

# **WIFI Antenna Test Report Prepared for Mitac 【W701&A701】 Project**

**Author** Jeff Hsiang

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**Client Information**

|                    |  |
|--------------------|--|
| Client             | Mitac  |
| Engineer of Client |  |
| Project Name       | W701&A701  |
| Project Stage      | <input type="checkbox"/> 2D Drawing <input type="checkbox"/> PCB <input type="checkbox"/> Housing <input type="checkbox"/> CNC(EVT)<br><input type="checkbox"/> Soft Tooling <input checked="" type="checkbox"/> Hot Tooling(DVT) <input type="checkbox"/> PVT |
| Antenna Type       | Linear Polarization  |
| Antenna Band       | 2400-2500MHz   |
| Antenna Engineer   | Jeff   |

**Tuning Note**

| Version | Date       | Revision Description | Designer |
|---------|------------|----------------------|----------|
| 01      | 2013/11/22 | Version 1            | Jeff     |
| 02      | 2014/01/08 | Version 2            | Jeff     |
| 03      | 2014/01/24 | Version 3            | Jeff     |
| 04      | 2014/03/18 | Version 4            | Jeff     |
|         |            |                      |          |
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|         |            |                      |          |
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|         |            |                      |          |
|         |            |                      |          |

**Antenna Info**

| LNA Name | Material | Dimension | Feed-In Location | PIN Length |
|----------|----------|-----------|------------------|------------|
|          |          |           |                  |            |

一.測試內容：

WIFI Antenna in **W701&A701** housing pattern measurement

二.測試項目：

S11 Return Loss 、 Efficiency 、 Radiation Pattern 、 Peak Gain 、  
Average Gain

三.測試設定：

Network Analyzer : Agilent E5071C

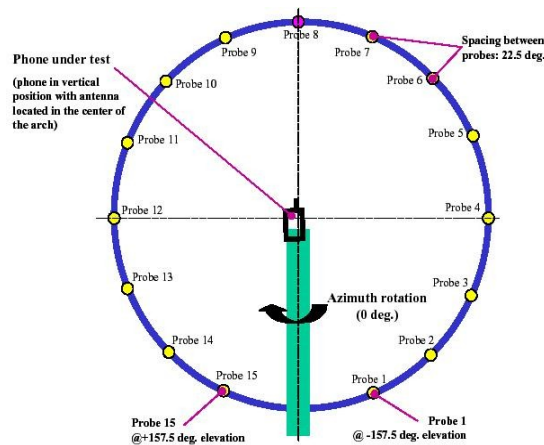
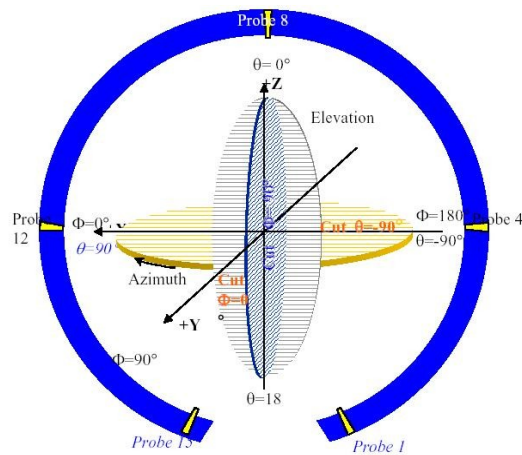
Source Antenna : TRAINING RESEARCH CO.,LTD

