

## SPECIFICATION

Part No. : **AA.162.301111**

Product Name : Ulysses Ultra-Low Profile Miniature Magnet  
Mounted GPS-GLONASS-GALILEO Antenna

Feature : 1575MHz – 1610MHz  
1.8-5.5V  
3m RG174 SMA(M)  
IP67 Rated  
Dims: 40\*38\*10mm  
Custom cables and connectors available  
RoHS Compliant



## **1. Introduction**

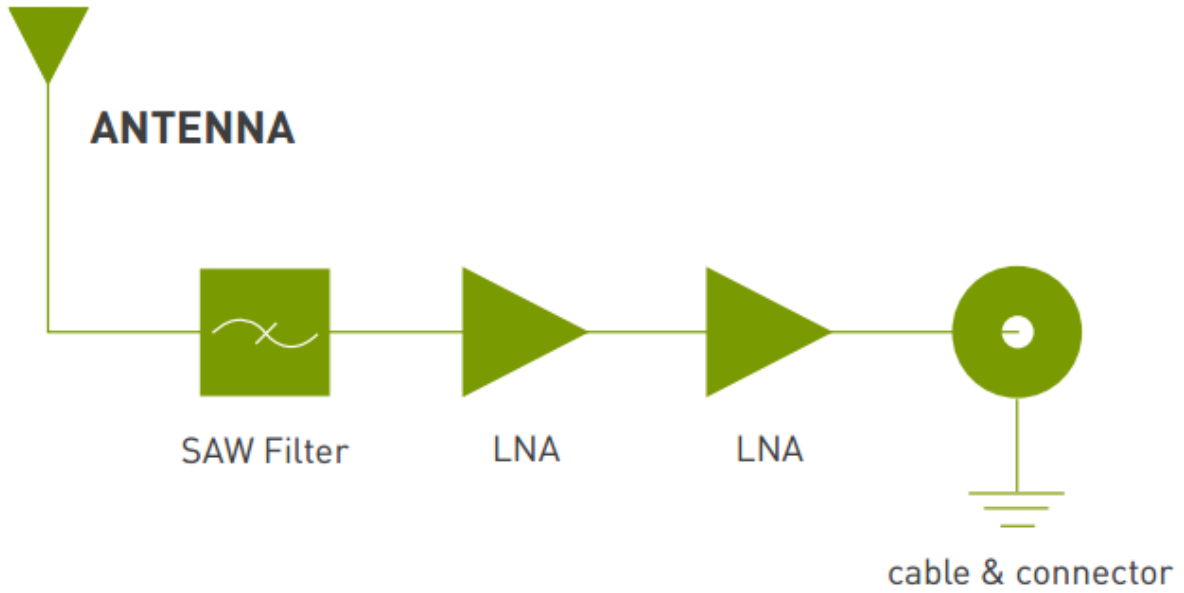
The Ulysses miniature super low profile (only 10mm in height) GNSS antenna is designed for applications which require high positioning accuracy by combining signals from GPS, GALILEO and GLONASS systems. A high gain wide-band patch antenna on an integral ground delivers reliable performance. Fully IP67 waterproof rating allows use in outdoors environments. Front end SAW filter configuration eliminates potential LNA burn-out from nearby out of band radiated power bursts from other antennas that may be co-located nearby.

The antenna is manufactured to strict first tier Automotive quality controlled manufacturing process in TS16949 approved facility.

