

## Specification

|              |   |                                                                                                                                                                                                                                                                                                                                                            |
|--------------|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Part No.     | : | <b>GSA.8827R.A.101111</b>                                                                                                                                                                                                                                                                                                                                  |
| Product Name | : | Phoenix 4G/3G/2G Ultra-wideband I-bar Antenna<br>for First-Tier Automotive Application                                                                                                                                                                                                                                                                     |
| Feature      | : | LTE / GSM / CDMA /DCS /PCS / WCDMA / UMTS /<br>HSDPA / GPRS / EDGE / GPS / Wi-Fi<br>698MHz to 960MHz, 1575.42MHz,<br>1710MHz to 2700Mhz<br>1M RG.174 cable with SMA(M) connector<br>AntD© Antenna Diagnostic Compatible<br>Low profile for easy installation<br>Fully customizable cable length and connector<br>105mm*30mm*7.7mm<br><b>RoHS compliant</b> |



## 1. Introduction

The GSA.8827R Phoenix Ultra-Wideband I-Bar antenna is a robust high efficiency cellular antenna for use with all 4G/3G/2G cellular modules worldwide.

Its slim-line design allows for covert and convenient installation in automotive vehicles, its omni-directional gain across all bands ensures constant reception and transmission. GSA.8827R is manufactured and tested in a TS16949 first tier automotive approved facility, and it has gone through full PPAP design, reliability and quality audits.

The Phoenix finds its application particularly in first-tier automotive application, aftermarket and telematics. With its unique ultra-wide band dipole design, the Phoenix has exceptional industry performance characteristics considering its very low profile at 7.7mm and has a compact size of only 105mm\*30mm.

This antenna is designed to be mounted on glass or plastic (not on metal). It comes with strong 3M double-sided adhesive for a permanent and secure fix to your vehicle interior. The antenna is UV Resistant. Cable lengths and connectors are fully customizable.

GSA.8827R features Taoglas' AntD© antenna diagnostic technology. AntD© allows connected radio products using the latest cellular modules and recommended circuits from Telit and uBlox to perform diagnostics on the antenna. This includes detection that the proper antenna is connected and that the connection isn't shorted or broken. Contact Taoglas engineering for examples on how to implement AntD© antenna diagnostics in your product.

