

Shanghai Sunnyway Communication Technology Limited Company

Temporary antenna specification

Customer: xiangchen		The project: T2561
Operating frequency band: GSM850/ 900/1800/1900 +WCDMA 1/2/4/5/8+LTE Band 1/2/3/4/5/7/8/12/13/17/19/20/25/26/28+TDD Band34/38/39/40/41 GPS/WIFI2.4&WIFI5G		
Motherboard version:		
Shangyuan material specifications		
Specifications and models	Shangyuan material number	Customer part number
LDS antenna	SH25181IA88-1	

The record of project changes			
Date of preparation/change	Changes	Change of person	version

Sunnyway counter-signature bar				
Research and development	ME:	Auditor:	QE:	Approver:
	RF:	Auditor:		
Client Counter-signature bar				
EE	PM		RF	QE

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1. Project information

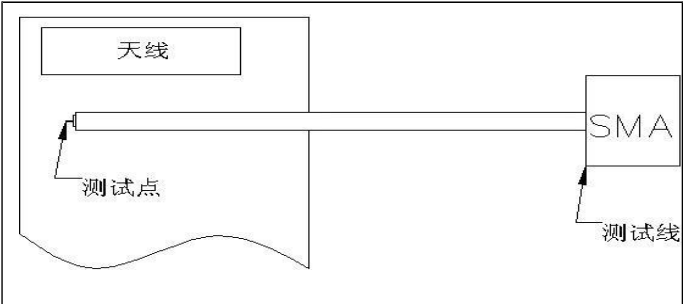
Machine information

Note: The customer finally verified that the antenna performance prototype was retained in our company for at least one year, which is convenient for analysis and solution to abnormal situations in antenna mass production.
Ensure antenna shipment quality.

2. Test fixtures

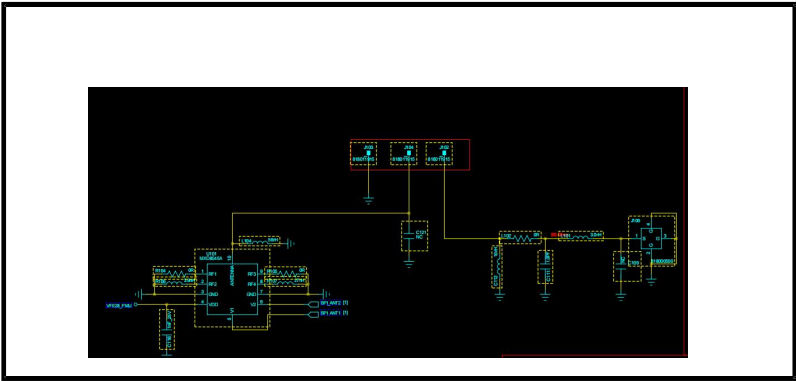
Purpose: To test the passive parameters of the antenna as accurately as possible.

How to make: The prototyping mechanism is made of a 50 ohm coaxial cable, one end is connected to the test point at the back of the matching circuit of the prototype motherboard (the front of the RF test hole), and the other end is connected to the SMA connector. The schematic diagram is as follows:



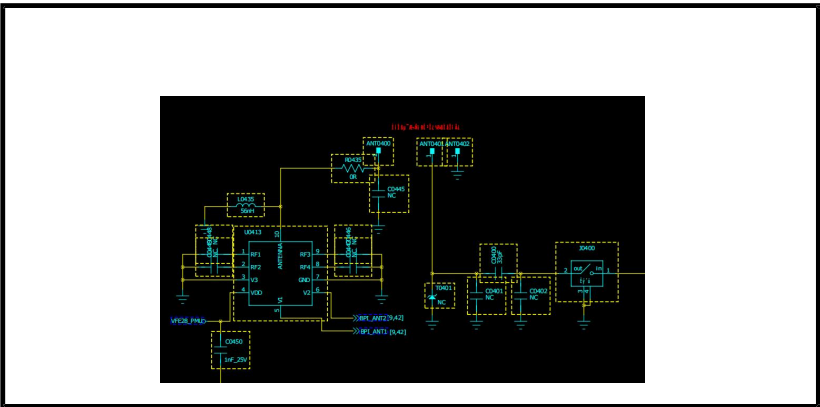
3. Matching circuits

MAIN



主天线主路	位号	匹配		位号	匹配
	C112	10nH		C112	NC
	L102	5.6pF	开关	L104	NC
	C111	NC	RF1	R104	0欧
	L101	0欧	RF2	R106	3.9NH
	C109	0.75pF	RF3	R105	8.2NH
			RF4	R107	12NH

DIV



未用开关，开关后期可以省去	位号	匹配
	C0045	0欧

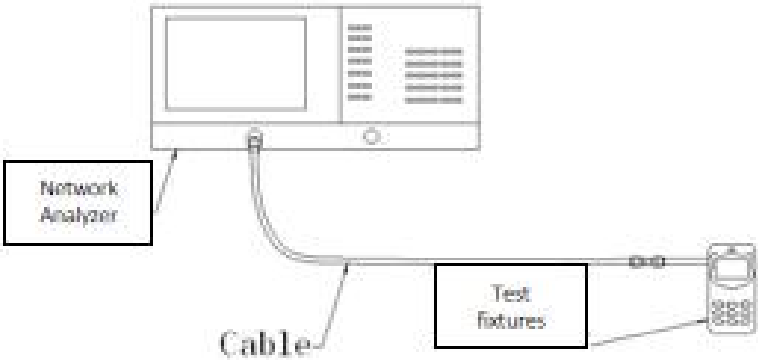
4. S11 test

4.1 S11 Test Method Description

Test Equipment: Network Analyzer (E5071C)

Test method: A 50 ohm CABLE cable is derived from the instrument test port, and the SMA connector of the prototype is connected after calibration using the calibrator to record the return loss and standing wave ratio corresponding to the relevant frequency point.

