APPROVAL SHEET

Dipole ANTENNA

617~960/1427~1518/1710~2690/3300~4200/ 5150~5925MHz Working Frequency

Halogens Free Product

P/N: RFDPA161500SMMB805

Customer：明泰

Customer ‘s Part No.：

Production：Antenna

Address：蘇州工業園區長陽街369號

*Contents in this sheet are subject to change without prior notice.

Version	Date	Description	Author
V01	2022 Sep.	New Release	CXLIU
V02	2022 Sep.	更新測報及頻段	CXLIU

ELECTRICAL CHARACTERISTICS

Item	Specification
Working Frequency Range	617~960/1427~1518/1710~2690/ 3300~4200/5150~5925MHz(note-1)
Gain	**LTE1** 617~960MHz@2.37 dBi 1427~1518MHz@4.27 dBi 1710~2690MHz@3.82 dBi 3300~4200MHz@4.29 dBi 5150~5925MHz@3.23 dBi **LTE2** 617~960MHz@2.81 dBi 1427~1518MHz@3.53 dBi 1710~2690MHz@4.66 dBi 3300~4200MHz@4.33 dBi 5150~5925MHz@5.03 dBi
Return Loss	**LTE1** -5.1dB(max) @ 617~960MHz -10dB(max) @ 1427~1518MHz -6dB(max) @ 1710~2690MHz -7.4dB(max) @ 3300~4200MHz -10dB(max) @5150~5925MHz **LTE2** -4.4dB(max) @ 617~960MHz -10dB(max) @ 1427~1518MHz -5.1dB(max) @ 1710~2690MHz -7.4dB(max) @ 3300~4200MHz -10dB(max) @5150~5925MHz
VSWR	**LTE1** <3.5 @ 617~960MHz <2.0 @ 1427~1518MHz <3.0 @ 1710~2690MHz <2.5 @ 3300~4200MHz <2.0 @5150~5925MHz **LTE2** <4.0 @ 617~960MHz <2.0 @ 1427~1518MHz <3.0 @ 1710~2690MHz <2.5 @ 3300~4200MHz <2.0 @5150~5925MHz
Polarization	Linear
Radiation Pattern	Omni-directional
Impedance	50Ω
Operation Temperature	－20℃ ～ ＋65℃

*Note 1. Central Frequency should be defined after customers' application approval.

MATERIAL TABLE

Items	Description
Antenna Down Base	PC+PBT;Black
Antenna Up Base	ABS;Black
Rivet	POM;Black
Antenna Cover	ABS;Black
PCB	FR4(Single Layer) T=0.8mm;Black
Sponge+Double Tape	EVA+3M9888T;Black
Cable	RG178 Cable;Brown
Connector	SMA Plug;Black
Color Ring	PP;Blue(Pantone Color : Process Blue C)

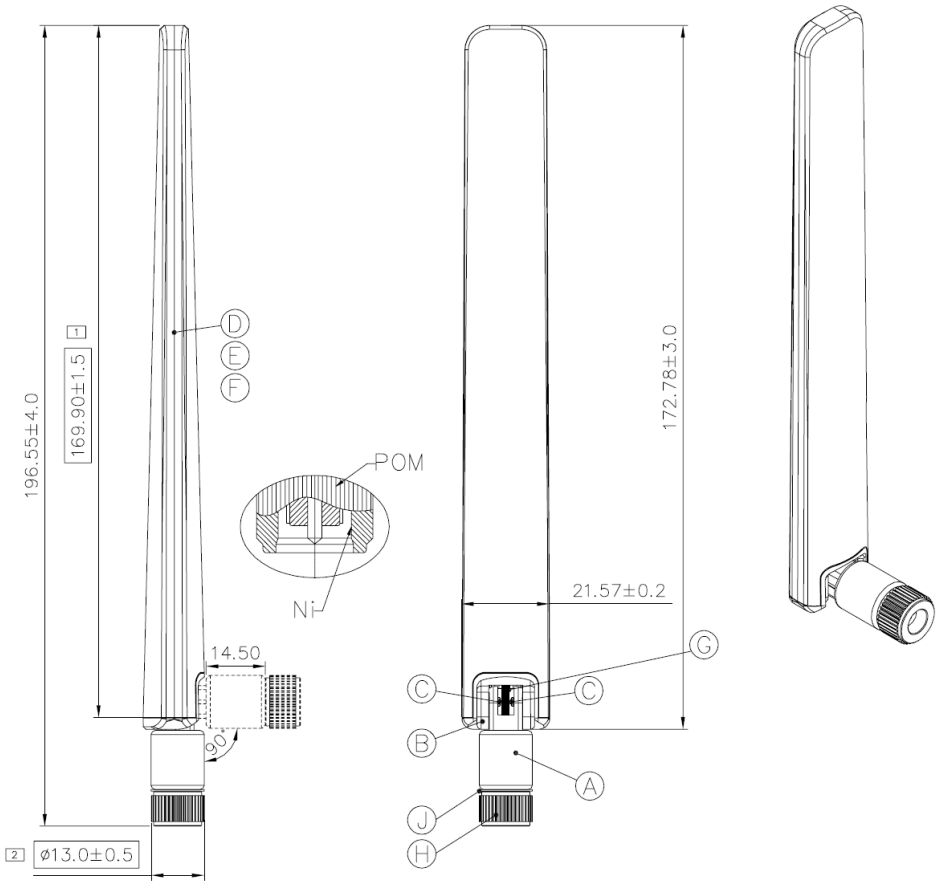
ORDERING RULE

RF	DPA	1615	00	S	M	M	B	8	05
Type Code	**Product Code**	**Dipole Dimension (Unit: mm)**	**Cable Length (unit: cm)**	**Connector Brand**	**Type of Connector**	**Application**	**Project status**	**Wire Diameter**	**Project**
Walsin RF Device	DPA: Dipole Antenna	Per 2 digits of length, width e.g.: 1615 Length 169.9mm, Width 13.0mm	2 digits for cable length e.g.: Non Cable	A: N C:MCX D:IPEX III E: IPEX IV F: IPEX A13 H: Hirose I: IPEX M: MMCX S: SMA T: TNC U:MURATA N: None	A: Reverse Female B: Reverse Male F: Female M: Male N: None	0: 0GHz 3: 3GHz 6: 6GHz A: 2.4GHz ISM band B: GSM 900/1800 dual band G: GPS band L: 2.4/5.2/5.8 GHz tri-band M:LTE+Sub 6G +5G N: NFC T: LTE band W: WCDMA band	B: MP T:During Test X: Pile Run	0:None 1:Ø0.81 3:Ø1.13 6:RG316 7:Ø1.37 8:RG178 9:Ø1.37 Low Loss	01~99 series number

DIMENSIONS

ELECTRICAL ⚠
Frequency : 617~960/
1427~1518/
1710~2690/
3300~4200/
5150~5925MHz

NO	DESCRIPTION		Q'TY	REMARK
A	Antenna Down Base	PC+PBT; Black	1	
B	Antenna Up Base	ABS; Black	1	
C	Rivet	POM; Black	2	
D	Antenna Cover	ABS; Black	1	
E	PCB	FR4(Single Layer) T=0.8mm; Black	1	PCA1116-1A
F	Sponge+Double Tape	EVA+3M9888T; Black	1	
G	Cable	RG178 Cable; Brown	1	
H	Connector	SMA Plug; Black	1	
J	Color Ring	PP; Blue(Pantone Color : Process Blue C)	1	



※標記□記號者，為重點檢驗尺寸

LTR	DESCRIPTION	DATE	REQ. BY
⚠	變更印字及線長改為80	2022.09.27	CXLIU

設計DR. CXLIU 2022.09.14
核准APPD. Marco

容許公差 TOLERANCE
6以下.....±0.2
6以上~30.....±0.5
30以上~120.....±0.8
120以上~315.....±1.2
315以上~1000.....±2.0
1000以上~2000.....±3.0

品名 ARTICLE: RFDPA161500SMMB805
版本 REV.: B

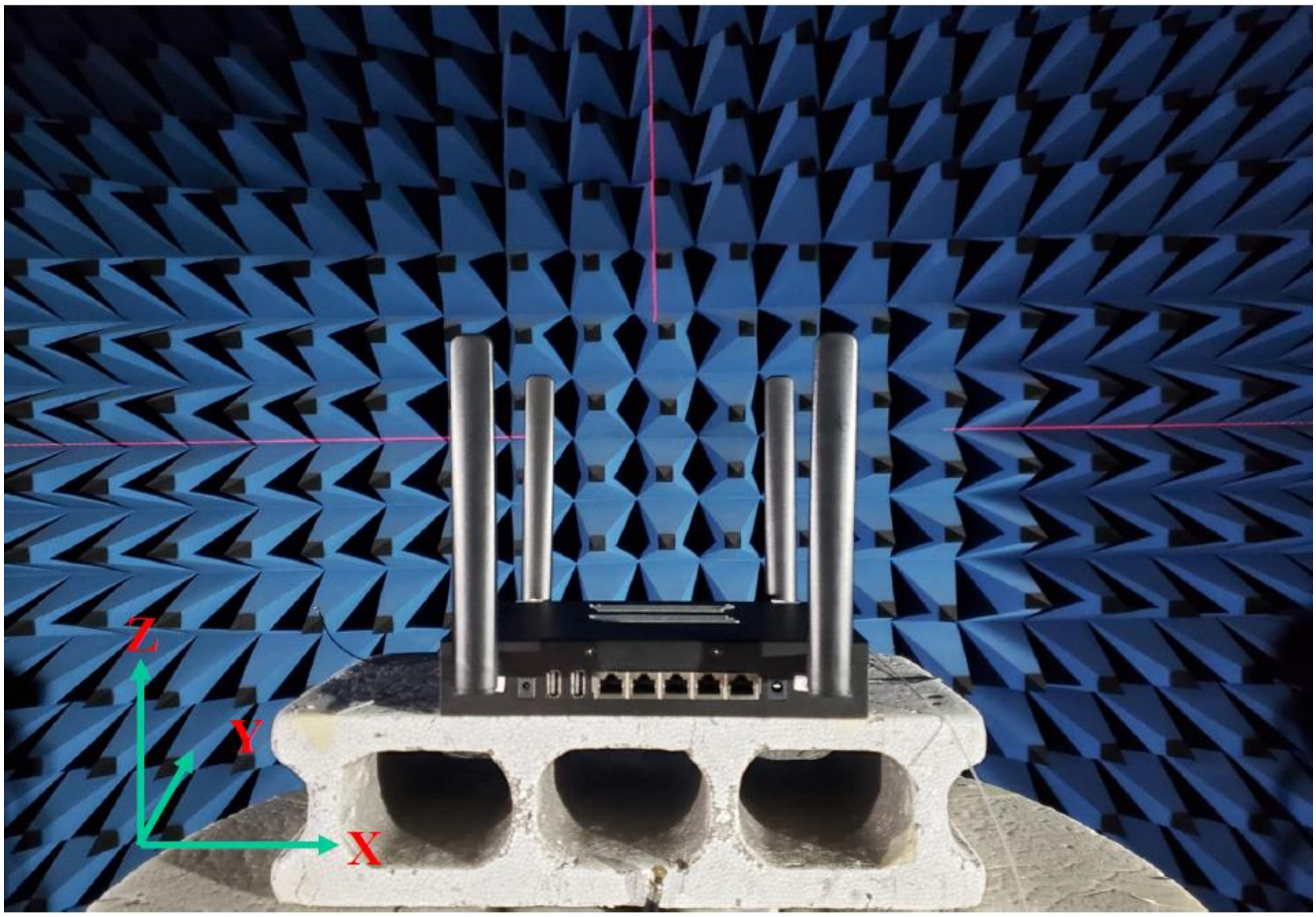
單位 UNIT: mm | 比例 SCALE: **** | 張數 SHEET: 1

