

HX-CSX387a is a four-system full-frequency built-in measurement antenna covering GPS, GLONASS, BDS and GALILEO, and is compatible with 4G and WIFI/BT operating bands. The antenna unit has high gain, wide coverage band, stable satellite reception, beautiful appearance and high environmental reliability. It can be used with a variety of GPS, Beidou and other receivers, and is widely used in geodetic surveying and mapping, marine survey, waterway survey, dredging survey, earthquake monitoring, bridge deformation monitoring, landslide monitoring, terminal container operation and other fields.

Good inter-system compatibility

GNSS antenna and 4G, WIFI/BT antenna are compatible and integrated, which is convenient for RTK manufacturers to integrate design. The isolation between the antennas of each system is deeply optimized, which systematically solves the electromagnetic compatibility problem that has been plaguing the RTK receiver, simplifies the design of the RTK whole machine, and makes the product stable and reliable.

The phase center is stable

The antenna part adopts a multi-feed point design scheme to realize the coincidence of the phase center and the geometric center, thereby reducing the influence of the antenna on the measurement error to the minimum. The communication antenna array is designed, and the communication antennas are uniformly distributed around the GNSS antenna, so that the structure is symmetrical, the influence of the communication antenna on the positioning antenna is well solved, and the phase center consistency of the positioning antenna is ensured.

Tracking in complex environment

The antenna unit has the characteristics of high gain, wide beam pattern and the like, ensures that the antenna still has a strong signal receiving effect at a low elevation angle, ensures that the satellite can be quickly locked in a complex environment such as shelter, and stably outputs a GNSS navigation signal, such as forest, building shelter and the like.

Antenna characteristics

- Support GNSS four-system full-band signal
- Support 4G, WIFI/BT frequency band
- Strong anti-interference ability, can withstand harsh working environment
- Good electromagnetic compatibility, small antenna size, easy product integration.

Manufacturer: Shenzhen Huaxin Antenna Technology Co., Ltd.
Address: 501, Dazu Laser Technology Center, No.9988, Shennan Avenue, Yuehai Street, Nanshan District, Shenzhen

Strong anti-interference performance

The antenna LNA has excellent out-of-band suppression performance, which can suppress useless electromagnetic wave signals, prevent the receiver from being interfered by other wireless communication systems, and effectively reduce the risk of system lock loss, such as electromagnetic wave interference from power grids, communication base stations, radio stations, etc.

High reliability of the structure

A low-loss microwave plate composite laminated structure is adopted, the antenna performance is designed to be optimal, the overall weight is lighter, the structure is more stable, the consistency is good, and the electrical performance is more stable and reliable.

Performance parameters

GNSS antenna characteristics (the following is the performance at room temperature)	
Frequency range	GPS L1/L2/L5 BDS B1I/B2I/B3I/B1C/B2a/B2b GLONASS G1/G2/G3 GALILEO E1/E5a/E5b/E6 QZSS L1/L2/L5/L6 IRNSS L5 SBAS L1/L5 L-band
Resistance	50 ohms
Polarization mode	Right-handed circular polarization
Maximum gain	≥5.5dBic
Axial ratio	≤3dB

Phase Center	±2mm
4G antenna characteristics (the following is the performance at room temperature)	
Frequency range	824~960MHz/1710~2690MHz
Resistance	50 ohms
Polarization mode	Linear polarization
Maximum gain	1.5dBi
Antenna efficiency	30%
WIFI/BT antenna characteristics (the following is the performance at room temperature)	
Frequency range	2400-2500MHz/5100-5800MHz
Resistance	50 ohms

Polarization mode	Linear polarization
Maximum gain	2dBi
Antenna efficiency	50%
Low noise amplifier specification	
Gain	L2 : 34±2dB L1 : 32±2dB
Noise figure	≤2.0dB
Output standing wave	≤2
In-band flatness	±2dB
Group delay variation	≤5ns
Operating voltage	3.3 ~ 12VDC

