



低功率射頻電機測試報告

Part I – 802.11b/g/n

申請廠商：台灣賓士股份有限公司
地址：臺北市松山區民生東路3段129號13樓
器材名稱：汽車音響
廠牌：Mercedes-Benz
型號：NTG6 HIGH



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報告號碼: 18-01-RBF-018-03

目錄	頁次
測試報告記錄.....	1
1 一般資料	2
1.1 產品描述.....	2
1.2 產品特性.....	2
1.3 測試方法之依據.....	2
2 適用規範	3
2.1 規範要求.....	3
2.2 限制使用之頻帶.....	5
3 受測裝置之系統說明	6
4 場強輻射之量測	7
4.1 適用標準.....	7
4.2 量測方法.....	7
4.3 量測場強輻射之儀器.....	7
4.4 場強度之計算.....	7
4.5 場強輻射之量測結果.....	8
4.6 輻射之測試配置.....	35
4.7 輻射量測之配置照片.....	36
5 電源線傳導干擾之量測	38
5.1 適用標準.....	38
5.2 測試方法.....	38
5.3 測試配置.....	38
6 天線增益之要求	39
6.1 適用標準.....	39
6.2 天線增益.....	39
7 發射頻寬之量測	40
7.1 適用標準.....	40
7.2 測試配置.....	40
7.3 發射頻寬之量測儀器.....	40
7.4 發射頻寬之量測結果.....	41
8 峰值傳導輸出功率之量測	54
8.1 適用標準.....	54
8.2 輸出功率之測試配置.....	54

8.3 輸出功率之量測儀器	54
8.4 輸出功率之量測結果	55
9 開放頻帶邊緣 100 kHz 頻寬內之量測	57
9.1 適用標準	57
9.2 開放頻帶邊緣之測試配置	57
9.3 量測開放頻帶邊緣之儀器	57
9.4 開放頻帶邊緣之量測結果	57
10 功率密度之量測	65
10.1 適用標準	65
10.2 量測功率密度之配置	65
10.3 量測功率密度之儀器	65
10.4 功率密度量測結果	65

低功率射頻電機測試報告



受理日期 : 107 年 01 月 16 日
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 實驗室地址 : 新北市 24442 林口區頂福里 5 鄰 34 號
 實驗室電話 : 02-26023052
 認可編號及範圍 : 2628 (9KHz- 40GHz)
 認可證書有效期限 : 107 年 10 月 08 日
 申請廠商 : 台灣賓士股份有限公司
 申請廠商地址 : 臺北市松山區民生東路 3 段 129 號 13 樓
 製造廠商 : Harman Becker Automotive System GmbH
 器材名稱 : 汽車音響
 廠牌 : Mercedes-Benz
 型號 : NTG6 HIGH
 發射功率(電場強度) : 802.11b : 9.52dBm ; 802.11g : 15.62dBm ;
 802.11n 2.4GHz HT-20 : 19.74dBm
 802.11n 2.4GHz HT-40 : 23.14dBm
 工作頻率及調變方式 : 2412 – 2472 MHz ; 13CH
 DSSS(802.11b) / OFDM(802.11g) / OFDM-MIMO 20M Mode
 (802.11n 2.4GHz HT-20)
 2422 – 2462 MHz ; 9CH
 OFDM-MIMO 40M Mode (802.11n 2.4GHz HT-40)
 天線規格 : 廠牌:Hirschmann / 型號:A247 905 83 00 /
 Gain: 2.4GHz(3dBi) 、5.7GHz(4.5dBi)

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 107 年 01 月 10 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	低功率射頻電機技術規範 3.10.1.5節、2.8節	請參閱4.5節	請參閱4.3節	合格
2	電源線傳導干擾	低功率射頻電機技術規範 2.3節	請參閱5.4節	---	無需實施 此項檢測
3	天線增益之要求	低功率射頻電機技術規範 3.10.1.3節	請參閱6.2節	---	合格
4	發射頻寬	低功率射頻電機技術規範 3.10.1.6節	請參閱7.4節	請參閱7.3節	合格
5	峰值傳導輸出功率	低功率射頻電機技術規範 3.10.1.2節	請參閱8.4節	請參閱8.3節	合格
6	開放頻帶邊緣之發射	低功率射頻電機技術規範 3.10.1.5節	請參閱9.4節	請參閱9.3節	合格
7	功率密度	低功率射頻電機技術規範 3.10.1.6節	請參閱10.4節	請參閱10.3節	合格
	以下空白				

報告簽署人：

量測員：

1 一般資料

1.1 產品描述

- a) 產品型態 : 汽車音響
- b) 商標 : Mercedes-Benz
- c) 產品型號 : NTG6 HIGH
- d) 供應電源 : DC12V Battery

1.2 產品特性

此裝置為汽車音響，內含IEEE 802.11b/g/n無線功能。

IEEE 802.11b/g/n部分，使用頻率範圍為2.4-2.4835GHz。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/ 802.11n HT-40)。使用頻道數：802.11b, g以及802.11n HT-20為13個頻道，802.11n HT-40為9個頻道。

實測輸出功率如下：

802.11b主波輸出功率為 9.52 dBm (8.953 mW)

802.11g主波輸出功率為 15.62 dBm (36.475 mW)

802.11n HT-20 主波輸出功率為 19.74 dBm (94.086 mW)

802.11n HT-40 主波輸出功率為 23.14 dBm (205.843 mW)

各頻道對應之頻率如下：

802.11b/g/n HT-20頻道如下：

頻道	對應頻率(MHz)	頻道	對應頻率(MHz)
01	2412	07	2442
02	2417	08	2447
03	2422	09	2452
04	2427	10	2457
05	2432	11	2462
05	2437	12	2467
		13	2472

802.11b/g/n HT-40頻道如下：

頻道	對應頻率(MHz)	頻道	對應頻率(MHz)
03	2422	07	2442
04	2427	08	2447
05	2432	09	2452
06	2437	10	2457
		11	2462

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電機技術規範以及參考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電機技術規範2.3節之規定，以市電為電源之低功率射頻電機，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

依據低功率射頻電機技術規範3.10.1.5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2.7節禁用頻段之輻射發射，應符合第2.8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	67.6/kHz	2400/kHz
0.490 - 1.705	30	87.6/kHz	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，依據低功率射頻電機技術規範3.10.1.3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，依據低功率射頻電機技術規範3.10.1.6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

依據低功率射頻電機技術規範3.10.1.2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

依據低功率射頻電機技術規範3.10.1.5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3.10.1.2(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2.7 禁用頻段之輻射發射，應符合2.8 之規定。

(7) 功率密度之要求

依據低功率射頻電機技術規範3.10.1.6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3.10.1.3 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	

3 受測裝置之系統說明

裝置名稱	製造者/代理者	型 號	纜線說明
汽車音響*	Harman Becker Automotive System GmbH/ 台灣賓士股份有限公司	NTG6 HIGH	----

標記“*”表欲申請之受測物。

4 場強輻射之量測

4.1 適用標準

依據低功率射頻電機技術規範3.10.1.5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2.7節禁用頻段之輻射發射，應符合第2.8節之規定。

4.2 量測方法

將待測物置於0.8米高的非金屬桌面，使其在工作狀態，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。

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
Test Receiver	Rohde & Schwarz	ESCI	2017/09/19	2018/09/18
Bi-Log Antenna	ETC	MCTD 2786	2017/08/09	2018/08/10
Log-periodic Antenna	EMCO	3146	2017/08/10	2018/08/09
Horn Antenna	EMCO	3115	2017/10/11	2018/10/10
Horn Antenna	EMCO	3116	2017/11/15	2018/11/14
Amplifier	HP	8447D	2017/12/08	2018/12/07
EMI Test Receiver	Rohde & Schwarz	ESU 40	2017/11/10	2018/11/09
Attenuator	Mini-Circuits	BW-S10W2+	2017/10/06	2018/10/05
Attenuator	Mini-Circuits	BW-S20W2+	2017/10/06	2018/10/05
Attenuator	Mini-Circuits	BW-S30W2+	2017/10/06	2018/10/05
Amplifier	HP	83051A	2017/08/25	2018/08/24

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

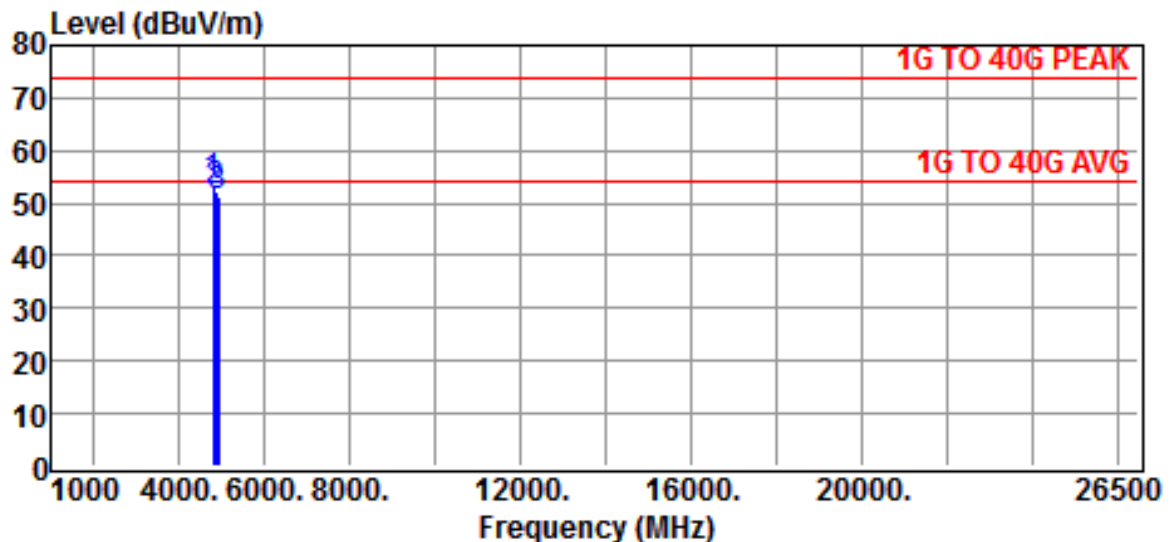
操作模式 : 發射接收

基本波頻率 : LO:2412MHz ,MI:2442MHz ,HI:2472MHz

(Local Frequency : LO:2412MHz ,MI:2442MHz ,HI:2472MHz)

測試結果 : 合格

測試者 : 何仁逸

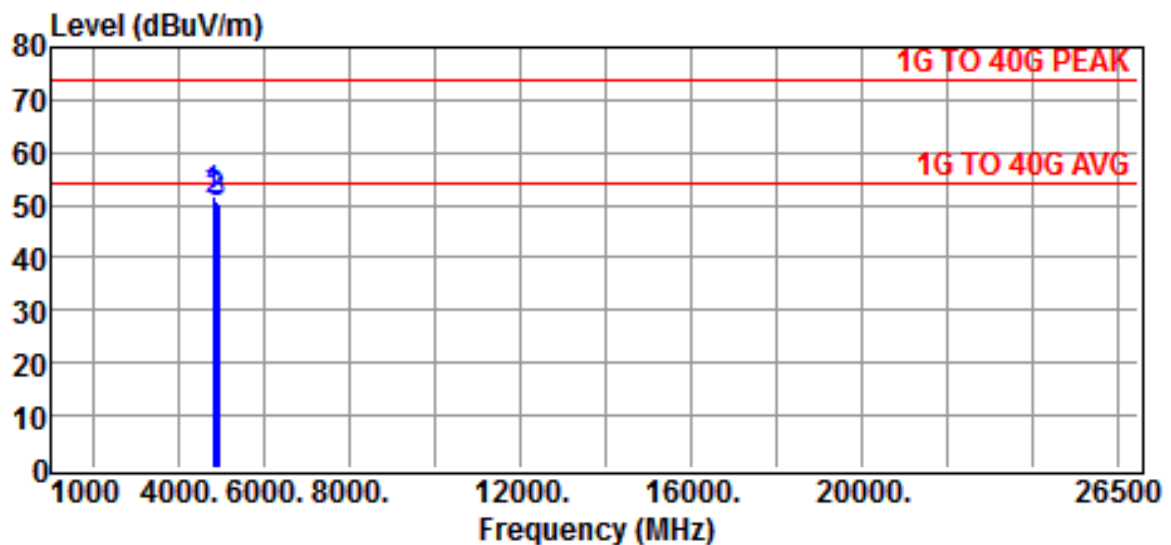


Site	:Chamber #2	Date	:2018-03-30
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	: 汽車音響	Model	:NTG6HIGH
Power Rating	:DC12V(Power from DC Supply)	Temp.	:25 °C
Engineer	: Kazuma Ho	Humi.	:52 %
Test Mode	:WiFi-B		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4824.0000	51.94	1.54	53.48	74.00	-20.52	Peak
4884.0000	50.70	1.71	52.41	74.00	-21.59	Peak
4944.0000	49.22	1.94	51.16	74.00	-22.84	Peak

Note :

1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected 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.



Site	:Chamber #2	Date	:2018-03-30
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	: 汽車音響	Model	:NTG6HIGH
Power Rating	:DC12V(Power from DC Supply)	Temp.	:25 °C
Engineer	: Kazuma Ho	Humi.	:52 %
Test Mode	:WiFi-B		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4824.0000	50.38	1.54	51.92	74.00	-22.08	Peak
4884.0000	49.28	1.71	50.99	74.00	-23.01	Peak
4944.0000	48.43	1.94	50.37	74.00	-23.63	Peak

Note :

1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected 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.

B. 802.11g

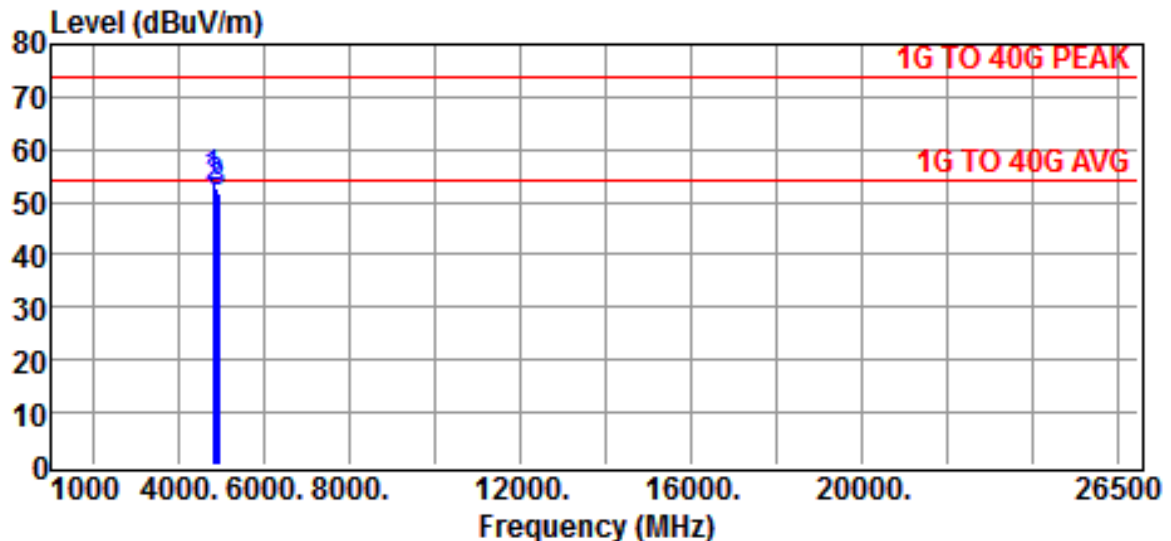
操作模式 : 發射接收

基本波頻率 : LO:2412MHz ,MI:2442MHz ,HI:2472MHz

(Local Frequency : LO:2412MHz ,MI:2442MHz ,HI:2472MHz)

測試結果 : 合格

測試者 : 何仁逸

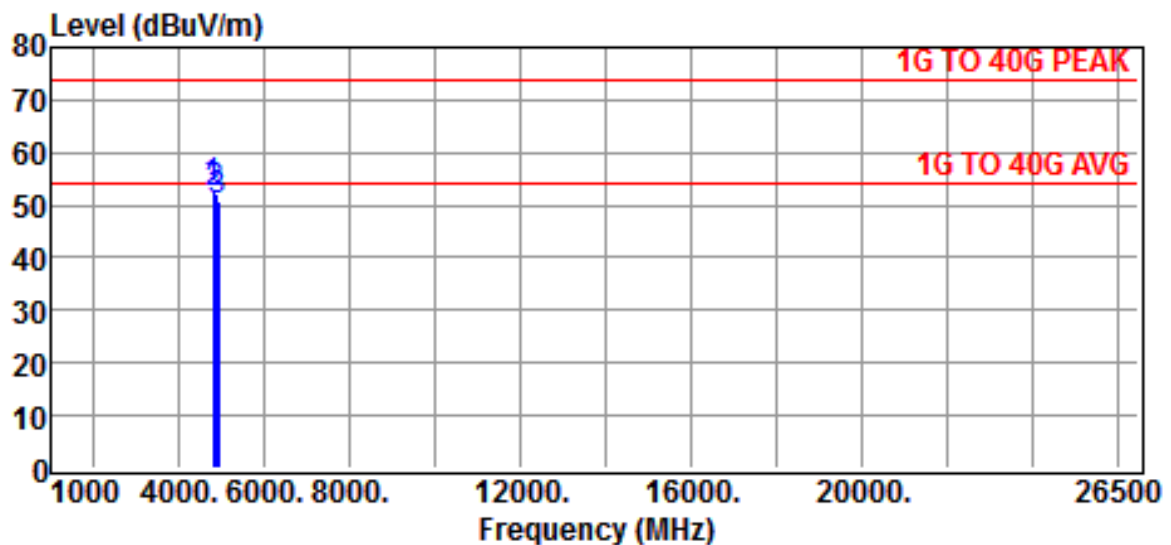


Site	:Chamber #2	Date	:2018-03-30
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	: 汽車音響	Model	:NTG6HIGH
Power Rating	:DC12V(Power from DC Supply)	Temp.	:25 °C
Engineer	: Kazuma Ho	Humi.	:52 %
Test Mode	:WiFi-G		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4824.0000	52.41	1.54	53.95	74.00	-20.05	Peak
4884.0000	51.17	1.71	52.88	74.00	-21.12	Peak
4944.0000	49.68	1.94	51.62	74.00	-22.38	Peak

Note :

1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected 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.



Site	:Chamber #2	Date	:2018-03-30
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	:	Model	:NTG6HIGH
Power Rating	:DC12V(Power from DC Supply)	Temp.	:25 °C
Engineer	: Kazuma Ho	Humi.	:52 %
Test Mode	:WiFi-G		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4824.0000	51.74	1.54	53.28	74.00	-20.72	Peak
4884.0000	50.60	1.71	52.31	74.00	-21.69	Peak
4944.0000	49.01	1.94	50.95	74.00	-23.05	Peak

Note :

1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected 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.

C. 802.11n HT-20

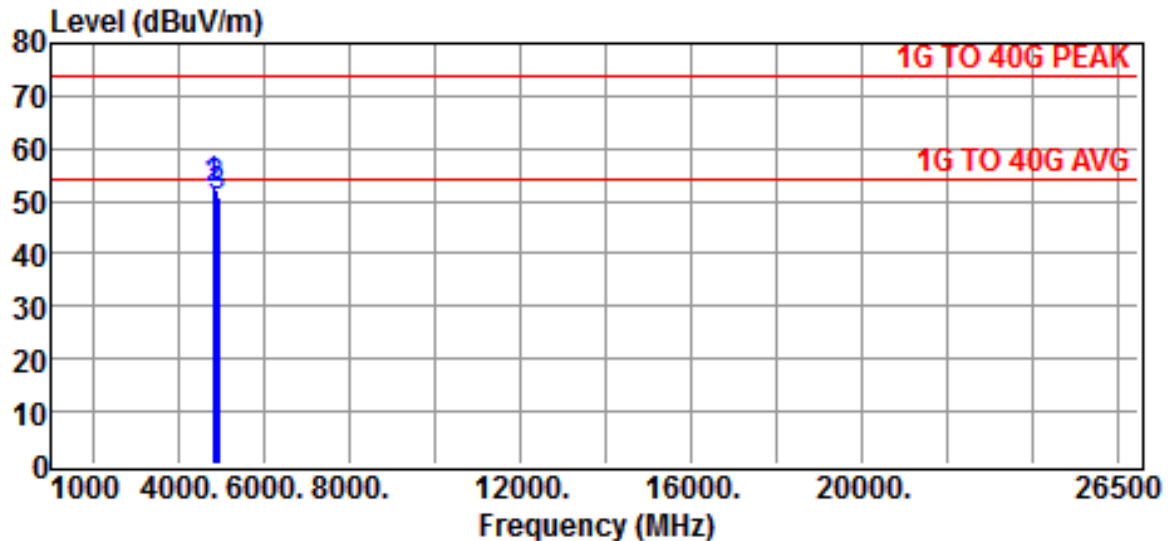
操作模式 : 發射接收(ANT1)

基本波頻率 : LO:2412MHz ,MI:2442MHz ,HI:2472MHz

(Local Frequency : LO:2412MHz ,MI:2442MHz ,HI:2472MHz)

測試結果 : 合格

測試者 : 何仁逸

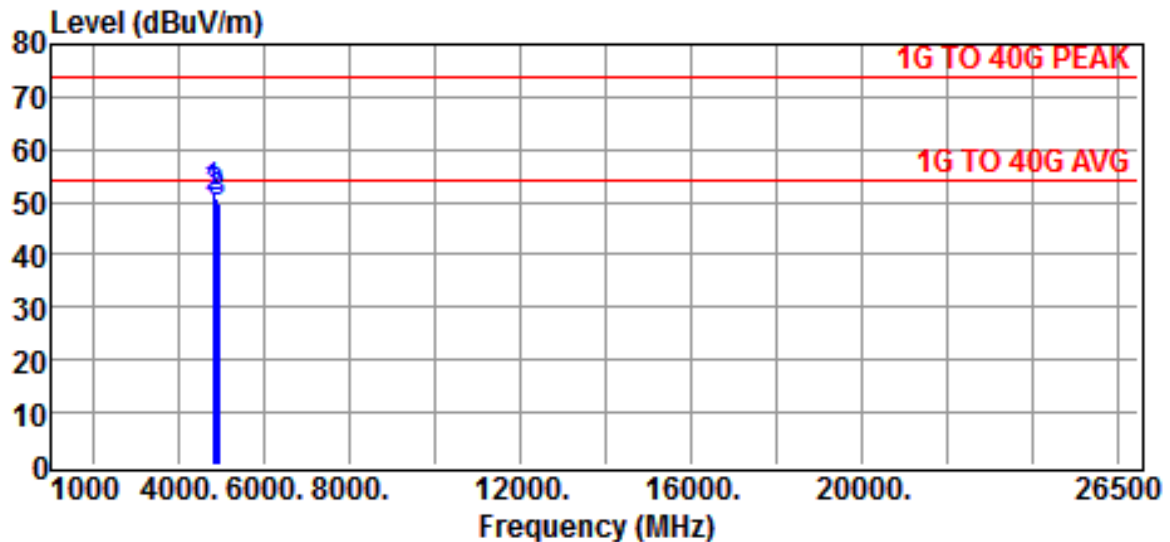


Site	:Chamber #2	Date	:2018-03-30
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	: 汽車音響	Model	:NTG6HIGH
Power Rating	:DC12V(Power from DC Supply)	Temp.	:25 °C
Engineer	: Kazuma Ho	Humi.	:52 %
Test Mode	:WiFi-N20		
Test Mode	:Ant 1		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4824.0000	51.32	1.54	52.86	74.00	-21.14	Peak
4884.0000	50.38	1.71	52.09	74.00	-21.91	Peak
4944.0000	48.80	1.94	50.74	74.00	-23.26	Peak

Note :

1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected 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.



Site	:Chamber #2	Date	:2018-03-30
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	: 汽車音響	Model	:NTG6HIGH
Power Rating	:DC12V(Power from DC Supply)	Temp.	:25 °C
Engineer	: Kazuma Ho	Humi.	:52 %
Test Mode	:WiFi-N20		
Test Mode	:Ant 1		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4824.0000	50.05	1.54	51.59	74.00	-22.41	Peak
4884.0000	49.22	1.71	50.93	74.00	-23.07	Peak
4944.0000	47.78	1.94	49.72	74.00	-24.28	Peak

Note :

1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected 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.

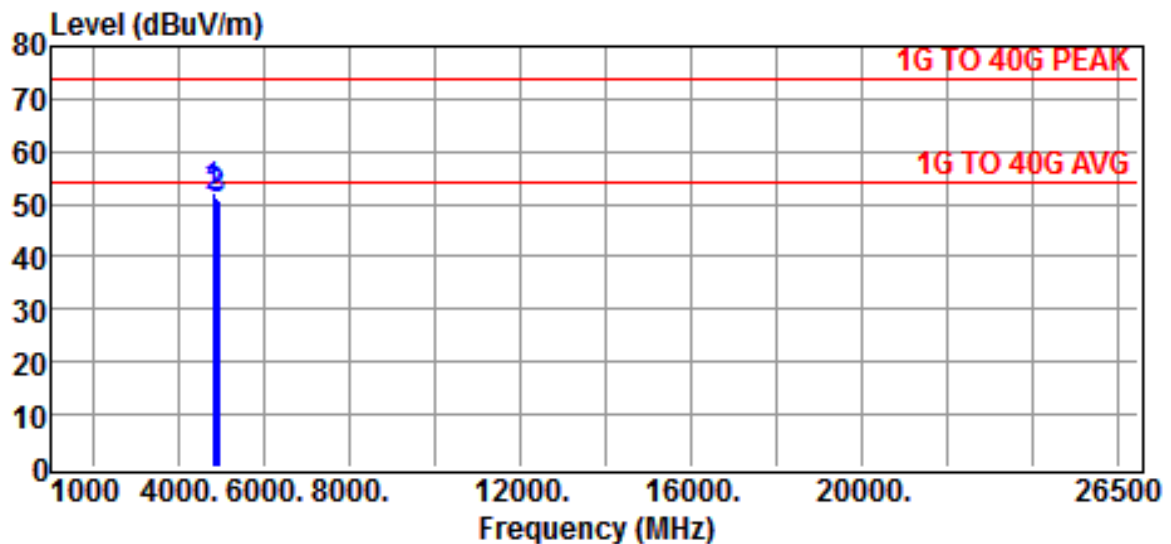
操作模式 : 發射接收(ANT2)

基本波頻率 : LO:2412MHz ,MI:2442MHz ,HI:2472MHz

(Local Frequency : LO:2412MHz ,MI:2442MHz ,HI:2472MHz)

測試結果 : 合格

測試者 : 何仁逸

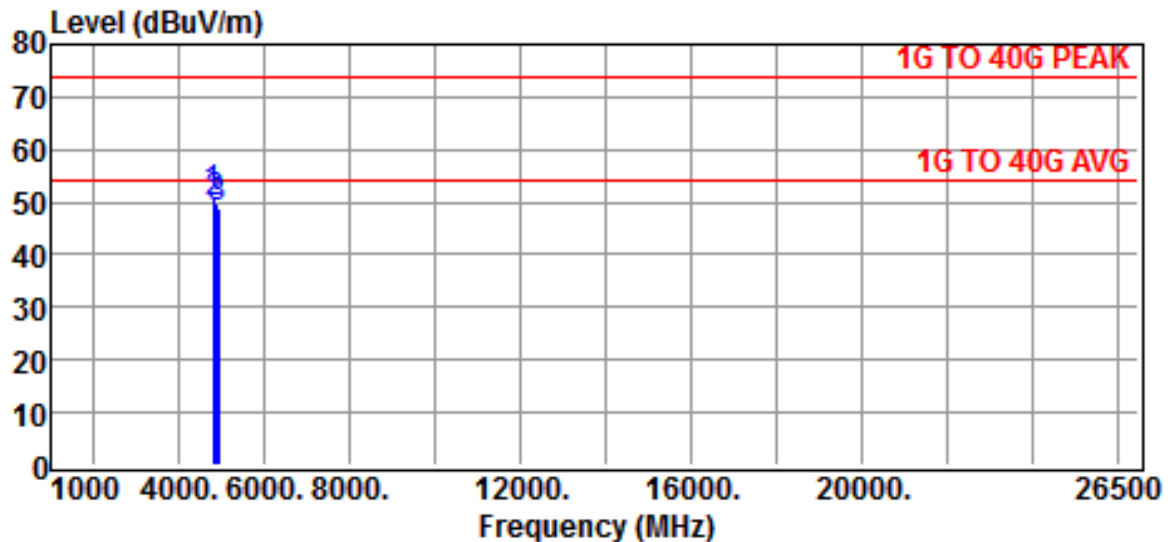


Site	:Chamber #2	Date	:2018-03-30
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	: 汽車音響	Model	:NTG6HIGH
Power Rating	:DC12V(Power from DC Supply)	Temp.	:25 °C
Engineer	: Kazuma Ho	Humi.	:52 %
Test Mode	:WiFi-N20		
Test Mode	:Ant 2		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4824.0000	50.86	1.54	52.40	74.00	-21.60	Peak
4884.0000	49.58	1.71	51.29	74.00	-22.71	Peak
4944.0000	48.75	1.94	50.69	74.00	-23.31	Peak

Note :

1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected 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.



Site	:Chamber #2	Date	:2018-03-30
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	: 汽車音響	Model	:NTG6HIGH
Power Rating	:DC12V(Power from DC Supply)	Temp.	:25 °C
Engineer	: Kazuma Ho	Humi.	:52 %
Test Mode	:WiFi-N20		
Test Mode	:Ant 2		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4824.0000	49.61	1.54	51.15	74.00	-22.85	Peak
4884.0000	48.24	1.71	49.95	74.00	-24.05	Peak
4944.0000	46.78	1.94	48.72	74.00	-25.28	Peak

Note :

1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected 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.

