



Antenna Test Report

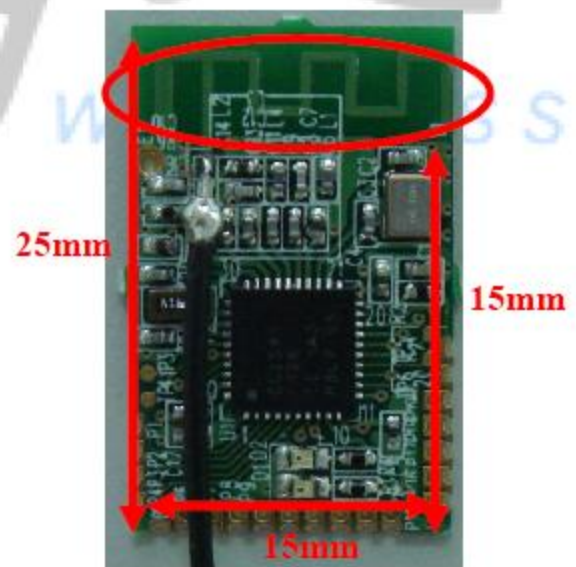
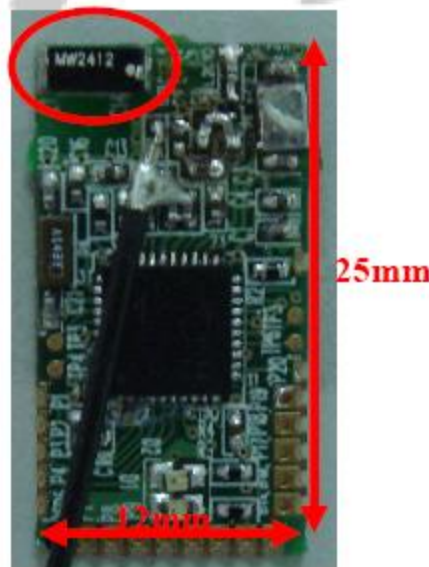
客戶:玖邦

機種:BT 模組

天線:MGW 2412 & IFA-101

工程師:梁文銘

Model	BT 模組					
Antenna type	MW 2412			IFA-101		
Frequency	2400	2450	2500	2400	2450	2500
S11(dB)	-6.90	-15.58	-5.88	-4.30	-3.26	-2.60
Peak Gain (dBi)	-2.04	-0.35	-1.31	-3.96	-5.45	-6.08
Efficiency (%)	25.06	35.02	27.83	16.91	14.27	10.49



