

OEM GNSS Antenna HX-CSX332A



HX-CSX332A is an embedded full frequency GNSS antenna covering GPS, GLONASS, BDS, GALILEO, and QZSS. It is also compatible with 4G, WiFi, and Bluetooth, meeting the demand for multi-system compatibility in current survey devices. It can be widely used in various applications such as geodetic surveying, marine surveying, channel surveying, dredging surveying, seismic monitoring, bridge deformation monitoring, landslide monitoring, and port container operations.

HIGHLY INTEGRATED ANTENNA FOR EASY INTEGRATION

HX-CSX332A integrates GNSS antenna and 4G antenna into one compact enclosure, greatly simplifying RTK integration. Deep optimization has been carried out for the isolation between antennas of various systems, systematically addressing the electromagnetic compatibility issues that have long troubled RTK receivers.

STABLE PHASE CENTER FOR ROBUST POSITIONING PERFORMANCE

It features multi-point feeding capability, guaranteeing a reliable phase center for millimeter positioning accuracy.

Key Features

- Supports GPS, GLONASS, BDS, Galileo, QZSS
- Supports 4G, BT/WiFi
- Anti-electromagnetic interference, tracking in complex environments
- Powerful system compatibility, easy for machine integration

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 guarantee robust signal availability even in low elevation, making the antenna a perfect option for complex environments with blockage, such as forests and buildings.

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 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.

