規格承認書

Specification for Approval

客　戶：　Tymphany
Customer

品　名：　DH400 Antenna
Part name

料　號：
Part No.

ARY196-0383-037-H0（WIFI-1）
ARY196-0383-038-H0（WIFI-2）
ARY196-0383-039-H0（BT）

客戶承認印　CUSTOMER APPROVED BY		
APPROVAL	CHIEF	SUPERVISOR
Approval No.		
Model		
Part No.		

CHIEF	SALES	CHIEF	ENGINEER
ROX	GRANT	ROX	WAH
Date: 2024.12.25		Date: 2024.12.25	

驊 陞 科 技 股 份 有 限 公 司

WIESON TECHNOLOGIES CO., LTD.

(SR-83-16)

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				Approvals	
Rev	Date	Description	Edited by	Prepared :	WAH
01	2024/12/25	ISSUE	WAH	Checked :	FOUNTAIN
				Approved :	ROX
				Issued No :	01
				Sheet :	**1 OF 30**

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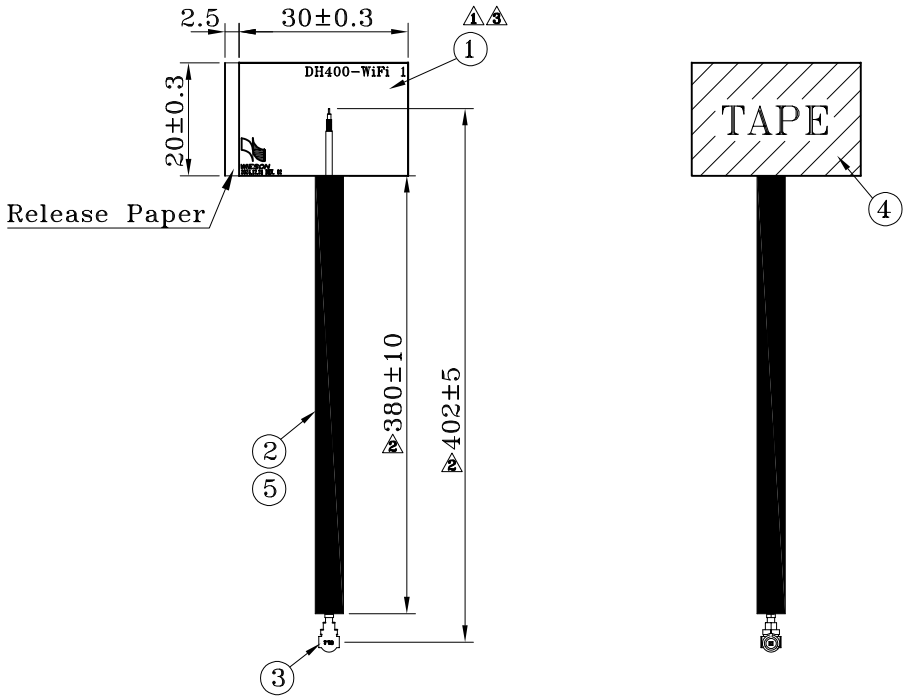
Customer Drawing

HF Compliant

REV	DATE	DESCRIPTION	ECN NO.	NAME
A1	24.09.30	PROPOSAL		DAVID
A2	24.10.29	1 Modify Print		DAVID
A3	24.12.11	2 Cable Length		DAVID
A4	24.12.24	3 Modify Layout		DAVID



CUST NO.:

WIESON TECHNOLOGIES CO., LTD
WIESON

PART NO.: ARY196-0383-037-H0

TITLE: WiFi 1 Antenna

NO.	ITEM	DESCRIPTION	QTY
5	Foam	Size: 380 x 10 x 1mm 2	1
4	Tape	G9000 , Size:29.2 x 19.2mm	1
3	MHF	I-PEX(I) Plug For 1.13mm Cable , Gold Plated	1
2	Cable	1.13mm Normal Coaxial Cable , FEP Black Jacket	1
1	PCB	FR-4 , Size: 30 x 20 x 0.8mm	1

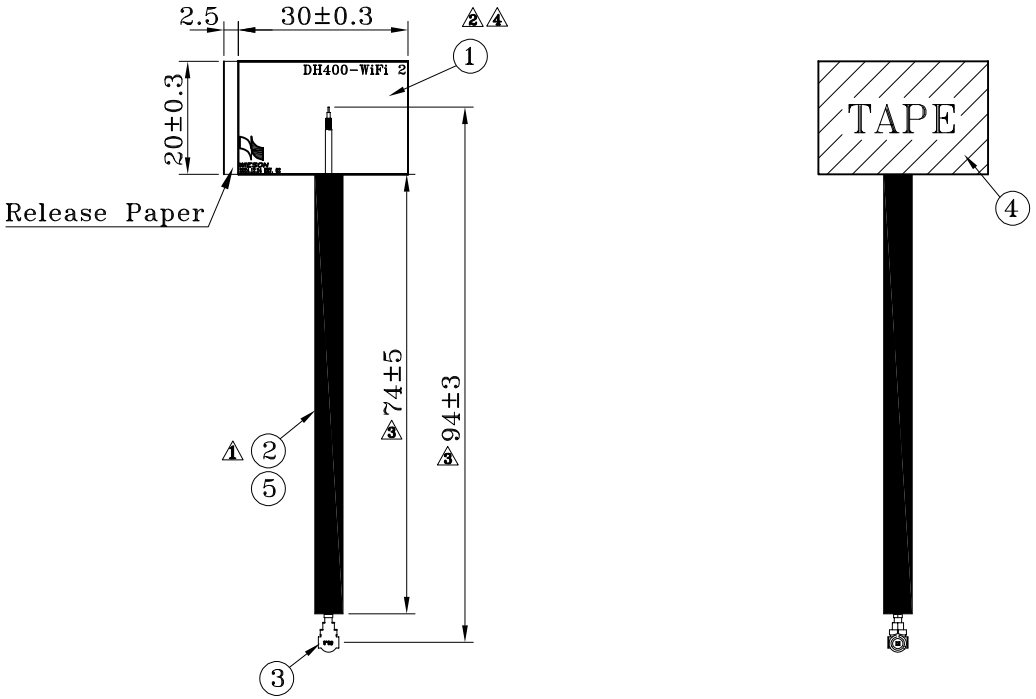
DRAWN BY	DAVID(WST)	DRAWING NO.	ARY196-0383-037-H0
CHECKED BY		DRAWING SIZE	A4
APPROVED BY		UNIT	mm
SORTING NO.	WSC	PAGE	1 OF 1

[ARTICLE: SR-83-41 V1]

Customer Drawing

HF Compliant

REV	DATE	DESCRIPTION	ECN NO.	NAME
A1	24.09.30	PROPOSAL		DAVID
A2	24.10.09	1 Modify Cable Color		DAVID
A3	24.10.29	2 Modify Print		DAVID
A4	24.12.11	3 Cable Length		DAVID
A5	24.12.24	4 Modify Layout		DAVID



CUST NO.:

WIESON TECHNOLOGIES CO., LTD

PART NO.: ARY196-0383-038-H0

TITLE: WiFi 2 Antenna

NO.	ITEM	DESCRIPTION	QTY
5	Foam	Size: 74 x 10 x 1mm 3	1
4	Tape	G9000 , Size:29.2 x 19.2mm	1
3	MHF	I-PEX(I) Plug For 1.13mm Cable , Gold Plated	1
2	Cable	1.13mm Normal Coaxial Cable , FEP Gray Jacket 1	1
1	PCB	FR-4 , Size: 30 x 20 x 0.8mm	1

