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## **INTRODUCTION** **GPS/GPRS/3G Tape mount Antenna** **CPG16D-2M-SMA/M x2**

### **1. GENERAL DESCRIPTION**

| <b>Model No</b>                  | <b>Products P/N</b> |
|----------------------------------|---------------------|
| CPG16D-2M-SMA/M x 2(GPS/GPRS/3G) | EA-16D-2M           |

**Below is a table summarizing the GPS/GPRS/3G antenna design specification.**

### **1.1 GSM/GPRS/3G Antenna Electrical Properties**

| <b>Parameter</b>                   | <b>Description</b>                                                                                                                |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Communication System               | AMPS/GSM/DCS/PCS/UMTS/3G                                                                                                          |
| Frequency Band (MHz)               | 824~896,880~960,1710~1880,1850~1990,1710~2170.                                                                                    |
| Average Efficiency                 | 47%/67%/59%/54%/57%                                                                                                               |
| Average Gain                       | 1.5~2.5 dB                                                                                                                        |
| LOG MAGNITUDE                      | 885.98Mhz (-22.163bBi)<br>885.00Mhz (-25.176dBi)<br>1828.98Mhz (-40.696dBi)<br>1965.02Mhz (-34.015dBi)<br>2130.08Mhz (-27.726dBi) |
| Nominal Impedance                  | 50 ohm                                                                                                                            |
| Polarization                       | Vertical                                                                                                                          |
| Radiation Pattern                  | Omni-directional                                                                                                                  |
| Return Loss                        | Please check Data-5.1~5.3                                                                                                         |
| V.S.W.R                            | <1.5 : 1                                                                                                                          |
| Peak V.S.W.R                       | 885.89Mhz (1.169)<br>885.00Mhz (1.118)<br>1830.00Mhz (1.043)<br>1965.00Mhz (10.42)<br>2160.00Mhz (1.090)-                         |
| Note: Gain includes the cable loss |                                                                                                                                   |
|                                    |                                                                                                                                   |

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|                            |                                             |        |       |       |        |
|----------------------------|---------------------------------------------|--------|-------|-------|--------|
| Model                      | CPG16D-2M-SMA/SMA_824~2170MHz_20140328_GPRS |        |       |       |        |
| Test / Position            | Gain / Free Space                           |        |       |       |        |
| Frequency                  | 855                                         | 885    | 1828  | 1965  | 2130   |
| Ant. Port Input Pwr. (dBm) | 0                                           | 0      | 0     | 0     | 0      |
| Tot. Rad. Pwr. (dBm)       | -11.33                                      | -10.02 | -5.74 | -6.96 | -7.25  |
| Peak EIRP (dBm)            | -7.89                                       | -6.31  | -0.93 | -1.83 | -1.32  |
| Directivity (dBi)          | 3.44                                        | 3.71   | 4.81  | 5.13  | 5.93   |
| Efficiency (dB)            | -11.33                                      | -10.02 | -5.74 | -6.96 | -7.25  |
| Efficiency (%)             | 7.36                                        | 9.95   | 26.66 | 20.13 | 18.85  |
| Gain (dBi)                 | -7.89                                       | -6.31  | -0.93 | -1.83 | -1.32  |
| NHPRP i/4 (dBm)            | -13.18                                      | -12.08 | -6.80 | -8.07 | -9.01  |
| NHPRP i/6 (dBm)            | -14.86                                      | -13.87 | -8.27 | -9.65 | -10.87 |
| Note                       |                                             |        |       |       |        |

## **1.2 GSM/GPRS/3G Antenna Mechanical Properties**

| Parameter                   | Description         |
|-----------------------------|---------------------|
| Antenna Type                | External Antenna    |
| Touch Type                  | Magnetic Mount Type |
| Antenna cable               | RG174u Low Loss     |
| Connector Type              | SMA 180°(Male)      |
| Antenna Cable Total Length  | 2000mm ±25          |
| Antenna Color               | Black               |
| Waterproof                  | 100% waterproof.    |
| Operating Temperature Range | -35℃~+80℃           |
| Storage Temperature Range   | -40℃~+85℃           |
| Shock (Drop Test)           | 1M drop on concret  |

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## 2.1 GPS Antenna Electrical Properties

| Parameter                          | Description                                                                         |
|------------------------------------|-------------------------------------------------------------------------------------|
| GPS Frequency Band                 | 1575.42 ± 1.023 MHz.                                                                |
| Antenna Gain                       | 90° : 2.0 dBi Min.<br>20° : -5.0 dBi Min.<br>Mounted on the 60mm*60mm ground plane. |
| Polarization                       | Polarization                                                                        |
| Axial Ratio                        | 90° : Max 3.0dB<br>Mounted on the 60mm*60mm ground plane.                           |
| Input Voltage                      | 3V~5V                                                                               |
| Power Consumption                  | At 3.0 V Typ: 13mA. Max: 16mA.<br>At 5.0 V Typ: 18mA. Max: 22mA.                    |
| V.S.W.R                            | <1.5 : 1                                                                            |
| Note: Gain includes the cable loss |                                                                                     |

| Model                      | CPG16D-1_1575.42MHz_20140328_GPS |         |
|----------------------------|----------------------------------|---------|
| Test / Position            | Gain / Free Space                |         |
| Frequency                  | 1575                             | 1575.42 |
| Ant. Port Input Pwr. (dBm) | 0                                | 0       |
| Tot. Rad. Pwr. (dBm)       | -26.54                           | -26.51  |
| Peak EIRP (dBm)            | -20.56                           | -20.36  |
| Directivity (dBi)          | 5.99                             | 6.15    |
| Efficiency (dB)            | -26.54                           | -26.51  |
| Efficiency (%)             | 0.22                             | 0.22    |
| Gain (dBi)                 | -20.56                           | -20.36  |
| NHPRP 厠 i/4 (dBm)          | -27.67                           | -27.64  |
| NHPRP 厠 i/6 (dBm)          | -28.90                           | -28.89  |
| Note                       |                                  |         |

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## 2.2 LNA Electrical Properties

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| Parameter                                                | Description                                                                                                                                                                                 |
|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequency Range                                          | 1575.42 $\pm$ 1.023 MHz                                                                                                                                                                     |
| Gain                                                     | 28 $\pm$ 4.5dB ( + 25 $^{\circ}$ C $\pm$ 5 $^{\circ}$ C)                                                                                                                                    |
| 28 $\pm$ 4.5dB ( + 25 $^{\circ}$ C $\pm$ 5 $^{\circ}$ C) | 1.5 dB Max. ( +25 $^{\circ}$ C $\pm$ 5 $^{\circ}$ C)<br>2.2 dB Max. ( +85 $^{\circ}$ C) SMA 180 $^{\circ}$ (Male)                                                                           |
| Out Band Rejection                                       | f <sub>o</sub> = 1575.42MHz<br>f <sub>o</sub> $\pm$ 20 MHz 7dB MIN<br>f <sub>o</sub> $\pm$ 30 MHz 12dB MIN<br>f <sub>o</sub> $\pm$ 50 MHz 20dB MIN<br>f <sub>o</sub> $\pm$ 100 MHz 30dB MIN |
| Output Impedance                                         | 50 $\Omega$                                                                                                                                                                                 |
| Output VSWR                                              | 2.0 Max                                                                                                                                                                                     |

