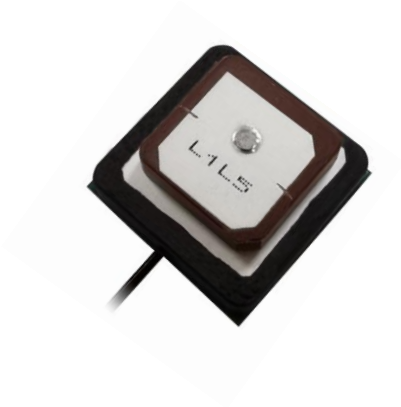
SUNNYWAY

# SWG012

## PN: SW20001IB93



**Sunnyway Technology**

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## 1. Electrical Specifications

| | | | |
|---|---|---|---|
| Standards | GPS L1+L5 & Galileo E2 & BeiDou B1 | | |
| Frequency range (MHz) | 1176MHz | 1561MHz | 1575MHz |
| Peak Gain (dBi) | 2.23dBi | 1.56dBi | 1.74dBi |
| Average Gain (dB) | -1.45dB | -3.77dB | -3.93dB |
| VSWR | 1.41 | 1.24 | 1.31 |
| Return Loss | -15.31 | -19.26 | -17.28 |
| Efficiency (%) | 71.5% | 41.9% | 40.4% |
| Polarization mode | Circular polarization | Circular polarization | Circular polarization |
| Radiation pattern | Hemispherical | Hemispherical | Hemispherical |
| Voltage Range (V) | 3.3 - 5.0 | 3.3 - 5.0 | 3.3 - 5.0 |
| Active Gain (dB) | 30 @ 5.0 V | 30 @ 5.0 V | 30 @ 5.0 V |
| Noise Figure (dB) | 1.5 @ 5.0 V | 1.5 @ 5.0 V | 1.5 @ 5.0 V |
| Current Consumption (mA) | 12 @ 5.0 V | | |
| Power Consumption (mW) | 100 @ 5.0 V | | |

## 2. Mechanical and Environmental Specification

| | |
|---|---|
| Mounting Type | Adhesive |
| Adhesive Type | 3M9448A |

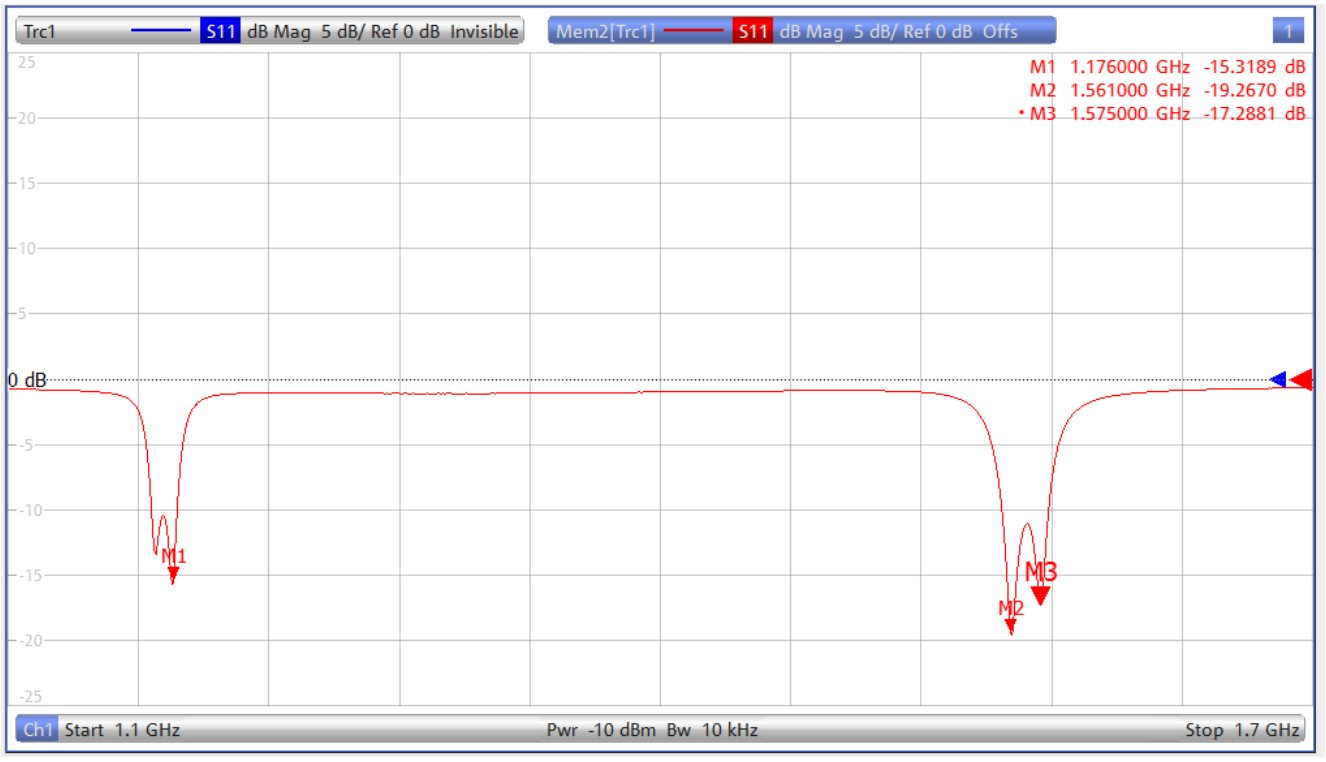
| | |
|---|---|
| Connector Type | U.FL Standard |
| Antenna size(mm) | 25 x25x4 +18x18x4 |
| Material | Ceramic |
| Cable length(mm) | 41.0mm |
| Operating Temperature (˚C) | -40 ˚C ~ +85 ˚C |
| Storage Temperature(˚C) | -40 ˚C ~ +85 ˚C |

