

低功率射頻器材測試報告

申請廠商：台灣羅伯特博世股份有限公司
地址：臺北市中山區建國北路1段90號6樓
器材名稱：熱影像鏡頭
廠牌：BOSCH
型號：GTC 600 C



財團法人台灣商品檢測驗證中心電磁相容試驗二部

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受理日期	:	110 年 4 月 6 日
完成日期	:	110 年 5 月 27 日
報告號碼	:	21-04-RBF-003
實驗室名稱	:	林口實驗室
實驗室地址	:	新北市林口區頂福里 5 鄰 34 號
實驗室電話	:	02-26023052
實驗室認可編號及範圍	:	2628 (9KHz- 40GHz)
TAF 證書有效期限	:	110 年 10 月 08 日
申請廠商	:	台灣羅伯特博世股份有限公司
申請廠商地址	:	臺北市中山區建國北路 1 段 90 號 6 樓
製造廠商	:	Robert Bosch Power Tools Sdn Bhd
器材名稱	:	熱影像鏡頭
廠牌	:	BOSCH
型號	:	GTC 600 C
發射功率(電場強度)	:	802.11b : 9.67 dBm 9.268 mW 802.11g : 9.45 dBm 8.810 mW 802.11n20 : 8.00 dBm 6.310 mW
工作頻率及調變方式	:	2412 – 2462MHz ; 11CH DSSS(802.11b) / OFDM(802.11g) / OFDM-SISO 20M Mode (802.11n 2.4GHz HT-20)
天線規格	:	固定式 PCB 天線
備註	:	1. 本測試報告僅對受測之樣品負責。 2. 非經本中心同意，測試報告不得摘錄複印使用。（全部複製除外） 3. 本產品所適用之規範修訂日期 109 年 07 月 01 日。

項次	測試項目	適用規範章節	測試結果	量測設備	判定
1	場強輻射	低功率射頻器材技術規範 4.10.1.5節、3.6節	請參閱4.5節	請參閱4.3節	合格
2	電源線傳導干擾	低功率射頻器材技術規範 3.3節	請參閱5.4節	請參閱5.6節	合格
3	天線增益之要求	低功率射頻器材技術規範 4.10.1.3節	請參閱6.2節	----	合格
4	發射頻寬	低功率射頻器材技術規範 4.10.1.6節	請參閱8.4節	請參閱8.3節	合格
5	峰值傳導輸出功率	低功率射頻器材技術規範 4.10.1.2節	請參閱9.4節	請參閱9.3節	合格
6	開放頻帶邊緣之發射	低功率射頻器材技術規範 4.10.1.5節	請參閱10.4節	請參閱10.3節	合格
7	功率密度	低功率射頻器材技術規範 4.10.1.6節	請參閱11.4節	請參閱11.3節	合格
	以下空白				

報告簽署人

阿良源

測試人員：

蘇美作



1 一般資料

1.1 產品描述

- a) 產品型態 : 熱影像鏡頭
- b) 商 標 : BOSCH
- c) 產品型號 : GTC 600 C
- d) 供應電源 : 1. 110Vac 60Hz

2. Battery

1.2 產品特性

此裝置熱影像鏡頭。

IEEE 802.11b/g/n部分，使用頻率範圍為2.4-2.462GHz。採用DSSS直接序列展頻(Direct Sequence Spread Spectrum)調變技術(802.11b)、OFDM (Orthogonal Frequency Division Multiplexing) 正交分頻多工調變技術(802.11g / 802.11n HT-20。使用頻道數：802.11b, g以及802.11n HT-20為11個頻道。

實測輸出功率如下:

802.11b : 9.67 dBm 9.268 mW

802.11g : 9.45 dBm 8.810 mW

802.11n20 : 8.00 dBm 6.310 mW

各頻道對應之頻率如下：

Wireless Technology		Bandwidth (MHz)	Channel	Frequency (MHz)
802.11 b / g / n20	2412-2462MHz	20	1	2412
			2	2417
			3	2422
			4	2427
			5	2432
			6	2437
			7	2442
			8	2447
			9	2452
			10	2457
			11	2462
			---	---
			---	---
			---	---

Note : Remark "---" Means not applicable for this device.

1.3 測試方法之依據

本測試報告之所有項目皆依據低功率射頻器材技術規範以及參考ANSI、FCC 47CFR/2.1046、2.1047、2.1049、2.1051、2.1053及2.1055之檢驗法。

2 適用規範

2.1 規範要求

(1) 傳導之規定

依據國家通訊傳播委員會低功率射頻器材技術規範3.3節之規定，以市電為電源之低功率射頻器材，其傳導回電源線上頻率自150 kHz~30百萬赫(MHz)之射頻電壓(在電源端子每一電源線對接地點)應小於或等於下表所列之限制值。測量時應經過50微亨利(uH)及50歐姆(Ω)之電源線阻抗穩定網路(Line Impedance Stabilization Network；LISN)。頻率重疊處，以較低限制值為準。電源傳導干擾之限制要求如下：

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

註：隨頻率之對數遞減。

(2) 輻射之規定

依據低功率射頻器材技術規範4.10.1.5節之要求，使用頻帶範圍外之任意100千赫(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100千赫(kHz)內的射頻功率，須衰減20分貝(dB)，以射頻傳導或輻射方式測量。此外，落於第3.5節禁用頻段之輻射發射，應符合第3.6節之規定：

頻率 MHz	測試距離 m	限制值 dB μ V/m	限制值 μ V/m
0.009 - 0.490	300	48.5 ~ 13.8	2400/kHz
0.490 - 1.705	30	33.8 ~ 22.97	24000/kHz
1.705 - 30	30	29.5	30
30 - 88	3	40.0	100
88 - 216	3	43.5	150
216 - 960	3	46.0	200
960以上	3	54.0	500

(3) 天線增益之要求

低功率發射機, 依據低功率射頻器材技術規範4.10.1.3節之規定, 操作於2400 MHz ~2483.5 MHz 頻段, 用於非固定式點對點操作時, 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。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。

(4) 頻寬之要求

對使用數位調變之低功率發射機, 依據低功率射頻器材技術規範4.10.1.6節之(2)(A)規定, 6dB之頻寬至少應有500 kHz。

(5) 峰值傳導輸出功率之要求

依據低功率射頻器材技術規範4.10.1.2節(1)(C)之規定, 操作於2400-2483.5MHz之所有數位調變技術系統: 1瓦(W)(含)以下。

(6) 頻帶邊緣之要求

依據低功率射頻器材技術規範4.10.1.5節之規定, 帶外發射限制: 操作頻帶範圍外之任意100 kHz 內, 發射機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, 其衰減值限制如下:

(1) 輸出功率以附件二之峰值輸出功率方式測量者, 至少須衰減20 dB, 可使用射頻傳導或輻射方式測量。

(2) 輸出功率以4.10.1.2節(1)(C)之最大傳導輸出功率測量方式者, 至少須衰減30 dB。

此外, 落於3.5 禁用頻段之輻射發射, 應符合3.6 之規定。

(7) 功率密度之要求

依據低功率射頻器材技術規範4.10.1.6節之(2)(B)之規定, 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4.10.1.3 之方式降低功率頻譜密度限制值。

2.2 限制使用之頻帶

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

2.3 量測不確定度資訊

Measurement	Frequency	Uncertainty
Conducted emissions	9kHz ~ 30MHz	$\pm 3.34\text{dB}$ (Mains)(LISN)
Radiated emissions	9kHz ~ 30MHz	$\pm 4.22\text{dB}$
Radiated emissions	30MHz ~ 1GHz	$\pm 4.2\text{dB}$ ($30\text{MHz} \leq f \leq 300\text{MHz}$)
		$\pm 4.44\text{dB}$ ($300\text{MHz} < f \leq 1\text{GHz}$)
	Above 1GHz	$\pm 4.44\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)
		$\pm 3.02\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)
Conducted Measurement	9kHz ~ 40GHz	$\pm 0.88\text{dB}$ ($9\text{kHz} \leq f \leq 30\text{MHz}$)
		$\pm 0.88\text{dB}$ ($30\text{MHz} < f \leq 1\text{GHz}$)
		$\pm 1.04\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)
		$\pm 1.2\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)
Frequencies Tolerance	9kHz ~ 40GHz	$\pm 4.04 \times 10^{-8}$
Occupied Bandwidth	9kHz ~ 40GHz	$\pm 5\%$

此量測不確定數值係以95%區間,k=2之擴充不確定度表示。

本實驗室依據之測試方法或標準若已有限制值或判斷基準，測試結果將依據測試方法或標準作為符合性判定，量測不確定度將依據測試標準之方法或規範執行。

3 受測裝置之系統說明

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the worst case was recorded.

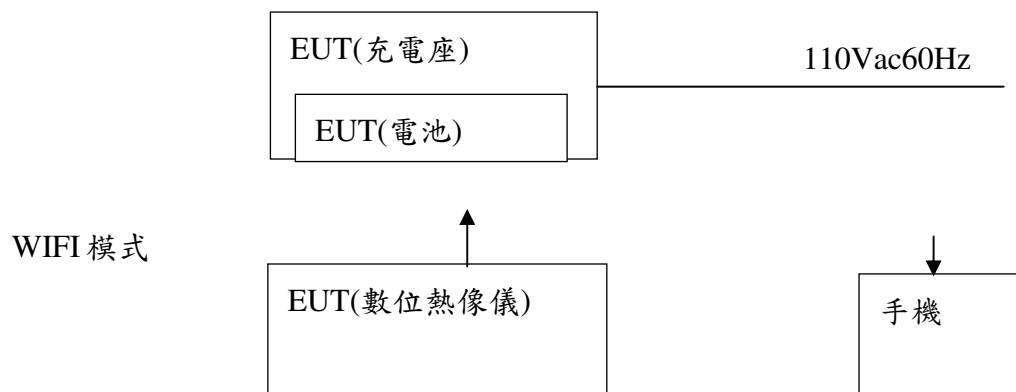
In order to find the worst case condition, Pre-tests are needed at the presence of different data rate. Preliminary tests have been done on all the configuration for confirming worst case. Data rate below means worst-case rate of each test item.

Worst-case data rates are shown as following table.

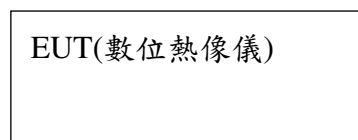
Band	Data Rate
802.11b	11Mbps
802.11g	54Mbps
802.11n20	MCS7

3.1測試接續圖(一般正常使用)

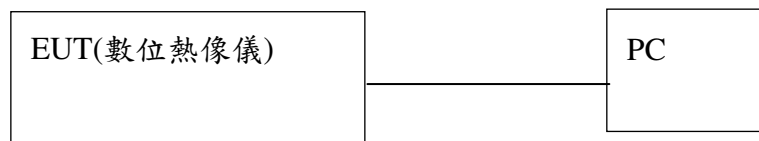
充電模式



錄音、播音、熱顯像模式



傳輸模式



3.1.1.待測物之主要配備

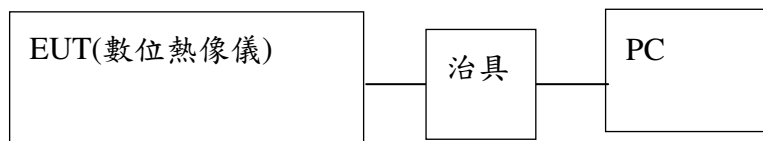
裝置名稱	廠牌	型號	纜線說明/規格
*熱影像鏡頭	BOSCH	GTC 600 C	- 20 … +600 °C
*EUT(Type-C)	BOSCH	2 609 120 670	USB TYPE A / USB MICRO B，長度 600mm
*EUT(電池)	BOSCH	GBA 12V 2.0Ah	DC 10.8V

*表示主待測物

3.1.2.外接週邊設備

裝置名稱	廠牌	型號	纜線說明/規格
手機	apple	I8 plus	---
PC	Acer	TMP257-M-58VU-001	---
EUT(充電座)	BOSCH	GAL 12-40	AC115V, 4.0A

3.2測試接續圖(測試模式使用)



3.2.1 測試治具、測試軟體名稱、測試軟體版本

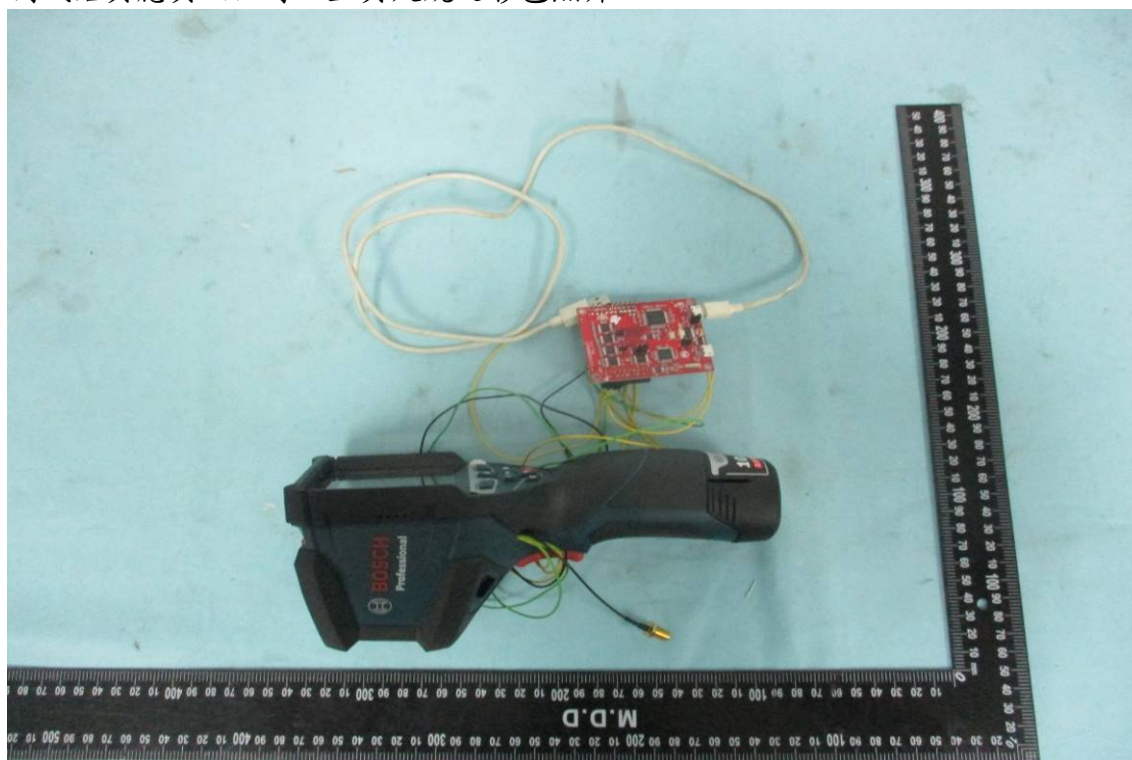
裝置名稱	廠牌	型號	纜線說明/規格
測試治具	BOSCH	USB-Singlewire	---
測試治具線材	ETC	ETC	1.0m 非屏蔽線材

測試軟體名稱	CC3100_CC3200_Ra dioTool-1.2-windows- installer.exe
測試軟體版本	---

3.2.2 測試模式之最大發射功率、頻率、頻寬、調變技術等設定值

模式	頻率	設定值
802.11B	2412-2462MHz	參數 6
802.11G	2412-2462MHz	參數 6
802.11N20	2412-2462MHz	參數 6

3.2.3 測試治具應具 4x6 吋以上具尺規之彩色照片。



4.1 適用標準

依據低功率射頻器材技術規範4.10.1.5節之要求，使用頻帶範圍外之任意100千赫(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100千赫(kHz)內的射頻功率，須衰減20分貝(dB)，以射頻傳導或輻射方式測量。此外，落於第3.5節禁用頻段之輻射發射，應符合第3.6節之規定。

4.2 量測方法

30MHz ~ 1GHz：將待測物置於0.8米高的非金屬桌面，使其在工作狀態，接收天線置於3米外1米高相同的高度。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米至4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。

1GHz以上：將待測物置於1.5米或0.8米高(依待測物為發射機或接收機)的非金屬桌面，使其在工作狀態，接收指向性天線置於3米外相同高度或1米高(依待測物為發射機或接收機)。待測物分別要垂直或水平放置，而且桌面要360度旋轉，另外接收指向性天線也要從1米至4米升降變化，以找出最大的輻射電場強度，接收指向性天線置於水平、垂直極向各執行測試一次。

4.3 量測場強輻射之儀器

儀器名稱	製造者	型號	本次校驗日期	下次校驗日期
EMI Test Receiver	Rohde & Schwarz	ESU40 (13054416-001)	2021/03/25	2022/03/24
Bi-Log Antenna	ETC & JYE BAO	MCTD 2786 & FAT-NM5NF5T3G2W6	2020/07/31	2021/07/30
Amplifier	HP	8447D (13040711-001)	2020/10/06	2021/10/05
Horn Antenna	EMCO	3116	2020/08/19	2021/08/18
Horn Antenna	ETS-Lindgren	3117	2021/03/16	2022/03/15
Amplifier	HP	8449B (13052901-001)	2020/10/06	2021/10/05
Amplifier	Keysight	83051A (13052926-001 & 13032683-001)	2020/08/27	2021/08/26

4.4 場強度之計算

場強之計算公式如下

$$\text{結果值} = \text{讀值} + \text{校正因數}$$

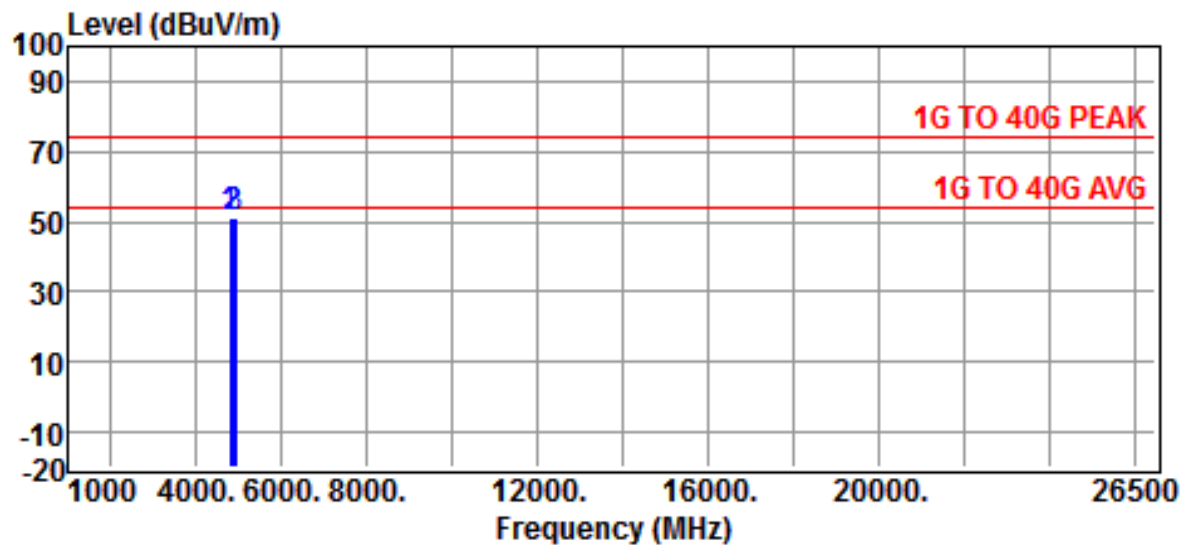
其中校正因數為：

天線因數+饋線損失+濾波器損失（若有使用）-放大器增益（若有使用）
量測結果請見下頁。

4.5 場強輻射之量測結果

4.5.1 發射諧波及本地震盪

A. 802.11b

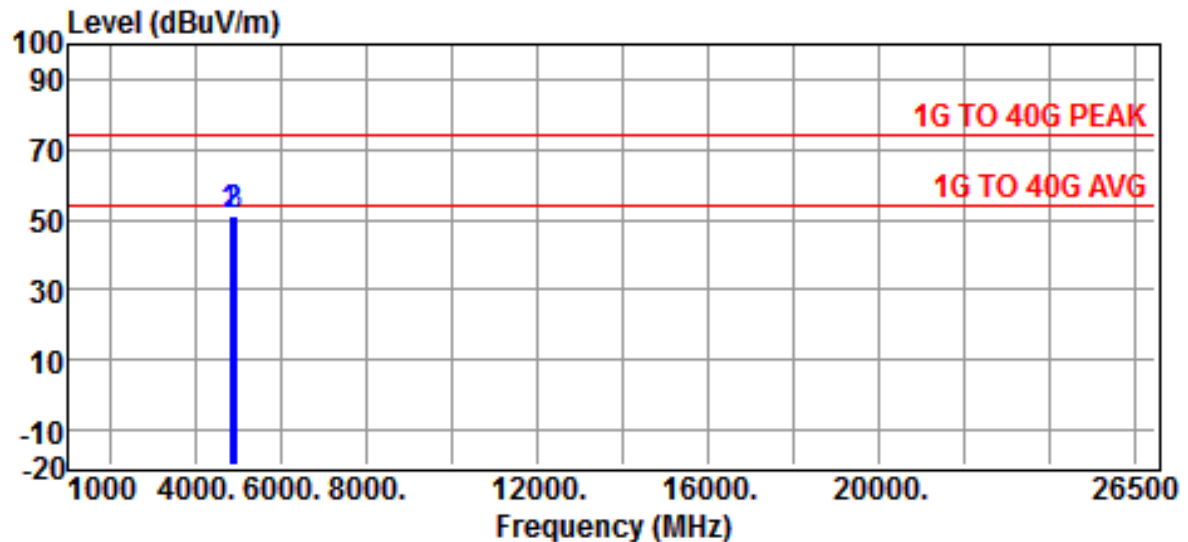


Site	:Chamber #2	Date	:2021-05-06
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	:熱影像鏡頭	Model	:GTC 600 C
Power Rating	:Battery	Temp.	:22 °C
Engineer	:Brian Huang	Humi.	:65 %
Test Mode	:11b		

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
	4824.0000	46.32	4.77	51.09	74.00	-22.91	Peak
*	4874.0000	46.29	4.81	51.10	74.00	-22.90	Peak
	4924.0000	46.11	4.80	50.91	74.00	-23.09	Peak

Note :

1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1Ghz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. " * " mean this data is the worst emission level.



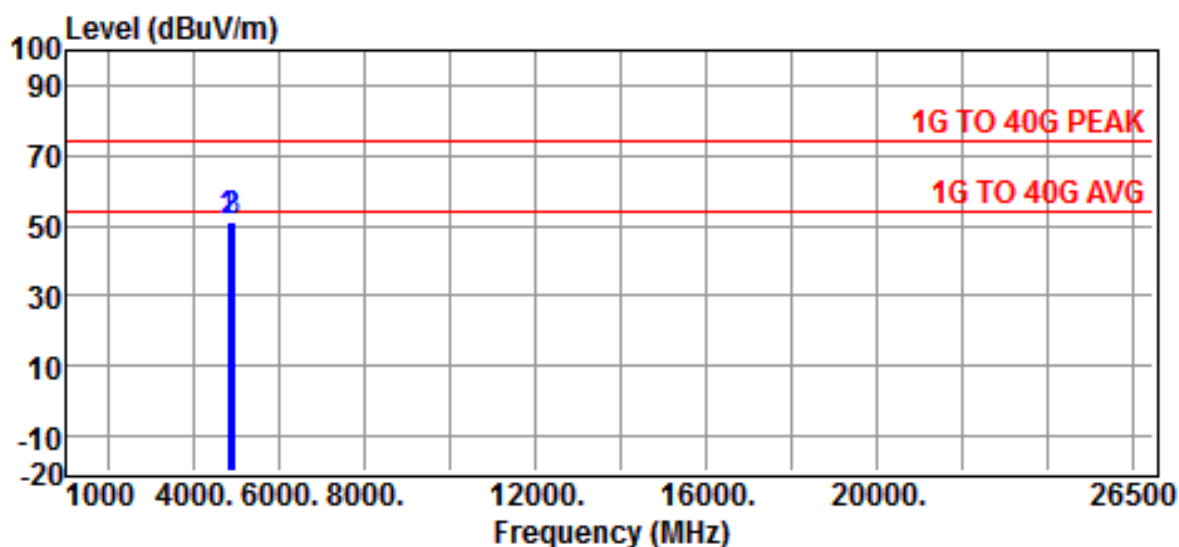
Site	:Chamber #2	Date	:2021-05-06
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	:熱影像鏡頭	Model	:GTC 600 C
Power Rating	:Battery	Temp.	:22 °C
Engineer	:Brian Huang	Humi.	:65 %
Test Mode	:11b		

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
	4824.0000	46.12	4.77	50.89	74.00	-23.11	Peak
	4874.0000	46.09	4.81	50.90	74.00	-23.10	Peak
*	4924.0000	46.30	4.80	51.10	74.00	-22.90	Peak

Note :

1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1Ghz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. " * " mean this data is the worst emission level.

B. 802.11g

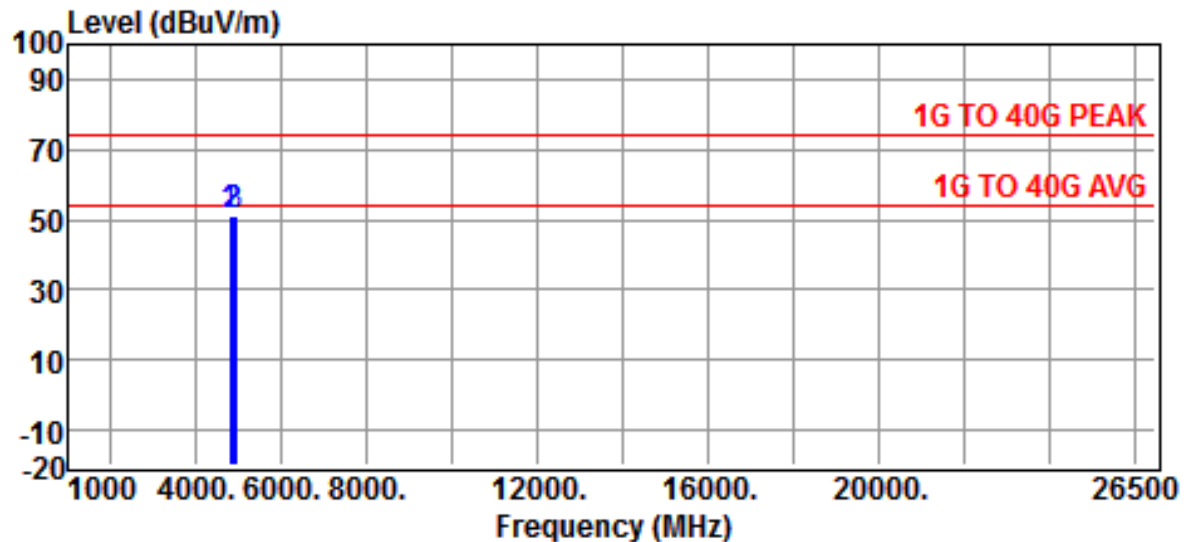


Site	:Chamber #2	Date	:2021-05-06
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	:熱影像鏡頭	Model	:GTC 600 C
Power Rating	:Battery	Temp.	:22 °C
Engineer	:Brian Huang	Humi.	:65 %
Test Mode	:11g		

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
	4824.0000	46.18	4.77	50.95	74.00	-23.05	Peak
	4874.0000	46.13	4.81	50.94	74.00	-23.06	Peak
*	4924.0000	46.22	4.80	51.02	74.00	-22.98	Peak

Note :

1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1Ghz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. " * " mean this data is the worst emission level.



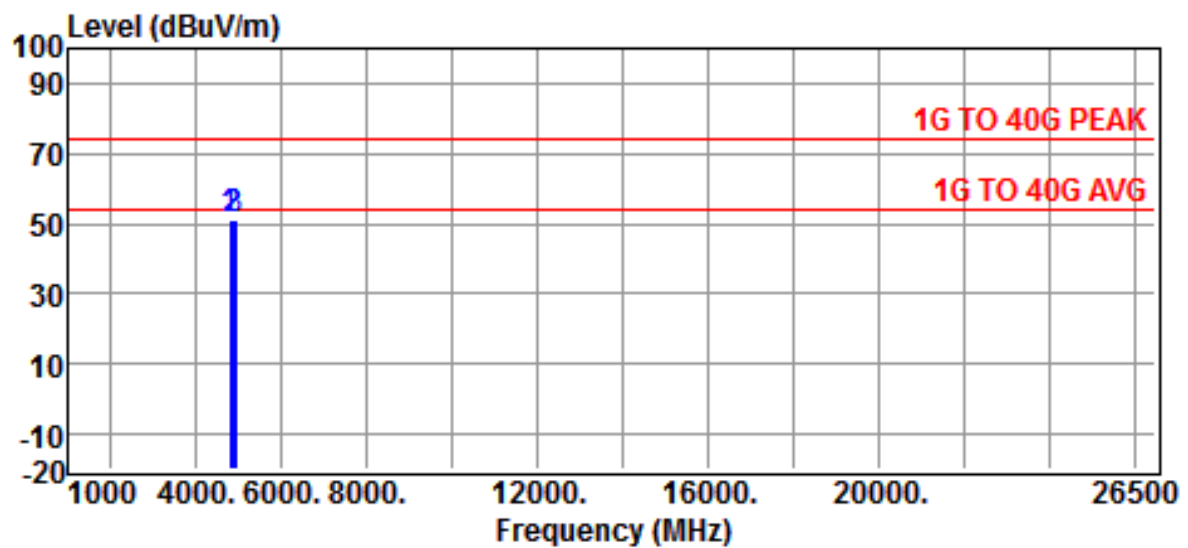
Site	:Chamber #2	Date	:2021-05-06
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	:熱影像鏡頭	Model	:GTC 600 C
Power Rating	:Battery	Temp.	:22 °C
Engineer	:Brian Huang	Humi.	:65 %
Test Mode	:11g		

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
	4824.0000	46.08	4.77	50.85	74.00	-23.15	Peak
	4874.0000	46.15	4.81	50.96	74.00	-23.04	Peak
*	4924.0000	46.22	4.80	51.02	74.00	-22.98	Peak

Note :

1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1Ghz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. " * " mean this data is the worst emission level.

