

SUNNYWAY TECHNOLOGY(CHINA)

ANTENNA SPEC

Company name : Tianbo (Shenzhen) Co., Ltd		Entry name : T20		
Working band:4G-LTE: B1/3/5/8/38/39/40/41				
Motherboard version :				
Sunnyway Material specification				
Specification type	Sunnyway number		Customer number	
DIV Antenna	SZ22060IB77-2			
Revision history				
Date of preparation/change	Change content		Altered person	
2023.06.08	New issue		Chen min	
Sunnyway Countersign column				
R&D	ME :	To examine :	QE :	Approval :
	RF :	To examine :		
Customer will sign the column				
Electronic Engineer	Project manager	Structural Engineer	Quality Engineer	

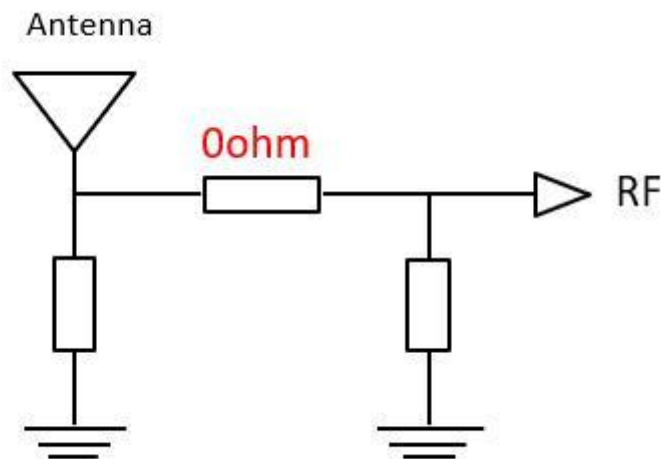
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1. Project information



2. Matching circuit



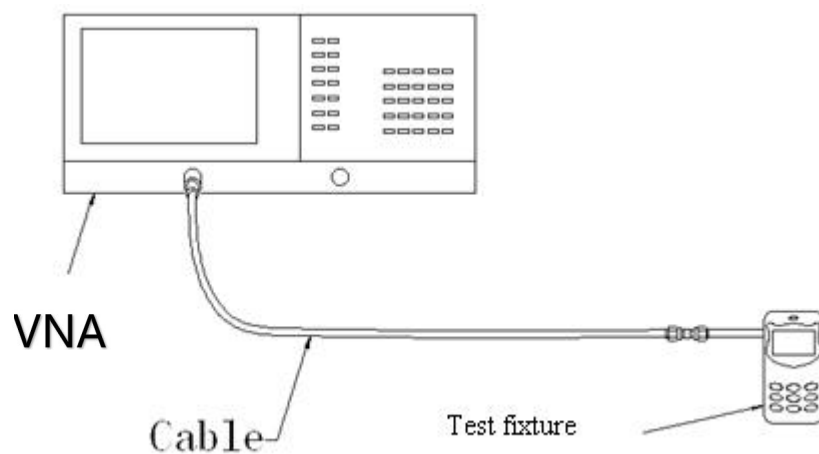
3. Antenna passive testing data

3.1 S11 Description of the test method

Test the equipment : Vector network analyzer (Agilent E5071C)

Test methodology : Use a 50 ohm CABLE cable to export from the instrument test port, use the calibration piece to calibrate and connect the SMA connector of the test fixture, and record the return loss and standing wave ratio corresponding to the relevant frequency point.

Below is a schematic picture of the test :



