SPEC SHEET

CellSpectrum™ | CellDigitizer™

CelPlan
Wireless Global Solutions

CellSpectrum™ Applications

CellSpectrum is a specialized and detailed Spectrum Analyzer, spanning a wide range of frequency bands, that can be used for spectrum clearance, interference analysis and other tasks needed by most wireless networks.

CellSpectrum works with a Software-Defined Radio Receiver, ***CellDigitizer***.

The receiver samples and digitizes up to 100 MHz of spectrum at a time (real time collection and recording capabilities) with a sampling rate of up to 125 MSamples/s and 14-bit digitization - all samples can be geotagged. The system is light weight and has low power consumption.

The three models of ***CellDigitizer*** cover the following frequency ranges: CD08 (8 GHz), CD18 (18 GHz), CD27 (27 GHz).

CellSpectrum main measurement features include:

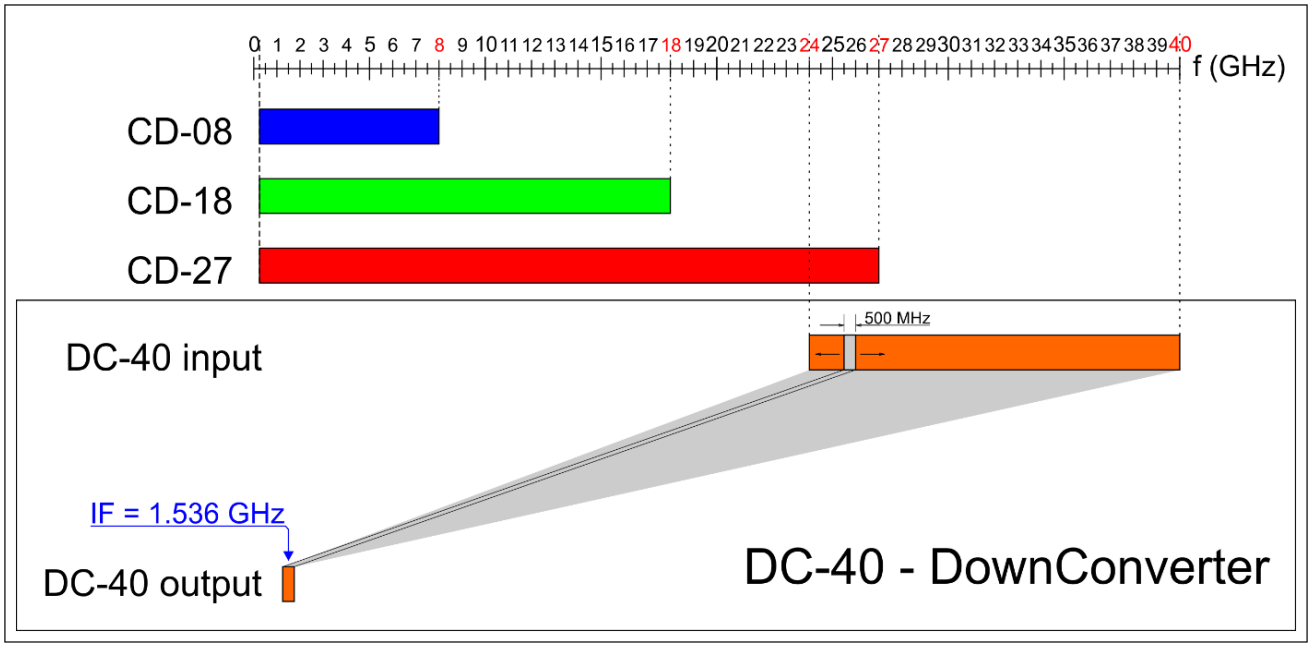
- Snap to vector samples (for GPS positioning error compensation)
- Multi-measurement concatenation and multi-data visualization
- Samples filtering (wide range of criteria)
- Up to 32 static markers plus dynamic markers
- Real time acquisition and geotagged spectrum recording for later playback or post processing
- Synchronized view (multiple analysis)

CellDigitizer main characteristics include:

- High Dynamic Range and protection against saturation via automatic gain control
- Cost-effective. Does not require separate hardware modules or software licenses
- Simultaneous scanning of multiple CW or narrow channels
- Simultaneous scanning of up to 256 channels

CellSpectrum™ Applications

Additionally, DC40 (Downconverter) can translate frequencies from 24 to 40 GHz to a 1.536 GHz center frequency band.

