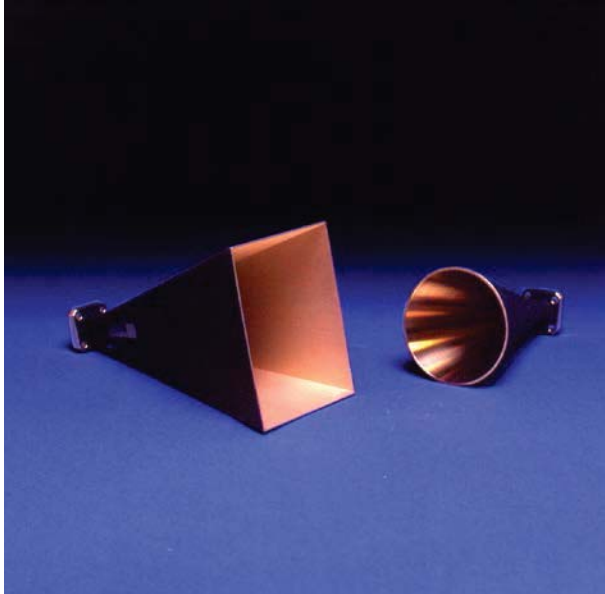


## STANDARD GAIN CONICAL AND PYRAMIDAL HORNS



### DESCRIPTION

Millitech series SGH standard gain conical and pyramidal horn antennas are electroformed to give precise dimensions and reproducible electrical characteristics. These feedhorns measure gain for other antennas by comparing the signal level of a test antenna to the standard gain horn, then adding this difference to the calibrated gain of the standard gain horn at the test frequency. They can also be used as reference sources in dual-channel antenna test receivers, or as receiver horns for radiation monitoring.

Conical standard gain horns are best suited for applications requiring a small,

### FEATURES:

- Low VSWR
- Lightweight
- Low cost

### APPLICATIONS:

- Antenna measurements
- Feeds for prime focus and Cassegrain antennas
- Array elements

inexpensive antenna capable of polarization diversity. The conical standard gain horns can support horizontal, vertical, left- and right-hand circular polarization when used with a polarizer. Typical beamwidth is 16° and typical midband gain is 21 dBi. Pyramidal horns have a typical beamwidth of 25° and a typical midband gain of 24 dBi.

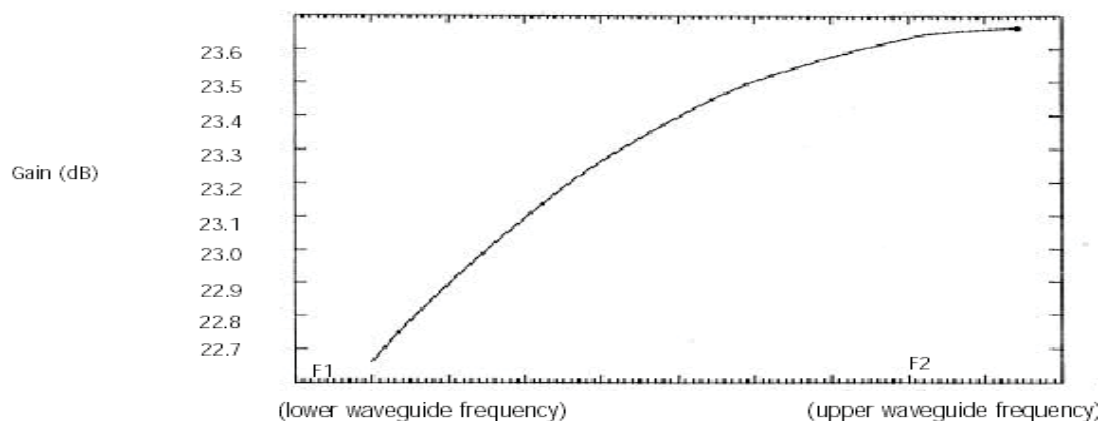
In addition to the standard models listed, custom feedhorns are available upon request. For antennas with lower sidelobes and symmetrical radiation patterns, see series SFH. Also see series CHA for custom conical feedhorns with beamwidths other than those provided by series SGH.