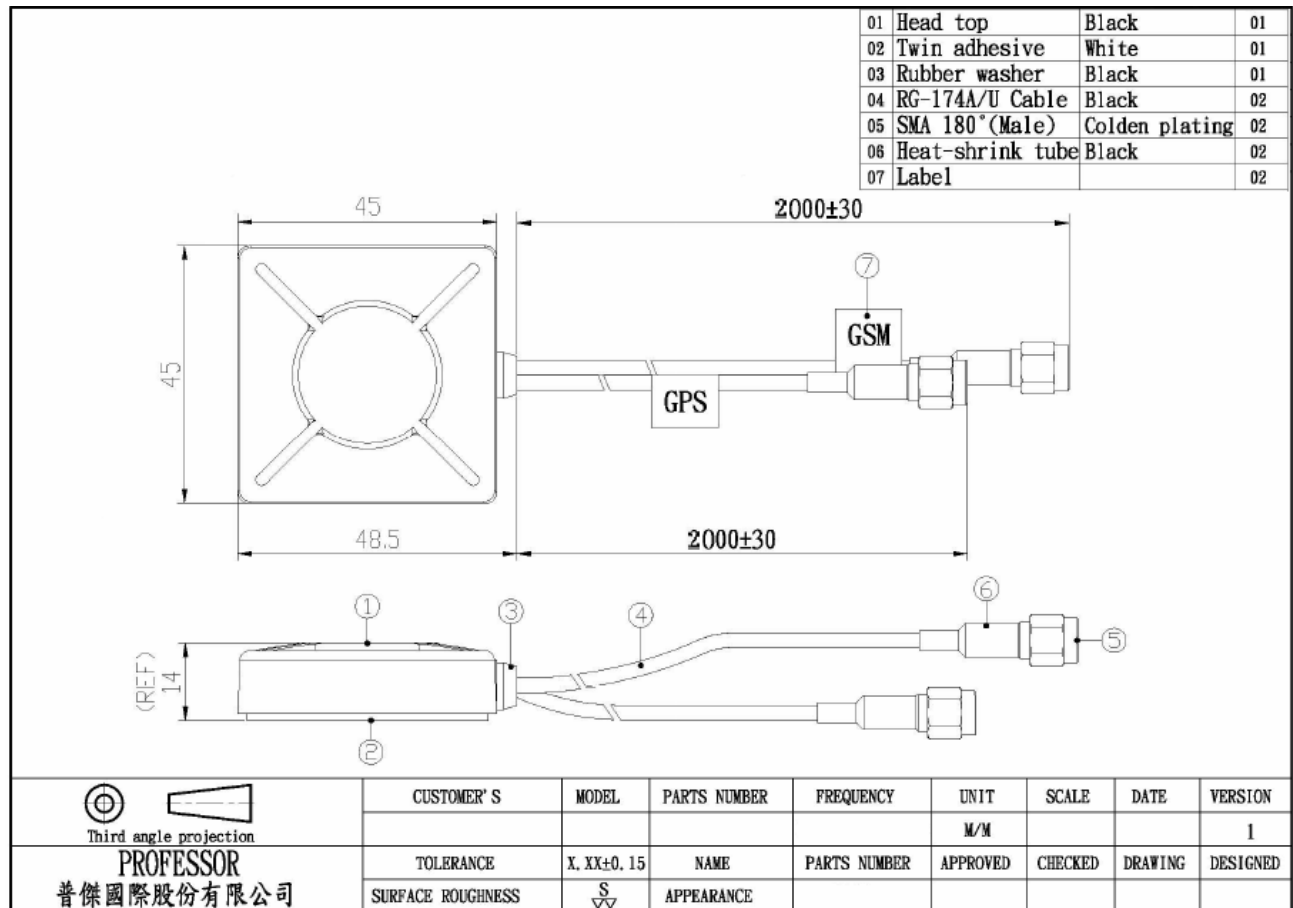
## 2.3 GPS Antenna Mechanical Properties

| Parameter                     | Description                       |
|-------------------------------|-----------------------------------|
| Antenna Mounting              | Magnetic Mount                    |
| Waterproof                    | 100 % waterproof.                 |
| Shock 10msec. Half sine wave. | Shock 10msec. Half sine wave.     |
| Antenna cable                 | RG174U Low loss                   |
| Antenna Cable Total Length    | 3000mm $\pm$ 25                   |
| Antenna Color                 | ABS (Black)                       |
| Connector                     | SMA 180 $^{\circ}$ (Male)         |
| Operating Temperature Range   | -35 $^{\circ}$ C~+80 $^{\circ}$ C |
| Storage Temperature Range     | -40 $^{\circ}$ C~+85 $^{\circ}$ C |
| Dimension                     | Dimension See Page. 4             |

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## 3.Appearance



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## **4.GSM/GPRS Penta-Band Antenna**