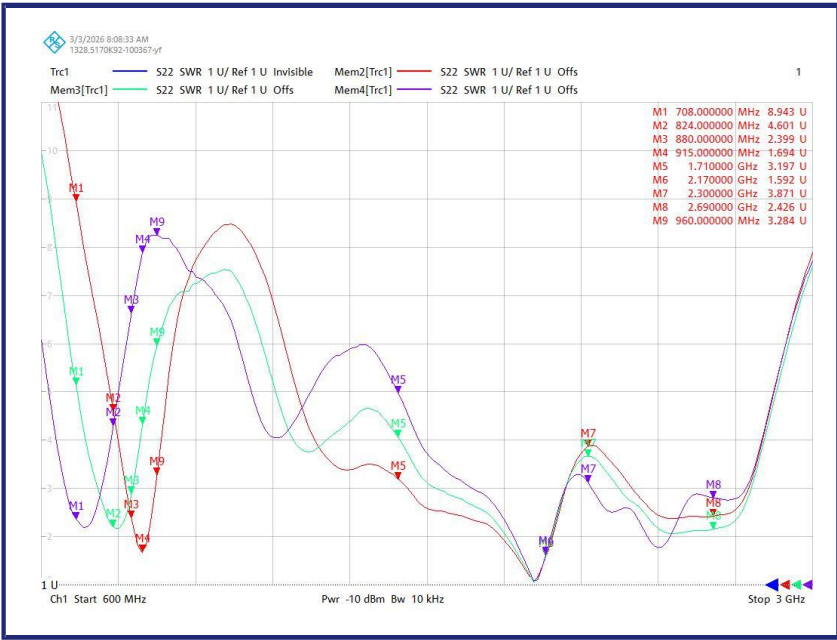
The test diagram is as follows:



