



AANE-AH-0161

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Ø33 x 45.8 mm

RoHS Compliant

MSL Level = 1

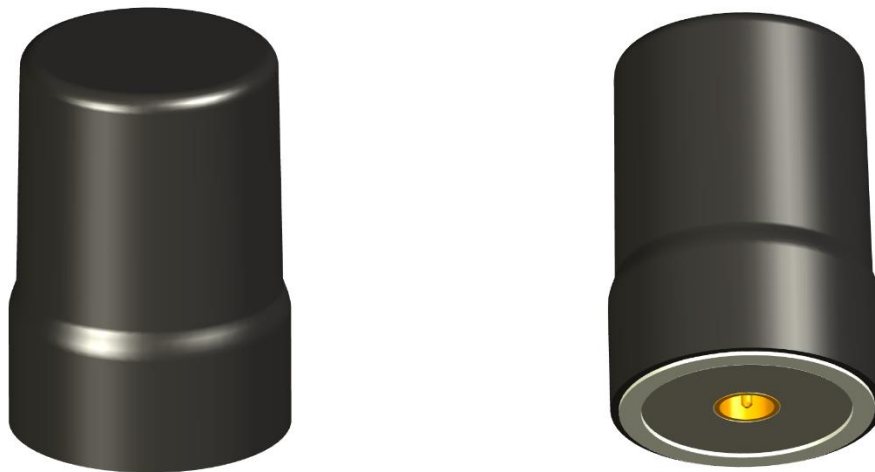
Features

- Multiband Multi-Constellation Active GNSS Antenna
 - GPS: L1/L2/L5
 - GLONASS: G1/G2/G3
 - GALILEO: E1/E5a/E5b
 - BEIDOU: B1I/B2I/B3I/B1C/B2a/B2b
 - IRNSS: L5
 - SBAS: L1/L5
 - L-Band
- High LNA Gain of 33±2 dB with Low Noise Figure
- Centimeter Phase Center Repeatability
- Invariant Performance from 3.3 to 12 VDC
- Extremely Light (≤20g) with IP65 Housing

Applications

- Precision Land Survey Positioning
- Surveying and Mapping Systems
- Precision GNSS Positioning
- Autonomous Driving and UAVs
- Mission-Critical GNSS Timing
- Geofencing

Product Image



Full-Band (L1/L2/L5 + L-band) Full-Constellation GNSS Helix Antenna



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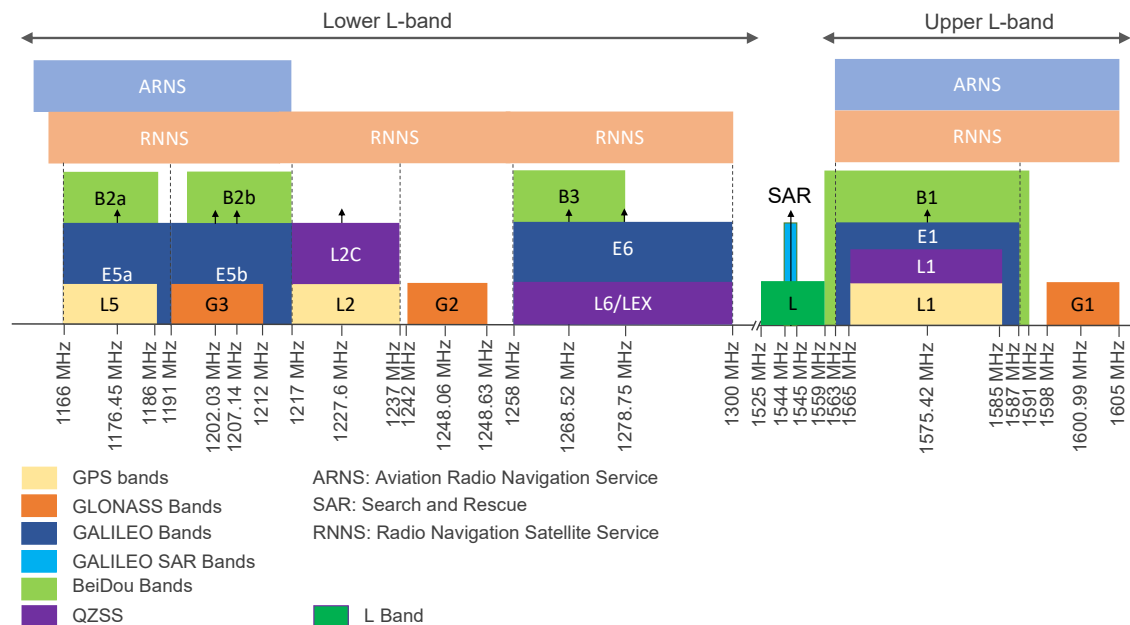
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GNSS Frequency Bands Covered

