低功率射頻器材試驗報告

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產品名稱	RRQ61051 Module
廠牌	Renesas
主 型 號	RRQ61051-009
系列型號	N/A
該產品樣品試驗依據之試驗標準	低功率射頻器材技術規範 LP0002 113年版
試驗結果	合格

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報告編號:RLK250801005RF01
案件受理日期: 114 年 08 月 01 日
報告發行日期: 115 年 01 月 22 日

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報告發行紀錄:

版次	案號	報告號碼	發行日期	說明	文件人員
0.0	RLK250801005	RLK250801005RF01	2026.01.22	報告發行	Cedric Xu

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1. 一般描述

產品名稱	RRQ61051 Module
廠　　牌	Renesas
主 型 號	RRQ61051-009
系列型號	N/A
差異說明	N/A
EUT供電方式	3.3Vdc

WiFi 2.4G

使用頻率	IEEE 802.11b/g/n20/ax20: 2412 ~ 2462 MHz
使用頻道數	IEEE 802.11b/g/n20/ax20: 11 channels
傳輸速率	IEEE 802.11b：1–11 Mbps IEEE 802.11g：6–54 Mbps IEEE 802.11n20：MCS 0–7 IEEE 802.11ax20：MCS 0–11
調變方式	IEEE 802.11b Mode: DSSS IEEE 802.11g/n20 Mode: OFDM IEEE 802.11ax20 Mode: OFDMA

**802.11ax mode only support full RU

**This device cannot run both WIFI 2.4G and WIFI 5G simultaneously.

BLE

使用頻率	2402~2480MHz
使用頻道數	40 Channels
傳輸速率	BLE(1M) Mode: 1Mbps
調變方式	GFSK

2. 測試規範

2.1 適用規範及條文

本測試報告之所有項目皆符合國家通訊傳播委員會 LP0002 低功率射頻器材技術規範及條文。

項次	測試項目	低功率射頻器材技術規範	測試結果
1	電源線傳導干擾	3.3節	符合規範
2	場強輻射	3.5節& 3.6節	符合規範
3	天線增益之要求	4.10.1.3節	符合規範
4	發射頻寬	4.10.1.6節	符合規範
5	輸出峰值功率	4.10.1.2節	符合規範
6	開放頻帶邊緣之發射	4.10.1.5節	符合規範
7	功率密度	4.10.1.6(2)(B)節	符合規範
8	電波曝露量	6.20.2.2節	符合規範

報 告 簽 署 人： 許詔強 許詔強

2.2 限制使用之頻帶

根據低功率射頻器材技術規範，任何低功率射頻器材之主波皆不得使用下表所列各頻帶內之頻率；低功率射頻器材落於下表所列頻帶內之混附發射，其電場強度必須符合限制規定。

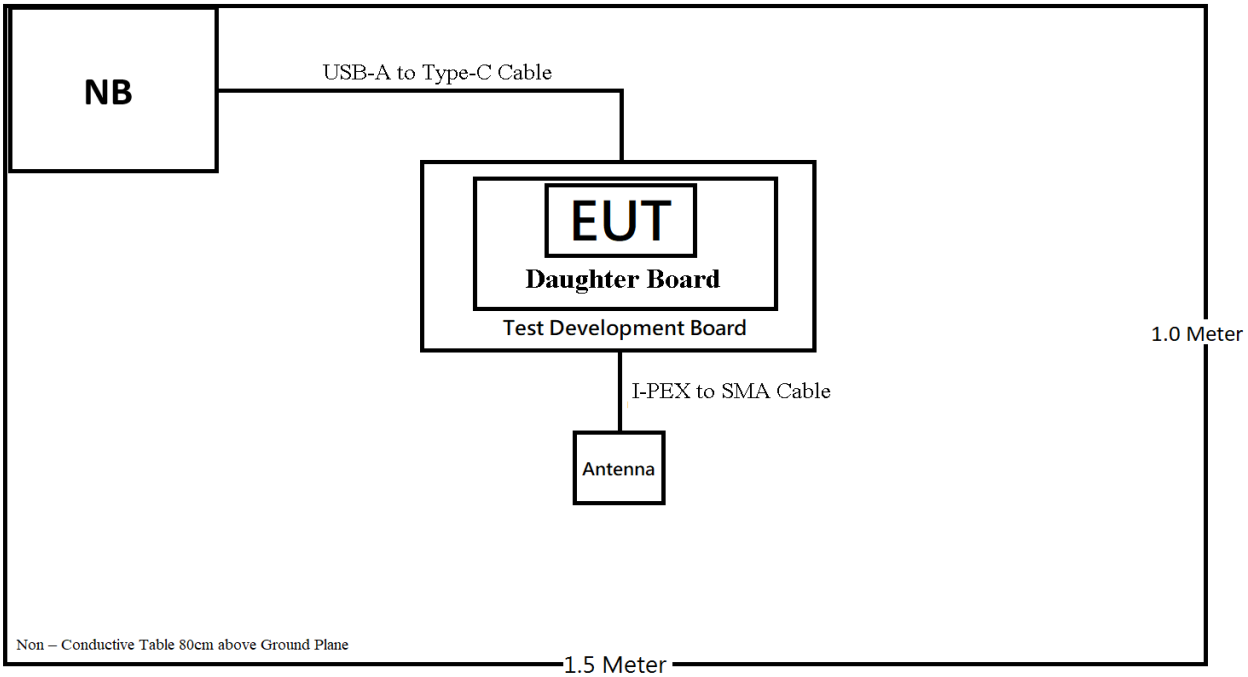
頻率 (MHz)	頻率 (MHz)	頻率 (MHz)	頻率 (MHz)
0.090 - 0.110	167.72 - 173.20	2483.5 - 2900.0	38600 以上
0.490 - 0.510	240.00 - 285.00	3260.0 - 3267.0	
2.172 - 2.198	322.00 - 335.40	3332.0 - 3339.0	
3.013 - 3.033	399.90 - 410.00	3345.8 - 3358.0	
4.115 - 4.198	485.00 - 510.00	3500.0 - 4400.0	
5.670 - 5.690	608.00 - 614.00	4500.0 - 5250.0	
6.200 - 6.300	703.00 - 748.00	5350.0 - 5460.0	
8.230 - 8.400	758.00 - 803.00	7250.0 - 7750.0	
12.265 - 12.600	825.00 - 915.00	8025.0 - 8500.0	
13.340 - 13.430	930.00 - 1240.0	9000.0 - 9200.0	
14.965 - 15.020	1300.0 - 1427.0	9300.0 - 9500.0	
16.700 - 16.755	1435.0 - 1626.5	10600 - 12700	
19.965 - 20.020	1660.0 - 1785.0	13250 - 13400	
25.500 - 25.700	1805.0 - 1880.0	14470 - 14500	
37.475 - 38.275	1885.0 - 1900.0	15350 - 16200	
73.500 - 75.400	1905.0 - 1985.0	17700 - 21400	
108.00 - 138.00	2010.0 - 2025.0	22010 - 23120	
149.90 - 150.05	2110.0 - 2170.0	23600 - 24000	
156.70 - 156.90	2200.0 - 2300.0	31200 - 31800	
162.01 - 167.17	2310.0 - 2390.0	36430 - 36500	

3. 受測裝置之系統說明

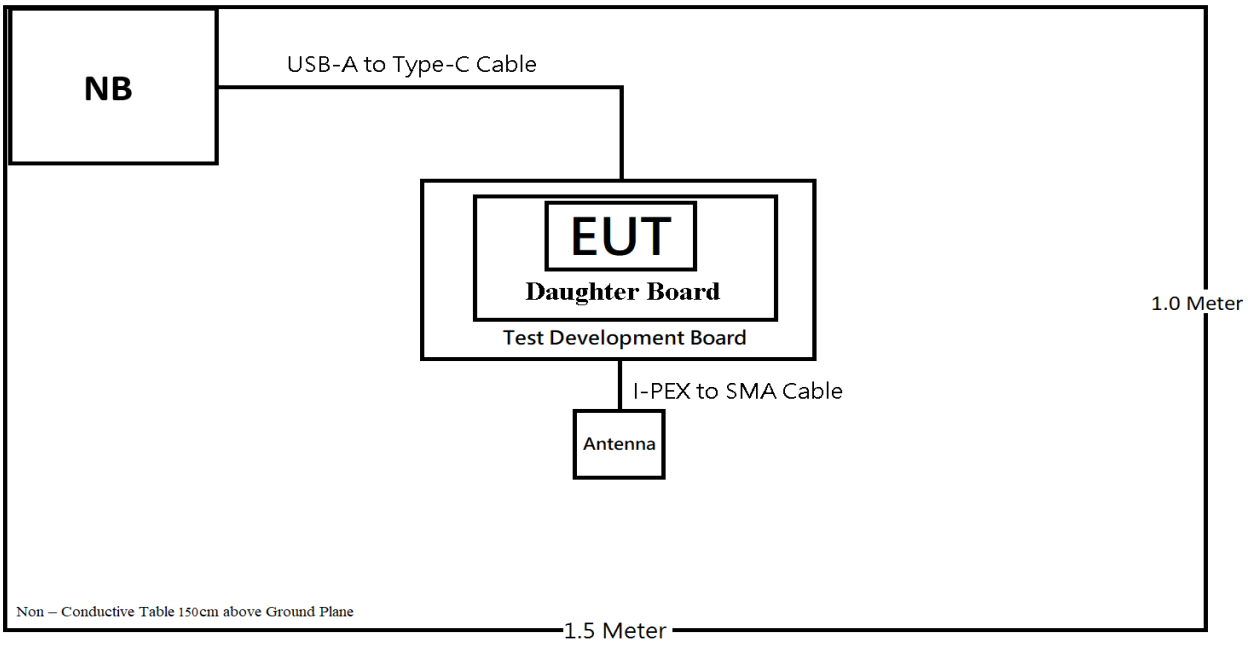
3.1 待測物與測試設備系統圖

Radiation:

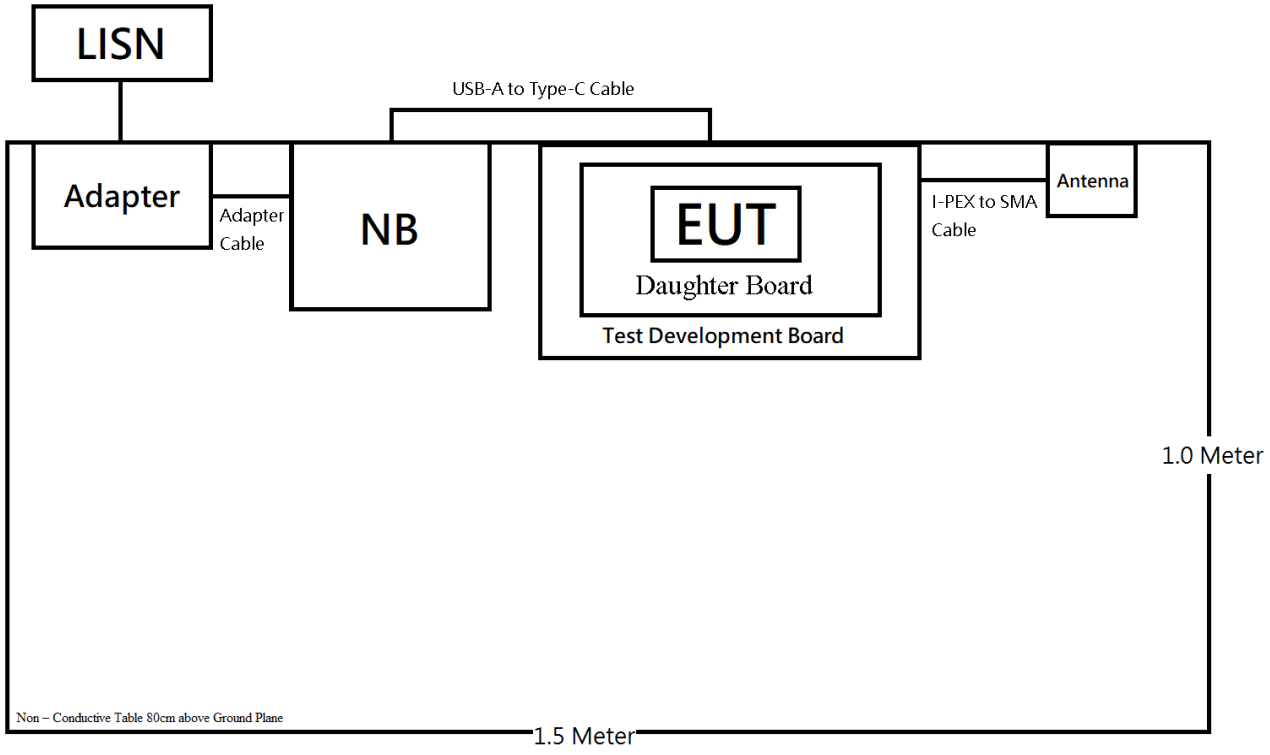
Below 1GHz



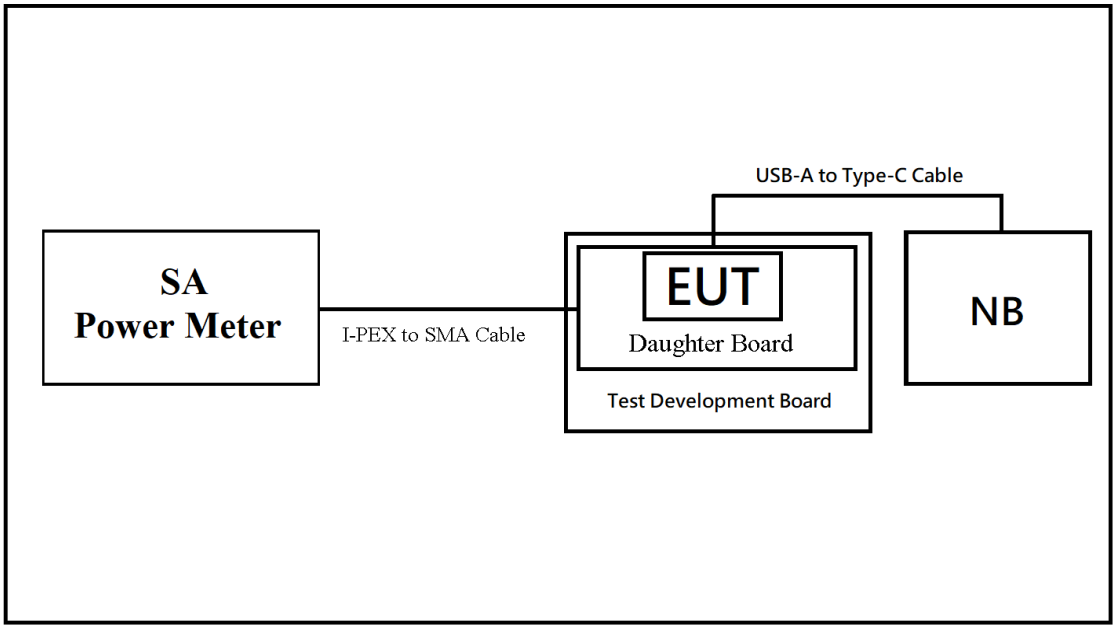
Above 1GHz:



Conduction:



Conducted:



3.2 測試模式

1. SET UP 方式請參照 SET UP Photos。
2. 樣品設定 Low, Mid 與 High Channel，並執行法規規定之測試項目。
3. 此案 Pre-scan 經三軸比對後，最差軸向 Z 軸。
4. 在輻射干擾部分均評估，報告中僅呈現最差模式。
5. WIFI2.4G 和 WIFI5G 不支援同時發射
6. 802.11ax mode only support full RU

Mode	測試模式	樣品序號
1	Radiated Test	RLK250801005-2
2	Conducted Test	RLK250801005-1
3	Conduction Test	RLK250801005-2

Worse	
BLE	1M-2402 MHz
WiFi 2.4G	ax20 mode 2462 MHz

3.3 測試軟件

BLE : Used “TeraTerm5 ” + “ SmartSnippets_Toolbox_v5.0.26.4228” software.
WiFi 2.4G : Used “TeraTerm5” software.

Test Frequency		Low	Mid	High
Power Level Setting	b Mode	9	9	6
	g Mode	11	11	10
	n20 Mode	9	11	9
	ax20 Mode	10	11	10
	BLE 1M	Defulat	Defulat	Defulat

3.4 隨貨附賣週邊設備名稱描述

N/A

3.5 未隨貨附賣，輔助測試週邊設備名稱描述

序號	設備名稱	廠牌	型號
1	Notebook (Lab provided)	DELL	E6410
2	Notebook (Lab provided)	Acer	N16Q1
3	USB-A to Type-C Cable (Customer provided)	VENTION	COZ
4	Test Development Board (Customer provided)	RENESAS	EK-RQ61 565-11-C-0001 Ver 3.1
5	I-PEX to SMA Cable (Customer provided)	TAOGLAS	0.2m
6	Antenna (Customer provided)	ARISTOTLE	RFA-27-H60-U-GB70
7	Daughter Board (Customer provided)	RENESAS	RRQ610x1 565-16-B

3.6 測試描述

BLE:

1. 將 EUT 插入 Test Development Board 上，使用線材連接 Test Development Board 與筆電，點擊模組板紅色按鈕
2. 打開測試軟體”TeraTerm5”，依循步驟設定指令
3. 打開測試軟體”SmartSnippets_Toolbox_v5.0.26.4228”
4. 輸入 TX & RX 測試指令，確認訊號是否正確，開始測試

WiFi 2.4G:

1. 將 EUT 插入 Test Development Board 上，使用線材連接 Test Development Board 與筆電，點擊模組板紅色按鈕
2. 打開測試軟體”TeraTerm5”
3. 輸入 TX & RX 測試指令，確認訊號是否正確，開始測試

3.7 占空比評估

Duty cycle = Tx on(ms)/(Tx on+off(ms)

Duty factor = 10*log(1/ Duty cycle)

	b Mode	g Mode	n20 Mode	ax20 Mode	BLE Mod
Duty cycle	0.87	0.88	0.75	0.96	0.99
Duty factor	0.60	0.56	1.25	0.18	0

4. 電源線傳導干擾之量測

4.1 適用標準

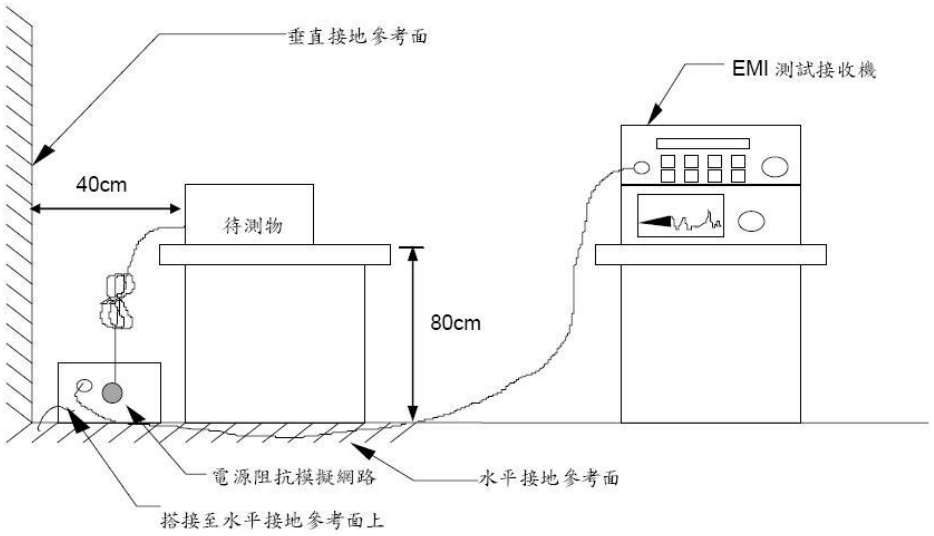
依據低功率射頻器材技術規範，電源傳導干擾之限制要求如下:

