TRANSCOM
INSTRUMENTS

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Handheld Spectrum Analyzer

SpecMini Handheld Spectrum Analyzer

Overview

SpecMini is the first Android hand-held spectrum analyzer. It features high testing sensitivity, light weight, compact size and portable design. Android operating system and high-resolution touch screen allow testing and measurement can be performed user-friendly. With excellent performance, SpecMini meets the testing and measurement requirements of the majority of RF signals.

Key Facts

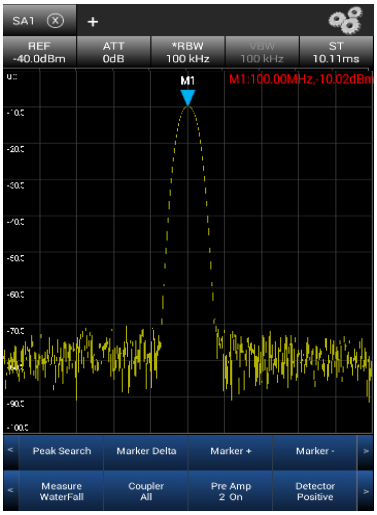
- Frequency Range: 9kHz to 6.0GHz
- DANL: -168dBm@1GHz (Sensitivity set to High, normalized to 1Hz)
- RBW: 10Hz to 5MHz
- Multi-screen: maximum 4 windows
- Android Operating System: touch screen operation, multi-touch, easy-to-use
- Compact size (197mm×93mm×61mm) and light weight (0.9kg, including the battery)
- More than 5 hours operating time
- Support interference signal hunting with AoA algorithm. Map service provided by "OpenStreetMap"
- Working as drive test scanner for propagation model tunning. Support a maximum 40km/h driving speed.

Functions & Applications

Spectrum Analysis

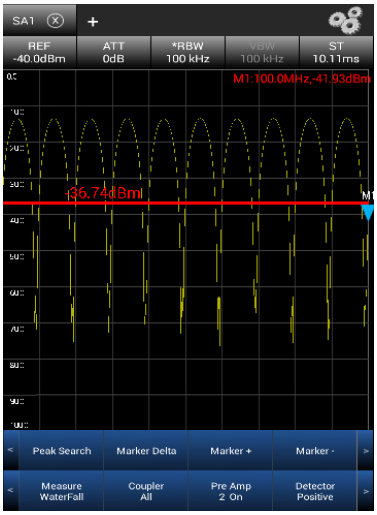
Swept-tuned Spectrum Analysis

The swept-tuned spectrum analyzer analyzes the stable and cyclically varying signals and provides signal amplitude and frequency information.



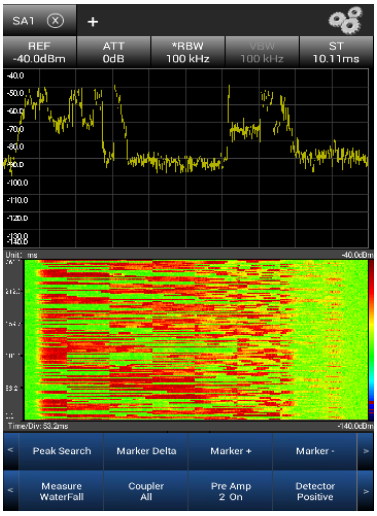
Zero Span

As an instrument for frequency domain measurements, SpecMini can perform time domain measurements in zero span mode.



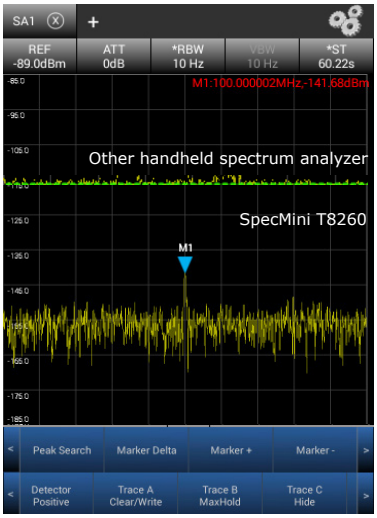
Waterfall Display

SpecMini provide Waterfall display (also called spectrogram). This function allows user to check spectrum in both frequency and time domain. User can easily find aperiodic target signal in waterfall display.



