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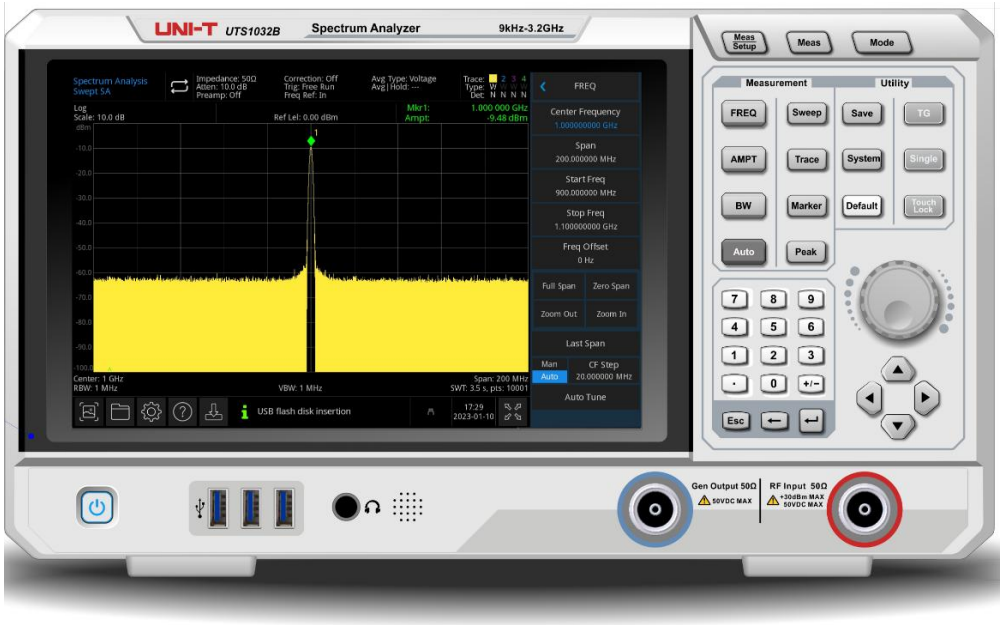


Data Sheet

UTS1000B Series Spectrum Analyzer

Product Features

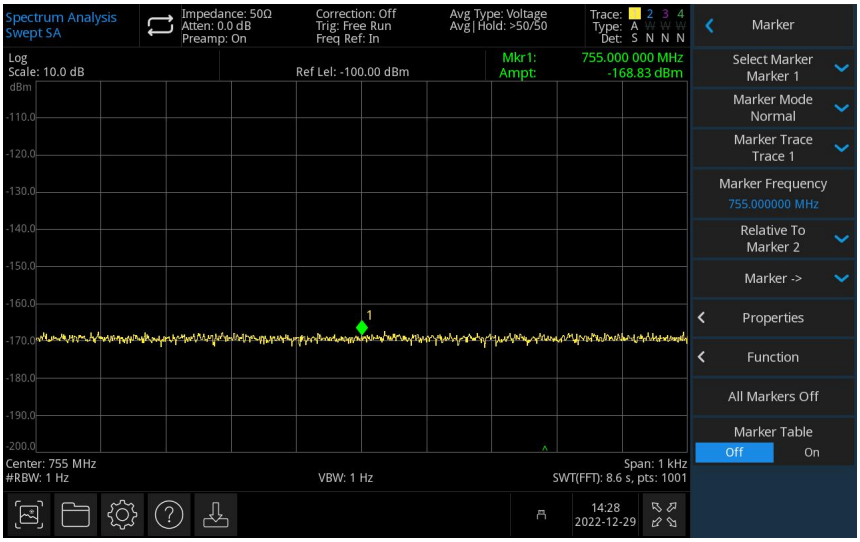
- Frequency measurement range：9 kHz~1.5 GHz，9 kHz~3.2 GHz
- Display average noise level can be as low as -161 dBm/Hz (typical value)
- Phase noise <-98 dBc/Hz（Offset 10 kHz, typical value）
- Full amplitude accuracy <0.7 dB
- Up to 10001 scanning points
- Minimum resolution bandwidth（RBW）1 Hz
- Advanced function one key measurement (optional)
- EMI Pre-compliance analysis function (optional)
- Support analog demodulation analysis (optional)
- Support digital demodulation analysis (optional)
- Support tracking source output function (UTS1000T model only)
- 10.1 inch 1280 × 800 HD capacitive touch screen
- Provide USB/LAN interface, support SCPI protocol

