



低功率射頻電機測試報告

Part I-WiFi (BGN20+N40+MIMO)

申請廠商：新醫科技股份有限公司
地址：臺北市大安區復興南路2段285號10樓
器材名稱：無線數位影像系統(Detector)
廠牌：Vieworks
型號：FXRD-1417NAW；FXRD-1417NBW



財團法人台灣電子檢驗中心電磁相容試驗二部

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報告號碼: 18-02-RBF-002-01

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低功率射頻電機測試報告



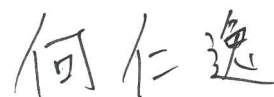
受理日期 : 107 年 02 月 06 日
完成日期 : 108 年 11 月 18 日
報告號碼 : 18-02-RBF-002-01
實驗室名稱 : 財團法人台灣電子檢驗中心電磁相容試驗二部
實驗室地址 : 新北市 24442 林口區頂福里 5 鄰 34 號
實驗室電話 : 02-26023052
認可編號及範圍 : 2628 (9KHz- 40GHz)
認可證書有效期限 : 110 年 10 月 08 日
申請廠商 : 新醫科技股份有限公司
申請廠商地址 : 臺北市大安區復興南路 2 段 285 號 10 樓
製造廠商 : Vieworks Co., Ltd.
器材名稱 : 無線數位影像系統(Detector)
廠牌 : Vieworks
型號 : FXRD-1417NAW ; FXRD-1417NBW
發射功率(電場強度) : 802.11b : 20.91dBm ; 802.11g : 20.37dBm ;
802.11n 2.4GHz HT-20-MIMO : 24.95dBm
802.11n 2.4GHz HT-40-MIMO : 25.01dBm
工作頻率及調變方式 : 2412 – 2462 MHz ; 11CH
DSSS(802.11b) / OFDM(802.11g) / OFDM-MIMO 20M Mode
(802.11n 2.4GHz HT-20)
2422 – 2452 MHz ; 7CH
OFDM-MIMO 40M Mode (802.11n 2.4GHz HT-40)
天線規格 : 固定式 PCB 天線(廠牌 : Vieworks /型號 : VWi-2450/5500DP-
C1.32[A/B/C])
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 107 年 01 月 10 日。
接續下頁

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	請參閱5.6節	合格
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
8	電波暴露量之評估	低功率射頻電機技術規範5.20 節(5.20.2)	請參閱11.2節	----	合格
	以下空白				

報告簽署人：



測試人員：



1 一般資料

1.1 產品描述

- a) 產品型態 : 無線數位影像系統(Detector)
- b) 商標 : Vieworks
- c) 產品型號 : FXRD-1417NAW ; FXRD-1417NBW
- d) 供應電源 : 1. DC 24V Max. 1.0A(Power from SCU)
2. DC 7.6V Battery
- e) 系列產品聲明 : **該產品確符合同系列產品技術規格及射頻性能相同**
本產品系列機種(廠牌: Vieworks , 型號: FXRD-1417NBW)的技術規格及射頻性能與原產品 (廠牌: Vieworks , 型號: FXRD-1417NAW)相同 , 僅型號不同。

1.2 產品特性

此裝置為無線數位影像系統(Detector) , 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11個頻道, 802.11n HT-40為7個頻道。

實測輸出功率如下:

802.11b主波輸出功率為 20.91 dBm (123.310 mW)

802.11g主波輸出功率為 20.37 dBm (108.893 mW)

802.11n HT-20 主波輸出功率為 24.95 dBm (312.301 mW)

802.11n HT-40 主波輸出功率為 25.01 dBm (316.842 mW)

電磁波曝露量MPE標準值 $1\text{mW}/\text{cm}^2$, 送測產品實測值為 0.0630 mW/cm^2 。

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
06	2437		

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		

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。

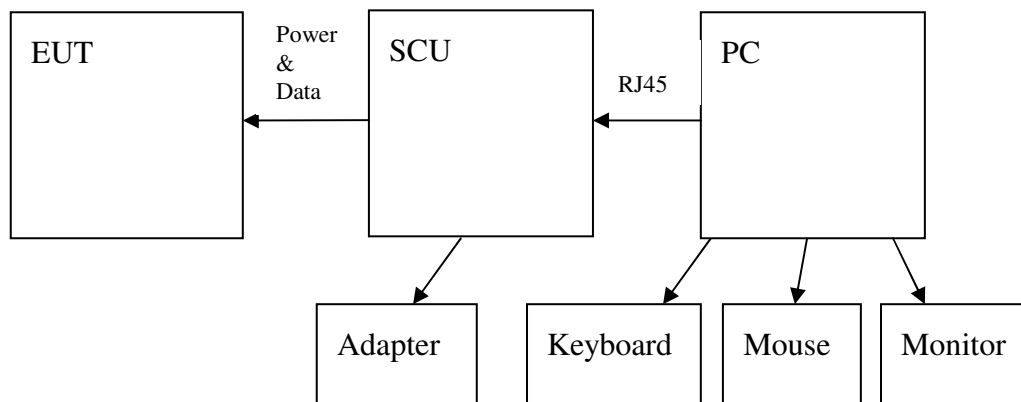
2.2 限制使用之頻帶

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	

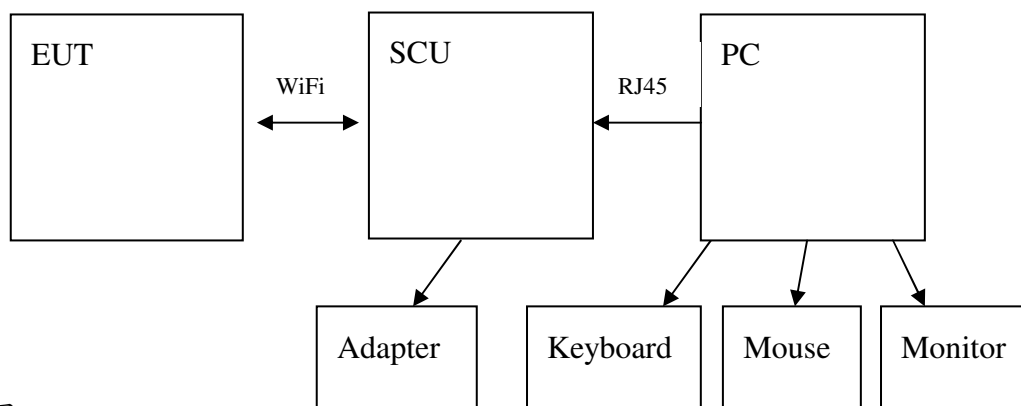
3 受測裝置之系統說明

3.1 量測配置圖

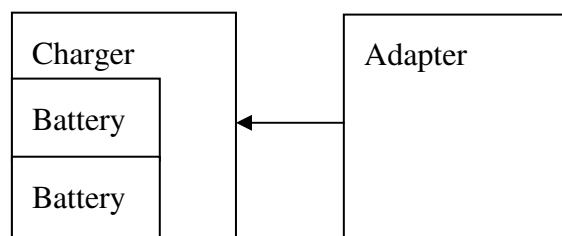
模式一(有線傳輸):



模式二(無線傳輸):



模式三、四



備註: 模式三 充電器型號為 FXRC-02A ; 模式四 充電器型號為 FXRC-03A

3.2 待測物之主要配備

裝置名稱	製造者	型號	纜線說明
無線數位影像系統 (Detector)	Vieworks Co., Ltd.	FXRD-1417NAW	----
充電器	Vieworks Co., Ltd.	FXRC-02A	----
電源供應器	BridgePower Corp.	BPM060S24F10	1.3m AC Power Cable (Part No:20 006 0207)
Tether Interface	Vieworks Co., Ltd.	20 006 4012(1831-3012-01A)	7m Cable
Direct LAN Cable	Vieworks Co., Ltd.	20 006 3006(1192-6202-01AE)	15m Cable
電池	Vieworks Co., Ltd.	FXRB-03A	----

3.3 外接週邊設備

裝置名稱	製造商/廠牌	型號	纜線說明
PC	DELL	OPTIPLEX9020	1.8m Unshielded AC Power Cord 15m Shielded RJ45 Cable
Monitor	SONY	KDL-22EX420	1.0m Unshielded D-Sub Cable 1.8m Unshielded Power Cord
Keyboard	DELL	L100	1.3m Unshielded PS/2 Cable
Mouse	ACROX	MVI	1.5m Unshielded USB Cable
SCU mini	Vieworks Co., Ltd.	FXRS-04A	1.8m Unshielded AC Power Cord 1.3m Unshielded DC Adapter 6.3m Unshielded Data&DC Power Cable
充電器(選配)	Vieworks Co., Ltd.	FXRC-03A	----

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

1) 磁場測試

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2米的高度。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0度至360度旋轉變化，以找出最大的輻射磁場強度。

2) 電場測試

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
EMI Test Receiver	Rohde & Schwarz	ESU 40	2019/10/25	2020/10/24
Bi-Log Antenna	ETC	MCTD 2786	2019/08/20	2020/08/19
Amplifier	HP	8447D	2019/05/06	2020/05/05
Horn Antenna	EMCO	3115	2019/10/15	2020/10/14
Horn Antenna	EMCO	3117	2019/03/13	2020/03/12
Amplifier	HP	8449B	2019/10/04	2020/10/03
Amplifier	HP	83051A	2019/09/02	2020/09/01

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

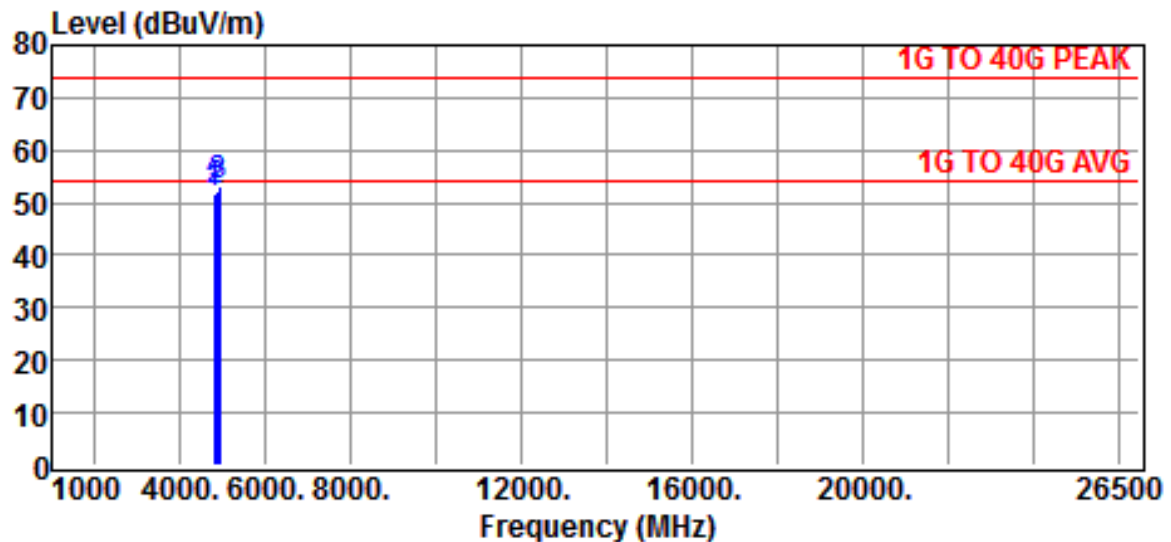
操作模式 : 發射接收

基本波頻率 : LO:2412MHz ,MI:2437MHz ,HI:2462MHz

(Local Frequency : LO:2412MHz ,MI:2437MHz ,HI:2462MHz)

測試結果 : 合格

測試者 : 何仁逸

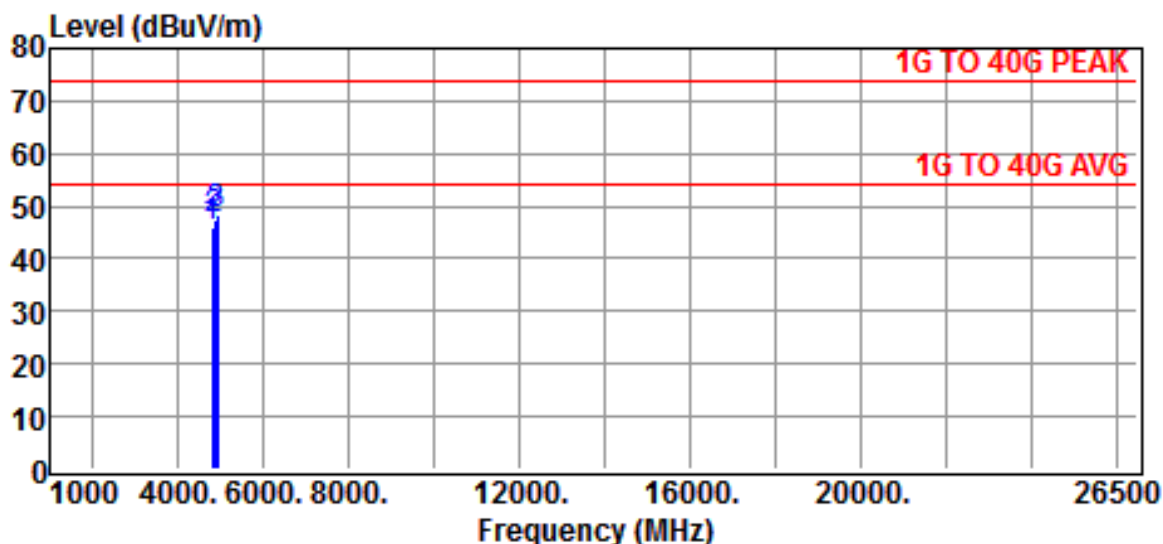


Site	:Chamber #2	Date	:2019-07-18
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:26 °C
Engineer	: Kazuma Ho	Humi.	:73 %
Test Mode	:WiFi 2.4G-B		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4824.0000	49.97	1.65	51.62	74.00	-22.38	Peak
4874.0000	50.43	1.80	52.23	74.00	-21.77	Peak
4924.0000	51.17	1.95	53.12	74.00	-20.88	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	:2019-07-18
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:26°C
Engineer	: Kazuma Ho	Humi.	:73 %
Test Mode	:WiFi 2.4G-B		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4824.0000	44.33	1.65	45.98	74.00	-28.02	Peak
4874.0000	45.46	1.80	47.26	74.00	-26.74	Peak
4924.0000	46.41	1.95	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.

B. 802.11g

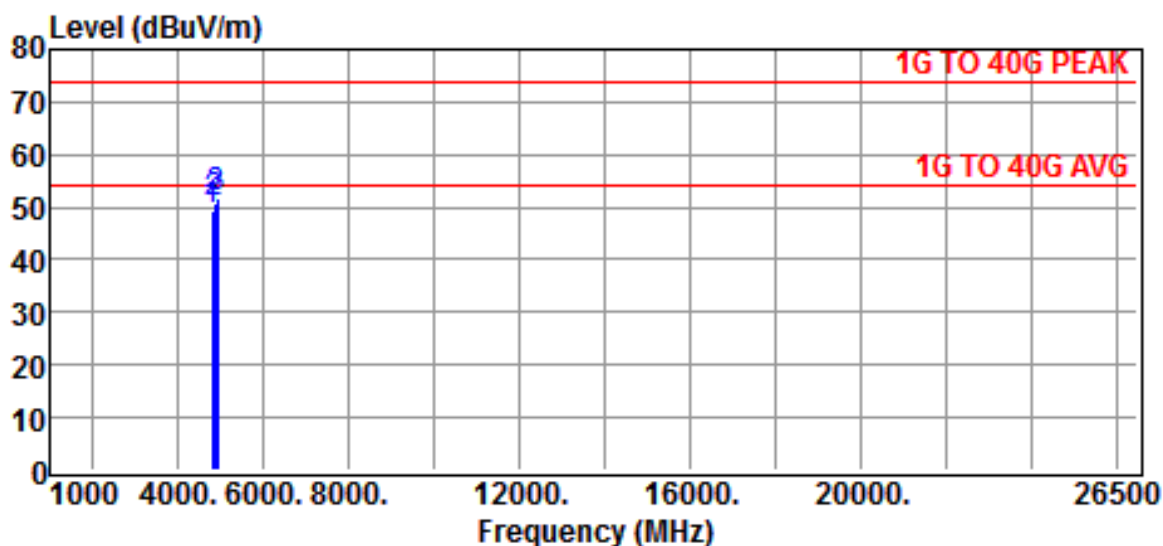
操作模式 : 發射接收

基本波頻率 : LO:2412MHz ,MI:2437MHz ,HI:2462MHz

(Local Frequency : LO:2412MHz ,MI:2437MHz ,HI:2462MHz)

測試結果 : 合格

測試者 : 何仁逸

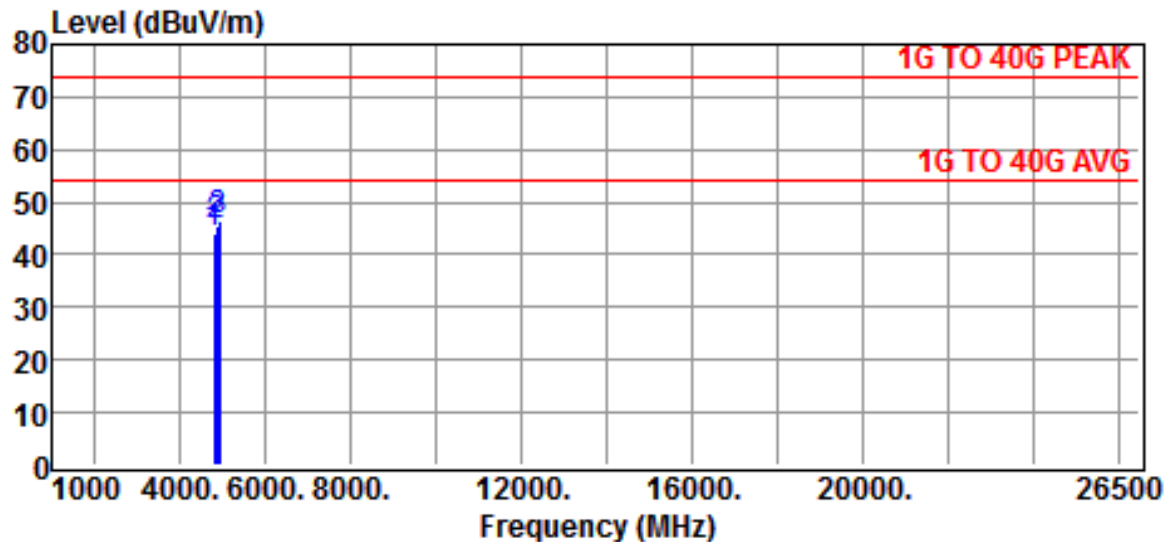


Site	:Chamber #2	Date	:2019-07-18
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:26 °C
Engineer	: Kazuma Ho	Humi.	:73 %
Test Mode	:WiFi 2.4G-G		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4824.0000	47.73	1.65	49.38	74.00	-24.62	Peak
4874.0000	48.90	1.80	50.70	74.00	-23.30	Peak
4924.0000	49.99	1.95	51.94	74.00	-22.06	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	:2019-07-18
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:26°C
Engineer	: Kazuma Ho	Humi.	:73 %
Test Mode	:WiFi 2.4G-G		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4824.0000	42.40	1.65	44.05	74.00	-29.95	Peak
4874.0000	43.70	1.80	45.50	74.00	-28.50	Peak
4924.0000	44.74	1.95	46.69	74.00	-27.31	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.

C. 802.11n HT-20

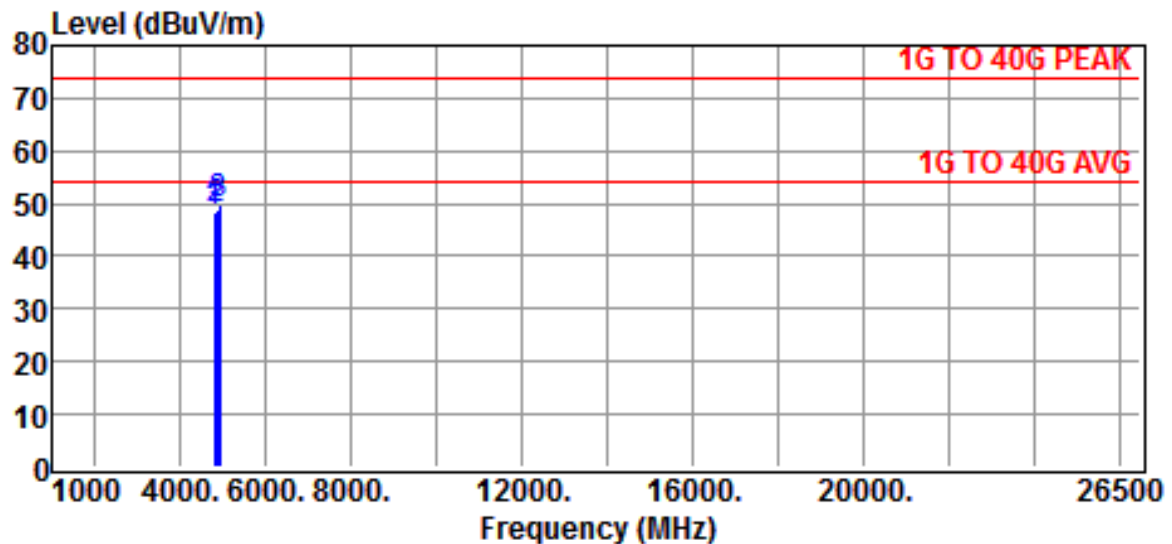
操作模式 : 發射接收

基本波頻率 : LO:2412MHz ,MI:2437MHz ,HI:2462MHz

(Local Frequency : LO:2412MHz ,MI:2437MHz ,HI:2462MHz)

測試結果 : 合格

測試者 : 何仁逸

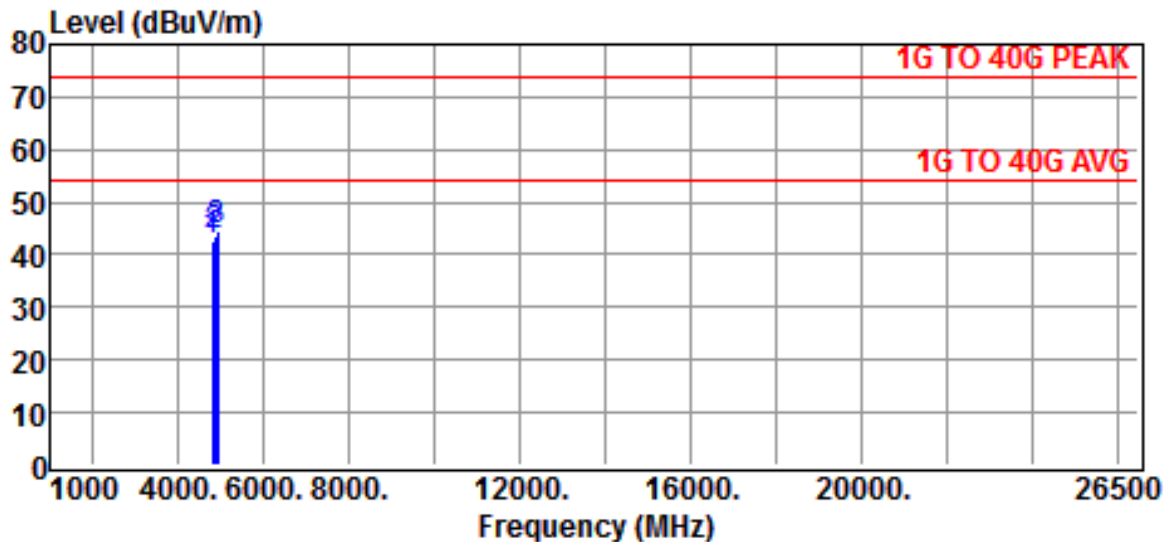


Site	:Chamber #2	Date	:2019-07-18
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:26 °C
Engineer	: Kazuma Ho	Humi.	:73 %
Test Mode	:WiFi 2.4G-N20		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4824.0000	46.50	1.65	48.15	74.00	-25.85	Peak
4874.0000	47.08	1.80	48.88	74.00	-25.12	Peak
4924.0000	47.74	1.95	49.69	74.00	-24.31	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	:2019-07-18
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:26 °C
Engineer	: Kazuma Ho	Humi.	:73 %
Test Mode	:WiFi 2.4G-N20		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4824.0000	41.13	1.65	42.78	74.00	-31.22	Peak
4874.0000	41.59	1.80	43.39	74.00	-30.61	Peak
4924.0000	42.66	1.95	44.61	74.00	-29.39	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

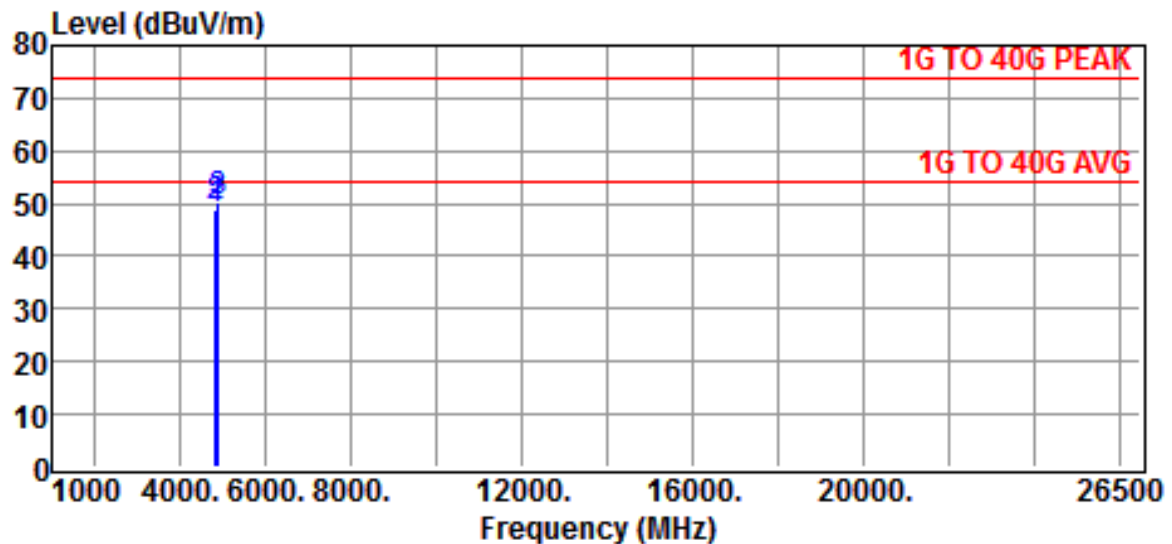
操作模式 : 發射接收

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

(Local Frequency : LO:2422MHz ,MI:2437MHz ,HI:2452MHz)

測試結果 : 合格

測試者 : 何仁逸

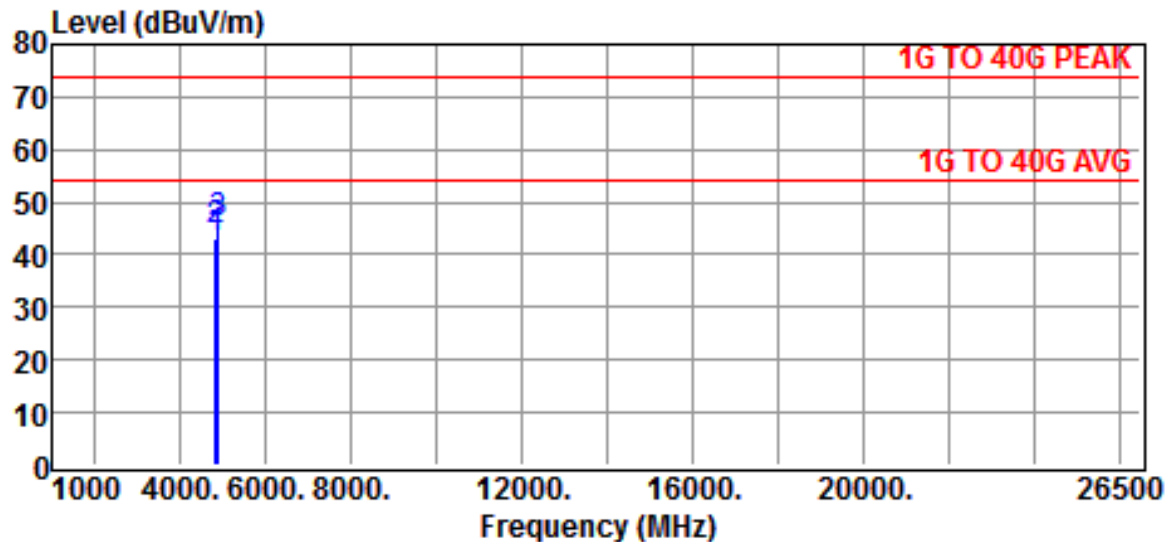


Site	:Chamber #2	Date	:2019-07-18
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:26 °C
Engineer	: Kazuma Ho	Humi.	:73 %
Test Mode	:WiFi 2.4G-N40		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4844.0000	47.04	1.71	48.75	74.00	-25.25	Peak
4874.0000	47.62	1.80	49.42	74.00	-24.58	Peak
4904.0000	48.54	1.89	50.43	74.00	-23.57	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	:2019-07-18
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:26 °C
Engineer	: Kazuma Ho	Humi.	:73 %
Test Mode	:WiFi 2.4G-N40		

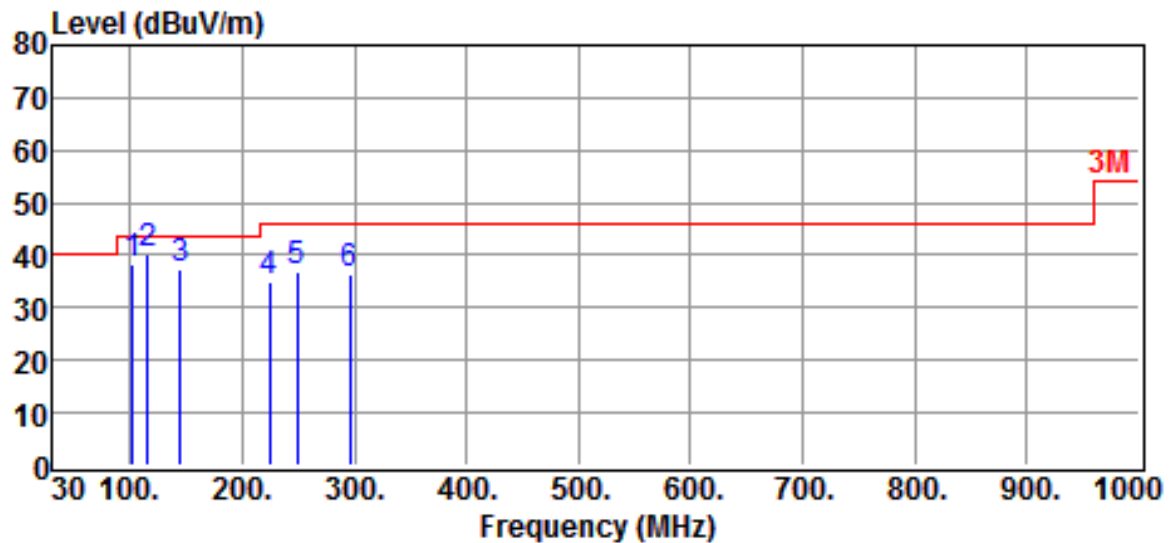
Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4844.0000	41.31	1.71	43.02	74.00	-30.98	Peak
4874.0000	42.75	1.80	44.55	74.00	-29.45	Peak
4904.0000	44.09	1.89	45.98	74.00	-28.02	Peak

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

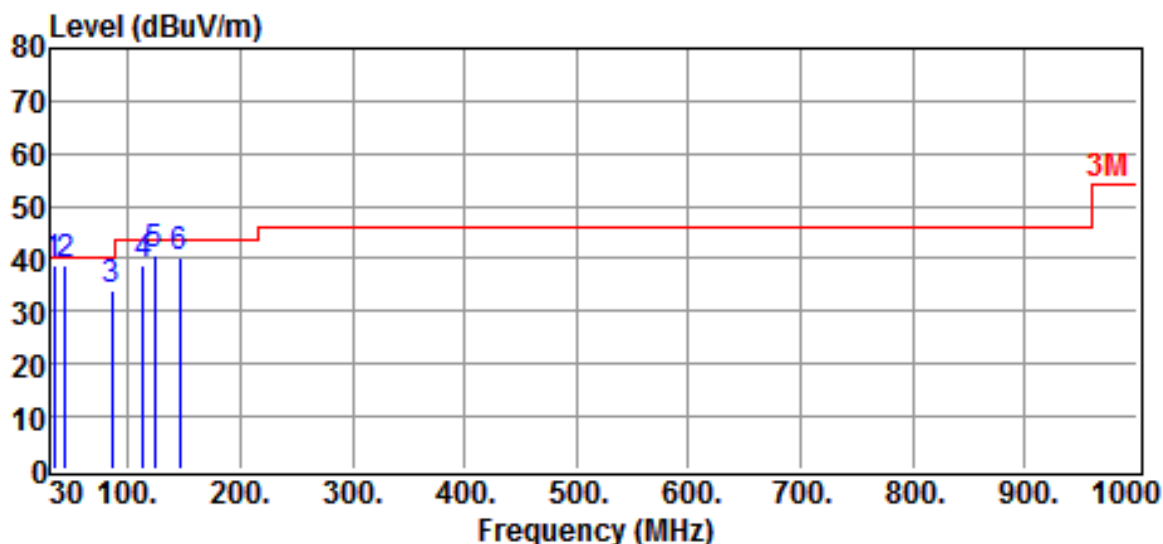


Site	:Chamber #2	Date	:2019-09-11
Limit	:3M	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:AC110V 60Hz	Temp.	:26 °C
Engineer	: Kazuma Ho	Humi.	:57 %
Test Mode	:Mode 1(有線傳輸)		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
101.7800	47.81	-9.49	38.32	43.50	-5.18	QP
115.3600	48.78	-8.38	40.40	43.50	-3.10	QP
144.4600	44.52	-7.39	37.13	43.50	-6.37	QP
224.0000	42.08	-7.18	34.90	46.00	-11.10	QP
249.2200	41.98	-5.18	36.80	46.00	-9.20	QP
295.7800	39.65	-3.04	36.61	46.00	-9.39	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.

