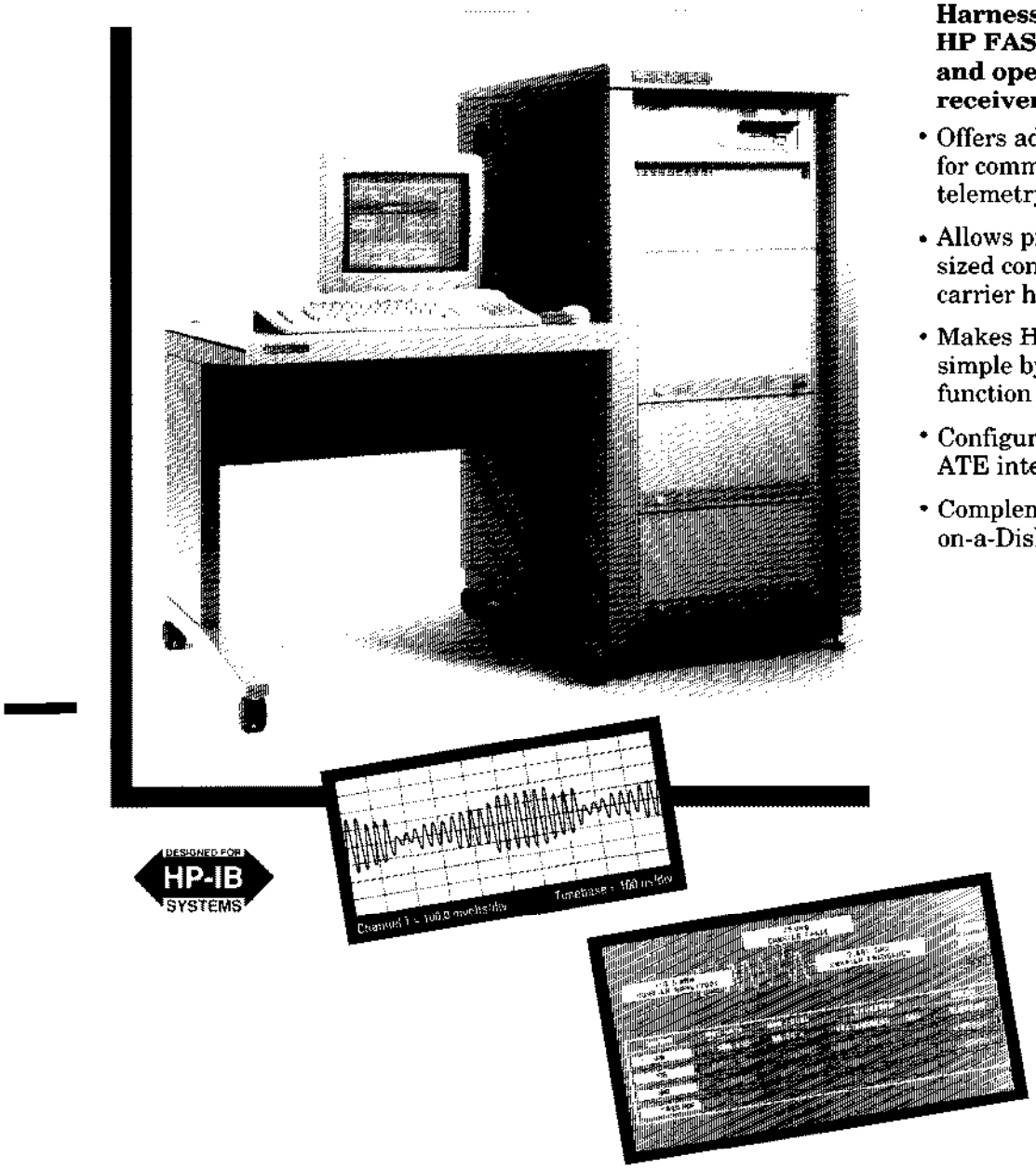
HEWLETT PACKARD

HP 8791 Model 100 Precision Signal Generator Software (PSID)

0.01 – 3 GHz (Optional upconversion available to 40 GHz)

