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Harxon
a *BDStar* company

A Leading Brand of GNSS Positioning
Antenna Solution Provider



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OEM GNSS Antenna HX-CSX245A(B5)

HX-CSX245A(B5) is an embedded multi-constellation, multi-frequency GNSS antenna that integrates a GNSS antenna with 4G and WiFi into one compact enclosure, meeting the current demand for multi-system compatibility in surveying equipment. The combination of high-precision GNSS positioning and 4G/WiFi function makes it ideal for applications requiring precise positioning, such as geodetic surveying and mapping, hydrographic surveying, waterway surveying, dredging surveys, seismic monitoring, bridge deformation monitoring, landslide monitoring, port container operations, and other related applications.

HIGHLY INTEGRATED ANTENNA FOR EASY INTEGRATION

HX-CSX245A(B5) integrates a GNSS antenna with 4G and WiFi antennas into a compact enclosure, simplifying integration for RTK receiver manufacturers. The isolation between different antenna systems has been extensively optimized to systematically address electromagnetic compatibility (EMC) issues that have long challenged RTK receiver design. This significantly simplifies RTK system integration while ensuring stable and reliable product performance.

STABLE PHASE CENTER FOR ROBUST POSITIONING PERFORMANCE

It features multi-point feeding capability, guaranteeing a reliable phase center for millimeter positioning accuracy. The 4G antenna array is strategically designed, with 4G antennas evenly distributed around the GNSS antenna in a symmetrical structure. This effectively mitigates the impact of communication antennas on the positioning antenna, ensuring the consistency of the positioning antenna's phase center.

TRACKING IN COMPLEX ENVIRONMENTS

The antenna delivers exceptional high-gain performance with minimal signal loss, ensuring reliable satellite signal tracking. Its wide beam width covers a broad frequency range with high marginal gain, maintaining robust signal availability even at low elevations. This makes it an ideal choice for complex environments with obstructions, such as tree canopies or buildings, enabling fast satellite locking and stable GNSS navigation signal output.

RELIABLE STRUCTURE FOR STABLE PERFORMANCE

This antenna uses air dielectric and low-loss microwave board materials. The overall weight is reduced, the structure is more robust, and the electrical performance becomes more stable and reliable.

STRONG ANTI-INTERFERENCE PERFORMANCE

The advanced LNA (Low Noise Amplifier) excels in improved signal filtering and out-of-band rejection, perfectly restraining unwanted electromagnetic interferences. With strong multi-path reduction capacity for strong

Key Features

- Supports GPS, GLONASS, Beidou, Galileo
- Supports 4G/ WiFi
- Strong anti-interference performance in complex environments
- Low profile and lightweight
- Powerful system compatibility, easy for integration

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anti-interference performance, consistent and reliable GNSS signals can be achieved even under complicated environments such as power grids, communication base stations and broadcast stations.

Specifications

PERFORMANCE (Room Temperature)		Nominal Impedance	50 Ω
Signal Received	GPS L1/L2/L5	Peak Gain	1dBi
	BDS B1I/B2I/B3I/B1C/B2a/B2b	Efficiency	20%
	GLONASS G1/G2/G3	VSWR	900MHz<6
	GALILEO E1/E5a/E5b/E6		1800MHz<6
	QZSS L1/L2/L5/L6		1850MHz<6
	IRNSS L5		1970MHz<6
L-band	GNSS: 1176-1278MHz; 1525-1602MHz Test Frequency: (1176/1207/1227/1246/1268/1525/ 1561/1575/1602)	WIFI/BT Antenna (Room Temperature)	
		Frequency	2402-2480MHz
		Nominal Impedance	50 Ω
		Peak Gain	1dBi
		VSWR	Test Frequency (2450) VSWR<2
Nominal Impedance	50 Ω	LOW NOISE AMPLIFIER	
Polarization	RHCP	LNA Gain	L2: 31±2dB L1: 31±2dB
Peak Gain	≥5dBi	Noise Figure	≤2dB
Axial Ratio	≤3dB	VSWR	≤2.0
Phase Center Deviation	±2mm	Passband Ripple	±2dB
4G Antenna (Room Temperature)		Group Delay	≤5ns
Frequency	820-960MHz/1710-2690MHz	Ripple	

