

DATE :Aug.18.2006

CUSTOMER: First International Computer, INC.

APPROVAL SHEET

MODEL	PTB50
DESCRIPTION	PIFA For Wireless LAN Antenna 2.4~2.5GHz/5.15~5.875 GHz
SUPPLIER P/N	K05004002251
CUSTOMER P/N	21-92560-01
FILE P/N	

FAVORTRON			Customer	
Manager	Supervisor	Engineer		
Nick	Vincent	Kristy		

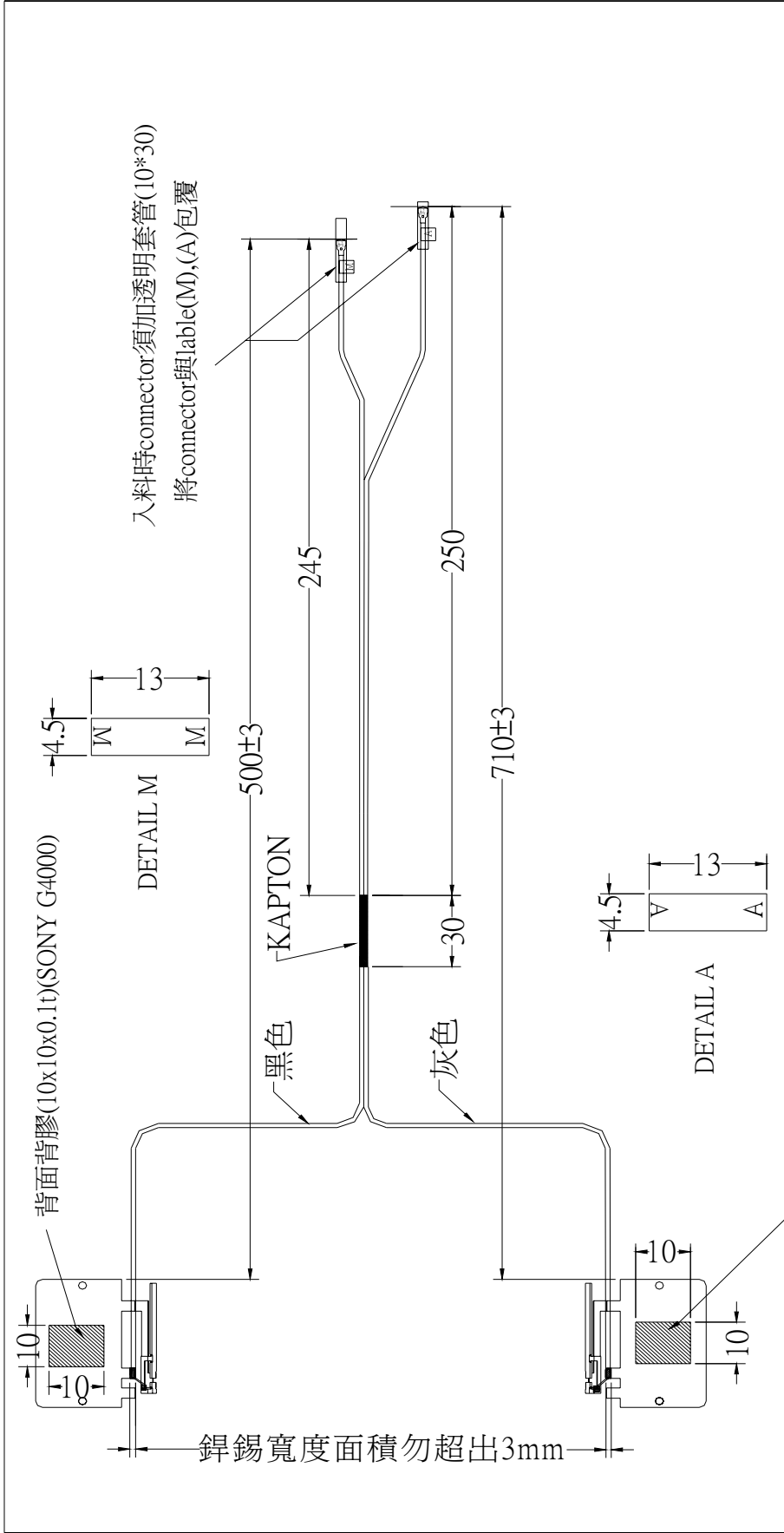


惠貿電子股份有限公司
FAVORTRON CO., LTD

台北縣中和市中正路 866 號 17F TEL: (02) 8227-5669

17nd F, no. 866, Zhong Zheng Rd., FAX: (02) 8227-5667
Zhong He City, Taipei Hsien, Taiwan R.O.C

1. DRAWING ASSEMBLY



入料時connector須加透明套管(10*30)
將connector與label(M),(A)包覆

惠賢電子股份有限公司 FAVORTRON CO.,LTD		Title:	
大眾PTB50-WLAN天線成品圖		Part No.	K05004002251
※未標註公差處，請參照下列標準。		Draw No.	TD-E-60829-a1
發	行	CUS.Part No.	21-92560-01
		CUS.Rev.	a1
		Approval	Check
		Scale	1:1
		Date	2006/08/10
		Sheet	1/3
		Nick	Vincent
		Check	Designed
		Nick	Vincent

備註

禁止使用1級環境管理物質，具體物質參見我司技術標準

REV	DESCRIPTION	DATE	Approval
△5			
△4			
△3			
△2			
△1			
REVISIONS			

機密
廠內專用

BOM

BOM					
ITEM	COMPONENT	Q'TY	DESCRIPTION	FAVORTRON P/N	VENDER
1	PIFA ANTENNA	1	GT1W" Left(0.4mm)/馬口鐵	M02007025001	品欣
2	同軸線	1	φ 1.13黑色* 528mm單邊加-PEX Connector	M04007047001	FVC
3	同軸線	1	φ 1.13 灰色* 738mm單邊加-PEX Connector	M04007046001	FVC
4	雙面膠帶	2	10mm*10mm*ε=0.15mm (NITTO 5000)	M01017009002	鈺承
5	透明套管	2	OD2.5*30mm(透明) 內徑3.1±0.2 壁厚0.25±0.1	B02020016121	三聯
6	PIFA ANTENNA	1	GT1W" Right(0.4mm)/馬口鐵	M02007024001	品欣
7	LABLE (A)	1	4.5*13mm	G01013007001	亞識
8	LABLE (M)	1	4.5*13mm	G01013007001	亞識
9	KAPTON	1	10*30mm (TAPE)10mm寬-33M-0.05(卷)	G01007014001	嘉得隆
10					
11					
12					
SUB BOM (M04007047001)					
ITEM	COMPONENT	Q'TY	DESCRIPTION	FVC P/N	VENDER
1	Connector	1	接頭MHF PLUG(I-PEX) OD= φ 1.13	L07001001001	I-PEX
2	同軸線	1	同軸線 φ 1.13*527mm(黑色)	M04005009001	日立信電
SUB BOM (M04007046001)					
ITEM	COMPONENT	Q'TY	DESCRIPTION	FVC P/N	VENDER
1	Connector	1	接頭MHF PLUG(I-PEX) OD= φ 1.13	L07001001001	I-PEX
2	同軸線	1	同軸線 φ 1.13*737mm(灰色)	M04005008001	日立信電



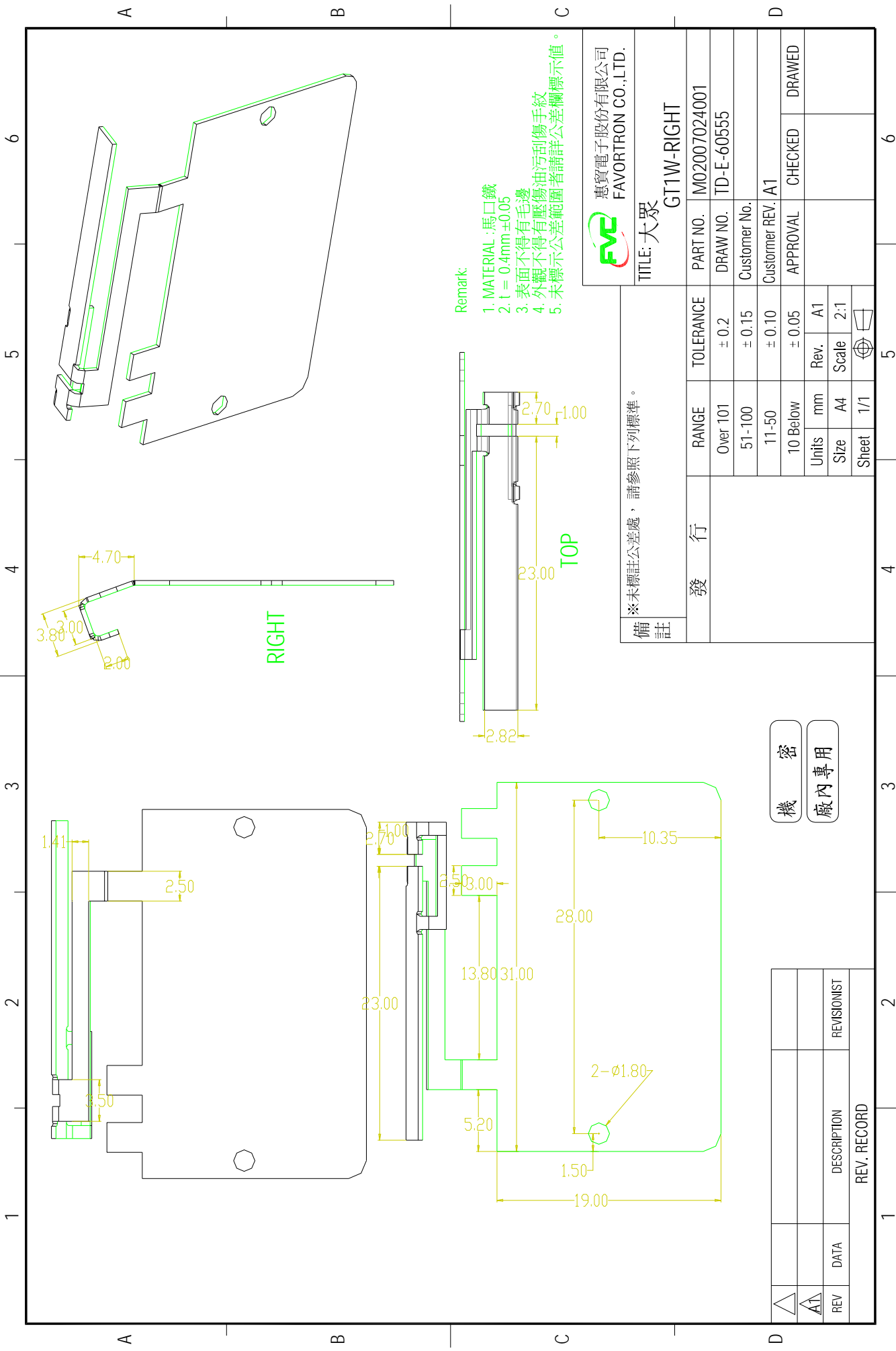
Title: 大眾PTB50-WLAN天線成品圖

Part No.	K05004002251
Draw No.	TD-E-60829-a1
CUS.Part No.	21-92560-01
CUS.Rev.	a1
Approval	Check
	Designed
Nick	Vincent
	Vincent

發	行	備	註
Date	2008/08/10	Sheet	2/3

機密
廠內專用

NOTES:
禁止使用1級環境管理物質，具體物質參見我司技術標準



Remark:

1. MATERIAL :馬口鐵
2. t = 0.4mm ±0.05
3. 表面不得有毛邊
4. 外觀不得有壓傷油污刮傷手紋
5. 未標示公差範圍者請詳公差欄標示值。



惠賢電子股份有限公司
FAVORTRON CO., LTD.

TITLE: 大眾

GT1W-RIGHT

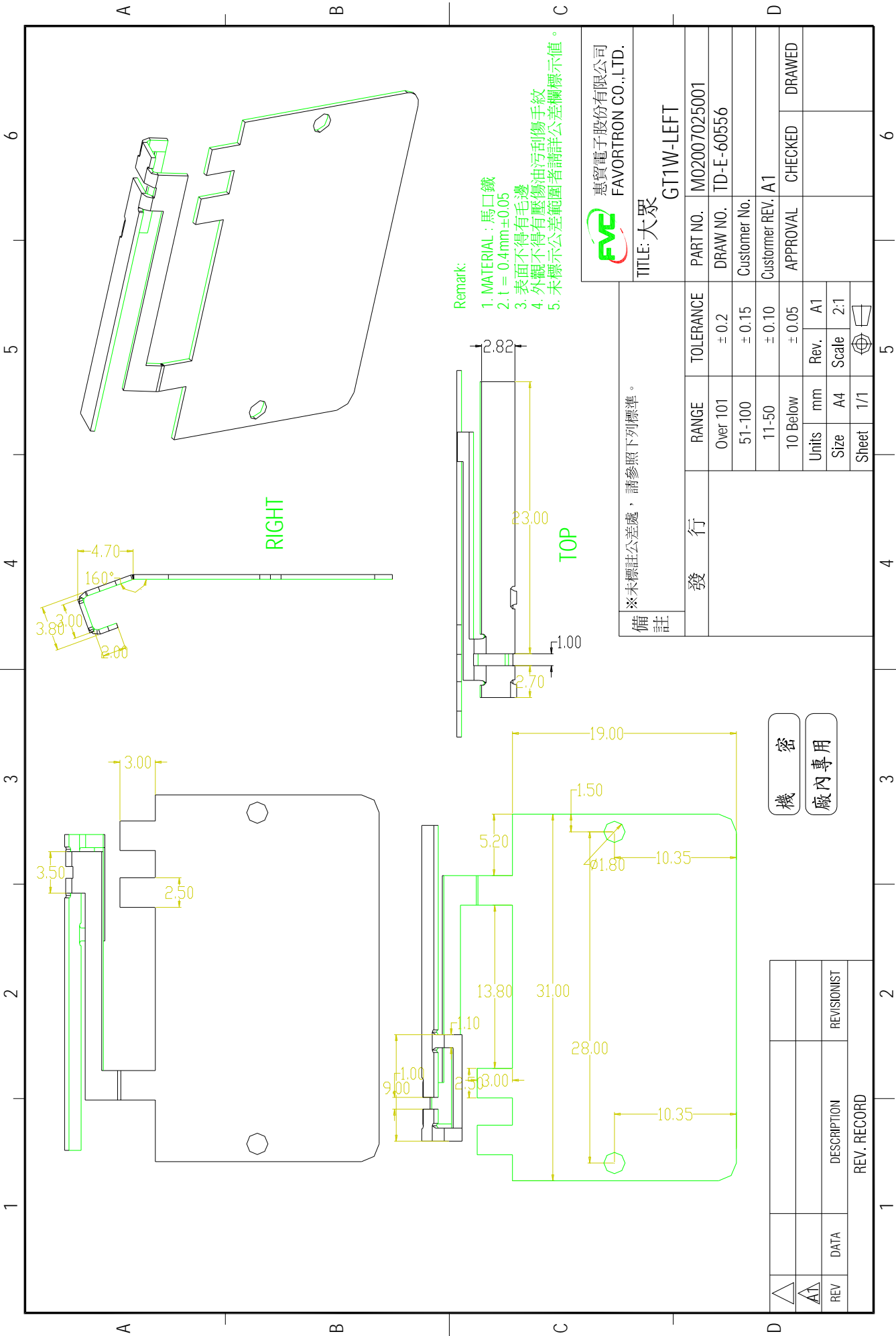
※未標註公差處，請參照下列標準。

備註		發行		TOLERANCE		PART NO.	
		RANGE	TOLERANCE	Over 101	± 0.2	M02007024001	
		Units	mm	51-100	± 0.15	Customer No.	
		Size	A4	11-50	± 0.10	Customer REV.	A1
		Sheet	1/1	10 Below	± 0.05	APPROVAL	CHECKED
							DRAWN

機密
廠內專用

REV	DATA	DESCRIPTION	REVISIONIST
		REV. RECORD	

ABC



惠賢電子股份有限公司 FAVORTRON CO.,LTD.	
TITLE: 大眾 GT1W-LEFT	
發 行	備 註
RANGE	TOLERANCE
Over 101	± 0.2
51-100	± 0.15
11-50	± 0.10
10 Below	± 0.05
Units	mm
Size	A4
Sheet	1/1
Rev.	A1
Scale	2:1
APPROVAL	CHECKED
Customer REV. A1	DRAWN
Customer No.	
DRAW NO.	TD-E-60556
PART NO.	M02007025001

