

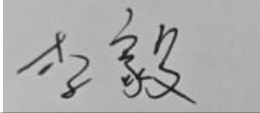
SPECIFICATION



Shenzhen Daxian Technology Co., Ltd.

W2 LDS Antenna Assembly

Product Specification

connection		frequency range	4G:2/4/5/12/13/17/66/71 GPS/WiFi GPS L5
entry name	W2	edition	V1.0
Material No	1W-2DHSB-061	Color	Black
Antenna type	LDS PIFA Antenna (8 antennas)	Test Engineer	
R F Design	YuanQing.Zhu	Structural Design	RuiBin.Zhou
Quality Manager	YongJie.Pan	Technical Director	Lei.Zhang
Date	2025-07-08		

Customer confirmation:

Whether the assembly meets your company's requirements: ☐OK ☐NG

Shenzhen Topant Technology Co., Ltd.

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Revision history

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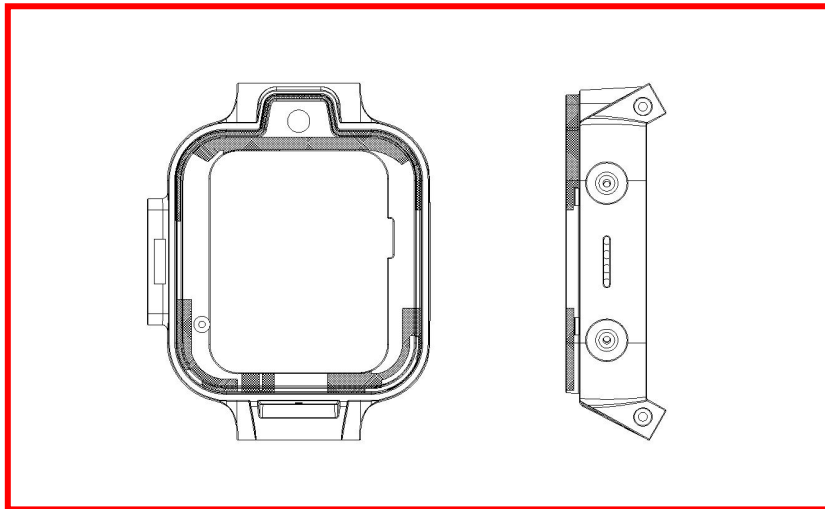
I 、 Project Description

Customer Name:	
Type of complete machine:	Phone watch
Antenna band:	4G:2/4/5/12/13/17/66/71 GPS/WiFi GPS L5
Antenna form:	LDS
Feed form:	Springfoot
Number of feed legs:	Main: Three、 GPS: Three、 WGB: Three
Test Software Name:	

II 、 LDS Antenna Assembly

1 specifications

This report mainly provides the testing status of various electrical and structural performance parameters of the antenna for the W2 project. The following image shows an antenna with a large display design.



antenna appearing diagram

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1.1 Electrical specifications and standards

1.1.1 Electrical performance index

The operating frequency band of the antenna is between 1850~1990MHz、1710 ~2155MHz、824~894MHz、699 ~746MHz、746 ~787MHz、1710 ~2200MHz、617 ~ 698MHz、32400~ 2500 MHz、5150~5850MHz、1575 MHz. The following table shows the electrical performance indicators of large display design and mass production antennas.

LTE -band B2				
band	band (MHz)	VSWR	band (MHz)	VSWR
	The transmitter TX		The receiving end RX	
LTE -B 2	1850~1910	≤4	1930~1990	≤4
LTE -band B4				
band	band (MHz)	VSWR	band (MHz)	VSWR
	The transmit TX		The receiving end RX	
LTE -B 4	1710~1755	≤4	2110~2155	≤4
LTE -band B5				
band	band (MHz)	VSWR	band (MHz)	VSWR
	The transmitter TX		The receiving end RX	
LTE -B 5	824~849	≤4	869~894	≤4
LTE -band B12				
band	band (MHz)	VSWR	band (MHz)	VSWR
	The transmitter TX		The receiving end RX	
LTE -B12	669~716	≤4	729~746	≤4
LTE -band B13				
band	band (MHz)	VSWR	band (MHz)	VSWR
	The transmitter TX		The receiving end RX	
LTE -B13	777~787	≤4	746~756	≤4
LTE -band 66				
band	band (MHz)	VSWR	band (MHz)	VSWR
	The transmitter TX		The receiving end RX	
LTE -B66	1710~1780	≤4	2110~2200	≤4
LTE -band B71				
band	band (MHz)	VSWR	band (MHz)	VSWR
	The transmitter TX		The receiving end RX	
LTE -B13	663~698	≤4	617~652	≤4

Frequency Range	Frequency (MHz)	VSWR
WiFi	2400 ~ 2500, 5150~ 5850	≤ 2
GPS	1575MHz	≤ 2

