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GNSS Active L1, L2, L5 Patch Antenna
NM Direct Mount

GNSSL125DM26NM



Features:

- *GNSS RHCP active antenna*
- *Beidou, GPS, Glonass*
- *LNA gain 30dB*
- *Stacked L1 / L2 + L5 patch antenna*
- *High rejection filters to suppress out of band interference*
- *ESD Protected*

Applications:

- *Base station timing antenna*
- *Tracking*
- *Asset tracking, Fleet management, IoT, M2M*

Electrical Specifications @ 25° C			
Antenna type	**Nominal Impedance**	**Polarization**	**Radiation pattern**
Patch	50Ω	RHCP	Directional

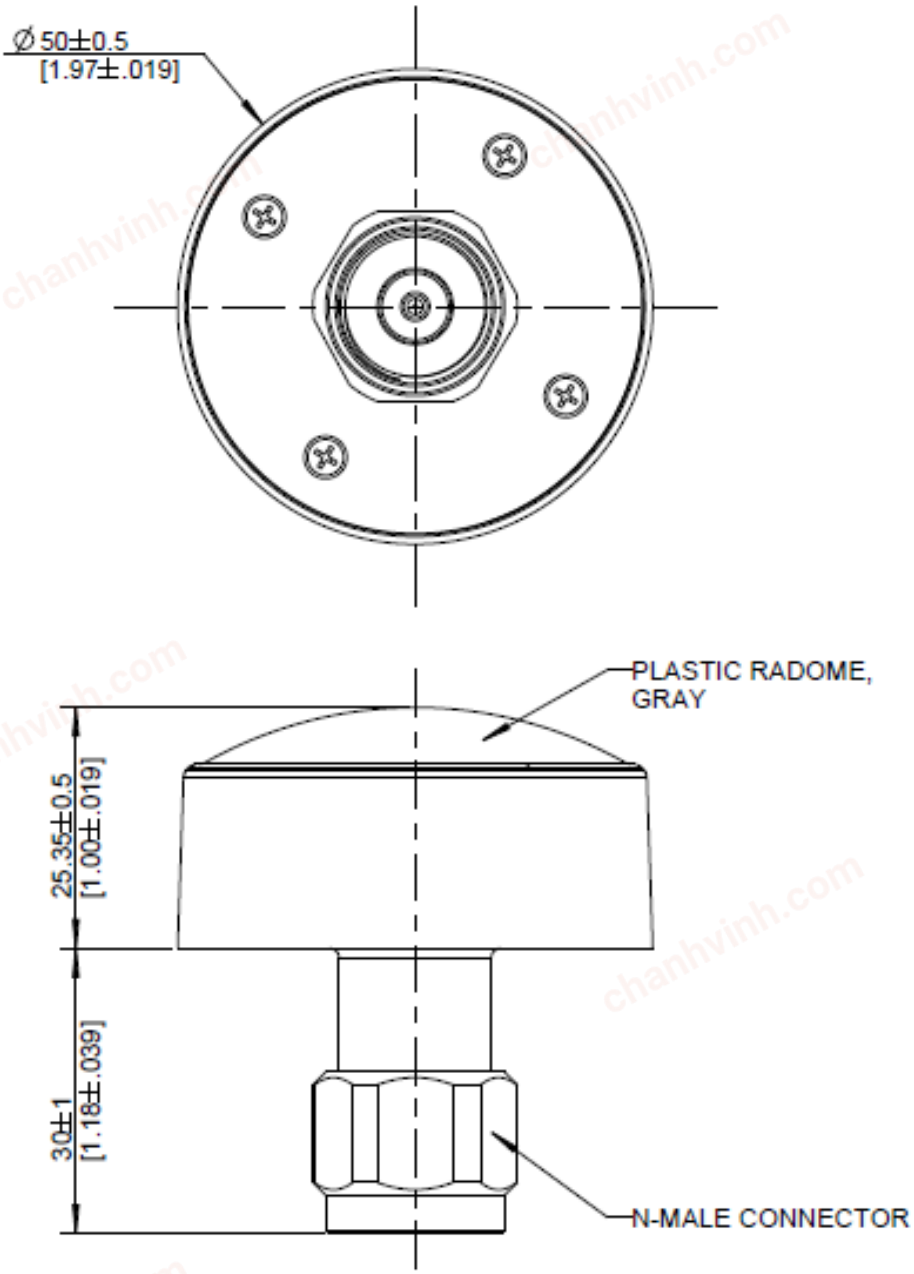
Frequency (MHz)	L1: 1561-1602	L2: 1215-1237	L5: 1164-1189
Return Loss (dB)	< -10	< -13	< -15
Radiating Element Peak Gain (dBi)	>2.5	>1.9	>1.9
Avg. Efficiency (%)	>40	>33	>39
LNA Gain (dB) Typical	28	33	30
Noise Figure (dB)	1.7 @1575MHz	2.2@1227MHz	2.2 @1164MHz
Operating Voltage[1] (V)	2.5 - 18		
Power Consumption (mA)	Max. 16		