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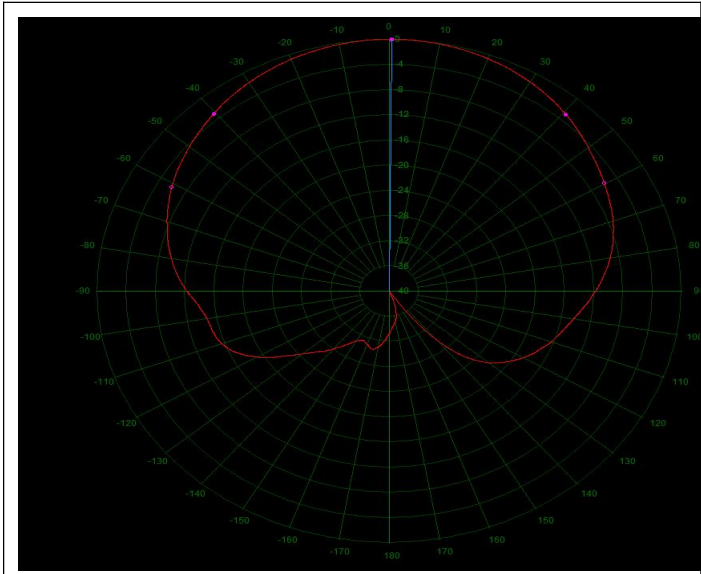
Operation Voltage	+3.3 ~ +12VDC
Operation Current	≤45mA
MECHANICAL	
Dimensions	φ134*17.5mm (excluding connector)
Weight	≤100g

Connector	GNSS: MMCX Female 4G/WIFI: IPEX Female
Mounting	6*M2.5 screws mounting
ENVIRONMENTAL	
Operating Temperature	-40°C ~ +85°C
Storage Temperature	-55°C ~ +85°C
Humidity	95% non-condensing

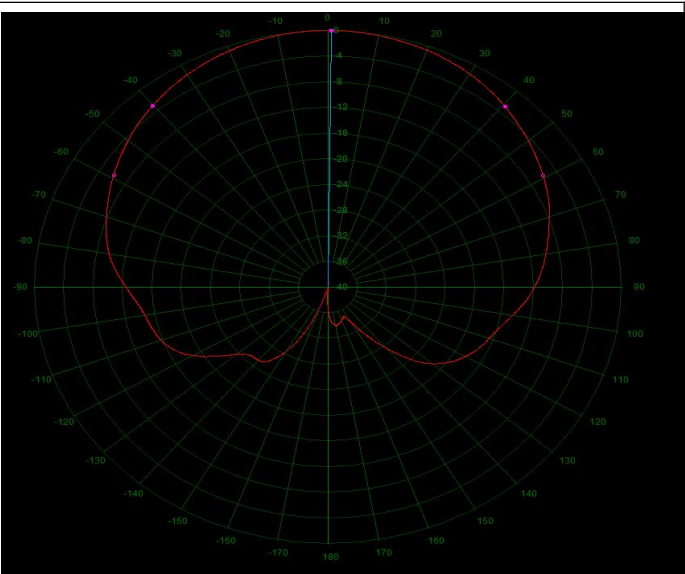
GNSS Antenna Performance

Frequency (MHz)	Peak Gain(dBi)	Gain at 20° Low Elevation Angle (dBi)	Axial Ratio (dB)
1176	2.93	-3.39	2.9
1207	4.26	-2.43	2.31
1227	5.38	-2.19	2.03
1248	5.66	-1.62	2.09
1278	4.51	-1.55	1.35
1559	5.04	-1.61	0.92
1575	5.55	-1.31	0.90
1610	5.44	-1.38	0.58

