DEVISER Wireless

DENVER
metrología electrónica, S.L.

SignalPROFILER
E7062B

2 MHz ~ 6 GHz (CA)
9kHz ~ 6 GHz (SA)

Key Benefits

- RF, fiber and wireless signal quality testing – in a single instrument
- Perform traditional RF feedline tests, inspect fiber connectors with auto pass/fall 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

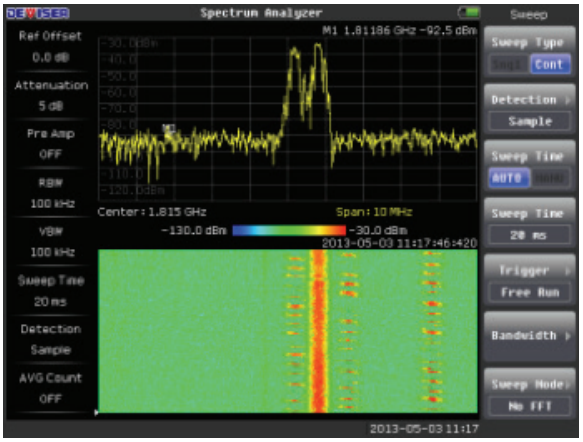
Distance-to-Fault (DTF) identifies the fault location of impairments within the cell-site transmission cable system. Fault location impairments and discontinuities can be detected by either DTF-Return Loss or DTF-VSWR measurements.

- 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
- Up to 6 markers can be set 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.

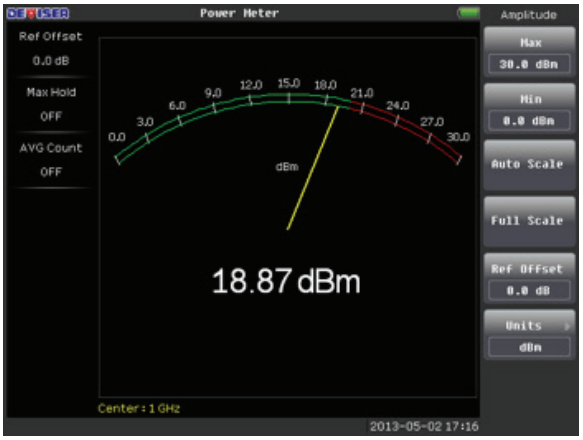
Interference Analysis can detect signal as low as -152 dBm and supports spectrogram display, RSSI, signal strength and signal ID capabilities.

- 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 – 6 GHz
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	
0 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 – 6 GHz
Tuning 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)	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 = 1 Hz, Attn = 0 dBm, Avg 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)

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	> 6.0 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