HX-CSX206A Built-in measurement antenna

HX-CSX206A is a four-system full-frequency built-in measurement antenna covering GPS, GLONASS, BDS and GALILEO, and it is compatible with 4G and BT/WiFi working bands to meet the current demand for multi-system compatibility of measurement equipment. It can be widely used in geodetic surveying and mapping, marine surveying, channel surveying, dredging surveying, earthquake monitoring, bridge deformation monitoring, landslide monitoring, container operation at the dock, etc.

Perfect compatibility between systems

The GNSS antenna and 4G, BT antenna do compatible integration, easy to RTK machine manufacturers to integrate the design. And for each system antenna isolation between the depth of optimization, systematic solution has been plagued by RTK receiver electromagnetic compatibility problems, so that the RTK machine design work is simplified, the product is stable and reliable.

Highly stable phase center

The antenna part adopts multi-feed point design scheme to realize the coincidence of phase center and geometric center, which reduces the influence of antenna on measurement error to the minimum. 4G antenna group array design, and 4G antennas are distributed around GNSS antennas, with good symmetry structure, which well solves the influence of communication antennas on positioning antennas and ensures the consistency of phase center of positioning antennas.

关键特性

- Support GNSS four system full band signal
- Support 4G, BT/WiFi
- Stable phase center ensures millimeter-level positioning accuracy
- Strong anti-interference ability, can withstand harsh working environment
- Good electromagnetic compatibility, small antenna size, easy product integration

Tracking in complex environments

The antenna unit has the characteristics of high gain and wide directional map beam to ensure that the antenna still has a strong signal reception effect at low elevation angles, ensuring that it can quickly lock on to the satellite and output GNSS navigation signal stably even in complex environments such as obscured trees and buildings.

High structural reliability

The communication antenna and GNSS positioning antenna substrate are molded in one piece by using self-researched microwave material, with lower loss, lighter weight, smaller antenna size, high precision, good consistency, and more stable and reliable electrical performance.

Strong anti-interference performance

Antenna LNA has excellent out-of-band rejection performance, which can suppress useless electromagnetic wave signals and avoid receiver interference by other wireless communication systems, effectively reducing the risk of system loss of lock, such as electromagnetic wave interference from power grids, communication base stations, radio stations, etc.

HX-CSX206A Built-in measurement antenna

Performance Parameters

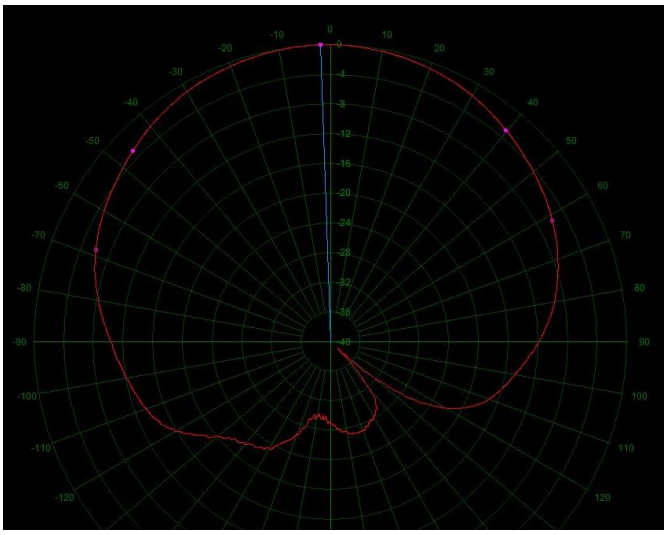
Antenna Characteristics	
Frequency range	GPS L1/L2/L5/L-Band BDS B1/B2/B3 GLONASS L1/L2/L3 GALILEO E1/E5a/E5b/E6 QZSS L1/L2/L5/L6 SBAS L1/L5 IRNSS L5 4G、BT/WIFI
Impedance	50 Ohm
Polarization method	Right rotation Circular polarization
Antenna axis ratio	≤3dB
Horizontal plane coverage angle	360°
Output standing wave	≤2.0
Maximum gain	**GNSS :** 1164-1230&1525-1615MHz**:** 6.2dBi **BT/WIFI :** 2400-2480MHz：1.60dBi **2G/3G/4G :** 820-960：0.13dBi 1710-2690MHz：3.77dBi
Phase center error	±2mm

