

Material Acknowledgement

Suppliers: Shenzhen Maya Communication Equipment Co., Ltd

Model: A93

Product Name: On the antenna assembly

Specifications / Models: _____

Antenna trademark:  _____

Color: black

Address: _____

Contact / Phone: _____

Supplier (with official seal)

Structural Department	R&D Department	Quality Department	Project	

Customer review

ID Department	Structural Department /	Hardware Department	Packaging	Quality Department
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	Special Project			

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Specifications

The report mainly provides A93 GSM +LTE,performance parameter test, antenna for built-in antenna:

2、Electrical performance

2-1Specification Standard

The A86 antenna operates in the LTE700/850/900 1800/1900/2100/2300/2700Mhz band, which generates resonances in this ;The following table shows the mass production performance test indicators for the A93 design antenna:

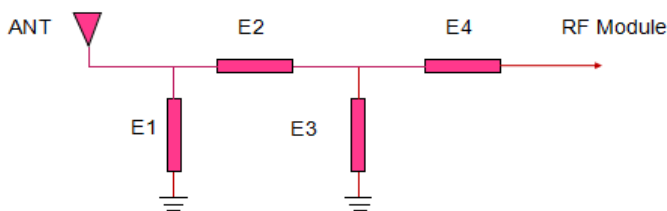
	VSWR	Frequency (MHz)	VSWR
Band		Receiver side	
GSM850	≤ 2.0	LTE FDD, B7	≤ 2.6
GSM900	≤ 2.2	LTE FDD, B8	≤ 2.0
DCS1800	≤ 2.5	LTE FDD, B12	≤ 2.5
PCS1900	≤ 2.2	LTE FDD, B13	≤ 2.5
WCDMA1	≤ 2.2	LTE FDD, B17	≤ 2.5
WCDMA2	≤ 2.2	LTE FDD, B18	≤ 2.0
WCDMA4	≤ 2.5	LTE FDD, B19	≤ 2.0
WCDMA5	≤ 2.0	LTE FDD, B20	≤ 2.0
WCDMA6	≤ 2.0	LTE FDD, B25	≤ 2.2
WCDMA8	≤ 2.0	LTE FDD, B26	≤ 2.0
WCDMA19	≤ 2.0	LTE FDD, B28	≤ 2.5
LTE FDD, B1	≤ 2.2	LTE FDD, B66	≤ 2.2
LTE FDD, B2	≤ 2.2	LTE TDD, B34	≤ 2.2
LTE FDD, B3	≤ 2.5	LTE TDD, B38	≤ 2.6
LTE FDD, B4	≤ 2.5	LTE TDD, B39	≤ 2.2
LTE FDD, B5	≤ 2.0	LTE TDD, B40	≤ 3.0
LTE TDD, B41	≤ 2.6	CDMA0	≤ 2.0

		CDMA1	≤ 2.2
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2-antenna matching circuit

Antenna Matching circuit is designed to match the motherboard and antenna, so that the mobile phone in the operating frequency band to achieve the best RF performance.

EGSM+WCDMA+TDSCDMA+LTE, antenna structure mode:



Element	Value
E1(0201)	0.75pF
E2(0201)	1.5nH
E3(0201)	7.5nH
E4(0201)	NC

Main antenna

3.Standing Wave Ratio(VSWR)test

3-1 Test settings

The VSWR test units are connected in turn: E5071B Network Analyzer → 50 ohm coaxial

Cable → 156mm long copper tube /b110> → Test fixtures.

Processing of the test fixture: A hard cable is used from the antenna 50 ohm test point on the pcb of the mobile phone to lead out the SMA-J connector, connect it to the copper tube with a choke, and then connect the other devices in turn.

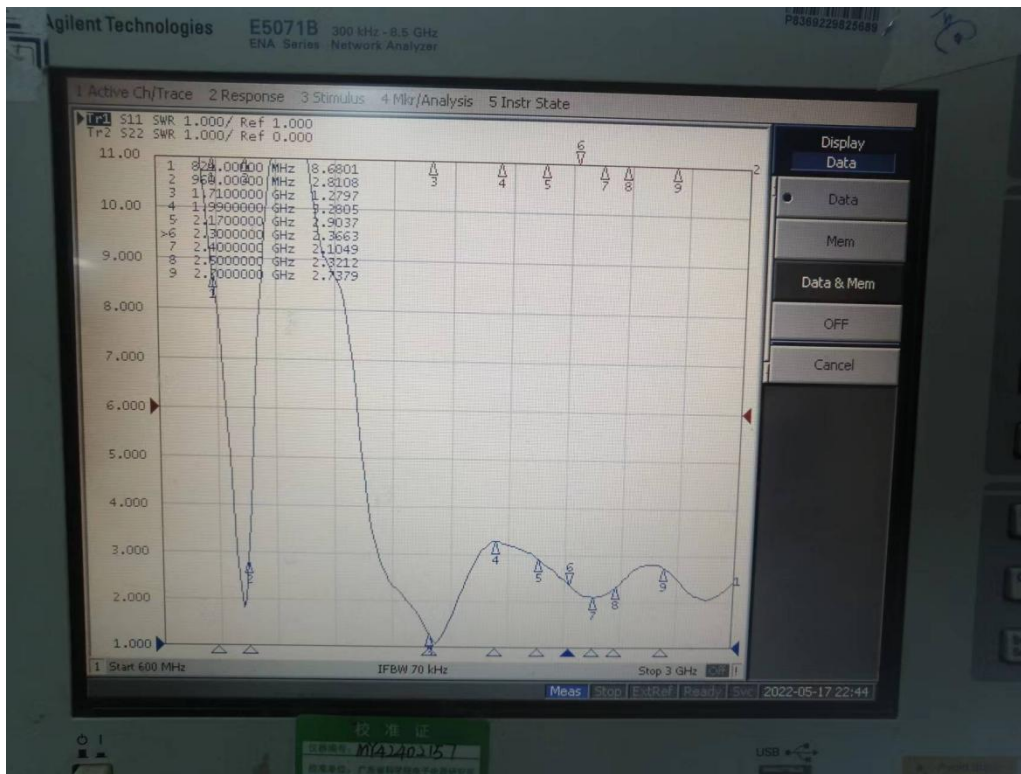
3-2 VWR test

The following table shows the value of the standing wave ratio of the edge frequency point of the GSM+LTE antenna operating band, , the return loss, VSWR, and the relevant waveform plot is shown in the annex:

