



規格承認書

Approval Sheet

客戶名稱

Customer Name: 瑞 軒

產品名稱

Product description: Arran Dux ANT

泓博料號

Hong Lin P/N: 290-90709(Ant1) / 290-90710(Ant2)

客戶料號

Customer P/N: 046050021241S / 046050021251S

版 別

日 期

Version: X4 Date: 2026/04/11

客戶承認簽印 CUSTOMER APPROVED BY	供應商承認簽印 VENDER APPROVED BY
Checked By:	Checked By:陈辉
Approval By:	Approval By:严加星

工厂/Factory:

1.越南,北宁省,桂武县,扶梁社,桂武三工业区 CN17A-2 地块

Lot No. CN17A-2 Que Vo 3 Industrial Park - Phu Luong Commune - Que Vo District -
Bac Ninh Province-VietNam.

2.江蘇省常熟市高新技術產業園柳州路 8 號

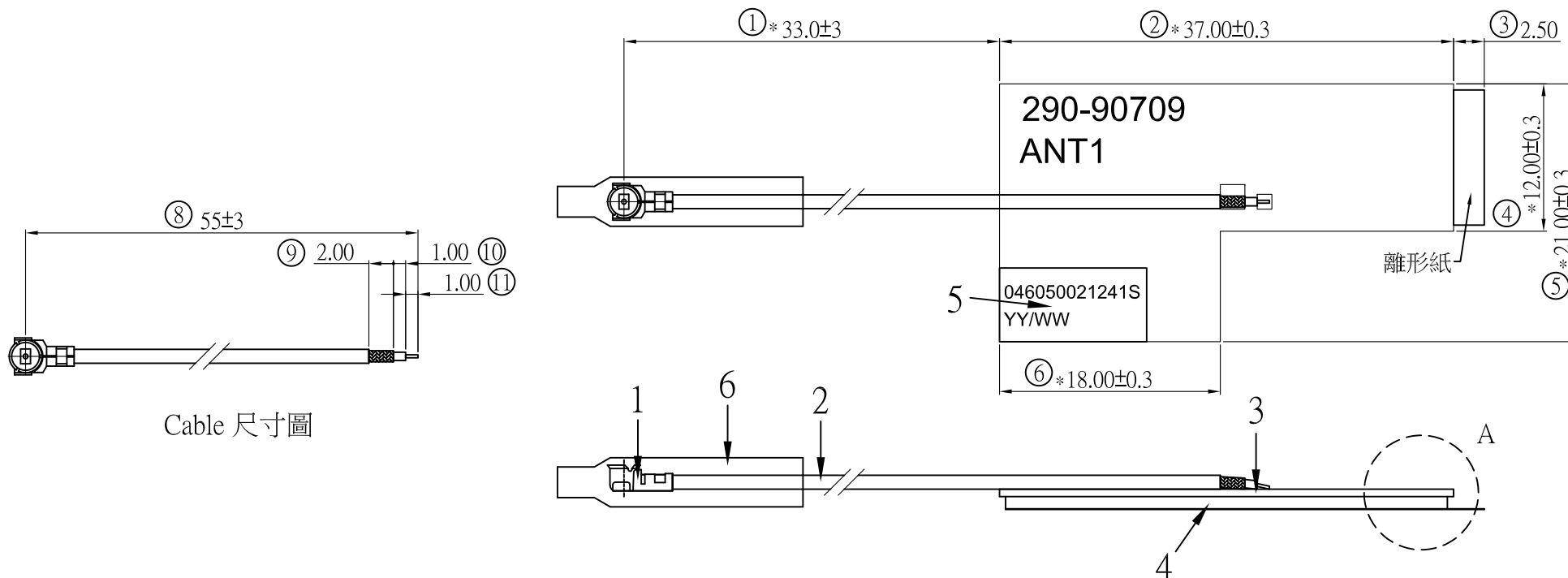
No.8 Liuzhou Road, Yushan Industrial Park, Hi-tech Development Zone, Changshu,
Jiangsu, China



Content

<u>Item</u>	<u>Page</u>
一、Antenna assembly (成品图)	3
二、Specification (規格表).....	4
三、Test data (測試資料).....	5-25
3.1 Test data.....	5-25
3.2 Return loss.....	5-25
3.3 Radiation Pattern.....	5-25
四、Antenna Picture.....	26
五、BOM LIST.....	27
六、CABLE CONNECTOR SPEC.....	28-29
七、SGS 报告.....	30-182

