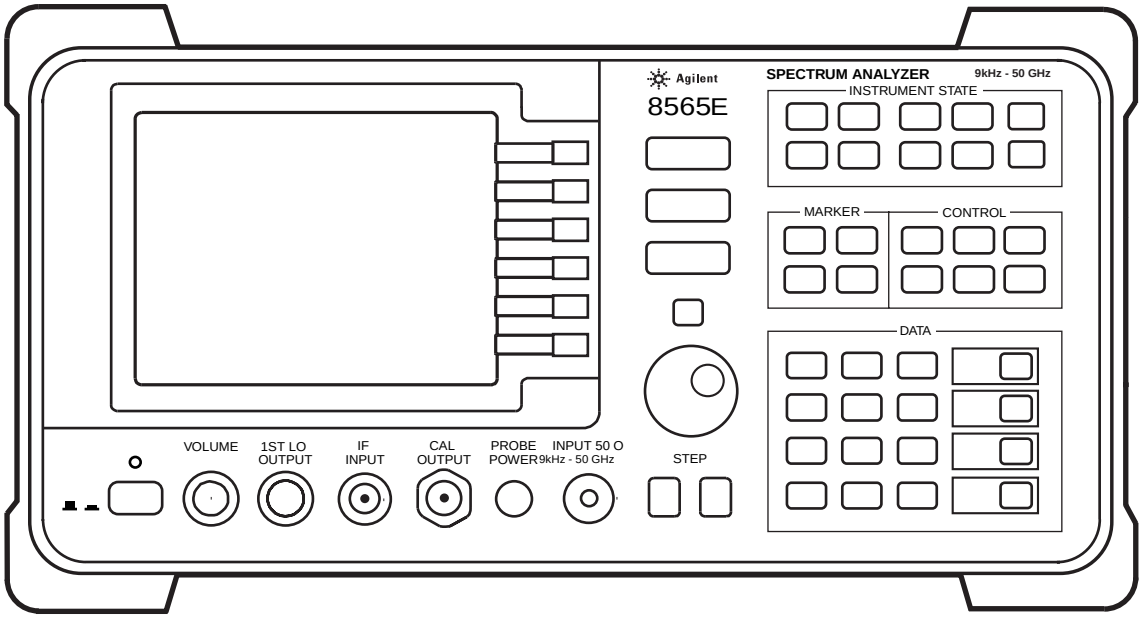
Agilent 8560 E-Series Spectrum Analyzers

Data Sheet

8560E 30 Hz to 2.9 GHz
8561E 30 Hz to 6.5 GHz
8562E 30 Hz to 13.2 GHz
8563E 30 Hz to 26.5 GHz
8564E 30 Hz to 40 GHz
8565E 30 Hz to 50 GHz



Unless noted, all specifications describe the instruments' warranted performance under the following conditions: 5-minute warm-up from ambient conditions, autocoupled controls, digital display, IF ADJ ON, REF LVL CAL adjusted, SECOND IF OUTPUT and 1ST LO OUTPUT terminated in 50 Ω. After a 30-minute warm-up, and over a temperature range of 20°C to 30°C, the preselector does not have to be peaked at each signal of interest; under these conditions factory preselector peak values are sufficient to meet all specifications. Typical performance is nonwarranted. Supplemental characteristics are denoted by "nominal" and "approximately"; these constitute nonwarranted functional performance information derived during the design process and are not tested on a continuing basis.

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Frequency Specifications, Agilent 8560 E-Series

Frequency Range

	8560E	8561E	8562E	8563E	8564E	8565E
Internal Mixing	30 Hz** to 2.9 GHz	30 Hz** to 6.5 GHz	30 Hz** to 13.2 GHz	30 Hz* to 26.5 GHz	30 Hz* to 40 GHz	30 Hz* to 50 GHz
External Mixing	18 GHz to 325 GHz	18 GHz to 325 GHz	18 GHz to 325 GHz	18 GHz to 325 GHz	18 GHz to 325 GHz	18 GHz to 325 GHz

* 8563E, 8564E, 8565E require Option 006 for operation below 9 kHz.
** 8560E, 8561E, 8562E minimum frequency in AC coupled mode is 100 kHz. In DC coupled mode minimum frequency is 30 Hz.