OEM GNSS Antenna HX-CSX332A

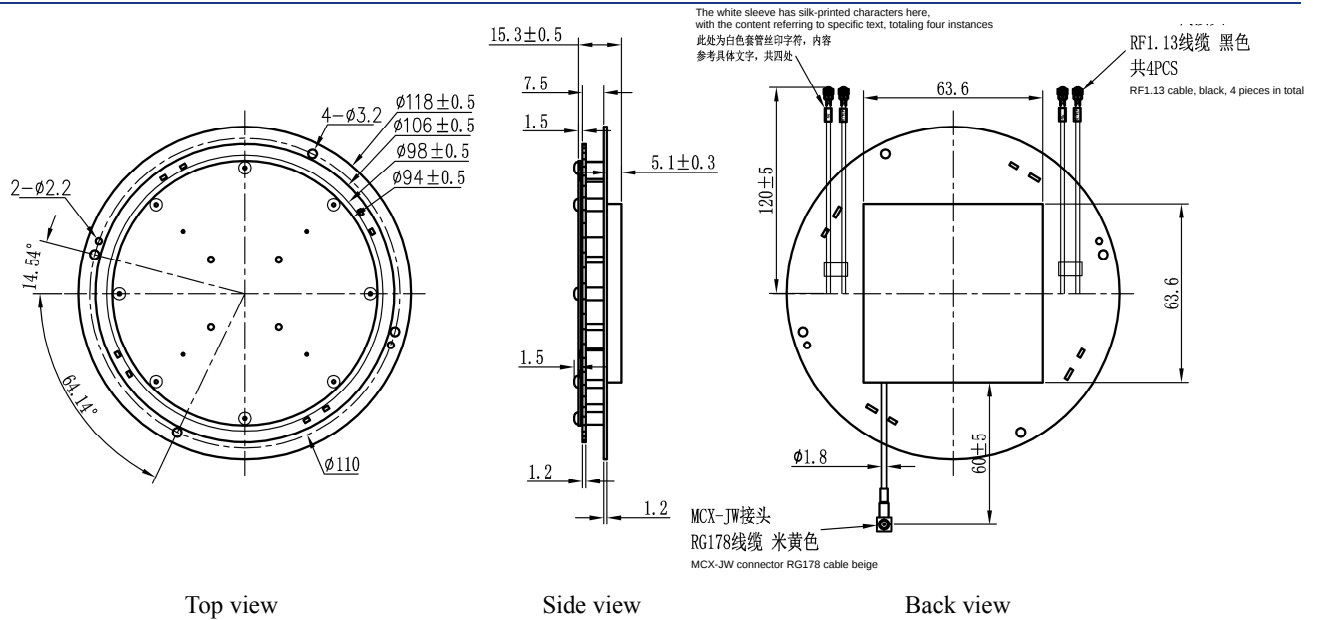
Specifications

PERFORMANCE	
Signal Received	GPS L1/L2/L5 BDS B1/B2/B3 GLONASS L1/L2/L3 GALILEO E1/E5a/E5b/E6 QZSS L1/L2/L5/L6 IRNSS L5 SBAS L1/L5 4G BT/WIFI L-Band
Nominal Impedance	50 Ω
Polarization	RHCP
Axial Ratio	$\leq 3\text{dB}$
Azimuth Coverage	360°
Output VSWR	≤ 2.0
Peak Gain	GNSS:5.2dBi 4G:0.5dBi WIFI: 1dBi BT: 1dBi
Phase Center Deviation	$\pm 2\text{mm}$
LOW NOISE AMPLIFIER	
LNA Gain	L2 : 34 $\pm$ 2dB L1 : 32 $\pm$ 2dB

Noise Figure	$\leq 2\text{dB}$
VSWR	≤ 2.0
Passband Ripple	$\pm 2\text{dB}$
Operation Voltage	+3.3 ~ +12VDC
Operation Current	$\leq 45\text{mA}$
Group Delay Ripple	$\leq 5\text{ns}$
MECHANICAL	
Dimensions	$\Phi 118 \times H15.3\text{mm}$
Weight	$\leq 220\text{g}$
Connector	GNSS:MCX-JW 4G_1:IPEX-K 4G_2: IPEX-K WIFI: IPEX-K BT: IPEX-K
Mounting	4*M3 screws mount
ENVIRONMENTAL	
Operating Temperature	-40°C ~ +85°C
Storage Temperature	-55°C ~ +85°C
Humidity	95% non-condensing

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Structure& Phase Center Drawing (mm) (Undeclared Tolerance:±0.3mm)



Label

Label size: 15*30mm, the content of the label is shown as below.



HX-CSX332A测量天线性能测试报告Measurement antenna performance test report

1 天线特性Antenna characteristics

1.1 天线指标测试项如下表所示The antenna indicator test items are shown in the following table

天线指标测试项Antenna index test items

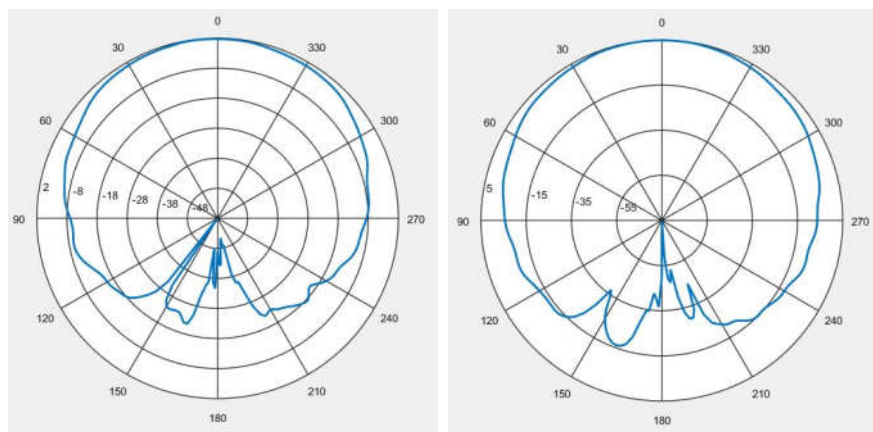
测试项Test item	要求Requirement
GNSS 天线最大增益 GNSS Maximum gain of antenna	$\geq 5\text{dBi}$
Antenna axis ratio天线轴比(90°)	$\leq 3\text{dB}$
输出驻波standing wave	≤ 2.0
4G 天线最大增益 Maximum gain of 4G antenna	$\geq 0.5\text{dBi}$

