



TAOGLAS®



Datasheet

GNSS Hercules

Part No:
A.40.A.301111

Description:

GPS/GLONASS/Galileo Hercules Heavy Duty Permanent Mount Antenna

Features:

Bands Covered:

- GPS L1
- GLONASS G1
- Galileo E1

Heavy duty Permanent mount

Dimensions: Ø48*29mm

Cable: 3m RG-174

IP65 Rated Enclosure

Connector: SMA(M) Straight

RoHS & Reach Compliant

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1. Introduction



The A.40 Hercules is an active high-performance permanent mount GPS/GLONASS/Galileo antenna designed for external use on vehicles and outdoor assets. Durable UV resistant PC housing is IP65 rated, resistant to vandalism and direct attack. At only 29mm high it complies with the latest EU directives for height restrictions, whilst also enabling covert operation with a diameter of only 49mm.

Typical Applications Include:

- Remote Asset Tracking
- Navigation
- Telematics Devices

The cable and connector is fully customizable, for further information, please contact your regional Taoglas customer support team.

2. Specifications

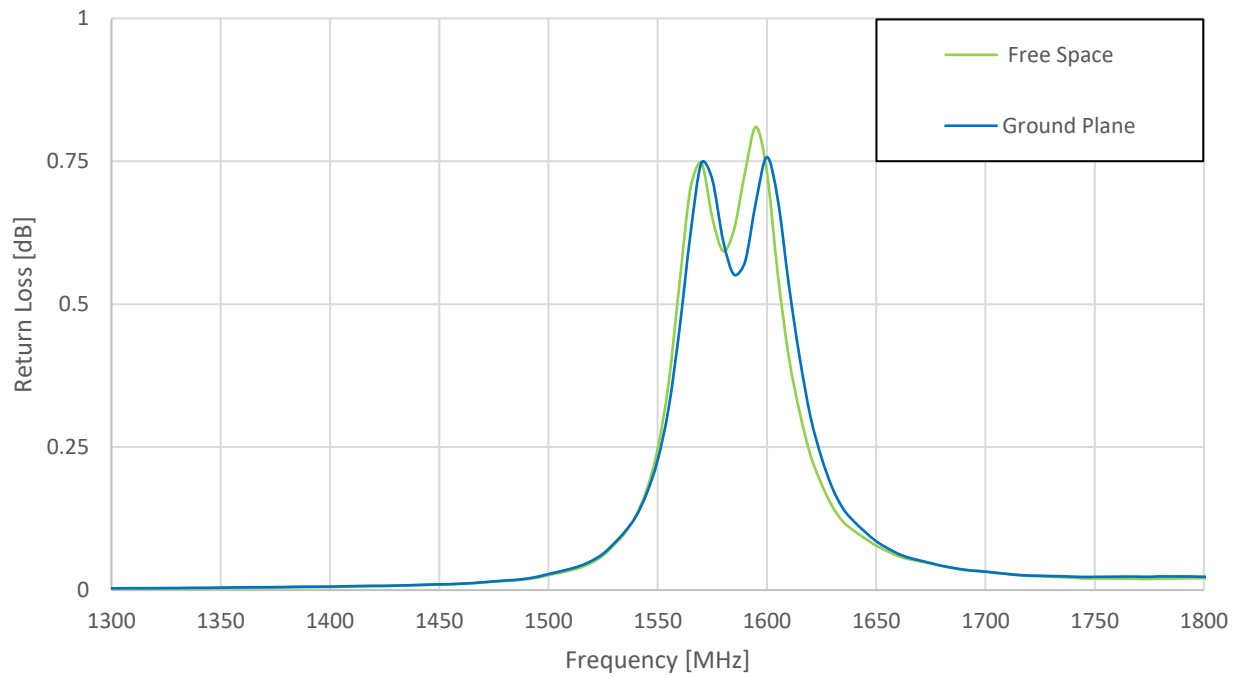
GNSS Frequency Bands Covered							
GPS/QZSS	L1 1575.42MHz	L2 1227.6MHz	L5 1176.45MHz	L6 1278.75MHz			
	■	□	□	□			
GLONASS	L5R 1176.45MHz	L3PT 1201.5MHz	L2PT 1246MHz	L1CR 1575.42MHz	L1PT 1602MHz		
	□	□	□	■	■		
Galileo	E5a 1176.45MHz	E5b 1201.5MHz	E4 1215MHz	E3 1256MHz	E6 1278.75MHz	E2 1561MHz	E1 1575.42MHz
	□	□	□	□	□	□	■
BeiDou	B1 1561MHz	B2 1207.14MHz	B3 1268.52MHz				
	□	□	□				
Compass	E5B(B2)/ E6(B3) 1268.56MHz	E2(B1) 1561MHz					
	□	□					
SBAS	Omnistar 1542.5MHz	WAAS/EGN OS 1575.42MHz					
	□	■					

GNSS Electrical	
Frequency (MHz)	1574 ~ 1606
VSWR (max.)	2.0:1
Impedance (Ohm)	50Ω
Polarization	RHCP
Input Voltage(V)	Typ. 2.5~5.5V
Total Gain @ Zenith	27dB typical at 3.0V
Current consumption(mA)	10mA typical at 3.0V
Noise figure	2.9dB typical
GPS/GALILEO Gain@ Zenith	-1.4dB Passive Gain @ Zenith
GLONASS Patch Gain@ Zenith	-1.3dBi Gain @ Zenith
Out Band Rejection	fo = 1575.42MHz fo ± 30 MHz 5dB Min. fo ± 50 MHz 20dB Min. fo ± 100 MHz 25dB Min.

