

# DEVISER®

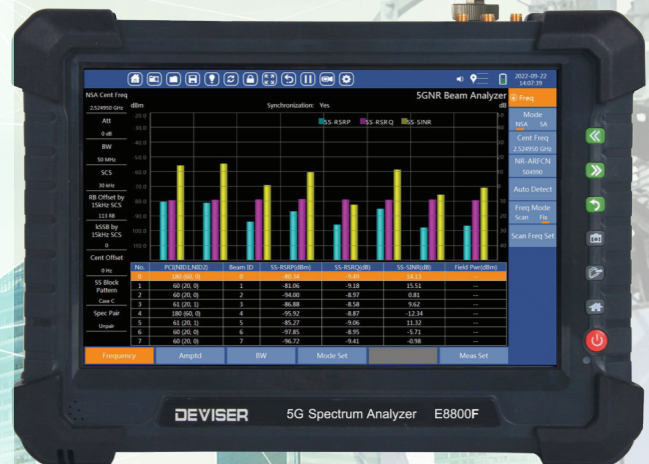


## 5G NR Spectrum Analyzer

### E8800C/D/E/F

#### Key Benefits

- High-performance handheld analyzer for construction & maintenance of 5G NR systems
- Frequency range 9 kHz ~ 43 GHz
- High-speed S/A analysis, measuring 30GHz/s
- Up to 110MHz bandwidth RTSA and 100% POI less than 5us
- Test and demodulate 5G NR (FR1 & FR2); TDD-LTE; FDD-LTE signals
- IQ data acquisition
- Additional modes include spectrogram; DPS; gated sweep; GPS data for locating interference
- 10.1" capacitive touchscreen for easy control & visibility
- Numerous data transfer options: LAN, USB, & more



[www.deviserinstrument.com](http://www.deviserinstrument.com)

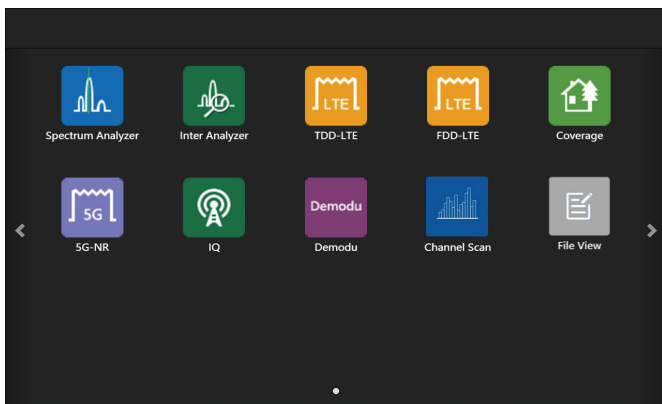
## E8800C/D/E/F 5G NR Spectrum Analyzer

### Overview

With radio bandwidth requirements escalating to all-time highs, the 5G New Radio (NR) standard is poised to change the landscape of Wireless communications. 5G NR promises to elevate the possibilities of 5G network service to all-new levels of flexibility and efficiency.

To claim a foothold in this space, providers and technicians must be able to characterize higher frequencies - and at higher speeds - than was possible in previous generations of spectrum analysis.

To meet this need, Deviser Instruments has designed the E8800F: a 5G NR spectrum analyzer boasting a frequency range of 9 kHz to 43 GHz, a wider-than-ever IF span of 110 MHz, the speed to conduct 3 full-span sweeps per second at less than 25kHz RBW, and a range of digital and analog test modes designed to provide a comprehensive picture of the signal environment - including 5G NR gNB demodulation and high-accuracy interference location.