High Sensitivity

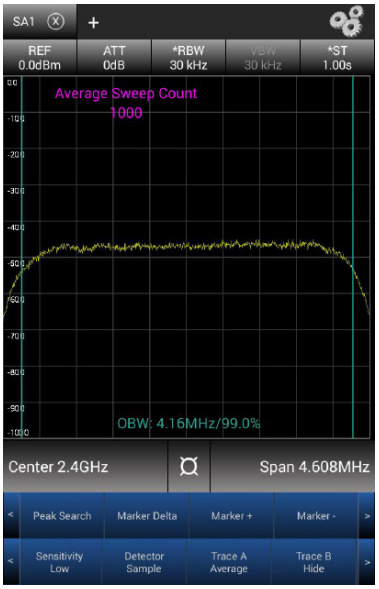
SpecMini provide superior DANL as low as -168dBm/Hz, promising a 10 to 20 dB better performance compare with other handheld spectrum analyzer.



Wireless Communication Testing

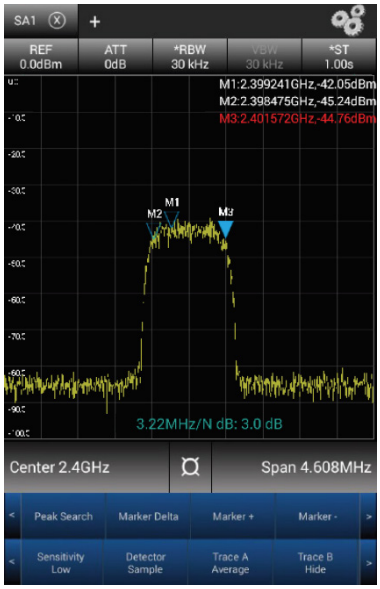
Occupied Bandwidth(OBW)

With SpecMini OBW measurement function in, Engineers can easily measure signal channel bandwidth which include its 99% power (ratio could be adjusted).



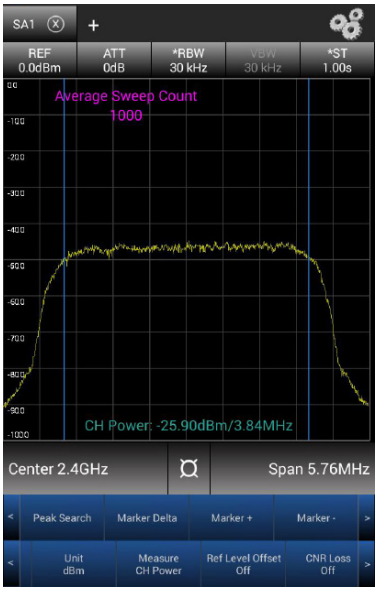
NdB Bandwidth

With SpecMini NdB bandwidth measurement function, instrument can test target signal's NdB bandwidth automatically.



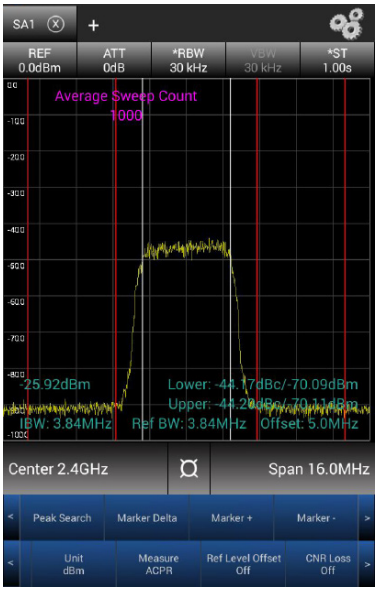
Channel Power

Channel power refers to the power and power spectral density within a particular channel bandwidth. SpecMini can automatically test the channel power of a given bandwidth.



Adjacent Channel Power Ratio (ACPR)

Adjacent channel power ratio(ACPR) measurements help check for signal leakage, identify and control sources of interference. SpecMini provides automated adjacent channel power ratio measurement.



RF Field Test

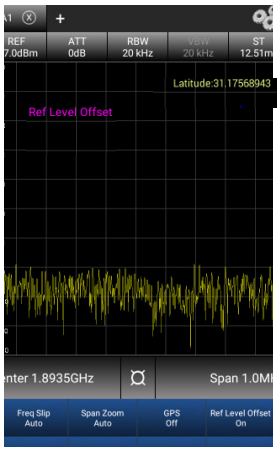
Propagation Model Tuning

The SpecMini has a built-in GPS module for stamping latitude and longitude info on spectrum results. Test result with GPS stamp can be stored as screenshots. It is convenient for engineers to match test data and test sites. Also SpecMini can output .csv file which include signal power and GPS info for the after analysis of propagation model tuning. That is to say, SpecMini can works like a CW drive test scanner. With its powerful Android platform and superior measurement speed, user can drive as fast as 40km/h when doing drive test.

