

# Circular and Rectangular Horn Antennas

Bulletin No. ACH & ARH

## FEATURES

- ❖ Standard gain
- ❖ Low side lobes
- ❖ Ridged configuration
- ❖ Gold plated finishing
- ❖ Low cost

## APPLICATIONS

- ❖ Antenna range reference
- ❖ Radiation element for sub-systems



ACH & ARH Series

## DESCRIPTION

**ACH and ARH** series circular and rectangular gain horns are offered for the frequency range of 18 to 110 GHz. The standard gain value and corresponding half power beamwidth at mid-frequency point of each waveguide band are 15, 20, 23, 25 dBi and 24, 13, 9, 7 degrees, respectively. Other gain values are available as custom order. The standard circular gain horns are equipped with circular waveguide interface, while rectangular waveguide interface are available. Other circular waveguide size is available per request. The rectangular gain horns are offered with standard waveguide interface.

## STANDARD GAIN HORN SPECIFICATIONS

Circular Horn	K	Ka	Q	U	V	E	W
Model Numbers <sup>1</sup>	ACH - DDD GG - 02 (Where DDD is the diameter in mils and GG is the gain in dB)						
Frequency Range (GHz)	20 to 24.5	33 to 38.5	38.5 to 43	43 to 50	58 to 68	66 to 88	88 to 110
Circular Waveguide Size (Dia, Inch)	0.356	0.250	0.219	0.188	0.141	0.125	0.094
Gain (dBi @ Fo, Typical)	15.0, 20.0, 23.0, 25.0						
3 dB Beamwidth (° @ Fo, Typical)	24.0, 13.0, 9.0, 7.0						
Sidelobe Level (dB, Typical)	-18.0						
Outline Drawing	WT-B-2						

Rectangular Horn	K	Ka	Q	U	V	E	W
Model Numbers <sup>2</sup>	ARH - WG GG - 02 (Where WG is the waveguide size and GG is the gain in dB)						
Frequency Range (GHz)	18 to 26.5	26.5 to 40	33.0 to 50	40 to 60	50 to 75	60 to 90	75 to 110
Circular Waveguide Size (Dia, Inch)	WR-42	WR-28	WR-22	WR-19	WR-15	WR-12	WR-10
Gain (dBi @ Fo, Typical)	15.0, 20.0, 23.0, 25.0						
3 dB Beamwidth, E (° @ Fo, Typical)	22.0, 12.0, 9.0, 7.0						
3 dB Beamwidth, H (° @ Fo, Typical)	22.0, 12.0, 9.0, 7.0						
Sidelobe Level (dB, Typical)	-18.0						
Outline Drawing	WT-B-1						

Note: 1. To order a Ka band circular gain horn with 0.250" diameter interface, 20 dBi gain, specify ACH-25020-02.

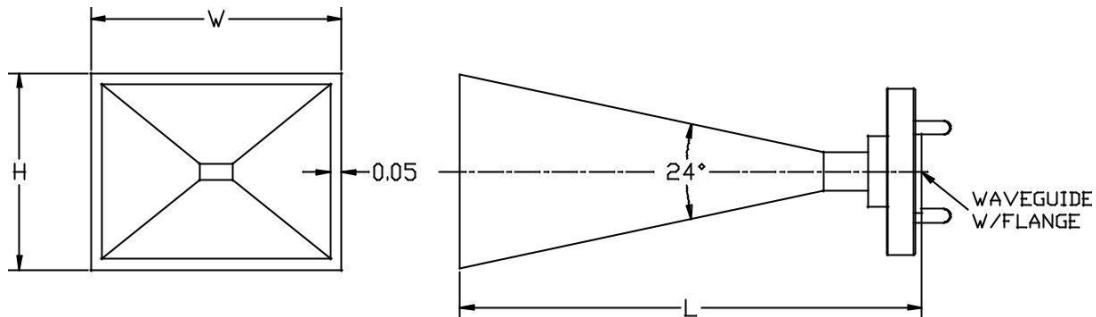
2. To order a W band rectangular gain horn with 20 dBi gain, specify ARH-1020-02.

3. The model number for a horn antenna with non-standard gain or different circular waveguide size may be specified in the similar manner mentioned above.

4. The model number for circular gain horn with rectangular waveguide is specified as ACH-WG GG-01, where WG is the waveguide size and GG is the gain in dB. For example, specify ACH-22 20-01 for a 20dBi gain circular gain horn with WR-22 waveguide interface.

