Environmental	
Operating Temperature	-10°C to + 55 °C
Storage Temperature	-40 °C to + 80 °C
Shock	Mil-PRF-28800F Class 2
EMC	
European EMC	IEC/EN 61326-1:2006
AC Power	
AC Adapter Output	19V / 3.42Ah
AC Adapter Input	100 – 240 VAC, 50-60 Hz
Size & Weight	
Size	278 mm x 217 mm x 87 mm (10.94 in x 8.54 in x 3.42 in)
Weight	3 kg (6.6 lbs)

Standard Accessories	
Rechargeable Li-Ion battery: 11.1V, 5.2Ah	6190.0100.05
AC-DC adapter: 19V, 3.42Ah	FSP065-RAB
Vehicle Plug-in lighter adapter	E8000-0400
Soft carry case	E7000-0600
Measurement Center Software CD-ROM with Users-Manual	E8000-0200
Optional Accessories	
RF Test Port Cable, Armored, 1.5m, N(m) to N(f), 6GHz, 50Ω	DTC-6PNMNF-1.5
RF Test Port Cable, Armored, 1.5m, N(m) to 7/16 DIN(f), 6GHz, 50Ω	DTC-6PNMDF-1.5
RF Test Port Cable, Armored, 1.5m, N(m) to 7/16 DIN(m), 6GHz, 50Ω	DTC-6PNMDM-1.5
RF Test Port Cable, Armored, 3.0m, N(m) to 7/16 DIN(f), 6GHz, 50Ω	DTC-6PNMDF-3.0
RF Test Port Cable, Armored, 3.0m, N(m) to 7/16 DIN(m), 6GHz, 50Ω	DTC-6PNMDM-3.0
Precision Adapters	
Precision Adapter Kit(PNMDM, PNFDM, PNMDF, PNFDF, PDFDF, PDFDM 90°), 6GHz, 50Ω	DPAK-6G100
Precision Adapter, N(m) to N(m), DC to 18GHz, 50Ω	DPA-18NMNM
Precision Adapter, N(f) to N(f), DC to 18GHz, 50Ω	DPA-18NFNF
Precision Adapter, N(f) to 7/16 DIN(m), DC to 6GHz, 50Ω	DPA-6NFDM
Precision Adapter, N(f) to 7/16 DIN(f), DC to 6GHz, 50Ω	DPA-6NFDF
Precision Adapter, N(f) to SMA(f), DC to 6GHz, 50Ω	DPA-6NFSF
Attenuators	
10W, 6dB, DC-6GHz, N(f) to N(m)	DATT-6NFNM-10-6
50W, 30dB, DC-6GHz, N(f) to N(m)	DATT-6NFNM-50-30
100W, 40dB, Bi-Directional, DC-18GHz, N(f) to N(m)	DATT-6NFNM-100-40
Directional Antennas	
806-960 MHz, N(f), 10 dBi, Yagi	ET0806D
822-900 MHz, N(f), 10 dBi, Yagi	ET0850D
824-960 MHz, N(f), 10 dBi, Yagi	ET0824D
885-970 MHz, N(f), 10 dBi, Yagi	ET0900D
1710-1880 MHz, N(f), 10 dBi. Yagi	ET1800D
1850-1990 MHz, N(f), 10 dBi, Yagi	ET1900D
1920-2170 MHz, N(f), 10 dB, Yagi	ET2100D
2400-2500 MHz, N(f), 10 dBi, Yagi	ET2400D
9 kHz to 20 MHz, log periodic	ET0020L
20 MHz to 200 MHz, log periodic	ET0200L
200 MHz to 500 MHz, log periodic	ET0500L
500 MHz to 3 GHz, log periodic	ET3000L
Portable Antennas	
470-860 MHz, SMA(m), 50 Ω	ET0470P
806-866 MHz, SMA(m), 50 Ω	ET0850P
870-960 MHz, SMA(m), 50 Ω	ET0900P
1710 to 1880 MHz, SMA(m), 50 Ω	ET1800P
1850 to 1990 MHz, SMA(m), 50 Ω	ET1900P
1920 to 2170 MHz, SMA(m), 50 Ω	ET2100P
2400 to 2500 MHz, SMA(m) , 50 Ω	ET2400
5725 to 5875 MHz, SMA(m), 50 Ω	ET5800
Power Sensors	
In-line Bi-Directional High Power Sensor, 300 MHz to 4GHz, 2mW to 150W, N(f) 50Ω	E7000A-050
Terminal Power Sensor	DPS-6TNM

E8000A
Spectrum Analyzer

Key Benefits

- Handheld, lightweight, rugged design that withstands harsh environments and lighting conditions
- Intuitive menu structure enables ease of use and quick measurements
- Quickly identifies, locates and maps signal interference
- Performs comprehensive signal analysis for complete site profile and monitoring of signal environment
- Occupied Bandwidth, Channel Power and ACPR
- Dual spectrum and spectrogram measurements
- Verify RF transmission

Verify RF Transmission. Identify and locate signal interference. Confirm coverage.

Today's wireless spectrum is shared among different communications systems and services including mobile communications, mobile radios, paging, wireless local-area networks and digital video broadcasting. In additional to licensed systems, the spectrum is also shared with unlicensed transmitters and signal impairments such as reflections and fading. The combination of all these signals creates a very complex environment which must be first cleared and routinely monitored in order to maximize service performance.

Designed specifically for wireless communications field engineers and technicians, the E8000 Spectrum Analyzer provides all necessary measurement functions and performance to accurately characterize the signal environment - in addition to clearing, detecting, identifying and locating signal interference - in a lightweight, handheld instrument.

Measurements

- Spectrum Analysis
- Channel Power
- Occupied Bandwidth (OBW)
- Adjacent Channel Leakage Ratio (ACLR)
- Field Strength
- FM/AM

Optional Measurements Modes

- Interference Analyzer (DML-110)
- Coverage Mapping (DML-120)
- High Precision Power Meter (DML-015)
- Tracking Generator (DML-035)
- GPS (DML-999)

Specifications

Frequency	
Frequency Range	9 kHz – 3.0 GHz
Resolution	1 Hz
Aging	<± 1.0ppm/yr
Frequency Span	1 kHz to 6 GHz in 1-2-5 sequence (automode), and 0 Hz (zero span)
Bandwidth	
Resolution Bandwidth (RBW)	10 Hz to 3 MHz in 1-3 sequence (auto or manually selectable)
Video Bandwidth (VBW)	10 Hz to 3 MHz in 1-3 sequence (auto or manually selectable)
Spectral Purity (Phase Noise)	
@ 1 kHz Offset from carrier	-85 dBc/Hz
@ 10 kHz Offset from carrier	-95 dBc/Hz
@ 100 kHz Offset from carrier	-100 dBc/Hz
Amplitude	
Dynamic Range	>95 dB
Measurement Range	DANL to maximum safe input level
Maximum Safe Input	+30dBm (peak power, input attenuation > 15dB), 50VDC
Amplitude Accuracy	≤ ± 1.0 dB
Attenuator Range	0 dB to 55 dB in 5 dB steps
Displayed Average Noise Level (DANL)	
(Input terminated, RBW = 10 kHz, Attn = 0 dBm, Sample Detector)	
Preamp Off	≤ -144 dBm, typical (1MHz – 1GHz) ≤ -138 dBm, typical (1GHz – 4GHz)
Preamp On	≤ -158 dBm, typical (1MHz – 1GHz) ≤ -154 dBm, typical (1GHz – 4GHz)
Connectors	
RF In	Type N, female, 50Ω
RF In Damage	+30dBm, ± 50 VDC.
Connectivity	
USB host	Type A, 1-Port (connect flash drive for data transfer)
USB client	5-pin mini-B (connect to PC for data transfer)
LAN	10M/100M LAN
Display	
Type / Size	TFT LCD / 6.5" (640 x 480)
Data Storage	
Internal	1 GB, > 2000 saved measurement files
External	Limited by size of USB flash drive
Battery	
Type	Li-Ion, 11.1V, 5.2AH
Operation	> 4.5 hours, continuous; 8.0 hrs, idle
Environmental	
Operating Temperature	-10°C to + 55 °C
Storage Temperature	-40 °C to + 80 °C
Shock	Mil-PRF-28800F Class 2
EMC	
European EMC	IEC/EN 61326-1:2006
AC Power	
AC Adapter Output	19V / 3.42Ah
AC Adapter Input	100 – 240 VAC, 50-60 Hz
Size & Weight	
Size	258 mm x 173 mm x 74 mm (10.2 in x 6.8 in x 2.9 in)
Weight	2.5 kg (5.51 lbs)

