**AANI-AP-0251**

Request Samples

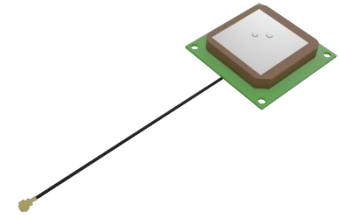


Check Inventory

**32 x 32 x 8.8 mm**
RoHS Compliant
MSL Level = 1

Description

This compact internal active GNSS L1 patch antenna measures just 32 x 32 x 8.8 mm, delivering precision multi-constellation positioning. Featuring a low axial-ratio of < 3.0 dB for excellent circular polarization, it provides a high LNA gain of 28 ± 3 dB with a noise figure < 2.0 dB for superior signal sensitivity. Low current consumption of 5 ± 2 mA and customizable cable/connector options enable flexible integration. This RoHS-compliant, MSL Level 1 antenna is ideal for asset tracking, fleet management, UAVs, autonomous vehicles, mission-critical timing, and geofencing applications.



Features

- Active GPS/GLONASS/BeiDou/Galileo Antenna Module
- Size: 32 x 32 x 8.8 mm
- Low Axial-Ratio: < 3.0 dB
- High LNA Gain: 28 ± 3 dB
- Low Noise Figure: 1.5dB (Typ.) / 2.0 dB (Max.)
- Low Current Consumption: 5 ± 2 mA
- Screw Mount
- Custom Cable & Connector Options Available
- [RoHS Compliant](#) | [MSL Level 1](#)

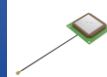
Applications

- Asset Tracking
- Fleet Management
- Micro-Mobility Solutions
- UAVs, Robotics & Autonomous Vehicles
- Precision GNSS Positioning
- Mission-Critical GNSS Timing
- Geofencing

Ordering Information

Part Number	Description
AANI-AP-0251-1	GNSS L1 Internal Active Patch Antenna with 100 mm cable and MHF1 connector

Note: Other options not listed may be available upon request via [Abracon online support](#)

**AANI-AP-0251**

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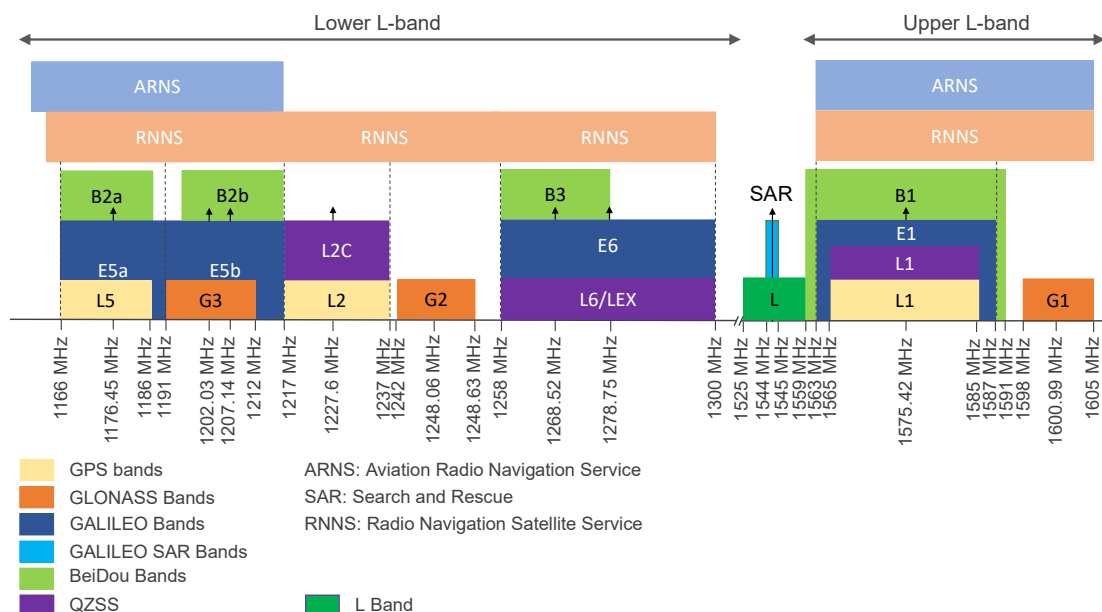
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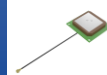
32 x 32 x 8.8 mm
RoHS Compliant
MSL Level = 1

GNSS Frequency Bands Covered

GPS	L1 1575.42MHz	L2 1227.6MHz	L5 1176.45MHz	
	■	□	□	
GLONASS	G1 1598.06-1609.31MHz	G2 1242.93-1251.68MHz	G3 1202.025MHz	
	■	□	□	
Galileo	E1 1575.42MHz	E5a 1176.45MHz	E5b 1201.5MHz	E6 1278.75MHz
	■	□	□	□
BeiDou	B1I 1561MHz	B2a 1176.45MHz	B2/B2b 1207.14MHz	B3I 1268.52MHz
	■	□	□	
QZSS	L1 1575.42MHz	L2 1227.6MHz	L5 1176.45MHz	L6 1278.75MHz
	■	□	□	□
IRNSS/NAVIC			L5 1176.45MHz	
			□	
SBAS	L1/E1/B1 1575.42MHz		L5/B2a/E5a 1176.45MHz	
	■		□	