Transmission System Set up and Maintenance

When using for transmission system set up and maintenance, SpecMini can provide:

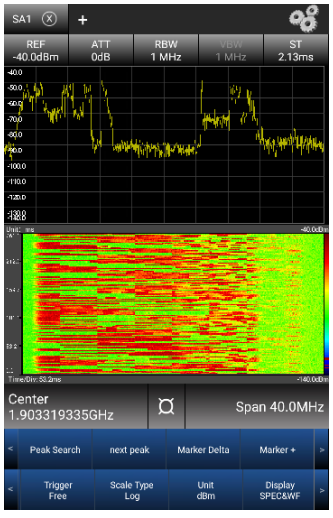
1. Evaluate signal quality with spectrum analysis
2. Spectrum analysis for mainstream mobile network signal
3. Perform cable test and wireless test for transmission system



1893.5	-99	103.726	34.
1893.5	-96	103.798	34.
1893.5	-93	103.765	34.
1893.5	-92	103.788	34.
1893.5	-91	103.776	34.
1893.5	-93	103.756	34.
1893.5	-94	103.787	34.
1893.5	-97	103.776	34.
1893.5	-93	103.798	34.
1893.5	-90	103.778	34.
1893.5	-89	103.756	34.
1893.5	-86	103.783	34.
1893.5	-83	103.779	34.
1893.5	-83	103.797	34.
1893.5	-84	103.789	34.
1893.5	-83	103.781	34.
1893.5	-85	103.785	34.
1893.5	-83	103.778	34.

Frequency Check

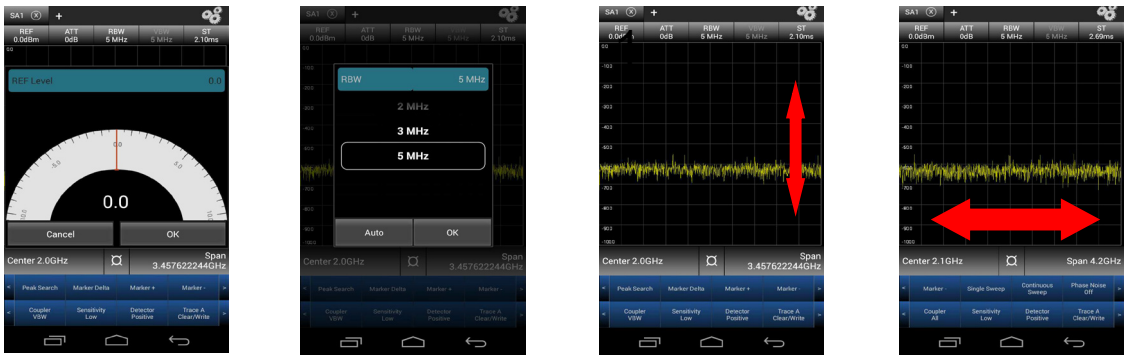
Frequency check is to test the expected frequency band and estimate the interference of the frequency band before building the wireless network coverage. Spectrum measurement with SpecMini is a means of frequency check. Its spectrum results determines the interference frequency and bandwidth; Waterfall display determines the time characteristics of the interference signal.



Innovative Features

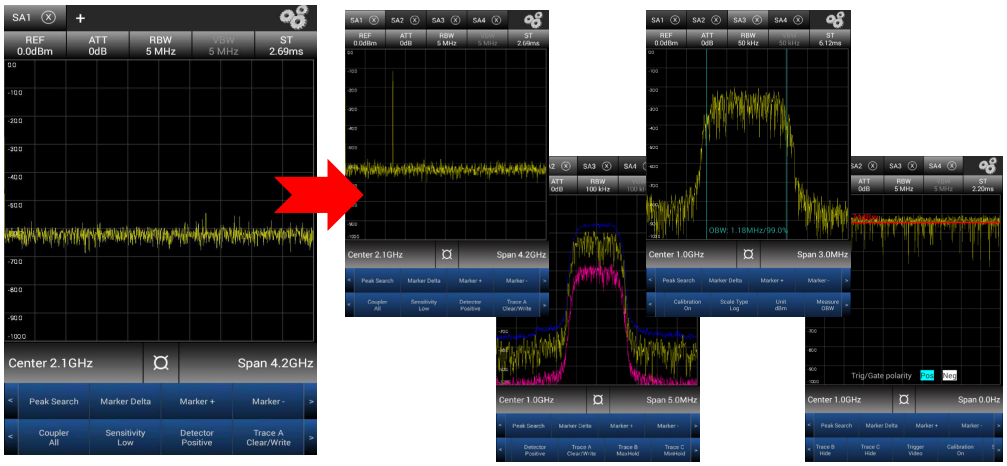
Multi-touch Operation

SpecMini is based on android. It support multi-touch operation. User can change reference level and center frequency with 1 finger and zoom the span with 2, just like a smart phone.



