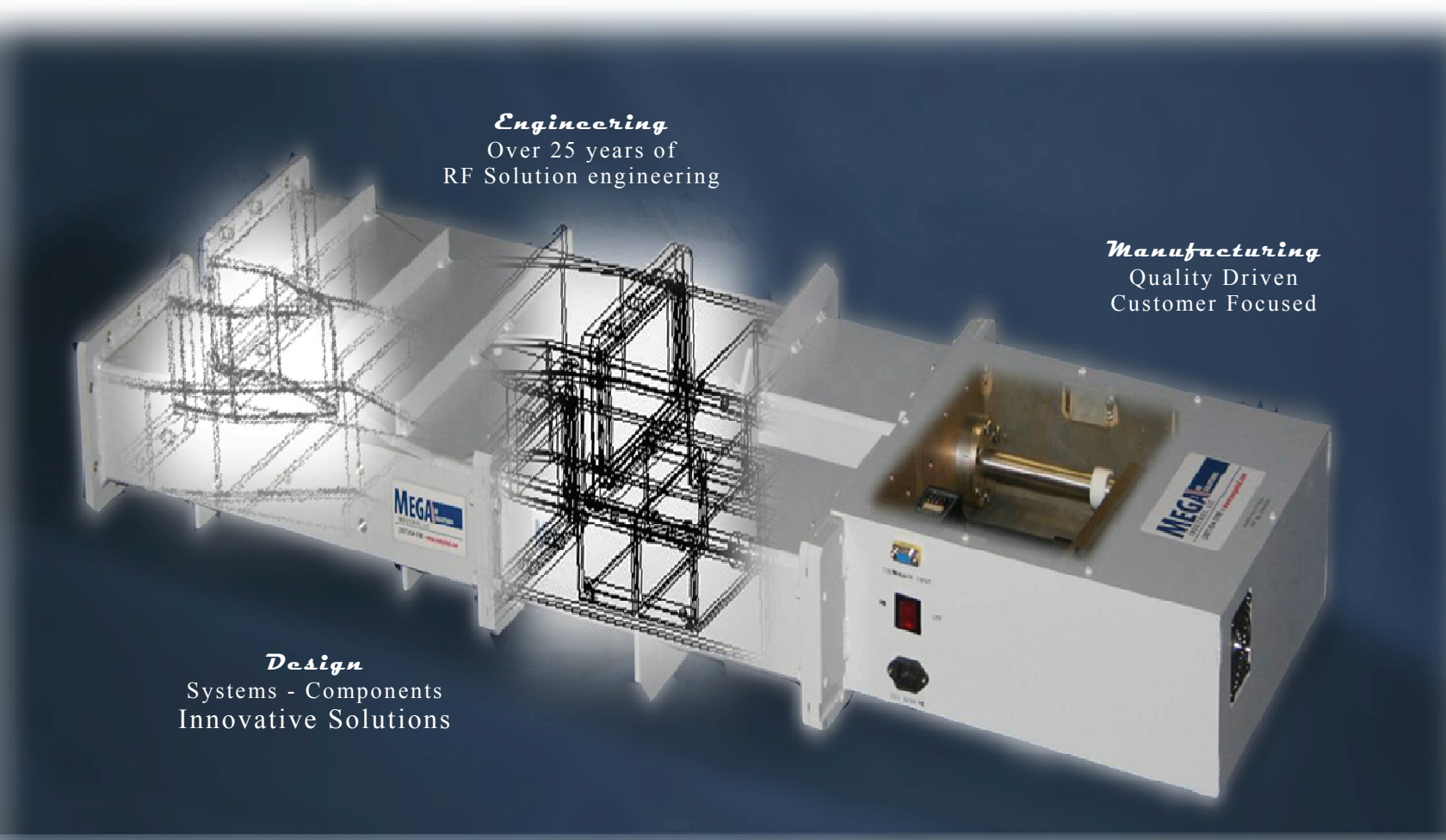
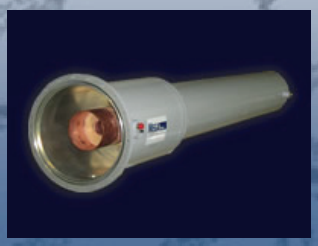


Waveguide

MEGA RF Solutions

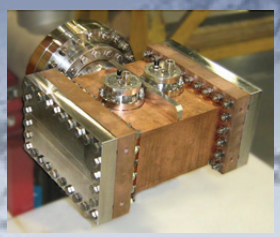
Rigid Waveguide

Coaxial Components



Solutions

Ultra High Vacuum



Semi-Flexible Waveguide

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MEGA RF Solutions

About Us

Welcome to MEGA INDUSTRIES, LLC

A World Leader In Microwave Transmission Equipment

A trusted name in microwave technology since 1989, Mega Industries is a world leader in the manufacture of microwave transmission equipment.

The continued growth of Mega Industries is attributable to the diverse backgrounds and experience of our managerial and technical staff.

Mega's microwave product lines include Rigid Waveguide, Semi-Flexible Waveguide and Coaxial Transmission Line.

Mega Has Launched A New Product Line

Mega has announced the launch of a new line of FM Broadcast Components. Among the items unveiled was a line of FM and IBOC filter products that will meet the demanding requirements facing the broadcasters of today.

In addition to our microwave and FM product lines, Mega Industries' machining and fabrication departments can provide equipment for shipboard systems, commercial metal fabrications, research and development applications or other products requiring expertise in metalworking.

Customer Base

- **Domestic and International**
- **Military**
- **Aviation High Energy**
- **Particle Accelerator and Fusion Research**

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MEGA RF Solutions

Our Products

Microwave Transmission Equipment

A trusted name in Microwave Technology since 1989, MEGA Industries is now a world leader in the manufacture of Microwave Transmission equipment. We are your one source of high power low frequency, rigid waveguide and waveguide components.

Rigid Waveguide

Mega Industries Waveguide is manufactured to precise tolerances calculated to provide optimum VSWR and maximum power handling capabilities. Mega provides waveguide in sizes WR90 through W2300. Full and reduced height configurations are also available to meet your design requirements. Custom sizes through WR6200 are also available on special request.

Semi-Flexible Waveguide

Mega's process of manufacturing Semi-Flexible Waveguide by brazing the seam off the center assures excellent performance in your high power applications. The process of brazing or fusion welding and not joining by epoxy assures a long life joint not prone to splitting or leaking.

Coaxial Transmission Line

Mega Industries Coaxial Transmission Line is manufactured to exacting electrical and mechanical tolerances to provide maximum stability and minimum VSWR. Mega manufactures coaxial transmission line and components in sizes Type N to 14-inch diameter.

Using Teflon, Ceramic or other insulator materials and employing special high power connector designs Mega Coaxial Transmission Line can operate at peak performance even in the harshest environments.

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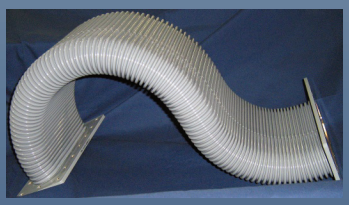

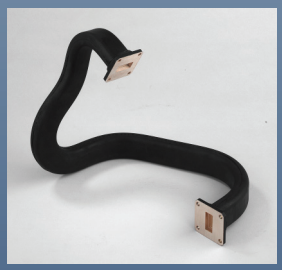

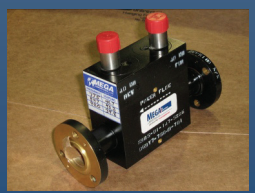

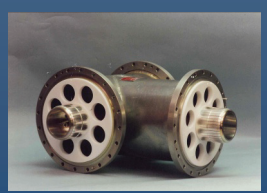

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MEGA RF Solutions

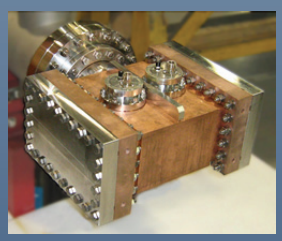
Innovative Custom Solutions

When ideas push the limits of what has been done before, that is where you will find the experience and engineering talent of the Mega team.

Our years of innovation and ability to take concepts from sketch to delivered solutions are what sets Mega apart. We deliver intricate shapes, uncommon materials, non-standard waveguide and coax sizes, and solutions for elevated power levels. Be it water-cooled coax, ultra high vacuum couplers or Gigawatt power levels, Mega is ready to deliver.

Taking the vast array of RF waveguide and coax components available and applying them to create systems is no trivial matter. It takes years to build a portfolio that can then be used as both a starting point and a catalyst to create new solutions, adaptations, and whole new designs that push the envelope and support innovation. Mega has decades of design experience that can be applied to solve even the most difficult design challenge.

Ultra High Vacuum WR650 Directional Coupler



This WR650 Directional Coupler was developed and manufactured for a cutting edge application where High Vacuum Levels (10^{-10} Torr) and Low Leak Rates wre required.
Mega Industries developed a solution and delivered a device that will allow these scientists to continue research.

WR650 Reduced Height Combiner

This reduced height WR650 Combiner was designed and manufactured for a demanding application where precision Phase Matching High Vacuum levels (10^{-6} Torr) and High Power levels (>Gigawatt) were required. Mega Industries met this challenge and delivered a device that met all of these requirements and kept the customer on schedule.

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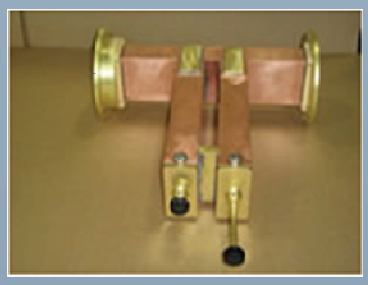
MEGA RF Solutions

Rigid Waveguide




Mega Industries provides high power, low frequency waveguide and waveguide components in sizes ranging from WR90 to WR2300. Larger sizes are offered through WR6200 upon special request.

Waveguide is manufactured from 6061-T6 aluminum alloy, however sized WR90 through WR650 are available in either copper or aluminum alloys. Waveguide flanges and gaskets are provided in accordance with EIA and Military Specifications.

Mega Industries rigid waveguides are manufactured to precise tolerances calculated to provide optimum VSWR and maximum power handling capabilities.

In addition to straight waveguide, Mega offers a complete line of components to complete or refurbish your systems. These include miter bends, sweep bends, quadrature hybrids, magic tees, folded tees, series and shunt tees, transformers, transitions, gas barriers, couplers, terminations, attenuators, phase shifters and tuners.

Our technical staff is on hand to assist you in developing and manufacturing specialized equipment at your request.

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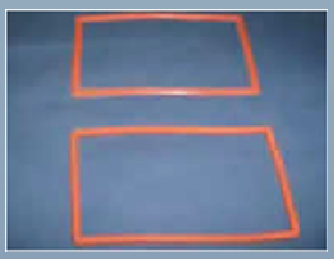
MEGA RF Solutions

Rigid Waveguide Accessories


Mega Industries has all the accessories needed for the installation of waveguide components. Gaskets provide the proper electrical and mechanical seal for interior and exterior use. Each hardware kit contains stainless steel hex bolts, flat washers, lock washers and nuts for a complete waveguide flange joint. Mega can also provide waveguide spacers that meet EIA specifications, bulkhead flanges and hangers.

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Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Alignment Pins	303000030	313000030	323000030	333000030	343000020	353000020	363000020	373000010	393000000
Bulkhead Flanges	303100000	313100000	323100000	333100000	343100000	353100000	363100000	373100000	393100000
Gaskets	302700000	312700000	322700000	332700000	342700000	352700000	362700000	372700000	392700000
Hangers	302900000	312900000	322900000	332900000	342900000	352900000	362900000	372900000	392900000
Hardware	302800000	312800000	322800000	332800000	342800000	352800000	362800000	372800000	392800000
Spacer	3035000X0	3153000X0	3253000X0	3353000X0	3453000X0	3553000X0	3653000X0	3753000X0	3953000X0

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Alignment Pins	403000000	413000000	423000000	433000000	443000000	453000000	463000000	473000000	483000000
Bulkhead Flanges	403100000	413100000	423100000	433100000	443100000	453100000	463100000	473100000	483100000
Gaskets	402700000	412700000	422700000	432700000	442700000	452700000	462700000	472700000	482700000
Hangers	402900000	412900000	422900000	432900000	442900000	452900000	462900000	472900000	482900000
Hardware	402800000	412800000	422800000	432800000	442800000	452800000	462800000	472800000	482800000
Spacer	4053000X0	4153000X0	4253000X0	4353000X0	4453000X0	4553000X0	4653000X0	4753000X0	4853000X0

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MEGA RF Solutions

Rigid Waveguide Attenuators

Mega Industries offers both fixed and variable precision waveguide attenuators for the most demanding system requirements. Low to medium power devices utilize high density shaped microwave absorbing elements permanently attached to a standard waveguide section. The VSWR of the fixed attenuators is less than 1.10.1 over a 10% band and the variable units exhibit a 1.15:1 maximum VSWR. When requested, calibration charts traceable to the National Bureau of Standards can be supplied.