D. 802.11n HT-40

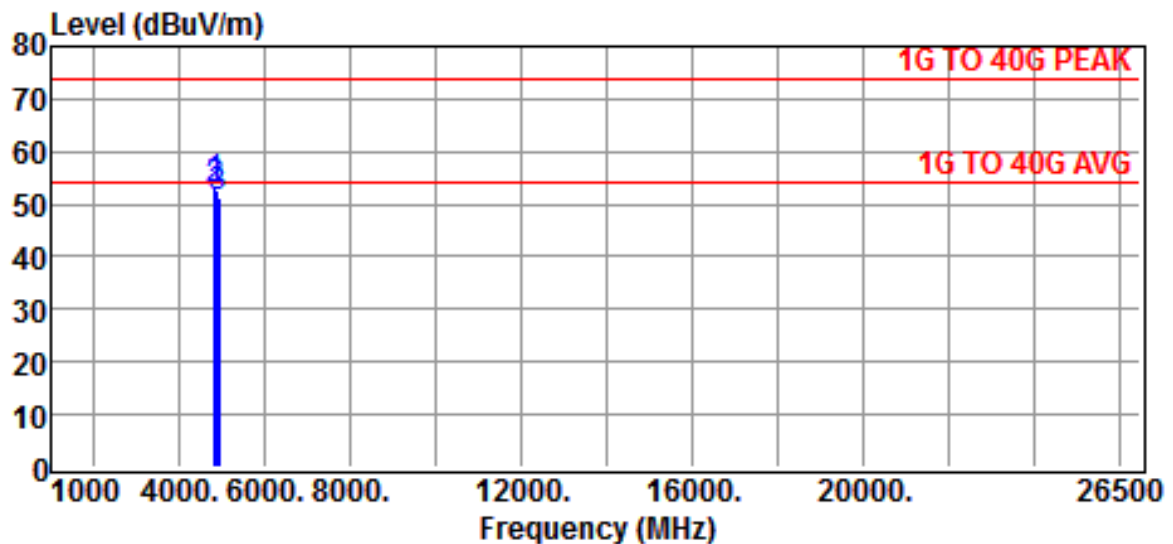
操作模式 : 發射接收(ANT1)

基本波頻率 : LO:2422MHz ,MI:2442MHz ,HI:2462MHz

(Local Frequency : LO:2422MHz ,MI:2442MHz ,HI:2462MHz)

測試結果 : 合格

測試者 : 何仁逸



Site : Chamber #2

Date : 2018-03-30

Limit : 1G TO 40G PEAK

Ant. Pol. : HORIZONTAL

EUT : 汽車音響

Model : NTG6HIGH

Power Rating : DC12V(Power from DC Supply)

Temp. : 25 °C

Engineer : Kazuma Ho

Humi. : 52 %

Test Mode : WiFi-N40

Test Mode : Ant 1

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4844.0000	52.20	1.60	53.80	74.00	-20.20	Peak
4884.0000	50.91	1.71	52.62	74.00	-21.38	Peak
4924.0000	49.18	1.88	51.06	74.00	-22.94	Peak

Note :

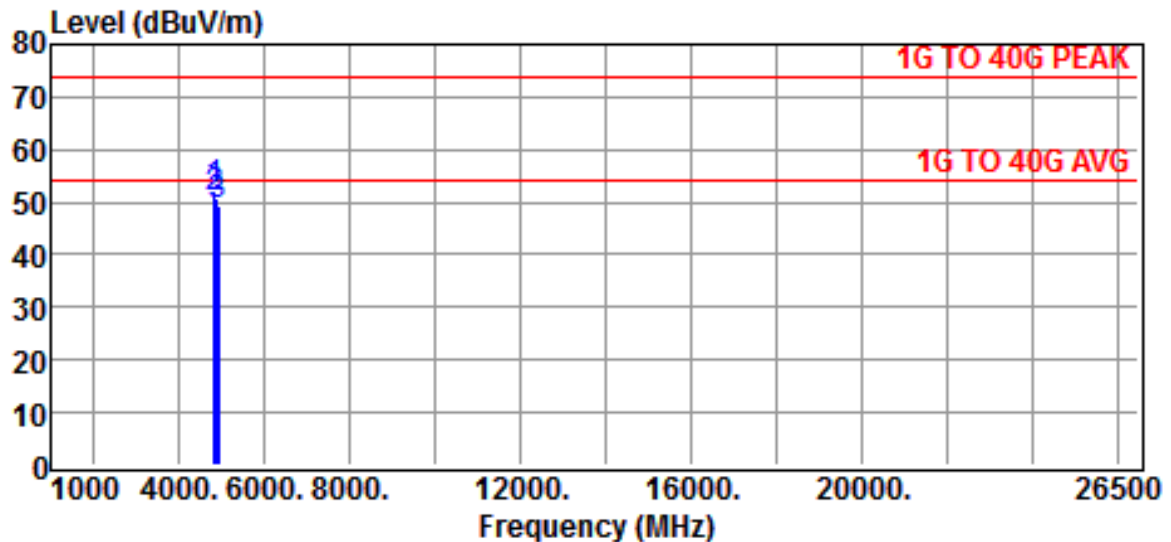
1. Result = Reading + Corrected Factor

2. Average Result = Peak Result + Duty Factor ()

3. Corrected 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.



Site	:Chamber #2	Date	:2018-03-30
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	: 汽車音響	Model	:NTG6HIGH
Power Rating	:DC12V(Power from DC Supply)	Temp.	:25 °C
Engineer	: Kazuma Ho	Humi.	:52 %
Test Mode	:WiFi-N40		
Test Mode	:Ant 1		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4844.0000	50.78	1.60	52.38	74.00	-21.62	Peak
4884.0000	49.01	1.71	50.72	74.00	-23.28	Peak
4924.0000	47.54	1.88	49.42	74.00	-24.58	Peak

Note :

1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected 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.

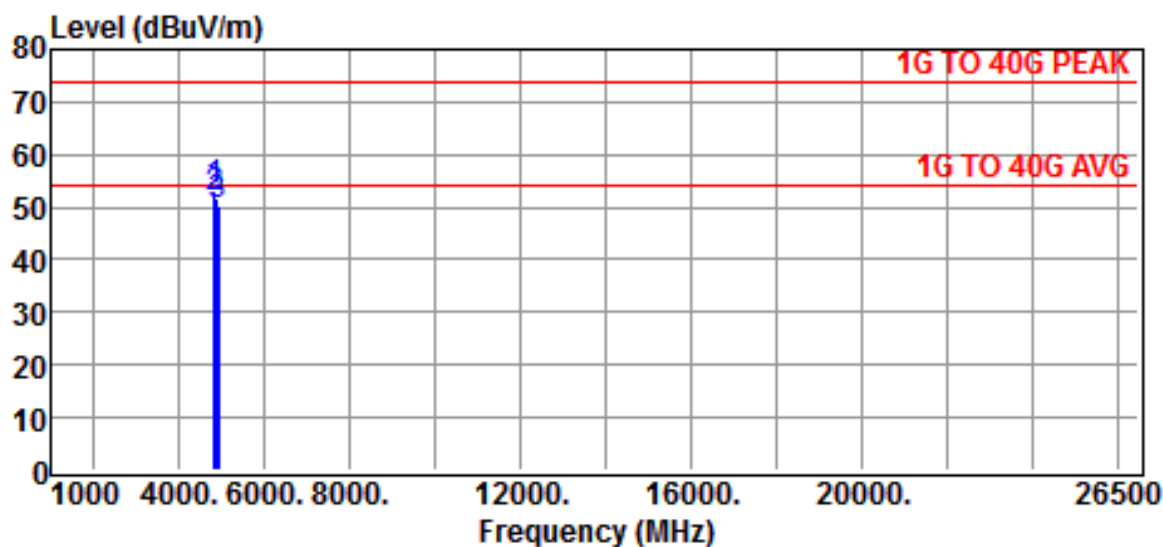
操作模式 : 發射接收(ANT2)

基本波頻率 : LO:2422MHz ,MI:2437MHz ,HI:2452MHz

(Local Frequency : LO:2422MHz ,MI:2437MHz ,HI:2422MHz)

測試結果 : 合格

測試者 : 何仁逸



Site : Chamber #2

Date : 2018-03-30

Limit : 1G TO 40G PEAK

Ant. Pol. : HORIZONTAL

EUT : 汽車音響

Model : NTG6HIGH

Power Rating : DC12V(Power from DC Supply)

Temp. : 25 °C

Engineer : Kazuma Ho

Humi. : 52 %

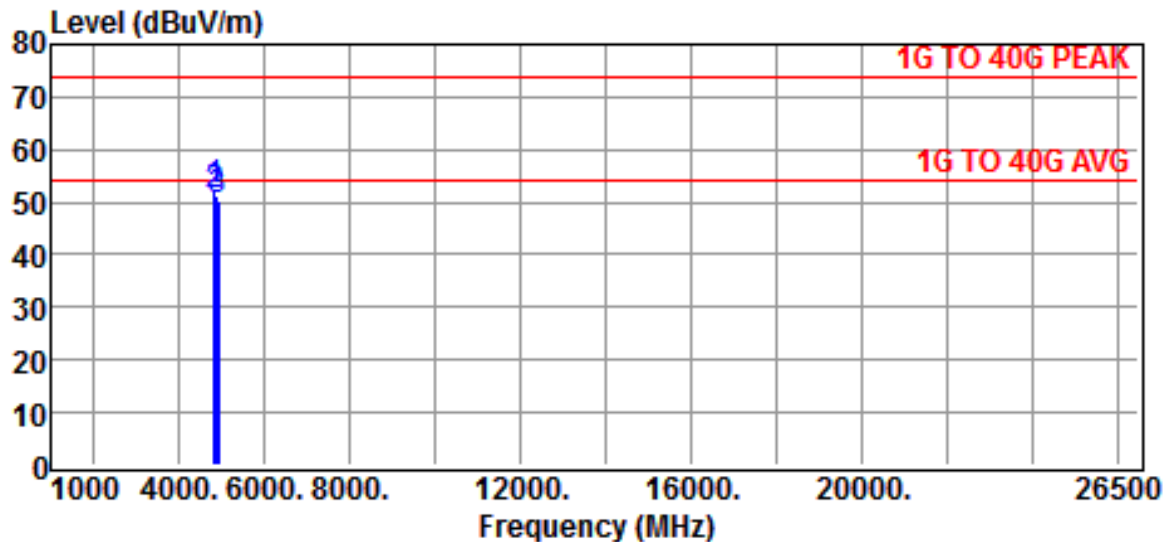
Test Mode : WiFi-N40

Test Mode : Ant 2

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4844.0000	51.62	1.60	53.22	74.00	-20.78	Peak
4884.0000	50.19	1.71	51.90	74.00	-22.10	Peak
4924.0000	48.40	1.88	50.28	74.00	-23.72	Peak

Note :

1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected 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.



Site	:Chamber #2	Date	:2018-03-30
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	: 汽車音響	Model	:NTG6HIGH
Power Rating	:DC12V(Power from DC Supply)	Temp.	:25 °C
Engineer	: Kazuma Ho	Humi.	:52 %
Test Mode	:WiFi-N40		
Test Mode	:Ant 2		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4844.0000	50.46	1.60	52.06	74.00	-21.94	Peak
4884.0000	49.41	1.71	51.12	74.00	-22.88	Peak
4924.0000	48.18	1.88	50.06	74.00	-23.94	Peak

Note :

1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected 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.

4.5.2 其它不必要之訊號

a. 1GHz以下

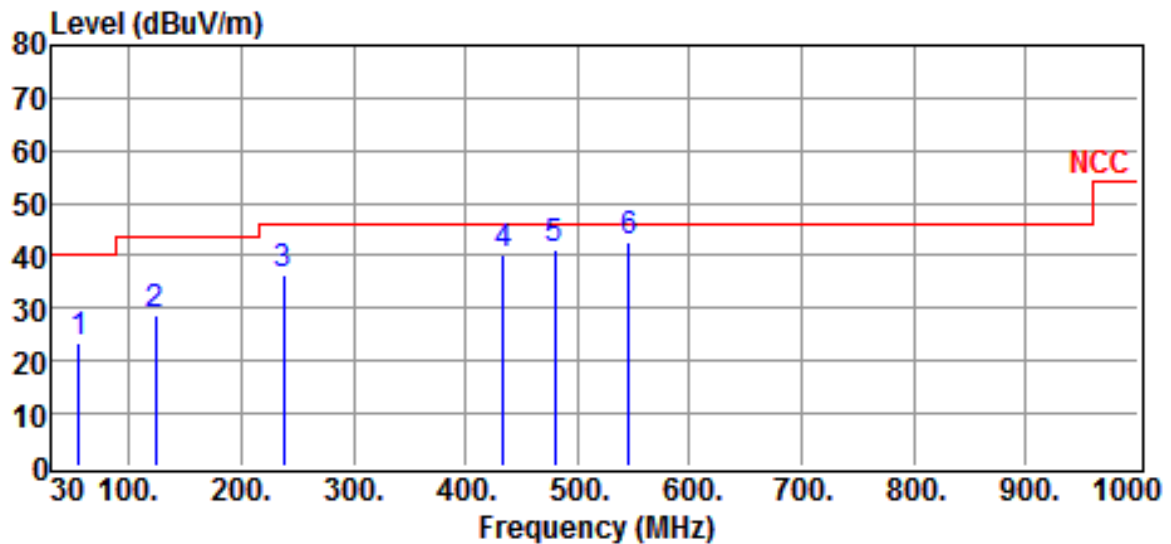
操作模式 : WiFi Mode

測試日期 : Mar. 19, 2018 環境溫度 : 23 °C

環境濕度 : 51 %

測試結果 : 合格

測試者 : 何仁逸



Site : Chamber #2

Date : 2018-03-19

Limit : NCC

Ant. Pol. : HORIZONTAL

EUT : 汽車音響

Model : NTG6HIGH

Power Rating : DC12V Battery

Temp. : 23 °C

Engineer : Kazuma Ho

Humi. : 51 %

Test Mode : WiFi

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
55.2200	36.79	-13.30	23.49	40.00	-16.51	QP
123.1200	36.88	-8.06	28.82	43.50	-14.68	QP
237.5800	43.11	-6.78	36.33	46.00	-9.67	QP
433.5200	40.36	-0.36	40.00	46.00	-6.00	QP
480.0800	41.09	0.14	41.23	46.00	-4.77	QP
546.0400	41.46	0.97	42.43	46.00	-3.57	QP

Note :

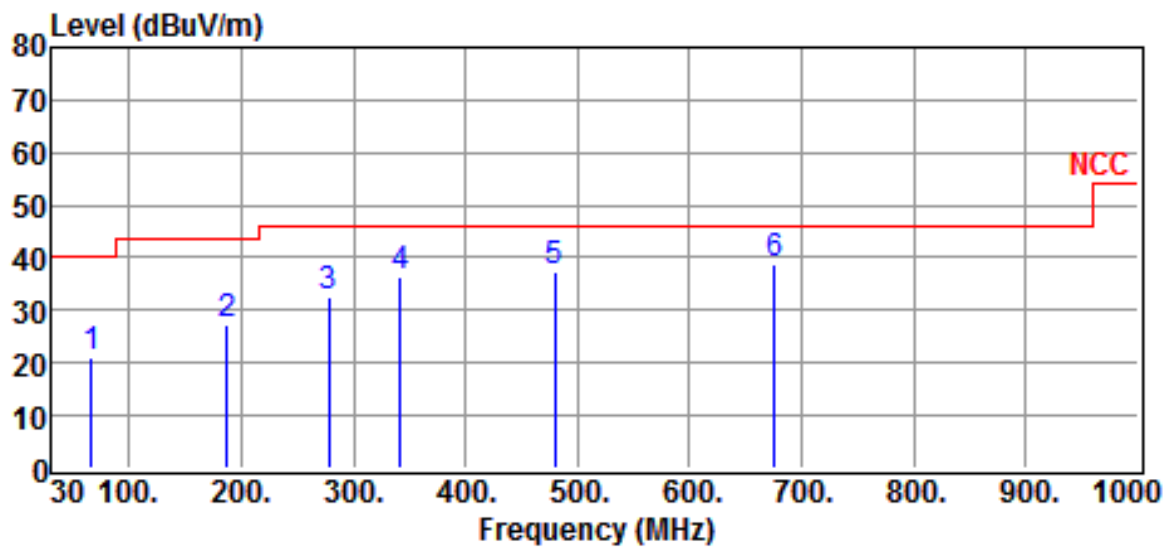
1. Result = Reading + Corrected Factor

2. Average Result = Peak Result + Duty Factor ()

3. Corrected 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.



Site	:Chamber #2	Date	:2018-03-19
Limit	:NCC	Ant. Pol.	:VERTICAL
EUT	: 汽車音響	Model	:NTG6HIGH
Power Rating	:DC12V Battery	Temp.	:23 °C
Engineer	: Kazuma Ho	Humi.	:51 %
Test Mode	:WiFi		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
66.8600	35.88	-14.70	21.18	40.00	-18.82	QP
187.1400	36.81	-9.35	27.46	43.50	-16.04	QP
278.3200	36.90	-4.28	32.62	46.00	-13.38	QP
342.3400	38.93	-2.43	36.50	46.00	-9.50	QP
480.0800	37.14	0.14	37.28	46.00	-8.72	QP
676.0200	35.29	3.62	38.91	46.00	-7.09	QP

Note :

1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected 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.

b. 1GHz以上

操作模式 : WiFi Mode

測試日期 : Mar. 19, 2018 環境溫度 : 23 °C

環境濕度 : 51 %

測試結果 : 合格

測試者 : 何仁逸

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

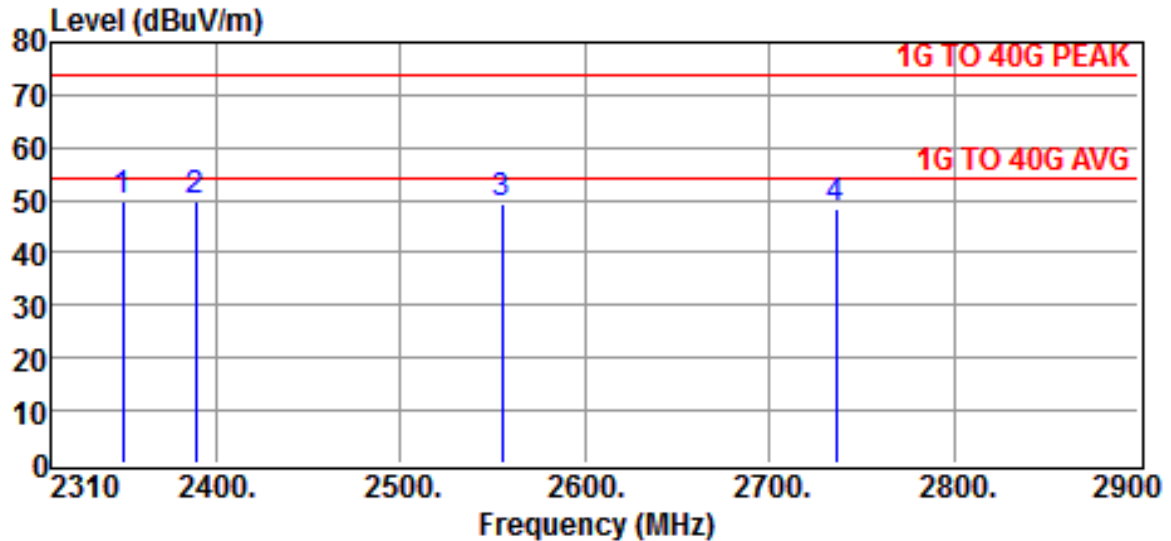
A. 802.11b

a. 限制頻帶之場強輻射測量

操作模式 : CH LO & HI - Restricted Bands

測試結果 : 合格

測試者 : 何仁逸



Site : Chamber #2

Date : 2018-03-30

Limit : 1G TO 40G PEAK

Ant. Pol. : HORIZONTAL

EUT : 汽車音響

Model : NTG6HIGH

Power Rating : DC12V(Power from DC Supply)

Temp. : 25 °C

Engineer : Kazuma Ho

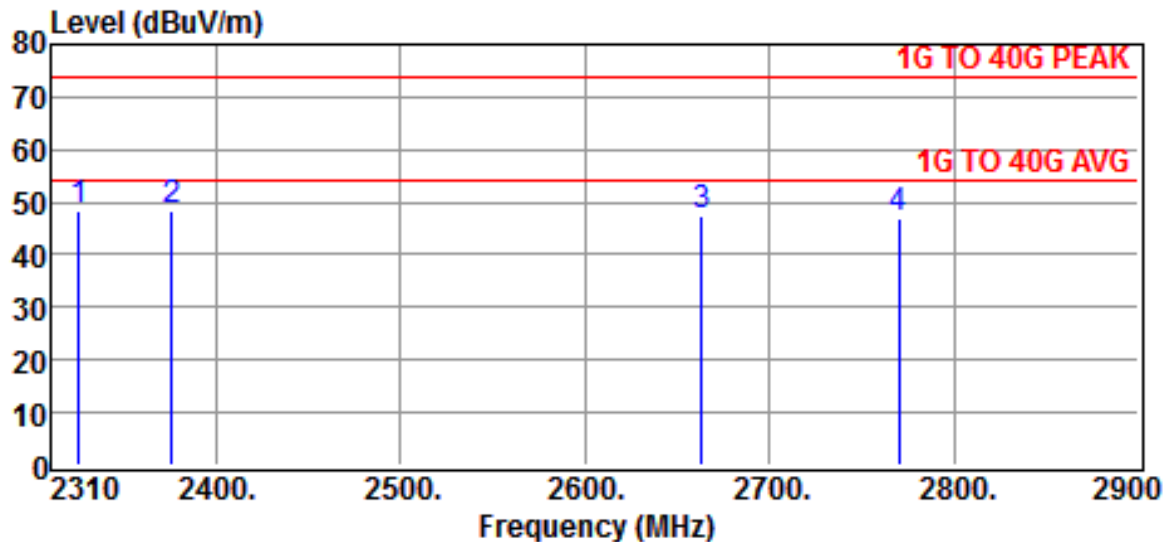
Humi. : 52 %

Test Mode : WiFi-B

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2349.0000	55.60	-5.59	50.01	74.00	-23.99	Peak
2389.0000	55.32	-5.48	49.84	74.00	-24.16	Peak
2555.0000	54.37	-5.03	49.34	74.00	-24.66	Peak
2736.0000	52.66	-4.30	48.36	74.00	-25.64	Peak

Note :

1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected 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.



Site	:Chamber #2	Date	:2018-03-30
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	: 汽車音響	Model	:NTG6HIGH
Power Rating	:DC12V(Power from DC Supply)	Temp.	:25 °C
Engineer	: Kazuma Ho	Humi.	:52 %
Test Mode	:WiFi-B		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2325.0000	53.89	-5.64	48.25	74.00	-25.75	Peak
2376.0000	53.70	-5.51	48.19	74.00	-25.81	Peak
2663.0000	52.14	-4.58	47.56	74.00	-26.44	Peak
2770.0000	50.96	-4.17	46.79	74.00	-27.21	Peak

Note :

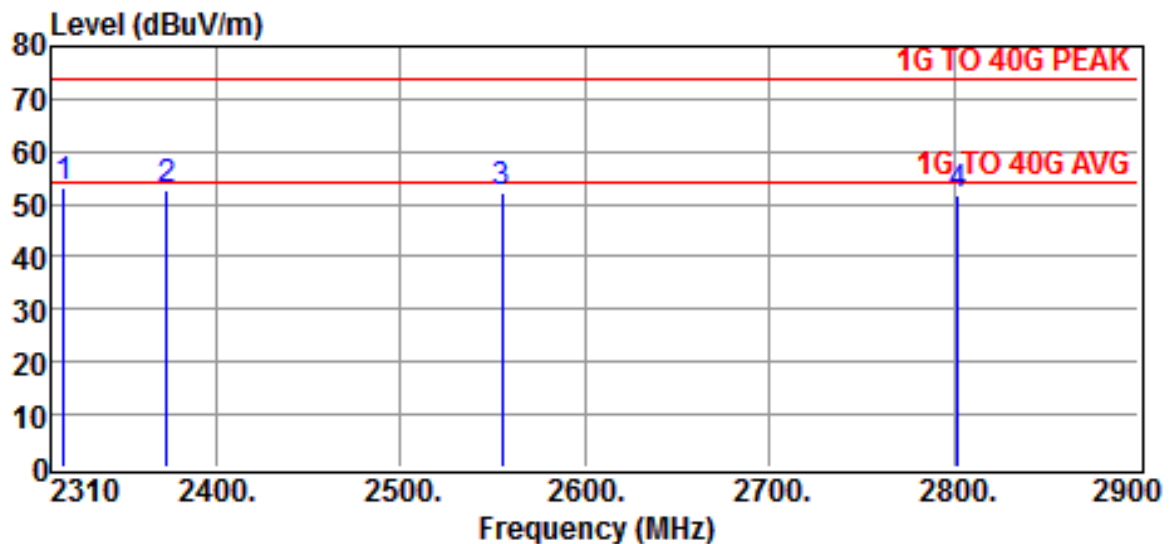
1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1GHz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.

B. 802.11g**a. 限制頻帶之場強輻射測量**

操作模式 : CH LO & HI - Restricted Bands

測試結果 : 合格

測試者 : 何仁逸



Site : Chamber #2

Date : 2018-03-30

Limit : 1G TO 40G PEAK

Ant. Pol. : HORIZONTAL

EUT : 汽車音響

Model : NTG6HIGH

Power Rating : DC12V(Power from DC Supply)

Temp. : 25 °C

Engineer : Kazuma Ho

Humi. : 52 %

Test Mode : WiFi-G

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2317.0000	58.66	-5.67	52.99	74.00	-21.01	Peak
2373.0000	58.16	-5.52	52.64	74.00	-21.36	Peak
2555.0000	57.46	-5.03	52.43	74.00	-21.57	Peak
2802.0000	56.01	-4.04	51.97	74.00	-22.03	Peak

Note :

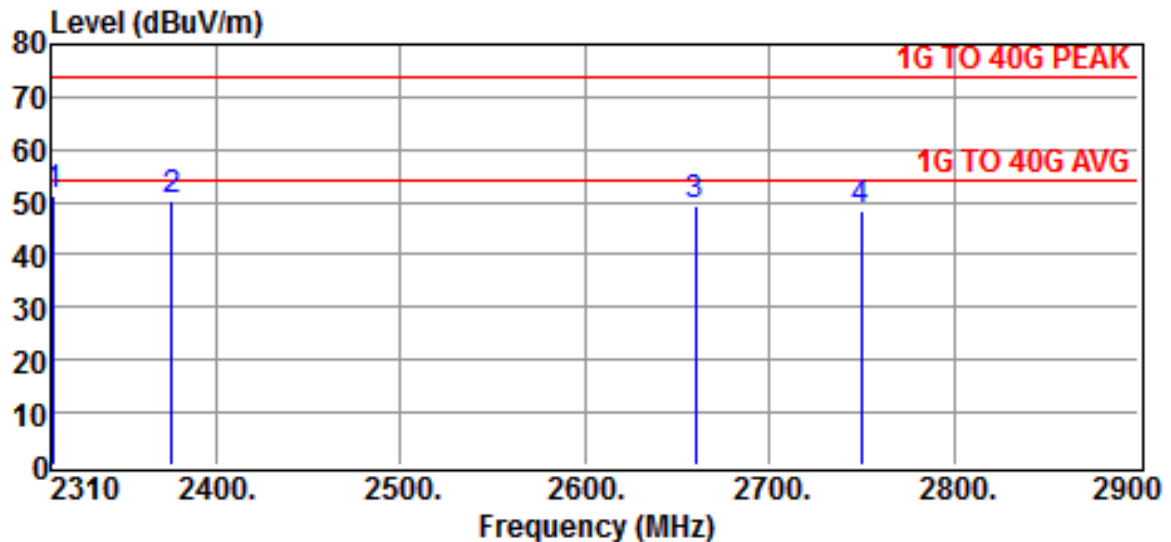
1. Result = Reading + Corrected Factor

2. Average Result = Peak Result + Duty Factor ()

3. Corrected 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.



Site	:Chamber #2	Date	:2018-03-30
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	: 汽車音響	Model	:NTG6HIGH
Power Rating	:DC12V(Power from DC Supply)	Temp.	:25 °C
Engineer	: Kazuma Ho	Humi.	:52 %
Test Mode	:WiFi-G		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2312.0000	56.95	-5.67	51.28	74.00	-22.72	Peak
2376.0000	55.81	-5.51	50.30	74.00	-23.70	Peak
2660.0000	54.04	-4.58	49.46	74.00	-24.54	Peak
2750.0000	52.73	-4.24	48.49	74.00	-25.51	Peak

Note :

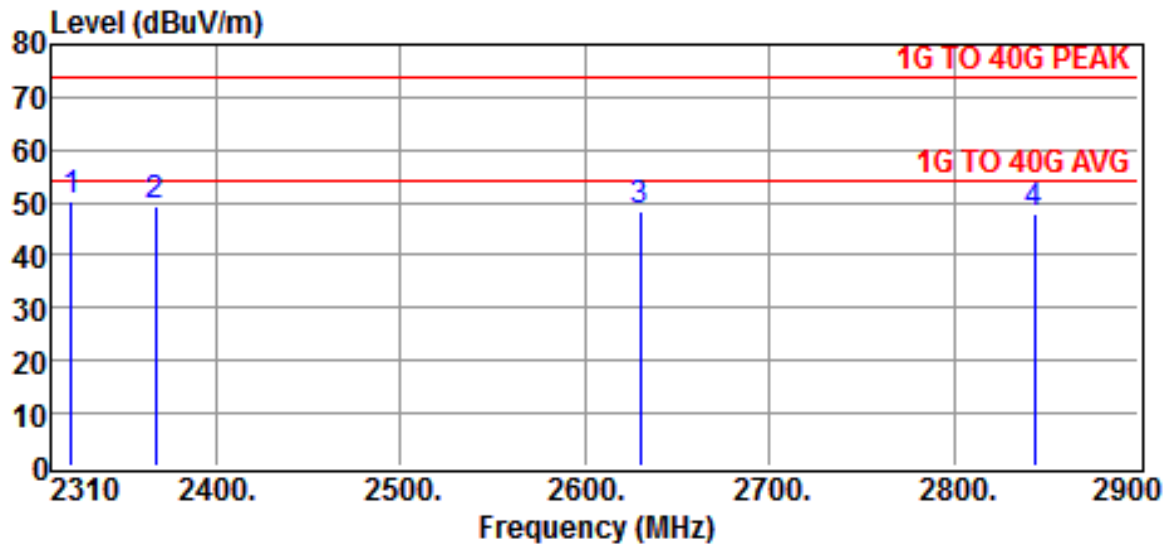
1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1GHz : Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.

