HP 11721A

Phase Modulation (Option 002)
Maximum Peak Phase Deviation: From ±25° for f_c between 120 and 160 MHz to ±400° for f_c between 1280 and 2560 MHz
Maximum Rate: From 10 kHz for f_c between 0.15 and 10 MHz to 10 MHz for f_c between 640 and 2560 MHz
Phase Deviation Resolution: 1° (0.1 ≤ f_c < 640 MHz); 2° (640 ≤ f_c < 1280 MHz); 4° (1280 ≤ f_c < 2560 MHz)
Phase Modulation Distortion: 10% at maximum rate

Biphase Modulation
Biphase modulation is available on the standard HP 8663A for f_c less than 640 MHz and available for all f_c with Option 002.
Deviation: ±90°
Carrier Null when Modulated with 1 MHz, 50% Duty Cycle Square Wave: >25 dBc
Modulation Input Required: TTL positive true. The internal modulation oscillator can be used for 50% duty-cycle modulation. External input is on rear panel.

Pulse Modulation[1]
Pulse On/Off Ratio: >80 dB (50 to 2560 MHz)
Pulse Rise/Fall Time: <250 ns (50 to 120 MHz); <800 ns (120 to 640 MHz); <100 ns (f_c ≥ 640 MHz)
Pulse Repetition Frequency (50% duty cycle):
Internal: 10 Hz to 99.9 kHz
External: 10 Hz to 2 MHz, 50 MHz < f_c < 640 MHz; 10 Hz to 5 MHz, f_c > 640 MHz
Internal Modulation Oscillator
Rates: 10 Hz to 99.9 kHz
Frequency resolution: 3 digits
Frequency accuracy: Same as reference oscillator
Output level (available on rear panel): 1 V peak into 600 Ω
Output impedance: 600 Ω
Flatness (referenced to 1 kHz): < ±1%
Distortion: <1%

Other HP 8662A and HP 8663A Information
Remote Programming: The HP-IB interface is standard on the HP 8662A and HP 8663A signal generators. All functions controlled from the front panel, with the exception of the line switch, are programmable with the same accuracy and resolution as in manual mode.
Operating Temperature Range: 0° to +55° C
Leakage: Meets radiated and conducted limits of MIL STD 461A methods RE02 and CE03 as well as BVDE 0871
Power Requirements: 115 (90 to 126) V or 230 (198 to 252) V; 48 to 66 Hz; 450 VA max
Weight: HP 8662A: net, 30 kg (65.5 lb); shipping, 36 kg (80 lb); HP 8663A: net, 33.8 (74 lb); shipping, 40 kg (88 lb)
Size: HP 8662A: 425 mm W × 178 mm H × 572 mm D (16.75 in × 7 in × 22.5 in). HP 8663A: 425 mm W × 178 mm H × 642 mm D (16.75 in × 7 in × 25.3 in). Note: depth includes front panel depth of 45 mm (1.75 in).

Key Literature
Synthesized Signal Generator 10 kHz to 1280 MHz Technical Data, p/n 5953-8402.
Synthesized Signal Generator 100 kHz to 2.56 GHz Technical Data, p/n 5953-8376.

Ordering Information
HP 8662A 1280 MHz Signal Generator[2]
Opt 001 RF Connectors on Rear Panel Only
Opt 003 Specified SSB Phase Noise for 640 MHz Output
Opt 700 External MATE Translator
Opt 907 Front Handle Kit (5062-3990)
Opt 908 Rack Flange Kit (5062-3978)
Opt 909 Rack Flange Kit with Front Handles (5062-3984)
Opt 910 Two Sets of Operating and Service Manuals (08662-90069)
Opt W30 Extended Repair Service (see page 663)
Opt W32 Calibration Service (see page 663)
Opt 1BN MIL STD 45662A Calibration Certificate
Opt 1BP MIL STD 45662A Calibration with Data Provided
HP 8663A 2560 MHz Signal Generator[2]
Opt 001 RF Connectors on Rear Panel Only
Opt 002 Wideband Linear Phase Modulation
Opt 003 Specified SSB Phase Noise for 640 MHz Output
Opt 700 External MATE Translator
Opt 907 Front Handle Kit (5061-9690)
Opt 908 Rack Flange Kit (5061-9678)
Opt 909 Rack Flange Kit with Front Handles (5061-9684)
Opt 910 Additional Operation and Calibration Manual (08663-90069) and Service Manuals (08663-90071)
Opt 915 Add Service Manual (08663-90071)
Opt W30 Extended Repair Service (see page 663)
Opt W32 Calibration Service (see page 663)
Opt 1BN MIL STD 45662A Calibration Certificate
Opt 1BP MIL STD 45662A Calibration with Data Provided
HP 11714A Service Support Kit (required for servicing HP 8662A/8663A)

[1] Pulse modulation is available for f_c < 50 MHz but is unspecified.
[2] HP-IB cables not supplied. For description and price, see page 99.

HP 11721A Frequency Doubler
The HP 11721A doubler is an ideal accessory for extending the usable frequency range of signal generators, frequency synthesizers, or other signal sources. Operating on input frequencies of 50 MHz to 1300 MHz, it provides a doubled output in the range of 100 MHz to 2600 MHz. The HP 11721A will work well with any RF source with an output in the range 50 to 1300 MHz.
The 50 Ω passive circuit of the HP 11721A offers low conversion loss, low spurious, and excellent flatness over its entire frequency range when operated above +10 dBm.

HP 11721A Specifications
Input Frequency Range: 50 to 1300 MHz
Output Frequency Range: 100 to 2600 MHz
Conversion Loss (+13 dBm input, 50 to 1280 MHz): <15 dB
Spurious Referenced to Desired Output Frequency f (+13 dBm input with Harmonics < −50 dBc, 50 to 1280 MHz): f/2, −15 dB; 3f/2, −15 dB
Input SWR: 1.5 typical
Input/Output Impedance: 50 Ω nominal
Operating Temperature Range: 0° to +50° C
Connectors: Input, type N male; output, type N female
Size: 161 mm L × 30 mm W × 20.5 mm H (6⅜ in × 1⅛ in × ¾ in)
Weight: Net, .02 kg (0.5 lb); shipping, 0.4 kg (1 lb)

Ordering Information
HP 11721A Frequency Doubler
Opt W30 Extended Repair Service (see page 663)