Multi touch HD screen for quick operation

10.1-inch multi-touch HD capacitive screen. Quick menu settings. Supports multiple gesture operations such as dragging, expanding, and zooming on the trace. Convenient human-computer interaction operation solves the problem of cumbersome and difficult operation to the greatest extent.

Excellent sensitivity to test weaker signals

The weak signal test is easily affected by the noise floor of the spectrum analyzer itself. UTS3000B series DANL as low as -161dBm, excellent sensitivity can effectively test weak signals.

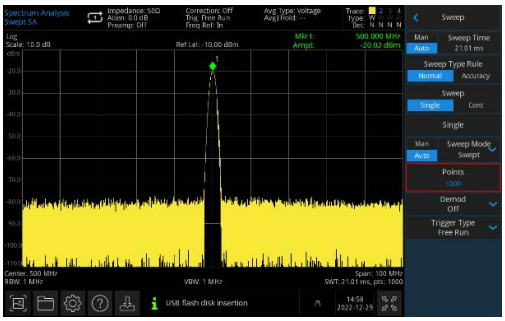


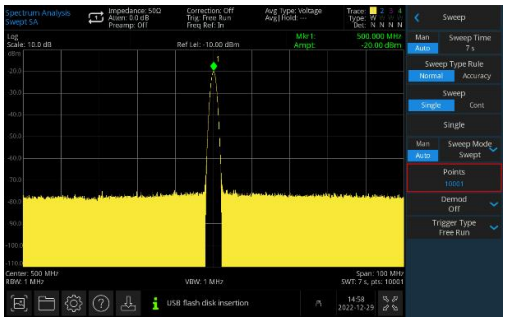
Removable dust mesh

With a detachable dust filter, after the instrument is used for a period of time, the user can remove the dust from the air inlet. To ensure the reliability of the whole machine, it can avoid short-circuit, burn or fire caused by dust.

Scan 10001 points

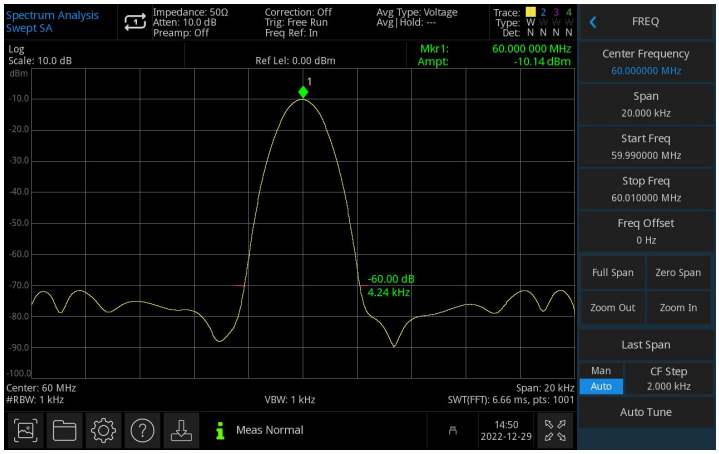
The UTS1000B series provides up to 10,001 sweep points, providing higher frequency resolution, making it easier to capture signals that are difficult to detect.





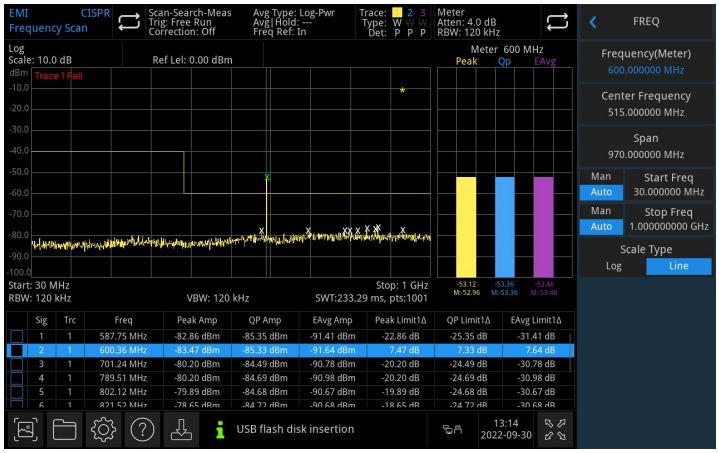
Excellent selectivity

It has stronger signal resolution capability of adjacent unequal amplitudes.