**Frequency :**

**824~896,880~960,1710~1880,1850~1990,1710~2170 MHz**

### **4.1~~LOG MAGNITUDE**



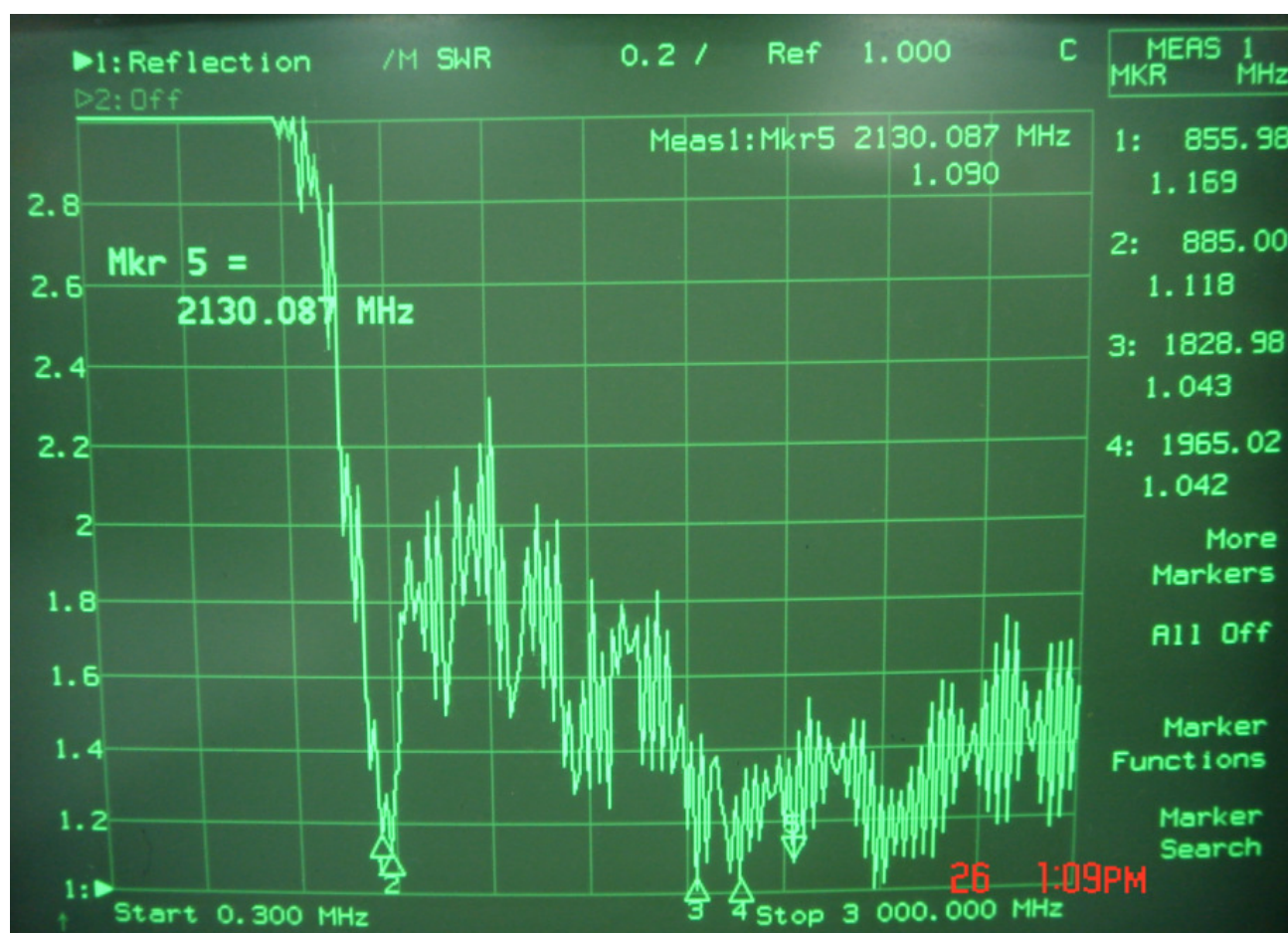
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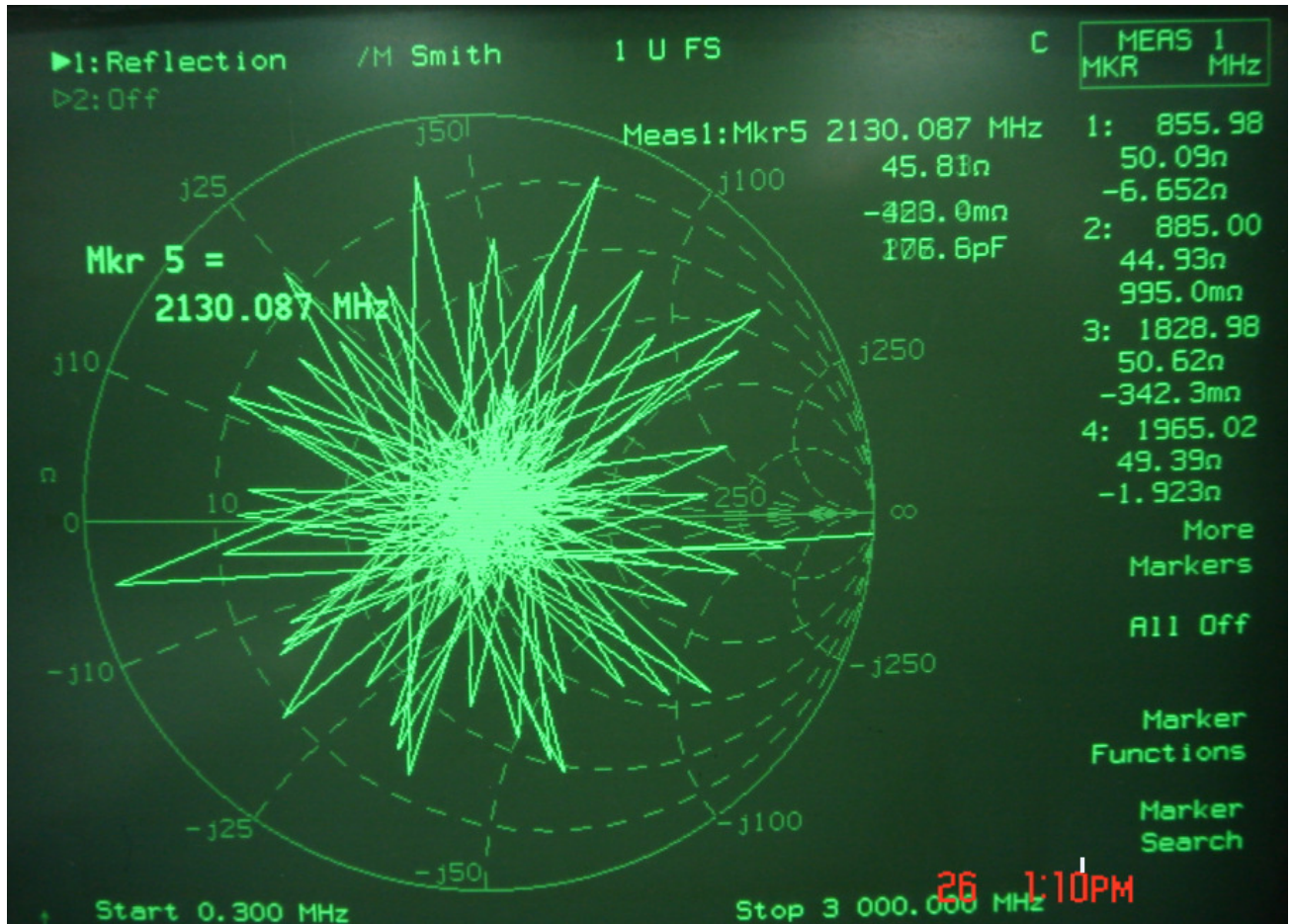
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## 4.2~~V.S.W.R



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## 4.3~~IMPEDANCE

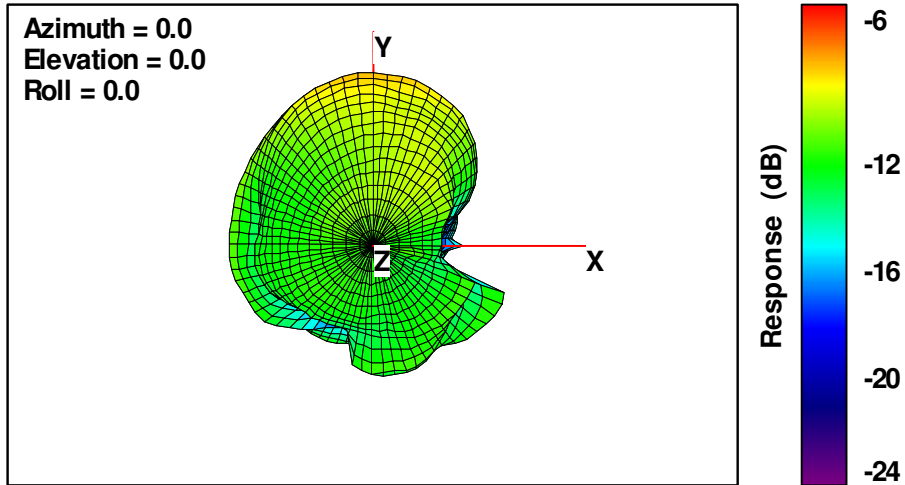


855MHz

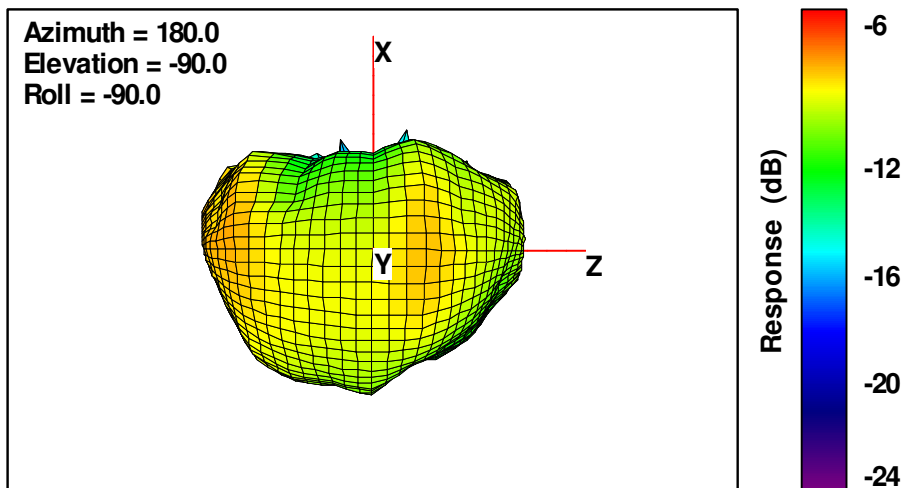
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**Total**