Frequency Band	Harmonic Mixing Mode (N)
30 Hz to 2.9 GHz	1
2.75 GHz to 6.46 GHz	1
5.86 GHz to 13.2 GHz	2
12.4 GHz to 26.8 GHz	4
26.4 GHz to 31.15 GHz	4
31.0 GHz to 50 GHz	8

Frequency Reference

		Opt. 103
Temperature Stability*	$\pm 1 \times 10^{-8}$	$\pm 1 \times 10^{-6}$
Aging (per year)	$\pm 1 \times 10^{-7}$	$\pm 2 \times 10^{-6}$
(per day nom.)	$\pm 5 \times 10^{-10}$**	
Initial Achievable Accuracy	$\pm 2.2 \times 10^{-8}$	$\pm 1 \times 10^{-6}$
Short-term warmup accuracy factors (nominal)		
5 minute	$\pm 1 \times 10^{-7}$	
15 minute	$\pm 1 \times 10^{-8}$	

* -10°C to +55°C, referenced to 25°C
** after 7-day warmup

Frequency Readout Accuracy

(Start, Stop, Center, and Marker frequency functions)

Span > 2 MHz x N*	±(freq readout x freq ref accuracy** +5% x span +15% x RBW +10 Hz)
Span ≤ 2 MHz x N*	±(freq readout x freq ref accuracy** +1% x span +15% x RBW +10 Hz)

* N = harmonic mixing mode number
** Frequency reference accuracy = aging x time since last adjustment + initial achievable accuracy + temperature stability

Frequency Counter Accuracy

Marker Count Accuracy (S/N ≥ 25 dB)	±(marker freq x freq ref accuracy* +2 Hz x N *** +1 LSD of counter)
Accuracy at 1 GHz (25°C, 1 yr aging, marker resolution = 1 Hz)	±225 Hz (5 minute warmup)** ±135 Hz (15 minute warmup)** ±3003 Hz (Option 103)
Delta Count Accuracy (S/N ≥ 25 dB)	±(delta freq x freq ref accuracy* + 4 Hz x N ***+2 LSD)
Counter Resolution	Selectable from 1 Hz to 1 MHz

* Frequency reference accuracy = aging x time since last adjustment + initial achievable accuracy + temperature stability
** Short term warmup accuracy factors have been included in this calculation.
*** N = harmonic mixing mode number

Frequency Span

Range	0, 100 Hz to full span (100 Hz x N* when using external mixers)
Accuracy	
Span > 2 MHz x N*	±5%
Span ≤ 2 MHz x N*	±1%

* N = harmonic mixing mode number
** Frequency reference accuracy = aging x time since last adjustment + initial achievable accuracy + temperature stability

Frequency Specifications, continued

Sweep Time

Range	
Span = 0 Hz	50 µs to 6000 s
Span ±100 Hz	
RBW ≥ 300 Hz	50 ms to 2000 s
RBW ≤ 100 Hz	50 ms to 100 ks
Accuracy (Span = 0 Hz)	
Sweep time ≥ 30 ms	±1% (digitized trace data)
Sweep time < 30 ms (non-Option 007)	±10% (analog trace data)
Sweep time < 30 ms (Option 007*)	±0.1% (digitized trace data)
Sweep Trigger	delayed, free run, single, line, video, external

* Option 007 extends digitized trace data capability to sweep times < 30 ms.

Resolution Bandwidth

Range (–3 dB)	1 Hz to 1 MHz in a 1, 3, 10 sequence and 2 MHz (3 MHz at –6 dB)	
Option 103	10 Hz to 1 MHz in a 1, 3, 10 sequence and 2 MHz (3 MHz at –6 dB)	
Accuracy	1 Hz to 300 kHz	±10%
	1 MHz	±25%
	2 MHz	+50%, –25%
Selectivity (–60 dB/–3 dB BW ratio)		
RBW ≥ 300 Hz	< 15:1	
RBW ≤ 100 Hz	< 5:1	

Video Bandwidth Range 1 Hz to 3 MHz in a 1, 3, 10 sequence

Noise Sidebands (see figure 1)

Center Frequency ≤ 1 GHz

Offset		**Opt. 103**
100 Hz	≤ 88 dBc/Hz*	≤ 70 dBc/Hz*
1 kHz	≤ 97 dBc/Hz*	≤ 90 dBc/Hz*
10 kHz#	≤ 113 dBc/Hz**	≤ 113 dBc/Hz**
30 kHz#,###	≤ 113 dBc/Hz***	≤ 113 dBc/Hz***
100 kHz##	≤ 117 dBc/Hz****	≤ 117 dBc/Hz****

