

DATE : 2006/02/06

CUSTOMER : UNIWILL CORP.

APPROVAL SHEET

MODEL	X20
DESCRIPTION	PIFA For Wireless LAN Antenna 2.4~2.5GHZ /4.9~5.875GHZ
SUPPLIER P/N	-----
CUSTOMER P/N	-----
FILE P/N	

FAVORTRON			CUSTOMER	
Manager	Supervisor	Engineer		
Jesse	Jesse	Nick		



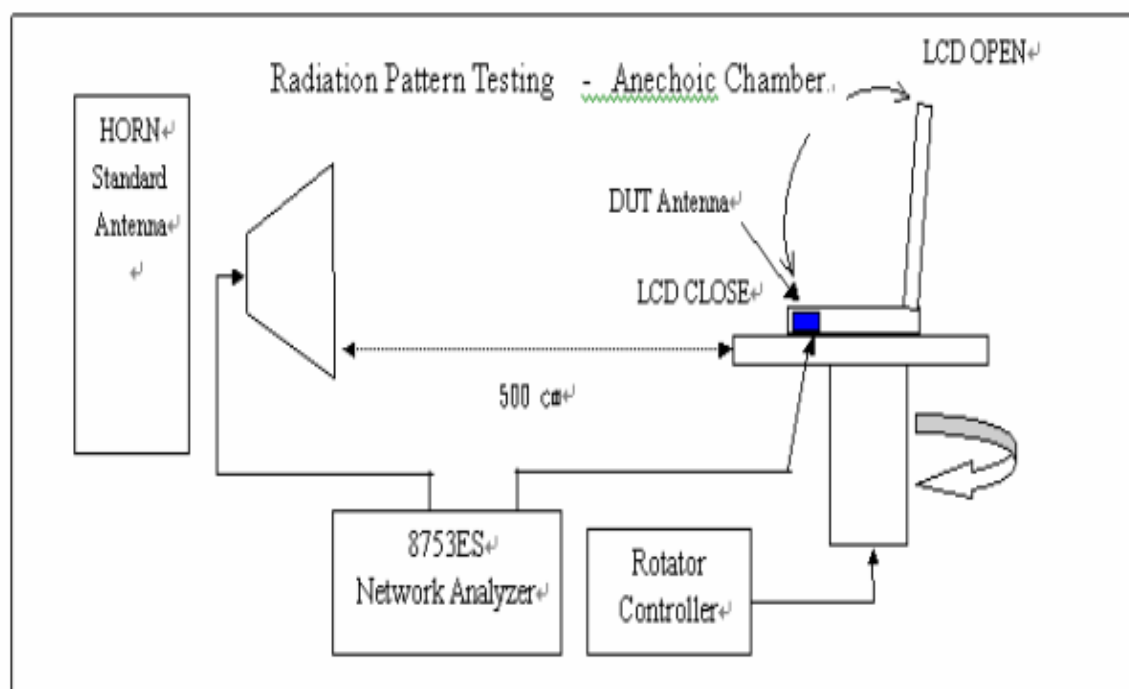
惠貿電子股份有限公司
FAVORTRON CO., LTD

台北縣新店市民權路 108-1 號 4F
4F, No. 108-1, Minchziuan Rd., SHzindian City,
Taipei HZsien 231, Taiwan. R.O.C

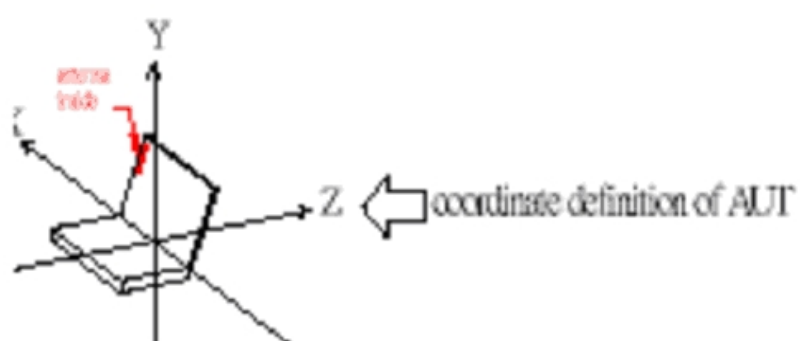
TEL: (02) 2218-2189
FAX: (02) 2218-5420
[URL:www.fvc.com.tw](http://www.fvc.com.tw)

1.

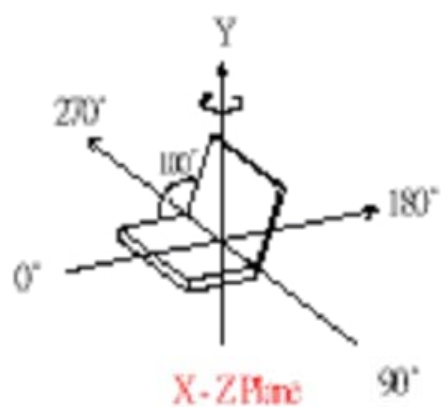
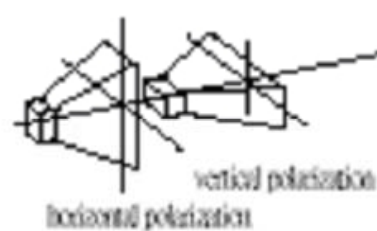
天線測試方法



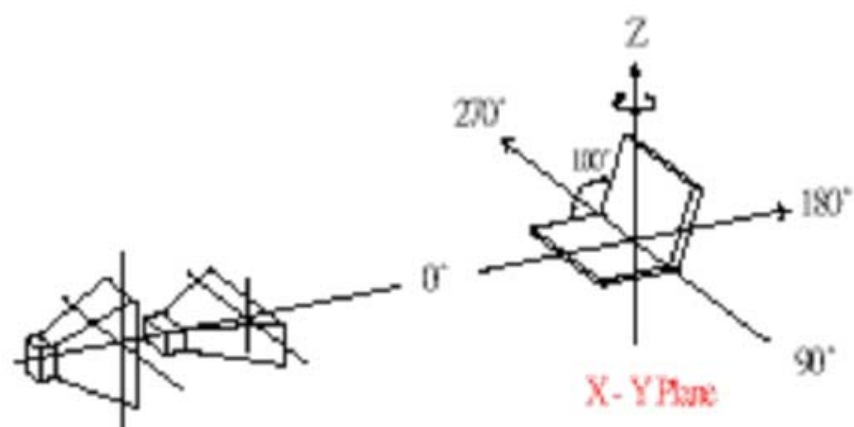
Coordinate Definition



ORN ANTENNA



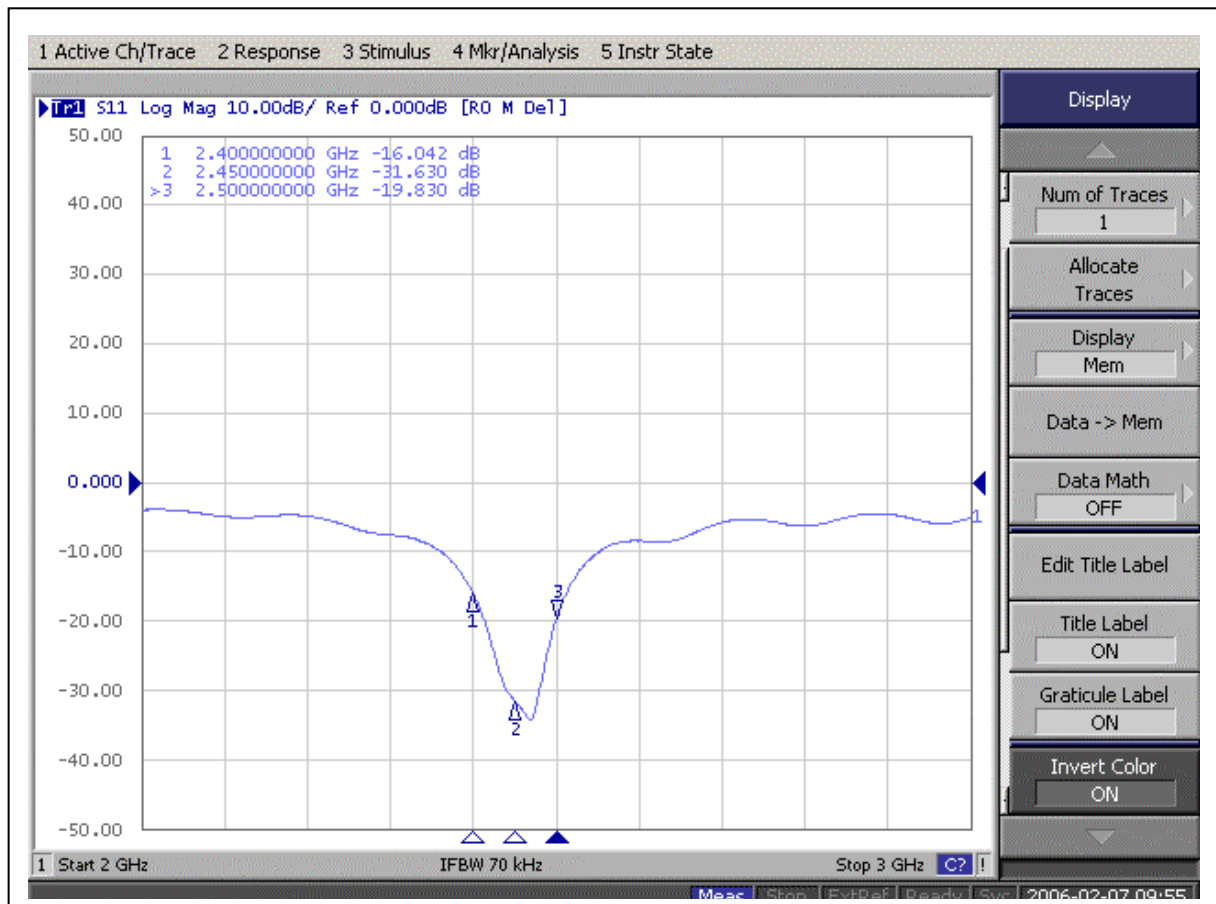
X-Z Plane



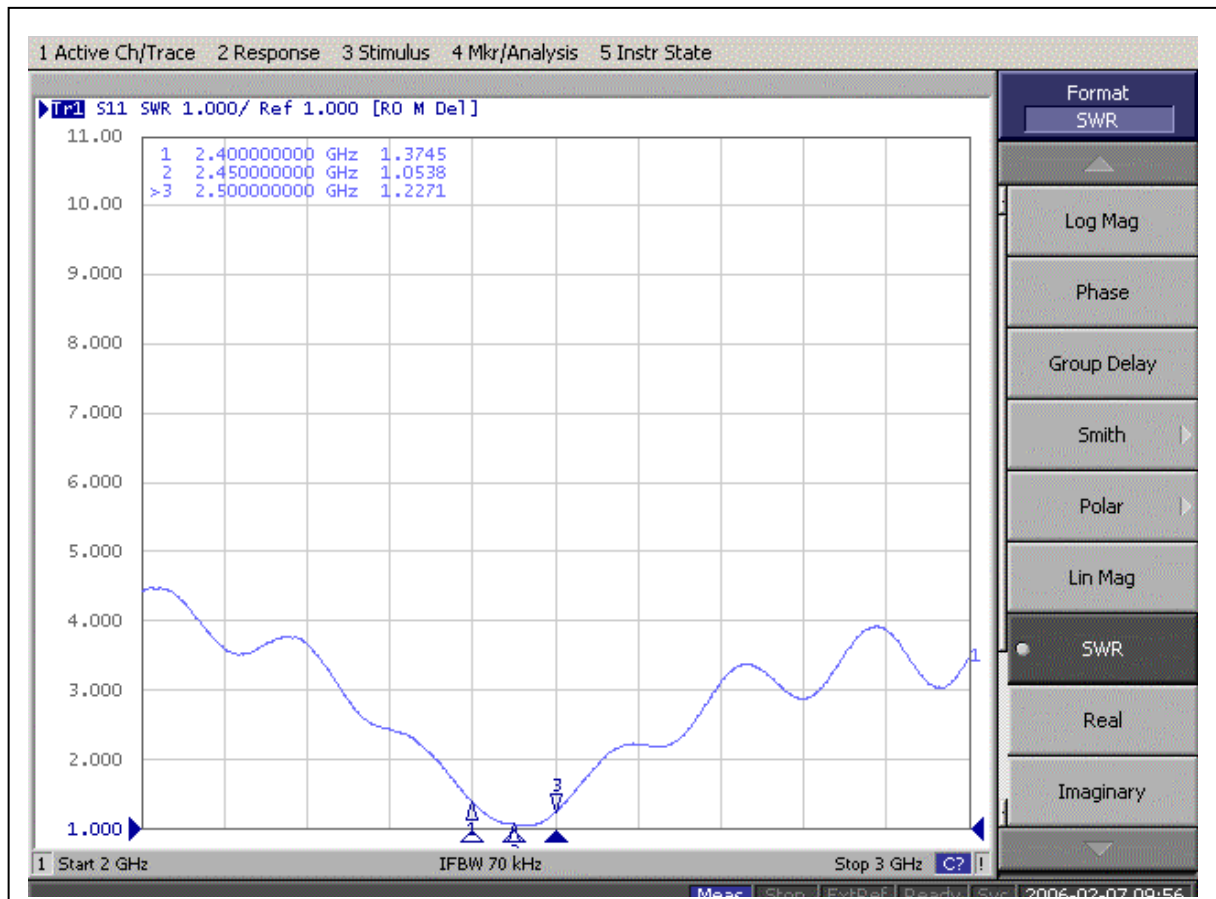
X-Y Plane

2. WLAN Ant./ (LEFT)

2.4~2.5GHZ / Return Loss

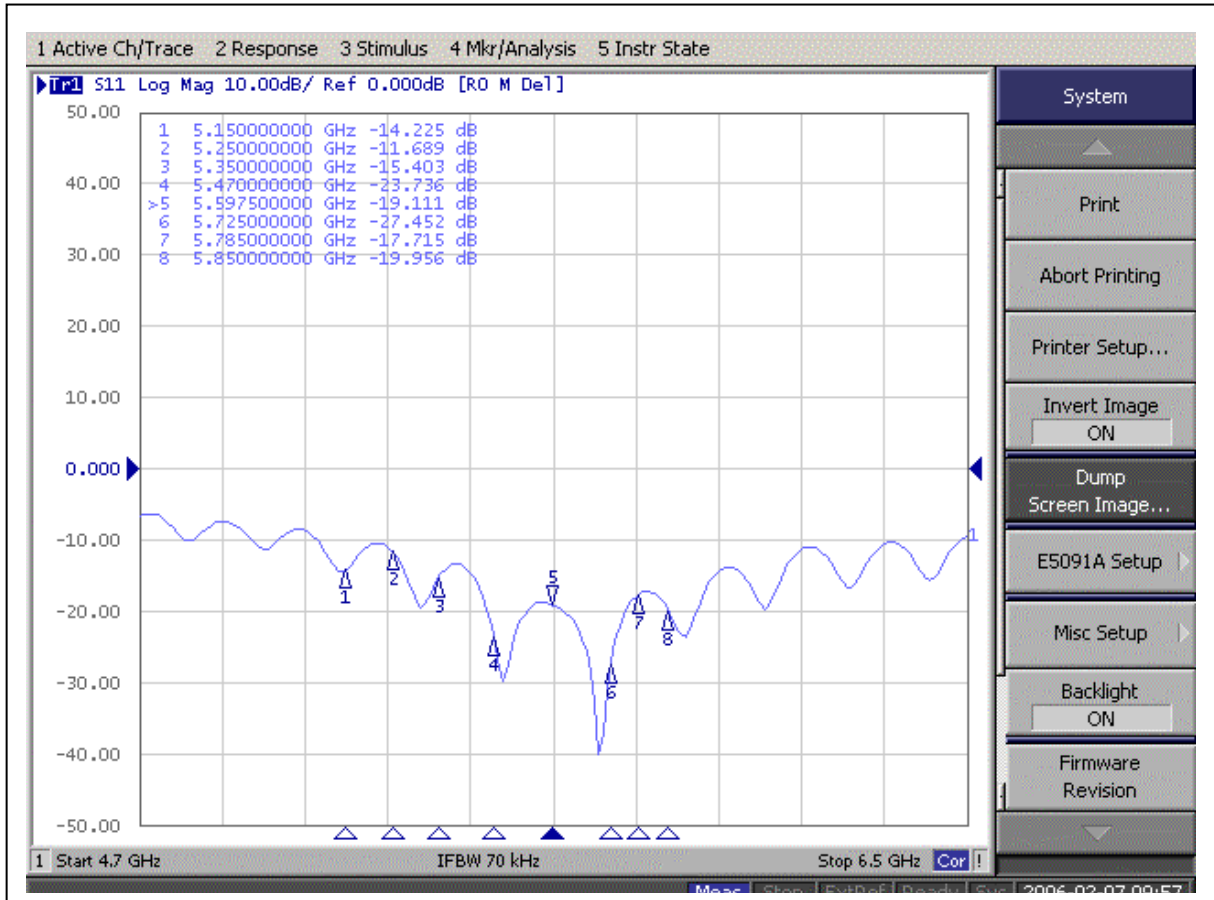


2.4~2.5GHZ / VSWR

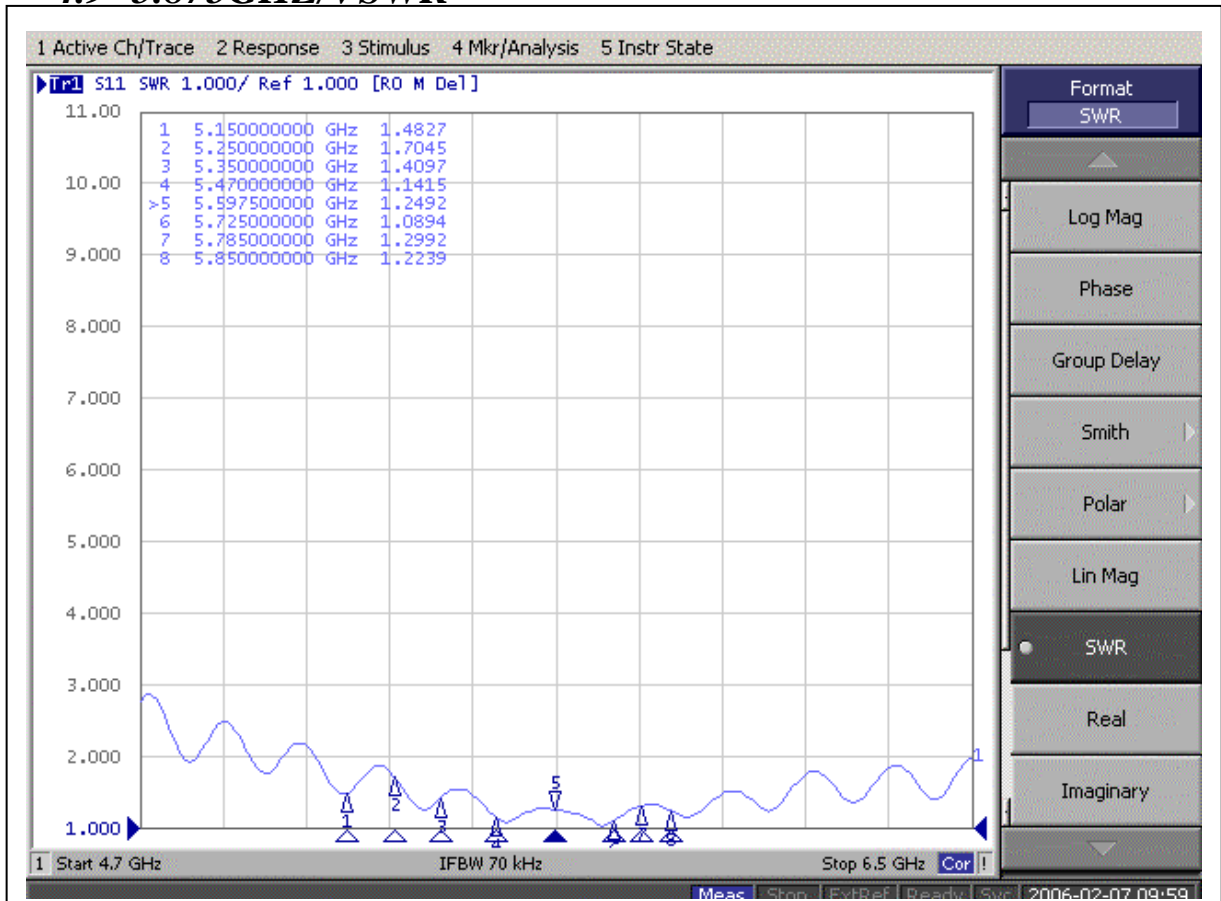


WLAN Ant./ (LEFT)

