Real-Time Spectrum Analyzers

> RSA3300A Series

Trigger, Capture, Analyze Your RF Signal

Quickly Solve Design, Production or Operational Problems with Comprehensive Characterization of Time-varying and Transient RF Signals

Define issues and solve problems faster by characterizing your device, system or signal more completely and rapidly than previously possible with swept spectrum analyzers. Tektronix RSA3300A Series Real-Time Spectrum Analyzers capture many signals not viewable on swept spectrum analyzers by seamlessly capturing and storing a span of RF frequencies all at one time. Once a signal is captured it can be viewed simultaneously and analyzed in time-correlated frequency, time and modulation domains. RSA Series instruments include not only Real-Time Spectrum Analyzer fast-signal capture, internal memory and modulation analysis but also functionality and operation of a swept spectrum analyzer for looking at very wide spans, all in an integrated, transportable package.

Features & Benefits

Real-Time Spectrum Analysis

Provides Seamless Capture of Time-varying, Transient or Periodic RF Signals Not Possible with Swept Spectrum Analyzers

Up to 65,536 Ms (256 MB) of Internal Memory Provides for Complete Analysis of Signals Over Time Without Making Multiple Measurements

Time-correlated, Simultaneous Views of Time, Frequency and Modulation Domains Provide Greater and Unique Understanding of Signal Behavior

Spectrogram Provides a Revealing Picture of RF Signal Frequency and Amplitude Behavior Over Time – Not Possible with a Swept Spectrum Analyzer

Frequency Mask Trigger – Available Only from Tektronix – Makes It Easy to Capture Fast, Transient or Intermittent Signals that Swept Spectrum Analyzers Would Miss

Spectrum Analyzer Mode for Very Wide Span Analyses

Built-in Demodulators Enhance Analysis of AM, ASK, FM, FSK and PM Signals

Digital Demodulator Offers Affordable Vector Signal Analysis

Outstanding DC – 20 MHz Dynamic Range and Low Phase Noise Mean You Can Make High-performance Weak Signal and Phase Noise Measurements

Applications

Analog and Digital Modulation Signal Quality Analysis

Understanding Frequency and Spectral Occupancy Behavior Over Time

Capture and Characterization of Undesired, Unknown or Interfering Signals

Device/system Design or Operational Diagnostic Measurement

Getting Answers to Elusive EMI Problems

VCO/Synthesizer Design, RFID Device Characterization, General Purpose Digital Modulation Vector Signal Analysis, Spectrum Monitoring, Radar Measurements

*See Tektronix Real-Time Spectrum Analysis Technical Brief (Lit # 37W-17252) for an explanation of how RTSA works and its unique capabilities:

http://www.tek.com/Measurement/App_Notes/37_17252/eng/
Real-Time Spectrum Analyzers
► RSA3300A Series

Trigger, Capture, Analyze
You Can Easily Catch an Elusive RF Signal and Analyze It at Your Convenience

Sensitive and fast, RSA Series Real-Time Spectrum Analyzer triggering easily captures unknown, periodic or intermittent signals. Using the Tektronix exclusive Frequency Mask Trigger, you can configure a custom frequency domain mask including signal guard bands and levels then trigger on events isolated to a specific frequency or frequency range. As signals are captured, they are automatically saved to RSA internal memory, making it easy to perform in-depth, time-correlated analysis across the frequency, time and modulation domains with no external computer required! Quick-to-set-up IF Level and Power (Span Bandwidth) triggers provide very convenient capture of signals in applications such as incident carrier-and-response interaction between two devices or burst signal carrier ramp up. Continuous Trigger Mode ensures a sequence of events are automatically captured into memory; you capture only the events and not time in between, maximizing memory efficiency and minimizing analysis time.

