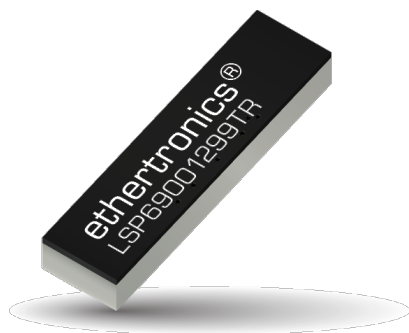


# Part No. LSP69001299TR

## LTE Cat-M1 / NB-IoT Antenna

700 / 750 / 850 / 900 / 1800 / 1900 / 2100 MHz

Supports: LTE Cat 1, LTE-M, SigFox, LoRa, NB-IoT, Cellular LPWA, RPMA, Broadband LTE (OCTA-BAND)



KYOCERA AVX' standard antennas provide high performance. They require a smaller design keep-out area, carry lower program development risk which yields a quicker time-to-market, without sacrificing RF performance.

### LTE Cat-M1/ NB IoT Antenna

Low Band 698 - 960 MHz  
High Band 1710 - 2170 MHz

#### KEY BENEFITS

##### Quicker Time-to-Market

Standard part means fewer design changes. Simple implementation, and Easy Assembly using RP-SMA or SMA

##### Best in Class Performance

Antennas are designed to maintain high efficiency in a variety of device configurations

##### Superior Network Coverage

Better network coverage means more reliable wireless connections

##### RoHS Compliant

Products are the latest RoHS version compliant.

#### APPLICATIONS

- IoT
- Healthcare
- Smart Metering
- Tracking
- M2M
- Industrial Devices
- Tracking
- SigFox
- LoRa
- Cellular
- LPWAN
- RPMA
- LTE Cat-M1

#### Extensive RF Experience

KYOCERA AVX antennas are supported by documentation, and when needed, by the expertise of RF engineers who have integrated hundreds of antenna designs into wireless devices.

#### Global Operations & Design Support

KYOCERA AVX' global operations support an integrated network of design centers that can take projects from concept to production.

#### Electrical Specifications

Typical performance antenna measured with 60 x 40 mm PCB

Frequency (MHz)	On 60x40 mm PCB	
	698 - 960	1710 - 2170
Return Loss	<-2.5 dB	<-3 dB
Efficiency	15 %	42 %
Peak Gain	<-2 dBi	<1.2 dBi
Impedance	50 ohms unbalanced	

#### Mechanical Specifications & Ordering Part Number

Ordering Part Number	LSP69001299TR
Dimensions (mm)	35.00 ± 0.10 length 9.00 ± 0.10 width 3.20 ± 0.10 thickness
Mechanical mounting	SMT (P&P)
Weight (grams)	0.2 grams
Color	Black

LTE Cat-M1 / NB-IoT antenna specifications  
 KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs

**LTE Bands Covered by LSP69001299TR**

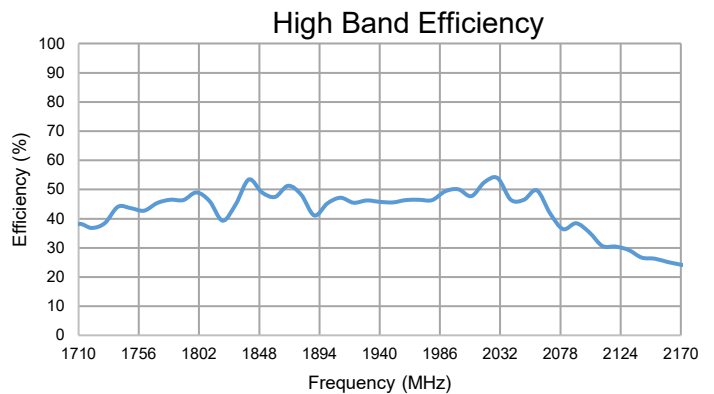
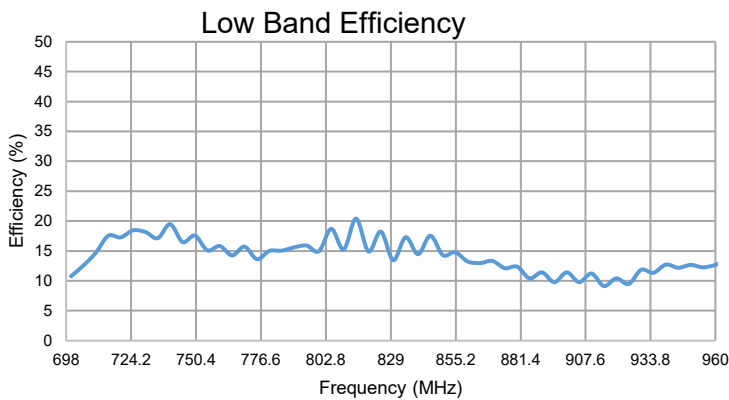
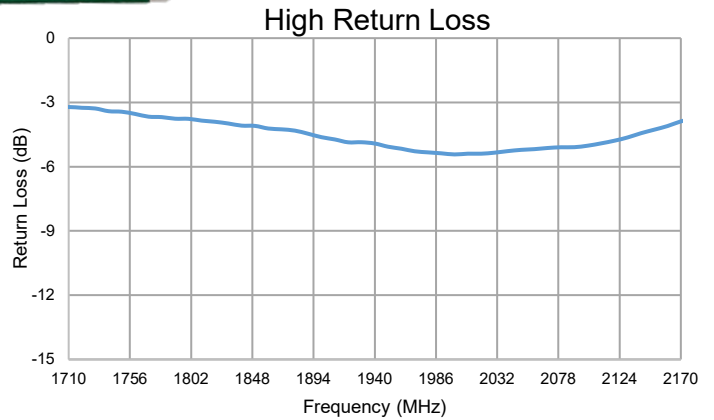
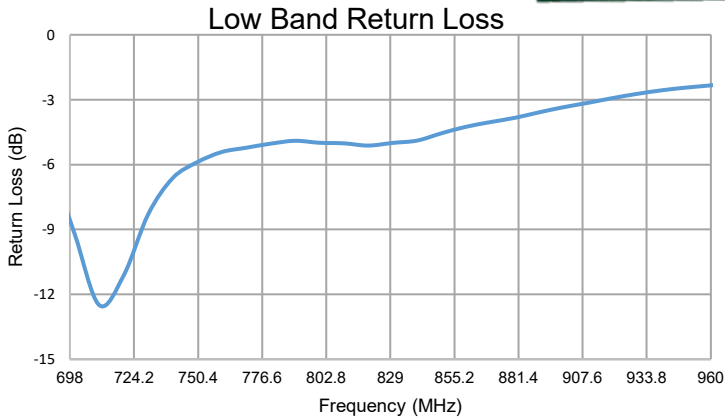
LTE Band	Frequency Band (MHz)	Uplink (UL) (MHz)	Downlink (DL) (MHz)	Region	Covered with PCB	
1	2100	1920 - 1980	2110 - 2170	Global	Yes	
2	1900	1850 - 1910	1930 - 1990	NAM		
3	1800	1710 - 1785	1805 - 1880	Global		
4	1700	1710 - 1755	2110 - 2155	NAM		
5	850	824 - 849	869 - 894	NAM		
6	850	830 - 840	875 - 885	APAC		
7	2600	2500 - 2570	2620 - 2690	EMEA	No	
8	900	880 - 915	925 - 960	Global	Yes	
9	1800	1749.9 - 1784.9	1844.9 - 1879.9	APAC	No	
10	1700	1710 - 1770	2110 - 2170	NAM	Yes	
11	1500	1427.9 - 1447.9	1475.9 - 1495.9	Japan	No	
12	700	699 - 716	729 - 746	NAM	yes	
13	700	777 - 787	746 - 756	NAM		
14	700	788 - 798	758 - 768	NAM		
17	700	704 - 716	734 - 746	NAM		
18	850	815 - 830	860 - 875	Japan	Yes	
19	850	830 - 845	875 - 890	Japan		
20	800	832 - 862	791 - 821	EMEA	No	
21	1500	1447.9 - 1462.9	1495.9 - 1510.9	Japan		
22	3500	3410 - 3490	3510 - 3590	EMEA		
23	2000	2000 - 2020	2180 - 2200	NAM		Yes
24	1600	1626.5 - 1660.5	1525 - 1559	NAM		No
25	1900	1850 - 1915	1930 - 1995	NAM		Yes
26	850	814 - 849	859 - 894	NAM		
27	850	807 - 824	852 - 869	NAM		
28	700	703 - 748	758 - 803	APAC,EU		
29	700	N/A	717 - 728	NAM		No
30	2300	2305 - 23151	2350 - 2360	NAM		
31	450	452.5 - 457.5	462.5 - 467.5	Global		
32	1500	N/A	1452 - 1496	EMEA		
33	1900		1900 - 1920		Yes	
34	2000		2010 - 2025			
35	1850		1850 - 1910			
36	1900		1930 - 1990			
37	1900		1910 - 1930			
38	2600		2570 - 2620		No	
39	1900		1880 - 1920		Yes	
40	2300		2300 - 2400		No	
41	2500		2496 - 2690			
42	3500		3400 - 3600			
43	3700		3600 - 3800			

