

Agilent 8560 E-Series Spectrum Analyzers

Data Sheet

8560E 30 Hz to 2.9 GHz

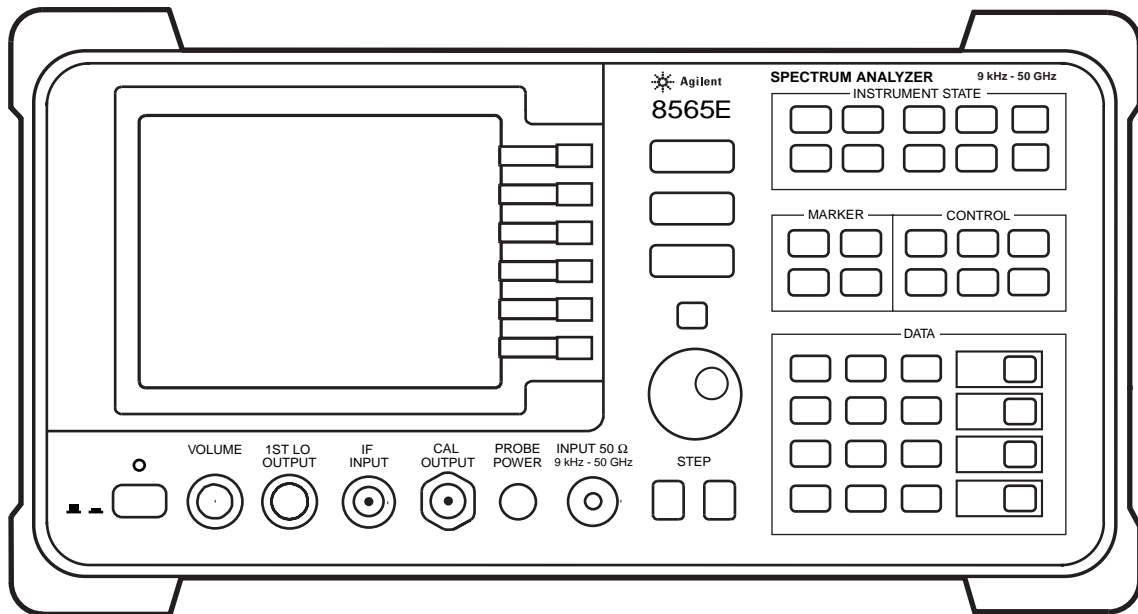
8561E 30 Hz to 6.5 GHz

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 $^{\circ}\text{C}$ to 30 $^{\circ}\text{C}$, 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.



Agilent Technologies

Innovating the HP Way

Frequency specifications, Agilent 8560 E-series

Frequency range

	8560E	8561E	8562E	8563E	8564E	8565E
Internal mixing	30 Hz ² to 2.9 GHz	30 Hz ² to 6.5 GHz	30 Hz ² to 13.2 GHz	30 Hz ¹ to 26.5 GHz	30 Hz ¹ to 40 GHz	30 Hz ¹ 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

Frequency band

30 Hz to 2.9 GHz
2.75 GHz to 6.46 GHz
5.86 GHz to 13.2 GHz
12.4 GHz to 26.8 GHz
26.4 GHz to 31.15 GHz
31.0 GHz to 50 GHz

Harmonic mixing mode (N)

1
1
2
4
4
8

Frequency counter accuracy

Marker count accuracy (S/N ≥ 25 dB) $\pm(\text{marker freq} \times \text{freq ref accuracy}^6 + 2 \text{ Hz} \times N^5 + 1 \text{ LSD of counter})$

Accuracy at 1 GHz (25 °C, 1 yr aging, marker resolution = 1 Hz) $\pm 225 \text{ Hz (5 minute warm-up)}^7$
 $\pm 135 \text{ Hz (15 minute warm-up)}^7$
 $\pm 3003 \text{ Hz (Option 103)}$

Delta count accuracy (S/N ≥ 25 dB) $\pm(\text{delta freq} \times \text{freq ref accuracy}^6 + 4 \text{ Hz} \times N^5 + 2 \text{ LSD})$

Counter resolution Selectable from 1 Hz to 1 MHz

Frequency reference

Temperature stability³

Aging (per year)
(per day nom.)

