



# 2016 Passive Components *Product Catalogue*

REV " #



Unique Broadband Systems Ltd. is a privately owned and operated company with our head office located in Toronto, Ontario, Canada and sales and support facilities in Beijing, China.

Unique Broadband Systems has been in business since 1990 as Unique Broadband Systems, Inc. In September 2003, through a divestiture by Unique Broadband Systems, Inc., UBS reverted to a privately held company. UBS continues its tradition of unwavering commitment to research and development of wireless technologies that enables companies and individuals to access voice, video and data on an “anywhere – anytime” basis. We continue our philosophy of valuing our relationships with our customers, vendors and employees.

## What we do

UBS manufactures equipment, components and complete transmissions systems for:

- Wireless fixed and mobile digital television and radio broadcasting
- MMDS equipment for digital television, voice and data (wireless triple-play)
- Military RF and calibration applications (TACAN/IFF)
- Passive components including filters waveguides and coaxial parts

## Technical core competencies

UBS has deployed systems and solutions spanning the globe on five continents. Unique Broadband Systems’ staff is a power house of qualified electronic and software engineers, master engineers and Ph.D. level engineers. With such a wealth of technical resources we are capable of handling all the technical and service requirements for any scope of project. Our company will continue to invest heavily in this area in the future to ensure that new products are developed, along with ongoing improvements to existing products.

UBS expertise includes:

- Digital waveform analysis and synthesis
- Solutions for all key international standards:  
ISDB-T/Tb, ATSC, DVB-T/H, DVB-T2, DVB-SH, DAB/DAB+, T-DMB, DTMB, T-MMB, CMMB
- High power LDMOS Technology
- Embedded Technology: COFDM
- Network and RF coverage analysis and design
- Satellite/Terrestrial SFN and MFN Solutions

UBS has over 25 international patents granted and/or pending with unique IP including:

- SFN Network Null Area Elimination technology
- GPS Receiver Elimination for repeater sites
- Adaptive Pre-Distorter for power amplifier linearization
- Satellite/terrestrial Doppler compensation processes

## **Company Introduction**

### **Key customer deployments**

We at UBS are proud of the many projects that some of the world's most innovative companies have trusted us to participate in.

Some of these customers are:

- XM Radio
- Sirius Satellite Radio
- Eutelsat Communications
- United States Airforce
- Harris Corporation

### **Industry relationships**

UBS is a member of major international engineering and standards bodies, including:

ETSI, ATSC, PMI, IEEE, DVB/DVB-H, CCTA, FLOForum and WorldDMB

UBS maintains strong business and technical relationships with major manufacturers in the digital television, digital radio and mobile multimedia industry.

UBS partners with leading value added resellers and systems integrators around the world to deliver complete network solutions as well as individual products and services.

UBS is also a leading technology and component source for other equipment manufacturers offering them:

- OEM Partnerships and Services
- Custom and custom packaged technologies for OEMs
- Re-brandable solution platforms
- Design-in engineering and consulting services
- UBS enables rapid time to market support for new and emerging broadcast applications and standards

## Rectangular Waveguide

Series No: 111

### Rectangular Waveguide Product Line

UBS stocks rectangular waveguide raw materials in sizes ranging from WR-28 to WR-650. UBS is also able to manufacture products from other industry standard waveguide sizes upon request. In addition to the standard line of waveguide products offered in this catalogue, UBS also is a supplier of OEM products to the military and commercial communications industry. UBS has the experienced staff and the resources to develop and manufacture waveguide components specific to your OEM application.

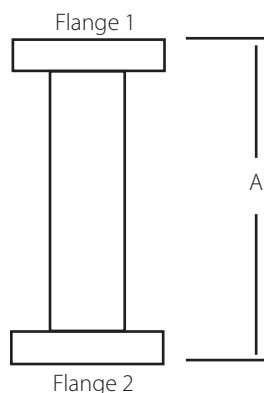
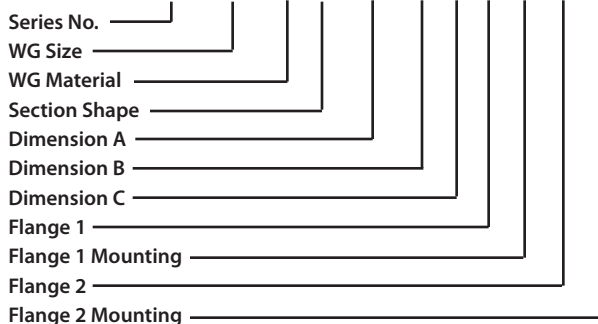
### Rectangular Waveguide Section Numbering System

The UBS rectangular waveguide section numbering system, allows the end user to specify the exact waveguide section(s) required.

#### Example 1

- You require a WR-42 straight section(S), 12" long.
- The waveguide material selected is bronze(B).
- Flange 1 is to be grooved(G) to accept a gasket
- Flange 2 at the other end is to be flat cover(C).
- The flange mounting holes are to be threaded(T2).

Part number - 111 - WR42 - B - S - 12.00 - X - X - G - T2 - C - T2



NOTE: Dimensions "B" and "C" do not apply and are left as "X" in the part number.

### Materials

Straight and complex sections can be specified from a choice of high conductivity copper, bronze or aluminum. Flexible waveguide is manufactured from a convoluted beryllium-copper alloy material that is fully pressurizable and is flexible in both the E and H planes. Longitudinal twists are not possible with this type of flexible waveguide. If a rigid longitudinal twist section is required, a suitable one can be specified from the UBS 112 series. For longitudinal twist use the 118 series of flexible twistable waveguides.

### Section Dimensions

The maximum length of rigid waveguide is 6 ft, flexible waveguide is 2 ft, and flexible twistable waveguide is 4 ft.

### Tips and Suggestions

Large sections manufactured from copper should be avoided. Instead use bronze for additional strength. It is strongly recommended that a single large complex section be constructed by specifying several smaller and less complicated sections for assembly by the user on site

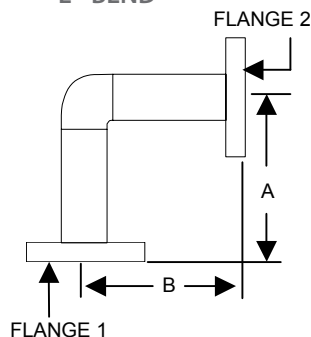
You are advised to contact UBS for assistance in specifying large complex sections to best meet your requirements.



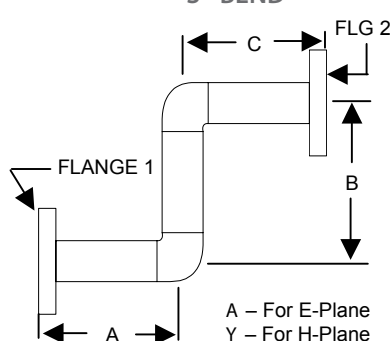
# Rectangular Waveguide

Series No: 111

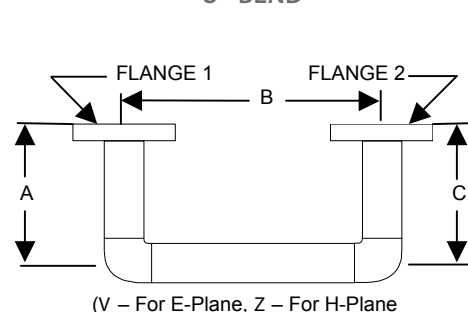
E - BEND



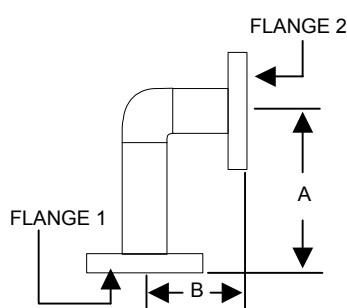
S - BEND



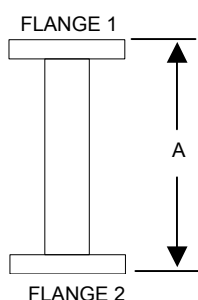
U - BEND



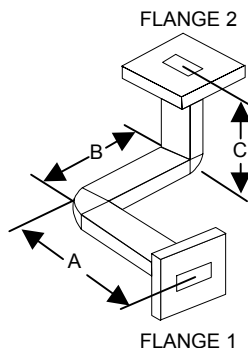
H - BEND



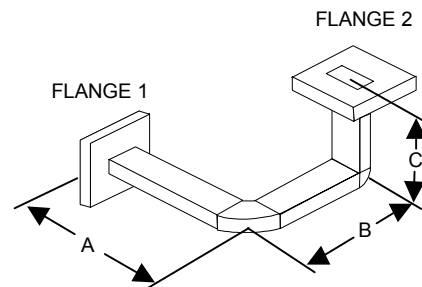
Straight



Composite Bend Type M



Composite Bend Type W



## Ordering Data

Part number - 112 - X - X - X - X - X - X - X - X - X - X

Series No. \_\_\_\_\_  
WG Size \_\_\_\_\_  
WG Material \_\_\_\_\_  
Section Shape \_\_\_\_\_  
Dimension A \_\_\_\_\_  
Dimension B \_\_\_\_\_  
Dimension C \_\_\_\_\_  
Flange 1 \_\_\_\_\_  
Flange 1 Mounting \_\_\_\_\_  
Flange 2 \_\_\_\_\_  
Flange 2 Mounting \_\_\_\_\_

## Waveguide Section

E	E-BEND
H	H-BEND
S	Straight Solid
F	Straight Flex
A	S-BEND E-PLANE
Y	S-BEND H-PLANE
V	U-BEND E-PLANE
Z	U-BEND H-PLANE
W	Composite Bend Type W
M	Composite Bend Type M

## Flange Configuration

Flange Type	C - Cover G - Groove CHOKE CMR, CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating

## Material

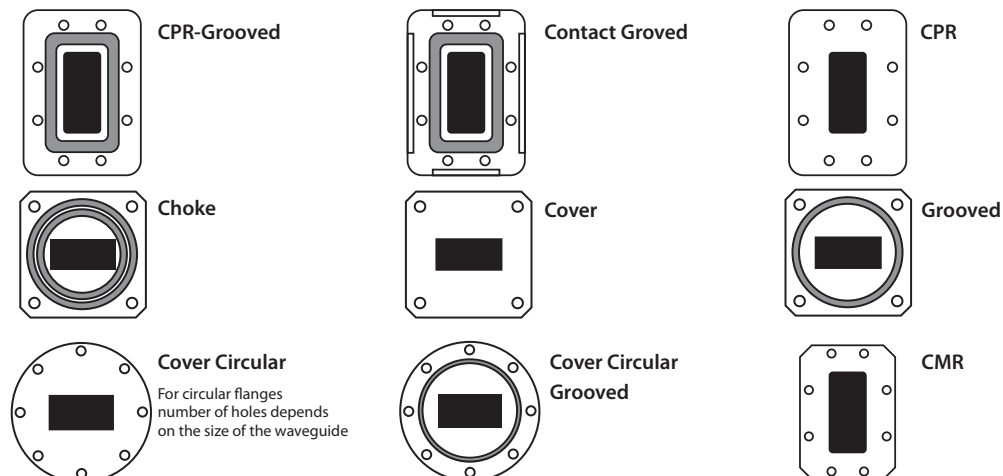
C	Copper
A	Aluminum
B	Bronze

**STANDARD FINISH:** is electroless corrosion protection for the metal surface. Non standard configurations and finishes (Silver, Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

# Rectangular Waveguide

Series No: 111

## Standard Flange Types



## North American (EIA Standard)

Size	UG Style						COVER			CPR		CMR
	SQUARE	CIRCULAR	CHOKE	CPR CONTACT		CMR	SQUARE	CIRCULAR	GROOVED	FLAT	GROOVED	
	C	C	CHOKE	CONTACT-F	CONTACT-G	CMR	C	C	G	F	G	CMR
WR28	UG-599/U		UG-600A/U				•		•			
WR34						UG-1530/U	•		•			
WR42	UG-595/U UG-597/U		UG-596A/U UG-598A/U				•		•			
WR51							•		•			
WR62	UG-419/U UG-1665/U		UG-541A/U				•		•			
WR75							•		•	•	•	
WR90	UG-39/U UG-135/U		UG-40B/U UG-136B/U	UG-1736/U UG-1737/U	UG-1360/U UG-1361/U	UG-1478/U UG-1483/U	•		•	•	•	•
WR112	UG-51/U UG-138/U		UG-52B/U UG-137B/U	UG-1734/U UG-1735/U	UG-1358/U UG-1359/U	UG-1477/U UG-1482/U	•		•	•	•	•
WR137		UG-344/U UG-441/U	UG-343B/U UG-440B/U	UG-1732/U UG-1733/U	UG-1356/U UG-1357/U	UG-1476/U UG-1481/U		•	•	•	•	•
WR159				UG-1730/U UG-1731/U	UG-1354/U UG-1355/U			•	•	•	•	•
WR187		UG-149A/U UG-407/U	UG-148C/U UG-406B/U	UG-1728/U UG-1729/U	UG-1352/U UG-1353/U	UG-1475/U UG-1480/U		•	•	•	•	•
WR229				UG-1726/U UG-1727/U	UG-1350/U UG-1351/U			•	•	•	•	•
WR284		UG-53/U UG-584/U	UG-54B/U UG-585/U	UG-1724/U UG-1725/U	UG-1348/U UG-1349/U	UG-1479/U UG-1484/U		•	•	•	•	•
WR340				UG-1712/U UG-1713/U	UG-1346/U UG-1347/U					•	•	
WR430				UG-1716/U UG-1711/U	UG-1344/U UG-1345/U					•	•	
WR650										•	•	

## Notes

1. UG Style W/G Material

WR90	UG-39/U	Brass/Copper
	UG-135/U	Aluminum Alloy

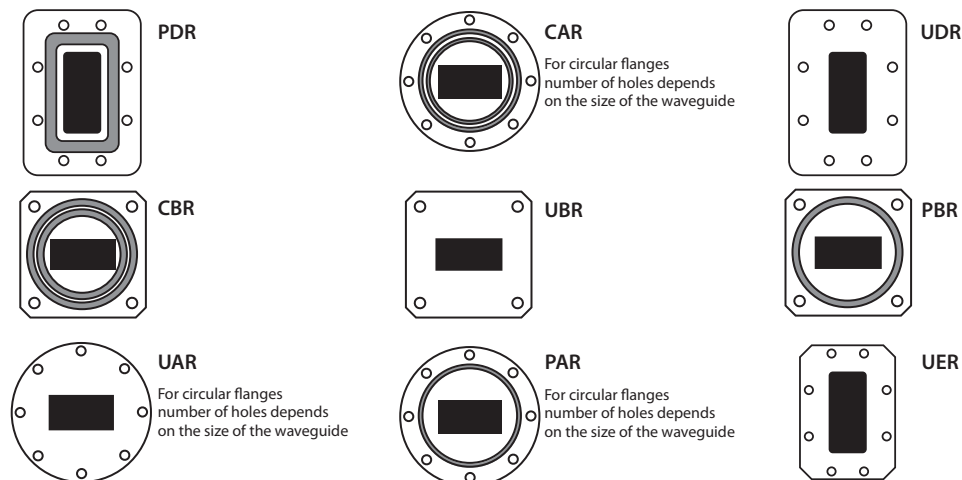
2. For flanges not found in this table please contact our sales department

VER 1.0 November 19, 2015

# Rectangular Waveguide

Series No: 111

## Standard Flange Types



## European (IEC Standard)

Waveguide Size			UBR	UAR	UDR	UER	PAR	PBR	PDR	CBR	CAR
EIA	RCSC	IEC	C	C	CPR	CMR	G	G	CPR-G	CHOKE	CHOKE
WR28	WG22	R320	UBR320					PBR320			
WR34	WG21	R260	UBR260					PBR260			
WR42	WG20	R220	UBR220					PBR220		CBR220	
WR51	WG19	R180	UBR180					PBR180			
WR62	WG18	R140	UBR140					PBR140		CBR140	
WR75	WG17	R120	UBR120		UDR120			PBR120	PDR120	CBR120	
WR90	WG16	R100	UBR100		UDR100	UER100		PBR100	PDR100	CBR100	
WR112	WG15	R84	UBR84		UDR84	UER84	PAR84	PBR84	PDR84	CBR84	
WR137	WG14	R70		UAR70	UDR70	UER70	PAR70		PDR70		CAR70
WR159	WG13	R58		UAR58	UDR58	UER58	PAR58		PDR58		CAR58
WR187	WG12	R48		UAR48	UDR48	UER48	PAR48		PDR48		CAR48
WR229	WG11A	R40			UDR40	UER40			PDR40		
WR284	WG10	R32		UAR32	UDR32	UER32	PAR32		PDR32		CAR32
WR340	WG9A	R26			UDR26				PDR26		
WR430	WG8	R22			UDR22				PDR22		
WR650	WG6	R14			UDR14				PDR14		

## Notes

1. Holes in EIC flanges are to accommodate metric hardware

## Twist (with flanges)

Series No: 112

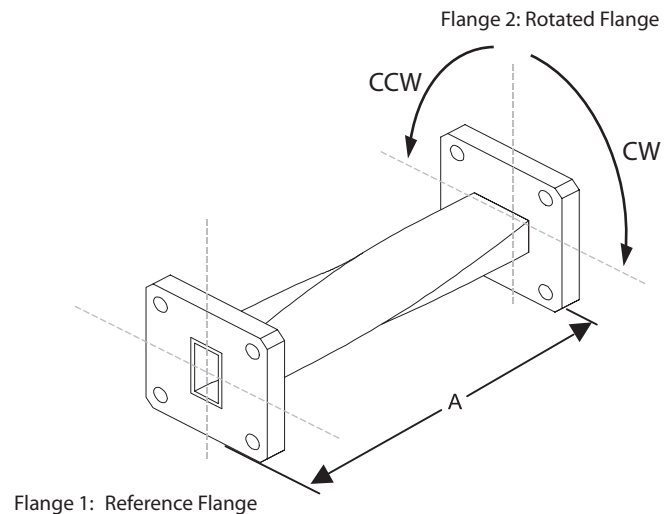
### Part Description

UBS offers a custom product line of formed twist sections covering waveguide sizes from WR-28 through WR-650. Insertion loss is equivalent to straight waveguide sections. Please specify the length.

### Ordering Data

Part number - 112 - X - X - X - X - X - X - X

Series No.	
WG Size	
Length	
Flange 1	
Flange 1 Mounting	
Flange 2	
Flange 2 Mounting	
Twist Angle	



### Flange Configuration

Flange Type	C - Cover G - Groove CHOKE CMR CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating
Twist Angle	1 - 90° Twist 2 - 45° Twist

### Electrical Specification

VSWR	< 1.06 - 1.10 (length dependent)
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**STANDARD FINISH:** is electroless corrosion protection for the metal surface. Non standard configurations and finishes (Silver, Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

### Specifications

Size	Frequency GHz	Minimum Dimension Available for 90° Twist
WR28	26.50 - 40.00	1.00
WR34	22.00 - 33.00	1.00
WR42	18.00 - 26.00	1.00
WR51	15.00 - 22.00	1.00
WR62	12.40 - 18.00	1.50
WR75	10.00 - 15.00	1.50
WR90	8.20 - 12.40	1.50
WR112	7.05 - 10.00	2.00
WR137	5.85 - 8.20	2.00
WR159	4.09 - 7.05	3.00
WR187	3.95 - 5.85	3.00
WR229	3.30 - 4.90	3.00
WR284	2.60 - 3.95	6.00
WR340	2.20 - 3.30	8.00
WR430	1.70 - 2.60	9.00
WR650	1.12 - 1.70	15.00

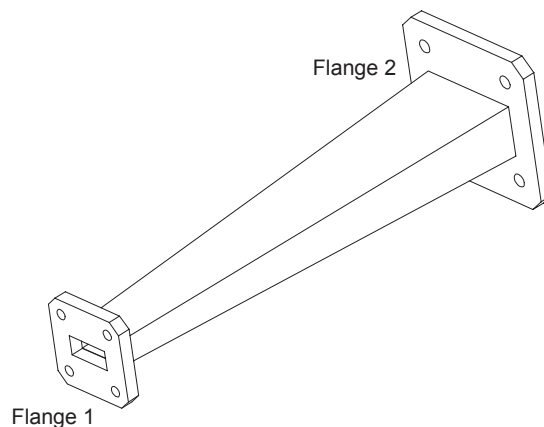
## Part Description

UBS standard product line of fabricated waveguide transitions are designed to interconnect different size waveguide components in a minimum space. The standard rectangular sizes from WR-28 through WR-284 are shown on this data sheet.

