Test Equipment Solutions Datasheet

Test Equipment Solutions Ltd specialise in the second user sale, rental and distribution of quality test & measurement (T&M) equipment. We stock all major equipment types such as spectrum analyzers, signal generators, oscilloscopes, power meters, logic analysers etc from all the major suppliers such as Agilent, Tektronix, Anritsu and Rohde & Schwarz.

We are focused at the professional end of the marketplace, primarily working with customers for whom high performance, quality and service are key, whilst realising the cost savings that second user equipment offers. As such, we fully test & refurbish equipment in our in-house, traceable Lab. Items are supplied with manuals, accessories and typically a full no-quibble 2 year warranty. Our staff have extensive backgrounds in T&M, totalling over 150 years of combined experience, which enables us to deliver industry-leading service and support. We endeavour to be customer focused in every way right down to the detail, such as offering free delivery on sales, covering the cost of warranty returns BOTH ways (plus supplying a loan unit, if available) and supplying a free business tool with every order.

As well as the headline benefit of cost saving, second user offers shorter lead times, higher reliability and multivendor solutions. Rental, of course, is ideal for shorter term needs and offers fast delivery, flexibility, try-before-you-buy, zero capital expenditure, lower risk and off balance sheet accounting. Both second user and rental improve the key business measure of Return On Capital Employed.

We are based near Heathrow Airport in the UK from where we supply test equipment worldwide. Our facility incorporates Sales, Support, Admin, Logistics and our own in-house Lab.

All products supplied by Test Equipment Solutions include:

- No-quibble parts & labour warranty (we provide transport for UK mainland addresses).
- Free loan equipment during warranty repair, if available.
- Full electrical, mechanical and safety refurbishment in our in-house Lab.
- Certificate of Conformance (calibration available on request).
- Manuals and accessories required for normal operation.
- Free insured delivery to your UK mainland address (sales).
- Support from our team of seasoned Test & Measurement engineers.
- ISO9001 quality assurance.

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HP 8591E

HP 8591E, 8593E, 8594E, 8595E, 8596E

Specifications

Specifications apply to any of these analyzers unless otherwise noted.

Frequency

Frequency Range
HP 8591E:
50 Ω: 9 kHz to 1.8 GHz
75 Ω: 1 MHz to 1.8 GHz
HP 8594E: 9 kHz to 2.9 GHz, dc-coupled; 100 kHz to 2.9 GHz, ac-coupled
HP 8595E: 9 kHz to 6.5 GHz, dc-coupled; 100 kHz to 6.5 GHz, ac-coupled

	Band	LO harmonic = N	Center frequency
HP 8596E	0	1	9 kHz to 2.9 GHz (dc-coupled)
	0	1	100 kHz to 2.9 GHz (ac-coupled)
	1	1	2.75 to 6.5 GHz
	2	2	6.0 to 12.8 GHz
HP 8593E	0	1	9 kHz to 2.9 GHz
	1	1	2.75 to 6.5 GHz
	2	2	6.0 to 12.8 GHz
	3	3	12.4 to 19.4 GHz
	4	4	19.1 to 22 GHz
	4	4 (Option 026/027)	19.1 to 26.5 GHz

