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深圳市华信天线技术有限公司

Harxon
北斗星通旗下企业

高精度定位智联车载天线产品规格书

HX-AULD078



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1. 产品介绍

高精度定位智联车载天线 HX-AULD078 是一款涵盖 BDS 、GPS、GLONASS、GALILEO、QZSS 和 IRNSS 的六系统八频的外置车载天线。具有体积小巧、外观精美、高增益、高灵敏度、低功耗、低风阻型等特性，极大提高了对高速运动载体定位的精度和速度。可配合多种接收机使用，适合应用到各种场合，可广泛应用于大地测绘、海洋测量、航道测量、疏竣测量、地震监测、桥梁变形监控、山体滑坡监测、码头集装箱作业等场合等。尤其适用于高速移动的系统和领域，如车载高精度应用等。主要配套双天线进行姿态测量应用。



产品特点 ：

★ 高稳相：GNSS 天线采用四馈点结构，以保证 GNSS 相位中心稳定性。

★ 强抗干扰能力：天线采用前置滤波技术提高对外界干扰的抑制,可以抑制无用的电磁干扰，提供稳定和可靠的 GNSS 信号。同时有效避免接收机在繁华城市、通信基站等复杂电磁环境中的失锁风险。

★ 适用性广泛：天线的频率覆盖全，功能性齐全。

★ 低风阻外观设计：小体积、低风阻设计可减少车辆行驶时的阻力。

表一：产品覆盖频率

产品型号 / 导航系统及频段		HX-AULD078	–	–	–	–
GPS/QZSS	L1	◆	–	–	–	–
	L2	◆	–	–	–	–
	L5	◆	–	–	–	–
GLONASS	G1	◆	–	–	–	–
	G2	◆	–	–	–	–
	G3	◆	–	–	–	–
BDS	B1I	◆	–	–	–	–
	B2I	◆	–	–	–	–
	B1C	◆	–	–	–	–
	B2A	◆	–	–	–	–
	B2b	◆	–	–	–	–
	B3I	◎	–	–	–	–
GALILEO	E1	◆	–	–	–	–
	E5b	◆	–	–	–	–
	E5a	◆	–	–	–	–
IRNSS	L5	◆	–	–	–	–
L-Band	L-Band	◆	–	–	–	–

备注：“◆”表示包含

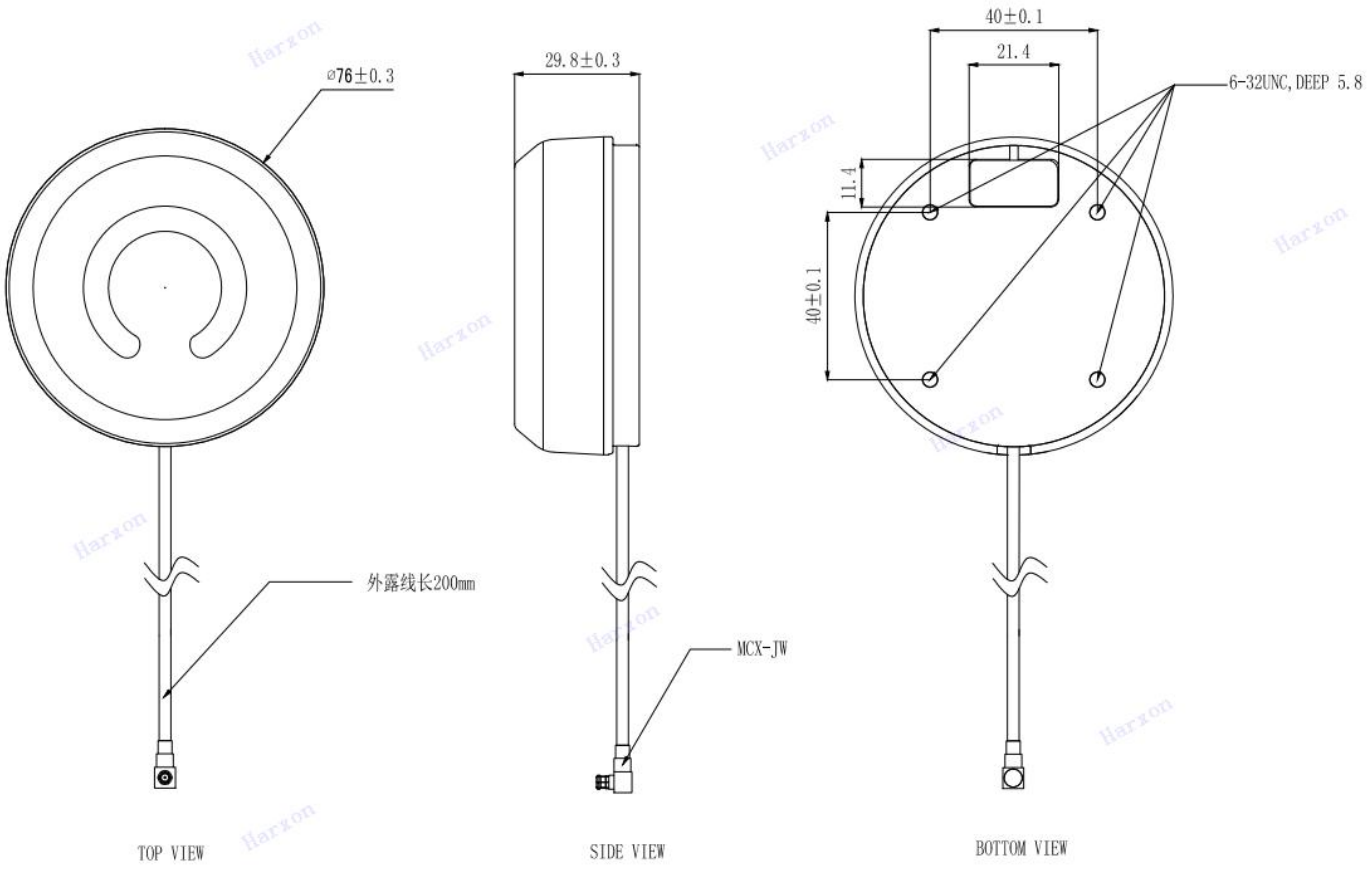
“◎”表示不包含

2. 技术参数

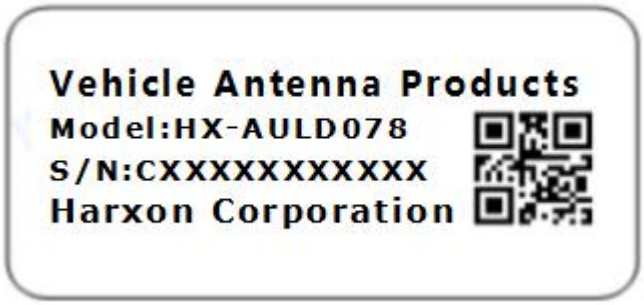
2.1 电气特性

性能参数（天线本体特性）	
频率范围	L1:1520-1610MHz L2:1166-1250MHz
阻　　抗	50 欧姆
极化方式	右旋圆极化
水平面覆盖角度	360°
VSWR	≤2.0
增益（典型值）	1166-1250MHz: ＞-1.5 dBi(@45° elevation)；＞-3.0 dBi(@30° elevation) 1520-1610MHz: ＞-1.5 dBi(@60° elevation)；＞-3.0 dBi(@45° elevation) GPS/QZSS L1 2.5 dBi (@ Zenith) L2 3.0 dBi (@ Zenith) L5 2.0 dBi (@ Zenith) GLONASS G1 2.0 dBi (@ Zenith) G2 2.0 dBi (@ Zenith) G3 3.0 dBi (@ Zenith) BD B1 2.0 dBi (@ Zenith) B2 3.0 dBi (@ Zenith) GALILEO L1 2.5 dBi (@ Zenith) E5b 3.0 dBi (@ Zenith) E5a 2.0 dBi (@ Zenith) IRNSS L5 2.0 dBi (@ Zenith) L-band 2.0 dBi(@ Zenith)

