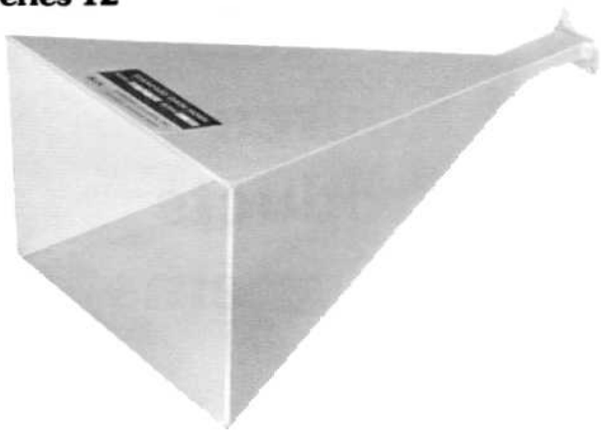
Scientific-Atlanta manufactures a complete line of antennas, feeds, and accessories including gain standards, parabolic reflectors and feeds, log-periodic dipoles, rotary joints, and coax-to-waveguide adaptors.

These products are designed for use as source antennas and gain standards on test ranges and anechoic chambers. The source antennas are broad band units which feature interchangeable feeds which can be readily aligned for optimum results. The gain standards are calibrated for simple gain determination of experimental antennas.

Standard Gain Horn Series 12



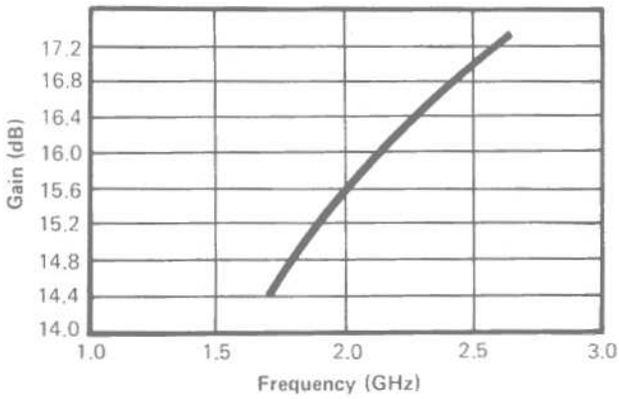
Series 12 Standard Gain Horns provide accurate and practical microwave antenna gain standards. The prime application of Series 12 Gain Horns is experimental gain determination of an antenna by the substitution method.

Several models of Standard Gain Horns are available to cover the frequency range from 0.35 to 90 GHz. Horn dimensions and calibration data are taken from NRL Report No. 4433. Gain versus frequency charts are supplied with each unit.

To prevent corrosion, all horns are plated prior to painting.

Mounting Flanges are available for all the Series 12 Standard Gain Horns.

Scientific-Atlanta Standard Gain Horn Model 12-1.70
Frequency Range 1.70 - 2.60 GHz



Calibration Data taken from NRL Report 4433

Applications

Gain measurements with the standard gain horn and antenna under test are made by alternately connecting the two antennas to a matched receiver. Received power levels are equalized either with the precision IF attenuator in the wide range receiver, or with a precision variable RF attenuator. The Gain G, in decibels, of the antenna under test is

$$G = G_S + (A\text{-}A_S)$$

where $(A\text{-}A_S)$ is the decibel change in attenuation required to equalize the two received power levels and G_S is the gain of the standard horn at the test frequency.*

Two conditions are essential for accurate measurements: (1) The antenna being tested and the standard gain horn must be matched to the line, and (2) the gain of the standard above the gain of an isotropic radiator at the test frequency must be known.

*Gain Accuracy
Model 12-0.4 through Model 12-1.7
±0.5 dB
Model 12-2.6 through Model 12-60
±.3 dB

