



东莞市启元电子科技有限公司
DONGGUAN QY TECHNOLOGY,CO.,LTD

Antenna Test Report

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Tester : Zhang Bingxiang

Date : 2023 / 10 / 12



◆ *Project introduction/项目介绍*

Customer/客户		DHD	project name 项目名称	BTS30P
NO.	ITEMS	DETAILS		
1	Frequency 频率	2400~2500MHz		
2	Type/类型	PCB Antenna		
4	Structure/ 结构	/		
5	Illustrate	first report(2023.10.12)		
6				
7				

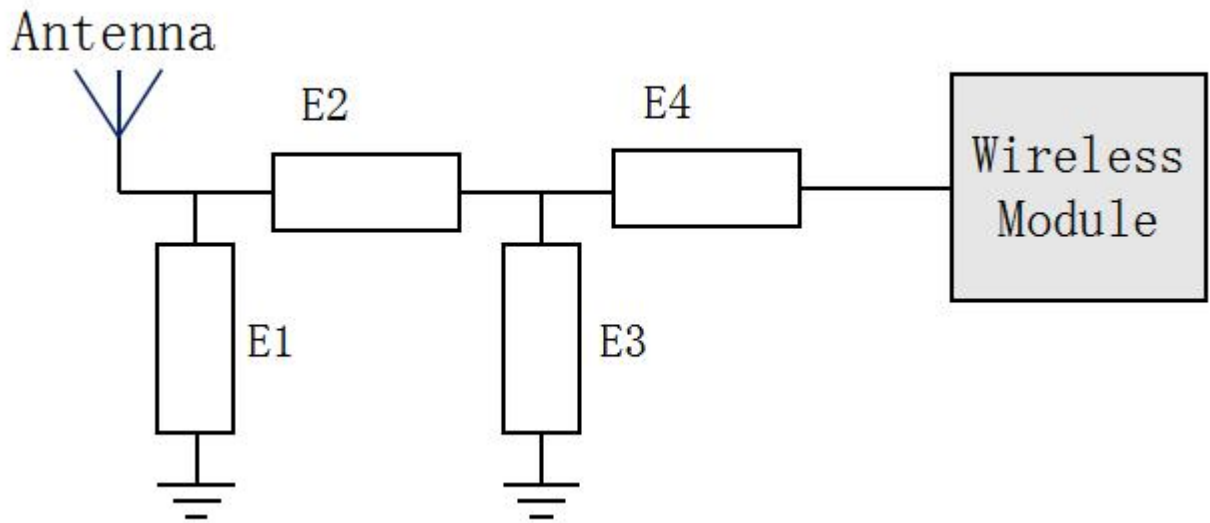


Technical drawing of a stepped profile with the following dimensions:

- Overall width: 14.1mm
- Overall height: 4.9mm
- Top horizontal segment width: 2.6mm
- Second horizontal segment width: 0.5mm
- Third horizontal segment width: 0.5mm
- Fourth horizontal segment width: 0.5mm
- Bottom horizontal segment width: 0.5mm
- Vertical segment height: 0.9mm
- Small vertical segment height: 0.5mm