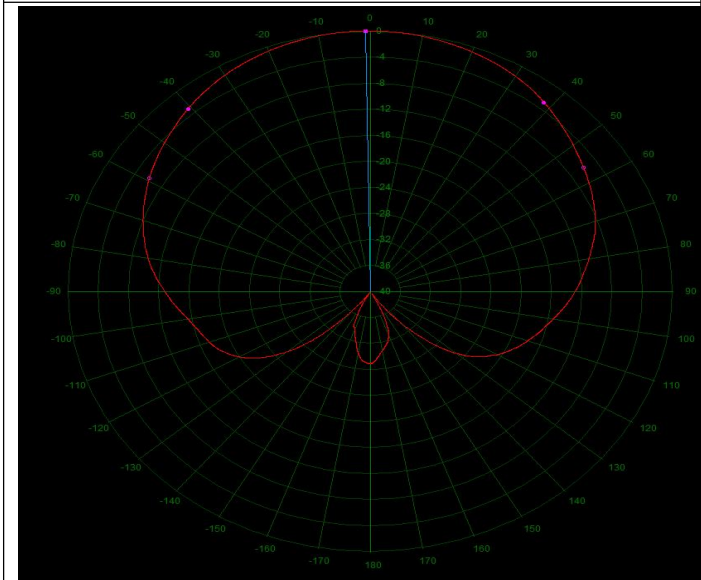
OEM GNSS Antenna HX-CSX245A(B5)