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	B1C 1575.42MHz	B2b 1207.14MHz	B2a 1176.45MHz	B3 1268.52MHz	B1I 1561MHz
	■	■	■	■	■
L-Band	L-Band 1542MHz				
	■				
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



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Electrical Specification

Parameters		Typ.			Units	Note
Antenna						
Frequency		GPS: L1/L2/L5GLONASS: G1/G2/G3 GALILEO: E1/E5a/E5b BEIDOU: B1I/B2I/B3I/B1C/B2a/B2b QZSS: L1/L2/L5/L6 IRNSS: L5 SBAS: L1/L5 L-Band				
VSWR		≤ 2			-	
Polarization		RHCP			-	(Right Hand Circular Polarization)
Nominal Impedance		50			Ω	
Gain RHCP (maximum)	1575.42MHz (L1)	2.6			dBic	
	1227.60MHz (L2)	2.5				
	1176.45MHz (L5)	-4.2				
	L-Band	-0.8				
Axial Ratio	1575.42MHz (L1)	0.6			dB	
	1227.60MHz (L2)	0.5				
	1176.45MHz (L5)	0.1				
	L-Band	0.6				
PCO	L1	26.8			mm	
	L2	26.8				
PCV		< 1.5			mm	
LNA						
Noise Figure		≤ 1.2			dB	
Gain		33±2			dB	
Passband Ripple		±2			dB	
VSWR		≤ 2.0			-	
Operating Voltage		3.3	5	12	V	
Current Consumption		29	29	29	mA	
Differential Propagation Delay		≤ 5			ns	
Out-Of-Band Rejection						
< 1400MHz		> 33			dB	Upper band
> 1700MHz		>30				
< 1000MHz		>41				
< 1130MHz		>28				Lower band

Please note: All measurement data is based on the standard configuration (conducted in free space unless otherwise specified).

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Mechanical Specifications

Parameter	Specification
Antenna Dimension	Ø33 x 45.8 mm
Weight	≤20g
Mounting Type	Connector Mount
RF Connector	SMA (M)

(1): UV Resistant optional

Environmental Specification

Parameter	Specification
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +85°C
RoHS Compliance	Yes
ESD Circuit Protection	15kV Air Discharge
Relative Humidity	Up to 95%
Ingress Protection	IP65 (when mounted)

Full-Band (L1/L2/L5 + L-band) Full-Constellation GNSS Helix Antenna



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Ordering Information

Part Number	Description	Connector Option
AANE-AH-0161-1	Full-Band (L1/L2/L5 + L-band) Full-Constellation GNSS Helix Antenna Black with UV coating and SMA (M) connector	SMA (M)

Note: Different cable and connector configurations that are not listed may be available upon request via [Abracon online support](#)



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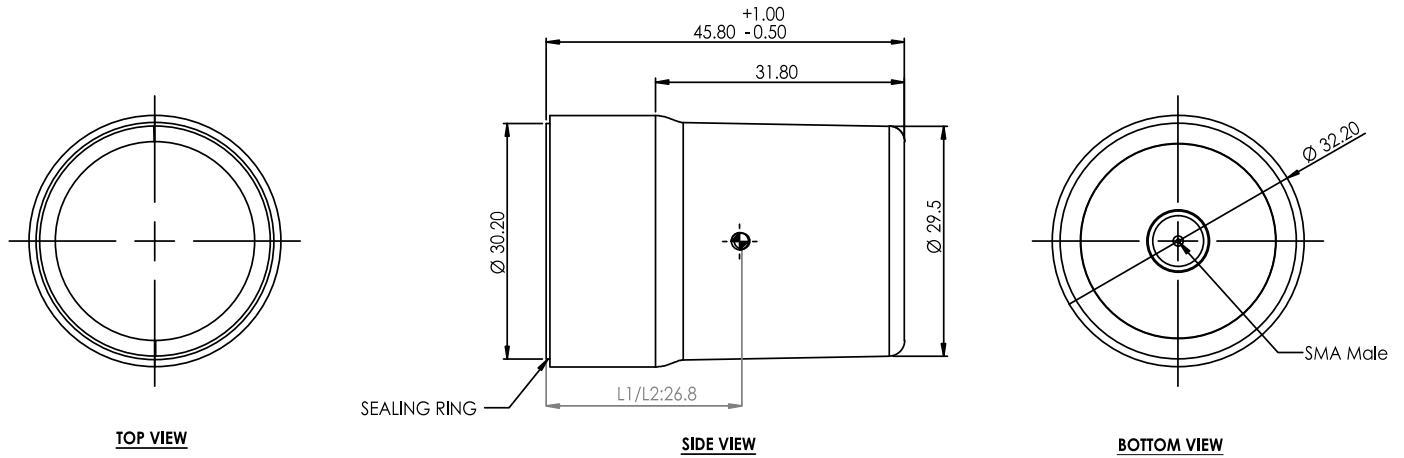