C. 802.11n20

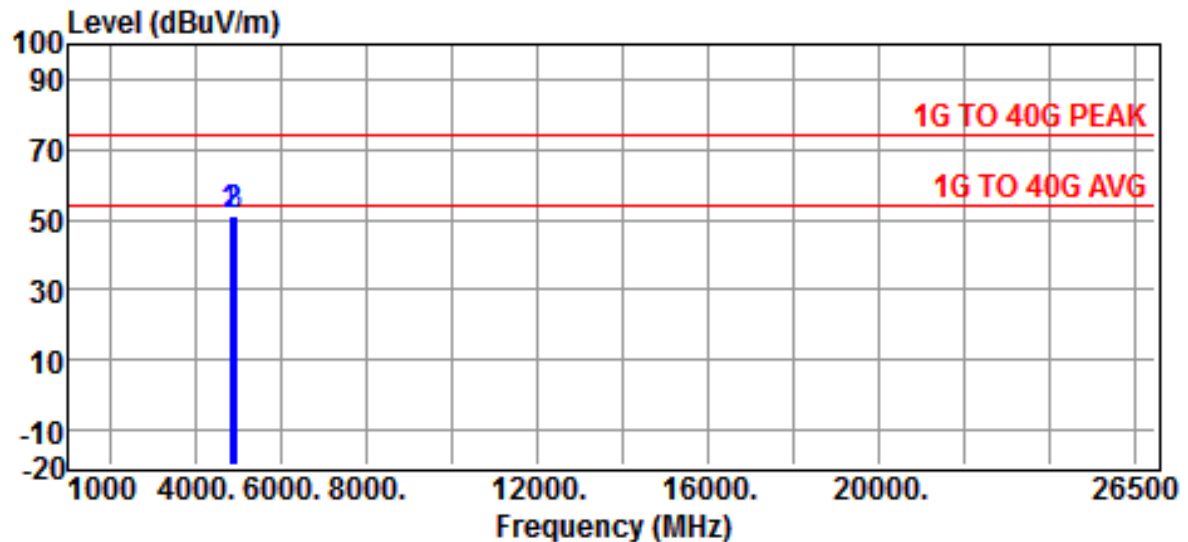


Site	:Chamber #2	Date	:2021-05-06
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	:熱影像鏡頭	Model	:GTC 600 C
Power Rating	:Battery	Temp.	:22 °C
Engineer	:Brian Huang	Humi.	:65 %
Test Mode	:11n20		

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
	4824.0000	46.15	4.77	50.92	74.00	-23.08	Peak
	4874.0000	46.23	4.81	51.04	74.00	-22.96	Peak
*	4924.0000	46.34	4.80	51.14	74.00	-22.86	Peak

Note :

1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1Ghz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. " * " mean this data is the worst emission level.



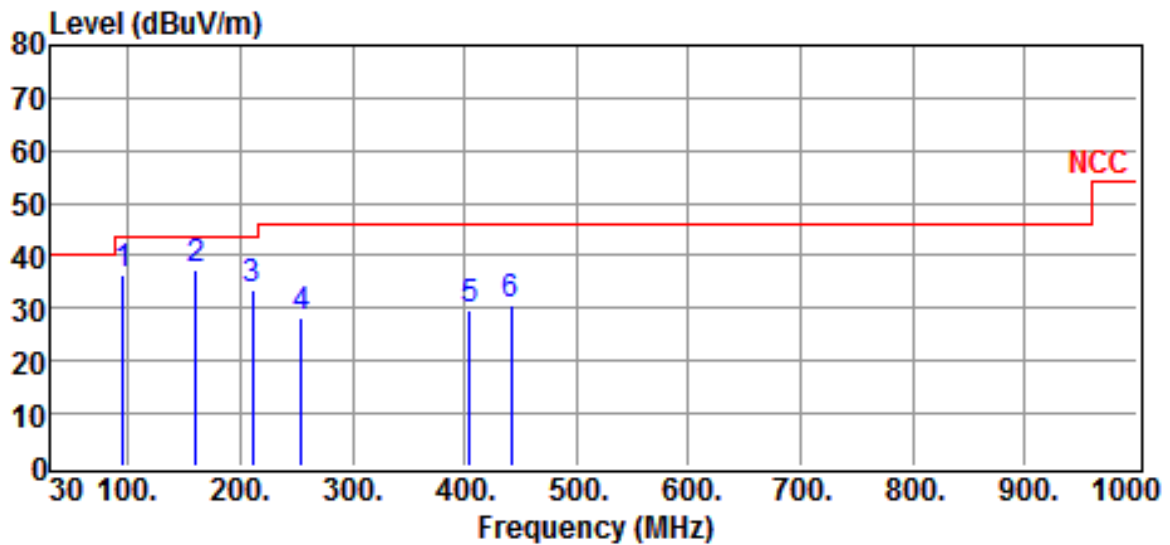
Site	:Chamber #2	Date	:2021-05-06
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	:熱影像鏡頭	Model	:GTC 600 C
Power Rating	:Battery	Temp.	:22 °C
Engineer	:Brian Huang	Humi.	:65 %
Test Mode	:11n20		

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
	4824.0000	46.19	4.77	50.96	74.00	-23.04	Peak
	4874.0000	46.27	4.81	51.08	74.00	-22.92	Peak
*	4924.0000	46.31	4.80	51.11	74.00	-22.89	Peak

Note :

1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1Ghz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. " * " mean this data is the worst emission level.

4.5.2 其它不必要之訊號



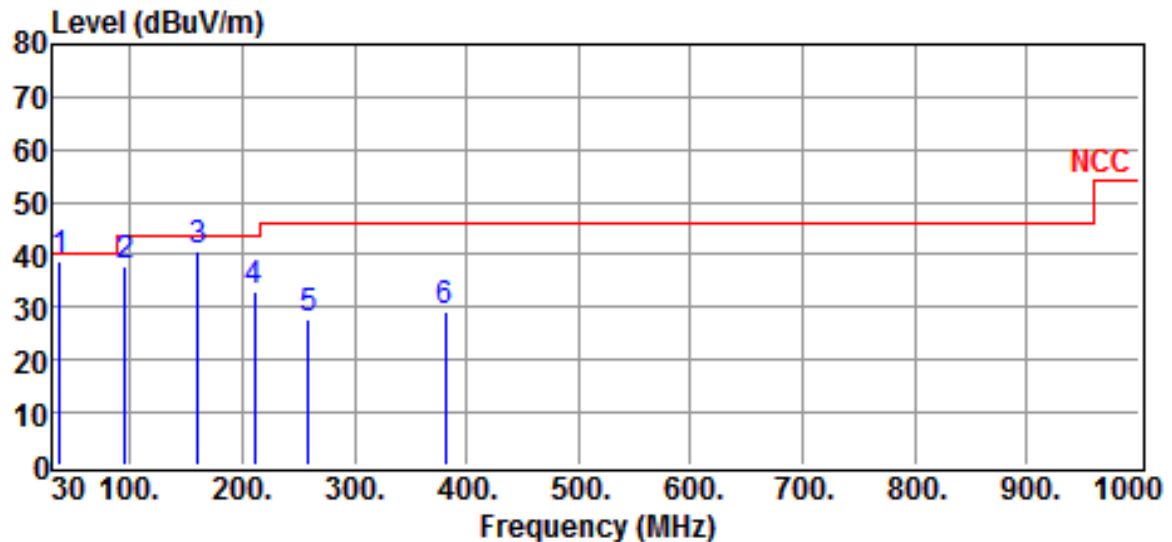
Site :Chamber #2
 Limit :NCC
 EUT :熱影像鏡頭
 Power Rating :110Vac60Hz
 Engineer :Brian Huang
 Test Mode :充電模式

Date :2021-05-06
 Ant. Pol. :HORIZONTAL
 Model :GTC 600 C
 Temp. :22 °C
 Humi. :65 %

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
	95.9600	47.10	-10.58	36.52	43.50	-6.98	QP
*	159.9800	44.92	-7.75	37.17	43.50	-6.33	QP
	210.4200	39.51	-5.83	33.68	43.50	-9.82	QP
	255.0400	33.03	-4.53	28.50	46.00	-17.50	QP
	404.4200	30.84	-1.03	29.81	46.00	-16.19	QP
	441.2800	30.76	-0.33	30.43	46.00	-15.57	QP

Note :

1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1Ghz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. " * " mean this data is the worst emission level.



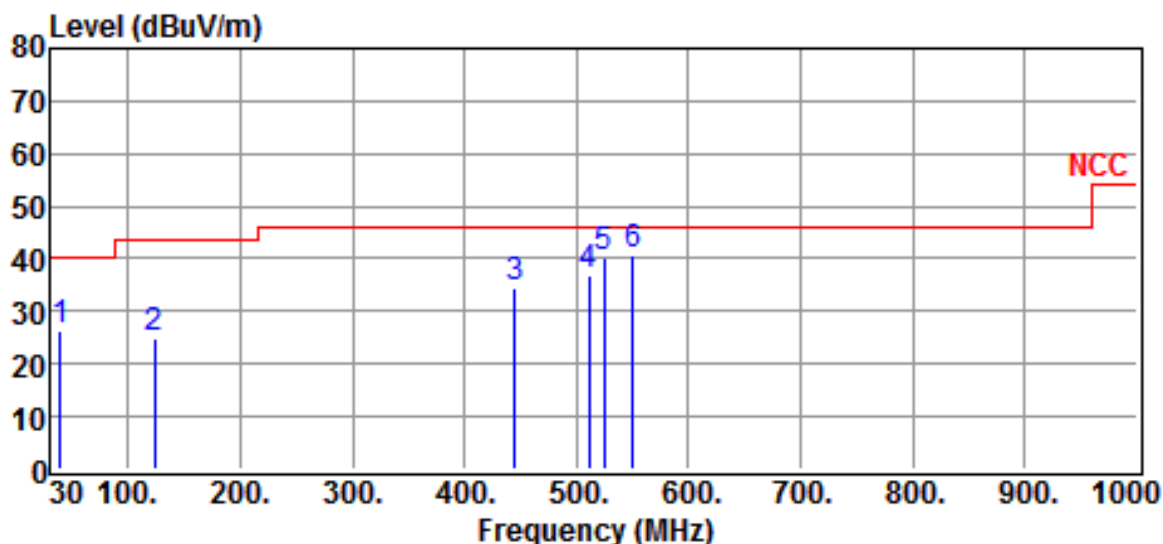
Site :Chamber #2
 Limit :NCC
 EUT :熱影像鏡頭
 Power Rating :110Vac60Hz
 Engineer :Brian Huang
 Test Mode :充電模式

Date :2021-05-06
 Ant. Pol. :VERTICAL
 Model :GTC 600 C
 Temp. :22 °C
 Humi. :65 %

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
*	37.7600	43.84	-4.99	38.85	40.00	-1.15	QP
	95.9600	48.30	-10.58	37.72	43.50	-5.78	QP
	159.9800	48.41	-7.75	40.66	43.50	-2.84	QP
	210.4200	38.97	-5.83	33.14	43.50	-10.36	QP
	258.9200	32.54	-4.66	27.88	46.00	-18.12	QP
	381.1400	31.03	-1.57	29.46	46.00	-16.54	QP

Note :

1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1GHz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. " * " mean this data is the worst emission level.



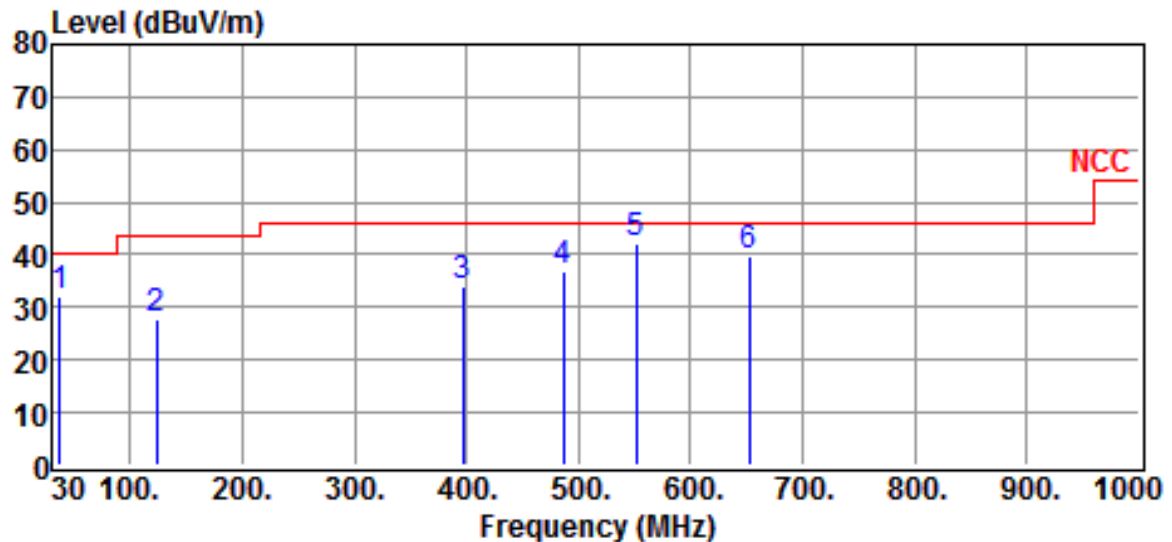
Site :Chamber #2
 Limit :NCC
 EUT :熱影像鏡頭
 Power Rating :Battery
 Engineer :Brian Huang
 Test Mode :WIFI 模式

Date :2021-05-06
 Ant. Pol. :HORIZONTAL
 Model :GTC 600 C
 Temp. :22 °C
 Humi. :65 %

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
	39.7000	32.14	-5.98	26.16	40.00	-13.84	QP
	123.1200	32.64	-7.82	24.82	43.50	-18.68	QP
	445.1600	35.10	-0.40	34.70	46.00	-11.30	QP
	511.1200	36.52	0.26	36.78	46.00	-9.22	QP
	524.7000	39.53	0.51	40.04	46.00	-5.96	QP
*	549.9200	39.51	1.31	40.82	46.00	-5.18	QP

Note :

1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1Ghz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. " * " mean this data is the worst emission level.



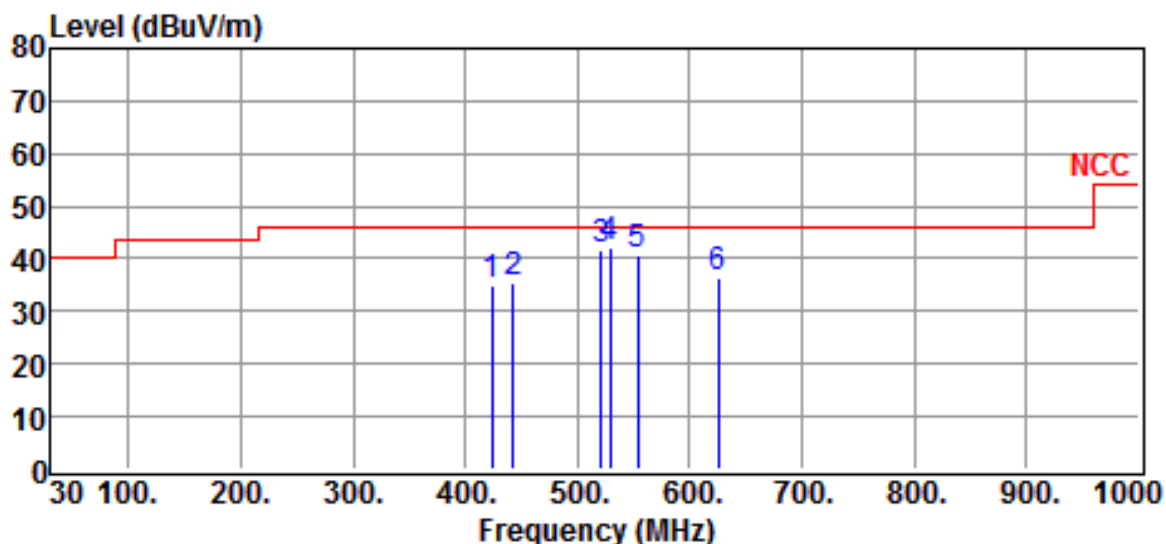
Site :Chamber #2
 Limit :NCC
 EUT :熱影像鏡頭
 Power Rating :Battery
 Engineer :Brian Huang
 Test Mode :WIFI 模式

Date :2021-05-06
 Ant. Pol. :VERTICAL
 Model :GTC 600 C
 Temp. :22 °C
 Humi. :65 %

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
	37.7600	37.00	-4.99	32.01	40.00	-7.99	QP
	123.1200	35.41	-7.82	27.59	43.50	-15.91	QP
	396.6600	35.02	-1.19	33.83	46.00	-12.17	QP
	485.9000	36.52	0.31	36.83	46.00	-9.17	QP
*	551.8600	40.60	1.36	41.96	46.00	-4.04	QP
	652.7400	36.31	3.41	39.72	46.00	-6.28	QP

Note :

1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1GHz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. " * " mean this data is the worst emission level.



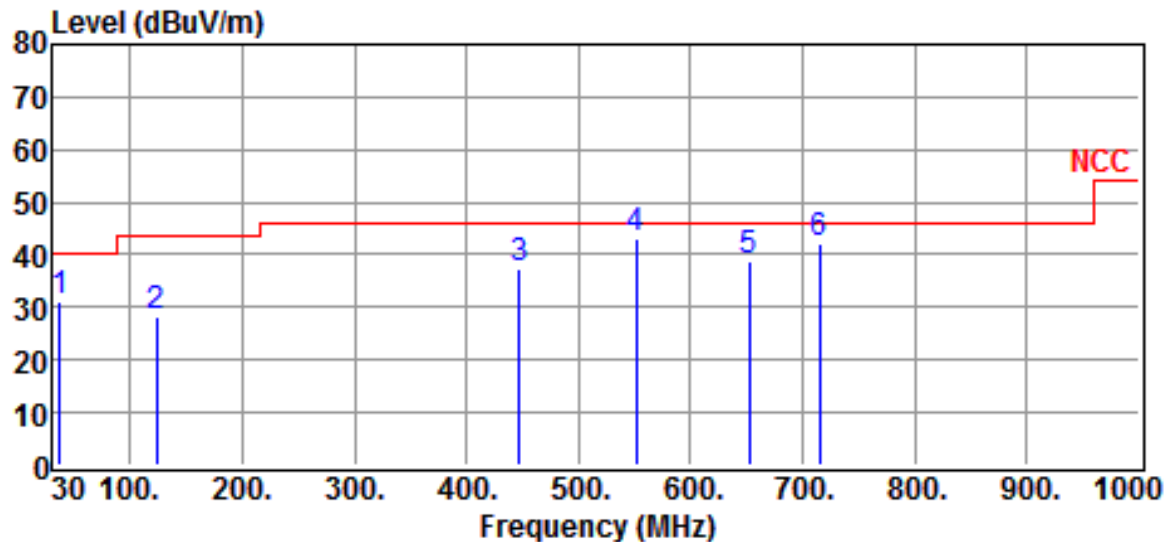
Site :Chamber #2
 Limit :NCC
 EUT :熱影像鏡頭
 Power Rating :Battery
 Engineer :Brian Huang
 Test Mode :錄音模式

Date :2021-05-06
 Ant. Pol. :HORIZONTAL
 Model :GTC 600 C
 Temp. :22 °C
 Humi. :65 %

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
	423.8200	35.86	-0.91	34.95	46.00	-11.05	QP
	443.2200	35.68	-0.36	35.32	46.00	-10.68	QP
	520.8200	41.17	0.42	41.59	46.00	-4.41	QP
*	528.5800	41.67	0.67	42.34	46.00	-3.66	QP
	553.8000	39.19	1.41	40.60	46.00	-5.40	QP
	625.5800	34.20	2.44	36.64	46.00	-9.36	QP

Note :

1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1Ghz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. ” * ” mean this data is the worst emission level.



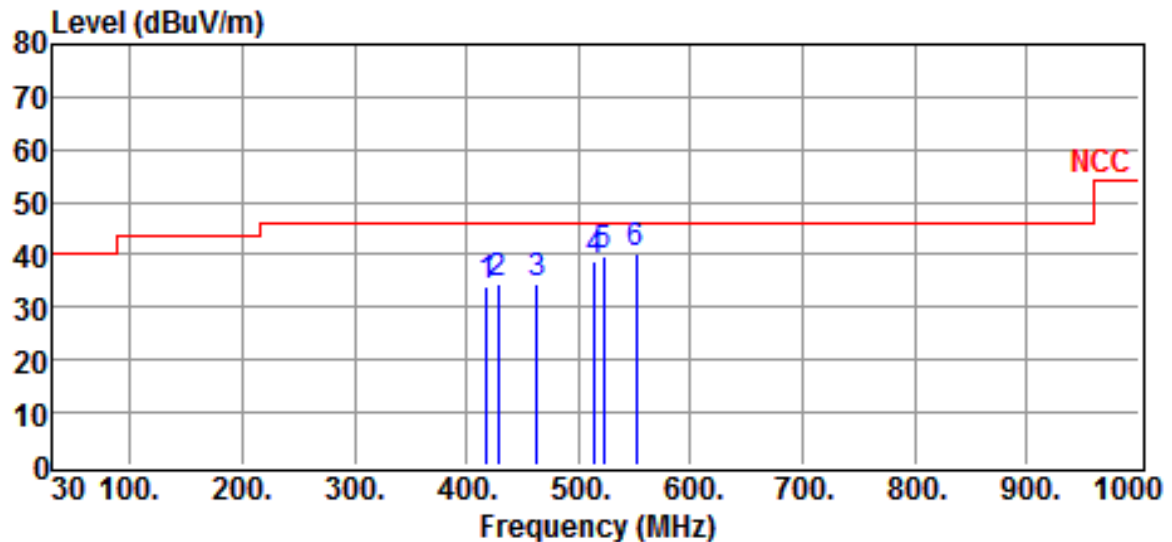
Site :Chamber #2
 Limit :NCC
 EUT :熱影像鏡頭
 Power Rating :Battery
 Engineer :Brian Huang
 Test Mode :錄音模式

Date :2021-05-06
 Ant. Pol. :VERTICAL
 Model :GTC 600 C
 Temp. :22 °C
 Humi. :65 %

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
	37.7600	36.32	-4.99	31.33	40.00	-8.67	QP
	123.1200	35.91	-7.82	28.09	43.50	-15.41	QP
	447.1000	37.96	-0.44	37.52	46.00	-8.48	QP
*	551.8600	41.60	1.36	42.96	46.00	-3.04	QP
	652.7400	35.53	3.41	38.94	46.00	-7.06	QP
	714.8200	38.31	3.98	42.29	46.00	-3.71	QP

Note :

1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1GHz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. " * " mean this data is the worst emission level.



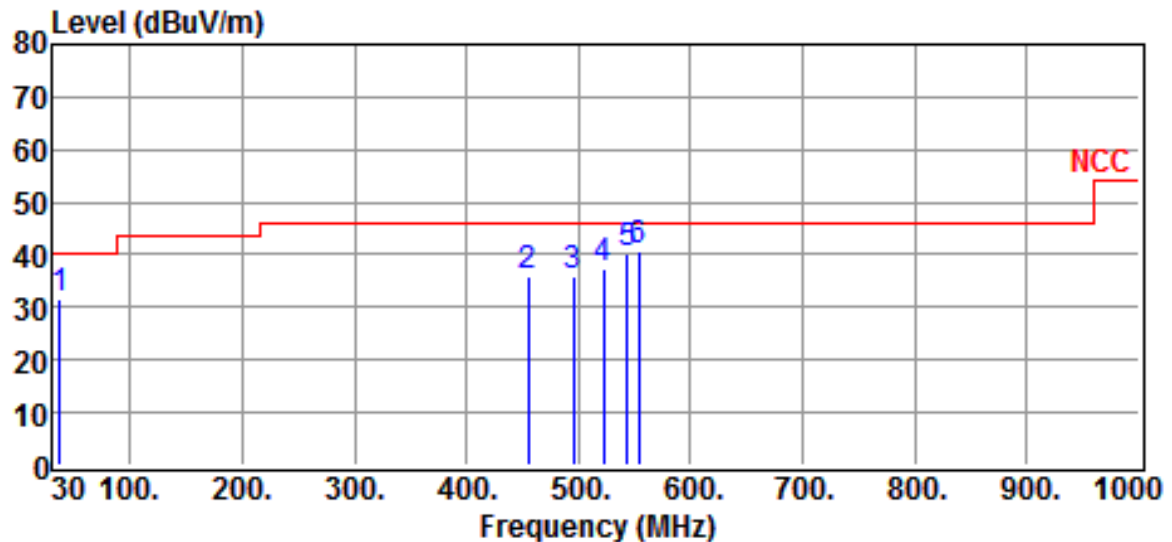
Site :Chamber #2
 Limit :NCC
 EUT :熱影像鏡頭
 Power Rating :Battery
 Engineer :Brian Huang
 Test Mode :播音模式

Date :2021-05-06
 Ant. Pol. :HORIZONTAL
 Model :GTC 600 C
 Temp. :22 °C
 Humi. :65 %

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
	418.0000	35.09	-0.91	34.18	46.00	-11.82	QP
	427.7000	35.36	-0.86	34.50	46.00	-11.50	QP
	462.6200	35.17	-0.45	34.72	46.00	-11.28	QP
	515.0000	38.75	0.28	39.03	46.00	-6.97	QP
	522.7600	39.22	0.47	39.69	46.00	-6.31	QP
*	551.8600	38.84	1.36	40.20	46.00	-5.80	QP

Note :

1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1Ghz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. ” * ” mean this data is the worst emission level.



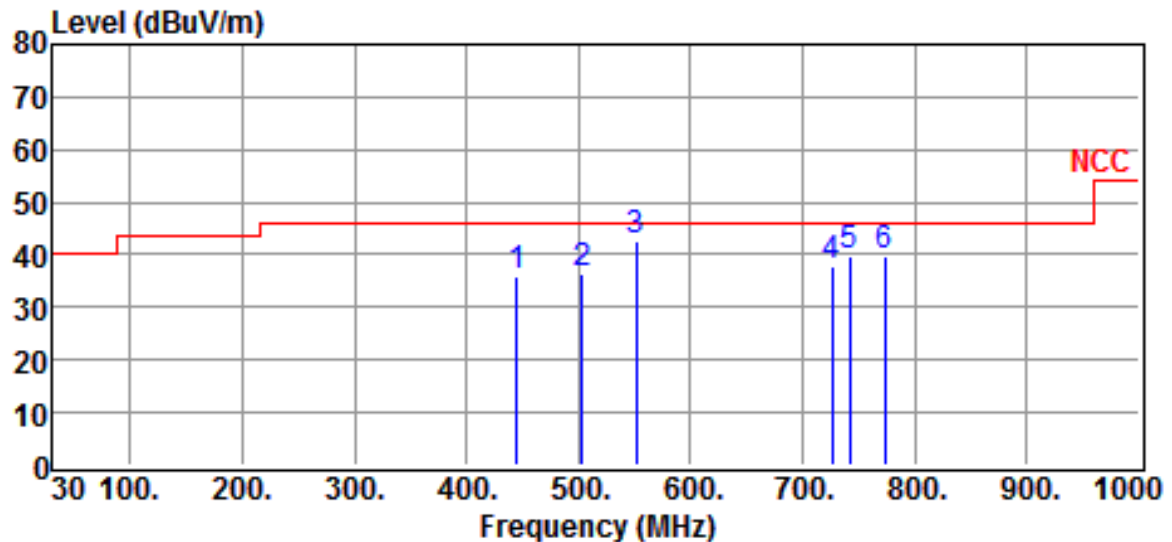
Site :Chamber #2
 Limit :NCC
 EUT :熱影像鏡頭
 Power Rating :Battery
 Engineer :Brian Huang
 Test Mode :播音模式

Date :2021-05-06
 Ant. Pol. :VERTICAL
 Model :GTC 600 C
 Temp. :22 °C
 Humi. :65 %

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
	37.7600	36.67	-4.99	31.68	40.00	-8.32	QP
	454.8600	36.55	-0.50	36.05	46.00	-9.95	QP
	495.6000	35.78	0.21	35.99	46.00	-10.01	QP
	522.7600	36.74	0.47	37.21	46.00	-8.79	QP
	544.1000	39.24	1.14	40.38	46.00	-5.62	QP
*	553.8000	39.47	1.41	40.88	46.00	-5.12	QP

Note :

1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1Ghz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. " * " mean this data is the worst emission level.



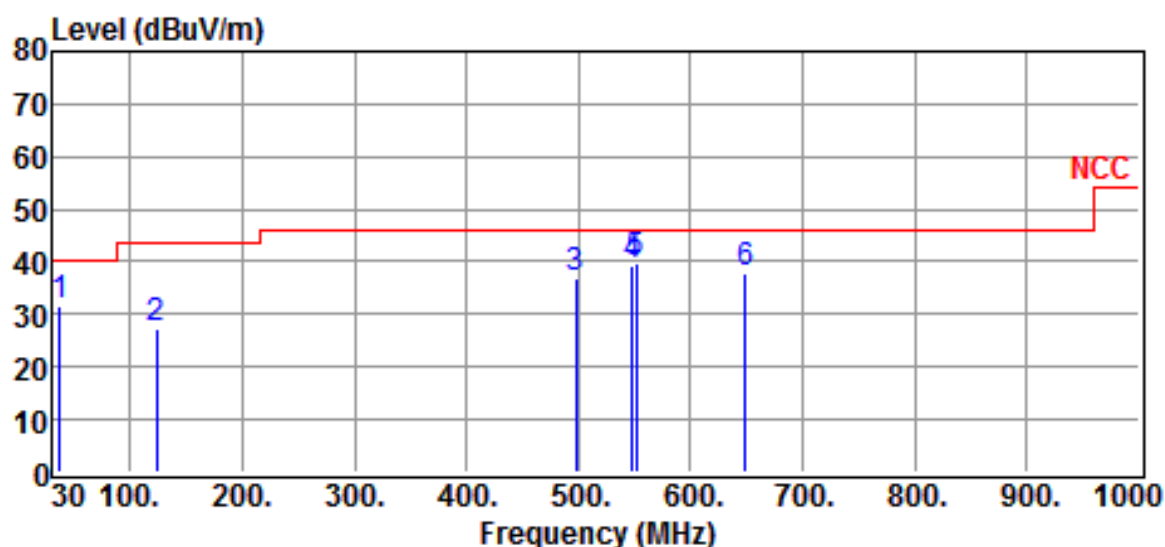
Site :Chamber #2
 Limit :NCC
 EUT :熱影像鏡頭
 Power Rating :Battery
 Engineer :Brian Huang
 Test Mode :熱顯像模式

Date :2021-05-06
 Ant. Pol. :HORIZONTAL
 Model :GTC 600 C
 Temp. :22 °C
 Humi. :65 %

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
	445.1600	36.33	-0.40	35.93	46.00	-10.07	QP
	503.3600	36.19	0.13	36.32	46.00	-9.68	QP
*	551.8600	41.14	1.36	42.50	46.00	-3.50	QP
	726.4600	33.65	4.16	37.81	46.00	-8.19	QP
	741.9800	35.31	4.46	39.77	46.00	-6.23	QP
	773.0200	35.02	4.77	39.79	46.00	-6.21	QP

Note :

1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1Ghz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. ” * ” mean this data is the worst emission level.