Frequency Reference
Aging: ± 2 x 10^{-6}/year; ± 1 x 10^{-7}/year (Option 004)
Temperature Stability: ± 5 x 10^{-6}; ± 1 x 10^{-8} (Option 004)
Initial Achievable Accuracy: ± 0.5 x 10^{-6}; ± 2.2 x 10^{-8} (Option 004)
Frequency Readout Accuracy (start, stop, center, marker):
± (freq. readout x freq. ref error + span accuracy + 1% of span + 20% of RBW + 100 Hz x N)
Marker Count Accuracy
Span ≤ 10 MHz x N: ± (marker freq. x freq. ref error + counter resolution + 100 Hz x N)
Span > 10 MHz x N: ± (marker freq. x freq. ref error + counter resolution + 1 kHz x N)
Counter Resolution
Span ≤ 10 MHz x N: Selectable from 10 Hz to 100 kHz
Span > 10 MHz x N: Selectable from 100 Hz to 100 kHz
Frequency Span
Range: 0 Hz (zero span) and
HP 8591E: 10 kHz to 1.8 GHz; 1 kHz min (Option 130)
HP 8594E: 10 kHz to 2.9 GHz; 1 kHz min (Option 130)
HP 8595E: 10 kHz to 6.5 GHz; 1 kHz min (Option 130)
HP 8596E: [10 x N] kHz to 12.8 GHz; [1 x N] kHz min (Option 130)
HP 8593E: [10 x N] kHz to 19.25 GHz; [1 x N] kHz min (Option 130)
Resolution: Four digits or 20 Hz x N, whichever is greater
Accuracy
Span ≤ 10 MHz x N: ± 2% of span
Span > 10 MHz x N: ± 3% of span
Sweep Time
Range
Span = 0 Hz or > 1 kHz: 20 ms to 100 s
Span = 0 Hz (Option 101): 20 µs to 100 s
Accuracy
20 ms to 100 s: ± 3%
20 µs to < 20 ms (Option 101): ± 2%
Sweep Trigger: Free run, single, line, video, external
Resolution Bandwidth: 1 kHz to 3 MHz (3 dB) in 1, 3, 10 sequence; 9 kHz and 120 kHz (6 dB) EMI bandwidths. Option 130 adds 30, 100, and 300 Hz (3 dB) bandwidths and 200 Hz (6 dB) EMI bandwidth.
Accuracy: ± 20%
Selectivity (characteristic)
–60 dB/–3 dB: 3 kHz to 10 kHz, 15:1
100 kHz to 3 MHz, 15:1
1 kHz, 30 kHz, 16:1
–40 dB/–3 dB: 30 Hz to 300 Hz, 10:1
Video Bandwidth Range: 30 Hz to 1 MHz in 1, 3 sequence (1 Hz to 1 MHz with Option 130)
Stability
Noise Sidebands (1 kHz RBW, 30 Hz VBW, sample detector)
> 10 kHz offset from CW signal: ≤ –90 dBc/Hz + 20 log N
> 20 kHz offset from CW signal: ≤ –100 dBc/Hz + 20 log N
> 30 kHz offset from CW signal: ≤ –105 dBc/Hz + 20 log N
Residual FM
HP 8591E:
1 kHz RBW, 1 kHz VBW: ≤ 250 Hz pk-pk in 100 ms
30 Hz RBW, 30 Hz VBW: ≤ 30 Hz pk-pk in 300 ms
HP 8593E, 8594E, 8595E, 8596E:
1 kHz RBW, 1 kHz VBW: ≤ (250 x N) Hz pk-pk in 100 ms
30 Hz RBW, 30 Hz VBW: ≤ (30 x N) Hz pk-pk in 300 ms
System Related Sidebands (> 30 kHz offset from CW signal): ≤ –65 dBc + 20 log N
Comb Generator Frequency (HP 8593E, 8596E): 100 MHz fundamental frequency; ± 0.007% frequency accuracy

Amplitude

Amplitude Range: Displayed average noise level to + 30 dBm
HP 8591 Option 001: Displayed average noise level to + 72 dBmV
Maximum Safe Input Level (input attenuator ≥ 10 dB)
Average Continuous Power: + 30 dBm (1 W)
HP 8591E Option 001: + 72 dBmV (0.2 W)
Peak Pulse Power
HP 8591E: + 30 dBm (1 W)
HP 8591E Option 001: + 72 dBmV (0.2 W)
HP 8593E, 8594E, 8595E, 8596E: +50 dBm (100 W) for < 10 µs pulse width and < 1% duty cycle, input atten. ≥ 30 dB
DC
HP 8591E: 25 Vdc
HP 8591E Option 001: 100 Vdc
HP 8593E: 0 Vdc
HP 8594E, 8595E, 8596E: 0 V (dc-coupled); 50 V (ac-coupled)
Gain Compression (> 10 MHz): ≤ 0.5 dB (total power at input mixer = –10 dBm)

Displayed Average Noise Level (input terminated, 0 dB atten., 30 Hz VBW or 1 Hz VBW with Option 130, sample detector)

