



產品承認書

Specification for Approval

客戶 (Customer): 易通展科技股份有限公司

Customer Part No.: MAEAI4080XXW1GV

Product Description: DIR-X1550(Antenna)

Lynwave Part No.: AOX20X-051041-00

客戶簽核 (Customer Approval)

客戶承認 Customer Approval	核准 (Authorized)	檢驗 (Approved)
	日期： 年 月 日	

內部簽核 (Signature) 日期： 2021 年 08 月 24 日

Approved by	Checked by	Tested by
<i>YungMing</i>	<i>Lisa Wei</i>	<i>Zero Chen</i>

綠億科技股份有限公司

Lynwave Technology Ltd.

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Specification

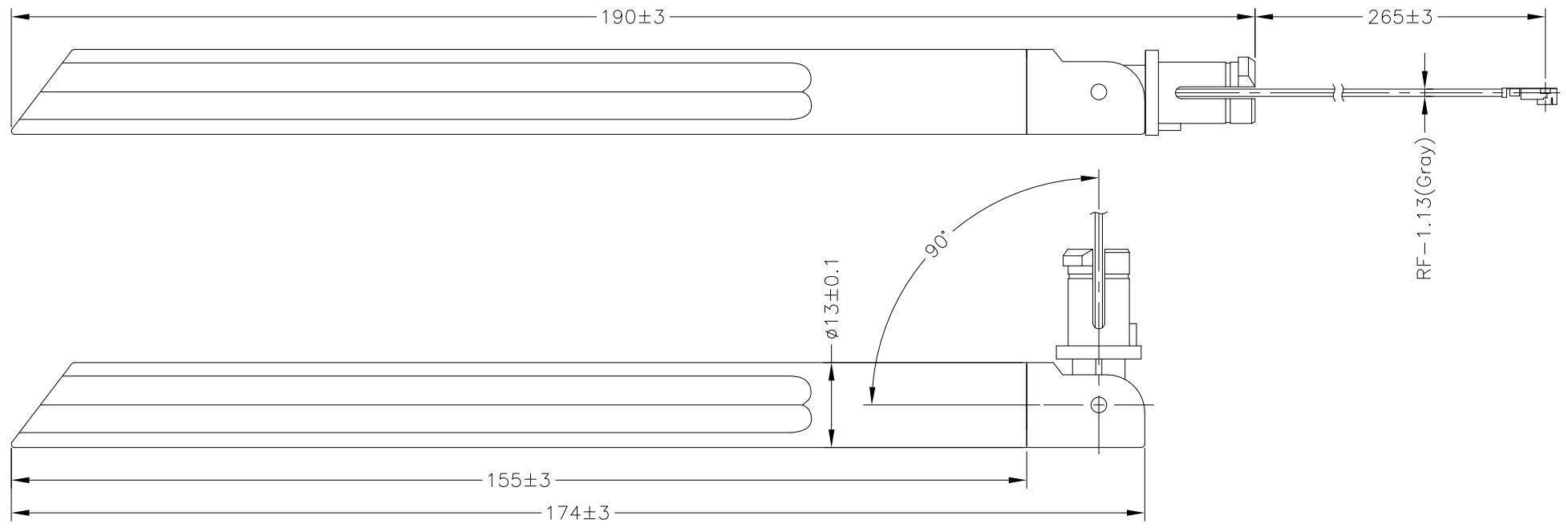
Electrical Properties :

1. Frequency :2400~2500MHz
2. VSWR : ≤ 2.0
3. Impedance : 50Ω
4. Peak Gain : 4.4 dBi

Physical Properties :

1. Operation temperature : $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
2. Storage temperature: $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
3. Storage period: 2years
4. Weight: 14.93g

Rev	Zone	Description	ENG	Approved	Date
A1		修改Cable, 由黑色80mm改為灰色265mm			2020/12/25
A2		修改外觀顏色, 由黑色改為白色			2021/01/18



- 備註:
- MHF compatible有方向性, 請依照圖面方向生產.
 - 外觀顏色: 白色

TOLERANCE		CUSTOMER		PART NO.		DESCRIPTION:		DWG NO.		REV.
XXX.	±1.0	----		----		Antenna		ADX20X-051041-00		A2
XX.	±0.5	PROJECTION		UNIT	SCALE	SIZE	SHEET			
X.	±0.3	⊕		mm	1:1	A4	1/1			
.X	±0.1	APPROVED:		DESIGNED:		DRAWN:				
No.	Description	Specification		Qty	.XX	±0.05	Anna			

LYNwave
www.lynwave.com

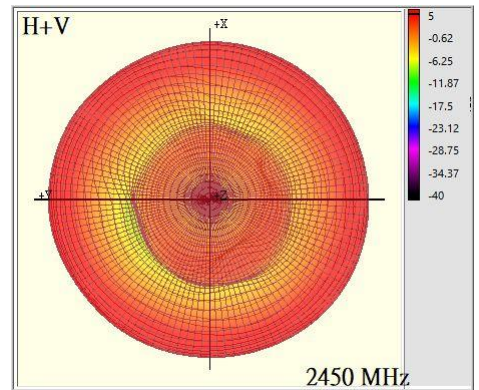
Features

- Single band IEEE 802.11 b/g/n/ax standard
- Case mounting or on board mount
- High efficiency
- Quick integration



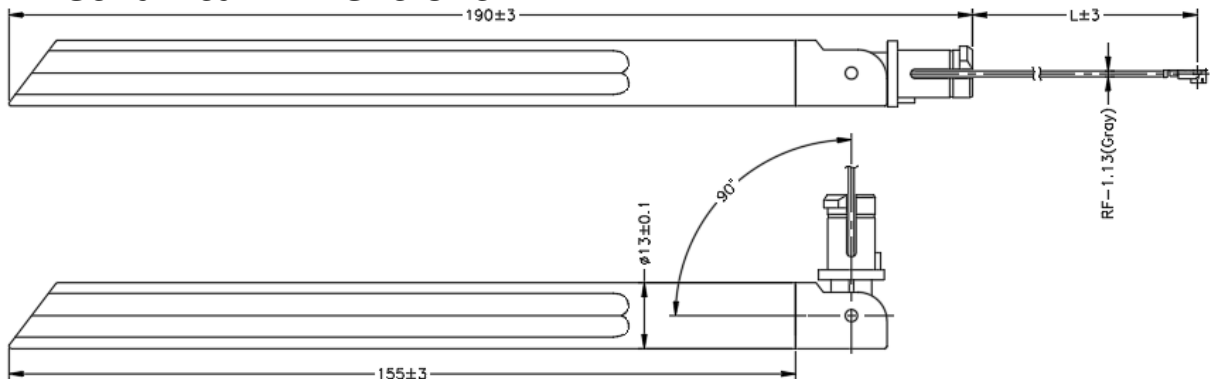
Specification

Frequency (MHz)	2400 ~ 2500
Peak Gain (dBi)	4.4
VSWR	2.0:1
Power (Watts)	1
Impedance (Ohms)	50
Dimension (mm)	Ø13 x 190
Color	White
Connector	MHF compatible
Cable length (mm)	265
Operating Temp (°C)	-40°C ~ +85°C