## Ordering Data

Part number - 113 - X/X - X - X - X - X

Series No. \_\_\_\_\_  
 WG Size \_\_\_\_\_  
 Flange 1 \_\_\_\_\_  
 Flange 1 Mounting \_\_\_\_\_  
 Flange 2 \_\_\_\_\_  
 Flange 2 Mounting \_\_\_\_\_



## Flange Configuration

Flange Type	C - Cover G - Groove CHOKE CMR CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - THreaded A - Alternating

## Electrical Specification

VSWR	1.10 max.
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**STANDARD FINISH:** is electroless corrosion protection for the metal surface. Non standard configurations and finishes (Silver, Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

## Specifications

Size	Frequency GHz
WR28/34	26.50 - 33.00
WR34/42	22.00 - 26.50
WR42/51	18.00 - 22.00
WR51/62	15.00 - 18.00
WR62/75	12.40 - 15.00
WR75/90	10.00 - 12.40
WR90/112	8.20 - 10.00
WR112/137	7.05 - 10.00
WR137/159	5.85 - 8.20
WR159/187	4.09 - 7.05
WR187/229	3.95 - 5.85
WR229/284	3.30 - 4.90

## Shorting Plates

Series No: 114

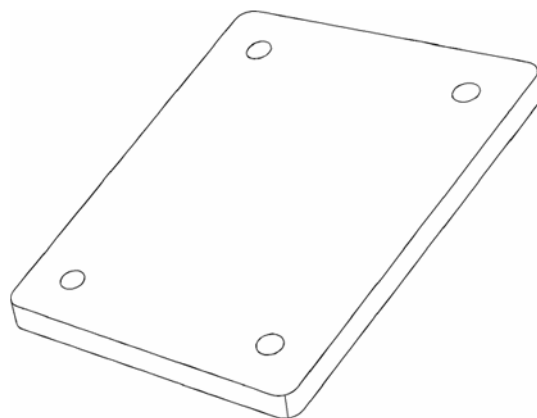
### Part Description

Unique Broadband Systems offers a line of shorting plates to mate with standard waveguide flanges. In addition to the popular standard flanges listed, UBS offers a more complete line of industry standard flange styles upon request.

### Ordering Data

Part number - 114 - X - X - X - O

Series No. \_\_\_\_\_  
 WG Size \_\_\_\_\_  
 Flange \_\_\_\_\_  
 Flange Mounting \_\_\_\_\_  
 Add "O" for Offset \_\_\_\_\_



### Flange Configuration

Flange Type	C - Cover G - Groove CMR CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - THreaded A - Alternating

### Specifications

Size	C	G	CMR	CPR
WR28	•	•		
WR34	•	•		
WR42	•	•		
WR51	•	•		
WR62	•	•		
WR75	•	•	•	•
WR90	•	•	•	•
WR112	•	•	•	•
WR137	•	•	•	•
WR159	•	•	•	•
WR187	•	•	•	•
WR229	•	•	•	•
WR284	•	•	•	•
WR340	•	•	•	•
WR430	•	•	•	•
WR650	•	•	•	•

## Pressure Windows

Series No: 115

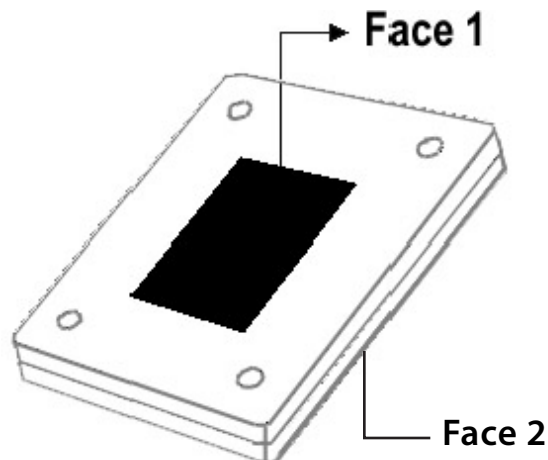
### Part Description

UBS offers a line of pressure windows to mate with all standard waveguide flanges. In addition to the popular standard flanges listed, UBS offers a more complete line of industry standard flange styles upon request. All pressure windows are manufactured from 0.0625" material and are designed to be used up to a maximum pressure of 10 psi (3-5 psi typical). These pressure windows are for low power Tx/ Rx application (below 250 Watts average power) and do not have pressure inlets or gasket grooves. Holes for attachment hardware are drilled clear.

### Ordering Data

Part number - 115 - X - X - X

Series No. \_\_\_\_\_  
 WG Size \_\_\_\_\_  
 Flange Face 1 \_\_\_\_\_  
 Flange Face 2 \_\_\_\_\_



### Flange Configuration

Flange Type	C - Cover G - Groove CHOKE CMR CPR (F, G)
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### Electrical Specification

VSWR	< 1.1 max.
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### Specifications

Size	C	G	CHOKE	CMR	CPR
WR28	•	•	•		
WR34	•	•	•		
WR42	•	•	•		
WR51	•	•	•		
WR62	•	•	•		
WR75	•	•	•	•	•
WR90	•	•	•	•	•
WR112	•	•	•	•	•
WR137	•	•	•	•	•
WR159	•	•	•	•	•
WR187	•	•	•	•	•
WR229	•	•	•	•	•
WR284	•	•	•	•	•
WR340	•	•	•	•	•
WR430	•	•	•	•	•
WR650	•	•	•	•	•



## Pressure Inserters

Series No: 116

### Part Description

UBS offers a line of pressure inserters to mate with all standard waveguide flanges. In addition to the popular standard flanges listed, UBS offers a more complete line of industry standard flange styles upon request. All pressure inserters are manufactured from aluminum alloy that has been chemically cleaned and coated to prevent corrosion. The pressure inlet has 1/8" female pipe thread and is shipped with a sealed 1/8" male pipe thread plug installed. Thickness 0.375". Holes for attachment hardware are drilled clear.

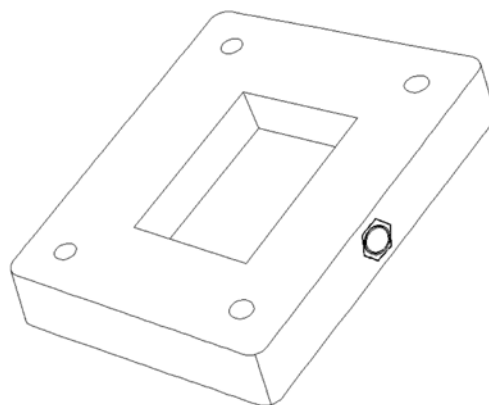
### Ordering Data

Part number - 116 - X - X

Series No. \_\_\_\_\_

WG Size \_\_\_\_\_

Flange \_\_\_\_\_



### Flange Configuration

Flange Type	C - Cover G - Groove CHOKE CMR CPR (F, G)
-------------	---

### Electrical Specification

VSWR	< 1.1 max.
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### Specifications

Size	C	G	CHOKE	CMR	CPR
WR28	•	•	•		
WR34	•	•	•		
WR42	•	•	•		
WR51	•	•	•		
WR62	•	•	•		
WR75	•	•	•	•	•
WR90	•	•	•	•	•
WR112	•	•	•	•	•
WR137	•	•	•	•	•
WR159	•	•	•	•	•
WR187	•	•	•	•	•
WR229	•	•	•	•	•
WR284	•	•	•	•	•
WR340	•	•	•	•	•
WR430	•	•	•	•	•
WR650	•	•	•	•	•

## Brackets and Hangers, Flange Hardware Kits

Series No: 117

### Part Description

The rectangular waveguide hangers offered by UBS are designed to allow suspension of rectangular waveguide in any position and are suitable for both indoor and outdoor applications. Available in single, double, triple or quadruple waveguide configurations.

### Ordering Data

Part number - 117 - X - X - X

Series No. \_\_\_\_\_

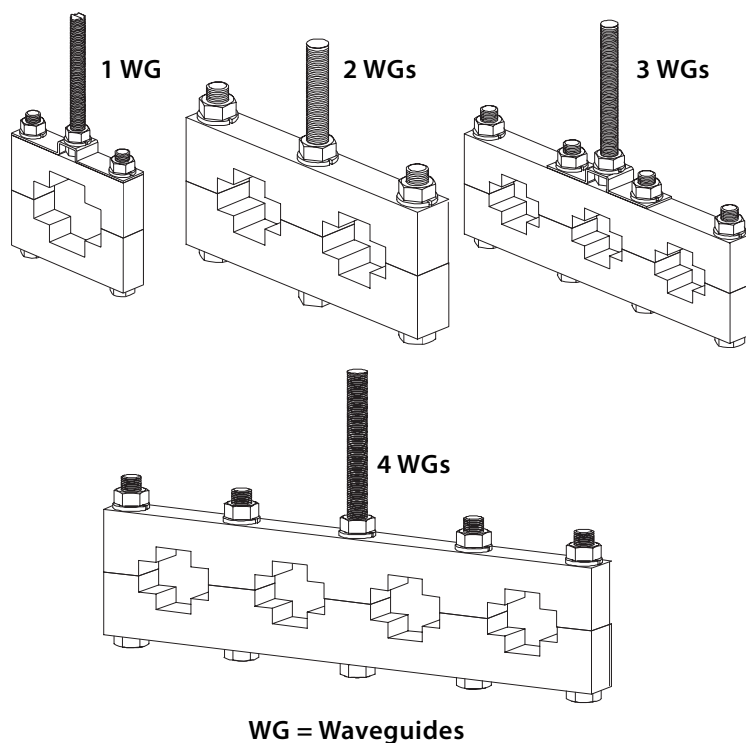
WG Size \_\_\_\_\_

Number of Waveguides \_\_\_\_\_

Hardware \_\_\_\_\_

### Note

Diagram shown with optional thread rod kit  
Waveguide sizes up to WER-650 are available. Contact our sales department with your requirements.



WG = Waveguides

### Flange Hardware Kit

The flange hardware kits offered by UBS include all required stainless steel fasteners including nuts, flat washers and lock washers. Gaskets supplied are half, full or double thickness as required.

### Ordering Data

Part number - 117 - USFHK - X

Series No. \_\_\_\_\_

Flange \_\_\_\_\_

# Twistable Flexible Waveguide

Series No: 118

## Part Description

UBS offers a line of twistable flexible or flexible waveguide sections. These sections are manufactured from spiral-wound silver plated conductors covered with a protective, pressure tight black neoprene or silicone rubber jacket. All standard waveguide flanges are available. In addition to the popular standard line of flanges listed, UBS offers a more complete line of industry standard flange styles upon request. Please specify the length that is required.

## Ordering Data

Part number - 118 - X - X - X - X - X - X - X - X

Series No.	
WG Size	
WG Type	
Length	
Flange 1	
Flange 1 Mounting	
Flange 2	
Flange 2 Mounting	
Hardware	



## Flange Configuration

Flange Type	C - Cover G - Groove CHOKE CMR CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating

Hardware	1 - Required 0 - Not Required
Twistable Flexible	A
Flexible	B

## Specifications

Size	C	G	CHOKE	CMR	CPR	MATCHING WG INTERNAL DIMENSIONS (in)	OPERATIONAL FREQUENCY BAND (GHz)	NOMINAL TEST FREQ. FOR ATTENUATION (GHz)	MAXIMUM IL ATTENUATION (dB/ft)	MAXIMUM VSWR < 36" >	MAXIMUM VSWR < 36" >	Power Handling (W)
WR28	•	•	•			0.280 x 0.140	26.50 - 40.00	34.00	1.00	1.30 - 36" max		75
WR42	•	•	•			0.420 x 0.170	18.00 - 26.50	22.00	0.70	1.18	1.23	100
WR51	•	•	•			0.510 x 0.255	15.00 - 22.00	18.50	0.55	1.15	1.18	400
WR62	•	•	•			0.622 x 0.311	12.40 - 18.00	14.00	0.28	1.10	1.13	400
WR75	•	•	•			0.750 x 0.375	10.00 - 15.00	13.70	0.18	1.08	1.10	750
WR90	•	•	•	•	•	0.900 x 0.400	8.20 - 12.40	9.40	0.15	1.07	1.10	1000
WR112	•	•	•	•	•	1.122 x 0.497	7.05 - 10.00	9.40	0.12	1.07	1.10	1500
WR137	•	•	•	•	•	1.372 x 0.622	5.85 - 8.20	6.45	0.09	1.05	1.09	2000
WR159	•	•	•	•	•	1.590 x 0.795	4.90 - 7.05	5.90	0.08	1.05	1.08	2500
WR187	•	•	•	•	•	1.872 x 0.872	3.95 - 5.85	4.75	0.05	1.05	1.07	3000
WR229	•	•	•	•	•	2.290 x 1.145	3.30 - 4.90	3.85	0.04	1.05	1.07	4000
WR284	•	•	•	•	•	2.840 x 1.340	2.60 - 3.95	3.15	0.04	1.04	1.07	4000

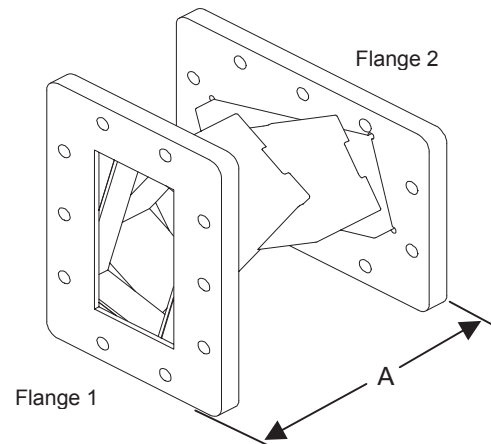
### Part Description

Unique Broadband Systems offers a custom product line of Electroformed step twist covering waveguide sizes from WR-90 through WR-650. Insertion loss is equivalent to straight waveguide sections.

### Ordering Data

Part number - 119 - X - X - X - X - X - X - X

Series No. \_\_\_\_\_  
 WG Size \_\_\_\_\_  
 Length \_\_\_\_\_  
 Flange 1 \_\_\_\_\_  
 Flange 1 Mounting \_\_\_\_\_  
 Flange 2 \_\_\_\_\_  
 Flange 2 Mounting \_\_\_\_\_  
 Twist Angle \_\_\_\_\_



### Flange Configuration

Flange Type	C - Cover G - Groove CHOKE CMR CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating
Twist Angle	1 - 90° Twist 2 - 45° Twist

### Electrical Specification

VSWR	< 1.2 max.
------	------------

**STANDARD FINISH:** is electroless corrosion protection for the metal surface. Non standard configurations and finishes (Silver, Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

### Specifications

Size	Frequency GHz	Minimum Dimension Available for 90° Twist (inches)	Minimum Dimension Available for 45° Twist (inches)
WR90	8.20 - 12.40	2.00	1.50
WR112	7.05 - 10.00	2.00	1.50
WR137	5.85 - 8.20	2.00	1.50
WR159	4.09 - 7.05	3.00	2.00
WR187	3.95 - 5.85	3.00	2.00
WR229	3.30 - 4.90	3.00	2.00
WR284	2.60 - 3.95	6.00	5.00
WR340	2.20 - 3.30	6.00	5.00
WR430	1.70 - 2.60	6.00	5.00
WR650	1.12 - 1.70	9.00	8.00

## Adapter (Waveguide to Coaxial)

Series No: 121

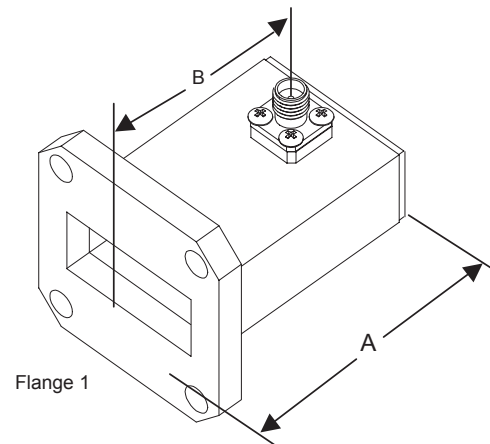
### Part Description

UBS offers a standard product line of precision rectangular waveguide-to-coax adapters covering waveguide sizes from WR-28 through WR-430.

### Ordering Data

Part number - 121 - X - X - X - X - X

Series No. \_\_\_\_\_  
 WG Size \_\_\_\_\_  
 Port 1 Connector Style \_\_\_\_\_  
 Port 1 Connector Type \_\_\_\_\_  
 Flange 1 \_\_\_\_\_  
 Flange 1 Mounting \_\_\_\_\_



### Flange Configuration

Flange Type	C - Cover G - Groove CHOKE CMR CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating

### Connector Style

Style	SMA N 2.9 mm (K) 3.5 mm 2.4 mm
Type	M - Male F - Female

### Electrical Specification

VSWR	< 1.10 typ.
------	-------------

**STANDARD FINISH:** is electroless corrosion protection for the metal surface. Non standard configurations and finishes (Silver, Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

### Specifications

Size	Frequency GHz	Dimensions			
		SMA-Type		N-Type	
		A	B	A	B
WR28	26.50 - 40.00	-	-	-	-
WR34	22.00 - 33.00	-	-	-	-
WR42	18.00 - 26.00	1.00	0.75	-	-
WR51	15.00 - 22.00	1.12	0.82	-	-
WR62	12.40 - 18.00	1.01	0.79	1.67	1.42
WR75	10.00 - 15.00	1.01	0.65	1.38	1.09
WR90	8.20 - 12.40	1.07	0.72	1.65	1.24
WR112	7.05 - 10.00	1.42	1.03	1.88	1.45
WR137	5.85 - 8.20	1.57	1.03	2.13	1.61
WR159	4.09 - 7.05	2.00	1.40	2.38	1.76
WR187	3.95 - 5.85	3.50	2.80	2.41	1.65
WR229	3.30 - 4.90	3.50	2.70	2.41	1.47
WR284	2.60 - 3.95	4.00	2.70	2.66	1.46
WR340	2.20 - 3.30	-	-	3.52	2.12
WR430	1.70 - 2.60	-	-	4.50	2.62

## Termination (Low Power Precision)

Series No: 131

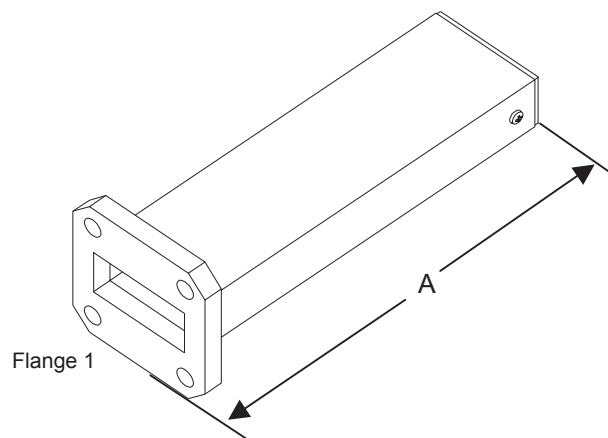
### Part Description

UBS' standard product line of precision low power terminations use spear load elements for optimum electrical performance. Maximum power handling capacity:  
0.5 watt for waveguide sizes WR-28 to WR-42, 1 watt for WR-51 and WR-62, 2 watts for waveguide sizes WR-75 to WR-650.