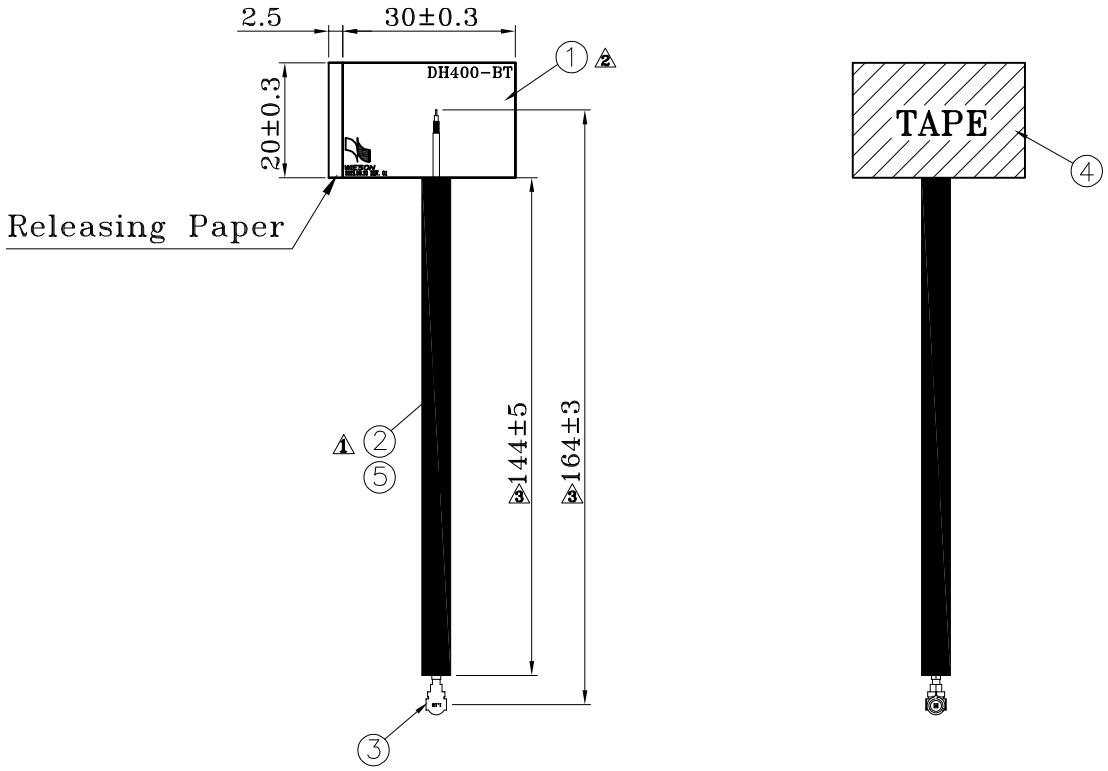
DRAWN BY	DAVID(WST)	DRAWING NO.	ARY196-0383-038-H0
CHECKED BY		DRAWING SIZE	A4
APPROVED BY		UNIT	mm
SORTING NO.	WSC	PAGE	1 OF 1

[ARTICLE: SR-83-41 V1]

Customer Drawing

HF Compliant

REV	DATE	DESCRIPTION	ECN NO.	NAME
A1	24.09.30	PROPOSAL		TC
A2	24.10.09	1 Modify Cable Color		DAVID
A3	24.10.29	2 Modify Print		DAVID
A4	24.12.11	3 Cable Length		DAVID



CUST NO.:

PART NO.: ARY196-0383-039-H0

WIESON TECHNOLOGIES CO., LTD
WIESON

TITLE: BT ANTENNA

NO.	ITEM	DESCRIPTION	QTY
5	Foam	Size: 144 x 10 x 1mm 3	1
4	Tape	G9000 , Size: 29.2 x 19.2mm	1
3	MHF	I-PEX(I) Plug For 1.13mm Cable , Gold Plated	1
2	Cable	1.13mm Normal Coaxial Cable , FEP White Jacket 1	1
1	PCB	FR-4 , Size: 30 x 20 x 0.8mm	1

DRAWN BY	TC(WST)	DRAWING NO.	ARY196-0383-039-H0
CHECKED BY		DRAWING SIZE	A4
APPROVED BY		UNIT	mm
SORTING NO.	WSC	PAGE	1 OF 1

[ARTICLE:SR-83-32 V7]

PRODUCT SPECIFICATION

Product name	WIFI-1 Antenna(DH400)		
Part number	ARY196-0383-037-H0		
Frequency Range	2.4GHz-2.5GHz	5.15GHz-5.85GHz	5.925GHz-7.125GHz
Operating Temperature	-10℃ to 60℃		
Storage with matching	-10℃ to 70℃		
Impedance	50 Ohms		
Polarization	Linear		
Admitted Power	1W		
Antenna type	PCB		
Cable（Length）	Ø1.13mm（402mm）		
Connector	MHF I		

Product name	WIFI-2 Antenna(DH400)		
Part number	ARY196-0383-038-H0		
Frequency Range	2.4GHz-2.5GHz	5.15GHz-5.85GHz	5.925GHz-7.125GHz
Operating Temperature	-10℃ to 60℃		
Storage with matching	-10℃ to 70℃		
Impedance	50 Ohms		
Polarization	Linear		
Admitted Power	1W		
Antenna type	PCB		
Cable（Length）	Ø1.13mm（94mm）		
Connector	MHF I		

Product name	BT Antenna(DH400)
Part number	ARY196-0383-039-H0
Frequency Range	2.4GHz-2.5GHz
Operating Temperature	-10℃ to 60℃
Storage with matching	-10℃ to 70℃
Impedance	50 Ohms
Polarization	Linear
Admitted Power	1W
Antenna type	PCB
Cable（Length）	Ø1.13mm（164mm）
Connector	MHF I

Product name	WIFI-1 Antenna(DH400)		
Part number	ARY196-0383-037-H0		
Frequency Range	2.4GHz-2.5GHz	5.15GHz-5.85GHz	5.925GHz-7.125GHz
Peak Gain (Max)	2.14	2.18	2.26
Efficiency	＞40%	＞40%	＞40%

Product name	WIFI-2 Antenna(DH400)		
Part number	ARY196-0383-038-H0		
Frequency Range	2.4GHz-2.5GHz	5.15GHz-5.85GHz	5.925GHz-7.125GHz
Peak Gain (Max)	2.54	3.38	3.75
Efficiency	＞40%	＞40%	＞40%

Product name	BT Antenna(DH400)
Part number	ARY196-0383-039-H0
Frequency Range	2.4GHz-2.5GHz
Peak Gain (Max)	2.75
Efficiency	＞40%

B&W
DH400

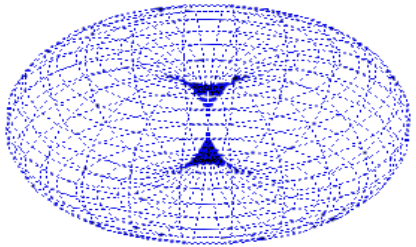
Engineer : Bz

Report date : 2024/12/23 REV.06

www.wieson.com

Executive Summary

- Revision History
- Antenna Specification
- Antenna Placement
- Antenna Solution
- Antenna Measurement Vector Network Analyzer
  - S-Parameter Result
  - Isolation Result
- The Antenna Anechoic Chamber Measurement
  - Antenna Measurement Photo
  - Antenna Measurement
    - Peak Gain、Efficiency Result
    - 2D Antenna Pattern
- Conclusion & Recommendations