EMI pre-compliance

UTS1000B series Optional components, together with near-field probes, help you find and improve EMI defects in advance. Thereby shortening the development cycle.



Definitions and Conditions

"Specifications" describe the performance of the parameters covered by the product warranty in detail, unless otherwise noted, these specifications apply to the temperature range of 20°C to 30°C.
"Typical" refers to other product performance information not covered by the product warranty. 80% of the units can exhibit 95% confidence over the temperature range of 20 °C to 30 °C when performance is out of specification. Typical performance does not include measurement uncertainty.
"Nominal Value" means expected performance, or describes product performance that is useful in product applications but not covered by the product warranty.

The analyzer can meet its specifications under the following conditions:
Is in a calibration cycle and has warmed up for at least 30 minutes. If the analyzer is stored within the allowable storage temperature range but outside the allowable operating temperature range, it must be placed within the allowable operating temperature range for at least two hours before starting the analyzer.

Product function and model comparison table

	UTS1015B	UTS1032B	UTS1015T	UTS1032T
Spectrum analysis	●	●	●	●
Vector Signal Analysis	○	○	○	○
EMI	○	○	○	○
Analog demodulation	○	○	○	○
Advanced measurement	○	○	○	○
Tracking generator	×	×	●	●

Note：● standard ○ option × not supported

Frequency and Time Specifications

Frequency		
model	UTS1015B/T	UTS1032B/T
frequency range	9 kHz~1.5 GHz	9 kHz~3.2 GHz
resolution bandwidth	1 Hz	
10MHz internal frequency reference		
Frequency reference	10.000000 MHz	
Accuracy	±[(time since last adjustment x aging rate) + temperature stability +calibration accuracy]	
Achievable initial calibration accuracy	<1 ppm	
Temperature stability	<1 ppm	5 to+45 ℃， Take 25 ℃ as reference
Aging rate	≤±1.0 ppm/ year	
Frequency readout accuracy (start, stop, center, marker)		
Marker resolution	Span / (Sweep point-1)	
Marker frequency uncertainty	± (marker frequency x frequency reference accuracy + 1 % x span + 10 % x RBW+marker resolution)	
Marker Mode	Normal、Delta△、Fixed	
Marker function	Marker Noise、Band Power、Band Density、N dB、Counter	
Counter resolution	1 Hz	
Uncertainty of frequency counter	±[marker frequency x frequency reference accuracy+Counter resolution]	
Frequency span (FFT and swept mode)		
Sweep range	0 Hz， 100 Hz to 1.5 GHz	0 Hz， 100 Hz to 3.2 GHz
Sweep accuracy	Swept	±[0.25%*Span+Span/ (Points-1)]
	FFT	±[0.10%*Span+Span/ (Points-1)]
Sweep time and triggering		
Sweep time	1 ms to 4000 s (span≠0)	
	1 µs to 4000s (span = 0)	
Sweep Type Rule	Accuracy、Normal	
Sweep Mode	Swept(1 kHz ~ 1 MHz)， FFT(1 Hz ~ 30 kHz)	
Sweep Rules	Single、Continuous	
Trigger Type	Free Run、External、Video	

External trigger input	TTL， Rising/Falling
Resolution bandwidth (RBW)	
Range (-3dB bandwidth)	1 Hz to 1 MHz， 1-3-10 steps
Selectivity (-60 dB/-3 dB)	<4.8:1 (nominal) -60 dB:-3 dB
Bandwidth accuracy (-3dB)	< 5% (nominal)
Video bandwidth (VBW)	
Range	1 Hz ~1 MHz， 1-3-10 steps
Uncertainty of video bandwidth	< 5%

