

Agilent RF and Microwave Test Accessories

Waveguide Accessories

Waveguide Accessories

Agilent waveguide products data

Agilent band designation	Frequency range TE ₁₀ mode (GHz)	Waveguide band designator ¹						Other common usage	Materials ¹	Flange designator ¹					
		EIA	IEC	British	JAN	MIL-W-	Cover			MIL-F-	EIA	MIL-F	Choke	EIA	
		WR-()	R-()	WG-()	RG-()/U	85/()									JAN
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	—	—	—	—	—	—	

¹The 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

Agilent RF and Microwave Test Accessories

Waveguide Accessories

Waveguide Accessories

Agilent band designation	Waveguide dimensions						Nom. wall thickness mm (in)	Cutoff frequency (GHz)	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							
	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)	—

Agilent RF and Microwave Test Accessories

Waveguide Accessories

Waveguide Accessories

Frequency band data

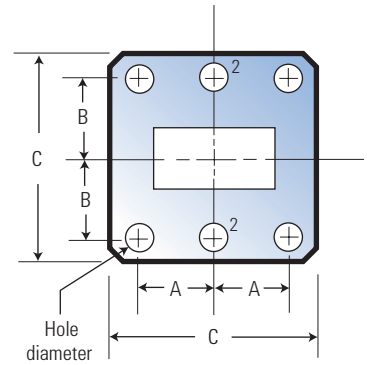
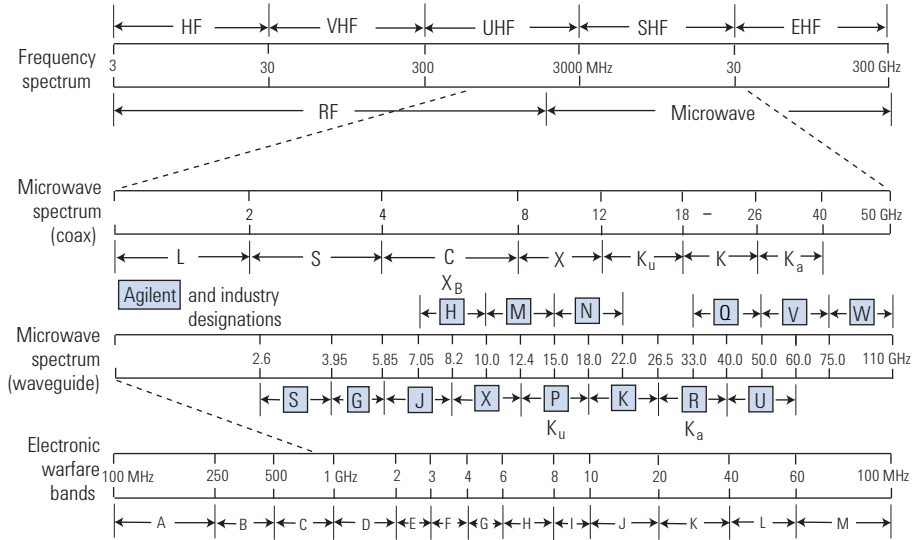


Figure 1. Rectangular flanges
H, X, M, P, N, K, R Bands

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

Agilent RF and Microwave Test Accessories

Waveguide Accessories

Waveguide Accessories

Figure 2a.

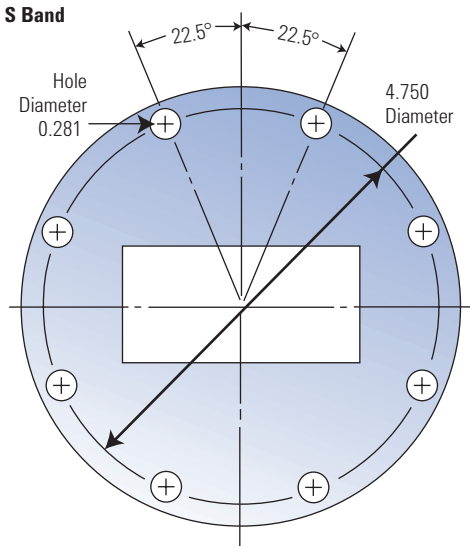


Figure 2b.