2.45GHz

Mechanical Dimensions



DIR-X1550

Antenna Test Report

Report by Alex
2020/12/24

A. Antenna Testing Conditions

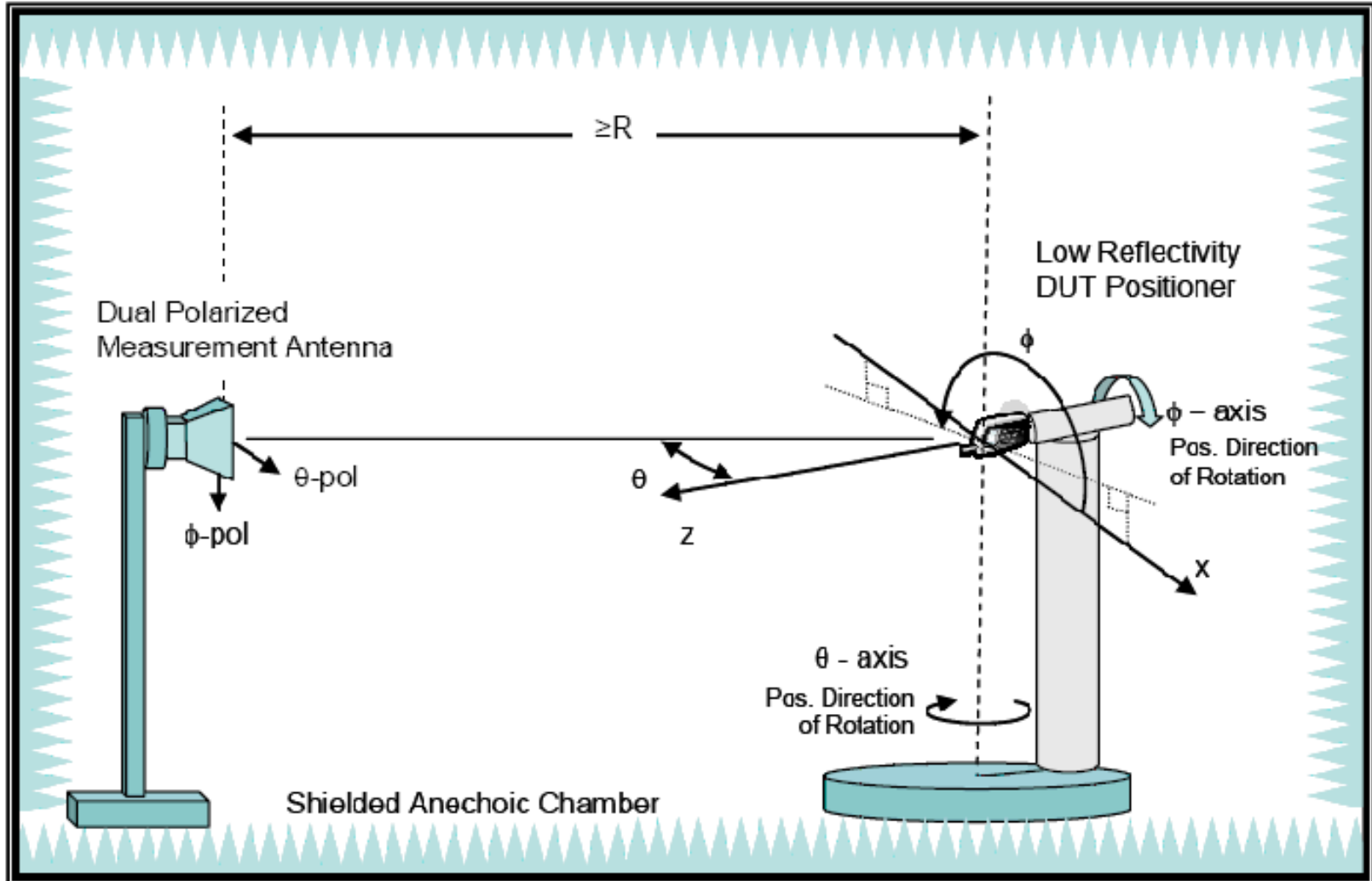
1. Test System
2. Antenna Under Test
3. Antenna Placement

