

S3501 Handheld Radio Communication Analyzer

(2MHz~1GHz) Radio testers for laboratory, production, service and maintenance



S3501 Handheld Radio Communication Analyzer is the ideal radio tester for laboratory, production, service and maintenance use. It combines radio frequency emission, reception analysis, audio source, analyzer, etc. all into one unit. It can measure the performance of radio from 2MHz to 1GHz, interphone, audio equipment as well as testing communication cables and standing-wave ratio.

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Excellent integrated test functions

S3501 Radio Communication Analyzer has more than 18 functions that can satisfy almost all radio emission and reception test requirements.

- RF Source
- Audio Source
- RF Power Meter
- RF Frequency Error Meter
- Strength Meter For Received Signal
- Spectrum Analyzer
- AM Depth Meter
- FM Deviation Meter
- Audio Frequency Meter
- Audio Voltmeter
- Distortion Meter
- SINAD Meter
- DVM Meter
- Oscilloscope
- Cable & Antenna Test

Key Features

- Optional extensions enable the S3501 to satisfy almost all requirements of radio measurements and even to cover related fields.
- Light-weight handheld design with low power consumption.
- Built-in high power capacity battery for long field applications.
- Impact, dust, and splash resistant
- 7" high contrast, backlit LCD screen with high resolution.
- A clear menu structure allowing fast and direct access to all measurement facilities.
- Double RF sources and pure spectrum supplies a whole integrated solution for radio and interphone test.

General Information

Operating Temperature	-10°C~+50°C (14°F~122°F)
Storage temperature	-40°C~+70°C (-40°F~158°F)
Dimensions (WxHxD)mm	295x195x70
Weight	Approx.2.5kg (Battery included)
Power Consumption	≤25W (While charging is disabled)
AC Power Supply	100~240V, 50/60Hz
DC Power Supply	12V~18V (Without battery) 15V~18V (With battery) Current: 4A (Min.)
Build-in Battery Supply	10.8V, ≥7000mAh

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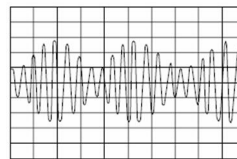
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Features To Boost Your Efficiency

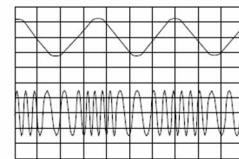
Multi interfaces, easily satisfies different requirements.



Built-in standard modulation source, AM/FM modulation



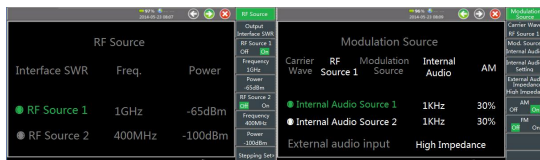
AM



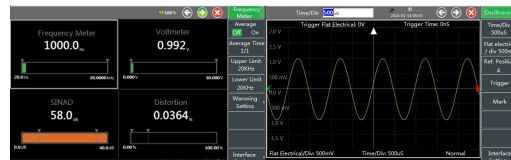
FM

Double RF signal sources make the test easier.

One RF source is 2MHz~1GHz and the other one is 2MHz~400MHz. It could be used separately or together.



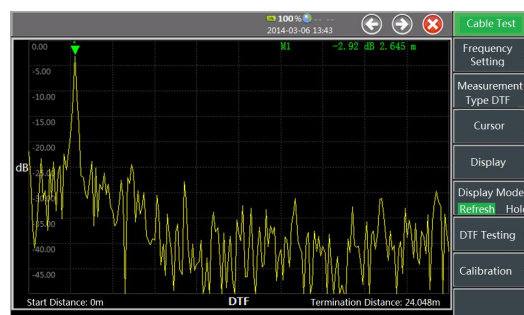
Accurate audio analysis, together with oscilloscope function, gives whole analysis for low frequency signals.



Powerful RF signal analysis function and real-time spectrum monitor, that supplies a multi-faceted test for Transmitter.



