



深圳市亿铭远科技有限公司

Shenzhen Yimingyuan Technology Co., Ltd

Industry leading manufacturer of one-stop
communication RF antenna solutions

Antenna Debugging Report

customer: thermodynamic

Project Name: Hakushu (OnboardPCB ANT)

RF Engineer: Xu Long

cell-phone number: 15915343126

Report Version: 2024.04.24

Antenna Manufacturer Company: Heatmoving

Comapny Address: NO 28 Jingyuling Rd Dongcheng Dongguan Guangdong China

行业领先的一站式通信射频天线解决方案制造商

One stop communication RF antenna solution manufacturer



catalogue

- 📶 Introduction to Project Debugging
- 📶 Summary of Report Version
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Introduction to Project Debugging

Introduction to Project Debugging

Plate type	complete machine						
Antenna Overview	Main antenna	Frequency band		Antenna status	Antenna form	Design Area	Match changes
		2G	N/A	sample	PIFA		nothing
		3G					
		4G	N/A				
		5G	N/A				
	Other antennas	BT/WIFI	2.4G		Onboard		nothing
		GPS	N/A				nothing
		diversity	N/A				nothing
Prototype status	HaKushu		Environmental treatment	nothing			

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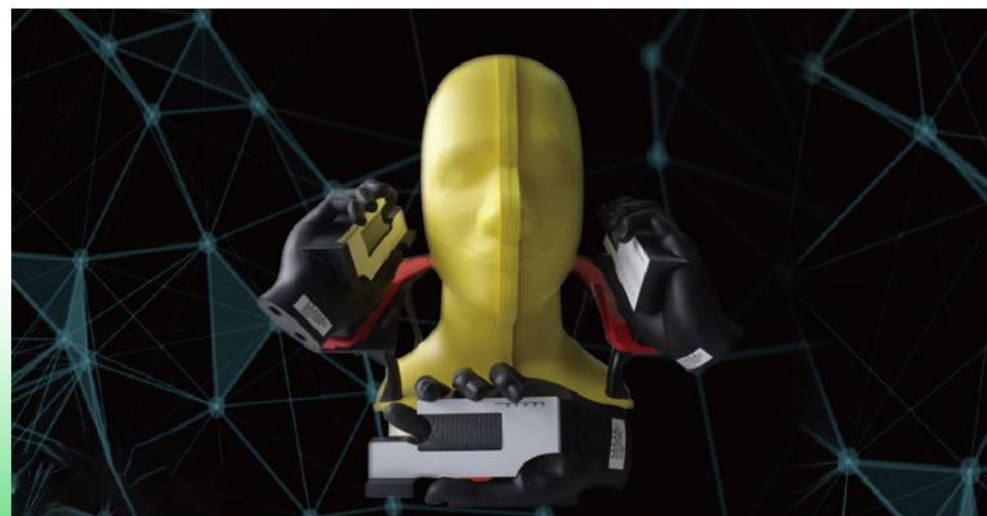
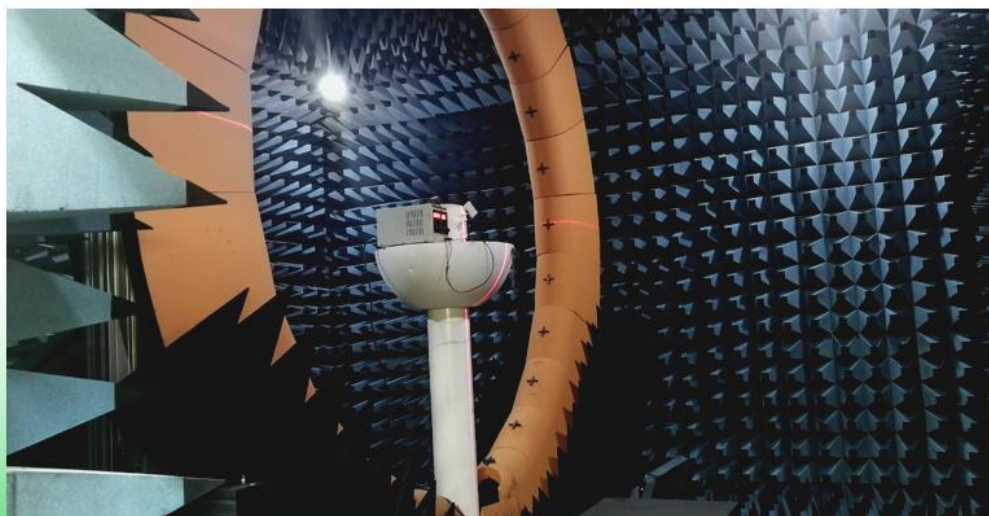
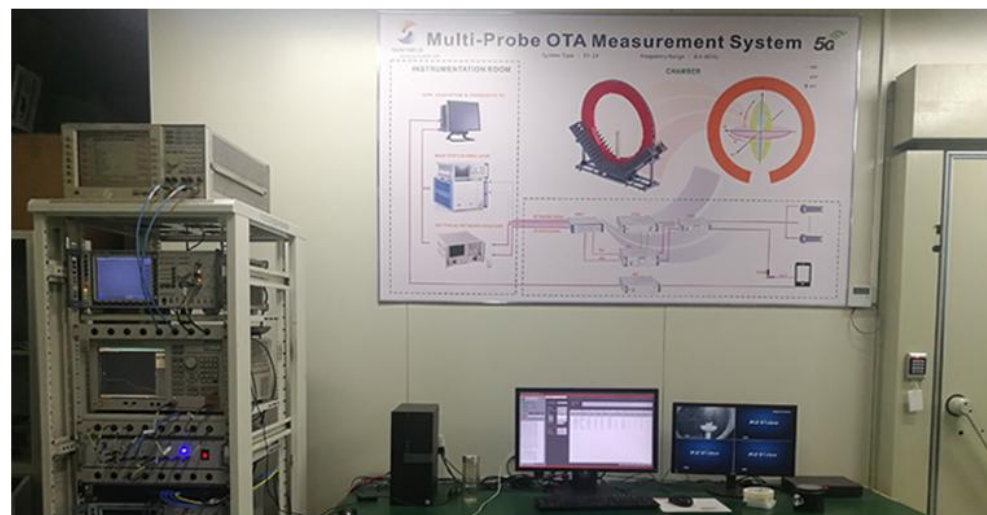
Summary of Report Version

edition	date	Content Overview
Hakushu	20240424	Onboard antenna test report



Yimingyuan Technology

Project development environment



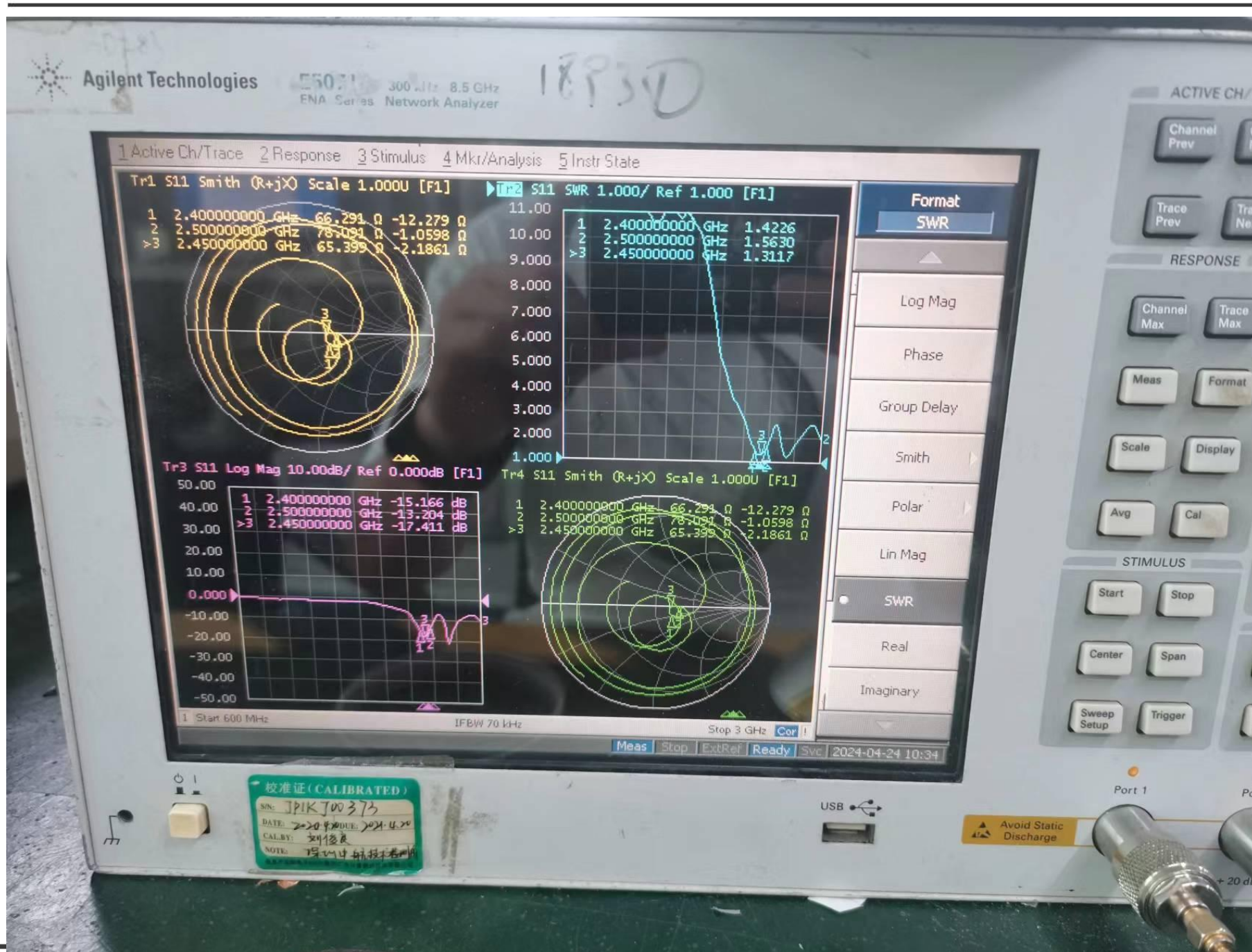
亿铭远一直都是您值得信赖且优秀的合作伙伴，我们为您提供全方位一站式的产品以及技术服务！

