

DATE. MAR. 26. 2006

CUSTOMER : First international Computer, Inc.

# TEST REPORT

|                     |                                                                                   |
|---------------------|-----------------------------------------------------------------------------------|
| <b>MODEL</b>        | GE2 (MAIN)                                                                        |
| <b>DESCRIPTION</b>  | PIFA For Wireless LAN Antenna<br>2.4~2.5GHZ / 5.15~5.875GHZ<br>275mm(Left, Black) |
| <b>SUPPLIER P/N</b> | K05004001301                                                                      |
| <b>CUSTOMER P/N</b> | 21-92526-01                                                                       |
| <b>FILE P/N</b>     |                                                                                   |

| FAVORTRON |            |          | CUSTOMER |  |
|-----------|------------|----------|----------|--|
| Manager   | Supervisor | Engineer |          |  |
| Nick      | James      | James    |          |  |



惠賢電子股份有限公司  
FAVORTRON CO., LTD

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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. 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 : 5.15 ~ 5.35GHz (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

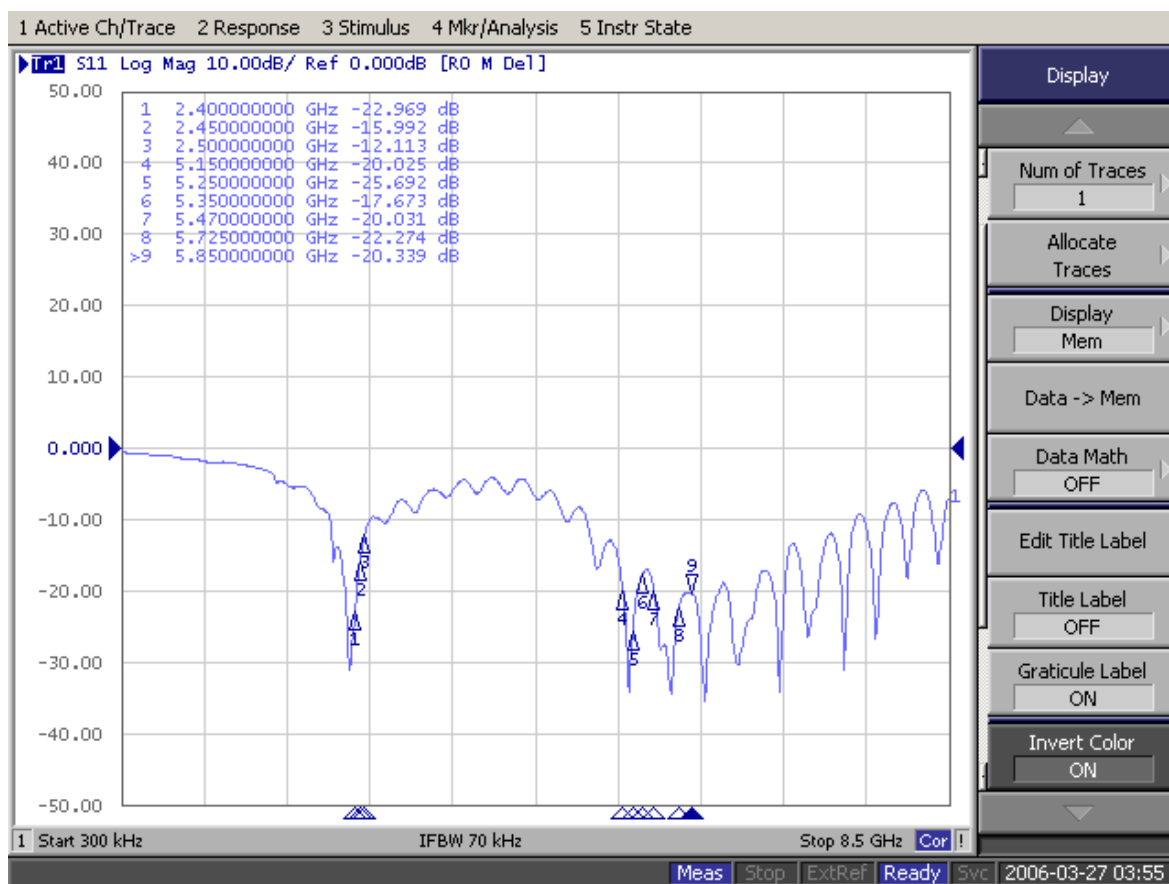
| Antenna   | Peak Gain (dBi) |         |         | Average Gain (dBi) |         |         |
|-----------|-----------------|---------|---------|--------------------|---------|---------|
|           | Frequency       |         |         | Frequency          |         |         |
|           | 5.15GHz         | 5.25GHz | 5.35GHz | 5.15GHz            | 5.25GHz | 5.35GHz |
| Main      | ≤ 6             | ≤ 6     | ≤ 6     | ≥ -4.8             | ≥ -4.8  | ≥ -4.8  |
| Auxiliary | ≤ 6             | ≤ 6     | ≤ 6     | ≥ -4.8             | ≥ -4.8  | ≥ -4.8  |

# 2. DESCRIPTION

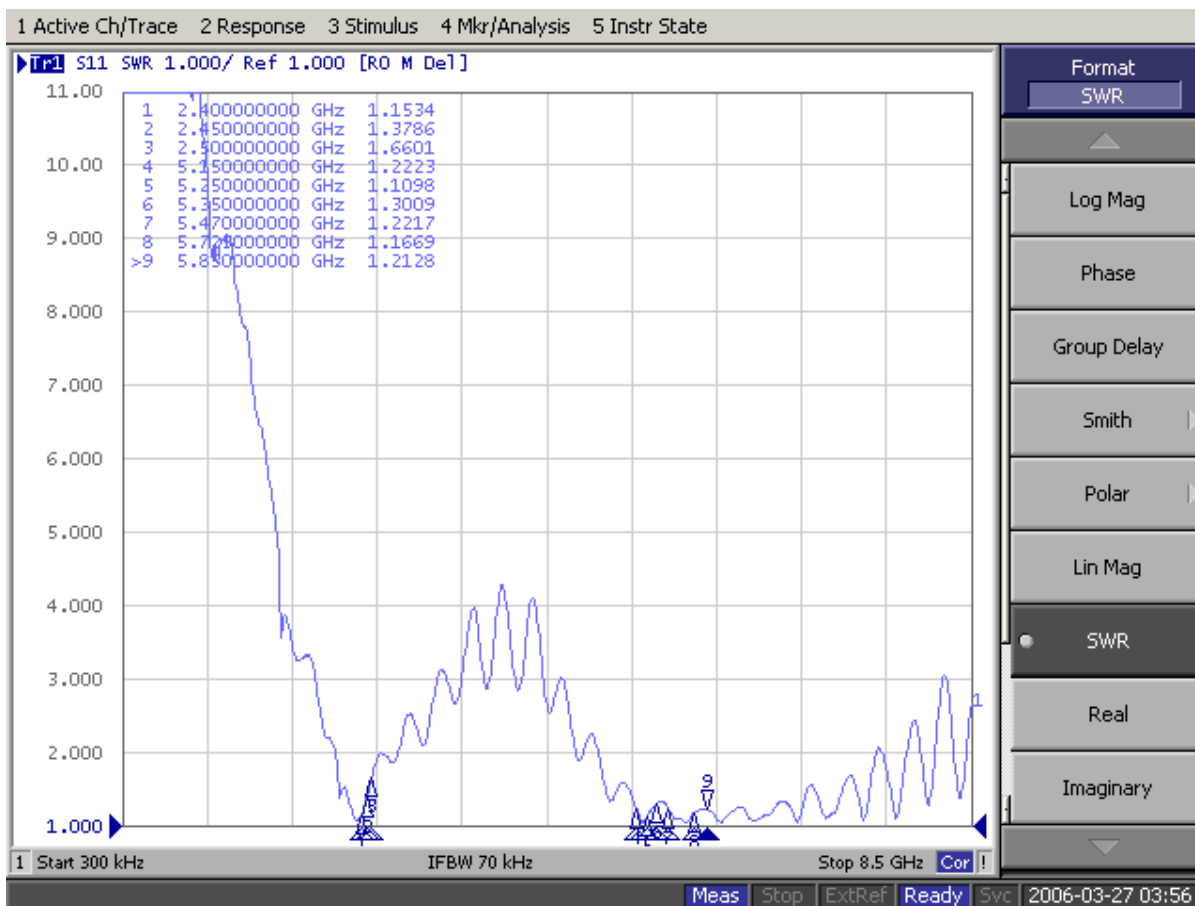
- a. FIC Project Name & FIC P/N : GE2(MAIN)
- & Frequency : 2.4~2.5GHZ / 5.15~5.875GHZ
- b. Vendor's antenna P/N : K05004001301
- c. Antenna P/N & type & material : M02007013001
- d. Coaxial cable length & diameter(Φ) : 275mm(MAIN, Black) / & 1.13Φ
- & Cable P/N
- & Vendor
- e. Connector model no. & vendor