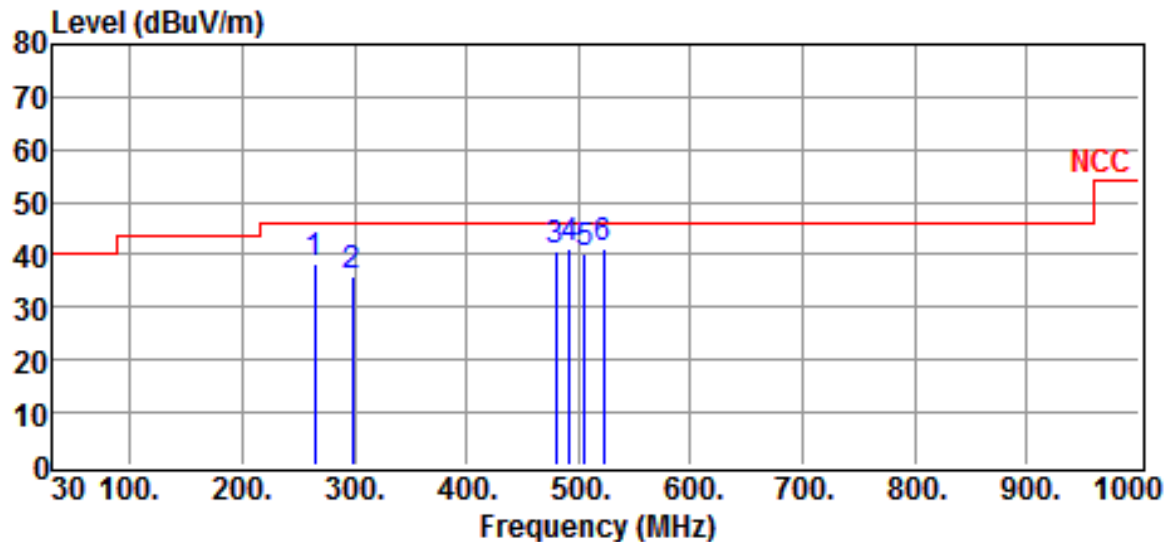
Site :Chamber #2
 Limit :NCC
 EUT :熱影像鏡頭
 Power Rating :Battery
 Engineer :Brian Huang
 Test Mode :熱顯像模式

Date :2021-05-06
 Ant. Pol. :VERTICAL
 Model :GTC 600 C
 Temp. :22 °C
 Humi. :65 %

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
	37.7600	36.53	-4.99	31.54	40.00	-8.46	QP
	123.1200	34.99	-7.82	27.17	43.50	-16.33	QP
	497.5400	36.67	0.17	36.84	46.00	-9.16	QP
	547.9800	38.01	1.26	39.27	46.00	-6.73	QP
*	551.8600	38.17	1.36	39.53	46.00	-6.47	QP
	648.8600	34.79	3.17	37.96	46.00	-8.04	QP

Note :

1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1GHz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. " * " mean this data is the worst emission level.



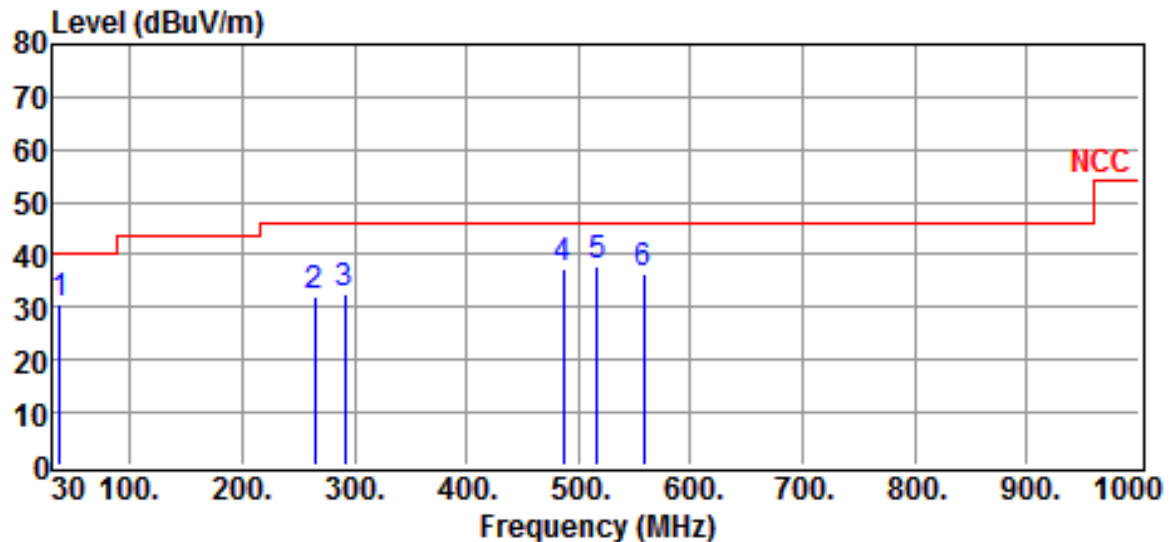
Site :Chamber #2
 Limit :NCC
 EUT :熱影像鏡頭
 Power Rating :Battery
 Engineer :Brian Huang
 Test Mode :Type C 傳輸模式

Date :2021-05-06
 Ant. Pol. :HORIZONTAL
 Model :GTC 600 C
 Temp. :22 °C
 Humi. :65 %

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
	264.7400	42.87	-4.65	38.22	46.00	-7.78	QP
	297.7200	39.05	-3.15	35.90	46.00	-10.10	QP
	480.0800	40.65	0.11	40.76	46.00	-5.24	QP
*	491.7200	41.05	0.29	41.34	46.00	-4.66	QP
	505.3000	40.31	0.15	40.46	46.00	-5.54	QP
	522.7600	40.57	0.47	41.04	46.00	-4.96	QP

Note :

1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1Ghz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. " * " mean this data is the worst emission level.



Site :Chamber #2
 Limit :NCC
 EUT :熱影像鏡頭
 Power Rating :Battery
 Engineer :Brian Huang
 Test Mode :Type C 傳輸模式

Date :2021-05-06
 Ant. Pol. :VERTICAL
 Model :GTC 600 C
 Temp. :22 °C
 Humi. :65 %

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
	37.7600	35.55	-4.99	30.56	40.00	-9.44	QP
	264.7400	36.60	-4.65	31.95	46.00	-14.05	QP
	291.9000	36.07	-3.37	32.70	46.00	-13.30	QP
	485.9000	36.93	0.31	37.24	46.00	-8.76	QP
*	516.9400	37.54	0.32	37.86	46.00	-8.14	QP
	557.6800	34.94	1.44	36.38	46.00	-9.62	QP

Note :

1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1Ghz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. " * " mean this data is the worst emission level.

b. 1GHz以上

操作模式 : 請參閱第三節配置說明

測試日期 : --

環境溫度 : -- °C

環境濕度 : -- %

測試結果 : 合格

測試者 : 黃義傑

備註: 1. 1GHz以上輻射信號太弱，掃描圖請參考4.5.1節。

4.5.3 禁用頻段之輻射(混附)發射

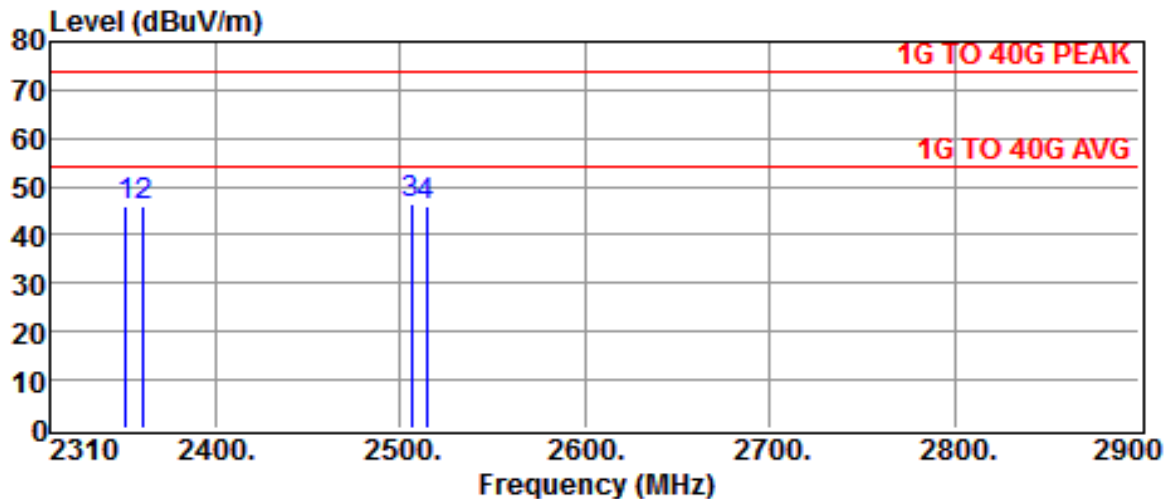
a. 限制頻帶之場強輻射測量

A. 802.11b

操作模式 : CH LO & HI - Restricted Bands

測試結果 : 合格

測試者 : 黃義傑

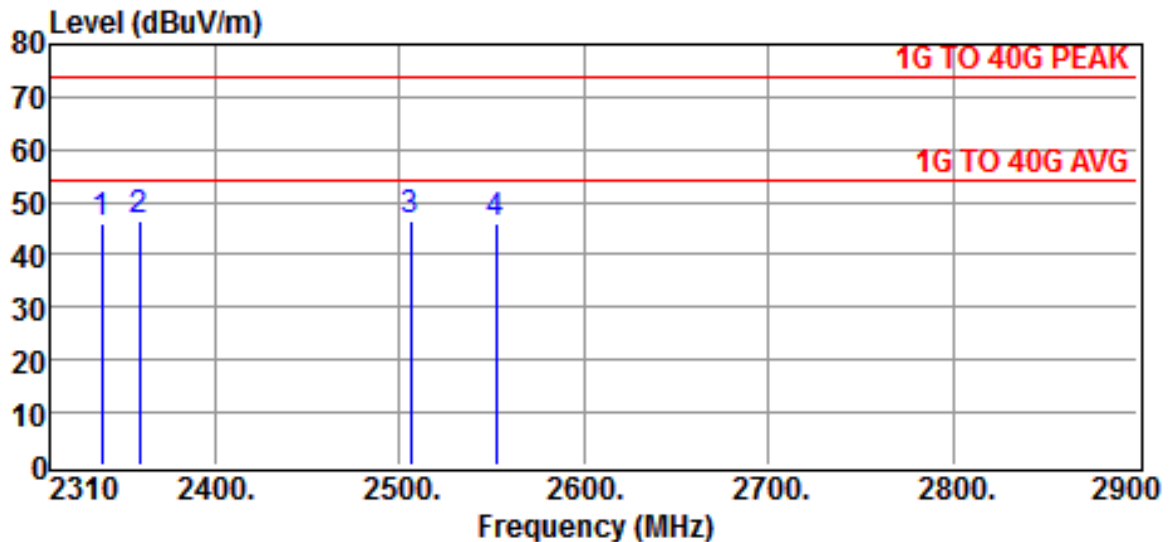


Site	:Chamber #2	Date	:2021-05-06
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	:熱影像鏡頭	Model	:GTC 600 C
Power Rating	:Battery	Temp.	:22 °C
Engineer	:Brian Huang	Humi.	:65 %
Test Mode	:11b		

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
	2351.3000	46.08	-0.15	45.93	74.00	-28.07	Peak
	2360.7400	46.12	-0.15	45.97	74.00	-28.03	Peak
*	2505.8800	46.35	-0.01	46.34	74.00	-27.66	Peak
	2514.1400	45.83	0.00	45.83	74.00	-28.17	Peak

Note :

1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1Ghz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. " * " mean this data is the worst emission level



Site	:Chamber #2	Date	:2021-05-06
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	:熱影像鏡頭	Model	:GTC 600 C
Power Rating	:Battery	Temp.	:22 °C
Engineer	:Brian Huang	Humi.	:65 %
Test Mode	:11b		

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
	2338.3200	46.18	-0.24	45.94	74.00	-28.06	Peak
*	2358.3800	46.60	-0.16	46.44	74.00	-27.56	Peak
	2505.8800	46.35	-0.01	46.34	74.00	-27.66	Peak
	2551.9000	46.15	0.06	46.21	74.00	-27.79	Peak

Note :

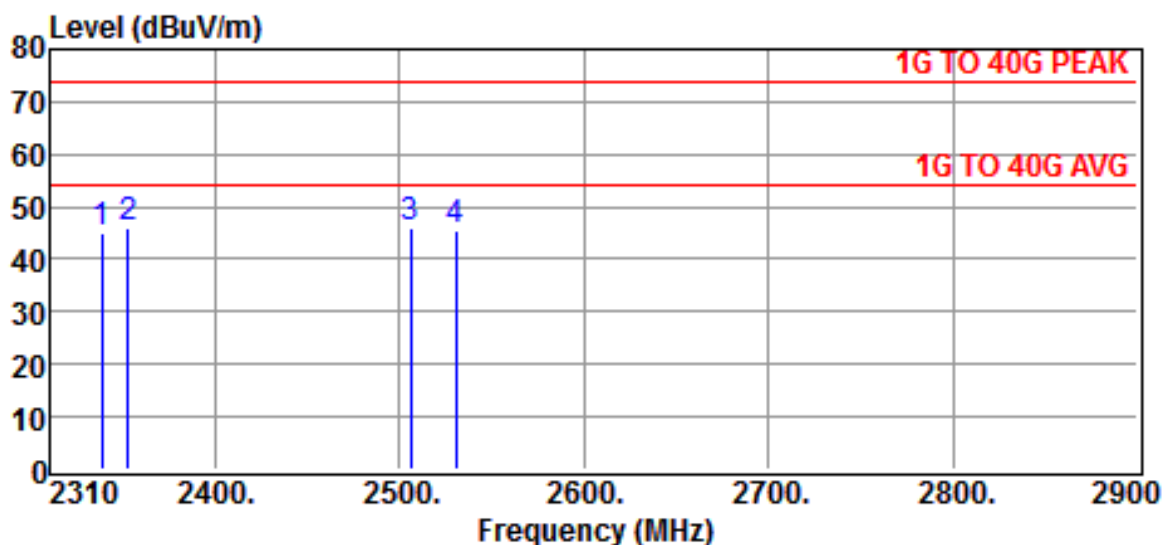
1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1Ghz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. " * " mean this data is the worst emission level.

B. 802.11g

操作模式 : CH LO & HI - Restricted Bands

測試結果 : 合格

測試者 : 黃義傑



Site : Chamber #2

Date : 2021-05-06

Limit : 1G TO 40G PEAK

Ant. Pol. : HORIZONTAL

EUT : 熱影像鏡頭

Model : GTC 600 C

Power Rating : Battery

Temp. : 22 °C

Engineer : Brian Huang

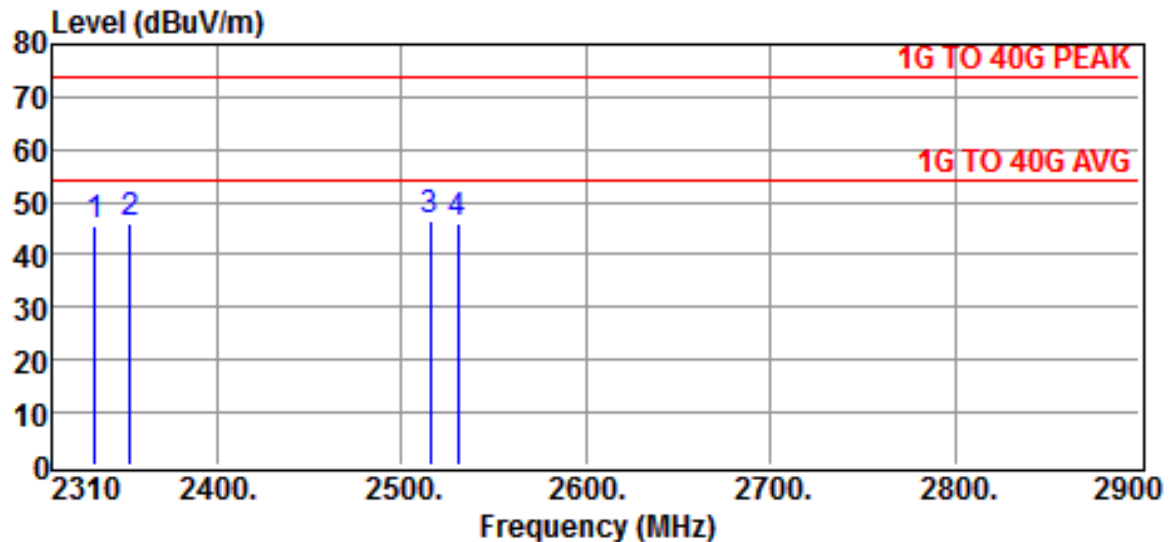
Humi. : 65 %

Test Mode : 11g

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
	2338.3200	45.29	-0.24	45.05	74.00	-28.95	Peak
*	2352.4800	46.19	-0.15	46.04	74.00	-27.96	Peak
	2505.8800	45.91	-0.01	45.90	74.00	-28.10	Peak
	2530.6600	45.62	0.03	45.65	74.00	-28.35	Peak

Note :

1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value = Limit - Result
5. Above 1Ghz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. " * " mean this data is the worst emission level.



Site	:Chamber #2	Date	:2021-05-06
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	:熱影像鏡頭	Model	:GTC 600 C
Power Rating	:Battery	Temp.	:22 °C
Engineer	:Brian Huang	Humi.	:65 %
Test Mode	:11g		

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
	2333.6000	45.69	-0.28	45.41	74.00	-28.59	Peak
	2352.4800	46.19	-0.15	46.04	74.00	-27.96	Peak
*	2515.3200	46.27	0.00	46.27	74.00	-27.73	Peak
	2530.6600	46.13	0.03	46.16	74.00	-27.84	Peak

Note :

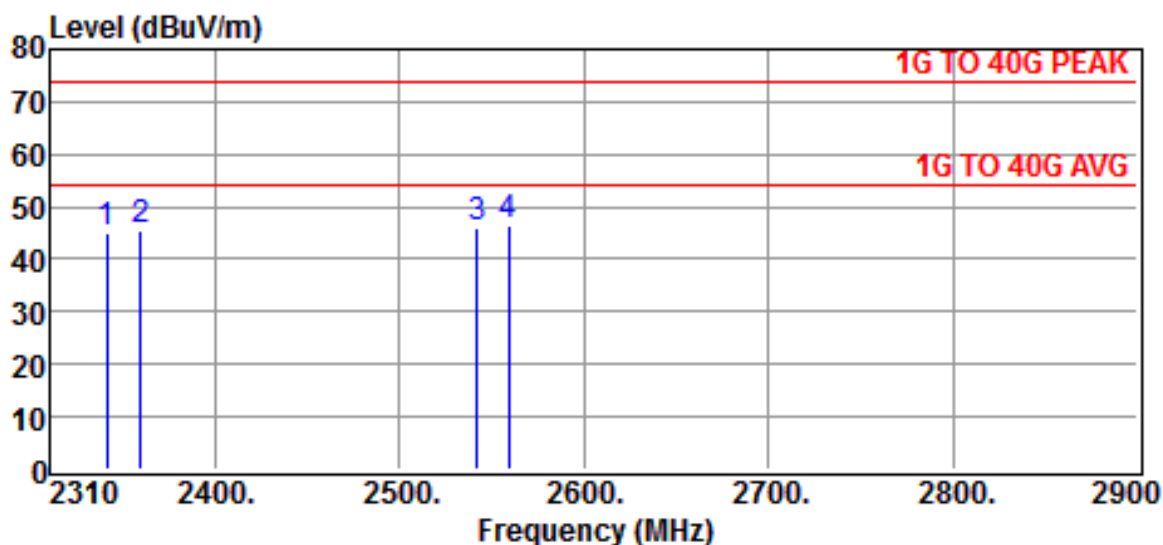
1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1Ghz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. " * " mean this data is the worst emission level.

C. 802.11n20

操作模式 : CH LO & HI - Restricted Bands

測試結果 : 合格

測試者 : 黃義傑



Site : Chamber #2

Date : 2021-05-06

Limit : 1G TO 40G PEAK

Ant. Pol. : HORIZONTAL

EUT : 熱影像鏡頭

Model : GTC 600 C

Power Rating : Battery

Temp. : 22 °C

Engineer : Brian Huang

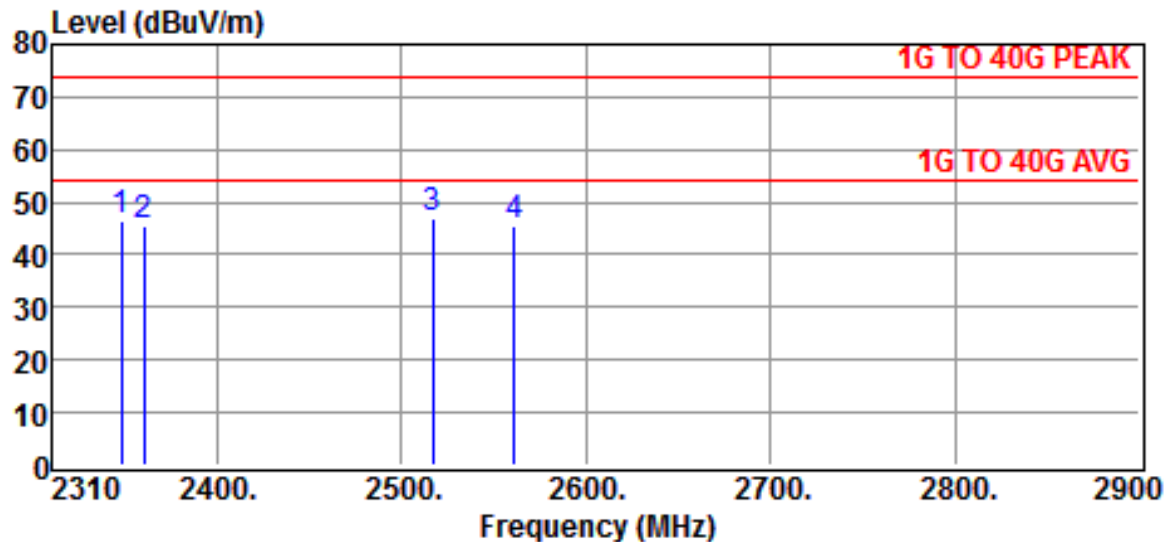
Humi. : 65 %

Test Mode : 11n20

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
	2341.2700	45.16	-0.21	44.95	74.00	-29.05	Peak
	2359.5600	45.65	-0.16	45.49	74.00	-28.51	Peak
	2541.8700	46.10	0.04	46.14	74.00	-27.86	Peak
*	2558.9800	46.52	0.09	46.61	74.00	-27.39	Peak

Note :

1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value = Limit - Result
5. Above 1Ghz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. " * " mean this data is the worst emission level.



Site	:Chamber #2	Date	:2021-05-06
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	:熱影像鏡頭	Model	:GTC 600 C
Power Rating	:Battery	Temp.	:22 °C
Engineer	:Brian Huang	Humi.	:65 %
Test Mode	:11n20		

	Freq MHz	Reading dBuV	Correction Factor dB/m	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
	2347.7600	46.54	-0.16	46.38	74.00	-27.62	Peak
	2360.1500	45.74	-0.16	45.58	74.00	-28.42	Peak
*	2516.5000	46.90	0.00	46.90	74.00	-27.10	Peak
	2560.7500	45.53	0.09	45.62	74.00	-28.38	Peak

Note :

1. Result = Reading + Correction Factor
2. Average Result = Peak Result + Duty Factor ()
3. Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1Ghz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
6. " * " mean this data is the worst emission level.

4.6 輻射之測試配置

圖 1：量測頻率低於1GHz之測試配置

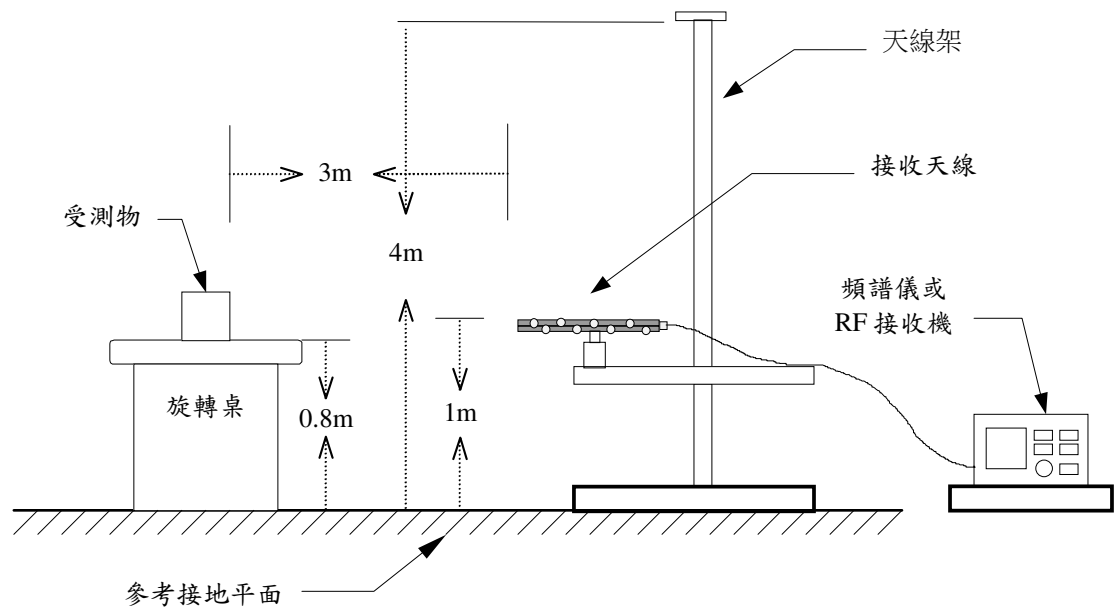
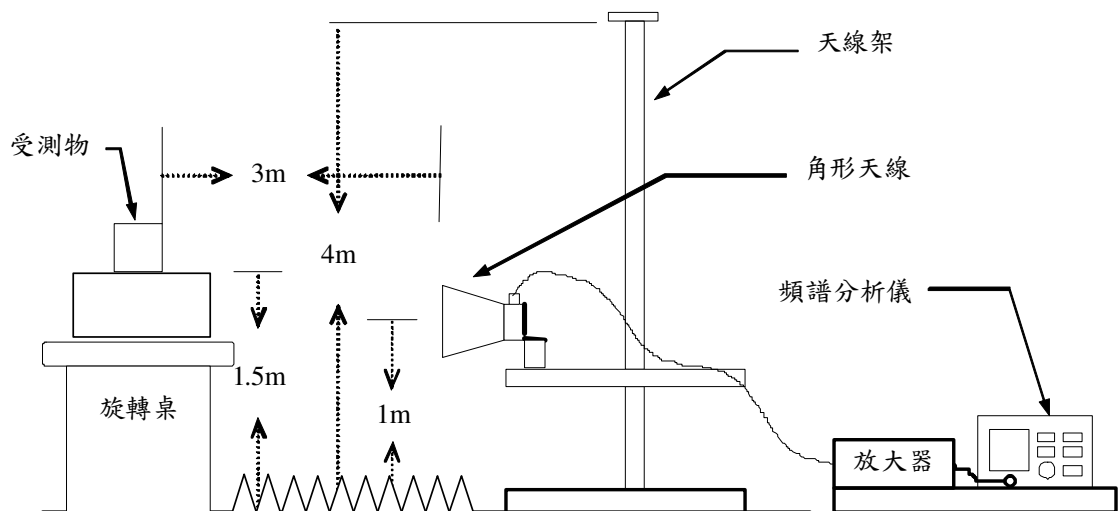


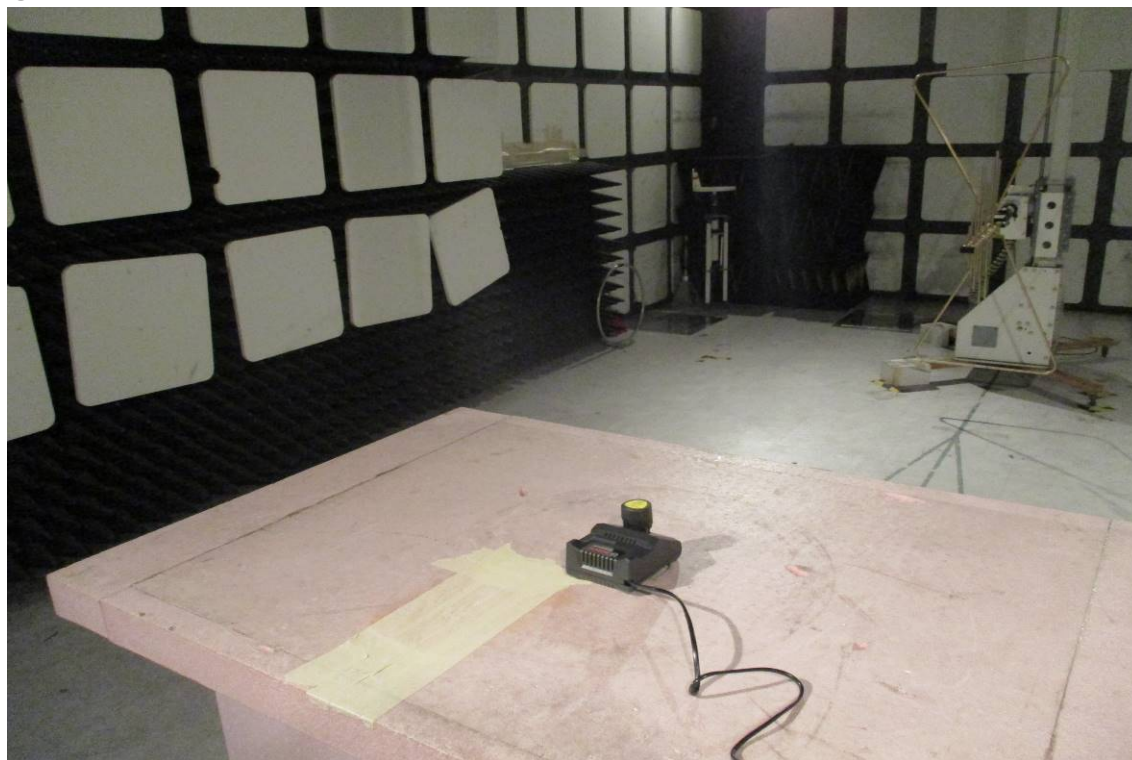
圖 2：量測頻率高於1GHz之測試配置



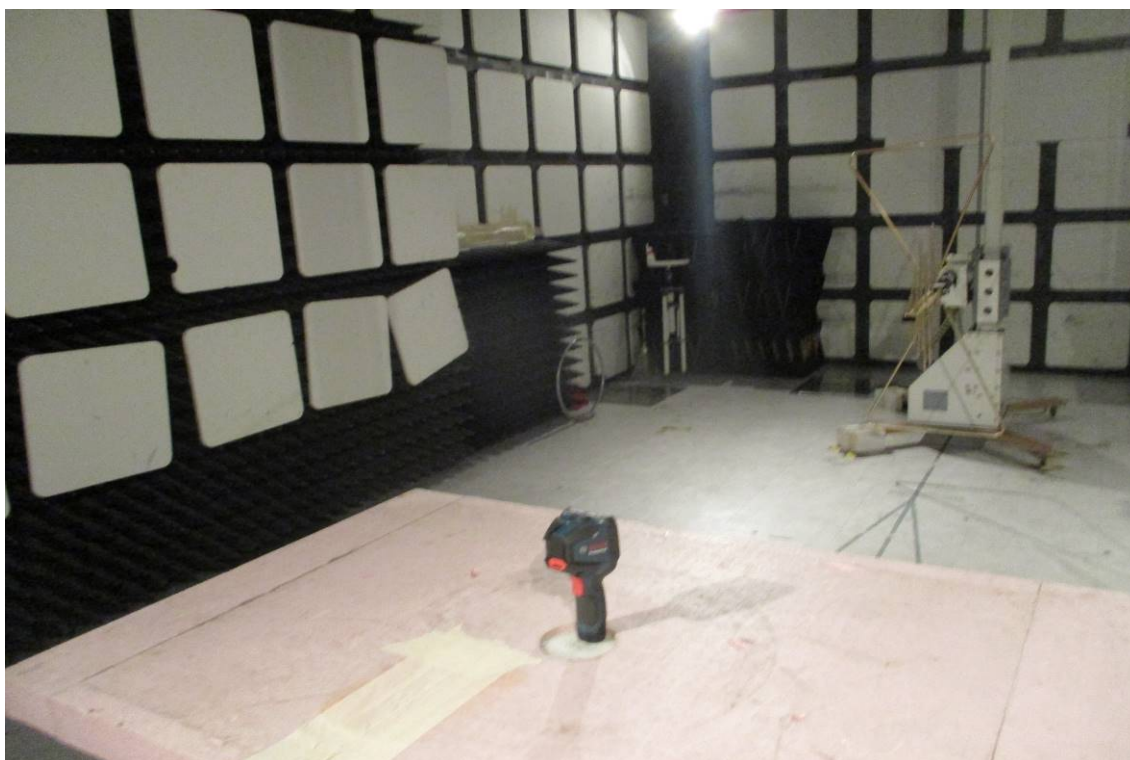
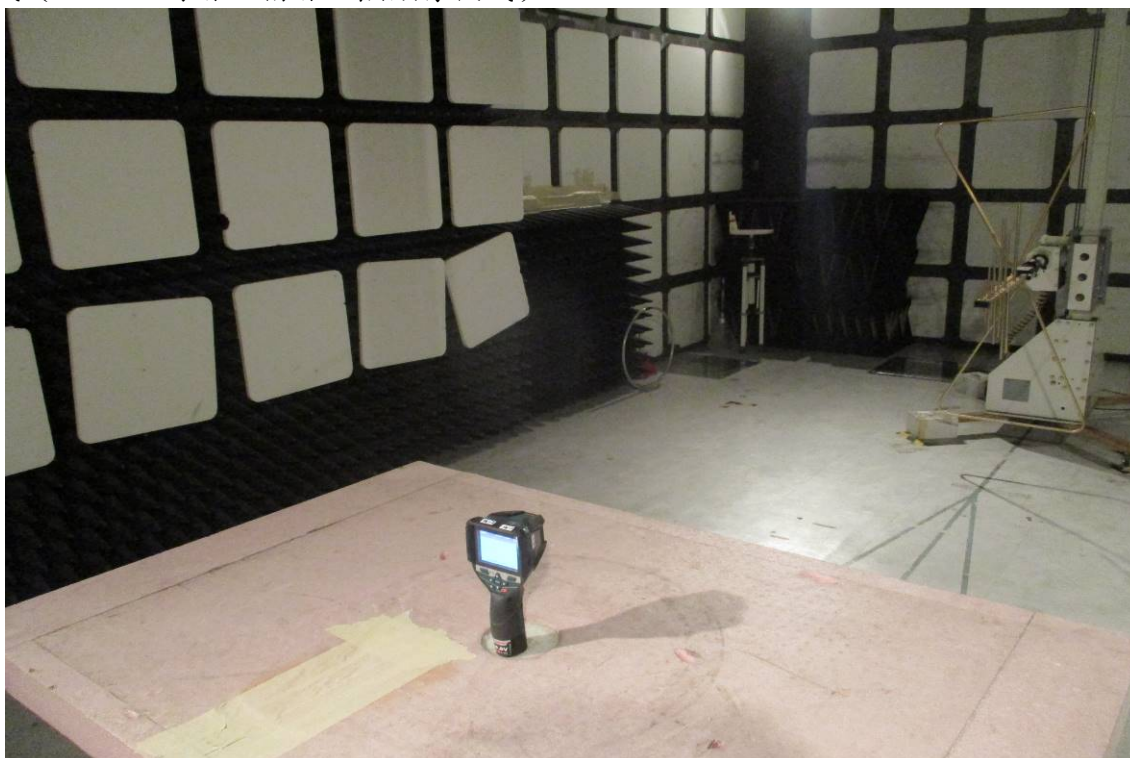
4.7 輻射量測之配置照片