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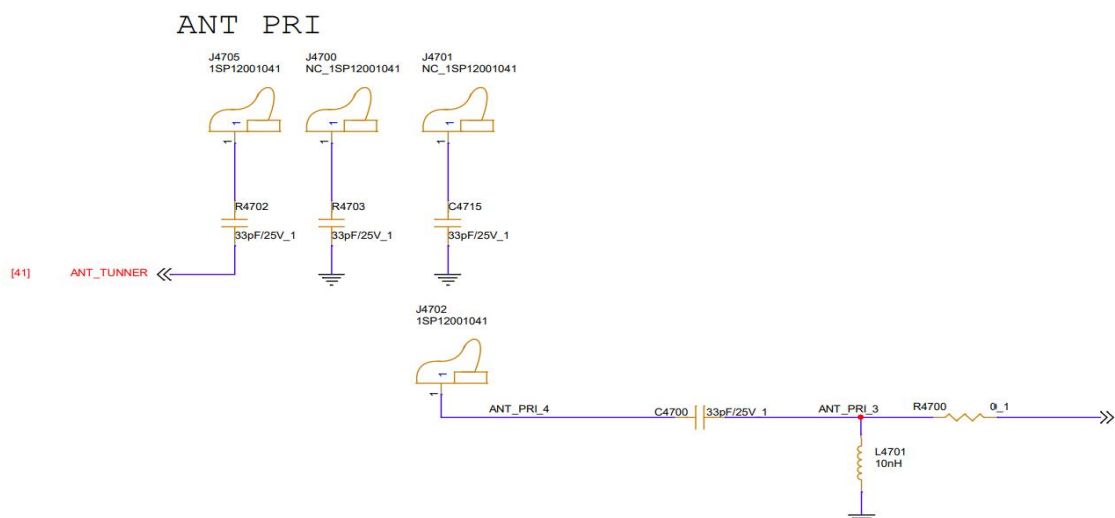
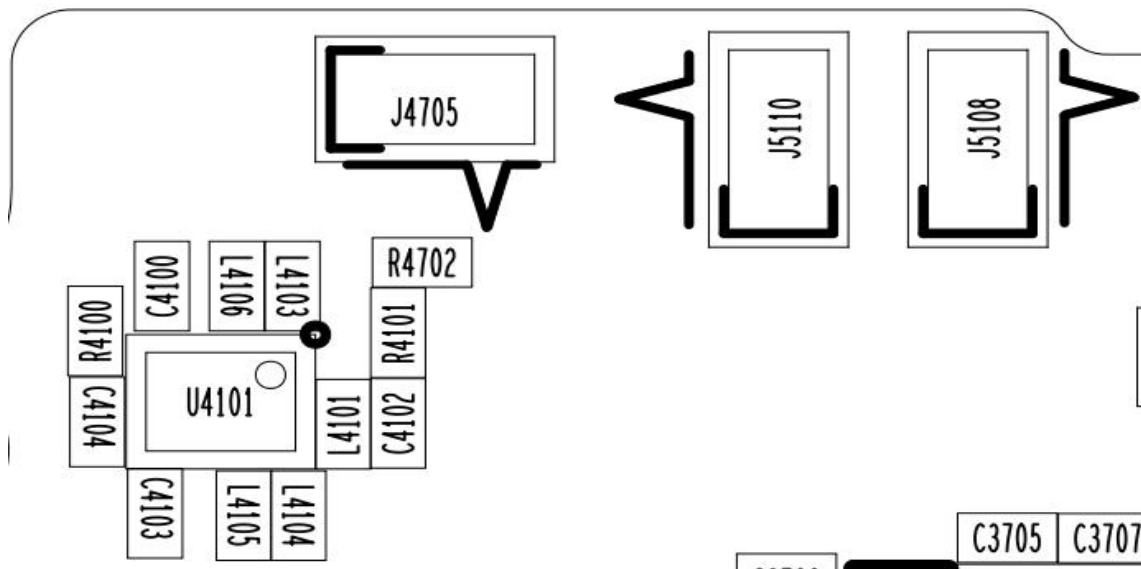
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1.2.1 Antenna matching: MIAN

Antenna switching logic	
RF1: on	LTE: B2/4/5/66
RF2: on	B13
RF3: on	B12/B17
RF4: on	N/C
permanent sea	B71