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Ø33 x 45.8 mm
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Product Dimension



Antenna phase center offset: L1/L2:26.8mm

Unit: mm

Full-Band (L1/L2/L5 + L-band) Full-Constellation GNSS Helix Antenna



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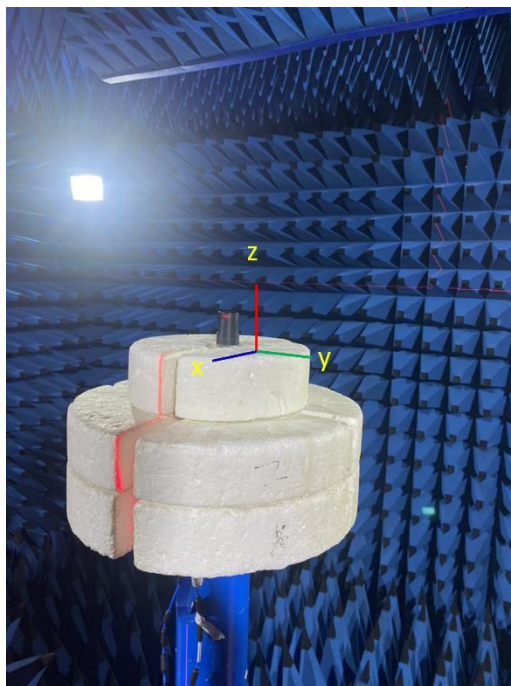


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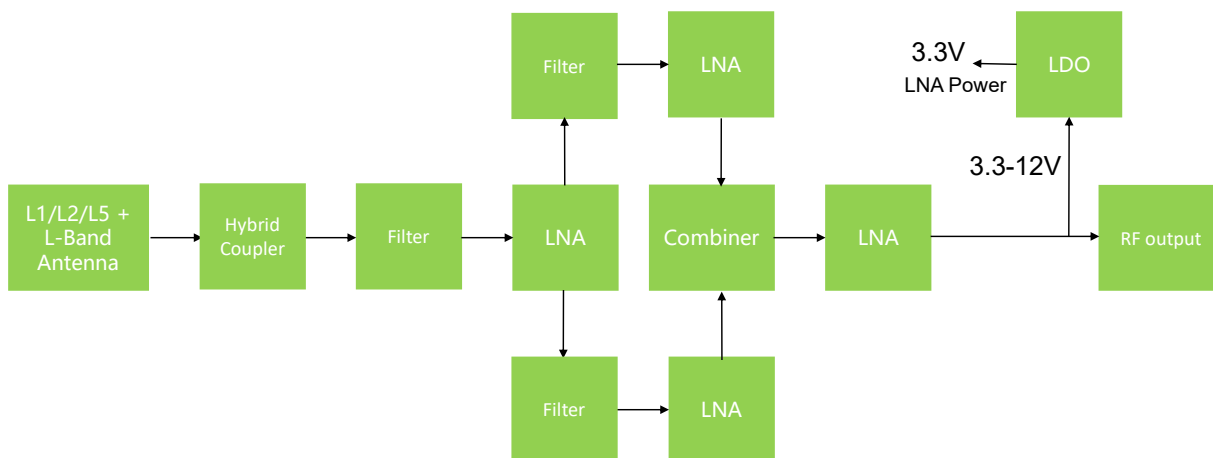