(30MHz to 1GHz)

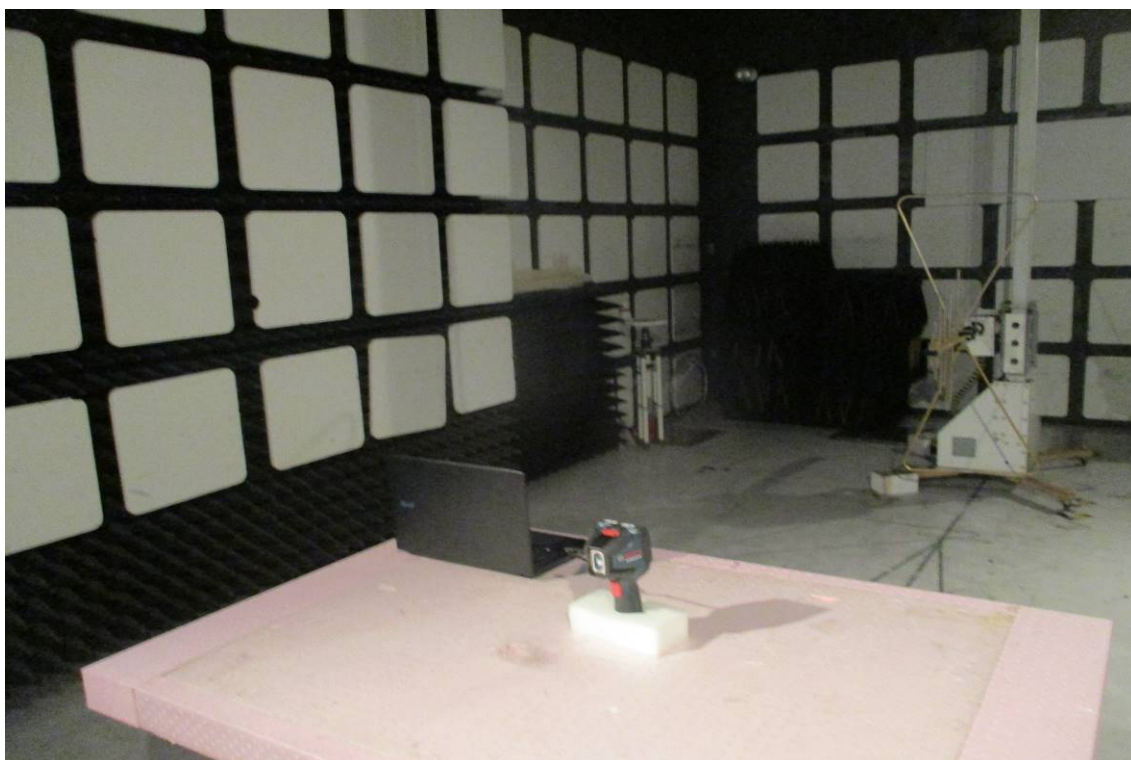
1. 充電



2.單機（WIFI、錄音、播音、熱顯像模式）

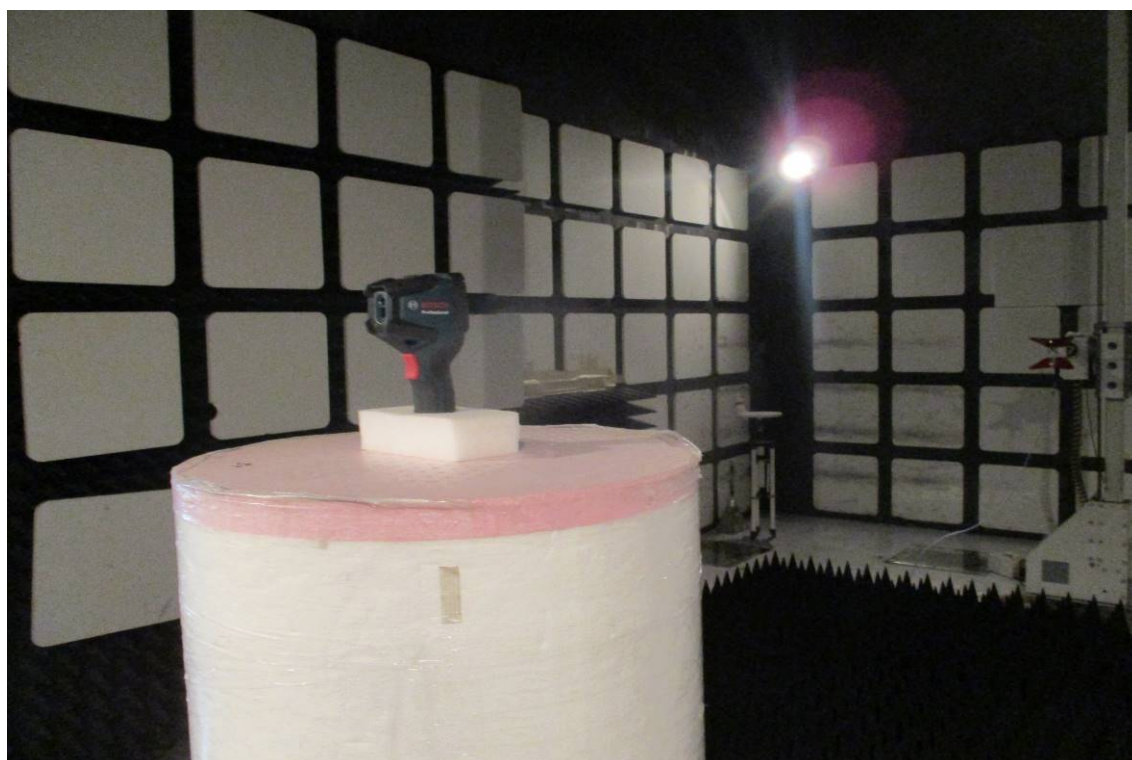
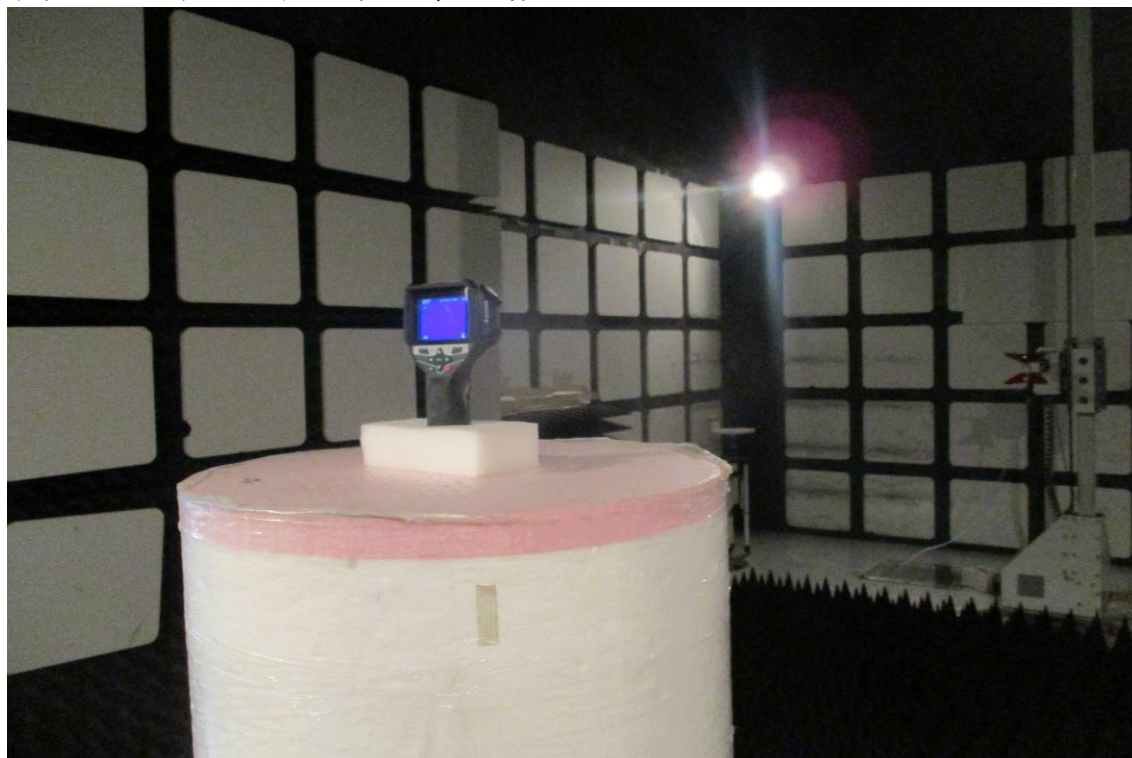


3. 傳輸



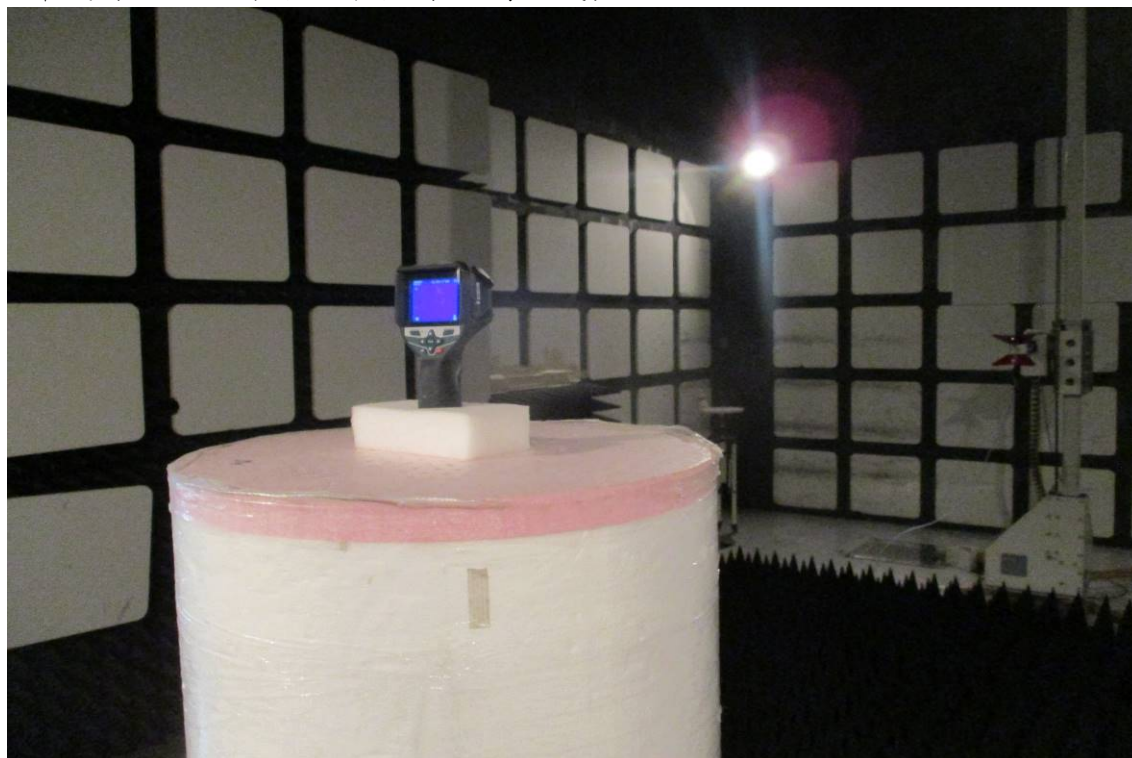
(1GHz to 6GHz)

1 單機 (WIFI、錄音、播音、熱顯像模式)



(6GHz 以上)

1 單機 (WIFT 、錄音、播音、熱顯像模式)



5 電源線傳導干擾之量測

5.1 適用標準

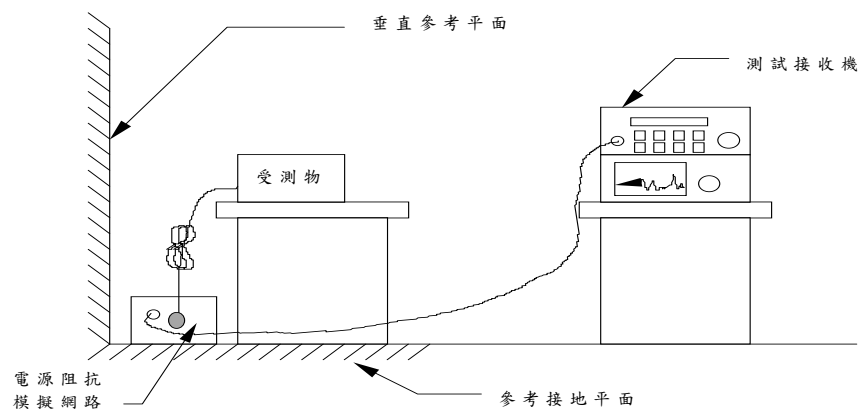
依據低功率射頻器材技術規範3.3節之要求。

5.2 測試方法

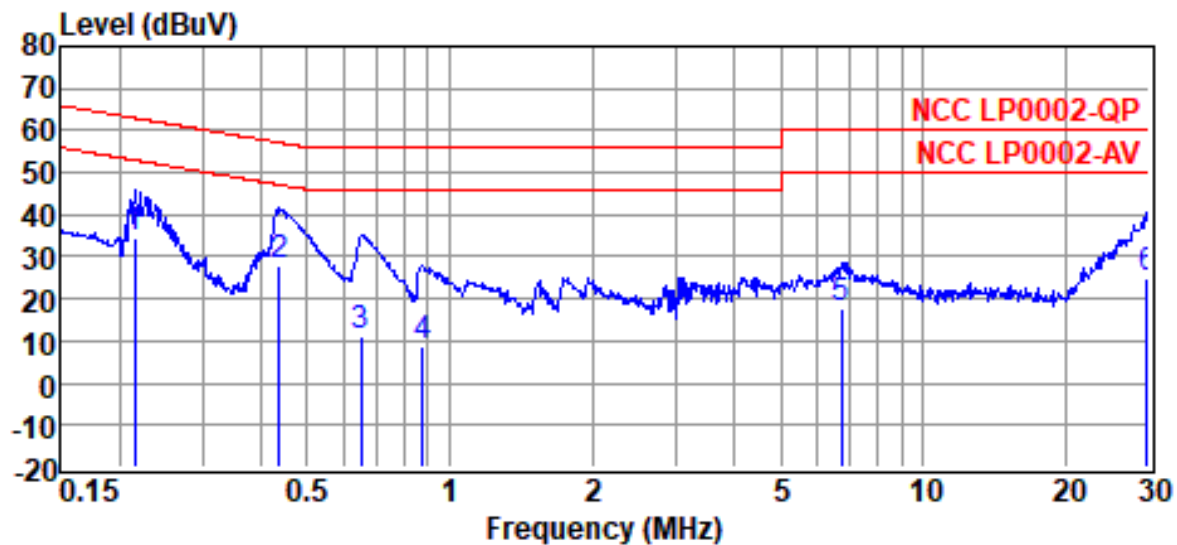
將待測物置於0.8米高的非金屬桌面，使其在工作狀態，待測物電源線接至電源線阻抗穩定網路上，從測試接收機記錄頻率由 0.15MHz 至 30MHz 之間之電源線傳導放射強度。

5.3 測試配置

圖 3：傳導干擾之量測配置



5.4 傳導干擾之量測結果



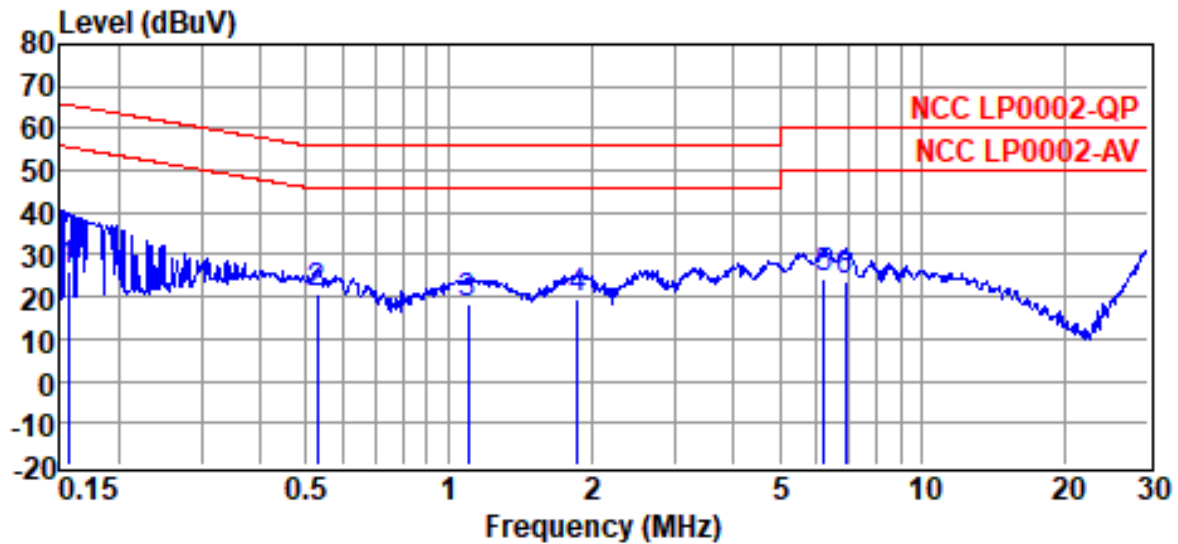
Site : conducted #1
 Condition : NCC LP0002-QP
 Tem / Hum : 22 °C / 65%
 EUT : 熱影像鏡頭
 Engineer : Brian Huang

Date : 2021-05-06
 LISN : NEUTRAL
 Test Mode : Charge Mode
 Power Rating : 110Vac60Hz
 Model : GTC 600 C

	Freq (MHz)	Reading (dBUV)	Factor (dB)	Emission Level (dBUV)	Limit Line (dBUV)	Over Limit (dB)	Remark
*	0.2162	24.21	10.06	34.27	62.96	-28.69	QP
	0.4351	17.63	10.06	27.69	57.15	-29.46	QP
	0.6474	1.26	10.07	11.33	56.00	-44.67	QP
	0.8757	-1.37	10.09	8.72	56.00	-47.28	QP
	6.7330	7.22	10.22	17.44	60.00	-42.56	QP
	29.6840	13.29	11.34	24.63	60.00	-35.37	QP

Note :

1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss+ Pulse Limiter Factor
3. " * " mean this data is the worst emission level



Site : conducted #1
 Condition : NCC LP0002-QP
 Tem / Hum : 22 °C / 65%
 EUT : 熱影像鏡頭
 Engineer : Brian Huang

Date : 2021-05-06
 LISN : LINE
 Test Mode : Charge Mode
 Power Rating : 110Vac60Hz
 Model : GTC 600 C

	Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
	0.1573	15.84	10.07	25.91	65.60	-39.69	QP
*	0.5265	10.90	10.05	20.95	56.00	-35.05	QP
	1.1000	8.29	10.08	18.37	56.00	-37.63	QP
	1.8680	9.40	10.13	19.53	56.00	-36.47	QP
	6.2190	14.16	10.21	24.37	60.00	-35.63	QP
	6.8780	13.80	10.21	24.01	60.00	-35.99	QP

Note :

1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss+ Pulse Limiter Factor
3. " * " mean this data is the worst emission level

5.5 干擾值之計算

電源傳導干擾電壓之計算公式如下

$$\text{結果值} = \text{儀器讀值} + \text{校正因子}$$

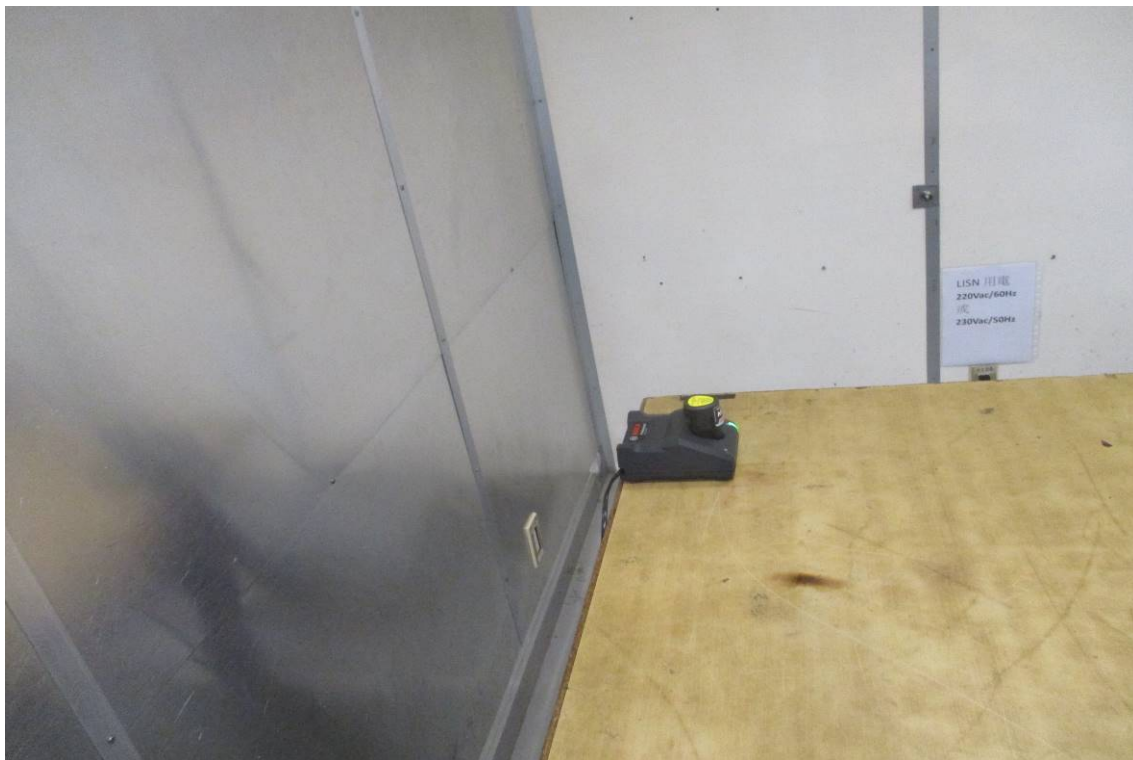
其中校正因子為：

$$\text{饋線損失} + \text{電源阻抗模擬網路損失}$$

5.6 傳導干擾之量測儀器

儀器名稱	製造者	型號	本次校驗日期	下次校驗日期
EMI Test Receiver	Rohde & Schwarz	ESCI (13054412-003)	2020/10/14	2021/10/13
LISN	Schwarzbeck	NSLK 8127 PLC (13057743-001)	2020/12/22	2021/12/21
PLUSE LIMITER (10dB)	Schwarzbeck	VTSD 9561 F-N (13056701-003)	2021/4/29	2022/4/28
LISN	Shibasoku	563 (13044902-001)	2020/11/10	2021/11/9

5.7 傳導量測之配置照片



6 天線增益之要求

6.1 適用標準

低功率發射機，依據低功率射頻器材技術規範4.10.1.3節之規定，操作於2400 MHz～2483.5 MHz 頻段，用於非固定式點對點操作時，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。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。

6.2 天線增益

其天線增益未超過6dBi之規定值，不需降低峰值發射功率以及峰值功率頻譜密度。

Brand (廠牌)	Model Name (型號)	Antenna Type	Gain (dBi)
--	--	固定式 PCB 天線	5

7 Duty Cycle

7.1 Duty Cycle之量測儀器

儀器名稱	製造者	型號	本次校驗日期	下次校驗日期
Spectrum Analyzer	Rohde & Schwarz	FSP40 (13040903-001)	2020/06/30	2021/06/29
Attenuator	MINI-CIRCUITS	BW-S10W2+	2020/10/07	2021/10/06

7.2 Duty Cycle Calculation

Test Data: 2021/5/7 Temp: 25 °C Hum: 65 %

Mode	Period (ms)	Transmission duration (T) (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T (kHz)	VBW setting (kHz)
802.11b	1.44	1.14	79.17	1.01	0.877	1
802.11g	0.97	0.06	6.19	12.09	16.667	30
802.11n20	0.98	0.10	10.20	9.91	10.000	10

NOTE : 1. When Duty Cycle > 98% , Duty Cycle Correction Factor not required (0.00 dB).

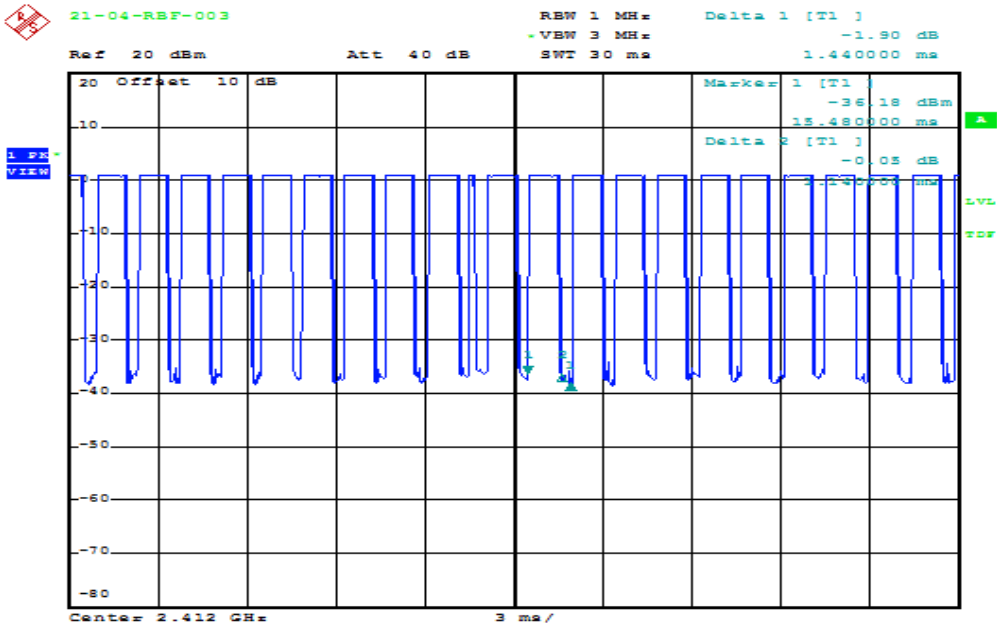
2. When Duty Cycle > 98% , VBW = 10 Hz .