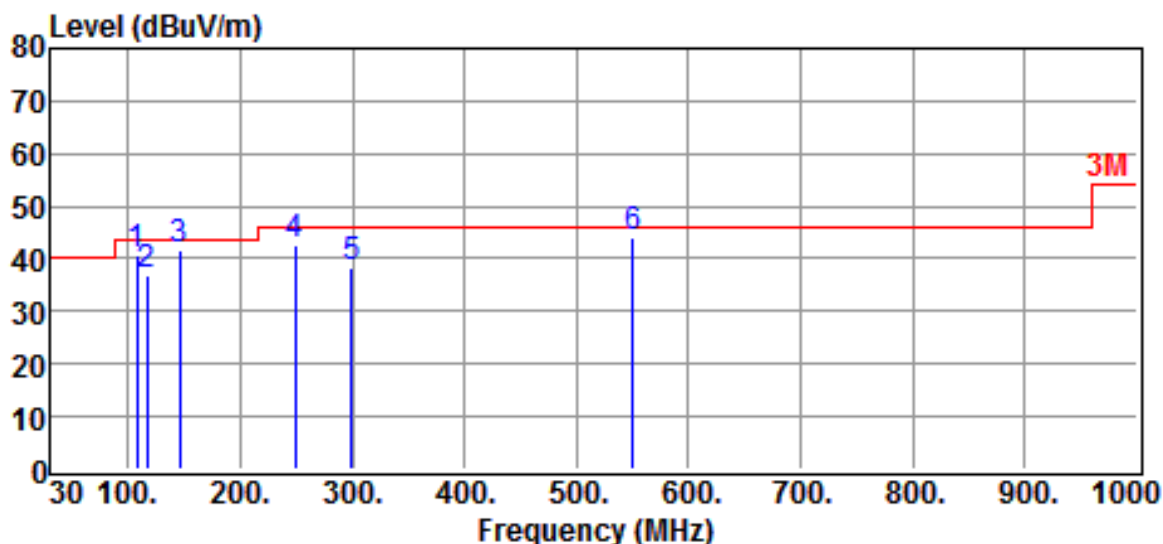


Site	:Chamber #2	Date	:2019-09-11
Limit	:3M	Ant. Pol.	:VERTICAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:AC110V 60Hz	Temp.	:26 °C
Engineer	: Kazuma Ho	Humi.	:57 %
Test Mode	:Mode 1(有線傳輸)		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
33.8800	41.39	-2.73	38.66	40.00	-1.34	QP
43.5800	47.51	-8.59	38.92	40.00	-1.08	QP
85.2900	45.92	-11.68	34.24	40.00	-5.76	QP
113.4200	47.42	-8.60	38.82	43.50	-4.68	QP
123.1200	48.62	-7.78	40.84	43.50	-2.66	QP
146.4000	47.79	-7.37	40.42	43.50	-3.08	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.

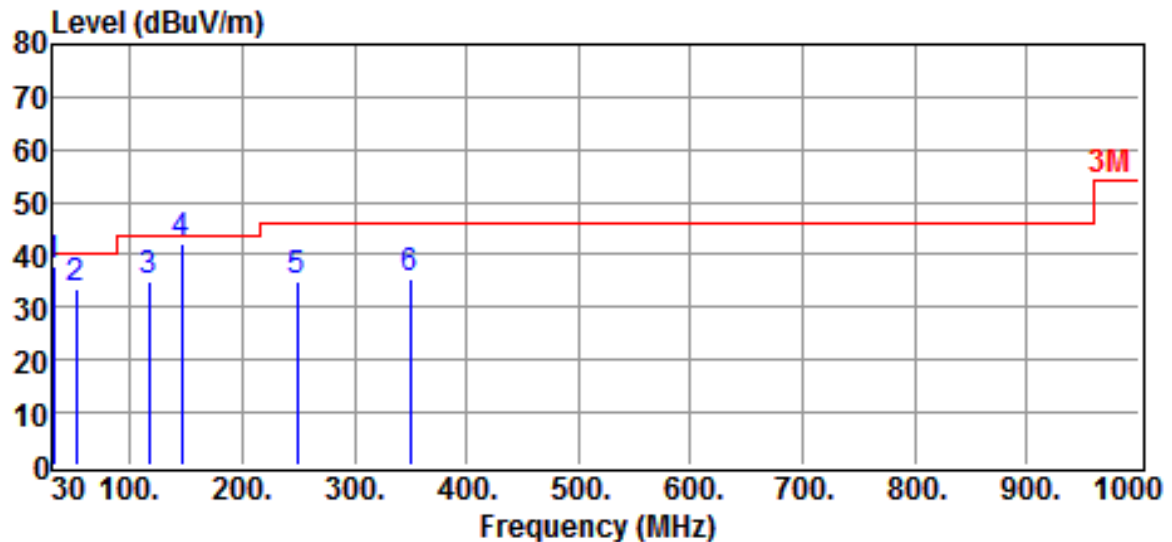


Site	:Chamber #2	Date	:2019-09-11
Limit	:3M	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC Battery	Temp.	:26 °C
Engineer	: Kazuma Ho	Humi.	:57 %
Test Mode	:Mode 2(無線傳輸)		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
107.6000	49.61	-8.93	40.68	43.50	-2.82	QP
117.3000	45.27	-8.22	37.05	43.50	-6.45	QP
146.4000	49.14	-7.37	41.77	43.50	-1.73	QP
249.2200	47.76	-5.18	42.58	46.00	-3.42	QP
299.6600	41.47	-2.94	38.53	46.00	-7.47	QP
549.9200	42.80	1.04	43.84	46.00	-2.16	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.

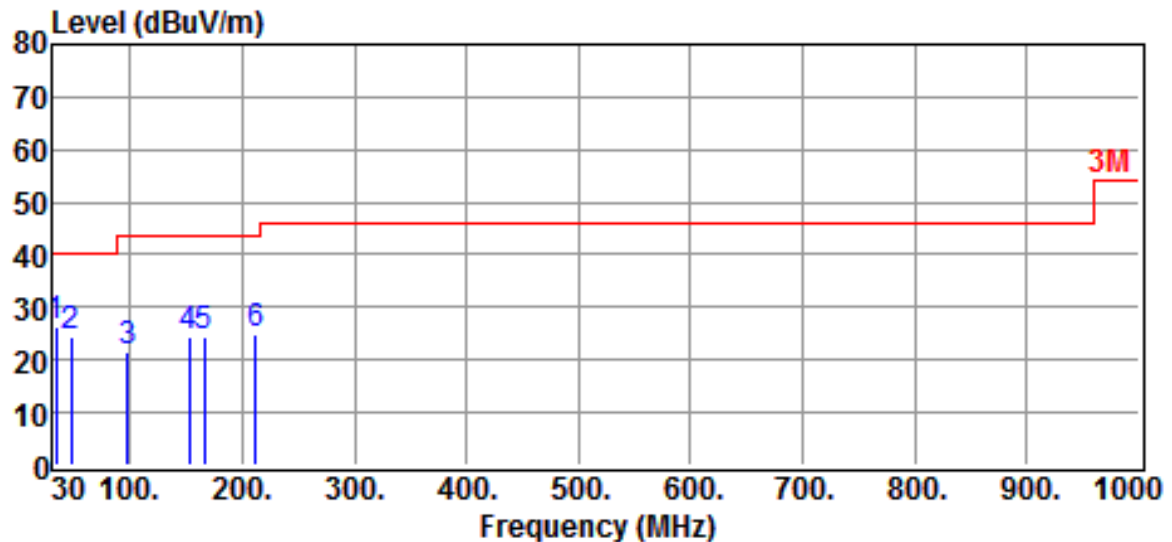


Site	:Chamber #2	Date	:2019-09-11
Limit	:3M	Ant. Pol.	:VERTICAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC Battery	Temp.	:26 °C
Engineer	: Kazuma Ho	Humi.	:57 %
Test Mode	:Mode 2(無線傳輸)		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
31.9400	39.59	-1.61	37.98	40.00	-2.02	QP
51.3400	46.16	-12.40	33.76	40.00	-6.24	QP
117.3000	43.20	-8.22	34.98	43.50	-8.52	QP
146.4000	49.45	-7.37	42.08	43.50	-1.42	QP
249.2200	40.30	-5.18	35.12	46.00	-10.88	QP
350.1000	37.88	-2.27	35.61	46.00	-10.39	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.



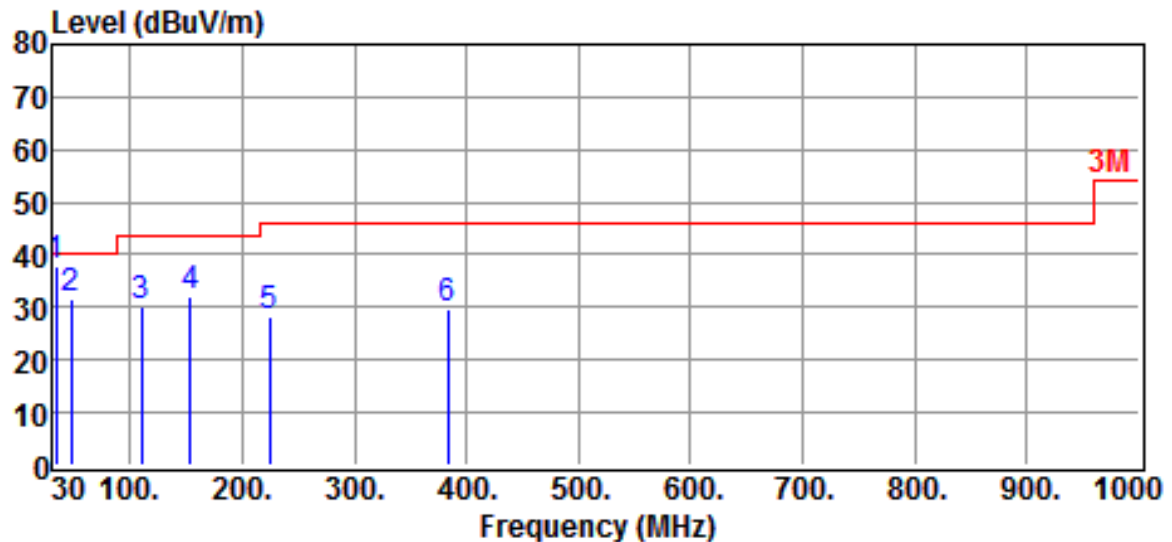
Site :CHAMBER #2
 Limit :3M
 EUT :無線數位影像系統
 Power Rating :AC110V 60Hz
 Engineer : Kazuma Ho
 Test Mode :Mode 3(Charging)

Date :2019-11-08
 Ant. Pol. :HORIZONTAL
 Model : FXRC-02A
 Temp. :22 °C
 Humi. :66 %

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
33.8800	29.30	-2.76	26.54	40.00	-13.46	QP
47.4600	33.38	-8.97	24.41	40.00	-15.59	QP
97.9000	31.83	-10.25	21.58	43.50	-21.92	QP
152.2200	31.97	-7.58	24.39	43.50	-19.11	QP
165.8000	32.79	-8.14	24.65	43.50	-18.85	QP
212.3600	31.69	-6.80	24.89	43.50	-18.61	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.



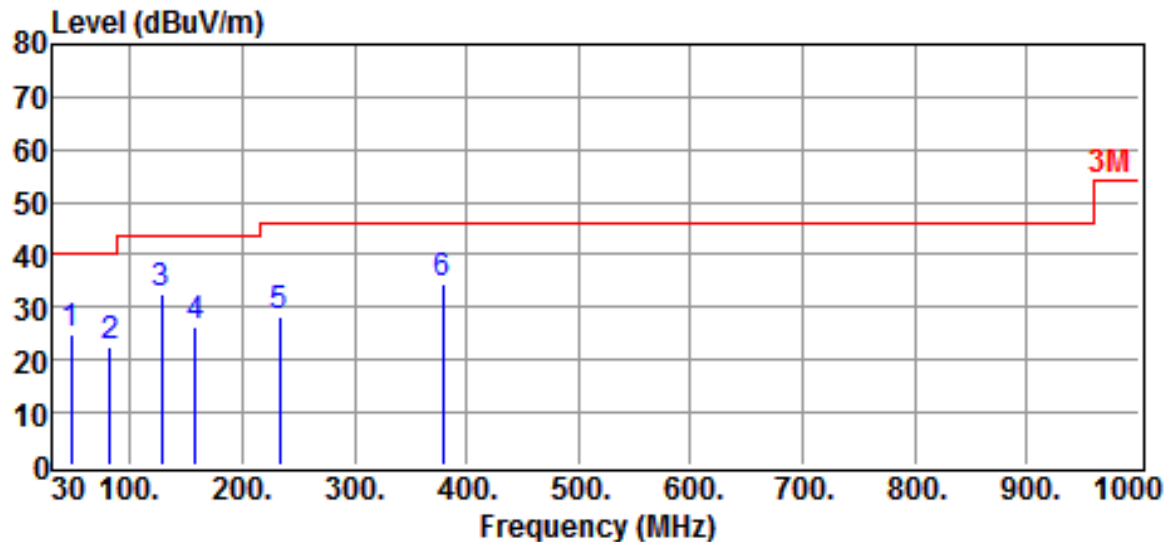
Site :CHAMBER #2
 Limit :3M
 EUT :無線數位影像系統
 Power Rating :AC110V 60Hz
 Engineer : Kazuma Ho
 Test Mode :Mode 3(Charging)

Date :2019-11-08
 Ant. Pol. :VERTICAL
 Model : FXRC-02A
 Temp. :22 °C
 Humi. :66 %

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
33.8800	40.45	-2.76	37.69	40.00	-2.31	QP
47.4600	40.77	-8.97	31.80	40.00	-8.20	QP
109.5400	38.79	-8.84	29.95	43.50	-13.55	QP
154.1600	39.91	-7.63	32.28	43.50	-11.22	QP
224.0000	35.28	-7.21	28.07	46.00	-17.93	QP
383.0800	31.01	-1.39	29.62	46.00	-16.38	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.



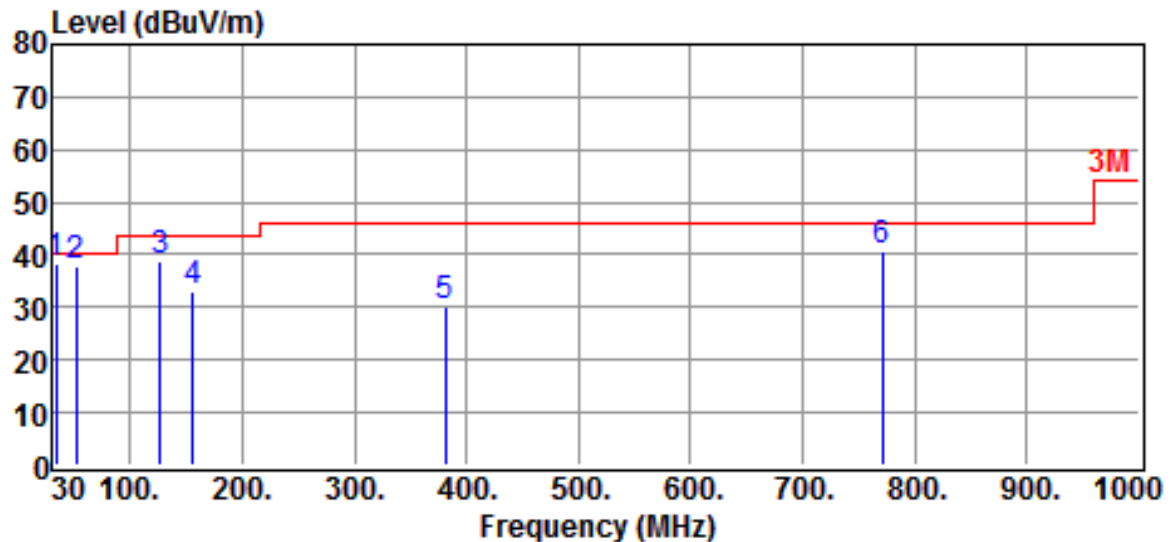
Site :CHAMBER #2
 Limit :3M
 EUT :無線數位影像系統
 Power Rating :AC110V 60Hz
 Engineer : Kazuma Ho
 Test Mode :Mode 4(Charging)

Date :2019-11-08
 Ant. Pol. :HORIZONTAL
 Model : FXRC-03A
 Temp. :22 °C
 Humi. :66 %

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
47.4600	33.92	-8.97	24.95	40.00	-15.05	QP
82.3800	34.72	-12.42	22.30	40.00	-17.70	QP
127.9700	40.03	-7.65	32.38	43.50	-11.12	QP
158.0400	34.45	-7.86	26.59	43.50	-16.91	QP
233.7000	35.27	-6.99	28.28	46.00	-17.72	QP
379.2000	35.76	-1.47	34.29	46.00	-11.71	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
 Limit :3M
 EUT :無線數位影像系統
 Power Rating :AC110V 60Hz
 Engineer : Kazuma Ho
 Test Mode :Mode 4(Charging)

Date :2019-11-08
 Ant. Pol. :VERTICAL
 Model : FXRC-03A
 Temp. :22 °C
 Humi. :66 %

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
33.8800	40.97	-2.76	38.21	40.00	-1.79	QP
51.3400	50.12	-12.44	37.68	40.00	-2.32	QP
127.0000	46.72	-7.76	38.96	43.50	-4.54	QP
156.1000	40.73	-7.79	32.94	43.50	-10.56	QP
381.1400	31.45	-1.43	30.02	46.00	-15.98	QP
771.0800	36.02	4.57	40.59	46.00	-5.41	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 : 參照3.1節之測試配置圖所示

測試日期 : Nov.08 , 2019 環境溫度 : 22 °C

環境濕度 : 66 %

測試結果 : 合格

測試者 : 何仁逸

備註:

1. 1GHz以上之不必要發射之訊號太弱而儀器無法量測。
2. 掃描圖請參考4.5.1 發射諧波及本地震盪。

4.5.3 禁用頻段之輻射(混附)發射

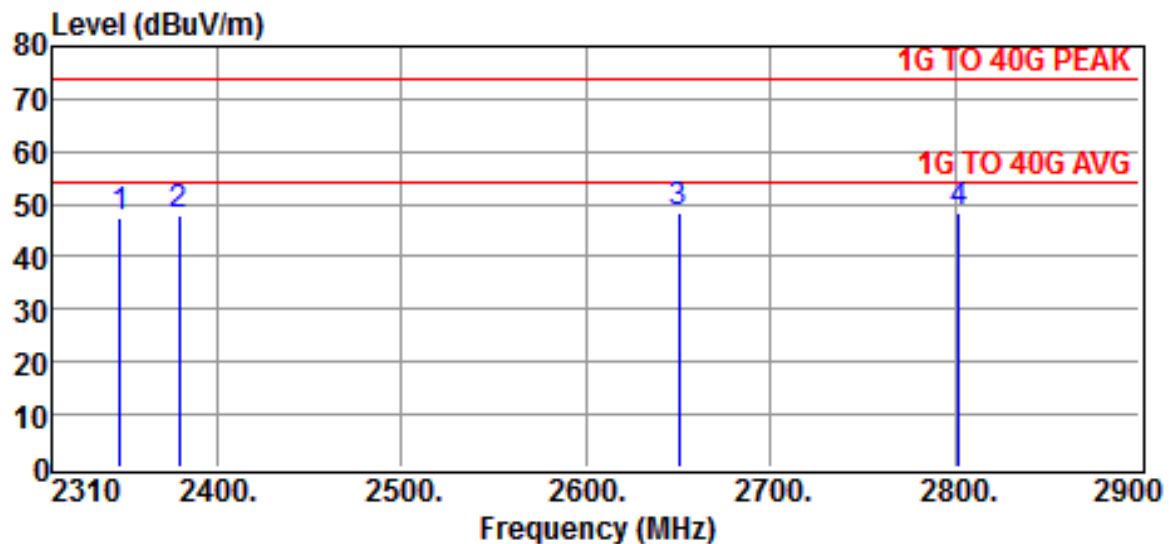
A. 802.11b

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

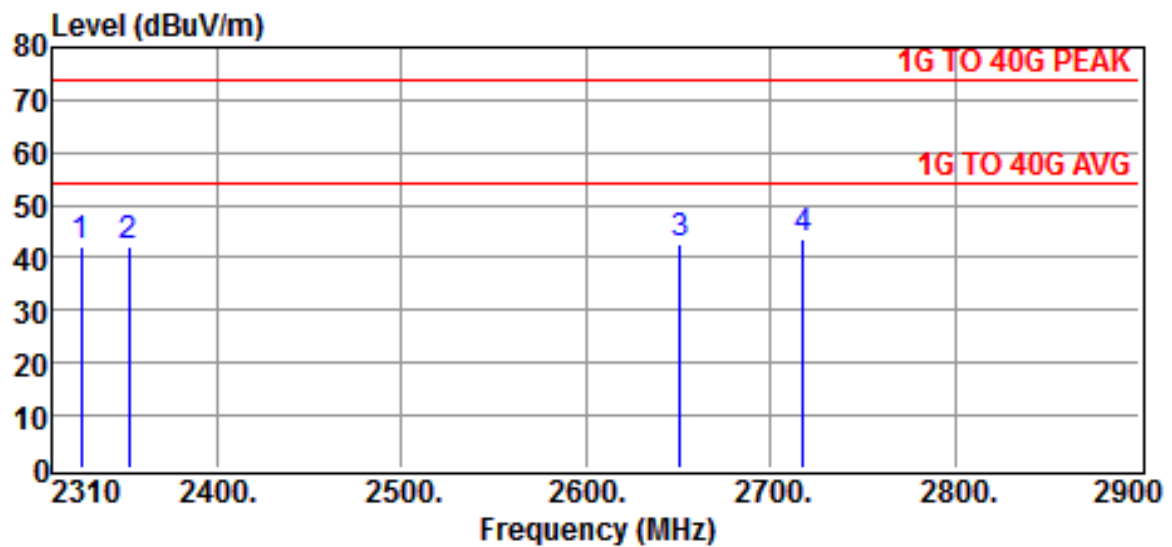


Site	:Chamber #2	Date	:2019-07-19
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 2.4G-B		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2347.0000	52.72	-5.52	47.20	74.00	-26.80	Peak
2379.0000	53.33	-5.44	47.89	74.00	-26.11	Peak
2650.0000	53.00	-4.55	48.45	74.00	-25.55	Peak
2802.0000	52.49	-3.93	48.56	74.00	-25.44	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	:2019-07-19
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 2.4G-B		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2326.0000	47.69	-5.58	42.11	74.00	-31.89	Peak
2352.0000	47.78	-5.51	42.27	74.00	-31.73	Peak
2651.0000	47.20	-4.55	42.65	74.00	-31.35	Peak
2718.0000	47.75	-4.27	43.48	74.00	-30.52	Peak

Note :

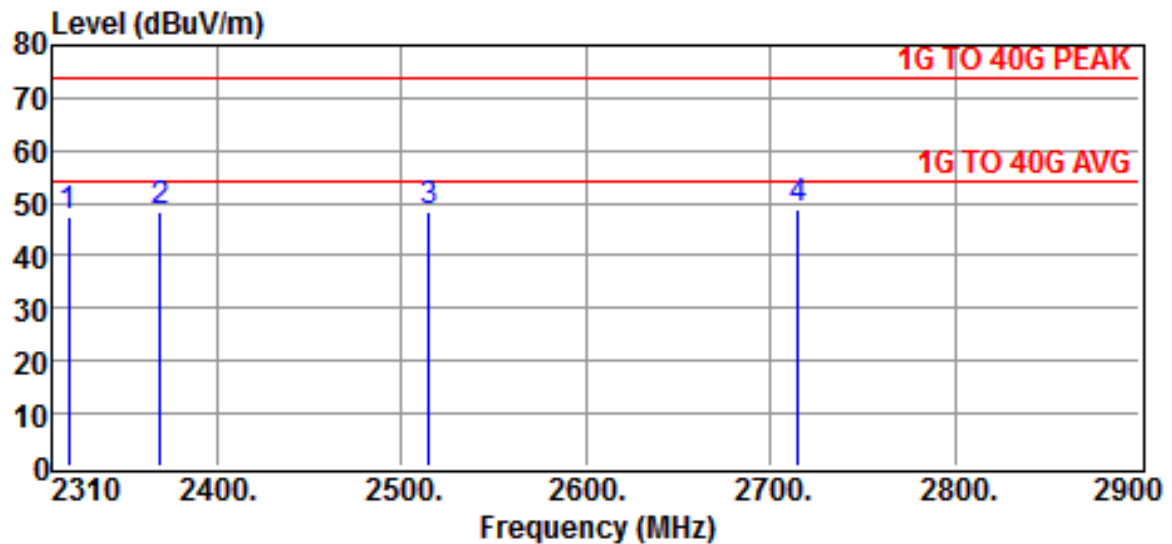
1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1Ghz : Peak measurements are compared to the average limit - as peak measurements are below the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

B. 802.11g

操作模式 : CH LO & HI - Restricted Bands

測試結果 : 合格

測試者 : 何仁逸

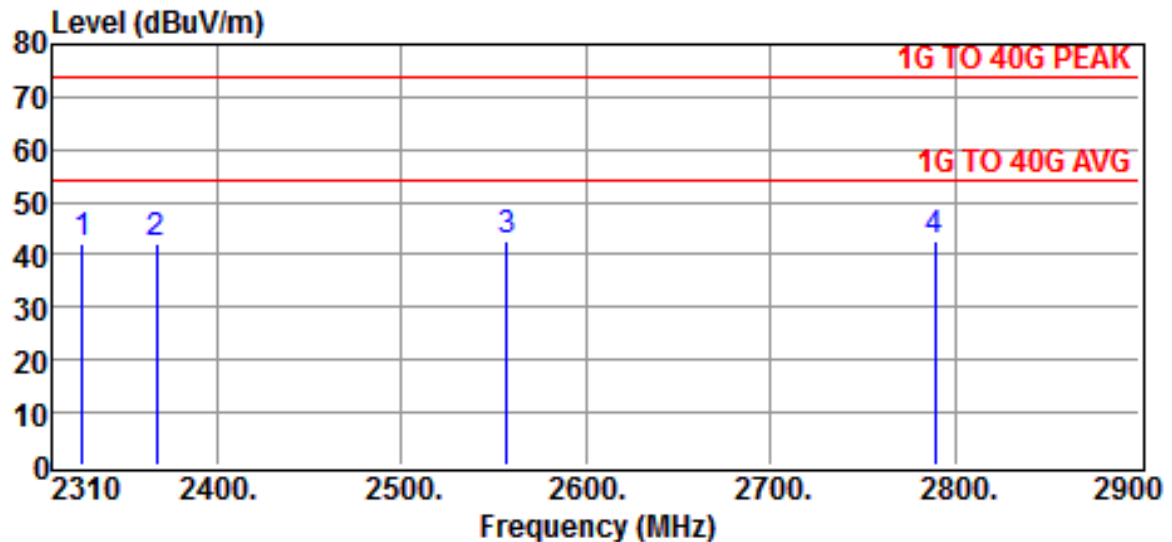


Site	:Chamber #2	Date	:2019-07-19
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 2.4G-G		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2319.0000	53.03	-5.59	47.44	74.00	-26.56	Peak
2369.0000	53.90	-5.47	48.43	74.00	-25.57	Peak
2515.0000	53.52	-5.09	48.43	74.00	-25.57	Peak
2715.0000	53.25	-4.29	48.96	74.00	-25.04	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	:2019-07-19
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 2.4G-G		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2327.0000	47.78	-5.58	42.20	74.00	-31.80	Peak
2367.0000	47.82	-5.47	42.35	74.00	-31.65	Peak
2557.0000	47.50	-4.93	42.57	74.00	-31.43	Peak
2789.0000	46.77	-3.98	42.79	74.00	-31.21	Peak

Note :

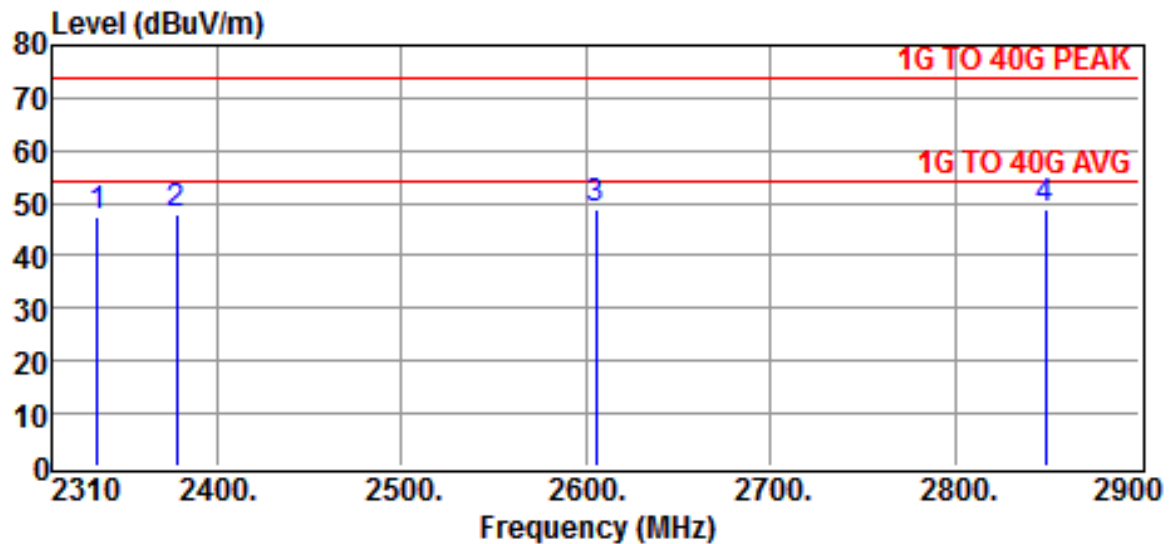
1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1Ghz : Peak measurements are compared to the average limit - as peak measurements are below the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

C. 802.11n HT-20

操作模式 : CH LO & HI - Restricted Bands

測試結果 : 合格

測試者 : 何仁逸

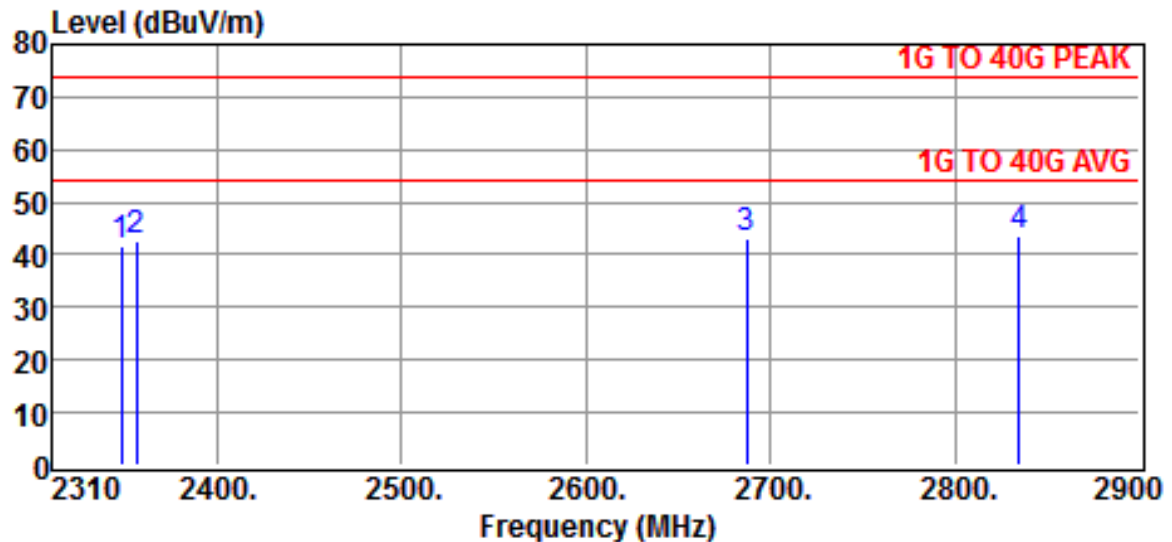


Site	:Chamber #2	Date	:2019-07-19
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 2.4G-N20		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2335.0000	52.89	-5.55	47.34	74.00	-26.66	Peak
2378.0000	53.49	-5.45	48.04	74.00	-25.96	Peak
2605.0000	53.58	-4.72	48.86	74.00	-25.14	Peak
2849.0000	52.83	-3.73	49.10	74.00	-24.90	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	:2019-07-19
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 2.4G-N20		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2348.0000	47.24	-5.52	41.72	74.00	-32.28	Peak
2356.0000	48.11	-5.50	42.61	74.00	-31.39	Peak
2687.0000	47.63	-4.39	43.24	74.00	-30.76	Peak
2835.0000	47.27	-3.80	43.47	74.00	-30.53	Peak

Note :

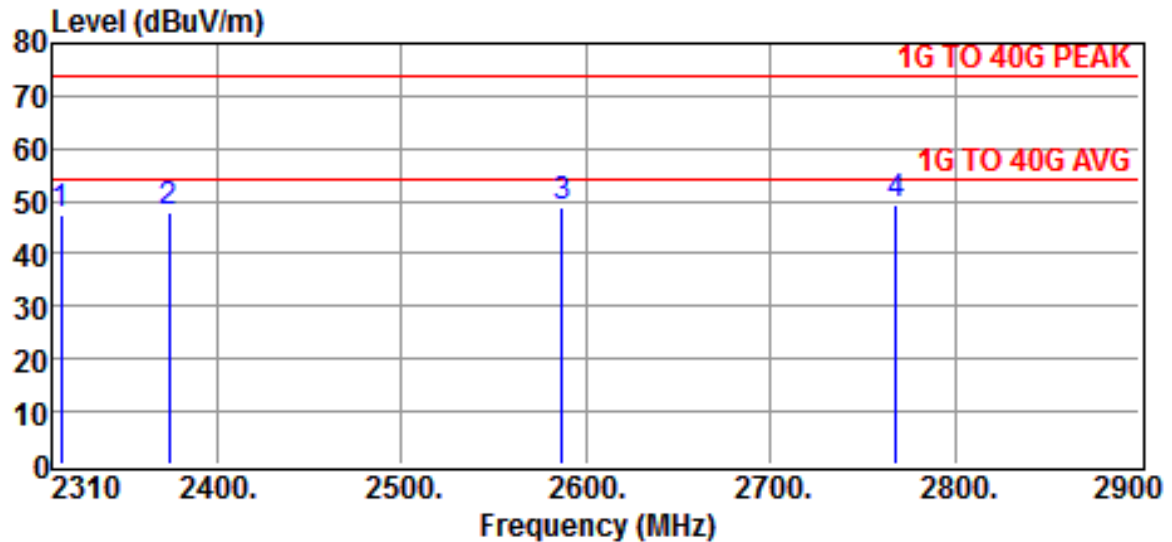
1. Result = Reading + Corrected Factor
2. Average Result = Peak Result + Duty Factor ()
3. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
4. The margin value=Limit - Result
5. Above 1Ghz : Peak measurements are compared to the average limit - as peak measurements are below the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

D. 802.11n HT-40

操作模式 : CH LO & HI - Restricted Bands

測試結果 : 合格

測試者 : 何仁逸

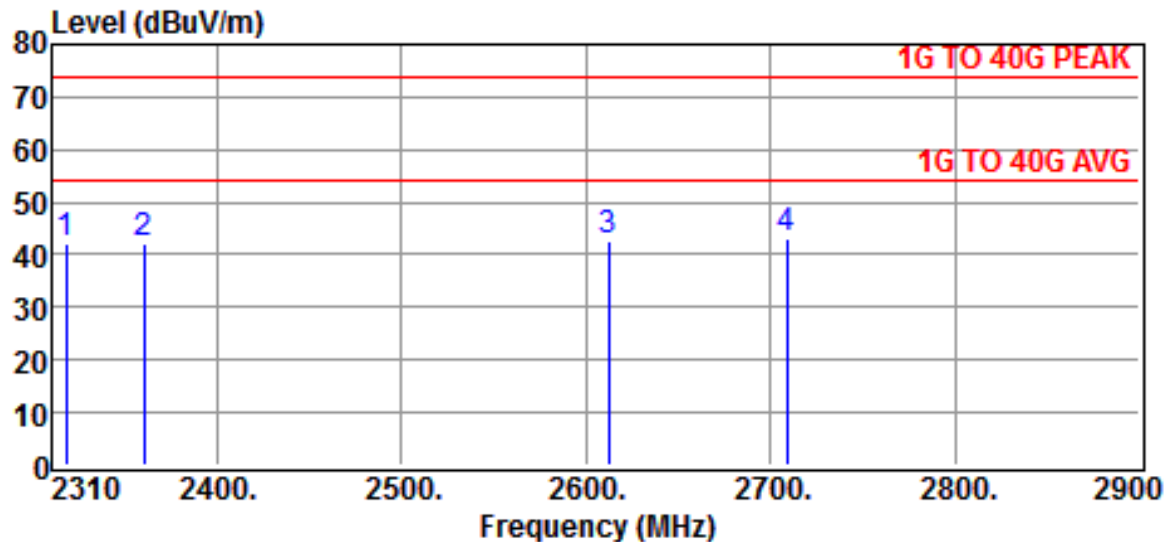


Site	:Chamber #2	Date	:2019-07-19
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 2.4G-N40		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2315.0000	53.20	-5.61	47.59	74.00	-26.41	Peak
2374.0000	53.53	-5.46	48.07	74.00	-25.93	Peak
2587.0000	53.76	-4.79	48.97	74.00	-25.03	Peak
2768.0000	53.60	-4.07	49.53	74.00	-24.47	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	:2019-07-19
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 2.4G-N40		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2318.0000	47.54	-5.59	41.95	74.00	-32.05	Peak
2360.0000	47.75	-5.49	42.26	74.00	-31.74	Peak
2612.0000	47.23	-4.69	42.54	74.00	-31.46	Peak
2709.0000	47.32	-4.31	43.01	74.00	-30.99	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.