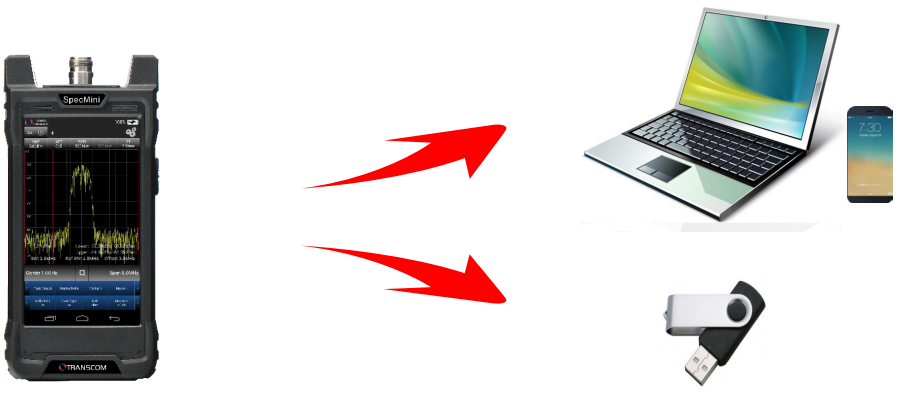
Multi-task Measurement

SpecMini can simultaneously open 4 windows for measurement tasks with different setting.



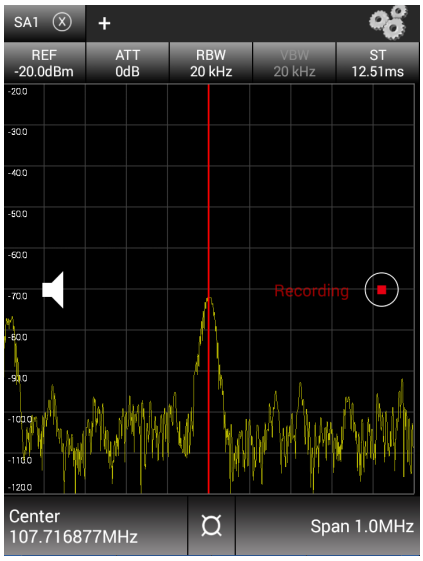
Data Store and Transfer

SpecMini provide 8G internal storage. It can save screenshot/data/setting and transfer them via USB/OTG/WiFi/Bluetooth, even upload to cloud storage.



FM demodulation

This customized application support FM demodulation in relevant channel, and play and record FM content as evidence.



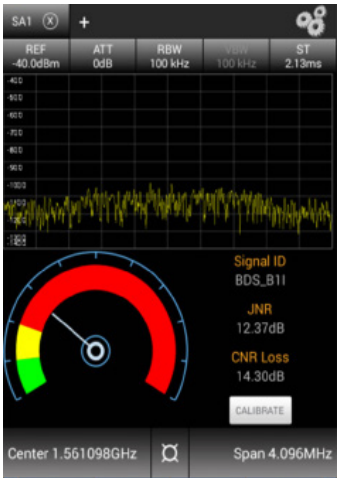
Software customization

Transcom provides SpecMini-based software customizing services. Variety of application and software can be pre- installed or build in SpecMini as users demanded.

Transcom also proactively open the API of SpecMini and encourage distributors make your clients' requirements into customized features on SpecMini.

• GNSS interference Analysis

This customized application can analyze GNSS (GPS, Beidou) signal quality through CNR Loss and JNR. Spectrum function coordinating with the customized application makes traditional testing more convenient.

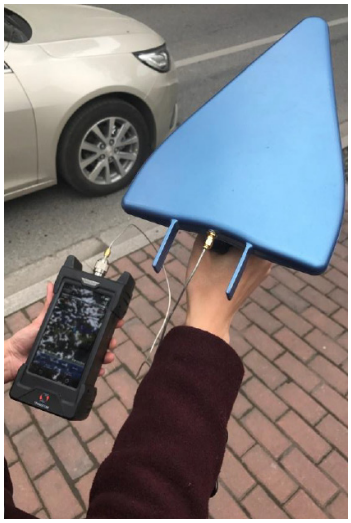


Interference Signal Hunting with AoA Algorithm

With this powerful featured APP and optional high performance directional antenna. SpecMini can be used as a ultra compact interference signal locator (map service provided by "OpenStreetMap"). Steps are as follow:

1. User perform a 360° test, lock the direction which he receive strongest interference and make a vector on digital map.
2. User drive to more test locations and repeat step 1. Finally we should get 3 to 5 vectors on map, which cross with each other and enclose a small area.
3. The estimate location of interference is in that small area. User drive in the small area and find the final location with tone signal indicator.