	30 Hz RBW	1 kHz RBW
HP 8591E		
400 kHz to 1 MHz	≤ –130 dBm	≤ –115 dBm
1 MHz to 1.5 GHz	≤ –130 dBm	≤ –115 dBm
1.5 GHz to 1.8 GHz	≤ –128 dBm	≤ –113 dBm
HP 8591E Option 001		
1 MHz to 1.5 GHz	≤ –78 dBmV	≤ –63 dBmV
1.5 GHz to 1.8 GHz	≤ –76 dBmV	≤ –61 dBmV
HP 8594E		
400 kHz to 5 MHz	≤ –122 dBm	≤ –107 dBm
5 MHz to 2.9 GHz	≤ –127 dBm	≤ –112 dBm
HP 8595E		
400 kHz to 2.9 GHz	≤ –125 dBm	≤ –110 dBm
2.75 to 6.5 GHz	≤ –127 dBm	≤ –112 dBm
HP 8596E		
400 kHz to 2.9 GHz	≤ –125 dBm	≤ –110 dBm
2.75 to 6.5 GHz	≤ –127 dBm	≤ –112 dBm
6.0 to 12.8 GHz	≤ –115 dBm	≤ –100 dBm
HP 8593E		
400 kHz to 2.9 GHz	≤ –127 dBm	≤ –112 dBm
2.75 to 6.5 GHz	≤ –129 dBm	≤ –114 dBm
6.0 to 12.8 GHz	≤ –117 dBm	≤ –102 dBm
12.4 to 19.4 GHz	≤ –113 dBm	≤ –98 dBm
19.1 to 22 GHz	≤ –107 dBm	≤ –92 dBm
HP 8593E Option 026/027		
19.1 to 26.5 GHz	≤ –102 dBm	≤ –87 dBm

HP 8590 E-Series
HP 8591E
HP 8593E
HP 8594E
HP 8595E
HP 8596E

Specifications (cont'd)

Spurious Responses

Second Harmonic Distortion
HP 8591E (5 MHz to 1.8 GHz): < –70 dBc for –45 dBm tone at input mixer
HP 8593E (10 MHz to 2.9 GHz): < –70 dBc for –40 dBm tone at input mixer
HP 8594E, 8595E, 8596E (> 10 MHz): < –70 dBc for –40 dBm tone at input mixer
HP 8593E, 8595E, 8596E (> 2.75 GHz): < –100 dBc for –10 dBm tone at input mixer (or below DANL)

Third-Order Intermodulation
HP 8591E (5 MHz to 1.8 GHz): < – 70 dBc for two –30 dBm tones at input and > 50 kHz separation
HP 8593E, 8594E, 8595E, 8596E (> 10 MHz): < –70 dBc for two –30 dBm ones at input and > 50 kHz separation

Other Input-Related Spurious (≥ 30 kHz offset, –20 dBm tone at input mixer)
HP 8591E, 8594E, 8595E, 8596E: < – 65 dBc
HP 8593E: < –65 dBc (applied frequency ≤ 18 GHz); < –60 dBc (applied frequency ≤ 22 GHz)

Residual Responses (input terminated, 0 dB attenuation)
1 MHz to 1.8 GHz (HP 8591E Option 001): < –38 dBmV
150 kHz to 1.8 GHz (HP 8591E): < –90 dBm
150 kHz to 2.9 GHz (HP 8594E): <–90 dBm
150 kHz to 6.5 GHz (HP 8593E, 8595E, 8596E): < –90 dBm

Display Range
Log Scale: 0 to –70 dB from ref level is calibrated; 0.1, 0.2, 0.5 dB/div and 1 to 20 dB/div in 1 dB steps; 8 div displayed
Linear Scale: 8 divisions
Scale Units: dBm, dBmV, dBμV, V, W

Marker Readout Resolution
Log Scale: 0.05 dB
Linear Scale: 0.05% of ref level
Fast Time Sweep for Zero Span (Option 101 or 301, 20 *μs* to 20 ms)
≤ **1 GHz:** 0.7% of ref level for linear scale
> 1 GHz: 1.0% of ref level for linear scale

