SYNZEN

# DATASHEET

MIRANDA | SZW-N-5X03 | Combination Antenna | 4GLTE/RedCap + GPS

## Features:

Port 1:
Cellular / LTE / RedCap
698-2700MHz

Port 2:
GPS
1575.42 MHz

Screw Mount
Dimensions: Ø 80.0 x 15.0mm
Connector: SMA Male
IP 65
RoHs Compliant

TW24/00000226

# Contents

# Introduction

MIRANDA SZW-N-5X03 is a compact LTE and GPS combination antenna designed for space constrained connected devices requiring reliable cellular communication and accurate positioning. The antenna integrates a wideband LTE element with a high sensitivity GNSS element in a low-profile circular form factor, delivering stable RF performance in environments dominated by large batteries and dense internal components. MIRANDA is optimised for predictable matching, efficient radiation, and straightforward integration, making it suitable for high volume IoT and tracking applications.

**Features**

- Compact low profile saucer antenna design
- Integrated LTE and active GPS antenna solution
- Wideband LTE coverage for global cellular operation
- High sensitivity GNSS element for accurate positioning
- Stable impedance matching in battery dominant layouts
- Circular ground referenced architecture for consistent performance
- Suitable for high volume manufacturing and repeatable integration

**Applications**

- Asset and personal tracking devices
- Telematics and fleet management systems
- IoT gateways and connected sensors
- Smart metering and infrastructure monitoring
- Industrial and commercial location enabled devices

# Mechanical Specifications

| Parameter | |
|---|---|
| **Part Number** | SZW-N-5X03 |
| **Name** | MIRANDA |
| **Dimensions (mm)** | Ø 80.0 x 15.0 |
| **Cable length (mm)** | 500 (RG174) |
| **Connector** | SMA Male |
| **Polarization Cellular** | Linear |
| **Polarization GPS** | RHCP |

# Electrical / RF Specifications

## Port 1 - Cellular

| Band | Frequency Range (MHz) | Average Efficiency (%) | Peak Gain (dBi) | VSWR (worst case) | Impedance |
|---|---|---|---|---|---|
| 5GNR/4G LTE B5,8,12,13,14,17,18,20,26,27,28,29 | 698-960 | 44.0 | 1.75 | 4.40:1 | 50 Ω |
| 5GNR/4G LTE B24 | 1427-1525 | 50.0 | 2.40 | | |
| 5GNR/4G LTE B1,2,3,4,9,23,35,39,66 | 1710-2200 | 55.0 | 3.19 | 3.17:1 | |
| 5GNR/4G LTE B40 | 2300-2400 | 50.0 | 3.02 | 2.07:1 | |
| 5GNR/4G LTE B7,38,41 | 2490-2690 | 45.0 | 2.85 | 2.53:1 | |

## Port 2 - GPS

| Band | Frequency Range (MHz) | Average Efficiency (%) | Peak Gain (dBi) | VSWR (worst case) | Impedance |
|---|---|---|---|---|---|
| GPS L1 | 1575.42±3 | >60 | 2.90 | 4.40:1 | 50 Ω |