C. 802.11n HT-20**a. 限制頻帶之場強輻射測量**

操作模式 : CH LO & HI - Restricted Bands

測試結果 : 合格

測試者 : 何仁逸



Site : Chamber #2

Date : 2018-03-30

Limit : 1G TO 40G PEAK

Ant. Pol. : HORIZONTAL

EUT : 汽車音響

Model : NTG6HIGH

Power Rating : DC12V(Power from DC Supply)

Temp. : 25 °C

Engineer : Kazuma Ho

Humi. : 52 %

Test Mode : WiFi-N20

Test Mode : Ant 1

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2321.0000	55.85	-5.65	50.20	74.00	-23.80	Peak
2367.0000	54.82	-5.55	49.27	74.00	-24.73	Peak
2630.0000	53.14	-4.70	48.44	74.00	-25.56	Peak
2844.0000	52.02	-3.90	48.12	74.00	-25.88	Peak

Note :

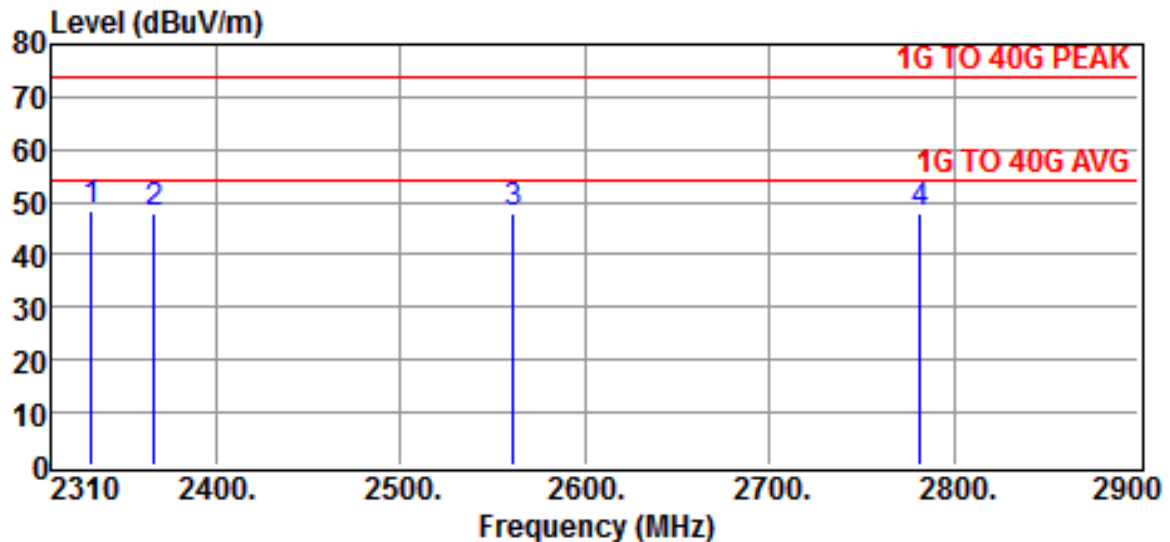
1. Result = Reading + Corrected Factor

2. Average Result = Peak Result + Duty Factor ()

3. Corrected 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.



Site	:Chamber #2	Date	:2018-03-30
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	: 汽車音響	Model	:NTG6HIGH
Power Rating	:DC12V(Power from DC Supply)	Temp.	:25 °C
Engineer	: Kazuma Ho	Humi.	:52 %
Test Mode	:WiFi-N20		
Test Mode	:Ant 1		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2332.0000	53.93	-5.64	48.29	74.00	-25.71	Peak
2366.0000	53.62	-5.55	48.07	74.00	-25.93	Peak
2561.0000	53.05	-4.98	48.07	74.00	-25.93	Peak
2782.0000	52.11	-4.10	48.01	74.00	-25.99	Peak

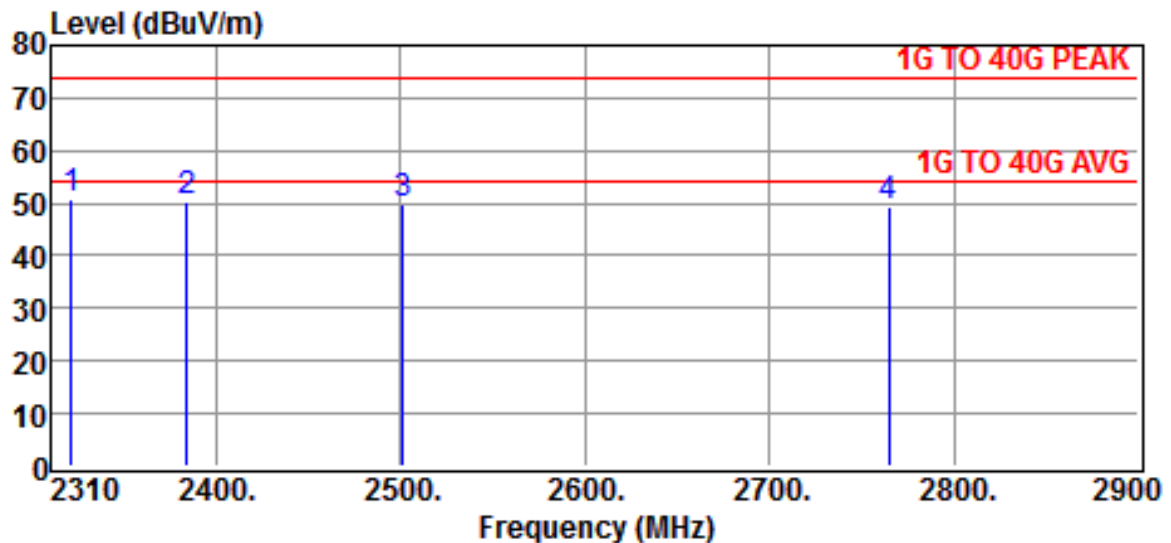
Note :

1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected 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.

操作模式 : CH LO & HI - Restricted Bands

測試結果 : 合格

測試者 : 何仁逸



Site : Chamber #2

Date : 2018-03-30

Limit : 1G TO 40G PEAK

Ant. Pol. : HORIZONTAL

EUT : 汽車音響

Model : NTG6HIGH

Power Rating : DC12V(Power from DC Supply)

Temp. : 25 °C

Engineer : Kazuma Ho

Humi. : 52 %

Test Mode : WiFi-N20

Test Mode : Ant 2

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2321.0000	56.40	-5.65	50.75	74.00	-23.25	Peak
2384.0000	55.60	-5.51	50.09	74.00	-23.91	Peak
2501.0000	55.24	-5.23	50.01	74.00	-23.99	Peak
2765.0000	53.47	-4.17	49.30	74.00	-24.70	Peak

Note :

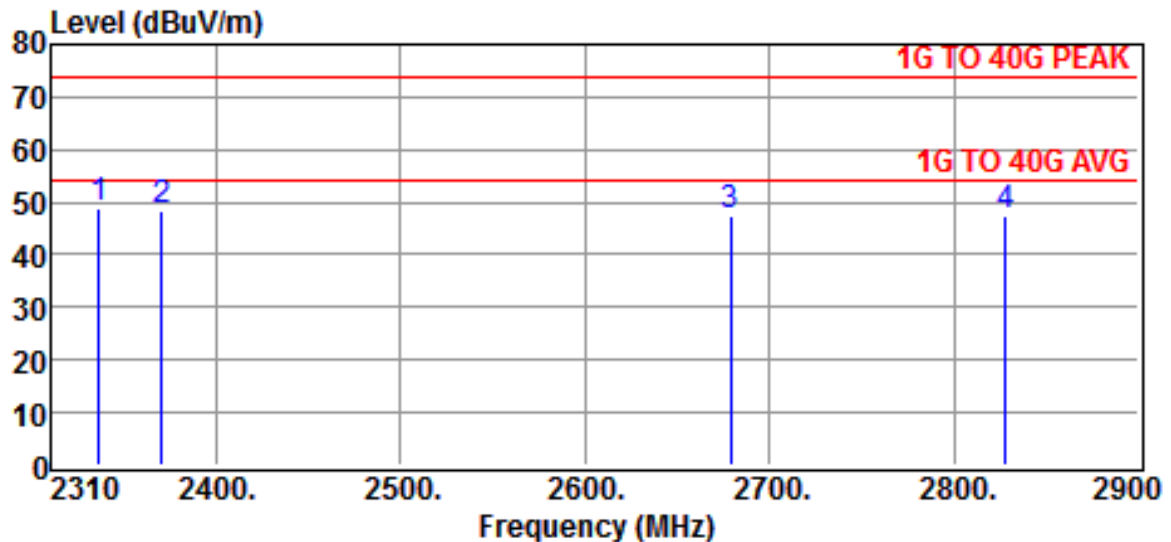
1. Result = Reading + Corrected Factor

2. Average Result = Peak Result + Duty Factor ()

3. Corrected 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.

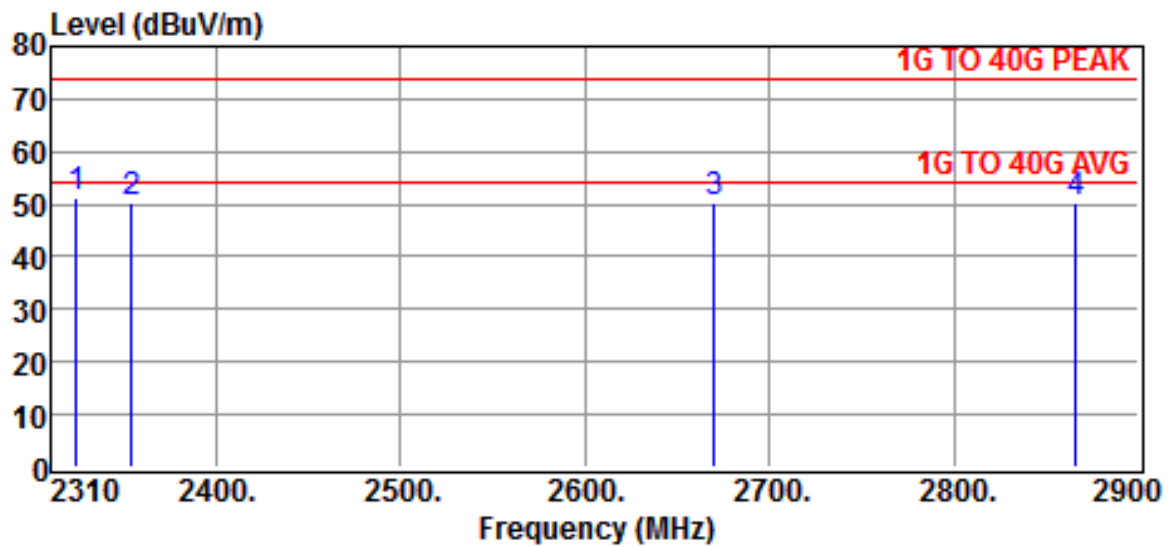


Site	:Chamber #2	Date	:2018-03-30
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	: 汽車音響	Model	:NTG6HIGH
Power Rating	:DC12V(Power from DC Supply)	Temp.	:25 °C
Engineer	: Kazuma Ho	Humi.	:52 %
Test Mode	:WiFi-N20		
Test Mode	:Ant 2		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2336.0000	54.65	-5.60	49.05	74.00	-24.95	Peak
2370.0000	53.73	-5.52	48.21	74.00	-25.79	Peak
2679.0000	52.07	-4.50	47.57	74.00	-26.43	Peak
2828.0000	51.36	-3.91	47.45	74.00	-26.55	Peak

Note :

1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected 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.

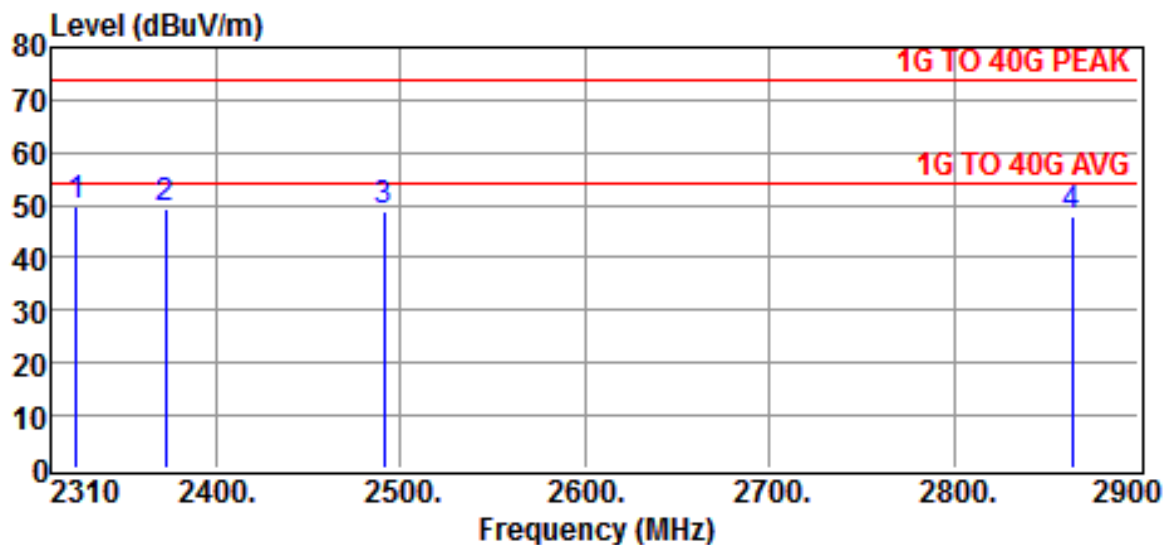
D. 802.11n HT-40

Site	:Chamber #2	Date	:2018-03-30
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	: 汽車音響	Model	:NTG6HIGH
Power Rating	:DC12V(Power from DC Supply)	Temp.	:25 °C
Engineer	: Kazuma Ho	Humi.	:52 %
Test Mode	:WiFi-N40		
Test Mode	:Ant 1		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2324.0000	56.98	-5.64	51.34	74.00	-22.66	Peak
2354.0000	56.06	-5.56	50.50	74.00	-23.50	Peak
2670.0000	54.81	-4.57	50.24	74.00	-23.76	Peak
2866.0000	54.02	-3.78	50.24	74.00	-23.76	Peak

Note :

1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected 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.

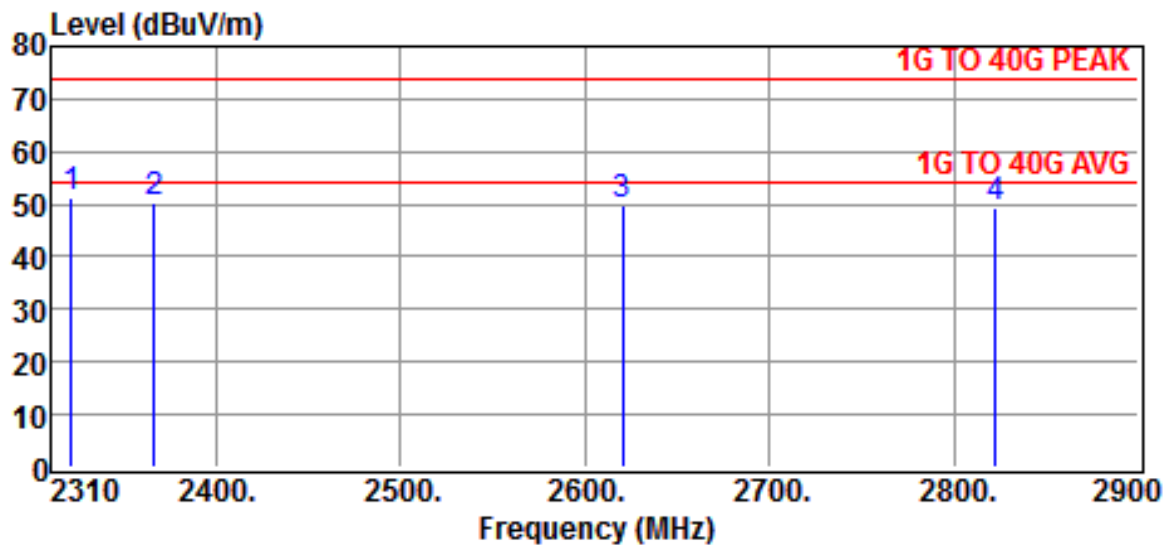


Site	:Chamber #2	Date	:2018-03-30
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	: 汽車音響	Model	:NTG6HIGH
Power Rating	:DC12V(Power from DC Supply)	Temp.	:25 °C
Engineer	: Kazuma Ho	Humi.	:52 %
Test Mode	:WiFi-N40		
Test Mode	:Ant 1		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2324.0000	55.55	-5.64	49.91	74.00	-24.09	Peak
2372.0000	54.96	-5.52	49.44	74.00	-24.56	Peak
2491.0000	54.06	-5.24	48.82	74.00	-25.18	Peak
2864.0000	51.63	-3.79	47.84	74.00	-26.16	Peak

Note :

1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected 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.

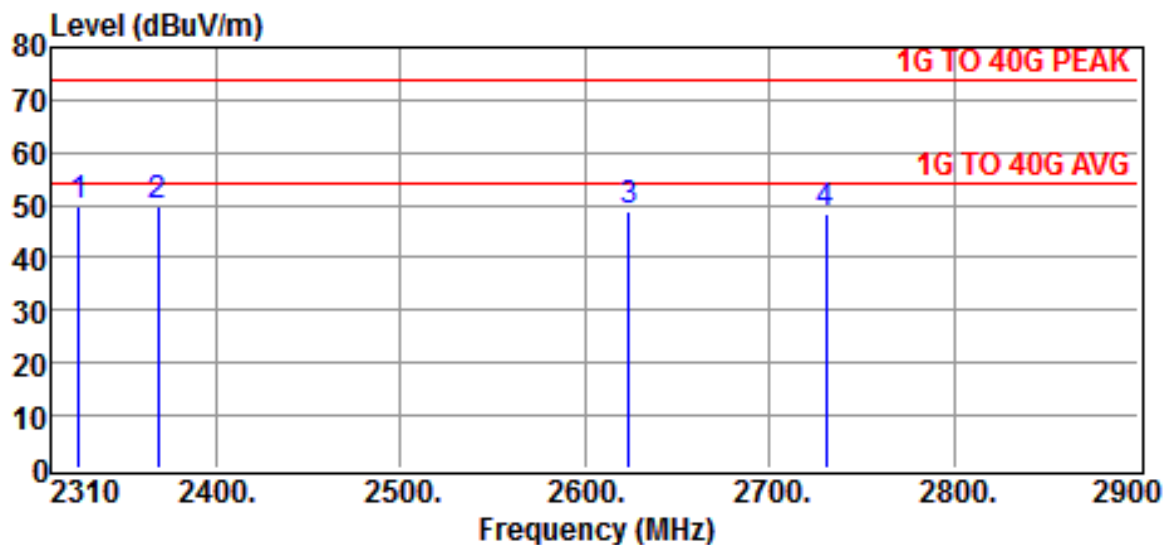


Site	:Chamber #2	Date	:2018-03-30
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	: 汽車音響	Model	:NTG6HIGH
Power Rating	:DC12V(Power from DC Supply)	Temp.	:25 °C
Engineer	: Kazuma Ho	Humi.	:52 %
Test Mode	:WiFi-N40		
Test Mode	:Ant 2		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2321.0000	57.08	-5.65	51.43	74.00	-22.57	Peak
2366.0000	56.06	-5.55	50.51	74.00	-23.49	Peak
2620.0000	54.51	-4.77	49.74	74.00	-24.26	Peak
2823.0000	53.55	-3.97	49.58	74.00	-24.42	Peak

Note :

1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected 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.



Site	:Chamber #2	Date	:2018-03-30
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	: 汽車音響	Model	:NTG6HIGH
Power Rating	:DC12V(Power from DC Supply)	Temp.	:25 °C
Engineer	: Kazuma Ho	Humi.	:52 %
Test Mode	:WiFi-N40		
Test Mode	:Ant 2		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2325.0000	55.62	-5.64	49.98	74.00	-24.02	Peak
2368.0000	55.17	-5.55	49.62	74.00	-24.38	Peak
2624.0000	53.68	-4.70	48.98	74.00	-25.02	Peak
2731.0000	52.90	-4.31	48.59	74.00	-25.41	Peak

Note :

1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected 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.

4.6 輻射之測試配置

圖 1：量測頻率低於1GHz之測試配置

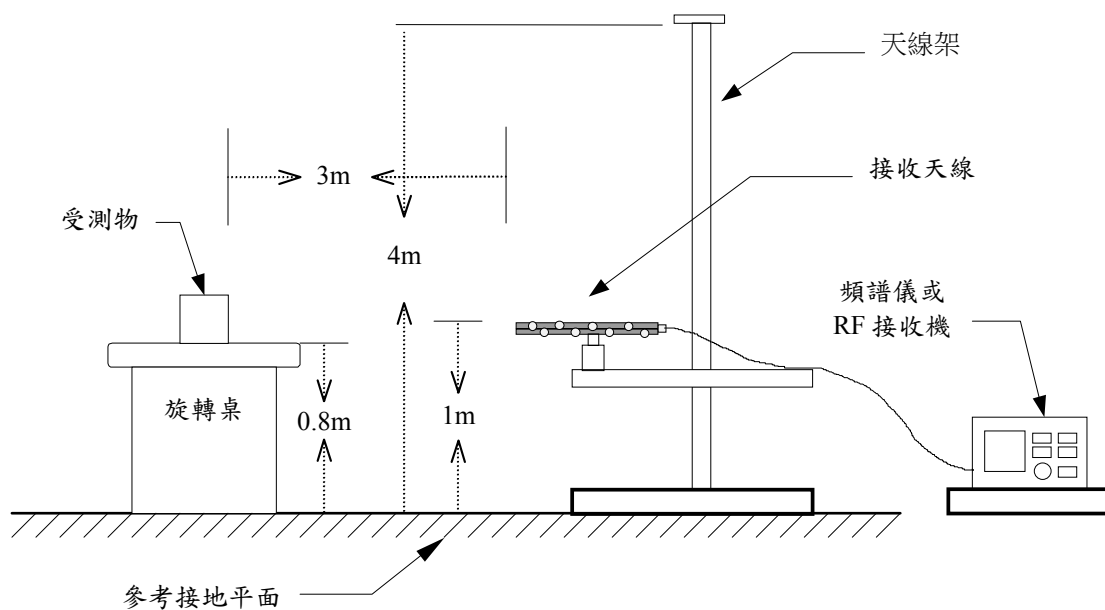
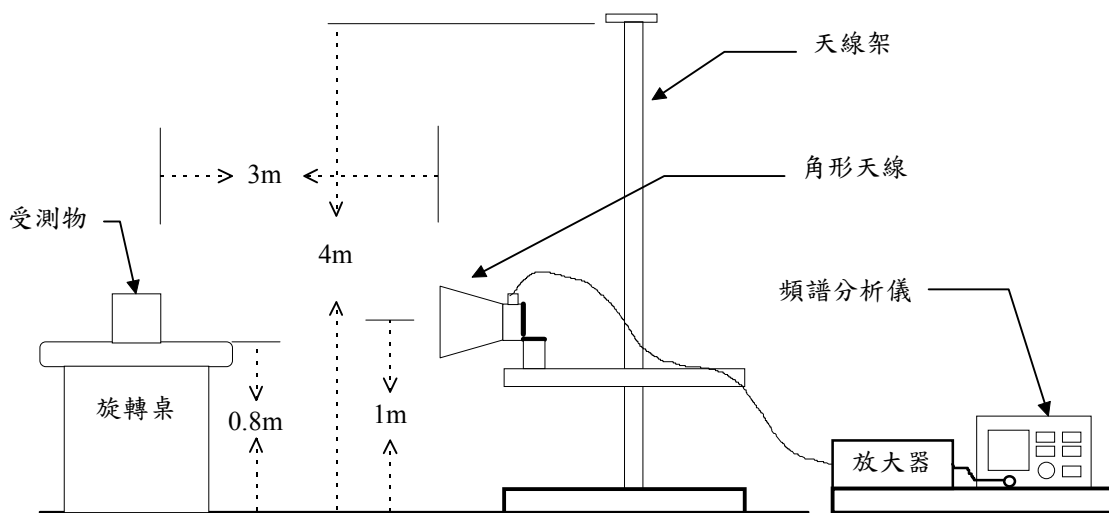
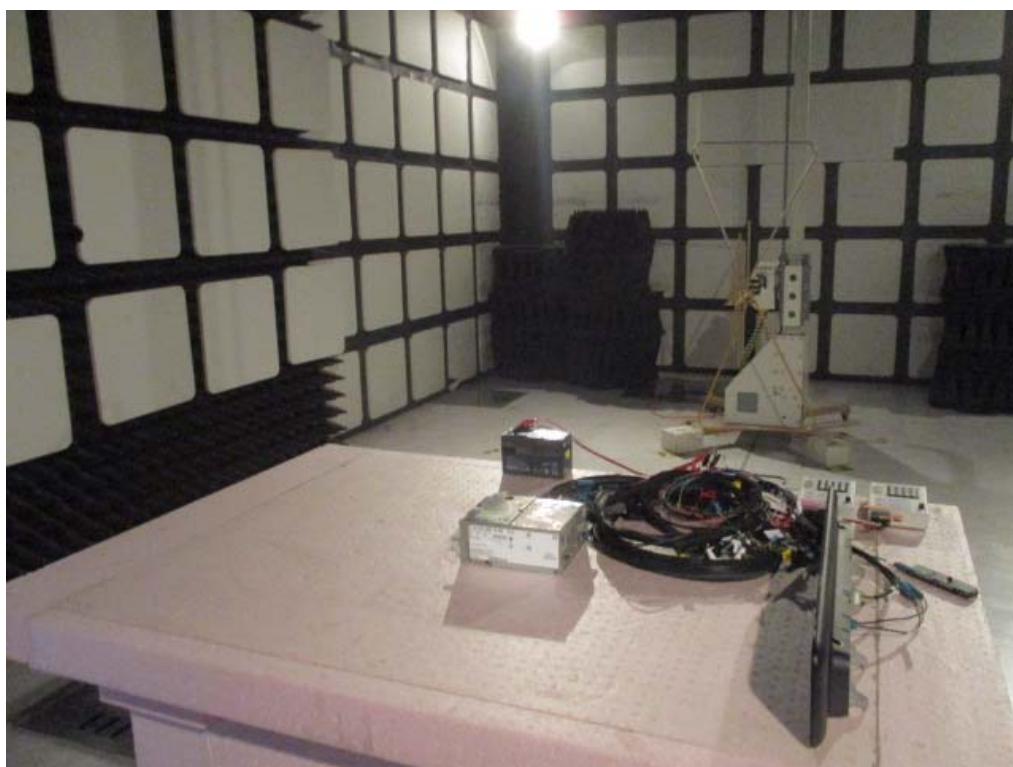


圖 2：量測頻率高於1GHz之測試配置



4.7 輻射量測之配置照片

(30MHz~1000MHz)



(Above 1GHz)



5 電源線傳導干擾之量測

5.1 適用標準

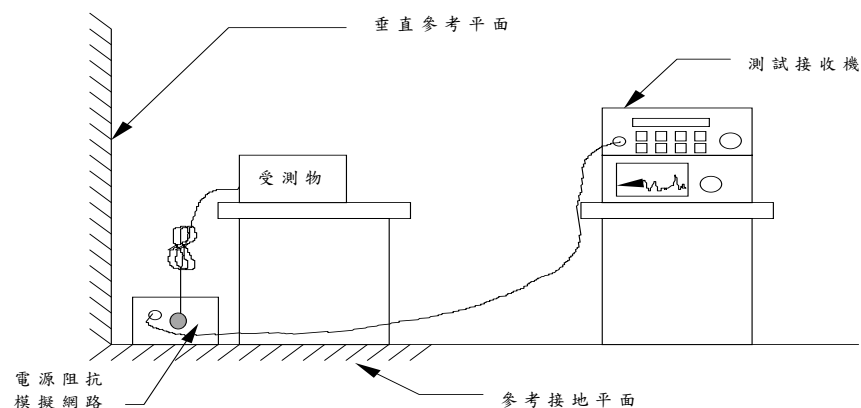
依據低功率射頻電機技術規範2.3節之要求。

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

因本產品為電池供電，故無需實施此項檢測。

6 天線增益之要求

6.1 適用標準

低功率發射機，依據低功率射頻電機技術規範3.10.1.3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

此裝置使用Patch天線，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。

廠牌:Hirschmann / 型號:A247 905 83 00 / Gain: 2.4GHz(3dBi) 、5.7GHz(4.5dBi)