For extremely high power or for low loss applications, hybrid style variable attenuators are available. These units, which exhibit a minimum insertion loss of 0.05 dB can be readily varied to 30 dB attenuation under full transmitter power. Both manual drive and motor driven devices are available to meet the most exacting requirements.

For ultra high power or critical phase applications Mega can incorporate water cooling to these designs.

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Fixed High Power	302504020	312504020	322504020	332503020	342503020	352503020	362503020	372503020	392503020
Fixed Low Power	302504000	312504000	322504000	332503000	342503000	352503000	362503000	372503000	392503000
Variable High Power	302504030	312504030	322504030	332503030	342503030	342503030	362503030	372503030	392503030
Variable Low Power	302504010	312504010	322504010	332503010	342503010	342503010	352603010	372503010	392503010

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Fixed High Power	402502020	412502020	422501020	432501020	442501020	452501020	462501020	472501020	482500020
Fixed Low Power	402502000	412502000	422501000	432501000	442501000	452501000	462501000	472501000	482500000
Variable High Power	402502030	412502030	422501030	432501030	442501030	452501030	462501030	472501030	482500030
Variable Low Power	402502010	412502010	422501010	432501010	442501010	452501010	462501010	472501010	482500010

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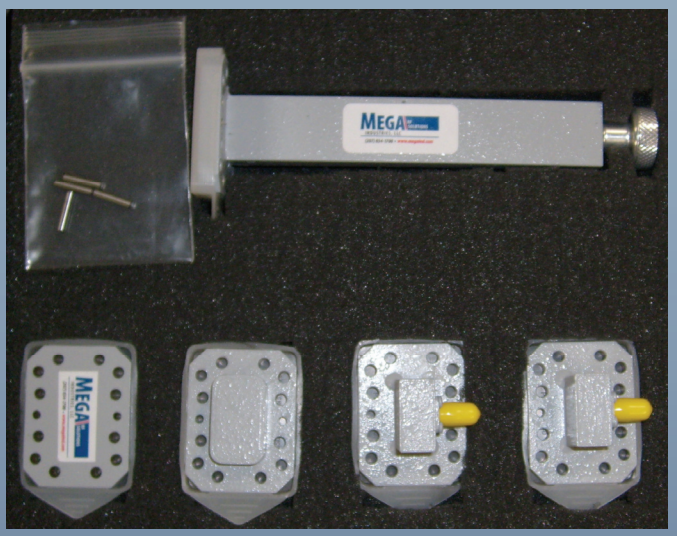
MEGA RF Solutions

Rigid Waveguide Calibration Kits

Mega Industries offers a complete line of waveguide precision Calibration Kits for use with Vector Network Analyzer systems.

Traditional calibration kits utilize three impedance standards and one transmission standard to fully effect a full two port calibration. The standards normally used are shorts, opens, loads and a through connection resulting in the common **"SOLT Calibration Kit".** Unlike Coaxial kits, where a "calibrated open" is readily achievable, SOLT waveguide calibration kits utilize Offset Short-Circuit sections to represent these two parameters. The length of the offsets, which are set as λ/8 and 3λ/8 long, are designed to provide a balanced phase response over the waveguide operating frequency range.



In addition, Mega provides precision Coaxial to Waveguide Transitions, which typically display a VSWR of better than 1.15:1 over the complete waveguide band and better than 1.10:1 over more than 80% of the band. This provides for extreme accuracy when measuring low insertion loss devices.

Also offered by Mega is the **Thru Reflect Line (TRL)** two port calibration kit, which utilizes 3 standards to define the calibrated reference plane. Precision waveguide to coaxial transitions are used in conjunction with a "flush" Short circuit plate and a precision λ/4 waveguide section designed to provide a balanced phase response over the waveguide operating frequency range.

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
SSL	304504000	314504000	324504000	334503000	344503000	354503000	364503000	374503000	394503000
TRL	304604000	314604000	324604000	334603000	344603000	354603000	364603000	374603000	394603000

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
SSL	404502000	414502000	424501000	434501000	444501000	454501000	464501000	474501000	484500000
TRL	404602000	414602000	424601000	434601000	444601000	454601000	464601000	474601000	484600000

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MEGA RF Solutions

Rigid Waveguide Couplers

Mega Industries offers a comprehensive line of super high power directional couplers for power monitoring, signal mixing, signal sampling, and branch line feeding. Array couplers, Cross Guide and Branch Line couplers may be selected for optimum space utilization in a feed system layout.

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Array	301604010	311604010	321604010	331603010	341603010	351603010	361603010	371603010	391603010
Cross Guide	301804000	311804000	321804000	331803000	341803000	351803000	361803000	371803000	391803000
Branch Line	301704000	311704000	321704000	331703000	341703000	351703000	361703000	371703000	391703000

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Array	401602010	411602010	421601010	431601010	441601010	451601010	461601010	471601010	481600010
Cross Guide	401802000	411802000	421801000	431801000	441801000	451801000	461601000	471801000	481800000
Branch Line	401702000	411703000	421801000	431801000	441801000	451801000	461701000	471701000	481800000

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MEGA RF Solutions

Rigid Waveguide Directional Couplers

Mega Industries single, double and triple loop couplers are utilized for reflectometer measurements and power monitoring in waveguide transmission systems. With multi-loop couplers the couplers can be set at different coupling values for forward and reverse waves to optimize the dynamic range. All electrical calibration is directly traceable to the National Bureau of Standards.

Typical Electrical Specifications over a 10% waveguide Bandwidth	
Mainline VSWR	1.05:1
Sidearm VSWR	1.25:1
Coupling Factor	40 to 75
Coupling Variation	+/- 1 dB
Directivity	27 dB
Insertion Loss	Less than
Terminations	Included,

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Monitor	301904000	311904000	321904000	331903000	341903000	351903000	361903000	371903000	391903000
Reflectometer	301904010	311904010	321904010	331903010	341903010	351903010	361903010	371903010	391903010
Triple Coupler	301904020	311904020	321904020	331903020	341903020	351903020	361903020	371903020	391903020

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Monitor	401902000	411902000	421901000	431901000	441901000				
Reflectometer	401902010	411902010	421901010	431901010	441901010				
Triple Coupler	401902020	411902020	421901020	431901020	441901020				

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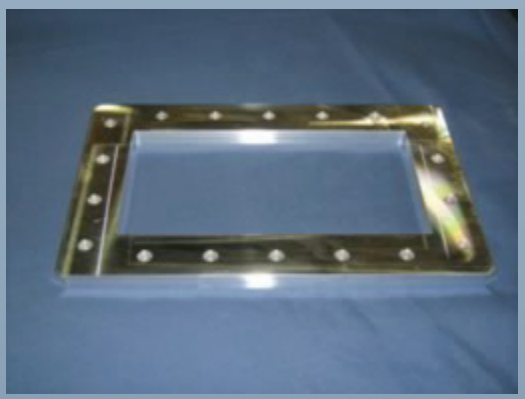
MEGA RF Solutions

Rigid Waveguide Flanges



Flush waveguide flanges in 6061-T6 aluminum plate are available for prototype fabrication or field installation. These flanges are pre-machined to EIA dimensions and are of sufficient thickness to allow a minimum of 1/8" for facing after welding. Special bolt hole patterns, double flanges, 4:1 aspect ratios, grooves, and alignment pins can be readily supplied to meet special feed system requirements.

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Thru Flange	302604000	312604000	322604000	332603000	342603000	352603000	362603000	372603000	392603000
Socket Flange	302604010	312604010	322604010	332603010	342603010	352603010	362603010	372603010	392603010

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Thru Flange	402602000	412602000	422601000	432601000	442601000	452601000	462601000	472601000	482600000
Socket Flange	402602010	412602010	422601010	432601010	442601010	452601010	462601010	472601010	482600010

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MEGA RF Solutions

Rigid Waveguide Folded Magic

For monopulse applications or when the use of standard magic tees presents a mechanical interfacing problem, folded tee configurations are available to our dimensions or custom designed to your specific system requirements. As well as E plane and H-plane folded tees, units are available in 4:1 aspect ratios, heavy wall waveguide, or with special flange configurations.

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
E-Plane	301404020	311404020	321404020	331403020	341403020	351403020	361403020	371403020	391403020
H-Plane	301404000	311404000	321404000	331403000	341403000	351403000	361403000	371403000	391403000

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
E-Plane	401402010	411402010	424201010	434201010	444201010	454201010	464201010	474201010	484201010
H-Plane	401402000	411402000	424201000	434201000	444201000	454201000	464201000	474201000	484201000

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MEGA RF Solutions

Rigid Waveguide Gain Horns

Mega Industries Standard Gain Horns have a wide range of applications such as transmitting, receiving or sampling.

The high precision manufacturing of the Mega Gain Horns assure you of accurate, repeatable gain reference. Horns are built and manufactured per the NRL standards, Report #4333.

All Mega Industries Gain Horns are manufactured from high quality 6061-T6 aluminum and are given a chromate conversion treatment in accordance with MIL-C-5541. Units are painted in our standard Mega Grey but can be custom painted to meet your system requirements.

General Specification:	
Variation of Mid-band	± 2 dB
Maximum VSWR	1.2:1

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Catalog #	304204000	314204000	324204000	334203000	344203000	354203000	364203000	374203000	394203000

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Catalog #	404202000	414202000	424201000	434201000	444201000	454201000	464201000	474201000	484200000

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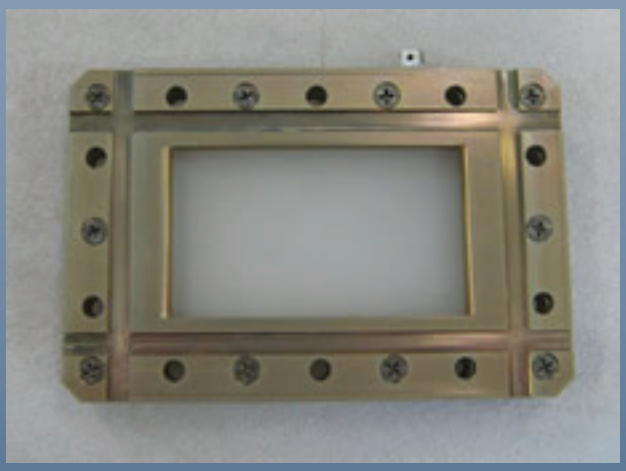
MEGA RF Solutions

Rigid Waveguide Gas Barriers

For optimum performance, we recommend that your microwave feed system be maintained under a slight positive pressure to prevent the entrance of moisture or other contaminants. The newest dielectric materials are utilized for these extremely compact gas barriers to assure minimum transmission loss and maximum power handling. These units are less than 1.00" thick in WR650 through WR975 and 2.00" in WR1150 through WR2300, and are available with or without gas ports.



Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Catalog #	301100000	311100000	321100000	331100000	341100000	351100000	361100000	371100000	391100000

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Catalog #	401100000	411100000	421100000	431100000	441100000	451100000	461100000	471100000	481100000

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MEGA RF Solutions

Rigid Waveguide Harmonic Filters

Mega offers a complete range of waveguide reflective and absorptive harmonic filters to meet the stringent system requirements necessary in today's marketplace.

Units are offered from WR2300 through WR90 and may be configured in a number of different ways in order to best fit any system requirement. Designs are available to handle any power level in order to achieve optimum system performance.

