



Smart Tag



Smart Tag

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Customer Approval

Company Shenzhen Phaten Technology Co., Ltd.

Signature *Li Shijian*

Date 2024-3-29

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1. Product Description

Product Name	Smart Tag
Antenna Type	PCB antenna
Maximum	Gain:2.0dBi
	Efficiency:44.48%

2. General Description

EUT Name	Smart Tag
Wireless type	BLE
Antenna Type	PCB antenna
Dimensions	Appendix A

3. Technical Information

Frequency Range	2402MHz~2480MHz
Test Frequency	2400,2410.....2500MHz

4. Test Standards

Identity	Document Title
IEEE 149-1979	IEEE Standard Test Procedures for Antennas

5. Test Item

Report Section	Description
Appendix B	S11A/SWR
Appendix C	Gain and Efficiency
Appendix D	Radiation Pattern (1D and 3D)

6. Test Photo

Report Section	Description
Appendix E	Test Setup Photo

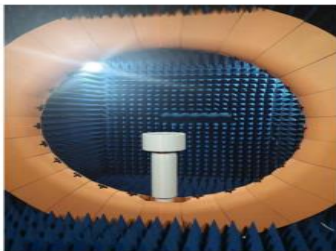
7. Darkroom test equipment and data

5.0 Test Equipment

Test system: shielded darkroom

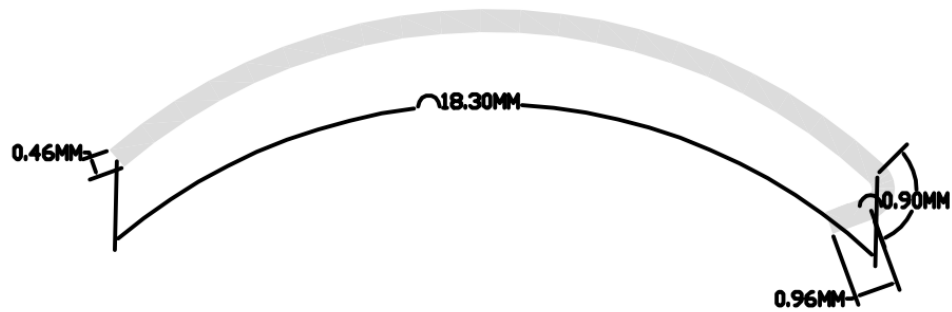
Test environment: temperature $22\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$, humidity $50\% \pm 15\%$

Test equipment: when testing passive data, use AgilentE5071C network analyzer; When testing the active data, use the comprehensive tester CMW500



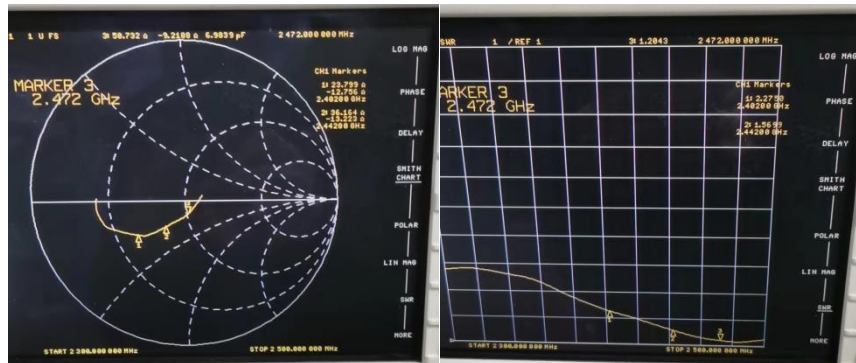
NO	Kind of Equipment/ 设备种类	Manufacturer /制造商	Type No. 型号/	Number/ 编号	Calibrated Until/校准到
1	network analyzer	Agilent	E5071C	US38433 157	2024-12-10
2	comprehensive tester	R&S	CMW500	146927	2024-12-10

8. Appendix A Antenna Dimension



9. Appendix B SII/VSWR

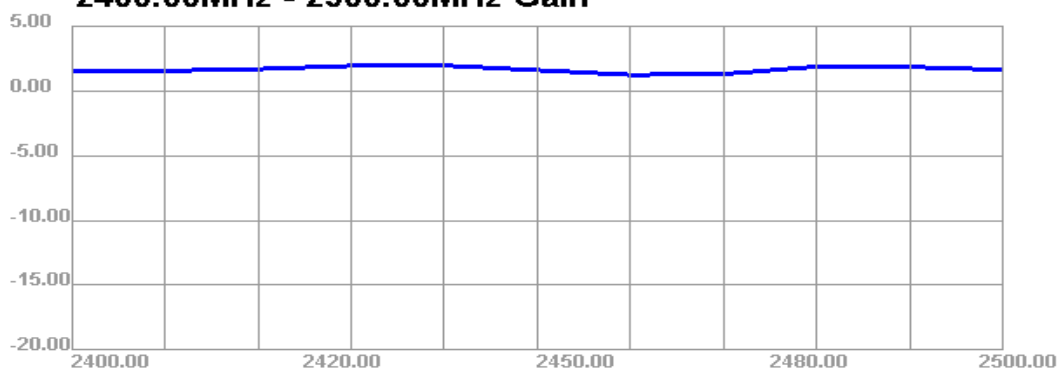
frequency (MHz)	2412	2442	2472
SNITH CHART	-12.75	-13.22	-9.2
SWR	2.27	1.56	1.2