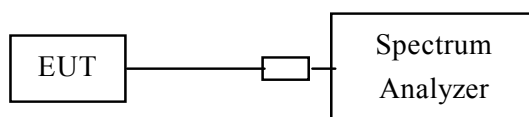
7 發射頻寬之量測

7.1 適用標準

對使用數位調變之低功率發射機，依據低功率射頻電機技術規範3.10.1.6節之(2)(A)規定，6dB之頻寬至少應有500 kHz。

7.2 測試配置

圖四



7.3 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
EMI Test Receiver	Rohde & Schwarz	ESU 40	2017/11/10	2018/11/09
Attenuator	MINI-CIRCUITS	BW-S10W2+	2017/10/06	2018/10/05
Attenuator	MINI-CIRCUITS	BW-S20W2+	2017/10/06	2018/10/05
Attenuator	MINI-CIRCUITS	BW-S30W2+	2017/10/06	2018/10/05

7.4 發射頻寬之量測結果

測試日期 : Mar. 23, 2018
測試結果 : 合格

環境溫度 : 25°C

環境濕度 : 55 %
測試者 : 何仁逸

A. 802.11b

- a) Channel Low : 6 dB 發射頻帶寬度為 8.16 MHz。
- b) Channel Middle : 6 dB 發射頻帶寬度為 8.16 MHz。
- c) Channel High : 6 dB 發射頻帶寬度為 8.16 MHz。

B. 802.11g

- a) Channel Low : 6 dB 發射頻帶寬度為 16.44 MHz。
- b) Channel Middle : 6 dB 發射頻帶寬度為 16.44 MHz。
- c) Channel High : 6 dB 發射頻帶寬度為 16.44 MHz。

C. 802.11n HT-20

Antenna1

- a) Channel Low : 6 dB 發射頻帶寬度為 17.70 MHz。
- b) Channel Middle : 6 dB 發射頻帶寬度為 17.70 MHz。
- c) Channel High : 6 dB 發射頻帶寬度為 17.70 MHz。

Antenna2

- a) Channel Low : 6 dB 發射頻帶寬度為 17.58 MHz。
- b) Channel Middle : 6 dB 發射頻帶寬度為 17.58 MHz。
- c) Channel High : 6 dB 發射頻帶寬度為 17.58 MHz。

D. 802.11n HT-40

Antenna1

- a) Channel Low : 6 dB 發射頻帶寬度為 35.10 MHz。
- b) Channel Middle : 6 dB 發射頻帶寬度為 35.10 MHz。
- c) Channel High : 6 dB 發射頻帶寬度為 35.10 MHz。

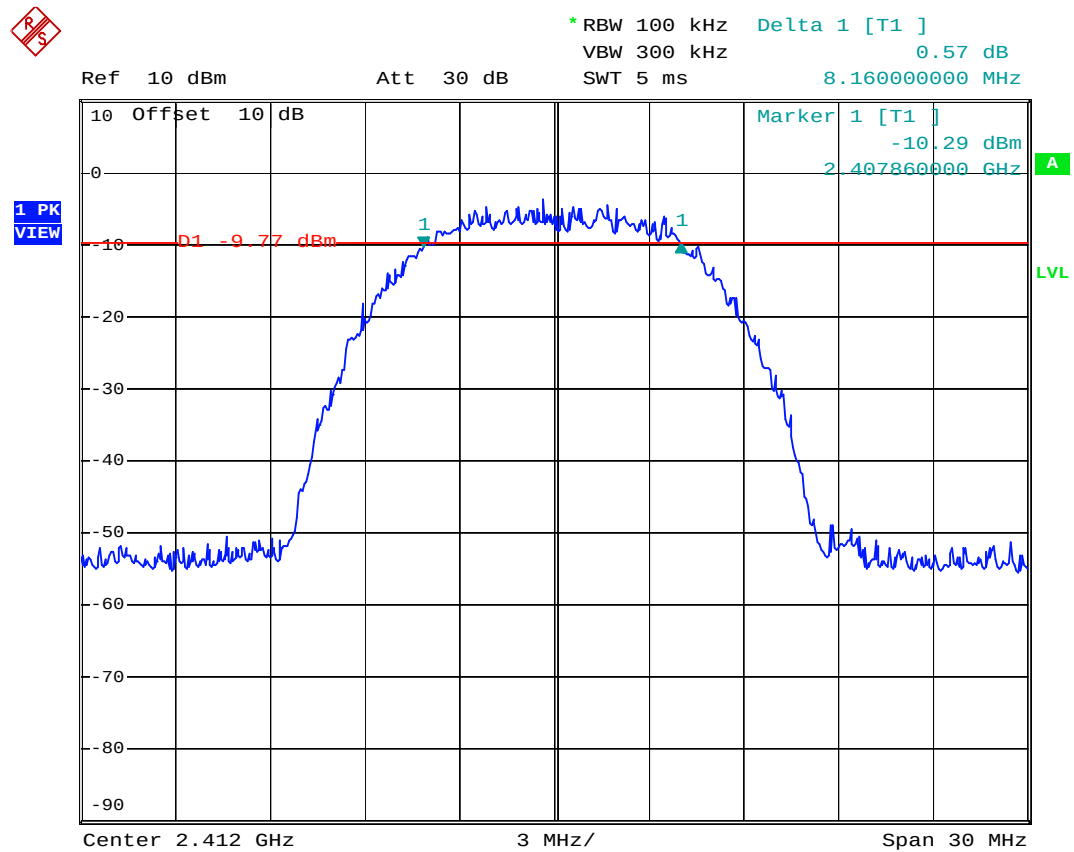
Antenna2

- a) Channel Low : 6 dB 發射頻帶寬度為 35.10 MHz。
- b) Channel Middle : 6 dB 發射頻帶寬度為 35.10 MHz。
- c) Channel High : 6 dB 發射頻帶寬度為 35.10 MHz。

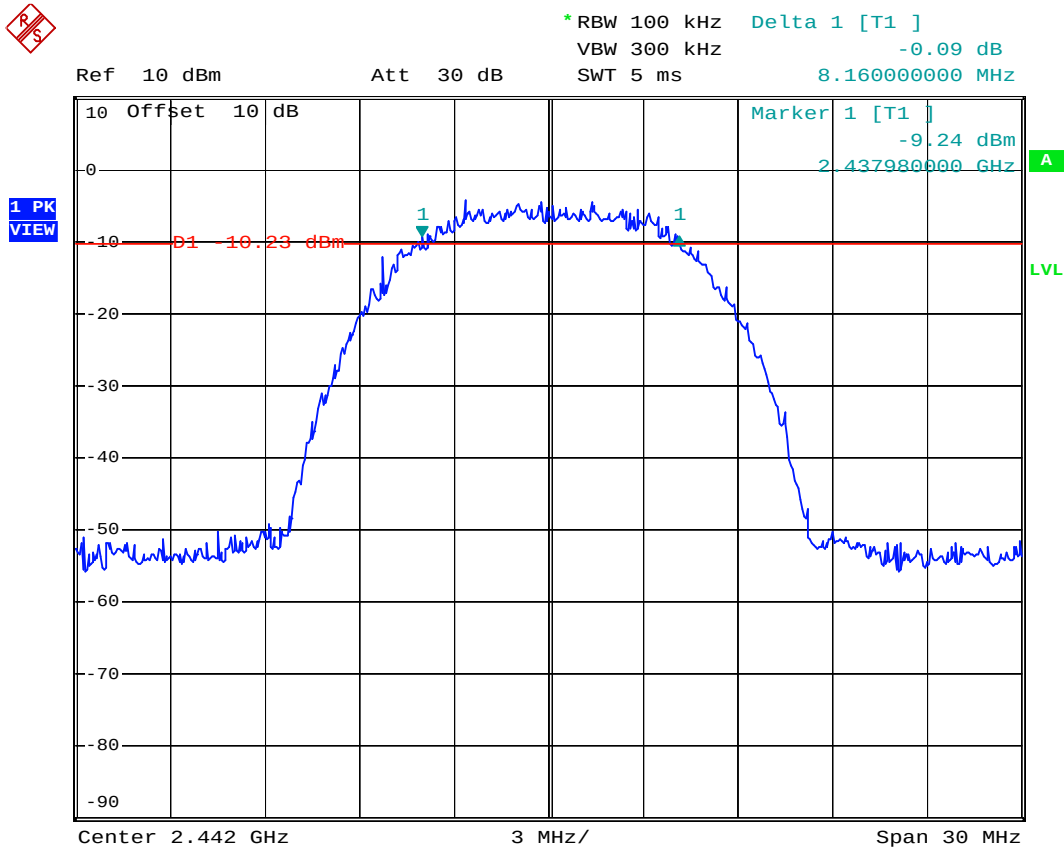
註：

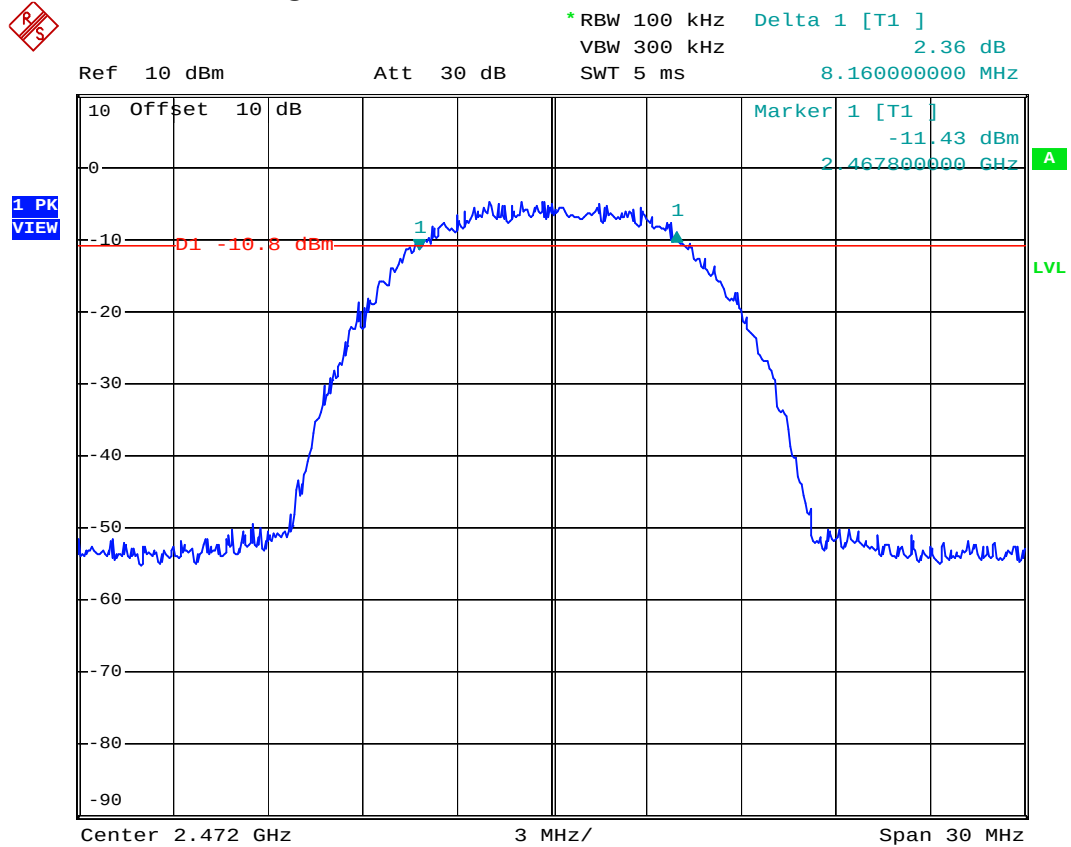
1. 本實驗室發射頻寬檢驗之擴充不確定度1500Hz。
2. 繪圖資料請參考下頁。

Mode: 802.11b/ Channel Low

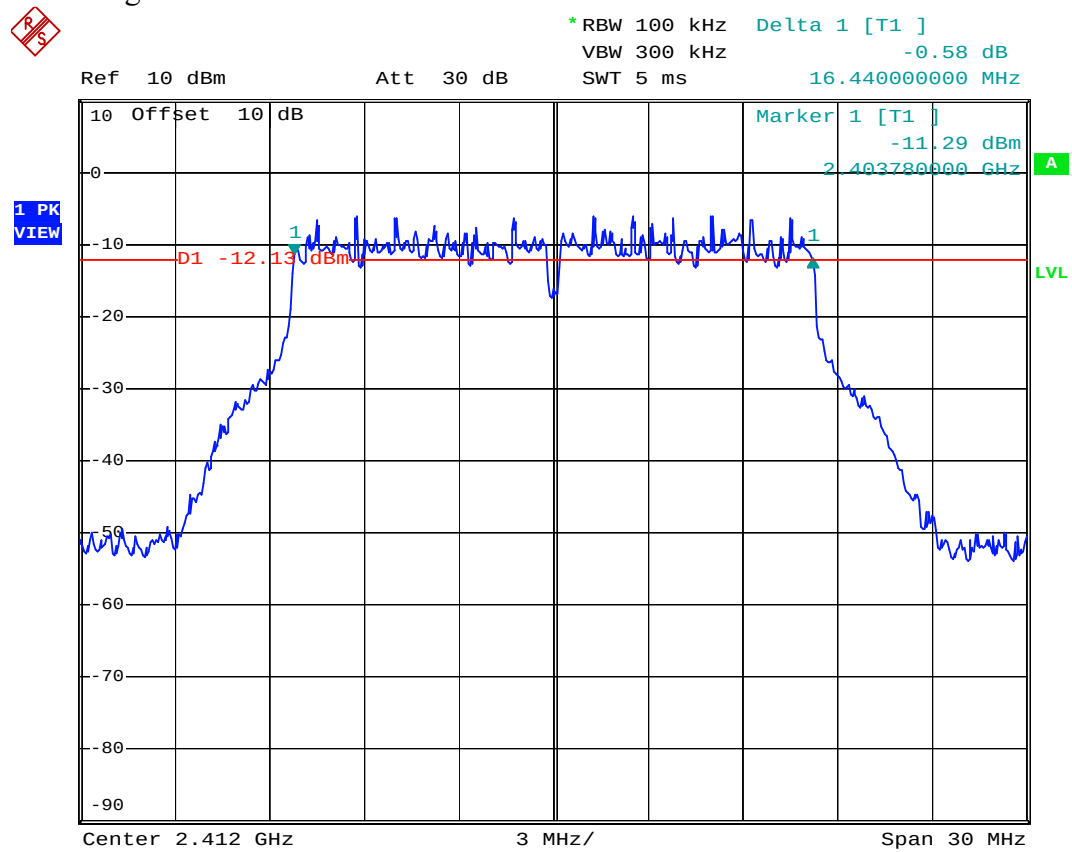


Mode: 802.11b/ Channel Middle





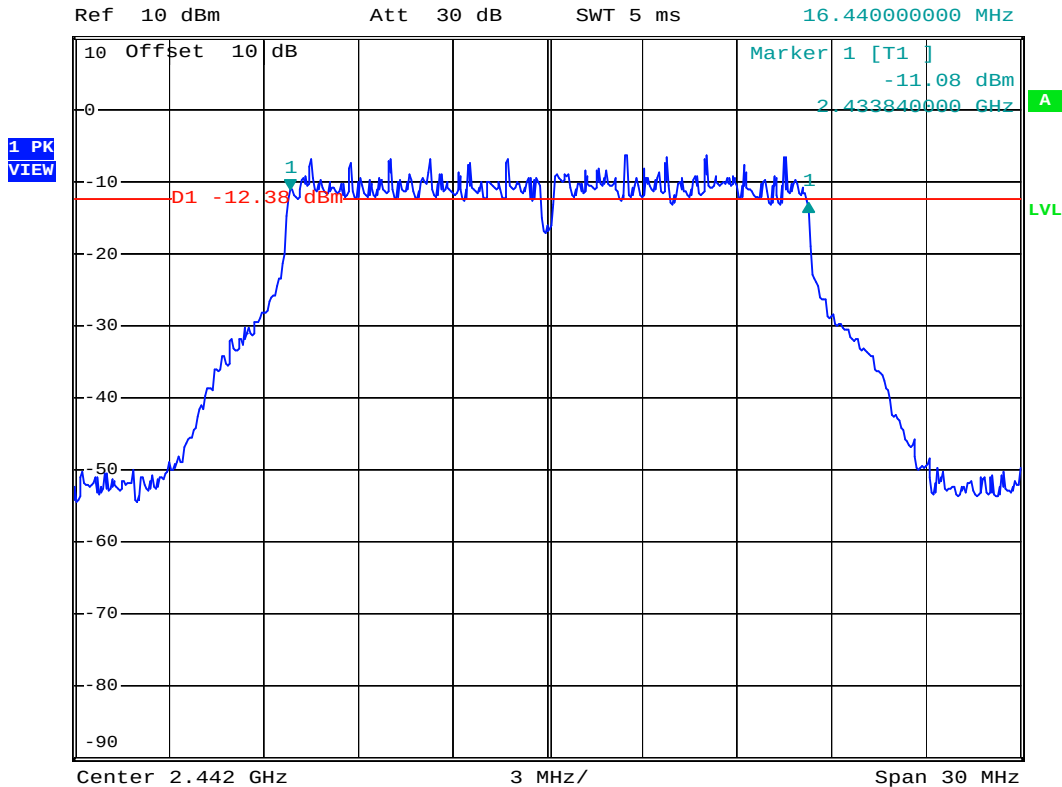
Mode: 802.11g/ Channel Low



Mode: 802.11g/ Channel Middle



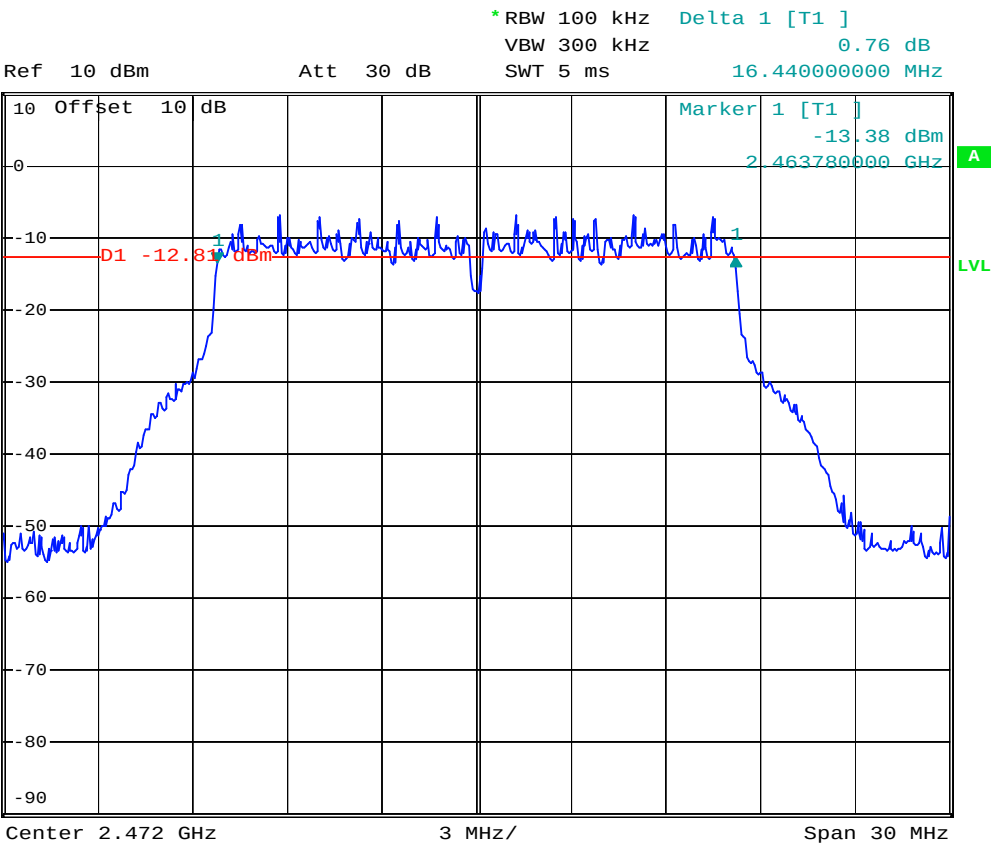
* RBW 100 kHz Delta 1 [T1]
VBW 300 kHz -1.93 dB
SWT 5 ms 16.440000000 MHz



