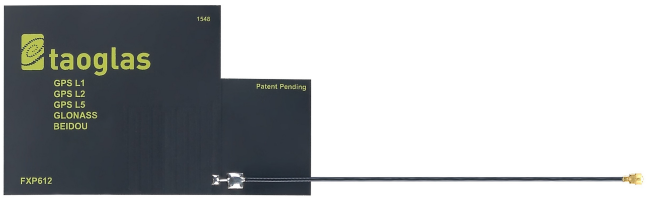
# SPECIFICATION

# Patent Pending

**Part No.** : **FXP612.07.0095A**

**Description** : FXP612 Flexible Polymer
GPS L1 / GPS L2 / GPS L5 /
GLONASS G1 / BEIDOU Antenna

**Features** :
GPS L1 :1563-1587 MHz
GPS L2 :1215-1240 MHz
GPS L5 :1164-1189 MHz
GLONASS G1: 1593-1610 MHz
BEIDOU:1559-1591 MHz
Flexible Loop Antenna
3 dBi Peak Gain-90% Efficiency
Peel and Stick
Dims: 76mm*47mm*0.15mm
Cable Length : 95mm
IPEX MHFI Connector (U.FL compatible)
Patent Pending
RoHS compliant




# 1. Introduction

The patent pending FXP612 embedded flexible antenna is a next generation GNSS antenna designed to cover working frequencies in the GPSL1/L2/L5/Glonass/BeiDou bands. This antenna features the highest efficiencies in the market, not just an incredible efficiency of 90% in GPS/Glonass/BeiDou L1 bands, but also 70% efficiency in the GPS L2 and L5 bands. The FXP612 is a linear polarized antenna, but with an omni-directional radiation pattern which makes it less sensitive to device orientation. The VSWR is also extremely low, below 1.6 at all bands, this of course contributes to it's total radiation efficiency, but also means it is ideal for low power consumption applications.

This antenna is made of durable, flexible, polymer with a cable and connector for easy installation. It is designed to be mounted directly to the inner shell of a plastic housing or glass enclosure/cover. No space is needed on the PCBs of your device, but at least 20mm of minimum clearance is required from the ground-plane to achieve optimal antenna efficiency. At 76mm*47mm*0.15mm, the antenna is ultra-thin and can be applied by a simple peel and stick process, attaching securely to non-metal surfaces via 3M adhesive. It has been tuned to work directly on ABS/PC plastic housings.

Typical Applications

- Telematics
- Fleet Management
- Positioning

It is an ideal choice for any device maker that needs a solution that can work on L1 and L2 today, but also for years to come with the new L2 and L5 GPS civilian signal bands coming on stream in 2020 and beyond, and which would like to keep manufacturing costs down over the lifetime of a product. Cable type, length and connectors are customizable. For cable lengths over 200mm, it is recommended to use an active GPS patch antenna. Please contact your regional Taoglas sales office for support.

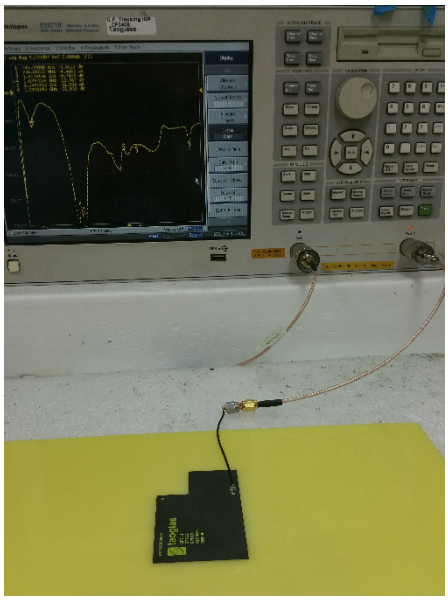
# 2. Specification

| ELECTRICAL | | | | | |
|---|---|---|---|---|---|
| **STANDARD** | **GPS L1** | **GPS L2** | **GPS L5** | **GLONASS** | **BEIDOU** |
| Operation Frequency (MHz) | 1563-1587 | 1215-1240 | 1164-1189 | 1593-1610 | 1559-1591 |
| Return Loss | -16.2 | -12.6 | -16.0 | -20.4 | -23.0 |
| Efficiency (%) | 91% | 73% | 70% | 92% | 91.5% |
| Peak Gain (dBi) | 3.7 | 3.3 | 3.1 | 3.9 | 4.0 |
| VSWR | 1.2 | 1.6 | 1.3 | 1.1 | 1.2 |
| Radiation Properties | Omni-Directional | | | | |
| Polarization | Linear | | | | |
| Impedance (Ohms) | 50 | | | | |
| Max input Power (Watts) | 5 | | | | |
| MECHANICAL | | | | | |
| Dimension | 76 x 47 x 40.15 mm | | | | |
| Material | FPCB | | | | |
| Connector | MHFI (U.FL compatible) | | | | |
| Weight | 3 grams | | | | |
| Cable Type | Mini-Coax 1.13 mm, Cable Length : 95mm | | | | |
| ENVIRONMENTAL | | | | | |
| Operation Temperature | -40°C to 85°C | | | | |
| Storage Temperature | -40°C to 105°C | | | | |
| Humidity | Non-condensing 65°C 95% RH | | | | |

