

Product Description

ATEK1001 is a pre-selector module covering 485 - 8000 MHz frequency band. Pre-selector consists of an SP8T switch followed by 7 fixed frequency sub-octave band pass filters which are followed by another SP8T switch. 8th path is a bypass path which provides user to bypass the filters.

RF Input and Outputs are internally matched to 50 ohms for ease of use.

Pre-selector provides 43 dBm IIP3 which allows users to realize high dynamic range wideband receiver frontends. Sub-octave filterbank architecture improves overall system IIP2.

Pre-selector is housed in custom milled metal enclosure with USB interface which allows simple control and the bias supply.

Custom package and module options are available upon request.

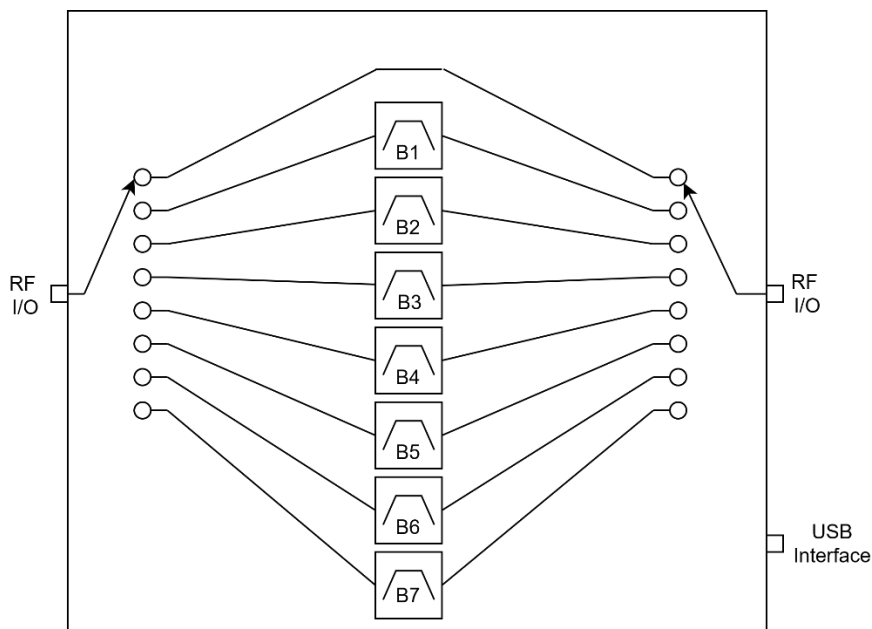
Product Features

- Frequency Range: 485 - 8000 MHz
- 7 Switchable Band Pass Filters
- Custom milled metal enclosure
- USB interface for control and Vdd supply
- IIP3: 43 dBm
- 36.4x59.9x24.8 mm compact size

Applications

- SDR
- Test Equipment
- Wideband Receivers
- Spectrum Analysis

Functional Block Diagram



Electrical Specifications

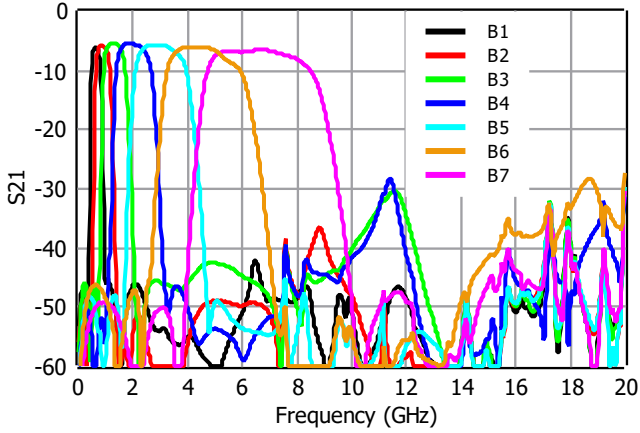
Test conditions unless otherwise noted: T = 25 C.

Parameter		Min	Typ.	Max	Units
Frequency Range		2		8000	MHz
3dB Bandwidth (High Pass 3dB cutoff - Low Pass 3dB cutoff)	Band 1		485 - 810		MHz
	Band 2		670 - 1125		
	Band 3		960 - 1670		
	Band 4		1440 - 2560		
	Band 5		2140 - 3850		
	Band 6		3300 - 5880		
	Band 7		4820 - 8500		
Insertion Loss	Filter Paths		6.5		dB
	Bypass Path		3.5		
Input IP3			43		dBm
Switching Speed			150		nS
DC Supply Current over USB			20		mA
Operating Temperature		-40		85	°C

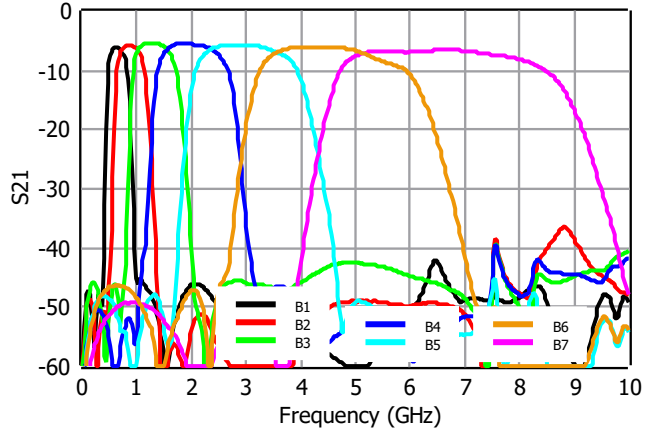
Typical Performance Plots

Conditions unless otherwise specified: T = 25 C.