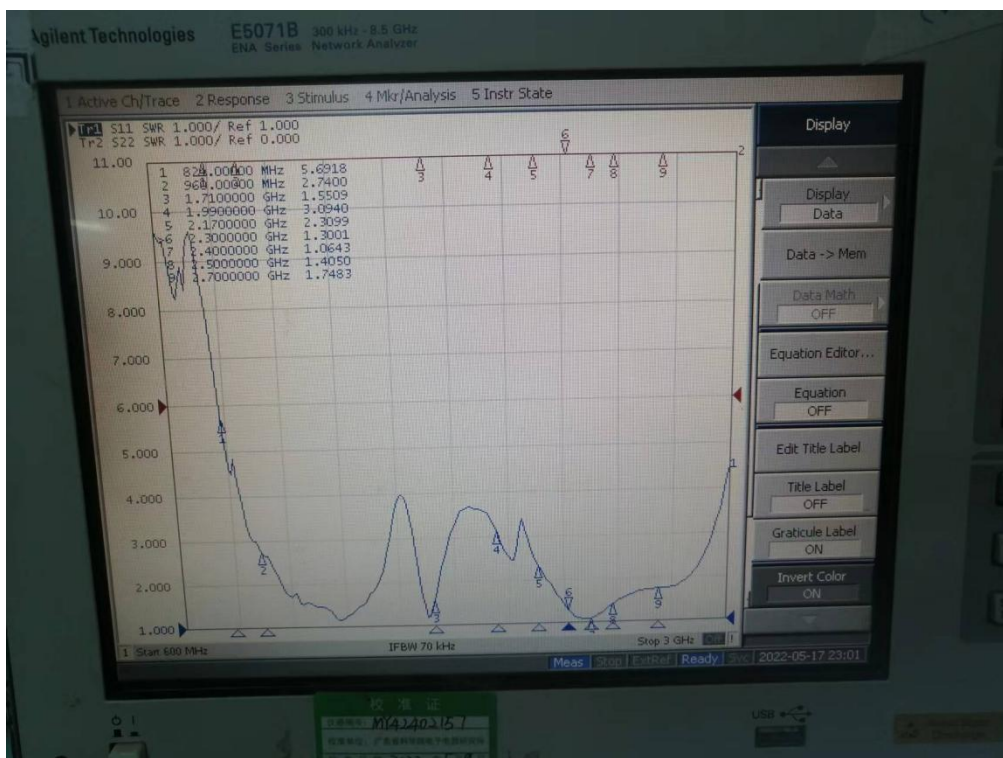
Main antenna VSWR								
Freq(MHz)	824	894	880	960	1710	1880	1850	1990
Free Space	2.2	3.5	2.2	2.1	2.5	2.3	2.4	2.2

Main antenna VSWR					
Freq(MHz)	2170	2300	2400	2500	2700
Free Space	2.9	2.3	2.3	2.5	2.5

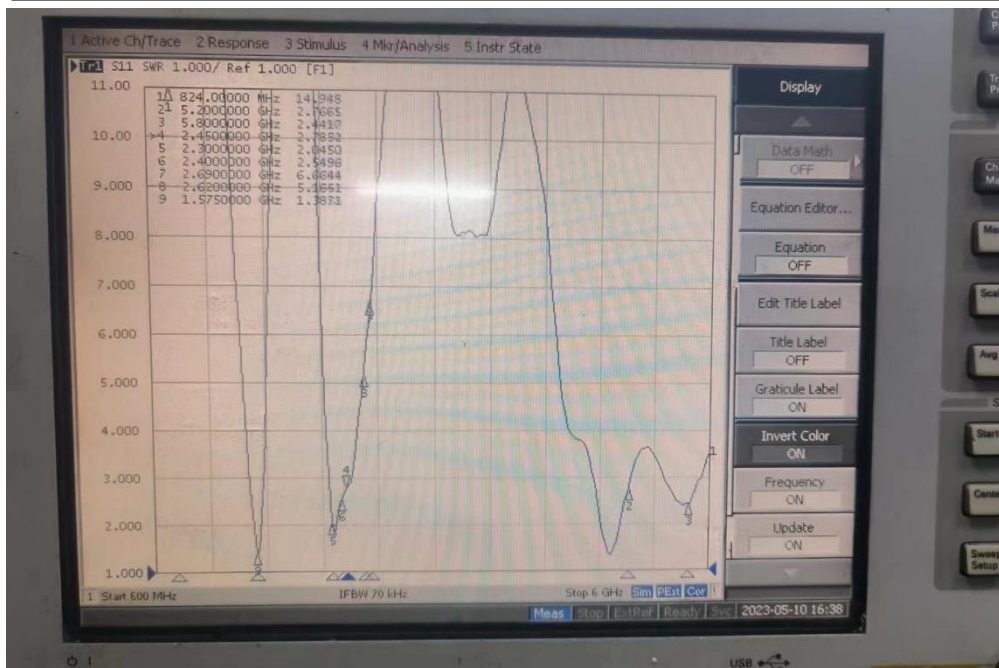
3-3 test results



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3-4 gain test

Freq	Gain	Freq	Gain	Freq	Gain
1560	0.3	2400	0.4	5100	1.1
1570	0.3	2420	0.4	5200	1.0
1580	0.4	2440	0.5	5300	0.9
		2460	0.5	5400	0.8
		2480	0.5	5500	0.6
		2500	0.6	5600	0.7
				5700	0.9
				5800	1.0