Standard Accessories	
Rechargeable Li-Ion battery	E8000-0300
AC-DC adapter:	FSP065-RAB
Vehicle Plug-in lighter adapter	E8000-0400
1.5m RF Test Port Cable, N(m), 6GHz	E7000-0702
Soft carry case	E7000-0600
Measurement Center Software CD-ROM with Users-Manual	E8000-0200
Optional Accessories	
RF Test Port Cable, Armored, 1.5m, N(m) to N(f), 18GHz, 50Ω	DTC-18NMNF-1.5
RF Test Port Cable, Armored, 1.5m, N(m) to 7/16 DIN(f), 18GHz, 50Ω	DTC-18NMDF-1.5
RF Test Port Cable, Armored, 1.5m, N(m) to 7/16 DIN(m), 18GHz, 50Ω	DTC-18NMDM-1.5
RF Test Port Cable, Armored, 3.0m, N(m) to 7/16 DIN(f), 18GHz, 50Ω	DTC-18NMDF-3.0
RF Test Port Cable, Armored, 3.0m, N(m) to 7/16 DIN(m), 18GHz, 50Ω	DTC-NMDM-3.0
Precision Adapters	
Precision Adapter Kit(PNMDM, PNFDM, PNMDF, PNFDF, PDFDF, PDFDM 90°), 6GHz, 50Ω	DPAK-6G100
Precision Adapter, N(m) to N(m), DC to 18GHz, 50Ω	DPA-18NMNM
Precision Adapter, N(f) to N(f), DC to 18GHz, 50Ω	DPA-18NFNF
Precision Adapter, N(f) to 7/16 DIN(m), DC to 6GHz, 50Ω	DPA-6NFDM
Precision Adapter, N(f) to 7/16 DIN(f), DC to 6GHz, 50Ω	DPA-6NFDF
Precision Adapter, N(f) to SMA(f), DC to 6GHz, 50Ω	DPA-6NFSF
Attenuators	
10W, 6dB, DC-6GHz, N(f) to N(m)	DATT-6NFNM-10-6
50W, 30dB, DC-6GHz, N(f) to N(m)	DATT-6NFNM-50-30
100W, 40dB, Bi-Directional, DC-18GHz, N(f) to N(m)	DATT-6NFNM-100-40
Directional Antennas	
806-960 MHz, N(f), 10 dBi, Yagi	ET0806D
822-900 MHz, N(f), 10 dBi, Yagi	ET0850D
824-960 MHz, N(f), 10 dBi, Yagi	ET0824D
885-970 MHz, N(f), 10 dBi, Yagi	ET0900D
1710-1880 MHz, N(f), 10 dBi. Yagi	ET1800D
1850-1990 MHz, N(f), 10 dBi, Yagi	ET1900D
1920-2170 MHz, N(f), 10 dB, Yagi	ET2100D
2400-2500 MHz, N(f), 10 dBi, Yagi	ET2400D
9 kHz to 20 MHz, log periodic	ET0020L
20 MHz to 200 MHz, log periodic	ET0200L
200 MHz to 500 MHz, log periodic	ET0500L
500 MHz to 3 GHz, log periodic	ET3000L
Portable Antennas	
470-860 MHz, SMA(m), 50 Ω	ET0470P
806-866 MHz, SMA(m), 50 Ω	ET0850P
870-960 MHz, SMA(m), 50 Ω	ET0900P
1710 to 1880 MHz, SMA(m), 50 Ω	ET1800P
1850 to 1990 MHz, SMA(m), 50 Ω	ET1900P
1920 to 2170 MHz, SMA(m), 50 Ω	ET2100P
2400 to 2500 MHz, SMA(m) , 50 Ω	ET2400
5725 to 5875 MHz, SMA(m), 50 Ω	ET5800
Power Sensors	
In-line Bi-Directional High Power Sensor, 300 MHz to 4GHz, 2mW to 150W, N(f) 50Ω	E7000A-050
Terminal Power Sensor	E7000A-040

E7042B/E7062B SignalPROFILER™
Combo Analyzer

Key Benefits

- RF, fiber and wireless signal quality testing – in a single instrument
- Perform traditional RF feedline tests, inspect fiber connectors with auto pass/fail results and measure RF/Optical power
- Perform comprehensive spectrum and signal analysis for complete site profile and monitoring of signal environment
- Test MIMO 4x4 antenna performance
- Detect signal degradation and system performance over time with trace overlay
- Handheld, lightweight, field-proven design withstands harsh environments and lighting conditions

Verify RF and fiber-based cell site performance with a single instrument

The SignalPROFILER combines the power and functionality of cable and antenna system analysis, fiber inspection, spectrum analysis, cellular signal demodulation, interference analysis, signal coverage mapping and RF/optical power measurements in a single instrument.

As a multi-functional instrument, the SignalPROFILER can be configured to meet your specific test needs at the time of purchase or at a later date as your test needs evolve. Additional measurement capability can be added on the fly in the field in a matter of seconds.

Designed specifically for wireless communication field engineers and technicians who install, maintain and troubleshoot wireless communication sites, the SignalPROFILER was developed to get the job done right – the first time – with multiple cutting edge features that deliver accurate results, improve productivity and reduce OPEX and CAPEX.

Standard Measurements & Applications (Cable & Antenna Analysis)

- Reflection – Return Loss or VSWR
- Fault Location – DFT/RL or DTF/VSWR
- Cable Loss
- 1-Port Phase
- Smith Chart
- FiberScope Fiber Connector Inspection (DML-OPI)
- Optical Power Meter (DML-OPM)
- Visual Fault Location (DML-VFL)

Standard Measurements & Applications (Spectrum Analysis)

- Spectrum Analysis
- Channel Power
- Occupied Bandwidth (OBW)
- Adjacent Channel Leakage Ratio (ACLR)
- Field Strength
- AM/FM

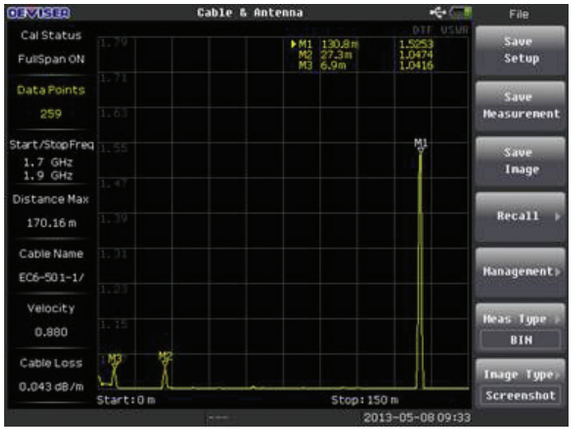
Optional Measurement Modes

- High Precision Power Meter (DML-015)
- Interference Analysis (DML-110)
- Coverage Mapping (DML-120)
- Transmission Measurement (DML-025)
- GPS Receiver (DML-999)

Key Measurements

Distance-to-Fault (DTF) identifies the fault location of impairments within the cell-site transmission cable system. Fault location impairments and discontinuities can be detected by either DTF-Return Loss or DTF-VSWR measurements.

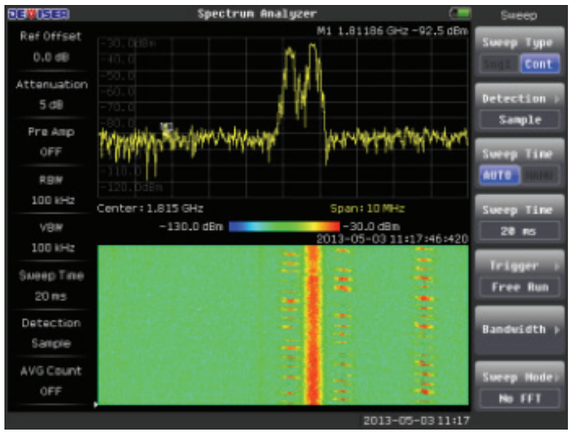
- Identify faults up to 5,000 feet (1,524m)
- High resolution enables up to 2,065 data points for locating pesky faults
- Includes over 100 different cable types with the ability to add more
- User definable limit-line automatically indicates pass/fail condition
- Set up to 6 markers for detailed analysis



- Fiber Inspection eliminates the most common fiber link problems by verifying that fiber optic connectors are not contaminated, letting users quickly inspect and clean fiber connector connections with a clear pass/fail indication.
- Visual Fault Location checks that fiber for continuity and detects damaged fibers or splices, including fiber breaks, excessive bends and brakes. Can also trace the path of fiber through multiple connections and identify the correct fibers for loss test.
- Cellular Signal Analysis provides detailed insight to LTE-FDD, LTE-TDD, WCDMA/HSDPA, TD-SCDMA, CDMA/EV-DO, GSM/GPRS/EDGE signals and modulation quality.

