

# Swept Frequency Synthesizers (Cont.)

## 6700B Series



Built-in pulse generator typically has less than 5 ns rise time over a 25 ns to 99 ns pulse width range.

### High Fidelity Radar Simulation

The 6700B generates pulsed signals in three ways:

- By controlling the built-in pulse modulator with the internal pulse generator, you avoid the inconvenience and expense of an external pulse generator.
- By externally "gating" the internal pulse generator, you can easily create complex pulse bursts.
- By externally controlling the internal pulse generator/modulator, you obtain high pulse fidelity with no droop, minimal overshoot, video feedthrough of less than  $\pm 5$  mVpk, and constant peak power with changing pulse widths.

Accurate rotating antenna simulation is achieved with 0 to 90% modulation depths, ac- or dc-coupled AM, fast frequency agility, and amplitude-modulated pulse envelopes.

Doppler simulation is enhanced with phase-locked and unlocked, dc-coupled FM.

### Receiver Measurement Capability

The growing demand for greater sensitivity and selectivity in EW/ECM, navigation, and communication receivers can be fulfilled only with performance like that of the 6700B. Exceptional EMI and RFI shielding takes the guesswork out of

low signal level tests. The broad frequency range of this one instrument permits measurements at all receiver frequencies—from baseband to microwave. Virtually every receiver characteristic can be measured with ease: sensitivity, selectivity, discriminator alignment, audio noise and distortion, AM reflection, intermodulation, distortion, SINAD, audio hum, and AGC response.

### Wiltron Quality Components

When you consider overall measurement accuracy, the 6700B is superb. Wiltron fundamental oscillators avoid the errors introduced by the subharmonics of multiplier-type oscillators. Wiltron-designed PIN switches hold harmonic levels to better than  $-60$  dBc above 2 GHz, while spurious are typically less than  $-70$  dBc.

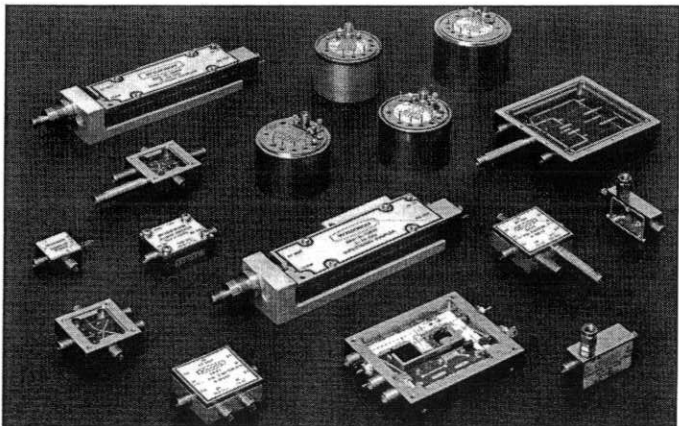
Source match is better than 13 dB return loss (1.6 SWR), a result of the excellent directivity of the Wiltron-designed leveling loop coupler. The addition of external components to improve match is unnecessary.

Also contributing to accuracy is the diode detector in the leveling loop. This component, also Wiltron designed, is digitally calibrated to compensate for variations in the temperature response and linearity. The result is a more accurate RF level.

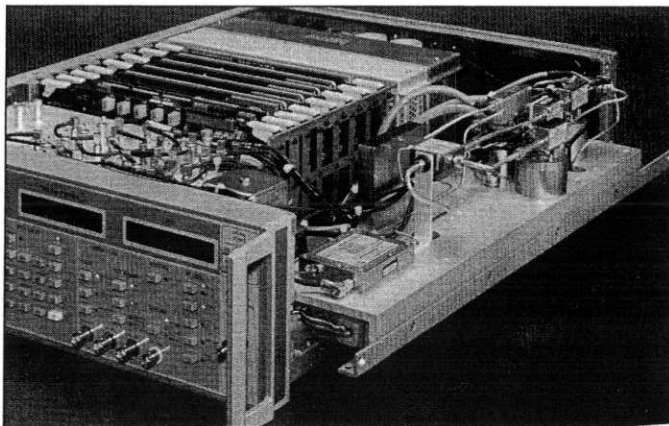
### Serviceability

An inside view of the 6700B provides convincing evidence of the care given to making it serviceable. For instance, a major competitor has 109 potentiometer adjustments in its 26.5 GHz synthesizer. The 6700B has 71 Precision voltage regulators and microprocessor-controlled, digital-to-analog converters are used throughout to eliminate manual adjustments, to improve stability and reliability, and to reduce calibration time. Major functions can be tested and recalibrated from the front panel without an external controller. Internal firmware makes it easy.