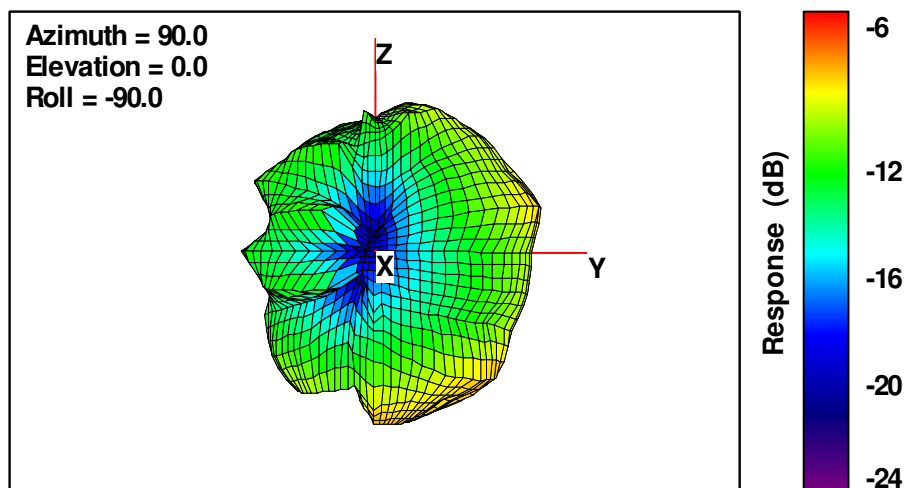
**Total**



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**Total**

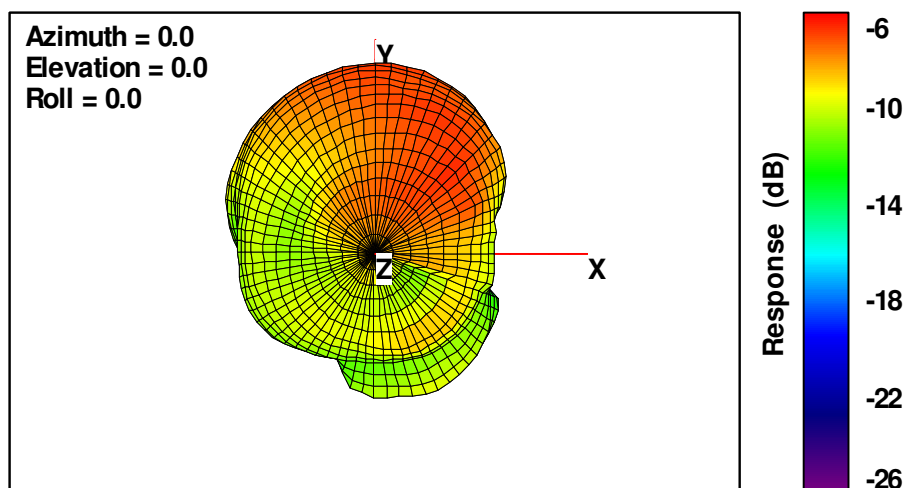


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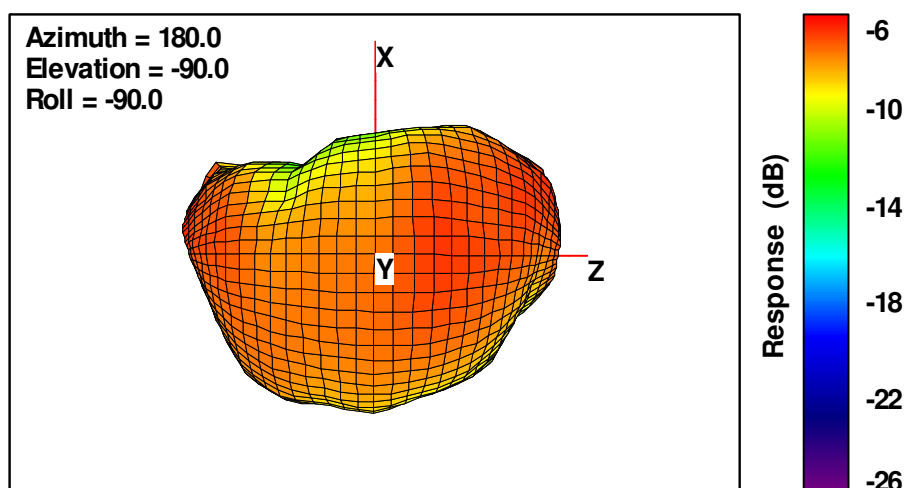
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885MHz

**Total**



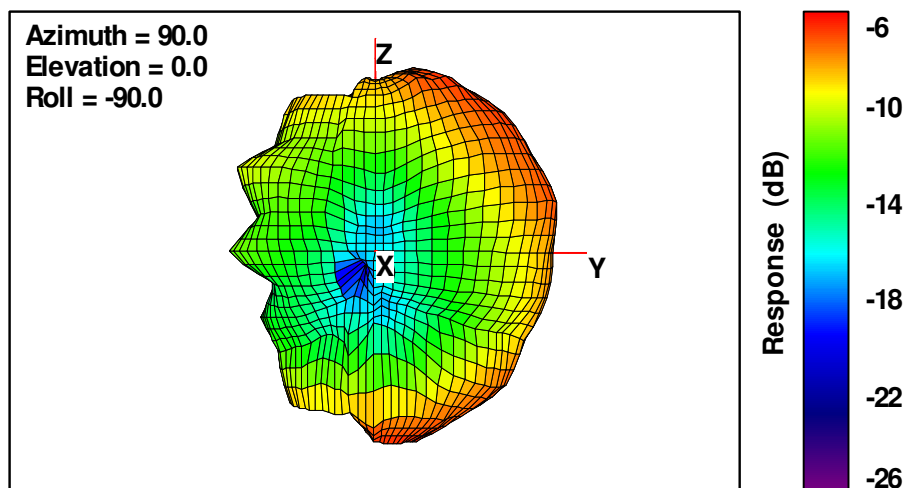
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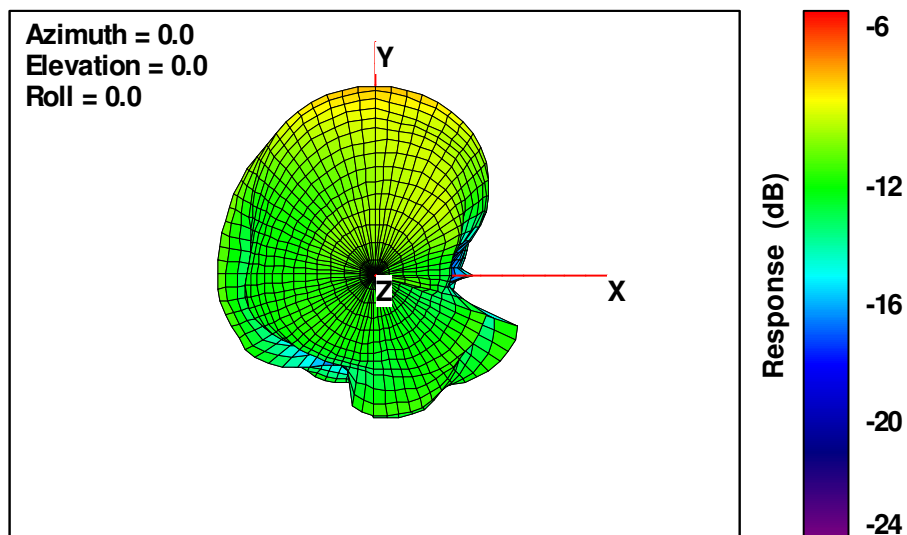
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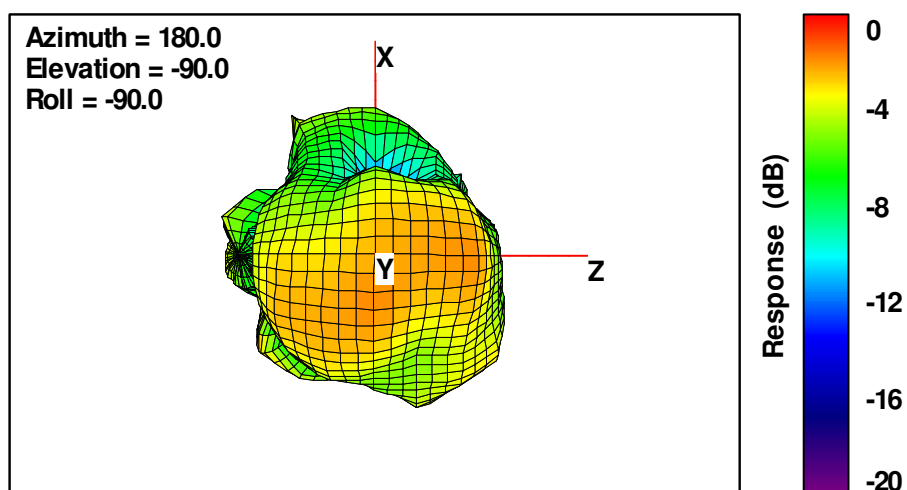
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1828MHz