PSA 華新科技股份有限公司 WALSIN TECHNOLOGY CORPORATION

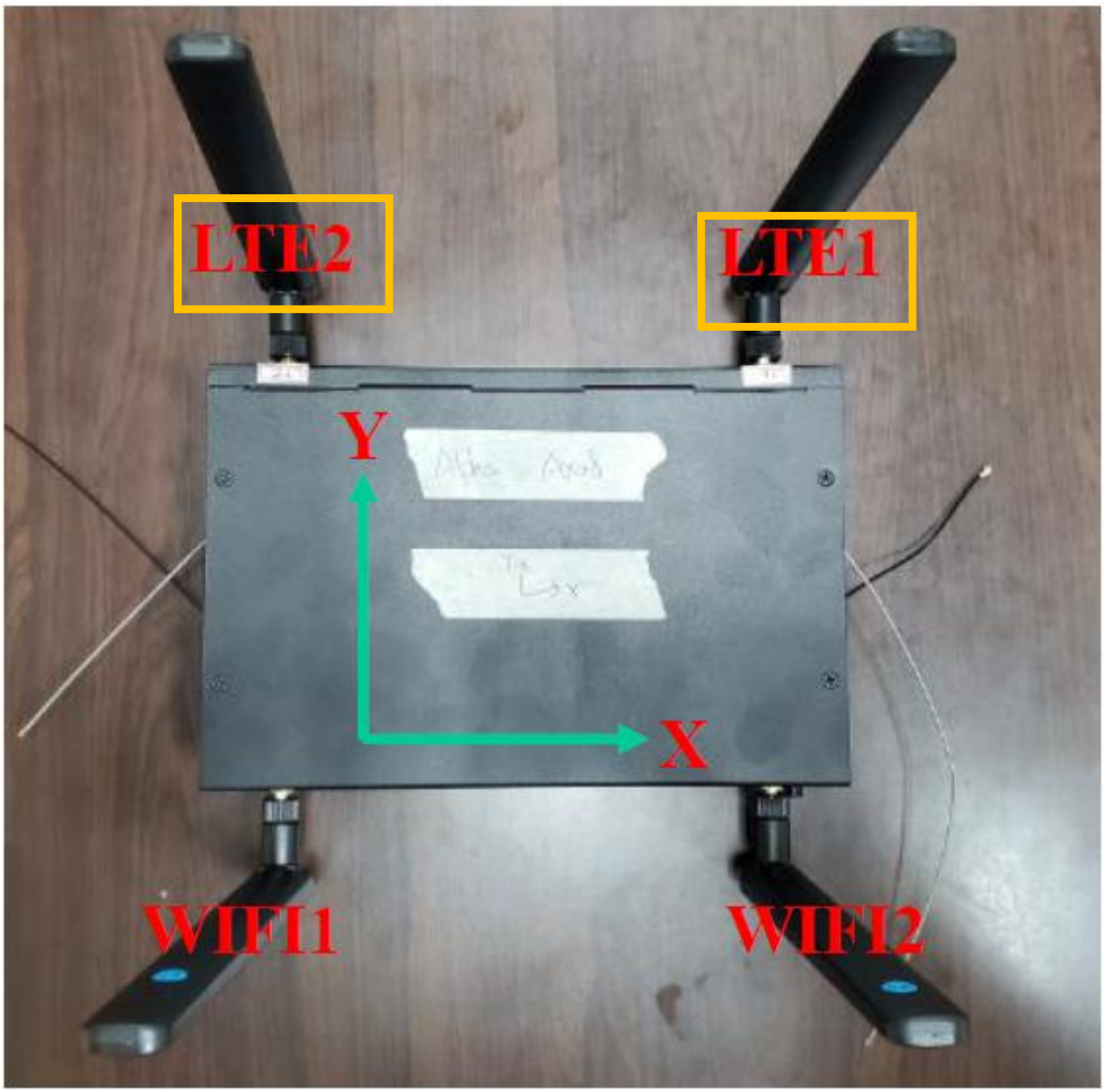
ANTENNA PICTURE

Test Report

Experimental Setup

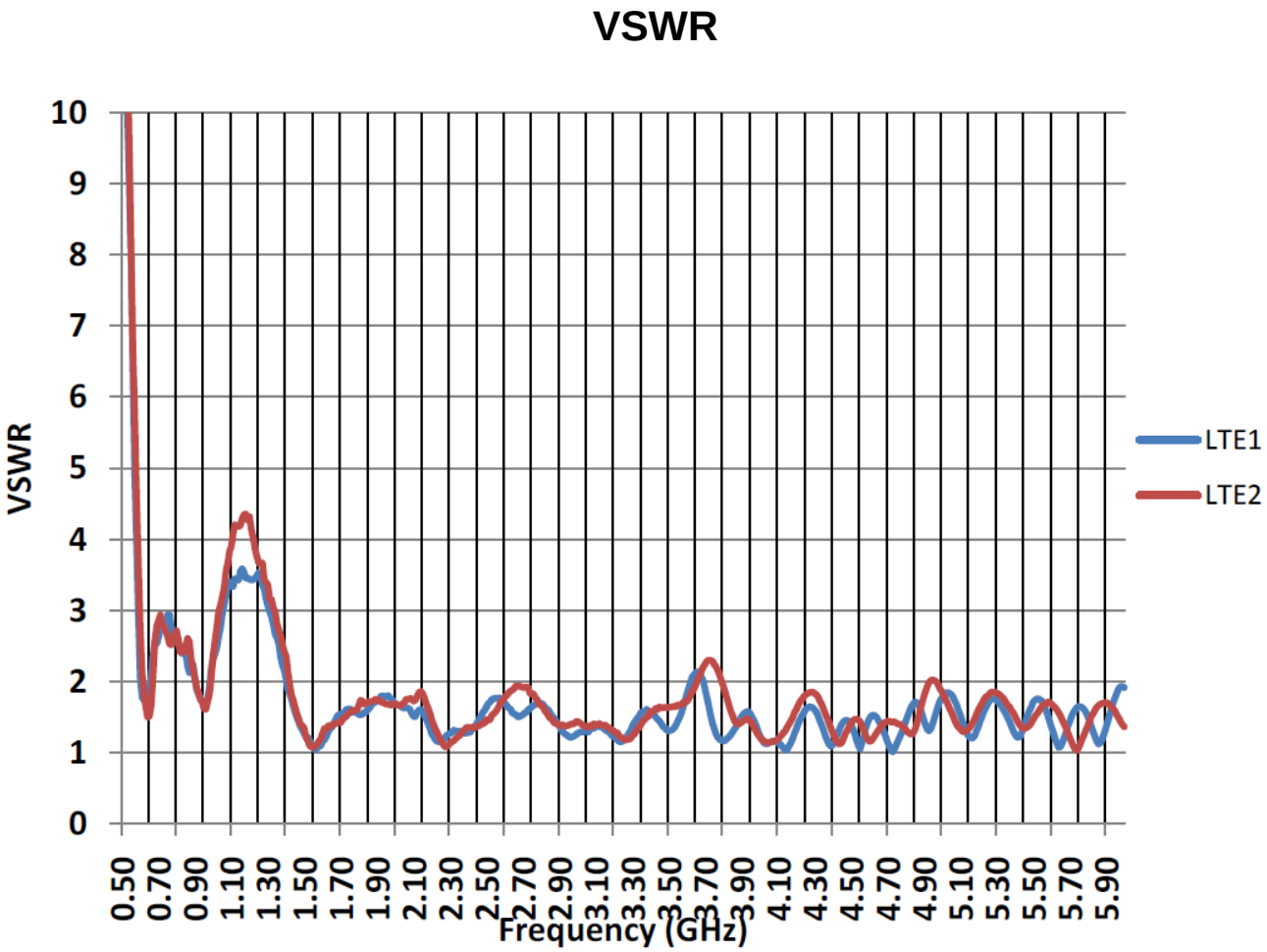


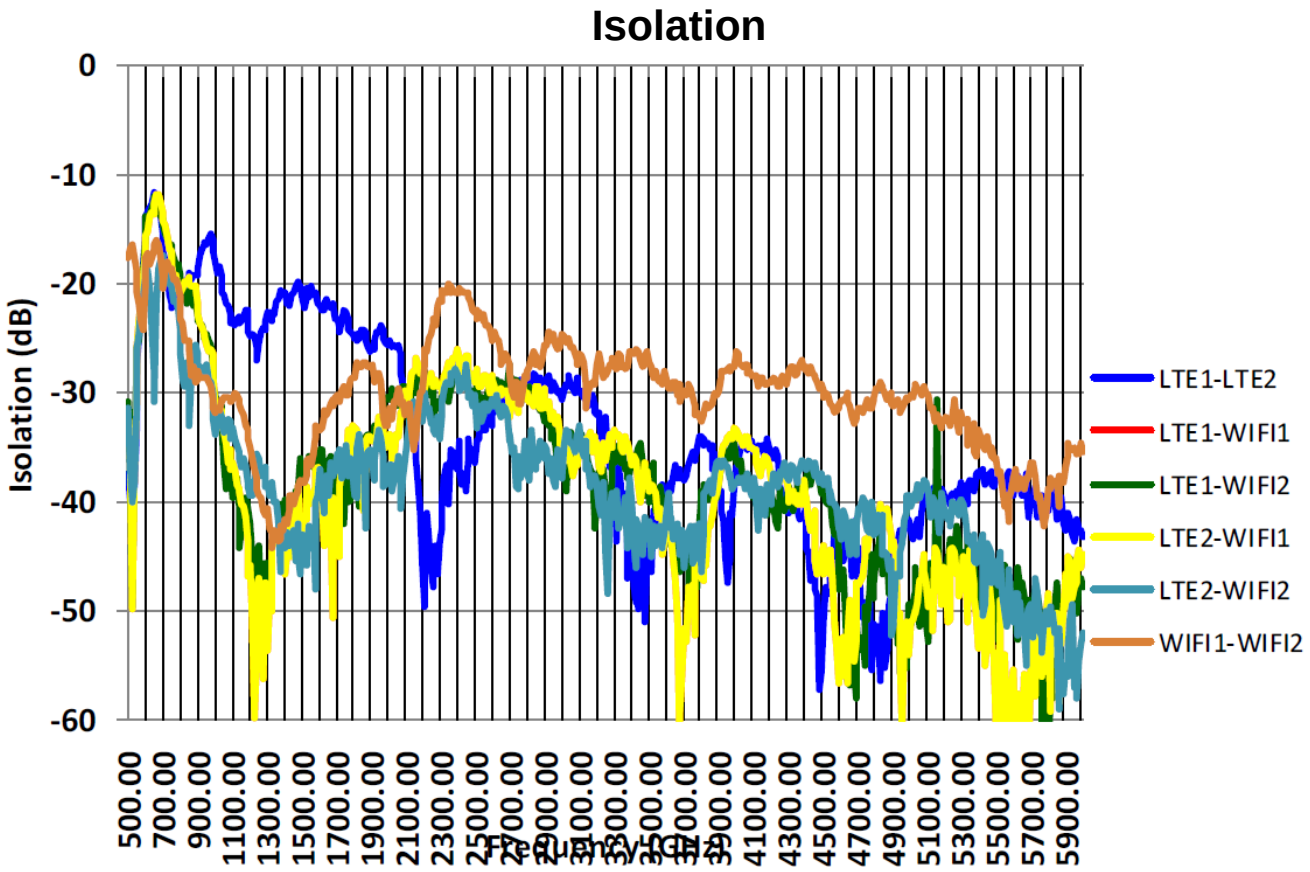
Antenna Solution Detail



Electrical Characteristics

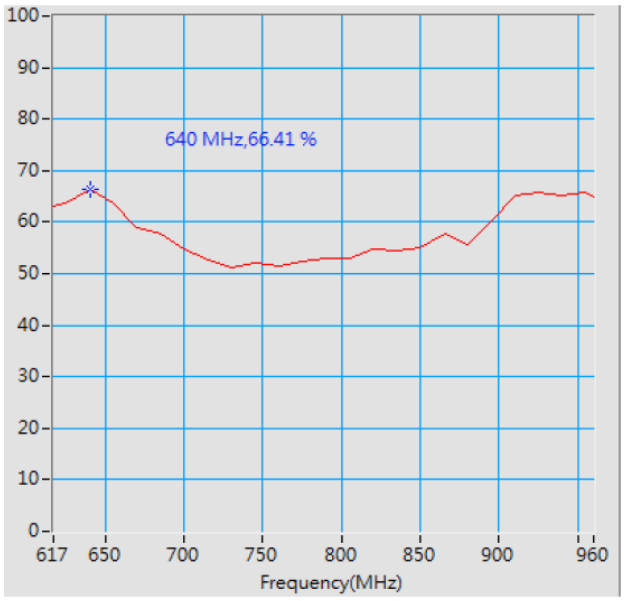
LTE

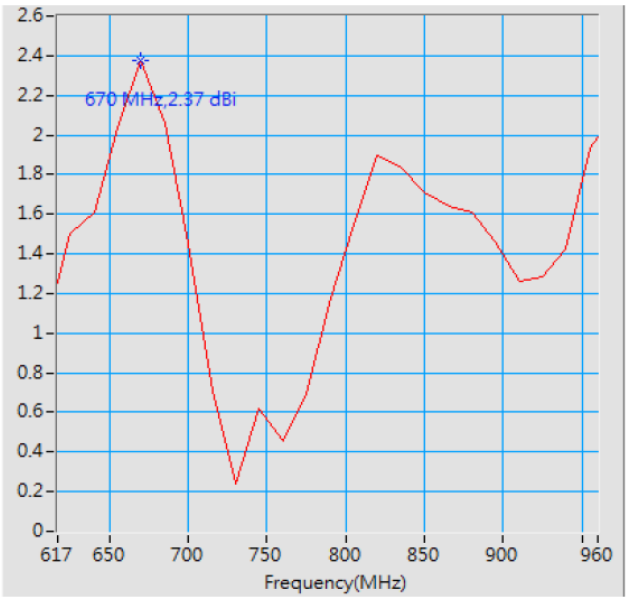



Isolation
0
-10
-20
-30
-40
-50
-60
Isolation (dB)
500.00
700.00
900.00
1100.00
1300.00
1500.00
1700.00
1900.00
2100.00
2300.00
2500.00
2700.00
3100.00
3300.00
3500.00
3700.00
3900.00
4100.00
4300.00
4500.00
4700.00
4900.00
5100.00
5300.00
5500.00
5700.00
5900.00
Frequency (MHz)
LTE1-LTE2
LTE1-WIFI1
LTE1-WIFI2
LTE2-WIFI1
LTE2-WIFI2
WIFI1-WIFI2