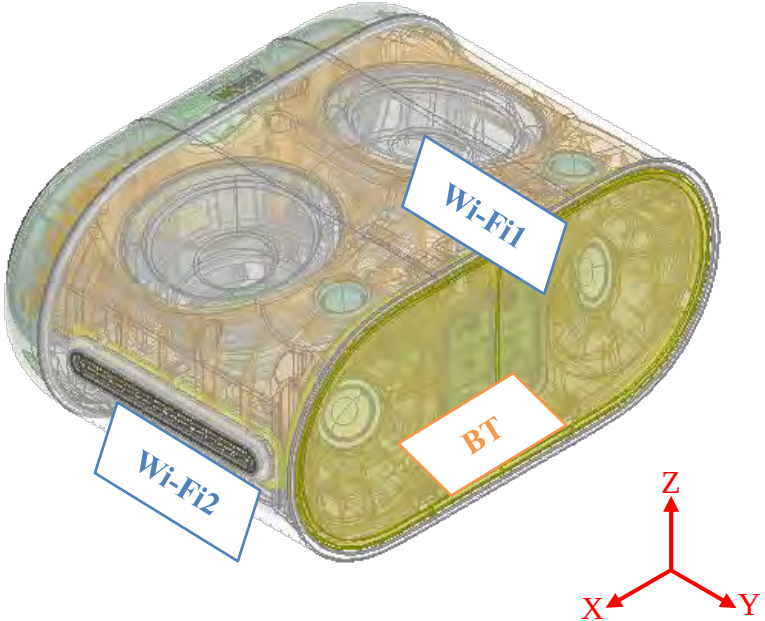
Revision History

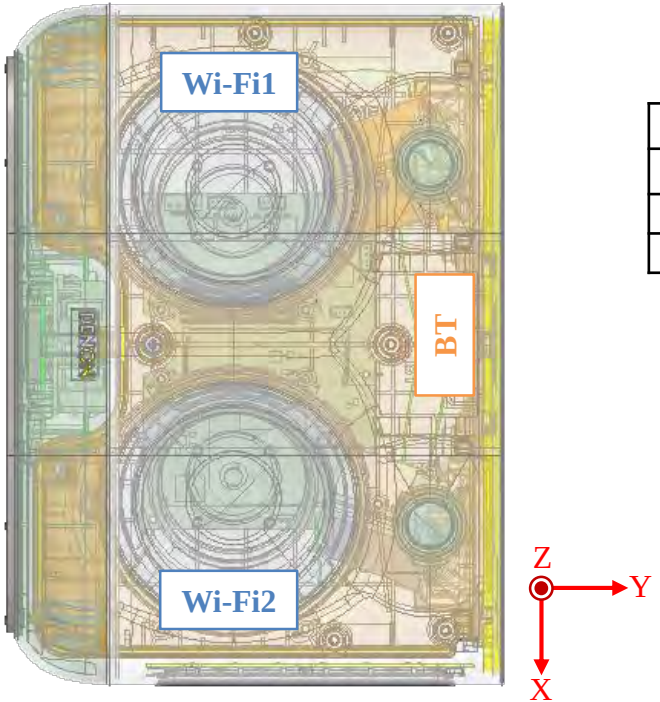
Revision	Date	Engineer	Description
01	2024/09/09	Aiden	New release
02	2024/11/29	Aiden	Check antenna performance for DUT
03	2024/12/11	Roy	Antenna testing in FS
04	2024/12/12	Aiden	Antenna testing in FS(Change antenna cable length)
05	2024/12/20	Aiden	Update
06	2024/12/23	Bz	Update Cable Routing and Length Data

Antenna Specification

Item	Wi-Fi 1			Wi-Fi 2			BT
Operating Frequency	2400-2500	5150-5850	5925-7125	2400-2500	5150-5850	5925-7125	2400-2500
Return Loss	10 dB	10 dB	10 dB	10 dB	10 dB	10 dB	10 dB
Isolation	Wi-Fi to BT： 2400-2500>29.2 dB 5150-5850>27.9 dB 5925-7125>25.3 dB						
	Wi-Fi to Wi-Fi： 2400-2500>21.4 dB 5150-5850>32.6 dB 5925-7125>32.7 dB						
Material	PCB						
Peak Gain	2.14 dBi	2.18 dBi	2.26 dBi	2.54 dBi	3.38 dBi	3.75 dBi	2.75 dBi
Efficiency	48 %(Max.)	49 %(Max.)	48 %(Max.)	56 %(Max.)	55 %(Max.)	58 %(Max.)	54 %(Max.)

Antenna Placement





Ant	Cable length
Wi-Fi 1	402 mm
Wi-Fi 2	94 mm
BT	164 mm

Antenna Solution

ANT	ANT Type	Size(L*W*H)	Cable Type	Connector	Cable Loss(dB)		
					2.4G	5.6G	6.5G
Wi-Fi 1	PCB	30 mm*20 mm	402 mm/1.13 Normal	MHF I	1.61	2.52	3.20
Wi-Fi 2	PCB	30 mm*20 mm	94 mm/1.13 Normal	MHF I	0.70	1.36	1.51
BT	PCB	30 mm*20 mm	164 mm/1.13 Normal	MHF I	0.92	-	-

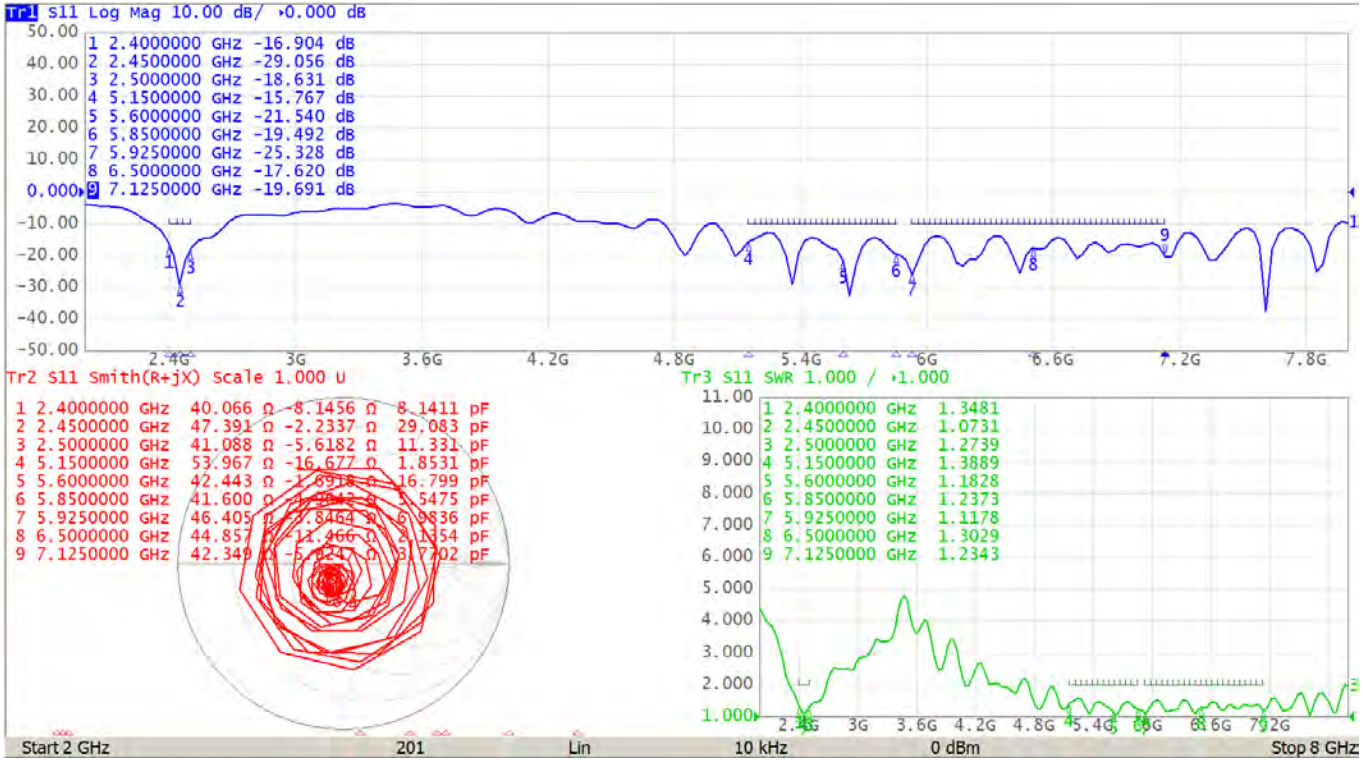
S-Parameter Result

Return Loss(dB)									
Freq.(MHz) / ANT	2400	2450	2500	5150	5600	5850	5925	6500	7125
Wi-Fi 1	16.9	29	18.6	15.7	21.5	19.4	25.3	17.6	19.6
Wi-Fi 2	18.3	26.8	16	22	13.5	22.7	23.3	15.5	12.3
BT1	13.2	14.4	14.1	-	-	-	-	-	-