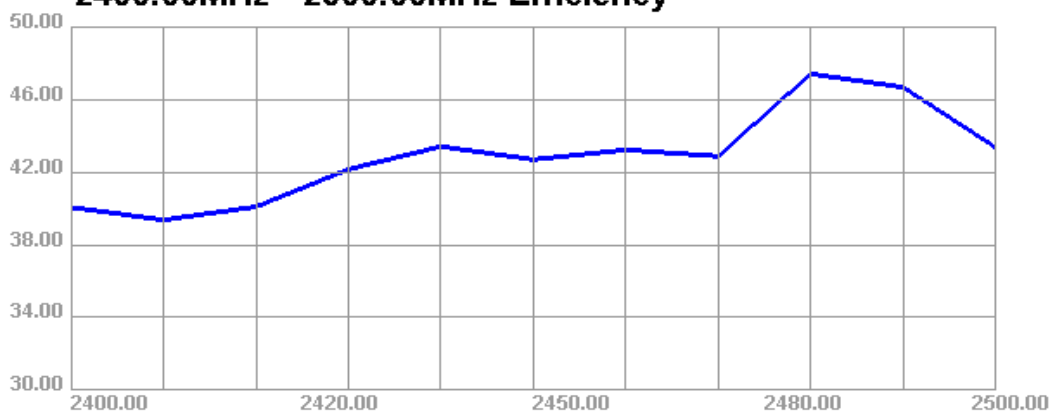
10. Appendix C Gain and Efficiency

Passive Test For D44										
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	Attenut Hor	Attenut Ver
2400	40.06	-3.97	0.7	1.45	13.944	26.121	0.7	-17.77	50.93	51.1
2410	39.38	-4.05	0.9	1.25	13.96	25.416	0.9	-17.79	51.10	51.33
2420	40.1	-3.97	0.9	1.25	14.275	25.821	0.9	-17.09	51.00	51.19
2430	42.16	-3.75	1.7	0.45	14.872	27.288	1.7	-16.27	51.09	51.27
2440	43.41	-3.62	2.0	0.15	15.065	28.346	2.0	-15.87	51.42	51.6
2450	42.7	-3.7	1.8	0.35	14.611	28.089	1.8	-15.62	51.54	51.71
2460	43.23	-3.64	1.5	0.65	14.715	28.513	1.5	-15.90	51.66	51.72
2470	42.88	-3.68	1.1	1.05	14.724	28.159	1.1	-17.65	51.80	51.85
2480	47.41	-3.24	0.8	1.35	16.591	30.822	0.8	-19.65	51.82	51.91
2490	46.68	-3.31	0.3	1.85	16.796	29.88	0.3	-23.27	51.81	51.83
2500	43.36	-3.63	0.3	1.85	16.115	27.248	0.3	-25.84	52.03	51.97