Frequency allocation: GNSS systems, upper L bands and lower L bands

**AANI-AP-0251**

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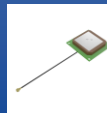
Check Inventory


32 x 32 x 8.8 mm
RoHS Compliant
MSL Level = 1

Electrical Specification

Parameters		Min.	Typ.	Max.	Units	Note
Antenna						
Frequency		GPS: L1 GLONASS: G1 GALILEO: E1 BEIDOU: B1I QZSS: L1 SBAS: L1				1559 – 1606 MHz
VSWR		≤ 2.0			-	
Polarization		RHCP			-	(Right Hand Circular Polarization)
Nominal Impedance		50			Ω	
Peak Gain	1563-1588 MHz (L1/E1)	1.4	2.6	3.7	dBic	dBi = dBic + 3dB
	1598-1606 MHz (G1)	2.5	2.9	3.4		
	1559-1563 MHz (B1I)	0.7	1.0	1.4		
Efficiency	1563-1588 MHz (L1/E1)	57	78	80	%	
	1598-1606MHz (G1)	49	56	64		
	1559-1563MHz (B1I)	57	61	64		
Axial Ratio		≤ 3.0			dB	
LNA						
VSWR		≤ 2.0			-	
DC Input		1.8 - 5.5			V	
Gain	1545-1610MHz	28 ± 3			dB	
Current Consumption		5 ± 2			mA	
Noise Figure		≤ 2.0			dB	

Please note: All measurement data is based on 70 × 70 mm ground plane (conducted in free space unless otherwise specified).

**AANI-AP-0251**

Request Samples



Check Inventory

**32 x 32 x 8.8 mm**
RoHS Compliant
MSL Level = 1

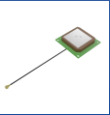
Mechanical Specification

Parameter	Specification
Antenna Dimension	32 x 32 x 8.8 mm
Mounting Type	Screw Mount
RF Connector ⁽¹⁾	IPEX MHF1 / u.FL
Cable Type ⁽¹⁾	Ø 1.13 mm
Cable Length ⁽¹⁾	100 mm

(1): Fully customizable RF Cable & Connector

Environmental Specification

Parameter	Specification
Operating Temperature	-40°C to +85°C
Storage Temperature	-40°C to +85°C
RoHS Compliance	Yes
Vibration	Sine sweep 1g(0-p), 10~55~10Hz each axis
Relative Humidity	Up to 95%