Mode: 802.11g/ Channel High

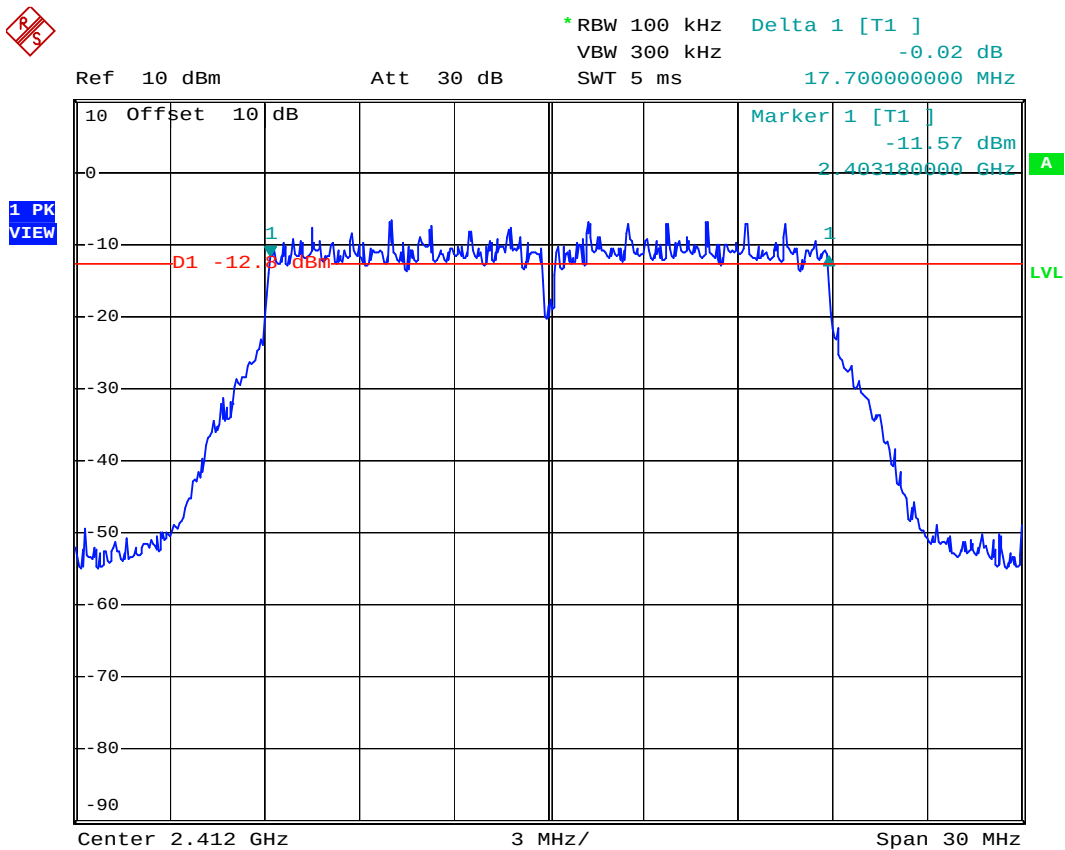


1 PK
VIEW



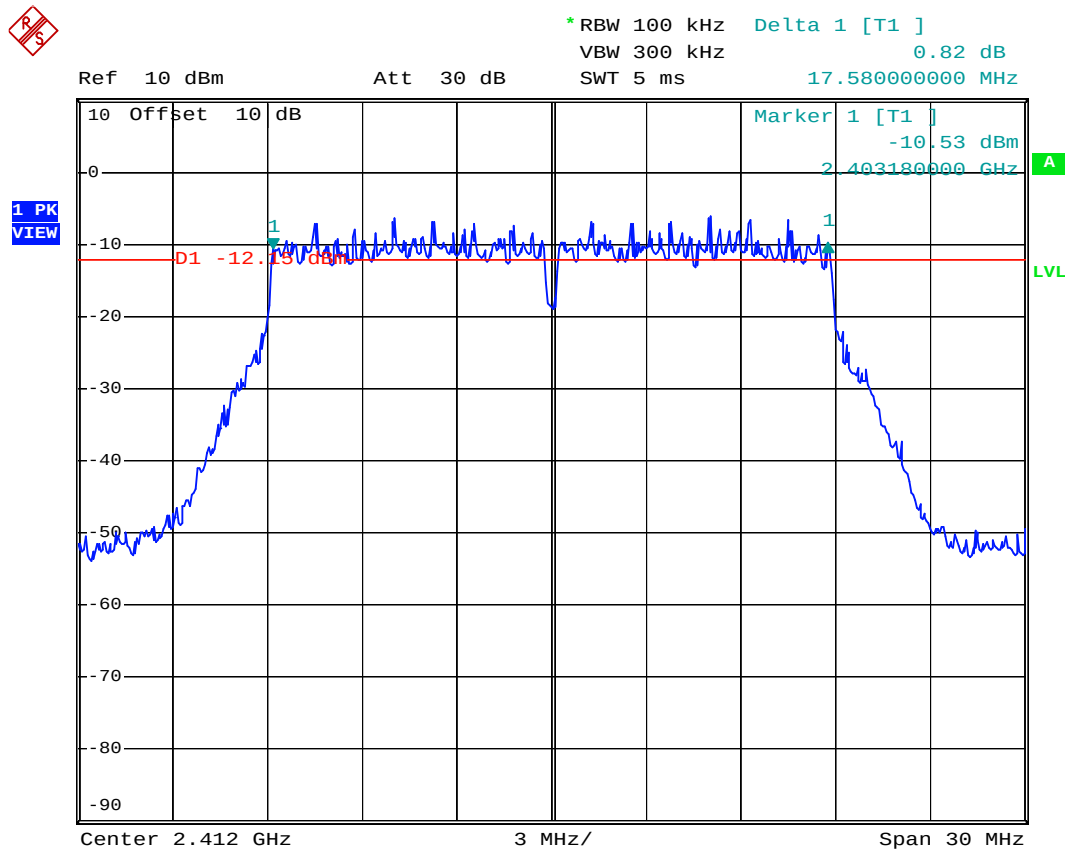
Mode: 802.11n HT-20 / Channel Low

Antenna1



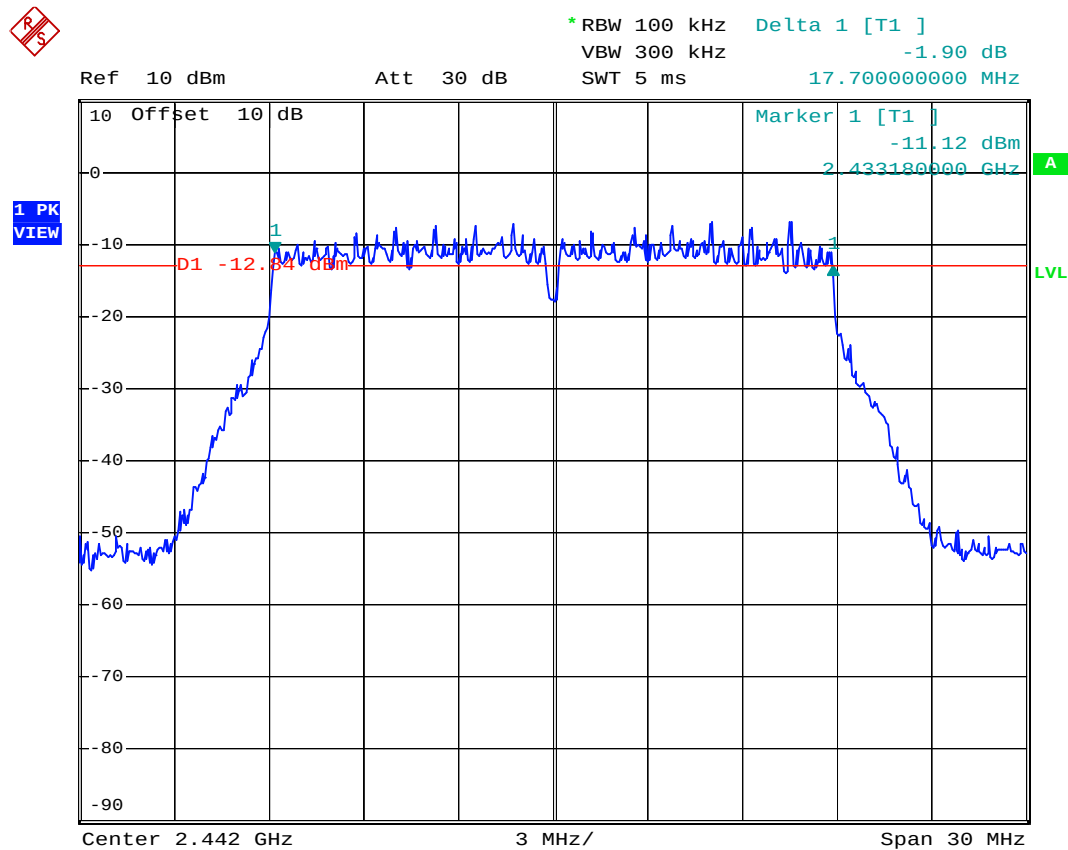
Mode: 802.11n HT-20 / Channel Low

Antenna2



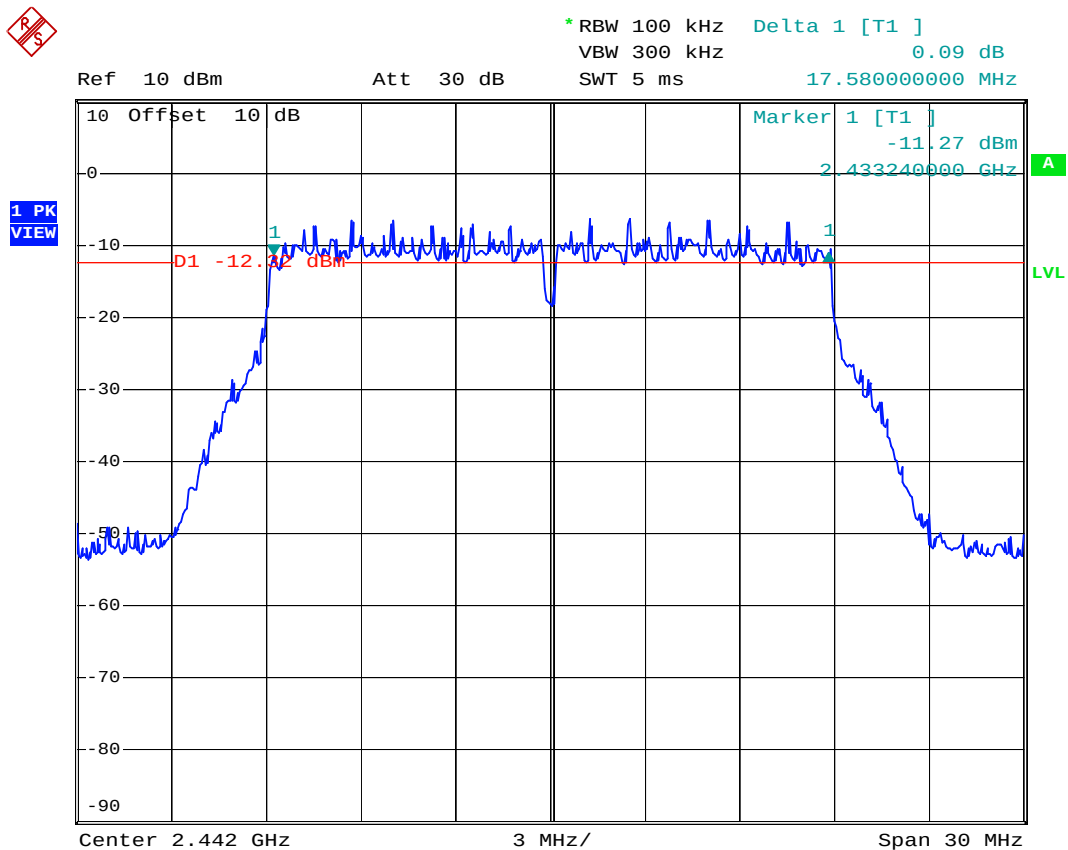
Mode: 802.11n HT-20 / Channel Middle

Antenna1



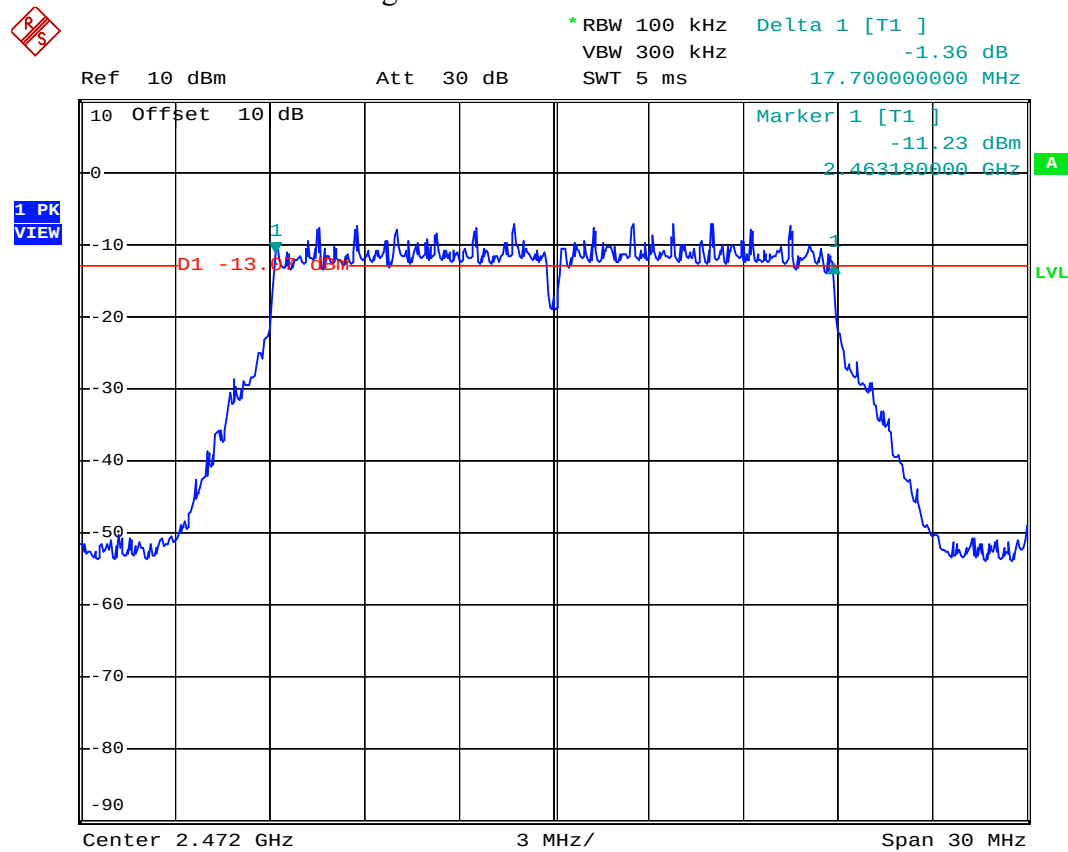
Mode: 802.11n HT-20 / Channel Middle

Antenna2



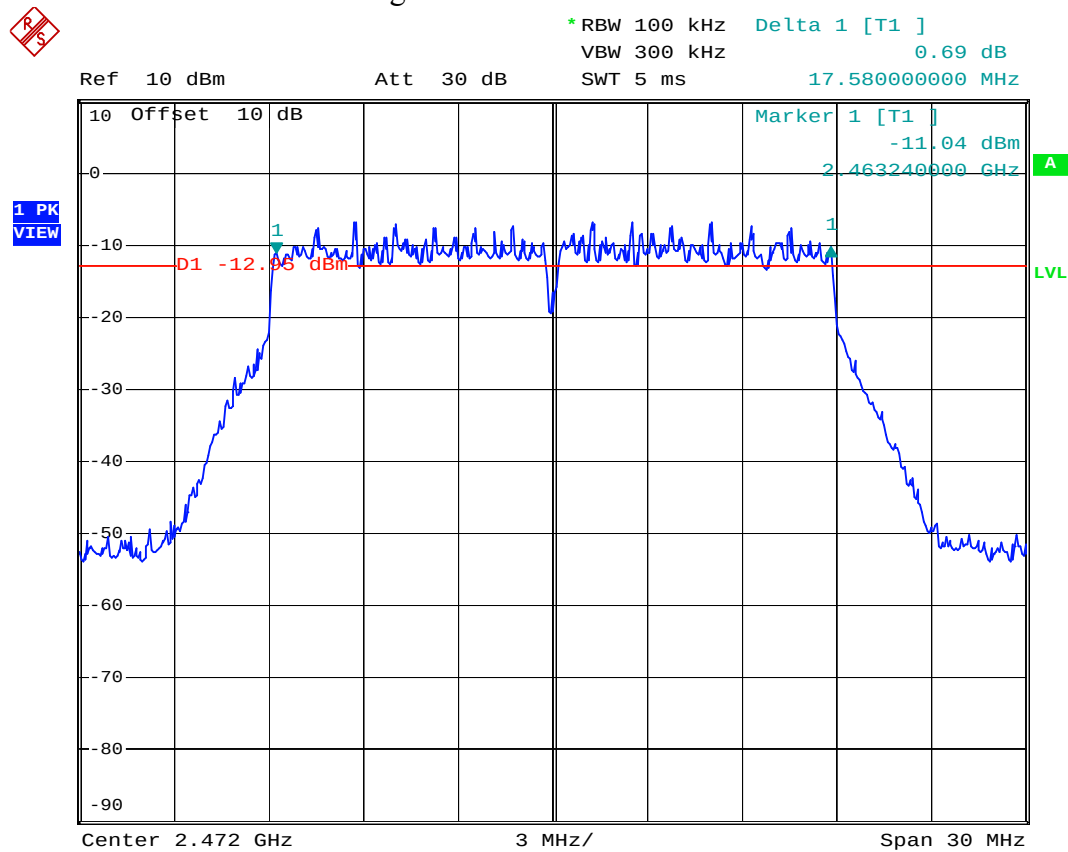
Mode: 802.11n HT-20 / Channel High

Antenna1



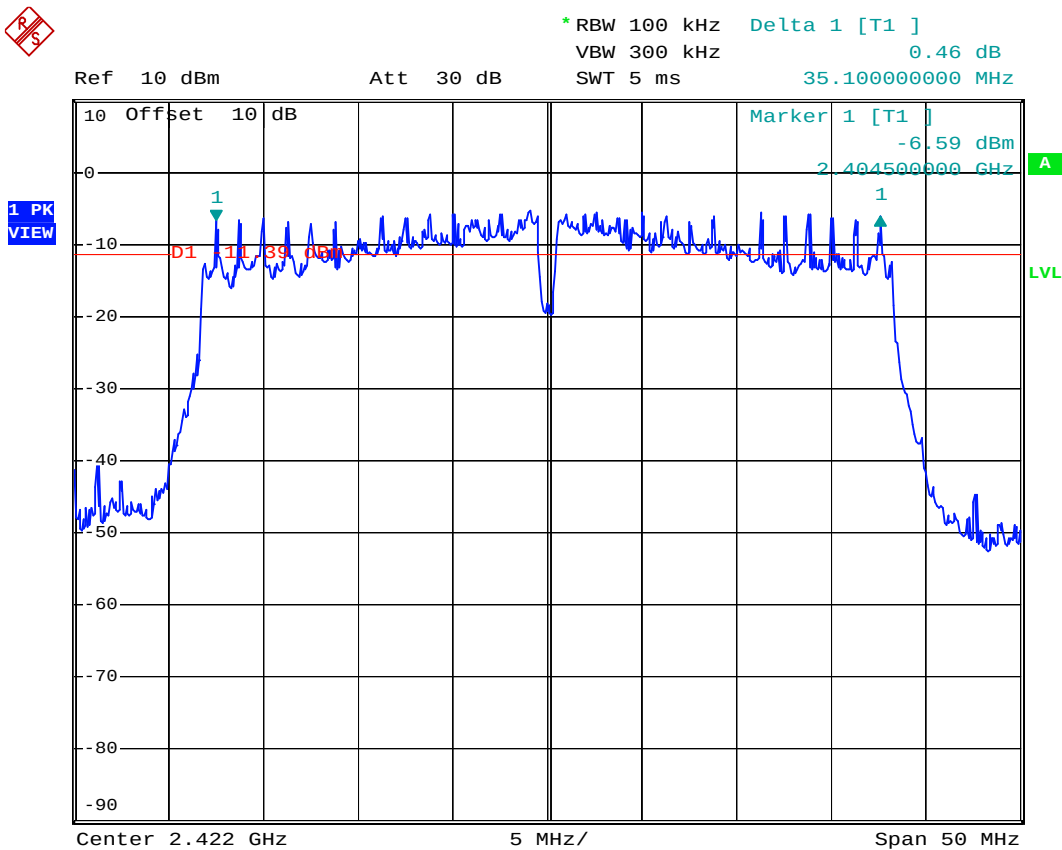
Mode: 802.11n HT-20 / Channel High

Antenna2



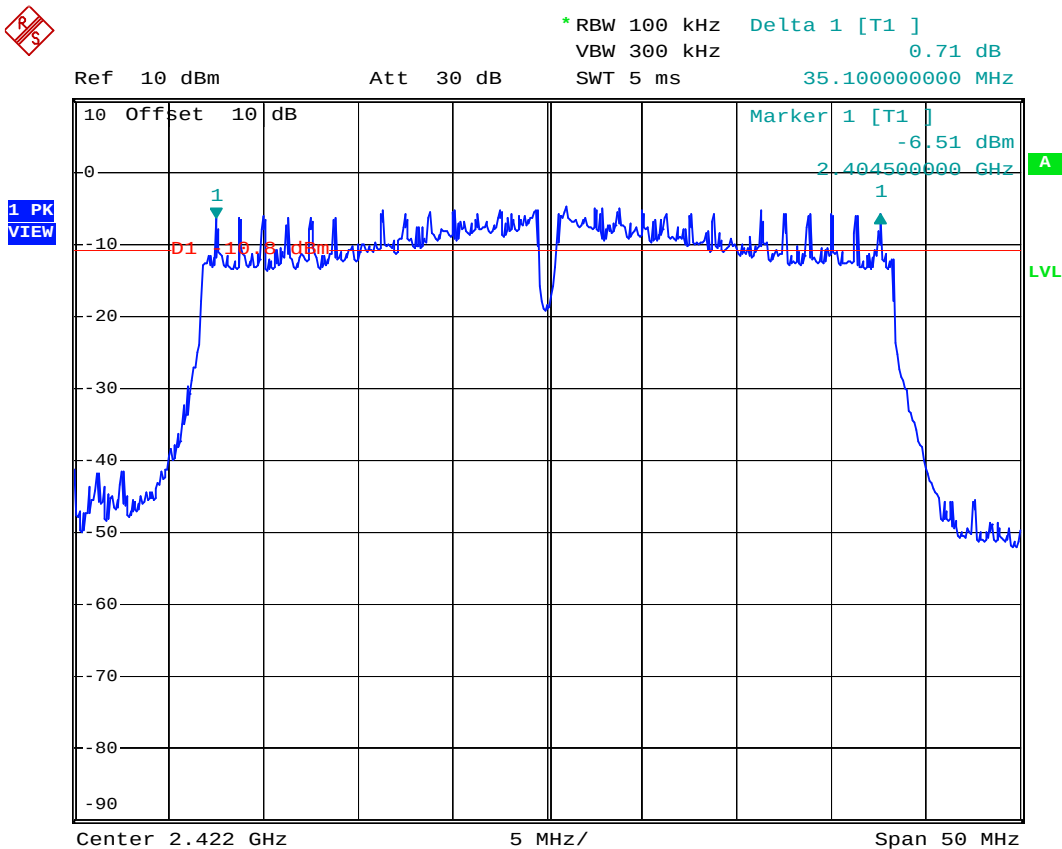
Mode: 802.11n HT-40/ Channel Low

Antenna1



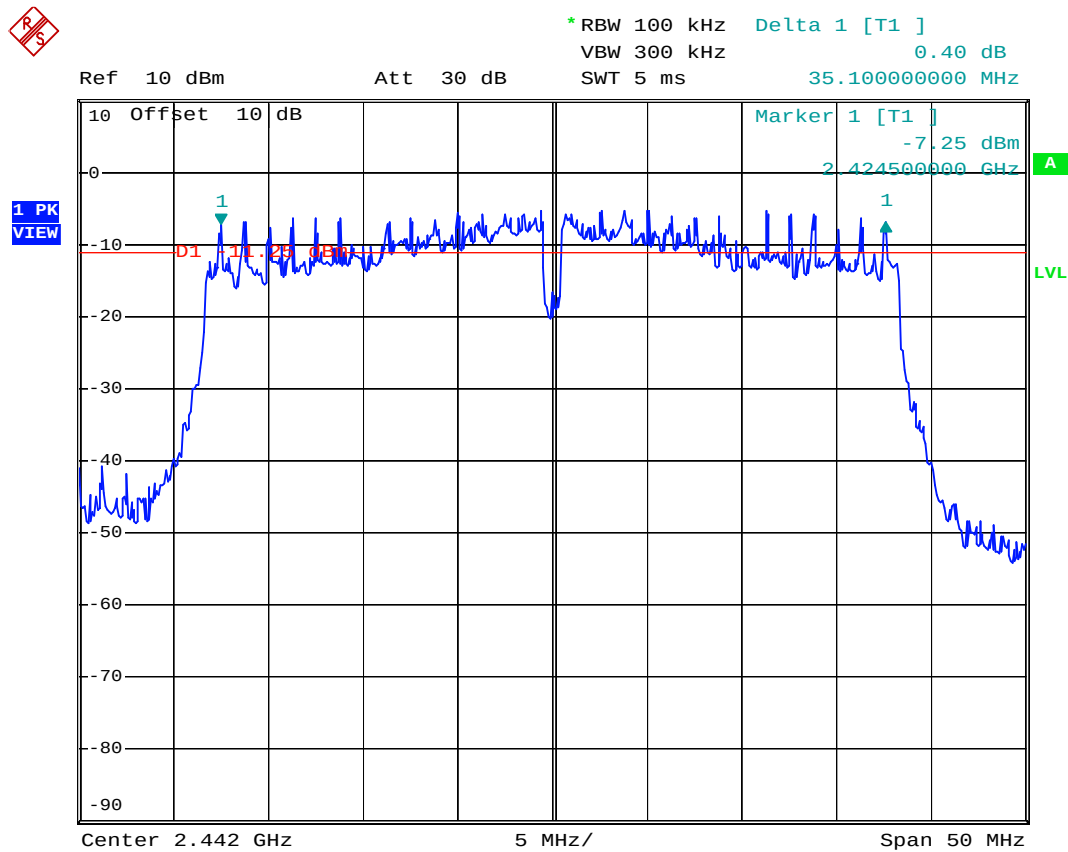
Mode: 802.11n HT-40/ Channel Low

Antenna2



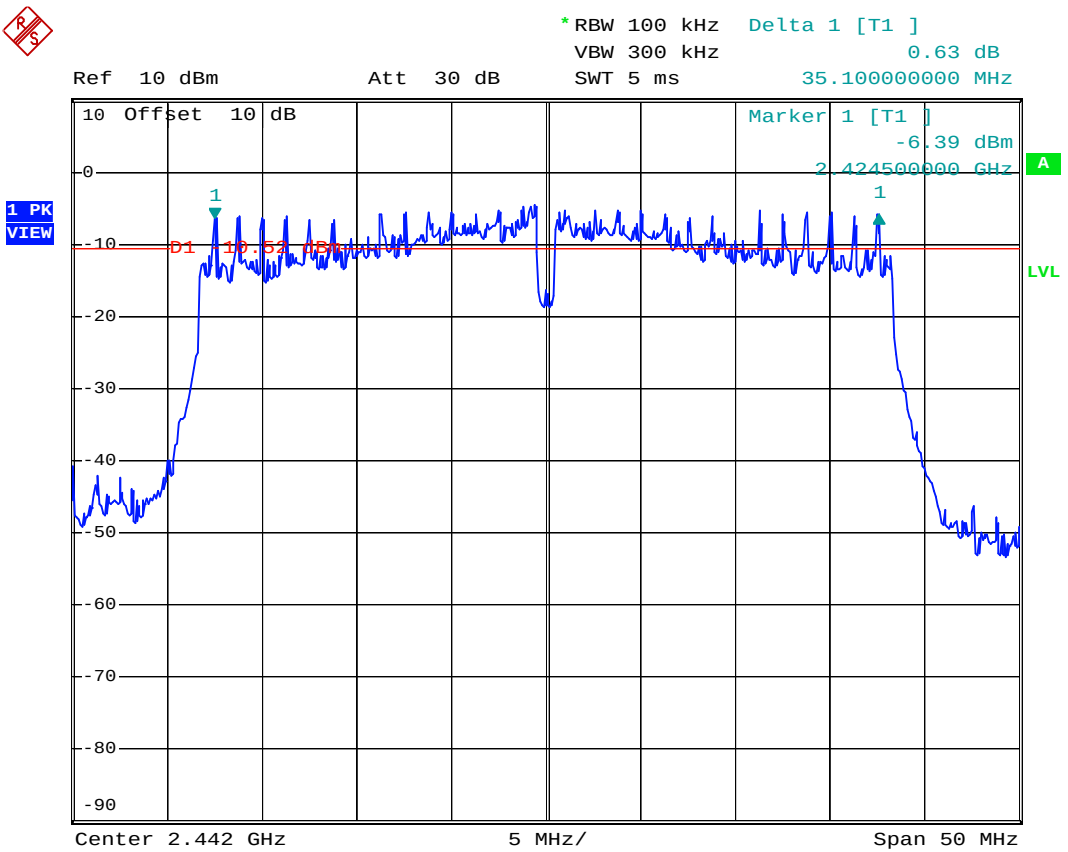
Mode: 802.11n HT-40 / Channel Middle

Antenna1



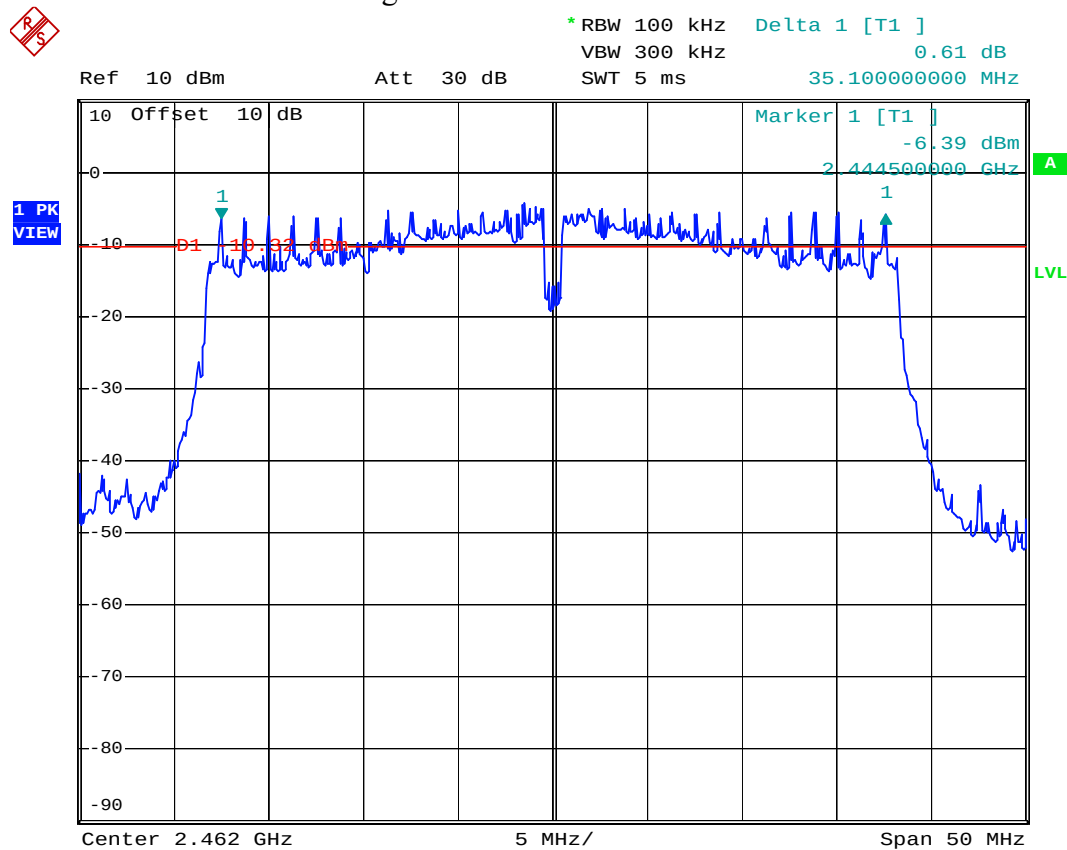
Mode: 802.11n HT-40 / Channel Middle

Antenna2



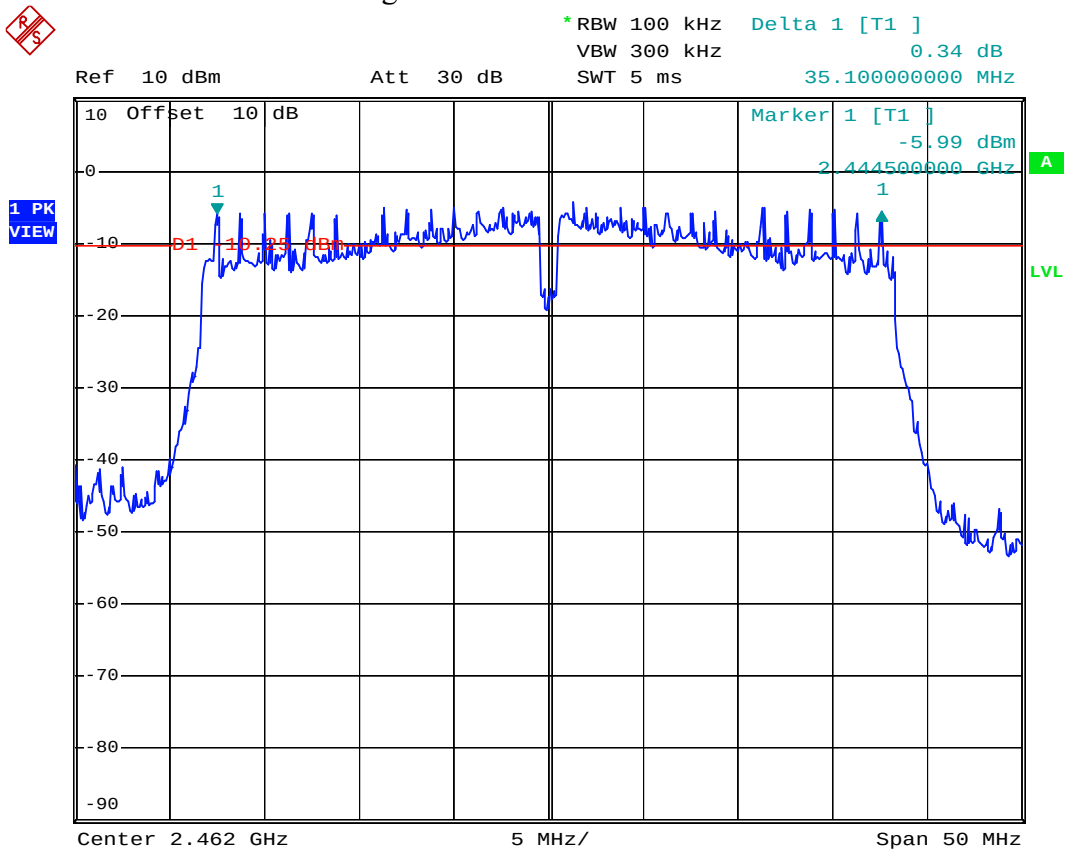
Mode: 802.11n HT-40 / Channel High

Antenna1



Mode: 802.11n HT-40 / Channel High

Antenna2

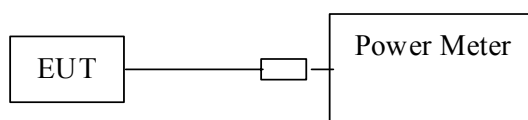


8 峰值傳導輸出功率之量測

8.1 適用標準

依據低功率射頻電機技術規範3.10.1.2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。

8.2 輸出功率之測試配置



如圖所示

8.3 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
POWER METER +SENSOR	ANRITSU	ML2487A +MA2491A	2017/05/18	2018/05/17
Attenuator	MINI-CIRCUITS	BW-S10W2+	2017/10/06	2018/10/05
Attenuator	MINI-CIRCUITS	BW-S20W2+	2017/10/06	2018/10/05
Attenuator	MINI-CIRCUITS	BW-S30W2+	2017/10/06	2018/10/05

8.4 輸出功率之量測結果

測試日期 : Mar. 23, 2018

環境溫度 : 25°C

環境濕度 : 55 %

測試結果 : 合格

測試者 : 何仁逸

A. 802.11b

- a) Channel Low : 輸出功率為 9.52 dBm or 8.953 mW。
- b) Channel Middle : 輸出功率為 9.43 dBm or 8.770 mW。
- c) Channel High : 輸出功率為 9.12 dBm or 8.165 mW。

B. 802.11g

- a) Channel Low : 輸出功率為 15.62 dBm or 36.475 mW。
- b) Channel Middle : 輸出功率為 15.02 dBm or 31.768 mW。
- c) Channel High : 輸出功率為 14.91 dBm or 30.974 mW。

C. 802.11n HT-20

Antenna1

- a) Channel Low : 輸出功率為 16.42 dBm or 43.853 mW。
- b) Channel Middle : 輸出功率為 16.73 dBm or 47.097 mW。
- c) Channel High : 輸出功率為 15.92 dBm or 39.084 mW。

Antenna2

- a) Channel Low : 輸出功率為 16.39 dBm or 43.551 mW。
- b) Channel Middle : 輸出功率為 16.72 dBm or 46.989 mW。
- c) Channel High : 輸出功率為 15.93 dBm or 39.174 mW。

Combine Antenna1&2

- a) Channel Low : 輸出功率為 19.42 dBm or 87.404 mW。
- b) Channel Middle : 輸出功率為 19.74 dBm or 94.086 mW。
- c) Channel High : 輸出功率為 18.94 dBm or 78.258 mW。

D. 802.11n HT-40

Antenna1

- a) Channel Low : 輸出功率為 20.13 dBm or 103.038 mW。
- b) Channel Middle : 輸出功率為 20.15 dBm or 103.514 mW。
- c) Channel High : 輸出功率為 20.03 dBm or 100.693 mW。

Antenna2

- a) Channel Low : 輸出功率為 20.09 dBm or 102.093 mW。
- b) Channel Middle : 輸出功率為 20.10 dBm or 102.329 mW。
- c) Channel High : 輸出功率為 20.01 dBm or 100.230 mW。

Combine Antenna1&2

- a) Channel Low : 輸出功率為 23.12 dBm or 205.131 mW 。
- b) Channel Middle : 輸出功率為 23.14 dBm or 205.843 mW 。
- c) Channel High : 輸出功率為 23.03 dBm or 200.923 mW 。