Technical Data

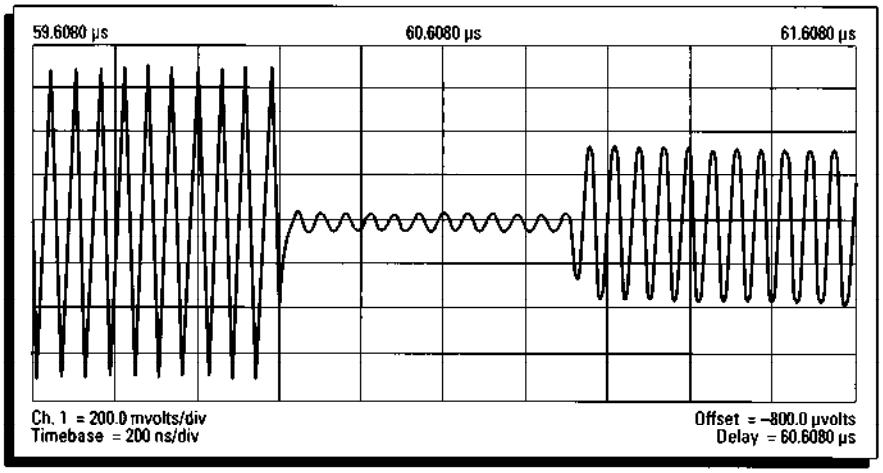


Instrument-on-a-Disk (ID) software for the HP 8791 Model 10 Frequency Agile Signal Simulator (HP FASS)

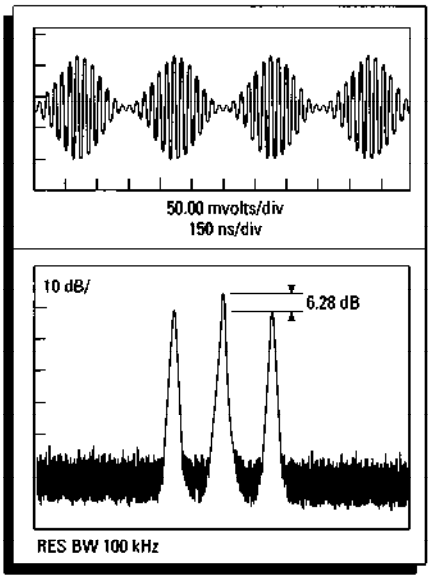
Harness the power of HP FASS for parametric and operational receiver tests

- Offers advanced test solutions for communications, navigation, telemetry, and metrology.
- Allows precise arbitrary synthesized control of AM, ΦM, FM and carrier hop.
- Makes HP FASS operation simple by emulating a full-function signal generator.
- Configures HP FASS for easy ATE integration.
- Complements other Instrument-on-a-Disk products.

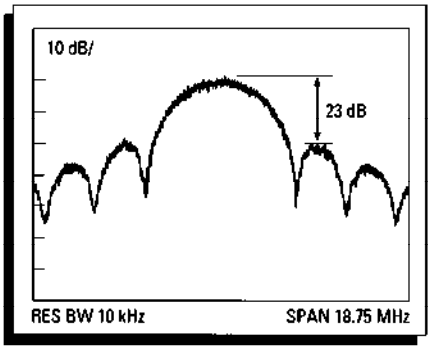
Use PSID for a Broad Range of Receiver Measurements



AGC recovery tests are a snap using a variety of signal level profiles.



This 97% AM signal illustrates the precision possible with HP FASS and PSID.



With user patterns, it is easy to create MSK signals such as this one with just a few clicks of the mouse.

Now you can test and calibrate RF and microwave receivers with unprecedented accuracy and parametric control. Together with the HP FASS, PSID harnesses the power of digital synthesis to make precision modulation easier than ever. Imagine the testing challenges you will overcome with these capabilities:

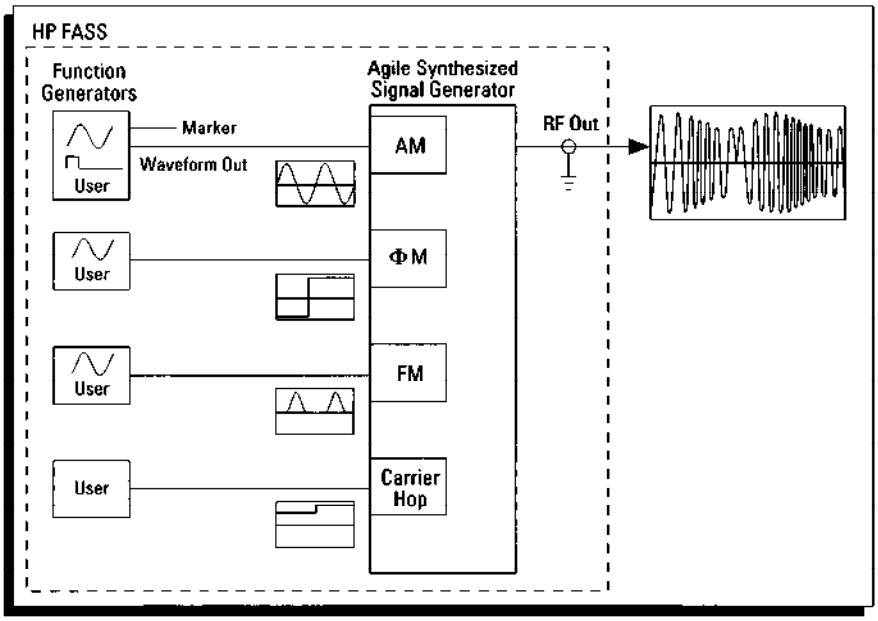
- Very wide modulation bandwidth (up to 40 MHz AM, ΦM, FM)
- 3 GHz agile carrier range (<250 ns guaranteed switching speed)
- Two-tone signals with up to 40 MHz separation
- Programmable time synchronization of each modulation: AM, ΦM, FM and frequency hop.
- Long user patterns for special applications and modulation formats
- Real time control of carrier frequency and/or modulation data

Calibration-grade modulation control improves operational and margin testing on a wide variety of communication and navigation systems.

- PLRS/JTIDS
- GPS
- MILSTAR
- GSM
- IFF

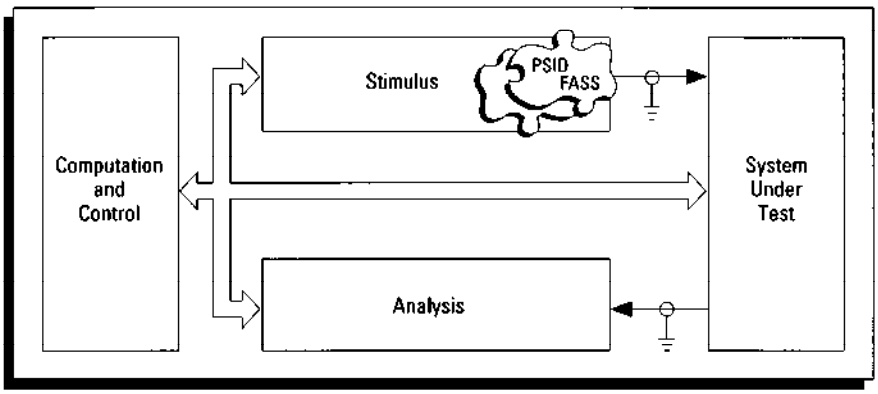
Performance Beyond Traditional Test Instrumentation

PSID gives HP FASS the feel and performance of synchronized arbitrary function generators modulating a precision agile synthesized signal generator.



Digital synthesis makes modulation and carrier synchronization simple for the PSID user.

For an ATE Drop-in Solution



HP FASS is sophisticated digital-based hardware. PSID harnesses this power making the system very easy to build into ATE systems.

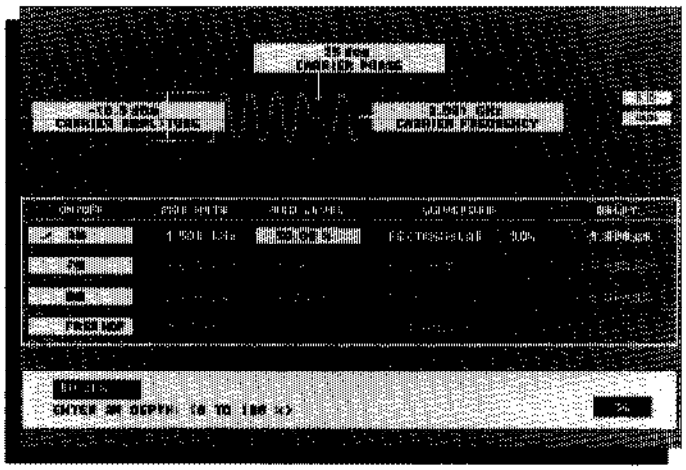
Look at this Simple Front Panel

To create a test signal, . . .

