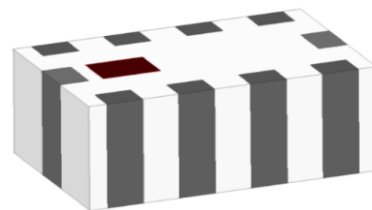




Impedance-matched Integrated Passive Device (IPD) Balun + Filter for Semtech LR11xx (LR1110, LR1120, LR1121)

- Designed for the Semtech LoRa Connect™ and LoRa Edge™ series chipsets.
- Integrates WiFi and GPS/GNSS/Beidou bands complete front-end.
- Provides necessary attenuation for FCC and ETSI requirements.
- Replaces complex RF front end with single integrated passive device (IPD).



General Specifications¹

GPS/GNSS/Beidou Rx Frequency

Balanced Impedance, transceiver side(Ω)
Unbalanced Impedance, antenna side (Ω)
Insertion Loss (dB)
Return Loss (dB)
Phase Difference (degree)
Amplitude Difference (dB)

GPS/GNSS/Beidou

Impedance-matched to Semtech chipsets
LR1110, LR1120, LR1121
50
1.4 Typ (2.0 Max.)
10 Min.
180±15
2.0 Max.

WiFi Passband Frequency (MHz)

Balanced Impedance, transceiver side (Ω)
Unbalanced Impedance, antenna side(Ω)
Insertion Loss (dB)
Return Loss (dB)

Impedance-matched to Semtech chipsets
LR1110, LR1120, LR1121
50
0.8 Typ. (1.2 Max.)
10 Min.

Attenuation
Frequency Range (MHz)
Attenuation (dB)

4800 - 5000
40 Min.

Frequency Range (MHz)
Attenuation (dB)

7200 - 7500
40 Min.

Frequency Range (MHz)
Attenuation (dB)

9600 - 10000
30 Min.

Frequency Range (MHz)
Attenuation (dB)

12000 - 12500
30 Min.

Frequency Range (MHz)
Attenuation (dB)

14400 - 15000
20 Min.

Frequency Range (MHz)
Attenuation (dB)

16800 - 17500
5 Min.

¹ Typical value represents average measurement at 25°C. Min./Max. values represent measurements from -40°C to +85°C

General Specifications (continued)

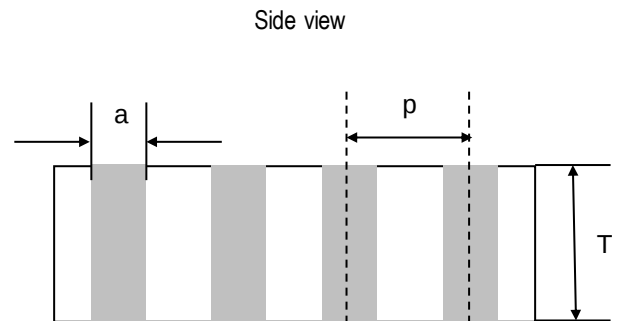
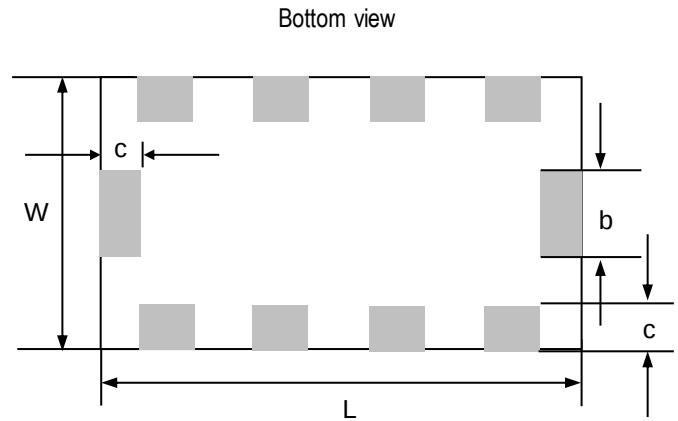
Frequency Range (MHz)	19200 - 20000
Attenuation (dB)	9 Min.
Frequency Range (MHz)	21600 - 22500
Attenuation (dB)	15 Min.
Frequency Range (MHz)	24000 - 25000
Attenuation (dB)	4 Min.