Isolation(dB)									
Freq.(MHz) / ANT	2400	2450	2500	5150	5600	5850	5925	6500	7125
Wi-Fi1&Wi-Fi 2	32.7	32.4	34.1	52.5	36.4	37.1	40.2	33.1	36.4
Wi-Fi1&BT	38.8	35.3	35.5	39.0	30.5	27.9	26.6	27.2	27.1
Wi-Fi 2&BT	29.2	32.0	33.1	39.9	46.5	41.0	46.2	34.8	47.4

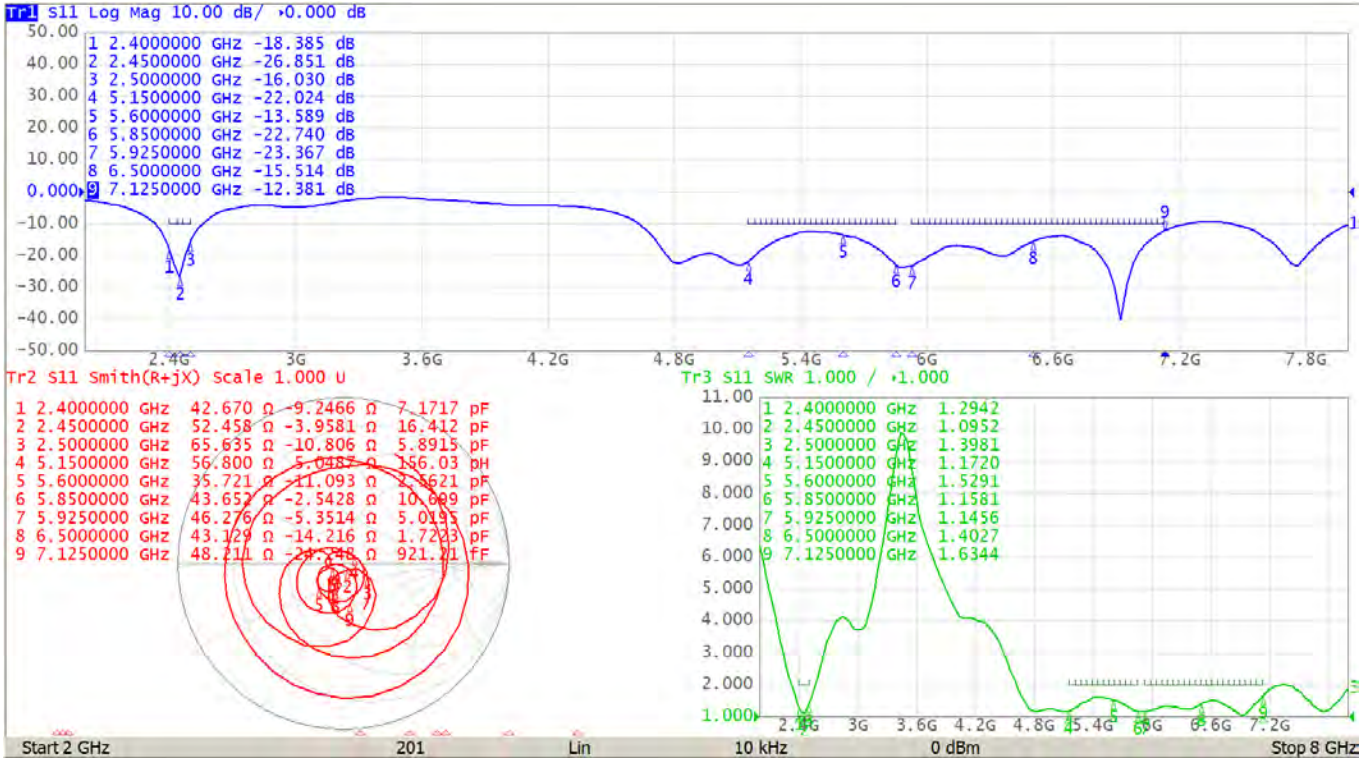
S-Parameter Result

Wi-Fi1



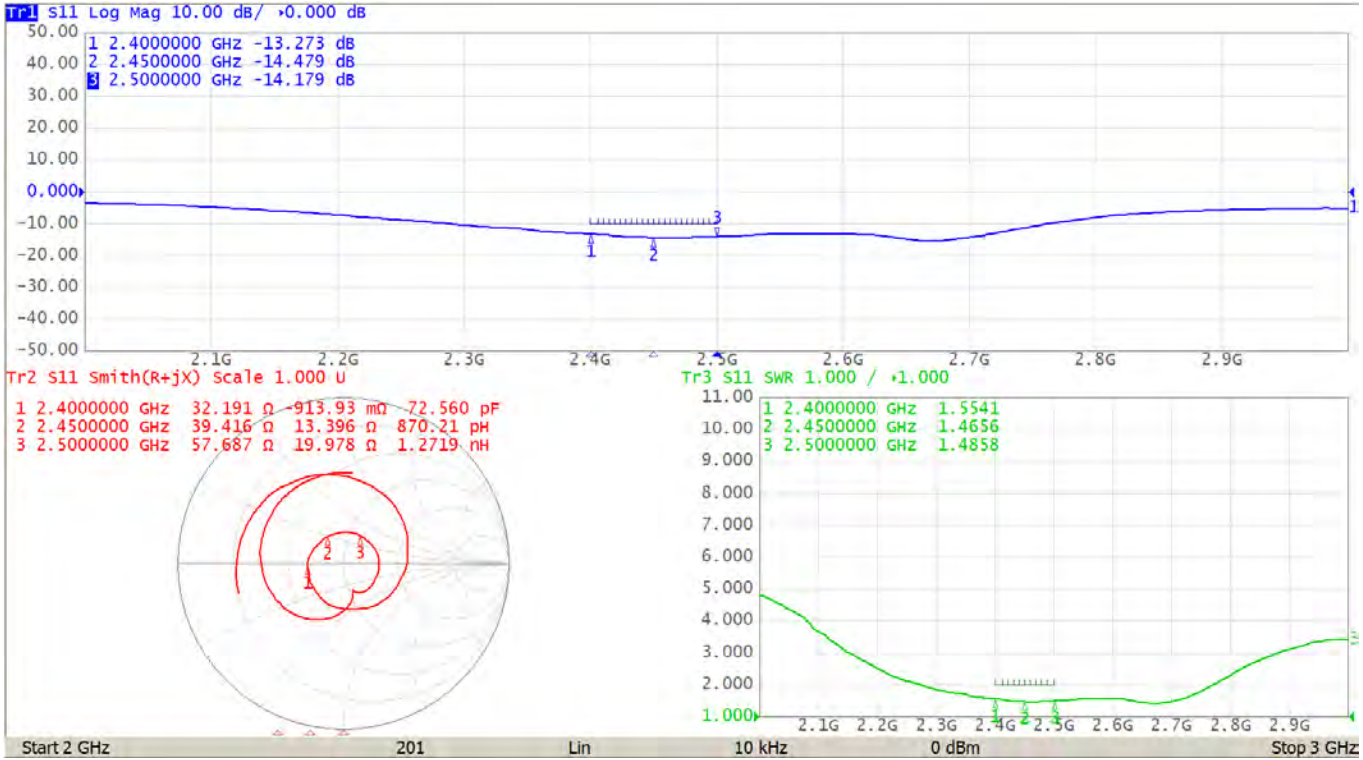
S-Parameter Result

Wi-Fi2

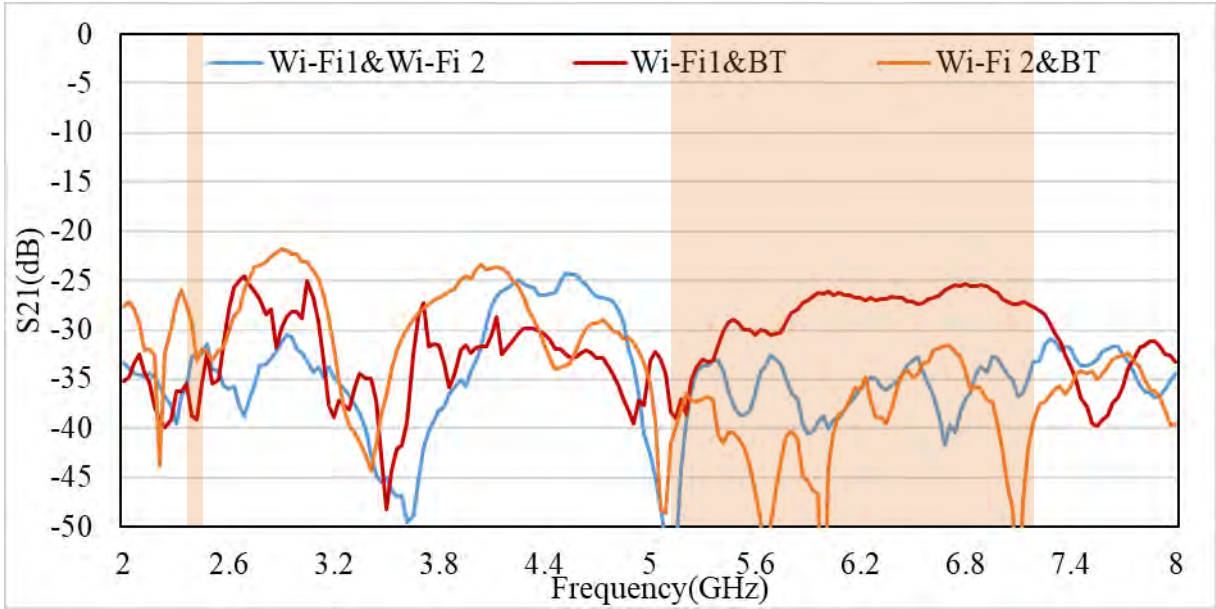


S-Parameter Result

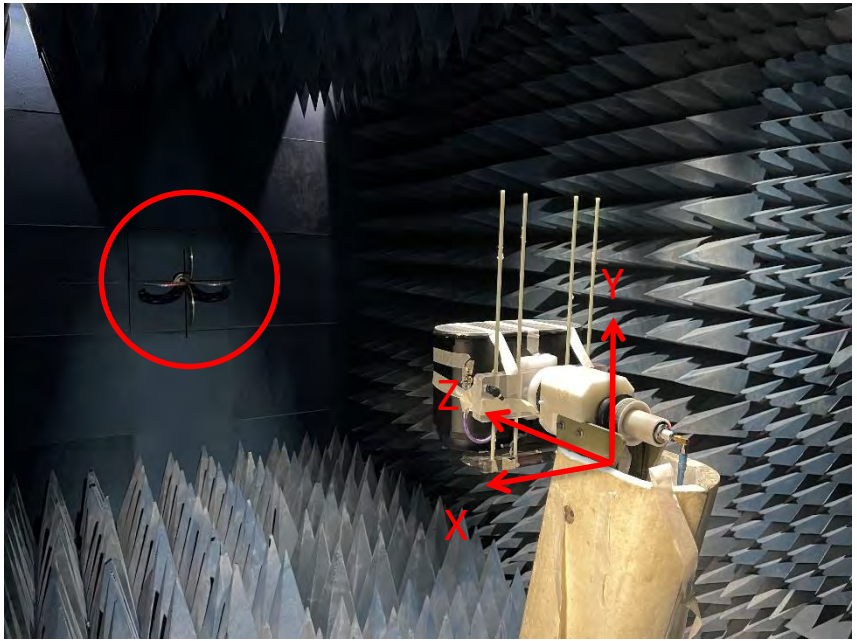
BT

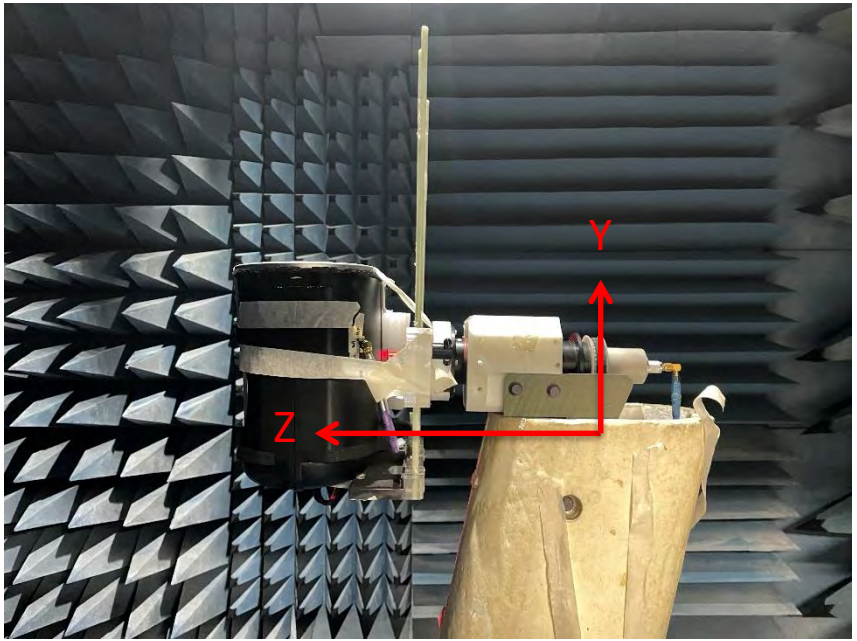


Isolation Result



Chamber Measurement Photo





Peak Gain、Efficiency Result

Frequency(GHz)	Wi-Fi 1		Wi-Fi 2	
	Peak Gain (dBi)	Efficiency (%)	Peak Gain (dBi)	Efficiency (%)
2.4	1.98	45	2.54	53
2.45	2.14	48	2.44	54
2.5	2.05	46	2.46	56
5.15	1.4	40	2.78	49
5.25	1.52	42	3.38	54
5.35	1.51	43	3.02	51
5.47	1.42	40	2.9	50
5.6	1.77	45	2.71	49
5.725	2.18	49	3.1	51
5.785	2.13	48	3.36	55
5.85	1.87	46	3.07	51
5.925	1.82	46	3.54	58

Frequency(GHz)	Wi-Fi 1		Wi-Fi 2	
	Peak Gain (dBi)	Efficiency (%)	Peak Gain (dBi)	Efficiency (%)
6	2.26	48	3.75	56
6.125	1.8	43	3.29	51
6.225	1.83	43	2.65	49
6.325	2.06	47	3.64	53
6.425	1.99	47	3.67	53
6.525	1.97	46	3.02	50
6.625	1.74	42	2.36	45
6.725	1.93	46	2.95	51
6.875	1.65	42	3.09	51
6.925	1.57	42	3.1	51
7	1.55	40	2.85	49
7.125	1.77	43	2.72	50