B. Antenna RF Characteristics

1. Return Loss
2. Isolation
3. Gain Table
4. 2D Radiation Pattern
5. 3D Radiation Pattern

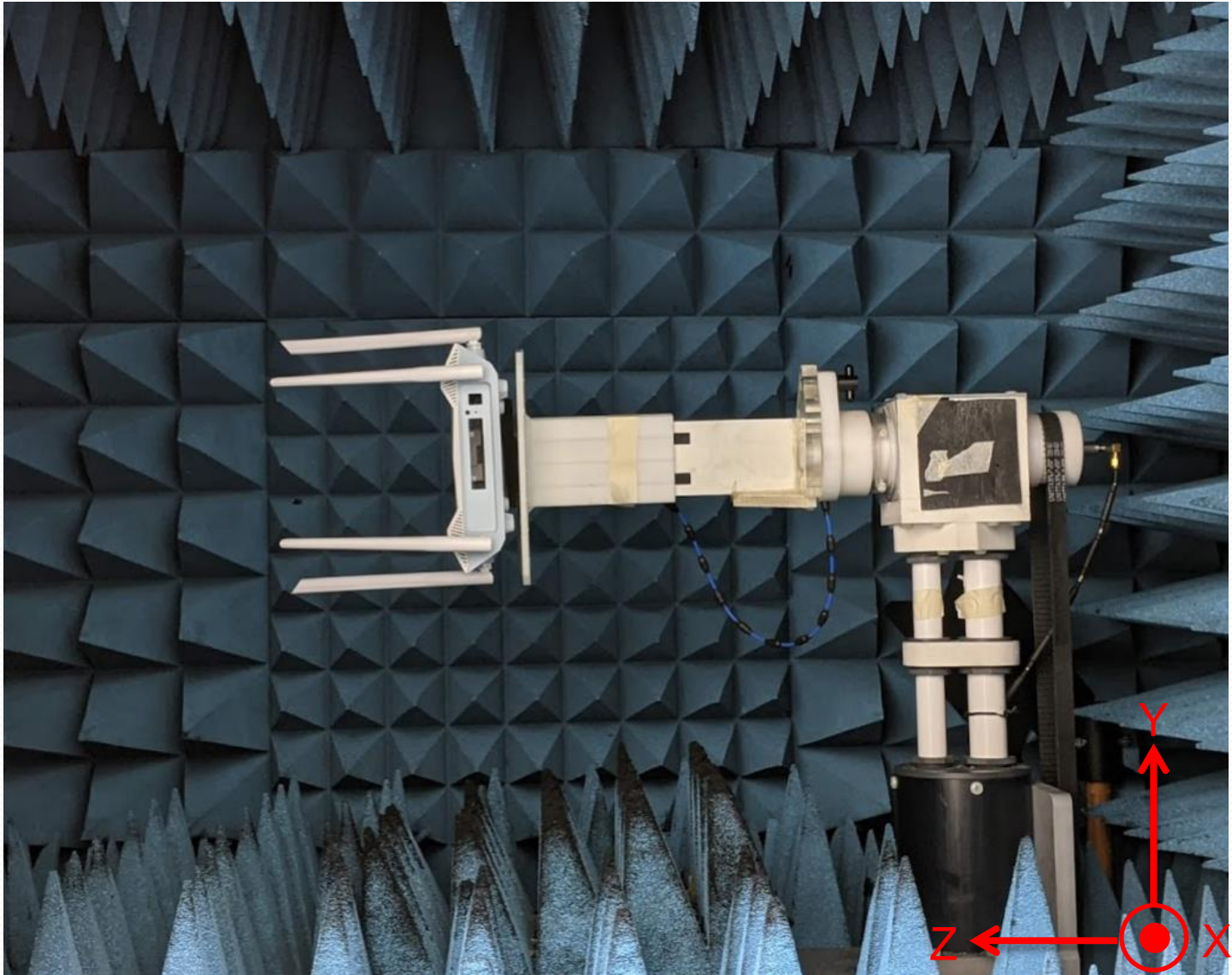
Antenna Test System

LYNwave



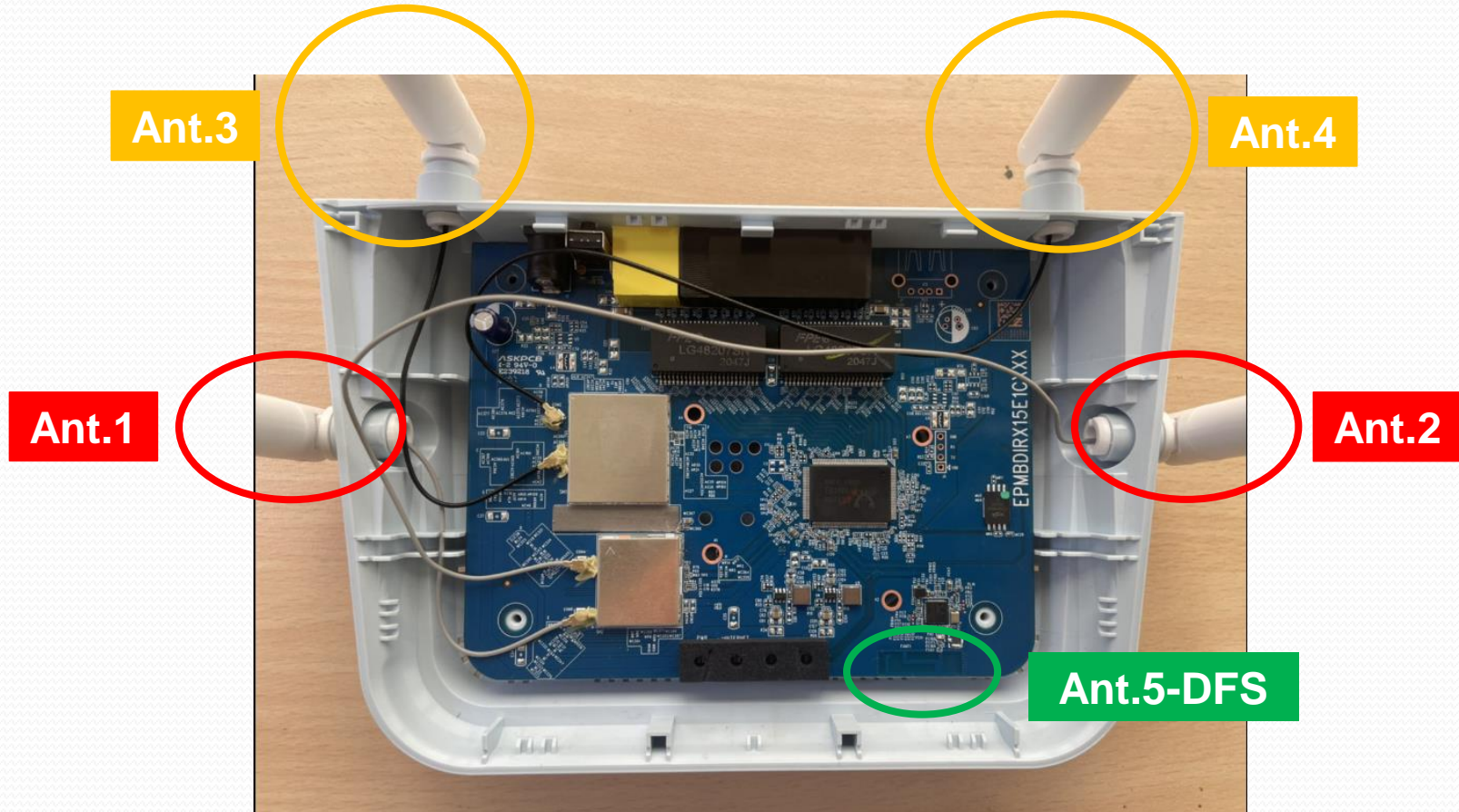
Antenna Under Test

LYNwave



Antenna Placement

LYNwave



- Ant.1 : 2.4GHz Single Band; Cable Length : Total 128mm, Outside 80mm, Gray**
- Ant.2 : 2.4GHz Single Band; Cable Length : Total 313mm, Outside 265mm, Gray**
- Ant.3 : 5GHz Single Band; Cable Length : Total 135mm, Outside 95mm, Black**
- Ant.4 : 5GHz Single Band; Cable Length : Total 235mm, Outside 195mm, Black**

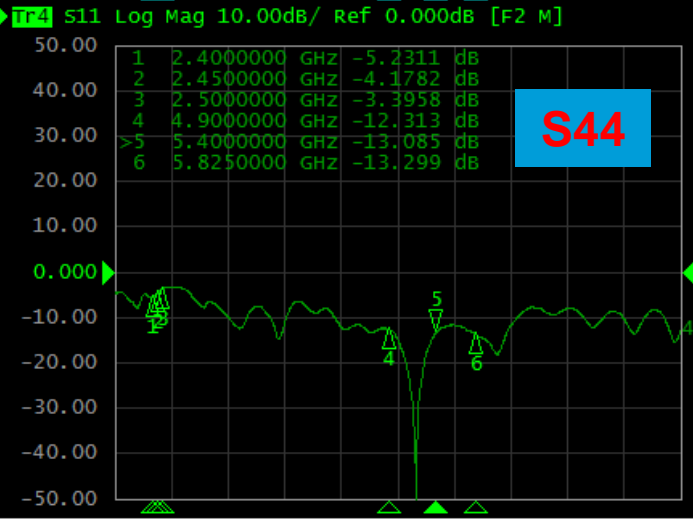
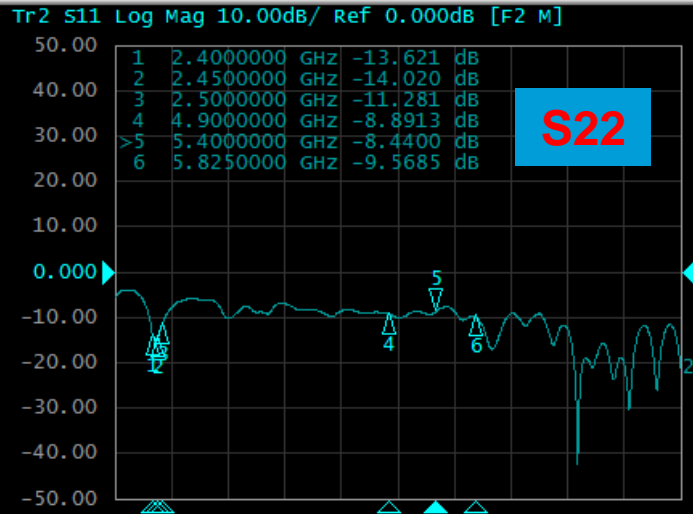
Return Loss

LYNwave

E5071C Network Analyzer

1 Active Ch/Trace 2 Response 3 Stimulus 4 Mkr/Analysis 5 Instr State

Resize



System

Print

Invert Image
ON

Dump
Screen Image...