Cable & Antenna Test



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Technical Specifications

Frequency	Range	2MHz~1000MHz (Source 1)	
		2MHz~400MHz (Source 2,ANT output)	
	Resolution	1Hz	
Amplitude	Accuracy	Time base \pm 2Hz	
	Output level range	-5dBm~-55dBm(SWR, Source 1)	
		-5dBm~-100dBm(ANT, Source 1)	
		-50dBm~-125dBm(T/R, Source 1)	
Level accuracy	0dBm~-100dBm(ANT, Source 2)		
		\pm 2dB (\geq -100dBm)	
Spectral Purity	SSB phase noise	\leq -95dBc/Hz (Frequency offset 20kHz)	
	Harmonic spurious	\leq -30dBc	
	Non-harmonic spurious	\leq -35dBc (Frequency offset>20kHz)	
Build-in AM	Frequency range	30Hz~5kHz (20Hz~20kHz can be set)	
	Amplitude range	0~100%	
	Accuracy	5% (150Hz~5kHz Modulation rate,10%~90% Modulation depth)	
Build-in FM	Frequency range	20Hz~20kHz	
	Offset range	Max.100kHz	
	Accuracy	\pm 5% (100kHz offset, 150Hz~5kHz modulation rate)	
External AM	Audio input	Switchable load	150 Ω , 600 Ω , 1k Ω , High Z
		Input level	0.05Vp~3Vp
		Frequency range	300Hz~5kHz
	Microphone input	Level range	20mVrms~350mVrms
		Frequency range	300Hz~3kHz
		Amplitude range	0~80%
External FM	Audio input	Switchable load	150 Ω , 600 Ω , 1k Ω , High Z
		Input level	0.05Vp~3Vp
		Frequency range	300Hz~5kHz
		Slope	Positive voltage positive offset
	Microphone input	Level range	200mVrms~350mVrms
		Frequency range	300Hz~10kHz
		Offset range	0Hz~80kHz
		Slope	Positive voltage positive offset

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Double Audio Sources (Audio 1 & Audio 2)

Frequency	Range	20Hz~20kHz
	Resolution	0.1Hz
	Accuracy	Frequency standard \pm 2Hz
Output Level	Range	20mVrms~1.57Vrms
	Resolution	0.01Vrms
	Accuracy	\pm (5% \pm 5mV)
Harmonic Spurious		<3% (1kHz, 1Vrms)
Output Current		<15mA
Output		Single tone, Dual tone, Noise, Single tone & Noise

RF Power Meter (RF power input to T/R port broadband)

Range	0~43dBm (0~20W), External attenuation = 0
	0~53dBm (0~200W), External attenuation = 20
Min. Input Level	0.1W/20dBm
Max. Input Level	20W /43dBm (25°C, last 10mins or longer, no attenuator)
Accuracy	\pm 1dB (build-in attenuator)

Strength Meter For Received Signal (IF Bandwidth RF Power)

Range	-110dBm~43dBm (53dBm, External attenuation = 20dB)
	10pW~20W (200W, External attenuation = 20dB)
Available RF Level Range	-50dBm~43dBm (T/R port)
	-90dBm~-10dBm (ANT port, RF amplifier not connected)
	-110dBm~-10dBm (ANT port, RF amplifier connected)
Resolution	0.01dB
Accuracy	\pm 3dB

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Cable & Antenna Test

Frequency	Range	2MHz~1000MHz
	Resolution	0.1MHz
DTF Test	Range	1m~100m
	Resolution	0.01m
	Speed (Automatic Identification or by Manual)	0.00~1.00
	Testing accuracy	± 10%
Mark		3
Test Type		SWR, RL, LOSS, DTF
VSWR Testing Accuracy (20Ω airline check)		SWR reading ± 10%(Calibration value) ≤ 500MHz SWR reading ± 20%(Calibration value) > 500MHz

Audio Oscilloscope (Optional)

