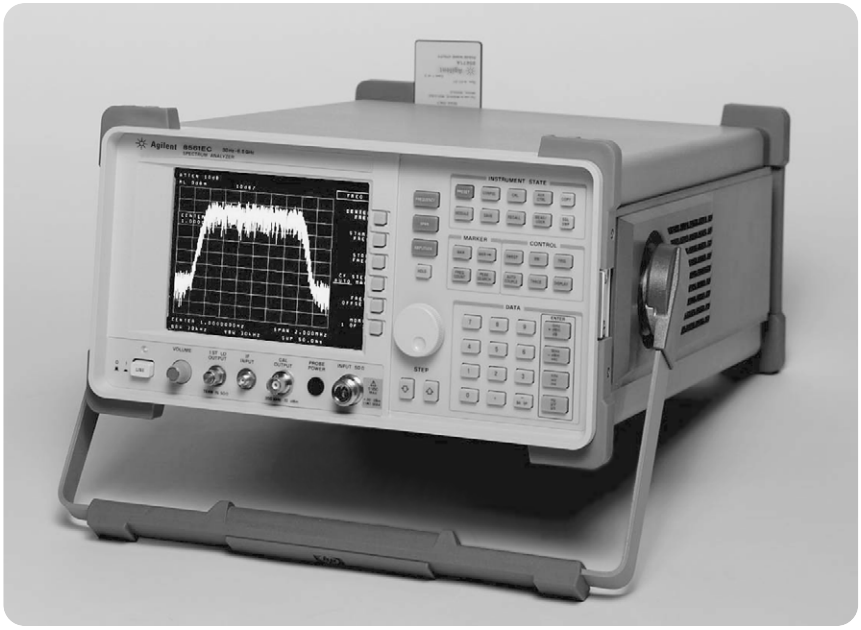
Agilent
8560 EC Series Spectrum Analyzers
Data Sheet

Agilent 8560EC 30 Hz to 2.9 GHz
Agilent 8561EC 30 Hz to 6.5 GHz [1]
Agilent 8562EC 30 Hz to 13.2 GHz
Agilent 8563EC 30 Hz to 26.5 GHz
Agilent 8564EC 30 Hz to 40 GHz
Agilent 8565EC 30 Hz to 50 GHz

1. The 8561EC has been discontinued and replaced with 8562EC.



The Agilent 8560 EC Series spectrum analyzers have a color display, offer standard digitized fast time domain sweeps (Option 856xE-007 on the 8560 E Series), and are Class 3 MIL-rugged. The 8560 EC Series is identical to the 8560E Series in all other respects.

Agilent Technologies

Frequency Specifications, Agilent 8560 EC Series

Unless noted, all specifications describe the instrument's 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 non-warranted. Supplemental characteristics are denoted by "nominal" and "approximately"; these constitute non-warranted functional performance information derived during the design process and are not tested on a continuing basis.

Frequency range

	8560EC	8561EC	8562EC	8563EC	8564EC	8565EC
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	**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

		Option 856xEC-103
Temperature stability[3]	$\pm 1 \times 10^{-8}$	$\pm 1 \times 10^{-6}$
Aging (per year)	$\pm 1 \times 10^{-7}$	$\pm 2 \times 10^{-6}$
(per day nom.)	$\pm 5 \times 10^{-10}$ (4)	
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	$\pm 1 \times 10^{-8}$	

Frequency readout accuracy

(Start, stop, center and marker frequency functions)

Span > 2 MHz x N[5]	±(freq readout x freq ref accuracy[6] +5% x span +15% x RBW +10 Hz)
Span ≤ 2 MHz x N[5]	±(freq readout x freq ref accuracy[6] +1% x span +15% x RBW +10 Hz)