Test Frequency : 2400-2500MHz

四.測試環境：

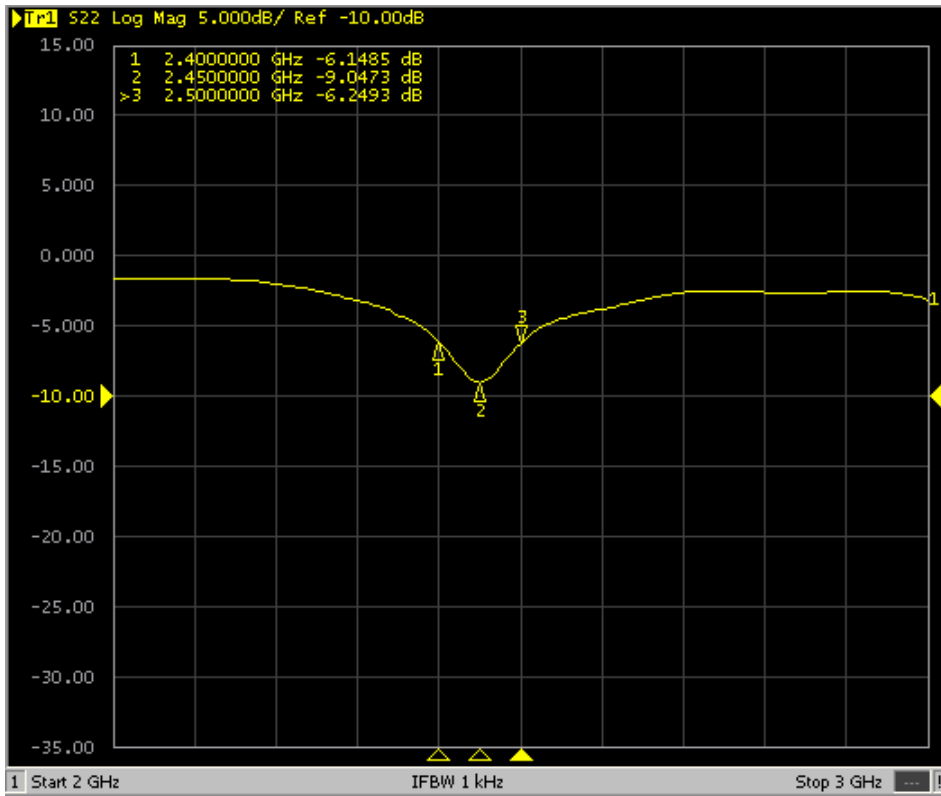
Room temperature : 23°C Humidity : 32%

五.測試設定示意圖：



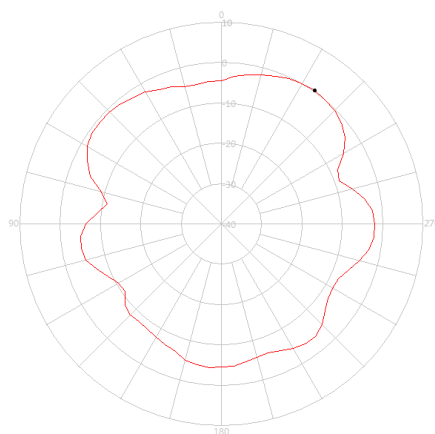
六.測試數據：

**WiFi Antenna in W701 housing S11 Return Loss Measurement**

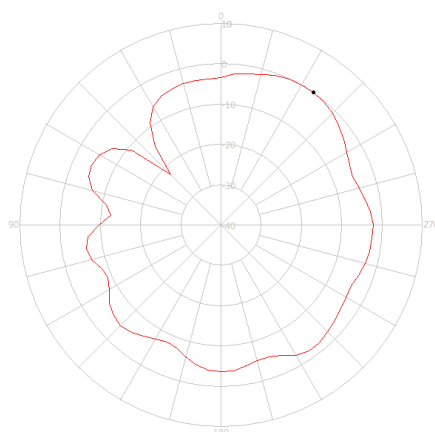


|                        |              |              |              |
|------------------------|--------------|--------------|--------------|
| <b>Frequency (MHZ)</b> | <b>2400</b>  | <b>2450</b>  | <b>2500</b>  |
| <b>Return Loss(dB)</b> | <b>-6.14</b> | <b>-9.04</b> | <b>-6.24</b> |