Initial achievable accuracy

Short-term warm-up

accuracy factors (nominal)

5 minute
15 minute

$\pm 1 \times 10^{-8}$	$\pm 1 \times 10^{-7}$	$\pm 2.2 \times 10^{-8}$	$\pm 1 \times 10^{-7}$
$\pm 1 \times 10^{-7}$	$\pm 5 \times 10^{-10(4)}$	$\pm 2.2 \times 10^{-8}$	$\pm 1 \times 10^{-8}$
$\pm 1 \times 10^{-7}$			$\pm 1 \times 10^{-8}$

Option 103

$\pm 1 \times 10^{-6}$	$\pm 2 \times 10^{-6}$	$\pm 1 \times 10^{-6}$
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Frequency span

Range

0, 100 Hz to full span
(100 Hz $\times N^{10}$ when using external mixers)

Accuracy

Span $> 2 \text{ MHz} \times N^5$ $\pm 5\%$
 Span $\leq 2 \text{ MHz} \times N^5$ $\pm 1\%$

Frequency readout accuracy

(Start, stop, center, and marker frequency functions)

Span $> 2 \text{ MHz} \times N^5$	$\pm(\text{freq readout} \times \text{freq ref accuracy}^6 + 5\% \times \text{span} + 15\% \times \text{RBW} + 10 \text{ Hz})$
Span $\leq 2 \text{ MHz} \times N^5$	$\pm(\text{freq readout} \times \text{freq ref accuracy}^6 + 1\% \times \text{span} + 15\% \times \text{RBW} + 10 \text{ Hz})$

- 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.
- 10 °C to +55 °C, referenced to 25 °C
- After 7-day warm-up
- N = harmonic mixing mode number
- Frequency reference accuracy = aging \times time since last adjustment + initial achievable accuracy + temperature stability
- Short term warm-up accuracy factors have been included in this calculation.

Frequency specifications, continued

Sweep time

Range

Span = 0 Hz	50 μ s to 6000 s
Span \pm 100 Hz	
RBW \geq 300 Hz	50 ms to 2000 s
RBW \leq 100 Hz	50 ms to 100 ks

Accuracy (Span = 0 Hz)

Sweep time \geq 30 ms	\pm 1% (digitized trace data)
Sweep time <30 ms (non-Option 007)	\pm 10% (analog trace data)
Sweep time <30 ms (Option 007 ¹)	\pm 0.1% (digitized trace data)

Sweep trigger

delayed, free run, single,
line, video, external

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	\pm 10%
	1 MHz	\pm 25%
	2 MHz	+50%, –25%

Selectivity (–60 dB/–3 dB BW ratio)

RBW \geq 300 Hz	<15:1
RBW \leq 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 \leq 1 GHz

Offset

100 Hz	\leq 88 dBc/Hz ²	Opt. 103 \leq 70 dBc/Hz ²
1 kHz	\leq 97 dBc/Hz ²	\leq 90 dBc/Hz ²
10 kHz ⁶	\leq 113 dBc/Hz ³	\leq 113 dBc/Hz ³
30 kHz ^{6,8}	\leq 113 dBc/Hz ⁴	\leq 113 dBc/Hz ⁴
100 kHz ⁷	\leq 117 dBc/Hz ⁵	\leq 117 dBc/Hz ⁵

Residual FM

(zero span, 10 Hz RBW))	<1 Hz pk-pk x N ⁹ in 20 ms
	<0.25 Hz pk-pk x N ⁹ in 20 ms (typical)
Option 103	<10 Hz pk-pk x N ⁹ in 20 ms

1. Option 007 extends digitized trace data capability to sweep times <30 ms.
2. Add $5.2 \times ((f/1 \text{ GHz}) - 1)$ for $f > 1 \text{ GHz}$ and $f \leq 2.9 \text{ GHz}$
3. Add $2.5 \times ((f/1 \text{ GHz}) - 1)$ for $f > 1 \text{ GHz}$ and $f \leq 2.9 \text{ GHz}$
4. Add $3.0 \text{ dB} \times ((f/1 \text{ GHz}) - 1)$ for $f > 1 \text{ GHz}$ and $f \leq 2.9 \text{ GHz}$
5. Add 2 dB for $f > 1 \text{ GHz}$ and $f \leq 2.9 \text{ GHz}$
6. RBW \leq 1 k or Span \leq 745 kHz
7. RBW \geq 3 k or Span $>$ 745 kHz
8. Not specified at 30 kHz offset for 8564E and 8565E
9. N = harmonic mixing mode number

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 +50 dBm (100 W, input attn ≥ 30 dB)
 ($\leq 10 \mu\text{s}$ pulse width, $< 1\%$ duty cycle)

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 ³
6.46 GHz to 26.8 GHz	-3 dBm
26.8 GHz to 50 GHz	+0 dBm (nominal)

Displayed average noise level (DANL) (see figure 2)
 (0 dB attenuation, 1 Hz resolution bandwidth¹)

