

# TRANSCOM INSTRUMENTS

## Product Brochure



TRANSCOM  
INSTRUMENTS

# 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: 10MHz 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 (200mm×99mm×67mm) and light weight (1.25kg, including the battery)
- 6 hours operating time
- Provide effective measurement guarantee during the building and maintenance of the transmission system



# Innovative Features & Benefits

## Product features

- Easy to carry
- Multiple test windows
- Touch screen: support multi-point touch

## Typical applications

### Set-up and maintenance of transmission system

- General spectrum test
- Occupied bandwidth test
- Channel power measurement
- Adjacent channel leakage power ratio measurement
- Support the measurement of RF parameters of each main communication signal
- Portable and suitable for long-time field test

### Interference search

- Precise weak signal measurement
- Connect the omnidirectional and directional antenna to check interference

### General test in laboratory, factory, school, etc.

- General spectrum analysis
- Common test status auto-saving
- Easy set-up
- Test parameters can be saved

### Easy to operate

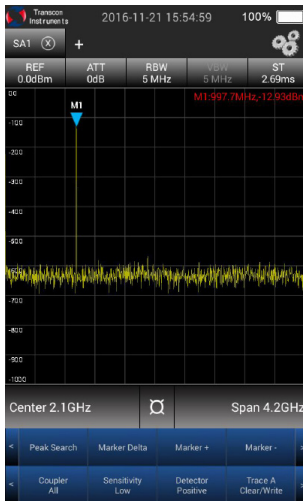
- User-friendly Android operating system
- Parameters can be set rapidly by clicking and sliding
- Test results can be read in any status

### Software customization

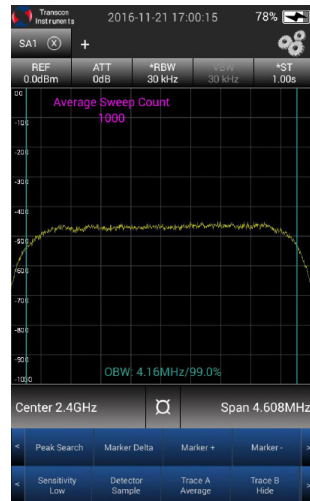
- Application and Software customization



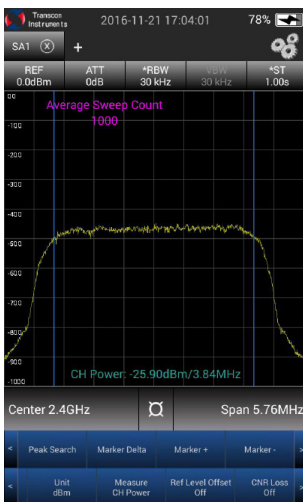
# Solution Highlights



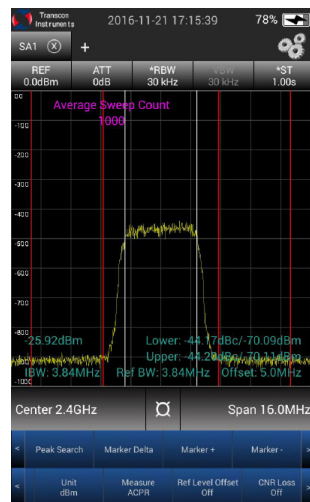
General spectrum test



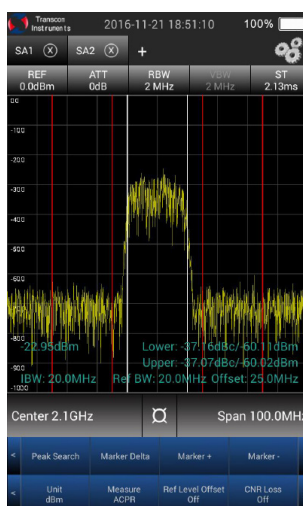
Occupied bandwidth (OBW)



