

Agilent RF and Microwave Test Accessories

Waveguide Accessories

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Agilent waveguide products data

Agilent band designation	Frequency range TE ₁₀ mode (GHz)	Waveguide band designator ¹						Materials ¹	Flange designator ¹					
		EIA	IEC	British	JAN	MIL-W-	Other common usage		MIL-F-3922/()	Cover JAN UG-()/U	EIA CMR-()	MIL-F 3922/()	Choke JAN UG-()/U	EIA CPR-()
		WR-()	R-()	WG-()	RG-()/U	85/()								
S	2.6 to 3.95	284	32	10	75	1-041		Alum alloy	56B-002	584	284	61-001	585A	284
G	3.95 to 5.85	187	48	12	95	1-053	C, H	Alum alloy	57B-001	407	187	62-001	406B	187
J	5.85 to 8.2	137	70	14	106	1-065	Xn, C, G	Alum alloy	55B-002	441	137	60-002	440B	137
H	7.05 to 10	112	84	15	51	1-073	Xb, W	Copper alloy	54C-005	51	112	59D-015	522B	
					68	1-072		Alum alloy	54C-006	138	—	59D-016	137B	112
X	8.2 to 12.4	90	100	16	52	1-079		Copper alloy	54C-007	39	90	59D-013	40B	—
					67	1-078		Alum alloy	54C-008	135	—	59D-014	136B	90
M	10 to 15	75	120	17	346	1-085		Copper alloy	70A-004	—	75	59D-010	—	—
					347	1-084		Alum alloy	70A-005	—	—	—	—	—
P	12.4 to 18	62	140	18	91	1-089	Ku, Y, U	Copper alloy	70A-007	419	—	59D-001	541A	—
					349	1-091		Alum alloy	70A-008	—	—	59D-002	—	—
N	15 to 22	51	180	19	353	1-096		Copper alloy	70A-010	—	—	69D-004	—	—
					351	1-098		Alum alloy	70A-011	—	—	69D-005	—	—
K	18 to 26.5	42	220	20	53	1-102		Copper alloy	54C-001	595	—	59D-003	596A	—
					121	1-104		Alum alloy	54C-002	597	—	59D-004	598A	—
R	26.5 to 40	28	320	22	96	3-007	V, Ka, U, A	Copper alloy	54C-003	599	—	59D-005	600A	—
					—	3-009		Alum alloy	—	—	—	—	—	—
Q	33 to 50	22	400	23	272	3-011		Copper alloy	67B-006	383	—	—	—	—
					—	3-013		Alum alloy	67B-013	—	—	—	—	—
U	40 to 60	19	500	24	358	3-015		Copper alloy	67B-007	383 (mod)	—	—	—	—
					—	—		Alum alloy	—	—	—	—	—	—
V	50 to 75	15	620	25	273	3-018	M	Copper alloy	67B-002	385	—	—	—	—
					—	—		Alum alloy	—	—	—	—	—	—
W	75 to 110	10	900	27	359	3-024		Copper alloy	67B-010	387 (mod)	—	—	—	—
					—	—		Alum alloy	—	—	—	—	—	—

¹ The waveguide/flange designator is provided to determine interface dimensions and generic material of Agilent products.