► Price/Performance choice: RSA3300A Series Real-Time Spectrum Analyzers

<table>
<thead>
<tr>
<th>RSA Model</th>
<th>Frequency Range</th>
<th>Memory Depth</th>
<th>Modulation Analysis</th>
<th>Real-Time Capture Bandwidth</th>
<th>Triggering Modes</th>
</tr>
</thead>
<tbody>
<tr>
<td>3303A</td>
<td>DC – 3 GHz</td>
<td>16.384 Msamples, 65.536 Msamples (Option 02)</td>
<td>AM, FM (ASK, FSK), PM; general-purpose digital mask analysis (Option 21)</td>
<td>15 MHz</td>
<td>IF Level; Frequency Mask Trigger and Power (Span BW) (Option 02)</td>
</tr>
<tr>
<td>3308A</td>
<td>DC – 8 GHz</td>
<td>16.384 Msamples, 65.536 Msamples (Option 02)</td>
<td>AM, FM (ASK, FSK), PM; general-purpose digital mask analysis (Option 21)</td>
<td>15 MHz</td>
<td>IF Level; Frequency Mask Trigger and Power (Span BW) (Option 02)</td>
</tr>
</tbody>
</table>

► Characteristics

► Frequency

<table>
<thead>
<tr>
<th>RSA3303A</th>
<th>RSA3308A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range</td>
<td>DC – 3 GHz</td>
</tr>
<tr>
<td>Frequency Aging</td>
<td>±1 x 10^−7/year</td>
</tr>
<tr>
<td>Frequency Stability</td>
<td>1 x 10^−7 (10 °C to 40 °C)</td>
</tr>
<tr>
<td>Opt. 10: 1 x 10^−7 (10 °C to 40 °C)</td>
<td>Opt. 10: 1 x 10^−7 (10 °C to 40 °C)</td>
</tr>
<tr>
<td>Total Reference Frequency Error</td>
<td>2 x 10^−7</td>
</tr>
</tbody>
</table>
Marker Frequency Readout Accuracy –
\[ \pm 0.01 \times MF + 0.001 \times \text{Span} + \text{RFM} \text{ Hz}. \]
RE = Reference Frequency Error.
MF = Marker Frequency [Hz].
RFM = Residual FM [Hz].

Carrier Frequency Measurement Accuracy –
RSA3303A and RSA3308A
At spans of ≤15 MHz for RSA3300A, all frequency components of the signal must be contained in the analysis period and span.
Carrier Frequency Measurement Sensitivity –
Carrier Power, –40 dBfs (typical) (dBfs = dB below full screen reference).
Accuracy – RE x CF + RFM. Resolution Setting = 1 MHz to 1 GHz.
- At 2 GHz ±20 Hz.
- At 5 GHz ±50 Hz.
- At 7 GHz ±70 Hz.

Frequency Span
Range –
RSA3303A and RSA3308A
Spectrum Analyzer Mode:
50 Hz to 5 GHz: Start Frequency ±20 MHz.
50 Hz to 20 MHz: Stop Frequency ≤20 MHz.
Real-Time Spectrum Analyzer Mode:
100 Hz to 10 MHz, 15 MHz (RF), 20 MHz (Baseband).
Time Domain and Demodulation Modes:
Span = 0 Hz (Simultaneous with 50 Hz to 15 MHz Span in second analysis window).
Resolution – <0.2% of Span (Span = 100 Hz to 10 MHz, 15 MHz, RSA3303A and RSA3308A).
Accuracy – ±0.1% of Span.

Resolution Bandwidth
Range – 1 Hz to 10 MHz, automatically selected or user defined.
Accuracy – Within 6.0% ±0.1%.
Shape Characteristic – Gaussian, <5.1 Shape Factor (3.60 dB); Rectangular, Nyquist, Root Nyquist shapes may also be selected.
Noise Bandwidth –
Range: 31.35 MHz to 400.87 kHz.
Accuracy: ±0.1%.