4.6 輻射之測試配置

圖 1：量測頻率低於1GHz之測試配置

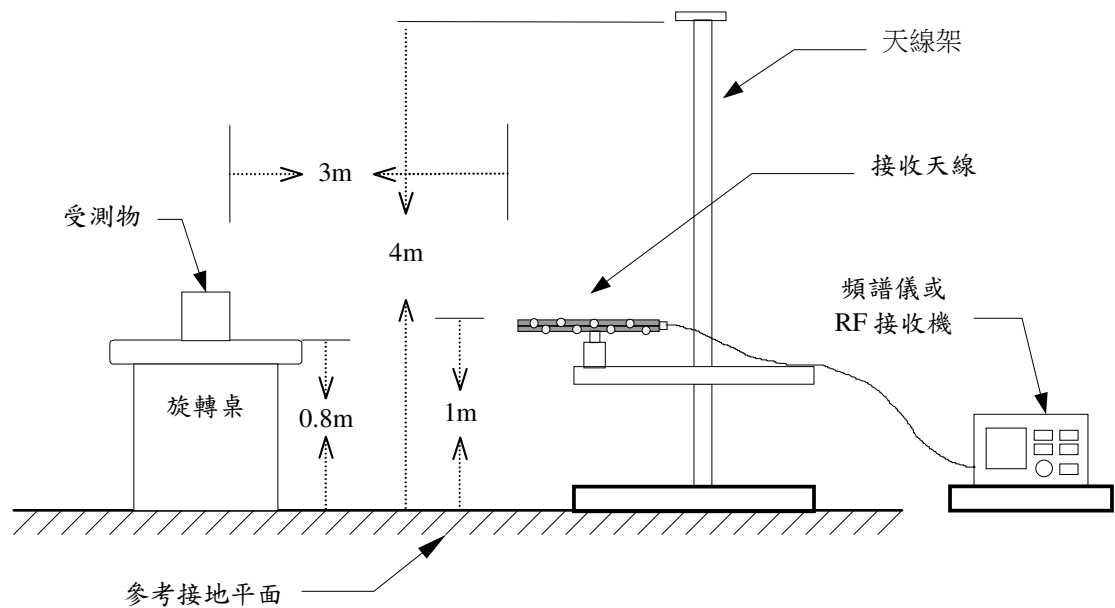
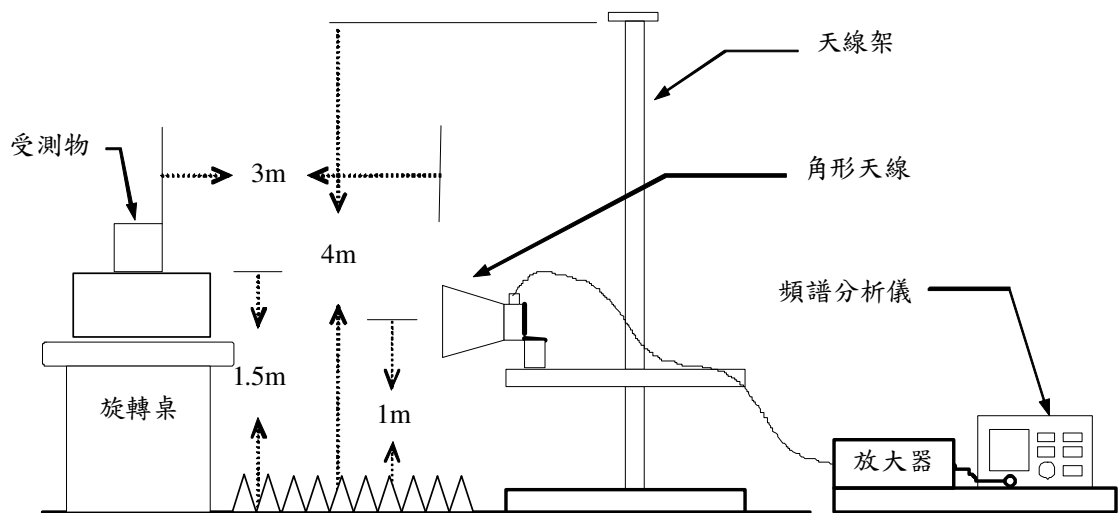


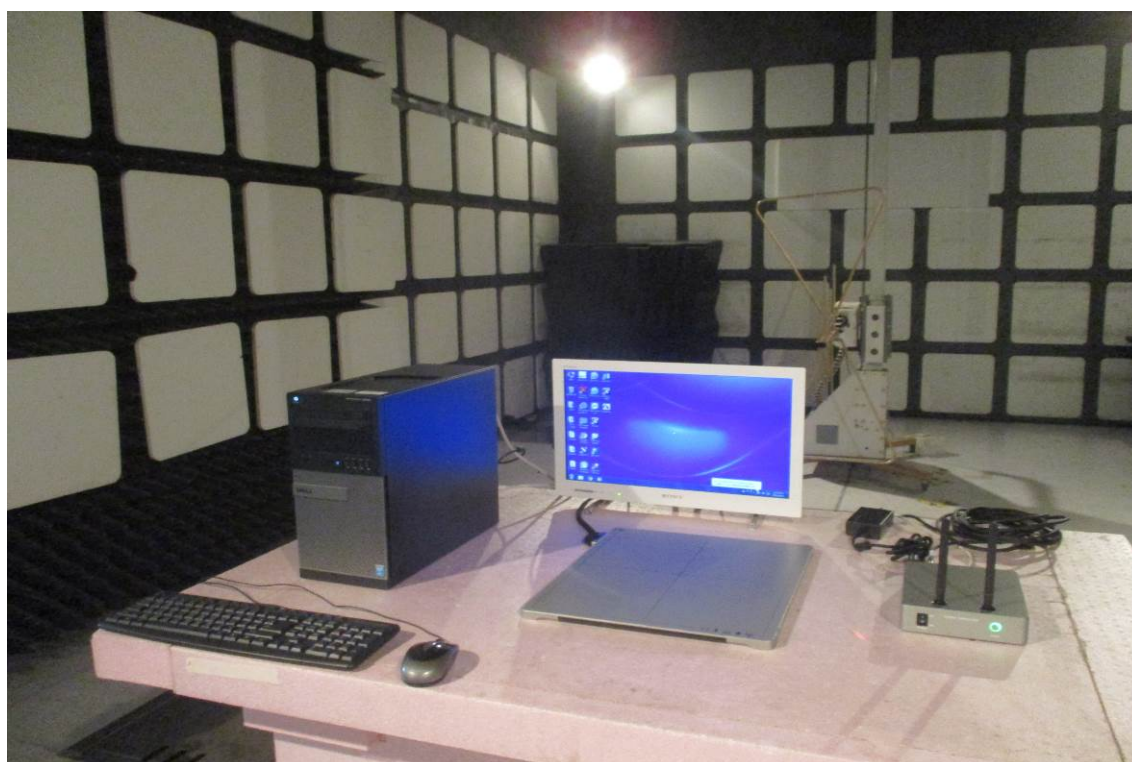
圖 2：量測頻率高於1GHz之測試配置



4.7 輻射量測之配置照片

(30MHz~1000MHz)

Mode 1



Mode 2



Mode 3

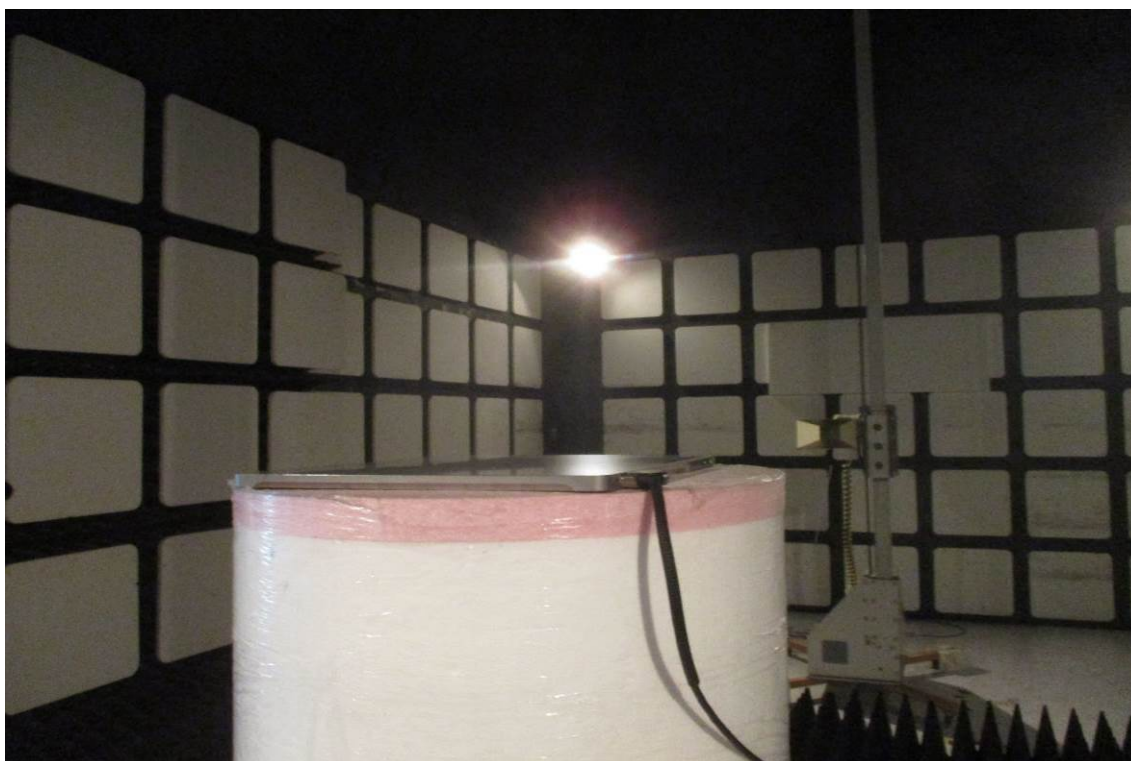


Mode 4



(Above 1GHz)

Mode 1



Mode 2



5 電源線傳導干擾之量測

5.1 適用標準

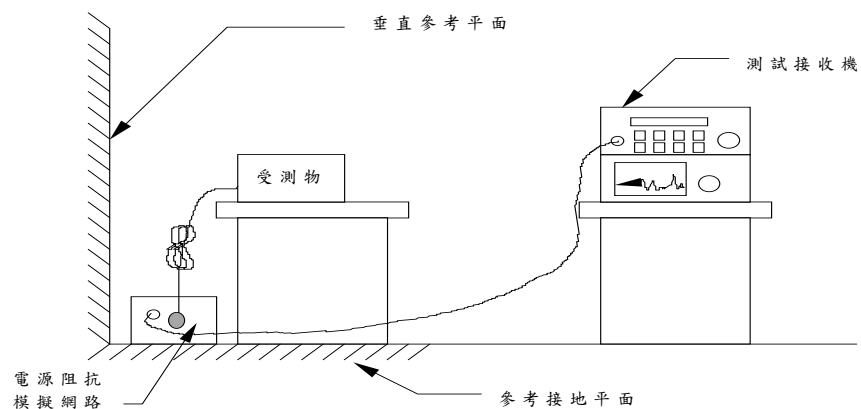
依據低功率射頻電機技術規範2.3節之要求。

5.2 測試方法

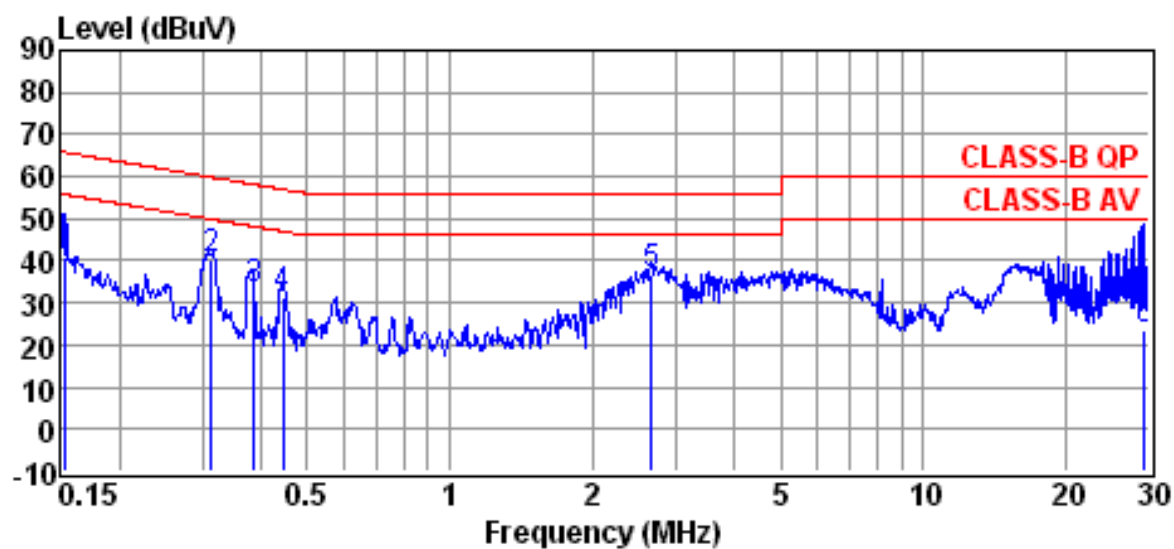
將待測物置於0.8米高的非金屬桌面，使其在工作狀態，待測物電源線接至電源線阻抗穩定網路上，從測試接收機記錄頻率由 0.15MHz 至 30MHz 之間之電源線傳導放射強度。

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



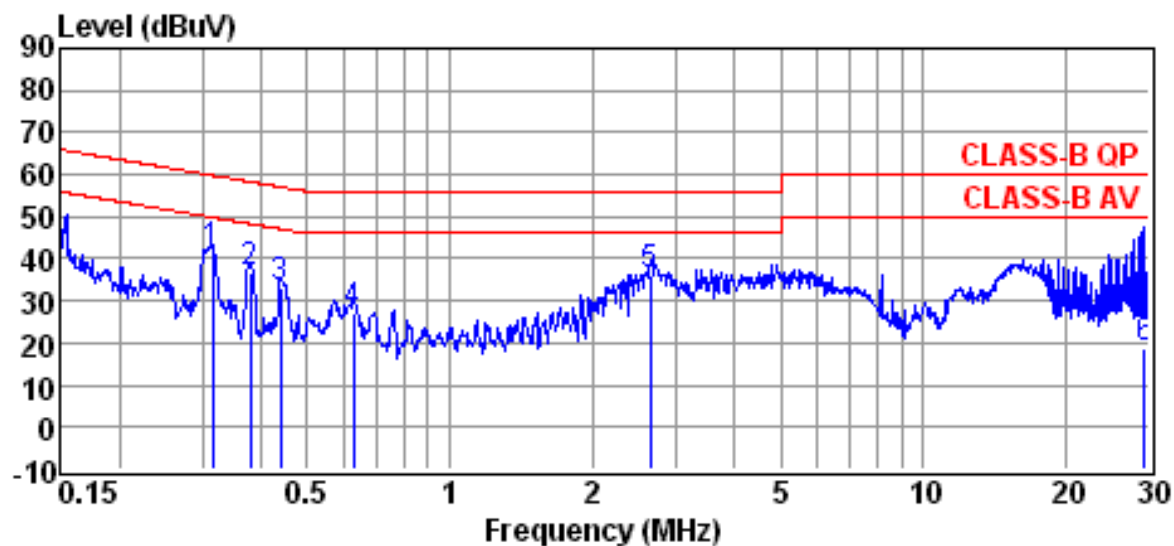
Site : conducted #1 Date : 09-16-2019
 Condition : CLASS-B QP LISN : NEUTRAL
 Tem / Hum : 25 °C / 65%
 Test Mode : Mode 1(有線傳輸)
 EUT : 無線數位影像系統
 Power Rating : AC110V 60Hz
 Engineer : Kazuma Ho Memo :

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.1532	31.14	10.03	41.17	65.82	-24.65	QP
0.3133	30.39	10.05	40.44	59.88	-19.44	QP
0.3852	22.79	10.07	32.86	58.17	-25.31	QP
0.4444	21.51	10.07	31.58	56.98	-25.40	QP
2.6640	26.59	10.20	36.79	56.00	-19.21	QP
29.3710	12.72	10.76	23.48	60.00	-36.52	QP

Note :

1. Result = Reading + Factor

2. Factor = LISN Factor + Cable Loss+ Pulse Limiter Factor

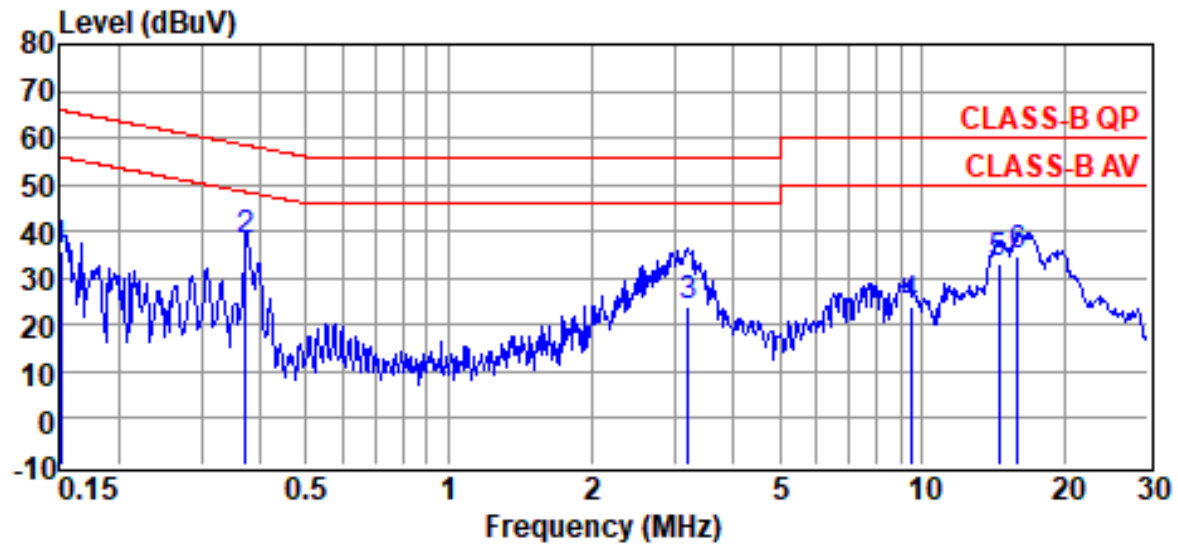


Site : conducted #1 Date : 09-16-2019
 Condition : CLASS-B QP LISN : LINE
 Tem / Hum : 25 °C / 65%
 Test Mode : Mode 1(有線傳輸)
 EUT : 無線數位影像系統
 Power Rating : AC110V 60Hz
 Engineer : Kazuma Ho Memo :

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.3150	31.22	10.02	41.24	59.84	-18.60	QP
0.3791	26.62	10.04	36.66	58.30	-21.64	QP
0.4397	23.32	10.04	33.36	57.07	-23.71	QP
0.6272	17.10	10.05	27.15	56.00	-28.85	QP
2.6500	26.09	10.17	36.26	56.00	-19.74	QP
29.3710	7.31	11.56	18.87	60.00	-41.13	QP

Note :

1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss+ Pulse Limiter Factor

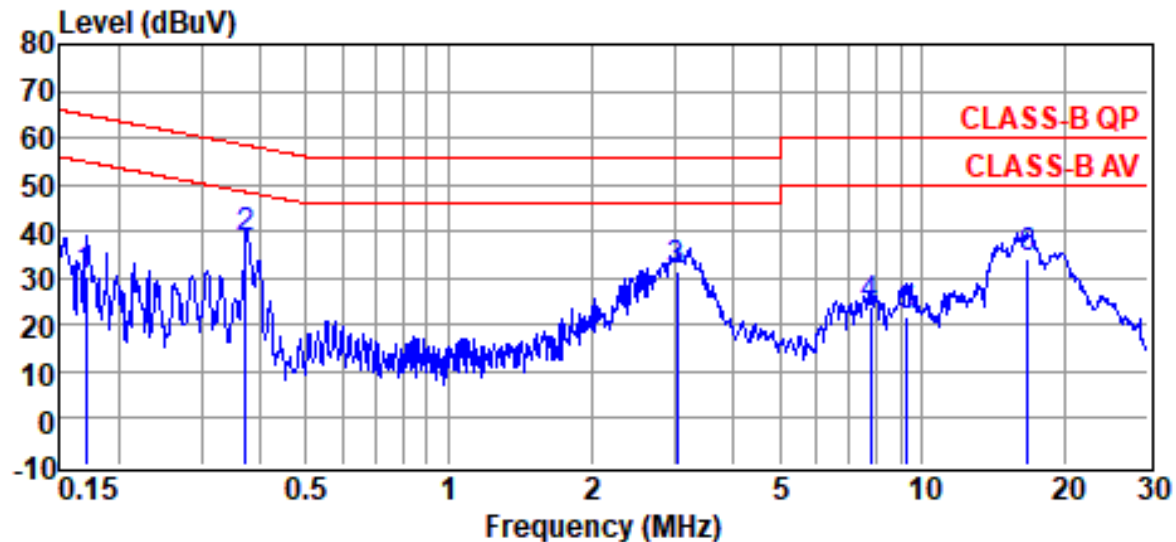


Site : conducted #1 Date : 2019-11-07
 Condition : CLASS-B QP LISN : NEUTRAL
 Tem / Hum : 25 °C / 68%
 Test Mode : Mode 3(Charging)
 EUT : 無線數位影像系統
 Power Rating : AC110V 60Hz
 Engineer : Kazuma Ho Memo :

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.1516	25.57	10.03	35.60	65.91	-30.31	QP
0.3731	28.03	10.07	38.10	58.43	-20.33	QP
3.2070	13.81	10.23	24.04	56.00	-31.96	QP
9.4510	13.64	10.48	24.12	60.00	-35.88	QP
14.5170	22.54	10.71	33.25	60.00	-26.75	QP
15.9700	23.75	10.75	34.50	60.00	-25.50	QP

Note :

1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss+ Pulse Limiter Factor



Site : conducted #1
 Condition : CLASS-B QP
 Tem / Hum : 25 °C / 68%
 Test Mode : Mode 3(Charging)
 EUT : 無線數位影像系統
 Power Rating : AC110V 60Hz
 Engineer : Kazuma Ho

Date : 2019-11-07

LISN : LINE

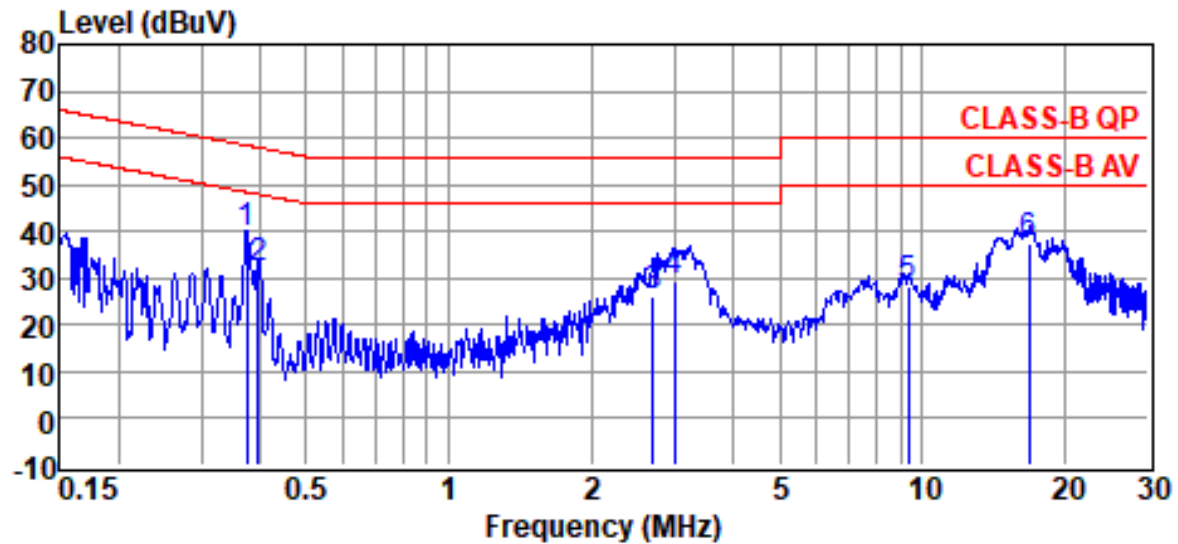
Memo :

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.1712	20.31	10.01	30.32	64.90	-34.58	QP
0.3731	28.57	10.04	38.61	58.43	-19.82	QP
3.0410	21.54	10.18	31.72	56.00	-24.28	QP
7.7690	13.55	10.44	23.99	60.00	-36.01	QP
9.3020	11.55	10.49	22.04	60.00	-37.96	QP
16.7500	23.03	11.01	34.04	60.00	-25.96	QP

Note :

1. Result = Reading + Factor

2. Factor = LISN Factor + Cable Loss+ Pulse Limiter Factor



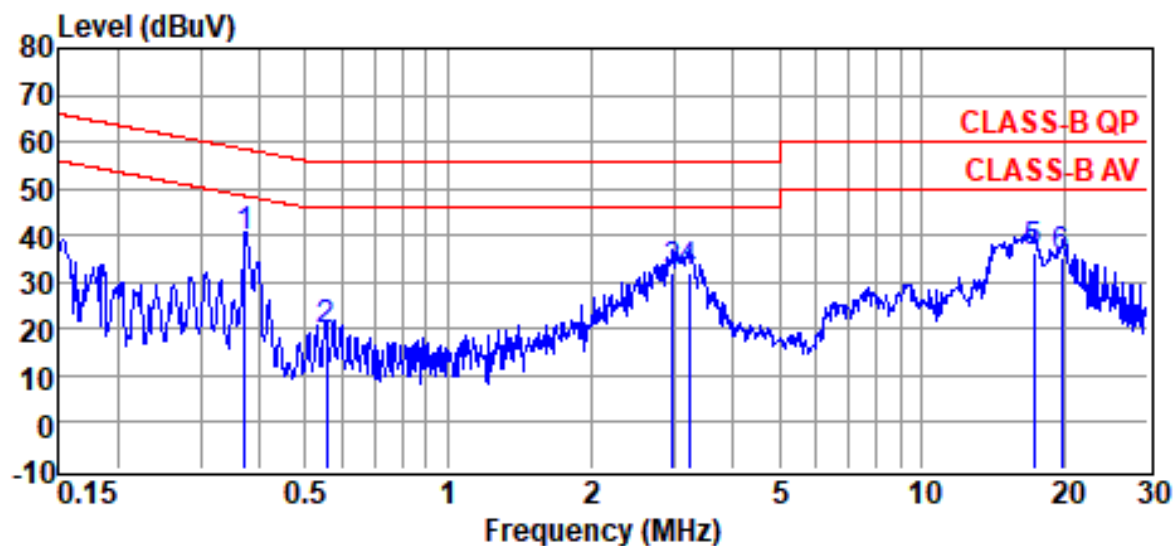
Site : conducted #1
 Condition : CLASS-B QP
 Tem / Hum : 25 °C / 68%
 Test Mode : Mode 4(Charging)
 EUT : 無線數位影像系統
 Power Rating : AC110V 60Hz
 Engineer : Kazuma Ho

Date : 2019-11-07
 LISN : NEUTRAL
 Memo :

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.3751	29.44	10.07	39.51	58.39	-18.88	QP
0.3955	22.21	10.07	32.28	57.95	-25.67	QP
2.7070	15.69	10.20	25.89	56.00	-30.11	QP
2.9930	19.30	10.20	29.50	56.00	-26.50	QP
9.3520	17.57	10.48	28.05	60.00	-31.95	QP
16.8390	26.45	10.79	37.24	60.00	-22.76	QP

Note :

1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss+ Pulse Limiter Factor



Site : conducted #1 Date : 2019-11-07
 Condition : CLASS-B QP LISN : LINE
 Tem / Hum : 25 °C / 68%
 Test Mode : Mode 4(Charging)
 EUT : 無線數位影像系統
 Power Rating : AC110V 60Hz
 Engineer : Kazuma Ho Memo :

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.3731	29.33	10.04	39.37	58.43	-19.06	QP
0.5523	9.38	10.05	19.43	56.00	-36.57	QP
2.9780	21.94	10.18	32.12	56.00	-23.88	QP
3.2240	22.00	10.21	32.21	56.00	-23.79	QP
17.1990	25.53	11.03	36.56	60.00	-23.44	QP
19.7400	23.97	11.17	35.14	60.00	-24.86	QP

Note :