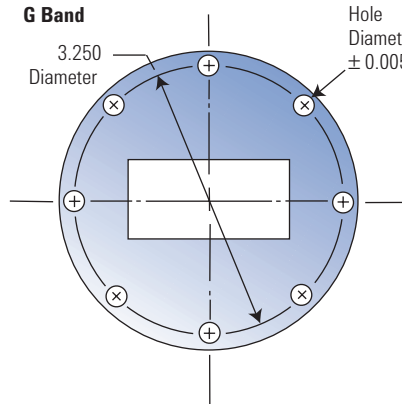
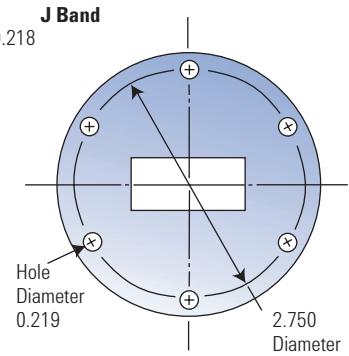


Figure 2c.



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.

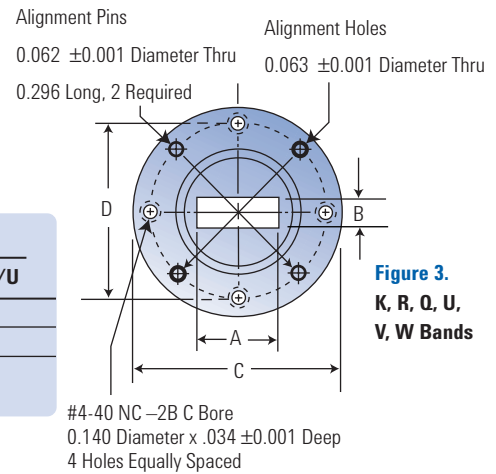


Figure 3.
K, R, Q, U,
V, W Bands

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.

Agilent Technologies' Test and Measurement Support, Services, and Assistance

Agilent Technologies aims to maximize the value you receive, while minimizing your risk and problems. We strive to ensure that you get the test and measurement capabilities you paid for and obtain the support you need. Our extensive support resources and services can help you choose the right Agilent products for your applications and apply them successfully. Every instrument and system we sell has a global warranty. Support is available for at least five years beyond the production life of the product. Two concepts underlie Agilent's overall support policy: "Our Promise" and "Your Advantage."

Our Promise

Our Promise means your Agilent test and measurement equipment will meet its advertised performance and functionality. When you are choosing new equipment, we will help you with product information, including realistic performance specifications and practical recommendations from experienced test engineers. When you use Agilent equipment, we can verify that it works properly, help with product operation, and provide basic measurement assistance for the use of specified capabilities, at no extra cost upon request. Many self-help tools are available.

Your Advantage

Your Advantage means that Agilent offers a wide range of additional expert test and measurement services, which you can purchase according to your unique technical and business needs. Solve problems efficiently and gain a competitive edge by contracting with us for calibration, extra-cost upgrades, out-of-warranty repairs, and onsite education and training, as well as design, system integration, project management, and other professional engineering services. Experienced Agilent engineers and technicians worldwide can help you maximize your productivity, optimize the return on investment of your Agilent instruments and systems, and obtain dependable measurement accuracy for the life of those products.



Agilent Email Updates

www.agilent.com/find/emailupdates

Get the latest information on the products and applications you select.

Agilent T&M Software and Connectivity

Agilent's Test and Measurement software and connectivity products, solutions and developer network allows you to take time out of connecting your instruments to your computer with tools based on PC standards, so you can focus on your tasks, not on your connections. Visit

www.agilent.com/find/connectivity

for more information.

By internet, phone, or fax, get assistance with all your test & measurement needs

Phone or Fax

United States:

(tel) 800 452 4844

Canada:

(tel) 877 894 4414

(fax) 905 282 6495

China:

(tel) 800 810 0189

(fax) 800 820 2816

Europe:

(tel) (31 20) 547 2323

(fax) (31 20) 547 2390

Japan:

(tel) (81) 426 56 7832

(fax) (81) 426 56 7840

Korea:

(tel) (82 2) 2004 5004

(fax) (82 2) 2004 5115

Latin America:

(tel) (305) 269 7500

(fax) (305) 269 7599

Taiwan:

(tel) 0800 047 866

(fax) 0800 286 331

Other Asia Pacific Countries:

(tel) (65) 6375 8100

(fax) (65) 6836 0252

Email: tm_asia@agilent.com

Online Assistance:

www.agilent.com/find/assist

Product specifications and descriptions in this document subject to change without notice.

© Agilent Technologies, Inc. 2000, 2003

Printed in USA *December, 2000*



Agilent Technologies