試產



Cable 尺寸圖

Label 印字內容

A 放大視圖

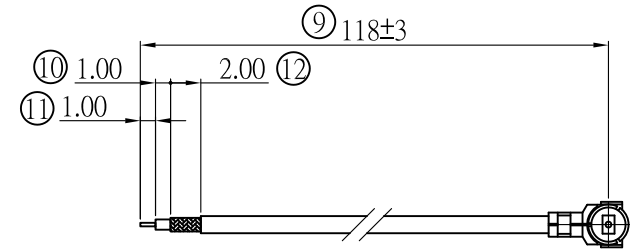
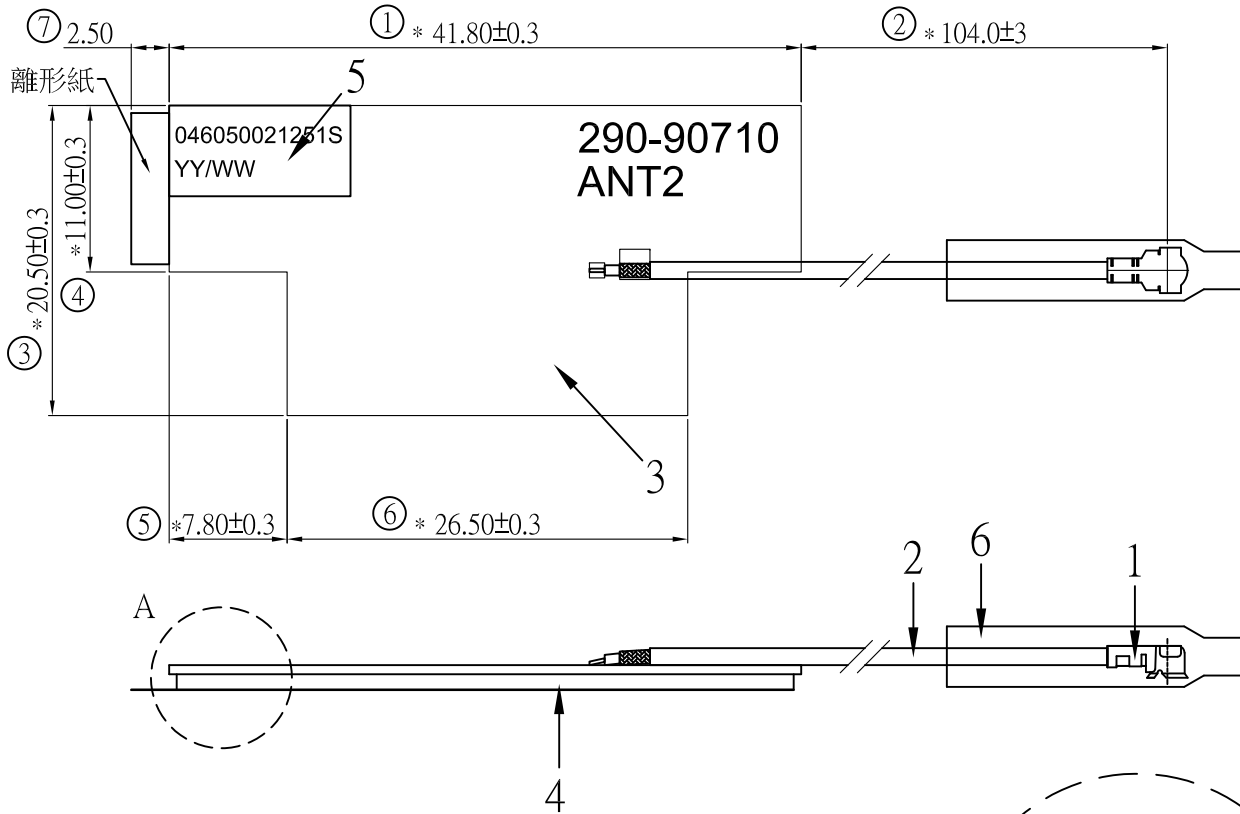
Note:

1. 標示 * 為重点管控尺寸
2. IPEX方向 需與圖面一致
3. 出線長度100以下 IPEX方向 $\pm 45^\circ$
100~200 IPEX方向 $\pm 90^\circ$
200以上 IPEX方向 不予以管控
4. 須符合RoHS 2.0 & 無鹵要求
5. Frequency: 2400 ~ 2500 MHz
5150 ~ 5850 MHz

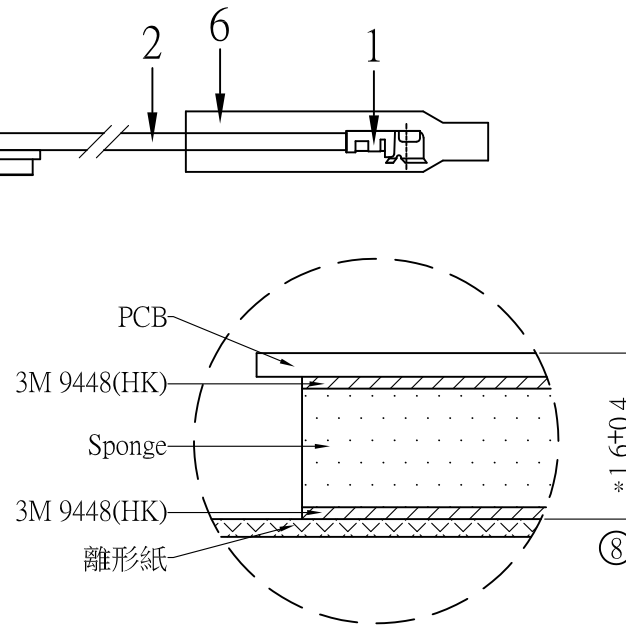
6	PE軟套管	OD2.5 ; L=20mm(熱膠套管) ; 黃色透明	1	
5	Label	L12*W6	1	
4	背膠	Sponge + 3M 9448(HK) 雙面背膠 ; T=1.0	1	潤豪
3	PCB	Arran Dux_ANT1_PCB ; T=0.6 ; 防焊黑漆 ; 單面板	1	樂凱特
2	Cable	1.13 Normal Cable ; Color : Black , L=55mm	1	希格諾
1	Connector	MHF Compatible Plug for OD 1.13mm	1	彩美
NO.	SORT	SPECIFICATION	Q'TY	VENDOR