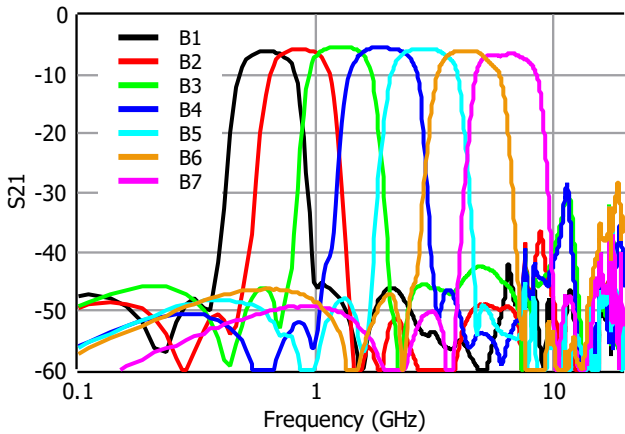
S21



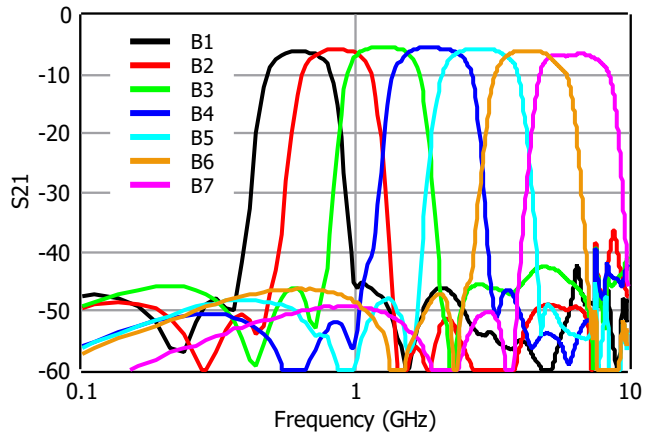
S21



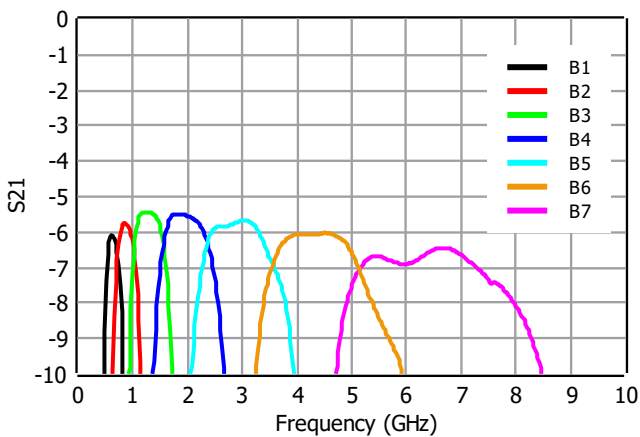
S21, Log Scale



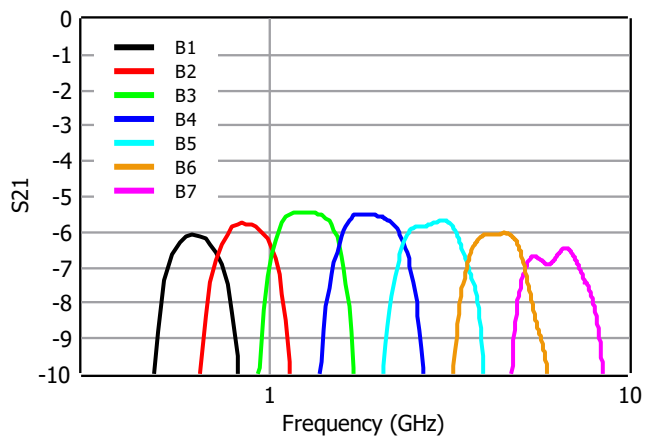
S21, Log Scale



S21



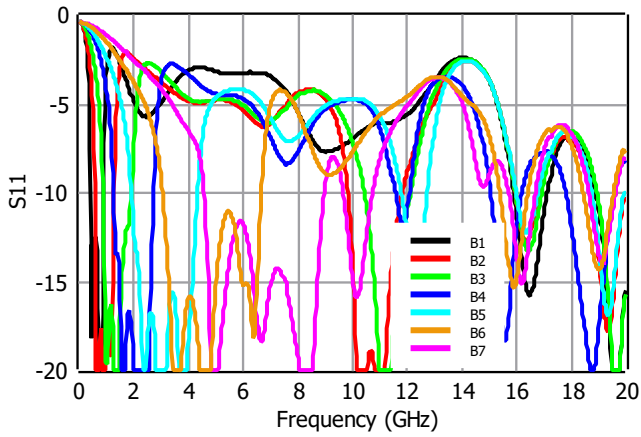
S21, Log Scale



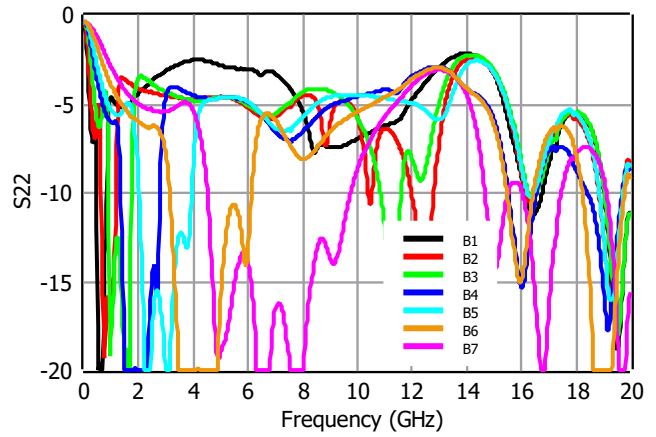
Typical Performance Plots

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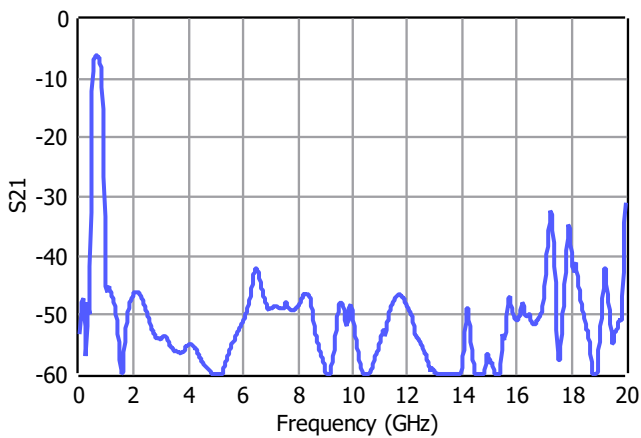
S11