All apps



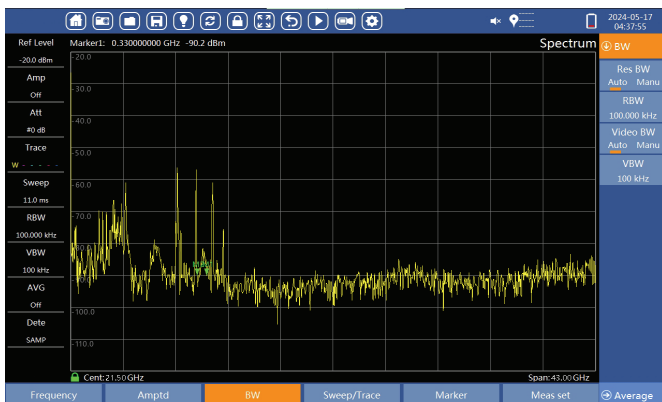
### Signal Scan Up To 43 GHz

#### Spectrum Analysis

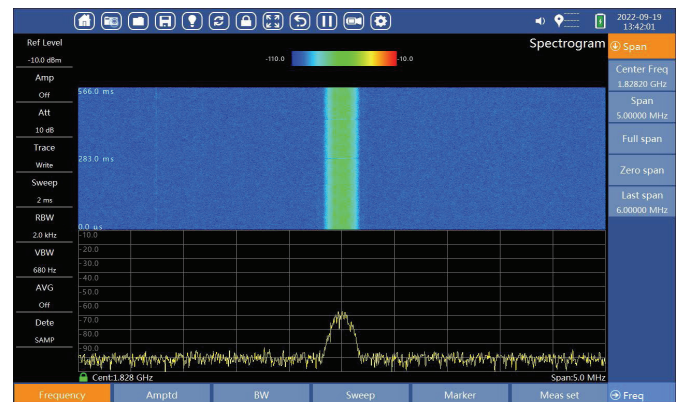
The E8800F performs standard spectrum analysis up to 43 GHz and 5G NR analysis support 5G FR1 and FR2 band. Rapid sweeps help capture bursty signals in real time, and deep customization options allow both new and experienced technicians to zero in on key data.

#### Spectrogram

The built-in Interference Analyzer mode targets hard-to-isolate signals that can threaten a system's capacity and coverage. Use the 3D Spectrogram tool to monitor change in the signal environment over time.



**Figure 1:** Standard spectrum analyzer with frequency range of 10MHz to 43 GHz, >100 dB of dynamic range @ 1 GHz and DANL -160dBm/Hz@1GHz



**Figure 2:** The spectrogram provides a scrolling three-dimensional display for tracking amplitude over time.

Digital Persistence Spectrum

Persistence testing separates the intended signal transmission from underlying low-level interference signals with supreme clarity, with no service interruptions at any point.

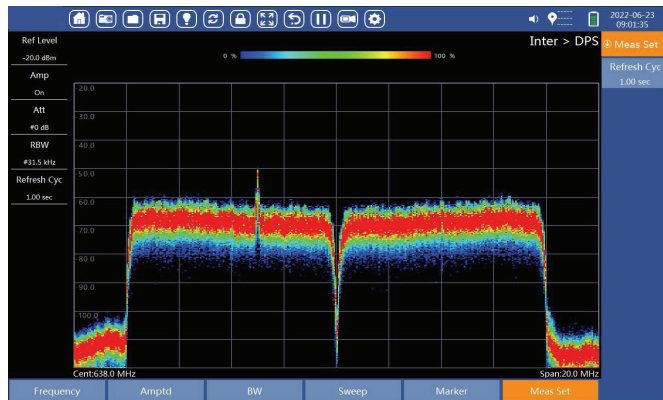


Figure 3: DPS mode reveals "hidden" ingress signal.

Oriente

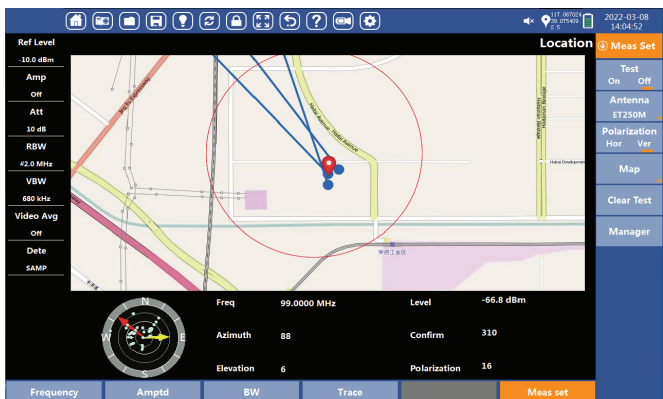
Users need to use directional antenna with GPS and electronic compass. Directional antenna is used to test the direction of the strongest interference frequency signal, electronic compass is used to automatically record the direction information of the test signal value, and GPS is used to automatically record the longitude and latitude of the current test point.



Location

Using directional antenna, GPS, electronic compass, electronic map, through the angle of arrival(AoA) direction finding method, locate the interference source;

In each test point, the directional antenna is used to test the interference signal, which direction appears the strongest signal



RTSA (Real Time Spectrum Analyzer)

RTSA supports max to 110MHz bandwidth fix frequency mode spectrum analysis. The 100% POI can reach to 5us which can catch the burst signal. It supports show the spectrogram and DPS together.