Low noise amplifier index	
Gain	L2 Bandwidth：32±2dB L1 Bandwidth：30±2dB
Noise factor	≤2dB
Output standing wave	≤2.0
In-band flatness	±2dB
Operating Voltage	+3.3～+12VDC
Operating current	≤45mA
Differential transmission delay	≤5ns
Structural characteristics	
Antenna Size	Φ 131*23.5mm(Connector not included)
Weight	≤230g
Joint form	GNSS:MCX-JW-RG178 4G/WIFI/BT:IPEX First generation
Installation method	4 x M3 screws for installation
Working Environment	
Operating temperature	-40℃～+85℃
Storage temperature	-55℃～+85℃
Humidity	95% Non-condensing

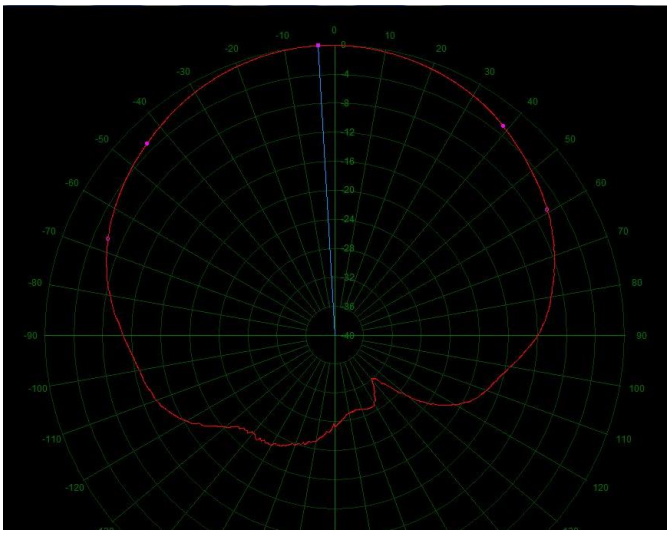
HX-CSX206A Built-in measurement antenna

GNSS Antenna Performance

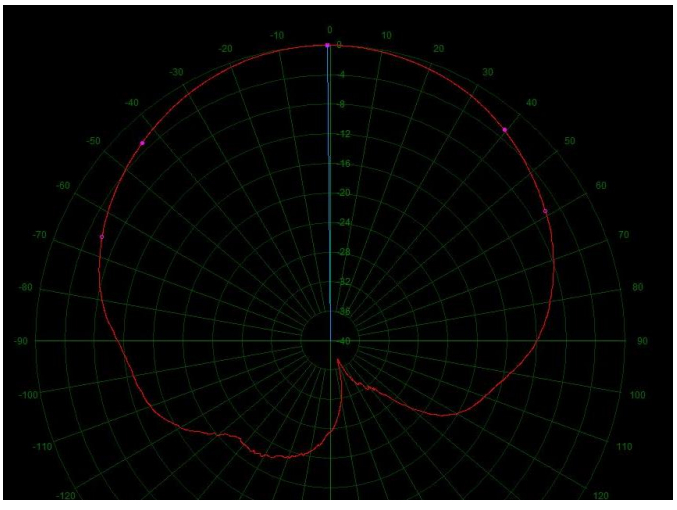
Frequency Points（MHz）	1176	1206	1227	1268	1542	1561	1575	1607
Maximum Gain（dBi）	3.5	5.3	6.0	5.6	4.0	5.9	6.2	4.5



