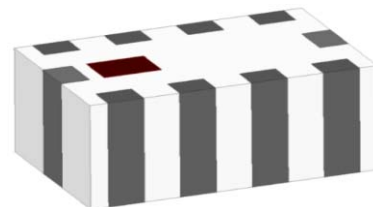


Impedance-matched Integrated Passive Device (IPD) Balun + Filter for Semtech LR11xx (LR1110, LR1120, LR1121)

- 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	GPS/GNSS/Beidou
Balanced Impedance, transceiver side(Ω)	Impedance-matched to Semtech chipsets LR1110, LR1120, LR1121
Unbalanced Impedance, antenna side (Ω)	50
Insertion Loss (dB)	1.4 Typ (2.0 Max.)
Return Loss (dB)	10 Min.
Phase Difference (degree)	180 \pm 15
Amplitude Difference (dB)	2.0 Max.
WiFi Passband Frequency (MHz)	2400 - 2500
Balanced Impedance, transceiver side (Ω)	Impedance-matched to Semtech chipsets LR1110, LR1120, LR1121
Unbalanced Impedance, antenna side(Ω)	50
Insertion Loss (dB)	0.8 Typ. (1.2 Max.)
Return Loss (dB)	10 Min.
Attenuation	
Frequency Range (MHz)	4800 - 5000
Attenuation (dB)	40 Min.
Frequency Range (MHz)	7200 - 7500
Attenuation (dB)	40 Min.
Frequency Range (MHz)	9600 - 10000
Attenuation (dB)	30 Min.
Frequency Range (MHz)	12000 - 12500
Attenuation (dB)	30 Min.
Frequency Range (MHz)	14400 - 15000
Attenuation (dB)	20 Min.
Frequency Range (MHz)	16800 - 17500
Attenuation (dB)	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)

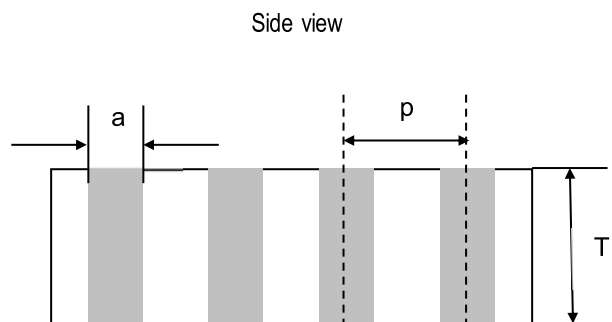
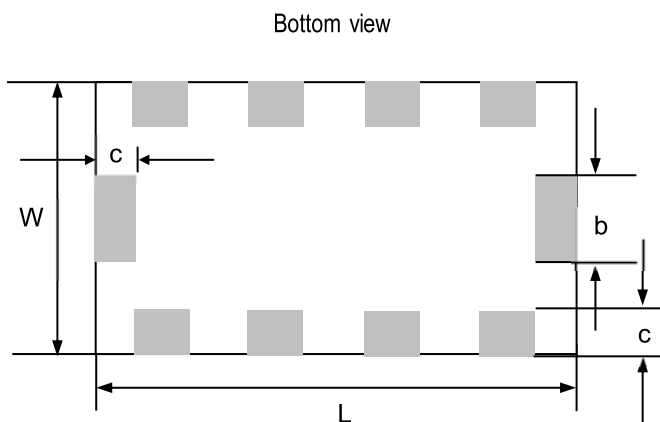
Frequency Range (MHz)	19200 - 20000
Attenuation (dB)	9 Min.
Frequency Range (MHz)	21600 - 22500
Attenuation (dB)	15 Min.
Frequency Range (MHz)	24000 - 25000
Attenuation (dB)	4 Min.

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.

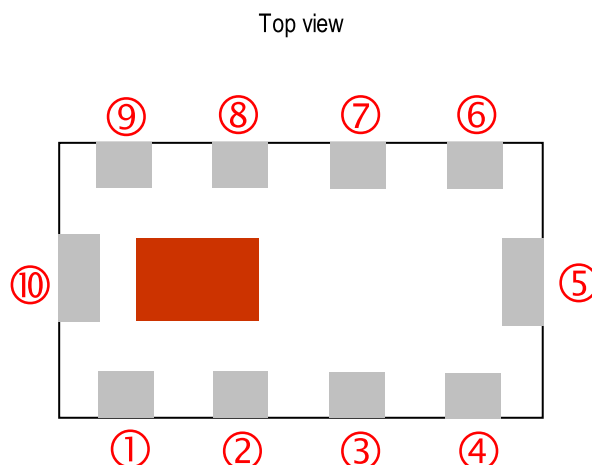
Mechanical Dimensions

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/-0.002	0.20		+0.1/-0.05
p	0.020	±	0.004	0.50	±	0.10