頻率 (MHz)	傳導限制值 (dBμV)	
	準峰值 (Quasi – peak)	平均值(Average)
0.15 – 0.5	66 – 56	56 - 46
0.5 – 5	56	46
5 - 30	60	50

4.2 測試方法

將待測物置於0.8米高的非金屬桌面，使其在工作狀態，待測物電源線接至電源線阻抗穩定網路上，從測試接收機記錄頻率由0.15 MHz至30 MHz之間之電源線傳導放射強度。

4.3 測試場地配置圖



4.4 干擾值之計算

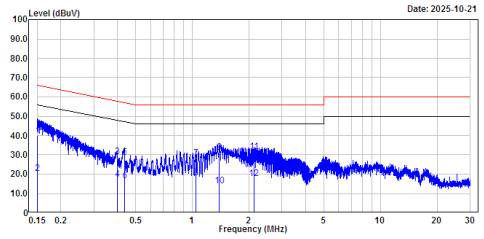
電源傳導干擾電壓之計算公式如下

干擾值 = 讀值 + 校正因子

其中校正因子為： 饋線損失 + 電源阻抗模擬網路損失

4.5 傳導干擾之量測結果

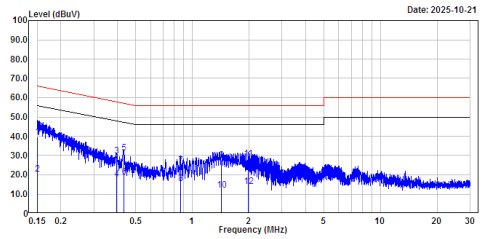
WIFI 2.4G Line



Site : Conduction
Condition: Line
Job No : RLK250801005
Test By : Cedric Xu
Power : AC 110V/60Hz
Temp.(℃)/Hum.(%RH): 23.4℃/52%
Mode : WiFi 2.4G-AX20-TX-2462

	Freq	Read Level	Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	
1	0.1502	19.97	39.95	19.98	65.99	-26.04	QP
2	0.1502	0.31	20.29	19.98	55.99	-35.70	Average
3	0.3983	8.93	28.95	20.02	57.89	-28.94	QP
4	0.3983	-2.81	17.21	20.02	47.89	-30.68	Average
5	0.4353	8.58	28.61	20.03	57.15	-28.54	QP
6	0.4353	-3.44	16.59	20.03	47.15	-30.56	Average
7	1.0470	8.38	28.42	20.04	56.00	-27.58	QP
8	1.0470	-1.97	18.07	20.04	46.00	-27.93	Average
9	1.3920	11.36	31.40	20.04	56.00	-24.60	QP
10	1.3920	-6.21	13.83	20.04	46.00	-32.17	Average
11	2.1224	11.45	31.51	20.06	56.00	-24.49	QP
12	2.1224	-2.44	17.62	20.06	46.00	-28.38	Average

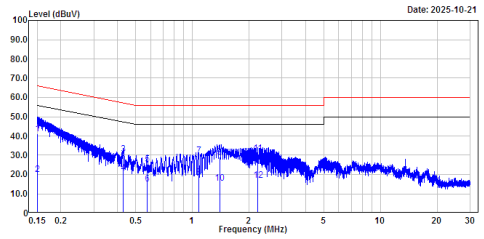
WIFI 2.4G Neutral



Site : Conduction
Condition: Neutral
Job No : RLK250801005
Test By : Cedric Xu
Power : AC 110V/60Hz
Temp.(℃)/Hum.(%RH): 23.4℃/52%
Mode : WiFi 2.4G-AX20-TX-2462

	Freq	Read Level	Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	
1	0.1508	19.50	39.51	20.01	65.96	-26.45	QP
2	0.1508	0.23	20.24	20.01	55.96	-35.72	Average
3	0.3955	9.93	29.91	19.98	57.95	-28.04	QP
4	0.3955	-2.20	17.78	19.98	47.95	-30.17	Average
5	0.4332	11.21	31.20	19.99	57.19	-25.99	QP
6	0.4332	-1.20	18.79	19.99	47.19	-28.40	Average
7	0.8659	4.76	24.77	20.01	56.00	-31.23	QP
8	0.8659	-4.59	15.42	20.01	46.00	-30.58	Average
9	1.4301	7.49	27.53	20.04	56.00	-28.47	QP
10	1.4301	-7.90	12.14	20.04	46.00	-33.86	Average
11	1.9849	8.17	28.22	20.05	56.00	-27.78	QP
12	1.9849	-5.98	14.07	20.05	46.00	-31.93	Average

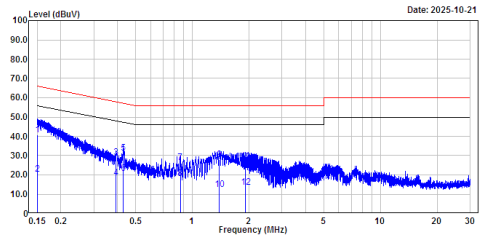
BLE Line



Site : Conduction
Condition: Line
Job No : RLK250801005
Test By : Cedric Xu
Power : AC 110V/60Hz
Temp.(℃)/Hum.(%RH): 23.4℃/52%
Mode : BLE 1M-TX-2402

	Freq	Read Level	Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	
1	0.1500	21.22	41.20	19.98	66.00	-24.80	QP
2	0.1500	-0.06	19.92	19.98	56.00	-36.08	Average
3	0.4297	10.67	30.70	20.03	57.26	-26.56	QP
4	0.4297	0.54	20.57	20.03	47.26	-26.69	Average
5	0.5776	5.14	25.17	20.03	56.00	-30.83	QP
6	0.5776	-5.04	14.99	20.03	46.00	-31.01	Average
7	1.0799	9.81	29.85	20.04	56.00	-26.15	QP
8	1.0799	-1.48	18.56	20.04	46.00	-27.44	Average
9	1.3962	9.11	29.15	20.04	56.00	-26.85	QP
10	1.3962	-4.60	15.44	20.04	46.00	-30.56	Average
11	2.2267	10.81	30.87	20.06	56.00	-25.13	QP
12	2.2267	-3.03	17.03	20.06	46.00	-28.97	Average

BLE Neutral



Site : Conduction
Condition: Neutral
Job No : RLK250801005
Test By : Cedric Xu
Power : AC 110V/60Hz
Temp.(℃)/Hum.(%RH): 23.4℃/52%
Mode : BLE 1M-TX-2402

	Freq	Read Level	Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	
1	0.1508	20.83	40.84	20.01	65.96	-25.12	QP
2	0.1508	0.39	20.40	20.01	55.96	-35.56	Average
3	0.3939	9.01	28.99	19.98	57.98	-28.99	QP
4	0.3939	-1.59	18.39	19.98	47.98	-29.59	Average
5	0.4310	11.19	31.18	19.99	57.23	-26.05	QP
6	0.4310	0.61	20.60	19.99	47.23	-26.63	Average
7	0.8633	6.28	26.29	20.01	56.00	-29.71	QP
8	0.8633	-1.86	18.15	20.01	46.00	-27.85	Average
9	1.3934	7.73	27.75	20.02	56.00	-28.25	QP
10	1.3934	-7.56	12.46	20.02	46.00	-33.54	Average
11	1.9128	6.93	26.98	20.05	56.00	-29.02	QP
12	1.9128	-6.50	13.55	20.05	46.00	-32.45	Average

Note:

Level = Read Level + Factor

Over Limit = Level – Limit Line

Factor = (LISN, ISN, PLC or current probe) Factor + Cable Loss + Attenuator

5. 場強輻射之量測

5.1 適用標準

依據低功率射頻器材技術規範，其他開放頻帶外不必要之輻射干擾需符合限制要求。

頻率 (MHz)	測試距離 (m)	干擾限制 (μV/m)	干擾限制 (dBμV/m)
0.009 ≤ f ≤ 0.490	300	2,400/頻率(千赫)	128.5-93.8 (註1)
0.490< f ≤1.705	30	24,000 /頻率(千赫)	73.8-63 (註2)
1.705< f <30	30	30	69.5 (註3)
30≤ f ≤88	3	100	40.0
88< f ≤216	3	150	43.5
216< f ≤ 960	3	200	46.0
960< f	3	500	54.0

註 1: 其干擾限制值= 20*LOG(2400/F)+40*LOG(300/量測距離)

註 2: 其干擾限制值= 20*LOG(24000/F)+40*LOG(30/量測距離)

註 3: 其干擾限制值= 20*LOG(30)+40*LOG(30/量測距離)

註 4: 其干擾限制值= 20*LOG(500)+20*LOG(3/1.5)(1.5m量測距離)

5.2 測試方法

將待測物置於0.8 或1.5米高的非金屬桌面，使其在工作狀態，接收天線置於3米外相同的高度。待測物分別要垂直或水平放置，而且桌面要360度旋轉，另外接收天線也要從1.0米至4.0米升降變化，以找出最大的輻射電場強度，接收天線置於水平、垂直極向各執行測試一次。若量測頻率低於30 MHz時，得於所規定距離以內進行測試，但應盡量避免於近場做測試。當測試距離較規定距離為近時，測試結果應以插補系數換算至規定距離之值：對同一輻射方向最少兩個距離作量測以決定適當的插補系數或線性距離平方反比(40 dB/10倍距離)。

5.3 測試場地配置圖

圖 1 :量測頻率9kHz~ 30MHz之測試配置

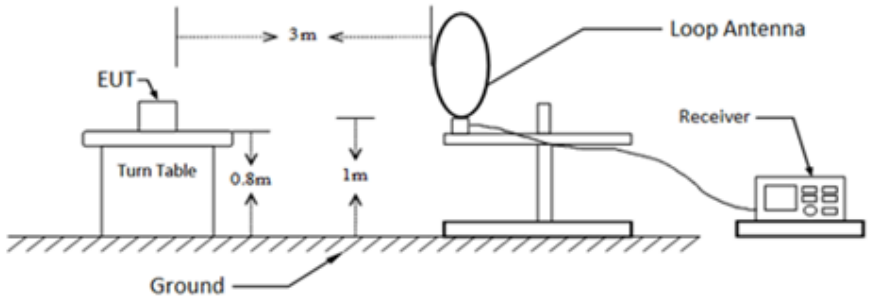


圖 2 :量測頻率30 MHz~ 1 GHz之測試配置

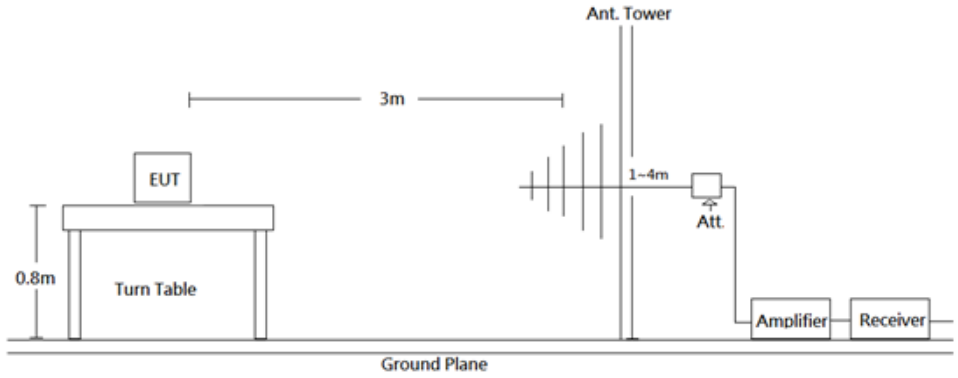


圖 3 : 量測頻率1 GHz以上之測試配置

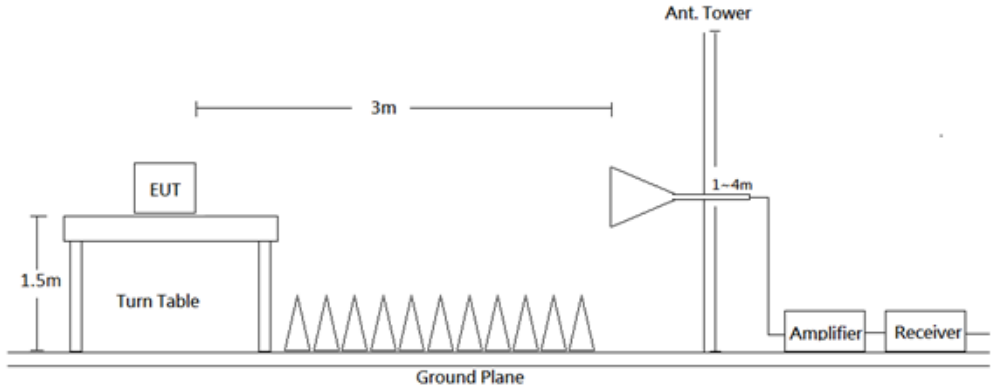
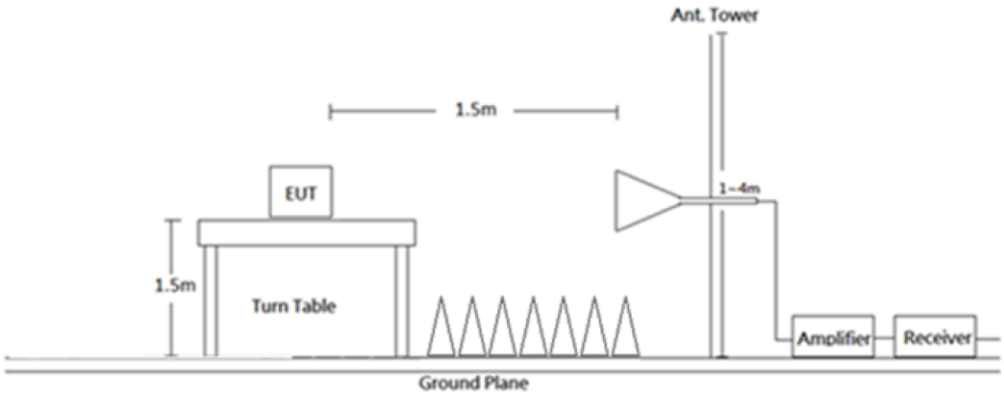


圖4: 量測頻率18GHz以上之測試配置



5.4 量測設定

1GHz以下:

頻譜分析儀設定: Quasi-Peak: RBW : 120kHz

1GHz以上:

頻譜分析儀設定: Peak: RBW: 1MHz; VBW: 3MHz

Average: RBW: 1MHz; VBW: 10Hz for Duty Cycle ≧ 98%

RBW: 1MHz; VBW: 1/T for Duty Cycle < 98%

5.5 場強度之計算

場強之計算公式如

干擾值 = 讀值 + 校正因子

其中校正因子為：

天線因子 + 饋線損失 + 濾波器損失（若有使用） - 放大器增益（若有使用）。

5.6 場強輻射之量測結果

發射機 / 接收機 其它不必要之訊號 (9 kHz ~ 30 MHz)

此頻率之干擾值低於限制值20 dB以下，被考量為背景雜訊值並不予記錄。

發射機 / 接收機 其它不必要之訊號 (30 MHz ~ 1 GHz)

測試模式: Worst Power, 此測試數據為最差模式。

發射機 其它不必要之訊號 (1 GHz ~ 18 GHz)

此案件測試模式分別為CH Low、Mid、High。

發射機 其它不必要之訊號 (18 GHz ~ 26.5 GHz)

測試模式:Worst Power，此測試數據為最差模式。

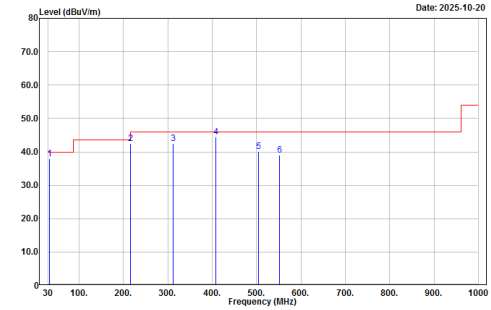
接收機 其它不必要之訊號 (1 GHz ~ 26.5 GHz)

此案件測試模式為Receiver模式。

發射機其它不必要之訊號（1 GHz 以下)

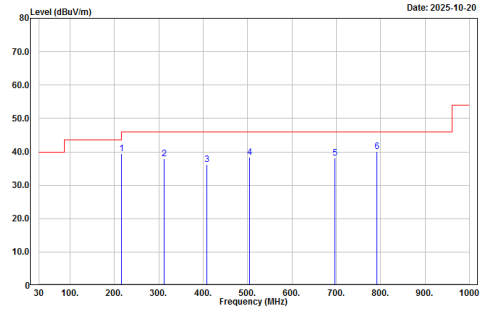
WLAN 2.4G mode:

30M-1G Horizontal	30M-1G Vertical



Site : 966B Chamber
Condition: 3m horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 24.5℃/ 51%
Memo : AX20-TX-2462

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1 !	32.975	42.39	-4.53	37.86	40.00	-2.14	QP
2 !	215.981	58.10	-15.64	42.46	43.50	-1.04	QP
3	311.979	54.99	-12.41	42.58	46.00	-3.42	QP
4 !	407.977	54.60	-10.11	44.49	46.00	-1.51	QP
5	504.007	48.26	-8.10	40.16	46.00	-5.84	QP
6	551.989	46.31	-7.28	39.03	46.00	-6.97	QP

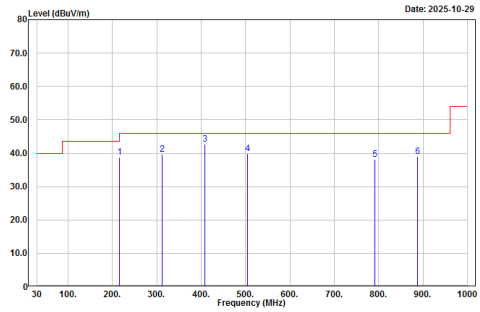
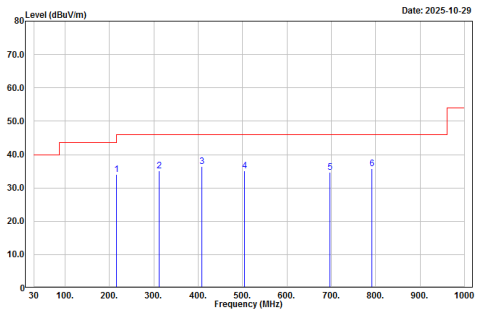


Site : 966B Chamber
Condition: 3m vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 24.5℃/ 51%
Memo : AX20-TX-2462

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	215.981	55.16	-15.64	39.52	43.50	-3.98	QP
2	311.979	50.43	-12.41	38.02	46.00	-7.98	QP
3	408.009	46.38	-10.11	36.27	46.00	-9.73	QP
4	504.007	46.56	-8.10	38.46	46.00	-7.54	QP
5	696.002	43.25	-5.06	38.19	46.00	-7.81	QP
6	792.000	43.83	-3.78	40.05	46.00	-5.95	QP

Note:
Level = Read Level + Factor
Over Limit = Level – Limit Line
Factor = Antenna Factor + Cable Loss – Amplifier Gain

BLE mode:

30M-1G Horizontal	30M-1G Vertical
	

Site : 966B Chamber
Condition: 3m horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 19.5℃/ 45%
Memo : BLE-1M-TX-2402