# Antenna Outline Drawings

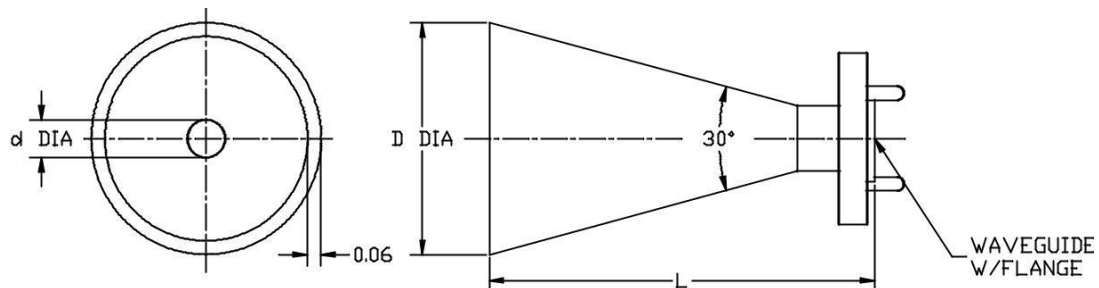
WT-B-1



Band	Frequency	Flange	W x H x L			
			Gain=15dB, BW=22°	Gain=20dB, BW=12°	Gain=23dB, BW=9°	Gain=25dB, BW=7°
K	24GHz	UG595/U	1.56 x 1.21 x 2.80	2.69 x 2.08 x 4.80	3.76 x 2.89 x 6.80	4.71 x 3.62 x 8.40
Ka	35GHz	UG599/U	1.10 x 0.86 x 2.10	1.88 x 1.46 x 3.40	2.61 x 2.02 x 4.80	3.26 x 2.51 x 6.00
Q	42GHz	UG383/U	0.93 x 0.74 x 1.70	1.58 x 1.23 x 2.80	2.19 x 1.70 x 3.90	2.73 x 2.11 x 4.90
U	50GHz	UG383/U-M	0.80 x 0.63 x 1.50	1.34 x 1.05 x 2.50	1.86 x 1.44 x 3.40	2.31 x 1.79 x 4.30
V	60GHz	UG385/U	0.68 x 0.54 x 1.40	1.14 x 0.89 x 2.20	1.56 x 1.22 x 3.00	1.94 x 1.51 x 3.60
E	77GHz	UG387/U	0.55 x 0.45 x 1.20	0.91 x 0.72 x 1.80	1.24 x 0.97 x 2.40	1.54 x 1.20 x 3.00
W	94GHz	UG387/U-M	0.47 x 0.38 x 1.00	0.76 x 0.60 x 1.50	1.03 x 0.81 x 2.10	1.28 x 1.00 x 2.50

Dimensions are in inches

WT-B-2



Band	Frequency	Flange	D x d x L			
			Gain=15dB, BW=24°	Gain=20dB, BW=13°	Gain=23dB, BW=9°	Gain=25dB, BW=7°
K	24GHz	UG595/U	1.31 x 0.368 x 2.30	2.36 x 0.368 x 4.40	3.39 x 0.368 x 6.30	4.34 x 0.368 x 8.00
Ka	35GHz	UG599/U	0.93 x 0.250 x 1.70	1.65 x 0.250 x 3.00	2.36 x 0.250 x 4.30	3.01 x 0.250 x 5.50
Q	42GHz	UG383/U	0.80 x 0.219 x 1.30	1.40 x 0.219 x 2.50	1.99 x 0.219 x 3.60	2.53 x 0.219 x 4.60
U	50GHz	UG383/U-M	0.69 x 0.188 x 1.20	1.19 x 0.188 x 2.10	1.69 x 0.188 x 3.10	2.14 x 0.188 x 3.90
V	60GHz	UG385/U	0.60 x 0.141 x 1.10	1.02 x 0.141 x 1.80	1.43 x 0.141 x 2.60	1.81 x 0.141 x 3.30
E	77GHz	UG387/U	0.49 x 0.125 x 0.90	0.82 x 0.125 x 1.50	1.14 x 0.125 x 2.10	1.43 x 0.125 x 2.70
W	94GHz	UG387/U-M	0.42 x 0.094 x 0.70	0.69 x 0.094 x 1.20	0.96 x 0.094 x 1.80	1.20 x 0.094 x 2.30

Dimensions are in inches

The flange pattern shown is for illustration purpose. Refer to Technical Reference Section for flange pattern details.  
The outline drawings shown are standard versions. Contact factory for your specific package requirements.