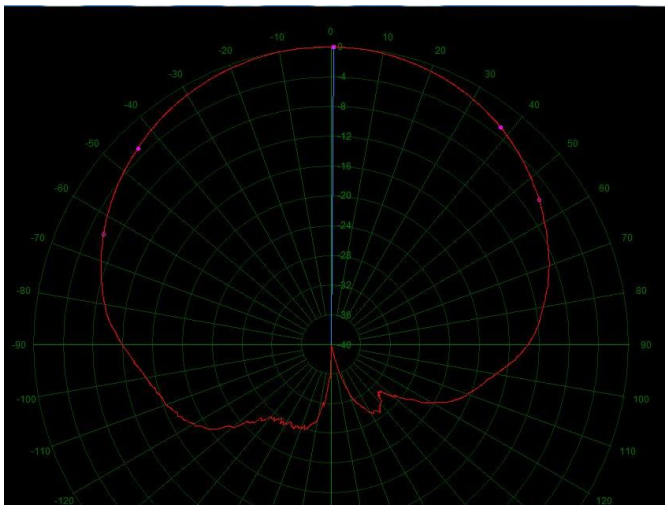
1176MHz Direction schematic



1206MHz Direction schematic

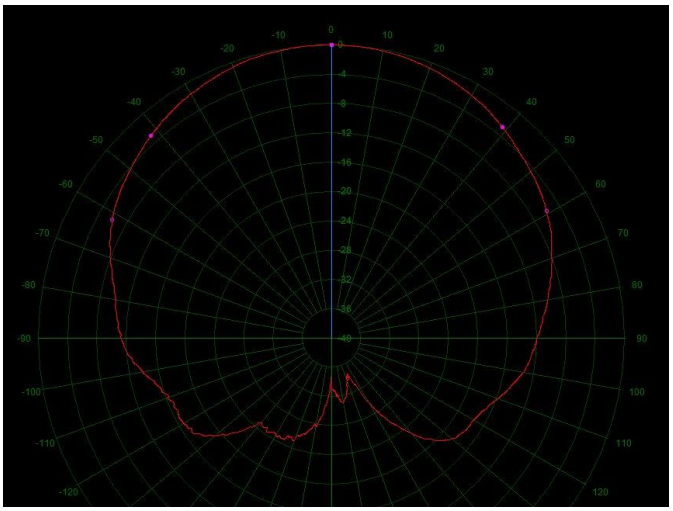


1227MHz Direction schematic

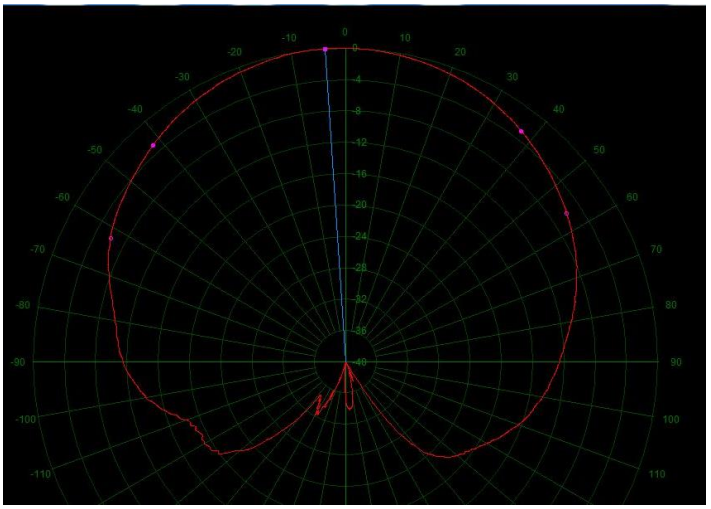


1268MHz Direction schematic

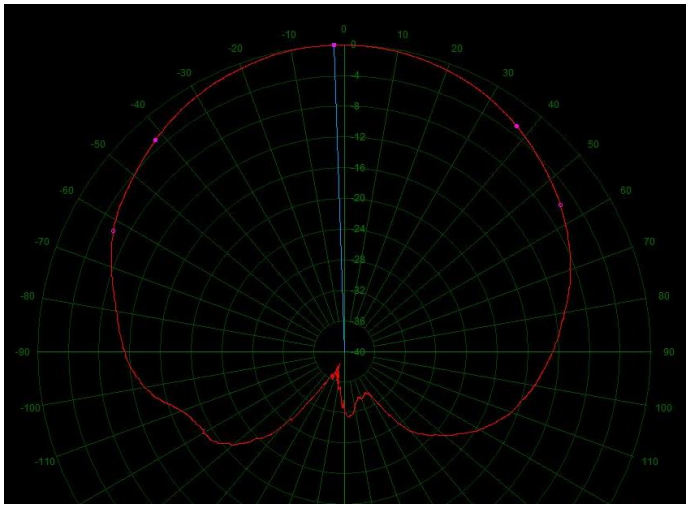
HX-CSX206A Built-in measurement antenna



