

# OEM GNSS Antenna HX-CSX383A



HX-CSX383A is an embedded multi-constellation multi-frequency GNSS antenna that covers GPS, GLONASS, BDS, and GALILEO and is also compatible with WiFi and 4G. It can be widely used in geodetic surveying, marine surveying, channel surveying, dredging surveying, seismic monitoring, bridge deformation monitoring, landslide monitoring, port container operations, and other occasions.

## GREAT COMPATIBILITY FOR SOLID RELIABILITY

This versatile antenna adopts a compact design that combines GNSS antenna, WiFi antennas and 4G antenna, delivering great compatibility to be integrated into RTK applications. The layout of this multifunction antenna is specifically designed for realizing a perfect isolation effect among the different antennas embedded and ensuring outstanding reduction of interrelated influence.

## STABLE PHASE CENTER FOR REMARKABLE PERFORMANCE

It features multi-point feeding capability, guaranteeing a reliable phase center for millimeter positioning accuracy. The BT and 4G antenna is placed around the GNSS, ensuring good structural symmetry, and ensuring the consistency of the positioning antenna's phase center.

## TRACKING IN COMPLEX ENVIRONMENTS

This antenna exhibits superior high gain performance with ultralow signal loss, ensuring reliable satellite signal tracking. It also delivers wide beam width that covers wide frequencies with high marginal gain. These features in turn ensure the antenna a robust signal availability even in low elevation, making the antenna a perfect option in complex environments that have blockage, such as tree canopy and buildings.

## RELIABLE AND ROBUST STRUCTURE

Utilizing self-developed air-spaced technology and low consumption microwave materials, GNSS antenna substrate is molded integrally through a mold, resulting in lower loss, lighter weight, smaller antenna dimensions, higher precision, good consistency, and more stable and reliable electrical performance.

## STRONG ANTI-INTERFERENCE PERFORMANCE

The advanced LNA (Low Noise Amplifier) excels in improved signal filtering and out-of-band rejection and restraints unwanted electromagnetic interferences, plus strong multi-path reduction capacity over all GNSS frequency bands, providing strong anti-interference performance for consistent and reliable GNSS signals, even under complicated environments such as power grids, communication base stations, and broadcast stations.

## KEY FEATURES

- Supports GPS, GLONASS, Galileo, BeiDou, QZSS, IRNSS and L-band correction service
- Supports WiFi, 4G
- Strong anti-Interference performance
- Powerful system compatibility, easy for machine integration

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## Specifications

### PERFORMANCE

|                        |                                                                                                                                                  |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequency              | GPS L1/L2/L5<br>BDS B1I/B2I/B3I/B1C/B2a/B2b<br>GLONASS G1/G2/G3<br>GALILEO E1/E5a/E5b/E6<br>QZSS L1/L2/L5/L6<br>IRNSS L5<br>L-Band<br>WIFI/BT、4G |
| Nominal Impedance      | 50 $\Omega$                                                                                                                                      |
| Polarization           | RHCP                                                                                                                                             |
| Axial Ratio            | $\leq 3\text{dB}$                                                                                                                                |
| Azimuth Coverage       | 360°                                                                                                                                             |
| Azimuth Coverage       | $\leq 2.0$                                                                                                                                       |
| Peak Gain              | GNSS:5dBi<br>4G:1dBi<br>BT/WIFI:1.5dBi                                                                                                           |
| Phase Center Deviation | $\pm 2\text{mm}$                                                                                                                                 |

### LOW NOISE AMPLIFIER

|                 |                                      |
|-----------------|--------------------------------------|
| LNA Gain        | L2: 34 $\pm$ 2dB<br>L1: 32 $\pm$ 2dB |
| Noise Figure    | $\leq 2\text{dB}$                    |
| VSWR            | $\leq 2.0$                           |
| Passband Ripple | $\pm 2\text{dB}$                     |

|                    |                    |
|--------------------|--------------------|
| Passband Ripple    | +3.3 ~ +12VDC      |
| Operation Current  | $\leq 45\text{mA}$ |
| Group Delay Ripple | $\leq 5\text{ns}$  |

### MECHANICAL

|            |                                        |
|------------|----------------------------------------|
| Dimensions | $\varnothing 136 \times 25.6\text{mm}$ |
| Connector  | FAKRA                                  |