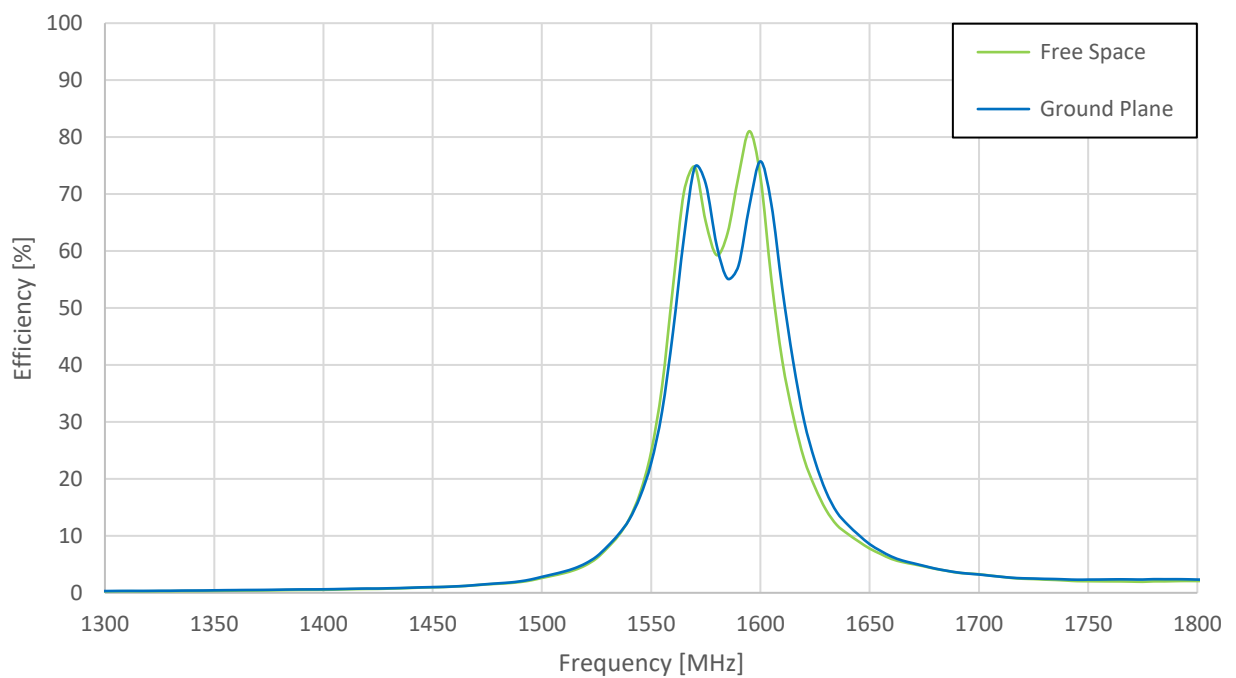
Mechanical	
Dimensions	Ø49mm Height 28.5mm
Cable type	RG-174
Cable length	3000mm
Casing	UV Resistant PC
Connector	SMA Male Straight
Recommended Mounting Torque	5-7Nm
Environmental	
Operation Temperature Range	-40°C to 85°C
Storage Temperature Range	-40°C to 85°C
Waterproof	IP65
Thermal Shock	100 cycles -40°C to +85°C
Shock (drop test)	1m drop on concrete 6 axes