4.9~5.875GHZ/Return Loss

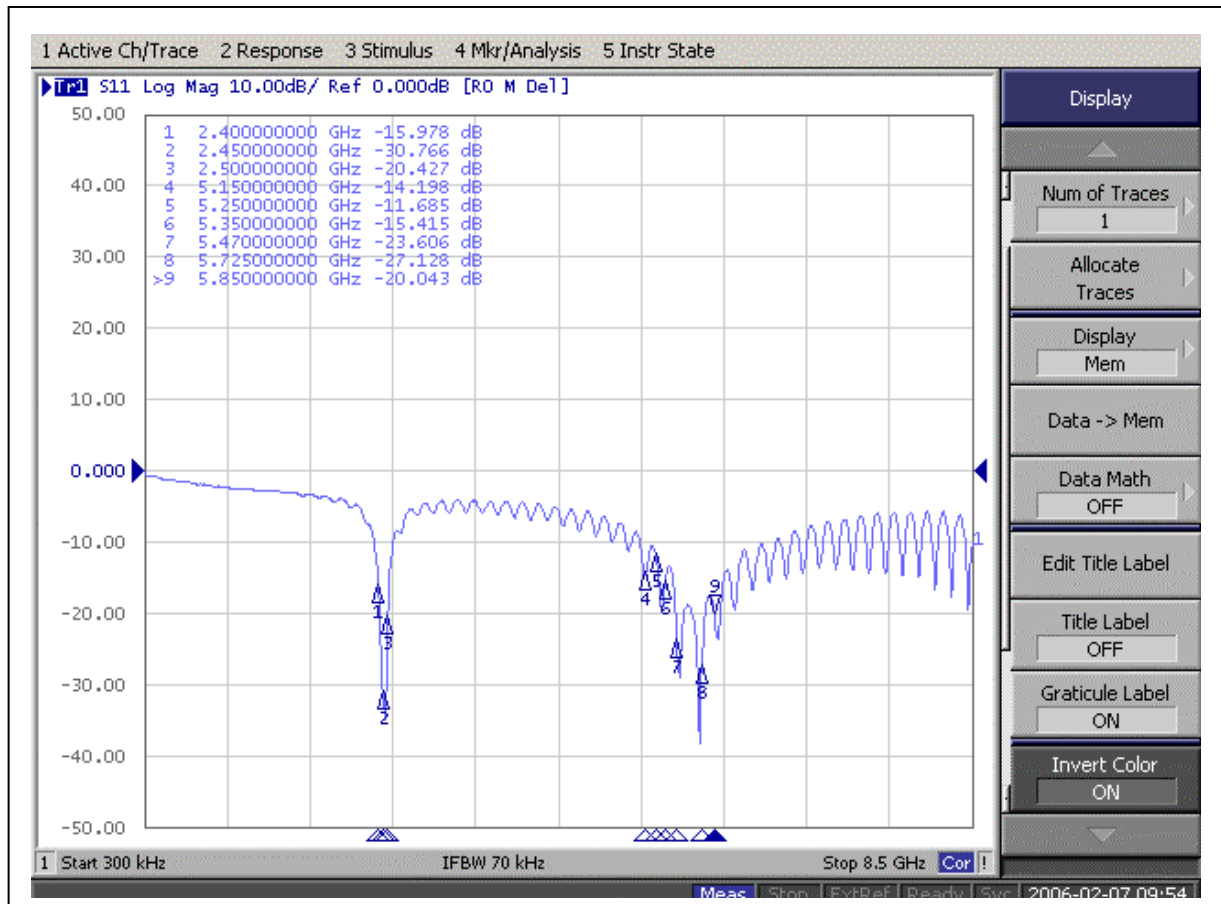


4.9~5.875GHZ/VSWR

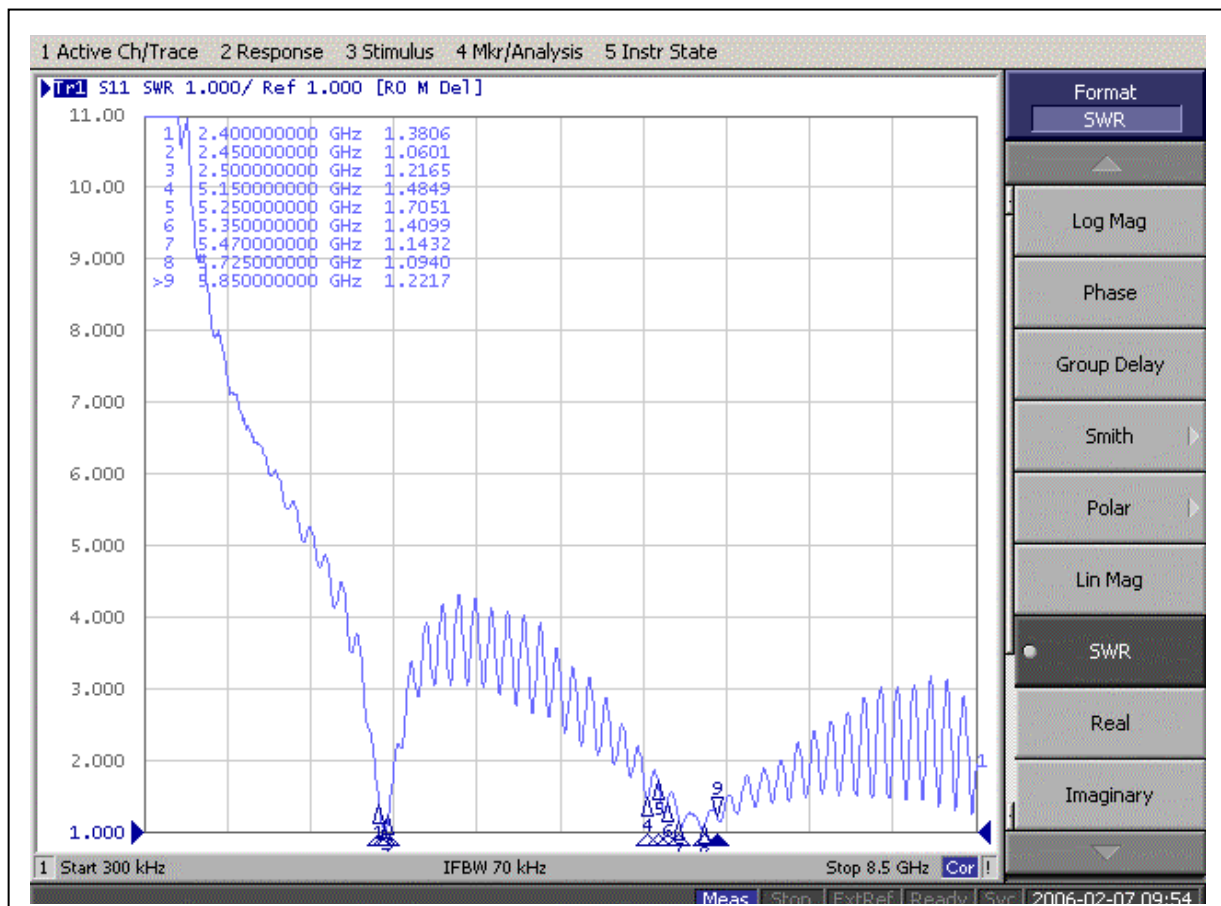


WLAN Ant./ (LEFT)

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



2.4~2.5GHZ & 5.15~5.875GHZ/VSWR



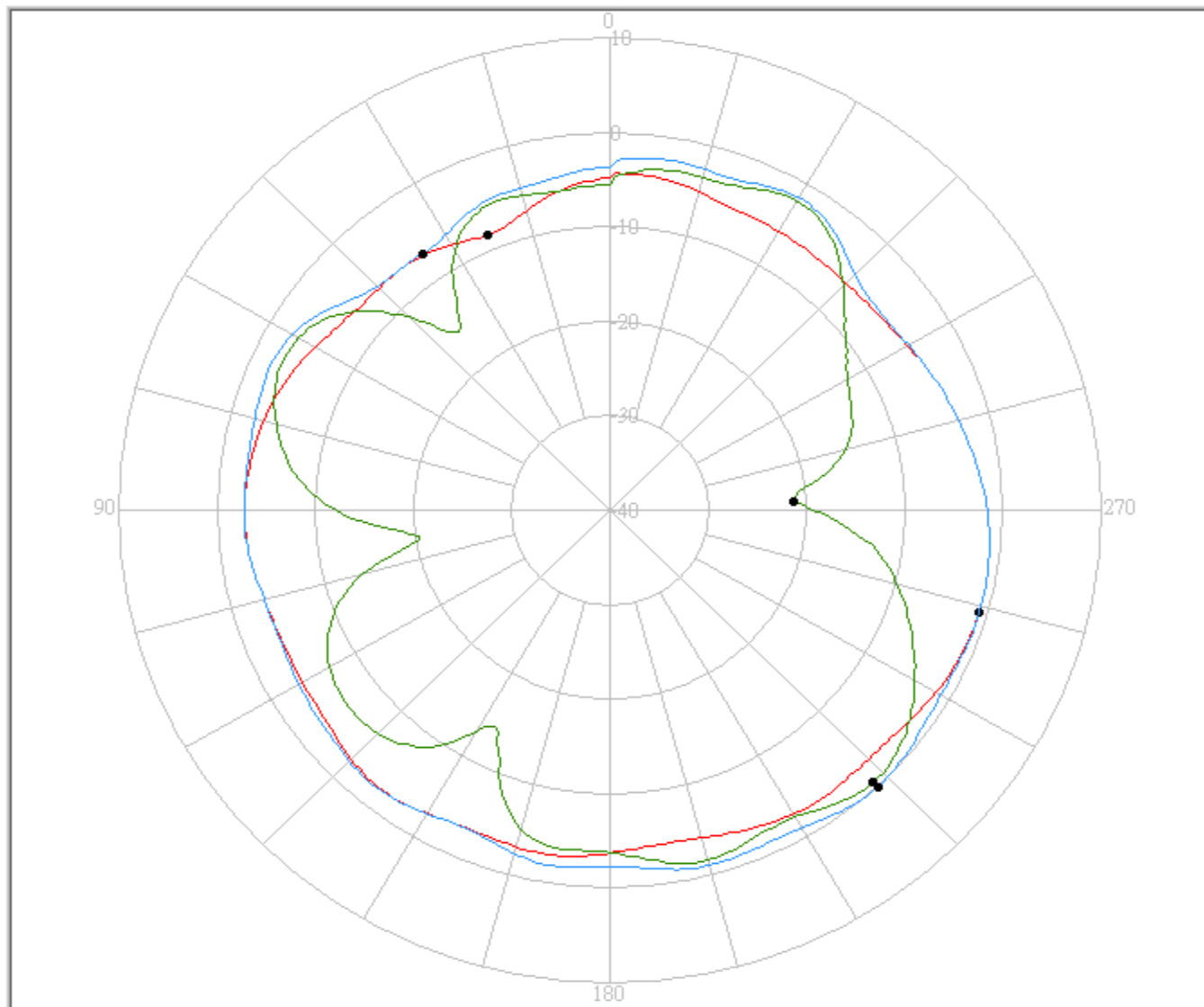
3. Gain & Pattern –LEFT

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	X20	Left	2400.00	-0.90 / 254.00	-8.33 / 23.00	-3.71	Ver.	2006/2/6
2	X20	Left	2400.00	-0.71 / 223.00	-21.30 / 273.00	-5.44	Hor.	2006/2/6
3	X20	Left	2400.00	-0.00 / 223.00	-6.86 / 35.00	-2.59	V+H	2006/2/6

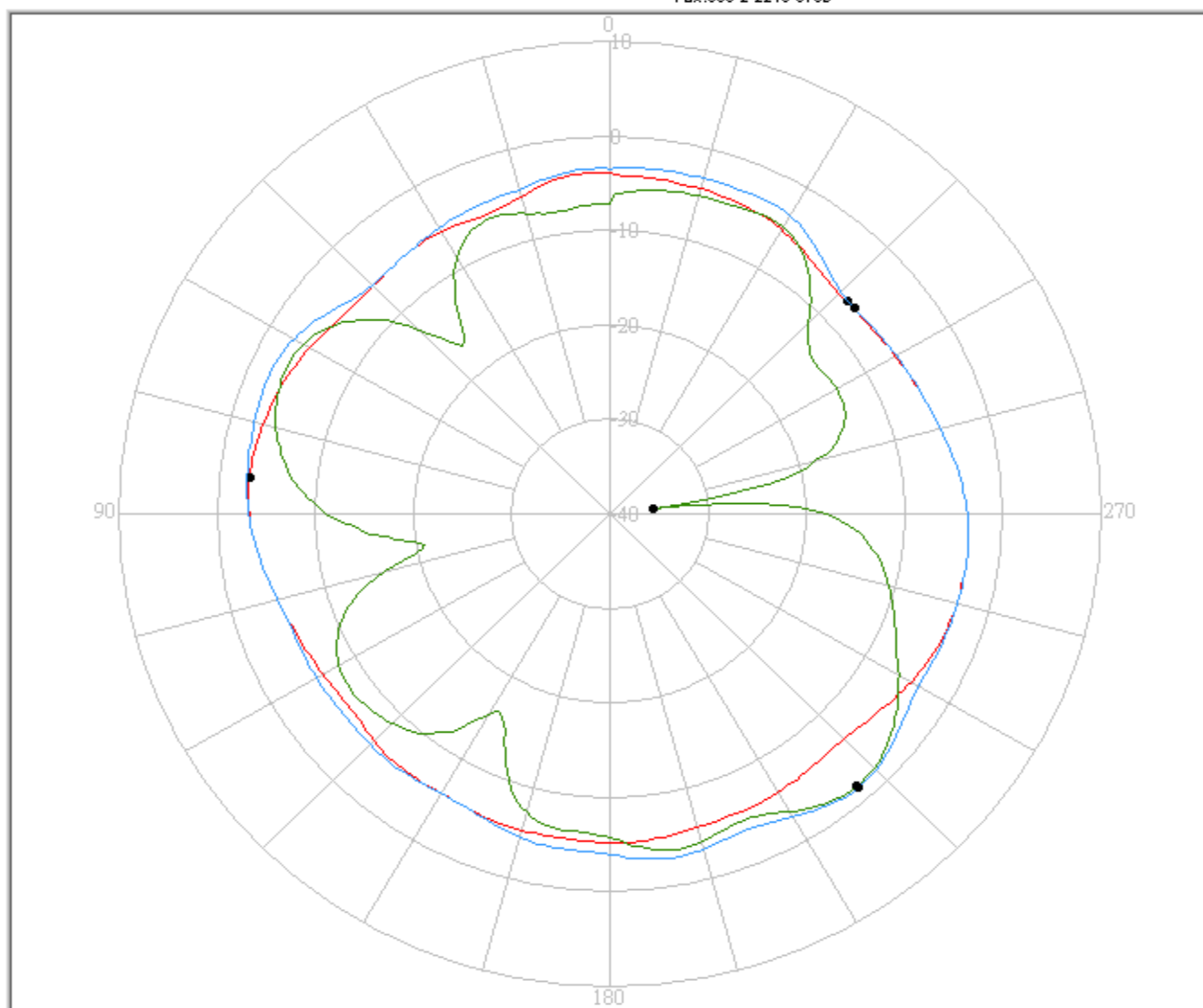
b. 2.45GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Left	2450.00	-3.13 / 84.00	-7.06 / 313.00	-5.03	Ver.	2006/2/6
2	X20	Left	2450.00	-1.81 / 221.00	-35.55 / 277.00	-7.02	Hor.	2006/2/6
3	X20	Left	2450.00	-1.55 / 221.00	-6.91 / 311.00	-4.04	V+H	2006/2/6

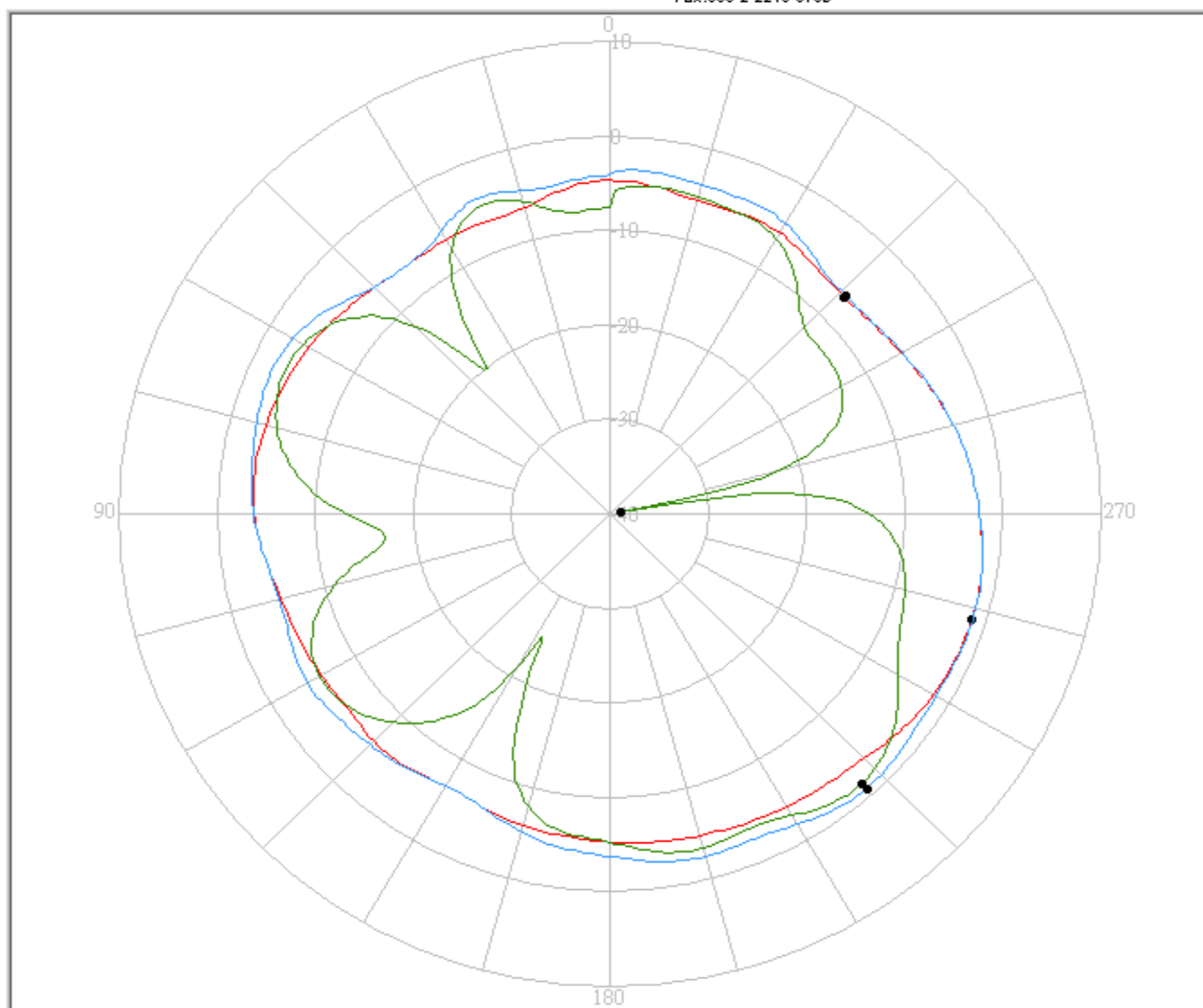
c. 2.5GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Left	2500.00	-1.48 / 253.00	-6.94 / 314.00	-4.60	Ver.	2006/2/6
2	X20	Left	2500.00	-1.63 / 222.00	-38.81 / 281.00	-6.73	Hor.	2006/2/6
3	X20	Left	2500.00	-0.91 / 222.00	-6.75 / 314.00	-3.67	V+H	2006/2/6