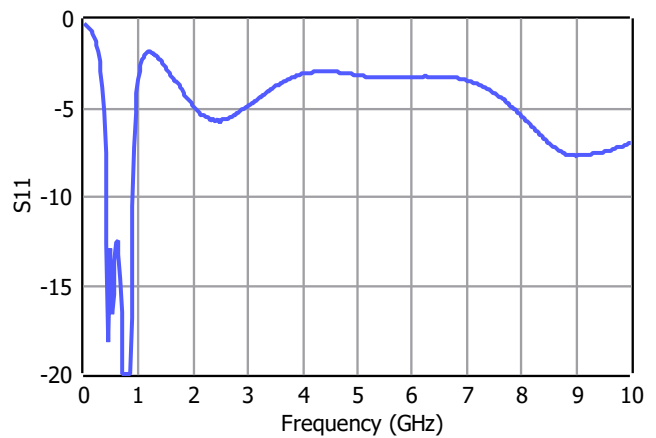
S22



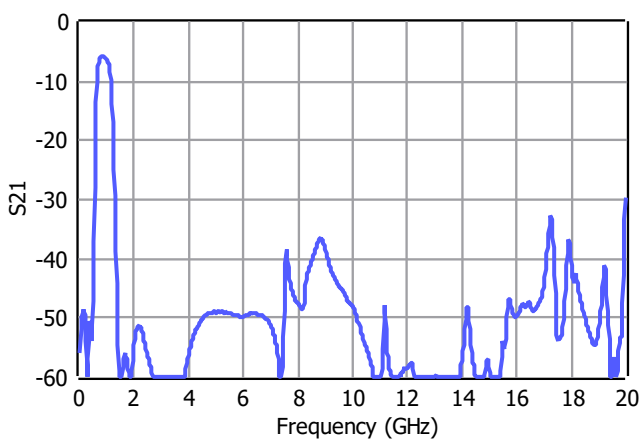
Band1 S21



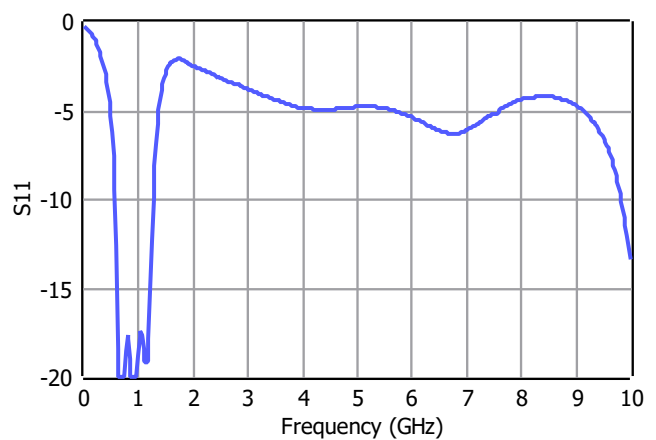
Band1 S11



Band2 S21



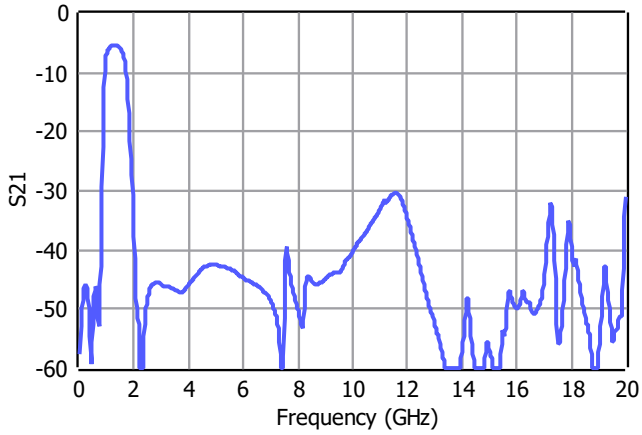
Band2 S11



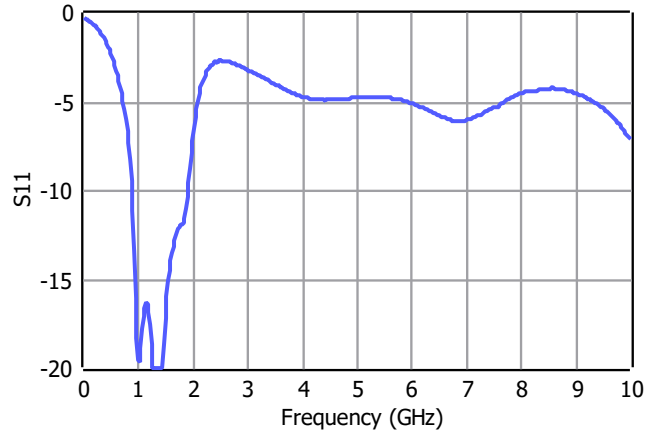
Typical Performance Plots

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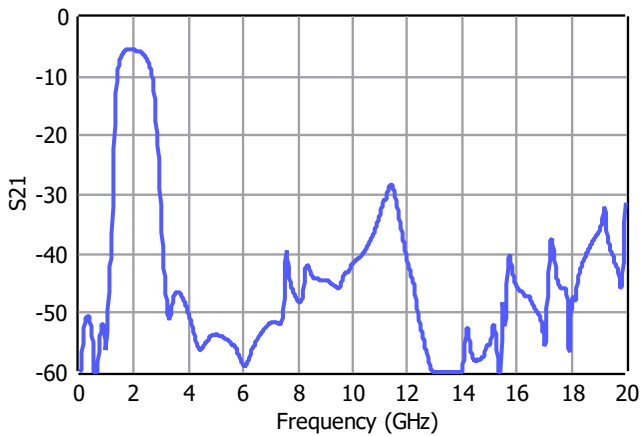
Band3 S21