Multiport Test Set
Setup

Misc Setup

Backlight
ON

Firmware
Revision

Service Menu

Help

Return

1 Start 2 GHz

IFBW 70 kHz

Stop 8 GHz Cor

Isolation

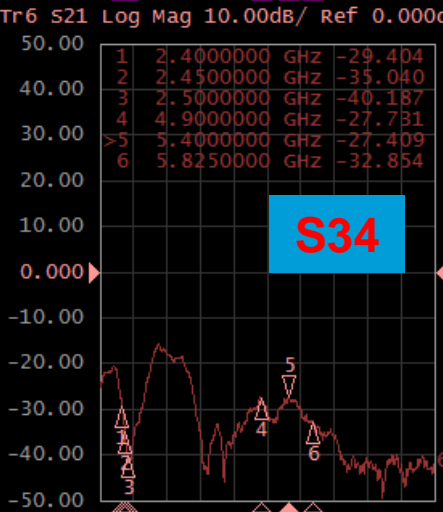
LYNwave

E5071C Network Analyzer

1 Active Ch/Trace 2 Response 3 Stimulus 4 Mkr/Analysis 5 Instr State

Resize

▶ Tr1 S21 Log Mag 10.00dB/ Ref 0.000d Tr2 S21 Log Mag 10.00dB/ Ref 0.000d Tr3 S21 Log Mag 10.00dB/ Ref 0.000d



System

Print

Invert Image
ON

Dump
Screen Image...

