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Find the *Keysight / Agilent 70340A* at our website: ***Click HERE***

Agilent
70340A Modular Signal Generator
1 to 20 GHz

The high performance
signal generator for
modular test systems



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All the Performance of Rack-and-Stack Signal Sources in Half the Space

Unlock the Power of Modular ATE

The HP 70340A is the first signal generator that delivers the performance, flexibility and value only modular ATE can provide. Designed to meet the need for a downsized, high performance signal source, the HP 70340A blends state-of-the-art technologies in a new microwave signal generator design to achieve unprecedented performance and value. The HP 70340A's combination of high output power, excellent spectral purity, powerful modulation, small size and light weight is unmatched by any other signal generator.



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Flexible frequency coverage matches performance to your application

- Complete, broadband 1 to 20 GHz coverage in a single module.
- 1 kHz frequency resolution standard; 1 Hz optional.
- Frequency extension module will expand coverage down to 10 MHz.

Unsurpassed output level accuracy and flatness generates measurement precision

- ±1 dB internal level accuracy
- ±0.5 dB internal flatness
- 0.01 dB output level resolution
- User Level Correction allows transfer of power meter accuracy to signal generator output at any remote point.

Excellent spectral purity provides "single-signal" accuracy and maximum dynamic range

- Exceptionally low harmonics in all modes of operation (typically <–60 dBc).
- Fundamental microwave oscillators eliminate subharmonic signals.
- Low SSB phase noise (typically <–95 dBc/Hz at 10 kHz offset at f_c = 6 GHz).
- Quiet AM noise floor (typically <–150 dBm/Hz).

Full modulation capability simulates real-world signals

- Fast, accurate pulse modulation:
  <10 nanosecond rise/fall times
  >80 dB on/off ratio
  Multi-mode internal pulse modulation source (optional)
- Wideband, high index FM:
  >10 MHz peak deviation
  >1 MHz maximum rate
  Modulation index >300
- Log AM for antenna scan simulation and power sweeps:
  >60 dBc depth
  Fast step response (typically <5 microseconds)
  Excellent AM accuracy and linearity
- Simultaneous AM, FM and pulse modulation.

Industry standard, open architecture reduces risk

- Modular platform simplifies system upgrades.
- Designed in the Modular Measurement System (MMS) for maximum performance.

Versatile programming speeds system integration

- Standard commands for programmable instrumentation (SCPI) programming protects software investment.
- Optional CIIL capability meets MATE requirements.

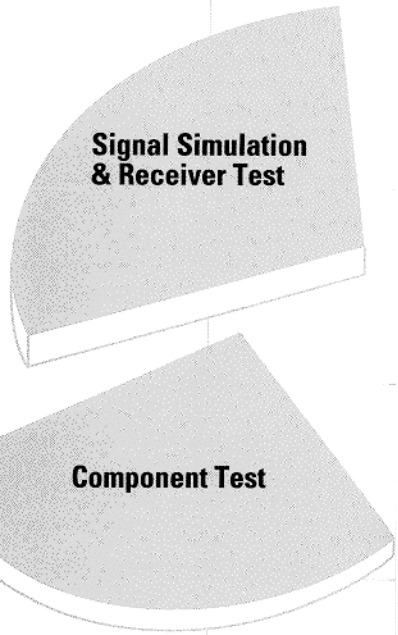
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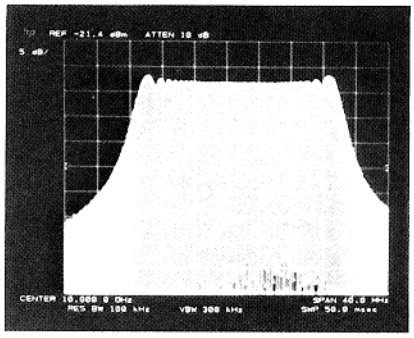
Signal simulation and receiver test

Simulate "real world" signals with the powerful modulation capability of the HP 70340A. Combine the high performance AM, FM and pulse modulations to generate the complex signals required for evaluating sophisticated receivers and sub-systems. Broad frequency coverage, excellent spectral purity and plenty of output power provide the flexibility necessary to evaluate modern receiver performance. Half rack width size makes the HP 70340A an excellent choice in multiple source applications including intermodulation testing and multi-emitter EW simulation.