To enhance serviceability further, circuitry is divided into readily accessible modules, including one each for the entire front and rear panels. A tilt-out RF deck exposes all microwave components for easy inspection or replacement. Access to the components while the instrument is in operation contributes to efficient troubleshooting.



Precision components manufactured in the Wiltron microelectronics facility contribute greatly to the exceptional performance of the 6700B



Tilt-out microwave deck exposes all high-frequency components and cabling.

## Specifications

### FREQUENCY

Model	Frequency Range	Output Power <sup>①</sup>
6772B <sup>②</sup>	40 to 60 GHz	0 dBm (1 mW)
6769B	10 MHz to 40 GHz	+10 dBm (10 mW), ≤20 GHz +5 dBm (3 mW), >20 GHz
6763B	2 to 40 GHz	+10 dBm (10 mW), ≤20 GHz +5 dBm (3 mW), >20 GHz
6740B	26.5 to 40 GHz	+10 dBm (10 mW)
6759B	10 MHz to 26.5 GHz	+10 dBm (10 mW), ≤20 GHz +5 dBm (3 mW), >20 GHz
6759B-10	10 MHz to 26.5 GHz	+10 dBm (10 mW)
6753B	2 to 26.5 GHz	+10 dBm (10 mW), ≤20 GHz +5 dBm (3 mW), >20 GHz
6753B-10	2 to 26.5 GHz	+10 dBm (10 mW)
6736B	18 to 26.5 GHz	+7 dBm (5 mW)
6736B-10	18 to 26.5 GHz	+10 dBm (10 mW)
6747B	10 MHz to 20 GHz	+10 dBm (10 mW)
6747B-20	10 MHz to 20 GHz	+13 dBm (20 mW)
6737B	2 to 20 GHz	+10 dBm (10 mW)
6737B-20	2 to 20 GHz	+13 dBm (20 mW)
6729B	8 to 20 GHz	+10 dBm (10 mW)
6729B-20	8 to 20 GHz	+13 dBm (20 mW)
6730B	12.4 to 20 GHz	+13 dBm (20 mW)
6730B-40	12.4 to 20 GHz	+16 dBm (40 mW)
6745B	10 MHz to 18 GHz	+10 dBm (10 mW)
6722B	10 MHz to 12.4 GHz	+10 dBm (10 mW)
6722B-20	10 MHz to 12.4 GHz	+13 dBm (20 mW)
6721B	2 to 12.4 GHz	+10 dBm (10 mW)
6721B-20	2 to 12.4 GHz	+13 dBm (20 mW)
6728B	8 to 12.4 GHz	+13 dBm (20 mW)
6728B-40	8 to 12.4 GHz	+16 dBm (40 mW)
6717B	10 MHz to 8.4 GHz	+10 dBm (10 mW)
6717B-20	10 MHz to 8.4 GHz	+13 dBm (20 mW)
6719B	2 to 8.4 GHz	+13 dBm (20 mW)
6709B	10 MHz to 2 GHz	+10 dBm (10 mW)
6709B-40	10 MHz to 2 GHz	+16 dBm (40 mW)

<sup>①</sup>Without optional attenuator. <sup>②</sup>External leveling only.

### CW MODE

**Output:** Nine independent, presettable CW frequencies.

**Accuracy:** Same as internal or external time base.

#### Internal 10 MHz Time Base Stability:

**With Aging:**  $<5 \times 10^{-10}$ /day

**With Temperature:**  $<\pm 5 \times 10^{-9}$  over 0° to +55°C range

**Resolution:** 1 kHz at ≤26.5 GHz  
2 kHz at >26.5 to 40 GHz  
3 kHz at >40 to 60 GHz

**10 MHz Reference Output:** 2 V<sub>p-p</sub> typical into 50Ω. AC coupled. BNC, rear panel, 50Ω impedance.

**External 10 MHz Reference Input:** Accepts external 10 MHz ±100 Hz, 0 to +10 dBm time base signal. Automatically disconnects internal time base. BNC, rear panel, 50Ω impedance.

**High Resolution Input:** Accepts 20–32.1 MHz external synthesizer signal to improve resolution to equal that of external instrument. BNC, rear panel, 50Ω impedance, 0 dBm.

**Switching Time (for any step size):** <15 ms typical, 25 ms max. to within 1 kHz.

**Lock Output:** Provides TTL-high signal when frequency is phase locked.

### SWEEP MODES

#### Analog Sweep

**F1–F2, F3–F4, ΔF F5, and ΔF F6 Sweep Width:** Independently selected, 1 MHz to full range continuous sweep. For >50 MHz sweep width, start/stop and bandswitching frequencies are phase-lock-corrected during every sweep. For ≤50 MHz width, the center frequency is phase-lock-corrected.

