

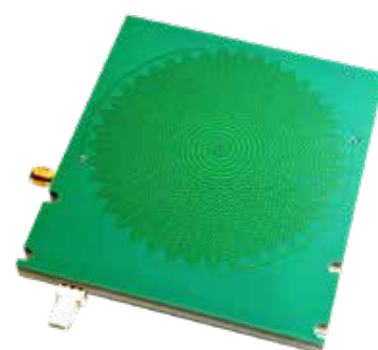
# Multiband GNSS Integrated Antenna & LNA

## M-GNSSA-ANT-LNA Previously named SI-L1620 Multiband GNSS Antenna with Integrated LNA Option

### Overview

The M-GNSSA-ANT-LNA is a low-space, multiband GNSS antenna, which provides operation over the GPS L5, L2, L1, Galileo E1, E5a and GLONASS G1, G2 bands. The antenna can be mounted on metal objects, suffering no performance degradation when close to nearby objects and its small profile of 100 x 91 x 7.8mm makes it ideal for mounting in confined spaces. Despite its low size, a patented design ensures that the typical axial ratio is maintained at < 3dB across the entire band with marginal RHCP gains, and with an application option for integrating a wideband LNA within the antenna structure, typical gains of 15dB can be achieved across the band.

The multi-band realisation provides reliable operation by allowing the optimal channel to be utilised with built-in redundancy in case of signal drop-off. The underside of the antenna is grounded for electrical isolation, which in conjunction with the small size allows surface mounted application with no 'contact' effects



### Features

- 100 x 91 x 7.8mm.
- 'Active' (incorporating LNA) or 'passive' operation.
- GPS L5, L2, L1 & Galileo E1, E5a & GLONASS G1, G2.
- < 2.5:1 VSWR.
- 3dB typical axial ratio.
- 15dB gain, <40mW d.c. consumption (active).
- Pads for SMA or coax connection.
- Screw mounting.

### Applications

- Inventory control.
- Automotive GNSS.
- Aerospace geo-location.

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### 'Active' Specification Overview (GPSL5 and Galileo E5a)

Parameter	Min.	Typ.	Max.	Units
Frequency	1164		1189	MHz
RHCP Gain*		16		dB
Input VSWR			1.5:1	
Axial Ratio*	3.8	4.2	5.5	dB
Power Consumption @ 3V Supply		40		mW

#### Notes

All tests are carried out at 25°C.

\*Parameter is not tested in production.

### 'Active' Specification Overview (GPSL2 and GLONASS G2)

Parameter	Min.	Typ.	Max.	Units
Frequency	1215		1254	MHz
RHCP Gain*		18		dB
Input VSWR		1.5:1		
Axial Ratio*	1.3	2.3	3.2	dB
Power Consumption @ 3V Supply		40		mW

### 'Active' Specification Overview (GPSL1, Galileo E1 and GLONASS G1)

Parameter	Min.	Typ.	Max.	Units
Frequency	1550		1610	MHz
RHCP Gain*	6	12		dB
Input VSWR		2.6:1		
Axial Ratio*	1.9	4.5	9	dB
Power Consumption @ 3V Supply		40		mW

## Passive' Specification Overview (GPSL5 and Galileo E5a)

Parameter	Min.	Typ.	Max.	Units
Frequency	1164		1189	MHz
RHCP Gain*		-4		dB
Input VSWR		2.4:1		
Axial Ratio*		2	2.8	dB

### Notes

All tests are carried out at 25°C.

\*Parameter is not tested in production.

## 'Passive' Specification Overview (GPSL2 and GLONASS G2)

Parameter	Min.	Typ.	Max.	Units
Frequency	1215		1254	MHz
RHCP Gain*		-2	1	dB
Input VSWR		2.3:1		
Axial Ratio*		2	3.4	dB

## 'Passive' Specification Overview (GPSL1, Galileo E1 and GLONASS G1)

Parameter	Min.	Typ.	Max.	Units
Frequency	1550		1610	MHz
RHCP Gain*		-3	0	dB
Input VSWR		2.5:1		
Axial Ratio*		2	3.7	dB

## Absolute Maximum Ratings

Parameter	Rating
J2_1 (VBIAS)	0 - 3.5V
J2_3 (VCC)	4V
ICC	30mA
Storage Temperature	-65°C to +150°C
Channel Temperature	+150°C
Operating Temperature	-40°C to +85°C

## Measured Performance Data

Active Mode Operation ( $R3=R4=0\Omega$ ,  $R5=R6=DNF$ )