註：

1. 本實驗室峰值功率頻譜密度檢驗之擴充不準確定 ± 2 dB。

9 開放頻帶邊緣 100 kHz 頻寬內之量測

9.1 適用標準

依據低功率射頻電機技術規範3.10.1.5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3.10.1.2(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2.7 禁用頻段之輻射發射，應符合2.8 之規定。

9.2 開放頻帶邊緣之測試配置

如圖四所示。

9.3 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
EMI Test Receiver	Rohde & Schwarz	ESU 40	2017/11/10	2018/11/09
Attenuator	MINI-CIRCUITS	BW-S10W2+	2017/10/06	2018/10/05
Attenuator	MINI-CIRCUITS	BW-S20W2+	2017/10/06	2018/10/05
Attenuator	MINI-CIRCUITS	BW-S30W2+	2017/10/06	2018/10/05

9.4 開放頻帶邊緣之量測結果

測試日期 : Mar. 23, 2018

環境溫度 : 25°C

環境濕度 : 55 %

測試結果 : 合格

測試者 : 何仁逸

(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. 802.11n HT-20

- 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。

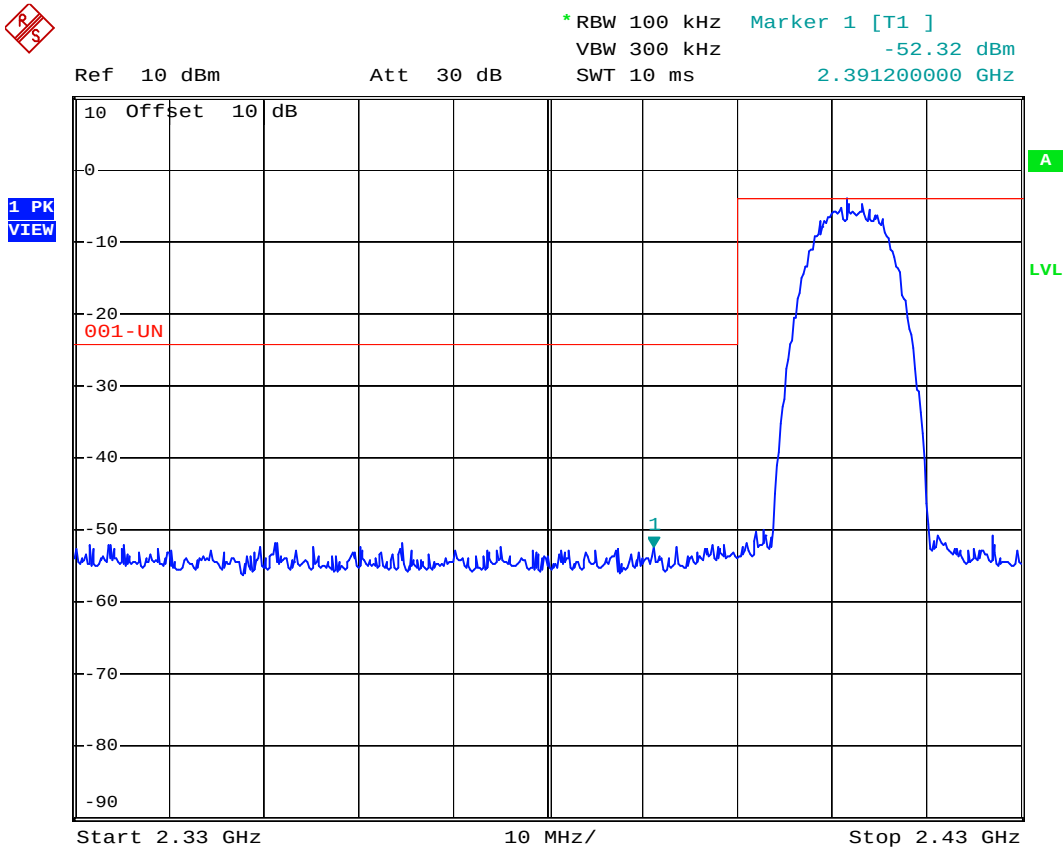
D. 802.11n HT-40

- 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。

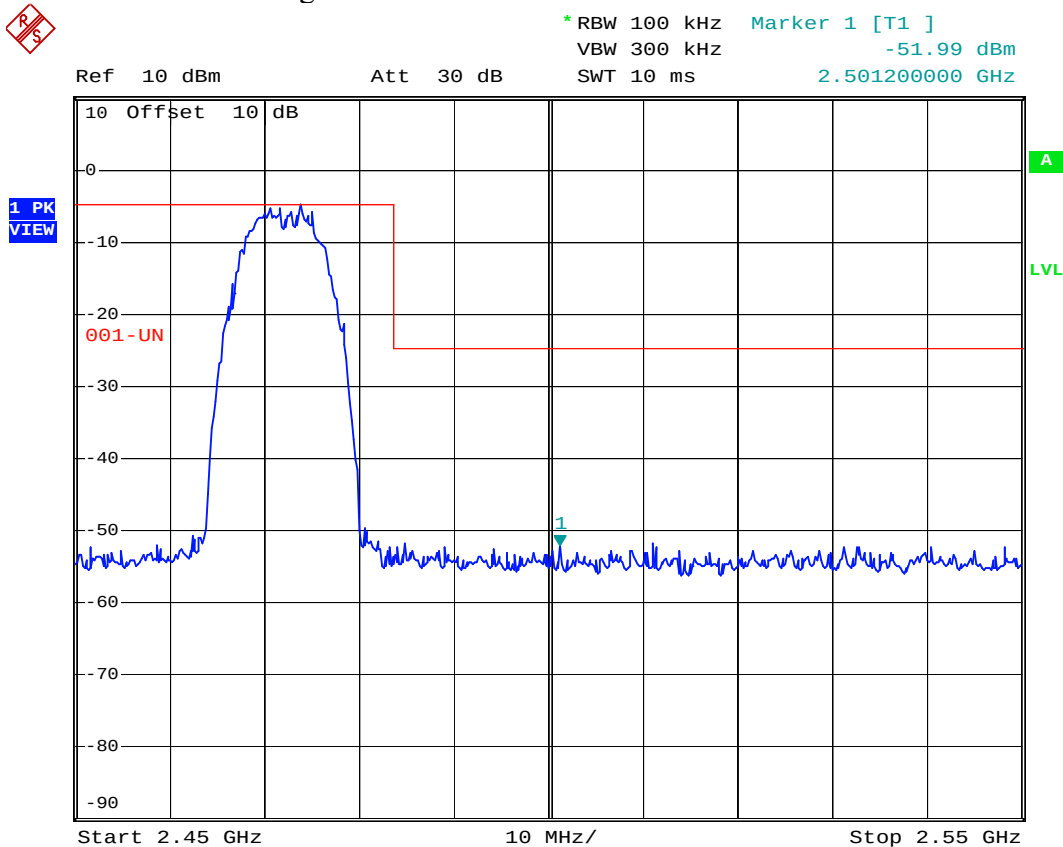
註：

1. 本實驗室開放邊緣頻帶檢驗之擴充不確定度 $\pm 2\text{dB}$ 。
2. 繪圖資料請參考下頁。

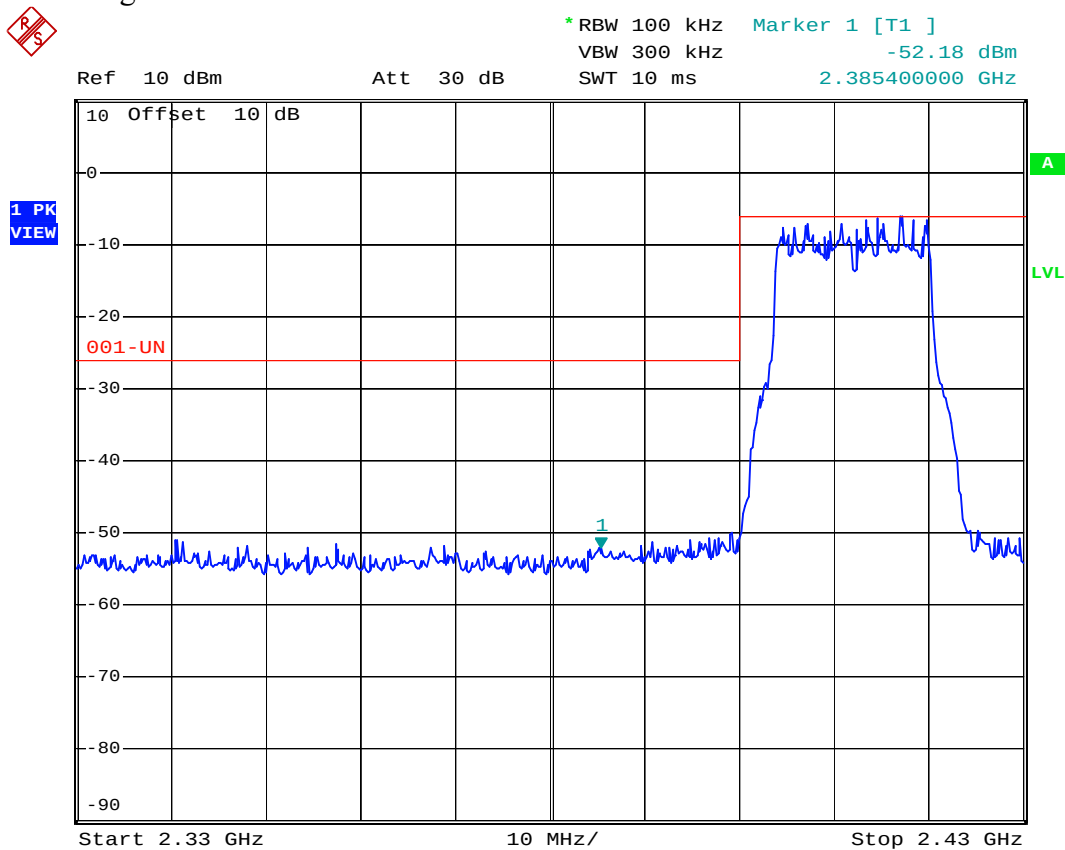
Mode: 802.11b/ Channel Lowest



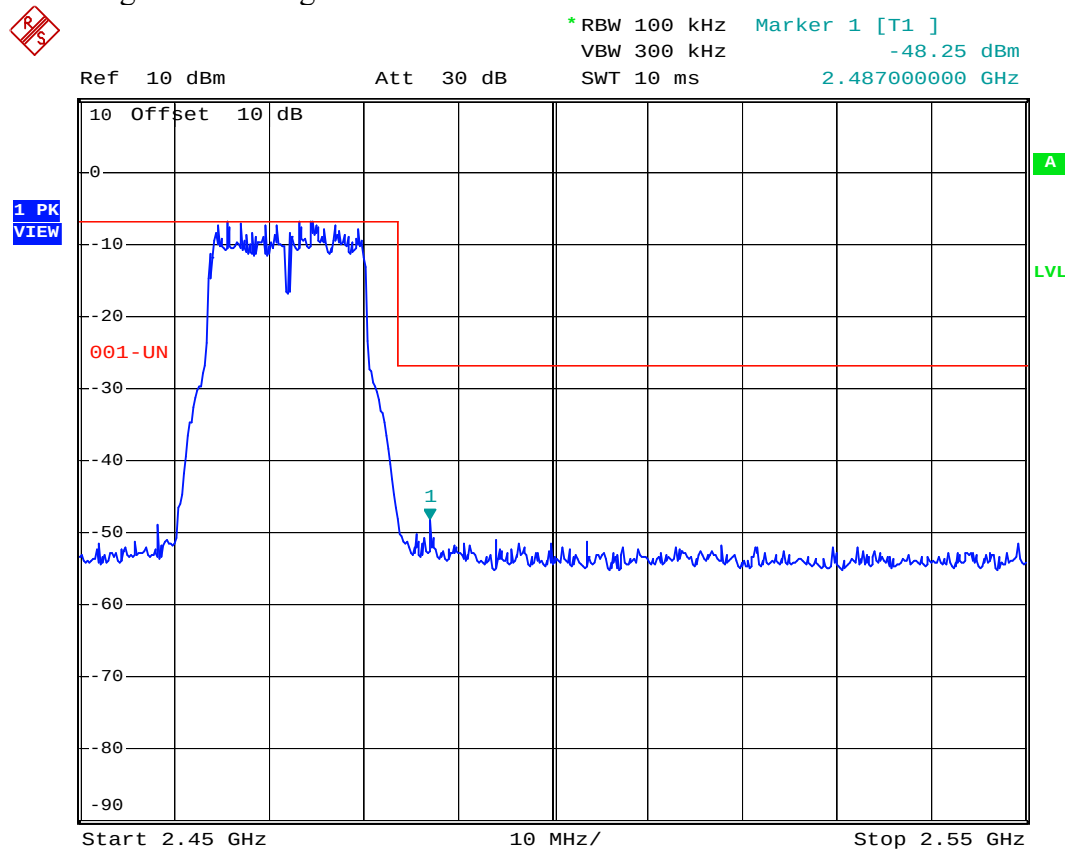
Mode: 802.11b/ Channel Highest



Mode: 802.11g/ Channel Lowest

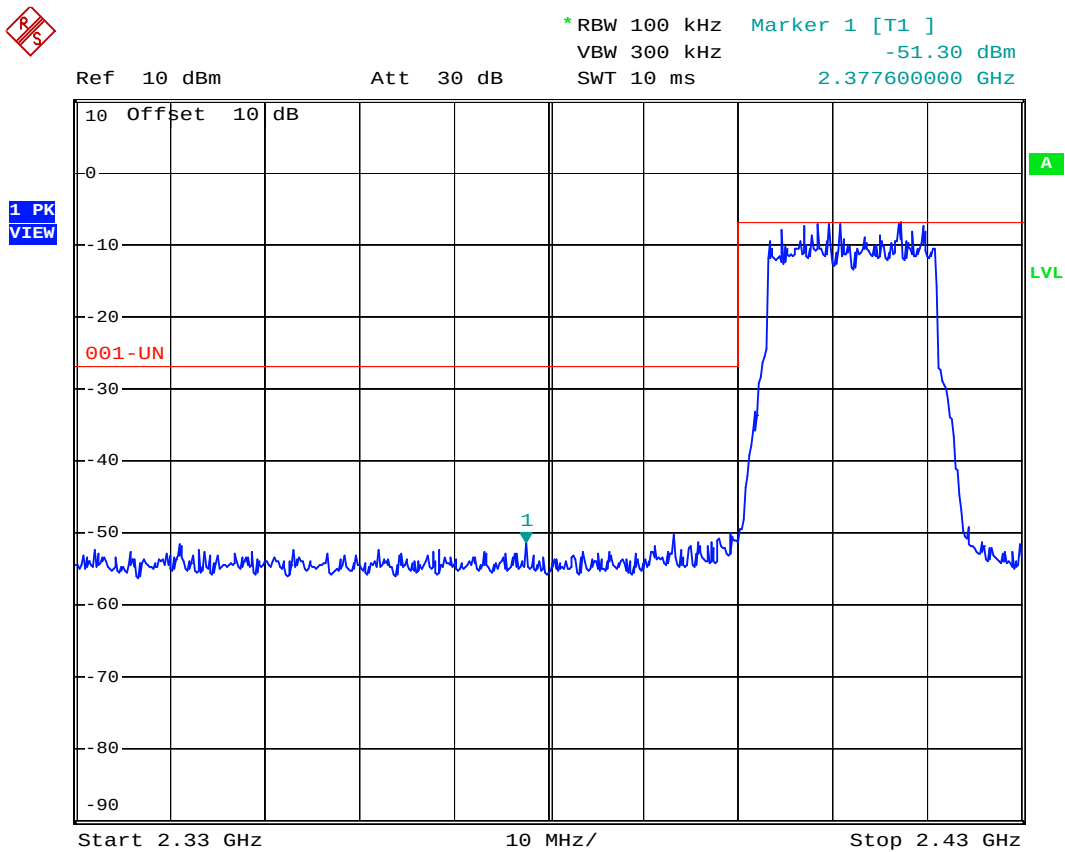


Mode: 802.11g/ Channel Highest



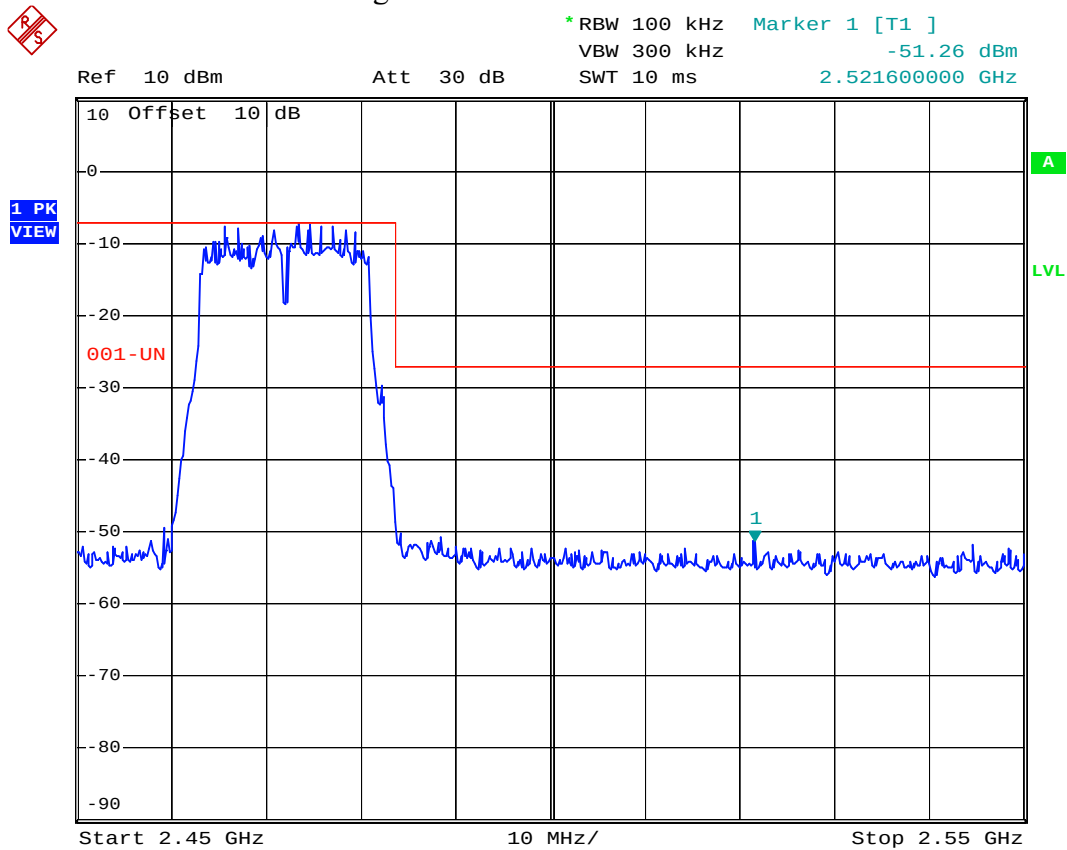
Mode: 802.11n HT-20 / Channel Lowest

Antenna1



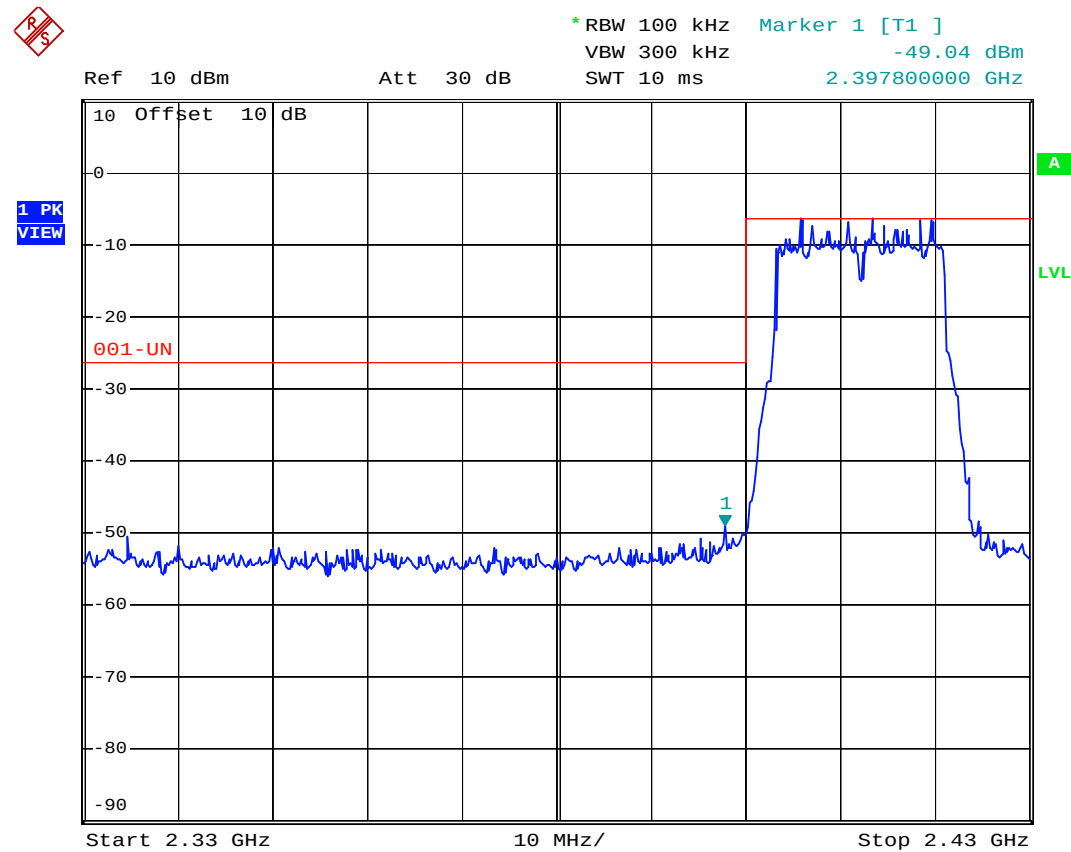
Mode: 802.11n HT-20 / Channel Highest

Antenna1



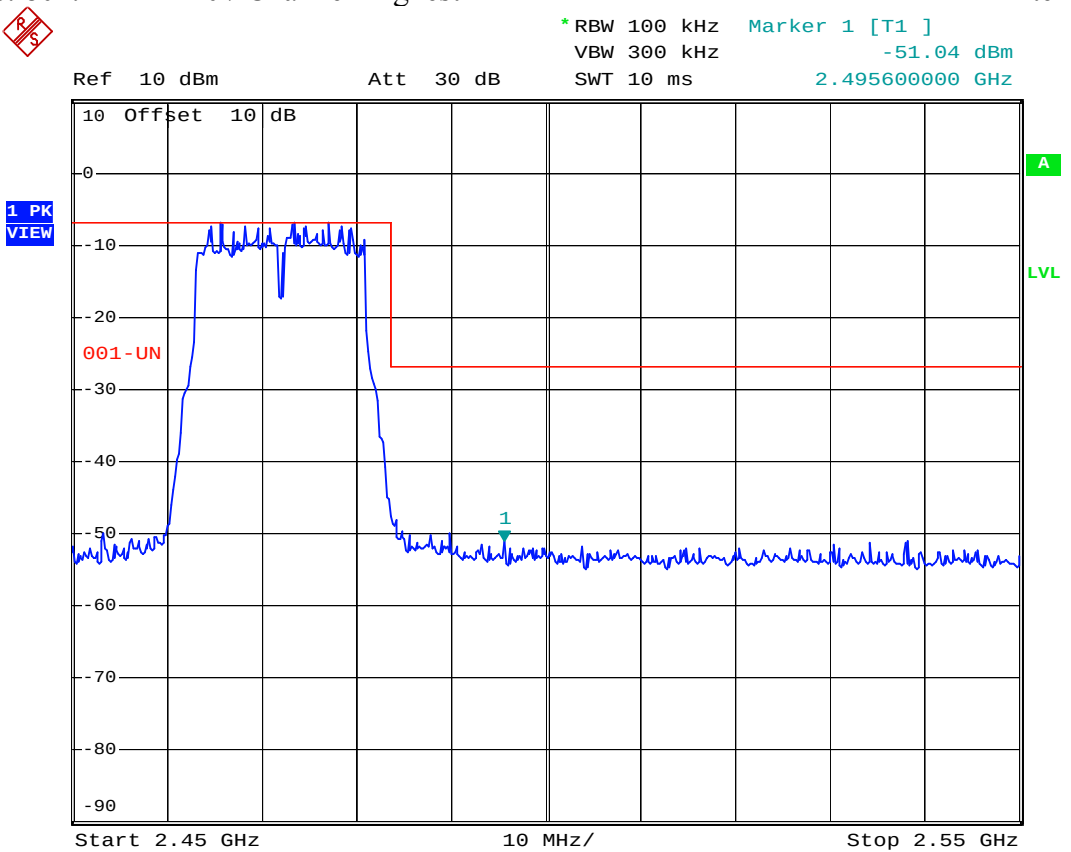
Mode: 802.11n HT-20 / Channel Lowest

Antenna2



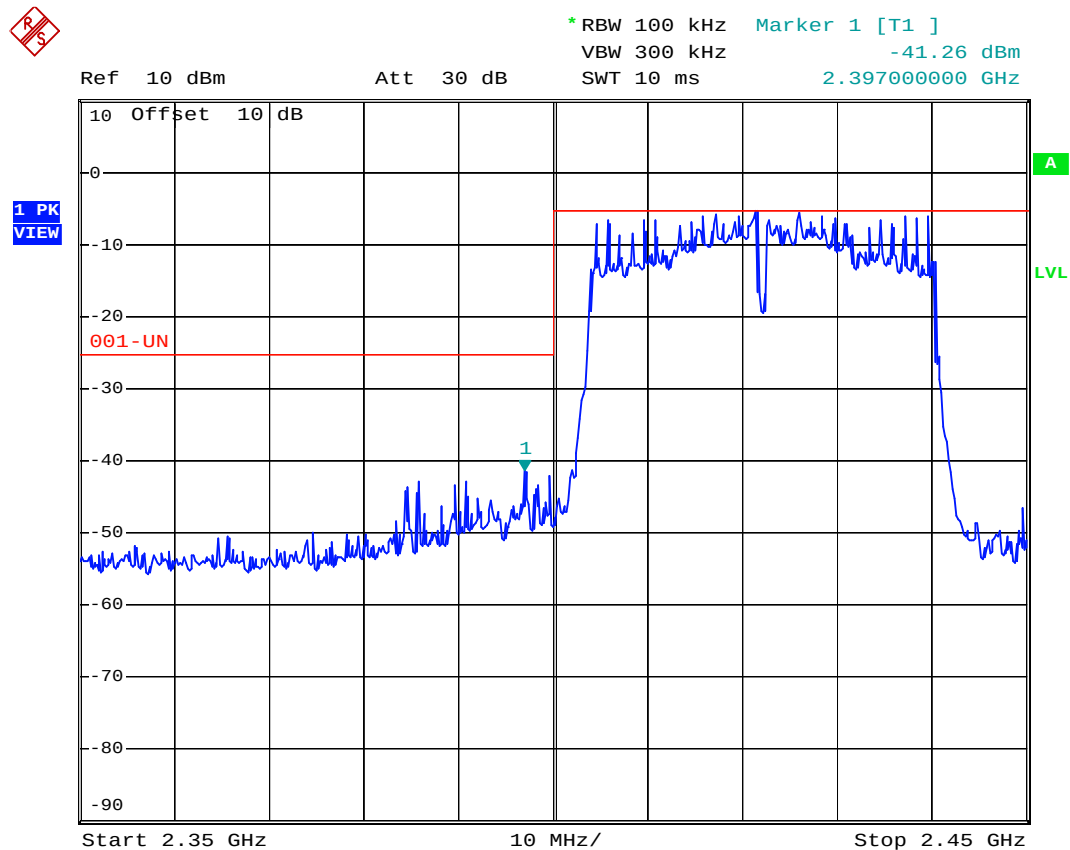
Mode: 802.11n HT-20 / Channel Highest

Antenna2



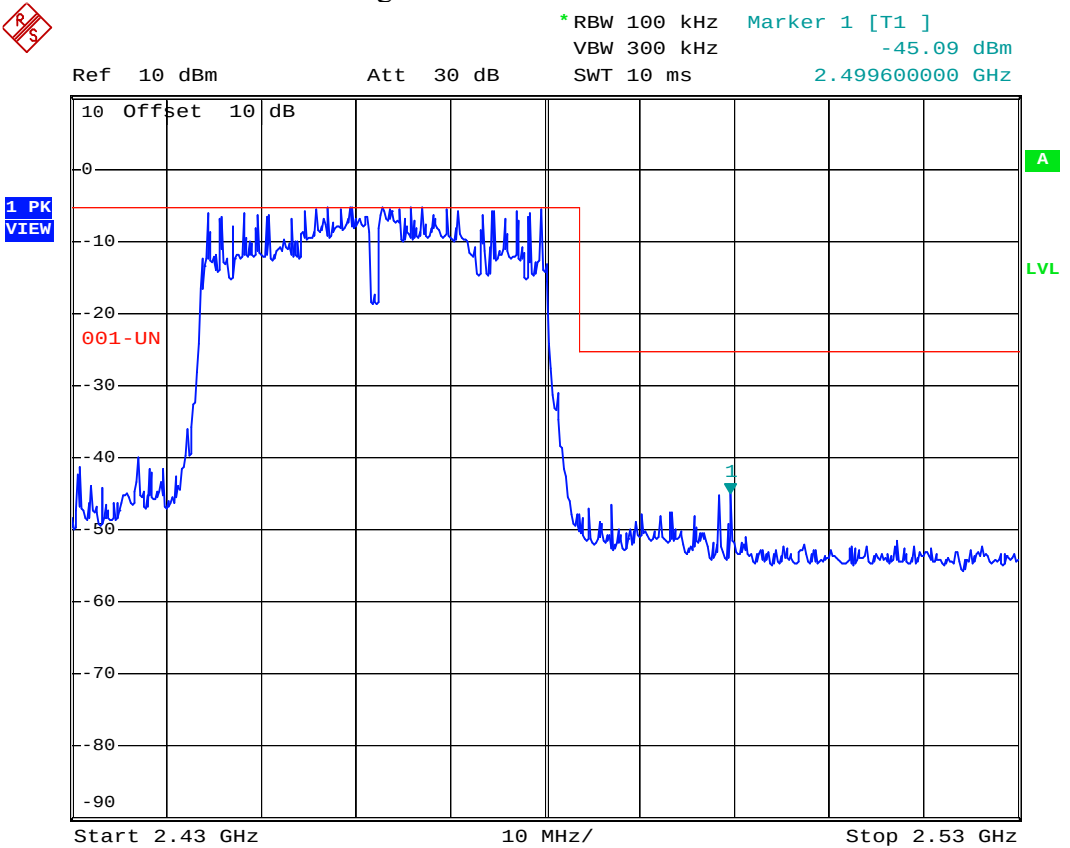
Mode: 802.11n HT-40 / Channel Lowest

Antenna1



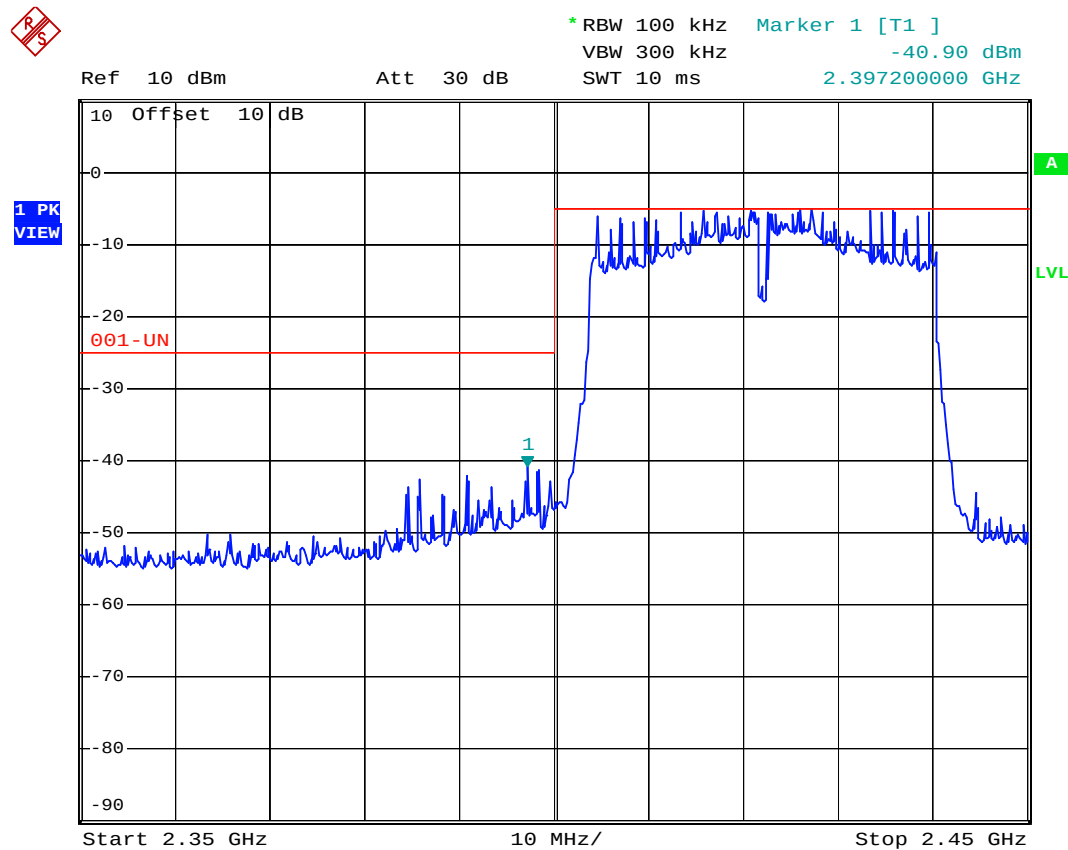
Mode: 802.11n HT-40 / Channel Highest

Antenna1



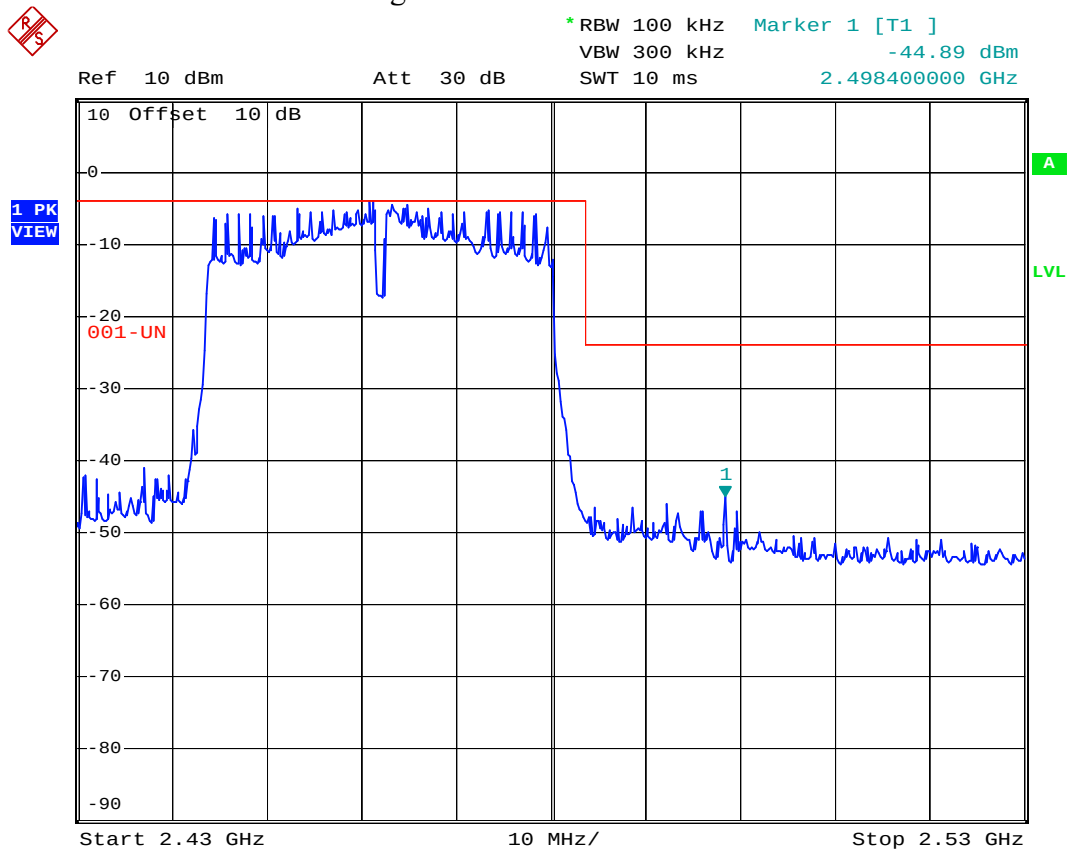
Mode: 802.11n HT-40 / Channel Lowest

Antenna2



Mode: 802.11n HT-40 / Channel Highest

Antenna2



10 功率密度之量測

10.1 適用標準