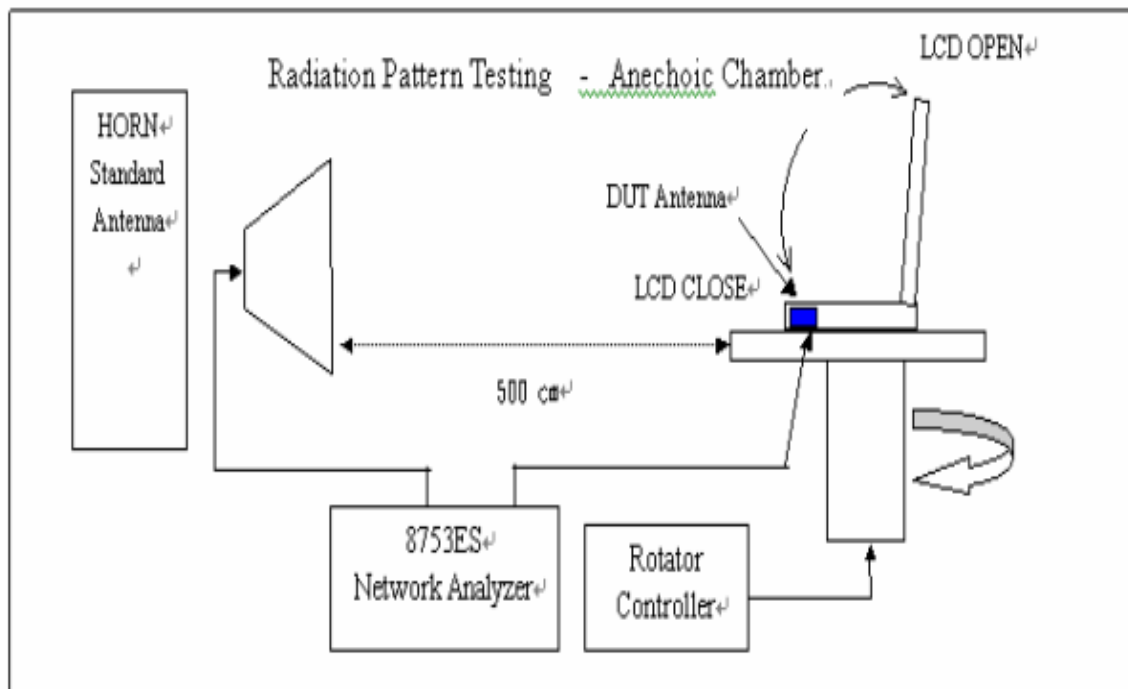
機 密
廠內專用

△			
△			
REV	DATA	DESCRIPTION	REVISIONIST
REV. RECORD			

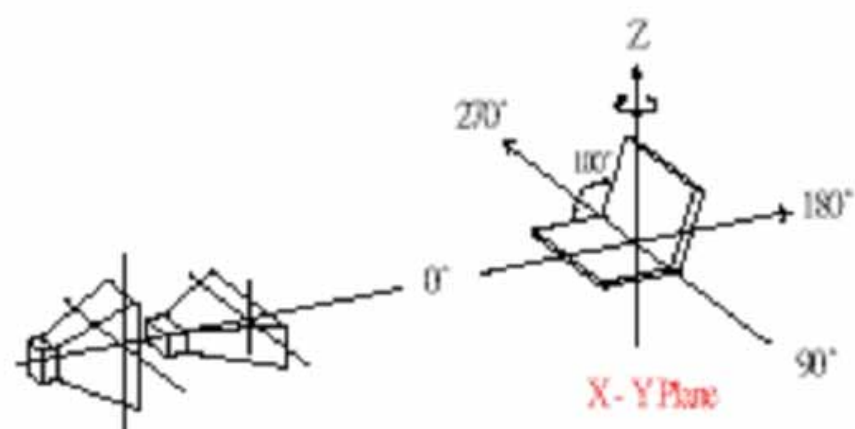
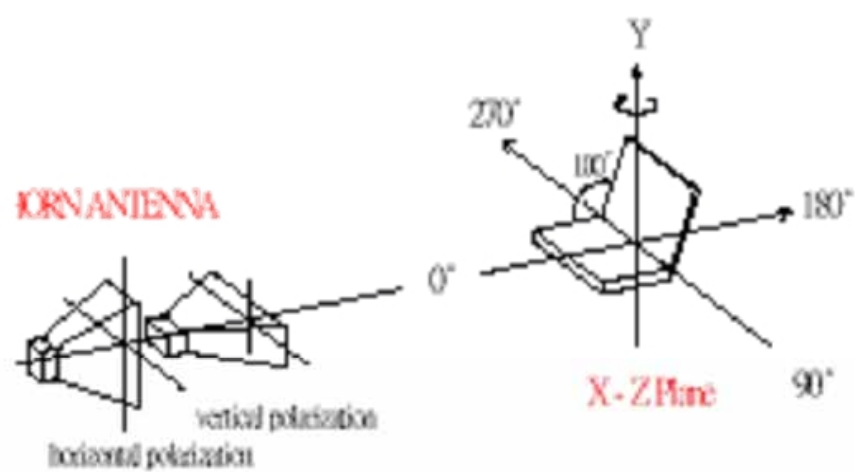
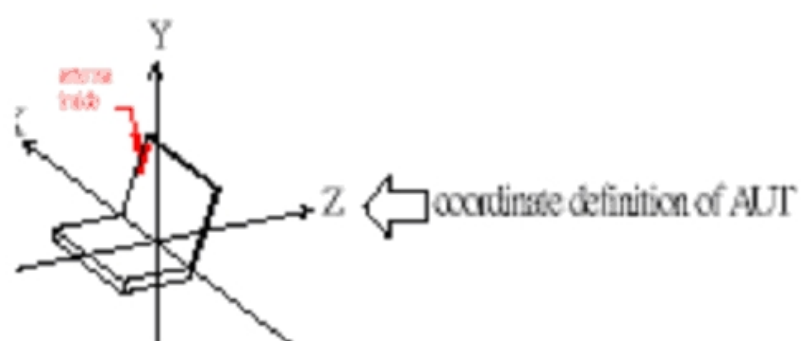
ABC

1.

天線測試方法



Coordinate Definition



2. Antenna Spec. For WLAN

1. 802.11b Spec.

- a. Frequency range : 2.4 ~ 2.5GHz (Nominal)
- b. Impedance : 50Ω
- c. LCD Panel : Open (100°) / Close (0°).
- d. System Plane : XY plane
- e. VSWR : ≤ 2 (Main & Aux. Antenna)
- f. Return Loss : ≤ -10dB (Main & Aux. Antenna)
- g. Band Width : ≥ 130MHz (2450MHz±65MHz at least).
- h. Diversity Sum : ≥ -2.5dBi
- i. Any 30° angle range can't has null depth.
- j. Average gain & Peak gain

Antenna	Peak Gain (dBi)			Average Gain (dBi)		
	Frequency			Frequency		
	2.4GHz	2.45GHz	2.5GHz	2.4GHz	2.45GHz	2.5GHz
Main	≤ 3	≤ 3	≤ 3	≥ -4	≥ -4	≥ -4
Auxiliary	≤ 3	≤ 3	≤ 3	≥ -4.5	≥ -4.5	≥ -4.5

2. 802.11a Spec.

- a. Frequency range : 4.9 ~ 5.875GHz (Nominal)
- b. Impedance : 50Ω
- c. LCD Panel : Open (100°) / Close (0°).
- d. System Plane : XY plane
- e. VSWR : ≤ 2 (Main & Aux. Antenna)
- f. Return Loss : ≤ -10dB (Main & Aux. Antenna)
- g. Band Width : ≥ 250MHz (5250MHz±125MHz at least).
- h. Diversity Sum : ≥ -3.5dBi
- i. Any 30° angle range can't has null depth.
- j. Average gain & Peak gain

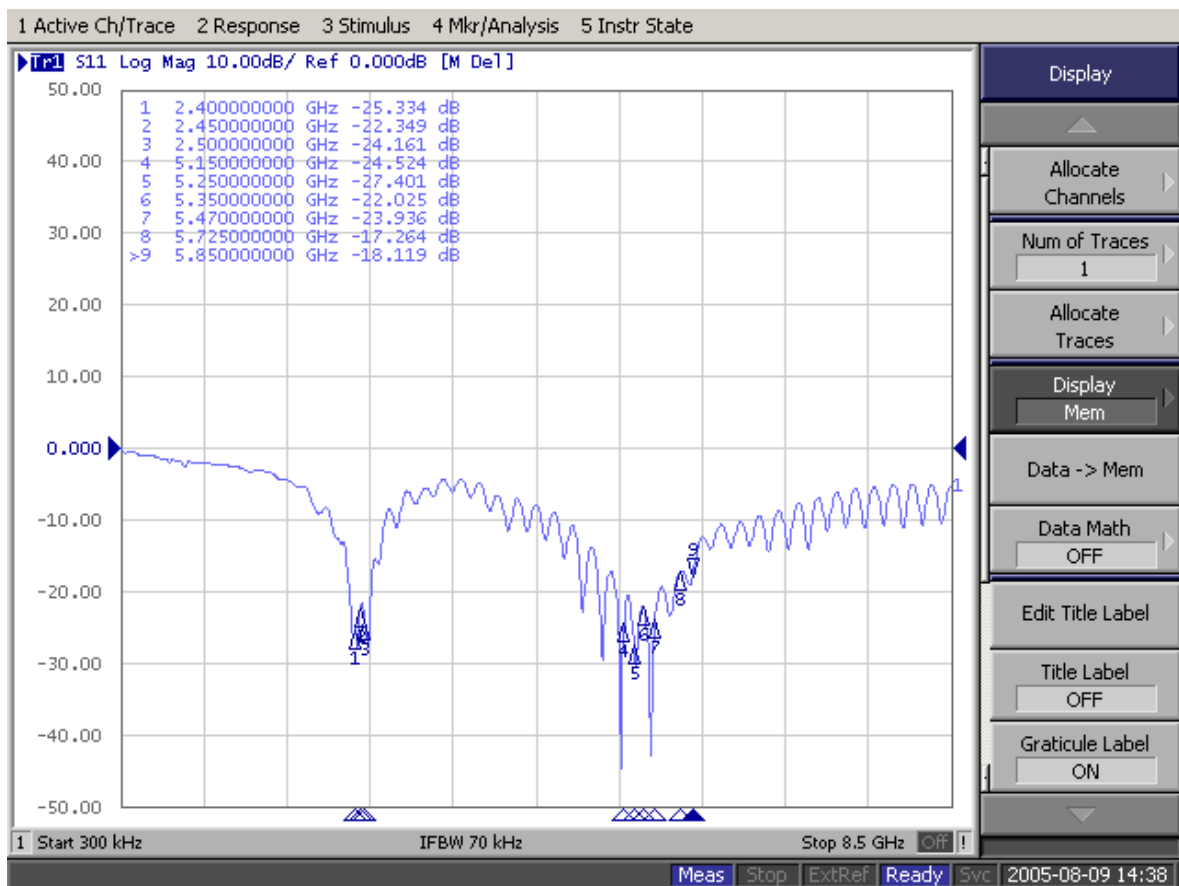
Antenna	Peak Gain (dBi)			Average Gain (dBi)		
	Frequency			Frequency		
	4.9GHz	5.47GHz	5.875GHz	4.9GHz	5.47GHz	5.875GHz
Main	≤ 5	≤ 5	≤ 5	≥ -4.8	≥ -4.8	≥ -4.8
Auxiliary	NA	NA	NA	≥ -4.8	≥ -4.8	≥ -4.8

3. DESCRIPTION

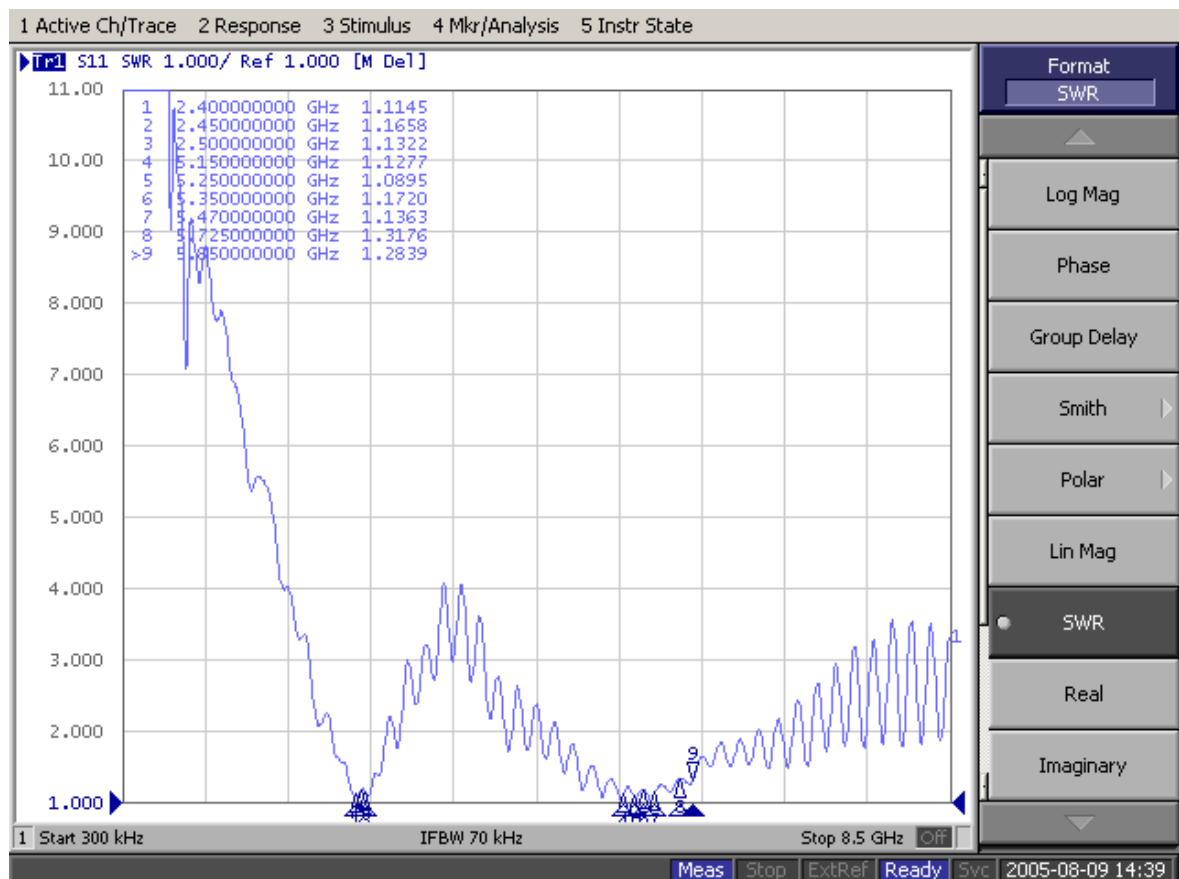
- a. FIC Project Name & FIC P/N : PTB50
& Frequency : Daul Band 2.4~2.5 & 4.9~5.875 GHz
- b. Vendor's antenna P/N : K05004002251
- c. Antenna P/N & type & material : M02007024001 (R) , M02007025001 (L)
PIFA & Cupronickel
- d. Coaxial cable length & diameter(Φ) : 738mm(Left, Gray) 、 528 mm(Right, Black) & 1.13 Φ
& Cable P/N & Vendor : M04007046001(G) M04007047001(B)
- e. Connector model no. & vendor : L07001001001

3. WLAN Main /Ant.(Right)

2.4~2.5GHZ & 5.15~5.875GHZ / Return Loss



2.4~2.5GHZ & 5.15~5.875GHZ / VSWR



4. Gain & Pattern – W/L / Main Ant. (Right).

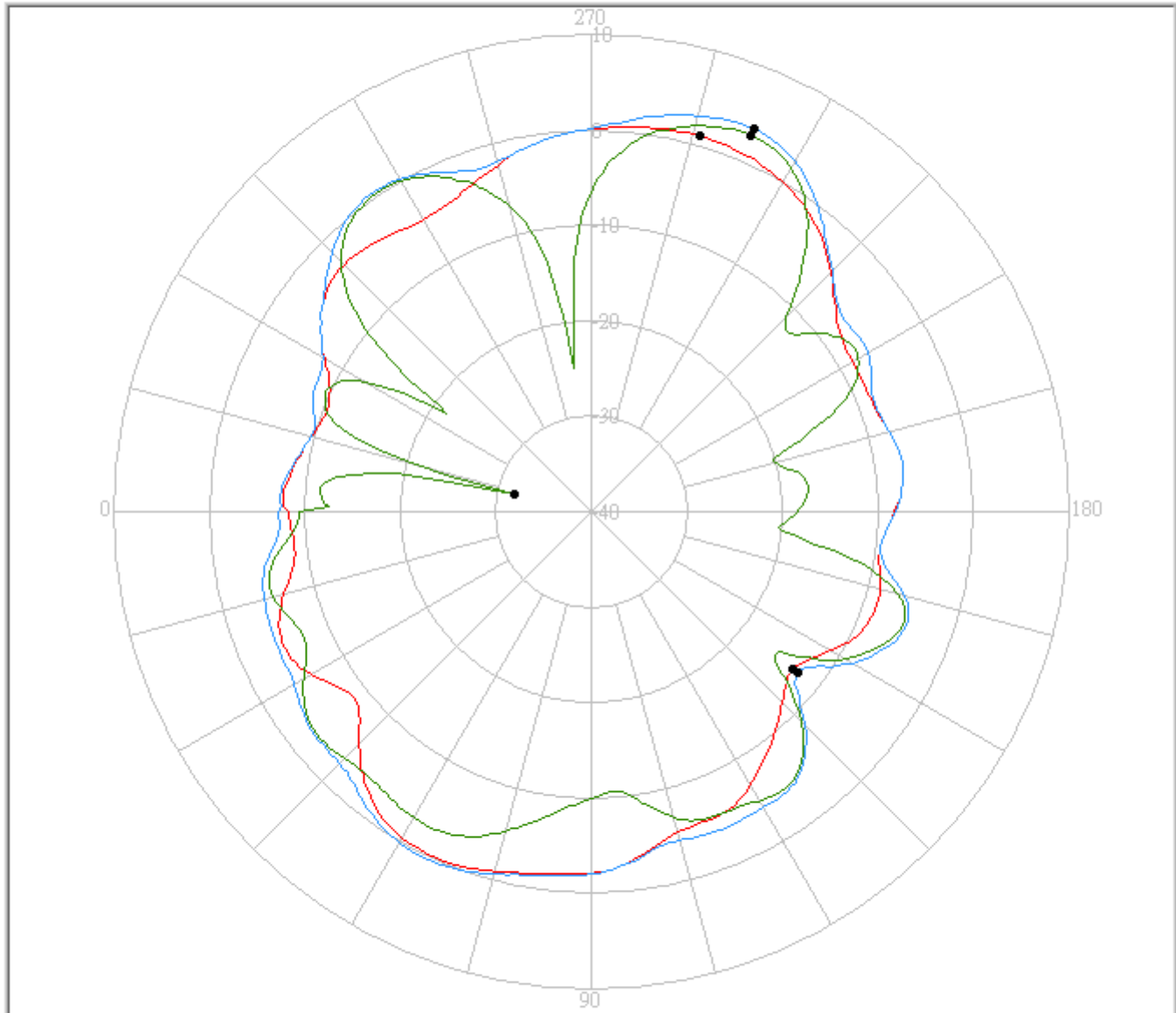
a. 2.4GHz





FAVORTRON Co. Ltd

Antenna Pattern Measurement

4F, No. 108-1, Min Chuan Rd., Hsin-Tien City, Taipei, Taiwan, R.O.C. Tel:886-2-2218-2189,
Fax:886-2-2218-5760



Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	 KR2W	Right	2400.00	0.91 / 254.00	-13.21 / 142.00	-3.94	Ver.	2005/8/10
2	 KR2W	Right	2400.00	2.80 / 247.00	-31.65 / 347.00	-4.64	Hor.	2005/8/10
3	 KR2W	Right	2400.00	2.85 / 247.00	-12.60 / 142.00	-2.47	V+H	2005/8/10

b. 2.45GHz



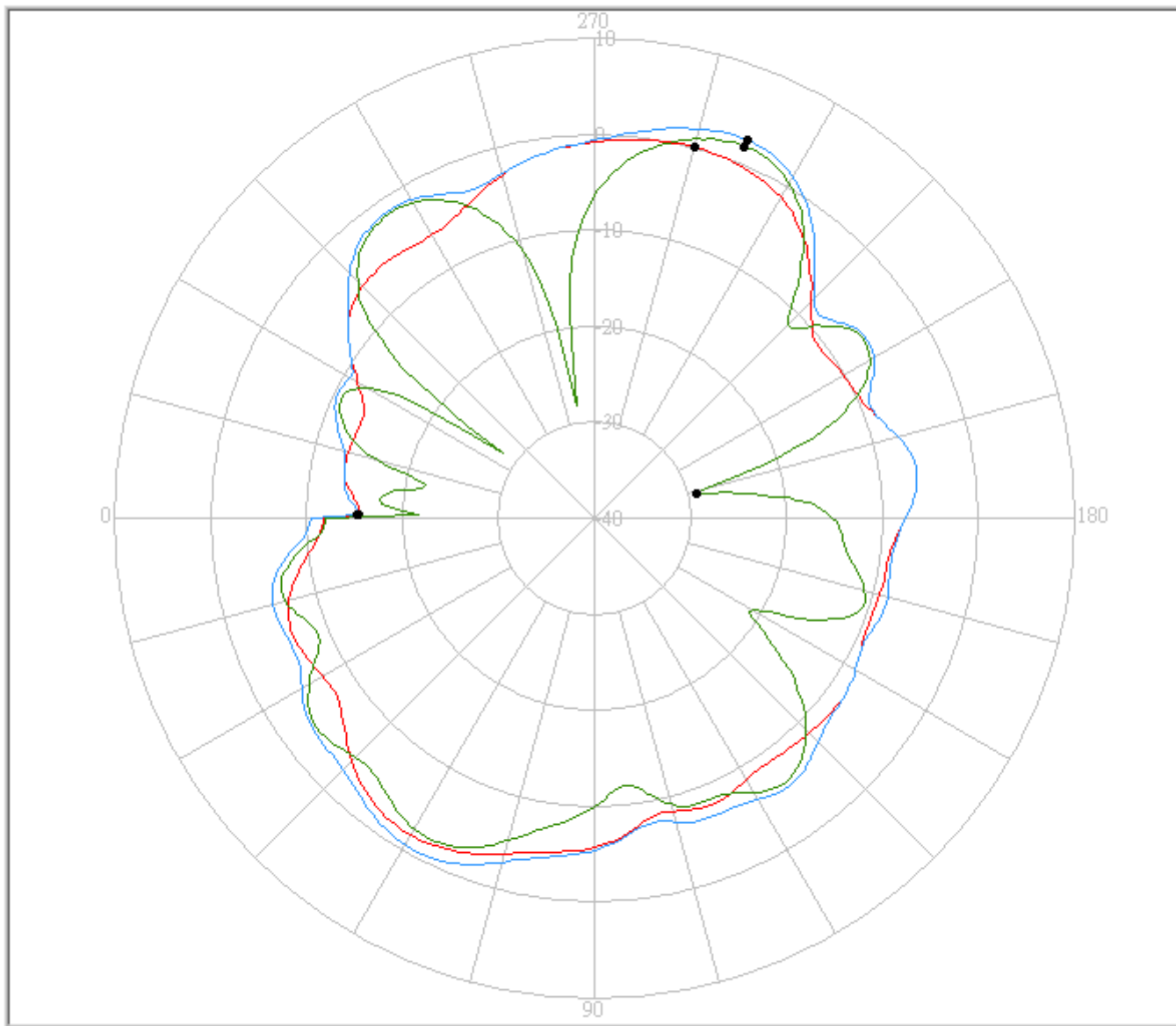
eService for Customer Satisfaction


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Antenna Pattern Measurement

4F, No. 108-1, Min Chuan Rd., Hsin-Tien City, Taipei, Taiwan, R.O.C. Tel:886-2-2218-2189,
Fax:886-2-2218-5760



Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	 KR2W	Right	2450.00	-0.01 / 255.00	-15.44 / 359.00	-5.27	Ver.	2005/8/10
2	 KR2W	Right	2450.00	1.75 / 248.00	-29.04 / 194.00	-5.83	Hor.	2005/8/10
3	 KR2W	Right	2450.00	2.48 / 248.00	-15.32 / 359.00	-3.80	V+H	2005/8/10

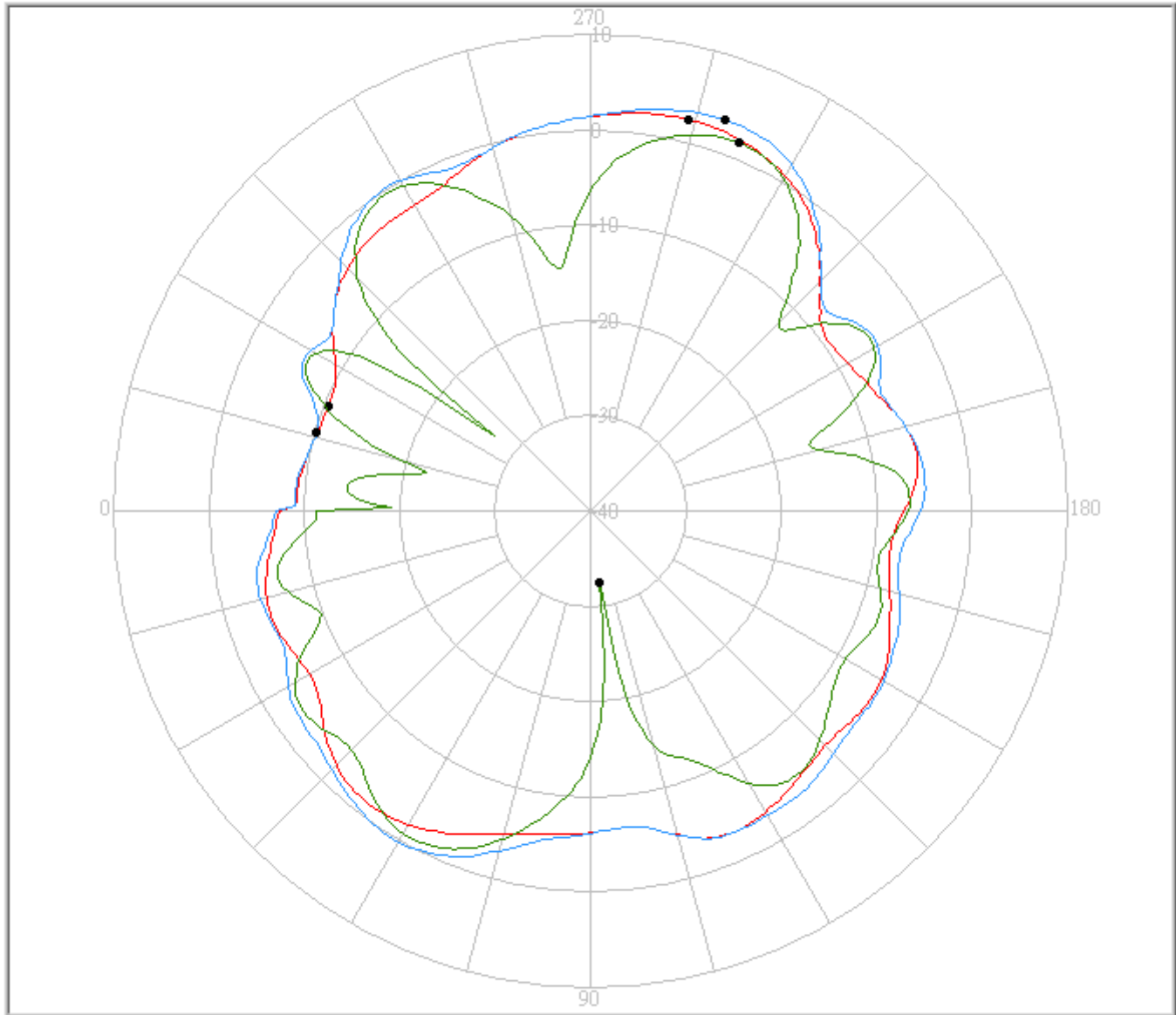
c. 2.5GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	KR2W	Right	2500.00	2.31 / 256.00	-10.44 / 338.00	-3.31	Ver.	2005/8/10
2	KR2W	Right	2500.00	1.66 / 248.00	-32.40 / 97.00	-5.08	Hor.	2005/8/10
3	KR2W	Right	2500.00	2.66 / 251.00	-10.16 / 344.00	-2.32	V+H	2005/8/10

d. 5.15GHz



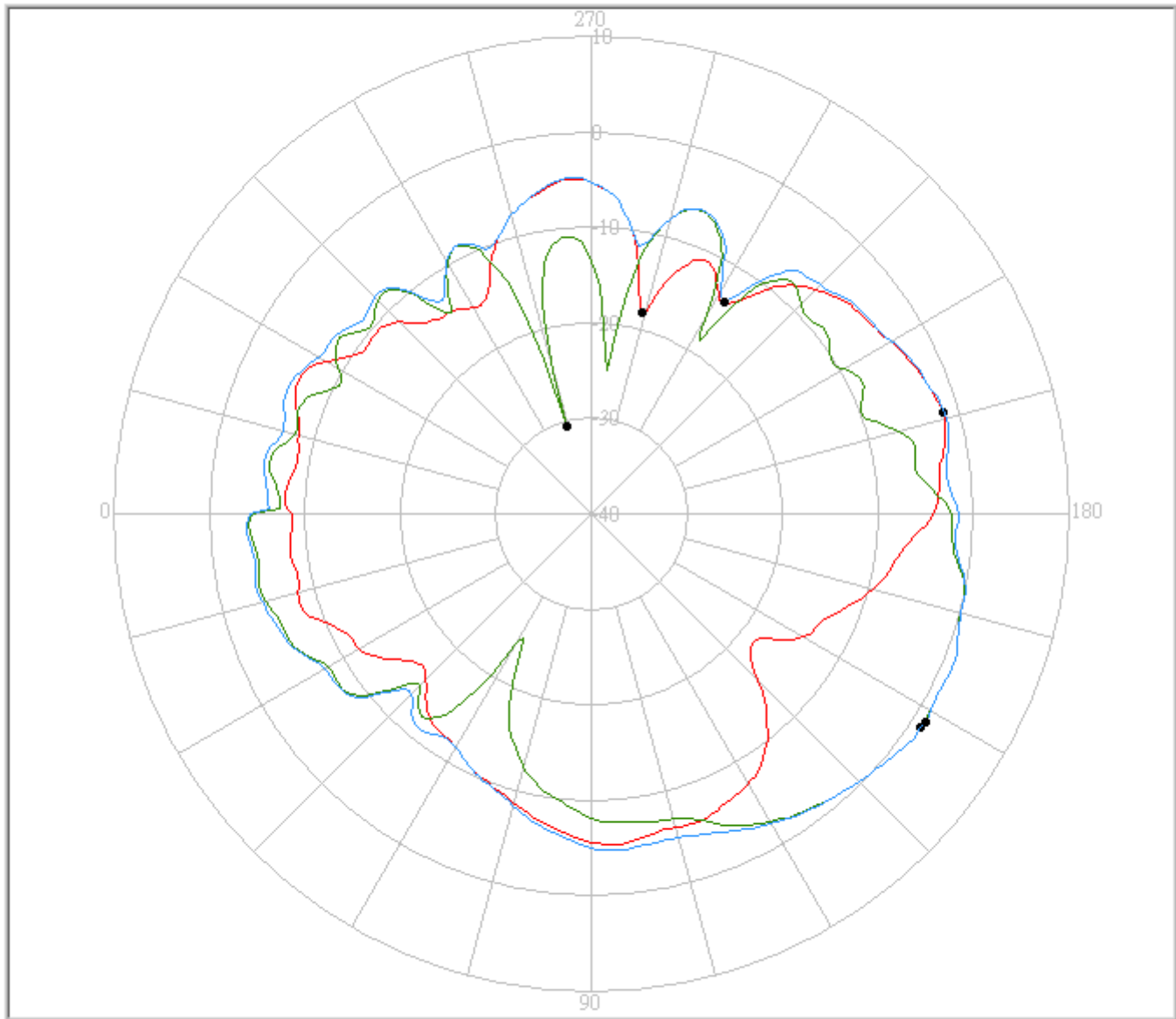
eService for Customer Satisfaction

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Fax:886-2-2218-5760



Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	KR2W	Right	5150.00	-1.74 / 196.00	-18.34 / 256.00	-7.76	Ver.	2005/8/10
2	KR2W	Right	5150.00	1.16 / 147.00	-30.47 / 286.00	-5.45	Hor.	2005/8/10
3	KR2W	Right	5150.00	1.16 / 148.00	-13.90 / 238.00	-4.27	V+H	2005/8/10

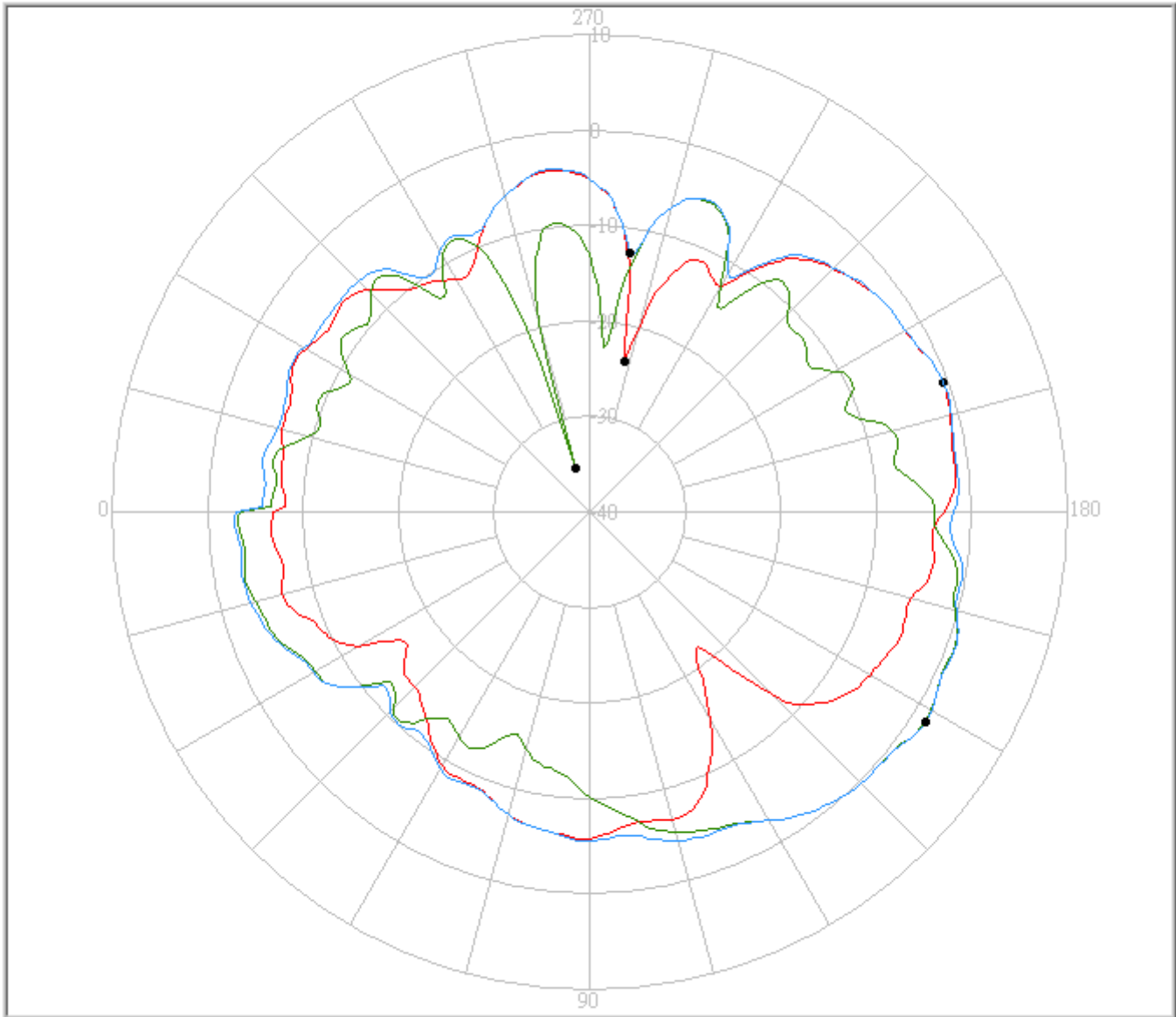
e. 5.25GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	KR2W	Right	5250.00	-0.56 / 200.00	-23.85 / 257.00	-6.24	Ver.	2005/8/10
2	KR2W	Right	5250.00	1.40 / 148.00	-35.30 / 287.00	-5.39	Hor.	2005/8/10
3	KR2W	Right	5250.00	1.46 / 148.00	-12.62 / 261.00	-3.65	V+H	2005/8/10