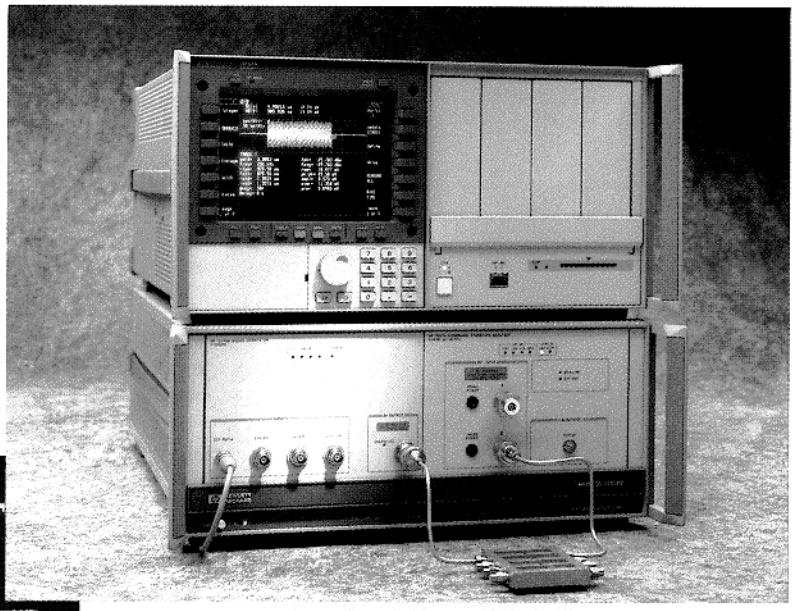
Compact component test system

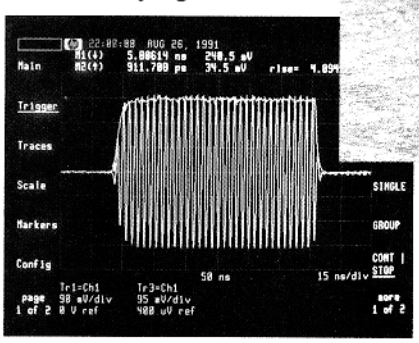
The HP 70340A is a natural companion signal source for the HP 71500A Microwave Transition Analyzer. Together these two modular instruments offer powerful pulsed component test capability in a small, easy to configure system ideal for production test stations as well as R&D. Test components to their limits with the fast, clean pulse modulation of the HP 70340A. Excellent pulse flatness, low overshoot and minimum video feedthrough improve accuracy in pulsed component measurements. Optional 1 Hz frequency resolution provides full system capability.





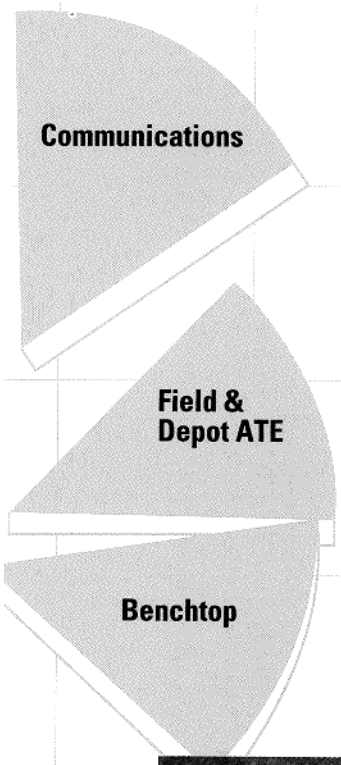
The HP 70340A's high index FM simplifies simulation of frequency chirped and telemetry signals.