◆ *Matching Circuits/匹配电路*



Element	Value	Vender
E1(0402)	2.7nH	
E2(0402)	0 Ω	
E3(0402)	N/A	
E4(0402)	0 Ω	



◆ *Test equipment*



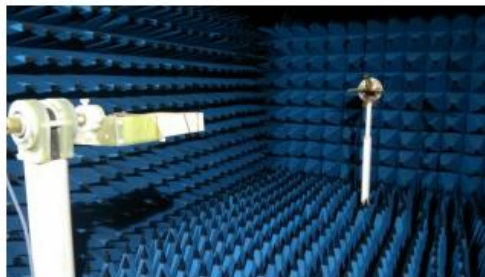
Network Analyzer
安捷伦 E5071C 网络分析仪



HP 8594E 频谱分析仪 Spectrum Analyzer



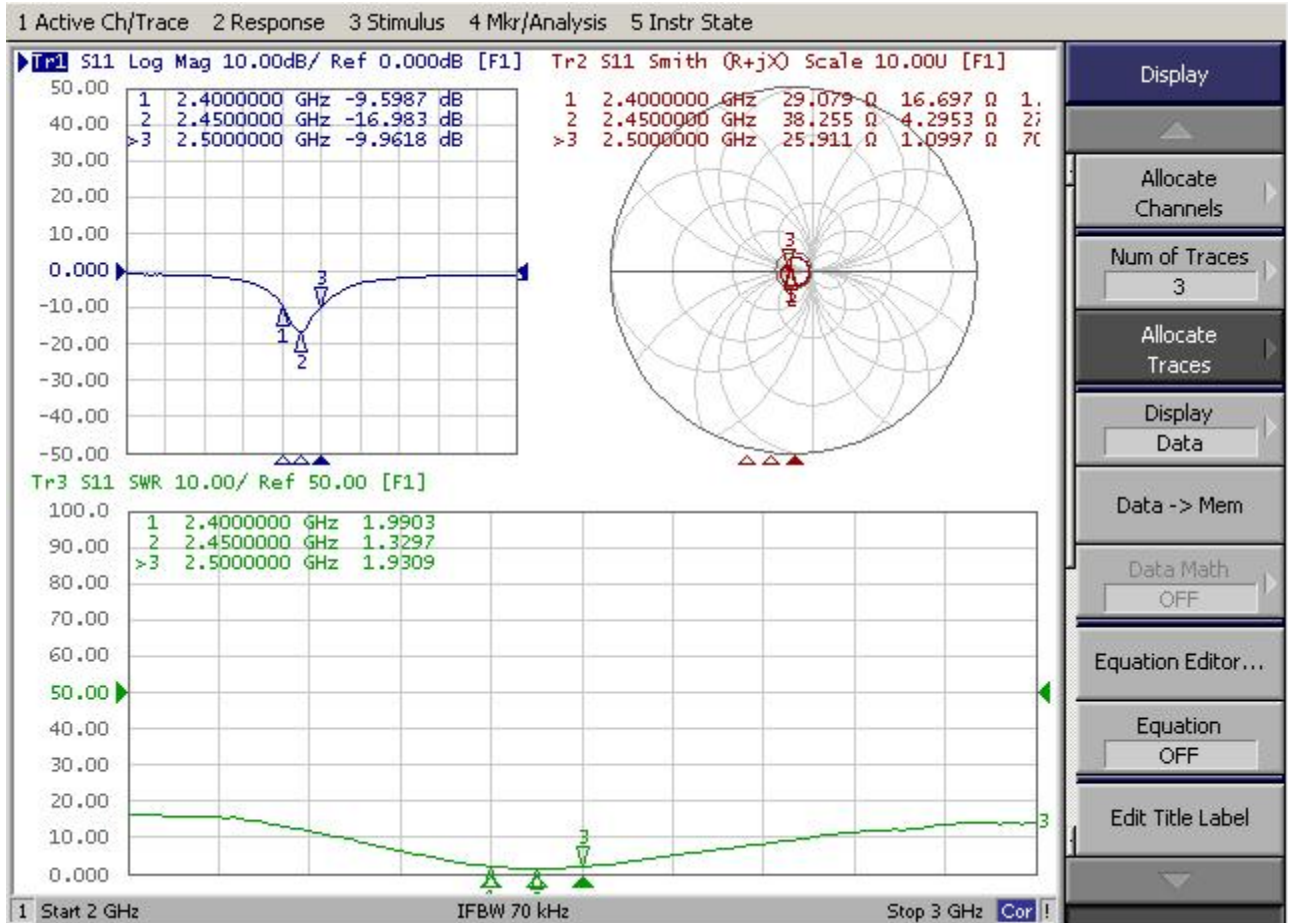
CMW-500



微波暗室 Anechoic Chamber



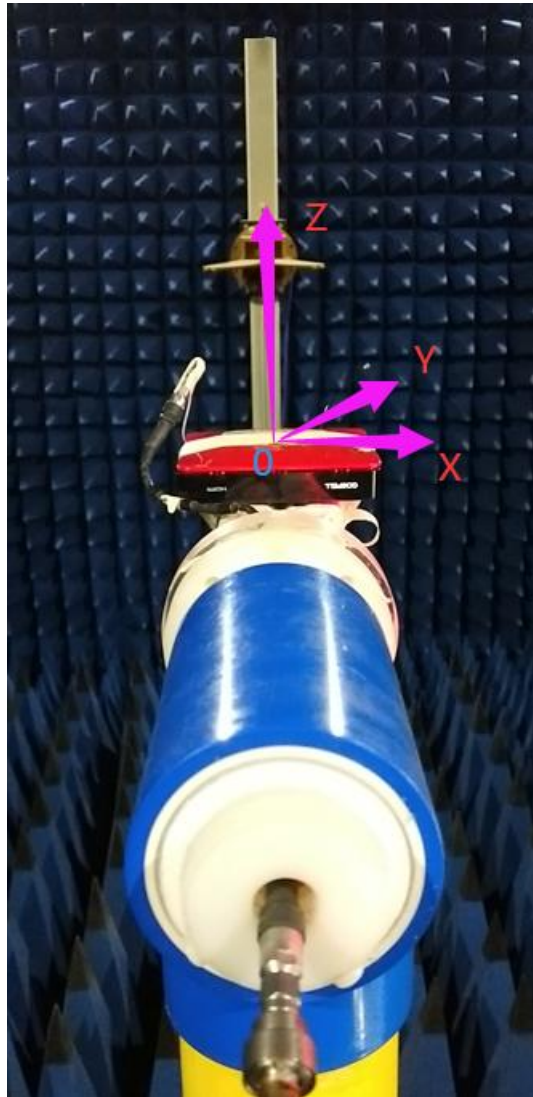
◆ *V.S.W.R & Return Loss Test*





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◆ *Field charts*





◆ *Anechoic chamber Test*

Active Test:

Conduction test For Module			
Band	Channel	TRP	TIS
Module	0	2.5	-90
	39	2.6	-92