轴比(法向)	≤3dB
相位中心变化量	≤5mm
低噪声放大器指标	
低噪放增益	33±2dB(可定制，根据实际模组可定)
增益平坦度	±2dB
低噪放噪声系数	≤2dB
低噪放输出驻波	≤2
低噪放工作电压	+3.3～+12VDC
低噪放工作电流	≤55mA
低噪放差分传输延迟	≤10ns
带外抑制	≥35@≤1050MHz ≥35@≥1350MHz ≥35@≤1425MHz ≥35@≥1706MHz
整机结构特性	
外观尺寸	Φ65*H29.8mm
接头形式	MCX Male（可定制，常用接头：Fakra Z Female)
安装方式	磁吸/螺丝固定
工作温度	-40℃～+85℃
存储温度	-40℃～+95℃
防尘防水等级	IP67
三视图	


⌀76±0.3
外露线长200mm
TOP VIEW
29.8±0.3
MCX-JW
SIDE VIEW
40±0.1
21.4
6-32UNC, DEEP 5.8
11.4
40±0.1
BOTTOM VIEW

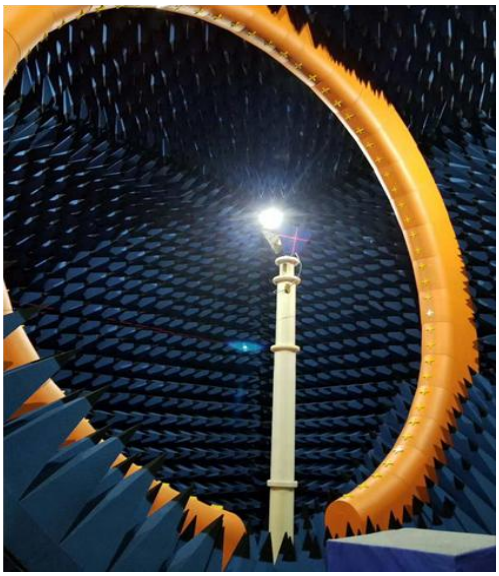
2.2 产品标签


Vehicle Antenna Products
Model:HX-AULD078
S/N:CXXXXXXXXXXX
Harxon Corporation

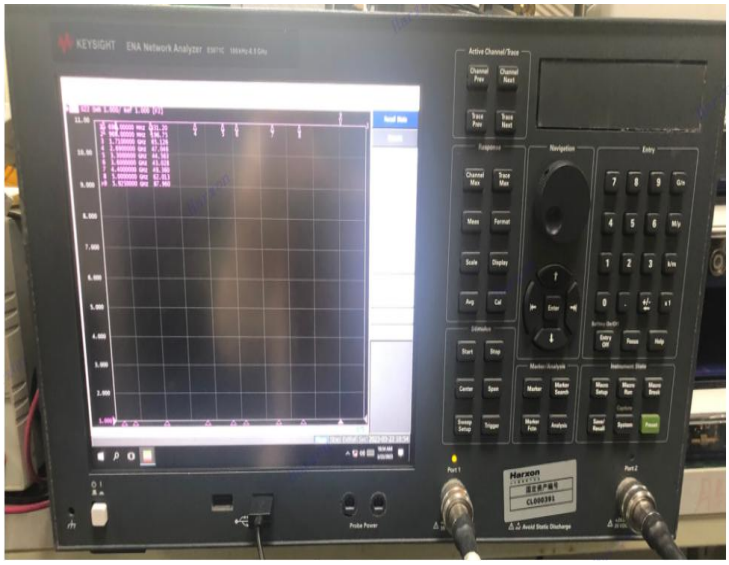
3. 产品电气测试数据

3.1 测试设备

- 64 探头球面近场测量系统：是卫星导航领域中第一个具有相位中心测试功能的测量系统
- KEYSIGHT VNA Network Analyzer E5071C 100 kHz–8.5 GHz：可用于测试天线 S 参数



64 探头球面近场测量系统

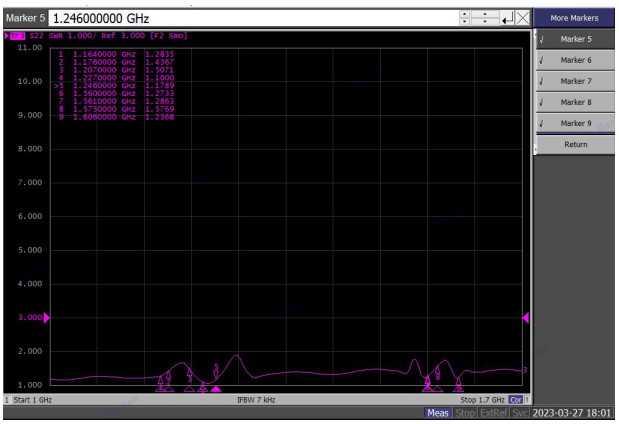


KEYSIGHT VNA Network Analyzer E5071C 100 kHz –8.5 GHz.