Excellent pulse fidelity makes the HP 70340A an ideal pulsed component and EW receiver stimulus.

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Clean clock source for high speed bit error rate testing

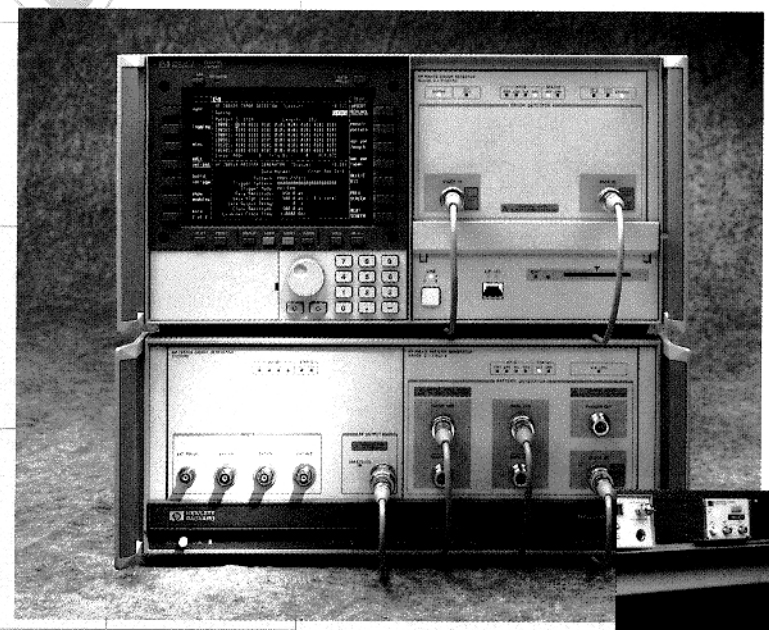
Low noise signals with minimum jitter are critical for accurate BER and C/N testing. Low phase noise and spurious, 1 Hz frequency resolution and high output power make the HP 70340A an excellent clock source for the HP 71600 series of high speed digital testers. Combine the HP 70340A with these and other modular test instruments to provide a complete, high performance satellite, lightwave or LAN-based communications test station.

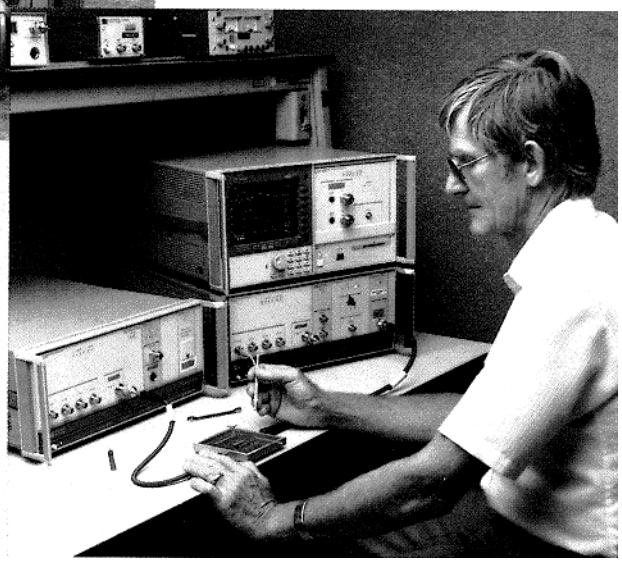
Match performance to mission in tomorrow's field portable ATE

Small size, low weight and proven MMS ruggedness make the HP 70340A the signal source of choice in tommorow's portable ATE. Whether you're testing on the flightline, at isolated repeater sites or on the go with van mounted ATE, the HP 70340A delivers the performance you need to meet your mission requirements.

The power of modularity is ideal for benchtop applications too!