	8560E	8561E	8562E	8563E	8564E, 8565E
30 Hz ²	≤ 90 dBm	≤ 90 dBm	≤ 90 dBm	≤ 90 dBm	≤ 90 dBm
1 kHz ²	≤ 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	≤ 149 dBm	≤ 145 dBm	≤ 151 dBm	≤ 151 dBm	≤ 145 dBm
2.9 GHz to 6.46 GHz		≤ 145 dBm	≤ 148 dBm	≤ 148 dBm	≤ 147 dBm
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

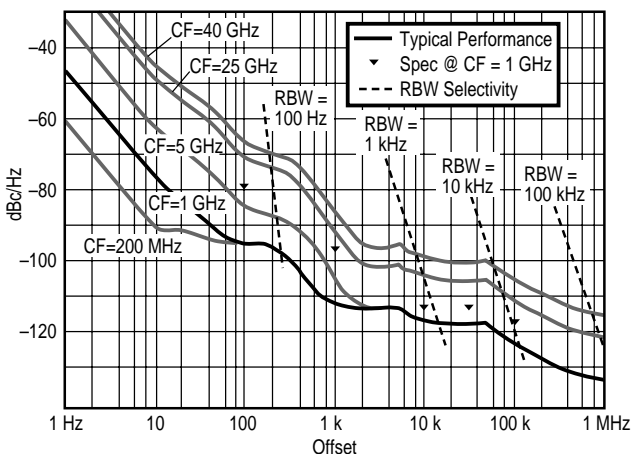


Figure 1. Noise sidebands normalized to 1 Hz BW versus offset from carrier

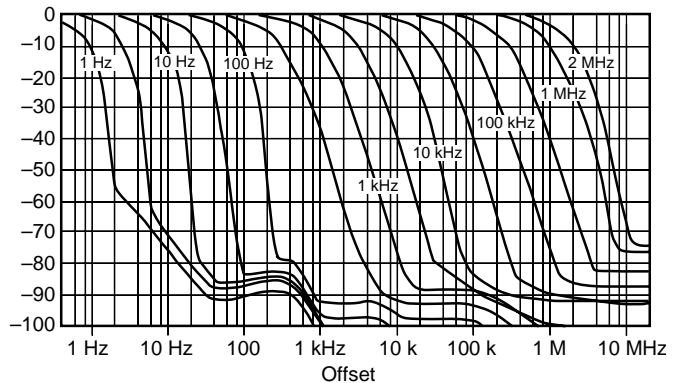


Figure 2. Typical on-screen dynamic range versus offset from 1 GHz center frequency for all RBWs (mixer level = -10 dBm)

1. For Option 103, degrade DANL by 10 dB
 2. 8563E, 8564E, 8565E require Option 006 for operation below 9 kHz.
 3. 8561E: -3 dBm

Amplitude specifications, continued

Dynamic range (see figure 3)

Compression to noise ¹	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
Signal to distortion					
Harmonic ²	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
Intermodulation³					
	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)

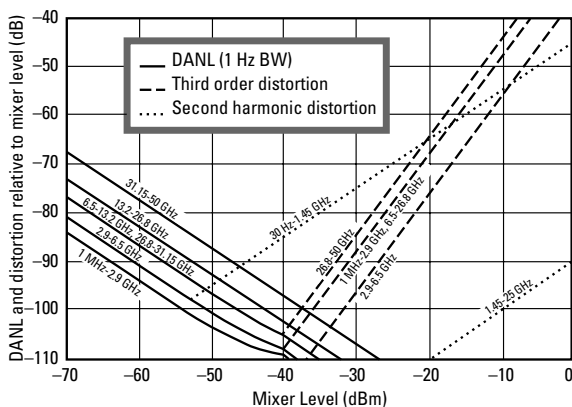


Figure 3. Agilent 8560E family nominal dynamic range

1. (1 dB compression - DANL) For Option 103, degrade compression to noise dynamic range by 10 dB.
2. 0.5 x (SHI - DANL at 2 x input frequency) For Option 103, degrade harmonic (SHI) dynamic range by 5 dB.
3. 0.67 x (TOI - DANL) For Option 103, degrade intermodulation (TOI) dynamic range by 6.67 dB.

Amplitude specifications, continued

Spurious responses

General spurious responses

(Mixer level –40 dBm) $<(-75 + 20 \times \log N^1)$ dBc

Second harmonic distortion

input signal	Mixer level	Distortion	SHI
20 MHz to 1.45 GHz	–40 dBm	≤ 79 dBc ²	+39 dBm ²
1.45 GHz to 2 GHz	–10 dBm ³	≤ 85 dBc ³	+75 dBm ³
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

Third order intermodulation distortion

(Two –30 dBm signals, ≥ 1 kHz apart)

Mixer level	Distortion	TOI
–30 dBm each	≤ 82 dBc ⁴	+11 dBm
–30 dBm each	≤ 90 dBc	+15 dBm
–30 dBm each	≤ 75 dBc	+7.5 dBm
–30 dBm each	≤ 85 dBc (nominal)	+12.5 dBm (nominal)