Frequency counter accuracy

Marker count accuracy	±(marker freq x freq ref accuracy[7] +2 Hz x N[5]
(S/N ≥ 25 dB)	+1 LSD of counter)
Accuracy at 1 GHz	±225 Hz (5-minute warm-up)[7]
(25 °C, 1 yr aging, marker resolution = 1 Hz)	±135 Hz (15-minute warm-up)[7]
	±3003 Hz (Option 856xEC-103)
Delta count accuracy	±(delta freq x freq ref accuracy[6] + 4 Hz x N[5]
(S/N ≥ 25 dB)	+2 LSD)
Counter resolution	Selectable from 1 Hz to 1 MHz

Frequency span

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

1. Agilent 8563EC, 8564EC, 8565EC require Option 856xEC-006 for operation below 9 kHz.
2. Agilent 8560EC, 8561EC, 8562EC minimum frequency in AC coupled mode is 100 kHz . In DC coupled mode minimum frequency is 30 Hz.
3. –10 °C to +55 °C, referenced to 25 °C
4. After 7 day warm-up
5. N = harmonic mixing mode number
6. Frequency reference accuracy = aging x time since last adjustment + initial achievable accuracy + temperature stability
7. Short term warmup accuracy factors have been included in this calculation.

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	±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 856xEC-103[1]	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		**Option 856xEC-103[1]**
100 Hz	≤ –88 dBc/Hz[2]	≤ –70 dBc/Hz[2]
1 kHz	≤ –97 dBc/Hz[2]	≤ –90 dBc/Hz[2]
10 kHz[6]	≤ –113 dBc/Hz[3]	≤ –113 dBc/Hz[3]
30 kHz[6, 8]	≤ –113 dBc/Hz[4]	≤ –113 dBc/Hz[4]
100 kHz[7]	≤ –117 dBc/Hz[5]	≤ –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 856xEC-103	< 10 Hz pk-pk x N[9] in 20 ms

1. Option 856xEC-103 is no longer offered.
2. Add 5.2 x ((f/1 GHz)–1) for f > 1 GHz and f ≤ 2.9 GHz
3. Add 2.5 x ((f/1 GHz)–1) for f > 1 GHz and f ≤ 2.9 GHz
4. Add 3.0 dB x ((f/1 GHz)–1) for f > 1 GHz and f ≤ 2.9 GHz
5. Add 2 dB for f > 1 GHz and f ≤ 2.9 GHz
6. RBW ≤ 1 kHz or span ≤ 745 kHz
7. RBW ≥ 3 kHz or span > 745 kHz
8. Not specified at 30 kHz offset for Agilent 8564EC and Agilent 8565EC
9. N = harmonic mixing mode number

Amplitude Specifications, Agilent 8560 EC Series

Range Displayed average noise level (DANL) 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)

(≤ 10 ms pulse width, < 1% duty cycle)

Maximum DC input voltage

DC coupled	±0.2 Vdc
AC coupled	±50 Vdc[1]

Displayed average noise level (DANL) (see Figure 2)

(0 dB attenuation, 1 Hz resolution bandwidth[2])

	8560EC	8561EC	8562EC	8563EC	8564EC, 8565EC
30 Hz[3]	≤ –90 dBm	≤ –90 dBm	≤ –90 dBm	≤ –90 dBm	≤ –90 dBm
1 kHz[3]	≤ –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	≤ –149 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[4] 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

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[5]
6.46 GHz to 26.8 GHz	–3 dBm
26.8 GHz to 50 GHz	+0 dBm (nominal)

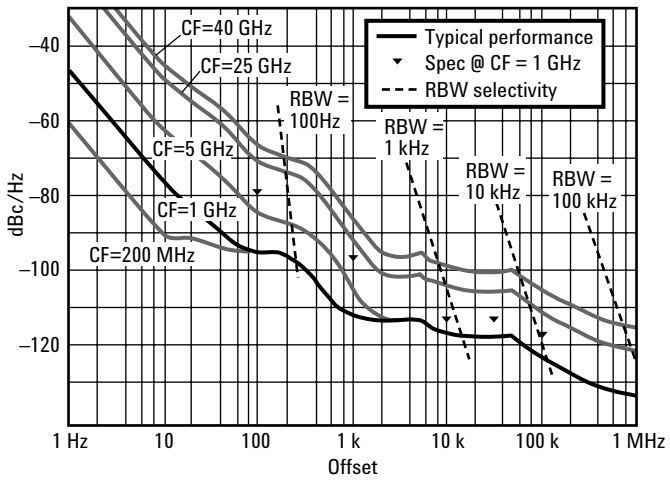


Figure 1. Noise sidebands normalized to 1 Hz BW versus offset from carrier.

