



# S3302RC Real-Time Handheld Signal/Spectrum Analyzer

(5G, 4G/LTE, 3G Test Solution)

## Datasheet



Saluki Technology Inc.

## The document applies to the handheld spectrum analyzer of the following models:

- S3302RC handheld signal/spectrum analyzer (9kHz-9GHz).

### Standard pack and accessories:

No.	Item
1	Main Machine
2	Power cord
3	Power adapter
4	USB cable
5	Li-on Battery (Embedded)
6	Certificate of Calibration

### Options of the S3302RC handheld spectrum analyzer in addition to standard accessories:

Model No.	Description	Note
S3302RC-006	Power Adapter	Power Adapter
S3302RC-007	Rechargeable Lithium Ion Battery	Standby Battery
S3302RC-008	CAT5 LAN Cable	Point to Point, 2m Length
S3302RC-009	Micro SD Card	Class4, Capacity: 8G
S3302RC-010	GPS and BEIDOU function	GPS exposed Antenna
S3302RC-016	Interference Analyzer Option	Provide Spectrogram, RSSI Measurement etc. Functions
S3302RC-019	List Sweep Option	To Realize Continuous Sweep Measurement of Various Frequency Bands
S3302RC-020	Zero Span IF Output	Output the Third or Fourth IF Signal (Choose One of Two)
S3302RC-021	ZE9080 Directional Antenna A	Frequency Range:9kHz-20MHz,N(f) (Requires Option 025)
S3302RC-022	ZE9080 Directional Antenna B	Frequency Range:20MHz-200MHz, N(f) (Requires Option 025)
S3302RC-023	ZE9080 Directional Antenna C	Frequency Range:200MHz-500MHz, N(f) (Requires Option 025)
S3302RC-024	ZE9080 Directional Antenna D	Frequency Range:500MHz-8GHz, N(f) (Requires Option 025)
S3302RC-025	ZE9080 Antenna Amplifier	Frequency Range:10kHz-8GHz,N(m), include option 050 (Requires Option 021/022/023/024)

Model No.	Description	Note
S3302RC-028	Functional Bag	Protect the Instrument
S3302RC-029	Backpack	Easy to Carry
S3302RC-030	Safety Instrument Carrying Case	Used to Carry
S3302RC-038	Location Analyzer Option	Internal software which requires option 010, option 050 and directional antenna for function realization
S3302RC-041	Omnidirectional Whip Antenna	Frequency Range: 700MHz-2700MHz, suitable for communication frequency band
S3302RC-042	700MHz-4GHz Directional Antenna	Active Log Periodic Antenna, Frequency Range: 700MHz-4GHz
S3302RC-043	700MHz-6GHz Directional Antenna	Active Log Periodic Antenna, Frequency Range: 700MHz-6GHz
S3302RC-044	680MHz-10GHz Directional Antenna	Active Log Periodic Antenna, Frequency Range: 680MHz-10GHz
S3302RC-046	400MHz-4GHz Directional Antenna	Active Log Periodic Antenna, Frequency Range: 400MHz-4GHz
S3302RC-047	400MHz-6GHz Directional Antenna	Active Log Periodic Antenna, Frequency Range: 400MHz-6GHz
S3302RC-048	380MHz-10GHz Directional Antenna	Active Log Periodic Antenna, Frequency Range: 380MHz-10GHz
S3302RC-050	USB Electronic Compass	External USB electronic compass, requires option 038 for function realization
S3302RC-051	6GHz Omnidirectional Antenna	Portable Omnidirectional Antenna, Frequency Range: 680MHz-6GHz
S3302RC-052	8GHz Omnidirectional Antenna	Portable Omnidirectional Antenna, Frequency Range: 300MHz-8GHz
S3302RC-053	VHF/UHF Extension-Type Whip Antenna	Frequency Range: 140MHz/430MHz
S3302RC-054	Passive Directional Antenna (700MHz-4GHz)	Passive Log Periodic Antenna, Frequency Range: 700MHz-4GHz
S3302RC-055	Passive Directional Antenna (700MHz-6GHz)	Passive Log Periodic Antenna, Frequency Range: 700MHz-6GHz
S3302RC-056	Passive Directional Antenna (680MHz-10GHz)	Passive Log Periodic Antenna, Frequency Range: 680MHz-10GHz
S3302RC-060	N/SMA-JJ RF Cable (2m)	N/SMA RF Coaxial Cable (m-m), DC-18GHz, 2m length
S3302RC-061	N/SMA-JJ RF Cable (1m)	N/SMA RF Coaxial Cable (m-m), DC-18GHz, 1m length
S3302RC-067	ZE9080 Antenna Transportation Case	Special case for ZE9080 antenna, for the whole set of ZE9080 antenna and antenna amplifier, including option 021, 022, 023, 024, 025
S3302RC-068	Real-time Spectrum Analysis	Provide real-time spectrum analysis function, including digital fluorescence and waterfall chart
S3302RC-069	5G NR Measurement	Perform demodulation analysis of 5G NR signals

<b>Model No.</b>	<b>Description</b>	<b>Note</b>
S3302RC-070	Time Gated Measurement	Perform time slot signal analysis
S3302RC-071	LTE Measurement	Perform 4G LTE FDD/TDD demodulation analysis
S3302RC-072	GSM/EDGE Measurement	Perform 2G GSM/EDGE demodulation analysis
S3302RC-073	120MHz Analysis Bandwidth	The analog bandwidth is extended to 120MHz, affecting the zero-span IF output, IQ data acquisition, and real-time spectrum analysis functions
S3302RC-074	Indoor/outdoor Map Measurement	Built-in software, including indoor/outdoor maps, need to be used with 010 option

## Preface

Thank you for choosing S3302RC real-time handheld signal/spectrum analyzer produced by Saluki Technology Inc.