Abbreviations

EIA — Electronic Industries Association

IEC — International Electrotechnical Commission

JAN — Joint Army Navy

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Agilent band designation	Waveguide dimensions							Theoretical attenuation low to high frequency (dB/100 ft)	Theoretical peak power rating- low to high frequency megawatts (kw)	Theoretical CW power rating- low to high frequency kilowatts (watts)	
	Inside dimensions			Outside dimensions			Nom. wall thickness mm (in)				Cutoff frequency (GHz)
	Width mm (in)	Height mm (in)	Tol ± mm (in)	Width mm (in)	Height mm (in)	Tol ± mm (in)					
S	72.14 (2.84)	34.04 (1.34)	0.15 (0.006)	76.20 (3.0)	38.10 (1.5)	0.15 (0.006)	2.03 (0.08)	2.08	0.950 - 0.651	7.645 - 10.85	13.42 - 19.59
G	47.55 (1.872)	22.15 (0.872)	0.13 (0.005)	50.80	25.40 (2.0)	0.13 (1.0)	1.63 (0.005)	3.155 (0.064)	1.785 - 1.238	3.296 - 4.69	5.165 - 7.446
J	34.85 (1.372)	15.80 (0.622)	0.10 (0.004)	38.10 (1.5)	19.05 (0.75)	0.10 (0.004)	1.63 (0.064)	4.285	3.532-1.999	1.975 - 2.53	2.076 - 3.667
H	28.50 (1.122)	12.62 (0.497)	0.10 (0.004)	31.75 (1.250)	15.88 (0.625)	0.10 (0.004)	1.63 (0.064)	5.260	4.114 - 3.197	1.284 - 1.702	1.607 - 2.067
								5.260	4.166 - 3.238	1.284 - 1.702	1.523 - 1.958
X	22.86 (0.900)	10.16 (0.40)	0.10 (0.004)	25.40 (1.0)	12.70 (0.5)	0.10 (0.004)	1.27 (0.05)	6.560	6.424 - 4.445	0.758 - 1.124	0.8621 - 1.246
								6.560	6.506 - 4.502	0.758 - 1.124	0.8169 - 1.180
M	19.05 (0.75)	9.53 (0.375)	0.08 (0.003)	21.59 (0.850)	12.07 (0.475)	0.08 (0.003)	1.27 (0.05)	7.847	7.601 - 5.309	0.622 - 0.903	0.6621 - 0.9479
								7.847	7.698 - 5.377	0.622 - 0.903	0.6273 - 0.8982
P	15.80 (0.622)	7.90 (0.311)	0.06 (0.0025)	17.83 (0.702)	9.93 (0.391)	0.08 (0.003)	1.02 (1.02)	9.490	9.578 - 7.041	0.457 - 0.633	0.4513 - 0.6139
								9.490	9.700 - 7.131	0.457 - 0.633	0.4276 - 0.5816
N	12.95 (0.51)	6.48 (0.255)	0.06 (0.0025)	14.99 (0.59)	8.51 (0.335)	0.08 (0.003)	1.02 (0.04)	11.54	13.08 - 9.477	0.312 - 0.433	0.2899 - 0.4000
								11.54	13.25 - 9.598	0.312 - 0.433	0.2746 - 0.3791
K	10.67 (0.42)	4.32 (0.17)	0.05 (0.002)	12.70 (0.5)	6.35 (0.25)	0.08 (0.003)	1.02 (0.04)	14.08	20.48 - 15.04	0.171 - 0.246	0.1565 - 0.2132
								14.08	20.74 - 15.23	0.171 - 0.246	0.1483 - 0.2020
R	7.11 (0.280)	3.56 (0.14)	0.04 (0.0015)	9.14 (0.36)	5.59 (0.22)	0.05 (0.002)	1.02 (0.04)	21.10	23.02 - 15.77	(96.0 - 146)	(109.7 - 160.1)
								21.10	34.46 - 23.59	(96.0 - 146)	(73.27 - 107.0)
Q	5.69 (0.224)	2.84 (0.112)	0.03 (0.001)	7.72 (0.304)	4.88 (0.192)	0.05 (0.002)	1.02 (0.04)	26.35	32.44 - 22.05	(64.4 - 97.0)	(68.89 - 101.4)
								26.35	48.53 - 32.99	(64.4 - 97.0)	(46.05 - 67.74)
U	4.78 (0.188)	2.39 (0.094)	0.03 (0.001)	6.81 (0.268)	4.42 (0.174)	0.05 (0.002)	1.02 (0.04)	30.69	39.81 - 28.60	(48.0 - 70.0)	(51.32 - 71.43)
								30.69	—	(48.0 - 70.0)	—
V	3.76 (0.148)	1.88 (0.074)	0.03 (0.001)	5.79 (0.228)	3.91 (0.154)	0.05 (0.002)	1.02 (0.04)	39.90	60.25 - 41.17	(30.0 - 40.0)	(30.27 - 44.30)
								39.90	—	(30.0 - 40.0)	—
W	2.54 (0.100)	1.27 (0.05)	0.03 (0.001)	4.57 (0.18)	3.30 (0.13)	0.05 (0.002)	1.02 (0.04)	58.85	105.6 - 74.26	(14.0 - 20.0)	(14.73 - 20.86)
								58.85	—	(14.0 - 20.0)	—