FFT Performance
Number of Samples per Frame – 64 to 8192 (65536 samples/frame, extended resolution).
Window Types –

Noise Bandwidth –
RSA3303A, RSA3308A

<table>
<thead>
<tr>
<th>Offset</th>
<th>Spec</th>
<th>Typical</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 kHz</td>
<td>–100</td>
<td>–103</td>
</tr>
<tr>
<td>10 kHz</td>
<td>–105</td>
<td>–108</td>
</tr>
<tr>
<td>20 kHz</td>
<td>–105</td>
<td>–108</td>
</tr>
<tr>
<td>30 kHz</td>
<td>–105</td>
<td>–108</td>
</tr>
<tr>
<td>100 kHz</td>
<td>–112</td>
<td>–115</td>
</tr>
<tr>
<td>1 MHz</td>
<td>–132</td>
<td>–135</td>
</tr>
<tr>
<td>5 MHz</td>
<td>–135</td>
<td>–138</td>
</tr>
<tr>
<td>7 MHz</td>
<td>–135</td>
<td>–138</td>
</tr>
</tbody>
</table>

Residual FM at 1 kHz RBW –
RSA3303A and RSA3308A: 2 Hz<sub>peak-peak</sub>.
Real-Time Spectrum Analyzers

RSA3300A Series

Time Domain
Trace Point Range –
Span >50 Hz, 64 to 240001 (RBW mode),
16 to 240001 (FFT mode).
Span = 0 Hz (Time and Demodulation Modes).
RSA3303A and RSA3308A – 10 Data Pairs: 1024 to
16384000, 1 to 65536000 (Option 02) Power vs.
Time: 1 to 512000.
Triggers –
RSA3303A and RSA3308A: Free run, single,
external, IF level (15 MHz BW).
Option 02: Adds Power (Span BW, Span <15 MHz)
and Frequency Mask.
Frequency Mask Trigger (Real Time SA Mode),
RSA3303A and RSA3308A with Opt. 02 Bandwidth –
Up to 15 MHz: Start Frequency ≥20 MHz.
Up to 20 MHz: Start Frequency <20 MHz,
and on IQ inputs.
Event Detection Bandwidth –
±5 MHz (100% probability of intercept, signal
occupying at least one complete ±160 µs frame).
10 MHz (60% probability of intercept, signal occupying
at least one complete 80 µs frame (typical)).
15/20 MHz (25% probability of intercept, signal
occupying at least one complete 40 µs frame (typical)).
Frequency Mask Range –
0 to –6 divisions from Reference Level at 10 dB/div.
Mask Shape – User Defined.
Minimum Horizontal Mask Setting Resolution –
<0.2% of Span.
Minimum Frequency Width – < 0.2% of Span.
Uncertainty – ±2 frames.

Amplitude Specifications
Measurement Range – Displayed average noise
level to MAX safe input.
Input Attenuator Range –
RSA3303A –
0 to 50 dB, 2 dB steps, DC to 3.0 GHz.
RSA3308A –
0 to 50 dB, 2 dB steps, DC to 3.5 GHz.
D to 50 dB, 10 dB steps, 3.5 to 8.0 GHz.
Maximum Safe Input Level –
Average Continuous – +30 dBm (RF ATT ≥ 10 dB),
Peak Pulse Power – +30 dBm (RF ATT ≥ 10 dB).
DC – RSA3303A, RSA3308A:
±0.2 V (SF = 20 MHz), ±5 V DC – 20 MHz.

Frequency Response

> RSA3303A, RSA3308A
Frequency Range Specification, dB Typical, dB
100Hz – 20 MHz ±0.5 ±0.3
15 MHz – 3 GHz ±1.2 ±0.5
3.0 GHz – 3.5 GHz ±1.7 ±0.5
3.5 GHz – 6.5 GHz ±1.7 ±1.0
5 GHz – 8 GHz ±1.7 ±1.0

Input Attenuator Switching Uncertainty (at
50 MHz) – ≤0.5 dB for all values of attenuation.
IQ Input Attenuator Range –
RSA3303A Opt. 03 and RSA3308A Opt. 03:
0 to 30 dB, 10 dB steps.
IQ Input Attenuator Switching Uncertainty –
RSA3303A Opt. 03 and RSA3308A Opt. 03:
≤0.5 dB for all values of attenuation.