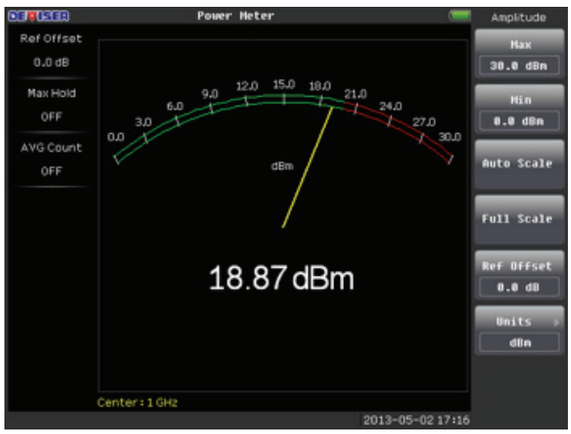
Interference Analysis can detect signal as low as -152 dBm and supports spectrogram display, RSSI, signal strength and signal ID capabilities.

- Spectrogram display features a three-dimensional display of frequency, power and time of spectrum activity enabling identification of intermittent signal interference, tracking these signals over time. The dual display screen allows for easy, simultaneous viewing of both the spectrum and spectrogram analysis
- Received Signal Strength Indicator (RSSI) observes and reports the signal strength of a single frequency over time
- Signal strength meter helps to locate interfering signals with the use of a directional antenna



RF/Optical Power Meter measures true RMS power for both CW and digitally modulated signals with an external power sensor.

- Users can set minimum and maximum power limits to automatically indicate pass/fail status



Additional Benefits:

- **Reduces maintenance time** with a complete multifunctional toolset that performs spectrum analysis, interference analysis, coverage mapping, cellular signal demodulation quality, RF/Fiber-Based feedline analysis and RF/Optical Power measurements in a single instrument.
- **Ensure optimal performance of fiber** with fiber connector inspection, visual fault location and optical power measurements.
- **Quickly identify and locate** Cable & Antenna signal reflections and faults and take two-port measurements for insertion gain/loss tests of amplifiers, filters, and antenna isolation measurements.
- **Ensure RF metrics and modulation quality** of any cellular technology including LTE-FDD, LTE-TDD, cdma2000/EV-DO, WCDMA/HSDPA, TD-SCDMA and GSM/GPRS/EDGE with the signal analysis measurement function.
- **Perform channel scanner measurements** to measure channel power up to 20 carriers in a single test
- **Assess non-intrusive PIM** detection across the complete frequency spectrum in a signal instrument
- **Quickly identify signal interference** with the interference analysis measurement function to detect and locate the position of interference through automatic triangulation and mapping.
- **Trace Overlay** enables users to easily detect signal and system degradation over time
- **Multiple Display Modes** enables users to set the display to lighting condition. Modes include standard view, nighttime, high contrast
- **Measurement Center Software** provides users with all the necessary functionality to manage measurements and increase the instruments, including:
  - Quickly exchange data via USB or LAN connection
  - Retrieve or save measurements results
  - Export measurement results
  - Analyze measurement results and activate multiple markers and limit lines
  - Compare measurement results
  - Create and export new cable types, frequency bands and test setups
  - Generate and print reports

Specifications: Cable Analyzer

Frequency	
Frequency Range	2 Mhz - 4.4 GHz (E7042B) 2 MHz – 6.0 GHz (E7062B)
Resolution	1 kHz
Measurement Speed	
Reflection	< 0.8 mS/point
DTF	< 1 mS/point
Data Points	130, 259, 517, 1033, 2065
Measurement Accuracy	
Corrected Directivity	42 dB (typical, after standard OSL calibration) 38 dB (typical, after eCAL calibration)
Output Power	
O dBm (Nominal)	
Interference Immunity	
On-channel	+20 dBm @ >1 MHz of carrier frequency
Off-channel	+10 dBm within ± 10 kHz of carrier frequency
Measurements	
Return Loss	0 to 60dB (resolution 0.01 dB)
VSWR	1:1 to 65:1 (resolution 0.01)
Cable Loss	0 to 30dB (resolution: 0.01 dB)
DTF Range (Distance)	1500 meters (4921 feet)
Connectors (Reflection/RF Out)	
RF Out	Type N, female, 50Ω
RF Out Damage Level	25 dBm, ± 50 VDC peak
Impedance	50Ω

Specifications: Optical Measurements

Optical Microscope	
Field of view	680 mm x 510 mm
Resolution	0.5 mm
Light source	Blue LED
Focus control	Adjustable
Dimensions	175 mm x 435 mm
Weight	200 g
Optical Power Meter	
Accuracy	±0.25dB
Probe Type	InGaAs Φ300μm
Dynamic Range	-50dBm ~ +27dBm
Resolution	0.01 dBm, mW, uW, nW
Wave Length	850 nm, 980 nm, 1300 nm, 1310nm, 1490 nm, 1550nm, 1610 nm
Adapter	FC/SC/ST
VFL	
Output Power	10mW
Adapter	FC/PC

Specifications: Spectrum Analyzer

Frequency	
Frequency Range	9 kHz – 4.4 GHz (E7042B) 9 kHz – 6.0 GHz (E7062B)
Tuning Resolution	1 Hz
Aging	<± 1.0ppm/yr
Frequency Span	1 kHz to 4 or 6 GHz in 1-2-5 sequence (automode), and 0 Hz (zero span)
Bandwidth	
Resolution Bandwidth (RBW)	10Hz to 3MHz in 1-3 sequence (auto or manually selectable)
Video Bandwidth (VBW)	10Hz to 3MHz in 1-3 sequence (auto or manually selectable)
Spectral Purity (Phase Noise)	
@ 1 kHz Offset from carrier	-90 dBc/Hz
@ 10 kHz Offset from carrier	-100 dBc/Hz
@ 100 kHz Offset from carrier	-105 dBc/Hz
Amplitude	
Dynamic Range	> 100 dB
Measurement Range	DANL to maximum safe input level
Maximum Safe Input	+30dBm (peak power, input attenuation > 15dB), 50VDC
Amplitude Accuracy	≤ ± 1.0 dB
Attenuator Range	0 dB to 55 dB in 5 dB steps
Displayed Average Noise Level (DANL)	
(Input terminated, RBW = 10 kHz, Attn = 0 dBm, Avg Detector)	
Preamp Off	≤ -148 dBm, typical (1MHz – 1GHz) ≤ -138 dBm, typical (1GHz – 6GHz)
Preamp On	≤ -160 dBm, typical (1MHz – 1GHz) ≤ -154 dBm, typical (1GHz – 6GHz)

Specifications: RF Power Meter

USB Smart RF Power Sensor	
Frequency Range	1 kHz – 6 GHz
Measurement Range	1μW~100mW(-30~+20dBm)
VSWR	1.1
Resolution	1dB, 0.1dB, 0.01dB, 0.001dB
Dimension	124 x 44 x 24
Weight	250g
Accuracy	Typ.: ±0.2dB
Inline RF Power Meter	
Frequency range	300MHz to 4000MHz
Measurement Range	0.15W to 150W
Insert Loss	0.1dB
VSWR	1.1
Directivity	30dB
Accuracy	±4%±0.05W(+15~+35°C) ±7%±0.05W(-10~+50°C)
Connector	Type N(f), 50 Ω

General

Connectors	
RF In	Type N, female, 50Ω
RF In Damage	+30 dBm, +50 VDC
Connectivity	
USB host	Type A, 1-Port (connect flash drive for data transfer)
USB client	5-pin mini-B (connect to PC for data transfer)
LAN	10M/100M LAN Port
Display	
Type / Size	TFT LCD / 8.4" (800 x 600)
Data Storage	
Internal	1 GB, > 2000 saved measurement files
External	Limited by size of USB flash drive
Battery	
Type	Li-Ion, 11.1V, 5.2AH
Operation	> 6 hours, continuous; 8.0 hrs, idle (CA mode) > 4.0 hours, continuous; 8.0 hrs, idle (SA mode)
Environmental	
Operating Temperature	-10°C to + 55 °C
Storage Temperature	-40 °C to + 75 °C
Shock	Mil-PRF-28800F Class 2
EMC	
European EMC	IEC/EN 61326-1:2006
AC Power	
AC Adapter Output	15-19 VDC
AC Adapter Input	100 – 240 VAC, 50-60 Hz
Size & Weight	
Size	258 mm x 173 mm x 74 mm (10.2 in x 6.8 in x 2.9 in)
Weight	3 kg (6.6 lbs)