	X4	新增客戶料號	2026-03-25	
	X3	變更處請參照▲	2026-03-18	
	X1	New Issue	2026-03-13	
ECN NO	版次	變更內容	日期	確認
RANGETOLERANCES	客戶名稱:	瑞軒	常熟市泓博通訊技術股份有限公司	
0-30 ±1.5	客戶料號:	046050021241S	CHANGSHU HONGBO TELECOMMUNICATION TECHNOLOGY CO.,LTD	
31-100 ± 2	泓博料號:	290-90709	產品名稱: Arran Dux_ANT1_成品圖	
101-200 ± 3	制圖:	Eason	頁次: 1 - 1	日期:
201以上 ± 4	BMD 審核:	Ball	版本:	比例: 2 : 1
REF ± 3	核准:	Alex	校對:	
METRIC: mm				

試產



Cable 尺寸圖



A 放大視圖

Note:

- 標示 * 為重点管控尺寸
- IPEX方向 需與圖面一致
- 出線長度100以下 IPEX方向 $\pm 45^\circ$
100~200 IPEX方向 $\pm 90^\circ$
200以上 IPEX方向 不予以管控
- 須符合RoHS 2.0 & 無鹵要求
- Frequency: 2400 ~ 2500 MHz
5150 ~ 5850 MHz

NO.	SORT	SPECIFICATION	Q'TY	VENDOR
6	PE軟套管	OD2.5 ; L=20mm(熱膠套管) ; 黃色透明	1	
5	Label	L12*W6	1	
4	背膠	Sponge + 3M 9448(HK) 雙面背膠 ; T=1.0	1	潤豪
3	PCB	Arran Dux_ANT1_PCB ; T=0.6 ; 防焊黑漆 ; 單面板	1	樂凱特
2	Cable	1.13 Normal Cable; Color : White , L=118mm	1	希格諾
1	Connector	MHF Compatible Plug for OD 1.13mm	1	彩美

	X4	新增客戶料號	2026-03-25	
	X3	變更處請參照▲	2026-03-18	
	X1	New Issue	2026-03-13	
ECN NO	版次	變更內容	日期	確認
RANGETOLERANCES	客戶名稱:	瑞軒	常熟市泓博通訊技術股份有限公司	
0-30 ±1.5	客戶料號:	046050021251S	CHANGSHU HONGBO TELECOMMUNICATION TECHNOLOGY CO.,LTD	
31-100 ± 2	泓博料號:	290-90710	產品名稱: Arran Dux_ANT2_成品圖	
101-200 ± 3	制圖:	Eason	頁次: 1 - 1	日期:
201以上 ± 4	R&D 審核:	Ball	版本:	比例: 2 : 1
REF ± 3	核准:	Alex	校對:	
METRIC: mm				



二、Specification (規格表)

1.1 Electrical Properties

- 1.1.1 Frequency Range----- 2400-2500MHz,
5150-5850MHz
- 1.1.2 Impedance----- 50Ω
- 1.1.3 VSWR----- 1.92:1
- 1.1.4 Return Loss----- 4.5dB or Less
- 1.1.5 Admitted Power----- 1W
- 1.1.6 Cable----- $\varnothing 1.13$
- 1.1.7 Antenna type----- PIFA type

1.2 Physical Properties

- 1.2.1 Antenna Body----- FR4

HB Antenna Proposal for Arron dux project

- Passive measurement report -

Prepared by: Eric

Date: 17th of March, 2026

Version: V1.4



Report Version Information

Version	Description	Date
V1.0	Simulation evaluation.	2025/11/13
V1.1	Simulation evaluation(With heat sink).	2025/12/11
V1.2	Simulation evaluation(With silver heat sink).	2025/12/15
V1.3	Simulation evaluation.	2026/3/12
V1.4	Simulation evaluation.	2026/3/17



Summary

- **Test Environment and Equipment**
 - DUT Orientation Setting
 - **Testing Contents – Default Configuration Of HW**
 - Antenna Information
 - Measurement Results:
 - Return Loss & Isolation
 - Antenna Efficiency, Peak Realized gain,
 - 2D Realized Gain Radiation Patterns @Total Polarization



Test Environment & Equipment

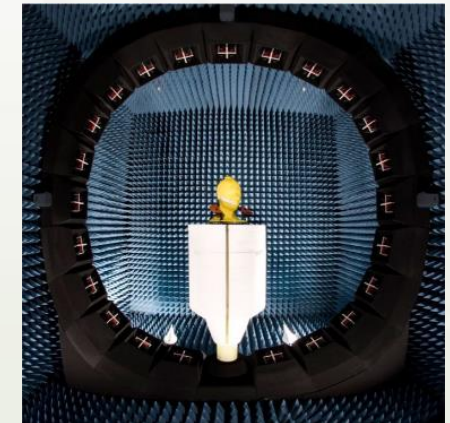


- SATIMO SG 24 Multi-Probe Antenna Measurement System
- Angle between probes: 15°
- Frequency range: 400 MHz – 8.5 GHz
- Chamber Room Size: 4.0 m L x 4.0 m W x 4.0 m H