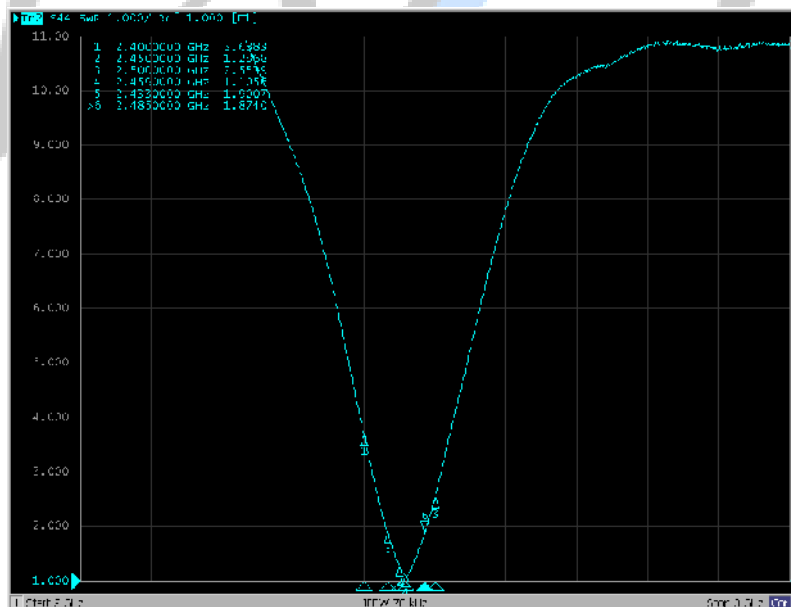
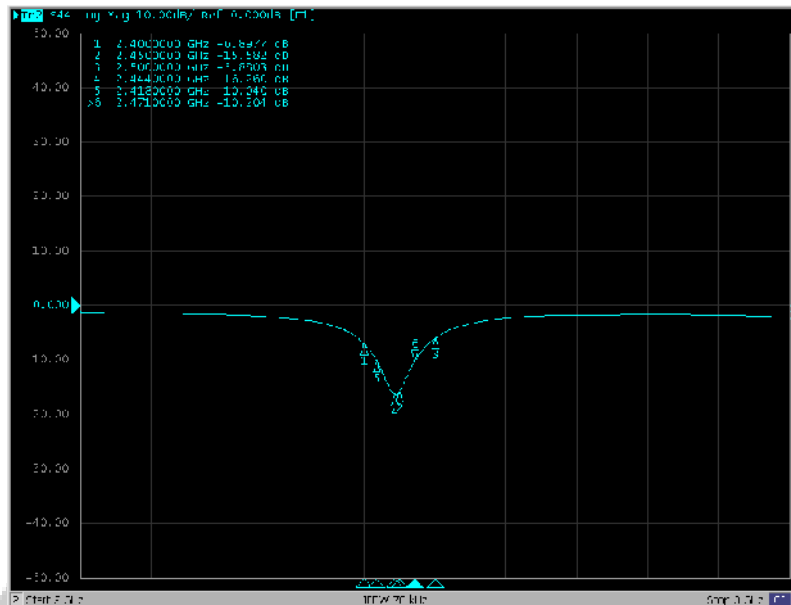
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MW 2412

S11 & VSWR

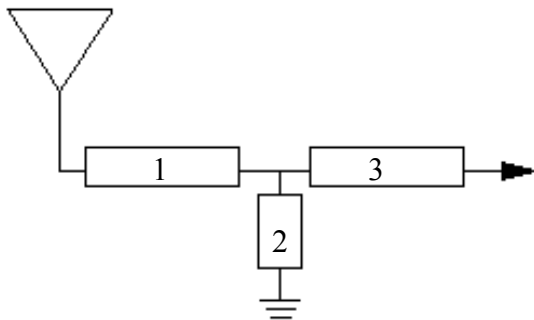


Model	BT 模組		
Antenna type	MW2412		
Frequency(MHz)	2400	2450	2500
S11 (dB)	-6.38	-16.32	-4.23
V.S.W.R	3.69	1.29	2.55