“质量第一，服务至上”是亿铭远一直以来的发展宗旨

携手共进 共创未来



Antenna Smith Circle Diagram and S11 Parameters





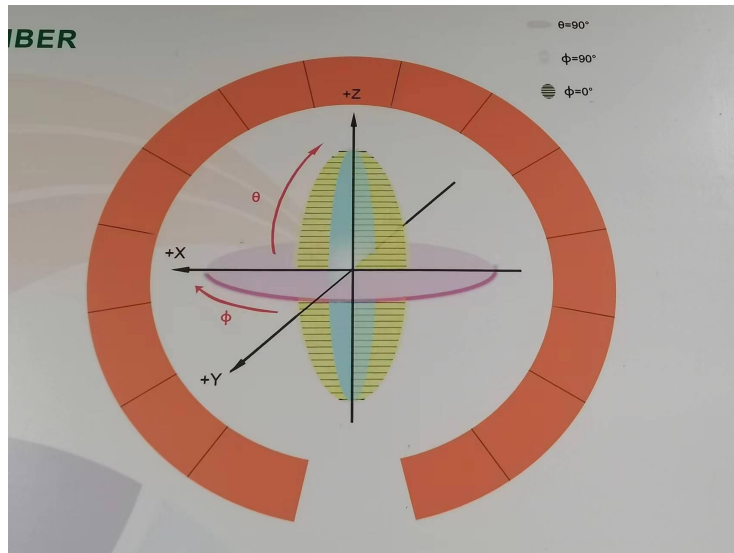
Antenna efficiency

Gain&Efficiency&PhaseCenter 增益、效率和相位中心			
frequency 频率(MHz)	gain 增益(dBi)	efficiency 效率(dB)	efficiency 效率(%)
2402	3.9	-3.71	42.52
2410	3.85	-3.49	44.75
2416	4.34	-3.17	48.19
2422	4.57	-3.13	48.68
2428	4.49	-3.41	45.56
2434	4.43	-3.49	44.82
2440	4.29	-3.47	45.03
2446	4.18	-3.57	43.94
2454	4.35	-3.61	43.59
2460	4.48	-3.63	43.39
2466	4.08	-3.91	40.6
2472	3.91	-3.94	40.33
2480	3.85	-3.96	40.17

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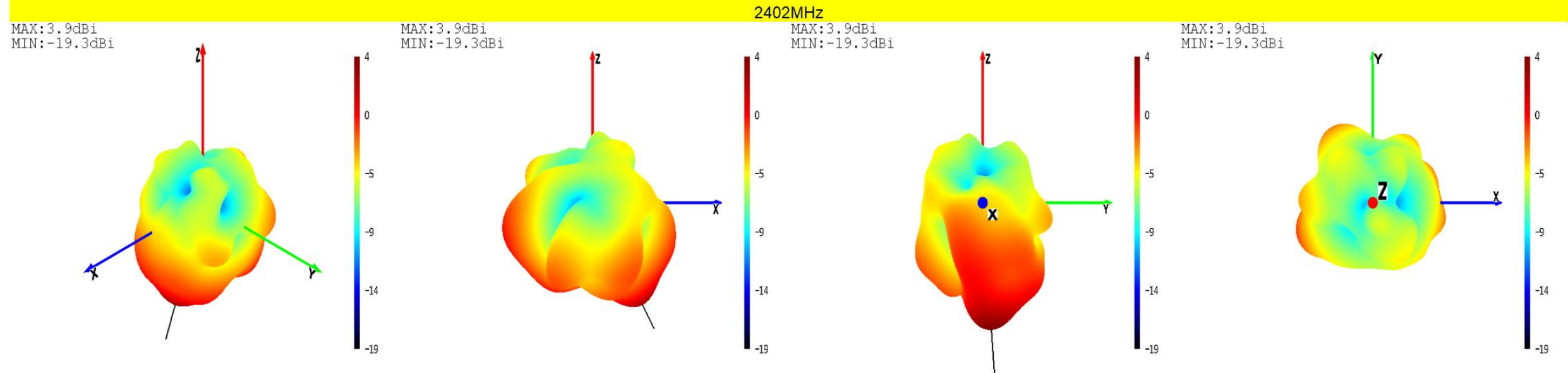
Z、X、Y Physical picture



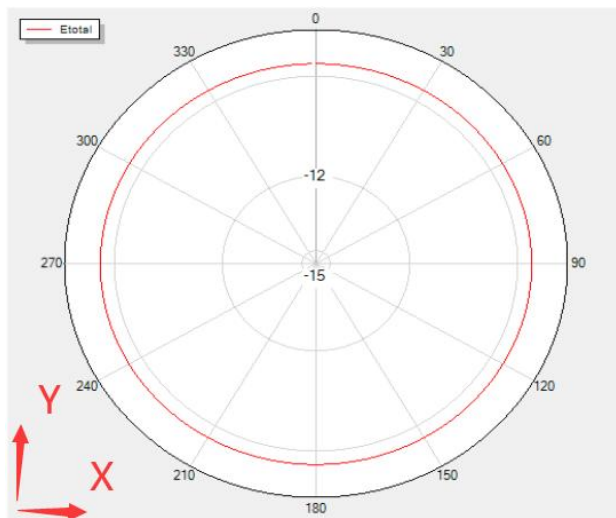
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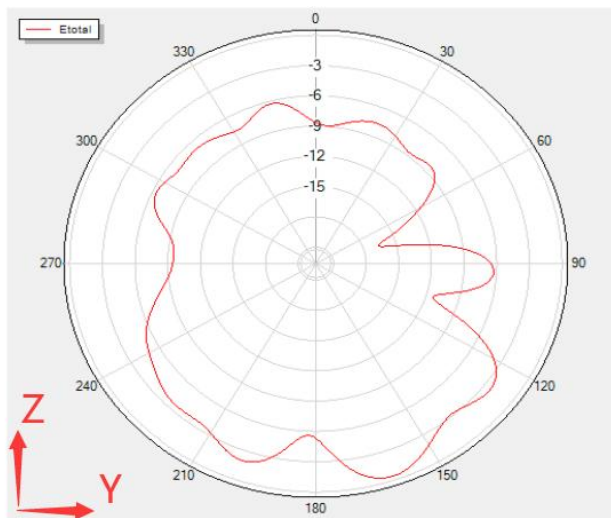
Antenna apple diagram and directional diagram



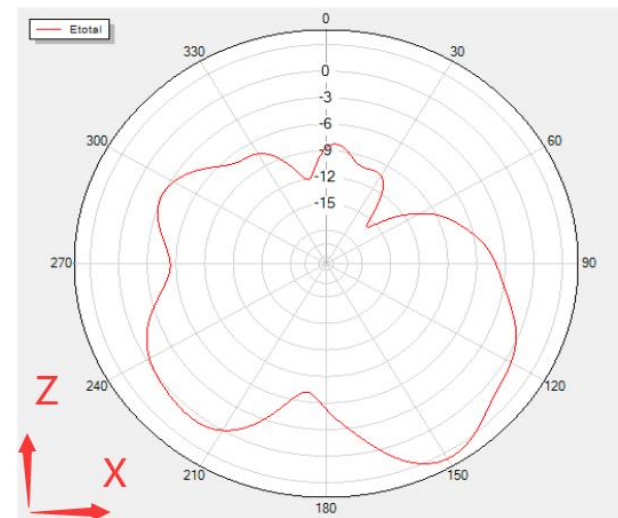
Theta=0 Freq=2402MHz



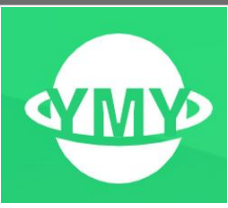
Phi=90 Freq=2402MHz



Phi=0 Freq=2402MHz



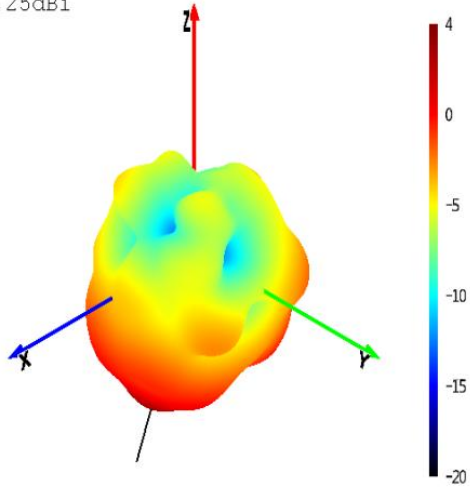
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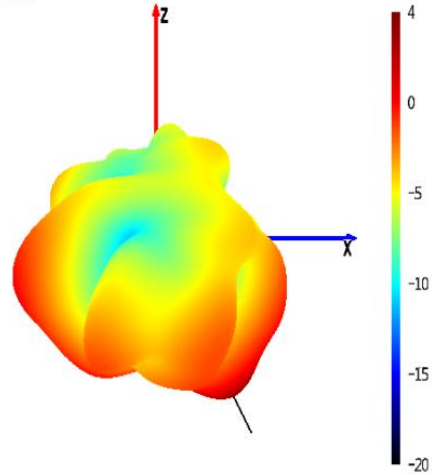
Antenna apple diagram and directional diagram