Reference Level
Range: Same as amplitude range
Resolution: ± 0.01 dB for log scale; ± 0.12% of ref level for linear scale
Accuracy: ± 0.3 dB at –20 dBm; 0 to –59.9 dBm: ± (0.3 dB + 0.01 x dB from –20 dBm)

Frequency Response (10 dB input attenuation)
Absolute (referenced to 300 MHz CAL OUT)
HP 8591E, 8594E: ± 1.5 dB
HP 8595E: ± 1.5 to ± 2.0 dB
HP 8596E: ± 1.5 to ± 2.5 dB
HP 8593E: ± 1.5 to± 5.0 dB (preselector peaked)
Relative Flatness (referenced to midpoint between highest and lowest frequency response deviations)
HP 8591E, 8594E: ± 1.0 dB
HP 8595E: ± 1.0 to ± 1.5 dB
HP 8596E: ± 1.0 to ± 2.0 dB
HP 8593E: ± 1.0 to ± 2.0 dB (preselector peaked)

Calibrator Output Amplitude: –20 dBm ± 0.4 dB; + 28.75 dBmV ± 0.4 dB, HP 8591 Option 001

Resolution Bandwidth Switching Uncertainty (ref to 3 kHz RBW, at ref level)
3 kHz to 3 MHz RBW: ± 0.4 dB
1 kHz RBW: ± 0.5 dB
30 Hz to 300 Hz RBW: ± 0.6 dB

Log to Linear Switching: ± 0.25 dB at ref level

Display Scale Fidelity
Log Incremental Accuracy (0 to –60 dB from ref level): ± 0.4 dB/4 dB
Log Maximum Cumulative (0 to –70 dB from ref level)
3 kHz to 3 MHz RBW: ± (0.3 + 0.01 x dB from ref level)
30 Hz to 1 kHz RBW: ± (0.4 + 0.01 x dB from ref level)
Linear Accuracy: ± 3% of ref level

General Specifications

MIL-T-28800: Has been type-tested to the environmental specifications of MIL-T-28800 Class 5

Temperature
Operating: 0˚ to +55˚ C
Storage: – 40˚ to +75˚ C

EMI Compatibility: Conducted and radiated interference CISPR Pub. 11 and Messempfaenger Postverfuegung 526/527/79

Audible Noise: < 37.5 dBA pressure and < 5.0 Bels power (ISODP7779)

Power Requirements
On (line 1): 90 to 132 V rms, 47 to 440 Hz
195 to 250 V rms, 47 to 66 Hz
Power consumption < 500 VA; < 180 W
Standby (line 0): Power consumption < 7 W

User Program Memory (nominal): 238 KB nonvolatile RAM

Data Storage (nominal)
Internal: 24 traces or 32 states
External: 50 traces, 8 states
Memory Cards: HP 85700A (32 KB), 24 traces or 32 states; HP 85702A (128 KB), 99 traces or 128 states
Video Cassette Recorder (VCR): Continuous video recording of display supported through composite video output

Size (nominal, without handle, feet, or cover): 325 mm W x 163 mm H x 427 mm D

Weight: 14.5 kg (HP 8591E); 16.4 kg (HP 8593E, 8594E, 8595E, 8596E)

Option 010 and 011 Built-In Tracking Generators

Option 010 (50 Ω) is available for all HP 8590 series spectrum analyzers except the HP 8592L. Option 011 (75 Ω) is available for the HP 8590L and 8591E only.

Frequency Range
Option 010: 100 kHz to 1.8 GHz (HP 8590L, 8591E); 9 kHz to 2.9 GHz (HP 8593E, 8594E, 8595E, 8596E)
Option 011: 1 MHz to 1.8 GHz (HP 8590L, 8591E)

Output Level
Range
Option 010: 0 to –15 dBm (HP 8590L); 0 to –70 dBm (HP 8591E); –1 to – 66 dBm (HP 8593E, 8594E, 8595E, 8596E)
Option 011: + 42.8 to +27.8 dBmV (HP 8590L); + 42.8 to–27.2 dBmV (HP 8591E)
Resolution: 0.1 dB
Absolute Accuracy: ± 1.5 dB (HP 8590L); ± 1.0 dB (HP 8591E); ± 0.75 dB (HP 8593E, 8594E, 8595E, 8596E)