### 3. WLAN Main /Ant.( MAIN)

#### 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.

### a. 2.4GHz



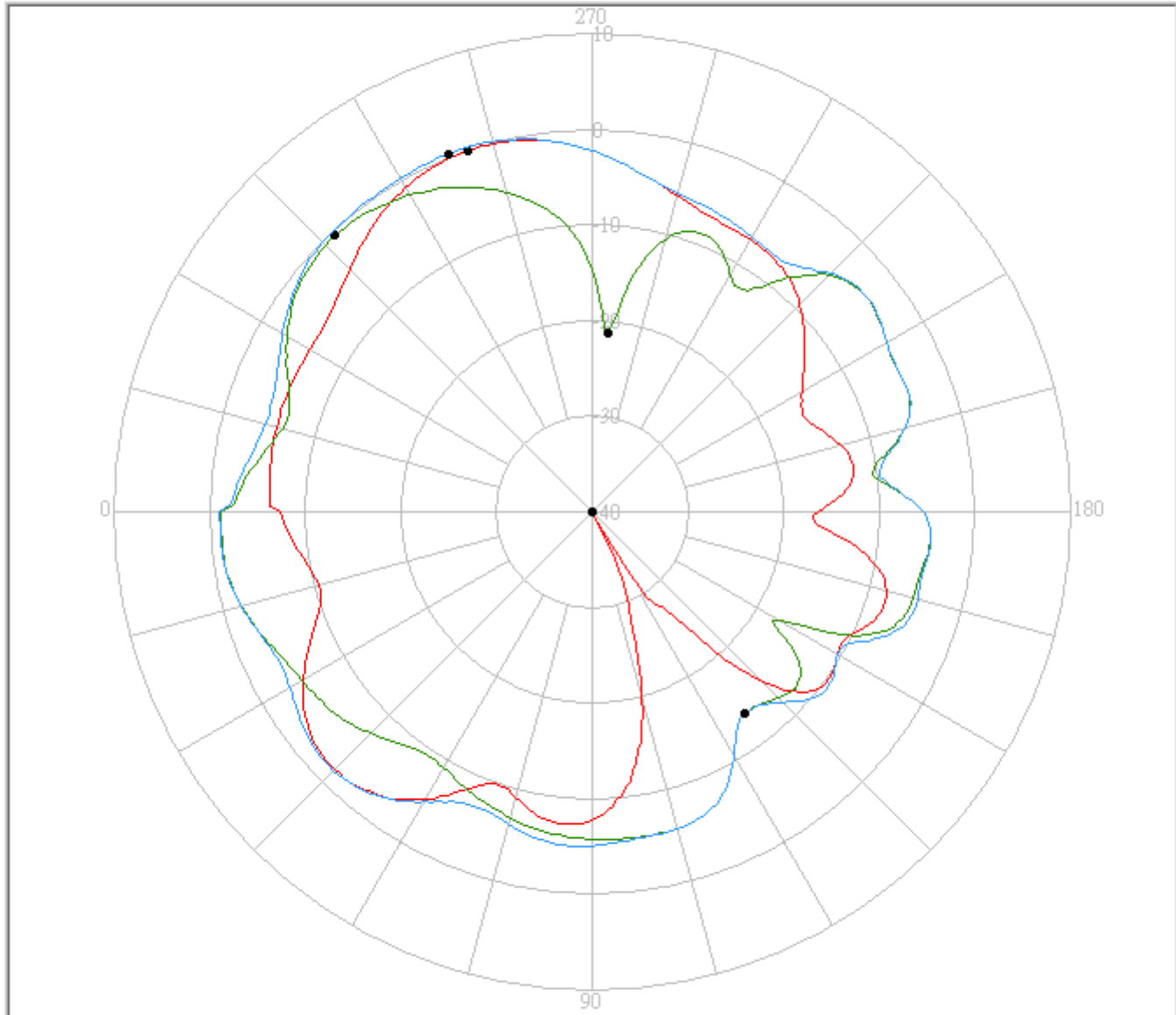
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**Antenna Pattern Measurement**

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       | GE2       | MAIN      | 2400.00   | -0.03 / 289.00 | -46.22 / 118.00 | -5.98          | Ver.          | 2006/3/26 |
| 2       | GE2       | MAIN      | 2400.00   | -0.53 / 313.00 | -21.20 / 265.00 | -5.33          | Hor.          | 2006/3/26 |
| 3       | GE2       | MAIN      | 2400.00   | 0.32 / 292.00  | -13.60 / 127.00 | -3.65          | V+H           | 2006/3/26 |