## 3. Antenna parameters

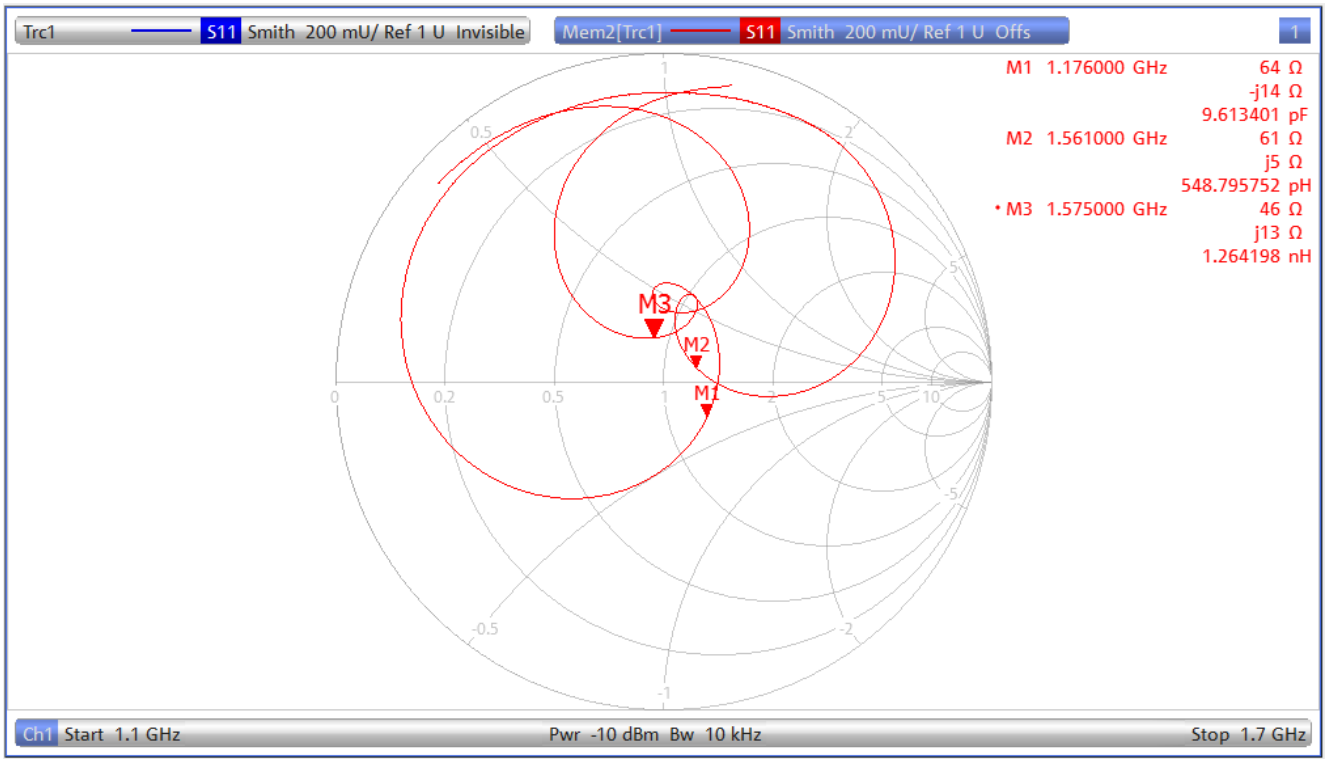
| FRE（MHz） | 1176 | 1561 | 1575 |
|---|---|---|---|
| VSWR | 1.41 | 1.24 | 1.31 |
| Return Loss | -15.31 | -19.26 | -17.28 |
| Eff (%) | 71.5 | 41.9 | 40.4 |
| PEAK Gain (dBi) | 2.23 | 1.56 | 1.74 |



