

R3267 * R3273

Family of 3G Capable Spectrum Analyzers

Characteristics

Frequency

R3267 Frequency Range - 100 Hz to 8 GHz.

Frequency	Frequency Band	Harmonic Order N
100 Hz to 3.6 GHz	0	1
1.6 GHz to 3.6 GHz	1	1
1.6 GHz to 7 GHz	2	1
6.9 GHz to 8 GHz	3	1

Built-in YIG tuning pre-selector at 1.6 GHz to 8 GHz.

R3273 Frequency Range -

100 Hz to 26.5 GHz.

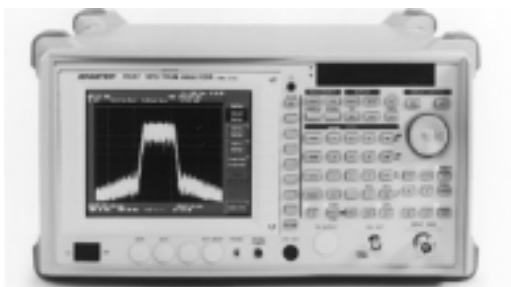
18 GHz - 60 GHz (external mixer; synchronization up to 325 GHz).

Frequency	Frequency Band	Harmonic Order N
100 Hz to 3.5 GHz	0	1
3.5 GHz to 7.5 GHz	1	1
7.4 GHz to 15.4 GHz	2	2
15.2 GHz to 26.5 GHz	3	4

Built-in YIG tuning pre-selector at 3.5 GHz to 26.5 GHz.

Frequency Reading Accuracy - $\pm(\text{Frequency reading} \times \text{Frequency reference accuracy} + \text{Span} \times \text{Span accuracy} + 0.15 \times \text{Resolution bandwidth} + 10 \text{ Hz})$.

Marker Frequency Counter (SPAN < 1 GHz).



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Resolution - 1 Hz to 1 kHz.

Accuracy(S/N > 25 dB) - $\pm(\text{Marker frequency} \times \text{Frequency reference accuracy} + 5 \text{ Hz} \times N + 1 \text{ LSD})$.

Delta Counter - $\pm(\text{DELTA Frequency} \times \text{Frequency reference accuracy} + 10 \text{ Hz} \times N + 2 \text{ LSD})$.

Frequency Reference Accuracy -

$\pm 3 \times 10^{-8}/\text{day}$.

$\pm 1 \times 10^{-7}/\text{year}$.

$\pm 5 \times 10^{-9}/\text{day}$ (Opt. 21).

$\pm 8 \times 10^{-8}/\text{year}$ (Opt. 21).

Frequency Stability -

Residual FM: $< 3 \text{ Hz} \times N \text{ p-p}/0.1 \text{ sec}$.

Drift: Same as reference source.

Signal Purity

	f < 2.6 GHz.	f > 2.6 GHz.
1 kHz	-100 dBc/Hz.	-95 dBc/Hz +20 logN (1 kHz offset).
10 kHz	-110 dBc/Hz.	-108 dBc/Hz +20 logN (10 kHz offset).
100 kHz	-118 dBc/Hz.	-112 dBc/Hz +20 logN (100 kHz offset).

Frequency Span -

Range:

R3267: 0, 200 Hz to 8 GHz.

R3273: 0, 200 Hz to 26.5 GHz.

Accuracy:

R3267: $\pm 1\%$.

R3273: $\pm 1\%$.

Resolution Bandwidth (3 dB) -

Range : 10 Hz to 3 MHz, 5 MHz, 10 MHz (1, 3, 10 sequences).

Accuracy:

$\pm 15\%$ (RBW=100 Hz to 1 MHz).

$\pm 25\%$ (RBW=30 Hz, 3 MHz, 5 MHz).

Selectivity:

$< 15:1$ (RBW=100 Hz to 5 MHz).

$< 20:1$ (RBW=30 Hz).

Video Bandwidth -

Range: 1 Hz to 3 MHz, 5 MHz, 10 MHz (1, 3, 10 sequences).

Frequency Sweep -

Sweep time:

Zero span: 1 μ s to 1000 s.

Span \geq 200 Hz: 20 ms to 1000 s.