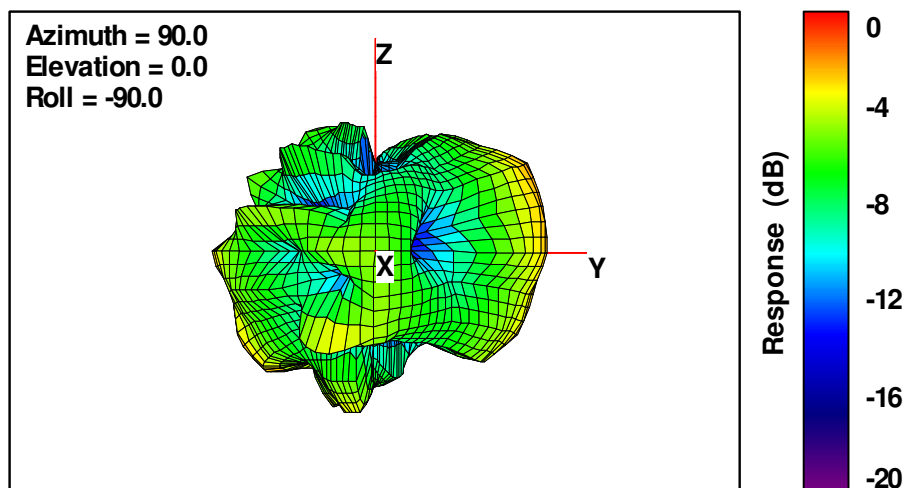
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**Total**

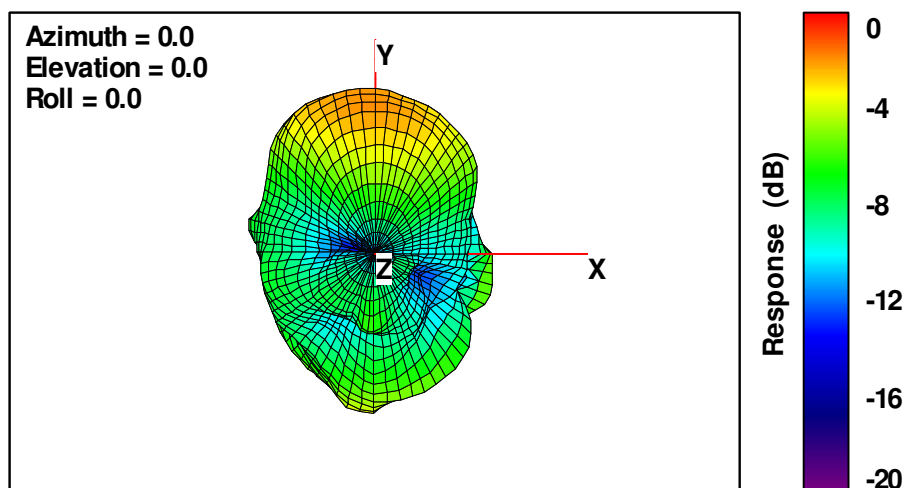


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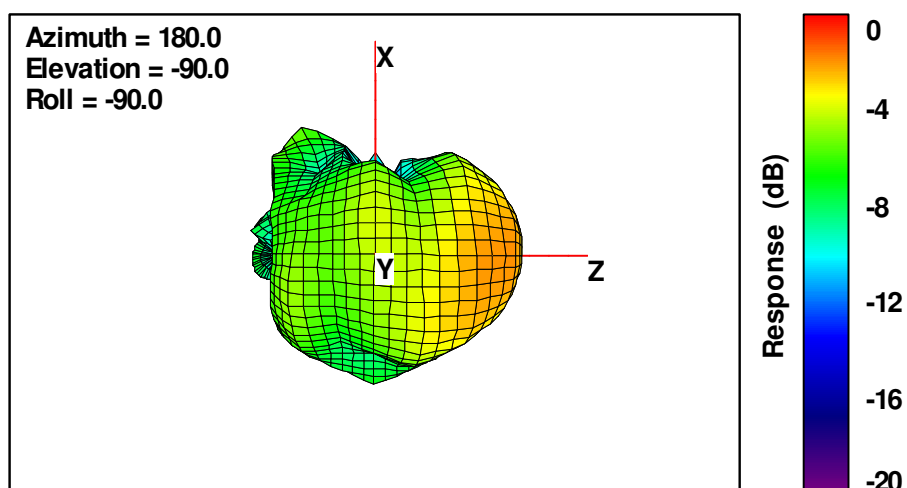
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1965MHz

**Total**



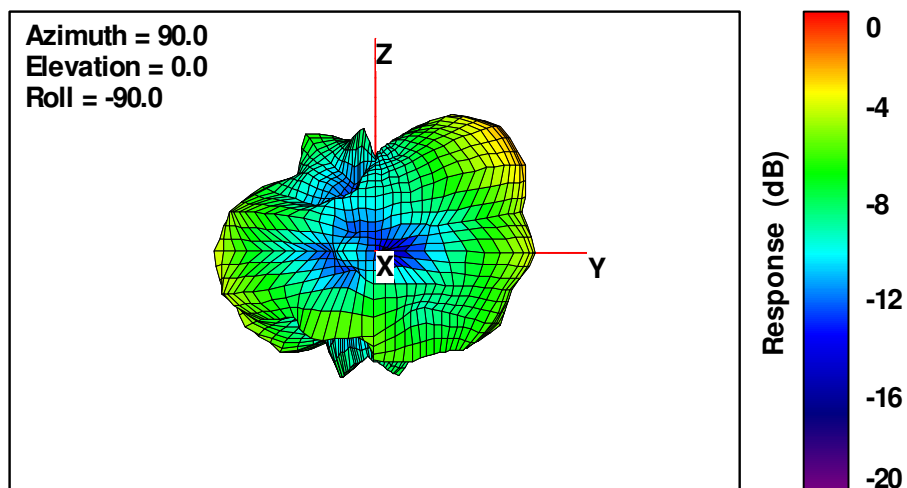
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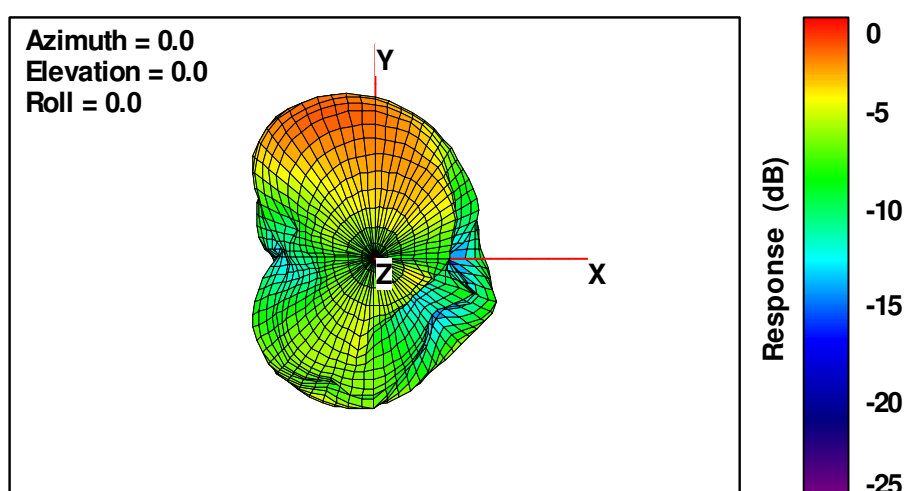
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**Total**