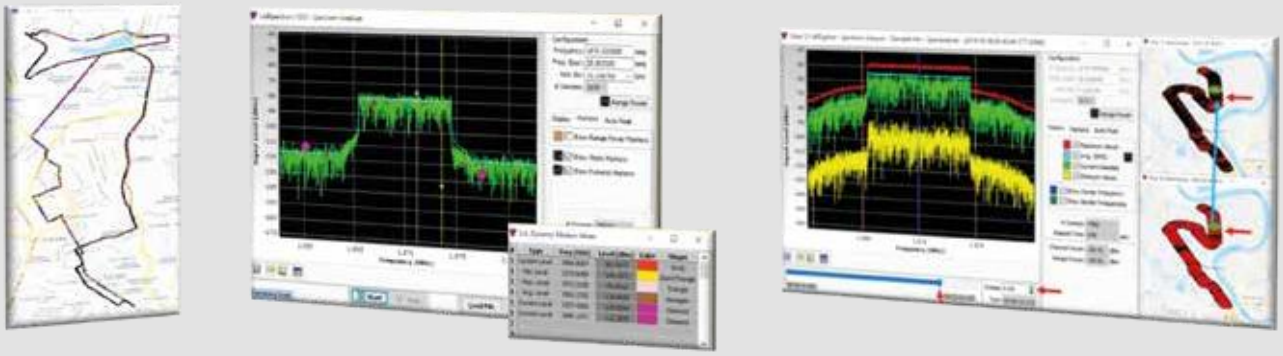


CellScanner will control both devices to allow synchronized operation to sweep all bands using the LAN port.

CellSpectrum™ Applications

***CellSpectrum*™** main applications include:

- Spectrum Clearance
- Propagation Model Tuning
- Interference Analysis



Technology scanning capabilities can be added to the system by a simple software upgrade (***CellScanner***) for use in network optimization and performance analysis.

CellSpectrum is supplied in a certified-waterproof, crushproof, dustproof maximum-size airline carry on suitcase.

Backpack available for walk-test and indoor collection.

CellSpectrum™ Applications

Wide Frequency Range

The frequency bands and channel bandwidths used in commercial wireless systems have been increasing steadily to accommodate the growing demand for larger data rates.

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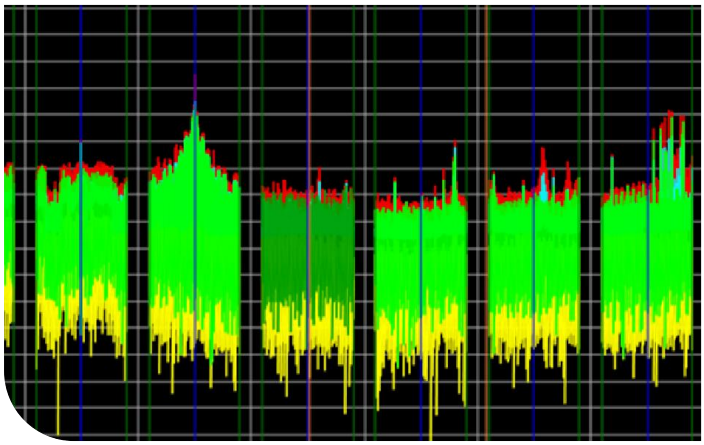


Wide Signal Dynamic Range and Saturation avoidance

CellDigitizer allows users to adjust gain of the input signal to create an effective dynamic range for measurements by avoiding saturation of samples collect close to the transmitter and by increasing sensitivity to weaker signal.

Real-Time Acquisition and Spectrum Recording

CellSpectrum allows real-time acquisition and recording of spectrum for report generation and/or further analysis. Playback mode is very convenient for post-processing tasks and allows users to add new markers and change the configured Resolution Bandwidth (RBW).

CellDigitizer has three receiver signal processing paths, and two Analog to Digital converters.

CellSpectrum™ Applications

High Span Rates

The span rate reflects how many channels can be measured per second.

Sweep rate is up to 28 GHz/s when using resolution bandwidth of 10 kHz (with 40 MHz instantaneous bandwidth.)