1. Set desired center frequency.
2. Set output amplitude.

And for each modulation format . . .

3. Turn modulation on or off.
4. Set modulation frequency.
5. Set modulation level (i.e., depth for AM; deviation for ϕM and FM).
6. Select desired waveform by clicking through the options.
7. Use delay to produce desired timing among modulations and frequency hopping.
8. Then click RUN to generate the signal.



Use the mouse to click on the parameter to be changed.

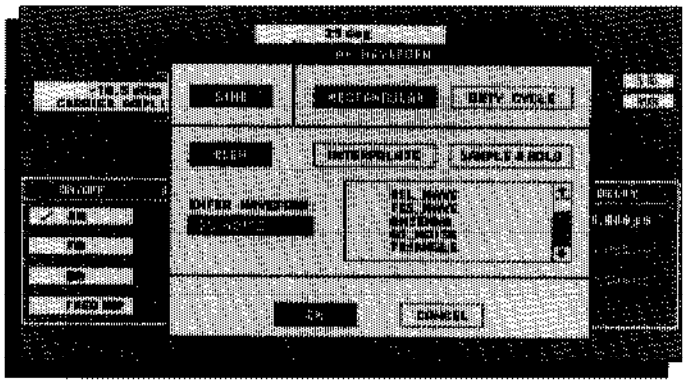
Create Custom Modulation Waveforms

Modulation and frequency-hop patterns are analogous to arbitrary waveform generators driving the modulation inputs of a synthesized signal generator. With HP FASS, this modulation is combined digitally then converted to analog in one step. The PSID software has built-in waveforms (sine and rectangle). In addition, you can create new patterns to address specific application needs. To get you started, PSID comes with a set of factory-supplied user waveforms.

- Triangle
- Constant
- Gaussian Noise

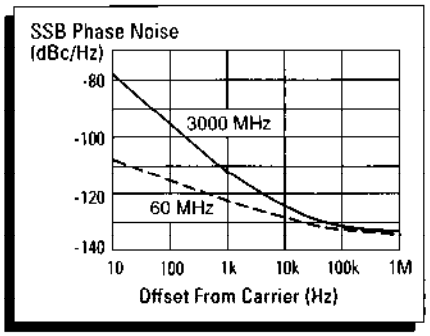
User patterns are configured as ASCII files that can be created with:

- An HP Waveform Generation Language workstation.
- Your own ATE computer and software.
- On-line notepad editor.
- Your own PC with such programs as LOTUS 123™.

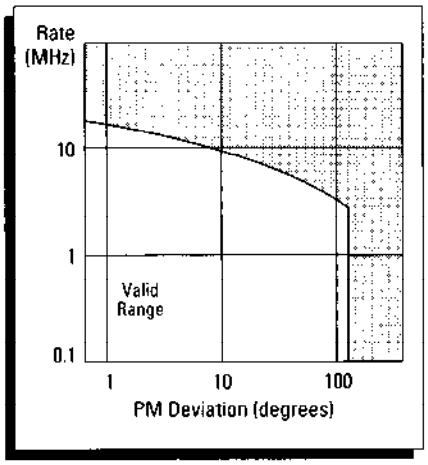


Choose from a number of factory-supplied user patterns or those you have created.

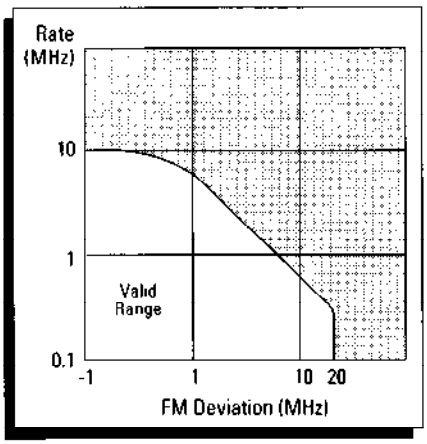
HP 8971 Model 100
Precision Signal Generator
Specifications



Typical SSB phase noise.