AANI-AP-0251

Request Samples

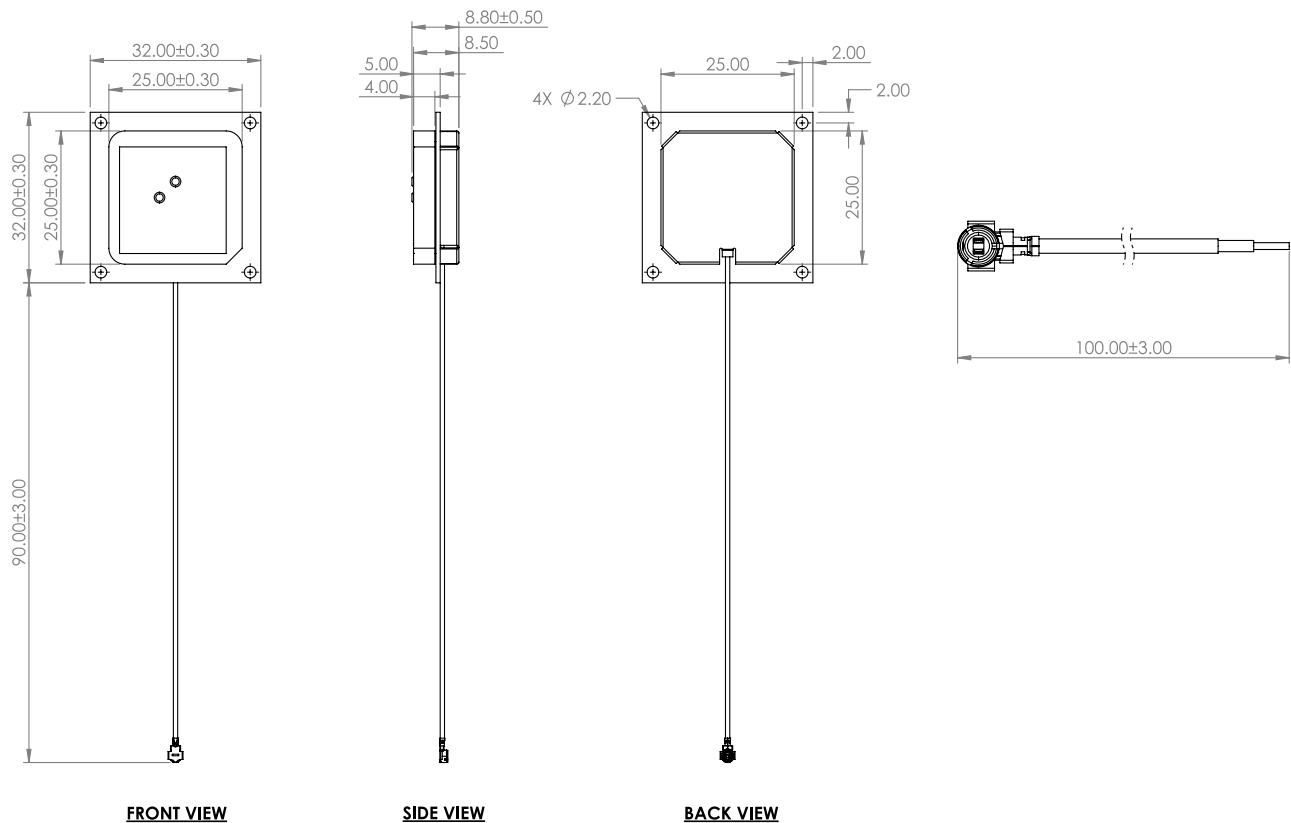


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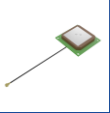


32 x 32 x 8.8 mm
RoHS Compliant
MSL Level = 1

Product Dimension



Unit: mm



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Request Samples

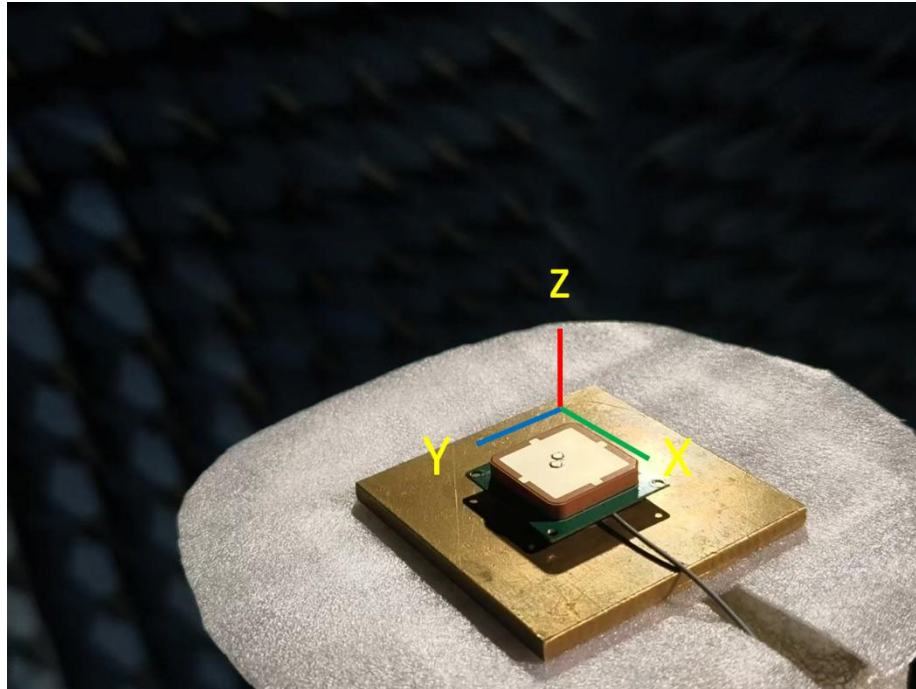


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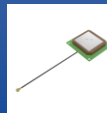
32 x 32 x 8.8 mm
RoHS Compliant
MSL Level = 1