- Agilent and Keysight Vector Network Analyzer
- Frequency range: 100KHz – 8.5GHz
- Ports numbers: 2 ports

- ETS-Lindgren AMS-8923 Antenna Measurement System
- EM Quest EMQ-100 Software
- Angle between probes: 15°
- Frequency range: 500 MHz - 8 GHz
- Positioning Systems
- Chamber Room Size: 4.0 m L x 4.0 m W x 4.0 m H



Measurement Information

Test equipment calibration information

Equipment	Model No.	Calibrated Date	Calibrated Until
ETS	AMS-8923	2025/10/1	2026/10/1
VNA	VNA485P	2025/12/10	2026/12/10



Default Configuration Of HW

- Antenna Information



Measurement Results

- Return Loss & Isolation
- Antenna Efficiency, Peak Realized Gain
- 2D Antenna Realized Gain Radiation Patterns @Total Polarization

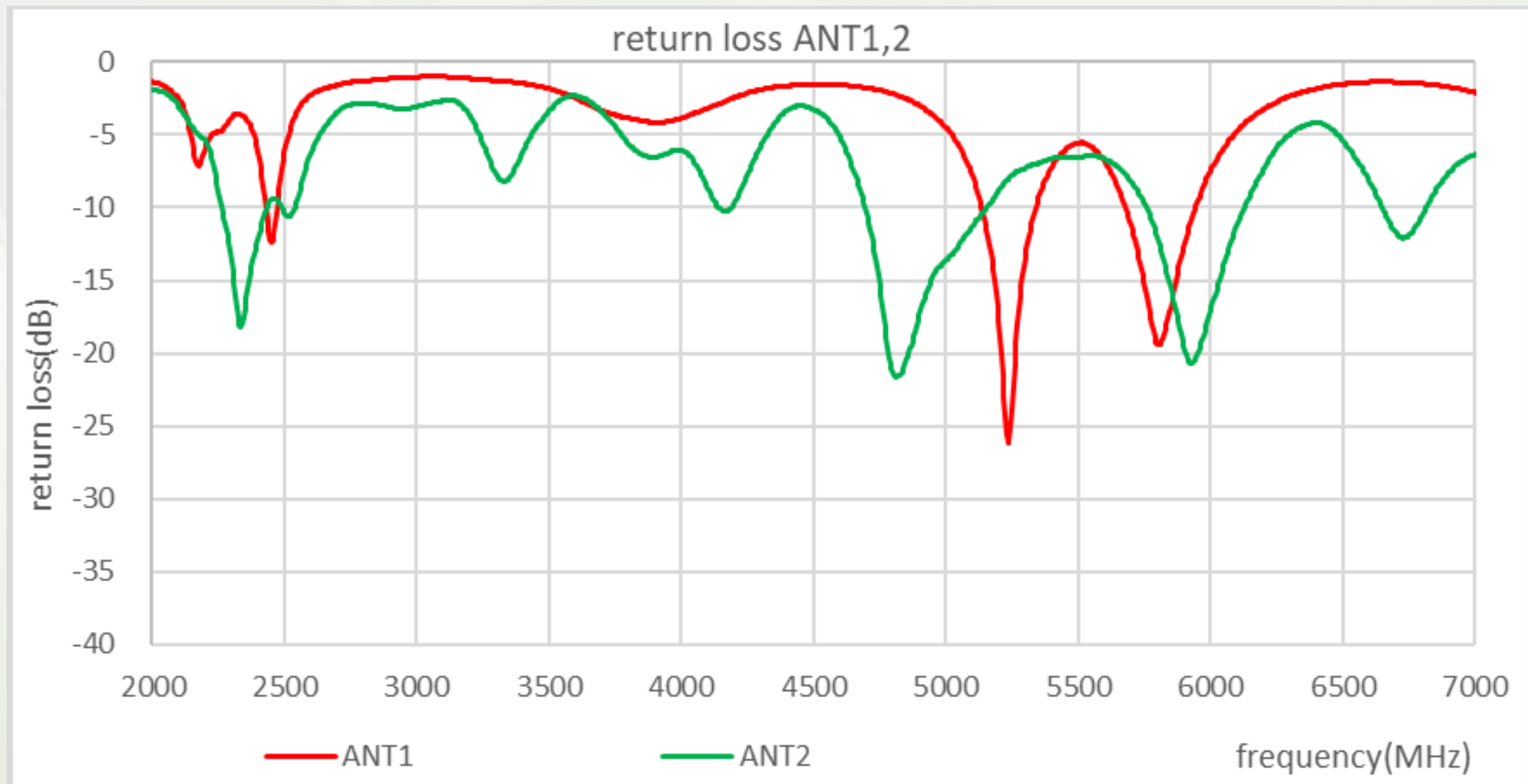


S-Parameters

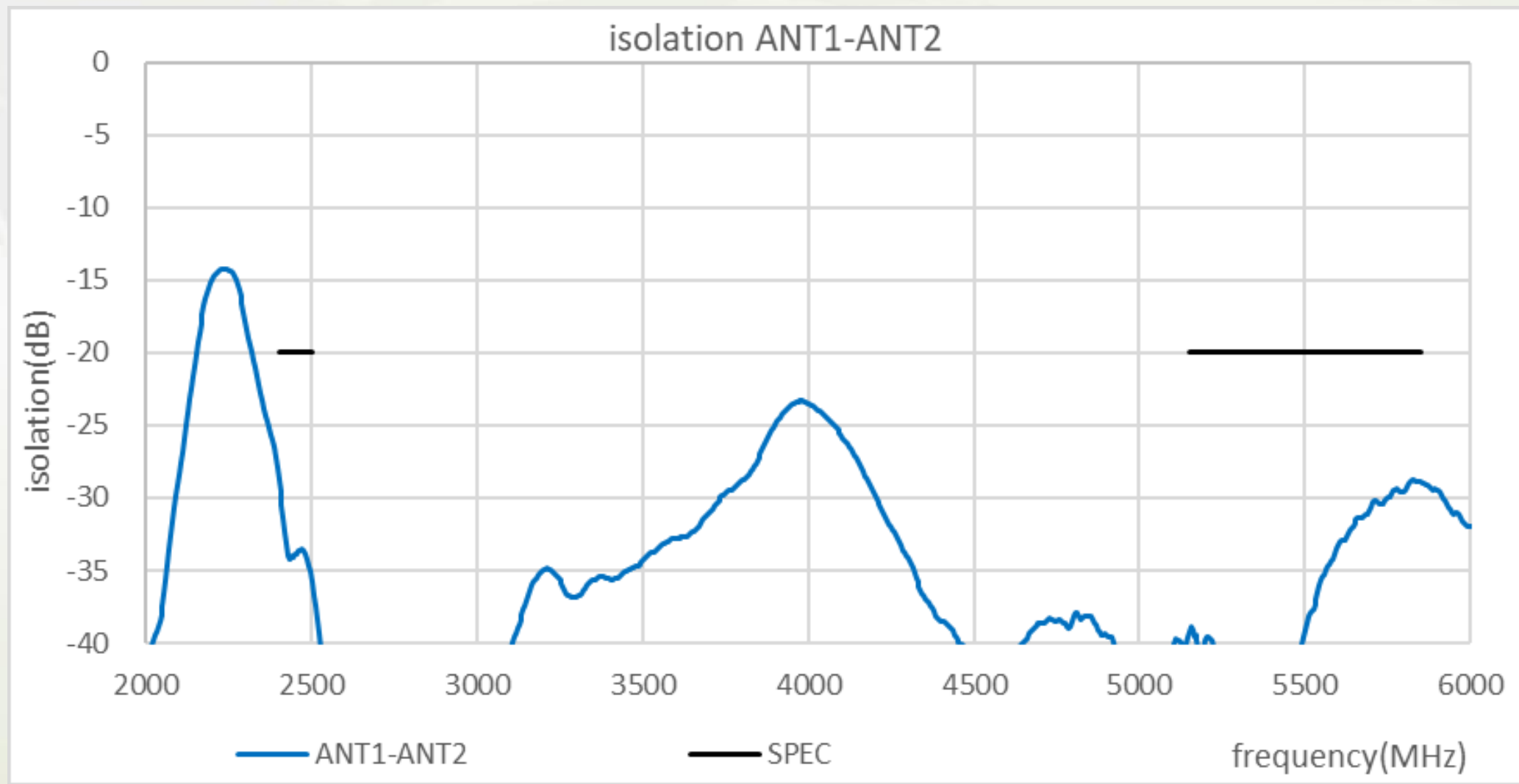
- Return Loss
- Isolation