The HP 70340A and other Hewlett-Packard modular instruments are also excellent performers in benchtop applications. Improve synchronization, eliminate clutter and increase test flexibility without losing capability. The high performance and low spurious emissions of the HP 70340A make it a perfect signal source for benchtop applications in state-of-the-art R&D, manufacturing, quality assurance and metrology.





The performance and flexibility of the HP 70340A make it an ideal BERT clock source (above) as well as an excellent general purpose signal source in benchtop applications (right).

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SPECIFICATIONS describe the instrument's warranted performance over the 0° to 55°C temperature range unless otherwise noted. SUPPLEMENTAL CHARACTERISTICS (indicated by italics) are intended to provide information useful in estimating instrument capability in your application by describing typical, but not warranted, performance.

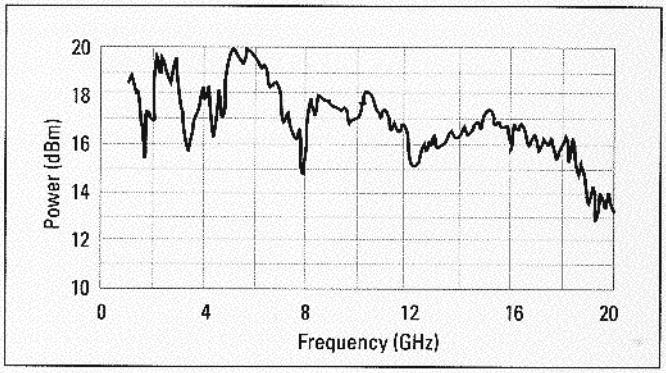
Frequency

Range: 1.0 to 20.0 GHz
Resolution: 1 kHz (1 Hz with Option 1E8)
Stability: Aging: With external high stability reference: Same as external reference.
Without external high stability reference: 1 x 10^{-8} per day after 72 hour operation warmup.
Temperature: *With external high stability reference: Same as external reference*
Without external high stability timebase: <5 ppm (0° to 55°C, referenced to 25°C).
Frequency Switching Time: *<50 ms to within 1 kHz*

RF Output

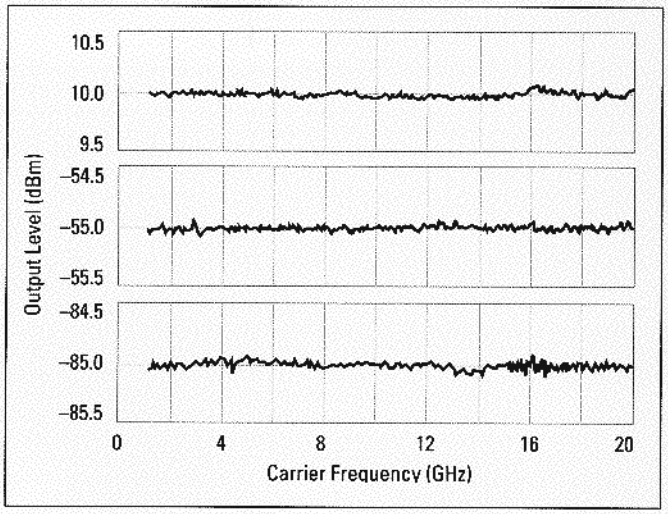
Maximum Leveled Output Power:

Frequency	Standard	with Option 1E1
1—18 GHz	+11 dBm	+10 dBm
18—20 GHz	+10 dBm	+8 dBm



Typical maximum available output power at 25°C with output step attenuator (Option 1E1) installed.

Minimum Leveled Output Power: –4 dBm, –90 dBm with Option 1E1
Display Resolution: 0.01 dB
Accuracy: ±1.0 dB (–4 dBm to specified maximum leveled output power)[1]
±2.0 dB (over all specified temperatures, frequencies and power levels)[1]



Typical output level accuracy and flatness at +10, –55 and –85 dBm.