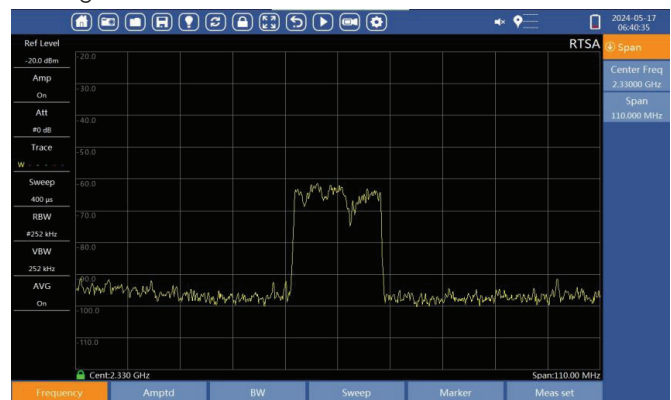


Figure 4: Real Time Spectrum Analyzer.

TDD-LTE Testing

TDD-LTE demodulation analysis includes channel power, cell ID, 4G time-division multiple-access signal analysis, sub-frame spectrum, and special sub-frame demodulation indicators.



Figure 5: TDD-LTE power vs. time measurement.

5G NR FR2

The E8800F's primary toolkit provides a typical measurement methodology for 5G new radio (NR) in the frequency ranges one (FR1) and two (FR2). It can meet the new subcarrier interval requirements and provide the measured value of PCI, Beam ID, SS-RSRP, SS-SINR, EVM, SSB constellation and more, which is up to 64 beams.



Figure 6: 5G NR FR2.

5G NR FR1 Beam Analyzer

The 5G-NR Beam Analyzer is a key feature of the E8800F's new demodulation analysis suite. This mode is configured for Massive MIMO systems, enabling you to track and measure 8 beam IDs simultaneously.



Figure 7: 5G NR FR1 beam analyzer measures up to 8 beams at once.

Outdoor Coverage Test

In conjunction with an external GPS antenna, conduct 4G & 5G outdoor drive tests to obtain signal maps of entire test sites.

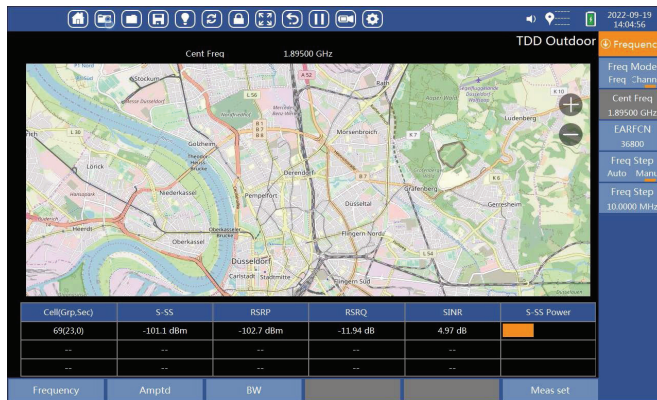


Figure 9: Drive tests map local cell ID, power, etc. onto GPS pin.

5G NR Interference Detection

Use the Interference Detection mode with a directional antenna to hunt down ingress signals in a 360-degree swath.

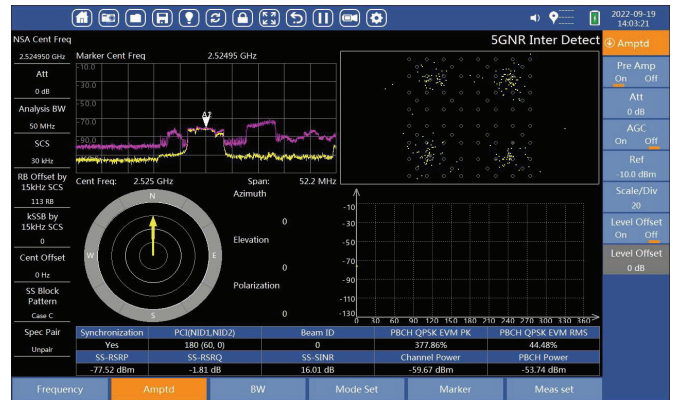


Figure 8: 5G NR interference detection.