Antenna Efficiency & Peak Gain

LTE1
@617-960MHz

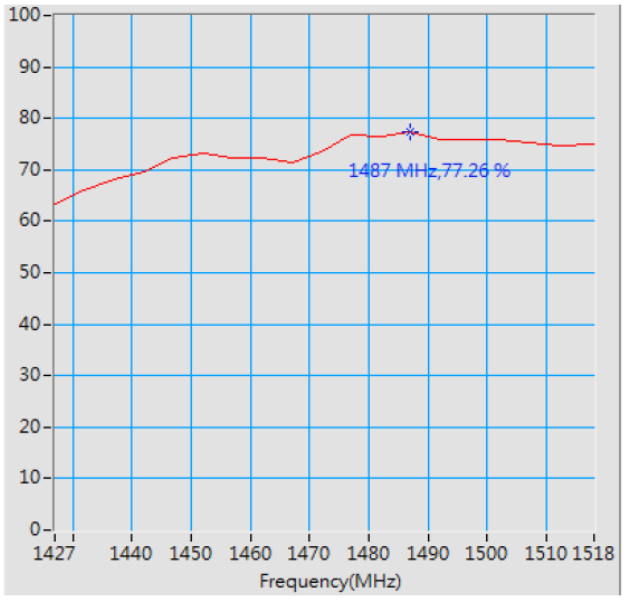


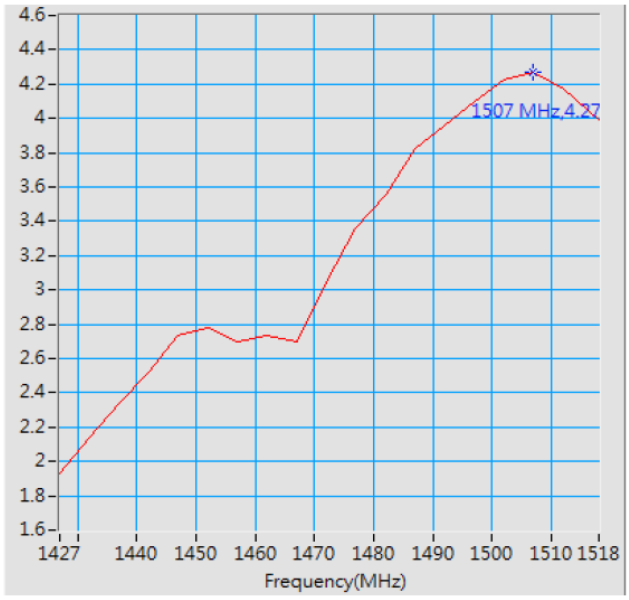


Maximum Efficiency at 640 MHz : 66.4 %

Maximum Peak Gain at 670 MHz : 2.37 dBi

LTE1
@1427-1518MHz

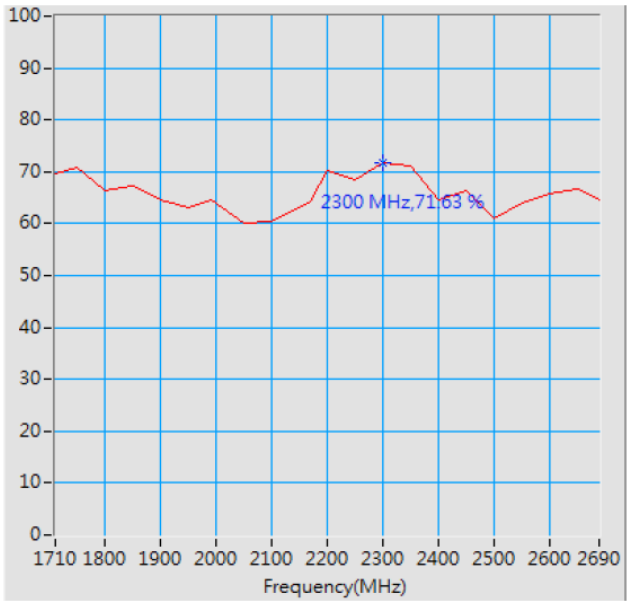


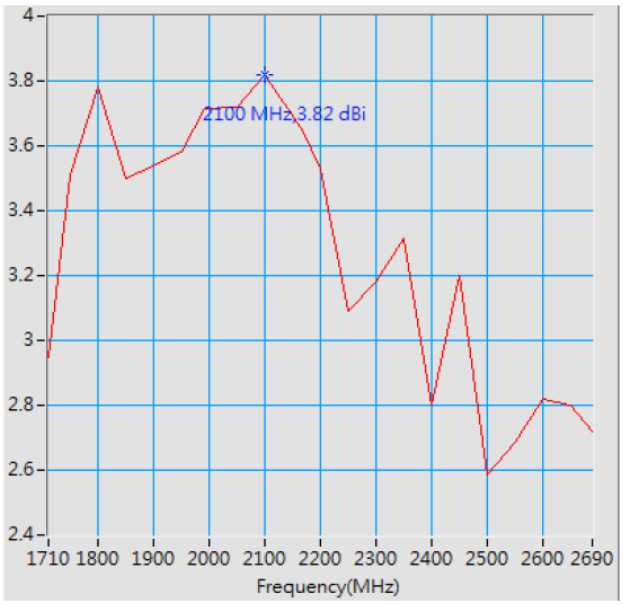


Maximum Efficiency at 1487 MHz : 77.2 %

Maximum Peak Gain at 1507 MHz : 4.27 dBi

LTE1
@1710-2690MHz

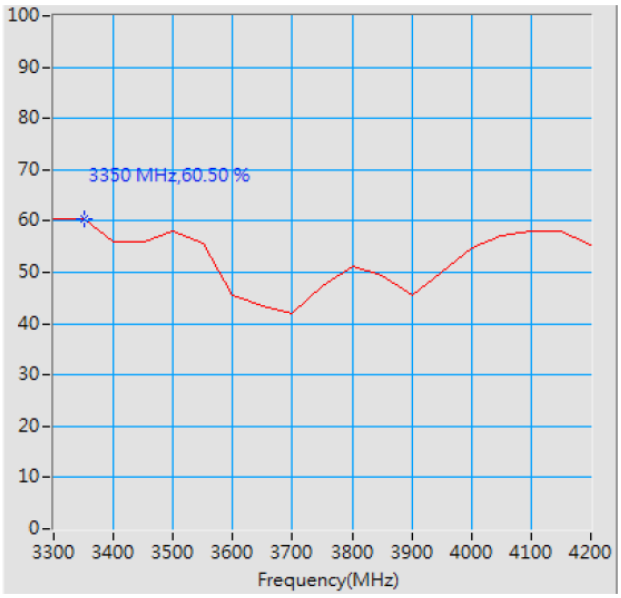


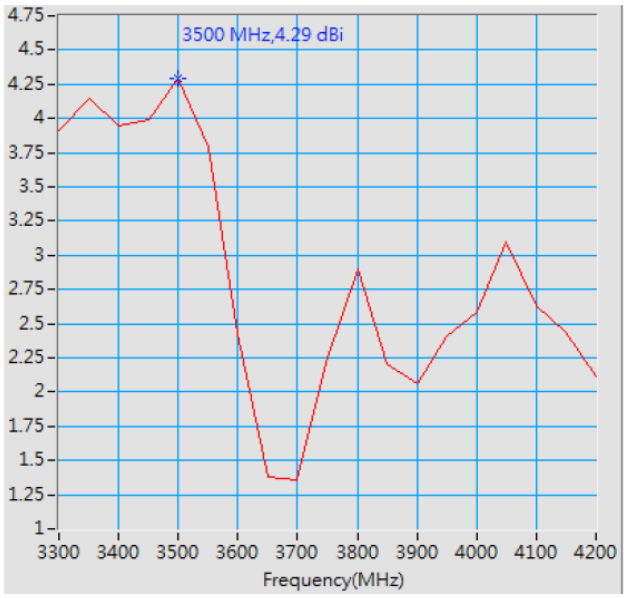


Maximum Efficiency at 2300 MHz : 71.6 %

Maximum Peak Gain at 2100 MHz : 3.82 dBi

LTE1
@3300-4200MHz

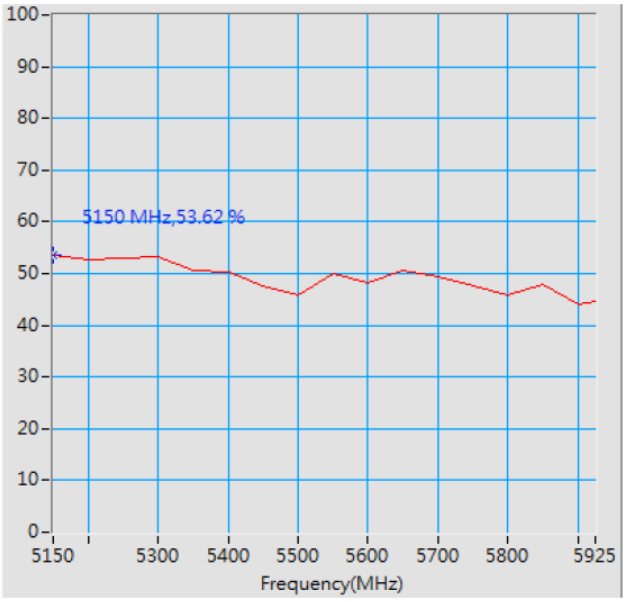




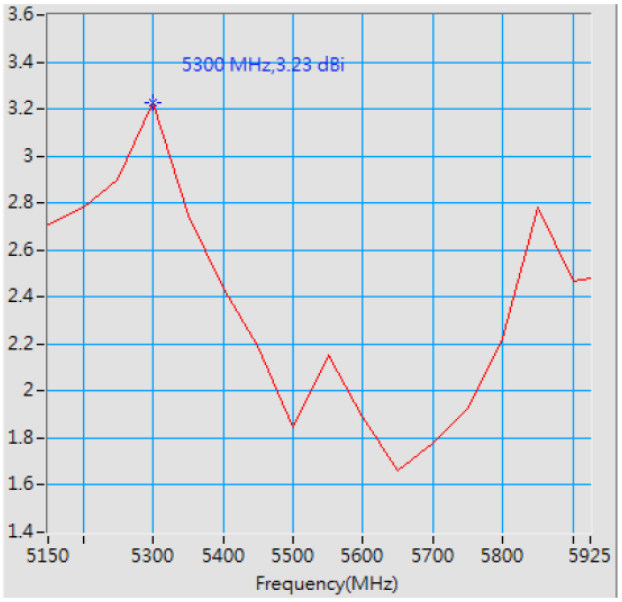
Maximum Efficiency at 3350 MHz : 60.5 %

Maximum Peak Gain at 3500 MHz : 4.29 dBi

LTE1
@5150-5925MHz

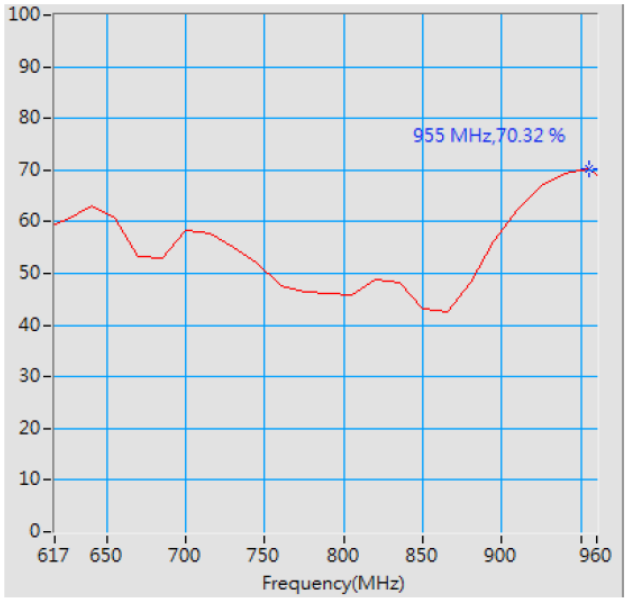


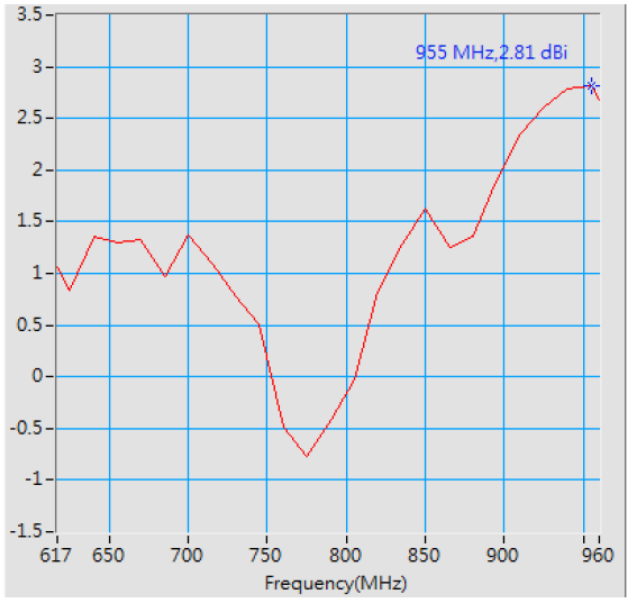
Maximum Efficiency at 5150 MHz : 53.6 %



Maximum Peak Gain at 5300 MHz : 3.23 dBi

LTE2
@617-960MHz

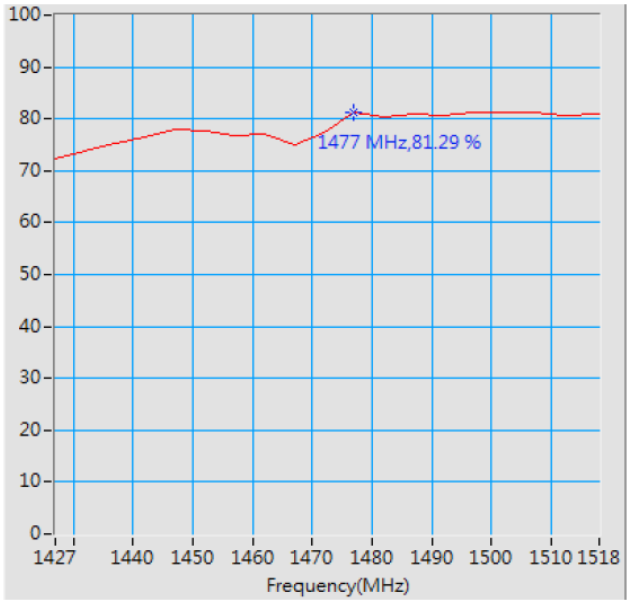


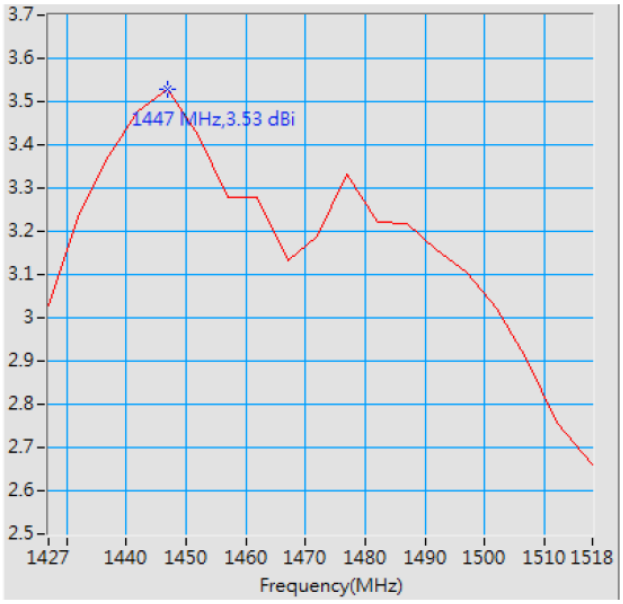


Maximum Efficiency at 955 MHz : 70.3 %

Maximum Peak Gain at 955 MHz : 2.81 dBi

LTE2
@1427-1518MHz

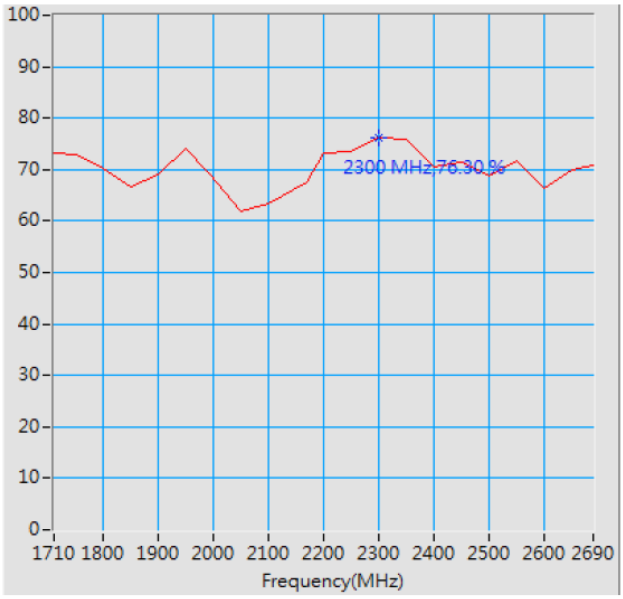




Maximum Efficiency at 1477 MHz : 81.2 %

Maximum Peak Gain at 1447 MHz : 3.53 dBi

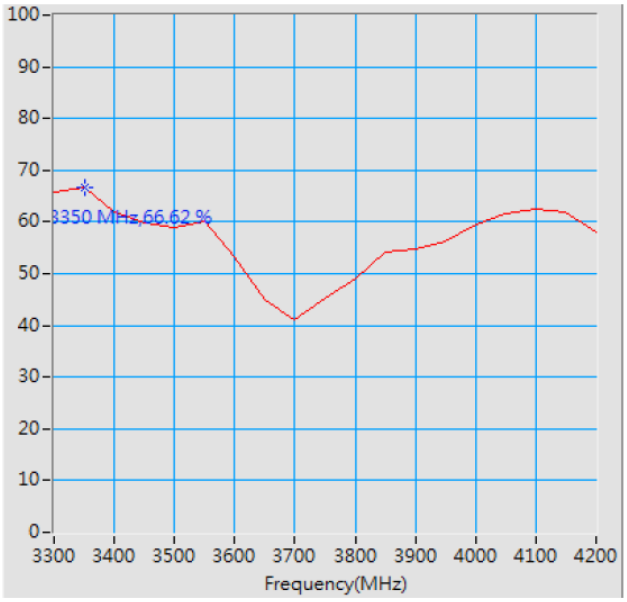
LTE2
@1710-2690MHz



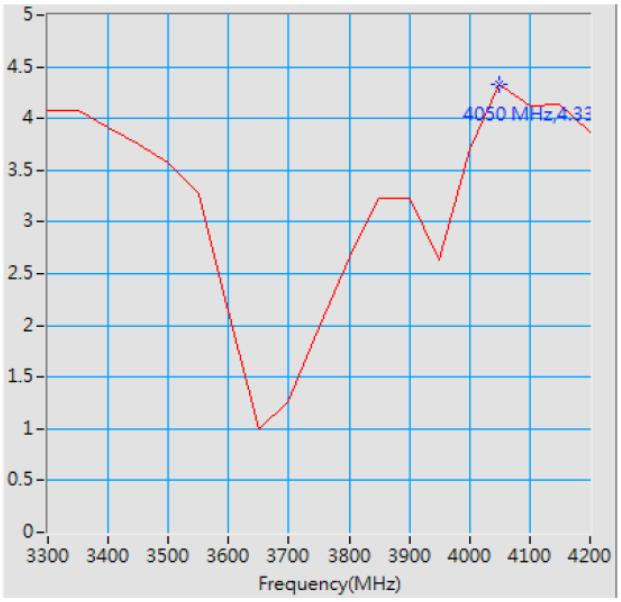
Maximum Efficiency at 2300 MHz : 76.3 %

Maximum Peak Gain at 2100 MHz : 4.66 dBi

LTE2
@3300-4200MHz

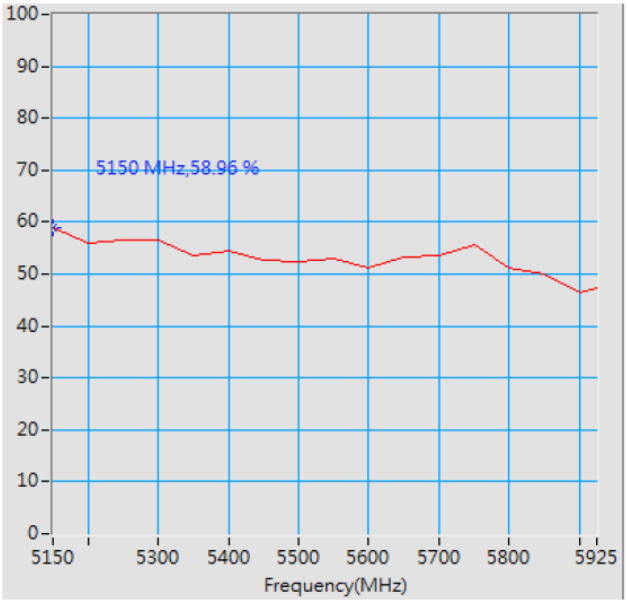


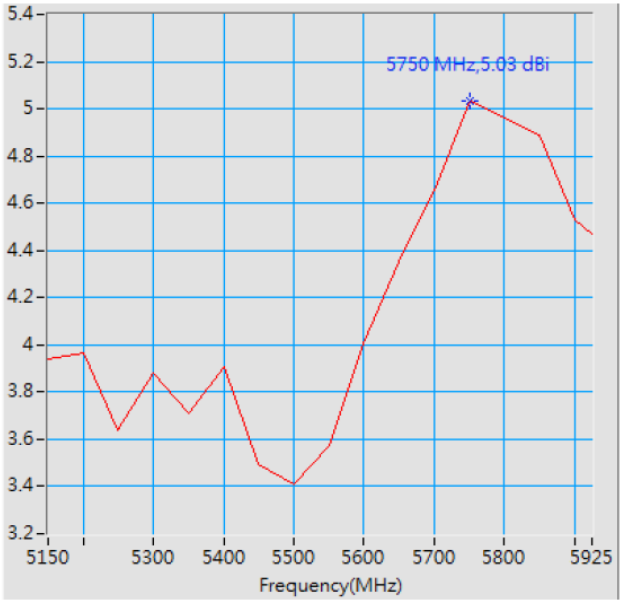
Maximum Efficiency at 3350 MHz : 66.6 %



Maximum Peak Gain at 4050 MHz : 4.33 dBi

LTE2
@5150-5925MHz





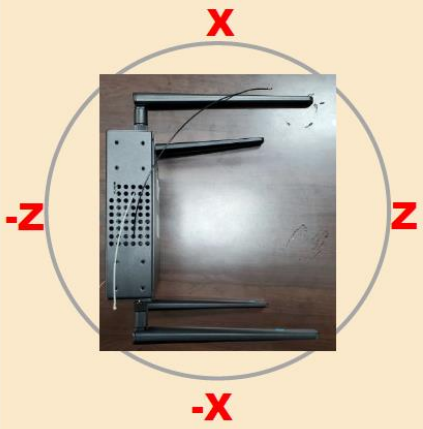
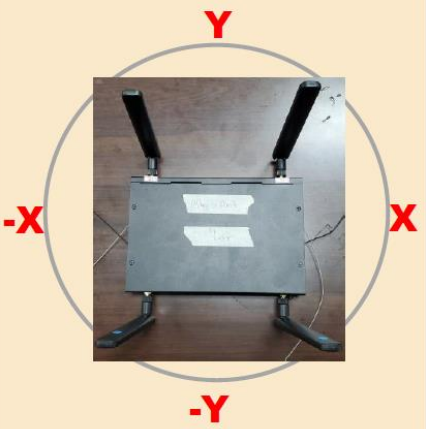
Maximum Efficiency at 5150 MHz : 58.9 %