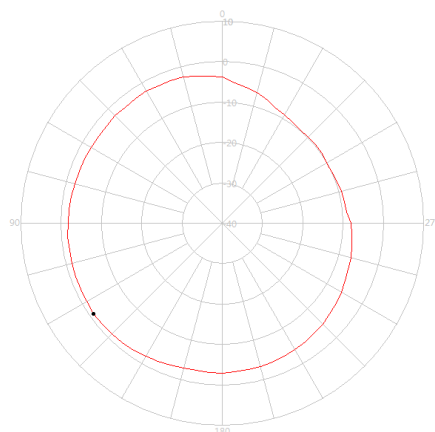
XZ-Plane 2450MHz



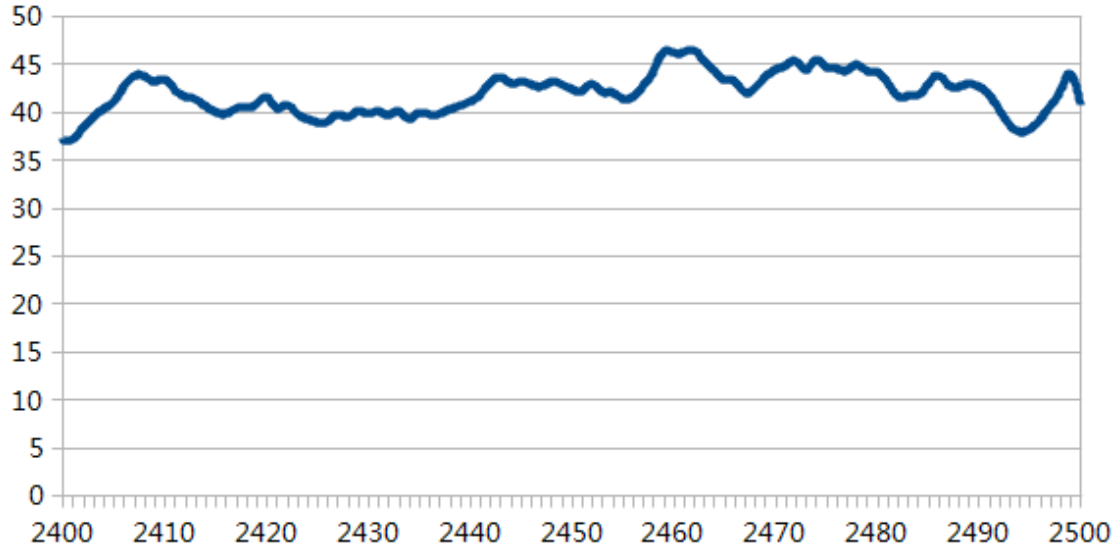
YZ-Plane 2450MHz



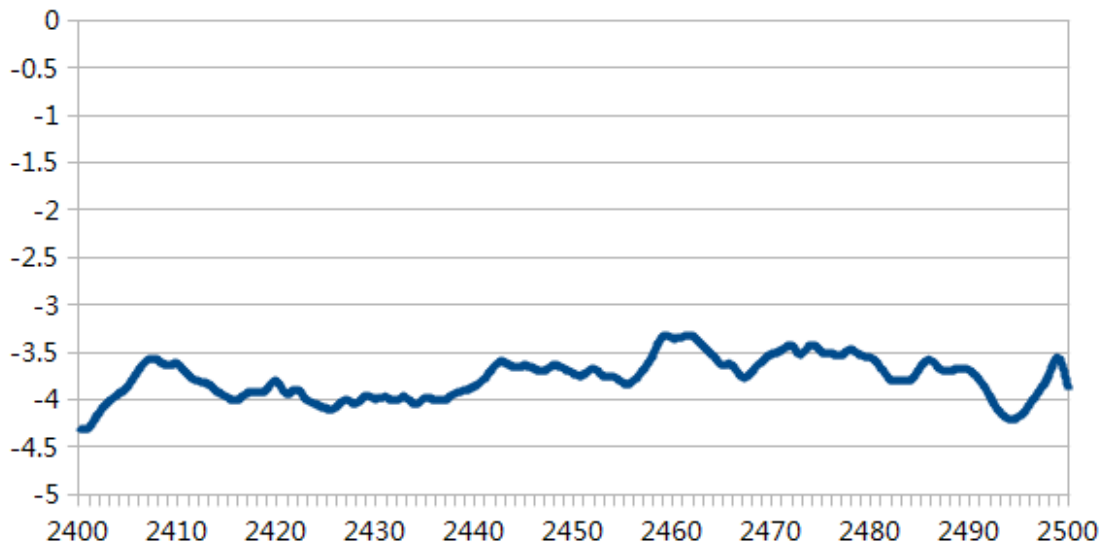
XY-Plane 2450MHz