1.2 GNSS 天线增益、轴比测试值Antenna gain and axial ratio test values

频率 (MHz)	增益 (dBi)	轴比 (dB)
1164	1.0	1.3
1167	1.0	1.2
1170	1.2	1.1
1173	1.5	1.0
1176	1.8	0.9
1179	2.0	0.9
1182	2.2	0.9
1185	2.5	0.9
1188	2.7	0.8
1191	2.8	0.8
1194	3.1	0.8
1197	3.3	0.8
1200	3.5	0.7
1203	3.7	0.7
1206	3.9	0.6
1209	4.1	0.5
1212	4.2	0.4
1215	4.3	0.4
1218	4.5	0.3
1221	4.6	0.2
1224	4.7	0.2
1227	4.8	0.2
1230	5.0	0.3
1233	5.1	0.4
1236	5.1	0.4
1239	5.0	0.5
1242	5.0	0.6
1245	5.0	0.7
1248	4.9	0.7
1251	4.9	0.8
1254	4.8	0.8
1257	4.7	0.8
1260	4.6	0.8
1263	4.4	0.9
1266	4.3	0.9
1269	4.1	0.9
1272	3.9	0.9
1275	3.8	1.0

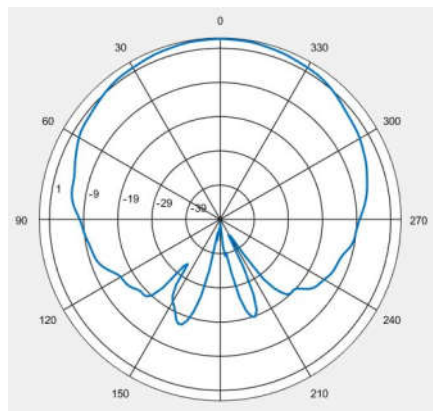
1278	3.7	1.0
频率 (MHz)	增益 (dBi)	轴比 (dB)
1525	-1.2	1.2
1528	-0.7	1.2
1531	-0.3	1.2
1534	0.0	1.3
1537	0.3	1.3
1540	0.5	1.3
1543	0.9	1.3
1546	1.3	1.4
1549	1.7	1.4
1552	2.0	1.4
1555	2.3	1.5
1558	2.4	1.6
1561	2.6	1.6
1564	2.8	1.7
1567	3.1	1.7
1570	3.4	1.7
1573	3.8	1.7
1576	4.0	1.7
1579	4.3	1.7
1582	4.5	1.6
1585	4.5	1.5
1588	4.7	1.5
1591	4.7	1.4
1594	4.9	1.3
1597	5.0	1.2
1600	5.2	1.1
1603	5.1	1.1
1606	4.9	1.0
1609	4.8	0.9