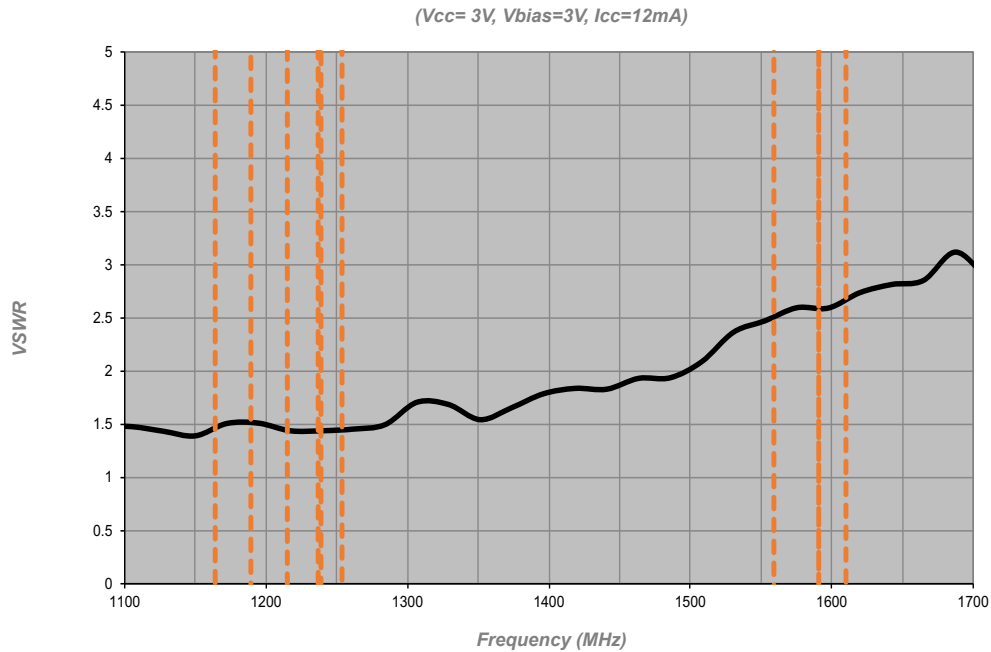


Figure 1  
 Active VSWR

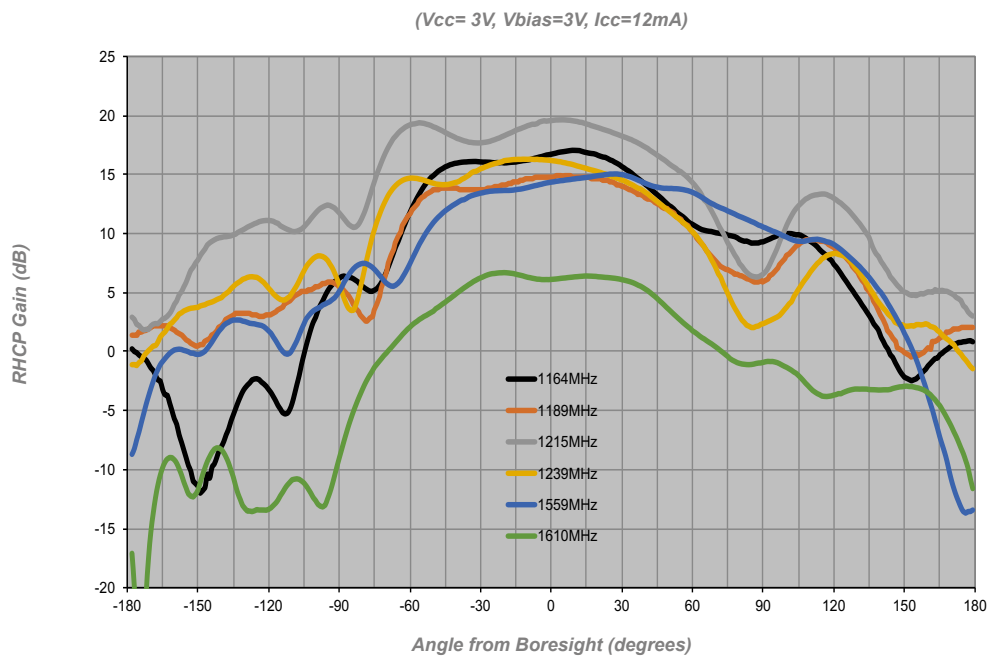


Figure 2  
 Active RHCP Gain

## Measured Performance Data

Active Mode Operation ( $R3=R4=0\Omega$ ,  $R5=R6=DNF$ )