Shoulder Harness



GPS Antenna



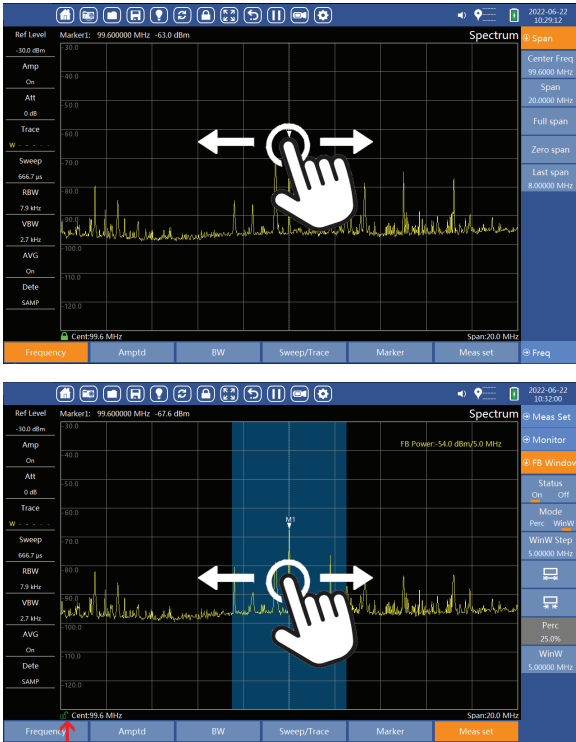
Power Supply DC Vehicle Adapter



### Multitouch

Multitouch operation with finger movement can adjust marker position and center frequency.

Before moving the center frequency, press the lock button at the lower left corner to unlock the screen as illustrated below.



### Recording

#### 1. Screen Capture

User can save the information on screen.

#### 2. Screen Recording

User can save the recording video, the device also supports video playback

#### 3. Status and Trace

User can select the Status to save the measurement screen or select Trace to record the spectrum trace. Power level vs. frequency can then be analyzed offline.

### Accessories

1	User Manual
2	Ethernet cable
3	Rechargeable Li-ion Battery (2 sets)
4	Power Cord with AC/DC Power Supply
5	USB Cable (USB 3.0 Type-A to Type-C, 1 meter length)
6	Soft Carry Case
7	Hard Carry Case with wheels
8	External Dual Charger
9	Tripod Set (1 meter)
10	Backpack (for E8800F base unit and accessories)
11	Service Manual

### Remote Control & Data Transfer

#### Smart Device Operation

The instrument can be operated remotely on smart device or computer through the connection to Cloud service.

#### 1. Wi-Fi

- 1). Insert USB Wi-Fi dongle and go to System Settings | Network to enable Wi-Fi hotspot and remote control.
- 2). Search for access point from Wi-Fi settings on computer or smart devices to join. Launch VNC Client, enter IP address and password to connect for remote desktop.

Computer or smart devices can also connect through Cloud server to the instrument for remote control to operate and display real-time measurement information.



#### 2. LAN Connection

- 1). In order to connect to the instrument through its LAN port, use an Ethernet cable to connect the computer or smart devices to the instrument and configure its IP address to be the same subnet as the instrument.
- 2). Download VNC Client to install on computing device. Launch the VNC Client, enter the IP address of the instrument and password to connect.



#### 3. Screen Projection

Connect the HDMI port of the instrument to project the instrument screen to HD TV or monitor. It's useful for education or technical training sessions.