Test schematic diagram

3.2 S11 Test parameters

(Freq.) MHz	1710	2170	2450	2690
VSWR	7.3	3.3	4.5	4.3

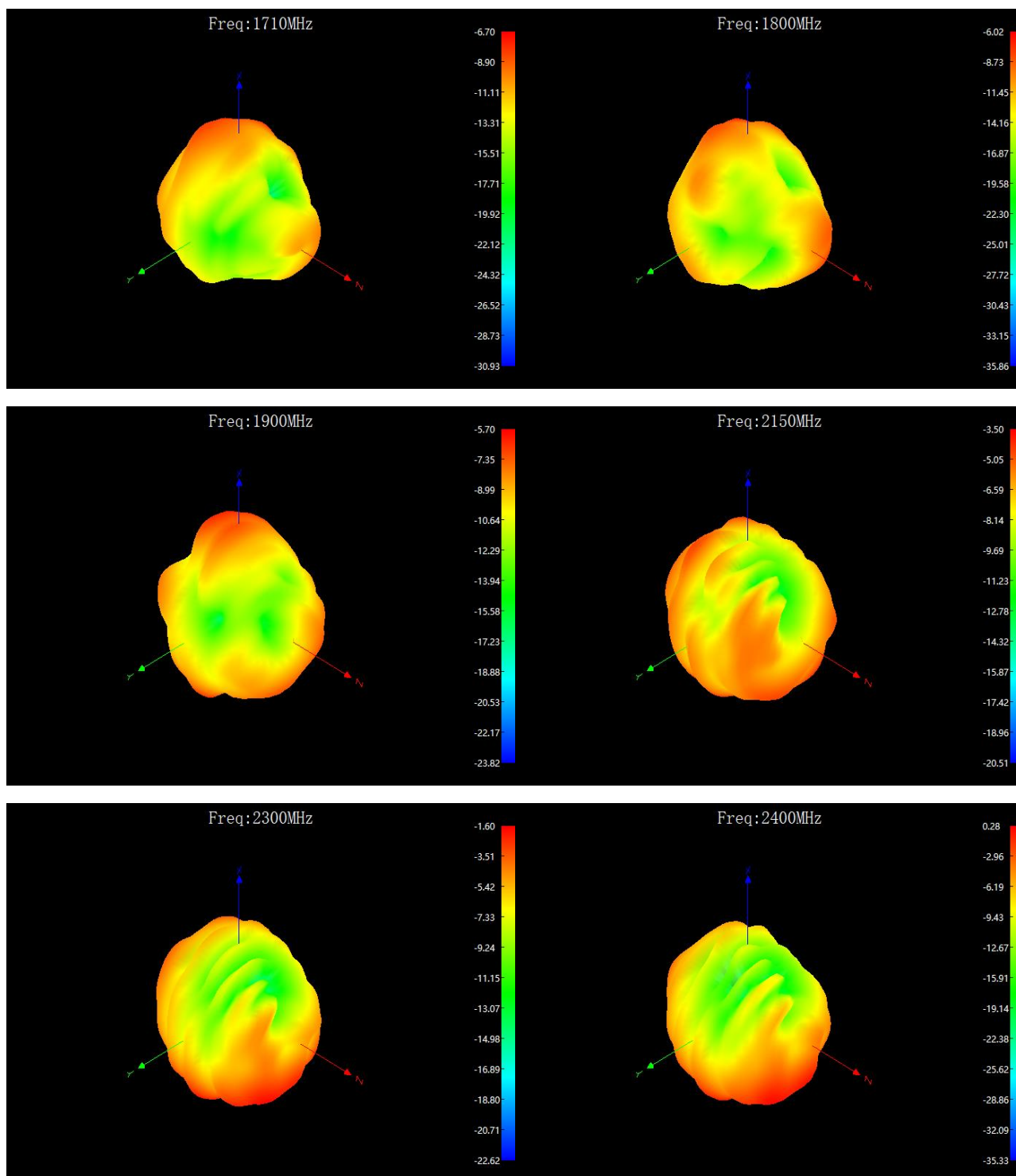
驻波比 VSWR

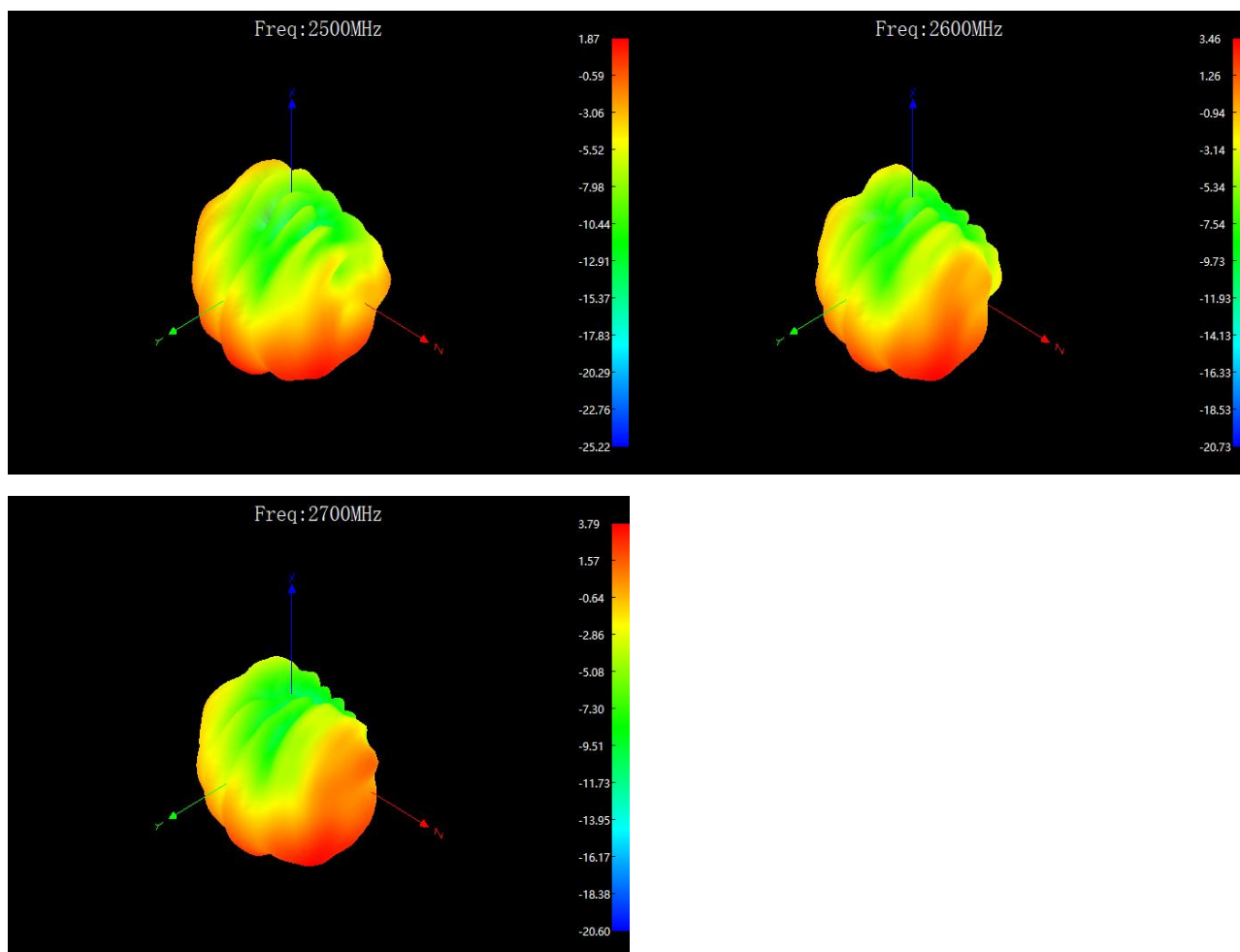


3.3 Antenna efficiency and gain

3.3.1 Antenna Efficiency

Frequency/MHz	MaxGain/dBi	Efficiency / %	Frequency/MHz	MaxGain/dBi	Efficiency / %	Frequency/MHz	MaxGain/dBi	Efficiency / %	Frequency/MHz	MaxGain/dBi	Efficiency / %
1710	-1.92	16.89	1960	-1.34	26.12	2210	1.13	31.7	2460	-0.02	22.54
1720	-2.11	16.93	1970	-1.55	26.67	2220	1.02	31.41	2470	0.81	25.06
1730	-2.2	16.84	1980	-1.7	26.92	2230	0.97	32.43	2480	0.54	24.89
1740	-2.09	17.19	1990	-1.64	27.29	2240	0.64	31.92	2490	0.85	24.89
1750	-2.15	17.67	2000	-1.63	26.79	2250	0.56	31.92	2500	0.8	25.29
1760	-2.41	17.47	2010	-1.47	27.1	2260	0.44	31.55	2510	0.37	23.01
1770	-2.34	17.86	2020	-1.31	26.55	2270	0.08	29.58	2520	0.34	23.17
1780	-1.99	18.48	2030	-1.18	26.3	2280	-0.27	27.99	2530	0.29	22.91
1790	-1.91	18.3	2040	-0.77	27.42	2290	-0.37	26.36	2540	-0.06	21.68