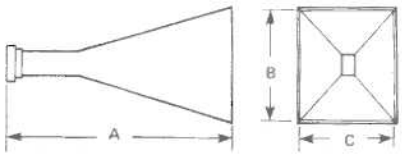
Series 12 Standard Gain Horn

Model No. Suffix	Flange Material	Waveguide Type	Waveguide Internal Size in (cm)	Cover Flange Type or Equivalent	Cover Flange Geometry	Dimensions Inches (cm) A	B	C	D	E
−0.4	aluminum	RG-291/U	21.00 (53.3) x x 10.50 (26.7)	*	rect.	62.00 (157.5)	73.03 (185.5)	54.10 (137.4)	16.0 (40.6)	16.00 (40.6) x x 25.00 (63.5)
−0.5	aluminum	RG-202/U	15.00 (38.1) x x 7.50 (19.1)	*	rect.	48.00 (121.9)	48.25 (122.6)	35.74 (98.0)	13.0 (33.0)	14.00 (35.6) x x 19.00 (48.3)
−0.75	aluminum	RG-204/U	9.75 (24.8) x x 4.88 (12.4)	*	rect.	32.25 (81.9)	32.57 (82.7)	24.12 (61.3)	9.75 (24.8)	16 (40.6)
−0.9	aluminum	RG-205/U	7.70 (19.6) x x 3.85 (9.8)	*	rect.	23.23 (59.0)	21.93 (55.7)	16.25 (41.3)	7.38 (18.8)	12 (30.5)
−1.1	aluminum	RG-103/U	6.50 (16.5) x x 3.25 (8.3)	UG-418B/U	rect.	21.70 (55.1)	21.93 (55.7)	16.25 (41.3)	6.62 (15.5)	10 (25.4)
−1.7	aluminum	RG-105/U	4.30 (10.9) x x 2.15 (5.5)	UG-437B/U	rect.	14.43 (36.7)	14.51 (36.9)	10.75 (27.3)	4.88 (12.4)	8 (20.3)
−2.6	aluminum	RG-75/U	2.84 (7.2) x x 1.34 (3.4)	UG-584/U	rd.	16.65 (42.3)	12.76 (32.4)	9.45 (24.0)	4.88 (12.4)	8 (20.3)
−3.9	aluminum	RG-95/U	1.87 (4.7) x x 0.87 (2.2)	UG-407/U	rd.	12.14 (30.8)	8.51 (21.6)	6.30 (16.0)	12 (30.5)	4 (10.2)
−5.8	aluminum	RG-106/U	1.37 (3.5) x x 0.62 (1.6)	UG-441/U	rd.	20.00 (50.8)	11.36 (28.9)	8.42 (21.4)	11.0 (29.4)	4 (10.2)
−8.2	aluminum	RG-67/U	0.90 (2.3) x x 0.40 (1.0)	UG-135/U	sq.	14.00 (35.6)	7.65 (19.4)	5.67 (14.4)	8 (20.3)	4 (10.2)
−12	aluminum	RG-349/U	0.62 (1.6) x x 0.31 (0.8)	UG-1665/U	sq.	14.00 (35.6)	5.98 (15.2)	4.91 (12.5)	6 (15.2)	4 (10.2)
A-18	brass	RG-53/U	0.42 (1.1) x x 0.17 (0.4)	UG-595/U	sq.	10.65 (27.1)	4.00 (10.2)	3.28 (8.3)	16.50 (41.9)	8 (20.3)
A-26	brass	RG-** 96/U	0.28 (0.7) x x 0.14 (0.4)	UG-** 599/U	sq.	6.82 (17.3)	2.72 (6.9)	2.23 (5.7)	16.50 (41.9)	8 (20.3)
−33	brass	RG-** 97/U	0.22 (0.6) x x 0.11 (0.3)	UG-** 383/U	rd.	5.77 (14.7)	2.18 (5.5)	1.79 (4.5)	16.50 (41.9)	8 (20.3)
−50	brass	RG-** 98/U	0.15 (0.4) x x 0.07 (0.2)	UG-** 385/U	rd.	3.85 (9.8)	1.45 (3.7)	1.19 (3.0)	16.50 (41.9)	8 (20.3)
−60	brass	RG-** 99/U	0.12 (0.3) x x 0.06 (0.2)	UG-** 387/U	rd.	3.21 (8.2)	1.21 (3.1)	0.99 (2.5)	16.50 (41.9)	8 (20.3)

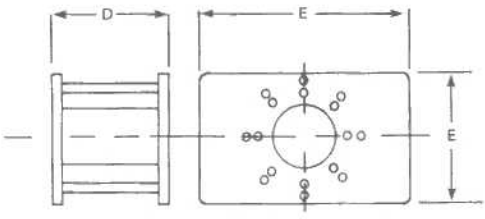
*Does not have preferred military designation, but is compatible with mating Series 11 Coax-to-Waveguide Adapter.