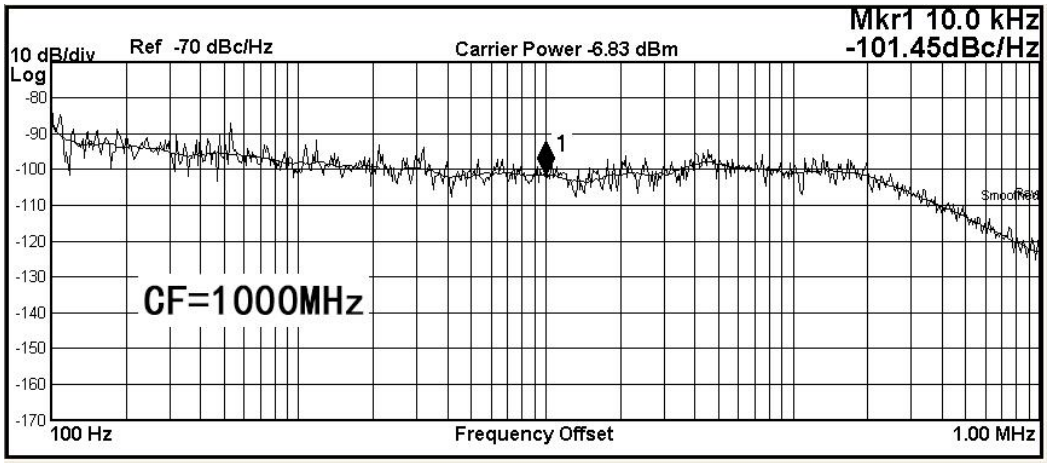
Amplitude Accuracy and Range Specifications

Amplitude range		
range	10 MHz to maximum frequency：（DANL）to +30 dBm	
Reference level	-100 dBm to+30 dBm，steps 1 dB	
Preamp	20 dB，Nominal，9 kHz~1.5 GHz（3.2 GHz）	
Input attenuator range	0~51 dB，1 dB Steps	
Maximum safe input level		
DC volts	50 V DC	max
Maximum continuous wave RF power	≤+33 dBm	3 minutes， Input attenuation >20 dB
Display range		
Log scale	1 dB to 200 dB	
Linear scale	0 to Reference level	
Scale units	dBm，dBmV，dBμV，V，W	
Sweep (trace) point range	10001	
Number of traces	4	
Detector	Sample、Peak、Negative、Normal、Average	
Trace Type	Clear/Write、Average、Max Hold、Min Hold	
Frequency response		
20℃ ~30℃，30%~70% relative humidity，Input attenuation 20 dB，be relative to50MHz。		
Preamp Off	9kHz~3.2GHz	±0.6 dB; ±0.3 dB，Typical
Preamp On	100kHz~3.2GHz	±1.0 dB; ±0.8 dB，Typical
Error and precision		
Resolution bandwidth switching uncertainty	Relative to 10 kHz RBW logarithmic resolution ± 0.2 dB, linear resolution ± 0.01，Nominal	
Input attenuation switching uncertainty	20 ~30 ℃,fc=50 MHz, Preamp Off, Relative to 20 dB attenuation, Input attenuation 1~51 dB	
	±0.5 dB	
Absolute amplitude accuracy	20 ~30 ℃,fc=50 MHz, RBW=1 kHz, VBW=1 kHz, Peak detectors, Input attenuation20 dB	
	±0.4 dB，Input signal level-20 dBm，Preamp Off	
	±0.5 dB，Input signal level-40 dBm，Preamp On	

Total absolute amplitude accuracy	20~30 ℃,Fc>100 kHz, Input signal level-50 dBm~0 dBm, RBW=1 kHz, VBW=1 kHz, Peak detectors, Input attenuation 20 dB, Preamp Off, 95% confidence	
	±(0.4 dB+ Frequency response)	
Input voltage standing wave ratio (VSWR)	1 MHz to 1.5 GHz ≤1.8，（Nominal）	1 MHz to 3.2 GHz ≤1.8，（Nominal）

