

Site PROFILER™ E7000L Cable & Antenna Analyzer

Key Benefits

- Handheld, lightweight, field-proven, hardened design for harsh environments and lighting conditions
- 100+ wireless frequency bands and cable type presets for best ease of use
- Reduced test time with dual simultaneous measurement display
- Detect signal degradation and system performance over time with trace overlay
- Instant Pass/Fail results
- Manage your test setups & results with Measurement Center Software (MCS)
- Intuitive touchscreen user interface for easier, faster measurements



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

Global deployment of wireless networks puts enormous pressure on wireless professionals and contractors who install, maintain and troubleshoot wireless communication networks. The main issues occurring in wireless network installations is often occur related to the cable and antenna system and associated RF connectors within the base station infrastructure. Compounding the problem, often times the cell sites are located in rural or difficult to access locations.

Designed specifically for carriers, wireless professionals and contractors, the E7000 Series of Cable & Antenna Analyzers provides all necessary measurement functions and performance capabilities to accurately diagnose and verify the site's cable & antenna systems and RF connectors, as well as basic fiber-feedline testing.

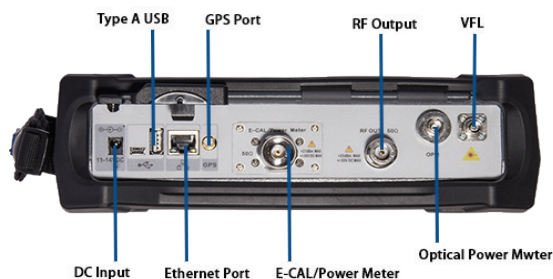
Standard Configuration Includes

- Cable and Antenna Analyzer, 2MHz to 4.4GHz
- Internal E-Calibration Module, 2MHz to 4.4GHz
- Internal RF Power Meter Module, 20MHz to 4.4GHz

Key Measurement Includes

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

E7000L Top View



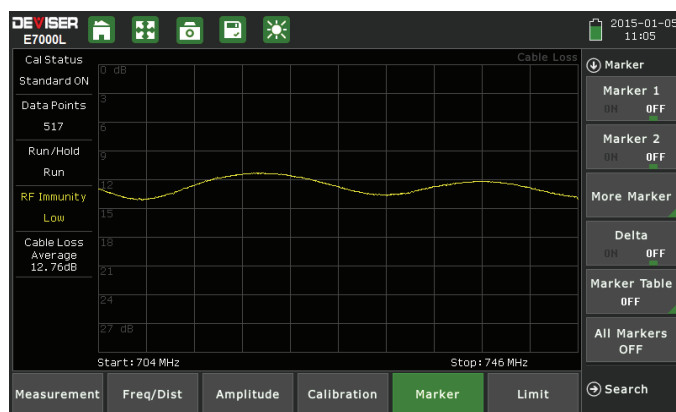
E7000L Top View



Key Measurements

Reflection measures the cell-site transmission line impedance performance across the selected frequency range in VSWR or Return Loss.

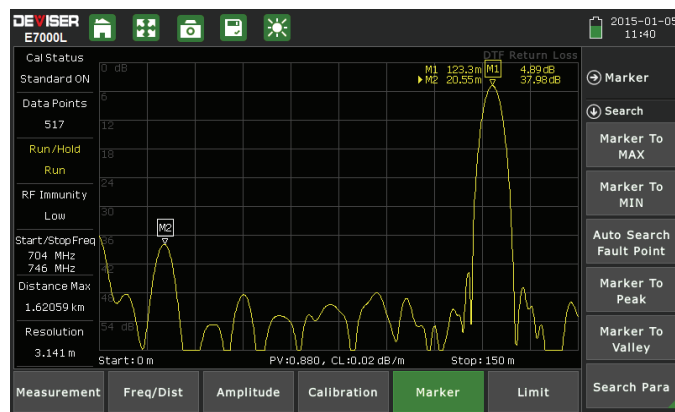
- The instrument's database offers over 100 wireless frequency bands and more can be customized.
- A user-definable limit line will automatically indicate pass/fail status.
- Users can set up to eight markers for trace analysis.