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Absorptive	303304000	313304000	323304000	333303000	343303000	353303000	363303000	373303000	393303000
Reflective	303704000	313704000	323704000	333703000	343703000	353703000	363703000	373703000	393703000

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Absorptive	403302000	413302000	423301000	433301000	443301000	453301000	463301000	473301000	483300000
Reflective	403702000	413702000	423701000	433701000	443701000	453701000	463701000	473701000	483700000

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MEGA RF Solutions

Rigid Waveguide High Power Loads

Mega Industries manufactures a wide range of waveguide terminations ranging from instrument level, low power test terminations to very high power system loads.

High power loads are offered in a number of configurations. Air cooled loads are available to handle most “medium power” applications while numerous styles of water cooled loads are available for high power applications.

Mega engineers are readily available to discuss custom system load requirements.

Mega also provides Short Circuits and Test Terminations.

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Air Cooled	303504000	313504000	323504000	333503000	343503000	353503000	363503000	373503000	393503000
Water Cooled	303504010	313504010	323504010	333503010	343503010	353503010	363503010	373503010	393503010
Water Load	303504020	313504020	323504020	333503020	343503020	343503020	363503020	373503020	393503020

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Air Cooled	403502000	413502000	423501000	433501000	443501000	453501000	463501000	473501000	483500000
Water Cooled	403502010	413502010	423501010	433501010	443501010	453501010	463501010	473501010	483500010
Water Load	403502020	413502020	423501020	433501020	443501020	453501020	463501020	473501020	483500020

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MEGA RF Solutions

Rigid Waveguide Impedance Matchers

For extremely high power applications, impedance matchers of the short slot hybrid design are utilized. Non-contacting, double bucket shorting assemblies, mounted on Teflon runners, are utilized for long term reliability. With an insertion loss characteristic of less than 0.05 dB, maximum power transfer is assured for both manual and motorized units.

For ultra high power or critical phase applications Mega can incorporate water cooling to these designs.

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Manual	302304000	312304000	322304000	332303000	342303000	352303000	362303000	372303000	392303000
Motorized	302304010	312304010	322304010	332303010	342303010	352303010	362303010	372303010	392303010

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Manual	402302000	412302000	422301000	432301000	442301000	452301000	462301000	472301000	482300000
Motorized	402302010	412302010	422301010	432301010	442301010	452301010	462301010	472301010	482300010

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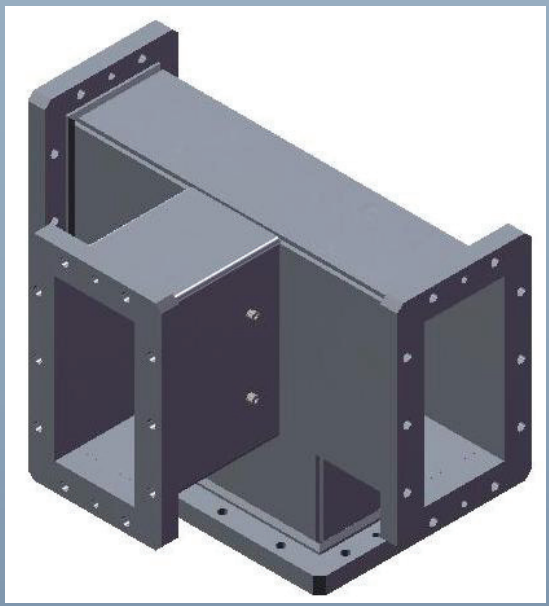
MEGA RF Solutions

Rigid Waveguide Magic Tees



A line of Magic tees manufactured to exacting electrical and mechanical specifications are available for every system layout.

Our manufacturing processes provide maximum symmetry in fabrication and resulting in the following electrical performance over a 10% bandwidth.

Electrical Performance over a 10% Waveguide Bandwidth	
Colinear Balance	+/- 0.1 dB
Insertion Loss	Less than 0.1 dB
E-H Isolation	30 dB Minimum
VSWR	1.10:1

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Catalog #	301304000	311304000	321304000	331303000	341303000	351303000	361303000	371303000	391303000

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Catalog #	401302000	411302000	421301000	431301000	441301000	451301000	461301000	471301000	481300000

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MEGA RF Solutions

Rigid Waveguide Miters

Mega Industries high quality 90° waveguide miter bends are of minimum physical size and provide superior electrical performance over a restricted bandwidth (typically VSWR 1.03:1 over a 5% bandwidth).

Standard material used is 6061-T6 Aluminum; however these can also be supplied in Copper and Brass.

Angles other than 90°, alignment pins, grooved flanges and various aspect ratios can readily be fabricated to meet your feed system requirements. Units are also available for both high pressure and high vacuum applications.

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
E-Plane	300604000	310604000	320604000	330603000	340603000	350603000	360603000	370603000	390603000
H-Plane	303704000	310704000	320704000	330703000	340703000	350703000	360703000	370703000	390703000

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
E-Plane	400602000	410602000	420601000	430601000	440601000	450601000	460601000	470601000	480600000
H-Plane	400702000	410702000	420701000	430701000	440701000	450701000	460701000	470701000	470700000

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MEGA RF Solutions

Rigid Waveguide Phase Shifters

For extremely high power applications, waveguide phase shifters of the short slot hybrid design are utilized. Non-contacting, double bucket shorting assemblies, mounted on Teflon runners, are utilized for long term reliability. With an insertion loss characteristic of less than 0.05 dB., maximum power transfer is assured for both manual and motorized units.

For ultra high power or critical phase applications Mega can incorporate water cooling the these designs.

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Manual	302204000	312204000	322204000	332203000	342203000	352203000	362203000	372203000	392203000
Motorized	302204010	312204010	322204010	332203010	342203010	352203010	362203010	372203010	392203010
3-Probe Manual	302204020	312204020	322204020	332203020	342203020	352203020	362203020	372203020	392203020
3-Probe Motorized	302204030	312204030	322204030	332203030	342203030	352203030	362203030	372203030	392203030

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Manual	402202000	412202000	422201000	432201000	442201000	452201000	462201000	472201000	482200000
Motorized	402202010	412202010	422201010	432201010	442201010	452201010	462201010	472201010	482200010
3-Probe Manual	402202020	412202020	422201020	432201020	442201020	452201020	462201020	472201020	482200020
3-Probe Motorized	402202030	412202030	422201030	432201030	442201030	452201030	462201030	472201030	482200030

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MEGA RF Solutions

Rigid Waveguide Rotary Joints

Mega Industries' waveguide rotary joints are designed specifically to customer requirements. These joints represent "State-of-the-Art" designs with extremely low VSWR and insertion loss. Our precise fabrication and construction methods assure you of minimal rotational VSWR (WOW) And maximum power handling capacity.

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Catalog #	303400000	313400000	323400000	333400000	343400000	353400000	363400000	373400000	393400000

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Catalog #	403400000	413400000	423400000	433400000	443400000	453400000	463400000	473400000	483400000

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Rigid Waveguide Short Slot Hybrid

Quadrature, or 90 degree, equal power division hybrids are available as a basic subsystem building block. Unequal 4.77 dB and 6 dB units are also available. Contact Mega's sales team for other possible splits.

These units meet, as a minimum, the following electrical specifications over a 10% waveguide bandwidth:

Electrical Performance over a 10% Waveguide Bandwidth	
Amplitude Balance	+/- 0.25 dB
Phase Balance	90 +/- 2°
Insertion Loss	Less than 0.1 dB
Isolation	28 dB Minimum
VSWR	1.10:1

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
3 dB	301504000	311504000	321504000	331503000	341503000	351503000	361503000	371503000	391503000
4.77 dB	301504020	311504020	321504020	331503020	341503020	351503020	361503020	371503020	391503020
6 dB	301504040	311504040	324504040	331503040	341503040	351503040	361503040	371503040	391503040

Size	WR340	WR294	WR229	WR187	WR159	WR137	WR112	WR102	WR90
3 dB	401502000	411502000	421501000	431501000	441501000	451501000	461501000	471501000	481500000
4.77 dB	401502020	411502020	421501020	431501020	441501020	451501020	461501020	471501020	481500020
6 dB	401502040	411502040	421501040	431501040	441501040	451501040	461501040	471501040	481500040

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MEGA RF Solutions

Rigid Waveguide Straight Sections

Mega Industries provides waveguide in sizes WR90 through WR2300. Full and reduced height configurations are available to meet your requirements. Custom sizes through WR6200 are also available on special request.

Mega Industries' four-corner spray arc argon welding process is performed in precision fixtures on WR430 through WR2300 to insure the highest quality waveguide which is mechanically stable and designed for optimum electrical performance. Mega waveguide meets or exceeds EIA and Mil standards for both waveguide(RS-261A & MIL-DTL-85) and flanges(RS271-A & MIL-DTL-3922).

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Raw Tube	3001040X0	3101040X0	3201040X0	3301030X0	3401030X0	3501030X0	3601030X0	3701030X0	3901030X0
One Flange	3002040X0	3102040X0	3202040X0	3302030X0	3402030X0	3502030X0	3602030X0	3702030X0	3902030X0
Two Flanges	3003040X0	3103040X0	3203040X0	3303030X0	3403030X0	3503030X0	3603030X0	3703030X0	3903030X0

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Raw Tube	4001020X0	4101020X0	4201010X0	4301010X0	4401010X0	4501010X0	4601010X0	4701010X0	4801000X0
One Flange	4002020X0	4102020X0	4202010X0	4302010X0	4402010X0	4502010X0	4602010X0	4702010X0	4802000X0
Two Flanges	4003020X0	4103020X0	4203010X0	4303010X0	4403010X0	4503010X0	4603010X0	4703010X0	4803000X0

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MEGA RF Solutions

Rigid Waveguide Sweeps

Mega Industries utilizes the most advanced fabricating methods for the forming of precision waveguide sweep bends. Strict adherence to EIA dimensional tolerances insures a minimum reflection coefficient over the waveguide band. Typical VSWR is 1.05:1

Standard material used is 6061-T6 Aluminum; however these can also be supplied in Copper and Brass.

The radii listed below are the recommended dimensions for 90° bends; however, other radii and angles can be readily supplied to minimize system design costs. Units are available for both high pressure and high vacuum applications.

Pieces are available in full height (2:1 ratio) as well as reduced height configurations.

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
E-Plane	300404000	310404000	320404000	330403000	340403000	350403000	360403000	370403000	390403000
H-Plane	300504000	310504000	320504000	330503000	340503000	350503000	360503000	370503000	390503000

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
E-Plane	400402000	410402000	420401000	430401000	440401000	450401000	460401000	470401000	480400000
H-Plane	400502000	410502000	420501000	430501000	440501000	450501000	460501000	470501000	480500000

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MEGA RF Solutions

Rigid Waveguide Switches

Mega Industries offers a comprehensive line of waveguide switch configurations, both manual and motorized, to meet the requirements of your microwave transmission system.

This line includes:

- Waveguide shutters for personnel protection in multiple transmitter applications.
- Three-port patch link assemblies for infrequent, preplanned SPDT operations.
- The conventional "T" configuration, for extremely high power use or where very high port isolation is required.

Size	WR2300	WR2100	WR1800	WR1500	WR11550	WR975	WR770	WR650	WR430
Shutter Manual	303200000	313200000	323200000	333200000	343200000	353200000	363200000	373200000	393200000
Shutter Motorized	303200010	313200010	323200010	333200010	343200010	353200010	363200010	373200010	393200010
T Style Manual	303200020	313200020	323200020	333200020	343200020	353200020	363.200020	373200020	393200020
T Style Motorized	303200030	313200030	323200030	333200030	343200030	353200030	363200030	373200030	393200030
Y Style Manual	303200040	313200040	323200040	333200040	343200040	353200040	363200040	373200040	393200040
Y Style Motorized	303200050	313200050	323200050	333200050	343200050	353200050	363200050	373200050	393200050

Contact Mega's sales team or go to www.megaind.com for other available sizes

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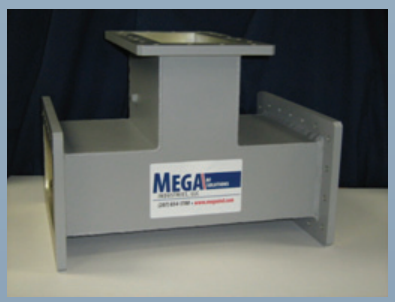
MEGA RF Solutions

Rigid Waveguide Tees



A complete line of series and shunt tees manufactured to exacting electrical and mechanical specifications are available for every system layout.