* The FXP612 antenna performance was measured with 30X30 cm ABS Plastic (2mm thickness)

# 3. Antenna Characteristics

## 3.1 Set up



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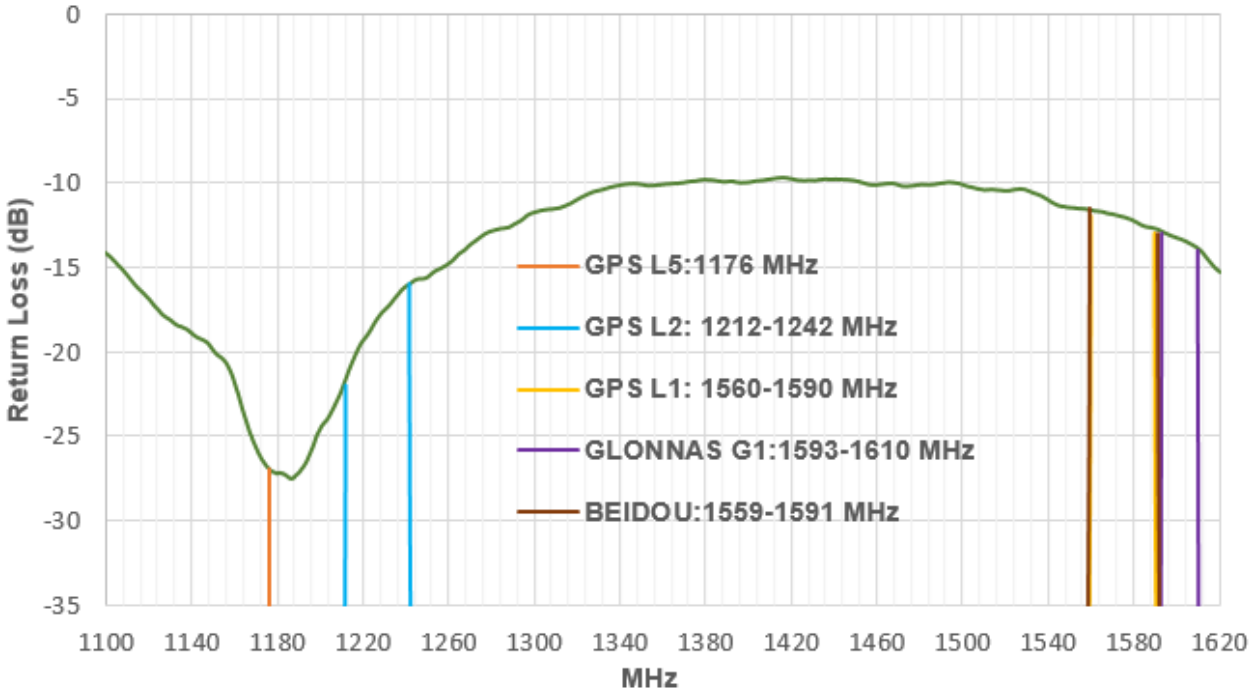
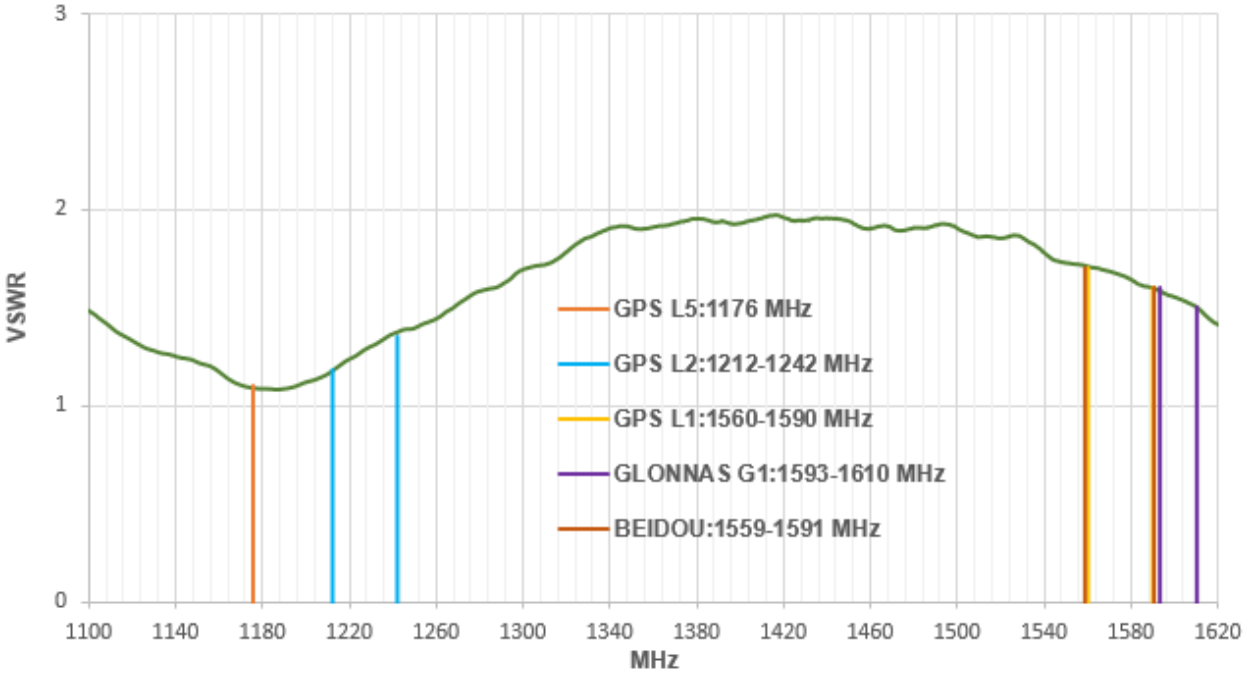
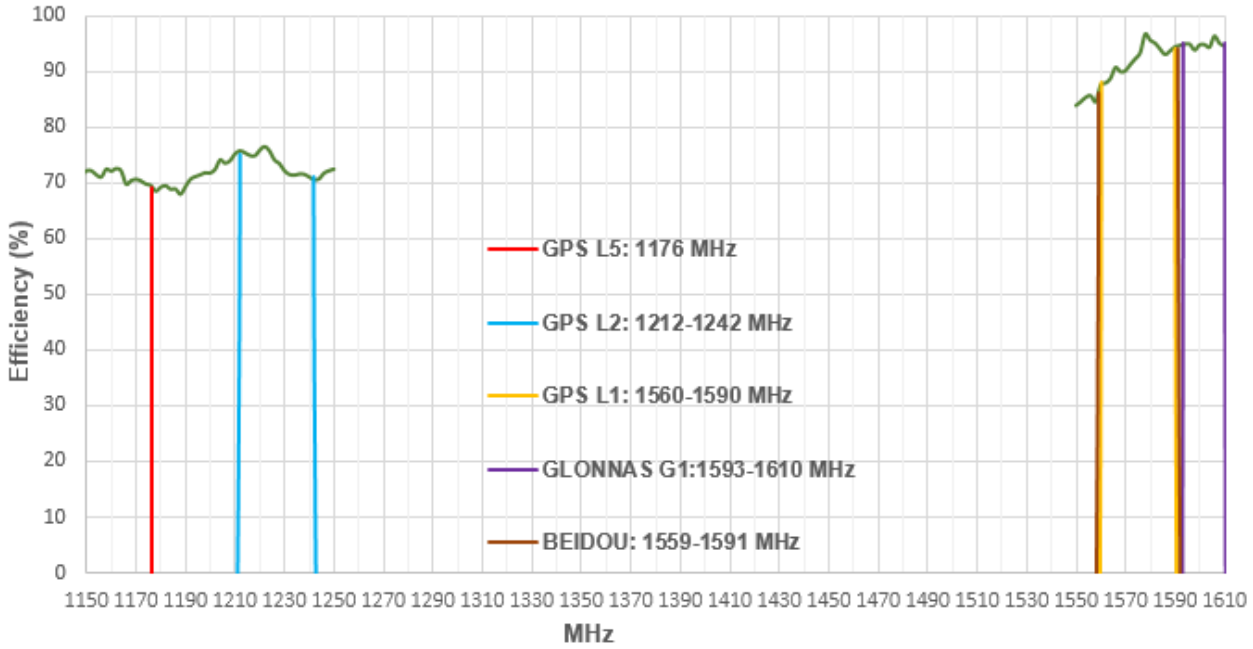
## 3.2 Return Loss