Return Loss of dual-bands



Isolation between ANT1-2 antennas



Radiated Performance

- Realized Efficiency
- Peak Realized Gain



Realized Efficiency of antennas in dual-bands

Frequency (MHz)	2400	2410	2420	2430	2440	2450	2460	2470	2480	2490	2500
Ant1(%)	50	53	54	54	53	51	52	53	51	52	50
Ant2(%)	51	51	50	52	50	51	52	52	51	54	52

Frequency (MHz)	5150	5200	5300	5400	5500	5600	5700	5800	5850
Ant1(%)	63	65	61	56	51	52	59	58	51
Ant2(%)	59	55	50	51	52	50	57	58	58



Peak Realized Gain of antennas in dual-bands

Frequency (MHz)	2400	2410	2420	2430	2440	2450	2460	2470	2480	2490	2500
Ant1(dBi)	4.4	4.4	4.4	4.3	4.4	4.5	4.5	4.5	4.3	4.1	4
Ant2(dBi)	4.5	4.3	3.9	3.7	3.6	3.8	4	4.1	4.2	4.4	4.4

Frequency (MHz)	5150	5200	5300	5400	5500	5600	5700	5800	5850
Ant1(dBi)	4.1	4.0	3.0	2.9	3.3	4.5	4.3	4.4	4.5
Ant2(dBi)	4.4	4.3	3.9	4.1	4.4	4.2	4.5	3.9	4.0