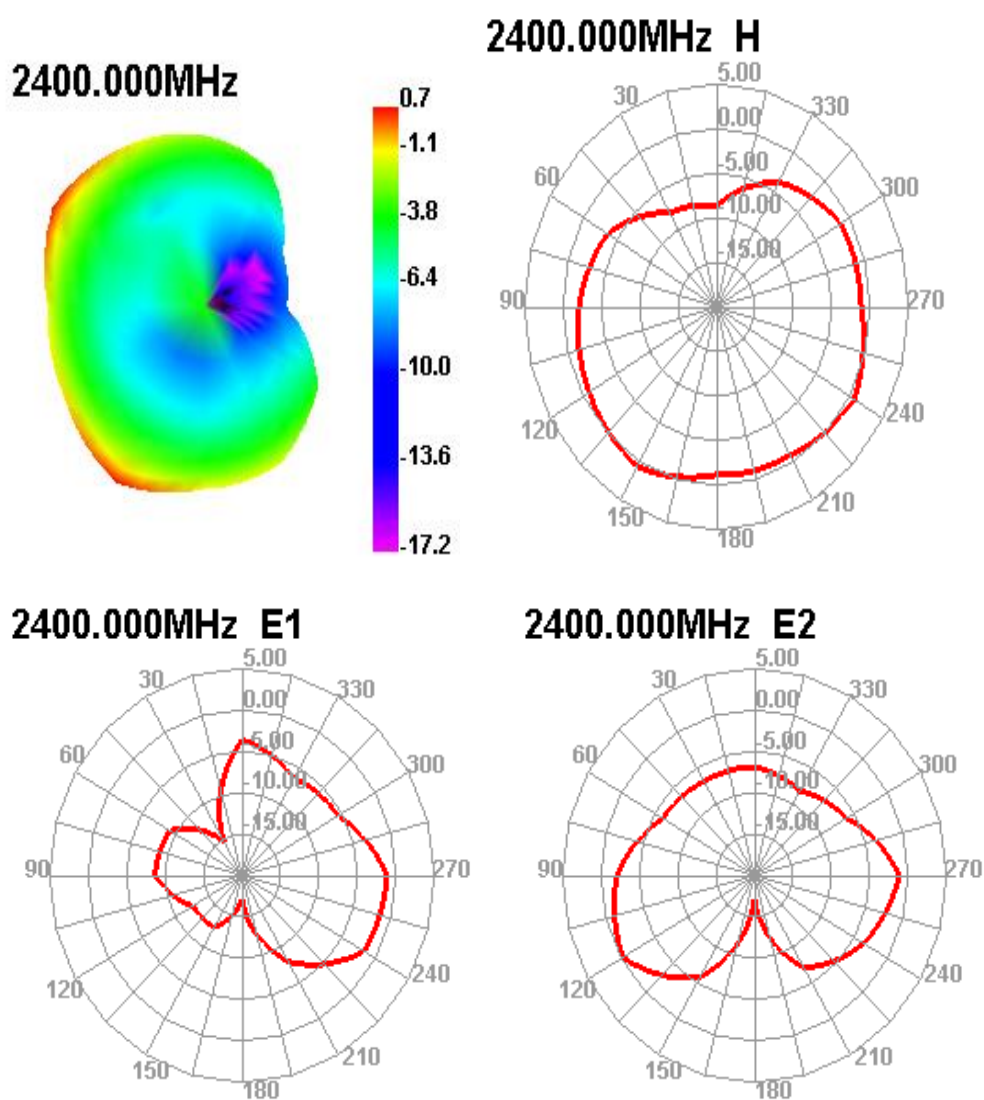
2400.00MHz - 2500.00MHz Gain



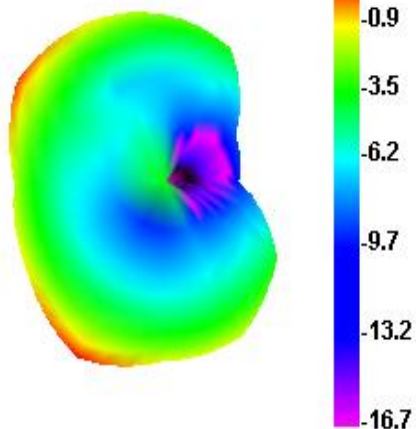
2400.00MHz - 2500.00MHz Efficiency



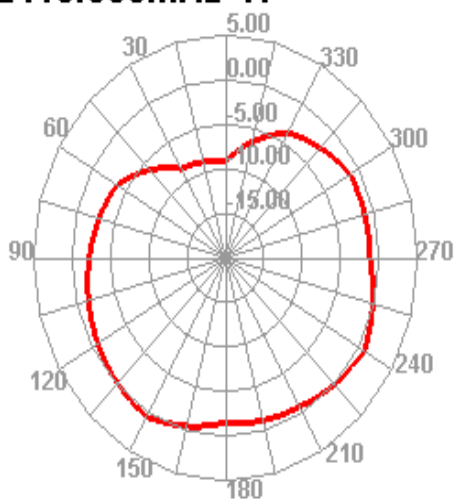
11. Appendix D Radiation Pattern(ID and 3D)