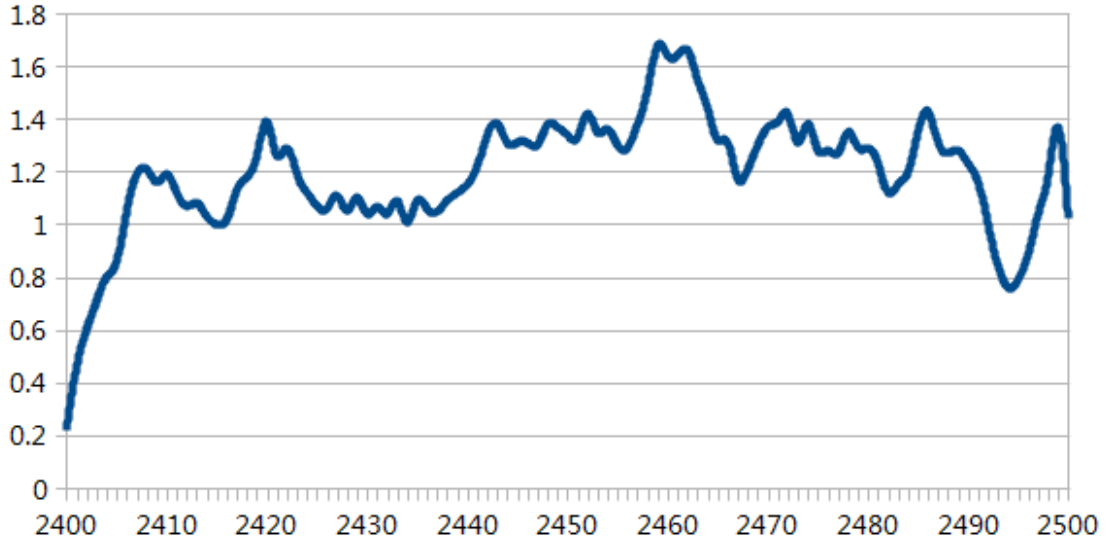
Efficiency :



Average Gain :

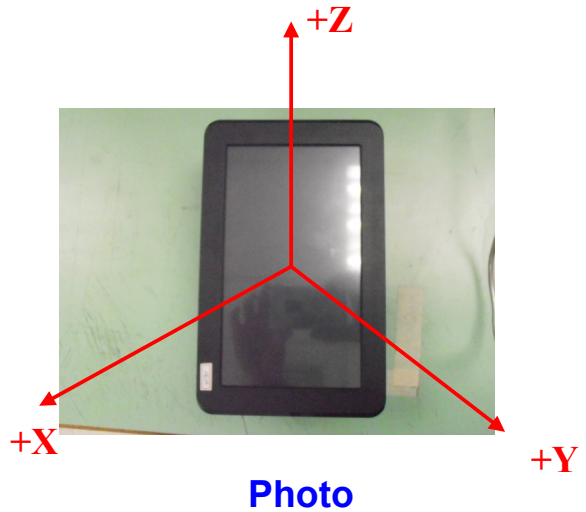
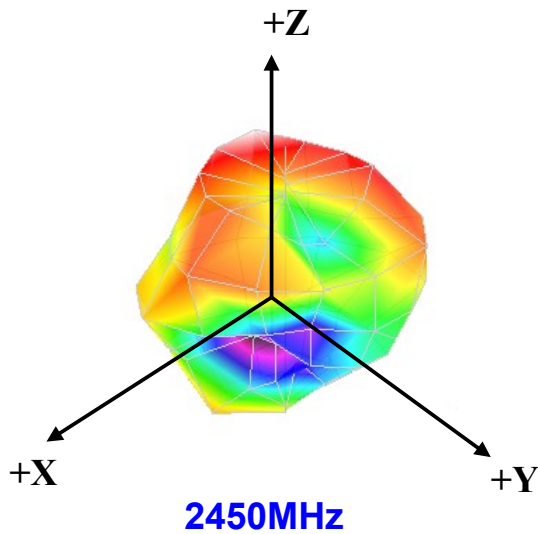


Peak Gain :