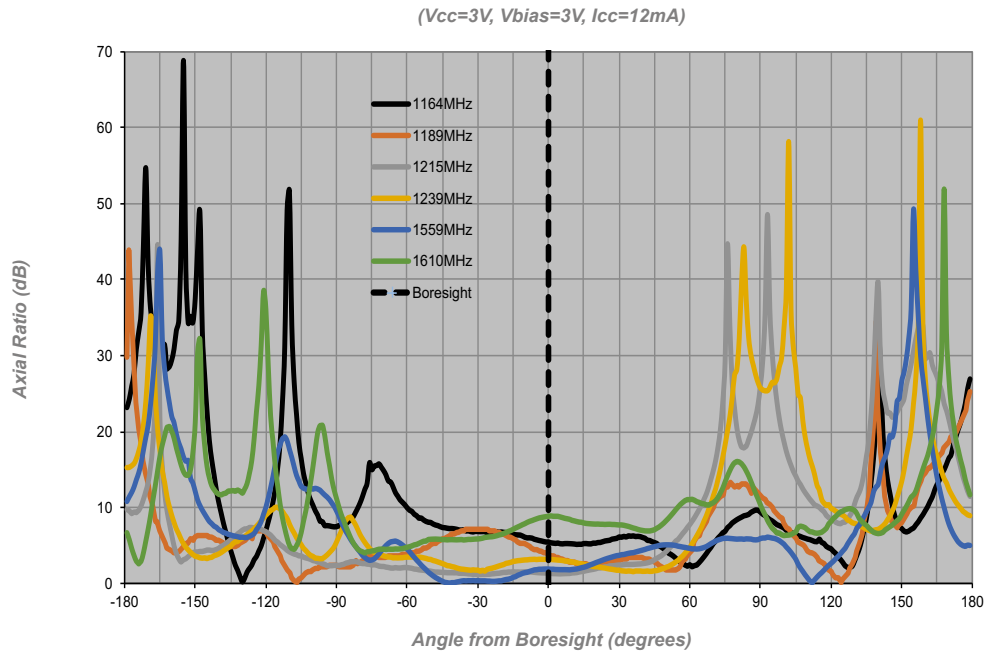


Figure 3  
Active Axial Ratio

## Measured Performance Data

Passive Mode Operation ( $R3=R4=DNF$ ,  $R5=R6=0\Omega$ )