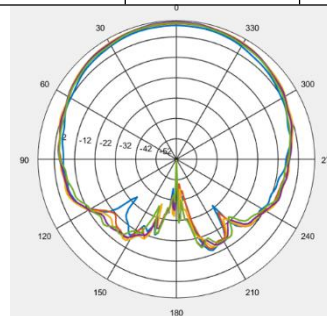
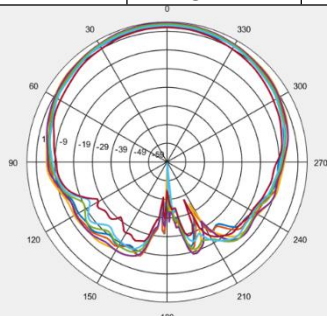
Operating current	≤45mA
Structural characteristics	
Antenna size	Φ 126.5 * 22.4 mm (excluding the height of screw and nut of welding spot and the size of connector cable)
Antenna weight	≤220g
Joint form	GNSS: IPEX Generation Cable (with latch) Dual 4G: IPEX Generation Cable (with latch) WIFI: IPEX 1st generation cable (with latch)
Installation method	Installation of 4 screws of M2.5
Work environment	
Operating temperature	-40°C ~ +85°C
Storage temperature	-55°C ~ +85°C
Humidity	95% non-condensing

Antenna performance test data

GNSS antenna test data

Freq. (MHz)	Max Gain (dBic)	Efficiency (%)	AR (dB)	Freq. (MHz)	Max Gain (dBic)	Efficiency (%)	AR (dB)
1163	3.30	49.92	0.64	1283	3.56	42.37	1.19
1169	3.58	52.26	0.60	1289	3.30	39.13	1.04
1175	4.13	57.61	0.63	1295	3.17	37.20	0.94
1181	4.44	60.37	0.70	1301	3.15	35.49	0.91
1187	4.78	63.90	0.78	1525	3.77	45.50	0.29
1193	4.91	64.88	0.80	1531	3.93	48.44	0.15

1199	5.26	68.35	0.77	1537	3.99	49.82	0.15
1205	5.48	70.16	0.69	1543	4.15	53.23	0.28
1211	5.54	70.91	0.60	1549	4.55	58.18	0.41
1217	5.53	69.79	0.56	1555	4.70	60.46	0.54
1223	5.58	70.34	0.64	1561	4.70	60.37	0.65
1229	5.63	70.33	0.83	1567	5.01	63.54	0.74
1235	5.58	68.90	1.04	1573	5.39	67.39	0.79
1241	5.35	64.71	1.24	1579	5.57	68.44	0.83
1247	5.25	62.16	1.40	1585	5.54	65.78	0.83
1253	5.03	59.13	1.51	1591	5.55	63.48	0.81
1259	4.74	55.74	1.56	1597	5.69	64.04	0.75
1265	4.30	50.32	1.55	1603	5.62	62.43	0.66
1271	4.03	47.48	1.48	1609	5.19	56.62	0.59
1277	3.77	45.14	1.35				