### ENVIRONMENT

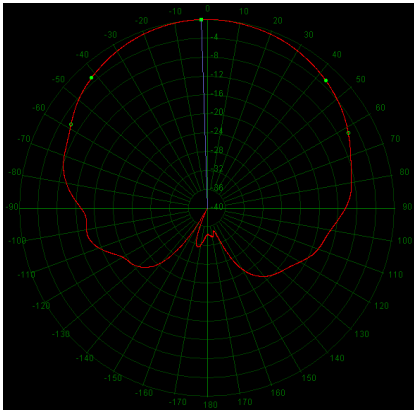
|                       |                    |
|-----------------------|--------------------|
| Operating Temperature | -40°C ~ +85°C      |
| Storage Temperature   | -55°C ~ +85°C      |
| Humidity              | 95% non-condensing |

# OEM GNSS Antenna HX-CSX383A

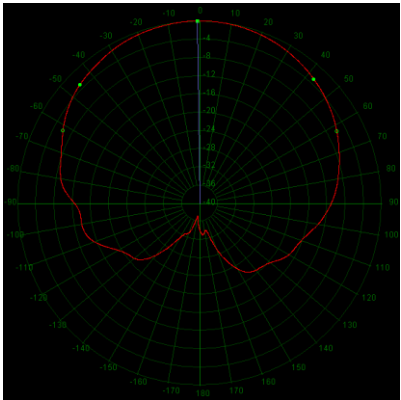
## GNSS Antenna Performance(Microstrip Antenna)

|                 |      |      |      |      |      |      |      |
|-----------------|------|------|------|------|------|------|------|
| Frequency (MHz) | 1205 | 1227 | 1237 | 1254 | 1268 | 1278 | 1300 |
| Gain (dBi)      | 3.2  | 4.3  | 4.3  | 4.3  | 4    | 3.7  | 2.9  |

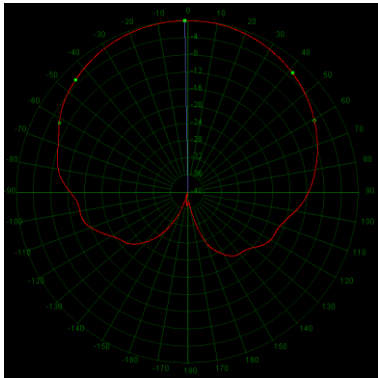
|                 |      |      |      |      |      |      |      |
|-----------------|------|------|------|------|------|------|------|
| Frequency (MHz) | 1520 | 1544 | 1560 | 1575 | 1585 | 1594 | 1612 |
| Gain (dBi)      | 3.2  | 4.3  | 4.8  | 5.4  | 5.5  | 5.5  | 5.3  |