## 2. Specification

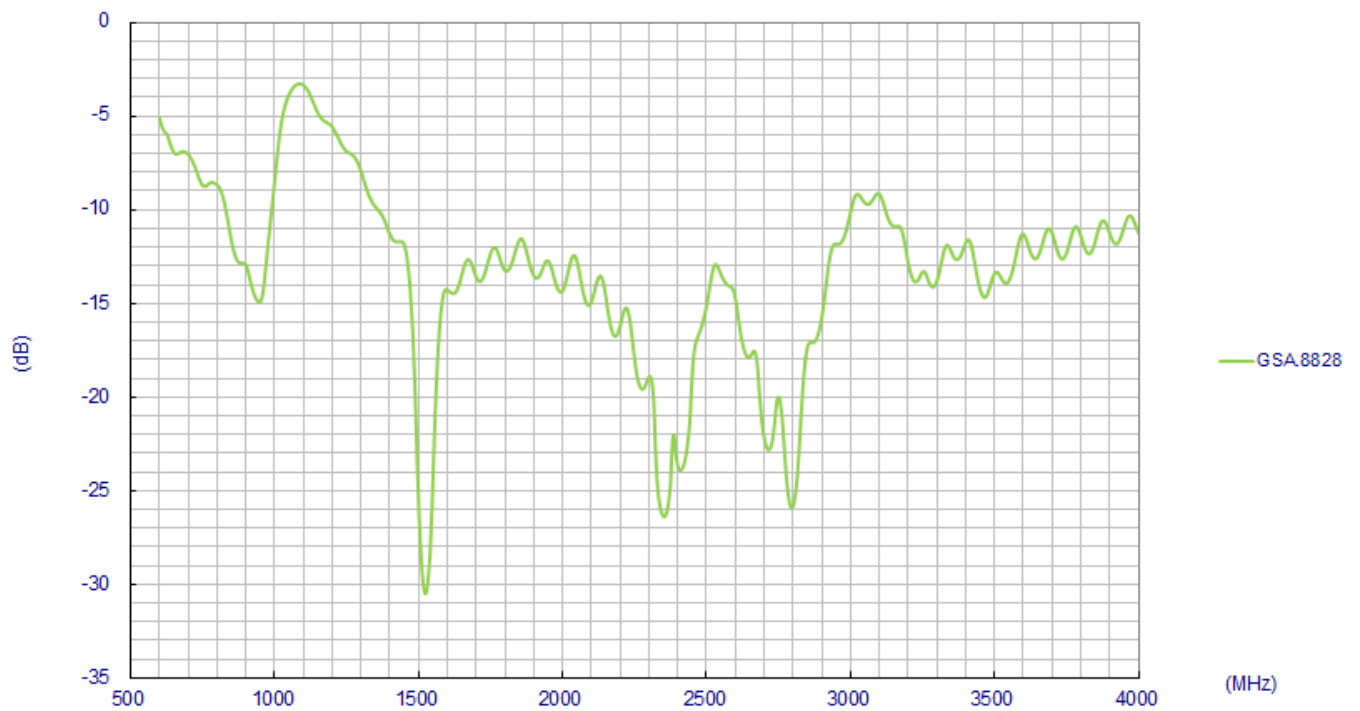
| ELECTRICAL                    |   |         |                            |         |         |            |            |            |            |            |            |
|-------------------------------|---|---------|----------------------------|---------|---------|------------|------------|------------|------------|------------|------------|
| Frequency (MHz)               |   | 698~803 | 824~894                    | 880~960 | 1575.42 | 1710 ~1880 | 1850 ~1990 | 1920 ~2170 | 2305 ~2360 | 2490 ~2690 | 3400 ~3600 |
| Free Space Peak Gain (dBi)    |   |         |                            |         |         |            |            |            |            |            |            |
| Cable length (meter)          | 1 | 3.42    | 2.38                       | 1.47    | 1.28    | 2.16       | 1.86       | 1.86       |            | 1.74       |            |
| Free Space Average Gain (dBi) |   |         |                            |         |         |            |            |            |            |            |            |
| Cable length (meter)          | 1 | -4.34   | -3.72                      | -3.71   | -1.75   | -2.47      | -2.43      | -2.56      |            | -4.36      |            |
| Free Space Efficiency (%)     |   |         |                            |         |         |            |            |            |            |            |            |
| Cable length (meter)          | 1 | 37.38   | 42.47                      | 42.54   | 66.83   | 56.71      | 57.14      | 55.50      |            | 37.03      |            |
| Impedance                     |   |         | 50Ω                        |         |         |            |            |            |            |            |            |
| Polarization                  |   |         | Linear                     |         |         |            |            |            |            |            |            |
| Radiation Pattern             |   |         | Omni                       |         |         |            |            |            |            |            |            |
| Input Power                   |   |         | 50 W                       |         |         |            |            |            |            |            |            |
| Integrate Resistor            |   |         | Shunt 15K Ohm to Ground    |         |         |            |            |            |            |            |            |
| MECHANICAL                    |   |         |                            |         |         |            |            |            |            |            |            |
| Casing                        |   |         | UV Resistant PC/ABS        |         |         |            |            |            |            |            |            |
| Connector                     |   |         | SMA Male (customizable)    |         |         |            |            |            |            |            |            |
| ENVIRONMENTAL                 |   |         |                            |         |         |            |            |            |            |            |            |
| Temperature Range             |   |         | -40°C to 85°C              |         |         |            |            |            |            |            |            |
| Humidity                      |   |         | Non-condensing 65°C 95% RH |         |         |            |            |            |            |            |            |

| LTE BANDS   |                                                      |                               |         |
|-------------|------------------------------------------------------|-------------------------------|---------|
| Band Number | LTE / LTE-Advanced / WCDMA / HSPA / HSPA+ / TD-SCDMA |                               |         |
|             | Uplink                                               | Downlink                      | Covered |