Mechanical Specifications					
Dimension with stud (w/o cable)	**Color**	**Antenna Material**	**Connector type**	**Installation torque**	**Weight**
Ø50mm*55.35mm / Ø1.97”x2.18”	Gray	PC + Copper	N-Male	6.2 - 9.7 in-lbs. / 0.7 - 1.1 Nm	128 grams
Storage and operating Temperature	**Ingress Protection**	**RoHS-Compliant**	**UV Protection**	**Flammability**	
40°C to +85°C	IP67	Yes	UL f1	UL 94 V0	

Notes:
1. LNA internal voltage stabilized by LDO (Low dropout regulator).

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Mechanical Drawing

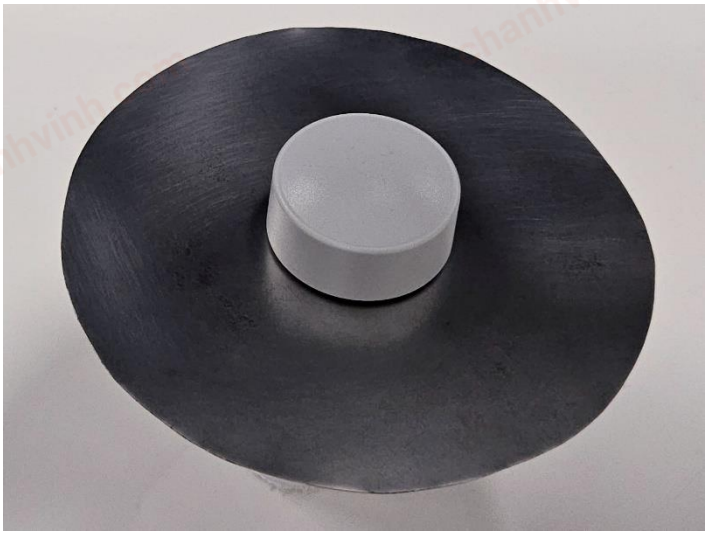


All dimensions are in mm / inches

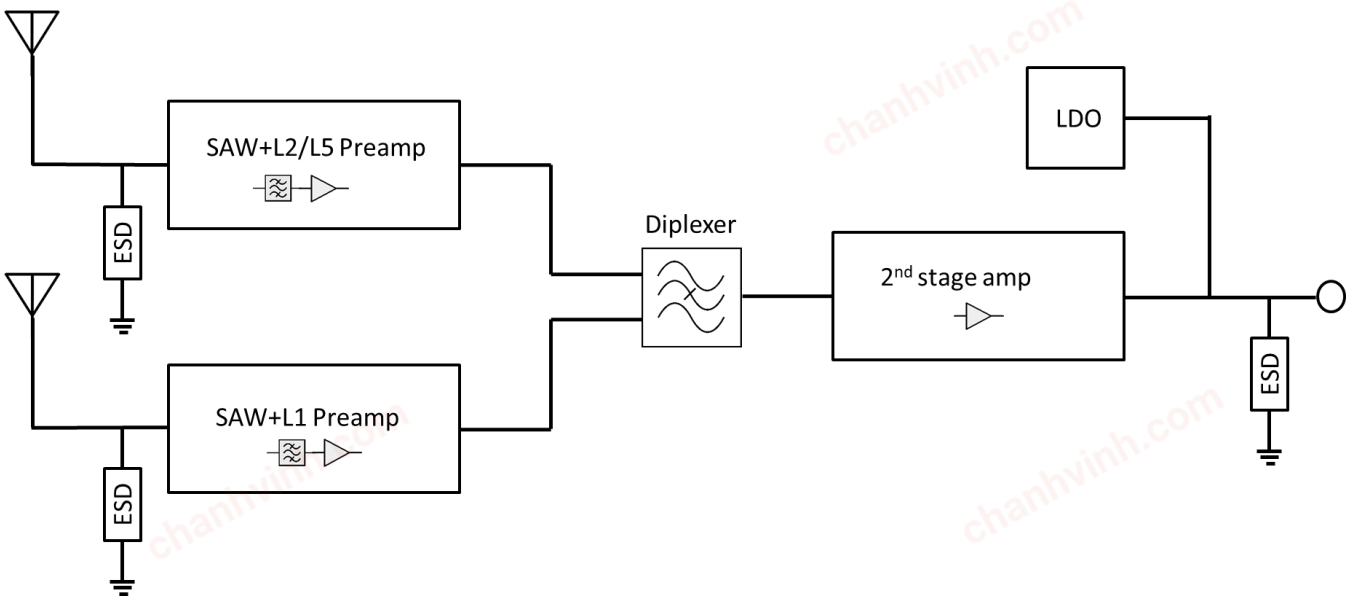
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Testing Setup

Module is tested on dia. 120mm ground plane.