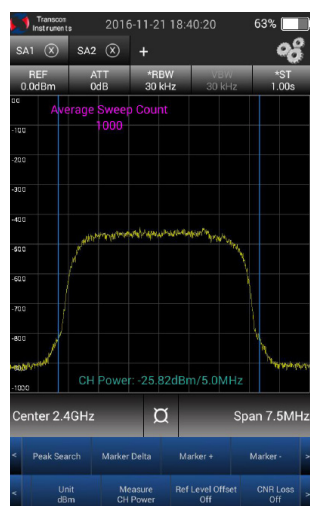
Channel power measurement



Adjacent channel leakage power ratio



Spectrum measurement of main communication signal



## Set-up and maintenance of transmission system

SpecMini can be used to establish and maintain transmission system which has the following measurement functions:

- Signal spectrum quality testing
- Mainstream communication system signal testing
- Applicable to the transmission test and air interface test

## General spectrum test

SpecMini has broadband test function, including frequency test, power test, spurious test, etc.

## Occupied bandwidth (OBW)

Measure the bandwidth occupied by energy sent by communication channel.

## Channel power measurement

This function can be used to measure the power and power spectrum density of the user-defined channels. The channel power measurement function of SpecMini supports channel power testing of various communication systems.

## Adjacent channel leakage power ratio

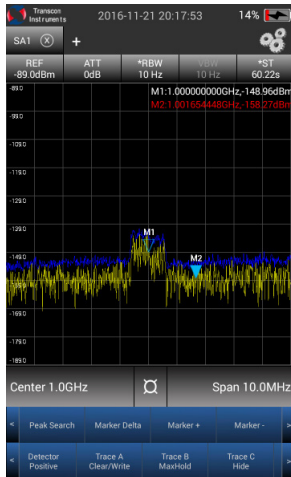
Operator needs to minimize the adjacent channel leakage power ratio to prevent the interference to normal operation of adjacent channels. The adjacent channel leakage power ratio is measured to check the signal leakage and identification and control the interference source. The function of adjacent channel leakage power ratio can be applied to test the influence of base station carrier signals on adjacent channels within a certain distance.

## Spectrum measurement of main communication signal

Measure communication signals by means of parameter setting. Various communication signals can be separately tested by clicking the unique multi-window interface.

## Portable and suitable for long-time field test

Compact design allows users to place and use SpecMini anywhere at anytime. The long standby time generally meets one-day field operation needs.



Precise weak signal measurement



SpecMini is able to work for 6 hours, and equipped with the protective circuit.



Recall function

## Interference search

Compact design allows users to place and use SpecMini anywhere at anytime. The long standby time generally meets one-day field operation needs.

## Precise weak signal measurement

With sensitivity being down to -168dBm, SpecMini is perfect for interference search. In the high sensitivity mode with the built-in low noise amplifier open, weak signals will be shown on the screen.

## Connect the omnidirectional and directional antenna to check interference

Connect omnidirectional antenna to qualitatively search signals and find interference signal. Then by connect directional antenna with SpecMini, and gradually locate the interference signal according to the relationship between the antenna direction and signal power.

## Suitable and portable for long-time testing

Compact design allows users to place and use SpecMini anywhere at anytime. SpecMini is able to work for 6 hours which generally meets one-day field operation needs without charging.

## General test in laboratory, factory, school, etc.

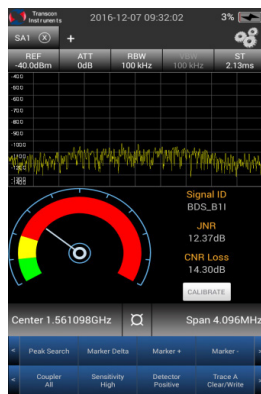
- General spectrum analysis.
- SpecMini has the broadband test function, including frequency test, power test, spurious test, etc.