## 2. Specification

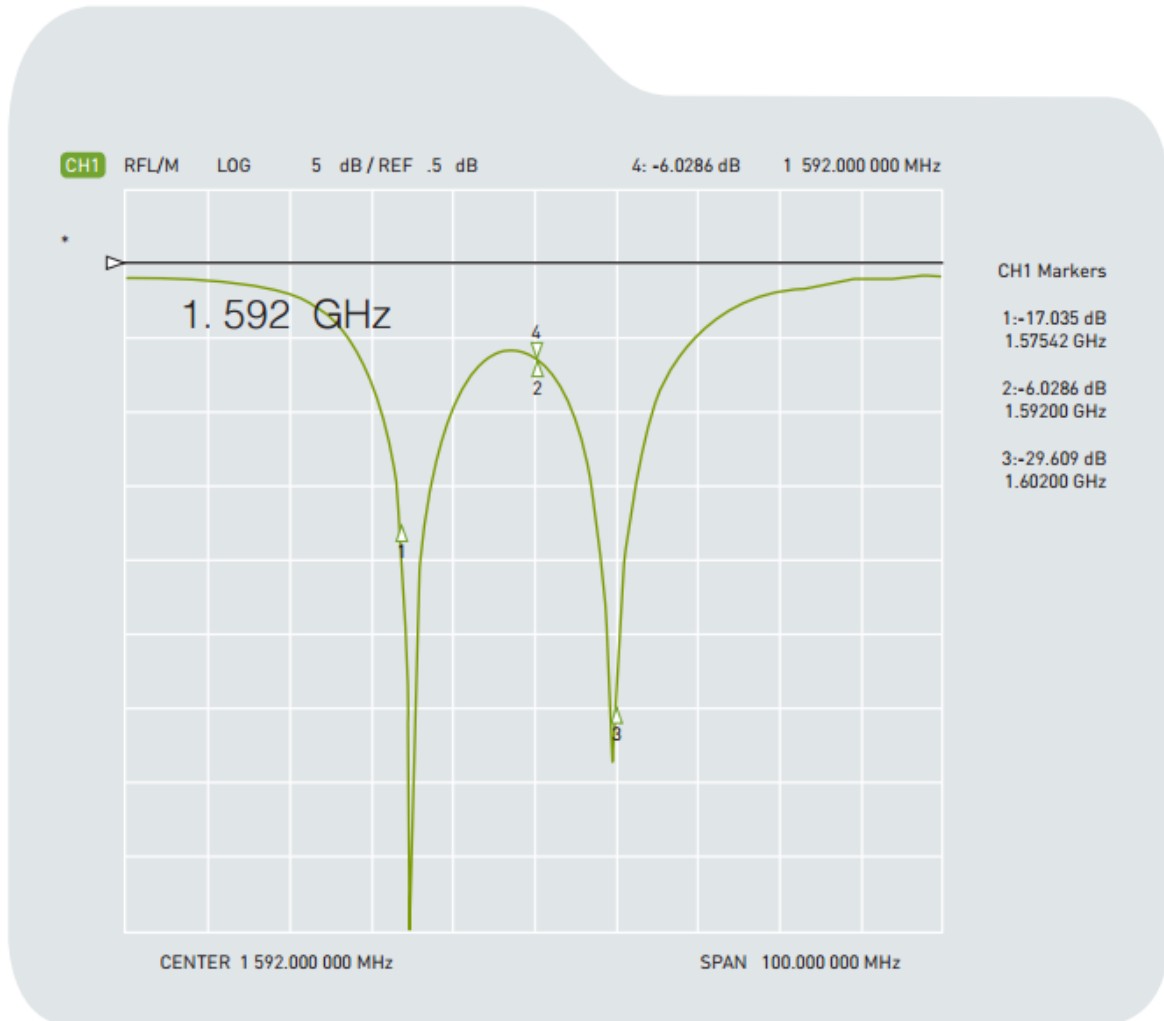
| ELECTRICAL                            |   |             |             |
|---------------------------------------|---|-------------|-------------|
| Centre Frequency                      | 1575~1610MHz  |             |             |
| Antenna Gain                          | 26±3dBic @ zenith @ 1575.42MHz<br>27±3dBic @ zenith @ 1602MHz |             |             |
| VSWR                                  | 2.0 max.  |             |             |
| Impedance                             | 50Ω   |             |             |
| Outer Band Attenuation                | 1592±140MHz 15dB Min  |             |             |
| Pout at 1dB Gain<br>Compression Point | -6dBm Min. -2dBm Typ.   |             |             |
| DC input                              | 1.8V (min.)   | 3.0V (typ.) | 5.5V (max.) |
| LNA Gain                              | 22dB  | 28dB        | 31dB        |
| Noise Figure                          | 2.6dB   | 2.6dB       | 2.9dB       |
| Power Consumption                     | 5mA   | 10mA        | 23mA        |
| MECHANICAL                            |   |             |             |
| Antenna Dimensions                    | 37.8 x 40.4 x 10mm  |             |             |
| Housing Material                      | UV Resistant ABS  |             |             |
| Cable                                 | 3m RG174 (fully customizable)                                 |             |             |
| Connector                             | SMA(M) (fully customizable)                                   |             |             |
| ENVIRONMENTAL                         |   |             |             |
| Operation Temperature                 | -40°C to 85°C   |             |             |
| Storage Temperature                   | -40°C to 85°C   |             |             |
| Relative Humidity                     | 40% to 95%  |             |             |