1.2.2 GNSS天线方向图Antenna pattern

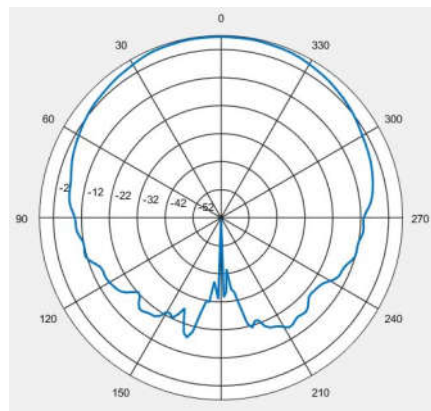


1176MHz

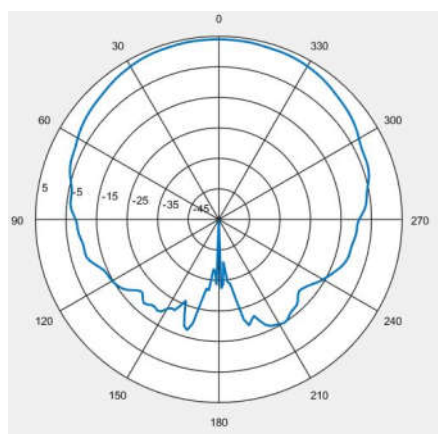
1227MHz



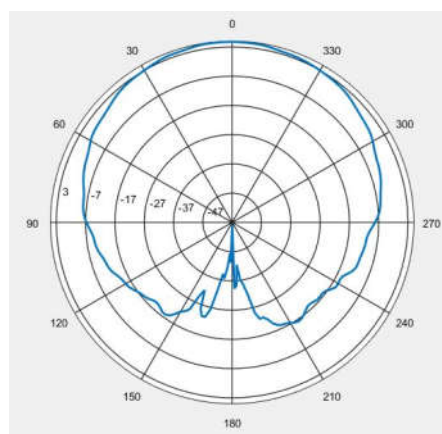
1278MHz



1561MHz



1576MHz



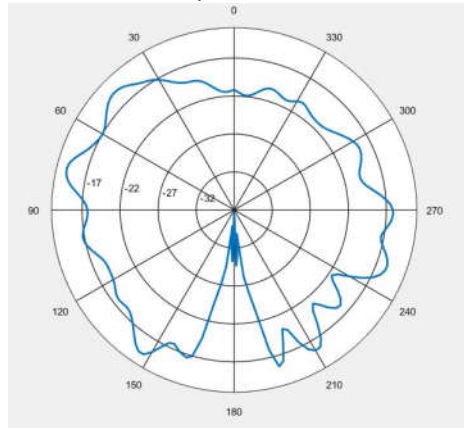
1609MHz

1.3.1 4G_1 天线增益、驻波比、效率测试值Antenna gain, standing wave ratio, efficiency test values

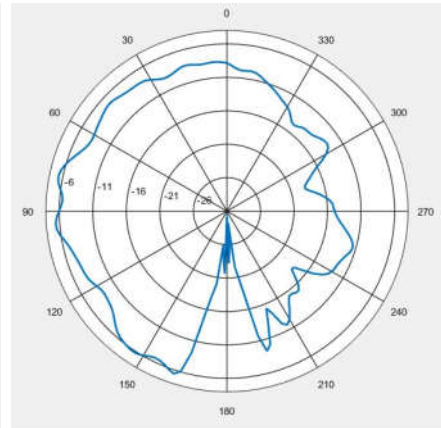
频率 (MHz)	增益 (dBi)	效率 (%)	频率 (MHz)	增益 (dBi)	效率 (%)	频率 (MHz)	增益 (dBi)	效率 (%)
820	-9.5	4.0	1910	-2.6	13.0	2380	-4.1	12.6
830	-8.6	4.8	1930	-0.9	18.2	2390	-4.0	13.0
840	-7.6	5.7	1950	-0.1	20.6	2400	-4.0	13.1
850	-6.9	6.7	1970	-1.4	15.9	2410	-3.8	13.6
860	-6.7	8.2	1990	-2.8	11.0	2420	-3.9	13.3
870	-6.1	10.7	2010	-3.4	9.4	2430	-3.9	13.2
880	-5.4	12.9	2030	-3.8	9.1	2440	-3.7	13.5
890	-4.3	16.5	2050	-4.3	9.1	2450	-3.5	14.2
900	-3.5	19.8	2070	-4.8	8.9	2460	-3.1	16.1
910	-2.2	23.5	2090	-4.8	9.3	2480	-2.6	19.5
920	-1.1	27.6	2110	-5.2	8.7	2500	-2.7	21.1
930	-0.9	29.4	2130	-4.7	10.5	2520	-2.9	20.4
940	-1.3	30.9	2150	-3.9	12.9	2540	-3.2	17.9
950	-1.5	27.6	2170	-3.3	14.3	2550	-3.1	16.9
960	-1.5	24.7	2190	-3.1	15.1	2570	-3.3	15.5
1710	-4.7	10.8	2210	-3.4	15.0	2590	-4.6	11.9
1730	-3.2	13.9	2230	-4.1	13.5	2610	-5.7	8.7
1750	-2.4	13.1	2250	-3.7	14.9	2630	-6.3	7.0
1770	-1.0	14.9	2270	-3.6	14.7	2650	-6.3	6.0
1790	0.7	29.7	2290	-4.0	13.8	2670	-6.3	6.0
1810	-1.0	27.1	2300	-4.4	12.8	2690	-5.4	7.6
1830	-0.4	24.6	2340	-4.9	10.7			

1850	-2.5	15.3	2350	-4.9	10.7			
1870	-5.2	11.0	2360	-4.4	11.8			
1890	-3.7	11.4	2370	-4.1	12.7			

