EXCEED MICROWAVE

Ready to Upgrade Your System

Exceed Microwave provides custom high performance passive microwave components for Commercial, Defense, and Space applications. The company was founded in 2013 and all technical staff have extensive background in space and military grade passive component hardware.

Exceed Microwave is AS9100D Certified and ITAR Registered.

NAICS Code: 334419 TRL Level 6

Our goal is to provide well balanced solutions to help customers achieve their system requirements.

Chief Engineer, Dr. Shigetoshi Yokota

- PhD from University of California of Berkeley in Numerical Analysis on Electromagnetic Scattering (including antennas).
- Started his career at Transco Products and became the Chief Engineer for military and space grade Filters, Antennas, Coaxial & Waveguide Switches. Developed the Highpower Waveguide Switchable Notch Filter used on F14 & F16 Fighter Jets.
- At Boeing Satellite Systems, he designed many types of waveguide, coaxial, and micro-strip filters as well as other passive components.
- Joined COMDEV USA as CTO and guided the technical staff in developing and improving high power and low power space grade passive components such as Filters, MUXs, Isolators, Coaxial & Waveguide Switches in the UHF Band up to W-Band.

President, Hajime Yokota

- Started at Boeing Satellite Systems designing various RF Electronics in the R&D division such as miniature filters, Q-Band Down Converters, MMIC GaN Power Amplifiers.
- Senior RF Engineer at COMDEV USA designing low loss coax and waveguide filters as well as isolators for space applications.
- At Teledyne, held the position of Senior Principal Engineer, and designed filters and multiplexers for space and military applications.

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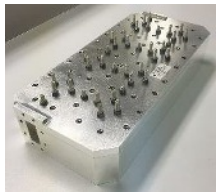
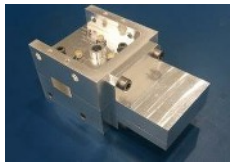
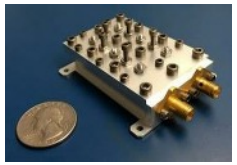
EXCEED MICROWAVE

Exceed Microwave Exclusive Products

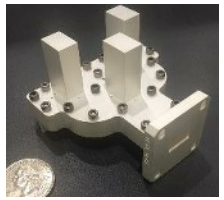
Product Series	Description	Ideal Use of Product	Sample Picture
BPF-WZ	- Ultra high Q waveguide filter - Super low insertion loss - High selectivity - High power handling	- High power transmit filters - Pre-select filters for low Noise Figure	
BPF-WC	- Compact waveguide filter - Can provide wideband performance that other waveguide filters cannot	- Broadband high frequency systems - Small systems with limited space	
PEQ-W	- Waveguide phase equalizer - Reduces phase non-linearity - Reduces peak-to-peak group delay variation	- Digital systems that require linear phase across pass-band. - Radar systems that require flatter group delay	

Exceed Microwave also provides:


WR51 Isolator


C-Band Temperature Stable BPF

- Waveguide & Coaxial Band-Stop Filters
- Coaxial filters
- Coaxial mechanical switches
- Waveguide Circulator/Isolator
- Waveguide & Coaxial Power Combiner/Splitter


WR51 4-Way Magic-T Combiner

Coaxial ElectroMechanical Switches up to 40GHz

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Part No:

BPF-WZ1-4764-22-8-187

EXCEED MICROWAVE

Ultra Low Insertion Loss C-Band Band-pass Filter • 4.75-4.78 GHz

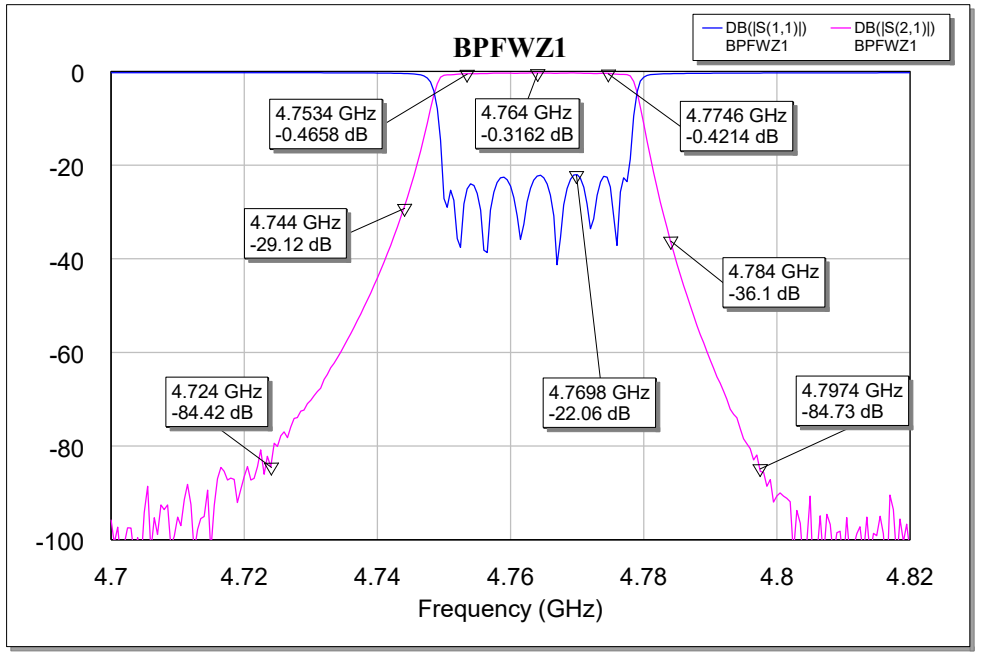
BPF-WZ1-4764-22-8-187 is a C-Band Band-pass Filter with super low insertion loss. It is an 8 section filter with 0.5dB insertion loss even with the narrow bandwidth of 0.6%. Input and output are CPR WR187.