Ø33 x 45.8 mm
RoHS Compliant
MSL Level = 1

Measurement Setup



GNSS Block Diagram





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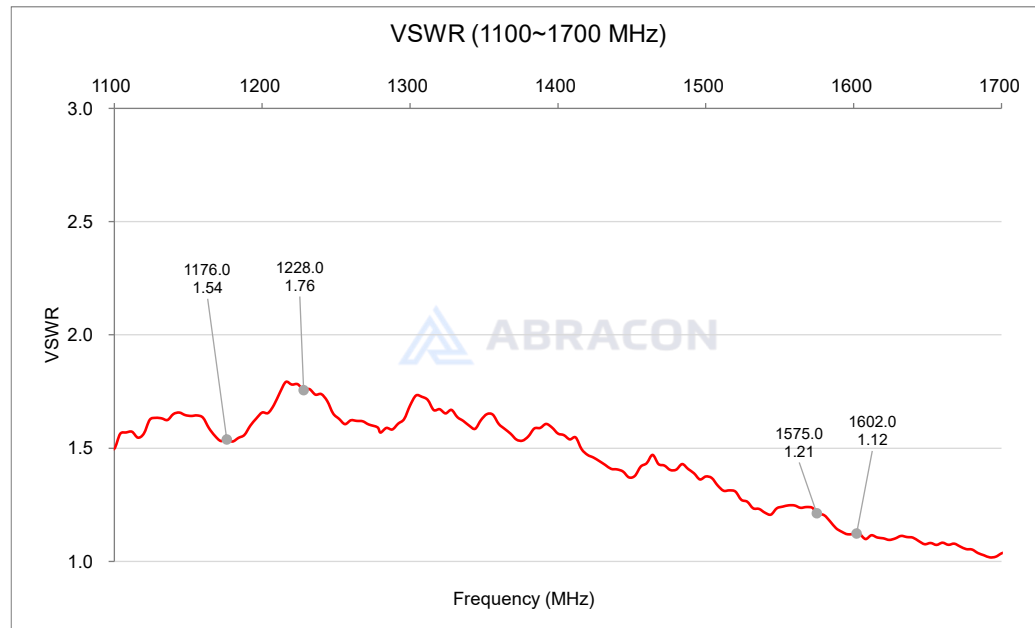
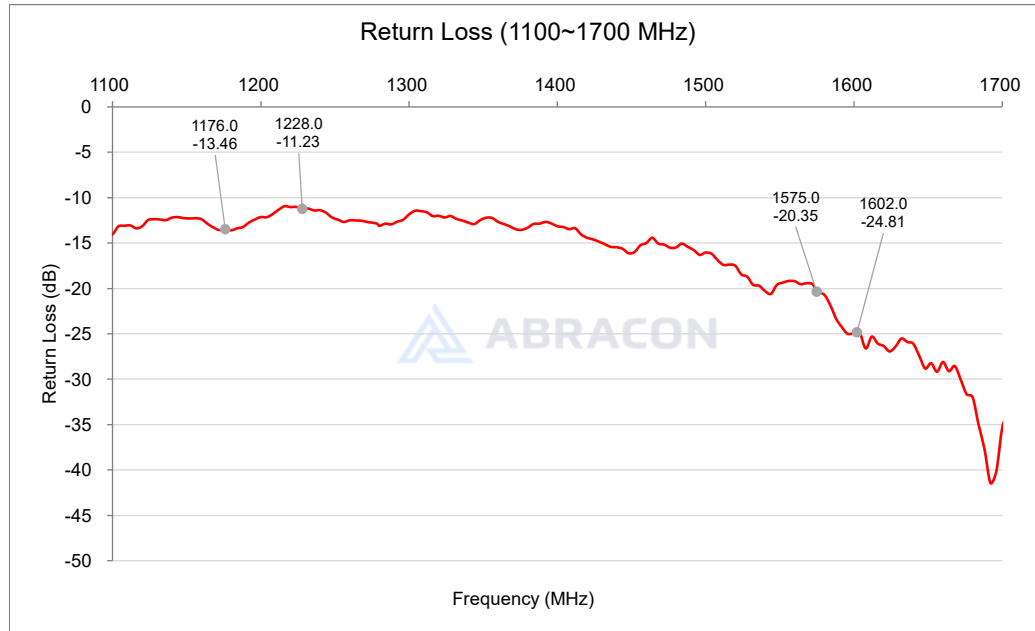


Ø33 x 45.8 mm

RoHS Compliant

MSL Level = 1

Reflection Characteristics – Return Loss & VSWR





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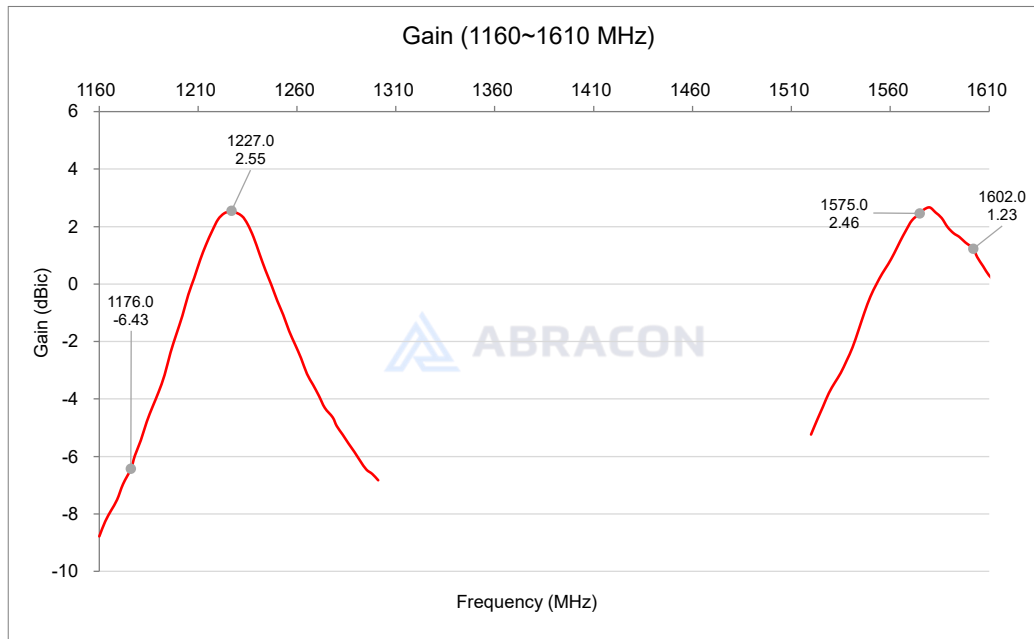