3. Passive Antenna Characteristics

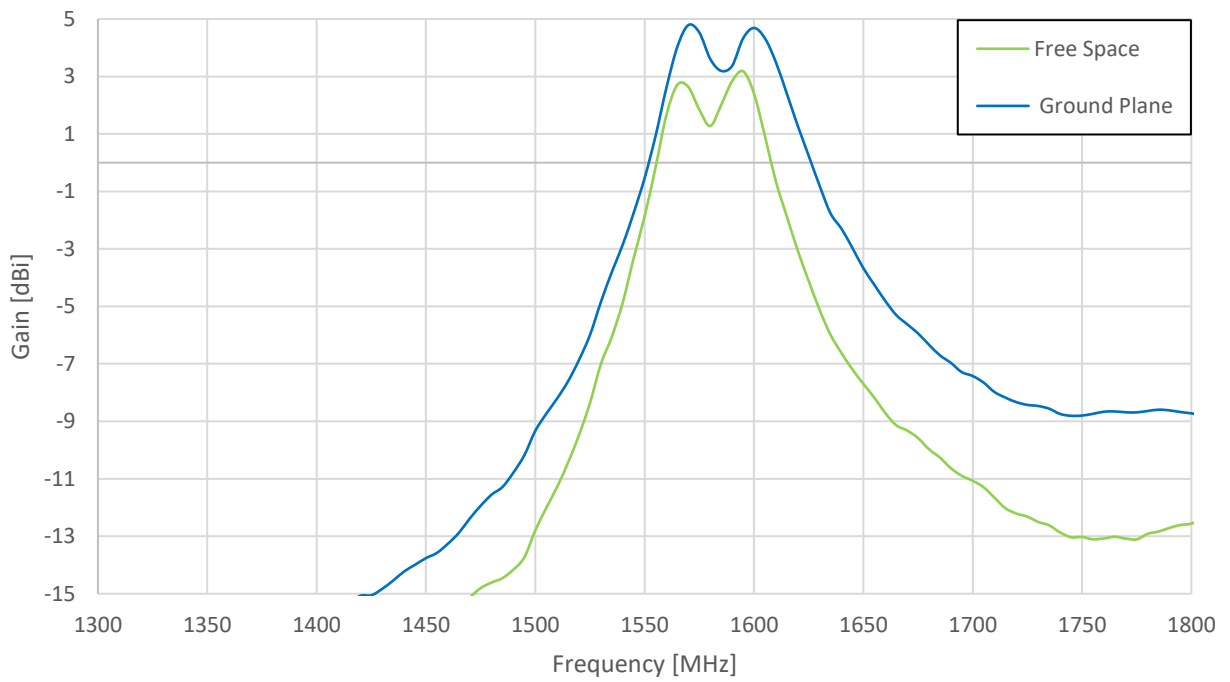
3.1 Return Loss



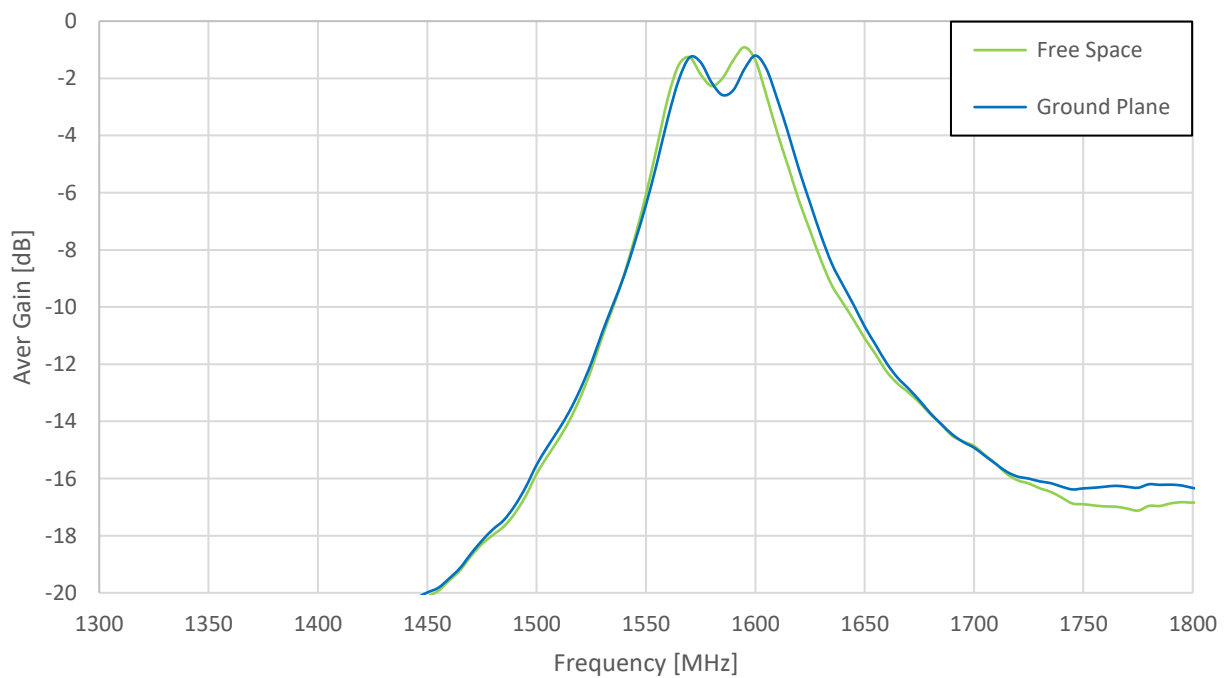
3.2 Efficiency



3.3 Peak Gain

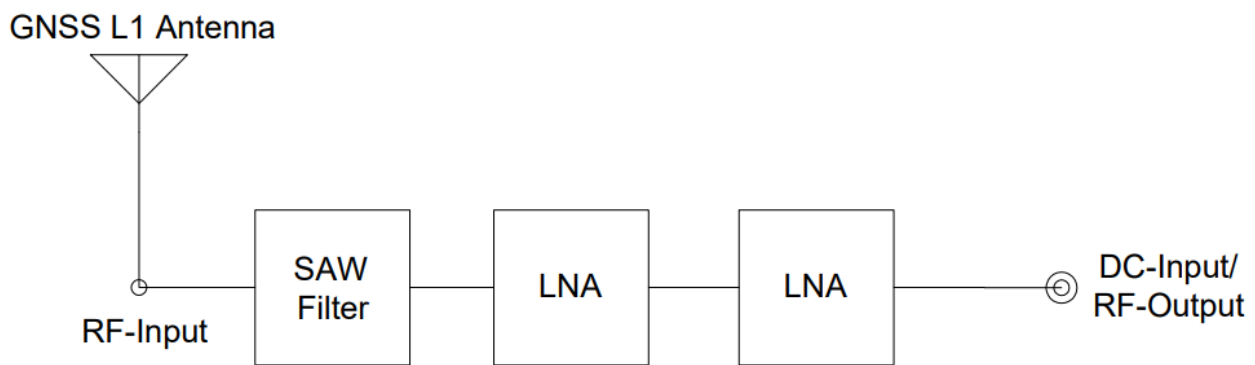