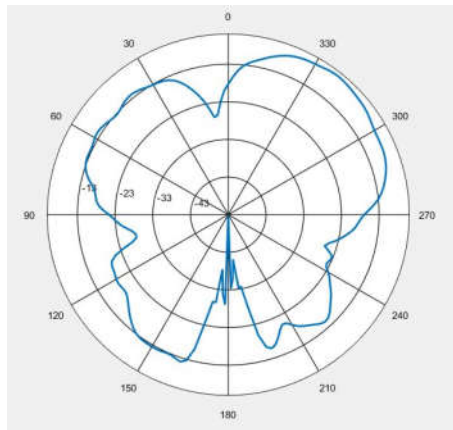
1.3.2 4G-LTE天线方向图Antenna pattern



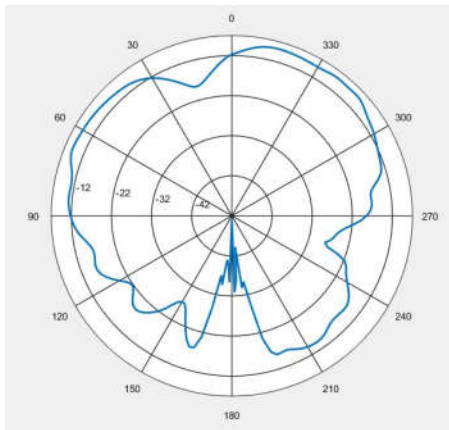
820MHz



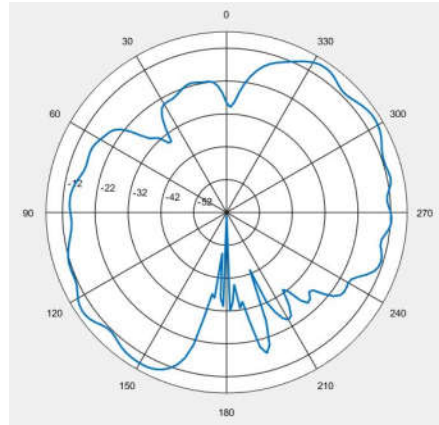
960MHz



1710MHz



2450MHz

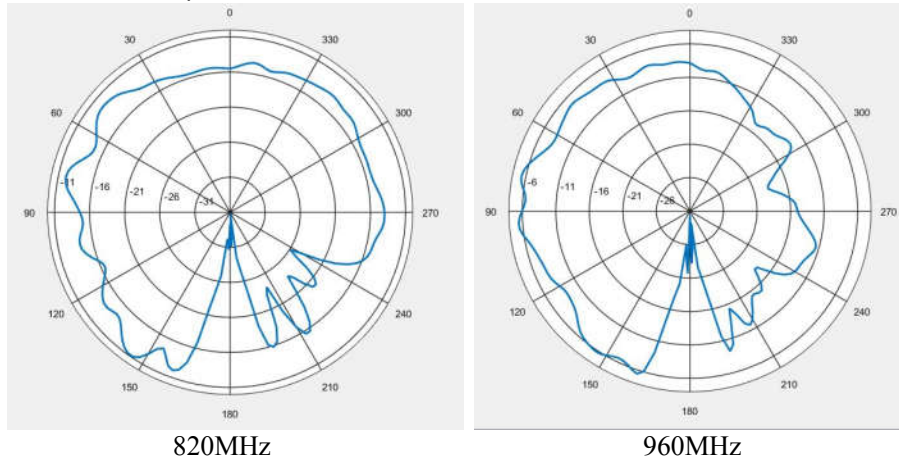


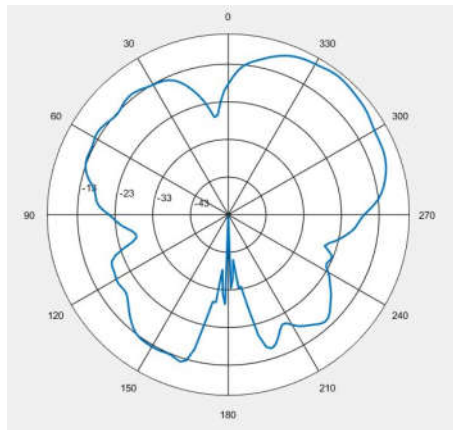
2690MHz

1.3.3 4G-2天线增益Antenna gain

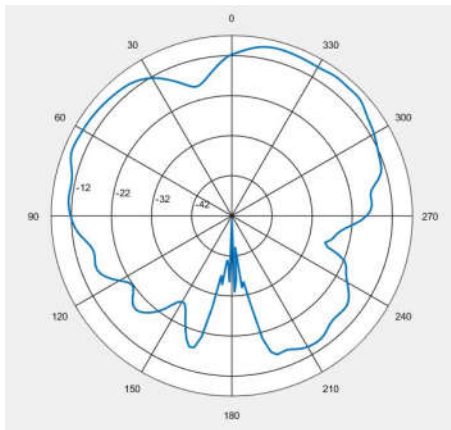
频率 (MHz)	增益 (dBi)	效率 (%)	频率 (MHz)	增益 (dBi)	效率 (%)	频率 (MHz)	增益 (dBi)	效率 (%)
820	-6.6	8.6	1910	-5.2	6.2	2380	-3.4	14.0
830	-5.4	11.3	1930	-5.0	6.4	2390	-3.3	14.7
840	-4.3	13.9	1950	-4.1	7.7	2400	-3.2	15.1
850	-3.4	16.6	1970	-3.6	8.4	2410	-2.9	16.1
860	-3.0	20.1	1990	-2.5	10.8	2420	-2.7	16.5
870	-2.6	24.3	2010	-1.3	14.9	2430	-2.3	18.0
880	-1.9	26.8	2030	-0.9	17.4	2440	-2.0	19.7