Test the schematic

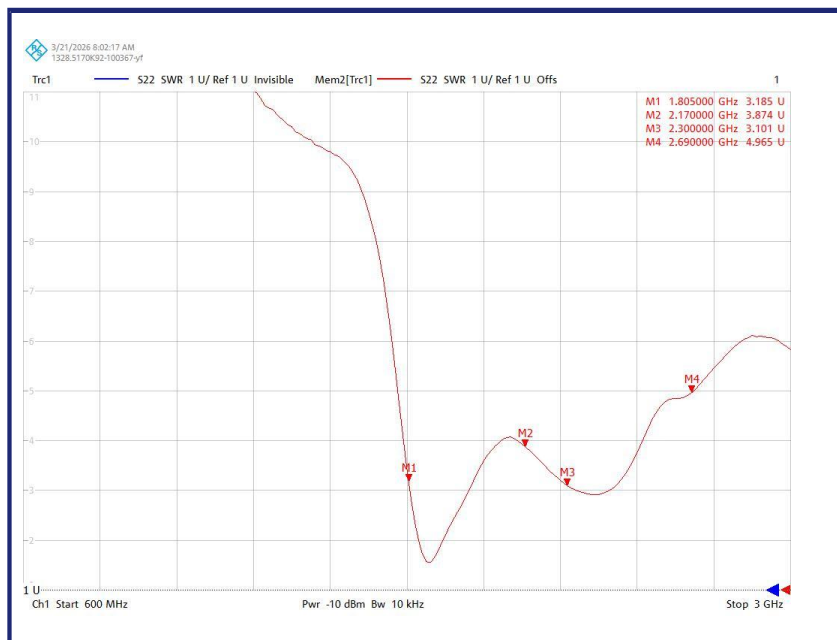
4.2 S11 parameter

AMAIN天线



MAIN天线	
RF1 频率（MHz）	驻波比
880	2.3
915	1.7
1710	3.2
2170	1.6
2300	3.9
2690	2.4

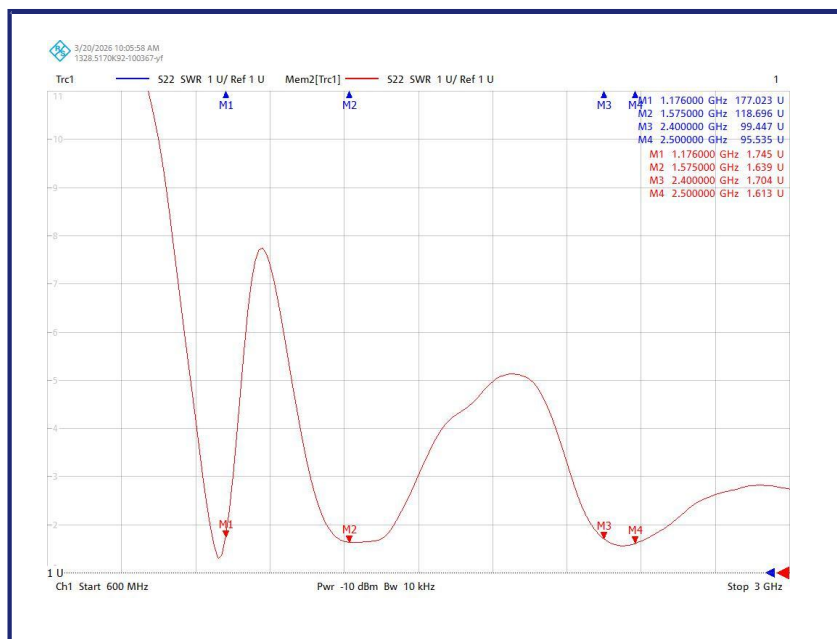
DIV



DIV天线

RF1 频率 (MHz)	驻波比
1710	3.2
2170	3.8
2300	3.1
2690	5.0

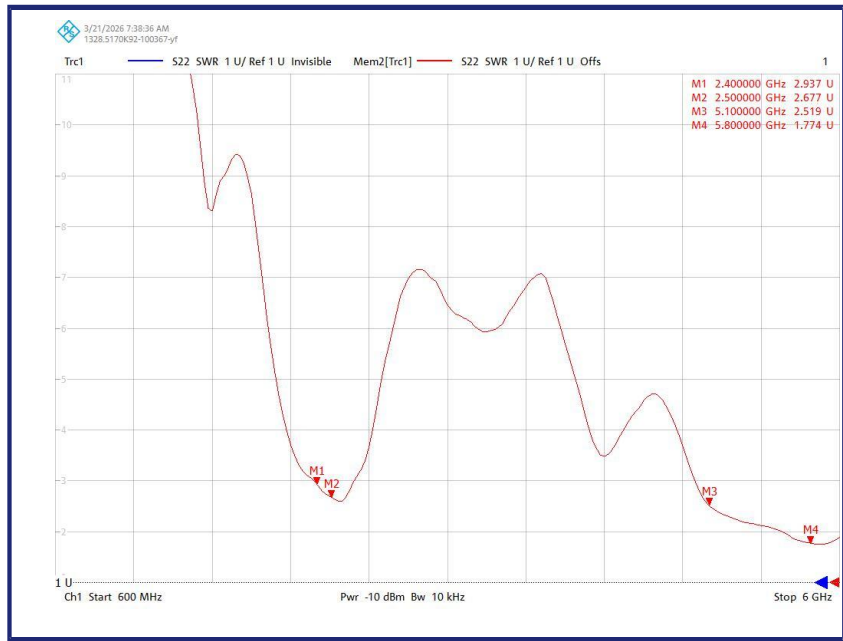
GPS



GPS天线

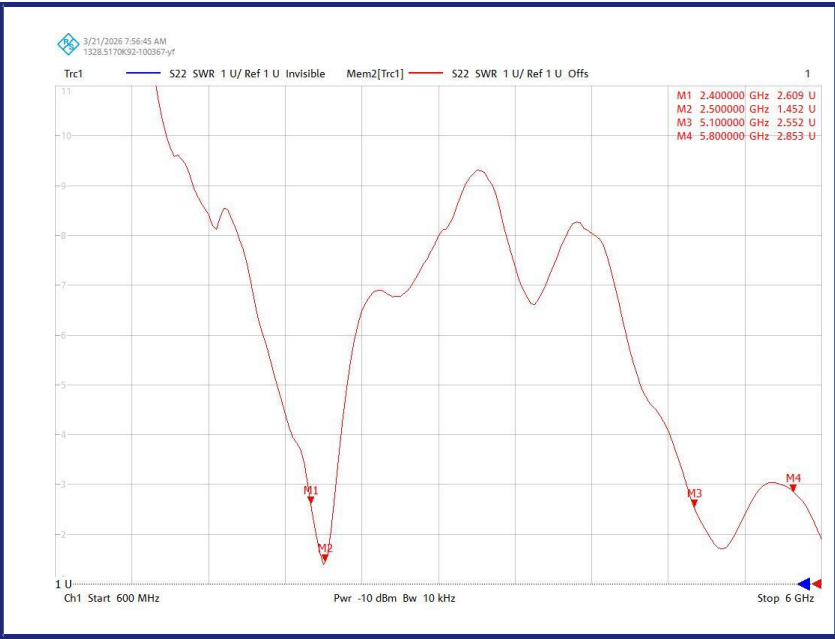
RF1 频率 (MHz)	驻波比
1176	1.7
1575	1.6
2400	1.7
2500	1.6

WiFi0天线



WiFi0天线	
RF1 频率（MHz）	驻波比
2400	2.9
2500	2.7
5100	2.5
5800	1.8

WiFi1



WiFi1天线	
RF1 频率（MHz）	驻波比
1176	2.7
1575	1.5
2400	2.6
2500	2.9

5 Darkroom test data

Test system: Shielded darkroom

Test environment: temperature $22^{\circ}\text{C}\pm 3^{\circ}\text{C}$, humidity
 $50\%\pm 15\%$