### Ordering Data

Part number - 131 - X - X - X

Series No. \_\_\_\_\_  
WG Size \_\_\_\_\_  
Flange 1 \_\_\_\_\_  
Flange 1 Mounting \_\_\_\_\_



### Flange Configuration

Flange Type	C - Cover G - Groove CHOKE CMR CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating

### Electrical Specification

VSWR	< 1.02 max.
------	-------------

**STANDARD FINISH:** is electroless corrosion protection for the metal surface. Non standard configurations and finishes (Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

### Specifications

Size	Frequency GHz	Dimensions (inches) A (min)
WR28	26.50 - 40.00	2.50
WR34	22.00 - 33.00	2.50
WR42	18.00 - 26.00	2.59
WR51	15.00 - 22.00	3.25
WR62	12.40 - 18.00	3.43
WR75	10.00 - 15.00	4.30
WR90	8.20 - 12.40	4.31
WR112	7.05 - 10.00	3.58
WR137	5.85 - 8.20	4.23
WR159	4.09 - 7.05	3.00
WR187	3.95 - 5.85	3.00
WR229	3.30 - 4.90	7.50
WR284	2.60 - 3.95	11.00
WR340	2.20 - 3.30	11.18
WR430	1.70 - 2.60	-
WR650	1.12 - 1.70	-

## Termination (Low Power)

Series No: 132

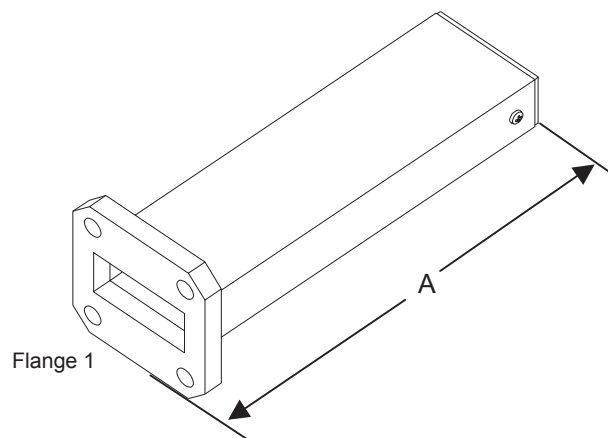
### Part Description

UBS' standard product line of precision low power terminations use spear load elements for optimum electrical performance. Maximum power handling capacity:  
0.5 watt for waveguide sizes WR-28 to WR-42, 1 watt for WR-51 and WR-62, 2 watts for waveguide sizes WR-75 to WR-650.

### Ordering Data

Part number - 132 - X - X - X

Series No. \_\_\_\_\_  
WG Size \_\_\_\_\_  
Flange 1 \_\_\_\_\_  
Flange 1 Mounting \_\_\_\_\_



### Flange Configuration

Flange Type	C - Cover G - Groove CHOKE CMR CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating

### Electrical Specification

VSWR	< 1.10 max.
------	-------------

**STANDARD FINISH:** is electroless corrosion protection for the metal surface. Non standard configurations and finishes (Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

### Specifications

Size	Frequency GHz	Dimensions (inches) A (min)
WR28	26.50 - 40.00	2.00
WR34	22.00 - 33.00	2.00
WR42	18.00 - 26.00	3.00
WR51	15.00 - 22.00	3.00
WR62	12.40 - 18.00	4.00
WR75	10.00 - 15.00	4.00
WR90	8.20 - 12.40	6.00
WR112	7.05 - 10.00	6.00
WR137	5.85 - 8.20	6.50
WR159	4.09 - 7.05	7.50
WR187	3.95 - 5.85	8.50
WR229	3.30 - 4.90	10.00
WR284	2.60 - 3.95	10.50
WR340	2.20 - 3.30	-
WR430	1.70 - 2.60	-
WR510	1.45 - 2.02	-
WR650	1.12 - 1.70	-



## Termination (Low Power short-length)

Series No: 133

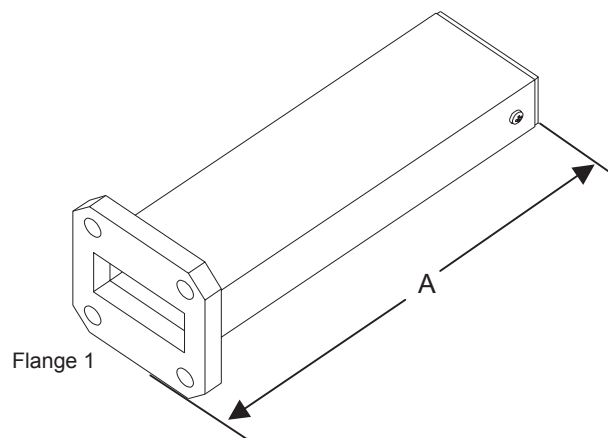
### Part Description

UBS' standard product line of precision low power terminations use spear load elements for optimum electrical performance. Maximum power handling capacity:  
0.5 watt for waveguide sizes WR-28 to WR-42, 1 watt for WR-51 and WR-62, 2 watts for waveguide sizes WR-75 to WR-650.

### Ordering Data

Part number - 133 - X - X - X

Series No. \_\_\_\_\_  
WG Size \_\_\_\_\_  
Flange 1 \_\_\_\_\_  
Flange 1 Mounting \_\_\_\_\_



### Flange Configuration

Flange Type	C - Cover G - Groove CHOKE CMR CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating

### Electrical Specification

VSWR	< 1.15 max.
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**STANDARD FINISH:** is electroless corrosion protection for the metal surface. Non standard configurations and finishes (Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

### Specifications

Size	Frequency GHz	Dimensions (inches) A (min)
WR28	26.50 - 40.00	1.00
WR34	22.00 - 33.00	1.00
WR42	18.00 - 26.00	1.00
WR51	15.00 - 22.00	1.40
WR62	12.40 - 18.00	1.80
WR75	10.00 - 15.00	2.00
WR90	8.20 - 12.40	3.00
WR112	7.05 - 10.00	3.28
WR137	5.85 - 8.20	3.50
WR159	4.09 - 7.05	3.50
WR187	3.95 - 5.85	4.00
WR229	3.30 - 4.90	5.00
WR284	2.60 - 3.95	6.00
WR340	2.20 - 3.30	-
WR430	1.70 - 2.60	-
WR510	1.45 - 2.02	-
WR650	1.12 - 1.70	-

## Termination (Medium Power)

Series No: 134

### Part Description

UBS' standard product line of medium power terminations are constructed of normal wall waveguide tubing and extruded heat sink material. The load elements are custom ground silicon carbide spears tapered for an optimum VSWR response of 1.10 max.

Maximum power handling capacity:

25 watts for waveguide sizes WR-28 to WR-62, 50 watts for waveguide sizes WR-75 to WR-430.

### Ordering Data

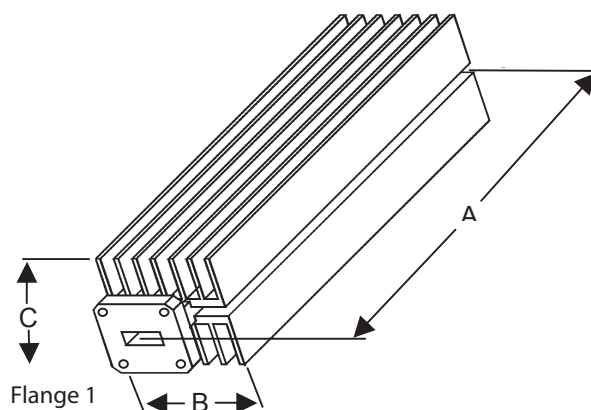
Part number - 134 - X - X - X

Series No. \_\_\_\_\_

WG Size \_\_\_\_\_

Flange 1 \_\_\_\_\_

Flange 1 Mounting \_\_\_\_\_



### Flange Configuration

Flange Type	C - Cover G - Groove CHOKE CMR CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating

### Electrical Specification

VSWR	< 1.10 max.
------	-------------

**STANDARD FINISH:** is electroless corrosion protection for the metal surface. Non standard configurations and finishes (Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

### Specifications

Size	Frequency GHz	Dimensions (inches)		
		A	B	C
WR28	26.50 - 40.00	5.00	2.30	3.40
WR34	22.00 - 33.00	5.00	2.30	3.40
WR42	18.00 - 26.00	5.00	2.30	3.40
WR51	15.00 - 22.00	5.00	2.30	3.40
WR62	12.40 - 18.00	5.00	2.30	3.40
WR75	10.00 - 15.00	7.00	2.30	3.40
WR90	8.20 - 12.40	7.00	2.30	3.40
WR112	7.05 - 10.00	7.00	2.30	3.40
WR137	5.85 - 8.20	7.00	2.30	3.40
WR159	4.09 - 7.05	8.50	2.30	3.40
WR187	3.95 - 5.85	8.50	2.30	3.40
WR229	3.30 - 4.90	9.00	2.30	3.40
WR284	2.60 - 3.95	12.00	2.30	3.40
WR340	2.20 - 3.30	-	-	-
WR430	1.70 - 2.60	-	-	-

## Termination (Medium Power, short-length)

Series No: 135

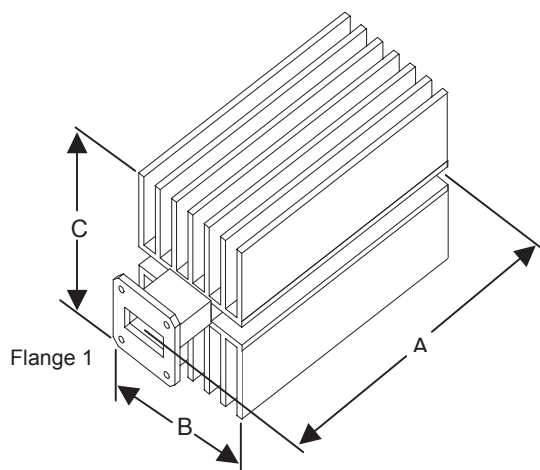
### Part Description

UBS' standard product line of medium power terminations are constructed of normal wall waveguide tubing and extruded heat sink material. The load elements are custom ground silicon carbide spears tapered for an optimum VSWR response of 1.15 max.

### Ordering Data

Part number - 135 - X - X - X

Series No. \_\_\_\_\_  
 WG Size \_\_\_\_\_  
 Flange 1 \_\_\_\_\_  
 Flange 1 Mounting \_\_\_\_\_



### Flange Configuration

Flange Type	C - Cover G - Groove CHOKE CMR CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating

### Electrical Specification

VSWR	< 1.15 max.
------	-------------

**STANDARD FINISH:** is electroless corrosion protection for the metal surface. Non standard configurations and finishes (Silver, Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

### Notes

1. All dimensions are for reference only
2. Depending on waveguide size and power requirements, the termination may require a heatsink. If required, UBS will advise and quote the termination with the heatsink included
3. All heatsinks selected based on natural convection cooling. For Forced air cooling, contact factory

### Specifications

Size	Frequency GHz	Dimensions (inches)			Average Power Watts
		A	B	C	
WR28	26.50 - 40.00	3.00	2.30	3.40	50
WR34	22.00 - 33.00	3.00	2.30	3.40	50
WR42	18.00 - 26.00	3.00	2.30	3.40	80
WR51	15.00 - 22.00	3.00	2.30	3.40	100
WR62	12.40 - 18.00	3.00	2.30	3.40	150
WR75	10.00 - 15.00	4.00	2.30	3.40	80
WR90	8.20 - 12.40	5.00	2.30	3.40	150
WR112	7.05 - 10.00	5.00	2.30	3.40	250
WR137	5.85 - 8.20	5.00	2.30	3.40	350
WR159	4.09 - 7.05	5.00	2.30	3.40	300
WR187	3.95 - 5.85	5.50	2.30	3.40	450
WR229	3.30 - 4.90	6.00	2.30	3.40	300
WR284	2.60 - 3.95	7.50	2.30	3.40	500
WR340	2.20 - 3.30	-	-	-	700
WR430	1.70 - 2.60	-	-	-	450

## Termination (High Power)

Series No: 136

### Part Description

UBS' standard product line of short length high power terminations are constructed similar to the medium power terminations.

### Ordering Data

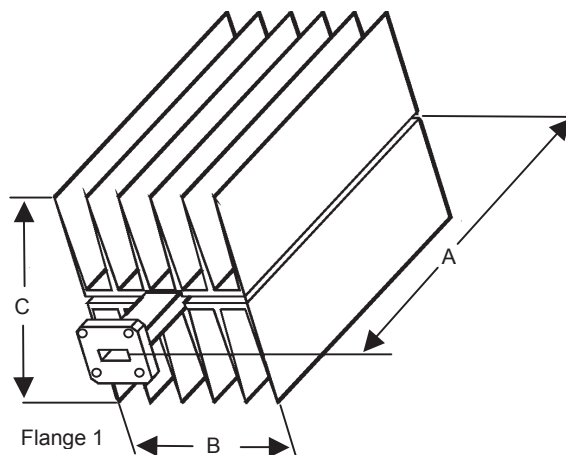
Part number - 136 - X - X - X

Series No. \_\_\_\_\_

WG Size \_\_\_\_\_

Flange 1 \_\_\_\_\_

Flange 1 Mounting \_\_\_\_\_



### Flange Configuration

Flange Type	C - Cover G - Groove CHOKE CMR CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating

### Electrical Specification

VSWR	< 1.10 max.
------	-------------

**STANDARD FINISH:** is electroless corrosion protection for the metal surface. Non standard configurations and finishes (Silver, Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

### Notes

1. All dimensions are for reference only
2. Depending on waveguide size and power requirements, the termination may require a heatsink. If required, UBS will advise and quote the termination with the heatsink included
3. All heatsinks selected based on natural convection cooling. For Forced air cooling, contact factory

### Specifications

Size	Frequency GHz	Dimensions (inches)			Average Power Watts
		A	B	C	
WR28	26.50 - 40.00	5.00	2.30	3.40	50
WR34	22.00 - 33.00	5.00	2.30	3.40	75
WR42	18.00 - 26.00	5.00	2.30	3.40	150
WR51	15.00 - 22.00	5.00	2.30	3.40	110
WR62	12.40 - 18.00	5.00	2.30	3.40	200
WR75	10.00 - 15.00	8.00	5.20	5.15	200
WR90	8.20 - 12.40	8.00	5.20	5.15	225
WR112	7.05 - 10.00	8.00	5.20	5.15	425
WR137	5.85 - 8.20	8.00	5.20	5.15	500
WR159	4.09 - 7.05	9.00	5.20	5.15	625
WR187	3.95 - 5.85	9.50	5.20	5.15	750
WR229	3.30 - 4.90	12.00	5.20	5.15	1000
WR284	2.60 - 3.95	13.00	5.20	5.15	1200
WR340	2.20 - 3.30	-	-	-	-
WR430	1.70 - 2.60	-	-	-	-

## Termination (RAM)

Series No: 137

### Part Description

Unique Broadband Systems offers a line of RAM terminations to mate with standard waveguide flanges. In addition to the popular standard flanges listed, UBS offers a more complete line of industry standard flange styles upon request.

### Ordering Data

Part Number - 137 - X - X - X  
 Series No. \_\_\_\_\_  
 WG Size \_\_\_\_\_  
 Flange \_\_\_\_\_  
 Flange Mounting \_\_\_\_\_



### Flange Configuration

Flange Type	C - Cover G - Groove CMR CPR (F, G)
Flange Mounting Holes	T1 - Through Holes T2 - THreaded A - Alternating

### Electrical Specification

VSWR	≤ 1.925
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### Specifications

Size	Frequency GHz
WR28	26.50 - 40.00
WR34	22.00 - 33.00
WR42	18.00 - 26.00
WR51	15.00 - 22.00
WR62	12.40 - 18.00
WR75	10.00 - 15.00
WR90	8.20 - 12.40
WR112	7.05 - 10.00
WR137	5.85 - 8.20
WR159	4.09 - 7.05
WR187	3.95 - 5.85
WR229	3.30 - 4.90
WR284	2.60 - 3.95
WR340	2.20 - 3.30
WR430	1.70 - 2.60
WR650	1.12 - 1.70

## Termination (Ferrite)

Series No: 138

### Part Description

Unique Broadband Systems offers a line of Ferrite terminations to mate with standard waveguide flanges. In addition to the popular standard flanges listed, UBS offers a more complete line of industry standard flange styles upon request.

### Ordering Data

Part Number - 138 - X - X - X

Series No. \_\_\_\_\_  
 WG Size \_\_\_\_\_  
 Flange \_\_\_\_\_  
 Flange Mounting \_\_\_\_\_



### Flange Configuration

Flange Type	C - Cover G - Groove CMR CPR (F, G)
Flange Mounting Holes	T1 - Through Holes T2 - THreaded A - Alternating

### Electrical Specification

VSWR	≤ 1.1
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### Specifications

Size	Frequency GHz
WR28	26.50 - 40.00
WR34	22.00 - 33.00
WR42	18.00 - 26.00
WR51	15.00 - 22.00
WR62	12.40 - 18.00
WR75	10.00 - 15.00
WR90	8.20 - 12.40
WR112	7.05 - 10.00
WR137	5.85 - 8.20
WR159	4.09 - 7.05
WR187	3.95 - 5.85
WR229	3.30 - 4.90
WR284	2.60 - 3.95
WR340	2.20 - 3.30
WR430	1.70 - 2.60
WR650	1.12 - 1.70

## Broadwall Directional Coupler

Series No: 141

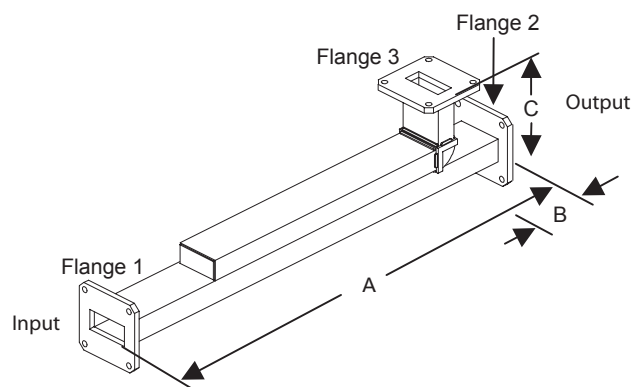
### Part Description

UBS offers a standard product line of multi-hole waveguide broadwall directional couplers covering waveguide sizes from WR-28 through WR-284. The optimum electrical characteristics of high directivity and coupling flatness are achieved utilizing a precision machined Tchebyscheff coupling hole distribution and a precision ground tapered load element in the secondary arm.

### Ordering Data

Part number - 141 - X - X - X - X - X - X - X - X

Series No.	
WG Size	
Coupling	
Flange 1	
Flange 1 Mounting	
Flange 2	
Flange 2 Mounting	
Flange 3	
Flange 3 Mounting	



### Flange Configuration

Flange Type	C - Cover G - Groove CHOKE CMR CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating

### Electrical Specification

VSWR	1.08 max. primary line 1.12 max. secondary line
Coupling	± 1.0 dB mean
Directivity	35 dB min.