## Specifications

Spectrum Analyzer	
Model	E8800C/D/E/F
Frequency range	9kHz~18GHz/26.5GHz/35GHz/43GHz
IF bandwidth	110MHz
SSB Phase noise (@1 GHz)	Input Signal : 1GHz, -20dBm Spectrum: Center Frequency=1GHz, RBW=1kHz, Average=OFF, Sweep Time=1s, Detector=RMS, AMP=Off, Attenuation=0dB, Sweep Points=10001, Span set to 50kHz,500kHz and 5MHz
	Offset 10kHz: -95 dBc/Hz -103 dBc/Hz (typical)
	Offset 100kHz: -98 dBc/Hz -105 dBc/Hz (typical)
	Offset 1MHz: -110 dBc/Hz -116 dBc/Hz (typical)
Displayed average noise level (DANL)	Termination 50 $\Omega$ , Attenuation=0dB, RBW=10kHz, Average=On, 100 times, Sweep Time=Auto, Detector=RMS, normalized to 1 Hz
	preamp off: 10MHz to 7.5GHz: -134 dBm, -145dBm(typ.) 1GHz, -145 dBm 7.5 GHz to 18 GHz: -136 dBm, -137dBm (typ.) 18 GHz to 39 GHz: -132 dBm, -136dBm (Typ.) 39 GHz to 42 GHz: -129 dBm, -132dBm (Typ.) 42 GHz to 43 GHz: -128 dBm, -134dBm (Typ.) preamp on: 10MHz to 7.5GHz: -150 dBm, -155dBm (typ.) 1GHz, -160dBm 7.5 GHz to 18 GHz: -155 dBm, -160 dBm (Typ.) 18 GHz to 39 GHz: -151 dBm, -155 dBm (Typ.) 39 GHz to 42 GHz: -140 dBm, -150 dBm (Typ.) 42 GHz to 43 GHz: -140 dBm, -150 dBm (Typ.)
3rd-order intercept (TOI)	Dual signal step 2MHz, Attenuation=5dB, AMP=OFF, Sweep Time=AUTO, Span=10MHz, RBW=3kHz, Detector=Positive-Peak, Average=ON, 100 times, Sweep Points=1001 Frequency less than 26GHz : input level=-20dBm Frequency greater than 26GHz : input level=-15dBm
	1GHz : +14dBm 3GHz : +13dBm 18GHz : +12dBm 26GHz : +13dBm 32GHz/40GHz : +16dBm
2nd harmonic distortion (RF Input -30dBm)	AMP=OFF, Attenuation=0dB, Input signal level=-30dBm, SPAN=20kHz, RBW=30Hz, Detector=Positive-Peak, Average=OFF, Sweep Points=1001, Sweep Time=AUTO, Center Frequency set to Second Harmonic input signal frequency.
	<10G : -50 dBc >10G : -58 dBc
Voltage standing wave ratio (VSWR)	100kHz to 18GHz : 2.0 18GHz to 25GHz : 2.6 25GHz to 43GHz : 2.2
Frequency accuracy	Input Signal=1GHz, -30dBm level. Spectrum : Span=200kHz, RBW=1kHz, AMP=OFF, Attenuation=0dB, Sweep Points=1001, Detector=Positive-Peak, Sweep Time=AUTO. Frequency Counter=ON/1Hz.
	$\pm 0.2$ ppm
Amplitude accuracy	f>1MHz: Center Frequency=Input Frequency, Span=1MHz, RBW=10kHz, Average=OFF, Detector=Positive-Peak, Sweep Time=AUTO, Sweep Points=1001 9kHz to 1MHz: Center Frequency=Input Frequency, Span=10kHz, RBW=100Hz, Average=OFF, Detector=Positive-Peak, Sweep Time=AUTO, Sweep Points=1001
	$\pm 1.5$ dB

RTSA 100% POI	RBW=2MHz, Detector=Positive-Peak
	5us
<b>5G NR Analyzer</b>	
Frequency range	FR1 (410 MHz ~ 7125 MHz) FR2 (24250 MHz ~ 43000 MHz)
IF bandwidth	Up to 100MHz
Rx sensitivity	-115 dBm @ SCS = 30 kHz -118 dBm @ SCS = 15 kHz
Measurements	<ul style="list-style-type: none"> <li>• Physical cell ID (PCI)</li> <li>• Beam ID</li> <li>• PB/PDS chan. power, constellation, EVM</li> <li>• SS-RSRP, SS-RSRQ, SS-SINR</li> <li>• Time offset</li> <li>• Beam stat analyzer</li> <li>• 5G NR interference detection</li> <li>• Power vs. time</li> </ul>
<b>LTE Analyzer</b>	
Mode	TDD-LTE, FDD-LTE
Measurements	<ul style="list-style-type: none"> <li>• Power vs. RB</li> <li>• Constellation</li> <li>• Power vs. time</li> <li>• Channel power</li> </ul>
<b>Drive Test</b>	
Std. spectrum analysis	Indoor / outdoor level testing
TDD-LTE outdoor test	Cell ID; S-SS; RSRP; RSRQ; SINR
5G-NR spectrum analysis	Indoor / outdoor PCI, Beam ID, SS RSRP, SS-RSRQ, SS-SINR
<b>Remote Control</b>	
Control interface	Ethernet, WiFi
Programming language	SCPI, VNC
<b>IQ Data Acquisiton</b>	
Sampling rate	1.92,3.84,7.68,15.36,30.71,61.44,122.88MHz
IQ file size	Up to 256MB
<b>General</b>	
Display	10.1" 1280 x 800 capacitive Touch screen
Test interface	<ul style="list-style-type: none"> <li>• 3x USB 2.0 ports, 1x USB 3.0 port</li> <li>• 1x Ethernet LAN port</li> <li>• External GPS antenna connection</li> <li>• External reference input</li> <li>• IF output</li> <li>• RF input</li> <li>• N type or 2.4mm(E8800C/D)</li> <li>• 2.4mm(E8800E/F)</li> </ul>
Data transfer	USB, Ethernet, WiFi
Data storage	100 GB
Operating time	≥4 hours(with backup battery)
Operating temperature	-10°C to +50°C
Dimensions (LxWxH)	292mm x 211mm x 82mm
Weight	About 3.9 kg



**DEVISER<sup>®</sup>**

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