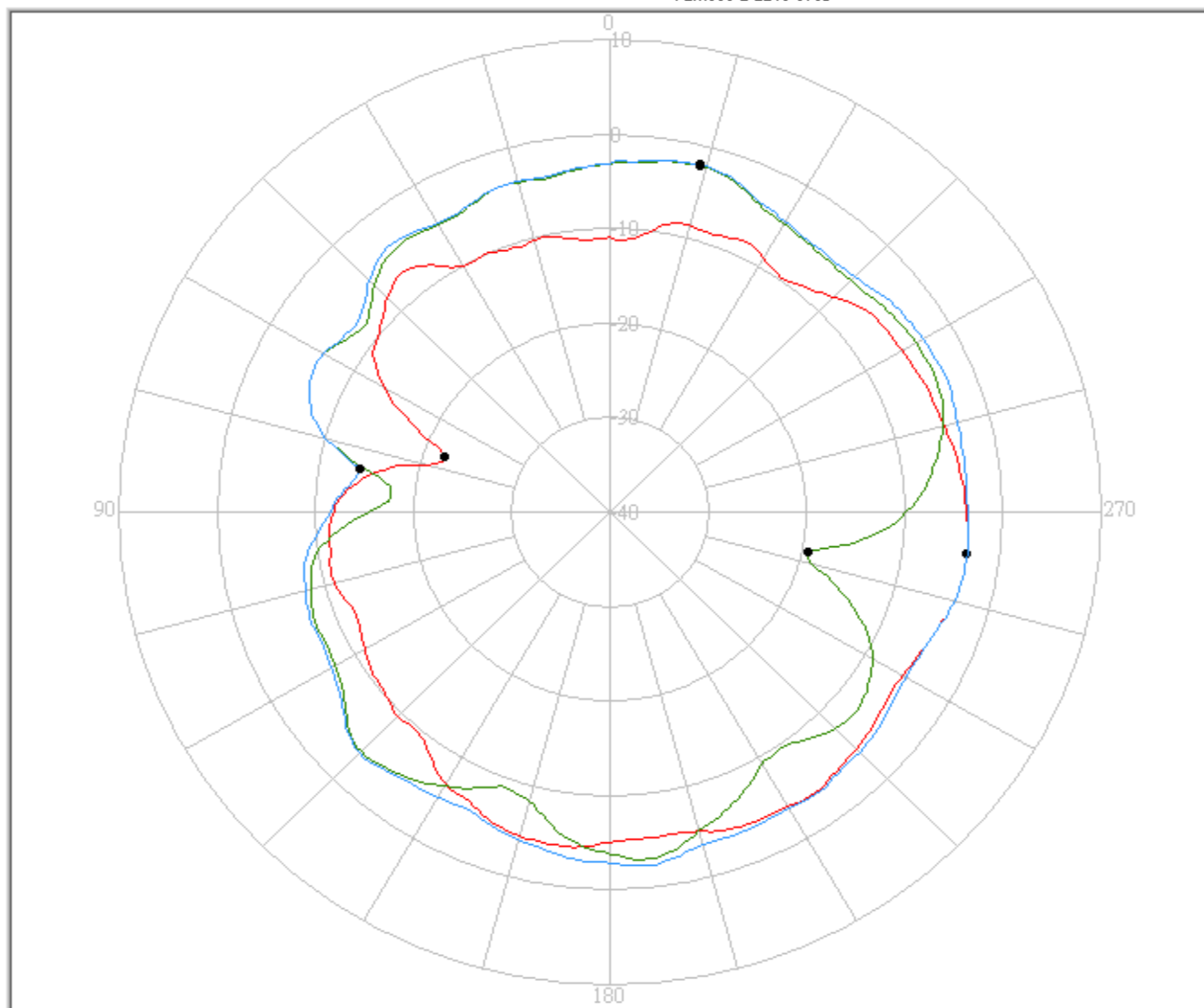
d. 4.9GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Left	4900.00	-3.38 / 263.00	-22.24 / 71.00	-6.86	Ver.	2006/2/6
2	X20	Left	4900.00	-2.26 / 346.00	-19.49 / 258.00	-5.97	Hor.	2006/2/6
3	X20	Left	4900.00	-2.14 / 346.00	-14.08 / 80.00	-4.47	V+H	2006/2/6

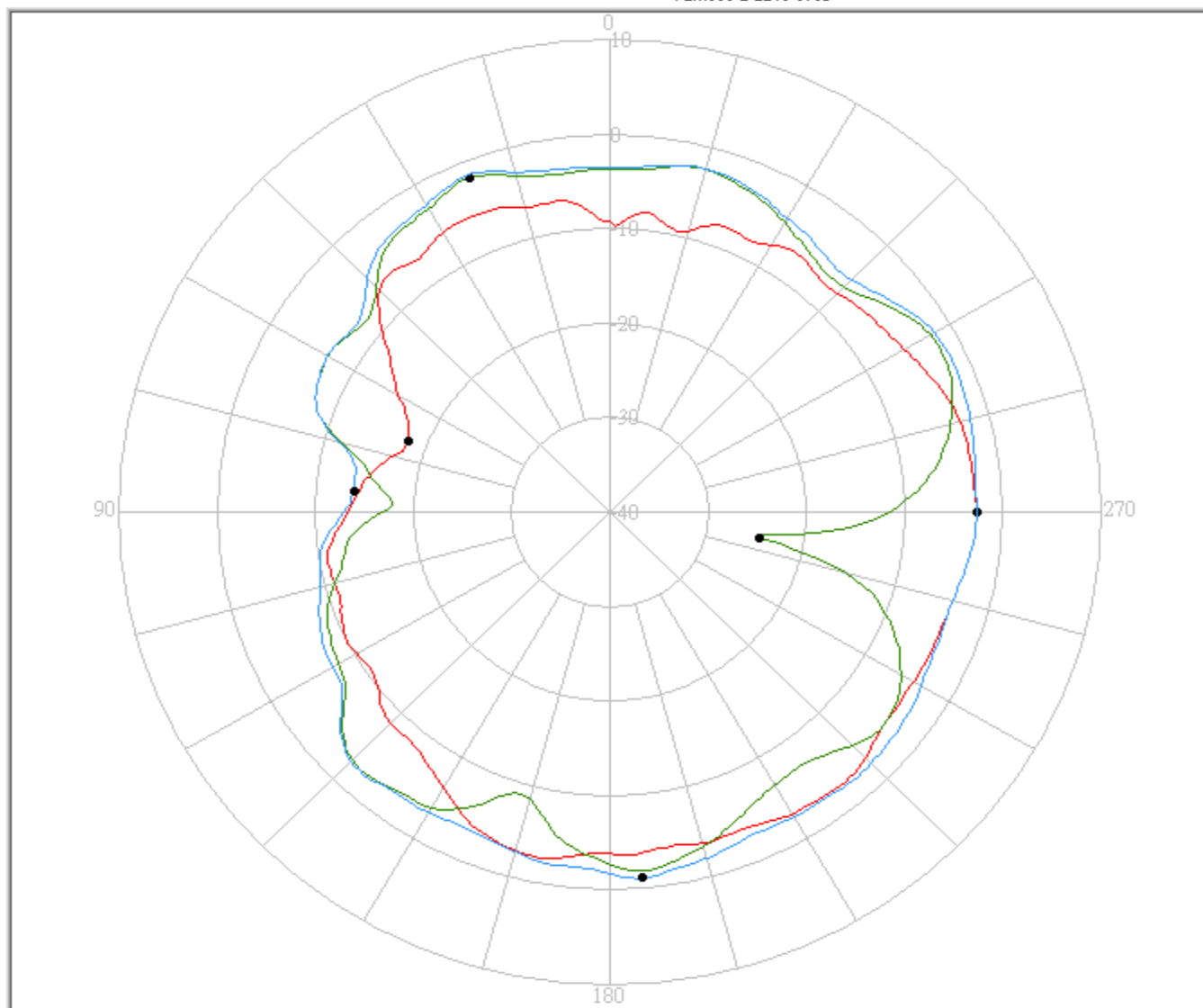
e. 5.075GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Left	5075.00	-2.69 / 270.00	-18.14 / 70.00	-5.76	Ver.	2006/2/6
2	X20	Left	5075.00	-1.86 / 22.00	-24.54 / 260.00	-5.19	Hor.	2006/2/6
3	X20	Left	5075.00	-1.14 / 185.00	-13.91 / 85.00	-3.65	V+H	2006/2/6

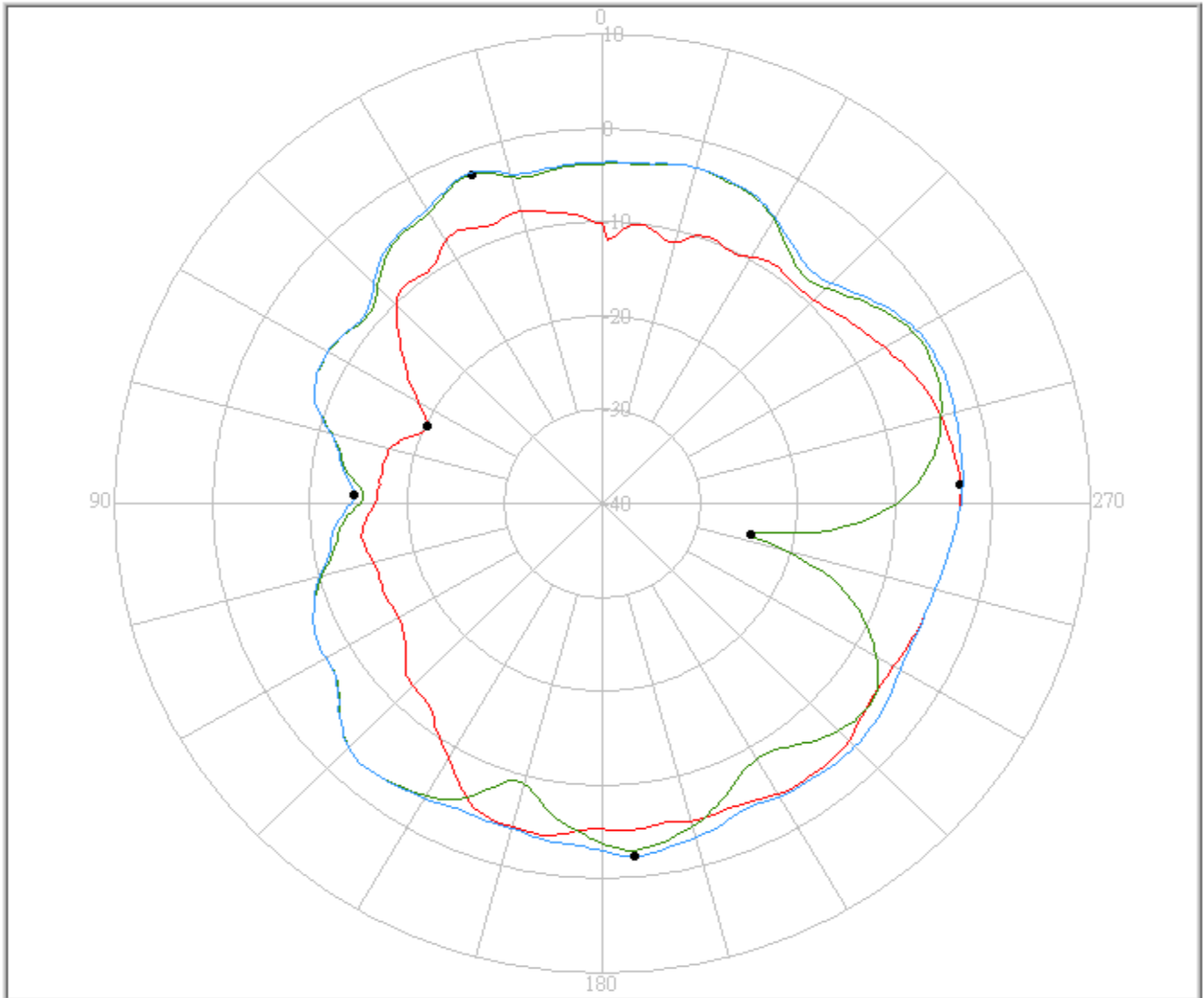
f. 5.15GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Left	5150.00	-3.23 / 273.00	-20.28 / 65.00	-7.24	Ver.	2006/2/6
2	X20	Left	5150.00	-2.46 / 21.00	-24.45 / 258.00	-5.80	Hor.	2006/2/6
3	X20	Left	5150.00	-2.23 / 185.00	-14.60 / 88.00	-4.52	V+H	2006/2/6

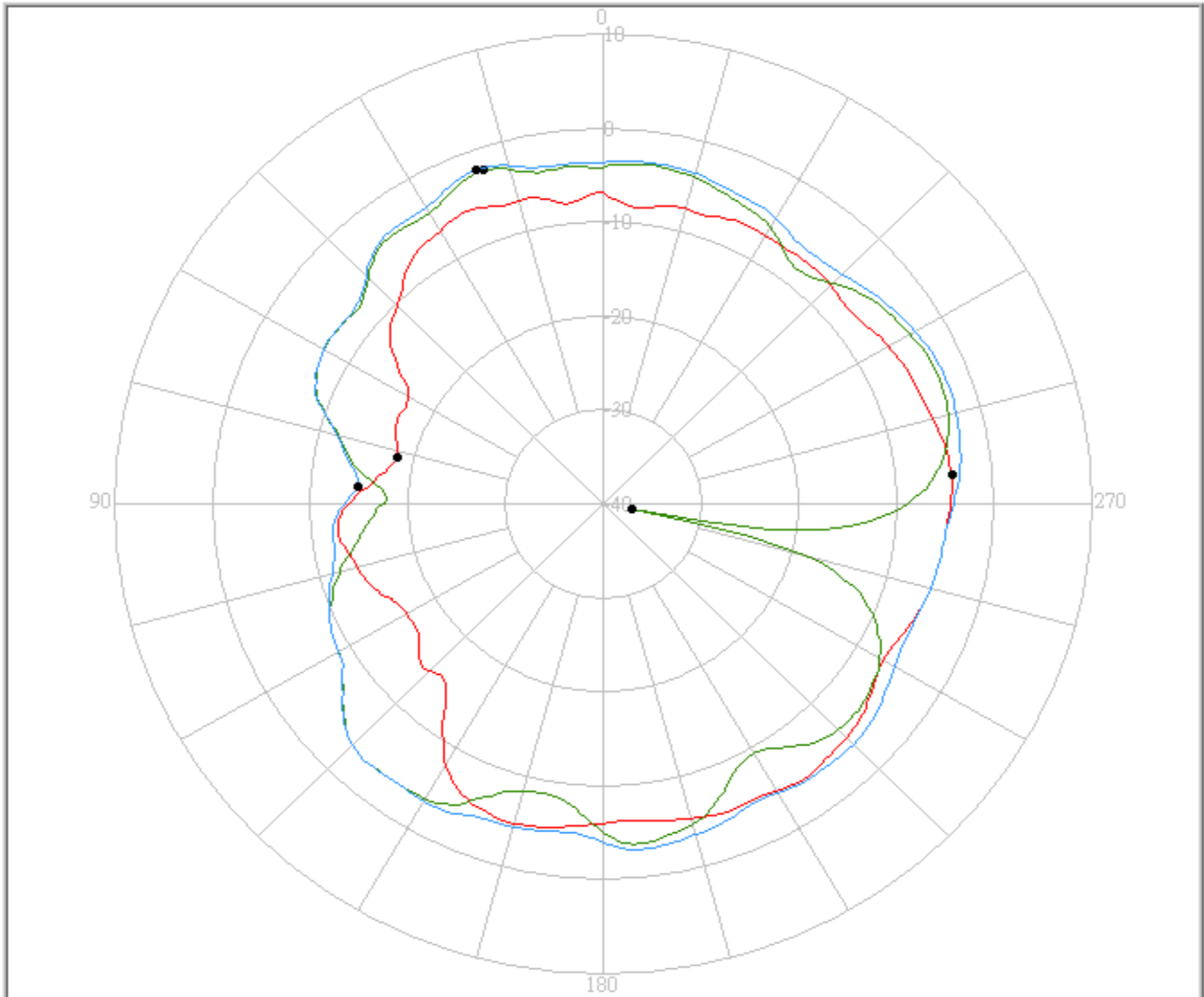
g. 5.25GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Left	5250.00	-4.24 / 275.00	-18.34 / 77.00	-7.20	Ver.	2006/2/6
2	X20	Left	5250.00	-2.47 / 19.00	-36.99 / 259.00	-5.99	Hor.	2006/2/6
3	X20	Left	5250.00	-2.14 / 20.00	-14.87 / 86.00	-4.73	V+H	2006/2/6

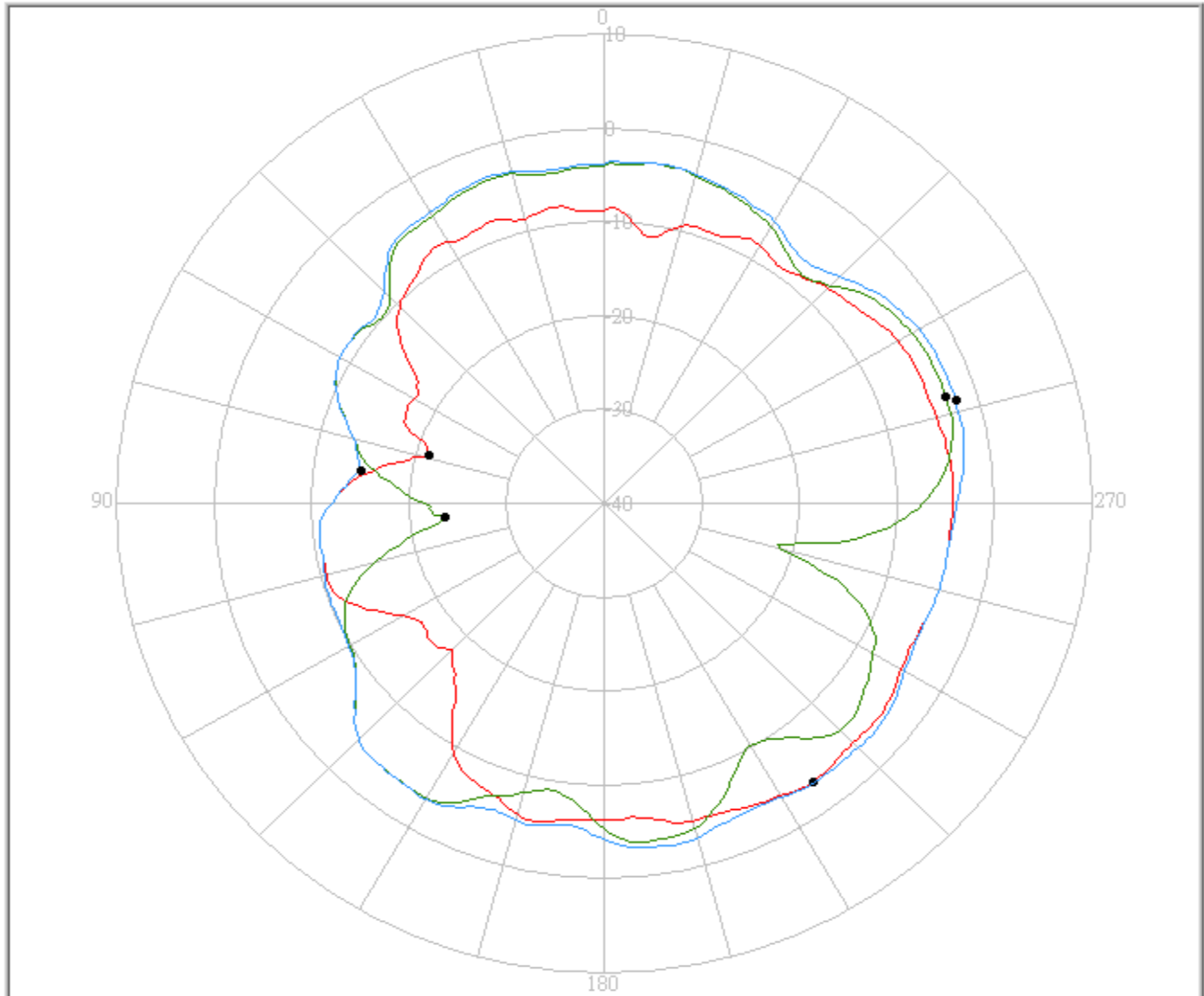
Hz. 5.35GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Left	5350.00	-3.39 / 216.00	-21.27 / 74.00	-7.19	Ver.	2006/2/6
2	X20	Left	5350.00	-3.15 / 288.00	-23.62 / 95.00	-6.29	Hor.	2006/2/6
3	X20	Left	5350.00	-2.34 / 287.00	-14.77 / 82.00	-4.84	V+H	2006/2/6