Multiport Test Set
Setup

Misc Setup

Backlight
ON

Firmware
Revision

Service Menu

Help

Return

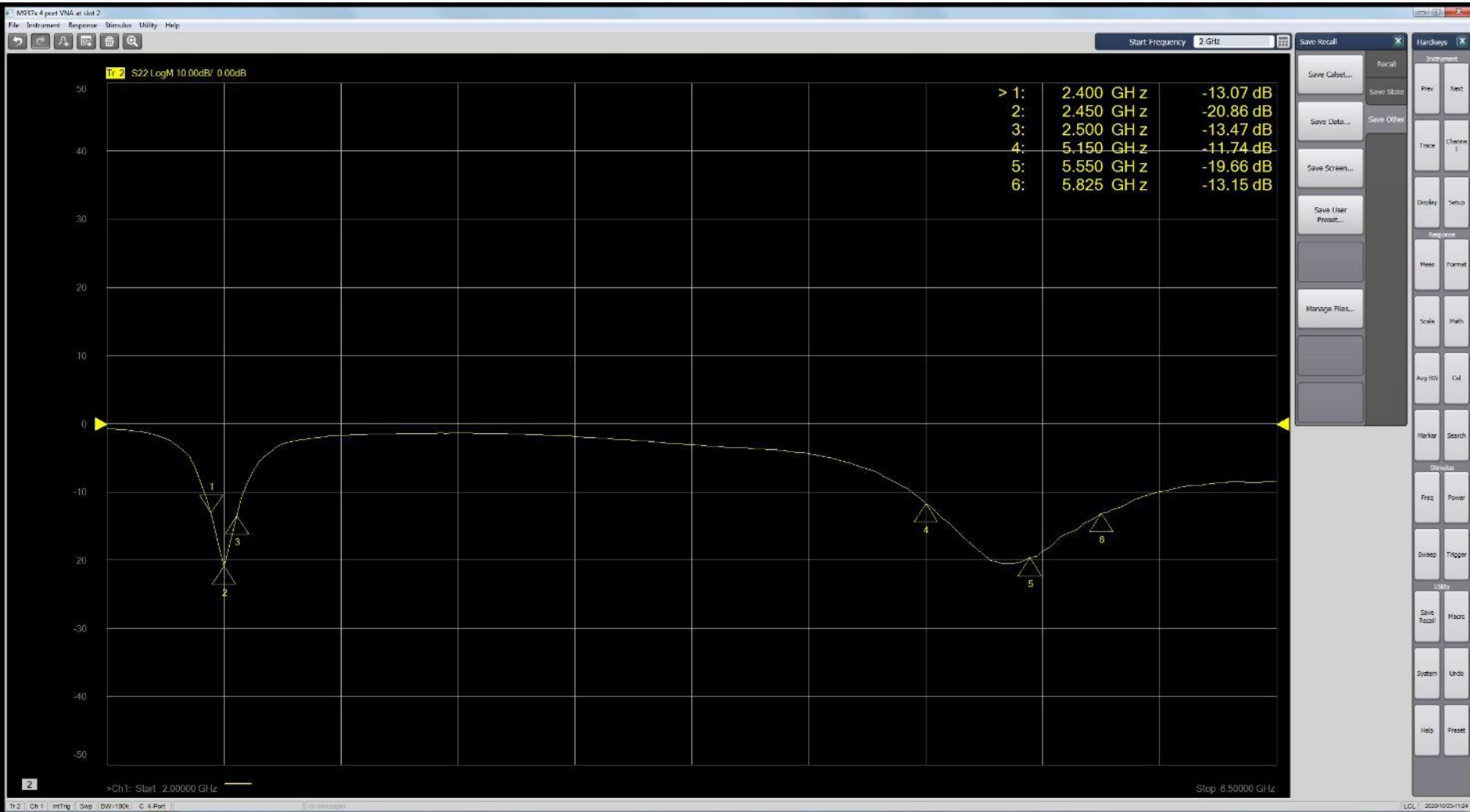
1 Start 2 GHz

IFBW 70 kHz

Stop 8 GHz Cor

DFS S-parameter

LYNwave



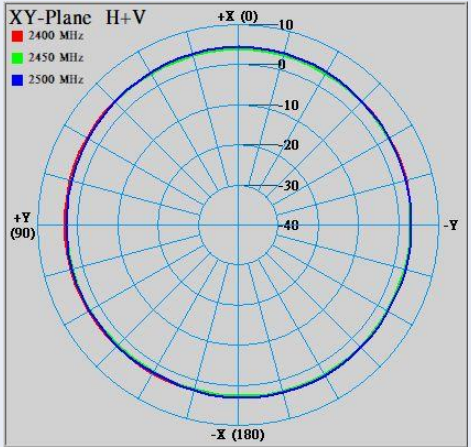
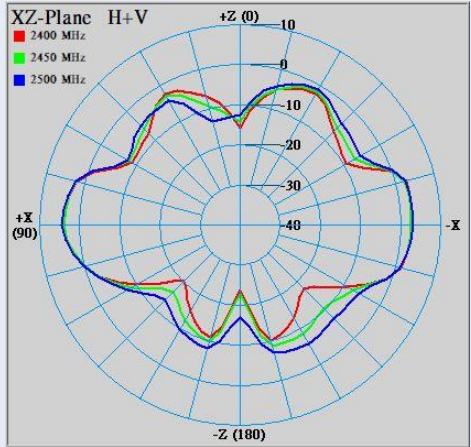
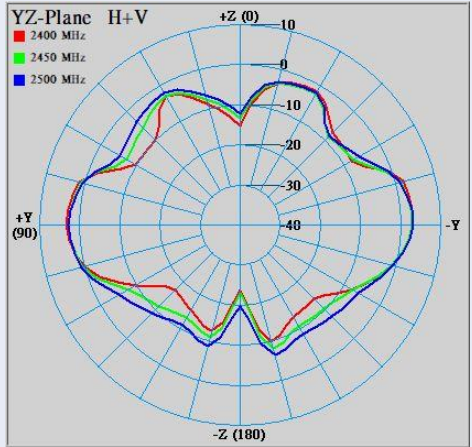



Gain Table

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	Ant.1					
Frequency (MHz)	2400		2450		2500	
Peak Gain(dBi)	4.0		4.8		4.5	
Efficiency(%)	71		74		72	
	Ant.2					
Frequency (MHz)	2400		2450		2500	
Peak Gain(dBi)	4.0		4.4		4.1	
Efficiency(%)	75		76		72	
	Ant.3					
Frequency (MHz)	4900		5400		5825	
Peak Gain(dBi)	4.8		5.3		4.8	
Efficiency(%)	72		78		73	
	Ant.4					
Frequency (MHz)	4900		5400		5825	
Peak Gain(dBi)	4.4		4.9		4.3	
Efficiency(%)	71		72		77	
	Ant.5					
Frequency (MHz)	2400	2450	2500	5150	5550	5825
Peak Gain(dBi)	1.9	1.9	1.5	3.9	4.1	3.1
Efficiency(%)	63.1	61.8	60.5	62.6	66.8	63.2

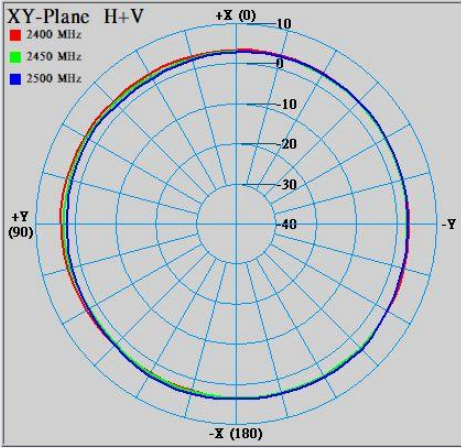
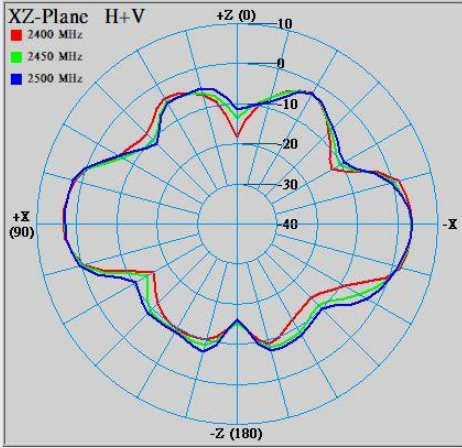
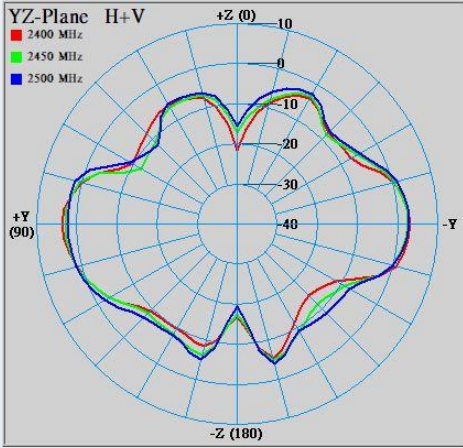



Ant.1 2.4GHz 2D Radiation Pattern

LYNwave

Frequency(MHz)	2400~2500		
Plane	XY	XZ	YZ
Radiation Pattern			
Setup			

Ant.2 2.4GHz 2D Radiation Pattern

LYNwave

Frequency(MHz)	2400~2500		
Plane	XY	XZ	YZ
Radiation Pattern			
Setup			

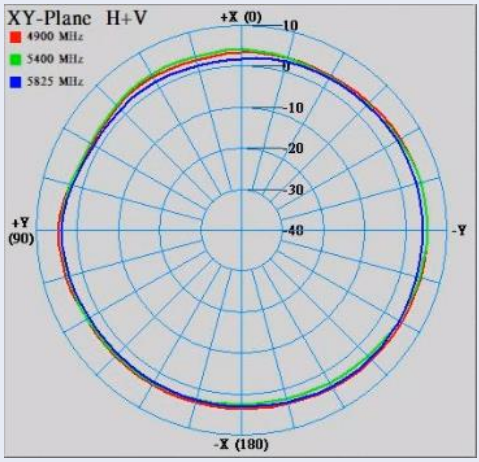
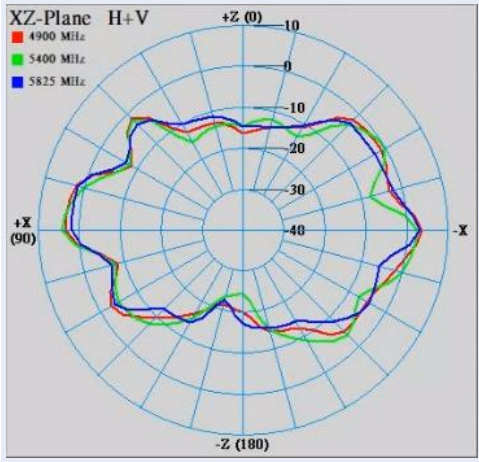
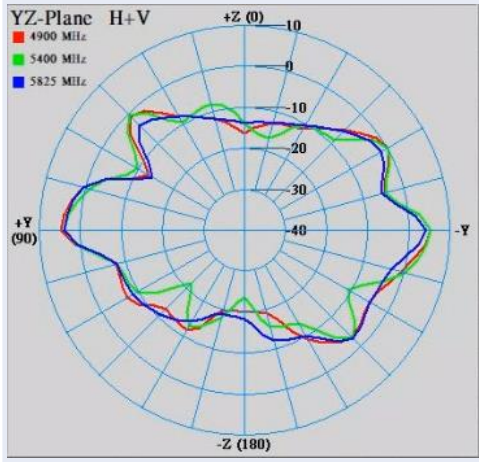