Our manufacturing processes provide maximum symmetry in fabrication and resulting in the following electrical performance over a 10% bandwidth.

Electrical Performance over a 10% Waveguide Bandwidth	
Colinear Balance	+/- 0.1 dB
Insertion Loss	Less than 0.1 dB
E-H Isolation	30 dB Minimum
VSWR	1.10:1

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Shunt unmatched	301204010	311204010	321204010	331203010	341203010	351203010	361203010	371203010	391203010
Shunt matched	301204020	311204020	321204020	331203020	341203020	351203020	361203020	371203020	391203020
Series unmatched	301204030	311204030	321204030	331203030	341203030	351203030	361203030	371203030	391203030
Series matched	301204040	311204040	321204040	331203040	341203040	351203040	361203040	371203040	391203040

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Shunt unmatched	401202010	411202010	421201010	431201010	441201010	451201010	461201010	471201010	481200010
Shunt matched	401202020	411202020	421201020	431201020	441201020	451201020	461201020	471201020	481200020
Series unmatched	401202030	411202030	421201030	431201030	441201030	451201030	461201030	471201030	481200030
Series matched	401202040	411202040	421201040	431201040	441201040	451201040	461201040	471201040	481200040

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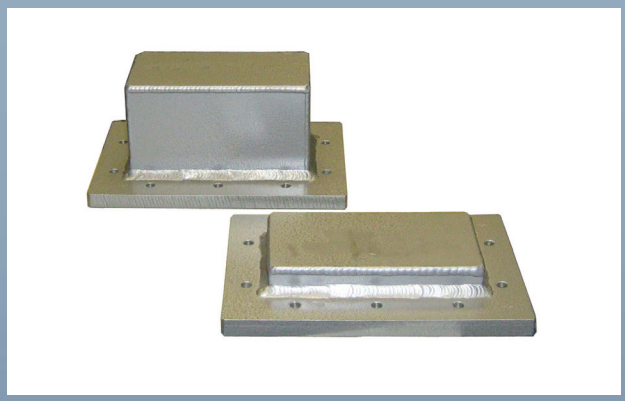
MEGA RF Solutions

Rigid Waveguide Test Terminations and Short Circuits

Mega Industries manufactures a wide range of waveguide terminations ranging from instrument level, low power test terminations to very high power system loads. The low power test terminations may be supplied in either a fixed or an adjustable configuration to best meet the needs of the customer.

Mega engineers are readily available to discuss custom system load requirements.

Mega also provides High Power Loads.



Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Fixed Termination	302004000	312004000	322004000	332003000	342003000	352003000	362003000	372003000	392003000
Sliding Termination	302004010	312004010	322004010	332003010	342003010	352003010	362003010	372003010	392003010
Short Circuits	3036040X0	3136040X0	3236040X0	3336030X0	3436030X0	3536030X0	3636030X0	3736030X0	3936030X0

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Fixed Termination	402002000	412002000	422001000	432001000	442001000	452001000	462001000	472001000	482000000
Sliding Termination	402002010	412002010	422001010	432001010	442001010	452001010	462001010	472001010	482000010
Short Circuits	4036020X0	4236020X0	4236010X0	4336010X0	4436010X0	4536010X0	4636010X0	4736010X0	4836000X0

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MEGA RF Solutions

Rigid Waveguide Transformers

Mega Industries offers a complete line of waveguide reducing transformers to the next standard size waveguide. Optimum electrical performance over the common waveguide band is obtained with the taper transformers. For minimum physical size, step transformers should be utilized. These units are precisely machined and fabricated to provide a maximum VSWR of 1.04:1 over the common waveguide band.

Mega Industries also offers a complete line of step transformers for various aspect ratios. The catalog numbers for the common 4:1 aspect ratio or Reduced-high waveguide are tabulated below for your ordering convenience.

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Taper to Next Smaller W/G	300804000	310804000	320804000	330803000	340803000	350803000	360803000	370803000	390803000
Taper to Reduced Hgt W/G	300804010	310804010	320804010	330803010	340803010	350803010	360803010	370803010	390803010
Step to Next Smaller W/G	300804020	310804020	320804020	330803020	340803020	350803020	360803020	370803020	390803020
Step to Reduced Hgt. W/G	300804030	310804030	320804030	330803030	340803030	350803030	360803030	370803030	390803030

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Taper to Next Smaller W/G	400802000	410802000	420801000	430801000	440801000	450801000	460801000	470801000	480800000
Taper to Reduced Hgt W/G	400802010	410802010	420801010	430801010	440801010	450801010	460801010	470801010	480800010
Step to Next Smaller W/G	400802020	410802020	420801020	430801020	440801020	450801020	460801020	470801020	480800020
Step to Reduced Hgt. W/G	400802030	410802030	420801030	430801030	440801030	450801030	460801030	470801030	480800030

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MEGA RF Solutions

Rigid Waveguide Transitions to Coaxial

Mega Industries manufacturers a complete line of waveguide to coaxial transitions. For laboratory testing or other low power applications, we recommend *"Probe type"* transitions to type "N" coaxial line; while our low VSWR *"cross-bar"* design provides optimum electrical performance for high power applications. To facilitate feed system layouts, the dimension chart that follows gives interface dimensions.

Standard transitions have fixed flanges. The 7/8, 1 5/8, 3 1/8, 6 1/8 coaxial adaptors for WR1800 and larger waveguides are female; other rigid coaxial adaptors are male. Also available are water-cooled transitions, half-height, and adaptors for SC, APC-7, SMA and other configurations.

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MEGA RF Solutions

For other sizes contact Mega's Sales department at Sales@megaind.com
or Mega's website at www.megaind.com

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Type N	3010040N0	3110040N0	3210040N0	3310030N0	3410030N0	3510030N0	3610030N0	3710030N0	3910030N0
SMA	3010040S0	3110040S0	3210040S0	3310030S0	3410030S0	3510030S0	3610030S0	3710030S0	3910030S0
7/8						351003010	361003010	371003010	391003010
1-5/8						351003020	361003020	371003020	391003020
3-1/8	301004030	311004030	321004030	331003030	341003030	351003030	361003030	371003030	
4-1/16	301004040	311004040	321004040	331003040	341003040	351003040	361003040		
6-1/8	301004050	311004050	321004050	331003050	341003050				

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Type N	4010020N0	4110020N0	4210010N0	4310010N0	4410010N0	4510010N0	4610010N0	4710010N0	4810000N0
SMA	4010020S0	4110020S0	4210010S0	4310010S0	4410010S0	4510010S0	4610010S0	4710010S0	4810000S0
7/8	401002010	411002010							
1-5/8	401002020	411002020							
3-1/8									
4-1/16									
6-1/8									

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MEGA RF Solutions

Rigid Waveguide Probe & Stub Tuners

Probe Tuners

Mega Industries waveguide probe tuners offer a form of in line waveguide structures, which will match out up to a 1.5:1 VSWR at any phase angle when placed in a waveguide circuit for subsystem optimization. The devices utilize Mega Industries contacting plunger designs for high power operation. Three probe units will readily match out a 1.25:1 mismatch while the 5 probe unit will match a 1.5:1 mismatch over a limited bandwidth**.** These devices are available for either manual or motorized operation. Remote Readouts and operating panels may be provided upon request. Contact the Mega Engineering Sales team for more information

Stub Tuners

Mega Industries waveguide stub tuners offer a form of in line waveguide structures to be used for impedance matching. These units, which will match out up to a 4:1 VSWR when appropriately placed in a waveguide circuit, utilize Mega Industries non contacting, single or double bucket short circuit designs for high power operation. Low power versions are also available utilizing contacting short circuit designs. Single stub units will match out a 2:1 mismatch over a 5% band while the double stub unit will match a 4:1 mismatch over a 20% bandwidth

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MEGA RF Solutions

Probe Tuners

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
3-Probe Manual	302104000	312104000	322104000	332103000	342103000	352103000	362103000	372103000	392103000
3-Probe Motorized	302104010	312104010	322104010	332103010	342103010	352103010	362103010	372103010	392103010
5-Probe Manual	302104020	312104020	322104020	332103020	342103020	352103020	362103020	372103020	392103020
5-Probe Motorized	302104030	312104030	322104030	332103030	342103030	352103030	362103030	372103030	392103030

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
3-Probe Manual	402102000	412102000	422101000	432101000	442101000	452101000	462101000	472101000	482100000
3-Probe Motorized	402102010	412102010	422101010	432101010	442101010	452101010	462101010	472101010	482100010
5-Probe Manual	402102020	412102020	422101020	432101020	442101020	452101020	462101020	472101020	482100020
5-Probe Motorized	402102030	412102030	422101030	432101030	442101030	452101030	462101030	472101030	482100030

Stub Tuners

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Manual	304304000	314304000	324304000	334303000	344303000	354303000	364303000	374303000	394303000
Motorized	304304010	314304010	324304010	334203010	344303010	354303010	364303010	374303010	394303010

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Manual	404302000	414302000	424301000	434301000	444301000	454301000	464301000	474301000	494300000
Motorized	404302010	434102010	424301010	434301010	444301010	454301010	464301010	474301010	494300010

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MEGA RF Solutions

Rigid Waveguide Step Twist

When mechanical system packaging necessitates a change in the plane of polarization, Mega Industries waveguide step twists provide an accurate electrical and mechanical interface. Our compact three-step waveguide twist exhibits a VSWR less than 1.05:1 over a 10% bandwidth. Lower VSWR's or increased bandwidth can be realized by utilizing a five-step twist.

Twist angles of 30°, 45°, 60° are also available. Continuous or smooth twists are available in the smaller sizes. All units come in right hand or left hand twist versions. Please contact our sales department for more information.

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
3 STEP RH	300904000	310904000	320904000	330903000	340903000	350903000	360903000	370903000	390903000
3 STEP LH	300904010	310904010	320904010	330903010	340903010	350903010	360903010	370903010	390903010
5 STEP RH	300904020	310904020	320904020	330903020	340903020	350903020	360903020	370903020	390903020
S STEP LH	300904030	310904030	320904030	330903030	340903030	350903030	360903030	370903030	390903030
7 STEP RH	300904040	310904040	320904040	330903040	340903040	350903040	360903040	370903040	390903040
7 STEP LH	300904050	310904050	320904050	330903050	340903050	350903050	360903050	370903050	390903050

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
3 STEP RH	400902000	410902000	420901000	430901000	440901000	450901000	460901000	470901000	480900000
3 STEP LH	400902010	410902010	420901010	430901010	440901010	450901010	460901010	470901010	480900010
5 STEP RH	400902020	410902020	420901020	430901020	440901020	450901020	460901020	470901020	480900020
S STEP LH	400902030	410902030	420901030	430901030	440901030	450901030	460901030	470901030	480900030
7 STEP RH	400902040	410902040	420901040	430901040	440901040	450901040	460901040	470901040	480900040
7 STEP LH	400902050	410902050	420901050	430901050	440901050	450901050	460901050	470901050	480900050

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MEGA RF Solutions

Rigid Waveguide EH Tuners

Mega Industries' complete line E-H Tuners offer a form of in line waveguide structures to be used for impedance matching. These units, which will match out up to a 4:1 VSWR at any phase angle throughout the band of operation, utilize Mega Industries' non contacting, single or double bucket short circuit designs for high power operation. Low power versions are also available utilizing contacting short circuit designs.