Optional Accessories:

Directional Antennas	
806-960 MHz, N(f), 10 dBi, Yagi	ET0806D
822-900 MHz, N(f), 10 dBi, Yagi	ET0850D
824-960 MHz, N(f), 10 dBi, Yagi	ET0824D
885-970 MHz, N(f), 10 dBi, Yagi	ET0900D
1710-1880 MHz, N(f), 10 dBi. Yagi	ET1800D
1850-1990 MHz, N(f), 10 dBi, Yagi	ET1900D
1920-2170 MHz, N(f), 10 dB, Yagi	ET2100D
2400-2500 MHz, N(f), 10 dBi, Yagi	ET2400D
9 kHz to 20 MHz, log periodic (with GPS & compass)	ET0020L
20 MHz to 200 MHz, log periodic	ET0200L
200 MHz to 500 MHz, log periodic	ET0500L
500 MHz to 3 GHz, log periodic	ET3000L
Precision Adapters	
Precision Adapter Kit, 50Ω (PNFNF, PNFD, PNFDF, PNTF)	DPAK-1000
Precision Adapter, N(f) to 7/16 DIN N(m), DC to 6GHz, 50Ω	DPA-6NFDM
Precision Adapter, N(f) to 7/16 DIN N(f), DC to 6GHz, 50Ω	DPA-6NFDF
Precision Adapter, N(f) to SMA(f), DC to 6GHz, 50Ω	DPA-6NFSF
Precision Adapter, N(f) to N(m), DC to 18GHz, 50Ω	DPA-18NFNM
Precision Adapter, N(m) to N(m), DC to 18GHz, 50Ω	DPA-18NMNM
Precision Adapter, N(f) to N(f), DC to 18GHz, 50Ω	DPA-18NFNF
Precision Adapter, N(f) to 7/16 DIN(m), DC to 18GHz, 50Ω	DPA-18NFDM
Precision Adapter, N(f) to 7/16 DIN(f), DC to 18GHz, 50Ω	DPA-18NFDF
Precision Adapter, N(f) to SMA(f), DC to 18GHz, 50Ω	DPA-18NFSF
Power Sensors	
In-line Bi-Directional High Power Sensor, 300 MHz to 4GHz, 2mW to 150W, N(f) 50Ω	E7000A-050
Terminal Power Sensor	E7000A-040
Attenuators	
10W, 6dB, DC-6GHz, N(f) to N(m)	DATT-6NFNM-10-6
50W, 30dB, DC-6GHz, N(f) to N(m)	DATT-6NFNM-50-30
100W, 40dB, Bi-Directional, DC-18GHz, N(f) to N(m)	DATT-6NFNM-100-40
Digital Fiber Microscope	
Fiberscope optical fiber microscope	DI-1000LP

Portable Antennas	
470-860 MHz, SMA(m), 50 Ω	ET0470P
806-866 MHz, SMA(m), 50 Ω	ET0850P
870-960 MHz, SMA(m), 50 Ω	ET0900P
1710 to 1880 MHz, SMA(m), 50 Ω	ET1800P
1850 to 1990 MHz, SMA(m), 50 Ω	ET1900P
1920 to 2170 MHz, SMA(m), 50 Ω	ET2100P
2400 to 2500 MHz, SMA(m) , 50 Ω	ET2400
5725 to 5875 MHz, SMA(m), 50 Ω	ET5800
Calibration Components	
Precision "Y" Open/Short/Load Calibration Combination, N(m), DC-6GHz, 50Ω	E7000-700
Calibration Combo "Y" Open/Short/Load, N(f), DC-6GHz, 50Ω	E7000-709
Calibration Combo "T" Open/Short/Load, 7/16 DIN(m), DC-6GHz, 50Ω	DCAL-6DM-C
Calibration Combo "T" Open/Short/Load Calibration Combination, 7/16 DIN(f), DC-6GHz, 50Ω	DCAL-6DF-C
RF Test Port Extension Cables	
RF Test Port Cable, Armored, phase stable, 1.5m, N(m) to N(f), 18GHz, 50Ω	DTC-18NMNF-1.5
RF Test Port Cable, Armored, phase stable, 1.5m, N(m) to 7/16 DIN(f), 18GHz, 50Ω	DTC-18NMDF-1.5
RF Test Port Cable, Armored, phase stable,1.5m, N(m) to 7/16 DIN(m), 18GHz, 50Ω	DTC-18NMDM-1.5
RF Test Port Cable, Armored, phase stable,3.0m, N(m) to N(f), 18GHz, 50Ω	DTC-18NMNF-3.0
RF Test Port Cable, Armored, phase stable,3.0m, N(m) to 7/16 DIN(f), 18GHz, 50Ω	DTC-18NMDF-3.0
RF Test Port Cable, Armored, phase stable,3.0m, N(m) to 7/16 DIN(m), 18GHz, 50Ω	DTC-18NMDM-3.0
RF Test Port Extension Cable, phase stable, 1.5m, N(f) to N(f), 18GHz, 50Ω	DTC-18NFNF-1.5

E7000L SitePROFILER™
Cable & Antenna Analyzer

Key Benefits

- Handheld, lightweight, field-proven design withstands harsh environments and lighting conditions
- Easily set up measurements with over 100 preset wireless frequency bands and cable types
- Reduce test time with dual measurement display to make two measurements simultaneously
- Detect signal degradation and system performance over time with trace overlay
- Instant Pass/Fail status
- Manage your measurement data and test setups with Measurement Center Software
- Intuitive touchscreen user interface for easier, faster measurements

Verify cell site RF transmission settings, cable feedline and antenna systems.

The proliferation of wireless networks has placed increased demands on wireless professionals and contractors, who install, maintain and troubleshoot wireless communication networks. The majority of problems in wireless network installation and performance often occur within the base station infrastructure consisting of the cable and antenna system and associated RF connectors. Compounding the problem, often times cell sites are located in rural or difficult to access locations.

Designed specifically for carriers, wireless professionals and contractors who install, maintain and troubleshoot wireless communications networks, the E7000 Series of Cable & Antenna Analyzers provide all necessary measurement functions and performance to accurately diagnose and verify the site's cable and antenna system and RF connectors, as well as basic fiber-feedline testing.

Measurements

- Reflection - Return Loss or VSWR
- Fault Location – DTF/RL or DTF/VSWR
- Cable-loss
- 1-Port Phase
- Smith Chart

Optional Measurements Modes

- RF Power Meter (DML-015)
- Optical Power Meter (DML-016)
- Visual Fault Locator (DML-017)

Specifications

Frequency	
Frequency Range (E7000L)	2 MHz – 4.4 GHz
Resolution	0.5 kHz
Measurement Speed	
Reflection	< 1.0 mS/point
DTF	< 1.25 mS/point
Data Points	130, 259, 517, 1033, 2065
Measurement Accuracy	
Corrected Directivity	42 dB (typical, after standard OSL calibration) 38 dB (typical, after eCAL calibration)
Output Power	
O dBm (Nominal)	
Interference Immunity	
On-channel	+18 dBm @ >1 MHz of carrier frequency
Off-channel	+13 dBm within ± 10 kHz of carrier frequency
Measurements	
Return Loss	0 to 60dB (Resolution 0.01 dB)
VSWR	1:1 to 65:1
Cable Loss	0 to 30 dB (Resolution 0.01 dB)
DTF Range (Distance)	1500 meters (4921 feet)
Connectors (Reflection/RF Out)	
RF Out	Type N, female, 50Ω
RF Out Damage Level	25 dBm, ± 50 VDC
Connectivity	
USB host	USB 2.0 Type A
USB client	5-pin mini-B (connect to PC for data transfer)
LAN	RJ45 10M/100M LAN Ethernet Port
Display	
Type / Size	TFT LCD / 7.0" (800 x 480)
Data Storage	
Internal	1 GB, > 2000 saved measurement files
External	Limited by size of USB flash drive
Battery	
Type	Li-Ion, 7.4V, 7.5AH
Operation	TYP.> 8.0 hours, continuous
Environmental	
Operating Temperature	-10°C to + 55 °C
Storage Temperature	-40 °C to + 80°C
Maximum Humidity	95% RH (non-condensing) @ 40 °C
Shock	Mil-PRF-28800F Class
Altitude	4600 meters, operating and non-operating
EMC	
European EMC	IEC/EN 61326-1:2006
AC Power	
AC Adapter Output	11-14 VDC
AC Adapter Input	100 – 240 VAC, 50-60 Hz
Size & Weight	
Size	245 mm x 190 mm x 75 mm (9.64 in x 7.48 in x 2.95 in)
Weight	2 kg (4.4 lbs)