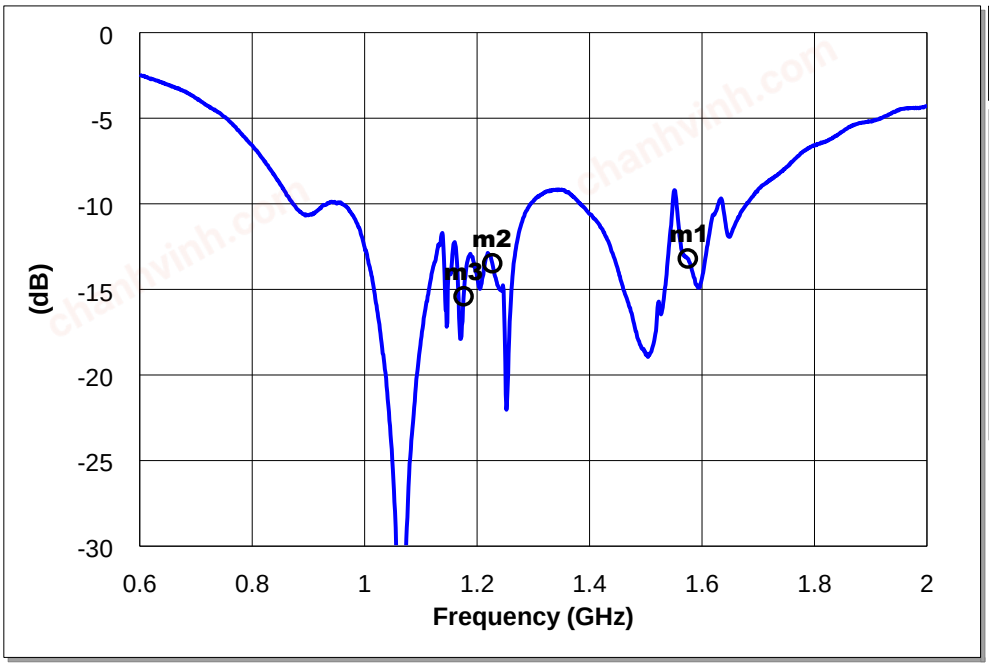


Active Antenna Block Diagram

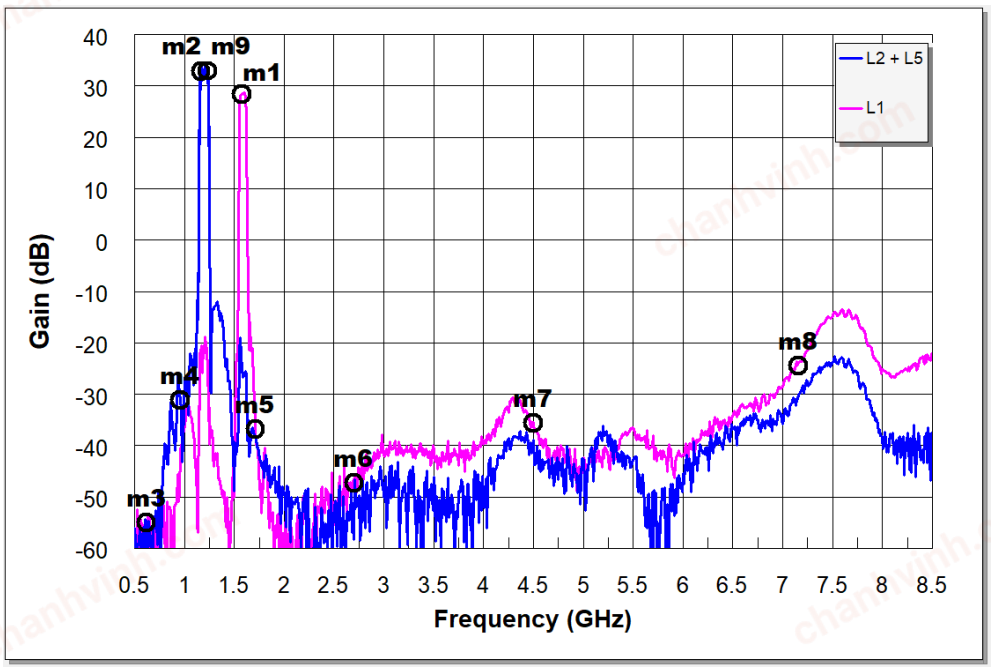


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Return Loss



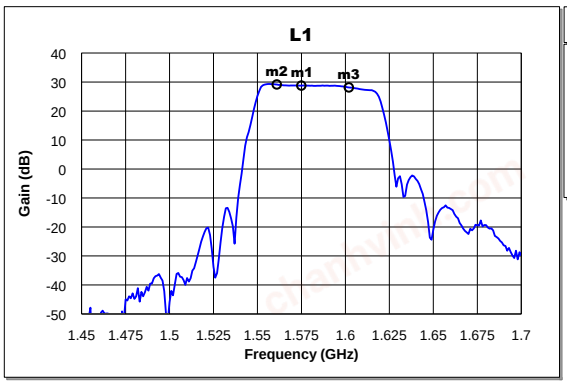
LNA Out of band rejection



m2: 1.176 GHz 32.37 dB	m1: 1.575 GHz 28.39 dB	m3: 0.617 GHz -54.90 dB	m4: 0.96 GHz -31.05 dB	m5: 1.71 GHz -36.76 dB
m6: 2.7 GHz -47.20 dB	m7: 4.5 GHz -35.52 dB	m8: 7.15 GHz -24.41 dB	m9: 1.227 GHz 32.92 dB	

