FEATURES

- **High Stop-Band Rejection**
- **Absorptive Design**
- **Can Be Cascaded for Multiple Notches**
- **On-Device Temperature Measurement**
- **Compact Form-factor**
- **Control and Power over USB 2.0**

Specifications

- **Tuning Range: 1200 – 1900 MHz**
- **Insertion Loss: 1.53 dB typical**
- **Return Loss: 22 dB typical**

APPLICATIONS

- **Jamming Mitigation**
- **Communications Receivers**
- **ESM Receiver Protection**
- **TR Modules**
- **Electronic Warfare**

GENERAL DESCRIPTION

IM2102DC is a demo unit for a high-rejection, tunable, absorptive notch filter that is designed and packaged to make evaluation and testing straightforward. The unit can be controlled through the provided graphical user interface or python API.

FUNCTIONAL BLOCK DIAGRAM

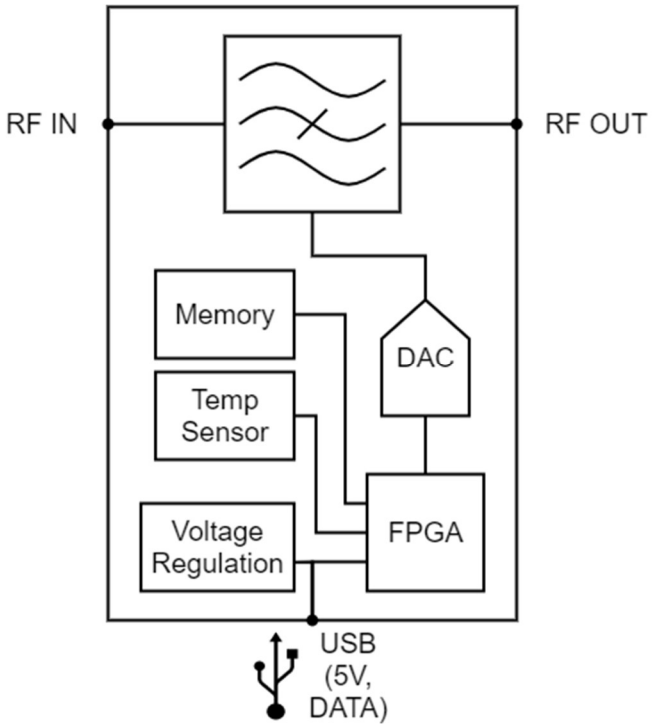

Figure 1 Functional Block Diagram

*Specifications subject to change without notice

SPECIFICATIONS

Specifications are for the IM2102DC L-band tunable notch filter.

Table 1. Electrical Specifications

PARAMETER	TEST CONDITION/COMMENTS	MIN	TYP.	MAX	UNITS
Tuning Range		1200		1900	MHz
Tuning Resolution			1		MHz
Passband					
Frequency Range	See Note 1	693		4220	MHz
Insertion Loss	See Note 2	1.28	1.53	2.10	dB
Return Loss	See Note 3	16	22	30	dB
Group Delay	100MHz spacing from notch center frequency	1.39	2	2.77	ns
Notch Performance					
Tuning Range		1200		1900	MHz
Rejection		29	55	93	dB
-3 dB Bandwidth		177		221	MHz
-20 dB Bandwidth		32		40	MHz
Tuning Time	1100MHz to 1900MHz Tuning Time (See Note 4)			25	µs
IIP3	Passband 2-Tone Test (See Note 5)	25.29	34.32	45.25	dBm

NOTES:

1. Passband is defined as the frequency range between the 3 dB insertion loss points outside of the notch filter tuning range.
2. Filter insertion loss is defined as the maximum insertion loss within the passband of the notch filter tuning range.
3. Maximum return loss in the passband frequency range outside of the notch.
4. Tuning speed is approximated for this demo unit. Actual tuning speed of the filter will depend on voltage driver and control interface latency.
5. IIP3 is determined using the fundamental tone in the passband and the highest 3rd order product produced. Tone spacing of 0.5 MHz was used.