## b. 2.45GHz



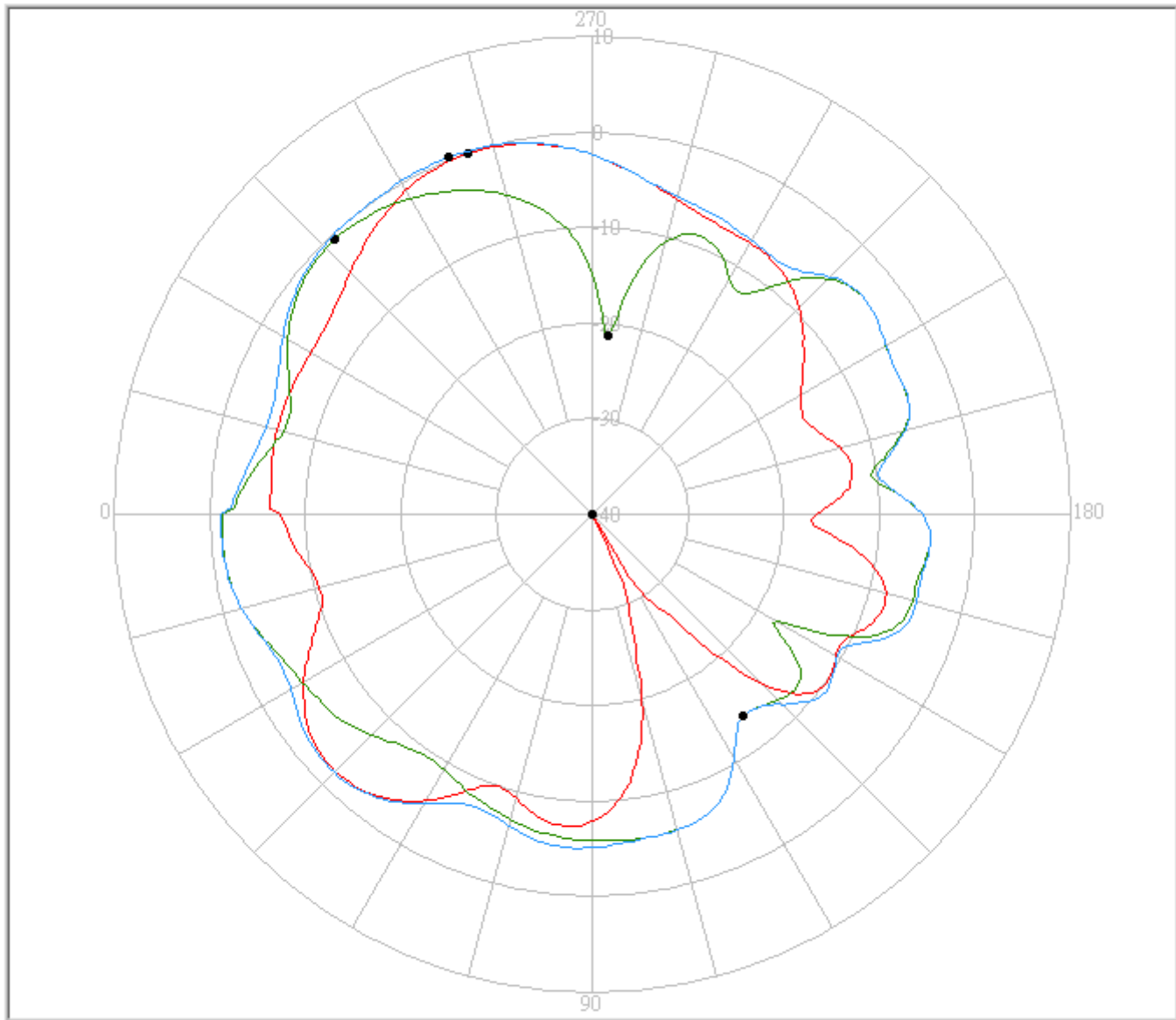
eService for Customer Satisfaction

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| Pattern | Model No. | Test Mode | Freq(MHz) | Max Gain(dBi)  | Min Gain(dBi)   | Avg. Gain(dBi) | Source Polar. | Date      |
|---------|-----------|-----------|-----------|----------------|-----------------|----------------|---------------|-----------|
| 1       | GE2       | MAIN      | 2450.00   | -0.12 / 289.00 | -46.31 / 118.00 | -6.07          | Ver.          | 2006/3/26 |
| 2       | GE2       | MAIN      | 2450.00   | -0.62 / 313.00 | -21.29 / 265.00 | -5.42          | Hor.          | 2006/3/26 |
| 3       | GE2       | MAIN      | 2450.00   | 0.23 / 292.00  | -13.69 / 127.00 | -3.74          | V+H           | 2006/3/26 |

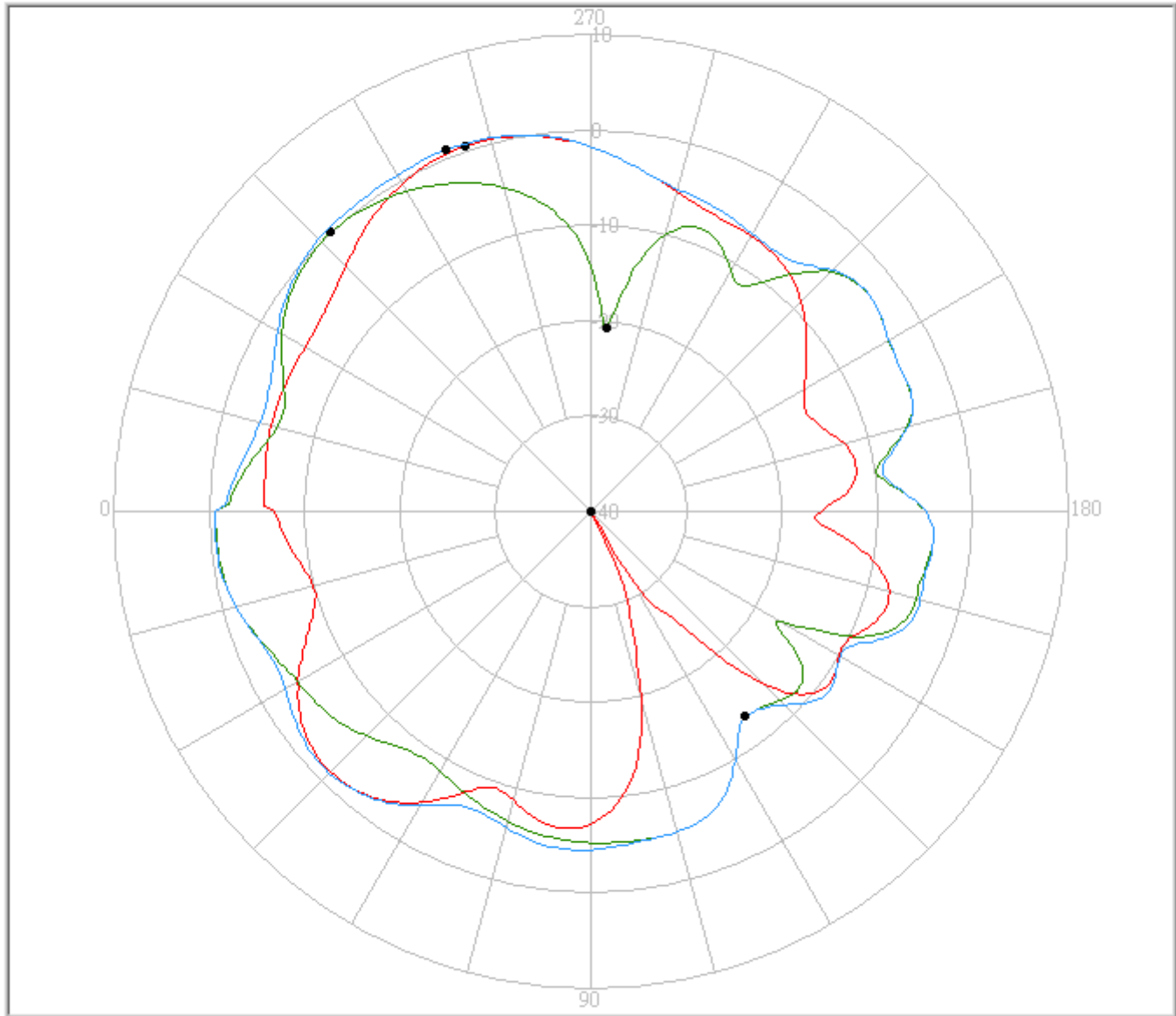
c. 2.5GHz



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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       | GE2       | MAIN      | 2500.00   | 0.47 / 289.00  | -45.72 / 118.00 | -5.48          | Ver.          | 2006/3/26 |
| 2       | GE2       | MAIN      | 2500.00   | -0.03 / 313.00 | -20.70 / 265.00 | -4.83          | Hor.          | 2006/3/26 |
| 3       | GE2       | MAIN      | 2500.00   | 0.82 / 292.00  | -13.10 / 127.00 | -3.15          | V+H           | 2006/3/26 |