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LNA Gain

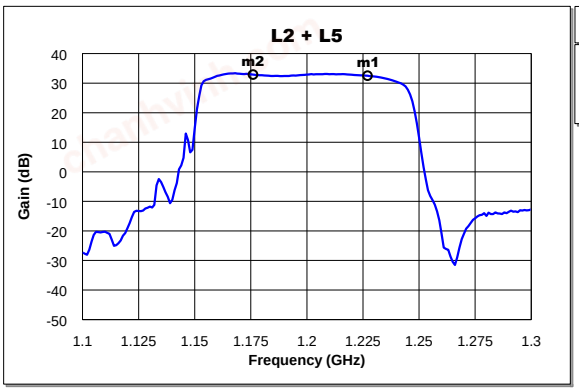


S21 GNSSL1L5

m1: 1.575 GHz 28.76 dB

m2: 1.561 GHz 29.13 dB

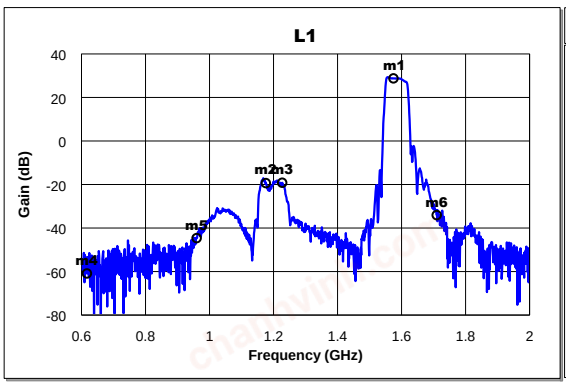
m3: 1.602 GHz 28.12 dB



S23 GNSSL1L2L5

m1: 1.227 GHz 32.52 dB

m2: 1.176 GHz 32.89 dB



S21 GNSSL1L2L5

m1: 1.575 GHz 28.76 dB

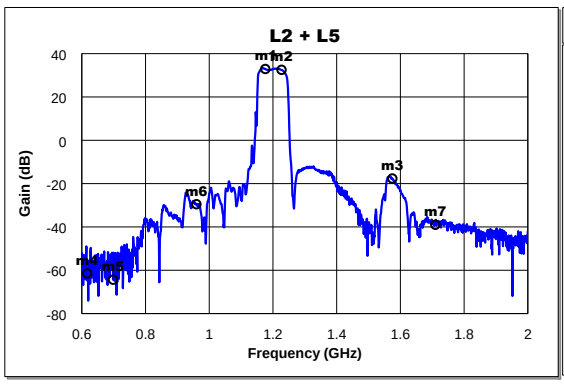
m2: 1.176 GHz -19.36 dB

m3: 1.227 GHz -19.19 dB

m4: 0.617 GHz -60.90 dB

m5: 0.96 GHz -44.66 dB

m6: 1.71 GHz -34.12 dB