3.2 GNSS 天线性能

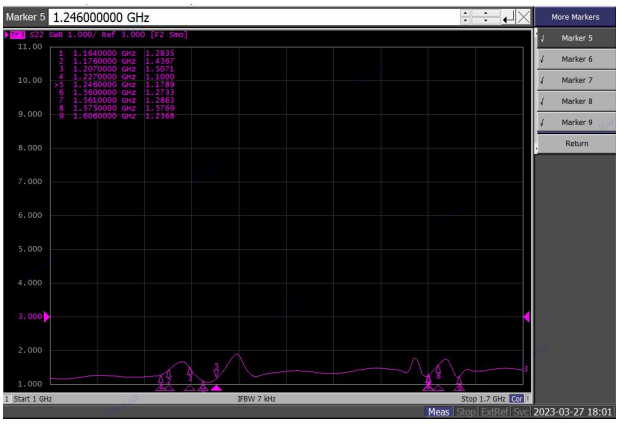
3.2.1 GNSS 天线驻波比

GNSS 天线 L1 频段



频率（MHz）	1560	1575	1606
输出驻波比	1.27	1.58	1.24

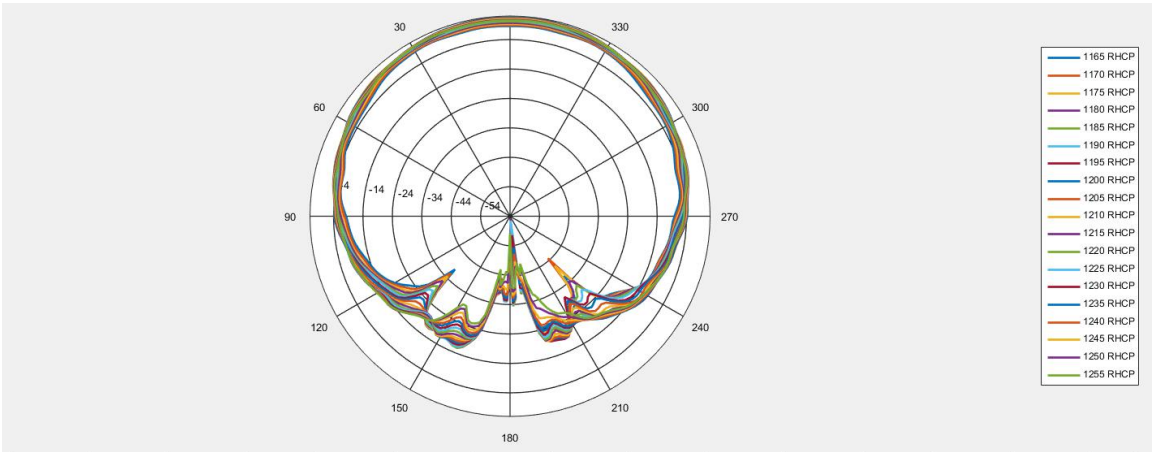
GNSS 天线 L2 频段



频率（MHz）	1164	1176	1207	1227	1246
输出驻波比	1.28	1.44	1.51	1.10	1.18

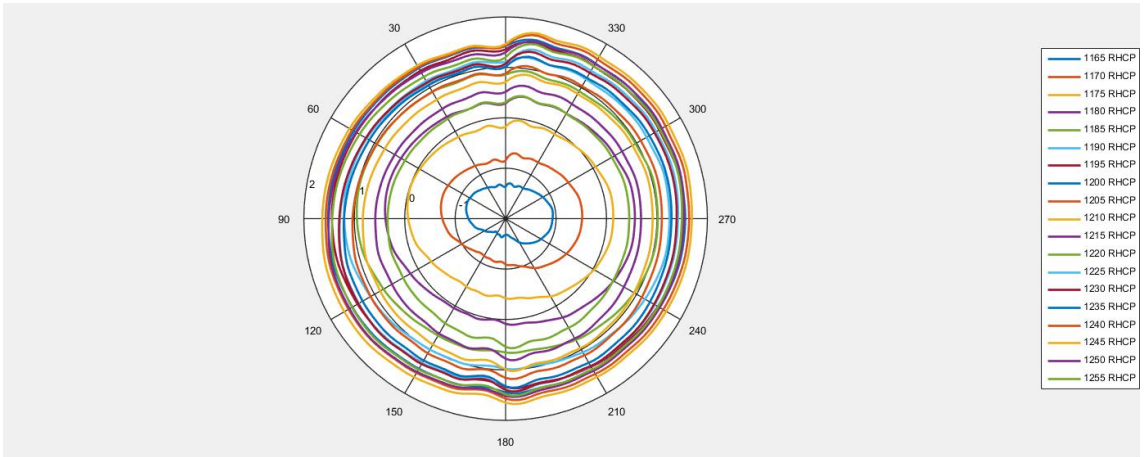
3.2.2 GNSS 天线典型增益和轴比

GNSS 天线 1166-1250MHz 频段法向增益



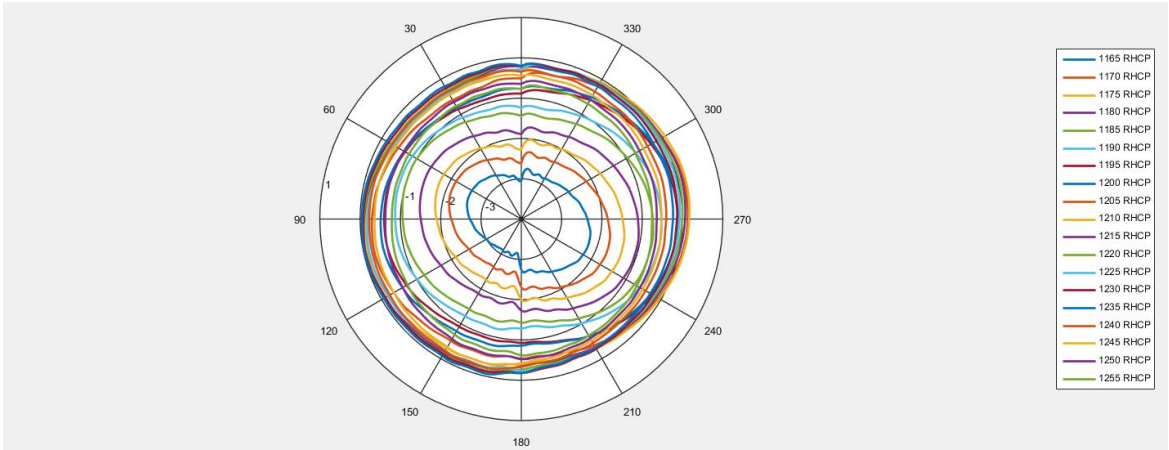
Frequency (MHz)	Max (dB)	Max@deg	Min (dB)	Min@ deg	Max-Min (dB)	Roundness (dB)	BW_3dB (deg)	BW_center (deg)	BW_10dB (deg)	F2B_0 (dB)	F2B_30 (dB)	F2B_XPD_30 (dB)	F2B_60 (dB)	XPD_0 (
1165	0.8473	-24	-52.6031	-174	53.4503	26.7252	99.6151	-0.0217	191.0809	17.3690	17.2432	7.7908	10.3577	
1170	0.9981	-24	-53.9097	-174	54.9078	27.4539	106.2156	-0.7997	194.0314	17.2305	17.0411	7.6157	10.0501	
1175	1.3841	8	-54.4826	-174	55.8667	27.9334	107.7048	-0.5360	194.1480	42.1594	17.1933	7.5920	12.6589	
1180	1.6964	8	-55.9902	-174	57.6866	28.8433	108.6966	0.3127	193.6927	42.3503	17.4570	7.7074	12.9399	
1185	2.1598	0	-55.5690	-174	57.7288	28.8644	109.4830	0.8297	192.7295	43.7808	17.9718	7.8314	17.0927	
1190	2.4405	0	-59.1552	-174	61.5957	30.7978	109.0239	0.9507	192.7098	44.1296	18.6206	8.0759	17.0971	
1195	2.8895	0	-58.5599	-174	61.4494	30.7247	108.6833	0.8343	192.9071	44.4568	19.6150	8.4562	16.7419	
1200	3.0864	0	-58.0709	-174	61.1573	30.5786	108.0780	0.6903	192.8604	45.1022	19.6593	8.8191	16.0899	
1205	3.4296	0	-59.0855	-174	62.5151	31.2575	107.6385	0.5255	193.3671	45.7957	20.2353	9.3040	15.4126	
1210	3.6146	-2	-59.6591	-174	63.2739	31.6370	107.6305	0.1569	194.4956	39.9186	20.1324	9.7166	15.5247	
1215	3.5967	2	-63.3100	-174	66.9067	33.4534	108.3413	0.1163	195.8959	37.0636	22.4105	10.1588	14.1299	
1220	3.6362	-4	-61.6967	-174	65.3329	32.6664	108.1290	-0.7267	196.7033	38.6016	21.2118	10.6693	14.4656	
1225	3.5780	-4	-62.5040	-174	66.0820	33.0410	107.5799	-1.6069	196.7387	38.6169	21.8770	11.2019	14.3268	
1230	3.5882	-4	-57.5024	-174	61.0906	30.5453	108.6727	-1.4940	196.6193	39.1358	22.6590	11.7949	14.2723	
1235	3.5246	-4	-53.3910	-174	56.9156	28.4578	110.2767	-1.0808	196.2740	40.0095	23.1501	12.0309	14.2920	
1240	3.2813	-6	-51.6768	-180	54.9581	27.4791	110.6220	-1.0573	196.1186	43.1882	22.8835	11.9621	13.5384	
1245	3.0623	-6	-54.0641	-180	57.1264	28.5632	112.8558	-0.5818	196.8253	43.5762	22.9416	11.7478	13.2757	
1250	2.7736	-6	-56.6831	-180	59.4569	29.7285	114.5779	-0.7575	198.1215	43.9839	22.8858	11.5447	13.1501	
1255	2.6331	-22	-58.0739	-180	60.7070	30.3535	114.4711	-0.8962	199.6307	28.5115	16.0874	11.4801	9.9958	