PM rate and deviation include sidebands >50 dBc.



FM rate and deviation to maintain ≤50 dBc spurs.

These specifications describe the warranted performance of the HP 8791 Model 10 Frequency Agile Signal Simulator when used with the HP 8791 Model 100 Precision Signal Generator Instrument-on-a-Disk software. For additional hardware specifications, refer to the HP 8791 Model 10 Frequency Agile Signal Simulator data sheet.

Frequency[1]

Range
0.01 to 3 GHz, 0.125 Hz resolution
Accommodates entry to 40 GHz (useful with optional upconverters)

Agile Modes
Constant (no hop)
User-defined

Agile Dwell Time
120 ns to >1.95 ms
0.1% resolution

Switching time
< 250 ns, 150 ns typical

Output/Spectral Purity

Level
–107 dBm to +10 dBm with AM off (<4 dBm with <100% AM)
<0.1 dB resolution

Output Level Accuracy
±1.0 dB fixed carrier
±2.5 dB agile carrier + attenuator uncertainty

Spurious Outputs
Harmonics (-10 dBm carrier): <–55 dBc typical
Harmonics (+10 dBm carrier): <–40 dBc typical
Other: <–50 dBc

SSB Phase Noise @ 2147 MHz
–80 dBc/Hz at 100 Hz offset
–120 dBc/Hz at 10 kHz offset
–125 dBc/Hz at 1 MHz offset

	Modulation Parameters			
	Rate	**Level**	**Waveform**	**Delay**
AM	0.0625 Hz - 20 MHz 0.1% resolution	0 to DSB-SC <±1% resolution for depth <100%	sine rectangle user	0 - 100% of repetition period ±0.1%resolution (typical)
ΦM	0.0625 Hz - 20 MHz 0.1% resolution	0 - 180° ±0.088° resolution	sine user	0 - 100% of repetition period ±0.1% resolution (typical)
FM	0.0625 Hz - 20 MHz 0.1% resolution	0.125 Hz - 20 MHz ±0.125 Hz resolution	sine user	0 - 100% of repetition period ±0.1% resolution (typical)

1 Specifications determined by internal clock frequency; will vary when using different external clock frequencies.

Specifications continued

Data Storage

Hardware images (include all hardware data)
5 on the Bernoulli™ disk
1 per 3.5 in. floppy disk

Button settings (include all parameters)
12 on the Bernoulli™ disk[1]
12 per 3.5 in. floppy disk

User-defined patterns (up to 8192 points long)
20 on the Bernoulli™ disk
20 per 3.5 in. floppy disk

External Triggering

Refer to the HP 8791 Model 10 Frequency Agile Signal Simulator technical data sheet. External single not supported.

Marker Outputs

Independent markers are available for each modulation format (AM, ΦM, FM, and Hop). A TTL-level signal is generated at the beginning of each scan of a modulation waveform. For details, refer to the HP 8791 Model 10 Frequency Agile Signal Simulator technical data sheet.

Remote Operation

HP-IB Capability: All parameters can be set over HP-IB. Command set follows the recommended formats of IEEE Std. 488-2.

General

Refer to the HP 8791 Model 10 Frequency Agile Signal Simulator technical data sheet for HP-IB and environmental specifications.

Ordering Information

The HP 8791 Model 100 Precision Signal Generator Instrument-on-a-Disk software runs on the HP 8791 Model 10 Frequency Agile Signal Simulator. For more information on any other HP 8791 Family products, contact your HP sales representative.

To receive HP 8791 Model 10 Precision Signal Generator, use Order Number E2502A.

Includes: Instrument-on-a-Disk software and manuals (extra manuals can be ordered using Order Number E2502A Option 0B2).

1 If user patterns total more than 8192 points, not all patterns will be saved with button settings.

HEWLETT PACKARD

For more information, call your local HP sales office listed in the telephone directory white pages. Ask for the Test and Measurement Department, or write to Hewlett-Packard:

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