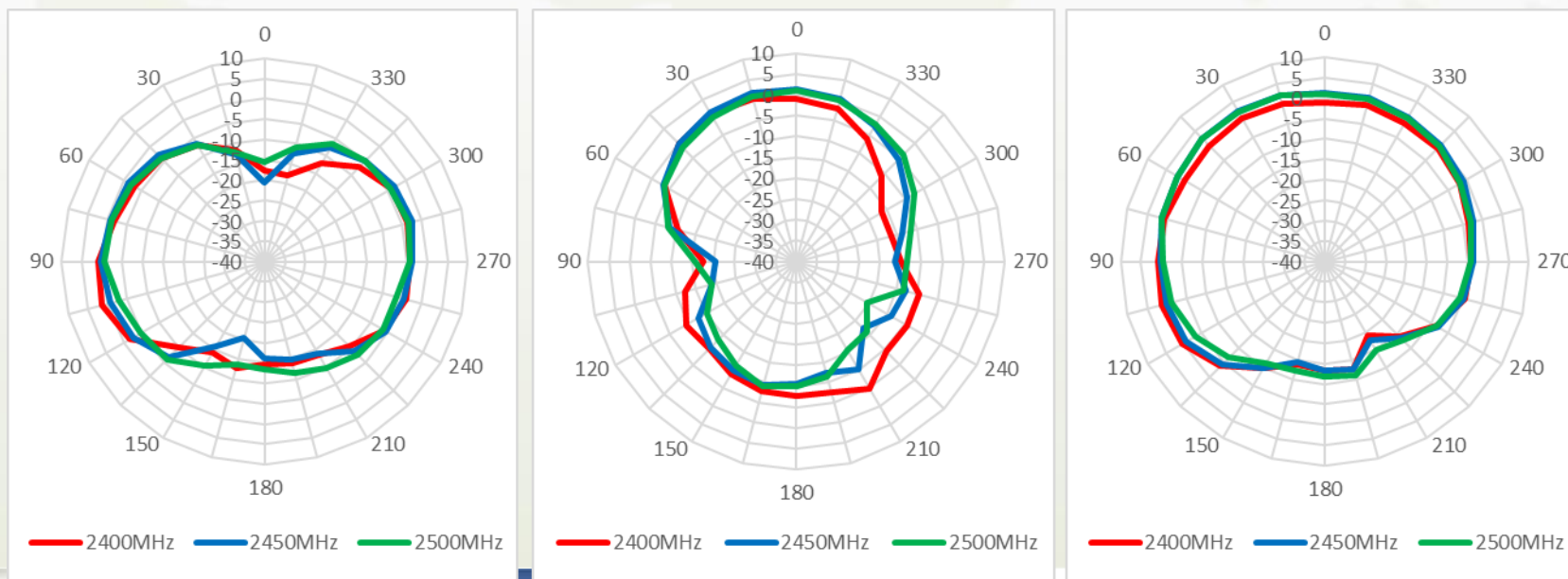


Radiation Patterns in Principal Planes

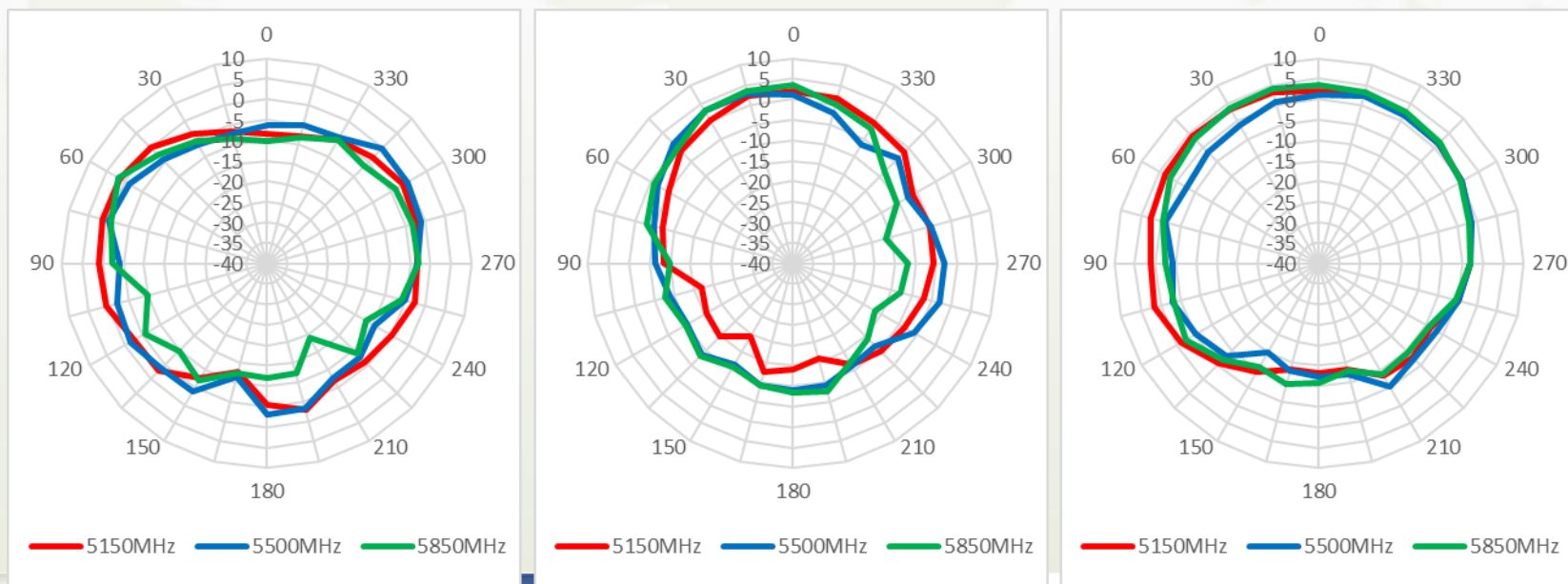
- Realized Gain



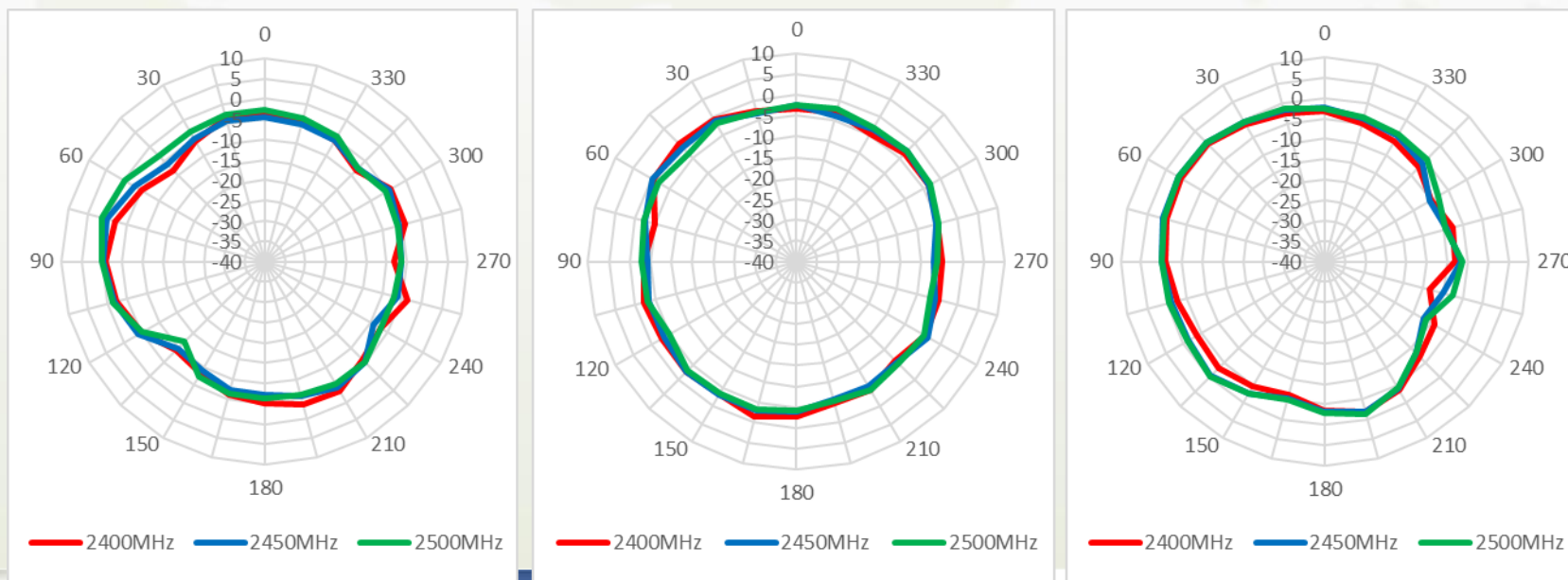