Measurement Setup



GNSS Block Diagram

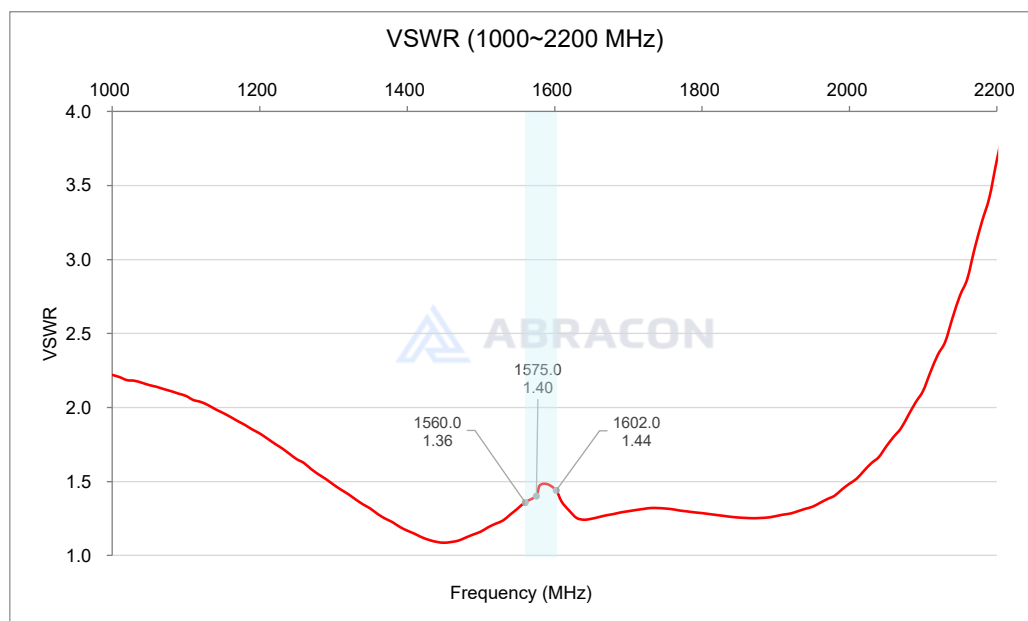
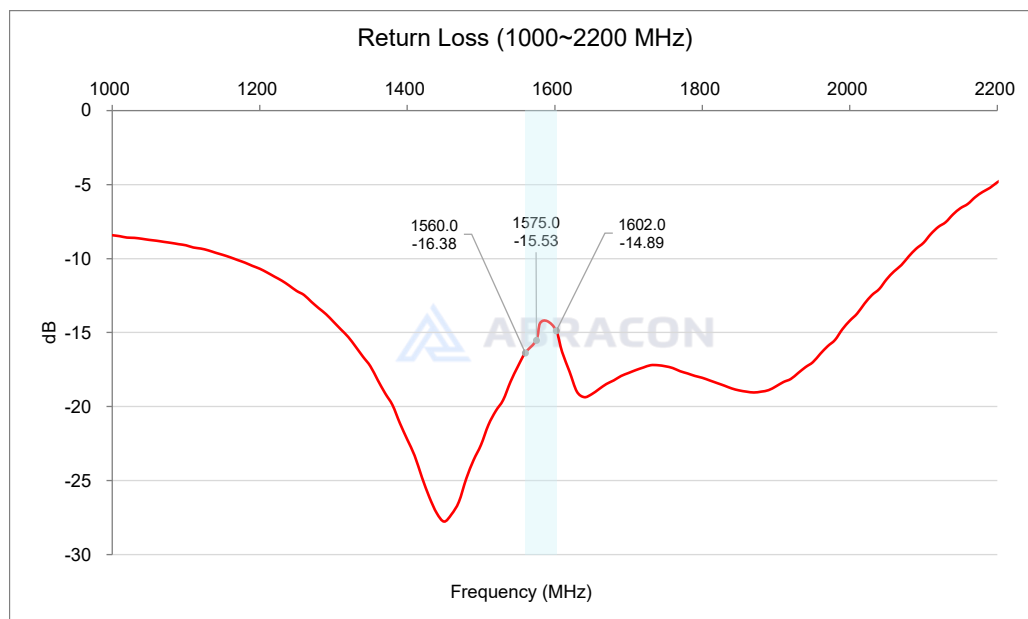


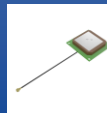
**AANI-AP-0251**

Request Samples



Check Inventory

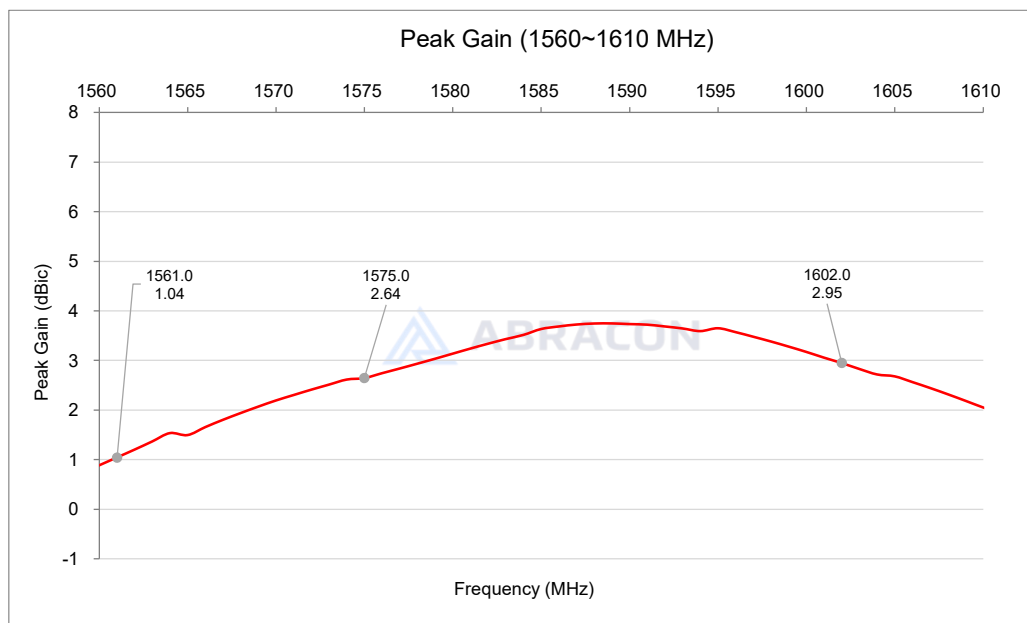
**32 x 32 x 8.8 mm**
RoHS Compliant
MSL Level = 1**Reflection Characteristics – Return Loss & VSWR**

