

**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

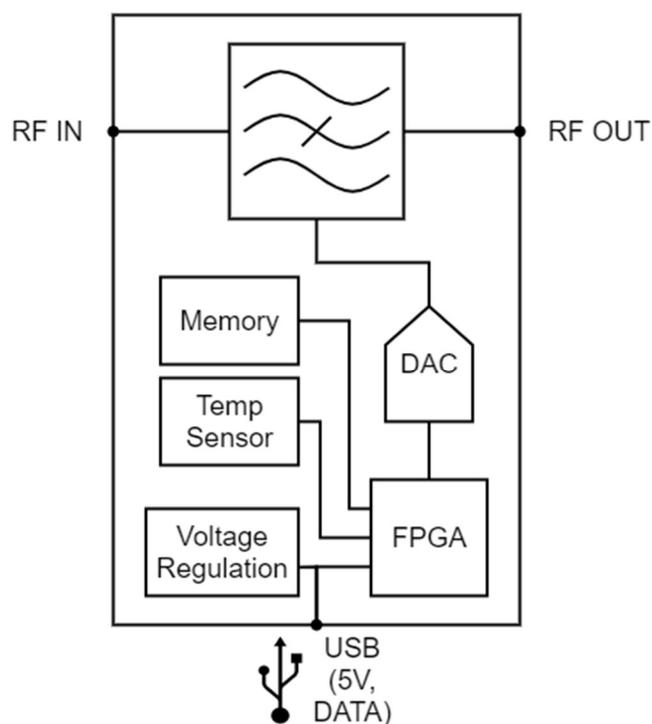
**APPLICATIONS**

- 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 3<sup>rd</sup> order product produced. Tone spacing of 0.5 MHz was used.