2410MHz

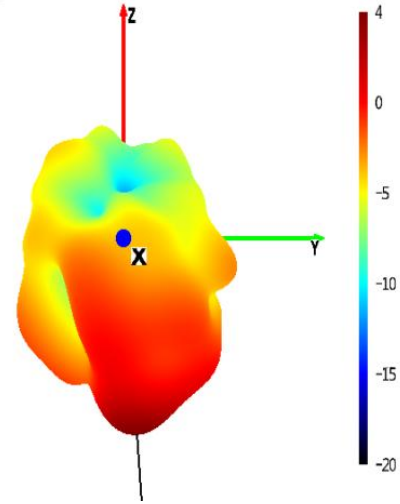
MAX:3.85dBi
MIN:-20.25dBi



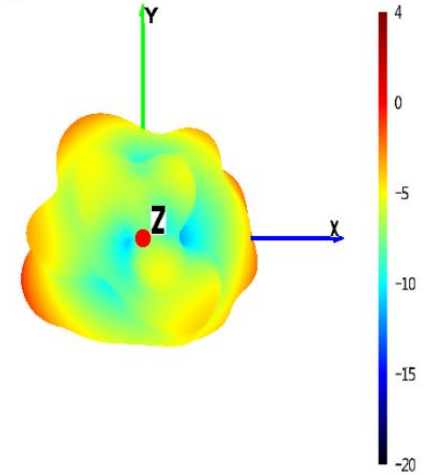
MAX:3.85dBi
MIN:-20.25dBi



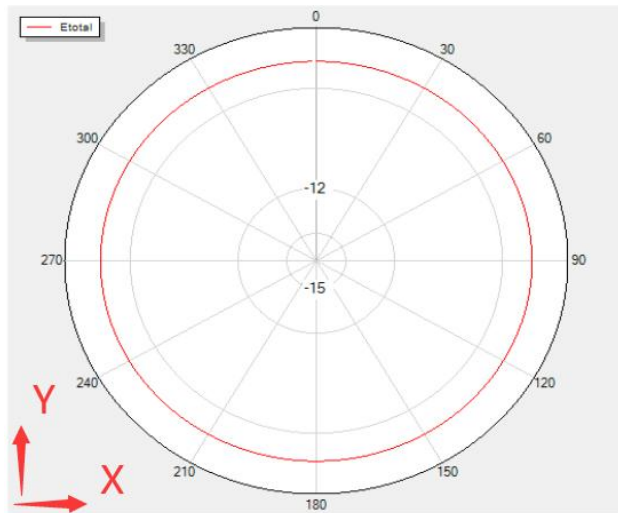
MAX:3.85dBi
MIN:-20.25dBi



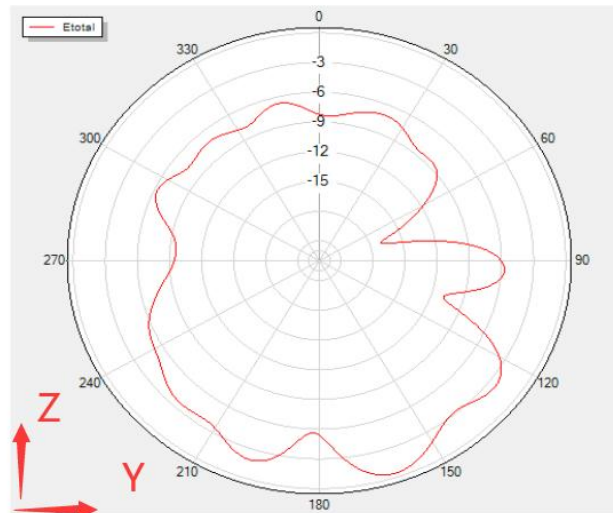
MAX:3.85dBi
MIN:-20.25dBi



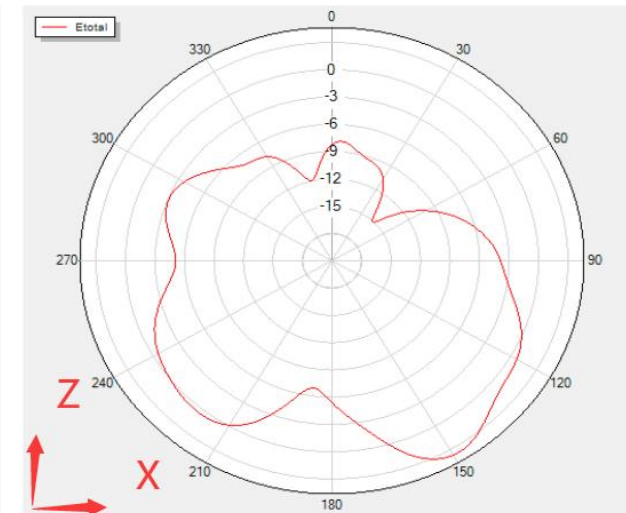
Theta=0 Freq=2410MHz



Phi=90 Freq=2410MHz



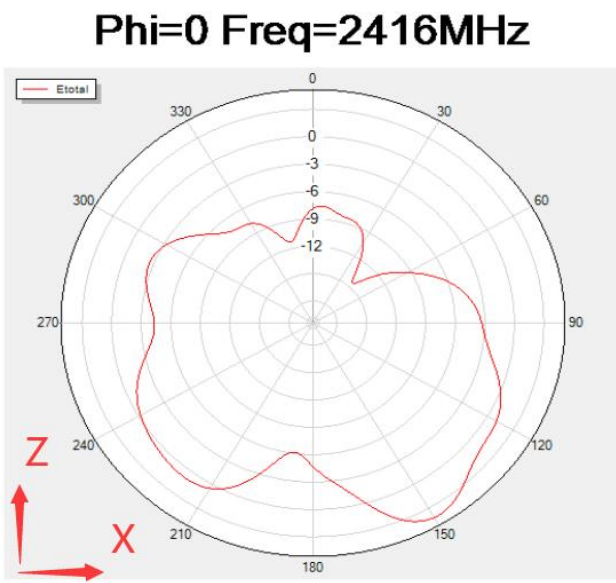
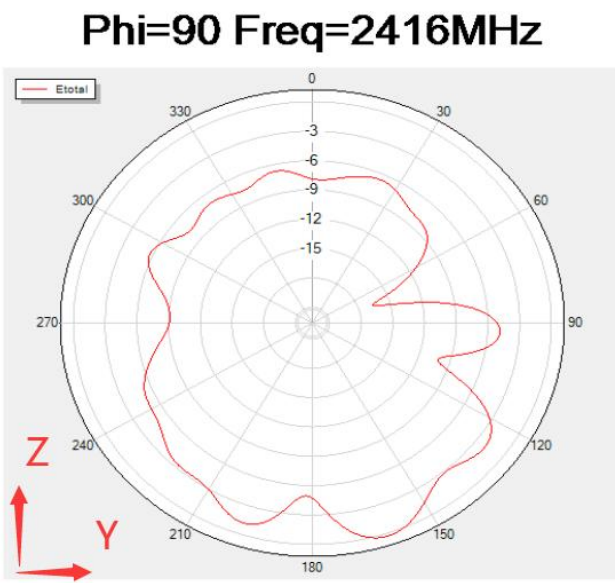
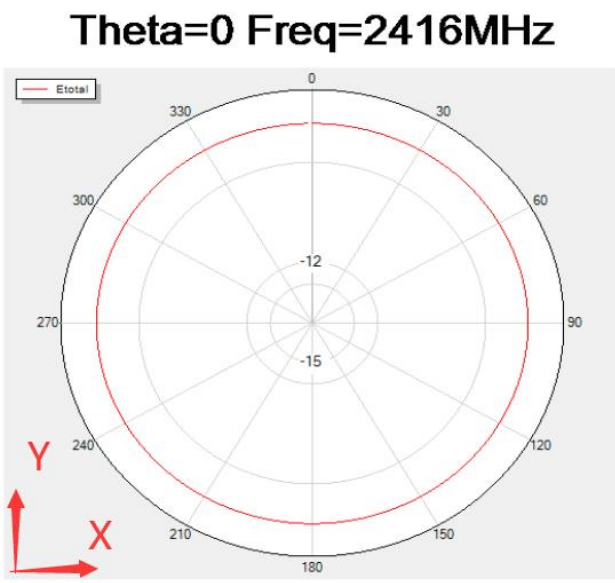
Phi=0 Freq=2410MHz



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Antenna apple diagram and directional diagram



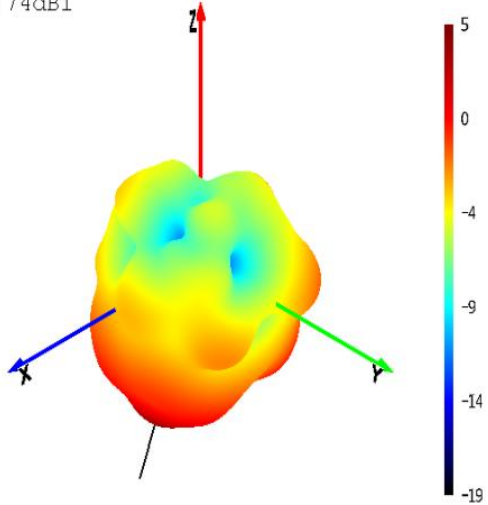
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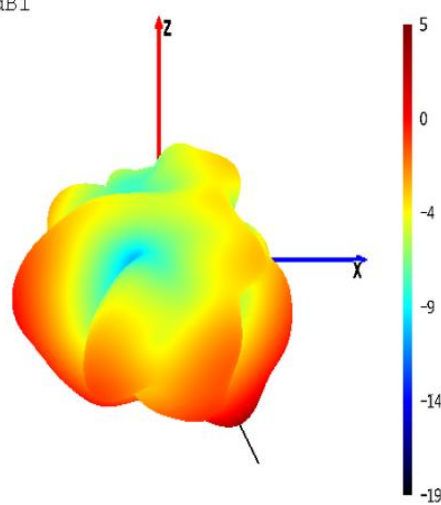
Antenna apple diagram and directional diagram