Sketch map



On-site photo

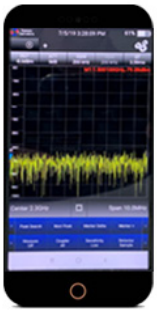
Software screenshot
(with OpenStreetMap)

Spectrum Monitoring

In the same WIFI environment, users can place SpecMini at any position to measure, through WIFI spectrum data will be projected to the computer for spectrum monitoring

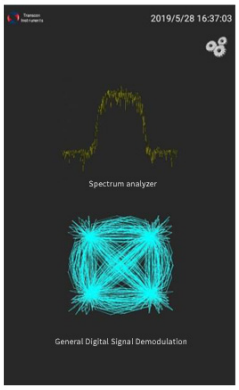
Terminal Wireless Control

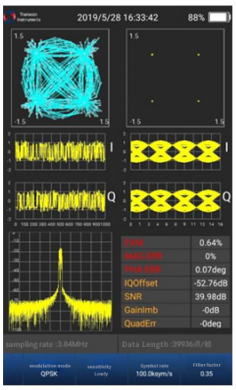
When a special scene requires a covert test, the SpecMini can be connected to the Android operating system phone, and it can be placed in the hidden backpack to control and test the data display using the mobile phone.



General digital signal demodulation

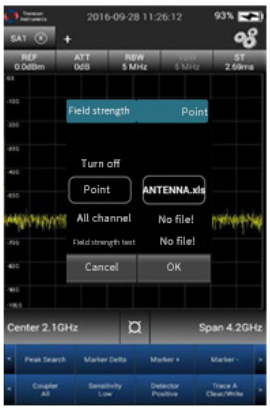
Supports general digital demodulation, and outputs "vector", "constellation", "IQ waveform", "IQ eye", "spectral map" and "related value information table" of related general digital signals.

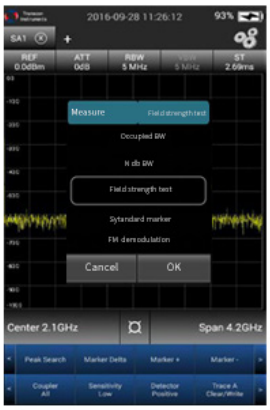




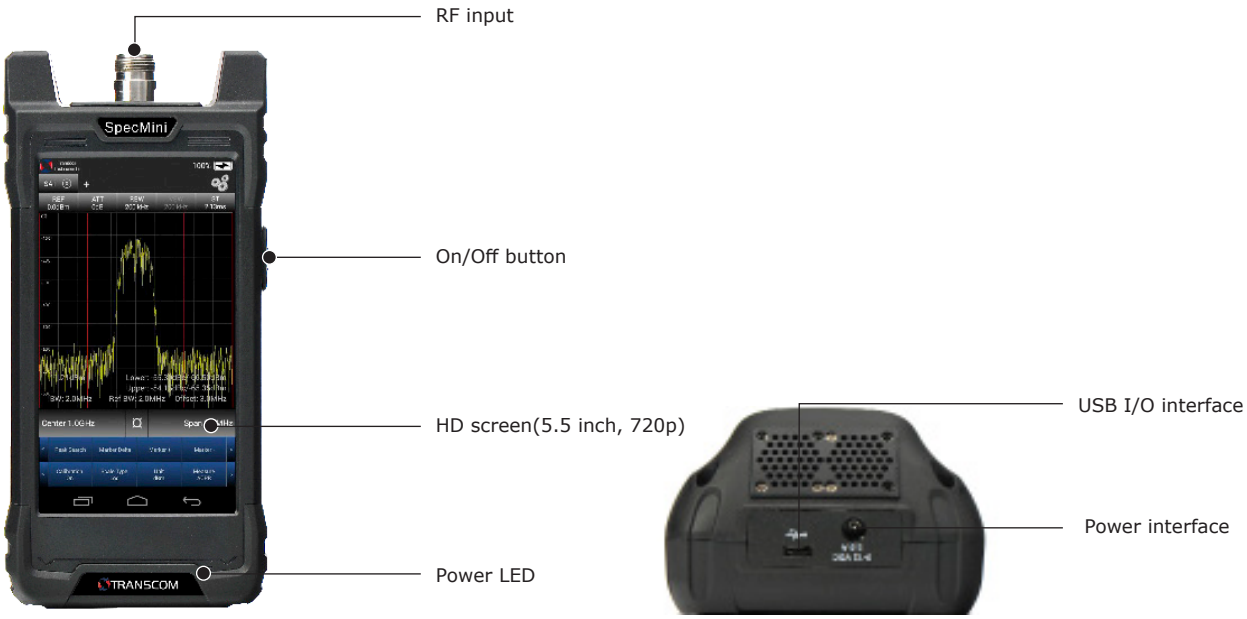
Field strength test

SpecMini cooperates with near-field probe to measure point, full-channel, pointwhole-channel field strength.