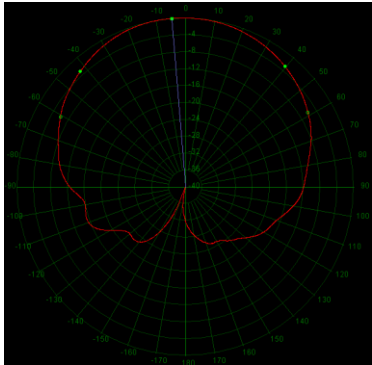
1520MHz



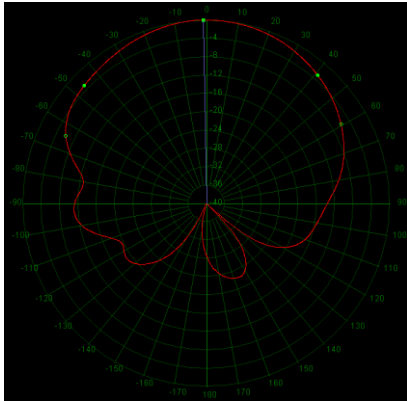
1560 MHz



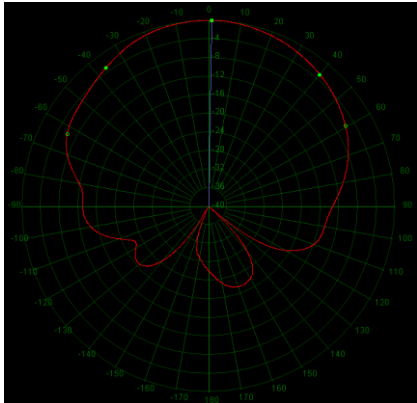
1576 MHz



1612 MHz

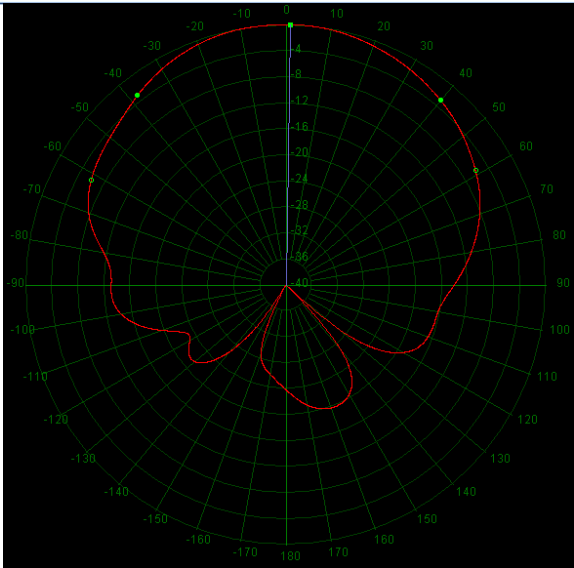


1164 MHz

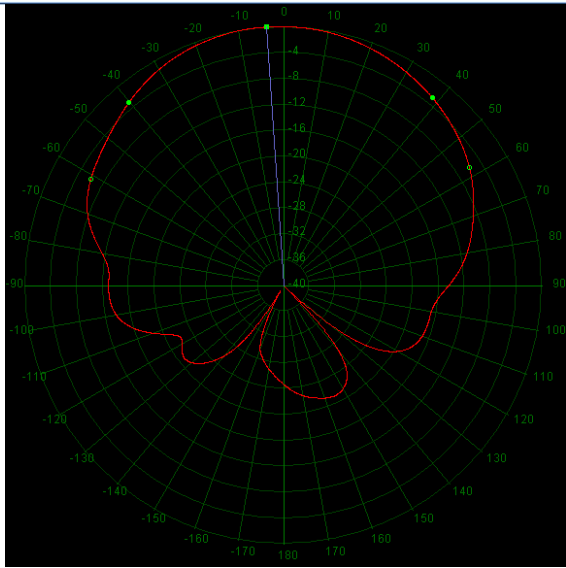


1204 MHz

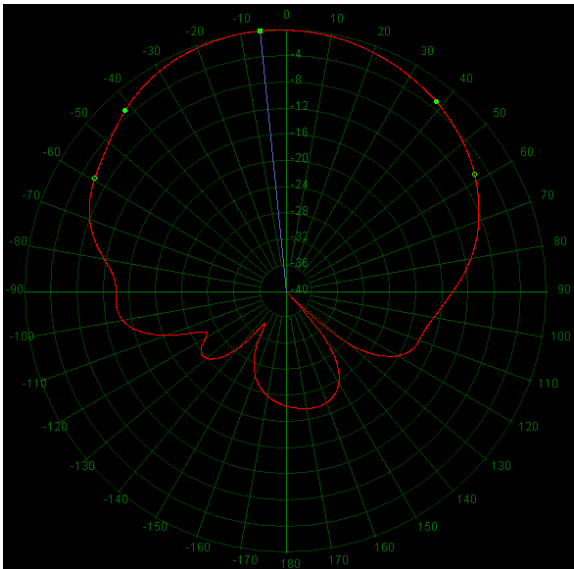
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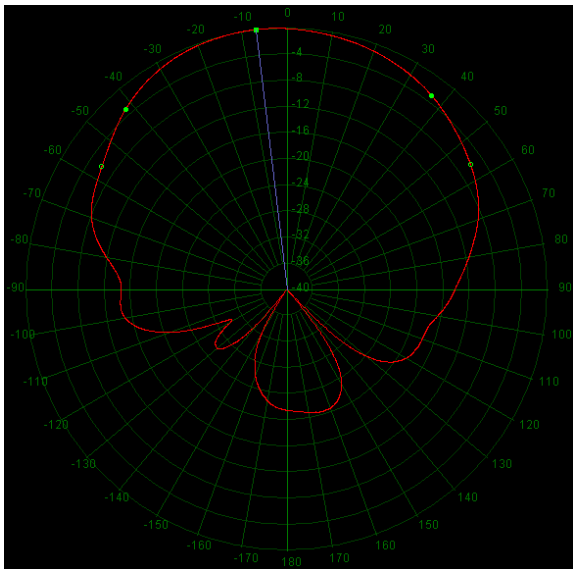
1228 MHz