GNSS 天线 1166-1250MHz 频段 45°仰角增益



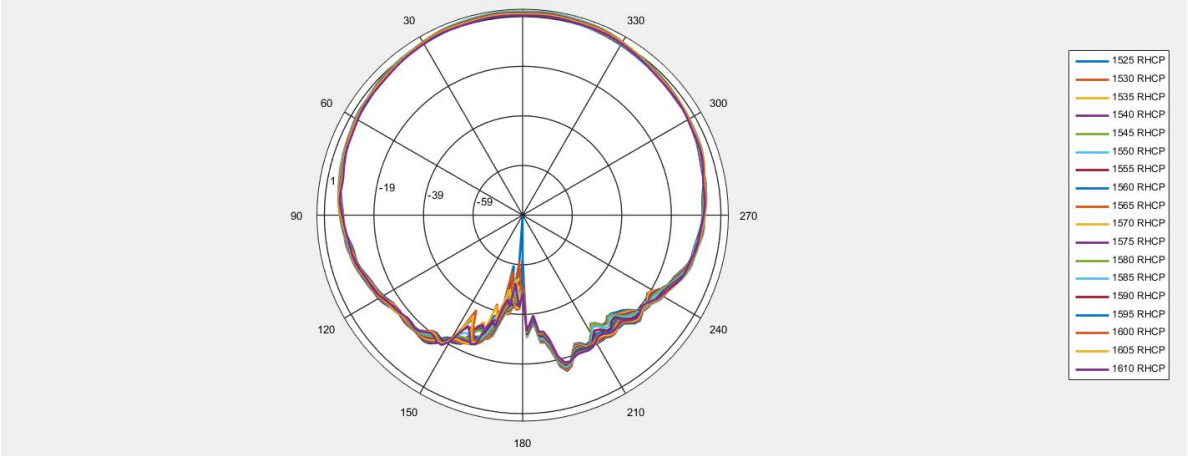
Frequency (MHz)	Max(dB)	Max@deg	Min(dB)	Min@ deg	Max-Min(dB)	Roundness(dB)	Avg_Gain(dB)	BW_3dB(deg)	BW_center(deg)	BW_10dB(deg)	F2B_0(dB)	F2B_30(dB)	F2B_XPD_30(dB)	F2B_60
1165	-1.0563	-80	-1.6820	146	0.6257	0.3129	-1.3353	NaN	NaN	NaN	0.2788	0.1226	0.1226	
1170	-0.4781	-84	-1.1589	146	0.6808	0.3404	-0.7866	NaN	NaN	NaN	0.3062	0.1947	0.1947	
1175	0.1403	-80	-0.4698	174	0.6101	0.3050	-0.1298	NaN	NaN	NaN	0.2643	0.1538	0.1538	
1180	0.5668	-76.0000	0.0146	174	0.5522	0.2761	0.3325	NaN	NaN	NaN	0.2485	0.1493	0.1493	
1185	1.0260	-76.0000	0.6269	174	0.3990	0.1995	0.8724	NaN	NaN	NaN	0.1228	0.0531	0.0531	
1190	1.2621	-74	0.9346	174	0.3275	0.1637	1.1409	NaN	NaN	NaN	0.0938	0.0485	0.0485	
1195	1.5377	-74	1.2289	172	0.3088	0.1544	1.4230	NaN	NaN	NaN	0.1031	0.0929	0.0929	
1200	1.5874	-10	1.3604	172	0.2271	0.1135	1.4966	NaN	NaN	NaN	0.2168	0.1171	0.1171	
1205	1.6818	-10	1.3814	4	0.3004	0.1502	1.5696	NaN	NaN	NaN	0.2444	0.0750	0.0750	
1210	1.7453	-54	1.4062	4	0.3390	0.1695	1.6356	NaN	NaN	NaN	0.0532	0.0531	0.0531	
1215	1.5944	-54	1.2416	4	0.3528	0.1764	1.4933	NaN	NaN	NaN	0.0150	0.0137	0.0137	
1220	1.5461	-54	1.1354	4	0.4107	0.2054	1.4336	NaN	NaN	NaN	0.0285	0.0274	0.0274	
1225	1.4555	-72	0.9718	4	0.4837	0.2419	1.3141	NaN	NaN	NaN	0.0944	0.0907	0.0907	
1230	1.4306	-176	1.0187	4	0.4119	0.2060	1.3116	NaN	NaN	NaN	0.4119	0.0868	0.0868	
1235	1.3560	-178	0.9706	4	0.3853	0.1927	1.2222	NaN	NaN	NaN	0.3851	0.1149	0.1149	
1240	1.1821	-178	0.8476	2	0.3346	0.1673	1.0491	NaN	NaN	NaN	0.3346	0.1285	0.1285	
1245	1.0242	-176	0.6813	4	0.3429	0.1715	0.8650	NaN	NaN	NaN	0.3429	0.1434	0.1434	
1250	0.8113	-176	0.4862	4	0.3251	0.1625	0.6330	NaN	NaN	NaN	0.3251	0.1525	0.1525	
1255	0.5716	-176	0.2818	34	0.2898	0.1449	0.3994	NaN	NaN	NaN	0.2879	0.1195	0.1195	