**STANDARD FINISH:** is electroless corrosion protection for the metal surface, plus "Admiralty Gray" epoxy top coat. Non standard configurations and finishes (Silver, Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

### Specifications

Size	Frequency GHz	Dimension (inches)	
		A	B
WR28	26.50 - 40.00	1.00	1.20
WR34	22.00 - 33.00	1.00	1.50
WR42	18.00 - 26.00	1.00	1.50
WR51	15.00 - 22.00	1.75	1.50
WR62	12.40 - 18.00	1.95	1.50
WR75	10.00 - 15.00	1.95	2.00
WR90	8.20 - 12.40	2.00	2.00
WR112	7.05 - 10.00	2.00	2.00
WR137	5.85 - 8.20	2.20	2.50
WR159	4.09 - 7.05	2.50	2.80
WR187	3.95 - 5.85	2.50	2.80
WR229	3.30 - 4.90	3.00	2.80
WR284	2.60 - 3.95	3.00	3.00

### Coupling

6, 10, 20, 30, 40 and 50 dB



# Dual Broadwall Directional Coupler

Series No: 142

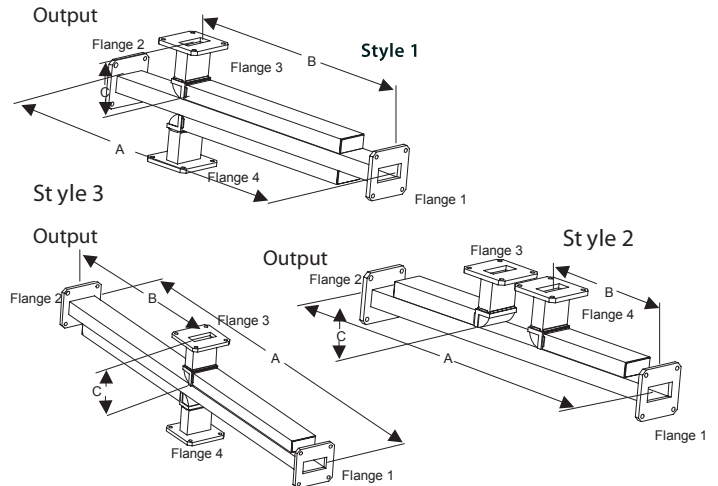
## Part Description

UBS offers a standard product line of dual arm multi-hole broadwall directional couplers covering waveguide sizes from WR-28 through WR-284 and configured similar to the single arm models.

## Ordering Data

Part number - 142 - X - X - X - X - X - X - X - X - X - X

Series No.	
WG Size	
Coupling	
Flange 1	
Flange 1 Mounting	
Flange 2	
Flange 2 Mounting	
Flange 3	
Flange 3 Mounting	
Flange 4	
Flange 4 Mounting	



## Flange Configuration

Flange Type	C - Cover G - Groove CHOKE CMR CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating

## Electrical Specification

VSWR	1.08 max. primary line 1.15 max. secondary line
Coupling	± 1.0 dB mean
Directivity	35 dB min.

**STANDARD FINISH:** is electroless corrosion protection for the metal surface, plus "Admiralty Gray" epoxy top coat. Non standard configurations and finishes (Silver, Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

## Specifications

Size	Frequency GHz	Dimension (inches)
		C
WR28	26.50 - 40.00	1.20
WR34	22.00 - 33.00	1.50
WR42	18.00 - 26.00	1.50
WR51	15.00 - 22.00	1.50
WR62	12.40 - 18.00	1.50
WR75	10.00 - 15.00	2.00
WR90	8.20 - 12.40	2.00
WR112	7.05 - 10.00	2.00
WR137	5.85 - 8.20	2.50
WR159	4.09 - 7.05	2.80
WR187	3.95 - 5.85	2.80
WR229	3.30 - 4.90	2.80
WR284	2.60 - 3.95	3.00

## Coupling

6, 10, 20, 30, 40 and 50 dB

## Broadwall Directional Coupler

Series No: 143

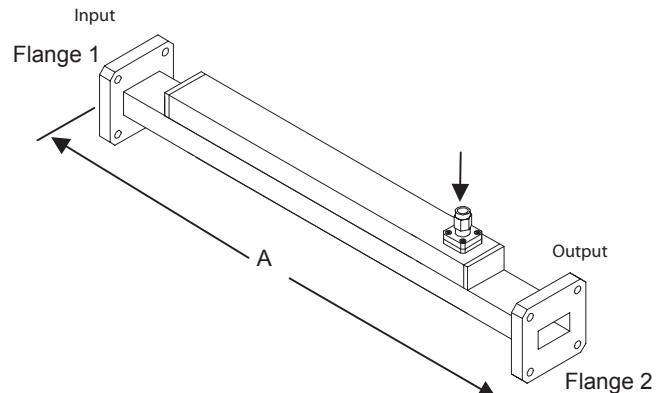
### Part Description

UBS offers a standard product line of multi-hole coax secondary broadwall couplers covering waveguide sizes from WR-28 through WR-284. The optimum electrical characteristics of high directivity and coupling flatness are achieved utilizing a precision machined Tchebyscheff coupling hole distribution and a precision ground tapered load element in the secondary arm.

### Ordering Data

Part number - 143 - X - X - X - X - X - X - X - X

Series No.	
WG Size	
Coupling	
Port 1 Connector Style	
Port 1 Connector Type	
Flange 1	
Flange 1 Mounting	
Flange 2	
Flange 2 Mounting	



### Flange Configuration

Flange Type	C - Cover G - Groove CHOKE, CMR, CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating

### Port Configuration

Connector Style	SMA, N, 2.9 mm(K), 3.5 mm, 2.4mm
Connector Type	M - Male, F - Female

### Electrical Specification

VSWR	1.08 max. primary line 1.30 max. secondary line
Coupling	± 1.0 dB mean
Directivity	35 dB min.

**STANDARD FINISH:** is electroless corrosion protection for the metal surface, plus "Admiralty Gray" epoxy top coat. Non standard configurations and finishes (Silver, Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

### Specifications

Size	Frequency GHz
WR28	26.50 - 40.00
WR34	22.00 - 33.00
WR42	18.00 - 26.00
WR51	15.00 - 22.00
WR62	12.40 - 18.00
WR75	10.00 - 15.00
WR90	8.20 - 12.40
WR112	7.05 - 10.00
WR137	5.85 - 8.20
WR159	4.09 - 7.05
WR187	3.95 - 5.85
WR229	3.30 - 4.90
WR284	2.60 - 3.95

### Coupling

6,10, 20, 30, 40 and 50 dB

### Note

For 60 dB coupling, an attenuator will be used on coaxial port and coupling mean is ±1.0 dB frequency response.

# Dual Broadwall Directional Coupler

Coax Secondaries

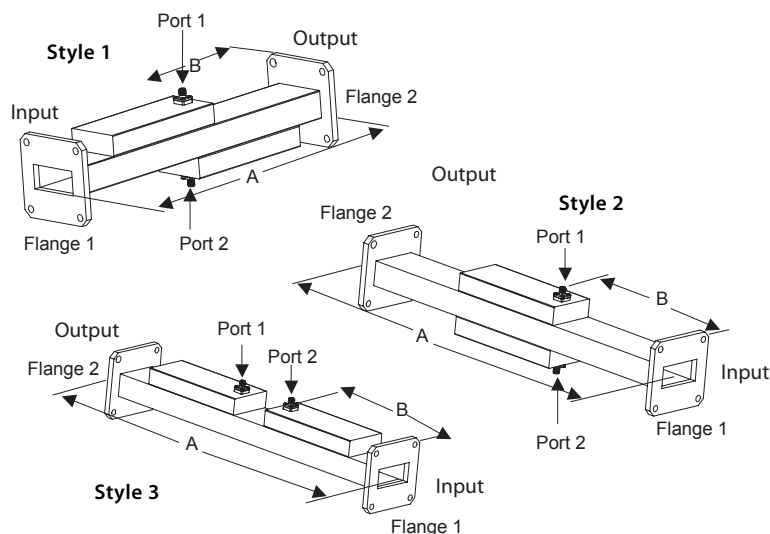
Series No: 144

## Part Description

UBS offers a standard product line of dual arm multi-hole coax dual directional couplers covering waveguide sizes from WR-28 through WR-284 and configured similar to the single arm models.

## Ordering Data

Part number	- 144 - X - X - X - X - X - X - X - X - X - X
Series No.	
WG Size	
Coupling	
Port 1 Connector Style	
Port 1 Connector Type	
Port 1 Connector Style	
Port 1 Connector Type	
Flange 1	
Flange 1 Mounting	
Flange 2	
Flange 2 Mounting	



## Flange Configuration

Flange Type	C - Cover G - Groove CHOKE, CMR, CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating

## Port Configuration (Style 3 Only)

Connector Style	SMA, N, 2.9 mm(K), 3.5 mm, 2.4mm
Connector Type	M - Male, F - Female

## Electrical Specification

VSWR	1.08 max. primary line 1.30 max. secondary line
Coupling	± 1.0 dB mean ± 0.50 dB freq. response
Directivity	35 dB min.

**STANDARD FINISH:** is electroless corrosion protection for the metal surface, plus "Admiralty Gray" epoxy top coat. Non standard configurations and finishes (Silver, Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

## Specifications

Size	Frequency GHz
WR28	26.50 - 40.00
WR34	22.00 - 33.00
WR42	18.00 - 26.00
WR51	15.00 - 22.00
WR62	12.40 - 18.00
WR75	10.00 - 15.00
WR90	8.20 - 12.40
WR112	7.05 - 10.00
WR137	5.85 - 8.20
WR159	4.09 - 7.05
WR187	3.95 - 5.85
WR229	3.30 - 4.90
WR284	2.60 - 3.95

## Coupling

10, 20, 30, 40 and 50 dB

## Note

For Connector Style, contact factory for 2.9mm, 3.5mm, and 2.4mm

# Cross Guide Coupler

Series No: 145

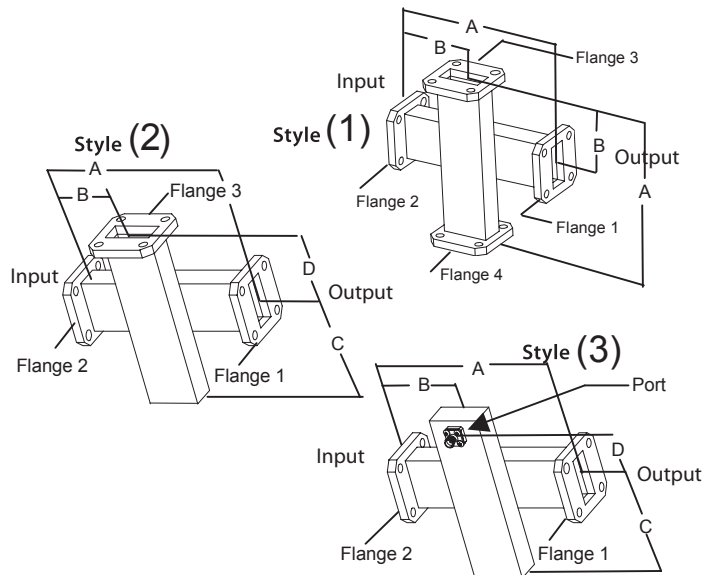
## Part Description

UBS directional crossguide couplers utilize an ultra-flat coupling technique that exhibits high power handling characteristics, while maintaining optimum electrical performance parameters over the full waveguide bandwidth.

## Ordering Data

Part number - 145 - X - X - X - X - X - X - X - X - X - X - X - X - X

Series No.	
WG Size	
Coupling	
Body Style	
Port 1 Connector Style	
Port 1 Connector Type	
Flange 1	
Flange 1 Mounting	
Flange 2	
Flange 2 Mounting	
Flange 1	
Flange 1 Mounting	
Flange 2	
Flange 2 Mounting	



## Flange Configuration

Flange Type	C - Cover G - Groove CHOKE, CMR, CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating

## Port Configuration (Style 3 Only)

Connector Style	SMA, N, 2.9 mm(K), 3.5 mm, 2.4mm
Connector Type	M - Male, F - Female

## Electrical Specification

VSWR	1.08 max. primary line 1.30 max. secondary line
Coupling	±1.0dB max for 10% of WG Band
Directivity	20 dB min.

**STANDARD FINISH:** is electroless corrosion protection for the metal surface, plus "Admiralty Gray" epoxy top coat. Non standard configurations and finishes (Silver, Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

## Specifications

Size	Frequency GHz	Dimensions (inches)			
		A	B	C	D
WR28	26.50 - 40.00	3.00	1.50	3.50	0.75
WR34	22.00 - 33.00	3.00	1.50	3.50	0.75
WR42	18.00 - 26.00	3.00	1.50	3.50	0.75
WR51	15.00 - 22.00	3.00	1.50	3.50	0.75
WR62	12.40 - 18.00	3.00	1.50	3.50	0.75
WR75	10.00 - 15.00	3.00	1.50	3.80	1.00
WR90	8.20 - 12.40	3.50	1.75	3.80	1.00
WR112	7.05 - 10.00	4.00	2.00	5.20	1.25
WR137	5.85 - 8.20	4.00	2.00	4.50	2.00
WR159	4.09 - 7.05	5.00	2.50	6.00	2.25
WR187	3.95 - 5.85	5.50	2.75	6.50	2.25
WR229	3.30 - 4.90	6.00	3.00	8.00	2.50
WR284	2.60 - 3.95	7.00	3.50	10.00	3.00

## Coupling

20, 30, 40, 50 and 60 dB

## Note

For connector style, contact factory for 2.9 mm(K), 3.5 mm, 2.4 mm

# Dual Cross Guide Coupler

Series No: 145D

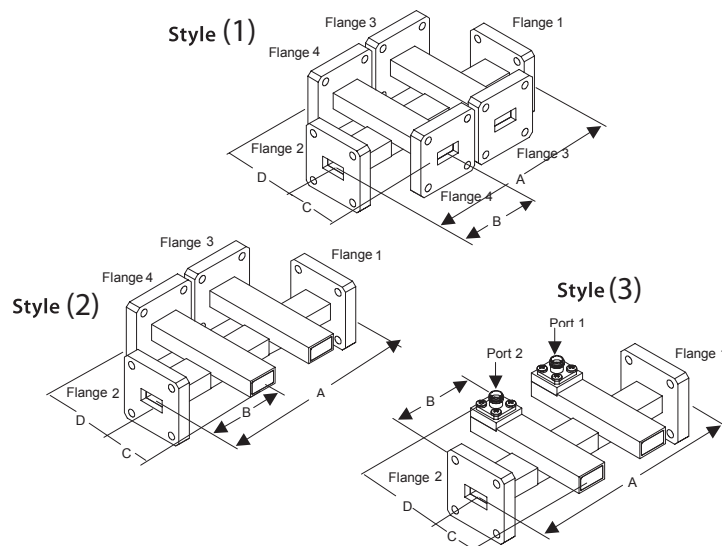
## Part Description

UBS directional crossguide couplers utilize an ultra-flat coupling technique that exhibits high power handling characteristics, while maintaining optimum electrical performance parameters.

## Ordering Data

Part number - 145D - X - X - X - X - X - X - X - X - X - X - X - X - X

Series No.	
WG Size	
Coupling	
Body Style	
Port 1 Connector Style	
Port 1 Connector Type	
Flange 1	
Flange 1 Mounting	
Flange 2	
Flange 2 Mounting	
Flange 1	
Flange 1 Mounting	
Flange 2	
Flange 2 Mounting	



## Flange Configuration

Flange Type	C - Cover G - Groove CHOKE, CMR, CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating

## Port Configuration (Style 3 Only)

Connector Style	SMA, N, 2.9 mm(K), 3.5 mm, 2.4mm
Connector Type	M - Male, F - Female

## Electrical Specification

VSWR	1.08 max. primary line 1.30 max. secondary line
Coupling	±1.0dB max for 10% of WG Band
Directivity	20 dB min.

**STANDARD FINISH:** is electroless corrosion protection for the metal surface, plus "Admiralty Gray" epoxy top coat. Non standard configurations and finishes (Silver, Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

## Specifications

Size	Frequency GHz	Dimensions (inches)			
		A	B	C	D
WR28	26.50 - 40.00	3.00	1.50	3.50	0.75
WR34	22.00 - 33.00	3.00	1.50	3.50	0.75
WR42	18.00 - 26.00	3.00	1.50	3.50	0.75
WR51	15.00 - 22.00	3.00	1.50	3.50	0.75
WR62	12.40 - 18.00	3.00	1.50	3.50	0.75
WR75	10.00 - 15.00	3.00	1.50	3.80	1.00
WR90	8.20 - 12.40	3.50	1.75	3.80	1.00
WR112	7.05 - 10.00	4.00	2.00	5.20	1.25
WR137	5.85 - 8.20	4.00	2.00	4.50	2.00
WR159	4.09 - 7.05	5.00	2.50	6.00	2.25
WR187	3.95 - 5.85	5.50	2.75	6.50	2.25
WR229	3.30 - 4.90	6.00	3.00	8.00	2.50
WR284	2.60 - 3.95	7.00	3.50	10.00	3.00

## Coupling

20, 30, 40, 50 and 60 dB

## Note

For connector style, contact factory for 2.9 mm(K), 3.5 mm, 2.4 mm

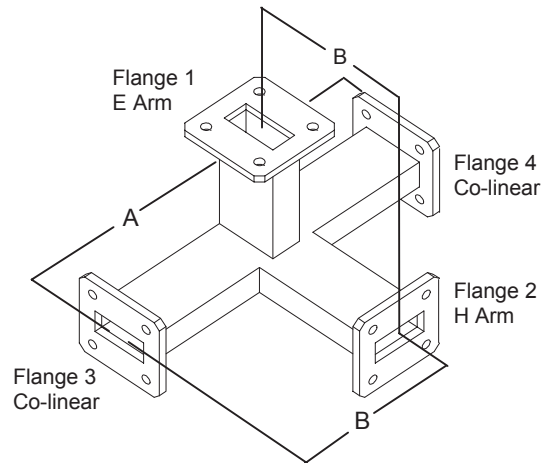
### Part Description

Unique Broadband Systems offers a standard product line of isolated four-port hybrid power dividers covering waveguide sizes from WR-28 through WR-340.

### Ordering Data

Part number - 146 - X - X - X - X - X - X - X - X - X

Series No.	
WG Size	
Flange 1	
Flange 1 Mounting	
Flange 2	
Flange 2 Mounting	
Flange 3	
Flange 3 Mounting	
Flange 4	
Flange 4 Mounting	



### Flange Configuration

Flange Type	C - Cover G - Groove CHOKE CMR CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating

### Specifications

Size	Frequency GHz	Dimension (inches)	
		A	B
WR28	26.50 - 40.00	2.50	1.25
WR34	22.00 - 33.00	2.50	1.25
WR42	18.00 - 26.00	2.50	1.25
WR51	15.00 - 22.00	2.50	1.25
WR62	12.40 - 18.00	2.50	1.25
WR75	10.00 - 15.00	2.50	1.25
WR90	8.20 - 12.40	2.50	1.25
WR112	7.05 - 10.00	3.50	1.25
WR137	5.85 - 8.20	4.50	2.25
WR159	4.09 - 7.05	5.00	2.50
WR187	3.95 - 5.85	5.00	2.50
WR229	3.30 - 4.90	6.00	3.00
WR284	2.60 - 3.95	6.00	3.00
WR340	2.20 - 3.30	-	-

### Electrical Specification

VSWR	1.3 nom. 1.5 max.
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### Isolation

E to H	30 dB min.
Co-Linear	15 dB min.
Power Split Variation	+/- 0.3 dB

**STANDARD FINISH:** is electroless corrosion protection for the metal surface, plus "Admiralty Gray" epoxy top coat. Non standard configurations and finishes (Silver, Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

# Loop Coupler

Series No: 147

## Part Description

UBS series of waveguide loop couplers offers a new dimension in high directivity couplers. They are available over a coupling range of 30-70 dB. These couplers are engineered to perform with a minimum of waveguide length making them the smallest of any waveguide couplers available.