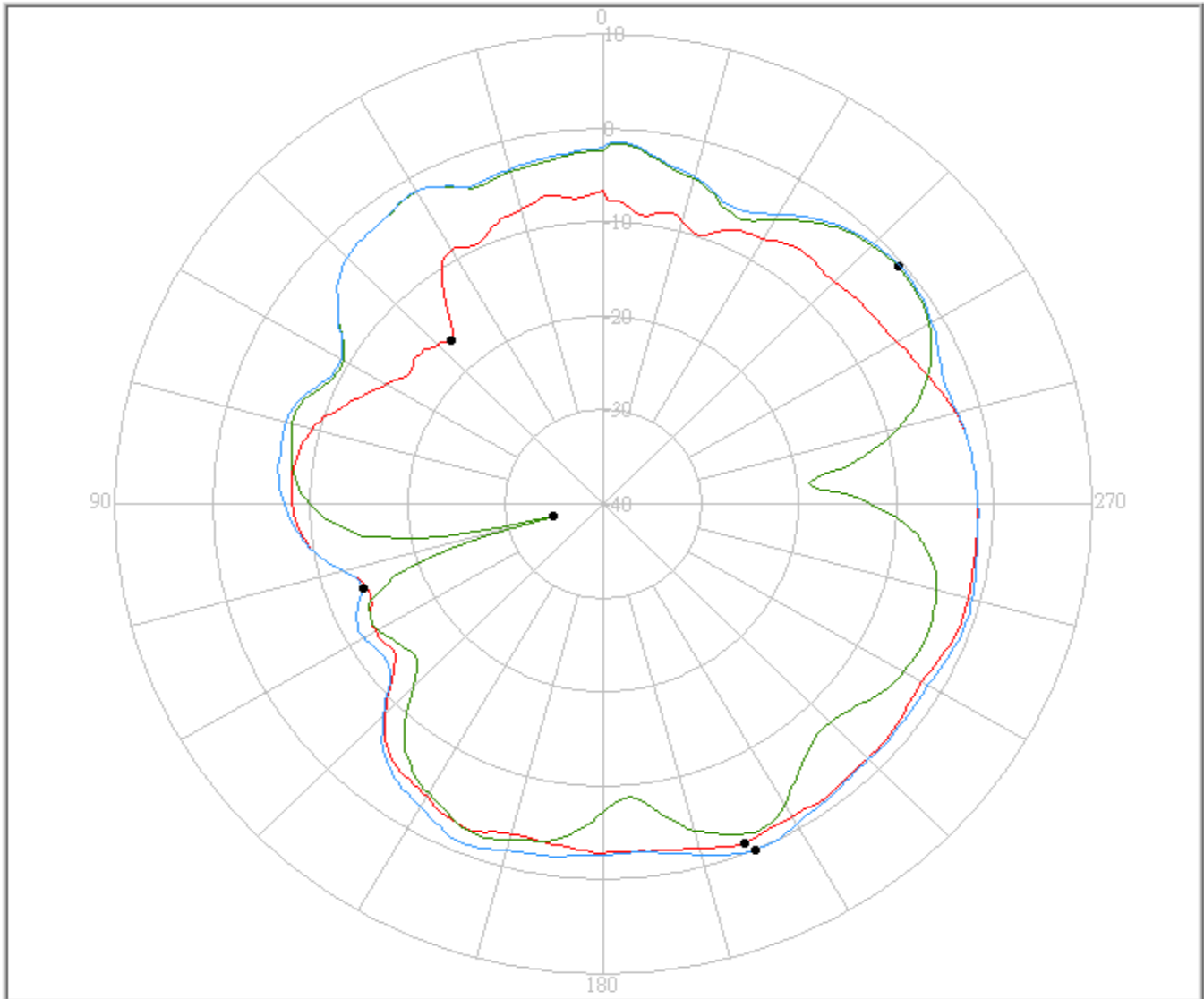
i. 5.47GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Left	5470.00	-1.16 / 202.00	-16.62 / 42.00	-4.85	Ver.	2006/2/6
2	X20	Left	5470.00	-0.63 / 310.00	-34.71 / 104.00	-4.82	Hor.	2006/2/6
3	X20	Left	5470.00	0.00 / 203.00	-13.85 / 110.00	-2.92	V+H	2006/2/6

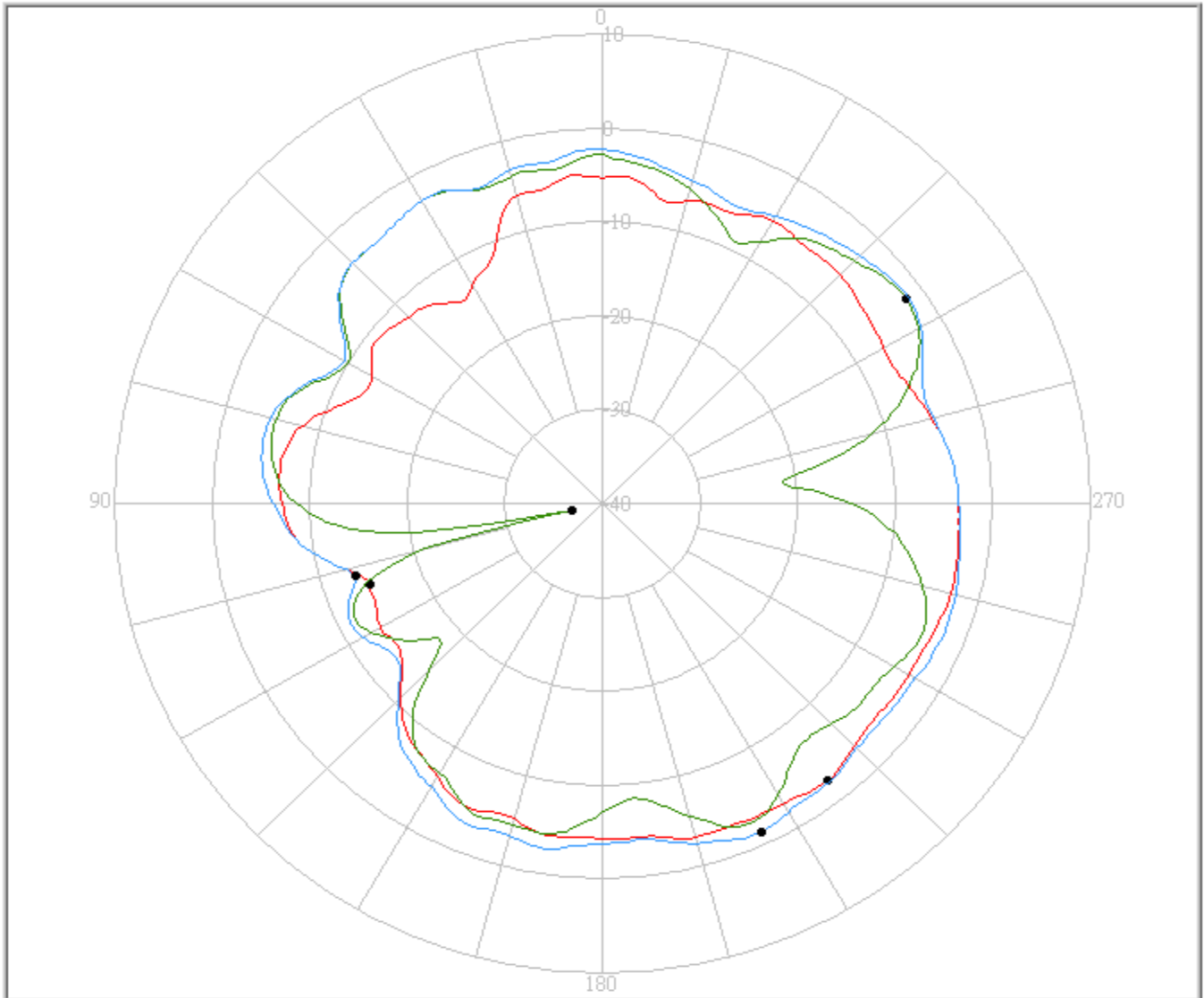
j. 5.597GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Left	5597.50	-2.54 / 218.00	-14.65 / 110.00	-5.85	Ver.	2006/2/6
2	X20	Left	5597.50	-2.04 / 305.00	-36.80 / 102.00	-5.87	Hor.	2006/2/6
3	X20	Left	5597.50	-1.41 / 205.00	-13.53 / 107.00	-4.06	V+H	2006/2/6

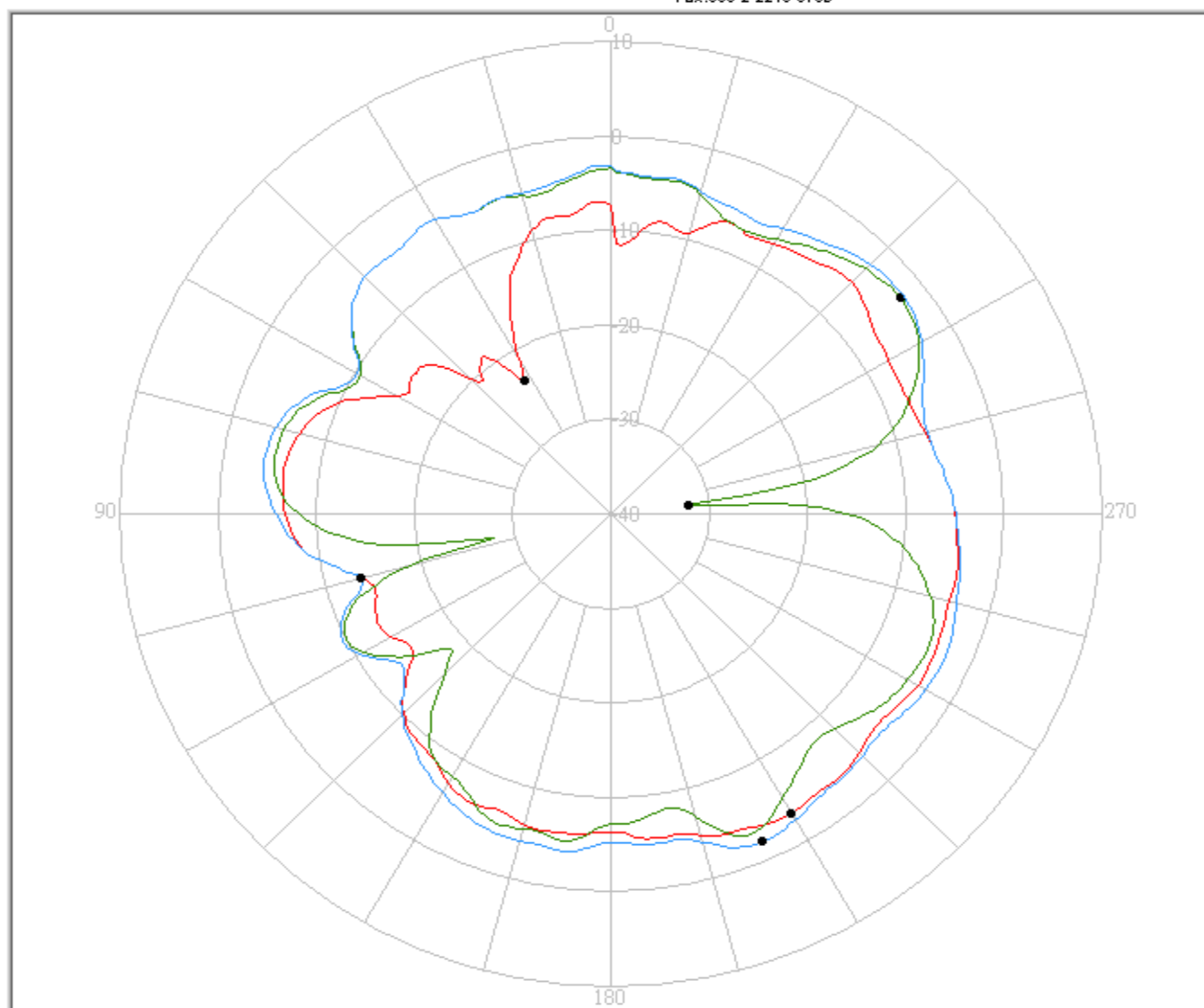
k. 5.725GHz



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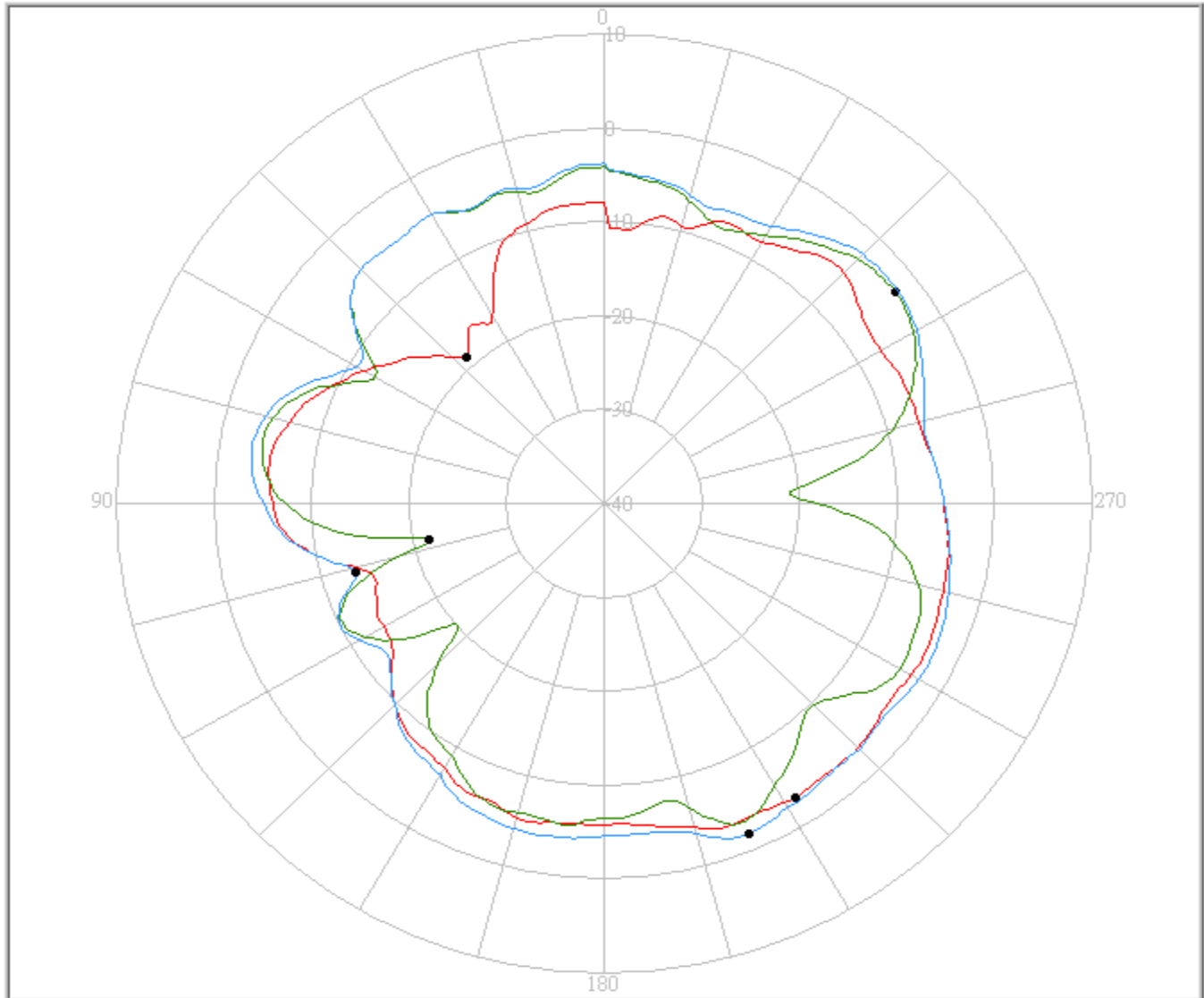
Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Left	5725.00	-3.37 / 210.00	-23.40 / 32.00	-6.96	Ver.	2006/2/6
2	X20	Left	5725.00	-2.69 / 308.00	-31.99 / 276.00	-6.36	Hor.	2006/2/6
3	X20	Left	5725.00	-2.04 / 204.00	-13.72 / 105.00	-4.84	V+H	2006/2/6

1. 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	X20	Left	5785.00	-3.09 / 212.00	-18.95 / 42.00	-6.63	Ver.	2006/2/6
2	X20	Left	5785.00	-2.62 / 307.00	-21.71 / 102.00	-6.57	Hor.	2006/2/6
3	X20	Left	5785.00	-1.80 / 203.00	-13.59 / 106.00	-4.80	V+H	2006/2/6

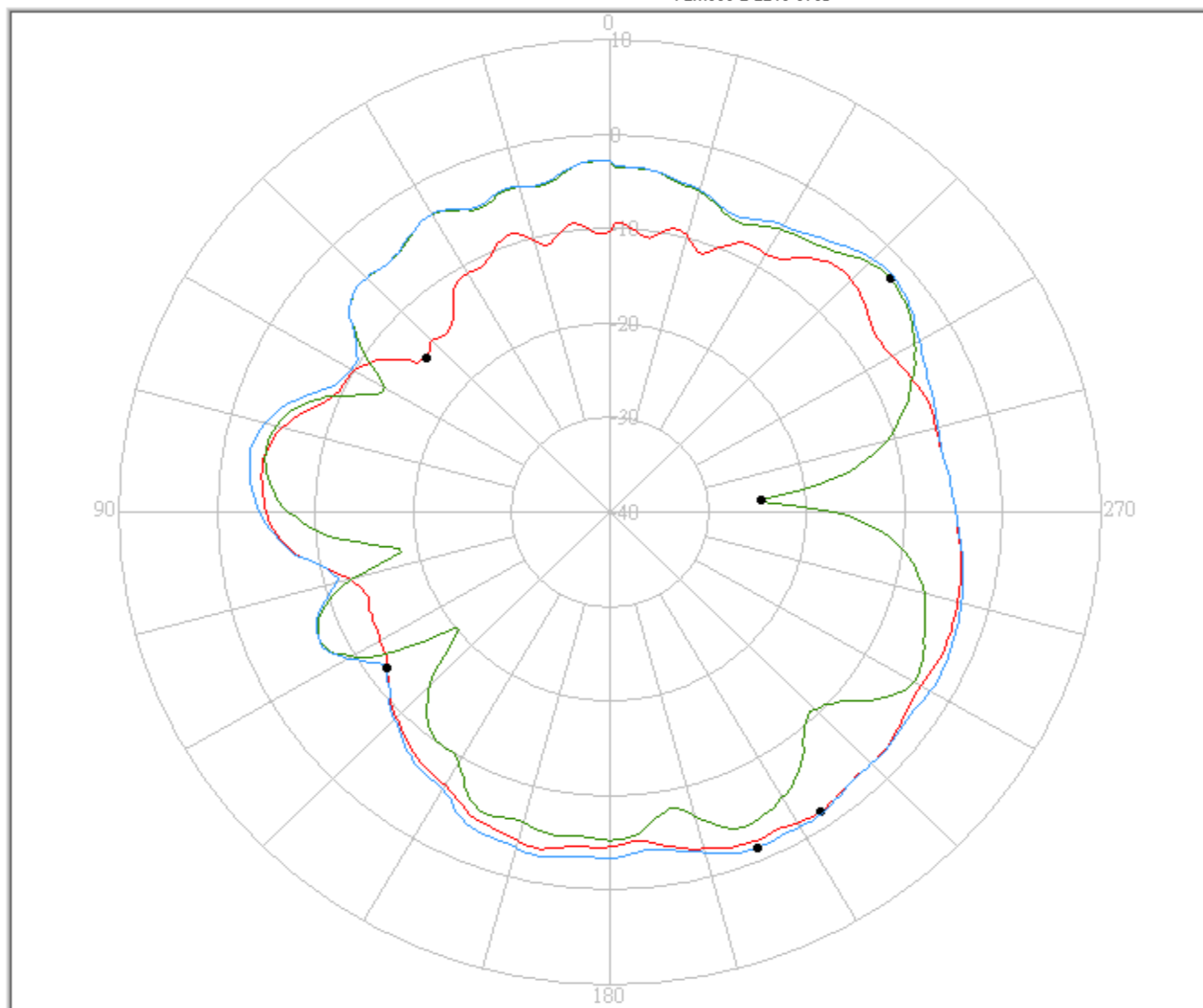
m. 5.85GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Left	5850.00	-1.79 / 214.00	-15.15 / 49.00	-5.90	Ver.	2006/2/6
2	X20	Left	5850.00	-2.23 / 311.00	-24.59 / 275.00	-6.20	Hor.	2006/2/6
3	X20	Left	5850.00	-1.38 / 203.00	-11.82 / 126.00	-4.17	V+H	2006/2/6