3.4 Average Gain

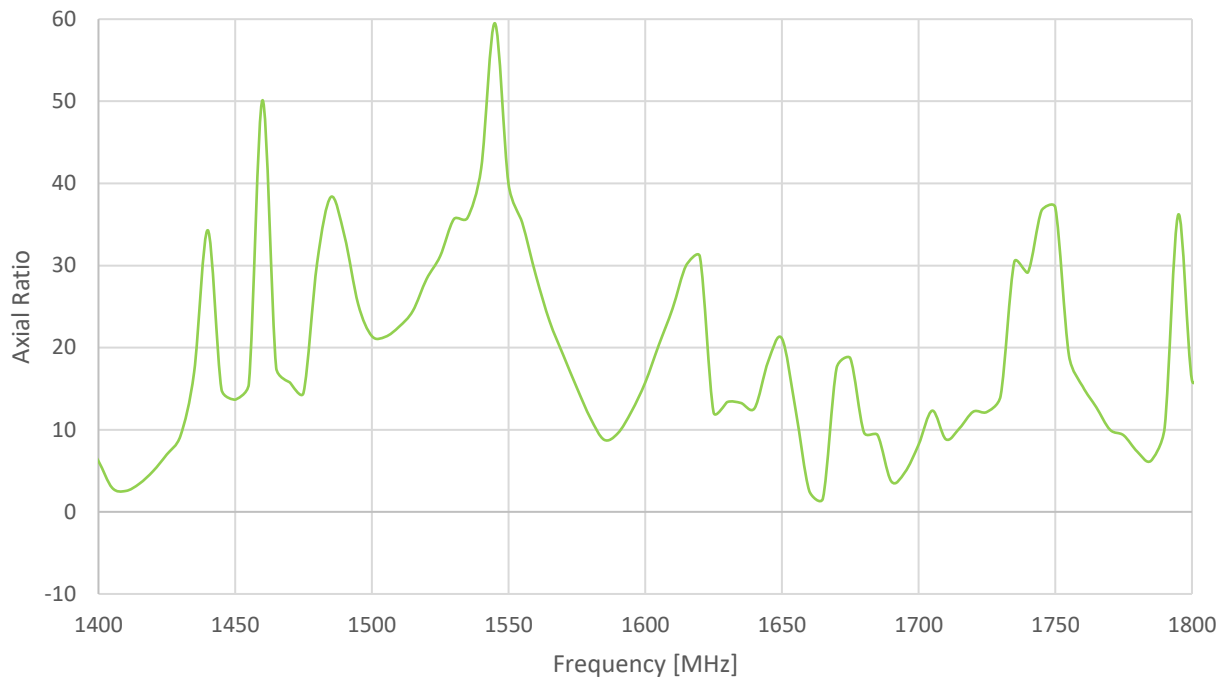


4. Active Antenna Characteristics

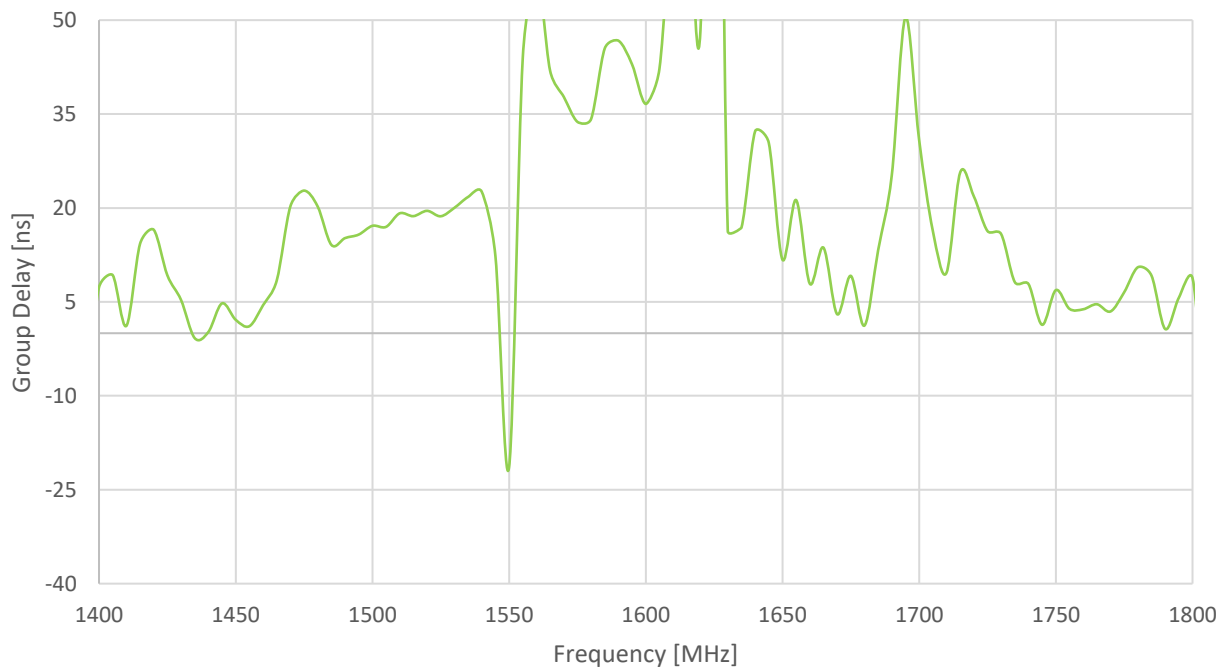
4.1 LNA Block Diagram



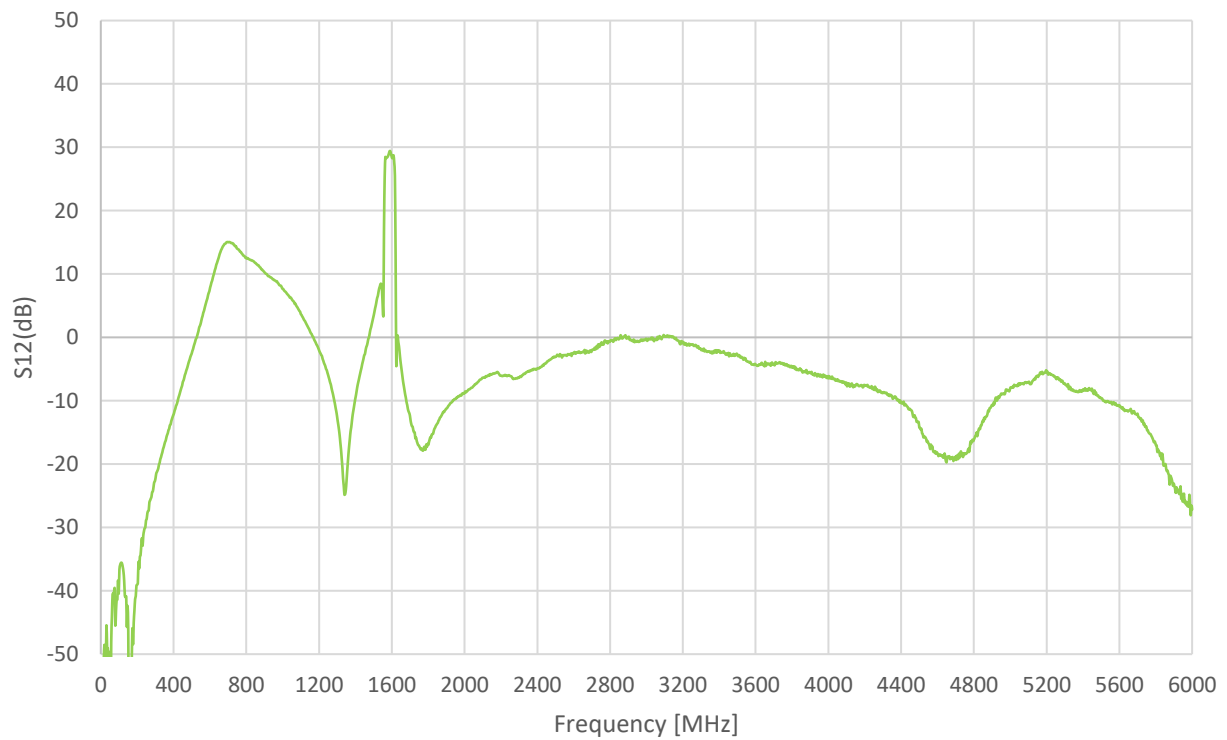