NAM: North America, EMEA: Europe, Middle East, and Africa, APAC: Asia-Pacific, EU: Europe

LTE Cat-M1 / NB-IoT antenna specifications  
 KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs

### Return loss and Efficiency Plots

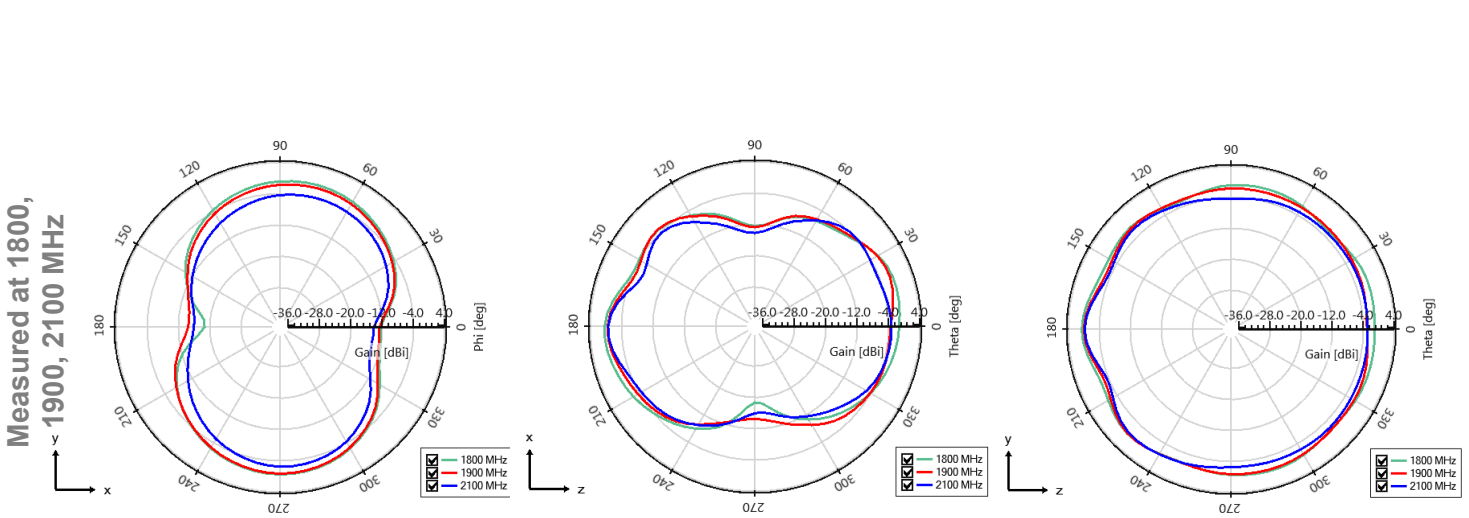
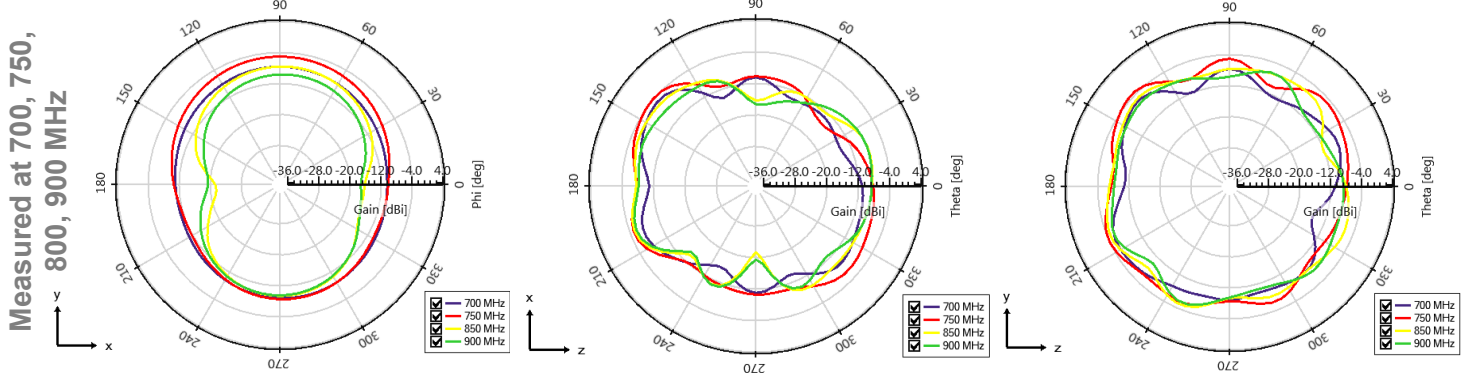
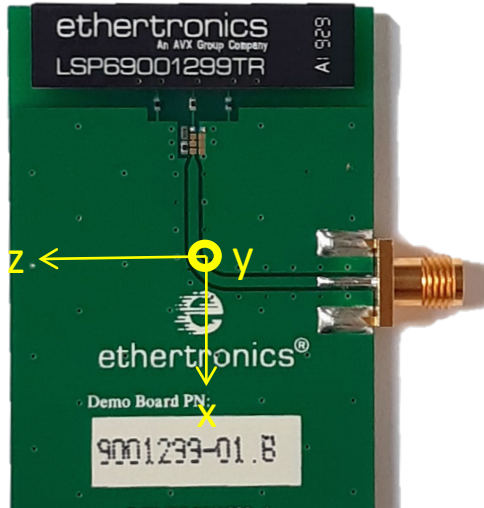