### 3. Antenna Block Diagram



## 4. Antenna S11 Property

### 4.1. Return Loss

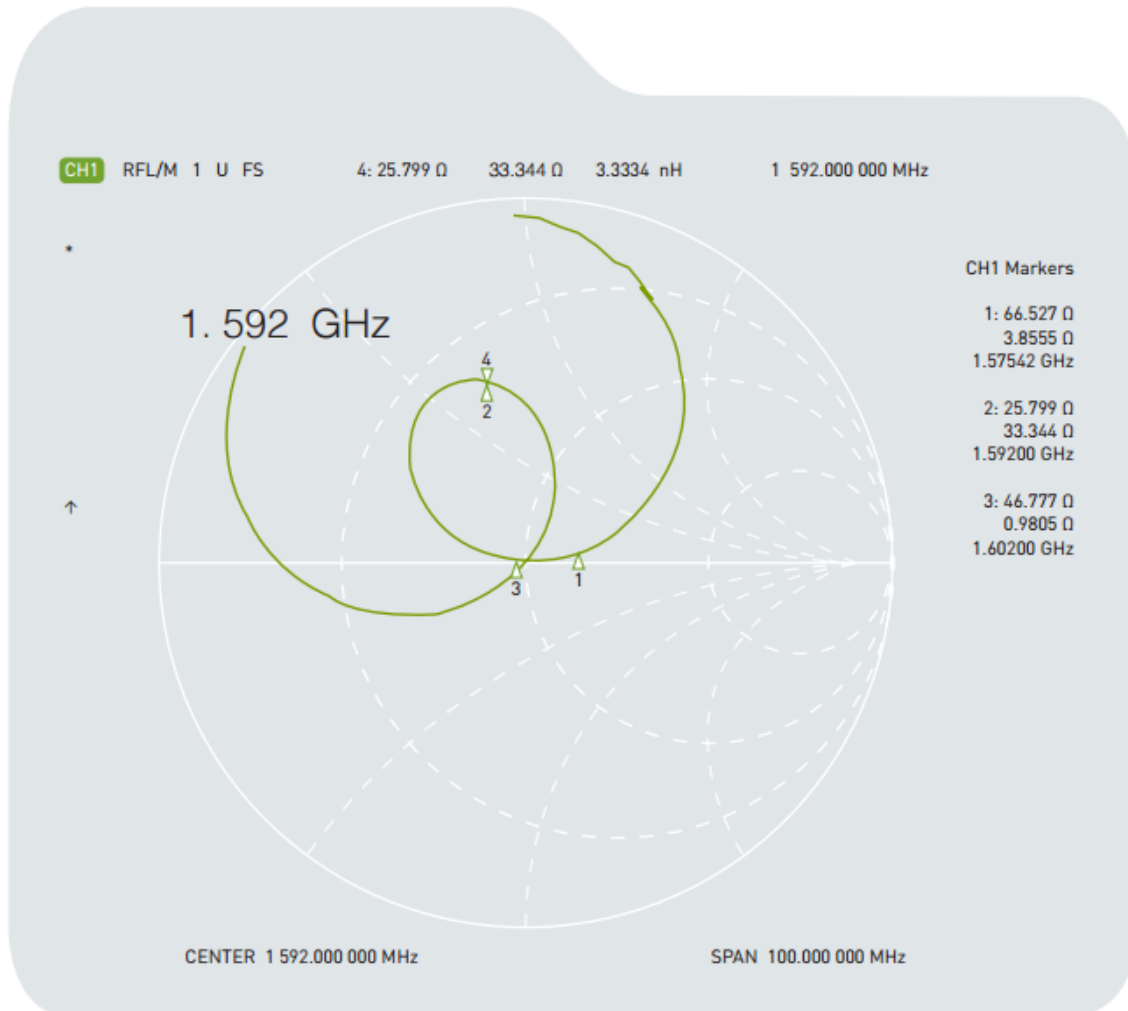


#### Return Loss

-17.03 dB @ 1575MHz

-29.60 dB @ 1602MHz

## 4.2. Impedance

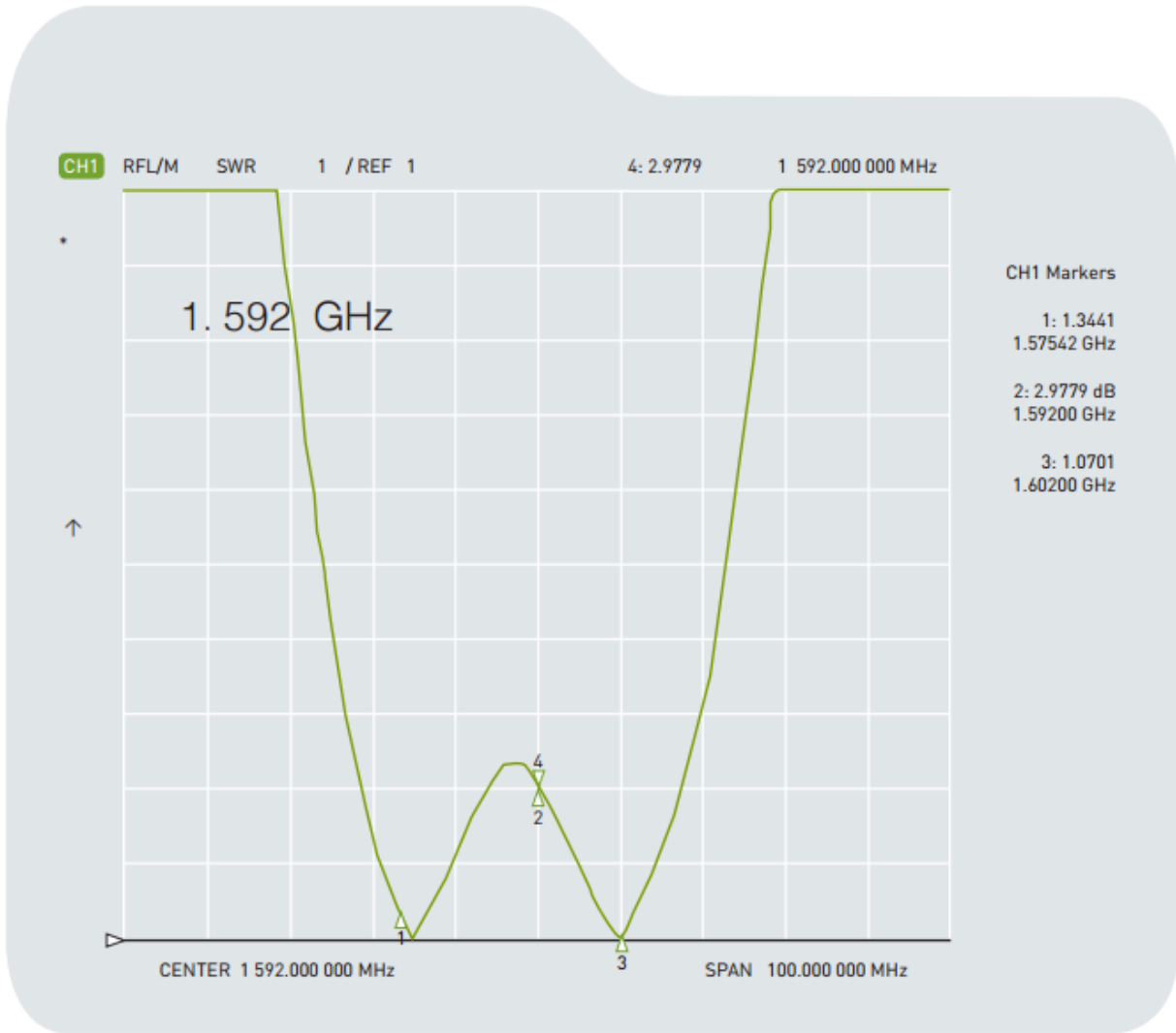


**Impedance :**

66.52 +j3.85 Ohm@ 1575MHz

46.77 +j0.98 Ohm@ 1602MHz

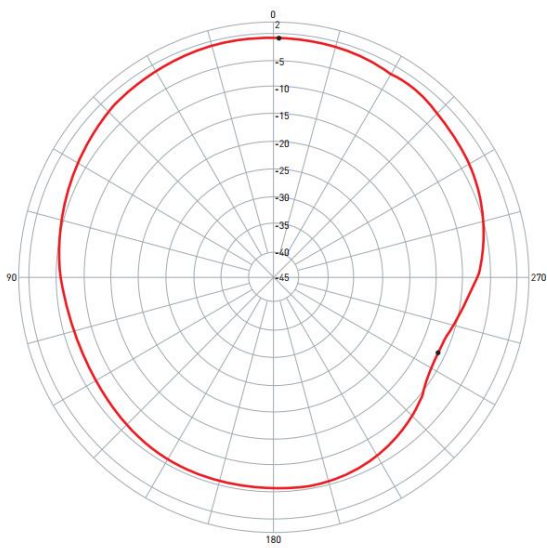
### 4.3. VSWR



**VSWR**  
 1.34 @ 1575MHz  
 1.07 @ 1602MHz

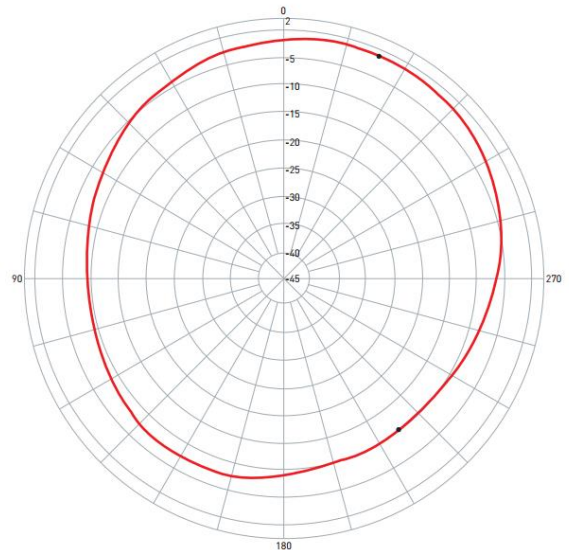
## 5. Radiation Patterns

1575.42MHz XZ Plane



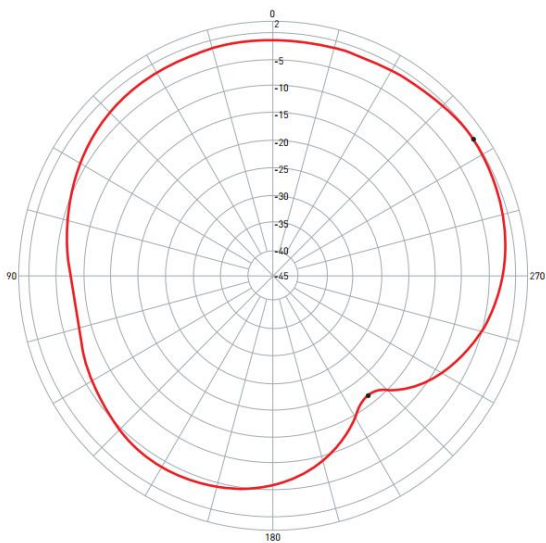