## 3.3 VSWR




## 3.4 Efficiency



## 3.5 Peak Gain

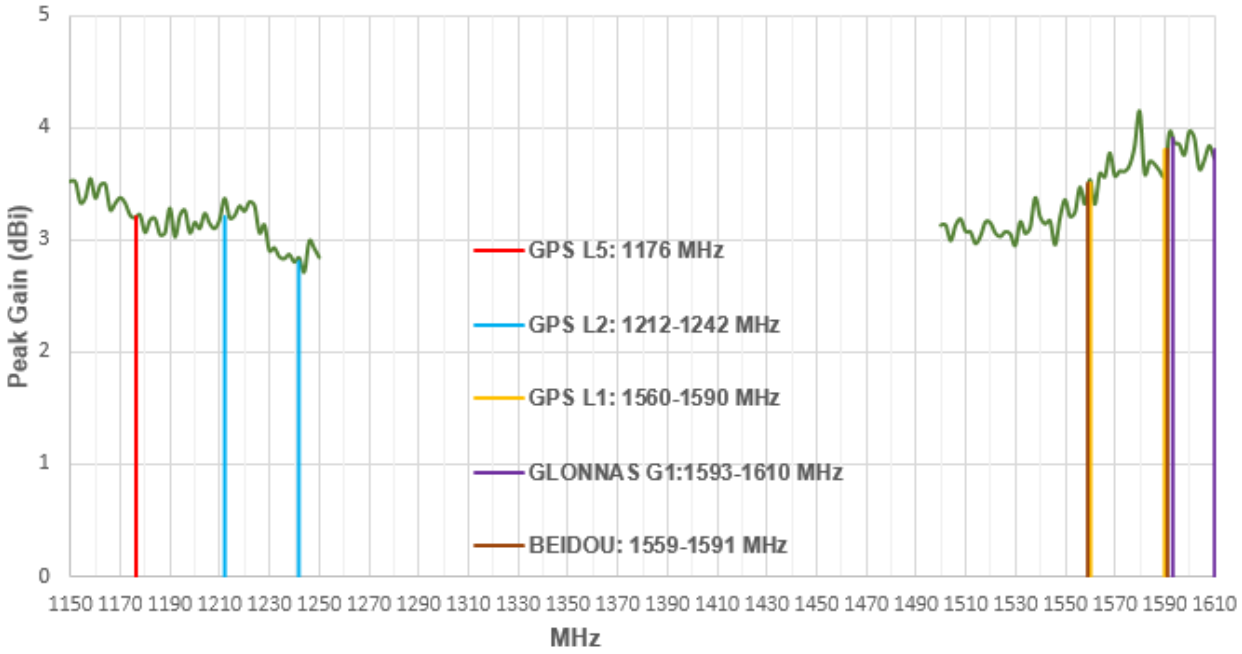
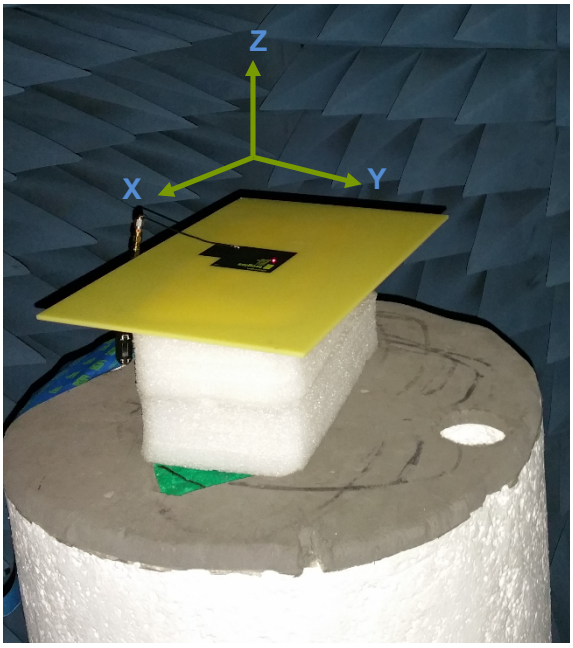