2130MHz

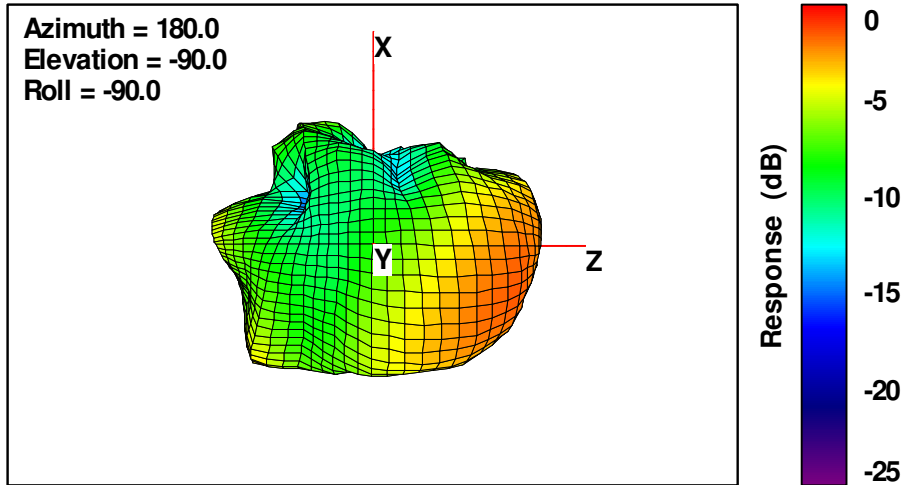
**Total**



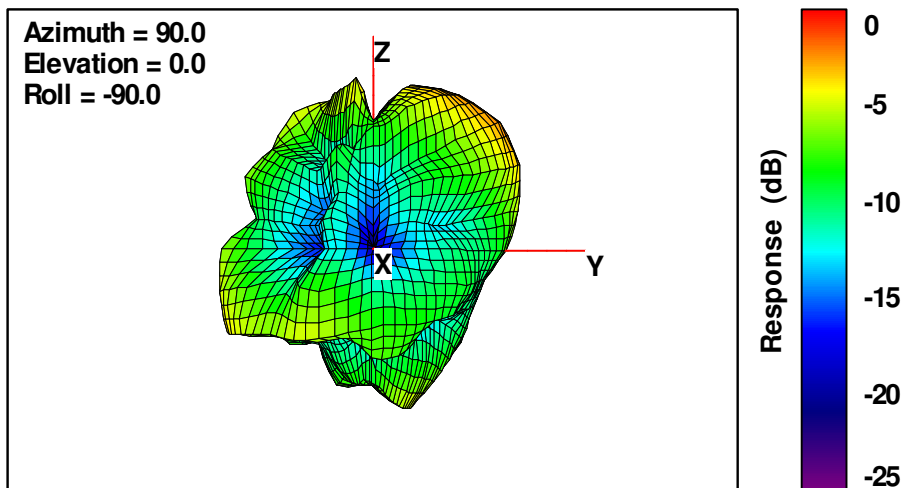
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**Total**



**Total**



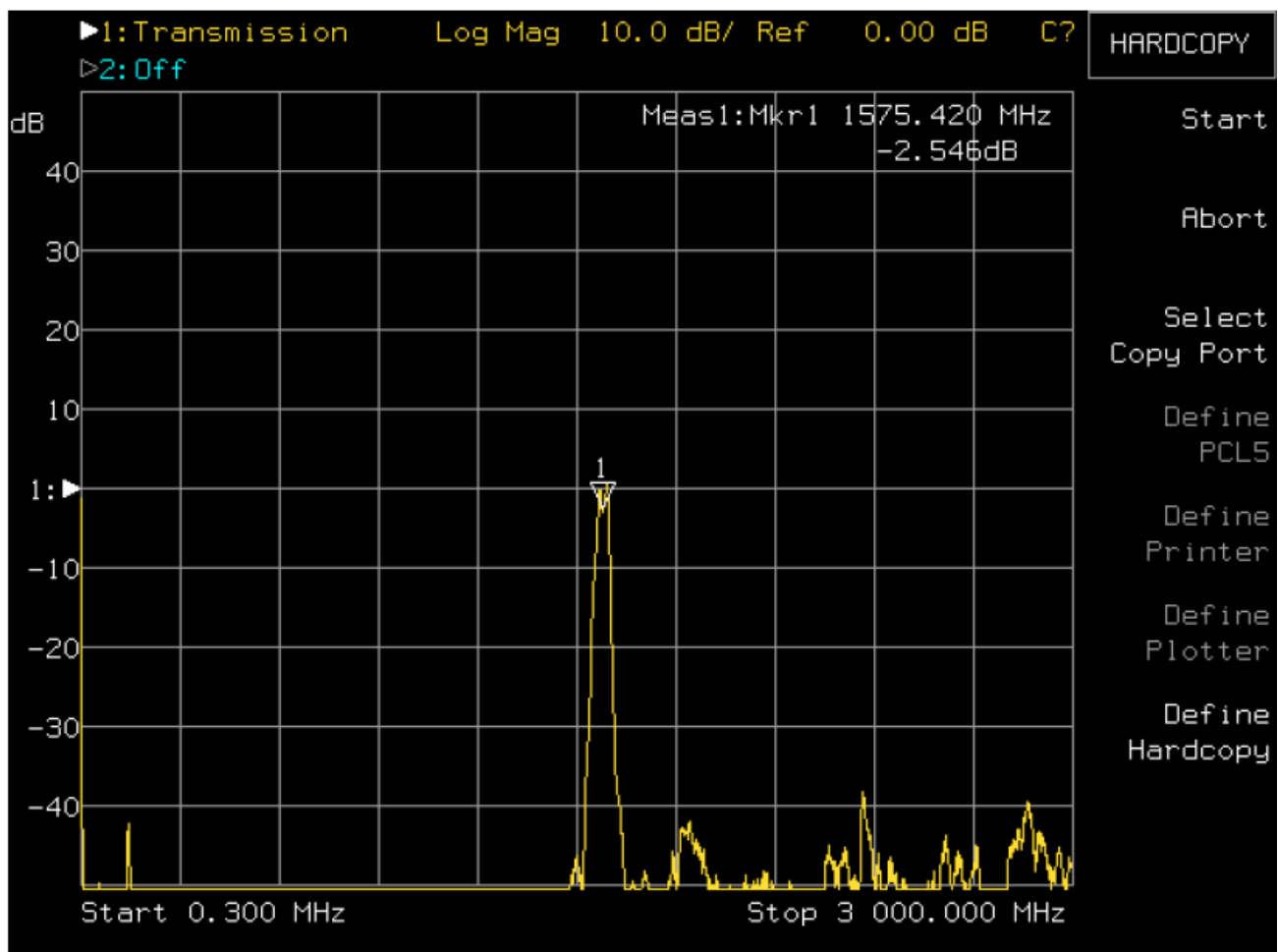
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## **5.GPS Antenna**