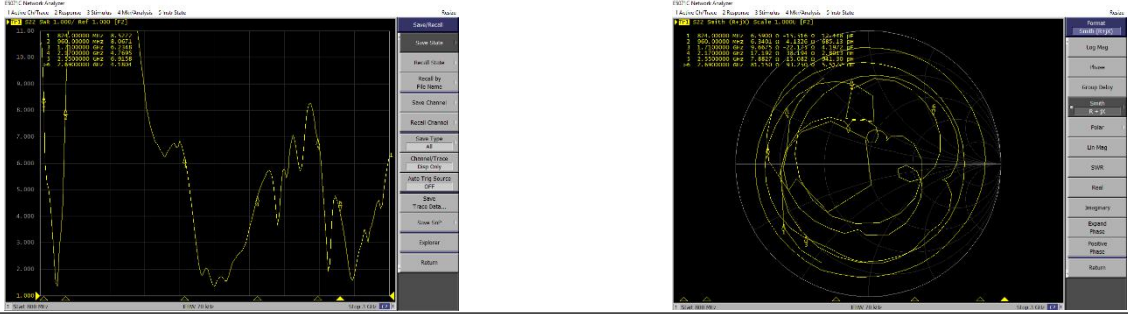
Test data of 4G antenna

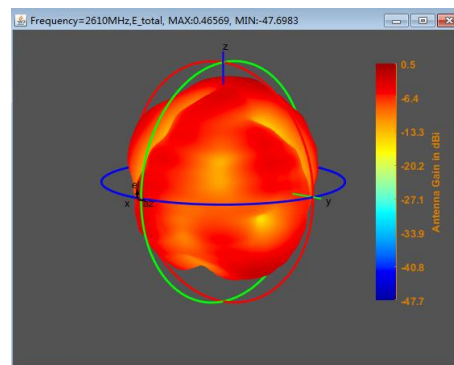
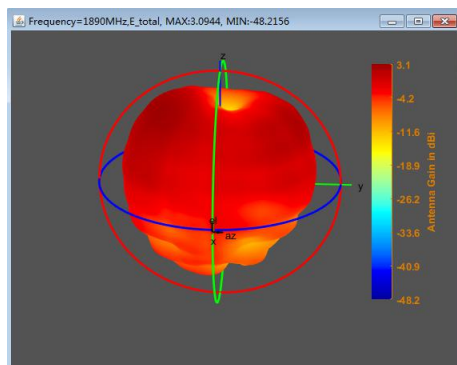
4G Main Antenna			4G Diversity Antenna		
Freq. (MHz)	Max Gain (dBi)	Efficiency (%)	Freq. (MHz)	Max Gain (dBi)	Efficiency (%)
690	-11.94	4.52	690	-10.59	4.84
710	-10.22	4.89	710	-10.67	5.16
730	-9.65	5.63	730	-9.85	5.57
750	-9.34	5.14	750	-9.56	5.23

770	-9.53	6.15	770	-9.34	6.11
790	-8.17	6.37	790	-8.64	6.92
820	-7.08	7.38	820	-7.55	7.29
830	-8.12	5.93	830	-6.96	8.20
840	-7.60	5.59	840	-5.56	10.75
860	-5.84	10.13	860	-2.82	21.02
880	-3.72	19.61	880	-0.15	39.22
890	-2.25	28.11	890	0.58	46.71
900	-1.06	35.47	900	0.32	44.68
920	-1.05	33.58	920	-0.90	32.64
930	-1.86	26.74	930	-1.37	27.97
940	-3.46	18.44	940	-1.83	21.88
960	-4.44	12.19	960	-1.50	21.24
1710	-2.10	23.26	1710	-2.38	19.44
1750	0.87	44.16	1750	-1.21	29.77
1790	2.69	68.68	1790	1.24	49.00
1830	1.81	50.44	1830	1.80	54.61
1850	2.04	47.37	1850	2.05	58.85
1890	3.09	48.76	1890	3.86	63.39
1910	3.33	45.90	1910	3.74	61.06
1990	4.23	61.27	1990	2.32	38.43
2010	3.47	55.60	2010	1.75	34.16
2050	2.03	47.17	2050	-0.83	22.58
2070	1.32	42.10	2070	-0.89	23.29
2090	0.00	32.97	2090	0.80	33.71
2110	-1.32	24.19	2110	1.54	31.56
2130	-1.57	23.47	2130	0.99	26.11
2150	-1.99	21.73	2150	-0.59	18.52
2170	-2.91	17.31	2170	-1.28	16.04
2290	-0.71	27.98	2290	-0.19	24.38
2310	-0.07	30.13	2310	-0.14	27.53
2350	1.20	31.31	2350	-3.43	10.33