Flatness: ±0.5 dB[1]
Level Switching Time: *<15 ms (without step attenuator range change. Attenuator range changes occur at –4, –14, –24 etc. dBm.)*
Output SWR: *<2.0 : 1 nominal*

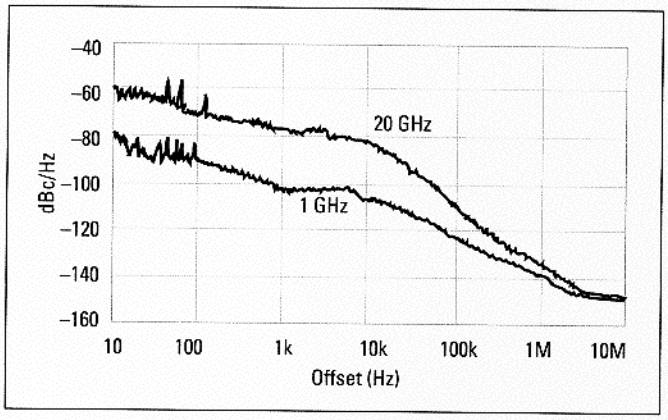
[1]The use of Type-N RF connectors above 18.0 GHz degrades specification by 0.2 dB.

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Spectral Purity

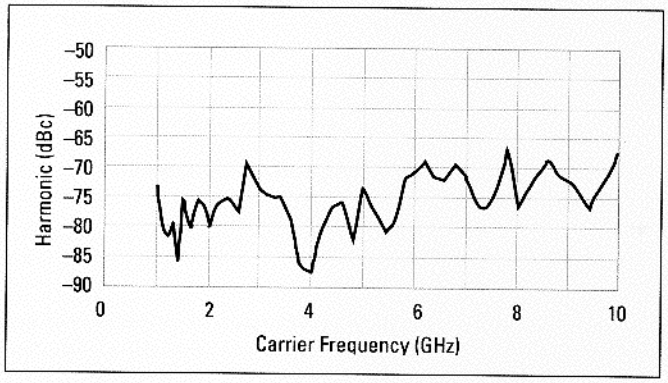
SSB Phase Noise (dBc/Hz):

	Offsets			
Carrier Freq.	**100 Hz**	**1 kHz**	**10 kHz**	**100 kHz**
2 GHz	–66	–74	–91	–110
10 GHz	–69	–75	–79	–101
18 GHz	–63	–70	–73	–103



Typical single-sideband phase noise at 1 GHz and 20 GHz, 25°C, CW mode. Offsets less than 100 Hz require use of an external high-stability reference.

Harmonics: <–55 dBc at output levels <+6 dBm



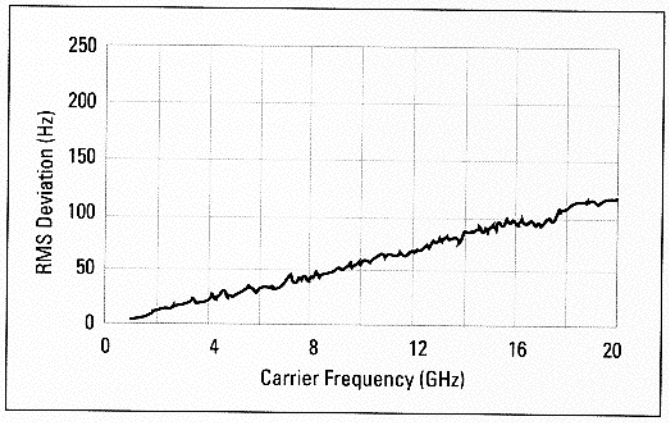
Typical 2nd harmonic levels measured at output power of +8 dBm with Option 1E1.

Non-Harmonic Spurious (≥3 kHz): <–60 dBc (includes power supply and frequency synthesis spurious).

Non-Harmonic Spurious (<3 kHz): <–50 dB

Sub-Harmonics: None

Residual FM:



Typical residual FM measured in 50 Hz - 15 kHz bandwidth; CW mode.