3. When the Duty Cycle is less than 98%, for the average measurement of the radiated emission test, the VBW setting is >1/T where the T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

註：

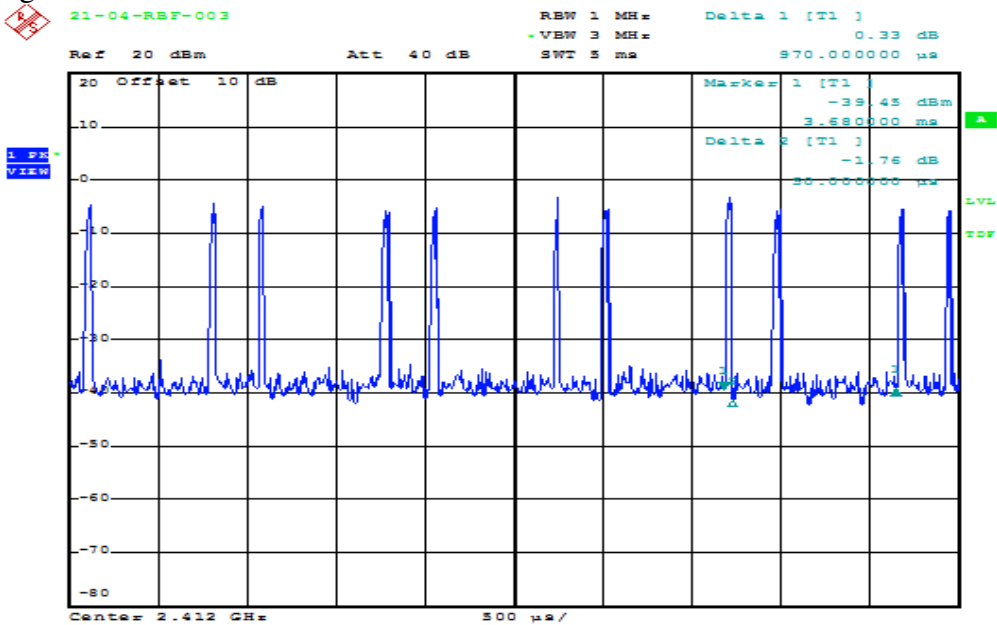
1. 繪圖資料請參考下頁。

802.11b



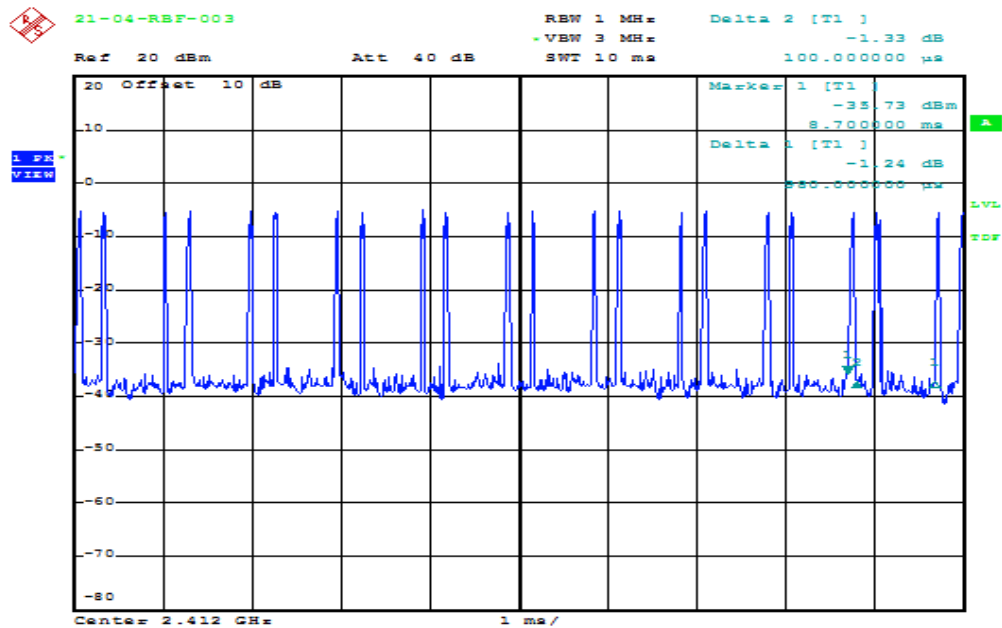
Date: 7.MAY.2021 10:48:16

802.11g



Date: 7.MAY.2021 10:59:21

802.11n20



Date: 7.MAY.2021 11:07:08

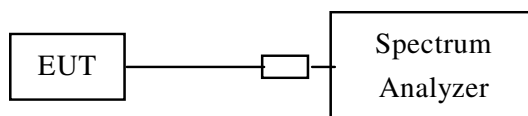
8 發射頻寬之量測

8.1 適用標準

對使用數位調變之低功率發射機，依據低功率射頻器材技術規範4.10.1.6節之(2)(A)規定，6dB之頻寬至少應有500 kHz。

8.2 測試配置

圖四



8.3 發射頻寬之量測儀器

儀器名稱	製造者	型號	本次校驗日期	下次校驗日期
Spectrum Analyzer	Rohde & Schwarz	FSP40 (13040903-001)	2020/06/30	2021/06/29
Attenuator	MINI-CIRCUITS	BW-S10W2+	2020/10/07	2021/10/06

8.4 發射頻寬之量測結果

測試結果 : 合格

測試者 : 黃義傑

Test Data: 2021/5/7 Temp: 25 °C Hum: 65 %

2412-2462MHz

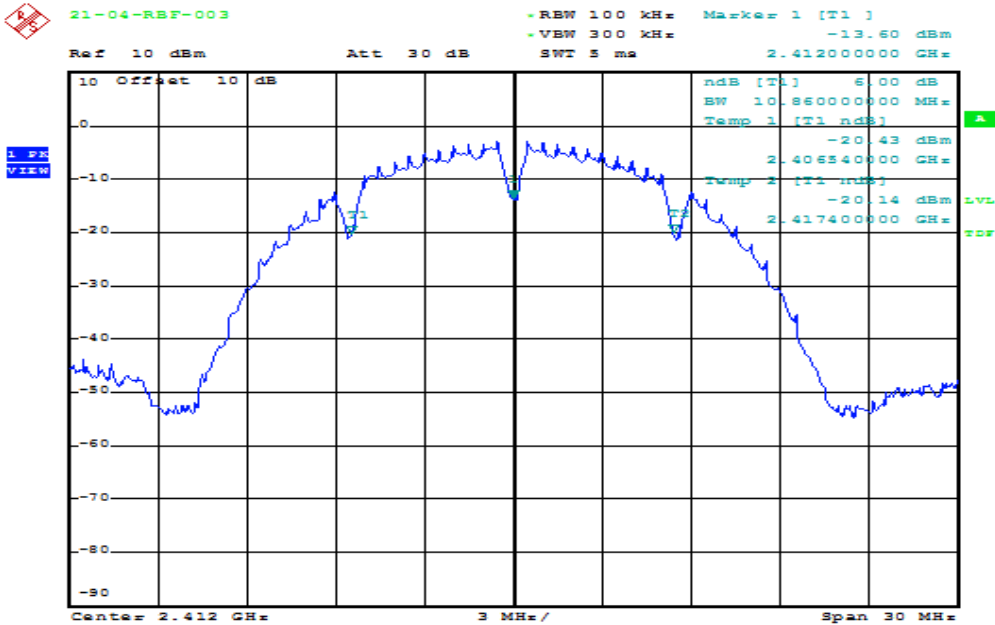
Wireless Standards	Carrier Frequency (MHz)	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)
802.11b	2412	---	10.860	≥ 500
	2437	---	10.800	≥ 500
	2462	---	10.800	≥ 500
802.11g	2412	---	16.800	≥ 500
	2437	---	17.160	≥ 500
	2462	---	17.400	≥ 500
802.11n20	2412	---	18.240	≥ 500
	2437	---	18.060	≥ 500
	2462	---	18.300	≥ 500

Note: Remark "---" Means not applicable for this device.

註：

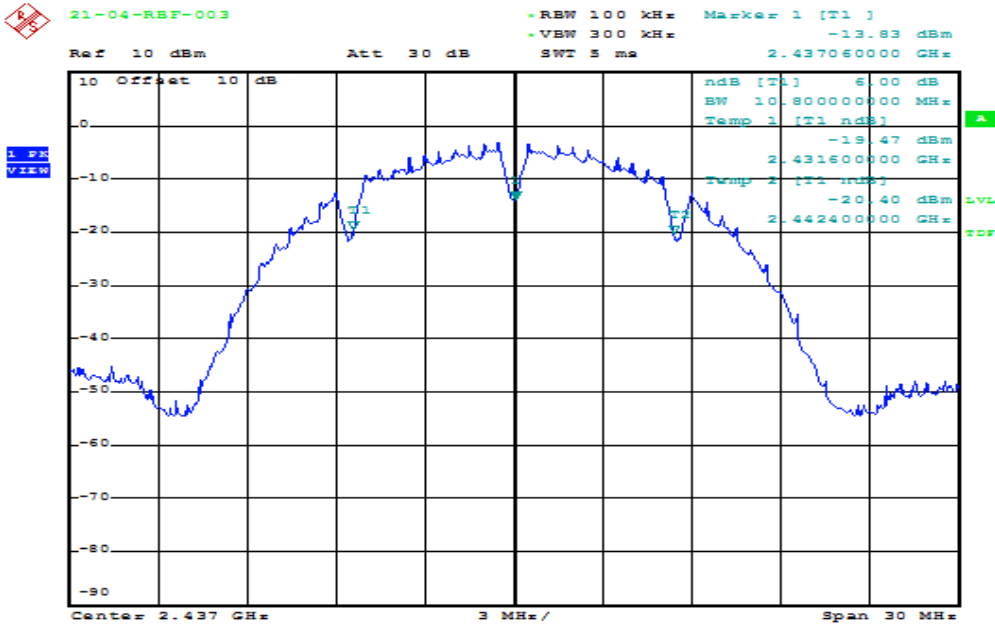
1. 繪圖資料請參考下頁。

Mode: 802.11b/ Channel Low



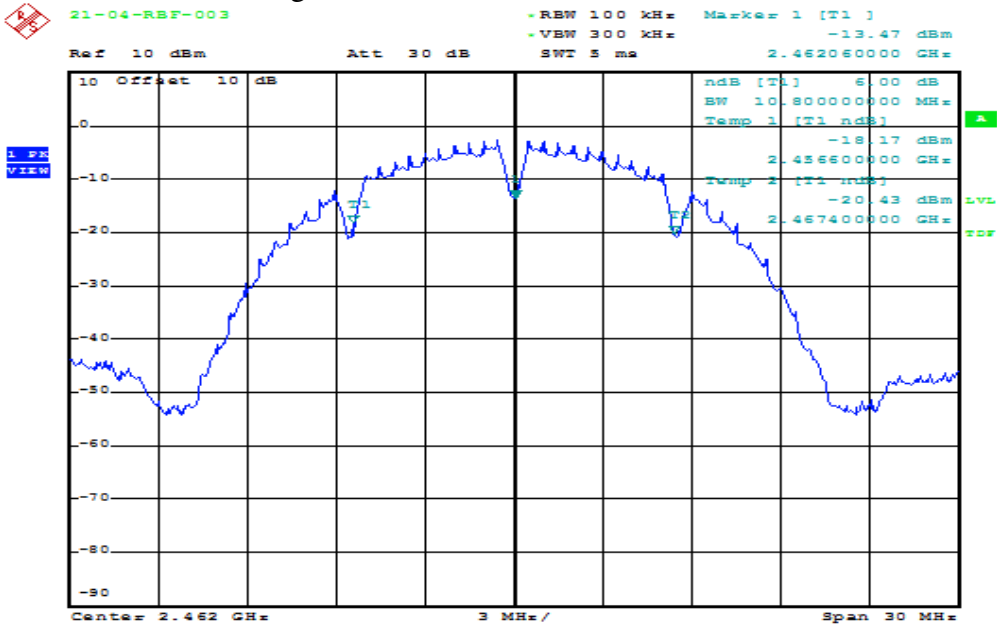
Date: 7.MAY.2021 10:48:43

Mode: 802.11b/ Channel Middle



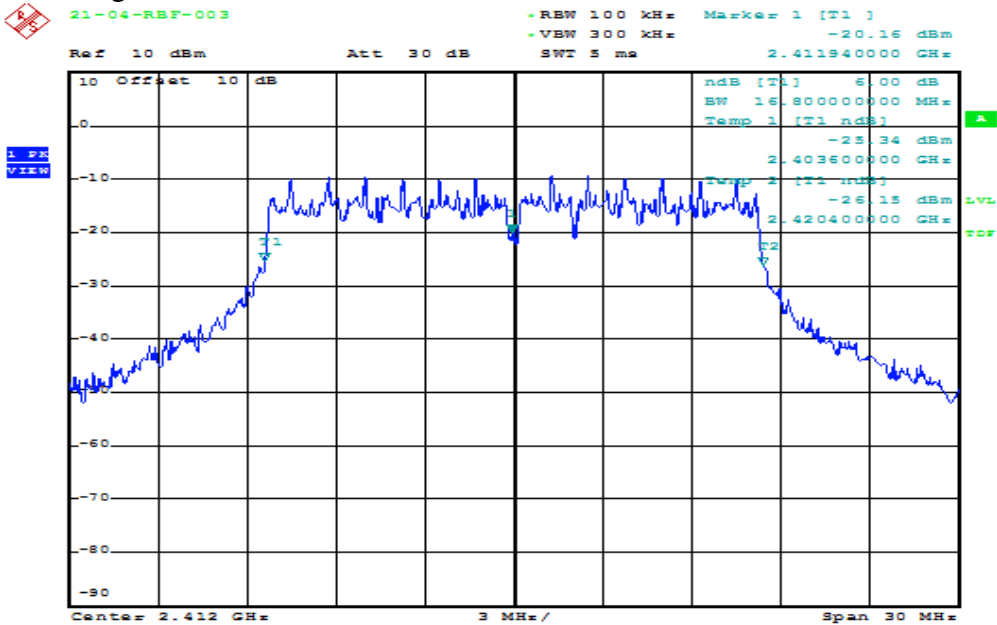
Date: 7.MAY.2021 10:51:08

Mode: 802.11b/ Channel High



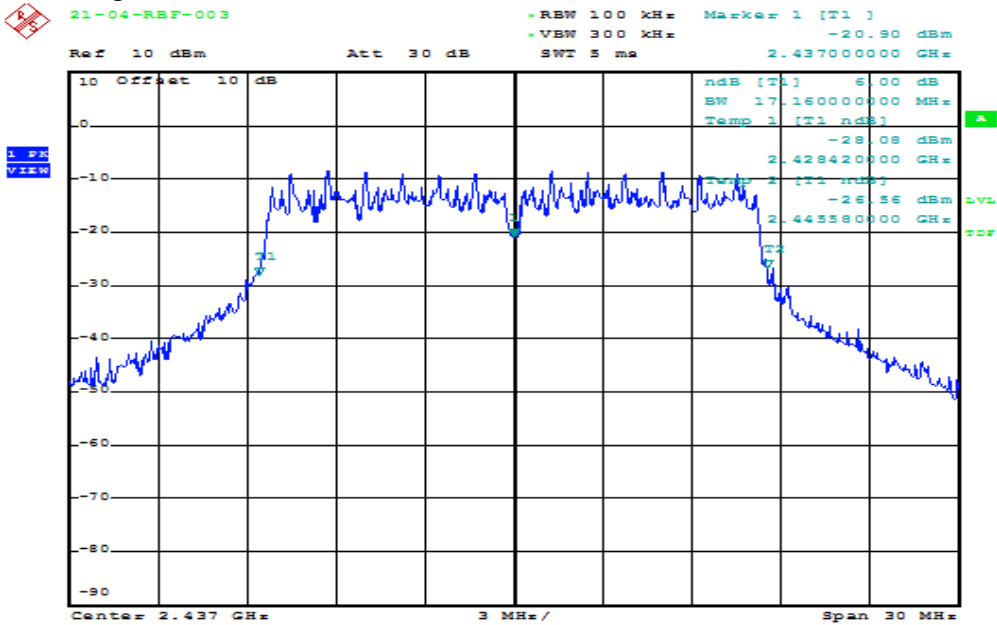
Date: 7.MAY.2021 10:54:29

Mode: 802.11g/ Channel Low



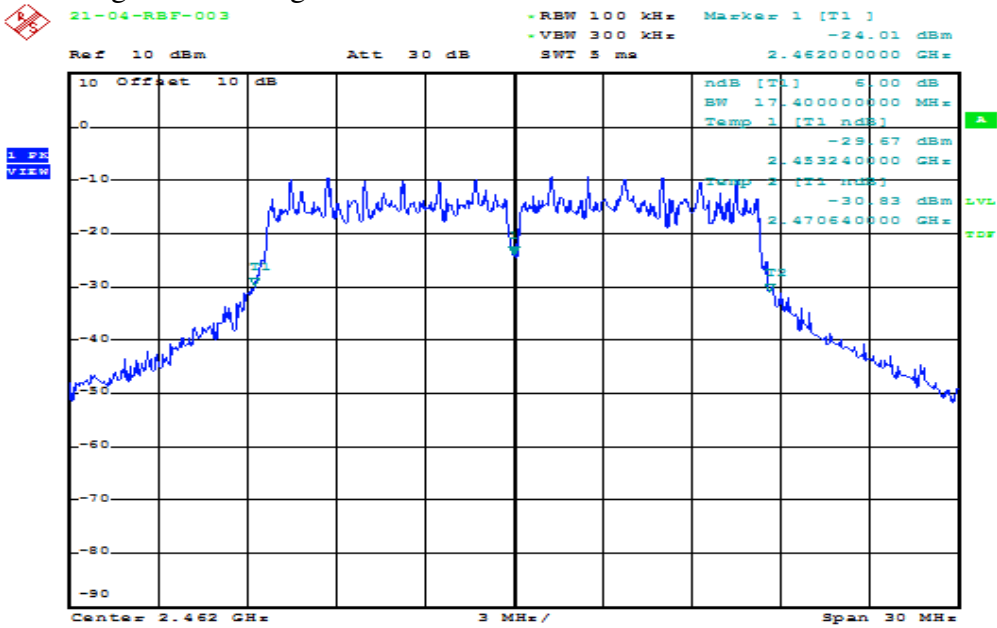
Date: 7.MAY.2021 10:59:45

Mode: 802.11g/ Channel Middle



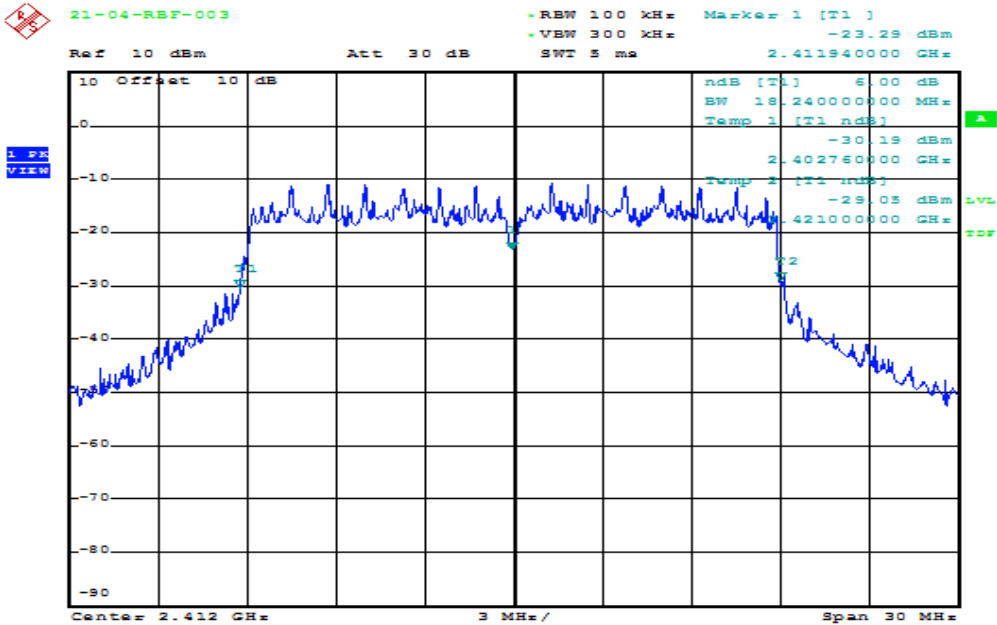
Date: 7.MAY.2021 11:02:06

Mode: 802.11g/ Channel High



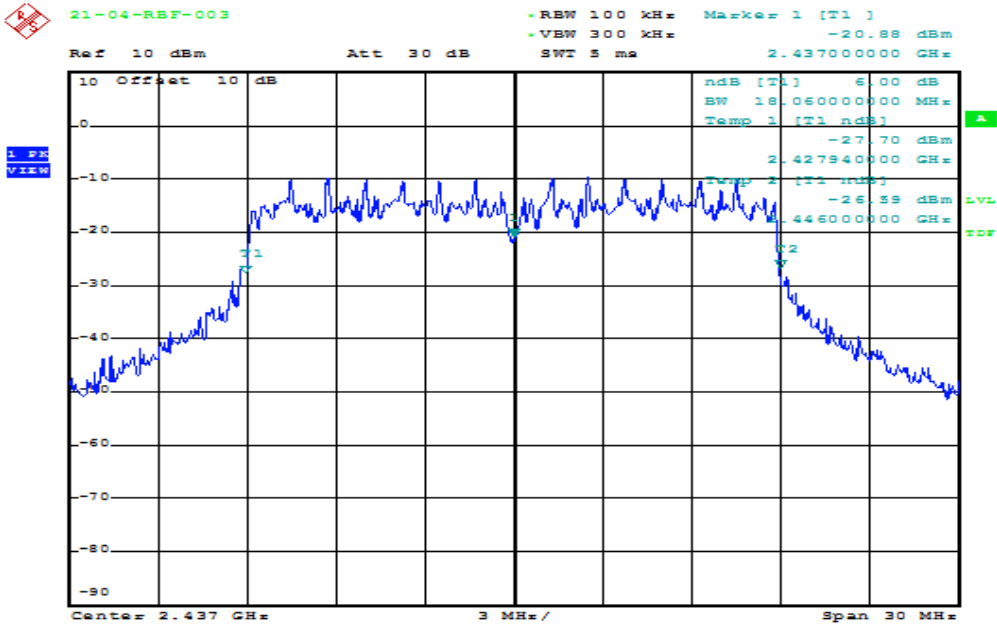
Date: 7.MAY.2021 11:04:11

Mode: 802.11n20/ Channel Low



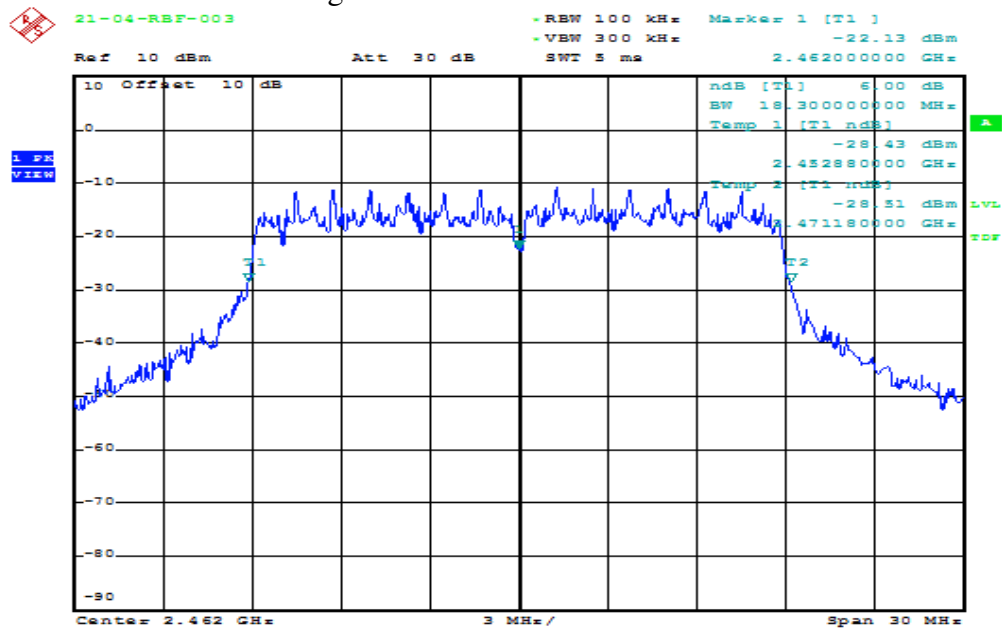
Date: 7.MAY.2021 11:07:28

Mode: 802.11n20/ Channel Middle



Date: 7.MAY.2021 11:09:49

Mode: 802.11n20/ Channel High



Date: 7.MAY.2021 11:11:57

9 峰值傳導輸出功率之量測

9.1 適用標準

依據低功率射頻器材技術規範4.10.1.2節(1)(C)之規定，操作於2400-2483.5MHz之所有數位調變技術系統：1瓦(W)(含)以下。

9.2 輸出功率之測試配置

如圖4所示

9.3 輸出功率之量測儀器

儀器名稱	製造者	型號	本次校驗日期	下次校驗日期
Spectrum Analyzer	Rohde & Schwarz	FSP40 (13040903-001)	2020/06/30	2021/06/29
Attenuator	MINI-CIRCUITS	BW-S10W2+	2020/10/07	2021/10/06

9.4 輸出功率之量測結果

測試結果 : 合格

測試者 : 黃義傑

Test Data: 2021/5/7 Temp: 25 °C Hum: 65 %

2412-2462MHz

Wireless Standards	Carrier Frequency (MHz)	Antenna Gain (dBi)	Output Power (dBm)	Output Power (mW)	Limit (dBm)
802.11b	2412	5.00	9.62	9.162	30
	2437	5.00	9.20	8.318	30
	2462	5.00	9.67	9.268	30
802.11g	2412	5.00	8.19	6.592	30
	2437	5.00	9.45	8.810	30
	2462	5.00	8.39	6.902	30
802.11n20	2412	5.00	6.83	4.819	30
	2437	5.00	8.00	6.310	30
	2462	5.00	6.89	4.887	30

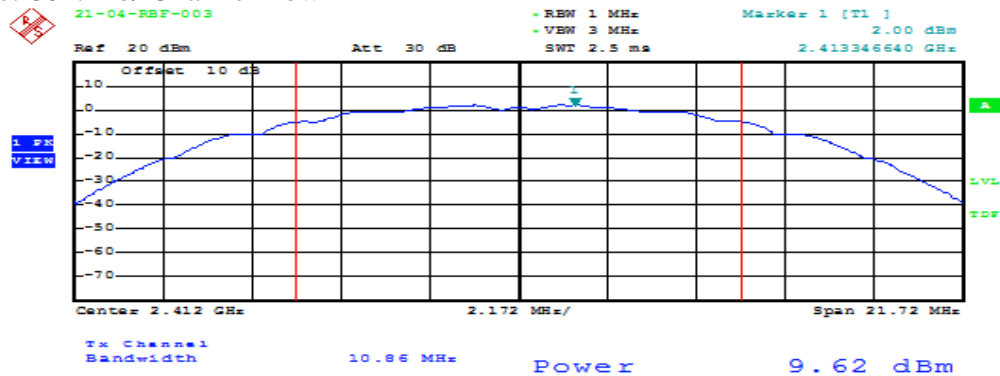
NOTE :1. Remark "---" Means not applicable for this device.

2. transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

註：

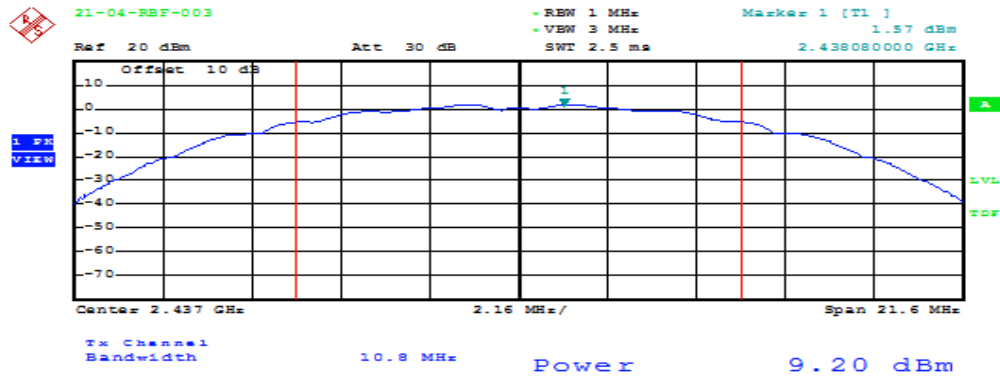
1. 繪圖資料請參考下頁。

Mode: 802.11b/ Channel Low



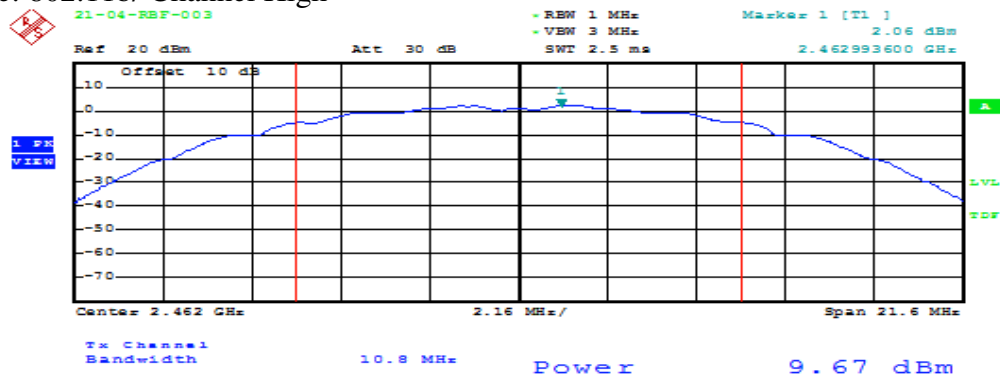
Date: 7.MAY.2021 10:49:13

Mode: 802.11b/ Channel Middle



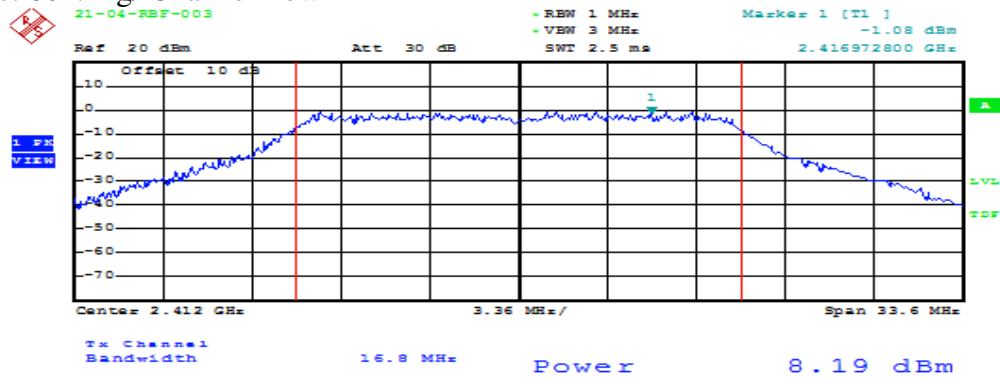
Date: 7.MAY.2021 10:51:42

Mode: 802.11b/ Channel High



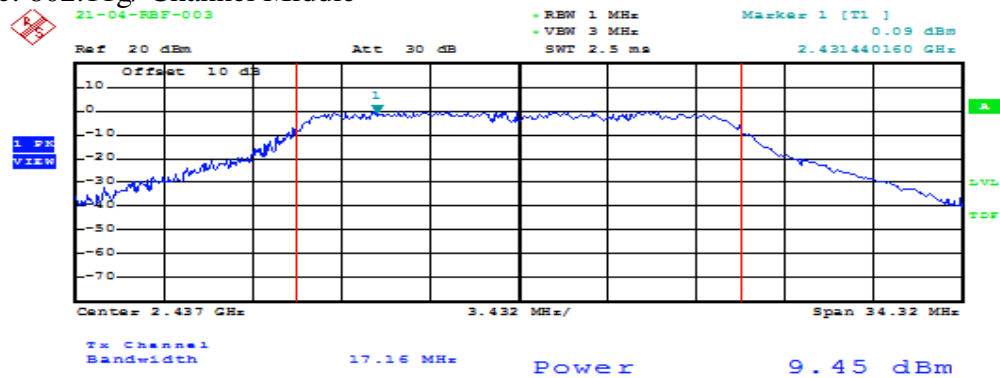
Date: 7.MAY.2021 10:54:55

Mode: 802.11g/ Channel Low



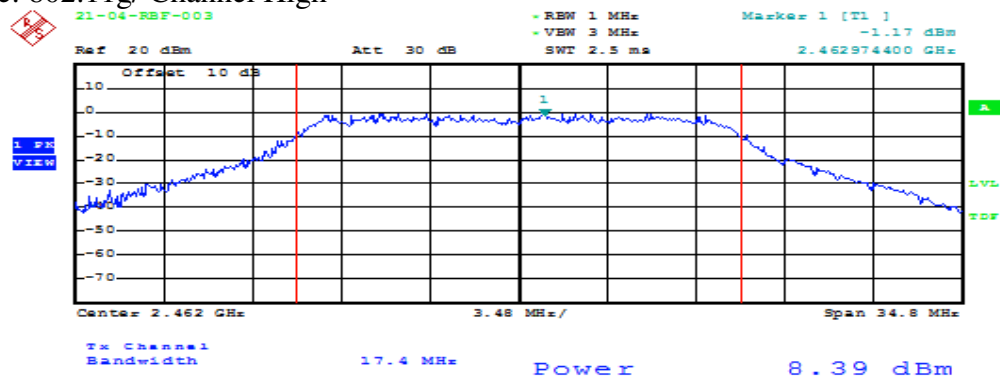
Date: 7.MAY.2021 11:00:13

Mode: 802.11g/ Channel Middle



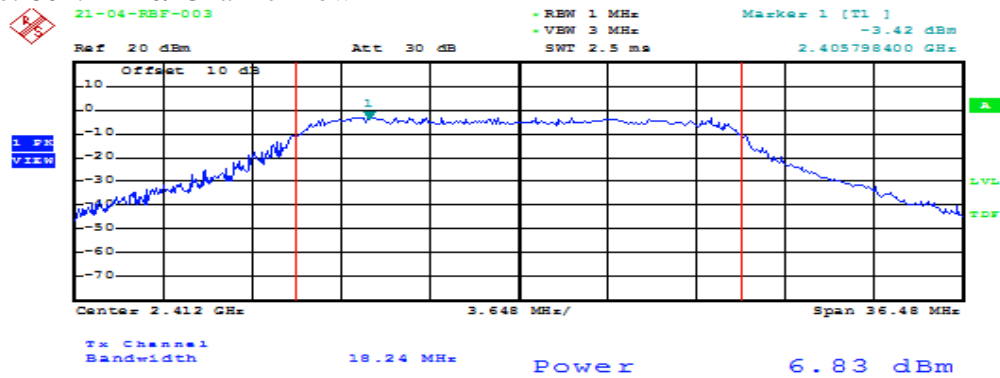
Date: 7.MAY.2021 11:02:33

Mode: 802.11g/ Channel High



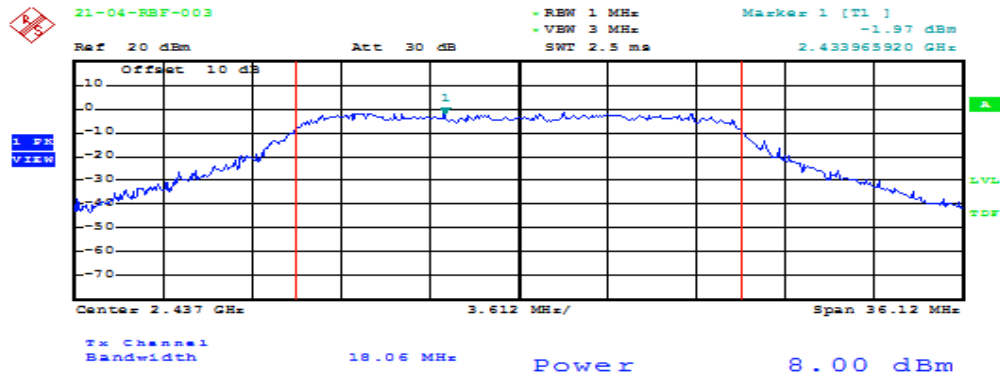
Date: 7.MAY.2021 11:04:37

Mode: 802.11n20/ Channel Low



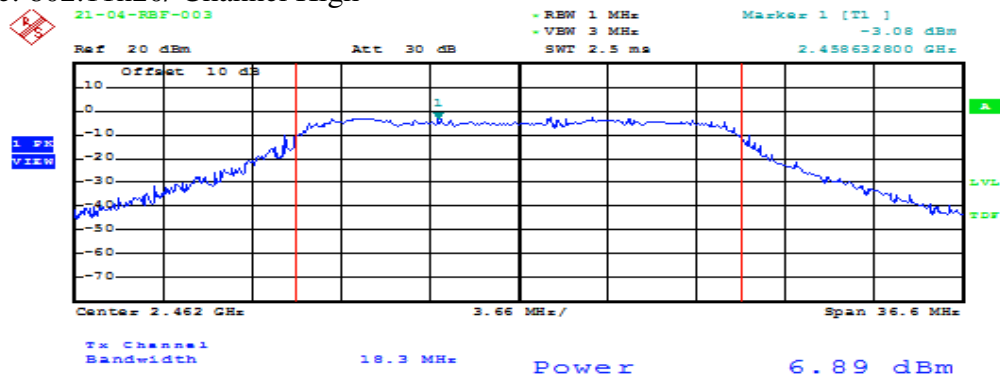
Date: 7.MAY.2021 11:07:57

Mode: 802.11n20/ Channel Middle



Date: 7.MAY.2021 11:10:18

Mode: 802.11n20/ Channel High



Date: 7.MAY.2021 11:12:25

10 開放頻帶邊緣 100 kHz 頻寬內之量測

10.1 適用標準

依據低功率射頻器材技術規範4.10.1.5節之規定，帶外發射限制：操作頻帶範圍外之任意100 kHz 內，發射機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，其衰減值限制如下：

- (1) 輸出功率以附件二之峰值輸出功率方式測量者，至少須衰減20 dB，可使用射頻傳導或輻射方式測量。
- (2) 輸出功率以4.10.1.2節(1)(C)之最大傳導輸出功率測量方式者，至少須衰減30 dB。

此外，落於3.5 禁用頻段之輻射發射，應符合3.6 之規定。

10.2 開放頻帶邊緣之測試配置

如圖四所示。

10.3 量測開放頻帶邊緣之儀器

儀器名稱	製造者	型號	本次校驗日期	下次校驗日期
Spectrum Analyzer	Rohde & Schwarz	FSP40 (13040903-001)	2020/06/30	2021/06/29
Attenuator	MINI-CIRCUITS	BW-S10W2+	2020/10/07	2021/10/06

10.4 開放頻帶邊緣之量測結果

Test Data: 2021/5/7 Temp: 25 °C Hum: 65 %
 測試結果 : 合格 測試者 : 黃義傑
 (詳如下頁說明)

A. 801.11b

- a) 下邊緣：於使用頻帶範圍下邊緣外之任意100千赫 (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100千赫 (kHz)內的射頻功率，衰減20分貝(dB)以上，符合規定。
- b) 上邊緣：於使用頻帶範圍上邊緣外之任意100千赫 (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100千赫 (kHz)內的射頻功率，衰減20分貝(dB)以上，符合規定。

B. 801.11g

- a) 下邊緣：於使用頻帶範圍下邊緣外之任意100千赫 (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100千赫 (kHz)內的射頻功率，衰減20分貝(dB)以上，符合規定。
- b) 上邊緣：於使用頻帶範圍上邊緣外之任意100千赫 (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100千赫 (kHz)內的射頻功率，衰減20分貝(dB)以上，符合規定。

C. 802.11n20

- a) 下邊緣：於使用頻帶範圍下邊緣外之任意100千赫 (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100千赫 (kHz)內的射頻功率，衰減20分貝(dB)以上，符合規定。
- b) 上邊緣：於使用頻帶範圍上邊緣外之任意100千赫 (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100千赫 (kHz)內的射頻功率，衰減20分貝(dB)以上，符合規定。

D. 802.11n20

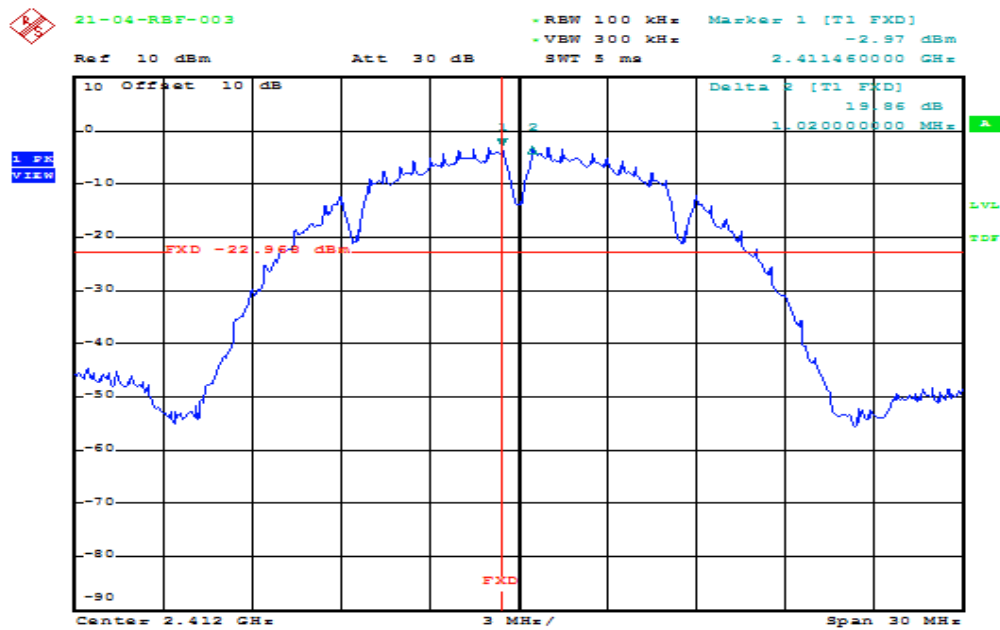
- a) 下邊緣：於使用頻帶範圍下邊緣外之任意100千赫 (kHz)內，發射器所產生的射頻功率相較於使用頻帶範圍中包含最高所需功率之100千赫 (kHz)內的射頻功率，衰減20分貝(dB)以上，符合規定。
- b) 上邊緣：於使用頻帶範圍上邊緣外之任意100千赫 (kHz)內，發射器所產生的射頻功率相較於使用頻帶範圍中包含最高所需功率之100千赫 (kHz)內的射頻功率，衰減20分貝(dB)以上，符合規定。

註：

1. 繪圖資料請參考下頁。

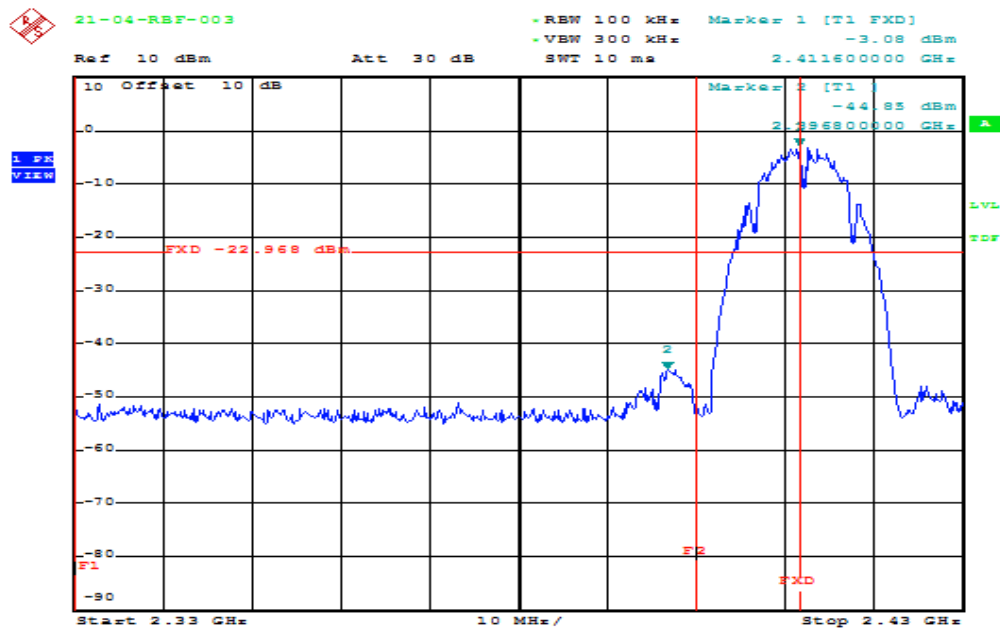
Mode: 802.11b/ Channel Low

100kHz PSD Reference Level



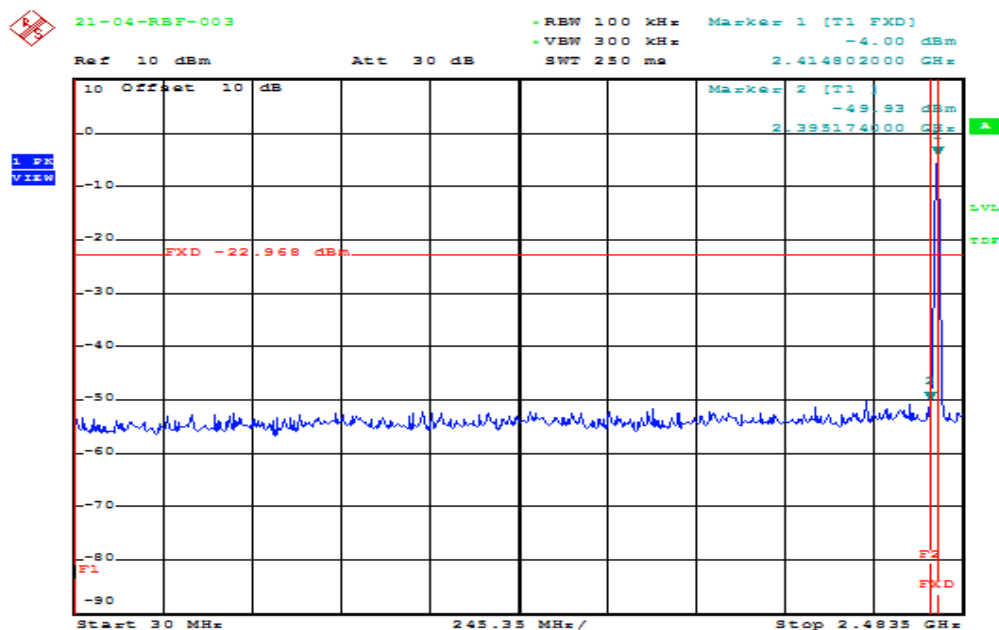
Date: 7.MAY.2021 10:49:45

Channel Plot



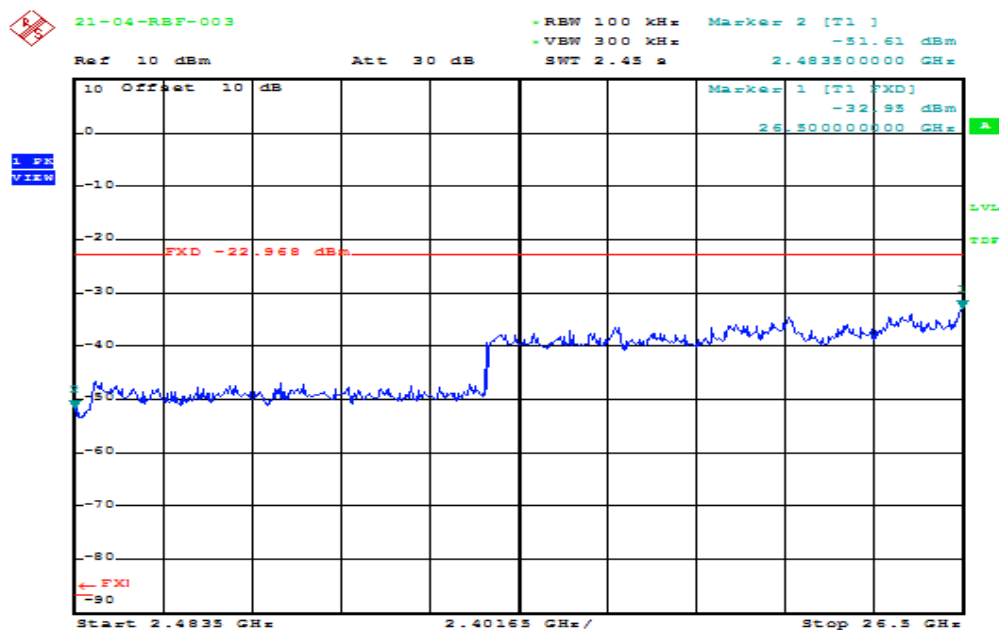
Date: 7.MAY.2021 10:49:56

Spurious Emission 30MHz~2483.5MHz (OUT)



Date: 7.MAY.2021 10:50:09

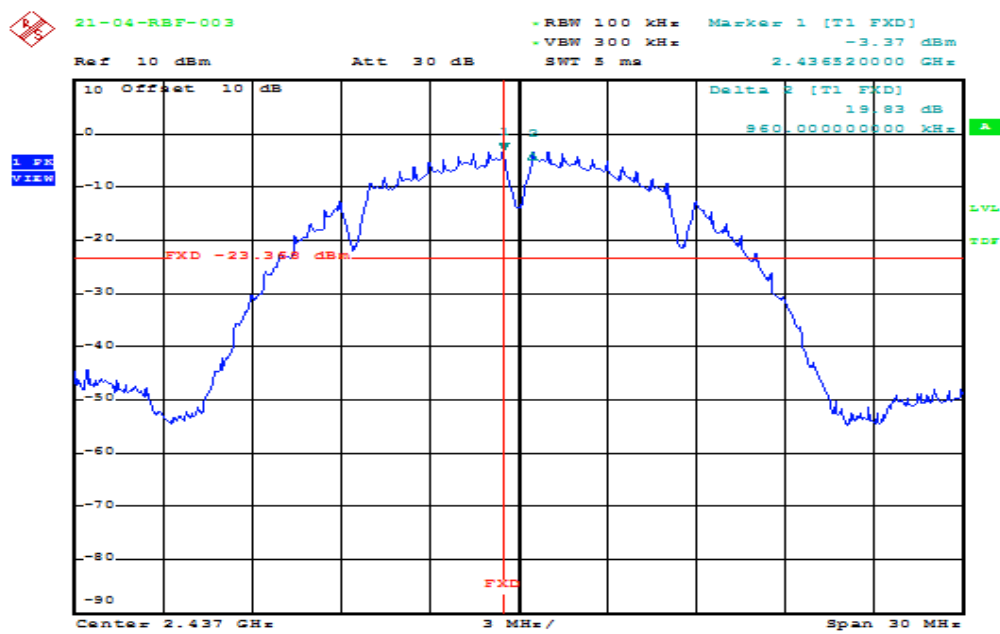
Spurious Emission 2483.5MHz~26.5GHz (OUT)



Date: 7.MAY.2021 10:50:28

Mode: 802.11b/ Channel Middle

100kHz PSD Reference Level

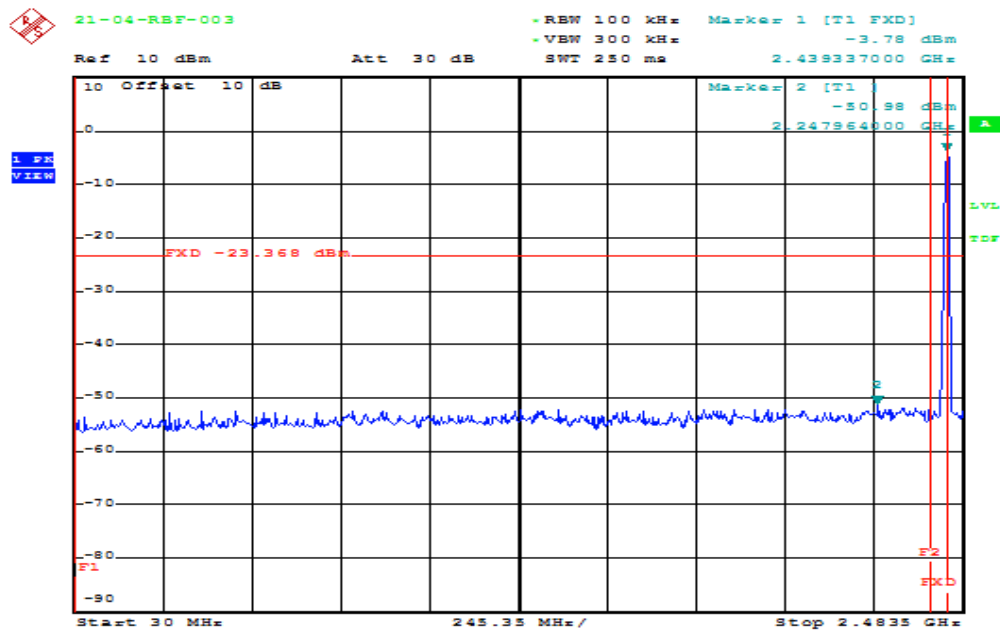


Date: 7.MAY.2021 10:52:17

Channel Plot

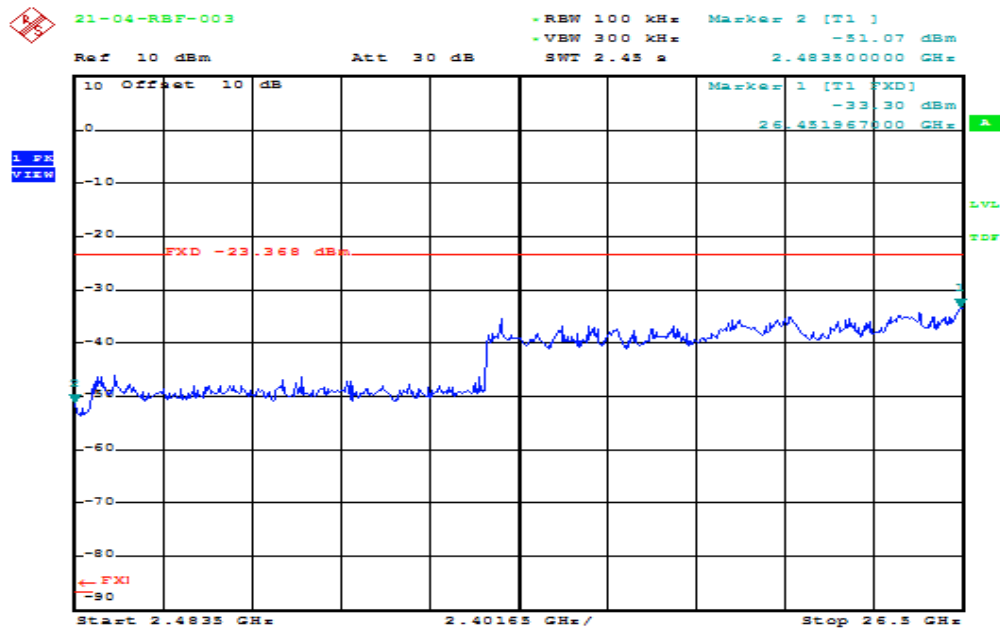
不適用

Spurious Emission 30MHz~2483.5MHz (OUT)



Date: 7.MAY.2021 10:52:33

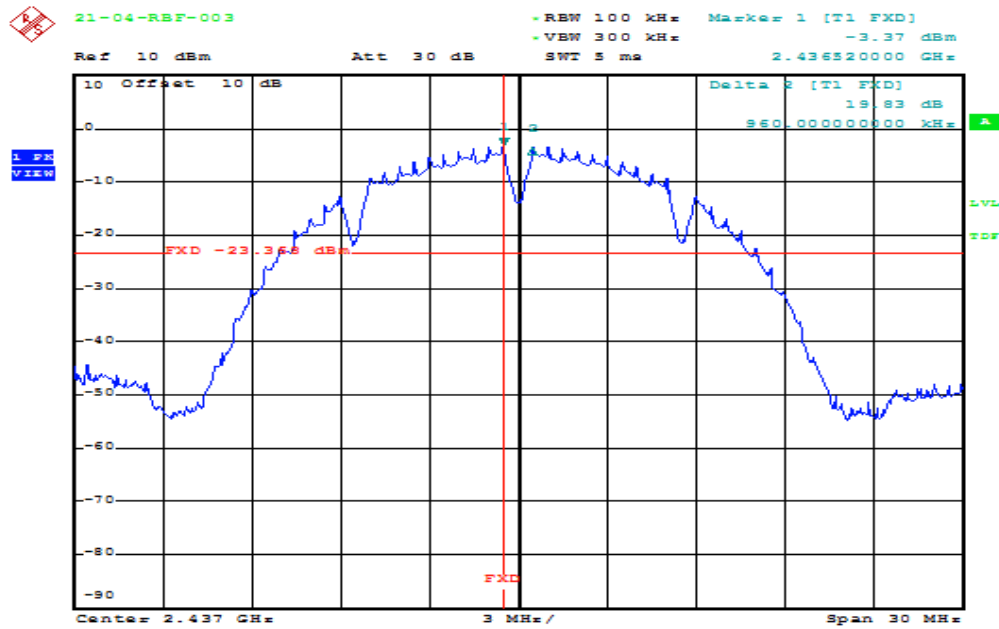
Spurious Emission 2483.5MHz~26.5GHz (OUT)



Date: 7.MAY.2021 10:52:51

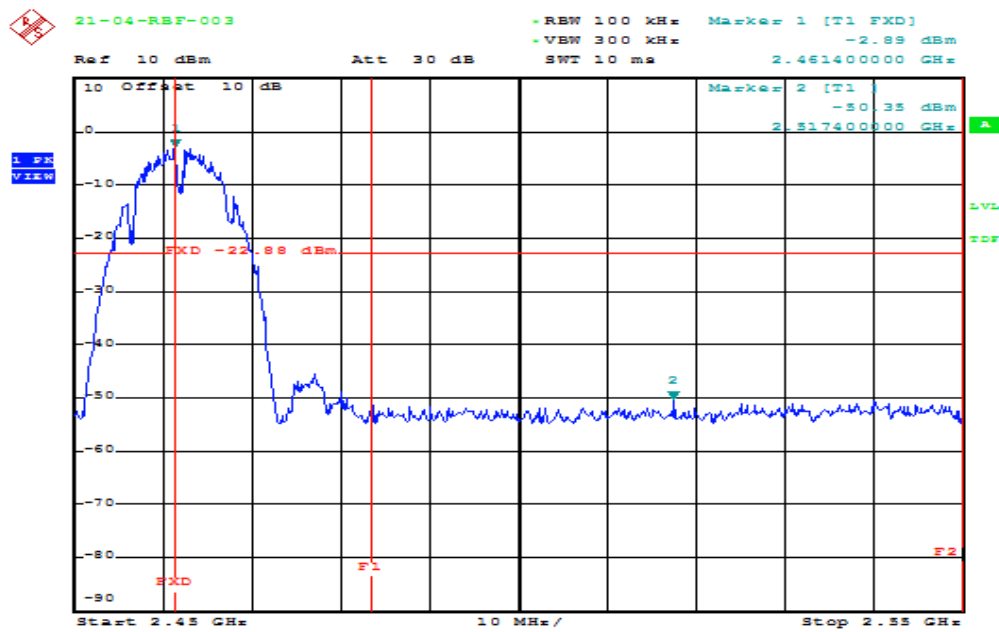
Mode: 802.11b/ Channel High

100kHz PSD Reference Level



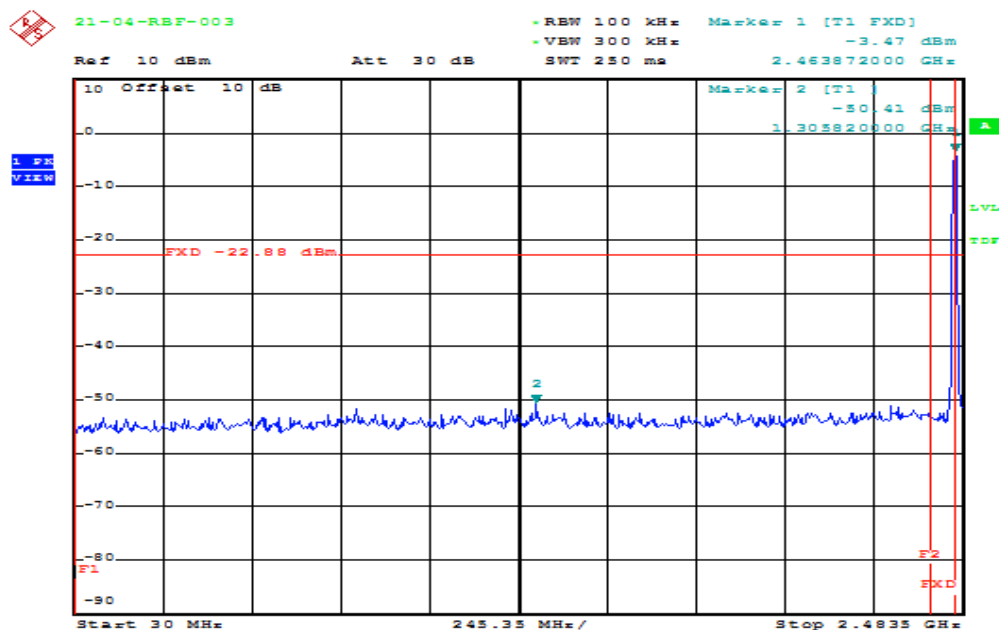
Date: 7.MAY.2021 10:52:17

Channel Plot



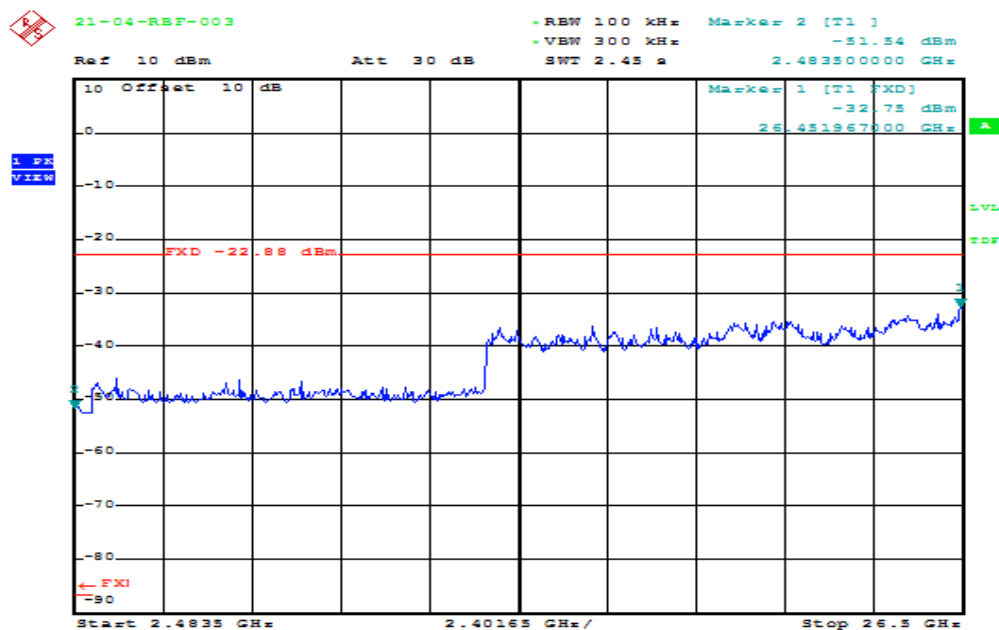
Date: 7.MAY.2021 10:55:42

Spurious Emission 30MHz~2483.5MHz (OUT)