* Add 5.2 x ((f/1 GHz)–1) for f >1 GHz and f ≤ 2.9 GHz
** Add 2.5 x ((f/1 GHz)–1) for f >1 GHz and f ≤ 2.9 GHz
*** Add 3.0 dB x ((f/1 GHz)–1) for f >1 GHz and f ≤ 2.9 GHz
**** Add 2 dB for f >1 GHz and f ≤ 2.9 GHz
# RBW ≤ 1k or Span ≤ 745 kHz
RBW ≥ 3k or Span >745 kHz
Not specified at 30 kHz offset for 8564E and 8565E

Residual FM

(zero span, 10 Hz RBW))	< 1 Hz pk-pk x N* in 20 ms
	< 0.25 Hz pk-pk x N* in 20 ms (typical)
Option 103	< 10 Hz pk-pk x N* in 20 ms

* N = harmonic mixing mode number
** Frequency reference accuracy = aging x time since last adjustment + initial achievable accuracy + temperature stability

Amplitude Specifications, Agilent 8560 E-Series

Range Displayed Average Noise Level to +30 dBm

Maximum Safe Input Level

Average Continuous Power	+30 dBm (1 W, input attn ≥ 10 dB)
Peak Pulse Power (≤ 10 µs pulse width, < 1% duty cycle)	+50 dBm (100 W, input attn ≥ 30 dB)
Maximum DC Input Voltage	
DC coupled	±0.2 Vdc
AC coupled	±50 Vdc

1 dB Gain Compression

Maximum power at mixer =
input power (dBm) – input attenuation (dB)

10 MHz to 2.9 GHz	–5 dBm
2.9 GHz to 6.46 GHz	+0 dBm*
6.46 GHz to 26.8 GHz	–3 dBm
26.8 GHz to 50 GHz	+0 dBm (nominal)

* 8561E: -3 dBm

Displayed Average Noise Level (DANL) (see figure 2)

(0 dB attenuation, 1 Hz resolution bandwidth*)

	8560E	8561E	8562E	8563E	8564E, 8565E
30 Hz**	≤ 90 dBm	≤ 90 dBm	≤ 90 dBm	≤ 90 dBm	≤ 90 dBm
1 kHz**	≤ 105 dBm	≤ 105 dBm	≤ 105 dBm	≤ 105 dBm	≤ 105 dBm
10 kHz	≤ 120 dBm	≤ 120 dBm	≤ 120 dBm	≤ 120 dBm	≤ 120 dBm
100 kHz	≤ 120 dBm	≤ 120 dBm	≤ 120 dBm	≤ 120 dBm	≤ 120 dBm
1 MHz to 10 MHz	≤ 140 dBm	≤ 140 dBm	≤ 140 dBm	≤ 140 dBm	≤ 140 dBm
10 MHz to 2.9 GHz	≤ 151 dBm	≤ 145 dBm	≤ 151 dBm	≤ 151 dBm	≤ 145 dBm
2.9 GHz to 6.46 GHz		≤ 145 dBm	≤ 148 dBm	≤ 148 dBm	≤ 147dBm
6.46 GHz to 13.2 GHz			≤ 145 dBm	≤ 145 dBm	≤ 143 dBm
13.2 GHz to 22.0 GHz				≤ 140 dBm	≤ 140 dBm
22.0 GHz to 26.8 GHz				≤ 139 dBm	≤ 136 dBm
26.8 GHz to 31.15 GHz					≤ 139 dBm
31.15 GHz to 40 GHz					≤ 130 dBm
40 GHz to 50 GHz					≤ 127 dBm

* For Option 103, degrade DANL by 10 dB
** 8563E, 8564E, 8565E require Option 006 for operation below 9 kHz.