These devices are available for either manual or motorized operation. Remote Readouts and operating panels may be provided upon request. Contact the

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Manual	302404000	312404000	322404000	332403000	342403000	352403000	362403000	372403000	392403000
Motorized	302404010	312404010	322404010	332403010	342403010	352403010	362403010	372403010	392403010

Size	WR340	WR28	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Manual	402402000	412402000	422401000	432401000	442401000	452401000	462401000	472401000	482400000
Motorized	402402010	412402010	422401010	432401010	442401010	452401010	462401010	472401010	482400010

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MEGA RF Solutions

Waveguide Technical Data

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MEGA RF Solutions

Attenuation Curves

The normal attenuation of a transmission line is the ratio of the output power to the input power when the load is matched to the characteristic impedance of the transmission line. The common expression for normal attenuation in decibels is:

$$A = 10 log_{10} \frac{P2}{P1}$$

Where: P_2 = Power in watts appearing at the output terminals of transmission line.

P_1 = Power in watts appearing at the input terminals of transmission line.

For Mega Industries, rectangular aluminum alloy, 6061-T6, air filled waveguides operating over their respective standard EIA frequency bands, the theoretical attenuation is found by employing the following formula.

Where: P = Power in watts
a = width of waveguide in inches
b = height of waveguide in inches
f = operating frequency
fc = cutoff frequency of waveguide

$$\alpha = \frac{1.7608}{a^{3}/_{2}} \left[\frac{\frac{a}{2b}\left(\frac{f}{fc}\right)^{3}/_{2} + \left(\frac{f}{fc}\right) - \frac{1}{2}}{\sqrt{\left(\frac{f}{fc}\right)^{2} - 1}} \right]$$

The attenuation curves are for standard waveguide and show 125% of theoretical attenuation which is used as a maximum value although measured values are significantly less.

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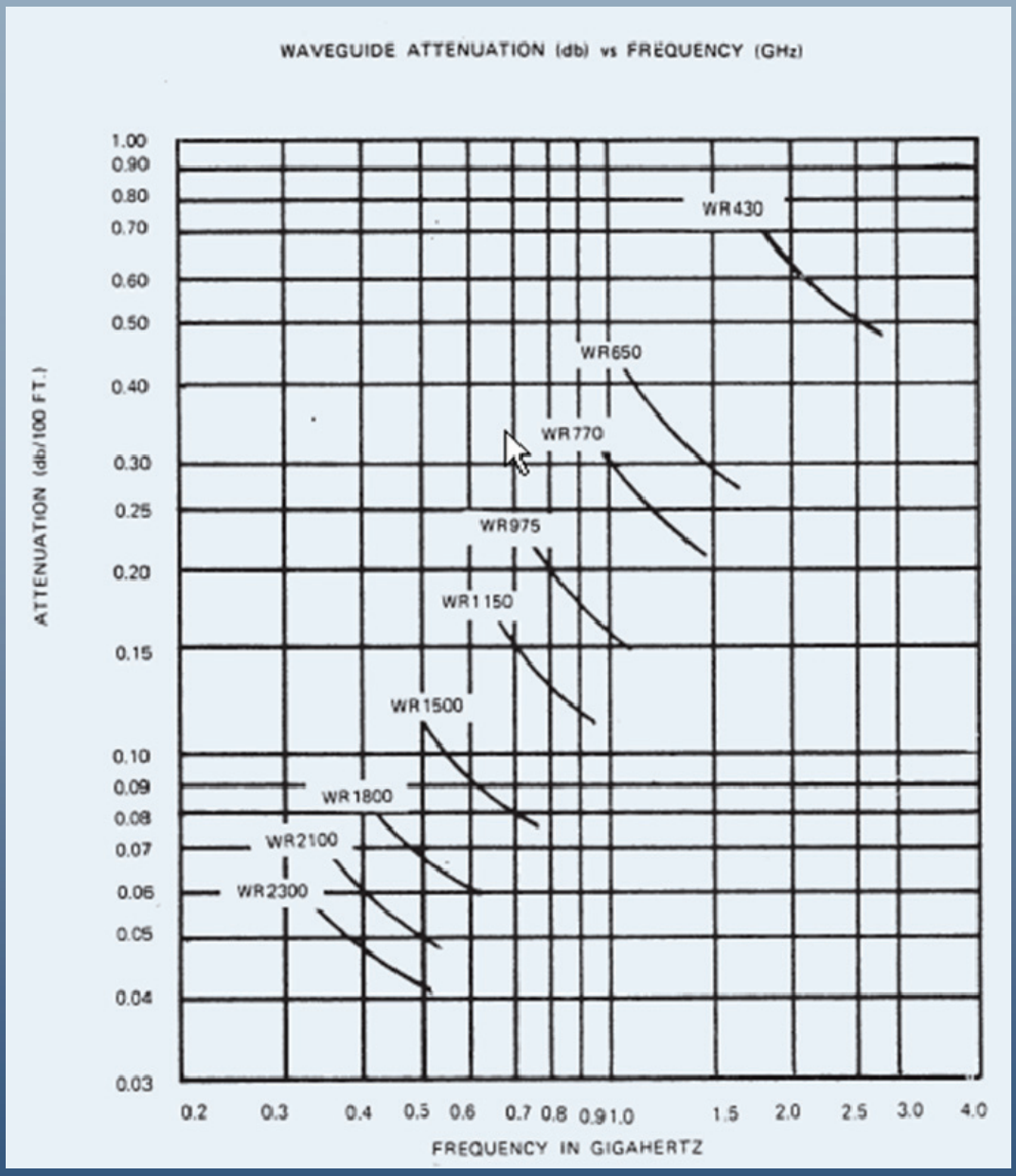

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MEGA RF Solutions

Power Handling Capacity

For a rectangular waveguide operation in the TE**10** mode, the maximum power handling capability can be expressed by:

$$P = 6.63 \times 10^{-4}\, ab \left(\frac{\lambda}{\lambda g}\right) (Emax)^2$$

Where: P = Power in watts
a = width of waveguide in centimeters
b = height of waveguide in centimeters
λ = free space wave length
λg = waveguide wave length (same units as are used for λ)
E max = breakdown voltage gradient of the dielectric filling the waveguide in volts/centimeter.

Other factors to be considered with the above formula are the voltage standing wave ratio and internal pressure. The VSWR of the waveguide lowers the maximum power handling capability of the waveguide by the reciprocal of the magnitude of the VSWR.
At higher internal pressures, the power is approximately proportional to the square of the density of air.
Note: The curves shown are based on 30,000 volts/centimeter, as the maximum voltage gradient of dry air at standard sea level conditions (Pressure = 760mm Hg. Temperature = 20° c).

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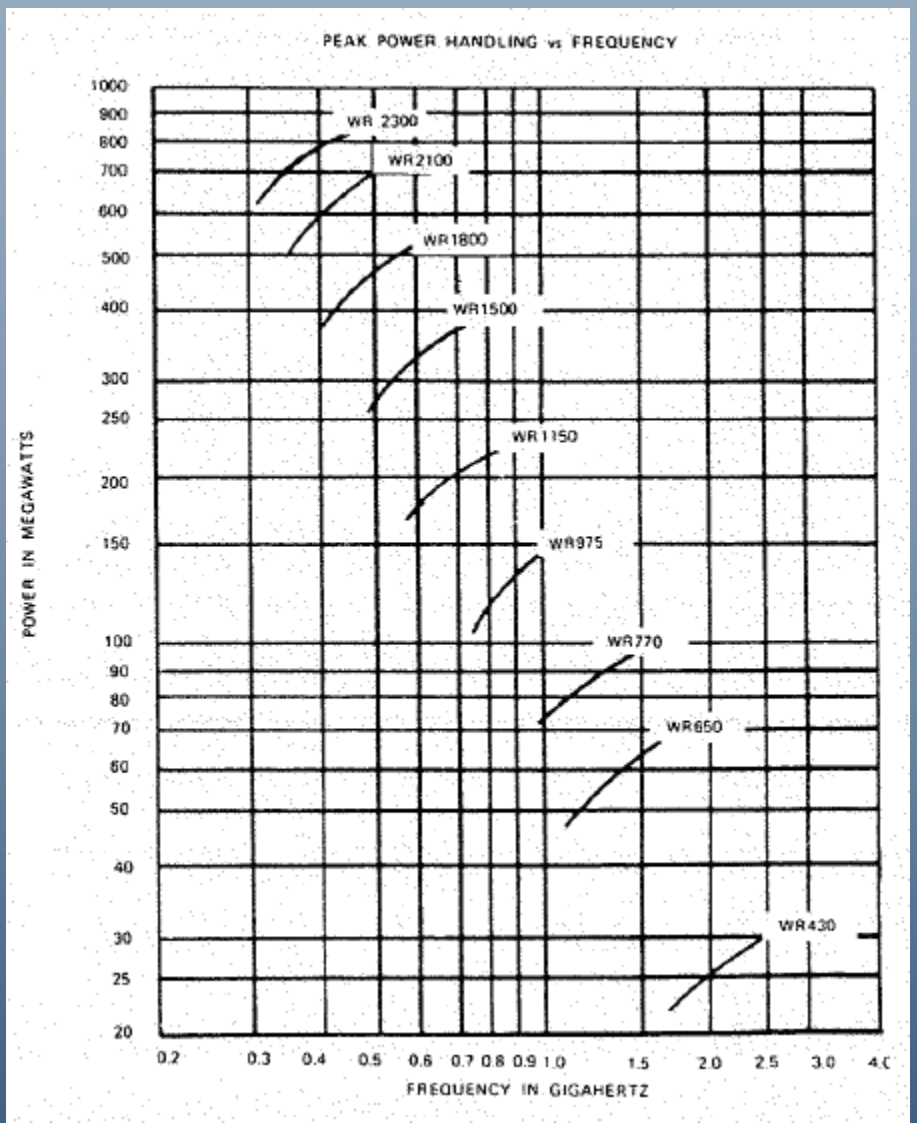

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MEGA RF Solutions

Decibels vs. Power & Voltage

The decibel chart below indicates dB for any ratio of voltage or power up to 100 dB. For voltage ratios greater than 10 (or power ratios greater than 100) the ratio can be broken down into tow products, the dB found for each separately, the two results then added. For example: To convert a voltage ratio of 250:1 to dB: 250:1 VR equals the product of 100:1 and 2.5:1. 100:1 equals 40 dB; 2.5:1 equals 8 dB. Therefore, 250:1 VR equals 40 dB + 8 dB or 48 dB.

Voltage Ratio	Power Ratio	- dB +	Voltage Ratio	Power Ratio	Voltage Ratio	Power Ratio	- dB +	Voltage Ratio	Power Ratio	Voltage Ratio	Power Ratio	- dB +	Voltage Ratio	Power Ratio
1.0000	**1.0000**	**0.0**	**1.000**	**1.000**	**0.4467**	**0.1995**	**7.0**	**2.239**	**5.012**	**0.1995**	**0.03981**	**14.0**	**5.012**	**25.12**
0.9886	0.9772	0.1	1.012	1.023	0.4416	0.1950	7.1	2.265	5.129	0.1972	0.03890	14.1	5.070	25.70
0.9772	0.9550	0.2	1.023	1.047	0.4365	0.1905	7.2	2.291	5.248	0.1950	0.03802	14.2	5.129	26.30
0.9661	0.9333	0.3	1.035	1.072	0.4315	0.1862	7.3	2.317	5.370	0.1928	0.03715	14.3	5.188	26.92
0.9550	0.9120	0.4	1.047	1.096	0.4266	0.1820	7.4	2.344	5.495	0.1905	0.03631	14.4	5.248	27.54
0.9441	0.8913	0.5	1.059	1.122	0.4217	0.1778	7.5	2.371	5.623	0.1884	0.03548	14.5	5.309	28.18
0.9333	0.8710	0.6	1.072	1.148	0.4169	0.1738	7.6	2.399	5.754	0.1862	0.03467	14.6	5.370	28.84
0.9226	0.8511	0.7	1.084	1.175	0.4121	0.1698	7.7	2.427	5.888	0.1841	0.03388	14.7	5.433	29.51
0.9120	0.8318	0.8	1.096	1.202	0.4074	0.1660	7.8	2.455	6.026	0.1820	0.03311	14.8	5.495	30.20
0.9016	0.8128	0.9	1.109	1.230	0.4027	0.1622	7.9	2.483	6.166	0.1799	0.03236	14.9	5.559	30.90