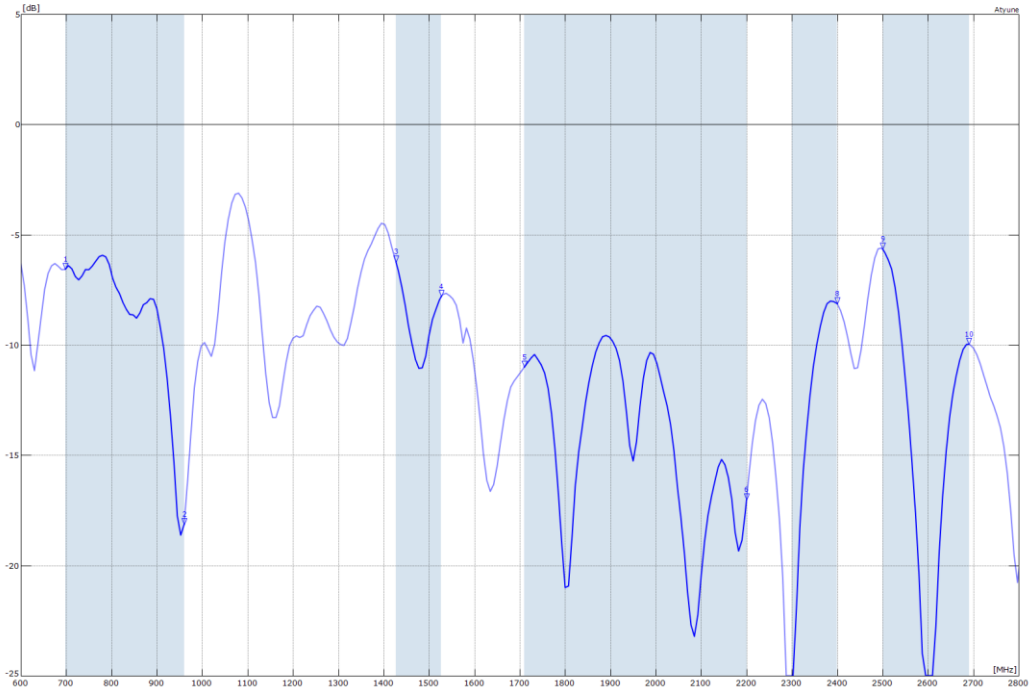
| LNA | |
|---|---|
| **Axial Ratio** | 1.80 |
| **Ceramic Patch (mm)** | 25 x 25 x 4.0 |
| **DC Supply (V)** | 3.3 – 5.0 |
| **Current Consumption (mA) Typical** | 9±3.0 |
| **LNA Gain (dB)** | 28±3.0 |
| **VSWR** | ≤2.00 |

# Environmental

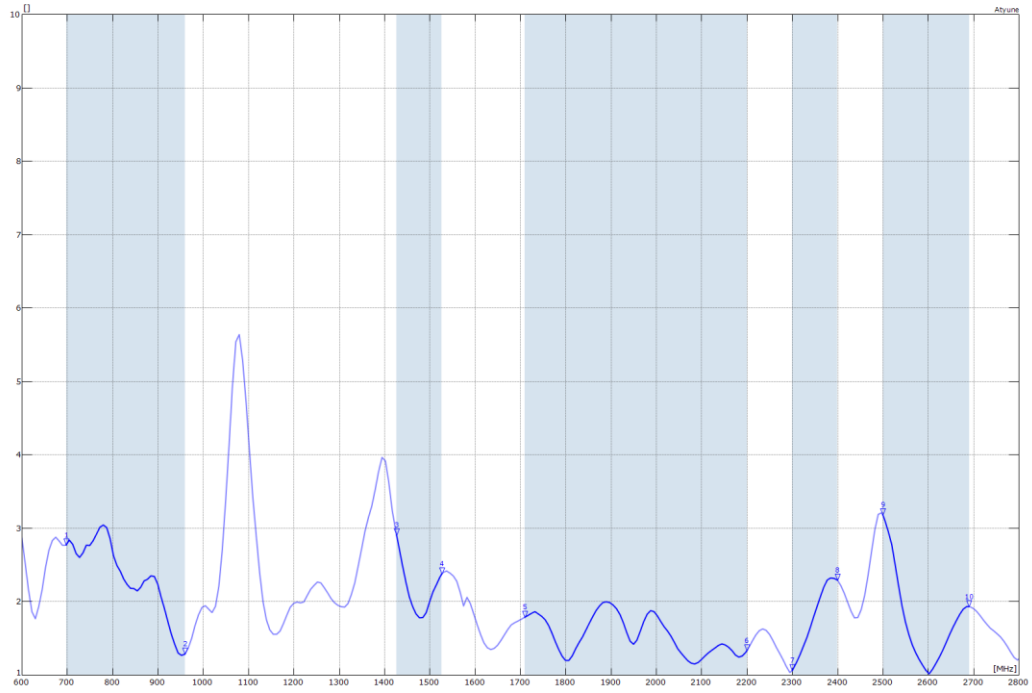
| Parameter | |
|---|---|
| Operational Temperature | -30 to +65°C |
| Storage Temperature | -40 to +70°C |
| IP Rating | IP67 |
| RoHs and REACH compliant | Yes |