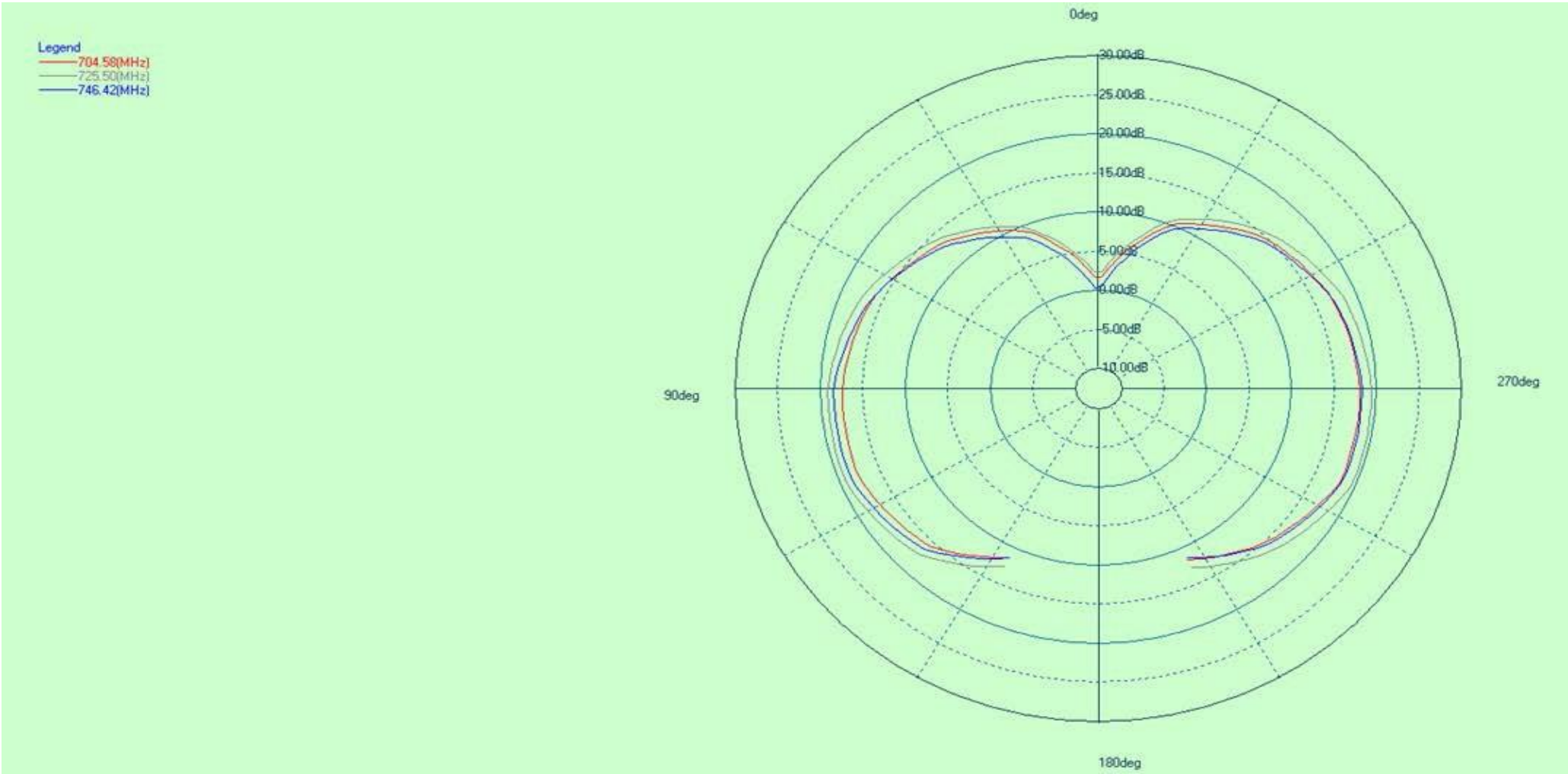
Confidential Information

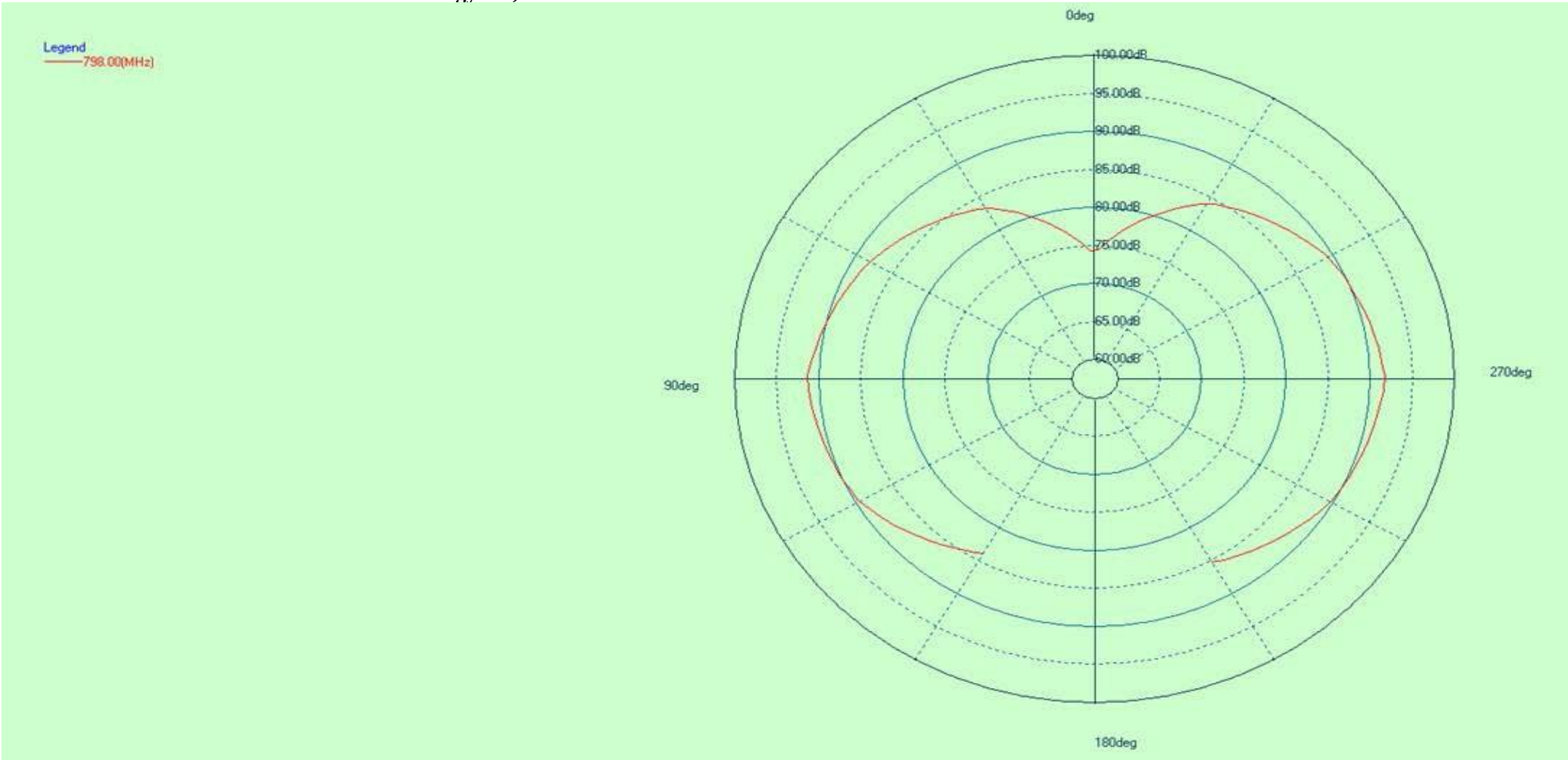
Freq	Gain	Freq	Gain	Freq	Gain
700	-2.1	950	-1.5	2160	-0.7
710	-2.2	960	-1.5	2180	-0.7
720	-2.2	1700	-0.7	2300	-0.7
730	-2.2	1720	-0.7	2320	-0.8
740	-2.2	1740	-0.7	2340	-0.8
750	-2.1	1760	-0.6	2360	-0.8
760	-2.1	1780	-0.7	2380	-0.7
770	-2.0	1800	-0.7	2400	-0.7
780	-2.0	1820	-0.7	2420	-0.7
790	-2.0	1840	-0.7	2440	-0.7
800	-2.0	1860	-0.6	2460	-0.6
810	-2.0	1880	-0.7	2480	-0.6
820	-1.7	1900	-0.7	2500	-0.6
830	-1.7	1920	-0.6	2520	-0.7
840	-1.7	1940	-0.7	2540	-0.7
850	-1.6	1960	-0.7	2560	-0.7
860	-1.6	1980	-0.6	2580	-0.6
870	-1.6	2000	-0.6	2600	-0.6
880	-1.6	2020	-0.9	2620	-0.7
890	-1.5	2040	-0.9	2640	-0.7
900	-1.5	2060	-0.9	2660	-0.7
910	-1.4	2080	-0.8	2680	-0.6
920	-1.4	2100	-0.9	2700	-0.7
930	-1.4	2120	-0.7		
940	-1.5	2140	-0.7		