Voltage Ratio	Power Ratio	- dB +	Voltage Ratio	Power Ratio	Voltage Ratio	Power Ratio	- dB +	Voltage Ratio	Power Ratio	Voltage Ratio	Power Ratio	- dB +	Voltage Ratio	Power Ratio
0.8913	0.7943	1.0	1.122	1.259	0.3981	0.1585	8.0	2.512	6.310	0.1778	0.03162	15.0	5.623	31.62
0.8810	0.7762	1.1	1.135	1.288	0.3936	0.1549	8.1	2.541	6.457	0.1758	0.03090	15.1	5.689	32.36
0.8710	0.7586	1.2	1.148	1.318	0.3890	0.1514	8.2	2.570	6.607	0.1738	0.03020	15.2	5.754	33.11
0.8610	0.7413	1.3	1.161	1.349	0.3846	0.1479	8.3	2.600	6.761	0.1718	0.02951	15.3	5.821	33.88
0.8511	0.7244	1.4	1.175	1.380	0.3802	0.1445	8.4	2.630	6.918	0.1698	0.02884	15.4	5.888	34.67
0.8414	0.7079	1.5	1.189	1.413	0.3758	0.1413	8.5	2.661	7.079	0.1679	0.02818	15.5	5.957	35.48
0.8318	0.6918	1.6	1.202	1.445	0.3715	0.1380	8.6	2.692	7.244	0.1660	0.02754	15.6	6.026	36.31
0.8222	0.6761	1.7	1.216	1.479	0.3673	0.1349	8.7	2.723	7.413	0.1641	0.02692	15.7	6.095	37.15
0.8128	0.6607	1.8	1.230	1.514	0.3631	0.1318	8.8	2.754	7.586	0.1622	0.02630	15.8	6.166	38.02
0.8035	0.6457	1.9	1.245	1.549	0.3589	0.1288	8.9	2.786	7.762	0.1603	0.02570	15.9	6.237	38.90

Voltage Ratio	Power Ratio	- dB +	Voltage Ratio	Power Ratio	Voltage Ratio	Power Ratio	- dB +	Voltage Ratio	Power Ratio	Voltage Ratio	Power Ratio	- dB +	Voltage Ratio	Power Ratio
0.7943	**0.6310**	**2.0**	**1.259**	**1.585**	**0.3548**	**0.1259**	**9.0**	**2.818**	**7.943**	**0.1585**	**0.02512**	**16.0**	**6.310**	**39.81**
0.7852	0.6166	2.1	1.274	1.622	0.3508	0.1230	9.1	2.851	8.128	0.1567	0.02455	16.1	6.383	40.74
0.7762	0.6026	2.2	1.288	1.660	0.3467	0.1202	9.2	2.884	8.318	0.1549	0.02399	16.2	6.457	41.69
0.7674	0.5888	2.3	1.303	1.698	0.3428	0.1175	9.3	2.917	8.511	0.1531	0.02344	16.3	6.531	42.66
0.7586	0.5754	2.4	1.318	1.738	0.3388	0.1148	9.4	2.951	8.710	0.1514	0.02291	16.4	6.607	43.65
0.7499	0.5623	2.5	1.334	1.778	0.3350	0.1122	9.5	2.985	8.913	0.1496	0.02239	16.5	6.683	44.67
0.7413	0.5495	2.6	1.349	1.820	0.3311	0.1096	9.6	3.020	9.120	0.1479	0.02188	16.6	6.761	45.71
0.7328	0.5370	2.7	1.365	1.862	0.3273	0.1072	9.7	3.055	9.333	0.1462	0.02138	16.7	6.839	46.77
0.7244	0.5248	2.8	1.380	1.905	0.3236	0.1047	9.8	3.090	9.550	0.1445	0.02089	16.8	6.918	47.86
0.7161	0.5129	2.9	1.396	1.950	0.3199	0.1023	9.9	3.126	9.772	0.1429	0.02042	16.9	6.998	48.98
0.7079	0.5012	3.0	1.413	1.995	0.3162	0.1000	10.0	3.162	10.000	0.1413	0.01995	17.0	7.079	50.12

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Voltage Ratio	Power Ratio	- dB +	Voltage Ratio	Power Ratio	Voltage Ratio	Power Ratio	- dB +	Voltage Ratio	Power Ratio	Voltage Ratio	Power Ratio	- dB +	Voltage Ratio	Power Ratio
0.6998	0.4898	3.1	1.429	2.042	0.3126	0.09772	10.1	3.199	10.23	0.1396	0.01950	17.1	7.161	51.29
0.6918	0.4786	3.2	1.445	2.089	0.3090	0.09550	10.2	3.236	10.47	0.1380	0.01905	17.2	7.244	52.48
0.6839	0.4677	3.3	1.462	2.138	0.3055	0.09333	10.3	3.273	10.72	0.1365	0.01862	17.3	7.328	53.70
0.6761	0.4571	3.4	1.479	2.188	0.3020	0.09120	10.4	3.311	10.96	0.1349	0.01820	17.4	7.413	54.95
0.6683	0.4467	3.5	1.496	2.239	0.2985	0.08913	10.5	3.350	11.22	0.1334	0.01778	17.5	7.499	56.23
0.6607	0.4365	3.6	1.514	2.291	0.2951	0.08710	10.6	3.388	11.48	0.1318	0.01738	17.6	7.586	57.54
0.6531	0.4266	3.7	1.531	2.344	0.2917	0.08511	10.7	3.428	11.75	0.1303	0.01698	17.7	7.674	58.88
0.6457	0.4169	3.8	1.549	2.399	0.2884	0.08318	10.8	3.467	12.02	0.1288	0.01660	17.8	7.762	60.26
0.6383	0.4074	3.9	1.567	2.455	0.2851	0.08128	10.9	3.508	12.30	0.1274	0.01622	17.9	7.852	61.66
0.6310	0.3981	4.0	1.585	2.512	0.2818	0.07943	11.0	3.548	12.59	0.1259	0.01585	18.0	7.943	63.10
0.6237	0.3890	4.1	1.603	2.570	0.2786	0.07762	11.1	3.589	12.88	0.1245	0.01549	18.1	8.035	64.57
0.6166	0.3802	4.2	1.622	2.630	0.2754	0.07586	11.2	3.631	13.18	0.1230	0.01514	18.2	8.128	66.07
0.6095	0.3715	4.3	1.641	2.692	0.2723	0.07413	11.3	3.673	13.49	0.1216	0.01479	18.3	8.222	67.61
0.6026	0.3631	4.4	1.660	2.754	0.2692	0.07244	11.4	3.715	13.80	0.1202	0.01445	18.4	8.318	69.18

Voltage Ratio	Power Ratio	- dB +	Voltage Ratio	Power Ratio	Voltage Ratio	Power Ratio	- dB +	Voltage Ratio	Power Ratio	Voltage Ratio	Power Ratio	- dB +	Voltage Ratio	Power Ratio
0.5957	0.3548	4.5	1.679	2.818	0.2661	0.07079	11.5	3.758	14.13	0.1189	0.01413	18.5	8.414	70.79
0.5888	0.3467	4.6	1.698	2.884	0.2630	0.06918	11.6	3.802	14.45	0.1175	0.01380	18.6	8.511	72.44
0.5821	0.3388	4.7	1.718	2.951	0.2600	0.06761	11.7	3.846	14.79	0.1161	0.01349	18.7	8.610	74.13
0.5754	0.3311	4.8	1.738	3.020	0.2570	0.06607	11.8	3.890	15.14	0.1148	0.01318	18.8	8.710	75.86
0.5689	0.3236	4.9	1.758	3.090	0.2541	0.06457	11.9	3.936	15.49	0.1135	0.01288	18.9	8.811	77.62
0.5623	0.3162	5.0	1.778	3.162	0.2512	0.06310	12.0	3.981	15.85	0.1122	0.01259	19.0	8.913	79.43
0.5559	0.3090	5.1	1.799	3.236	0.2483	0.06166	12.1	4.027	16.22	0.1109	0.01230	19.1	9.016	81.28
0.5495	0.3020	5.2	1.820	3.311	0.2455	0.06026	12.2	4.074	16.60	0.1096	0.01202	19.2	9.120	83.18
0.5433	0.2951	5.3	1.841	3.388	0.2427	0.05888	12.3	4.121	16.98	0.1084	0.01175	19.3	9.226	85.11
0.5370	0.2884	5.4	1.862	3.467	0.2399	0.05754	12.4	4.169	17.38	0.1072	0.01148	19.4	9.333	87.10
0.5309	0.2818	5.5	1.884	3.548	0.2371	0.05623	12.5	4.217	17.78	0.1059	0.01122	19.5	9.441	89.13
0.5248	0.2754	5.6	1.905	3.631	0.2344	0.05495	12.6	4.266	18.20	0.1047	0.01096	19.6	9.550	91.20
0.5188	0.2692	5.7	1.928	3.715	0.2317	0.05370	12.7	4.315	18.62	0.1035	0.01072	19.7	9.661	93.33
0.5129	0.2630	5.8	1.950	3.802	0.2291	0.05248	12.8	4.365	19.05	0.1023	0.01047	19.8	9.772	95.50
0.5070	0.2570	5.9	1.972	3.890	0.2265	0.05129	12.9	4.416	19.50	0.1012	0.01023	19.9	9.886	97.72
0.5012	0.2512	6.0	1.995	3.981	0.2239	0.05012	13.0	4.467	19.95	0.1000	0.01000	20.0	10.000	100.00

Voltage Ratio	Power Ratio	- dB +	Voltage Ratio	Power Ratio	Voltage Ratio	Power Ratio	- dB +	Voltage Ratio	Power Ratio	Voltage Ratio	Power Ratio	- dB +	Voltage Ratio	Power Ratio
0.4955	0.2455	6.1	2.018	4.074	0.2213	0.04898	13.1	4.519	20.42					
0.4898	0.2399	6.2	2.042	4.169	0.2188	0.04786	13.2	4.571	20.89		10^{-3}	30.0		10^{-3}
0.4842	0.2344	6.3	2.065	4.266	0.2163	0.04677	13.3	4.624	21.38	10^{-2}	10^{-4}	40.0	10^{-2}	10^{-4}
0.4786	0.2291	6.4	2.089	4.365	0.2138	0.04571	13.4	4.677	21.88			50.0		10^{-5}
											10^{-5}	60.0		10^{-6}
0.4732	0.2239	6.5	2.113	4.467	0.2113	0.04467	13.5	4.732	22.39	10^{-3}	10^{-6}	70.0	10^{-3}	10^{-7}
0.4677	0.2188	6.6	2.138	4.571	0.2089	0.04365	13.6	4.786	22.91		10^{-7}	80.0		10^{-8}
0.4624	0.2138	6.7	2.163	4.677	0.2065	0.04266	13.7	4.842	23.44	10^{-4}	10^{-8}	90.0	10^{-4}	10^{-9}
0.4571	0.2089	6.8	2.188	4.786	0.2042	0.04169	13.8	4.898	23.99	10^{-5}	10^{-9}			
0.4519	0.2042	6.9	2.213	4.898	0.2018	0.04074	13.9	4.955	24.55		10^{-10}	100.0	10^{-5}	10^{-10}