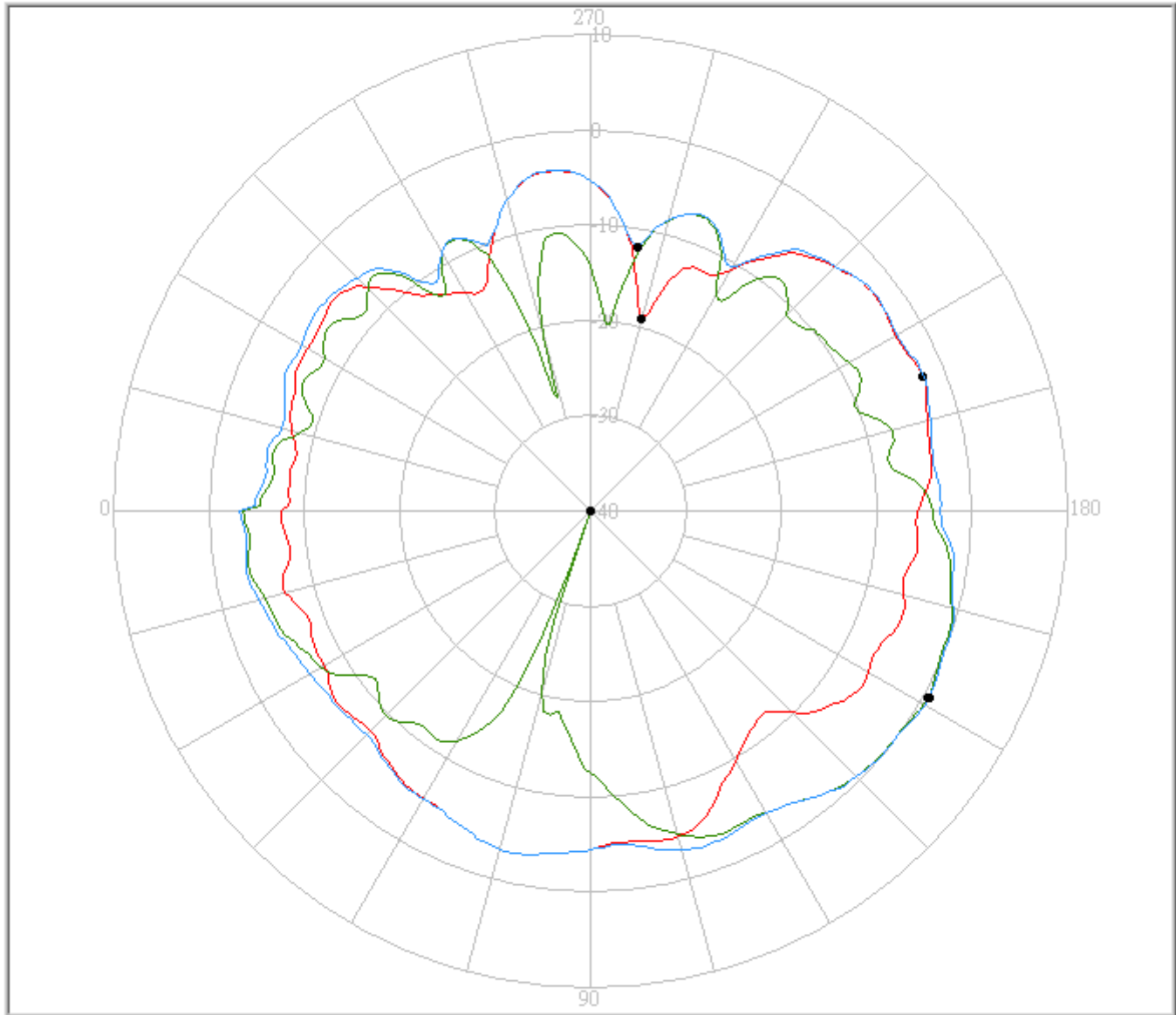
f. 5.35GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	KR2W	Right	5350.00	-2.38 / 202.00	-19.14 / 255.00	-6.08	Ver.	2005/8/10
2	KR2W	Right	5350.00	0.47 / 151.00	-45.27 / 71.00	-5.81	Hor.	2005/8/10
3	KR2W	Right	5350.00	0.55 / 151.00	-11.83 / 260.00	-3.87	V+H	2005/8/10

g. 5.47GHz



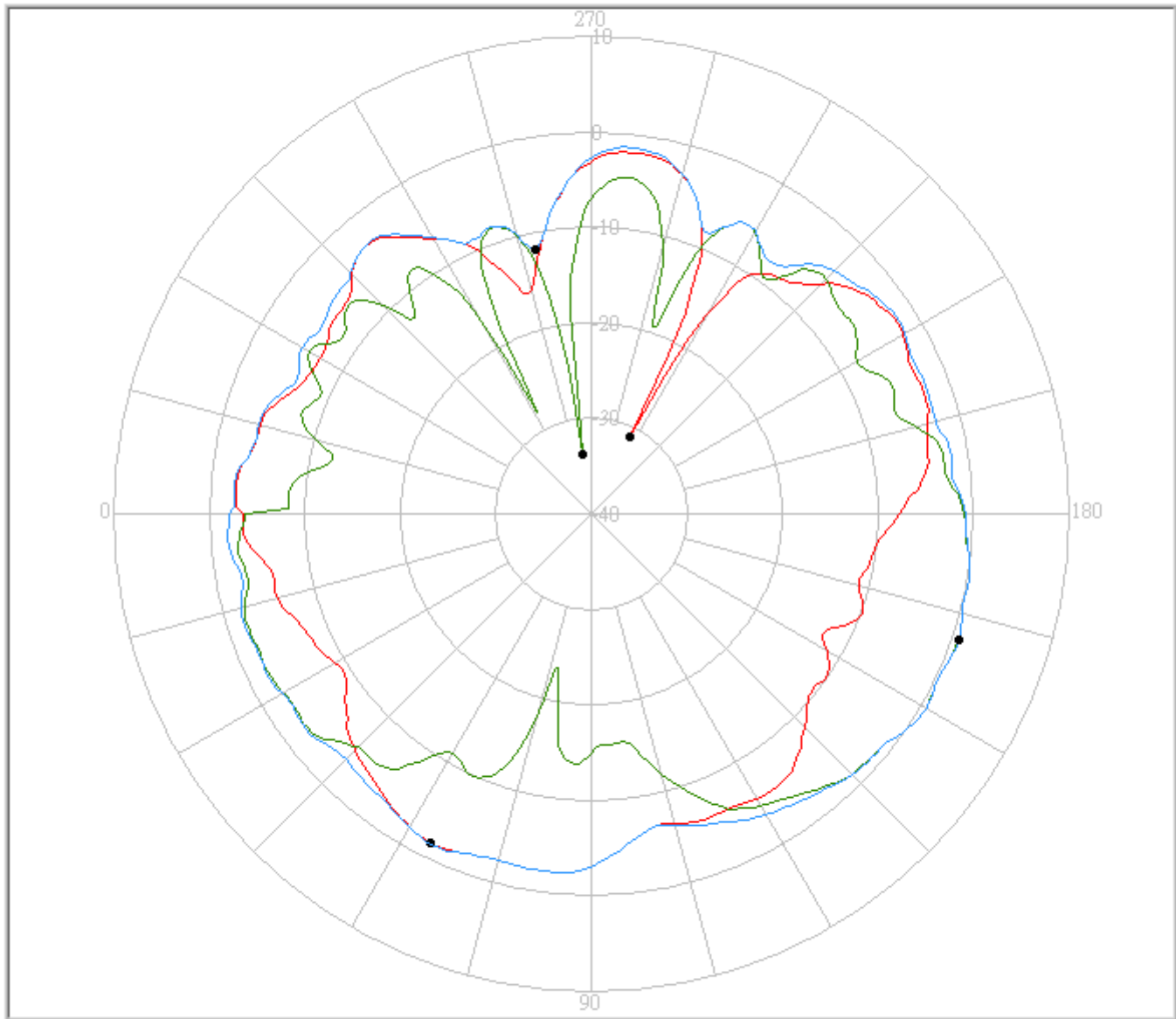
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Antenna Pattern Measurement

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Fax:886-2-2218-5760



Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	KR2W	Right	5470.00	-1.59 / 64.00	-31.01 / 243.00	-5.20	Ver.	2005/8/10
2	KR2W	Right	5470.00	0.64 / 161.00	-33.74 / 278.00	-4.87	Hor.	2005/8/10
3	KR2W	Right	5470.00	0.65 / 161.00	-11.65 / 282.00	-2.89	V+H	2005/8/10

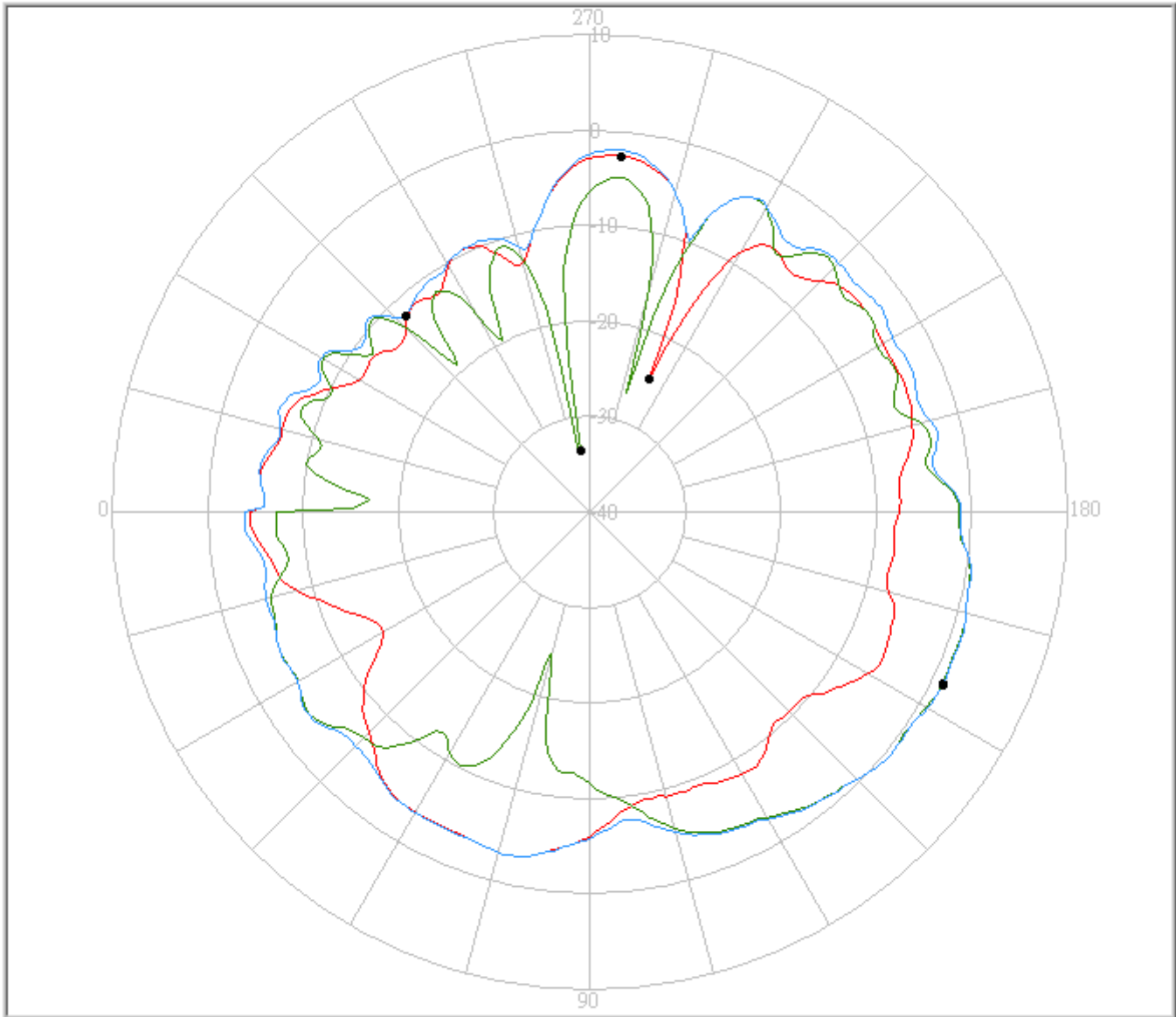
h. 5.597GHz



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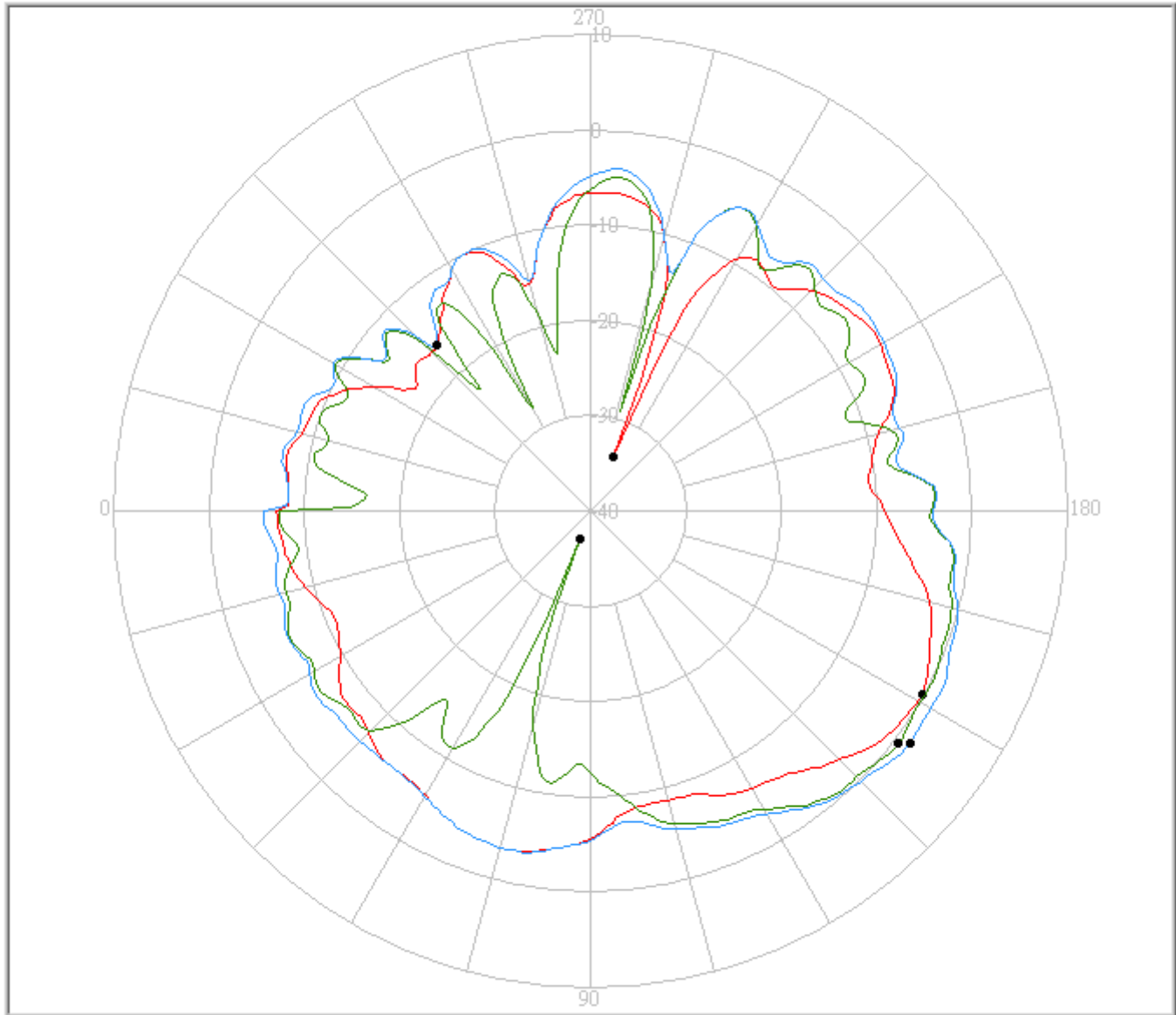
Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	KR2W	Right	5597.50	-2.63 / 265.00	-24.67 / 246.00	-6.74	Ver.	2005/8/10
2	KR2W	Right	5597.50	1.12 / 154.00	-33.57 / 279.00	-4.76	Hor.	2005/8/10
3	KR2W	Right	5597.50	1.21 / 154.00	-11.90 / 313.00	-3.51	V+H	2005/8/10

i. 5.725GHz



FAVORTRON Co. Ltd Antenna Pattern Measurement

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Fax:886-2-2218-5760



Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	KR2W	Right	5725.00	-0.24 / 151.00	-33.82 / 248.00	-6.53	Ver.	2005/8/10
2	KR2W	Right	5725.00	0.46 / 143.00	-36.96 / 69.00	-6.02	Hor.	2005/8/10
3	KR2W	Right	5725.00	1.39 / 144.00	-16.26 / 313.00	-4.47	V+H	2005/8/10