GNSS 天线 1166-1250MHz 频段 30°仰角增益



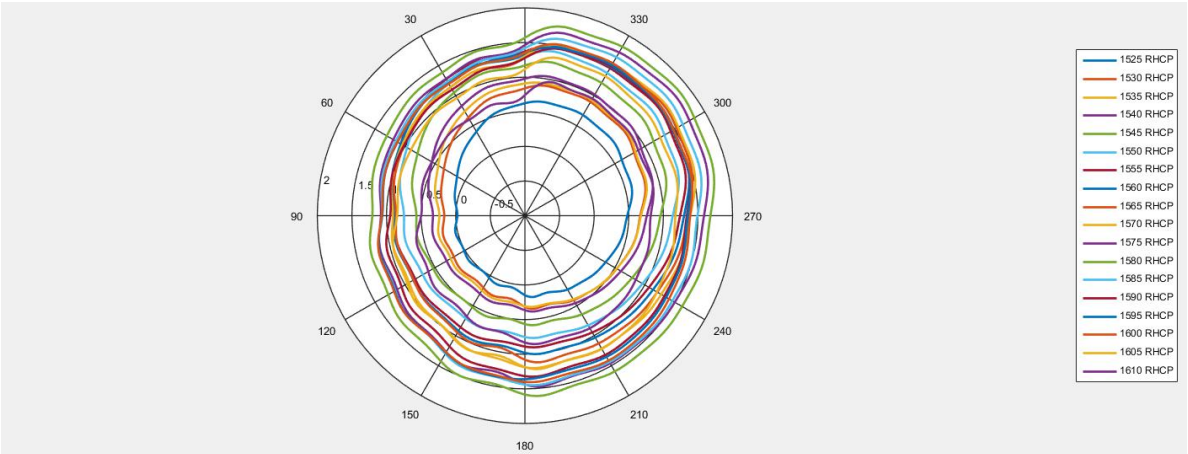
Frequency (MHz)	Max(dB)	Max@deg	Min(dB)	Min@ deg	Max-Min(dB)	Roundness(dB)	Avg_Gain(dB)	BW_3dB(deg)	BW_center(deg)	BW_10dB(deg)	F2B_0(dB)	F2B_30(dB)	F2B_XPD_30(dB)	F2B_60
1165	-2.2164	-114	-3.1577	172	0.9413	0.4707	-2.7011	NaN	NaN	NaN	0.3653	0.3652	0.3652	
1170	-1.7242	-112	-2.6867	172	0.9625	0.4813	-2.2310	NaN	NaN	NaN	0.4057	0.4049	0.4049	
1175	-1.3777	-112	-2.3236	172	0.9459	0.4729	-1.8794	NaN	NaN	NaN	0.4033	0.3991	0.3991	
1180	-1.0435	-112	-1.9310	174	0.8875	0.4437	-1.5198	NaN	NaN	NaN	0.3700	0.3655	0.3655	
1185	-0.7018	-100	-1.4715	176	0.7697	0.3849	-1.1305	NaN	NaN	NaN	0.3133	0.2938	0.2938	
1190	-0.5085	-98.0000	-1.3301	-174	0.8216	0.4108	-0.9484	NaN	NaN	NaN	0.3433	0.3366	0.3366	
1195	-0.1224	-94	-0.9440	174	0.8216	0.4108	-0.6125	NaN	NaN	NaN	0.4765	0.4728	0.4728	
1200	-0.1147	-84	-0.8933	-174	0.7785	0.3893	-0.5554	NaN	NaN	NaN	0.3873	0.3815	0.3815	
1205	0.1437	-80	-0.6035	26.0000	0.7472	0.3736	-0.3021	NaN	NaN	NaN	0.4112	0.4080	0.4080	
1210	0.1938	-78.0000	-0.4459	42	0.6396	0.3198	-0.1800	NaN	NaN	NaN	0.3007	0.3001	0.3001	
1215	0.1010	-76.0000	-0.4008	-174	0.5018	0.2509	-0.1684	NaN	NaN	NaN	0.1455	0.1455	0.1455	
1220	0.0353	-74	-0.3526	-160	0.3879	0.1940	-0.1590	NaN	NaN	NaN	0.0724	0.0701	0.0701	
1225	-0.0349	-74	-0.3998	42	0.3649	0.1824	-0.2124	NaN	NaN	NaN	0.1059	0.1030	0.1030	
1230	-0.0490	102	-0.3025	-158	0.2536	0.1268	-0.1675	NaN	NaN	NaN	0.0621	0.0552	0.0552	
1235	-0.0243	102	-0.3389	-158	0.3146	0.1573	-0.1776	NaN	NaN	NaN	0.1909	0.1789	0.1789	
1240	-0.2071	168	-0.4645	-134	0.2574	0.1287	-0.3314	NaN	NaN	NaN	0.1446	0.0902	0.0902	
1245	-0.3070	154	-0.5371	-136	0.2301	0.1151	-0.4330	NaN	NaN	NaN	0.1494	0.1091	0.1091	
1250	-0.5203	-180	-0.6647	42	0.1444	0.0722	-0.6008	NaN	NaN	NaN	0.1265	0.0360	0.0360	
1255	-0.6142	-178	-0.7919	42	0.1777	0.0889	-0.7204	NaN	NaN	NaN	0.1464	0.0549	0.0549	