Key Features

- Super Low Insertion Loss while maintaining high selectivity
- Very High Power Handling: 20 kW
- Ideal for high power transmit filters as well as pre-select filters for low Noise Figure

Parameters	
Pass-Band Frequency	4.75-4.78 GHz
Insertion Loss	<0.5 dB @ Fc
Insertion Loss Flatness	<0.2 dB
Return Loss	>21 dB
Rejection @ 4.72 GHz	>80 dB
Rejection @ 4.8 GHz	>80 dB
Operating Temperature	-50°C to +85°C
Material	Silver Plated Aluminum 6061
Weight	30 lbs

Typical Measured Data



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Part No:

BPF-WZ1-59200-800-8-15

EXCEED MICROWAVE

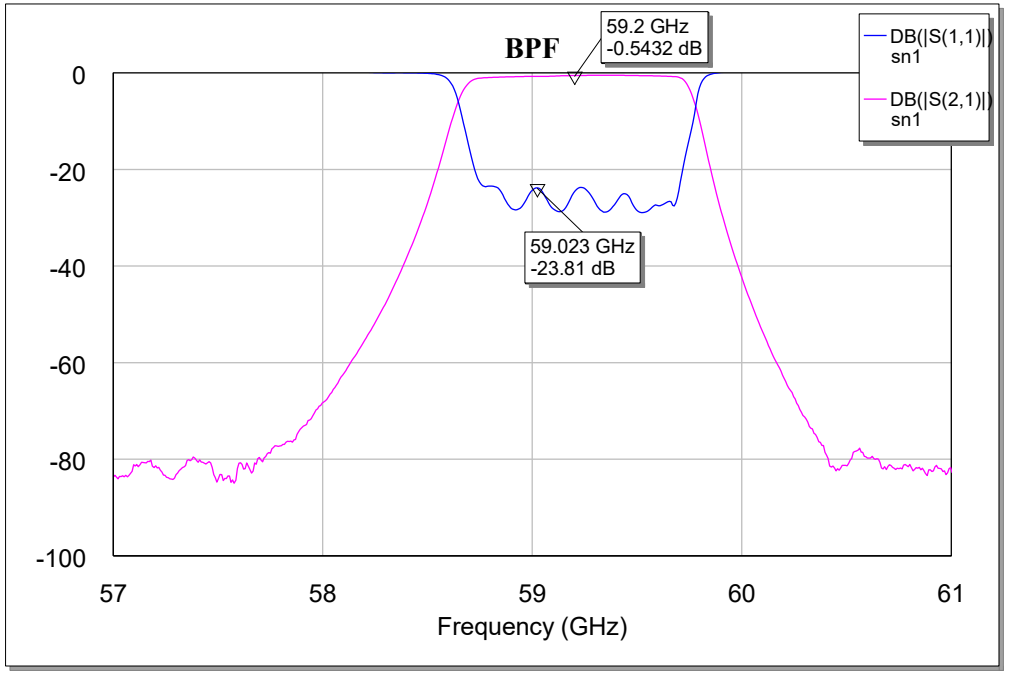
Ultra Low Insertion Loss V-Band Band-pass Filter • 58.8-59.6 GHz

BPF-WZ1-59200-800-8-15 is a V-Band Band-pass Filter with super low insertion loss. It is an 8 section filter with 0.55dB insertion loss even with the narrow bandwidth of 1.5%. Input and output are WR15 UG385/U.