Test equipment: When testing passive data, use the

Network Analyzer Agilent E5062C When testing
active data, the Comprehensive Tester Agilent 8960
/CMW500/E4438C is used

5.1 5.1 Passive test data

5.1.1 MAIN

MAIN															
Frequen cy/Mhz	Efficienc y / dB	Efficienc y / %	MaxGain /dBi	Frequen cy/Mhz	Efficienc y / dB	Efficienc y / %	MaxGain /dBi	Frequen cy/Mhz	Efficienc y / dB	Efficienc y / %	MaxGain /dBi	Frequen cy/Mhz	Efficienc y / dB	Efficienc y / %	MaxGain /dBi
700	-9.45	11.35	-5.48	1710	-6.89	20.46	-3.02	2080	-4.8	33.11	-1.37	2560	-5.54	27.93	0.41
710	-9.28	11.8	-5.73	1720	-6.76	21.09	-3.02	2090	-4.72	33.73	-1.36	2570	-5.45	28.51	0.58
720	-9.1	12.3	-5.86	1730	-6.65	21.63	-2.87	2100	-4.67	34.12	-1.03	2580	-5.28	29.65	0.85
730	-9.04	12.47	-6.12	1740	-6.54	22.18	-2.49	2110	-4.44	35.97	-0.74	2590	-5.34	29.24	0.89
740	-8.96	12.71	-6.18	1750	-6.45	22.65	-2.06	2120	-4.29	37.24	-0.32	2600	-5.18	30.34	1.04
750	-9.01	12.56	-6.2	1760	-6.37	23.07	-1.98	2130	-4.14	38.55	-0.21	2610	-5.26	29.79	0.93
760	-9.21	11.99	-6.41	1770	-6.47	22.54	-2.24	2140	-4.02	39.63	0.03	2620	-5.22	30.06	0.92
770	-9.49	11.25	-6.86	1780	-6.33	23.28	-2.17	2150	-4.04	39.45	-0.11	2630	-5.15	30.55	1
780	-9.64	10.86	-7.14	1790	-6.15	24.27	-1.95	2160	-4.05	39.36	-0.09	2640	-5.29	29.58	0.97
790	-9.63	10.89	-7.01	1800	-6.06	24.77	-1.6	2170	-4.33	36.9	-0.05	2650	-5.37	29.04	1.03
800	-9.7	10.72	-6.65	1810	-6	25.12	-1.42					2660	-5.36	29.11	1.22
				1820	-5.95	25.41	-1.29	2300	-3.88	40.93	1.46	2670	-5.39	28.91	1.35
740	-9.5	11.22	-6.66	1830	-5.9	25.7	-1.23	2310	-3.95	40.27	1.38	2680	-5.32	29.38	1.58
750	-9.34	11.64	-6.5	1840	-5.72	26.79	-1.05	2320	-4.08	39.08	1.17	2690	-5.31	29.44	1.78
760	-9.25	11.89	-6.41	1850	-5.61	27.48	-0.91	2330	-4.19	38.11	1.18				
770	-9.28	11.8	-6.63	1860	-5.48	28.31	-0.64	2340	-4.35	36.73	1.2				
780	-9.24	11.91	-6.73	1870	-5.36	29.11	-0.38	2350	-4.76	33.42	1.19				
790	-9.04	12.47	-6.44	1880	-5.31	29.44	-0.34	2360	-5.03	31.41	1.19				
				1890	-5.11	30.83	-0.34	2370	-5.42	28.71	0.98				
820	-8.76	13.3	-5.57	1900	-5.12	30.76	-0.51	2380	-5.6	27.54	0.86				
830	-8.45	14.29	-5.14	1910	-5.22	30.06	-0.7	2390	-5.87	25.88	0.6				
840	-8.39	14.49	-4.96	1920	-5.2	30.2	-0.77	2400	-6.06	24.77	0.28				
850	-8.39	14.49	-5.03	1930	-5.16	30.48	-0.84	2410	-6.18	24.1	0.19				
860	-8.29	14.83	-4.87	1940	-5.12	30.76	-0.72	2420	-6.22	23.88	0.07				
870	-8.3	14.79	-4.96	1950	-4.95	31.99	-0.53	2430	-6.46	22.59	0.09				
880	-8.47	14.22	-5.21	1960	-4.88	32.51	-0.2	2440	-6.45	22.65	0.4				
890	-8.65	13.65	-5.25	1970	-4.78	33.27	-0.02	2450	-6.54	22.18	0.34				
				1980	-4.74	33.57	0	2460	-6.44	22.7	0.31				
880	-8.78	13.24	-5.39	1990	-4.82	32.96	-0.21	2470	-6.5	22.39	0.17				
890	-8.11	15.45	-4.62	2000	-4.87	32.58	-0.32	2480	-6.56	22.08	-0.11				
900	-7.68	17.06	-4.25	2010	-4.88	32.51	-0.45	2490	-6.36	23.12	0.2				
910	-7.4	18.2	-4.23	2020	-4.89	32.43	-0.42	2500	-6.18	24.1	0.4				
920	-7.38	18.28	-4.46	2030	-4.85	32.73	-0.29	2510	-6.14	24.32	0.63				
930	-7.62	17.3	-4.52	2040	-4.83	32.89	-0.27	2520	-5.99	25.18	0.72				
940	-7.88	16.29	-4.23	2050	-4.7	33.88	-0.4	2530	-5.95	25.41	0.74				
950	-8.28	14.86	-4.21	2060	-4.66	34.2	-0.72	2540	-5.74	26.67	0.64				
960	-8.8	13.18	-4.54	2070	-4.77	33.34	-1.19	2550	-5.67	27.1	0.5				

