

Table 1-1. System Specifications

These system specifications describe the performance available from the spectrum analyzer-tracking generator system in various types of applications. In all cases it is assumed that the spectrum analyzer is equipped with either an 8554B or 8555A Tuning Section, 8552A or 8552B IF Section, 140T or 141T Display Section.

SWEPT FREQUENCY RESPONSE MEASUREMENTS

The tracking generator is used as a signal source to measure the frequency response of a device.

Dynamic Range: > 90 dB from spectrum analyzer 1 dB gain compression point to average noise level (approximately -10 dBm to -100 dBm). Spurious responses not displayed.

Gain Compression: For -10 dBm signal level at the input mixer, gain compression < 1 dB.

Average Noise Level: > -102 dBm with 10 kHz IF bandwidth.

Absolute Amplitude Calibration Range:

Spectrum Analyzer:

Log: From -122 dBm to +10 dBm, 10 dB/div on a 70 dB display or 2 dB/div on a 16 dB display (8552A has 10 dB/div only).

Linear: From 0.1 μ V/div to 100 mV/div (8555A), 20 mV/div (8554B) in a 1, 2 sequence on an 8-division display.

Tracking Generator (Drive Level to Test Device): 0 to -10 dBm continuously variable. 0 dBm calibrated to ± 0.5 dB at 30 MHz.

Frequency Range: 500 kHz to 1250 MHz with 8554B and 10 MHz to 1300 MHz with 8555A.

Scan Width (Determined by Spectrum Analyzer Controls):

Per Division: With 8555A, 16 calibrated scan widths from a 2 kHz/div to 200 MHz/div in a 2, 5, 10 sequence. With 8554B, 15 calibrated scan widths from a 2 kHz/div to 100 MHz/div in 2, 5, 10 sequence.

Full Scan: 0-1250 MHz with 8554B; 0-1300 MHz with 8555A.

Zero Scan: Analyzer is fixed tuned receiver.

Frequency Resolution: 1 kHz.

Stability:

Residual FM (peak to peak):

Tuning Section	Stabilized	Unstabilized
8554B/8555A	200 Hz	10 kHz

Amplitude Accuracy:

System Frequency Response: ± 1.5 dB.

Tracking Generator Calibration: 0 dBm at 30 MHz to ± 0.5 dB.

SWEEP/CW GENERATOR

The tracking generator-spectrum analyzer system can be used to supply test signals for other devices as a sweeper.

Frequency: Controlled by spectrum analyzer. Range is 500 kHz to 1250 MHz with the 8554B and 10 MHz to 1300 MHz with the 8555A.

Frequency Accuracy: ± 10 MHz (8554B), ± 15 MHz (8555A) using spectrum analyzer tuning dial. Can be substantially improved using external counter output.

Spectral Purity:

Residual FM (peak-to-peak):

Tuning Section	Stabilized	Unstabilized
8554B/8555A	200 Hz	10 kHz

Harmonic Distortion: Typically 25 dB below output level.

Nonharmonic (spurious) Signals: > 35 dB below output level.

Flatness: ± 0.5 dB.

Long Term Stability: Drift typically less than 30 kHz/hour when stabilized after 2-hour warmup.

Sweep Width: 20 kHz to 1250 MHz (8554B) or 1300 MHz (8555A).

Sweep Rates: Selected by Scan Time per Division on spectrum analyzer. 16 internal scan rates from 0.1 msec/div to 10 sec/div in a 1, 2, 5 sequence. Manual Scan is available with the external sweep voltage from the 8444A or by a front panel control of the 8552B IF Section.

PRECISION FREQUENCY MEASUREMENTS

An external counter output is provided on the 8444A for precision frequency measurements. The frequency of unknown signals as well as the frequency of any point on a frequency response curve can be measured. The use of the HP 5300A/5303A Counter is suggested for frequency measurements to 500 MHz and the HP 5245L/5254C Counter for measurements to 1300 MHz.

Frequency Accuracy:

For unknown signals ± 10 kHz. (Tracking drift typically 5 kHz/10 min after 2-hour warmup.)

For points on frequency response curve, counter accuracy \pm Residual FM.

Counter Mode of Operation:

Manual Scan: Scan determined either by front panel control of 8552B IF Section or by external scan signal provided by the 8444A.

Zero Scan: Analyzer is fixed tuned receiver. Counter reads center frequency to accuracy of tracking drift.

Counter Output Level: 0.1 V rms.

GENERAL SPECIFICATIONS

Temperature Range: Operation, 0 to 55°C, storage -40°C to 75°C.

Power: 115V and 230V, 48 to 440 Hz, 35 VA max.