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Ø33 x 45.8 mm
RoHS Compliant
MSL Level = 1

Radiation Characteristics –Passive Peak Gain





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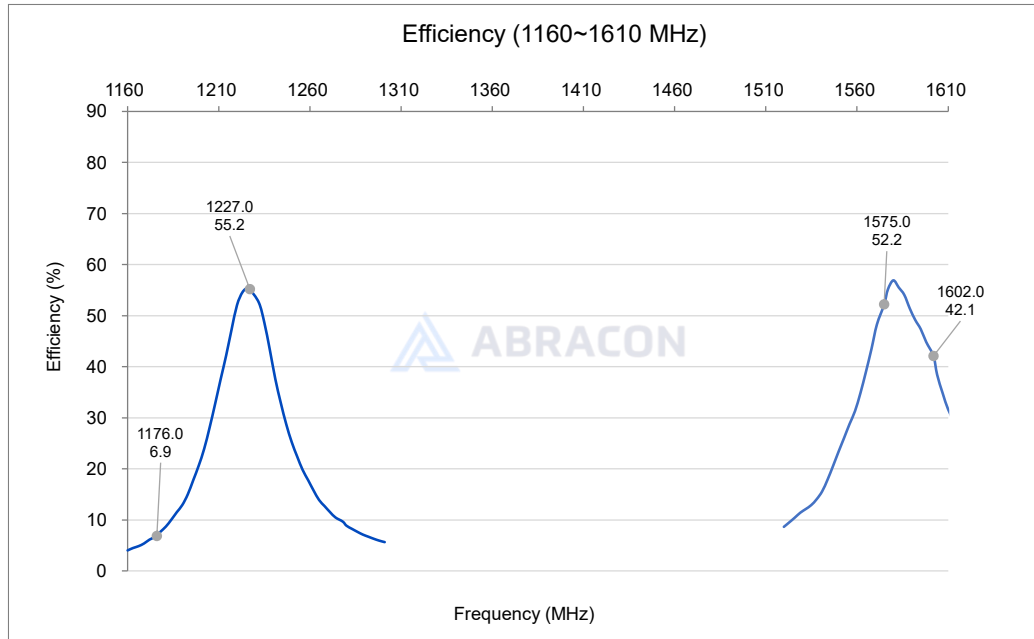


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Ø33 x 45.8 mm
RoHS Compliant
MSL Level = 1

Radiation Characteristics –Passive Efficiency





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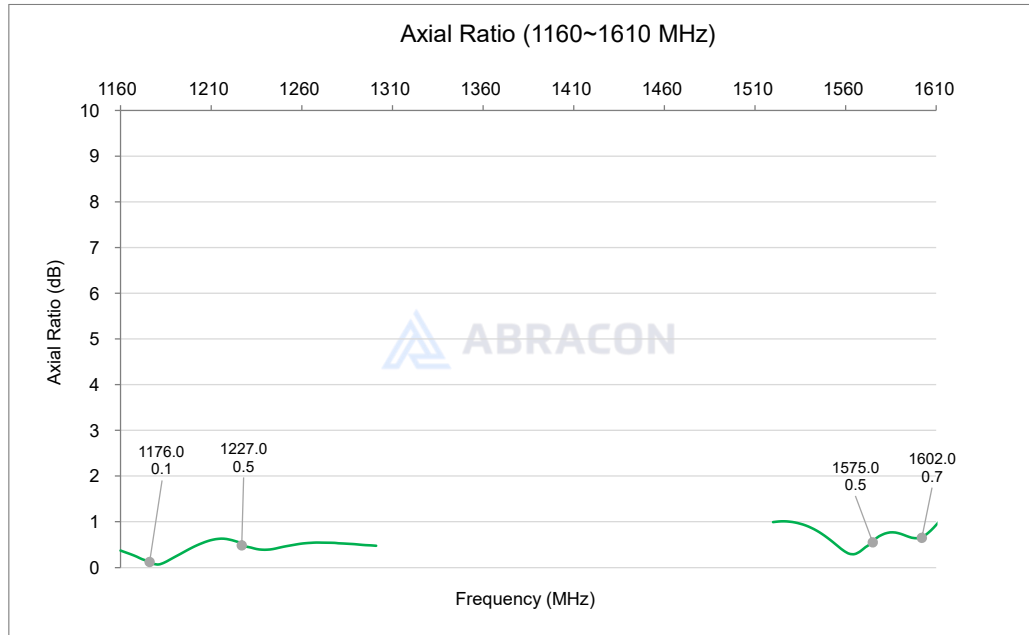