# d. 5.15GHz



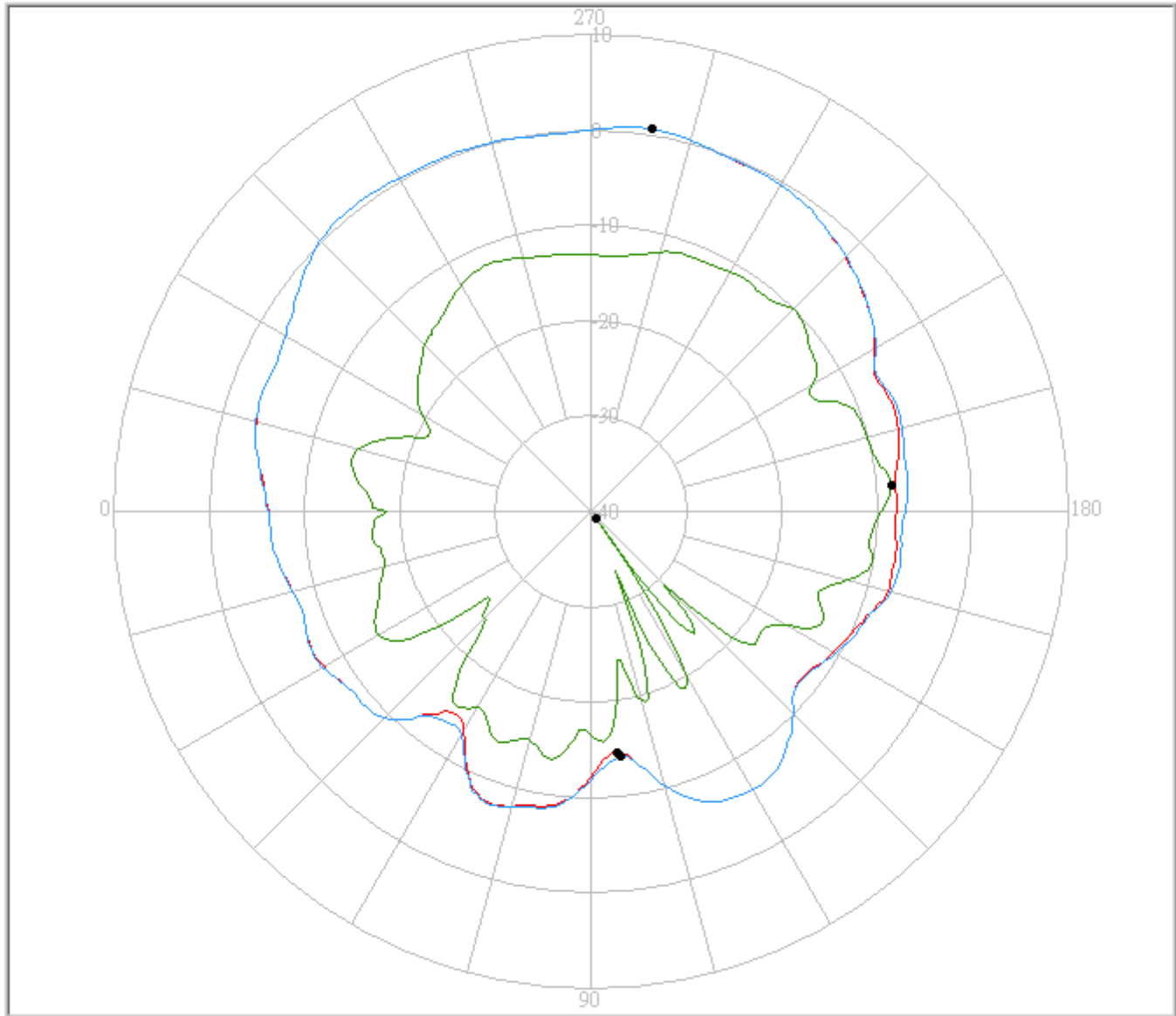
eService for Customer Satisfaction

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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       | GE2       | MAIN      | 5150.00   | 0.57 / 261.00  | -14.58 / 96.00  | -3.88          | Ver.          | 2006/3/26 |
| 2       | GE2       | MAIN      | 5150.00   | -8.42 / 185.00 | -39.19 / 125.00 | -13.77         | Hor.          | 2006/3/26 |
| 3       | GE2       | MAIN      | 5150.00   | 0.57 / 261.00  | -14.17 / 97.00  | -3.82          | V+H           | 2006/3/26 |

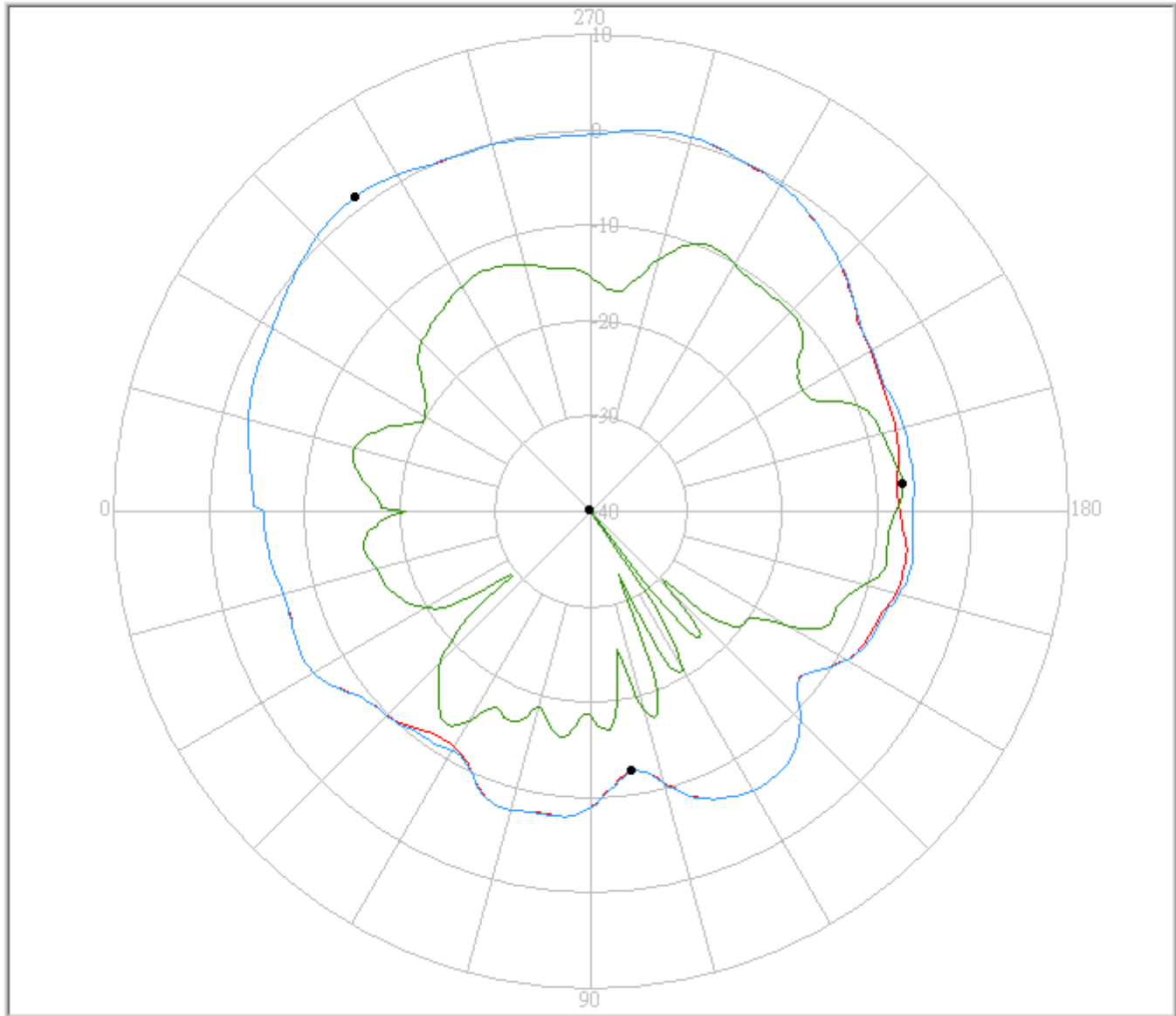
e. 5.25GHz



# 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       | GE2       | MAIN      | 5250.00   | 1.17 / 307.00  | -12.53 / 99.00  | -3.59          | Ver.          | 2006/3/26 |
| 2       | GE2       | MAIN      | 5250.00   | -7.23 / 185.00 | -40.29 / 125.00 | -13.50         | Hor.          | 2006/3/26 |
| 3       | GE2       | MAIN      | 5250.00   | 1.17 / 307.00  | -12.50 / 99.00  | -3.52          | V+H           | 2006/3/26 |