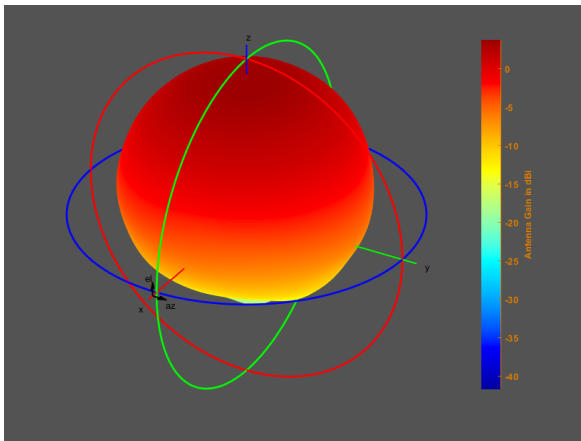
1254 MHz



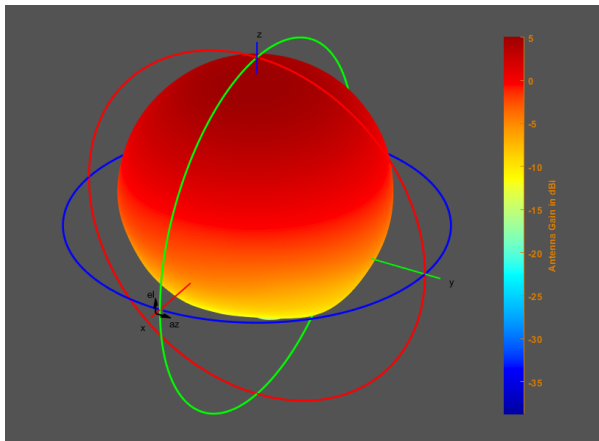
1268 MHz



1300 MHz

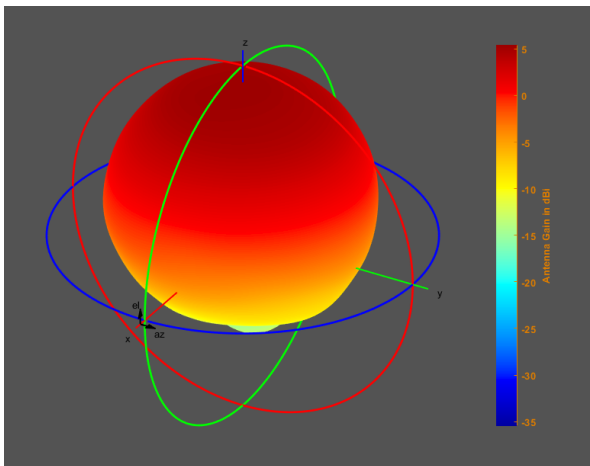


1520MHz

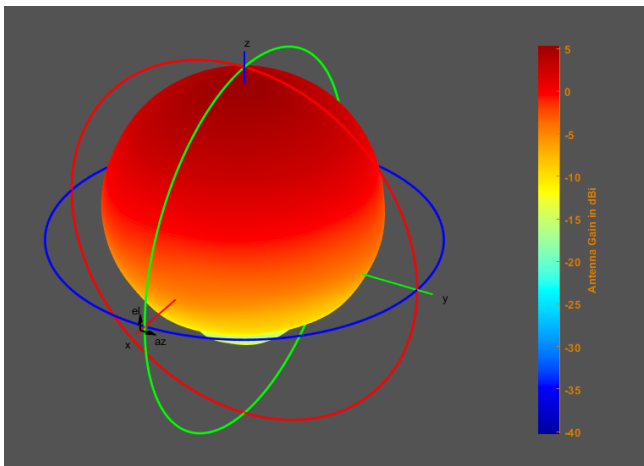


1560 MHz

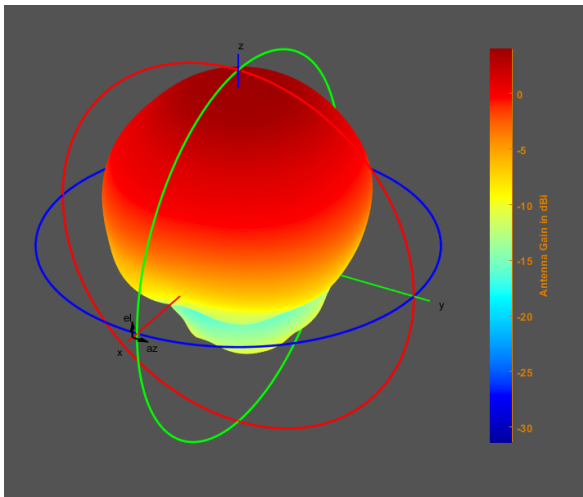
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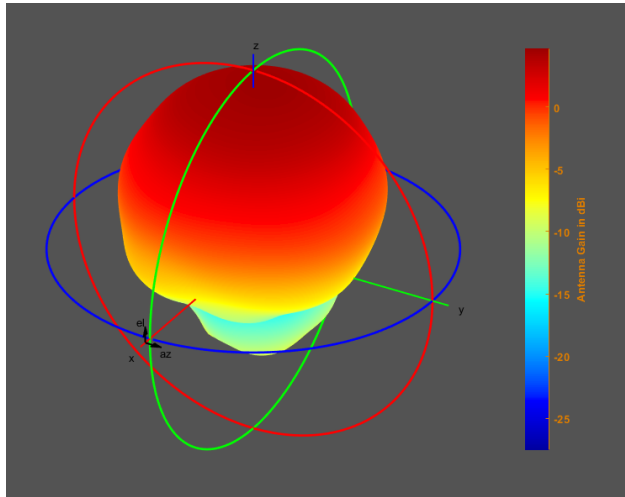
1576 MHz