Standard Accessories	
Rechargeable Li-Ion battery: 7.4V, 7.5Ah	6130.0100.01
AC-DC adapter: 11-14VDC	FSP065-RAB
Vehicle Plug-in lighter adapter	E8000-040
1.5m RF Test Port Cable, N(m), 6GHz	E7000-0702
Calibration Combo Open/Short/Load, N(m), 6GHz	E7000-0700
Soft carry case	DS2800-008
Measurement Center Software CD-ROM with Users-Manual	E7000-0200
Optional Accessories	
RF Test Port Cable, Armored, phase stable, 1.5m, N(m) to N(f), 6GHz, 50Ω	DTC-6SNMNF-1.5
RF Test Port Cable, Armored, phase stable, 1.5m, N(m) to 7/16 DIN(f), 6GHz, 50Ω	DTC-6SNMDF-1.5
RF Test Port Cable, Armored, phase stable,1.5m, N(m) to 7/16 DIN(m), 6GHz, 50Ω	DTC-6SNMDM-1.5
RF Test Port Cable, Armored, phase stable,3.0m, N(m) to N(f), 6GHz, 50Ω	DTC-6SNMNF-3.0
RF Test Port Cable, Armored, phase stable,3.0m, N(m) to 7/16 DIN(f), 6GHz, 50Ω	DTC-6S8NMDF-3.0
RF Test Port Cable, Armored, phase stable,3.0m, N(m) to 7/16 DIN(m), 6GHz, 50Ω	DTC-6SNMDM-3.0
RF Test Port Extension Cable, phase stable, 1.5m, N(f) to N(f), 6GHz, 50Ω	DTC-6SNFNF-1.5
Precision Adapter Kit, 50Ω (NMDM, NFDM, NMDF, NFDF, DFDM90°)	DPAK-6G100
Precision Adapter, N(m) to N(m), DC to 18GHz, 50Ω	DPA-NMNM
Precision Adapter, N(f) to N(m), DC to 18GHz, 50Ω	DPA-NFNM
Precision Adapter, N(f) to N(f), DC to 18GHz, 50Ω	DPA-NFNF
Precision Adapter, N(f) to 7/16 DIN N(m), DC to 6GHz, 50Ω	DPA-NFDM
Precision Adapter, N(f) to 7/16 DIN N(f), DC to 6GHz, 50Ω	DPA-NFDF
Precision Adapter, N(f) to SMA(f), DC to 6GHz, 50Ω	DPA-NFSF

E7100B/E7000B SitePROFILER™
Cable & Antenna Analyzer

Key Benefits

- RF and fiber testing in a single solution
- Handheld, lightweight, field-proven design withstands harsh environments and lighting conditions
- Easily set up measurements with over 100 preset wireless frequency bands and cable types
- Reduce test time with dual measurement display to make two measurements simultaneously
- Detect signal degradation and system performance over time with trace overlay
- Instant Pass/Fail status
- Manage your measurement data and test setups with Measurement Center Software
- Intuitive touchscreen user interface for easier, faster measurements

Verify cell site, RF site, and fiber transmission settings, feedline and antenna system performance

The demand for high-speed wireless service has resulted in the deployment of advanced cell sites, many of which employ RF technology or newer fiber-based feedlines. As with traditional RF networks, where connectors are often the root problem to system performance, contamination in fiber connectors is the most common problem associated with the fiber feedline. Since a majority of wireless network performance issues occur within the base station infrastructure, consisting of the feedline (RF or fiber), antenna system and associated connectors, it is imperative that all wireless networks with fiber-based feedlines verify the performance of both RF and fiber-based systems. Designed specifically for carriers, wireless professionals and contractors who install, maintain and troubleshoot wireless communications networks (RF or fiber), the E7100B Cable & Antenna Analyzer provides an integrated solution that tests both RF and fiber-based wireless cell sites, thereby eliminating the need to carry multiple instruments.

All necessary measurement functions and performance are included to accurately diagnose and verify both RF and fiber-based feedlines, antenna system and connectors. Fiber-based measurements include Fiber Scope to detect and identify dirty/damaged connections, Visual Fiber Location (VFL) to access fiber continuity and detect excessive bends and breaks in the fiber, as well as verifying if the correct fiber is routed to the correct RRU Port, and Optical Power Meter to verify transmission power level.

Measurements

- Reflection - Return Loss or VSWR
- Fault Location – DTF/RL or DTF/VSWR
- Cable Loss
- 1-Port Phase
- Smith Chart

Optional Measurement Modes

- RF Power Meter (DML-015)
- Optical Power Meter (DML-016)
- Visual Fault Locator (DML-017)
- Fiberscope Inspection (DML-018)

Specifications

Frequency	
Frequency Range	2.2 MHz – 4.4 GHz (E7000B) 2.2 MHz – 6.1 GHz (E7100B)
Resolution	0.5 kHz
Measurement Speed	
Reflection	< 0.9 mS/point
DTF	< 1.15 mS/point
Data Points	130, 259, 517, 1033, 2065
Measurement Accuracy	
Corrected Directivity	42 dB (typical, after standard OSL calibration) 38 dB (typical, after eCAL calibration)
Output Power	
O dBm (Nominal)	
Interference Immunity	
On-channel	+20 dBm @ >1 MHz of carrier frequency
Off-channel	+13 dBm within ± 10 kHz of carrier frequency
Measurements	
Return Loss	0 to 60dB (Resolution 0.01 dB)
VSWR	1:1 to 65:1
Cable Loss	0 to 30 dB (Resolution 0.01 dB)
DTF Range (Distance)	1500 meters (4921 feet)
Connectors (Reflection/RF Out)	
RF Out	Type N, female, 50Ω
RF Out Damage Level	25 dBm, ± 50 VDC
Connectivity	
USB host	USB 2.0 Type A
USB client	5-pin mini-B (connect to PC for data transfer)
LAN	RJ45 10M/100M LAN Ethernet Port
Display	
Type / Size	TFT LCD / 7.0" (800 x 480)
Data Storage	
Internal	1 GB, > 2000 saved measurement files
External	Limited by size of USB flash drive
Battery	
Type	Li-Ion, 7.4V, 7.5AH
Operation	TYP.> 8.0 hours, continuous
Environmental	
Operating Temperature	-10°C to + 55 °C
Storage Temperature	-40 °C to + 80°C
Maximum Humidity	95% RH (non-condensing) @ 40 °C
Shock	Mil-PRF-28800F Class
Altitude	4600 meters, operating and non-operating
EMC	
European EMC	IEC/EN 61326-1:2006
AC Power	
AC Adapter Output	12.5-19 VDC–
AC Adapter Input	100 – 240 VAC, 50-60 Hz
Size & Weight	
Size	275 mm x 215 mm x 88 mm (10.82 in x 8.46 in x 3.46 in)
Weight	≤ 2.5kg (5.51 lbs)