**Accuracy:** The lesser of ±30 MHz or ±(2 MHz + 0.25% of sweep width) for sweep speeds of ≤50 GHz/s

**Resolution:** 1 MHz

**Sweep Time Range:** 30 ms to 99 s

#### Phase-Locked Step Sweep

**F1–F2, F3–F4, ΔF F5, and ΔF F6 Sweep Width:** Independently selected, 1 kHz to full range. Every frequency step in sweep range is phase locked.

**Accuracy:** Same as internal or external time base.

**Resolution:** Minimum step size is 1 kHz at ≤26.5 GHz  
2 kHz at >26.5 to 40 GHz  
3 kHz at >40 to 60 GHz

**Number of Steps:** Variable from 1 to 1800

**Dwell Time Per Step:** Variable from 1 ms to 99s

**Switching Time (for any step size):** <15 ms typical, 25 ms max. to within 1 kHz

#### Alternate Sweep:

Sweeps alternately in analog or step sweep between any two of the sweep ranges: F1–F2, F3–F4, ΔF F5, and ΔF F6

#### Manual Sweep:

Provides stepped, phase-locked adjustment of frequencies between sweep limits.

#### Programmable Frequency Agility:

Under GPIB control, up to 512 nonsequential frequencies can be stored and then addressed as a phase-locked step sweep.

**Switching Time (for any step size):** <15 ms typical, 25 ms max. to within 1 kHz.

**Markers:** Up to nine independent, presettable markers.

**Video:** TTL high during marker. BNC, rear panel.

**Intensity (analog sweep only):** Intensified dot on trace. Obtained by momentary dwell in sweep.

**Accuracy:** Same as sweep frequency accuracy.

**Resolution (Step Sweep):** 1 kHz at ≤26.5 GHz  
2 kHz at >26.5 to 40GHz  
3 kHz at >40 to 60 GHz

**Resolution (Analog Sweep):** 1 MHz or sweep width divided by 4096, whichever is greater.

#### Sweep Triggering:

**Auto:** Triggers sweep automatically.

**Line:** Triggers sweep from power line frequency.

**External:** Accepts TTL-high signal of >1 μs width to trigger, abort, or reset analog sweep. BNC, rear panel.

**Single:** Triggers, aborts, and resets a single sweep. Front-panel pushbutton.

**Sweep Dwell Input:** Accepts TTL-low signal to stop sweep. Sweep continues when signal is removed. BNC, rear panel.

**Horizontal Sweep Output:** Provides 0V at beginning to 10V at end of sweep for all sweep modes, regardless of sweep width. In CW mode, voltage is proportional to frequency between 0V at low end and 10V at high end of range. In CW mode, CW RAMP provides a repetitive, 30 ms, 0V to 10V ramp. BNC, rear panel.

**V/GHz Output:** 0.5 V/GHz or 1 V/GHz up to 20V maximum. BNC, rear panel.

**Bandswitch Blanking Output:** +5V or –5V signal coincident with bandswitching points. BNC, rear panel.

**Retrace Blanking Output:** +5V or –5V output signal coincident with sweep retrace. AUX I/O Cannon 25 pin D style, rear panel.

**Pen Lift Output:** Normally open or normally closed internal relay contacts during sweep retrace. BNC, rear panel.

**Sequential Sync Output:** Provides TTL-high signal during retrace and at bandswitching points for interface to network analyzers, –5V during marker and –10V during selected marker. BNC, rear panel.

# Swept Frequency Synthesizers (Cont.)

## 6700B Series

### SPECTRAL PURITY

All specifications apply to the phase-locked CW and Step Sweep Modes.

#### Spurious Signals:

- Subharmonics:**  $\leq 26.5$  GHz: None  
 $26.5$  to  $40$  GHz:  $-20$  dBc
- Harmonics:**  $\leq 2$  GHz:  $-40$  dBc  
 $(-30$  dBc for 6709A-40, 6717A-40, and 6747A-20)  
 $>2$  to  $\leq 26.5$  GHz:  $-60$  dBc  
 $>26.5$  to  $60$  GHz:  $-20$  dBc
- Nonharmonics:**  $-60$  dBc, typically  $-70$  dBc