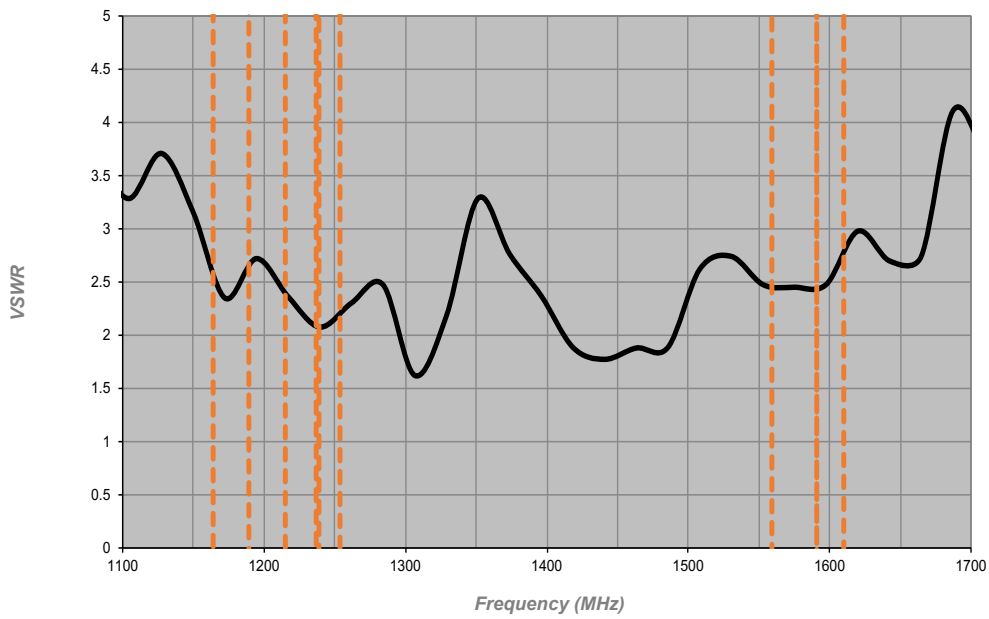


Figure 4  
 Passive VSWR

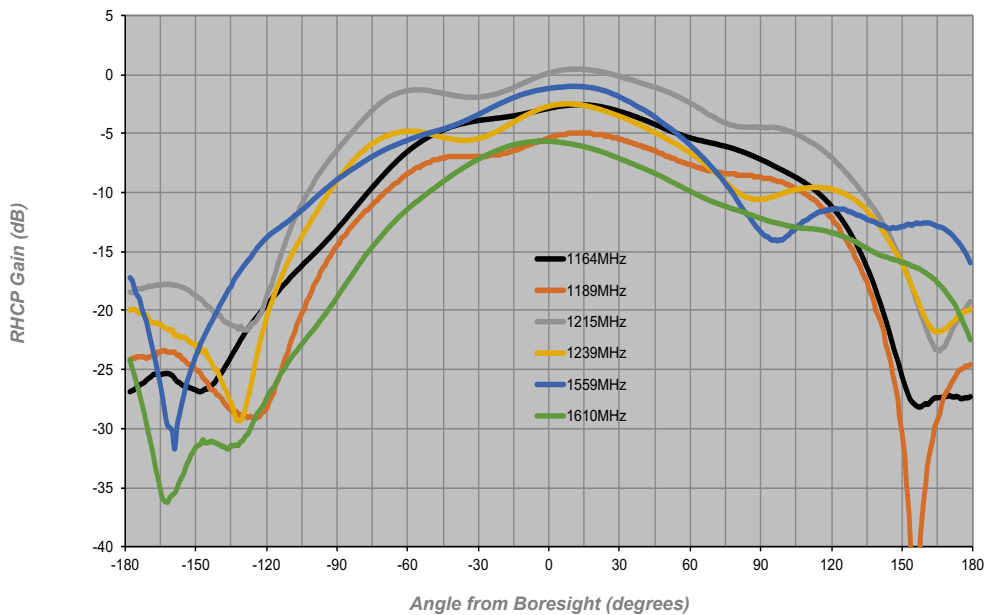


Figure 5  
 Passive RHCP Gain