**Waveguide Dimensions per Jan. spec. but brass instead of silver.

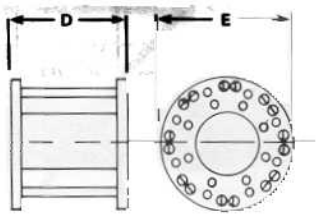
Series 12 Standard Gain Horn



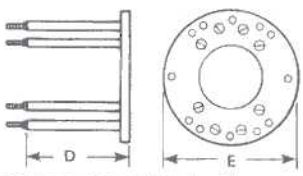
Model 12 Standard Gain Horn



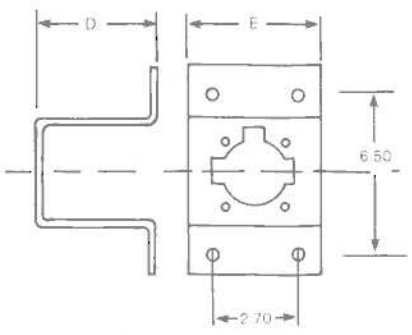
12F-0.4 and 12F-0.5 Mounting Flange



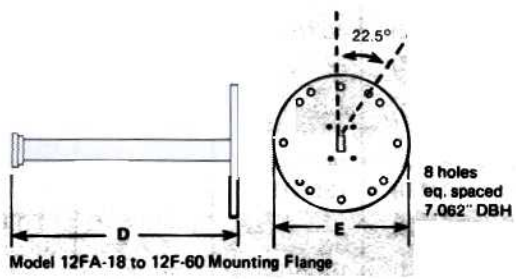
12F-0.75 Mounting Flange



Model 12F -0.9 to 12F -2.6 Mounting Flange



12FS -3.9 to 12FS-12 Mounting Flange



Model 12FA-18 to 12F-60 Mounting Flange

STANDARD GAIN HORNS							MOUNTING FLANGES		
Model Number	Freq Range (GHz)	Nominal Gain (dB)	Nominal Beamwidth (°)		Weight lb (kg)		Model Number	Weight lb (kg)	
			E-plane	H-plane	net	shipping		net	shipping
12-0.4	0.35 to 0.53	15.5	30	27	300(136)	665(302)	12F-0.4	27(13)	60(27)
12-0.5	0.49 to 0.75	15.5	30	27	180(82)	403(183)	12F-0.5	18(8)	40(18)
12-0.75	**0.75 to 1.12**	**15.5**	**30**	**27**	**67(30)**	**145(66)**	**12F-0.75**	**12(6)**	**27(13)**
12-0.9	**0.95 to 1.15**	**13.7**	**40**	**35**	**25(11)**	**50(23)**	**12F-0.9**	8(4)	15(7)
12-1.1	1.12 to 1.70	15.5	30	27	15(7)	30(14)	12F-1.1	3(2)	6(3)
12-1.7	1.70 to 2.60	15.5	30	27	8(4)	15(7)	12F-1.7	3(2)	6(3)
12-2.6	**2.60 to 3.95**	**18.0**	**23**	**22**	**7(3)**	**13(6)**	**12FS-2.6**	**2(1)**	**4(2)**
12-3.9	**3.95 to 5.85**	**18.0**	**23**	**22**	**7(3)**	**12(6)**	**12FS-3.9**	**2(1)**	**4(2)**
12-5.8	5.85 to 8.20	22.1	12	13	5(2)	10(4)	12FS-5.8	2(1)	4(2)
12-8.2	8.20 to 12.4	22.1	12	13	4(2)	7(3)	12FS-8.2	2(1)	4(2)
12-12	**12.4 to 18.0**	**24.7**	**9**	**10**	**3(1)**	**6(3)**	**12FS-12**	**1(0.5)**	**3(1.5)**
12A-18	**18.0 to 26.5**	**24.7**	**9**	**10**	**2(1)**	**5(2)**	**12FA-18**	**½(0.3)**	**3(1.5)**
12A-26	26.5 to 40.0	24.7	9	10	2(1)	3(2)	12FA-26	½(0.3)	2(1)
12-33	33.0 to 50.0	24.7	9	10	1(0.5)	3(2)	12F-33	¼(0.1)	2(1)
12-50	**50.0 to 75.0**	**24.7**	**9**	**10**	**¼(0.1)**	**2(1)**	**12F-50**	**¼(0.1)**	**2(1)**
12-60	**60.0 to 90.0**	**24.7**	**9**	**10**	**¼(0.1)**	**1(0.5)**	**12F-60**	**¼(0.1)**	**2(1)**