**Figure 5.** Peak Gain.

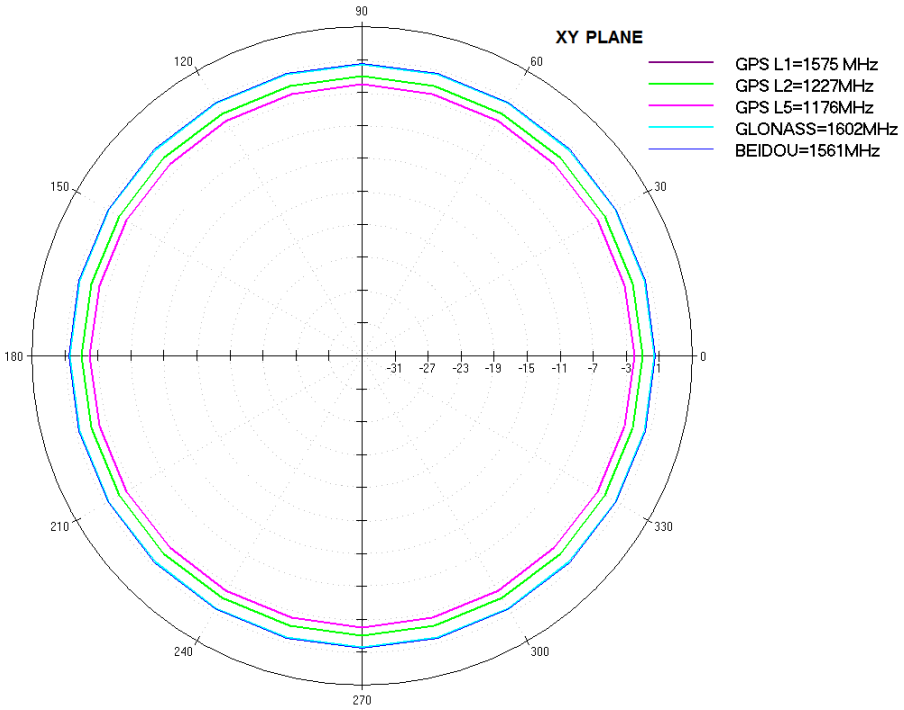
# 4. Antenna Radiation Pattern

## 4.1 Measurement Setup

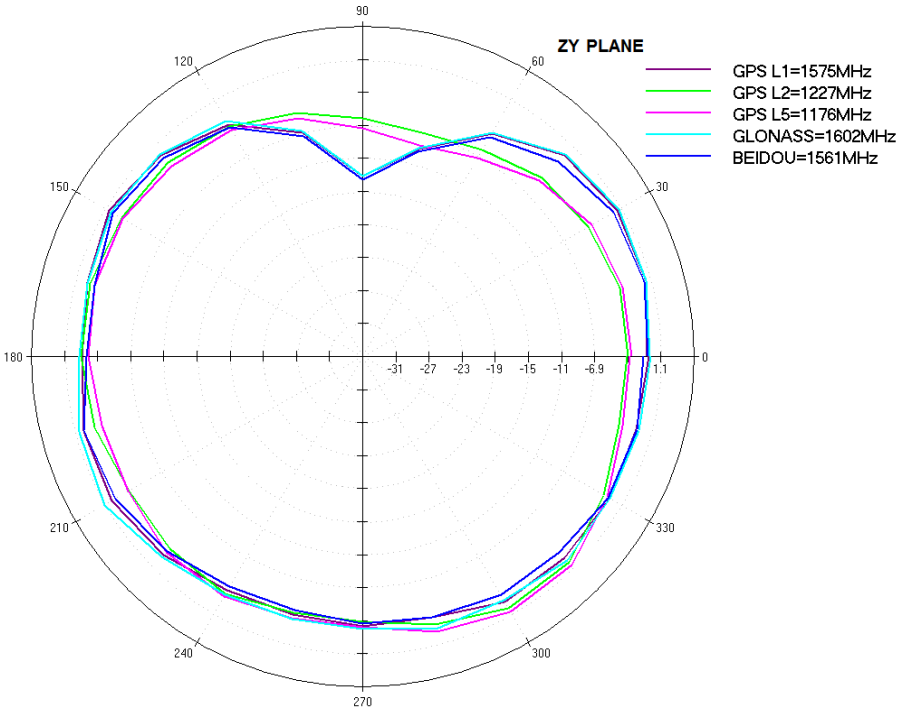


## 4.2 2D Radiation Pattern

### 4.2.1 XY Plane

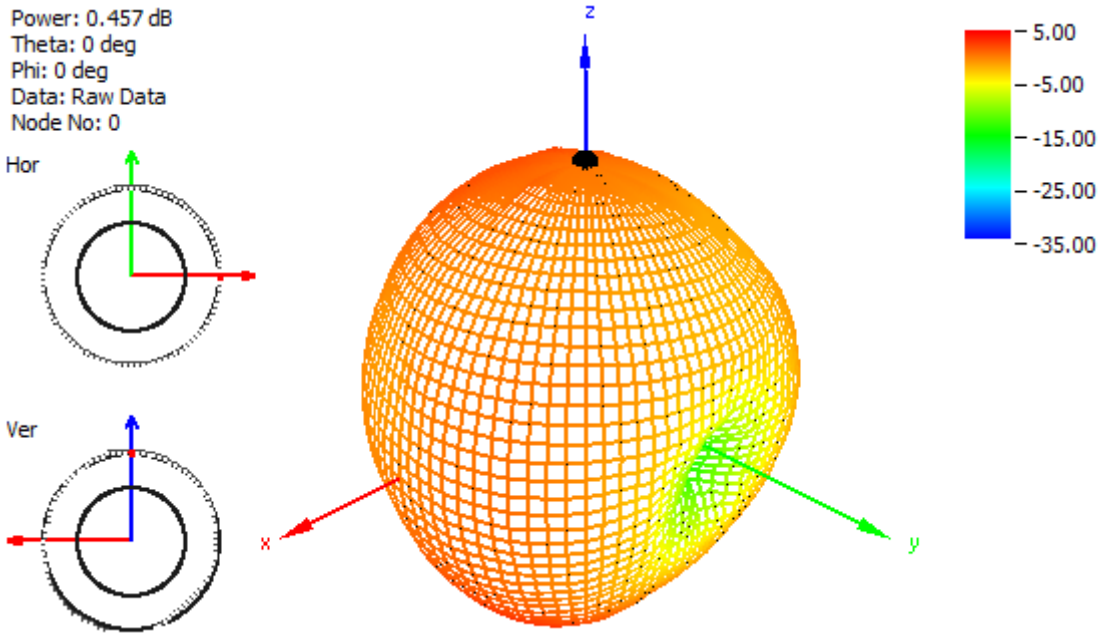



### 4.2.2 ZY Plane

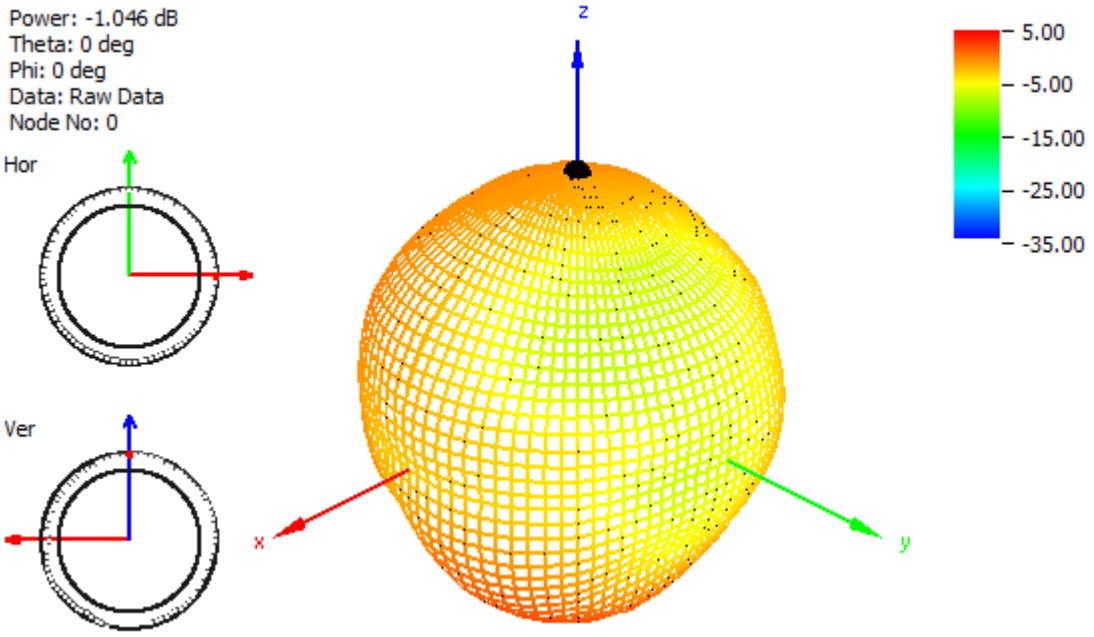


## 4.3 3D Radiation Pattern

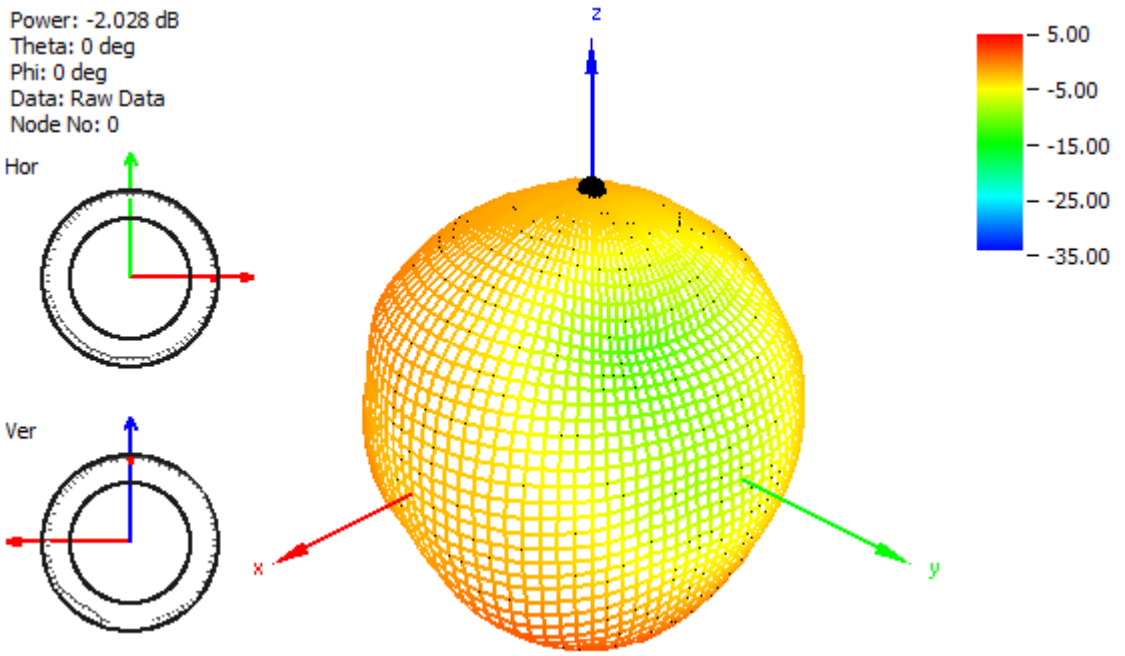