f. Hz. 5.35GHz



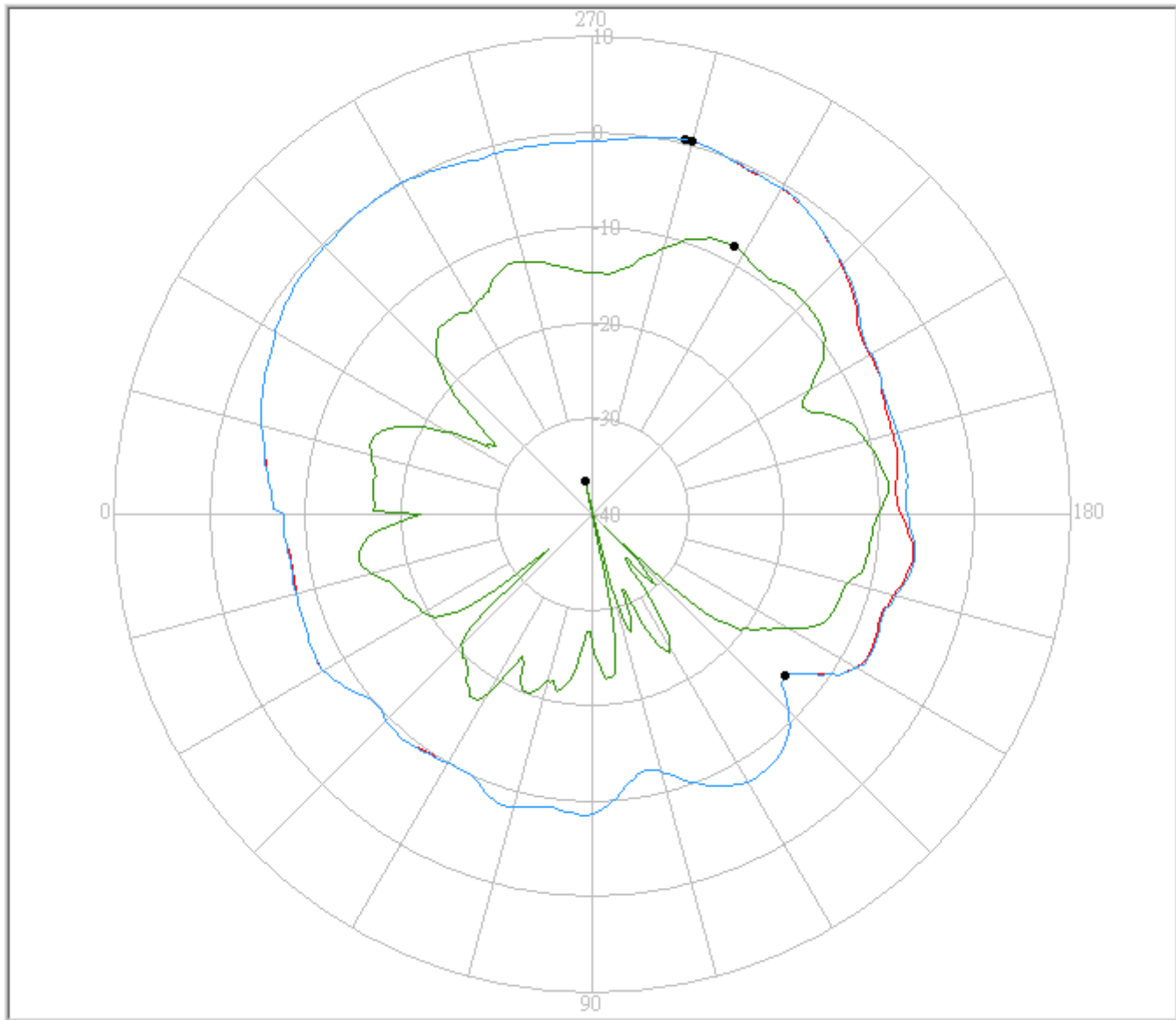
eService for Customer Satisfaction

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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       | GE2       | MAIN      | 5350.00   | 0.31 / 256.00  | -13.82 / 140.00 | -4.21          | Ver.          | 2006/3/26 |
| 2       | GE2       | MAIN      | 5350.00   | -8.27 / 242.00 | -43.60 / 103.00 | -14.03         | Hor.          | 2006/3/26 |
| 3       | GE2       | MAIN      | 5350.00   | 0.32 / 255.00  | -13.78 / 140.00 | -4.15          | V+H           | 2006/3/26 |

g. 5.47GHz



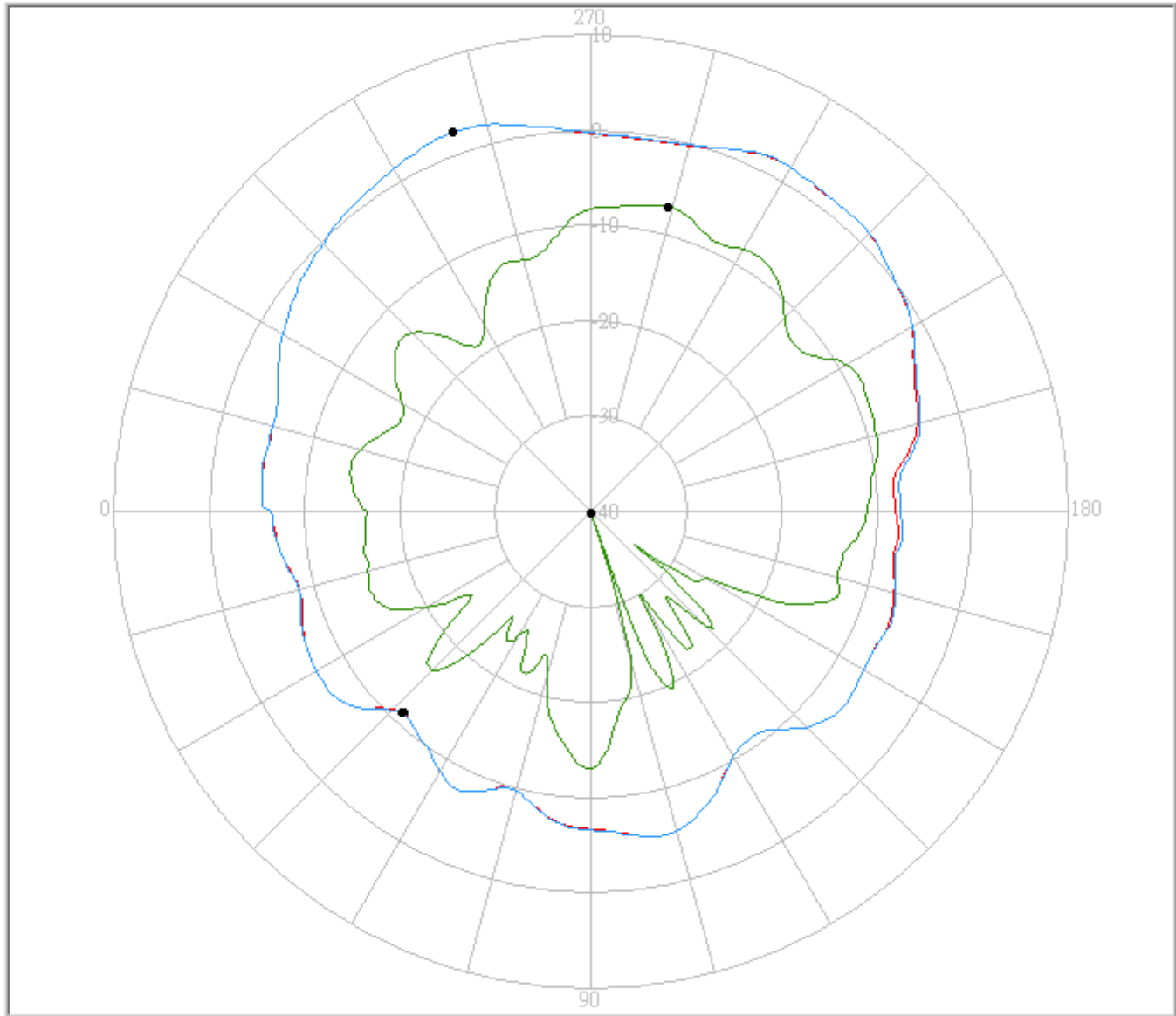
eService for Customer Satisfaction

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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       | GE2       | MAIN      | 5470.00   | 2.24 / 290.00  | -11.21 / 47.00  | -2.80          | Ver.          | 2006/3/26 |
| 2       | GE2       | MAIN      | 5470.00   | -7.06 / 256.00 | -39.85 / 108.00 | -12.93         | Hor.          | 2006/3/26 |
| 3       | GE2       | MAIN      | 5470.00   | 2.24 / 290.00  | -11.08 / 47.00  | -2.76          | V+H           | 2006/3/26 |