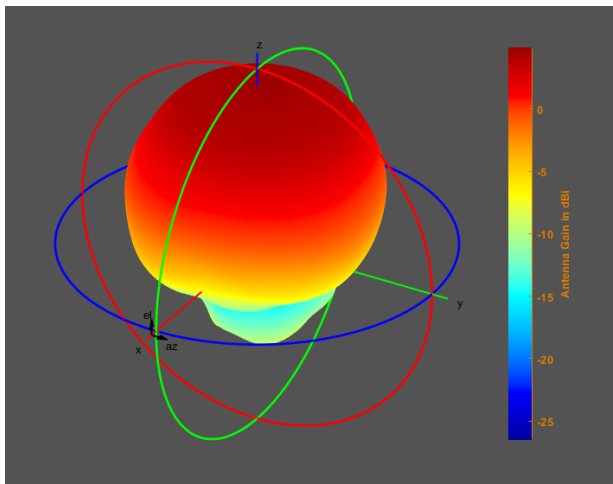
1612 MHz



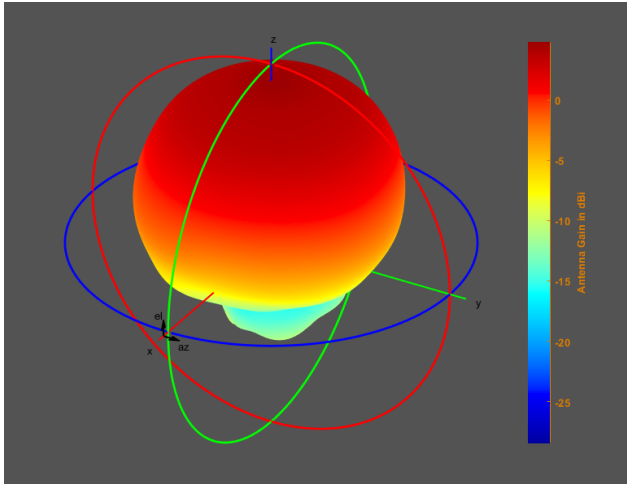
1164 MHz



1204 MHz

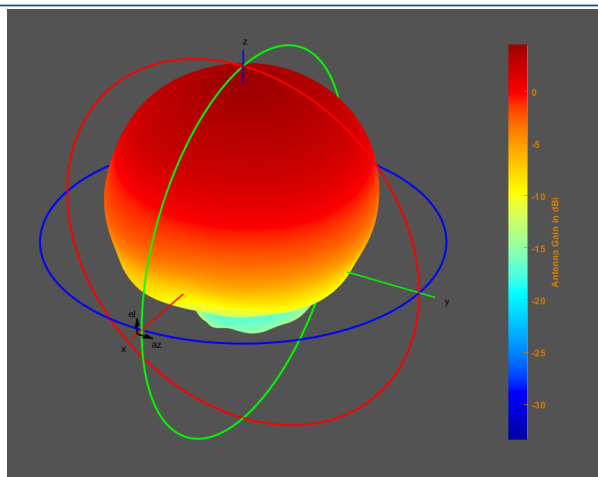


1228 MHz

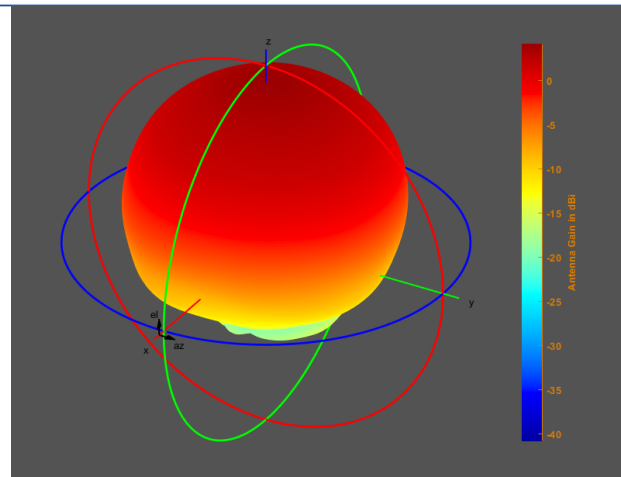