We devote ourselves to meeting your demands, providing you high-quality measuring instrument and the best after-sales service. We persist with “superior quality and considerate service”, and are committed to offering satisfactory products and service for our clients.

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## Version

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Saluki Technology

## Document Authorization

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## Product Quality Assurance

The warranty period of the product is three years from the date of delivery. The instrument manufacturer will repair or replace damaged parts according to the actual situation within the warranty period.

## Product Quality Certificate

The product meets the indicator requirements of the document at the time of delivery. Calibration and measurement are completed by the measuring organization with qualifications specified by the state, and relevant data are provided for reference.

## Quality/Settings Management

Research, development, manufacturing and testing of the product comply with the requirements of the quality and environmental management system.

## Contacts

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## 1. Overview

Saluki S3302RC spectrum analyzer is a broadband handheld real-time spectrum analyzer designed for field testing. The maximum real-time analysis bandwidth reaches 120MHz. It has real-time spectrum analysis, 5G NR demodulation analysis, LTE FDD/TDD demodulation analysis, GSM/ EDGE demodulation analysis, directional analysis and other measurement function modes, as well as field strength measurement, channel power, occupied bandwidth, adjacent channel power, audio demodulation, harmonic distortion, spectral emission mask/spurious emission mask, indoor/outdoor map measurement. It adopts 8.4-inch large-screen LCD and capacitive touch screen integrated design to facilitate user operation. The structure adopts a handheld chassis, which is small in size, light in weight, flexible in power supply, easy to maneuver, and is extremely suitable for on-site use.

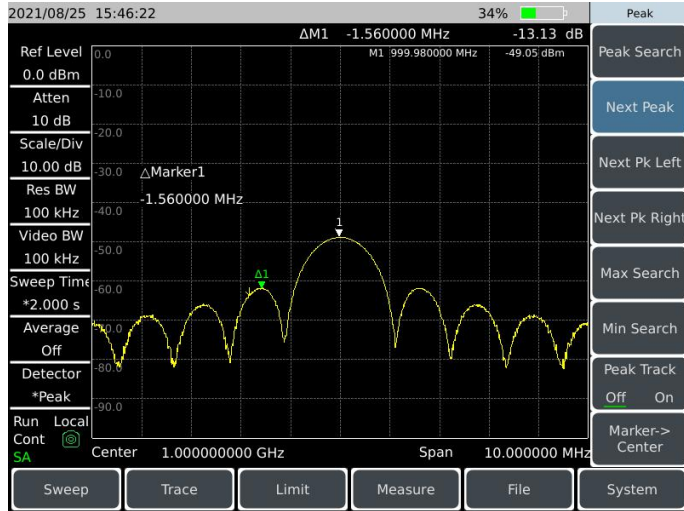
The S3302RC handheld signal/spectrum analyzer can be used for on-site debugging and installation and maintenance of mobile communications, wireless communications, radar, satellite communications and other equipment, wireless communication signal demodulation analysis, interference source direction finding and map positioning, broadband modulation or transient signal test analysis. In other fields, it can provide a relatively complete solution for the user's external field spectrum test.

## 2. Main Characteristics

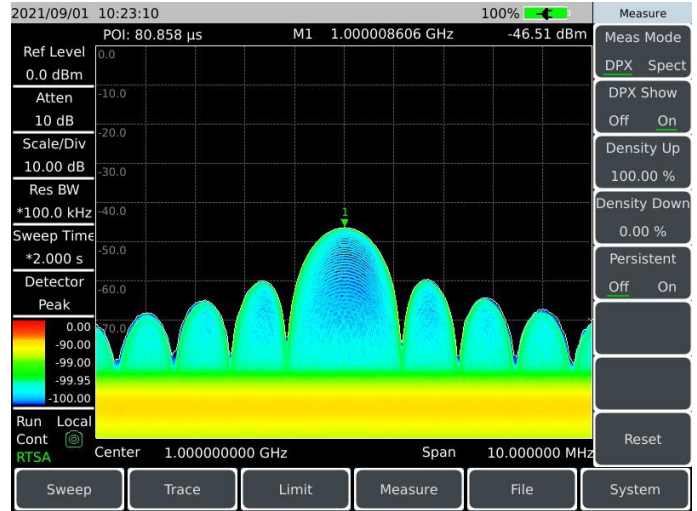
- Wide frequency range: from 9kHz to 9GHz
- Full-band preamplifiers configuration
- Excellent RF specification performance:
  - Low displayed average noise level: -163dBm@1Hz RBW (typical)
  - Phase noise performance: -115dBc/Hz@100kHz frequency offset@1GHz carrier
  - Input TOI point: +13dBm (typical)
  - Amplitude accuracy:  $\pm 1.3$ dB
- Real-time spectrum analysis function
- Support persistence spectrum and waterfall display mode
- Maximum real-time analysis bandwidth: 120MHz
- RTSA with 5.8us POI
- Resolution bandwidth: 1Hz-10MHz(1/3 step), 20MHz
- 512MHz IQ waveform capture
- Various measurement functions: spectrum analyzer, interference analyzer (spectrogram, RSSI), RTSA, 5G NR demodulation, LTE FDD/TDD demodulation, GSM/EDGE demodulation function etc.
- Various intelligent measurement functions: field strength measurement, channel power, occupied bandwidth, adjacent-channel power ratio, tune & listen, carrier-to-noise ratio, emission mask, indoor/outdoor map measurement, Support GPS/BEIDOU positioning and frequency taming calibration function of the crystal oscillator in the machine
- Various auxiliary test interface: 10MHz reference input/output interface, GPS antenna interface, zero span IF output interface, external triggering input interface etc.
- Easy & convenient user operation: 8.4 inch high definition LCD and large font display, convenient capacitive touch screen operation, combination of LCD and touch screen, various display modes etc.
- Working temperature range: -10°C to +50°C
- Power supplied by battery or AC