Maximum Ratings

Power Capacity (W)	2 (CW)
Operating Temperature (°C)	-40 to +85
Recommended Storage Conditions post-installation (°C)	-40 to +85
Recommended Storage Conditions and Period for Unused T&R Product	45% - 60% RH +5 to +35°C 18 Months Max.

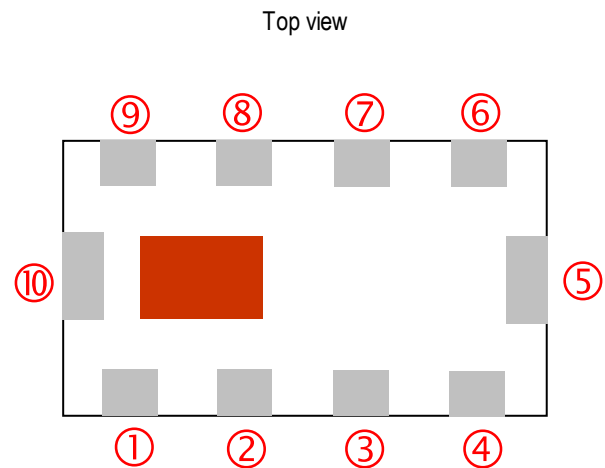
Mechanical Dimensions

L	0.079	±	0.008	2.00	±	0.20
W	0.049	±	0.008	1.25	±	0.20
T	0.028	±	0.004	0.70	±	0.10
a	0.010	±	0.004	0.25	±	0.10
b	0.012	±	0.006	0.30	±	0.15
c	0.008	±	0.004	0.20	±	0.10
p	0.020	±	0.004	0.50	±	0.10



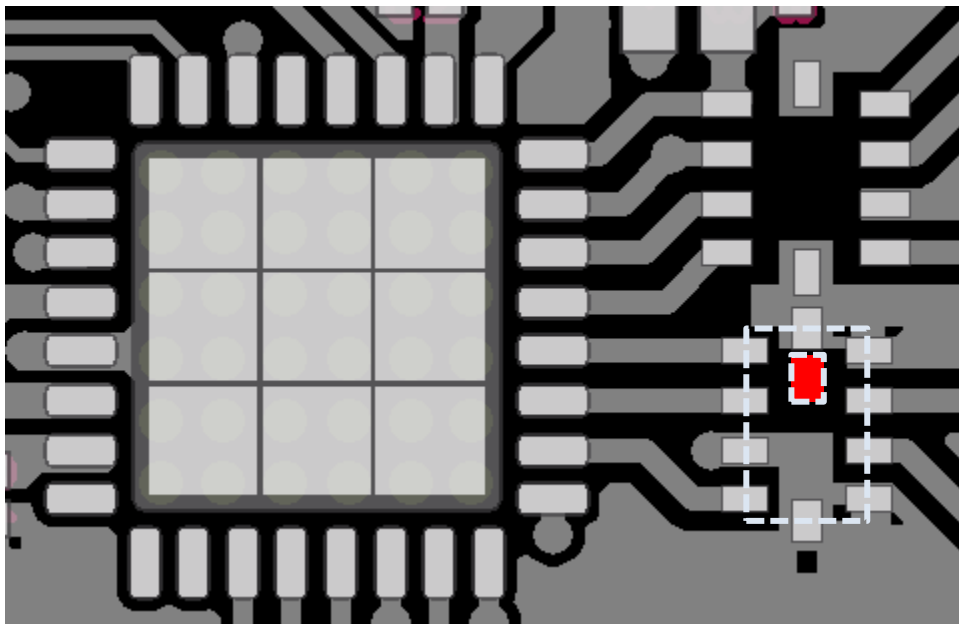
Terminal Configuration

Pin Number	Function
1	RFI_P_LF1
2	RFI_N_LF1
3	GND
4	RFIO_HF
5	GND
6	GND
7	WIFI
8	GPS
9	GND
10	GND