Maximum Peak Gain at 5750 MHz : 5.03 dBi

	LTE1		LTE2	
Frequency (MHz)	Efficiency (%)	Peak gain (dBi)	Efficiency (%)	Peak gain (dBi)
617	63.0	1.26	59.4	1.06
700	54.8	1.45	58.4	1.37
820	54.8	1.89	48.8	0.82
960	65.0	1.99	69.0	2.69
1427	63.3	1.93	72.3	3.03
1472	73.5	3.05	77.2	3.19
1518	75.0	4.00	80.8	2.66
1710	69.8	2.95	73.3	3.67
1990	64.7	3.72	69.5	4.33
2170	64.3	3.64	67.4	3.35
2690	64.5	2.72	70.7	2.82

	LTE1		LTE2	
Frequency (MHz)	Efficiency (%)	Peak gain (dBi)	Efficiency (%)	Peak gain (dBi)
3300	60.3	3.92	65.9	4.07
3800	51.2	2.89	49.2	2.67
4200	55.3	2.12	58.0	3.86
5150	53.6	2.71	59.0	3.94
5500	45.8	1.84	52.3	3.41
5925	44.7	2.48	47.3	4.47

3 views of antenna

X-Z plane	Y-Z plane	X-Yplane
		

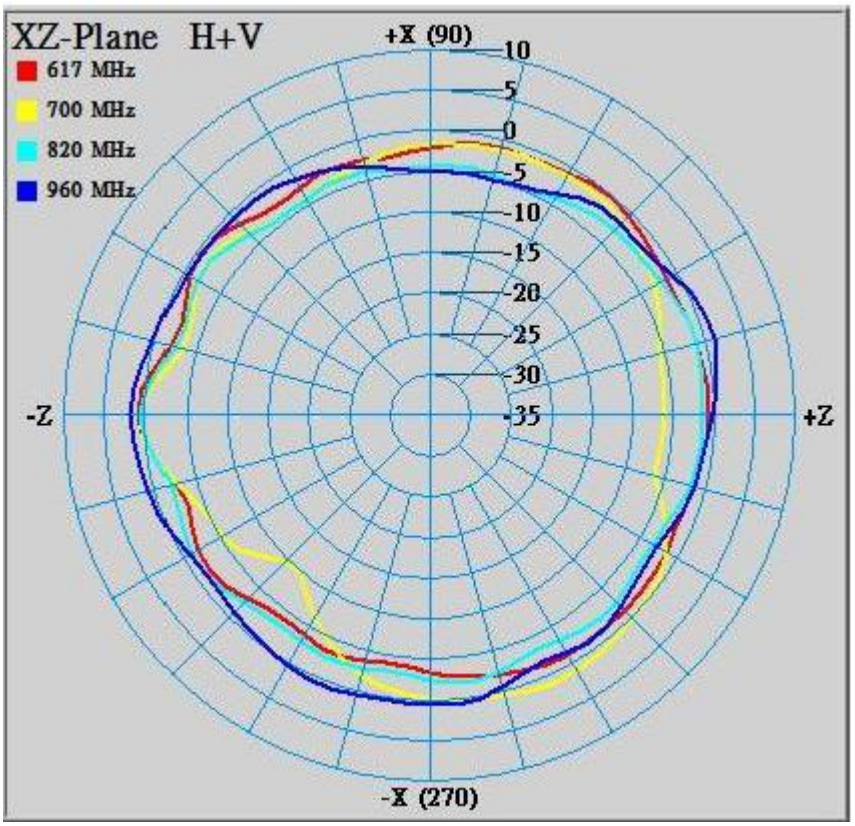
2D Radiation Patterns

LTE1
@617-960MHz

X-Z Plane

Phi=0.00deg

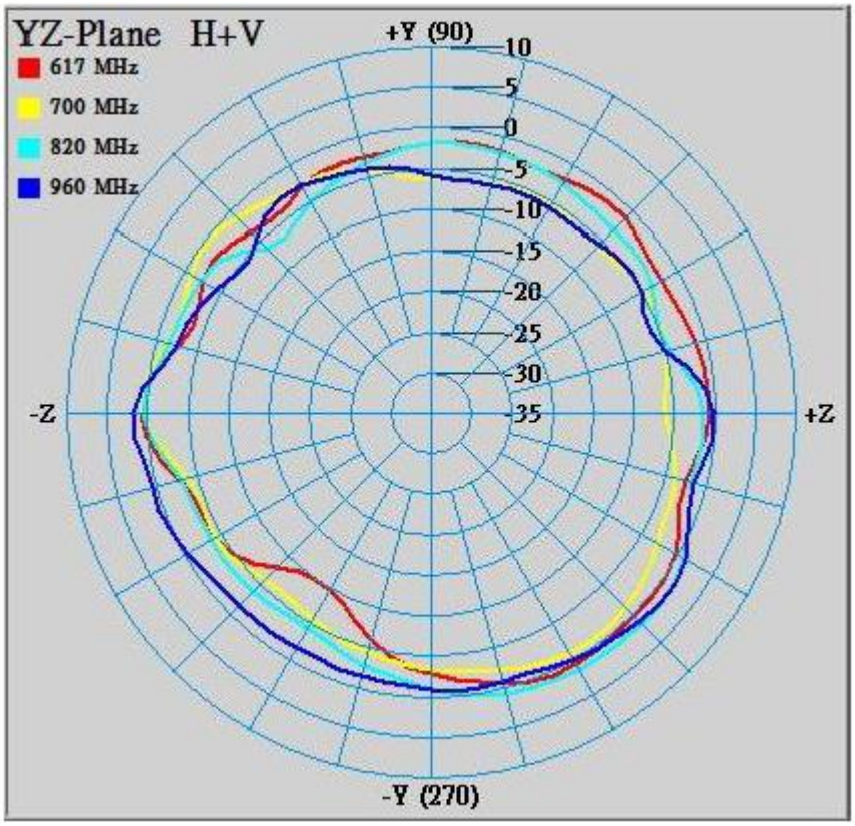
Gain . dB



Y-Z Plane

Phi=90.00deg

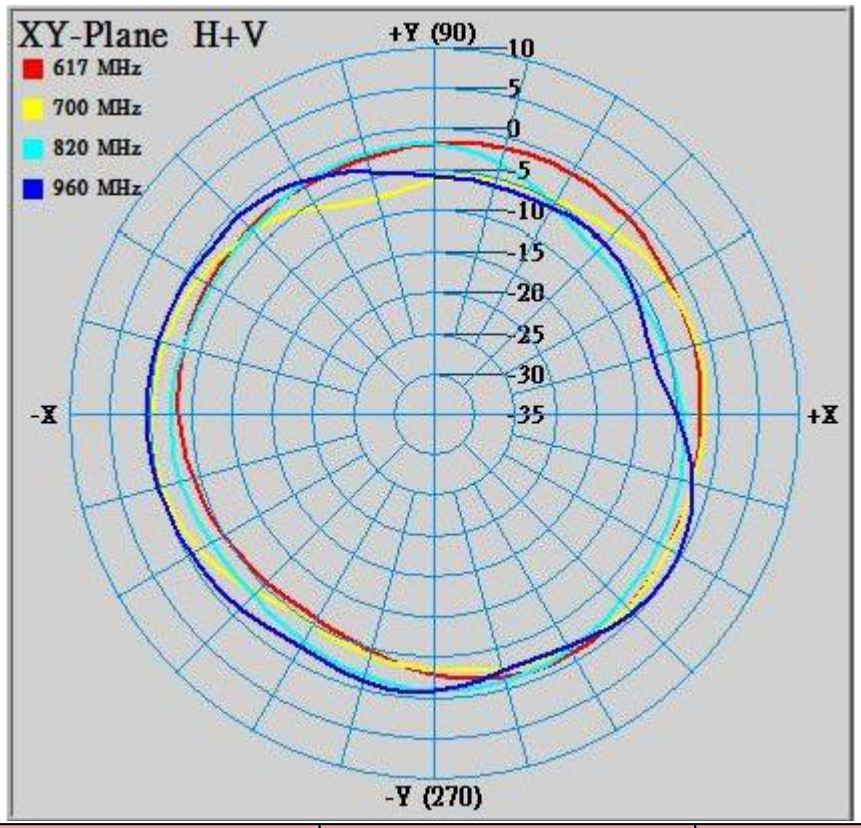
Gain . dB



X-Y Plane

Theta=90.00deg

Gain . dB



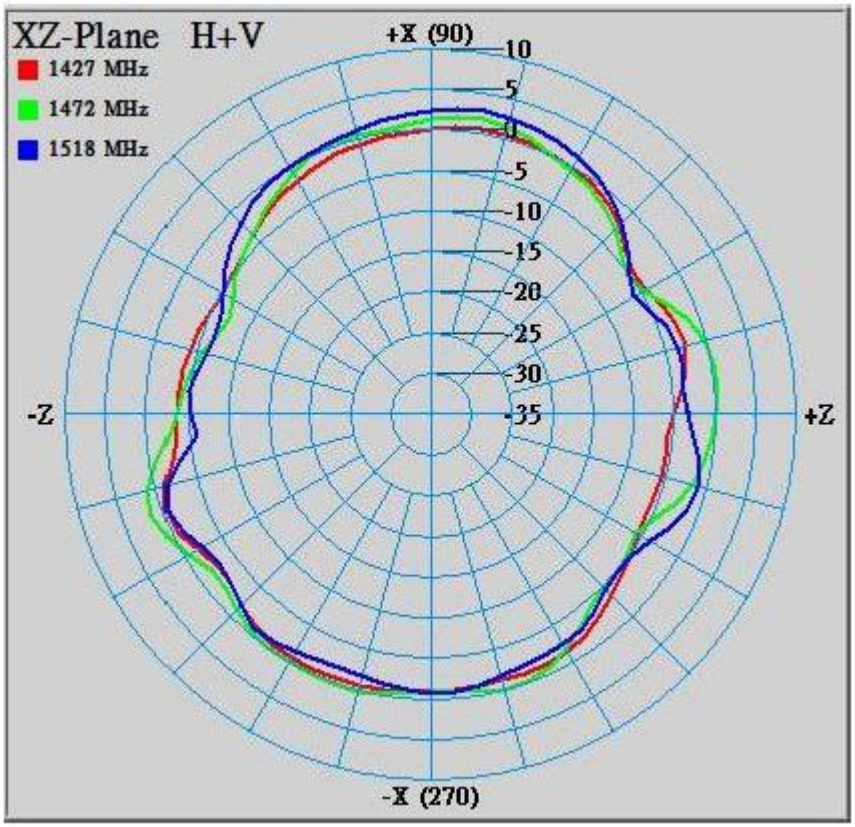
	ZX plane		ZY plane		XY plane	
Frequency [MHz]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]
617	0.91	-1.56	0.91	-1.93	-0.90	-2.41
700	1.27	-2.07	0.76	-3.12	-0.08	-2.53
820	0.63	-2.46	1.78	-1.65	-0.86	-2.90
960	1.85	-0.71	1.93	-1.58	0.60	-1.87