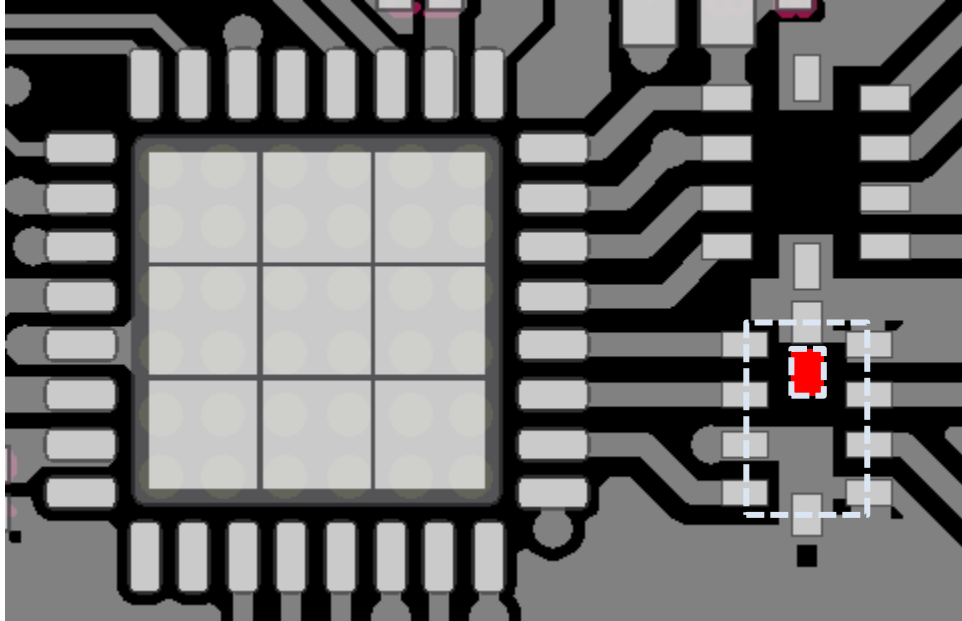


Terminal Configuration

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



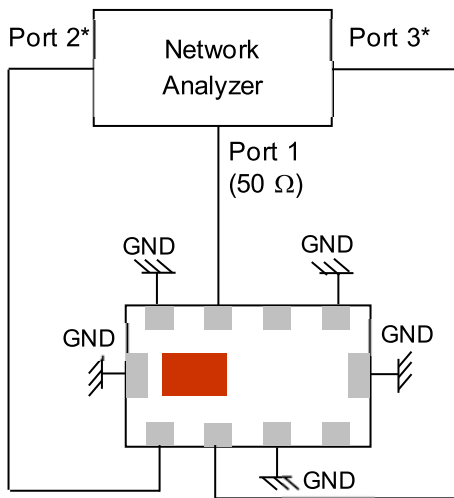
PCB Layout



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



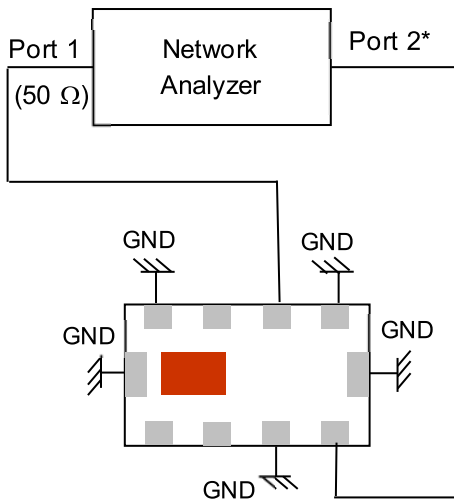
Measurement Diagram



GPS

Port 1: GPS Port, 50Ω

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