Standard Accessories	
Rechargeable Li-Ion battery: 11.1 V, 5.2Ah	6190.0100.05
AC-DC adapter: 12.5 to 19VDC	FSP065-RAB
Vehicle Plug-in lighter adapter	E8000-0400
1.5m RF Test Port Cable, N(m), 6GHz	E7000-0702
Calibration Combo Open/Short/Load, N(m), 6GHz	E7000-0700
Soft carry case	E7000-0600
Measurement Center Software CD-ROM with Users-Manual	E7000-0200
Optional Accessories	
RF Test Port Cable, Armored, phase stable, 1.5m, N(m) to N(f), 6GHz, 50Ω	DTC-6SNMNF-1.5
RF Test Port Cable, Armored, phase stable, 1.5m, N(m) to 7/16 DIN(f), 6GHz, 50Ω	DTC-6SNMDF-1.5
RF Test Port Cable, Armored, phase stable,1.5m, N(m) to 7/16 DIN(m), 6GHz, 50Ω	DTC-6SNMDM-1.5
RF Test Port Cable, Armored, phase stable,3.0m, N(m) to N(f), 6GHz, 50Ω	DTC-6SNMNF-3.0
RF Test Port Cable, Armored, phase stable,3.0m, N(m) to 7/16 DIN(f), 6GHz, 50Ω	DTC-6SNMDF-3.0
RF Test Port Cable, Armored, phase stable,3.0m, N(m) to 7/16 DIN(m), 6GHz, 50Ω	DTC-6SNMDM-3.0
RF Test Port Extension Cable, phase stable, 1.5m, N(f) to N(f), 6GHz, 50Ω	DTC-6SNFNF-1.5
Precision Adapter Kit, 50Ω (NMDM, NFDM, NMDF, NFDF, DFDM90°)	DPAK-6G100
Precision Adapter, N(m) to N(m), DC to 18GHz, 50Ω	DPA-NMNM
Precision Adapter, N(f) to N(m), DC to 18GHz, 50Ω	DPA-NFNM
Precision Adapter, N(f) to N(f), DC to 18GHz, 50Ω	DPA-NFNF
Precision Adapter, N(f) to 7/16 DIN N(m), DC to 6GHz, 50Ω	DPA-NFDM
Precision Adapter, N(f) to 7/16 DIN N(f), DC to 6GHz, 50Ω	DPA-NFDF

E7000A Series
Cable & Antenna Analyzer

Key Benefits

- Handheld, lightweight, field-proven design withstands harsh environments and lighting conditions
- Easily set up measurements with over 100 preset wireless frequency bands and cable types
- Reduce test time with dual measurement display to make two measurements simultaneously
- Detect signal degradation and system performance over time with trace overlay
- Instant Pass/Fail status
- Manage your measurement data and test setups with Measurement Center Software

Verify cell site RF transmission settings, cable feedline and antenna systems.

The proliferation of wireless networks has placed increased demands on carriers, wireless professionals and contractors, who install, maintain and troubleshoot wireless communication networks. The majority of problems in wireless network installation and performance often occur within the base station infrastructure consisting of the cable and antenna system and associated RF connectors. Compounding the problem, often times cell sites are located in rural or difficult to access locations.

Designed specifically for carriers, wireless professionals and contractors who install, maintain and troubleshoot wireless communications networks, the E7000 Series of Cable & Antenna Analyzers provide all necessary measurement functions and performance to accurately diagnose and verify the site's cable and antenna system and RF connectors, including signal reflections (return loss or VSWR), fault location (distance-to-fault), cable loss and RF transmission power in a lightweight, field-proven, handheld instrument.

Measurements

- Reflection - Return Loss or VSWR
- Fault Location – DTF/RL or DTF/VSWR
- Cable Loss
- 1-Port Phase
- Smith Chart

Optional Measurement Modes

- High Precision Power Meter (DML-015)

Specifications

Frequency	
Frequency Range (E7000A)	1 MHz – 4.4 GHz
Resolution	1 kHz
Measurement Speed	
Reflection	< 1.0 mS/point
DTF	< 1.25 mS/point
Data Points	130, 259, 517, 1033, 2065
Measurement Accuracy	
Corrected Directivity	42 dB (typical, after standard OSL calibration) 38 dB (typical, after eCAL calibration)
Output Power	
O dBm (Nominal)	
Interference Immunity	
On-channel	+20 dBm @ >1 MHz of carrier frequency
Off-channel	+13 dBm within ± 10 kHz of carrier frequency
Measurements	
Return Loss	0 to 60dB
VSWR	1:1 to 65:1
DTF Range (Distance)	1500 meters (4921 feet)
Connectors (Reflection/RF Out)	
RF Out	Type N, female, 50Ω
RF Out Damage Level	25 dBm, ± 50 VDC
Connectivity	
USB host	USB 2.0 Type A
USB client	5-pin mini-B (connect to PC for data transfer)
LAN	RJ45 10M/100M LAN Ethernet Port
Display	
Type / Size	TFT LCD / 6.5" (640 x 480)
Data Storage	
Internal	1 GB, > 2000 saved measurement files
External	Limited by size of USB flash drive
Battery	
Type	Li-Ion, 11.1V, 5.2AH
Operation	> 6.0 hours, continuous; 8.0 hrs, idle
Environmenta	
Operating Temperature	-10°C to + 55 °C
Storage Temperature	-20 °C to + 75°C
Maximum Humidity	95% RH (non-condensing) @ 40 °C
Shock	Mil-PRF-28800F Class
Altitude	4600 meters, operating and non-operating
EMC	
European EMC	IEC/EN 61326-1:2006
AC Power	
AC Adapter Output	15-19 VDC
AC Adapter Input	100 – 240 VAC, 50-60 Hz
Size & Weight	
Size	258 mm x 173 mm x 74 mm (10.2 in x 6.8 in x 2.9 in)
Weight	2.2 kg (4.85 lbs)

Standard Accessories	
Rechargeable Li-Ion battery	E8000-0300
AC-DC adapter	FSP065-RAB
Vehicle Plug-in lighter adapter	E7000-0400
1.5m RF Test Port Cable, N(m), 6GHz	E7000-0702
Calibration Combo Open/Short/Load, N(m), 6GHz	E7000-0700
Soft carry case	E7000-0600
Measurement Center Software CD-ROM with Users-Manual	E7000-0200
Optional Accessories	
Precision "Y" Open/Short/Load Calibration Combination, N(m), DC-6GHz, 50Ω	E7000-700
Calibration Combo "Y" Open/Short/Load, N(f), DC-6GHz, 50Ω	E7000-709
Calibration Combo "T" Open/Short/Load, 7/16 DIN(m), DC-6GHz, 50Ω	DCAL-6DM-C
Calibration Combo "T" Open/Short/Load Calibration Combination, 7/16 DIN(f), DC-6GHz, 50Ω	DCAL-6DF-C
RF Test Port Cable, Armored, phase stable, 1.5m, N(m) to N(f), 18GHz, 50Ω	DTC-18NMNF-1.5
RF Test Port Cable, Armored, phase stable, 1.5m, N(m) to 7/16 DIN(f), 18GHz, 50Ω	DTC-18NMDF-1.5
RF Test Port Cable, Armored, phase stable,1.5m, N(m) to 7/16 DIN(m), 18GHz, 50Ω	DTC-18NMDM-1.5
RF Test Port Cable, Armored, phase stable,3.0m, N(m) to N(f), 18GHz, 50Ω	DTC-18NMNF-3.0
RF Test Port Cable, Armored, phase stable,3.0m, N(m) to 7/16 DIN(f), 18GHz, 50Ω	DTC-18NMDF-3.0
RF Test Port Cable, Armored, phase stable,3.0m, N(m) to 7/16 DIN(m), 18GHz, 50Ω	DTC-18NMDM-3.0
RF Test Port Extension Cable, phase stable, 1.5m, N(f) to N(f), 18GHz, 50Ω	DTC-18NFNF-1.5
Precision Adapter Kit, 50Ω (PNFNF, PNFD, PNFDF, PNTF)	DPAK-1000
Precision Adapter, N(f) to N(m), DC to 18GHz, 50Ω	DPA-NFNM
Precision Adapter, N(f) to N(f), DC to 18GHz, 50Ω	DPA-NFNF
Precision Adapter, N(f) to 7/16 DIN N(m), DC to 6GHz, 50Ω	DPA-NFDM
Precision Adapter, N(f) to 7/16 DIN N(f), DC to 6GHz, 50Ω	DPA-NFDF
Precision Adapter, N(f) to SMA(f), DC to 6GHz, 50Ω	DPA-NFSF

E7000A-SA Series
RF Analyzer

Key Benefits

- Perform cable feedline and antenna system analysis, spectrum analysis and power measurements in a single instrument
- Intuitive menu structure enables ease of use and quick measurements
- Performs comprehensive signal analysis for complete site profile and monitoring of signal environment
- Detect signal degradation and system performance over time with trace overlay
- Quickly identifies, locates and maps signal interference
- Handheld, lightweight, field-proven design withstands harsh environments and lighting conditions

Verify cell site performance – Cable feed line and antenna systems, RF transmission settings and spectrum signal analysis.