Key Features
- Narrow bandwidth
- Super Low Insertion loss

Parameters	
Pass-Band Frequency	58.8-59.6 GHz
Insertion Loss	<0.6dB @ Fc
Insertion Loss Flatness	<0.5dB
Return Loss	>21dB
Rejection @ 58GHz	>70dB
Rejection @ 61GHz	>80dB
Operating Temperature	-50°C to +85°C
Material	Silver Plated Aluminum 6061
Weight	100 grams

Typical Measured Data



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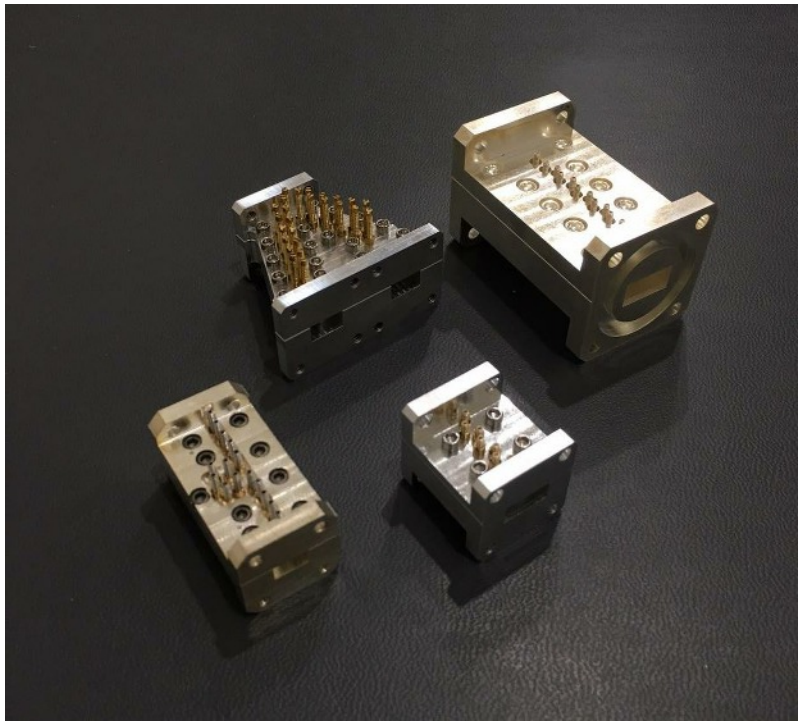
WC-Series Waveguide Filters



Key Features

- Very short length. Typically half the length of standard waveguide filters.
- Capable of achieving wider passbands than standard waveguide filters. Standard waveguide filters have poor high frequency rejection when used with wide passbands but Exceed Microwave's WC-Series BPF still provides excellent high frequency rejection.
- WC-Series Filters can be designed to reject higher order modes above the waveguide cutoff frequency which reduce or eliminate the need for Low Pass Filters.

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Part No:

DPX-WC-22-28-34

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Ka-Band Compact Wideband Diplexer

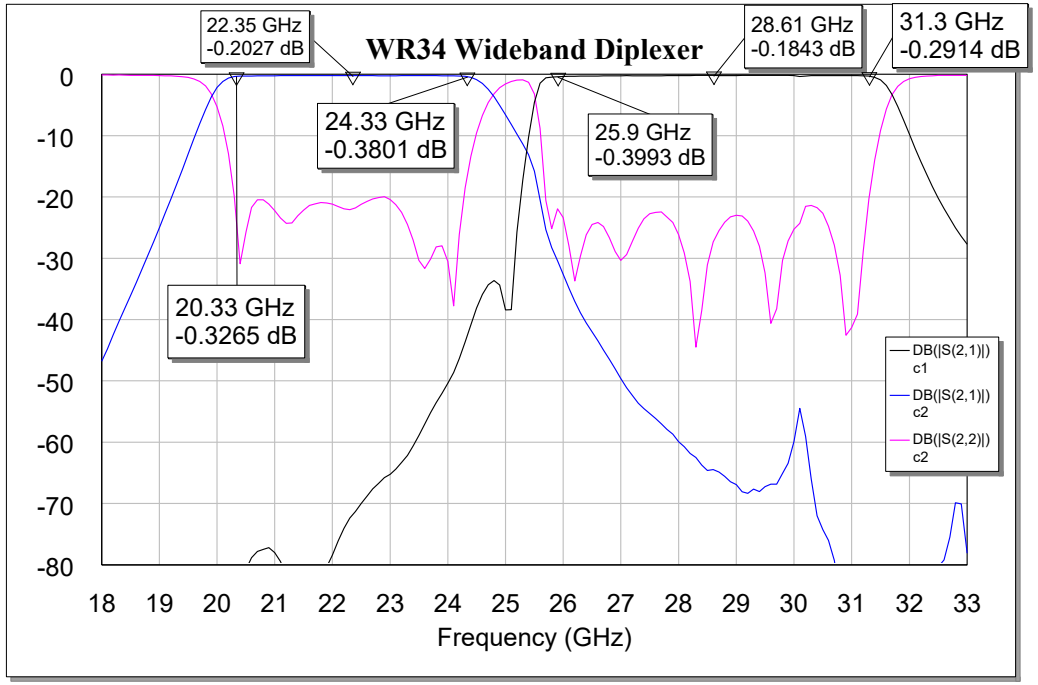
DPX-WC-22-28-34 is a WR34 diplexer with very wide bandwidth for both channels. Both channels provide 20% bandwidth with low insertion loss and low VSWR. Together, both channels cover nearly the entire WR34 waveguide band. It is very compact, nearly half the size of typical waveguide diplexers. Input and output are WR34 UG1530.