GNSS 天线 1520-1610MHz 频段法向增益



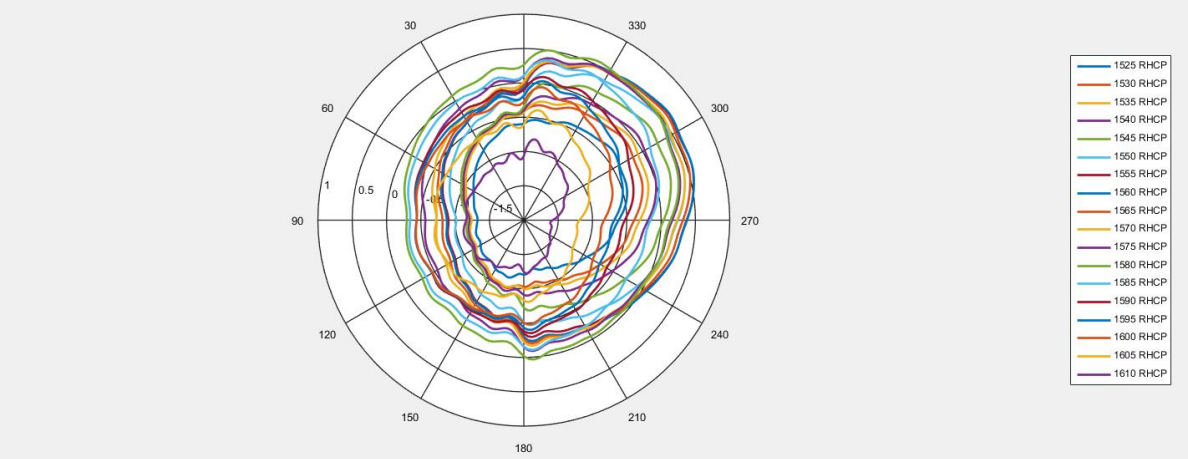
Frequency (MHz)	Max(dB)	Max@deg	Min(dB)	Min@ deg	Max-Min(dB)	Roundness(dB)	BW_3dB(deg)	BW_center(deg)	BW_10dB(deg)	F2B_0(dB)	F2B_30(dB)	F2B_XPD_30(dB)	F2B_60(dB)	XPD_0
1525	2.0005	4	-56.5073	180	58.5078	29.2539	92.9987	3.0692	195.2510	37.3204	17.2827	10.3533	16.2136	
1530	2.2196	4	-58.1430	180	60.3626	30.1813	92.5091	2.9947	195.5754	37.4357	17.0747	9.9149	16.3859	
1535	2.2728	6	-59.4206	180	61.6934	30.8467	92.2968	2.6795	196.3576	38.4582	16.8519	9.4965	15.6082	
1540	2.3734	6	-59.9634	180	62.3368	31.1684	91.5187	2.3333	197.0512	38.0306	16.7573	9.1653	15.6520	
1545	2.5804	4	-60.2320	-180	62.8124	31.4062	90.0368	1.5451	198.0919	36.6618	16.6398	8.8681	16.6398	
1550	2.8367	6	-60.8856	-180	63.7223	31.8612	88.8424	1.4970	198.1833	37.5183	16.6965	8.6861	15.3378	
1555	3.0509	6	-61.2136	-180	64.2645	32.1322	87.2830	1.5277	198.3234	37.3964	16.7770	8.5420	15.1233	
1560	3.1212	6	-59.8916	-180	63.0128	31.5064	86.4036	1.6726	197.4645	37.5196	17.0234	8.4635	14.8247	
1565	3.1279	6	-57.3418	-180	60.4697	30.2348	86.4386	1.7870	196.3752	37.4805	17.2682	8.3952	14.6476	
1570	3.1606	6	-54.7894	-180	57.9500	28.9750	85.9089	1.9753	195.6396	37.7697	17.6145	8.3838	14.5425	
1575	3.2166	-6	-52.7904	-180	56.0070	28.0035	86.4678	1.8563	196.1578	50.0078	17.9282	8.3949	13.7188	
1580	3.2688	-6	-50.9544	-180	54.2232	27.1116	87.2914	2.2634	197.0381	50.7911	18.2573	8.4407	13.6154	
1585	3.0032	-8	-51.5843	172	54.5875	27.2938	89.8143	2.2071	198.6422	54.5875	18.5044	8.4579	12.9460	
1590	2.6873	-8	-53.2224	178	55.9098	27.9549	92.2007	2.2255	199.4553	55.8166	18.8987	8.4834	12.8931	
1595	2.5056	-8	-78.5366	178	81.0421	40.5211	96.4781	0.9924	201.1666	54.0733	19.1062	8.4867	12.7992	
1600	2.4097	-8	-60.3190	176	62.7286	31.3643	98.2690	0.6848	201.7984	50.3163	19.2636	8.5360	12.8617	
1605	2.1118	-8	-53.0847	174	55.1965	27.5983	99.2339	0.7332	203.2520	46.8522	19.0957	8.5862	12.8903	
1610	1.7008	-8	-51.4112	174	53.1120	26.5560	102.8016	0.9651	205.2290	43.6723	18.7052	8.5537	12.7341	

GNSS 天线 1520-1610MHz 频段 60°仰角增益



Frequency (MHz)	Max(dB)	Max@deg	Min(dB)	Min@ deg	Max-Min(dB)	Roundness(dB)	Avg_Gain(dB)	BW_3dB(deg)	BW_center(deg)	BW_10dB(deg)	F2B_0(dB)	F2B_30(dB)	F2B_XPD_30(dB)	F2B_60
1525	0.6791	-28	-0.0243	90	0.7034	0.3517	0.3171	NaN	NaN	NaN	0.6311	0.5312	0.5312	
1530	0.8993	-10	0.1653	90	0.7340	0.3670	0.5137	NaN	NaN	NaN	0.6830	0.5499	0.5499	
1535	0.9336	-26.0000	0.2149	142	0.7187	0.3594	0.5542	NaN	NaN	NaN	0.6672	0.6171	0.6171	
1540	1.0383	-10	0.2786	142	0.7597	0.3799	0.6343	NaN	NaN	NaN	0.7344	0.6495	0.6495	
1545	1.2471	-10	0.5026	142	0.7445	0.3722	0.8435	NaN	NaN	NaN	0.7391	0.6621	0.6621	
1550	1.4064	-10	0.6874	142	0.7190	0.3595	1.0162	NaN	NaN	NaN	0.7120	0.6353	0.6353	
1555	1.4819	-12	0.8258	116.0000	0.6562	0.3281	1.1236	NaN	NaN	NaN	0.6329	0.5752	0.5752	
1560	1.5209	-52.0000	0.8542	116.0000	0.6667	0.3333	1.1557	NaN	NaN	NaN	0.6364	0.5734	0.5734	
1565	1.5627	-52.0000	0.8473	116.0000	0.7154	0.3577	1.1728	NaN	NaN	NaN	0.6712	0.5759	0.5759	
1570	1.5922	-52.0000	0.9077	90	0.6845	0.3423	1.2229	NaN	NaN	NaN	0.6136	0.4891	0.4891	
1575	1.7777	-52.0000	1.0807	90	0.6970	0.3485	1.4180	NaN	NaN	NaN	0.5868	0.4415	0.4415	
1580	1.8619	-52.0000	1.2034	88	0.6585	0.3292	1.5367	NaN	NaN	NaN	0.5219	0.3659	0.3659	
1585	1.6729	-52.0000	1.0652	88	0.6078	0.3039	1.3831	NaN	NaN	NaN	0.4471	0.3039	0.3039	
1590	1.5079	-50	0.9414	88	0.5665	0.2833	1.2479	NaN	NaN	NaN	0.3877	0.2543	0.2543	
1595	1.5112	-30	1.0562	88	0.4550	0.2275	1.3096	NaN	NaN	NaN	0.2293	0.1488	0.1488	
1600	1.5408	-30	1.0638	88	0.4771	0.2385	1.3284	NaN	NaN	NaN	0.2656	0.1510	0.1510	
1605	1.3263	-12	0.8411	88	0.4851	0.2426	1.1107	NaN	NaN	NaN	0.2314	0.1209	0.1209	
1610	0.9667	-12	0.4932	88	0.4735	0.2367	0.7530	NaN	NaN	NaN	0.2527	0.1061	0.1061	