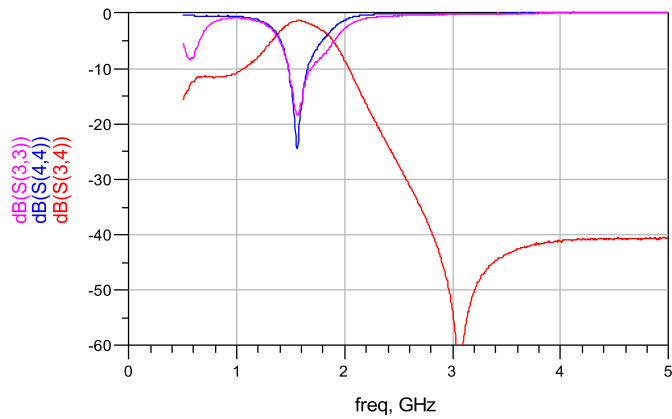
WiFi

Port 1: WIFI Port, 50Ω

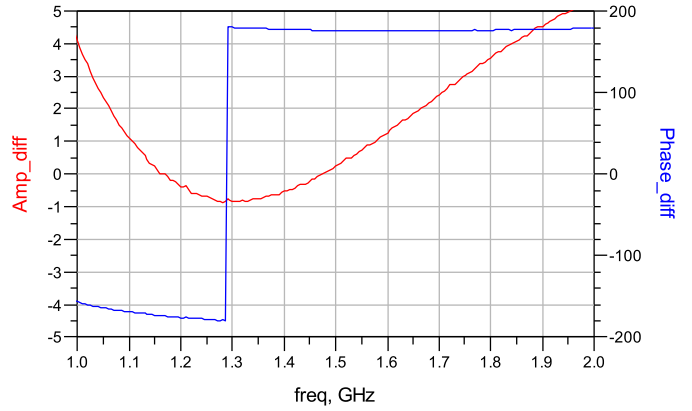
*Port 2: RFIO_HF Port, Impedance match to Semtech chipset

RF Measurement of Component
GPS/GNSS/Beidou

Insertion and Return Loss

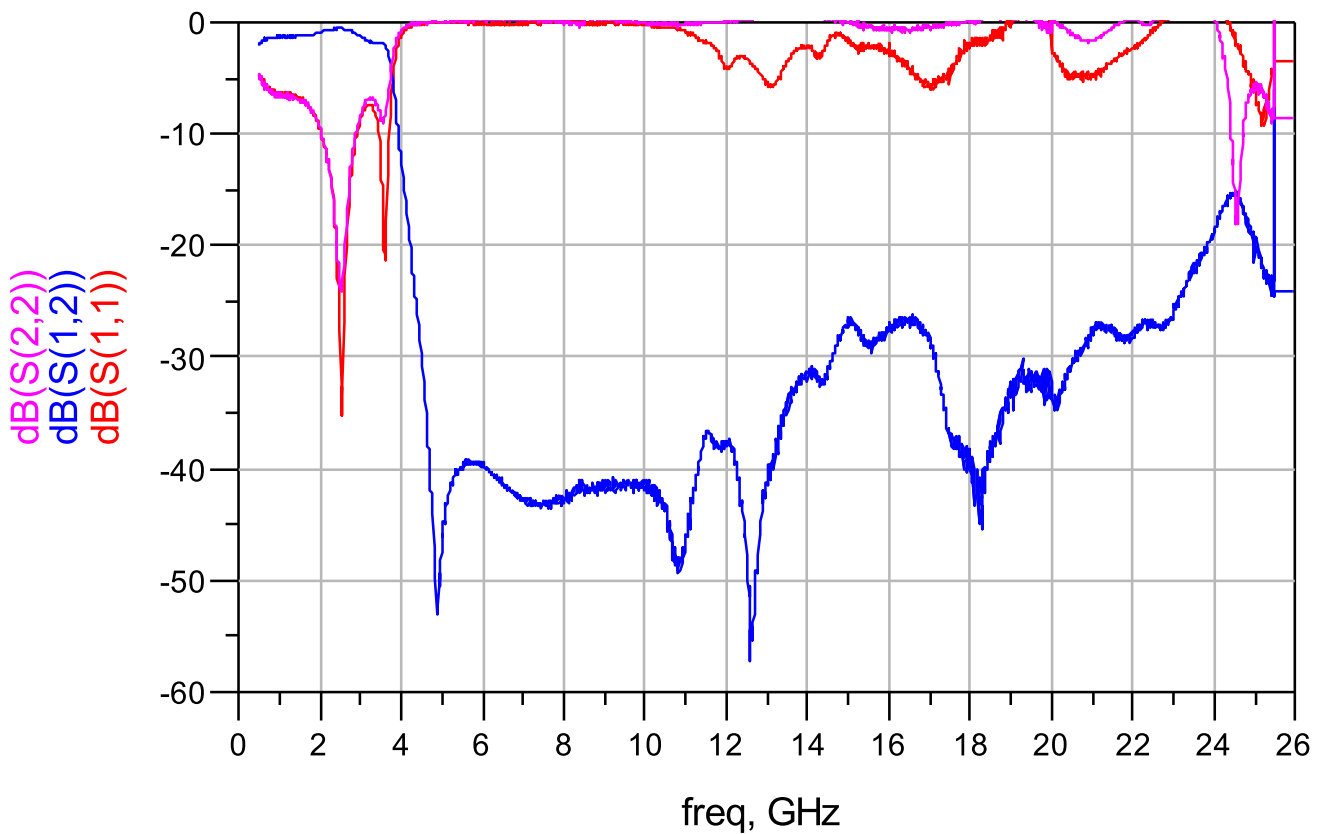


Amplitude and Phase



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