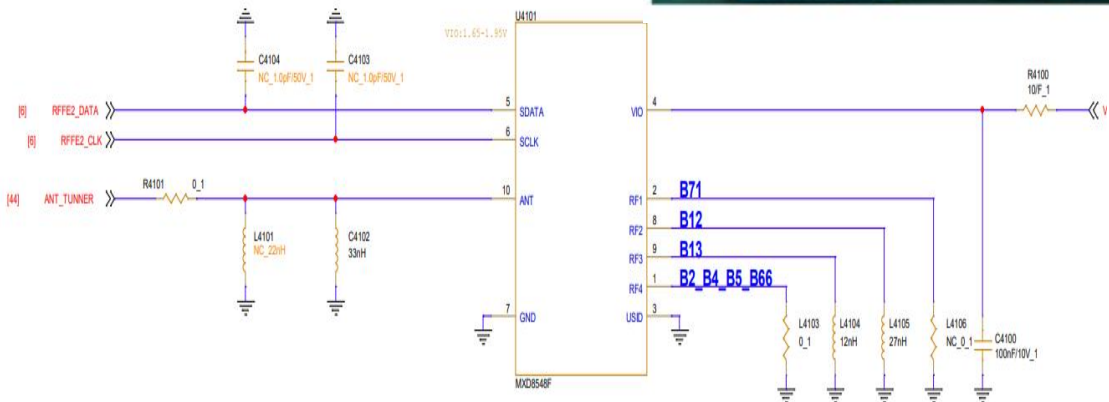
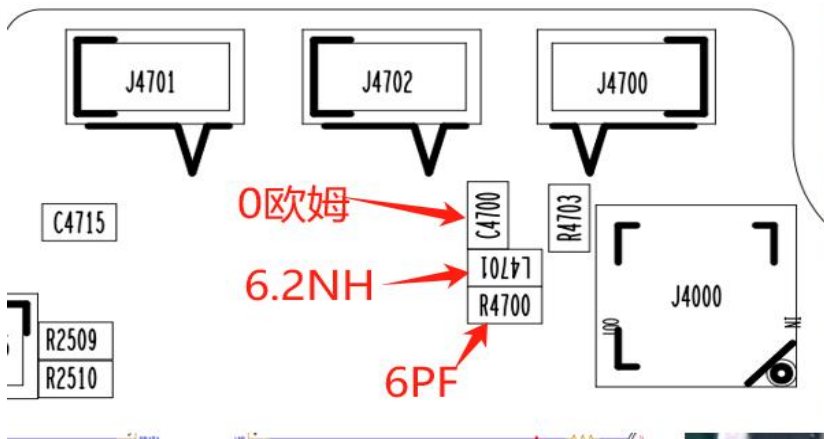
Main Antenna Main Circuit Mat ching		Main Antenna Switch Hatching	
Bit muber	numerical value		
C4715	N/C	R4702	33PF
R4703	N/C	R4101	0Ω
		C4102	33NH
		L4103	0Ω
C4700	0Ω	L4104	15NH
L4701	6.2NH	L4105	27NH
R4700	6PF	L4106	N/C
J4701	Get rid of		
J4700	Get rid of		



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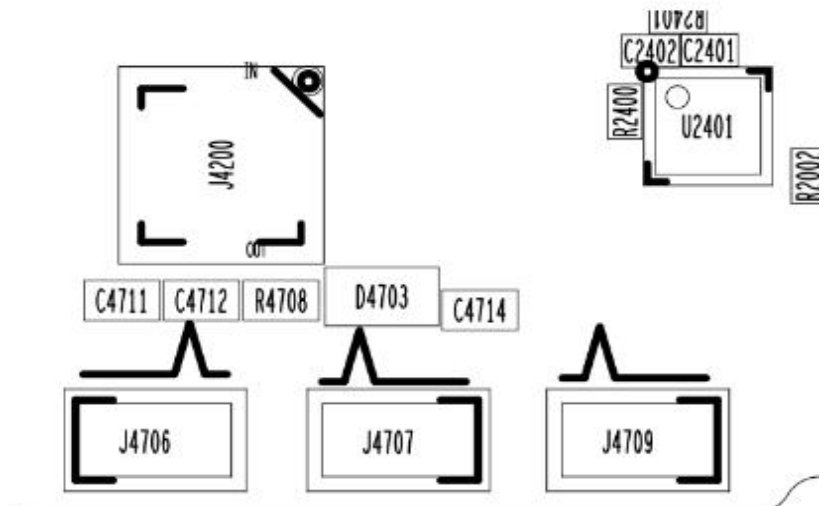
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GPS

Element		GPS L5
C411		unchanged
C4714		0 Ω
D4703		unchanged
R4708		0 Ω
C4712		N/C
J4706		Get rid of