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	215.981	54.54	-15.64	38.90	43.50	-4.60	QP
2	311.979	52.00	-12.41	39.59	46.00	-6.41	QP
3	407.977	52.72	-10.11	42.61	46.00	-3.39	QP
4	504.007	47.97	-8.10	39.87	46.00	-6.13	QP
5	792.000	41.89	-3.78	38.11	46.00	-7.89	QP
6	887.997	41.67	-2.73	38.94	46.00	-7.06	QP

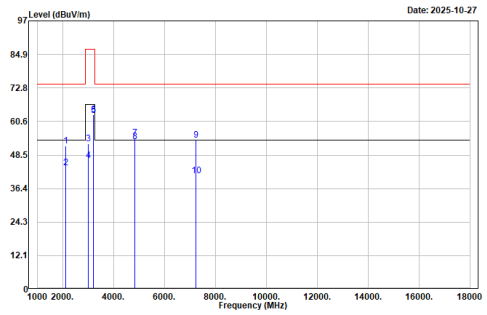
Site : 966B Chamber
Condition: 3m vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 19.5℃/ 45%
Memo : BLE-1M-TX-2402

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	215.981	49.69	-15.64	34.05	43.50	-9.45	QP
2	311.979	47.44	-12.41	35.03	46.00	-10.97	QP
3	407.977	46.63	-10.11	36.52	46.00	-9.48	QP
4	504.007	43.16	-8.10	35.06	46.00	-10.94	QP
5	696.002	39.65	-5.06	34.59	46.00	-11.41	QP
6	792.000	39.46	-3.78	35.68	46.00	-10.32	QP

Note:
Level = Read Level + Factor
Over Limit = Level – Limit Line
Factor = Antenna Factor + Cable Loss – Amplifier Gain

發射機其它不必要之訊號 (1GHz-18GHz): WLAN 2.4G mode

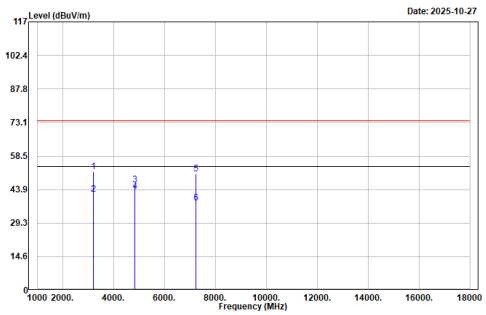
IEEE 802.11b Low Channel Horizontal



Site : 966B Chamber
Condition: 3m horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : B-TX-2412

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2110.667	53.04	-1.37	51.67	74.00	-22.33	Peak
2	2110.667	45.20	-1.37	43.83	54.00	-10.17	Average
3	3015.067	52.77	-0.18	52.59	86.85	-34.26	Peak
4	3015.067	46.76	-0.18	46.58	66.85	-20.27	Average
5	3215.667	62.44	0.34	62.78	86.85	-24.07	Peak
6	3215.667	62.80	0.34	63.14	66.85	-3.71	Average
7	4824.000	51.33	3.27	54.60	74.00	-19.40	Peak
8 !	4824.000	49.96	3.27	53.23	54.00	-0.77	Average
9	7236.000	44.42	9.42	53.84	74.00	-20.16	Peak
10	7237.000	31.54	9.43	40.97	54.00	-13.03	Average

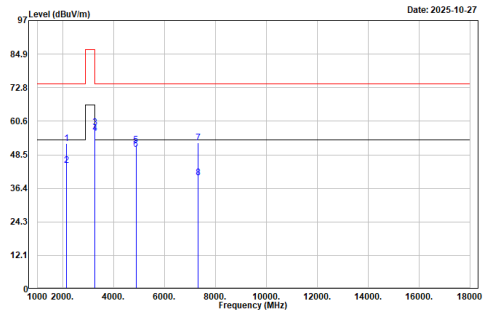
IEEE 802.11b Low Channel Vertical



Site : 966B Chamber
Condition: 3m vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : B-TX-2412

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	3216.233	51.29	0.35	51.64	74.00	-22.36	Peak
2	3216.233	41.39	0.35	41.74	54.00	-12.26	Average
3	4824.000	42.85	3.27	46.12	74.00	-27.88	Peak
4	4824.000	39.73	3.27	43.00	54.00	-11.00	Average
5	7236.000	41.25	9.42	50.67	74.00	-23.33	Peak
6	7236.000	28.61	9.42	38.03	54.00	-15.97	Average

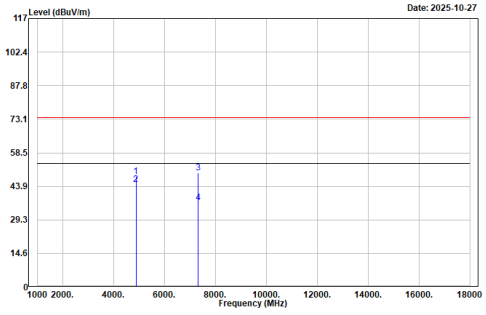
IEEE 802.11b Middle Channel Horizontal



Site : 966B Chamber
Condition: 3m horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : B-TX-2437

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2132.200	54.20	-1.68	52.52	74.00	-21.48	Peak
2	2132.200	46.31	-1.68	44.63	54.00	-9.37	Average
3	3249.667	57.76	0.55	58.31	86.48	-28.17	Peak
4	3249.667	55.68	0.55	56.23	66.48	-10.25	Average
5	4874.000	48.55	3.43	51.98	74.00	-22.02	Peak
6	4874.000	46.93	3.43	50.36	54.00	-3.64	Average
7	7311.000	43.13	9.60	52.73	74.00	-21.27	Peak
8	7311.000	30.66	9.60	40.26	54.00	-13.74	Average

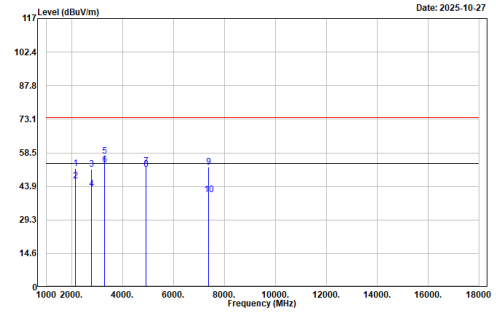
IEEE 802.11b Middle Channel Vertical



Site : 966B Chamber
Condition: 3m vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : B-TX-2437

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	4874.000	44.74	3.43	48.17	74.00	-25.83	Peak
2	4874.000	41.24	3.43	44.67	54.00	-9.33	Average
3	7311.000	40.21	9.60	49.81	74.00	-24.19	Peak
4	7311.000	27.06	9.60	36.66	54.00	-17.34	Average

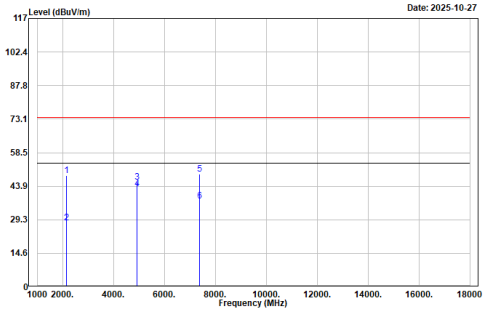
IEEE 802.11b High Channel Horizontal



Site : 966B Chamber
Condition: 3m horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : B-TX-2462

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2154.300	53.71	-1.96	51.75	74.00	-22.25	Peak
2	2154.300	48.14	-1.96	46.18	54.00	-7.82	Average
3	2769.700	52.40	-0.89	51.51	74.00	-22.49	Peak
4	2769.700	43.72	-0.89	42.83	54.00	-11.17	Average
5	3282.533	56.61	0.57	57.18	74.00	-16.82	Peak
6 !	3282.533	52.61	0.57	53.18	54.00	-0.82	Average
7	4924.000	49.10	3.54	52.64	74.00	-21.36	Peak
8 !	4924.000	47.94	3.54	51.48	54.00	-2.52	Average
9	7386.000	42.56	9.77	52.33	74.00	-21.67	Peak
10	7386.000	30.35	9.77	40.12	54.00	-13.88	Average

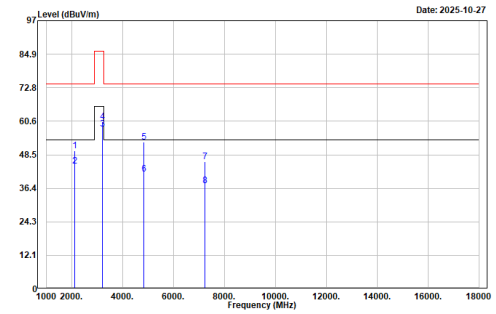
IEEE 802.11b High Channel Vertical



Site : 966B Chamber
Condition: 3m vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : B-TX-2462

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2154.300	50.42	-1.96	48.46	74.00	-25.54	Peak
2	2154.300	29.99	-1.96	28.03	54.00	-25.97	Average
3	4924.000	42.15	3.54	45.69	74.00	-28.31	Peak
4	4924.000	39.18	3.54	42.72	54.00	-11.28	Average
5	7386.000	39.40	9.77	49.17	74.00	-24.83	Peak
6	7386.000	27.54	9.77	37.31	54.00	-16.69	Average

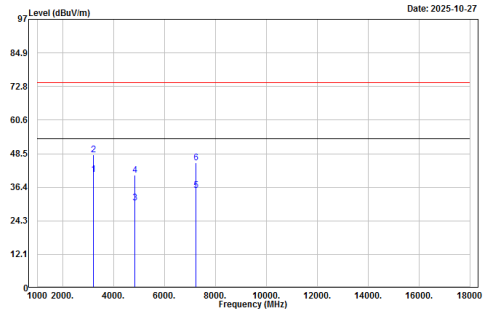
IEEE 802.11g Low Channel Horizontal



Site : 966B Chamber
Condition: 3m horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : G-TX-2412

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2110.100	51.23	-1.36	49.87	74.00	-24.13	Peak
2	2110.100	45.67	-1.36	44.31	54.00	-9.69	Average
3	3215.233	57.59	0.34	57.93	66.00	-8.07	Average
4	3216.233	60.17	0.35	60.52	86.00	-25.48	Peak
5	4824.000	49.90	3.27	53.17	74.00	-20.83	Peak
6	4824.000	38.31	3.27	41.58	54.00	-12.42	Average
7	7236.000	36.52	9.42	45.94	74.00	-28.06	Peak
8	7236.000	27.97	9.42	37.39	54.00	-16.61	Average

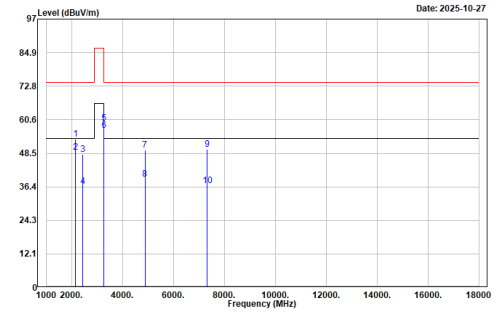
IEEE 802.11g Low Channel Vertical



Site : 966B Chamber
Condition: 3m vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : G-TX-2412

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	3216.233	40.61	0.35	40.96	54.00	-13.04	Average
2	3216.233	47.72	0.35	48.07	74.00	-25.93	Peak
3	4824.000	27.37	3.27	30.64	54.00	-23.36	Average
4	4824.000	37.38	3.27	40.65	74.00	-33.35	Peak
5	7236.000	25.70	9.42	35.12	54.00	-18.88	Average
6	7236.000	35.80	9.42	45.22	74.00	-28.78	Peak

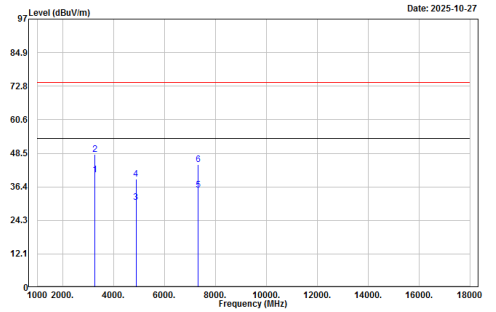
IEEE 802.11g Middle Channel Horizontal




```
Site      : 966B Chamber
Condition: 3m horizontal
Job No    : RLK250801005
Model     : RRQ61051-009
Power     : From Test Development Board
Tester    : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo      : G-TX-2437
```

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2132.200	55.40	-1.68	53.72	74.00	-20.28	Peak
2	2132.200	50.70	-1.68	49.02	54.00	-4.98	Average
3	2438.767	50.09	-2.08	48.01	74.00	-25.99	Peak
4	2438.767	38.53	-2.08	36.45	54.00	-17.55	Average
5	3249.100	58.81	0.54	59.35	86.47	-27.12	Peak
6	3249.100	56.28	0.54	56.82	66.47	-9.65	Average
7	4874.000	46.25	3.43	49.68	74.00	-24.32	Peak
8	4874.000	35.81	3.43	39.24	54.00	-14.76	Average
9	7311.000	40.45	9.60	50.05	74.00	-23.95	Peak
10	7311.000	27.18	9.60	36.78	54.00	-17.22	Average

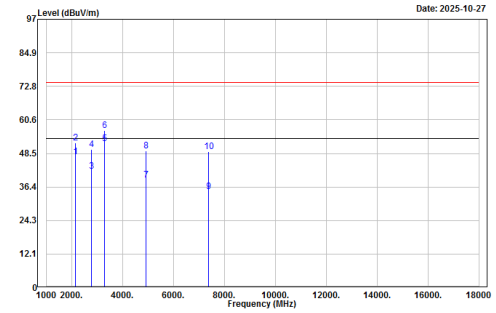
IEEE 802.11g Middle Channel Vertical




```
Site      : 966B Chamber
Condition: 3m vertical
Job No    : RLK250801005
Model     : RRQ61051-009
Power     : From Test Development Board
Tester    : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo      : G-TX-2437
```

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	3249.667	40.31	0.55	40.86	54.00	-13.14	Average
2	3249.667	47.48	0.55	48.03	74.00	-25.97	Peak
3	4874.000	27.22	3.43	30.65	54.00	-23.35	Average
4	4874.000	35.84	3.43	39.27	74.00	-34.73	Peak
5	7311.000	25.52	9.60	35.12	54.00	-18.88	Average
6	7311.000	34.76	9.60	44.36	74.00	-29.64	Peak

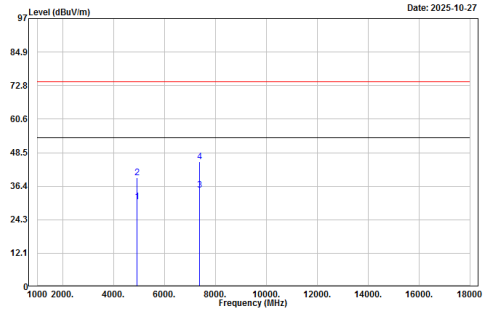
IEEE 802.11g High Channel Horizontal




```
Site      : 966B Chamber
Condition: 3m horizontal
Job No    : RLK250801005
Model     : RRQ61051-009
Power     : From Test Development Board
Tester    : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo      : G-TX-2462
```

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2154.300	49.35	-1.96	47.39	54.00	-6.61	Average
2	2154.300	54.22	-1.96	52.26	74.00	-21.74	Peak
3	2772.533	42.91	-0.91	42.00	54.00	-12.00	Average
4	2772.533	50.94	-0.91	50.03	74.00	-23.97	Peak
5 !	3282.533	51.49	0.57	52.06	54.00	-1.94	Average
6	3282.533	56.30	0.57	56.87	74.00	-17.13	Peak
7	4924.000	35.33	3.54	38.87	54.00	-15.13	Average
8	4924.000	46.00	3.54	49.54	74.00	-24.46	Peak
9	7386.000	24.98	9.77	34.75	54.00	-19.25	Average
10	7386.000	39.38	9.77	49.15	74.00	-24.85	Peak

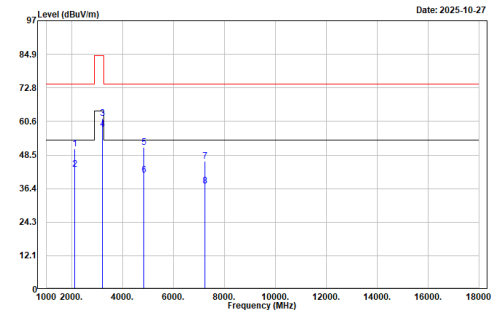
IEEE 802.11g High Channel Vertical




```
Site      : 966B Chamber
Condition: 3m vertical
Job No    : RLK250801005
Model     : RRQ61051-009
Power     : From Test Development Board
Tester    : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo      : G-TX-2462
```

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	4924.000	27.26	3.54	30.80	54.00	-23.20	Average
2	4924.000	35.90	3.54	39.44	74.00	-34.56	Peak
3	7386.000	25.27	9.77	35.04	54.00	-18.96	Average
4	7386.000	35.54	9.77	45.31	74.00	-28.69	Peak

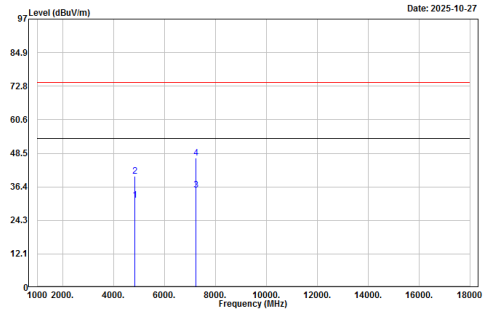
IEEE 802.11n HT20 Low Channel Horizontal




```
Site      : 966B Chamber
Condition: 3m Horizontal
Job No    : RLK250801005
Model     : RRQ61051-009
Power     : From Test Development Board
Tester    : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo      : N20-TX-2412
```

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2110.667	52.19	-1.37	50.82	74.00	-23.18	Peak
2	2110.667	44.83	-1.37	43.46	54.00	-10.54	Average
3	3216.233	61.37	0.35	61.72	84.37	-22.65	Peak
4	3216.233	57.44	0.35	57.79	64.37	-6.58	Average
5	4824.000	47.99	3.27	51.26	74.00	-22.74	Peak
6	4824.000	38.08	3.27	41.35	54.00	-12.65	Average
7	7236.000	36.97	9.42	46.39	74.00	-27.61	Peak
8	7236.000	27.92	9.42	37.34	54.00	-16.66	Average

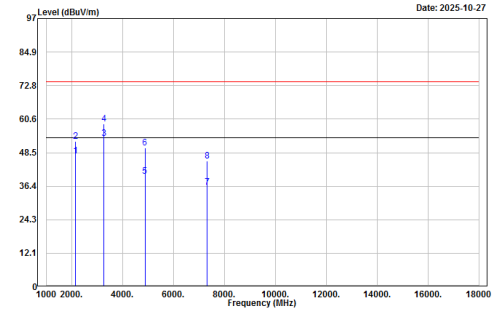
IEEE 802.11n HT20 Low Channel Vertical




```
Site      : 966B Chamber
Condition: 3m Vertical
Job No    : RLK250801005
Model     : RRQ61051-009
Power     : From Test Development Board
Tester    : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo      : N20-TX-2412
```

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	4824.000	28.23	3.27	31.50	54.00	-22.50	Average
2	4824.000	36.97	3.27	40.24	74.00	-33.76	Peak
3	7236.000	25.84	9.42	35.26	54.00	-18.74	Average
4	7236.000	37.35	9.42	46.77	74.00	-27.23	Peak