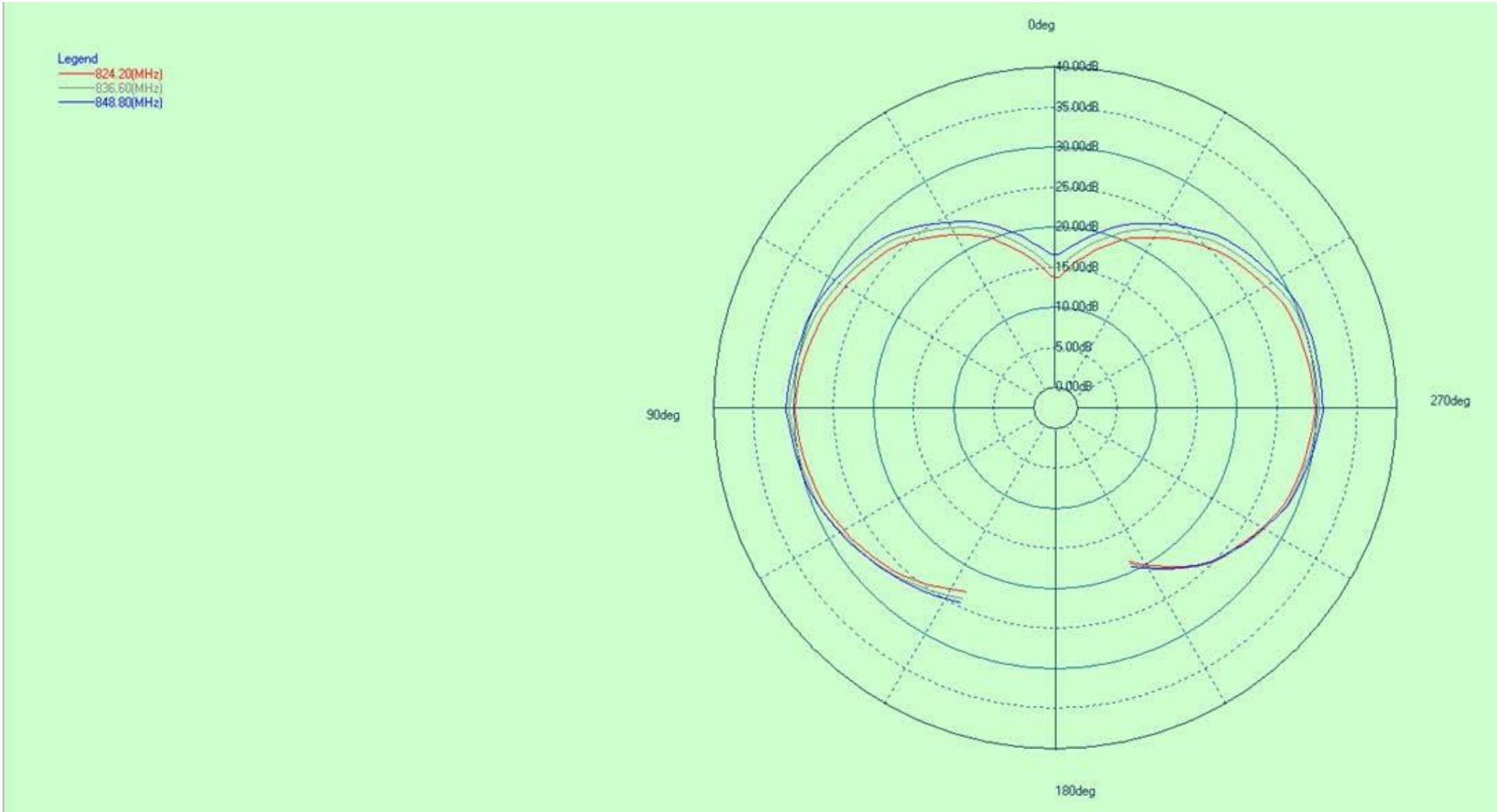
主集增益

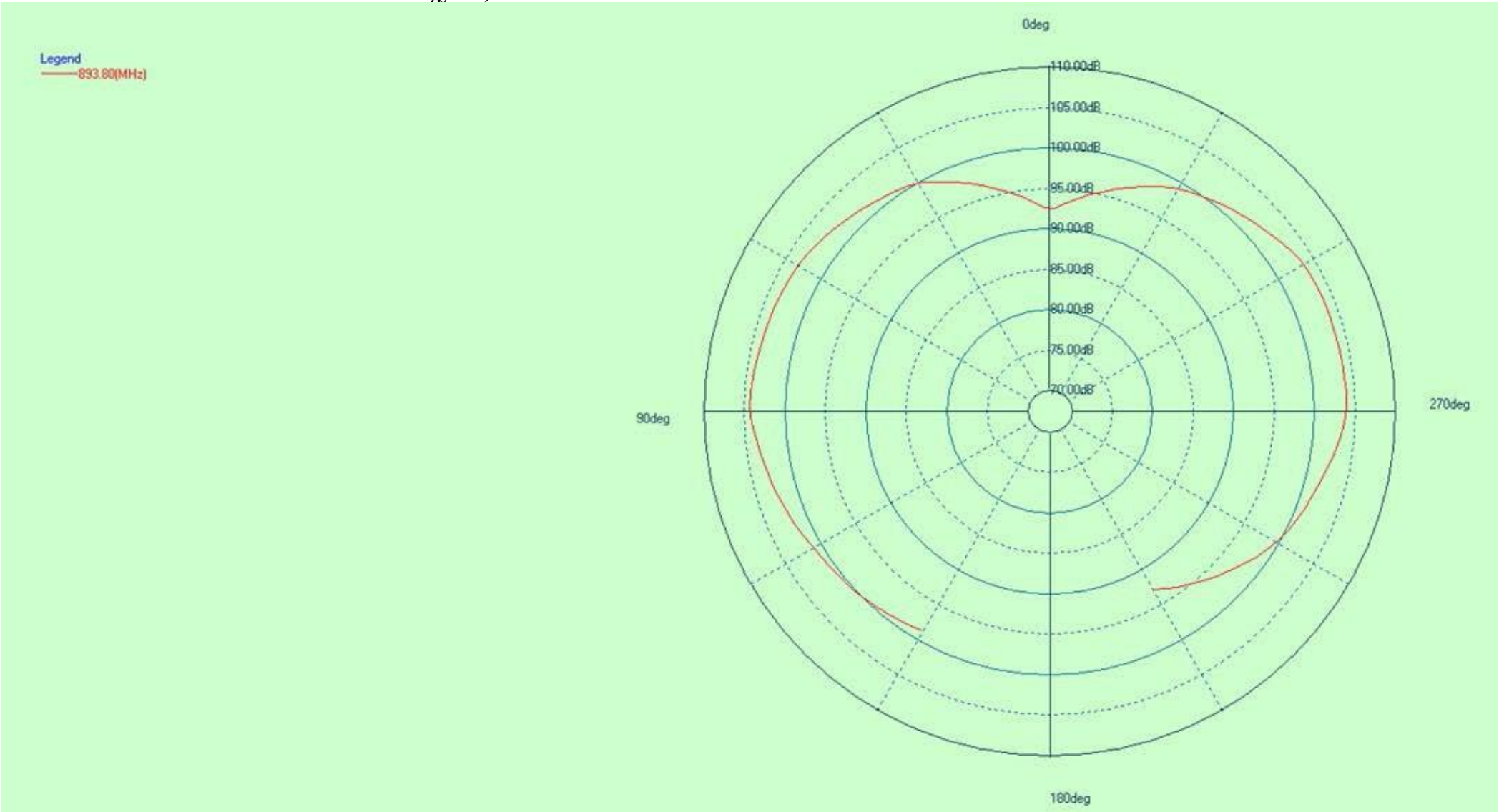
Freq	Gain	Freq	Gain
1700	-3.6	2300	-2.4
1720	-3.7	2320	-2.4
1740	-3.6	2340	-2.3
1760	-3.5	2360	-2.1
1780	-3.7	2380	-2.1
1800	-3.1	2400	-1.8
1820	-2.8	2420	-1.8
1840	-2.8	2440	-1.8
1860	-2.8	2460	-1.7
1880	-2.7	2480	-1.8
1900	-2.6	2500	-1.7
1920	-2.7	2520	-1.8
1940	-2.6	2540	-1.7
1960	-2.6	2560	-1.8
1980	-2.7	2580	-1.7
2000	-2.6	2600	-1.7
2020	-2.7	2620	-1.8
2040	-2.6	2640	-1.8
2060	-2.6	2660	-1.9
2080	-2.7	2680	-2.1
2100	-2.7	2700	-2.0
2120	-2.6		
2140	-2.5		