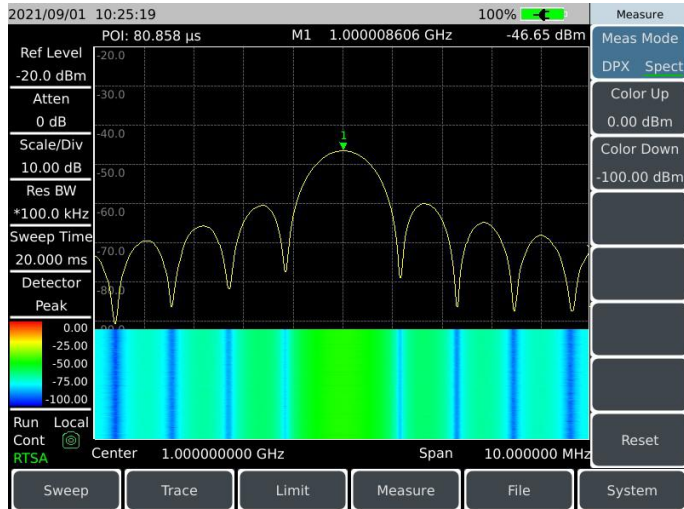
## Various Measurement Functions



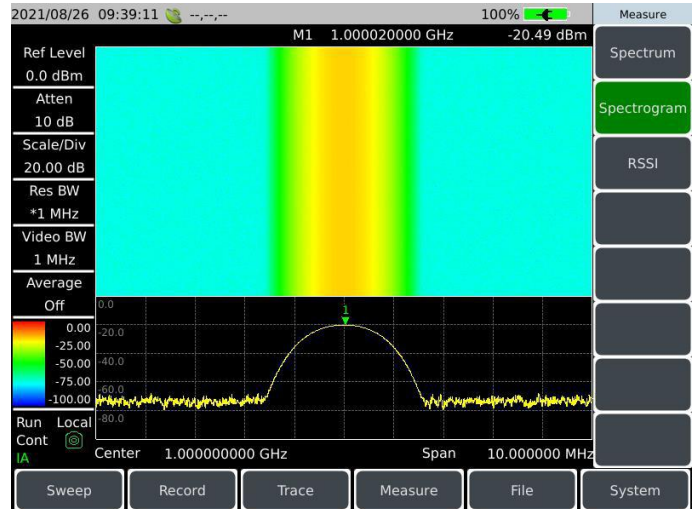
**Spectrum Analysis Mode**



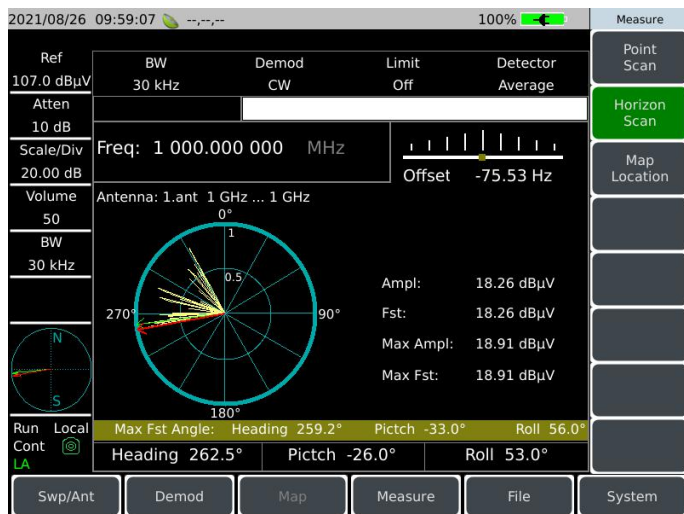
**RTSA Persistence Mode**



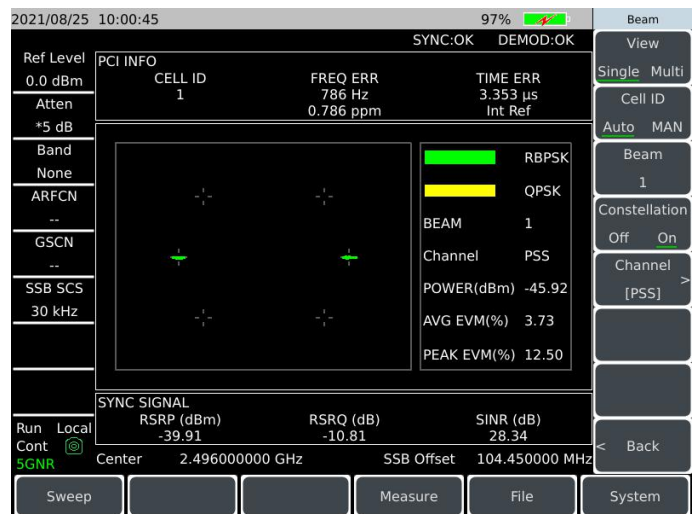
**RTSA Waterfall Mode**



**Interference Analysis Mode**

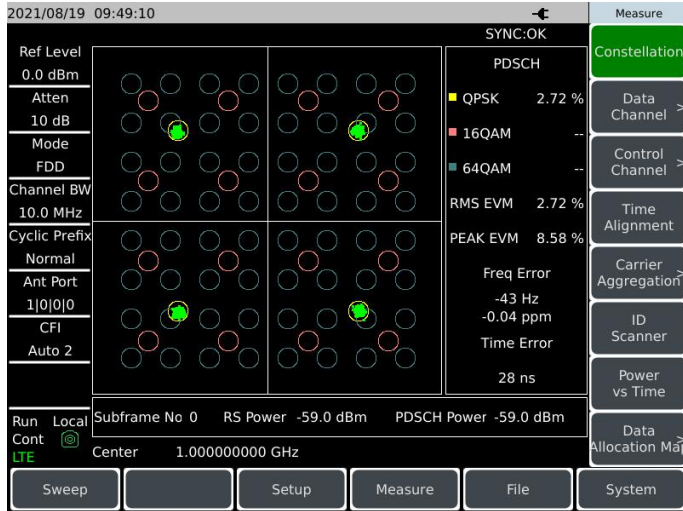