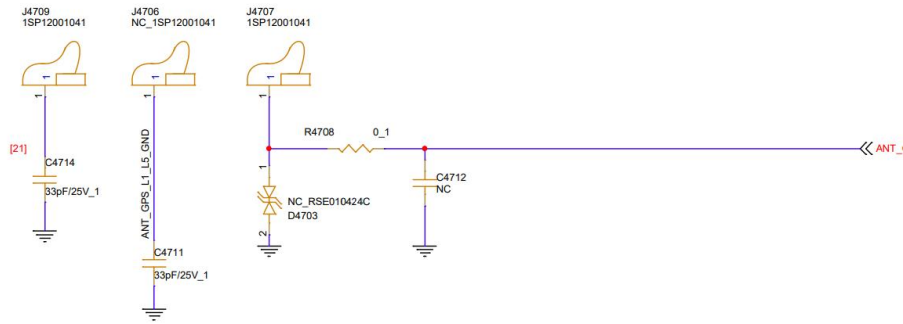


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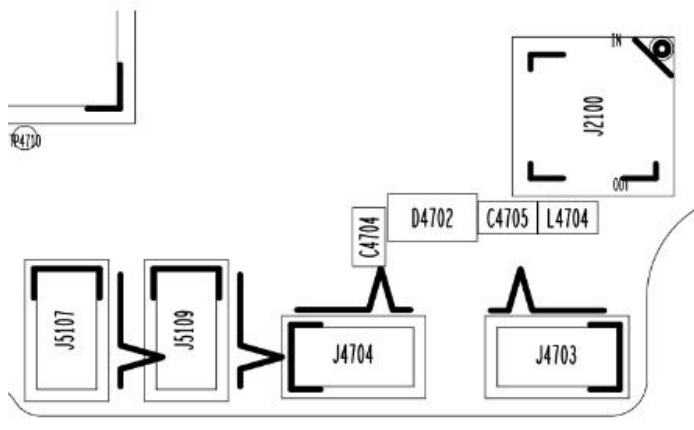
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ANT GPS

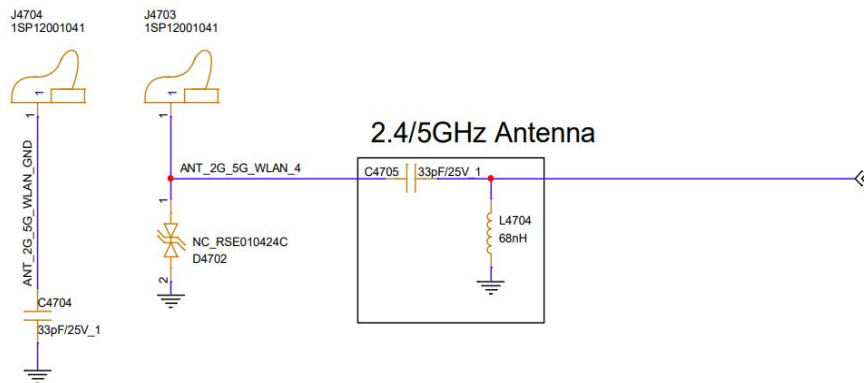


WGB

Element		WGB
C4704		0Ω
D4702		Unchanged
C4705		Unchanged
L4704		Unchanged



ANT WLAN



2 Structural specifications and standards

1.2.1 Antenna composition

The antenna is mainly composed of LDS.

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2、 The Equipment of Active Test

Satimo 3D Chamber $6 \times 4 \times 4$ (m)

Agilent 8960 E5515c

Network analyzer-R&S ZVL



Figure 2

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3 test

3.1 Test of standing wave (VSWR)

3.1.1 Test connection: The VSWR test device is sequentially connected as follows: R&S ZVL network analyzer → test line → Test fixture

Actual measurement (attached drawing)

3.2 Gain and efficiency, power (TRP), sensitivity (TIS) testing

3.2.1 Test site:

Large display microwave anechoic chamber. The test frequency range is 400MHz - 6GHz, the static zone range is 50cm circumferential, and the reflectivity is less than - 50dB.

3.2.2 Tested Instruments:

R&S ZVL network analyzer, Agilent 8960 E5515C, standard horn antenna, French SATIMO-SG24SYSTEM system, printer, etc.

3.2.3 Test data: In a microwave anechoic chamber, the values related to the power and sensitivity tested are shown in the table below

OTA active test data:

Band	TRP	TIS	Motherboard conduction data		
2	15.17		Band	TRP	TIS
	15.69		2	23.47	
	15.23	-91.13		23.69	
4	14.47			23.53	-98.13
	14.89		4	23.57	
	15.04	-90.51		23.59	
5	13.22			23.64	-98.21
	13.16		5	23.72	
	13.14	-83.18		23.86	
12	10.17			23.84	-99.58
	10.24		12	23.77	
	10.12	-83.05		23.84	
13	11.19			23.82	-99.45
	11.12		13	23.79	
	11.17	-81.09		23.72	
66	14.52			23.67	-99.28
	14.61		66	23.72	
	15.16	-90.37		23.71	
71	7.15			23.86	-98.37
	7.47		71	23.45	
	7.32	-73.27		23.47	
				23.52	-98.37