| 1           | UL: 1920 to 1980                                     | DL: 2110 to 2170              | ✓       |
| 2           | UL: 1850 to 1910                                     | DL: 1930 to 1990              | ✓       |
| 3           | UL: 1710 to 1785                                     | DL: 1805 to 1880              | ✓       |
| 4           | UL: 1710 to 1755                                     | DL: 2110 to 2155              | ✓       |
| 5           | UL: 824 to 849                                       | DL: 869 to 894                | ✓       |
| 7           | UL: 2500 to 2570                                     | DL: 2620 to 2690              | ✓       |
| 8           | UL: 880 to 915                                       | DL: 925 to 960                | ✓       |
| 9           | UL: 1749.9 to 1784.9                                 | DL: 1844.9 to 1879.9          | ✓       |
| 11          | UL: 1427.9 to 1447.9                                 | DL: 1475.9 to 1495.9          | ✗       |
| 12          | UL: 699 to 716                                       | DL: 729 to 746                | ✓       |
| 13          | UL: 777 to 787                                       | DL: 746 to 756                | ✓       |
| 14          | UL: 788 to 798                                       | DL: 758 to 768                | ✓       |
| 17          | UL: 704 to 716                                       | DL: 734 to 746 (LTE only)     | ✓       |
| 18          | UL: 815 to 830                                       | DL: 860 to 875 (LTE only)     | ✓       |
| 19          | UL: 830 to 845                                       | DL: 875 to 890                | ✓       |
| 20          | UL: 832 to 862                                       | DL: 791 to 821                | ✓       |
| 21          | UL: 1447.9 to 1462.9                                 | DL: 1495.9 to 1510.9          | ✗       |
| 22          | UL: 3410 to 3490                                     | DL: 3510 to 3590              | ✗       |
| 23          | UL: 2000 to 2020                                     | DL: 2180 to 2200 (LTE only)   | ✓       |
| 24          | UL: 1625.5 to 1660.5                                 | DL: 1525 to 1559 (LTE only)   | ✓       |
| 25          | UL: 1850 to 1915                                     | DL: 1930 to 1995              | ✓       |
| 26          | UL: 814 to 849                                       | DL: 859 to 894                | ✓       |
| 27          | UL: 807 to 824                                       | DL: 852 to 869 (LTE only)     | ✓       |
| 28          | UL: 703 to 748                                       | DL: 758 to 803 (LTE only)     | ✓       |
| 29          | UL: -                                                | DL: 717 to 728 (LTE only)     | ✓       |
| 30          | UL: 2305 to 2315                                     | DL: 2350 to 2360 (LTE only)   | ✓       |
| 31          | UL: 452.5 to 457.5                                   | DL: 462.5 to 467.5 (LTE only) | ✗       |
| 32          | UL: -                                                | DL: 1452 - 1496               | ✗       |
| 35          | 1850 to 1910                                         |                               | ✓       |
| 38          | 2570 to 2620                                         |                               | ✓       |
| 39          | 1880 to 1920                                         |                               | ✓       |
| 40          | 2300 to 2400                                         |                               | ✓       |
| 41          | 2496 to 2690                                         |                               | ✓       |
| 42          | 3400 to 3600                                         |                               | ✗       |
| 43          | 3600 to 3800                                         |                               | ✗       |