Realized Gain Pattern of ANT1 Antenna in 2GHz Band



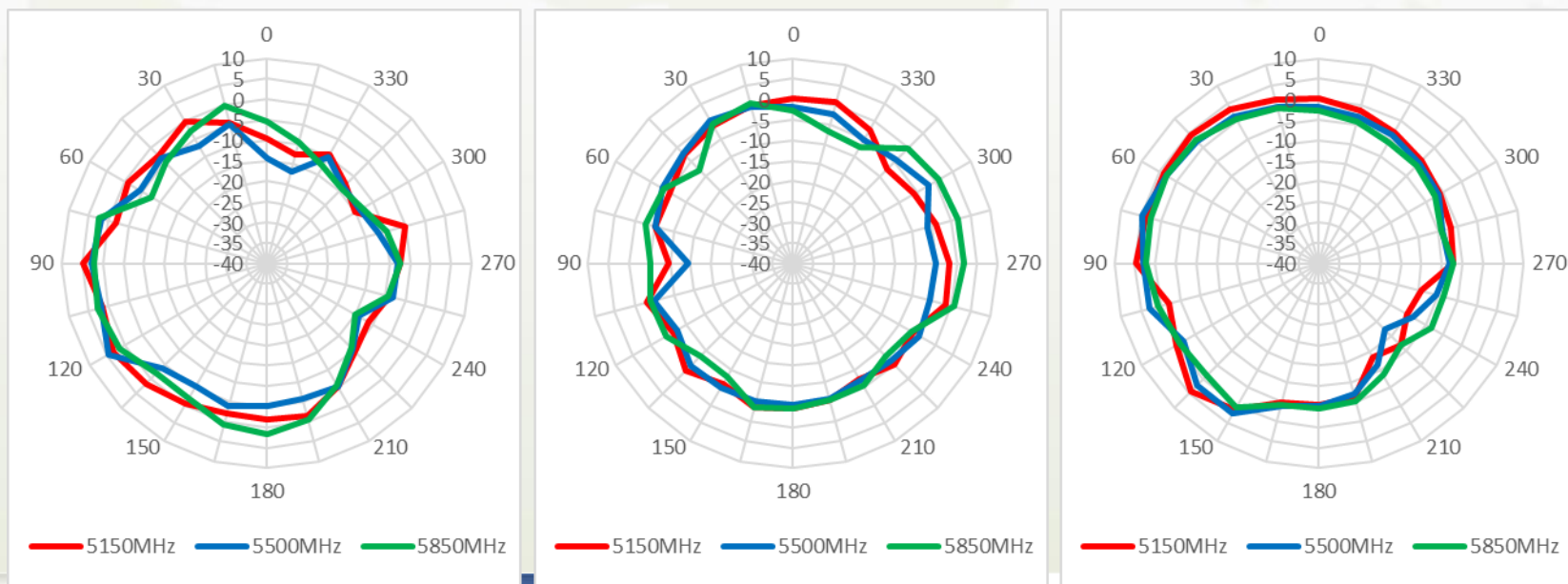
Realized Gain Pattern of ANT1 Antenna in 5GHz Band