LTE1
@1427-1518MHz

X-Z Plane

Phi=0.00deg

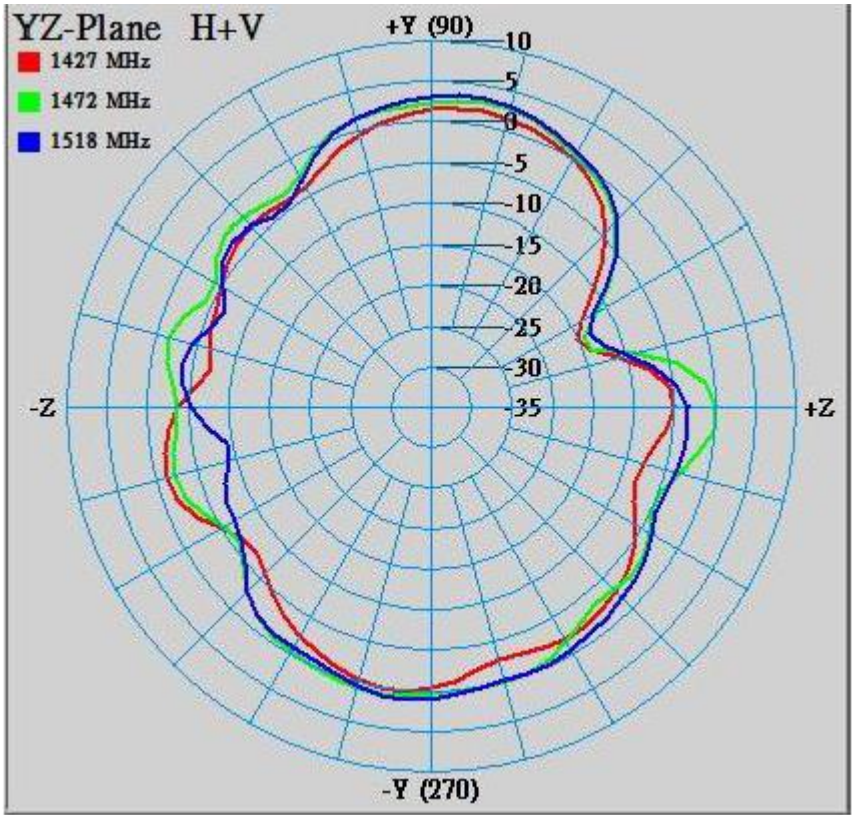
Gain . dB



Y-Z Plane

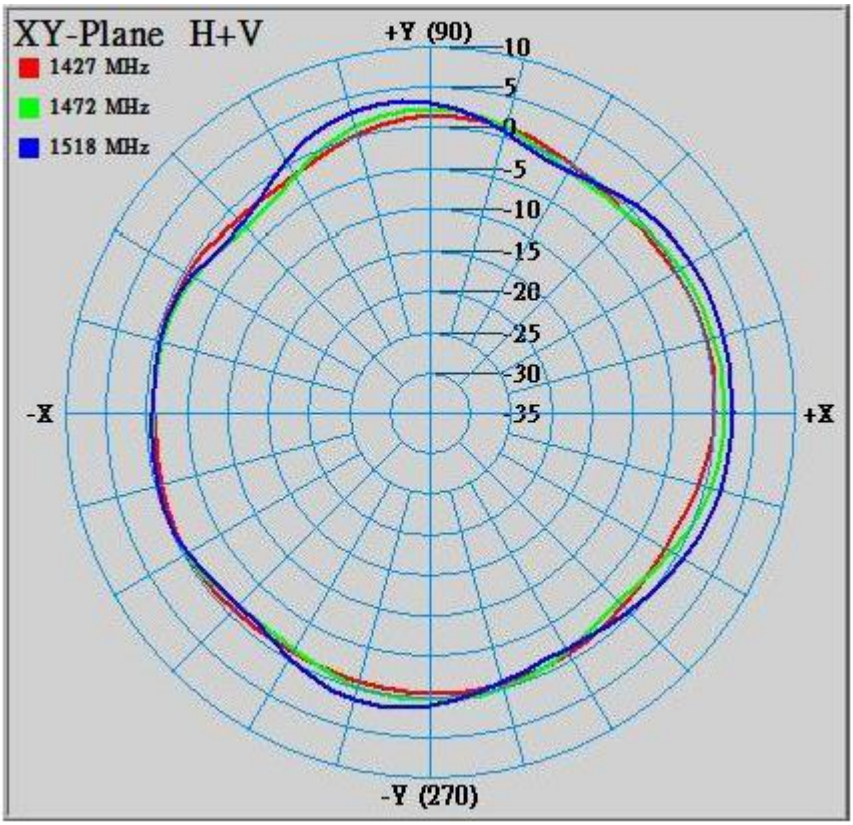
Phi=90.00deg

Gain . dB



X-Y Plane
Theta=90.00deg

Gain . dB



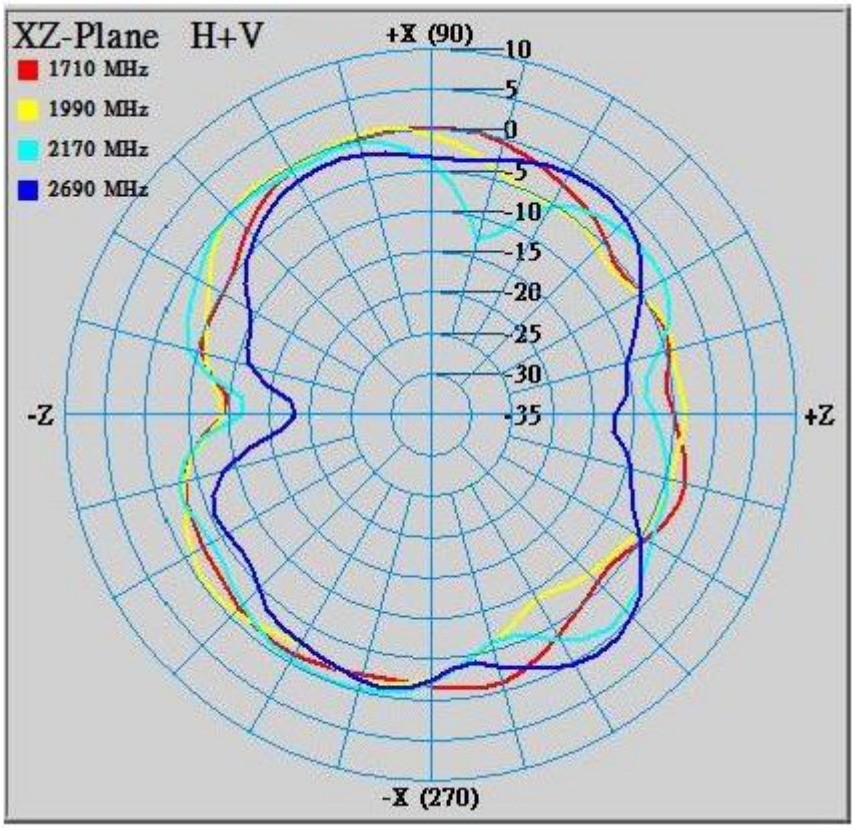
	ZX plane		ZY plane		XY plane	
Frequency [MHz]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]
1427	0.62	-1.98	1.90	-2.58	1.57	-0.35
1472	1.99	-1.08	3.01	-1.14	2.38	-0.06
1518	2.81	-1.32	3.57	-1.38	3.51	0.73

LTE1
@1710-2690MHz

X-Z Plane

Phi=0.00deg

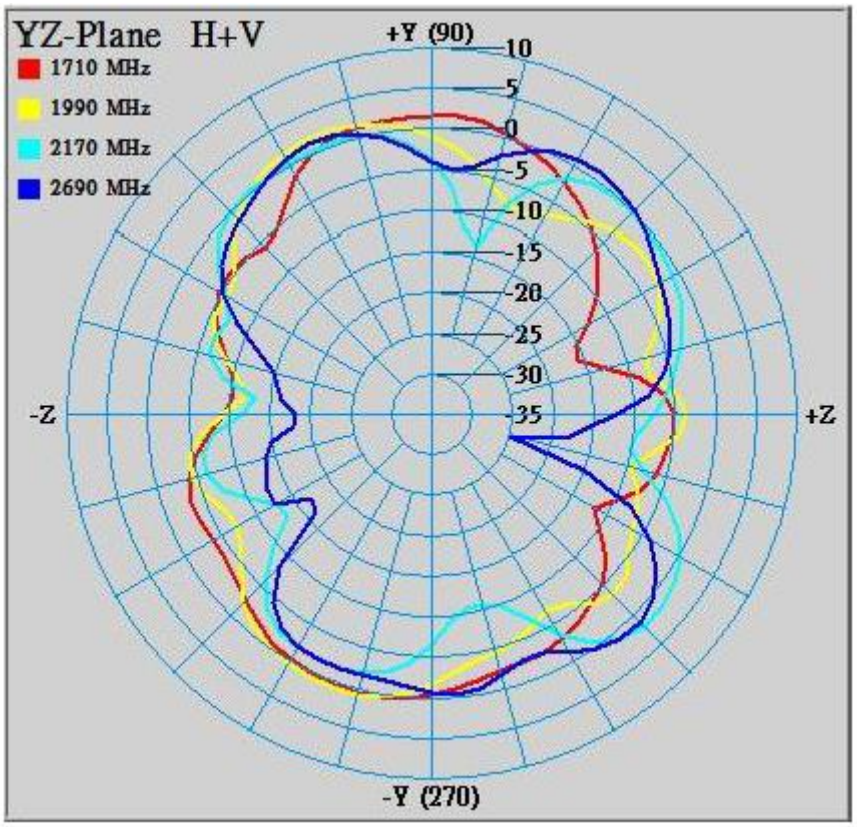
Gain . dB



Y-Z Plane

Phi=90.00deg

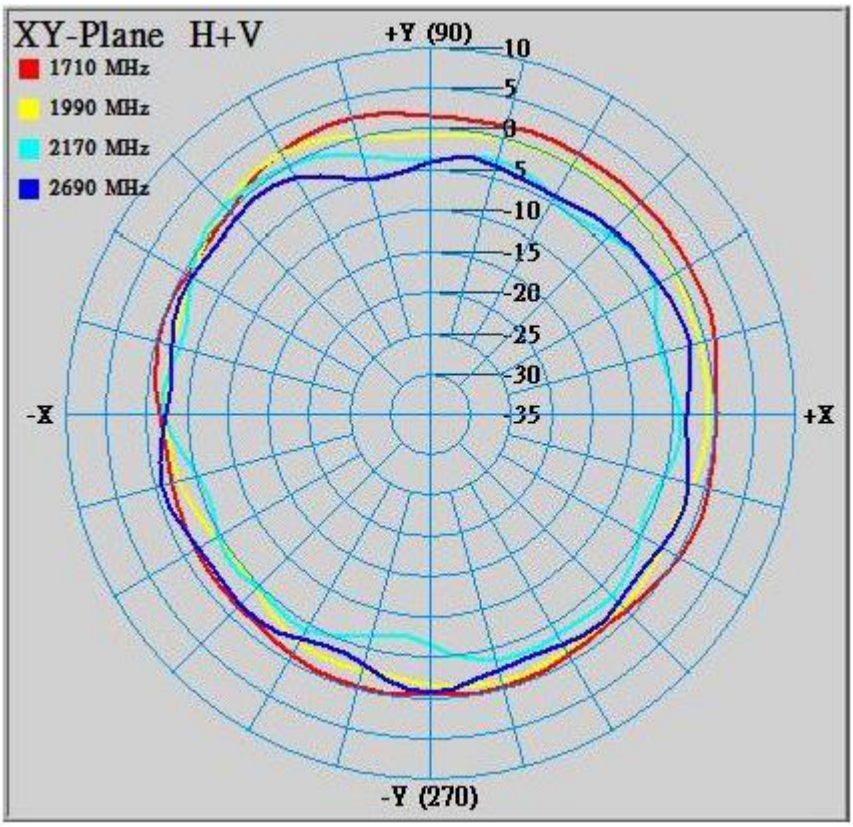
Gain . dB



X-Y Plane

Theta=90.00deg

Gain . dB



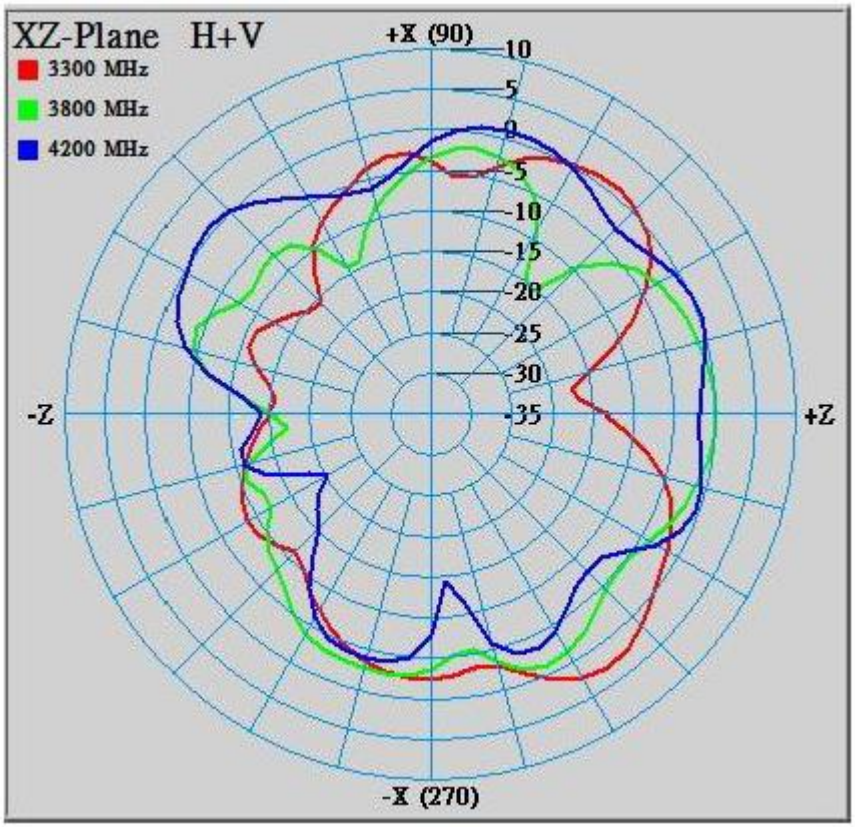
	ZX plane		ZY plane		XY plane	
Frequency [MHz]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]
1710	0.36	-2.60	1.73	-2.69	2.69	0.47
1990	0.70	-2.96	2.15	-2.78	1.96	-0.96
2170	0.04	-2.77	2.09	-2.73	1.10	-3.21
2690	0.87	-3.54	1.45	-2.50	-0.65	-2.26

LTE1
@3300-4200MHz

X-Z Plane

Phi=0.00deg

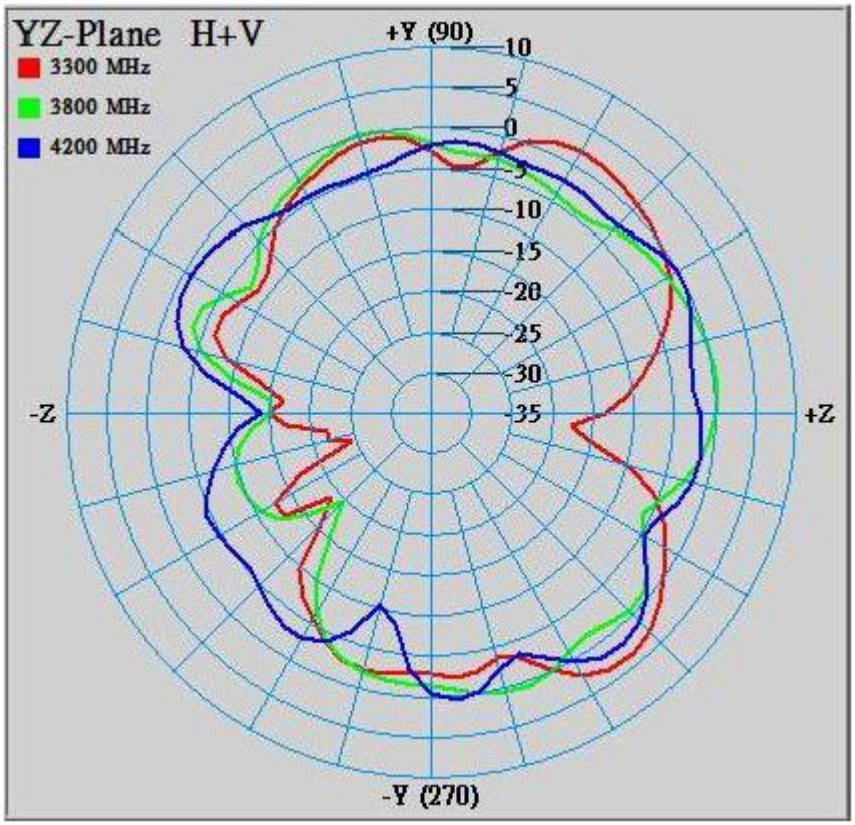
Gain . dB



Y-Z Plane

Phi=90.00deg

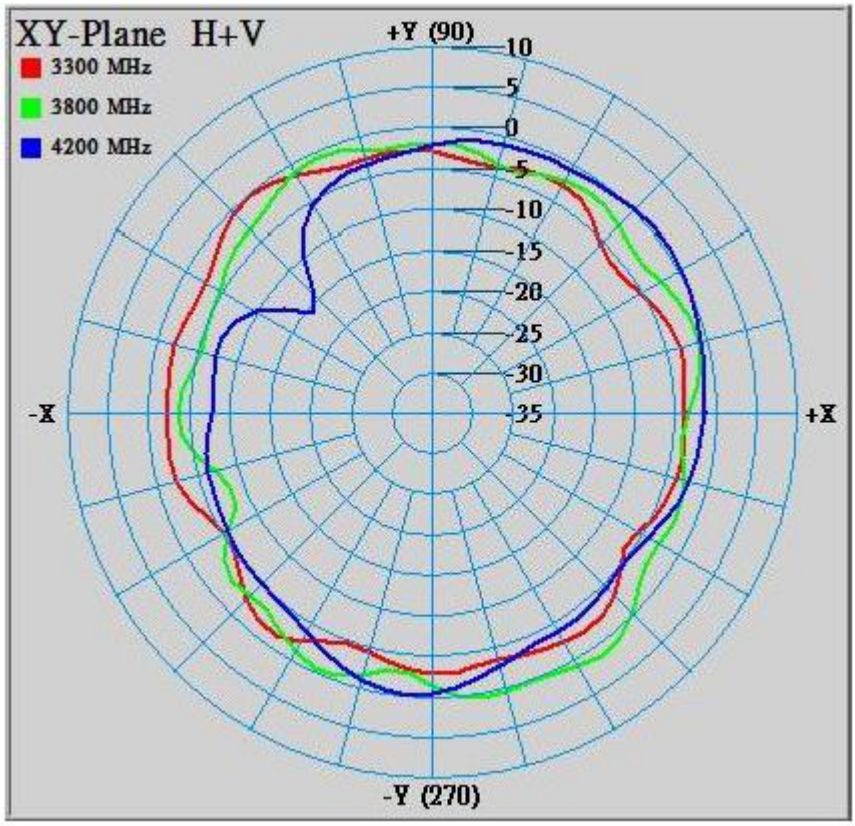
Gain . dB



X-Y Plane

Theta=90.00deg

Gain . dB



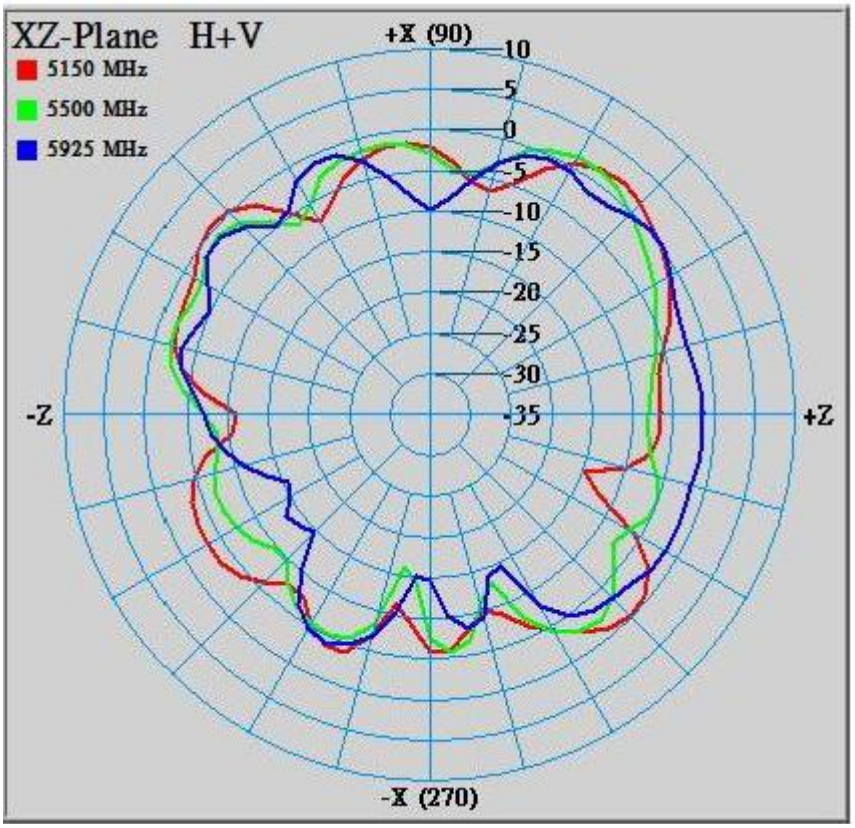
	ZX plane		ZY plane		XY plane	
Frequency [MHz]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]
3300	2.96	-3.56	3.76	-2.51	-0.16	-3.04
3800	0.15	-4.26	0.70	-2.71	1.55	-2.08
4200	1.21	-2.88	2.09	-2.40	0.69	-2.83