2370	-0.19	22.85	2370	-3.53	9.72
2410	-2.76	14.36	2410	-0.43	15.96
2450	-1.10	18.59	2450	-1.23	11.50
2490	-4.82	8.45	2490	-1.33	11.86
2510	-5.33	7.57	2510	-0.54	15.32
2550	-5.37	8.29	2550	-3.11	9.88
2590	-1.76	13.26	2590	-3.14	13.64
2610	0.47	28.09	2610	-0.02	28.19
2650	-2.81	16.77	2650	-1.00	23.31
2690	-1.20	22.37	2690	-0.86	20.88

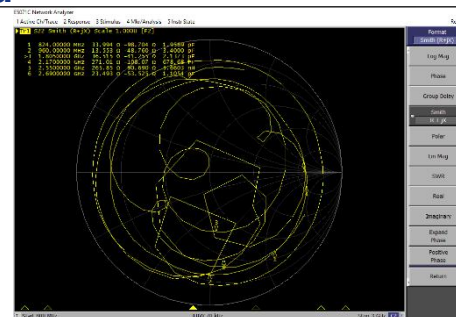
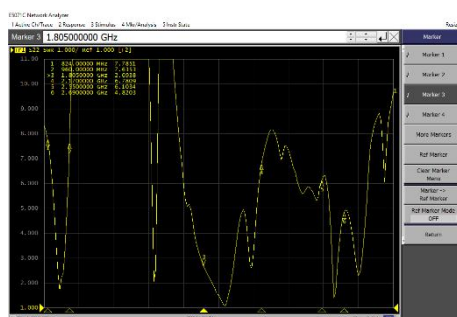
4G antenna test picture data

4G Main Antenna	
VSWR & Smith chart	
Pattern	

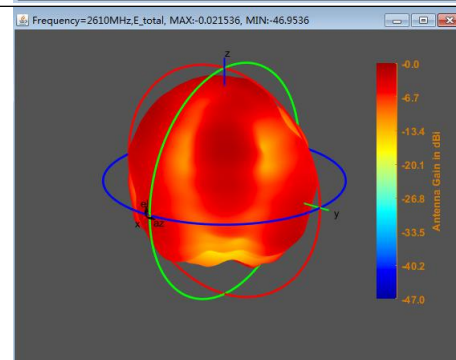
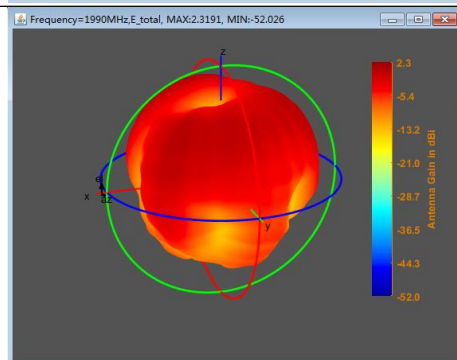
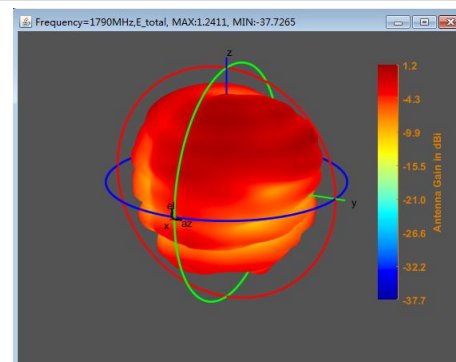
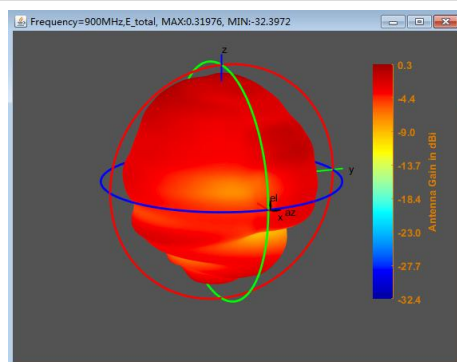