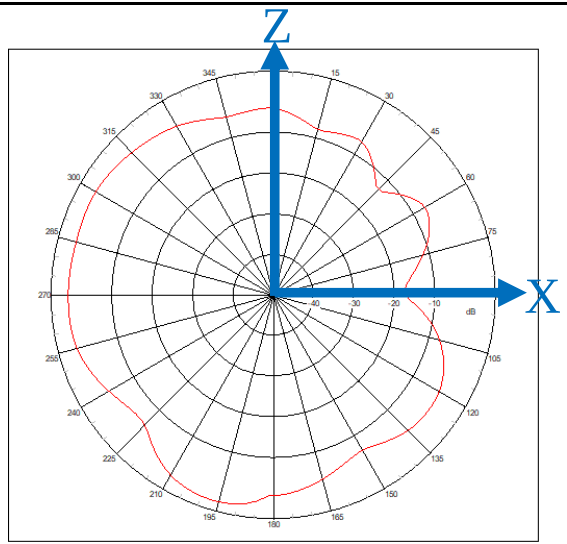
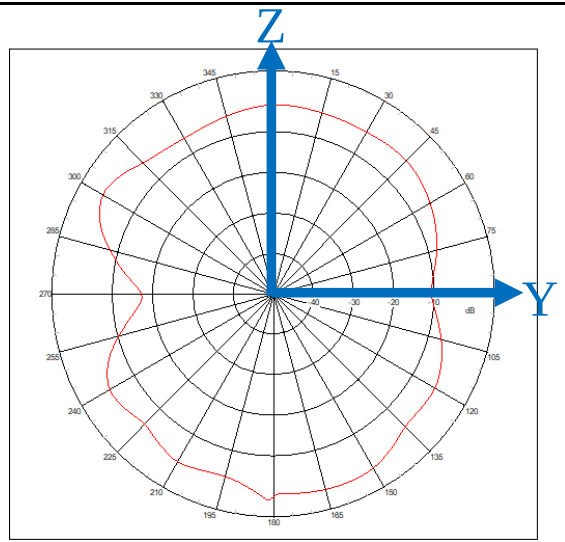
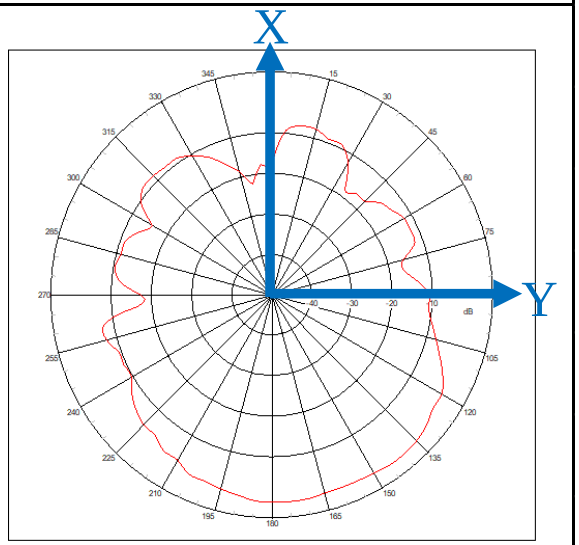
Peak Gain、Efficiency Result

Frequency(GHz)	BT	
	Peak Gain (dBi)	Efficiency (%)
2.4	2.11	46
2.41	2.34	48
2.42	2.32	47
2.43	2.18	47
2.44	2.4	49
2.45	2.41	49
2.46	2.36	49
2.47	2.54	51
2.48	2.59	51
2.49	2.63	53
2.5	2.75	54

2D Antenna Pattern

Wi-Fi1

Frequency：2450 MHz

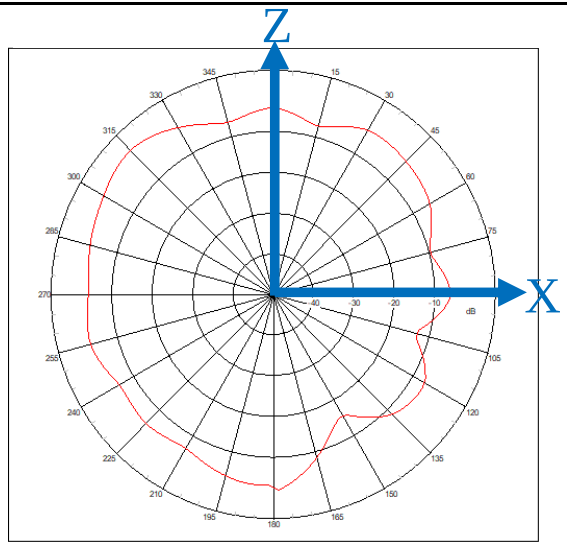
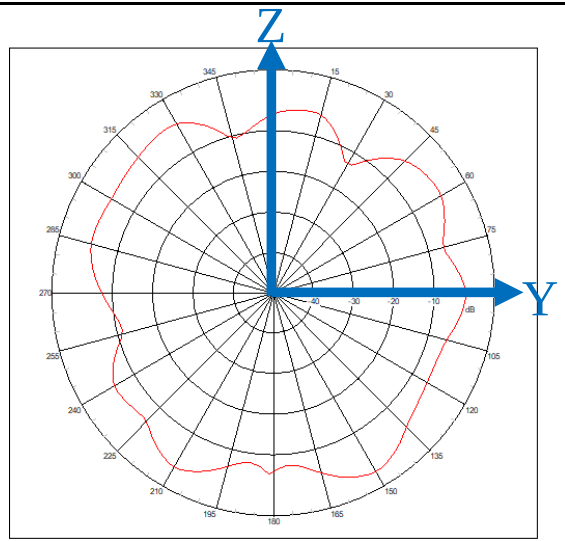
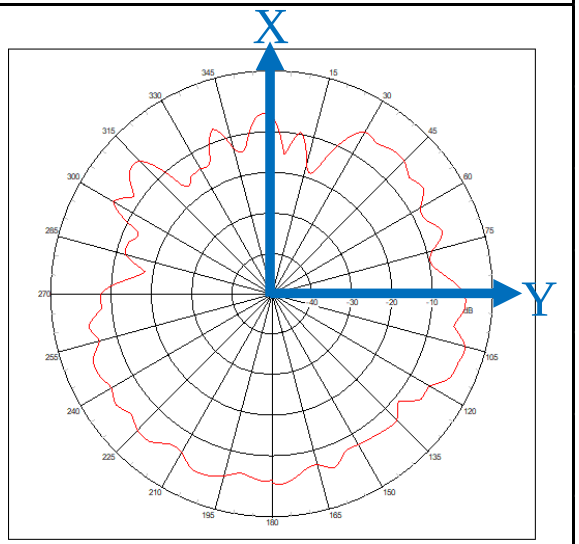
XZ-plane	YZ-plane	XY-plane
		

Far-field amplitude limits:
Max: 5dB
min: -50dB

2D Antenna Pattern

Wi-Fi1

Frequency：5600 MHz

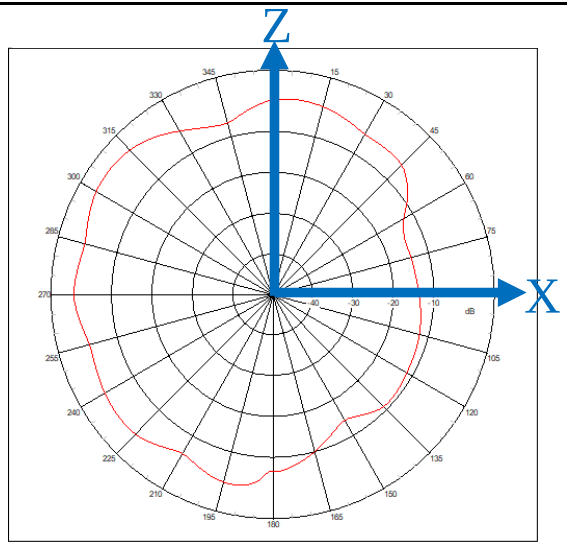
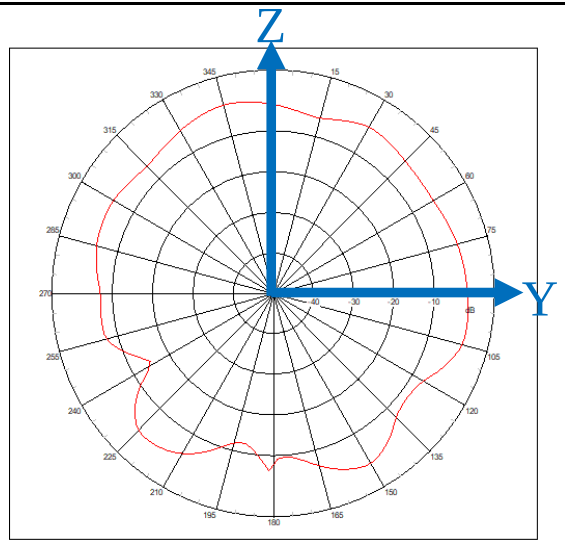
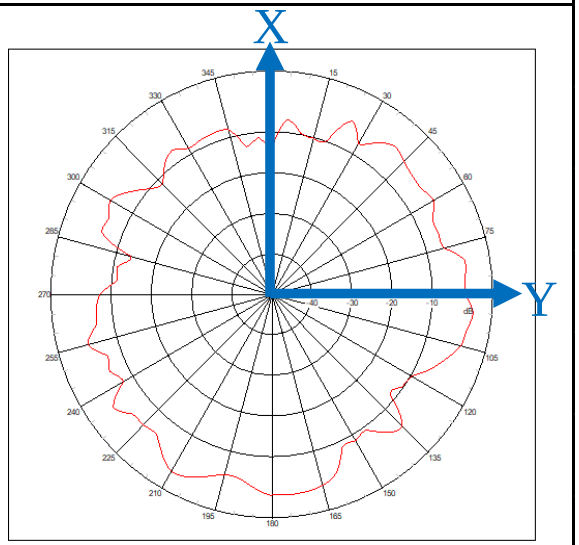
XZ-plane	YZ-plane	XY-plane
		