Date: 7.MAY.2021 10:55:54

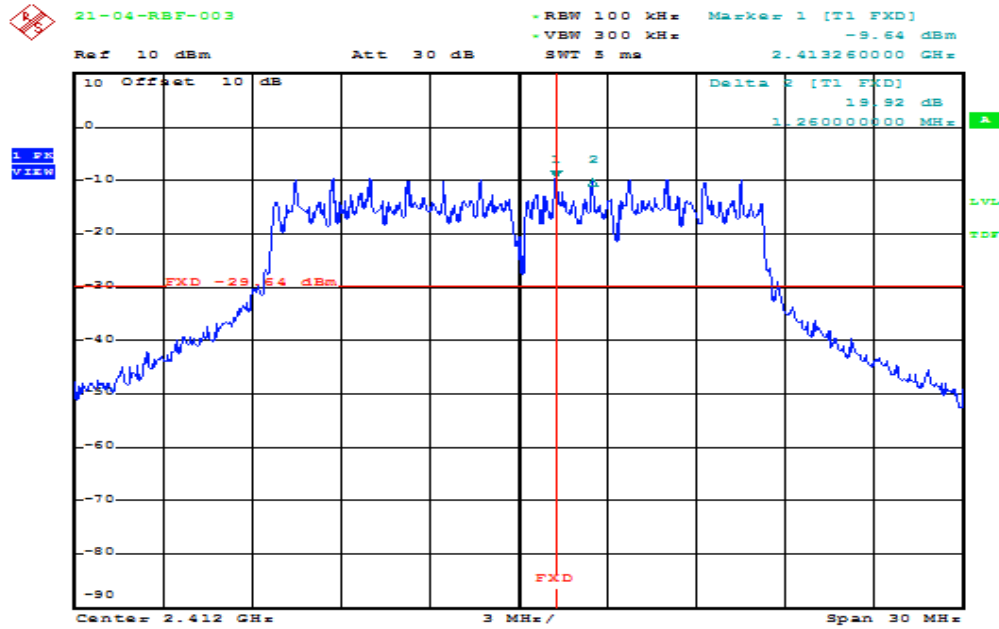
Spurious Emission 2483.5MHz~26.5GHz (OUT)



Date: 7.MAY.2021 10:56:13

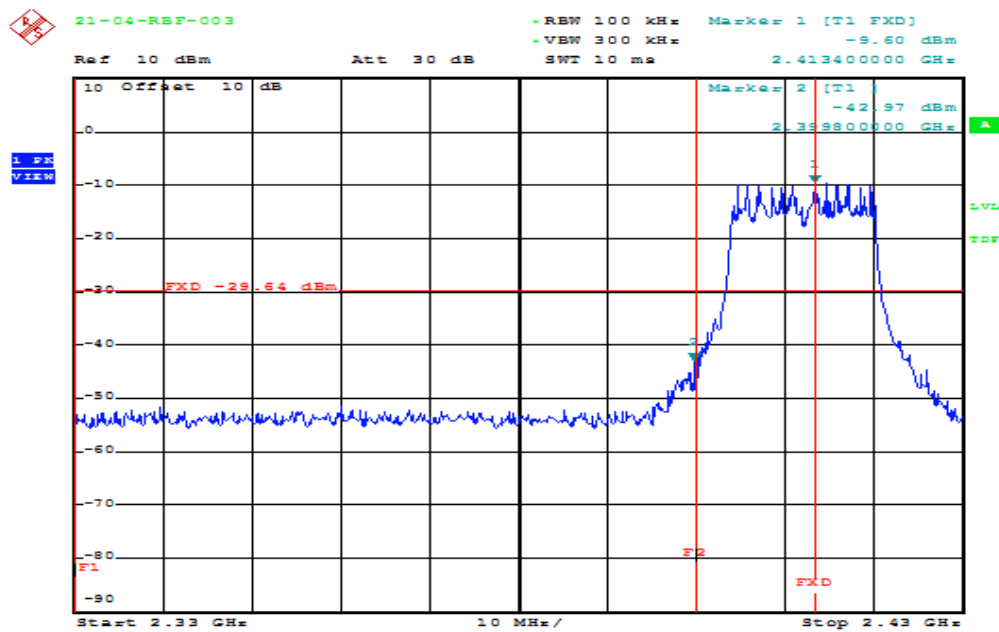
Mode: 802.11g/ Channel Low

100kHz PSD Reference Level



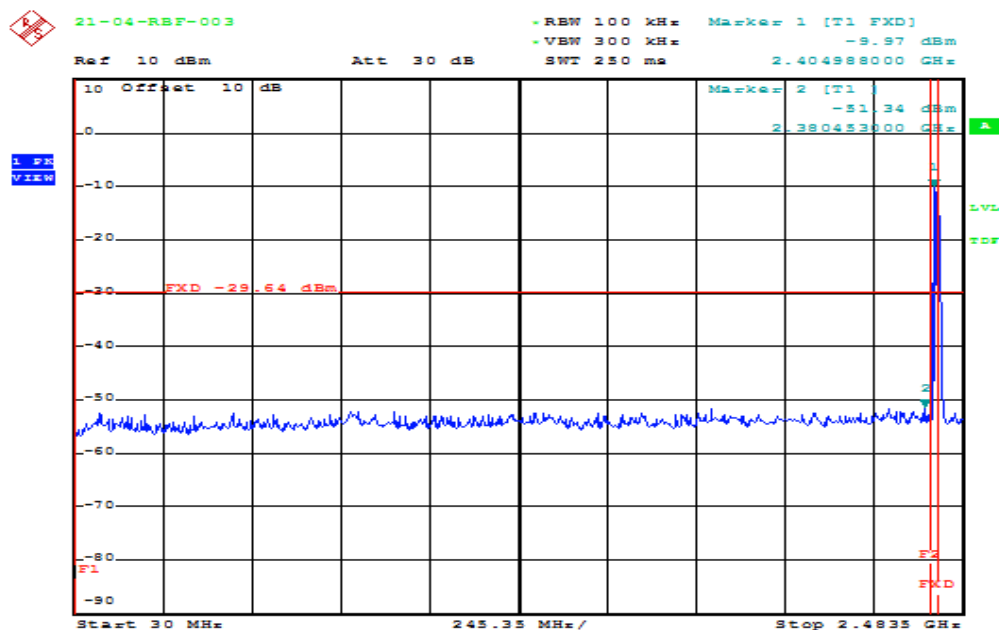
Date: 7.MAY.2021 11:00:50

Channel Plot



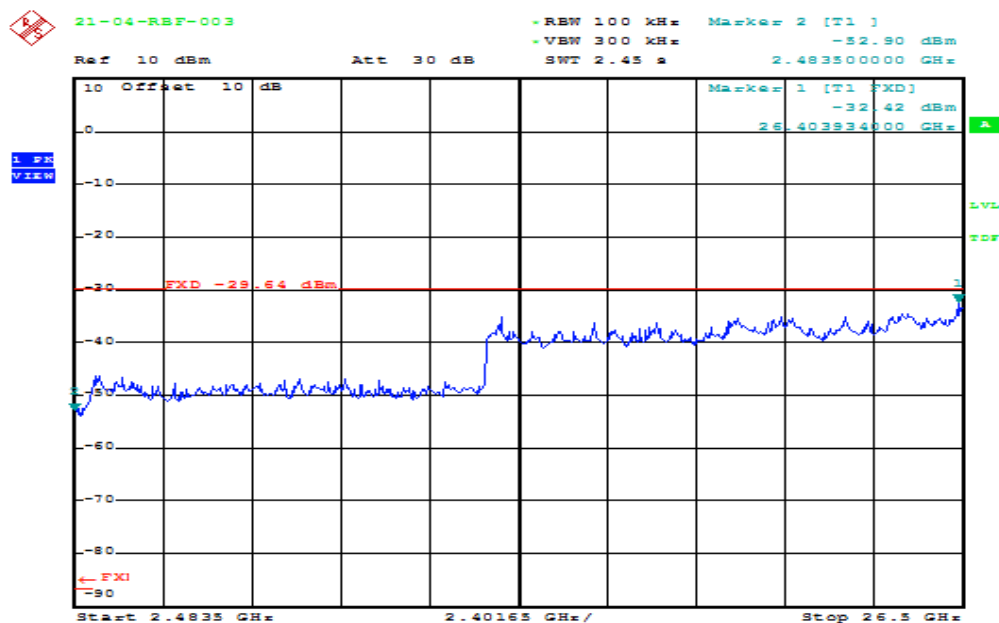
Date: 7.MAY.2021 11:01:00

Spurious Emission 30MHz~2483.5MHz (OUT)



Date: 7.MAY.2021 11:01:14

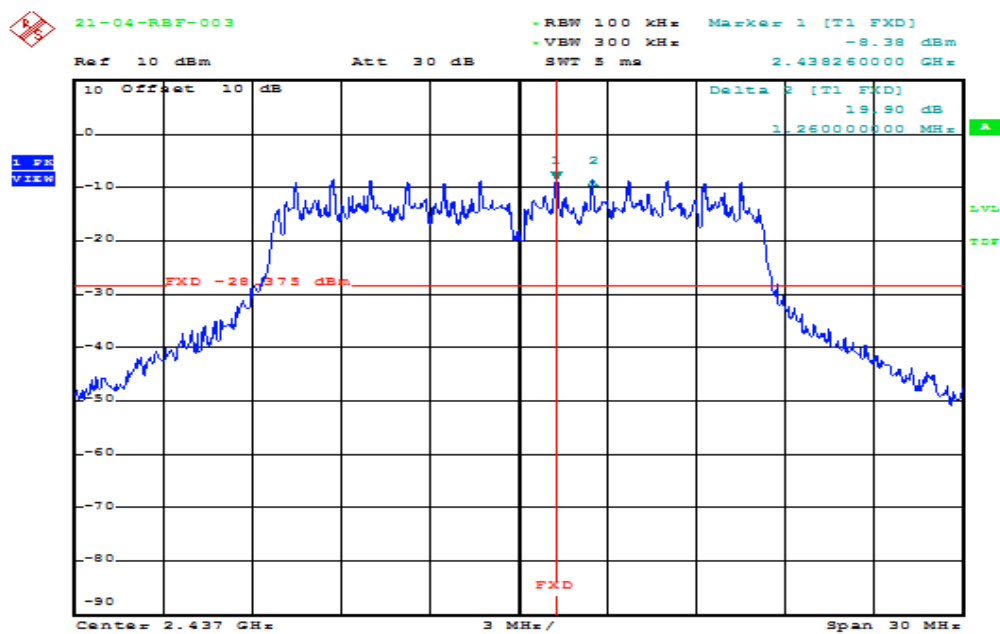
Spurious Emission 2483.5MHz~26.5GHz (OUT)



Date: 7.MAY.2021 11:01:34

Mode: 802.11g/ Channel Middle

100kHz PSD Reference Level

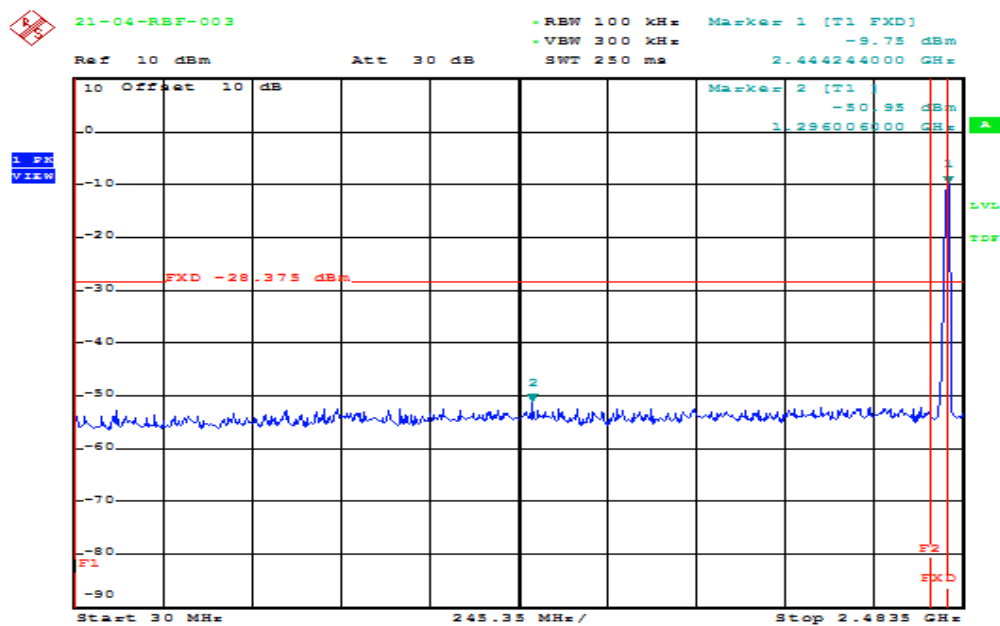


Date: 7.MAY.2021 11:03:06

Channel Plot

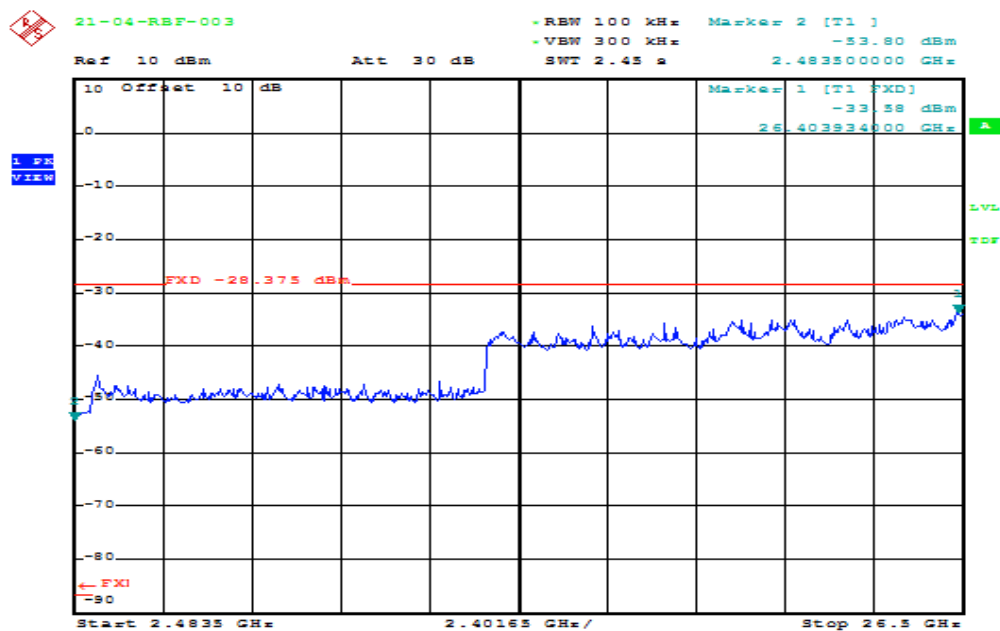
不適用

Spurious Emission 30MHz~2483.5MHz (OUT)



Date: 7.MAY.2021 11:03:20

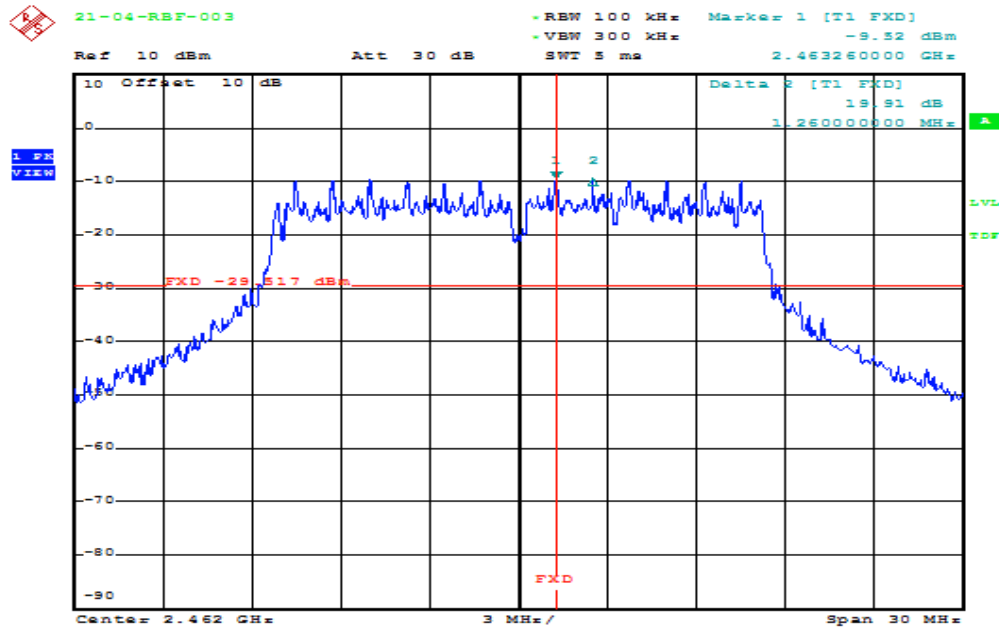
Spurious Emission 2483.5MHz~26.5GHz (OUT)



Date: 7.MAY.2021 11:03:38

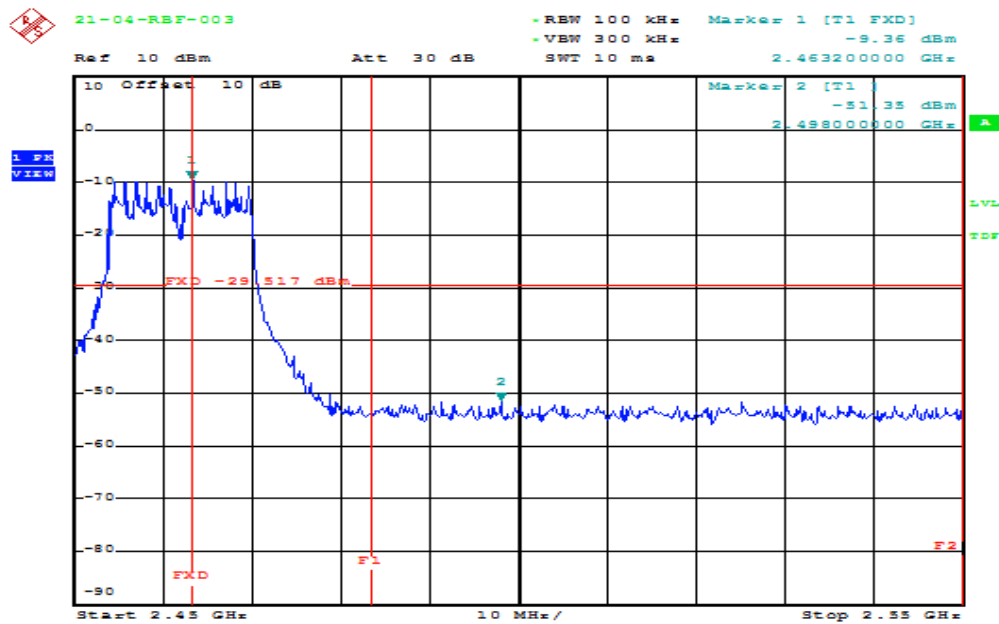
Mode: 802.11g/ Channel High

100kHz PSD Reference Level



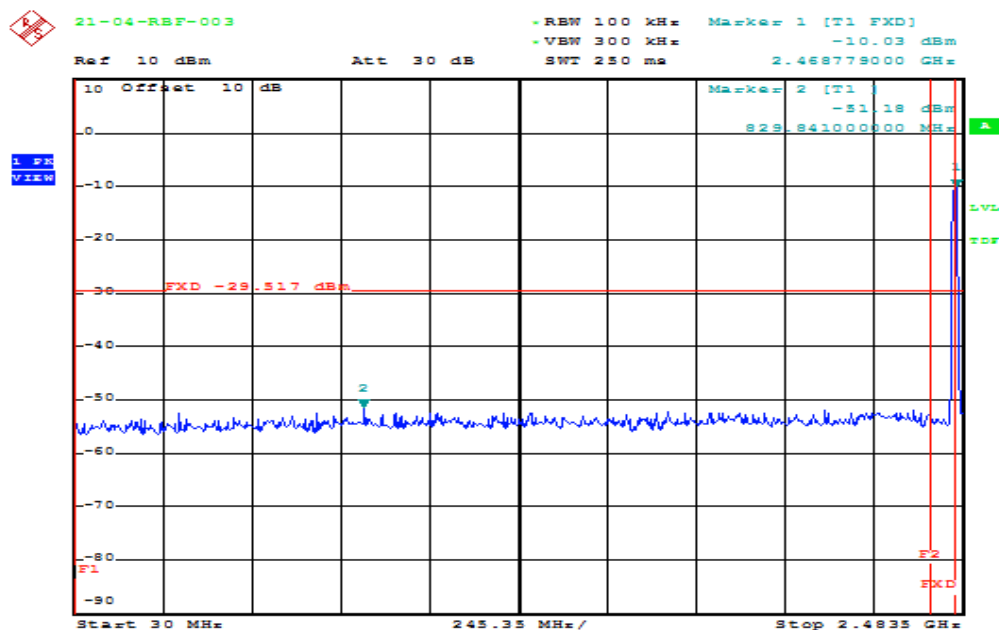
Date: 7.MAY.2021 11:05:11

Channel Plot



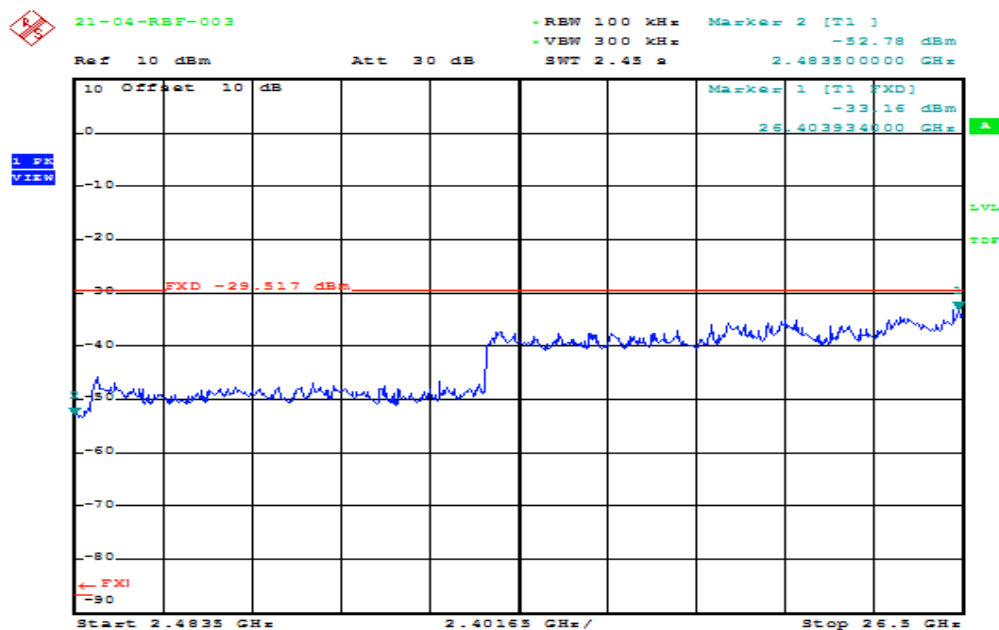
Date: 7.MAY.2021 11:05:22

Spurious Emission 30MHz~2483.5MHz (OUT)



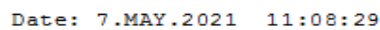
Date: 7.MAY.2021 11:05:34

Spurious Emission 2483.5MHz~26.5GHz (OUT)



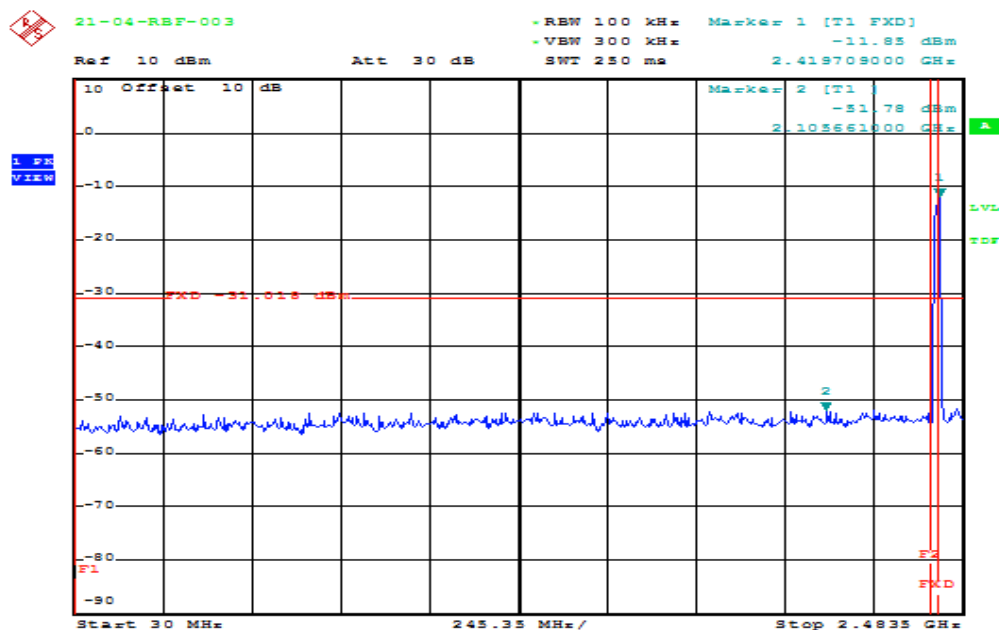
Date: 7.MAY.2021 11:05:51

100kHz PSD Reference Level



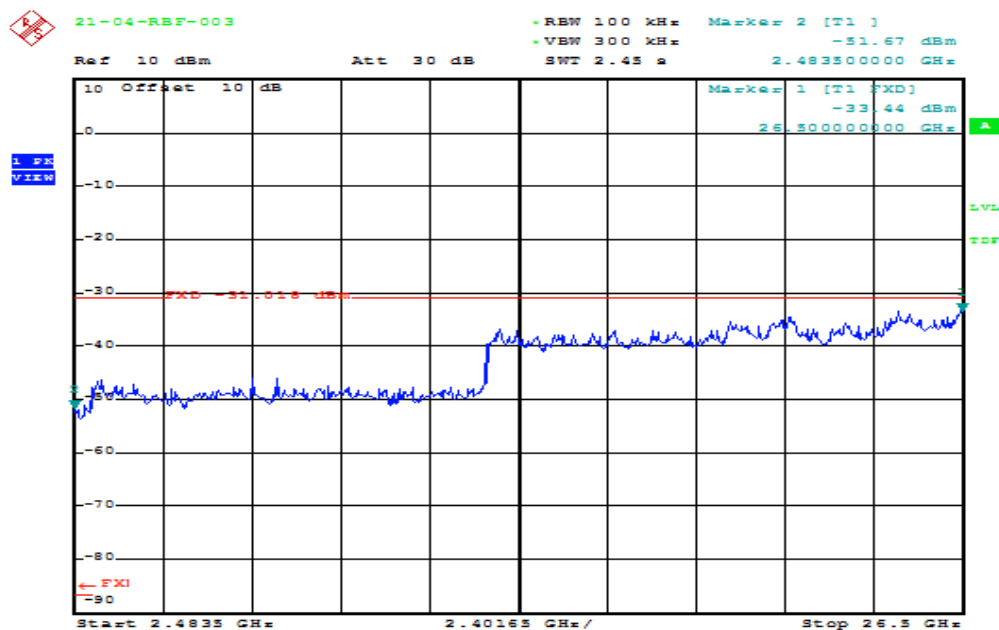
Date: 7.MAY.2021 11:08:39

Spurious Emission 30MHz~2483.5MHz (OUT)



Date: 7.MAY.2021 11:08:52

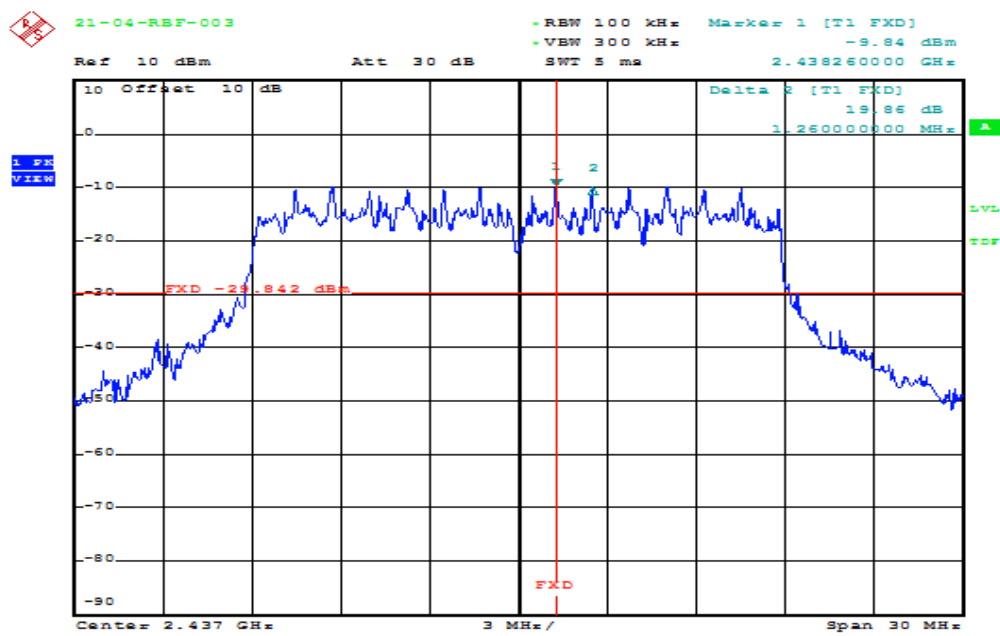
Spurious Emission 2483.5MHz~26.5GHz (OUT)