2422MHz

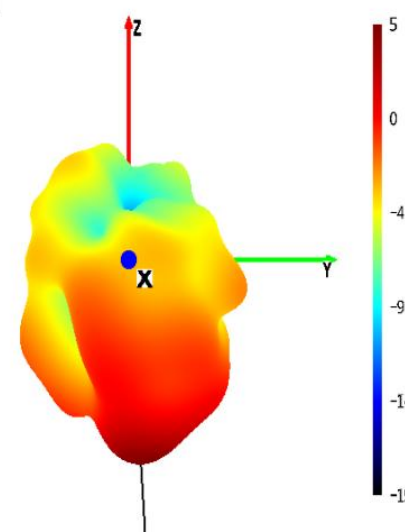
MAX: 4.57dBi
MIN: -19.74dBi



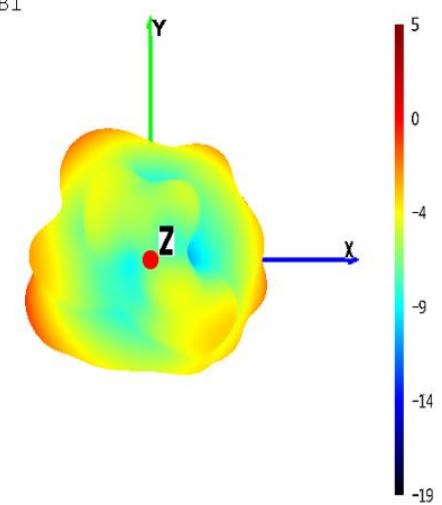
MAX: 4.57dBi
MIN: -19.74dBi



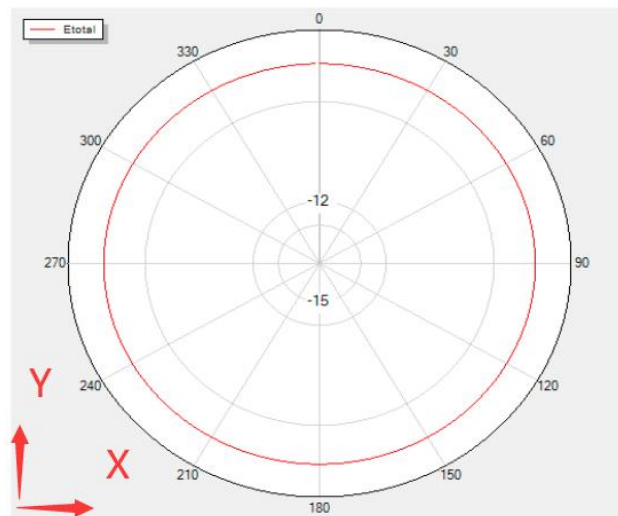
MAX: 4.57dBi
MIN: -19.74dBi



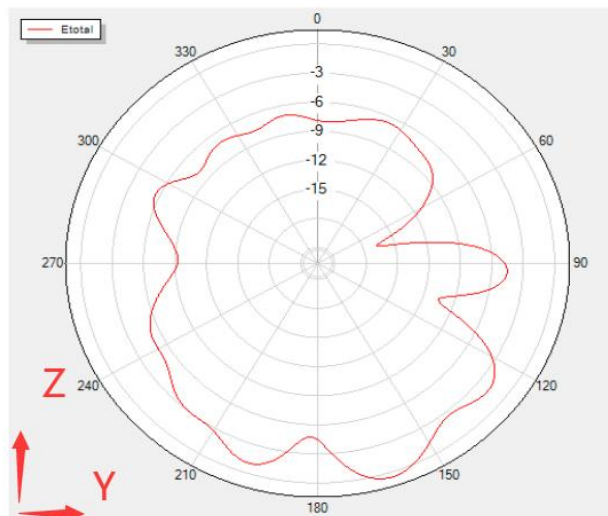
MAX: 4.57dBi
MIN: -19.74dBi



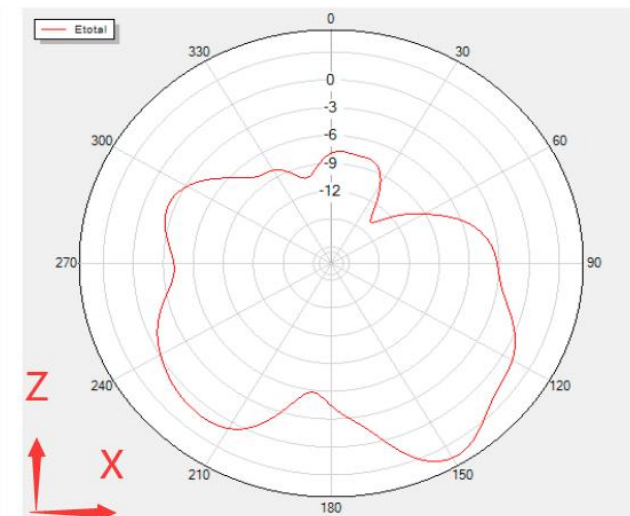
Theta=0 Freq=2422MHz



Phi=90 Freq=2422MHz



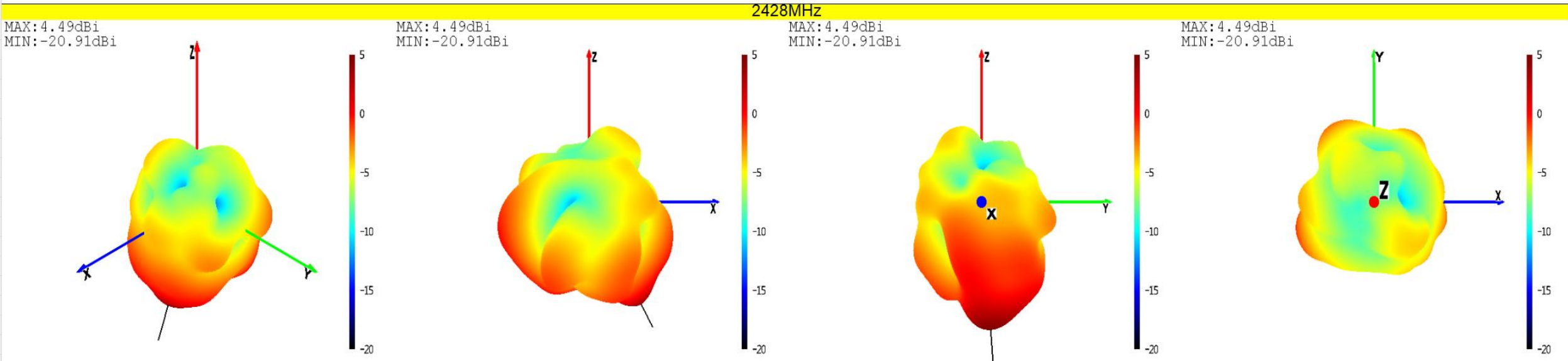
Phi=0 Freq=2422MHz



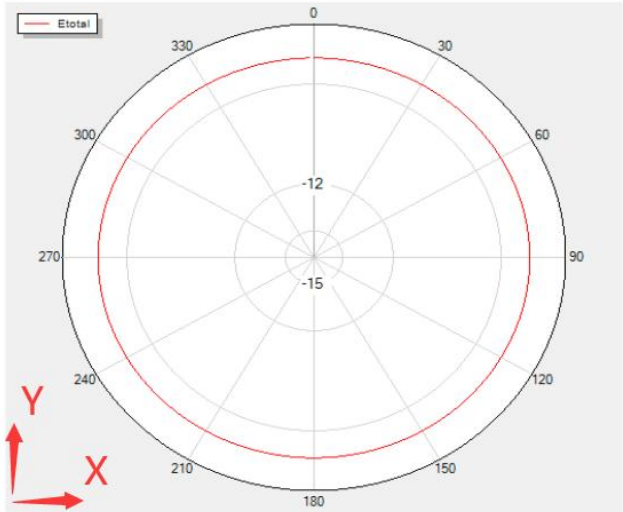
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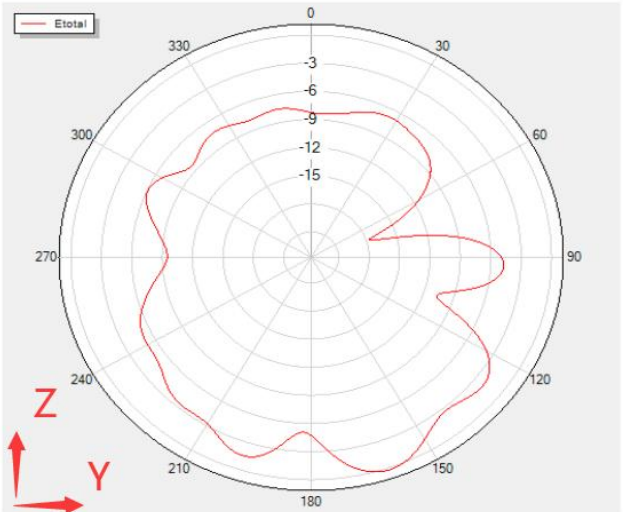
Antenna apple diagram and directional diagram



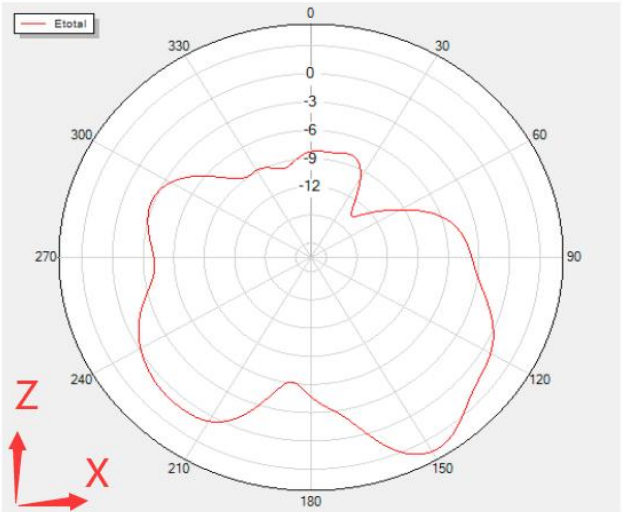
Theta=0 Freq=2428MHz



Phi=90 Freq=2428MHz



Phi=0 Freq=2428MHz



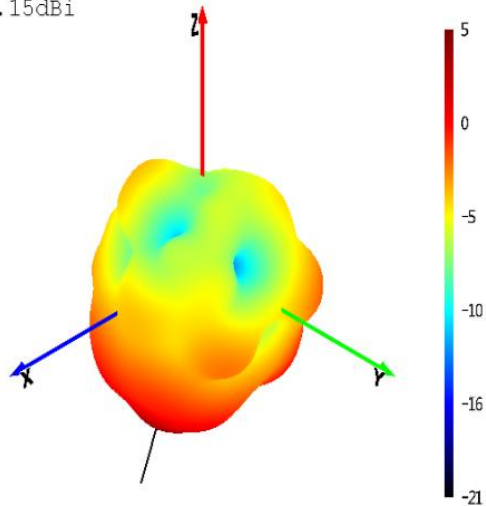
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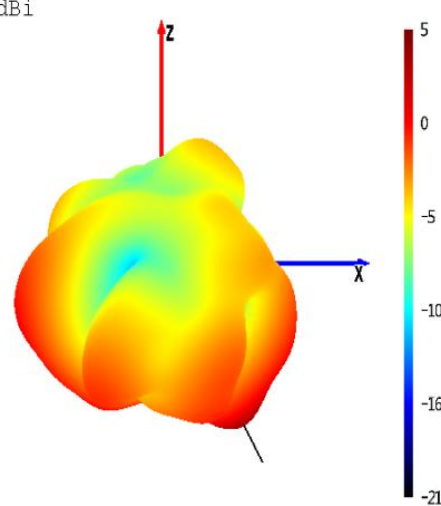
Antenna apple diagram and directional diagram