1. Result = Reading + Factor

2. Factor = LISN Factor + Cable Loss+ Pulse Limiter Factor

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：

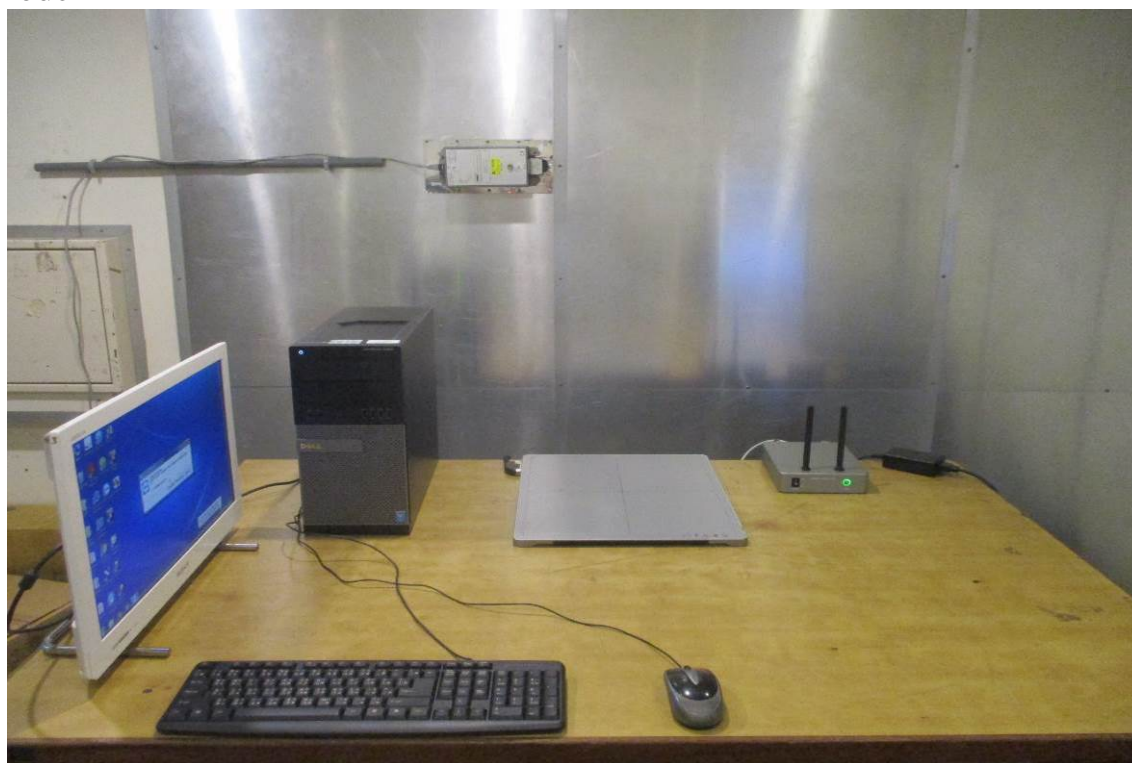
饋線損失 + 電源阻抗模擬網路損失

5.6 傳導干擾之量測儀器

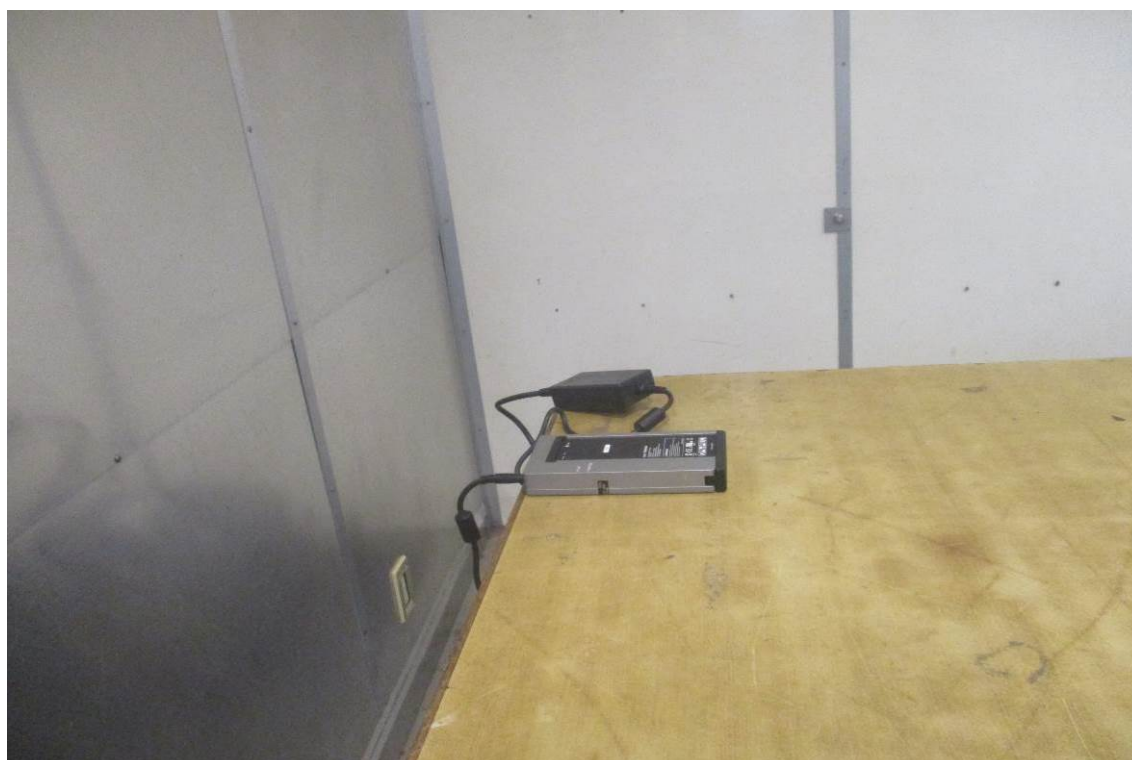
儀器名稱	製造者	型號	本次校驗日期	下次校驗日期
EMI Test Receiver	Rohde & Schwarz	ESCI	2019/01/09	2020/01/08
LISN	Rohde & Schwarz	ESH2-Z5	2019/05/16	2020/05/15
Pluse Limiter (10dB)	Schwarzbeck	VTSD 9561 F-N	2019/05/07	2020/05/06
LISN	Shibasoku	563	2019/10/21	2020/10/20

5.7 傳導量測之配置照片

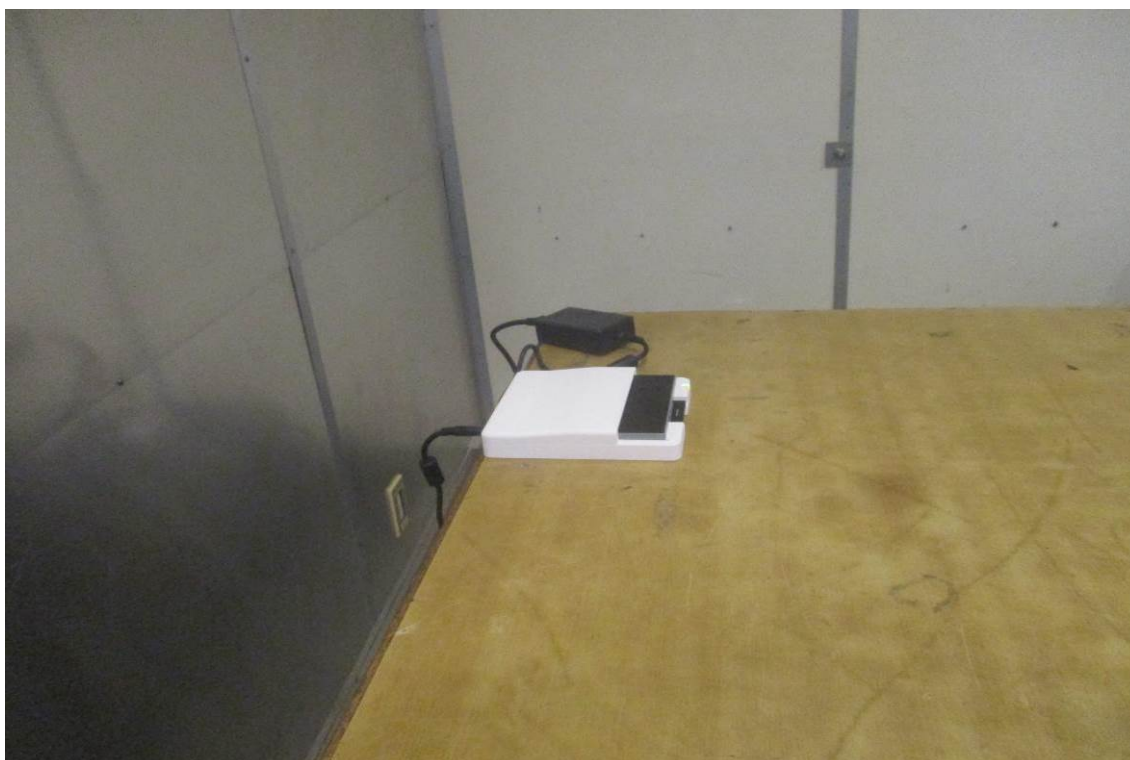
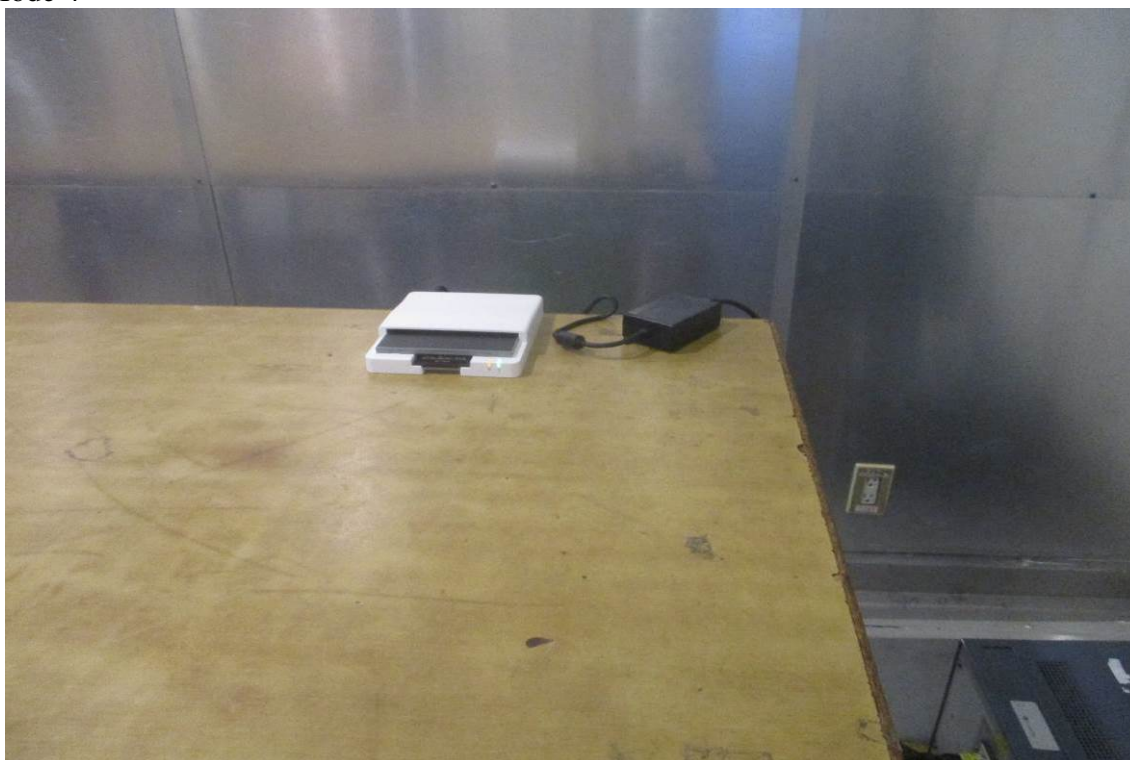
Mode 1



Mode 3



Mode 4



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

此裝置使用固定式PCB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。

No.	天線廠牌	天線型號	天線型式	天線增益 (dBi)
1	Vieworks	VWi-2450/5500DP- C1.32[A/B/C]	固定式PCB天線	0

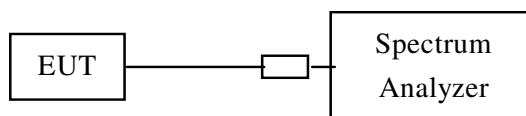
7 發射頻寬之量測

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	KEYSIGHT	N9010A	2019/02/01	2020/01/31
Attenuator	Mini-Circuits	BW-S10W2+	2019/10/04	2020/10/03
Attenuator	Mini-Circuits	BW-S20W2+	2019/10/04	2020/10/03
Attenuator	Mini-Circuits	BW-S30W2+	2019/10/04	2020/10/03

7.4 發射頻寬之量測結果

測試日期 : Jul. 26, 2019
測試結果 : 合格

環境溫度 : 25°C

環境濕度 : 65 %
測試者 : 何仁逸

A. 802.11b

- a) Channel Low : 6 dB 發射頻帶寬度為 7.053MHz。
- b) Channel Middle : 6 dB 發射頻帶寬度為 7.050MHz。
- c) Channel High : 6 dB 發射頻帶寬度為 7.075MHz。

B. 802.11g

- a) Channel Low : 6 dB 發射頻帶寬度為 16.490 MHz。
- b) Channel Middle : 6 dB 發射頻帶寬度為 16.480 MHz。
- c) Channel High : 6 dB 發射頻帶寬度為 16.500 MHz。

C. 802.11n HT-20 –ANT0

- a) Channel Low : 6 dB 發射頻帶寬度為 17.690 MHz。
- b) Channel Middle : 6 dB 發射頻帶寬度為 17.690 MHz。
- c) Channel High : 6 dB 發射頻帶寬度為 15.680 MHz。

D. 802.11n HT-20 –ANT1

- a) Channel Low : 6 dB 發射頻帶寬度為 17.690 MHz。
- b) Channel Middle : 6 dB 發射頻帶寬度為 17.650 MHz。
- c) Channel High : 6 dB 發射頻帶寬度為 17.660 MHz。

E. 802.11n HT-20 –ANT2

- a) Channel Low : 6 dB 發射頻帶寬度為 17.650 MHz。
- b) Channel Middle : 6 dB 發射頻帶寬度為 17.710 MHz。
- c) Channel High : 6 dB 發射頻帶寬度為 17.710 MHz。

F. 802.11n HT-40-ANT0

- a) Channel Low : 6 dB 發射頻帶寬度為 35.800 MHz。
- b) Channel Middle : 6 dB 發射頻帶寬度為 35.810 MHz。
- c) Channel High : 6 dB 發射頻帶寬度為 36.410 MHz。

G. 802.11n HT-40-ANT1

- a) Channel Low : 6 dB 發射頻帶寬度為 36.360 MHz。
- b) Channel Middle : 6 dB 發射頻帶寬度為 35.770 MHz。
- c) Channel High : 6 dB 發射頻帶寬度為 35.800 MHz。

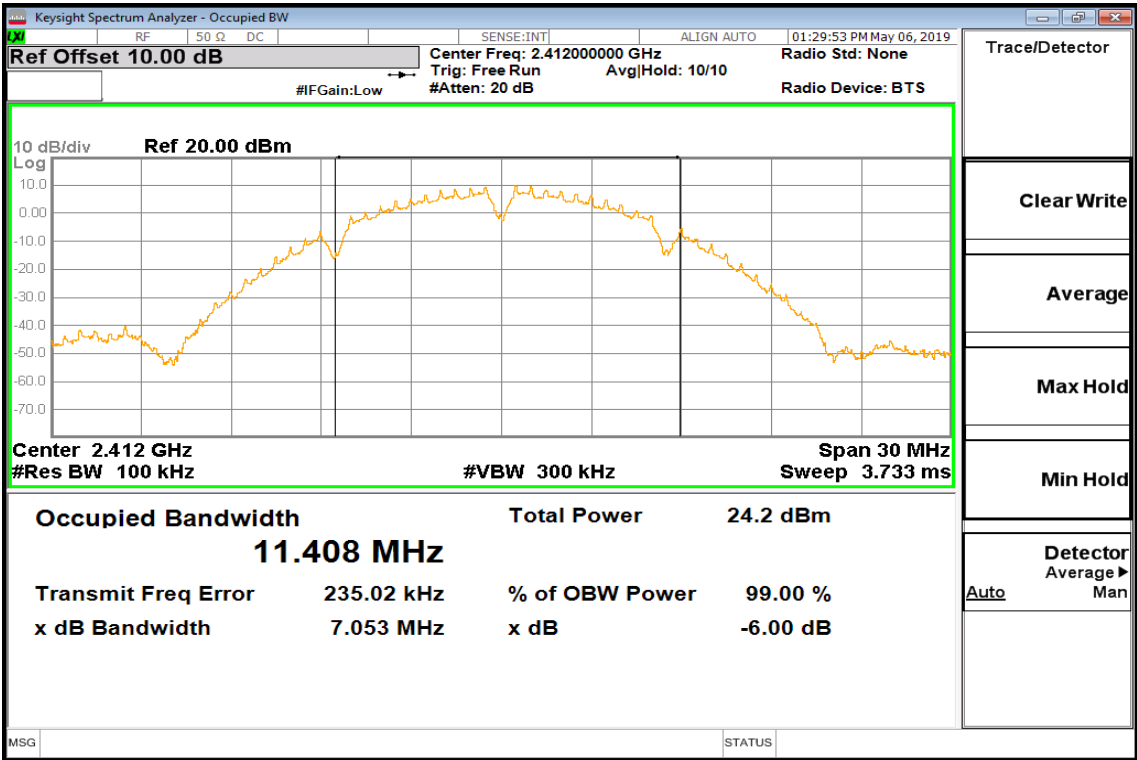
H. 802.11n HT-40-ANT2

- a) Channel Low : 6 dB 發射頻帶寬度為 36.410 MHz。
- b) Channel Middle : 6 dB 發射頻帶寬度為 35.920 MHz。
- c) Channel High : 6 dB 發射頻帶寬度為 35.780 MHz。