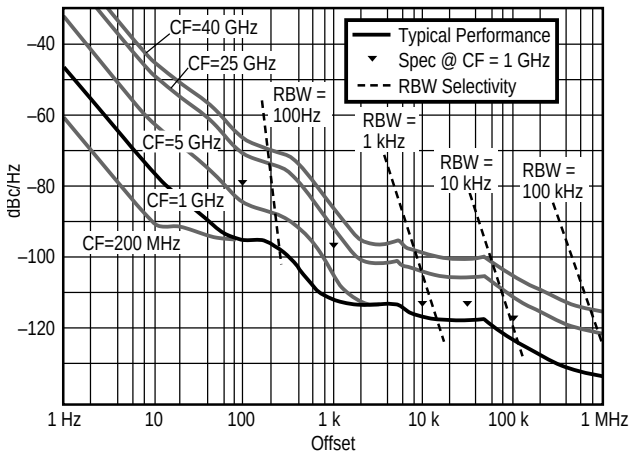


Figure 1. Noise sidebands normalized to 1 Hz BW versus offset from carrier.

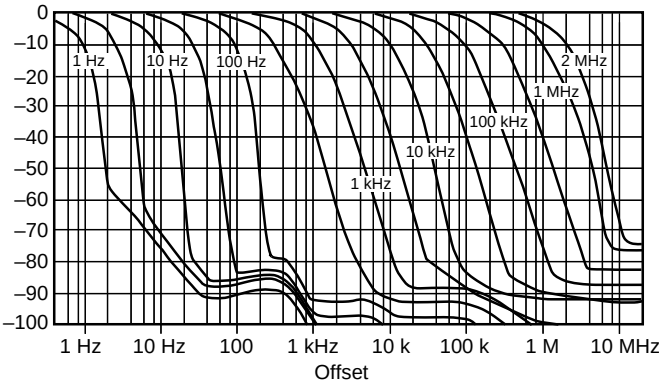


Figure 2. Typical on-screen dynamic range vs offset from 1 GHz center frequency for all RBWs (mixer level = –10 dBm).

Amplitude Specifications, continued

Dynamic Range (see figure 3)

Compression to Noise*	8560E	8561E	8562E	8563E	8564E, 8565E
10 MHz to 2.9 GHz	> 146 dB	> 140 dB	> 146 dB	> 144 dB	> 145 dB
2.9 GHz to 6.46 GHz		> 142 dB	> 148 dB	> 148 dB	> 147 dB
6.46 GHz to 13.2 GHz			> 142 dB	> 142 dB	> 140 dB
13.2 GHz to 22.0 GHz				> 137 dB	> 137 dB
22.0 GHz to 26.8 GHz				> 136 dB	> 133 dB
26.8 GHz to 31.15 GHz					> 139 dB
31.15 GHz to 40 GHz					> 130 dB
40 GHz to 50 GHz					> 127 dB

* (1dB compression - DANL) For Option 103, degrade compression to noise dynamic range by 10 dB.

Signal to Distortion Harmonic*	8560E	8561E	8562E	8563E	8564E, 8565E
20 MHz to 1.45 GHz	> 95 dB	> 88.5 dB	> 95 dB	> 94 dB	> 92 dB
1.45 GHz to 2 GHz		> 98.5 dB	> 111.5 dB	> 111.5 dB	> 111 dB
2 GHz to 3.25 GHz		> 119 dB	> 119 dB	> 119 dB	> 113.5 dB
3.25 GHz to 6.6 GHz			> 117.5 dB	> 117.5 dB	> 111.5 dB
6.6 GHz to 11 GHz				> 115 dB	> 110 dB
11 GHz to 13.4 GHz				> 114.5 dB	> 108 dB
13.4 GHz to 15.6 GHz					> 109.5 dB
15.6 GHz to 20 GHz					> 105 dB
20 GHz to 25 GHz					> 103.5 dB

* 0.5 x (SHI - DANL at 2 x input frequency) For Option 103, degrade harmonic (SHI) dynamic range by 5 dB.

Intermodulation*	8560E	8561E	8562E	8563E	8564E, 8565E
10 MHz to 2.9 GHz	> 108 dB	> 103 dB	> 108 dB	> 107 dB	> 104 dB
2.9 GHz to 6.46 GHz		> 107 dB	> 108.5 dB	> 108.5 dB	> 108 dB
6.46 GHz to 13.2 GHz			> 101.5 dB	> 101.5 dB	> 100 dB
13.2 GHz to 22.0 GHz				> 98 dB	> 98 dB
22.0 GHz to 26.8 GHz				> 97.5 dB	> 95.5 dB
26.8 GHz to 31.15 GHz					> 101 dB (nominal)
31.15 GHz to 40 GHz					> 95 dB (nominal)
40 GHz to 50 GHz					> 93 dB (nominal)

* 0.67 x (TOI - DANL) For Option 103, degrade intermodulation (TOI) dynamic range by 6.67 dB.