## Ordering Data

Part number - 147 - X - X - X - X - X - X - X - X - X - X - X

Series No. \_\_\_\_\_

WG Size \_\_\_\_\_

Coupling \_\_\_\_\_

Port 1,2 Connector Style \_\_\_\_\_

Port 1,2 Connector Type \_\_\_\_\_

Flange 1 \_\_\_\_\_

Flange 1 Mounting \_\_\_\_\_

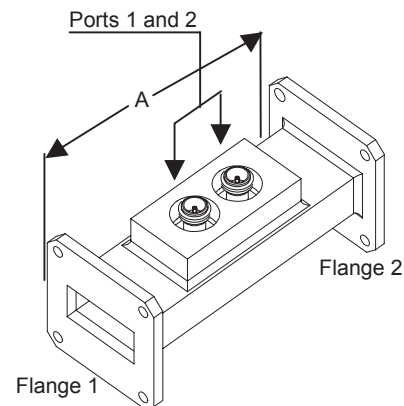
Flange 2 \_\_\_\_\_

Flange 2 Mounting \_\_\_\_\_

Bandwidth (10 or 20 %) \_\_\_\_\_

Centre Frequency \_\_\_\_\_

Hardware \_\_\_\_\_



## Flange Configuration

Flange Type	C - Cover G - Groove CHOKE, CMR, CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating

## Port Configuration

Connector Style	SMA, N, 2.9 mm(K), 3.5 mm, 2.4mm
Connector Type	M - Male, F - Female

## Electrical Specification

VSWR - Mainline	1.05 max
Coupling	± 1dB max for 20% of WG Band
Directivity	30 dB typ. for 10% of WG Band 25 dB typ. for 20% of WG Band

**STANDARD FINISH:** is electroless corrosion protection for the metal surface, plus "Admiralty Gray" epoxy top coat. Non standard configurations and finishes (Silver, Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

## Specifications

Size	Frequency GHz	Dimension (inches) A
WR90	8.20 - 12.40	2.50
WR102	7.00 - 11.00	2.50
WR112	7.05 - 10.00	2.50
WR137	5.85 - 8.20	3.50
WR159	4.09 - 7.05	3.50
WR187	3.95 - 5.85	3.50
WR229	3.30 - 4.90	5.00
WR284	2.60 - 3.95	5.00
WR340	2.20 - 3.30	-
WR430	1.70 - 2.60	5.00
WR650	1.12 - 1.70	-

## Coupling

30 dB, 40 dB, 50 dB, 60 dB and 70 dB



# Power Samplers

Series No: 148

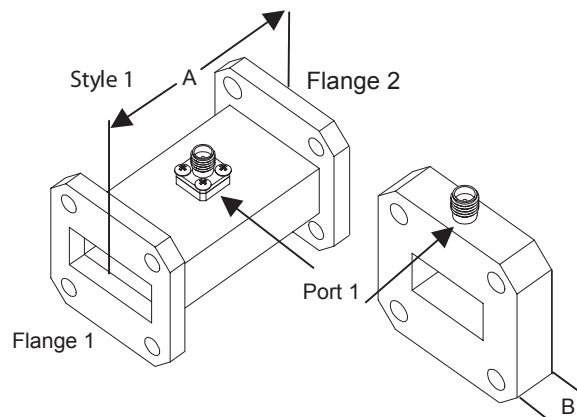
## Part Description

Unique Broadband Systems power samplers offers a low cost approach to monitoring power in matched waveguide systems where high directivity is not a concern. Standard coupling values are available from 20 dB to 90 dB with coupling flatness maintained at +/- 1.0 dB.

## Ordering Data

Part number - 148 - X - X - X - X - X - X - X - X

Series No.	
WG Size	
Coupling	
Port 1 Connector Style	
Port 1 Connector Type	
Flange 1	
Flange 1 Mounting	
Flange 2	
Flange 2 Mounting	



## Flange Configuration

Flange Type	C - Cover G - Groove CHOKE, CMR, CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating

## Port Configuration

Connector Style	SMA, N, 2.9 mm(K), 3.5 mm, 2.4mm
Connector Type	M - Male, F - Female

## Electrical Specification

VSWR - Mainline	1.10 max.
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## Specifications

Size	Frequency GHz	Dimension (inches)	
		A	B
WR28	26.50 - 40.00	2.00	0.75
WR34	22.00 - 33.00	2.00	0.75
WR42	18.00 - 26.00	2.00	0.75
WR51	15.00 - 22.00	2.00	0.75
WR62	12.40 - 18.00	2.00	0.75
WR75	10.00 - 15.00	2.00	0.75
WR90	8.20 - 12.40	2.00	0.75
WR112	7.05 - 10.00	2.00	0.75
WR137	5.85 - 8.20	2.50	0.75
WR159	4.09 - 7.05	2.50	-
WR187	3.95 - 5.85	3.00	-
WR229	3.30 - 4.90	3.00	-
WR284	2.60 - 3.95	3.00	-

**STANDARD FINISH:** is electroless corrosion protection for the metal surface, plus "Admiralty Gray" epoxy top coat. Non standard configurations and finishes (Silver, Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

## Coupling

30 to 40dB

# MMDS Quadrature Hybrid

Series No: 149

## Ordering Data

Part number - 149 - X - X - X - X - X - X - X

Series No. \_\_\_\_\_

WG Size \_\_\_\_\_

Body Style \_\_\_\_\_

Flange 1 & 2 Type \_\_\_\_\_

Flange 1 & 2 Mounting \_\_\_\_\_

Flange 3 & 4 Type (style 2 only) \_\_\_\_\_

Flange 3 & 4 Mounting (style 2 only) \_\_\_\_\_

Port 3 & 4 Connector Type \_\_\_\_\_

## Specifications

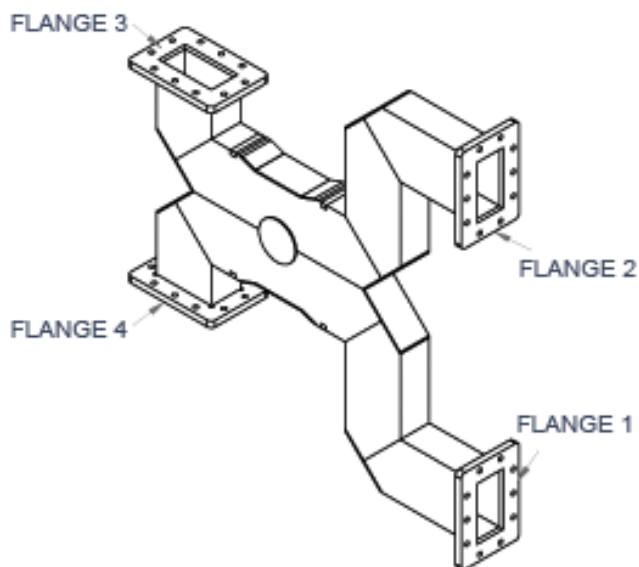
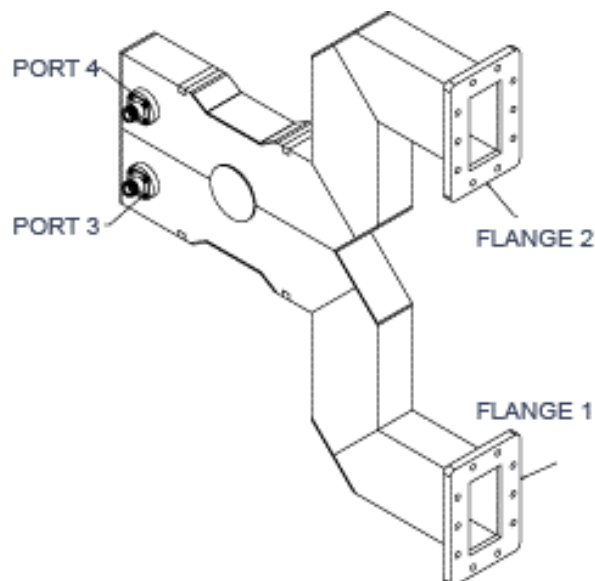
Frequency Bandwidth	2.5 to 2.7 GHz
VSWR	1.25:1 max.
Insertion Loss	0.25 dB typ.
Isolation	18 dB max.
Unbalance	+/- 0.25 dB

## Flange Configuration

Flange Type	C - Cover G - Groove CHOKE CMR CPR (F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating

## Port Configuration

Connector Style	N-Type, 7/16 DIN-Type, 7/8 EIA
Connector Type	M - Male, F - Female



**STANDARD FINISH:** is electroless corrosion protection for the metal surface, plus "Admiralty Gray" epoxy top coat. Non standard configurations and finishes (Silver, Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

## Fixed Attenuator

Series No: 152

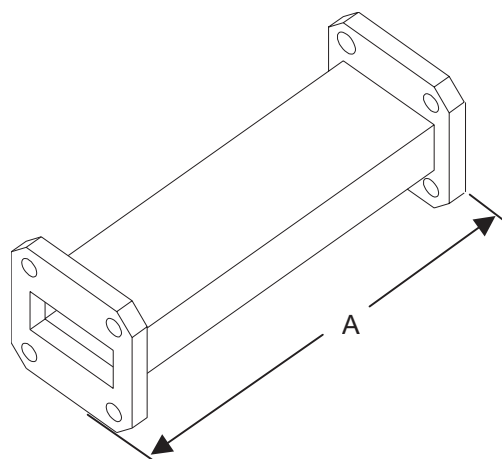
### Part Description

UBS offers a series of rectangular waveguide precision attenuators covering waveguide sizes from WR-28 through WR-284. The assembly construction includes a precision ground observing elements for optimum electrical performance. Attenuation flatness is +/- 0.5 dB over the 30% bandwidth and +/- 1.5 dB Full Band. The max. power rating for all waveguide sizes is 1 watt WR-28 to WR-62.

### Ordering Data

Part number - 152 - X - X - X - X - X - X

Series No. \_\_\_\_\_  
 WG Size \_\_\_\_\_  
 Attenuation \_\_\_\_\_  
 Flange 1 \_\_\_\_\_  
 Flange 1 Mounting \_\_\_\_\_  
 Flange 2 \_\_\_\_\_  
 Flange 2 Mounting \_\_\_\_\_



### Flange Configuration

Flange Type	C - Cover G - Groove CHOKE CMR CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating

### Specifications

Size	Frequency GHz	Minimum Dimension
WR28	26.50 - 40.00	2.00
WR34	22.00 - 33.00	2.00
WR42	18.00 - 26.00	2.00
WR51	15.00 - 22.00	2.50
WR62	12.40 - 18.00	2.50
WR75	10.00 - 15.00	3.00
WR90	8.20 - 12.40	3.00
WR112	7.05 - 10.00	3.50
WR137	5.85 - 8.20	3.50
WR159	4.09 - 7.05	3.50
WR187	3.95 - 5.85	4.00
WR229	3.30 - 4.90	4.00
WR284	2.60 - 3.95	4.00

### Electrical Specification

Attenuation	1 - 60 dB
VSWR	< 1.10 max.

**STANDARD FINISH:** is electroless corrosion protection for the metal surface. Non standard configurations and finishes (Silver, Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

# Waveguide Bulkhead Feed Assembly

Series No: 154

## Part Description

The 154 series Waveguide Bulkhead Feed Assembly was designed for use as a wall feed-through in assemblies. A gasket is provided on the panel mount side for weather resistance and the adapter is finished in a baked enamel paint.

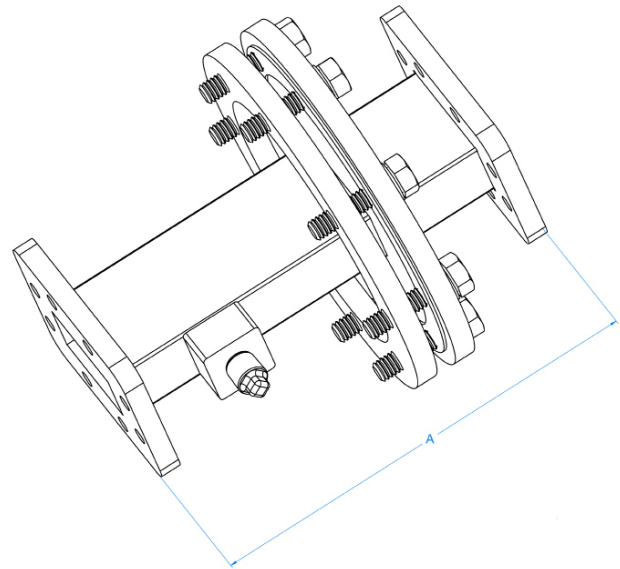
These adapters operate over the full waveguide bandwidths and are available for WR75 to WR137 waveguide sizes. Standard lengths are 5.00 inches with custom lengths and a wide variety of flange types available upon request.

## Ordering Data

Part number - 154 - X - X - X - X - X - X

Series No. \_\_\_\_\_  
 WG Size \_\_\_\_\_  
 Length \* \_\_\_\_\_  
 Flange 1 \_\_\_\_\_  
 Flange 1 Mounting \_\_\_\_\_  
 Flange 2 \_\_\_\_\_  
 Flange 2 Mounting \_\_\_\_\_

\* Customer requested Length  
 (contact Sales for more information)



## Flange Configuration

Flange Type	C - Cover G - Groove CHOKE CMR CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating

## Specifications

Size	Frequency (GHz)	Length (inches)
WR75	10.00 - 15.00	5.00
WR90	8.20 - 12.40	5.00
WR112	7.05 - 10.00	5.00
WR137	5.85 - 8.20	5.00

## Horn Antenna Series

Series No: 155

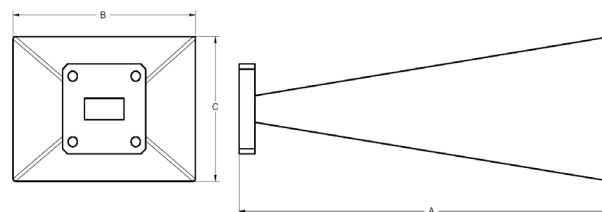
### Part Description

UBS offers a series of precision horn antennas covering waveguide sizes from WR-28 through WR-650. The assembly construction includes precision ground observing elements for optimum electrical performance.

### Ordering Data

Part number - 155 - X - X - X - X

Series No. \_\_\_\_\_  
 WG Size \_\_\_\_\_  
 Gain \_\_\_\_\_  
 Flange Type \_\_\_\_\_  
 Flange Mounting \_\_\_\_\_



### Flange Configuration

Flange Type	C - Cover G - Groove CHOKE CMR CPR CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating

### Specifications

Size	Frequency GHz	Dimensions (inches)								
		10 dB			15 dB			20 dB		
		A	B	C	A	B	C	A	B	C
WR28	26.50 - 40.00									
WR34	22.00 - 33.00									
WR42	18.00 - 26.00	1.24	0.62	0.43	2.35	1.15	0.84	4.09	2.13	1.56
WR51	15.00 - 22.00									
WR62	12.40 - 18.00	1.15	1.10	0.62	2.41	1.67	1.32	5.92	2.88	2.11
WR75	10.00 - 15.00	1.95	1.62	0.93	4.65	2.23	1.32	8.32	4.04	2.97
WR90	8.20 - 12.40	2.07	1.51	1.12	5.44	2.63	1.92	10.2	5.16	3.75
WR112	7.05 - 10.00									
WR137	5.85 - 8.20	3.12	2.03	1.44	6.53	3.45	2.51	12.33	6.71	4.70
WR159	4.09 - 7.05									
WR187	3.95 - 5.85									
WR229	3.30 - 4.90									
WR284	2.60 - 3.95									
WR340	2.20 - 3.30									
WR430	1.70 - 2.60									
WR650	1.12 - 1.70									

### Electrical Specification

VSWR	1.15 max.
Gain	10 dB, 15 dB, 20 dB
Gain Variance	± 2.0 dB

**STANDARD FINISH:** is electroless corrosion protection for the metal surface. Non standard configurations and finishes (Silver, Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

### Part Description

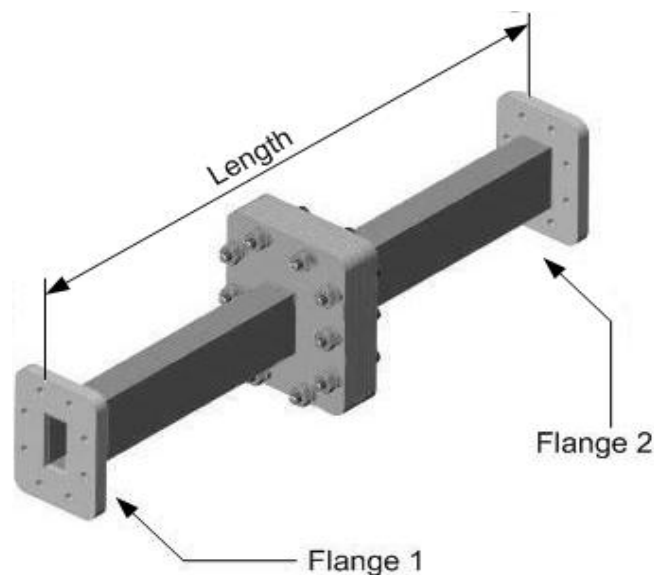
UBS offers a series of DC Blocks covering waveguide sizes from WR-28 through WR-650. The assembly construction includes precision ground elements for optimum electrical performance.

### Ordering Data

Part number - 156 - X - X - X - X - X - X

Series No. \_\_\_\_\_  
 WG Size \_\_\_\_\_  
 Length \* \_\_\_\_\_  
 Flange 1 \_\_\_\_\_  
 Flange 1 Mounting \_\_\_\_\_  
 Flange 2 \_\_\_\_\_  
 Flange 2 Mounting \_\_\_\_\_

\* Customer requested Length  
 (contact Sales for more information)



### Flange Configuration

Flange Type	C - Cover G - Groove CHOKE CMR CPR CPR(F, G)
Flange Mounting Holes	T1 - Through Holes T2 - Threaded A - Alternating

### Electrical Specification

VSWR	1.15 max.
Insertion Loss	0.15 dB max.

**STANDARD FINISH:** is electroless corrosion protection for the metal surface. Non standard configurations and finishes (Silver, Nickel, Cadmium plating) are available upon request. Waveguide sizes up to WR-650 available. Contact our sales department with your requirements.

### Specifications

Size	Frequency GHz	C	G	CHOKE	CMR	CPR
WR28	26.50 - 40.00	•	•	•		
WR34	22.00 - 33.00	•	•	•		
WR42	18.00 - 26.00	•	•	•		
WR51	15.00 - 22.00	•	•	•		
WR62	12.40 - 18.00	•	•	•		
WR75	10.00 - 15.00	•	•	•	•	•
WR90	8.20 - 12.40	•	•	•	•	•
WR112	7.05 - 10.00	•	•	•	•	•
WR137	5.85 - 8.20	•	•	•	•	•
WR159	4.09 - 7.05	•	•	•	•	•
WR187	3.95 - 5.85	•	•	•	•	•
WR229	3.30 - 4.90	•	•	•	•	•
WR284	2.60 - 3.95	•	•	•	•	•
WR340	2.20 - 3.30	•	•	•	•	•
WR430	1.70 - 2.60	•	•	•	•	•
WR650	1.12 - 1.70	•	•	•	•	•

## *Waveguide and Coaxial Components*

### **Filters, Couplers, Combiners and Power Dividers**

*DAB L-Band Dual-Mode Bandpass Filters*

*S-Band Dual Mode Bandpass Filters*

*18 GHz Dual Mode Bandpass Filters*

*UHF DTV Bandpass Filters*

*Combine Bandpass Filters*

*Waveguide Bandpass Filters*

*Waveguide Bandstop (Notch) Filters*

*Harmonic Reject Filters*

*DR Ceramic Filters*

*MMDS Directional Channel Filters/Combiners*

*18 GHz/27 GHz Semi-Adjacent Multi-Channel Combiners*

*UHF Loop Coupler*

*Triple Arm Coaxial Coupler*

*UHF High-Power (Quadrature) Hybrid*

*L-Band 6-Way Radial Combiner*

*Broadband Wilkinson Combiners/Dividers*

*2-way Low Power Divider*

*2-way High Power Divider*

## *Filter, Coupler, Combiner and Power Divider Product Specifications*



## DAB L-Band Dual-Mode Bandpass Filter

### Product Features

- Low loss
- High power ( Up to 2 kW )
- Compact dual-mode design
- Invar construction for stable performance
- Compliant with Eureka 147 mask specifications



### Overview

UBS' DAB L-band bandpass filters are custom designed for channelized applications requiring high levels of rejection near the operating band of interest.