5.1 Passive test data

WIFI passive efficiency

WiFi0天线					WiFi1天线			
Frequency/Mhz	Efficiency / dB	Efficiency / %	MaxGain/dBi		Frequency/Mhz	Efficiency / dB	Efficiency / %	MaxGain/dBi
2400	-5.35	29.17	-0.62		2400	-6.43	22.75	-1.75
2410	-5.17	30.41	-0.43		2410	-5.87	25.88	-1.11
2420	-5.1	30.9	-0.29		2420	-5.56	27.8	-0.46
2430	-5.02	31.48	-0.27		2430	-5.21	30.13	-0.29
2440	-4.89	32.43	-0.11		2440	-4.98	31.77	0.02
2450	-4.82	32.96	0.27		2450	-5.04	31.33	0.26
2460	-4.68	34.04	0.47		2460	-5.02	31.48	0.55
2470	-4.54	35.16	0.76		2470	-5.2	30.2	0.83
2480	-4.56	34.99	0.76		2480	-5.59	27.61	0.77
2490	-4.64	34.36	1.11		2490	-5.88	25.82	1.01
2500	-4.72	33.73	1.3		2500	-6.38	23.01	0.94
5100	-4.63	34.43	1.85		5100	-8.19	15.17	-1.71
5150	-4.4	36.31	1.54		5150	-8.03	15.74	-2.1
5200	-4.09	38.99	0.77		5200	-7.71	16.94	-2.57
5250	-3.8	41.69	2.58		5250	-7.43	18.07	-2.35
5300	-3.7	42.66	2.44		5300	-6.92	20.32	-1.17
5350	-3.77	41.98	2.45		5350	-6.79	20.94	-0.73
5400	-3.86	41.11	1.67		5400	-6.78	20.99	-1.46
5450	-3.85	41.21	3.1		5450	-6.56	22.08	-1.54
5500	-4.04	39.45	3.41		5500	-6.58	21.98	-0.18
5550	-4.13	38.64	0.96		5550	-6.85	20.65	-1.05
5600	-4.31	37.07	2.54		5600	-7.21	19.01	-1.57
5650	-4.41	36.22	3.18		5650	-7.3	18.62	-1.71
5700	-4.21	37.93	3.28		5700	-7.39	18.24	-1.84
5750	-4.3	37.15	2.3		5750	-7.32	18.54	-1.49
5800	-4.21	37.93	1.67		5800	-7.04	19.77	-1.19
5850	-4.1	38.9	2.98		5850	-6.95	20.18	-0.82
5900	-4.1	38.9	2.07		5900	-6.6	21.88	-0.65
5950	-4.02	39.63	1.86		5950	-6.21	23.93	0.05
6000	-4.07	39.17	1.6		6000	-6.05	24.83	0.19
6050	-3.77	41.98	2.07		6050	-5.97	25.29	0.54
6100	-3.79	41.78	2.09		6100	-5.78	26.42	0.81
6150	-4.15	38.46	2.02		6150	-6.09	24.6	0.65
6200	-5.23	29.99	1.36		6200	-7.15	19.28	-0.79
6250	-5.52	28.05	0.7		6250	-8.56	13.93	-2.12
6300	-5.75	26.61	0.76		6300	-8.94	12.76	-2.72
6350	-5.8	26.3	0.76		6350	-9.03	12.5	-2.89
6400	-5.07	31.12	1.47		6400	-9.24	11.91	-3.08
6450	-4.72	33.73	1.89		6450	-9.33	11.67	-3.58
6500	-4.02	39.63	3.19		6500	-9.33	11.67	-2.96
6550	-3.4	45.71	3.95		6550	-9.98	10.05	-3.87
6600	-3.41	45.6	3.69		6600	-10.26	9.42	-4.09
6650	-3.73	42.36	3.33		6650	-11.58	6.95	-5.09
6700	-3.85	41.21	2.96		6700	-12.44	5.7	-6.91
6750	-3.96	40.18	2.99		6750	-12.3	5.89	-7.04
6800	-4.2	38.02	2.46		6800	-12.79	5.26	-8.33
6850	-4.81	33.04	1.42		6850	-12.45	5.69	-7.72
6900	-4.48	35.65	1.51		6900	-12.1	6.17	-6.34
6950	-4.55	35.08	2.31		6950	-12.3	5.89	-7.05
7000	-4.71	33.81	1.77		7000	-12.05	6.24	-6.3
7050	-4.63	34.43	0.05		7050	-11.63	6.87	-6.08
7100	-4.72	33.73	-0.85		7100	-11.54	7.01	-6.48
7150	-4.93	32.14	0.83		7150	-10.92	8.09	-6.71