#### Single-Sideband Phase Noise (dBc, CW mode, max.):

Range (GHz)	Offset From Carrier				
	30 Hz	100 Hz	1 kHz	10 kHz	100 kHz
0.01 to 8	-67	-72	-76	-80	-98
8 to 12.4	-64	-69	-73	-77	-100
12.4 to 20	-60	-65	-69	-73	-100
20 to 26.5	-58	-63	-67	-71	-97
26.5 to 40	-54	-59	-63	-67	-95
40 to 60	-50	-55	-59	-63	-90

#### Power Line and Fan Rotation Spurious (dBc, CW mode, max.):

Range (GHz)	Offset From Carrier		
	<300 Hz	300 Hz to 1 kHz	1 kHz
0.01 to 8	-50	-60	-65
8 to 12.4	-46	-53	-58
12.4 to 20	-41	-48	-53
20 to 26.5	-40	-47	-52
26.5 to 40	-35	-42	-47
40 to 60	-40	-47	-52

#### Residual FM (CW Mode, 50 Hz – 15 kHz BW, typical):

Frequency Range (GHz)	Residual FM (Hz RMS)
0.01 to 2	80
2 to 8	90
8 to 12.4	190
12.4 to 20	240
20 to 26.5	280
26.5 to 40	480
40 to 60	720

#### Residual FM (Analog Sweep, 50 Hz – 15 kHz BW)

Frequency Range (GHz)	Residual FM (kHz RMS)
0.01 to 8	5
8 to 12.4	7
12.4 to 20	10
20 to 26.5	15
26.5 to 40	30
40 to 60	30

### RF OUTPUT

Power level specifications apply at  $25^{\circ}\text{C} \pm 10^{\circ}$ . Please see page 51 for power ratings.

#### Leveled Output Power Range:

- Without Attenuator:** 12 dB  
**With Option 2A, 2B, or 2C:** 122 dB  
**Attenuator Insertion Loss:** Reduces rated power by 3 dB max.

- Output Power Entry Resolution:** 0.01 dB  
**Output Power Display Resolution:** 0.1 dB

- Power Level Stability with Temperature:** Typically 0.02 dB/ $^{\circ}\text{C}$   
**Power Level Switching Time (to within specified accuracy):**  
**Without Change in Step Attenuator (pulse off):**  $<50$   $\mu\text{s}$   
**With Change in Step Attenuator (pulse off):**  $<20$  ms

### Output Power Accuracy and Flatness: Step Sweep and CW Modes:

Attenuation Below Maximum Power	Frequency			
	0.01 to 20 GHz	20 to 26.5 GHz	26.5 to 40 GHz	40 to 60 GHz <sup>3</sup>
<b>Accuracy</b> <sup>1</sup>				
0 to 12 dB	$\pm 0.6$ dB	$\pm 0.6$ dB	$\pm 0.8$ dB	N/A
0 to 30 dB <sup>2</sup>	$\pm 1.4$ dB	$\pm 2.0$ dB	$\pm 3.0$ dB	N/A
30 to 60 dB <sup>2</sup>	$\pm 2.6$ dB	$\pm 2.6$ dB	$\pm 4.6$ dB	N/A
60 dB <sup>2</sup>	$\pm 3.1$ dB	$\pm 4.0$ dB	$\pm 5.0$ dB	N/A
<b>Flatness</b>				
0 to 12 dB	$\pm 0.4$ dB	$\pm 0.4$ dB	$\pm 0.6$ dB	N/A
0 to 30 dB <sup>2</sup>	$\pm 0.8$ dB	$\pm 1.0$ dB	$\pm 2.0$ dB	N/A
30 to 60 dB <sup>2</sup>	$\pm 2.0$ dB	$\pm 2.0$ dB	$\pm 3.0$ dB	N/A
60 dB <sup>2</sup>	$\pm 2.5$ dB	$\pm 3.0$ dB	$\pm 4.0$ dB	N/A

<sup>1</sup>Includes flatness variations. <sup>2</sup>For models with attenuator. <sup>3</sup>External leveling.

### Analog Sweep Modes (typical):

Attenuation Below Maximum Power	Frequency			
	0.01 to 20 GHz	20 to 26.5 GHz	26.5 to 40 GHz	40 to 60 GHz <sup>3</sup>
<b>Accuracy</b> <sup>1</sup>				
0 to 12 dB	$\pm 1.0$ dB	$\pm 1.5$ dB	$\pm 2.0$ dB	N/A
0 to 30 dB <sup>2</sup>	$\pm 3.5$ dB	$\pm 3.6$ dB	$\pm 4.6$ dB	N/A
30 to 60 dB <sup>2</sup>	$\pm 4.0$ dB	$\pm 4.2$ dB	$\pm 5.2$ dB	N/A
60 dB <sup>2</sup>	$\pm 5.0$ dB	$\pm 5.2$ dB	$\pm 6.2$ dB	N/A
<b>Flatness</b>				
0 to 12 dB	$\pm 1.0$ dB	$\pm 1.5$ dB	$\pm 2.0$ dB	N/A
0 to 30 dB <sup>2</sup>	$\pm 3.0$ dB	$\pm 3.1$ dB	$\pm 4.1$ dB	N/A
30 to 60 dB <sup>2</sup>	$\pm 3.5$ dB	$\pm 3.6$ dB	$\pm 4.6$ dB	N/A
60 dB <sup>2</sup>	$\pm 4.0$ dB	$\pm 4.2$ dB	$\pm 5.2$ dB	N/A