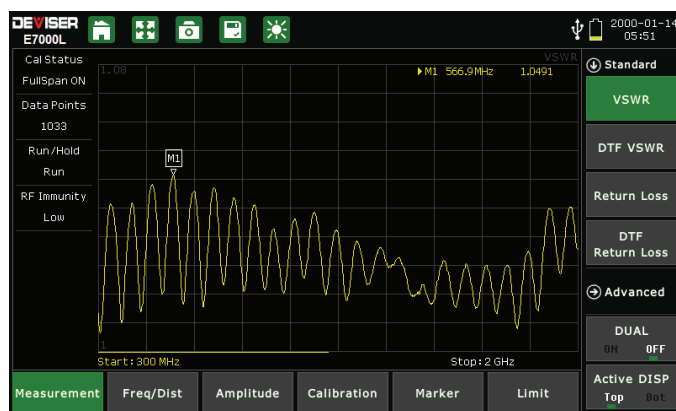
Reflection — Return Loss

Distance to Fault (DTF) identifies fault locations at cell-sites indicating signal discontinuities using VSWR or Return Loss.

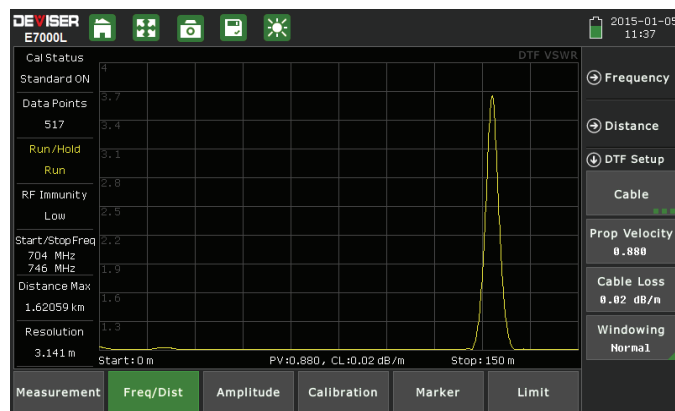
- Cable lengths up to 1,500 meters (4,921 ft)
- High-resolution mode with 2065 data points.
- The instrument's database includes over 100 cable types and more can be customized.
- A user-definable limit line will automatically indicate pass/fail status.
- Users can set up to eight markers for trace analysis.



DTF-Return Loss



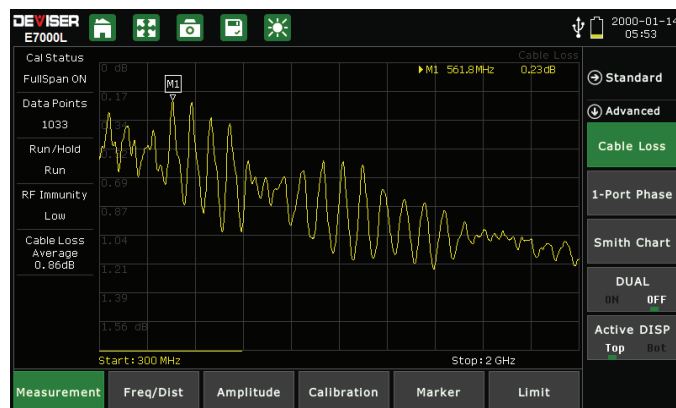
VSWR



DTF-VSWR

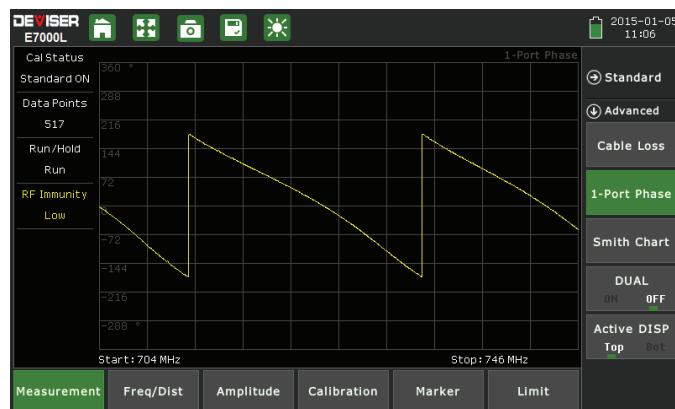
1-Port Cable Loss measures the signal loss through cables or other devices over a user defined frequency range.