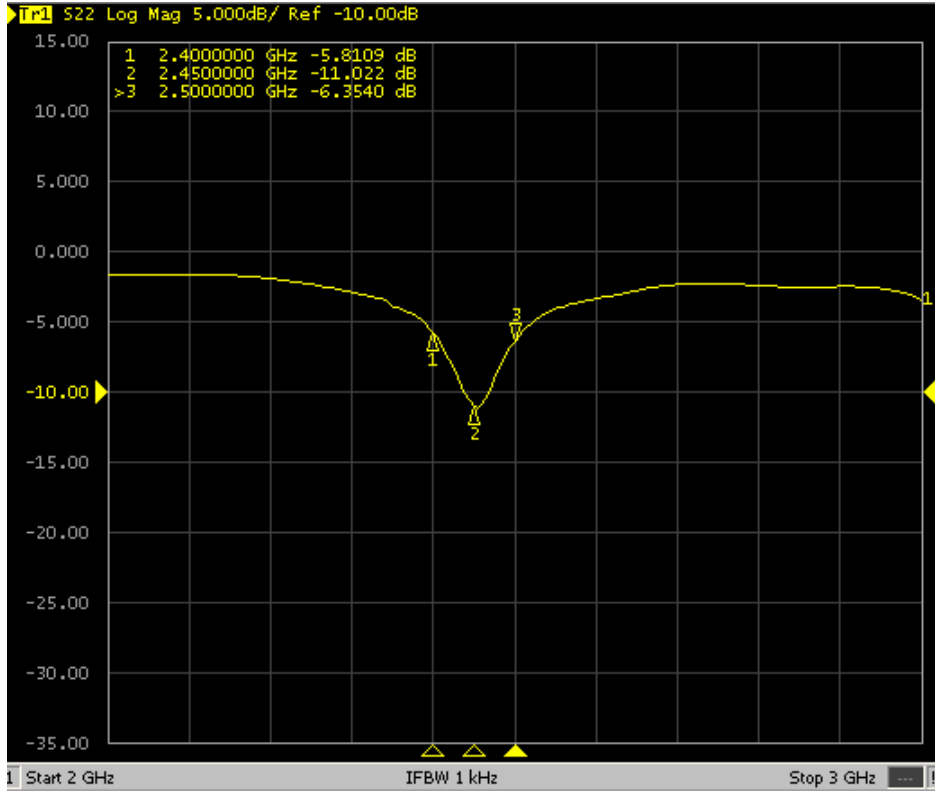


|                          |              |              |              |
|--------------------------|--------------|--------------|--------------|
| <b>Frequency (MHz)</b>   | <b>2400</b>  | <b>2450</b>  | <b>2500</b>  |
| <b>Efficiency (%)</b>    | <b>37.09</b> | <b>42.33</b> | <b>40.73</b> |
| <b>Average Gain(dBi)</b> | <b>-4.30</b> | <b>-3.73</b> | <b>-3.90</b> |
| <b>Peak Gain(dBi)</b>    | <b>0.22</b>  | <b>1.34</b>  | <b>1.02</b>  |

3D Pattern



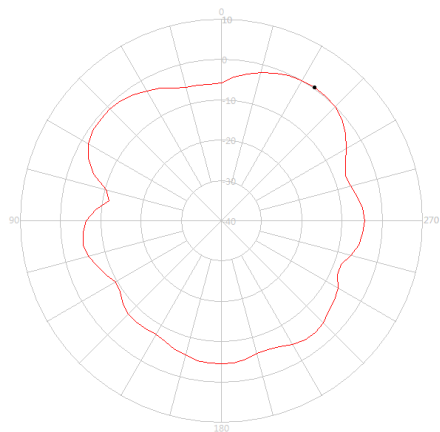
WiFi Antenna in A701 housing S11 Return Loss Measurement



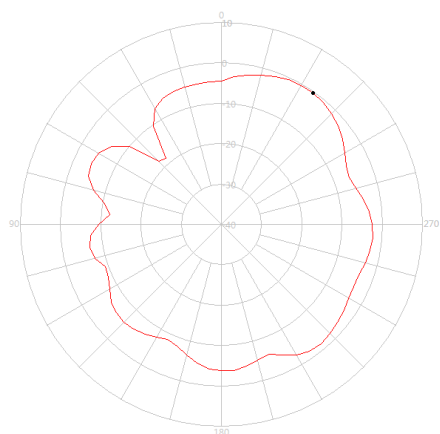
|                        |              |               |              |
|------------------------|--------------|---------------|--------------|
| <b>Frequency (MHZ)</b> | <b>2400</b>  | <b>2450</b>   | <b>2500</b>  |
| <b>Return Loss(dB)</b> | <b>-5.81</b> | <b>-11.02</b> | <b>-6.35</b> |