\*Specifications subject to change without notice

## ABSOLUTE MAXIMUM RATINGS

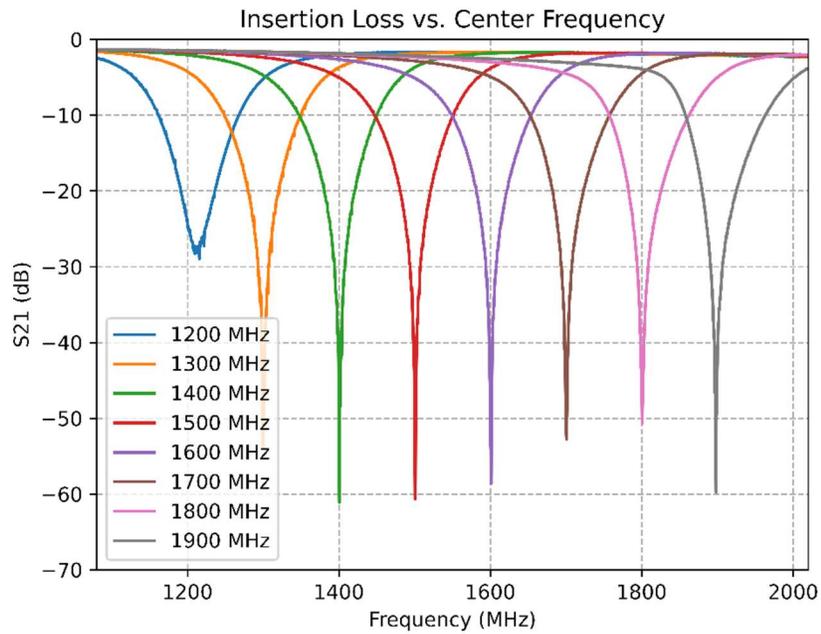
*Table 2. Absolute Maximum Ratings*

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

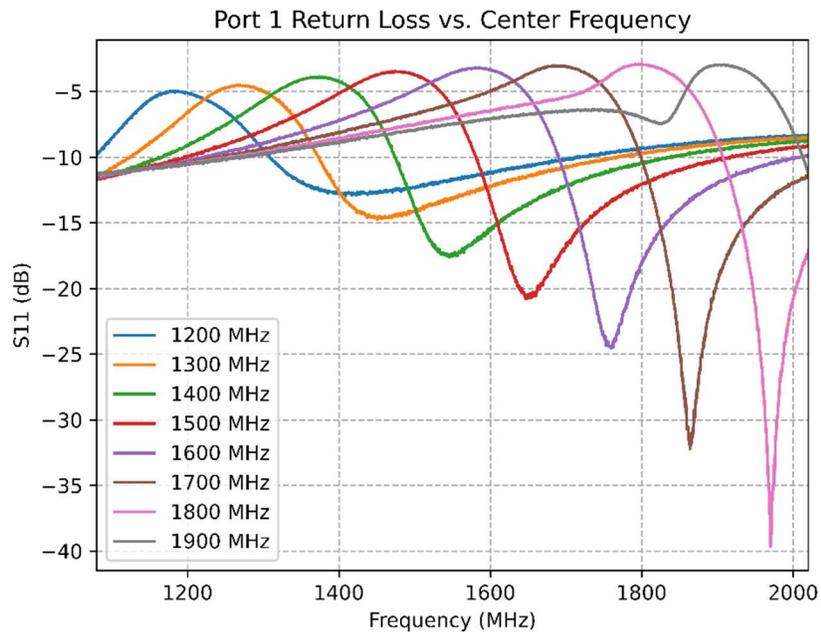
---

\*Specifications subject to change without notice

**TYPICAL PERFORMANCE DATA**

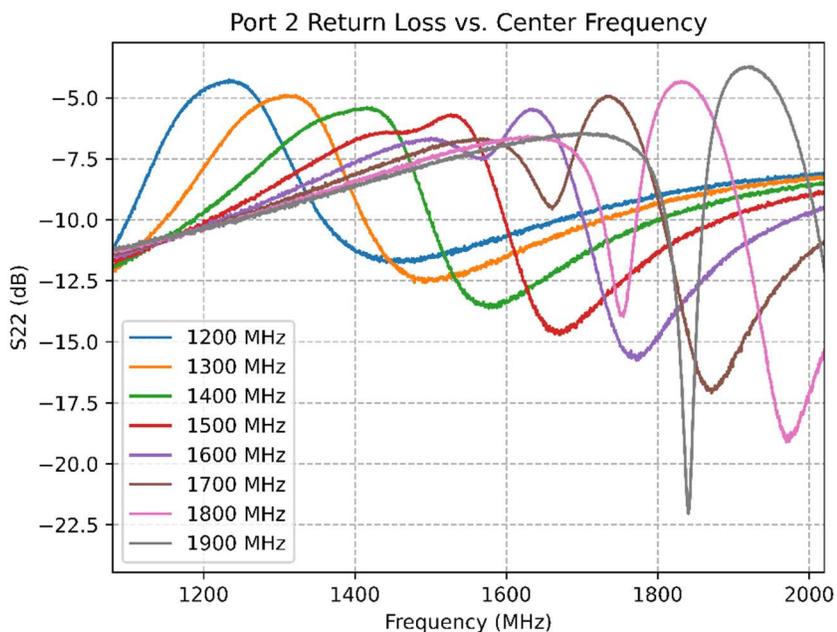


**Figure 2. Filter Insertion Loss vs Center Frequency**

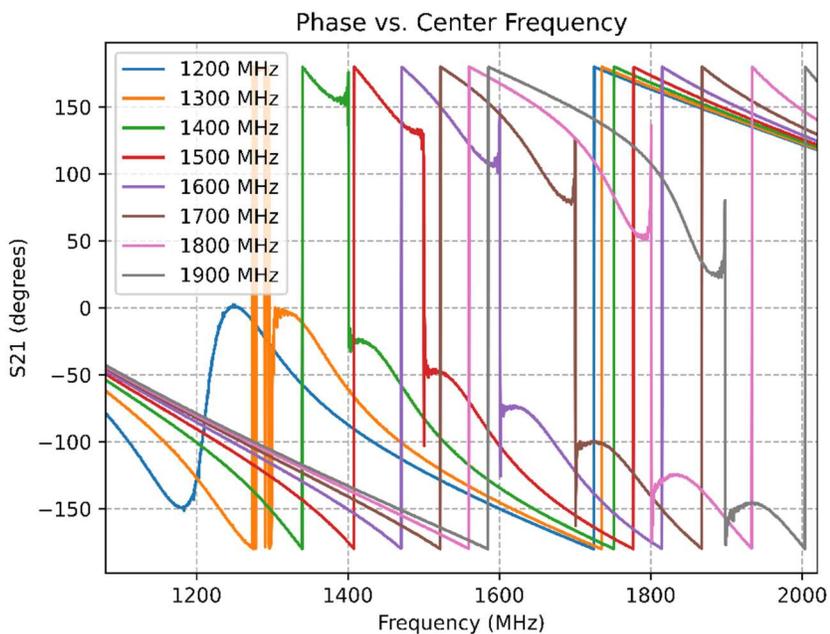


**Figure 3. Filter Return Loss vs Center Frequency – RF IN**

\*Specifications subject to change without notice

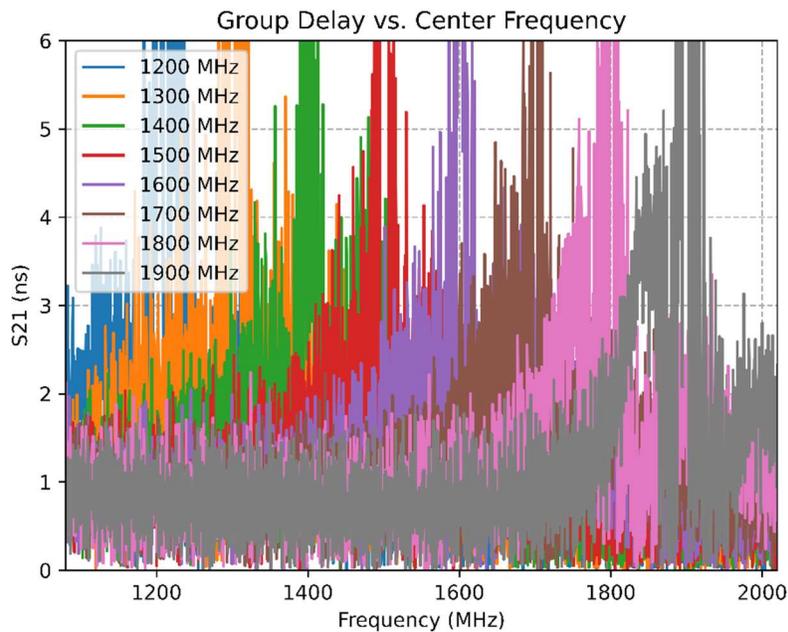


**Figure 4. Filter Return Loss vs Center Frequency – RF OUT**

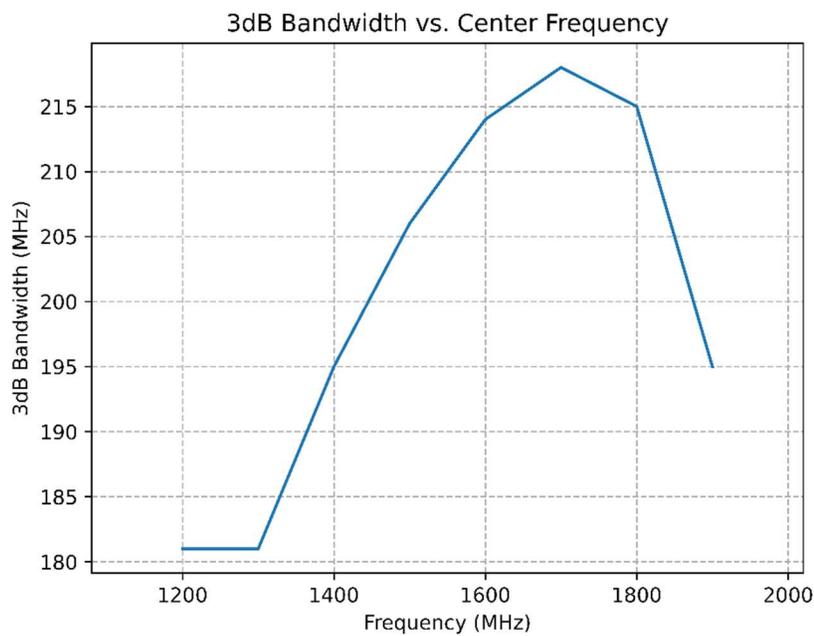


**Figure 5. Filter Phase vs Center Frequency**

\*Specifications subject to change without notice



**Figure 6. Filter Group Delay vs Center Frequency**



**Figure 7. Notch 3dB Bandwidth vs Center Frequency**

\*Specifications subject to change without notice

**HARDWARE INTERFACE**

*Table 3. Connectors*

<b>NAME</b>	<b>TYPE</b>	<b>HARDWARE</b>	<b>MANUFACTURER</b>	<b>MANUFACTURER PART NUMBER</b>
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

\*Specifications subject to change without notice

Indiana Microelectronics, LLC. All rights reserved. Information in this document is provided about Indiana Microelectronics, LLC products. These materials are provided by Indiana Microelectronics as a service to its customers and may be used for informational purposes only. Except as provided in Indiana Microelectronics' Terms and Conditions of Sale for such products or in any separate agreement related to this document, Indiana Microelectronics assumes no liability whatsoever. Indiana Microelectronics assumes no responsibility for errors or omissions in these materials. Indiana Microelectronics may make changes to specifications and product descriptions at any time, without notice. Indiana Microelectronics makes no commitment to update the information and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to its specifications and product descriptions. No license, express or implied, by estoppels or otherwise, to any intellectual property rights is granted by this document.

THESE MATERIALS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, RELATING TO SALE AND/OR USE OF INDIANA MICROELECTRONICS PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, CONSEQUENTIAL OR INCIDENTAL DAMAGES, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. INDIANA MICROELECTRONICS FURTHER DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. INDIANA MICROELECTRONICS SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS, WHICH MAY RESULT FROM THE USE OF THESE MATERIALS.

Indiana Microelectronics products are not intended for use in medical, lifesaving or life sustaining applications. Indiana Microelectronics customers using or selling Indiana Microelectronics products for use in such applications do so at their own risk and agree to fully indemnify Indiana Microelectronics for any damages resulting from such improper use or sale.

---

\*Specifications subject to change without notice