**Directional Analysis Mode**

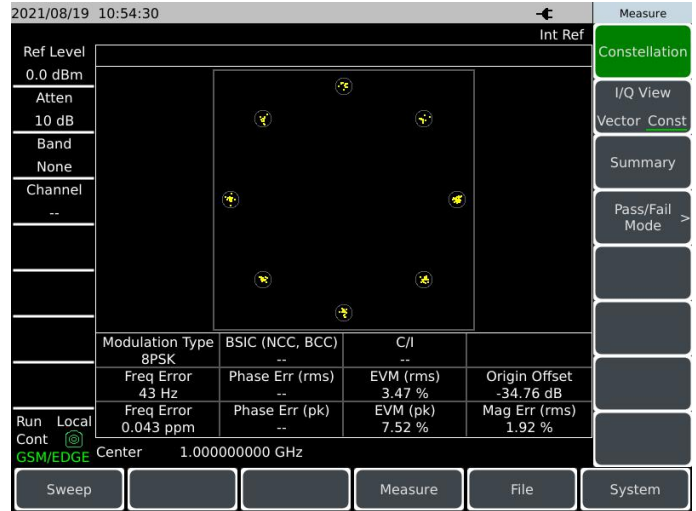


**5G NR Measurement**



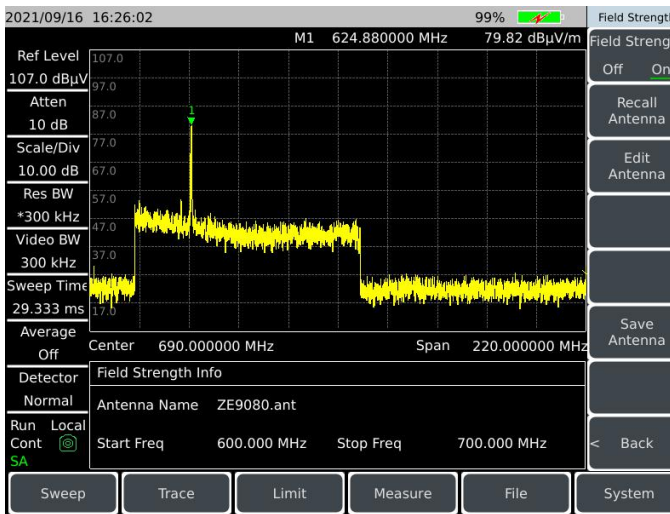


4G LTE Measurement

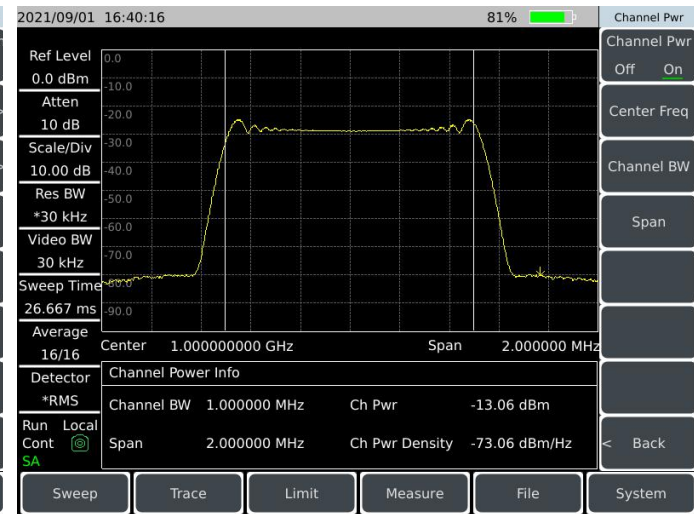


GSM/EDGE Measurement

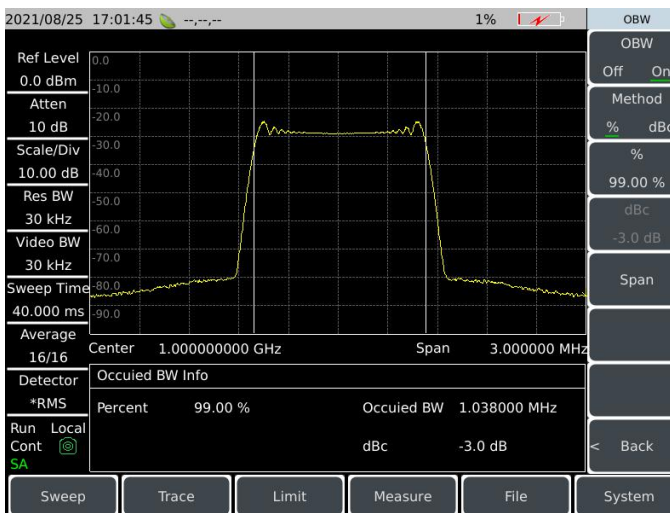
Comprehensive Intelligent Measurement Functions