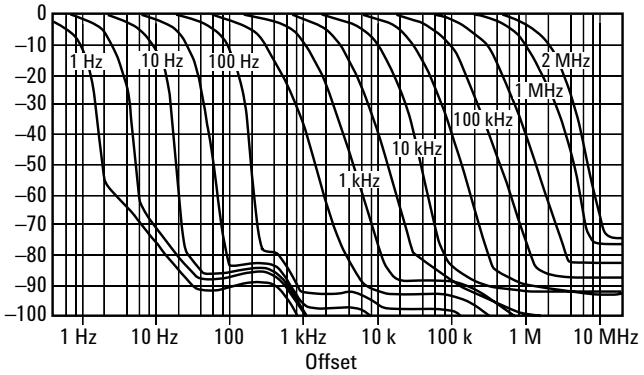


Figure 2. Typical on-screen dynamic range versus offset from 1 GHz center frequency for all RBWs (mixer level = –10 dBm).

1. Not applicable to 8564EC and 8565EC.
2. For Option 856xEC-103, degrade DANL by 10 dB
3. Agilent 8563EC, 8564EC, 8565EC require Option 856xEC-006 for operation below 9 kHz
4. For Agilent 8563EC: 26.5 GHz
5. Agilent 8561EC: –3 dBm

Amplitude Specifications, continued

Dynamic range (see Figure 3)

Compression to noise [1]

	8560EC	8561EC	8562EC	8563EC	8564EC, 8565EC
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]

	8560EC	8561EC	8562EC	8563EC	8564EC, 8565EC
20 MHz to 1.45 GHz	> 95 dB	> 88.5 dB	> 95 dB	> 94dB	> 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

Intermodulation [3]

	8560EC	8561EC	8562EC	8563EC	8564E, 8565EC
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)

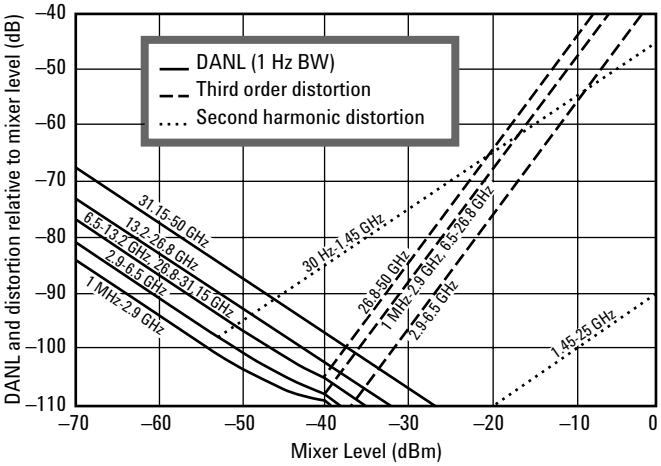


Figure 3. Agilent 8560 EC Series nominal dynamic range

1. (1dB compression - DANL) for Option 856xEC-103, degrade compression to noise dynamic range by 10 dB
2. 0.5 x (SHI - DANL at 2 x input frequency) for Option 856xEC-103, degrade harmonic (SHI) dynamic range by 5 dB
3. 0.67 x (TOI - DANL) for Option 856xEC-103, degrade intermodulation (TOI) dynamic range by 6.67 dB

Amplitude Specifications, continued

Spurious responses

General spurious responses

(Mixer level –40 dBm)	< (–75 + 20 x logN)[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
20 MHz to 2.9 GHz	–30 dBm each	≤ –82 dBc[4]	+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)