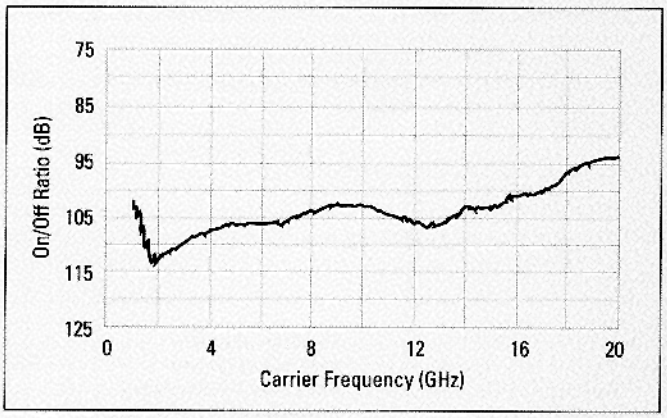
AM Noise Floor: < 150 dBm / Hz at 0 dBm and offsets greater than 5 MHz from carrier.

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Modulation

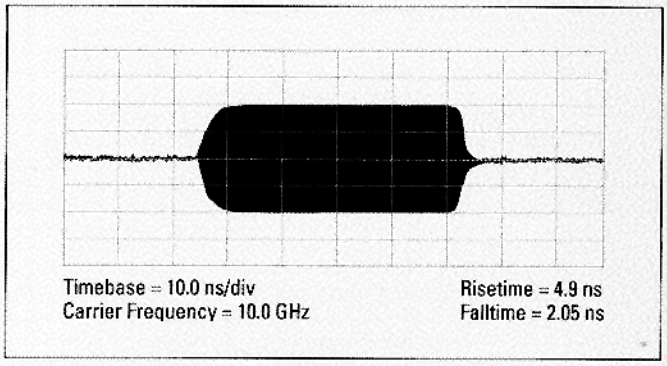
Pulse Modulation

On/Off Ratio: >80 dB



Typical pulse modulation on/off ratio at +8 dBm .

Minimum Pulse Width: <25 ns; typically <10 ns
Rise/Fall Time: <10 ns; typically <5 ns



Typical pulse modulation envelope illustrates the fast rise and fall times, excellent flatness and pulse fidelity of the HP 70340A.

Maximum Pulse Repetition Frequency: *>3 MHz*
Minimum Pulse Duty Cycle: *No restrictions on duty cycle.*
Pulse Width Compression: *<±5 ns*
Pulse Overshoot: *<10 %*
Pulse Delay (Video to RF): *<100 ns*
Video Feedthrough: *<20 mv peak to peak*
Input Impedance: *50 Ω nominal; TTL drive levels*
Pulse Level Accuracy: *±1.0 dB (relative to CW)*
Maximum Leveled Output Power in Pulse Mode: *0.5 dB relative to CW*

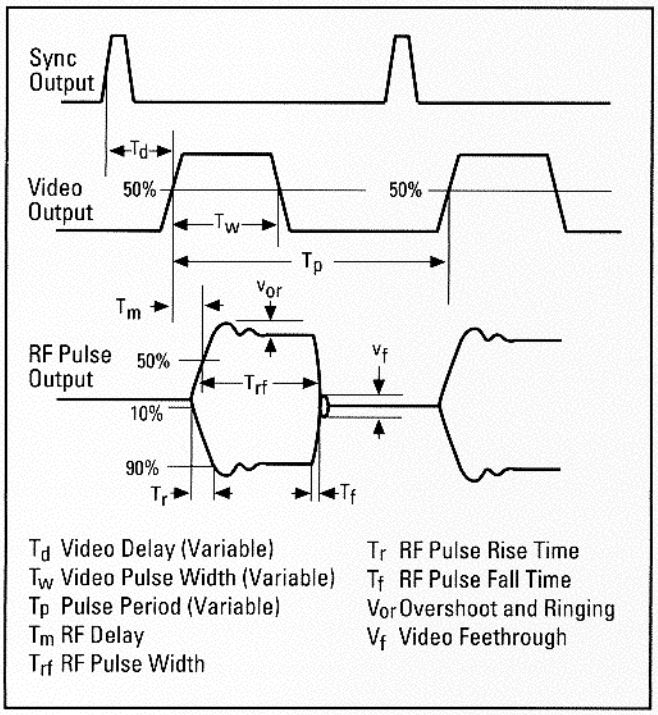
Internal Pulse Modulation Source (Option 1E2)