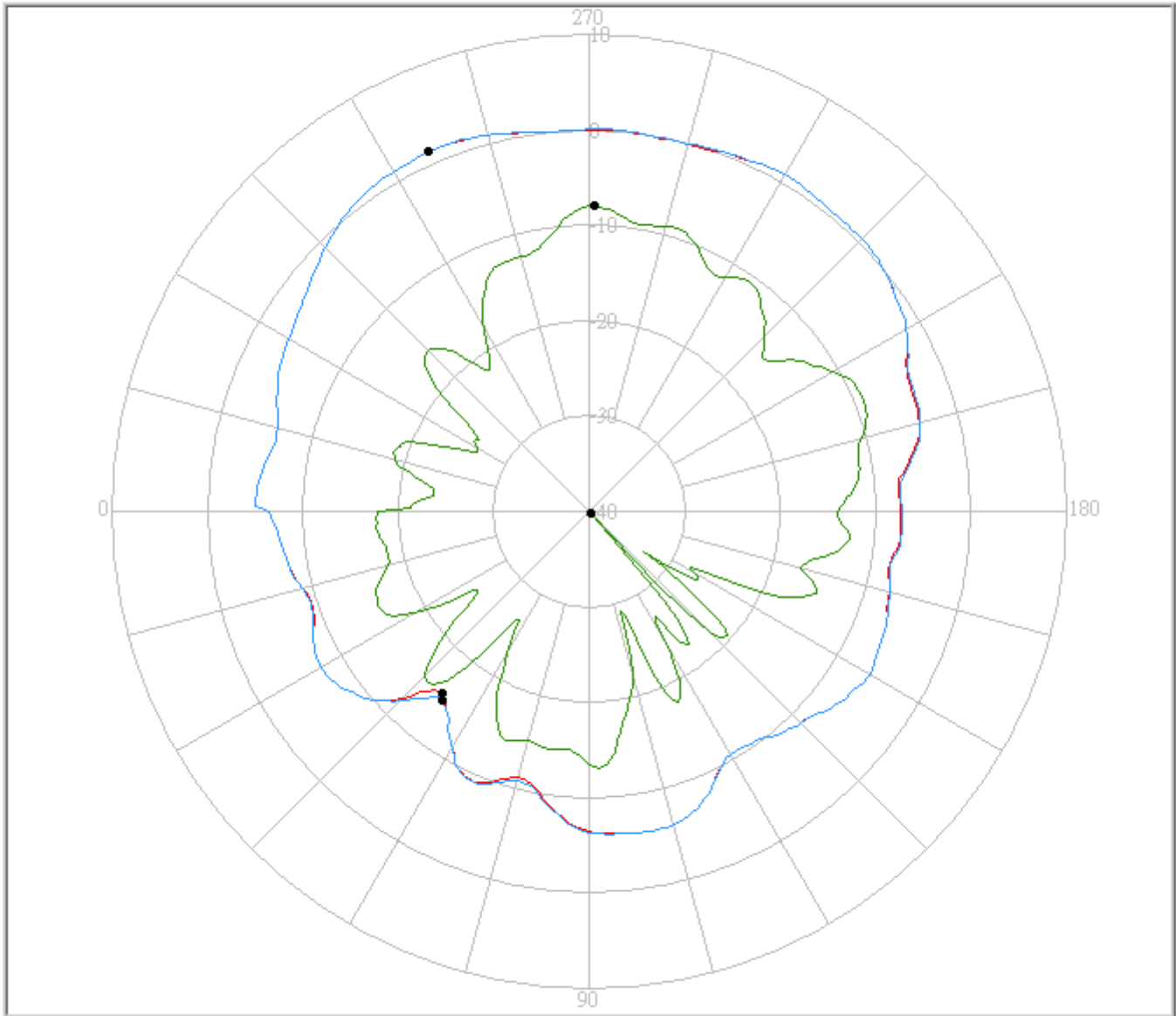
h. 5.597GHz



# 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



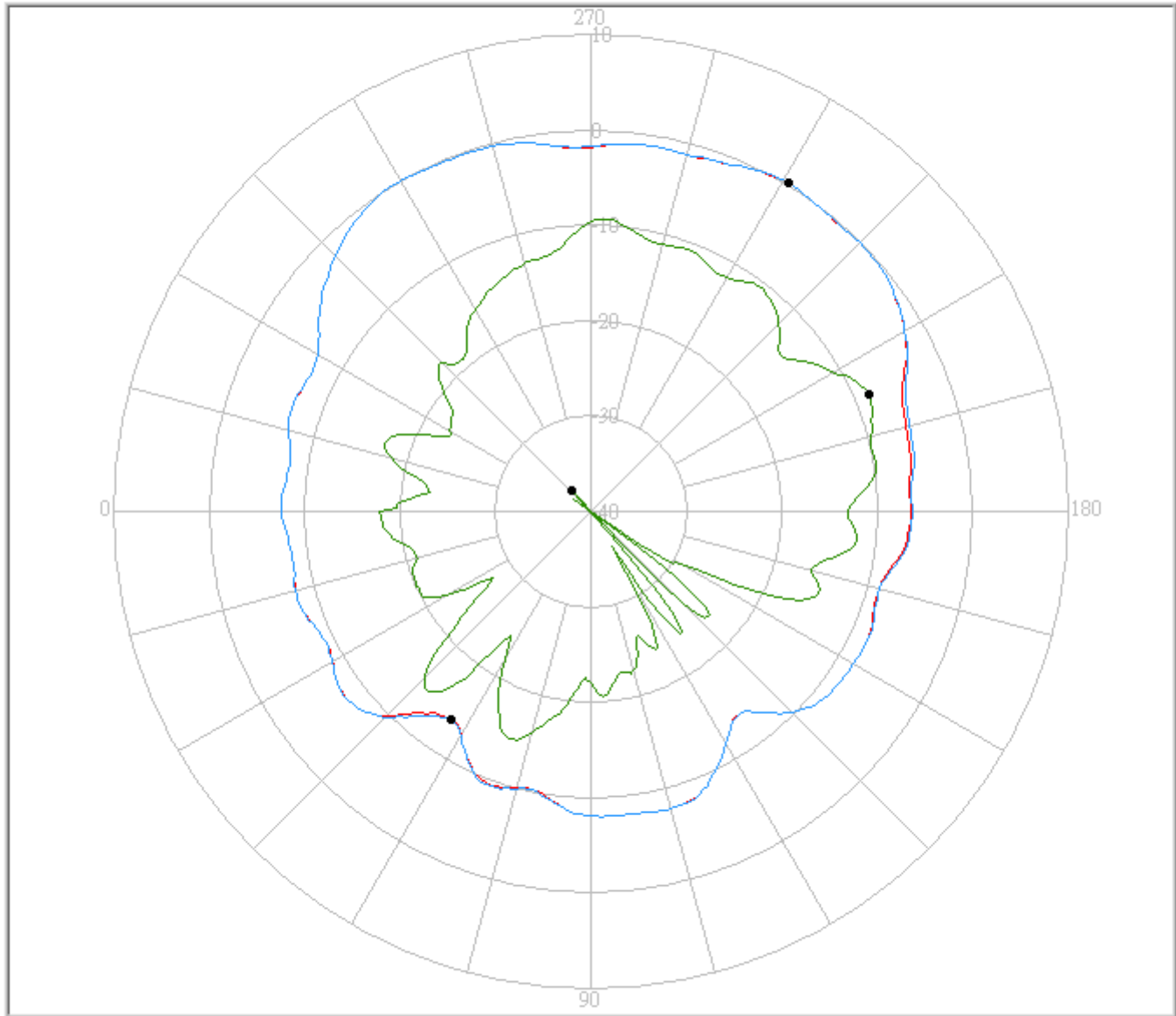
| Pattern | Model No. | Test Mode | Freq(MHz) | Max Gain(dBi)  | Min Gain(dBi)   | Avg. Gain(dBi) | Source Polar. | Date      |
|---------|-----------|-----------|-----------|----------------|-----------------|----------------|---------------|-----------|
| 1       | GE2       | MAIN      | 5597.50   | 1.23 / 294.00  | -15.56 / 51.00  | -3.29          | Ver.          | 2006/3/26 |
| 2       | GE2       | MAIN      | 5597.50   | -8.03 / 269.00 | -39.78 / 132.00 | -14.18         | Hor.          | 2006/3/26 |
| 3       | GE2       | MAIN      | 5597.50   | 1.23 / 294.00  | -15.00 / 52.00  | -3.26          | V+H           | 2006/3/26 |