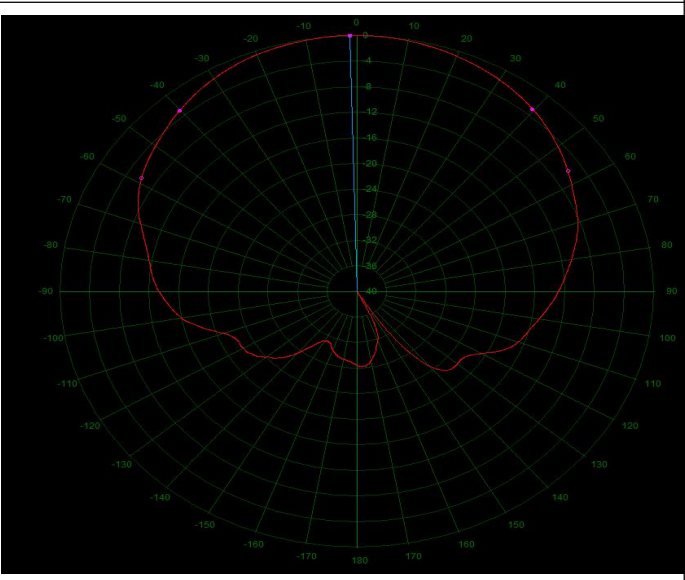
1176 MHz



1227 MHz

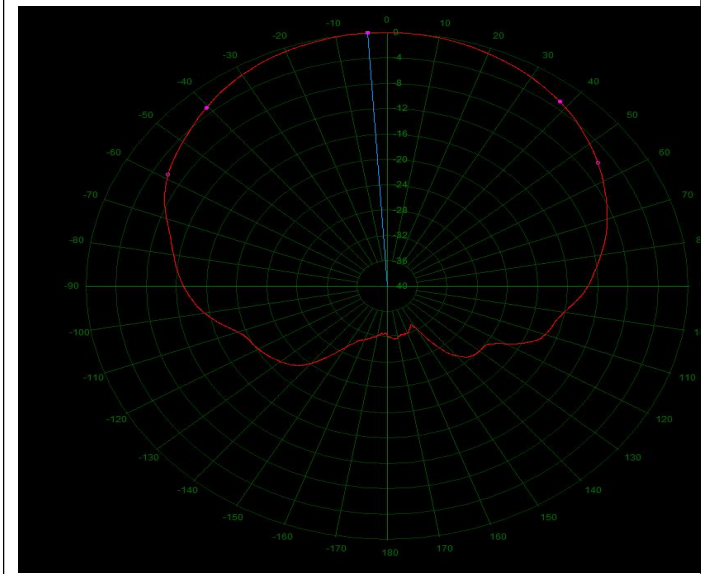


1278 MHz

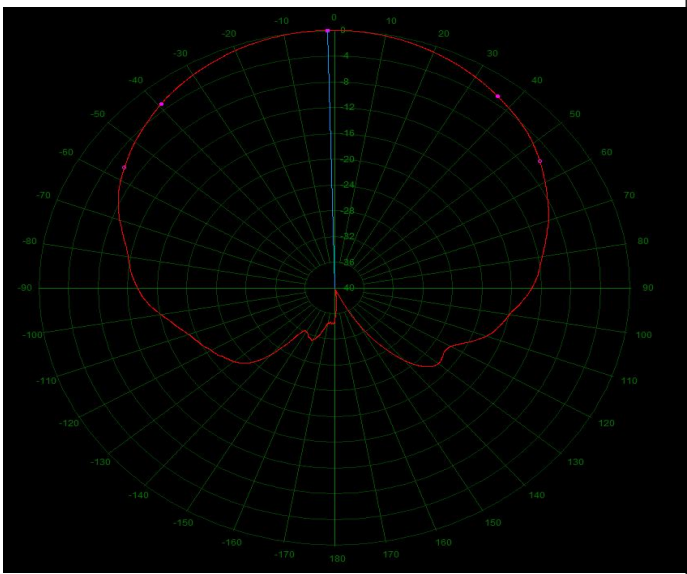


1559 MHz

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1575 MHz