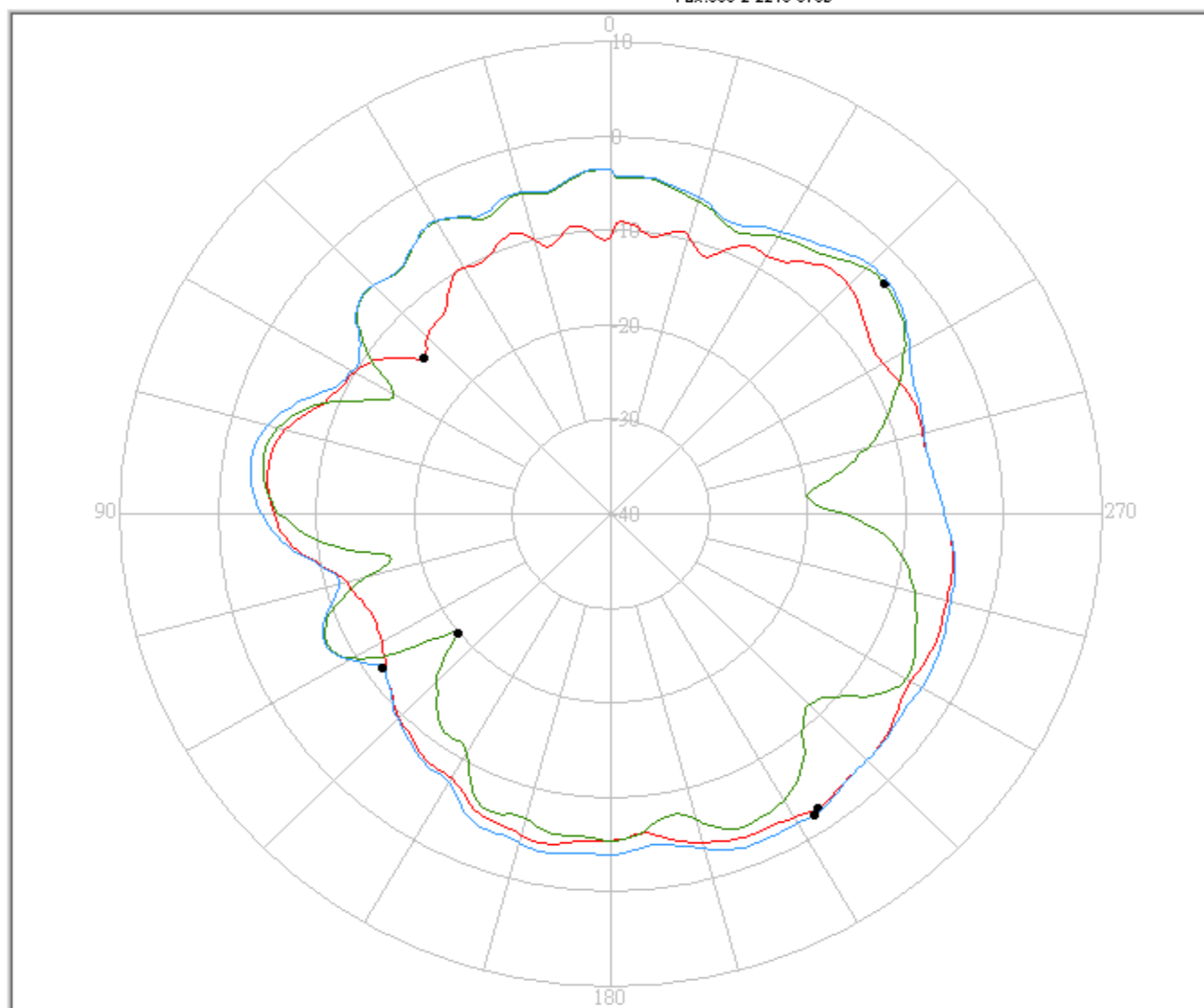
n. 5.875GHz



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Antenna Pattern Measurement

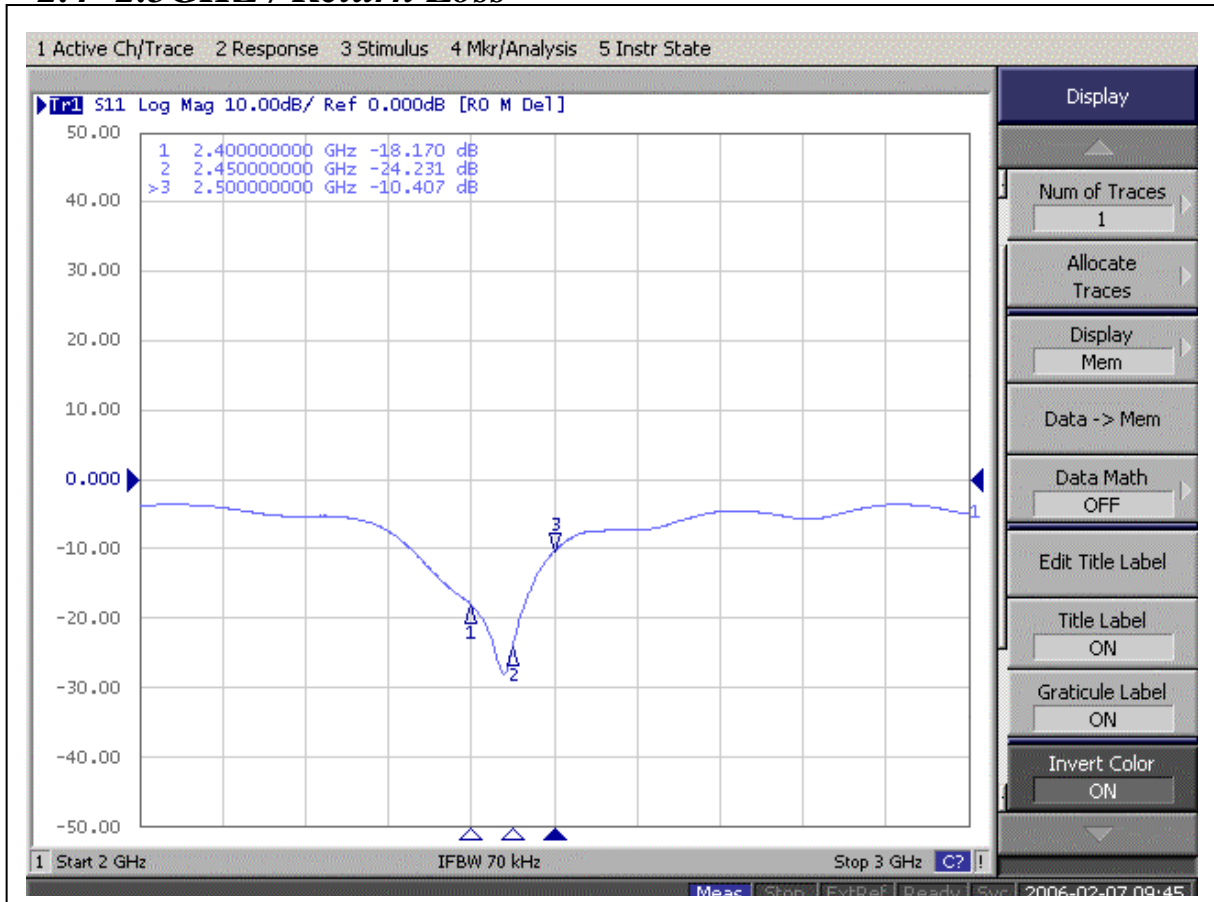
4F, No. 108-1, Min Chuan Rd., Hsin-Tien City, Taipei, Taiwan, R.O.C. Tel:886-2-2218-2189,
Fax:886-2-2218-5760



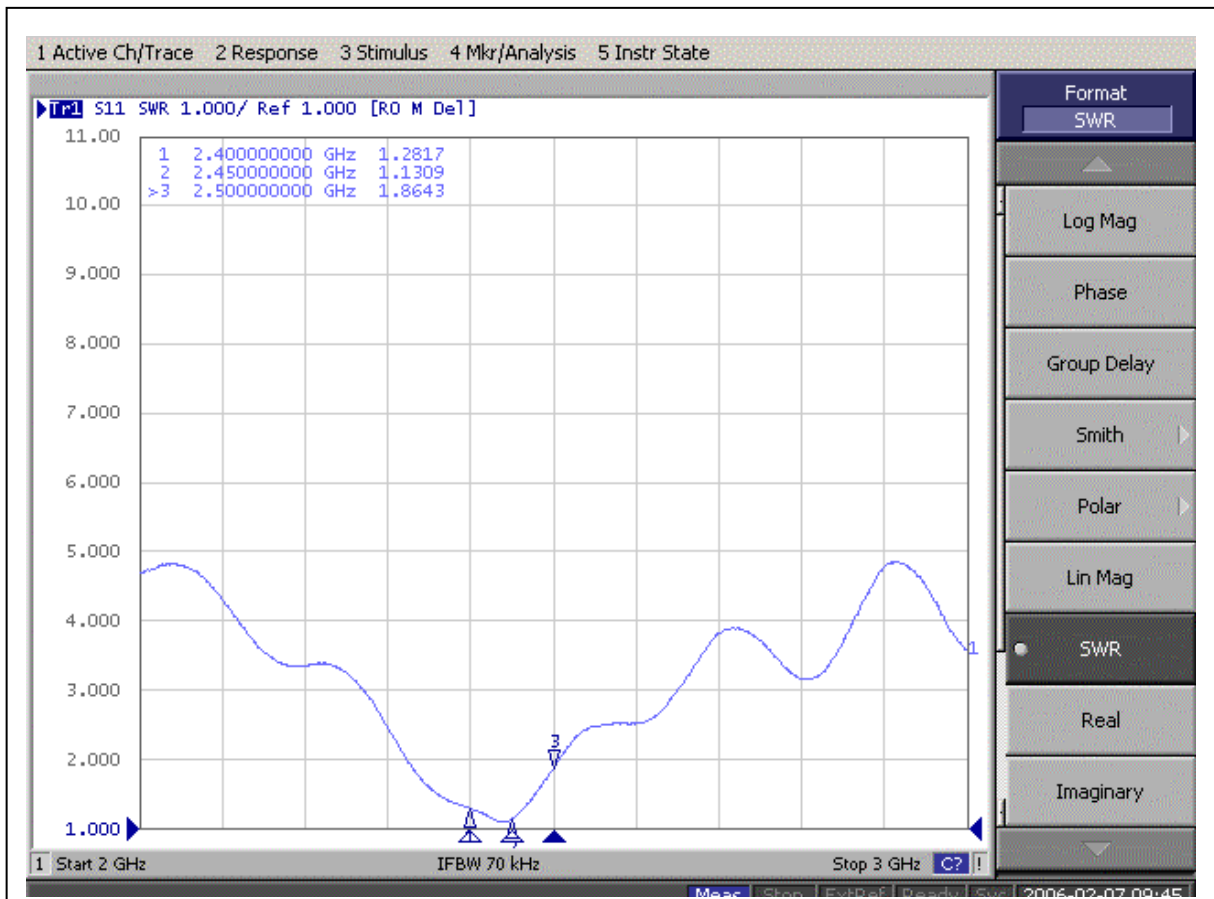
Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Left	5875.00	-2.44 / 214.00	-14.78 / 49.00	-6.63	Ver.	2006/2/6
2	X20	Left	5875.00	-3.00 / 311.00	-20.01 / 129.00	-6.79	Hor.	2006/2/6
3	X20	Left	5875.00	-2.02 / 213.00	-11.64 / 125.00	-4.90	V+H	2006/2/6

4. WLAN Ant./ (RIGHT)

2.4~2.5GHZ / Return Loss

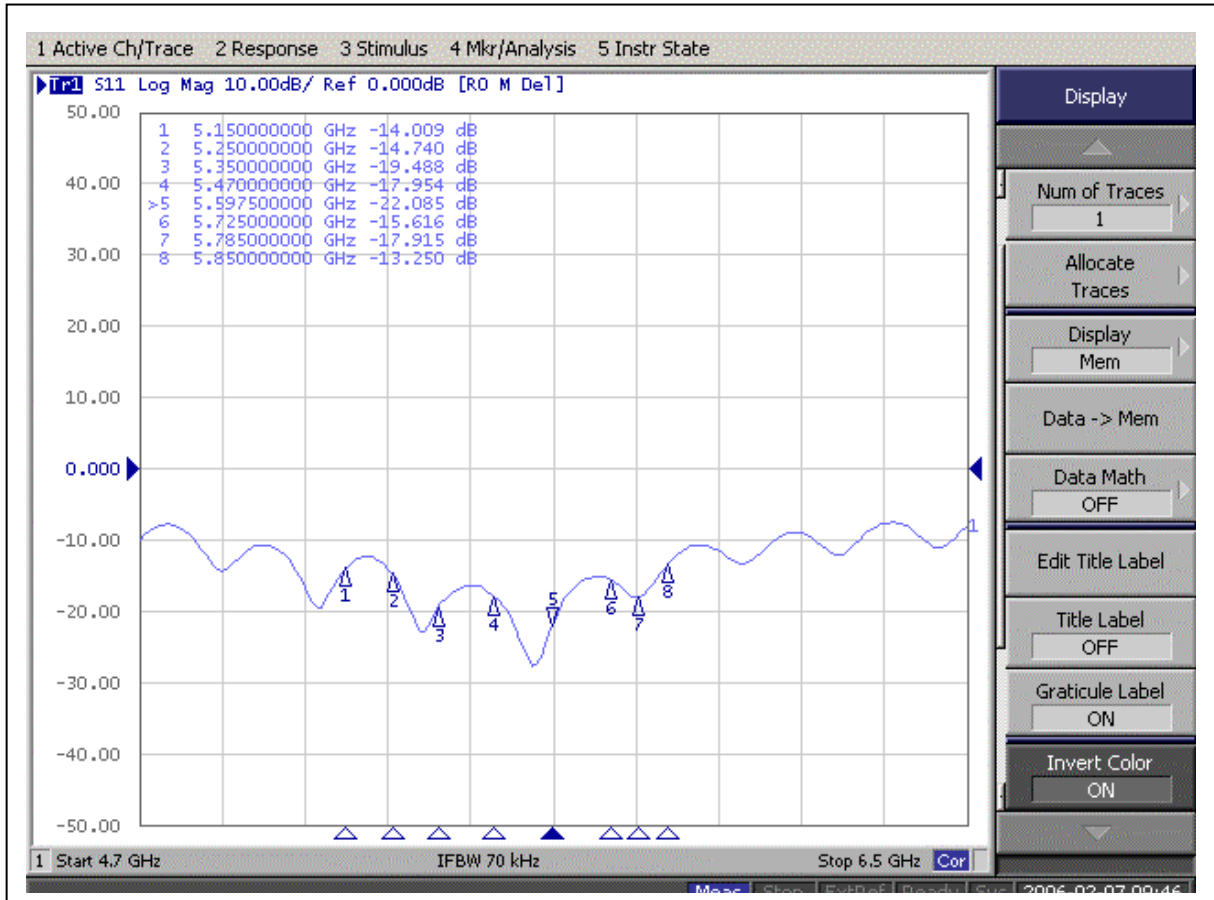


2.4~2.5GHZ / VSWR

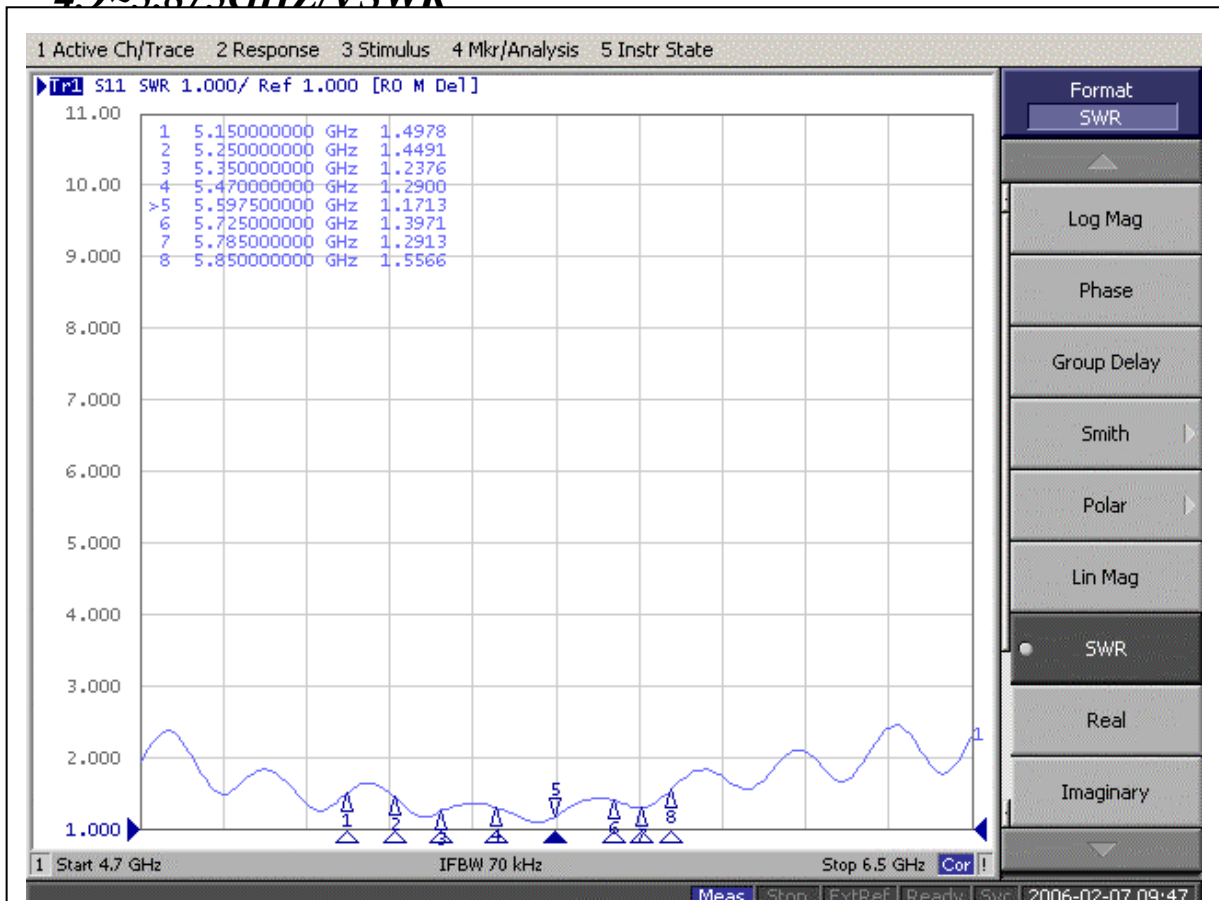


WLAN Ant./ (RIGHT)