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MW 2412 匹配電路

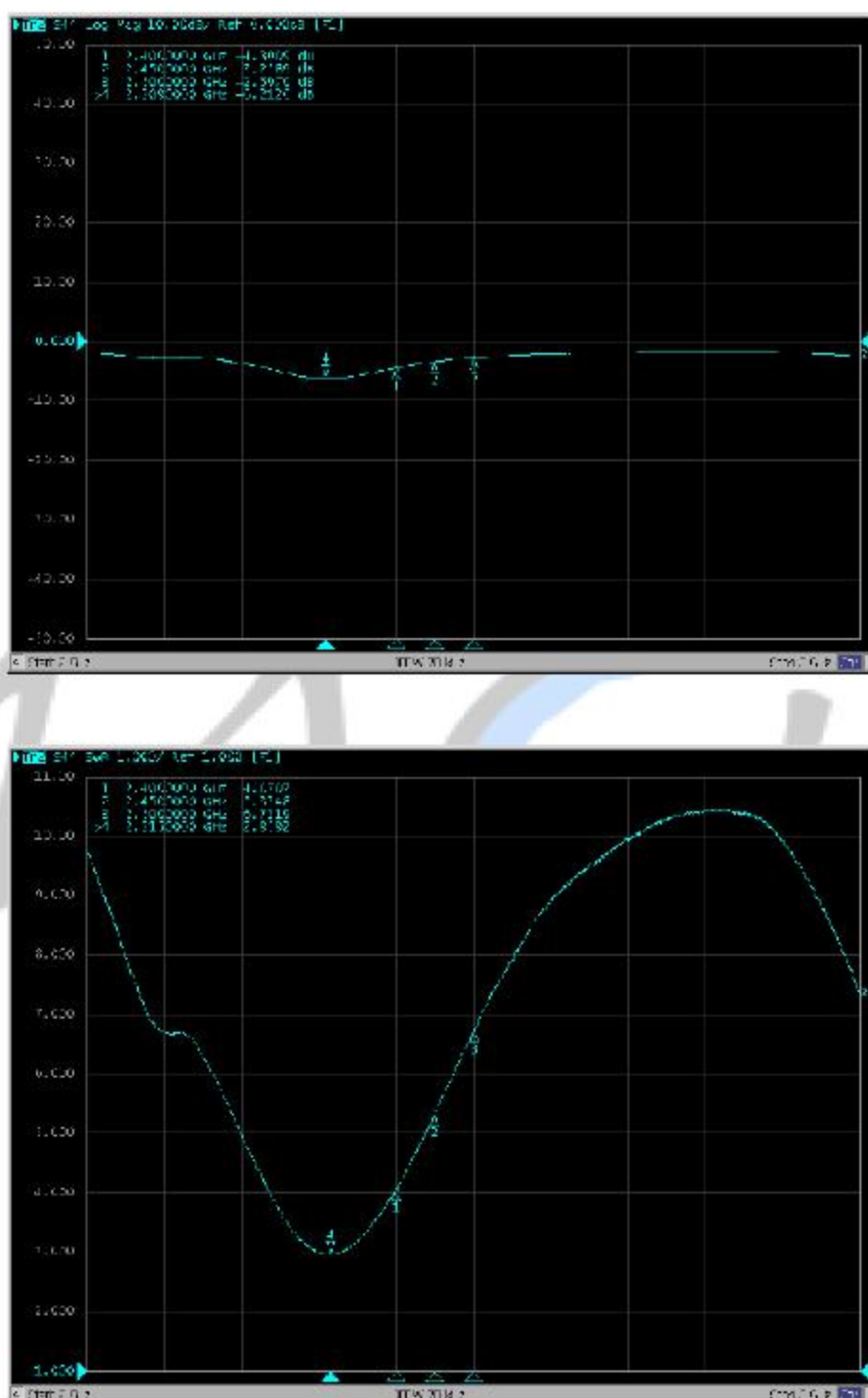


System Matching Circuit Component		
Location	Description	Vendor
Antenna	502010	MW2412
1	3.0nH	0402 TDK
2	1.8pF	0402 TDK
3	3.3nH	0402 TDK



IFA-101

S11 & VSWR



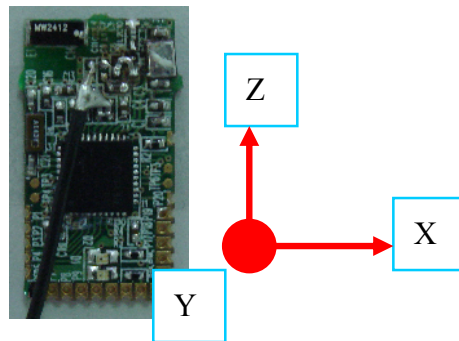
Model	BT 模組		
Antenna type	IFA-101		
Frequency(MHz)	2400	2450	2500
S11 (dB)	-4.30	-3.26	-2.60
V.S.W.R	4.07	5.33	6.73



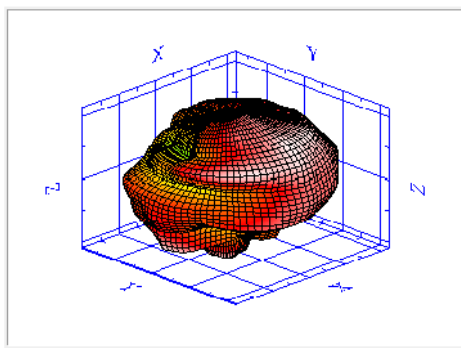
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MW 2412