Typical Performance measured with 60 x 40 mm PCB



LTE Cat-M1 / NB-IoT antenna specifications  
 KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs

**Radiation pattern Plots**

Typical performance measured with 60 x 40 mm PCB  
 Measured at 700, 750, 850, 900, 1800, 1900, 2100 MHz

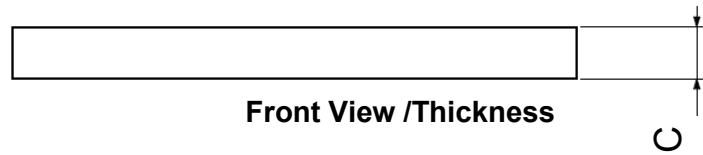
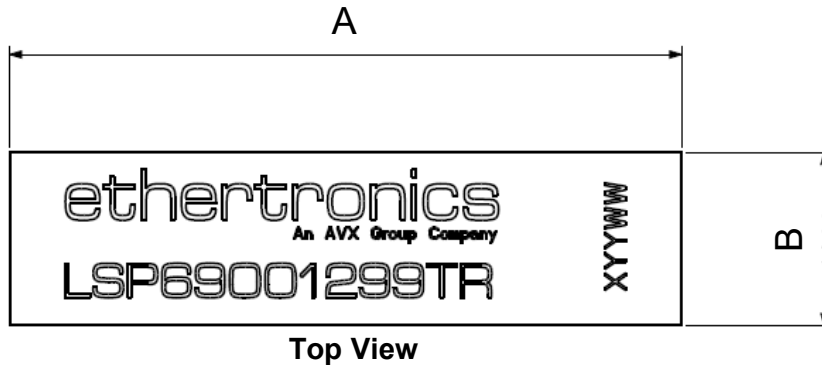