# RF Characteristics - Cellular

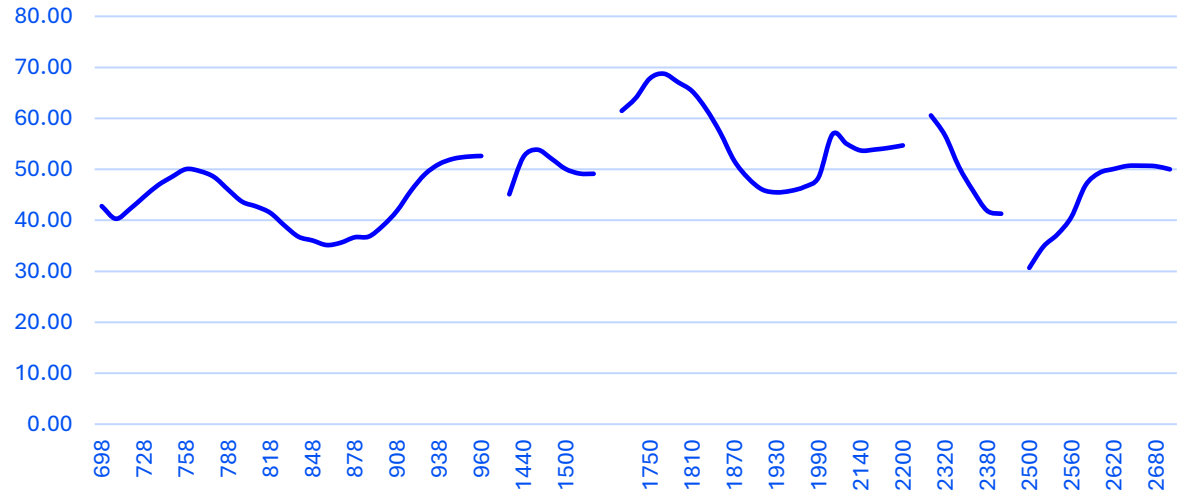
## Return loss



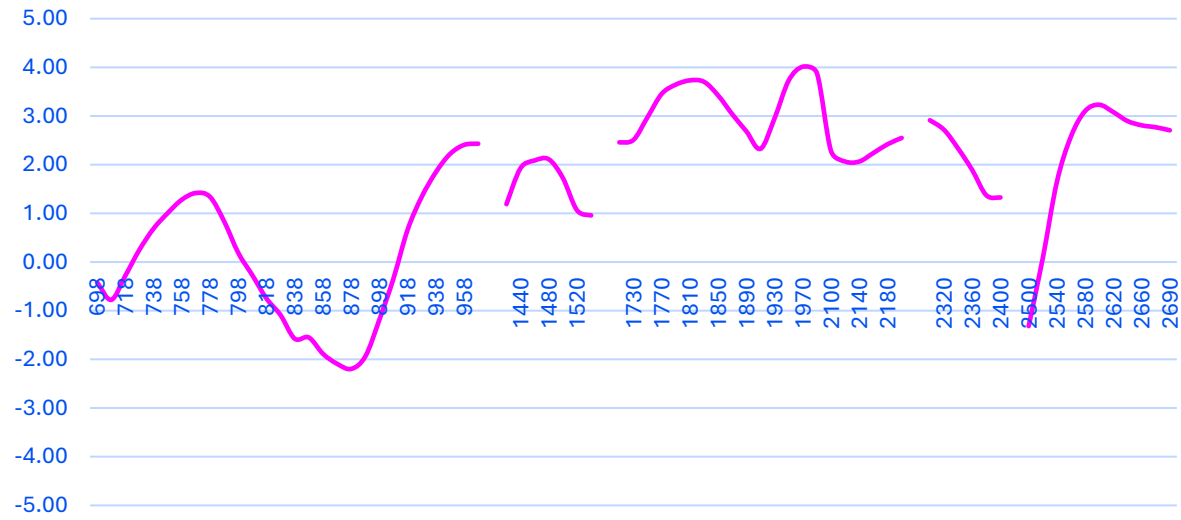

## VSWR



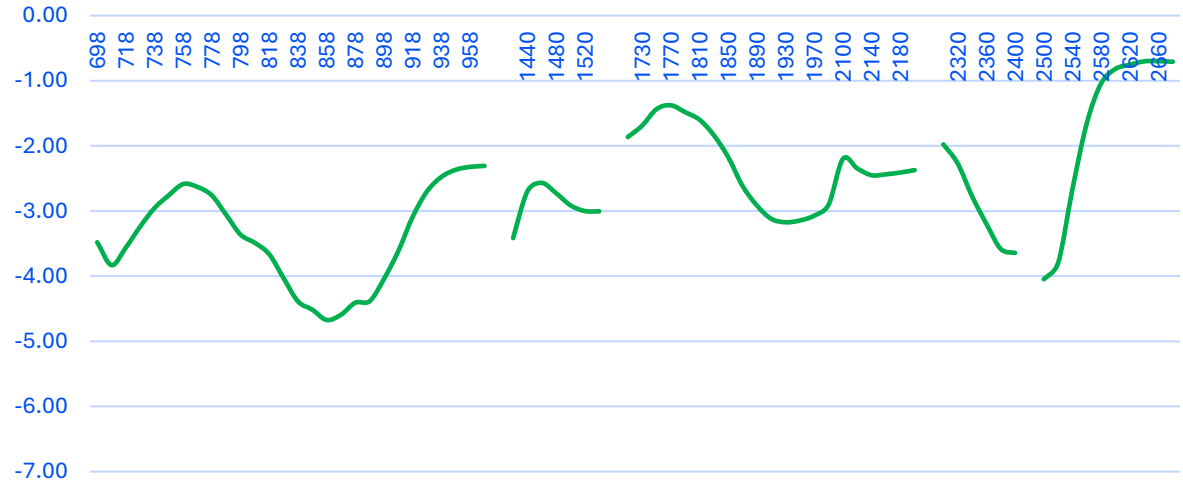
## Efficiency




## Peak Gain

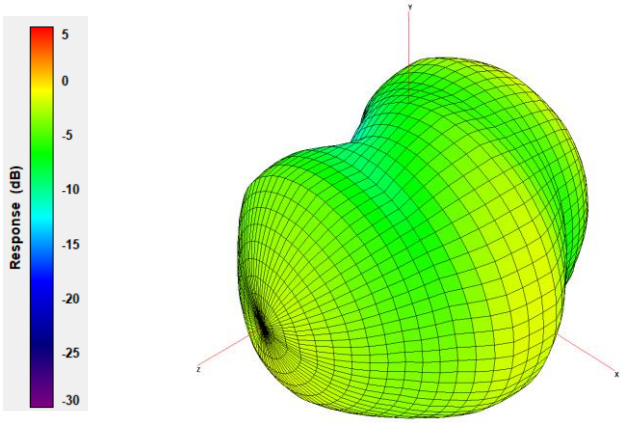


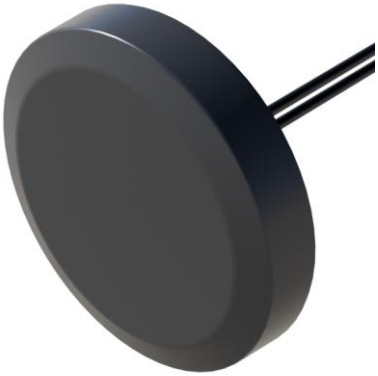

## Average Gain



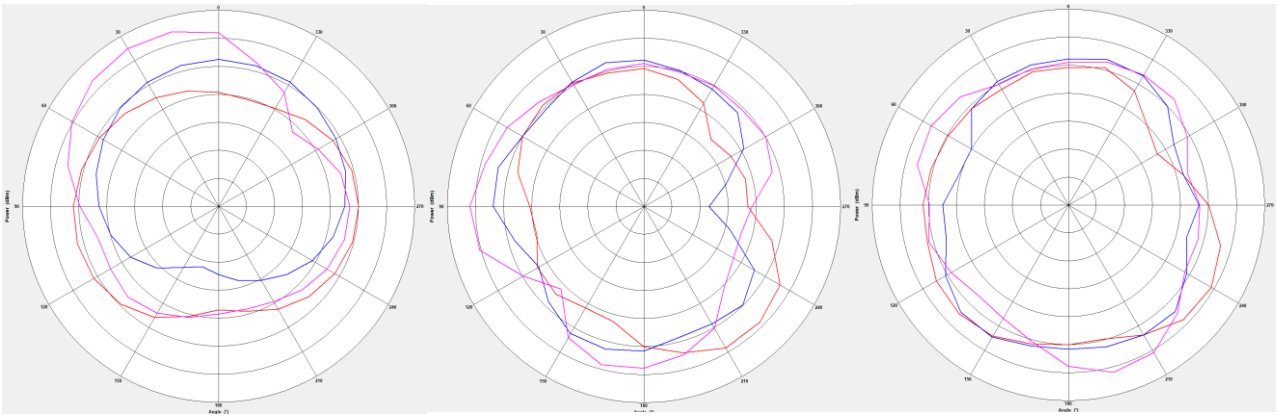