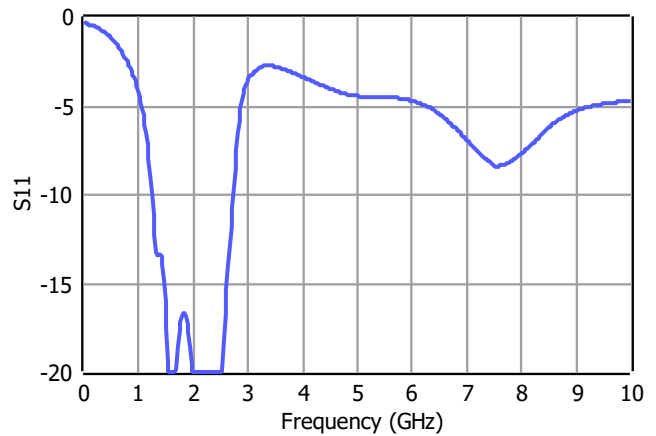
Band3 S11



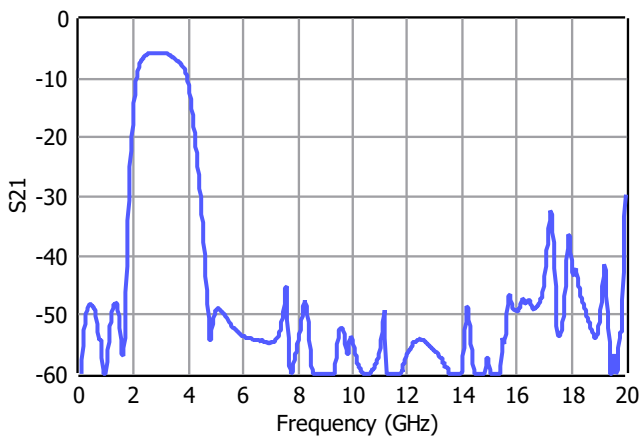
Band4 S21



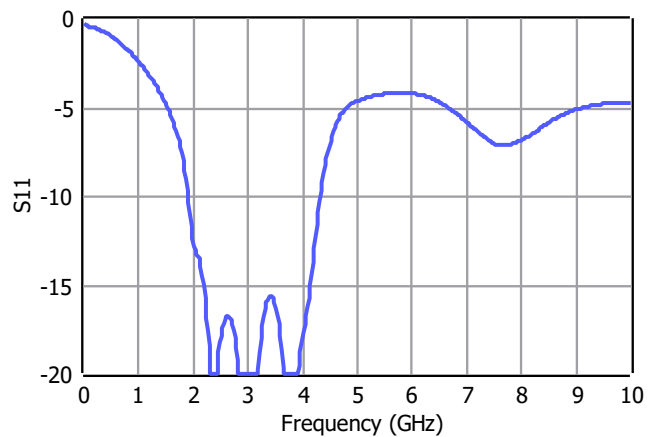
Band4 S11



Band5 S21



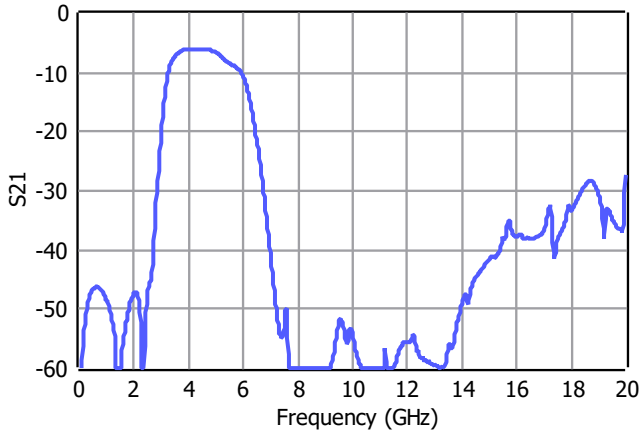
Band5 S11



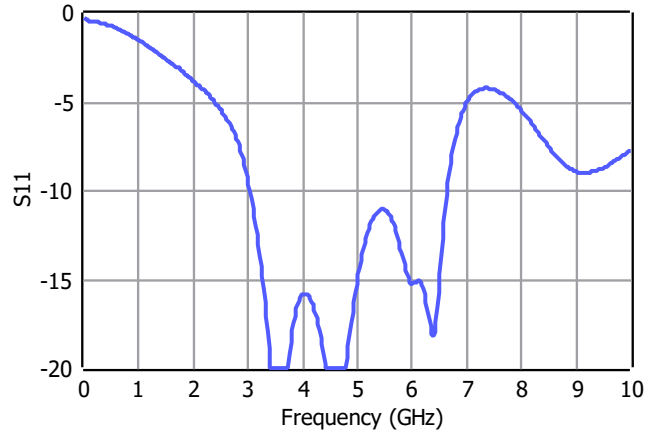
Typical Performance Plots

Conditions unless otherwise specified: T = 25 C.