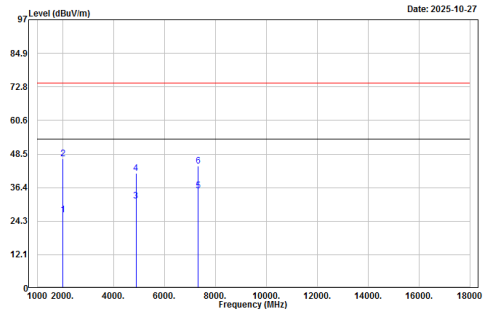
IEEE 802.11n HT20 Middle Channel Horizontal




```
Site      : 966B Chamber
Condition: 3m Horizontal
Job No    : RLK250801005
Model     : RRQ61051-009
Power     : From Test Development Board
Tester    : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo      : N20-TX-2437
```

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2132.200	48.97	-1.68	47.29	54.00	-6.71	Average
2	2132.200	54.34	-1.68	52.66	74.00	-21.34	Peak
3 !	3249.100	53.06	0.54	53.60	54.00	-0.40	Average
4	3249.100	58.35	0.54	58.89	74.00	-15.11	Peak
5	4874.000	36.49	3.43	39.92	54.00	-14.08	Average
6	4874.000	46.68	3.43	50.11	74.00	-23.89	Peak
7	7311.000	26.34	9.60	35.94	54.00	-18.06	Average
8	7311.000	35.75	9.60	45.35	74.00	-28.65	Peak

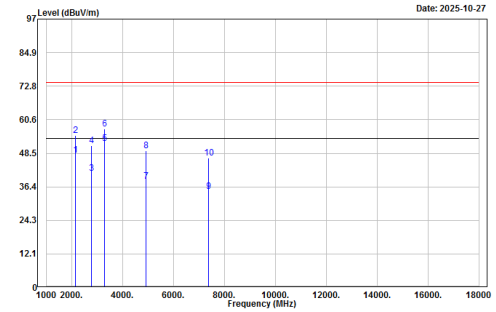
IEEE 802.11n HT20 Middle Channel Vertical




```
Site      : 966B Chamber
Condition: 3m Vertical
Job No    : RLK250801005
Model     : RRQ61051-009
Power     : From Test Development Board
Tester    : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo      : N20-TX-2437
```

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2000.167	28.37	-1.75	26.62	54.00	-27.38	Average
2	2000.167	48.55	-1.75	46.80	74.00	-27.20	Peak
3	4874.000	28.23	3.43	31.66	54.00	-22.34	Average
4	4874.000	38.18	3.43	41.61	74.00	-32.39	Peak
5	7311.000	25.58	9.60	35.18	54.00	-18.82	Average
6	7311.000	34.64	9.60	44.24	74.00	-29.76	Peak

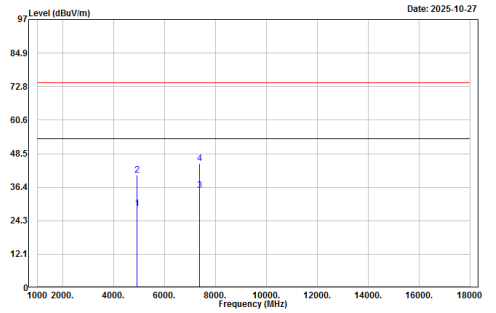
IEEE 802.11n HT20 High Channel Horizontal



Site : 966B Chamber
Condition: 3m Horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : N20-TX-2462

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2154.300	49.73	-1.96	47.77	54.00	-6.23	Average
2	2154.300	56.89	-1.96	54.93	74.00	-19.07	Peak
3	2771.967	42.24	-0.90	41.34	54.00	-12.66	Average
4	2771.967	52.07	-0.90	51.17	74.00	-22.83	Peak
5 !	3282.100	51.53	0.57	52.10	54.00	-1.90	Average
6	3283.100	56.83	0.57	57.40	74.00	-16.60	Peak
7	4924.000	34.82	3.54	38.36	54.00	-15.64	Average
8	4924.000	45.75	3.54	49.29	74.00	-24.71	Peak
9	7386.000	24.84	9.77	34.61	54.00	-19.39	Average
10	7386.000	36.96	9.77	46.73	74.00	-27.27	Peak

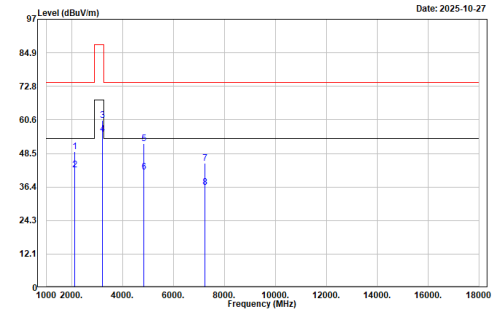
IEEE 802.11n HT20 High Channel Vertical



Site : 966B Chamber
Condition: 3m vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : N20-TX-2462

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	4924.000	25.15	3.54	28.69	54.00	-25.31	Average
2	4924.000	37.22	3.54	40.76	74.00	-33.24	Peak
3	7386.000	25.38	9.77	35.15	54.00	-18.85	Average
4	7386.000	35.06	9.77	44.83	74.00	-29.17	Peak

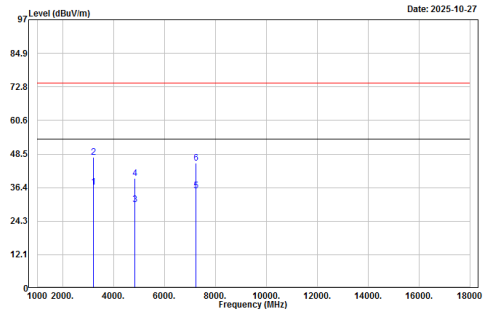
IEEE 802.11n ax20 Low Channel Horizontal



Site : 966B Chamber
Condition: 3m horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : AX20-TX-2412

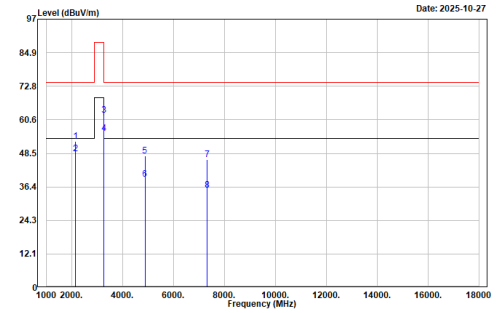
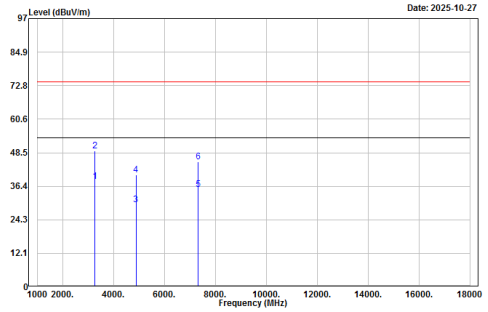
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2110.100	50.61	-1.36	49.25	74.00	-24.75	Peak
2	2110.100	44.00	-1.36	42.64	54.00	-11.36	Average
3	3216.233	60.19	0.35	60.54	87.83	-27.29	Peak
4	3216.233	55.24	0.35	55.59	67.83	-12.24	Average
5	4824.000	48.91	3.27	52.18	74.00	-21.82	Peak
6	4824.000	38.51	3.27	41.78	54.00	-12.22	Average
7	7236.000	35.47	9.42	44.89	74.00	-29.11	Peak
8	7236.000	26.79	9.42	36.21	54.00	-17.79	Average

IEEE 802.11n ax20 Low Channel Vertical



Site : 966B Chamber
Condition: 3m vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : AX20-TX-2412

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	3215.667	36.18	0.34	36.52	54.00	-17.48	Average
2	3215.667	46.91	0.34	47.25	74.00	-26.75	Peak
3	4824.000	27.03	3.27	30.30	54.00	-23.70	Average
4	4824.000	36.46	3.27	39.73	74.00	-34.27	Peak
5	7236.000	25.94	9.42	35.36	54.00	-18.64	Average
6	7236.000	35.72	9.42	45.14	74.00	-28.86	Peak

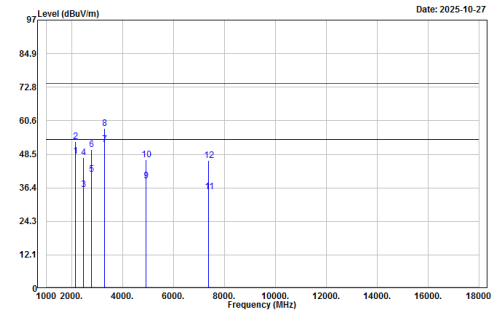
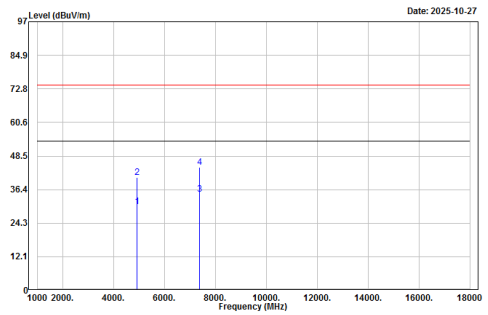
IEEE 802.11n ax20 Middle Channel Horizontal	IEEE 802.11n ax20 Middle Channel Vertical
	

Site : 966B Chamber
Condition: 3m horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : AX20-TX-2437

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2132.767	54.49	-1.70	52.79	74.00	-21.21	Peak
2	2132.767	50.02	-1.70	48.32	54.00	-5.68	Average
3	3249.100	61.71	0.54	62.25	88.64	-26.39	Peak
4	3249.100	55.29	0.54	55.83	68.64	-12.81	Average
5	4874.000	44.08	3.43	47.51	74.00	-26.49	Peak
6	4874.000	35.79	3.43	39.22	54.00	-14.78	Average
7	7311.000	36.66	9.60	46.26	74.00	-27.74	Peak
8	7311.000	25.72	9.60	35.32	54.00	-18.68	Average

Site : 966B Chamber
Condition: 3m vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : AX20-TX-2437

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	3249.667	37.53	0.55	38.08	54.00	-15.92	Average
2	3249.667	48.61	0.55	49.16	74.00	-24.84	Peak
3	4874.000	26.29	3.43	29.72	54.00	-24.28	Average
4	4874.000	37.08	3.43	40.51	74.00	-33.49	Peak
5	7311.000	25.54	9.60	35.14	54.00	-18.86	Average
6	7311.000	35.60	9.60	45.20	74.00	-28.80	Peak

IEEE 802.11n ax20 High Channel Horizontal	IEEE 802.11n ax20 High Channel Vertical
	

Site : 966B Chamber
Condition: 3m horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : AX20-TX-2462

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2154.300	49.80	-1.96	47.84	54.00	-6.16	Average
2	2154.300	54.99	-1.96	53.03	74.00	-20.97	Peak
3	2463.133	38.12	-2.32	35.80	54.00	-18.20	Average
4	2463.133	49.73	-2.32	47.41	74.00	-26.59	Peak
5	2772.533	42.24	-0.91	41.33	54.00	-12.67	Average
6	2772.533	51.22	-0.91	50.31	74.00	-23.69	Peak
7 !	3282.533	51.46	0.57	52.03	54.00	-1.97	Average
8	3282.533	57.34	0.57	57.91	74.00	-16.09	Peak
9	4924.000	35.25	3.54	38.79	54.00	-15.21	Average
10	4924.000	43.02	3.54	46.56	74.00	-27.44	Peak
11	7386.000	25.18	9.77	34.95	54.00	-19.05	Average
12	7386.000	36.46	9.77	46.23	74.00	-27.77	Peak

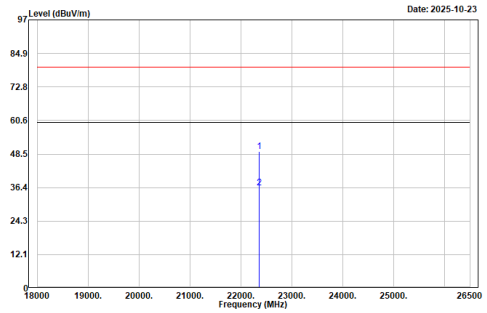
Site : 966B Chamber
Condition: 3m vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : AX20-TX-2462

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	4924.000	26.64	3.54	30.18	54.00	-23.82	Average
2	4924.000	37.33	3.54	40.87	74.00	-33.13	Peak
3	7386.000	25.04	9.77	34.81	54.00	-19.19	Average
4	7386.000	34.77	9.77	44.54	74.00	-29.46	Peak

Note:
Level = Read Level + Factor
Over Limit = Level – Limit Line
Factor = Antenna Factor + Cable Loss – Amplifier Gain

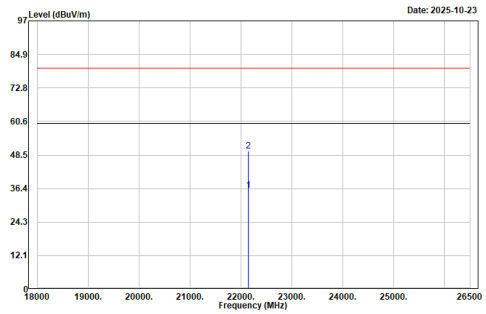
發射機其它不必要之訊號 (18GHz-26.5GHz) : WLAN 2.4G mode

Horizontal	Vertical



Site : 966B Chamber
Condition: 1.5m horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 19.5℃/ 45%
Memo : AX20-TX-2462

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	22359.370	48.49	1.01	49.50	80.00	-30.50	Peak
2	22359.370	35.38	1.01	36.39	60.00	-23.61	Average



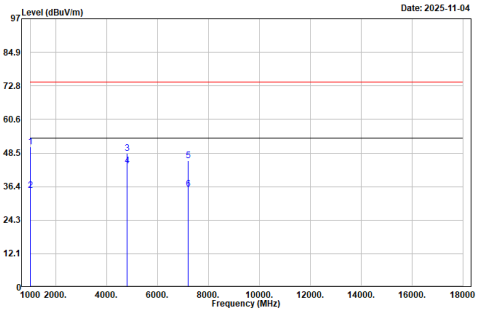
Site : 966B Chamber
Condition: 1.5m vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 19.5℃/ 45%
Memo : AX20-TX-2462

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	22141.480	35.08	0.78	35.86	60.00	-24.14	Average
2	22141.480	49.09	0.78	49.87	80.00	-30.13	Peak

Note:
Level = Read Level + Factor
Over Limit = Level – Limit Line
Factor = Antenna Factor + Cable Loss – Amplifier Gain

發射機其它不必要之訊號 (1GHz-18GHz): BLE 1M Mode

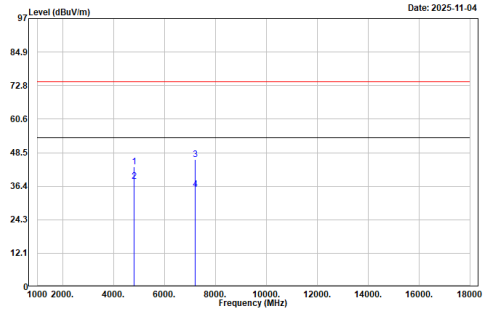
BLE Low Channel Horizontal



Site : 966B Chamber
Condition: 3m Horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 20.6℃/ 59%
Memo : BLE-1M-TX-2402

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	1000.000	58.66	-7.95	50.71	74.00	-23.29	Peak
2	1000.000	42.87	-7.95	34.92	54.00	-19.08	Average
3	4804.000	45.08	3.18	48.26	74.00	-25.74	Peak
4	4804.000	40.85	3.18	44.03	54.00	-9.97	Average
5	7206.000	36.34	9.27	45.61	74.00	-28.39	Peak
6	7206.000	26.12	9.27	35.39	54.00	-18.61	Average

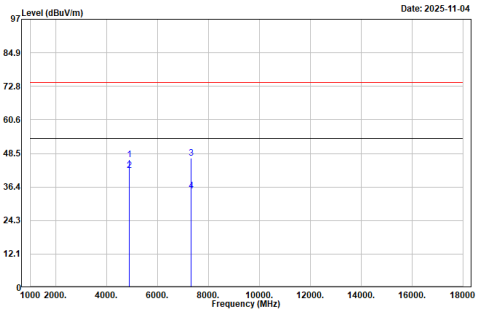
BLE Low Channel Vertical



Site : 966B Chamber
Condition: 3m Vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 20.6℃/ 59%
Memo : BLE-1M-TX-2402

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	4804.000	40.14	3.18	43.32	74.00	-30.68	Peak
2	4804.000	35.03	3.18	38.21	54.00	-15.79	Average
3	7206.000	36.84	9.27	46.11	74.00	-27.89	Peak
4	7206.000	25.88	9.27	35.15	54.00	-18.85	Average

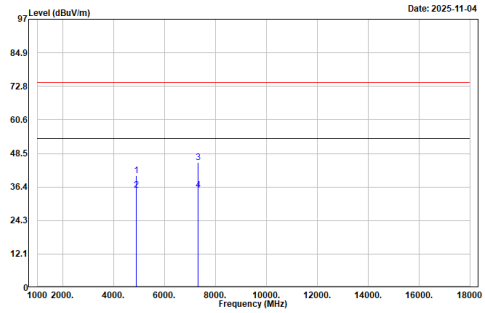
BLE Middle Channel Horizontal



Site : 966B Chamber
Condition: 3m Horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 20.6℃/ 59%
Memo : BLE-1M-TX-2440

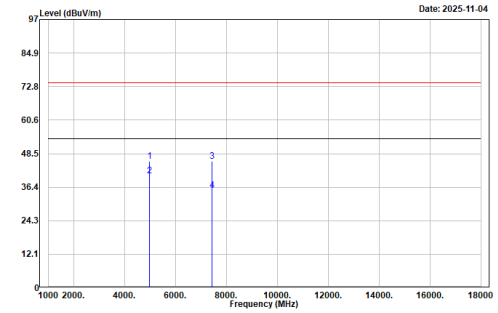
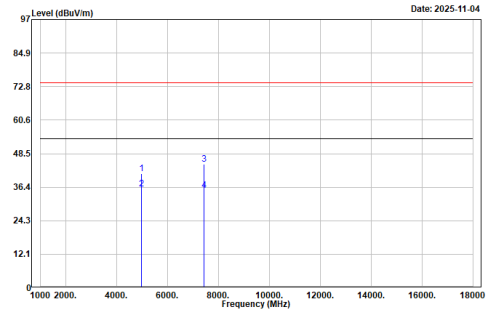
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	4880.000	42.91	3.44	46.35	74.00	-27.65	Peak
2	4880.000	38.95	3.44	42.39	54.00	-11.61	Average
3	7320.000	37.15	9.63	46.78	74.00	-27.22	Peak
4	7320.000	25.35	9.63	34.98	54.00	-19.02	Average

BLE Middle Channel Vertical



Site : 966B Chamber
Condition: 3m Vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 20.6℃/ 59%
Memo : BLE-1M-TX-2440

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	4880.000	37.11	3.44	40.55	74.00	-33.45	Peak
2	4880.000	31.86	3.44	35.30	54.00	-18.70	Average
3	7320.000	35.60	9.63	45.23	74.00	-28.77	Peak
4	7320.000	25.66	9.63	35.29	54.00	-18.71	Average

BLE High Channel Horizontal	BLE High Channel Vertical
	

Site : 966B Chamber
Condition: 3m Horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 20.6℃/ 59%
Memo : BLE-1M-TX-2480

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	4960.000	42.16	3.62	45.78	74.00	-28.22	Peak
2	4960.000	36.92	3.62	40.54	54.00	-13.46	Average
3	7440.000	35.93	9.93	45.86	74.00	-28.14	Peak
4	7440.000	25.40	9.93	35.33	54.00	-18.67	Average