4.2 Axial Ratio



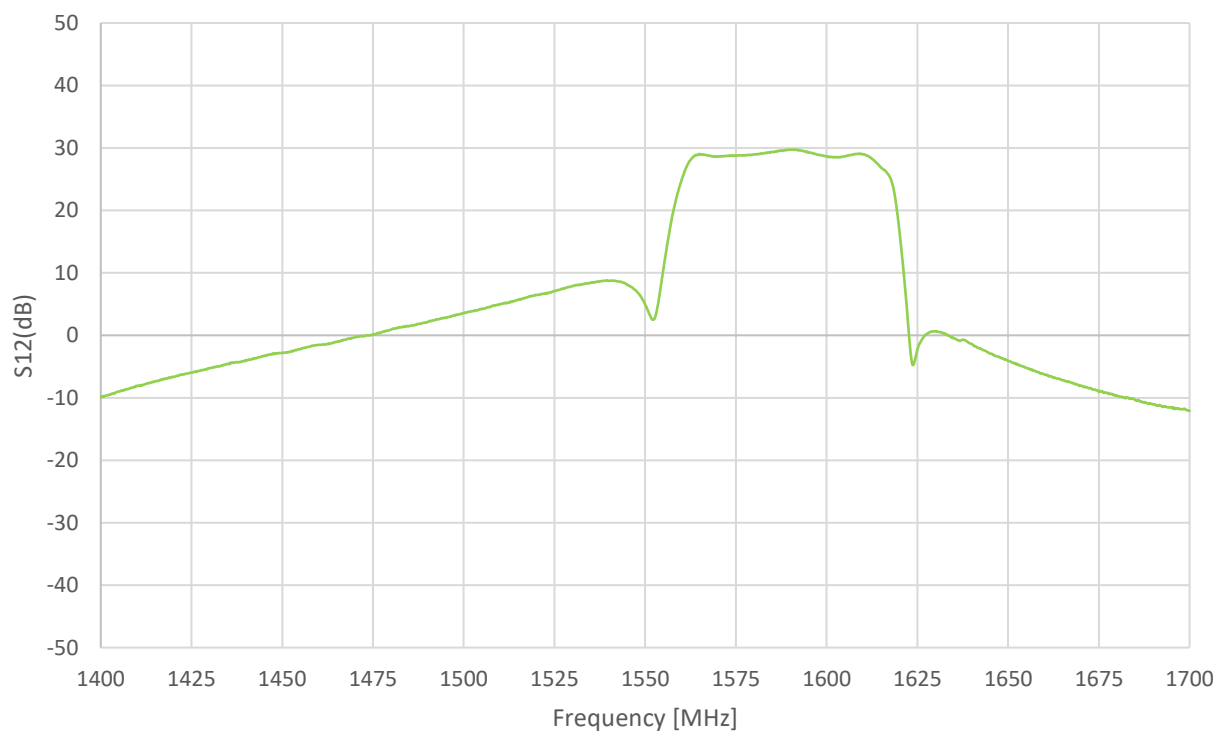
4.3 Group Delay



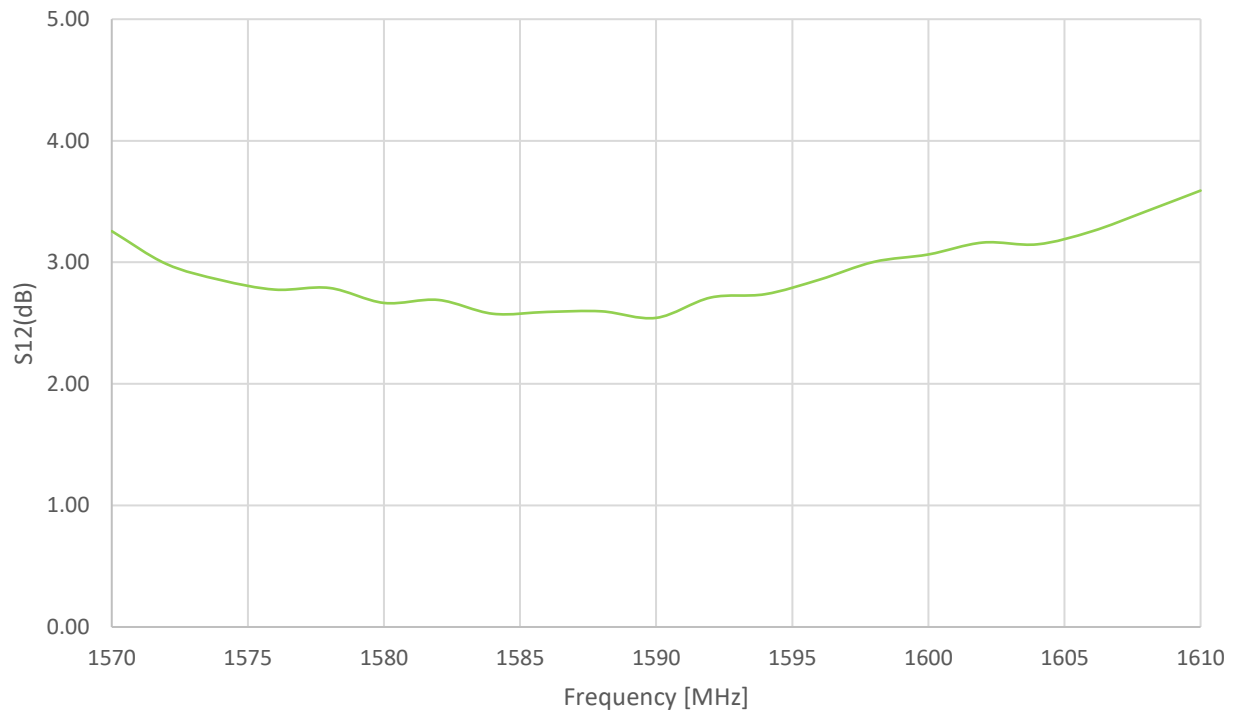
4.4 Out of Band Attenuation



4.5 LNA Gain

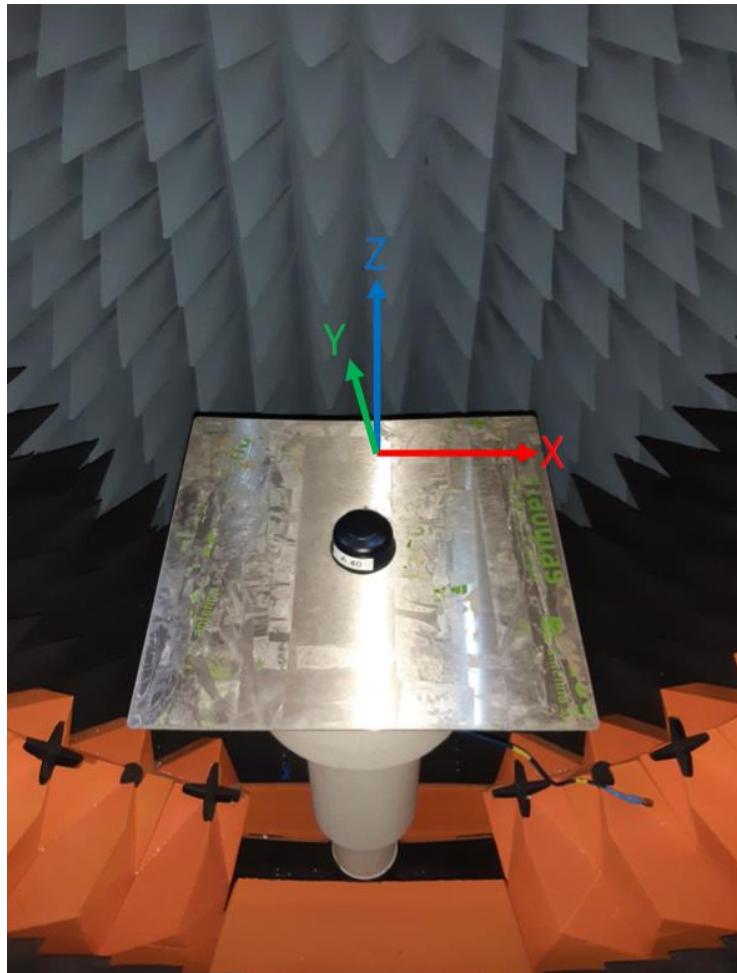