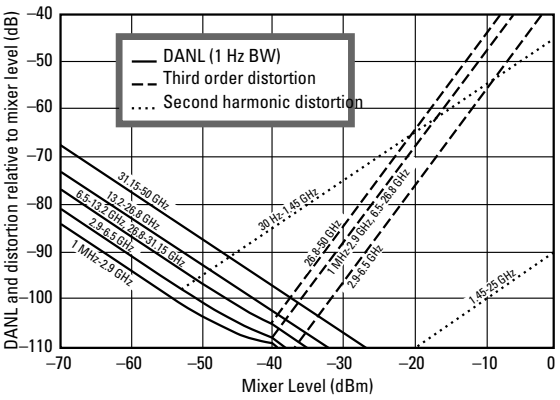


Figure 3. Agilent 8560E family nominal dynamic range

Amplitude Specifications, continued

Spurious Responses

General Spurious Responses

(Mixer level –40 dBm) < (–75 + 20 x logN) dBc

Second Harmonic Distortion

Input Signal	Mixer Level	Distortion	SHI
20 MHz to 1.45 GHz	–40 dBm	≤ 79 dBc*	+39 dBm*
1.45 GHz to 2 GHz	–10 dBm**	≤ 85 dBc**	+75 dBm**
2 GHz to 13.25 GHz			
8562E, 8563E	–10 dBm	≤ 100 dBc	+90 dBm
8564E, 8565E	–10 dBm	≤ 90 dBc	+80 dBm
13.25 GHz to 25 GHz	–10 dBm	≤ 90 dBc	+80 dBm

* 8561E: distortion –72 dBc, SHI +32 dBm
** 8561E: mixer level –20 dBm, distortion –72 dBc, SHI +52 dBm

Third Order Intermodulation Distortion

(Two –30 dBm signals, ≥ 1 kHz apart)	Mixer Level	Distortion	TOI
20 MHz to 2.9 GHz	–30 dBm each	≤ 82 dBc*	+11 dBm
2.9 GHz to 6.46 GHz	–30 dBm each	≤ 90 dBc	+15 dBm
6.46 GHz to 26.8 GHz	–30 dBm each	≤ 75 dBc	+7.5 dBm
26.8 GHz to 50 GHz	–30 dBm each	≤ 85 dBc (nominal)	+12.5 dBm (nominal)

* 8561E –78 dB distortion with two –30 dBm signals, 9 dBm TOI

Image Responses	Mixer Level	
10 MHz to 26.8 GHz	–10 dBm	–80 dBc
26.8 GHz to 50 GHz	–30 dBm	–60 dBc

Multiple and Out-of-band Responses	Mixer Level	
10 MHz to 26.8 GHz	–10 dBm	–80 dBc
26.8 GHz to 50 GHz	–30 dBm	–55 dBc

Residual Responses

≤ 90 dBm, for the range from 200 kHz to 6.46 GHz, no input signal, 0 dB input attenuation

Display Range

Viewing Area	approximately 7 cm (V) x 9 cm (H)
Scale Calibration	10 x 10 divisions
Log Scale	10, 5, 2, 1 dB per division
Linear Scale	10% of reference level per division

Scale Fidelity

	Incremental	Maximum
Log Range	0 to –90 dB	0 to –90 dB
RBW >= 300 Hz	±0.1 dB/dB	±0.85 dB
RBW <= 100 Hz	±0.2 dB/2dB	±0.85 dB*
Linear Range	±3% of reference level	

* maximum for 0 to –100 dB is ±1.5 dB

Amplitude Specifications, continued

Reference Level Range

Log, adjustable in 0.1 dB steps

30 Hz to 31.15 GHz	–120 to +30 dBm
31.15 GHz to 50 GHz	–115 to +30 dBm

Linear, adjustable in 1% steps

30 Hz to 31.15 GHz	2.2 µV to 7.07 V
31.15 GHz to 50 GHz	3.98 µV to 7.07 V

Frequency Response in dB, 10 dB input attenuation, dc coupled
relative/typical relative/absolute**/typical absolute***

