

TEKTRONIX

RSA306

The Tektronix RSA306 is a portable, USB-powered real-time spectrum analyzer offering a frequency range of 9 kHz to 6.2 GHz with a 40 MHz real-time bandwidth. Powered through a USB 3.0 interface and utilizing the comprehensive Tektronix SignalVu-PC software on an external PC, the RSA306 delivers full-featured spectrum analysis, streaming capture, and high-performance DPX spectrogram analysis in a compact, ruggedized package designed to meet MIL-STD-28800 Class 2 environmental standards.

SPECIFICATIONS

General

Interfaces	USB 3.0 Type Micro-B with screw-lock, SMA female trigger and reference connectors
Display	None (uses external PC screen via SignalVu-PC software)

Physical

Power Supply	USB 3.0 bus powered (5.0 V, 900 mA maximum, ≤ 4.5 W)
Operating Temperature	-10 °C to +55 °C °C
Dimensions (W×H×D)	127.0 mm × 30.5 mm × 190.5 mm mm
Weight	0.59 kg kg
Form Factor	Portable, USB-powered RF digitizer / receiver

Frequency

Frequency Range	9 kHz to 6.2 GHz
Real-Time Capture Bandwidth	40 MHz
Center Frequency Resolution (Block IQ)	1 Hz
Center Frequency Resolution (Streamed ADC)	500 kHz
Frequency Reference Initial Accuracy	± 3.0 ppm (at 23 °C)
Frequency Reference Temperature Stability	± 14 ppm (-10 °C to 55 °C)
Frequency Reference Aging Rate	± 1.0 ppm per year

Amplitude & Sensitivity

Measurement Range	+20 dBm to -160 dBm
RF Input Impedance	50 Ω
RF Input VSWR	$\leq 1.8:1$ (10 MHz to 6200 MHz, reference level ≥ -15 dBm, typical)
Maximum Safe RF Input DC Voltage	± 40 VDC
Maximum Safe RF Input (Reference Level ≥ -10 dBm)	+23 dBm (continuous or peak)
Displayed Average Noise Level (5 GHz)	-150 dBm/Hz (typical)
Absolute Amplitude Accuracy	± 1.25 dB (9 kHz to 6.2 GHz, 18 °C to 28 °C)
Frequency Response Flatness	± 1.0 dB (over 40 MHz RF Bandwidth, 18 °C to 28 °C)
Input Attenuation Range	0 dB to 51 dB
Input Attenuator Step Size	1 dB

Real-Time & Acquisition

Minimum Event Duration for 100% POI	100 μ s
A/D Converter Resolution	14 bits
A/D Converter Sampling Rate	112 MS/s
IF Bandwidth	40 MHz
Maximum Block Acquisition Time	1 second
Block Baseband Acquisition Bandwidths	$\leq 40 / (2^N)$ MHz, 0 Hz Digital IF, $N \geq 0$
Block Baseband Acquisition Sample Rates	$\leq 56 / (2^N)$ MS/s, 32-bit float complex samples, $N \geq 0$
Spurious-Free Dynamic Range (SFDR)	50 dBc (typical)

Spectral Purity

Phase Noise @ 10 kHz Offset	-86 dBc/Hz (-89 dBc/Hz typical) at 1 GHz Center Frequency
Phase Noise @ 100 kHz Offset	-89 dBc/Hz (-92 dBc/Hz typical) at 1 GHz Center Frequency
Phase Noise @ 1 MHz Offset	-115 dBc/Hz (-120 dBc/Hz typical) at 1 GHz Center Frequency
Spurious Responses (Operating Range 18 °C to 28 °C)	≤ -50 dBc (typical)

Triggering

Trigger / Sync Input Impedance	10 k Ω
IF Power Trigger Threshold Range	0 dB to -50 dB from reference level
Trigger Modes	Free run, Triggered
Trigger Sources	RF Input (IF power), Trigger/Sync Input (External SMA)

Software & Measurements

Included Software	Tektronix SignalVu-PC™ RF Signal Analysis Software
Display Modes	Real-time Spectrum, Spectrogram/Waterfall, DPX Spectrum
Optional Measurement Applications	AM/FM/PM/Direct Audio Analysis, Settling Time, Advanced Signal Analysis (Pulse), General modulation analysis, OFDM, WLAN 802.11ac
Programming Interface Support	SignalVu-PC programmatic interface, Windows API, MATLAB driver for Instrument Control Toolbox

Inputs & Outputs

RF Input Connector	N-type female
Trigger / Sync Input Connector	SMA female
Reference Frequency Input Connector	SMA female (10 MHz reference input)
PC Connection Port	USB 3.0 Micro-B (with screw-lock holes)

Environmental & Compliance

Environmental Standard Compliance	MIL-PRF-28800F Class 2 (operational and non-operational shock, vibration)
Storage Temperature Range	-51 °C to +71 °C
Operating Humidity Range	5% to 95% relative humidity (non-condensing)
Maximum Operating Altitude	Up to 9,144 meters (30,000 feet)

RF Input Performance

Local Oscillator Feedthrough to Input	< -75 dBm (with 0 dB input attenuation, -30 dBm reference level)
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General Characteristics

Warm-up Time	20 minutes
Calibration Interval	1 year

External Reference Input

External Reference Input Frequency	10 MHz
External Reference Input Level Range	-10 dBm to +10 dBm
External Reference Input Frequency Quality	Must be within ± 0.5 ppm of 10 MHz

Host PC Requirements

Host Processor Requirement	Intel Core i7 4th Gen (or AMD equivalent) with AVX2 support
Host RAM Requirement	8 GB minimum (16 GB recommended for streaming)
Host Interface Requirement	USB 3.0 port
Host OS Support	Windows 7, 8, 8.1, 10 (64-bit)

Compliance

Safety Compliance	UL 61010-1, CAN/CSA-C22.2 No. 61010-1, EN 61010-1, IEC 61010-1
EMC Compliance	EN 61326-1, EN 61326-2-1, AS/NZS 2064, ICES-003, FCC 47 CFR Part 15 Subpart B Class A

Power

USB Interface Power Consumption	Up to 4.5 W (5 V, 900 mA)
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Environmental

Random Vibration (Operating)	0.015 g ² /Hz (5 Hz to 500 Hz) per MIL-PRF-28800F Class 2
Random Vibration (Non-Operating)	0.030 g ² /Hz (5 Hz to 500 Hz) per MIL-PRF-28800F Class 2

TECHNOLOGY

Real-Time Spectrum Analysis (RTSA)

APPLICATIONS

RF signal analysis, interference hunting, academic labs, field testing, and design troubleshooting

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