Pulse Source Modes: Free-run, triggered with delay, doublet and gated. Triggered with delay, doublet and gated require external trigger source.
Pulse Repetition Frequency: 3 Hz to >3 MHz
Pulse Repetition Interval (PRI): 300 ns to 419 ms
Pulse Width (T_w): 25 ns to 419 ms

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Variable Pulse Delay (free-run mode, T_d): ±419 ms from sync pulse to video pulse
Variable Pulse Delay (triggered with delay & doublet modes, T_d): 225 ns to 419 ms with ±25 ns jitter
Pulse Width/Delay/PRI Resolution: 25 ns
Pulse Delay (Video to RF, T_m): Nominally, <20 ns

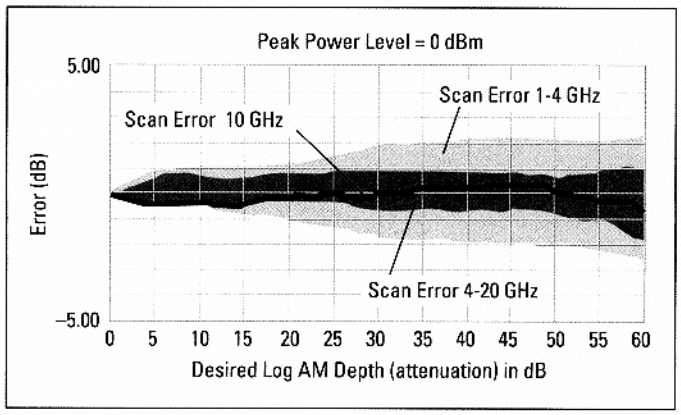
All pulse modulation specifications and supplemental characteristics apply during use of internal pulse source.



Frequency Modulation
Rates: 1 kHz to 1 MHz
Flatness: ±2 dB
Maximum Deviation: 10 MHz peak, 2-20 GHz. 5 MHz peak, 1-2 GHz
FM Sensitivity: 5 MHz / Volt
FM Sensitivity Accuracy: ±25% at 100 kHz
Modulation Index: >300, 2-20 GHz. >150, 1-2 GHz
Incidental AM: <5%,
FM Input Impedance: 600 Ω nominal
Harmonic Distortion: <1% (1 MHz peak deviation, 100 kHz rate)

Logarithmic Amplitude Modulation (Scan Modulation)
Maximum Depth: > 60 dB
Sensitivity: –10 dB / Volt; (0 to +6V for 0 to –60 dBc)
Step Response: (rise and fall): <5µs for 50 dB change in level
Input Impedance: 5000 Ω nominal
Maximum Leveled Output Power in Log AM Mode: –4.0 dB relative to CW, 1-4 GHz; –1 dB relative to CW, >4 GHz

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Typical log AM error (deviation from desired depth) at 25°C for carrier frequencies between 1.0 and 20 GHz.