Accuracy: \pm 3%.

Trigger: Free-run, line, single, video, external, IF.

Amplitude Range

Measurement Range - +30 dBm to Average noise level.

Maximum Safe Input -

Average continuous power:

(Input ATT>10 dB): +30 dBm (1 W).

DC input: 0 V.

Display Range - 10 x 10 div.

Log: 10, 5, 2, 1, 0.5 dB/div.

Linear: 10% of reference level/div.

Reference Level Range -

Log: -140 dBm to +60 dBm (in 0.1 dB steps).

Linear: 22.4 nV to 223 V (steps of 1% of full scale).

Input Attenuation Range -

R3267: 0 to 75 dB (5 dB steps).

R3273: 0 to 70 dB (10 dB steps).

Dynamic Range

Average Noise Level - (100 Hz resolution bandwidth, 0 dB input attenuation, 1 Hz video bandwidth):

R3267

Frequency	Frequency Band	Average Noise Level
1 kHz	0	-90 dBm
10 kHz	0	-100 dBm
100 kHz	0	-101 dBm
1 MHz	0	-125 dBm

10 MHz to 3.6 GHz	0	$-(130 - f \text{ (GHz)})$ dBm.
1.6 GHz to 3.6 GHz	1	-125 dBm
3.5 GHz to 7.0 GHz	2	-125 dBm
6.9 GHz to 8.0 GHz	3	-125 dBm

R3273

Frequency	Frequency Band	Average Noise Level
1 kHz	0	-90 dBm
10 kHz	0	-100 dBm
100 kHz	0	-101 dBm
1 MHz	0	-125 dBm
10 MHz to 3.6 GHz	0	$-(130 - f \text{ (GHz)})$ dBm
3.5 GHz to 7.5 GHz	1	-125 dBm
7.4 GHz to 15.4 GHz	2	-122 dBm
15.2 GHz to 26.5 GHz	3	-117 dBm

1 dB gain compression: 0 dBm.

Spurious Response

2nd Order Harmonic Distortion	Frequency Range	Mixer Level
R3267		
< -70 dBc	10 MHz to 3.5 GHz	-30 dBm
< -90 dBc	>1.6 GHz	-10 dBm
R3273		
< -70 dBc	10 MHz to 3.6 GHz	-30 dBm
< -100 dBc	>3.5 GHz	-10 dBm
2 Signal 3rd Order Harmonic Distortion	Frequency Range	Mixer Level
R3267		

< -80 dBc	100 MHz to 3.5 GHz	-30 dBm
< -90 dBc	>1.6 GHz	-30 dBm
R3273		
< -80 dBc	100 MHz to 3.5 GHz	-30 dBm
< -70 dBc	>3.5 GHz	-30 dBm
Image/Multiple/Out-band Response		
R3267		
< -70 dBc	(10 MHz to 8 GHz)	
R3273		
< -70 dBc	(10 MHz to 18 GHz)	
< -60 dBc	(10 MHz to 23 GHz)	
< -50 dBc	(10 MHz to 26.5 GHz)	
Residual Response (no input, input ATT 0 dB, 50 Ohm termination)		
R3267		
< -100 dBm	1 MHz to 3.5 GHz	
< -90 dBm	300 kHz to 8 GHz	
R3273		
< -100 dBm	1 MHz to 3.5 GHz	
< -90 dBm	300 kHz to 26.5 GHz	

Amplitude Accuracy

In-band Flatness	Frequency Response
R3267	
±1.5 dB	100 Hz to 3.5 GHz
±1.0 dB	50 MHz to 2.6 GHz
±1.5 dB	1.6 GHz to 3.6 GHz
±1.5 dB	3.5 GHz to 7.0 GHz
±1.5 dB	6.9 GHz to 8.0 GHz
R3273	
±1.5 dB	100 Hz to 3.5 GHz
±1.0 dB	50 MHz to 2.6 GHz
±1.5 dB	3.5 GHz to 7.5 GHz

±3.5 dB	7.4 GHz to 15.4 GHz
±4.0 dB	15.4 GHz to 26.5 GHz

Calibration Signal Accuracy (30 MHz) - -10 dBm ±0.3 dB.