1254 MHz

# OEM GNSS Antenna HX-CSX383A



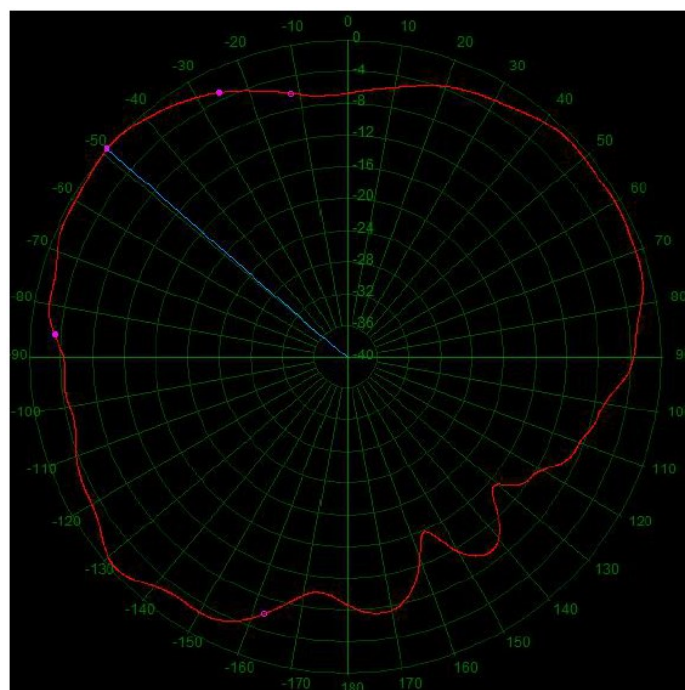
1268 MHz



1300 MHz

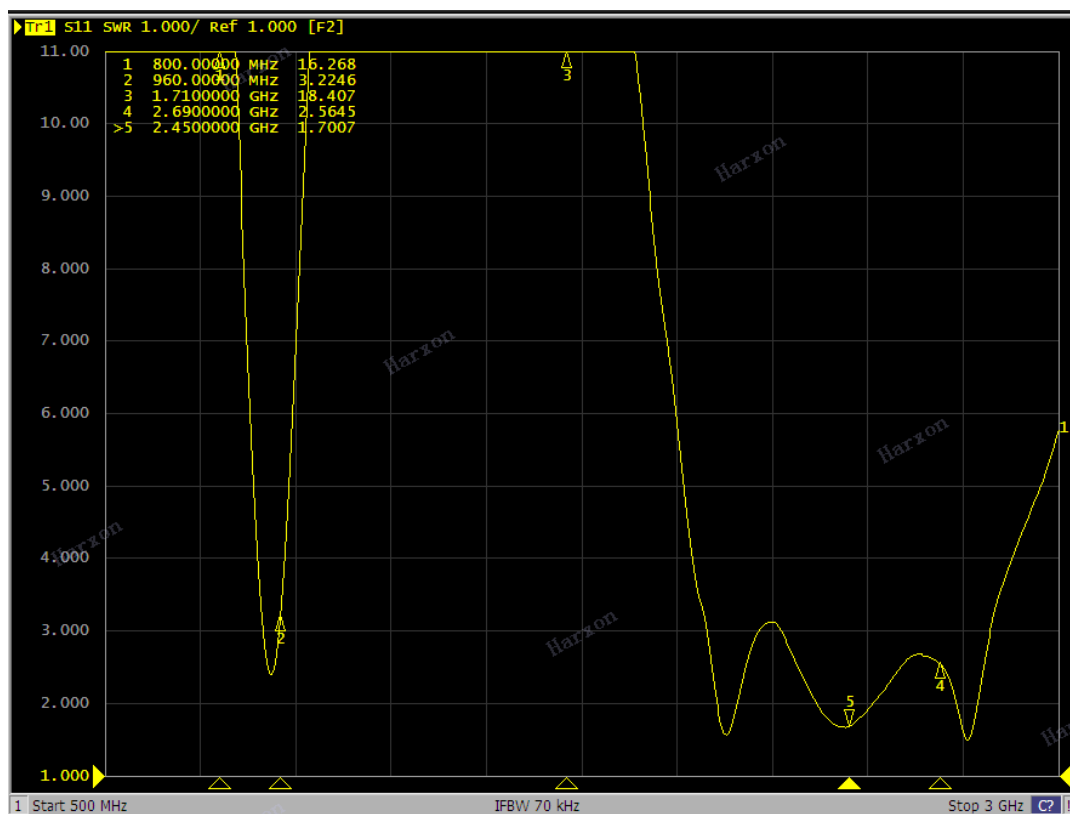
## WIFI/BT Antenna Performance( Planar Inverted-Antenna)