Control Elements



Specifications

Key Functions	
Measurement	ACPR, CH Power, OBW, Phase Noise, and N dB Bandwidth
Trace	3 Trace: A, B and C Trace operation: Clear/Write, Maxhold, Minhold, Average, View ,Hide
Sweep	Continuous/single
Trigger	Free, Video (zero span)
Marker	8 maximum,surport 1 reference with 7 Delta Markers Peak Search, Marker Delta, Marker+, Marker-
Span	T8260: 0Hz, 100Hz to 6GHz Freq Slip, Span Zoom (1-2-5-10 series, 4GHz, 6GHz)
Scale	Log/Lin Log: 0.1 to 1, 0.1 step Lin: 1 to 10, 1 step
Unit	dBm, dBuV, dBV, W, mW, uW, pW, V, mV, uV
Sensitivity	Low, Medium and High
Detector	Positive, Negative, Sample, Average, RMS
Ref Level Offset	-50dB to 50dB
Multi-Screen	4 Maximum
Frequency	
Frequency Range	T8260: 9kHz to 6.0GHz
Frequency Reference	Aging Rate: ±1ppm
Frequency Readout Accuracy	±((Readout Frequency + 1GHz) x Frequency Reference + Frequency Span Accuracy x Span)
Frequency Span Accuracy	± 1%
Sweep Time	1.2ms to 1600s 2.69ms to 1600s, zero span

Resolution Bandwidth	
RBW Range	10Hz to 5MHz (1-2-3-5-10 Series)
RBW Accuracy	RBW ≥ 1MHz, ±10% RBW < 1MHz, ±2%
Rectangular coefficient	RBW=5MHz , < 1：4 RBW=1MHz , < 1：4 RBW=100kHz ,< 1：4 RBW=300Hz , < 1：4

Amplitude		
Measuring Range	Display average noise level to +20dBm	
Input Attenuator Range	0 to 30dB, 1dB Step	
Maximum Safe Input Level	Sensitivity(Low): +30dBm Sensitivity(Medium): 0dBm Sensitivity(High): -20dBm	
Reference Level Range	-140dBm to +20dBm -440dBm to +220dBm (Ref level offset: ON)	
Amplitude Accuracy	ATT set to 0 dB, input signal: -5 to -30 dBm; detector set to Positive,Sensitivity set to Low; RBW auto-coupled ,all other settingsauto-coupled, 23±5℃ ±1.5dB	
RBW Switching Uncertainty	±0.3dB	
Input Attenuator Uncertainty	±0.6dB	
Accuracy of Reference Level	Reference level: ≥-60dBm, ±0.8dB	
Display Average Noise Level (DANL)	T8260: Input Terminated,Detector set to Positive,Trace Average set to 1000,Span set to 50kHz,Ref set to -100dBm,all other settings auto-coupled, 23±5℃ . Normalized to 1 Hz RBW	
	5MHz center frequency:	1GHz center frequency:
	Sensitivity: Low -129dBm/Hz (typically -131dBm/Hz)	Sensitivity Low: -131dBm/Hz (typically -133dBm/Hz)
	Sensitivity: Medium -129dBm/Hz (typically -131dBm/Hz)	Sensitivity Medium: -149dBm/Hz (typically -151dBm/Hz)
	Sensitivity: High -149dBm/Hz (typically -150dBm/Hz)	Sensitivity High: -166dBm/Hz (typically -168dBm/Hz)
Residual Response	<-70dBm	
Input-related Response	9kHz～700MHz , <-70dBc 700MHz～900MHz , <-46dBc 900MHz～1.3GHz , <-42dBc 1.3GHz～2.2GHz , <-46dBc 2.2GHz～2.7GHz , <-53dBc 2.7GHz～2.9GHz , <-42dBc 2.9GHz～3.3GHz , <-38dBc 3.3GHz～6GHz , <-53dBc	
Second Harmonic Distortion	-70dBc(Input frequency 1.5GHz, Amplitude -10dBm)	
Third-order Intercept (TOI)	-10dBm tones, 1MHz apart, Sensitivityset to low, Ref set to -10 dBm +15dBm	
P1dB	+5dBm (nominal)	
Phase Noise @1GHz	T8260: -95dBc/Hz, @10kHz (typically -97dBc/Hz) -123dBc/Hz, @1MHz (typically -125dBc/Hz)	