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Frequency band data

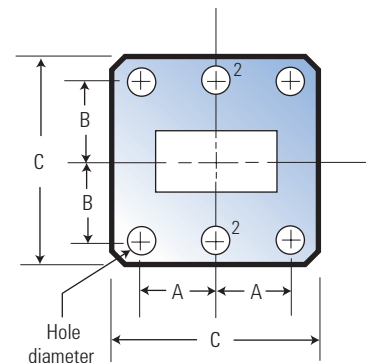
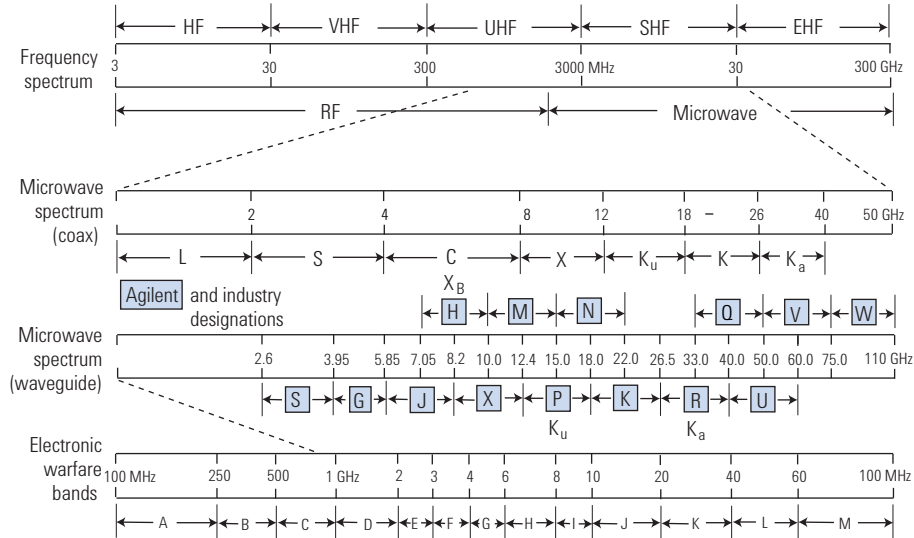


Figure 1. Rectangular flanges
H, X, M, P, N, K, R Bands

Rectangular flanges

Agilent flange data (7.05 to 40.0 GHz)¹

Agilent band	Waveguide designator			Flange designator			Dimensions mm (in)			
	Frequency range (GHz)	EIA	MIL-W-85/()	Material B: Copper alloy A: Alum. alloy	JAN UG-()/U	MIL-F-3922/()	A	B	C	Hole diameter
H	7.05 to 10	WR-112	1-073	B	51	54C-005	17.2	18.7	47.6	4.3
			1-072	A	138	54C-006	(0.676)	(0.737)	(1.875)	(0.169)
X	8.2 to 12.4	WR-90	1-079	B	39	54C-007	15.5	16.3	41.3	4.3
			1-078	A	135	54C-008	(0.61)	(0.64)	(1.625)	(0.169)
M	10 to 15	WR-75	1-085	B	—	70A-004	13.2	14.2	38.1	3.6
			1-084	A	—	70A-005	(0.52)	(0.561)	(1.50)	(0.14)
P	12.4 to 18	WR-62	1-089	B	419	70A-007	12.6	12.1	33.5	3.7
			1-091	A	—	70A-008	(0.497)	(0.478)	(1.32)	(0.144)
N	15 to 22	WR-51	1-096	B	—	70A-010	10.3	11.3	30.1	3.6
			1-098	A	—	70A-011	(0.405)	(0.443)	(1.187)	(0.14)
K	18 to 26.5	WR-42	1-102	B	595	54C-001	8.1	8.5	22.2	2.9
			1-104	A	597	54C-002	(0.32)	(0.335)	(0.875)	(0.116)
R	26.5 to 40	WR-28	3-007	B	599	54-003	6.35	6.7	19.1	2.9
			3-009	A	—	—	(0.25)	(0.265)	(0.75)	(0.116)

¹ See Figure 1.

² R band only, hole diameter 2.38 mm, -0, + 0.025

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Figure 2a.

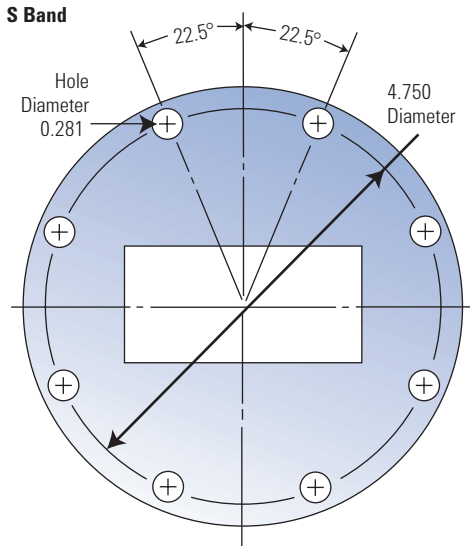


Figure 2b.