## Common test status auto-saving

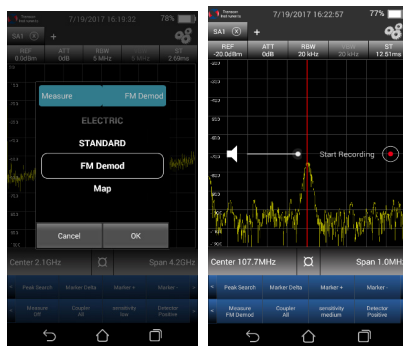
SpecMini has auto-saving option for common test status. Once parameters are set, test state and parameter can be saved to be directly recalled for next operation, thus avoiding the repeated operation in each measurement and reducing the workload.

## Easy set-up

SpecMini is small and lightweight, can be deployed easily and rapidly. It is easy to carry and free from the environmental influence. It is able to rapidly respond to test demands and can be directly deployed in place.



GNSS interference Analysis



Frequency attribution identificationm



FM demodulation and locating

## Easy to operate

### User-friendly Android operating system

SpecMini can be operated as same as a regular mobile phone. Even inexperienced user can easily obtain test results after simple training.

### Parameters can be set rapidly by clicking and sliding

Operational shortcuts on the touch screen help users to operate the instrument more convenient, and obtain the desired test results only by clicking and sliding.

### Test results can be read in any state.

SpecMini is equipped with the 5.5-inch 720p HD screen, with the brightness adjustable and no influence on parameter readout indoors or outdoors.

## 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.

SpecMini supports various customized software. Transcom carries out development and maintenance of customized applications to further upgrade SpecMini based on user's needs.

### 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.

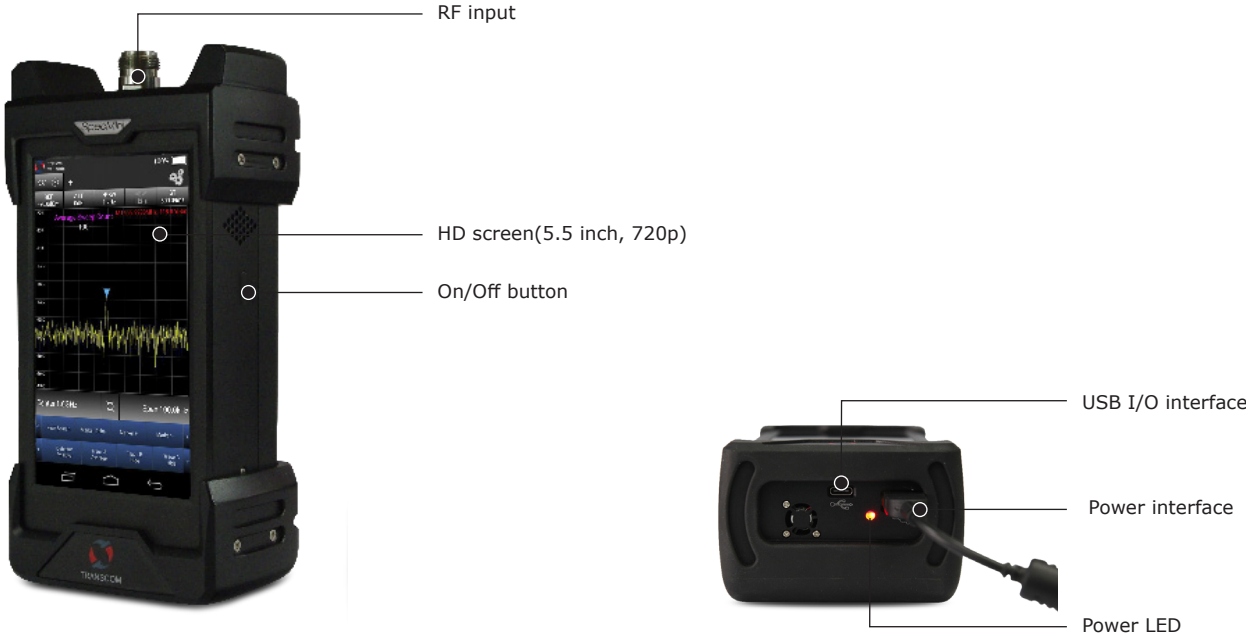
### Frequency attribution identificationm

This customized application can analyze frequency attribution of current base stations with back-end database (editable). In the field test, marker can intelligently identify the application and operator attribution of concerned frequency band, avoid frequency conflicts

### FM demodulation and locating

This customized application support FM demodulation in relevant channel, and play and record FM content as evidence. By using SpecMini, user can detect illegal broadcasts and locate the source with directional antenna.