Absolute Amplitude Uncertainty –
At Reference Setting – ≤0.3 dB (RF) at 50 MHz
CF, ≤0 dBm signal, 0 dB ATT, 20 °C to 30 °C;
≤0.3 dB (baseband) (Opt. 05) at 10 MHz CF, –20 dBm
signal, 0 dB ATT, 20 °C to 30 °C.
Overall Amplitude Accuracy –
≥0.7 dB (RF) + Frequency Response.

Displayed Average Noise Level (DANL)

<table>
<thead>
<tr>
<th>Frequency</th>
<th>RSA3303A, RSA3308A (Spec, dBm/Hz)</th>
<th>RSA3303A, RSA3308A (Typical, dBm/Hz, With Preamp)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 kHz to 10 kHz</td>
<td>–144</td>
<td>N/A</td>
</tr>
<tr>
<td>10 kHz to 10 MHz</td>
<td>–151</td>
<td>N/A</td>
</tr>
<tr>
<td>10 MHz to 100 MHz</td>
<td>–151</td>
<td>N/A</td>
</tr>
<tr>
<td>100 MHz to 1 GHz</td>
<td>–151</td>
<td>–164</td>
</tr>
<tr>
<td>1 GHz to 2 GHz</td>
<td>–150</td>
<td>–164</td>
</tr>
<tr>
<td>2 GHz to 3 GHz</td>
<td>–150</td>
<td>–158</td>
</tr>
<tr>
<td>3 GHz to 5 GHz</td>
<td>–142</td>
<td>N/A</td>
</tr>
<tr>
<td>5 GHz to 8 GHz</td>
<td>–142</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Log Display Range – 10 µdB/div to 10 dB/div.
Linear Display Scale – 10 divisions.
Linear Display Units – dBm, dBµV, V, Watts + Hz
for FM Demod, Degrees for PM Demod.

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Real-Time Spectrum Analyzers

Spurious Responses

Third Order Intermodulation Distortion –
100 MHz to 3 GHz:
RSA3303A, RSA3308A: <–74 dBc (Ref Level = +5 dBm, RF Att. = 20 dB, total signal power = –7 dBm, signal separation 300 kHz).
3 GHz to 8 GHz:
RSA3308A: <–72 dBc (Ref Level = +5 dBm, RF Att. = 20 dB, total signal power = –7 dBm, signal separation 300 kHz).

Other-Input Related Spurious –
> 30 kHz offset – 70 dBc (Ref = –30 dBm, RBW = 100 kHz, Span 3 GHz)

Non-input Related Spurious –
(Ref = –10 dBm, RBW = 100 kHz, Span 3 GHz)

1 dB Gain Compression

RSA3303A, RSA3308A –
+2 dBm (RF ATT = 0 dB, 2 GHz).

Resolution Bandwidth Switching Uncertainty –
1 Hz to 10 MHz – ± 0.05 dB.

Reference Level –
Range – –51 to +30 dBm.
Resolution – 1 dB.
Accuracy – ±0.2 dB (–10 dBm to –60 dBm) at 50 MHz.

Display Scale Fidelity –
Log scale (max. cumulative), >10 dB to 50 dB – <±0.2 dB;
<±0.12 dB, typical at 0 dBm reference level.
Linear Scale – ±2% of Reference Level.
Linear to Log Scale Switching Uncertainty – 0.05%.
Amplitude Reference Output – –20 dBm, 50 MHz, internally switched to input.

Seamless Capture and Processing

Memory Depth (samples) –
RSA3303A and RSA3308A: 16.384 Msamples; 65.536 Msamples (Opt. 02).