Ant.3 5GHz 2D Radiation Pattern

LYNwave

Frequency(MHz)	4900~5825		
Plane	XY	XZ	YZ
Radiation Pattern	<p>XY-Plane H+V</p> <ul style="list-style-type: none"> 4900 MHz 5400 MHz 5825 MHz 	<p>XZ-Plane H+V</p> <ul style="list-style-type: none"> 4900 MHz 5400 MHz 5825 MHz 	<p>YZ-Plane H+V</p> <ul style="list-style-type: none"> 4900 MHz 5400 MHz 5825 MHz
Setup	<p>X</p> <p>Y</p>	<p>Z</p> <p>X</p>	<p>Z</p> <p>Y</p>

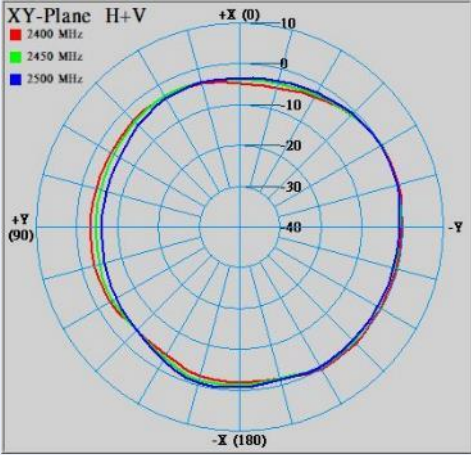
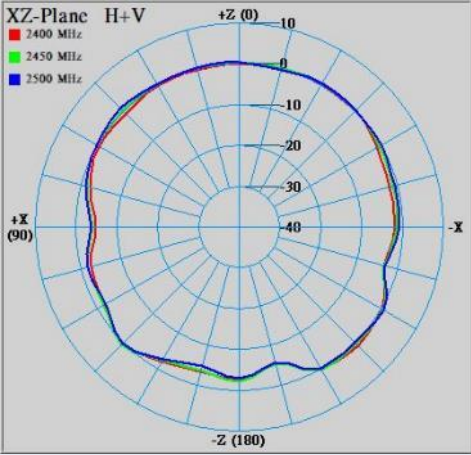
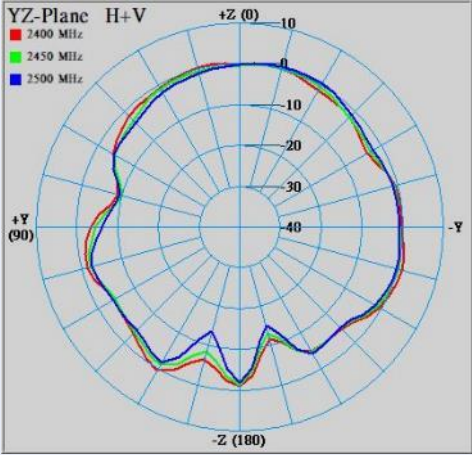



Ant.4 5GHz 2D Radiation Pattern

LYNwave

Frequency(MHz)	4900~5825		
Plane	XY	XZ	YZ
Radiation Pattern			
Setup			

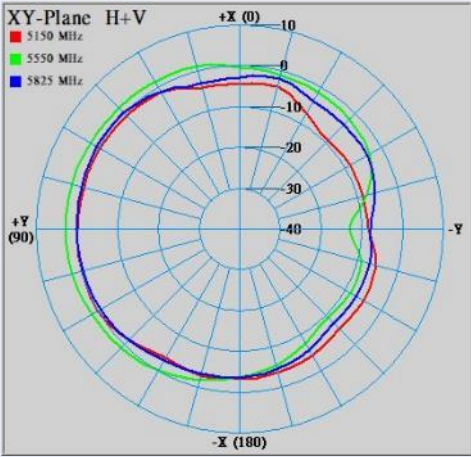
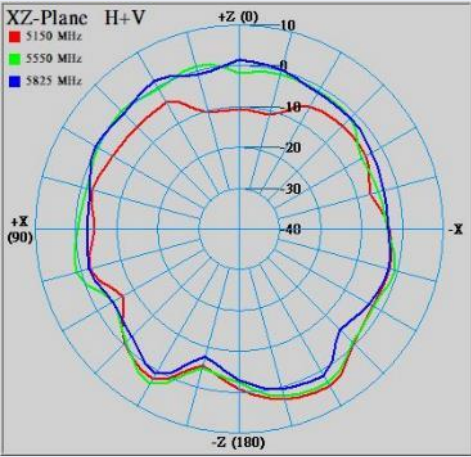
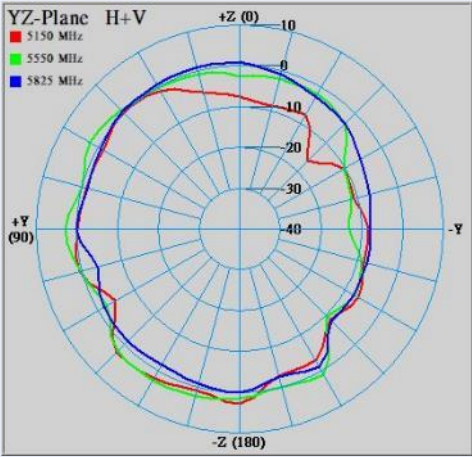



Ant.5_2G_2D Radiation Pattern

LYNwave

Frequency(MHz)	2400~2500		
Plane	XY	ZX	ZY
Radiation Pattern			
Setup			

Ant.5_5G_2D Radiation Pattern

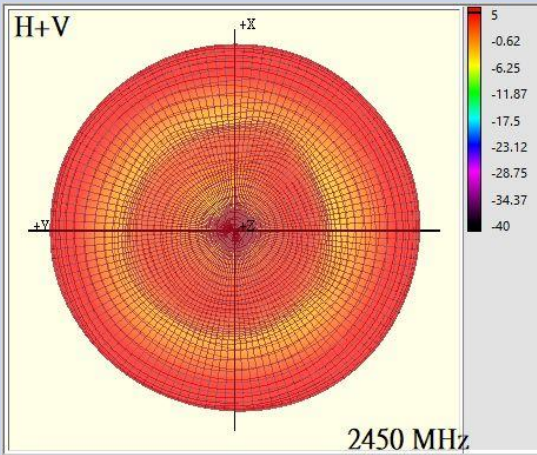
LYNwave

Frequency(MHz)	5150~5825		
Plane	XY	ZX	ZY
Radiation Pattern			
Setup			

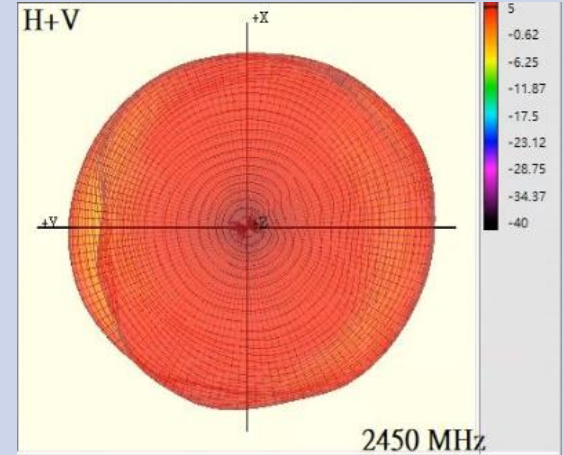
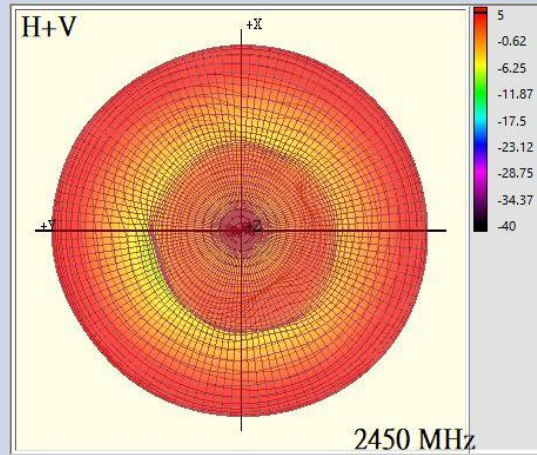
3D Radiation Pattern