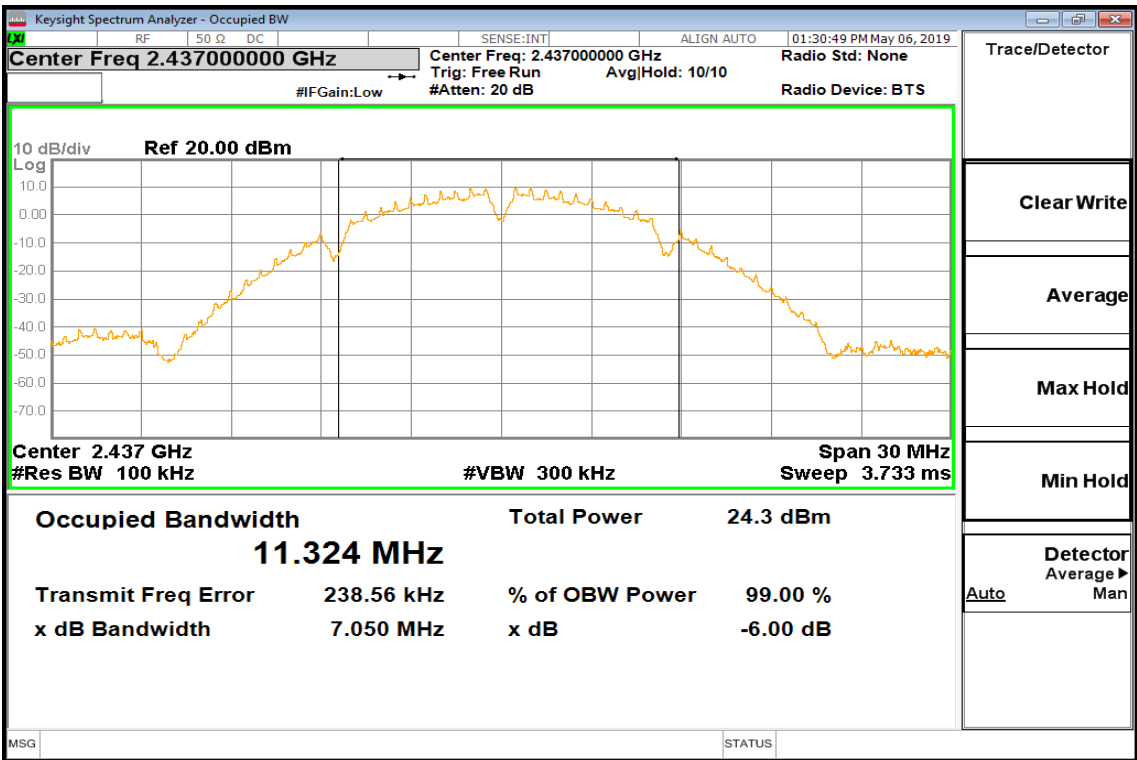
註：

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。

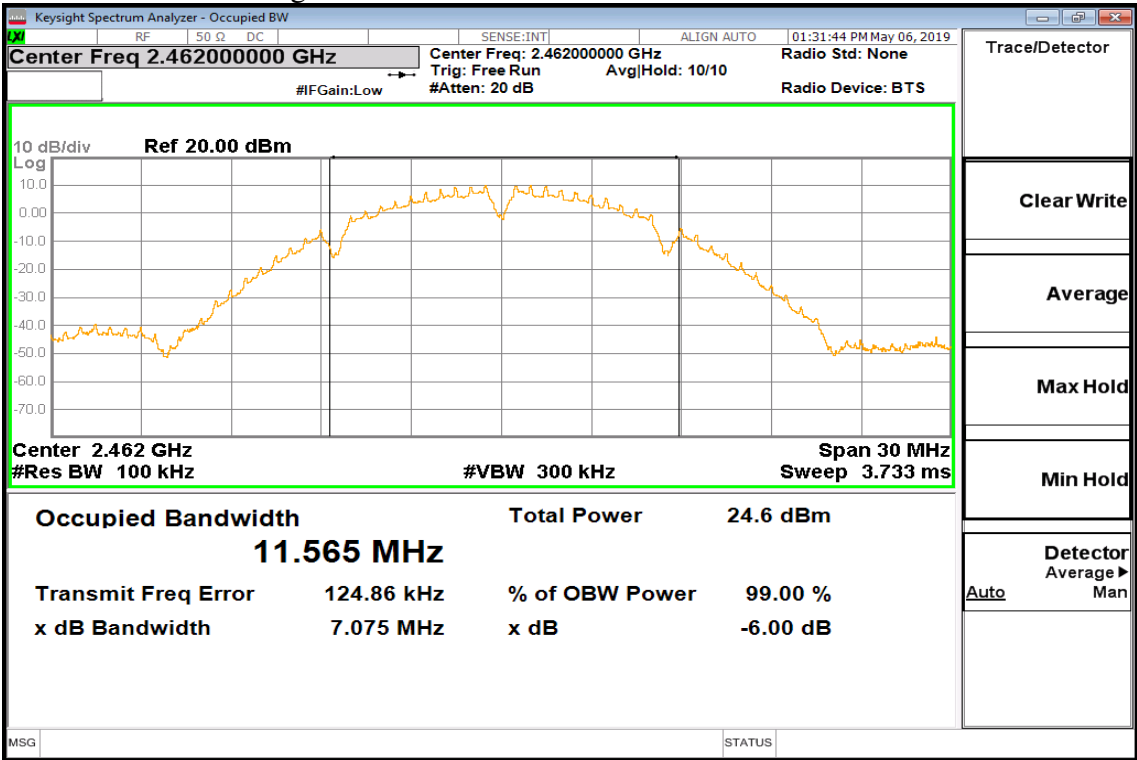
Mode: 802.11b/ Channel Low



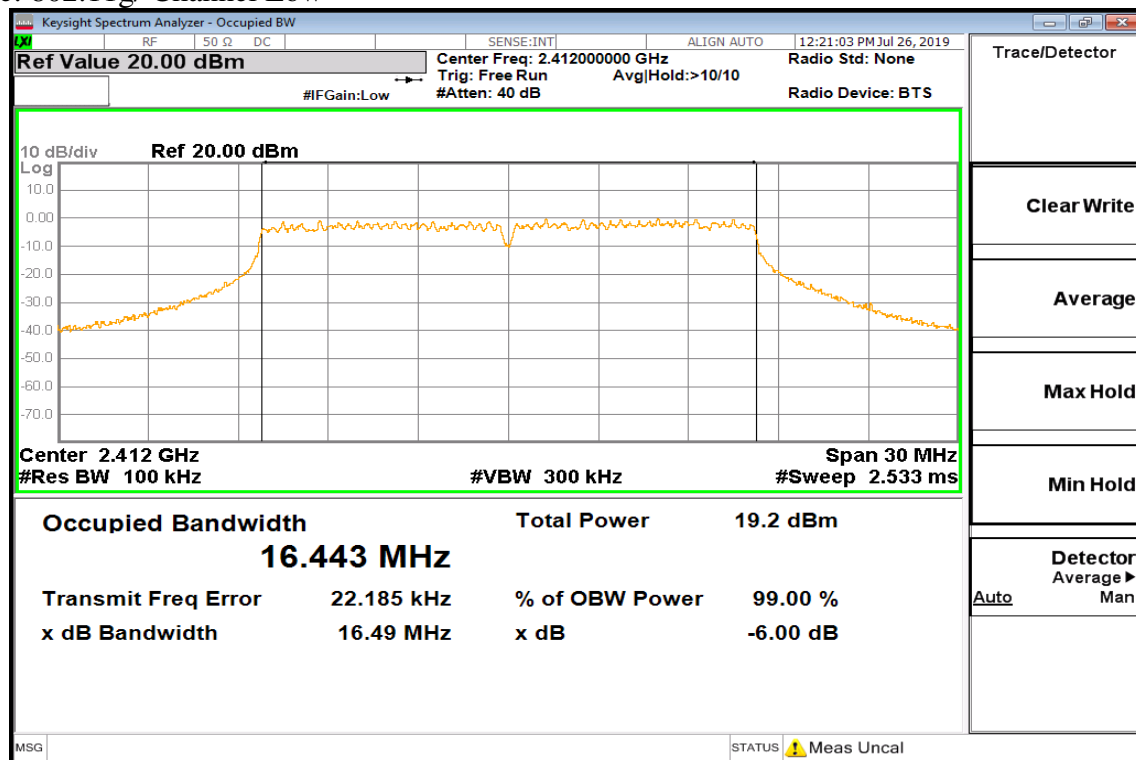
Mode: 802.11b/ Channel Middle



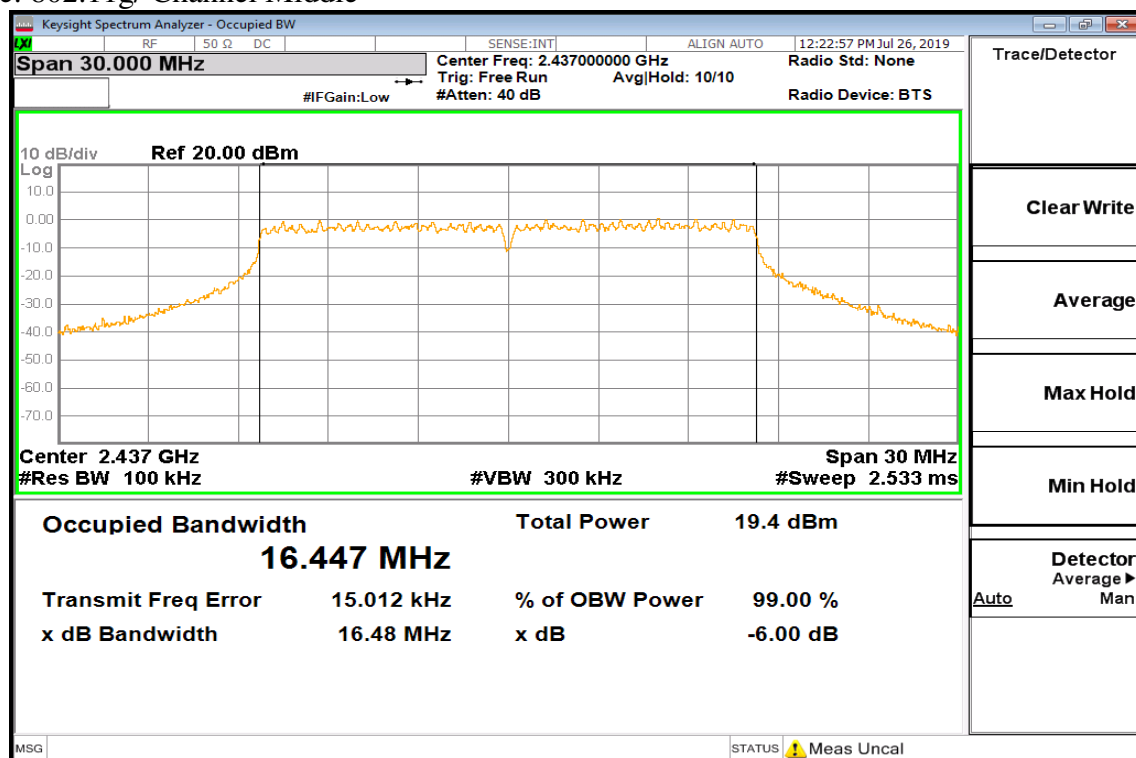
Mode: 802.11b/ Channel High



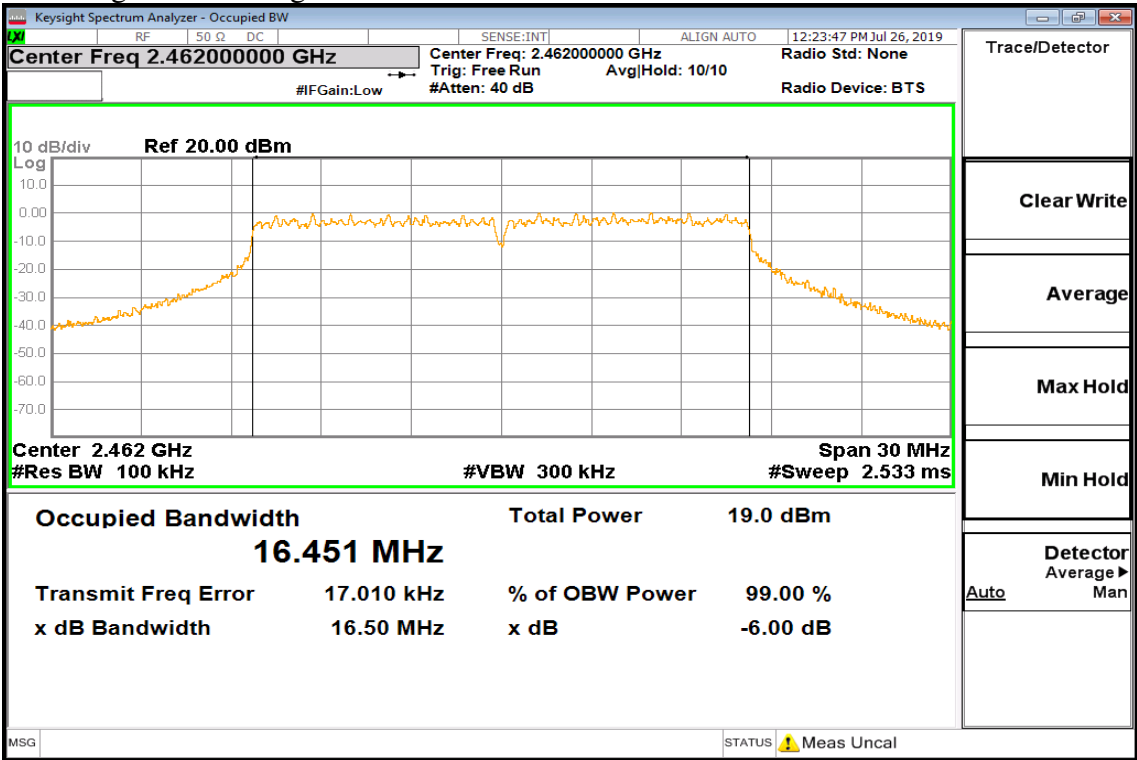
Mode: 802.11g/ Channel Low



Mode: 802.11g/ Channel Middle

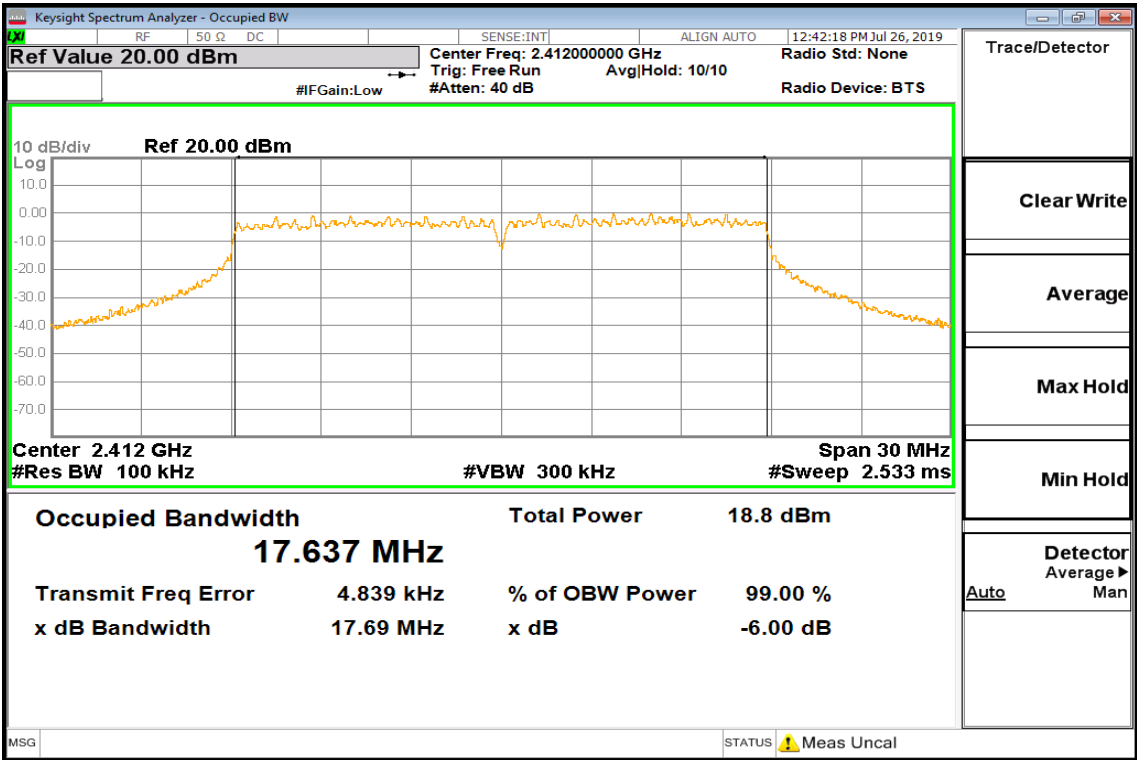


Mode: 802.11g/ Channel High

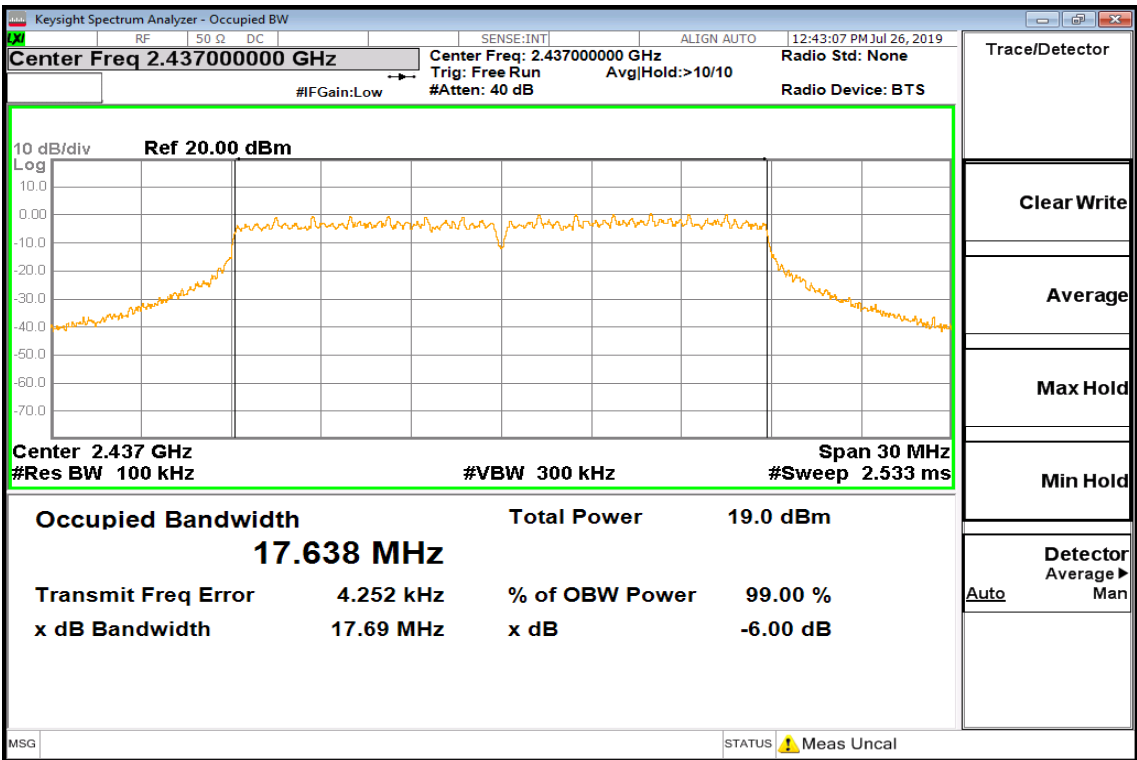


Mode: 802.11n HT-20 / Channel Low

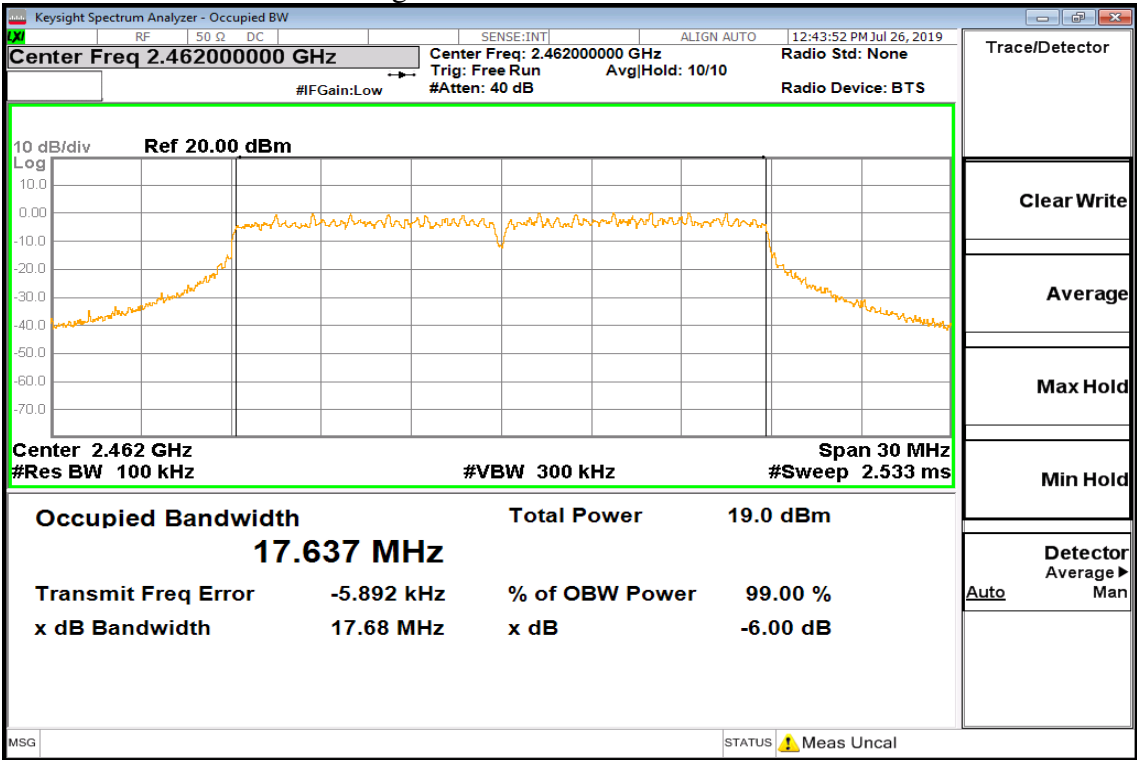
ANT0



Mode: 802.11n HT-20 / Channel Middle

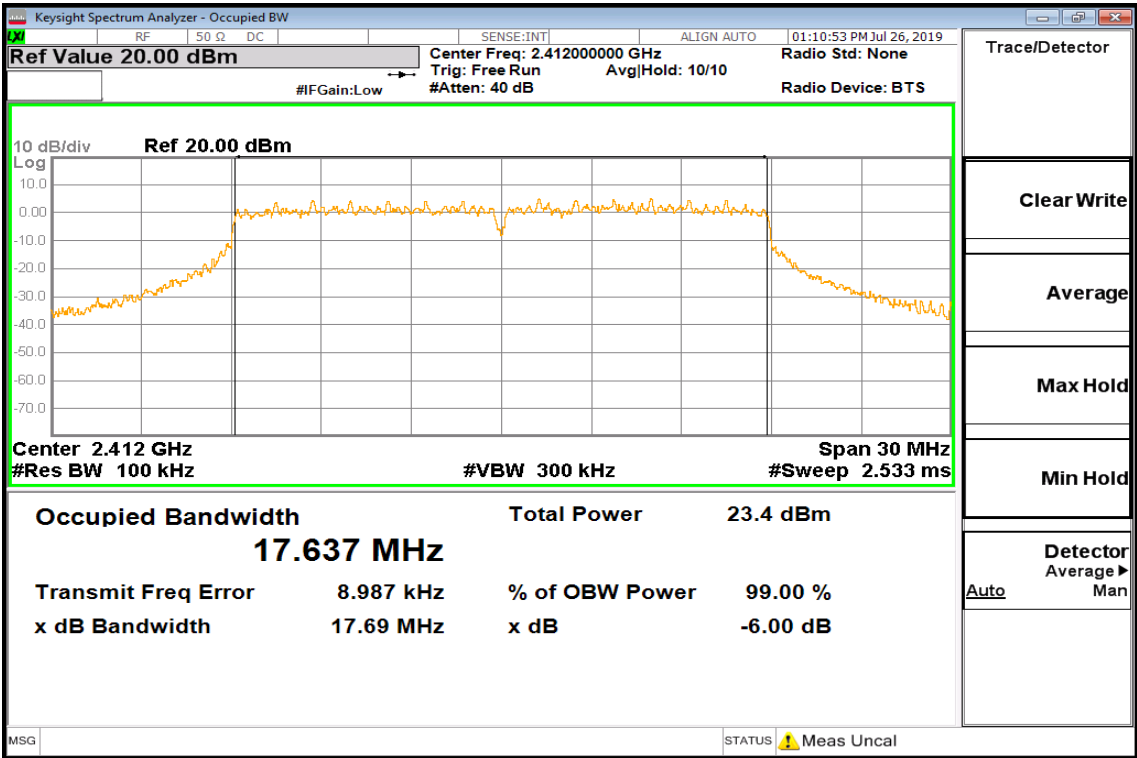


Mode: 802.11n HT-20 / Channel High

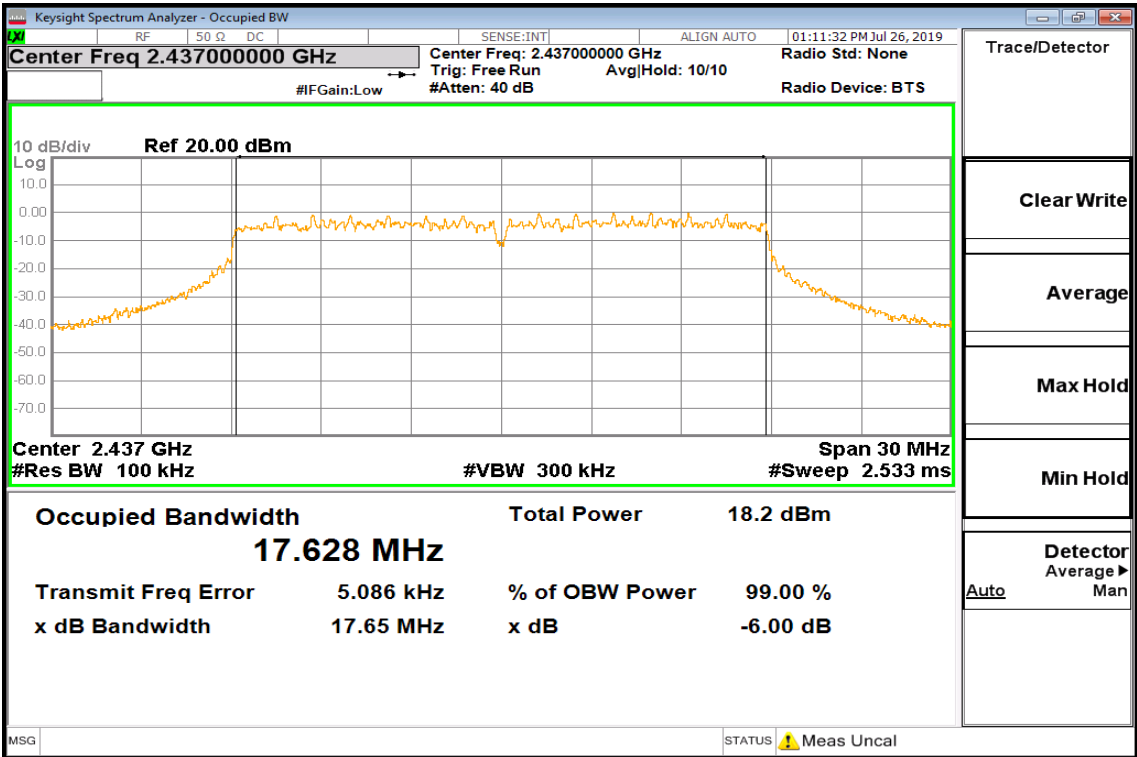


Mode: 802.11n HT-20 / Channel Low

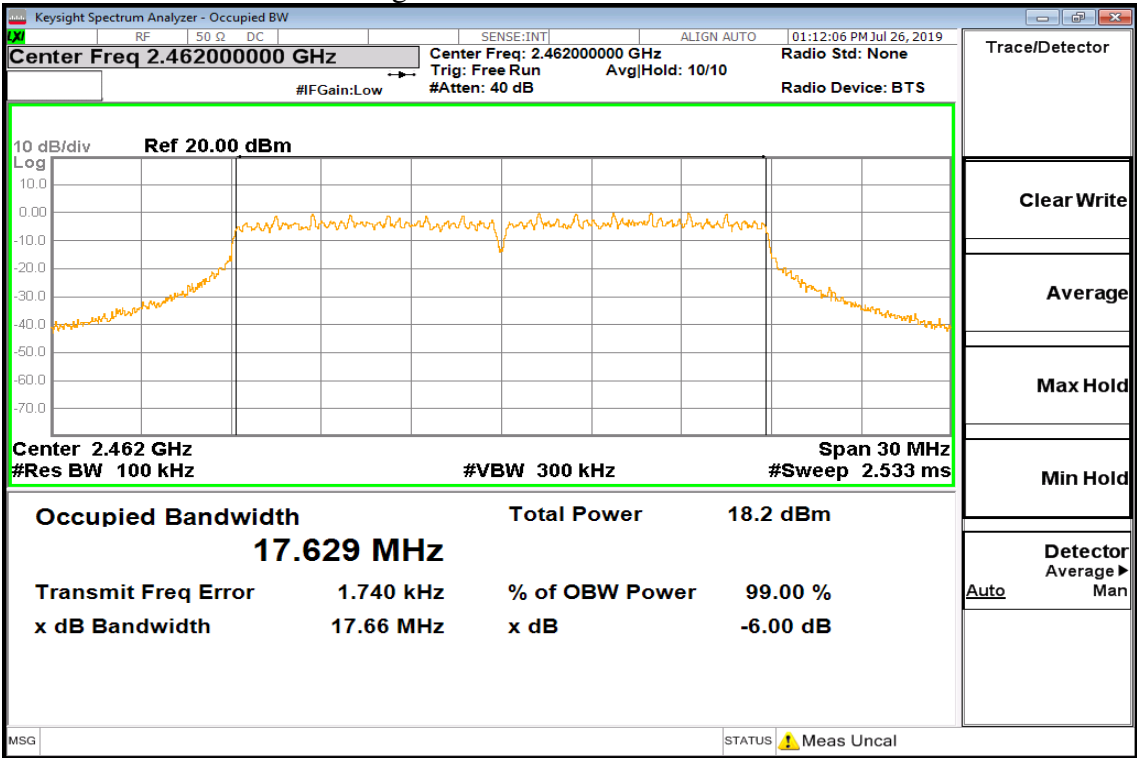
ANT1



Mode: 802.11n HT-20 / Channel Middle

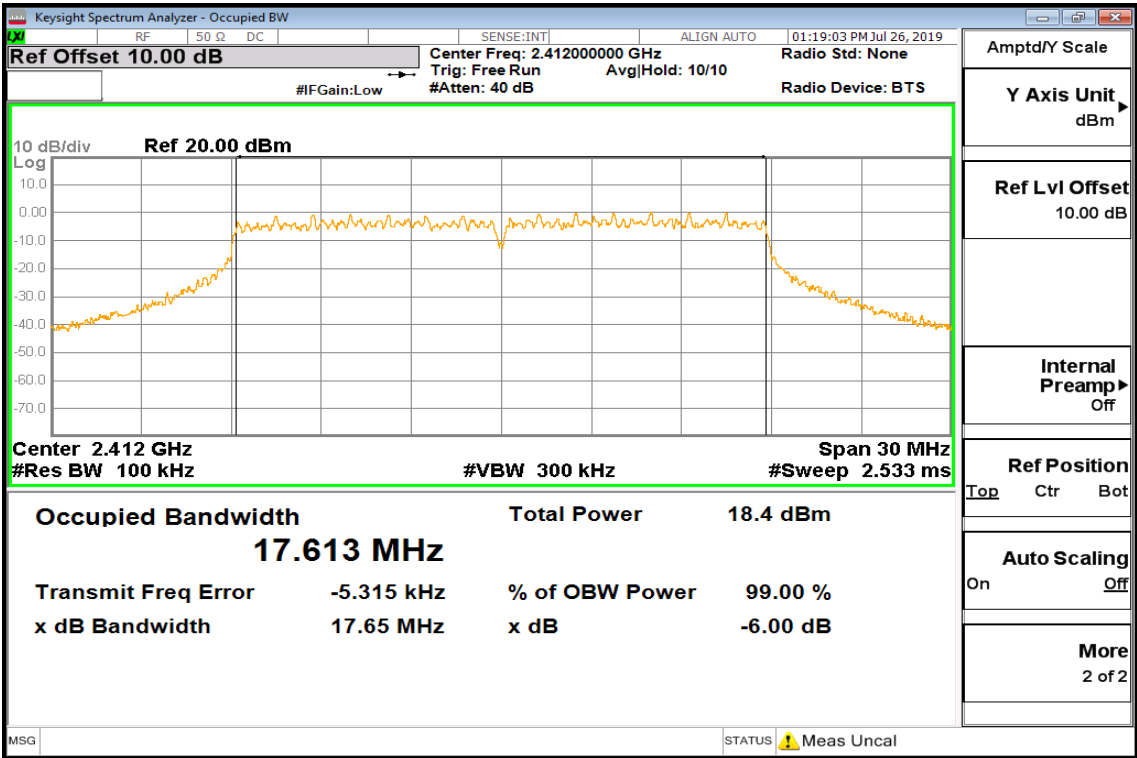


Mode: 802.11n HT-20 / Channel High

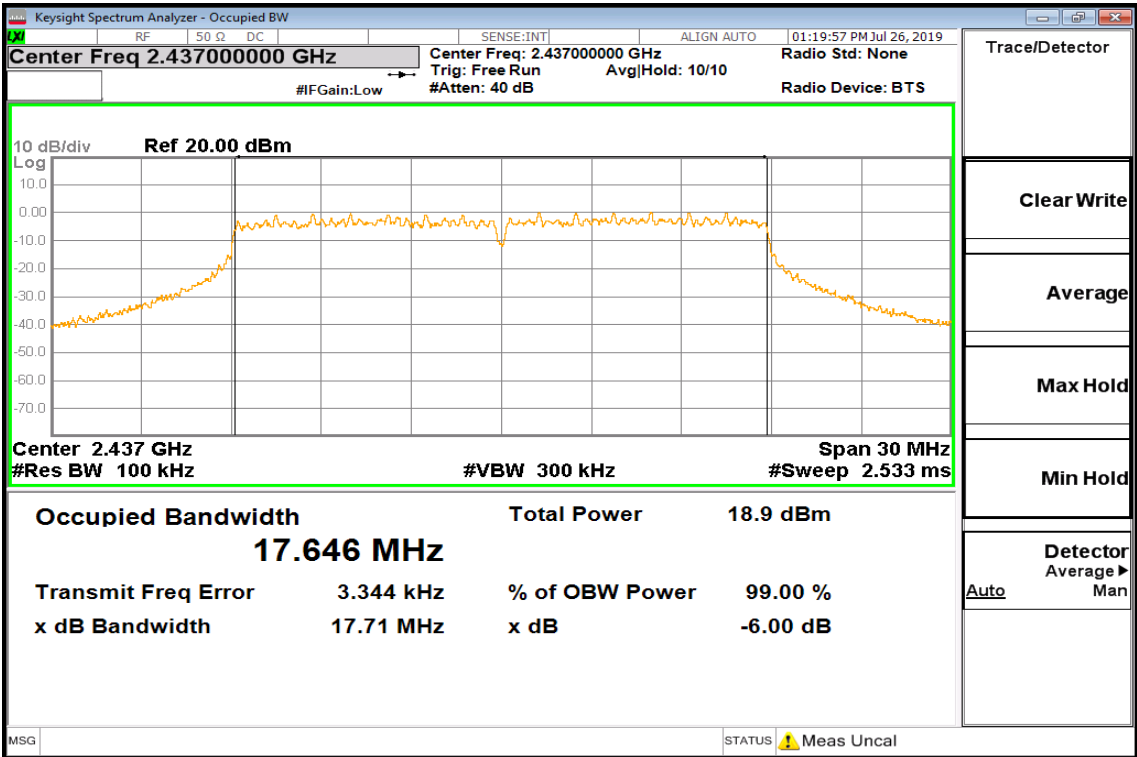


Mode: 802.11n HT-20 / Channel Low

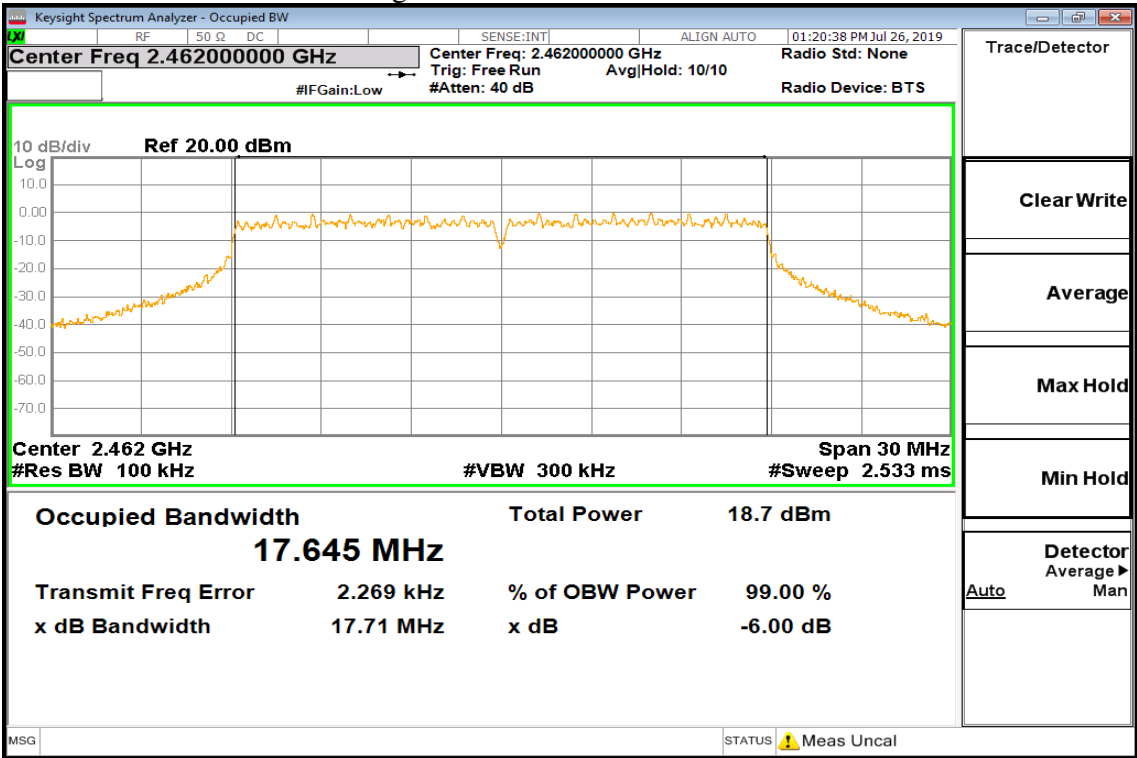
ANT2



Mode: 802.11n HT-20 / Channel Middle

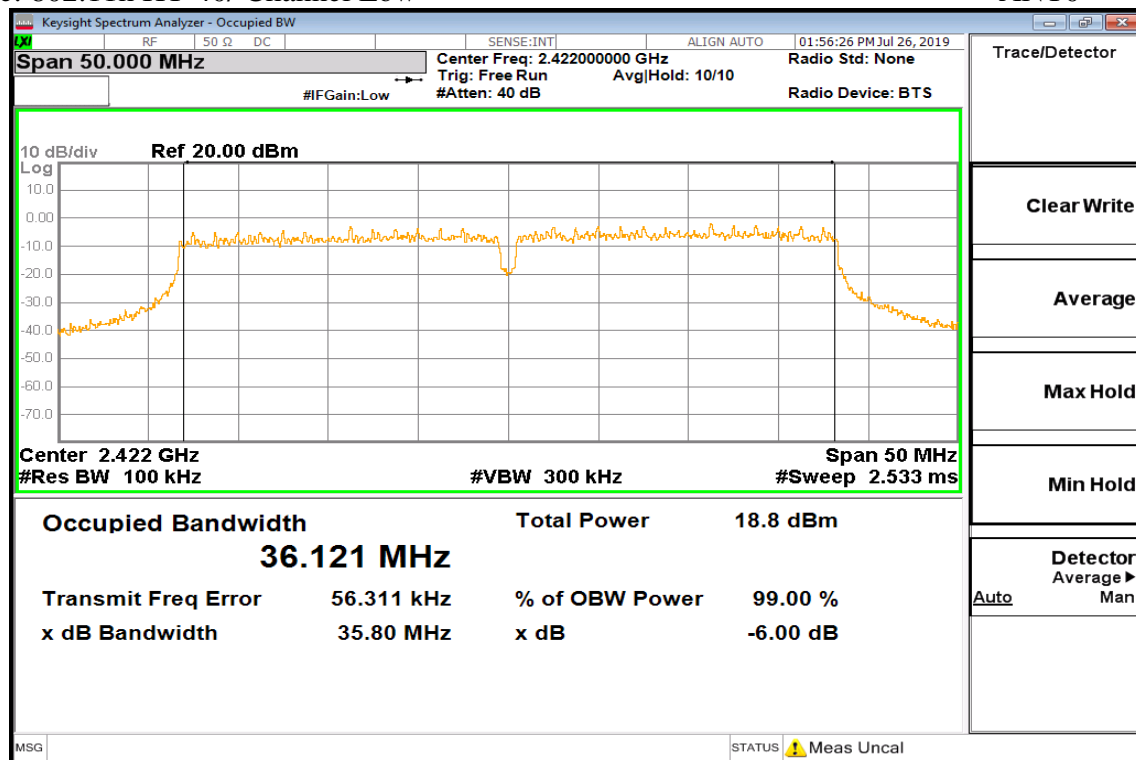


Mode: 802.11n HT-20 / Channel High

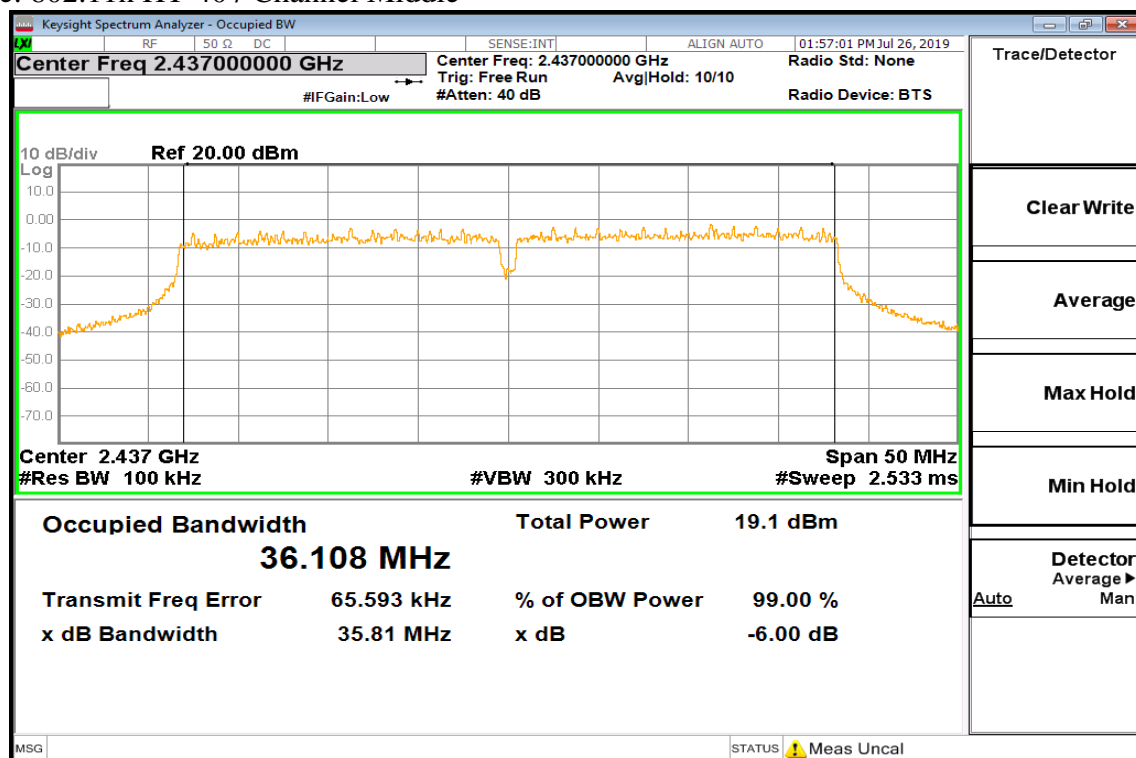


Mode: 802.11n HT-40/ Channel Low

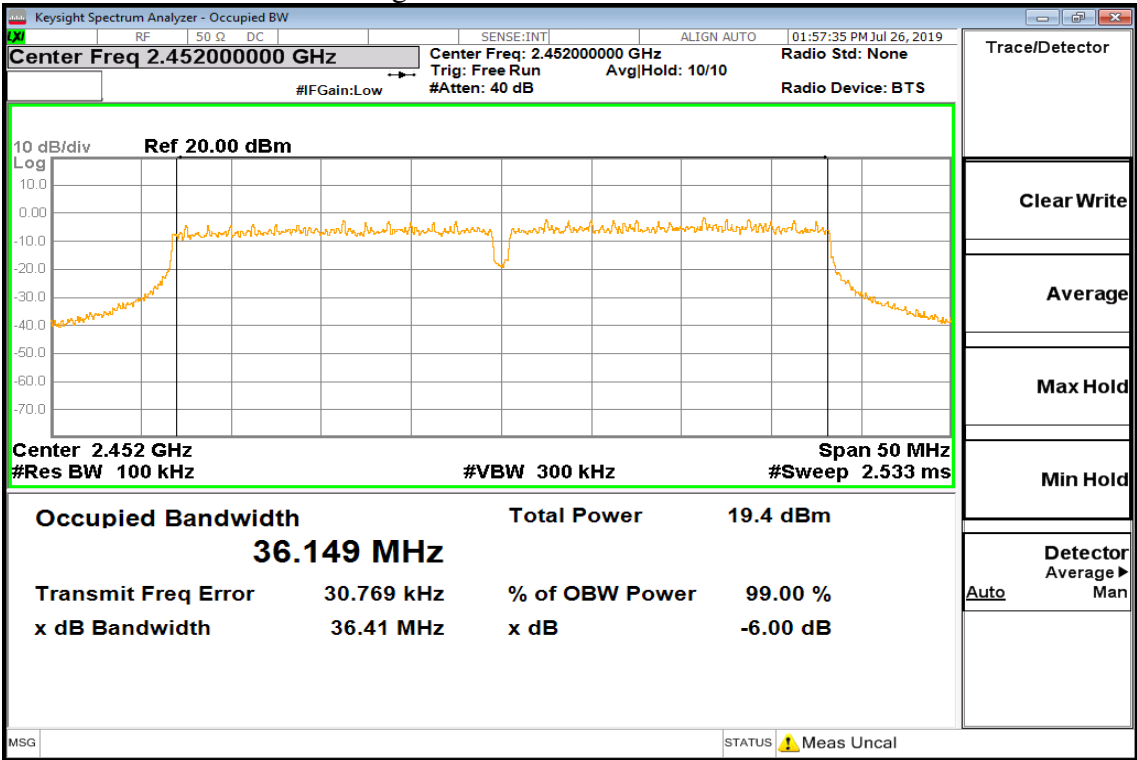
ANT0



Mode: 802.11n HT-40 / Channel Middle

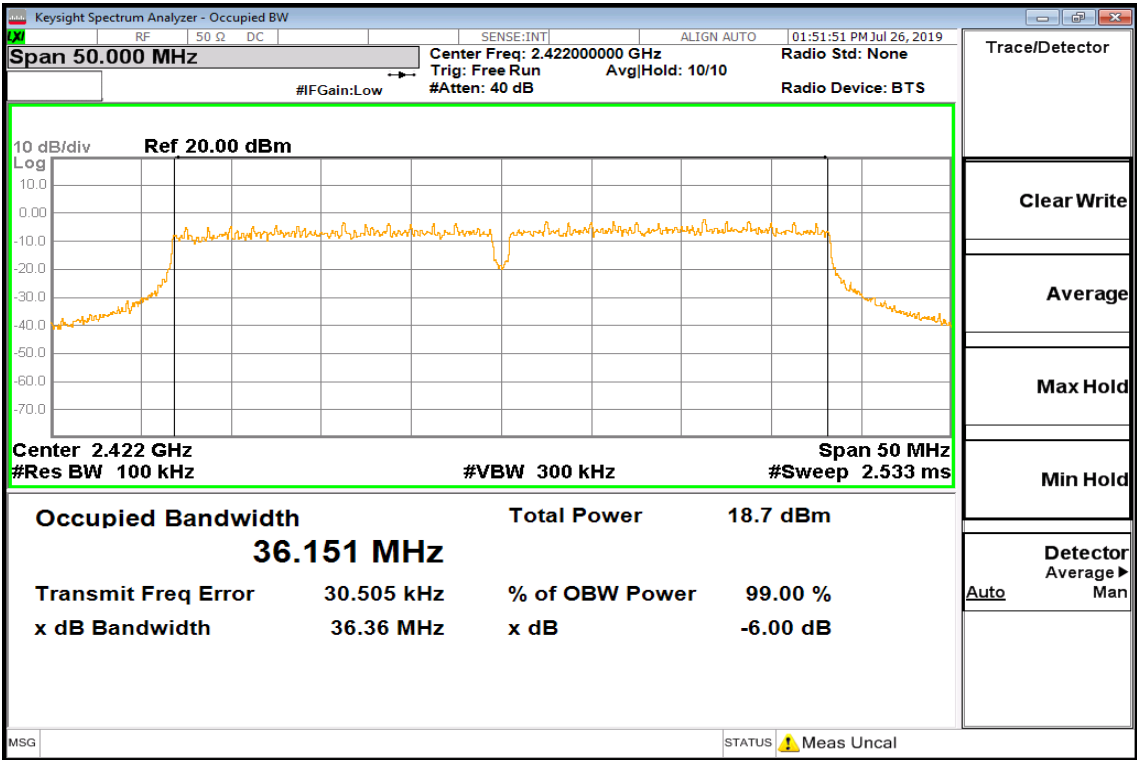


Mode: 802.11n HT-40 / Channel High

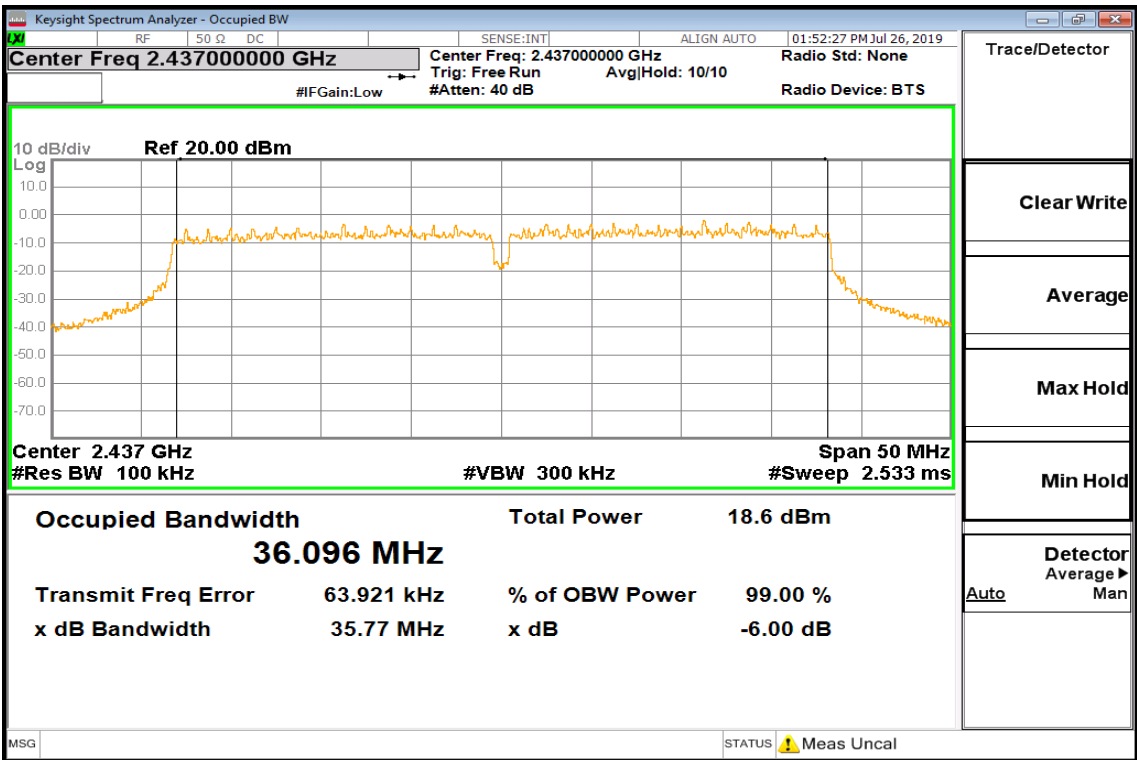


Mode: 802.11n HT-40/ Channel Low

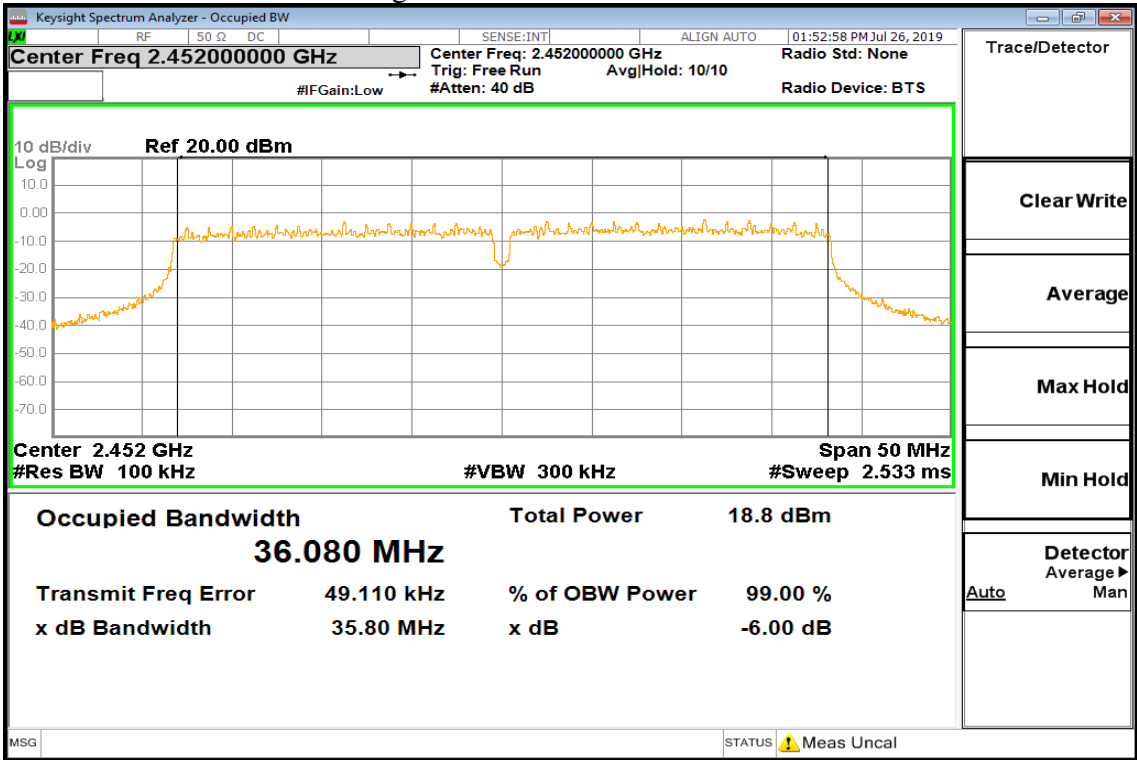
ANT1



Mode: 802.11n HT-40 / Channel Middle

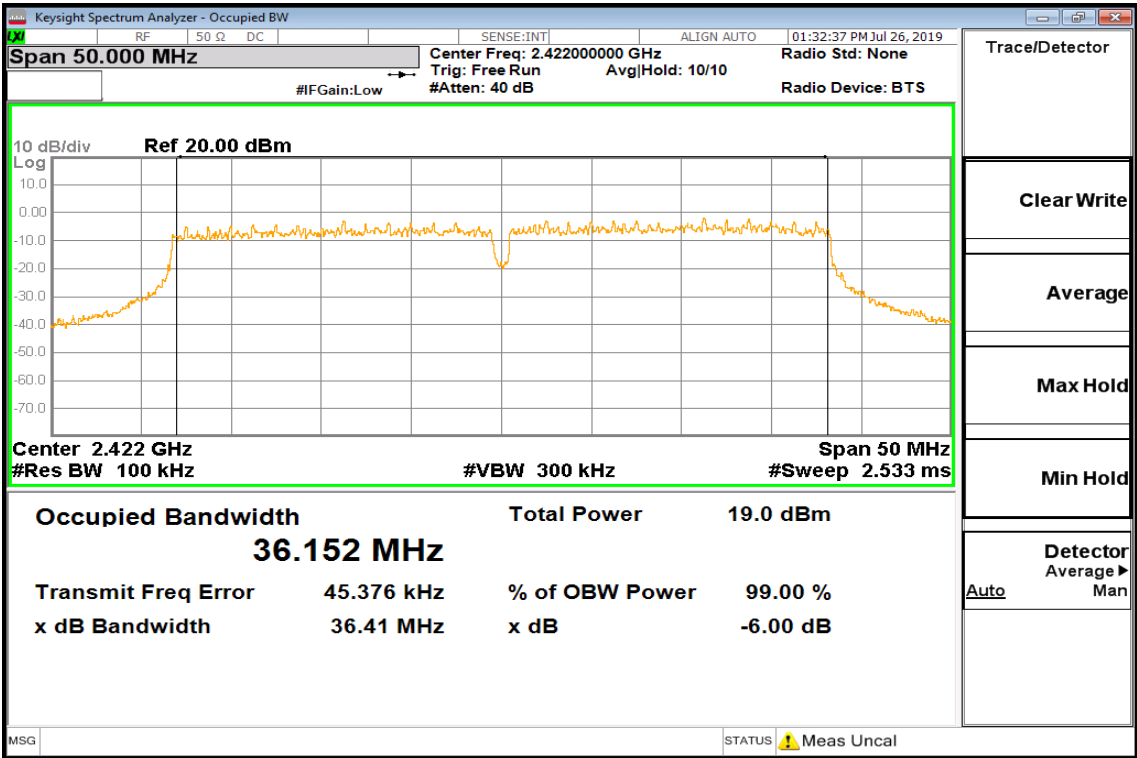


Mode: 802.11n HT-40 / Channel High

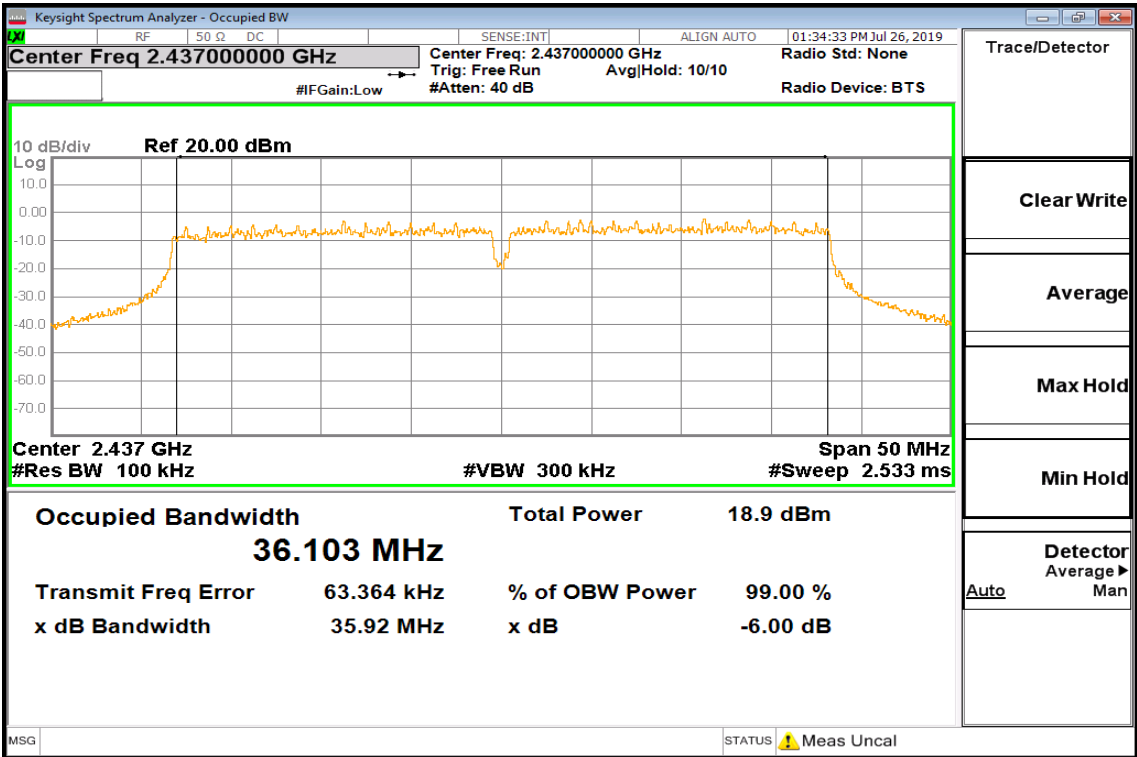


Mode: 802.11n HT-40/ Channel Low

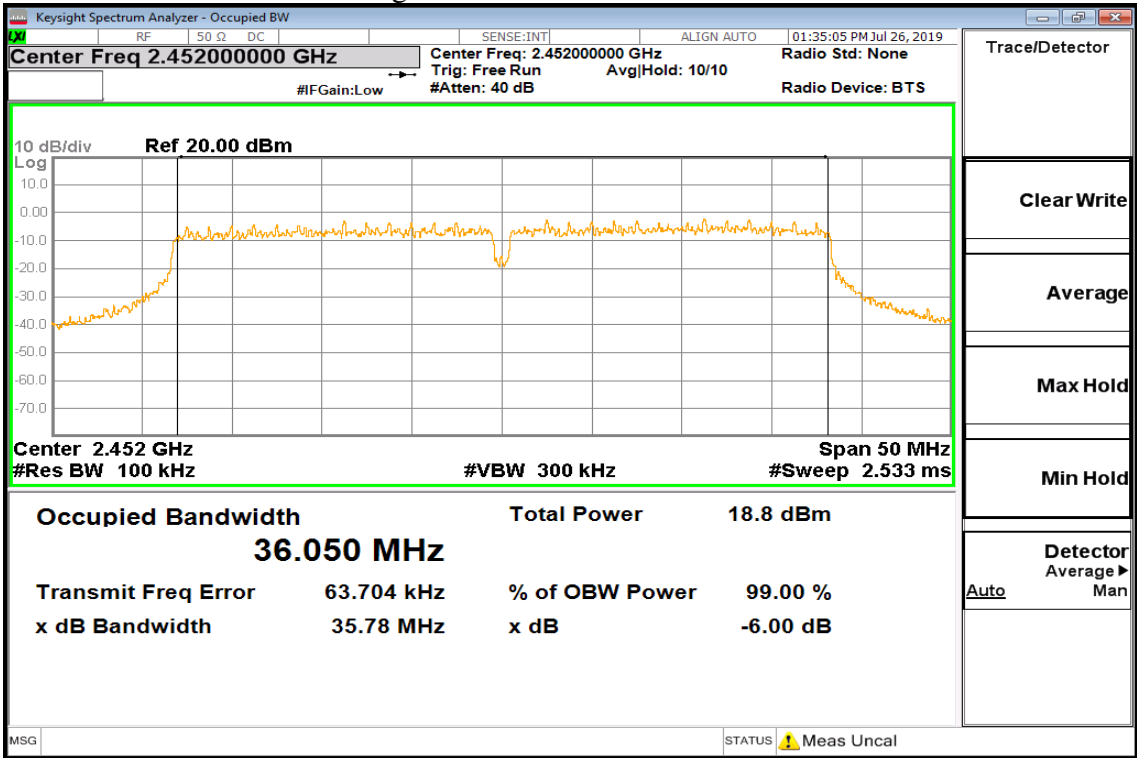
ANT2



Mode: 802.11n HT-40 / Channel Middle



Mode: 802.11n HT-40 / Channel High

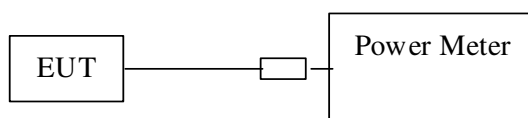


8 峰值傳導輸出功率之量測

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	2019/06/10	2020/06/09
Attenuator	MINI-CIRCUITS	BW-S10W2+	2019/10/04	2020/10/03
Attenuator	MINI-CIRCUITS	BW-S20W2+	2019/10/04	2020/10/03
Attenuator	MINI-CIRCUITS	BW-S30W2+	2019/10/04	2020/10/03

8.4 輸出功率之量測結果

測試日期 : Jul. 26, 2019
 測試結果 : 合格

環境溫度 : 25°C

環境濕度 : 65 %
 測試者 : 何仁逸

A. 802.11b

- | | | | |
|-------------------|---------|--------------|-------------|
| a) Channel Low | : 輸出功率為 | 20.51 dBm or | 112.460 mW。 |