Ø33 x 45.8 mm

RoHS Compliant

MSL Level = 1

Radiation Characteristics –Axial Ratio





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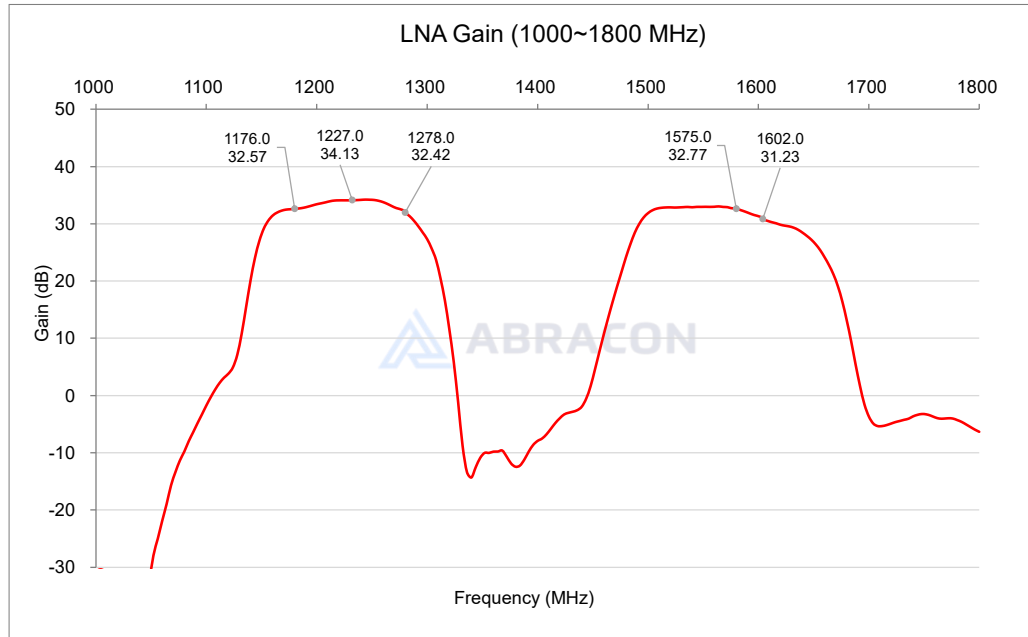


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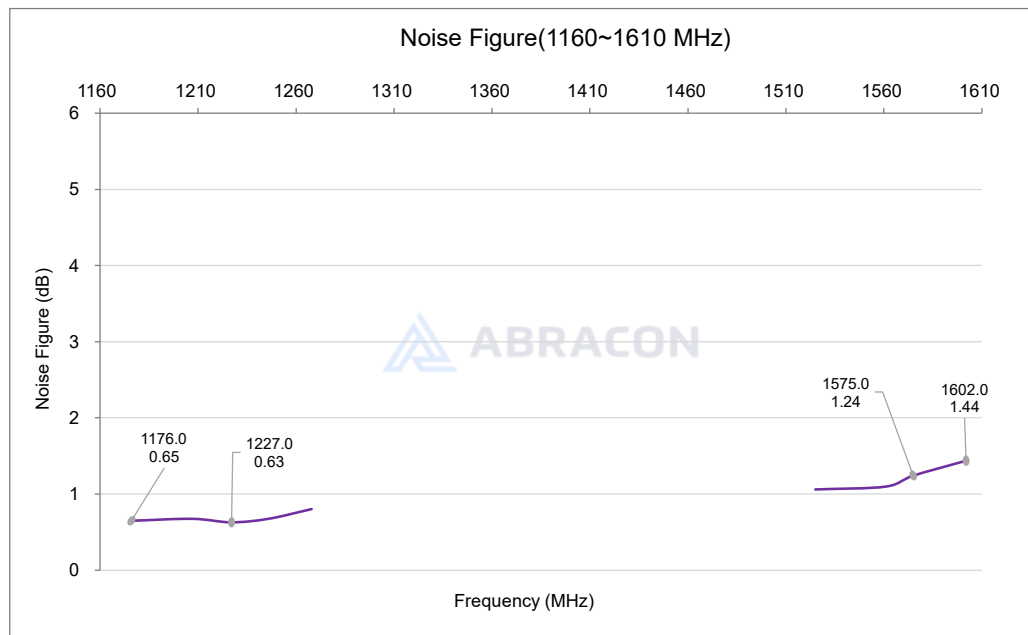