4.6 Noise Figure



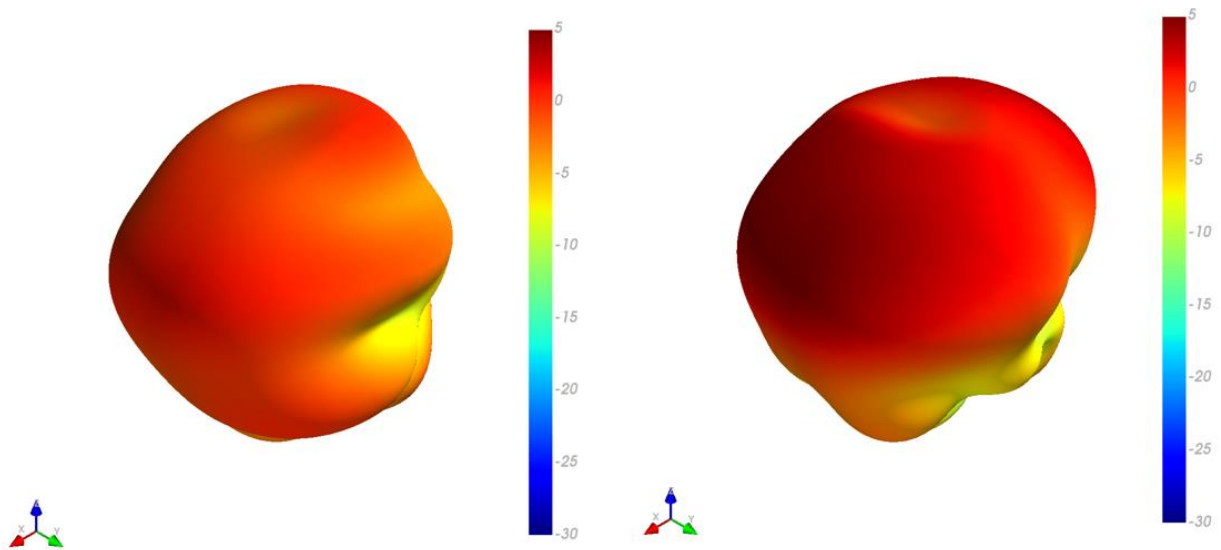
5. Radiation Patterns

5.1 Test Setup



Chamber Setup

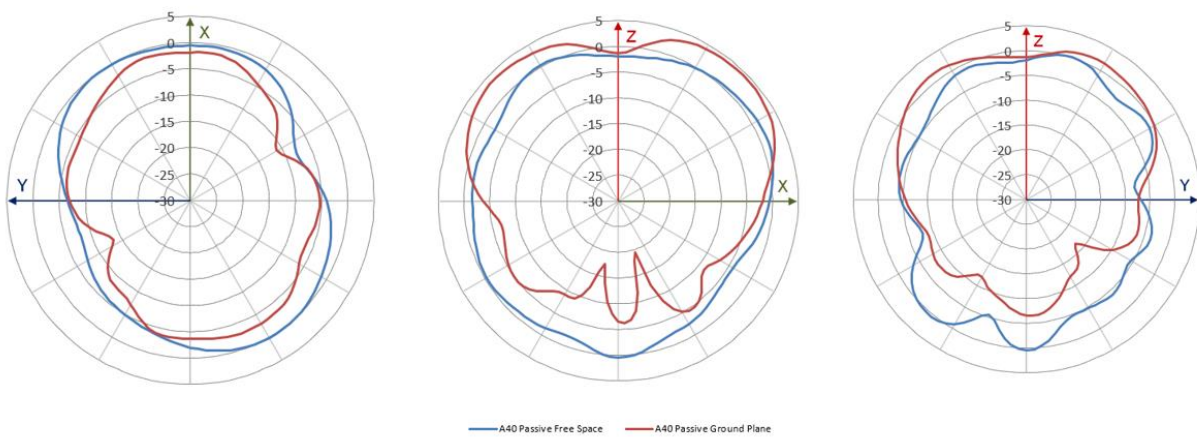
5.2 1575.42MHz 3D and 2D Radiation Patterns