Dynamic Range Specifications

1 dB gain compression			
	Fc ≥ 50 MHz, Input attenuation 0 dB, preamp off, 20 ℃ to 30 ℃		
	>-5 dBm，Nominal		
Displayed average noise level (DANL)			
Input load termination, 0dB RF attenuation, RBW=1Hz, VBW=1Hz, sample detector, average ＞ 50			
Preamp off	9 kHz~500 kHz	-130 dBm（Nominal）	-105 dBm（Nominal）
	500 kHz~1 MHz	-143 dBm，-145 dBm（Typical）	-115 dBm，-120 dBm（Typical）
	1 MHz~10 MHz	-142 dBm，-144 dBm（Typical）	-127 dBm，-130 dBm（Typical）
	10 MHz~200 MHz	-142 dBm，-143 dBm（Typical）	-142 dBm，-145 dBm（Typical）
	200 MHz~1.5 GHz	-140 dBm，-142 dBm（Typical）	-143 dBm，-146 dBm（Typical）
	1.5 GHz~3.2 GHz	---	-140dBm，-143dBm（Typical）
Preamp on	9 kHz~500 kHz	-145 dBm（Nominal）	-125 dBm（Nominal）
	500 kHz~1 MHz	-155 dBm，-157 dBm（Typical）	-130 dBm，-135 dBm（Typical）
	1 MHz~10 MHz	-155 dBm，-158 dBm（Typical）	-145 dBm，-147 dBm（Typical）
	10 MHz~200 MHz	-158 dBm，-160 dBm（Typical）	-158 dBm，-160 dBm（Typical）
	200 MHz~1.5 GHz	-159 dBm，-161 dBm（Typical）	-161 dBm，-164 dBm（Typical）
	1.5 GHz~3.2 GHz	---	-159 dBm，-161 dBm（Typical）
Spurious responses			
Second harmonic distortion (SHI)	Preamp off，Signal input-30 dBm，0dB RF attenuation		
	Fc≥50 MHz	-65 dBc/+35 dBm	
Third-order intermodulation distortion (TOI)	Preamp off，Signal input-20 dBm，0 dB RF attenuation，Fc≥50 MHz		
	+10 dBm；+13 dBm Nominal		
Input related spurious	Mixer level：-30 dBm，20℃ to 30℃		
	＜-60 dBc		
Residual responses	Input port 50 Ω，RF attenuation 0 dB，20℃ to 30℃		
	＜-90 dBm		
Phase noise			
Offset relative to continuous wave signal Fc=1 GHz，RBW=1 kHz，VBW=10 Hz，Sampling detection，Log avg，avg＞50			
10kHz	-95 dBc/Hz，-98 dBc/Hz（Typical）	-95 dBc/Hz，-98 dBc/Hz（Typical）	
100kHz	-96 dBc/Hz，-98 dBc/Hz（Typical）	-100 dBc/Hz（Typical）	
1MHz	-115 dBc/Hz，-120 dBc/Hz（Typical）	-115 dBc/Hz，-120 dBc/Hz（Typical）	



Freq Offset	Trace1	Trace2	Trace3
100 Hz	-80.40 dBc/Hz	-84.70 dBc/Hz	---
1.00 kHz	-99.72 dBc/Hz	-97.88 dBc/Hz	---
10.0 kHz	-101.61 dBc/Hz	-101.45 dBc/Hz	---
100 kHz	-101.85 dBc/Hz	-100.88 dBc/Hz	---
1.00 MHz	-118.57 dBc/Hz	-122.65 dBc/Hz	---

TG Specifications

Frequency		
Frequency range	100 kHz to 1.5 GHz	100 kHz to 3.2 GHz
Counter resolution	10 Hz	
Output power level		
Range	-40 dBm to 0 dBm	
Resolution	0.5 dB	
Flatness output	be relative to 50 MHz	
	±3 dB	
Maximum safe reverse input level		
Average total power	30 dBm	
AC coupling	±50 VDC	