GNSS 天线 1520-1610MHz 频段 45°仰角增益



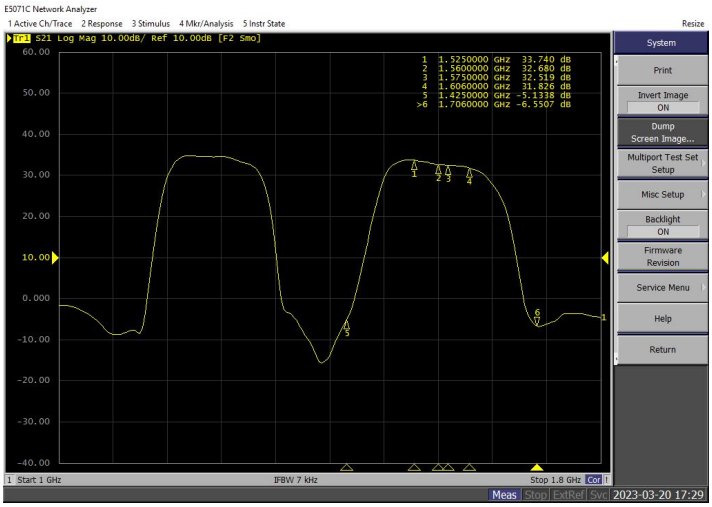
Frequency (MHz)	Max(dB)	Max@deg	Min(dB)	Min@ deg	Max-Min(dB)	Roundness(dB)	Avg_Gain(dB)	BW_3dB(deg)	BW_center(deg)	BW_10dB(deg)	F2B_0(dB)	F2B_30(dB)	F2B_XPD_30(dB)	F2B_60
1525	-0.3536	-52.0000	-1.3256	90	0.9720	0.4860	-0.9101	NaN	NaN	NaN	0.8782	0.8125	0.8125	
1530	-0.1210	-52.0000	-1.1952	90	1.0742	0.5371	-0.7252	NaN	NaN	NaN	0.9839	0.8967	0.8967	
1535	-0.0370	-52.0000	-1.2401	90	1.2030	0.6015	-0.7008	NaN	NaN	NaN	1.1112	0.9983	0.9983	
1540	0.0678	-52.0000	-1.2101	90	1.2780	0.6390	-0.6276	NaN	NaN	NaN	1.1861	1.0541	1.0541	
1545	0.2805	-54	-1.1834	90	1.4640	0.7320	-0.4958	NaN	NaN	NaN	1.3741	1.2158	1.2158	
1550	0.4810	-54	-1.0154	90	1.4964	0.7482	-0.3032	NaN	NaN	NaN	1.3962	1.2178	1.2178	
1555	0.6192	-54	-0.9027	90	1.5220	0.7610	-0.1757	NaN	NaN	NaN	1.4187	1.2268	1.2268	
1560	0.6285	-54	-0.8799	92	1.5084	0.7542	-0.1576	NaN	NaN	NaN	1.4083	1.2239	1.2239	
1565	0.5844	-54	-0.8151	90	1.3995	0.6997	-0.1494	NaN	NaN	NaN	1.3075	1.1410	1.1410	
1570	0.5252	-52.0000	-0.7299	90	1.2551	0.6276	-0.1400	NaN	NaN	NaN	1.1620	1.0298	1.0298	
1575	0.4854	-26.0000	-0.5643	90	1.0497	0.5248	-0.0829	NaN	NaN	NaN	0.9053	0.5893	0.5893	
1580	0.5551	-26.0000	-0.2984	118.0000	0.8535	0.4267	0.0477	NaN	NaN	NaN	0.7756	0.5332	0.5332	
1585	0.3541	-24	-0.3804	140	0.7345	0.3672	-0.1115	NaN	NaN	NaN	0.6835	0.4605	0.4605	
1590	0.1058	-8	-0.6070	-120	0.7128	0.3564	-0.3385	NaN	NaN	NaN	0.6218	0.4567	0.4567	
1595	0.0460	-8	-0.7294	-98.0000	0.7754	0.3877	-0.4118	NaN	NaN	NaN	0.6299	0.4445	0.4445	
1600	-0.0451	-8	-0.8694	-96	0.8243	0.4121	-0.4878	NaN	NaN	NaN	0.5754	0.4355	0.4355	
1605	-0.3838	-8	-1.2220	-96	0.8382	0.4191	-0.8083	NaN	NaN	NaN	0.5339	0.4121	0.4121	
1610	-0.8123	-8	-1.6135	-96	0.8012	0.4006	-1.2323	NaN	NaN	NaN	0.5371	0.4005	0.4005	

频率（MHz）	1525	1560	1575	1610
增益（dBi）	2	3.12	3.21	1.7
60°仰角增益（dBi）	-0.02	1.08	0.69	0.49
45°仰角增益（dBi）	-1.32	-0.87	-0.56	-1.61
轴比（θ=0°，Φ=0°）（dB）	1.91	2.16	2.54	1.77

频率（MHz）	1165	1175	1205	1225	1250
增益（dBi）	0.84	1.38	3.42	3.57	2.77
30°仰角增益（dBi）	-3.15	-2.32	-0.6	-0.39	-0.66
45°仰角增益（dBi）	-1.68	-0.46	1.38	0.97	0.48
轴比（θ=0°，Φ=0°）（dB）	0.97	0.91	0.65	0.25	0.44