## Measured Performance Data

Passive Mode Operation ( $R3=R4=DNF$ ,  $R5=R6=0\Omega$ )

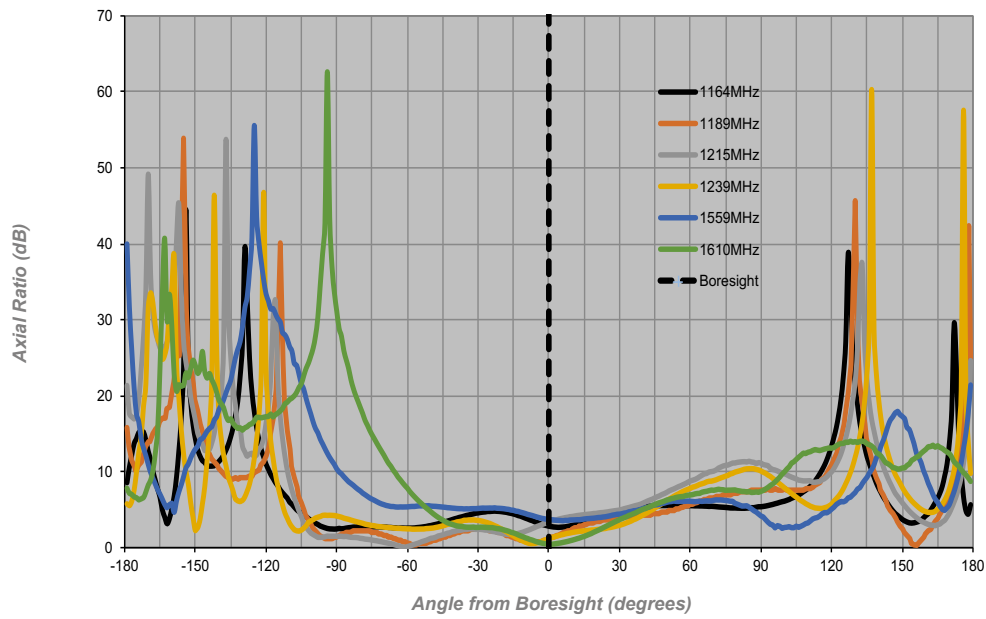
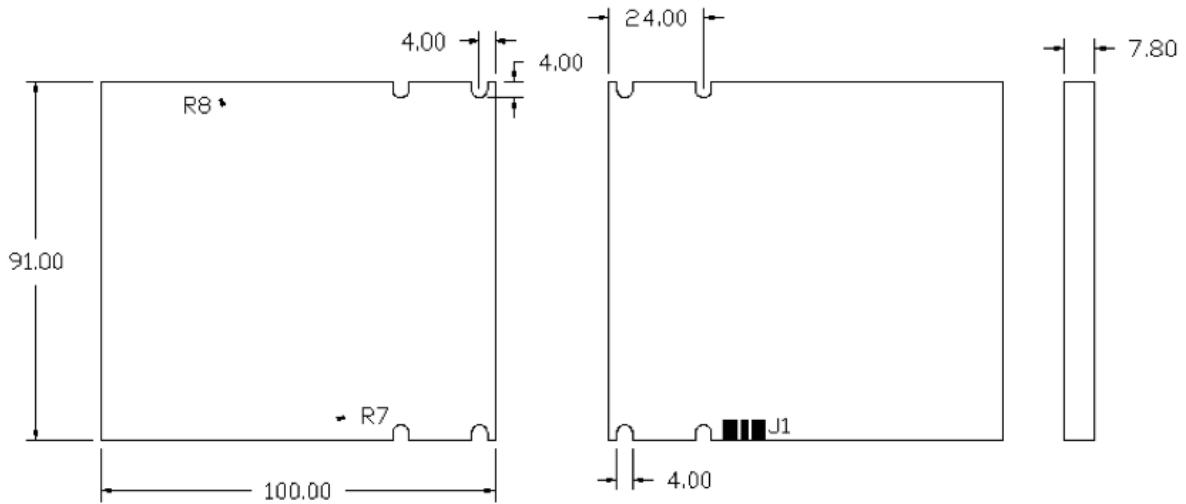