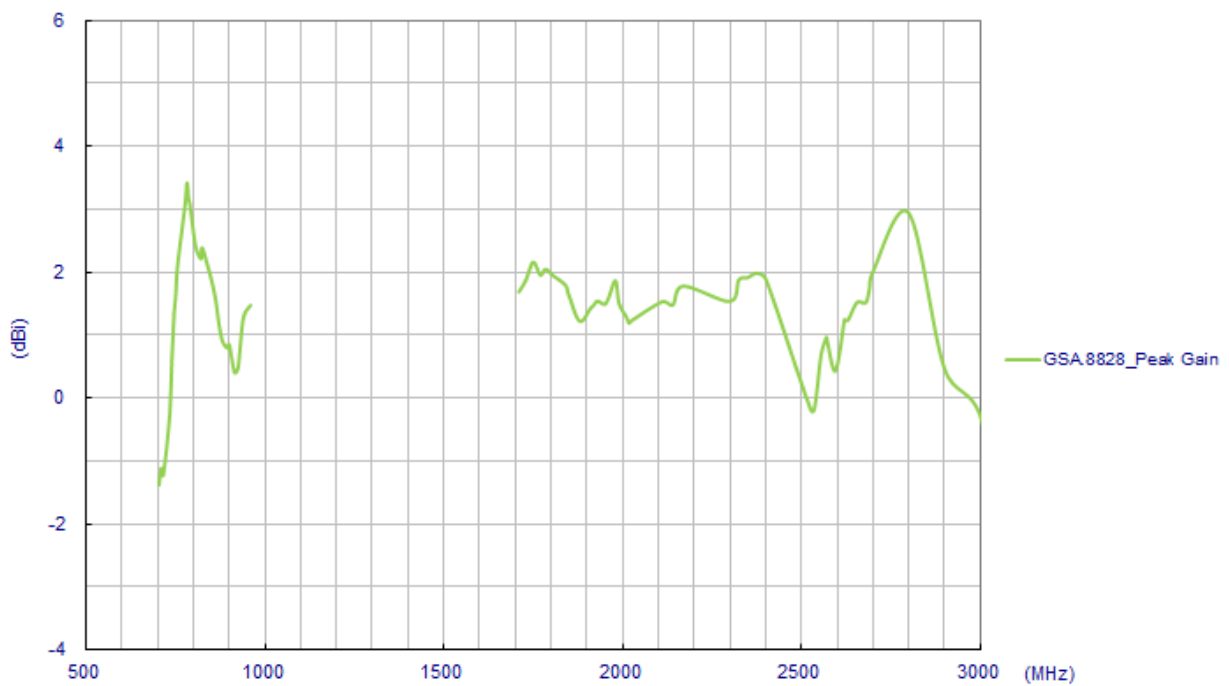
\*Covered bands represent an efficiency greater than 20%