4G Diversity Antenna

VS
&
Smith
chart



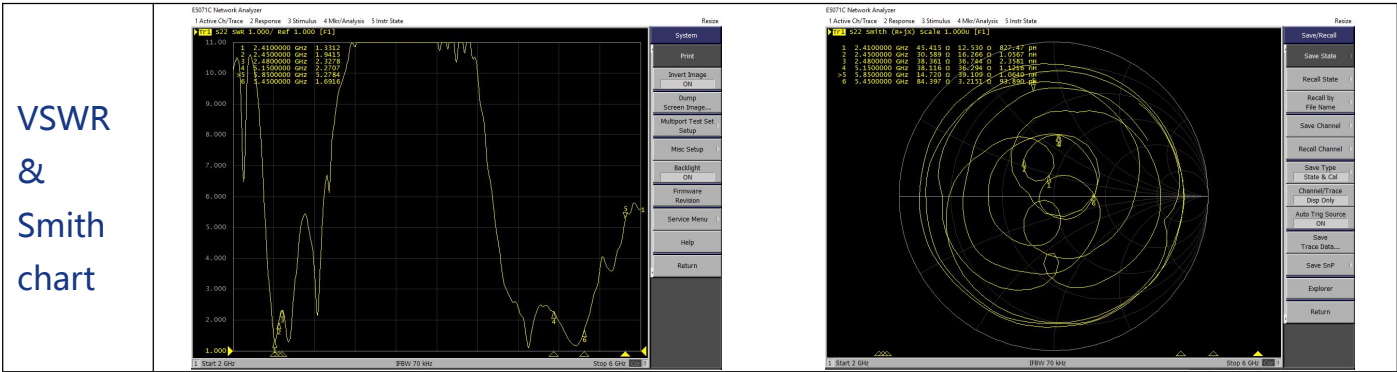
Pattern



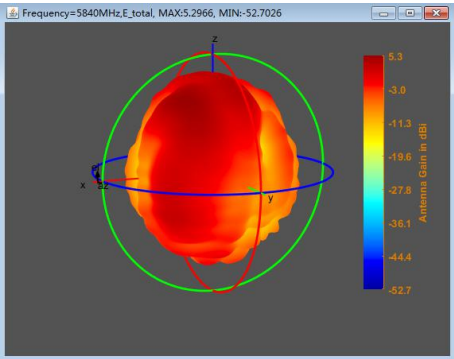
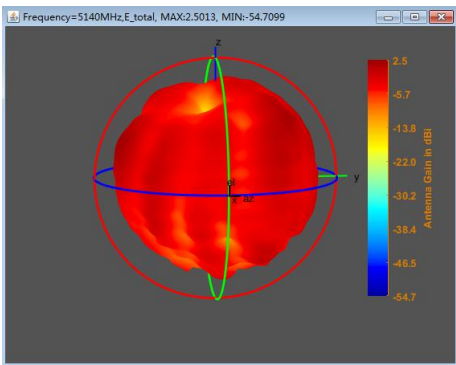
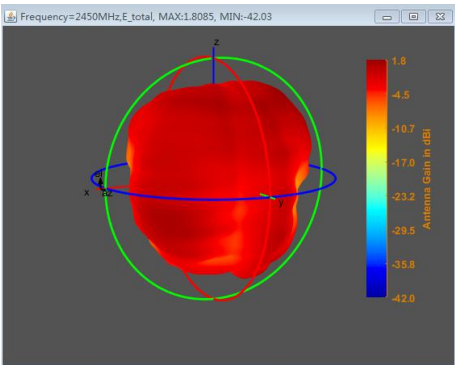
WiFi Antenna Test Data