Bandwidth flexibility

The wide application of wireless technologies today requires tools to cover both narrow and wide channels; the configuration flexibility of ***CellSpectrum*** allows the tool to tackle any channel size, ready for any technology evolution.

Portable and flexible

Besides providing the means for capturing and processing digitized samples, ***CellSpectrum*** also offers a wide variety of information manipulation and visualization options that, along with ***CellDigitizer***'s small form factor, makes the combo very portable and flexible.

Easy ‘Drive Test Setup’

Outdoor Measurement Collection

CellScanner is quickly & easily installed for a drive test campaign. Al items are packaged in an airline carry on suitcase.

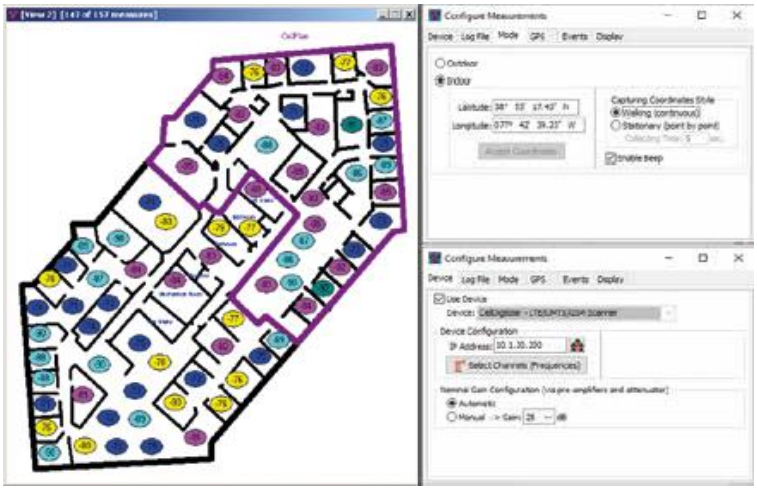
Magnetic mounts for the wide band antenna and GPS module are easily installed in the vehicle roof.

Due to the low power consumption an external DC converter is needed.

Extensive support, training and documentation is provided to allow fast and painless drive test campaigns.

Easy ‘Click and Go’

Indoor Measurement Collection



Just click on a point in the visualization window and samples are collected, even when no GPS is available.

Floor plan can be imported, geo-tagged and made available for a walk test. ***CellScanner*** options includes stationery and walking (continuous) measurement.

Specifications

Spectrum Analyzer	
Dynamic Range	> 100dB
Span BW / RBW Range (depends on Span)	97 kHz to 100 MHz / 5 Hz to 1 MHz
Range Power Increment	100 Hz
Sweep Rate	Up to 400 MHz/s
Static / Dynamic Markers	32 / 32

RF and Digitalization Specifications		
Frequency Range	9 kHz to 8, 18, 27 GHz	
Max. Instantaneous Bandwidth	100 MHz	
Max. Dynamic Range / Noise Figure	100 dB / < 15 dB	
Real Time Bandwidth (RTBW)	0.1 / 10 / 40 / 100 MHz	
Maximum Safe RF Input Level	+ 10 dBm, DC 10 V	
Programable Attenuation and Gain	CD08: - 30, - 20, - 15, - 10, - 5, 0 dB CD18: - 30, - 20, - 15, - 10, - 5, 0, 5, 15, 25 dB CD27: - 30, - 20, - 15, - 10, - 5, 0, 5, 15, 25 dB	
Spurious Free Dynamic Range (SFDR)	60 dBc (typical) 70 dBc (typical) 100 dBc (typical)	100 MHz RTBW 10 / 40 MHz RTBW 0.1 MHz RTBW
Amplitude Accuracy (25 °C ± 5 °C)	± 2.0 dB (typical)	
A/D Converter Sampling Rate and Resolution	125 MSa/s, 14 bits for each I and Q 300 kSa/s, 24 bits	10 / 40 / 100 MHz RTBW 0.1MHz RTBW
Sweep rate	Up to 28 GHz/s @ 10 kHz RBW	40 MHz IBW
Stream rate	Up to 360 Mbits/s	

Specifications

Frequency

Frequency Range	9 kHz to 8, 18, 27 or 40 GHz	
Frequency Reference	± 1.0 ppm ± 1.0 ppm 0 °C to 55 °C ± 1.0 ppm per year	Accuracy at room temperature Stability over temperature Aging
Probability of Intercept (POI)	≥ 25.552 µs signal duration ≤ 17.360 µs signal duration	For 100% POI For 0% POI