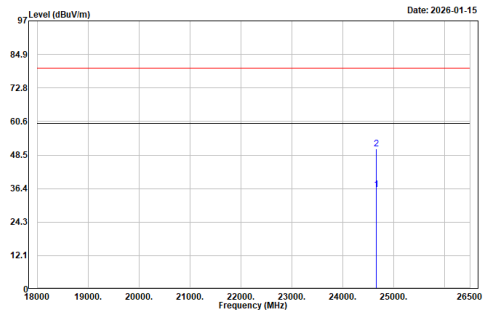
Site : 966B Chamber
Condition: 3m Vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 20.6℃/ 59%
Memo : BLE-1M-TX-2480

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	4960.000	37.53	3.62	41.15	74.00	-32.85	Peak
2	4960.000	32.13	3.62	35.75	54.00	-18.25	Average
3	7440.000	34.78	9.93	44.71	74.00	-29.29	Peak
4	7440.000	25.41	9.93	35.34	54.00	-18.66	Average

Note:
Level = Read Level + Factor
Over Limit = Level – Limit Line
Factor = Antenna Factor + Cable Loss – Amplifier Gain

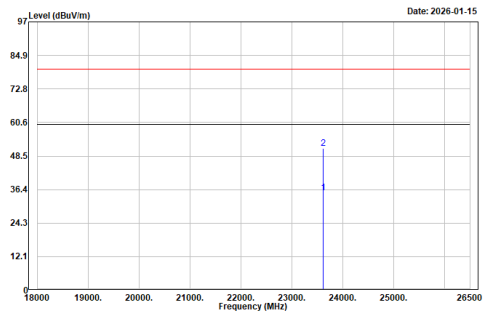
發射機其它不必要之訊號 (18GHz-26.5GHz) : BLE 1M Mode

Horizontal	Vertical



Site : 966B Chamber
Condition: 1.5m horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 18.2℃/52%
Memo : BLE-1M-TX-2402

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	24660.880	33.97	2.11	36.08	60.00	-23.92	Average
2	24660.880	48.51	2.11	50.62	80.00	-29.38	Peak



Site : 966B Chamber
Condition: 1.5m vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 18.2℃/52%
Memo : BLE-1M-TX-2402

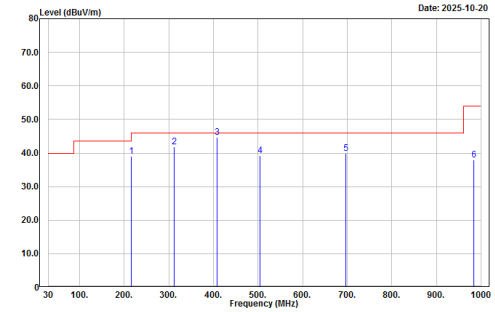
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	23615.380	33.46	1.86	35.32	60.00	-24.68	Average
2	23615.380	49.34	1.86	51.20	80.00	-28.80	Peak

Note:
Level = Read Level + Factor
Over Limit = Level – Limit Line
Factor = Antenna Factor + Cable Loss – Amplifier Gain

接收機其它不必要之訊號 (1 GHz 以下)

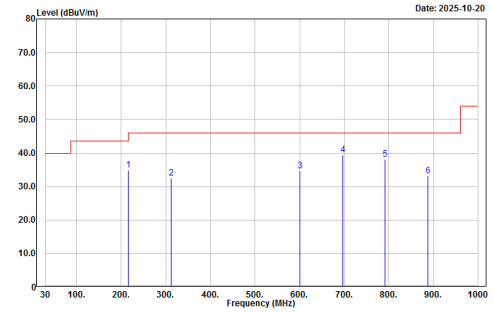
WLAN 2.4G mode:

30M-1G Horizontal	30M-1G Vertical



Site : 966B Chamber
Condition: 3m horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 24.5℃/ 51%
Memo : AX20-RX-2462

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	215.981	54.68	-15.64	39.04	43.50	-4.46	QP
2	311.979	54.17	-12.41	41.76	46.00	-4.24	QP
3 !	408.009	54.78	-10.11	44.67	46.00	-1.33	QP
4	504.007	47.34	-8.10	39.24	46.00	-6.76	QP
5	696.002	44.93	-5.06	39.87	46.00	-6.13	QP
6	983.995	39.97	-1.97	38.00	54.00	-16.00	QP

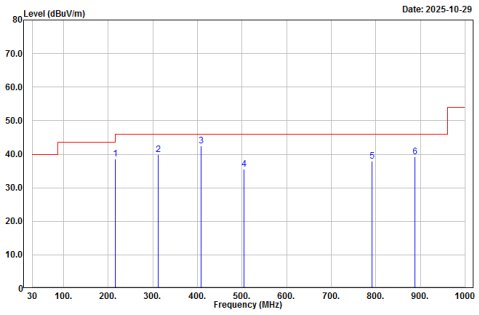
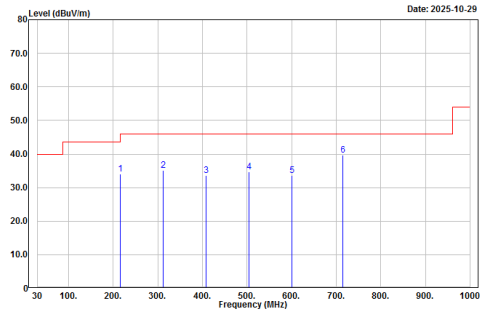


Site : 966B Chamber
Condition: 3m vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 24.5℃/ 51%
Memo : AX20-RX-2462

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	215.981	50.53	-15.64	34.89	43.50	-8.61	QP
2	311.979	44.85	-12.41	32.44	46.00	-13.56	QP
3	600.004	41.90	-7.16	34.74	46.00	-11.26	QP
4	696.002	44.45	-5.06	39.39	46.00	-6.61	QP
5	792.000	41.86	-3.78	38.08	46.00	-7.92	QP
6	888.030	35.81	-2.73	33.08	46.00	-12.92	QP

Note:
Level = Read Level + Factor
Over Limit = Level – Limit Line
Factor = Antenna Factor + Cable Loss – Amplifier Gain

BLE mode:

30M-1G Horizontal	30M-1G Vertical
	

Site : 966B Chamber
Condition: 3m horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 19.5℃/ 45%
Memo : BLE-1M-RX-2402

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	215.981	54.19	-15.64	38.55	43.50	-4.95	QP
2	311.979	52.37	-12.41	39.96	46.00	-6.04	QP
3	407.977	52.55	-10.11	42.44	46.00	-3.56	QP
4	504.007	43.74	-8.10	35.64	46.00	-10.36	QP
5	792.000	41.77	-3.78	37.99	46.00	-8.01	QP
6	887.997	41.88	-2.73	39.15	46.00	-6.85	QP

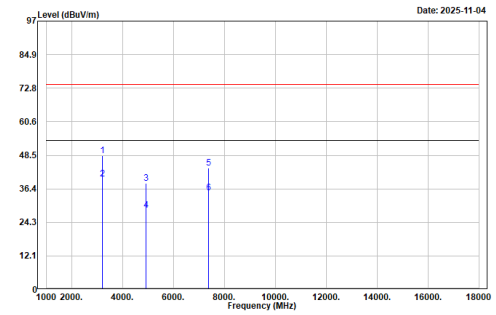
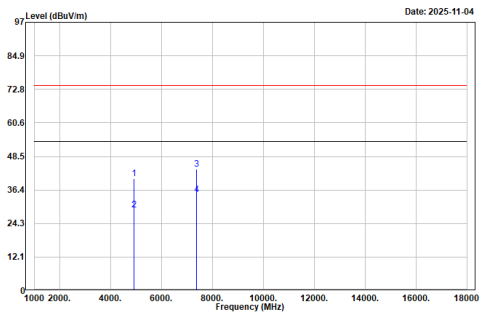
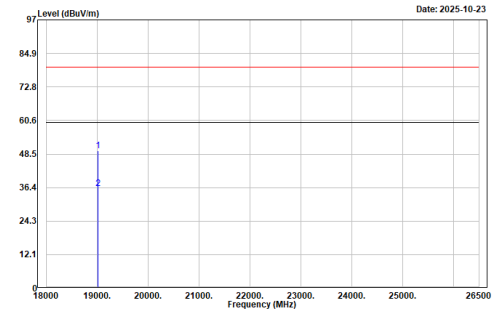
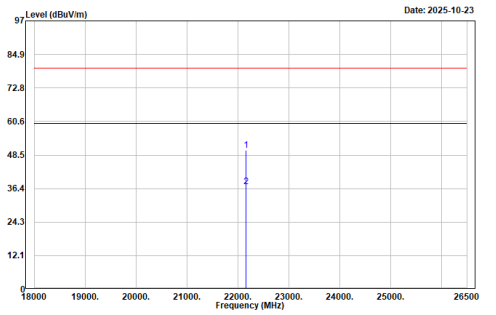
Site : 966B Chamber
Condition: 3m vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 19.5℃/ 45%
Memo : BLE-1M-RX-2402

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	215.981	49.57	-15.64	33.93	43.50	-9.57	QP
2	311.979	47.50	-12.41	35.09	46.00	-10.91	QP
3	408.009	43.73	-10.11	33.62	46.00	-12.38	QP
4	504.007	42.77	-8.10	34.67	46.00	-11.33	QP
5	600.004	40.83	-7.16	33.67	46.00	-12.33	QP
6	714.012	44.35	-4.63	39.72	46.00	-6.28	QP

Note:
Level = Read Level + Factor
Over Limit = Level– Limit Line
Factor = Antenna Factor + Cable Loss – Amplifier Gain

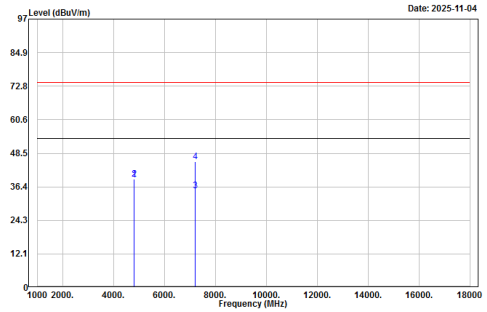
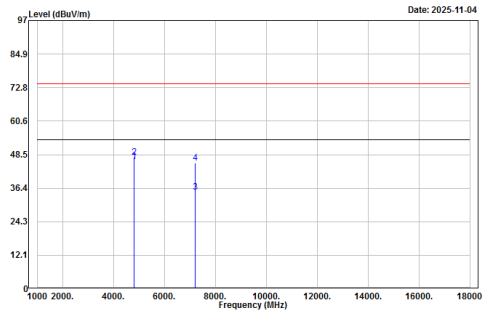
接收機其它不必要之訊號 (1GHz 以上)

WLAN 2.4G mode:

Horizontal (1GHz-18GHz)	Vertical (1GHz-18GHz)
 Site : 966B Chamber Condition: 3m horizontal Job No : RLK250801005 Model : RRQ61051-009 Power : From Test Development Board Tester : Derek Temp./ Hum.: 20.6℃/ 59% Memo : AX20-RX-2462 Freq / Read Level / Factor / Level / Limit Line / Over Limit / Remark MHz / dBuV / dB/m / dBuV/m / dBuV/m / dB 1 3215.667 48.08 0.34 48.42 74.00 -25.58 Peak 2 3215.667 39.69 0.34 40.03 54.00 -13.97 Average 3 4924.000 34.77 3.54 38.31 74.00 -35.69 Peak 4 4924.000 25.19 3.54 28.73 54.00 -25.27 Average 5 7386.000 34.14 9.77 43.91 74.00 -30.09 Peak 6 7386.000 25.14 9.77 34.91 54.00 -19.09 Average	 Site : 966B Chamber Condition: 3m vertical Job No : RLK250801005 Model : RRQ61051-009 Power : From Test Development Board Tester : Derek Temp./ Hum.: 20.6℃/ 59% Memo : AX20-RX-2462 Freq / Read Level / Factor / Level / Limit Line / Over Limit / Remark MHz / dBuV / dB/m / dBuV/m / dBuV/m / dB 1 4924.000 37.03 3.54 40.57 74.00 -33.43 Peak 2 4924.000 25.64 3.54 29.18 54.00 -24.82 Average 3 7386.000 34.24 9.77 44.01 74.00 -29.99 Peak 4 7386.000 24.81 9.77 34.58 54.00 -19.42 Average
Horizontal (18GHz – 26.5GHz)	**Vertical (18GHz – 26.5GHz)**
 Site : 966B Chamber Condition: 1.5m Horizontal Job No : RLK250801005 Model : RRQ61051-009 Power : From Test Development Board Tester : Derek Temp./ Hum.: 19.5℃/ 45% Memo : AX20-RX-2462 Freq / Read Level / Factor / Level / Limit Line / Over Limit / Remark MHz / dBuV / dB/m / dBuV/m / dBuV/m / dB 1 19009.520 54.84 -5.05 49.79 80.00 -30.21 Peak 2 19009.520 41.10 -5.05 36.05 60.00 -23.95 Average	 Site : 966B Chamber Condition: 1.5m Vertical Job No : RLK250801005 Model : RRQ61051-009 Power : From Test Development Board Tester : Derek Temp./ Hum.: 19.5℃/ 45% Memo : AX20-RX-2462 Freq / Read Level / Factor / Level / Limit Line / Over Limit / Remark MHz / dBuV / dB/m / dBuV/m / dBuV/m / dB 1 22157.350 49.49 0.81 50.30 80.00 -29.70 Peak 2 22157.350 36.19 0.81 37.00 60.00 -23.00 Average

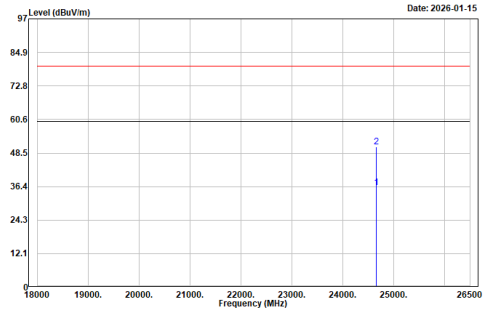
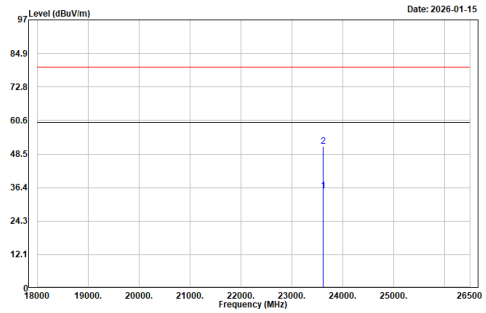
Note:
Level = Read Level + Factor
Over Limit = Level – Limit Line
Factor = Antenna Factor + Cable Loss – Amplifier Gain

BLE mode:

Horizontal (1GHz-18GHz)	Vertical (1GHz-18GHz)
	
Site : 966B Chamber Condition: 3m horizontal Job No : RLK250801005 Model : RRQ61051-009 Power : From Test Development Board Tester : Derek Temp./ Hum.: 20.6℃/ 59% Memo : BLE-1M-RX-2402 Memo : RBW/VBW: PK:1M/3M; AV:1M/3k	Site : 966B Chamber Condition: 3m vertical Job No : RLK250801005 Model : RRQ61051-009 Power : From Test Development Board Tester : Derek Temp./ Hum.: 20.6℃/ 59% Memo : BLE-1M-RX-2402 Memo : RBW/VBW: PK:1M/3M; AV:1M/3k

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	4804.000	35.78	3.18	38.96	54.00	-15.04	Average
2	4804.000	36.09	3.18	39.27	74.00	-34.73	Peak
3	7206.000	25.79	9.27	35.06	54.00	-18.94	Average
4	7206.000	36.10	9.27	45.37	74.00	-28.63	Peak

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	4804.000	42.83	3.18	46.01	54.00	-7.99	Average
2	4804.000	44.33	3.18	47.51	74.00	-26.49	Peak
3	7206.000	25.72	9.27	34.99	54.00	-19.01	Average
4	7206.000	36.30	9.27	45.57	74.00	-28.43	Peak

Horizontal (18GHz – 26.5GHz)	Vertical (18GHz – 26.5GHz)
	
Site : 966B Chamber Condition: 1.5m horizontal Job No : RLK250801005 Model : RRQ61051-009 Power : From Test Development Board Tester : Derek Temp./ Hum.: 18.2℃/52% Memo : BLE-1M-TX-2402	Site : 966B Chamber Condition: 1.5m vertical Job No : RLK250801005 Model : RRQ61051-009 Power : From Test Development Board Tester : Derek Temp./ Hum.: 18.2℃/52% Memo : BLE-1M-TX-2402

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	24660.880	33.97	2.11	36.08	60.00	-23.92	Average
2	24660.880	48.51	2.11	50.62	80.00	-29.38	Peak

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	23615.380	33.46	1.86	35.32	60.00	-24.68	Average
2	23615.380	49.34	1.86	51.20	80.00	-28.80	Peak

Note:
Level = Read Level + Factor
Over Limit = Level– Limit Line
Factor = Antenna Factor + Cable Loss – Amplifier Gain

Conducted Spurious Emissions:

環境溫度	24.1℃	測試日期	2025-10-20
環境濕度	46%	測試人員	Alen

WLAN 2.4G mode:

Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)	Result
B mode				
Low	2412	33.49	≥ 20	PASS
Mid	2437	35.47	≥ 20	PASS
High	2462	35.27	≥ 20	PASS
G mode				
Low	2412	32.77	≥ 20	PASS
Mid	2437	30.66	≥ 20	PASS
High	2462	33.30	≥ 20	PASS
N20 mode				
Low	2412	37.55	≥ 20	PASS
Mid	2437	35.31	≥ 20	PASS
High	2462	37.17	≥ 20	PASS
AX20 mode				
Low	2412	32.95	≥ 20	PASS
Mid	2437	32.14	≥ 20	PASS
High	2462	32.34	≥ 20	PASS

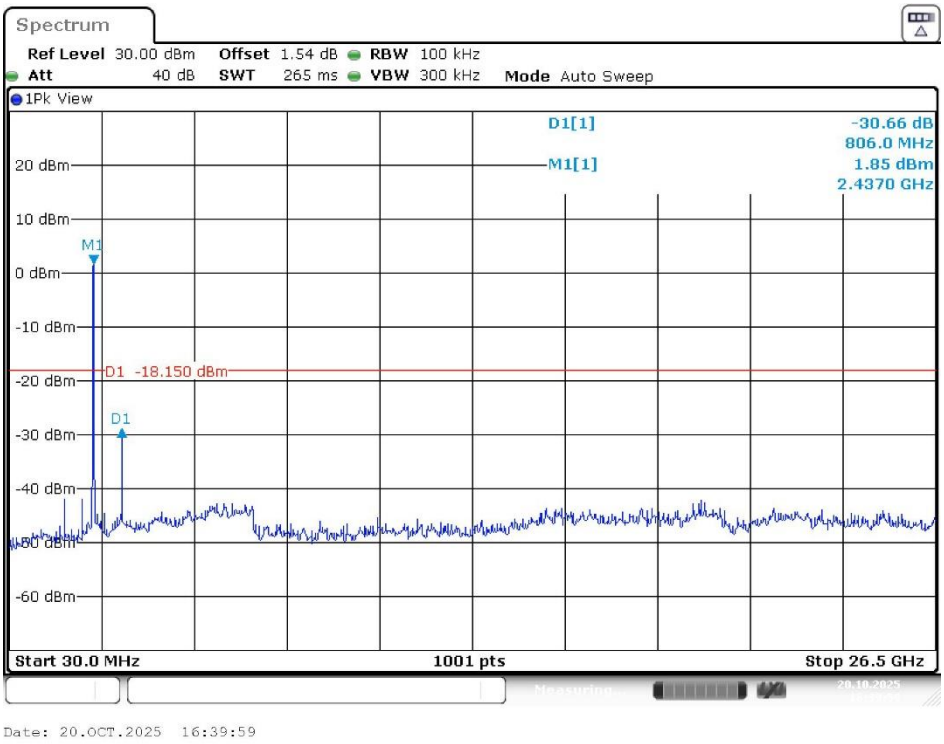
環境溫度	21.7℃	測試日期	2025-10-28
環境濕度	57%	測試人員	Alan