Armed WIFI 2.4G		
Band	TRP	TIS
WIFI_B	7.5	
WIFI_B	8.45	
WIFI_B	8.16	-74.05

Armed GPS		
Band	TRP	TIS
GNSS		-134.88

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Antenna Passive Test Data**B5**

Frequency (MHz)	Gain (dBi)	Efficiency (dB)	Efficiency (%)
820	-7.45	-12	6.31
830	-6.92	-11.65	6.84
840	-6.57	-11.37	7.29
850	-6.33	-11.05	7.85
860	-6.11	-10.79	8.34
870	-6.07	-10.52	8.87
880	-6.08	-10.35	9.23
890	-6.02	-10.16	9.64
900	-6.11	-10.04	9.92

B12

Frequency (MHz)	Gain (dBi)	Efficiency (dB)	Efficiency (%)
700	-7.23	-11.65	6.84
710	-6.77	-11.1	7.76
720	-6.41	-10.79	8.33
730	-6.2	-10.5	8.92
740	-7.51	-11.07	7.82
750	-7.96	-11.61	6.9

B13

Frequency (MHz)	Gain (dBi)	Efficiency (dB)	Efficiency (%)
740	-7.45	-12	6.31
750	-6.92	-11.65	6.84
760	-6.57	-11.37	7.29
770	-6.33	-11.05	7.85
780	-6.11	-10.79	8.34
790	-6.07	-10.52	8.87
800	-6.08	-10.35	9.23

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B71

Frequency (MHz)	Gain (dBi)	Efficiency (dB)	Efficiency (%)
620	-8.2	-13.96	4.02
630	-8.08	-13.82	4.15
640	-7.74	-13.8	4.17
650	-7.34	-13.7	4.26
660	-7.15	-13.59	4.38
670	-7.16	-13.59	4.38
680	-7.11	-13.36	4.61
690	-7.37	-13.33	4.65
700	-6.09	-12.9	5.13

Frequency (MHz)	Gain (dBi)	Efficiency (dB)	Efficiency (%)	Frequency (MHz)	Gain (dBi)	Efficiency (dB)	Efficiency (%)
1700	-0.61	-7.74	16.81	1960	-0.62	-7.7	16.99
1710	-0.7	-7.85	16.41	1970	-0.65	-7.53	17.66
1720	-0.91	-7.92	16.13	1980	-0.63	-7.29	18.65
1730	-0.93	-8.01	15.8	1990	-0.54	-7.04	19.75
1740	-0.67	-8.02	15.78	2000	-2.86	-7.3	18.62
1750	-0.65	-8.03	15.76	2010	-3.05	-7.23	18.9
1760	-0.66	-8.01	15.8	2020	-2.97	-7.23	18.9
1770	-0.58	-7.85	16.42	2030	-2.79	-7.32	18.52
1780	-0.54	-7.78	16.69	2040	-2.59	-7.28	18.7
1790	-0.56	-7.72	16.9	2050	-2.44	-7.11	19.44
1800	-0.6	-7.76	16.77	2060	-2.42	-7.09	19.55
1810	-0.8	-7.78	16.68	2070	-2.28	-7.02	19.85
1820	-1.11	-7.91	16.17	2080	-2.09	-6.86	20.59
1830	-1.26	-7.94	16.07	2090	-2.03	-6.83	20.76
1840	-1.43	-7.93	16.09	2100	-1.95	-6.74	21.16
1850	-1.71	-8.02	15.79	2110	-1.76	-6.65	21.61
1860	-1.03	-7.65	17.2	2120	-1.59	-6.64	21.69
1870	-0.58	-7.39	18.26	2130	-1.45	-6.65	21.63
1880	-0.27	-7.16	19.24	2140	-1.38	-6.51	22.32
1890	-1.53	-7.38	18.27	2150	-1.3	-6.49	22.46
1900	-1.67	-7.58	17.46	2160	-1.04	-6.49	22.45
1910	-1.82	-7.84	16.44	2170	-0.72	-6.31	23.4
1920	-1.86	-8.04	15.69	2180	-0.56	-6.2	23.99
1930	-1.88	-8.22	15.07	2190	-0.53	-6.2	23.97
1940	-0.69	-8.16	15.26	2200	-1.07	-6.37	23.25
1950	-0.66	-7.94	16.09				

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WGB

Frequency (MHz)	Gain (dBi)	Efficiency (dB)	Efficiency (%)
1500	-4.43	-9.87	10.32
1510	-4.16	-9.65	10.84
1520	-4.02	-9.52	11.16
1530	-4.26	-9.43	11.39
1540	-4.21	-9.28	11.8
1550	-4.33	-9.19	12.06
1560	-4.54	-9.12	12.24
1570	-4.73	-8.94	12.77
1580	-3.98	-9.01	12.57
1590	-4.14	-9.1	12.31
1600	-5.21	-9.06	12.42