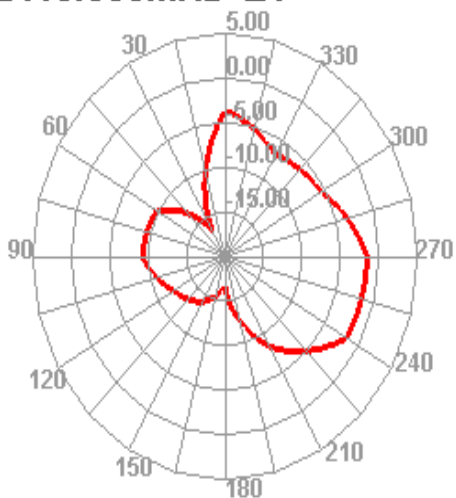
2410.000MHz



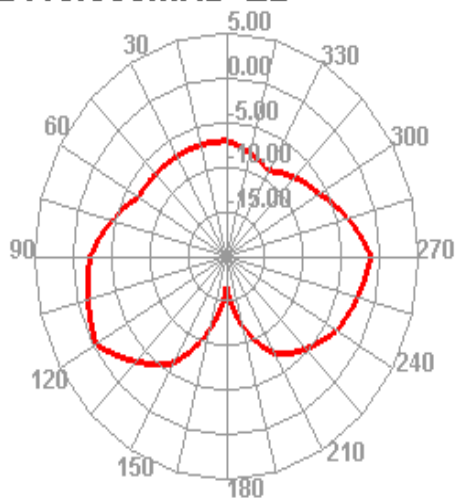
2410.000MHz H



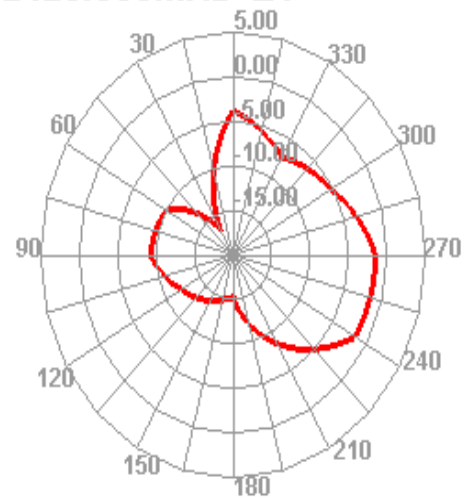
2410.000MHz E1



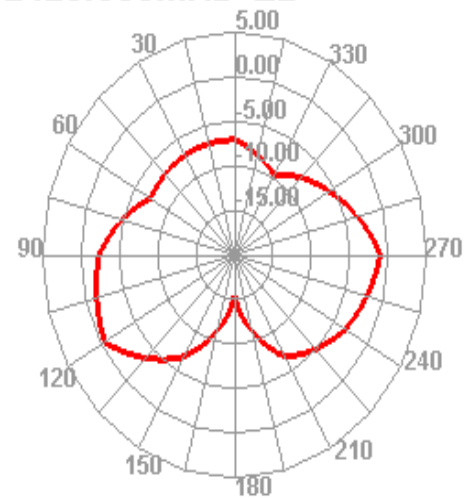
2410.000MHz E2



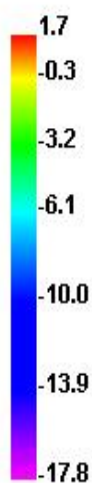
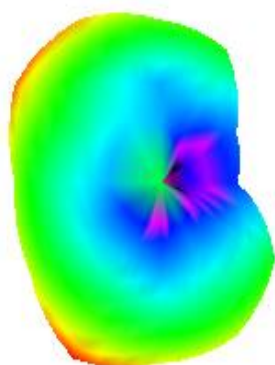
2420.000MHz E1



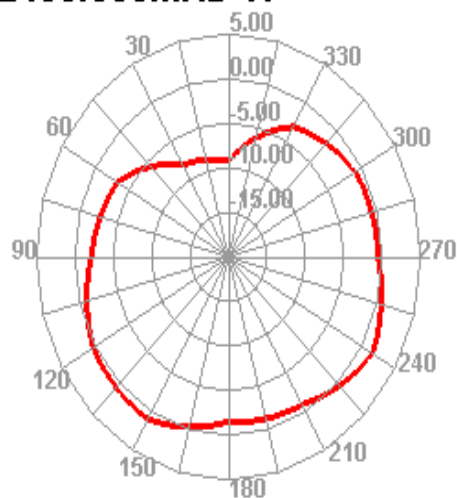
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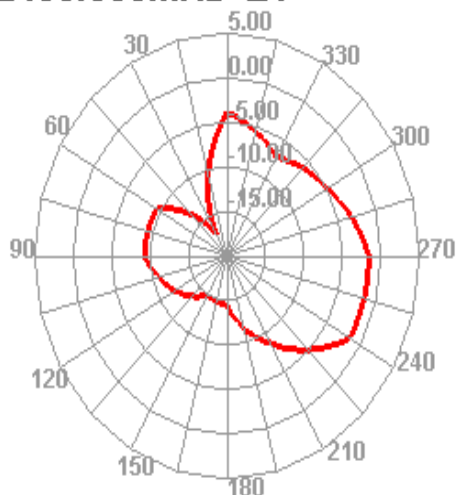
2430.000MHz