S23 GNSSL1L2

m1: 1.176 GHz 32.89 dB

m2: 1.227 GHz 32.52 dB

m3: 1.575 GHz -17.66 dB

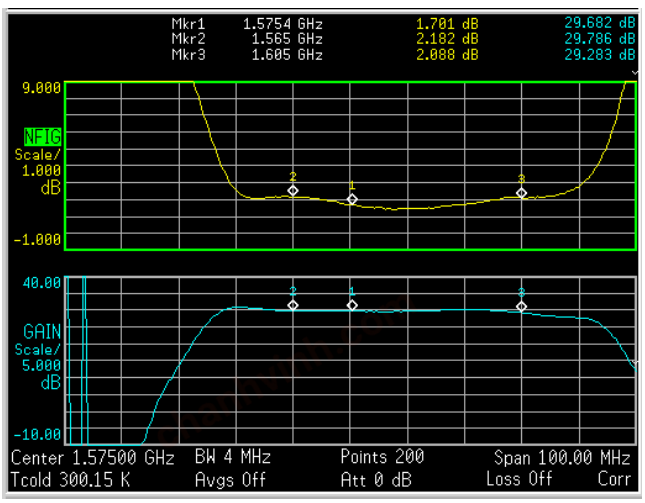
m4: 0.617 GHz -61.48 dB

m5: 0.698 GHz -64.38 dB

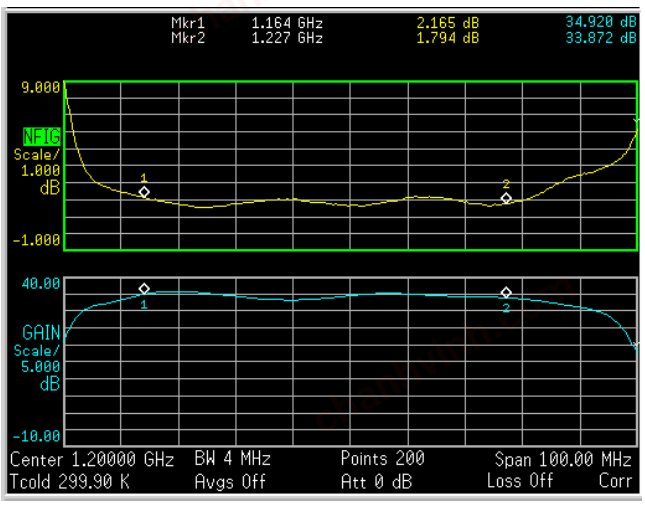
m6: 0.96 GHz -29.55 dB

m7: 1.71 GHz -39.04 dB

LNA Noise Figure



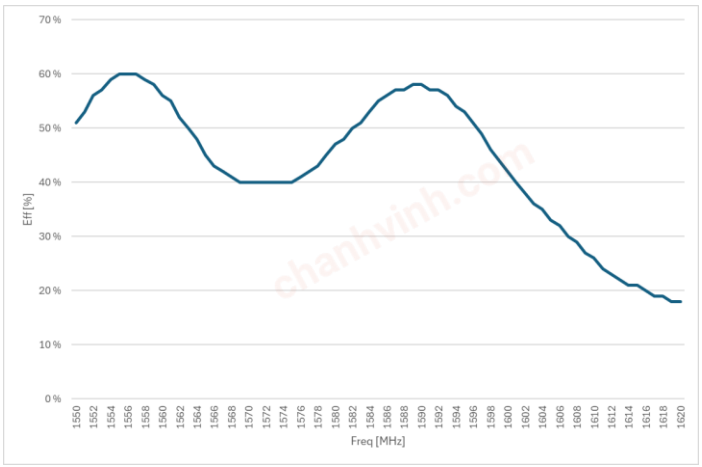
L1 Noise Figure



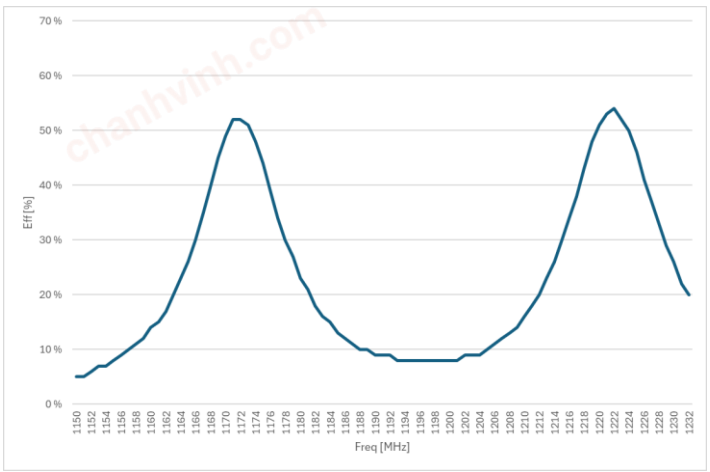
L2 + L5 Noise Figure

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Radiating Element Efficiency