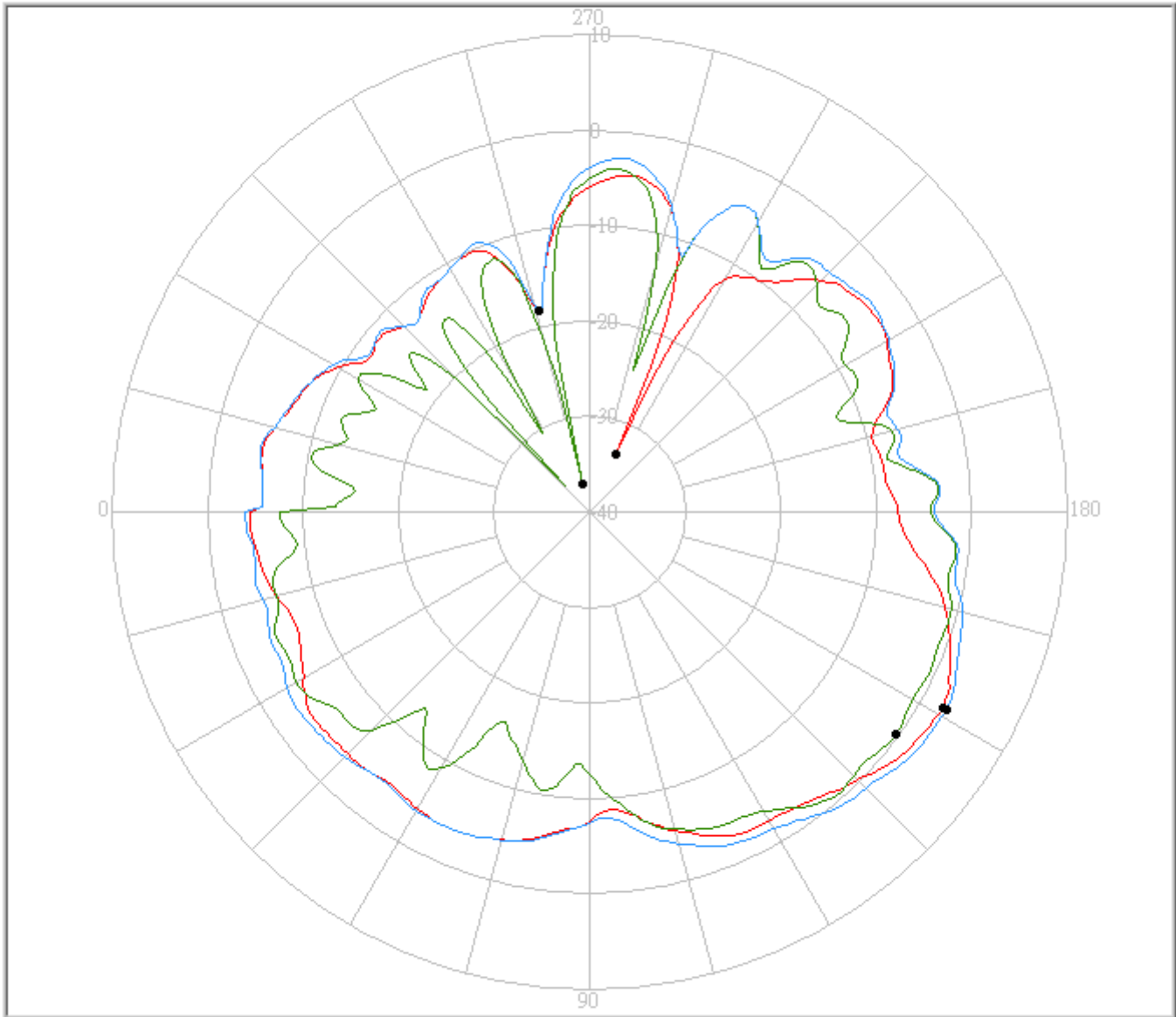
j. 5.785GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	KR2W	Right	5785.00	2.23 / 151.00	-33.37 / 246.00	-4.66	Ver.	2005/8/10
2	KR2W	Right	5785.00	-0.37 / 144.00	-37.08 / 283.00	-5.98	Hor.	2005/8/10
3	KR2W	Right	5785.00	2.68 / 151.00	-18.29 / 284.00	-3.52	V+H	2005/8/10

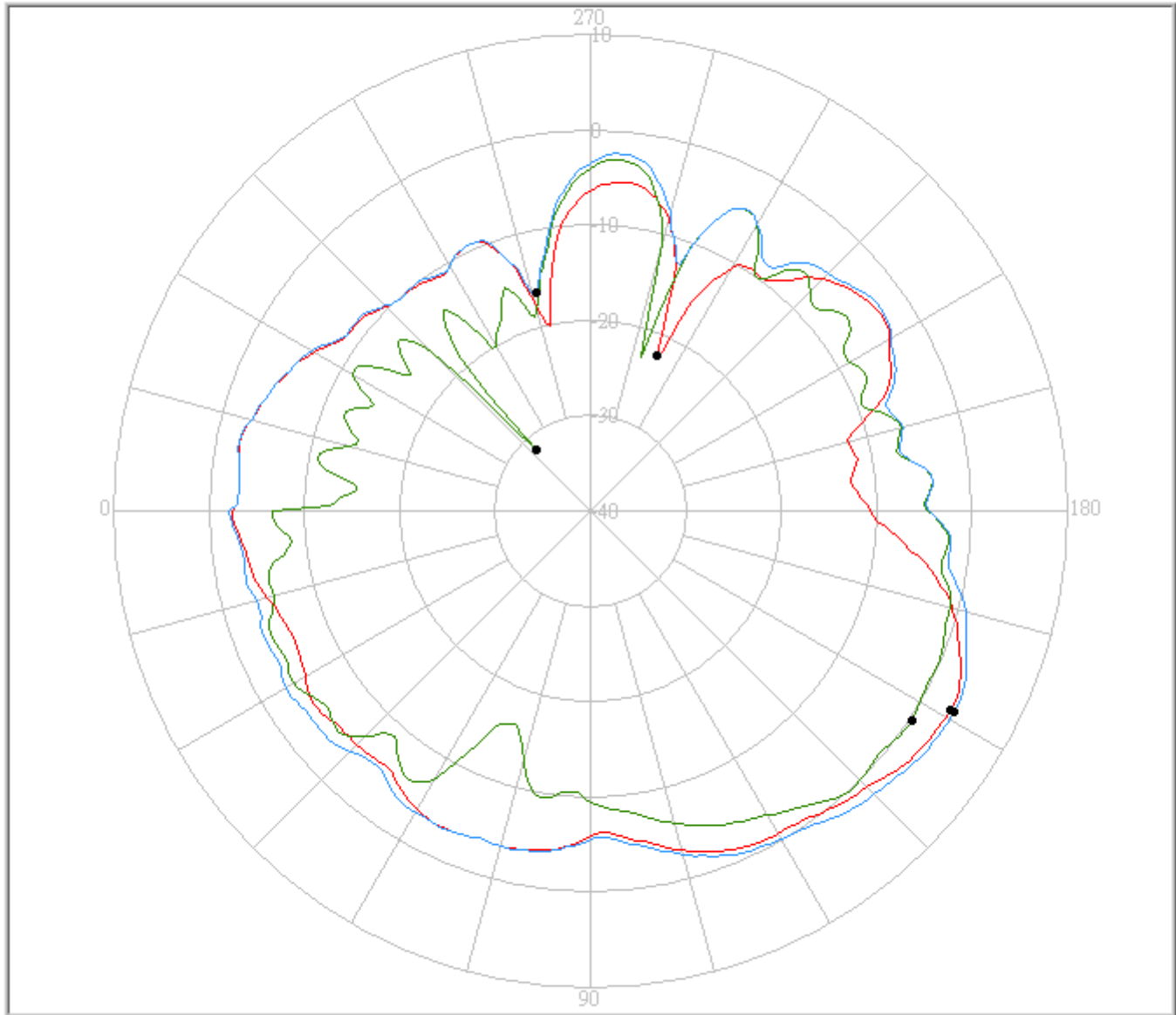
k. 5.85GHz



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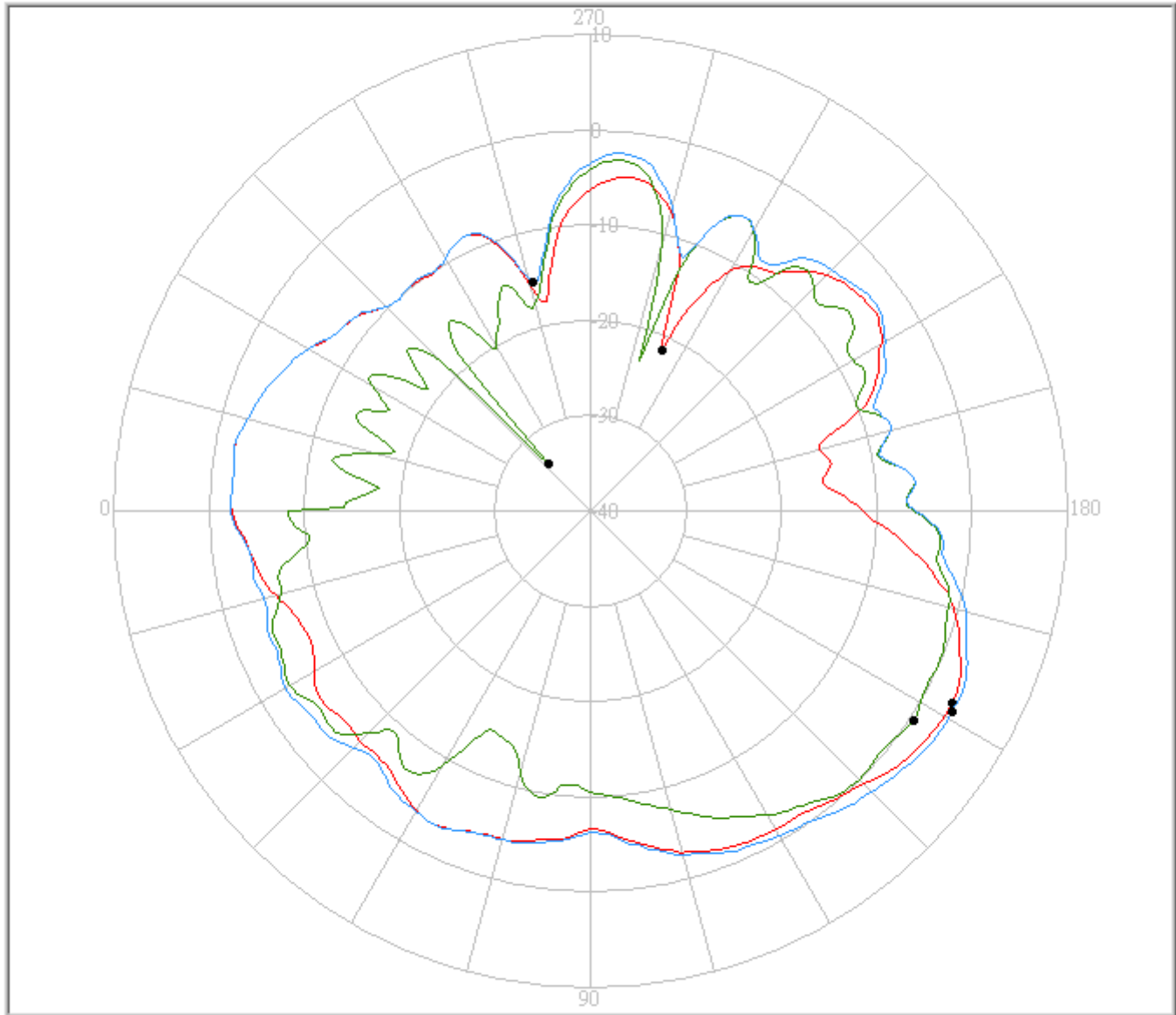
Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	KR2W	Right	5850.00	3.18 / 151.00	-22.30 / 247.00	-3.72	Ver.	2005/8/10
2	KR2W	Right	5850.00	0.20 / 147.00	-31.39 / 312.00	-5.57	Hor.	2005/8/10
3	KR2W	Right	5850.00	3.59 / 151.00	-16.44 / 284.00	-2.74	V+H	2005/8/10

1. 5.875GHz



FAVORTRON Co. Ltd Antenna Pattern Measurement

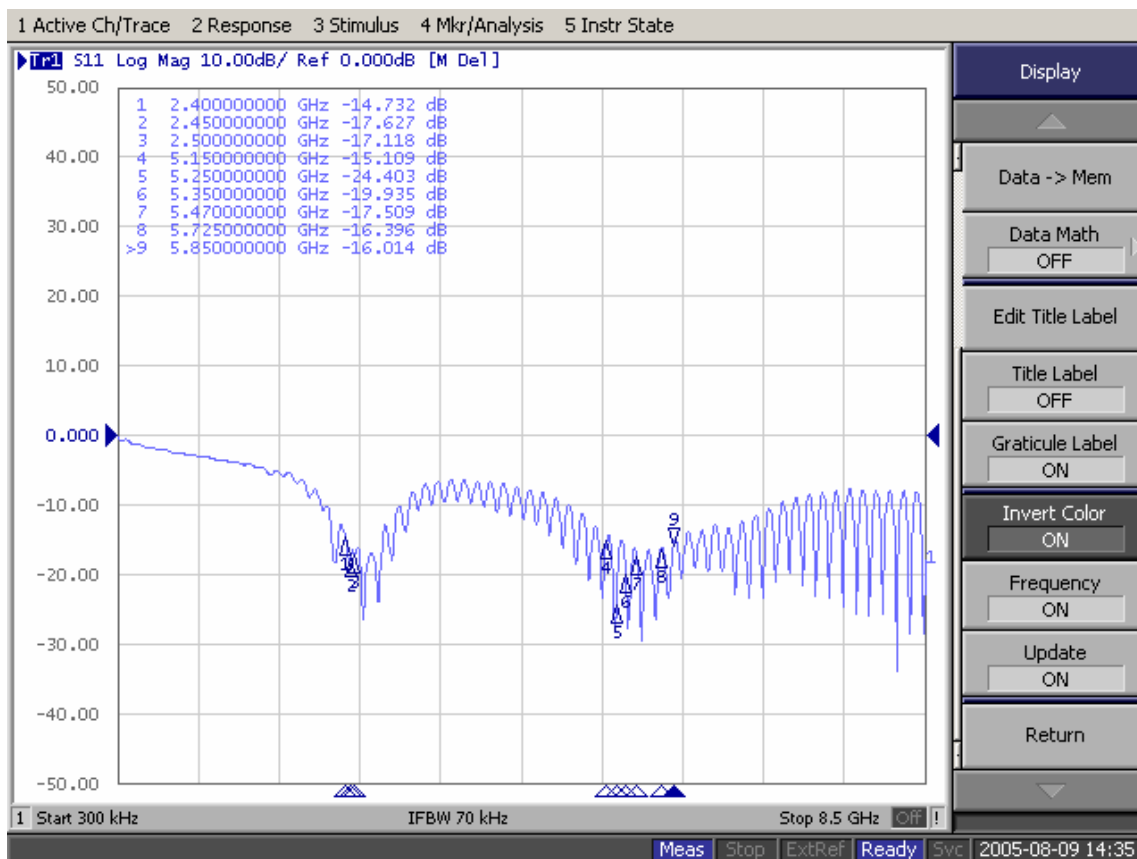
4F, No. 108-1, Min Chuan Rd., Hsin-Tien City, Taipei, Taiwan, R.O.C. Tel:886-2-2218-2189,
Fax:886-2-2218-5760