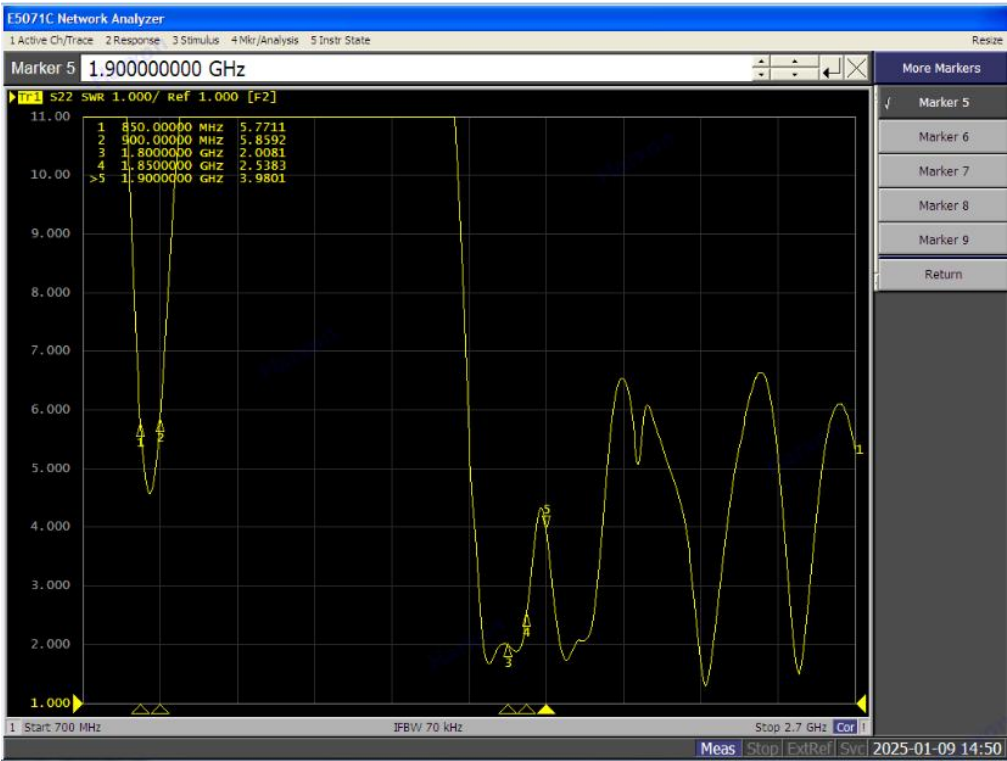


1610 MHz

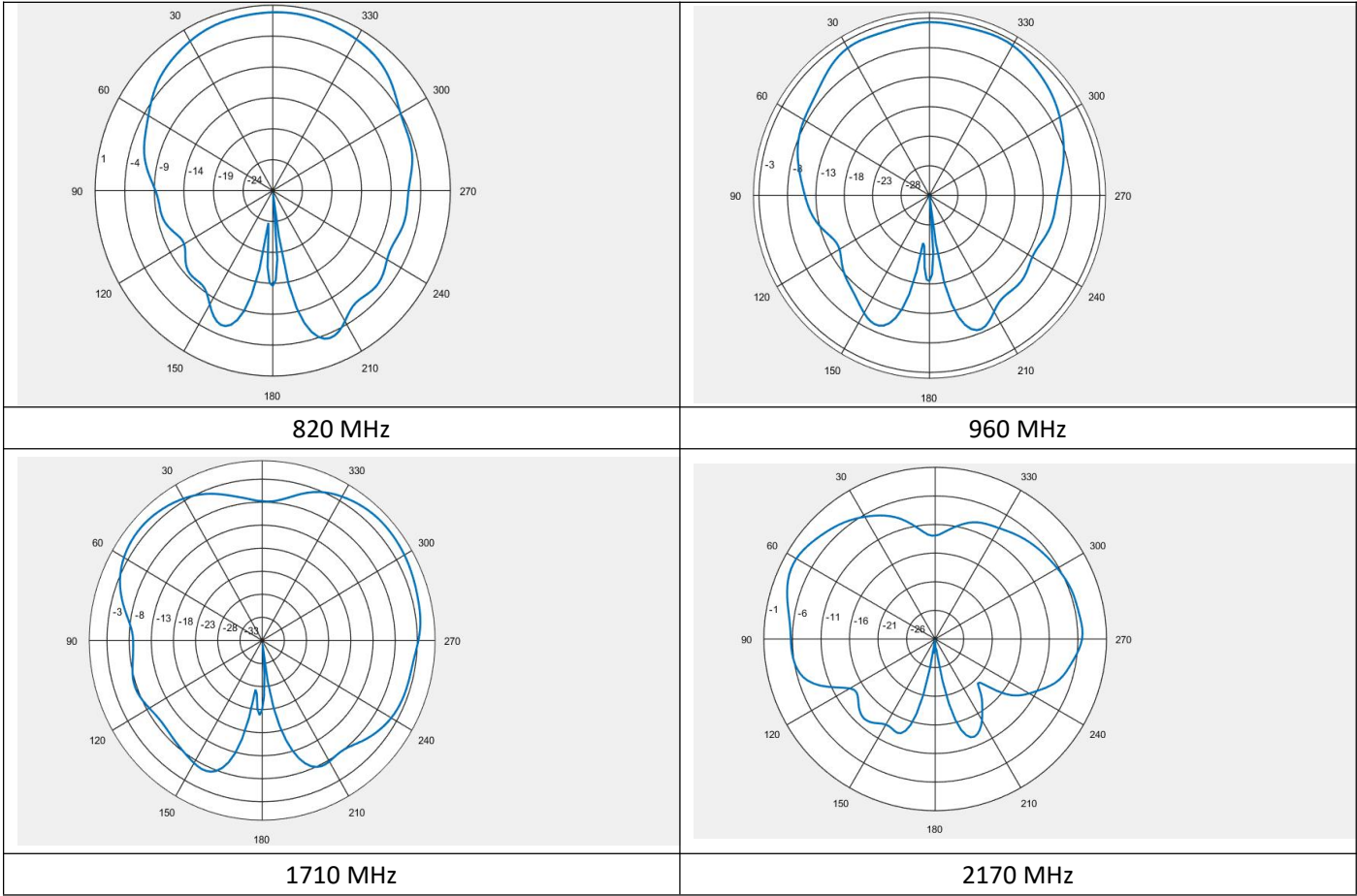
4G Antenna Performance

Frequency (MHz)	820	890	960	1710	1910	2110	2410	2450	2480	2690
Gain (dBi)	-6.32	-3.68	-8.72	-2.37	-2.52	-1.96	-6.19	-3.83	-0.69	-0.45