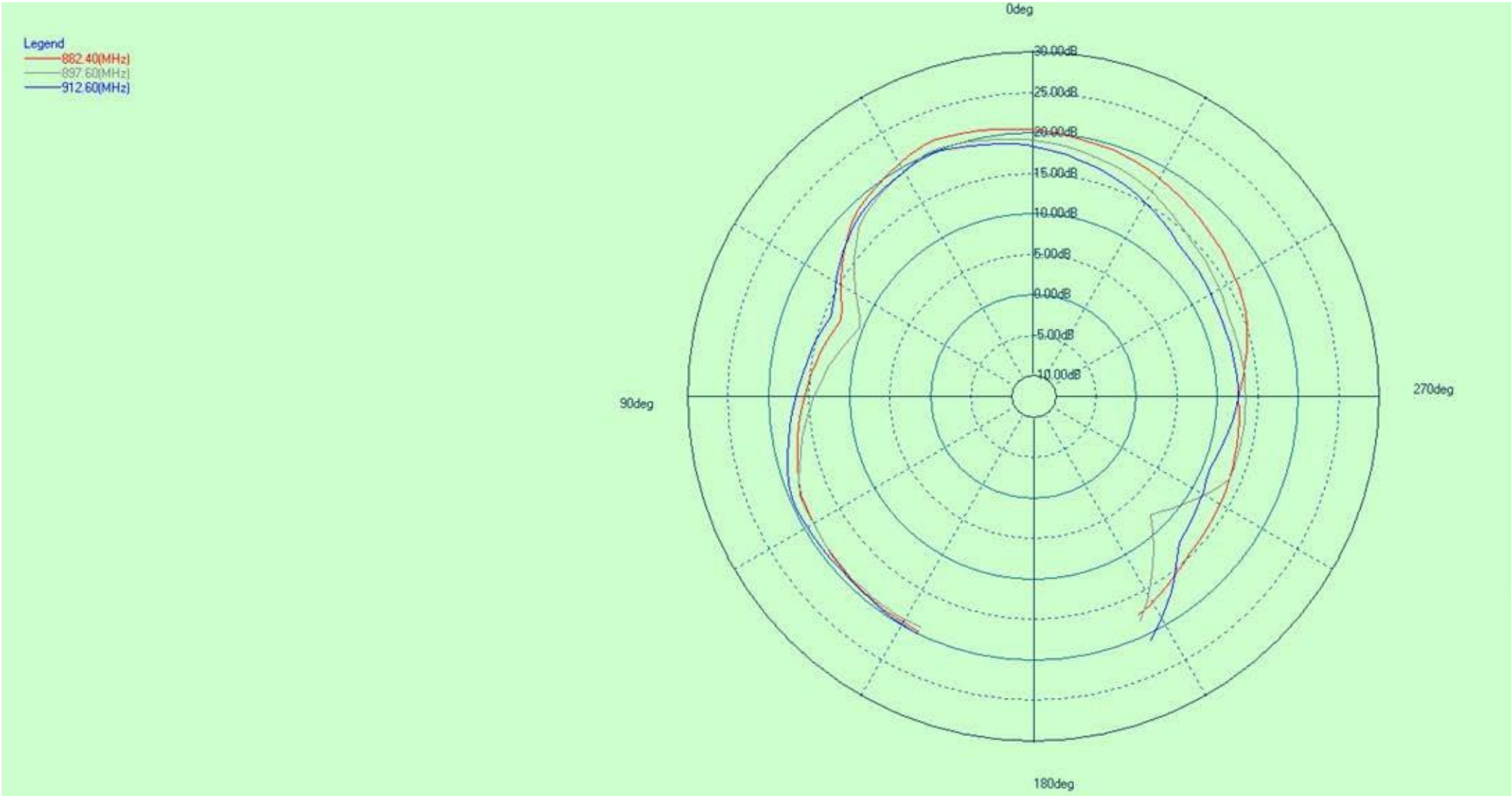
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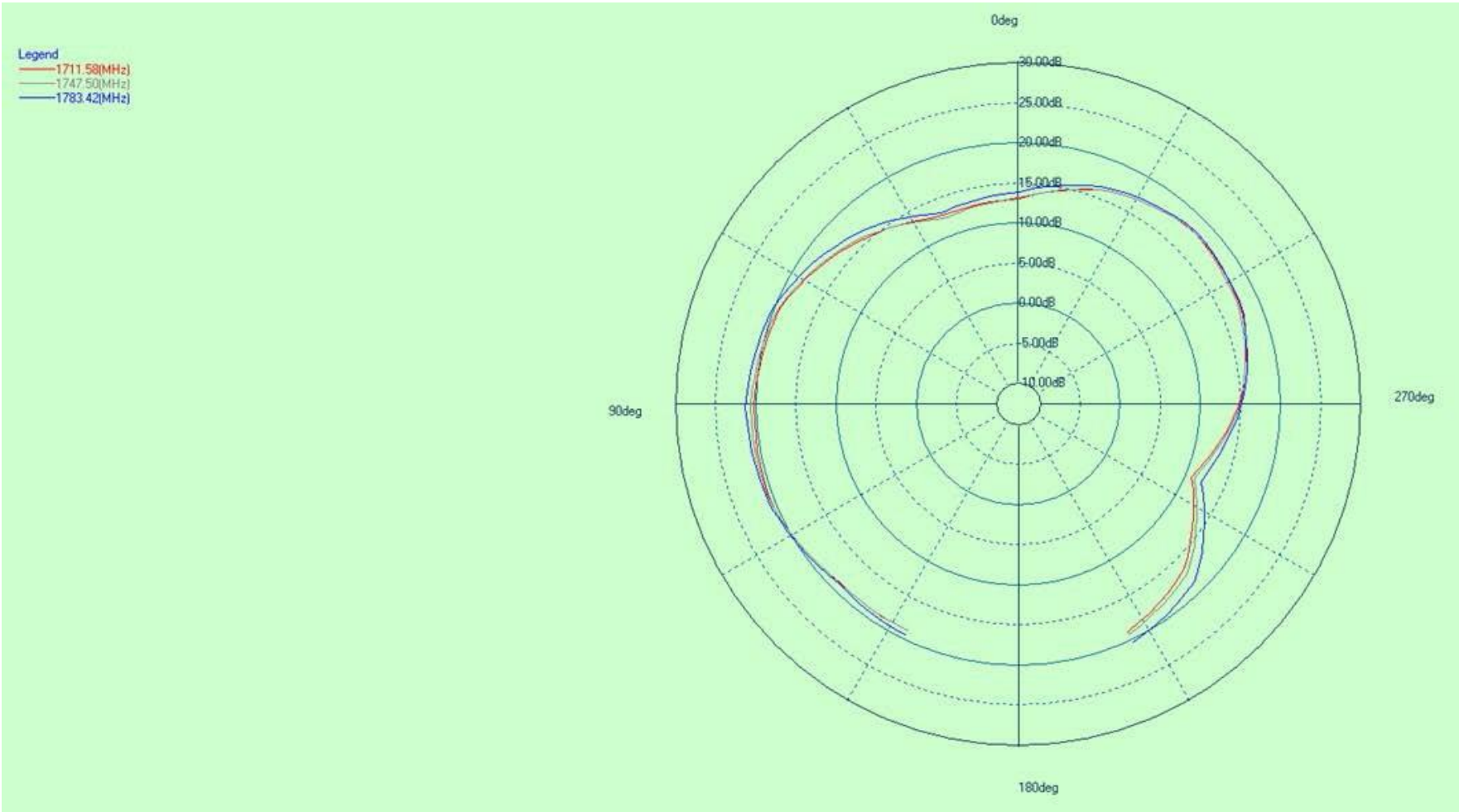