BLE mode:

Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)	Result
BLE(1M) mode				
Low	2402	51.61	≥ 20	PASS
Mid	2440	51.91	≥ 20	PASS
High	2480	51.37	≥ 20	PASS

WiFi 2.4G

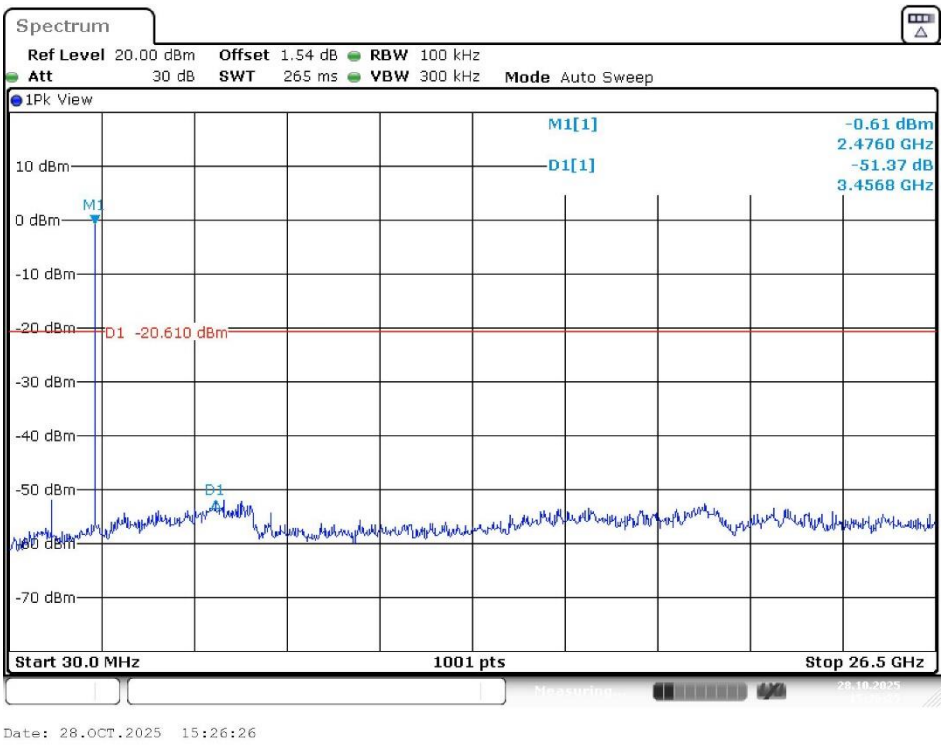
****此測試圖僅放測試結果最差的頻道。**



依據測試數據結果，符合低功率射頻器材技術規範之要求。

BLE

****此測試圖僅放測試結果最差的頻道。**



依據測試數據結果，符合低功率射頻器材技術規範之要求。

6. 天線增益之要求

6.1 適用標準

依據低功率射頻器材技術規範之規定，應符合下列敘述其中之一：

進行固定式點對點操作時，其發射天線之方向性增益超過6 dBi，每超過3 dBi，最大傳導輸出功率限制值應降低1 dB。

操作頻率為5725 MHz ~ 5850 MHz且進行固定式點對點操作時，其發射天線之方向性增益超過6 dBi，不需降低最大傳導輸出功率。

使用超過6 dBi方向增益之發射天線時，應依超過6 dBi天線方向增益的dBi總量，等量減少最大傳導輸出功率限制值。

6.2 天線增益

此裝置使用的天線明細如下:

天線型態	廠牌	型號	Gain
Dipole Antenna	ARISTOTLE	RFA-27-H60-U-GB70	3.3 dBi

* 其詳細規格資料，請參見：天線規格。

**天線所連接測試使用的I-Pex Cable 的Cable Los : 1.54 dB

判定結果: 符合規範

7. 發射頻寬之要求

7.1 適用標準

對使用跳頻系統之低功率發射機依據低功率射頻器材技術規範之規定，跳頻系統之載波頻率頻道間隔應大於或等於25 kHz或跳頻頻道之20 dB頻寬，兩者取較寬者。但操作頻率為2400 MHz～2483.5 MHz頻段且輸出功率應小於或等於125 mW跳頻系統，其載波頻率頻道間隔不得小於25 kHz或跳頻頻道20 dB頻寬之三分之二，兩者取較寬者。系統之跳頻頻道應依虛擬亂數排列，在各頻率之跳頻頻道上跳躍。每一發射機必須均等的使用每一頻率。系統接收機應具有與發射機跳躍頻道頻寬相匹配之輸入頻寬，且應隨所發射之訊號同步偏移接收頻率。

對使用數位調變技術之低功率發射機，依據低功率射頻器材技術規範之規定，6 dB之頻寬至少應有500 kHz。

7.2 測試方法

測量時，頻譜分析儀之解析頻寬為100kHz，視訊頻寬不小於解析頻寬。為求得精確測量，頻率掃描範圍(Span)遠大於解析頻寬。

7.3 發射頻寬之量測結果

環境溫度	24.1℃	測試日期	2025-10-20
環境濕度	46%	測試人員	Alan

WLAN 2.4G mode:

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	Limit (kHz)	Result
B mode				
Low	2412	8.032	>500	PASS
Mid	2437	6.034		PASS
High	2462	7.552		PASS
G mode				
Low	2412	15.105	>500	PASS
Mid	2437	15.105		PASS
High	2462	15.105		PASS
N20 mode				
Low	2412	15.105	>500	PASS
Mid	2437	15.105		PASS
High	2462	15.105		PASS
AX20 mode				
Low	2412	16.264	>500	PASS
Mid	2437	16.583		PASS
High	2462	16.184		PASS

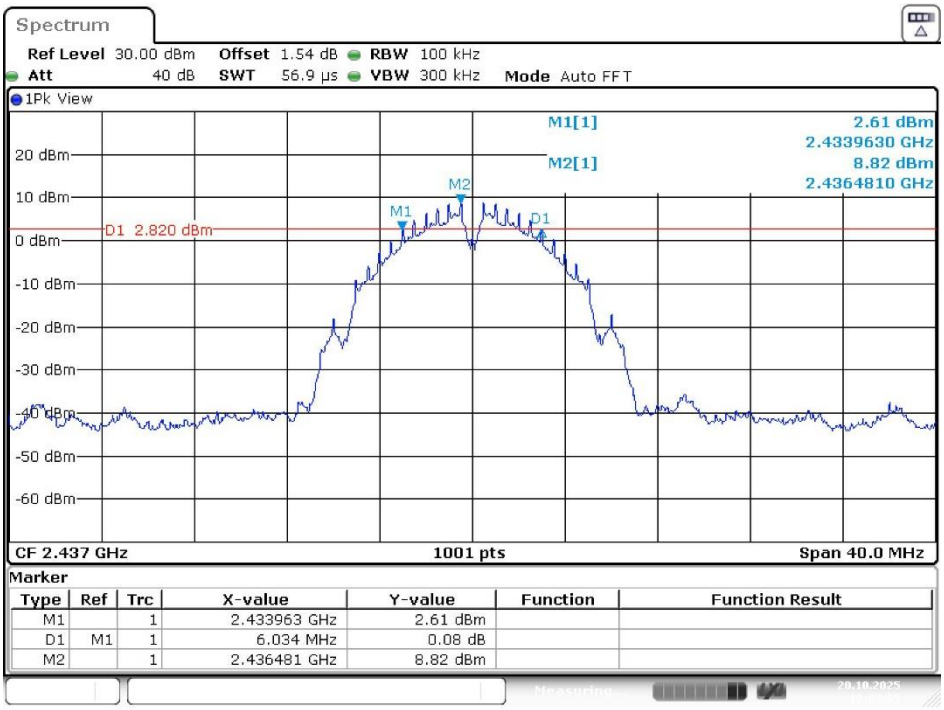
環境溫度	21.7℃	測試日期	2025-10-28
環境濕度	57%	測試人員	Alan

BLE mode:

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	Limit (kHz)	Result
BLE(1M) mode				
Low	2402	0.756	>500	PASS
Mid	2440	0.762		PASS
High	2480	0.753		PASS

WiFi 2.4G

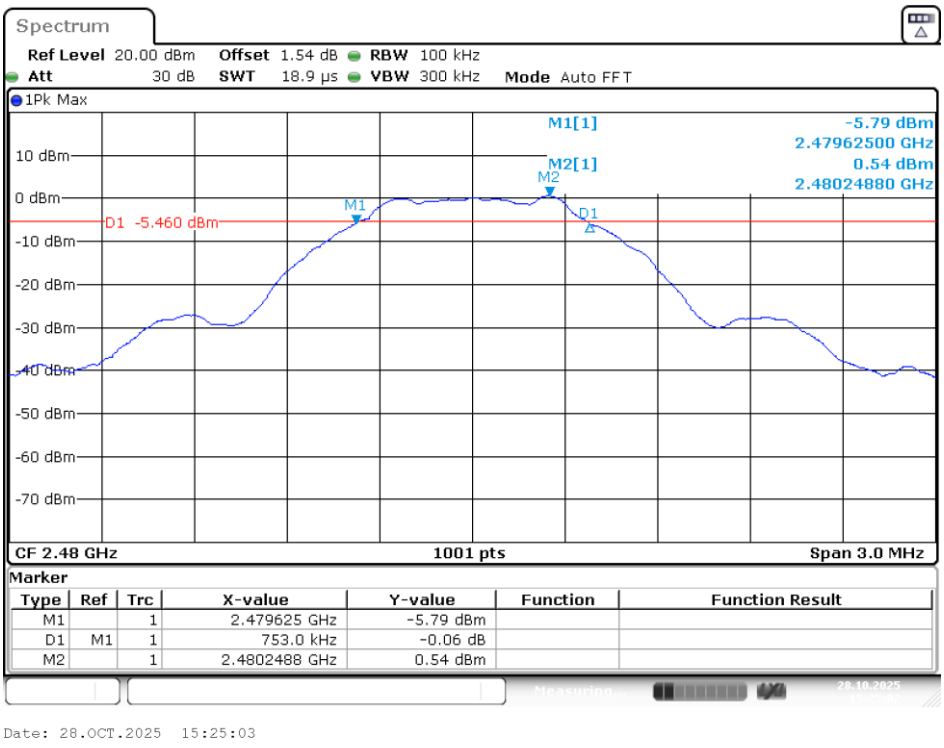
****此測試圖僅放測試結果最差的頻道。**



依據測試數據結果，符合低功率射頻器材技術規範之要求。

BLE

****此測試圖僅放測試結果最差的頻道。**



依據測試數據結果，符合低功率射頻器材技術規範之要求。

8. 輸出峰值功率之量測

8.1 適用標準

依據低功率射頻器材技術規範之規定，跳頻系統至少使用75個跳頻頻道：1 W(含)以下；跳頻系統依規定操作於2400 MHz ~ 2483.5 MHz之展頻跳頻系統，須使用至少15個無重疊的頻道，在0.4秒乘以跳頻頻道數之週期內，任一頻率占用之平均時間應小於或等於0.4秒，應使用智慧型跳頻技術：0.125 W(含)以下；數位調變技術系統：1 W(含)以下。

8.2 測試方法

1. 將受測物的RF埠經由一條50歐姆纜線連接至功率分析儀。
2. 設定量測頻率為量測頻道。
3. 紀錄最大峰值輸出功率。

上述之測試步驟應注意外接之衰減與纜線損失。

8.3 輸出功率之量測結果

環境溫度	22.1~25.3℃	測試日期	2025-09-25~2025-10-20
環境濕度	41~50%	測試人員	Alan

WLAN 2.4G mode:

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (dBm)	Result
B mode					
Low	2412	19.59	0.091	30	PASS
Mid	2437	18.71	0.074	30	PASS
High	2462	17.64	0.058	30	PASS
G mode					
Low	2412	19.45	0.088	30	PASS
Mid	2437	19.52	0.090	30	PASS
High	2462	19.62	0.092	30	PASS
N20 mode					
Low	2412	19.53	0.090	30	PASS
Mid	2437	19.54	0.090	30	PASS
High	2462	19.61	0.091	30	PASS
AX20 mode					
Low	2412	19.54	0.090	30	PASS
Mid	2437	19.64	0.092	30	PASS
High	2462	19.68	0.093	30	PASS

環境溫度	21.7℃	測試日期	2025-10-28
環境濕度	57%	測試人員	Alan

BLE mode:

Channel	Frequency (MHz)	Peak Output Power (dBm)	Output Power (W)	Limit (W)	Result
BLE(1M) mode					
Low	2402	1.42	0.00139	1	PASS
Mid	2440	1.14	0.00130		PASS
High	2480	0.93	0.00124		PASS

9. 開放頻帶邊緣 100 kHz 頻寬內之限制

9.1 適用標準

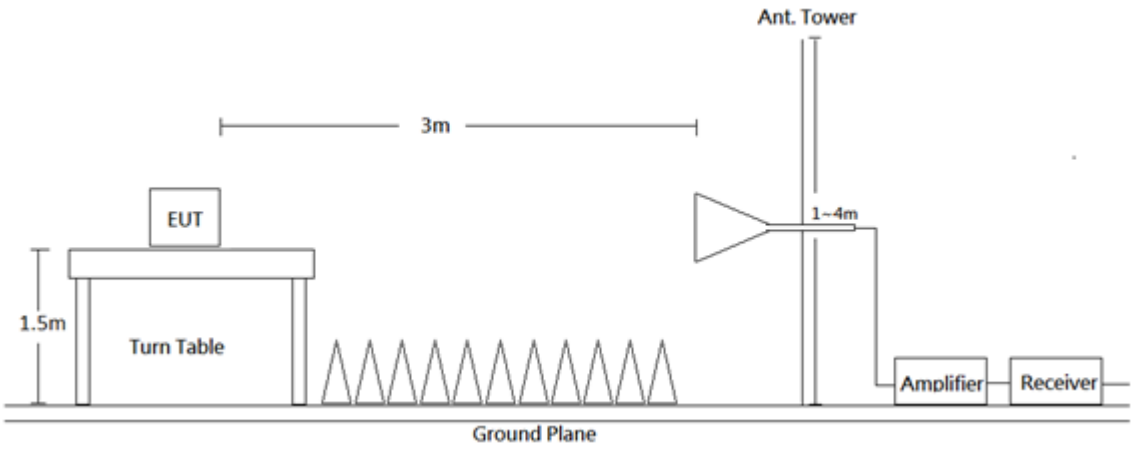
依據低功率射頻器材技術規範之規定，使用頻帶範圍外之任意100 kHz內，發射器所產生的射頻功率相較於使用頻帶範圍中包含最高所需功率之100 kHz內的射頻功率，峰值輸出功率方式測量者須衰減20分貝(dB)，以射頻傳導或輻射方式測量。最大傳導輸出功率測量方式者，至少須衰減30 dB。此外，落於禁用頻段之輻射發射，應符合規定。

9.2 測試方法

1. 頻率掃描範圍足以涵蓋操作在最靠近頻帶邊緣之頻道的發射波峰位準以及任何落於許可頻帶外之調變產物。
2. 解析頻寬大於1%頻率掃描範圍寬度，視訊頻寬不小於解析頻寬。掃描時間為自動，檢波功能為峰值，訊號軌跡為最大保留(Max Hold)。
3. 將標記設定於在頻帶邊緣上的發射，或將標記設定於最大之頻帶外調變產物上若其位準大於頻帶邊緣上的發射。啟動標記差值之功能，利用標記至波峰功能(Marker to Peak)功能以標記頻帶內發射之波峰，所顯示之標記差值必須符合指定之限制值。

以上述相同的步驟決定由跳頻功能所產生的任何混附波是否亦符合規定之限制值。

9.3 測試場地配置圖



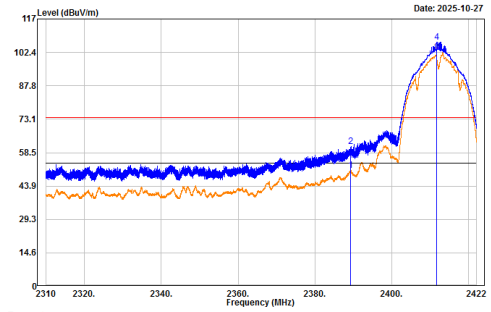
9.4 開放頻帶邊緣之量測結果

請參考附圖

判定結果: 符合規範

發射限制測試: IEEE 802.11b

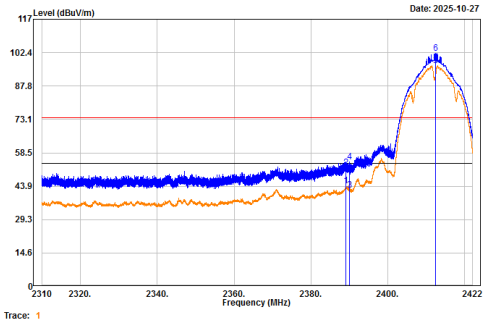
Low Channel / Horizontal



Trace: 1
Site : 966B Chamber
Condition: 3m Horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : B-TX-2412
Memo : RBW/VBW: PK:1M/3M; AV:1M/3k

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2389.180	52.84	-2.04	50.80	54.00	-3.20	Average
2	2389.180	63.12	-2.04	61.08	74.00	-12.92	Peak
3	2411.674	104.40	-2.12	102.28	------	------	Average
4	2411.674	108.97	-2.12	106.85	------	------	Peak

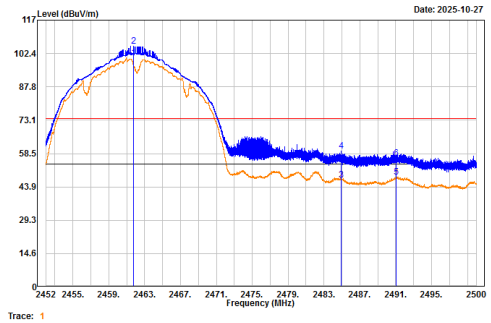
Low Channel / Vertical



Trace: 1
Site : 966B Chamber
Condition: 3m Vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : B-TX-2412
Memo : RBW/VBW: PK:1M/3M; AV:1M/3k

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2389.094	46.09	-2.04	44.05	54.00	-9.95	Average
2	2389.094	54.19	-2.04	52.15	74.00	-21.85	Peak
3	2389.976	44.30	-2.02	42.28	54.00	-11.72	Average
4	2389.976	56.49	-2.02	54.47	74.00	-19.53	Peak
5	2412.450	98.97	-2.12	96.85	------	------	Average
6	2412.450	104.07	-2.12	101.95	------	------	Peak

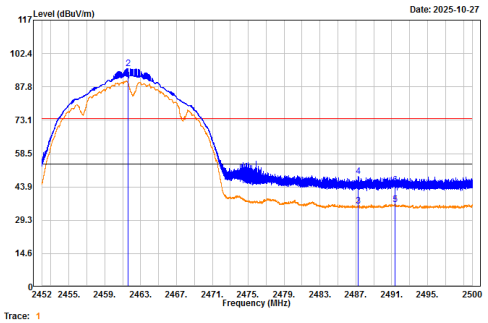
High Channel / Horizontal



Trace: 1
Site : 966B Chamber
Condition: 3m Horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : B-TX-2462
Memo : RBW/VBW: PK:1M/3M; AV:1M/3k