2434MHz

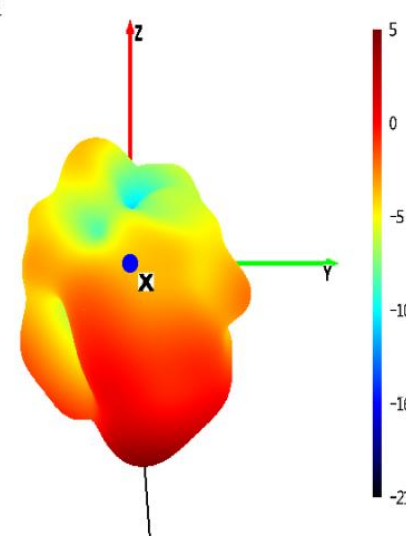
MAX: 4.43dBi
MIN: -22.15dBi



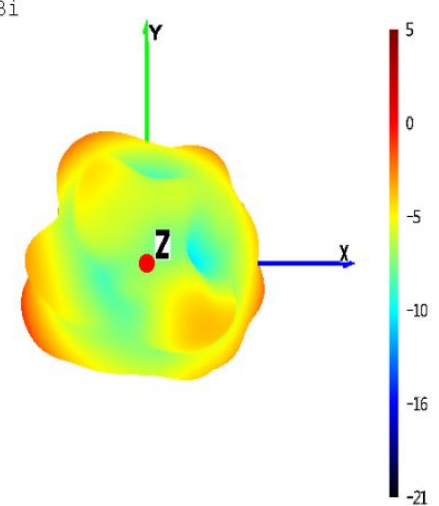
MAX: 4.43dBi
MIN: -22.15dBi



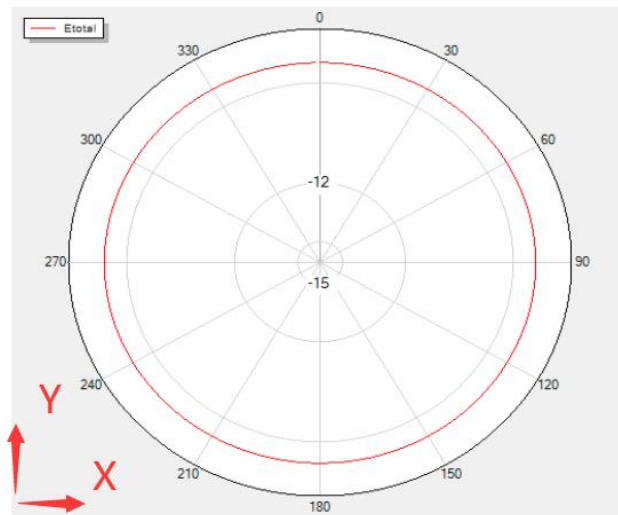
MAX: 4.43dBi
MIN: -22.15dBi



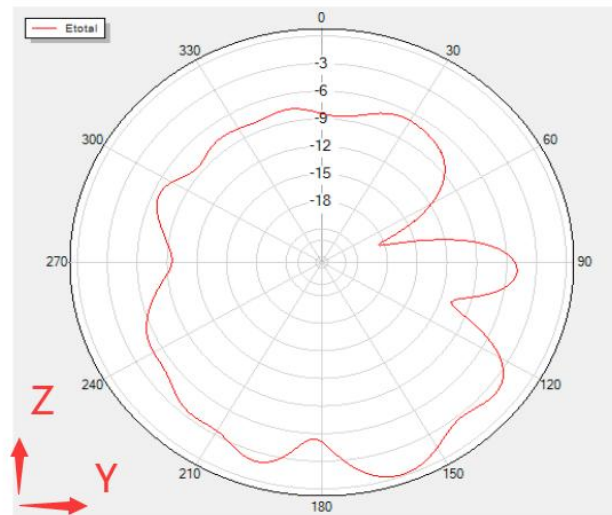
MAX: 4.43dBi
MIN: -22.15dBi



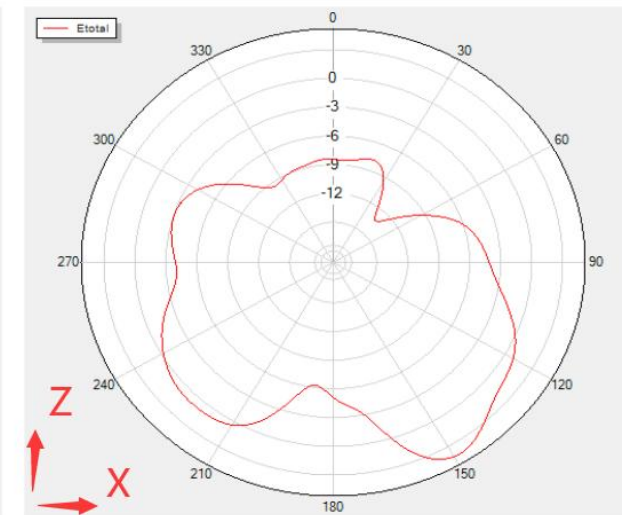
Theta=0 Freq=2434MHz



Phi=90 Freq=2434MHz



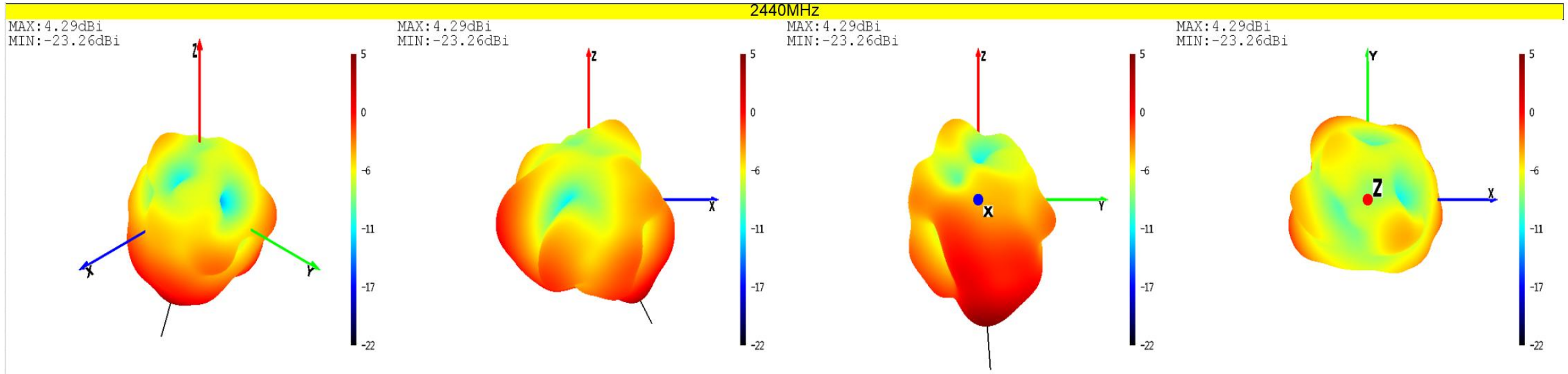
Phi=0 Freq=2434MHz



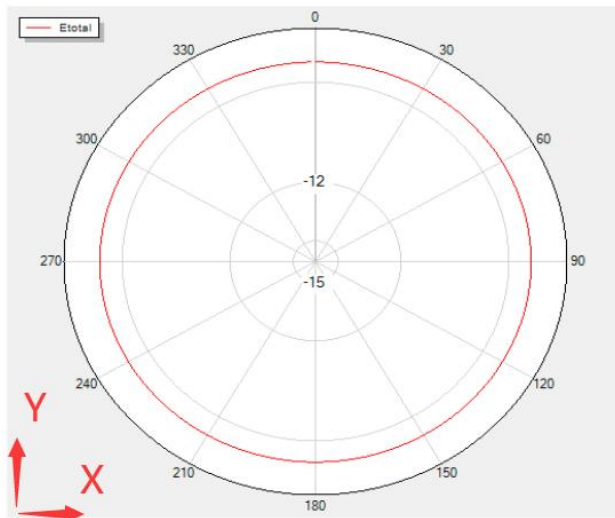
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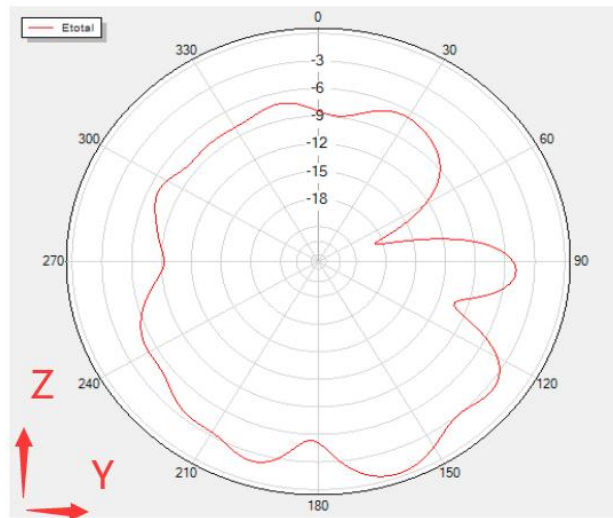
Antenna apple diagram and directional diagram



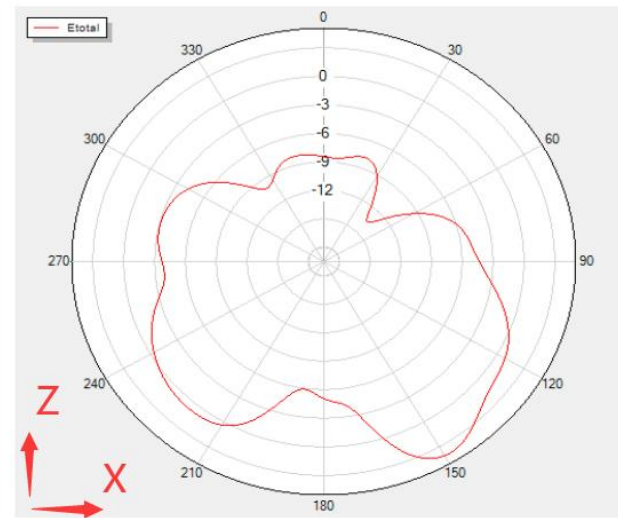
Theta=0 Freq=2440MHz



Phi=90 Freq=2440MHz



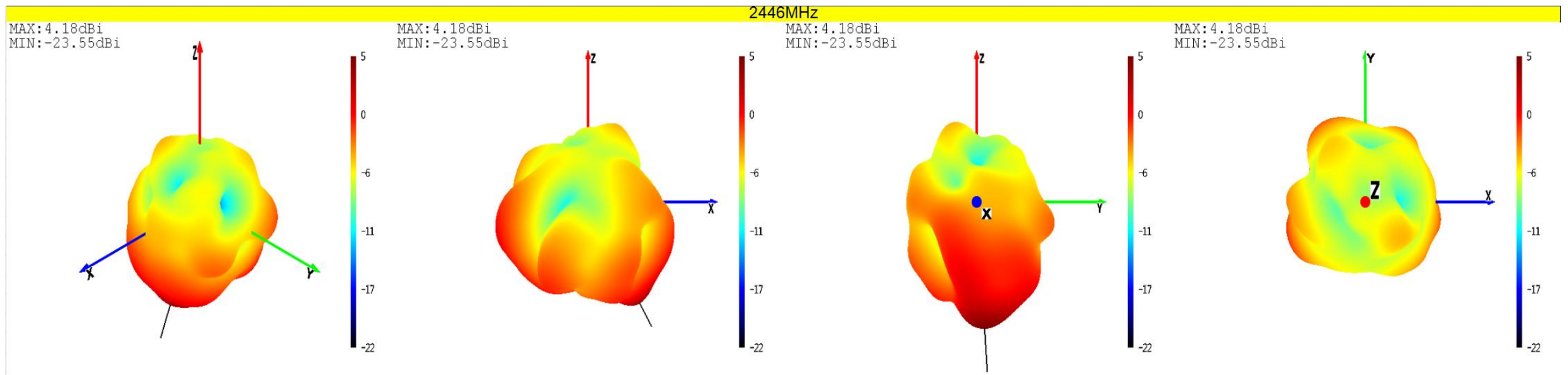
Phi=0 Freq=2440MHz



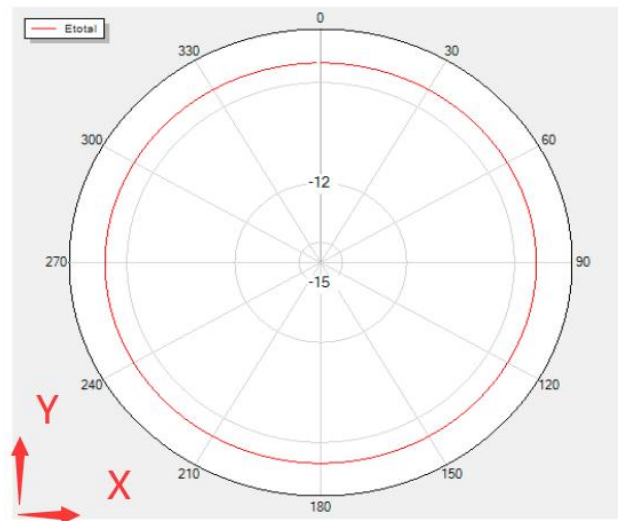
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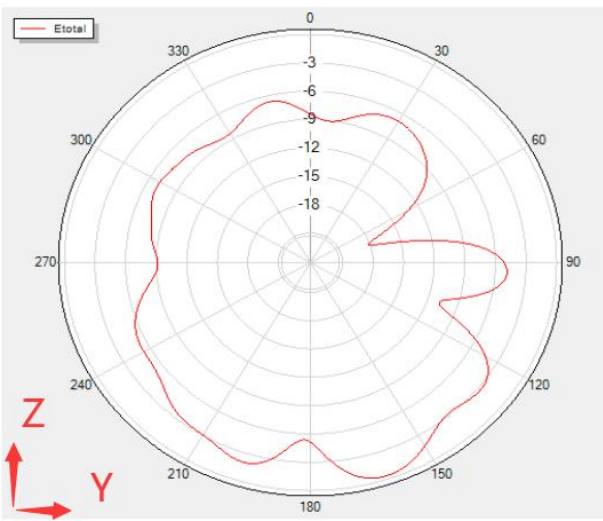
Antenna apple diagram and directional diagram