Shanghai Shangyuan Communication Technology Co., Ltd. antenna recognition

Antenna GPS passive efficiency

WiFi0天线					WiFi1天线			
Frequency/Mhz	Efficiency / dB	Efficiency / %	MaxGain/dBi		Frequency/Mhz	Efficiency / dB	Efficiency / %	MaxGain/dBi
2400	-5.35	29.17	-0.62		2400	-6.43	22.75	-1.75
2410	-5.17	30.41	-0.43		2410	-5.87	25.88	-1.11
2420	-5.1	30.9	-0.29		2420	-5.56	27.8	-0.46
2430	-5.02	31.48	-0.27		2430	-5.21	30.13	-0.29
2440	-4.89	32.43	-0.11		2440	-4.98	31.77	0.02
2450	-4.82	32.96	0.27		2450	-5.04	31.33	0.26
2460	-4.68	34.04	0.47		2460	-5.02	31.48	0.55
2470	-4.54	35.16	0.70		2470	-5.2	30.2	0.83
2480	-4.56	34.99	0.70		2480	-5.59	27.61	0.77
2490	-4.64	34.36	1.11		2490	-5.88	25.82	1.01
2500	-4.72	33.73	1.3		2500	-6.38	23.01	0.94
5100	-4.63	34.43	1.85		5100	-8.19	15.17	-1.71
5150	-4.4	36.31	1.54		5150	-8.03	15.74	-2.1
5200	-4.09	38.99	0.77		5200	-7.71	16.94	-2.57
5250	-3.8	41.69	2.58		5250	-7.43	18.07	-2.35
5300	-3.7	42.66	2.44		5300	-6.92	20.32	-1.17
5350	-3.77	41.98	2.45		5350	-6.79	20.94	-0.73
5400	-3.86	41.11	1.67		5400	-6.78	20.99	-1.46
5450	-3.85	41.21	3.1		5450	-6.56	22.08	-1.54
5500	-4.04	39.45	3.41		5500	-6.58	21.98	-0.18
5550	-4.13	38.64	0.96		5550	-6.85	20.65	-1.05
5600	-4.31	37.07	2.54		5600	-7.21	19.01	-1.57
5650	-4.41	36.22	3.18		5650	-7.3	18.62	-1.71
5700	-4.21	37.93	3.28		5700	-7.39	18.24	-1.84
5750	-4.3	37.15	2.3		5750	-7.32	18.54	-1.49
5800	-4.21	37.93	1.67		5800	-7.04	19.77	-1.19
5850	-4.1	38.9	2.98		5850	-6.95	20.18	-0.82
5900	-4.1	38.9	2.07		5900	-6.6	21.88	-0.65
5950	-4.02	39.63	1.86		5950	-6.21	23.93	0.05
6000	-4.07	39.17	1.6		6000	-6.05	24.83	0.19
6050	-3.77	41.98	2.07		6050	-5.97	25.29	0.54
6100	-3.79	41.78	2.09		6100	-5.78	26.42	0.81
6150	-4.15	38.46	2.02		6150	-6.09	24.6	0.65
6200	-5.23	29.99	1.36		6200	-7.15	19.28	-0.79
6250	-5.52	28.05	0.7		6250	-8.56	13.93	-2.12
6300	-5.75	26.61	0.76		6300	-8.94	12.76	-2.72
6350	-5.8	26.3	0.76		6350	-9.03	12.5	-2.89
6400	-5.07	31.12	1.47		6400	-9.24	11.91	-3.08
6450	-4.72	33.73	1.89		6450	-9.33	11.67	-3.58
6500	-4.02	39.63	3.19		6500	-9.33	11.67	-2.96
6550	-3.4	45.71	3.95		6550	-9.98	10.05	-3.87
6600	-3.41	45.6	3.69		6600	-10.26	9.42	-4.09
6650	-3.73	42.36	3.33		6650	-11.58	6.95	-5.09
6700	-3.85	41.21	2.96		6700	-12.44	5.7	-6.91
6750	-3.96	40.18	2.99		6750	-12.3	5.89	-7.04
6800	-4.2	38.02	2.46		6800	-12.79	5.26	-8.33
6850	-4.81	33.04	1.42		6850	-12.45	5.69	-7.72
6900	-4.48	35.65	1.51		6900	-12.1	6.17	-6.34
6950	-4.55	35.08	2.31		6950	-12.3	5.89	-7.05
7000	-4.71	33.81	1.77		7000	-12.05	6.24	-6.3
7050	-4.63	34.43	0.05		7050	-11.63	6.87	-6.08
7100	-4.72	33.73	-0.85		7100	-11.54	7.01	-6.48
7150	-4.93	32.14	0.83		7150	-10.92	8.09	-6.71