**AANI-AP-0251**

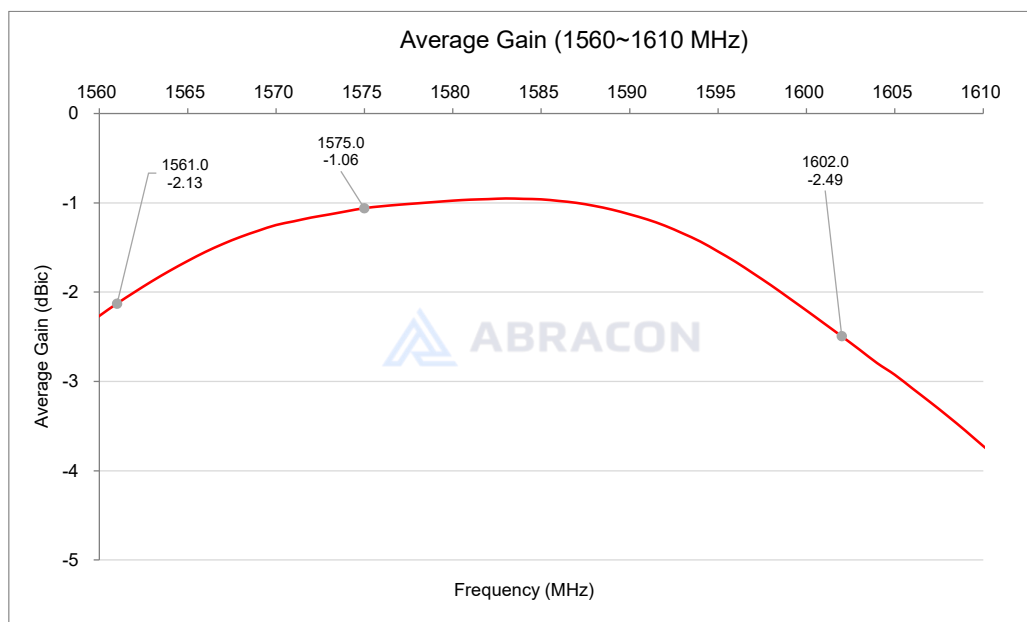
Request Samples

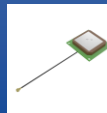


Check Inventory

**32 x 32 x 8.8 mm**
RoHS Compliant
MSL Level = 1**Radiation Characteristics –Passive Gain**

Note: dBi = dBic + 3dB

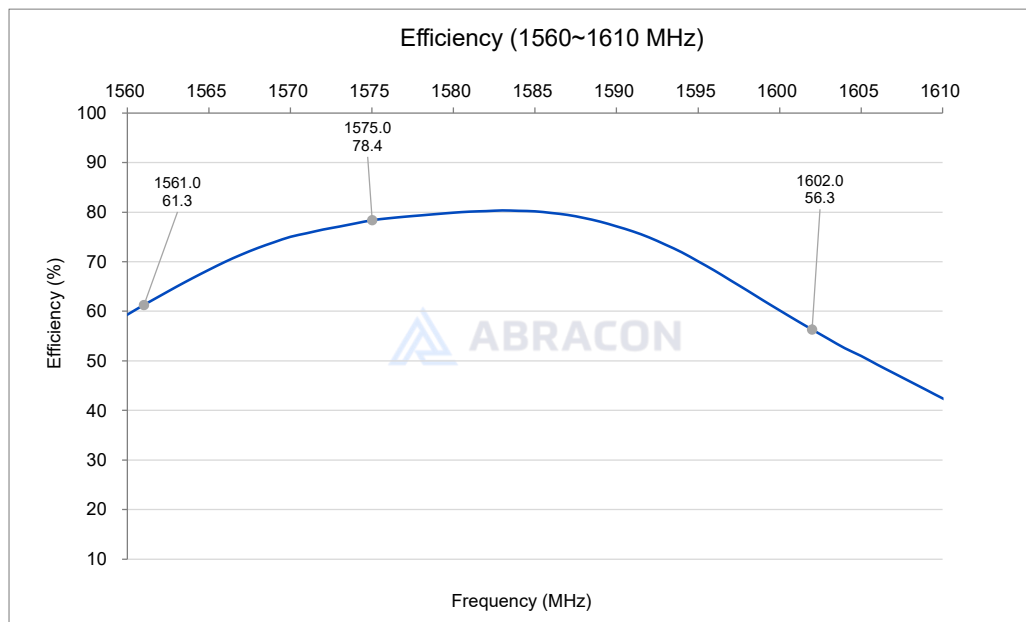