# i. 5.725GHz



## 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       | GE2       | MAIN      | 5725.00   | 0.11 / 239.00  | -13.69 / 56.00  | -4.33          | Ver.          | 2006/3/26 |
| 2       | GE2       | MAIN      | 5725.00   | -8.43 / 203.00 | -42.92 / 132.00 | -14.60         | Hor.          | 2006/3/26 |
| 3       | GE2       | MAIN      | 5725.00   | 0.12 / 239.00  | -13.67 / 56.00  | -4.29          | V+H           | 2006/3/26 |

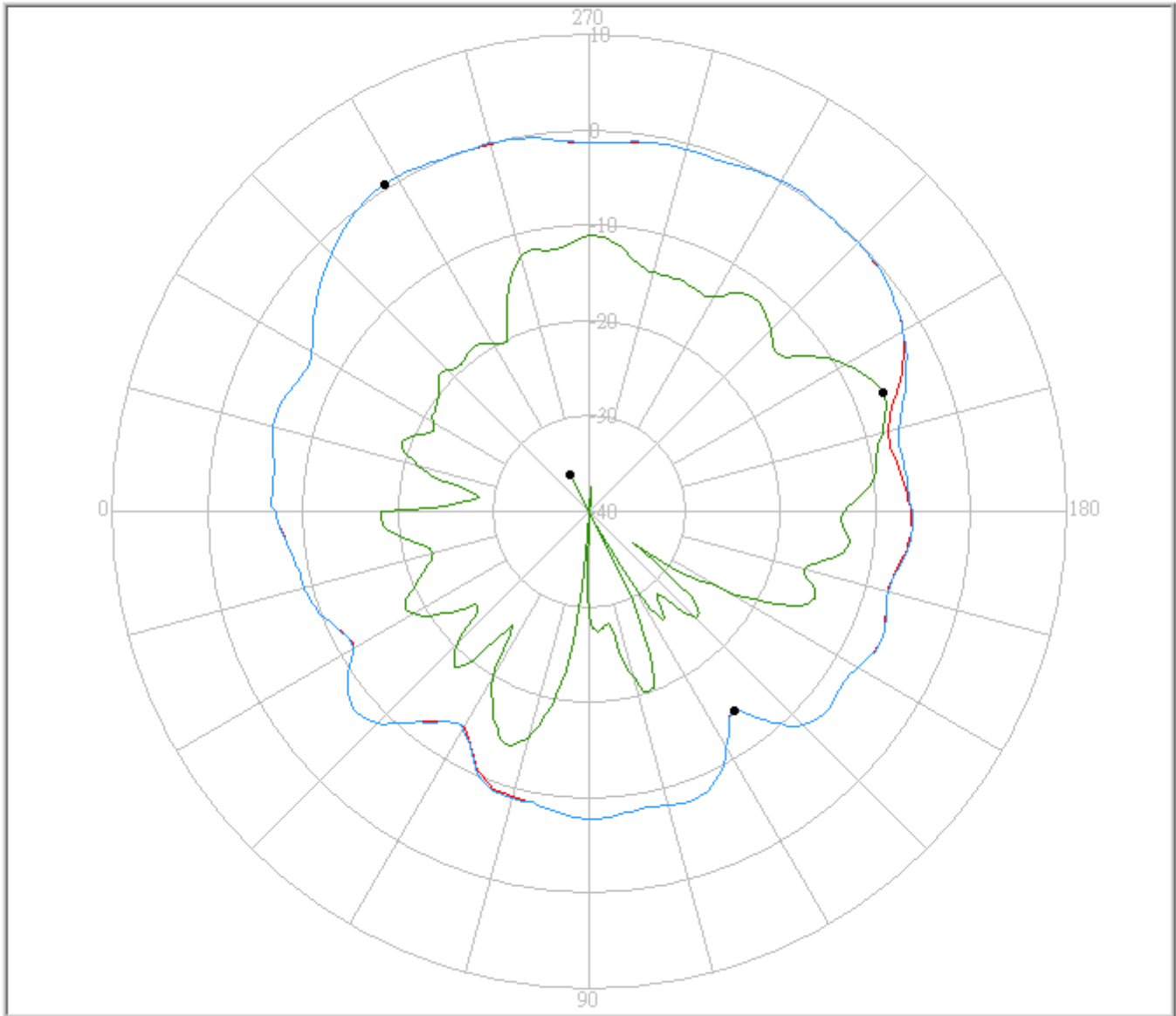
j. 5.785GHz



# 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       | GE2       | MAIN      | 5785.00   | 0.43 / 302.00  | -14.22 / 126.00 | -4.09          | Ver.          | 2006/3/26 |
| 2       | GE2       | MAIN      | 5785.00   | -6.85 / 202.00 | -44.31 / 118.00 | -14.98         | Hor.          | 2006/3/26 |
| 3       | GE2       | MAIN      | 5785.00   | 0.43 / 302.00  | -14.21 / 126.00 | -4.04          | V+H           | 2006/3/26 |