Figure 6  
Passive Axial Ratio

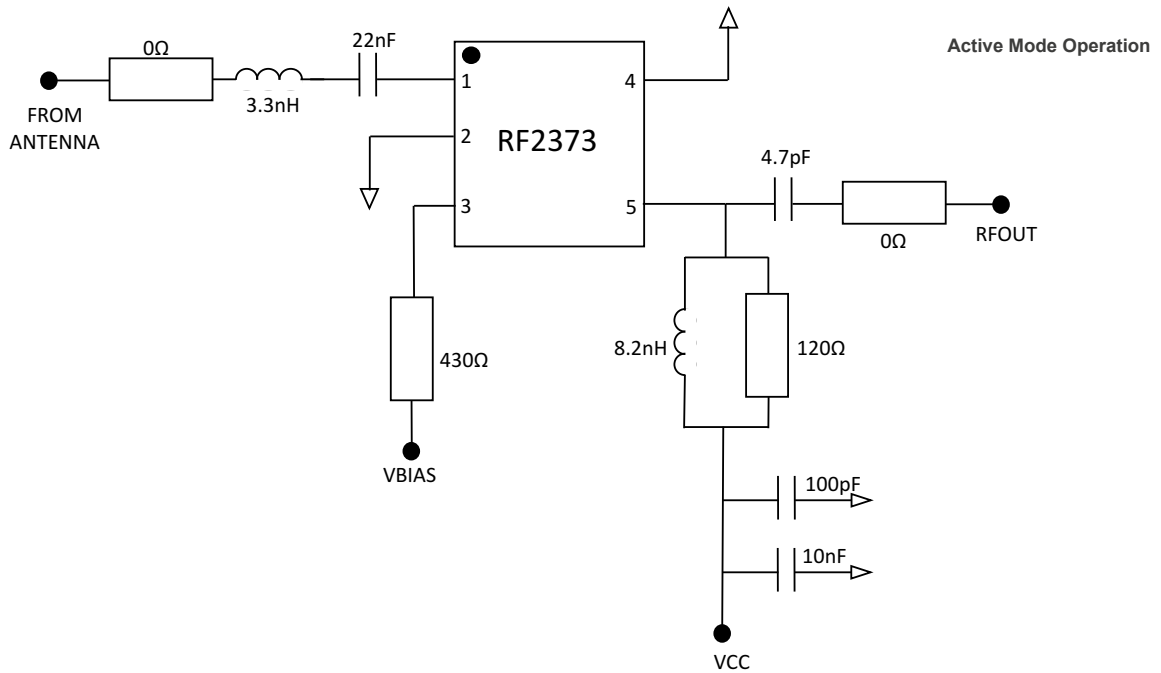
### Outline Drawing



#### Notes

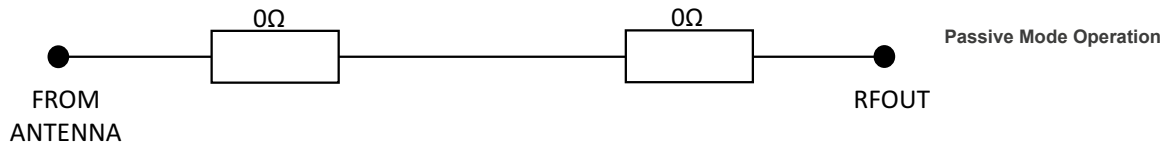
1. All dimensions are in mm.
2. Backside metal, although passivated, is ground.
3. Passivated top surface.

### Electrical Schematic

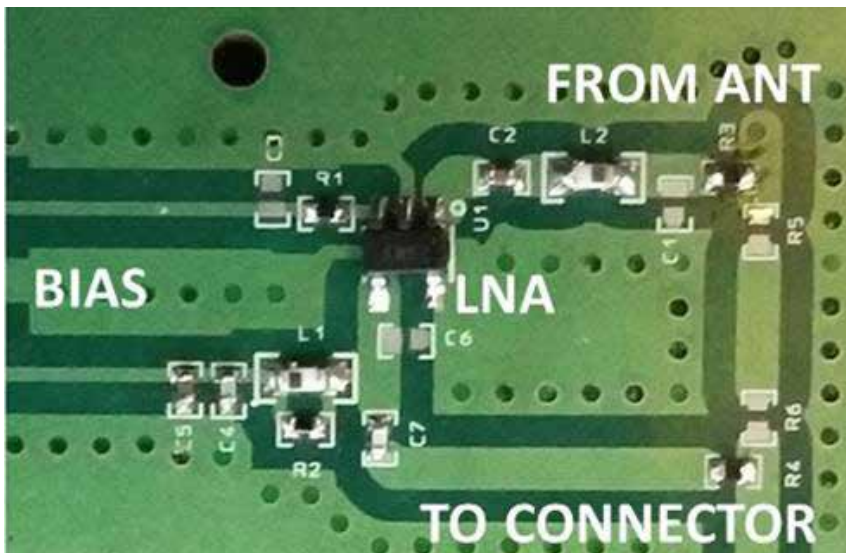




## Electrical Schematic



## Layout



*Mounting configuration shown for Active Mode.*

## Pad & Component Descriptions

Name	Description	Comment
J1	Input RF pad. Pad is G-S-G for SMA or coax connector.	
J2_1	VBIAS. This is the LNA Bias Control Voltage. Typically 3V.	Active Mode Only
J2_2	LNA GND connection.	Active Mode Only
J2_3	VCC. This is the LNA Bias Voltage. Typically 3V.	Active Mode Only
R1	430Ω resistor. (0402 Imperial)	Active Mode Only
R2	120Ω resistor. (0402 Imperial)	Active Mode Only
R3	0Ω resistor. (0402 Imperial)	Active Mode Only DNF for Passive Mode
R4	0Ω resistor. (0402 Imperial)	Active Mode Only DNF for Passive Mode
R5	0Ω resistor. (0402 Imperial)	Passive Mode Only DNF for Active Mode
R6	0Ω resistor. (0402 Imperial)	Passive Mode Only DNF for Active Mode
R7	240Ω resistor. (0402 Imperial)	Top Surface Component
R8	240Ω resistor. (0402 Imperial)	Top Surface Component
C1	DNF	
C2	22nF capacitor. (0402 Imperial)	Active Mode Only
C3	DNF	
C4	100pF capacitor. (0402 Imperial)	Active Mode Only
C5	10nF capacitor. (0402 Imperial)	Active Mode Only
C6	DNF	
C7	4.7pF capacitor. (0402 Imperial)	Active Mode Only
L1	3.3nH inductor. (0603 Imperial)	Active Mode Only
L2	8.2nH inductor (0603 Imperial)	Active Mode Only
U1	RF2373* (SOT 5-Lead)	Active Mode Only

### Notes

\*Qorvo part



ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features proprietary protection circuitry, damage may occur on devices subjected to ESD. Proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

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Arralis European Offices  
t: +(44) 1793 239670 (UK)  
e: sales@arralis.com

**arralis.com**

Arralis USA Office  
+(1) 386 301 3249 (USA)  
e: emilie.wren@arralis.com

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