<sup>1</sup>Includes flatness variations. <sup>2</sup>For models with attenuator. <sup>3</sup>External leveling.

### Source Impedance: 50 $\Omega$

#### Source SWR (internal leveling):

- Without Attenuator:**  $<1.7$  at  $<2$  GHz  
 $<1.6$  at 2 to 20 GHz  
 $<2.0$  at  $>20$  GHz

**With Attenuator:**  $<2$  typical

**Level Offset:** Offsets displayed power level to establish a new reference level.

**RF On/Off Between Frequency Steps:** RF On or Off during frequency switching in CW or step sweep mode.

**Retrace RF On/Off:** Rear panel switch selects RF On or Off during retrace.

**RF Off:** With RF control in Off position, oscillators are turned fully off.

**Internal Leveling:** Power is leveled at output connector in all modes.

#### External Leveling:

**External Detector:** Levels power at remote detector location. Front panel BNC connector, positive or negative 0.5 mV to 500 mV. EXT GAIN CAL adjusts input gain to optimum value.

**External Power Meter:** Levels output power at remote power sensor location. Front panel BNC connector,  $\pm 1\text{V}$  full scale EXT GAIN CAL adjusts input gain to optimum value.

**External Leveling Bandwidth (pulse off):** 30 kHz typical in Detector mode,  $>0.7$  Hz typical in Power Meter mode.

**Unleveled Indicator:** Lights when output power is unleveled.

### POWER SWEEP

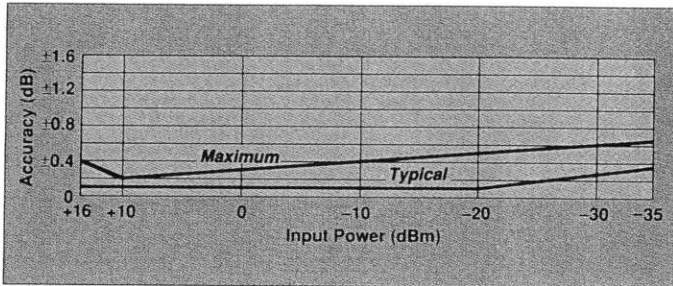
- Range:** Sweeps between any two power levels.  
**Resolution:** 0.01 dB/step  
**Accuracy:** Same as output accuracy.  
**Number of Steps:** Variable from 1 to 1000.  
**Dwell Time per Step:** Variable from 50 ms to 10s.

## POWER METER

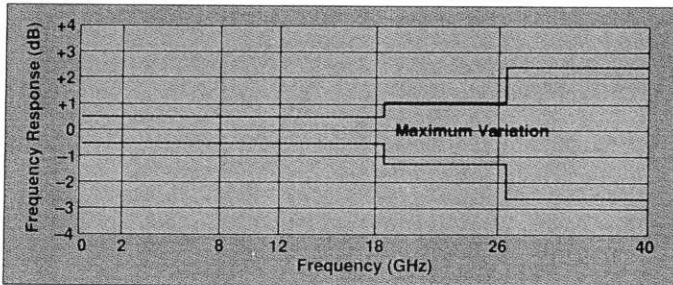
**Built-In Power Meter Range:** +16 dBm to -35 dBm. Compatible with Wiltron 560-7 or 6400-71 Series Detectors. Rear panel input.  
**Built-In Power Meter Accuracy:**

$$\text{Power Measurement Accuracy} = \text{Meter Accuracy} + \text{Detector Frequency Response}$$

### Meter Accuracy (25°C):



### Detector Frequency Response:



## MODULATION

AM, FM, and pulse modulation can be applied simultaneously.

### PULSE MODULATION

**On/Off Ratio:** 80 dB  
**Pulse Rise and Fall Time:** <5 ns typical, 10 ns max.  
**Pulse Overshoot and Ringing:** <10% typical  
**Pulse Width Compression:** ±5 ns max.  
**Video Feedthrough:** <±2 mVpk typical, ±5 mVpk max.