Date: 7.MAY.2021 11:09:09

Mode: 802.11n20/ Channel Middle

100kHz PSD Reference Level

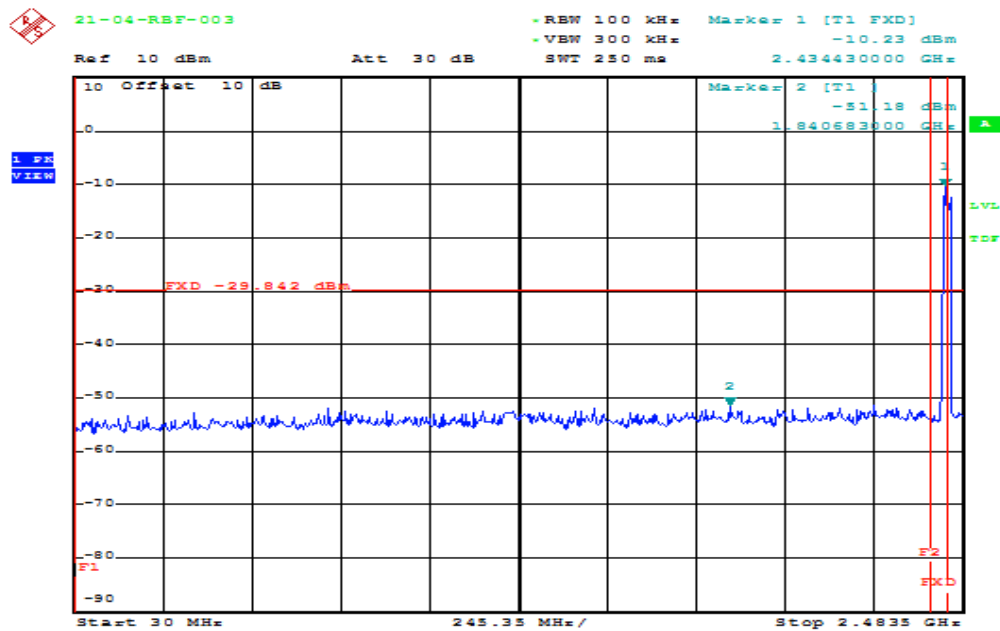


Date: 7.MAY.2021 11:10:52

Channel Plot

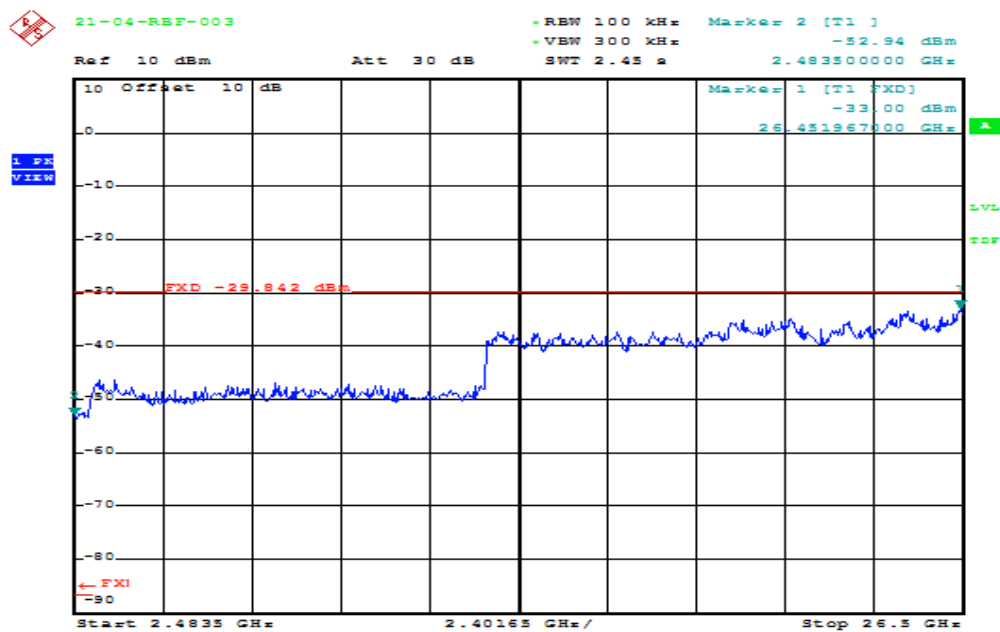
不適用

Spurious Emission 30MHz~2483.5MHz (OUT)



Date: 7.MAY.2021 11:11:05

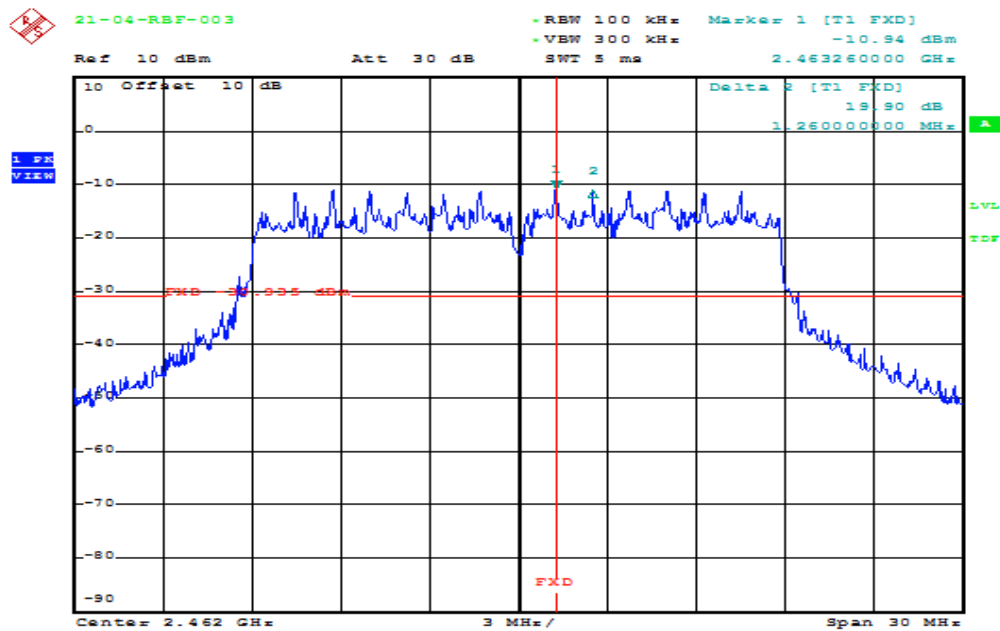
Spurious Emission 2483.5MHz~26.5GHz (OUT)



Date: 7.MAY.2021 11:11:25

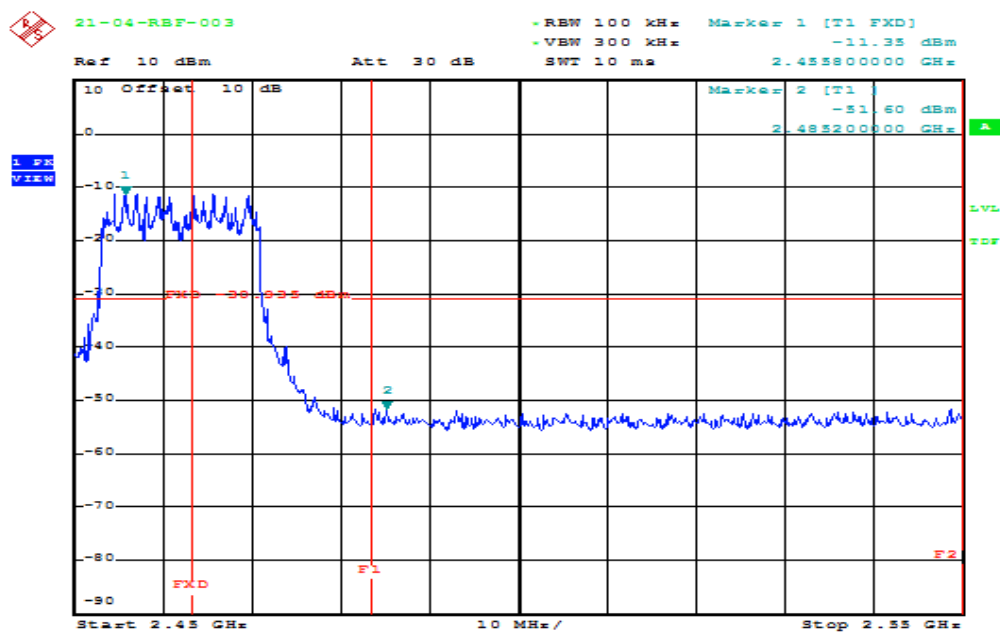
Mode: 802.11n20/ Channel High

100kHz PSD Reference Level



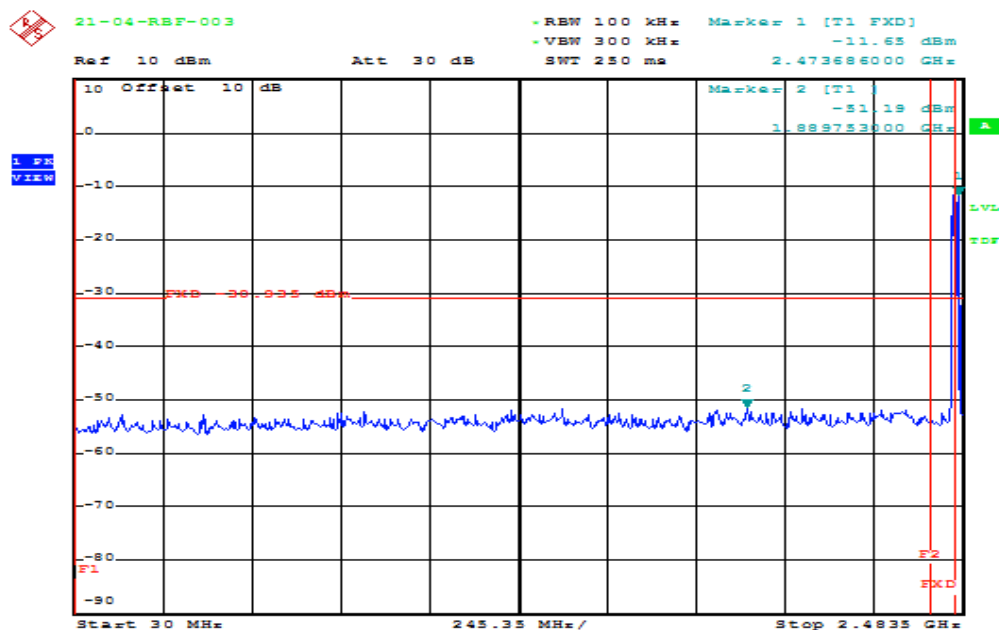
Date: 7.MAY.2021 11:13:02

Channel Plot



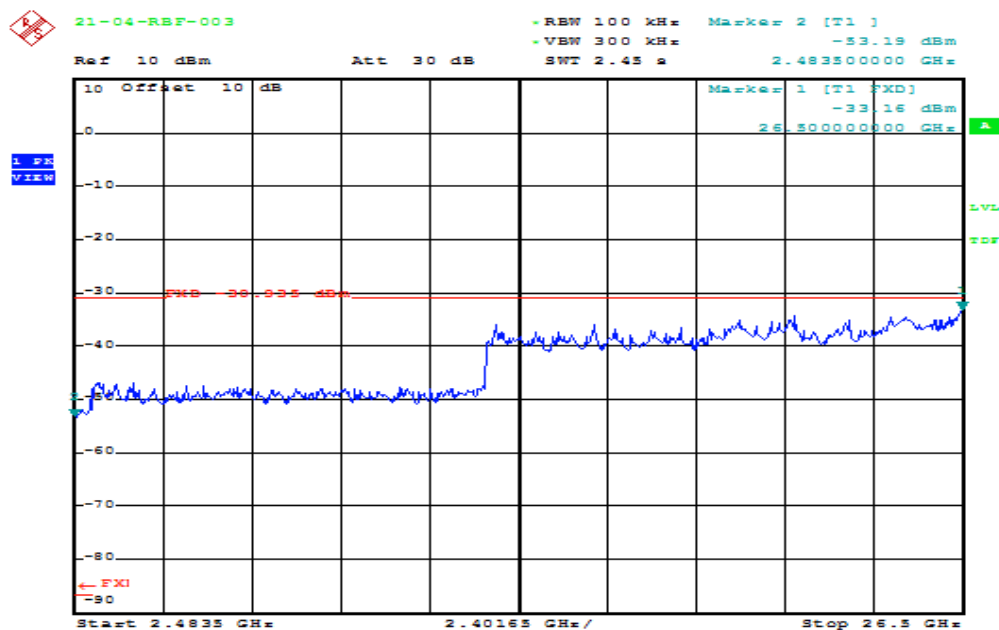
Date: 7.MAY.2021 11:13:12

Spurious Emission 30MHz~2483.5MHz (OUT)



Date: 7.MAY.2021 11:13:24

Spurious Emission 2483.5MHz~26.5GHz (OUT)



Date: 7.MAY.2021 11:13:42

11 功率密度之量測

11.1 適用標準

依據低功率射頻器材技術規範4.10.1.6節之(2)(B)之規定，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4.10.1.3 之方式降低功率頻譜密度限制值。

11.2 量測功率密度之配置

如圖 4 所示。

11.3 量測功率密度之儀器

儀器名稱	製造者	型號	本次校驗日期	下次校驗日期
Spectrum Analyzer	Rohde & Schwarz	FSP40 (13040903-001)	2020/06/30	2021/06/29
Attenuator	MINI-CIRCUITS	BW-S10W2+	2020/10/07	2021/10/06

11.4 功率密度量測結果

測試結果 : 合格

測試者 : 黃義傑

Test Data: 2021/5/7 Temp: 25 °C Hum: 65 %

2412-2462MHz

Wireless Standards	Carrier Frequency (MHz)	Antenna Gain (dBi)	PSD (dBm/3kHz)	Limit (dBm/3kHz)
802.11b	2412	5.00	-16.86	8
	2437	5.00	-16.81	8
	2462	5.00	-16.48	8
802.11g	2412	5.00	-30.63	8
	2437	5.00	-28.53	8
	2462	5.00	-31.06	8
802.11n20	2412	5.00	-29.80	8
	2437	5.00	-28.82	8
	2462	5.00	-29.91	8

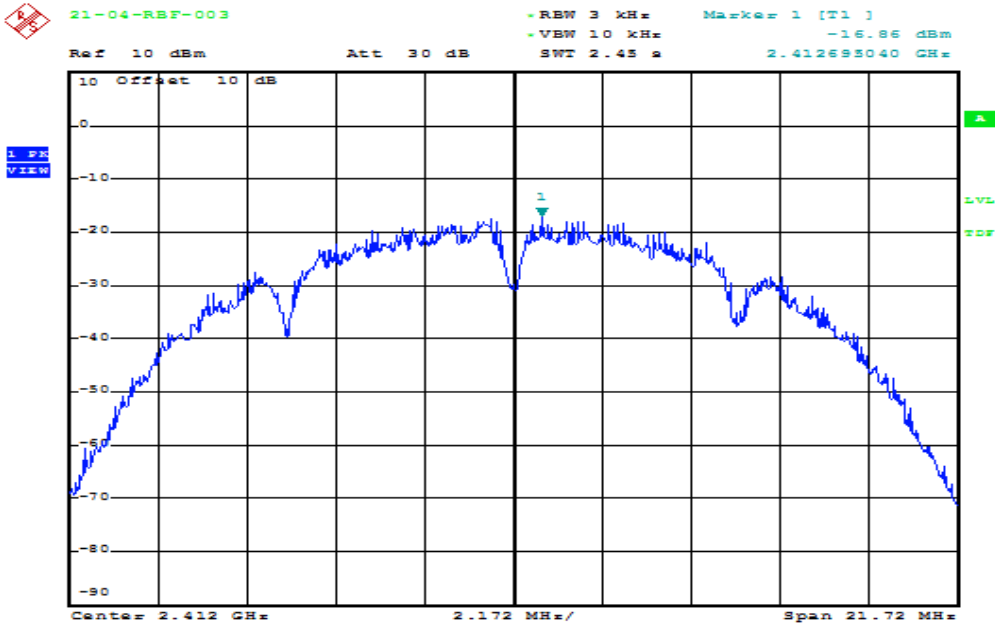
NOTE :1. Remark "---" Means not applicable for this device.

2. transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

註：

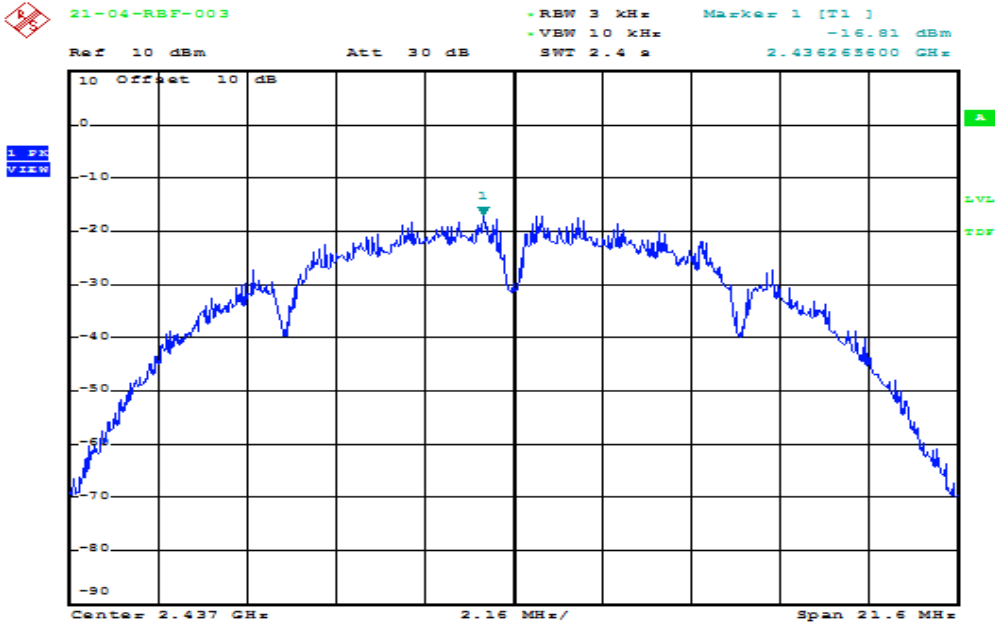
1. 繪圖資料請參考下頁。

Mode: 802.11b/ Channel Low



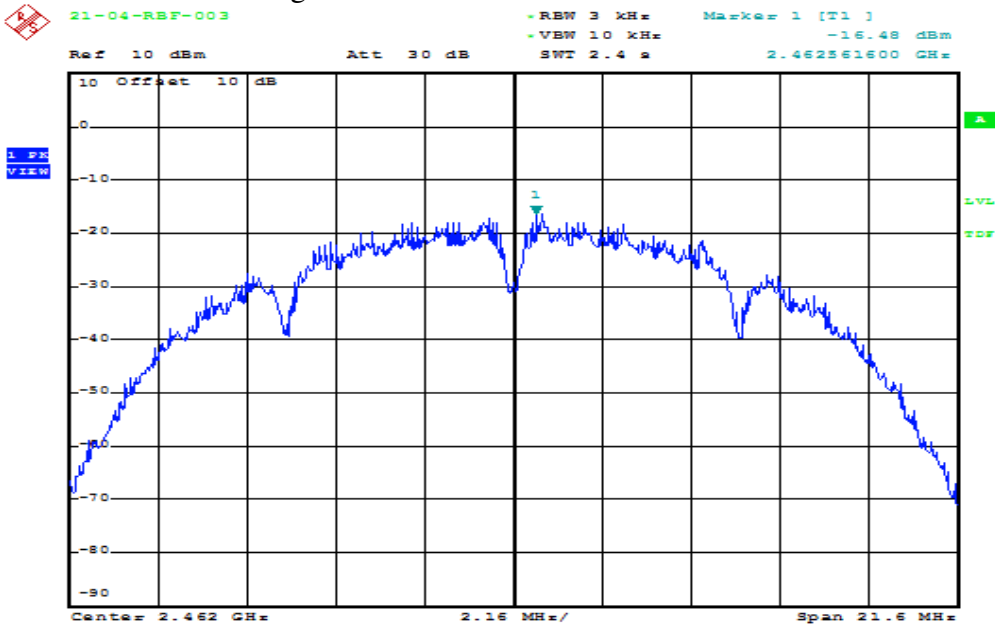
Date: 7.MAY.2021 10:49:32

Mode: 802.11b/ Channel Middle



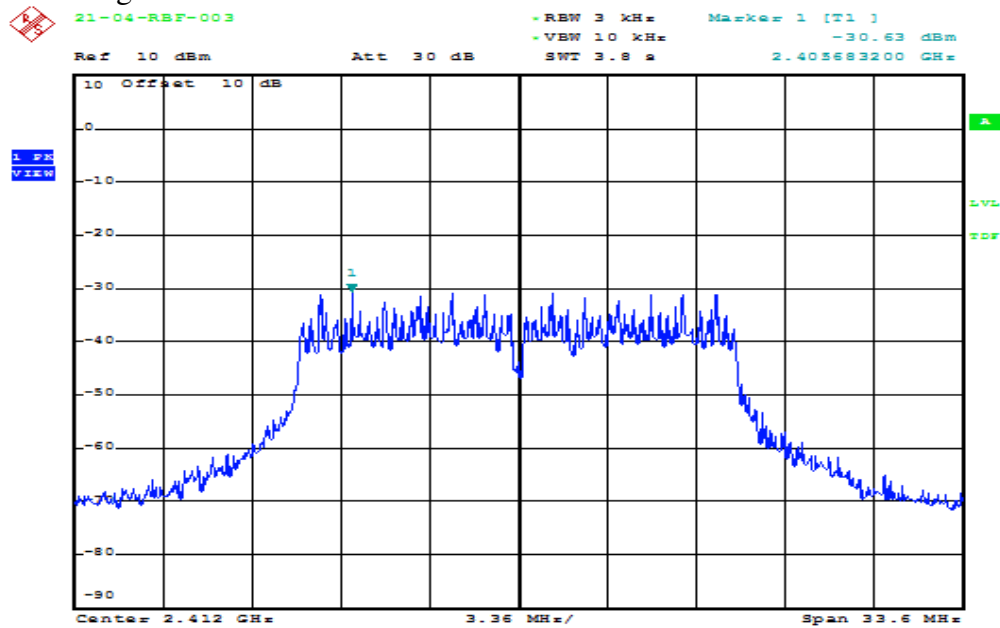
Date: 7.MAY.2021 10:52:02

Mode: 802.11b/ Channel High



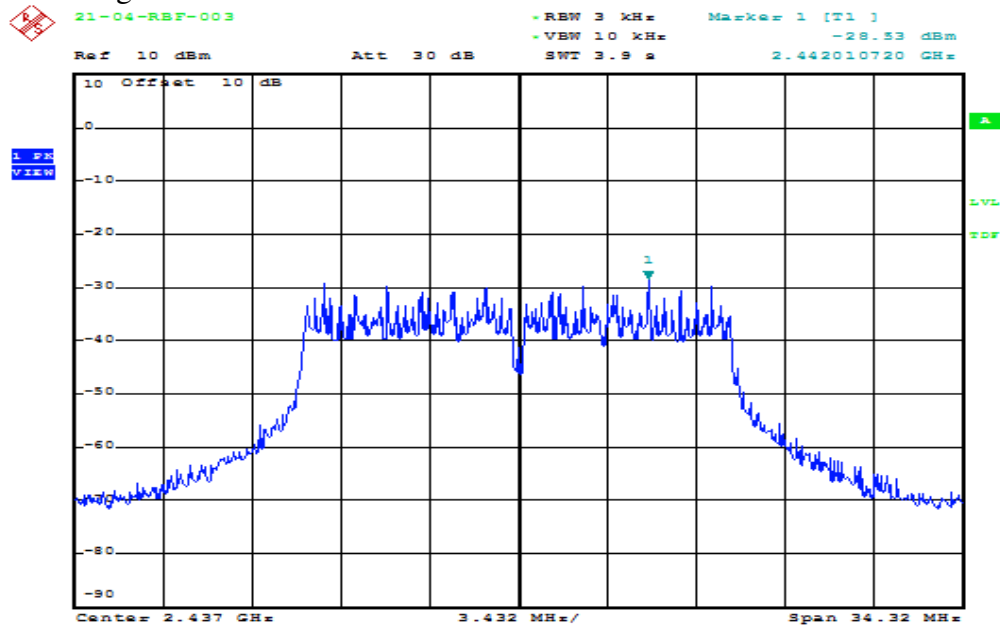
Date: 7.MAY.2021 10:55:15

Mode: 802.11g/ Channel Low



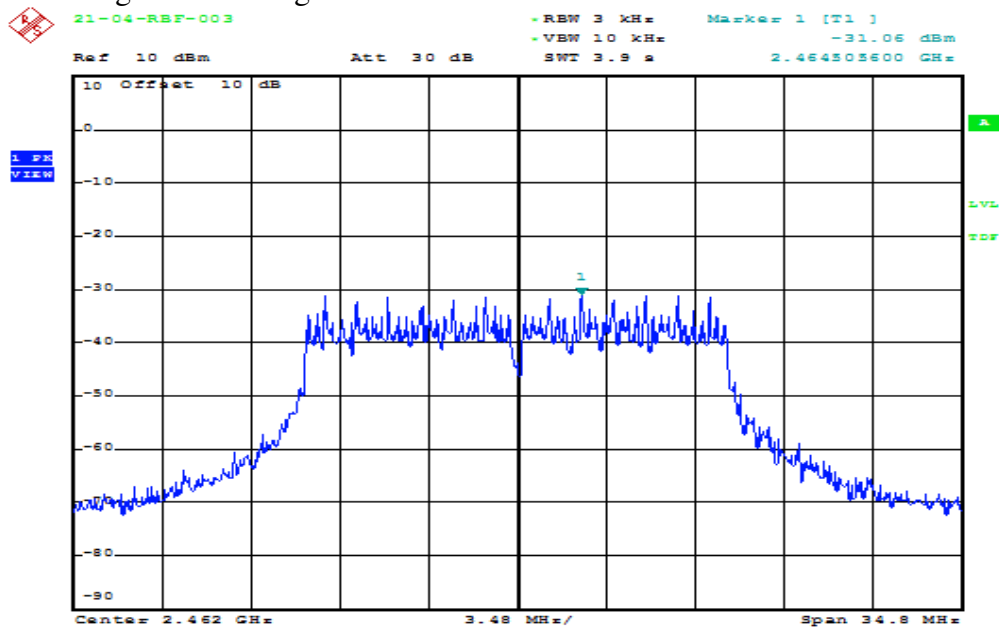
Date: 7.MAY.2021 11:00:33

Mode: 802.11g/ Channel Middle



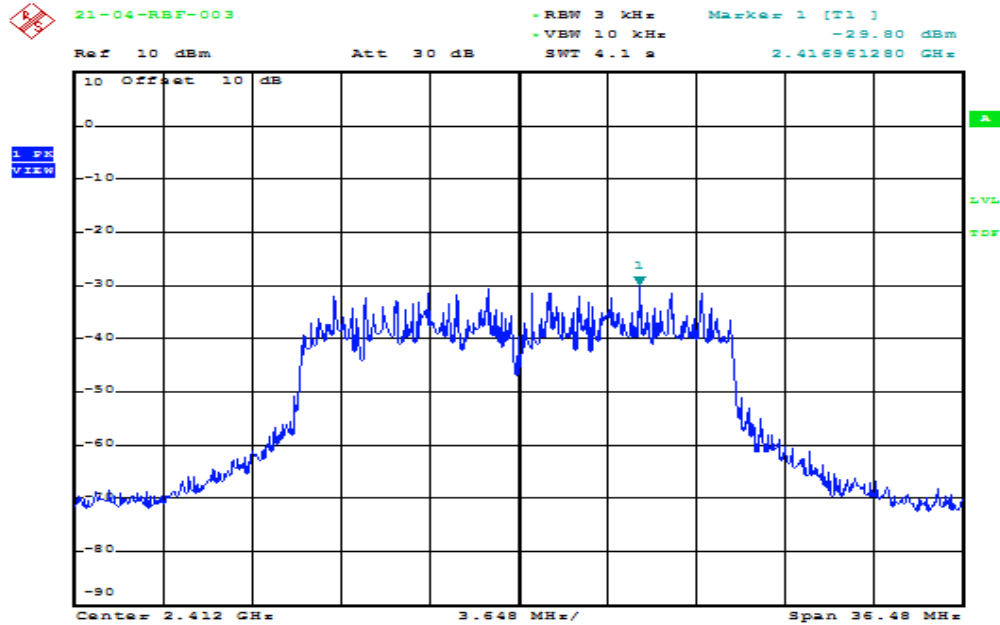
Date: 7.MAY.2021 11:02:54

Mode: 802.11g/ Channel High



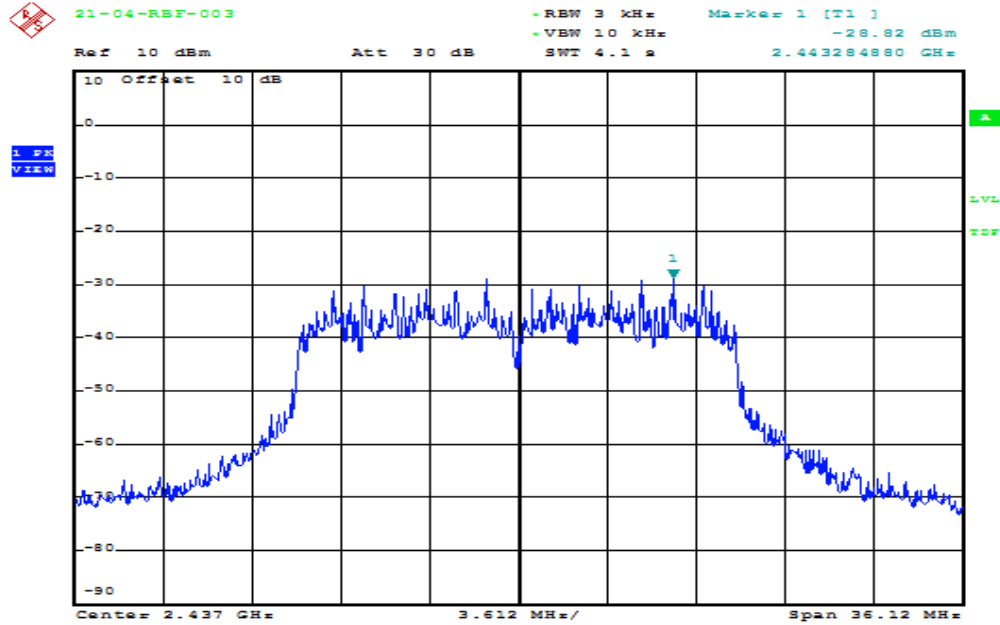
Date: 7.MAY.2021 11:04:59

Mode: 802.11n20/ Channel Low



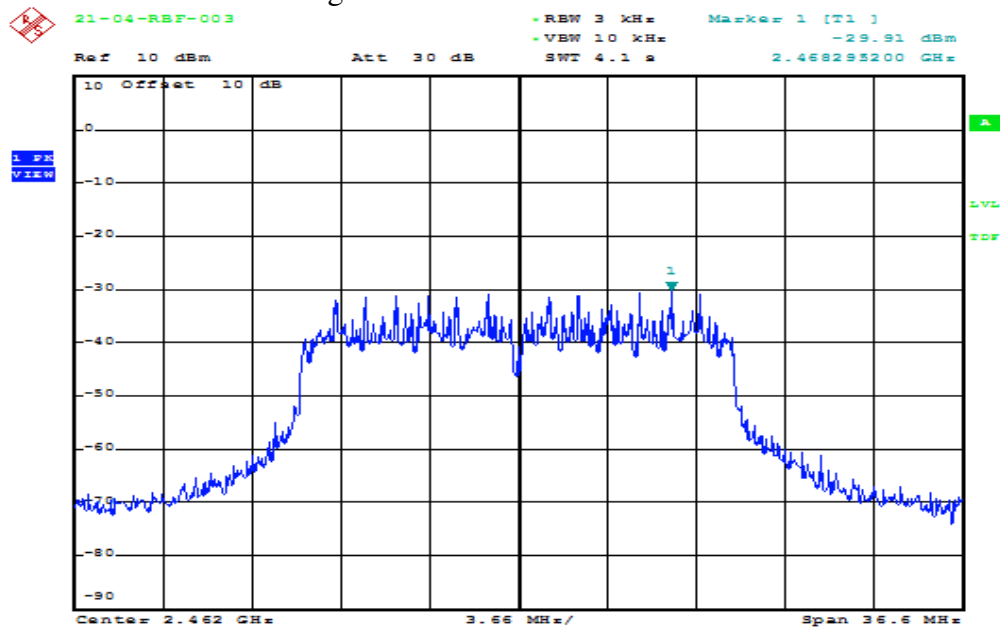
Date: 7.MAY.2021 11:08:17

Mode: 802.11n20/ Channel Middle



Date: 7.MAY.2021 11:10:39

Mode: 802.11n20/ Channel High



Date: 7.MAY.2021 11:12:45