| b) Channel Middle | : 輸出功率為 | 20.46 dBm or | 111.173 mW。 |
| c) Channel High | : 輸出功率為 | 20.91 dBm or | 123.310 mW。 |

B. 802.11g

- | | | | |
|-------------------|---------|--------------|-------------|
| a) Channel Low | : 輸出功率為 | 17.27 dBm or | 53.333 mW。 |
| b) Channel Middle | : 輸出功率為 | 20.37 dBm or | 108.893 mW。 |
| c) Channel High | : 輸出功率為 | 17.51 dBm or | 56.364 mW。 |

C. 802.11n HT-20 – ANT0

- | | | | |
|-------------------|---------|--------------|-------------|
| a) Channel Low | : 輸出功率為 | 17.23 dBm or | 52.845 mW。 |
| b) Channel Middle | : 輸出功率為 | 20.26 dBm or | 106.170 mW。 |
| c) Channel High | : 輸出功率為 | 17.52 dBm or | 56.494 mW。 |

D. 802.11n HT-20 – ANT1

- | | | | |
|-------------------|---------|--------------|-------------|
| a) Channel Low | : 輸出功率為 | 17.26 dBm or | 53.211 mW。 |
| b) Channel Middle | : 輸出功率為 | 20.03 dBm or | 100.693 mW。 |
| c) Channel High | : 輸出功率為 | 17.18 dBm or | 52.240 mW。 |

E. 802.11n HT-20 – ANT2

- | | | | |
|-------------------|---------|--------------|-------------|
| a) Channel Low | : 輸出功率為 | 17.5 dBm or | 56.234 mW。 |
| b) Channel Middle | : 輸出功率為 | 20.23 dBm or | 105.439 mW。 |
| c) Channel High | : 輸出功率為 | 17.35 dBm or | 54.325 mW。 |

F. 802.11n HT-20 – MIMO

- | | | | |
|-------------------|---------|--------------|-------------|
| a) Channel Low | : 輸出功率為 | 22.1 dBm or | 162.181 mW。 |
| b) Channel Middle | : 輸出功率為 | 24.95 dBm or | 312.608 mW。 |
| c) Channel High | : 輸出功率為 | 22.12 dBm or | 162.930 mW。 |

G. 802.11n HT-40 – ANT0

- a) Channel Low : 輸出功率為 17.55 dBm or 56.885 mW。
- b) Channel Middle : 輸出功率為 20.24 dBm or 105.682 mW。
- c) Channel High : 輸出功率為 17.92 dBm or 61.944 mW。

H. 802.11n HT-40 – ANT1

- a) Channel Low : 輸出功率為 17.51 dBm or 56.364 mW。
- b) Channel Middle : 輸出功率為 20.15 dBm or 103.514 mW。
- c) Channel High : 輸出功率為 17.42 dBm or 55.208 mW。

I. 802.11n HT-40 – ANT2

- a) Channel Low : 輸出功率為 17.57 dBm or 57.148 mW。
- b) Channel Middle : 輸出功率為 20.32 dBm or 107.647 mW。
- c) Channel High : 輸出功率為 17.62 dBm or 57.810 mW。

J. 802.11n HT-40 – MIMO

- a) Channel Low : 輸出功率為 22.31 dBm or 170.216 mW。
- b) Channel Middle : 輸出功率為 25.01 dBm or 316.957 mW。
- c) Channel High : 輸出功率為 22.43 dBm or 174.985 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	KEYSIGHT	N9010A	2019/02/01	2020/01/31
Attenuator	Mini-Circuits	BW-S10W2+	2019/10/04	2020/10/03
Attenuator	Mini-Circuits	BW-S20W2+	2019/10/04	2020/10/03
Attenuator	Mini-Circuits	BW-S30W2+	2019/10/04	2020/10/03