**Frequency : 1575.42 MHz**

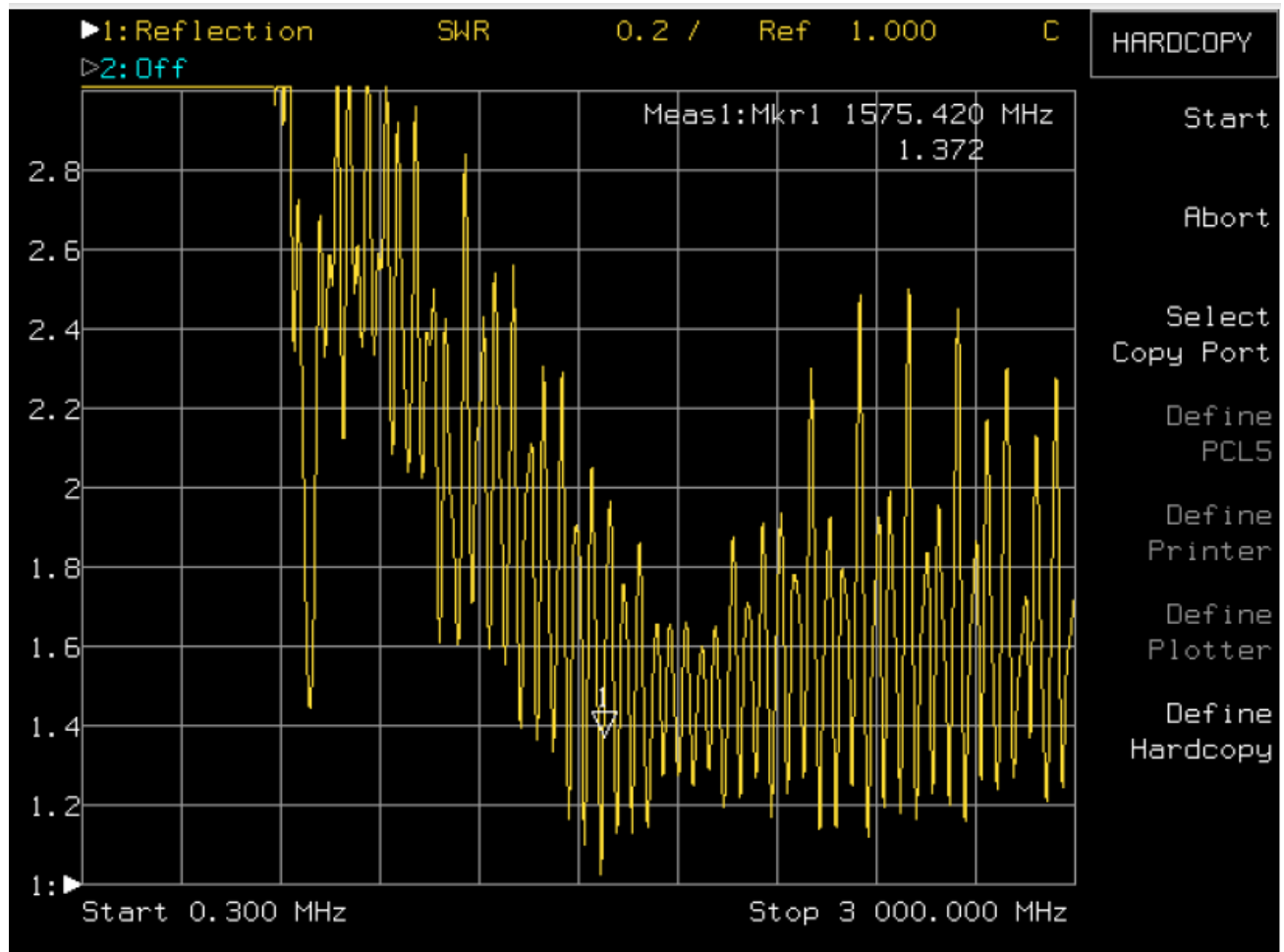
### **5.1~~LOG MAGNITUDE**



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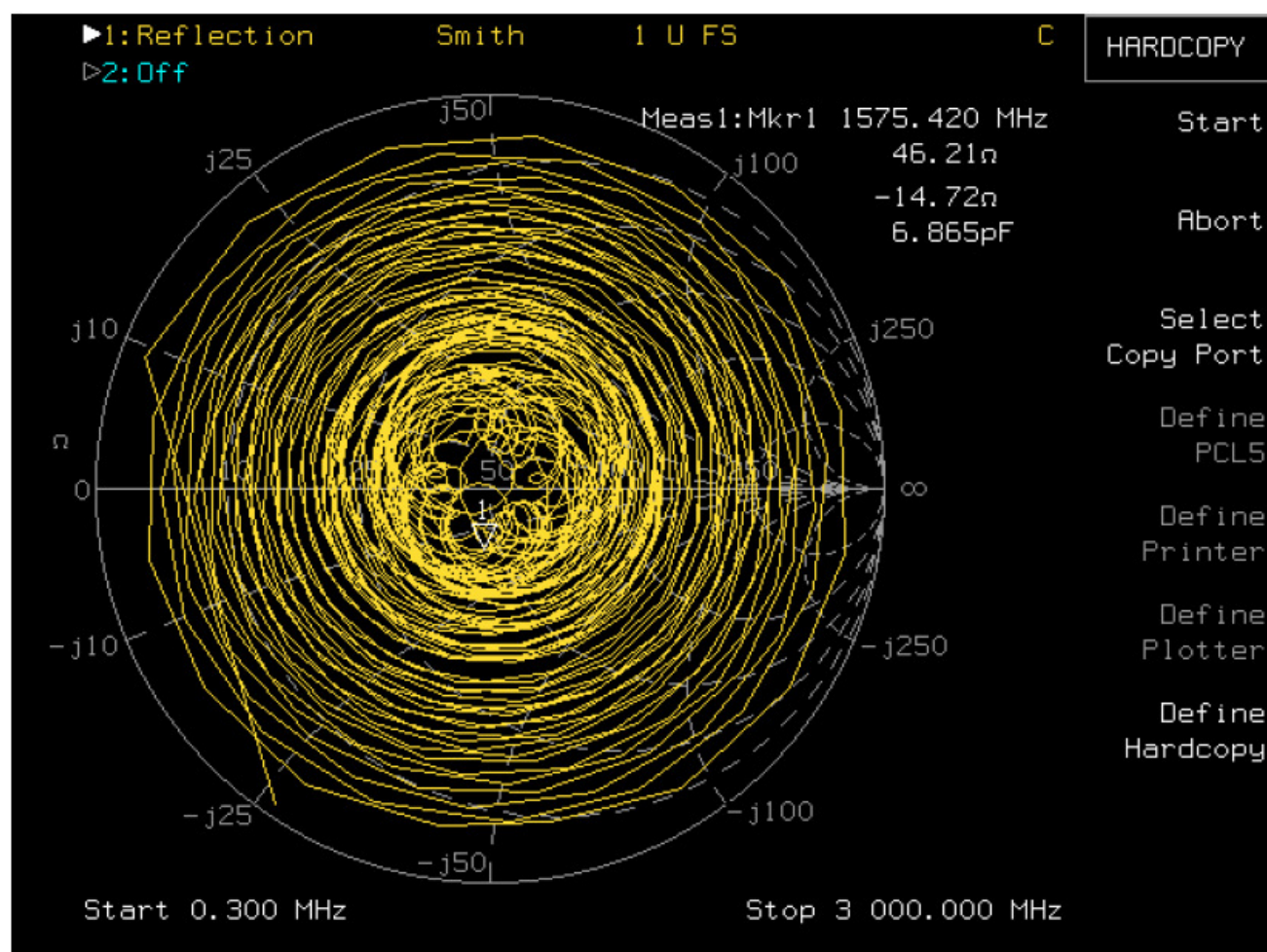
## 5.2~~V.S.W.R