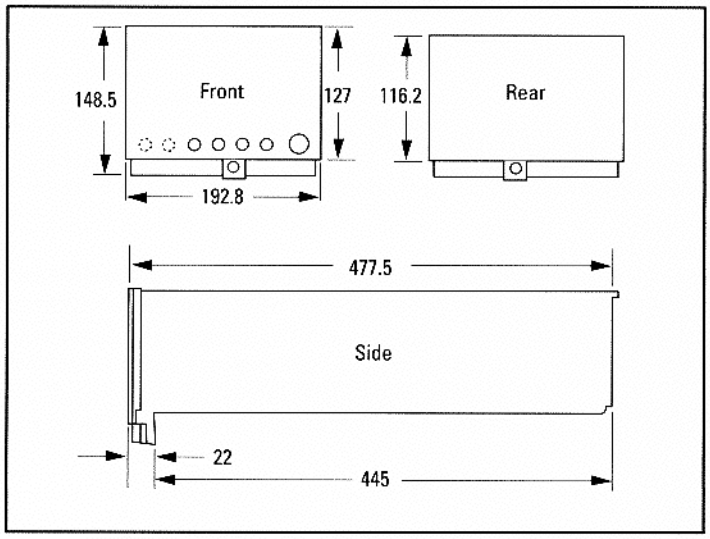
Simultaneous Modulations
Full AM bandwidth and depth is available at any pulse rate or width. FM is completely independent of AM and pulse modulation.

General

Programming
The HP 70340A is fully compatible with the Standard Commands for Programmable Instruments (SCPI). SCPI programming complies with IEEE 488.2-1987. Optional CIIL programming compatibility is available. Please consult your HP sales representative for details.

Environmental
Operating Temperature Range: 0° to 55°C
EMC: Meets or exceeds EN 55011/CISPR 11/1990, Class A and Mil-Std-461C Part 4 RE02, CE03, CS02, RS03.

Physical Dimensions
Net Weight: < 9 kg (20 lb);
Shipping: < 15 kg (30 lb)
Size: 4/8 MMS module width. 148.5 mm H x 192.8 mm W x 477.5 mm D
Power Consumption: < 80 Watts



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Rear Panel Connectors

0.5-1 GHz Output:
Outputs a 0.5 to 1.0 GHz signal for driving the HP 70341A Frequency Extension module.

0.01-1 GHz Input:
Accepts the HP 70341A 0.01-1 GHz output signal. The HP 70341A signal is output step attenuated in the HP 70340A with the 0.01 to 1.0 GHz output available at the front panel output connector of the HP 70340A.

10 MHz Input:
Accepts a 10 MHz ± 100 Hz, 0 to +10 dBm, external reference signal for operation from an external high stability timebase. Nominal input impedance is 50 Ω.

10 MHz Output:
Outputs the 10 MHz external reference signal, nominally +3 dBm, for use as an external reference signal for other modules.

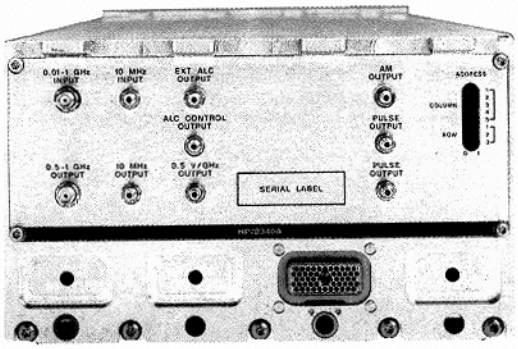
External ALC Output:
Outputs external ALC drive signal (from front panel EXT ALC input connector) to frequency extension modules.

ALC Control Output:
Supplies a –10 to +10 V signal as a reference for leveling the .01 to 1.0 GHz output signal of the HP 70341A.

0.5 V/ GHz Output:
Supplies a voltage proportional to output frequency for use with mm-wave frequency multipliers, including the HP 835XX Series.

AM Output:
Outputs AM modulation drive signal (from front panel EXT AM input connector) to frequency extension modules.

Pulse Output:
Outputs pulse modulation drive signals (from front panel EXT PULSE input connector) to frequency extension modules.



Rear Panel

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Part Numbers
70340A Modular Signal Generator
Option 1E1 Add Output Step Attenuator
Option 1E2 Internal Pulse Modulation Generator
Option 1E8 1 Hz Frequency Resolution
Option 1E9 3.5 mm RF Output Connector
Option 0B2 Extra Operating Manual
Option 0B3 Service Manuals

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