## 3. Antenna Characteristics

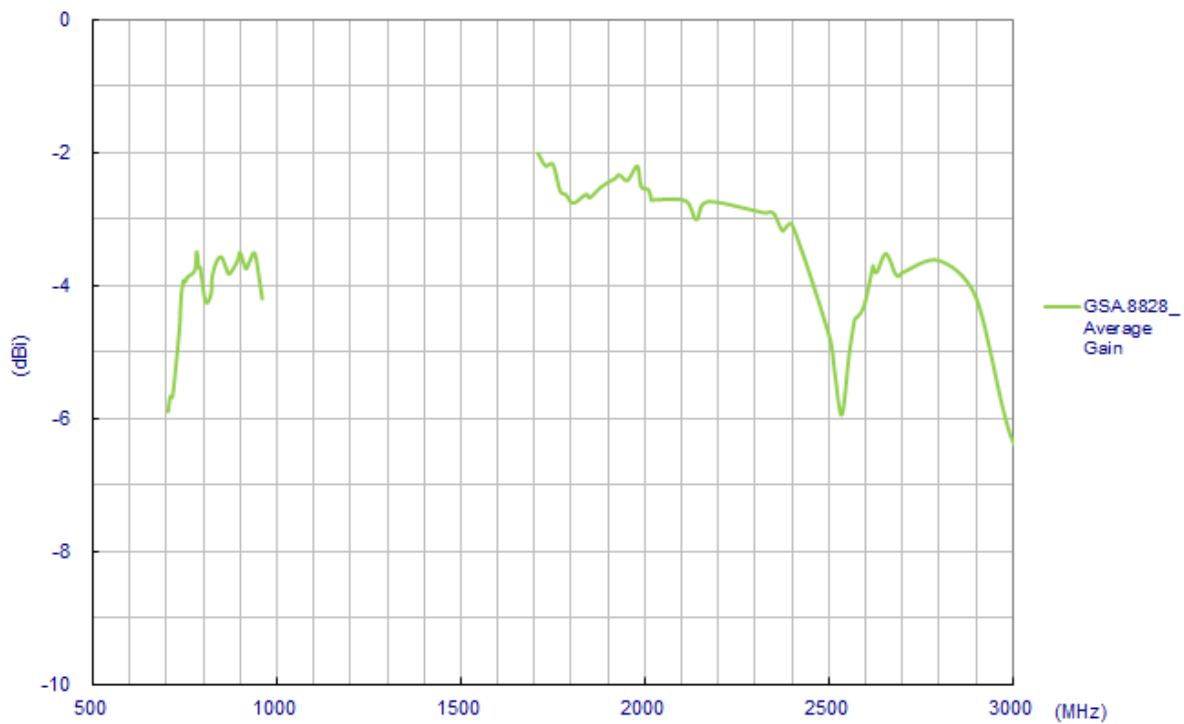
### 3.1. Return Loss (in free space)



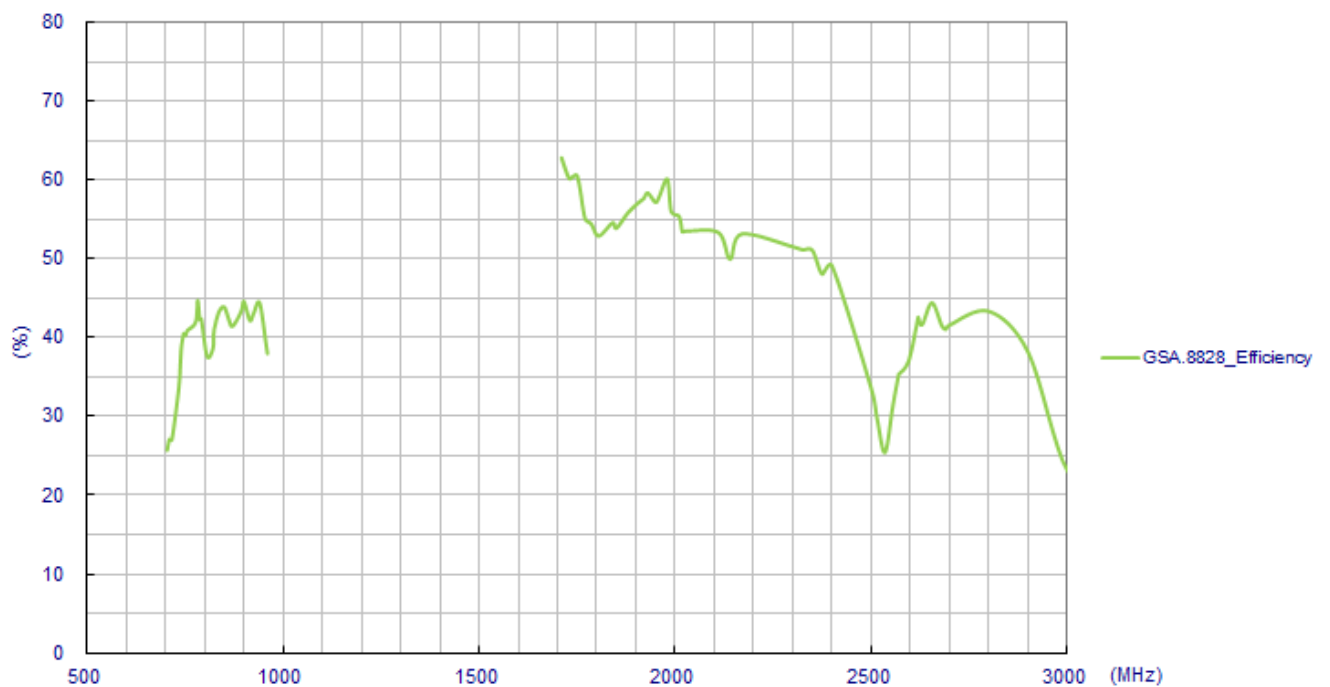
### 3.2. Peak Gain (in free space)