890	-1.5	28.7	2050	-0.6	20.1	2450	-1.6	21.5
900	-1.7	27.6	2070	-0.4	22.3	2460	-1.5	22.8
910	-2.2	25.4	2090	0.2	25.6	2480	-1.9	22.5
920	-2.5	23.3	2110	0.5	27.3	2500	-2.4	22.1
930	-3.2	20.5	2130	0.3	26.8	2520	-2.4	21.8
940	-3.3	20.3	2150	-1.4	22.7	2540	-2.2	21.3
950	-3.8	16.6	2170	-3.2	17.4	2550	-2.3	20.3
960	-3.4	15.7	2190	-4.2	14.1	2570	-2.6	18.6
1710	-1.8	19.9	2210	-5.0	11.8	2590	-3.4	14.9
1730	-0.2	26.9	2230	-5.5	10.8	2610	-4.0	12.5
1750	0.4	27.8	2250	-6.4	8.9	2630	-4.4	11.1
1770	-0.1	24.2	2270	-6.4	8.5	2650	-4.9	10.3
1790	-0.6	20.9	2290	-6.1	8.2	2670	-5.3	10.0
1810	-0.9	21.4	2300	-6.2	8.0	2690	-4.6	11.4
1830	-0.9	19.7	2340	-4.4	11.2			
1850	-4.4	8.5	2350	-4.1	12.1			
1870	-5.2	6.7	2360	-3.7	13.2			
1890	-4.9	6.5	2370	-3.6	13.5			