	8560E	8561E	8562E	8563E	8564E, 8565E
100 MHz to 2 GHz	0.7/0.7/--/--		0.9/0.8/--/--	1.0/0.8/--/--	0.9/0.8/--/--
30 Hz* to 2.9 GHz	1/0.8/1.5/1.0	1.0/0.7/1.75/1.0	1.25/0.8/1.8/1.0	1.25/0.8/1.8/1.0	1.0/0.8/1.5/1.0
2.9 GHz to 6.46 GHz		1.5/1.1/2.5/1.5	1.5/1.1/2.5/1.5	1.5/1.0/2.4/1.5	1.7/1.4/2.6/1.8
6.46 to 13.2 GHz			2.2/1.5/2.9/2.0	2.2/1.5/2.9/2.0	2.6/2.2/3.0/2.8
13.2 to 22 GHz				2.5/1.5/4.0/2.5	2.5/2.5/4.0/3.5
22 to 26.8 GHz				3.3/2.2/4.0/2.5	3.3/2.2/4.5/4.0
26.8 to 31.15 GHz					3.1/2.9/4.0/3.0
31.15 GHz to 40 GHz (8564E)					2.6/2.4/4.0/3.2
31.15 GHz to 50 GHz (8565E)					3.2/3.0/4.0/4.0

* Operation below 9 kHz requires Option 006.
** Absolute flatness values referenced to 300 MHz CAL OUT
*** Typical values at 25°C

Band Switching Uncertainty

±1 dB (added to relative frequency response for between-band measurements)

Calibrator Output

300 MHz x (1 ±frequency reference accuracy*) at –10 dBm ±0.3 dB

* Frequency reference accuracy = aging x time since last adjustment + initial achievable accuracy + temperature stability

Input Attenuator

Switching Uncertainty (referenced to 10 dB attenuation)
30 Hz to 2.9 GHz for 20 to 70 dB settings of input attenuator:
±.6 dB/10 dB step, 1.8 dB maximum
Repeatability ±0.1 dB (nominal)

IF Gain Uncertainty

±1 dB (0 to –80 dBm reference levels with 10 dB input attenuation)

IF Alignment Uncertainty

±0.5 dB (additional uncertainty only when using 300 Hz RBW)

Resolution Bandwidth Switching Uncertainty

±0.5 dB (relative to 300 kHz RBW)

Amplitude Specifications, continued

Pulse Digitization Uncertainty

(pulse response mode, PRF >720/sweep time)

	Log	Linear
RBW ≤ 1 MHz	< 1.25 dB pk-pk	< 4% of ref level
RBW = 2 MHz	< 3 dB pk-pk	< 12% of ref level
Standard Deviation (RBW < 1 MHz)		< 0.2 dB (nominal)

Time-gated Spectrum Analysis

Gate Delay*	**Edge Mode**	**Level Mode**
Range	3 µs to 65.535 ms	≤ 0.5 µs
Resolution	1 µs	
Accuracy	±1 µs	
(From GATE TRIGGER INPUT to positive edge of GATE OUTPUT)		

Gate Length	
Range	1 µs to 65.535 ms
Resolution	1 µs
Accuracy	±1 µs
(From positive edge to negative edge of GATE OUTPUT)	

* Up to 1 µs jitter due to 1 µs resolution of gate delay clock

Delayed Sweep

Trigger Modes	Free Run, Line, External, Video
Range	
Non-Option 007*	+2 µs to +65.535 ms
Option 007, sweep time < 30 ms	–9.9 ms to +65.535 ms
sweep time ≥ 30 ms	+2 µs to +65.535 ms
Resolution	1 µs
Accuracy	±1 µs

* Up to 1 µs jitter due to 1 µs resolution of gate delay clock

Demodulation

Spectrum Demodulation	
Modulation type	AM and FM
Audio output	Speaker and phone jack with volume control
Marker Pause Time	100 ms to 60 s (nominal)

Inputs/Outputs, Agilent 8560 E-Series

(All values are nominal)