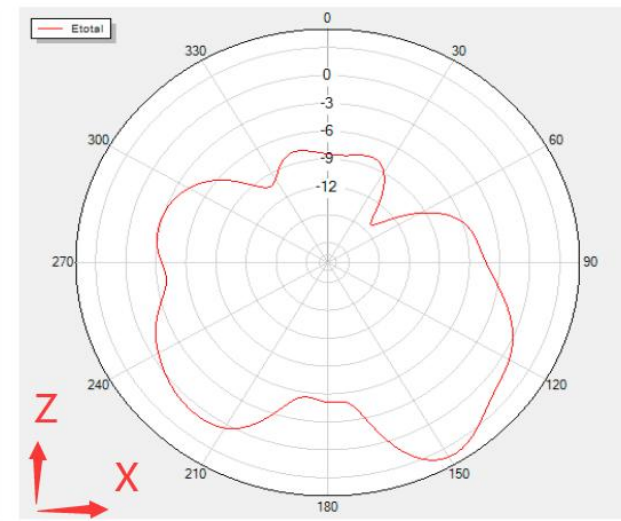
Theta=0 Freq=2446MHz



Phi=90 Freq=2446MHz



Phi=0 Freq=2446MHz



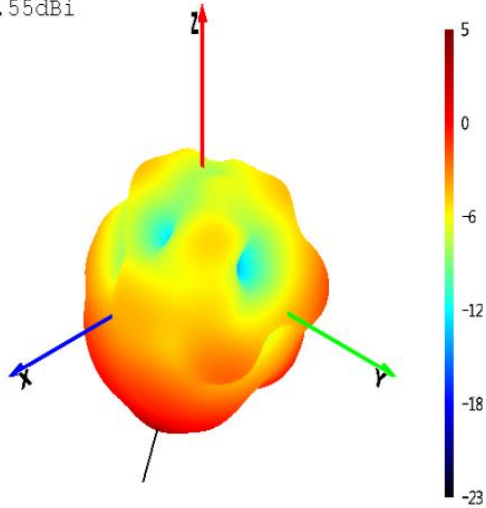
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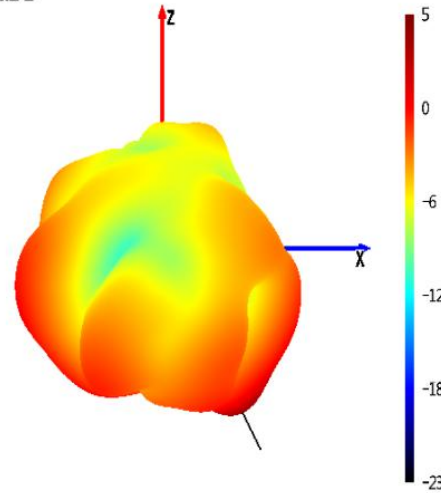
Antenna apple diagram and directional diagram

2454MHz

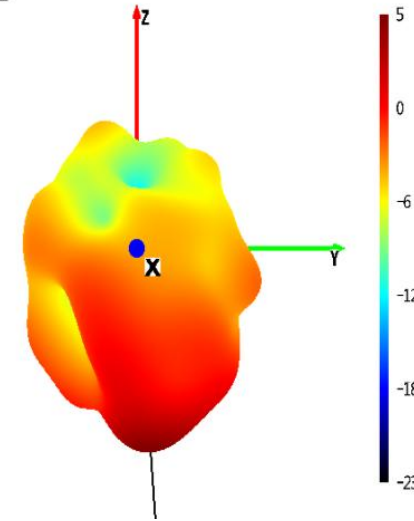
MAX: 4.35dBi
MIN: -24.55dBi



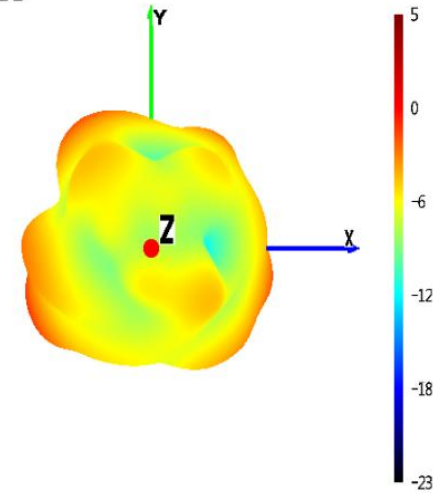
MAX: 4.35dBi
MIN: -24.55dBi



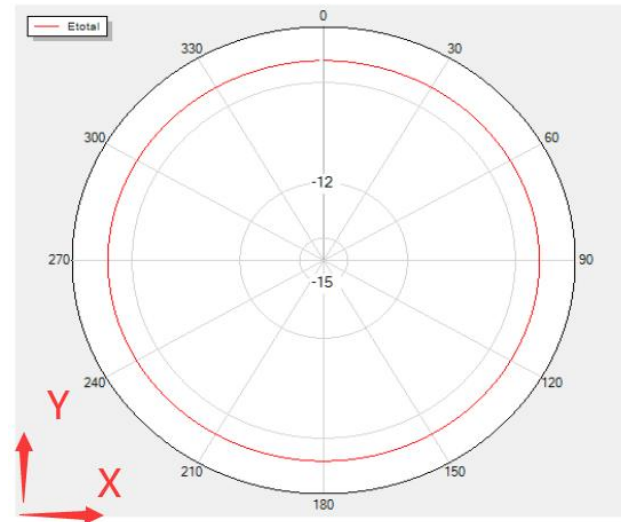
MAX: 4.35dBi
MIN: -24.55dBi



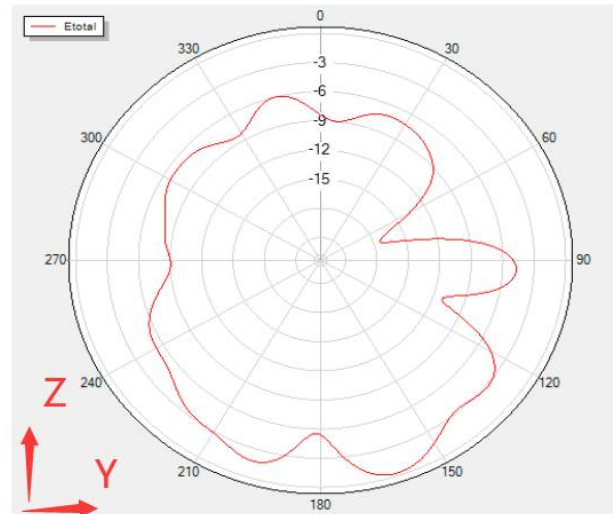
MAX: 4.35dBi
MIN: -24.55dBi



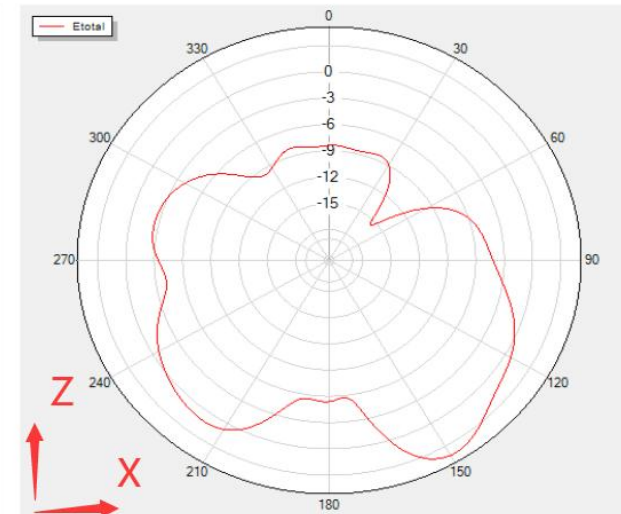
Theta=0 Freq=2454MHz



Phi=90 Freq=2454MHz



Phi=0 Freq=2454MHz



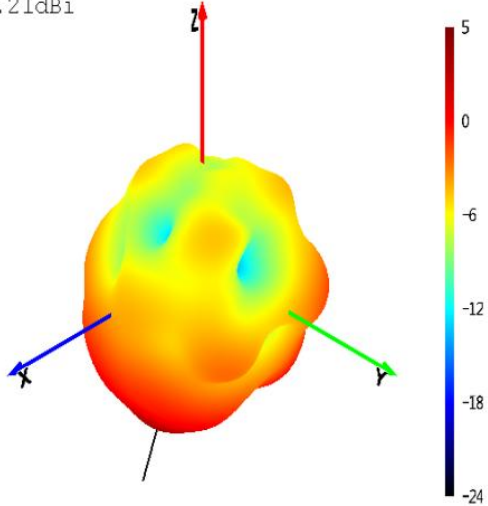
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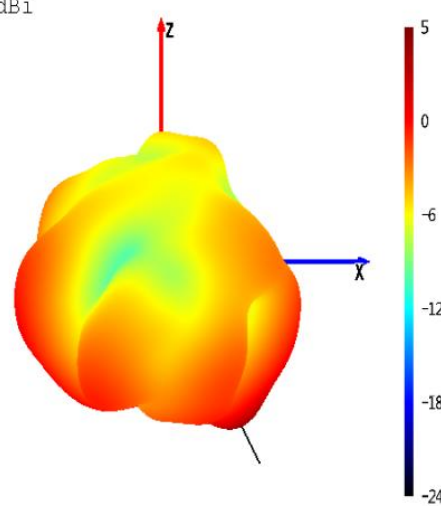
Antenna apple diagram and directional diagram