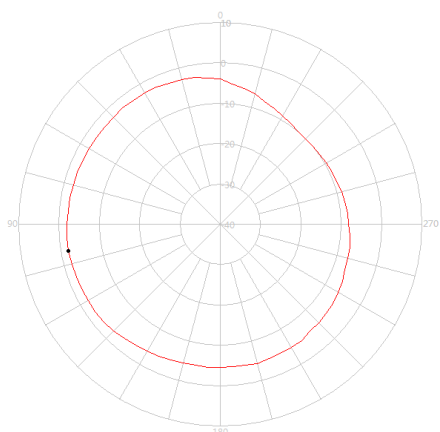
XZ-Plane 2450MHz



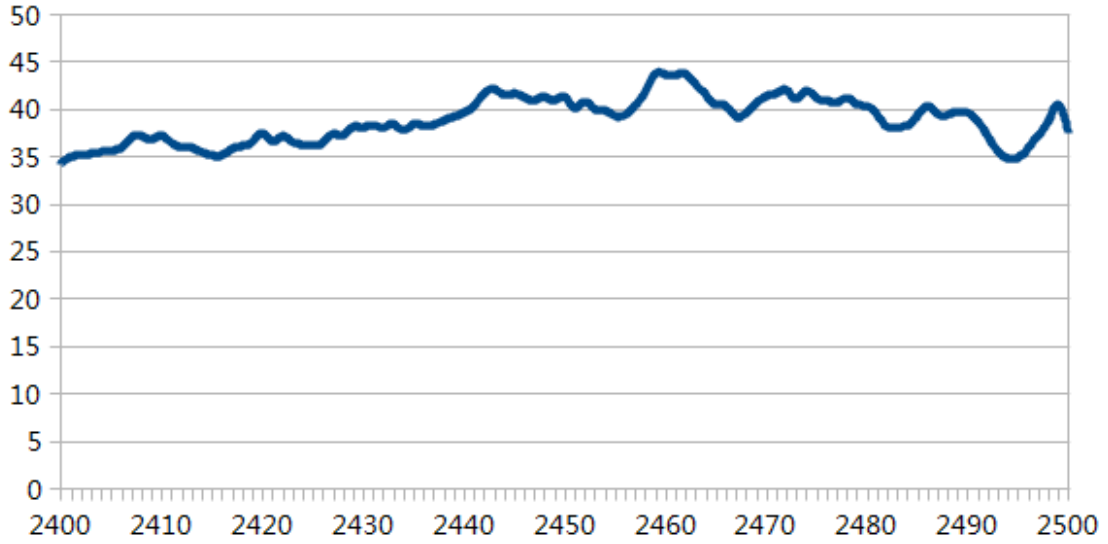
YZ-Plane 2450MHz



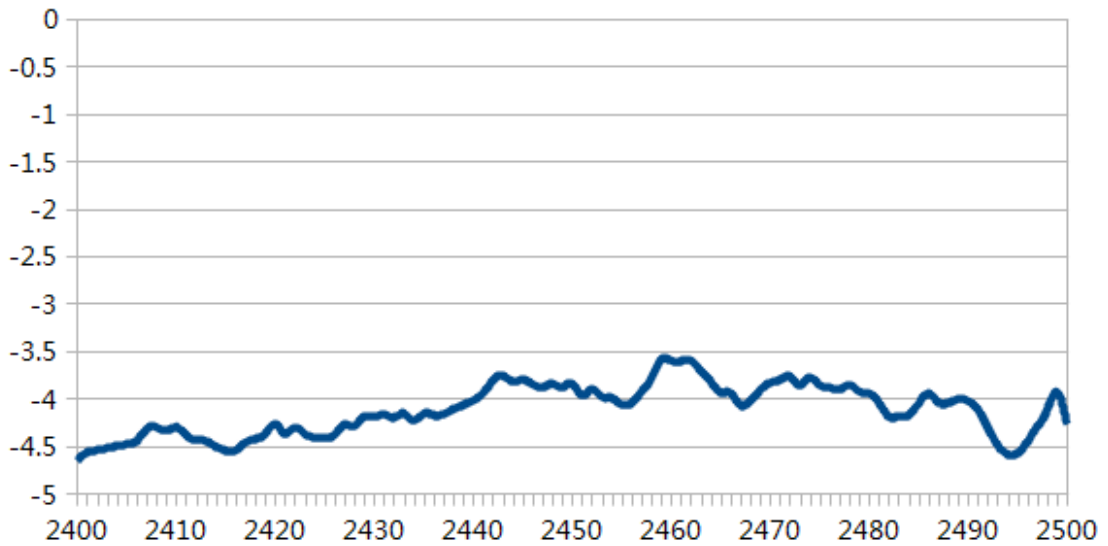