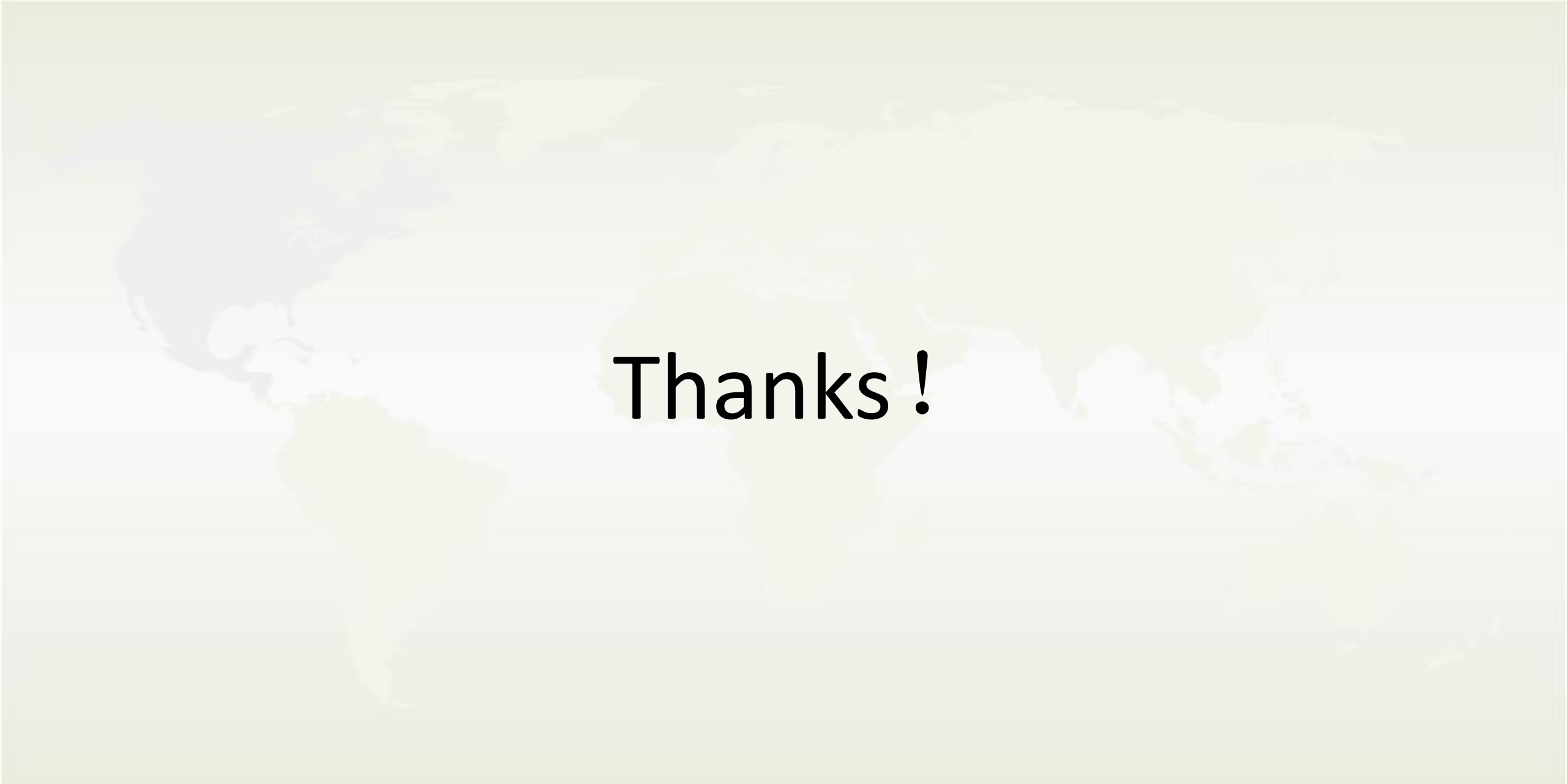


Realized Gain Pattern of ANT2 Antenna in 2GHz Band



Realized Gain Pattern of ANT2 Antenna in 5GHz Band





Thanks !





046050021251S
26/15

290-90710
ANT2