## ELECTRICAL SPECIFICATIONS\*

Pyramidal Horns												
Model Number	SGH-42	SGH-28	SGH-22	SGH-19	SGH-15	SGH-12	SGH-10	SGH-08	SGH-06	SGH-05	SGH-04	SGH-03
Frequency band and range (GHz)	K 18-26.5	Ka 26.5-40	Q 33-50	U 40-60	V 50-75	E 60-90	W 75-110	F 90-140	D 110-170	G 140-220	- 170-260	- 220-325
Gain (dB)	24	24	24	24	24	24	24	24	24	24	24	24
VSWR	1.2:1	1.2:1	1.2:1	1.2:1	1.2:1	1.2:1	1.2:1	1.25:1	1.25:1	1.25:1	1.25:1	1.25:1
Conical Horns												
Gain (dB)	21	21	21	21	21	21	21	21	21	21	21	21
VSWR	1.2:1	1.2:1	1.2:1	1.2:1	1.2:1	1.2:1	1.2:1	1.25:1	1.25:1	1.25:1	1.25:1	1.25:1

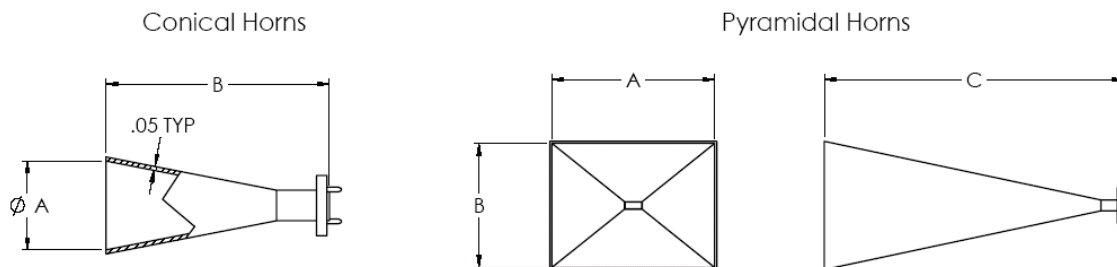
\*All specifications listed are typical values.

## TYPICAL PERFORMANCE



NOTE: Band specific plots available upon request.

## OUTLINE DRAWINGS\*



\*The outlines shown may not reflect the latest information. Please contact Millitech for current outline drawings.

## MECHANICAL SPECIFICATIONS

### Circular Waveguide Output – Conical Horns

Diameter (in)	Frequency Range	A (in/mm)	B (in/mm)	Flange MIL.F-3922
0.455	17.5-20.5	2.300/58.420	5.000/127.000	/54-001*
0.396	20.0-24.5	2.660-67.564	4.976/126.390	/54-001*
0.328	24.0-26.5	2.350/59.690	4.384/111.354	/54-001*
0.315	26.5-33.0	1.800/45.720	3.300/83.820	/54-003*
0.250	33.0-38.5	1.660/42.164	3.097/78.664	/54-003*
0.219	38.5-40.0	1.512/38.405	2.821/71.653	/54-003*
0.250	33.0-38.5	1.440/36.576	2.700/68.580	/67B-006
0.219	38.5-43.0	1.456/39.982	2.717/69.012	/67B-006
0.188	43.0-50.0	1.276/32.410	2.381/60.477	/67B-006
0.210	40.0-43.0	1.180/29.972	2.250/57.150	/67B-007
0.188	43.0-50.0	1.276/32.410	2.381/60.477	/67B-007
0.165	50.0-60.0	1.079/27.407	2.013/51.130	/67B-007
0.165	50.0-58.0	0.950/24.130	1.900/48.260	/67B-008
0.141	58.0-68.0	0.942/23.927	1.757/44.628	/67B-008
0.125	68.0-75.0	0.830/21.082	1.548/39.319	/67B-008
0.136	60.0-66.0	0.784/19.914	1.600/40.640	/67B-009
0.125	66.0-88.0	0.770/19.558	1.438/36.525	/67B-009
0.094	88.0-90.0	0.667/16.942	1.244/31.598	/67B-009
0.112	75.0-88.0	0.644/16.358	1.300/33.020	/67B-010
0.094	88.0-110.0	0.599/15.215	1.118/28.397	/67B-010
0.089	90.0-115.0	0.514/13.056	1.100/27.940	/67B-M08
0.075	115.0-140.0	0.465/11.811	0.868/22.047	/67B-M08
0.073	110.0-140.0	0.418/10.617	0.900/22.860	/67B-M06
0.059	140.0-160.0	0.396/10.058	0.738/18.745	/67B-M06
0.058	140.0-220.0	0.328/8.331	0.750/19.050	/67B-M05
0.049	170.0-260.0	0.276/7.010	0.650/16.510	/67B-M04
0.039	220.0-325.0	0.218/5.537	0.550/13.970	---