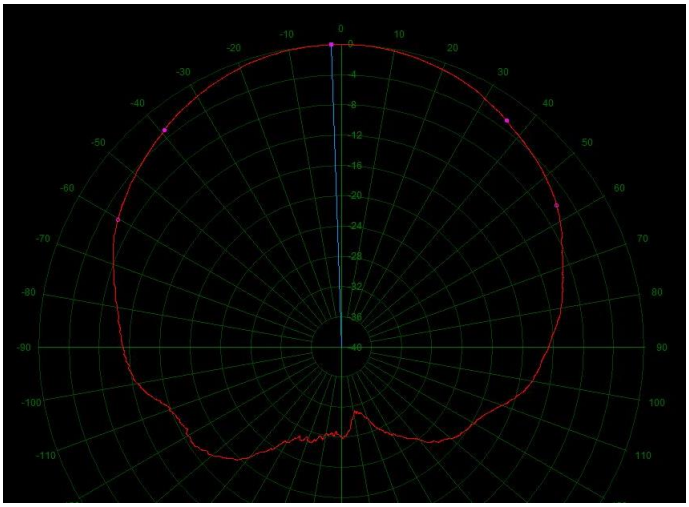
1542MHz Direction schematic



1565MHz Direction schematic



1575MHz Direction schematic



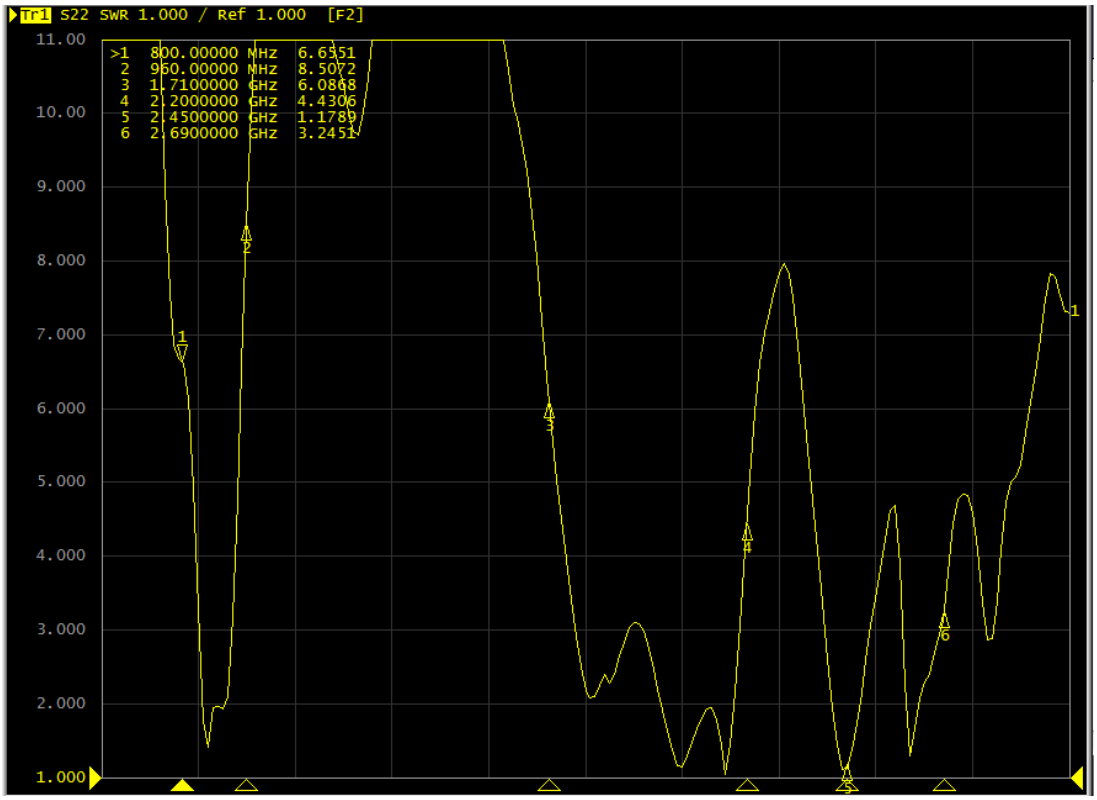
1607MHz Direction schematic

HX-CSX206A Built-in measurement antenna

4G Antenna Performance

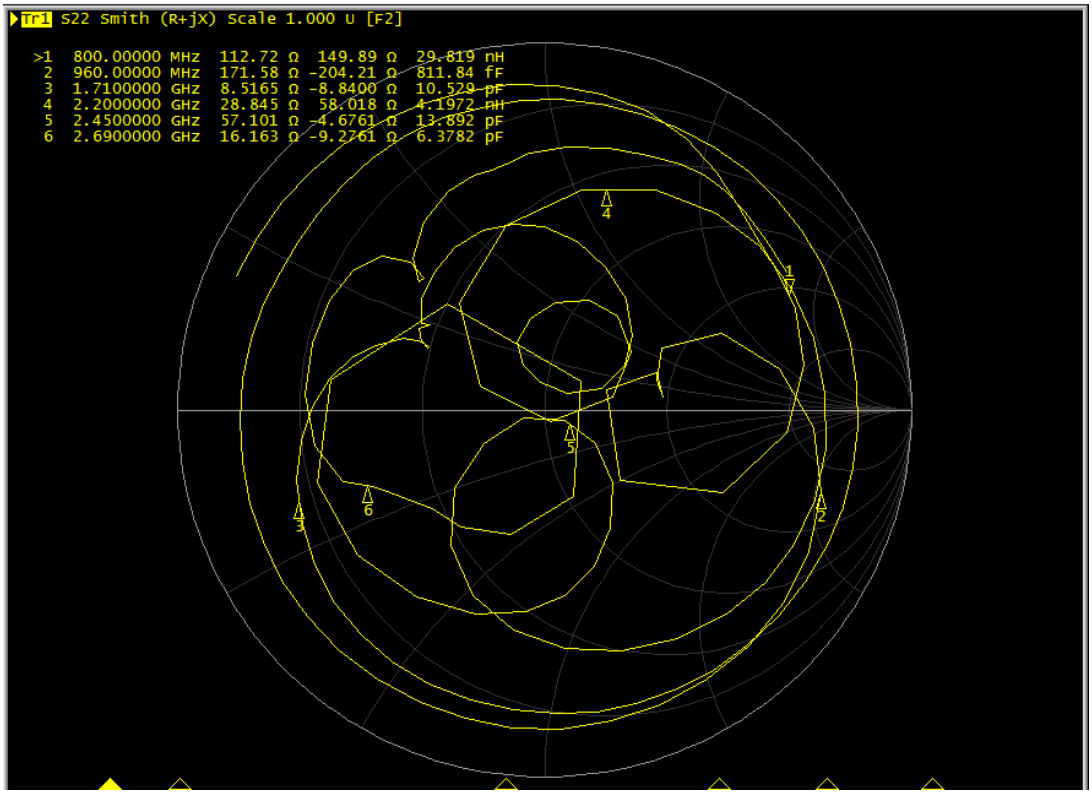
Frequency （MHz）	820	840	860	880	900	920	940	960		
Maximum Gain （dBi）	-3.3	-0.28	-2.05	-1.93	-1.22	-1.70	-3.35	-4.57		
Frequency （MHz）	1710	1790	1870	1950	2030	2110	2190	2270	2350	2430
Maximum Gain （dBi）	-1.42	1.58	2.95	2.66	3.77	2.87	1.80	-0.32	0.76	2.89
Frequency （MHz）	2510	2590	2670							
Maximum Gain （dBi）	2.88	-1.42	1.33							