Image responses

Mixer level	
–10 dBm	–80 dBc
–30 dBm	–60 dBc

Multiple and out-of-band responses

Mixer level	
–10 dBm	–80 dBc
–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

Log range

RBW ≥ 300 Hz

RBW ≤ 100 Hz

Linear range

Incremental

0 to –90 dB

± 0.1 dB/dB

± 0.2 dB/2dB

$\pm 3\%$ of reference level

Maximum

0 to –90 dB

± 0.85 dB

± 0.85 dB⁵

1. Excluding display related side bands at multiples of 60 Hz
2. 8561E: distortion –72 dBc, SHI +32 dBm
3. 8561E: mixer level –20 dBm, distortion –72 dBc, SHI +52 dBm
4. 8561E –78 dB distortion with two –30 dBm signals, 9 dBm TOI
5. 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 μ V to 7.07 V
31.15 GHz to 50 GHz	3.98 μ V to 7.07 V

Frequency response in dB, 10 dB input attenuation, dc coupled relative/typical relative/absolute²/typical absolute³

	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 ¹ 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

Band switching uncertainty

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

Calibrator output

300 MHz x (1 \pm frequency reference accuracy⁴) at –10 dBm
 ± 0.3 dB

Input attenuator

Switching uncertainty (referenced to 10 dB attenuation)

30 Hz to 2.9 GHz for 20 to 70 dB settings of input attenuator:
 ± 0.6 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)

1. Operation below 9 kHz requires Option 006.
2. Absolute flatness values referenced to 300 MHz CAL OUT
3. Typical values at 25 °C
4. Frequency reference accuracy = aging x time since last adjustment + initial achievable accuracy + temperature stability

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 ¹	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)

Delayed sweep

Trigger modes Free run, line, external, video

Range

Non-Option 007 ¹	+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

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)

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

Inputs/outputs, Agilent 8560 E-series

(All values are nominal)

Front panel connectors

RF input

8560E, 8561E, 8562E, 8563E (Option 026, 8563E only)	Type N female, 50 Ω 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 with 10 dB atten)	≤ 80 dBm

IF input

Frequency	SMA female, 50 Ω 310.7 MHz
Full screen level	-30 dBm
Gain compression	-23 dB

First LO output

Frequency	SMA female, 50 Ω 3.000 - 6.8107 GHz ¹
Amplitude	+16.5 dBm ± 2.0 dB ¹

Cal output

Probe power	BNC female, 50 Ω +15 Vdc, -12.6 Vdc, and Gnd (150 mA max each)
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Rear panel connectors

Earphone

Subminiature mono jack,
0.2 W into 4 Ω

10 MHz REF In/Out

Output freq accuracy
 $\pm(10 \text{ MHz} \times \text{freq ref accuracy})$

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 \times 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, >10 k 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

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

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 ¹	>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

Option 002 built-in tracking generator² (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-minute warm-up, usable in 300 Hz RBW after 30-minute warm-up.
Minimum RBW	300 Hz ³

Amplitude specifications

Output level	-10 dBm to +1 dBm (10 dBm to +2.8 dBm typical)
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

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

2. Option 002 deletes millimeter external mixer capability (Second IF input is deleted)

3. Tracking generator not usable with resolution bandwidths ≤100 Hz

Option 002 built-in tracking generator (8560E only), continued

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 ¹	
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 range²

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) (nominal)	Type-N female, 50 Ω
Maximum safe reverse level	+30 dBm, ±30 Vdc

External ALC input (rear panel)

BNC female, use with negative detector

Environmental specifications, Agilent 8560 E-series

Per MIL-T-28800, type III, class 3³, 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)

30 g for 11 ms 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)

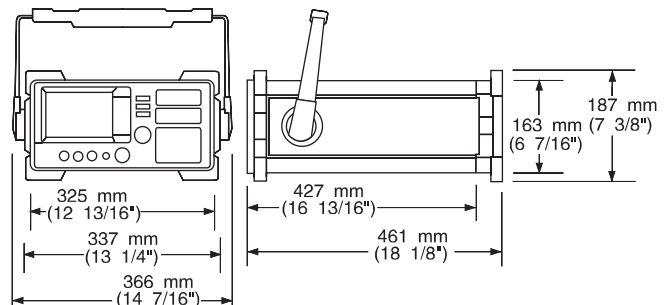
<5.0 Bels power at room temp (ISO DP7779)

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)



1. Leakage measured with maximum power into 50 Ω and with 50 Ω on RF input
 2. Difference between maximum power output and tracking generator feedthrough
 3. 8564E, 8565E: Class 5

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