Table 1-1. Model 5342A Specifications

INPUT CHARACTERISTICS

INPUT 1:

Frequency range: 500 MHz to 18 GHz

Sensitivity:

500 MHz to 12.4 GHz -25 dBm
12.4 GHz to 18 GHz -20 dBm

Maximum input: +5 dBm (see Options 002, 003 for higher level).

Dynamic range:

500 MHz to 12.4 GHz 30 dB
12.4 GHz to 18 GHz 25 dB

Impedance: 50 ohms, nominal

Connector: Precision Type N female

Damage level: +25 dBm, peak

Coupling: dc to load, ac to instrument.

SWR:

<2:1, 500 MHz—10 GHz
<3:1, 10 GHz—18 GHz

FM tolerance: Switch selectable (rear panel)

FM (wide): 50 MHz p-p worst case.
CW (normal): 20 MHz p-p worst case.
For modulation rates from dc to 10 MHz.

AM tolerance: Any modulation index provided the minimum signal level is not less than the sensitivity specification.

Automatic amplitude discrimination: Automatically measures the largest of all signals present, providing that signal is 6 dB above any signal within 500 MHz; 20 dB above any signal, 500 MHz—18 GHz.

Modes of operation:

Automatic: Counter automatically acquires and displays highest level signal within sensitivity range.

Manual: Center frequency entered to within ±50 MHz to true value.

Acquisition time:

Automatic mode: Normal FM 530 ms worst case; wide FM 2.4 s worst case.

Manual mode: 80 ms after frequency entered.

INPUT 2:

Frequency range: 10 Hz to 520 MHz Direct Count.

Sensitivity:

50Ω 10 Hz to 520 MHz 25 mV rms.
1 MΩ 10 Hz to 25 MHz 50 mV rms.

Impedance: Selectable: 1 MΩ, <50 pF or 50Ω nominal.

Coupling: ac

Connector: Type BNC female.

Maximum input: 50Ω 3.5V rms (+24 dBm) or 5V dc fuse protected; 1 MΩ 200V dc +5.0V rms.

TIME BASE

Crystal frequency: 10 MHz

Stability:

Aging rate: $<1 \times 10^{-7}$ per month.

Short term: $<1 \times 10^{-9}$ for 1 second average time.

Temperature: $<\pm 1 \times 10^{-6}$ over the range 0°C to 50°C.

Line variation: $<\pm 1 \times 10^{-7}$ for 10% change from nominal.

Output frequency: 10 MHz ≥2.4V square wave (TTL compatible); 1.5V peak-to-peak into 50Ω available from rear panel BNC.

External time base: Requires 10 MHz, 2.0V peak-to-peak sine wave or square wave into 1 KΩ via rear panel BNC connector. Switch selects either internal or external time base.

OPTIONAL TIME BASE (OPTION 001)

Option 001 provides an oven-controlled crystal oscillator time base, 10544A (see separate data sheet), that results in better accuracy and longer periods between calibration.

Crystal frequency: 10 MHz

Stability:

Aging rate: $<5 \times 10^{-10}$/day after 24-hour warm-up.

Temperature: $<7 \times 10^{-9}$ over the range 0°C to 50°C.

Short term: $<1 \times 10^{-11}$ for 1 second average time.

Line variation: $<1 \times 10^{-10}$ for 10% change from nominal.

Warm-up: $<5 \times 10^{-9}$ of final value 20 minutes after turn-on, at 25°C.

AMPLITUDE MEASUREMENT (OPTION 002)

Option 002 provides the capability of measuring the amplitude of the incoming sine wave signal, and simultaneously displaying its frequency (MHz) and level (dBm). The maximum operating level and the top end of dynamic range are increased to +20 dBm. Amplitude offset to 0.1 dB resolution may be selected from front panel pushbuttons.

INPUT 1:

Frequency range: 500 MHz—18 GHz.

Dynamic range (frequency and level):

-22 dBm to +20 dBm 500 MHz to 12.4 GHz
-15 dBm to +20 dBm 12.4 GHz to 18 GHz

Maximum operating level: +20 dBm

Damage level: +25 dBm, peak

Resolution: 0.1 dB

Accuracy: ±1.5 dB (excluding mismatch uncertainty).