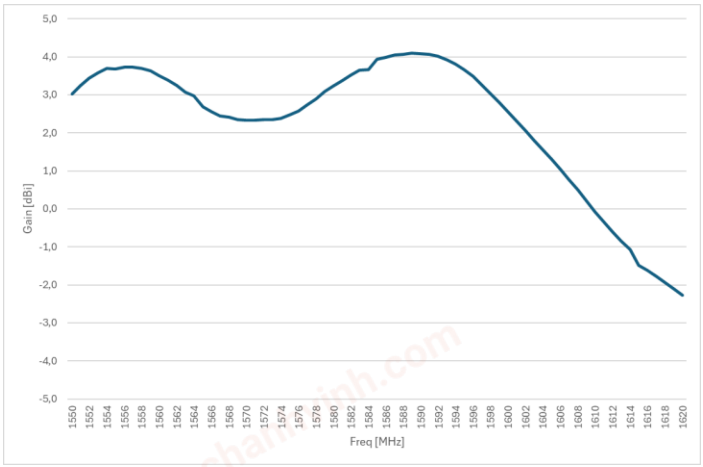


L1 Band

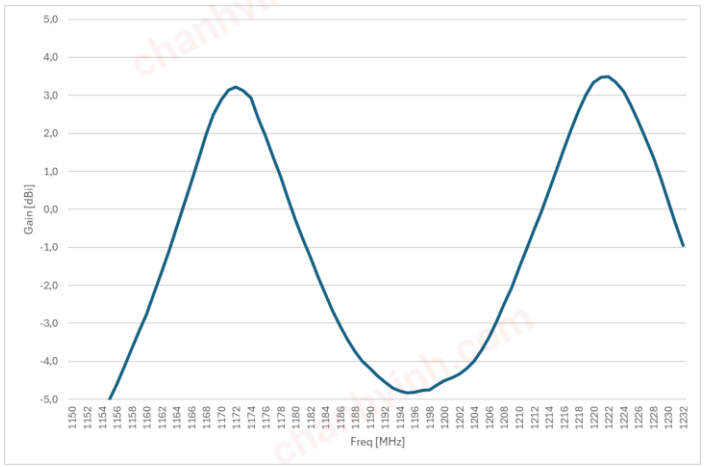


L2 + L5 Band

Radiating Element Peak Gain (Linear)



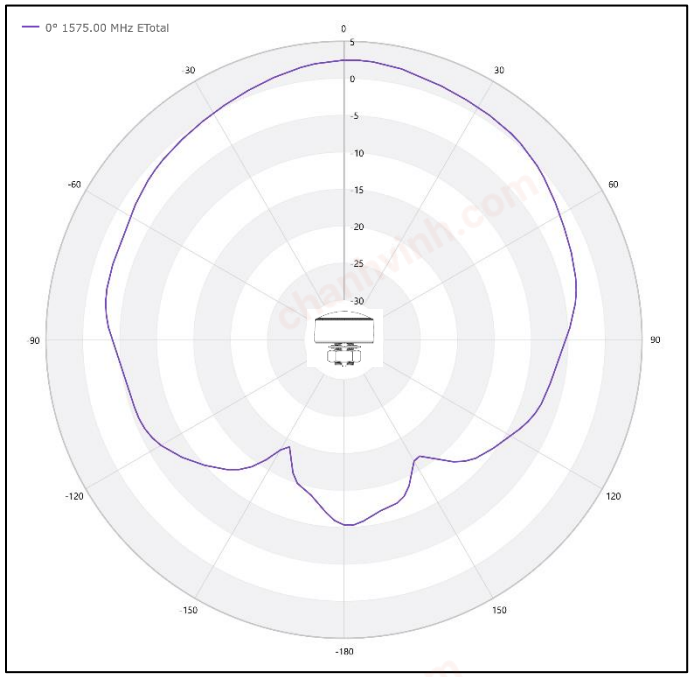