2460MHz

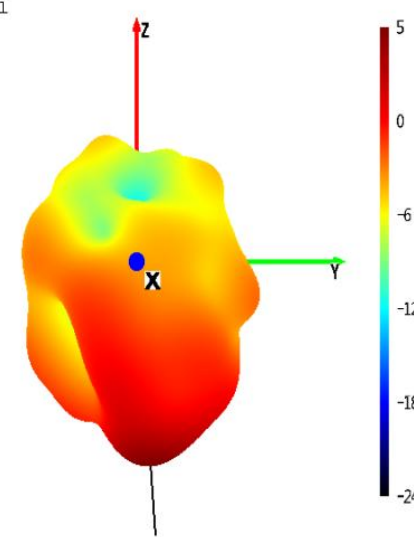
MAX: 4.48dBi
MIN: -25.21dBi



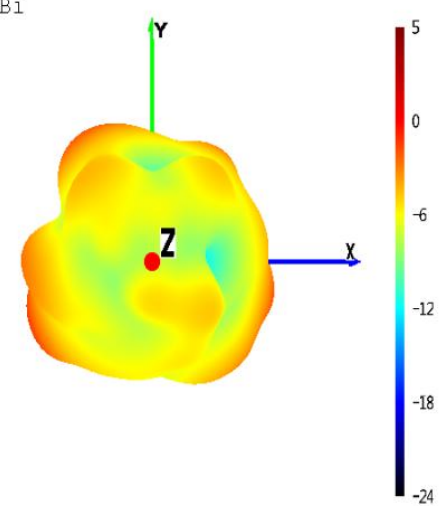
MAX: 4.48dBi
MIN: -25.21dBi



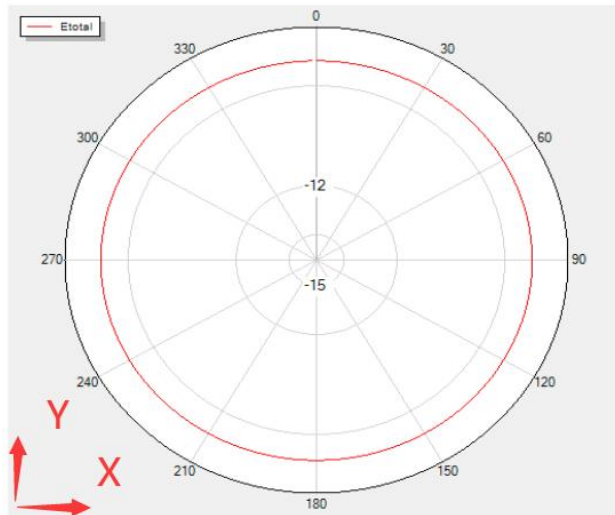
MAX: 4.48dBi
MIN: -25.21dBi



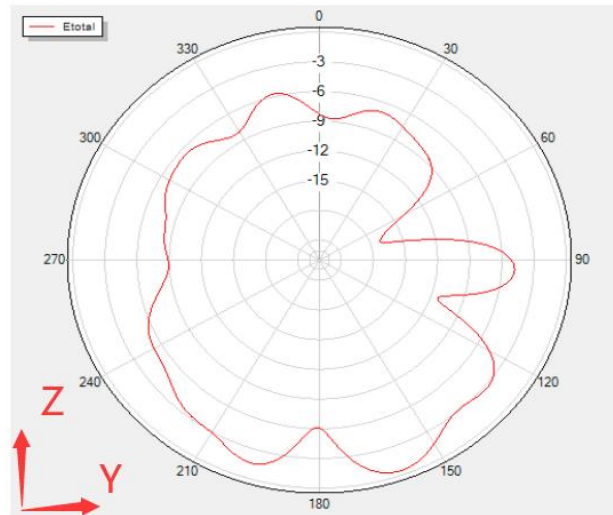
MAX: 4.48dBi
MIN: -25.21dBi



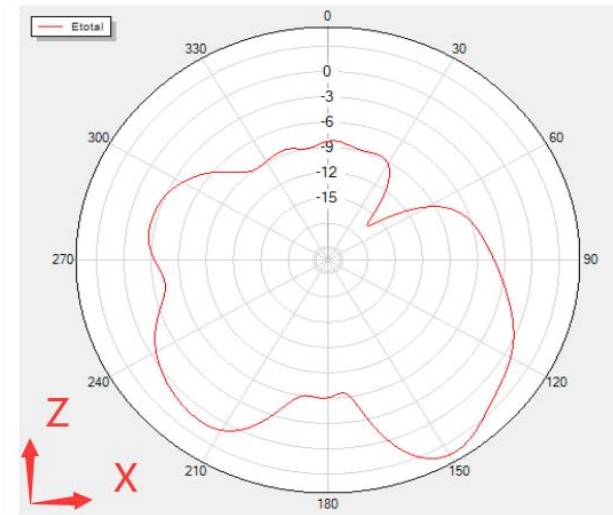
Theta=0 Freq=2460MHz



Phi=90 Freq=2460MHz



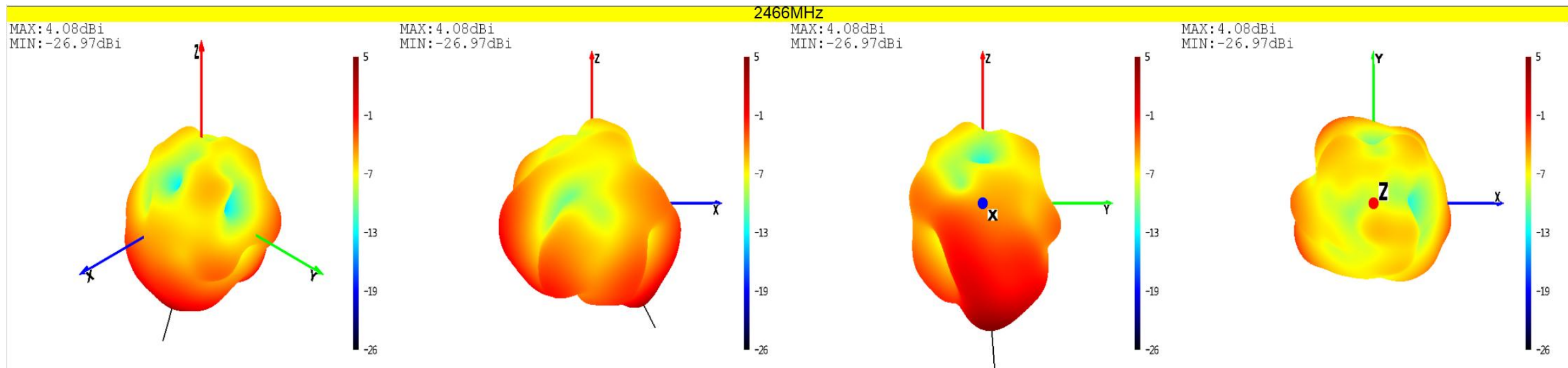
Phi=0 Freq=2460MHz



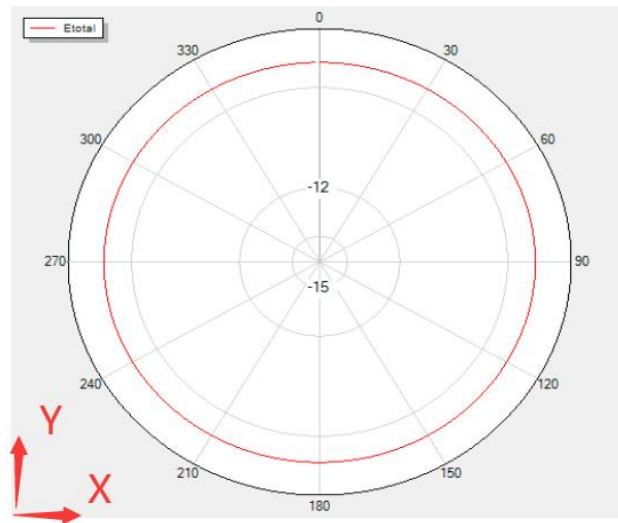
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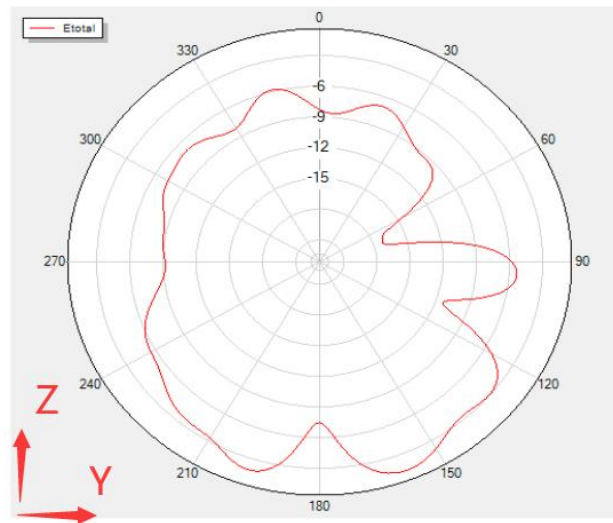
Antenna apple diagram and directional diagram



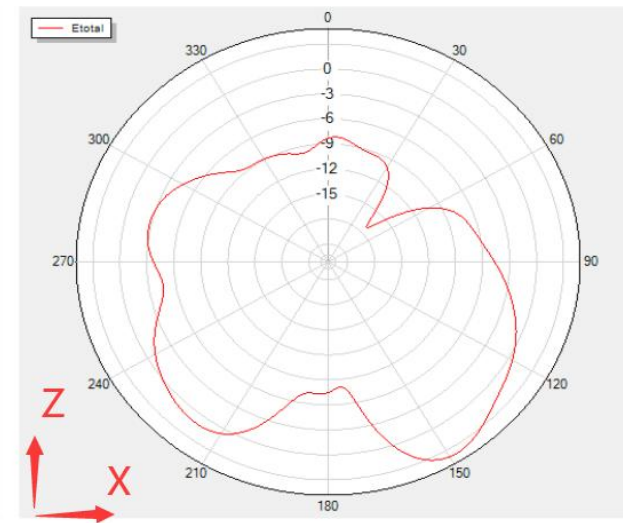
Theta=0 Freq=2466MHz



Phi=90 Freq=2466MHz



Phi=0 Freq=2466MHz



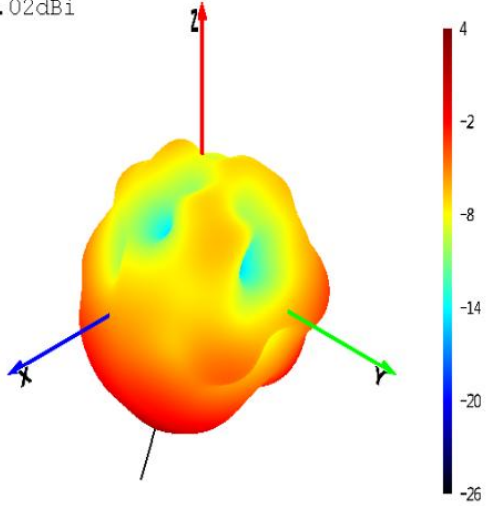
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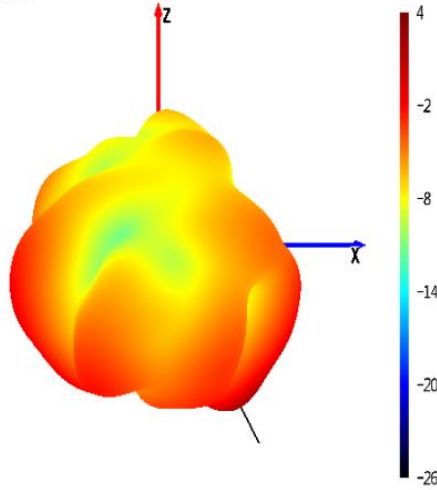
Antenna apple diagram and directional diagram