Vernier
Range: 15 dB (HP 8590L); 10 dB (HP 8591E); 9 dB (HP 8593E, 8594E, 8595E, 8596E)
Accuracy: ±1.0 dB (HP 8590L); ± 0.75 dB (HP 8591E); ± 0.5 dB (HP 8593E, 8594E, 8595E, 8596E)

Output Flatness: ± 1.75 dB (HP 8590L, 8591E); ± 2.0 dB, > 10 MHz (HP 8593E, 8594E, 8595E, 8596E)

Spurious Output
Harmonic Spurs: 0 dBm + 42.8 dBmV output, < –25 dBc (HP 8590L, HP 8591E); –1 dBm output, < –25 dBc (HP 8593E, 8594E, 8595E, 8596E)
Nonharmonic Spurs: < –30 dBc (HP 8590L, 8591E); ≤ –27 dBc, 300 kHz to 2.0 GHz, ≤ –23 dBc, 2.0 GHz to 2.9 GHz (HP 8593E, 8594E, 8595E, 8596E)

Dynamic Range (characteristic; max. output level –TG feedthrough)
Option 010: 106 dB (HP 8590L, 8591E); 106 dB (HP 8594E, > 400 kHz); 109 dB (HP 8595E, 8596E, > 400 kHz); 111 dB (HP 8593E, > 400 kHz)
Option 011: 100 dB

Power Sweep
Range
Option 010: –15 dBm to 0 dBm (HP 8590L); –75 dBm to 0 dBm (HP 8591E); –66 dBm to –1 dBm in 8 dB increments (HP 8593E, 8594E,8595E, 8596E)
Option 011: + 27.8 dBmV to +42.8 dBmV (HP 8590L); –32.2 to + 42.8 dBmV (HP 8591E)
Resolution: 0.1 dB

- Low-cost general purpose spectrum analysis with frequency accuracy

HP 8590L and 8592L Specifications

Specifications apply to either analyzer unless otherwise noted.

Frequency

Frequency Range
HP 8590L:
50 Ω: 9 kHz to 1.8 GHz
75 Ω (Option 001): 1 MHz to 1.8 GHz
HP 8592L: 9 kHz to 22 GHz
HP 8592L (Option 026/027): 9 kHz to 26.5 GHz

Band	LO harmonic=N	Center frequency
0	1	9 kHz to 2.9 GHz
1	1	2.75 to 6.5 GHz
2	2	6.0 to 12.8 GHz
3	3	12.4 to 19.4 GHz
4	4	19.1 to 22.0 GHz
4	4 (Option 026/027)	19.1 to 26.5 GHz

Frequency Reference
Aging: ± 2 x 10^{-6}/year
Temperature Stability: ± 5 x 10^{-6}
Initial Achievable Accuracy: ± 0.5 x 10^{-6}
Frequency Readout Accuracy (start, stop, center, marker): ± (freq. readout x freq. ref. error + span accuracy + 1% of span + 20% of RBW + 100 Hz x N)
Marker Count Accuracy
Span ≤ 10 MHz x N: ± (marker freq. x freq. ref. error + counter resolution + 100 Hz x N)
Span > 10 MHz x N: ± (marker freq. x freq. ref. error + counter resolution + 1 kHz x N)
Counter Resolution
Span ≤ 10 MHz x N, selectable from 10 Hz to 100 kHz
Span > 10 MHz x N, selectable from 100 Hz to 100 kHz
Frequency Span
Range
HP 8590L: 0 Hz (zero span), 10 kHz to 1.8 GHz
HP 8592L: 0 Hz (zero span), [50 kHz x N] to 19.25 GHz
Resolution: Four digits
Accuracy:
HP 8590L: ± 3% of span
HP 8592L: Span ≤ 10 MHz x N[1] ± 2% of span; span > 10 MHz x N[1] ± 3% of span
Sweep Time
Range: 20 ms to 100 s
Accuracy: ± 3%
Sweep Trigger: Free run, single, line, video, external
Resolution Bandwidth (characteristic): 1 kHz to 3 MHz (3 dB) in 1, 3, 10 sequence, 9 kHz and 120 kHz (6 dB) EMI bandwidths
Accuracy: ± 20%
Video Bandwidth Range: 30 Hz to 1 MHz in 1, 3, 10 sequence
Stability (same as for HP 8590E series)
Noise Sidebands (1 kHz RBW, 30 Hz VBW and sample detector): ≤ –105 dBc/Hz + 20 log N at > 30 kHz offset from CW signal
System-Related Sidebands: ≤ – 65 dBc + 20 log N at > 30 kHz offset from CW signal