IF Gain Error (after automatic calibration)-

0 dBm to -50 dBm ±0.5 dB.

0 dBm to -80 dBm ±0.7 dB.

Scale Display Accuracy (after automatic calibration) -

Log:

±0.2 dB/1 dB.

±1 dB/10 dB.

±1.5 dB/90 dB.

Linear: ±5% of reference level.

Input Attenuation Switching Error (in reference to 10 dB, at 20 dB to 70 dB) -

R3267	100 Hz to 8 GHz	±1.1 dB/10 dB steps, 2.0 dB max.
R3273	100 Hz to 12.4 GHz	±1.1 dB/10 dB steps, 2.0 dB max.
	12.4 GHz to 18 GHz	±1.3 dB/10 dB steps, 2.5 dB max.
	18 GHz to 26.5 GHz	±1.8 dB/10 dB steps, 3.5 dB max.

Resolution Bandwidth Switching Error -

Resolution bandwidth in reference to 300 kHz, after automatic calibration: < ±0.3 dB.

Pulse Quantization Error -

PRF>500/sweep time in pulse measurement mode peak to peak.

Log:

1.2 dB (RBW < 1 MHz).

3.0 dB (RBW >1 MHz).

Linear:

4% of reference level (RBW < 1 MHz).

12% of reference level (RBW >1 MHz).

Analog Demodulation (Option)

Spectrum Demodulation -

Modulation type: AM, FM.

Audio output: Internal speaker, earphone jack, volume control possible.

Continuous demodulation time: 100 ms to 1000 s.

Input and Output

RF Input -

Connector: N-type female (can be converted to SMA on R3273).

Impedance: 50 Ohm (nominal).

VSWR (Input $ATT \geq 10$ dB):

< 1.5:1 (< 3.6 GHz) (nominal).

< 2.1:1 (>3.6 GHz) (nominal).

Calibration Signal Output -

Connector: BNC female, front panel.

Frequency: 30 MHz x ($1 \pm$ frequency reference accuracy).

Impedance: 50 Ohm (nominal).

Amplitude: -10 dBm \pm 0.3 dB.

10 MHz Frequency Reference Output -

Connector: BNC female, rear panel.

Output impedance: 50 Ohm (nominal).

Output frequency accuracy: 10 MHz x frequency reference accuracy.

Output amplitude range: -5 dBm to +5 dBm.

10 MHz Frequency Reference Input -

Connector: BNC female, rear panel.

Input impedance: 50 Ohm (nominal).

Input amplitude range: -5 dBm to +5 dBm.

Probe Power Supply: ± 12.6 V (100 mA).

21.4 MHz, IF Output -

Connector: BNC female, rear panel.

Impedance: 50 Ohm (nominal).

421.4 MHz IF Output -

Connector: BNC female, rear panel.

Impedance: 50 Ohm (nominal).

Video Output -

Connector: VGA (15-Pin, female), rear panel.

640 x 480 dots (equivalent to VGA).

X Axis Output -

Connector: BNC female, rear panel.

Impedance: 1 kilohm (nominal), DC coupled.

Amplitude: About -5 V to +5 V.

Y Axis Output -

Connector: BNC female, rear panel.

Impedance: 220 Ohm (nominal).

Amplitude: About 2 V for full scale (with 10 dB/div).

External Trigger/Gate Input -

Connector: BNC female, rear panel.

Impedance: 10 kilohm (nominal), DC coupled.

Trigger level: TTL.

Trigger Output -

Connector: BNC female, rear panel.

Amplitude: TTL level.

Audio Output (demodulation audio, option) -

Connector: Small-type monophonic jack, front panel.

Power output: 0.2 W max, 8 Ohm (nominal).

I/O Interface -

GPIB: IEEE-488 bus connector, rear panel.

RS232: D-SUB 9-Pin, rear panel.

Printer: D-SUB 25-Pin, rear panel.

Extended I/O port: D-SUB 25-Pin, rear panel.

FDD: 3.5" floppy disk drive.

Direct Print - Output with ESC/P, PCL, ESC/P raster commands.

Safety - UL3111-1, CSA1010.1, EN61010-1, IEC61010-1.



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