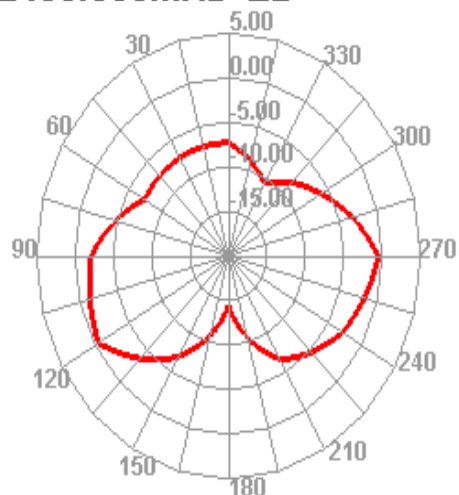
2430.000MHz H



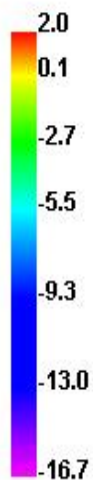
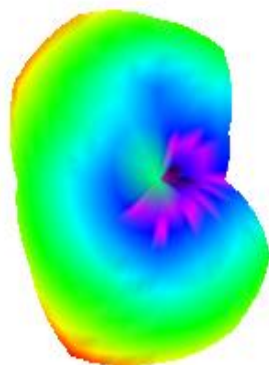
2430.000MHz E1



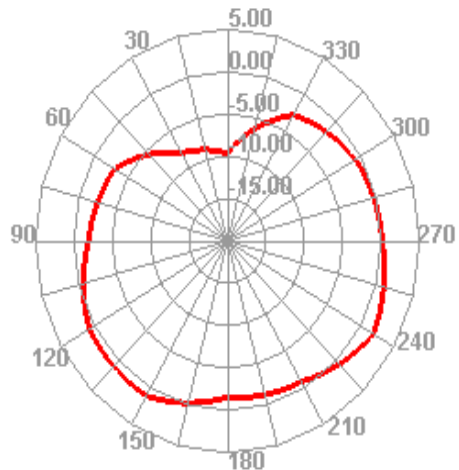
2430.000MHz E2



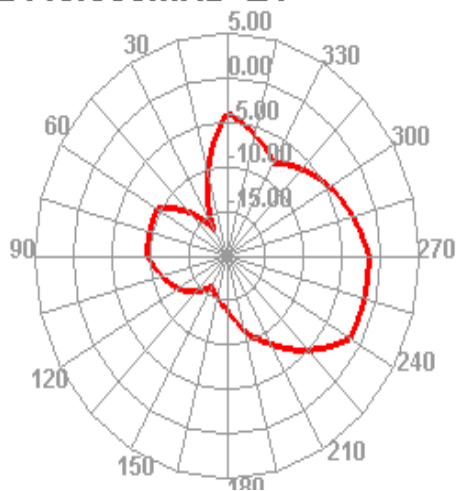
2440.000MHz



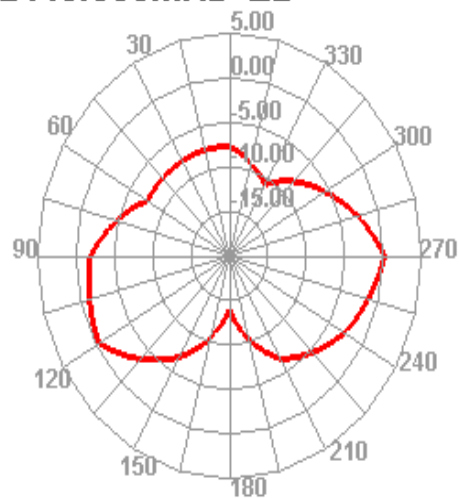
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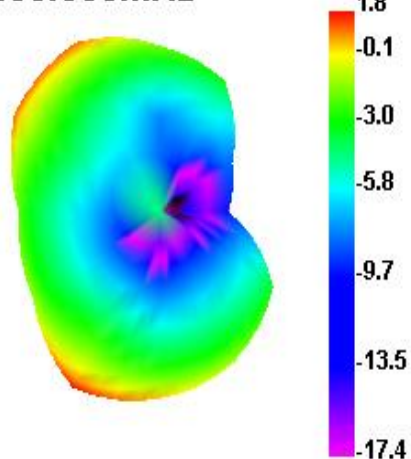
2440.000MHz E1