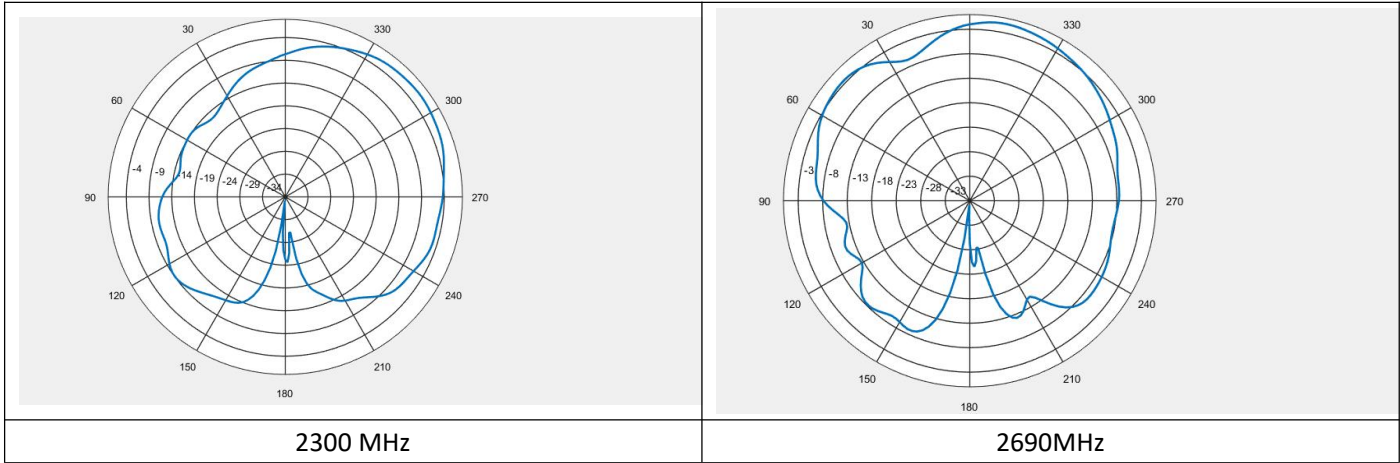
OEM GNSS Antenna HX-CSX245A(B5)



4G Antenna VSWR

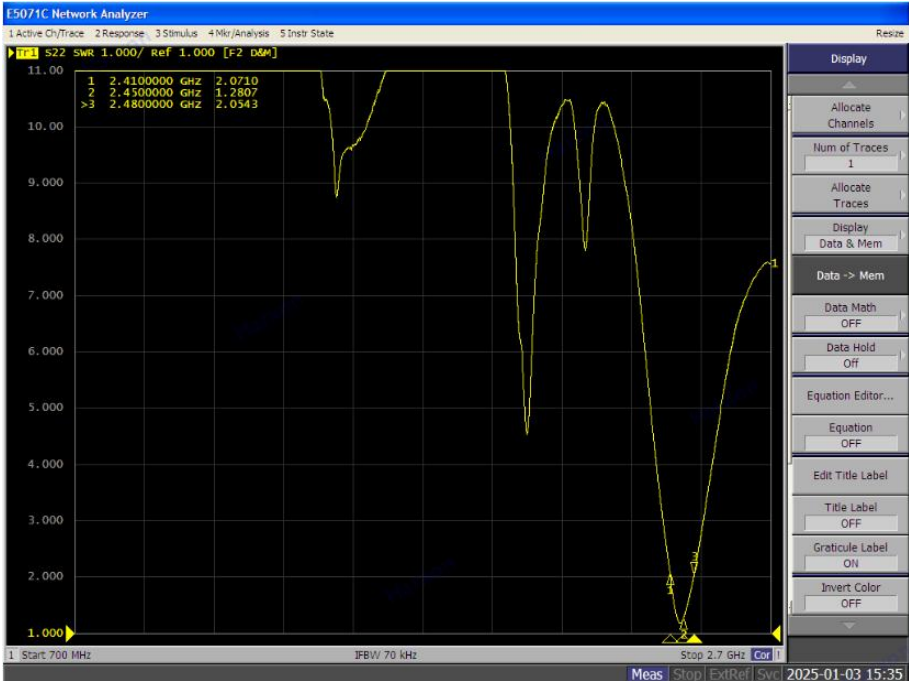


OEM GNSS Antenna HX-CSX245A(B5)



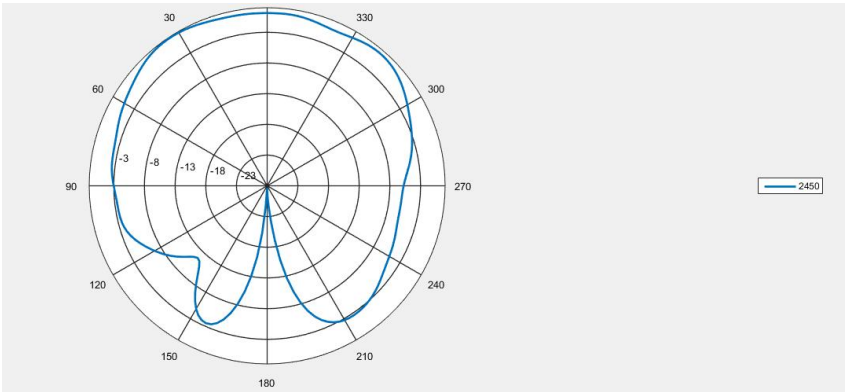
WIFI Antenna Performance

Frequency (MHz)	2402	2420	2430	2440	2450	2460	2470	2480	2490	2500
Gain (dBi)	0.83	1.23	1.54	1.83	1.94	1.95	1.79	1.35	0.87	0.51