### Accuracy of Peak Pulse Power (relative to CW level, 100 Hz ≤ PRF ≤ 1 MHz):

Pulse Width	<2 GHz	≥2 GHz
<100 ns	⊖	⊖
100 ns to 200 ns	⊖	±1.5 dB
200 ns to 500 ns	⊖	±1.5 dB
500 ns to <1 μs	±1.2 dB	±0.8 dB
1 μs to <2 μs	±0.9 dB	±0.5 dB
2 μs to <5 μs	±0.6 dB	±0.3 dB
≥5 μs	±0.3 dB	±0.3 dB

⊖ RF Power is controllable, but not automatically leveled for very narrow pulses.

### Internal Pulse Generator:

**Pulse Period:** 1 μs to 100 ms  
**Pulse Period Resolution:** 0.1 μs (1 μs to 99.9 μs pulse period)  
 1 μs (100 μs to 999 μs pulse period)  
 10 μs (1 ms to 9.99 ms pulse period)  
 100 μs (10 ms to 100 ms pulse period)

**Pulse Period Accuracy:** ±10 ns, typical

**Gate Width Range:** 100 ns to infinity

**Pulse Input:** Rear panel switch selects TTL-high or -low signal for triggering or gating internal pulse generator. BNC, rear panel.

**Pulse Sync Output:** TTL-high signal, 100 ns minimum pulse width, preceding RF pulse by 100 ns. BNC, rear panel.

### External Pulse Input:

**Pulse Width Range:** 10 ns to CW  
**Repetition Rate:** 10 Hz to 10 MHz  
**External Trigger:** TTL  
**Delay Time:** 50 ns typical  
**Delay Range:** 200 ns to 100 ms  
**Delay Resolution:** 100 ns to 99.9 μs: 100 ns  
 100 μs to 999 μs: 1 μs  
 1 ms to 9.9 ms: 10 μs  
 10 ms to 100 ms: 100 μs

### AMPLITUDE MODULATION

Specifications are measured at 1 kHz rate, 30% AM depth, with internally leveled RF at 4 dB below maximum rated output, unless otherwise noted.

**AM Input:** Rear panel switch selects ac or dc coupling. BNC, front and rear panel, 600Ω impedance.

**Sensitivity:** 1%/V to 100%/V, selectable

**Sensitivity Accuracy:** ±10% of displayed value ±1% AM plus AM flatness

**Depth:** 0-90% at ≤26.5 GHz, typical; 0-80% at >26.5 GHz, typical; with RF level at 6 dB below maximum rated output

**AM Depth Metering Accuracy:** Same as Sensitivity Accuracy

**Bandwidth (3 dB, pulse off):** DC to 100 kHz or 50 Hz to 100 kHz, selectable

### AM Bandwidth with Pulse Modulation (typical):

10 kHz for pulse widths of ≥16 μs  
 10 kHz times the duty factor for pulse widths of <16 μs

**Flatness (relative to 1 kHz rate, pulse off):** ±0.3 dB from dc to 10 kHz

**Distortion:** <5% typical

**Incidental Phase Modulation (100 Hz-10 kHz modulation rates):** <0.4 radians, typical

**Incidental FM:** Incidental phase modulation times modulation frequency.

### FREQUENCY MODULATION

**FM Input:** ±1 Vpk provides full range frequency deviation. BNC, front and rear panel, 600Ω impedance.

### Sensitivity:

**Phase-Locked Mode:** 10 kHz/V to 5 MHz/V, selectable to 3 digits

**Unlocked Mode:** 10 kHz/V to 25 MHz/V, selectable to 3 digits

**Accuracy:** ±5% at 40 kHz modulation rate

### Maximum Deviation:

**Phase-Locked Mode:** ±20 times the modulation rate

**Unlocked Mode:** ±25 MHz

**Deviation Meter Accuracy:** ±5% of full range plus FM flatness

### Modulation Rates (3 dB BW):

**Phase-Locked Mode:**

100 Hz-250 kHz (500 kHz typical) at ≤300 kHz/V sensitivity

1-250 kHz (500 kHz typical) at >300 kHz/V sensitivity

**Unlocked Mode:** DC to 250 kHz (500 kHz typical) rate

### Flatness (relative to 40 kHz rate):

**Phase-Locked Mode:**

±1 dB from 200 Hz to 200 kHz (500 kHz typical)

at ≤300 kHz/V sensitivity

±1 dB from 3 kHz to 200 kHz (500 kHz typical)

at 300 kHz/V sensitivity

**Unlocked Mode:** ±1 dB from dc to 200 kHz

**Distortion at 1 kHz:** <10%

**Incidental AM:** ±0.2% per MHz deviation

### INSTRUMENT STATUS (IEEE-488)

**GPIB Indicators:** LED lights indicate the following conditions:

**Remote:** Operating on GPIB

**Talk:** Talking on GPIB

**Listen:** Listening on GPIB

**SRG:** Sending a service request

**Local Lockout:** Disables the RETURN TO LOCAL pushbutton.

Instrument can be placed in local mode only via GPIB.