Signal Sources		External audio, DVM input, Demodulated signal
Scan Line		1
Mark		2
Broadband		20kHz
Trigger	Modes	Auto, Standard, Single
	Pulse edge	Up edge, Down edge
	Trigger level	-60V~+60V (Set based on range)
Horizontal	Range	0.2ms/grid~50ms/grid, by 1/2/5
	Accuracy	±3%
Vertical	Range	10mV~20V/grid, by 1/2/5
	Accuracy	±10%
Coupling	Audio input	AC
	DVM input	AC, DC
Input Impedance	Audio input	150Ω, 600Ω, 1kΩ, High Z
	DVM input	1mΩ

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RF Frequency Error Meter		Distortion Meter (THD)	
Capture Range	± 200kHz	Signal Sources	Audio input, Demodulated signal
Resolution	1Hz	Audio Frequency	1kHz
Accuracy	Time base ± 2Hz	Range	0~100%
AM Depth Meter		Resolution	0.10%
Range	5%~100%	Accuracy	± (5% x test data+0.1%) (Range 1%~20%)
Resolution	1%	SINAD Meter (1kHz Audio Frequency)	
Accuracy	±5%, 1kHz modulation rate 30%~90% depth, 3kHz LPF	Signal Sources	Audio input, Demodulated signal
FM Deviation Meter		Frequency	1kHz
Range	500Hz~100kHz	Range	0~40dB
Resolution	1Hz	Resolution	0.1dB
Accuracy	±5%, 1kHz~10kHz offset 150Hz~1kHz modulation rate	Accuracy	±1.5dB (Range 8~35dB)
Audio Frequency Meter		DVM Meter	
Signal Sources	Audio input, Demodulated signal	Input Frequency Range	DC~20kHz
Resolution	0.1Hz	Input Impedance	1MΩ
Accuracy	±1Hz	Coupling	AC, DC
Audio Voltmeter		Input level	20mVp~3Vp (Range 1), 1Vp~60Vp (Range 2)
Signal Sources	Audio input, Demodulated signal	Accuracy	± 10% (Range 1)
Audio input level	20mVp~3Vp (Range 1) 1Vp~30Vp (Range 2)	Spectrum Analyzer (Optional)	
Accuracy	± (5% x test data+5mV) (Range 1)	Range	2MHz~1GHz
Internal Time Base		Span	10kHz~998MHz
Aging	1x10 ⁻⁶ /Year	Ref. Level Range	-80dBm~50dBm
Temperature Stability	1x10 ⁻⁶	Resolution Bandwidth Range	10Hz~30kHz(step by 1,3,10)
		Average Noise Level	-120dBm(Typical, 10kHz bandwidth)

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Input & Output Port

Name	Mark	Type
RF Output	ANT	BNC
	T/R	
	SWR	
RF Input	ANT	
	T/R	
Audio Output	AUDIO OUT	
Audio Input	AUDIO/DVM IN	
DVM Input	AUDIO/DVM IN	
GPS Input	GPS	
Audio Box	AUDIO SET	

Standard Package:

Item	Name	Qty
1	AC Adaptor	1 PC
2	Standard three-phase power cord	1 PC
3	Built-in rechargeable battery	1 PC
4	USB cable	1 PC
5	User guide	1 PC
6	PC software CD	1 PC
7	Car-mount charger	1 PC
8	Soft Carrying Bag	1 PC

Optional Accessories

S3501-01	Audio Oscilloscope	
S3501-02	Spectrum Analyzer	
S3501-03	20dB Attenuator-50W	High-power measurements extended Connector Type N (J,K)
S3501-04	20dB Attenuator-150W	
S3501-05	20dB Attenuator-200W	
S3501-06	BNC/SMA-JK 1PC	BNC/SMA Adaptor
	BNC/SMA-JJ 1PC	
S3501-07	N/BNC-JJ 1PC	N/BNC Adaptor
	N/BNC-KJ 1PC	
S3501-08	Audio Box Set	Build-in Speaker, Microphone and Cable
S3501-09	High Z Passive Oscilloscope Probes	Audio input/DVM test
S3501-10	Type N Male Calibration Kit	
S3501-11	Type N Female Calibration Kit	
S3501-12	External GPS cable	
S3501-13	BNC Cable (80cm)	