Frequency (MHz)	Gain (dBi)	Efficiency (dB)	Efficiency (%)
2400	-2.46	-7.18	19.16
2410	-2.52	-7.27	18.73
2420	-2.45	-7.29	18.66
2430	-2.61	-7.33	18.49
2440	-2.76	-7.4	18.19
2450	-2.93	-7.53	17.68
2460	-3.16	-7.7	16.99
2470	-3.34	-7.83	16.47
2480	-3.49	-7.94	16.08
2490	-3.77	-8.23	15.04
2500	-3.95	-8.47	14.22

GPS-L5

Frequency (MHz)	Gain (dBi)	Efficiency (dB)	Efficiency (%)
1160	-0.93	-9.04	12.46
1170	-0.86	-9.11	12.26
1180	-0.69	-9.09	12.34
1190	-0.71	-9.13	12.21
1200	-0.72	-9.2	12.03
1210	-0.64	-9.14	12.2
1220	-0.7	-9.1	12.29
1230	-0.64	-9.05	12.46
1240	-0.73	-8.88	12.93

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WIFI

Frequency (MHz)	Gain (dBi)	Efficiency (dB)	Efficiency (%)	Frequency (MHz)	Gain (dBi)	Efficiency (dB)	Efficiency (%)
5000	-2.45	-7.47	17.92	5520	-3.26	-6.47	22.54
5020	-2.55	-7.35	18.42	5540	-3.15	-6.51	22.31
5040	-2.49	-7.35	18.42	5560	-3.11	-6.51	22.32
5060	-2.13	-7.32	18.52	5580	-3.27	-6.43	22.76
5080	-2.02	-7.38	18.29	5600	-3.64	-6.52	22.29
5100	-2.06	-7.21	19.02	5620	-3.44	-6.62	21.8
5120	-2.18	-7.03	19.83	5640	-3.11	-6.66	21.59
5140	-1.9	-6.9	20.42	5660	-3.13	-6.78	20.98
5160	-1.77	-6.77	21.05	5680	-3.2	-6.82	20.81
5180	-1.86	-6.73	21.23	5700	-3.45	-6.92	20.35
5200	-1.69	-6.58	21.98	5720	-3.59	-7	19.93
5220	-1.73	-6.39	22.96	5740	-3.64	-7.09	19.56
5240	-1.86	-6.24	23.74	5760	-3.62	-7.2	19.07
5260	-1.82	-6.12	24.46	5780	-3.72	-7.28	18.7
5280	-2.04	-6.26	23.66	5800	-4.03	-7.34	18.45
5300	-2.12	-6.15	24.26	5820	-4.28	-7.42	18.11
5320	-2.44	-6.28	23.55	5840	-4.33	-7.45	17.99
5340	-2.66	-6.36	23.11	5860	-4.11	-7.47	17.92
5360	-2.77	-6.29	23.49	5880	-3.97	-7.46	17.93
5380	-2.57	-6.23	23.81	5900	-3.43	-7.35	18.39
5400	-2.53	-6.34	23.25	5920	-2.93	-7.23	18.94
5420	-2.54	-6.5	22.38	5940	-2.55	-7.1	19.52
5440	-2.71	-6.66	21.59	5960	-2.28	-6.85	20.64
5460	-3	-6.68	21.46	5980	-2.4	-6.84	20.69
5480	-3.32	-6.64	21.66	6000	-2.54	-6.79	20.94
5500	-3.31	-6.57	22.02				