Key Features

- Very wide pass-band bandwidth
- Low Pass-band Insertion loss
- 20dB return loss across both channels
- Very compact size

Parameters	
Pass-Band Frequency	20.33-24.33 GHz & 25.9-31.3 GHz
Insertion Loss	<0.4dB
Return Loss	>20dB
CH1 Rejection @ 18 & 26 GHz	>40dB
CH2 Rejection @ 25 & 33 GHz	>25dB
Operating Temperature	-50°C to +85°C
Material	Silver Plated Aluminum
Weight	40 grams

Typical Measured Data



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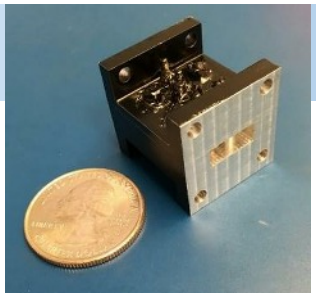
Part No:

BPF-WC-19750-3000-4-42

EXCEED MICROWAVE

K-Band Compact Band-pass Filter

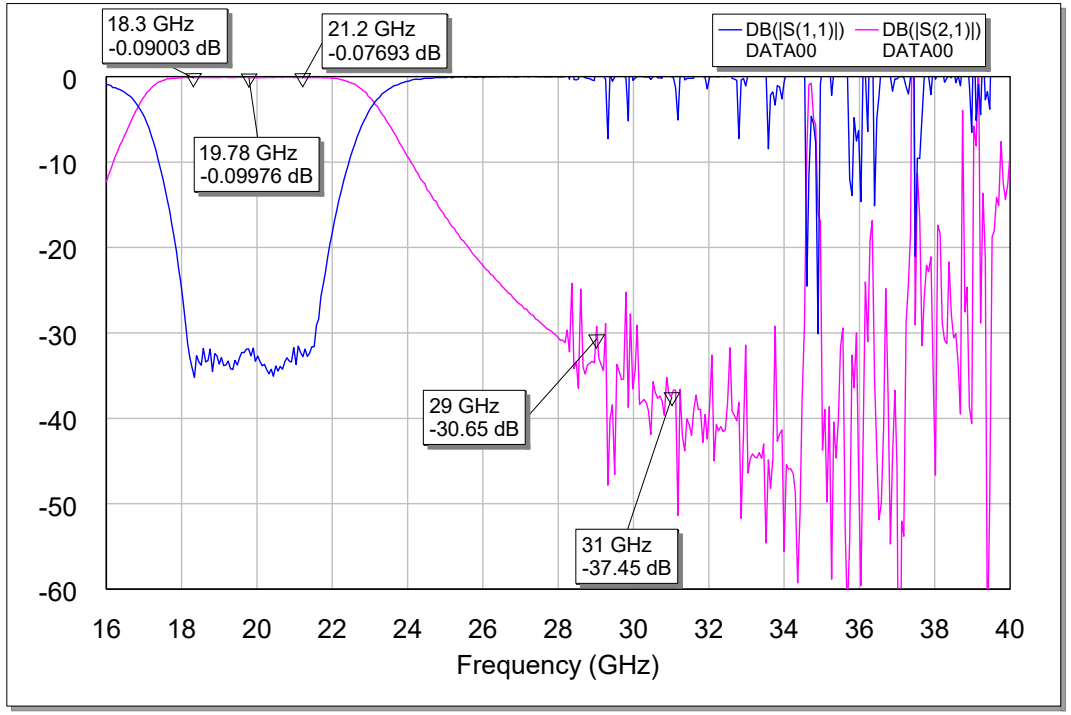


Filter tested with E & H waveguide bends at I/O Ports, inducing higher order modes. Test results show the filter will reject higher order modes up to ~34.5GHz.

BPF-WC-19750-3000-4-42 is a K-Band Band-pass Filter with low insertion loss and is only 1.0 in. length. It is an 4 section filter with 0.1dB insertion loss and provides rejection even above cutoff frequency. Input and output are WR42.

- WR42 Bandpass Filter
- Insertion Loss <0.1dB
- Return Loss >25dB
- 6061 aluminum, Conversion Coating MIL-DTL-5541, Type II, Cl 3
- 1 inch length

Typical Measured Data



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Phase/Group Delay Equalizer

What it does

- Filters and long waveguide lengths can distort the phase/group delay.
- Exceed Microwave's phase equalizers can reduce the peak-to-peak group delay or phase variation across the frequency band of use with minimal effect on the amplitude.
- We design the equalizer to inversely match the phase/group delay response of the component or system that currently has too much variation.