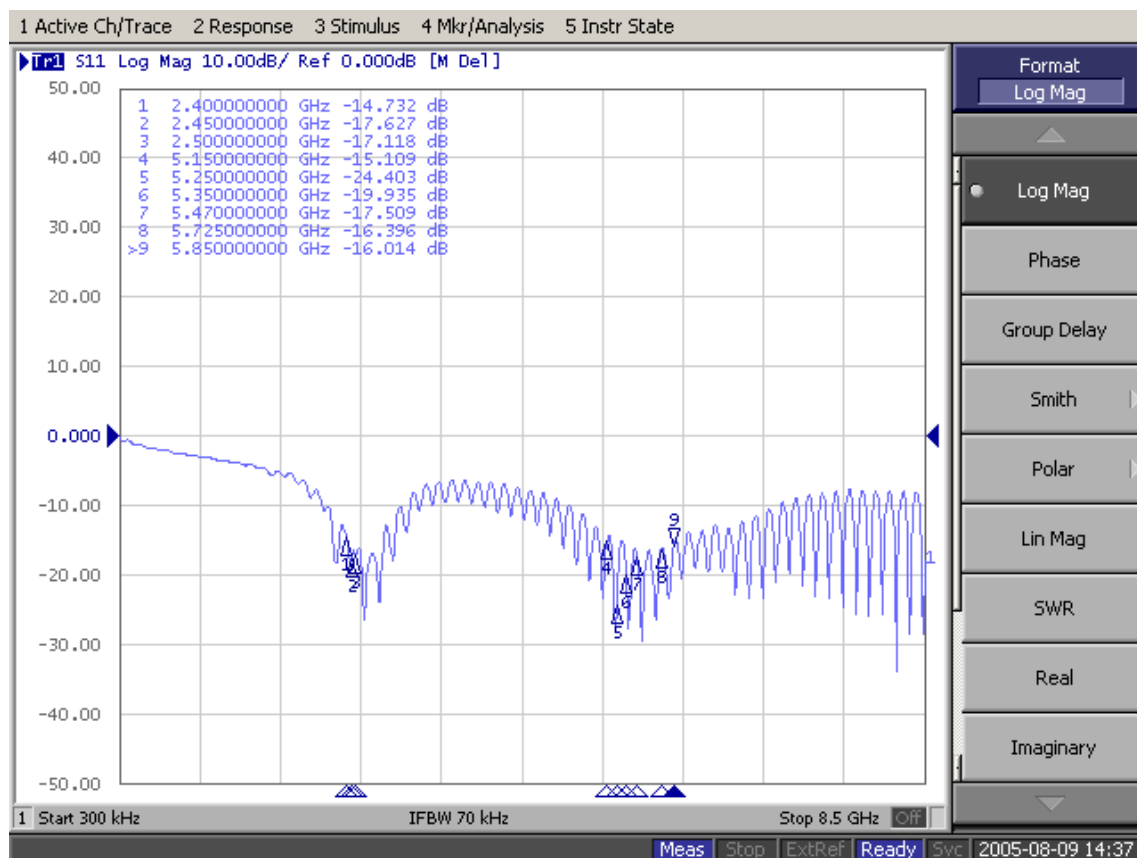
Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	KR2W	Right	5875.00	2.95 / 152.00	-21.59 / 246.00	-3.92	Ver.	2005/8/10
2	KR2W	Right	5875.00	0.30 / 147.00	-33.45 / 312.00	-5.86	Hor.	2005/8/10
3	KR2W	Right	5875.00	3.42 / 151.00	-15.28 / 284.00	-2.95	V+H	2005/8/10

5. WLAN Aux /Ant.(Left)

2.4~2.5GHZ & 5.15~5.875GHZ / Return Loss



2.4~2.5GHZ & 5.15~5.875GHZ / VSWR



6. Gain & Pattern – W/L / Aux Ant. (Left).

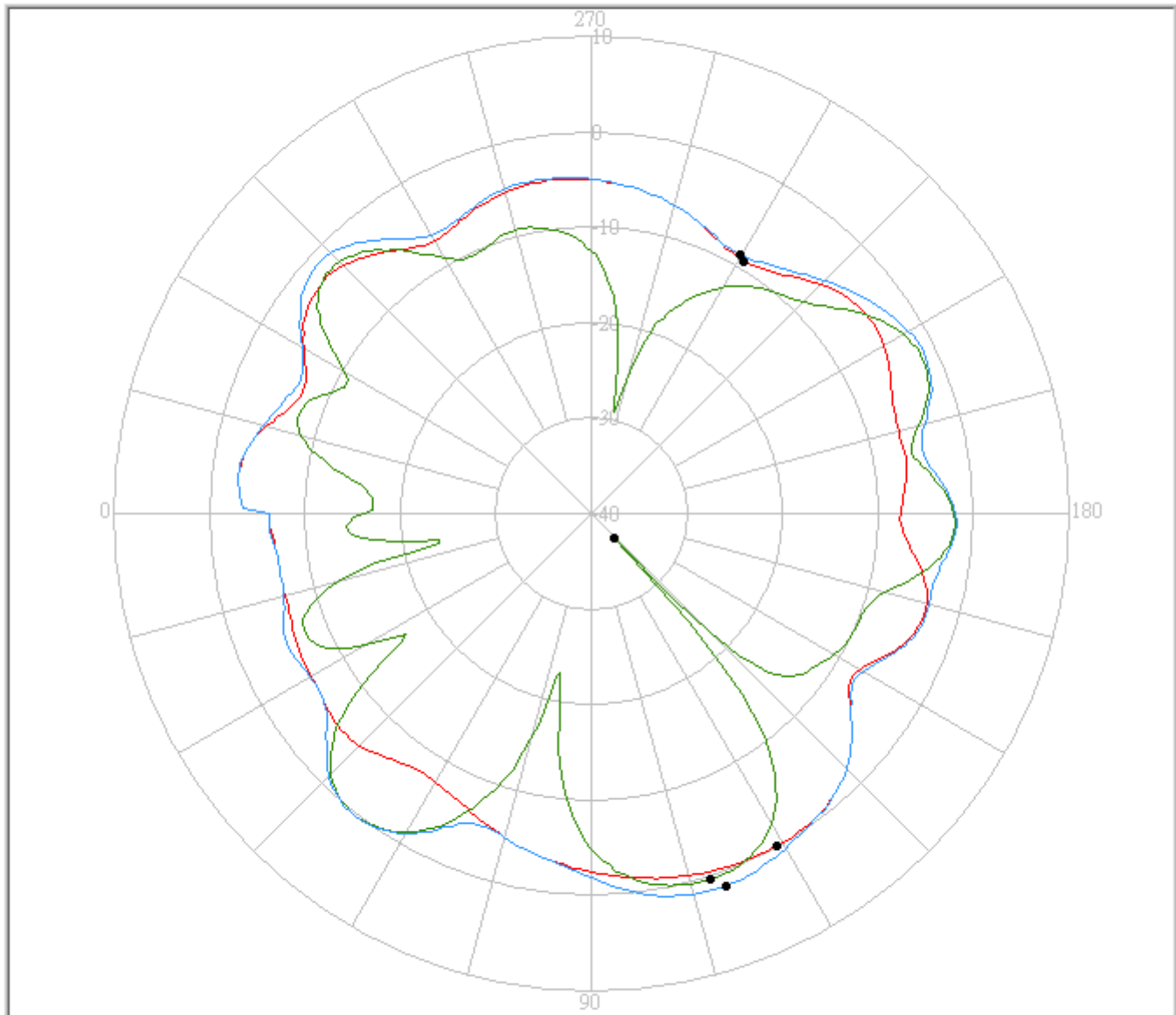
a. 2.4GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	■ KR2W	Left	2400.00	-0.13 / 119.00	-9.16 / 239.00	-4.56	Ver.	2005/8/10
2	■ KR2W	Left	2400.00	0.28 / 108.00	-36.58 / 133.00	-5.62	Hor.	2005/8/10
3	■ KR2W	Left	2400.00	1.45 / 110.00	-8.75 / 240.00	-3.14	V+H	2005/8/10

b. 2.45GHz



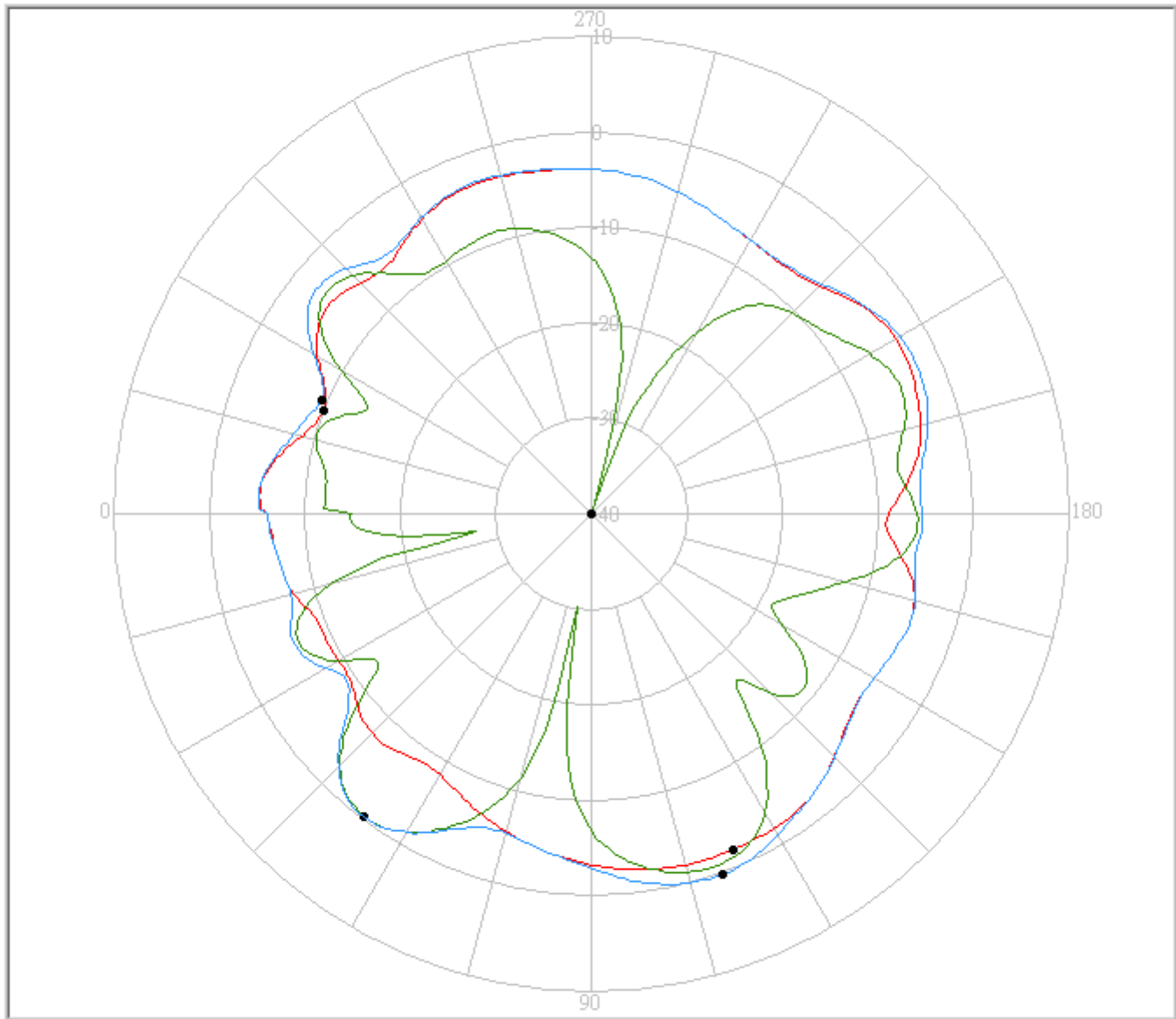
eService for Customer Satisfaction




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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	 KR2W	Left	2450.00	-1.85 / 113.00	-9.93 / 339.00	-5.10	Ver.	2005/8/10
2	 KR2W	Left	2450.00	-0.39 / 53.00	-47.83 / 253.00	-7.08	Hor.	2005/8/10
3	 KR2W	Left	2450.00	0.18 / 110.00	-9.37 / 337.00	-4.00	V+H	2005/8/10

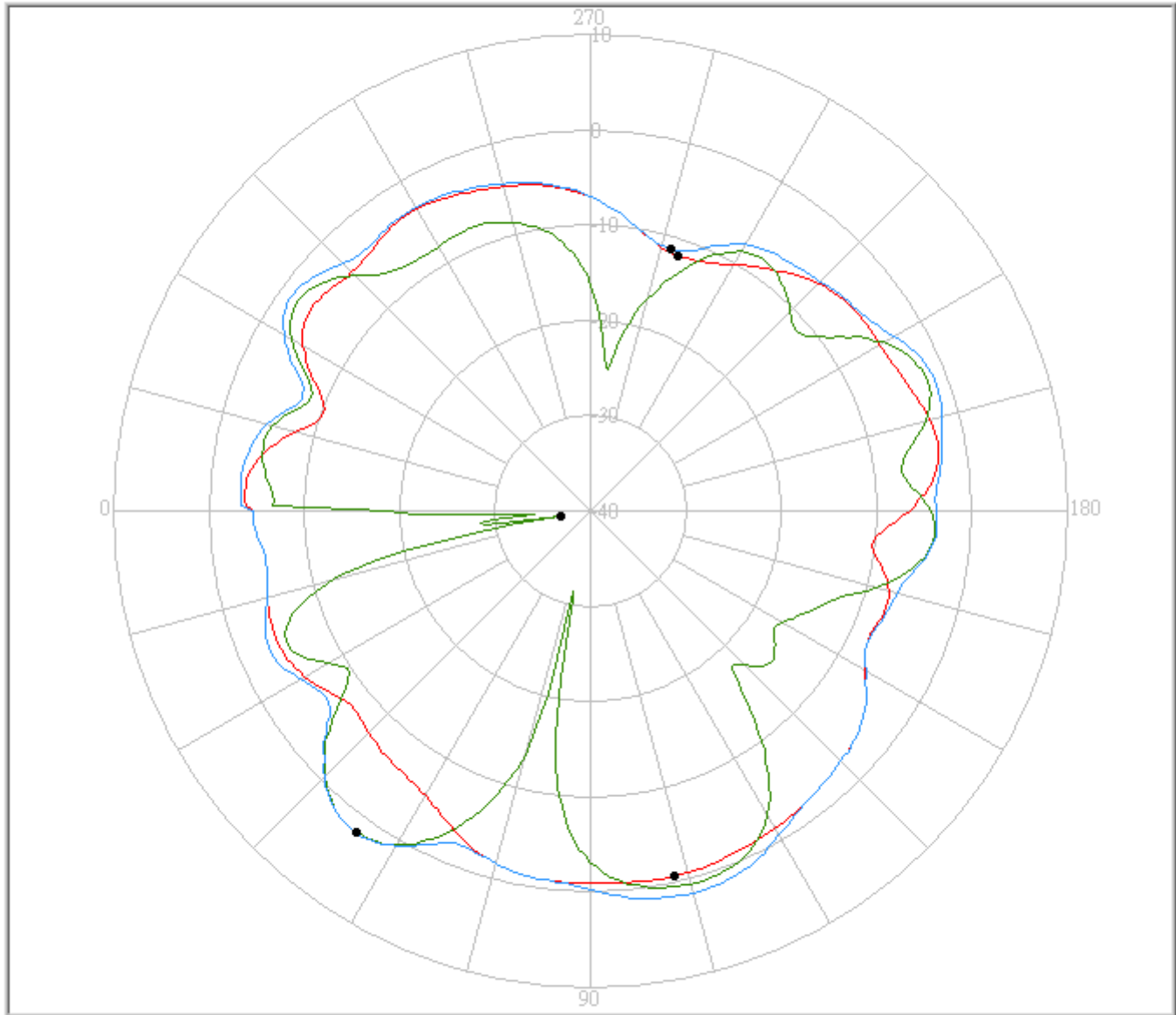
c. 2.5GHz






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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	 KR2W	Left	2500.00	-0.68 / 103.00	-11.77 / 251.00	-4.45	Ver.	2005/8/10
2	 KR2W	Left	2500.00	1.68 / 54.00	-36.93 / 9.00	-5.16	Hor.	2005/8/10
3	 KR2W	Left	2500.00	1.74 / 54.00	-11.32 / 253.00	-2.89	V+H	2005/8/10

d. 5.15GHZ



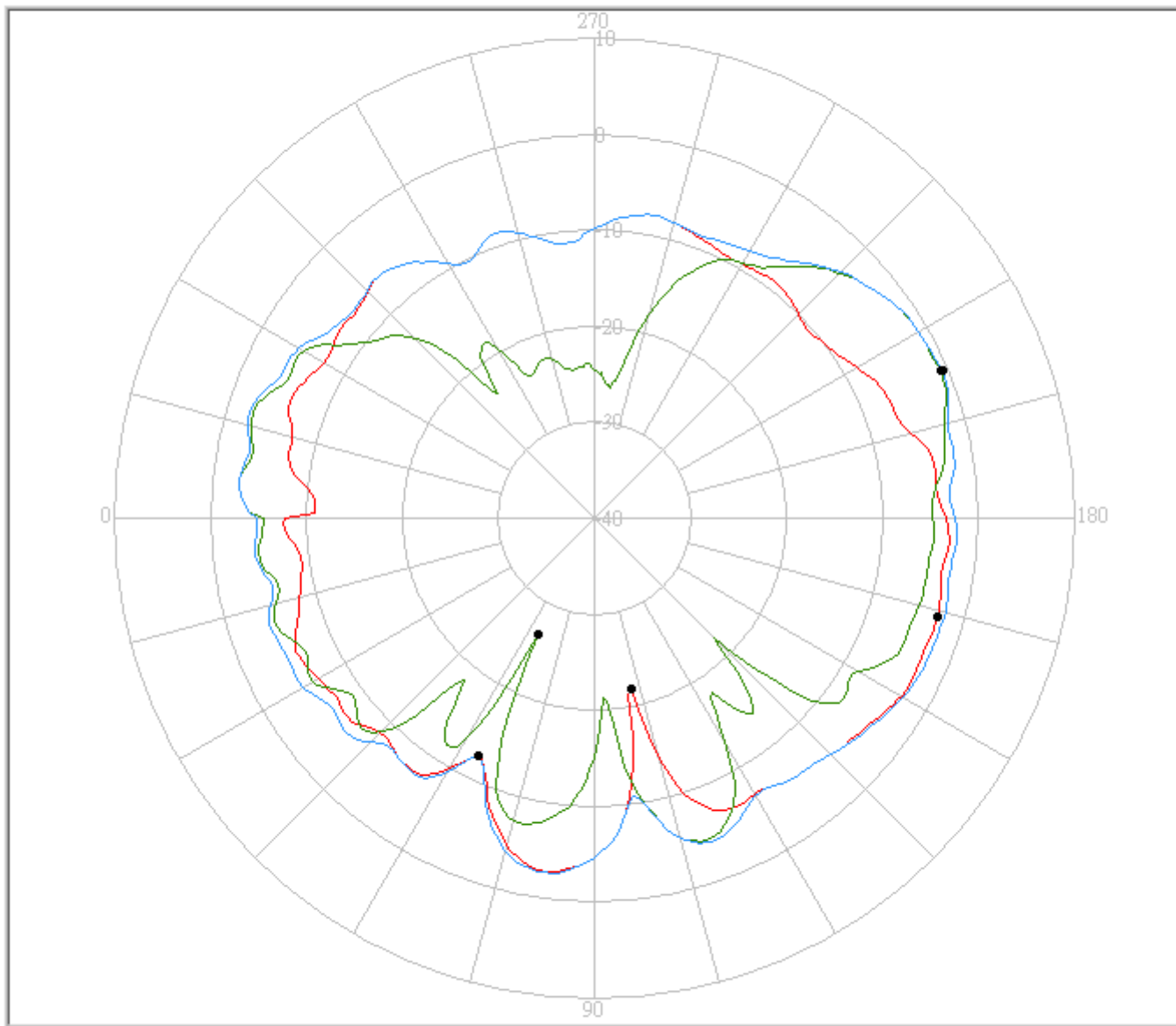
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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	KR2W	Left	5150.00	-2.79 / 164.00	-21.88 / 102.00	-6.66	Ver.	2005/8/10
2	KR2W	Left	5150.00	-0.82 / 203.00	-26.46 / 64.00	-6.68	Hor.	2005/8/10
3	KR2W	Left	5150.00	-0.70 / 203.00	-12.49 / 64.00	-4.70	V+H	2005/8/10