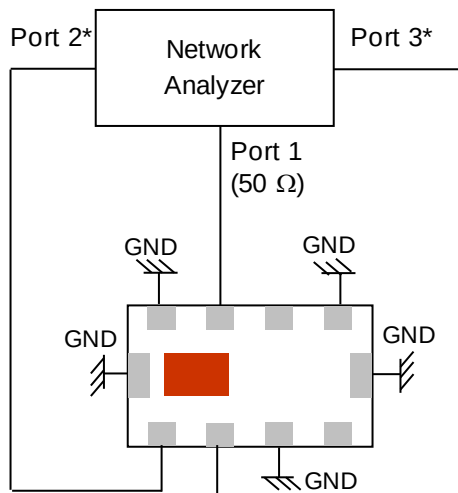
PCB Layout



Please contact us for the full reference design package: <https://www.johansontechnology.com/ask-a-question>



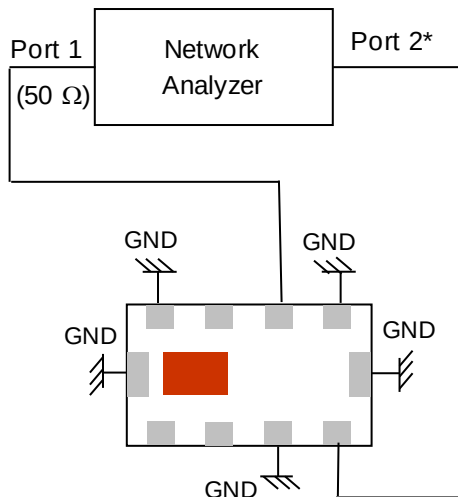
Measurement Diagram



GPS

Port 1: GPS Port, 50Ω

*Ports 2 & 3: RFI_P_LF1 / RFI_N_LF1, Impedance match to Semtech chipset



WiFi

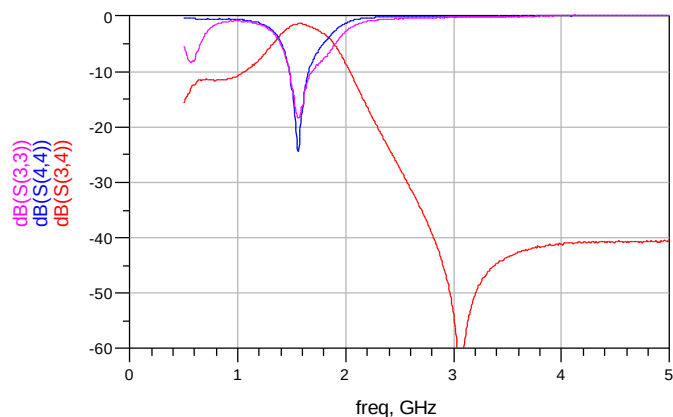
Port 1: WIFI Port, 50Ω

*Port 2: RFIO_HF Port, Impedance match to Semtech chipset

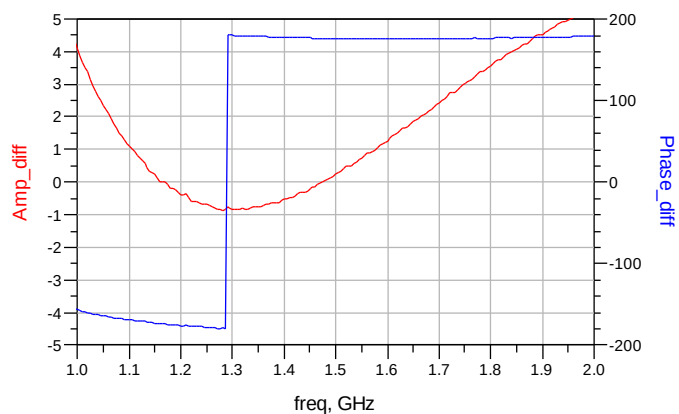
RF Measurement of Component

GPS/GNSS/Beidou

Insertion and Return Loss

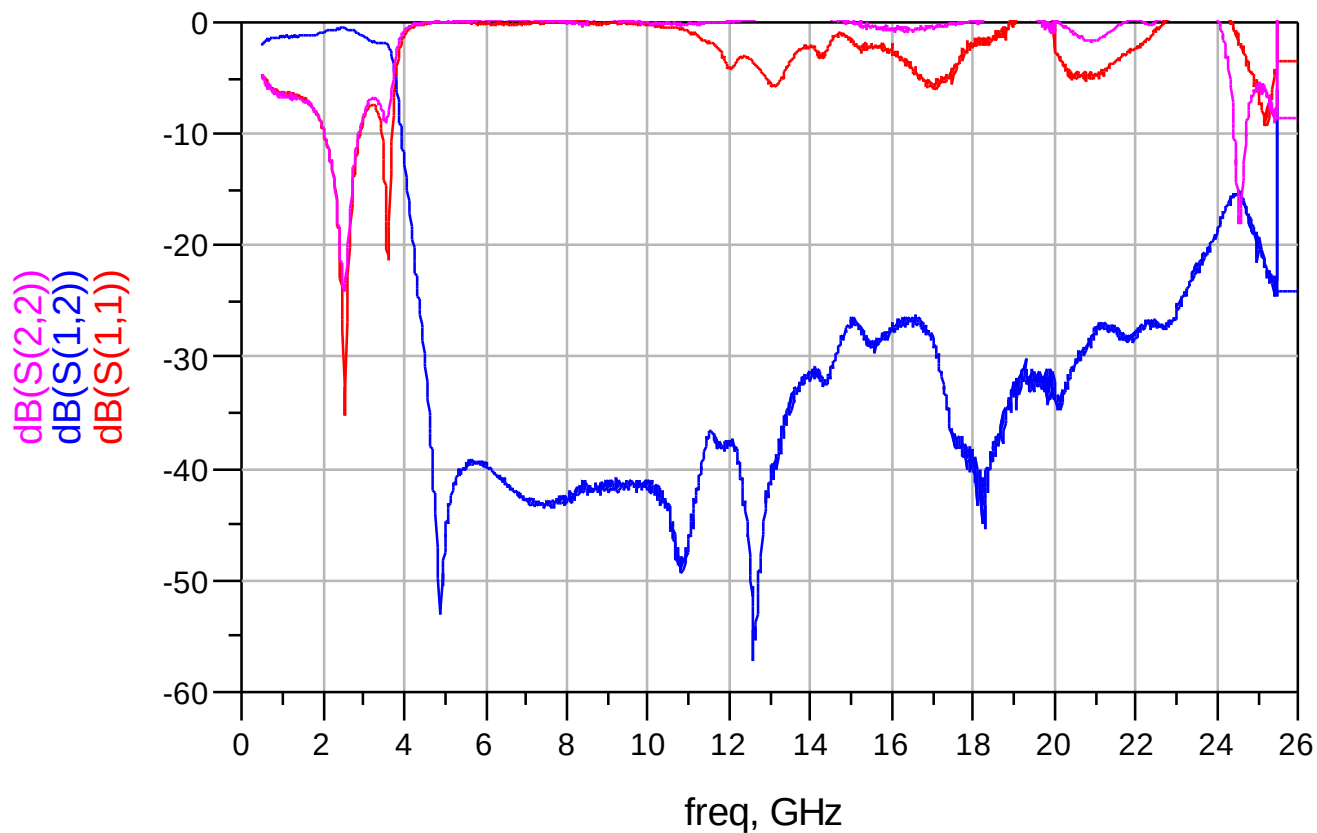


Amplitude and Phase



WiFi

Insertion and Return Loss



S-parameters and layouts file available upon request. Please contact <https://www.johansontechnology.com/ask-a-question>

Orderable Part Number

Part Number Explanation		
Packaging Style	Bulk (loose pcs.)	2000PC15C0040001B
	T & R (7" Reel Embossed Tape)	2000PC15C0040001E (Qty: 4,000 pcs./reel)

Important Links

[2000PC15C0040001E Samples, Quote, Downloads](#)

[Tuning, Optimization, and Validation Services](#)

[Soldering Information](#)

[MSL Information](#)

[Packaging Information](#)

[Recommended Storage Condition and Max Shelf Life](#)

[RoHS Compliance](#)

Changelog	
1.1	Initial Release