| Pattern | Model No.     | Test Mode | Freq (MHz) | Max Gain(dBi)  | Min Gain(dBi)   | Avg. Gain(dBi) | Source Polar. |
|---------|---------------|-----------|------------|----------------|-----------------|----------------|---------------|
| 1       | AA.162.301111 | XZ        | 1575.42    | -0.69 / 359.00 | -11.62 / 245.00 | -4.12          | V+H           |

1575.42MHz YZ Plane



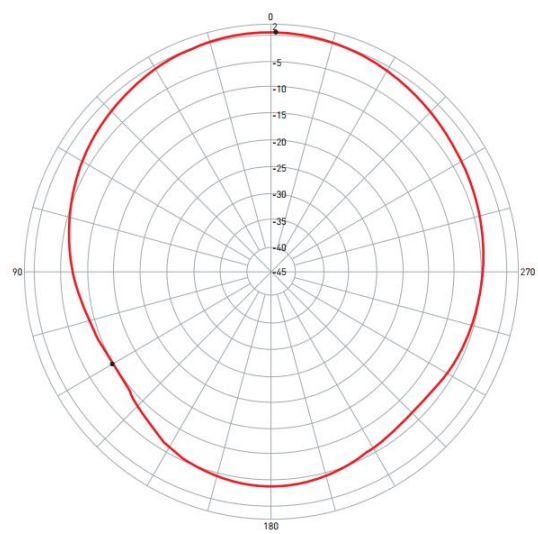
| Pattern | Model No.     | Test Mode | Freq (MHz) | Max Gain(dBi)  | Min Gain(dBi)   | Avg. Gain(dBi) | Source Polar. |
|---------|---------------|-----------|------------|----------------|-----------------|----------------|---------------|
| 1       | AA.162.301111 | YZ        | 1575.42    | -1.15 / 337.00 | -10.60 / 217.00 | -5.28          | V+H           |

1602MHz XZ Plane



| Pattern | Model No.     | Test Mode | Freq (MHz) | Max Gain(dBi)  | Min Gain(dBi)   | Avg. Gain(dBi) | Source Polar. |
|---------|---------------|-----------|------------|----------------|-----------------|----------------|---------------|
| 1       | AA.162.301111 | XZ        | 1602.00    | -0.34 / 304.00 | -16.71 / 218.00 | -3.63          | V+H           |