**Remote Operation:** All front-panel functions except line power and GPIB address are programmable via GPIB (IEEE-488). Additional programmable commands include: front-panel settings, stored setups, error/malfunction messages, operational status, self-test diagnostics.

# Swept Frequency Synthesizers (Cont.)

## 6700B Series

### INSTRUMENT STATUS (Cont.)

**GPIB Speed:** 15K bytes/s  
 **GPIB Address:** Selectable from front panel  
 **IEEE-488 Interface Functions:**  
 **Source:** SH1  
 **Acceptor Handshake:** AH1  
 **Talker:** T6  
 **Listener:** L4  
 **Service Request:** SR1  
 **Remote Local:** RL1  
 **Parallel Poll:** PP1  
 **Device Clear:** DC1  
 **Device Trigger:** DT1

### GENERAL

**Stored Setups:** Saves front-panel settings and nine additional stored setups for approximately ten years. Setups can be recovered directly by using the RECALL function or sequentially by using the SCAN function. Whenever the instrument is turned on, control settings come on at the same functions and values existing when power was removed.

**Memory Sequencing Input:** Accepts TTL-low signal to sequence through nine stored setups. BNC, rear panel.

**Self-Test:** Self-test is performed when power is applied or SELF TEST key is pressed. If an error is detected, a diagnostic code appears, identifying the cause and location of the error.

**Secure Mode:** Front-panel readouts are blanked to protect confidential test parameters.

**Parameter Entry:** Instrument-controlled parameters may be entered in 3 ways: keypad, control knob, or step DECR/INCR keys. Controlled parameters are frequency, power level, sweep speed, dwell time, pulse width, pulse repetition rate, AM % depth, AM sensitivity, and FM sensitivity. Entry is terminated by pressing appropriate unit key, i.e., GHz, MHz, dBm, ms, %, etc. Values of each are displayed on LCD readout.

**Reset Control:** Returns test parameters to preset default values

**Warm-Up Time From Standby:** 30 minutes

**Warm-Up Time From Power Application:** 72 hours to achieve  $1 \times 10^{-9}$  per day frequency stability

### Output Connectors:

**Models with Output Frequency  $\leq 20$  GHz:** Type N female

**Models with Output Frequency  $>20$  GHz and  $\leq 40$  GHz:** K female

**Model 6772B:** WR19 Waveguide (UG-383/U Flange)

**Weight:** 25 kg (55 lb.) maximum

**Dimensions:** 133 H x 429 W x 584 D mm

(5-1/4 H x 16-7/8 W x 23 D in.)

**Power:** 90-130V or 120-240V, 50-400 Hz, 220 VA

(30 VA in Standby)

**Standby:** With ac line power connected, unit is placed in standby when power switch is released from On position.

### ENVIRONMENTAL

**Operating Temperature Range:** 0°C to 55°C

**Relative Humidity:** 95%

**EMI:** Meets the conducted and radiated emission requirements of MIL-STD-461B, CE03, RE02, Part 4, Class A3 and VDE 0871/1978, Level B. Tested for conducted and radiated susceptibility per MIL-STD-462, CS02, CS06, and RS03 with no functional failures.