# RF Radiation Patterns

## RF Radiation Patterns at 880MHz



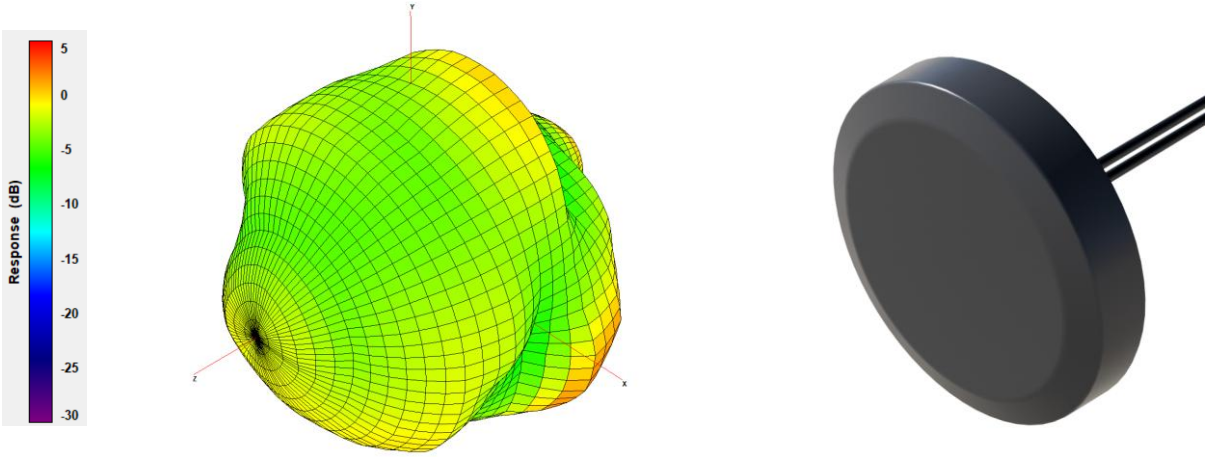
XY | XZ | YZ



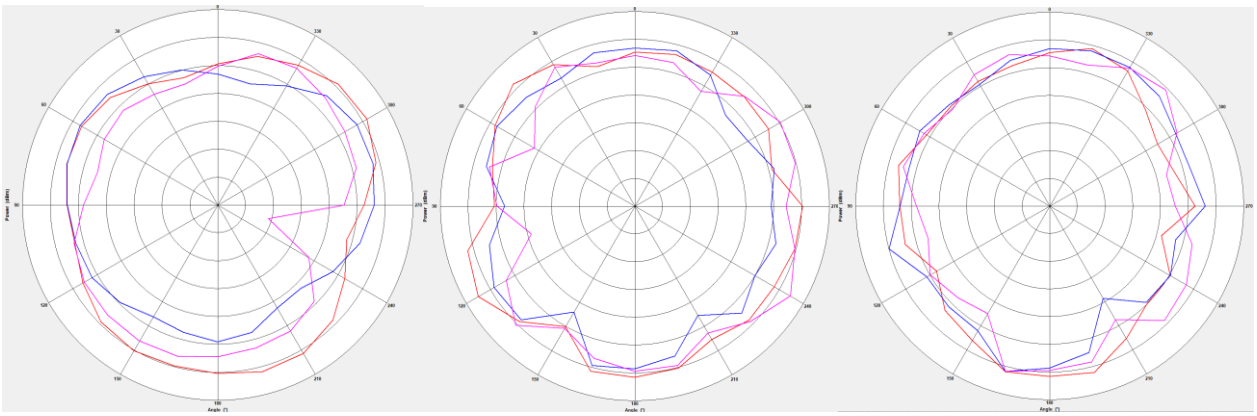
Max: 5
Min-30
Scale: 5/div

698
778
960

# RF Radiation Patterns at 1880MHz



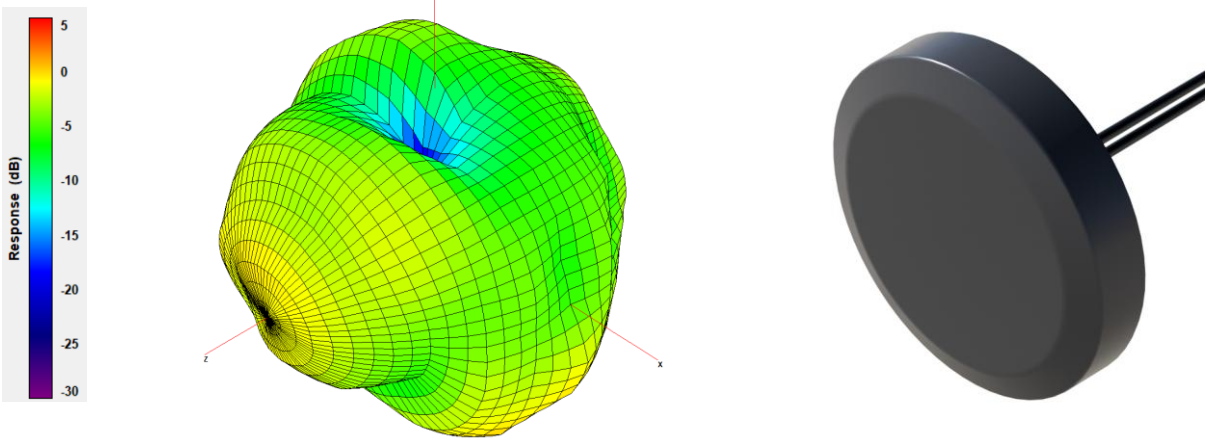

| XY | XZ | YZ |
|---|---|---|

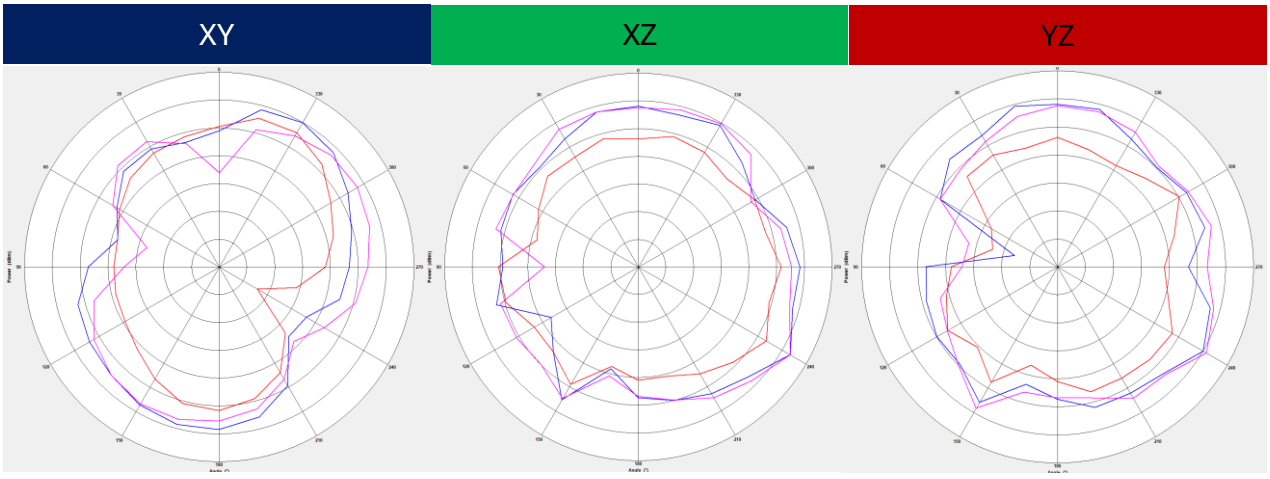


Max: 5
Min-30
Scale: 5/div

1710
1890
2200