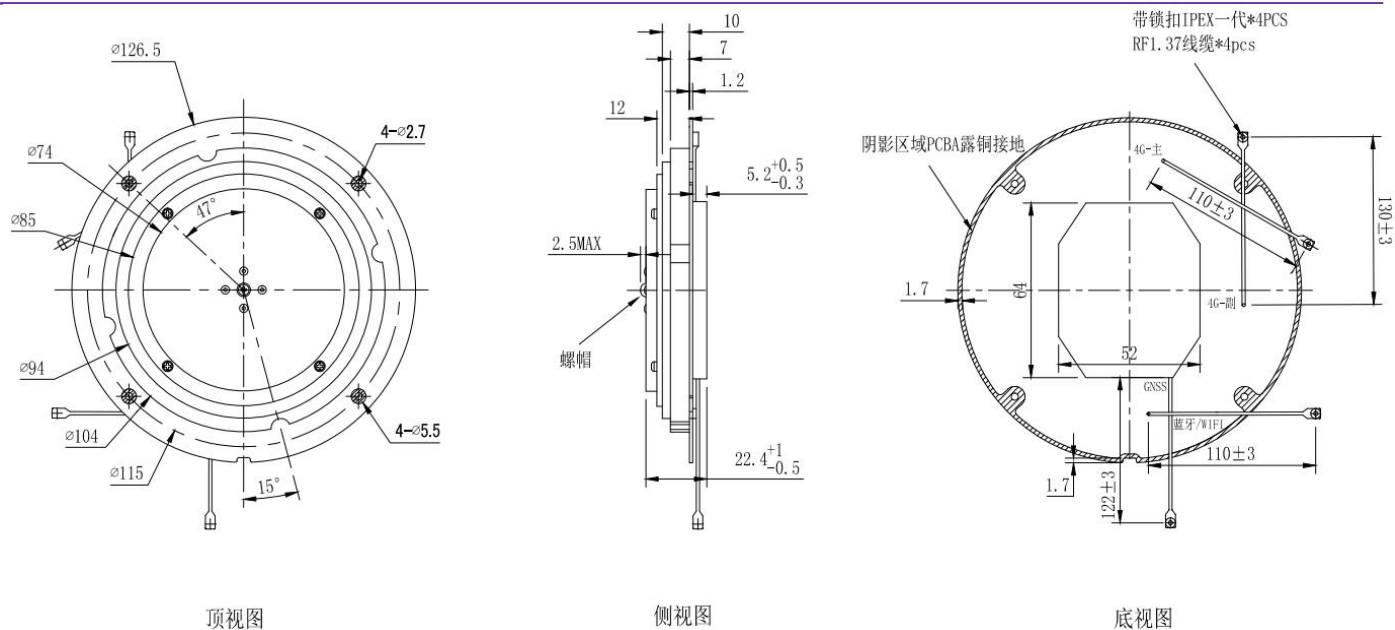
Freq. (MHz)	Max Gain (dBi)	Efficiency (%)	Freq. (MHz)	Max Gain (dBi)	Efficiency (%)
2400	4.14	57.85	2480	2.83	54.02
2405	3.87	56.22	2485	2.86	53.94
2410	3.62	55.26	2490	2.78	52.20
2415	3.34	54.17	2495	2.37	48.21
2420	2.95	52.77	2500	2.09	44.33
2425	2.63	52.68	5140	2.50	51.41
2430	2.31	52.37	5280	2.58	35.68
2435	1.91	52.52	5420	2.79	31.02
2440	1.79	52.84	5540	5.19	54.97
2445	1.76	52.20	5600	5.13	65.69
2450	1.81	50.97	5660	3.45	42.81
2455	1.89	50.36	5720	4.17	43.35
2460	2.02	50.80	5840	5.30	44.29
2465	2.38	52.60	5900	5.18	43.97
2470	2.56	53.23	5960	4.57	36.52
2475	2.69	54.02			

WiFi antenna test picture data



Pattern



Three views of product (dimensional tolerance $\pm 0.3\text{mm}$)

Product label

Label size: 15 * 30 mm. The content form of the label is shown in the following figure, in which the S/N code shall be prepared according to the program document and the actual situation, and the following figure is only for illustration.

Survey Antenna Products
Model:DEV-CSX387A
S/N:Cxxxxxxxxxxx
Devecent Corporation



Documentation status

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History of document preparation/revision				
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— This concludes this document —