MEGA RF Solutions

Typical Specifications

Typical Specifications									
Size EIA WR	Size IEC R()	Recom-mended Frequency Range (GHz)	Cut-off for TE_{10} Mode (GHz)	Attenua-tion* Max/Min**	Power Rating In Megawatt Max/Min**	Material Alloy	Dimensions		
							ID Inches (mm)	OD Inches (mm)	Wall Thickness Inches (mm)
90	100	8.20-12.40	6.557	5.542	0.47	Al/Cu/Br	0.900 (22.86)	1.0 (25.40)	0.050 (1.27)
				3.83	0.033		0.400 (10.16)	0.5 (12.70)	
102	-	7.00-11.00	5.785	4.27	0.68	Al/Cu/Br	1.020 (25.91)	1.148 (29.16)	0.064 (1.63)
				2.98	0.48		0.510 (12.95)	0.638 (16.21)	
112	84	7.05-10.00	5.259	3.99	0.73	Al/Cu/Br	1.122 (28.50)	1.25 (31.75)	0.064 (1.63)
				2.76	0.52		0.497 (12.62)	0.625 (15.88)	
137	70	5.85-8.20	4.301	2.91	1.12	Al/Cu/Br	1.372 (34.85)	1.5 (38.10)	0.064 (1.63)
				2.00	0.79		0.622 (15.80)	0.75 (19.05)	
159	58	4.90-7.05	3.711	2.19	1.66	Al/Cu/Br	1.590 (40.39)	1.718 (43.64)	0.064 (1.63)
				1.48	1.18		0.795 (20.19)	0.923 (23.44)	
187	48	3.95-5.85	3.152	1.79	2.15	Al/Cu/Br	1.872 (47.55)	2.0 (50.80)	0.064 (1.63)
				1.23	1.52		0.827 (21.01)	1.0 (25.40)	
229	40	3.30-4.90	2.577	1.27	3.46	Al/Cu/Br	2.29 (58.71)	2.418 (24.18)	0.064 (1.63)
				0.86	2.44		1.145 (29.08)	1.273 (32.33)	
284	32	2.60-3.95	2.078	0.953	5.0	Al/Cu/Br	2.840 (72.14)	3.0 (76.20)	0.080 (2.03)
				0.652	3.5		1.34 (34.04)	1.5 (38.10)	
340	26	2.10-3.30	1.736	0.702	7.6	Al/Cu	3.40 (86.36)	3.56 (90.42)	0.080 (2.03)
				0.475	5.4		1.7 (43.18)	1.86 (47.24)	

* Attenuation is in dB per 100 feet in aluminum
** Maximum Frequency / Minimum Frequency

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MEGA RF Solutions

Typical Specifications									
Size EIA WR	Size IEC R()	Recom-mended Frequency Range (GHz)	Cut-off for TE_{10} Mode (GHz)	Attenua-tion* Max/Min**	Power Rating In Megawatt Max/Min**	Material Alloy	Dimensions		
							ID Inches (mm)	OD Inches (mm)	Wall Thickness Inches (mm)
430	22	1.70-2.60	1.372	0.494	12.2	Al/Cu	4.3 (109.92	4.46 (113.28)	0.080 (2.03)
				0.334	8.6		2.15 (54.61)	2.31 (58.67)	
510	18	1.45-2.20	1.157	0.382	17.1	Al/Cu	5.1 (129.54)	5.325 (135.26)	0.125 (3.18)
				0.259	12.09		2.5 (63.50)	2.8 (71.12)	
650	14	1.12-0.908	0.908	0.266	27.8	Al/Cu	6.5 (165.10)	6.75 (171.45)	0.125 (3.18)
				0.180	19.6		3.25 (82.55)	3.5 (88.90)	
770	12	0.96-1.45	0.766	0.206	39.1	Al	7.7 (195.58)	7.95 (201.93)	0.125 (3.18)
				0.140	27.6		3.85 (97.79)	4.1 (104.14)	
975	9	0.75-1.12	0.605	0.145	62.6	Al	9.75 (247.65)	10.0 (254.00)	0.125 (3.18)
				0.98	44.2		4.875 (123.83)	5.125 (130.18)	
1150	8	0.64-0.96	0.513	0.113	87.1	Al	11.5 (292.10)	11.75 (298.45)	0.125 (3.18)
				0.076	61.5		5.75 (146.05)	6 (152.40)	
1500	6	0.49-0.75	0.393	0.076	148	Al	15.0 (381.0)	15.25 (387.35)	0.125 (3.18)
				0.051	104		7.50 (190.50)	7.75 (196.85)	
1800	5	0.41-0.62	0.328	0.058	231	Al	18.0 (457.20)	18.376 (466.75)	.190 (4.826)
				0.039	150		9.0 (228.60)	9.376 (238.15)	
2100	4	0.35-0.53	0.281	0.046	290	Al	21.0 (533.40)	21.376 (542.95)	.190 (4.826)
				0.031	205		10.50 (266.70)	10.876 (276.25)	
2300	3	0.32-0.49	0.256	0.040	348	Al	23.0 (584.20)	23.376 (593.75)	.190 (4.826)
				0.027	246		11.50 (292.10)	11.876 (301.65)	

* Attenuation is in dB per 100 feet in aluminum
** Maximum Frequency / Minimum Frequency

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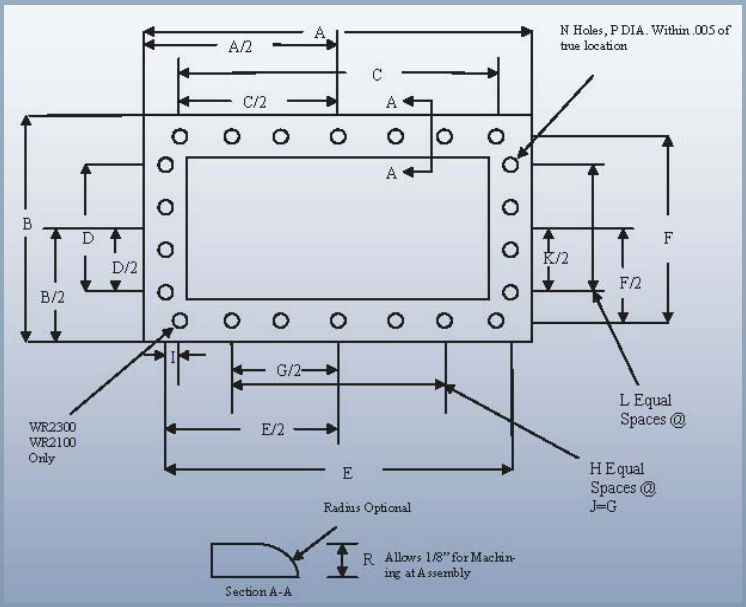
MEGA RF Solutions

Flange Dimensions



Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650
A	26.63 (676.28)	24.63 (625.48)	21.50 (546.10)	18.50 (469.90)	15.00 (381.00)	13.25 (336.55)	11.22 (284.94)	8.69 (220.65)
B	15.13 (384.18	14.13 (358.78)	12.50 (317.50)	11.00 (279.40)	9.25 (234.95)	8.38 (212.85)	7.38 (187.45)	5.44 (138.10)
C	23.40 (594.23)	21.40 (543.43)	18.40 (467.23)	15.39 (390.91)	11.89 (302.01)	10.01 (254.25)	7.96 (202.18)	6.76 (171.70)
D	11.90 (302.13)	10.90 (276.73)	9.40 (238.63)	7.89 (200.41)	6.14 (155.96)	5.13 (130.30)	4.11 (104.39)	3.51 (89.15)
E	25.50 (647.70)	23.50 (596.90)	20.00 (508.00)	17.00 (431.80)	13.50 (342.90)	11.75 (298.45)	9.70 (246.38)	7.87 (200.00)
F	14.00 (355.60)	13.00 (330.20)	11.00 (279.40)	9.50 (241.30)	7.75 (196.85)	6.88 (174.63)	5.85 (148.59)	4.62 (117.40)
G	20.06 (509.55)	18.28 (464.24)	16.00 (406.40)	14.00 (355.60)	10.00(254.00)	8.00 (203.20)	8.00 (203.20)	4.75 (120.60)
H	9	7	8	7	5	4	4	2
I	0.489 (12.421)	0.439 (11.151)	-	-	-	-	-	-
J	2.23 (56.62)	2.61 (66.32)	2.00 (50.80)	2.00 (50.80)	2.00 (50.80)	2.00 (50.80)	2.00 (50.80)	2.37 (60.30)
K	9.30 (236.27	7.80 (198.12)	9.06 (230.20)	6.00 (152.40)	5.81 (147.68)	6.00 (152.40)	2.00 (50.80)	2.50 (63.45)
L	5	3	5	3	3	3	1	1
M	1.86 (47.24)	2.60 (66.04)	1.81 (46.05)	2.00 (50.80)	1.94 (49.23)	2.00 (50.80)	2.00 (50.80)	2.50 (63.45)
N	36	28	30	24	20	18	14	10
P	0.53 (13.49)	0.53 (13.49)	0.41 (10.31)	0.41 (10.31)	0.41 (10.31)	0.41 (10.31)	0.41 (10.31)	0.33 (8.26)
R	0.75 (19.05)	0.75 (19.05)	0.625 (15.88)	0.625 (15.88)	0.625 (15.88)	0.625 (15.88)	0.5 (12.70)	0.5 (12.70)

Size	WR430	WR340	WR284	WR187	WR159	WR137	WR112	WR90
A	6.34 161.11)	5.44 (138.18)	4.50 (114.30)	3.50 (88.90)	3.19 (81.03)	2.69 (68.33)	2.50 (63.50)	2.09 (53.09)
B	4.19 (106.35)	3.75 (95.25)	3.00 (76.20)	2.50 (63.50)	2.44 (61.98)	1.94 (49.28)	1.75 (44.45)	1.59 (40.39)
C	4.47 (113.54)	2.69 (68.28)	3.20 (81.15)	1.13 (28.58)	1.00 (25.40)	0.88 (22.23)	0.80 (20.37)	0.58 (14.71)
D	2.32 (58.93)	1.34 (34.09)	1.16 (29.36)	0.88 (22.35)	.075 (19.05)	0.63 (15.88)	0.60 (15.29)	0.63 (15.88)
E	5.59 (141.99)	4.69 (119.08)	3.83 (97.23)	2.83 (71.83)	2.55 (64.67)	2.19 (55.58)	1.91 (48.41)	1.66 (42.06)
F	3.44 (87.38)	3.00 (76.20)	2.33 (59.13)	1.83 (46.43)	1.75 (44.45)	1.44 (36.53)	1.28 (32.54)	1.16 (29.36)
G	3.57 (90.78)	2.69 (68.28)	2.56 (65.07)	1.13 (28.58)	1.00 (25.40)	0.88 (22.23)	.075 (19.05)	0.58 (14.73)
H	2	2	2	1	1	1	1	1
I	-	-	-	-	-	-	-	-
J	1.787 (45.39)	1.344 (34.14)	1.281 (32.54)	1.125 (28.58)	1.00 (25.40)	0.875 (22.23)	.075 (19.05)	0.58 (14.73)
K	1.876 (47.65)	1.342 (34.09)	1.156 (29.36)	0.875 (22.23)	.075 (19.05)	0.625 (15.88)	0.625 (15.88)	0.625 (15.88)
L	1	1	1	1	1	1	1	1
M	1.876 (47.65)	1.342 (34.09)	1.156 (29.36)	0.875 (22.23)	.075 (19.05)	0.625 (15.88)	0.625 (15.88)	0.6254 (15.89)
N	10	10	10	8	8	8	8	8
P	0.266 (6.76)	0.266 (6.76)	0.259 (6.58)	0.259 (6.58)	0.259 (6.58)	0.198 (5.03)	0.17 (4.32)	0.147 (3.73)
R	0.5 (12.70)	0.5 (12.70)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)

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MEGA RF Solutions

Semi-Flexible Waveguide

Mega Industries, LLC • 28 Sanford Drive, Gorham, Me. 04038 USA
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MEGA RF Solutions

Mega Industries, LLC manufactures semi-flexible waveguide products in sizes WR90 thru WR2300. All designs are field proven to meet the highest standards in the industry. Flexible waveguides are manufactured from aluminum or copper alloys to meet EIA and Military specifications and may be plated in accordance with customer requirements. Standard finish is a Chemical Resistant Epoxy paint system. Urethane and neo-prene jacketing systems are also offered.

Mega Industries recommends the use of flexible waveguide sections to account for system flange misalignments and also for interfaces where expansion and contraction in a microwave feed must be absorbed. Half height flexible waveguides are also available is some popular sizes and custom flexible waveguide sizes are available upon request.

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MEGA RF Solutions

Semi-Flexible Offsets

Mega Industries Flexible Waveguide Offsets excellent electrical performance while giving you that extra flexibility that you need in those tight connections that your layout may demand.