- A user-definable limit line automatically indicates pass/fail status.
- Users can set up to eight markers for trace analysis.



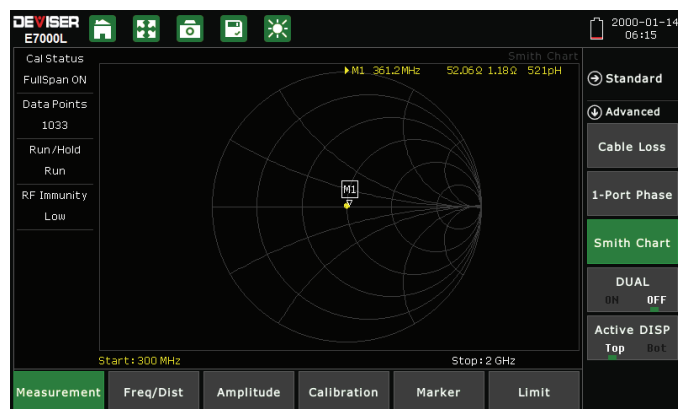
1-Port Cable Loss

1-Port Phase measures S11 phase to tune antennas and to phase-match cables.



1-Port Phase

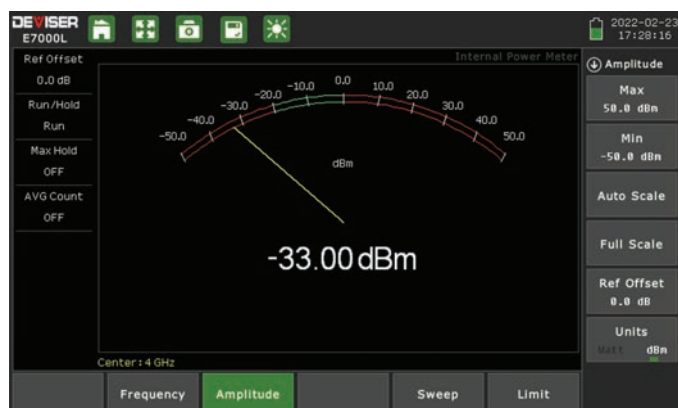
Smith Chart displays impedance matching characteristics in cable and antenna systems and RF devices.



Smith Chart

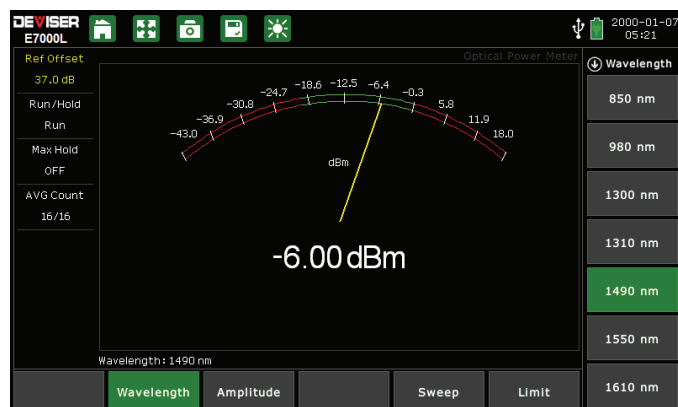
Internal RF Power Meter measurement mode provides standard-accuracy RF power testing without the need for additional equipment. Simply connect the source to be measured to the N(m) power meter FC connector on the instrument's top panel.