| Frequency (MHz) | 2400 | 2410 | 2420 | 2430 | 2440 | 2450 | 2460 |
|-----------------|------|------|------|------|------|------|------|
| Gain (dBi)      | 0.17 | 0.67 | 1.1  | 1.5  | 1.4  | 0.77 | 0.3  |



WIFI 2440MHz

# OEM GNSS Antenna HX-CSX383A



WIFI/BT Antenna VSWR

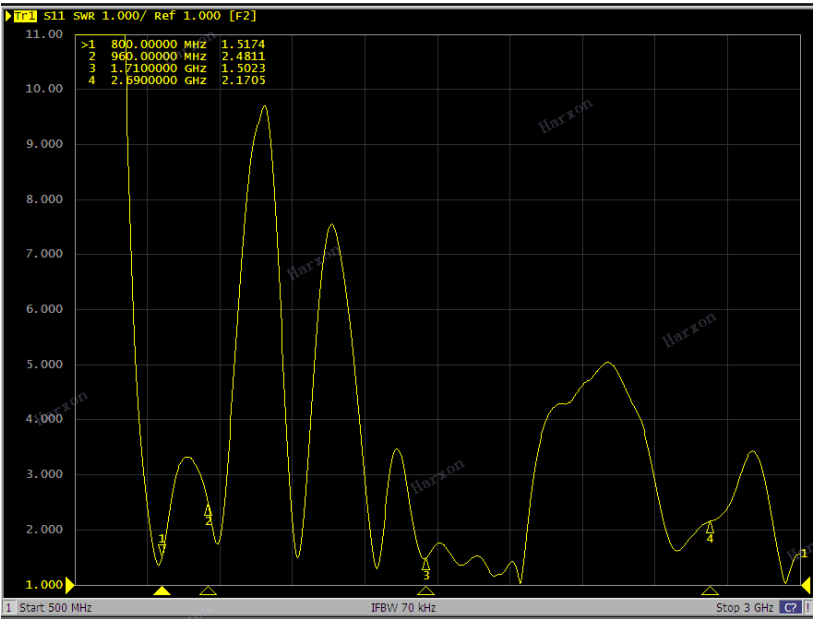
## 4G Antenna Performance( Planar Inverted-Antenna)

### 4G-1

| Frequency (MHz) | 820  | 850  | 880  | 910  | 940  | 960  | 1710 | 1840 | 1900 | 1940 | 2000 | 2100 |
|-----------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Gain (dBi)      | -4.9 | -2.6 | -2.3 | -2.6 | -2.3 | -1.3 | -2   | 0.8  | -0.2 | -1.2 | -2.5 | -2   |

| Frequency (MHz) | 2170 | 2200 | 2300 | 2340 | 2400 | 2440 | 2500 | 2540 | 2600 | 2640 | 2700 |
|-----------------|------|------|------|------|------|------|------|------|------|------|------|
| Gain (dBi)      | -7   | -7.8 | -6   | -6   | -4.7 | -4.7 | -3.9 | -2.8 | -2   | -1.3 | -1.6 |