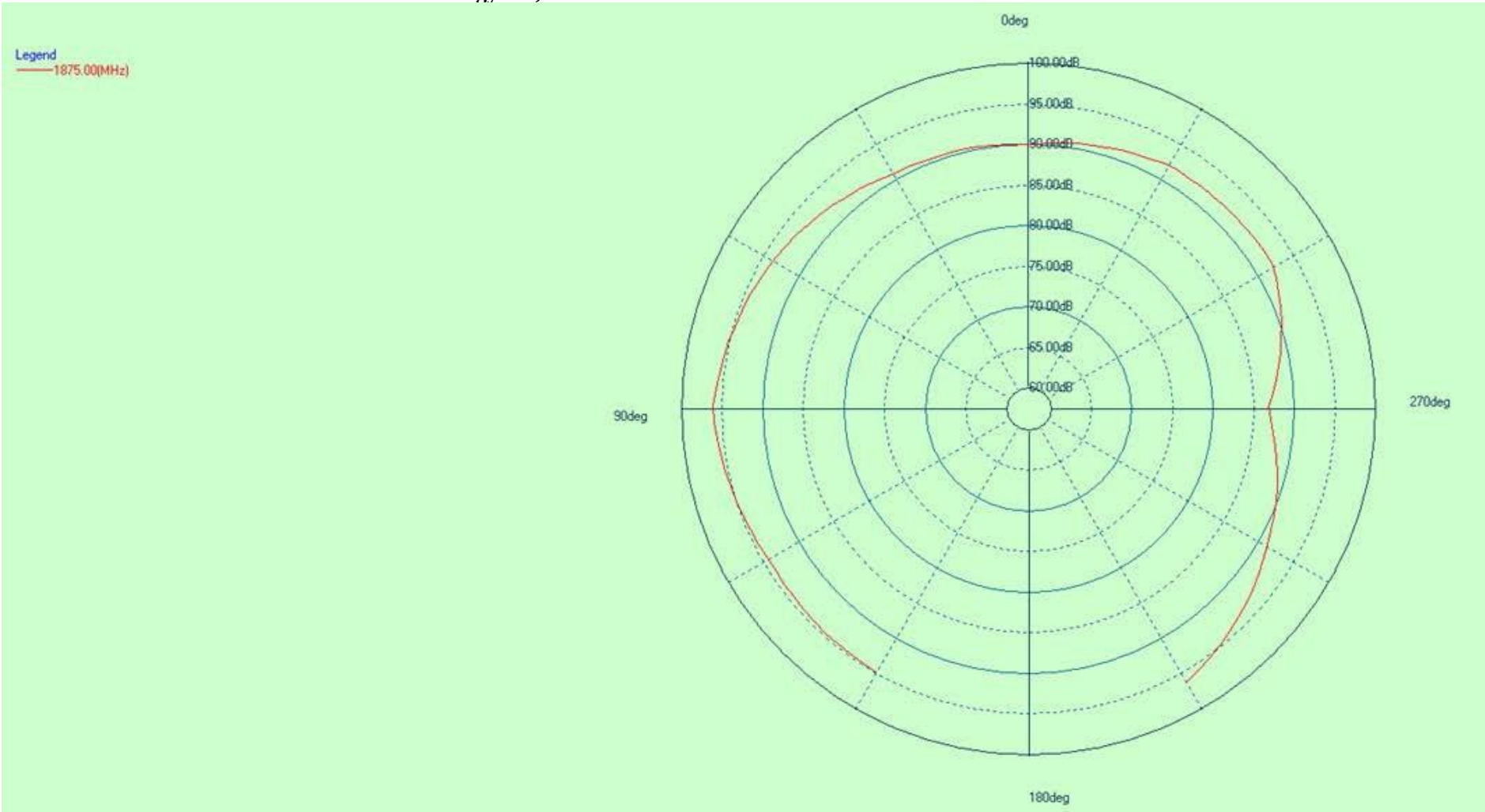




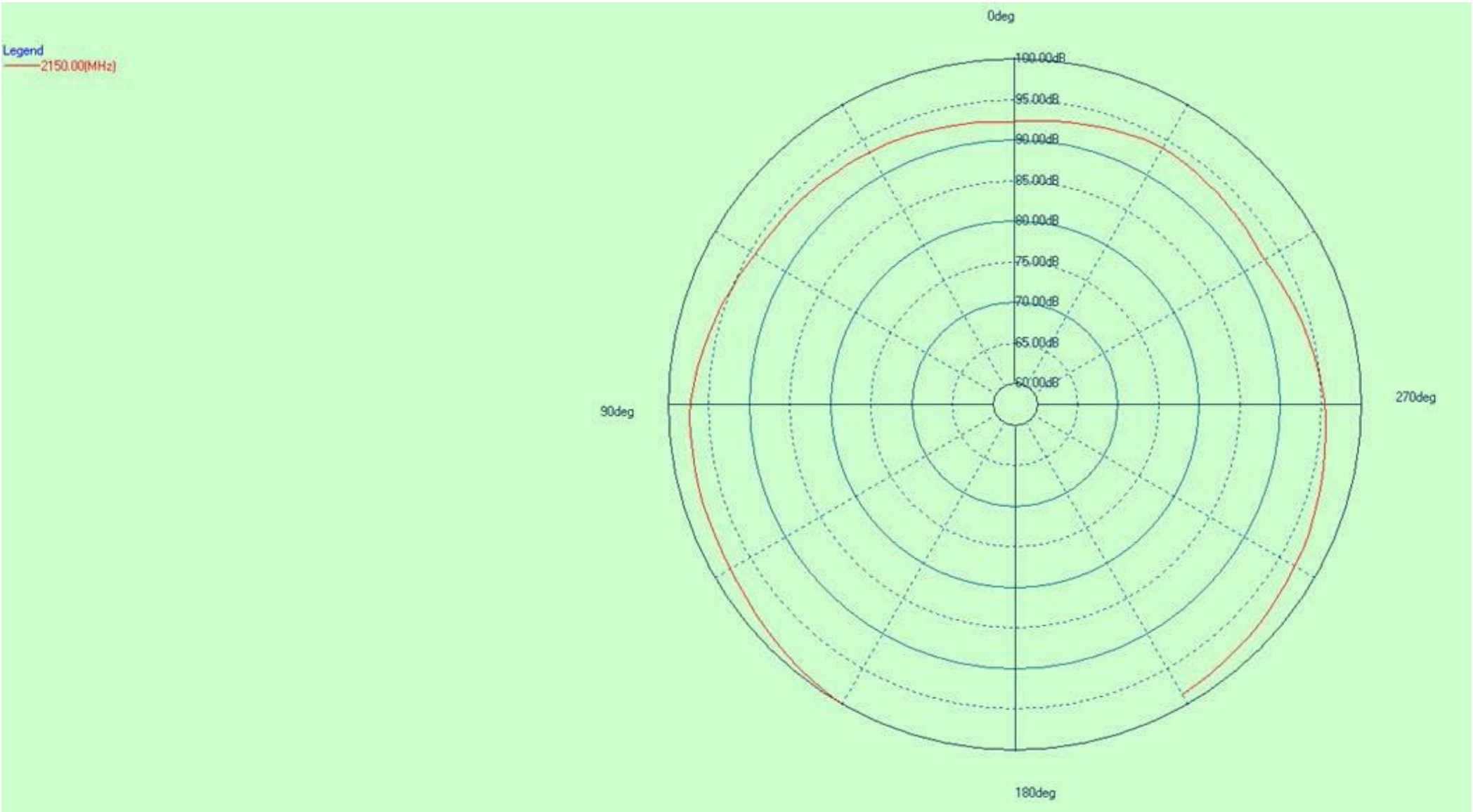
Shenzhen Huaxin Micro Communication Technology Co., Ltd.