Front Panel Connectors

RF Input	
8560E, 8561E, 8562E, 8563E	Type N female, 50 Ω
(Option 026, 8563E only)	APC 3.5 mm male, 50 Ω
8564E, 8565E	APC 2.4 mm male, 50 Ω
VSWR (≥ 10 dB atten)	
30 Hz to 2.9 GHz	< 1.5:1 dB
2.9 GHz to 50 GHz	< 2.3:1 dB
LO Emission Level	
(average w/10 dB atten)	≤ 80 dBm
IF Input	SMA female, 50 Ω
Frequency	310.7 MHz
Full Screen Level	–30 dBm
Gain Compression	–23 dB
First LO Output	SMA female, 50 Ω
Frequency	3.000 - 6.8107 GHz*
Amplitude	+16.5 dBm ±2.0 dB*

* Option 002: 3.9107 to 6.8107 GHz, +14.5 dBm ±3.0 dB

Cal Output	BNC female, 50 Ω
Probe Power	+15 Vdc, –12.6 Vdc, and Gnd (150 mA max each)

Rear Panel Connectors

Earphone	Subminiature mono jack, 0.2 W into 4 Ω
10 MHz REF In/Out	Shared BNC female, 50 Ω
Output Freq Accuracy	±(10 MHz x freq ref accuracy)
Output Amplitude	0 dBm
Input Amplitude	–2 to +10 dBm
Video Output	BNC, 50 Ω
Amplitude (RBW ≥ 300 Hz)	0 to +1 V full scale

LO Sweep Frequency Analog Voltage Output
(LO Sweep or V/GHz function selectable from the front panel, BNC female, 120 Ω)

LO Sweep Output	0 to 10 V (no load)

Frequency Analog Voltage Output (internal mixer mode)
Output ramp voltage proportional to start and stop frequencies.

Transfer Function:	0.5 V/GHz

0.5 V/GHz Output (external mixer mode)
Output ramp voltage proportional to LO frequency: (LO = 3 to 6.8107 GHz)
Transfer Function: (1.5 V/GHz x LO frequency (GHz) –0.2054) ±50 mV (typ)

Blanking/Gate	
Output	Shared BNC female, 50 Ω
Blanking Mode	
During Sweep	Low TTL Level
During Retrace	High TTL level
Gate Mode	
Gate On	High TTL level
Gate Off	Low TTL level
External/Gate	
Trigger Input	Shared BNC female, > 10k Ω Settable to high TTL or low TTL
GPIB	IEEE-488 bus connector
Interface Functions	SH1, AH1, T6, L4, LE0, RL1, PP1, DC1, DT1, C1, C28, TE0, SR1
Direct Printer Output	Supports HP 3630A PaintJet printer, HP 2225A ThinkJet printer
Direct Plotter Output	Supports HP 7225A/7440A/ 7470A/7475A/7550A

Options

Option 001 Second IF output, Agilent 8560 Series

(all values are nominal)

3 dB bandwidth **NF** **conversion gain**	**8560E**	**8561E**	**8562E**	**8563E**	**8564E,8565E**
30 Hz to 2.9 GHz*	> 25 MHz 24 dB 1.2 dB	> 25 MHz 25 dB –6.5 dB	> 25 dB 20 dB –1.2 dB	> 25 MHz 25 dB –1.2 dB	>25 MHz 28 dB –1.2 dB
2.9 GHz to 6.5 GHz		> 30 MHz 26 dB –1 dB	> 30 MHz 22 dB –3 dB	> 30 MHz 22 dB –1 dB	>30 MHz 23 dB –1 dB
6.5 GHz to 13.2 GHz			> 37 MHz 26 dB –5.7 dB	> 37 MHz 26 dB –5.7 dB	>37 MHz 28 dB –5.7 dB
13.2 GHz to 22 GHz				> 45 MHz 30 dB –8 dB	> 45 MHz 32 dB –8 dB
22 GHz to 26.8 GHz				> 45 MHz 32 dB –8 dB	> 45 MHz 35 dB –8 dB
26.8 GHz to 31.15 GHz					> 25 MHz 28 dB –9 dB
31.15 GHz to 40 GHz					> 25 MHz 38 dB –19 dB
40 GHz to 50 GHz					> 25 MHz 42 dB –23 dB

* DC coupled for frequencies below 100 kHz. Option 006 required for operation below 9 kHz in 8563E, 8564E, 8565E.

