

TEKTRONIX

RSA6106A

The Tektronix RSA6106A is a high-performance 6.2 GHz Real-Time Spectrum Analyzer designed to discover, trigger, capture, and analyze transient RF signals. Featuring a DPX live color display, up to 110 MHz real-time bandwidth, and advanced triggering, it provides critical insight for complex RF design and troubleshooting.

SPECIFICATIONS

General

Interfaces	USB 2.0, LAN (10/100/1000 Base-T), GPIB, VGA, Reference In/Out, Trigger In/Out
Display	10.4-inch TFT color touch screen, 1024 × 768 resolution
Warm-up Time	20 minutes
Recommended Calibration Interval	1 year

Physical

Power Supply	90 to 264 VAC, 47 to 63 Hz, 450 W maximum
Operating Temperature	+5 °C to +40 °C °C
Dimensions (W×H×D)	473 mm (W) × 282 mm (H) × 531 mm (D) mm
Weight	26.3 kg kg

Frequency Specifications

Frequency Range	9 kHz to 6.2 GHz
Frequency Reference Accuracy	$\pm 1.0 \times 10^{-6}$ per year (standard), $\pm 1.0 \times 10^{-7}$ per year (with Option 12)
Real-Time Capture Bandwidth	40 MHz (Standard), 110 MHz (Option 110)
Frequency Span Range	10 Hz to 6.2 GHz (Real-Time Span: 100 Hz to 40 MHz / 110 MHz)

Amplitude & Sensitivity Specifications

Maximum Safe RF Input Level	+30 dBm (RF Attenuation $\geq$ 10 dB)
Maximum DC Input Voltage	± 5 V
RF Input Impedance	50 Ω
RF Input VSWR	$<1.5:1$ (10 MHz to 6.2 GHz, RF Attenuator $\geq$ 10 dB)
Displayed Average Noise Level (DANL) (Preamp Off)	-153 dBm/Hz (typical at 2 GHz)
Displayed Average Noise Level (DANL) (Preamp On)	-167 dBm/Hz (typical at 2 GHz, with Option 01)
Third-Order Intercept (TOI)	+17 dBm (at 2 GHz, typical, preamp off)
1 dB Compression Point	+2 dBm (at 2 GHz, typical, preamp off, RF Attenuation = 0 dB)
Absolute Amplitude Accuracy	± 0.5 dB (at 2 GHz, 95% confidence)
Frequency Response Flatness	± 0.5 dB (10 MHz to 3 GHz), ± 1.0 dB (3 GHz to 6.2 GHz, Attenuator = 10 dB)
Input Attenuation Range	0 dB to 75 dB
Input Attenuator Step Size	5 dB

Real-Time & Acquisition Capabilities

Minimum Event Duration for 100% POI (Option 110)	24 μ s
Minimum Event Duration for 100% POI (Standard)	31 μ s
A/D Converter Resolution	14 bits
A/D Converter Sampling Rate (Standard)	100 MS/s
A/D Converter Sampling Rate (Option 110)	300 MS/s
Acquisition Memory Depth (Standard)	256 MB
Acquisition Memory Depth (Option 09)	1 GB

Spectral Purity & Phase Noise

Phase Noise (10 kHz Offset)	-111 dBc/Hz (at 1 GHz CF)
Phase Noise (100 kHz Offset)	-113 dBc/Hz (at 1 GHz CF)
Phase Noise (1 MHz Offset)	-133 dBc/Hz (at 1 GHz CF)

Triggering Capabilities

Trigger Modes	Free Run, Triggered
Trigger Sources	RF Input (FMT, Power), External 1, External 2
Frequency Mask Trigger Bandwidth (Standard)	40 MHz
Frequency Mask Trigger Bandwidth (Option 110)	110 MHz

Input, Output & System Interfaces

RF Input Connector Type	Type N female
Reference Input (10 MHz)	BNC female
Reference Output (10 MHz)	BNC female
External Trigger Inputs	2 × BNC female
Trigger Output	BNC female
Analog IF Output	BNC female (with Option 05)
Digital IQ Output	LVDS connector (with Option 05)
GPIO Interface	IEEE 488.2
LAN Interface	10/100/1000 Base-T Ethernet (RJ-45)
USB Ports	5 × USB 2.0 (2 front, 3 rear)
External Display Interface	VGA (15-pin D-sub)
Audio Output	Headphone jack (3.5 mm) and internal speaker

Power & Hardware Specifications

AC Input Voltage Range	90 VAC to 264 VAC
AC Input Frequency Range	47 Hz to 63 Hz
Power Consumption	450 W maximum (350 W typical)
Internal Storage Type	Removable Hard Disk Drive
Internal Storage Capacity	≥80 GB (Option 06 or standard)
Display Size and Type	10.4-inch active matrix color TFT touch screen
Display Resolution	1024 × 768 pixels

Physical Characteristics

Form Factor	Benchtop / Rackmountable (Option 1R)
Width	473 mm (with handles)
Height	282 mm (with feet)
Depth	531 mm (with front cover)

Environmental & Compliance

Storage Temperature	-20 °C to +60 °C
Operating Humidity	90% RH (at or below +30 °C), 80% RH (at or below +40 °C)
Maximum Operating Altitude	3,000 m (9,843 ft)
Maximum Storage Altitude	12,190 m (40,000 ft)

Dynamic Range

Spurious-Free Dynamic Range (SFDR)	-78 dBc (typical, 40 MHz BW) / -73 dBc (typical, 110 MHz BW with Option 110)
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Spurious Response

Second Harmonic Distortion (SHD)	<-80 dBc (typical, 10 MHz to 3.1 GHz carrier)
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RF Input

Preamplifier Frequency Range	1 MHz to 6.2 GHz (with Option 01)
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Trigger

Trigger Jitter	< 20 ns (typical, standard) / < 15 ns (typical, with Option 110)
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Inputs & Outputs

Analog IF Output Center Frequency	500 MHz (with Option 05)
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DPX Spectrum Display

DPX Spectrum Processing Rate	292,969 frames/s
DPX Bitmap Resolution	1041 × 256 pixels

Spurious Responses

Residual Spurious	<-95 dBm (9 kHz to 6.2 GHz, terminated input, 0 dB RF attenuation)
Image Rejection	>80 dB (for Span ≤ 40 MHz, Center Frequency 10 MHz to 6.2 GHz)
Local Oscillator Emission	<-80 dBm (with 10 dB RF attenuation)

Environmental

Operating Shock	15 G, half-sine, 11 ms duration
Operating Vibration	0.22 Grms, 5 Hz to 500 Hz
Non-operating Vibration	2.28 Grms, 5 Hz to 500 Hz

Regulatory & Compliance

Safety Compliance	UL61010-1, CSA C22.2 No. 61010-1, EN61010-1, IEC61010-1
EMC Compliance	EN61326, Class A

TECHNOLOGY

Real-Time Spectrum Analyzer

APPLICATIONS

RF design, radar, electronic warfare, wireless communication troubleshooting, and spectrum management

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