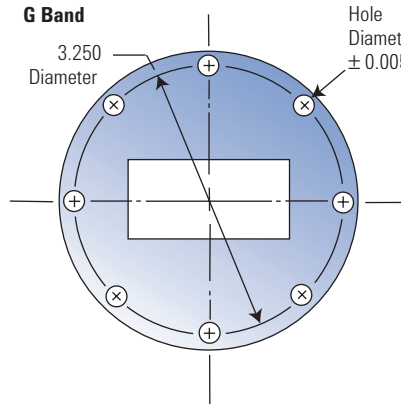
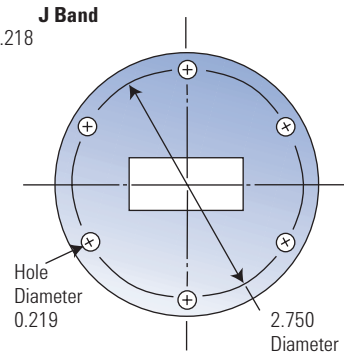


Figure 2c.



Agilent circular flange data (2.6 to 8.2 GHz)¹

Agilent band	Frequency range (GHz)	Waveguide designator			Flange designator	
		EIA	MIL-W-85/()	Material	MIL-F-3922/()	JAN UG-()/U
S	2.60 to 3.95	WR-284	1-041	Alum. Alloy	56B-002	584
G	3.95 to 5.85	WR-187	1-053	Alum. Alloy	57B-001	407
J	5.85 to 8.20	WR-137	1-065	Alum. Alloy	55B-002	441

¹ See Figures 2a, 2b, and 2c.

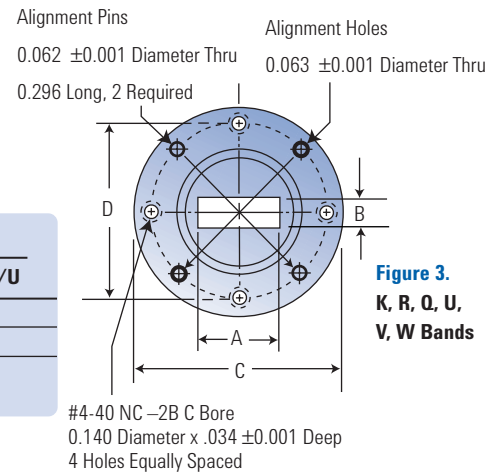


Figure 3.
K, R, Q, U,
V, W Bands

Agilent precision circular flange data (18.0 to 110.0 GHz)²

Agilent band	Frequency Range (GHz)	Waveguide designator			Flange designator		Dimensions mm (in)			
		EIA	85/()	Material MIL-W-A: Alum. Alloy	B: Copper Alloy 3922/()	UG-()/U	MIL-F A	JAN B	C diameter	D diameter
K	18 to 26.5	WR-42	1-102	B	67B-004	425	10.7	4.3	28.6	23.8
			1-104	A	67B-011	—	(0.42)	(0.17)	(1.125)	(0.9375)
R	26.5 to 40	WR-28	3-007	B	67B-005	381	7.1	3.6	28.6	23.8
			3-009	A	67B-012	—	(0.28)	(0.14)	(1.125)	(0.9375)
Q	33 to 50	WR-22	3-011	B	67B-006	383	5.7	2.8	28.6	23.8
			3-013	A	67B-013	—	(0.224)	(0.112)	(1.125)	(0.9375)
U	40 to 60	WR-19	3-015	B	67B-007	383 (mod)	4.8	2.4	28.6	23.8
			—	A	—	—	(0.188)	(0.094)	(1.125)	(0.9375)
V	50 to 75	WR-15	3-018	B	67B-002	385	3.8	1.9	19.1	14.3
			—	A	—	—	(0.148)	(0.074)	(0.75)	(0.5625)
W	75 to 110	WR-10	3-024	B	67B-010	387 (mod)	2.5	1.3	19.1	14.3
			—	A	—	—	(0.10)	(0.050)	(0.75)	(0.5625)

² See Figure 3.

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