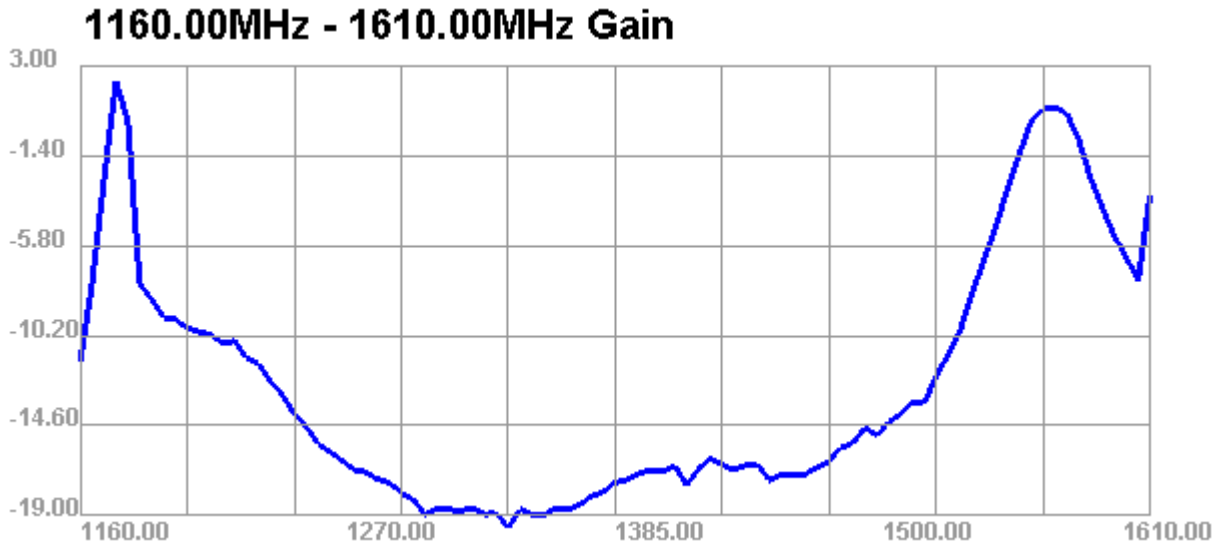

VSWR

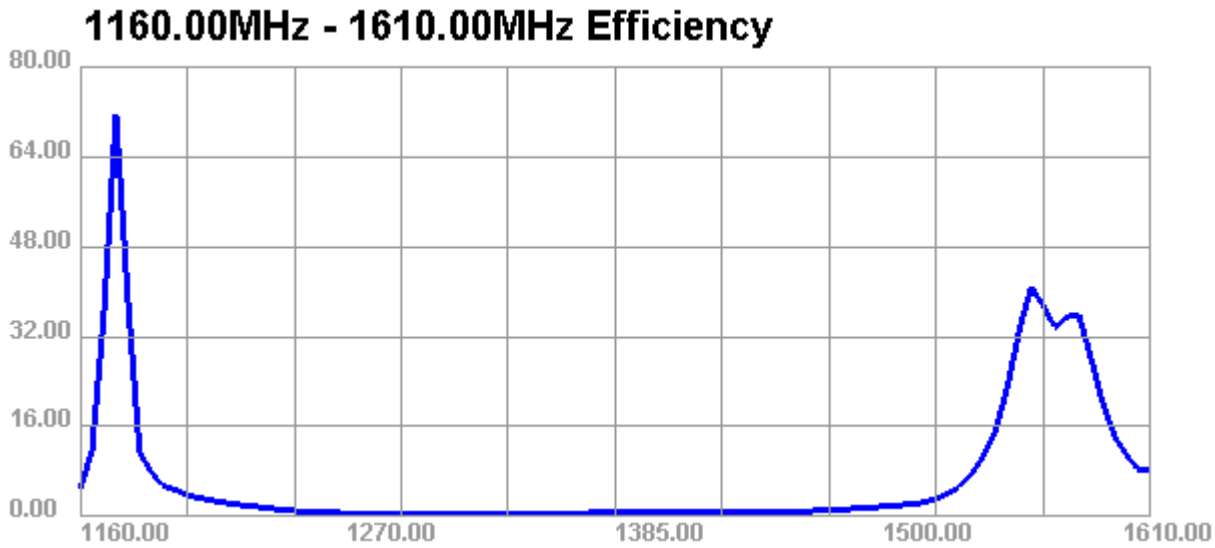



Return Loss

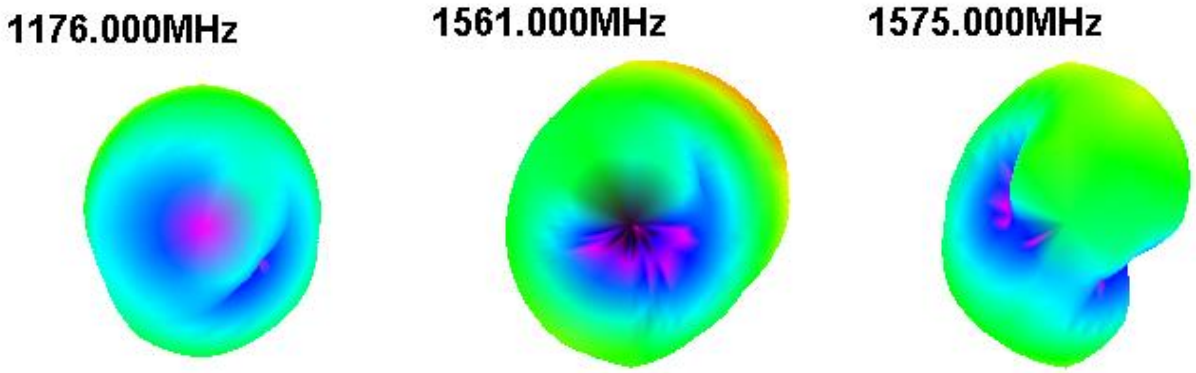

Trc1 S11 Smith 200 mU/ Ref 1 U Invisible
Mem2[Trc1] S11 Smith 200 mU/ Ref 1 U Offs
M1 1.176000 GHz
64 Ω
-j14 Ω
9.613401 pF
M2 1.561000 GHz
61 Ω
j5 Ω
548.795752 pH
• M3 1.575000 GHz
46 Ω
j13 Ω
1.264198 nH
M3
M2
M1
Ch1 Start 1.1 GHz
Pwr -10 dBm Bw 10 kHz
Stop 1.7 GHz