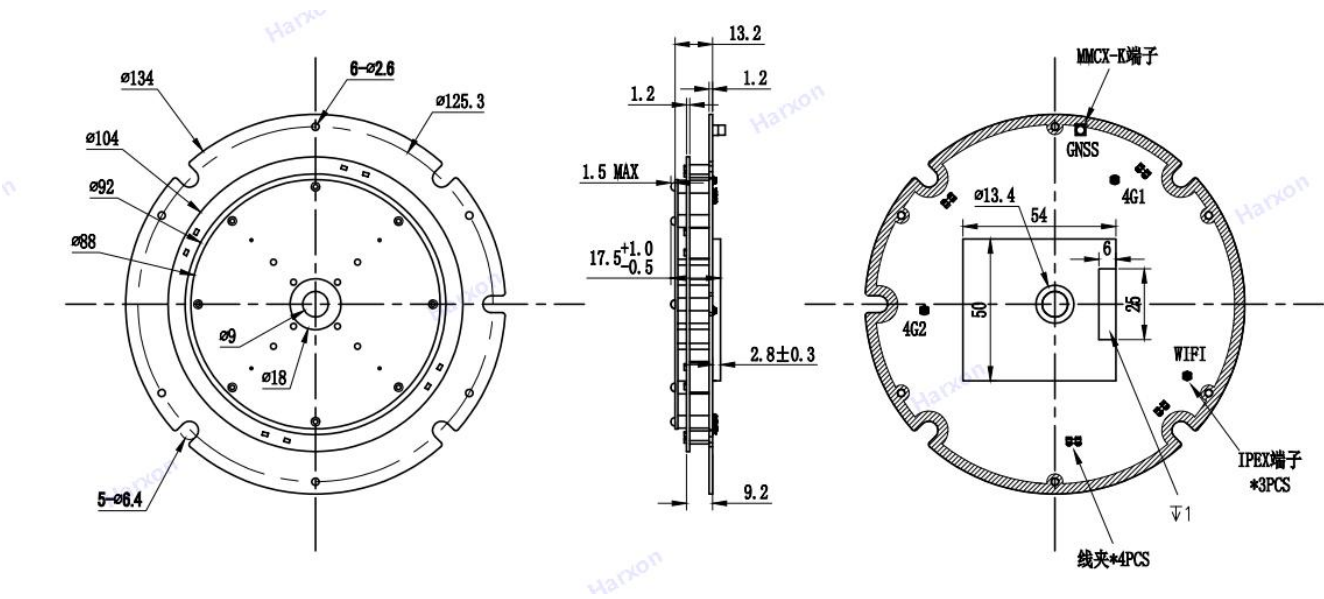
WIFI antenna VSWR

OEM GNSS Antenna HX-CSX245A(B5)



2450MHz

Structure & Phase Center Drawing (mm) (Undeclared tolerance:±0.2mm)



Top view

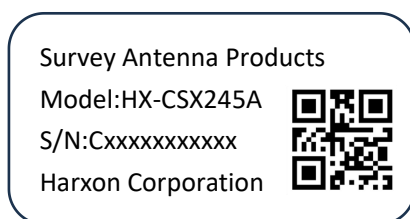
Side view

Bottom view

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Label

Label Size: 15*30mm. The label content format is shown in the figure below, where the S/N code shall be compiled according to the procedure documents and the actual situation; the figure below is for illustration purposes only.



文件情况

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HQB. 01-GF-3664a		0093		
文 件 制 / 修 订 履 历				
序号	章节/条款	摘 要	版本号	经办日期
1.	/	新建文件	a	2025. 6. 4
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3.				
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