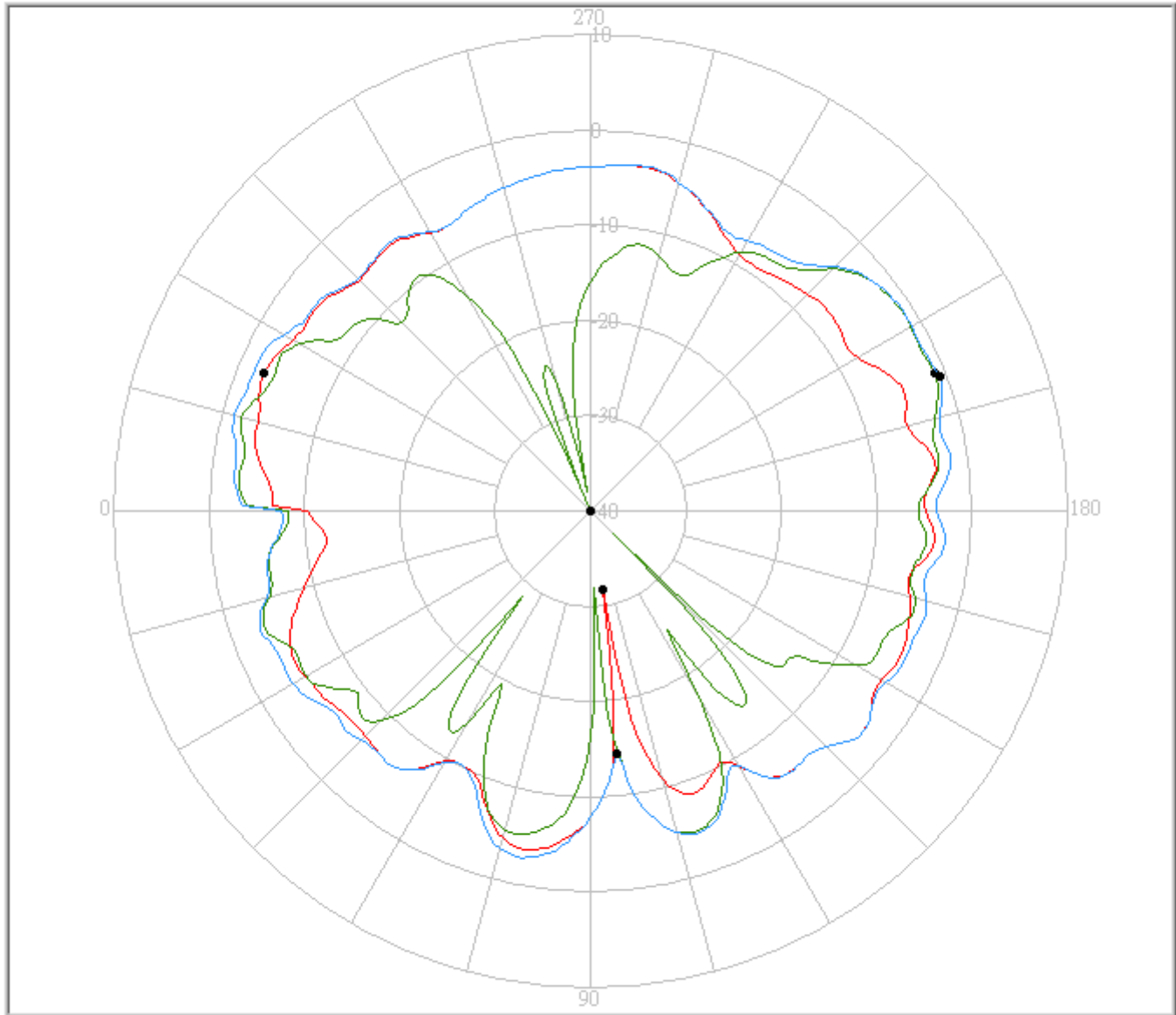
e. 5.25GHz






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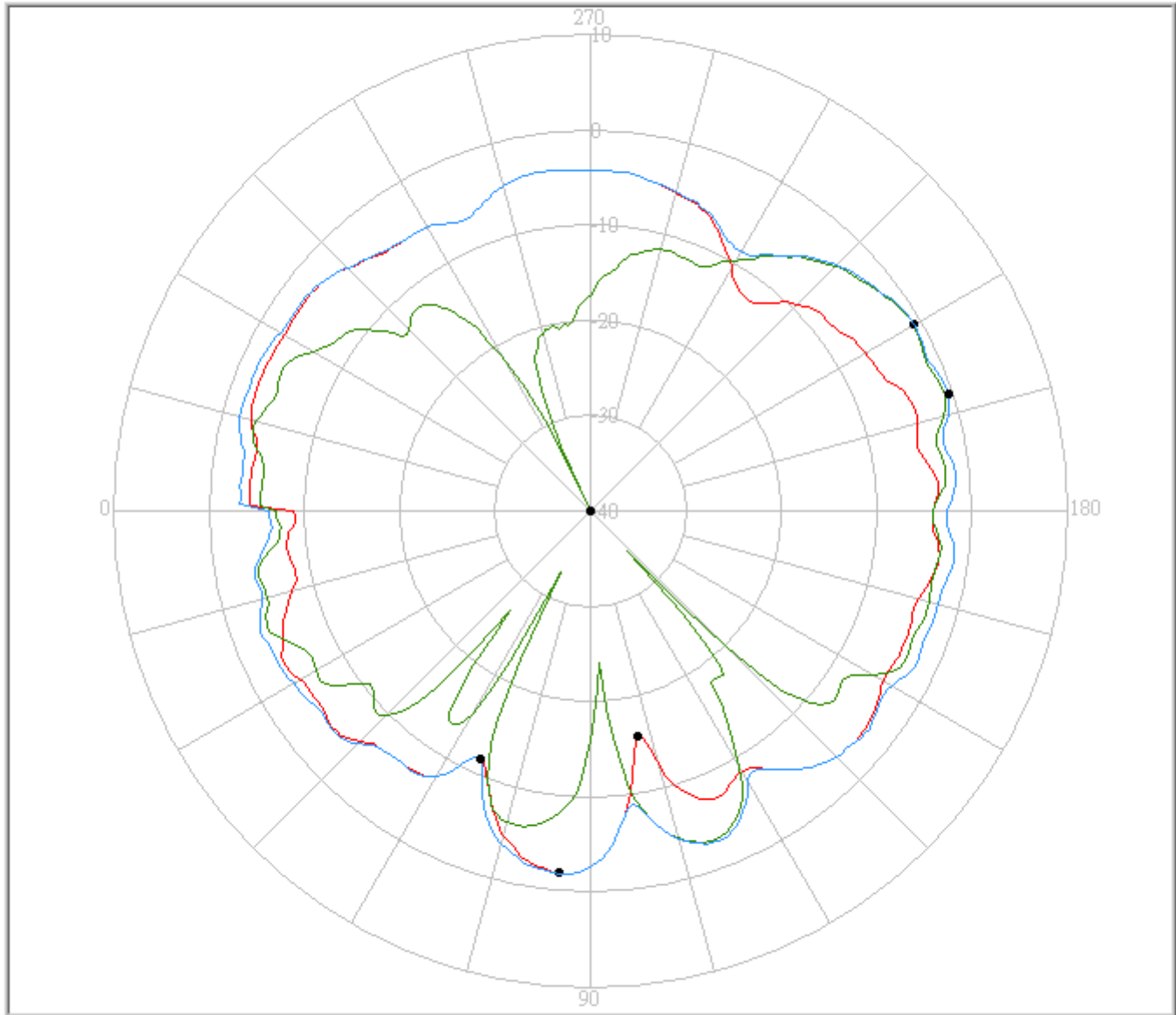
Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	 KR2W	Left	5250.00	-2.88 / 337.00	-31.69 / 99.00	-5.75	Ver.	2005/8/10
2	 KR2W	Left	5250.00	-1.17 / 202.00	-44.55 / 293.00	-6.52	Hor.	2005/8/10
3	 KR2W	Left	5250.00	-0.81 / 201.00	-14.47 / 96.00	-4.18	V+H	2005/8/10

f. 5.35GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	KR2W	Left	5350.00	-1.88 / 85.00	-15.81 / 102.00	-5.18	Ver.	2005/8/10
2	KR2W	Left	5350.00	-0.91 / 210.00	-39.94 / 295.00	-6.27	Hor.	2005/8/10
3	KR2W	Left	5350.00	-0.56 / 198.00	-11.58 / 66.00	-3.72	V+H	2005/8/10

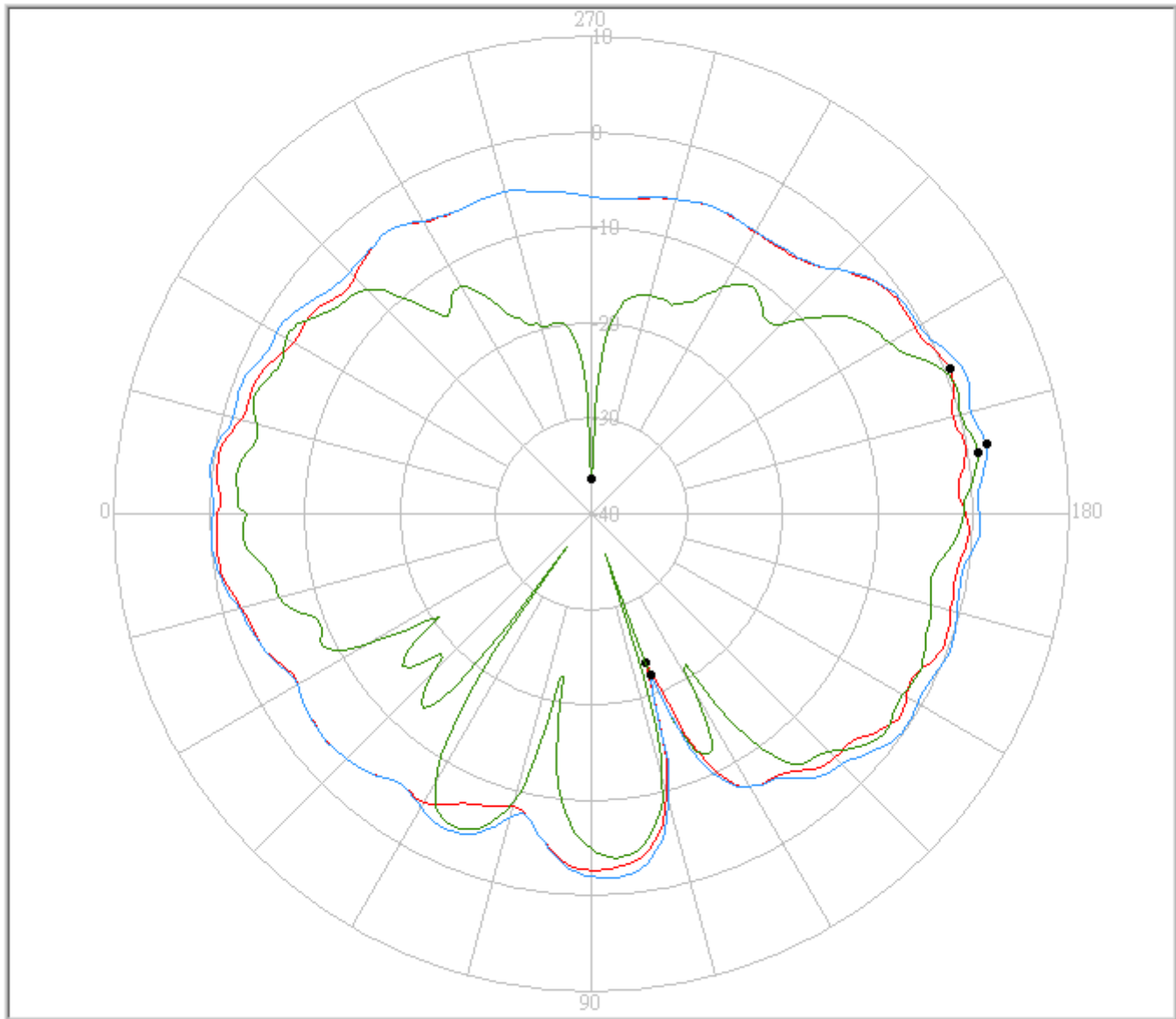
g. 5.47GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	KR2W	Left	5470.00	0.46 / 202.00	-23.35 / 110.00	-3.25	Ver.	2005/8/10
2	KR2W	Left	5470.00	0.98 / 189.00	-36.26 / 270.00	-5.50	Hor.	2005/8/10
3	KR2W	Left	5470.00	1.95 / 190.00	-22.03 / 110.00	-2.42	V+H	2005/8/10