### 4.3.1 GPS L1 at 1575 MHz



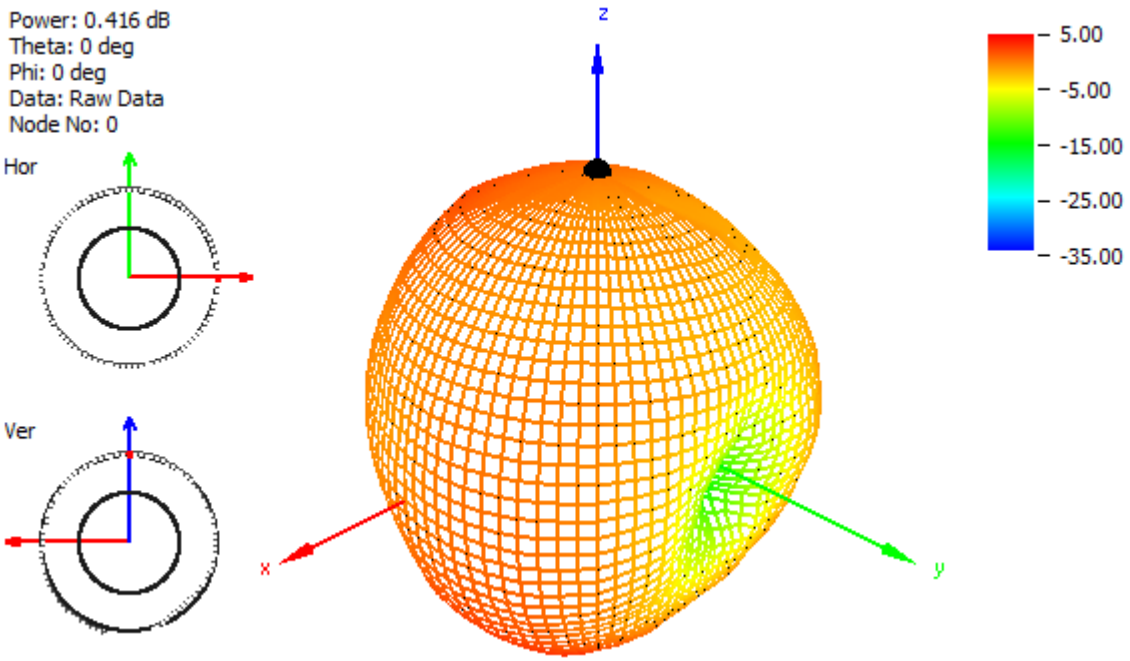

### 4.3.2 GPS L2 at 1227 MHz



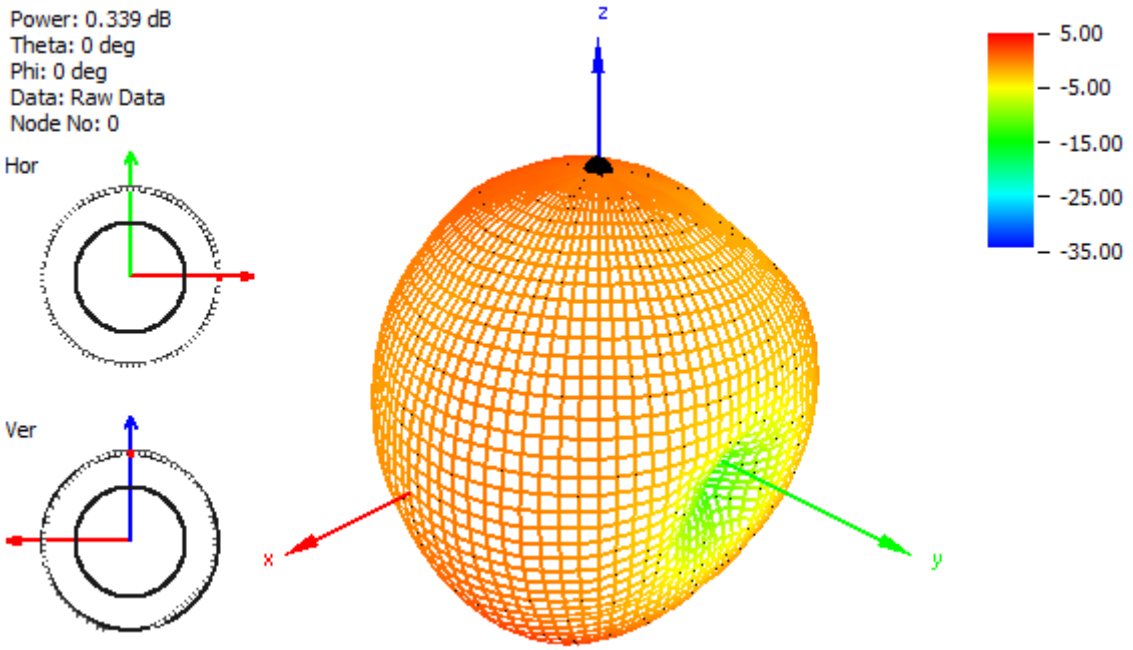
### 4.3.3 GPS L5 at 1176 MHz



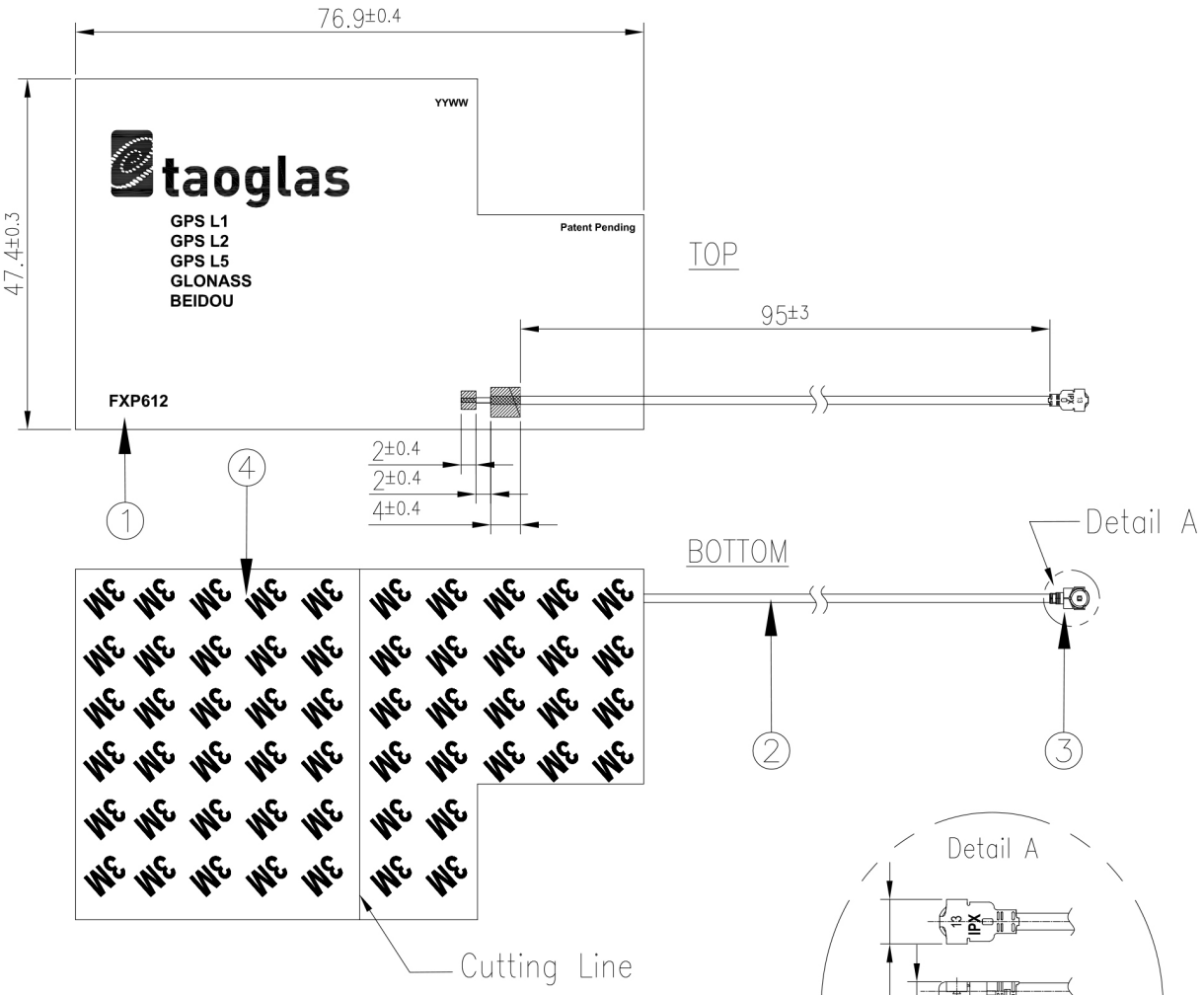

### 4.3.4 GLONASS at 1602 MHz



### 4.3.5 BEIDOU at 1561 MHz



# 5. Mechanical Drawing (Unit - mm)



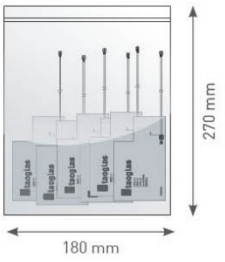

| | Name | Material | Finish | QTY |
|---|---|---|---|---|