Smith

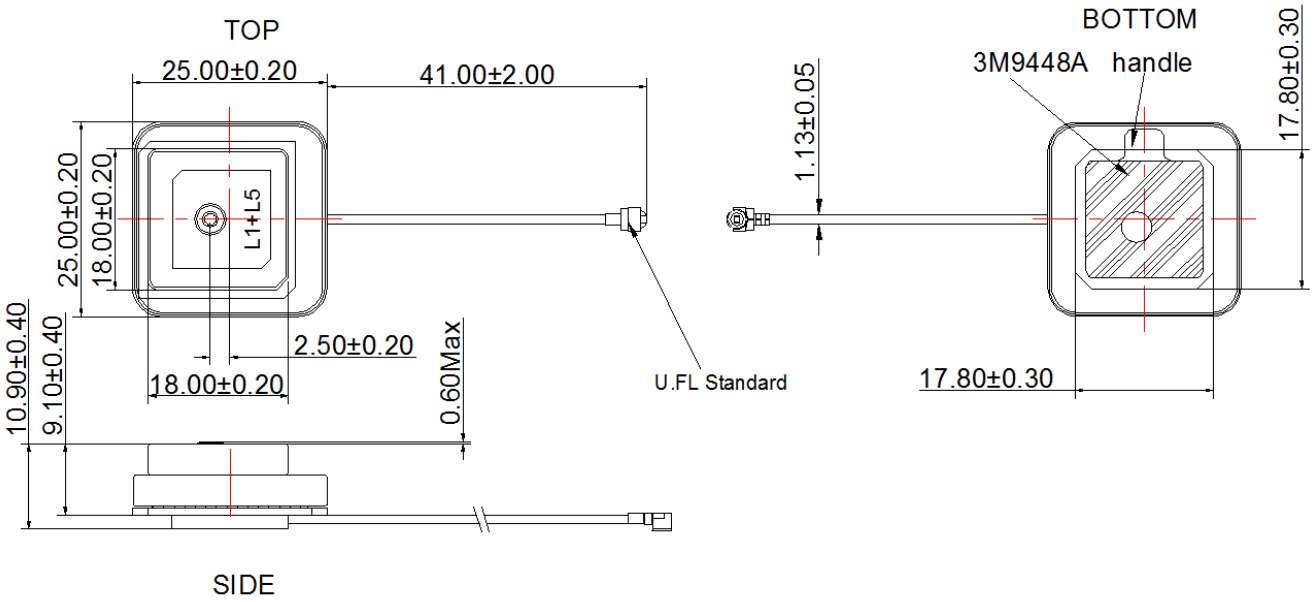

1160.00MHz - 1610.00MHz Gain
3.00
-1.40
-5.80
-10.20
-14.60
-19.00
1160.00
1270.00
1385.00
1500.00
1610.00




# Directional Pattern



# 4. Antenna Drawings



## 5. Drop Test

| Department | Antenna Name | Test Quantity | Test Standard | Test Date |
|---|---|---|---|---|
| MD | SWG012 | 1pc | N/A | 2020/1/2 |

**Test Purpose:**

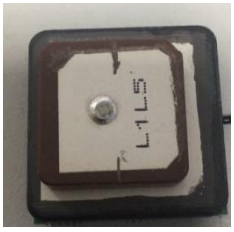
Verify the upper and lower ceramics do not fall off in the event of Falling at a certain height.

**Test process：**

According to the ceramic external antenna assembly requirements:

Soldered to the PCB, assembled into the outer casing, at a height of 1.5 meters, free fall on the concrete floor, fell 3 times with optional corner and/or 3 sides.








**Pass Criteria:**

1、There is no falling off at the ceramic thimble soldering PCB board;

2、There is no looseness between the upper and lower ceramic sheets.

**Test Result：**

After the drop test, the outer casing is opened, and the inner ceramic antenna thimble is not welded off at the PCB board, and there is no looseness between the upper and lower ceramic sheets.

PASS■ FAIL□

| Test Engineer/Date： | Approved by/Date： |
|---|---|
| Yu Jiang/2020-1-2 | Chen Xiaoping/2020-1-2 |