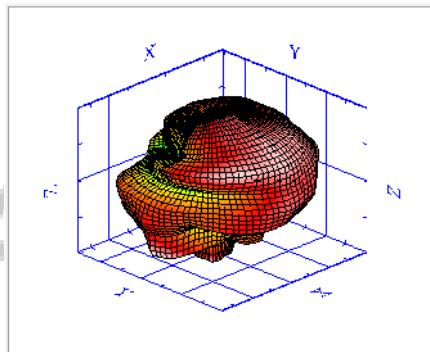
3D Chamber measure



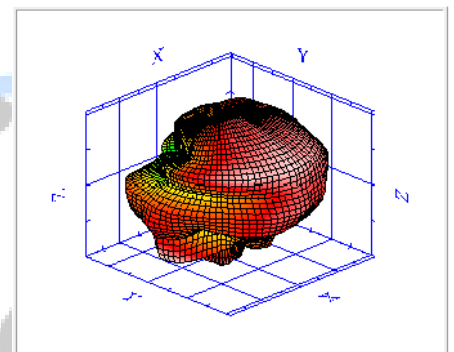
3D Antenna Radiation Pattern



2400MHz



2450MHz



2500MHz

Antenna Radiation Efficiency

Model	BT 模組		
Antenna type	MW2412		
Frequency	2400	2450	2500
Peak Gain (dBi)	-2.04	-0.35	-1.31
Efficiency (%)	25.06	35.02	27.83



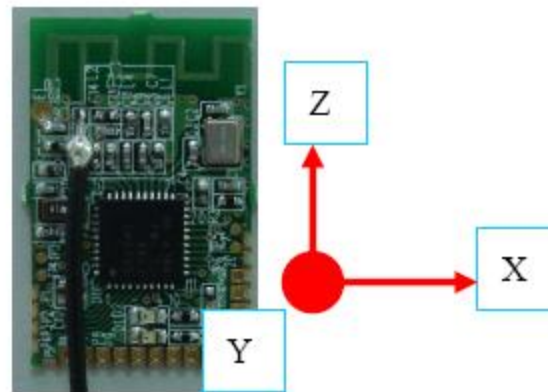
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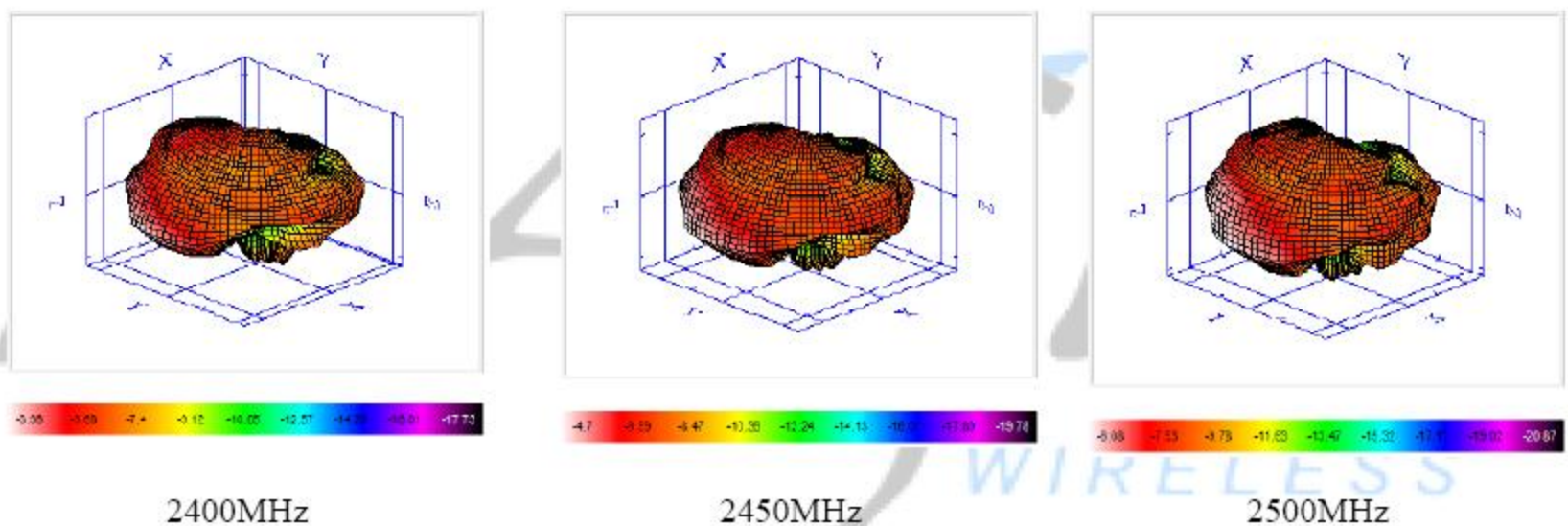
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IFA-101