依據低功率射頻電機技術規範3.10.1.6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3.10.1.3 之方式降低功率頻譜密度限制值。

10.2 量測功率密度之配置

如圖 4 所示。

10.3 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
EMI Test Receiver	Rohde & Schwarz	ESU 40	2017/11/10	2018/11/09
Attenuator	MINI-CIRCUITS	BW-S10W2+	2017/10/06	2018/10/05
Attenuator	MINI-CIRCUITS	BW-S20W2+	2017/10/06	2018/10/05
Attenuator	MINI-CIRCUITS	BW-S30W2+	2017/10/06	2018/10/05

10.4 功率密度量測結果

測試日期 : Mar. 23, 2018

環境溫度 : 25°C

環境濕度 : 55 %

測試結果 : 合格

測試者 : 何仁逸

A. 802.11b

- a) Channel Low : 3 kHz 頻寬之功率密度為 -16.92 dBm
- b) Channel Middle : 3 kHz 頻寬之功率密度為 -19.23 dBm
- c) Channel High : 3 kHz 頻寬之功率密度為 -18.75 dBm

B. 802.11g

- a) Channel Low : 3 kHz 頻寬之功率密度為 -22.51 dBm
- b) Channel Middle : 3 kHz 頻寬之功率密度為 -22.52 dBm
- c) Channel High : 3 kHz 頻寬之功率密度為 -22.21 dBm

C. 802.11n HT-20

Antenna1

- a) Channel Low : 3 kHz 頻寬之功率密度為 -21.81 dBm
- b) Channel Middle : 3 kHz 頻寬之功率密度為 -22.39 dBm
- c) Channel High : 3 kHz 頻寬之功率密度為 -21.36 dBm

Antenna2

- a) Channel Low : 3 kHz 頻寬之功率密度為 -22.03 dBm
- b) Channel Middle : 3 kHz 頻寬之功率密度為 -22.70 dBm
- c) Channel High : 3 kHz 頻寬之功率密度為 -22.87 dBm

D. 802.11n HT-40

Antenna1

- a) Channel Low : 3 kHz 頻寬之功率密度為 -22.10 dBm
- b) Channel Middle : 3 kHz 頻寬之功率密度為 -22.09 dBm
- c) Channel High : 3 kHz 頻寬之功率密度為 -21.55 dBm

Antenna2

- a) Channel Low : 3 kHz 頻寬之功率密度為 -20.12 dBm
- b) Channel Middle : 3 kHz 頻寬之功率密度為 -20.71 dBm
- c) Channel High : 3 kHz 頻寬之功率密度為 -21.58 dBm

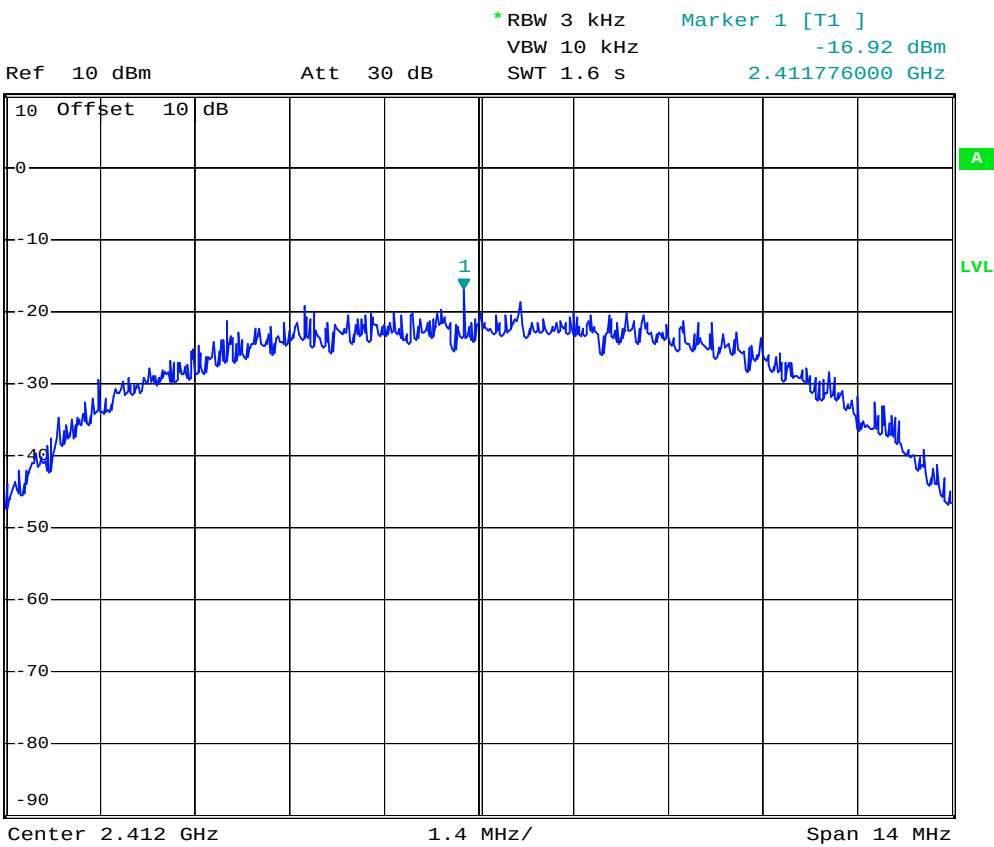
註：

1. 本實驗室功率密度檢驗之擴充不確定度 ± 2 dB。
2. 繪圖資料請參考下頁。

Mode: 802.11b/ Channel Low



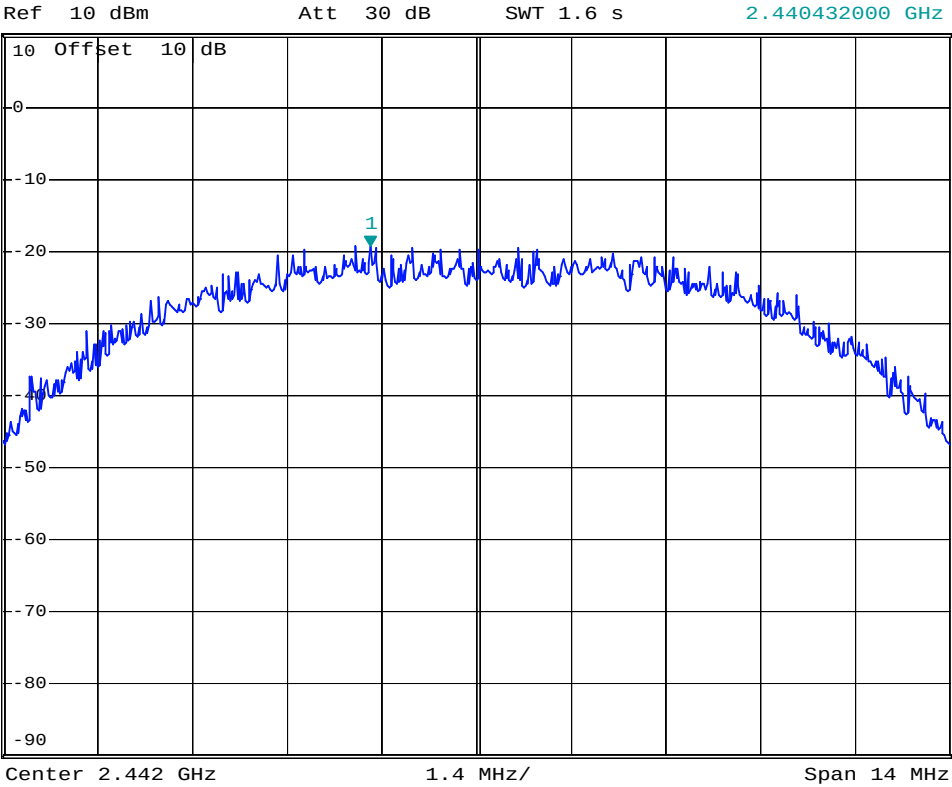
1 PK
VIEW



Mode: 802.11b/ Channel Middle



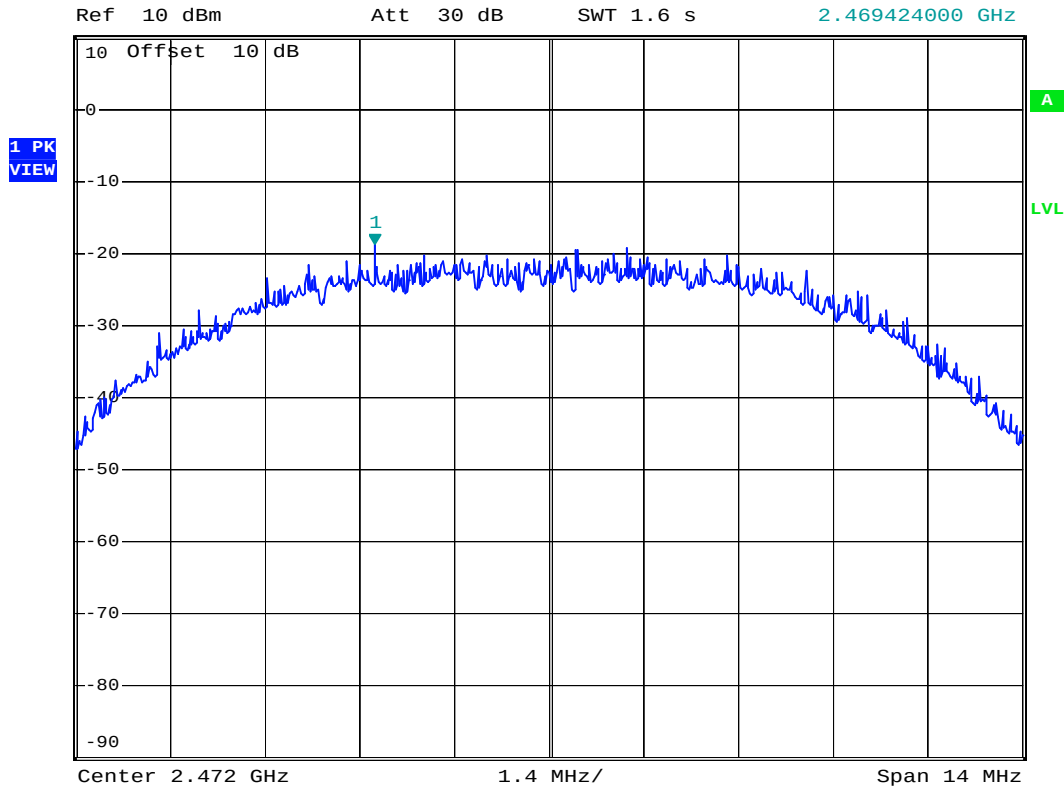
*RBW 3 kHz Marker 1 [T1]
VBW 10 kHz -19.23 dBm
SWT 1.6 s 2.440432000 GHz



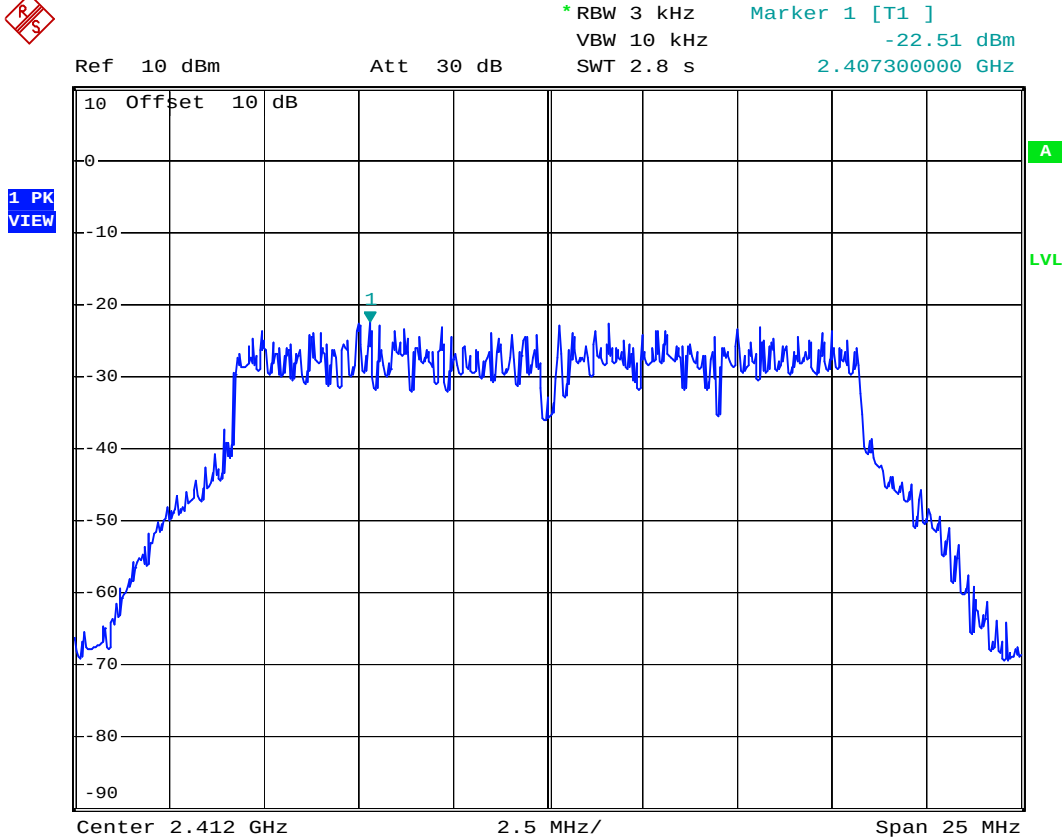
Mode: 802.11b/ Channel High



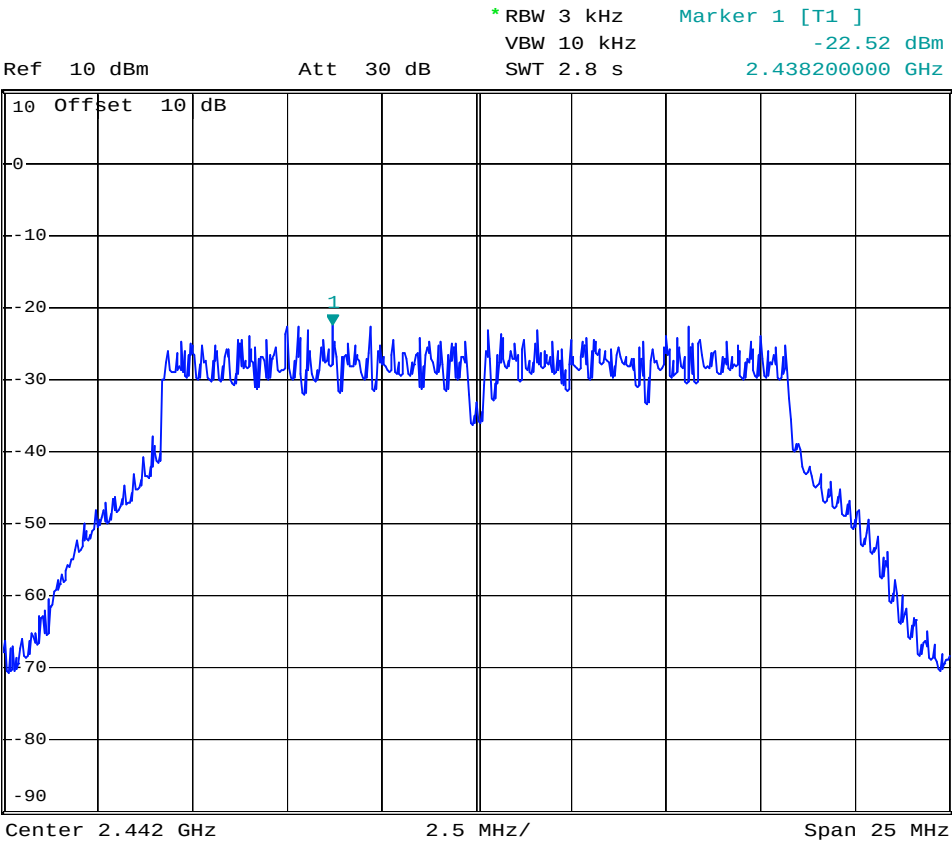
* RBW 3 kHz Marker 1 [T1]
VBW 10 kHz -18.75 dBm
SWT 1.6 s 2.469424000 GHz