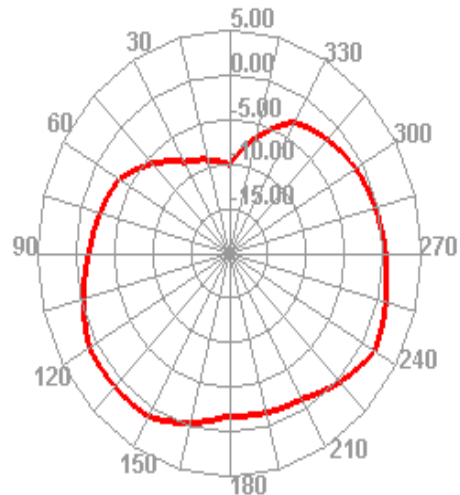
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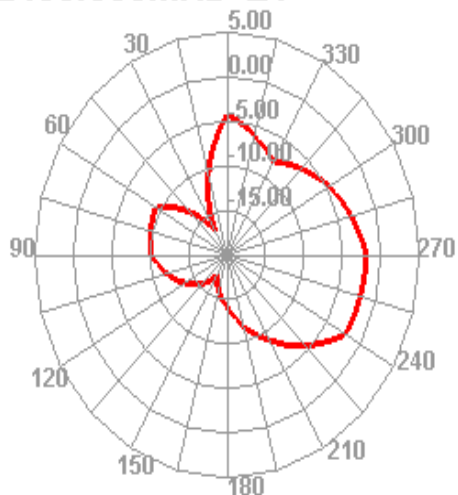
2450.000MHz



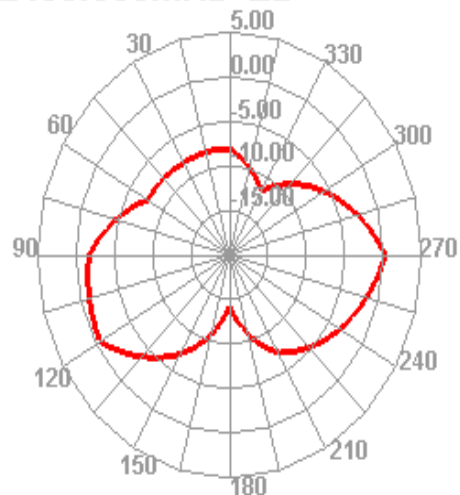
2450.000MHz H



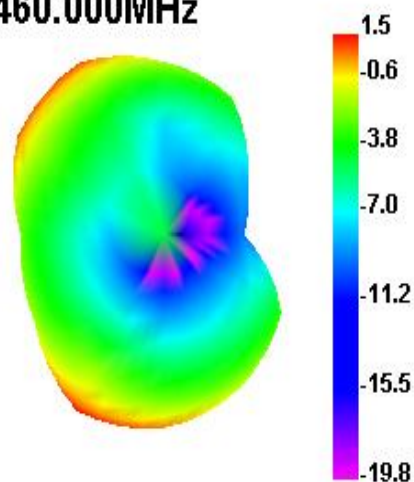
2450.000MHz E1



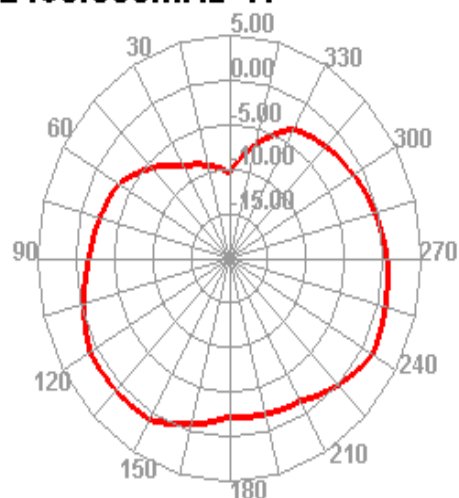
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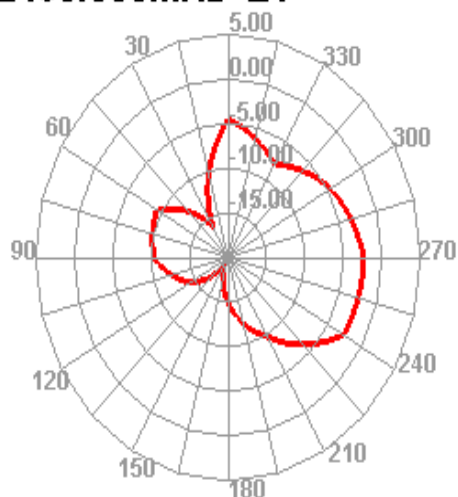
2460.000MHz