### 3.3. Average Gain (in free space)

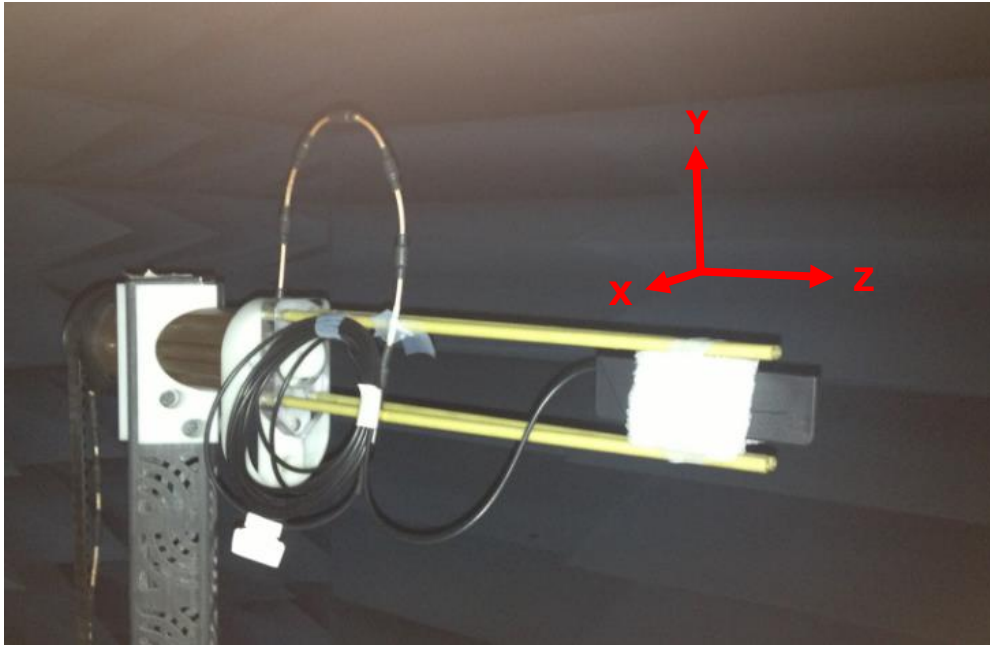


#### 3.4.1 Efficiency (in free space)



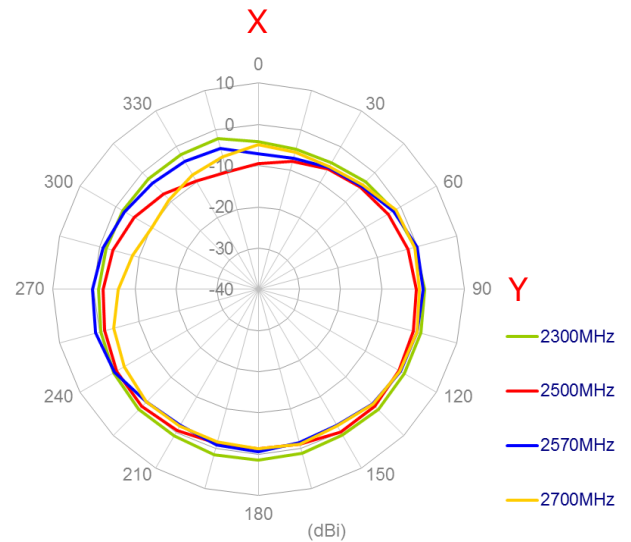
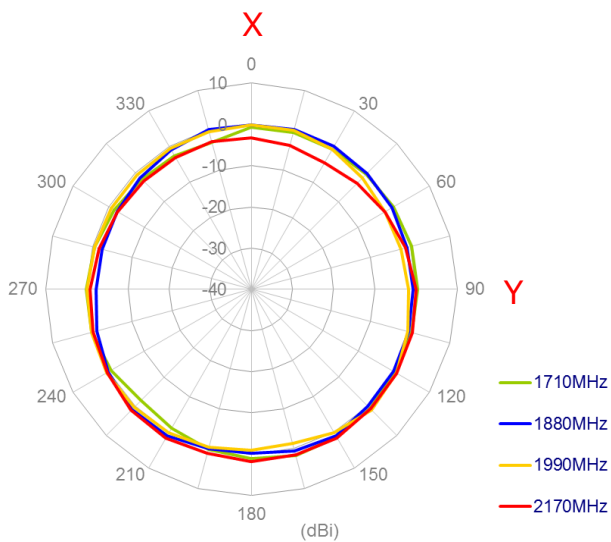
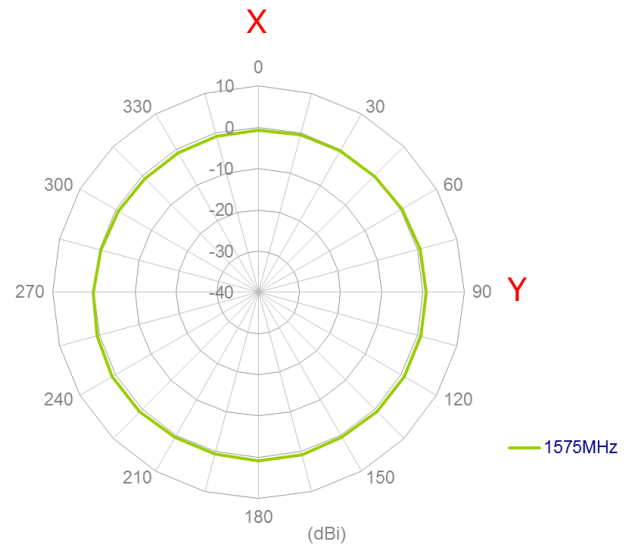
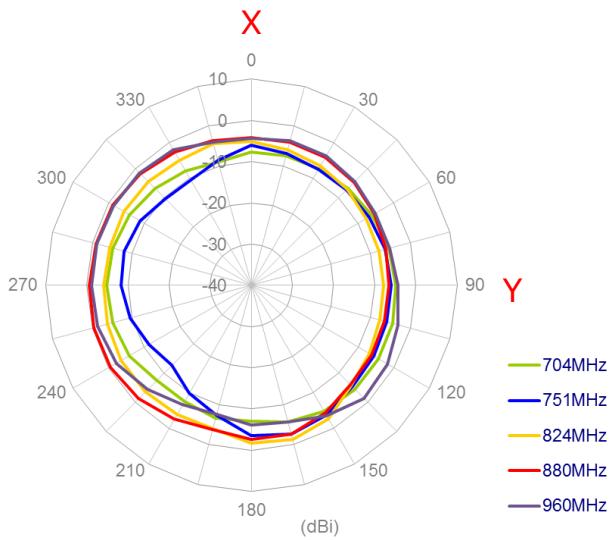
## 4. Antenna Radiation Patterns