Real-Time Capture Bandwidth (Seamless Data Capture) –
RSA3303A and RSA3308A: 15 MHz (rf), 20 MHz (DC – 20 MHz (Baseband), 20 MHz, 10 inputs (Opt.03).

Data Samples per Frame (Real Time S/A Mode) –
1024 .

Block Size (number of frames) –
RSA3303A and RSA3308A: 1 to 10000; 1 to 64000 (Opt. 02).

Maximum A/D Sampling Rate and Resolution –
51.2 Msamples/sec, 14 bits.

Memory Depth (time) – RSA3303A and RSA3308A

<table>
<thead>
<tr>
<th>Span</th>
<th>Sample Rate</th>
<th>Record Length</th>
<th>Record Length (Opt. 02)</th>
<th>Spectrum Frame Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 MHz (Baseband)</td>
<td>25.6 MS/s</td>
<td>0.64 s</td>
<td>2.56 s</td>
<td>40 µs</td>
</tr>
<tr>
<td>15 MHz</td>
<td>25.6 MS/s</td>
<td>0.64 s</td>
<td>2.56 s</td>
<td>40 µs</td>
</tr>
<tr>
<td>10 MHz</td>
<td>12.8 MS/s</td>
<td>1.28 s</td>
<td>5.12 s</td>
<td>80 µs</td>
</tr>
<tr>
<td>5 MHz</td>
<td>6.4 MS/s</td>
<td>2.56 s</td>
<td>10.24 s</td>
<td>160 µs</td>
</tr>
<tr>
<td>2 MHz</td>
<td>3.2 MS/s</td>
<td>5.12 s</td>
<td>20.48 s</td>
<td>320 µs</td>
</tr>
<tr>
<td>1 MHz</td>
<td>1.6 MS/s</td>
<td>10.24 s</td>
<td>40.96 s</td>
<td>640 µs</td>
</tr>
<tr>
<td>500 kHz</td>
<td>800 MS/s</td>
<td>20.48 s</td>
<td>81.92 s</td>
<td>1.28 ms</td>
</tr>
<tr>
<td>200 kHz</td>
<td>320 MS/s</td>
<td>51.20 s</td>
<td>200.48 s</td>
<td>3.2 ms</td>
</tr>
<tr>
<td>100 kHz</td>
<td>160 kcps</td>
<td>102.40 s</td>
<td>409.60 s</td>
<td>6.4 ms</td>
</tr>
<tr>
<td>50 kHz</td>
<td>80 kcps</td>
<td>204.80 s</td>
<td>819.20 s</td>
<td>12.8 ms</td>
</tr>
<tr>
<td>20 kHz</td>
<td>32 kcps</td>
<td>512 s</td>
<td>2048 s</td>
<td>32 ms</td>
</tr>
<tr>
<td>10 kHz</td>
<td>16 kcps</td>
<td>1024 s</td>
<td>4096 s</td>
<td>64 ms</td>
</tr>
<tr>
<td>5 kHz</td>
<td>8 kcps</td>
<td>2048 s</td>
<td>8192 s</td>
<td>128 ms</td>
</tr>
<tr>
<td>2 kHz</td>
<td>3.2 kcps</td>
<td>5120 s</td>
<td>20480 s</td>
<td>320 ms</td>
</tr>
<tr>
<td>1 kHz</td>
<td>1.6 kcps</td>
<td>10240 s</td>
<td>40960 s</td>
<td>640 ms</td>
</tr>
<tr>
<td>500 Hz</td>
<td>800 sps</td>
<td>20480 s</td>
<td>81920 s</td>
<td>1.28 s</td>
</tr>
<tr>
<td>200 Hz</td>
<td>320 sps</td>
<td>51200 s</td>
<td>204800 s</td>
<td>2.56 s</td>
</tr>
<tr>
<td>100 Hz</td>
<td>160 sps</td>
<td>102400 s</td>
<td>409600 s</td>
<td>5.12 s</td>
</tr>
</tbody>
</table>
Real-Time Spectrum Analyzers