The cavities are fabricated from Invar to provide excellent temperature stability and are silver plated for low loss.

Our DAB L-Band filters have been designed to meet the Eureka 147 mask specifications.

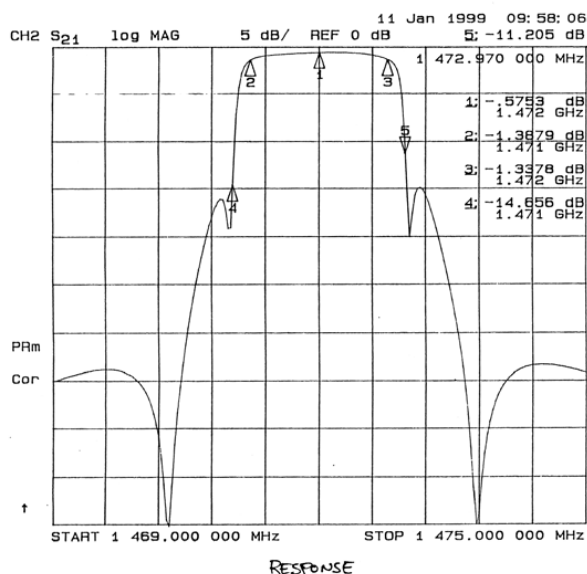
Available models include; four, six and eight-pole dual mode designs.

### L-Band Filter Specifications

<b>Center Frequency</b>	1452 MHz - 1492 MHz
<b>Insertion Loss:</b> <b>at Center Frequency</b> <b>at <math>\pm 0.77</math> MHz</b>	0.7 dB max 1.0 dB max.
<b>Rejection at <math>\pm 1.8</math> MHz</b>	30 dB min.
<b>VSWR</b>	1.20:1
<b>Average Power Handling</b>	Up to 2 kW (connector dependent)
<b>Connectors</b>	7/16 DIN-type, 7/8" or 5/8"
<b>Dimensions</b>	17" (L) x 9" (OD) (excludes connectors)

(specifications are subject to change without notice)

### Typical Frequency Response



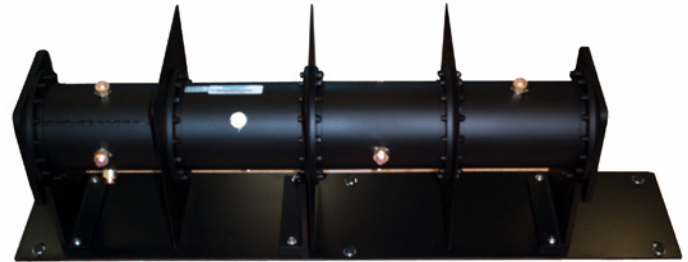
### General Filter Specifications

<b>Center Frequency</b>	2 to 20 GHz
<b>Number of Cavities</b>	2 to 4
<b>Passband</b>	2 MHz to 30 MHz
<b>Insertion Loss</b>	0.3 to 1.2 dB typ.
<b>Rejection</b>	Consult Factory
<b>Input/Output Ports</b>	Coaxial Connectors or WG flanges

## S-Band Dual-Mode Bandpass Filter

### Product Features

- Low loss
- High power ( Up to 3 kW )
- Compact dual-mode design
- Invar construction for stable performance
- Compliant with FCC mask specifications



### Overview

UBS Dual Mode filters are custom designed for channelized applications requiring high levels of rejection near the operating band of interest.

The cavities are fabricated from Invar to provide excellent temperature stability and are silver plated for low loss.

Our DARS S-Band filters have been designed to meet the FCC mask requirements for Digital Audio Radio Service Systems.

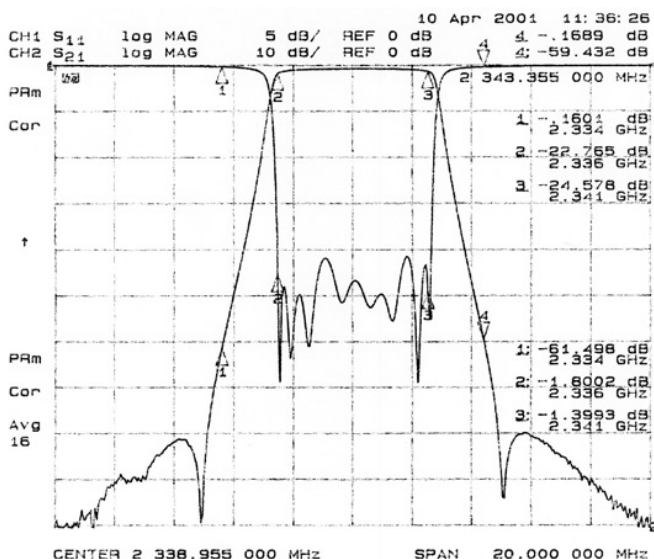
Available models include; four, six and eight-pole dual mode designs.

### S-Band Filter Specifications

<b>Center Frequency</b>	2300 MHz - 2345 MHz
<b>Insertion Loss at Center Frequency at <math>\pm 2.53</math> MHz</b>	0.85 dB max. 1.6 dB max.
<b>Rejection at <math>\pm 1.8</math> MHz</b>	38 dB min.
<b>VSWR</b>	1.20:1
<b>Average Power Handling</b>	Up to 3 kW
<b>Connectors</b>	WR340
<b>Dimensions</b>	38"L x 8"OD (excludes iris)

(specifications are subject to change without notice)

### Typical Frequency Response



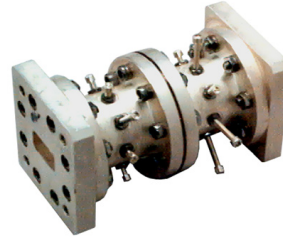
### General Filter Specifications

<b>Center Frequency</b>	2 to 20 GHz
<b>Number of Cavities</b>	2 to 4
<b>Passband</b>	2 MHz to 30 MHz
<b>Insertion Loss</b>	0.3 to 1.2 dB typ.
<b>Rejection</b>	Consult Factory
<b>Input/Output Ports</b>	Coaxial Connectors or WG flanges

## 18 GHz Dual-Mode Bandpass Filter

### Product Features

- Low loss
- Compact dual-mode design
- Invar construction for stable performance



### Overview

UBS Dual-Mode filters are custom designed for channelized applications requiring high levels of rejection near the operating band of interest.

The cavities are fabricated from Invar to provide excellent temperature stability and are silver plated for low loss.

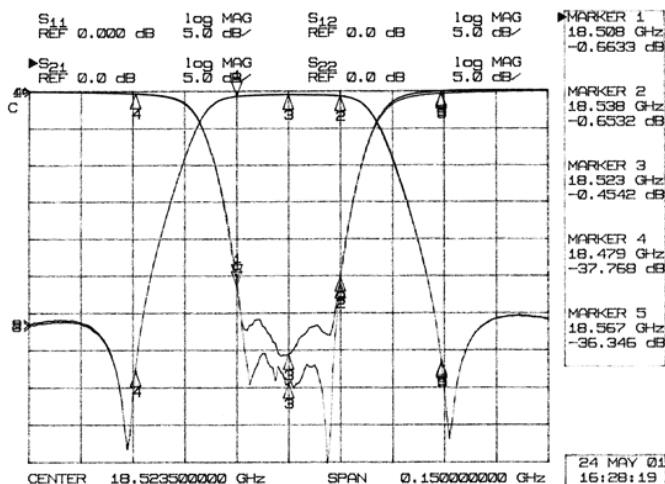
Available models include; four, six and eight-pole dual mode designs.

### 18 GHz Filter Specifications

<b>Center Frequency</b>	18,508 MHz - 18,567 MHz
<b>Insertion Loss:</b> <b>at Center Frequency</b> <b>at <math>\pm 15</math> MHz</b>	0.8 dB max. 1.0 dB max.
<b>Rejection at <math>\pm 45</math> MHz</b>	30 dB min.
<b>VSWR</b>	1.20:1
<b>Average Power Handling</b>	20 W (higher power versions also available)
<b>Connectors</b>	WR51
<b>Dimensions</b>	2.7" (L) x 1.5" (OD)

(specifications are subject to change without notice)

### Typical Frequency Response



### General Filter Specifications

<b>Center Frequency</b>	2 to 20 GHz
<b>Number of Cavities</b>	2 to 4
<b>Passband</b>	2 MHz to 30 MHz
<b>Insertion Loss</b>	0.3 to 1.2 dB typ.
<b>Rejection</b>	Consult Factory
<b>Input/Output Ports</b>	Coaxial Connectors or WG flanges

## UHF DTV Bandpass Filter

Model: 8CF-8-500

### Product Features

- 500 Watt maximum input power
- Chebyshev response
- DTV non-critical mask applications
- 19" rack mountable
- Very compact and lightweight



### Description and Application

UBS offers a line of compact, low-loss bandpass filters for analogue and DTV system applications.

The filter is designed in combine filter technology for small size, and consists of 8 screened resonators for effective spurious suppression. The inductive couplings between the resonators permit low operating voltages within the filter. The resonators are silver-plated for low insertion loss.

The filters are constructed from lightweight aluminum that provides solid mechanical and temperature stability, and come complete with the necessary hardware and test data.

### Product Specifications

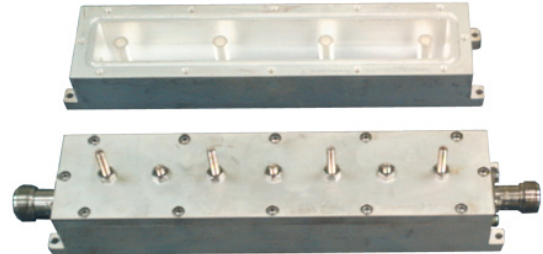
<b>Center Frequency Range</b>	Tunable from 470 MHz - 860 MHz
<b>Passband width</b>	8 MHz
<b>Type of Electrical Response</b>	Bandpass Chebyshev
<b>Number of Poles</b>	8
<b>Material</b>	Aluminum
<b>Interface</b>	7/16 DIN-type
<b>Technology</b>	Screened combine resonators in rectangular cavities
<b>VSWR</b>	1:1.23 typ.
<b>Insertion Loss Fc = 10.0 MHz</b>	0.85 dB @ Fc 2.3 dB @ Fc $\pm$ 4 MHz
<b>Rejection</b>	60 dB @ Fc $\pm$ 8 MHz
<b>Group Delay variation across passband (peak-to-peak)</b>	375...380 ns
<b>Size</b>	8" x 5" x 15" (without tuning screws and connectors)
<b>Weight</b>	9 kg
<b>Power</b>	500 Watts

(specifications are subject to change without notice)

## Comblines Bandpass Cavity Filter

### Product Features

- *Direct-coupled resonator design*
- *Very good rejection and spurious characteristics*
- *Low pass band insertion loss*
- *Lightweight, compact and economical*
- *Robust construction*



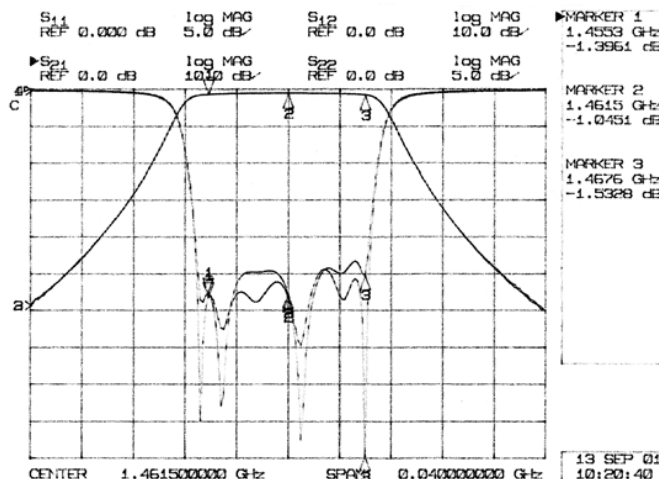
### Overview

UBS Comblines filter designs incorporate high “Q” structures enabling the realization of high skirt selectivity and very low pass-band insertion loss. This makes them ideally suited for critical receiver front-end or transmitter applications. Increased selectivity is accomplished by the addition of more resonators to the design.

The filter housing is generally made from lightweight aluminum and may be silver-plated for improved electrical characteristics. Temperature related frequency shifting is minimized through the use of proprietary design techniques and strict process control.

UBS Comblines filters are available from 2 to 14 resonator sections with bandwidths up to 30% and operating frequencies from 1GHz to 18 GHz. Please consult our sales department for further details.

### Typical Frequency Response



### Product Specifications

Frequency Range	1 GHz - 18 GHz
Available Bandwidth	Up to 30%
Insertion Loss	0.5 dB – 2.0 dB (dependant on # of sections)
Stop Band Attenuation	Consult Factory
Number of Resonator Sections Available	2 to 14
VSWR	1.50:1 ( Standard ) 1.20:1 ( Premium )
Connectors	SMA or N-type
Dimensions	Consult Factory

(specifications are subject to change without notice)

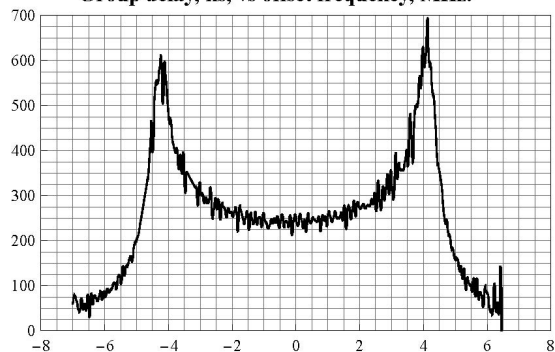
# UHF DTV Bandpass Filter



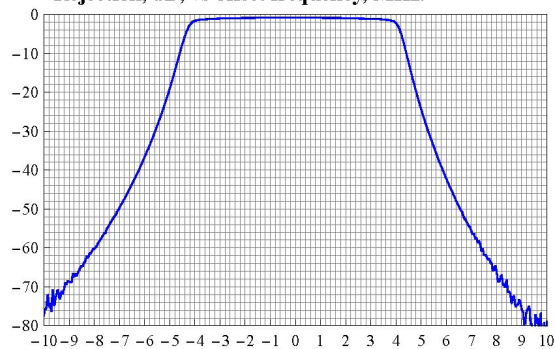
## Sample Measurement

Parameter	486 MHz - 494 MHz
Center Frequency (Fc)	490 MHz
Passband width	8 MHz
Insertion Loss	0.82 dB @ Fc 2.28 dB @ Fc $\pm$ 4 MHz
Return Loss	20 dB typ. 18.5 dB worst case

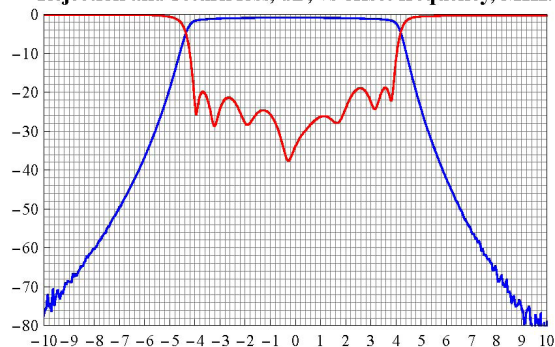
**8-pole comb-line: Fc=490 MHz, BW=8 MHz.**  
**Group delay, ns, vs offset frequency, MHz.**



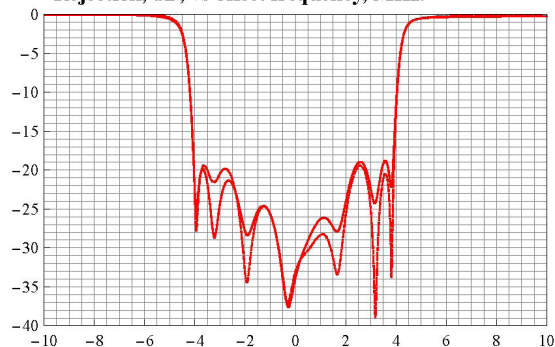
**8-pole comb-line filter: Fc=490 MHz, BW=8 MHz.**  
**Rejection, dB, vs offset frequency, MHz.**



**8-pole comb-line filter: Fc=480 MHz, BW=8 MHz.**  
**Rejection and return loss, dB, vs offset frequency, MHz.**



**8-pole comb-line filter: Fc=490 MHz, BW=8 MHz.**  
**Rejection, dB, vs offset frequency, MHz.**





## Waveguide Bandpass Filter

### Product Features

- Wide range of waveguide sizes
- Excellent out-of-band rejection
- Low pass band insertion loss



### Overview

Our bandpass filters exhibit excellent out-of-band rejection while maintaining a very low pass-band insertion loss. This makes them ideally suited for critical receiver front-end or transmitter applications. Increased selectivity is simply accomplished by the addition of more resonator sections to the design. Our designs can incorporate 2 to 17 resonator sections to satisfy the most stringent requirements.

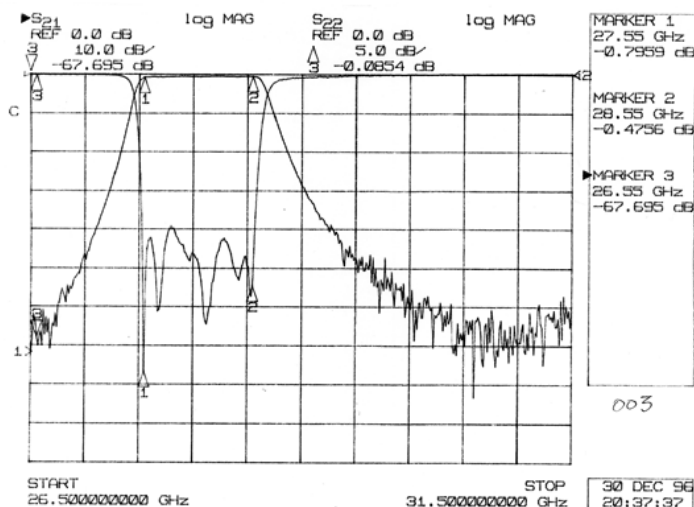
Available construction material includes bronze, aluminum or invar and may be folded to comply to a specified mechanical configuration. Please consult our sales department for further details.

### Product Specifications

<b>Frequency Range</b>	1.14 GHz – 40 GHz
<b>Available Bandwidth</b>	Up to 12%
<b>Insertion Loss</b>	0.5 dB – 2.0 dB (dependant on # of sections)
<b>Stop Band Attenuation</b>	Consult Factory
<b>Number of Resonator Sections Available</b>	2 to 17
<b>VSWR</b>	1.50:1
<b>Connectors</b>	WR28 to WR650
<b>Dimensions</b>	Consult Factory

(specifications are subject to change without notice)

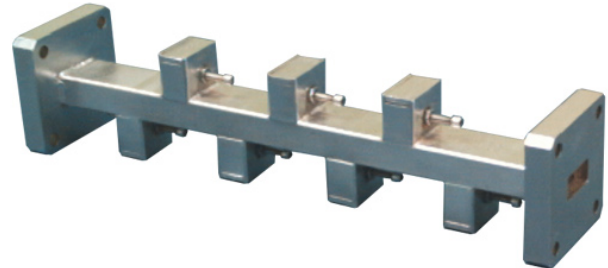
### Typical Frequency Response



## Waveguide Bandstop (Notch) Filter

### Product Features

- Wide range of waveguide sizes
- High bandstop rejection
- Low pass band insertion loss



### Overview

UBS offers bandstop filters in available waveguide sizes from WR28 to WR650 covering the frequency spectrum from 1.14 GHz to 40 GHz.