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## 5.3~~IMPEDANCE

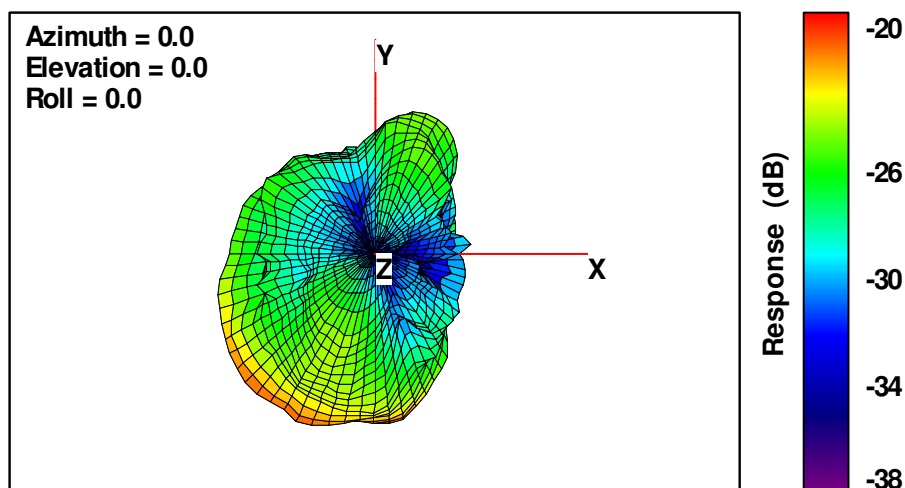


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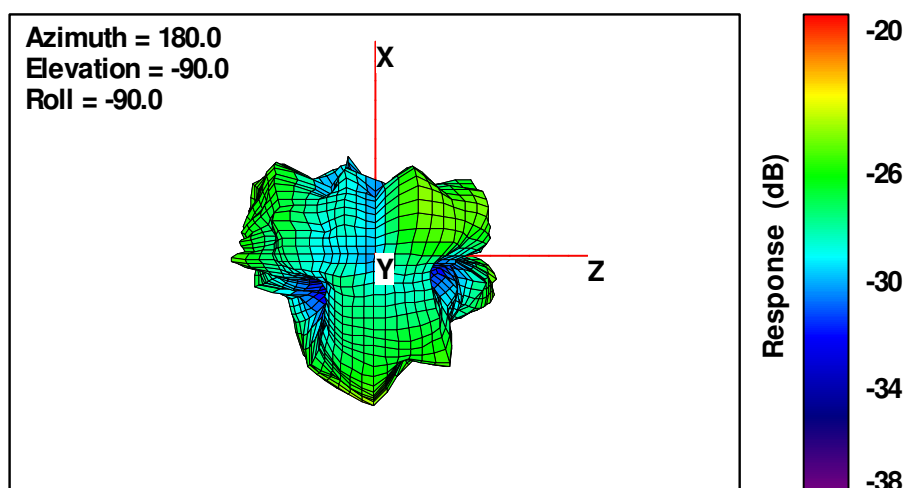
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1575MHz

**Total**



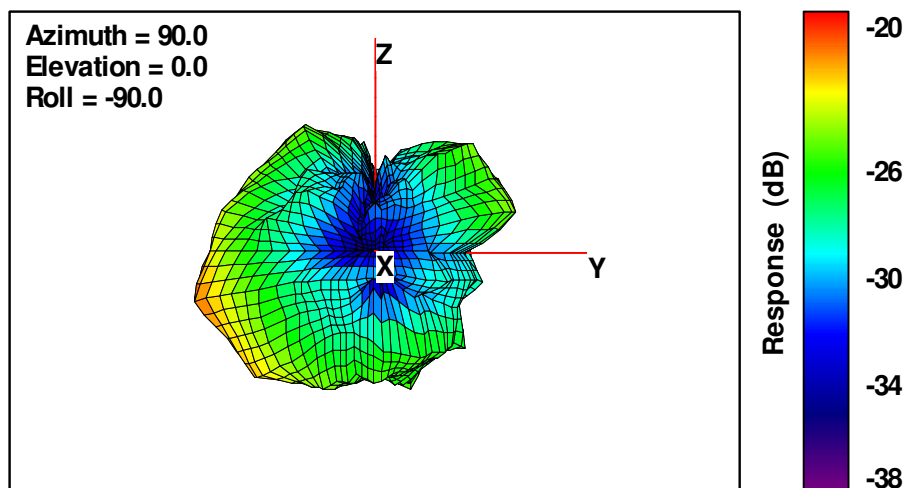
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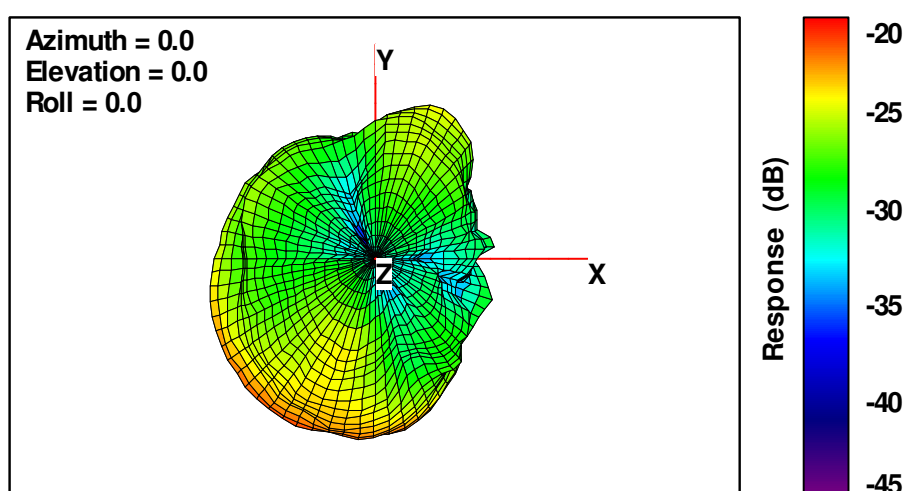
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**Total**



1575.42MHz

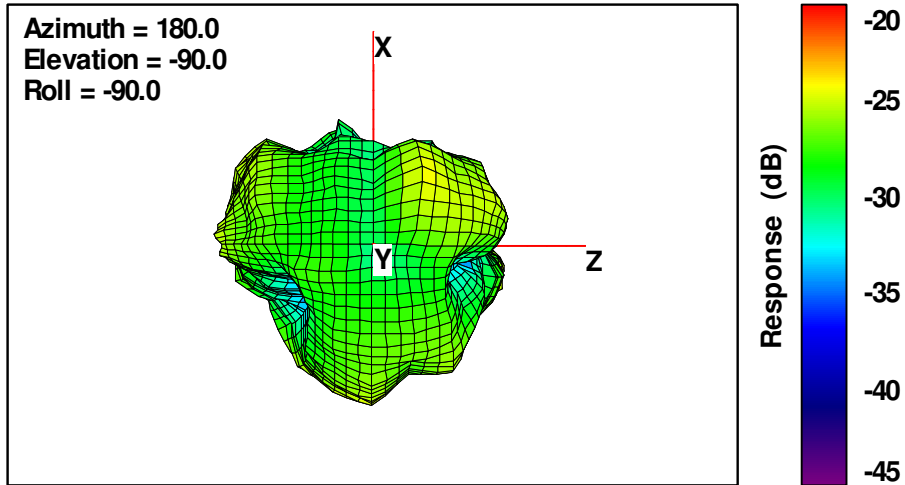
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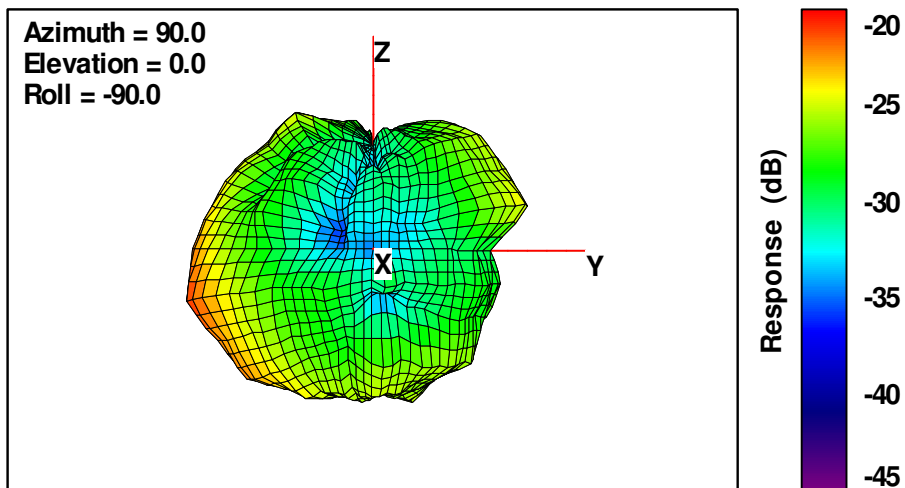
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**Total**



**Total**



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