Comb Generator Frequency (HP 8592L): 100 MHz fundamental frequency
Accuracy: ± 0.007%

Amplitude

Amplitude Range
HP 8590L, 8592L: Displayed average noise level to +30 dBm
HP 8590L Option 001: Displayed average noise level to +75 dBmV
Maximum Safe Input Level (input attenuator ≥ 10 dB)
Average Continuous Power
HP 8590L, 8592L: +30 dBm (1 W)
HP 8590L Option 001: +75 dBmV (0.4 W)
Peak Pulse Power
HP 8590L: +30 dBm (1 W); + 75 dBmV (0.4 W) (Option 001)
HP 8592L: +50 dBm (100 W) for < 10 µs pulse width and < 1% duty cycle, input atten. ≥ 30 dB
DC
HP 8590L: 25 Vdc; 100 Vdc (Option 001)
HP 8592L: 0 Vdc
Gain Compression (> 10 MHz): ≤ 0.5 dB (total power at input mixer= –10 dBm)
Displayed Average Noise Level (input terminated, 0 dB atten., 1 kHz RBW, 30 Hz VBW, sample detector)
HP 8590L: ≤ –115 to ≤ –113 dBm; ≤ –63 to ≤ –61 dBmV (Option 001)
HP 8592L: ≤ –112 to ≤ –92 dBm; ≤ –112 to ≤ –87 dBm (Option 026)
Spurious Responses
Second Harmonic Distortion
HP 8590L: (> 5 MHz) < – 70 dBc for –45 dBm tone at input mixer
HP 8592L (10 MHz to 2.9 GHz): < – 70 dBc for –40 dBm tone at input mixer; > 2.75 GHz: < – 100 dBc for –10 dBm tone at input mixer (or below DANL)
Third-Order Intermodulation Distortion
HP 8590L
Distortion > 5 MHz: < – 70 dBc for two –30 dBm tones at input mixer and > 50 kHz separation
Other Input-Related: < – 65 dBc at ≥ 30 kHz offset, for – 20 dBm tone at input mixer
HP 8592L
Distortion > 10 MHz: < – 70 dBc for two –30 dBm tones at input mixer and > 50 kHz separation
Other Input-Related: < – 65 dBc at ≥ 30 kHz offset, for– 20 dBm tone at input mixer, ≤ 18 GHz; < – 60 dBc for– 20 dBm tone at input mixer, ≤ 22 GHz
Display Range
Log Scale: 0 to – 70 dB from ref. level is calibrated; 0.1, 0.2, 0.5 dB/div. and 1 to 20 dB/div. in 1 dB steps; 8 div. displayed
Linear Scale: 8 divisions
Scale Units: dBm, dBmV, dBµV, V, W
Marker Readout Resolution: 0.05 dB for log scale; 0.05% of reference level for linear
Reference Level
Range: Same as amplitude range
Resolution: 0.01 dB for log scale; 0.12% of ref. level for linear
Accuracy: ± 0.3 dB @ – 20 dBm; 0 dBm to –59.9 dBm: ± (0.3 dB + 0.01 x dB from –20 dBm)
Frequency Response (10 dB input attenuation)
Absolute (referenced to 300 MHz CAL OUT)
HP 8590L: ± 1.5 dB
HP 8592L (preselector peaked in band > 0): ± 1.5 to ± 5.0 dB
Relative: Referred to midpoint between highest and lowest frequency response deviations
HP 8590L: ± 1.0 dB
HP 8592L (preselector peaked in band > 0): ±1.0 to ± 2.0 dB
Calibrator Output Amplitude: – 20 dBm ± 0.4 dB;
HP 8590L Option 001: +28.75 dBmV ± 0.4 dB
Resolution Bandwidth Switching Uncertainty (ref. to 3 kHz RBW, at ref. level): ± 0.4 dB for 3 kHz to 3 MHz RBW; ± 0.5 dB for 1 kHz
Log to Linear Switching: ± 0.25 dB at ref. level
Display Scale Fidelity
Log Incremental Accuracy: ± 0.4 dB/4 dB, 0 to – 60 dB from ref. level
Log Maximum Cumulative: ± (0.4 dB + 0.01 x dB from ref. level), 0 to –70 dB from ref. level
Linear Accuracy: ± 3% of ref. level