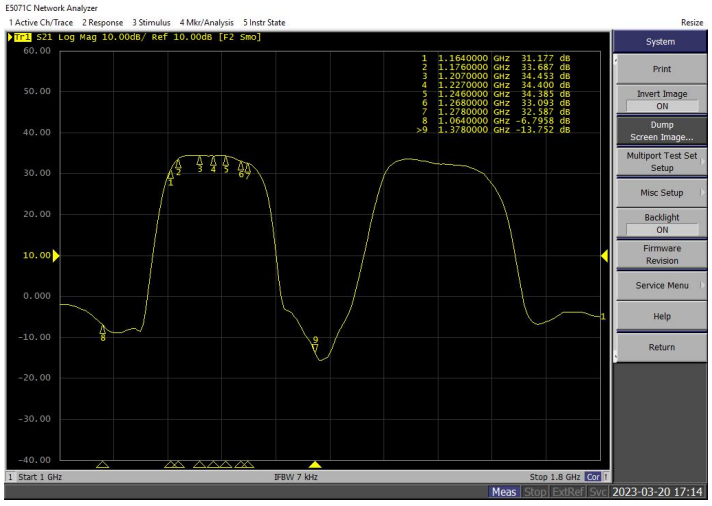
3.2.4 GNSS 天线 LNA 增益

GNSS 天线 1520-1610MHz 频段



频率（MHz）	1525	1560	1575(f_0)	1606
LNA 增益(dB)	33.74	32.68	32.52	31.83

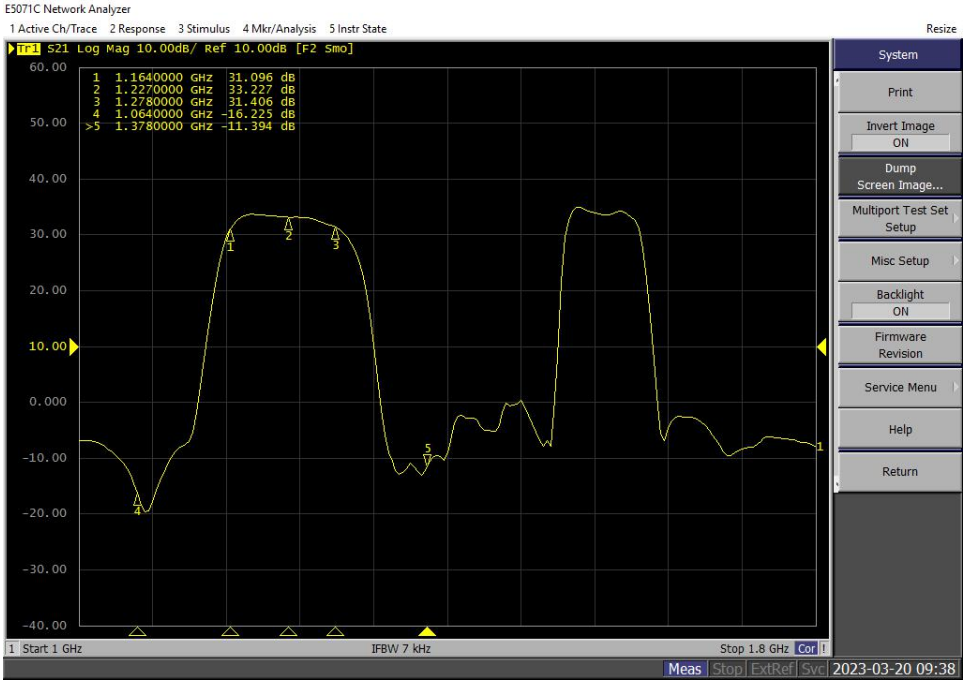
GNSS 天线 1166-1250MHz 频段



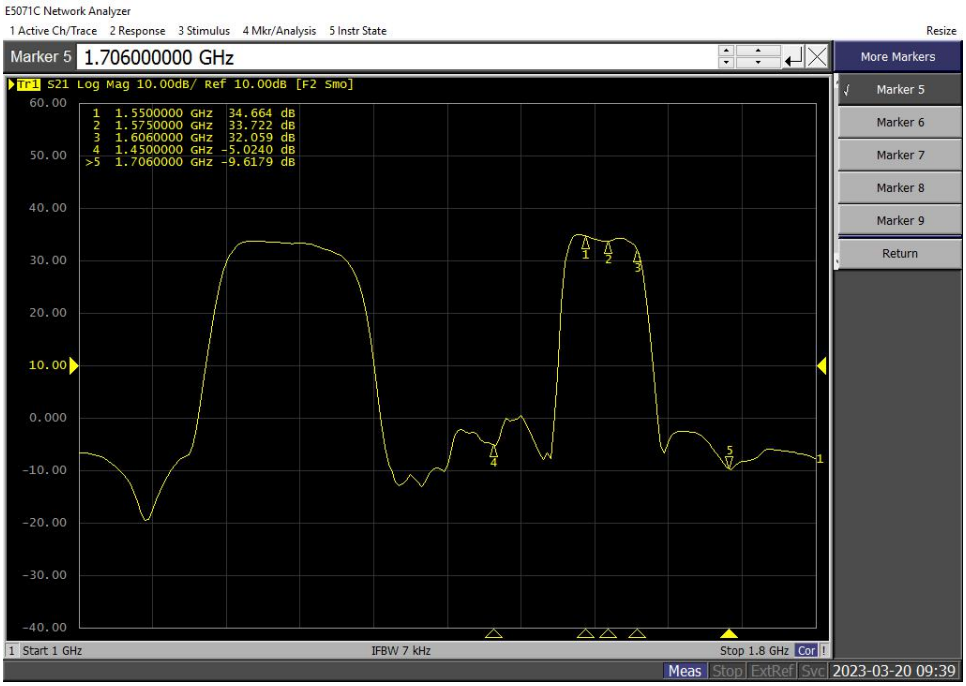
频率（MHz）	1164	1227(f_0)	1246
LNA 增益(dB)	31.18	34.40	34.39

3.2.5 GNSS 天线 LNA 带外抑制（±100MHz）

GNSS 天线 1166-1250MHz 频段

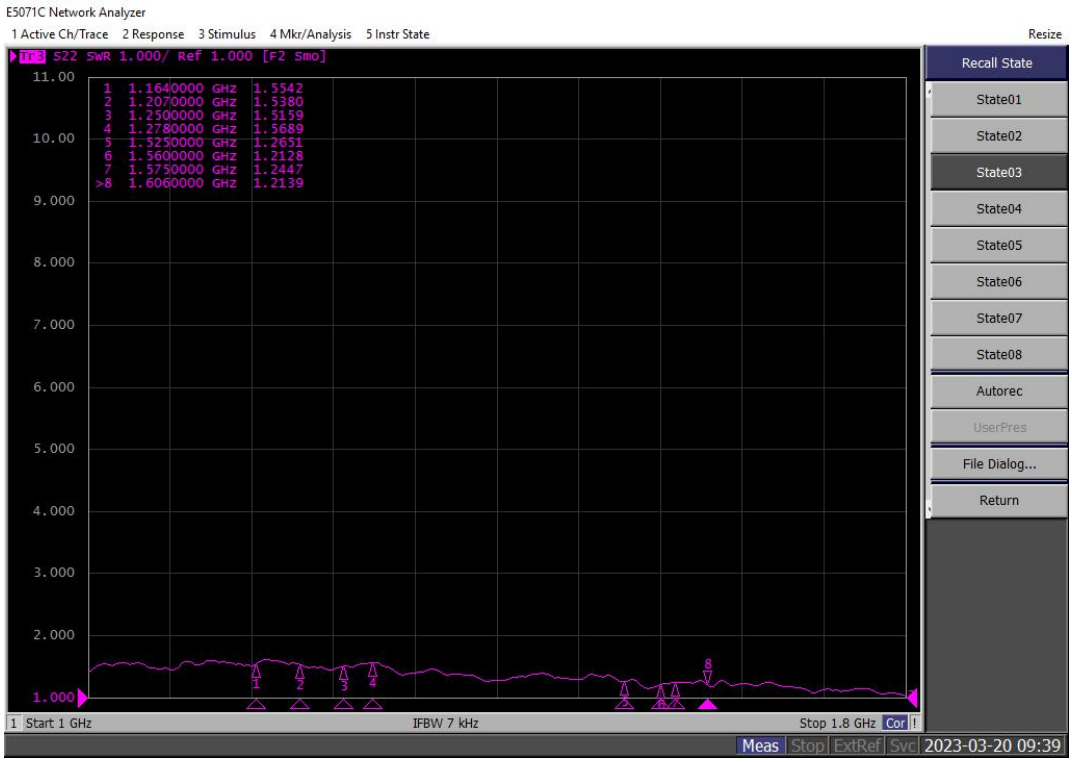


GNSS 天线 1520-1610MHz 频段



频率（MHz）	1064	1378	1450	1706
带外抑制	47	42	39	41

LNA 输出驻波（VSWR≤2.0）



深圳市华信天线技术有限公司

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