RSA3300A Series

Measurement Speed
Screen Update Rate –
38/Sec, (SA Mode, 2 MHz span, 128 point FFT),
35/Sec, (SA Mode, 2 MHz span, 1024 point FFT).
Remote Sample/Sec at 2 MHz span Auto RBW
Spectrum data.
Ethernet Transfer Rate –
2.6 MB/Sec (256 MB .IQT file transfer).
RF Center Frequency Switching Time –
<10 ms for 10 MHz frequency change,
<500 ms for 3 GHz frequency change.

Traces, Displays, Detectors
Traces – Two traces, Spectrum Analyzer Mode.
Displays –
Up to three time-correlated, user-selected displays from
the following: Spectrum, Spectrogram, Amplitude vs.
Time, Frequency vs. Time, IQ vs. time.
Detector – RMS.
Trace Types –
Normal (RMS), Average, Max Hold, Min Hold.
Display Detection – Max, Min, Max/Min.

Inputs and Outputs
Front Panel
Input – 50 Ω, type N.
Preamplifier Power –
Standard RSA3303A and RSA3308: LEMO 6 pin
connector – Pin 1, NC; Pin 2, ID1; Pin 3, ID2; Pin 4,
-12 V; Pin 5, GND; Pin 6, +12V.
Rear Panel –
10 MHz REF OUT – 50 Ω, BNC, >–3 dBm.
10 MHz REF IN – 50 Ω, BNC, –10 dBm to +6 dBm.
I, +I, Q, +Q Inputs –
RSA3303A with Opt. 03, and RSA3308A with Opt. 03.
EXT TRIG IN –
Ext Trig. BNC, High: 1.6 to 5.0 V, Low: 0 to 0.5 V.
GPIB Interface – IEEE 488.2.
TRIGGER OUT –
50 Ω, BNC, High >2.0 V, Low: <0.4 V (output current 1 mA).
Side Panel
LAN Interface (Ethernet) – 10/100Base-T (std).
Serial Interface – USB 1.1, 2 ports.
VGA Output– VGA compatible, 15 pin D-sub.

Automated Measurements
Channel Power, ACPR, Carrier to Noise, Occupied
BW, Carrier Frequency, Emission BW, Spurious
Search, CCDF, dB/Hz Mkr, dBc/Hz Mkr.

Preamplifier (RSA3300A
Series Opt. 1A, external)
Frequency Range – 100 MHz to 2 GHz.
Gain – 20 dB.
Noise Figure – 6.5 dB at 2 GHz.

Modulation Analysis
FM (may be used to evaluate FSK signals) –
Minimum Input Level – –40 dBfs,* typical.
Range – 0.8 Hz to 12.8 MHz.
Accuracy – ± 1% of span (Signal at center screen,
input level –10 dBfs).
AM (may be used to evaluate ASK signals)
Minimum Input Level – –40 dBfs, typical.
Accuracy – ±2 % (Signal at center screen, input
level –10 dBfs, 10 % to 60 % modulation depth).
PM
Minimum Input Level – –40 dBfs, typical.
Accuracy – ±3º, (Signal at center screen, input
level –10 dBfs).
PM Scale, Max, Min – ± 180º.