# 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	0Hz, 100Hz to 4.2GHz (T8142), 100Hz to 6.0GHz (T8160) T8142: Freq Slip, Span Zoom (1-2-5-10 series, 4GHz, 4.2GHz) T8160: 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	T8142: 10MHz to 4.2GHz T8160: 10MHz 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	1.1ms 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%																								
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 -190dBm to +70dBm (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 settings auto-coupled, 23±5°C ±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) @1GHz	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°C . Normalized to 1 Hz RBW  <table border="0"> <tr> <td>T8142:</td> <td>T8160:</td> </tr> <tr> <td>Sensitivity: Low -131dBm/Hz (typically -133dBm/Hz)</td> <td>Sensitivity Low: -129dBm/Hz (typically -132dBm/Hz)</td> </tr> <tr> <td>Sensitivity: Medium -151dBm/Hz (typically -153dBm/Hz)</td> <td>Sensitivity Medium: -149dBm/Hz (typically -152dBm/Hz)</td> </tr> <tr> <td>Sensitivity: High -168dBm/Hz (typically -169dBm/Hz)</td> <td>Sensitivity High: -166dBm/Hz (typically -168dBm/Hz)</td> </tr> </table>	T8142:	T8160:	Sensitivity: Low -131dBm/Hz (typically -133dBm/Hz)	Sensitivity Low: -129dBm/Hz (typically -132dBm/Hz)	Sensitivity: Medium -151dBm/Hz (typically -153dBm/Hz)	Sensitivity Medium: -149dBm/Hz (typically -152dBm/Hz)	Sensitivity: High -168dBm/Hz (typically -169dBm/Hz)	Sensitivity High: -166dBm/Hz (typically -168dBm/Hz)																
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Residual Response	-75dBm																								
Input-related Response	<table border="0"> <tr> <td>T8142:</td> <td></td> </tr> <tr> <td>10MHz to 1.285GHz, 3.22GHz to 3.7GHz</td> <td>&lt; -70dBc</td> </tr> <tr> <td>1.625GHz to 1.775GHz</td> <td>&lt; -55dBc</td> </tr> <tr> <td>1.285GHz to 1.625GHz, 1.775GHz to 2.35GHz, 2.71GHz to 3.22GHz</td> <td>&lt; -42dBc</td> </tr> <tr> <td>3.7GHz to 4.2GHz</td> <td>&lt; -35dBc</td> </tr> <tr> <td>2.35GHz to 2.71GHz</td> <td>&lt; -25dBc</td> </tr> <tr> <td>T8160:</td> <td></td> </tr> <tr> <td>10MHz to 1.1GHz</td> <td>&lt; -70dBc</td> </tr> <tr> <td>1.1GHz to 1.85GHz, 2.9GHz to 2.97GHz</td> <td>&lt; -41dBc</td> </tr> <tr> <td>1.85GHz to 2.9GHz, 2.97GHz to 3.11GHz, 3.7GHz to 5.6GHz</td> <td>&lt; -50dBc</td> </tr> <tr> <td>5.6GHz to 5.8GHz</td> <td>&lt; -45dBc</td> </tr> <tr> <td>3.11GHz to 3.7GHz, 5.8GHz to 6.0GHz</td> <td>&lt; -39dBc</td> </tr> </table>	T8142:		10MHz to 1.285GHz, 3.22GHz to 3.7GHz	< -70dBc	1.625GHz to 1.775GHz	< -55dBc	1.285GHz to 1.625GHz, 1.775GHz to 2.35GHz, 2.71GHz to 3.22GHz	< -42dBc	3.7GHz to 4.2GHz	< -35dBc	2.35GHz to 2.71GHz	< -25dBc	T8160:		10MHz to 1.1GHz	< -70dBc	1.1GHz to 1.85GHz, 2.9GHz to 2.97GHz	< -41dBc	1.85GHz to 2.9GHz, 2.97GHz to 3.11GHz, 3.7GHz to 5.6GHz	< -50dBc	5.6GHz to 5.8GHz	< -45dBc	3.11GHz to 3.7GHz, 5.8GHz to 6.0GHz	< -39dBc
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Second Harmonic Distortion	1.6GHz -70dBc																								
Third-order Intercept (TOI)	-10dBm tones, 1MHz apart, Sensitivity set to low, Ref set to -10 dBm +15dBm																								
P1dB	+5dBm (nominal)																								
Phase Noise @1GHz	<table border="0"> <tr> <td>T8142:</td> <td></td> </tr> <tr> <td>-96dBc/Hz, @10kHz (typically -98dBc/Hz)</td> <td></td> </tr> <tr> <td>-118dBc/Hz, @1MHz (typically -120dBc/Hz)</td> <td></td> </tr> <tr> <td>T8160:</td> <td></td> </tr> <tr> <td>-95dBc/Hz, @10kHz (typically -97dBc/Hz)</td> <td></td> </tr> <tr> <td>-115dBc/Hz, @1MHz (typically -116dBc/Hz)</td> <td></td> </tr> </table>	T8142:		-96dBc/Hz, @10kHz (typically -98dBc/Hz)		-118dBc/Hz, @1MHz (typically -120dBc/Hz)		T8160:		-95dBc/Hz, @10kHz (typically -97dBc/Hz)		-115dBc/Hz, @1MHz (typically -116dBc/Hz)													
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General																									
System settings	Presets, Save, ScreenCopy, Print, Language, Service, About																								
Connectors	RF input: N-type, female, 50Ω USB: USB type C Power interface: Slim Tip, DC 20V																								
Display	5.5-inch, 720p																								
Operating System	Android																								
Battery	Type: Lithium-ion Operation time: 6 hours Charging time: 2.5 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	200mm*99mm*67mm (7.8 in*3.9 in*2.6in)																								
Weight	1.25kg (2.8 lb)																								