4.9~5.875GHZ/Return Loss

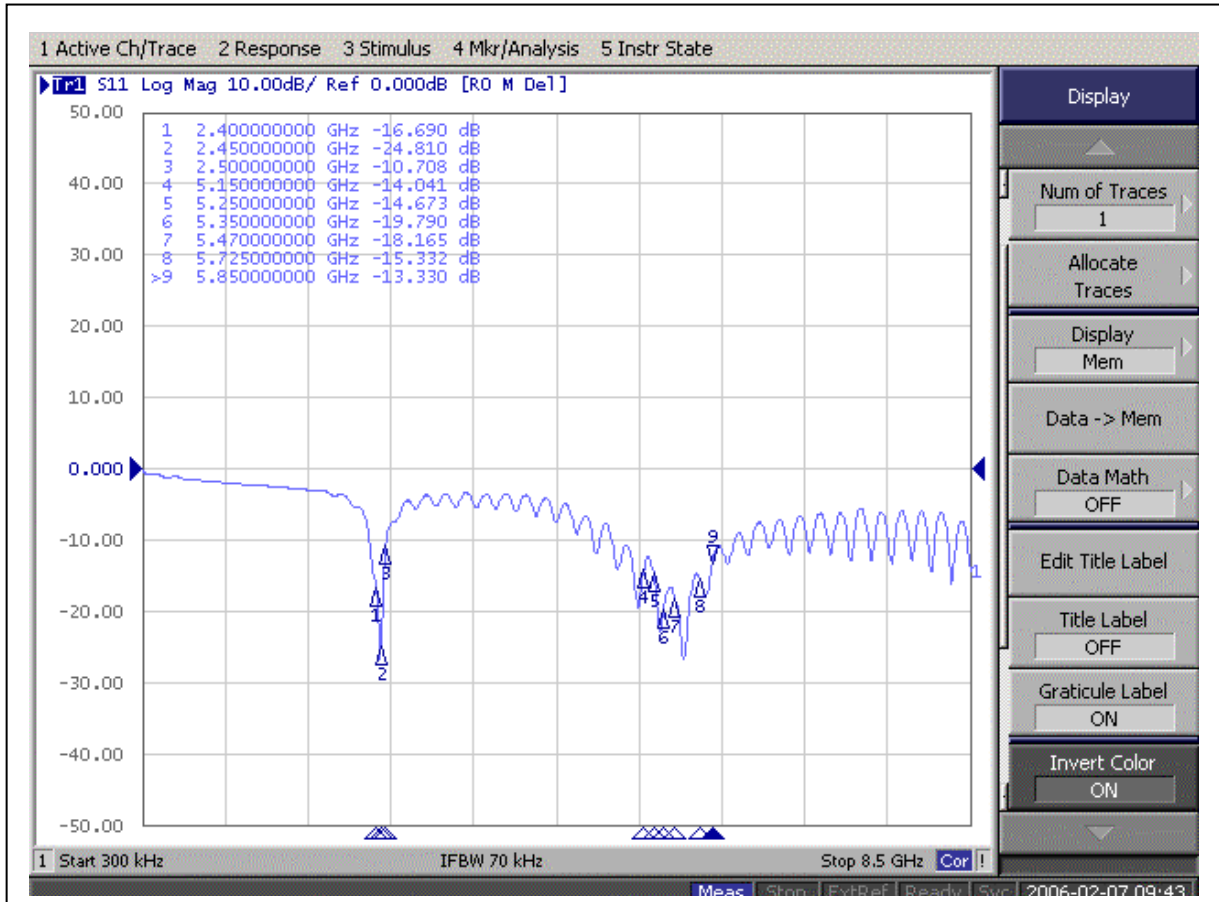


4.9~5.875GHZ/VSWR

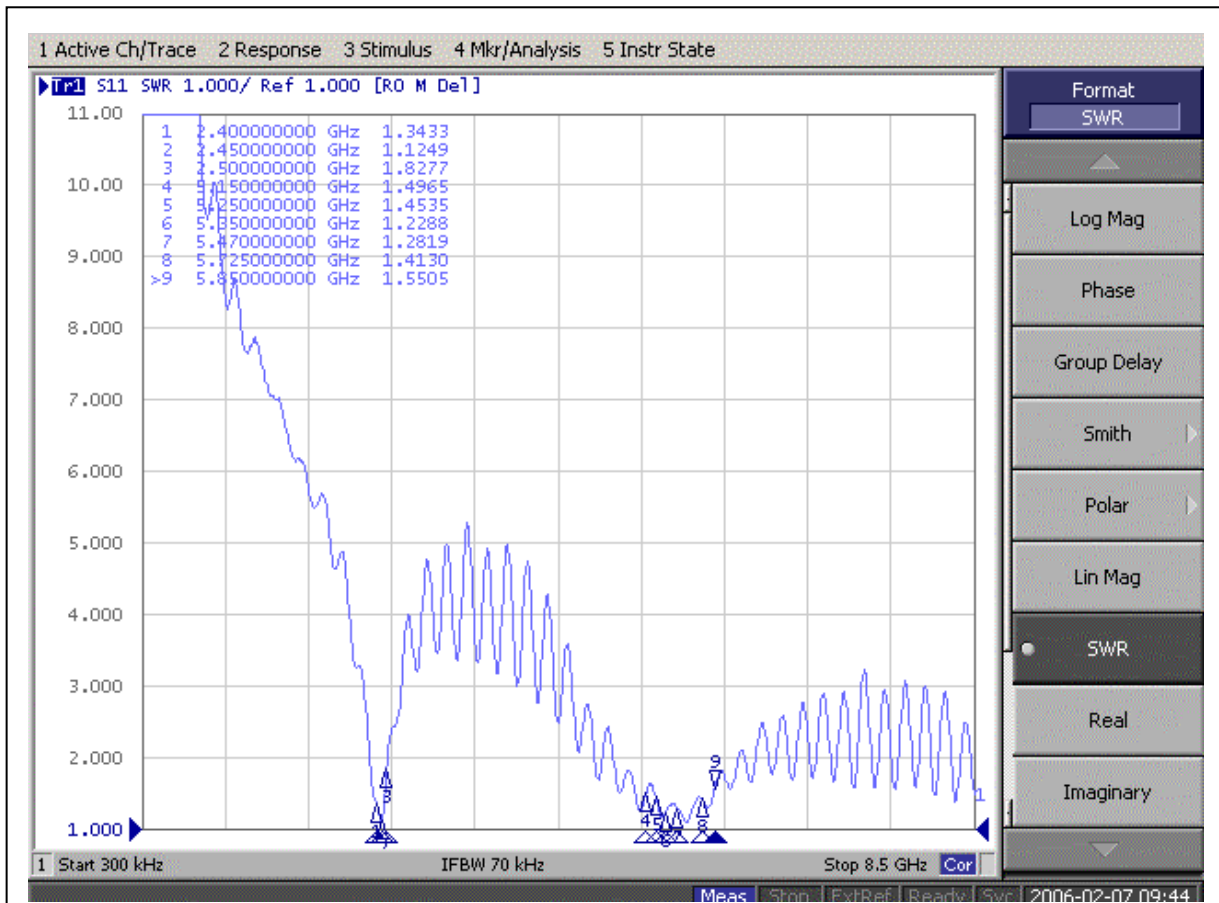


WLAN Ant./ (RIGHT)

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



2.4~2.5GHZ & 5.15~5.875GHZ/VSWR



5. Gain & Pattern –RIGHT

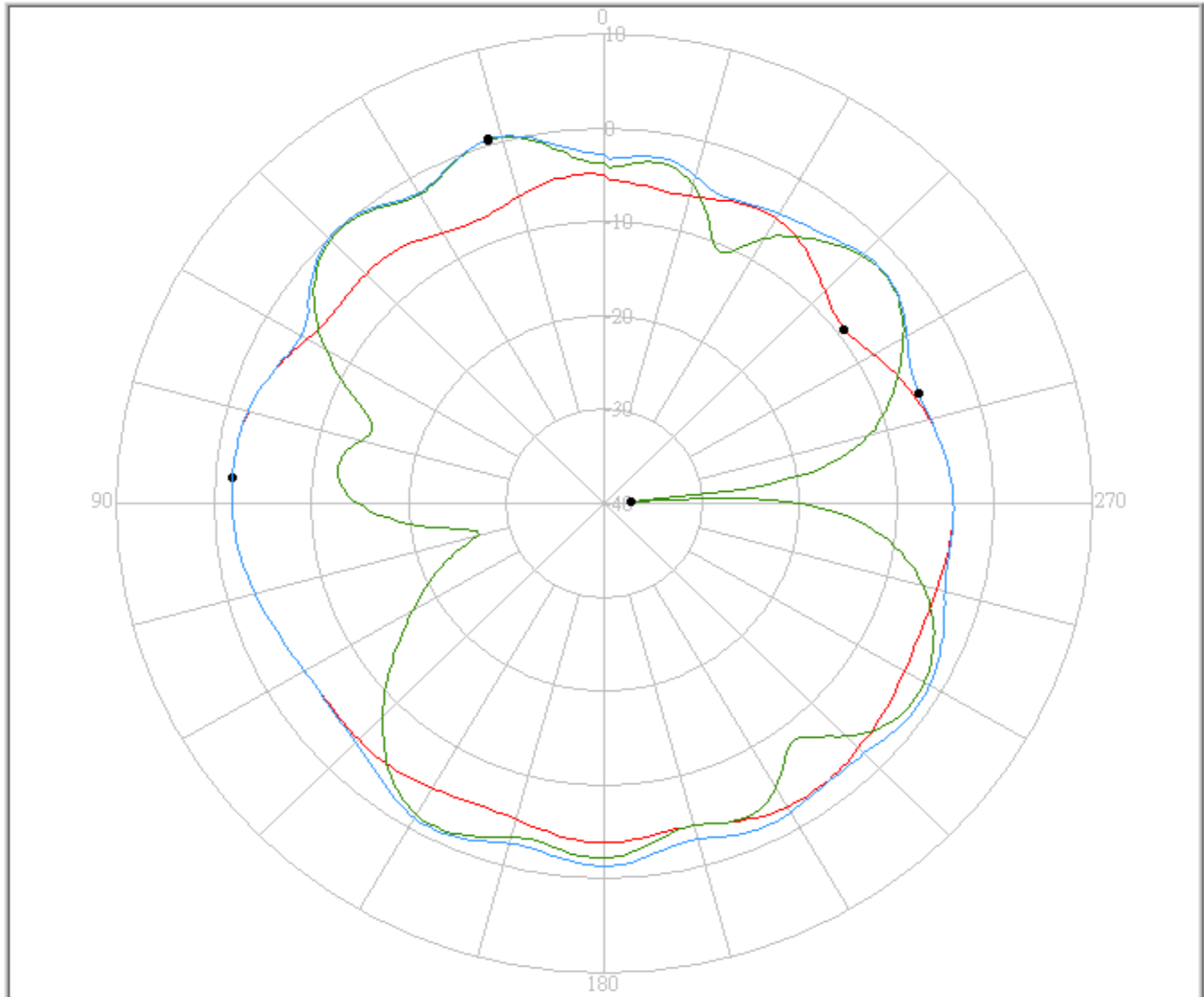
a. 2.4GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Right	2400.00	-1.84 / 86.00	-9.19 / 307.00	-4.51	Ver.	2006/2/6
2	X20	Right	2400.00	0.45 / 17.00	-37.20 / 274.00	-4.49	Hor.	2006/2/6
3	X20	Right	2400.00	0.53 / 17.00	-5.74 / 290.00	-2.53	V+H	2006/2/6

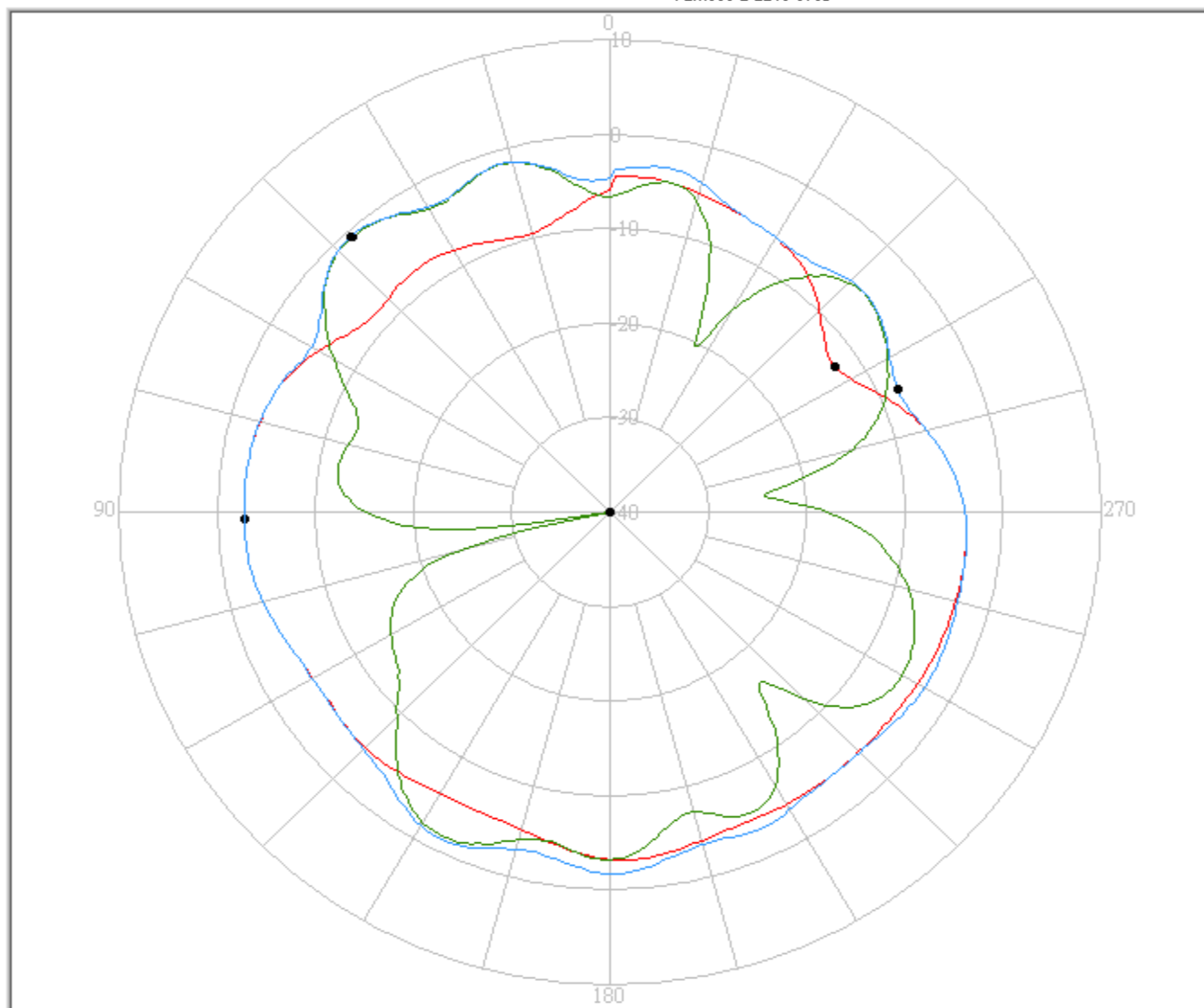
b. 2.45GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Right	2450.00	-2.75 / 91.00	-12.41 / 304.00	-5.05	Ver.	2006/2/6
2	X20	Right	2450.00	-0.80 / 42.00	-44.13 / 100.00	-6.20	Hor.	2006/2/6
3	X20	Right	2450.00	-0.72 / 42.00	-8.02 / 294.00	-3.53	V+H	2006/2/6

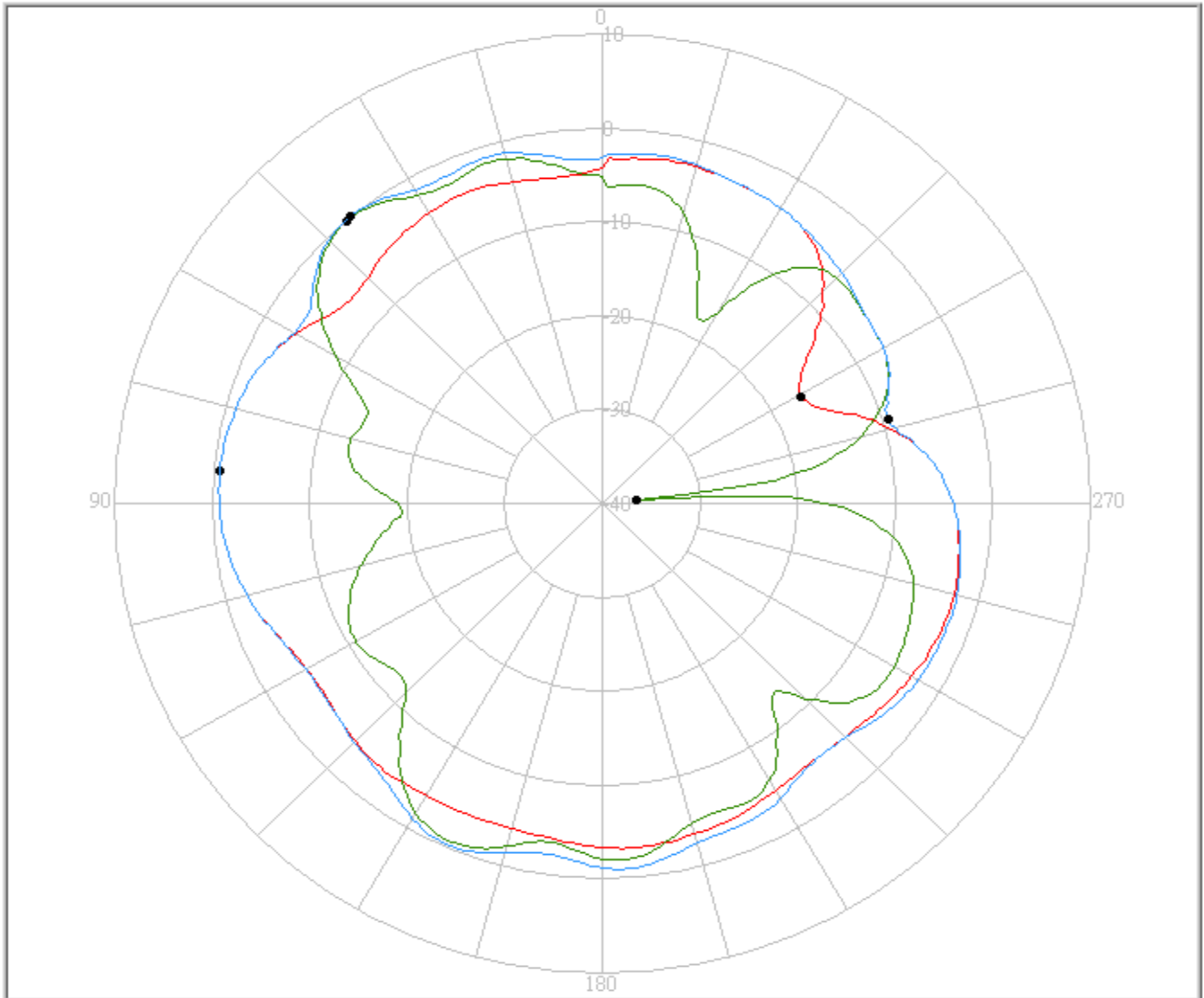
c. 2.5GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Right	2500.00	-0.66 / 85.00	-16.68 / 299.00	-3.94	Ver.	2006/2/6
2	X20	Right	2500.00	-0.14 / 41.00	-36.43 / 275.00	-5.65	Hor.	2006/2/6
3	X20	Right	2500.00	0.04 / 40.00	-9.39 / 287.00	-2.71	V+H	2006/2/6

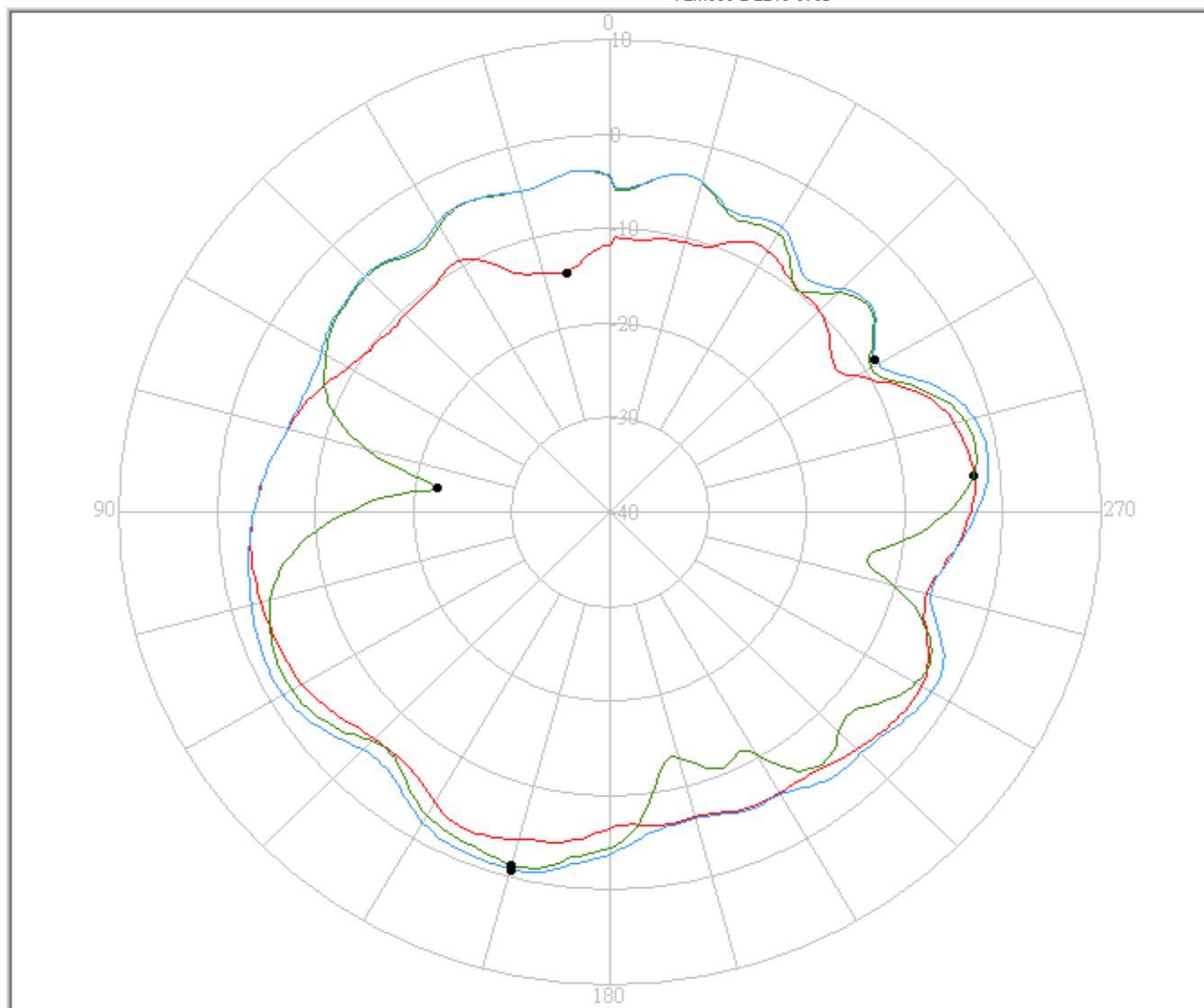
d. 4.9GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Right	4900.00	-2.74 / 276.00	-14.28 / 10.00	-5.97	Ver.	2006/2/6
2	X20	Right	4900.00	-1.33 / 165.00	-22.19 / 82.00	-5.37	Hor.	2006/2/6
3	X20	Right	4900.00	-0.82 / 165.00	-8.62 / 301.00	-3.87	V+H	2006/2/6