3D Chamber measure



3D Antenna Radiation Pattern



Antenna Radiation Efficiency

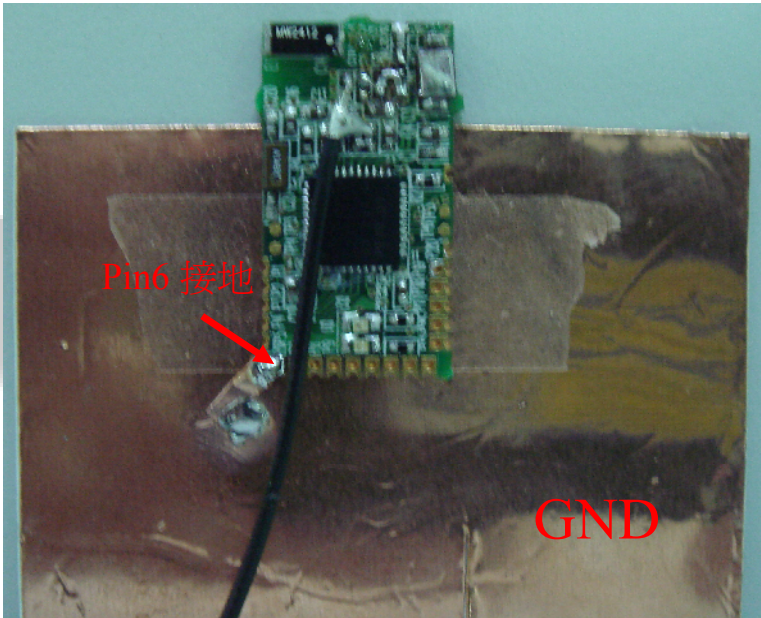
Model	BT 模組		
Antenna type	IFA-101		
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Peak Gain (dBi)	-3.96	-5.45	-6.08
Efficiency (%)	16.91	14.27	10.49



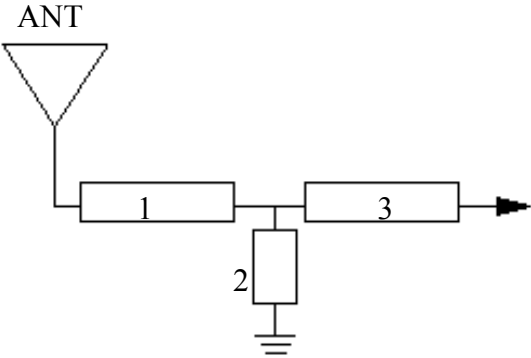
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MW2412 增加 GND 測試

Model	BT 模組		
Antenna type	MW 2412+GND		
Frequency	2400	2450	2500
S11(dB)	-11.54	-16.71	-9.00
Peak Gain (dBi)	1.89	3.13	2.95
Efficiency (%)	42.86	49.64	46.62