A40 Passive Free Space

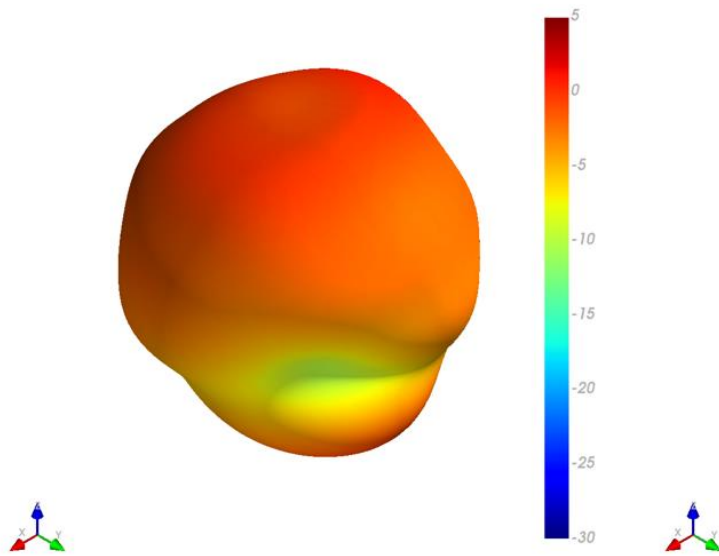
A40 Passive Ground Plane

XY Plane XZ Plane YZ Plane

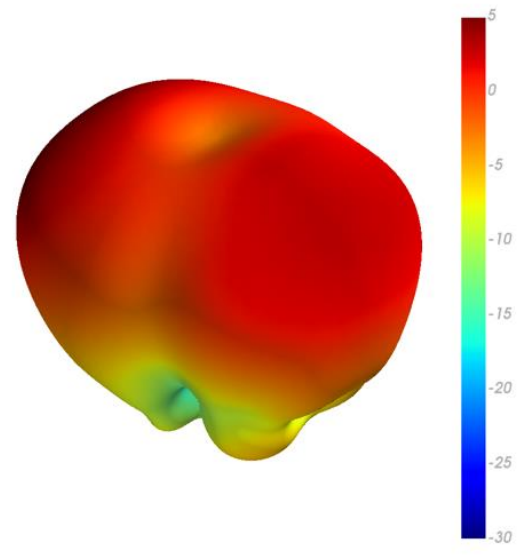


— A40 Passive Free Space — A40 Passive Ground Plane

1602MHz



A40 Passive Free Space

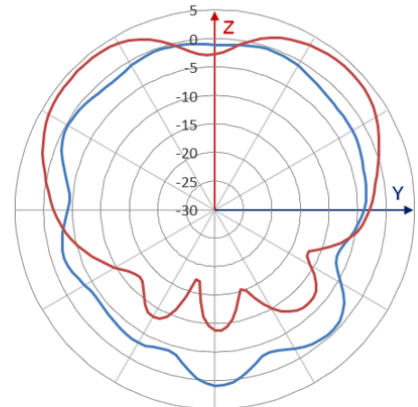
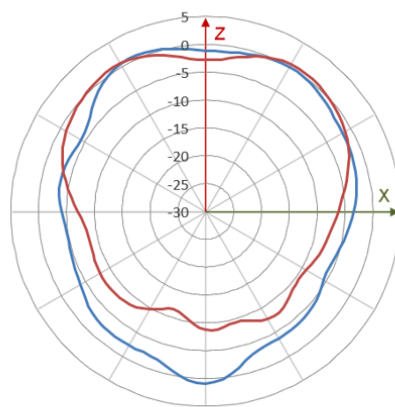
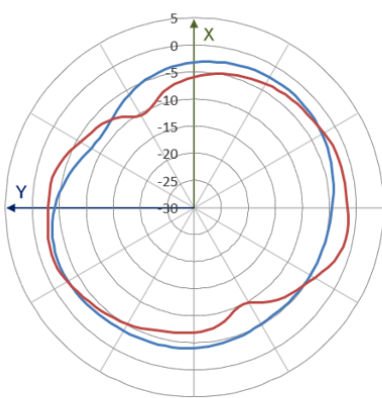