1.3.4 4G-2天线方向图Antenna pattern

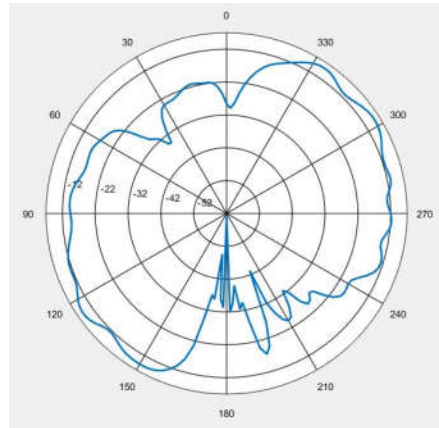




1710MHz



2450MHz

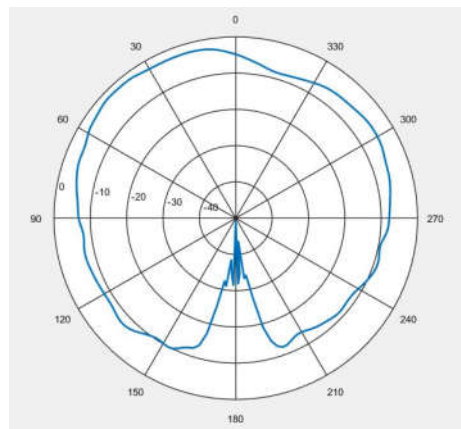


2690MHz

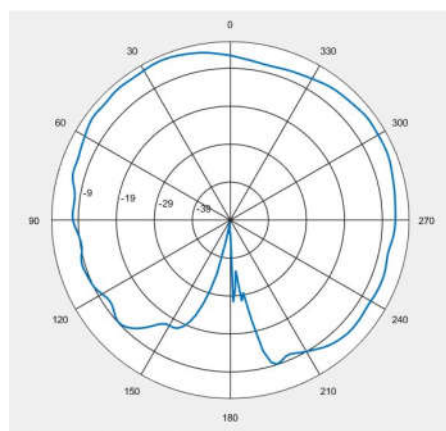
1.4.1 BT天线增益Antenna gain

频率 (MHz)	2410	2420	2430	2440	2450	2460	2470	2480
增益 (dB)	-1.0	-0.8	-0.2	1	-0.6	-1.2	-1.9	-2.0

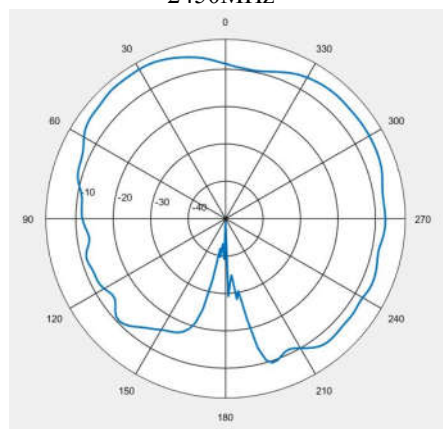
1.4.2 BT天线方向图Antenna pattern



2410MHz



2450MHz

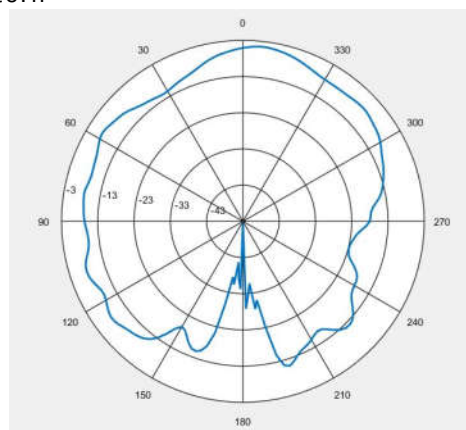


2480MHz

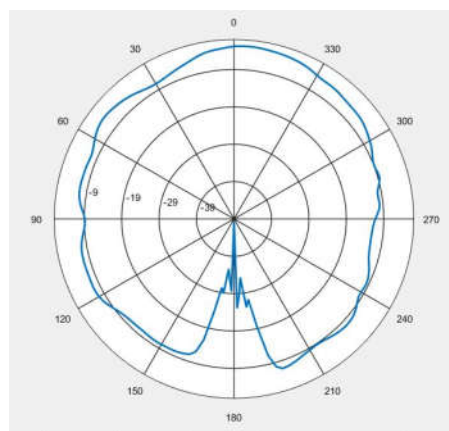
1.5.1 WiFi天线增益Antenna gain

频率 (MHz)	2410	2420	2430	2440	2450	2460	2470	2480
增益 (dB)	-0.9	-0.6	1	0.4	0.7	0.6	0.5	0.4

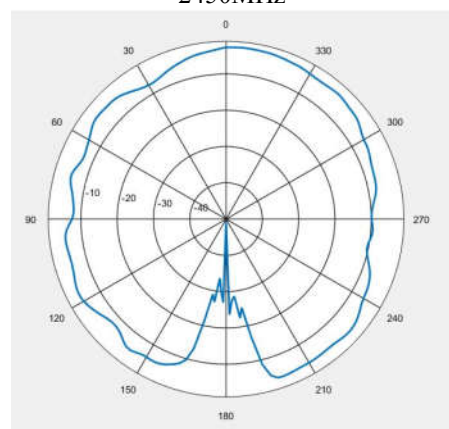
1.5.2 WiFi天线方向图Antenna pattern



2410MHz



2450MHz



2480MHz