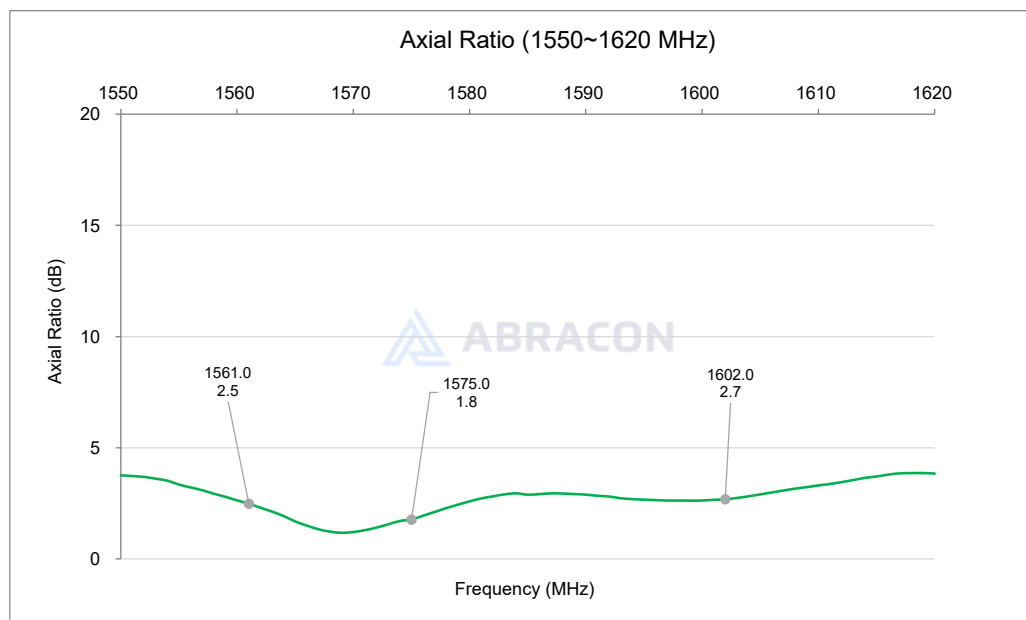


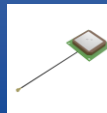
**AANI-AP-0251**

Request Samples



Check Inventory

**32 x 32 x 8.8 mm**
RoHS Compliant
MSL Level = 1**Radiation Characteristics –Passive Efficiency****Radiation Characteristics –Axial Ratio**