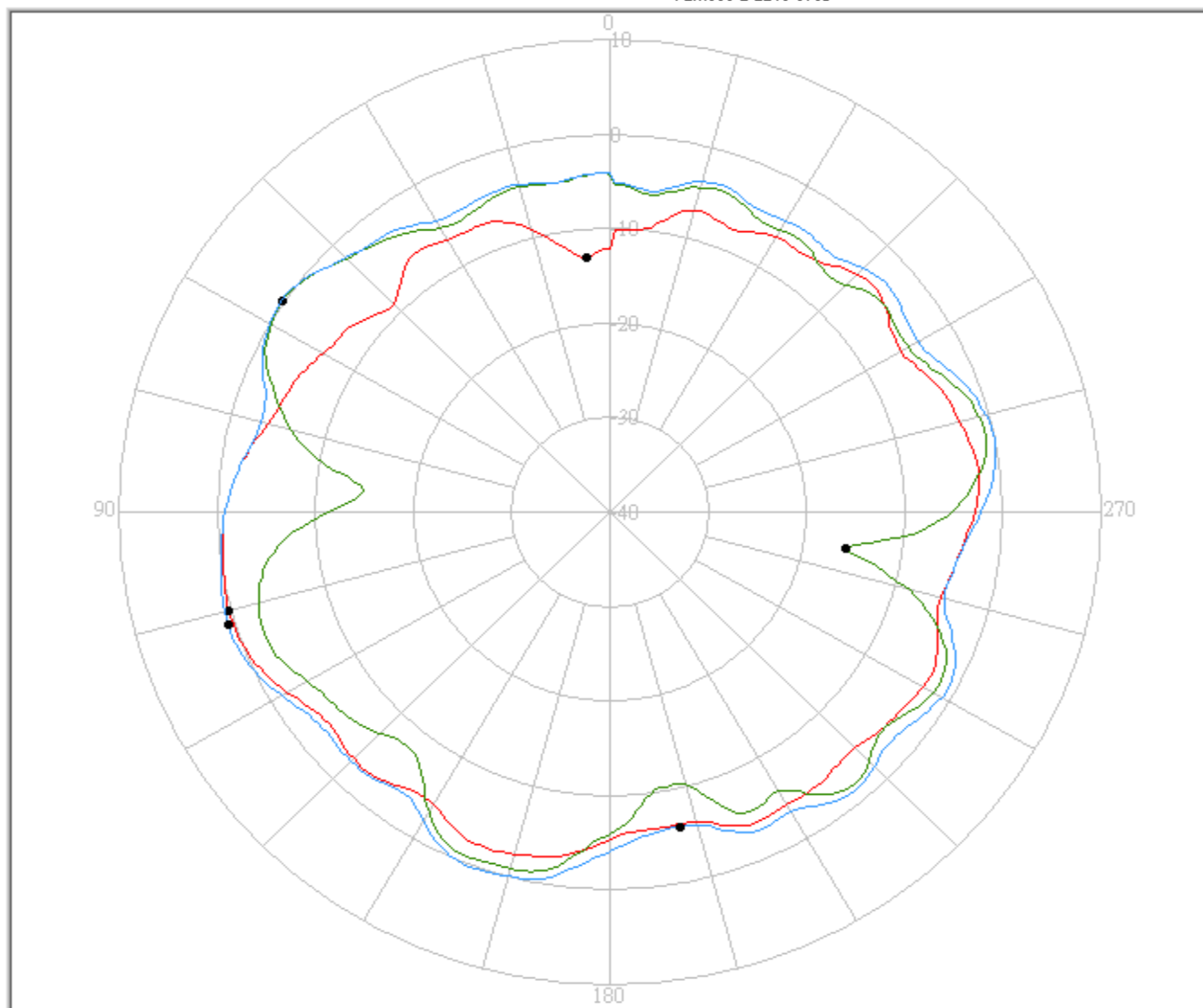
e. 5.075GHz



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Antenna Pattern Measurement

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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Right	5075.00	0.14 / 105.00	-13.00 / 5.00	-4.11	Ver.	2006/2/6
2	X20	Right	5075.00	0.10 / 56.00	-15.75 / 261.00	-3.99	Hor.	2006/2/6
3	X20	Right	5075.00	0.65 / 107.00	-6.00 / 192.00	-2.28	V+H	2006/2/6

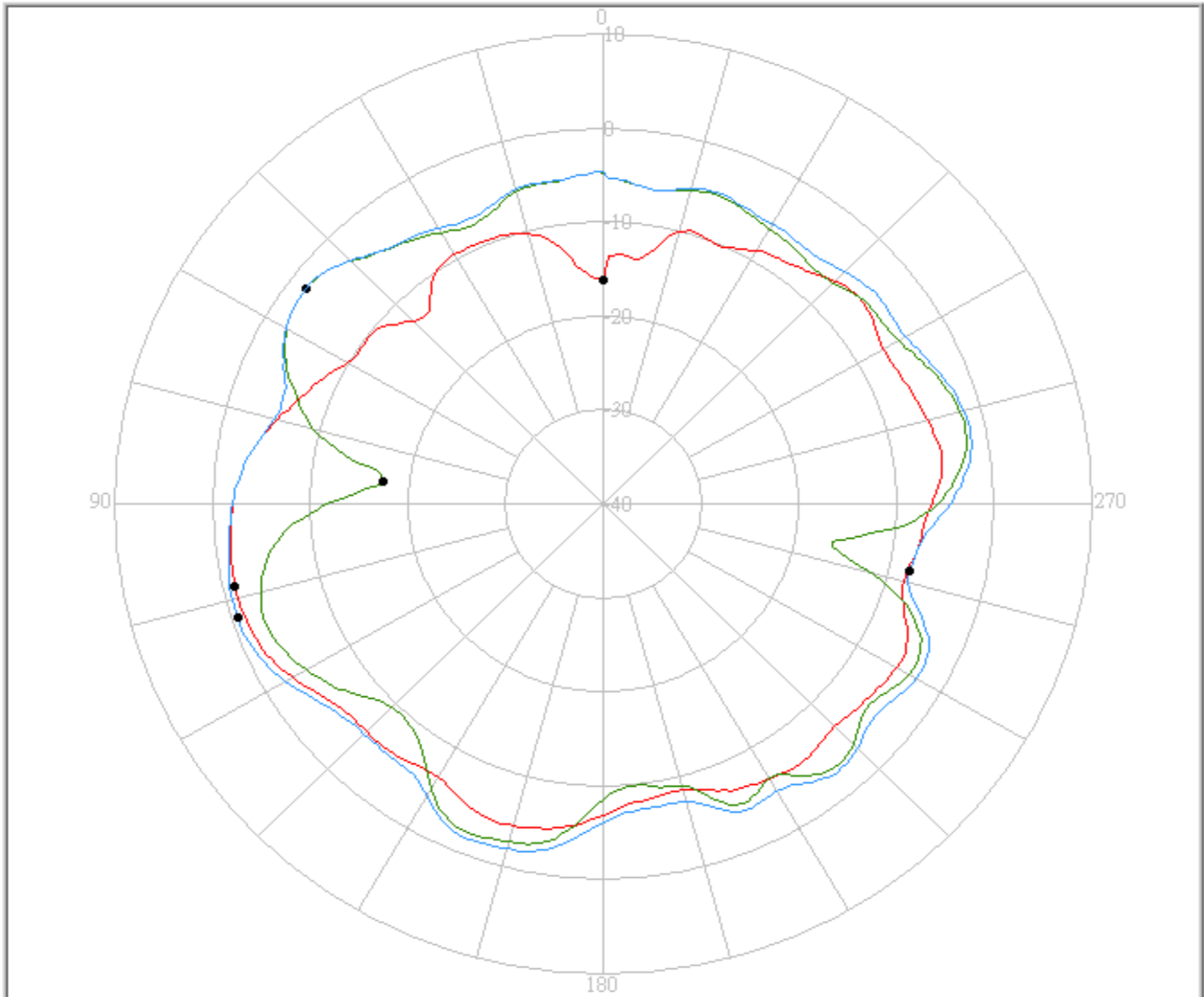
f. 5.15GHz



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Antenna Pattern Measurement

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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Right	5150.00	-1.32 / 103.00	-16.19 / 0.00	-6.14	Ver.	2006/2/6
2	X20	Right	5150.00	-1.90 / 53.00	-17.38 / 84.00	-5.29	Hor.	2006/2/6
3	X20	Right	5150.00	-0.66 / 108.00	-7.87 / 257.00	-3.88	V+H	2006/2/6

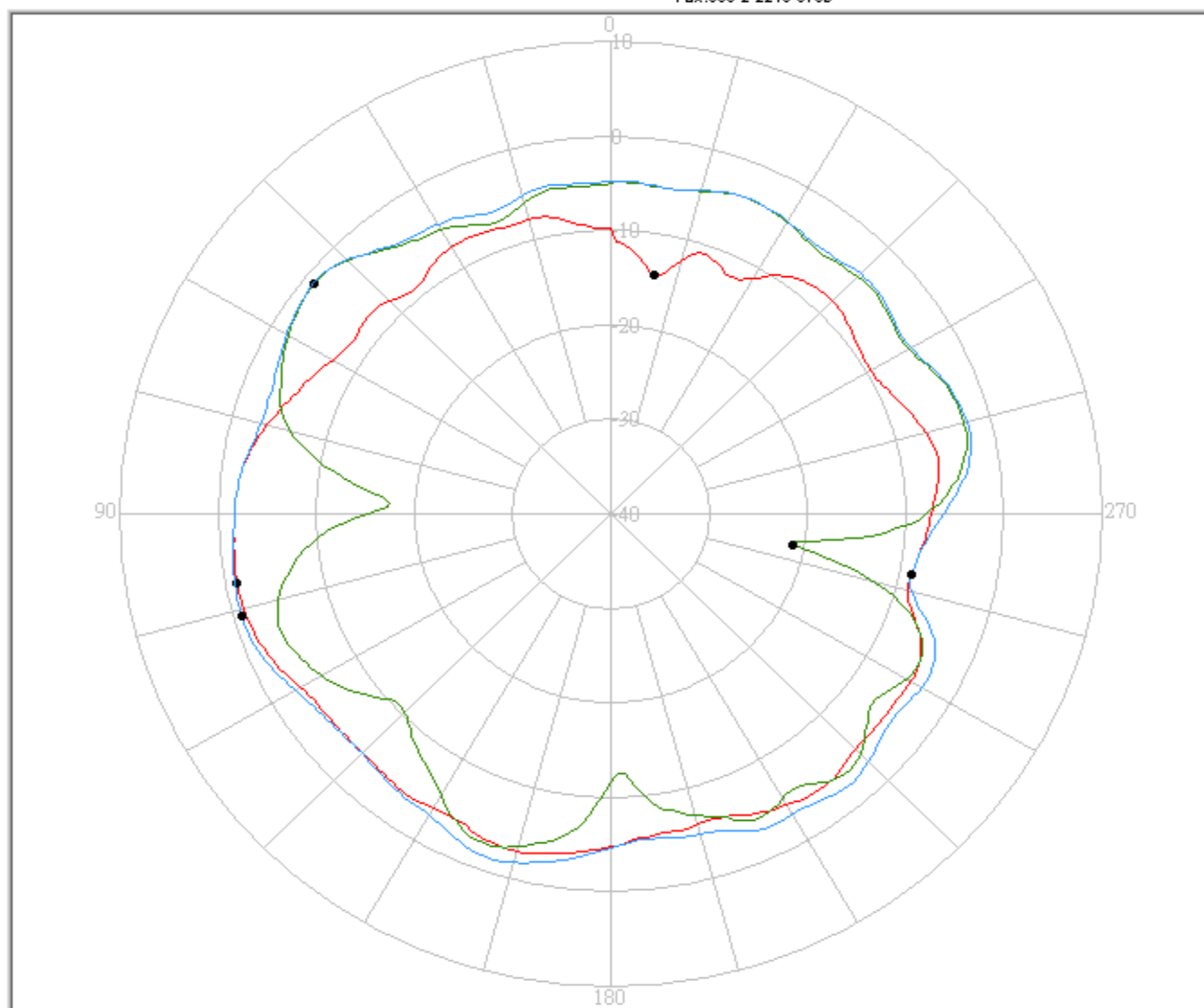
g. 5.25GHz



FAVORTRON Co. Ltd

Antenna Pattern Measurement

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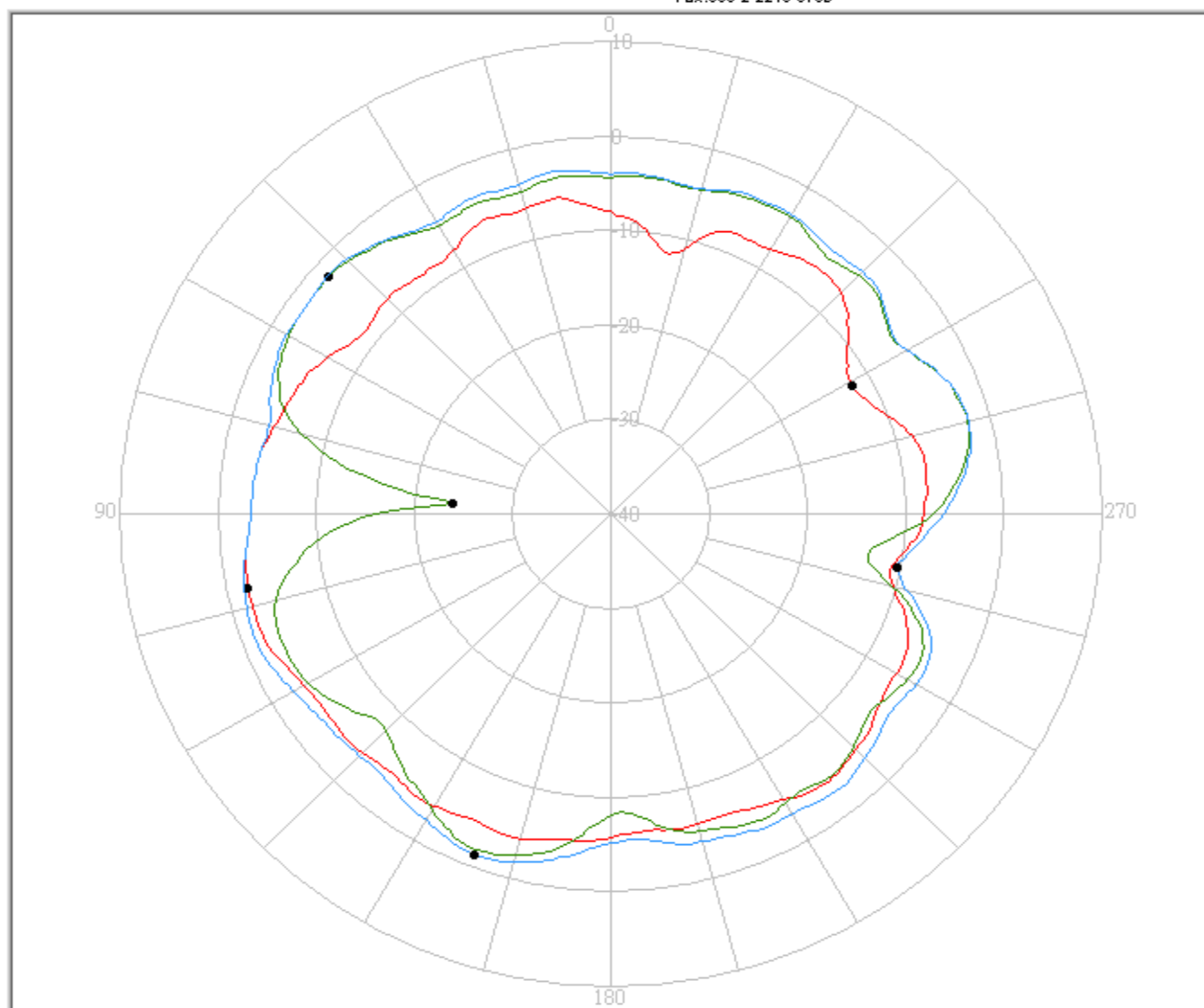
Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Right	5250.00	-1.24 / 101.00	-14.30 / 350.00	-5.41	Ver.	2006/2/6
2	X20	Right	5250.00	-1.20 / 51.00	-21.17 / 260.00	-5.24	Hor.	2006/2/6
3	X20	Right	5250.00	-0.96 / 106.00	-8.75 / 258.00	-3.45	V+H	2006/2/6

H. 5.35GHz



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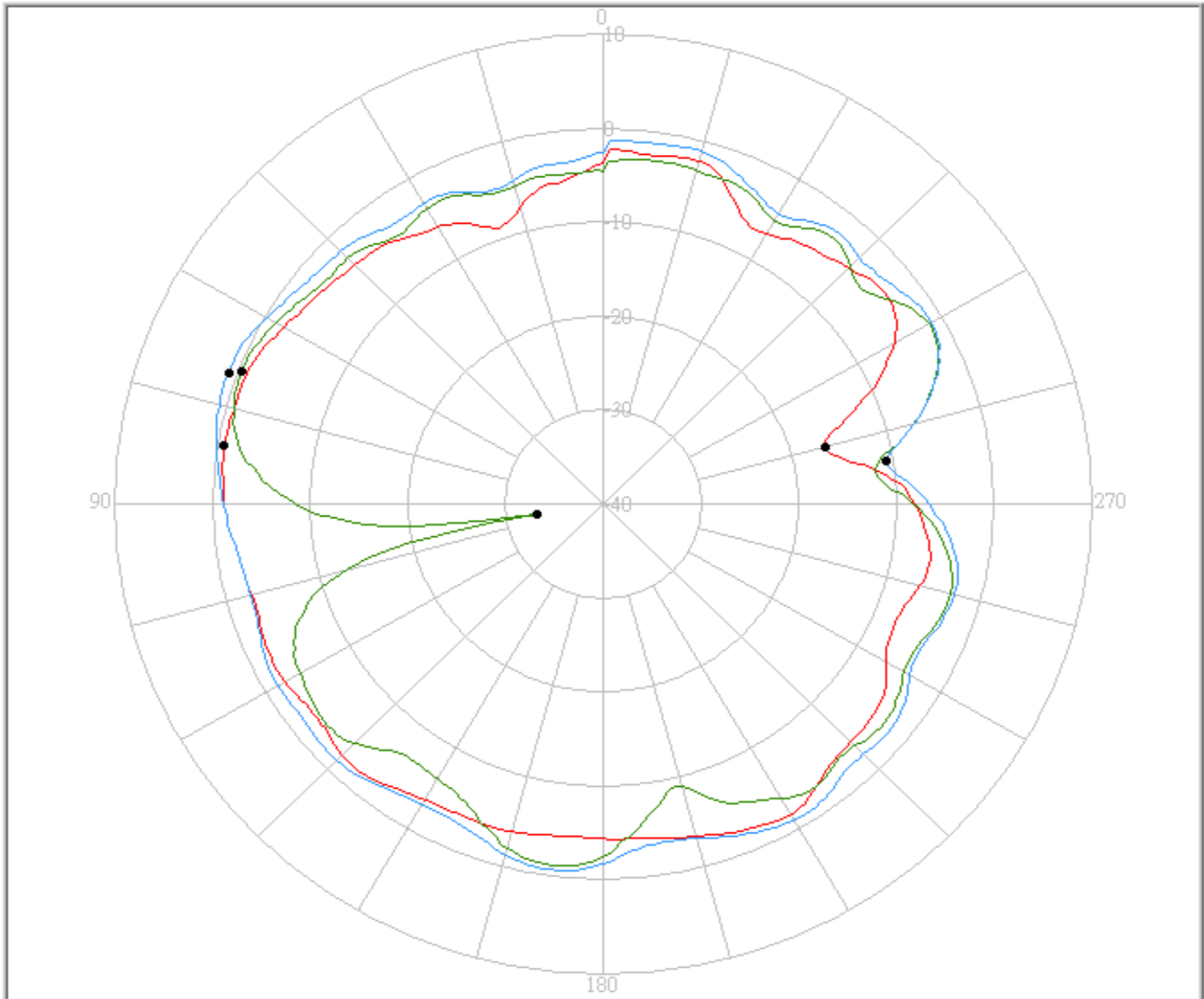
Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Right	5350.00	-2.20 / 102.00	-11.95 / 299.00	-5.87	Ver.	2006/2/6
2	X20	Right	5350.00	-1.83 / 49.00	-23.84 / 86.00	-4.72	Hor.	2006/2/6
3	X20	Right	5350.00	-1.35 / 159.00	-10.29 / 259.00	-3.47	V+H	2006/2/6

i. 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	X20	Right	5470.00	-0.75 / 81.00	-16.44 / 285.00	-3.87	Ver.	2006/2/6
2	X20	Right	5470.00	-0.40 / 69.00	-33.08 / 99.00	-3.99	Hor.	2006/2/6
3	X20	Right	5470.00	0.83 / 70.00	-10.69 / 279.00	-2.23	V+H	2006/2/6