Amplitude

Amplitude Accuracy 25 °C ± 5 °C	± 2.00 dB typical	for frequencies between 50 MHz to 27 GHz
Measurement Range	DANL to levels in table below	
Maximum Safe RF Input Level	+ 10 dBm, Max DC: 10 V	

Displayed Average Noise Level (DANL)

At 25 °C ± 5 °C, typical

Frequency (GHz)	CD08	CD18	CD27
0.1	-157-dBm/Hz	-161-dBm/Hz	-160-dBm/Hz
0.5	-155-dBm/Hz	-160-dBm/Hz	-159-dBm/Hz
1.0	-156-dBm/Hz	-160-dBm/Hz	-159-dBm/Hz
2.0	-154-dBm/Hz	-154-dBm/Hz	-153-dBm/Hz
3.0	-152-dBm/Hz	-158-dBm/Hz	-157-dBm/Hz
4.0	-151-dBm/Hz	-162-dBm/Hz	-162-dBm/Hz
5.0	-150-dBm/Hz	-158-dBm/Hz	-158-dBm/Hz
6.0	-149-dBm/Hz	-157-dBm/Hz	-157-dBm/Hz
7.0	-150-dBm/Hz	-153-dBm/Hz	-155-dBm/Hz
8.0	-144-dBm/Hz	-160-dBm/Hz	-161-dBm/Hz
9.0		-158-dBm/Hz	-161-dBm/Hz
10.0		-160-dBm/Hz	-161-dBm/Hz
11.0		-156-dBm/Hz	-160-dBm/Hz
12.0		-158-dBm/Hz	-157-dBm/Hz
13.0		-151-dBm/Hz	-157-dBm/Hz
14.0		-154-dBm/Hz	-154-dBm/Hz
15.0		-160-dBm/Hz	-157-dBm/Hz
16.0		-157-dBm/Hz	-157-dBm/Hz
17.0		-150-dBm/Hz	-156-dBm/Hz
18.0		-144-dBm/Hz	-156-dBm/Hz
19.0			-149 dBm/Hz
20.0			-154 dBm/Hz
21,0			-153 dBm/Hz
22.0			-152 dBm/Hz
23.0			-153 dBm/Hz
24.0			-155 dBm/Hz
25.0			-153 dBm/Hz
26.0			-150 dBm/Hz
27.0			-148 dBm/Hz

Specifications

Spectral Purity

SSB Phase noise	Offset	
25 °C ± 5 °C	100 Hz	-90 dBc/Hz
At, 1 GHz, measured with	1 kHz	-93 dBc/Hz
external oscillator not	10 kHz	-98 dBc/Hz
present	100 kHz	-106 dBc/Hz
	1 MHz	-120 dBc/Hz

Power and Physical

Power Supply / Consumption	12 V_{DC} / 17 W – CD08 12 V_{DC} / 23 W – CD18 12 V_{DC} / 23 W – CD27	Use AC Wall Power adapter provided At room temperature	Input AC 120 – 240 V
Operating Temperature Range	0 °C to 50 °C		
Enclosure Dimensions / Weight	257.3 (L) x 193.7 (W) x 66.0 (H) mm / 2.7 kg 10.13 (L) x 7.63 (W) x 2.61 (H) inches / 6 lbs		
Warm up time	30 minutes		

Conectors

RF in	SMA female, 50 Ω	
10 MHz Reference In and Out	SMA female, 50 Ω	
Analog I and Q Out	SMA female, 50 Ω	
HIF Out	SMA female, 50 Ω	
10 / 100 / 1000 Ethernet	RJ45	
USB Console	Type B - mini	
GPIO	25-pin male D-Subminiature	
Power	Coaxial Type A: 5.5 mm, OD 2.5 mm ID	

Regulatory Compliance

FCC / RoHS Compliance / Mark (CE)		
EMC Directive 2014/30/EU	EN 61326-1:2013	Electromagnetic Compatibility
Low Voltage Directive 2006/95/EC	EN 61010-1-2010 Class 1	Safety
Humidity & Temperature	MIL-STD-PRF-28800 Class 2	
Shock & Vibration	MIL-STD-PRF-28800 Class 2 MIL-STD-PRF-28800 Class 3	

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