**AANI-AP-0251**

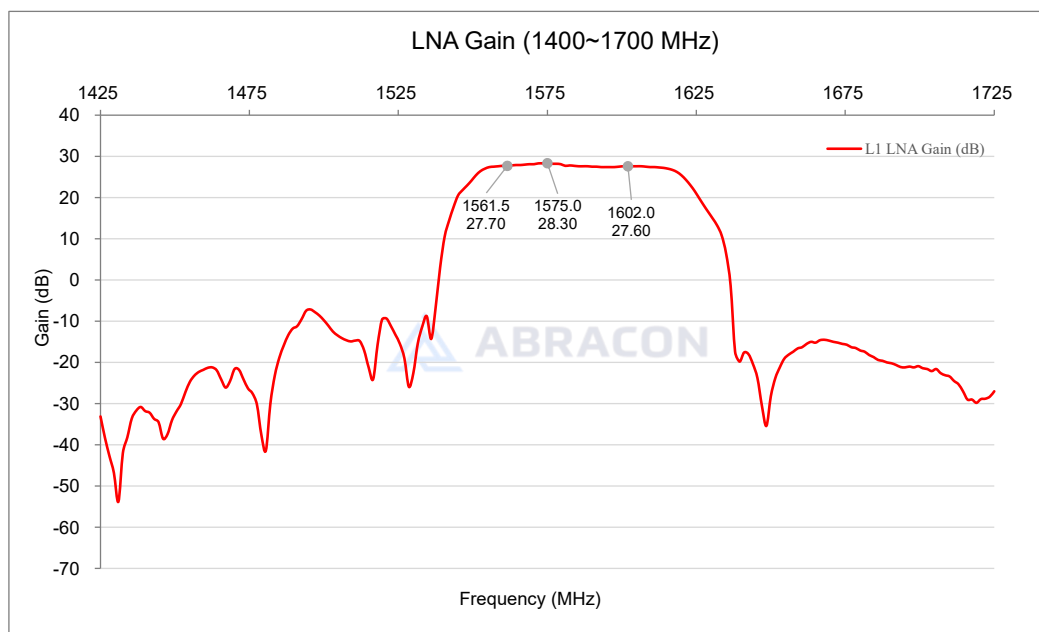
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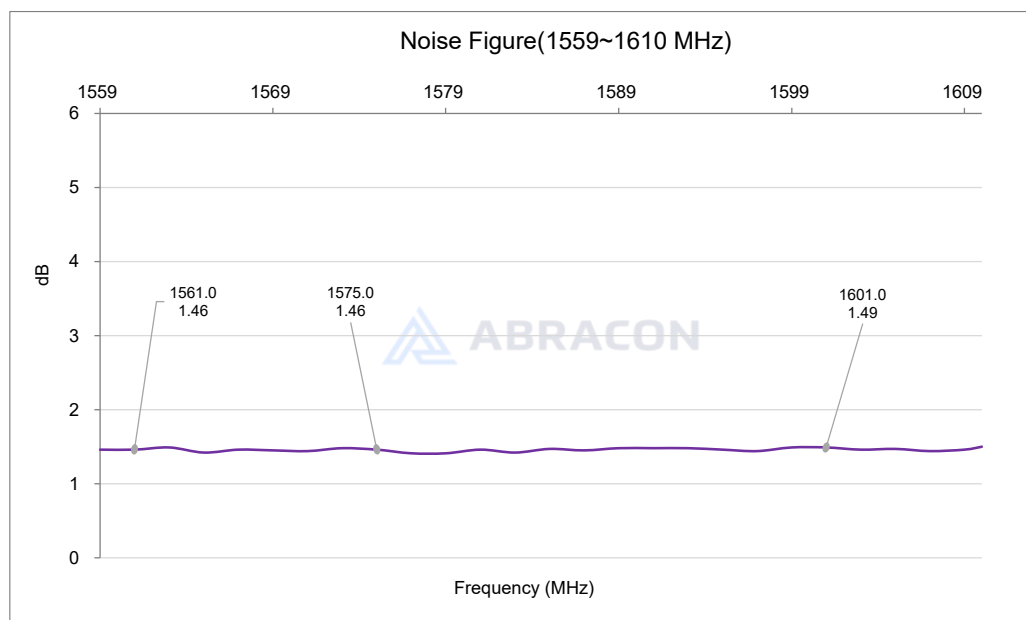
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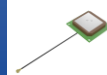
**32 x 32 x 8.8 mm**
RoHS Compliant
MSL Level = 1

LNA Characteristics –LNA Gain



LNA Characteristics –Noise Figure





AANI-AP-0251

Request Samples



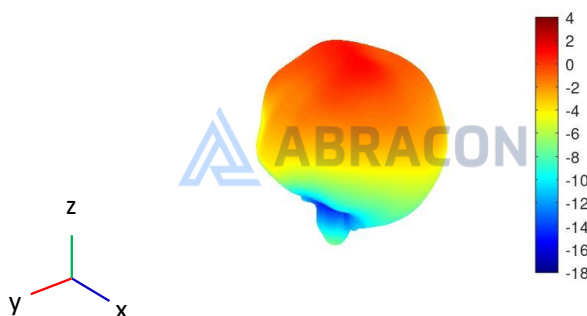
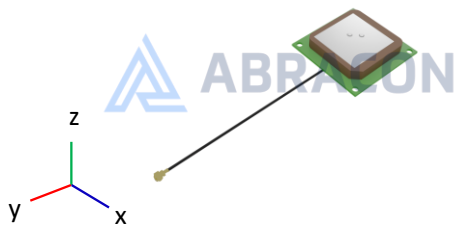
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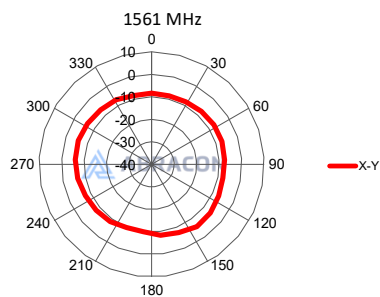
32 x 32 x 8.8 mm
RoHS Compliant
MSL Level = 1