### 4.1. Antenna setup (Free Space with 1 Meter Cable Length)

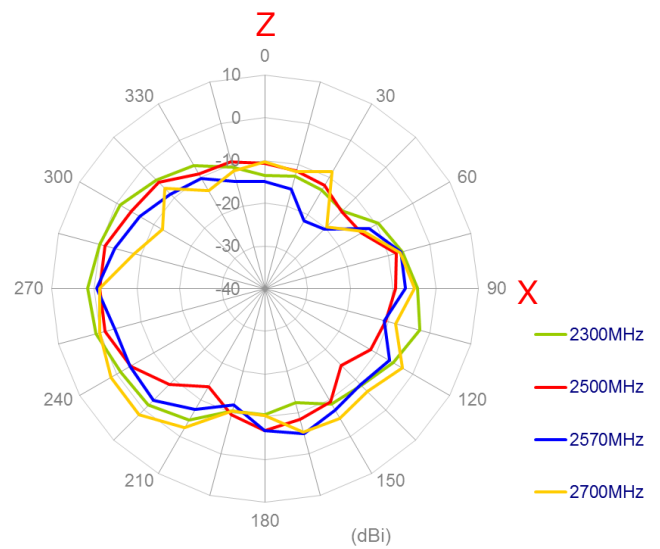
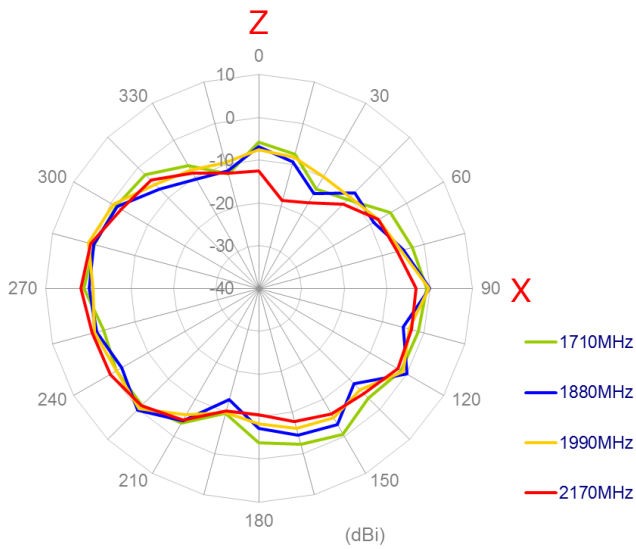
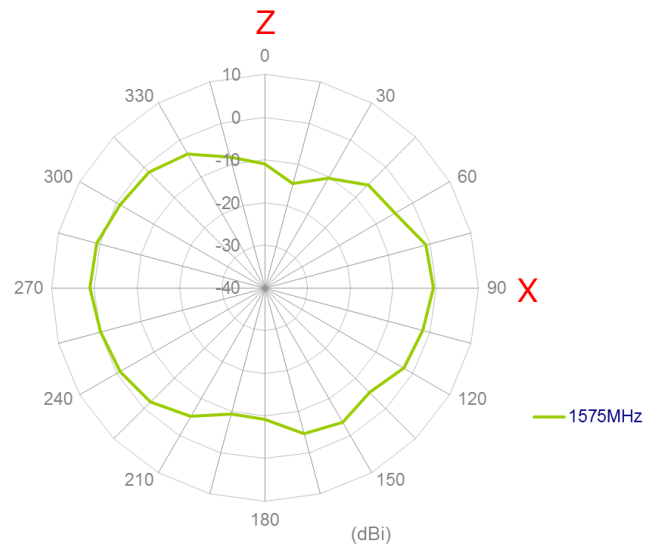
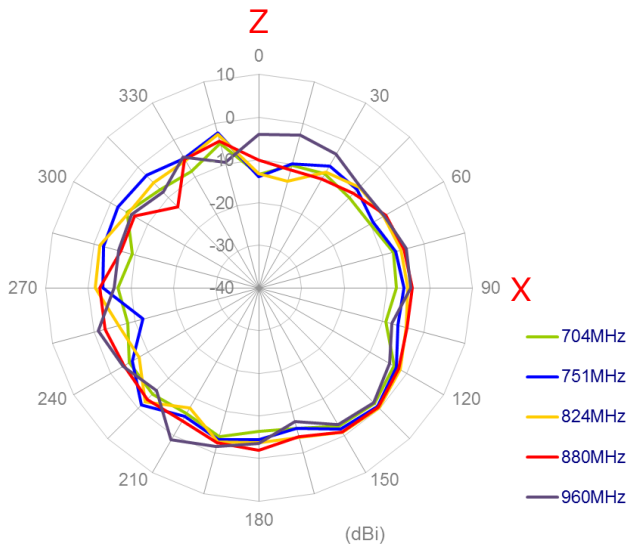