Our bandstop designs exhibit high notch attenuation while maintaining low pass-band insertion loss. Increased notch attenuation is simply accomplished by the addition of more resonator sections to the design. Our designs can incorporate 3 to 11 resonator sections to satisfy the most stringent requirements.

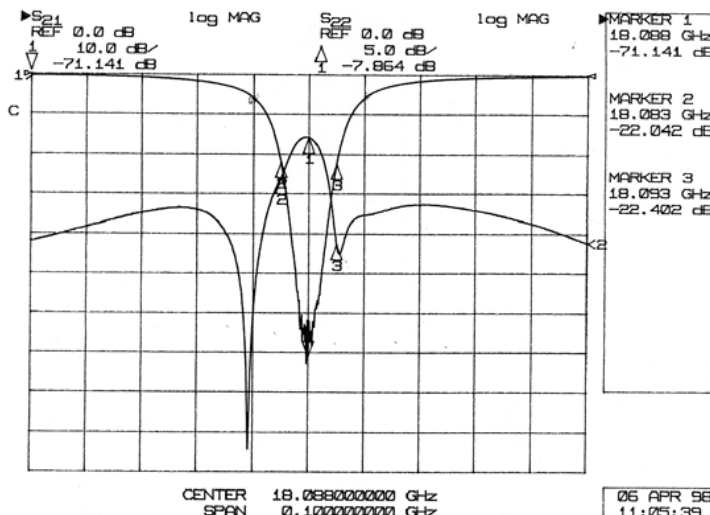
Available construction material includes bronze, aluminum or invar. Please consult our sales department for further details.

### Product Specifications

<b>Frequency Range</b>	1.14 GHz – 40 GHz
<b>Available Bandwidth</b>	Up to 12%
<b>Insertion Loss</b>	0.5 – 2.0 dB (dependant on # of sections)
<b>Stop Band Attenuation</b>	Consult Factory
<b>Number of Resonator Sections Available</b>	3 to 11
<b>VSWR</b>	1.30:1
<b>Connectors</b>	WR28 to WR650
<b>Dimensions</b>	Consult Factory

(specifications are subject to change without notice)

### Typical Frequency Response

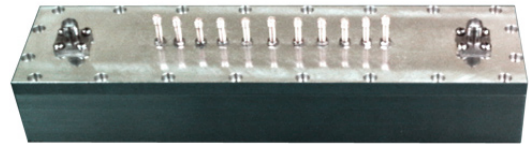




## Harmonic Reject Filter

### Product Features

- Wideband spurious free performance
- Excellent harmonic suppression
- Low pass band insertion loss
- Evanescent-Mode ridged waveguide design
- Integrated waveguide-to-coax adapters



### Overview

UBS Harmonic Reject filters are designed for wideband applications requiring low pass-band insertion loss and high harmonic stopband rejection. The design incorporates cost-saving integrated waveguide-to-coax adapters for connectorized applications. Designs with waveguide flanges are also available.

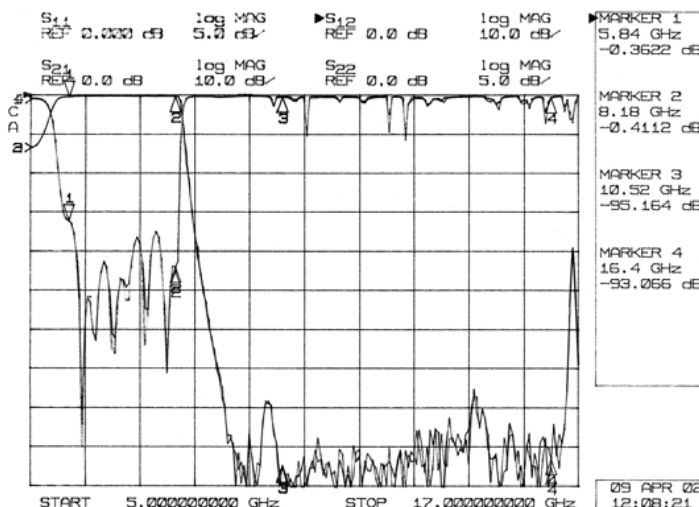
The illustration and specifications shown herein are for a full WR-137 band harmonic reject filter. Other full waveguide band designs are also available with bandwidths ranging from 10-100% of the waveguide frequency range. Please consult our sales department to discuss your specific application.

### Product Specifications

<b>Pass Band Frequency</b>	5.85 GHz - 8.2 GHz (other bands available)
<b>Pass Band Insertion Loss</b>	0.3 dB max. (0.2 dB typ.)
<b>Stop Band Frequency</b>	10.5 GHz - 16.4 GHz
<b>Stop Band Attenuation</b>	> 70 dB
<b>VSWR</b>	1.40:1 (full band)
<b>Connectors</b>	SMA, N-type or WG
<b>Dimensions</b>	7.3" x 1.8" x 1.2" (excludes connectors)

(specifications are subject to change without notice)

### Typical Frequency Response



## Dielectric Resonant Filter

### Product Features

- Low loss filter design
- Robust and compact
- High RF Power handling capacity
- Low pass-band frequency drift



### Overview

The high performance Dielectric Resonant band-pass filter is based on coupled cavities design and has exceptional performance characteristics. A key quality is its ability to provide significant out-of-band attenuation in very close proximity to the filter's pass-band, while providing a low loss path for the transmit signal.

The output filter is robust and compact. The High-Q values of the ceramic materials permit the use of small cavity structures keeping the weight and size of the filter to a minimum. The ceramic materials are also very stable in relation to temperature, resulting in minimal frequency shifting over a broad temperature range.

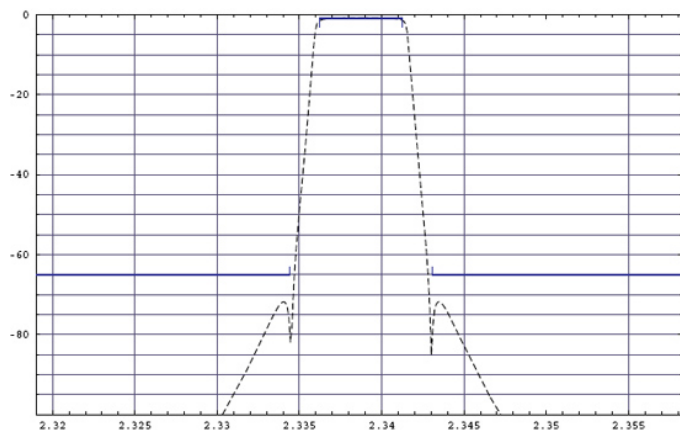
### Product Specifications

<b>Center Frequency of pass band</b>	2326.25 MHz
<b>Bandwidth</b>	4.012 MHz
<b>Insertion Loss at Band Edges (Fc ± 2.006 MHz)</b>	1.2 dB max.
<b>Attenuation:</b>	
Fc ± 2.5 MHz	3 dB
Fc ± 3.0 MHz	23 dB
Fc ± 3.5 MHz	38 dB
Fc ± 4.5 MHz	48 dB
Fc ± 5.5 MHz	74 dB
Fc ± 6.5 MHz	80 dB
Fc ± 7.0 MHz	85 dB
Fc ± 10.0 MHz	100 dB
<b>VSWR</b>	1.20:1
<b>Input Power (referenced at input port)</b>	300 W (avg.) 1000 W (pk.)
<b>Connectors</b>	7/16 DIN-type (F)
<b>Operating Temperature</b>	55 °C to -25 °C

(specifications are subject to change without notice)

### Typical Frequency Response

Rejection, dB



## MMDS Directional Channel Filter/Combiner

### Product Features

- Semi-adjacent/adjacent channel applications
- Analog/Digital ready MMDS Systems
- High channel isolation
- Low pass band insertion loss
- Easy installation



### Description and Application

UBS offers a line of directional, semi-adjacent and adjacent channel filter/combiners for both analog and digital MMDS system applications. The analog version consists of three resonator filter sections, while the digital ready version incorporates four.

The channel filter/combiner is used to cascade the output of several transmitters into a common waveguide (transmission line) while providing protection to the transmitters against transmission line mismatches.

The filters can be used to add transmitters to an existing network or can be configured to combine up to 16 arbitrary non-adjacent channels or up to 31 adjacent channels.

The filters are constructed from lightweight aluminum for easy installation and come complete with the necessary hardware and test data.

### Product Specifications

<b>Standard Frequency</b>	2500 MHz - 2686 MHz ( 2 GHz - 4 GHz available)
<b>Insertion Loss (transmitter-to-antenna port)</b>	< 0.8 dB (semi-adjacent analog combiner) < 1.0 dB (semi-adjacent digital ready combiner) < 1.5 dB video carrier (adjacent combiner) < 2.0 dB audio carrier (adjacent combiner)
<b>VSWR</b>	< 1.25:1 (transmitter port ) < 1.10:1 (waveguide input port)
<b>Channel Isolation</b>	30 dB (semi-adjacent analog combiner) 45 dB (semi-adjacent digital ready combiner)
<b>Channel Formats</b>	NTSC, PAL, SECAM
<b>Connectors</b>	N-type Female (transmitter port) CPR340 (waveguide port)
<b>Operating Temperature</b>	10 °C to 32 °C

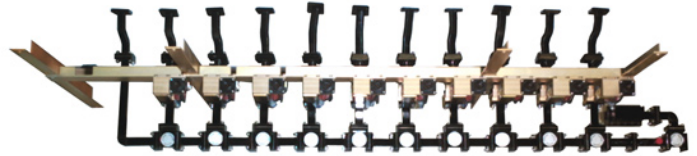
\*\*Additional Loss due to transit through multiple channels is approximately 0.025 dB per channel combiner.

(specifications are subject to change without notice)

## 18 GHz / 27 GHz Semi-Adjacent Multi-Channel Combiner

### Product Features

- Low loss, high power design
- Excellent output VSWR
- Complete integral system



### Overview

The UBS Multi-Channel Combiner is designed for terrestrial point-to-multipoint and satellite systems providing analog and/or digital services.

The combiner network comes complete with all necessary hardware including dual-mode channel filters, channel circulators, electro-mechanical shorting switches (for redundant agile configurations), RF output monitoring port and a wideband high power output isolator for protection against high load VSWR conditions.

### Product Specifications

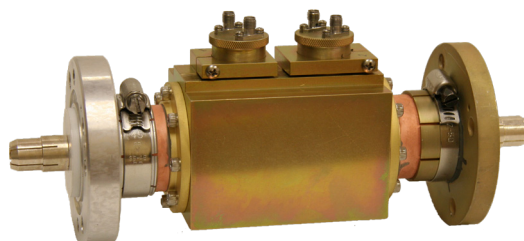
<b>Frequency</b>	18 GHz / 27 GHz
<b>Insertion Loss**</b>	1.0 dB
<b>Output VSWR</b>	1.2:1
<b>Channel Isolation</b>	> 30 dB
<b>Transmitter / Antenna Interface</b>	WR42 or WR51 for 18 GHz Combiner WR28 or WR34 for 27 GHz Combiner
<b>Power Handling</b>	20 Watts (higher power versions available)

\*\*Additional loss due to transit through multiple channels is approx. 0.3 dB per channel.

(specifications are subject to change without notice)

## Product Features

- *Standard interface: 1-5/8" connector at the primary ports, SMA connector at the (coupled) ports*
- *1 kW maximum power at the primary ports*
- *Operating temperature range of -15° C to +60° C*
- *50 ohm nominal impedance*
- *Custom options include special coupling values and frequency ranges, alternate connector styles, coupling configurations and plating methods*



## Description and Application

UBS designs and manufactures a variety of directional couplers optimized for accurate power measurements in air-line coaxial transmission lines.

The series of UHF couplers covers all DTV channels from 470 MHz to 860 MHz. They are ideally suited for DTV and wireless applications by virtue of their high power capability, lowest insertion loss, high directivity and excellent matching with the prime line.

The available from stock couplers include models to cover the entire frequency range of 470 MHz to 860 MHz, as well as specialized models perfected for a particular set of DTV channels. These models are available in a single-probe configuration (for monitoring the power flow in one direction) and a dual-probe configuration (for sampling both incident and reflected power), for the standard coupling values of 30 dB, 40 dB and 50 dB.

## Product Specifications

<b>Frequency Range</b>	ATSC DTV channels: 18 (494 MHz - 500 MHz) 45 (656 MHz - 662 MHz) 73 (824 MHz - 830 MHz)
<b>Configuration</b>	Dual-probe, external terminations, non-silver plated
<b>Maximum Power (at a primary port)</b>	1 kW
<b>Return Loss (at a primary port)</b>	> 25 dB
<b>Directivity</b>	> 30 dB
<b>Coupling</b>	50 dB
<b>Dimensions (with connectors)</b>	10" x 4.5" x 2.6"
<b>Weight</b>	2 kg
<b>Interface:</b>	
<b>Primary Line</b>	Connector: 1-5/8"
<b>Coupled Ports</b>	Connector: SMA

(specifications are subject to change without notice)

## Ordering Information

LCC-X1-X2-X3-X4-X5-X6

X1 - Nominal coupling value (dB)

X2 - Lower operating frequency (MHz)

X2 - Upper operating frequency (MHz)

X4 - Number of probes (1 for a single-probe, 2 for a dual-probe)

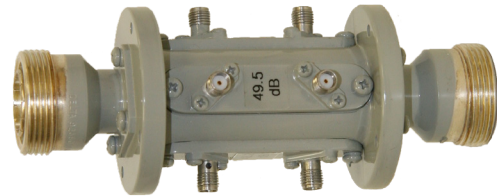
X5 (for custom connector) - Primary port connector

X6 (for custom connector) - Coupled (probe) port connector

## Triple Arm Coaxial Coupler

### Product Features

- *High power handling capability*
- *Rugged mechanical design*



### Product Specifications

<b>Operating Frequency</b>	2.0 GHz - 3.0 GHz
<b>Continuous Power Handling Capacity</b>	400 Watts
<b>VSWR Main Line Output</b>	1.15:1
<b>VSWR Coupled Ports</b>	1.2:1
<b>Directivity</b>	25 dB min.
<b>Coupling ports Accuracy</b>	± 0.5 dB max
<b>Input/Output ports</b>	7/16 DIN-type (F) (other options available)
<b>Coupled Ports</b>	SMA (F)
<b>Dimensions (L x W x H)</b>	5.35" x 2.10" x 1.80"

(specifications are subject to change without notice)

## UHF High-Power (Quadrature) Hybrid

### Product Features

- *Adjacent and crossover configurations*
- *Equipped with 7/16" DIN connectors; custom connector styles are possible*
- *Can be supplied with a built-in bidirectional 60 dB coupler for power monitoring and VSWR alarms*
- *Power rating of 500 Watts*
- *50 ohm impedance*



### Description and Application

A hybrid, or 3-dB 90-degree directional coupler is one of the core devices in microwave and wireless networks. It can be used to produce power combiners/dividers, directional filters, attenuators, phase shifters, and for a variety of other demanding purposes.

The UHF hybrid coupler from UBS covers a frequency range of 470 MHz to 860 MHz. The robust and reliable single-section stripline design provides excellent impedance match at all ports, superior amplitude and phase balance, low dissipative loss, and has been specifically optimized for power levels up to 500 Watts.

### Product Specifications

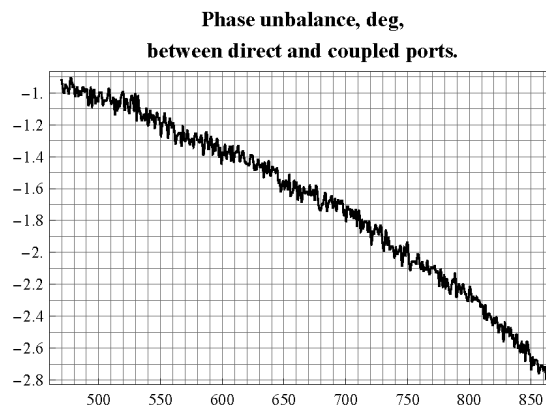
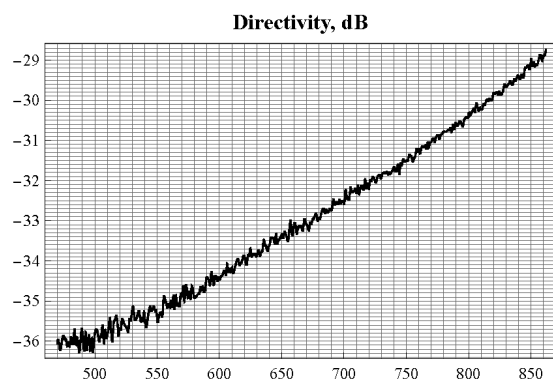
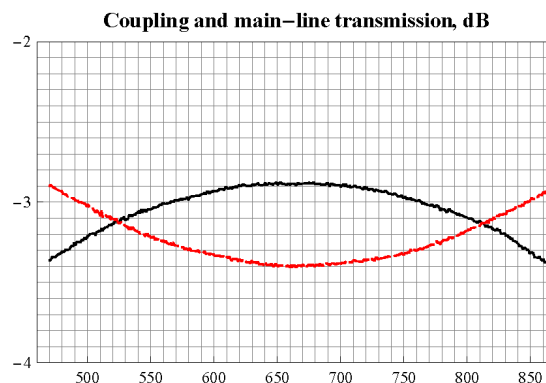
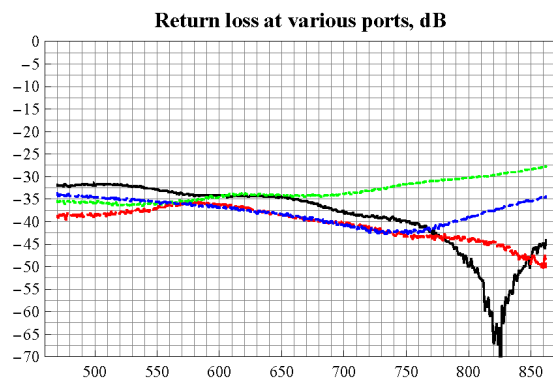
<b>Frequency Range</b>	470 MHz - 860 MHz
<b>Configuration</b>	Crossover hybrid, external matched load
<b>Maximum Power</b>	500 Watts
<b>Return Loss (at the input port)</b>	30 dB min.
<b>Directivity</b>	29 dB min.
<b>Amplitude Balance</b>	±0.26 dB
<b>Phase Balance</b>	±1.4°
<b>Dimensions (without connectors)</b>	2.25" x 2.1" x 6.9"
<b>Interface</b>	Connectors: 7/16"

(specifications are subject to change without notice)

# UHF High-Power (Quadrature) Hybrid



## Product Specifications (specifications are subject to change without notice)

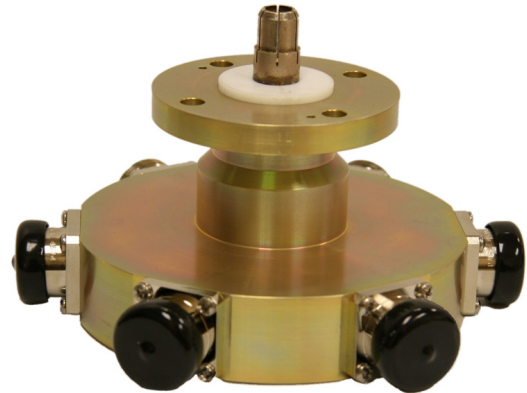




## L-Band 6-Way Radial Combiner

### Product Features

- 2, 4, 6 or 8 collecting (input) ports; other combining orders are possible
- 0.5 kW maximum input power
- 1-5/8" or 7/8" connectors at the common port, 7/16" or N-type connectors at the collecting ports
- 19" rack mountable, easy installation
- Designed to cover T-DAB and S-DAB bands
- Custom designs can be developed to meet specific electrical and mechanical requirements



### Description and Application

The UBS L-band radial power combiners present a unique blend of reliability and high power handling capability in a compact housing.