- Power measurement range: -33 dBm to +20 dBm
- It is recommended to use an external optical attenuator for high power measurement

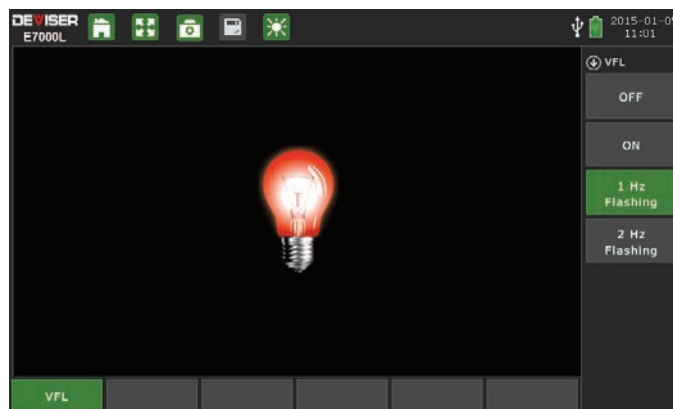


RF Power Meter

Optical Power Meter and VFL displays impedance matching characteristics in cable and antenna systems and RF devices.



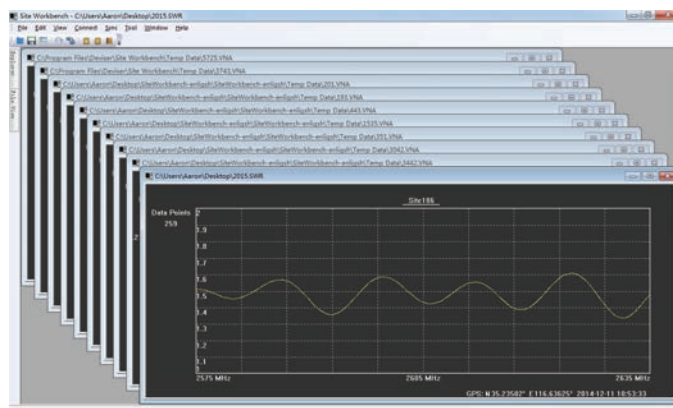
Optical Power Meter



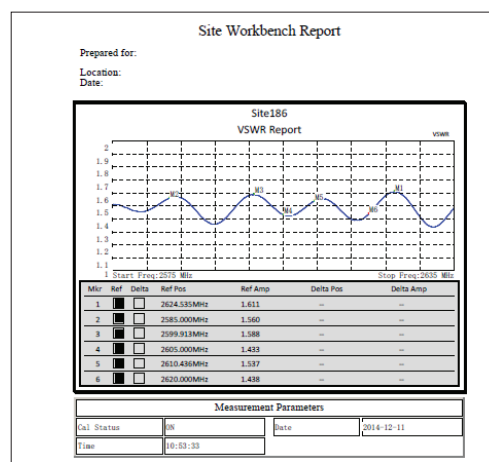
Visual Fault Locator

The Built-in GPS (Optional, requires external GPS Antenna) is used to confirm the exact location (longitude, latitude, altitude) of measurement, as well as Universal Time (UT) information. Each trace can be stamped with location information to ensure you are taking measurements at the right location and save it for records purposes.

Workbench PC software provides a simple and easy way to manage, archive, and analyze current and past measurements, as well as generate and print reports. The software package also allows you to customize your cable, antenna, and signal standards lists.



Workbench PC Software



Report Generation

- Workbench's **Remote Access** tool enables users to perform tests and measurements remotely through their Deviser equipment.



Remote Access

Technical Specifications

Cable & Antenna Analyzer	
Measurement	VSWR Return Loss Cable Loss Distance-to-Fault (DTF) Return Loss Distance-to-Fault (DTF) VSWR 1-Port Phase Smith Chart
Frequency	
Frequency Range	2 MHz to 4400MHz
Frequency Accuracy	±2 ppm
Frequency Resolution	0.5kHz
Output Power	
High	0 dBm (nominal)
Low	-30 dBm (nominal)
Measurement Speed	
Reflection	< 1.0 mS/point
DTF	< 1.25 mS/point
Measurement Accuracy	
Corrected Directivity	42dB (typical, after standard OSL calibration) 38dB (typical, after E-CAL calibration)
Interference Immunity	
On-channel	+18 dBm @ >1 MHz of carrier frequency
Off-channel	+13 dBm within ± 10 kHz of carrier frequency
Return Loss	
Measurement Range	0 to 60dB
Resolution	0.01 dB
VSWR	
Measurement Range	1 to 65
Resolution	0.0001
Cable Loss	
Measurement Range	0 to 30dB
Resolution	0.01 dB
Distance to Fault	
Vertical Range Return Loss	0 to 60dB