Ø33 x 45.8 mm
RoHS Compliant
MSL Level = 1

LNA Characteristics –LNA Gain



LNA Characteristics –Noise Figure





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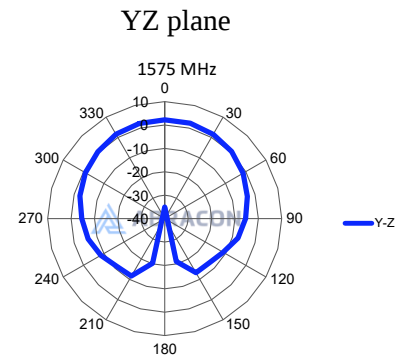
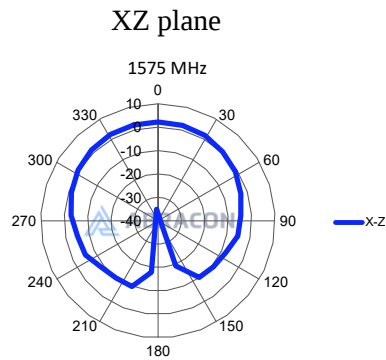
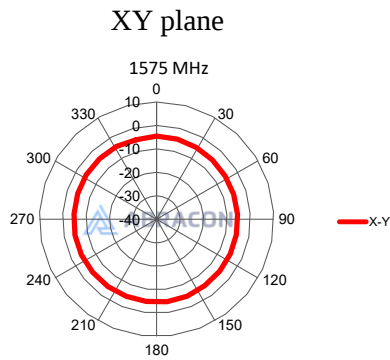
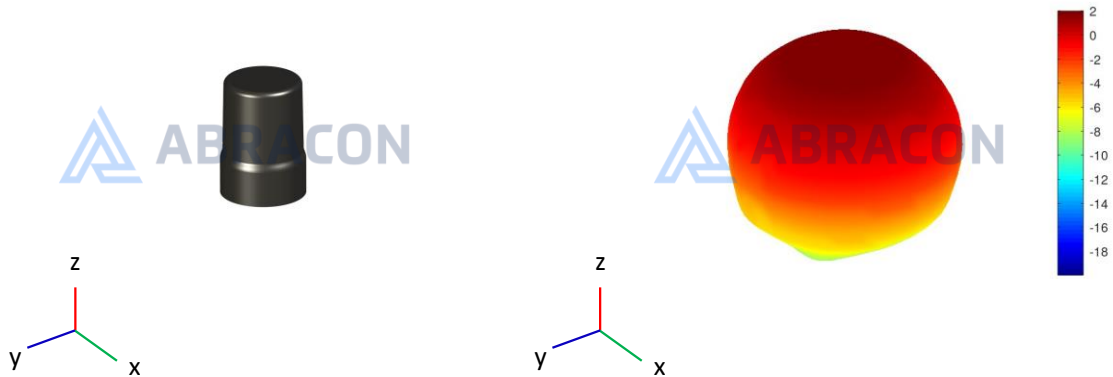
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RoHS Compliant

MSL Level = 1

Radiation Characteristics – 3D & 2D Pattern

1575MHz (L1 Band)



Full-Band (L1/L2/L5 + L-band) Full-Constellation GNSS Helix Antenna



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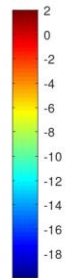
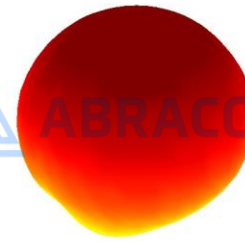
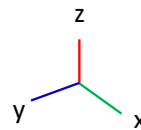
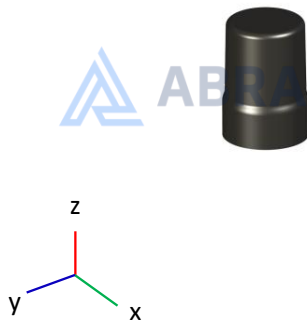


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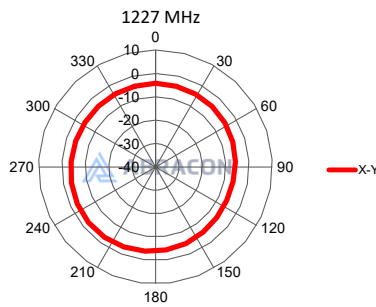