E-Plane

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Aluminum	3064000X0	3164000X0	3264000X0	3364010X0	3464010X0	3564010X0	3664000X0	3764000X0	3964040X0
Phos. Bronze									
Brass									3964140X0

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Aluminum	4064040X0								
Phos. Bronze	4064240X0	4164250X0	4264280X0	4364250X0	4464270X0	4564270X0		4764270X0	4864290X0
Brass							4664170X0		

H-Plane

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Aluminum	3065000X0	3165000X0	3265000X0	3365010X0	3465010X0	3565010X0	3665000X0	3765000X0	3965040X0
Phos. Bronze									
Brass									3965140X0

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Aluminum	4065040X0								
Phos. Bronze	4065240X0	4165250X0	4265280X0	4365250X0	4465270X0	4565270X0		4765270X0	4865290X0
Brass							4665170X0		

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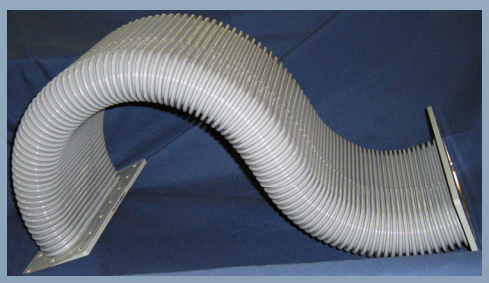
MEGA RF Solutions

Semi-Flexible Sweeps

Mega manufactures Flexible Waveguide Sweeps from various materials and various flange configurations. Mega provides full design services for factory formed sweeps that assure accuracy and electrical performance.



E-Plane

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Aluminum	30620000	316200000	326200000	336201000	346201000	356201000	366200000	376200000	396204000
Phos. Bronze									
Brass									396214000

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Aluminum	406204000								
Phos. Bronze	406224000	416225000	426228000	436225000	446227000	456227000		476227000	486229000
Brass							466217000		

H-Plane

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Aluminum	30630000	316300000	326300000	336301000	346301000	356301000	366300000	376300000	396304000
Phos. Bronze									
Brass									396314000

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Aluminum	406304000								
Phos. Bronze	406324000	416325000	426328000	436325000	446327000	456327000		476327000	486329000
Brass							466317000		

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MEGA RF Solutions

Semi-Flexible Straights

Mega Industries manufactures Flexible Waveguide Straights from aluminum, copper, brass and phosphor bronze with various flange configurations to meet EIA and Military specifications.

Raw Tube

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Aluminum									
Phos. Bronze									
Brass									3960140X0

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Aluminum									
Phos. Bronze	4060240X0	4160250X0	4260280X0	4360250X0	4460270X0	4560270X0		4760270X0	4860290X0
Brass							4660170X0		

Flanged Assembly

Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Aluminum	3061000X0	3161000X0	3261000X0	3361010X0	3461010X0	3561010X0	3661000X0	3761000X0	3961040X0
Phos. Bronze									
Brass									3961140X0

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Aluminum	4061040X0								
Phos. Bronze	4061240X0	4161250X0	4261280X0	4361250X0	4461270X0	4561270X0		4761270X0	4861290X0
Brass							4661170X0		

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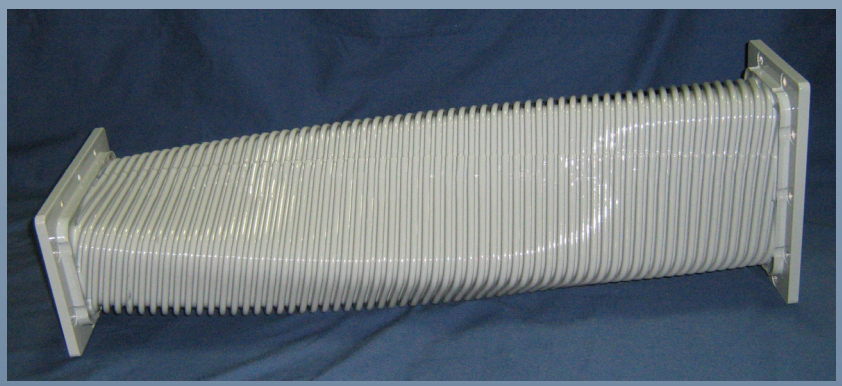
MEGA RF Solutions

Semi-Flexible Twists

Mega Industries manufactures Flexible Waveguide Twists from aluminum, copper brass and phosphor bronze with various flange configurations.

Mega provides a full design services to assure accuracy and electrical performance.



Size	WR2300	WR2100	WR1800	WR1500	WR1150	WR975	WR770	WR650	WR430
Right Hand	3066000X0	3166000X0	3266010X0	3366010X0	3466010X0	3566010X0	3666000X0	3766000X0	3966040X0
Left Hand	3067000X0	3167000X0	3267010X0	3367010X0	3467010X0	3567010X0	3667000X0	3767000X0	3967040X0

Size	WR340	WR284	WR229	WR187	WR159	WR137	WR112	WR102	WR90
Right Hand	4066040X0	4166250X0	4266280X0	4366250X0	4466270X0	4566270X0	4666170X0	4766270X0	4866290X0
Left Hand	4067040X0	4167250X0	4267280X0	4367250X0	4467270X0	4567270X0	4667170X0	4767270X0	4867290X0

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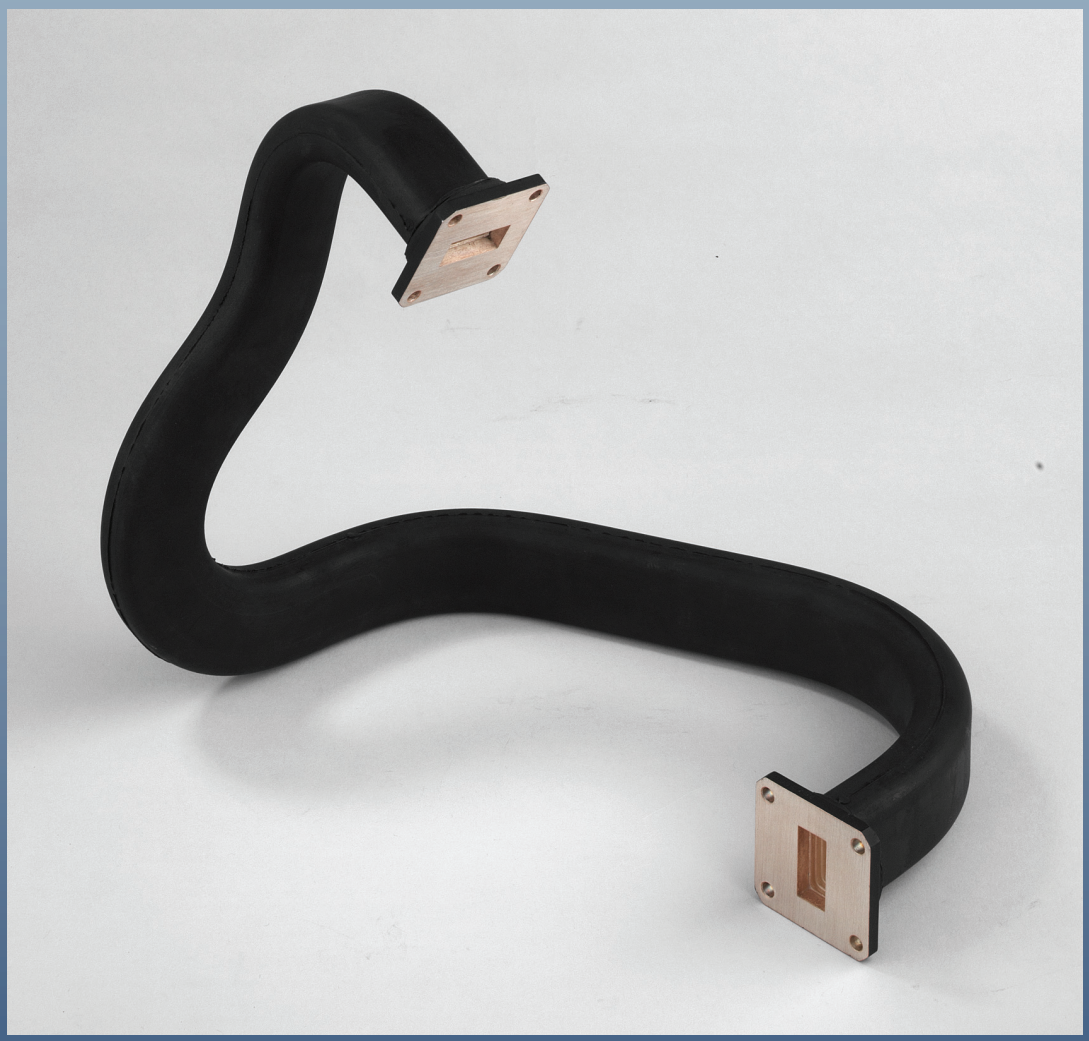
MEGA RF Solutions



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MEGA RF Solutions

Semi-Flexible Waveguide Technical

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MEGA RF Solutions

Typical Specifications

Typical Specifications

Size	Frequency Range (GHZ)	VSWR*	Attenuation**	Bend Radii to Centerline				Average Power	Peak Power
				E-Plane w/ Jacket	H-Plane w/ Jacket	E-Plane No Jacket	H-Plane No Jacket	Kilowatts	Megawatts
WR90	8.20-12.40	1.10	0.09	1.75	2.50	1.25	1.50	3	0.18
WR102	7.00-11.00	1.10	0.08	2.00	2.88	1.30	1.94	4	0.30
WR112	7.05-10.00	1.09	0.06	2.25	3.25	1.40	1.82	4	0.31
WR137	5.85-8.20	1.09	0.05	2.38	3.38	1.50	2.07	5	0.50
WR159	4.90-7.05	1.08	0.04	4.00	6.00	1.60	2.25	6	1.10
WR187	3.95-5.85	1.08	0.03	4.38	6.50	1.94	3.00	6	1.25
WR229	3.30-4.90	1.07	0.02	6.50	8.00	2.13	3.25	8	1.55
WR284	2.60-3.95	1.09	0.02	7.00	9.50	2.94	5.50	10	2.00
WR340	2.20-3.30	1.08	0.01	N/A	N/A	4.25	6.00	16	3.70
WR430	1.70-2.60	1.07	0.01	N/A	N/A	6.00	8.00	20	4.70
WR510	1.45-2.20	1.07	0.01	N/A	N/A	6.00	12.00	20	4.70
WR650	1.12-1.70	1.06	0.01	N/A	N/A	6.00	12.00	150	11
WR770	.96-1.45	1.05	0.01	N/A	N/A	6.00	12.00	210	15
WR975	.75-1.12	1.05	0.01	N/A	N/A	9.00	18.00	350	25
WR1150	.64-.96	1.05	0.01	N/A	N/A	12.00	24.00	490	35
WR1500	.49-.75	1.05	0.01	N/A	N/A	12.00	30.00	840	60
WR1800	.41-.62	1.05	0.01	N/A	N/A	18.00	36.00	1200	86
WR2100	.35-.53	1.05	0.01	N/A	N/A	24.00	42.00	1300	117
WR2300	.32-.49	1.05	0.01	N/A	N/A	24.00	48.00	1540	141

* VSWR is per 2 foot section ** Attenuation is in dB per foot

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Compressed Convolution Typical Specifications

Compressed Convolution Typical Specifications

Size	Frequency Range (GHZ)	VSWR*	Attenuation**	Movement (% of total length)				Average Power	Peak Power
				E-Plane Standard	H-Plane Com. Conv.	E-Plane Standard	H-Plane Com. Conv.	Kilowatts	Megawatts
WR650	1.12-1.70	1.06	0.01	3%	5.8%	2%	3.6%	150	11
WR770	.96-1.45	1.05	0.01	3%	5.8%	2%	3.6%	210	15
WR975	.75-1.12	1.05	0.01	3%	5.8%	2%	3.6%	350	25
WR1150	.64-.96	1.05	0.01	3%	5.8%	2%	3.6%	490	35
WR1500	.49-.75	1.05	0.01	3%	5.8%	2%	3.6%	840	60
WR1800	.41-.62	1.05	0.01	3%	5.8%	2%	3.6%	1200	86
WR2100	.35-.53	1.05	0.01	3%	5.8%	2%	3.6%	1300	117
WR2300	.32-.49	1.05	0.01	3%	5.8%	2%	3.6%	1540	141

* VSWR is per 2 foot section ** Attenuation is in dB per foot

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