Vertical Range VSWR	1 to 65
Horizontal Range (m)	0 to (Data Points – 1) x Fault Resolution, to maximum of 1500 meters (4921 ft)
Fault Resolution(m)	(Vp x C)/(Span x 2)
Data Points	130,259,517,801,1033,2065
1-Port Phase	
Measurement Display Range	-450° to +450°
Resolution	0.01 °
Smith Chart	
Impedance	50Ω
Resolution	0.01
Connectors (Reflection/RF Out)	
RF Out	Type N, female, 50Ω
RF Out Damage Level	+25 dBm, ± 50 VDC
Internal RF Power Meter	
Frequency range	20MHz to 4400MHz
Amplitude	Maximum, Minimum, Auto Scale, Full Scale, Ref Offset, Units
Average	Run/Hold, Max Hold On/Off, AVG Count, Averaging On/ Off, AVG Factor
Limit	Limit On/Off, Upper Value, Lower Value
Units	Watt, dBm
Display Range	0 W to 1000mW / -133 dBm to +120 dBm
Measurement Range	-33 dBm to +20 dBm
Offset Range	Max ± 100 dB, user settable value
VSWR	1.5:1 typical
Maximum Power	+27 dBm, ± 50 VDC (damage level)
Connector	Type N(m), 50 Ω
Accuracy	± 0.5 dB (23 °C ± 3 °C)
Frequency Response and Linearity	Additional ± 0.8 dB (± 0.5 dB typical)
Temperature Effect	Additional ± 0.02 dB per 1 °C change (typical)

Optical Power Meter and VFL(Optional)	
Detector Type	InGaAs $\Phi 300\mu\text{m}$
Measurement Range	-50dBm ~ +27dBm
Wavelength	850/980/1300/1310/1490/1550/1610 nm
Accuracy	$\pm 0.17\text{dB}(\pm 3\%)$
Resolution	0.01 dBm, mW, uW, nW
Optical Adapter	FC\SC\ST changeable adapter
VFL	650nm, 10mW, Adapter: FC/PC
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 Trace Storage	1 GB, > 2000 saved measurement files, >2000 setup files, >800 BMP files
External Trace Storage	Limited by size of USB flash drive

Battery	
Type	Li-Ion, 7.2V, 8.7AH
Operation	Typical> 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
Dimensions & Weight	
Dimensions	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)

Ordering Information

Standard Configuration and Accessories (included with instrument)

Part No.	Ordering No.	Description
E7000L	0130.7000.12	Cable and Antenna Analyzer, 2MHz to 4.4GHz
E7000L-1000	2130.7000.27	Internal E-Calibration Module, 2MHz to 4.4GHz
E7000L-0040	2130.7000.28	Internal RF Power Meter Module, 20MHz to 4.4GHz
E7000-702	6190.0501.03	Test Extension Cable, 1.5m, N(m) to N(f), 6GHz, 50 Ω
E7000-700	6190.0501.01	Precision "Y" Open/Short/Load Calibration Combination, N(m), DC-6GHz
DS2800-008	6110.0600.14	Soft Carrying Case
HYLB-1842B	6130.0100.01	Rechargeable Li-Ion Battery(7.2V/8700mAh)
FSP060-DBAE1	6290.0700.01	AC-DC Power Adapter
AE4000-730	6290.0900.01	Stylus with Coiled Tether
DS2800-010	6110.0600.17	Carabineer Red Deviser Logo
DS2800-011	6110.0600.18	Carabineer Blue Deviser Logo
DS2800-012	6110.0600.19	Plated Key Ring
		Standard Three-Year Warranty (LCD, Battery and Accessories one-year warranty), Certificate of Calibration and Conformance, Download Guide for User Manual and Workbench PC Software

Options

OPM Model	2130.7000.29	Optical Power Meter and VFL Module
DS2500-704	2121.8000.28	GPS Dongle (USB Connector)
E7000-757	6130.0600.30	GPS Antenna
E7000L-0030	2130.7000.30	Built-in GPS Module