Antenna DIV passive efficiency

DIV					
Frequency/Mh z	Efficiency / dB	Efficiency / %	Frequency/Mh z	Efficiency / dB	Efficiency / %
1800	-15.15	3.05	2310	-9.67	10.79
1810	-14.94	3.21	2320	-9.27	11.83
1820	-14.67	3.41	2330	-8.96	12.71
1830	-14.43	3.61	2340	-8.67	13.58
1840	-14.16	3.84	2350	-8.38	14.52
1850	-13.78	4.19	2360	-8.16	15.28
1860	-13.38	4.59	2370	-8.09	15.52
1870	-13.02	4.99	2380	-7.98	15.92
1880	-12.66	5.42	2390	-7.87	16.33
1890	-12.46	5.68	2400	-7.9	16.22
1900	-12.21	6.01	2410	-7.87	16.33
1910	-11.98	6.34	2420	-7.91	16.18
1920	-11.85	6.53	2430	-8.06	15.63
1930	-11.68	6.79	2440	-8.09	15.52
1940	-11.52	7.05	2450	-8.18	15.21
1950	-11.48	7.11	2460	-8.35	14.62
1960	-11.37	7.29	2470	-8.3	14.79
1970	-11.35	7.33	2480	-8.21	15.1
1980	-11.48	7.11	2490	-8.1	15.49
1990	-11.6	6.92	2500	-7.94	16.07
2000	-11.9	6.46	2510	-7.81	16.56
2010	-12.1	6.17	2520	-7.83	16.48
2020	-12.6	5.5	2530	-7.96	16
2030	-13.12	4.88	2540	-8.03	15.74
2040	-13.71	4.26	2550	-8.28	14.86
2050	-14.05	3.94	2560	-8.46	14.26
2060	-14.38	3.65	2570	-8.68	13.55
2070	-14.78	3.33	2580	-8.74	13.37
2080	-15	3.16	2590	-8.95	12.74
2090	-15.23	3	2600	-9.09	12.33
2100	-15.37	2.9	2610	-9.08	12.36
2110	-15.48	2.83	2620	-9.01	12.56
2120	-15.33	2.93	2630	-8.75	13.34
2130	-15.38	2.9	2640	-8.56	13.93
2140	-15.18	3.03	2650	-8.43	14.35
2150	-15.07	3.11	2660	-8.19	15.17
2160	-14.78	3.33	2670	-8.09	15.52
2170	-14.42	3.61	2680	-8.25	14.96
			2690	-8.25	14.96
2300	-9.99	10.02	2700	-8.64	13.68

5.2 Active test data

Main antenna active testdate (Free space, screen off)

BAND		CHANNEL	OTA	BAND		CHANNEL	OTA	BAND		CHANNEL	OTA
GSM850	TRP	128	23.87	Band 1 (10M)	TRP	18050	18.18	Band 34 (10M)	TRP	36250	17.78
		190	24.55			18300	18.61			36275	17.8
		251	23.99			18550	19.49			36300	17.68
	TIS	128			TIS	18050			TIS	36250	
		190				18300				36275	
		251	-100.78			18550	-94.33			36300	-93.03
EGSM900	TRP	975	23.95	Band 3 (10M)	TRP	19250	17.33	Band 38 (20M)	TRP	37850	17.14
		38	23.93			19575	17.07			38000	17.31
		124	24.55			19900	16.51			38150	17.12
	TIS	975			TIS	19250			TIS	37850	
		38				19575				38000	
		124	-100.63			19900	-93.29			38150	-89.62
GSM1800	TRP	512	23.87	Band 5 (10M)	TRP	20450	15.49	Band 39 (20M)	TRP	38350	18.93
		698	23.76			20525	15.74			38450	17.2
		885	23.53			20600	15.67			38550	17.76
	TIS	512			TIS	20450			TIS	38350	
		698				20525				38450	
		885	-103.76			20600	-90.09			38550	-91.29
GSM1900	TRP	512	22.69	Band 7 (10M)	TRP	20800	16.5	Band 40 (20M)	TRP	38750	16.56
		661	22.52			21100	17.51			39150	16.53
		810	23.92			21400	17.5			39550	16.34
	TIS	512			TIS	20800			TIS	38750	
		661				21100				39150	
		810	-103.49			21400	-91.48			39550	-88.17
WCDMA 1	TRP	10562	18.14	Band 8 (10M)	TRP	21500	15.44	Band 41 (20M)	TRP	40140	17.34
		10700	18.29			21625	15.76			40620	17.72
		10838	18.57			21750	15.52			41140	17.5
	TIS	10562			TIS	21500			TIS	40140	
		10700				21625				40620	
		10838	-106.98			21750	-89.54			41140	-88.02
WCDMA 5	TRP	4357	14.1	Band 20 (10M)	TRP	24200	14.85				
		4408	14.25			24300	15.07				
		4458	14.37			24400	14.93				
	TIS	4357			TIS	24200					
		4408				24300					
		4458	-104.89			24400	-88.51				
WCDMA 8	TRP	2937	14.51	Band 28 (10M)	TRP	27260	15.45				
		3012	15.13			27435	15.68				
		3088	15.05			27610	15.22				
	TIS	2937			TIS	27260					
		3012				27435					
		3088	-103.2			27610	-89.7				