1800	-1.48	19.02	2050	-0.77	27.04	2300	-0.58	23.71	2550	-0.05	21.78
1810	-1.41	19.33	2060	-0.81	26.36	2310	-0.63	22.44	2560	-0.11	21.78
1820	-1.3	19.68	2070	-0.8	26.61	2320	-0.81	22.86	2570	-0.3	20.94
1830	-1	17.8	2080	-0.61	27.35	2330	-1.05	22.65	2580	-0.3	20.37
1840	-1.64	14.79	2090	-0.52	27.48	2340	-1.03	24.43	2590	-0.05	21.13
1850	-1.41	15.74	2100	-0.17	28.31	2350	-0.25	26.92	2600	-0.22	20.75
1860	-2.14	16.67	2110	0.07	29.44	2360	0.12	28.25	2610	-0.4	21.13
1870	-2.07	17.3	2120	0.25	30.13	2370	0.49	28.97	2620	-0.48	21.73
1880	-2.12	17.42	2130	0.15	29.58	2380	0.75	29.99	2630	-0.45	21.73
1890	-2.15	18.11	2140	0.13	29.31	2390	0.47	27.42	2640	-0.27	21.78
1900	-2.06	18.97	2150	0.06	29.24	2400	0.25	25.23	2650	0.04	22.75
1910	-2.01	19.68	2160	0.27	29.85	2410	0.76	26.67	2660	0.42	23.28
1920	-1.8	20.8	2170	0.53	30.97	2420	0.43	25.88	2670	0.61	23.33
1930	-1.48	22.28	2180	0.71	30.62	2430	0.26	23.55	2680	0.87	23.17
1940	-1.4	23.44	2190	0.93	31.19	2440	0.82	25.35	2690	0.78	22.39
1950	-1.33	24.6	2200	1.17	31.92	2450	0.64	25.12	2700	0.75	21.23