The E7000A-SA RF Analyzer combines the functionality of cable and antenna system analysis, spectrum analysis and power measurements, covering all measurements required for installation, deployment, maintenance and troubleshooting the physical layer of the wireless base station.

Designed specifically for wireless communications field engineers and technicians, the E7000A-SA Series RF Analyzers provide of full range of measurement capability to accurately characterize, maintain and troubleshoot wireless communication sites such as return loss, distance-to-fault location, tower mounted amplifier gain, antenna-to-antenna isolation, channel power, adjacent channel power, occupied bandwidth and field strength measurements. Interference Analysis function features spectrogram, RSSI, signal identification and location capability.

Standard Measurements & Applications (Cable & Antenna Analysis)

- Reflection – Return Loss or VSWR
- Fault Location – DFT/RL or DTF/VSWR
- Cable Loss
- 1-Port Phase
- Smith Chart

Standard Measurements & Applications (Spectrum Analysis)

- Spectrum Analysis
- Channel Power
- Occupied Bandwidth (OBW)
- Adjacent Channel Leakage Ratio (ACLR)
- Field Strength
- AM/FM

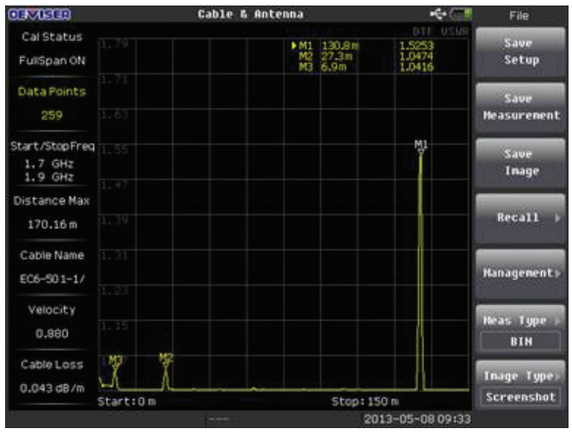
Optional Measurement Modes

- High Precision Power Meter (DML-015)
- Interference Analysis (DML-110)
- Coverage Mapping (DML-120)
- Transmission Measurement (DML-025)
- GPS Receiver (DML-999)

Key Measurements

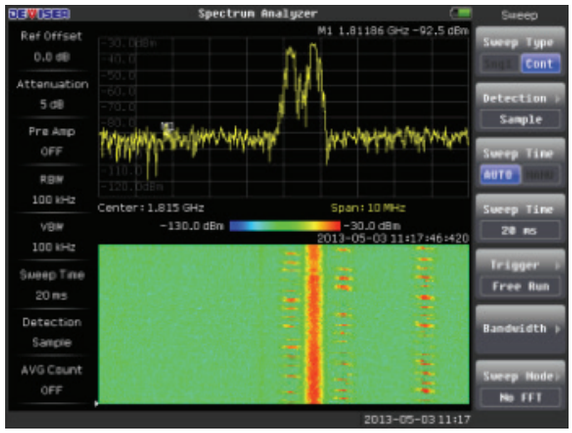
Distance-to-Fault (DTF) identifies the fault location of impairments within the cell-site transmission cable system. Fault location impairments and discontinuities can be detected by either DTF-Return Loss or DTF-VSWR measurements.

- E7000 A-Series can identify faults up to 5,000 feet (1,524m)
- High resolution enables up to 2,065 data points for locating pesky faults
- E7000 A-Series includes over 90 different cable types with the ability to add more
- User definable limit-line automatically indicates pass/fail condition
- Up to 6-Markers can be set for detailed analysis



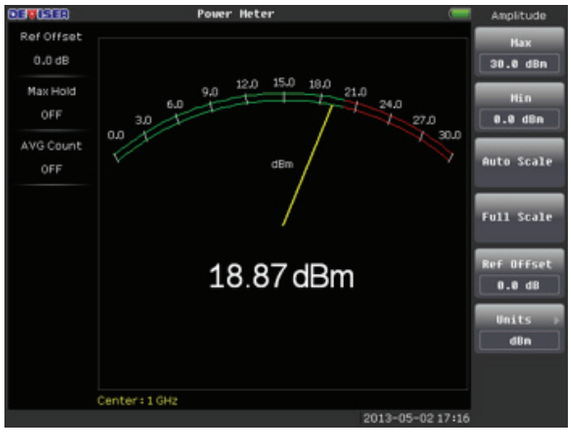
Interference Analysis can detect signal as low as -152 dBm and supports spectrogram display, RSSI, signal strength and signal ID capabilities.

- Spectrogram display features a three-dimensional display of frequency, power and time of spectrum activity enabling identification of intermittent signal interference, tracking these signals over time. The dual display screen allows for easy, simultaneous viewing of both the spectrum and spectrogram analysis
- Received Signal Strength Indicator (RSSI) observes and reports the signal strength of a single frequency over time
- Signal strength meter helps to locate interfering signals with the use of a directional antenna



Power Meter measures true RMS power for both CW and digitally modulated signals with an external power sensor

- Users can set minimum and maximum power limits to automatically indicate pass/fail status



Key Features

- **Dual Display** enables users to reduce test time by making two measurements simultaneously
- **Trace Overlay** enables users to easily detect signal and system degradation over time
- **2065 Data Points** enables users to detect faults that may otherwise go undetected, and to sweep cables up to 4,921ft. Allows users to fix minor faults before they become large problems
- **Multiple Display Modes** enables users to set the display to lighting condition. Modes include standard view, nighttime, high contrast
- **Connectivity** enables easy connection to PC's, storage devices and field sensors through the E7000A-SA USB port. LAN Ethernet port provides link to application software with PC
- **Measurement Center Software** provides users with all the necessary functionality to manage measurements and increase the instruments, including:
  - Quickly exchange data via USB or LAN connection
  - Retrieve or save measurements results
  - Export measurement results
  - Analyze measurement results and activate multiple markers and limit lines
  - Compare measurement results
  - Create and export new cable types, frequency bands and test setups
  - Generate and print reports

Specifications: Cable Analyzer

Frequency	
Frequency Range (E7000A)	1 MHz – 4.4 GHz
Resolution	1 kHz
Measurement Speed	
Reflection	< 1.0 mS/point
DTF	< 1.25 mS/point
Data Points	130, 259, 517, 1033, 2065
Measurement Accuracy	
Corrected Directivity	42 dB (typical, after standard OSL calibration) 38 dB (typical, after eCAL calibration)
Output Power	
O dBm (Nominal)	
Interference Immunity	
On-channel	+20 dBm @ >1 MHz of carrier frequency
Off-channel	+13 dBm within ± 10 kHz of carrier frequency
Measurements	
Return Loss	0 to 60dB
VSWR	1:1 to 65:1
DTF Range (Distance)	1500 meters (4921 feet)
Connectors (Reflection/RF Out)	
RF Out	Type N, female, 50Ω
RF Out Damage Level	25 dBm, ± 50 VDC
Power Sensors	
In-line Bi-Directional High Power Sensor, 300 MHz to 4GHz, 2mW to 150W, N(f) 50Ω	E7000A-050
Terminal Power Sensor	E7000A-040
Precision Adapters	
Precision Adapter Kit, 50Ω (PNMDM, PNFDM, PNMDF, PNFDF, PDFDF, PDFDM 90°)	DPAK-6G100
Precision Adapter, N(m) to N(m), DC to 18GHz, 50Ω	DPA-18NMNM
Precision Adapter, N(f) to N(f), DC to 18GHz, 50Ω	DPA-18NFNF
Precision Adapter, N(f) to 7/16 DIN(m), DC to 18GHz, 50Ω	DPA-18NFDM
Precision Adapter, N(f) to 7/16 DIN(f), DC to 18GHz, 50Ω	DPA-18NFDF
Precision Adapter, N(f) to SMA(f), DC to 18GHz, 50Ω	DPA-18NFSF
RF Test Port Extension Cable, phase stable, 1.5m, N(f) to N(f), 18GHz, 50Ω	DTC-18NFNF-1.5
Precision Adapter Kit, 50Ω (PNFNF, PNFD, PNFDF, PNTF)	DPAK-1000
Precision Adapter, N(m) to N(m), DC to 18GHz, 50Ω	DPA-NMNM
Precision Adapter, N(f) to N(m), DC to 18GHz, 50Ω	DPA-NFNM
Precision Adapter, N(f) to N(f), DC to 18GHz, 50Ω	DPA-NFNF
Precision Adapter, N(f) to 7/16 DIN N(m), DC to 6GHz, 50Ω	DPA-NFDM
Precision Adapter, N(f) to 7/16 DIN N(f), DC to 6GHz, 50Ω	DPA-NFDF
Precision Adapter, N(f) to SMA(f), DC to 6GHz, 50Ω	DPA-NFSF