General

Same as for HP 8590 E-series
Built-in tracking generator (see page 238)

Ordering Information

HP 8590L Spectrum Analyzer (9 kHz to 1.8 GHz)
HP 8592L Spectrum Analyzer (9 kHz to 22 GHz)
Options[1]
Opt 001 75 Ω Input (HP 8590L only)
Opt 003 Memory Card Reader
Opt 010 Tracking Generator (100 kHz to 1.8 GHz, HP 8590L only)
Opt 011 Tracking Generator (75 Ω, HP 8590L only)
Opt 015 Soft Tan Carrying/Operating Case
Opt 016 Soft Yellow Carrying/Operating Case
Opt 041 HP-IB and Parallel Printer Interfaces
Opt 043 RS-232 and Parallel Printer Interfaces
Opt 026 26.5 GHz Frequency Extension, APC-3.5 mm Connector (HP 8592L only)
Opt 027 26.5 GHz Frequency Extension, Type-N Connector (HP 8592L only)
Opt 040 Front Panel Protective Cover With Storage
Opt 042 Protective Soft Carrying Case/Backpack
Opt 711 50/75 Ω Matching Pad/100 Vdc Block
Opt 0Q8 Factory Service Training
Opt UK6 Commercial Calibration Certificate with Test Data
Opt ABX Quick Reference Guide in Local Languages
Opt 908 Rackmount Without Handles
Opt 909 Rackmount With Handles
Opt 910 Additional Manual Set
Opt 915 Component Level Information and Service Guide
Opt W30 Two Additional Years Return-to-HP Service
Opt W32 Two Additional Years Return-to-HP Calibration

HP 8591E Spectrum Analyzer, 9 kHz to 1.8 GHz
HP 8594E Spectrum Analyzer, 9 kHz to 2.9 GHz
HP 8595E Spectrum Analyzer, 9 kHz to 6.5 GHz
HP 8596E Spectrum Analyzer, 9 kHz to 12.8 GHz
HP 8593E Spectrum Analyzer, 9 kHz to 22 GHz

Options[1]
Opt 001 75 Ω Input (HP 8591E only)
Opt 004 Precision Frequency Reference
Opt 009 LO and Sweep + Tune
Opt 010 Tracking Generator (100 kHz to 1.8 GHz, HP 8591E only)
Opt 010 Tracking Generator (9 kHz to 2.9 GHz)
Opt 011 Tracking Generator (75 Ω, HP 8591E only)
Opt 012 Source for DECT Receiver Test
Opt 015 Soft Tan Carrying/Operating Case
Opt 016 Soft Yellow Carrying/Operating Case
Opt 026 26.5 GHz Frequency Extension, APC-3.5 mm Connector (HP 8593E only)
Opt 027 26.5 GHz Frequency Extension, Type-N Connector (HP 8593E only)
Opt 040 Front Panel Protective Cover With Storage
Opt 041 HP-IB and Parallel Printer Interfaces
Opt 042 Protective Soft Carrying Case/Backpack
Opt 043 RS-232 and Parallel Printer Interfaces
Opt 050 Improved Amplitude Accuracy (NADC-TDMA bands)
Opt 051 Improved Amplitude Accuracy for PDC Bands
Opt 052 Improved Amplitude Accuracy for PHS Band
Opt 053 Improved Amplitude Accuracy for CDMA Bands
Opt 101 Fast Time-Domain Sweeps and Analog+ Display
Opt 102 AM/FM Demodulator and TV Sync Trigger (TV Sync requires Option 101)
Opt 103 Quasi-Peak Detector, AM/FM Demodulator
Opt 105 Time-Gated Spectrum Analysis
Opt 107 TV Receiver Video Tester
Opt 110 CT2 Demodulator
Opt 111 Group Delay and Amplitude Flatness (HP 8593/4/5/6E only)
Opt 112 DECT Demodulator
Opt 119 Noise Figure
Opt 130 Narrow Resolution Bandwidths (30 to 300 Hz and 200 Hz EMI)
Opt 140 Narrow Bandwidths and Precision Frequency Reference
Opt 151 DSP, FAST ADC, and Digital Demodulator
Opt 160 PDC, PHS, NADC, and CDMA Firmware for Option 151
Opt 163 GSM900/DCS1800 Firmware for Option 151
Opt 180 TV Picture NTSC/PAL/SECAM
Opt 301 TV Sync Trigger, Fast Time-Domain Sweeps, AM/FM Demodulator, Analog+ Display
Opt 711 50/75 Ω Matching Pad/100 Vdc Block
Opt 0Q8 Factory Service Training
Opt UK6 Commercial Calibration Certificate with Test Data
Opt ABX Quick Reference Guide in Local Languages
Opt W30 Two Additional Years Return-to-HP Service
Opt W32 Two Additional Years Return-to-HP Calibration