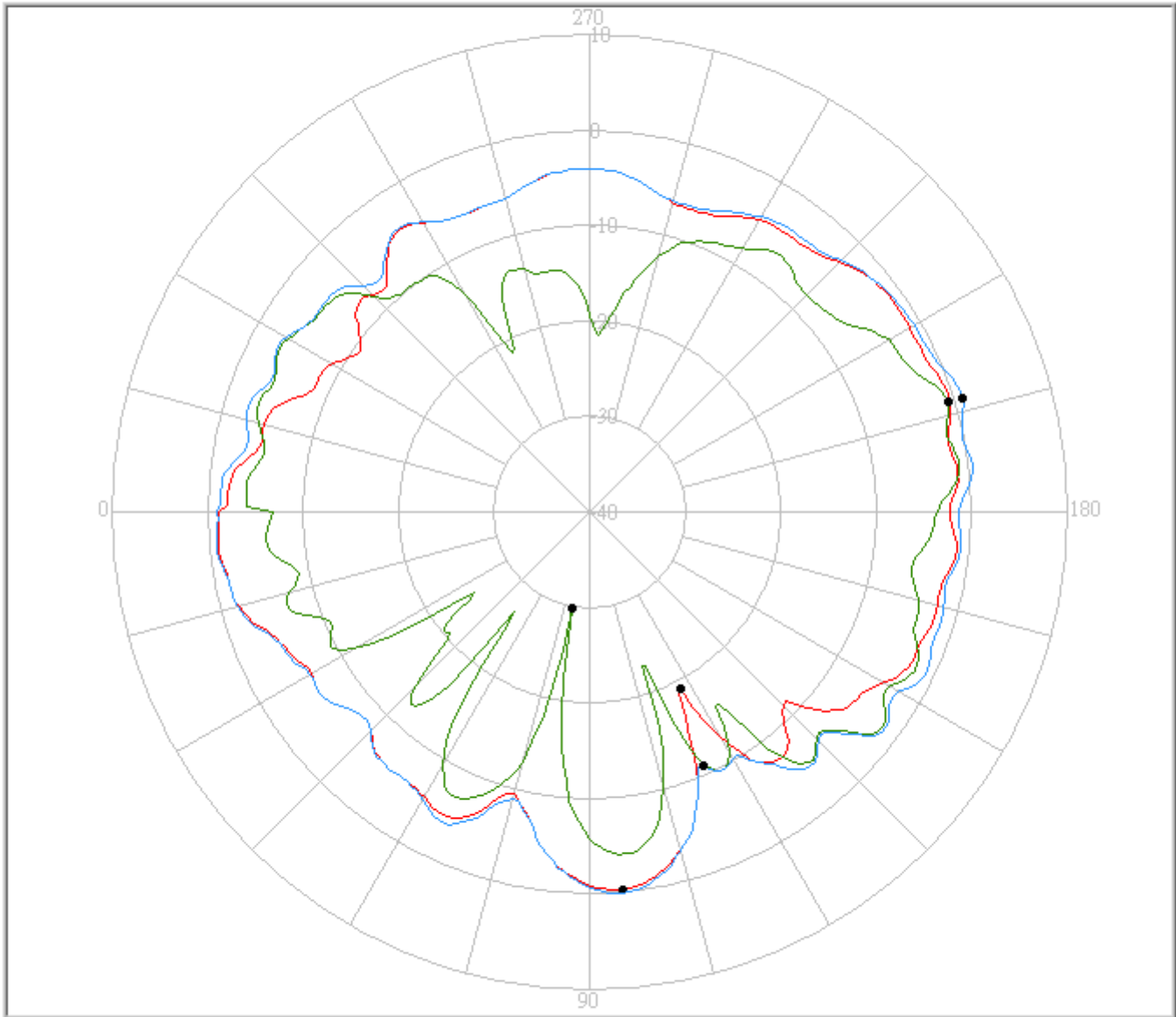
h. 5.597GHz



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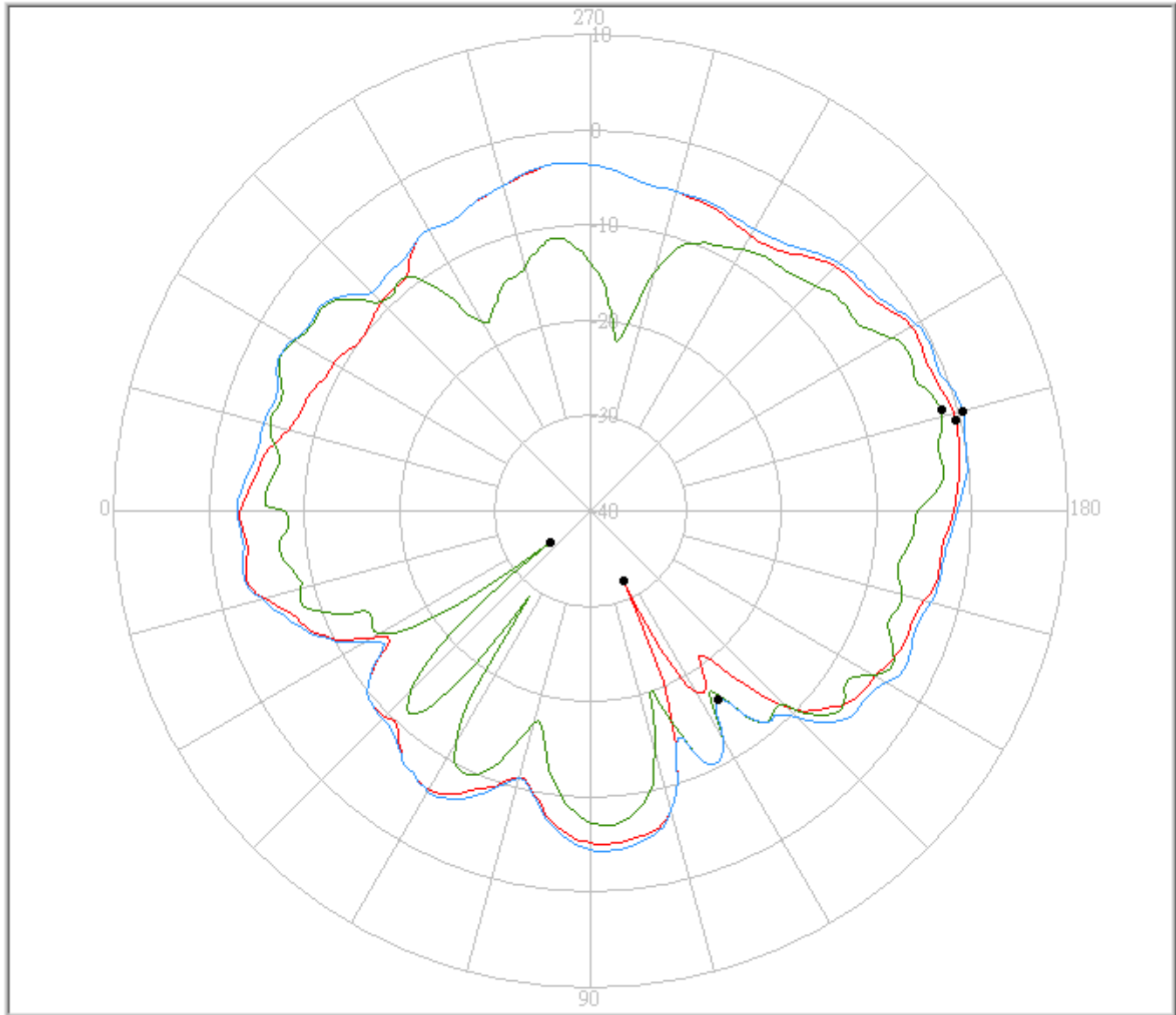
Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	KR2W	Left	5597.50	-0.34 / 95.00	-19.17 / 117.00	-4.03	Ver.	2005/8/10
2	KR2W	Left	5597.50	-0.82 / 197.00	-29.73 / 80.00	-6.44	Hor.	2005/8/10
3	KR2W	Left	5597.50	0.83 / 197.00	-10.92 / 114.00	-3.18	V+H	2005/8/10




i. 5.725GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	 KR2W	Left	5725.00	-0.54 / 194.00	-31.91 / 115.00	-5.32	Ver.	2005/8/10
2	 KR2W	Left	5725.00	-1.71 / 196.00	-34.76 / 38.00	-7.71	Hor.	2005/8/10
3	 KR2W	Left	5725.00	0.41 / 195.00	-16.24 / 124.00	-4.51	V+H	2005/8/10

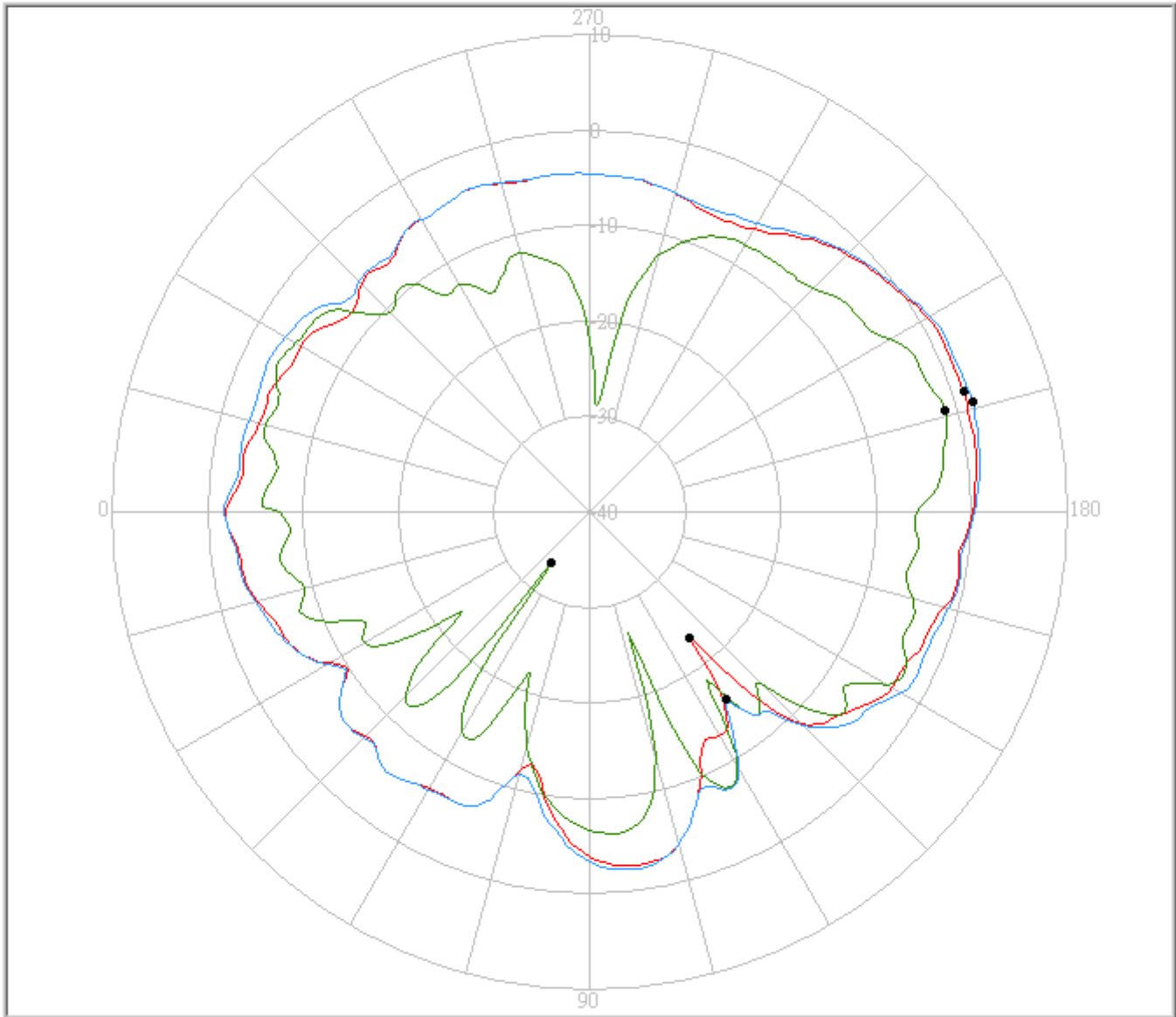
j. 5.785GHz






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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	 KR2W	Left	5785.00	1.12 / 198.00	-23.17 / 128.00	-3.67	Ver.	2005/8/10
2	 KR2W	Left	5785.00	-1.25 / 196.00	-33.27 / 53.00	-7.39	Hor.	2005/8/10
3	 KR2W	Left	5785.00	1.72 / 196.00	-15.74 / 126.00	-3.21	V+H	2005/8/10

k. 5.85GHz



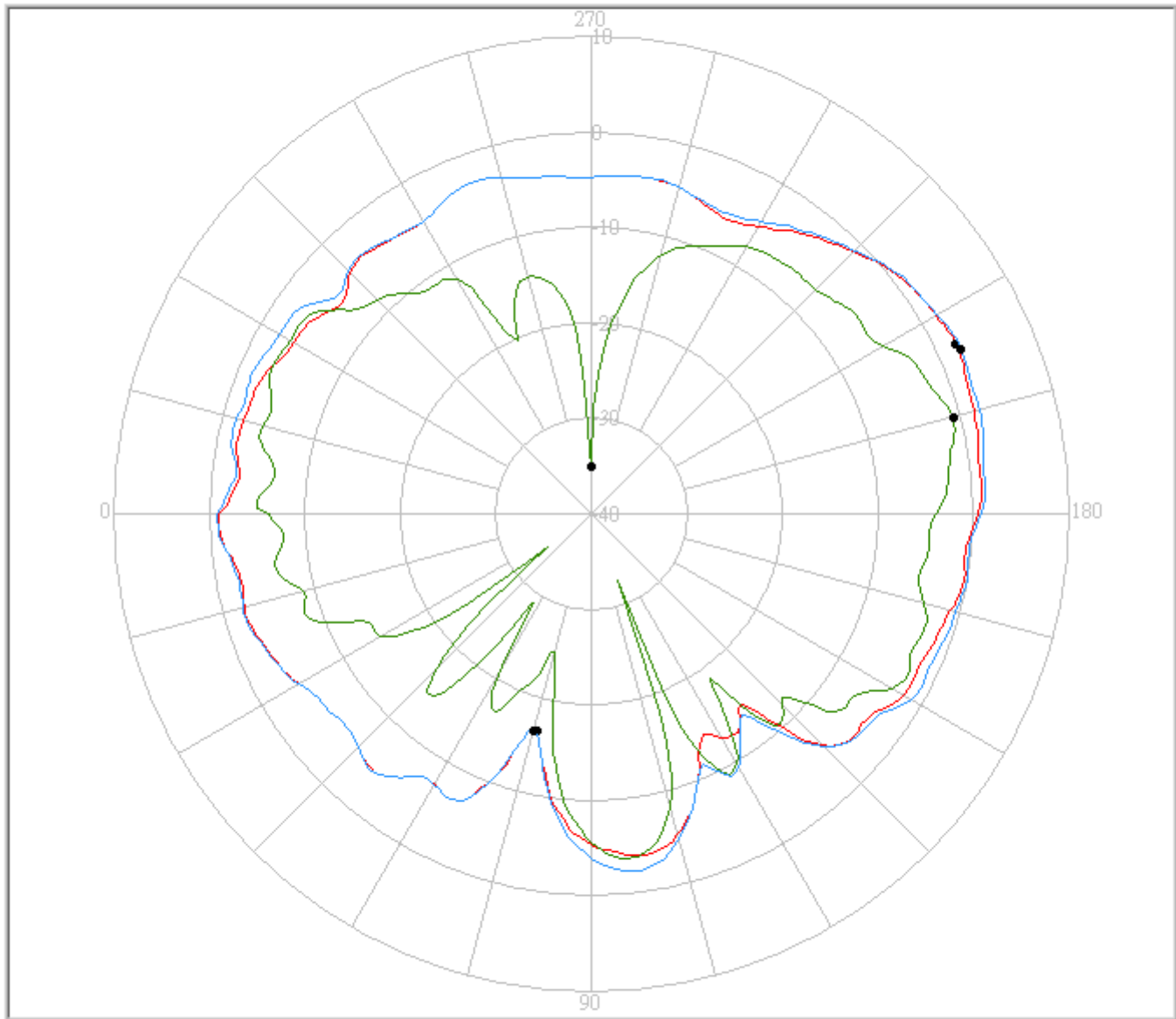
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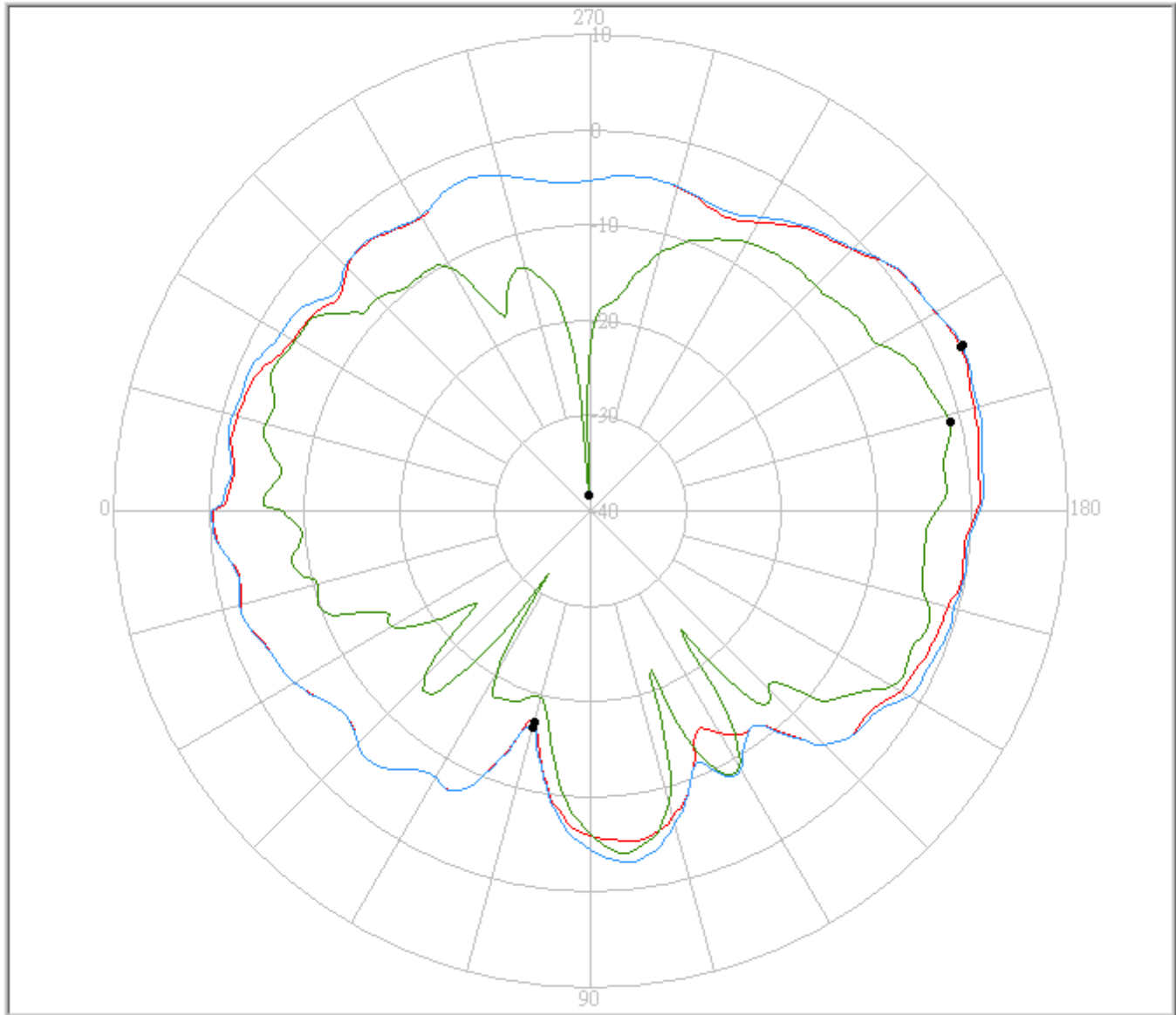
Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	KR2W	Left	5850.00	2.13 / 205.00	-16.63 / 76.00	-2.96	Ver.	2005/8/10
2	KR2W	Left	5850.00	-0.84 / 195.00	-35.13 / 270.00	-6.96	Hor.	2005/8/10
3	KR2W	Left	5850.00	2.36 / 204.00	-16.58 / 75.00	-2.54	V+H	2005/8/10




1. 5.875GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	 KR2W	Left	5875.00	2.51 / 204.00	-17.05 / 75.00	-2.85	Ver.	2005/8/10
2	 KR2W	Left	5875.00	-1.20 / 194.00	-38.26 / 274.00	-7.17	Hor.	2005/8/10
3	 KR2W	Left	5875.00	2.70 / 204.00	-16.50 / 75.00	-2.47	V+H	2005/8/10