4G-1 Gain Table



4G-1 Antenna VSWR

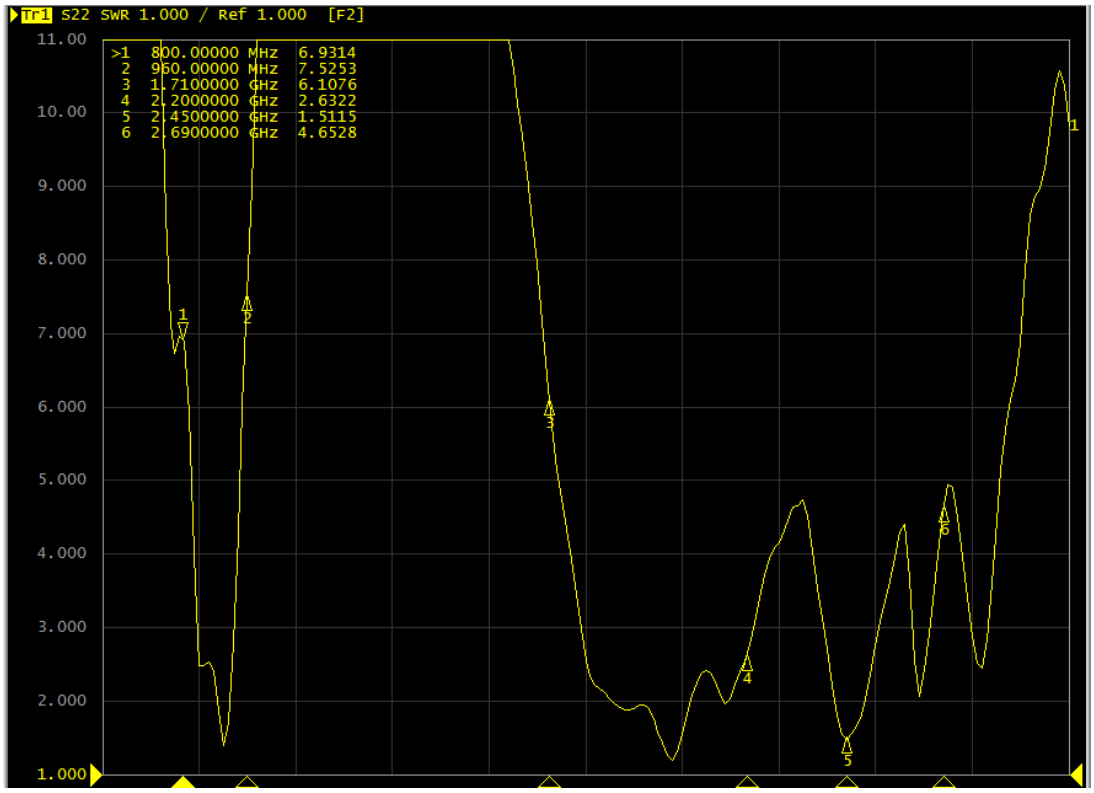
HX-CSX206A Built-in measurement antenna



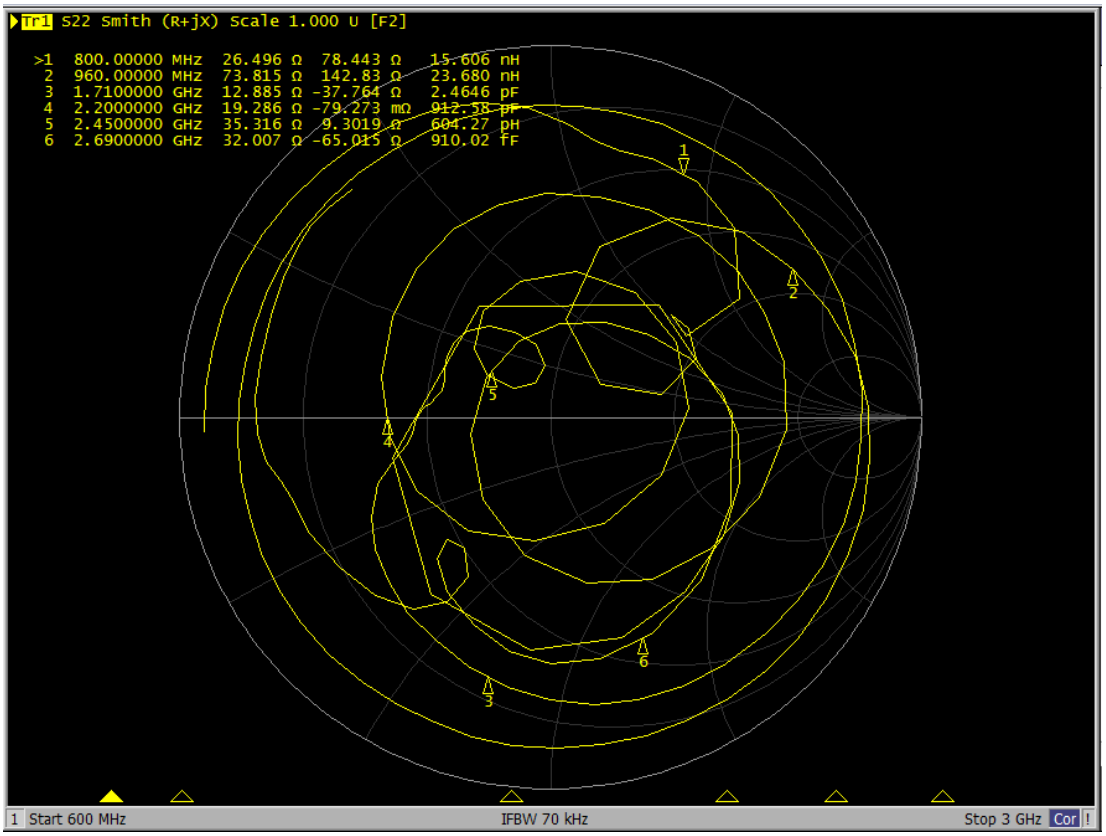
4G-1 Antenna Smith Chart

Frequency (MHz)	820	840	860	880	900	920	940	960		
Maximum Gain (dBi)	-4.17	-1.07	0.13	-1.63	-1.03	-0.75	-2.31	-4.22		
Frequency (MHz)	1710	1790	1870	1950	2030	2110	2190	2270	2350	2430
Maximum Gain (dBi)	-1.08	2.26	1.50	0.84	2.10	1.54	-0.17	-3.7	0.08	3.74
Frequency (MHz)	2510	2590	2670							
Maximum Gain (dBi)	1.52	-2.90	0.88							