Far-field amplitude limits:
Max: 5dB
min: -50dB

2D Antenna Pattern

Wi-Fi1

Frequency：6525 MHz

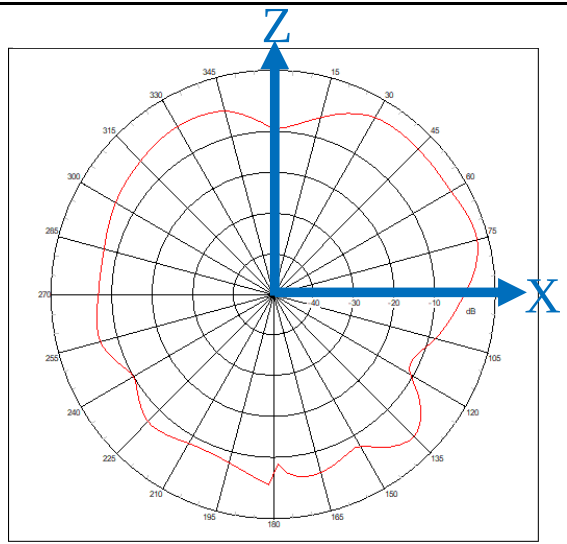
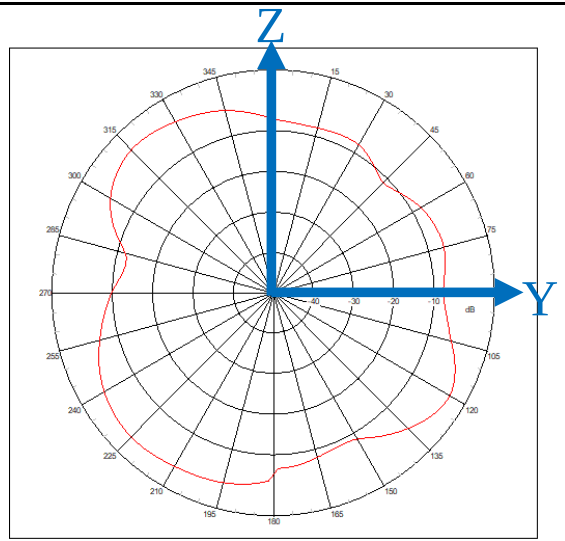
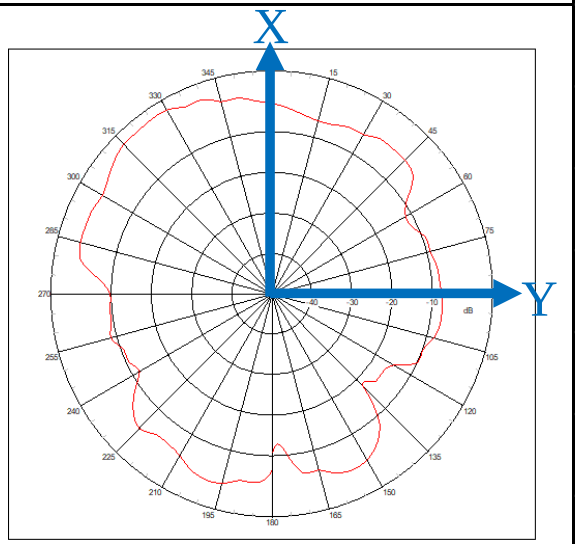
XZ-plane	YZ-plane	XY-plane
		

Far-field amplitude limits:
Max: 5dB
min: -50dB

2D Antenna Pattern

Wi-Fi2

Frequency：2450 MHz

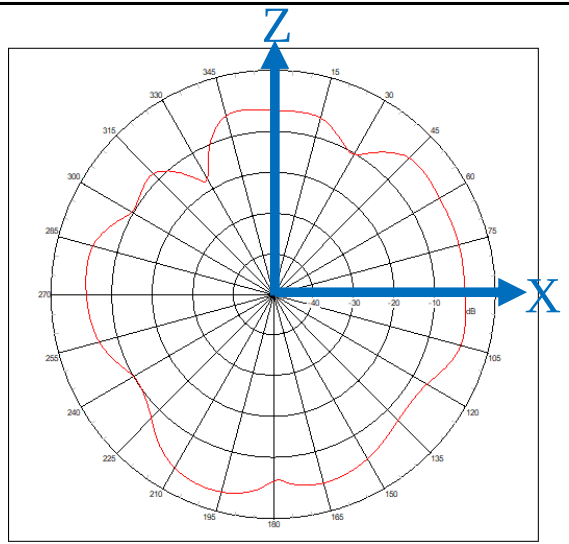
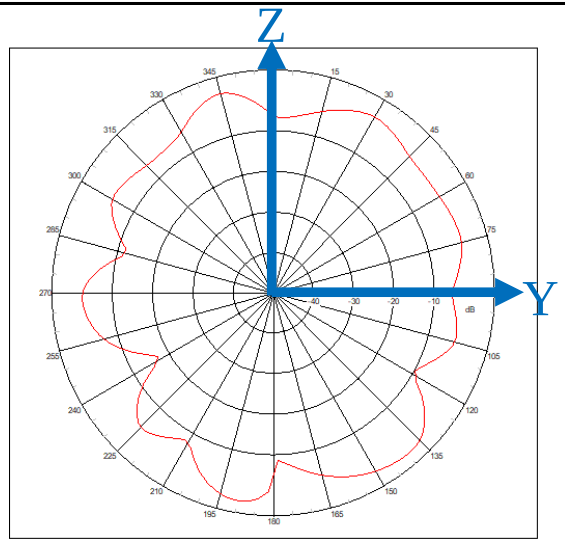
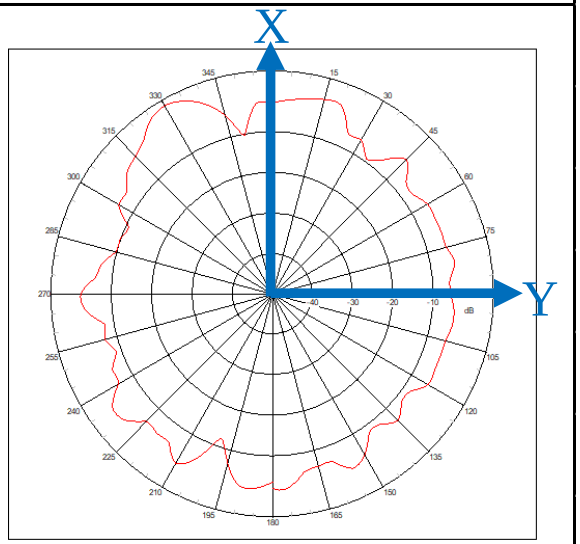
XZ-plane	YZ-plane	XY-plane
		