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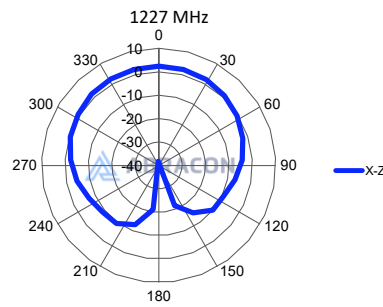
1227MHz (L2 Band)



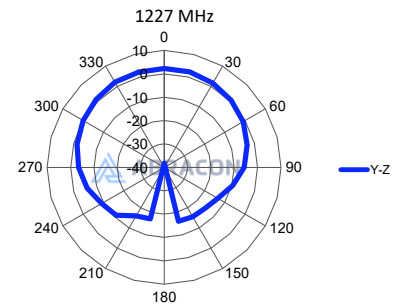
XY plane



XZ plane



YZ plane



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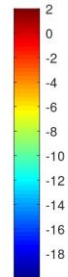
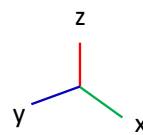
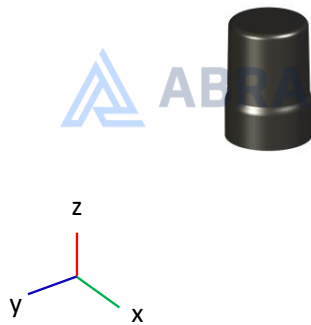


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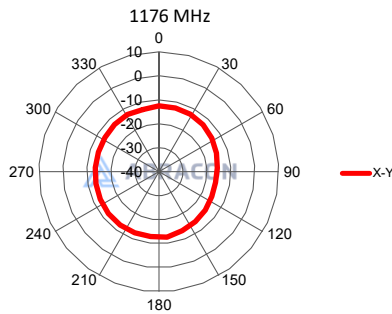


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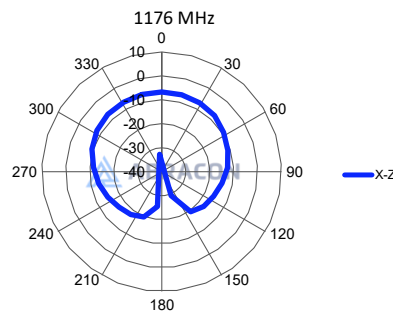
1176MHz (L5 Band)



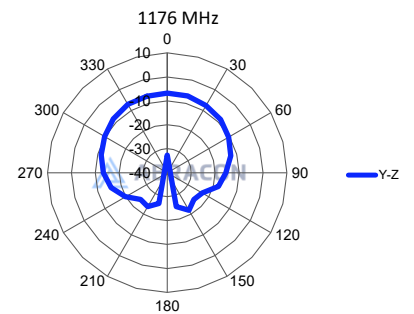
XY plane



XZ plane



YZ plane



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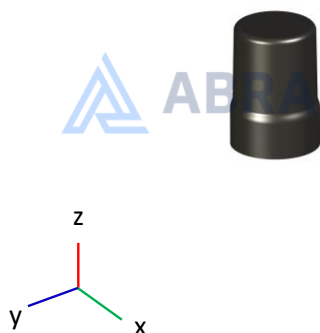


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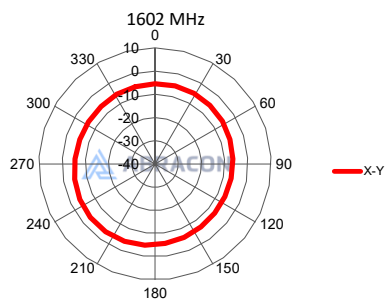


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MSL Level = 1

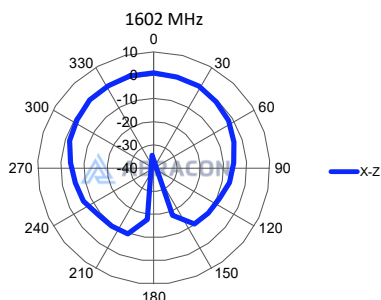
1602MHz (G1 Band)



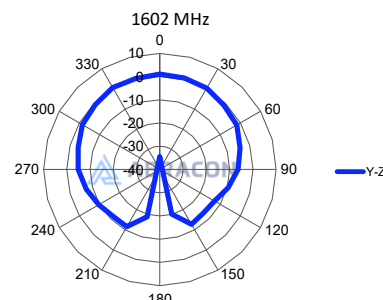
XY plane



XZ plane



YZ plane



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