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Part No:

WR15 Phase Equalizer

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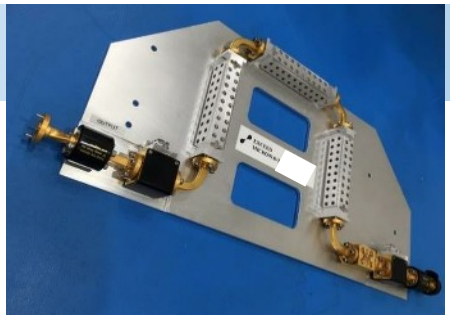
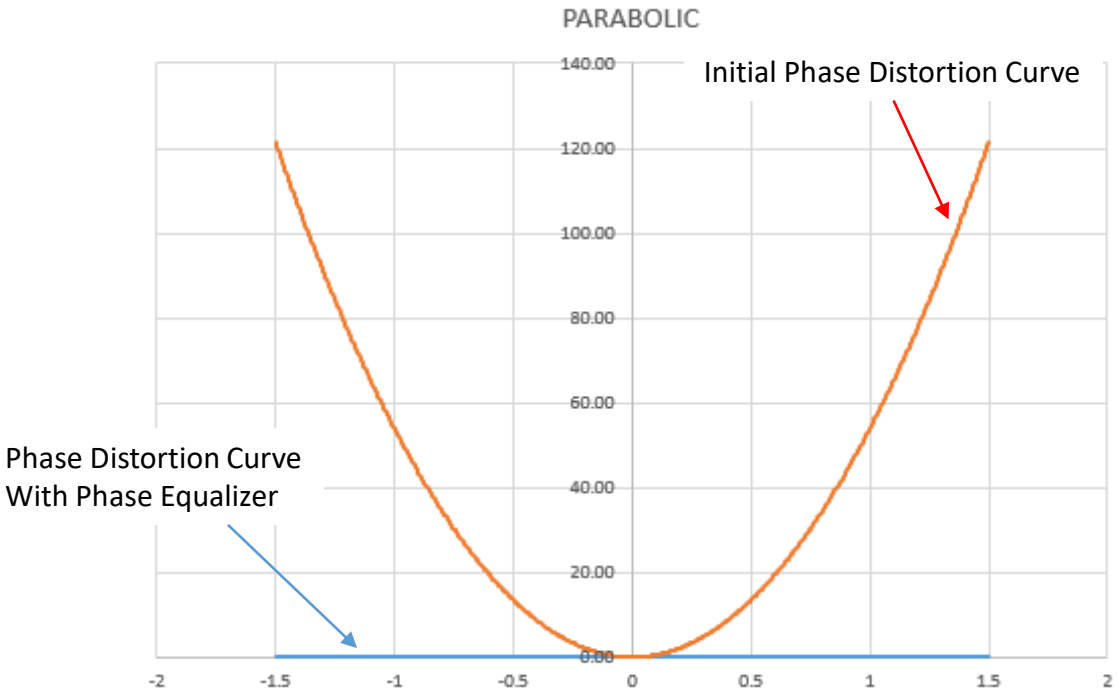


V-Band Phase Equalizer



- WR15 Phase Equalizer
- Used when the system's peak-to-peak phase non-linearity value or group delay variation across the pass-band is too large
- In this example, the product reduces parabolic phase distortion of 120 deg p-p down to <1 deg p-p
- Red line= System's original parabolic phase distortion
- Blue line= System+Phase Equalizer Total parabolic phase distortion

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Part No:

WR51 Phase Equalizer

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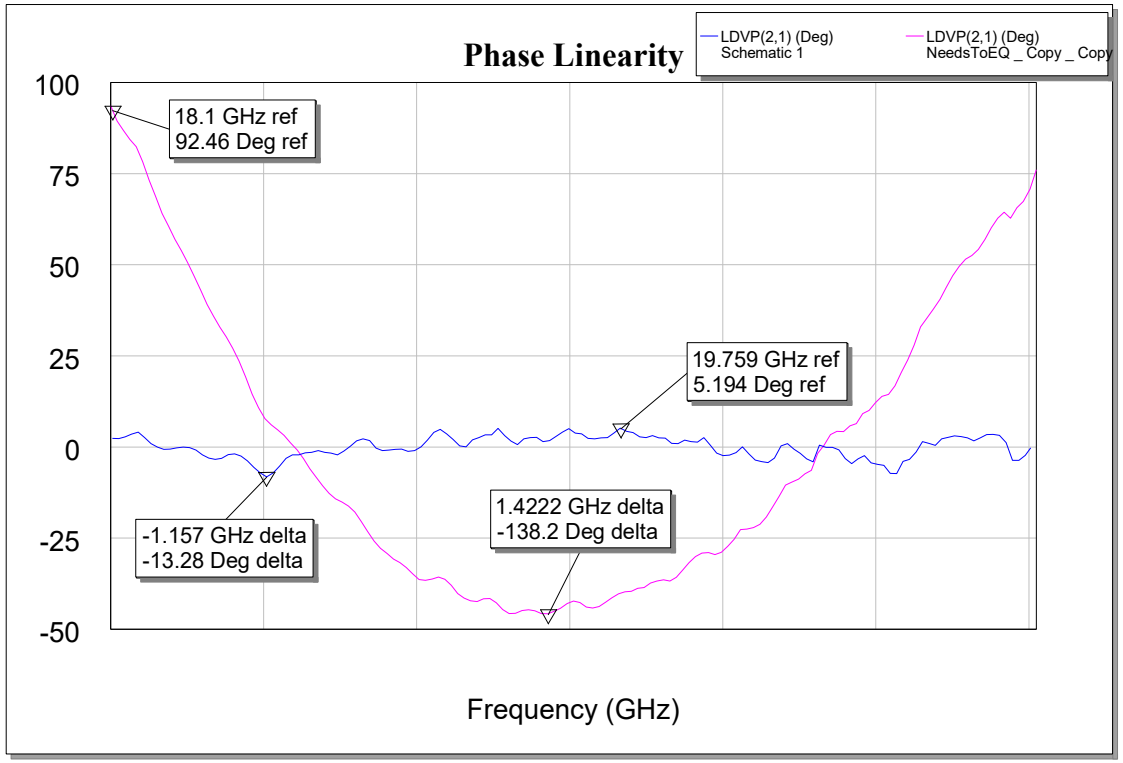
K-Band Phase Equalizer