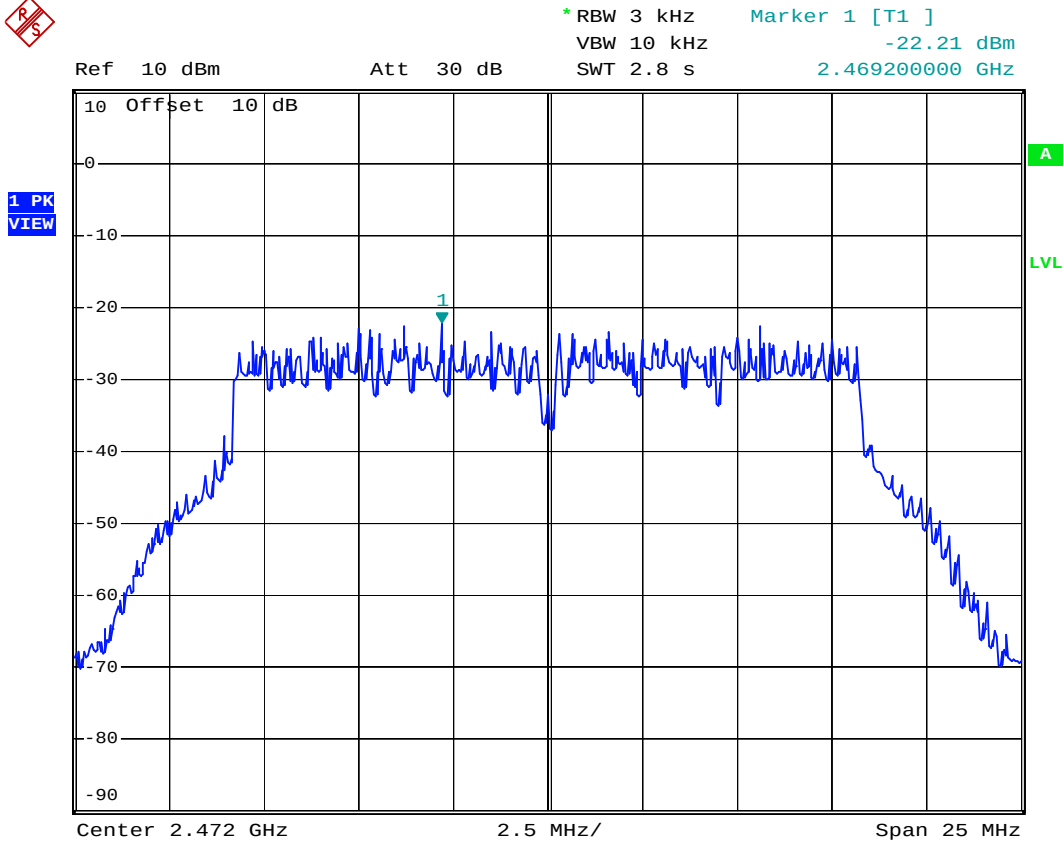
Mode: 802.11g/ Channel Low



Mode: 802.11g/ Channel Middle

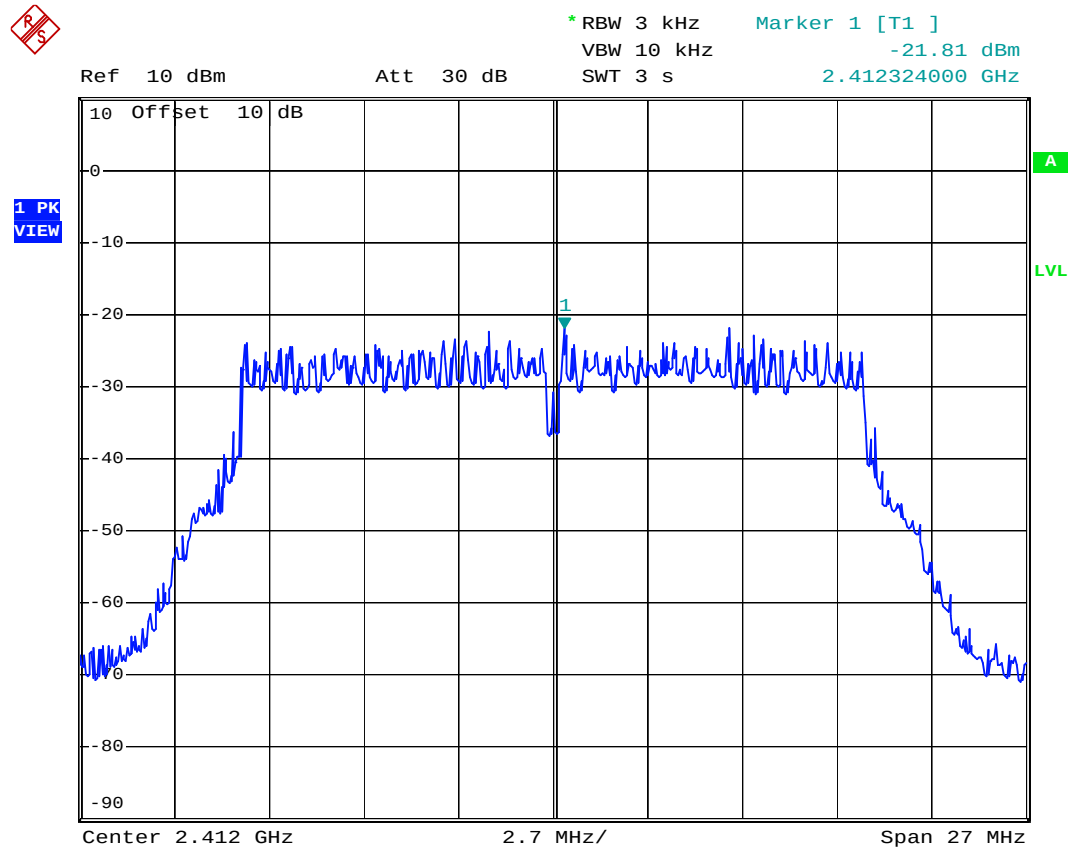


Mode: 802.11g/ Channel High



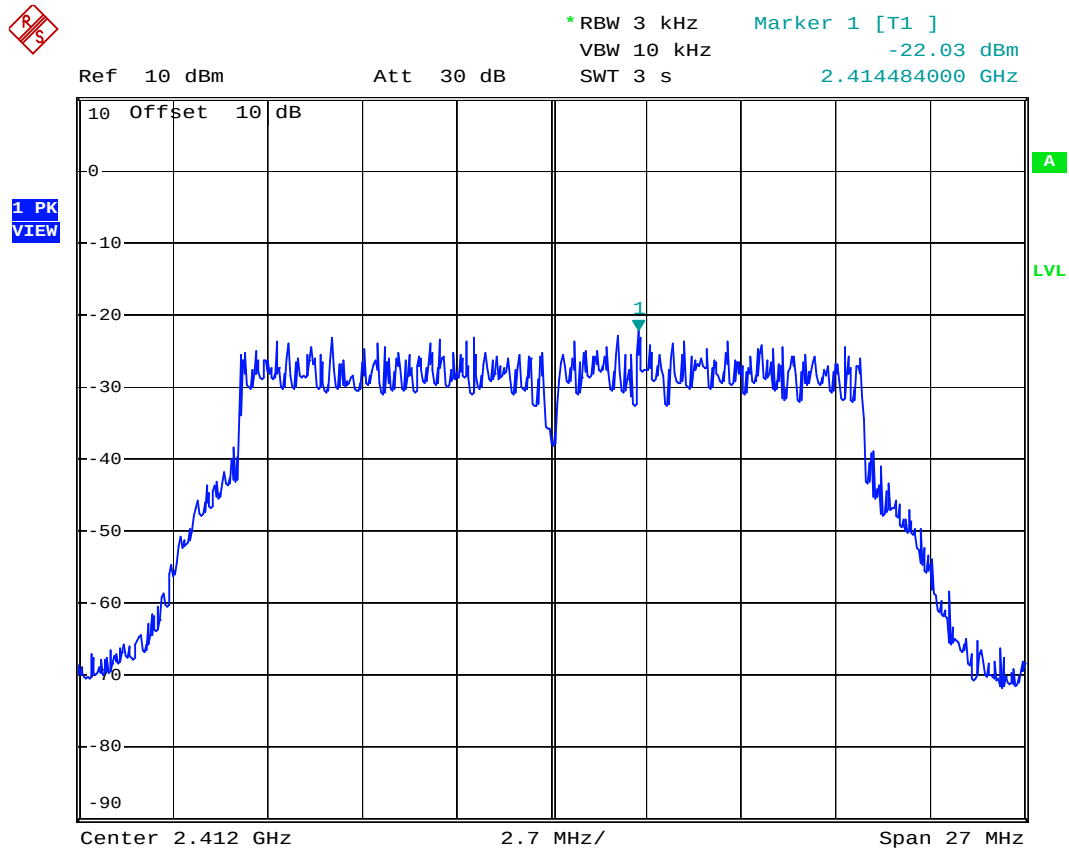
Mode: 802.11n HT-20 / Channel Low

Antenna 1



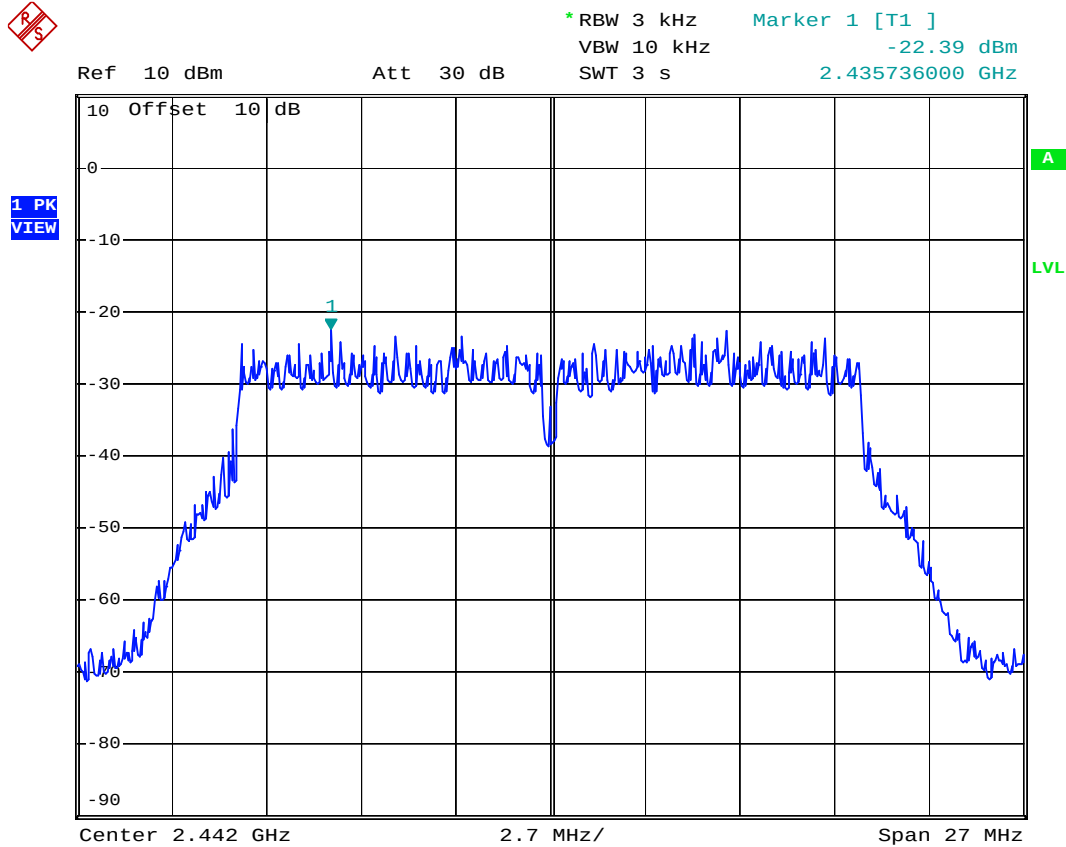
Mode: 802.11n HT-20 / Channel Low

Antenna2



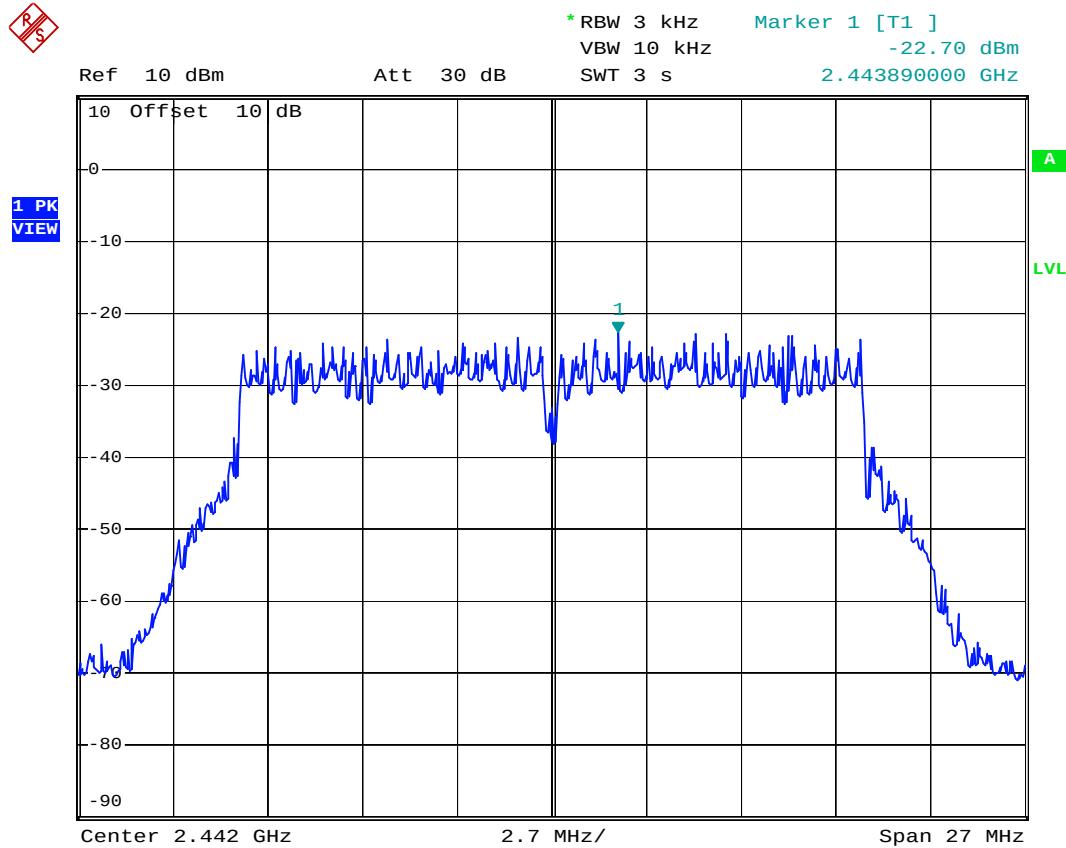
Mode: 802.11n HT-20 / Channel Middle

Antenna1



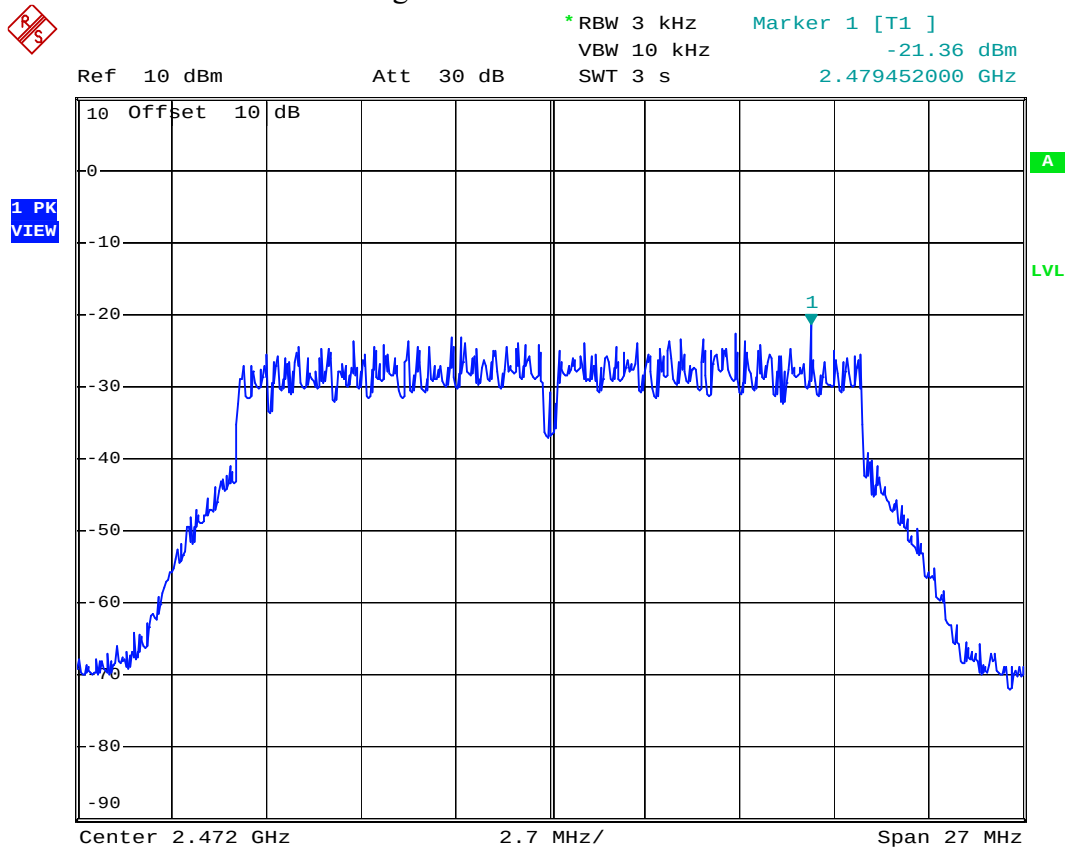
Mode: 802.11n HT-20 / Channel Middle

Antenna2



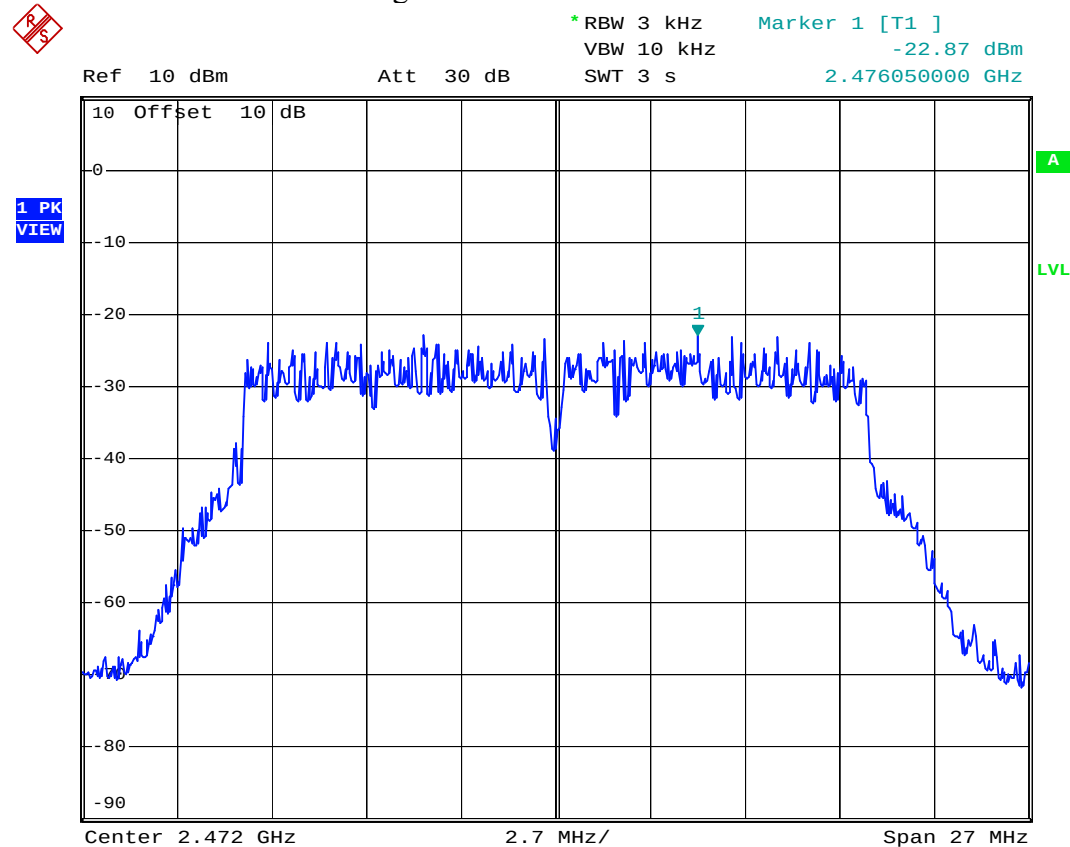
Mode: 802.11n HT-20 / Channel High

Antenna1



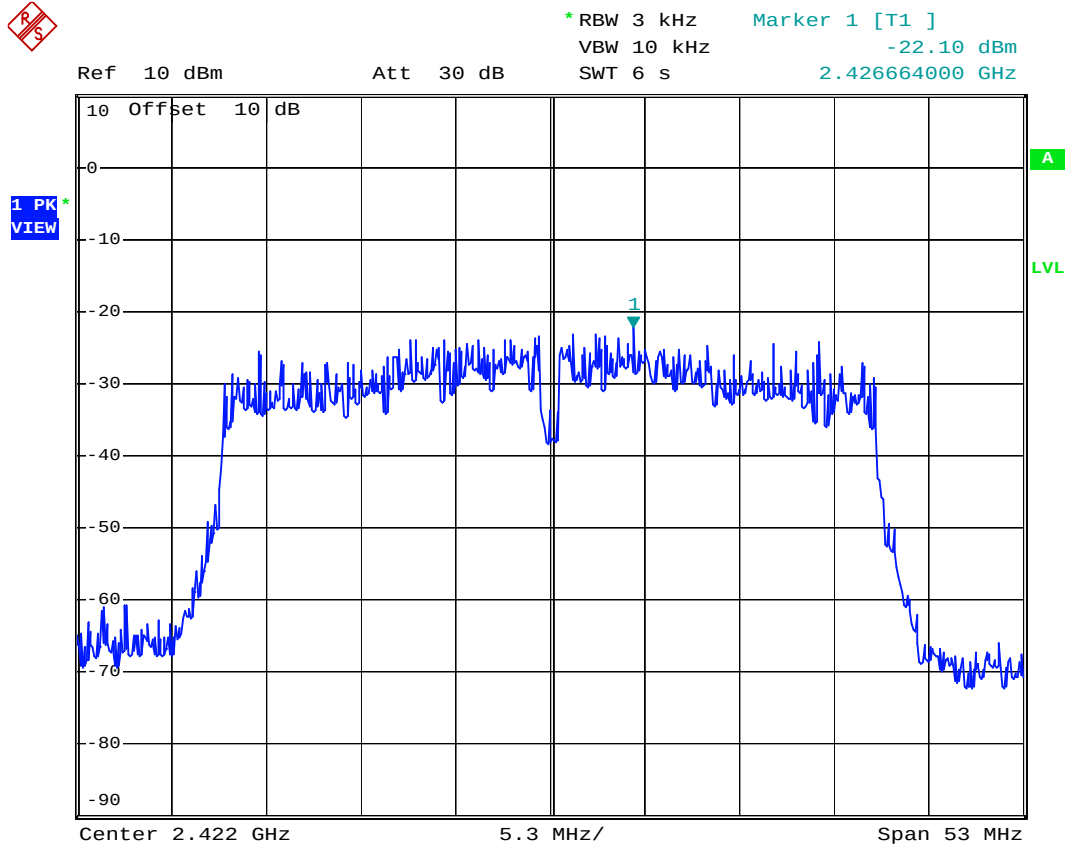
Mode: 802.11n HT-20 / Channel High

Antenna2



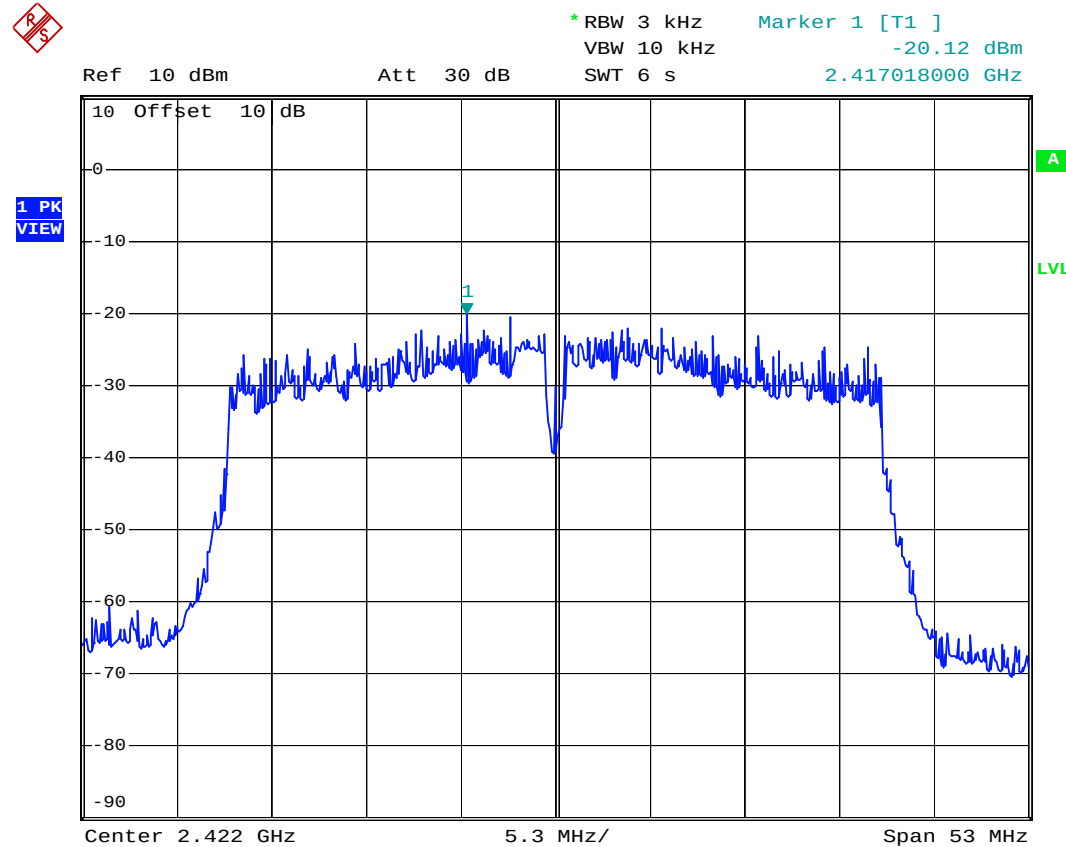
Mode: 802.11n HT-40 / Channel Low

Antenna1



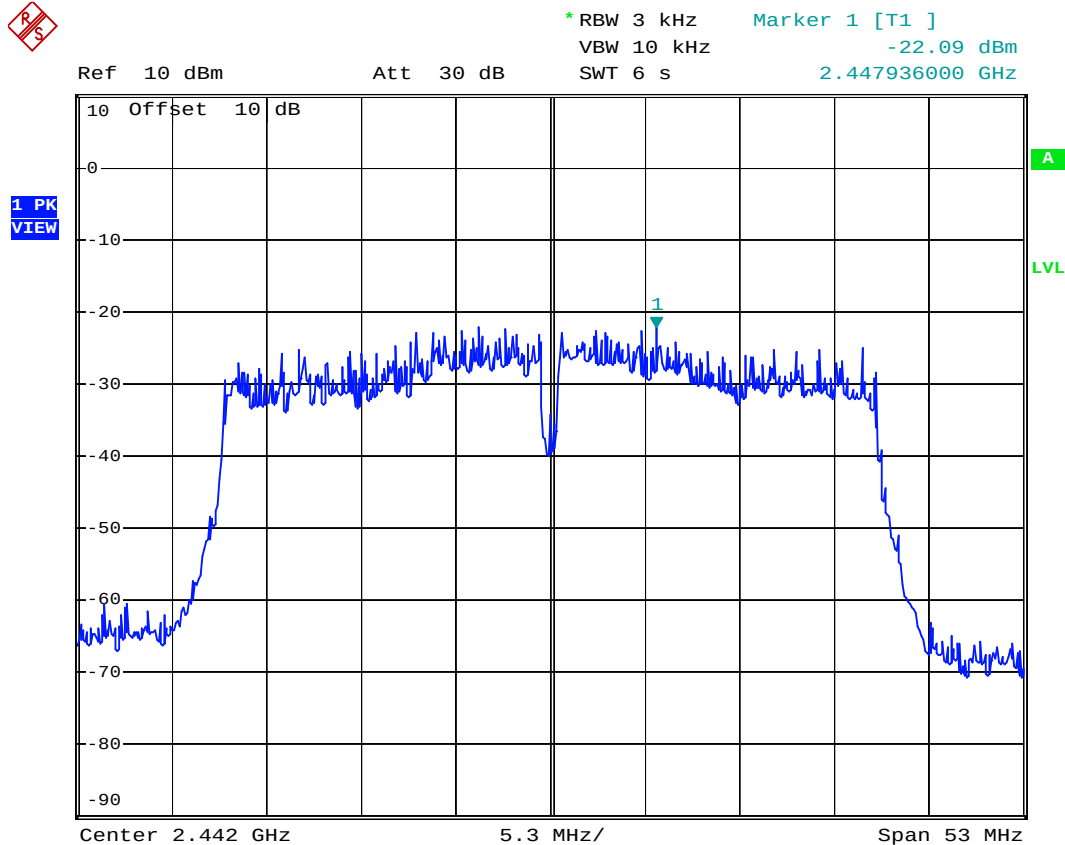
Mode: 802.11n HT-40 / Channel Low

Antenna2



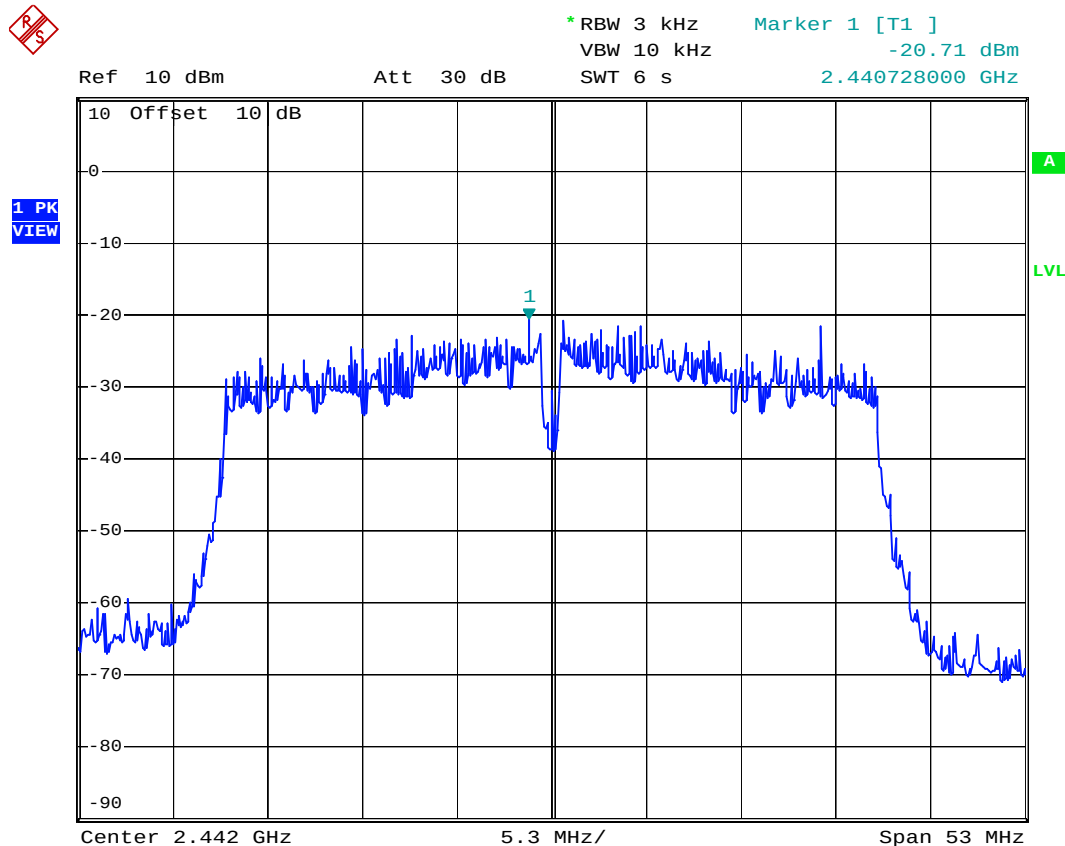
Mode: 802.11n HT-40 / Channel Middle

Antenna1



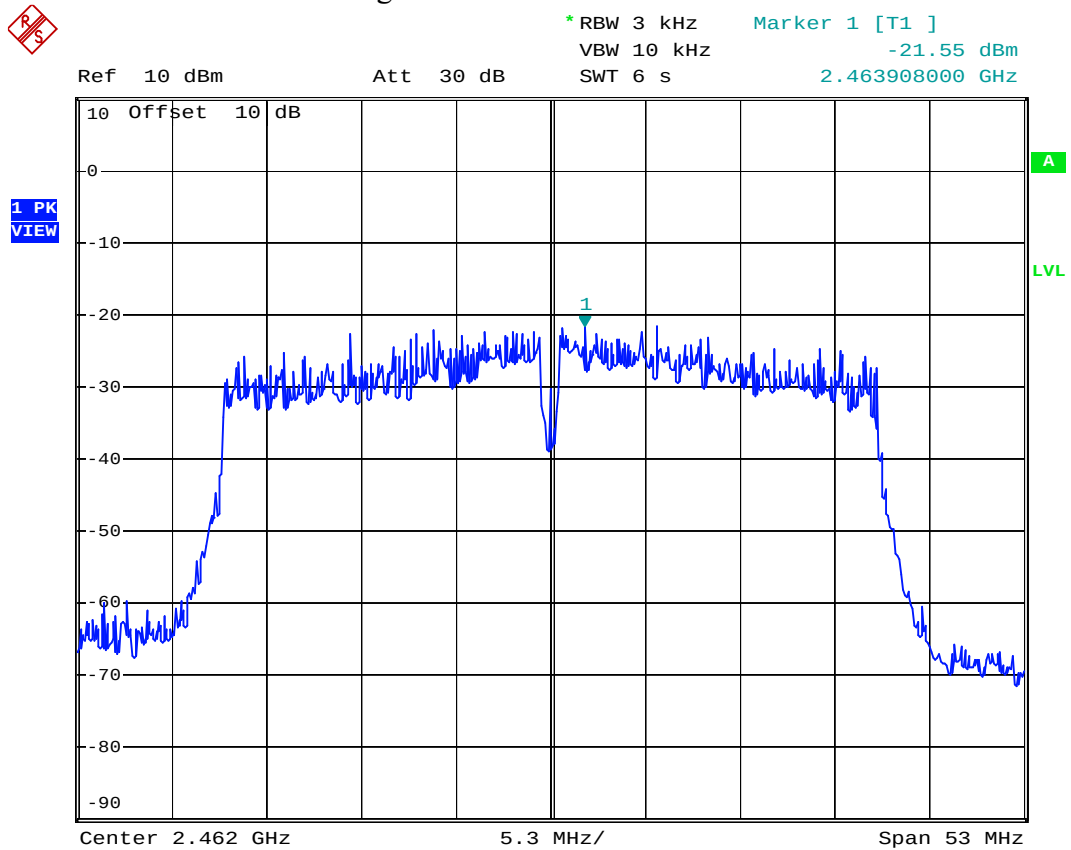
Mode: 802.11n HT-40 / Channel Middle

Antenna2



Mode: 802.11n HT-40 / Channel High

Antenna1



Mode: 802.11n HT-40 / Channel High

Antenna2