# RF Radiation Patterns at 2600MHz

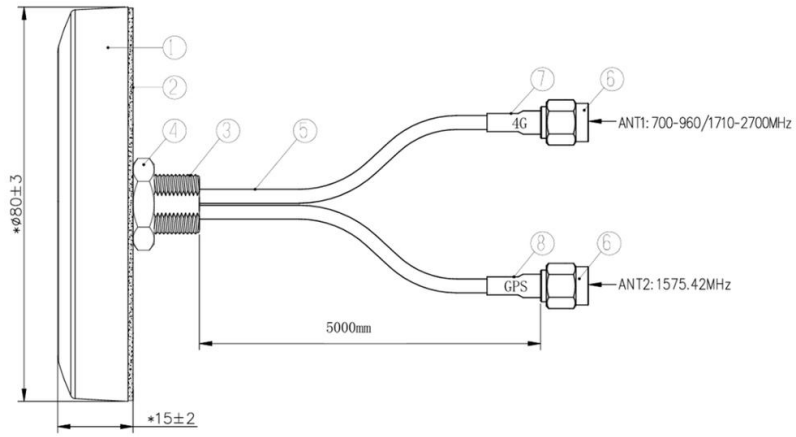



Max: 5
Min-30
Scale: 5/div

2510
2610
2690

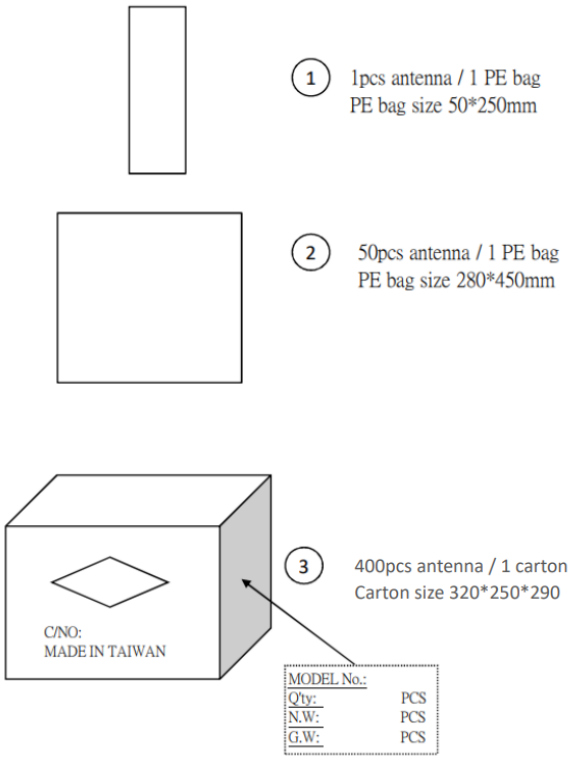
# Mechanical Drawing




NOTE:
1.Frequency Range:
1) ANT1:700~960&1710~2700MHz
VSWR≤4.0;
2) ANT2:1575.42MHz
LNA Gain:28±3dB (DC:3.3-5V)
VSWR≤2.0;
Impendance:50 Ohm;
2.Waterproof:IP65(Excluding cables);
3.These Parts comply with ROHS 2.0 ;
4.Strict size is marked with "*", and () for reference

| NO. | DESCRIPTION | | Q'TY |
|---|---|---|---|
| 8 | Heat shrinkable sleeve | PE,Color: White;Printing black "GPS" on surface | 1 |
| 7 | Heat shrinkable sleeve | PE,Color: White;Printing black "4G" on surface | 1 |
| 6 | Connector | SMA Male;Standard;Brass shell,Gold-Plated | 2 |
| 5 | Cable | RG174 Coaxial Cable,Black | 2 |
| 4 | Nut | Nut for M12;Nickel Plated(with cable trough) | 1 |
| 3 | Screw connector | M12 Screw;Nickel Plated | 1 |
| 2 | Foam&Adensive | Foam&Double side adhensive tape | 1 |
| 1 | Antenna shell | Black plastic shell | 1 |

# Packaging




# Material Regulation

The antenna has been assessed to conform to RoHS requirements. A certificate of conformance is available upon request.