Modulation analysis technical indicators

Demodulation		
Frequency range	2 MHz to 1.5 GHz	2 MHz to 3.2 GHz
Carrier power accuracy	±2 dB	
Input power	-30 dB to +20 dBm	Automatic attenuation
Carrier power display resolution	0.01 dBm	
AM measurement (option)		
Modulation rate	20 Hz to 100 kHz	
accuracy	1 Hz (Nominal)	Modulation rate < 1 kHz
	< 0.1%Modulation rate (Nominal)	Modulation rate≥1 kHz

depth	5 to 95%	
accuracy	±4% (Nominal)	
FM measurement (option)		
Modulation rate	20 Hz to 100 kHz	
accuracy	1 Hz (Nominal)	Modulation rate < 1 kHz
	< 0.1%Modulation rate (Nominal)	Modulation rate≥1 kHz
frequency offset	1 kHz to 400 kHz	
accuracy	±4% (Nominal)	
Digital demodulation (option)		
modulation type	ASK(2ASK);	
	FSK:2, 4, 8, 16 level;	
	MSK(GMSK);	
	PSK: BPSK, QPSK, OQPSK, 8PSK;	
	DPSK: DBPSK, DQPSK, D8PSK, π/4 -DQPSK, π/8 -D8PSK;	
	QAM: 16, 32, 64, 128, 256	
Measure symbol length	16 to 4096	
Number of sign points/oversampling rate	4, 6, 8, 10, 12, 14, 16	
Symbol rate	1 ksps to 2.5 Msps, Number of symbol points * symbol rate<=10 Msps	

Interface and display

Common interface	
RF Input	Type-N female, 50 Ω, nominal
Front panel trace source output	Type-N female, 50 Ω, nominal
10MHz Ext Ref In	10 MHz, >0 dBm, 50 Ω, BNC female, 50 Ω, nominal
10 MHz out	10 MHz, -5 dBm~+10 dBm, 50 Ω, BNC female, 50 Ω, nominal
External trigger input	TTL, BNC female
HDMI display	HDMI 1.4Display interface
USB-Host	USB-A 3.0
USB-Device	USB-B 2.0
LAN	LAN(VXI11), 10/100/1000 Base, RJ-45
Display screen	
Display Type	10.1 inch capacitive multi-touch panel
Display resolution	1280×800, RGB Vertical pixel

Advanced measurement kit

Power Measurement	
Channel power	Channel power, Power spectral density
ACP,Adjacent channel power	Main CH Power, Left channel power, Right channel power
Occupied Bandwidth	Occupied Bandwidth, Transmit Frequency Error
Time Domain Power	Zero Span Integrated Power
CNR,Carrier Noise Ratio	C/N, Noise Power
Non-Linear Measurement	
TOI, Third-Order Intercept	Measure the third-order products from two tones
Harmonic measurement	Max Harmonic number 10
Spectrum Monitor Measurement	
Spectrogram	

General technical specifications

Specifications		
Supply voltage	100 to 240 VAC (Fluctuations±10%)	100 to 120 VAC (Fluctuations±10%)
Frequency	50/60 Hz	400 Hz
Environment		
Temperature range	operation: 0℃ ~ +40℃	
	Non operational: -20℃ ~ +70℃	
Cooling method	Fan forced cooling	
Humidity range	operation: Below +35 ℃ ≤90%relative humidity; Non operational: +35 ℃ ~ +40 ℃ ≤60%relative humidity	
Altitude	operation: Below 3000 m; Non operational: Below 15000 m	
Pollution degree	2	
Operating environment	Indoor use	
Mechanical specifications		
Dimensions	378mm×218mm×120mm (Width x Height x Length)	
Net weight	4.55kg	
Calibration cycle	The recommended calibration circle is one year	
Regulatory standards		
EMC	Compliance with EMC directives(2014/30/EU), Conform to or better than IEC 61326-1:2021/EN61326-1:2021, IEC 61326-2-1:2021/EN61326-2-1:2021	
Conductive disturbance	CISPR 11/EN 55011	CLASS B group 1, 150kHz-30MHz
Radiation disturbance	CISPR 11/EN 55011	CLASS B group 1, 30MHz-1GHz
(ESD)Electrostatic discharge (ESD)	IEC 61000-4-2/EN 61000-4-2	4.0 kV (Contact), 8.0 kV (air)
Radio frequency electromagnetic field immunity	IEC 61000-4-3/EN 61000-4-3	0V/m (80 MHz to 1 GHz); 3V/m (1.4 GHz to 2 GHz); 1V/m (2.0 GHz to 2.7GHz)
(EFT)Electrical fast transient burst (EFT)	IEC 61000-4-4/EN 61000-4-4	2kV (AC input port)