A40 Passive Ground Plane

XY Plane

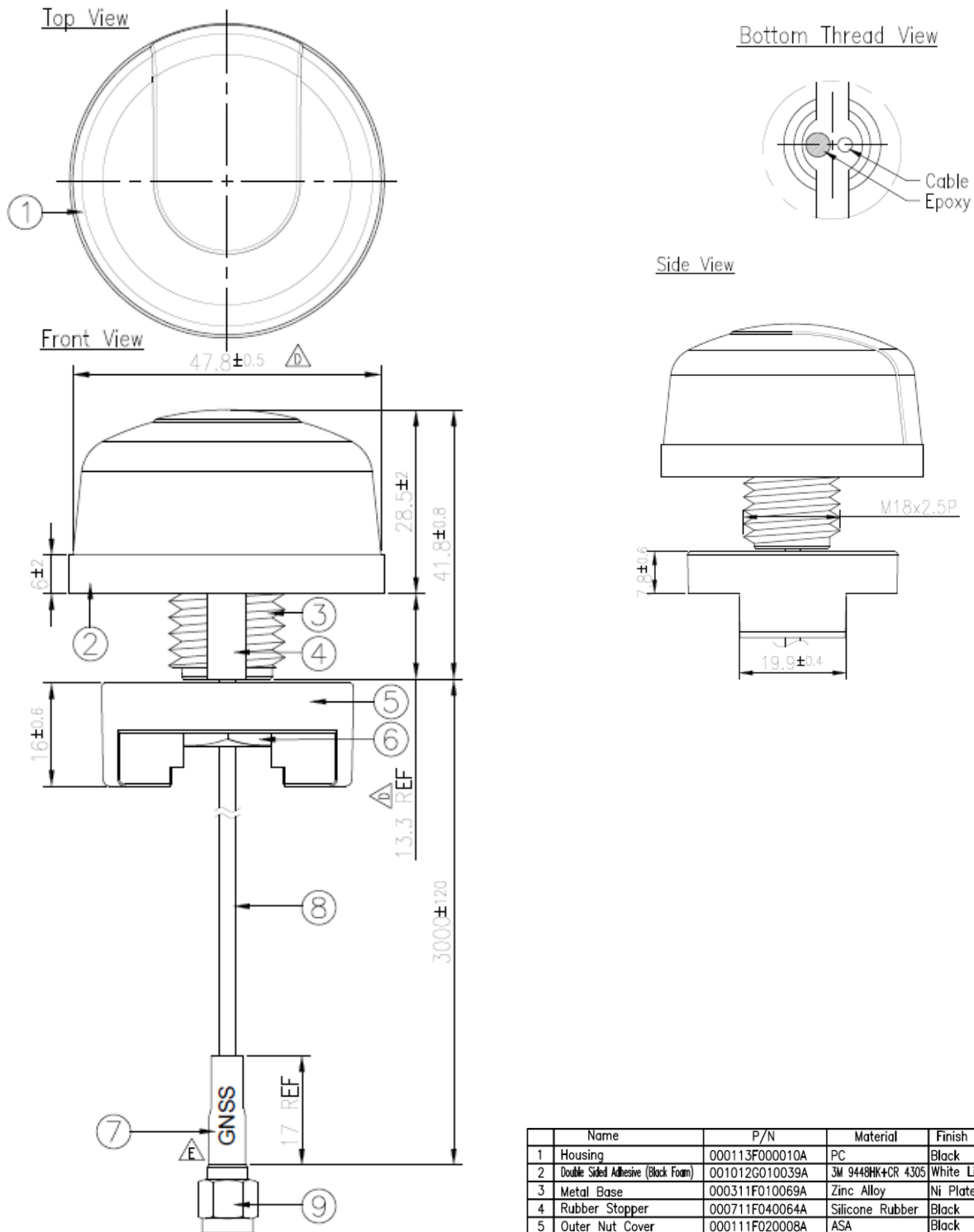
XZ Plane

YZ Plane



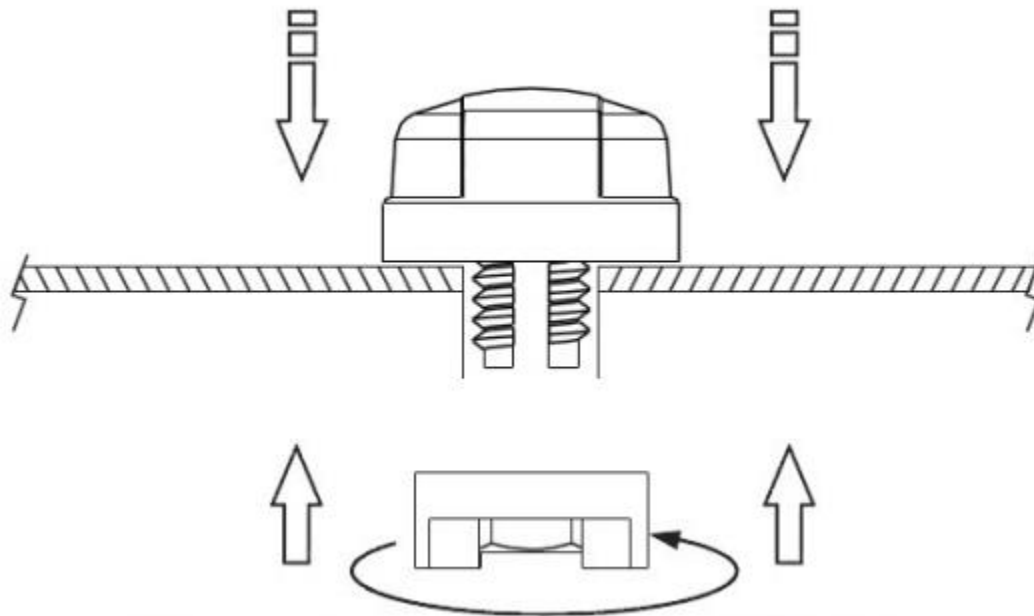
— A40 Passive Free Space — A40 Passive Ground Plane

6. Mechanical Drawing (Units: mm)



Name	P/N	Material	Finish	QTY
1 Housing	000113F000010A	PC	Black	1
2 Double Sided Adhesive (Black Foam)	001012G010039A	3M 9448HK+CR 4305	White Liner	1
3 Metal Base	000311F010069A	Zinc Alloy	Ni Plated	1
4 Rubber Stopper	000711F040064A	Silicone Rubber	Black	1
5 Outer Nut Cover	000111F020008A	ASA	Black	1
6 M18 Inner Nut	000413F010061A	Steel Carbon	Zn Plated	1
7 Heat Shrink Tube(GNSS)	001316C000000A	PE	Blue Tube/White Tex	1
8 RG174 Coaxial Cable	301315C000000A	PVC	Black	1
9 SMA(M)ST	200212G000013A	Brass	Au Plated	1

7. Installation

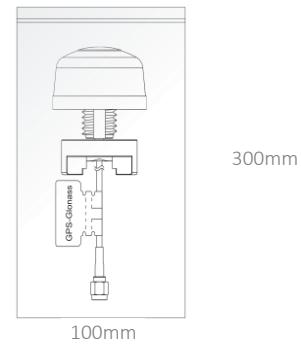


Recommended torque for mounting: 5-7Nm

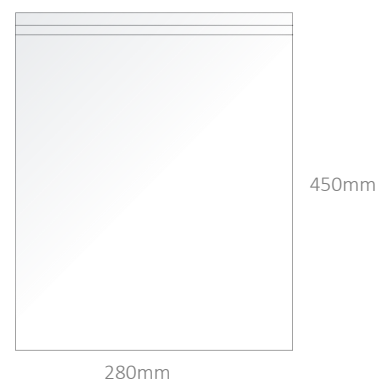
(Torque value obtained with antenna mounted on 1mm thick SUS-316 bracket)

8. Packaging

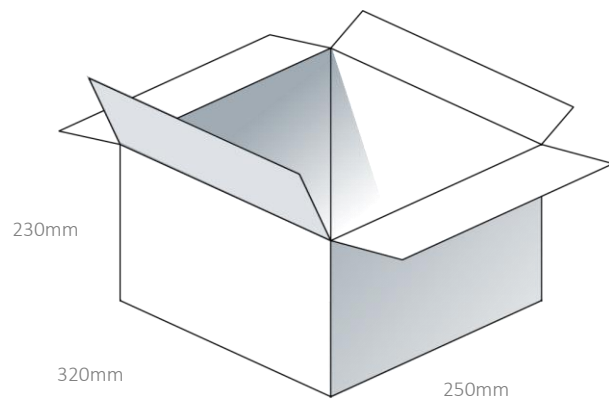
1pc A.40.A.301111 per PE Bag
 Dimensions: 100*300mm
 Weight: 151g



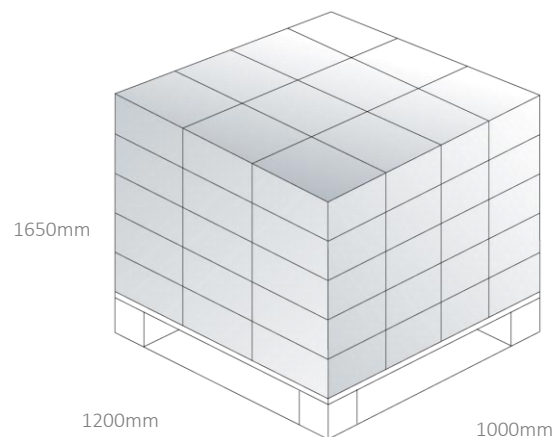
10 pcs A.40.A.301111 per Large PE Bag
 Dimensions: 280*450mm
 Weight: 1.524Kg



60pcs A.40.A.301111 per carton
 Dimensions - 320*250*230mm
 Weight - 9.8Kg



Pallet Dimensions:
 1200*1000*1650mm
 60 Cartons per Pallet
 12 Cartons per Layer, 5 Layers



Changelog for the datasheet

SPE-13-8-053 – A.40.A.301111

Revision: L (Current Version)

Date:	2022-10-13
Changes:	Added LNA Block diagram
Changes Made by:	Cesar Sousa

Previous Revisions

Revision: K

Date:	2022-02-23
Changes:	Updated data
Changes Made by:	Gary West

Revision: F

Date:	2019-01-22
Changes:	Amended Drawing
Changes Made by:	Jack Conroy

Revision: J

Date:	2021-02-09
Changes:	Updated IP rating
Changes Made by:	Erik Landi

Revision: E

Date:	2018-12-12
Changes:	Amended Heatshrink Drawing
Changes Made by:	Jack Conroy

Revision: I

Date:	2021-02-09
Changes:	Updated waterproof rating
Changes Made by:	Jack Conroy

Revision: D

Date:	2016-06-01
Changes:	Amended Packaging and Info
Changes Made by:	Aine Doyle

Revision: H

Date:	2020-03-27
Changes:	Updated Packaging and Template
Changes Made by:	Jack Conroy

Revision: C

Date:	2014-08-26
Changes:	Removed Saw info
Changes Made by:	Aine Doyle

Revision: G

Date:	2019-11-07
Changes:	Amended Drawing
Changes Made by:	Jack Conroy

Revision: B

Date:	2014-08-11
Changes:	Updated Torque Info
Changes Made by:	Aine Doyle

Revision: A (Original First Release)	
Date:	2013-07-26
Notes:	
Author:	Wayne Yang