**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 °C, 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 °C. 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
T8142	SpecMini handheld spectrum analyzer (10MHz to 4.2GHz)
T8160	SpecMini handheld spectrum analyzer (10MHz to 6.0GHz)
Accessories Model	Description
SPM-AS001	Power adapter (20V/4.5A output)
SPM-AS002	Power cable(China standard)
SPM-AS003	Power cable(US standard)
SPM-AS004	USB data cable
SPM-AS005	USB OTG cable
SPM-AS006	Capacitive pen
SPM-AS007	Portable box
SPM-AS008	Portable soft bag
Options	
SPM-AS010	700MHz to 2700MHz omnidirectional antenna
SPM-AS011	700MHz to 6000MHz omnidirectional antenna
SPM-AS012	700MHz to 4000MHz directional antenna
Replacement options	
SPM-AS021	11.1V and 6800mAH battery kit

*Keep innovating for excellence!*

### About us

Transcom Instrument Co., Ltd. founded in 2005 and headquartered in Shanghai, is a leading manufacturer and provider of RF and wireless communication testing instruments and overall solutions in China. Based on its independent brands and a wide range of core patented technologies, Transcom became national high-tech enterprise with independent intelligent property rights and has been listed into Shanghai Enterprise Recognition Award for High Growth SMEs in Technology.

Transcom is backed by a experienced and dedicated research team in mobile communication, radio frequency and microwave, and network optimization testing instrument. Through "Industry-University-Research" cooperation with universities, Transcom founded Southeast University-Transcom Electronic Measurement Technology Center at Southeast University to futher ensure technology and talent reserve, and secure future visionary and sustainable technology development.

Transcom's product portfolios focus 4 areas: cellular network critical communication planning/maintenance/optimization, Manufacturing testing solution, educational instrument/equipment, spectrum monitoring sensor for system integration.



ISO14001



ISO9001

### Headquarter

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Company Profile