# OEM GNSS Antenna HX-CSX383A

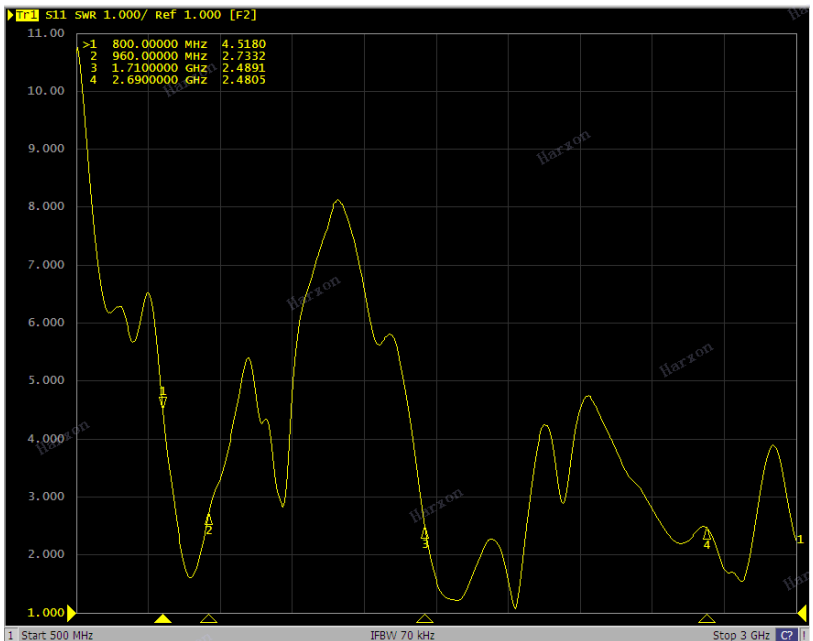


4G-1 Antenna VSWR

4G-2

|                 |     |      |      |      |     |      |      |      |      |      |      |      |
|-----------------|-----|------|------|------|-----|------|------|------|------|------|------|------|
| Frequency (MHz) | 820 | 850  | 880  | 910  | 940 | 960  | 1710 | 1840 | 1900 | 1940 | 2000 | 2100 |
| Gain (dBi)      | -7  | -5.7 | -3.8 | -3.1 | -3  | -2.2 | -2.1 | -2   | -0.7 | -1.4 | -0.3 | -5.4 |

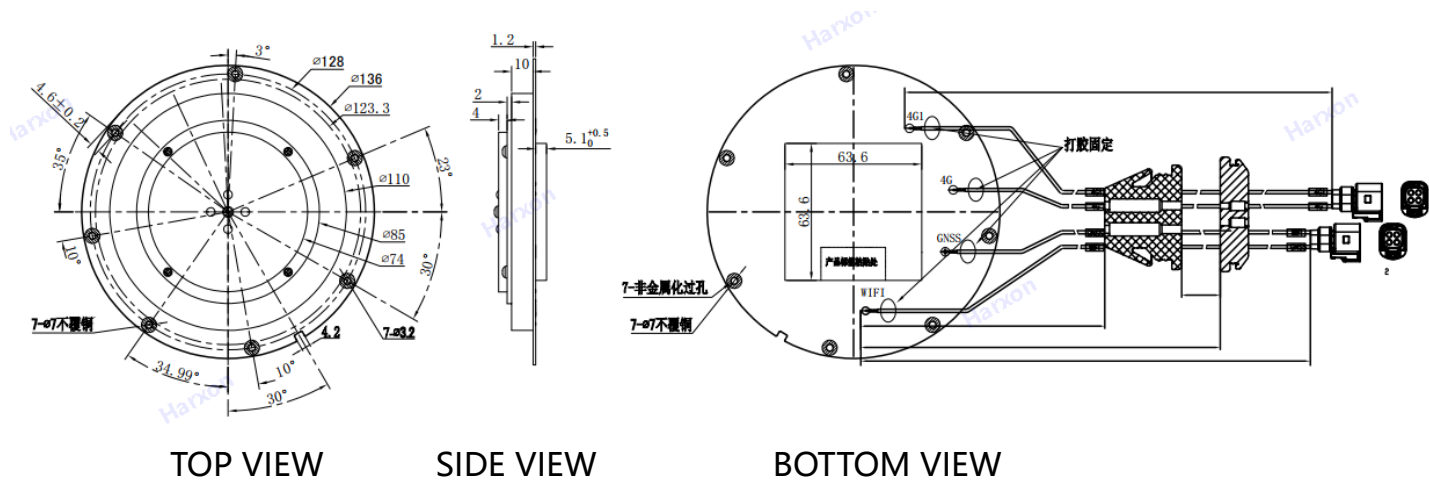
|                 |      |      |      |      |      |      |      |      |      |      |      |
|-----------------|------|------|------|------|------|------|------|------|------|------|------|
| Frequency (MHz) | 2170 | 2200 | 2300 | 2340 | 2400 | 2440 | 2500 | 2540 | 2600 | 2640 | 2700 |
| Gain (dBi)      | -8.4 | -8.5 | -7.4 | -6.8 | -4   | -3.1 | -3   | -2.6 | -1.9 | -1.8 | -1.8 |



4G-2 Antenna VSWR

# OEM GNSS Antenna HX-CSX383A

## Structure & Phase Center Drawing (mm)



Undeclared Tolerance:  $\pm 0.3\text{mm}$