Radial combiners, by their nature, tend to be very efficient for summing a large number of amplifiers. The analysis technique employed at UBS allows for very accurate prediction and careful optimization of combiner performance.

A superior mechanical design provides an excellent electrical symmetry thus improving their amplitude and phase stability. All this ensures that UBS' radial combiners have low insertion loss, excellent amplitude and phase balance over a wide frequency range, as well as graceful degradation characteristics.

### Product Specifications

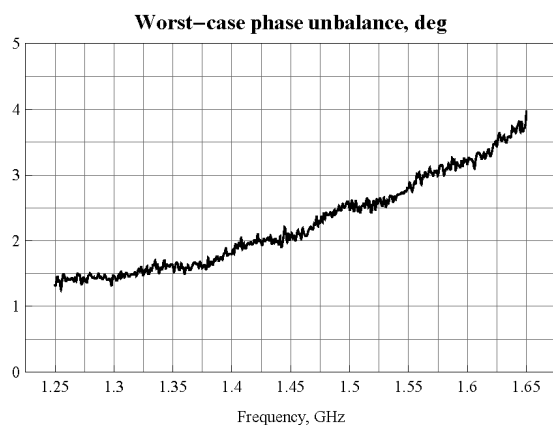
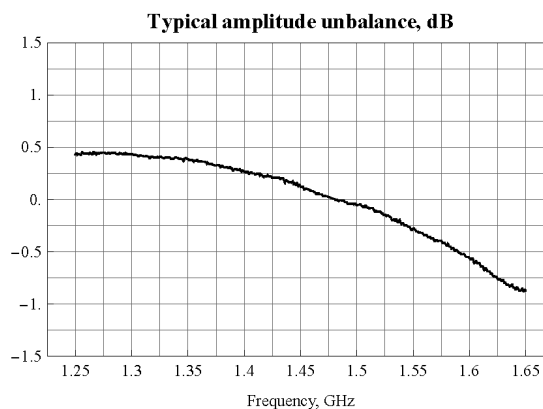
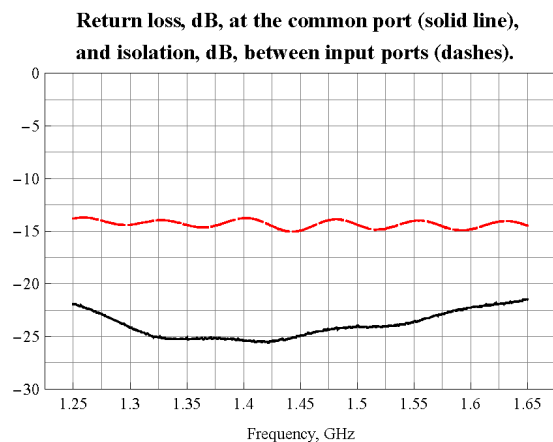
<b>Frequency Range</b>	1250 MHz - 1650 MHz
<b>Maximum Power (at the input port)</b>	0.5 kW
<b>Insertion Loss (of a combiner)</b>	0.75 dB
<b>Return Loss (at the common port)</b>	20 dB min., 22 dB typical
<b>Isolation (between input ports)</b>	13.5 dB min.
<b>Amplitude Unbalance</b>	±0.75 dB worst case
<b>Phase Unbalance</b>	±1.5° worst case
<b>Size</b>	Diameter of the base 6" Height 3.5"
<b>Weight</b>	3 kg
<b>Interface:</b>	
<b>Common Port</b>	Connector: 1-5/8"
<b>Collecting Port</b>	Connector: 7/16"

(specifications are subject to change without notice)

## L-Band 6-Way Radial Combiner



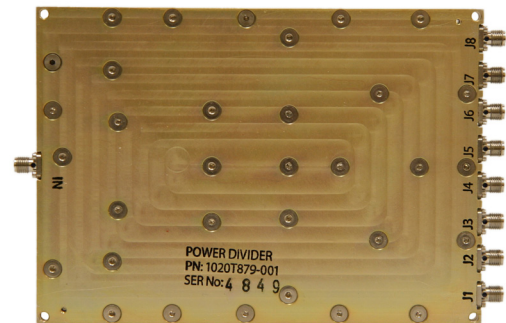
### Product Specifications (specifications are subject to change without notice)



## Broadband Wilkinson Combiners/Dividers

### Product Features

- Broadband 500 MHz to 3000 MHz frequency range
- Can be used in both power combiner and divider applications
- In-phase, equal power division
- 2, 4, 6, or 8-way configurations
- Power rating of 20 Watts
- Passes DC to all ports
- Furnished with SMA female connectors
- Custom designs are possible, focusing on specific frequency range, electrical performance, power and connector style requirements



8-Way Combiner/Divider

### Description and Application

UBS offers a unique solution to broadband power combining and division with an innovative line of 2-way through 8-way Wilkinson combiners/dividers.

A well-known advantage of Wilkinson dividers lies in providing improved input and output VSWR performance and superior isolation between the collecting ports. An outstanding feature of our design is that it is optimized for broadband operation over all wireless frequency bands from 500 MHz to 3000 MHz. This has been achieved by invoking a multi-section stripline construction together with a judicious electromagnetic optimization with the help of the state-of-the art 3D modeling software.

Other distinctive features include excellent amplitude and phase balance, low insertion loss, and power handling capability of up to 20 Watts at the common port.

Model	Part Number	Description
1020T879-001	54890-01	8-Way Combiner/Divider

Model	Part Number	Description
1020T877-001	54893-01	6-Way Combiner/Divider

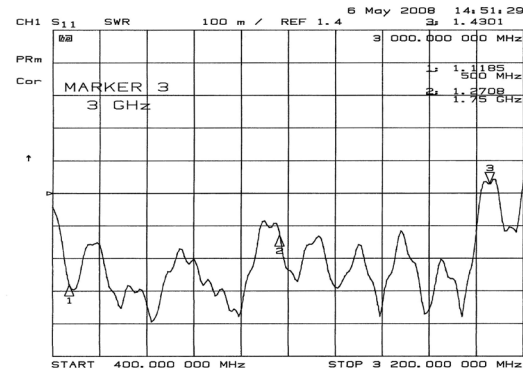
## Broadband Wilkinson Combiners/Dividers



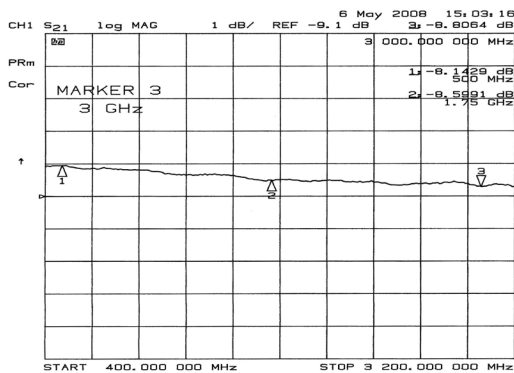
### 6-Way Combiner/Divider Product Specifications (specifications are subject to change without notice)

Number of Output Ports	6
Power Division	1:6 Uniform Distribution
Frequency Band of Operation	0.5 GHz - 3.0 GHz
Input Power *	20 Watts
Insertion Loss	$\leq 1.3$ dB
Input VSWR	$\leq 1.4:1$ (0.5 GHz - 2.8 GHz) $\leq 1.55:1$ (2.8 GHz - 3.0 GHz)
Amplitude Unbalance	$\leq \pm 0.5$ dB
Phase Unbalance	$\leq \pm 5^\circ$
Isolation	$\geq 13$ dB
Interface	Connectors: SMA (F)

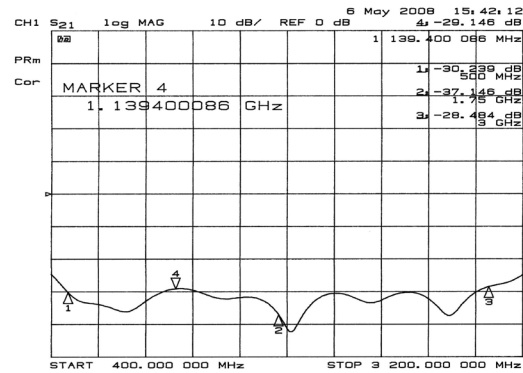
\* All of the six output ports should be terminated with a load VSWR of 1.5:1 or better.



6-Way Combiner/Divider Input VSWR



6-Way Combiner/Divider Transmission, dB



6-Way Combiner/Divider Isolation, dB

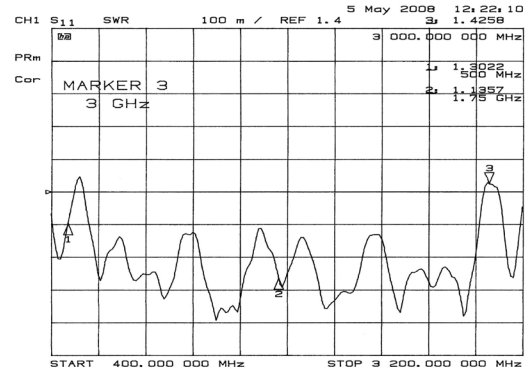


# Broadband Wilkinson Combiner/Divider

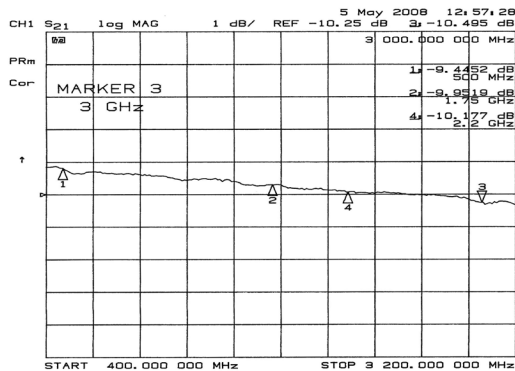
## 8-Way Combiner/Divider Product Specifications (specifications are subject to change without notice)

Number of Output Ports	8
Power Division	1:8 Uniform Distribution
Frequency Band of Operation	0.5 GHz - 3.0 GHz
Input Power *	20 Watts
Insertion Loss	$\leq 1.25$ dB (0.5 GHz to 2.1 GHz) $\leq 1.65$ dB (2.1 GHz to 3.0 GHz)
Input VSWR	$\leq 1.4:1$ (0.7 GHz - 2.8 GHz) $\leq 1.55:1$ (0.5 GHz - 0.7 GHz) and (2.8 GHz - 3.0 GHz)
Amplitude Unbalance	$\leq \pm 0.3$ dB
Phase Unbalance	$\leq \pm 3^\circ$
Isolation	20 dB (typical), 17 dB (minimum)
Interface	Connectors: SMA (F)

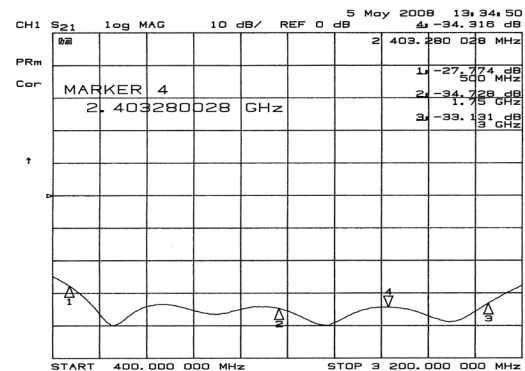
\* All of the eight output ports should be terminated with a load VSWR of 2.0:1 or better.



8-Way Combiner/Divider Input VSWR



8-Way Combiner/Divider Transmission, dB



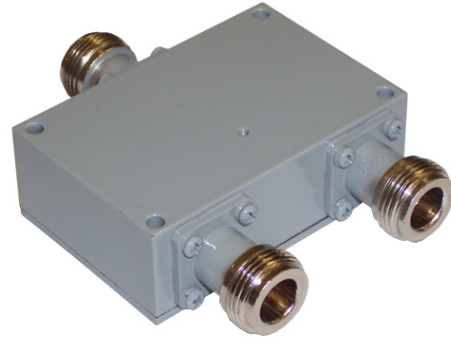
8-Way Combiner/Divider Isolation, dB

## Power Divider

Model: 242W-NFNF-25

### Product Features

- Low insertion loss
- High operational power
- Weatherproof aluminum housing



### Product Specifications

<b>Frequency</b>	2.2 GHz - 2.5 GHz
<b>Insertion Loss<sup>1</sup></b>	0.4 dB
<b>Isolation<sup>2</sup></b>	> 21 dB
<b>VSWR</b>	Input Port: 1.3:1 Output Port J1: 1.3:1 Output Port J2: 1.3:1
<b>Phase Unbalance</b>	$\pm 2^\circ$
<b>Amplitude Unbalance<sup>3</sup></b>	0.1 dB max.
<b>Input Power<sup>4</sup></b>	25 W
<b>Connectors</b>	Input: N-type (F) Output: N-type (F)
<b>Dimensions (W x L x H)</b>	2.4" x 3" x 0.8"

(specifications are subject to change without notice)

### Notes

1. Insertion loss excludes coupled power losses (3 dB).
2. Isolation between output ports J1 and J2. Input port terminated to 50 ohm load VSWR < 1.3:1
3. The maximum level difference, expressed in dB, between the two output ports, J1 and J2.
4. The maximum allowable average power applied to the input port with the output ports, J1 and J2, terminated to a 50 ohm load exhibiting a VSWR not exceeding 2.0:1. For load VSWRs exceeding 2.0:1, the maximum allowable input power is derated to 10 watts

## Power Divider

Model: 232S-EFNF-400

### Product Features

- Star configuration
- Low low insertion losses
- High power handling capacity
- Rigid weatherproof design



### Product Specifications

Frequency	2.1 GHz - 2.5 GHz
Insertion Loss <sup>1</sup>	< 0.2 dB
Isolation <sup>2</sup>	6 dB typ.
Input Return Loss	> 21 dB
Phase Unbalance	±2°
Amplitude Unbalance <sup>3</sup>	0.2 dB max.
Input Power <sup>4</sup>	400 W
Connectors	Input: 7/16 DIN-type (F) Output: N-type (F)
Dimensions (W x L x H)	5.75" x 5.75" x 1.12"

(specifications are subject to change without notice)

### Notes

1. Insertion loss excludes coupled power losses (3 dB).
2. Isolation between output ports J1 and J2. Input port terminated to 50 ohm load. VSWR < 1.3:1
3. The maximum level difference, expressed in dB, between the two output ports, J1 and J2.
4. The maximum allowable average power applied to the input port with the output ports, J1 and J2, terminated to a 50 ohm load exhibiting a VSWR not exceeding 2.0:1.

## *Military Product Specifications*



## TWT Replacement SSPA Kit

Model: NSN-5985-01-324-0709

### Product Features

- *Military Approved Design*
- *High Reliability SSPA*
- *Integrated DC-DC Power Converter*
- *Form, Fit and Functional Package*
- *Used in Terrestrial PTP Radios*



### Description and Application

UBS manufactures a complete line of solid-state retrofit kits designed to be a direct form, fit and function replacement for TWTs and their associated high voltage power supplies commonly found in present day terrestrial point-to-point microwave radio transmitters.

The kit includes a solid-state power amplifier (SSPA) with an integrated DC-DC power converter, mounting hardware, RF cables (if required) and complete installation instructions. No cutting or drilling modifications to the existing radio chassis are required. The SSPA depicted above is for a retrofit kit for the AN/FRC-17X microwave radio.

### Ordering Information

**NSN-5985-01-324-0709**

### ITAR Statement

This UBS product is included on the U.S. Munitions List as defined in the International Traffic in Arms Regulations (ITAR), 22 CFR 120. As such, direct download of technical data referred to at this website is not authorized. Please contact a UBS Sales Representative to request a copy of the technical data related to this product. The requested document(s) will be sent via encrypted e-mail upon receipt and confirmation of a valid .mil e-mail address (size permitting). If e-mail transmission is not feasible, the requested document(s) will be provided on Compact Disc and will be sent only to a valid U.S. Military installation or U.S. Government contractor.

## Dual Directional Coupler

Model: NSN-5985-01-048-7881

### Product Features

- *Military Approved Design*
- *High Directivity*
- *Multi-Octave Performance*
- *Precision Connectors*
- *Ideal for Reflectometer Applications*



### Description and Application

This product is built and tested to comply with the military requirement M15370/11-001. This product is a laboratory-grade, dual-directional coupler, designed to provide continuous monitoring of incident and reflected power in RF/Microwave measurement applications, particularly those involving swept measurement techniques.

### Ordering Information

**NSN-5985-01-048-7881**

### ITAR Statement

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## 0°/180° Power Combiner / Splitter

Model: NSN-5985-01-036-2651

### Product Features

- *Military Approved Design*
- *Excellent Phase and Amplitude Balance*
- *Full-Octave Performance*
- *High Isolation*
- *Configurable for 0°/180° Operation*



### Description and Application

This product is designed, manufactured, and tested to comply with the applicable military standards. This product is a four port, two-way power combiner/divider, providing either an in-phase (0 °) or out-of-phase (180 °) difference between the two output ports. For in-phase operation, the input signal is applied to the "H" port and the "E" port is terminated to an external 50 ohm load. For out-of-phase operation, the input signal is applied to the "E" port and the "H" port is terminated to an external 50 ohm load. In each case, the input signal is equally divided in amplitude between the two outputs with the only difference being their relative phase difference.

### Ordering Information

**NSN-5985-01-036-2651**

### ITAR Statement

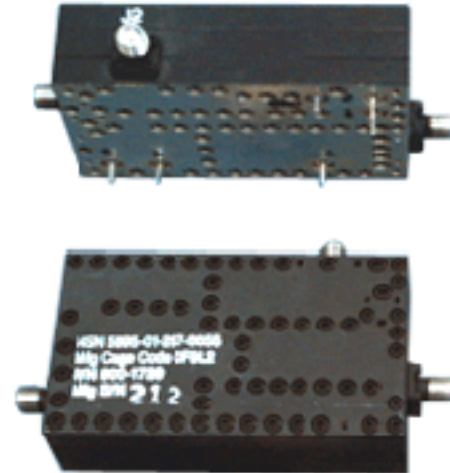
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## Mixer Diplexer

Model: NSN-5985-01-287-8855

### Product Features

- *Military Approved Design*
- *PIN Diode Modulator*
- *Rugged Construction*
- *Overload Protection*



### Description and Application

This product is a custom stripline modulator-duplexer, designed for use in military test set conforming to MIL-T-28800, Type I, Class 2 requirements. Its rugged construction enables it to operate in ambient temperatures from  $-40^{\circ}\text{C}$  to  $75^{\circ}\text{C}$  at altitudes up to 40,000 ft.

The modulator-duplexer incorporates a PIN diode modulator for the purpose of amplitude-modulating a CW signal applied to the appropriate input port. The resultant output signal is a series of RF pulses conforming to specified requirements. Protection against input signals in excess of the normal operating conditions is provided through the use of a limiter-diode circuit in conjunction with integrated bandpass filters.

### Ordering Information

NSN-5985-01-287-8855

### ITAR Statement

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