LYNwave

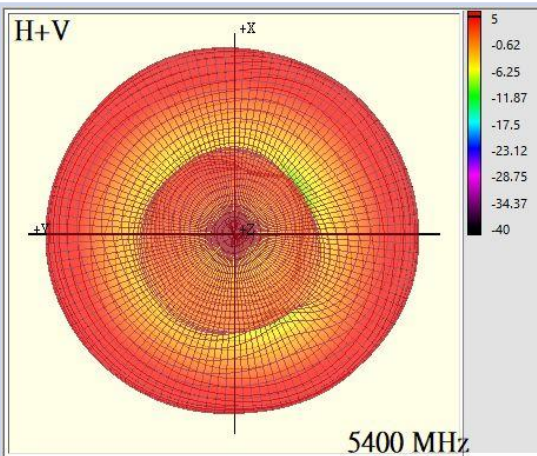
ANT1



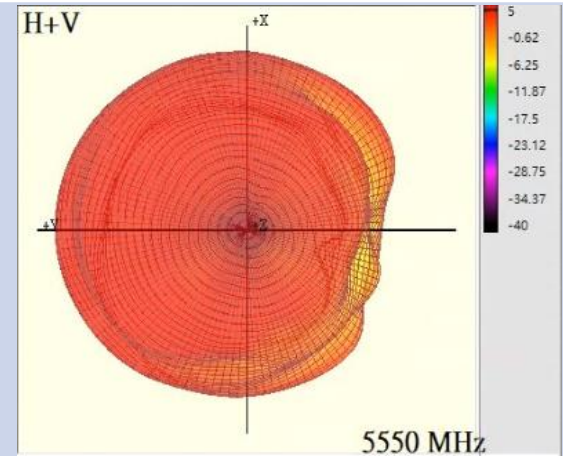
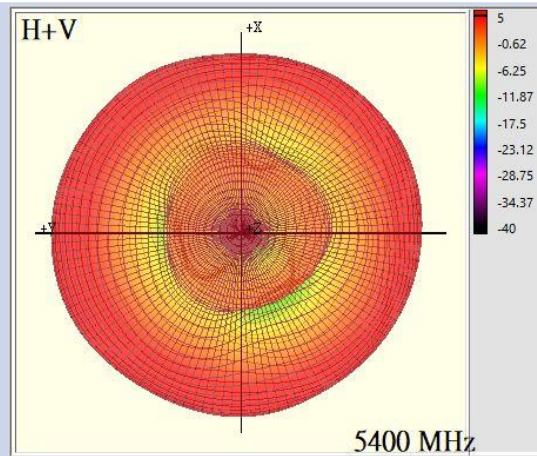
ANT2



ANT3



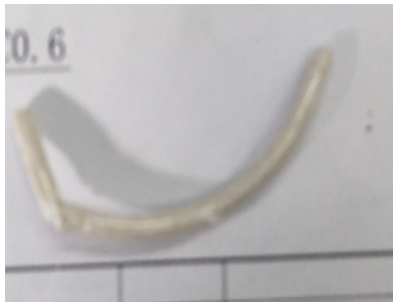



ANT4



- The antenna characteristics
 - Return loss $< -10\text{dB}$ in operating band
 - Gain
 - Wifi 2.4GHz band 4.0~4.8dBi , Wifi 5GHz band 4.3~5.3 dBi
 - DFS 2GHz 1.5~1.9dBi , 5GHz 3.1~4.1dBi
 - Efficiency
 - Wifi 2.4GHz band $> 70\%$, Wifi 5GHz band $> 70\%$
 - DFS $> 60\%$
 - Isolation
 - Wifi 2.4GHz band $> 20\text{dB}$
 - Wifi 5GHz band $> 25\text{dB}$




熔體流動測試報告

部門	注塑			圖面版本	/版	
料號	六脚刀鋒天线			測試日期	2021/3/25	
模號				塑膠材質	TPEE	
穴號 / 穴數	8			荷重 kg	2.16	
設定溫度℃	260			烘烤時間 H	烘烤時間 2H, 烘烤溫度 120℃	
測試結果 (單位:g/10min)	MI 值規格	第一次切料	第二次切料	第三次切料	MI 平均值	判定
	≧20	14.5	15.5	15	15.00	OK
測 試 照 片	(原料)		(第一次切料)			
						
	(第二次切料)		(第三次切料)			
						
备注：测试样品由 QC 提供						
測試 判定	<input checked="" type="checkbox"/> 合格 <input type="checkbox"/> 不合格		主管審核		測試者	
			刘瑞琴		杨辉丽	

表单编号： QE - TQA-0080A

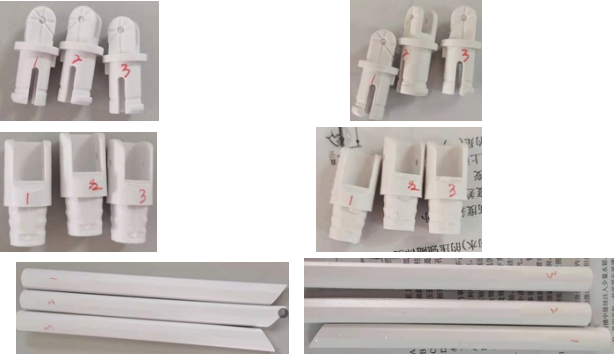
落球試驗報告

日期：2021/3/25

生产部门	注塑	試驗數量	5pcs /
零件編號	上下固	沖擊值	7.056 (根据 ASTM D2463)
落球重量	1000g	模穴號	
落球高度	0.9m	綜合判定	OK
测试条件	落球测试机。落球重 1KG, 高度 0.9M, 冲击值 7.056 (根据 ASTM D2463)		
試驗要求	鉚釘孔兩側各落球 3 次, 再用 20 倍放大鏡檢查, 不可破裂 (斷面光滑的裂痕)。		
測試結果	鉚釘孔兩側各落球 3 次后, 用 20 倍放大鏡檢查無破裂 (無斷面光滑的裂痕)。		
試驗圖片 (示意圖)	<p>(以长管状物固定落球冲击点) 測試前圖片</p>  <p>測試后圖片 (无破裂)</p>  		
測試結果	樣品編號	是否破裂, 是否有斷面光滑的脆裂	判定
	1	無破裂, 無斷面光滑的脆裂。	OK
	2	無破裂, 無斷面光滑的脆裂。	OK
	3	無破裂, 無斷面光滑的脆裂。	OK
	4	無破裂, 無斷面光滑的脆裂。	OK
	5	無破裂, 無斷面光滑的脆裂。	OK
備注: 測試樣品由 QC 提供.			
核准: 刘瑞琴	審核: 杨晓中		制表: 李美娟