LTE1
@5150-5925MHz

X-Z Plane

Phi=0.00deg

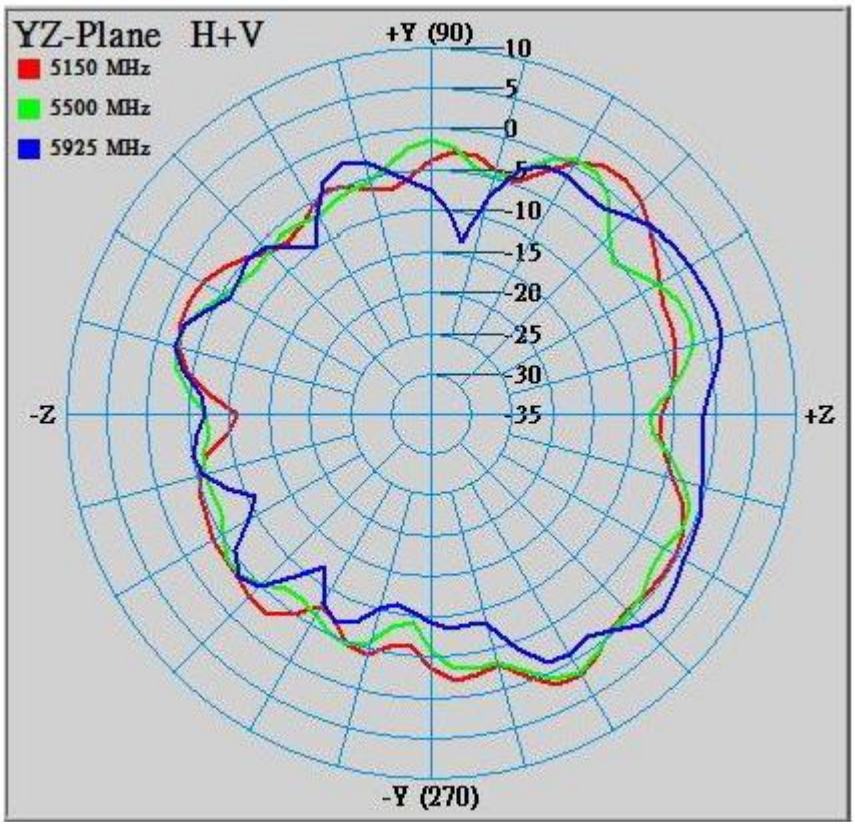
Gain . dB



Y-Z Plane

Phi=90.00deg

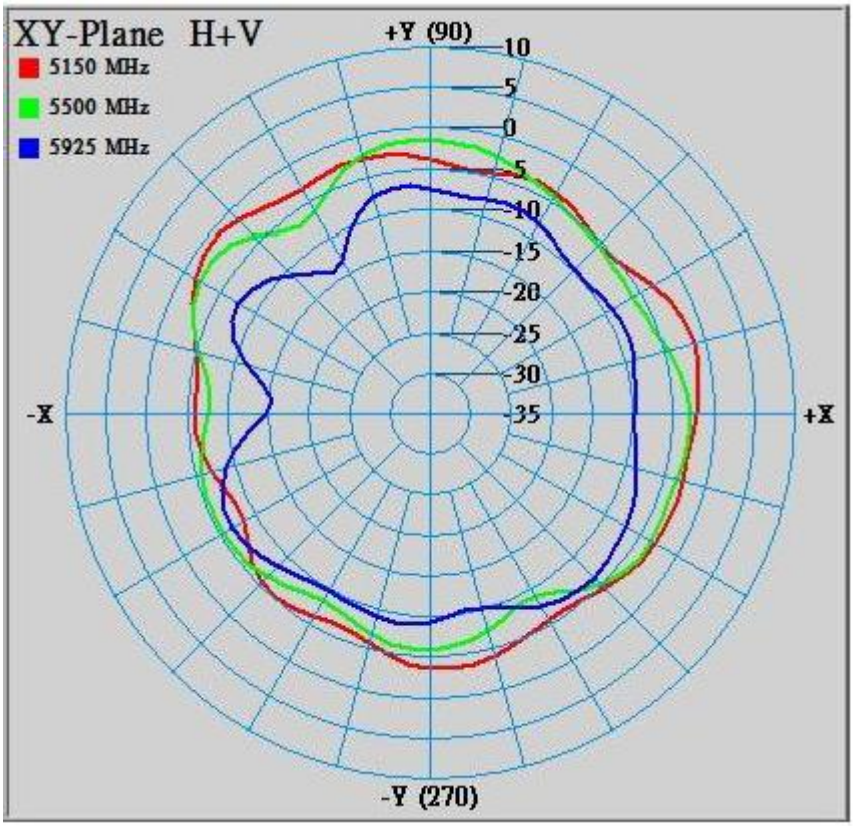
Gain . dB



X-Y Plane

Theta=90.00deg

Gain . dB



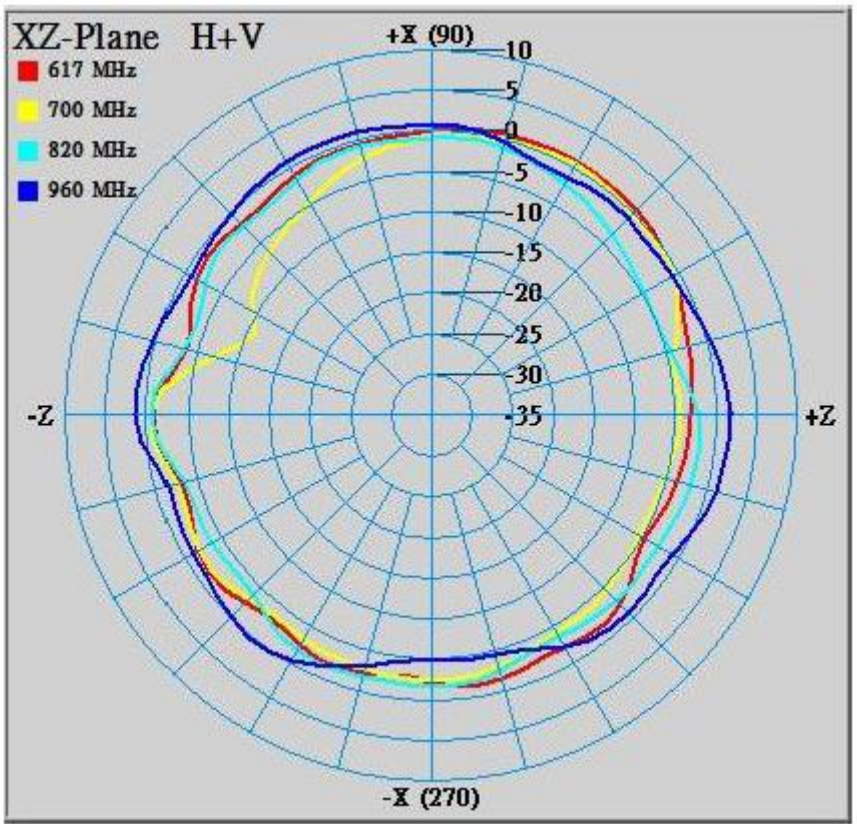
	ZX plane		ZY plane		XY plane	
Frequency [MHz]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]
5150	2.13	-3.14	2.42	-2.62	-0.85	-3.86
5500	1.62	-3.81	1.75	-3.20	-1.44	-4.69
5925	0.41	-3.66	2.41	-2.51	-6.45	-8.77

LTE2
@617-960MHz

X-Z Plane

Phi=0.00deg

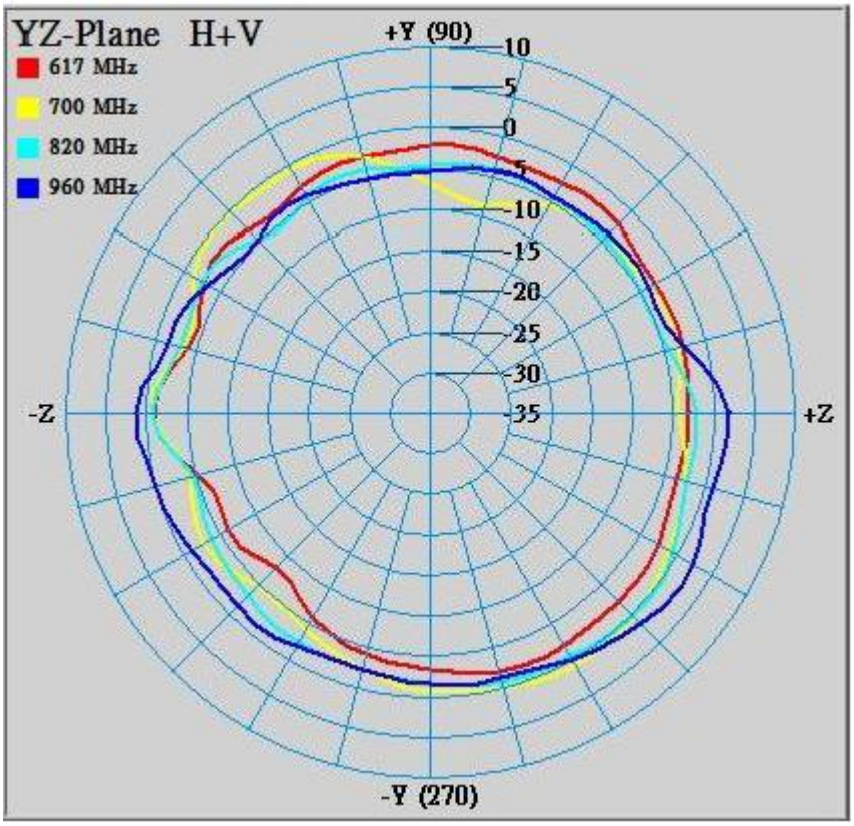
Gain . dB



Y-Z Plane

Phi=90.00deg

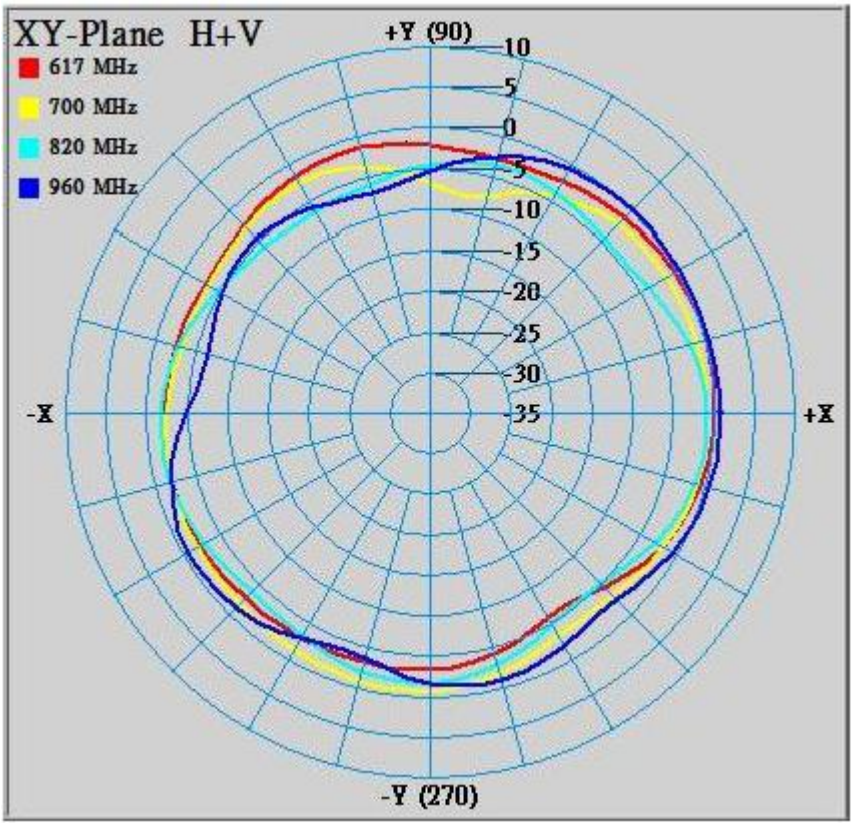
Gain . dB



X-Y Plane

Theta=90.00deg

Gain . dB



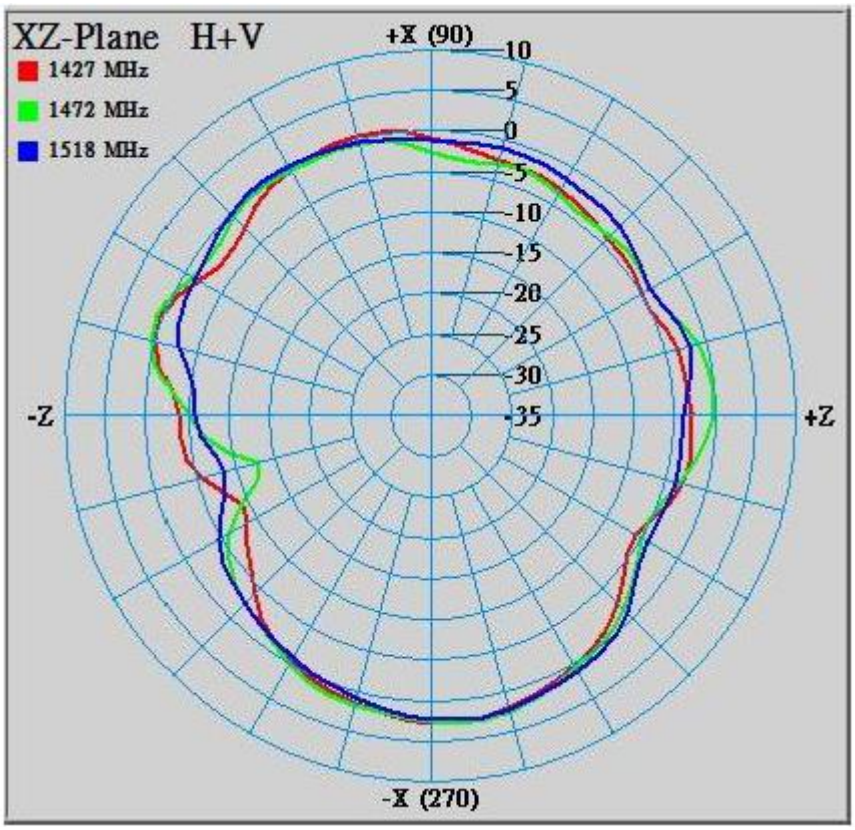
	ZX plane		ZY plane		XY plane	
Frequency [MHz]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]
617	0.97	-1.47	-0.89	-3.05	0.23	-2.06
700	0.64	-2.66	0.95	-2.17	-0.66	-2.28
820	-0.65	-2.36	0.54	-2.58	-0.77	-3.22
960	1.75	-0.31	2.62	-1.20	0.83	-1.77