Surge	IEC 61000-4-5/EN 61000-4-5	1kV (Live line to zero line) 2kV (Fire/zero line to ground)
Immunity to RF continuous conduction	IEC 61000-4-6/EN 61000-4-6	3V,0.15-80MHz
Voltage dips and short interruptions	IEC 61000-4-11/EN 61000-4-11	Voltage dip: 0% UT during 1 cycle; 40% UT during 10/12 cycles; 70% UT during 25/30 cycles Short Interruption: 0% UT during 250/300 cycles
Safety regulations		
	EN 61010-1:2010+A1:2019 EN IEC61010-2-030:2021+A11:2021 BS EN61010-1:2010+A1:2019 BS EN IEC61010-2-030:2021+A11:2021 UL 61010-1:2012 Ed.3+ R:19 Jul2019 UL 61010-2-030:2018 Ed.2 CSA C22.2#61010-1:2012 Ed.3+U1;U2;A1 CSA C22.2#61010-2-030:2018 Ed.2	

Ordering information

	Description	Ordering No.
Models	Spectrum analyzer，9 kHz to 1.5 GHz	UTS1015B
	Spectrum analyzer，9 kHz to 3.2 GHz	UTS1032B
	Spectrum analyzer，9 kHz to 1.5 GHz,TG	UTS1015T
	Spectrum analyzer，9 kHz to 3.2 GHz,TG	UTS1032T
Standard accessories	Power cord ×1	
	USB cable x1	UT-D04
Recommended options & accessories		
Options	Advanced measurement kit	UTS1000-AMK
	EMI measurement option	UTS1000-EMI
	Analog demodulation measurement option	UTS1000-AMA
	Digital demodulation analysis option	UTS1000-VSA
UT-CK01 accessories kit	SMAJ-NJ-0.7M DC-6G Cable x1	UT-W02-6GHz
	NJ-NJ-0.7M DC-6G Cable x1	UT-W01-6GHz
	Adapter SMA-N-KJ-T DC-6GHz x2	UT-C01-6GHz
	Adapter N-BNC-JK DC-4GHz x2	UT-C02-6GHz
	Antenna 2400MHz-2500MHz x2	UTS-T01
	Antenna 824-960MHz/1710-1990MHz x2	UTS-T02
UTS-EMI01 Near-field probes kit	50Ω-SMA-SMB Cable x1	UT-W03
	Adapter SMA-N-KJ-T DC-6 GHz x1	UT-C01
	Near field probe，frequency range 30 MHz-3 GHz，Detection range 10 cm x1	NFP-3G-P1
	Near field probe，frequency range30MHz-3GHz，Detection range 3 cm x1	NFP-3G-P2
	Near field probe，frequency range30MHz-2GHz，resolving power 5 mm x1	NFP-2G-P3
	Near field probe，frequency range30MHz-3GHz，resolving power 2 mm x1	NFP-3G-P4

Warranty and Service

If the spectrum analyzer is under warranty or is covered by a maintenance contract, it will be repaired under the terms of warranty as below. If the analyzer is no longer under warranty, UNI-T will notify you of the cost of repair after examining the analyzer.
UNI-T UTS1000B series spectrum analyzers provide 1- year warranty for mainframes and 1-year warranty for accessories as standard.
The above warranty applies to all UNI-TREND test measurement instrument products procured through the UNI-TREND authorized distributors. Product purchased from outside the UNI-TREND instruments network will be serviced by the selling agents and not UNI-TREND TECHNOLOGY. Please Go to UNI-T official website ->instruments->support->Where to buy to find the authorized test and measurement instrument distributors.

Learn more at: www.uni-trend.com

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