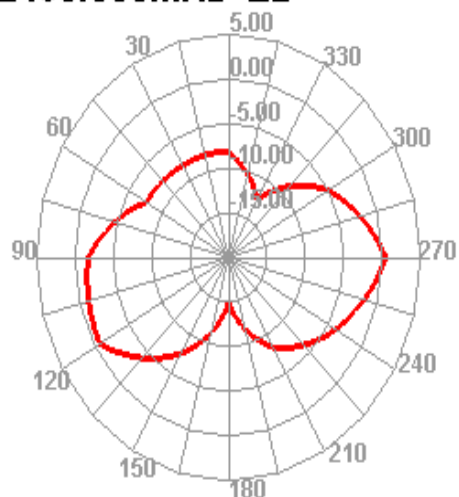
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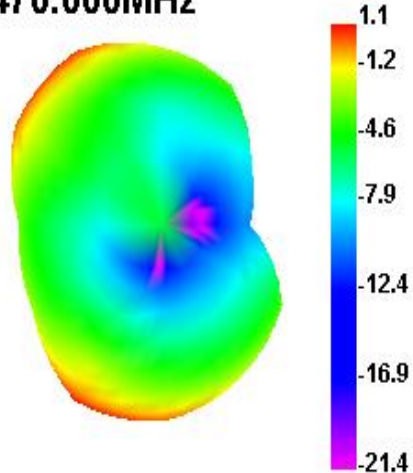
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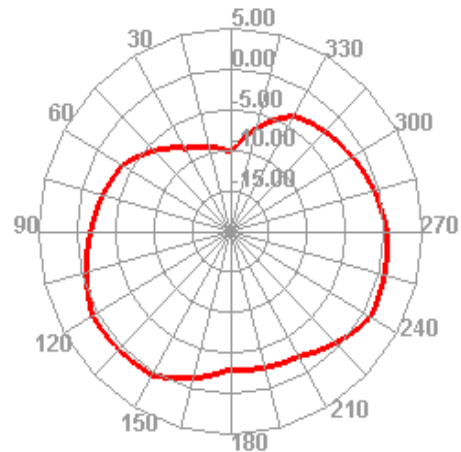
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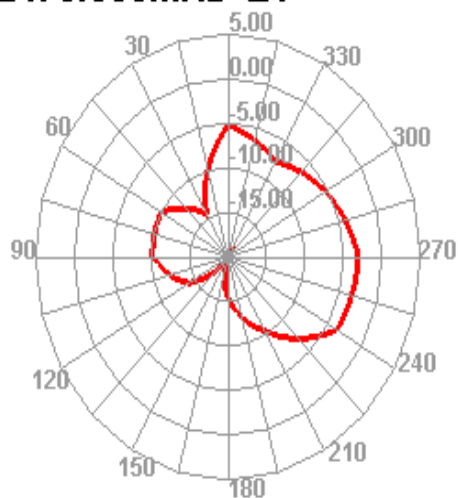
2470.000MHz