General	
System settings	Preset, Save, ScreenCopy, Print, Language, Service, About
Connectors	RF input: N-type, female, 50Ω USB: USB type C Power interface: Slim-Tip, DC 12V/4.5A
Display	5.5-inch, 720p
Operating System	Android
Battery	Type: Lithium-ion Operation time: 4 hours Charging time: 6 hours Charging temperature: 0°C to +35°C, Must be in power of state
Operating environment	Operating temperature: 0°C to 50°C Storage temperature: -20°C to 70°C
Dimension	197mm*93mm*61mm(7.7*3.7*2.4in)
Weight	0.9kg

Technical specifications

This technical specifications include the influence of probability distribution, measurement uncertainty and environmental factors on the instrument performance. It guarantee the performance under the following conditions.

- The instrument is ON and warmed up for 30min.
- The instrument internal reference signal is applied.

Testing temperature is 23±5 ºC, unless other specific condition applied.

Typical value

Additional description does not cover all performance information of the product guarantee. Unless otherwise specified, the typical value refers to the indicator or technical specification with which more than 80% of products comply under 23 ± 5 ºC. The measurement uncertainty is excluded. SpecMini should be within the calibration period.

Nominal value

The nominal value refers to the characteristic description or design range. It is not tested or covered by the product. SpecMini should be within the calibration period.

Ordering List

Model	Description
T8260	SpecMini handheld spectrum analyzer (9kHz to 6GHz)
Accessories Model	**Description**
SPM-AS001	Power adapter (20V/4.5A output)
SPM-AS002-I	Power cable(China standard)
SPM-AS002-B	Power cable(US standard)
SPM-AS002-G	Power cable(UK standard)
SPM-AS002-F	Power cable(EU standard)
SPM-AS004	USB data cable
SPM-AS005	USB OTG cable
SPM-AS006	Capacitive pen
SPM-AS007	Portable box
SPM-AS018	Portable soft bag
SPM-AS019	USB disk
SPM-S003	FM demodulation
SPM-S005	Waterfall display
Options	
SPM-S006	AoA locate
Replacement options	
SPM-AS021	Replacement battery
Antenna Options	

SPM-AS010		700MHz-2700MHz Omnidirectional Antenna (SMA-Male) w/ SPM-AS013 N-SMA adapter
SPM-AS011		700MHz-6000MHz Omnidirectional Antenna (SMA-Male) w/ SPM-AS013 N-SMA adapter
SPM-AS012		700MHz-4000MHz Directional Antenna (SMA-Female) w/ N-SMA adapter

Antenna Options		
SPM-AS100		700MHz-6000MHz Directionall Antenna (SMA-Famale) w/ N-SMA adapter
SPM-AS014		SMA-SMA RF Cable
SPM-AS015		N-N RF Cable
SPM-AS016		10MHz-700MHz Omnidirectional Antenna （Pitman Style，N-Male）
SPM-AS040		Antenna carring case（For SPM-AS042～SPM-AS045）
SPM-AS041		Pistol grab handle（For SPM-AS042～SPM-AS045）
SPM-AS042		9KHz-20MHz Directional Antenna (N-Female)
SPM-AS043		20MHz-200MHz Directional Antenna (N-Female)
SPM-AS044		200MHz-500MHzDirectional Antenna (N-Female)
SPM-AS045		500MHz-3000MHzDirectional Antenna (N-Female)

SPM-AS101		Plastic Rack.Align the direction of antenna and SpecMini to the same. Provide a better one-hand device holding experience

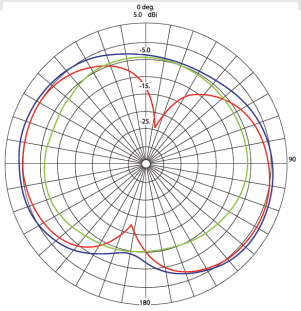
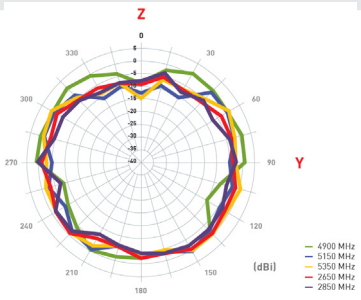
Antenna Specification