XY-Plane 2450MHz



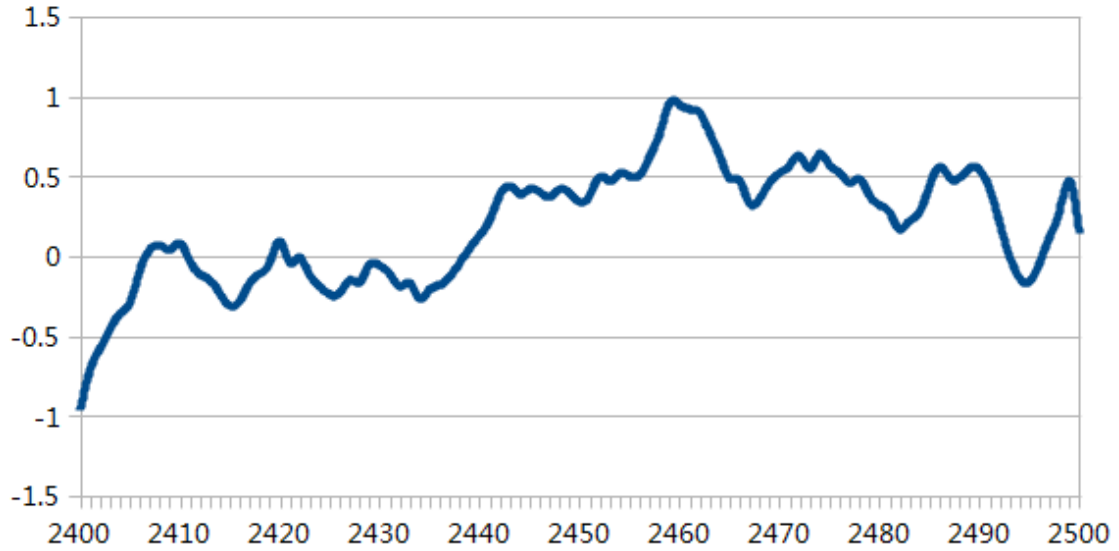
Efficiency :



Average Gain :

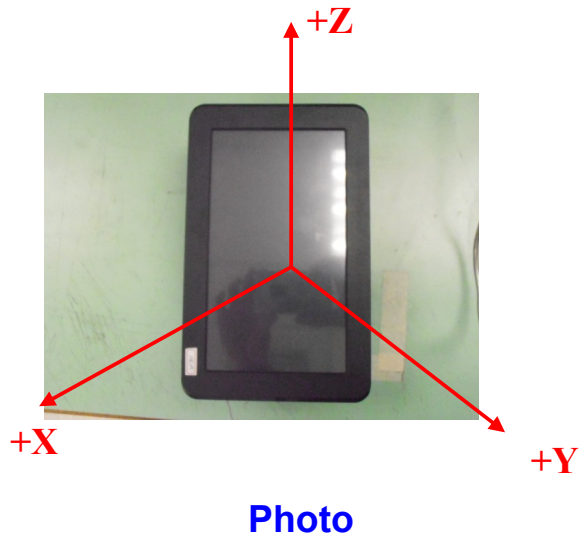
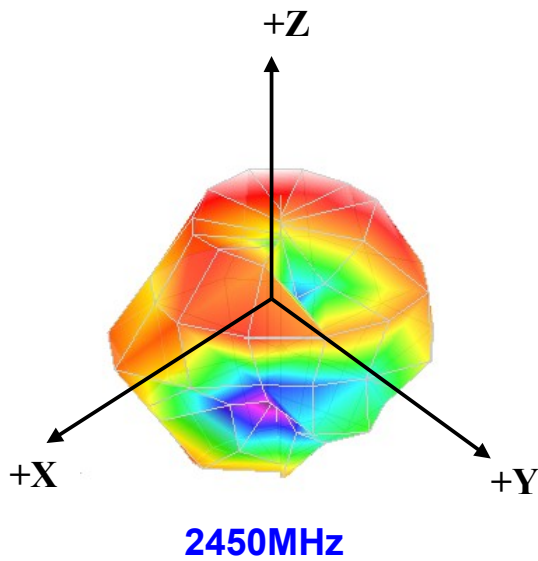