LTE2
@1427-1518MHz

X-Z Plane

Phi=0.00deg

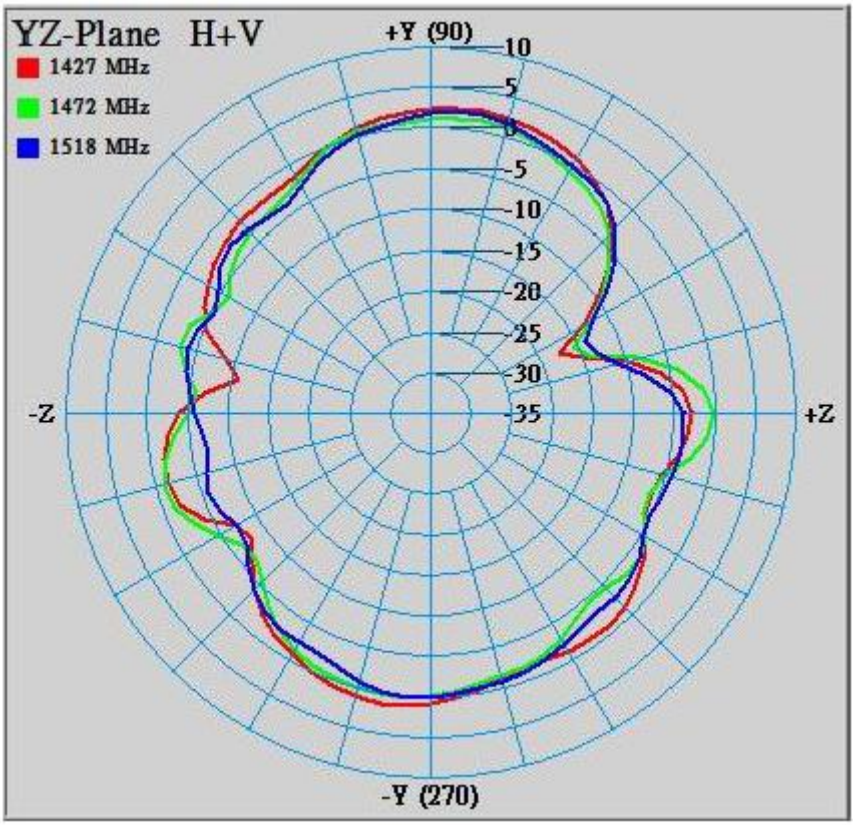
Gain . dB



Y-Z Plane

Phi=90.00deg

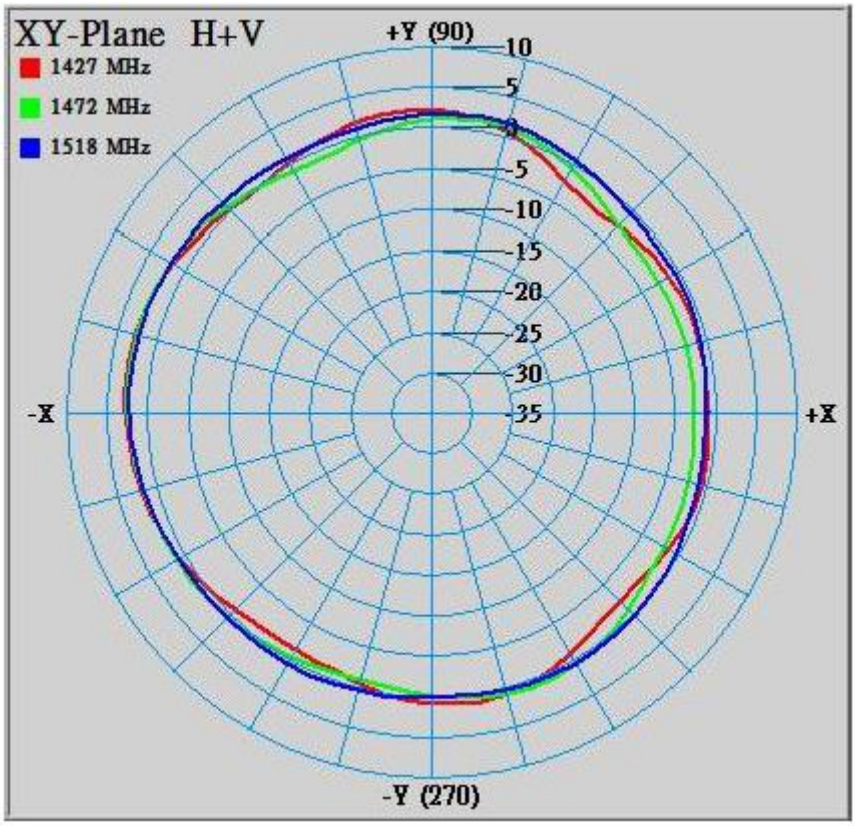
Gain . dB



X-Y Plane

Theta=90.00deg

Gain . dB



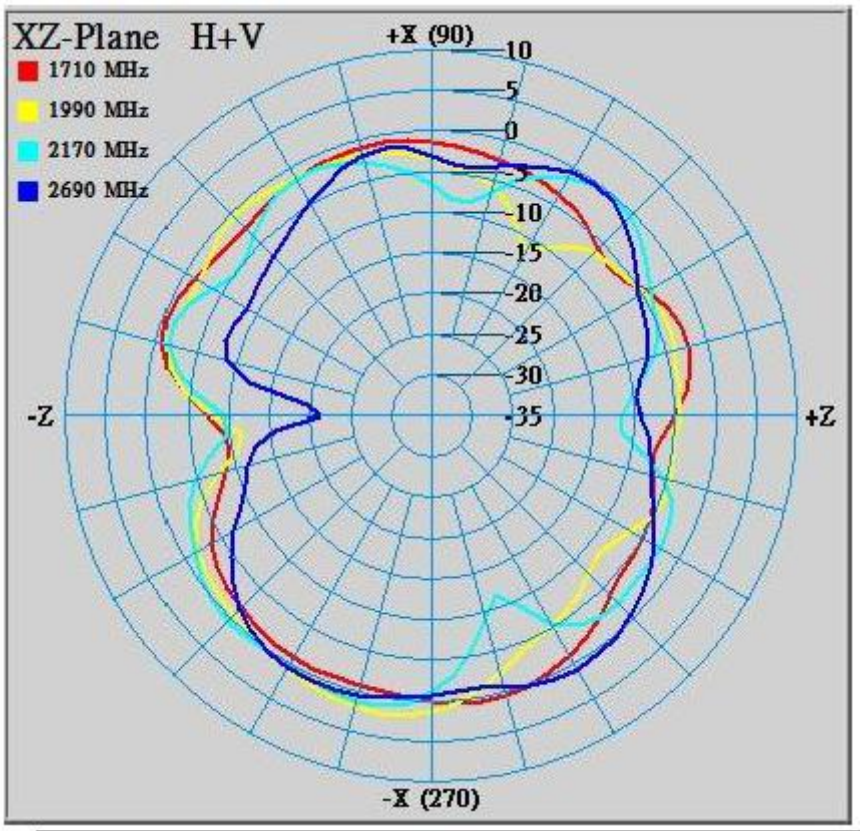
	ZX plane		ZY plane		XY plane	
Frequency [MHz]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]
1427	2.86	-1.37	2.59	-1.48	2.94	0.41
1472	2.98	-1.04	1.47	-2.15	2.76	0.25
1518	2.60	-1.17	2.20	-2.33	2.40	0.79

LTE2
@1710-2690MHz

X-Z Plane

Phi=0.00deg

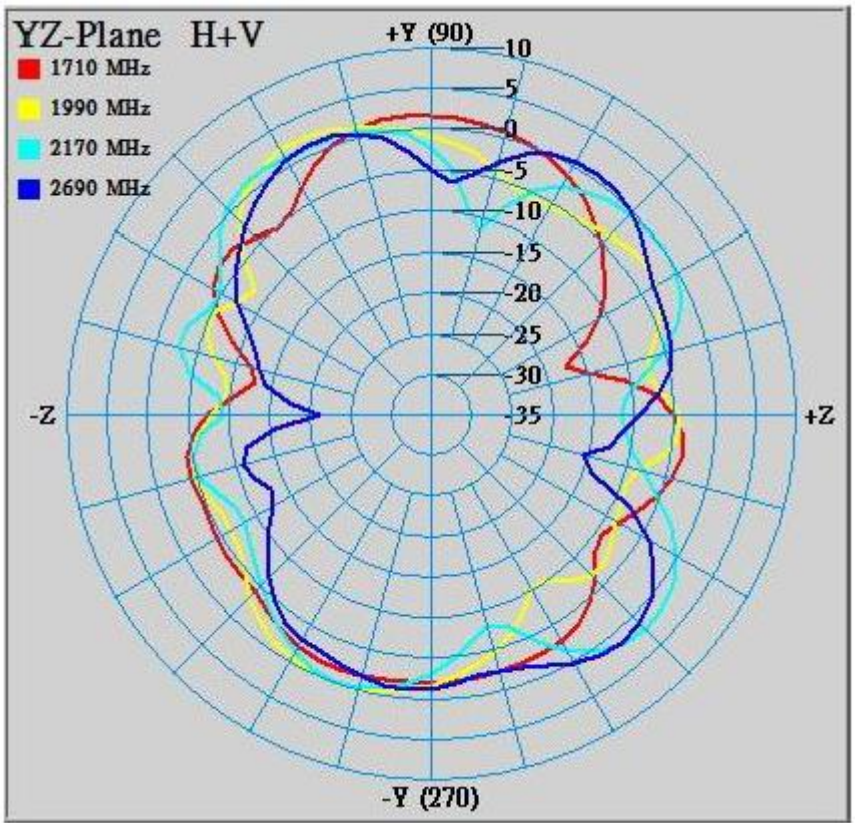
Gain . dB



Y-Z Plane

Phi=90.00deg

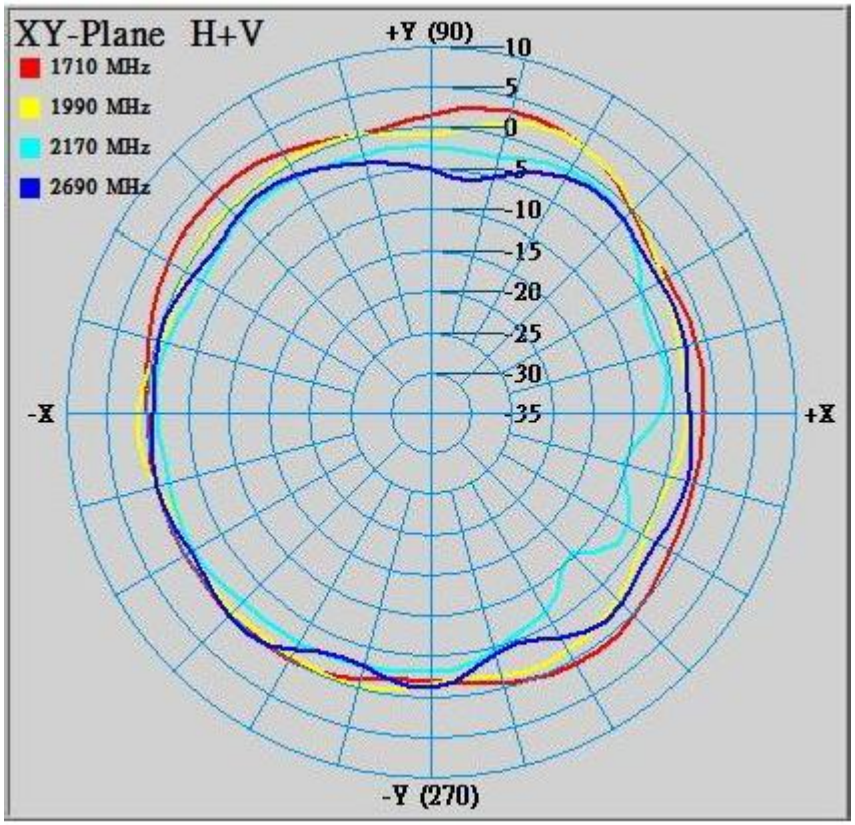
Gain . dB



X-Y Plane

Theta=90.00deg

Gain . dB



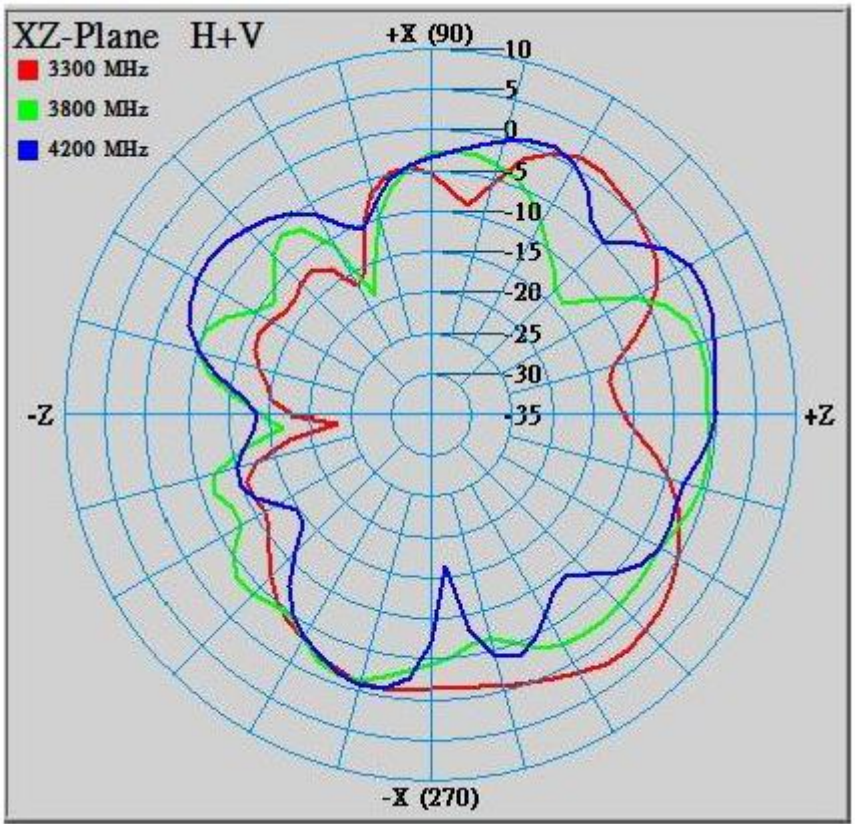
	ZX plane		ZY plane		XY plane	
Frequency [MHz]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]
1710	0.69	-2.34	1.72	-3.07	3.44	0.61
1990	2.10	-2.51	2.51	-3.05	2.88	-0.47
2170	1.36	-2.71	2.28	-2.11	-0.57	-2.90
2690	0.94	-2.86	1.72	-2.69	0.45	-1.80