- WR51 Phase Equalizer
- Used when the system's peak-to-peak phase non-linearity value across the pass-band is too large
- In this example, the product reduces phase non-linearity of 138 deg p-p down to 14 deg p-p
- Pink line= System's original phase non-linearity
- Blue line= System+Phase Equalizer Total phase non-linearity

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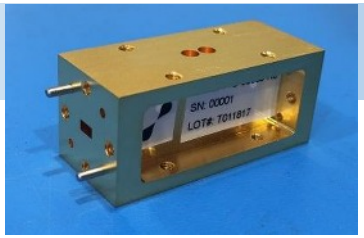
Part No:

BPF-WH1-60000-500-4-15

EXCEED MICROWAVE



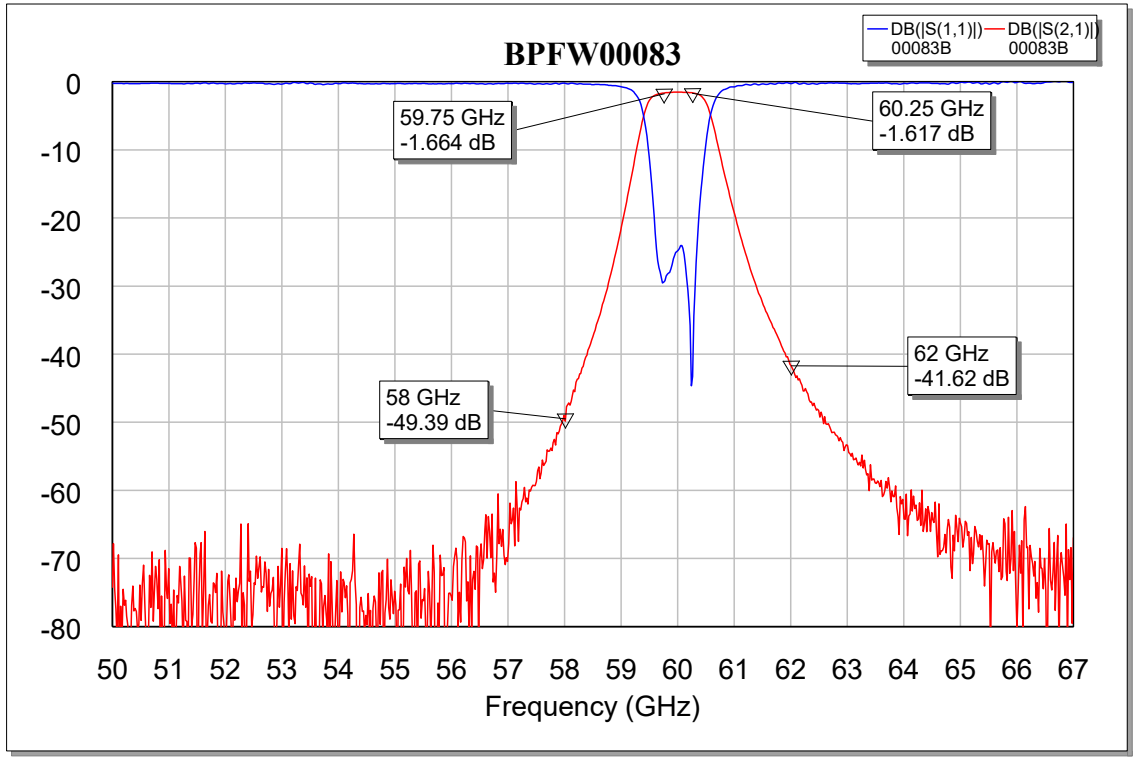
V-Band Band-pass Filter • 58.8-59.6 GHz

Key Features
- Narrow bandwidth
- Great Return Loss

BPF-WH1-60000-500-4-15 is a V-Band Band-pass Filter with a narrow pass-band. It is an 4 section filter with 1.7dB insertion loss. It is 1.7 inches in length. Input and output are WR15 UG385/U.