| 1 | FXP612 FPCB | Polymer | Black | 1 |
| 2 | 1.13 Coaxial Cable | FEP | Black | 1 |
| 3 | IPEX MHFI | Brass | Gold | 1 |
| 4 | Double-Sided Adhesive | 3M 467 | Brown Liner | 1 |

# 6. Packaging

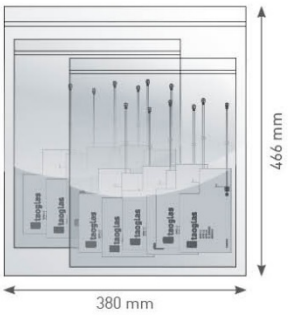
**FXP612.07.0095A**

**Packaging Specifications**

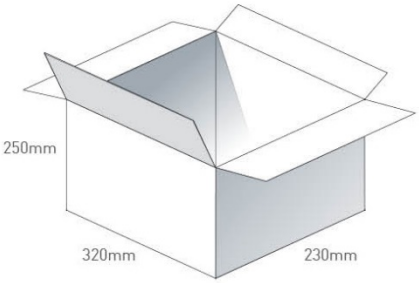
100pcs FXP612.07.0095A per PE Bag
Bag Dimensions - 270 x 180mm
Weight - 207g



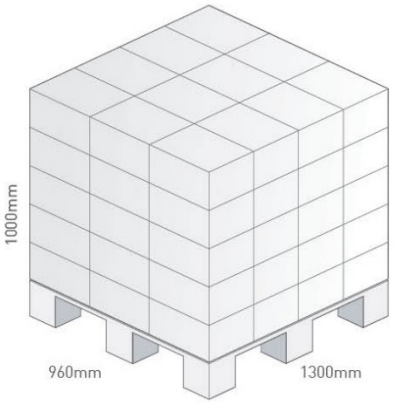

1000pcs FXP612.07.0095A per PE Large Bag
Bag Dimensions - 466 x 380mm
Weight - 2.1kg




5,000 pcs FXP612.07.0095A per carton
Carton - 320 x 250 x 230mm
Weight - 10.5Kg




Pallet Dimensions 960 x 1000 x 1300mm
60 Cartons per Pallet
12 Cartons per layer
5 Layers



# 7. Application Note

The MA612 antenna performance with different cable lengths.