9.4 開放頻帶邊緣之量測結果

測試日期 : May 06, 2019

環境溫度 : 25°C

環境濕度 : 65 %

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。

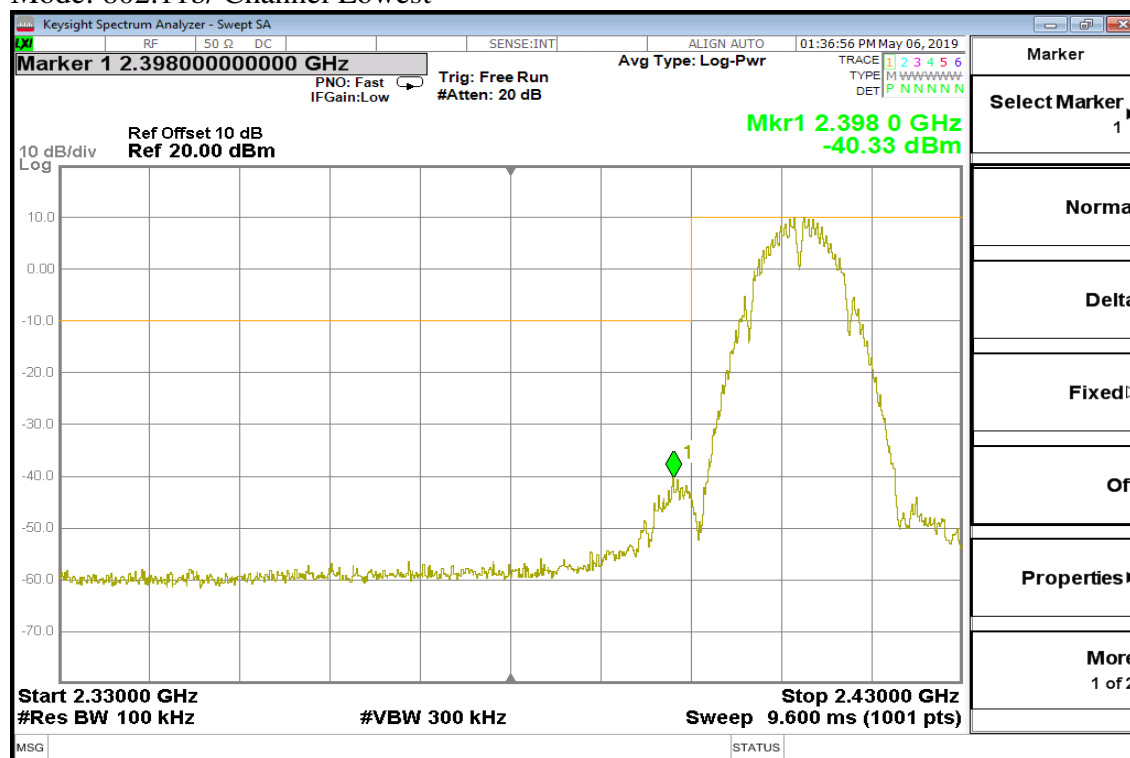
D. 802.11n HT-40

- 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。

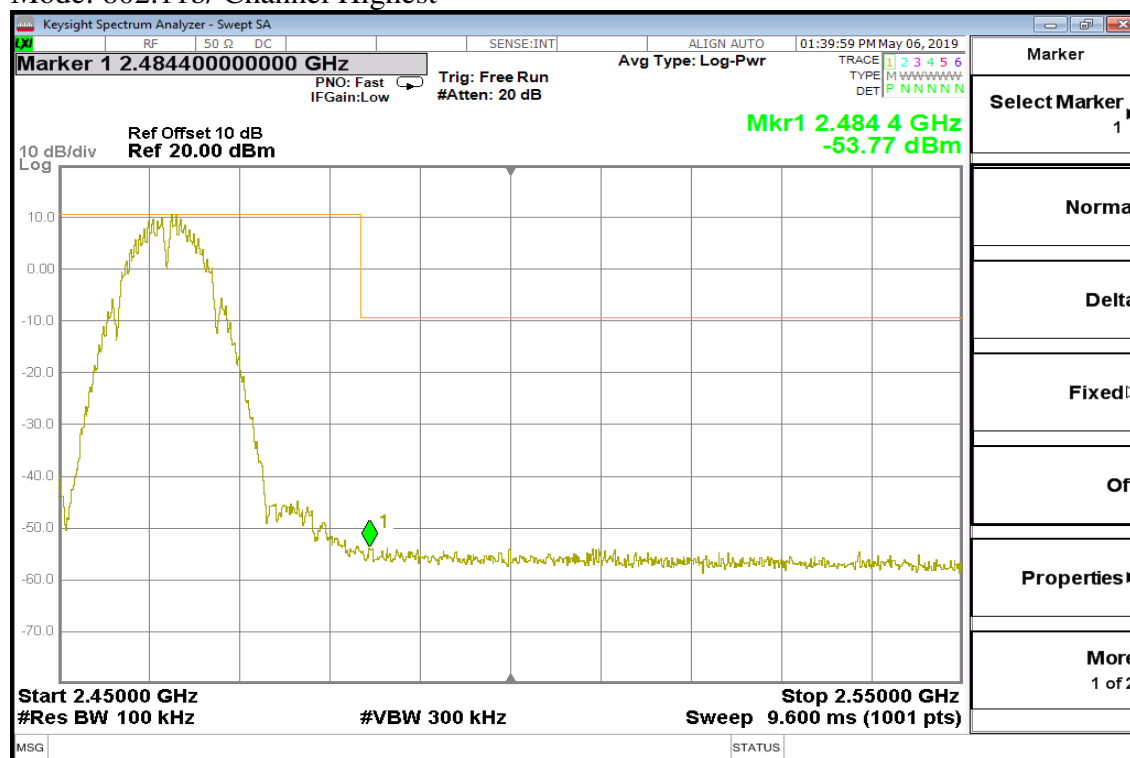
註：

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。

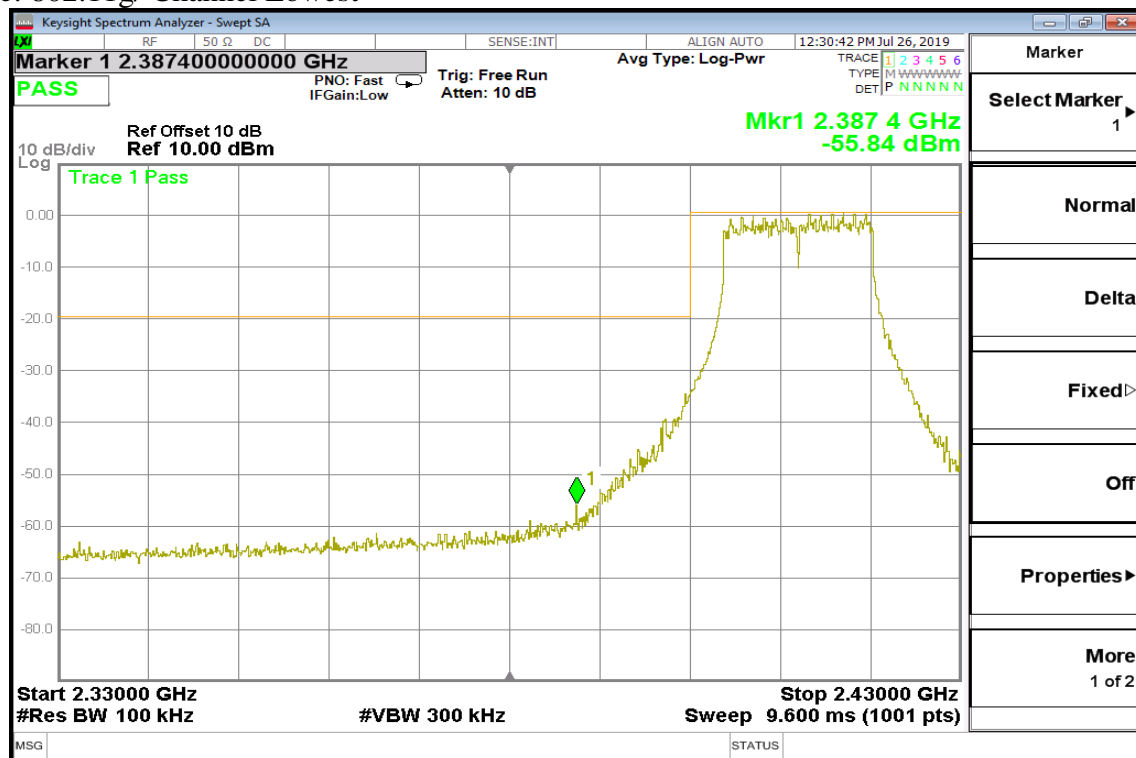
Mode: 802.11b/ Channel Lowest



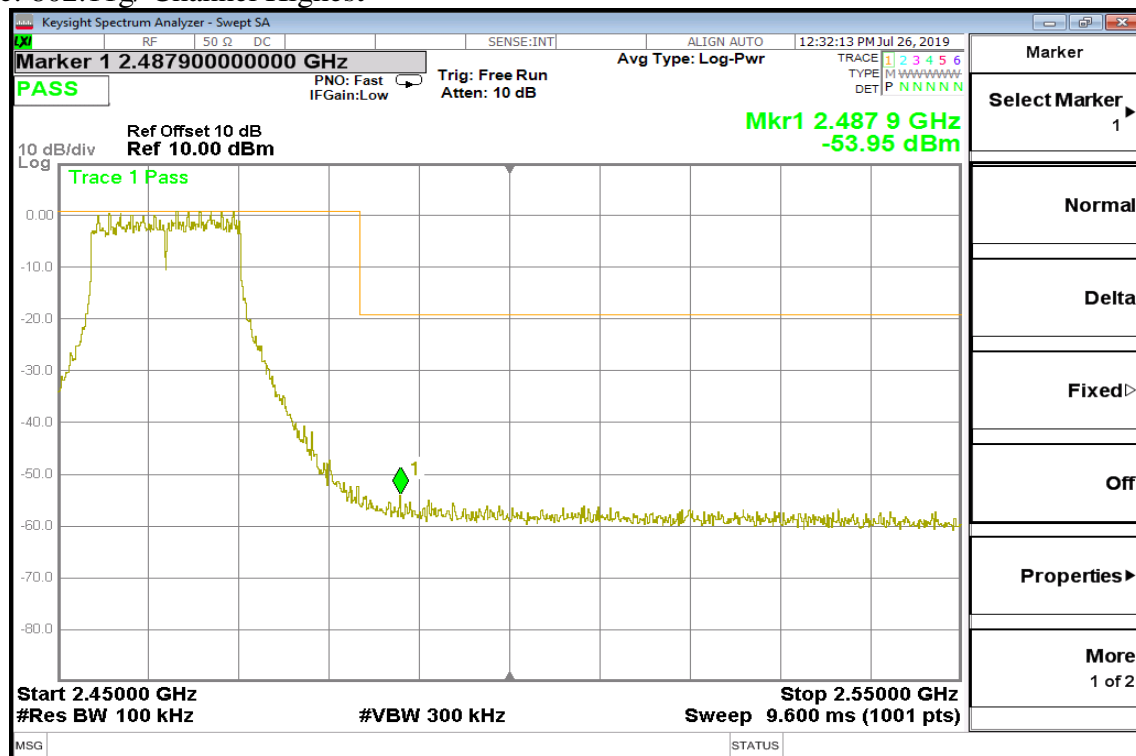
Mode: 802.11b/ Channel Highest



Mode: 802.11g/ Channel Lowest

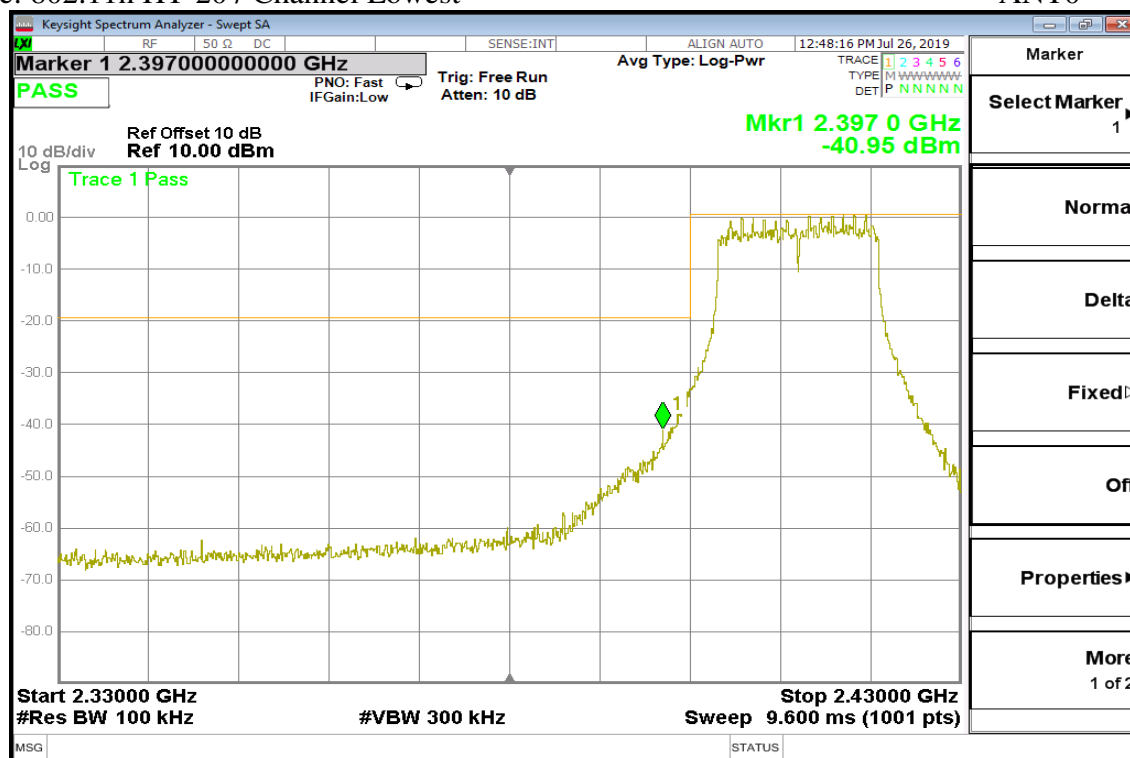


Mode: 802.11g/ Channel Highest

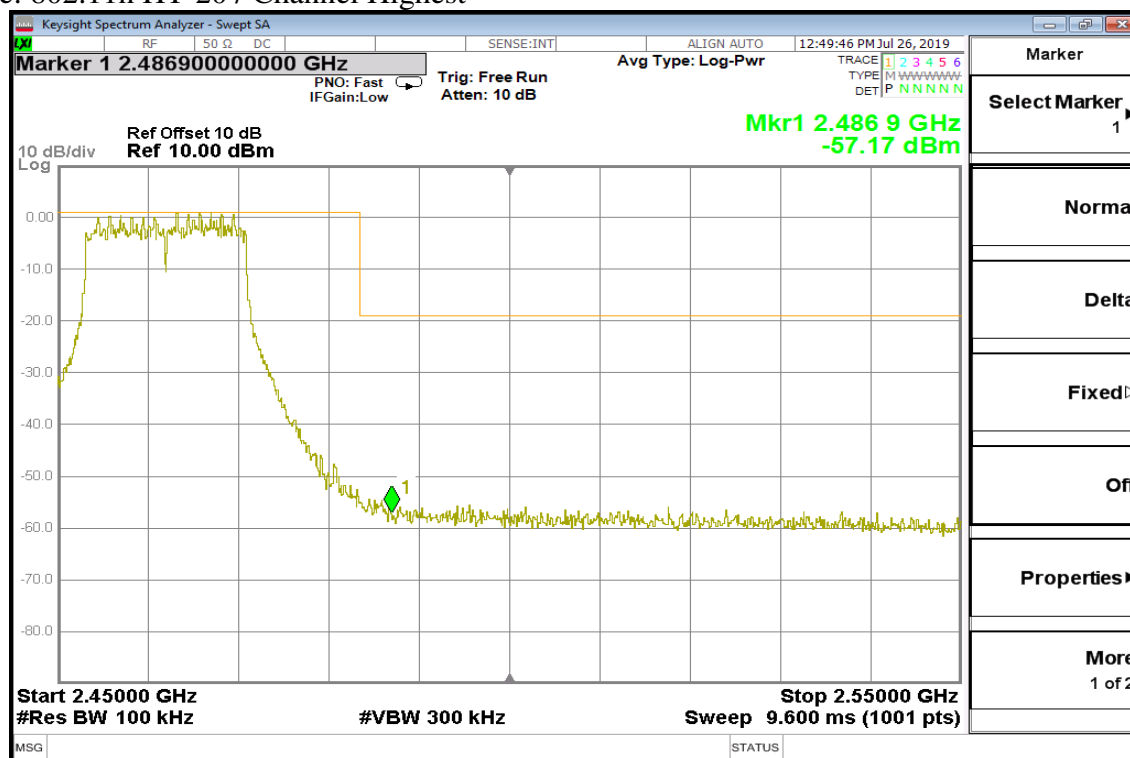


Mode: 802.11n HT-20 / Channel Lowest

ANT0

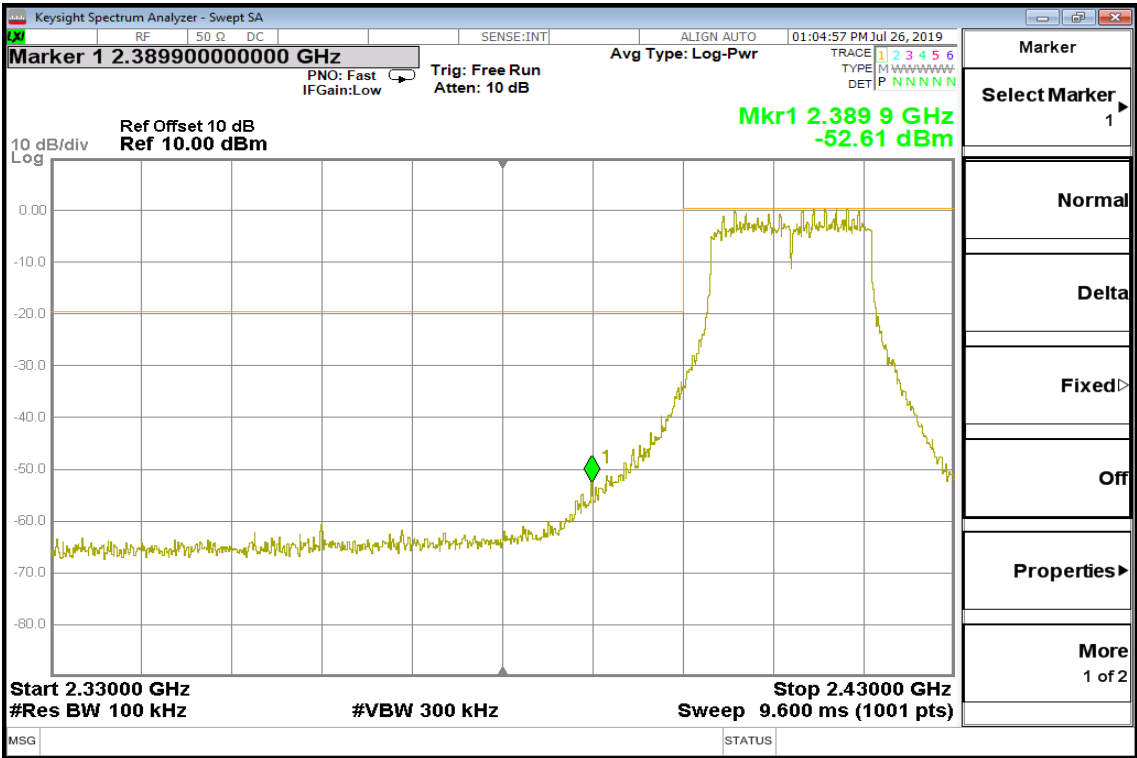


Mode: 802.11n HT-20 / Channel Highest

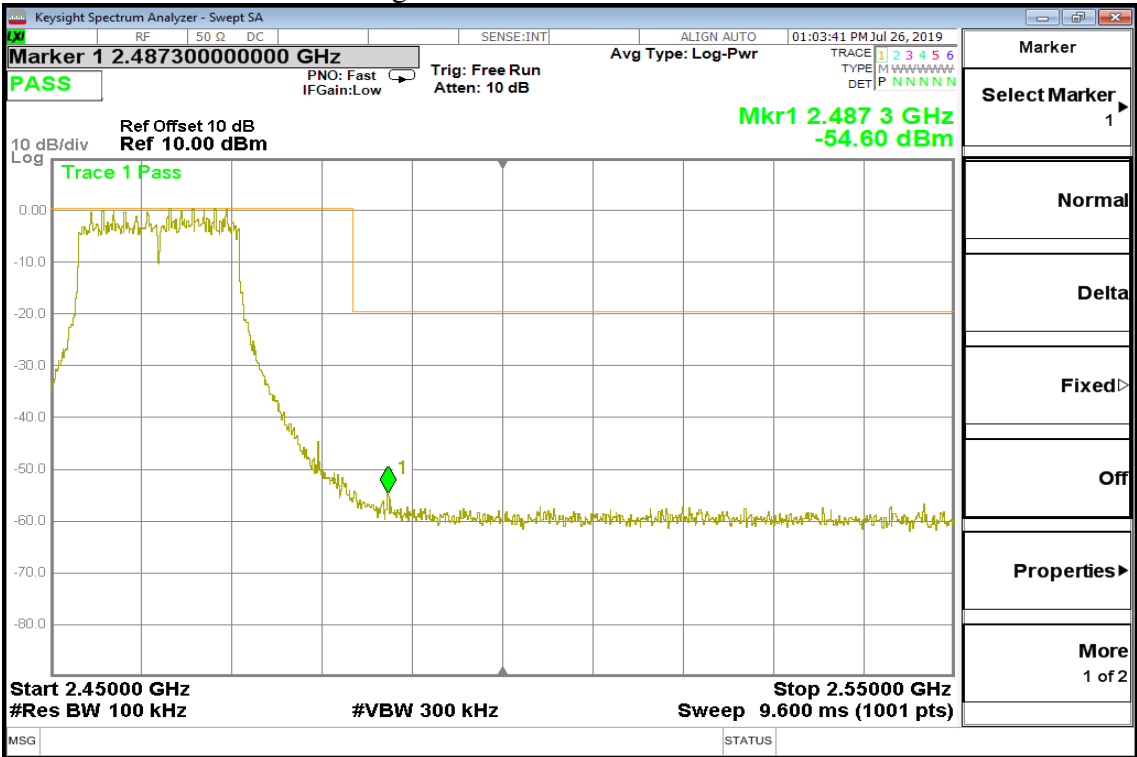


Mode: 802.11n HT-20 / Channel Lowest

ANT1

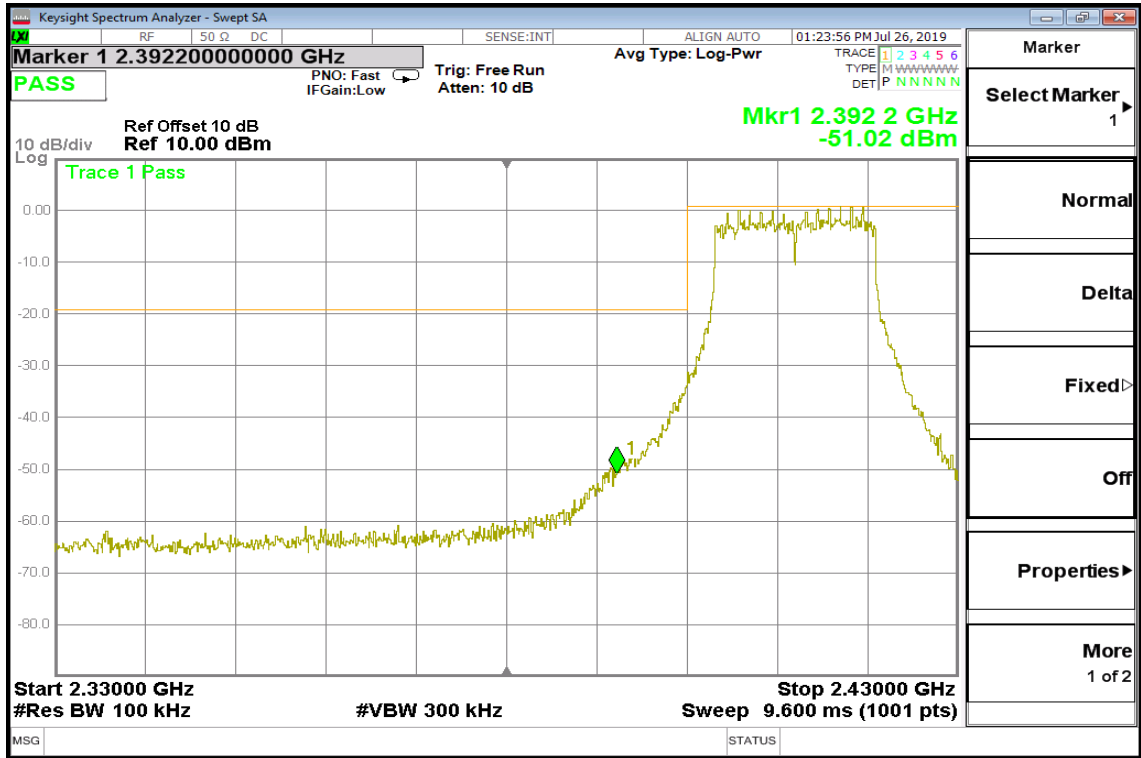


Mode: 802.11n HT-20 / Channel Highest

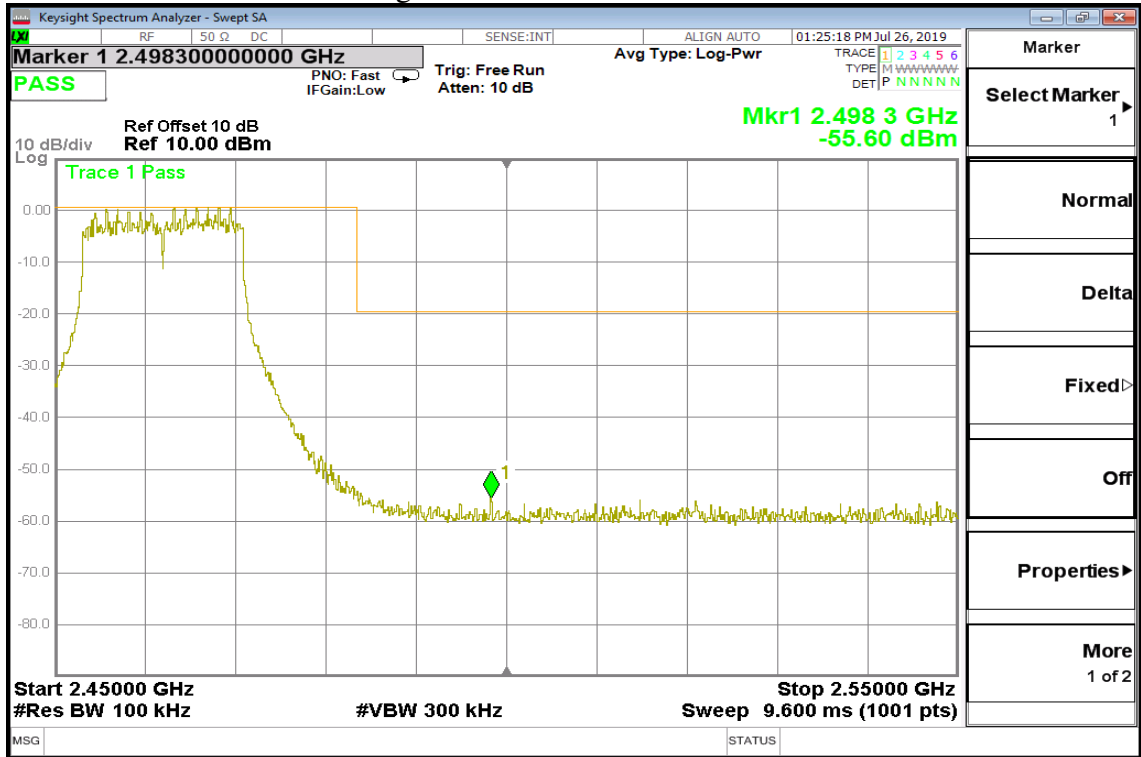


Mode: 802.11n HT-20 / Channel Lowest

ANT2

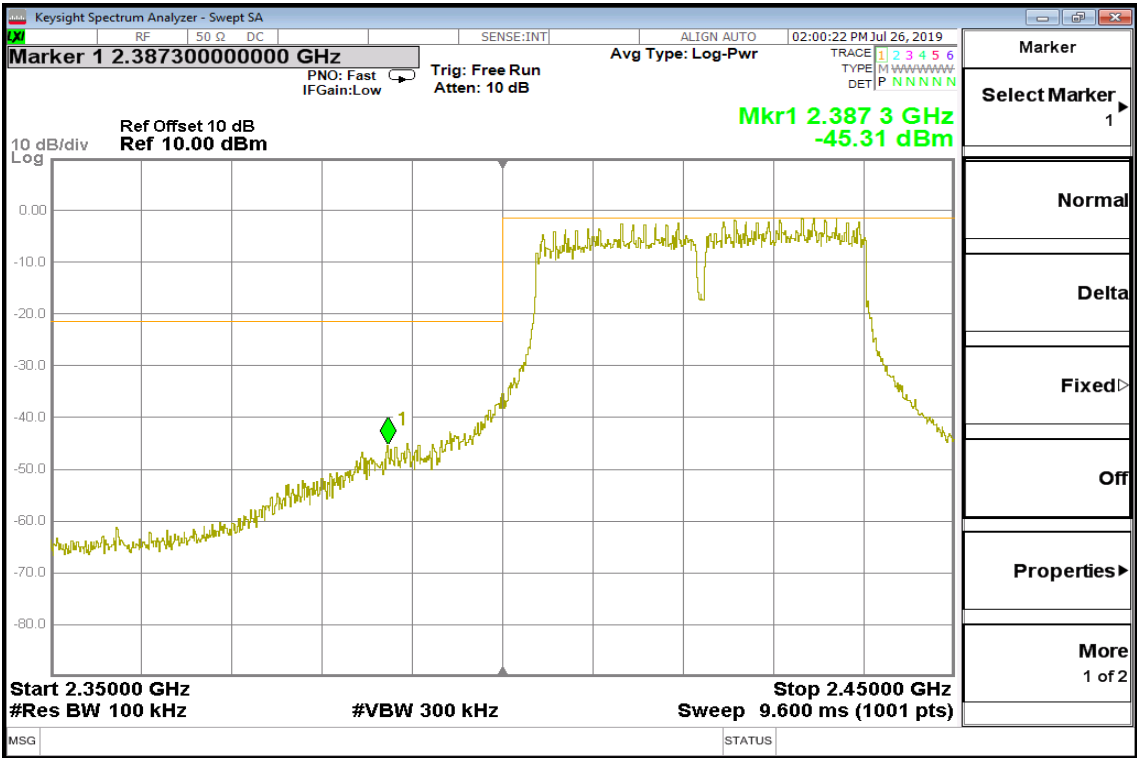


Mode: 802.11n HT-20 / Channel Highest

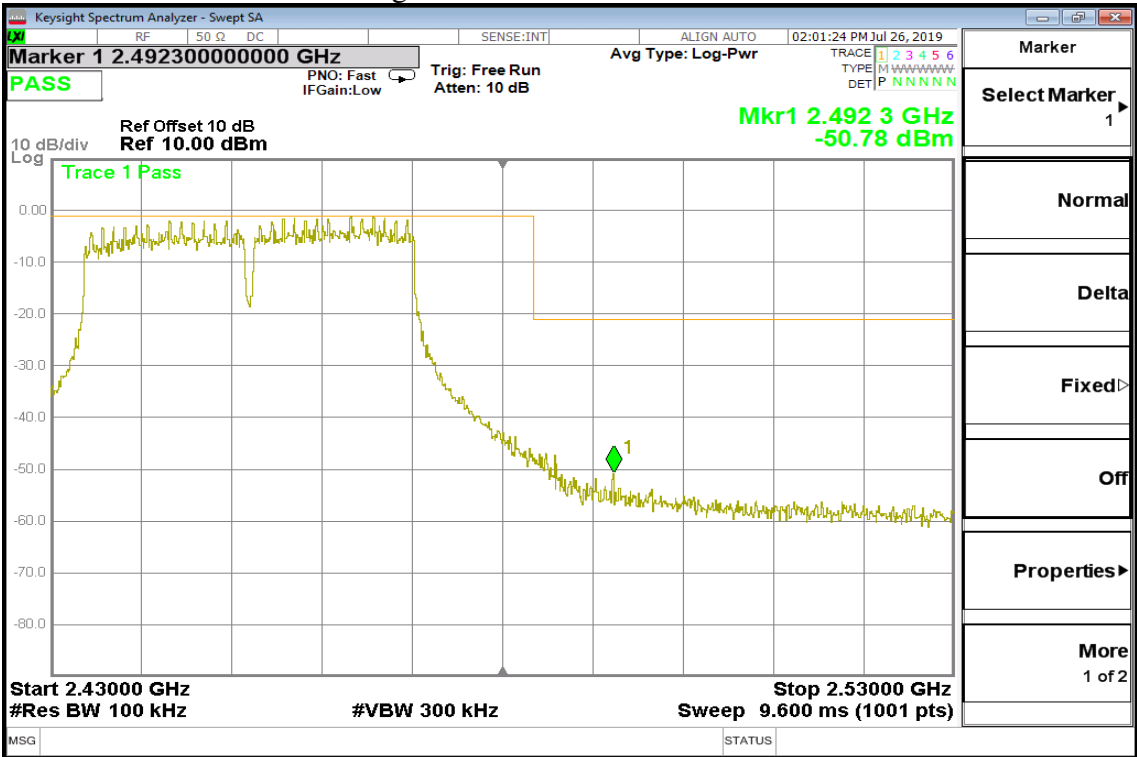


Mode: 802.11n HT-40 / Channel Lowest

ANT0

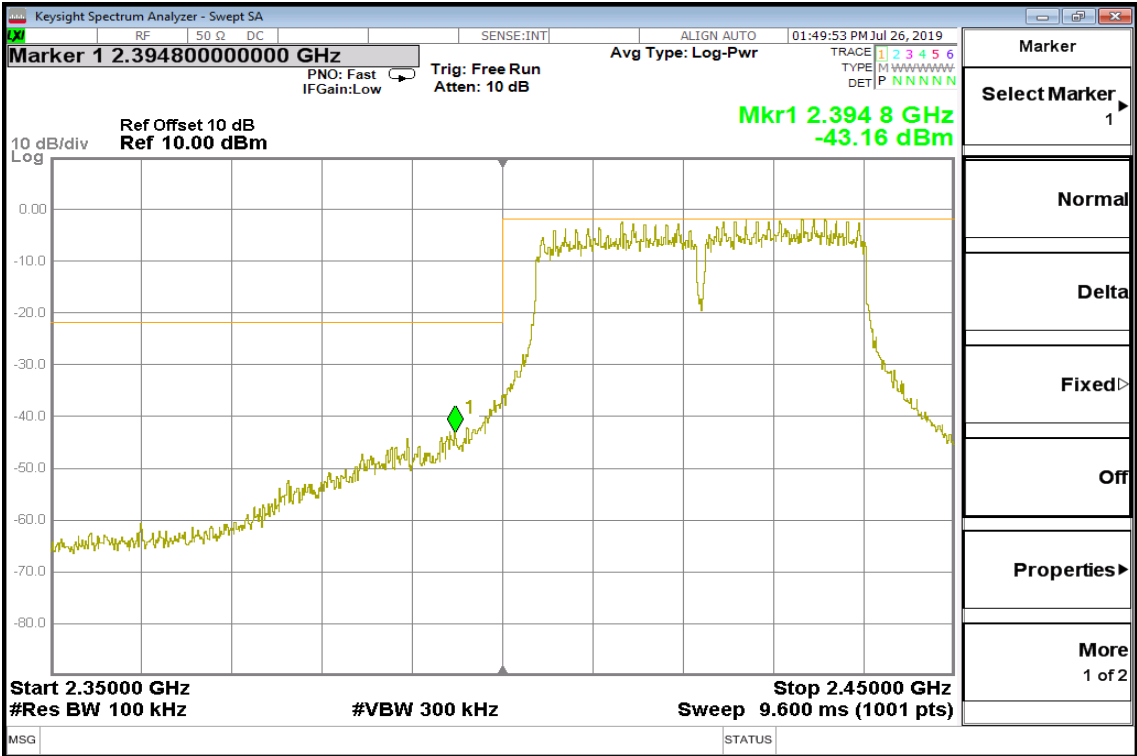


Mode: 802.11n HT-40 / Channel Highest

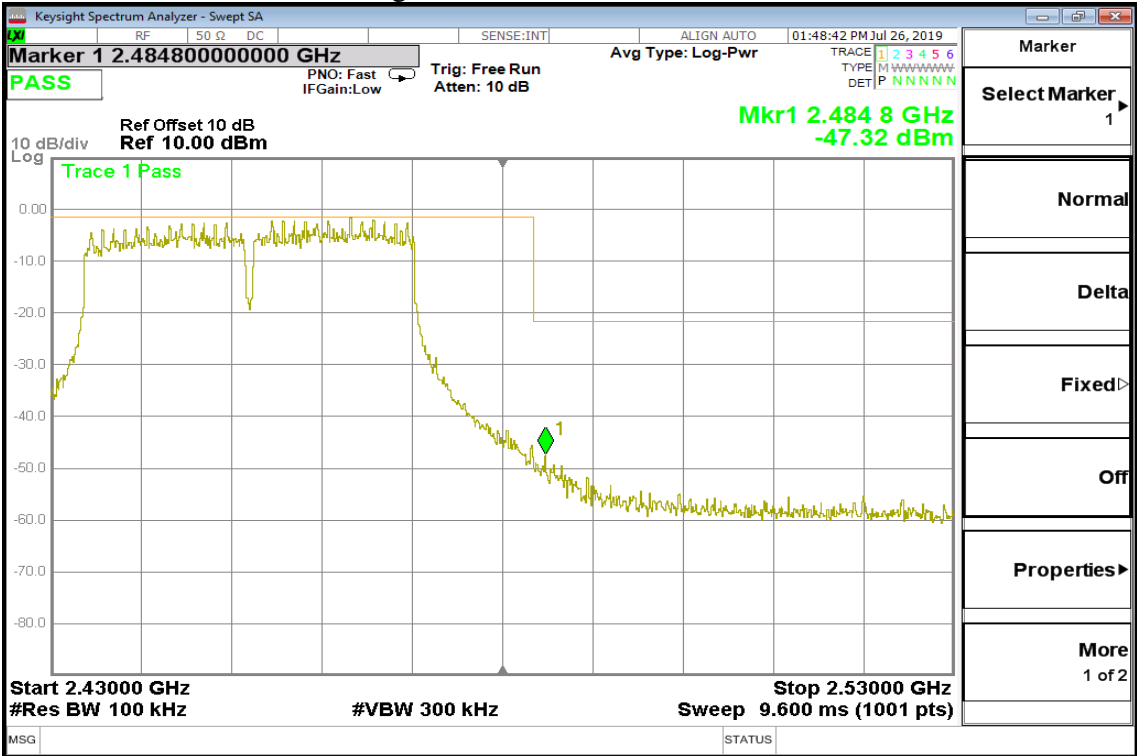


Mode: 802.11n HT-40 / Channel Lowest

ANT1

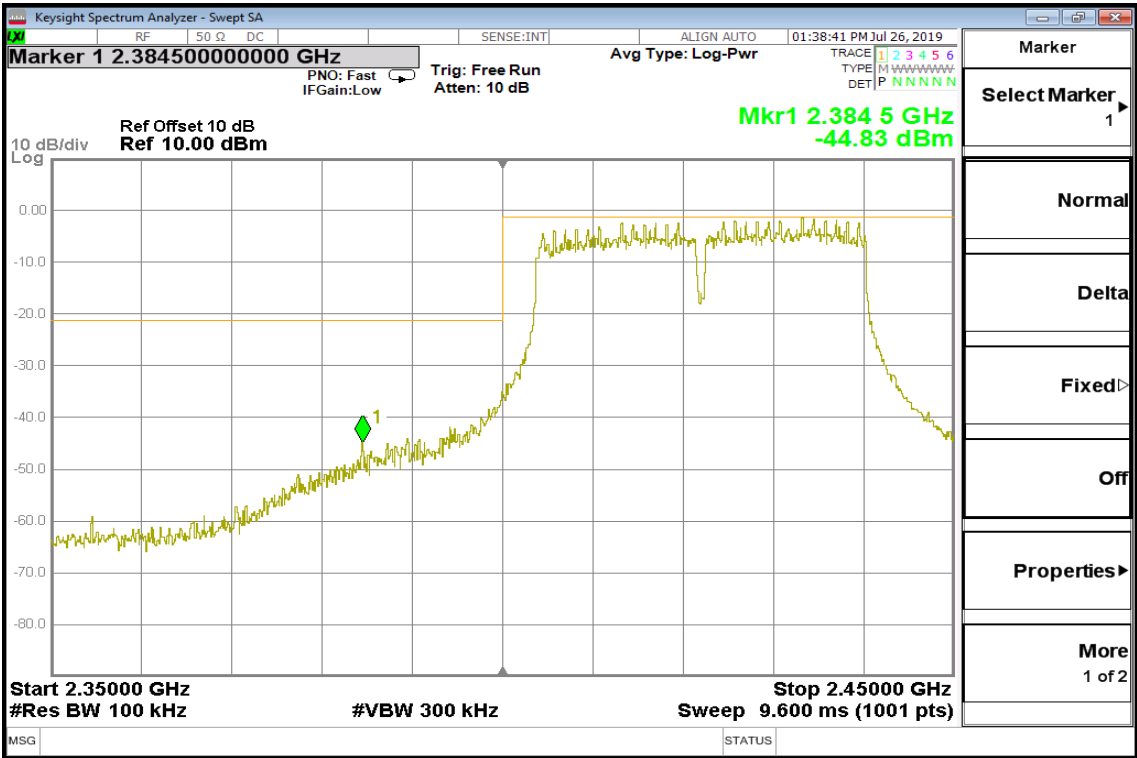


Mode: 802.11n HT-40 / Channel Highest

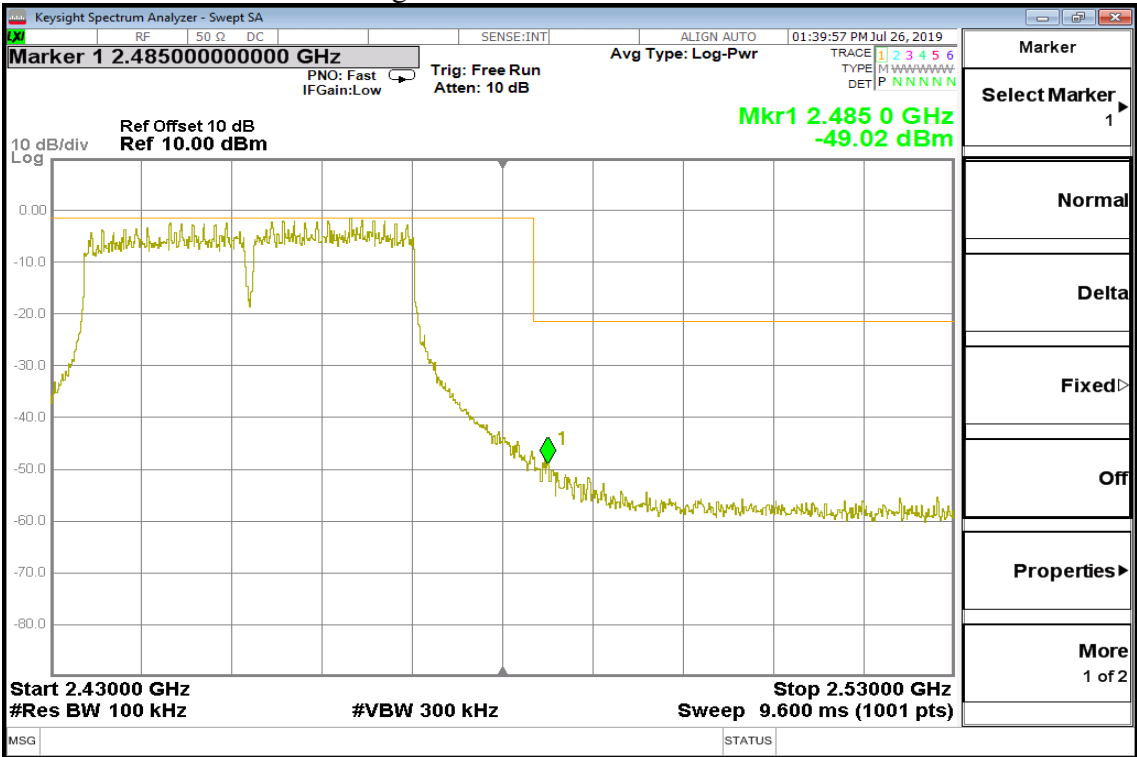


Mode: 802.11n HT-40 / Channel Lowest

ANT2



Mode: 802.11n HT-40 / Channel Highest



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	KEYSIGHT	N9010A	2019/02/01	2020/01/31
Attenuator	Mini-Circuits	BW-S10W2+	2019/10/04	2020/10/03
Attenuator	Mini-Circuits	BW-S20W2+	2019/10/04	2020/10/03
Attenuator	Mini-Circuits	BW-S30W2+	2019/10/04	2020/10/03

10.4 功率密度量測結果

測試日期 : May 06, 2019
測試結果 : 合格

環境溫度 : 25°C

環境濕度 : 65 %
測試者 : 何仁逸

A. 802.11b

- a) Channel Low : 3 kHz 頻寬之功率密度為 -4.87 dBm
- b) Channel Middle : 3 kHz 頻寬之功率密度為 -4.54dBm
- c) Channel High : 3 kHz 頻寬之功率密度為 -3.85 dBm

B. 802.11g

- a) Channel Low : 3 kHz 頻寬之功率密度為 -11.24 dBm
- b) Channel Middle : 3 kHz 頻寬之功率密度為 -10.797 dBm
- c) Channel High : 3 kHz 頻寬之功率密度為 -10.361dBm

C. 802.11n HT-20-ANT0

- a) Channel Low : 3 kHz 頻寬之功率密度為 -12.86 dBm
- b) Channel Middle : 3 kHz 頻寬之功率密度為 -11.67 dBm
- c) Channel High : 3 kHz 頻寬之功率密度為 -13.34 dBm

D. 802.11n HT-20-ANT1

- a) Channel Low : 3 kHz 頻寬之功率密度為 -13.34 dBm
- b) Channel Middle : 3 kHz 頻寬之功率密度為 -11.32 dBm
- c) Channel High : 3 kHz 頻寬之功率密度為 -11.30 dBm

E. 802.11n HT-20-ANT2

- a) Channel Low : 3 kHz 頻寬之功率密度為 -13.05 dBm
- b) Channel Middle : 3 kHz 頻寬之功率密度為 -13.80 dBm
- c) Channel High : 3 kHz 頻寬之功率密度為 -13.05 dBm

F. 802.11n HT-40 – ANT0

- a) Channel Low : 3 kHz 頻寬之功率密度為 -16.07 dBm
- b) Channel Middle : 3 kHz 頻寬之功率密度為 -15.52 dBm
- c) Channel High : 3 kHz 頻寬之功率密度為 -15.07 dBm

G. 802.11n HT-40 – ANT1

- a) Channel Low : 3 kHz 頻寬之功率密度為 -16.94 dBm
- b) Channel Middle : 3 kHz 頻寬之功率密度為 -16.69 dBm
- c) Channel High : 3 kHz 頻寬之功率密度為 -14.88 dBm