Peak Gain :

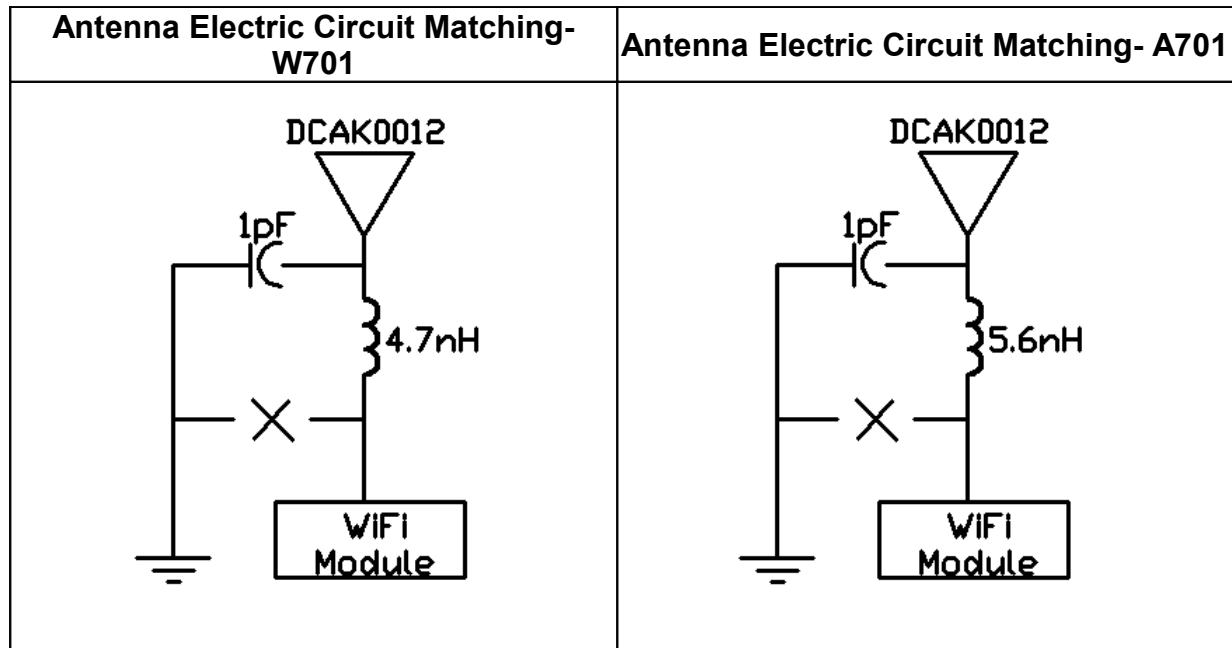


|                          |              |              |              |
|--------------------------|--------------|--------------|--------------|
| <b>Frequency (MHz)</b>   | <b>2400</b>  | <b>2450</b>  | <b>2500</b>  |
| <b>Efficiency (%)</b>    | <b>34.18</b> | <b>41.26</b> | <b>37.49</b> |
| <b>Average Gain(dBi)</b> | <b>-4.66</b> | <b>-3.84</b> | <b>-4.26</b> |
| <b>Peak Gain(dBi)</b>    | <b>-0.97</b> | <b>0.34</b>  | <b>0.14</b>  |

3D Pattern



## Photo :



## 七.測試結果：

依客戶需求及客戶所提供之匹配值分別針對 W701 及 A701 兩台樣機進行 2.4G WIFI 天線量測，經量測後，A701 樣機有些微頻偏現象產生，故我司即針對此樣機重新進行匹配，匹配後兩台樣機目前皆為準頻，匹配值如上圖所示。

上述兩台樣機於 2.4G WIFI 應用頻段內之天線效率經量測後約為 35-45%，其中 W701 於中心頻率 2450MHz 時效率為 42.33%，而 A701 於中心頻率 2450MHz 時效率則為 41.26%。

其餘天線各頻段之 Return Loss、Antenna Efficiency、Radiation Pattern、Average Gain 以及 Peak Gain 等特性皆如上所述，均可符合客戶於 2.4G WIFI 應用之設計，供客戶參考評估。