Options, continued

Option 002 Built-in Tracking Generator* (8560E only)

Frequency Specifications

Frequency Range	300 kHz to 2.9 GHz
Accuracy	
After Peaking	±(frequency reference accuracy x tuned frequency + 5% x span + 295 Hz)
Tracking Drift (nominal)	Usable in 1 kHz RBW after 5 minutes warm-up, usable in 300 Hz RBW after 30 minute warm-up.
Minimum RBW	300 Hz**

Amplitude Specifications

Output Level (10 dBm to +2.8 dBm typical)	–10 dBm to +1 dBm
Resolution	0.1 dB
Accuracy	
Vernier	±0.20 dB/dB, ±0.5 dBm max (25 °C ±10 °C)
Absolute	±0.75 dB
Level Flatness	±2.0 dB
Effective Source Match	1.92:1 (nominal)
Total Absolute Accuracy	±3.25 dB

Spurious Output (at +1 dBm output power)

Harmonic Spurious	–25 dBc
Non-harmonic Spurious	
300 kHz to 2.0 GHz	–27 dBc
2.0 GHz to 2.9 GHz	–23 dBc
LO Feedthrough	–16 dBm (3.9 GHz to 6.8 GHz)
Residuals (RF-Power-Off)	–78 dBm (300 kHz to 2.9 GHz

Dynamic Range

TG Feedthrough***	
300 kHz to 1 MHz	–95 dBm
1 MHz to 2.7 GHz	–115 dBm
2.7 GHz to 2.9 GHz	–110 dBm
Dynamic Range****	
300 kHz to 1 MHz	96 dB
1 MHz to 2.7 GHz	116 dB
2.7 to 2.9 GHz	111 dB
Power Sweep	10 dB range, 0.1 dB resolution

Inputs/Outputs

RF Output (front panel)	Type-N female, 50 W (nominal)
Maximum Safe Reverse Level	+ 30 dBm, ±30 Vdc
External ALC Input (rear panel)	BNC female, use with negative detector

* Option 002 deletes millimeter external mixer capability (Second IF input is deleted)
** Tracking generator not usable with resolution bandwidths ≤100 Hz
*** Leakage measured with maximum power into 50 Ω and with 50 W on RF input
**** Difference between maximum power output and tracking generator feedthrough

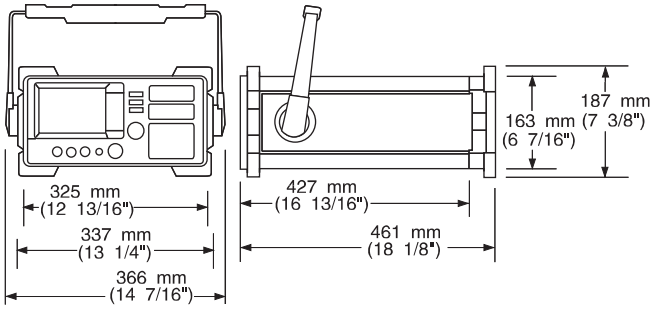
Environmental Specifications, Agilent 8560 E-Series

Per MIL-T-28800, Type III, Class 3*, Style C

Calibration Interval	
8560E, 8561E, 8562E, 8563E	2 years
8564E, 8565E	1 year
Warm-up Time	5 minutes in ambient conditions
Temperature	–10°C to +55°C (operating); –51°C to +71°C (not operating)
Humidity	95% @ 40°C for 5 days
Rain Resistance	Drip-proof at 16 liters/hour/sq. ft.
Altitude	15,000 ft. (operating), 50,000 ft. (non-operating)
Pulse Shock (half sine)	30g for 11ms duration
Transit Drop	8-inch drop on six faces and eight corners
Electromagnetic Compatibility	Conducted and radiated interference in compliance with CISPR Pub. 11(1990). Meets Mil-STD-461C, part 2, with certain exceptions.

Power Requirements	115 VAC operation: 90 to 140 V rms, 3.2 A rms max, 47 to 440 Hz 230 VAC operation: 180 to 250 V rms, 1.8 A rms max, 47 to 66 Hz
Maximum Power Dissipation	
8560E, 8561E, 8562E, 8563E	180 W
8564E, 8565E	260 W
Audible Noise (nominal)	< 5.0 Bels power at room temp (ISO DP7779)
Dimensions (w/o handle, cover)	337 mm W x 187 mm H x 461 mm D
Weight (nominal)	
8560E, 8561E, 8562E, 8563E	20 kg (44 lbs)
8564E, 8565E	21 kg (46 lbs)

* 8564E, 8565E: Class 5



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