### ACCESSORIES

#### Power Meter Extender Cables:

**800-109 Extender Cable, 7.6 m (25 ft.)** . . . . . \$50

**800-110 Extender Cable, 15.2 m (50 ft.)** . . . . . \$75

**800-111 Extender Cable, 30.5 m (100 ft.)** . . . . . \$100

**800-112 Extender Cable, 61.0 m (200 ft.)** . . . . . \$180

#### GPIB Cables:

**2100-1 GPIB Cable, 1 m (3.3 ft.) long** . . . . . \$60

**2100-2 GPIB Cable, 2 m (6.6 ft.) long** . . . . . \$75

**2100-4 GPIB Cable, 4 m (13.2 ft.)** . . . . . \$95

**2100-5 GPIB Cable, 0.5 m (1.65 ft.)** . . . . . \$55

**Transit Case 760-81 for 6700B** . . . . . \$655

## Ordering Information

Model	Frequency Range	Output Power <sup>①</sup> (Minimum)	Price
6709B	10 MHz to 2 GHz	+10 dBm (10 mW)	\$26,900
6709B-40	10 MHz to 20 GHz	+16 dBm (40 mW)	\$27,900
6717B	10 MHz to 8.4 GHz	+10 dBm (10 mW)	\$32,000
6717B-20	10 MHz to 8.4 GHz	+13 dBm (20 mW)	\$33,000
6719B	2 to 8.4 GHz	+13 dBm (20 mW)	\$28,300
6721B	2 to 12.4 GHz	+10 dBm (10 mW)	\$33,600
6721B-20	2 to 12.4 GHz	+13 dBm (20 mW)	\$35,100
6722B	10 MHz to 12.4 GHz	+10 dBm (10 mW)	\$37,200
6722B-20	10 MHz to 12.4 GHz	+13 dBm (20 mW)	\$38,500
6728B	8 to 12.4 GHz	+13 dBm (20 mW)	\$26,500
6728B-40	8 to 12.4 GHz	+16 dBm (40 mW)	\$28,100
6729B	8 to 20 GHz	+10 dBm (10 mW)	\$33,000
6729B-20	8 to 20 GHz	+13 dBm (20 mW)	\$34,600
6730B	12.4 to 20 GHz	+13 dBm (20 mW)	\$26,900
6730B-40	12.4 to 20 GHz	+16 dBm (40 mW)	\$28,800
6736B	18 to 26.5 GHz	+7 dBm (5 mW)	\$28,500
6736B-10	18 to 26.5 GHz	+10 dBm (10 mW)	\$30,000
6737B	2 to 20 GHz	+10 dBm (10 mW)	\$35,700
6737B-20	2 to 20 GHz	+13 dBm (20 mW)	\$37,300
6740B	26.5 to 40 GHz	+10 dBm (10 mW)	\$33,500
6745B	10 MHz to 18 GHz	+10 dBm (10 mW)	\$37,300
6747B	10 MHz to 20 GHz	+10 dBm (10 mW)	\$37,800
6747B-20	10 MHz to 20 GHz	+13 dBm (20 mW)	\$38,800
6753B	2 to 26.5 GHz	+10 dBm (10 mW), $\leq 20$ GHz +5 dBm (3 mW), $>20$ GHz	\$43,000
6753B-10	2 to 26.5 GHz	+10 dBm (10 mW)	\$45,000
6759B	10 MHz to 26.5 GHz	+10 dBm (10 mW), $\leq 20$ GHz +5 dBm (3 mW), $>20$ GHz	\$46,000
6759B-10	10 MHz to 26.5 GHz	+10 dBm (10 mW)	\$48,000
6763B	2 to 40 GHz	+10 dBm (10 mW), $\leq 20$ GHz +5 dBm (3 mW), $>20$ GHz	\$53,000
6769B	10 MHz to 40 GHz	+10 dBm (10 mW), $\leq 20$ GHz +5 dBm (3 mW), $>20$ GHz	\$57,500
6772B <sup>②</sup>	40 to 60 GHz	+10 dBm (10 mW)	\$39,500

<sup>①</sup>Without optional attenuator. <sup>②</sup>External leveling only.

### Options:

**Rack Mounting, Option 1:** Rack mount kit with chassis track slides and mounting ears. Weight is 2.3 kg (5 lb). . . . . \$350

**Attenuator, Option 2:** Adds 10 dB step attenuator to increase the RF output range. Reduces rated power by 3 dB (4 dB for Option 2C).

For Models With Upper Frequency Limit	Maximum Attenuation	Order	Price
$\leq 20$ GHz	110 dB	Option 2A	\$1,600
26.5 GHz	110 dB	Option 2B	\$2,100
40 GHz	110 dB	Option 2C	\$3,800

**Rear Panel RF Output, Option 9K:** Adds rear panel K Connector RF output. Deletes front panel connector. Degrades output power, flatness, and SWR. . . . . \$500

### Power Meter Detectors:

Detector Model	Frequency Range	Input Connector	Price
6400-71N50	10 MHz to 2 GHz	N Male, 50Ω	\$375
6400-71N75-1	10 MHz to 2 GHz	N Male, 75Ω	\$475
560-7A50	10 MHz to 18 GHz	GPC-7	\$550
560-7S50	10 MHz to 18.5 GHz	WSMA Male	\$525
560-7N50	10 MHz to 18.5 GHz	N Male	\$525
560-7S50-2	10 MHz to 26.5 GHz	WSMA Male	\$600
560-7K50	10 MHz to 40 GHz	K Male	\$675