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2461.768	102.74	-2.33	100.41	------	------	Average
2	2461.768	107.85	-2.33	105.52	------	------	Peak
3	2484.902	49.11	-2.08	47.03	54.00	-6.97	Average
4	2484.902	61.55	-2.08	59.47	74.00	-14.53	Peak
5	2491.024	50.32	-2.03	48.29	54.00	-5.71	Average
6	2491.024	58.47	-2.03	56.44	74.00	-17.56	Peak

High Channel / Vertical



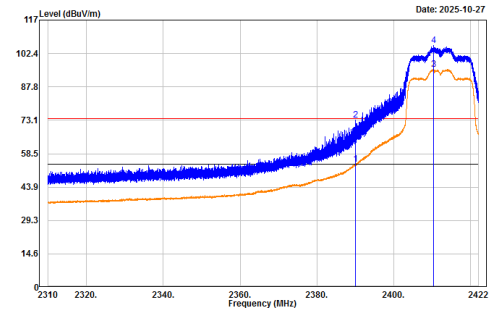
Trace: 1
Site : 966B Chamber
Condition: 3m Vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : B-TX-2462
Memo : RBW/VBW: PK:1M/3M; AV:1M/3k

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2461.606	92.56	-2.33	90.23	------	------	Average
2	2461.606	98.24	-2.33	95.91	------	------	Peak
3	2487.237	37.48	-2.06	35.42	54.00	-18.58	Average
4	2487.237	50.67	-2.06	48.61	74.00	-25.39	Peak
5	2491.392	38.31	-2.03	36.28	54.00	-17.72	Average
6	2491.392	46.65	-2.03	44.62	74.00	-29.38	Peak

Note:
Level = Read Level + Factor
Over Limit = Level – Limit Line
Factor = Antenna Factor + Cable Loss – Amplifier Gain

發射限制測試: IEEE 802.11g

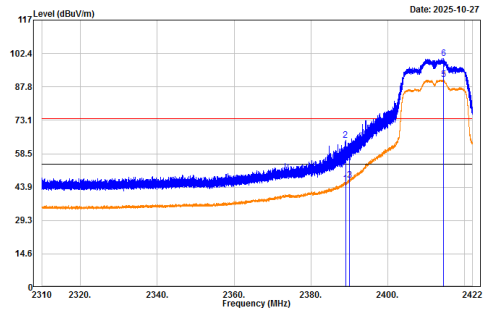
Low Channel / Horizontal



Trace: 1
Site : 966B Chamber
Condition: 3m Horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : G-TX-2412
Memo : RBW/VBW: PK:1M/3M; AV:1M/3k

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1 !	2389.938	55.78	-2.02	53.76	54.00	-0.24	Average
2 !	2389.938	75.25	-2.02	73.23	74.00	-0.77	Peak
3	2410.244	97.60	-2.10	95.50	------	------	Average
4	2410.244	108.10	-2.10	106.00	------	------	Peak

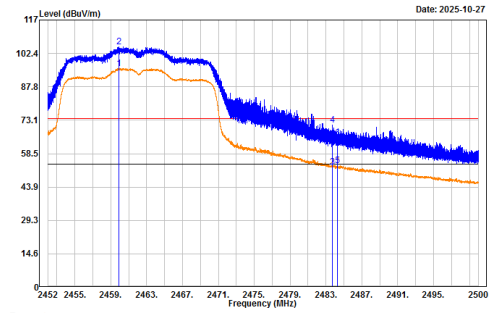
Low Channel / Vertical



Trace: 1
Site : 966B Chamber
Condition: 3m Vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : G-TX-2412
Memo : RBW/VBW: PK:1M/3M; AV:1M/3k

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2388.964	47.44	-2.04	45.40	54.00	-8.60	Average
2	2388.964	66.42	-2.04	64.38	74.00	-9.62	Peak
3	2389.938	49.02	-2.02	47.00	54.00	-7.00	Average
4	2389.938	60.65	-2.02	58.63	74.00	-15.37	Peak
5	2414.511	93.07	-2.15	90.92	------	------	Average
6	2414.511	102.26	-2.15	100.11	------	------	Peak

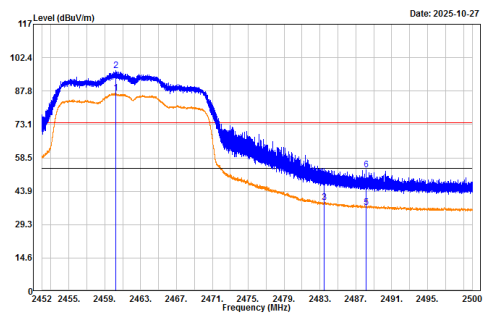
High Channel / Horizontal



Trace: 1
Site : 966B Chamber
Condition: 3m Horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : G-TX-2462
Memo : RBW/VBW: PK:1M/3M; AV:1M/3k

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2459.920	98.27	-2.36	95.91	------	------	Average
2	2459.920	107.63	-2.36	105.27	------	------	Peak
3 !	2483.694	54.65	-2.09	52.56	54.00	-1.44	Average
4	2483.694	73.00	-2.09	70.91	74.00	-3.09	Peak
5 !	2484.281	55.51	-2.09	53.42	54.00	-0.58	Average
6	2484.281	67.32	-2.09	65.23	74.00	-8.77	Peak

High Channel / Vertical



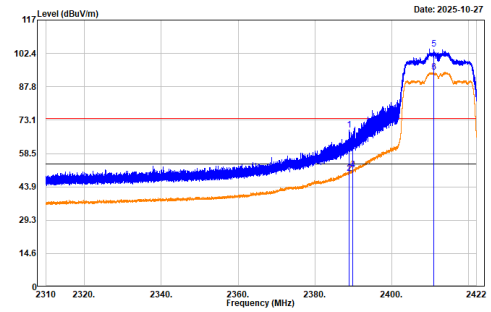
Trace: 1
Site : 966B Chamber
Condition: 3m Vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : G-TX-2462
Memo : RBW/VBW: PK:1M/3M; AV:1M/3k

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2460.202	89.14	-2.36	86.78	------	------	Average
2	2460.202	98.92	-2.36	96.56	------	------	Peak
3	2483.500	41.13	-2.10	39.03	54.00	-14.97	Average
4	2483.500	50.02	-2.10	47.92	74.00	-26.08	Peak
5	2488.152	38.89	-2.05	36.84	54.00	-17.16	Average
6	2488.152	55.21	-2.05	53.16	74.00	-20.84	Peak

Note:
Level = Read Level + Factor
Over Limit = Level – Limit Line
Factor = Antenna Factor + Cable Loss – Amplifier Gain

發射限制測試: IEEE 802.11n HT20

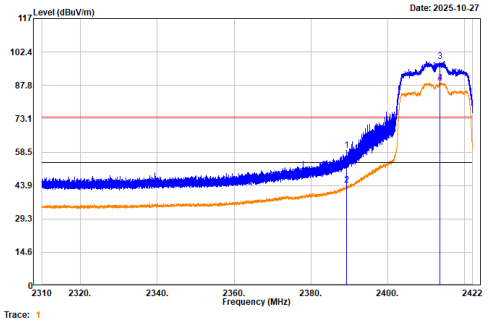
Low Channel / Horizontal



Trace: 1
Site : 966B Chamber
Condition: 3m Horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : N20-TX-2412
Memo : RBW/VBW: PK:1M/3M; AV:1M/5k

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2388.896	70.89	-2.04	68.85	74.00	-5.15	Peak
2	2388.896	51.94	-2.04	49.90	54.00	-4.10	Average
3	2389.725	63.30	-2.03	61.27	74.00	-12.73	Peak
4 !	2389.725	53.35	-2.03	51.32	54.00	-2.68	Average
5	2410.875	106.47	-2.10	104.37	------	------	Peak
6	2410.875	96.18	-2.11	94.07	------	------	Average

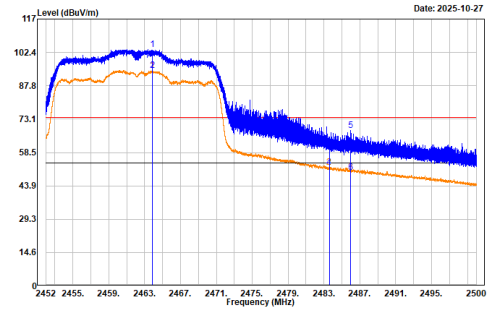
Low Channel / Vertical



Trace: 1
Site : 966B Chamber
Condition: 3m Vertical
Job No : RLK250801005
Model : RRQ61001-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : N20-TX-2412
Memo : RBW/VBW: PK:1M/3M; AV:1M/5k

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2389.307	61.19	-2.03	59.16	74.00	-14.84	Peak
2	2389.307	46.03	-2.03	44.00	54.00	-10.00	Average
3	2413.574	100.53	-2.10	98.43	------	------	Peak
4	2413.574	91.01	-2.14	88.87	------	------	Average

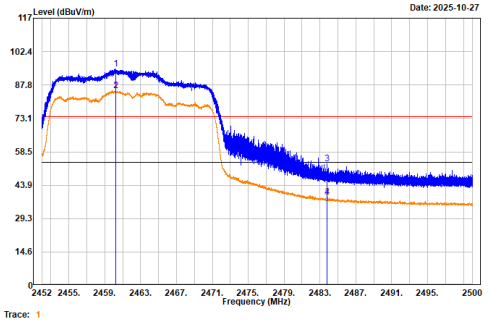
High Channel / Horizontal



Trace: 1
Site : 966B Chamber
Condition: 3m Horizontal
Job No : RLK250801005
Model : RRQ61001-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : N20-TX-2462
Memo : RBW/VBW: PK:1M/3M; AV:1M/5k

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2463.846	105.95	-2.32	103.63	------	------	Peak
2	2463.846	96.67	-2.31	94.36	------	------	Average
3	2483.584	63.06	-2.09	60.97	74.00	-13.03	Peak
4 !	2483.584	54.05	-2.09	51.96	54.00	-2.04	Average
5	2485.994	70.14	-2.07	68.07	74.00	-5.93	Peak
6	2485.994	51.97	-2.07	49.90	54.00	-4.10	Average

High Channel / Vertical



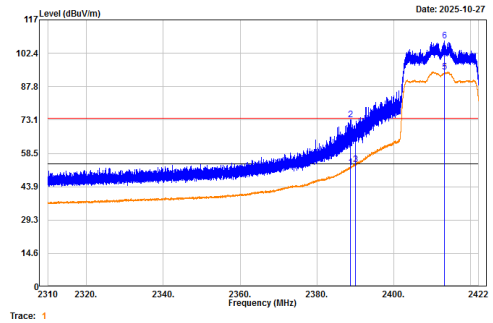
Trace: 1
Site : 966B Chamber
Condition: 3m Vertical
Job No : RLK250801005
Model : RRQ61001-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : N20-TX-2462
Memo : RBW/VBW: PK:1M/3M; AV:1M/5k

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2460.229	97.11	-2.36	94.75	------	------	Peak
2	2460.229	87.62	-2.36	85.26	------	------	Average
3	2483.757	55.45	-2.09	53.36	74.00	-20.64	Peak
4	2483.757	40.63	-2.09	38.54	54.00	-15.46	Average

Note:
Level = Read Level + Factor
Over Limit = Level – Limit Line
Factor = Antenna Factor + Cable Loss – Amplifier Gain

發射限制測試: IEEE 802.11n ax20

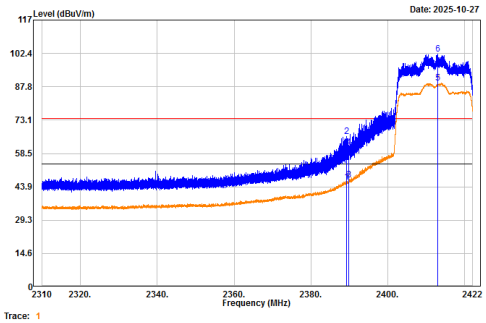
Low Channel / Horizontal



Trace: 1
Site : 966B Chamber
Condition: 3m Horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : AX20-TX-2412
Memo : RBW/VBW: PK:1M/3M; AV:1M/3k

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1 !	2388.714	54.43	-2.05	52.38	54.00	-1.62	Average
2 !	2388.714	75.36	-2.05	73.31	74.00	-0.69	Peak
3 !	2389.960	55.74	-2.02	53.72	54.00	-0.28	Average
4	2389.960	68.07	-2.02	66.05	74.00	-7.95	Peak
5	2413.122	96.29	-2.13	94.16	------	------	Average
6	2413.122	109.96	-2.13	107.83	------	------	Peak

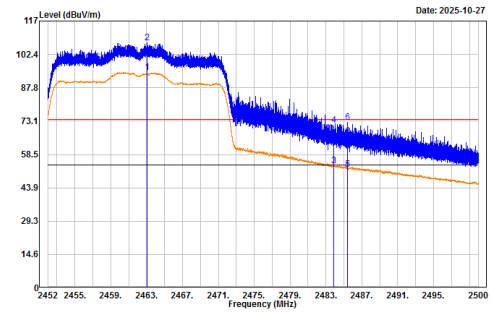
Low Channel / Vertical



Trace: 1
Site : 966B Chamber
Condition: 3m Vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : AX20-TX-2412
Memo : RBW/VBW: PK:1M/3M; AV:1M/3k

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2389.206	47.94	-2.04	45.90	54.00	-8.10	Average
2	2389.206	68.13	-2.04	66.09	74.00	-7.91	Peak
3	2389.875	48.95	-2.02	46.93	54.00	-7.07	Average
4	2389.875	63.06	-2.02	61.04	74.00	-12.96	Peak
5	2412.868	91.48	-2.13	89.35	------	------	Average
6	2412.868	104.16	-2.13	102.03	------	------	Peak

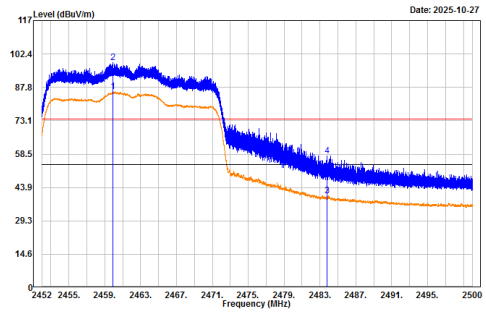
High Channel / Horizontal



Trace: 1
Site : 966B Chamber
Condition: 3m Horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : AX20-TX-2462
Memo : RBW/VBW: PK:1M/3M; AV:1M/3k

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2463.066	96.71	-2.32	94.39	------	------	Average
2	2463.066	109.73	-2.32	107.41	------	------	Peak
3 !	2483.829	55.78	-2.09	53.69	54.00	-0.31	Average
4 !	2483.829	73.43	-2.09	71.34	74.00	-2.66	Peak
5 !	2485.430	54.20	-2.08	52.12	54.00	-1.88	Average
6 !	2485.430	74.82	-2.08	72.74	74.00	-1.26	Peak

High Channel / Vertical



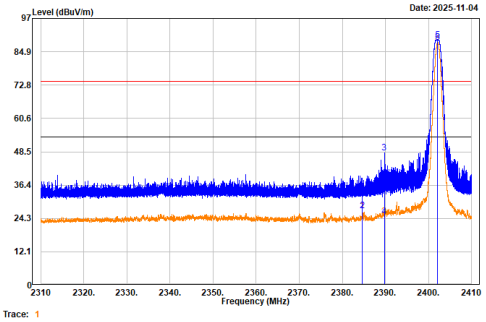
Trace: 1
Site : 966B Chamber
Condition: 3m Vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 22.1℃/ 54%
Memo : AX20-TX-2462
Memo : RBW/VBW: PK:1M/3M; AV:1M/3k

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2459.875	88.18	-2.36	85.82	------	------	Average
2	2459.875	100.88	-2.36	98.52	------	------	Peak
3	2483.792	42.34	-2.09	40.25	54.00	-13.75	Average
4	2483.792	59.80	-2.09	57.71	74.00	-16.29	Peak

Note:
Level = Read Level + Factor
Over Limit = Level – Limit Line
Factor = Antenna Factor + Cable Loss – Amplifier Gain

發射限制測試: BLE 1M

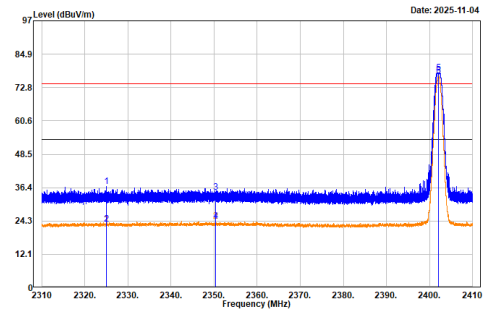
Low Channel / Horizontal



Trace: 1
Site : 966B Chamber
Condition: 3m Horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 20.6℃/ 59%
Memo : BLE-1M-TX-2402
Memo : RBW/VBW: PK:1M/3M; AV:1M/3k

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2384.633	35.94	-2.13	33.81	74.00	-40.19	Peak
2	2384.633	29.25	-2.13	27.12	54.00	-26.88	Average
3	2389.743	50.15	-2.03	48.12	74.00	-25.88	Peak
4	2389.743	27.00	-2.03	24.97	54.00	-29.03	Average
5	2402.150	91.19	-2.03	89.16	------	------	Peak
6	2402.150	90.29	-2.03	88.26	------	------	Average

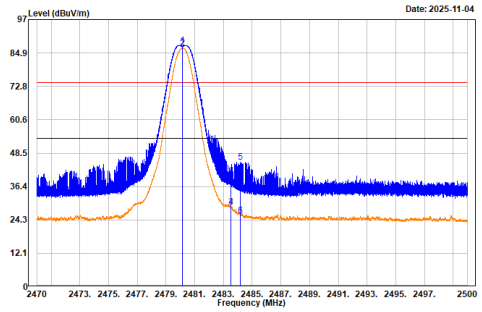
Low Channel / Vertical



Trace: 1
Site : 966B Chamber
Condition: 3m Vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 20.6℃/ 59%
Memo : BLE-1M-TX-2402
Memo : RBW/VBW: PK:1M/3M; AV:1M/3k

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2324.980	38.96	-2.23	36.73	74.00	-37.27	Peak
2	2324.980	25.38	-2.23	23.15	54.00	-30.85	Average
3	2350.293	36.71	-1.95	34.76	74.00	-39.24	Peak
4	2350.293	26.03	-1.95	24.08	54.00	-29.92	Average
5	2402.163	80.11	-2.03	78.08	------	------	Peak
6	2402.163	79.05	-2.03	77.02	------	------	Average

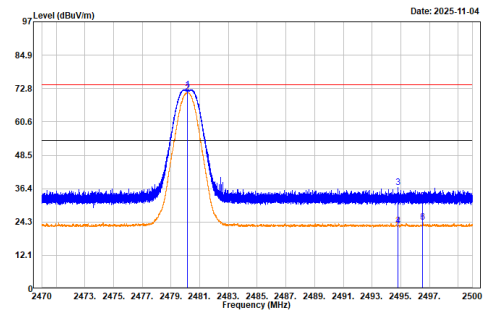
High Channel / Horizontal



Trace: 1
Site : 966B Chamber
Condition: 3m Horizontal
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 20.6℃/ 59%
Memo : BLE-1M-TX-2480
Memo : RBW/VBW: PK:1M/3M; AV:1M/3k

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2480.136	89.79	-2.14	87.65	------	------	Peak
2	2480.136	88.82	-2.14	86.68	------	------	Average
3	2483.530	40.71	-2.09	38.62	74.00	-35.38	Peak
4	2483.530	31.06	-2.09	28.97	54.00	-25.03	Average
5	2484.191	47.34	-2.09	45.25	74.00	-28.75	Peak
6	2484.191	27.86	-2.09	25.77	54.00	-28.23	Average