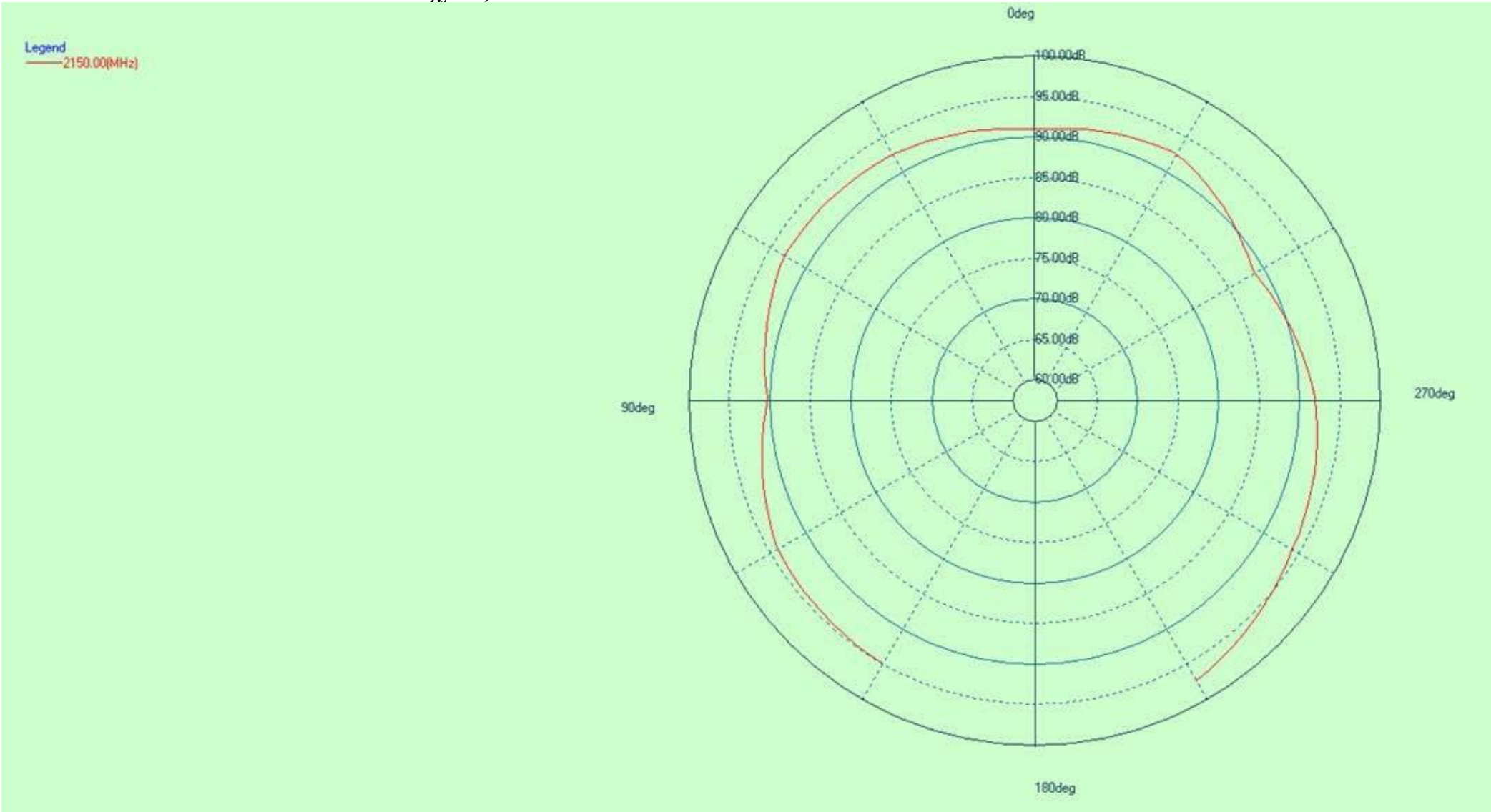
1710M-2100M

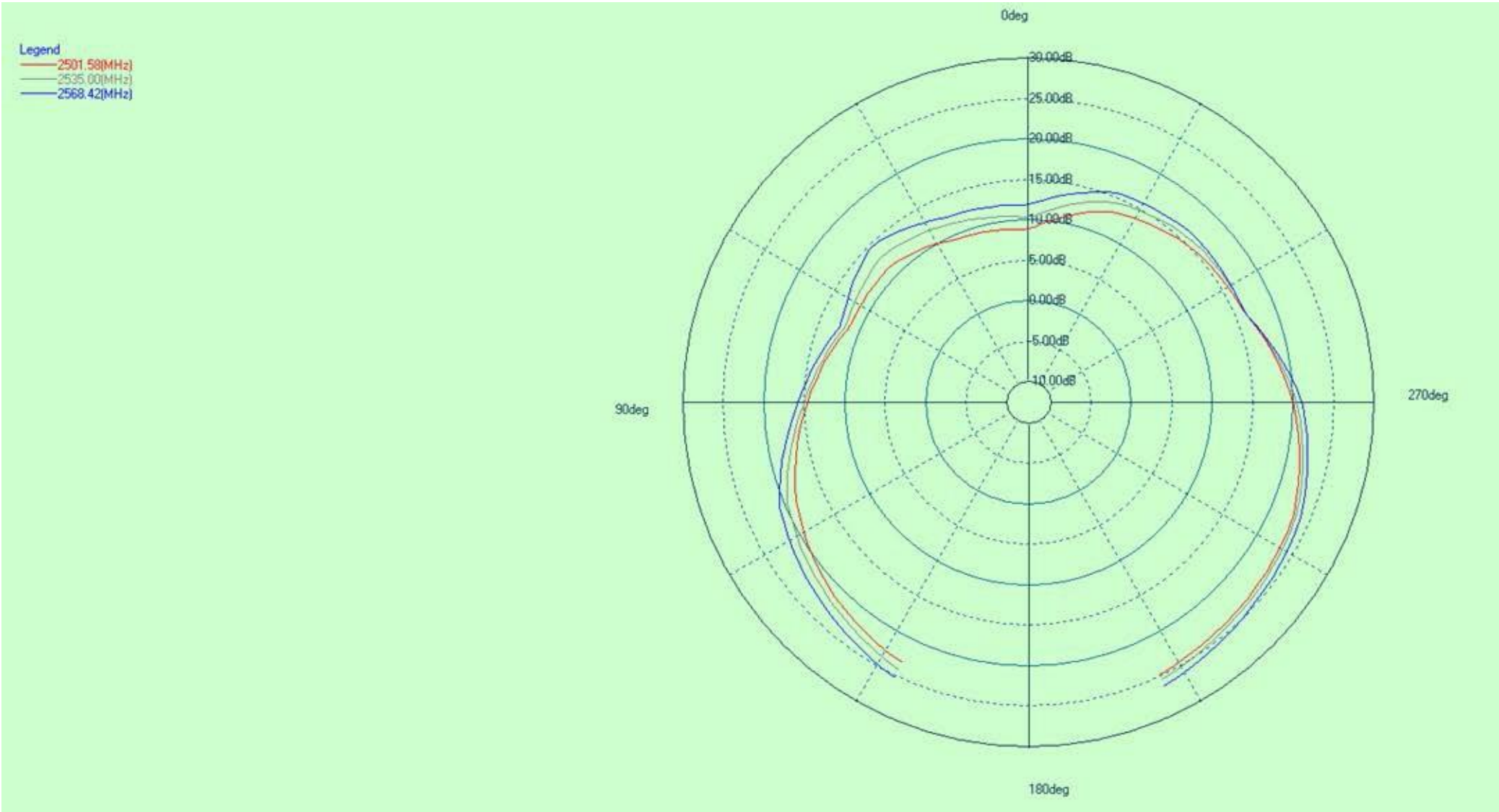


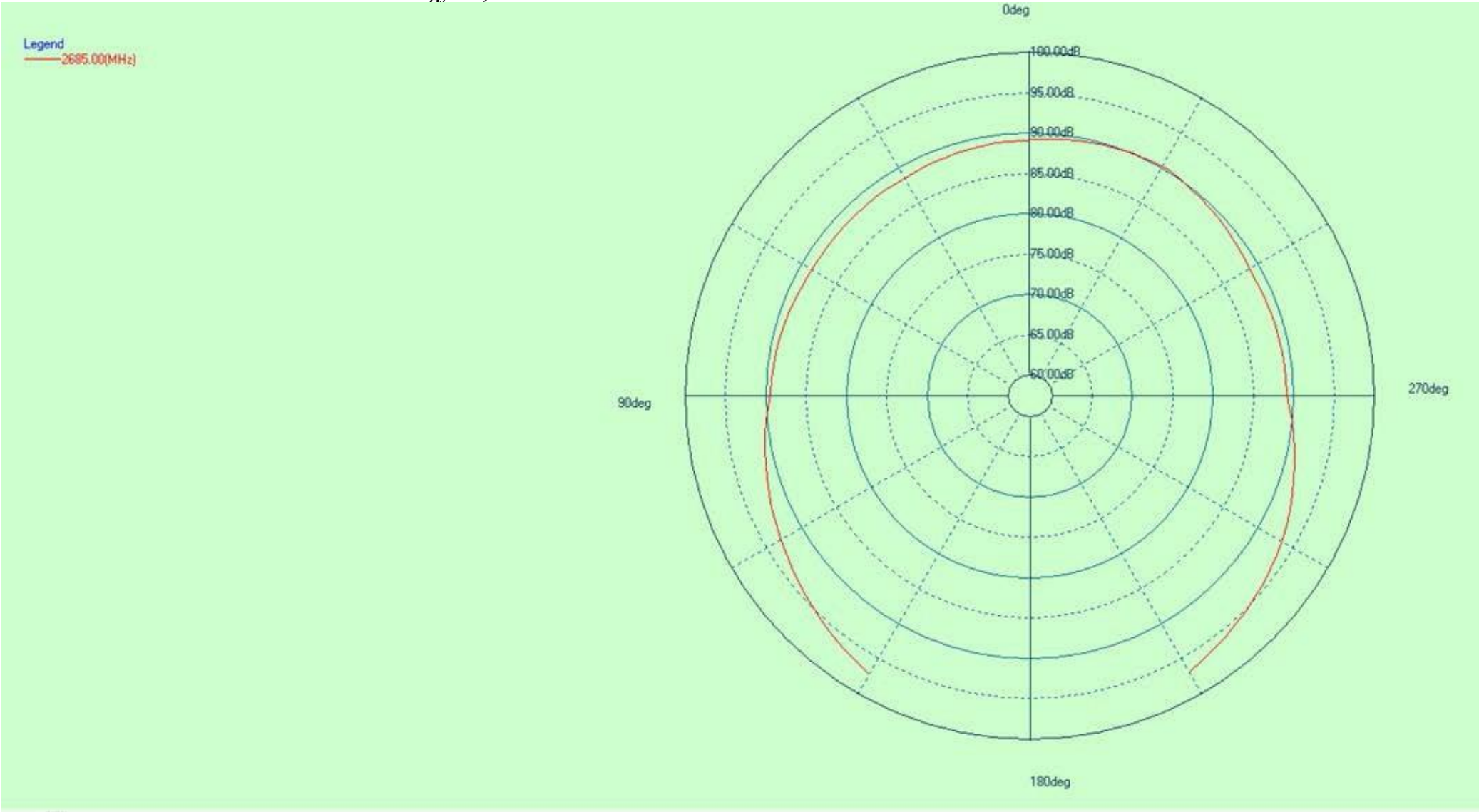


Shenzhen Huaxin Micro Communication Technology Co., Ltd.
2100M-2400M









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The active test units are connected in turn as follows: Agilent8960/8820C → 50 ohm

coaxial Cable → GTS Test System → sted.

4-1 Test site

GTS microwave anechoic chamber: the test frequency range is 400MHz-6GHz, the quiet zone range is 40cm circumference, and the reflectivity is less than -90 dB.

4-2 Test results

Maximum radiated power and maximum receive sensitivity reflect the antenna's maximum power radiated value and optimal reception performance over the entire radiation space. /b10> TRP and TIS reflect the average radiated power and average reception sensitivity of the antenna, that is, the overall reception performance of the antenna.

5. Environmental treatment

Original environment treatment.

6. Recommendations and Conclusions

This report is based on the antenna electrical performance measured by the customer's final version of the A62. As can be seen from the above test data, this antenna provides better electrical performance.

Fubang R&D looks forward to your confirmation, thank you for your cooperation!