SWR:

<2:1 (amplitude measurement).
<5:1 (frequency measurement).

Measurement time: 100 ms + frequency measurement time.

Display: Simultaneously displays frequency to 1 MHz resolution and input level. (Option 011 provides full frequency resolution on HP-IB output.)

INPUT 2: (50Ω impedance only)

Frequency range: 10 MHz—520 MHz

Dynamic range (frequency and level):

-17 dBm to +20 dBm.

Damage level: +24 dBm, peak

Resolution: 0.1 dBm.

Accuracy: 1.5 dB (excluding mismatch uncertainty).

SWR: <1.8:1

Measurement time: 100 ms + frequency measurement time.

Display: Simultaneously displays frequency to 1 MHz resolution and input level.

Table 1-1. Model 5342A Specifications (Continued)

EXTENDED DYNAMIC RANGE (OPTION 003)

Option 003 provides an attenuator that automatically extends the dynamic range of operation for input 1.

INPUT 1:

Frequency range: 500 MHz to 18 GHz

Sensitivity:

500 MHz to 12.4 GHz	-22 dB
12.4 GHz to 18 GHz	-15 dBm

Maximum operating level: +20 dBm.

Dynamic range:

500 MHz to 12.4 GHz	42 dB
12.4 GHz to 18 GHz	35 dB

Damage level: +25 dBm, peak

SWR: <5:1

DIGITAL-TO-ANALOG CONVERTER (OPTION 004)

Option 004 provides the ability to convert any three consecutive displayed digits into an analog voltage output. A display of ØØØ produces ØV output; 999 produces 9.99V full scale.

Accuracy: ±5 mV, ±0.3 mV/°C (from 25°C)

Conversion Speed: <50 μs to ±0.01% of full scale reading.

Resolution: 10 mV

Output: 5 mA. Impedance <1.0 ohm.

Connector: Type BNC female on rear panel.

GENERAL

Accuracy: ±1 count ± time base error.

Resolution: Front panel pushbuttons select 1 Hz to 1 MHz.

Residual stability: When counter and source use common time base or counter uses external higher stability time base, $<4 \times 10^{-11}$ rms typcial.

Display: 11-digit LED display, sectionalized to read GHz, MHz, kHz, and Hz.

Self-check: Selected from front panel pushbuttons. Measures 75 MHz for resolution chosen.

Frequency offset: Selected from front panel pushbuttons. Displayed frequency is offset by entered value to 1 Hz resolution.

Sample rate: Variable from less than 20 ms between measurements to HOLD which holds display indefinitely.

IF out: Rear panel BNC connector provides 25 MHz to 125 MHz output of down-converted microwave signal.

Operating temperature: 0°C to 50°C.

Power requirements: 100/120/220/240V rms, +5%, -10%, 48—66 Hz; 100 VA max.

Accessories furnished: Power cord, 229 cm (7½ ft.)

Size: 133 mm H × 213 mm W × 498 mm D (5¼" × 8⅜" × 19⅝").

Weight: Net 9.1 kg (20 lbs.). Shipping 12.7 kg (28 lbs.).

1-5. SAFETY CONSIDERATIONS

1-6. This product is a Safety Class I instrument (provided with a protective earth terminal). Safety information pertinent to the operation and servicing of this instrument is included in appropriate sections of this manual.

1-7. INSTRUMENT IDENTIFICATION

1-8. Hewlett-Packard instruments have a 2-section, 10-character serial number (0000A00000), which is located on the rear panel. The four-digit serial prefix identifies instrument changes. If the serial prefix of your instrument differs from that listed on the title page of this manual, there are differences between this manual and your instrument. Instruments having higher serial prefixes are covered with a "Manual Changes" sheet included with this manual. If the change sheet is missing, contact the nearest Hewlett-Packard Sales and Service Office listed at the back of this manual. Instruments having a lower serial prefix than that listed on the title page, are covered in Section VII.

1-9. ACCESSORIES

1-10. *Table 1-2* lists accessory equipment supplied and *Table 1-3* lists accessories available.

Table 1-2. Equipment Supplied

DESCRIPTION	HP PART NUMBER
Detachable Power Cord 229 cm (7½ feet long)	8120-1378