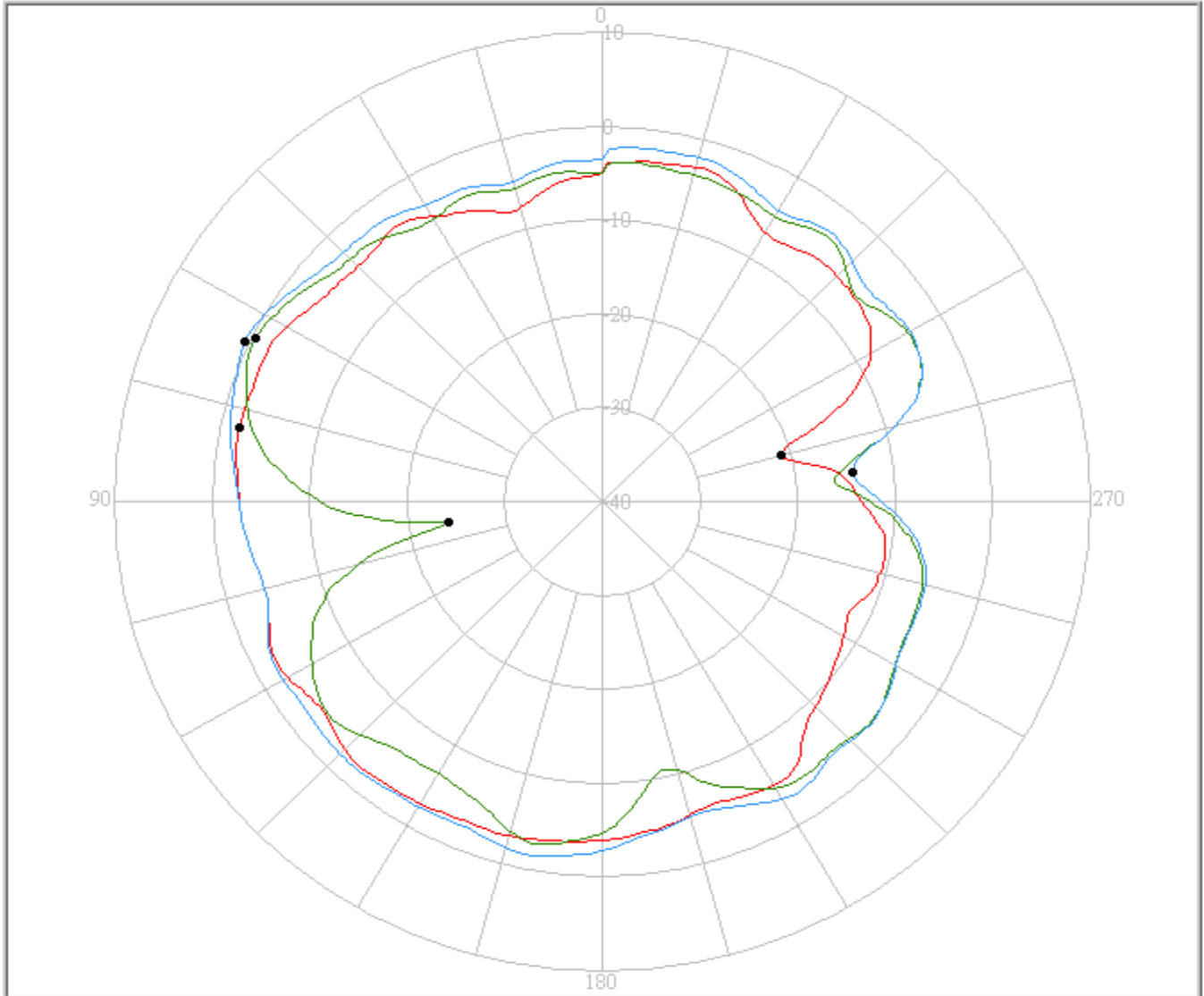
j. 5.597GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Right	5597.50	-1.95 / 78.00	-20.99 / 285.00	-4.90	Ver.	2006/2/6
2	X20	Right	5597.50	-0.46 / 64.00	-24.02 / 98.00	-5.00	Hor.	2006/2/6
3	X20	Right	5597.50	0.36 / 65.00	-14.09 / 277.00	-3.22	V+H	2006/2/6

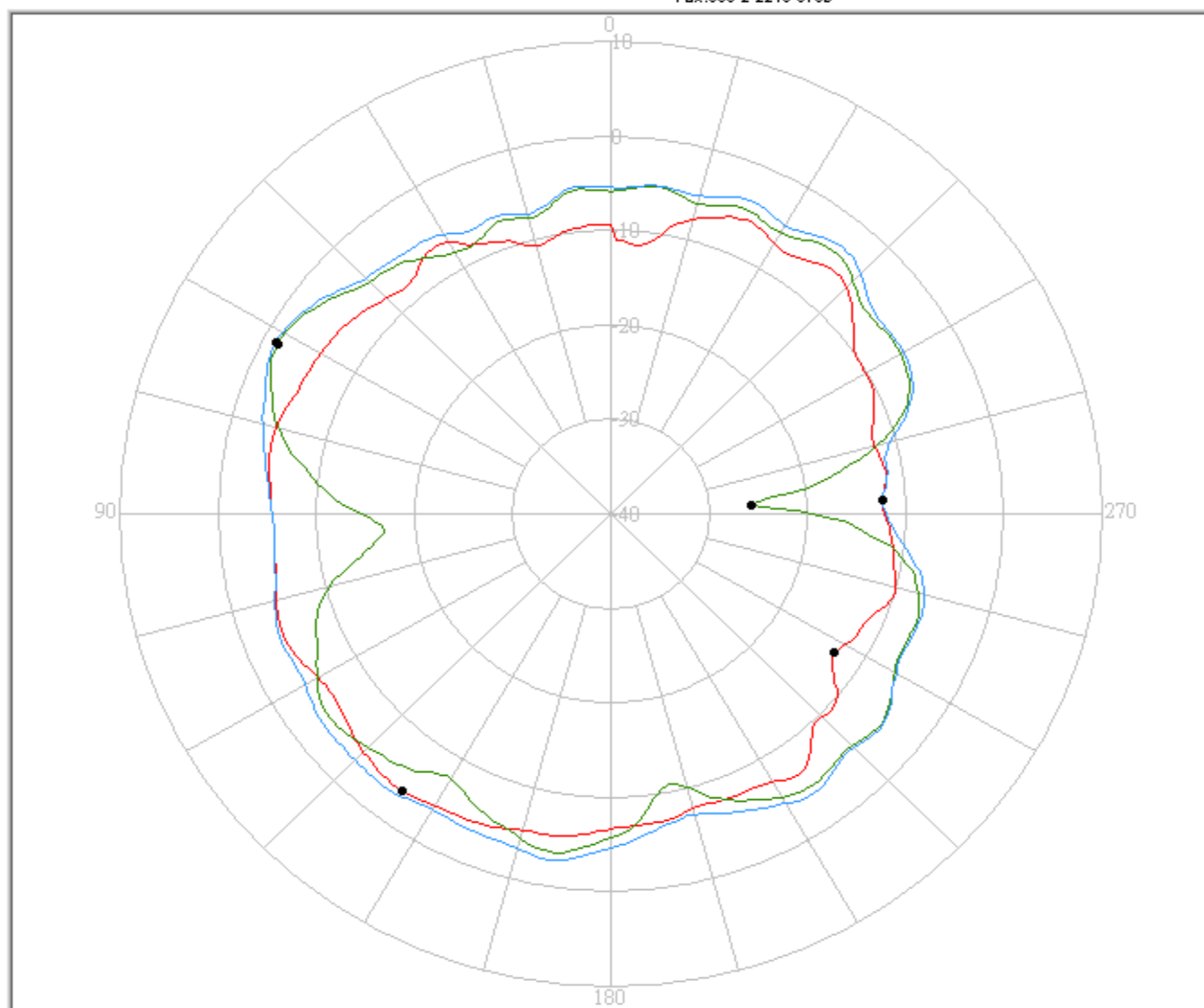
k. 5.725GHz



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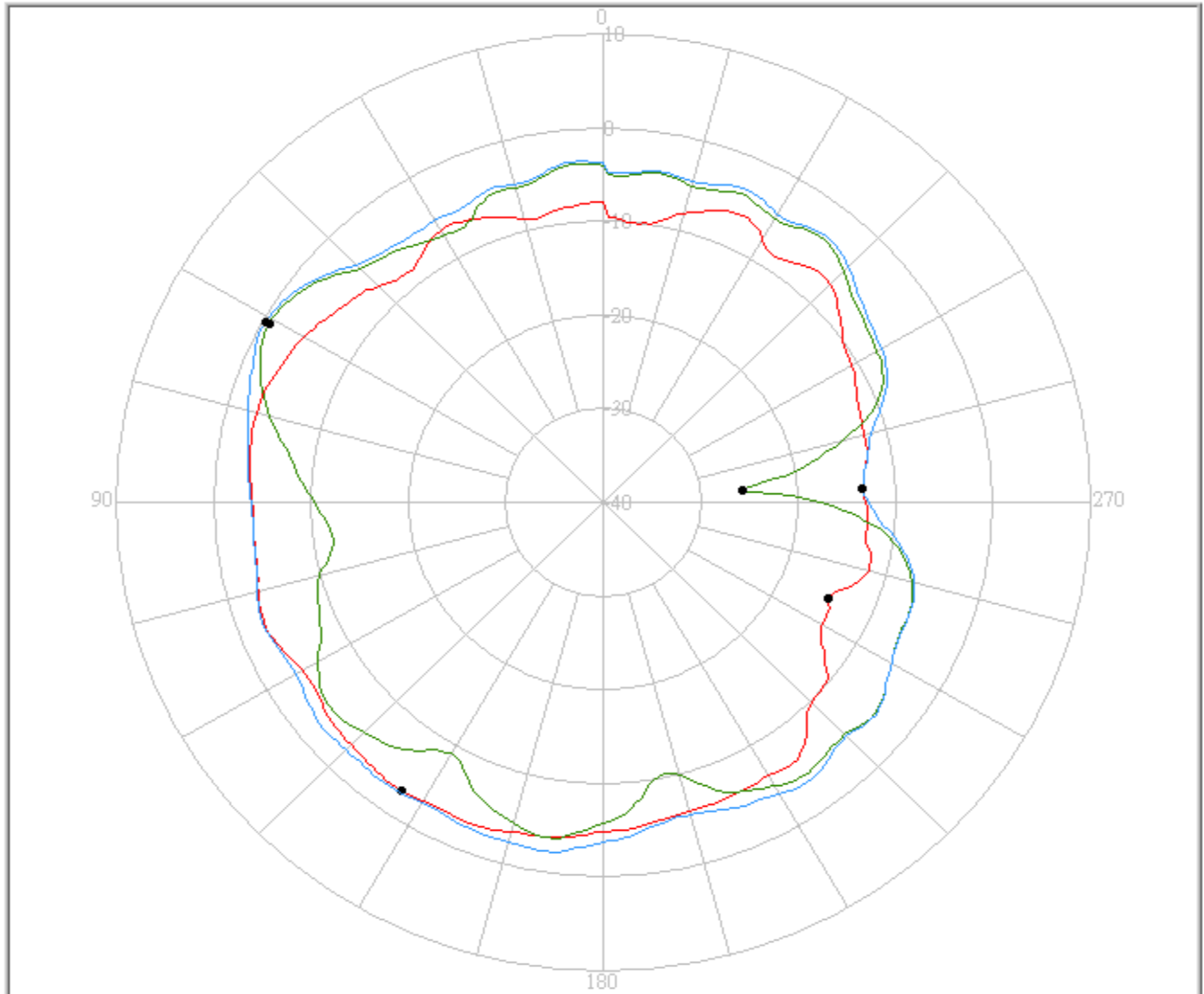
Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Right	5725.00	-3.78 / 144.00	-12.99 / 237.00	-7.00	Ver.	2006/2/6
2	X20	Right	5725.00	-1.63 / 62.00	-25.68 / 274.00	-6.14	Hor.	2006/2/6
3	X20	Right	5725.00	-1.34 / 62.00	-12.37 / 273.00	-4.81	V+H	2006/2/6

1. 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	X20	Right	5785.00	-2.85 / 146.00	-14.64 / 246.00	-6.06	Ver.	2006/2/6
2	X20	Right	5785.00	-0.74 / 61.00	-25.69 / 275.00	-5.73	Hor.	2006/2/6
3	X20	Right	5785.00	-0.37 / 61.00	-13.33 / 273.00	-4.10	V+H	2006/2/6

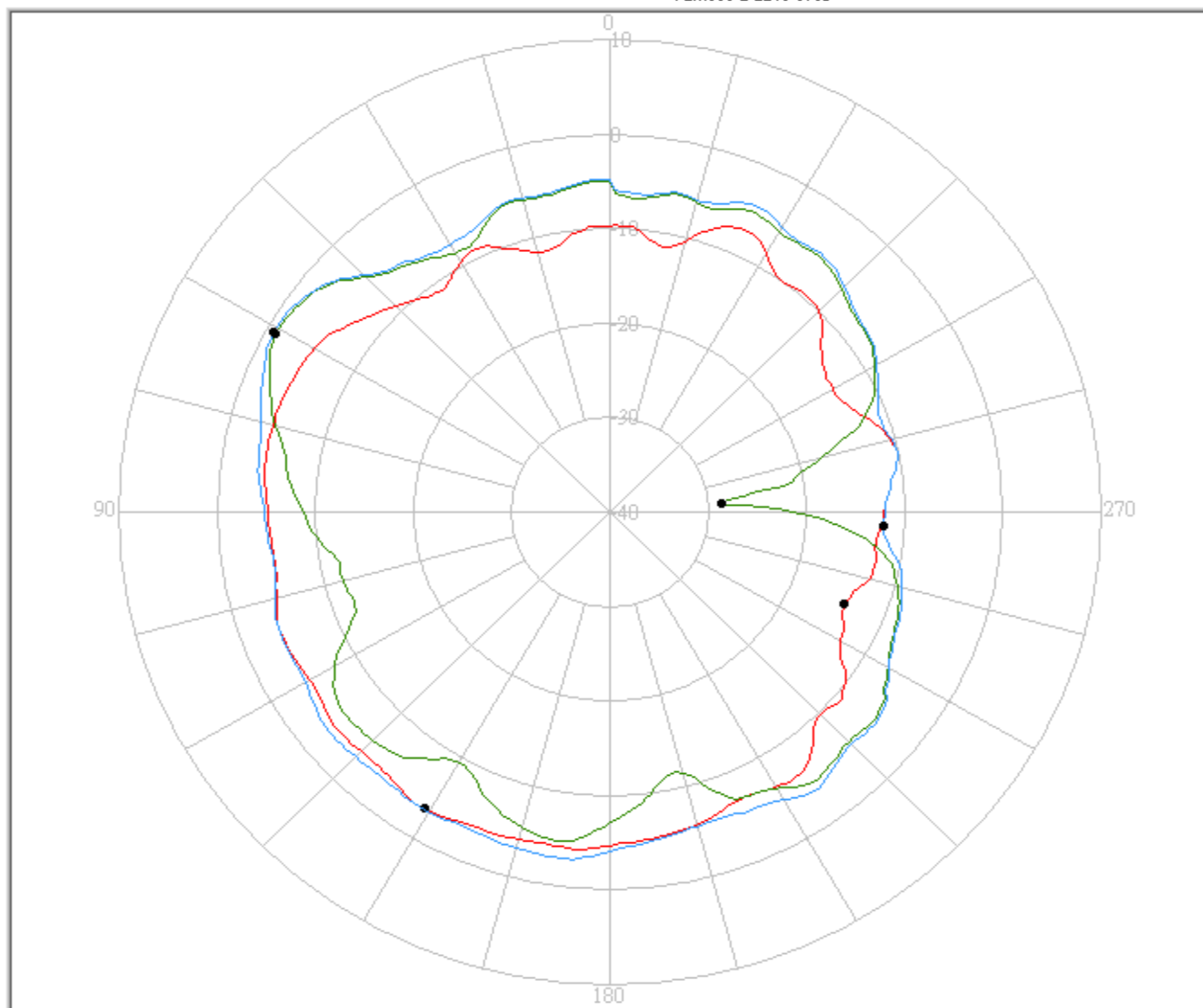
m. 5.85GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Right	5850.00	-3.36 / 149.00	-14.24 / 248.00	-6.94	Ver.	2006/2/6
2	X20	Right	5850.00	-1.15 / 61.00	-28.66 / 275.00	-6.62	Hor.	2006/2/6
3	X20	Right	5850.00	-0.83 / 61.00	-12.18 / 267.00	-4.95	V+H	2006/2/6

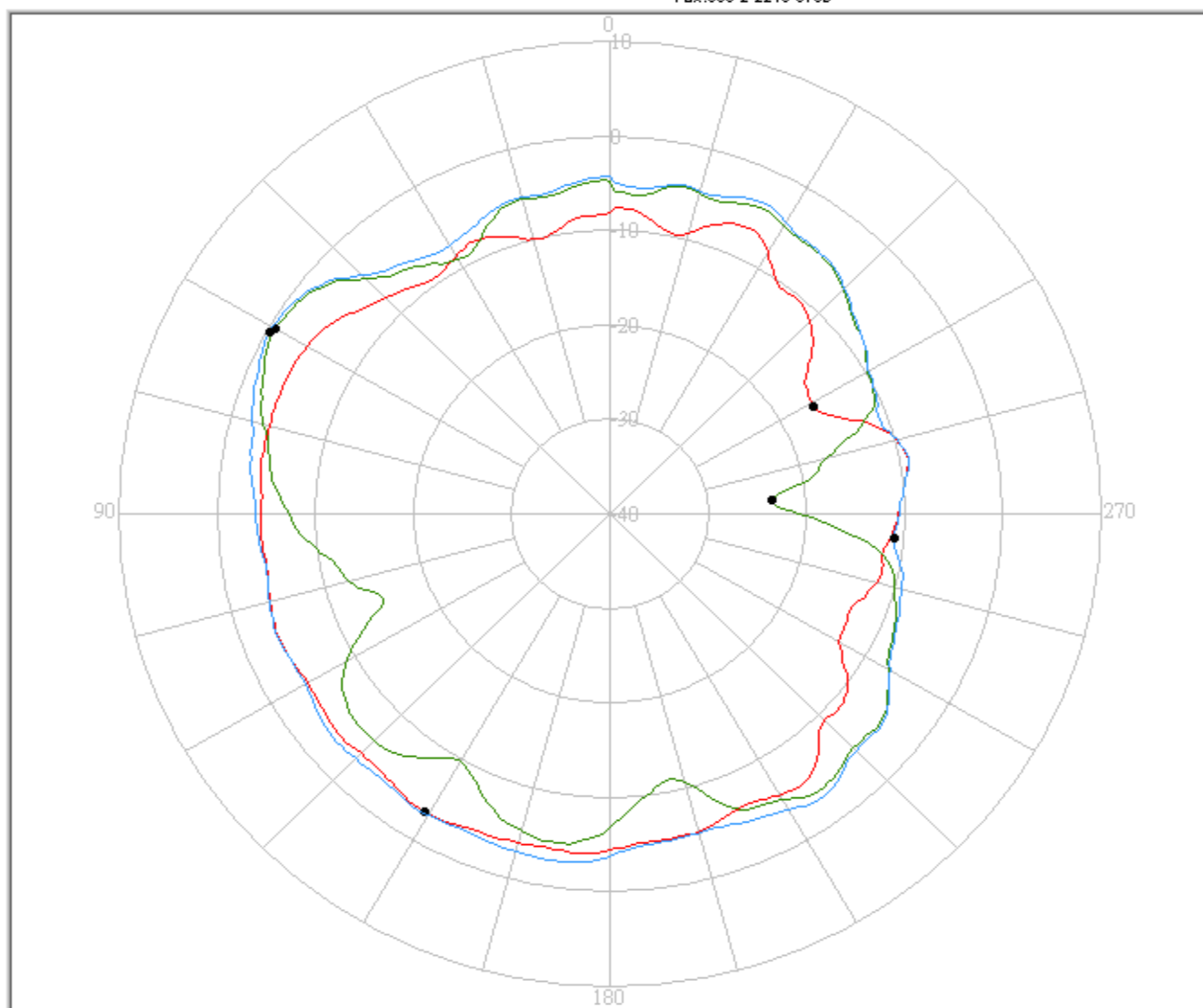
n. 5.875GHz



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Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	X20	Right	5875.00	-3.22 / 149.00	-16.40 / 299.00	-6.43	Ver.	2006/2/6
2	X20	Right	5875.00	-0.69 / 60.00	-23.52 / 275.00	-6.25	Hor.	2006/2/6
3	X20	Right	5875.00	-0.32 / 61.00	-10.99 / 265.00	-4.52	V+H	2006/2/6