LTE2
@3300-4200MHz

X-Z Plane

Phi=0.00deg

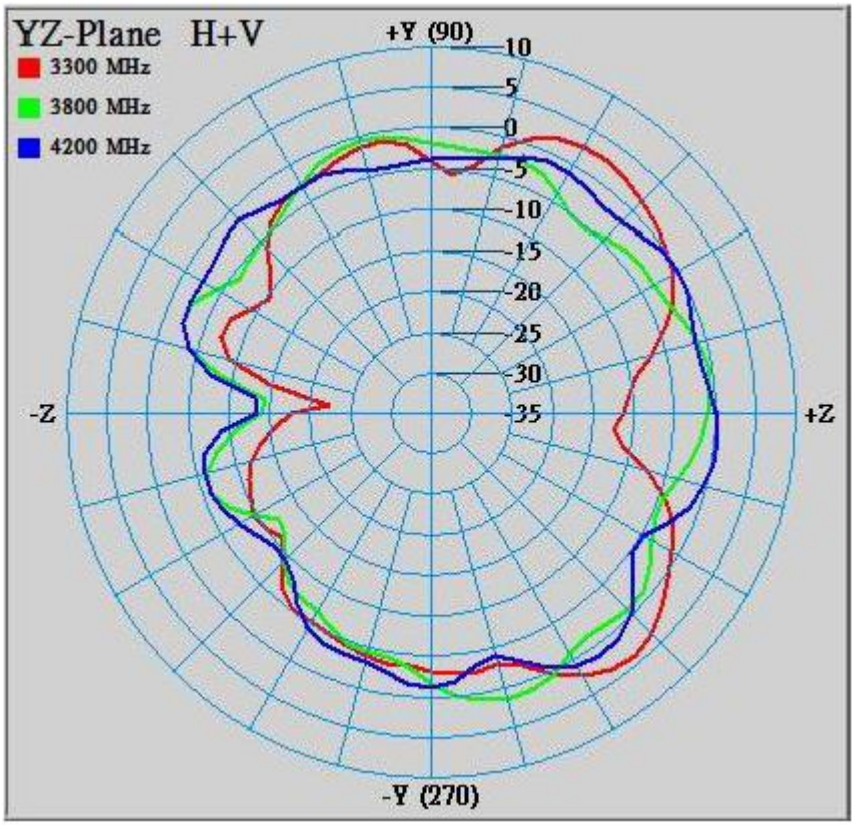
Gain . dB



Y-Z Plane

Phi=90.00deg

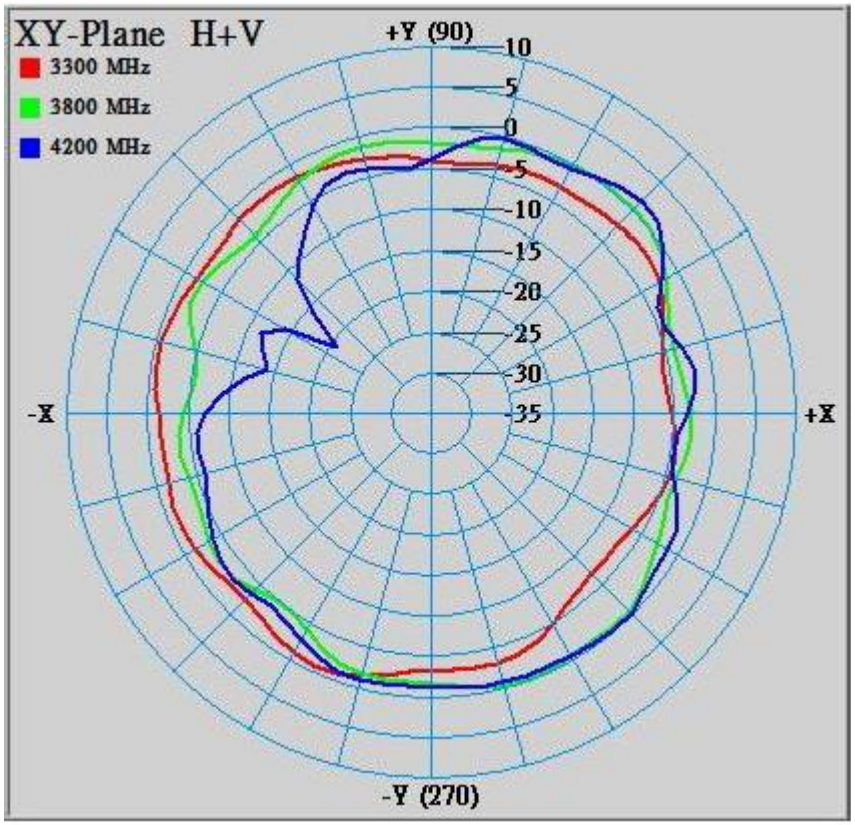
Gain . dB



X-Y Plane

Theta=90.00deg

Gain . dB



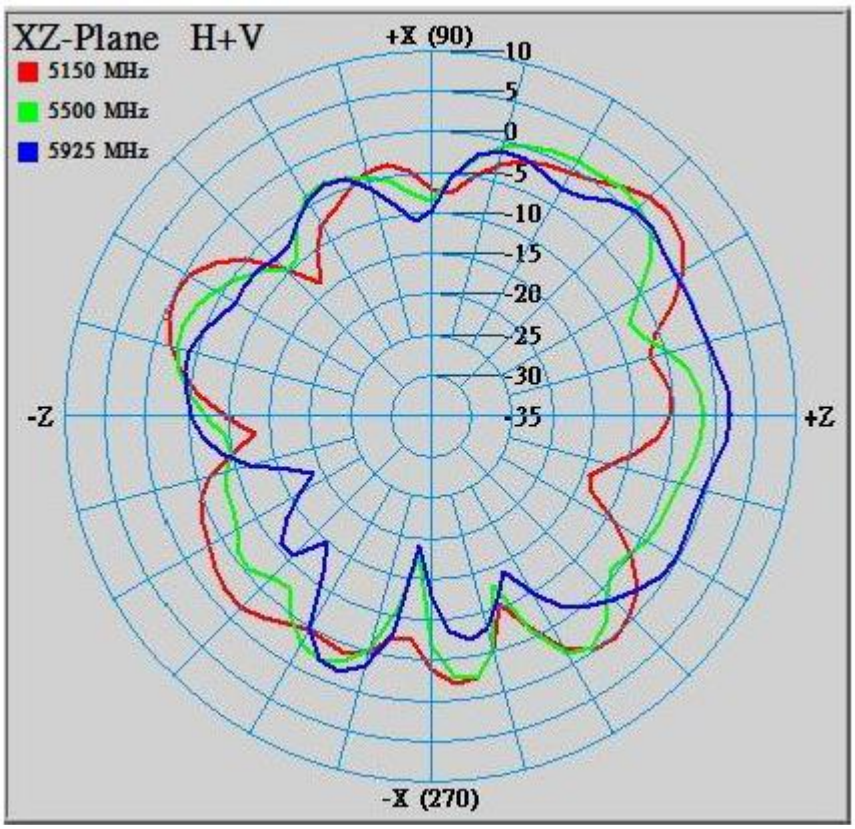
	ZX plane		ZY plane		XY plane	
Frequency [MHz]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]
3300	2.68	-3.00	4.07	-2.19	-0.43	-2.69
3800	-0.32	-4.16	1.51	-2.88	0.34	-2.09
4200	2.10	-2.93	1.39	-2.41	1.89	-2.52

LTE2
@5150-5925MHz

X-Z Plane

Phi=0.00deg

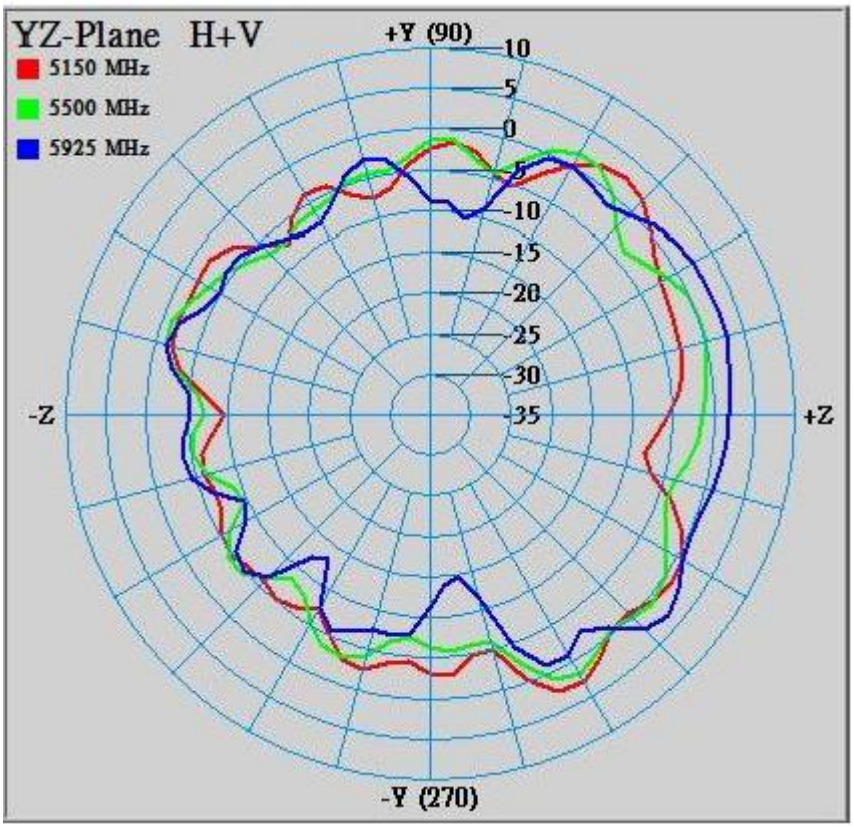
Gain . dB



Y-Z Plane

Phi=90.00deg

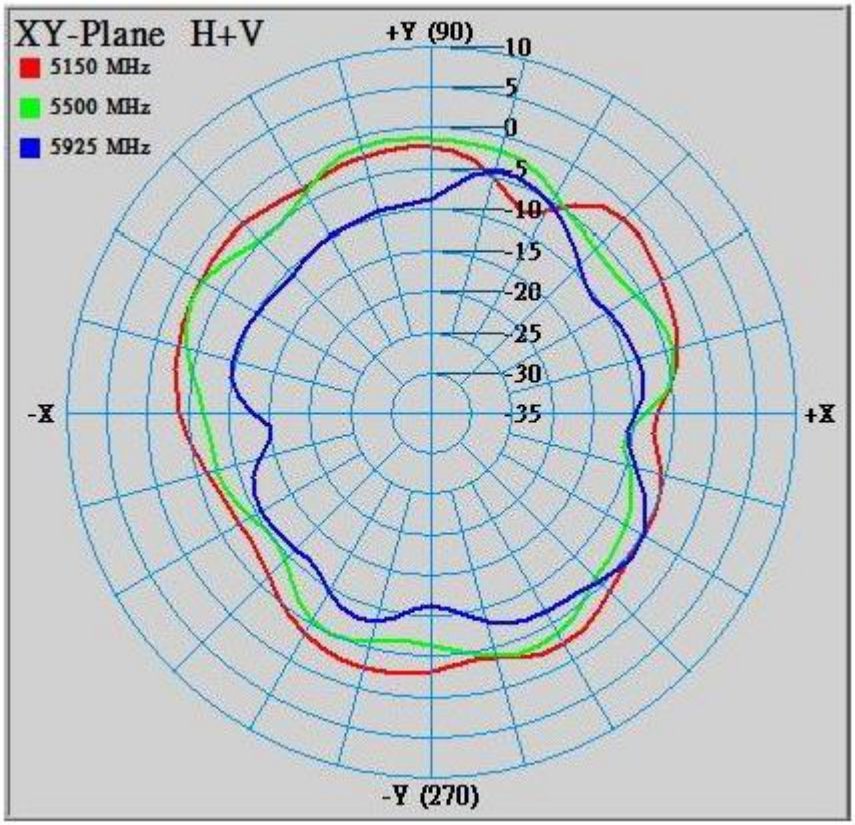
Gain . dB



X-Y Plane

Theta=90.00deg

Gain . dB



	ZX plane		ZY plane		XY plane	
Frequency [MHz]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]
5150	3.43	-2.98	3.09	-2.36	-1.20	-3.61
5500	1.68	-3.45	1.98	-2.48	-1.02	-4.75
5925	1.85	-3.24	3.36	-1.77	-4.10	-8.46

Package

禾邦電子有限公司		
RFDPA161500SMMB805包規	頁 次： 1 之 1	
	規章編號：	版次 ： A0版
	制修訂日期：2020/3/4	

包裝圖

圖一

4pcs/袋

圖二

圖三

4pcs/袋

產品包裝規範：

1.將每4PCS產品裝入PE袋中封口,PE袋須有“回收”標示，不用貼標籤，。

2.將珍珠棉放入外箱中(如圖示二)

3.將裝好的成品(如圖示三)放入外箱中，每箱放280pcs產品，上下各放1片珍珠棉。

4.外箱上需粘貼客標，製造標以及客戶要求相關標籤，

製造標籤圖示：實物標籤內容僅作參考 具體內容以出貨料號為准

核准：	何耀輝	審核：	童明輝	制定：	程碧琴

產地：
企業名稱：蘇州華科電子有限公司
通訊地址：江蘇省蘇州市工業園區現代大道長陽街367號

RELIABILITY TEST

PSA 華新科技股份有限公司 Walsin Technology Corporation	編號	日期	頁次
		2020/5/6	1/1
RFDPA161500SMMB805 實驗報告	核準	審核	作成
	何耀輝	童明輝	王婷

實驗名稱:	拉力測試
實驗目的:	驗證connentor鉚壓后其拉力是否OK
實驗設備:	拉力測試機-Hung Ta/HF-8116
實驗人員:	王婷
實驗日期:	2020/5/6
實驗步驟:	1.取5PCS組裝好connector的樣品進行拉力測試，步驟如下：

組裝IPEX后產品

測試結果

2.拉力測試數據如下：

拉力測試規格：≧1.0 Kg

NO	1	2	3	4	5						判定
測試值	1.89	1.91	1.93	2	1.97						OK
MAX：	2	MIN	1.89	$\overline{X}$：	1.94						

實驗結論:	取5PCS產品進行拉力測試，其拉力值均在規格范圍內，判定為OK。

Report Completion/Modify date： 2019/07/11

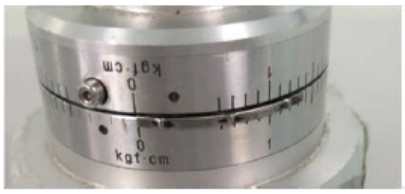
PSA 華新科技股份有限公司 WALSIN TECHNOLOGY CORPORATION

Page： 02 Of 05

ENVIRONMENT TEST DATA

TEST ITEM	段落感測試
NO.	RFDPA161500SMMB805
TEST CONDITION	

Test Process:



實驗前

實驗後

Test Result:

SPEC：

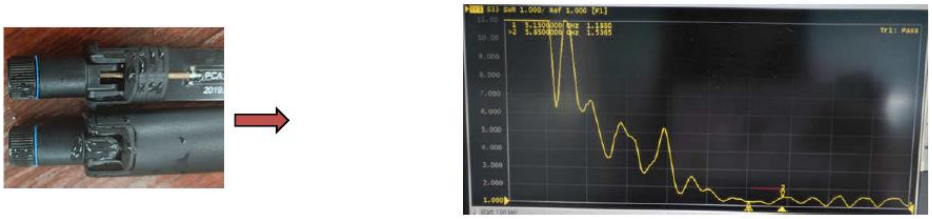
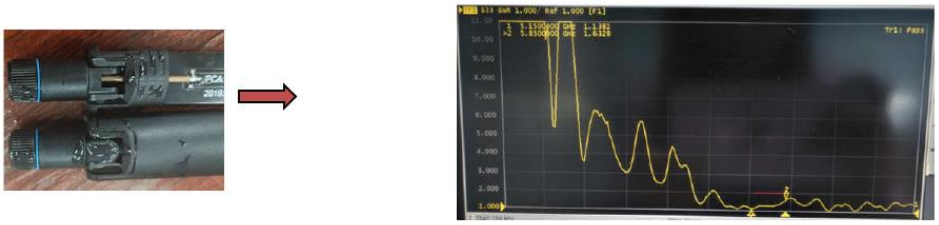
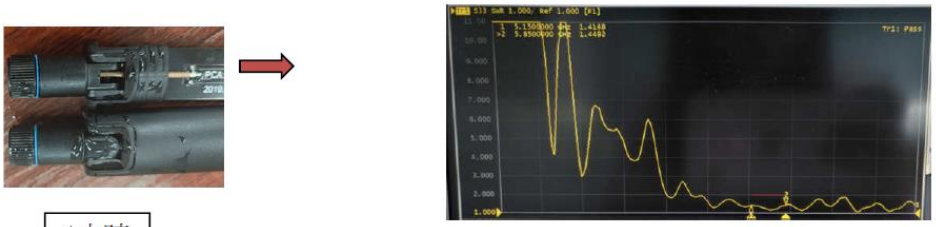
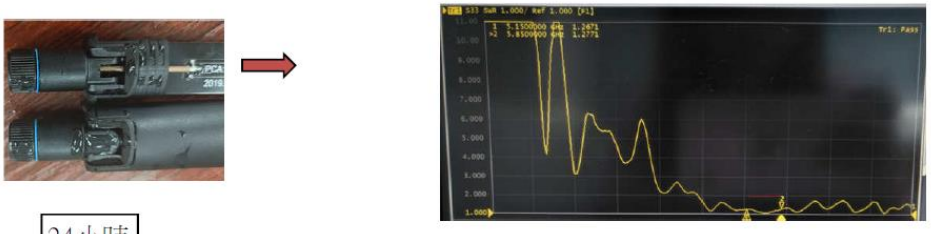
NO	1	2	3	4	5
判定	OK	OK	OK	OK	OK

Report Completion/Modify date： 2019/07/11

Page： 04 Of 05

PSA 華新科技股份有限公司 WALSIN TECHNOLOGY CORPORATION

ENVIRONMENT TEST DATA

TEST ITEM	高溫工作
NO.	RFDPA161500SMMB805
TEST CONDITION	溫度60±2℃；實驗樣品溫度穩定時間：1H;持續試驗時間：24H，恢復時間：1H，溫度變化速率：1度/分，中間需要在第2、3、4、24開關機，驗證電調功能是否正常。備註：電調部分需要有調試監控，並在報告中體現。
Test Process:	 2小時  3小時  4小時  24小時
Test Result:	SPEC：第2、3、4、24小時開關機，驗證電調功能是否正常

NO	1	2	3	4	5
判定	OK	OK	OK	OK	OK

Report Completion/Modify date： 2019/07/11

Page： 05 Of 05

PSA 華新科技股份有限公司 WALSIN TECHNOLOGY CORPORATION

ENVIRONMENT TEST DATA

TEST ITEM	落球實驗
NO.	RFDPA161500SMMB805
TEST CONDITION	將110G鐵球至1m高空墜落於產品，產品無破損
Test Process:	 實驗前  實驗前  實驗後
Test Result:	SPEC：不可有破損脫落

NO	1	2	3	4	5
判定	OK	OK	OK	OK	OK