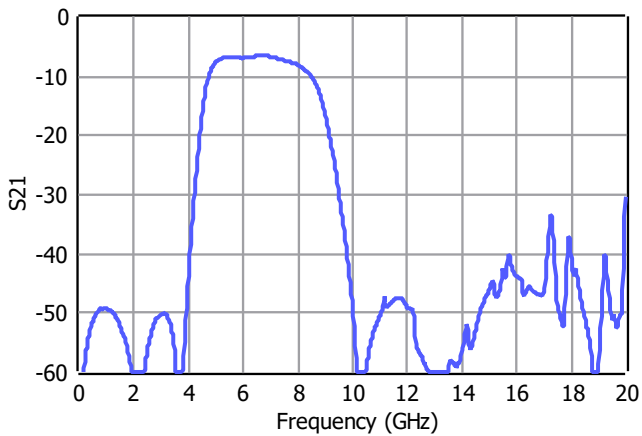
Band6 S21



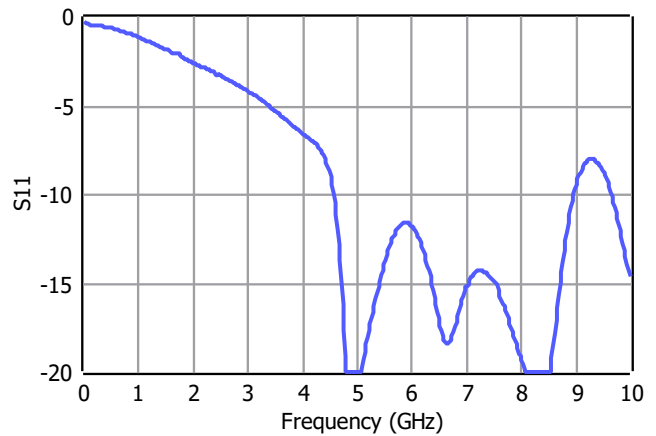
Band6 S11



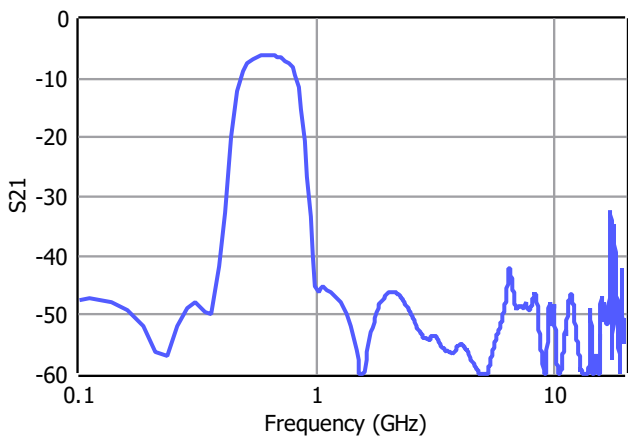
Band7 S21



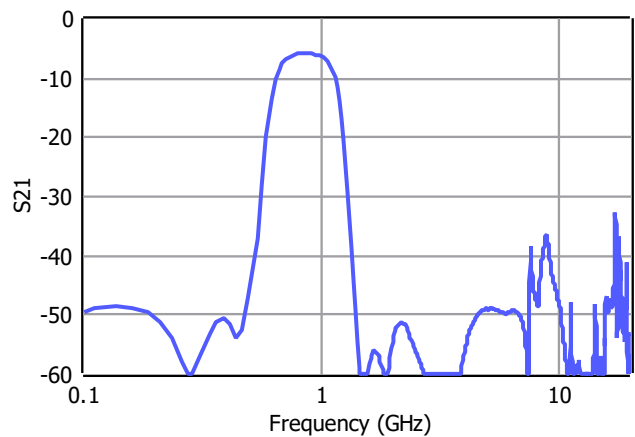
Band7 S11



Band1 S21, Log Scale



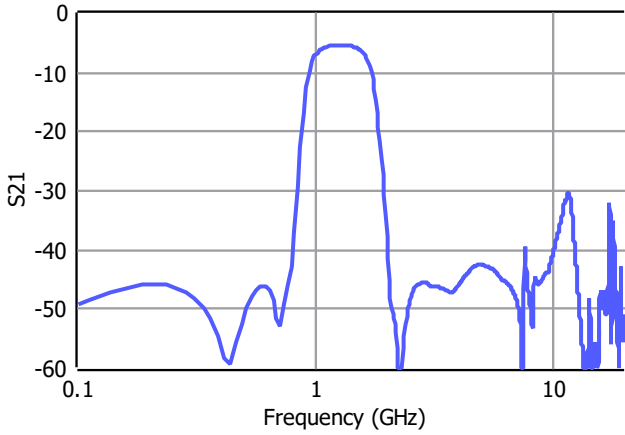
Band2 S21, Log Scale



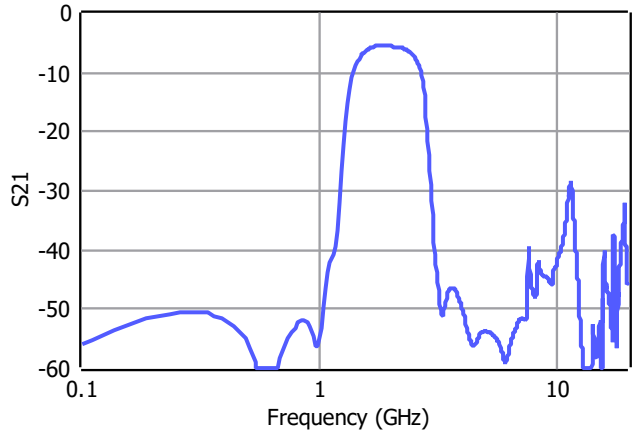
Typical Performance Plots

Conditions unless otherwise specified: T = 25 C.