Parameters	
Pass-Band Frequency	59.75-60.25 GHz
Insertion Loss	1.7dB @ Fc
Return Loss	>21dB
Rejection @ 58GHz	>45dB
Rejection @ 62GHz	>35dB
Operating Temperature	-25°C to +75°C
Material	Gold Plated Aluminum 6061
Weight	100 grams

Typical Measured Data



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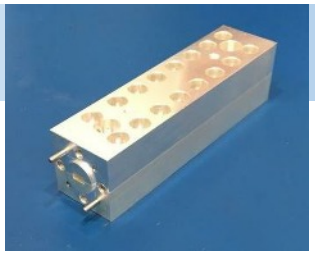
Part No:

BSF-W-60000-1000-8-15

EXCEED MICROWAVE



V-Band Band-stop Filter • 60 GHz

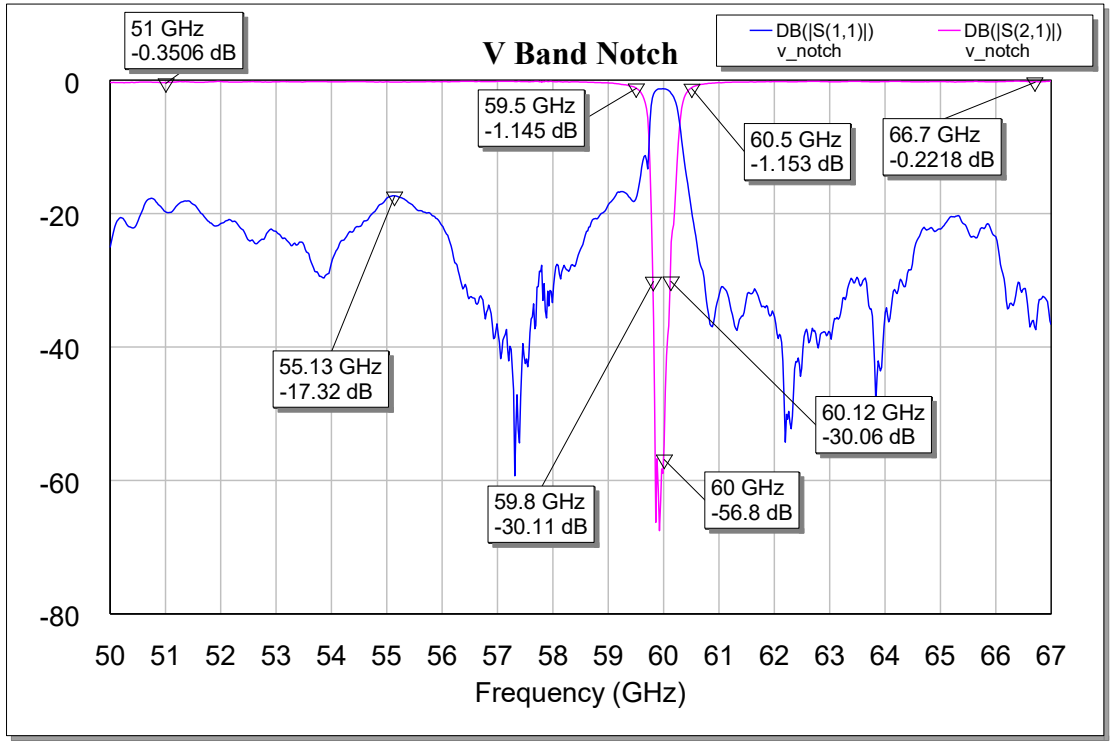
BSF-W-60000-1000-8-15 is a WR15 V-Band Band-stop Filter with a very narrow rejection band. It provides >50 dB rejection at 60 GHz and has very low pass-band insertion loss. The majority of the pass-band has >20dB return loss. Input and output are WR15 UG385/U.