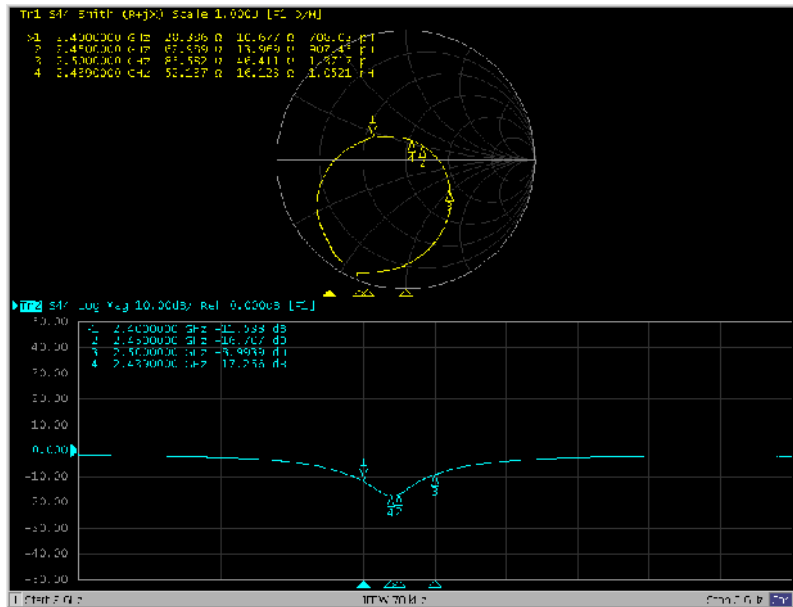
匹配電路



System Matching Circuit Component		
Location	Description	Vendor
Antenna	502010	MW2412
1	3.0nH	0402 TDK
2	1.2 pF	0402 TDK
3	4.7nH	0402 TDK

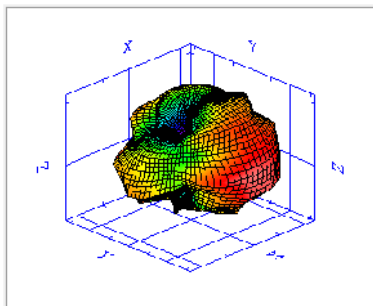


MW2412+GND S11

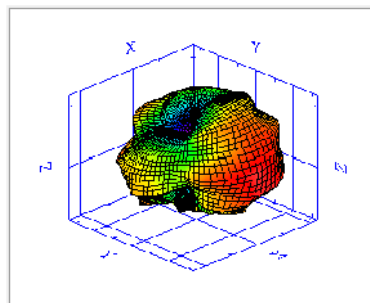


Model	BT 模組		
Antenna type	MW2412+GND		
Frequency(MHz)	2400	2450	2500
S11 (dB)	-11.58	-16.71	-9.00

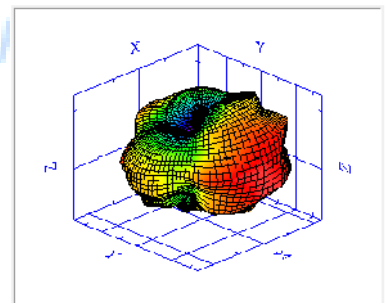
3D Antenna Radiation Pattern



2400MHz



2450MHz



2500MHz

Model	BT 模組		
Antenna type	MW2412+GND		
Frequency	2400	2450	2500
Peak Gain (dBi)	1.89	3.13	2.95
Efficiency (%)	42.86	49.64	46.62



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結 論

1. 本報告為一個 BT 模組,針對 Chip 天線與 PCB(Inverted-F)天線的比較報告。
2. 經過我司測試後,MW2412 在 2450MHz 的效率為 35%,遠優於 PCB(Inverted-F)天線14%
3. 本產品為一模組,實際應用會與一大型主板連接,頻率特性會有變異,MW2412+GND 為模擬實際應用,將 PCB 版的 PIN6 腳位與 GND 相接,其特性在 2450GHz 效率為 49.64% 較原本特性佳,建議客戶在實際應用上,可以使用 MW2412+GND 的匹配值去製作。

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