LTE Cat-M1 / NB-IoT antenna specifications  
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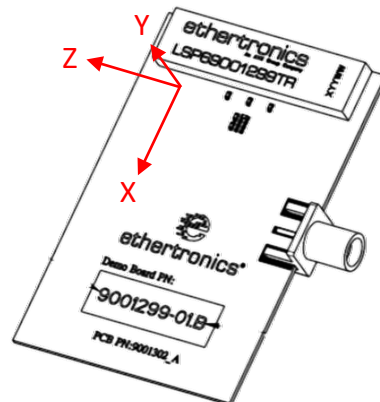
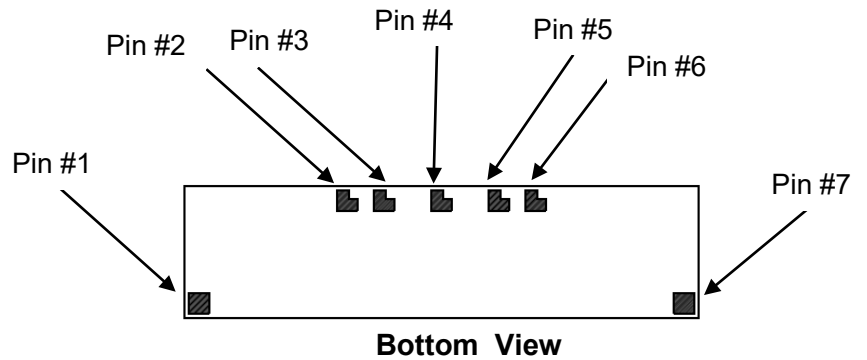
**Mechanical Specifications**

Typical antenna dimensions in mm

Part Number	A (mm)	B (mm)	C (mm)
LSP69001299TR	35.00 ± 0.10	9.00 ± 0.10	3.20 ± 0.10



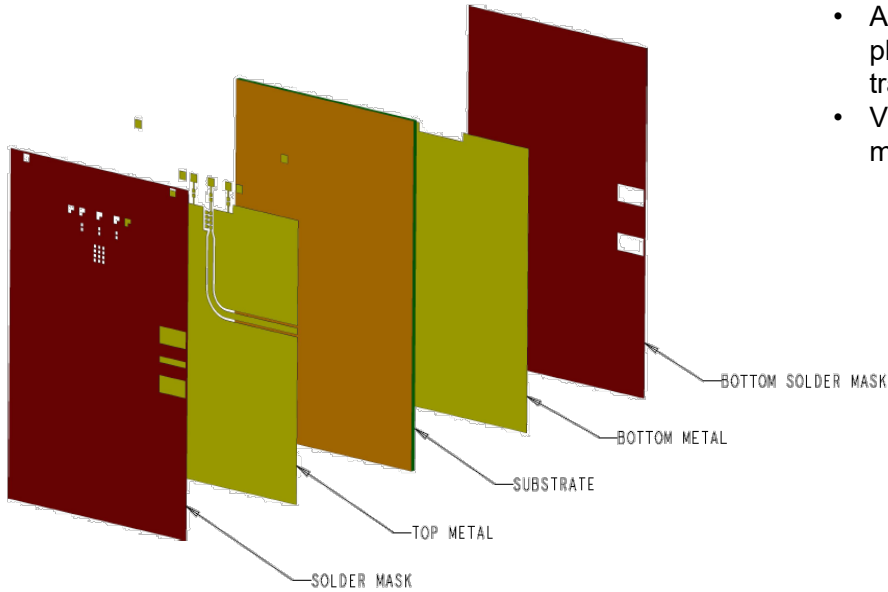
Pin#	Description
1	Dummy Pad
2	Dummy Pad
3	Ground
4	Feed
5	Ground
6	Dummy Pad
7	Dummy Pad