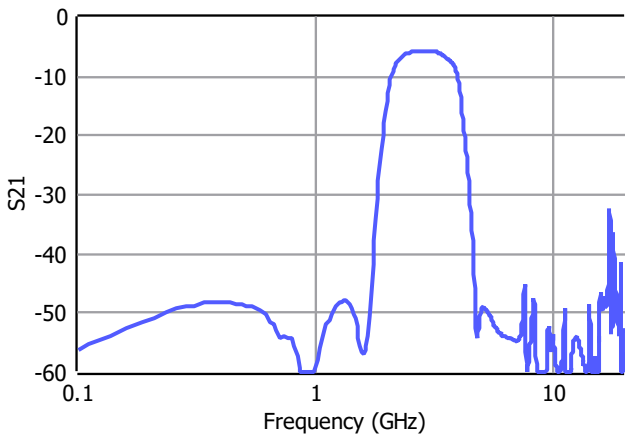
Band3 S21, Log Scale



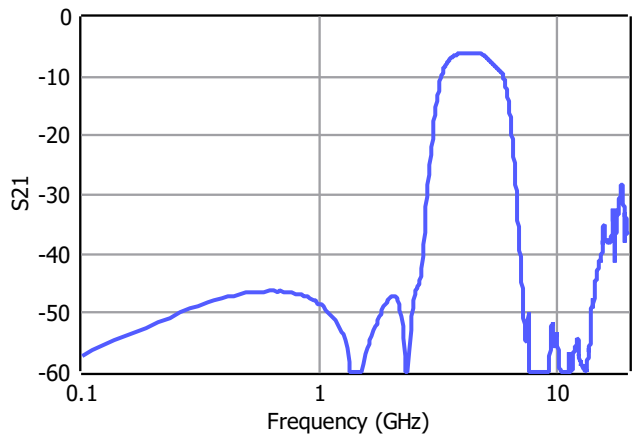
Band4 S21, Log Scale



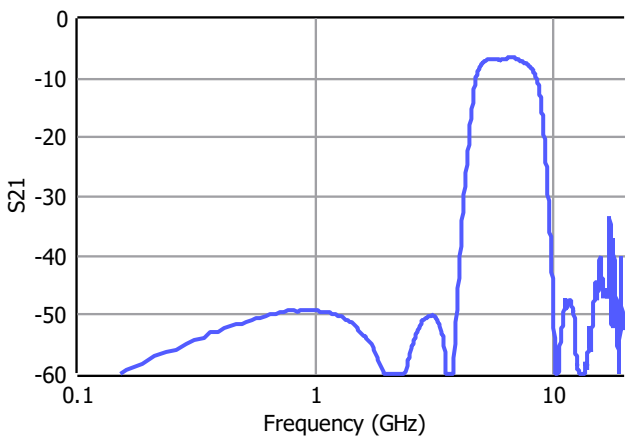
Band5 S21, Log Scale



Band6 S21, Log Scale



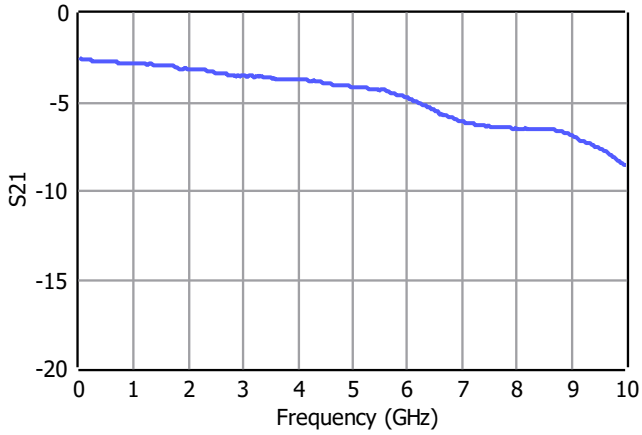
Band7 S21, Log Scale



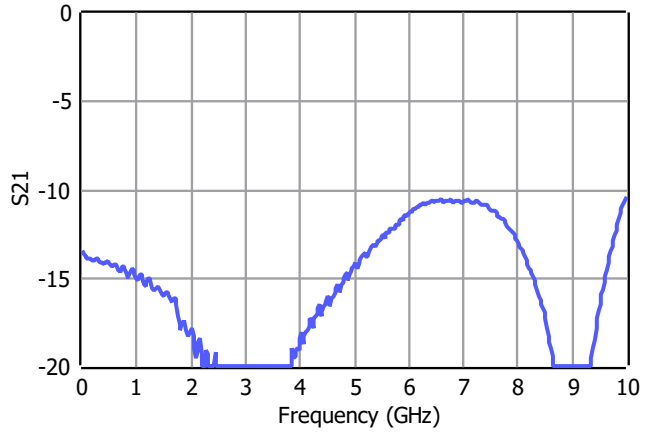
Typical Performance Plots

Test conditions unless otherwise specified: T = 25 C.