QE-TQA-0097A

冰醋酸試驗報告

生产部门	注塑	試驗日期	2021/3/25		
品名規格	六脚刀锋天线	綜合判定	OK		
零件編碼					
試驗目的： <input type="checkbox"/> 新產品開發試驗 <input type="checkbox"/> 設計變更試驗 <input checked="" type="checkbox"/> 量產追蹤試驗 <input type="checkbox"/> 其他特殊需求試驗 設備名稱： <u>冰醋酸 99.5%</u> 試驗規格： <u>浸泡冰醋酸 3 分鐘後，用清水沖洗乾淨，</u> <u>用 20 倍放大鏡全檢不可破裂</u> 試驗時間： <u> 3 </u> 分鐘 試驗數量： <u> 3PCS </u>		 <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="border: 1px solid black; padding: 2px; color: cyan;">試驗前产品状态</div> <div style="border: 1px solid black; padding: 2px; color: cyan;">試驗后产品状态</div> </div>			
Sample	外觀 檢 驗			判定	
1	無破裂			OK	
2	無破裂			OK	
3	無破裂			OK	
4	無破裂			OK	
5	無破裂			OK	
補充說明： 測試樣品由 QC 提供.					
核 准	刘瑞琴	確 認	杨晓中	製表	杨辉丽

表单编号： QE-TQA-0033A

實照



MATERIAL BOM LIST

Customers: Amigo

2021/1/7

Customer Model No.:

Lynwave Model No.: AOX20X-051041-00

Product Description:

NO	部位名稱	供應商	材質名稱	規格描述	UL No.
1	PCB	GOLDENMAX INTERNATIONAL TECHNOLOGY (ZHUHAI) LTD	FR4	GF21 + MASK INK(GREEN)	E330731
2	CABLE	SHENYU COMMUNICATION TECHNOLOGY INC	1354	RF1.13 NORMAL(GRAY)	E318898
3	RIVET	POLYPLASTICS CO LTD	M90-44	POM(BLACK)	E45034
4	POLE COVER	SHINKONG SYNTHETIC FIBERS CORP	S201	TPEE(BLACK)	E107536

实际生产地&零件单重

生产地	零件	材质	单重
广东东莞	杆套	TPEE	9.218g
	上固	PC+PBT	1.867g
	下固	PC+PBT	1.449g
	铆钉	POM	0.025g

Antenna 成品編碼原則

共 14 碼

X X X X X X - X X X X X X - X X

① ② ③ ④~⑤ ⑥ ⑦~⑧ ⑨ ⑩~⑪ ⑫ 【⑬~⑭】←2017 年改為最後二碼流水號

E.g.

ALA120-092031-125055

ALA150-051020-000000

ALX17P-051XX0-00

ALX18M-221AA0-00

AEX19P-051AA0-00

Number	Item
①	Product category A – Antenna C – Cable Assembly → 另有 Cable Assembly 編碼原則 S – Smart antenna M – Module I – Integration system O – Outdoor antenna (e.g. Patch)
②	Research and development L – Lynwave O – Purchased E – OEM
③	應用類別碼 X –
④~⑤	Years 取西元的末 2 碼, 例: 2018 年取 “18”
⑥	Antenna Material P – PCB F – FPCB M – Metal X – Other

<p>⑦~⑧</p>	<p>Frequency band</p> <p>01 – LTE (791~960MHz,1710~2170MHz,2500~2690MHz)</p> <p>02 – LoRa (780~1020 MHz)</p> <p>03 – Z-wave (868~915MHz)</p> <p>04 – DECT (1880~1920MHz)</p> <p>05 – 11 b / g / n (2400~2500MHz)</p> <p>06 –低頻 (470~510MHz)</p> <p>07 – 2G/3G (868~960MHz,1710~2170MHz)</p> <p>08 – 13.56MHz</p> <p>09 – 11 a / n / ac / ax (5150~5825MHz)</p> <p>10 – GPS (1575MHz) 、 (1565~1585MHz)</p> <p>11 –其他 (e.g.RFID)</p> <p>12 – Numerous Frequency band</p> <p>15 – 5GNR</p> <p>16 – WiFi 6E (5950~7225MHz)</p> <p>21 – GSM+IMT (880/920/960MHz,1920/2000/2170MHz)</p> <p>22 – 11 a / b / g / n / ac / ax (2400~2500MHz+5150~5825MHz)</p> <p>23 – GPRS (850/900/1800/1900MHz)</p>
<p>⑨</p>	<p>Antenna type</p> <p>0 – Monopole</p> <p>1 – Dipole</p> <p>2 – PIFA</p> <p>3 – Loop</p> <p>4 – Chip</p> <p>5 – Coil</p> <p>6 – Numerous types</p> <p>7 – Patch</p>
<p>⑩~⑪</p>	<p>Antenna gain</p> <p>XX – Embedded 及 Other product 適用 → 僅 2017 年使用 目前不使用</p> <p>AA – Embedded 及 Other product 適用</p> <p>----- ↓ 以下 patch 及 外接 dipole 適用</p> <p>01 – 1 dBi</p> <p>02 – 2 dBi</p> <p>…以此類推</p>
<p>⑫</p>	<p>流水號 (主體不同時)</p> <p>0 ~ 9 ~ A ~ Z (不使用 I 與 O) , 共 34 碼可用</p>
<p>⑬~⑭</p>	<p>流水號 (線材/輔料不同時)</p> <p>00~99</p>

水口料比例

材料	原料	水口
POM	100%	0%
TPEE	100%	0%
PC+PBT	100%	0%

LYNwave 綠億科技股份有限公司

LYNwave Technology Limited

包裝規範書

產品名稱	Dipole天線	客戶名稱	易通展	版次	A
綠億料號	AOX20X-051040-00 AOX20X-051041-00 AOX21X-091050-00 AOX21X-091051-00	客戶料號	MAEAIIF5080XXW1GV MAEAIIF4080XXW1GV MAEAIIZ5095XXW2GV MAEAIIZ5195XXW2GV	製作日期	2021/8/5
產品包裝說明			產品包裝圖示		
<p>一、包裝：</p> <p>(1)10 pcs/排袋</p> <p>(2)將出線尾端使用珍珠棉包紮好</p> <p>(3)將50包裝入到防水袋內</p> <p>(4)每箱500 pcs</p> <p>二、裝箱：</p> <p>(1)每箱50袋</p> <p>(2)外箱須貼外箱標籤</p> <p>(3)封箱並用打包袋固定</p> <p style="color: red;">註: 以實際裝箱數量為準</p>			<p>1. 10PCS裝入到排袋內，將出線尾端使用珍珠棉包紮好</p> <p>2. 用珍珠棉將出線尾端包紮好</p> <p>3. 將產品50包裝入到防水袋內</p> <p>4. 每箱裝500PCS，兩側貼標籤外箱標籤</p>		

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