### Rectangular Waveguide Output – Pyramidal Horns

Model Number	A (in/mm)	B (in/mm)	C (in/mm)	Flange MIL.F-3922
SGH-42	4.068/103.327	3.093/78.562	7.480/189.992	/54-001*
SGH-28	2.712/68.885	2.062/52.375	5.087/129.210	/54-003*
SGH-22	2.170/55.118	1.650/41.910	4.070/103.378	/67B-006
SGH-19	1.821/46.253	1.385/35.179	3.480/88.392	/67B-007
SGH-15	1.434/36.424	1.090/27.686	2.775/70.485	/67B-008
SGH-12	1.182/30.023	0.898/22.809	2.348/59.639	/67B-009
SGH-10	0.969/24.613	0.736/18.694	1.938/49.225	/67B-010
SGH-08	0.775/19.685	0.589/14.961	1.561/39.649	/67B-M08
SGH-06	0.630/16.002	0.479/12.167	1.265/32.131	/67B-M06
SGH-05	0.494/12.548	0.376/9.550	1.036/26.314	/67B-M05
SGH-04	0.417/10.592	0.317/8.052	0.855/21.717	/67B-M04
SGH-03	0.329/8.357	0.250/6.350	0.707/17.958	---

\* With #4-40 threaded holes.

## HOW TO ORDER

<b>Specify Model Number</b> <b>SGH-XX-ABCCC</b>
<b>XX</b> = Waveguide Band <b>WR</b> – number
<b>A</b> = Flange Type <b>R</b> – round (not available in WR-42) <b>S</b> – square (WR-42 and WR-28 only) <b>A</b> – Precision flange per Millitech IS000131, flat option (WR-08 through WR-05 only)
<b>B</b> = Horn Type <b>P</b> – pyramidal (rectangular waveguide only) <b>C</b> – conical
<b>CCC</b> = Circular Waveguide Diameter (in) <b>See Waveguide Sizes Table</b> (next page) (conical horn only) Specify ØØØ for rectangular waveguide output (pyramidal horn only)

### EXAMPLE:

**To Order:** series SGH pyramidal standard gain horn with rectangular waveguide output in WR-10 waveguide band with a round flange.

**Specify:** SGH-10-RPØØØ

## CIRCULAR WAVEGUIDE SIZES

Rectangular Waveguide Band	Circular Diameter Size	Frequency Range (GHz)*	Circular Waveguide Diameter (in/mm)
<b>K</b>	Large	17.5-20.5	0.455/11.56
	Medium	20.0-24.5	0.396/10.06
	Small	24.0-26.5	0.328/8.33
<b>Ka</b>	Large	26.5-33.0	0.315/8.00
	Medium	33.0-38.5	0.250/6.35
	Small	38.5-40.0	0.219/5.56
<b>Q</b>	Large	33.0-38.5	0.250/6.35
	Medium	38.5-43.0	0.219/5.56
	Small	43.0-50.0	0.188/4.78
<b>U</b>	Large	40.0-43.0	0.210/5.33
	Medium	43.0-50.0	0.188/4.78
	Small	50.0-60.0	0.165/4.19
<b>V</b>	Large	50.0-58.0	0.165/4.19
	Medium	58.0-68.0	0.141/3.58
	Small	68.0-75.0	0.125/3.18
<b>E</b>	Large	60.0-66.0	0.136/3.45
	Medium	66.0-82.0	0.125/3.18
	Small	82.0-90.0	0.094/2.39
<b>W</b>	Large	75.0-88.0	0.112/2.84
	Small	88.0-110.0	0.094/2.39
<b>F</b>	Large	90.0-115.0	0.089/2.26
	Small	115.0-140.0	0.075/1.91
<b>D</b>	Large	110.0-140.0	0.073/1.85
	Small	140.0-160.0	0.059/1.50
<b>G</b>	Large	140.0-180.0	0.058/1.47
	Small	180.0-220.0	0.045/1.14
---	---	170.0-260.0	0.049/1.25
---	---	220.0-325.0	0.039/0.99

\*If the required frequencies fall within two waveguide diameter sizes, the larger one should be selected.