LTE Cat-M1 / NB-IoT antenna specifications  
 KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs

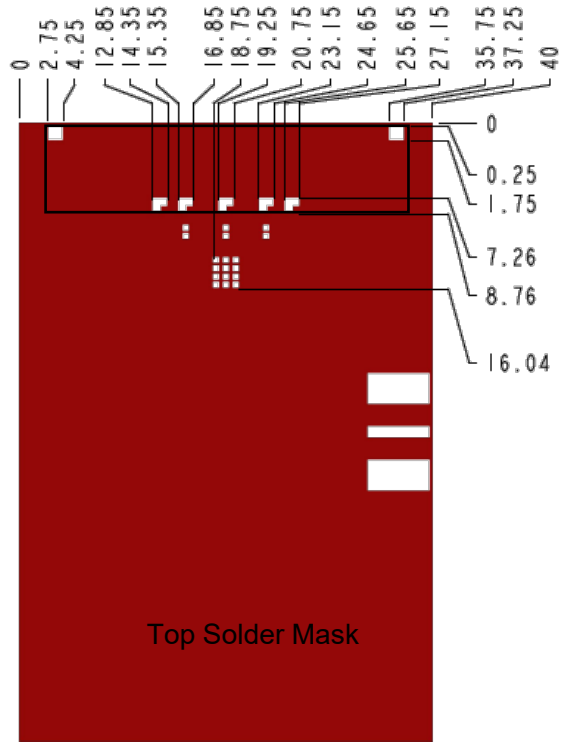
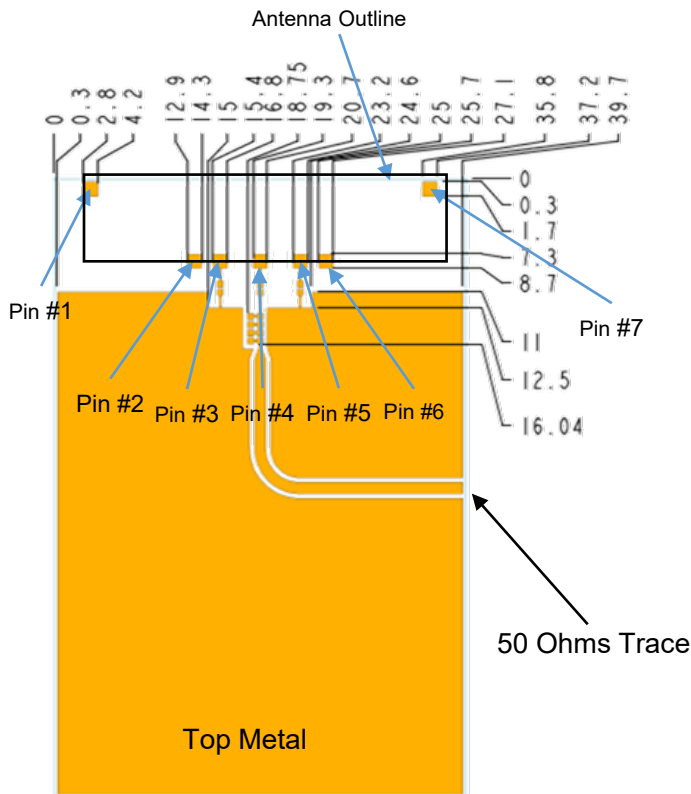
Antenna Layout Specifications

Typical layout dimensions in mm



- Additional vias : Diam. 0.2 mm to be placed around antenna, (no vias on transmission lines)
- Via holes must be covered by solder mask

Pin#	Description
1	Dummy Pad
2	Dummy Pad
3	Ground
4	Feed
5	Ground
6	Dummy Pad
7	Dummy Pad