## 4.2. Radiation patterns

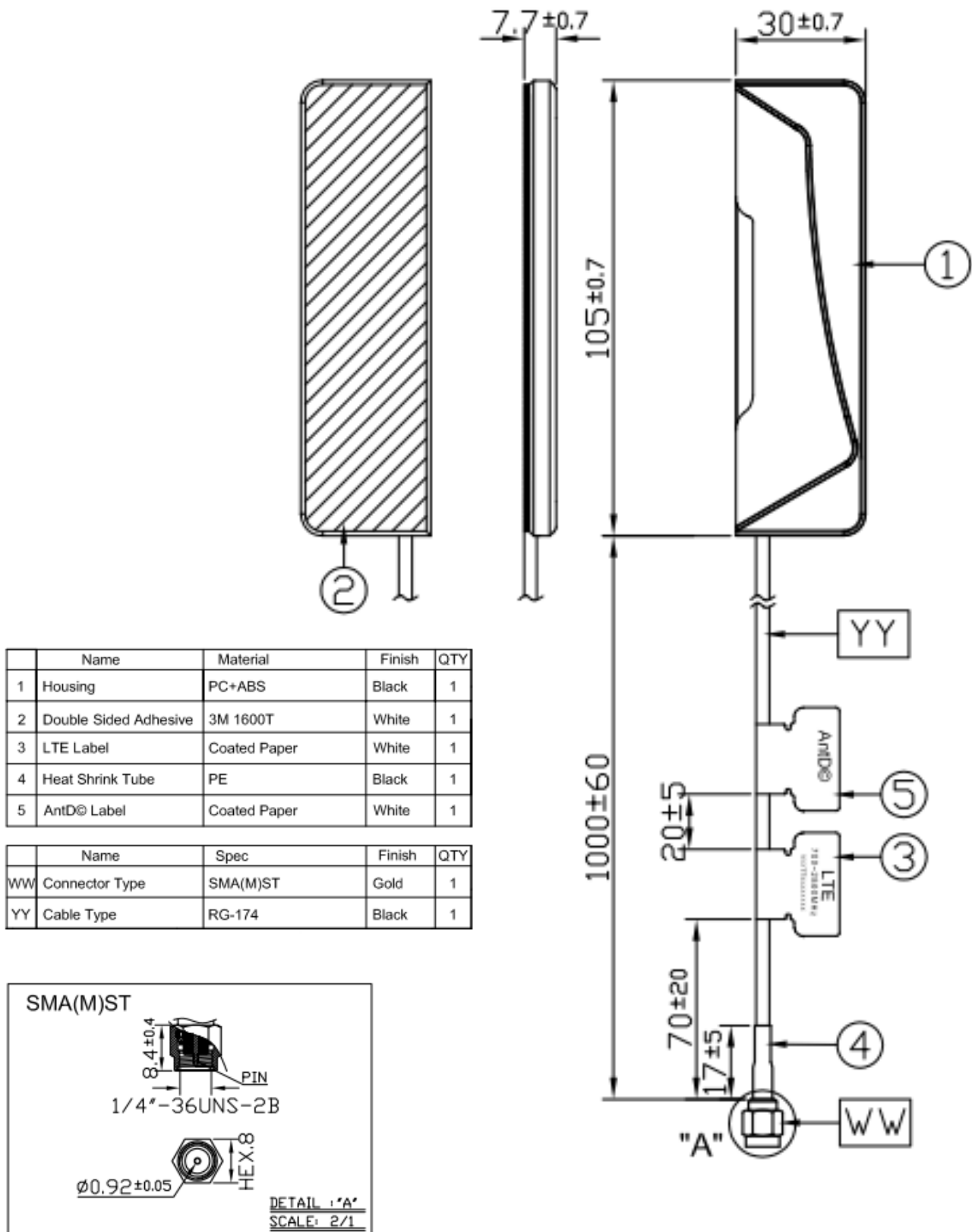
### XY Plane



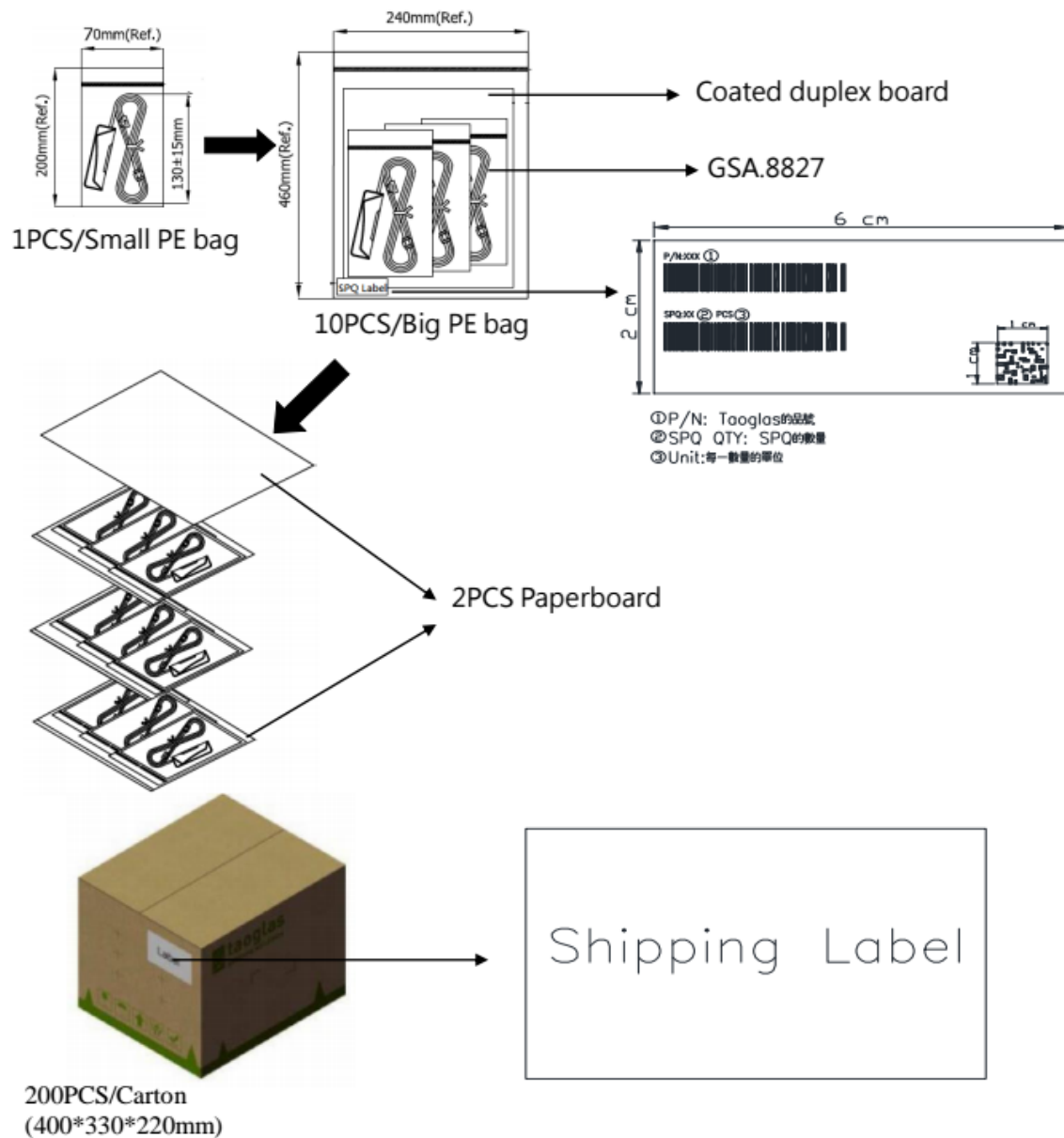
## XZ Plane



## 5. Drawing



## 6. Packaging



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