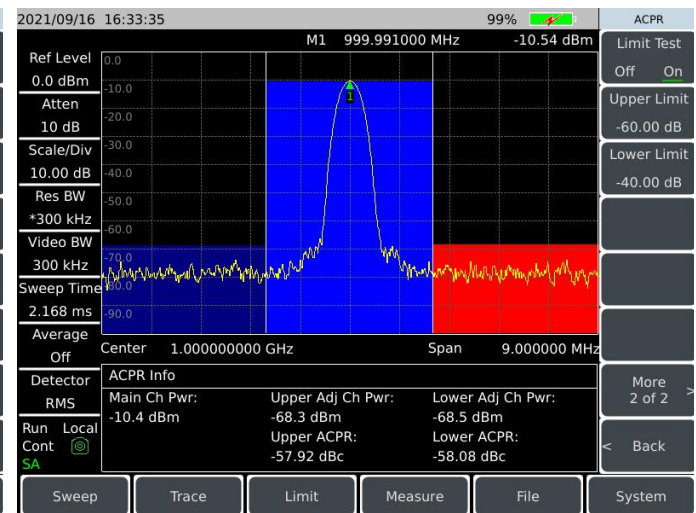
Field Strength Measurement



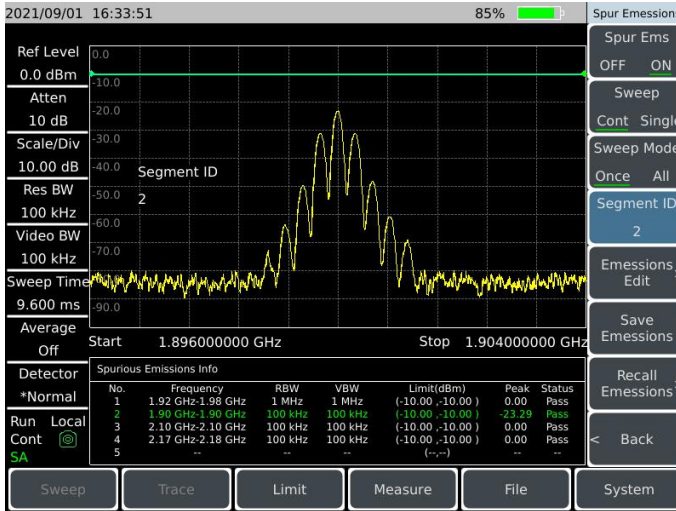
Channel Power



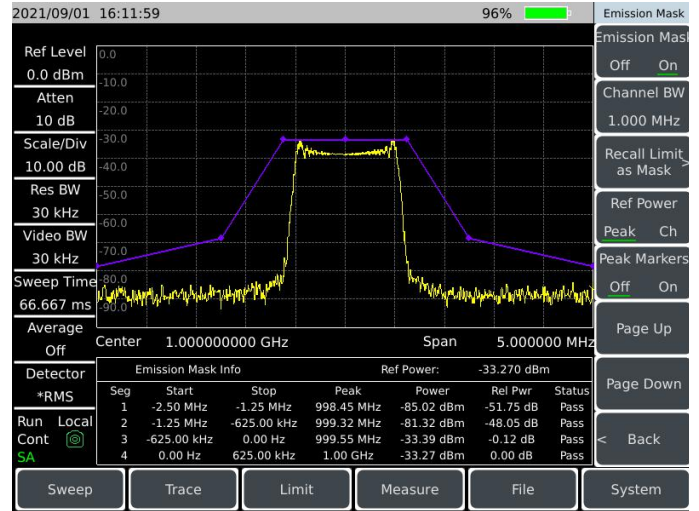
Occupied Bandwidth



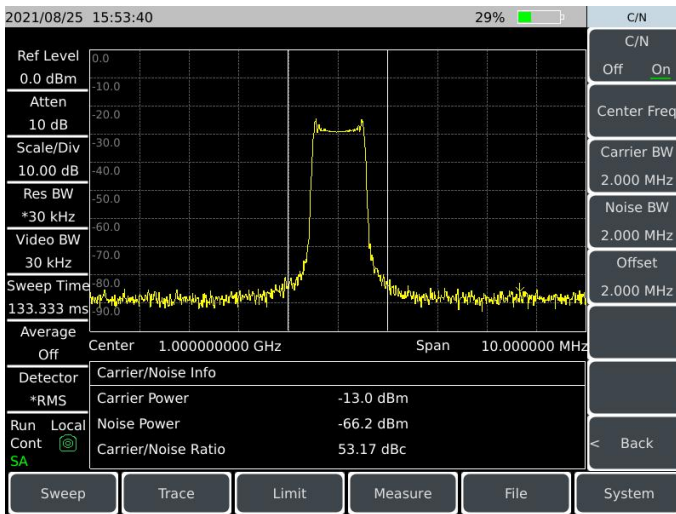
Adjacent-Channel Power Ratio



Spur Emission Mask



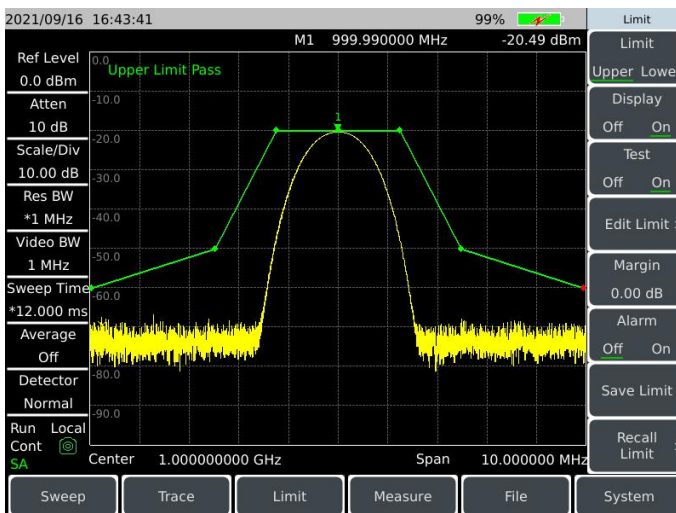
Emission Mask



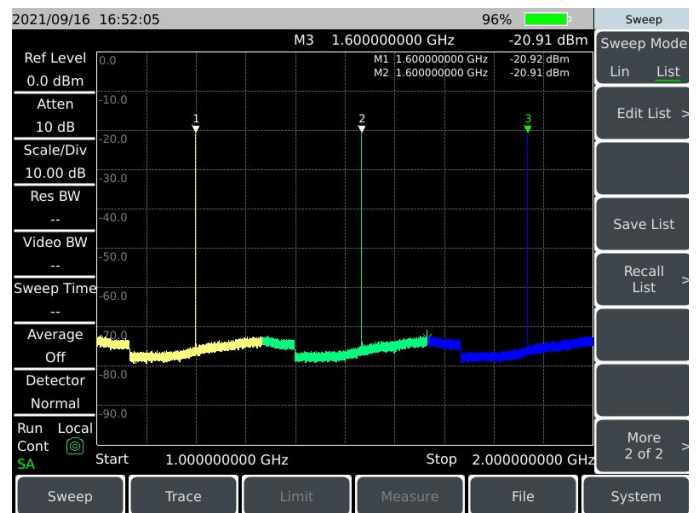
Carrier-to-Noise Ratio



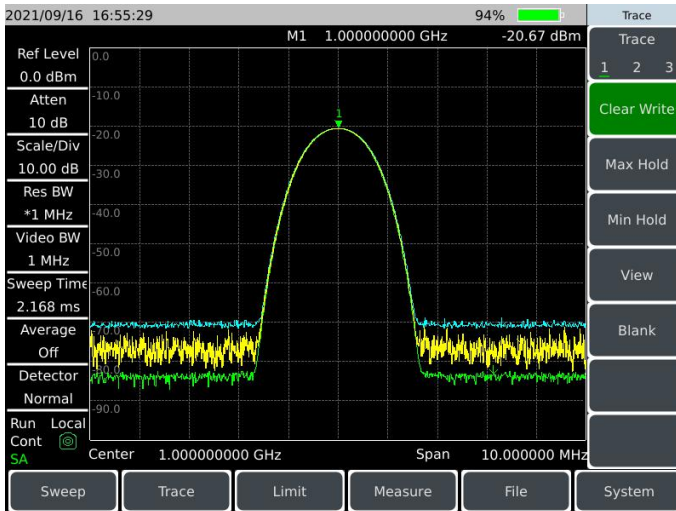
Harmonic Distortion



Limit Line

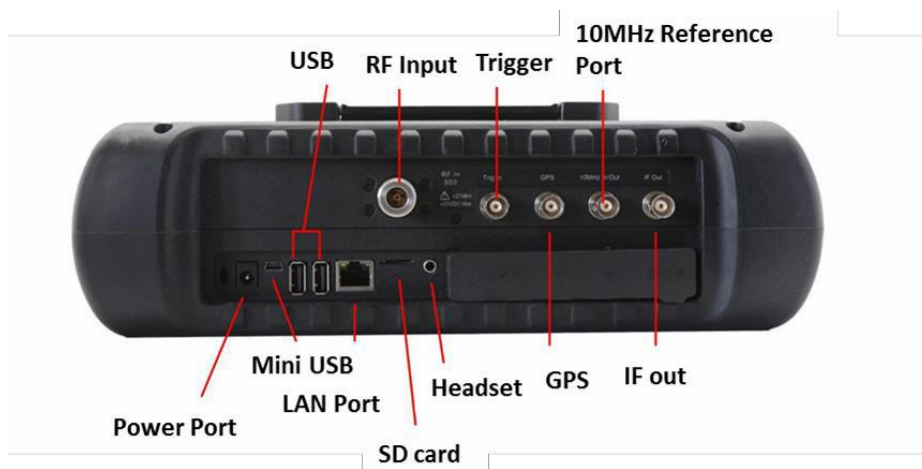


List Sweep



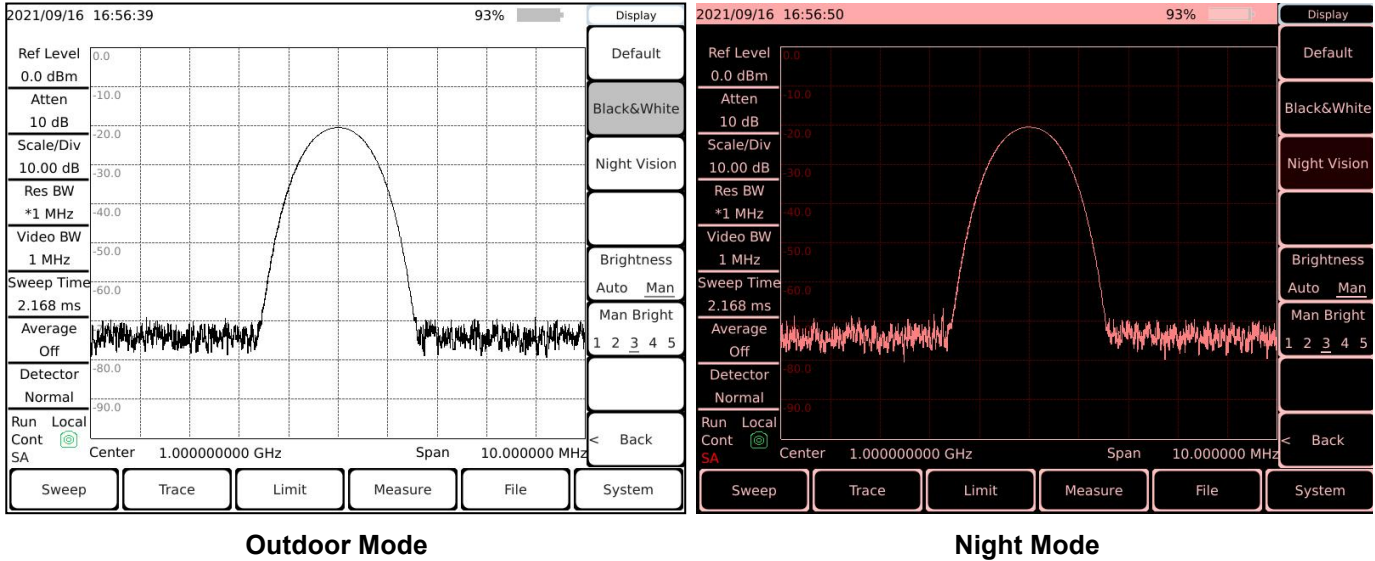
**Multi-Trace**

### Various Auxiliary Test Interfaces



### Easy & Convenient User Operation

- One-click quick measurement
- Storage and recall of state and data
- Combination of 8.4 inch LCD and capacitive touchscreen, smaller light refraction and clearer display
- Convenient capacitive touch screen operation
- Various display modes, better experience under outdoor light and night vision
- Backlight keys enable easy viewing in darkness



### 3. Typical Applications

#### Comprehensive Performance Evaluation of wireless communication base stations

S3302RC spectrum analyzer has 5G NR, LTE FDD/TDD, GSM/EDGE and other wireless communication signal demodulation analysis and 120MHz bandwidth real-time spectrum analysis function, adopts a handheld structure, small size, light weight, battery-powered , Can be applied to the field installation and commissioning of wireless communication base stations and maintenance support.

#### Field Test and Diagnosis of Transmitter and Receiver

S3302RC spectrum analyzer has various measurement function modes like spectrum analyzer, interference analyzer, Real-time spectrum analyzer, etc., as well as various intelligent measurement functions such as indoor/outdoor map measurement, channel power, occupied bandwidth, adjacent-channel power ratio, carrier-to-noise ratio, field strength measurement, emission mask etc.. It can provide comprehensive spectrum analysis and diagnosis service for the field test of transmitter and receiver.