4. testing environment

4.1 Test the environment

Test the system : Multi-probe OTA measurement system (XH-IoT)

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

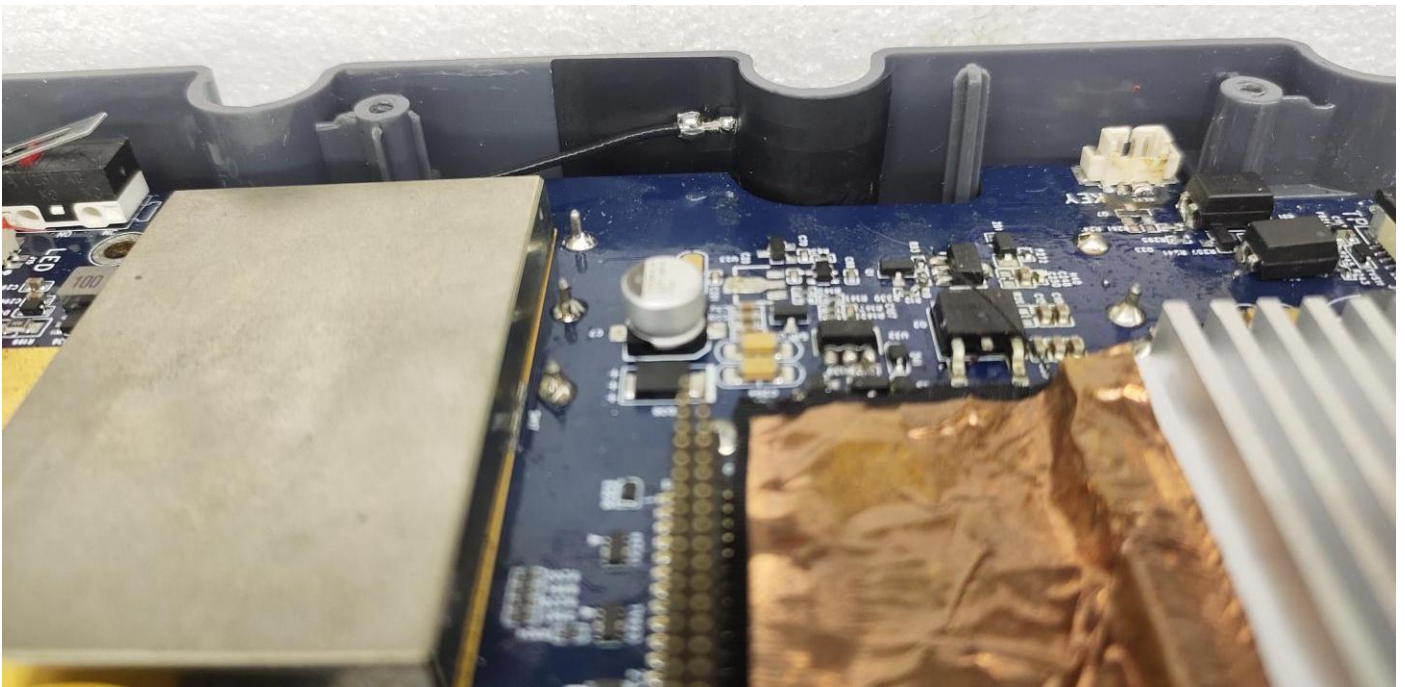
Test the equipment : When testing passive data, use the network analyzer R&S ZND/ Agilent

E5071C

When testing active data, use the Agilent 8960/CMW500/SP9500E/SP8315



5. Environmental treatment methods



6. Standard for mass production antennas

When the antenna is mass-produced, the VSWR is used as the mass production test standard.

According to the differences in the project itself, the following criteria are given:

Freq. (MHz)	Mass production standards
824-960	$VSWR(\text{Production performance}) < VSWR(\text{Confirmed performance}) + 0.5$
1710-2690	$VSWR(\text{Production performance}) < VSWR(\text{Confirmed performance}) + 0.5$

7. Engineering drawings