Radiation Characteristics – 3D & 2D Pattern

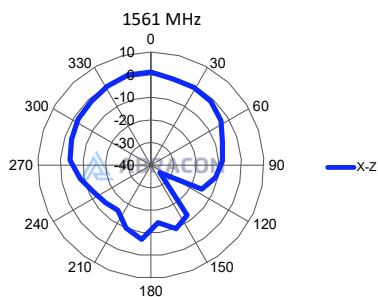
1561MHz



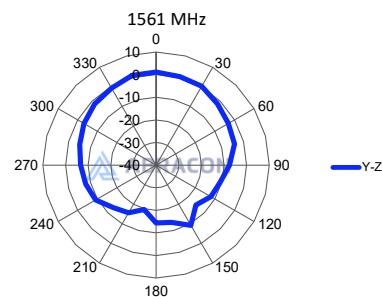
XY plane



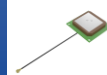
XZ plane



YZ plane



GNSS L1 Internal Active Patch Antenna



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Request Samples

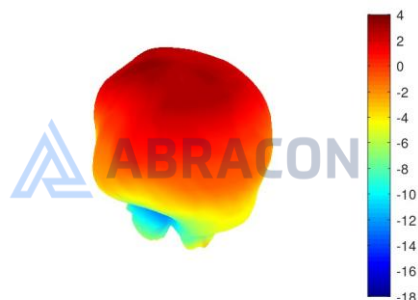
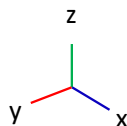
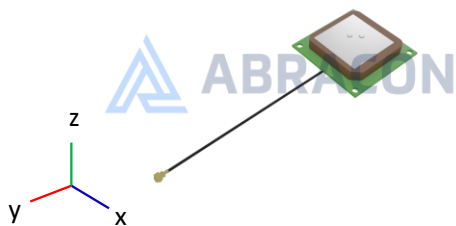


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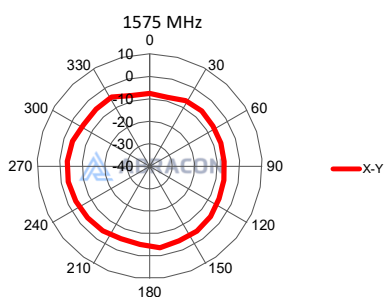


32 x 32 x 8.8 mm
RoHS Compliant
MSL Level = 1

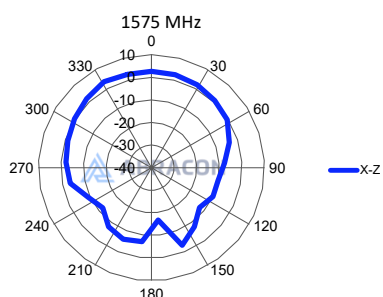
1575MHz



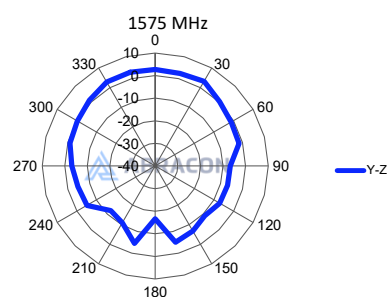
XY plane



XZ plane



YZ plane

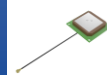


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GNSS L1 Internal Active Patch Antenna



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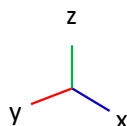
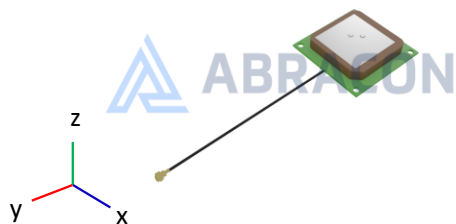


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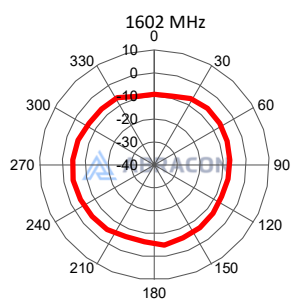


32 x 32 x 8.8 mm
RoHS Compliant
MSL Level = 1

1602MHz

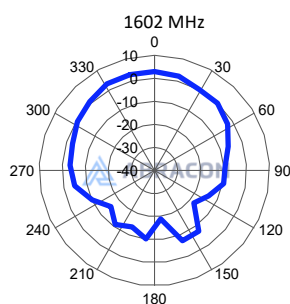


XY plane



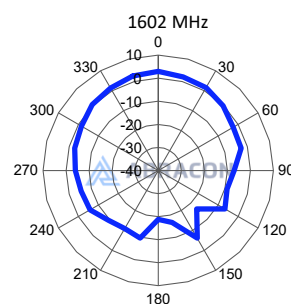
X-Y

XZ plane



X-Z

YZ plane



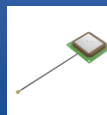
Y-Z



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32 x 32 x 8.8 mm
RoHS Compliant
MSL Level = 1

Packaging

20 pcs per tray

4 trays per vacuum bag

4 vacuum bags per carton

320 pcs antennas per carton

Dimensions: 345 x 210 x 275 mm

ATTENTION: Abracon LLC's products are Commercial-Off-The-Shelf ('COTS'), which are designed, intended, and validated for use in commercial, industrial, and automotive applications. The customer is responsible for testing and verifying the performance of an Abracon solution to meet their system-level requirements.



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