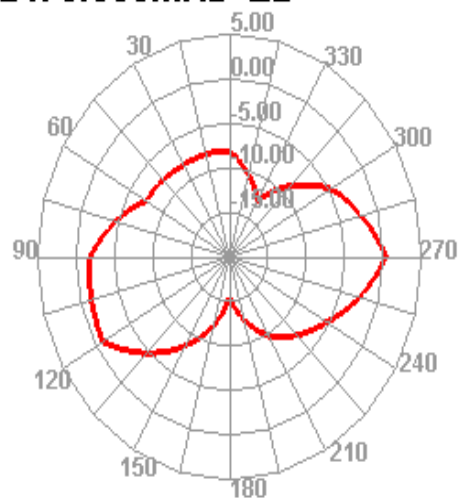
2470.000MHz H



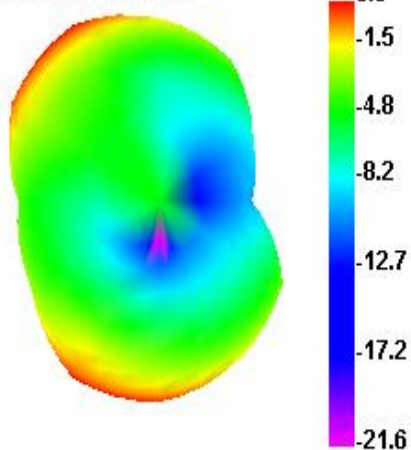
2470.000MHz E1



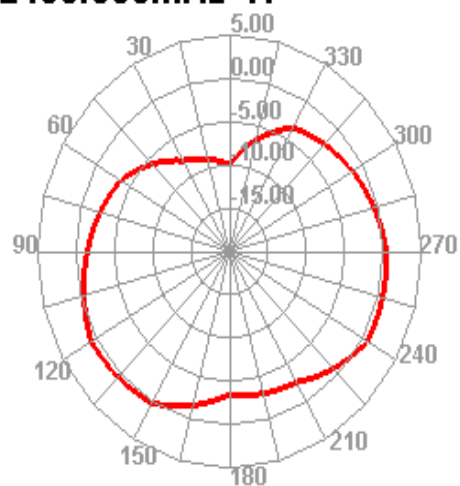
2470.000MHz E2



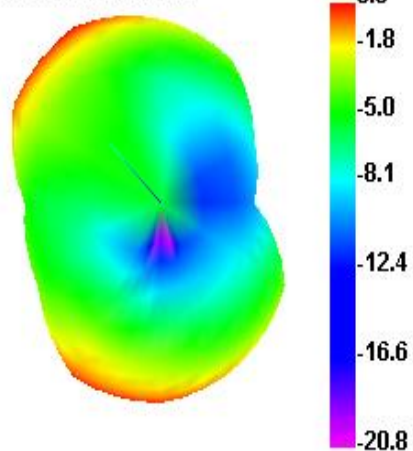
2480.000MHz



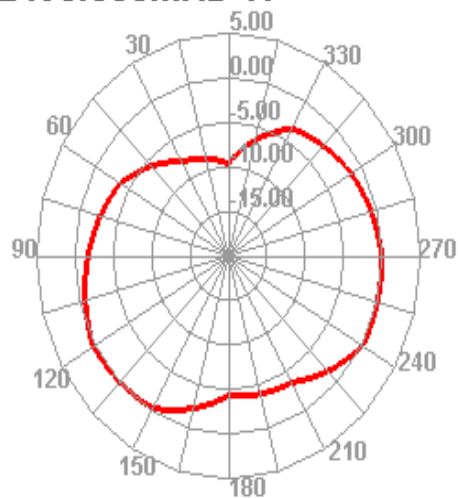
2480.000MHz H



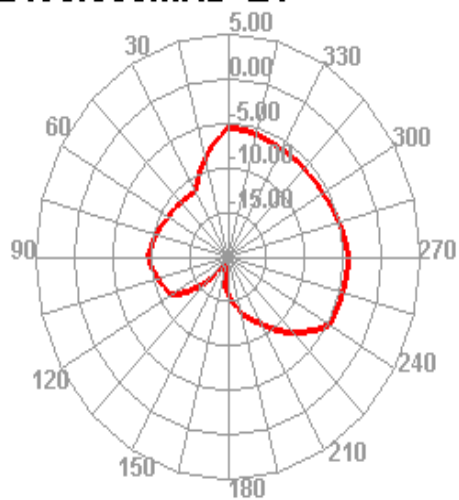
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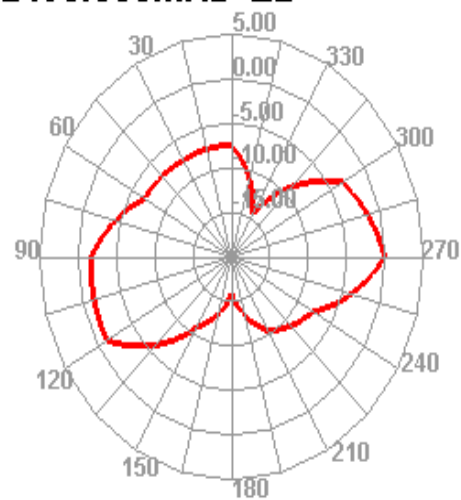
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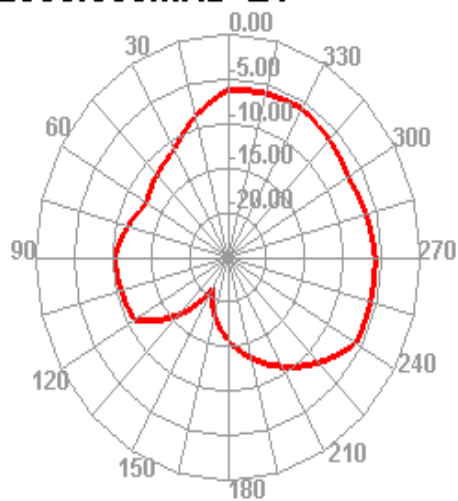
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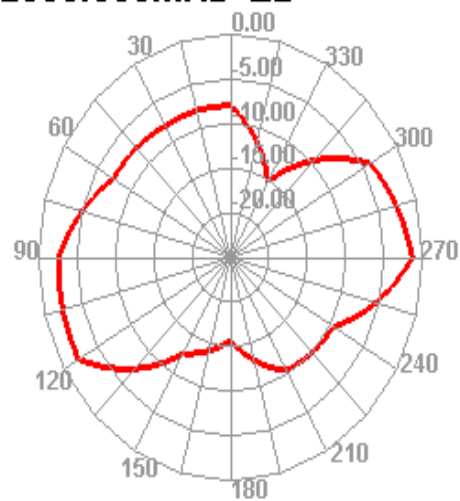
2490.000MHz E2



2500.000MHz E1



2500.000MHz E2



12. Appendix E Test Setup Photo