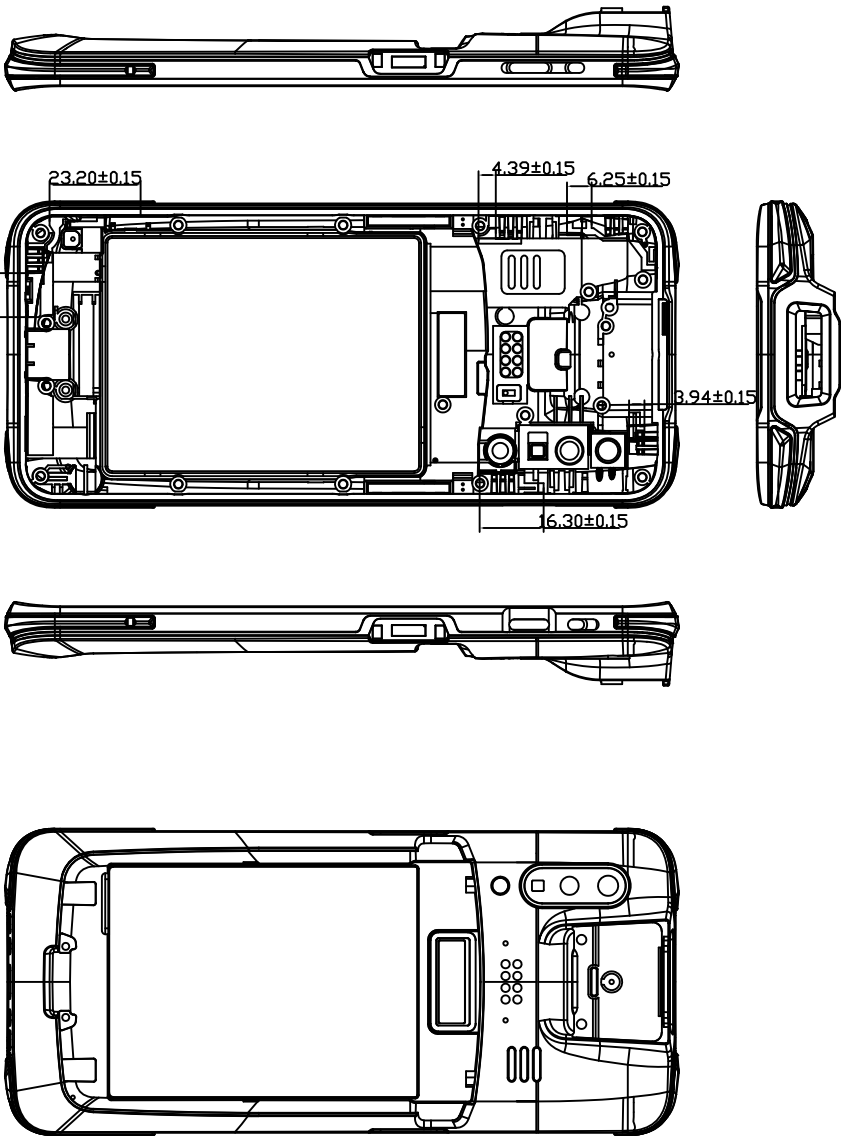
Triple three in one triad ternion **active test data** (Free space, screen on)

frequency	Channel	OTA	
		TRP	TIS
WIFI 11a (54M)	36	14.31	
	157	16.83	
	165	16.97	-76.49
WIFI 11b (11M)	1	16.56	
	7	17.64	
	13	17.39	-85
WIFI 11g	1	13.78	
	7	14.72	
	13	14.96	-73.31
WIFI 11n	1	11.04	
	7	11.43	
	13	11.99	-69.21
11AX	1	11.45	
	7	11.58	
	13	12.37	-70.23
	36	12.14	
	157	14.48	
	165	14.41	-71.23

7. Mass production antenna indicators

When the antenna is mass-produced, the standing wave ratio is used as the mass production test standard. According to the differences in the project itself, the following criteria are given:

frequency (MHz)	量产标准
MAIN 700--960; 1710--2690	VSWR (Mass production performance) <VSWR(Acknowledge performance)+1
DIV 820--960; 1710--2690	VSWR (Mass production performance) <VSWR(Acknowledge performance)+1
3H1 天线 1575.42; 2400-- 2500&5150-7125	VSWR (Mass production performance) <VSWR(Acknowledge performance)+1



Sunnyway Technology (China) Co., Ltd.

		PART NAME: LDS T2561	DATE: 2025. 11. 10
TOLERANCE X.X ±0.25	PART NO: SH251811A88-1	DRAWN: YUJIANG	
.XX ±0.20	MATERIAL:	CHECKED:	
.XXX±0.05	FINISHING:	APPROVED:	
ANGULAR ≤±0.5°			
UNIT: mm	COLOUR:	SCALE: 1:1	REV: TA

- Technical Requirements**
- Shipping Packaging Requirements: (For pallet packaging, this side must face upward.)
- LDS surface free of perceptible scratches, underplating, and overplating. (Due to the chemical plating process, the antenna surface may develop imperceptible scratches.)
 - Dimensions marked with * are key dimensions, and unmarked dimensions have a tolerance of ±0.15MM;
 - LDS antenna with copper plating thickness of 8μm-12μm and nickel plating thickness of 3μm-5μm, passed 48-hour salt spray test;
 - Plated material: copper-nickel
 - Grids meet general requirements
 - The product complies with ROHS 2.0 requirements.