High Channel / Vertical



Trace: 1
Site : 966B Chamber
Condition: 3m Vertical
Job No : RLK250801005
Model : RRQ61051-009
Power : From Test Development Board
Tester : Derek
Temp./ Hum.: 20.6℃/ 59%
Memo : BLE-1M-TX-2480
Memo : RBW/VBW: PK:1M/3M; AV:1M/3k

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2480.156	74.47	-2.14	72.33	------	------	Peak
2	2480.156	73.47	-2.14	71.33	------	------	Average
3	2494.786	38.77	-2.02	36.75	74.00	-37.25	Peak
4	2494.786	25.01	-2.02	22.99	54.00	-31.01	Average
5	2496.533	33.72	-2.02	31.70	74.00	-42.30	Peak
6	2496.533	26.10	-2.02	24.08	54.00	-29.92	Average

Note:
Level = Read Level + Factor
Over Limit = Level – Limit Line
Factor = Antenna Factor + Cable Loss – Amplifier Gain

Conducted Bandedge

環境溫度	24.1	測試日期	2025-10-20
環境濕度	46%	測試人員	Alan

WLAN 2.4G mode:

Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)	Result
B mode				
Low	2412	39.55	≥ 20	PASS
High	2462	49.49	≥ 20	PASS
G mode				
Low	2412	27.02	≥ 20	PASS
High	2462	40.84	≥ 20	PASS
N20 mode				
Low	2412	31.86	≥ 20	PASS
High	2462	40.95	≥ 20	PASS
AX20 mode				
Low	2412	27.32	≥ 20	PASS
High	2462	37.11	≥ 20	PASS

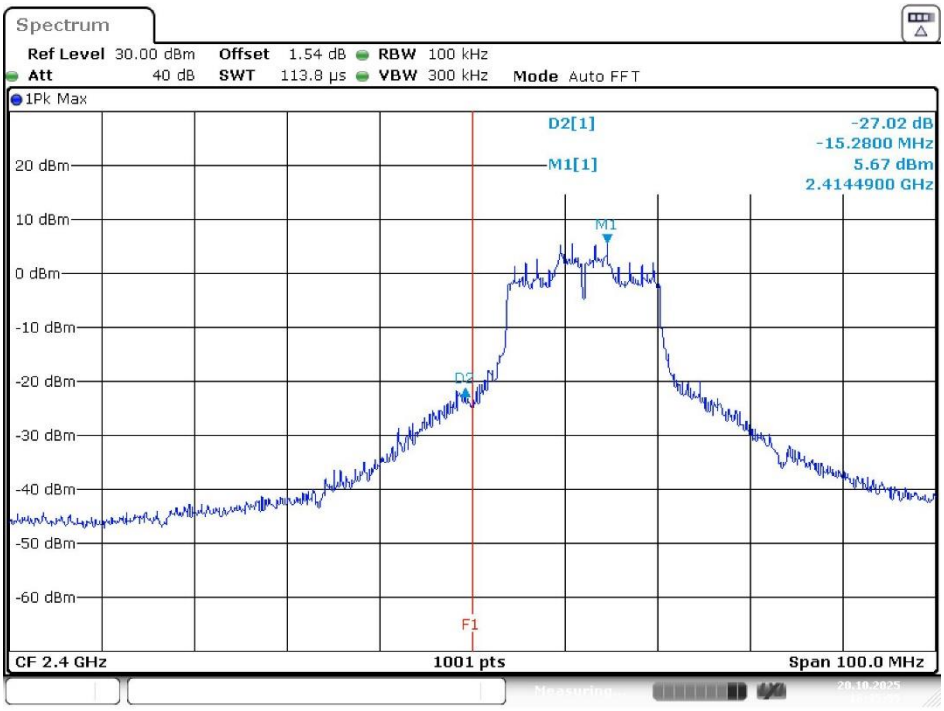
環境溫度	21.7℃	測試日期	2025-10-28
環境濕度	57%	測試人員	Alan

BLE mode:

Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)	Result
BLE (1M) mode				
Low	2402	38.88	≥ 20	PASS
High	2480	47.40	≥ 20	PASS

WiFi 2.4G

****此測試圖僅放測試結果最差的頻道。**

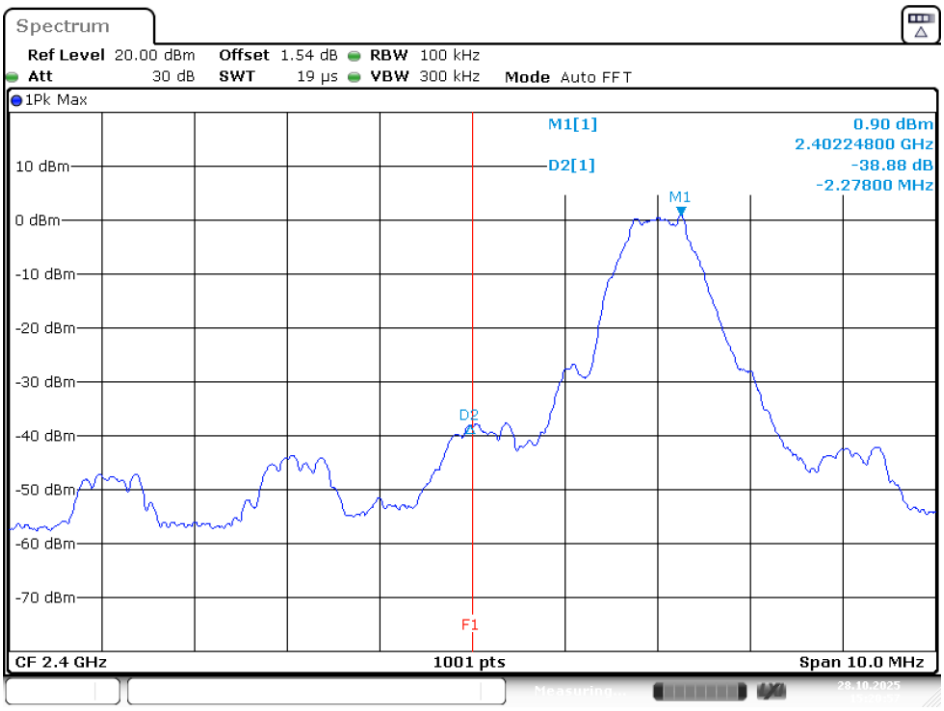


Date: 20.OCT.2025 16:35:55

依據測試數據結果，符合低功率射頻器材技術規範之要求。

BLE

****此測試圖僅放測試結果最差的頻道。**



Date: 28.OCT.2025 15:20:58

依據測試數據結果，符合低功率射頻器材技術規範之要求。

10. 功率密度之量測

10.1 適用標準

依據低功率射頻器材技術規範規定，在使用頻率範圍之任一3 kHz頻寬內，由發射機傳導至天線之功率頻譜密度在任意傳輸期間內，皆小於或等於8毫分貝(dBm)，且應依規定方式降低功率頻譜密度限制值。

10.2 測試方法

1. 將發射機之天線埠經由適當之衰減直接連至測試儀器。找出發射峰值並擴展於通帶內，設定解析頻寬為3 kHz，視訊頻寬大於解析頻寬，掃描時間為頻率掃描範圍除以3 kHz。所測得之峰值位準必須應小於或等於8 dBm。
2. 若受測裝置之頻譜線間隔小於3 kHz，測量時應將解析頻寬降低以使頻譜線間隔大於3 kHz，所測得之數據再藉加總3 kHz頻帶內所有個別頻譜線之功率(即標準化至3 kHz)以決定是否符合規定。

10.3 功率密度之量測結果

環境溫度	24.1℃	測試日期	2025-10-20
環境濕度	46%	測試人員	Alan

WLAN 2.4G mode:

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Result
B mode				
Low	2412	0.18	8	PASS
Mid	2437	-3.21		PASS
High	2462	-1.27		PASS
G mode				
Low	2412	-7.43	8	PASS
Mid	2437	-10.81		PASS
High	2462	-7.17		PASS
N20 mode				
Low	2412	-9.38	8	PASS
Mid	2437	-7.56		PASS
High	2462	-8.04		PASS
AX20 mode				
Low	2412	-9.02	8	PASS
Mid	2437	-8.25		PASS
High	2462	-8.34		PASS

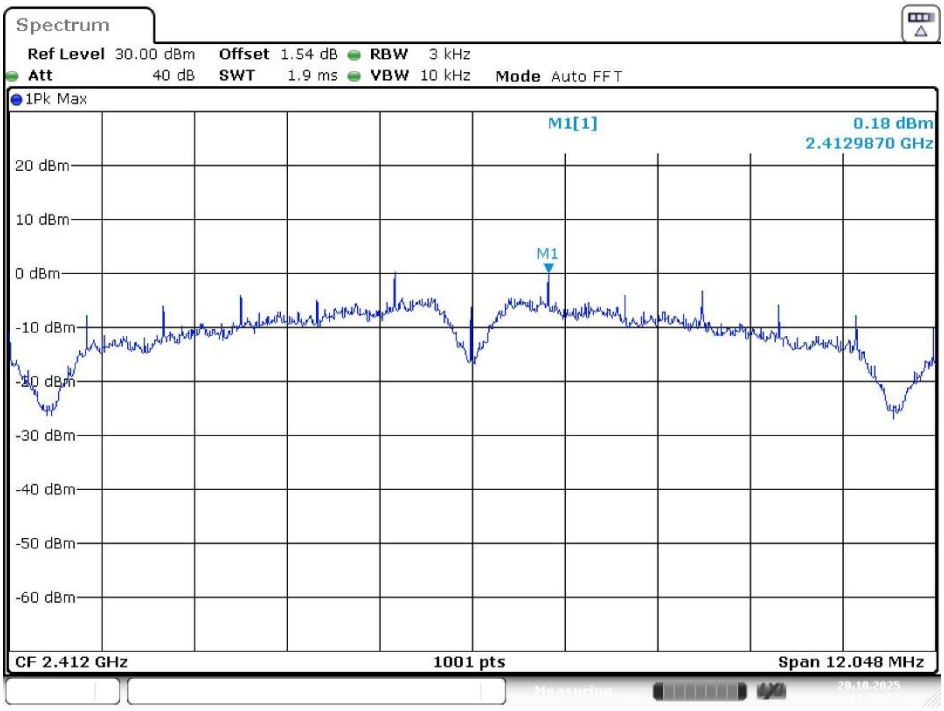
環境溫度	21.7℃	測試日期	2025-10-28
環境濕度	57%	測試人員	Alan

BLE mode:

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Result
BLE (1M) mode				
Low	2402	-14.82	8	PASS
Mid	2440	-14.98		PASS
High	2480	-14.83		PASS

WiFi 2.4G

****此測試圖僅放測試結果最差的頻道。**

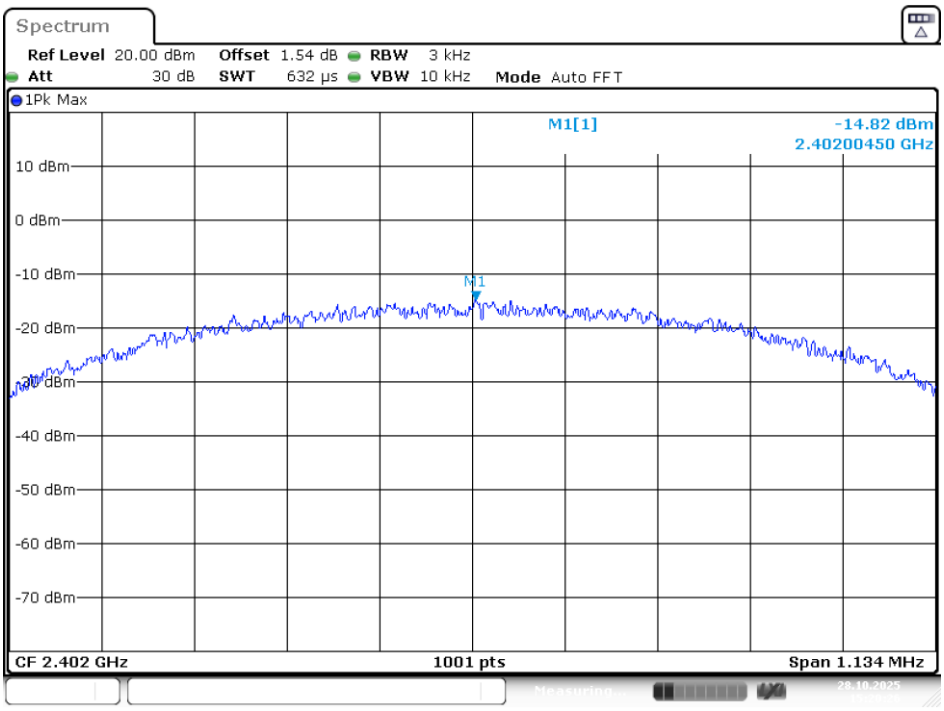


Date: 20.OCT.2025 12:00:27

依據測試數據結果，符合低功率射頻器材技術規範之要求。

BLE

****此測試圖僅放測試結果最差的頻道。**



Date: 28.OCT.2025 15:20:27

依據測試數據結果，符合低功率射頻器材技術規範之要求。

11. 電波曝露量之評估

11.1 適用標準

依據低功率射頻器材技術規範之規定，若受測物於正常操作模式下，其發射機距離人體 20 公分以上者，可測試最大曝露允許值(Maximum Permissible Exposure，MPE)以證明其符合電波曝露量之要求。

限制值

6.20.2.2 一般人/不可控制之曝露

頻率範圍 (MHz)	電場強度 (V/m)	磁場強度 (A/m)	功率密度 (mW/cm^2)	平均時間 (分)
0.3~1.34	614	1.63	*100	30
1.34~30	824/f	2.19/f	*180/f^2	30
30~300	27.5	0.073	0.2	30
300~1,500	-	-	f/1500	30
1,500~100,000	-	-	1.0	30

註 1：標記*表平面波等效功率密度。

註 2：f 表測試頻率，單位：MHz。

Calculated Formulary:

Predication of MPE limit at a given distance

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm^2);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

11.2 電波曝露量之結果

Test mode: WLAN 2.4G mode

Frequency (MHz)	Power		Antenna Gain		Evaluation Distrance (cm)	Power Density (mW/cm²)	MPE Limit (mW/cm²)
	(dBm)	(mW)	(dBi)	(numeric.)			
2402-2480	19.68	92.897	3.30	2.138	20	0.0395	1

Test mode: BLE mode

Frequency (MHz)	Power		Antenna Gain		Evaluation Distrance (cm)	Power Density (mW/cm²)	MPE Limit (mW/cm²)
	(dBm)	(mW)	(dBi)	(numeric.)			
2402-2480	1.42	1.39	3.3	2.14	20	0.00059	1

WLAN 2.4G mode:

電磁波曝露量 MPE 標準值 1mW/cm^2，送測產品實測值為：**0.0395** mW/cm^2

BLE mode:

電磁波曝露量 MPE 標準值 1mW/cm^2，送測產品實測值為：**0.00059** mW/cm^2

12. 量測儀器一覽表

儀器名稱	廠商	型號	序號	校驗日期	下次校驗日期
AC Line Conduction Room (CON-A)					
Pulse Limiter	SCHWARZBECK	VTSD 9561-F	00432	2025/08/14	2026/8/14
ESR EMI Test Receiver	Rohde & Schwarz	ESCI7	100769	2025/04/02	2026/4/2
RF Cable	EMCI	EMCCFD300-BM-BM-3000	221013	2025/10/16	2026/10/16
Two-Line V-Network	Rohde & Schwarz	ENV216	100037	2025/09/15	2026/9/15
Software	Audix	e3 v9	E3LK-03	N.C.R	N.C.R
Radiation 3M Room (966-B)					
Bilog Antenna & 6 dB Attenuator	SUNOL SCIENCES & EMCI	JB3 & N-6-06	A071318 & AT-N0670	2025/08/14	2026/08/14
Active Loop Antenna	ETS-Lindgren	6502	0001-3322	2025/03/27	2026/03/27
Horn Antenna	ETS-Lindgren	3115	85775	2025/10/03	2026/10/03
Horn Antenna	ETS-Lindgren	3160-09	123853	2025/08/28	2026/08/28
18-40GHz Preamplifier	GLOBAL	1313-A1840	5031371	2025/04/28	2026/04/28
30M-18GHz Preamplifier	A.H. Systems	PAM-0118P	479	2025/09/05	2026/09/05
ESR EMI Test Receiver	Rohde & Schwarz	ESR3	102430	2025/04/25	2026/04/25
Spectrum Analyzer	Rohde & Schwarz	FSV40	101456	2025/06/05	2026/06/05
Microflex Cable (1m)	EMCI	EMCI02-KM-KM-1000	180524	2025/08/01	2026/08/01
Microflex Cable (2m)	EMCI	EMCI06-SM-SM-2000	180516	2025/08/01	2026/08/01
Microflex Cable (8m)	UTIFLEX	UFA210A-1-3149-300300	MFR 64639 232490-002	2025/08/01	2026/08/01
Software	AUDIX	E3 V9	E3LK-02	N.C.R	N.C.R
-10dB Attenuator	MTJ	MTJ604-10	004	2025/04/07	2026/04/07

Band Reject Filter	MICRO-TRONICS	BRM50702	G613	2025/04/30	2026/04/30
Conducted Room					
Cable	MTJ	MT40S	620620-MT40S-100	2024/12/26	2026/01/05
Signal and Spectrum Analyzer	Rohde & Schwarz	FSV40	101457	2024/12/04	2025/12/04
USB Wideband Power Sensor	AGILENT	U2021XA	MY54080011	2025/08/26	2026/08/26
10dB Attenuator	MCL	BW-S10W5+	605	2025/04/14	2026/04/14

***Statement of Traceability:** BACL Corp. attests that all of the calibrations on the equipment items listed above were traceable to the SI System of Units via the R.O.C. Center for Measurement Standards of the Electronics Testing Center, Taiwan (ETC) or to another internationally recognized National Metrology Institute (NMI), and were compliant with the current Taiwan Accreditation Foundation (TAF) requirements.

13. 試驗室之測試不確定度

測試項目	測試場地 / 測試頻率	不確定度
傳導干擾電壓量測	AC Line Conduction	±2.98 (dB)
輻射干擾場強量測 (測試距離: 3m)	3m Chamber / 30~1000MHz	±3.30 (dB)
	3m Chamber / 1~18GHz	±4.99 (dB)
	3m Chamber / 18~40GHz	±4.52 (dB)
	3m Chamber / 9k~30MHz	±3.20 (dB)
佔用頻寬	Conducted	±0.09 (%)
輸出功率	Conducted	±3.73 (dB)
直量雜散	Conducted	±1.03 (dB)
開放頻帶邊緣	Conducted	±1.03 (dB)
功率密度	Conducted	±0.45 (dBm/kHz)

a) 必要為試驗結果作解釋時，依 ISO/IEC 17025 第 7.8.3.1 要求，實驗室得決定是否在測試報告上包含量測不確定度評估結果。

b) 測試證書/報告中提供量測不確定度資訊時，通常應使用 “y± U (y 和 U 的單位)” 或類似的表述方式；量測結果的數值與其量測不確定度亦可以列表方式表達。視需要，擴充不確定度也可以用相對擴充不確定度 U / |y|的方式表達，如指數或百分比。應在證書/報告中註明不確定度的涵蓋因子及涵蓋機率(或信賴水準)，可以使用以下文字描述：

「本報告的擴充不確定度，係以組合標準不確定度乘以涵蓋因子 k (k=2)來表示，相應之涵蓋機率(或信賴水準)約為 95 %。」

******* END OF REPORT *******