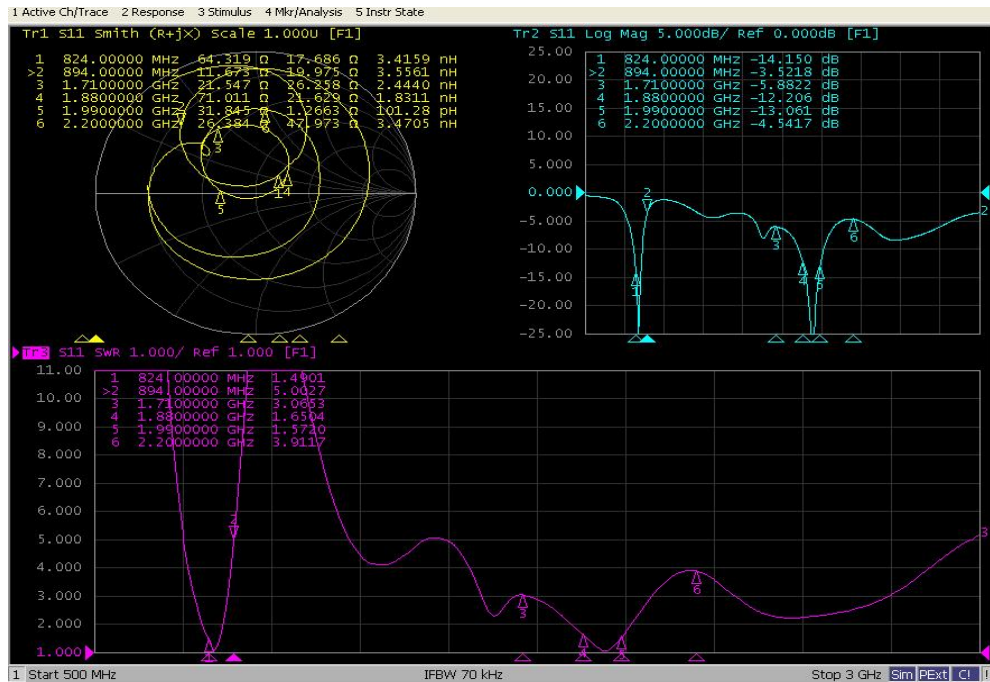
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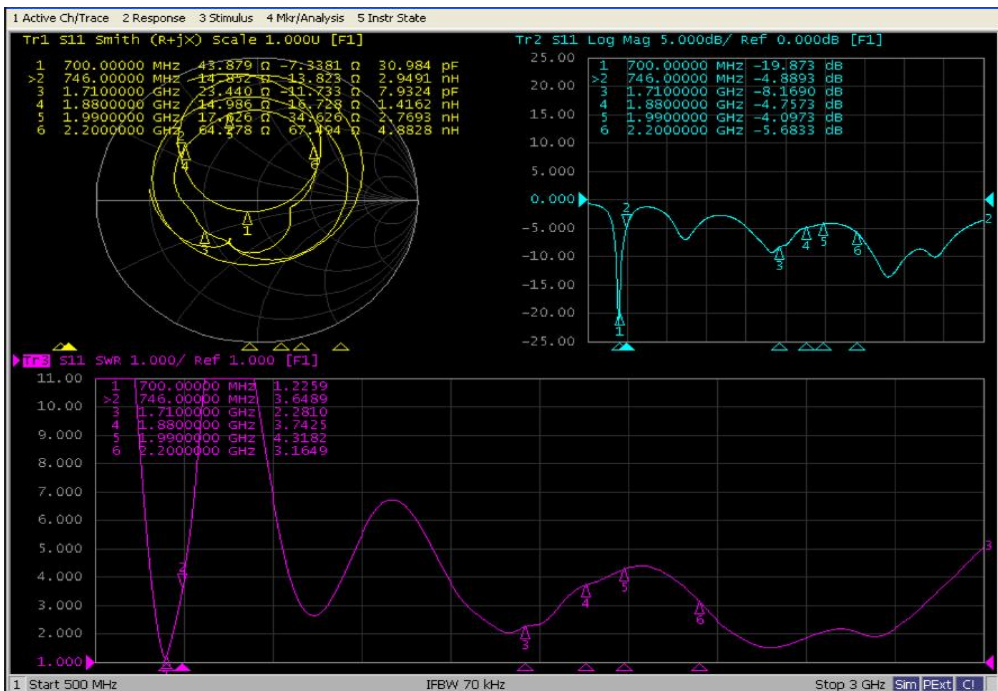
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4、VSWR parameter diagram