ABSOLUTE MAXIMUM RATINGS

Table 2. Absolute Maximum Ratings

PARAMETER	RATING
Supply Voltage	5V (USB)
Passband RF Power	30dBm
Notch RF Power	-15dBm
Minimum Signal to Notch Spacing	50MHz
Ambient Operating Temperature	-40 to 60 °C
Storage Temperature	-40 to 60 °C

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TYPICAL PERFORMANCE DATA

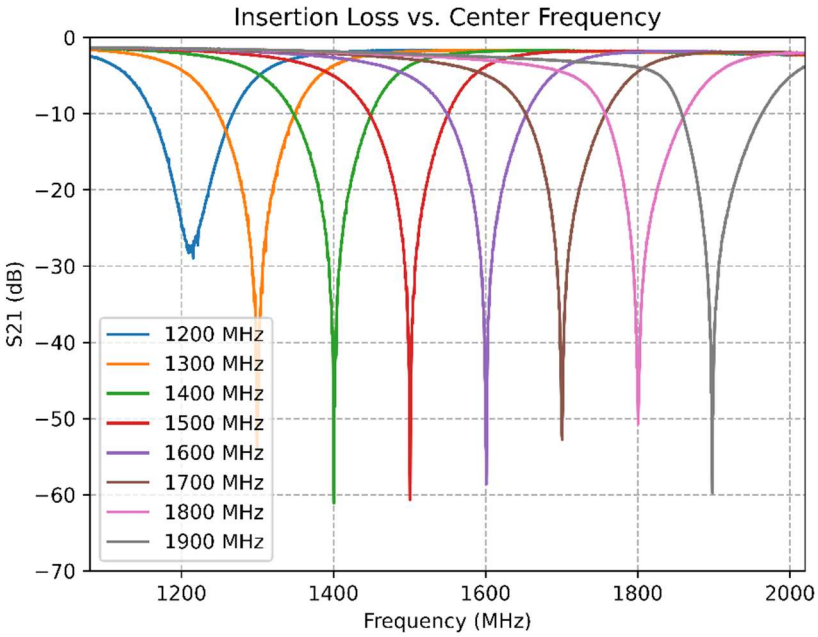

Figure 2. Filter Insertion Loss vs Center Frequency

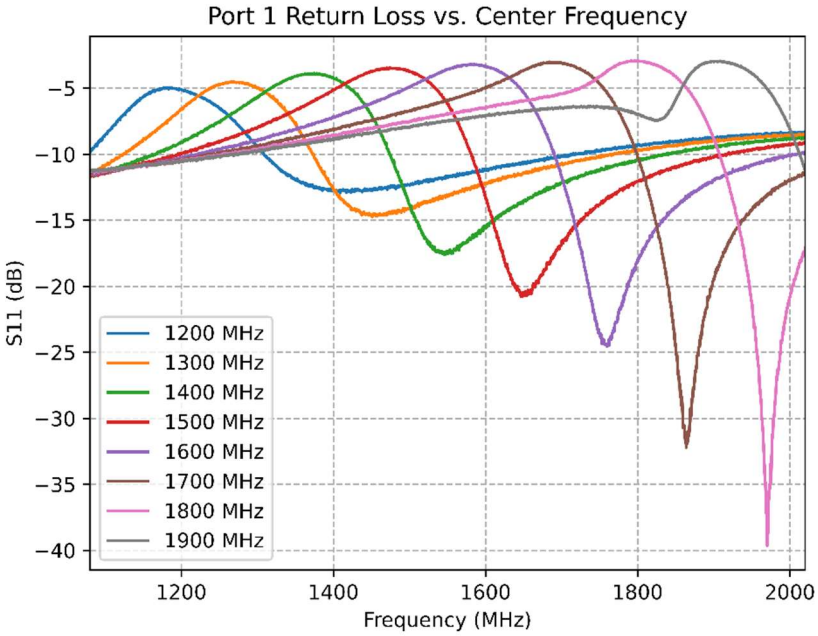

Figure 3. Filter Return Loss vs Center Frequency – RF IN

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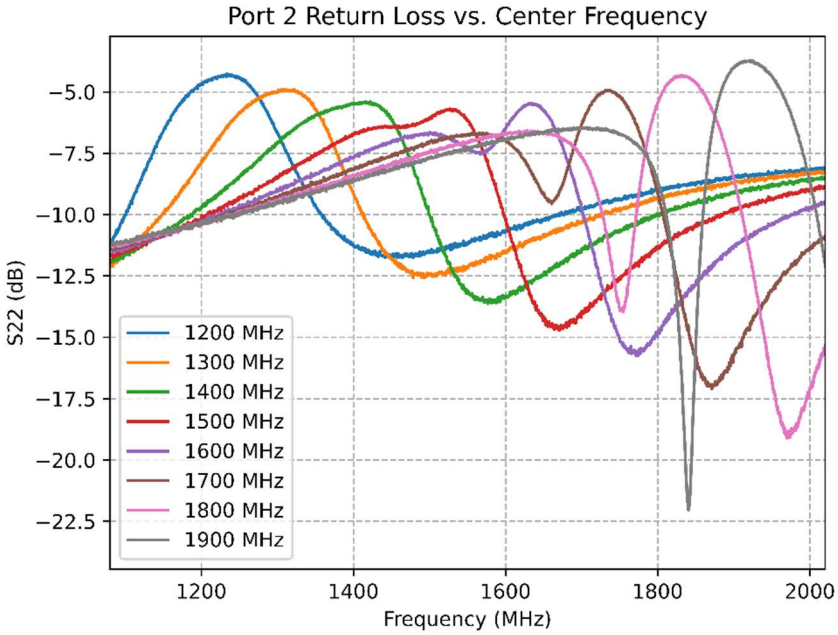