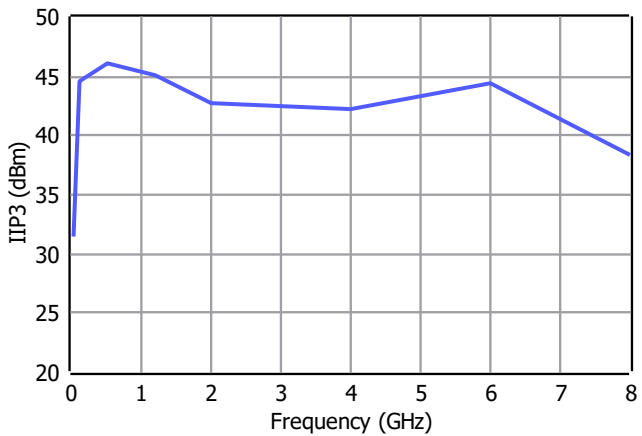
Thru Path S21



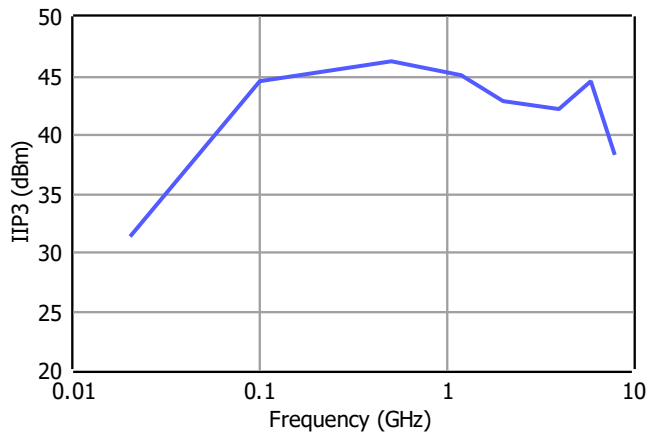
Thru Path S11



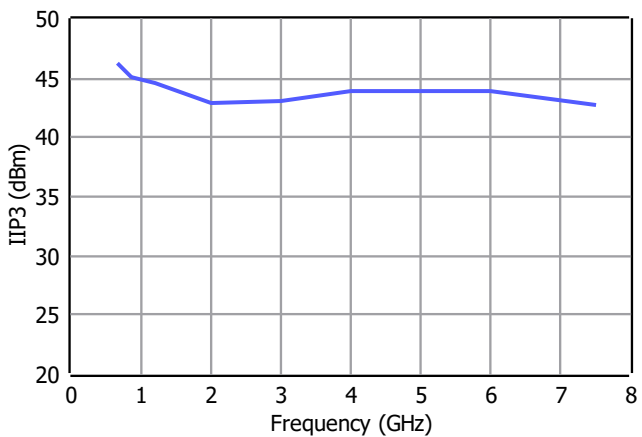
Input IP3 Thru Path



Input IP3 Thru Path, Log Scale



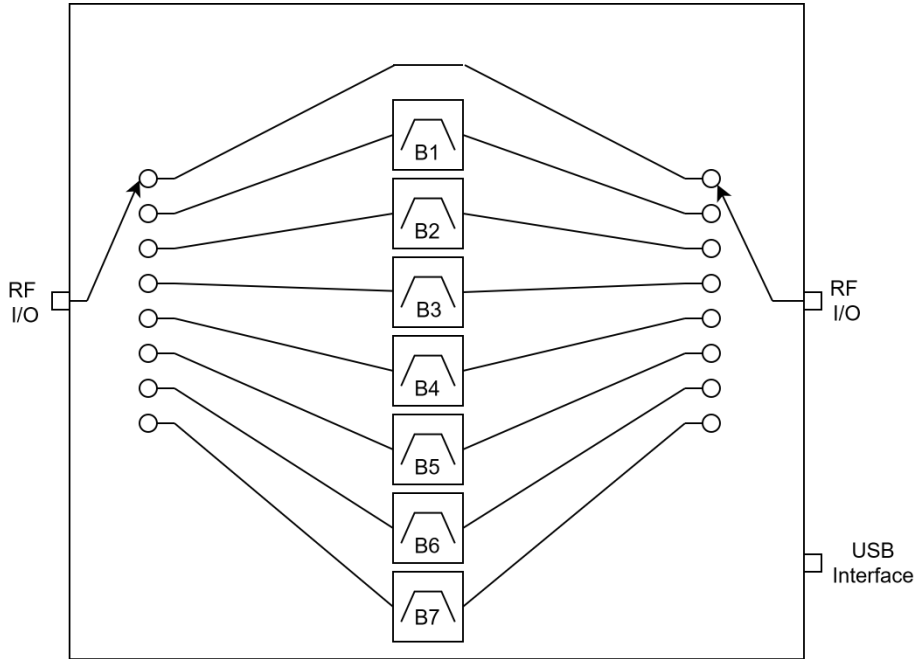
Input IP3, Filter Path



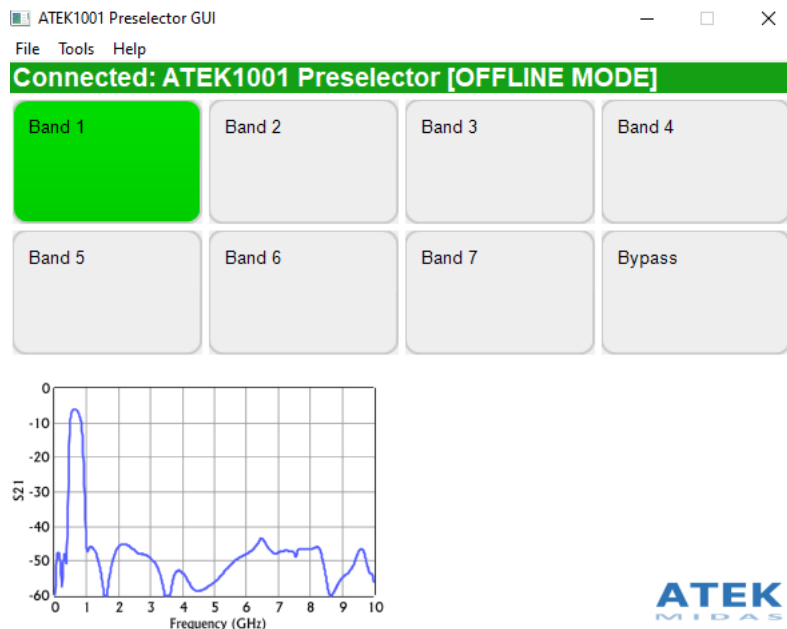
Applications Information

Signal entering from RF I/O goes into 8 selectable paths. 7 of these paths are fixed frequency band pass filters and the 8th path is a bypass path which provides user to bypass the filters.

Typical application schematic to operate the pre-selector is given below.



Bias and control requirements for band selection is provided through USB interface. Easy to use GUI is provided for the operator as shown below.



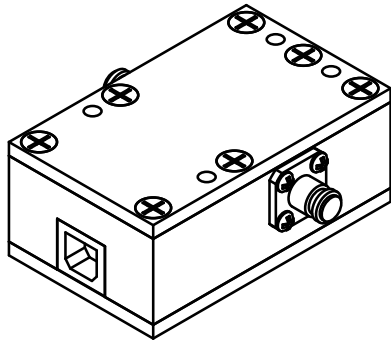
Band selection is done simply by mouse clicking the button of target filter band.

Absolute Maximum Ratings

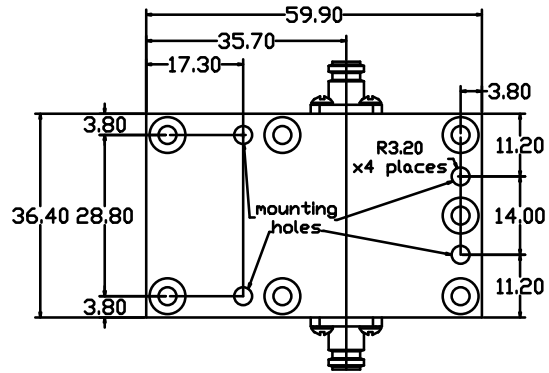
Parameter	Value/Range
USB interface rails	5.5 V