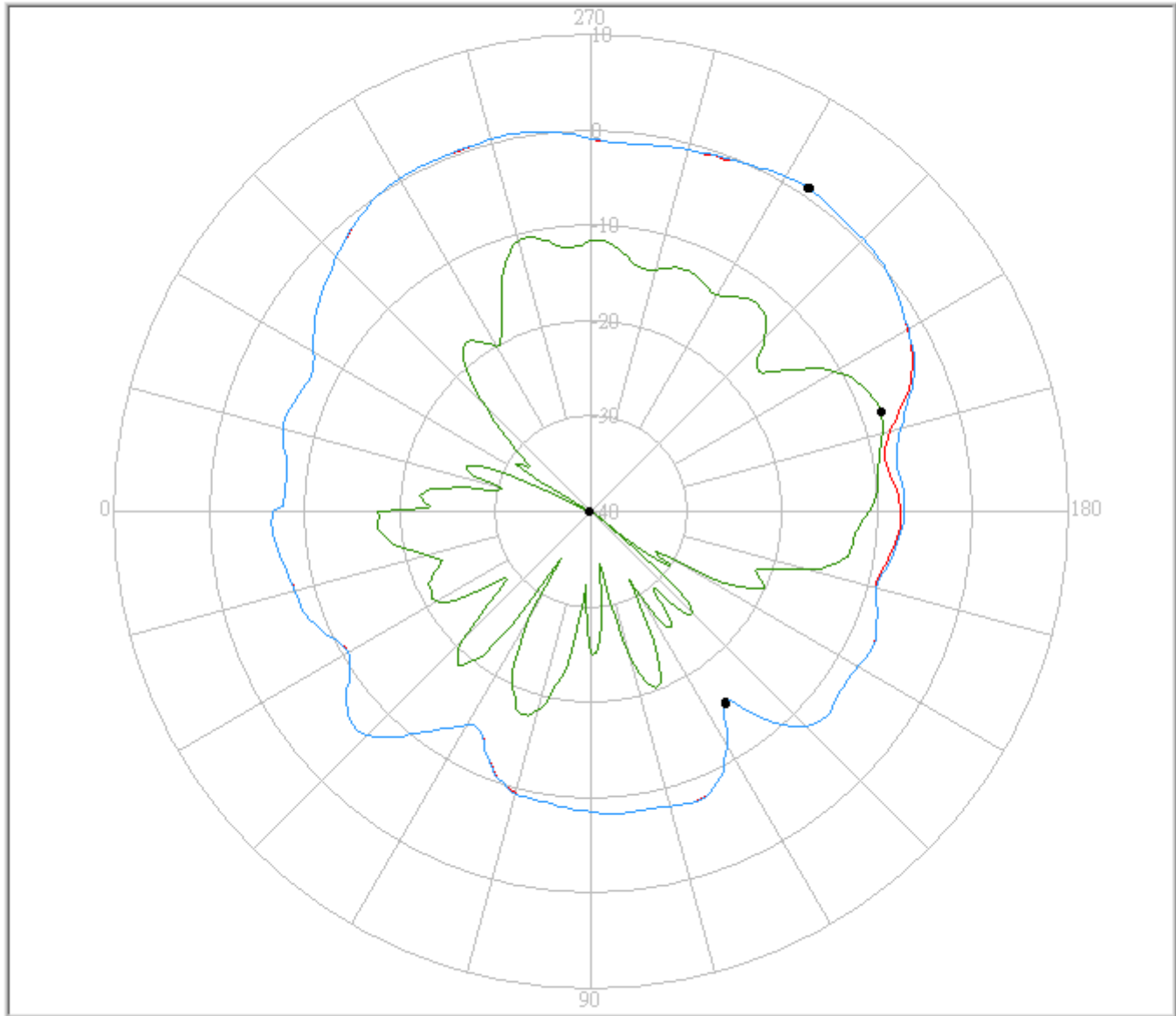
k. 5.85GHz



# FAVORTRON Co. Ltd

## Antenna Pattern Measurement

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Fax:886-2-2218-5760



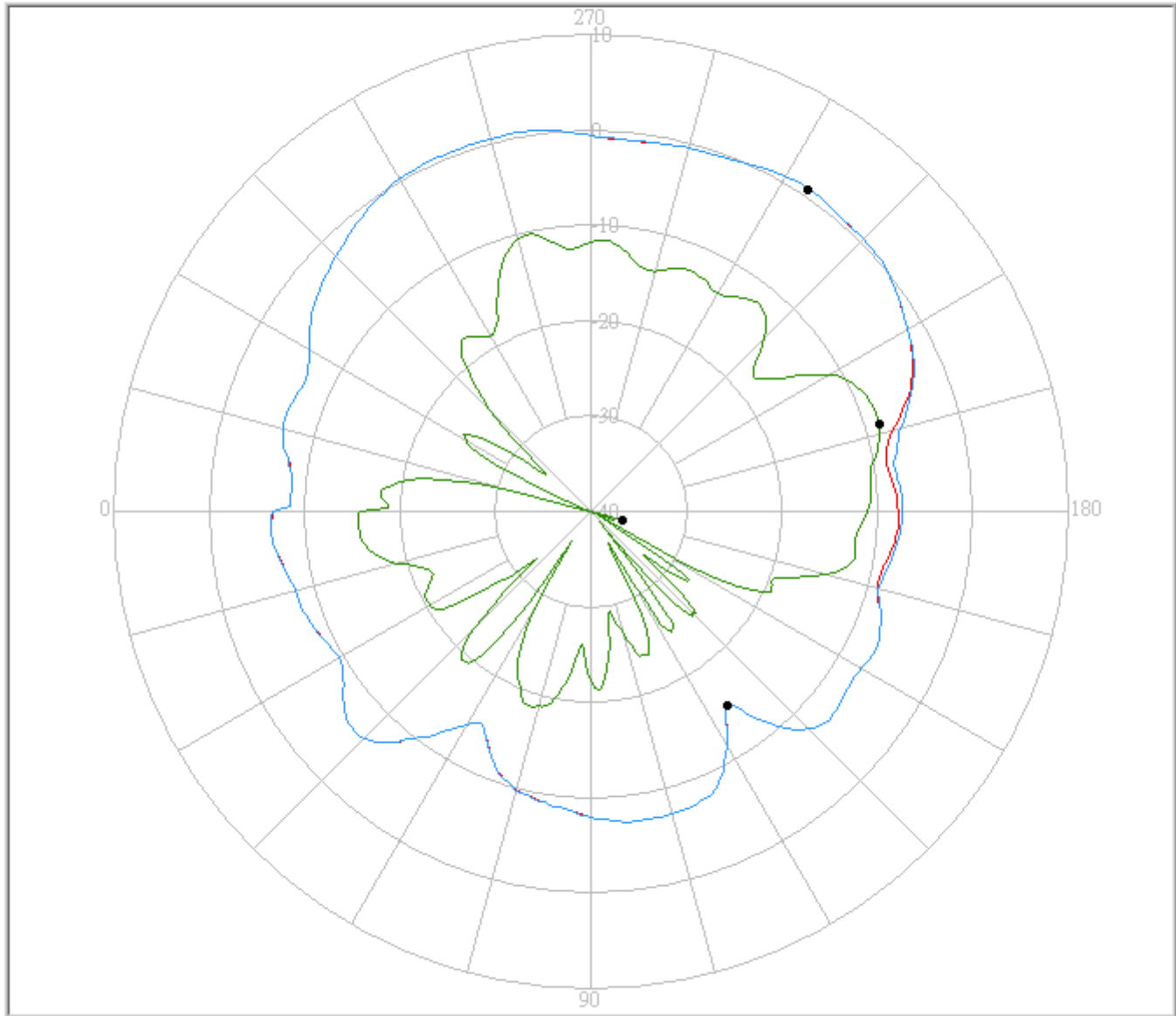
| Pattern | Model No. | Test Mode | Freq(MHz) | Max Gain(dBi)  | Min Gain(dBi)   | Avg. Gain(dBi) | Source Polar. | Date      |
|---------|-----------|-----------|-----------|----------------|-----------------|----------------|---------------|-----------|
| 1       | GE2       | MAIN      | 5850.00   | 0.78 / 236.00  | -15.54 / 125.00 | -3.95          | Ver.          | 2006/3/26 |
| 2       | GE2       | MAIN      | 5850.00   | -7.89 / 199.00 | -39.84 / 334.00 | -15.43         | Hor.          | 2006/3/26 |
| 3       | GE2       | MAIN      | 5850.00   | 0.78 / 236.00  | -15.52 / 125.00 | -3.91          | V+H           | 2006/3/26 |

# 1. 5.875GHz



## 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       | GE2       | MAIN      | 5875.00   | 0.74 / 236.00  | -15.23 / 125.00 | -3.82          | Ver.          | 2006/3/26 |
| 2       | GE2       | MAIN      | 5875.00   | -8.45 / 197.00 | -43.38 / 343.00 | -15.41         | Hor.          | 2006/3/26 |
| 3       | GE2       | MAIN      | 5875.00   | 0.75 / 236.00  | -15.21 / 125.00 | -3.79          | V+H           | 2006/3/26 |