Image responses	**Mixer level**
10 MHz to 26.8 GHz	–10 dBm
26.8 GHz to 50 GHz	–30 dBm

Multiple and out-of-band responses	
	Mixer level
10 MHz to 26.8 GHz	–10 dBm
26.8 GHz to 50 GHz	–30 dBm

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	Color display, approximately 9.6 cm (v) x 13 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/2 dB	±0.85 dB[5]
Linear range	±3% of reference level	

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 mV to 7.07 V
31.15 GHz to 50 GHz	3.98 mV to 7.07 V

1. Excluding display-related sidebands at multiples of 60 Hz
2. Agilent 8561EC: distortion –72 dBc, SHI +32dBm
3. Agilent 8561EC: mixer level –20 dBm, distortion –72 dBc, SHI +52 dBm
4. Agilent 8561EC –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

Frequency response in dB, 10 dB input attenuation, dc coupled
relative / typical relative / absolute[2] / typical absolute[3]

	8560EC	8561EC	8562EC	8563EC	8564EC, 8565EC
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 (Agilent 8564EC)					2.6/2.4/4.0/3.2
31.15 GHz to 50 GHz (Agilent 8565EC)					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 ± frequency reference accuracy[4]) 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)

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[5]	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)

1. Operation below 9 kHz requires Option 856xEC-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
5. Up to 1 µs jitter due to 1 µs resolution of gate delay clock

Amplitude Specifications, continued

Delayed sweep

Trigger modes	Free run, line, external, video
Range	
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)

Inputs/Outputs, Agilent 8560 EC Series

(All values are nominal)

Front panel connectors

RF input	
Agilent 8560EC, 8561EC, 8562EC, 8563EC	Type N female, 50 Ω
(Option 856xEC-026, Agilent 8563EC only)	APC 3.5 mm male, 50 Ω
Agilent 8564EC, 8565EC	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	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
Cal output	BNC female, 50 Ω
Probe power	+15 Vdc, –12.6 Vdc, and Gnd (150 mA max each)

Rear panel connectors

Earphone	Sub-miniature 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).	

Inputs/Outputs, Agilent 8560 EC Series, continued

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 kΩ 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 856xEC-001 second IF output, Agilent 8560 EC Series

(all values are nominal)

3 dB bandwidth **NF** **conversion gain**	**8560EC**	**8561EC**	**8562EC**	**8563EC**	**8564EC, 8565EC**
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 to31.15 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 8560EC-002 Built-in tracking generator[2]

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[3]

1. DC coupled for frequencies below 100 kHz. Option 856xEC-006 required for operation below 9 kHz in Agilent 8563EC, 8564EC, 8565EC.
2. Option 8560EC-002 is no longer offered.
3. Tracking generator not usable with resolution bandwidths ≤ 100 Hz.

Options, continued

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, ±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 [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 range [2]	
300 kHz to 1 MHz	96 dB
1 MHz to 2.7 GHz	116 dB
2.7 GHz 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 Ω (nominal)
Maximum safe reverse level	+ 30 dBm, ±30 Vdc
External ALC input (rear panel)	BNC female use with negative detector

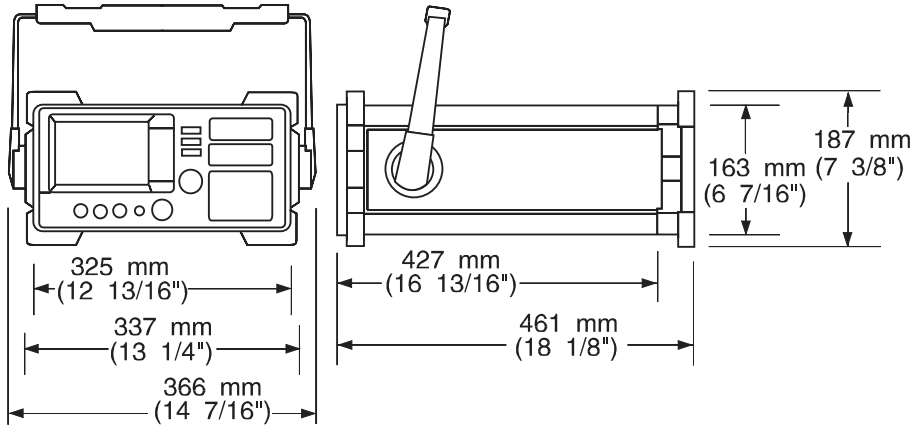
1. Leakage measured with maximum power into 50 Ω, with 50 Ω loads on the TG output and RF input.
2. Difference between maximum power output and tracking generator feedthrough.