Table E-1. Specifications

SPECIFICATIONS

The following specifications are for the HP 8444A Tracking Generator **ONLY** and should not be confused with system specifications listed in Table 1-1. Typical system performance characteristics are located in Table E-2.

SWEPT FREQUENCY RESPONSE MEASUREMENTS

Absolute Amplitude Calibration Range:

Frequency Range: 500 kHz to 1500 MHz

Stability:

Residual FM: Depends on analyzer being used. Refer to Table E-2.

Amplitude Accuracy:

Frequency Response (flatness)¹:

0.5 to 1300 MHz, ± 0.5 dB

0.5 to 1500 MHz, ± 0.75 dB

Tracking Generator Calibration: 0 dBm ± 0.5 dB at 30 MHz

SWEEP/CW GENERATOR

Frequency Range: 500 kHz to 1500 MHz

Frequency Accuracy: Same as analyzer being used.²

Output Flatness: 0.5 to 1300 MHz, ± 0.5 dB; 0.5 to 1500 MHz, ± 0.75 dB

Drive Level to Test Device: 0 to -10 dBm continuously variable.

Spectral Purity:

Residual FM: Depends on analyzer being used. Refer to Table E-2.

Spurious Signals: ≥ 35 dB below output level.

¹ This is output flatness of tracking generator only. System frequency response is determined by combining this figure with frequency response figure for spectrum analyzer used. Refer to Table E-2 for typical values using various analyzers.

² Frequency accuracy, when using the 8558B or 8565A spectrum analyzers, may be improved by use of an external frequency counter connected to rear-panel AUX RF OUTPUT connector. 8568A Spectrum Analyzer contains an internal frequency counter, so should be used alone for best accuracy.

Table E-2. System Performance Characteristics

PERFORMANCE CHARACTERISTICS			
The following characteristics outline the typical performance of the tracking generator/spectrum analyzer system using the HP Model 8444A Option 059 Tracking Generator with various HP spectrum analyzers. These are not specifications. They are intended only as additional information regarding instrument performance.			
Description	8444A-059 with 8558B	8444A-059 with 8565A	8444A-059 with 8568A
SWEPT FREQUENCY RESPONSE MEASUREMENTS			
Dynamic Range	>90 dB	>90 dB	>90 dB
Average Noise ¹	<-107 dBm	<-100 dBm	<-105 dBm
Calibration Range Spectrum Analyzer: Log	-117 dBm to +30 dBm	-102 dBm to +30 dBm	-99.9 dBm to +30 dBm
Frequency Range	500 kHz to 1500 MHz	10 MHz to 1500 MHz	500 kHz to 1500 MHz
Scan Width			
Full Span	Not Available	1500 MHz	1500 MHz
Per Division	5 kHz to 100 MHz	1 kHz to 100 MHz	1 kHz to 150 MHz
Residual FM ²	1 kHz	300 Hz	300 Hz
Frequency Response: (system flatness, 0.5- 1500 MHz)	±1.75 dB (3.5 dB)	±2.0 dB (4.0 dB)	±1.75 dB (3.5 dB)
SWEEP/CW GENERATOR			
Frequency Range	500 kHz to 1500 MHz	10 MHz to 1500 MHz	500 kHz to 1500 MHz
Frequency Accuracy ³	Same as 8558B	Same as 8565A	Same as 8568A
Output Flatness	±0.75 dB	±0.75 dB	±0.75 dB
Spectral Purity			
Residual FM ²	1 kHz	300 Hz	300 Hz
Harmonic Distortion	-25 dBc	-25 dBc	-25 dBc
Spurious Signals	-35 dBc	-35 dBc	-35 dBc
Long Term Stability			
Drift	30 kHz/10 min.	13 kHz/10 min.	10 kHz/10 min. ⁴
Sweep Width	50 kHz to 1000 MHz	10 kHz to 1500 MHz	100 Hz to 1500 MHz
Sweep Rate (Per Div.)	5 ms to 10 sec ⁵	2 ms to 10 sec ⁶	2 ms to 150 sec ⁶
¹ With 10 kHz resolution bandwidth selected. ² Residual FM of tracking generator is typically <300 Hz. ³ Frequency accuracy, when using the 8558B or 8565A spectrum analyzer, may be improved by use of an external frequency counter connected to rear-panel AUX RF OUTPUT. 8568A contains an internal counter, so should be used alone for best accuracy. ⁴ Plus analyzer drift during one sweep. ⁵ Although faster sweep rates are available, for best tracking, the 8558B should not be swept faster than 5 ms. ⁶ Do not use coupled sweep times in Full Span. For best operation with 8568A, use   (KST) to lock 2nd LO frequency for spans ≤1 MHz.			