Standard Accessories	
Rechargeable Li-Ion battery	E8000-0300
AC-DC adapter	FSP065-RAB
Vehicle Plug-in lighter adapter	E7000-0400
1.5m RF Test Port Cable, N(m), 6GHz	E7000-0702
Calibration Combo Open/Short/Load, N(m), 6GHz	E7000-0700
Soft carry case	E7000-0600
Measurement Center Software CD-ROM with Users-Manual	E7000-0200
Optional Accessories	
Precision "Y" Open/Short/Load Calibration Combination, N(m), DC-6GHz, 50Ω	E7000-700
Calibration Combo "Y" Open/Short/Load, N(f), DC-6GHz, 50Ω	E7000-709
Calibration Combo "T" Open/Short/Load, 7/16 DIN(m), DC-6GHz, 50Ω	DCAL-6DM-C
Calibration Combo "T" Open/Short/Load Calibration Combination, 7/16 DIN(f), DC-6GHz, 50Ω	DCAL-6DF-C
RF Test Port Cable, Armored, phase stable, 1.5m, N(m) to N(f), 18GHz, 50Ω	DTC-18NMNF-1.5
RF Test Port Cable, Armored, phase stable, 1.5m, N(m) to 7/16 DIN(f), 18GHz, 50Ω	DTC-18NMDF-1.5
RF Test Port Cable, Armored, phase stable,1.5m, N(m) to 7/16 DIN(m), 18GHz, 50Ω	DTC-18NMDM-1.5
RF Test Port Cable, Armored, phase stable,3.0m, N(m) to N(f), 18GHz, 50Ω	DTC-18NMNF-3.0
RF Test Port Cable, Armored, phase stable,3.0m, N(m) to 7/16 DIN(f), 18GHz, 50Ω	DTC-18NMDF-3.0
RF Test Port Cable, Armored, phase stable,3.0m, N(m) to 7/16 DIN(m), 18GHz, 50Ω	DTC-18NMDM-3.0
RF Test Port Extension Cable, phase stable, 1.5m, N(f) to N(f), 18GHz, 50Ω	DTC-18NFNF-1.5
Precision Adapter Kit, 50Ω (PNFNF, PNFD, PNFDF, PNTF)	DPAK-1000
Precision Adapter, N(m) to N(m), DC to 18GHz, 50Ω	DPA-NMNM
Precision Adapter, N(f) to N(m), DC to 18GHz, 50Ω	DPA-NFNM
Precision Adapter, N(f) to N(f), DC to 18GHz, 50Ω	DPA-NFNF
Precision Adapter, N(f) to 7/16 DIN N(m), DC to 6GHz, 50Ω	DPA-NFDM
Precision Adapter, N(f) to 7/16 DIN N(f), DC to 6GHz, 50Ω	DPA-NFDF
Precision Adapter, N(f) to SMA(f), DC to 6GHz, 50Ω	DPA-NFSF

Specifications: Spectrum Analyzer

Frequency	
Frequency Range	9 kHz – 3.0 GHz
Tuning Resolution	1 Hz
Aging	<± 1.0ppm/yr
Frequency Span	1 kHz to 3GHz in 1-2-5 sequence (automode), and 0 Hz (zero span)
Bandwidth	
Resolution Bandwidth (RBW)	10Hz to 3MHz in 1-3 sequence (auto or manually selectable)
Video Bandwidth (VBW)	10Hz to 1MHz in 1-3 sequence (auto or manually selectable)
Spectral Purity (Phase Noise)	
@ 1 kHz Offset from carrier	-85 dBc/Hz
@ 10 kHz Offset from carrier	-95 dBc/Hz
@ 100 kHz Offset from carrier	-100 dBc/Hz
Amplitude	
Dynamic Range	> 95 dB
Measurement Range	DANL to maximum safe input level
Maximum Safe Input	+30dBm (peak power, input attenuation > 15dB), 50VDC
Amplitude Accuracy	≤ ± 1.0 dB
Attenuator Range	0 dB to 55 dB in 5 dB steps
Displayed Average Noise Level (DANL)	
(Input terminated, RBW = 10 kHz, Attn = 0 dBm, Sample Detector)	
Preamp Off	≤ -142 dBm, typical (1MHz – 1GHz) ≤ -138 dBm, typical (1GHz – 3GHz)
Preamp On	≤ -155 dBm, typical (1MHz – 1GHz) ≤ -151 dBm, typical (1GHz – 3GHz)
Connectors	
RF In	Type N, female, 50Ω
RF In Damage	+30 dBm, +50 VDC
Connectivity	
USB host	Type A, 1-Port (connect flash drive for data transfer)
USB client	5-pin mini-B (connect to PC for data transfer)
LAN	10M/100M LAN Port
Display	
Type / Size	TFT LCD / 6.5" (640 x 480)
Data Storage	
Internal	1 GB, > 2000 saved measurement files
External	Limited by size of USB flash drive
Battery	
Type	Li-Ion, 11.1V, 5.2AH
Operation	> 6 hours, continuous; 8.0 hrs, idle (CA mode) > 4.5 hours, continuous; 8.0 hrs, idle (SA mode)
Environmental	
Operating Temperature	-10°C to + 55 °C
Storage Temperature	-20 °C to + 75 °C
Shock	Mil-PRF-28800F Class 2
EMC	
European EMC	IEC/EN 61326-1:2006
AC Power	
AC Adapter Output	15-19 VDC
AC Adapter Input	100 – 240 VAC, 50-60 Hz
Size & Weight	
Size	258 mm x 173 mm x 74 mm (10.2 in x 6.8 in x 2.9 in)
Weight	2.2 kg (4.85 lbs)

Optional Accessories	
RF Test Port Cable, Armored, 1.5m, N(m) to N(f), 18GHz, 50Ω	DTC-18NMNF-1.5
RF Test Port Cable, Armored, 1.5m, N(m) to 7/16 DIN(f), 18GHz, 50Ω	DTC-18NMDF-1.5
RF Test Port Cable, Armored, 1.5m, N(m) to 7/16 DIN(m), 18GHz, 50Ω	DTC-18NMDM-1.5
RF Test Port Cable, Armored, 3.0m, N(m) to 7/16 DIN(f), 18GHz, 50Ω	DTC-18NMDF-3.0
RF Test Port Cable, Armored, 3.0m, N(m) to 7/16 DIN(m), 18GHz, 50Ω	DTC-NMDM-3.0
Attenuators	
10W, 6dB, DC-6GHz, N(f) to N(m)	DATT-6NFNM-10-6
50W, 30dB, DC-6GHz, N(f) to N(m)	DATT-6NFNM-50-30
100W, 40dB, Bi-Directional, DC-18GHz, N(f) to N(m)	DATT-6NFNM-100-40
Directional Antennas	
806-960 MHz, N(f), 10 dBi, Yagi	ET0806D
822-900 MHz, N(f), 10 dBi, Yagi	ET0850D
824-960 MHz, N(f), 10 dBi, Yagi	ET0824D
885-970 MHz, N(f), 10 dBi, Yagi	ET0900D
1710-1880 MHz, N(f), 10 dBi. Yagi	ET1800D
1850-1990 MHz, N(f), 10 dBi, Yagi	ET1900D
1920-2170 MHz, N(f), 10 dB, Yagi	ET2100D
2400-2500 MHz, N(f), 10 dBi, Yagi	ET2400D
9 kHz to 20 MHz, log periodic	ET0020L
20 MHz to 200 MHz, log periodic	ET0200L
200 MHz to 500 MHz, log periodic	ET0500L
500 MHz to 3 GHz, log periodic	ET3000L
Portable Antennas	
470-860 MHz, SMA(m), 50 Ω	ET0470P
806-866 MHz, SMA(m), 50 Ω	ET0850P
870-960 MHz, SMA(m), 50 Ω	ET0900P
1710 to 1880 MHz, SMA(m), 50 Ω	ET1800P
1850 to 1990 MHz, SMA(m), 50 Ω	ET1900P
1920 to 2170 MHz, SMA(m), 50 Ω	ET2100P
2400 to 2500 MHz, SMA(m) , 50 Ω	ET2400
5725 to 5875 MHz, SMA(m), 50 Ω	ET5800

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