Application Measurement Cards/Personalities[2,3]
HP 11770A Link Measurement Personality
HP 85700A Blank 32-KB Memory Card
HP 85702A Blank 128-KB Memory Card
HP 85704A Blank 256-KB Memory Card
HP 85705A Blank 512-KB Memory Card
HP 85712D EMC Measurement Personality
HP 85713A Digital Radio Measurement Personality
HP 85714A Scalar Measurement Personality
HP 85715B GSM900 Measurement Personality
HP 85717A CT2-CAI Measurement Personality
HP 85718B NADC-TDMA Measurement Personality
HP 85719A Noise-Figure Measurement Personality
HP 85720C PDC Measurement Personality
HP 85721A Cable TV Measurement Personality
HP 85722B DCS1800 Measurement Personality
HP 85723A DECT Measurement Personality
HP 85724A Broadcast Measurement Personality
HP 85725C CDMA Measurement Personality
HP 85726B PHS Measurement Personality

Printers and Accessories
HP DeskJet 340 (C2655A) portable monochrome/color printer
HP DeskJet 400 (C2642A) monochrome/color printer
HP DeskJet 680C (C4549A) color printer
HP DeskJet 690C (C4562A) color printer
HP DeskJet 693C (C4589A) color printer
HP DeskJet 870C (C4565A, C4555A) color printer
HP C1405B Keyboard (requires C1405-60015 Adapter)
HP 10833A HP-IB Cable (1 m)
HP 24542U RS-232 Cable 3 Meter (9 Pin F to 9 Pin F) Option 043 Only (for RS-232 9 Pin PC Connection to Analyzer)
HP 24542G RS-232 Cable 3 Meter (25 Pin M to 9 Pin F) Option 043 Only (for RS-232 25 Pin PC or Printer Connection to Analyzer)
HP C2932A RS-232 Cable 3 Meter (9 Pin M to 9 Pin F) Option 043 Only (for Serial 9 Pin LaserJet 4P/4Plus Connection to Analyzer)
HP C2950A HP IEEE-1284 A-B Parallel Cable (2 m)
HP ITEL-45CHVUB HP-IB/Parallel Converter (U.S./Canada)
HP ITEL-45CHVEB HP-IB/Parallel Converter (International) (requires HP F1011A ac adapter)

Key Literature

HP 8590 Series Configuration Guide, p/n 5963-6858E
HP 8590 E-Series Data Sheet, p/n 5963-6909E
HP 8590 L-Series Product Overview, p/n 5962-7575E
HP 8590 Series Brochure, p/n 5963-6908E

[1] Most options can be retrofitted. Please contact your local HP sales representative.
[2] Some measurement personalities are not supported by all HP 8590 series models. For complete information, please contact your local HP sales representative.
[3] HP 8590L series requires Option 003 memory card reader.