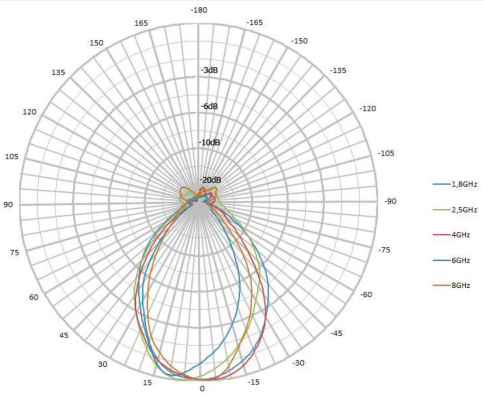
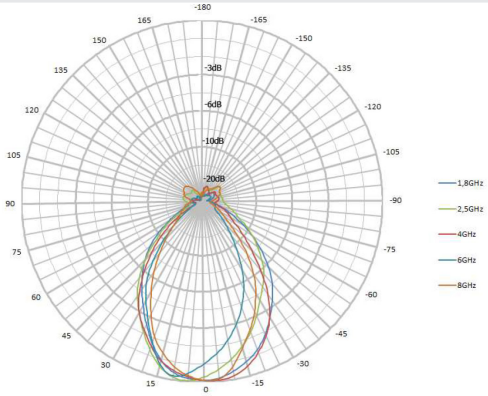
Antenna specification please refers to appendix.

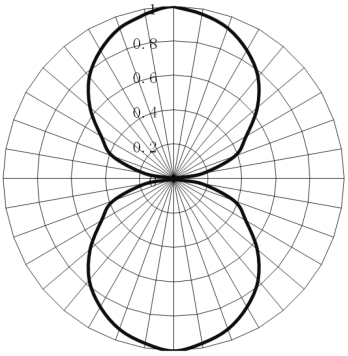
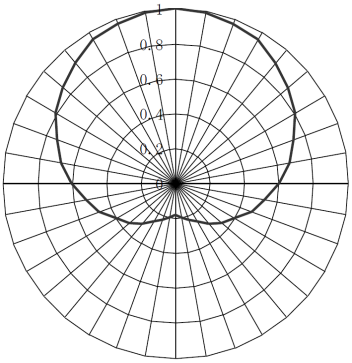
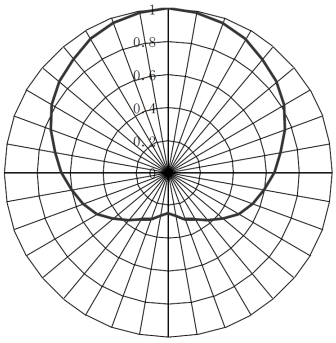
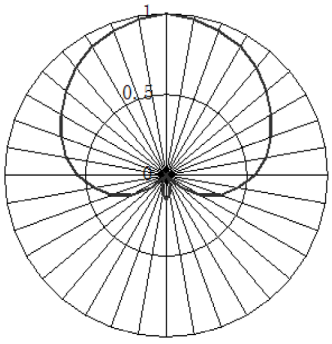
Pistol Type Antenna

Antenna AS042 to AS045 should be ordered with AS040 antenna carrying case and AS041 pistol grab handle.

Appendix

Model	[SPM-AS010] 700MHz-2700M(SMA-Male) Omnidirectional Antenna	[SPM-AS011] 700MHz-6000M(SMA-Male) Omnidirectional Antenna	[SPM-AS016] 10MHz-700MHz(N-Male) Omnidirectional Antenna（Pitmun Style）
Photo			
Gain	1-3dBi	1-6dBi	---
Antenna Pattern			N/A

Model	[SPM-AS012] 700MHz-4000MHz（SMA-Female）Directional Antenna	[SPM-AS100] 700MHz-6000MHz（SMA-Female）Directional Antenna
Photo		
Gain	4dBi	4dBi
Antenna Pattern		

Model	[SPM-AS042+ SPM-AS041] 9KHz-20MHz(N-Female) Directional Antenna	[SPM-AS043+ SPM-AS041] 20MHz-200MHz(N-Female) Directional Antenna
Photo		
Gain	15dBi	16dBi
Antenna Pattern	9kHz-20MHz (Horizontal) 	150MHz (Horizontal) 
Model	[SPM-AS044+ SPM-AS041] 200MHz-500MHz(N-Female) Directional Antenna	[SPM-AS045+ SPM-AS041] 500MHz-3000MHz(N-Female) Directional Antenna
Photo		
Gain	16dBi	12dBi
Antenna Pattern	350MHz (Horizontal) 	500-8000MHz (Horizontal) 

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Data without tolerance limits is not binding. Subject to change.
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ISO9001 ISO14001

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