Environmental Specifications, Agilent 8560 EC Series

Per MIL- PRF-28800F, Class 3

Calibration interval

Agilent 8560EC, 8561EC, 8562EC, 8563EC:	2 years
Agilent 8564EC, 8565EC:	1 year
Warm-up time	5 minutes in ambient conditions
Temperature	0 °C to +55 °C (operating); –40 °C to +75 °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	
Agilent 8560EC, 8561EC, 8562EC, 8563EC	180 Ω
Agilent 8564EC, 8565EC:	260 Ω
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)	
Agilent 8560EC, 8561EC, 8562EC, 8563EC:	16.5 kg (36 lbs)
Agilent 8564EC, 8565EC:	17.3 kg (38 lbs)



Agilent Technologies' Test and Measurement Support, Services, and Assistance
Agilent Technologies aims to maximize the value you receive, while minimizing your risk and problems. We strive to ensure that you get the test and measurement capabilities you paid for and obtain the support you need. Our extensive support resources and services can help you choose the right Agilent products for your applications and apply them successfully. Every instrument and system we sell has a global warranty. Support is available for at least five years beyond the production life of the product. Two concepts underlie Agilent's overall support policy: "Our Promise" and "Your Advantage."

Our Promise
Our Promise means your Agilent test and measurement equipment will meet its advertised performance and functionality. When you are choosing new equipment, we will help you with product information, including realistic performance specifications and practical recommendations from experienced test engineers. When you use Agilent equipment, we can verify that it works properly, help with product operation, and provide basic measurement assistance for the use of specified capabilities, at no extra cost upon request. Many self-help tools are available.

Your Advantage
Your Advantage means that Agilent offers a wide range of additional expert test and measurement services, which you can purchase according to your unique technical and business needs. Solve problems efficiently and gain a competitive edge by contracting with us for calibration, extra-cost upgrades, out-of-warranty repairs, and onsite education and training, as well as design, system integration, project management, and other professional engineering services. Experienced Agilent engineers and technicians worldwide can help you maximize your productivity, optimize the return on investment of your Agilent instruments and systems, and obtain dependable measurement accuracy for the life of those products.

Agilent Email Updates

www.agilent.com/find/emailupdates
Get the latest information on the products and applications you select.

Agilent T&M Software and Connectivity
Agilent's Test and Measurement software and connectivity products, solutions and developer network allows you to take time out of connecting your instruments to your computer with tools based on PC standards, so you can focus on your tasks, not on your connections. Visit
www.agilent.com/find/connectivity
for more information.

For more information on Agilent Technologies' products, applications or services, please contact your local Agilent office. The complete list is available at:

www.agilent.com/find/contactus

Phone or Fax

United States:
(tel) 800 829 4444
(fax) 800 829 4433

Canada:
(tel) 877 894 4414
(fax) 905 282 6495

China:
(tel) 800 810 0189
(fax) 800 820 2816

Japan:
(tel) (81) 426 56 7832
(fax) (81) 426 56 7840

Korea:
(tel) (080) 769 0800
(fax) (080)769 0900

Latin America:
(tel) (305) 269 7500

Taiwan:
(tel) 0800 047 866
(fax) 0800 286 331

Other Asia Pacific Countries:
(tel) (65) 6375 8100
(fax) (65) 6755 0042
Email: tm_ap@agilent.com

Product specifications and descriptions in this document subject to change without notice.

Printed in USA, June 28, 2004
5968-8156E

Agilent Technologies