RF input power	+15 dBm
Storage Temperature	-55 to +125°C

Operation of this device outside the parameter ranges given above may cause damage. These parameters should not be applied simultaneously.

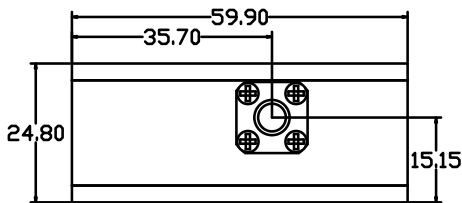
Mechanical and Marking Information



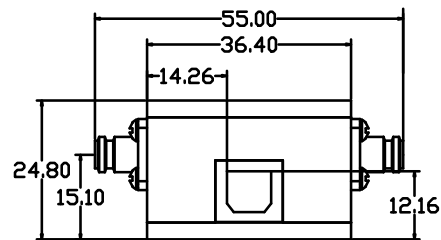
3D View



Top View



Side View A



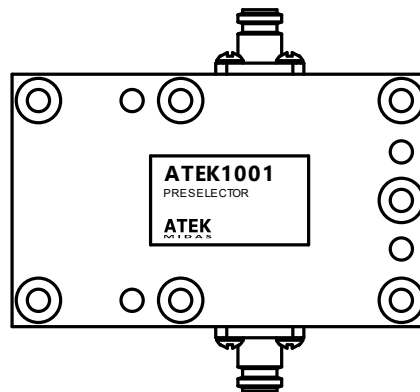
Side View B

All dimensions are in mm.

USB type B- connector for control and power supply.

4 mounting holes with 3.2 mm radius.

2 RF SMA connectors for RF I/O interface.



Handling Precautions



Caution!
ESD-Sensitive Device
Handle Accordingly

Contact Information

For the latest specifications, additional product information, support, and sales.

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Revisions

Revision No	Revision Date	Revision Reason	Section / Page No
1.0	2021	Initial Release	
1.1	2021	Drawing and Plots Updated	
1.2	24.03.2022	Drawing and Plots Updated	
1.3	25.05.2022	Format and Content Fixed	