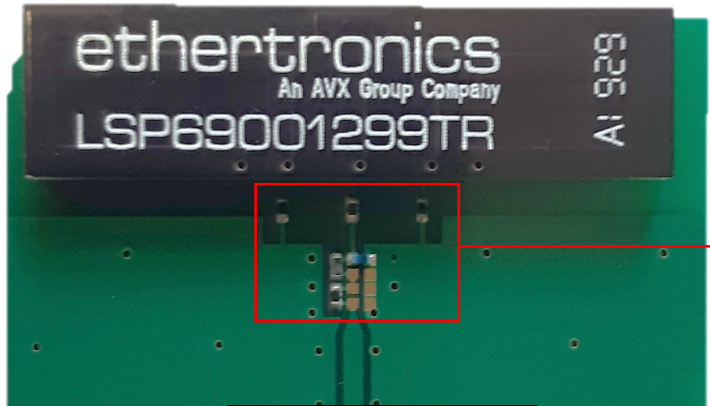


Default Pi matching Network values with instructions can be found under Antenna Matching Network.

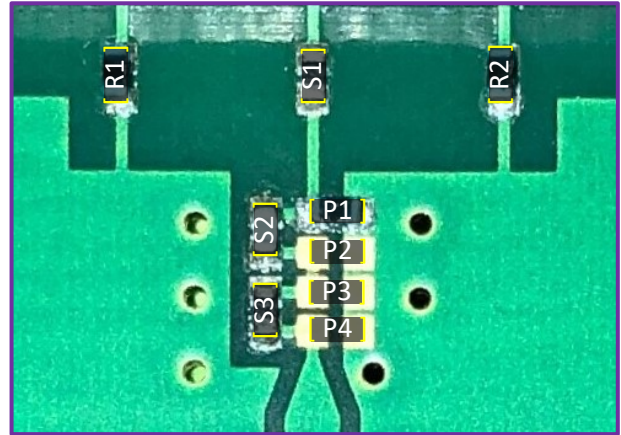
LTE Cat-M1 / NB-IoT antenna specifications  
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### Antenna Layout Specifications

Typical layout dimensions in mm

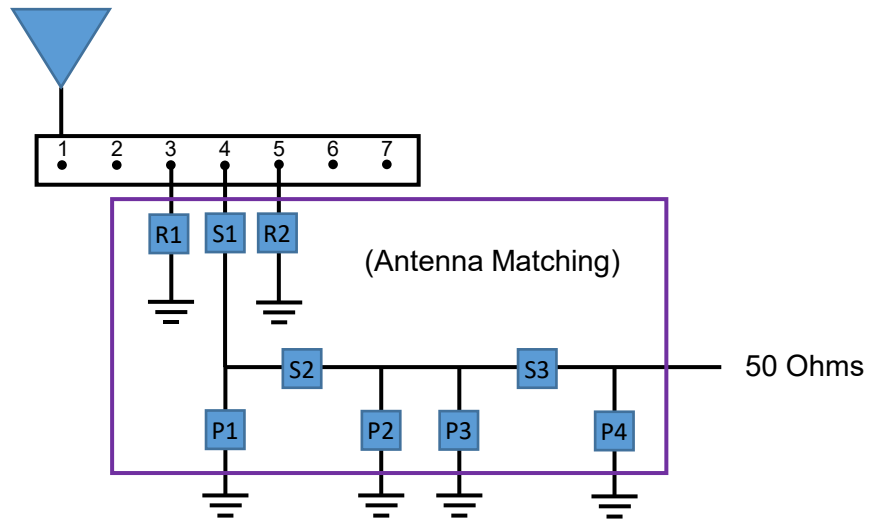


Antenna Matching component



(Antenna Matching): pads are directly inline with the antenna feed trace.

Pin#	Description
1	Dummy Pad
2	Dummy Pad
3	Ground
4	Feed
5	Ground
6	Dummy Pad
7	Dummy Pad



	S1/S3	S2	P1	P2/P3/P4	R1	R2
Default Matching	0 Ohm	2 pF	13 nH	DNI	20 nH	22 nH
Part Number	RC0402JR-070RL	04025J2R0PBS	LQW15AN13NG00D		LQW15AN20NG00D	LQW15AN22NG00D