2472MHz

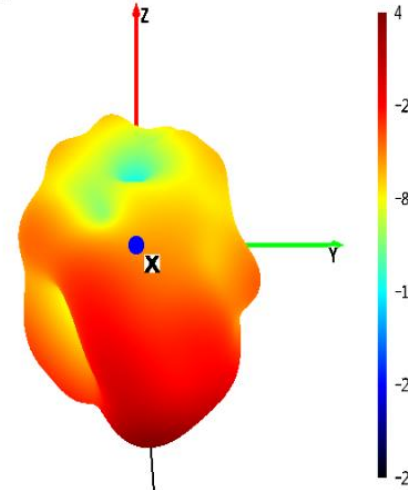
MAX:3.91dBi
MIN:-27.02dBi



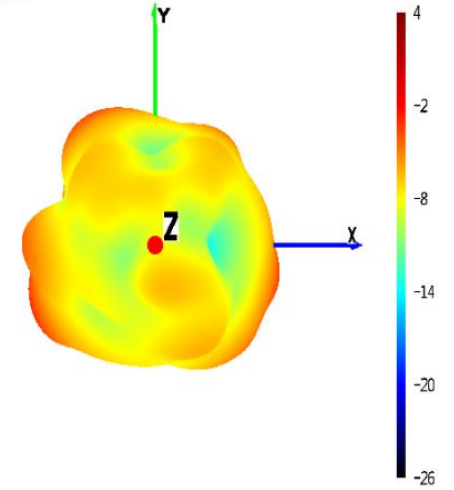
MAX:3.91dBi
MIN:-27.02dBi



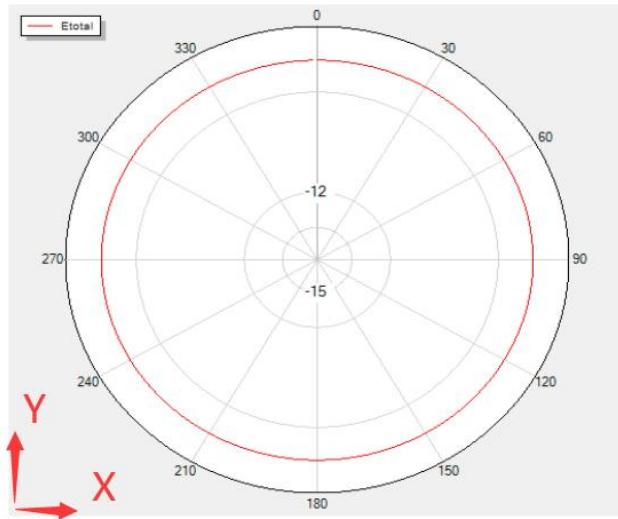
MAX:3.91dBi
MIN:-27.02dBi



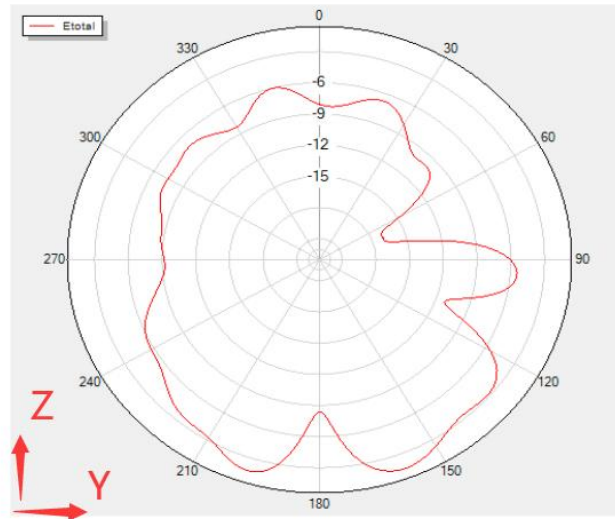
MAX:3.91dBi
MIN:-27.02dBi



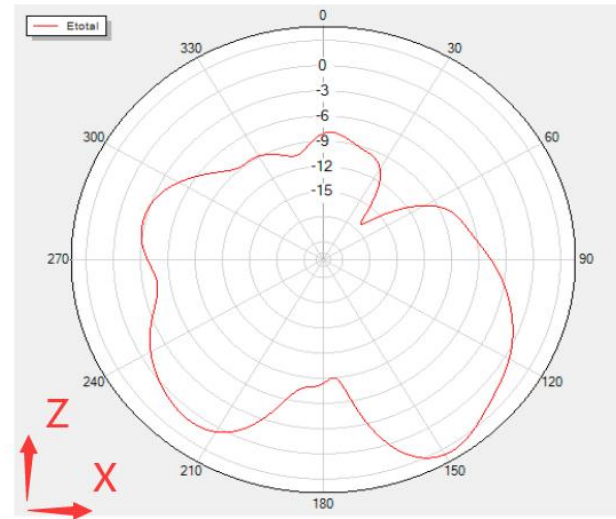
Theta=0 Freq=2472MHz



Phi=90 Freq=2472MHz



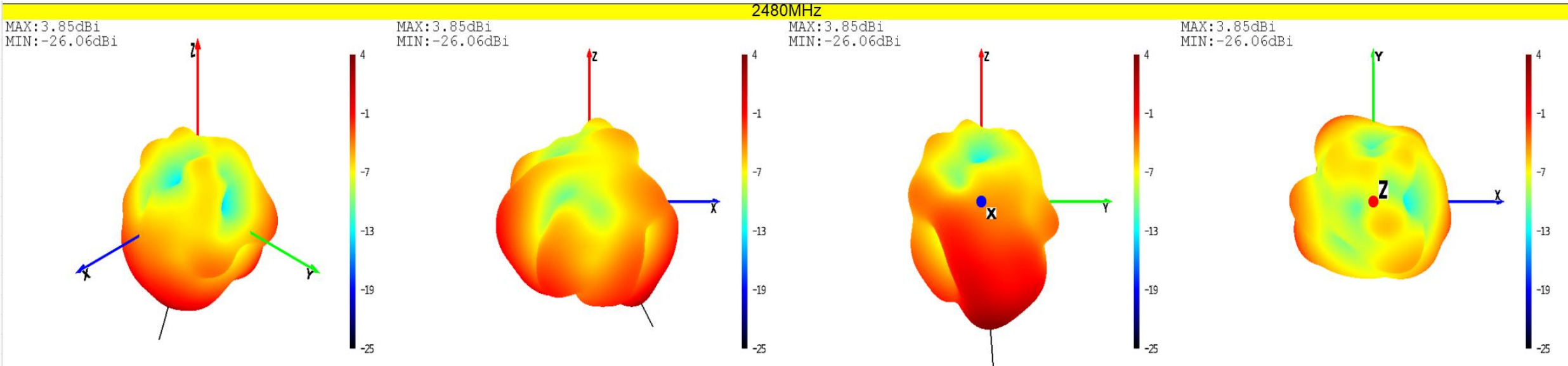
Phi=0 Freq=2472MHz



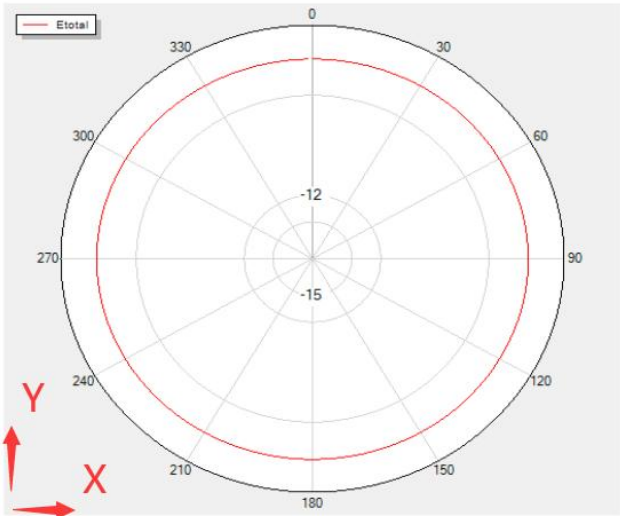
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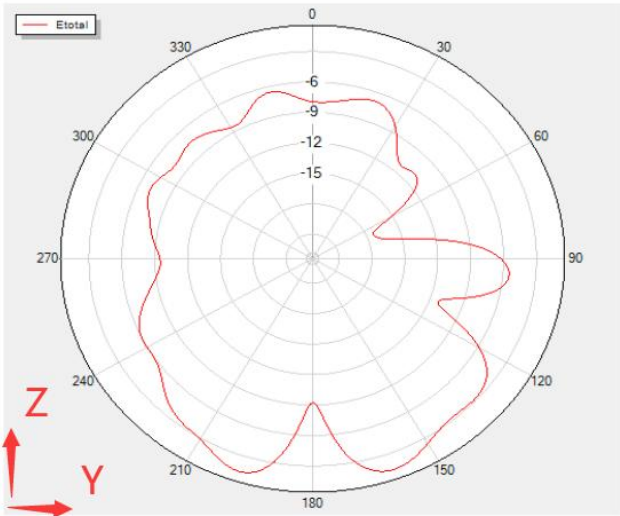
Antenna apple diagram and directional diagram



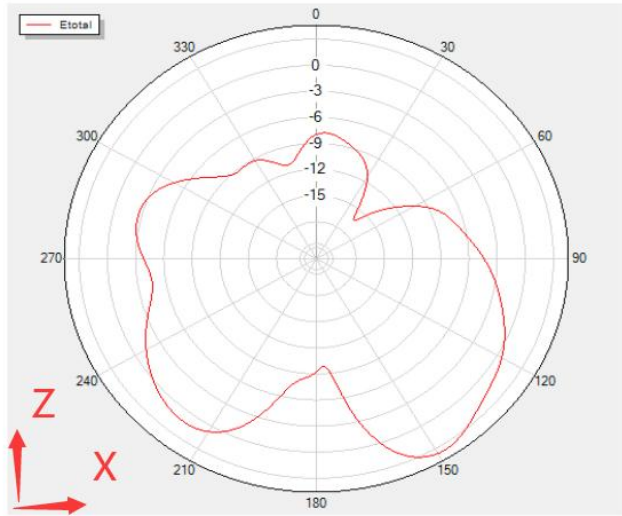
Theta=0 Freq=2480MHz



Phi=90 Freq=2480MHz



Phi=0 Freq=2480MHz



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Additional explanation

- 📶 Please carefully confirm whether the matching circuit mentioned in the report has been modified and whether the environmental treatment has been imported, as this will directly affect the antenna performance.
- 📶 The parameters provided in this report are only the parameters provided by the customer to our company for testing the prototype, and do not represent the final mass production status of your company's final project.
- 📶 If your company has the latest prototype for trial production or updated status (replacement of materials, software, environmental treatment, etc.), please submit it to our company for verification as soon as possible to confirm whether the antenna performance is affected.
- 📶 If your company needs to send the machine for third-party retesting or customer testing, please be sure to hand it over to our company for testing and confirmation, as factors such as motherboard consistency, assembly consistency, and differences in antenna assembly may lead to deviations in antenna parameters.



深圳市亿铭远科技有限公司

Shenzhen Yimingyuan Technology Co., Ltd

The End

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