L1 Band



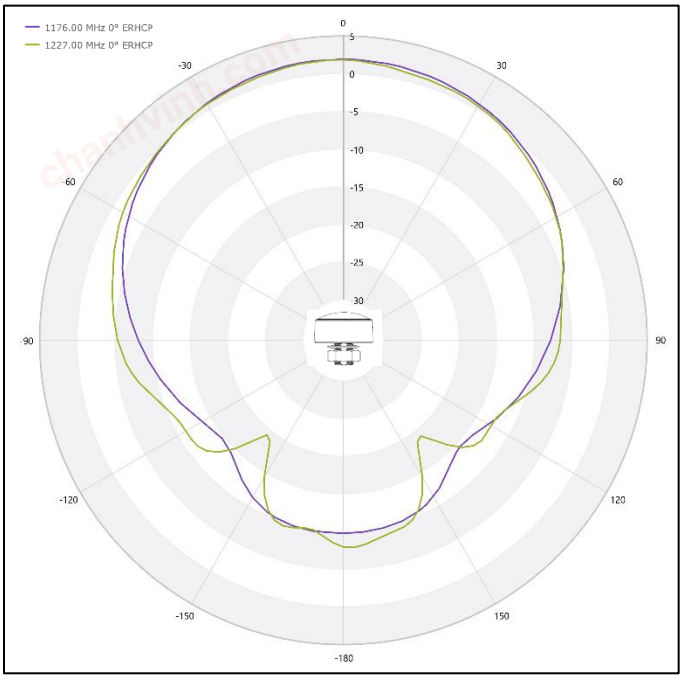
L2 + L5 Band

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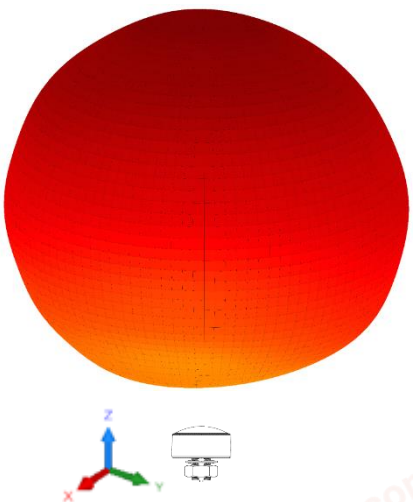
Radiation Patterns