1602MHz YZ Plane



| Pattern | Model No.     | Test Mode | Freq (MHz) | Max Gain(dBi) | Min Gain(dBi)   | Avg. Gain(dBi) | Source Polar. |
|---------|---------------|-----------|------------|---------------|-----------------|----------------|---------------|
| 1       | AA.162.301111 | YZ        | 1602.00    | 0.49 / 359.00 | -10.13 / 120.00 | -3.46          | V+H           |

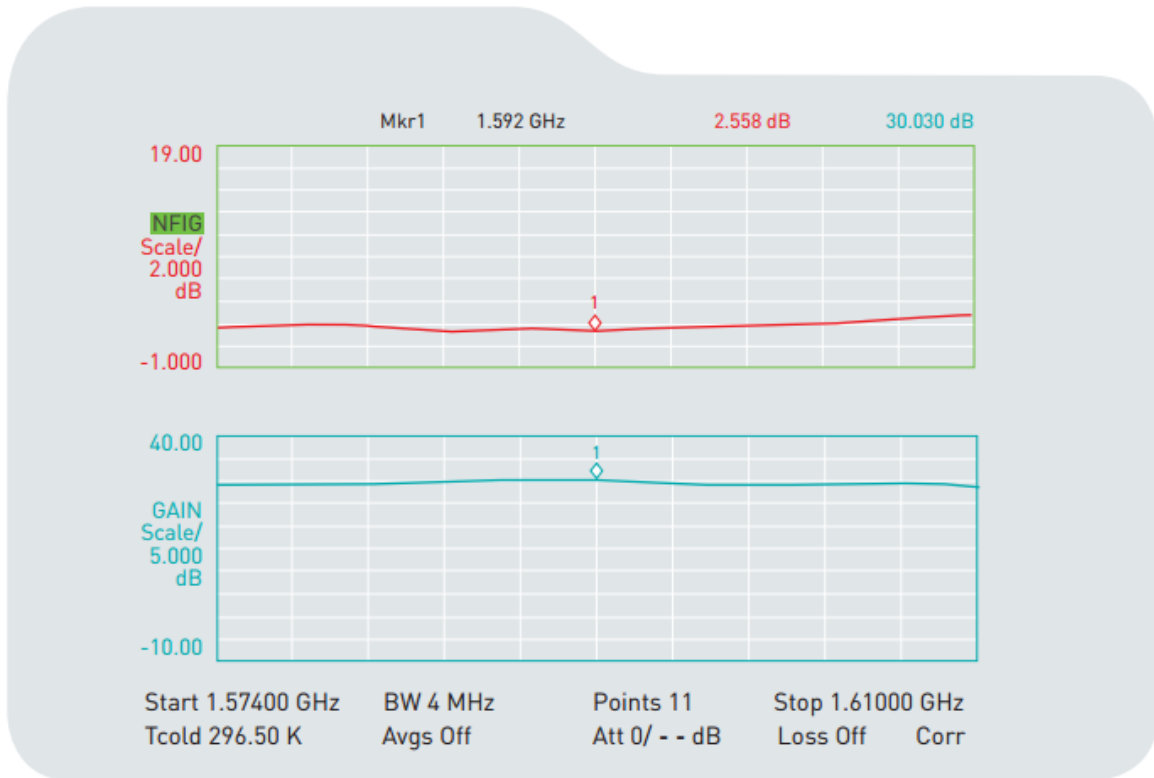


## 6. LNA Gain and Output Band Rejection @3.0V

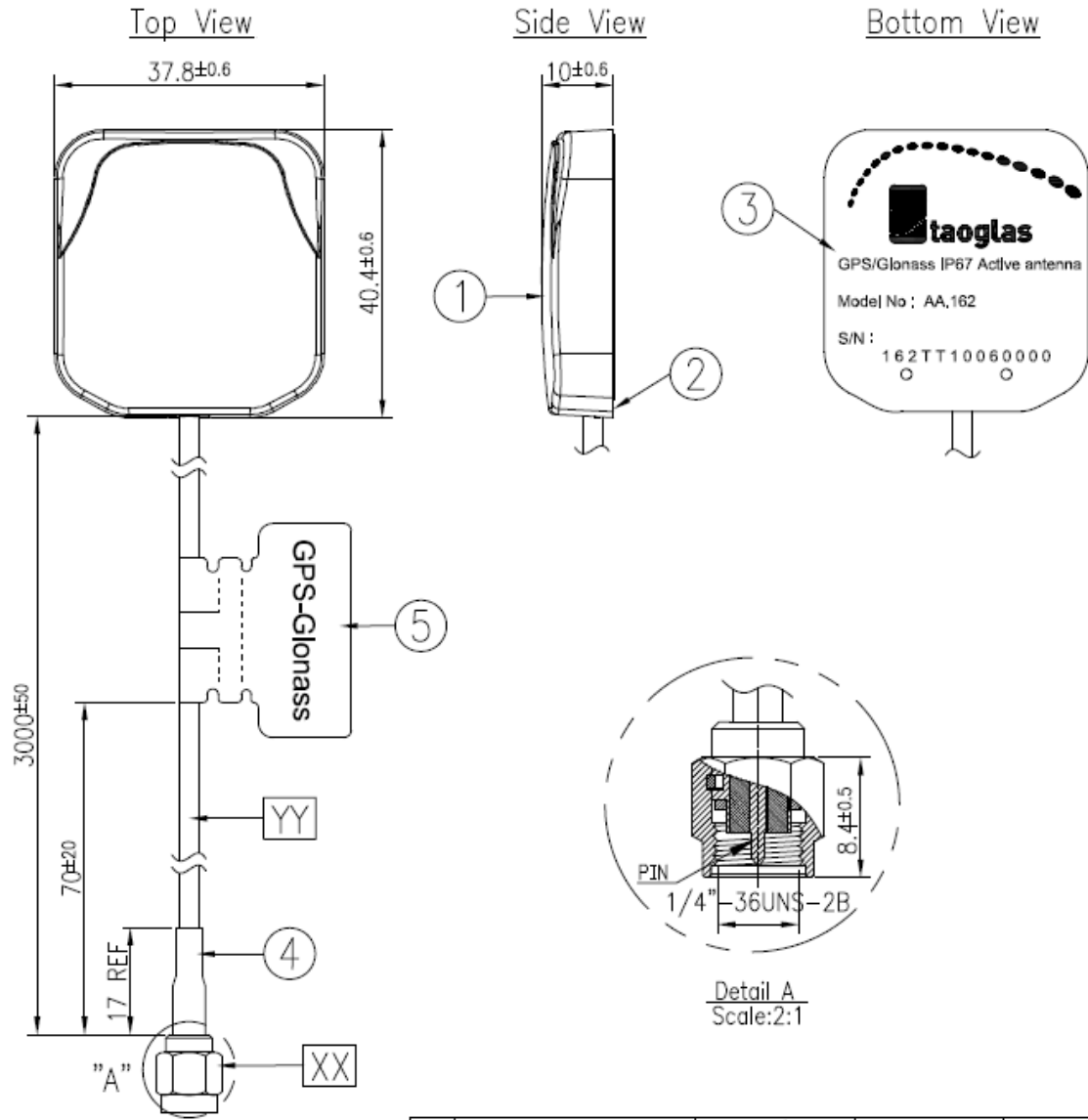


|             |    |               |         |    |
|-------------|----|---------------|---------|----|
| Ch1 Tr1 S21 | 1  | 1.5740000 GHz | 28.186  | dB |
| Ch1 Tr1 S21 | >2 | 1.6100000 GHz | 27.949  | dB |
| Ch1 Tr1 S21 | 3  | 1.5920000 GHz | 29.044  | dB |
| Ch1 Tr1 S21 | 4  | 1.5420000 GHz | 9.0245  | dB |
| Ch1 Tr1 S21 | 5  | 1.6420000 GHz | -10.035 | dB |
| Ch1 Tr1 S21 | 6  | 1.4920000 GHz | 4.4105  | dB |
| Ch1 Tr1 S21 | 7  | 1.6920000 GHz | -14.431 | dB |
| Ch1 Tr2 S21 | 1  | 1.5740000 GHz | 1.0816  |    |
| Ch1 Tr2 S21 | 2  | 1.6100000 GHz | 1.1855  |    |
| Ch1 Tr2 S21 | 3  | 1.5920000 GHz | 1.2488  |    |
| Ch1 Tr2 S21 | 4  | 1.5420000 GHz | 1.3486  |    |