* dBfs = dB relative to full-screen reference.
Real-Time Spectrum Analyzers  
**RSA3300A Series**

**Digital Demodulation Accuracy**
The following tables are examples of typical digital demodulation accuracy:

<table>
<thead>
<tr>
<th>Symbol Rate, per second</th>
<th>QPSK</th>
<th>π/4 DQPSK</th>
<th>16 QAM</th>
<th>QPSK</th>
<th>π/4 DQPSK</th>
<th>16 QAM</th>
<th>QPSK</th>
<th>π/4 DQPSK</th>
<th>16 QAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF = 1 GHz</td>
<td>0.5</td>
<td>0.6</td>
<td>0.9</td>
<td>0.5</td>
<td>0.6</td>
<td>0.5</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>CF = 2 GHz</td>
<td>0.5</td>
<td>0.6</td>
<td>0.9</td>
<td>0.5</td>
<td>0.6</td>
<td>0.5</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>CF = 3 GHz</td>
<td>0.7</td>
<td>0.7</td>
<td>0.9</td>
<td>0.7</td>
<td>0.7</td>
<td>0.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.2</td>
</tr>
<tr>
<td>CF = 5 GHz²</td>
<td>0.7</td>
<td>0.7</td>
<td>0.9</td>
<td>0.7</td>
<td>0.7</td>
<td>0.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.2</td>
</tr>
</tbody>
</table>

² RSA3308A only.

**Digital Modulation**
(RSA3303A with Opt. 21, RSA3308A with Opt. 21)

**Modulation Format** – BPSK, QPSK, π/4 DQPSK, 8PSK, 16QAM, 32QAM, 64QAM, GMSK, GFSK.

**Analysis Period** – Up to 7680 sample points.

**Filter Types** –
- Measurement Filters – Square Root Raised Cosine, none.
- Reference Filters – Raised Cosine, Gaussian, none.

**Alpha/B*T Range** – 0.0001 to 1.0, 0.0001 step.

**Minimum Symbol Rate** – 12.8 Msymbols/sec (typical).

**Vector Display Formats**
- Polar – Constellation – Data displayed at symbol times.
- Vector – X to Y Points displayed between symbols.
- IQ Versus Time – I, Q – Continuous versus time over analysis window.
- Trellis – Adjustable, 1 to 16 symbols.
- Eye Diagram – Adjustable, 1 to 16 symbols.
- Error Measurements Versus Time – EVM, Magnitude Error, Phase Error.
- Waveform Quality (ρ), Frequency Error Measurement, Origin Offset Measurement.

**Symbol Table** – Binary, Octal, Hexadecimal.

**General Specifications**

**Temperature Range** –
- Operating – +10 ºC to +40 ºC.
- Storage – –20 ºC to +60 ºC.

**Warm-up Time** – 20 min.

**Safety and EMI Compatibility** –
- UL 61010B-1; CSA C22.2 No.1010.1.
- Power Requirements –
  - 100 VAC to 240 VAC, 47 Hz to 63 Hz.
  - Power Consumption – 350 VA max.

**Data Storage** – Internal HDD (20 GB) + USB port + Floppy Disk Drive.

**Weight, Without Options** – 19 kg.

**Dimensions** –
- Without bumpers and feet – 215 mm (H) x 425 mm (D) x 425 mm (W).
- With bumpers and feet – 238 mm (H) x 470 mm (D) x 445 mm (W).

**Calibration Interval** – 1 year.

**Warranty** – 1 year.
Real-Time Spectrum Analyzers

- RSA3300A Series

Ordering Information

RSA3303A
Real-Time Spectrum Analyzer, DC – 3 GHz.

RSA3308A
Real-Time Spectrum Analyzer, DC – 8 GHz.

Standard Accessories

Options
- Opt. 1R – Rackmount.
- Opt. 1A – External preamp, 20 dB gain to 3 GHz.
- Opt. 02 – 256 MB Data Memory with Frequency Mask Trigger and Power (Span BW) Trigger.
- Opt. 03 – Differential IQ Inputs.

Upgrades
- RSA3UP IF – Installation for RSA3UP 21.

International Power Plugs
- Opt. A0 – North America power.
- Opt. A3 – Australia power.
- Opt. A5 – Switzerland power.
- Opt. A99 – No power cord or AC adapter.

Language Option

Service Options
- Opt. C5 – Calibration Service 5 years.

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