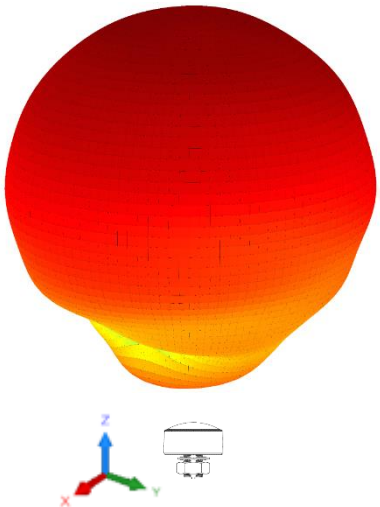
L1 Pattern



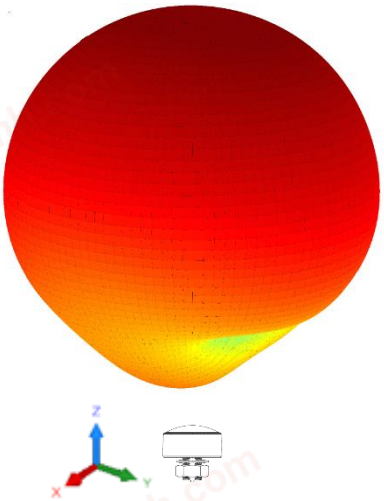
L2 + L5 Pattern



L1 3D RHCP Pattern
@1575 MHz



L2 3D RHCP Pattern
@1227 MHz



L5 3D RHCP Pattern
@1176 MHz

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Reliability Tests

Temperature change	-40℃ to +85 °C, MIL-STD 810G Method 503.5. 1.Room Temperature to -40 °C (2hours) 2.Storage for 2 hours at -40 °C 3. -40 °C to 85 °C (2hours) 4. Storage for 2 hours at 85 °C 5. 85 °C to -40 °C (2hours) 6.Repeat from 2 to 5 for 5 times 7. -40 °C increase to room temperature within 2 hours (Total 44 Hrs) No loss of function after tests.
Storage test	-40°C to +85°C, MIL STD 810G Method 501.5 (high) Method 502.5 (low) 1.Room Temperature to -40°C within 2 hours 2.Storage for 24 hours at -40°C; 3. -40°C to room temperature within 2 hours 4.Room Temperature to +85°C within 2 hours 5.Storage for 24 hours at 85°C; 6. 85°C room temperature within 2 hours(Total 56 Hrs) No loss of function after tests.
Shock test	1.Three shocks in each direction shall be applied along the three mutually perpendicular axes of the test specimen (18 shocks) 2.Peak value: 1,500g's 3.Duration: 0.5ms 4.Waveform: Half si. No loss of function after tests.
Drop test	Drop test (single device) for mounted device, the antenna needs to be fixed to PCB and then assemble PCBA into the covers for the test, please do the test with Armadillo antenna, only need the PCB and top/bottom cover for the tests.
Vibration test	Random vibration input of 60 min/axis, all three perpendicular axis. Transportation frequency 5-500 Hz using Fig 514.6C-I and Table 514.6-II of MIL STD 810G section 514.6, performed only upon customer request., no loss of function after tests.

Package

Each antenna wrapped in plastic bag
40 PCS/ carton box
Carton box dimensions (MM)：460x235x140

For More Information:
Americas - antennas.us@pulseelectronics.com | Europe – antennas.eu@pulseelectronics.com | Asia – antennas.as@pulseelectronics.com | Questions? +1-800-ANTENNA
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