4G-2 Gain Table



4G-2 Antenna VSWR

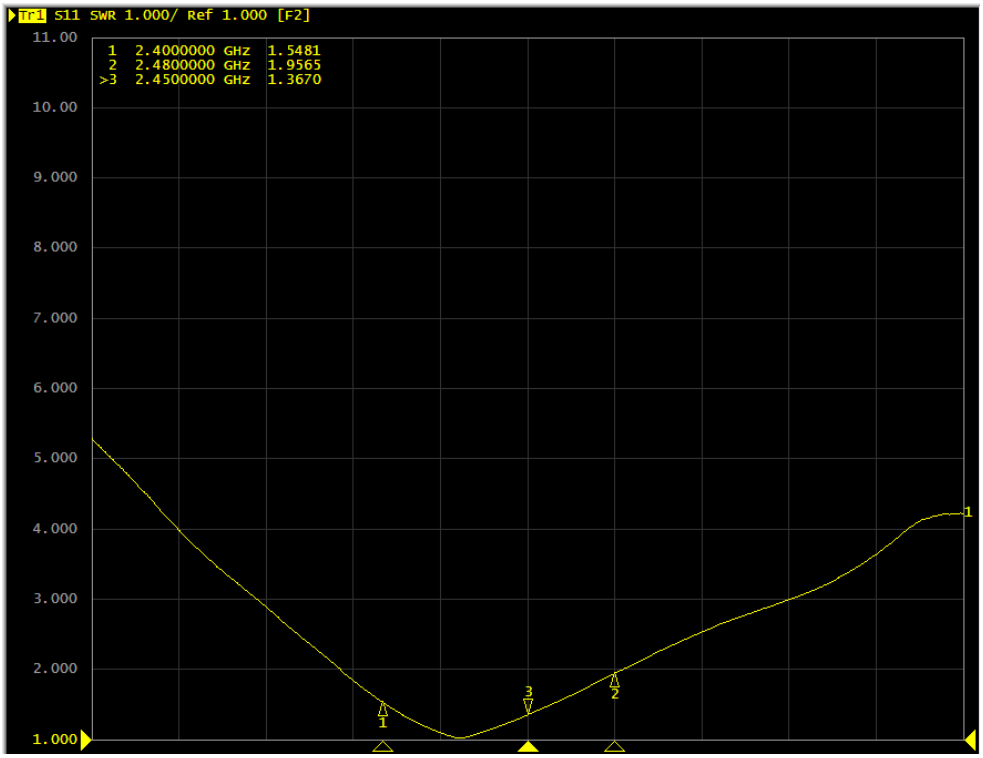


4G-2 Antenna Smith Chart

WiFi/BT Antenna Performance

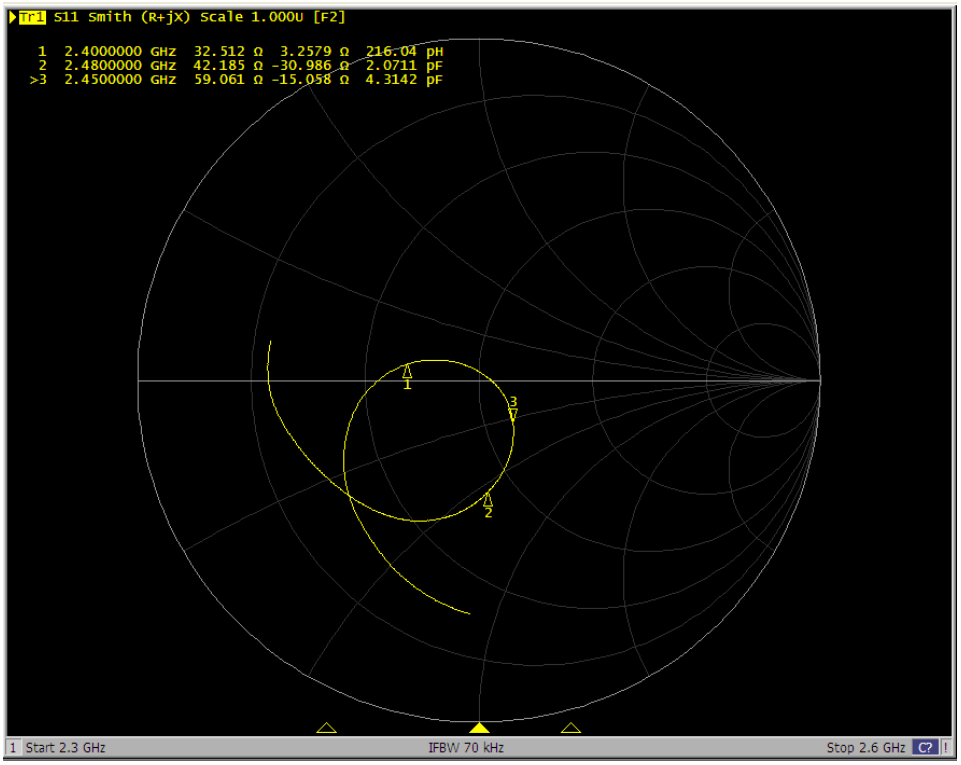
WiFi/BT Antenna Gain T

Frequency（MHz）	2400	2410	2420	2430	2440	2450	2460	2470	2480
Maximum Gain（dBi）	0. 77	0. 56	0. 54	1. 23	1. 60	1. 51	1. 25	1. 16	0. 86