#### Broadband Spectrum Monitoring, Interference Recognition

Connected with external directive antenna, S3302RC spectrum analyzer can be used for electromagnetic environment detection, radio interference analysis, electromagnetic environment background assessment, spectrum monitoring and illegal channel interference signal recognition.

### 4. Technical Specifications

<b>Model</b>	<b>S3302RC</b>
<b>Frequency Range</b>	S3302RC: 9kHz-9GHz Frequency Resolution:1Hz
	Frequency: 10MHz



<b>Frequency Reference</b>	Aging Rate: $\pm 0.5$ ppm/Year Initial Frequency Accuracy: $\pm 0.3$ ppm Temperature Stability: $\pm 0.1$ ppm(-10 to 50°C, Comparative to 25°C)
<b>Sweep Time</b>	Range: 10 $\mu$ s-6000s (Zero Span) Accuracy: $\pm 2.00\%$ (Zero Span)
<b>Frequency Readout Accuracy</b>	$\pm(\text{Frequency Readout} \times \text{frequency Reference} + 2\% \times \text{Span} + 10\% \times \text{Resolution Bandwidth})$
<b>Frequency Span</b>	Range: 100Hz-9GHz or 0Hz Accuracy: $\pm 2.0\%$
<b>Resolution Bandwidth</b>	1Hz-10MHz (1-3 Times of Stepping), 20MHz
<b>Video Bandwidth</b>	1Hz-10MHz (1-3 Times of Stepping), 20MHz
<b>SSB Phase Noise (Carrier 1GHz)</b>	$\leq -108$ dBc/Hz@ Frequency Offset 10kHz $\leq -110$ dBc/Hz@ Frequency Offset 100kHz $\leq -118$ dBc/Hz@ Frequency Offset 1MHz $\leq -129$ dBc/Hz@ Frequency Offset 10MHz
<b>Displayed Average Noise Level</b> (input port is connected with a 50ohm load, 0dB input attenuation, average detection, logarithm of video type, RBW normalized to 1Hz, tracking source off., 20°C-30°C)	Pre-amplifier Off: $\leq -140$ dBm (2MHz-3GHz) $\leq -138$ dBm (3GHz-9GHz) Pre-amplifier On: $\leq -160$ dBm (2MHz-3GHz) $\leq -157$ dBm (3GHz-9GHz)
<b>Residual Response</b>	(exceptional frequency: 3.15GHz): Pre-amplifier Off: $\leq -82$ dBm (10MHz-9GHz) Pre-amplifier On: $\leq -95$ dBm (10MHz-9GHz)
<b>Second Harmonic Distortion (0dB attenuation, -30dBm input signal)</b>	50MHz-2GHz: $< -65$ dBc 2GHz-4.5GHz: $< -70$ dBc
<b>TOI (-15dBm two-tone signal, 100kHz span, pre-amplifier off)</b>	50MHz-5.2GHz: $\geq +10$ dBm 5.2GHz-9GHz: $\geq +12$ dBm
<b>Absolute Amplitude Accuracy (input signal 0dBm to -50dBm, all settings are automatic couplings, 20°C-30°C, 30 minutes of preheating)</b>	$\pm 1.3$ dB (10MHz-9GHz)
<b>Input Attenuator</b>	Attenuation Range: 0dB-30dB, 5dB Steps

<b>Maximum Continuous Input</b>	+27dBm Peak Typical ( $\geq 10$ dB Attenuation) +20dBm Peak Typical (<10dB Attenuation) +10dBm Peak Typical (Pre-amp On)
<b>Reference Level</b>	Range: -150dBm to +30dBm Conversion Uncertainty: $\pm 1.20$ dB
<b>Dimension</b>	314mm (W) $\times$ 218mm (H) $\times$ 91mm (D) (Excluding Handle, Stand) 338mm(W) $\times$ 218mm (H) $\times$ 100mm (D) (Including Handle, Stand)
<b>Weight</b>	$\leq 4.6$ kg
<b>Working Temperature</b>	-10 $^{\circ}$ C to +50 $^{\circ}$ C (the battery operation temperature is 0 $^{\circ}$ C to +45 $^{\circ}$ C)
<b>Storage Temperature</b>	-40 $^{\circ}$ C to +70 $^{\circ}$ C (the battery storage temperature is -20 $^{\circ}$ C to +60 $^{\circ}$ C)
<b>Electromagnetic Compatibility</b>	Conforms to GJB3947A-2009 3.9.1 Requirements
<b>Power Supply</b>	AC power adapter: input 100 to 240VAC, 50/60Hz Output 15VDC, 4A Lithium-ion battery: 10.8V
<b>Battery operation time</b>	2h (typical)
<b>Power Consumption</b>	$\leq 40$ W
<b>Test Interface</b>	RF input: Type-N connector (female)
<b>Other Interfaces</b>	10MHz Reference Input/Output: BNC (female) connector External Triggering Input: BNC (female) connector IF Output: BNC (female) connector GPS Antenna Input: BNC (female) connector

## 5. Compliant

### 5.1. CE



- EMC

Complies with the requirements of the **EC EMC** directives.

Test Standards:EN 61326

- Safety

Complies with **EC LVD** Directive.

Test Standard:EN61010-1

## 5. 2. ISO



- Manufacturing

This instrument is manufactured in an ISO-9001 registered facility

**- End of Document -**