## 7. LNA Noise Figure @3.0V



## 8. Drawing

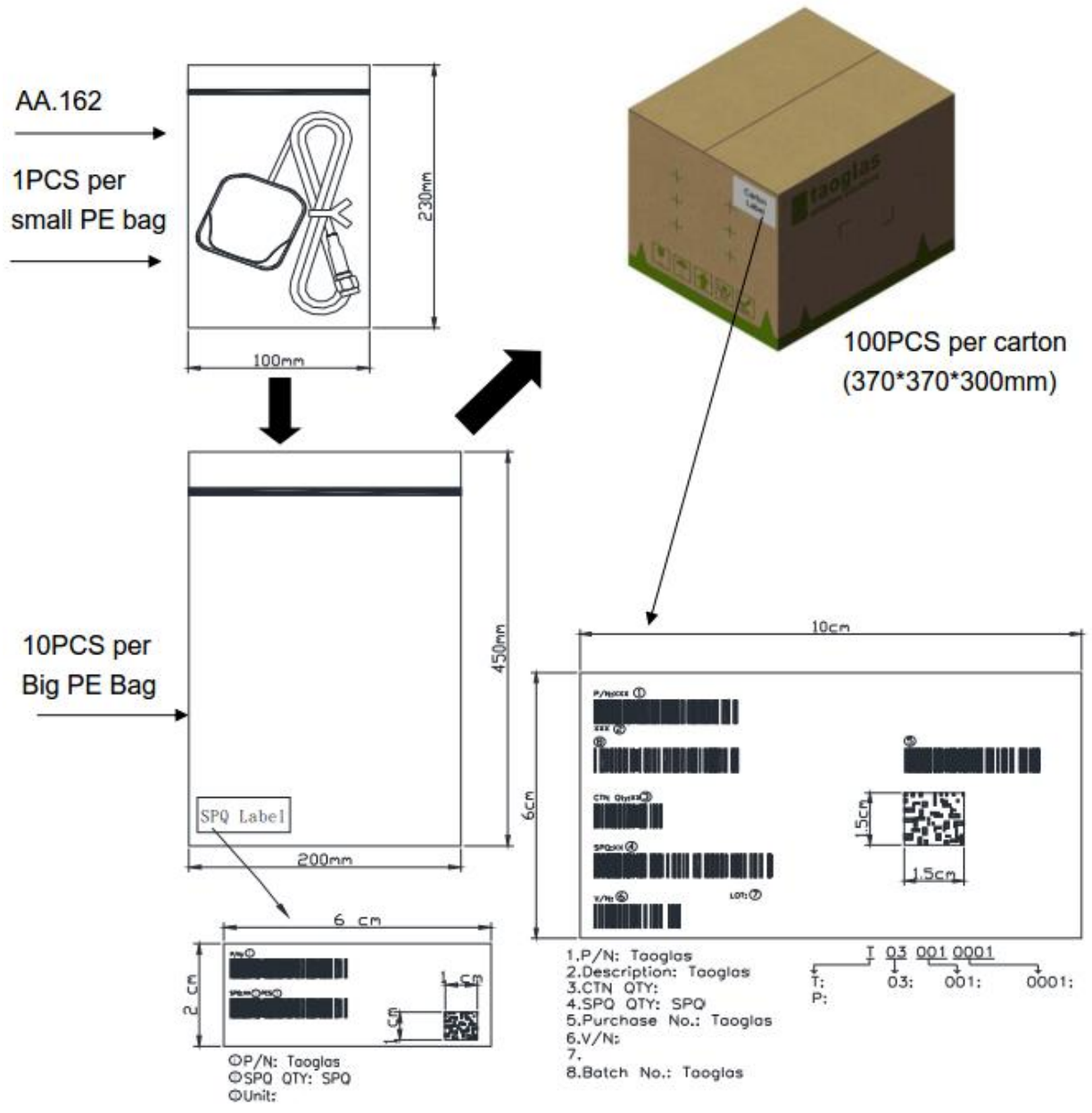


NOTES:  
1. All Material Must Be RoHS Compliant.

|   | Name              | P/N            | Material         | Finish | QTY |
|---|-------------------|----------------|------------------|--------|-----|
| 1 | Housing Top       | 000116K000000A | ABS              | Black  | 1   |
| 2 | Housing Bottom    | 000116K010000A | ABS              | Black  | 1   |
| 3 | Sticker           | 001016K000000A | Glass Silver PET | Silver | 1   |
| 4 | Heat Shrink Tube  | 001315C020000A | PE               | Black  | 1   |
| 5 | GPS-Glonass Label | 001012K010051A | PEPA             | Orange | 1   |

|    | Name           | P/N            | Spec     | Finish    | QTY |
|----|----------------|----------------|----------|-----------|-----|
| XX | Connector Type | 200216D00009BA | SMA(M)ST | Au Plated | 1   |
| YY | Cable Type     | 301315C000000A | RG-174   | Black     | 1   |

## 9. Packaging



Taoglas makes no warranties based on the accuracy or completeness of the contents of this document and reserves the right to make changes to specifications and product descriptions at any time without notice. Taoglas reserves all rights to this document and the information contained herein.

Reproduction, use or disclosure to third parties without express permission is strictly prohibited.

Copyright © Taoglas Ltd.