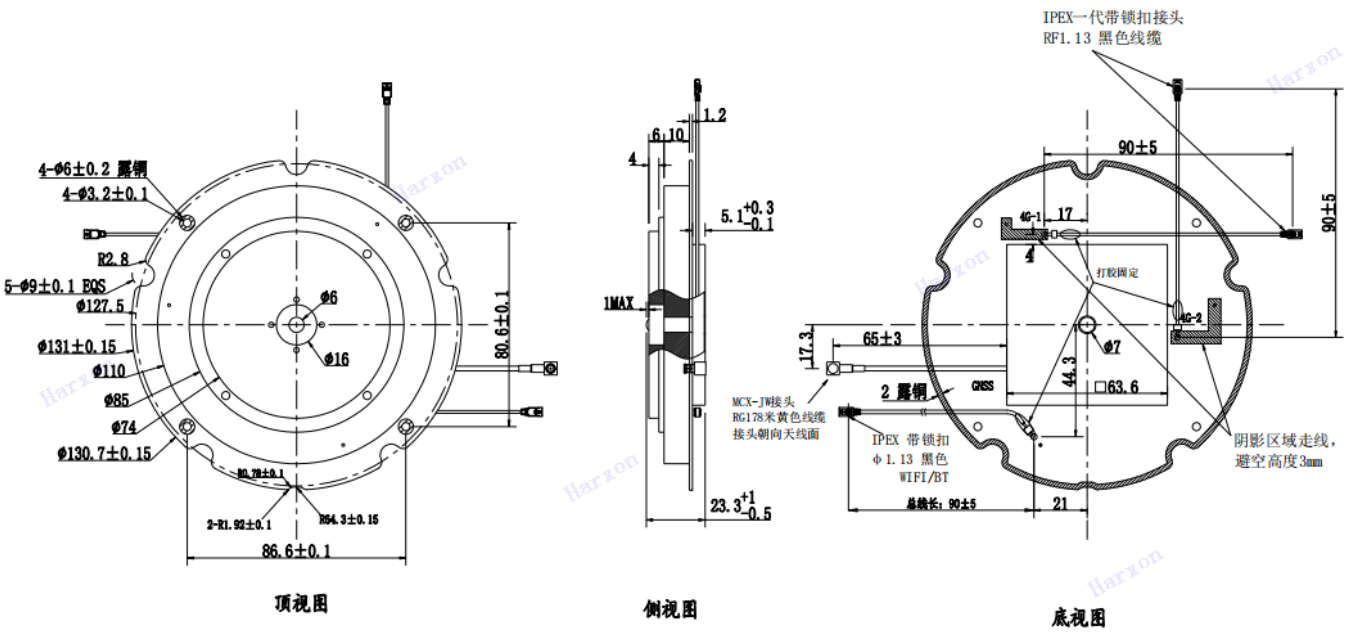
WIFI/BT Antenna VSWR

HX-CSX206A Built-in measurement antenna



WIFI/BT Antenna Smith Chart

Three views of the product （Dimensional Tolerance±0.3mm）



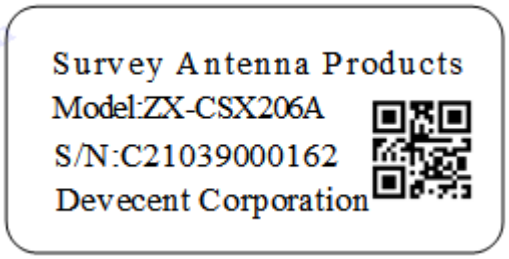
顶视图　　侧视图　　底视图

Top view　　Side view　　Bottom view

HX-CSX206A Built-in measurement antenna

Product Tags

Label Size：15*30mm，The label content is shown below。



HX-CSX206A Built-in measurement antenna

Document Status

Number	Code
HQB.01-GF-2458c	0454

Documentation/revision history				
Serial number	Chapter/ Article	Summary	版本号	经办日期
1	/	Initial creation	a	20230404
2	Three Views	Changing the location of the WiFi outgoing line	b	20230417
3	Product Tags	Replace product label content	c	20230530
4	Performance Parameters	Performance parameter change	d	20230703

————The content of this document ends here————