Far-field amplitude limits:
Max: 5dB
min: -50dB

2D Antenna Pattern

Wi-Fi2

Frequency：5600 MHz

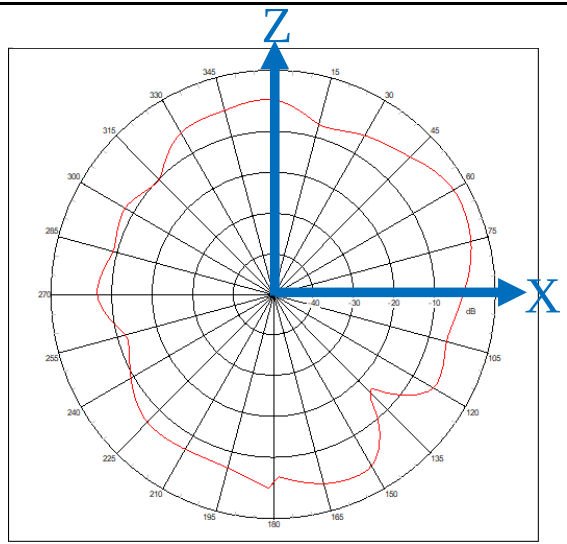
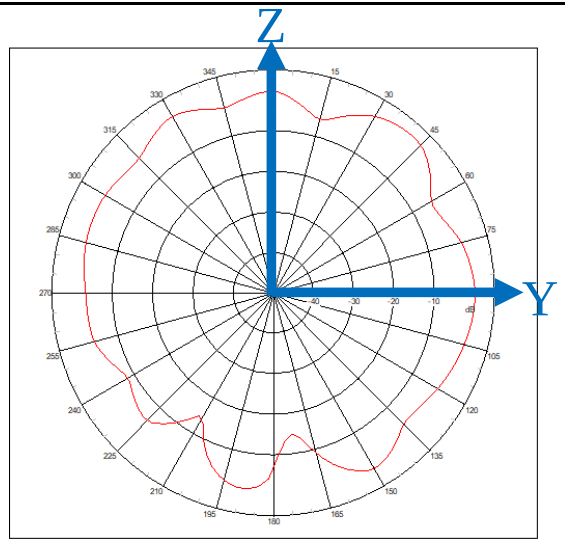
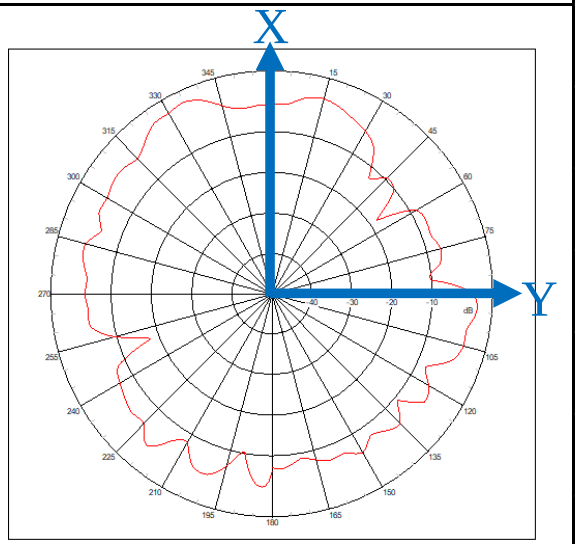
XZ-plane	YZ-plane	XY-plane
		

Far-field amplitude limits:
Max: 5dB
min: -50dB

2D Antenna Pattern

Wi-Fi2

Frequency：6525 MHz

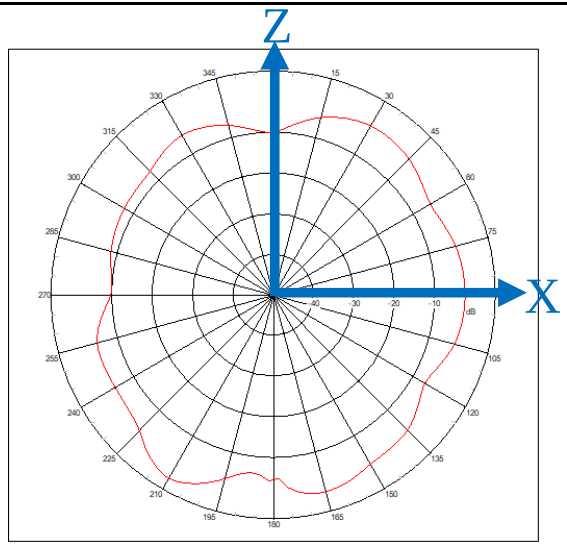
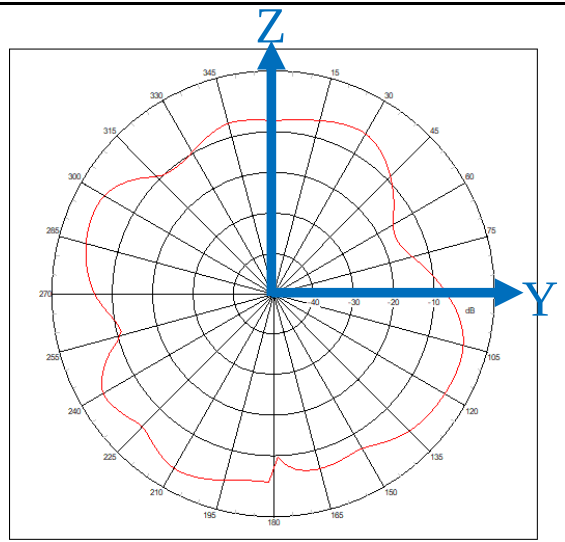
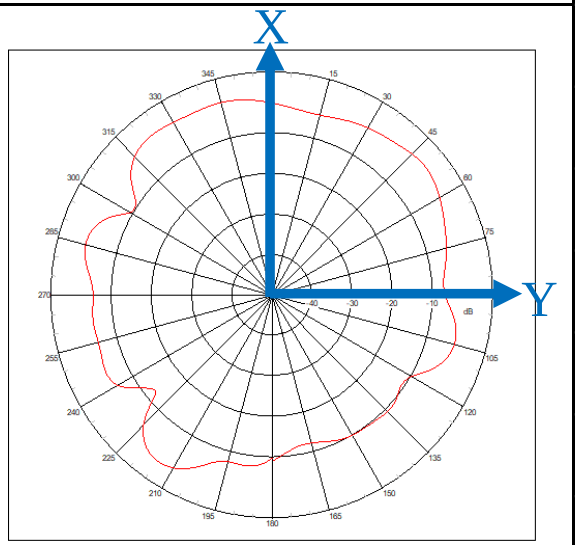
XZ-plane	YZ-plane	XY-plane
		

Far-field amplitude limits:
Max: 5dB
min: -50dB

2D Antenna Pattern

BT

Frequency：2450 MHz

XZ-plane	YZ-plane	XY-plane
		

Far-field amplitude limits:
Max: 5dB
min: -50dB

Conclusion & Recommendations

- 目前整體天線效能如下：
  - Isolation：Wi-Fi to Wi-Fi>32 dB；Wi-Fi to BT> 27 dB
  - Peak Gain：2.4G< 3 dBi ；5G<4 dBi； 6G<4 dBi
  - Efficiency：2.4G/5G/6G>40 %

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Operation Address: Xinbaowei Industrial Building, Huangang Industrial Zone, Houjie Town (Exclusion of A Building and 4F, B Building), Dongguan City | 523946 Guangdong | China

has been assessed and certified as meeting the requirements of:

ISO 9001:2015

for the following activities:

Design, Manufacture and Sales of Electronic and Automotive Connectors, Cables, Wire Harnesses, RF (Radio Frequency) and Antenna Products, Plastic Injection Parts, Stamping Parts, Plastic & Hardware Molds

This certificate is valid from 26/01/2024 until 25/01/2027
Issued: 26/01/2024
Certificate № CA00525-EN

This registration is subject to the company maintaining a Quality Management System to the above standard, which will be monitored by TÜV Saarland Certification.
The validity of this certificate may be verified on both CNCA's website (www.cnca.gov.cn) and the website of TÜV Saarland Certification (www.tuv-saar.cn).

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