	78	2.5	-90

Active Test For Bluetooth			
Band	Channel	TRP	TIS
Bluetooth	0	0.19	-86.3
	39	-1.56	-87.9
	78	-1.39	-85.5



◆ *Anechoic chamber Test*

Passive Test:

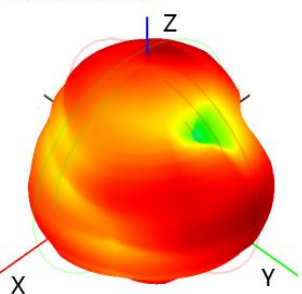
FEITUKEJI											
Frequency ID	1	2	3	4	5	6	7	8	9	10	11
Frequency (MHz)	2400.0	2410.0	2420.0	2430.0	2440.0	2450.0	2460.0	2470.0	2480.0	2490.0	2500.0
Gain (dBi)	-1.37	-0.93	-0.41	0.34	0.14	0.43	-0.16	-0.31	-0.82	-1.03	-1.09
Efficiency (%)	24.99	27.11	29.17	32.57	30.52	30.98	29.51	31.41	29.94	27.00	25.25



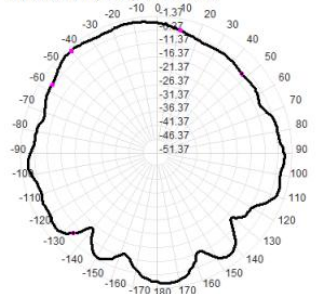
◆ *Anechoic chamber Test*

2D、3D Radiation Patter:

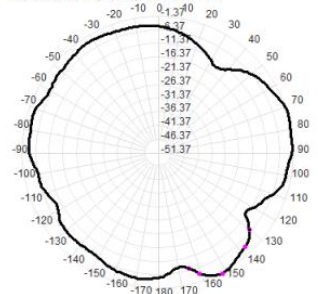
2400.0MHz H+V, Eff: 25.0%



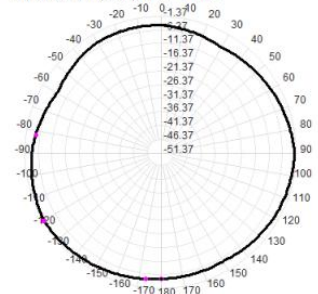
2400.0MHz Total(E1-XZ), Max=-2.62dBi



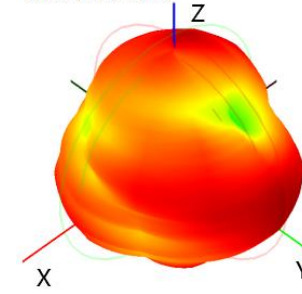
2400.0MHz Total(E2-YZ), Max=-1.37dBi



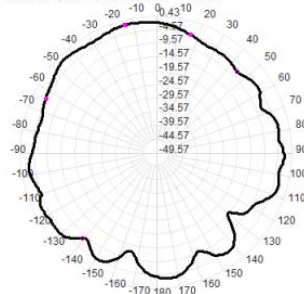
2400.0MHz Total(H-XY), Max=-1.86dBi



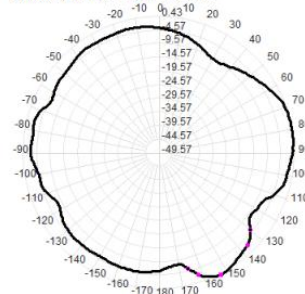
2450.0MHz H+V, Eff: 31.0%



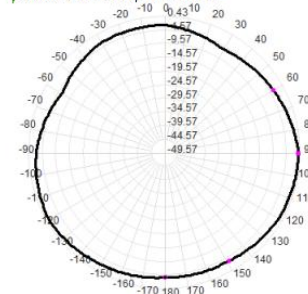
2450.0MHz Total(E1-XZ), Max=-1.44dBi



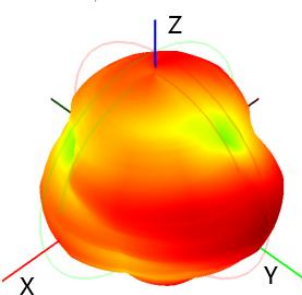
2450.0MHz Total(E2-YZ), Max=0.43dBi



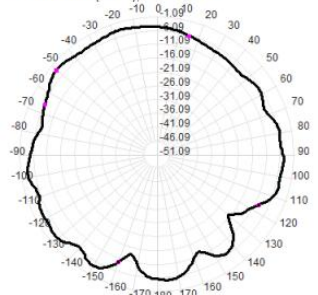
2450.0MHz Total(H-XY), Max=-0.52dBi



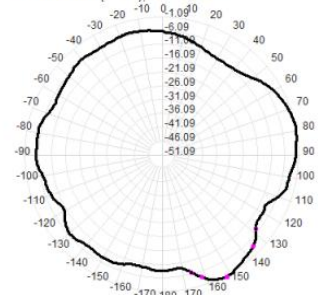
2500.0MHz H+V, Eff: 26.3%



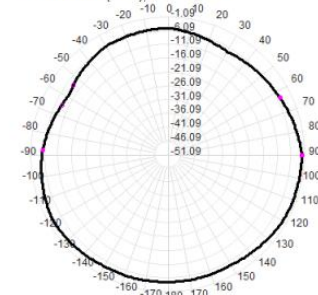
2500.0MHz Total(E1-XZ), Max=-3.47dBi



2500.0MHz Total(E2-YZ), Max=-1.09dBi



2500.0MHz Total(H-XY), Max=-2.43dBi





◆ *Summary*

- The on-board antenna is placed above the battery, and the signal radiation is absorbed by the battery, causing the gain and efficiency to be very low, resulting in a small TRP.
- Improvement suggestions: 1. Wrap all batteries with tin foil, and then connect them to the board ground, which may improve performance; 2. Change to an FPC+Cable antenna structure, and performance will be greatly improved.



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Thank you!



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