Figure 4. Filter Return Loss vs Center Frequency – RF OUT

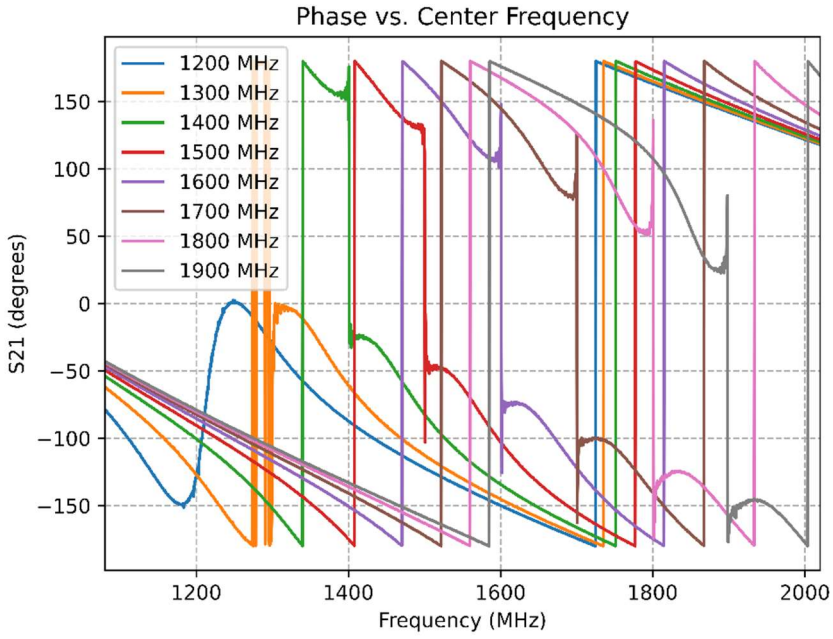

Figure 5. Filter Phase vs Center Frequency

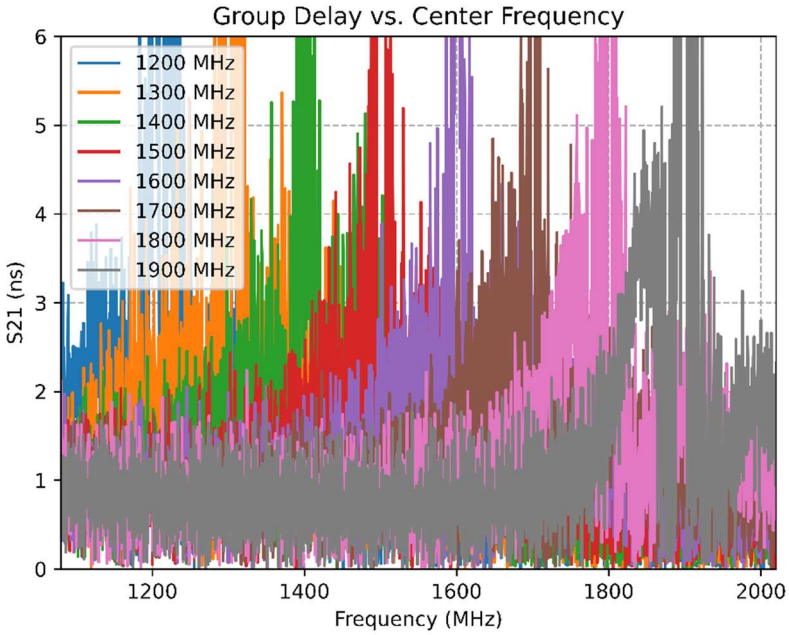

Figure 6. Filter Group Delay vs Center Frequency

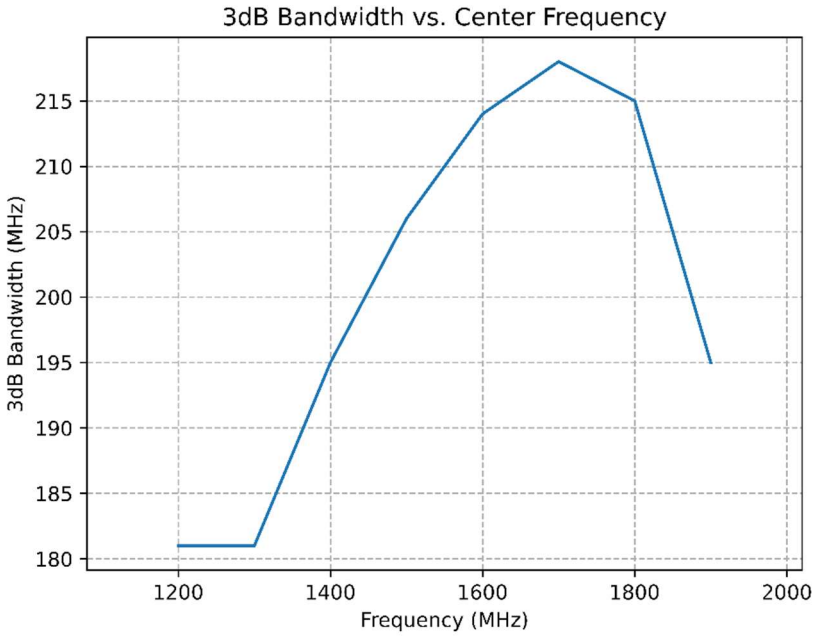

Figure 7. Notch 3dB Bandwidth vs Center Frequency

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HARDWARE INTERFACE

Table 3. Connectors

NAME	TYPE	HARDWARE	MANUFACTURER	MANUFACTURER PART NUMBER
RF1	RF Input / Output	SMA Female	Amphenol RF	132146
RF2	RF Input / Output	SMA Female	Amphenol RF	132146
Power / Control	USB	USB Mini-B	Amphenol ICC	MUSB15104

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