B5



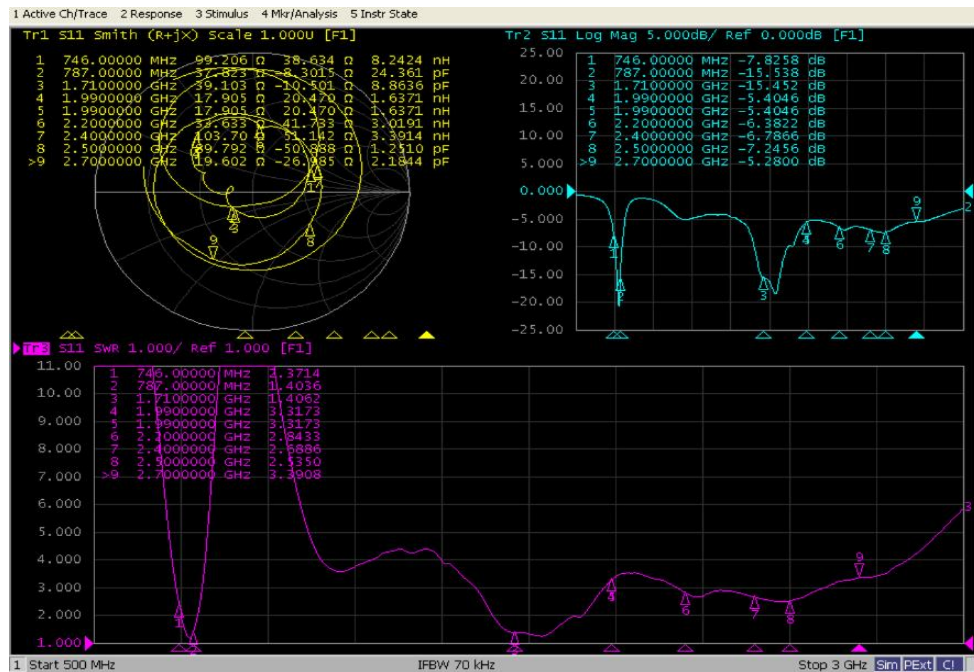
B12



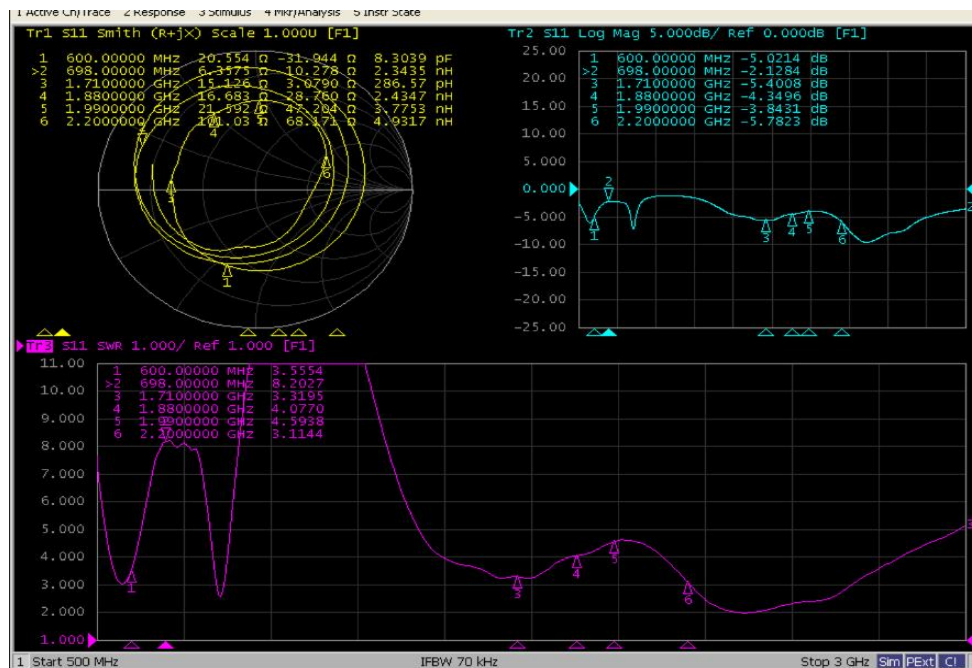
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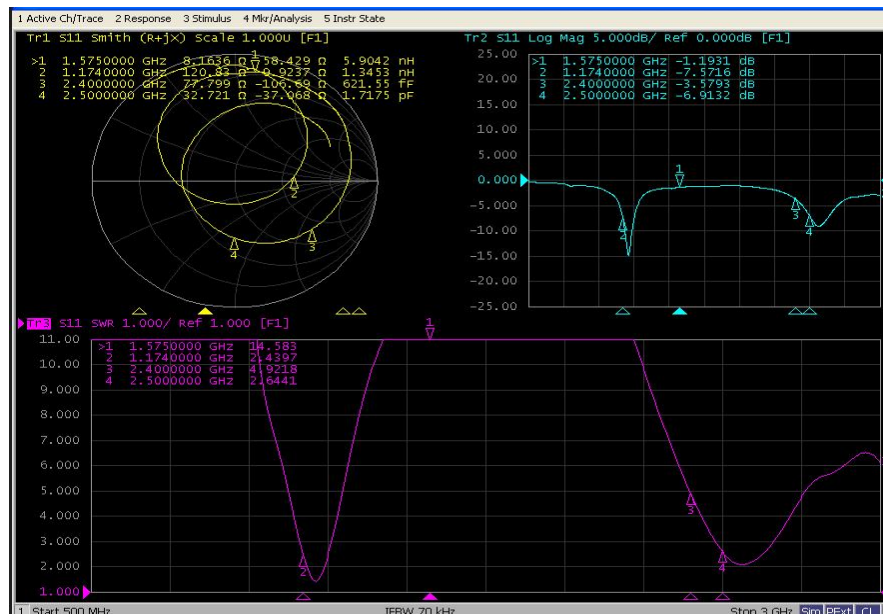
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GPS L5



5、 conclusion

This antenna is designed based on the prototype provided by the customer. The electrical parameters and structural performance have met the technical requirements, please confirm!

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