Key Features

- Very narrow rejection bandwidth
- Low Pass-band Insertion loss

Parameters	
Pass-Band Frequency	50-59.5 GHz & 60.5-67 GHz
Insertion Loss	<0.4dB
3dB Frequency Points	60GHz ±350 MHz
Return Loss	>20dB most of pass-band
Rejection @ 60 GHz	>500dB
Rejection @ 60 GHz± 100 MHz	>30dB
Operating Temperature	-50°C to +85°C
Material	Silver Plated Aluminum
Weight	65 grams

Typical Measured Data



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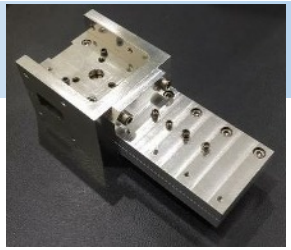
Part No:

ISO-W-12500-5000-75

EXCEED MICROWAVE



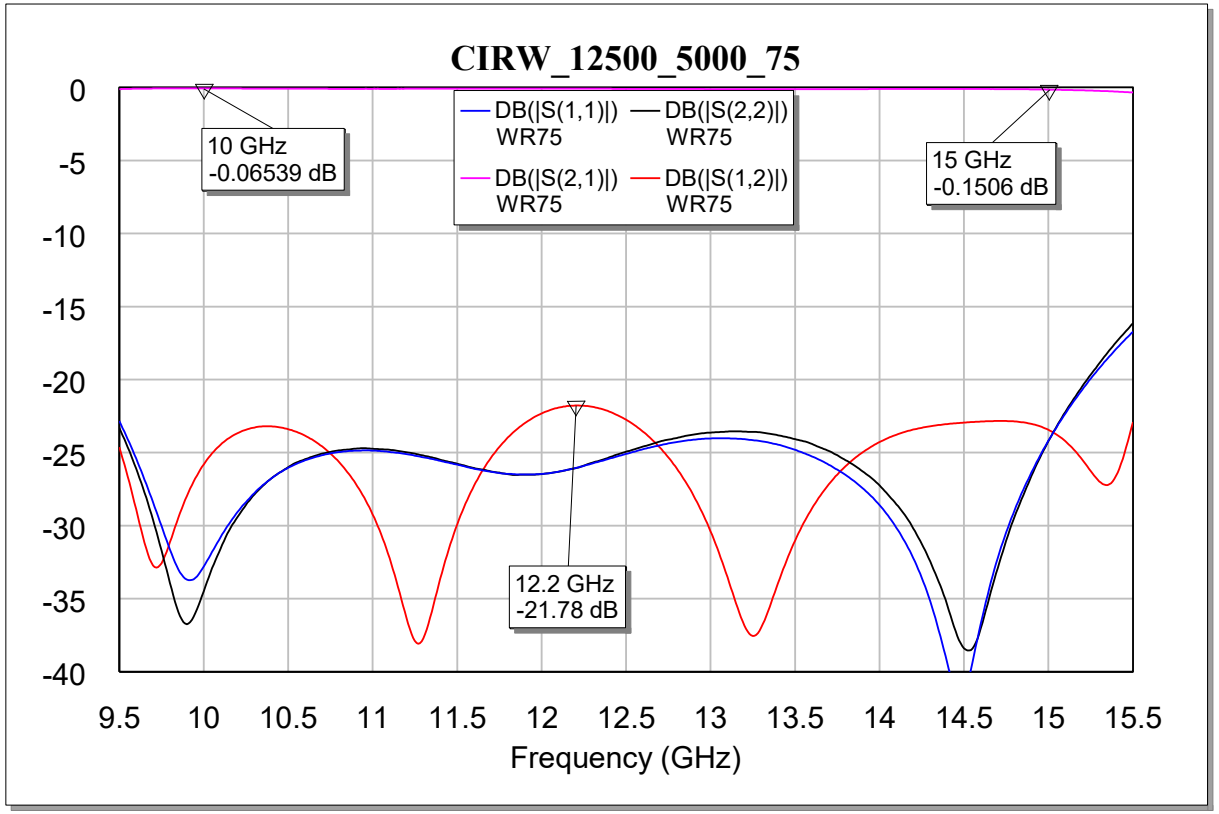
Ku-Band Full Band Isolator

ISO-W-12500-5000-75 is a WR75 Full Band Isolator with excellent return loss and isolation across the entire passband. It also has very low insertion loss of <0.2 dB.

Key Features

- Full Band WR75 Isolator
- Low Pass-band Insertion loss
- Great Return Loss and Isolation

Parameters	
Pass-Band Frequency	10-15 GHz
Insertion Loss	<0.2dB
Return Loss	>20dB
Isolation	>20dB
Operating Temperature	-30°C to +70°C
Material	Aluminum Chromate Conversion Coating
Weight	300 grams



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Part No:

SWT-C-

EXCEED MICROWAVE

Coaxial Switches

- The following types of switches are available:
  SPDT, SP3T, SP4T, SP5T, SP6T, SP7T, SP8T, SP9T, SP10T, SP11T, SP12T, DPDT (Transfer), Custom Switch Matrix
- Various Connectors are available: SMA, 2.92MM, SMB, SC, N, TNC, RF Pin, 7/16 DIN
- Actuator Type: Latching, Failsafe, Normally Open, Terminated
- Voltage: 5, 12, 15, 24, 28 Vdc
- Options: Indicator, TTL, Diode, Positive Common, Decoder, D-SUB, Self Cutoff, Termination
- 1,000,000 minimum cycles. Can be higher on request.

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