Optional Accessories

Accessories - Calibration Kit		
E7000-710	6190.0501.20	Precision "Y" Open/Short/Load Calibration Combination, N(f), DC-6GHz
Accessories - RF Cables		
E7000-741	6190.0500.00	Test Extension Cable, 1.5m, N(m) to N(m), 6GHz, 50Ω
E7000-742	6190.0500.98	Test Extension Cable, 3m, N(m) to N(f), 6GHz, 50Ω
E7000-743	6190.0501.69	Test Extension Cable, 3m, N(m) to N(m), 6GHz, 50Ω
E7000-705	6190.0501.15	RF Test Port Cable, Unarmored, Phase Stable, 1.5m, N(m) to 7/16 DIN(f), 6GHz, 50Ω
E7000-706	6190.0501.16	RF Test Port Cable, Unarmored, Phase Stable, 1.5m, N(m) to 7/16 DIN(m), 6GHz, 50Ω
E7000-756	6190.0501.82	RF Test Port Cable, Armored, Phase Stable, 1.5m, N(m) to N(f), 6GHz, 50Ω
E7000-744	6190.0501.70	RF Test Port Cable, Armored, Phase Stable, 1.5m, N(m) to N(m), 6GHz, 50Ω
E7000-745	6190.0501.71	RF Test Port Cable, Armored, Phase Stable, 3.0m, N(m) to N(f), 6GHz, 50Ω
E7000-746	6190.0501.72	RF Test Port Cable, Armored, Phase Stable, 3.0m, N(m) to N(m), 6GHz, 50Ω
Accessories - Adapters		
E7000-717	6190.0501.27	Adapter, DIN 7/16 (f) -N (m), DC-7.5GHz, 50Ω
E7000-718	6190.0501.28	Adapter, DIN 7/16 (f) to N(f), DC to 7.5GHz, 50Ω
E7000-719	6190.0501.29	Adapter, DIN 7/16 (m) to N(f), DC to 7.5GHz, 50Ω
E7000-721	6190.0501.31	Adapter, DIN 7/16 (m) to DIN 7/16(m), DC to 7.5GHz, 50Ω
E7000-722	6190.0501.32	Adapter, DIN 7/16 (f) to DIN 7/16(f), DC to 7.5GHz, 50Ω
E7000-723	6190.0501.33	Adapter, DIN 7/16 (f) to DIN 7/16(m), DC to 7.5GHz, 50Ω
E7000-720	6190.0501.30	L29/N-JK Converter
Accessories - Power Attenuators		
E7000-747	6190.0501.73	Power Attenuator 5W, 20dB, DC-6GHz, N(m) to N(f)
E7000-748	6190.0501.74	Power Attenuator 5W, 30dB, DC-6GHz, N(m) to N(f)
E7000-749	6190.0501.75	Power Attenuator 5W, 20dB, DC-18GHz, N(m) to N(f)
E7000-750	6190.0501.76	Power Attenuator 5W, 30dB, DC-18GHz, N(m) to N(f)
E7000-751	6190.0501.77	Power Attenuator 50W, 30dB, DC-8.5GHz, N(m) to N(f)
E7000-752	6190.0501.78	Power Attenuator 100W, 40dB, DC-4GHz, N(m) to N(f)
E7000-753	6190.0501.79	Power Attenuator 100W, 40dB, DC-8.5GHz, N(m) to N(f)
E7000-754	6190.0501.80	Power Attenuator 150W, 40dB, DC-4GHz, N(m) to N(f)
E7000-755	6190.0501.81	Power Attenuator 150W, 40dB, DC-8.5GHz, N(m) to N(f)
Accessories – Power Adapter Plug Cord		
AE4000-733	6290.0500.03	Power Adapter Plug Cord (Europe)
AE4000-734	6290.0500.04	Power Adapter Plug Cord (Unite States)
AE4000-735	6290.0500.05	Power Adapter Plug Cord (United Kingdom)
AE4000-736	6290.0500.06	Power Adapter Plug Cord (Australia)