DEVISER Wireless

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)

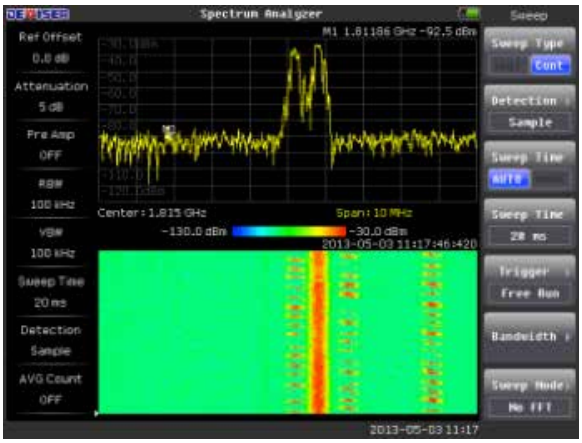
Key Measurements

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

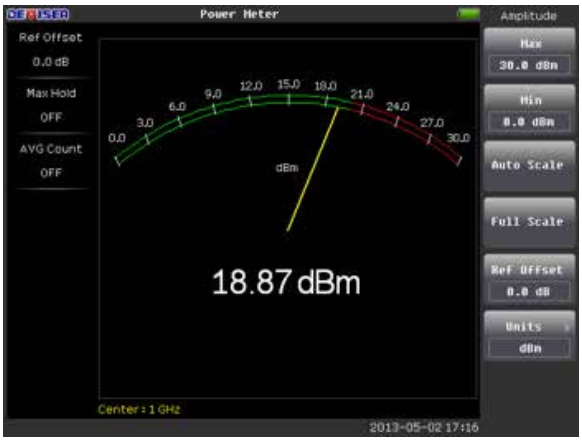
Interference Analysis can detect signal as low as -152 dBm and supports spectrogram display, RSSI, signal strength and signal ID capabilities.

- 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. Also enables users 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	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	
0 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 peak

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