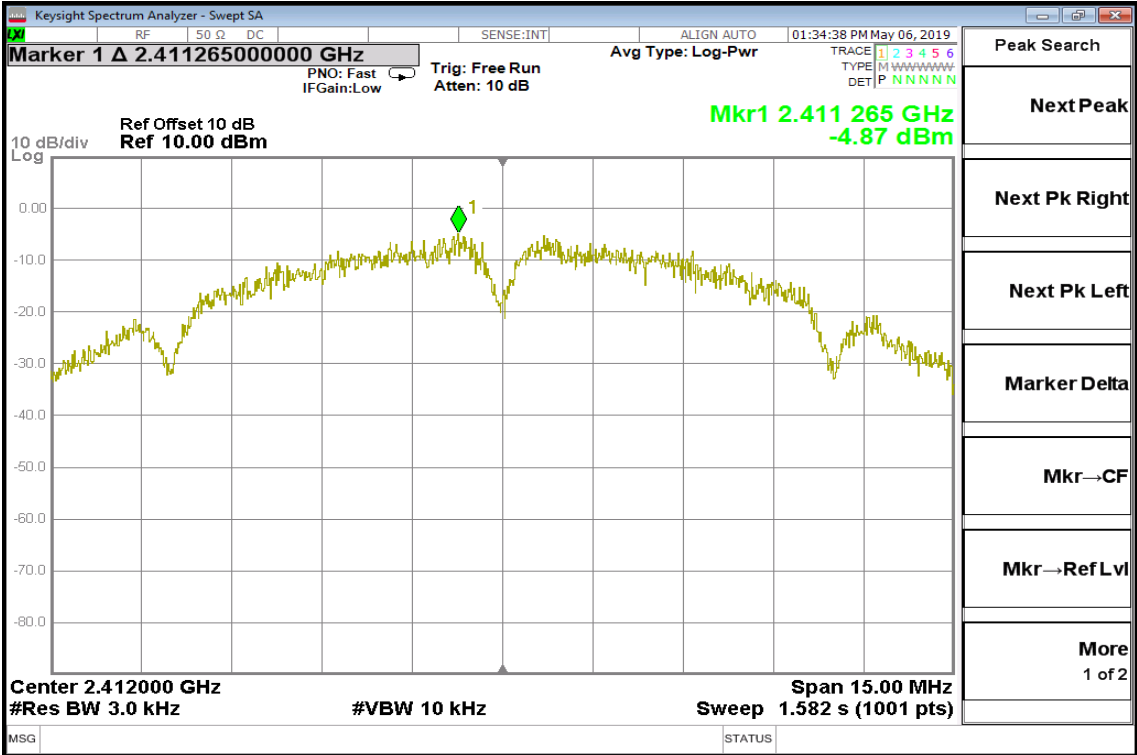
H. 802.11n HT-40 – ANT2

- a) Channel Low : 3 kHz 頻寬之功率密度為 -16.10 dBm
- b) Channel Middle : 3 kHz 頻寬之功率密度為 -16.41 dBm
- c) Channel High : 3 kHz 頻寬之功率密度為 -16.13 dBm

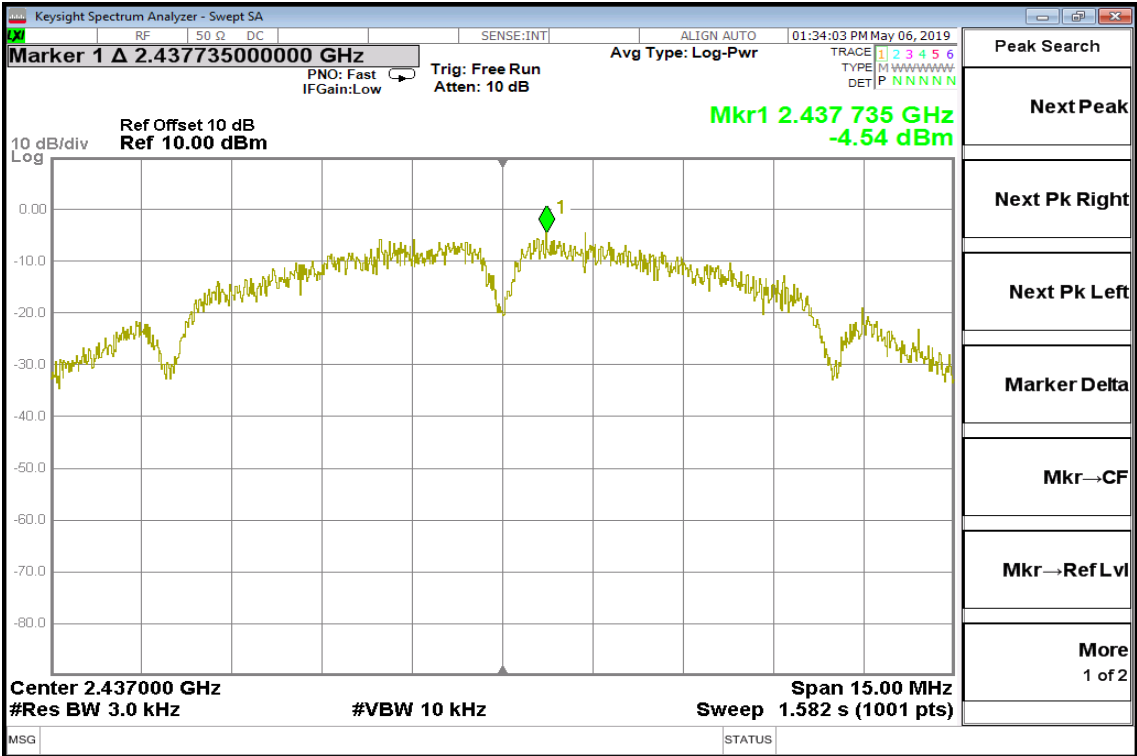
註：

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。

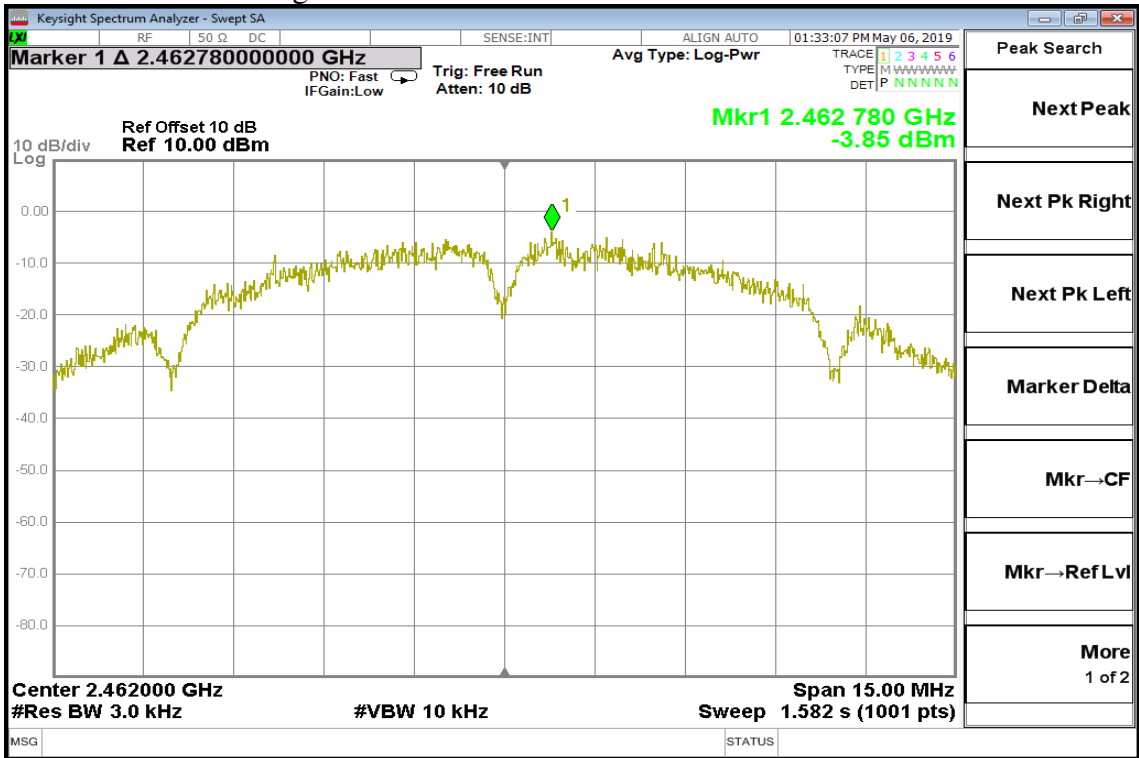
Mode: 802.11b/ Channel Low



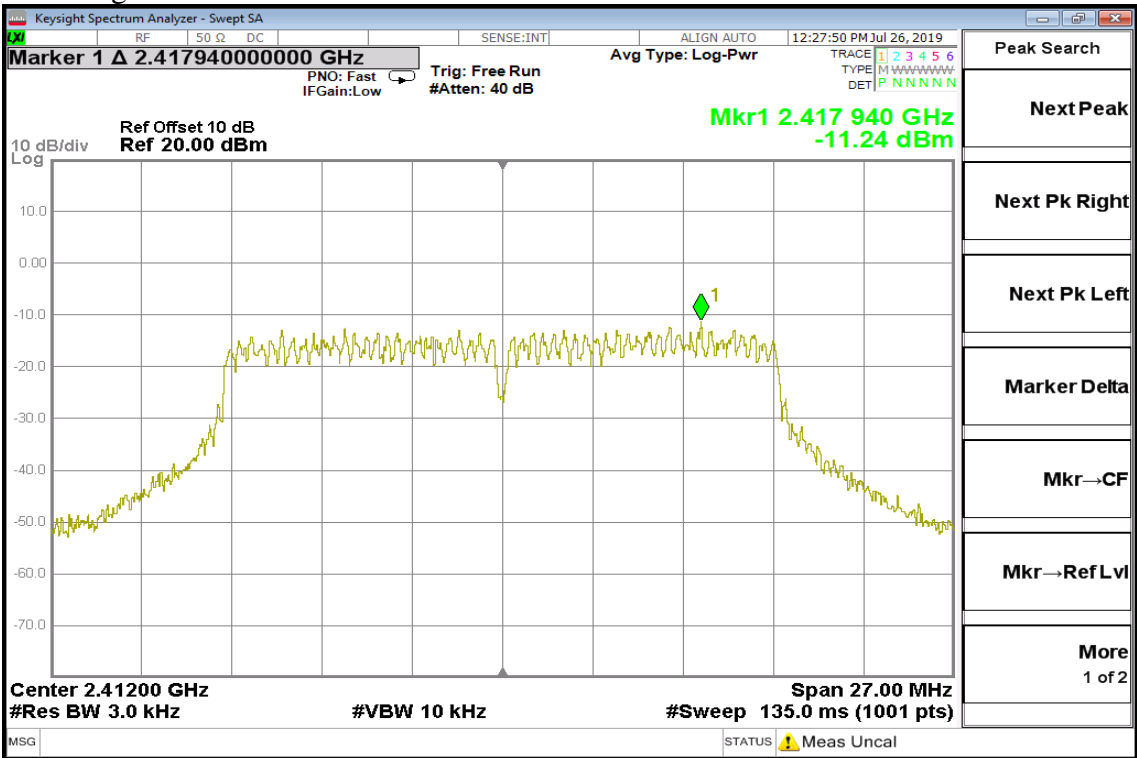
Mode: 802.11b/ Channel Middle



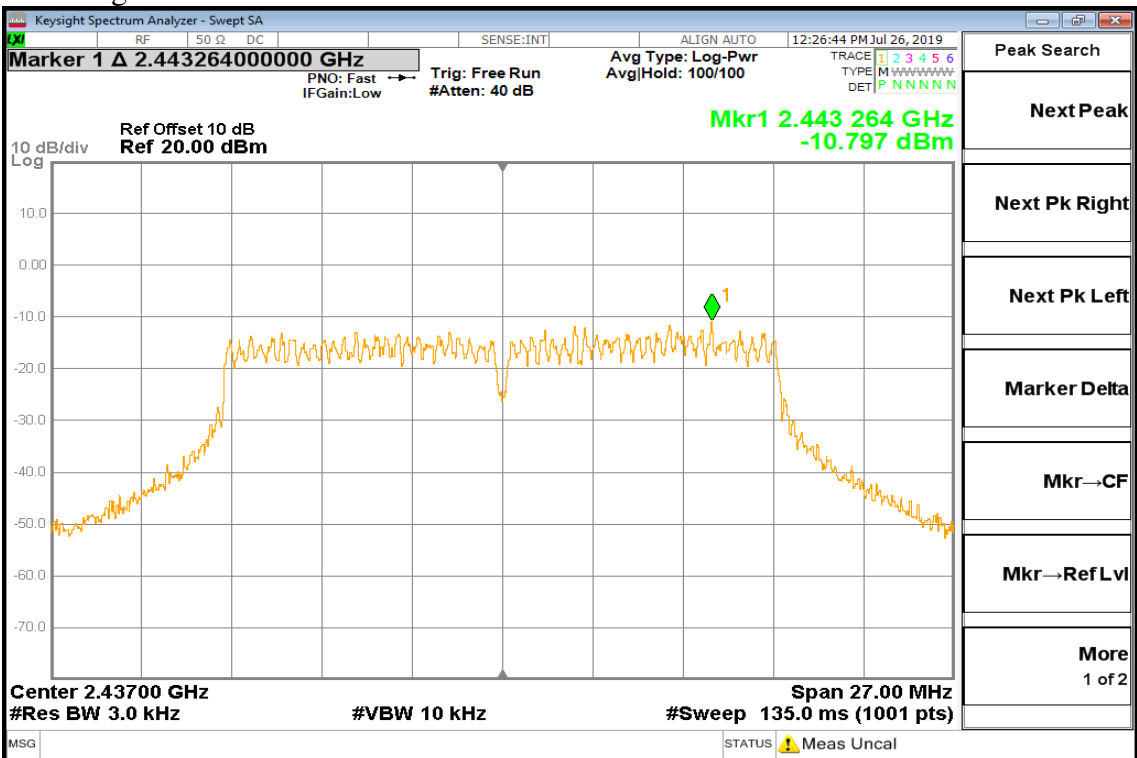
Mode: 802.11b/ Channel High



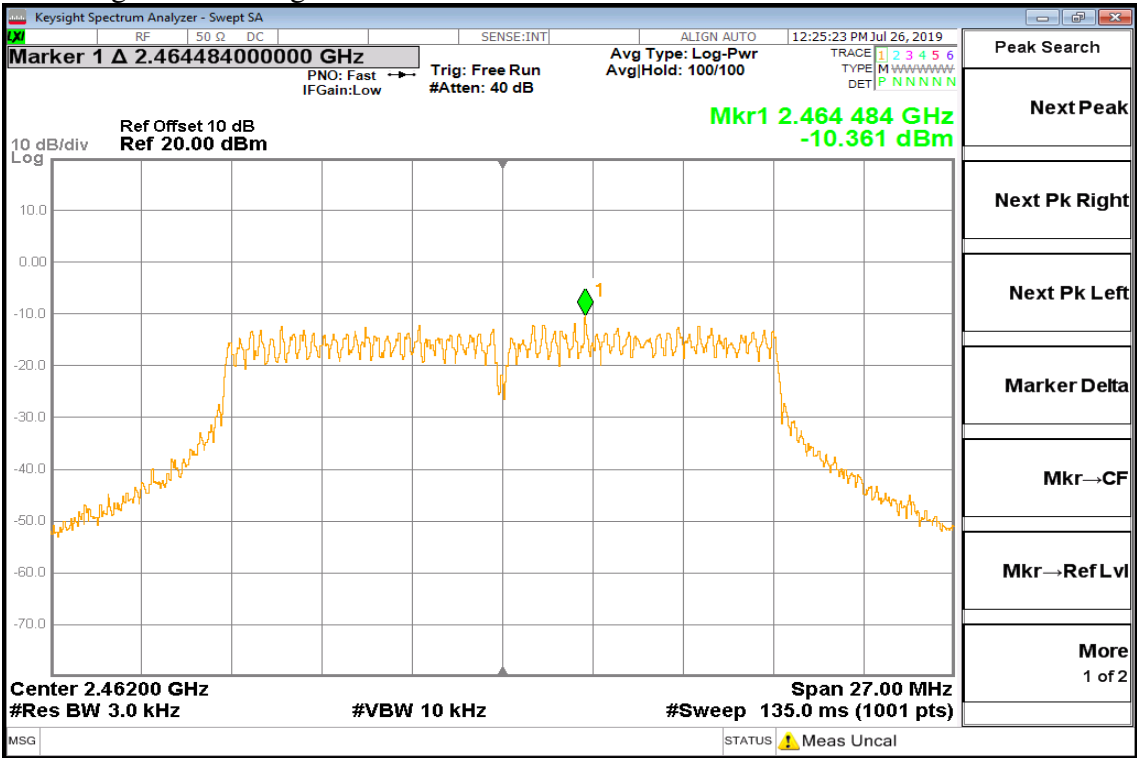
Mode: 802.11g/ Channel Low



Mode: 802.11g/ Channel Middle

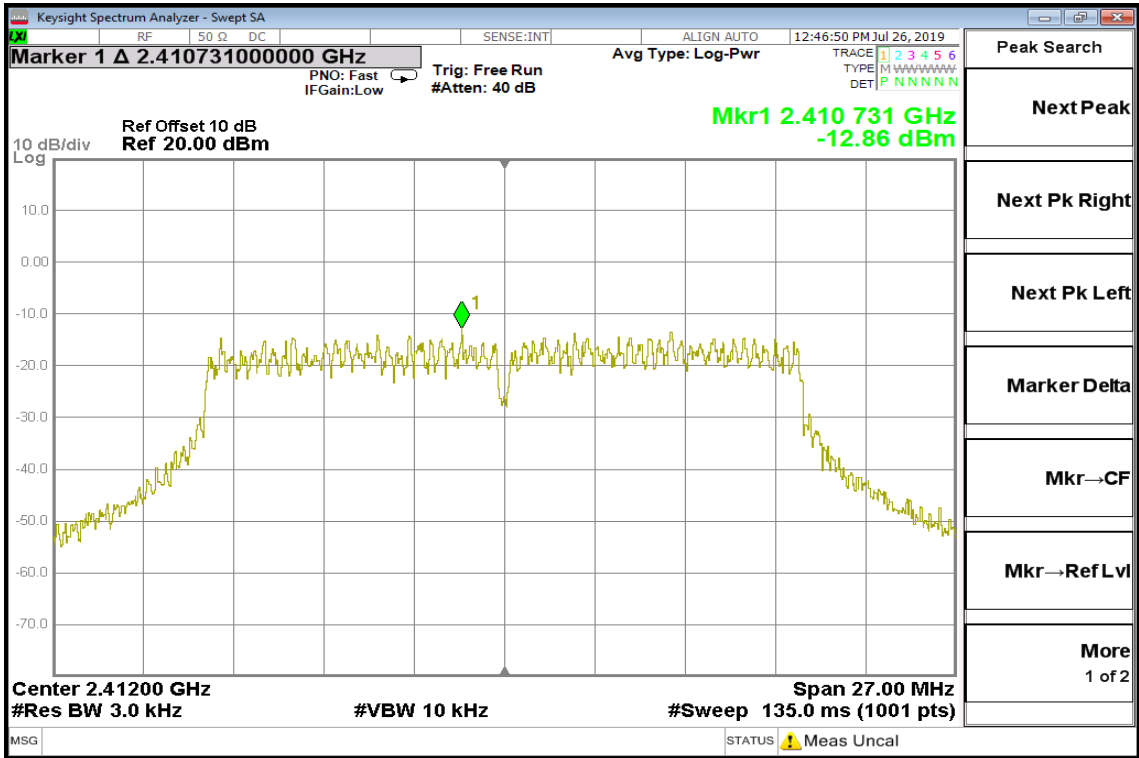


Mode: 802.11g/ Channel High

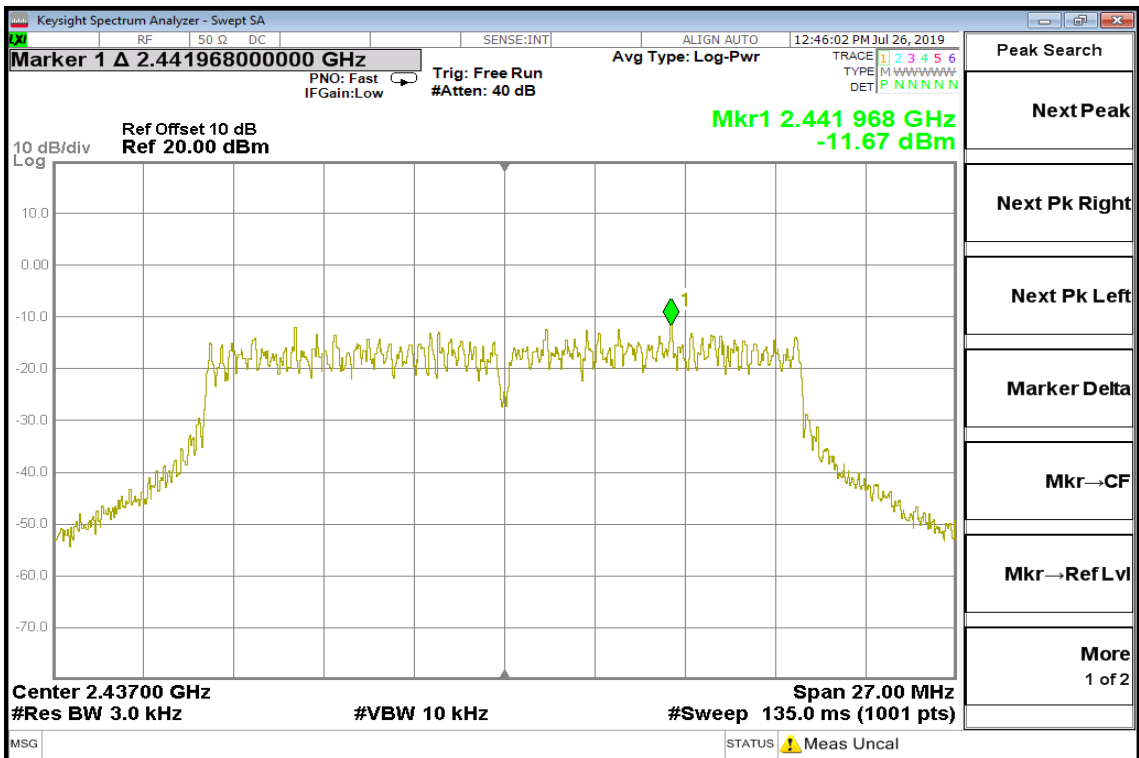


Mode: 802.11n HT-20 / Channel Low

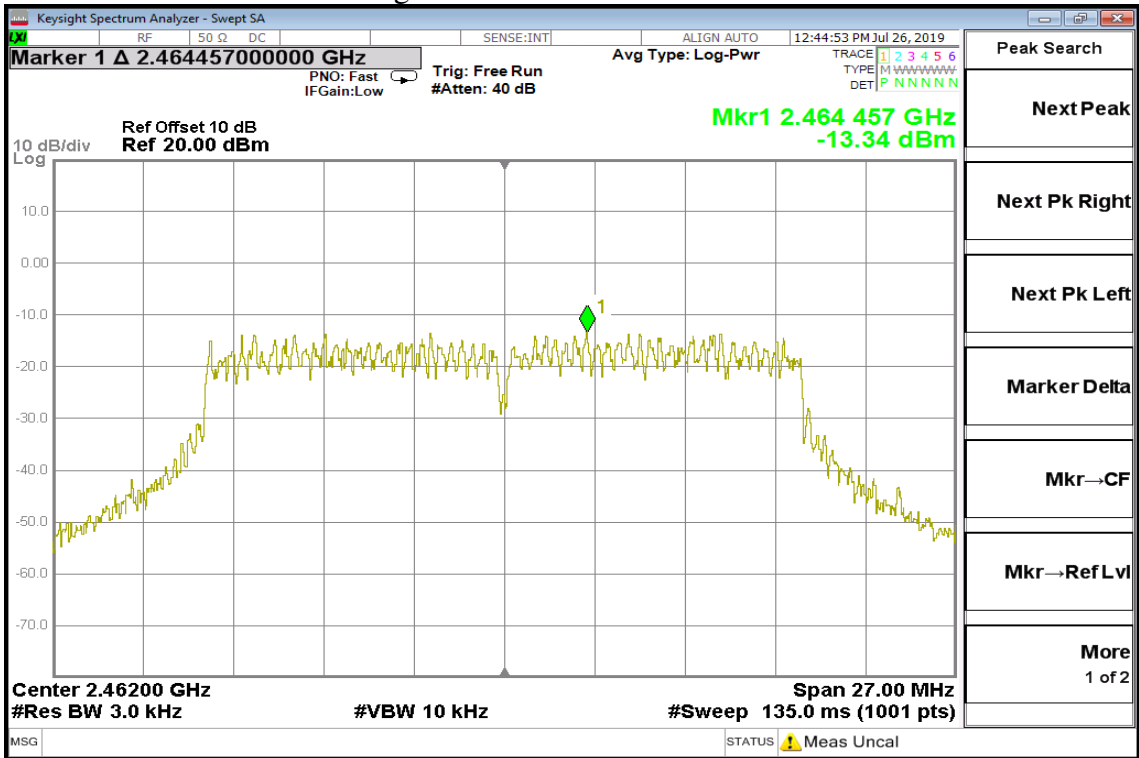
ANT0



Mode: 802.11n HT-20 / Channel Middle

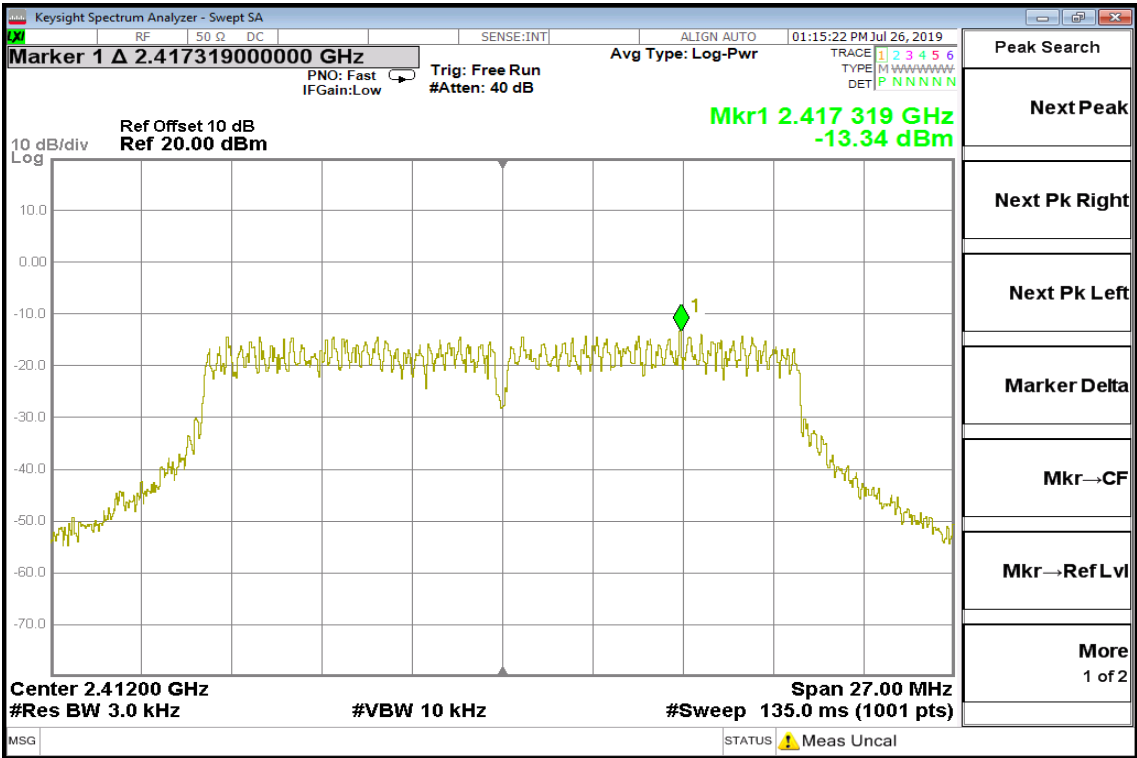


Mode: 802.11n HT-20 / Channel High

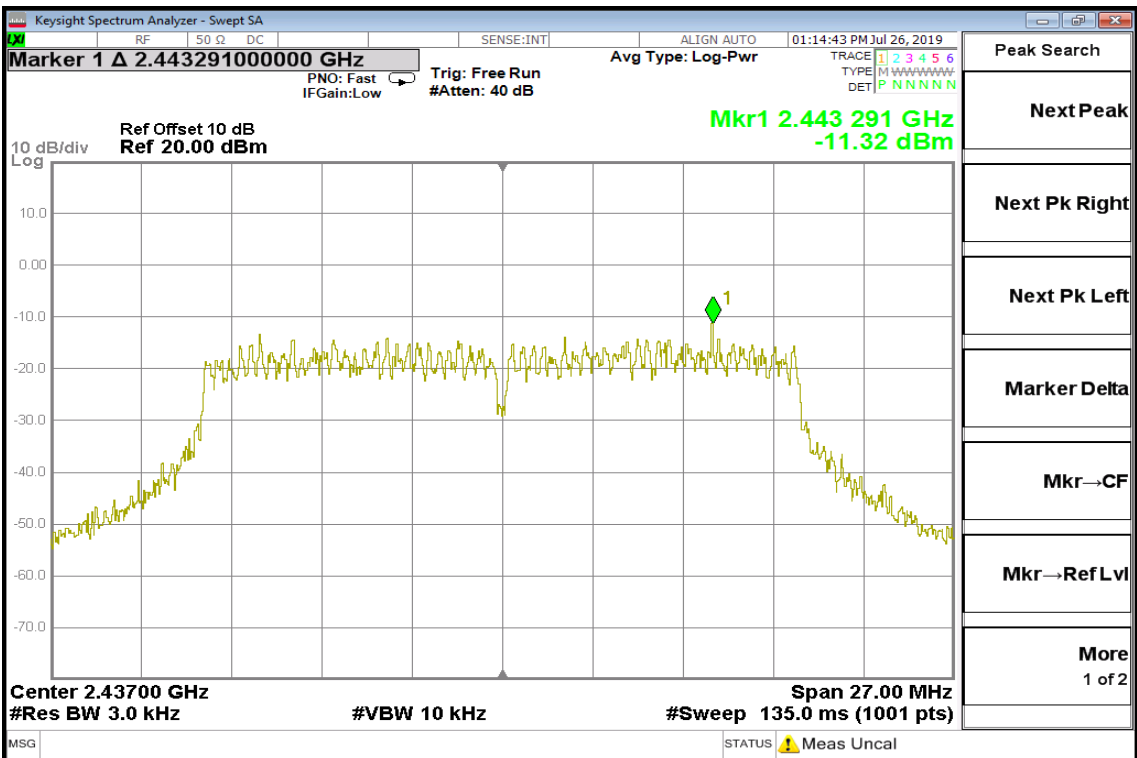


Mode: 802.11n HT-20 / Channel Low

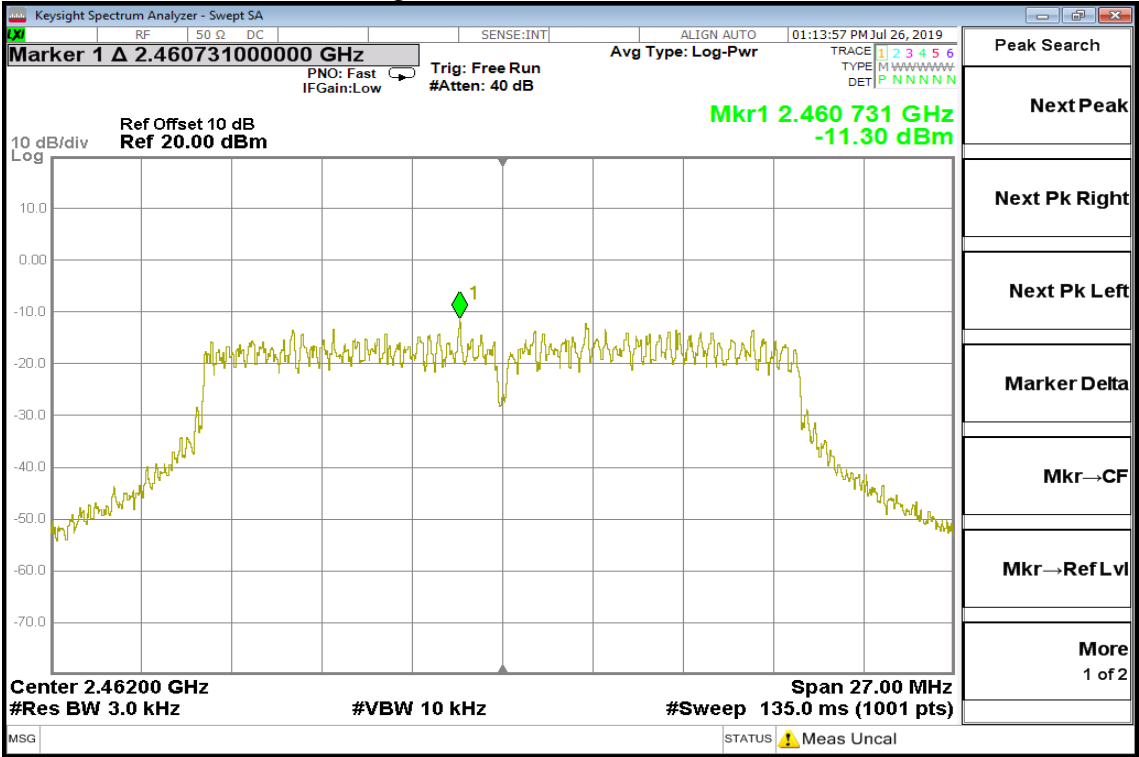
ANT1



Mode: 802.11n HT-20 / Channel Middle

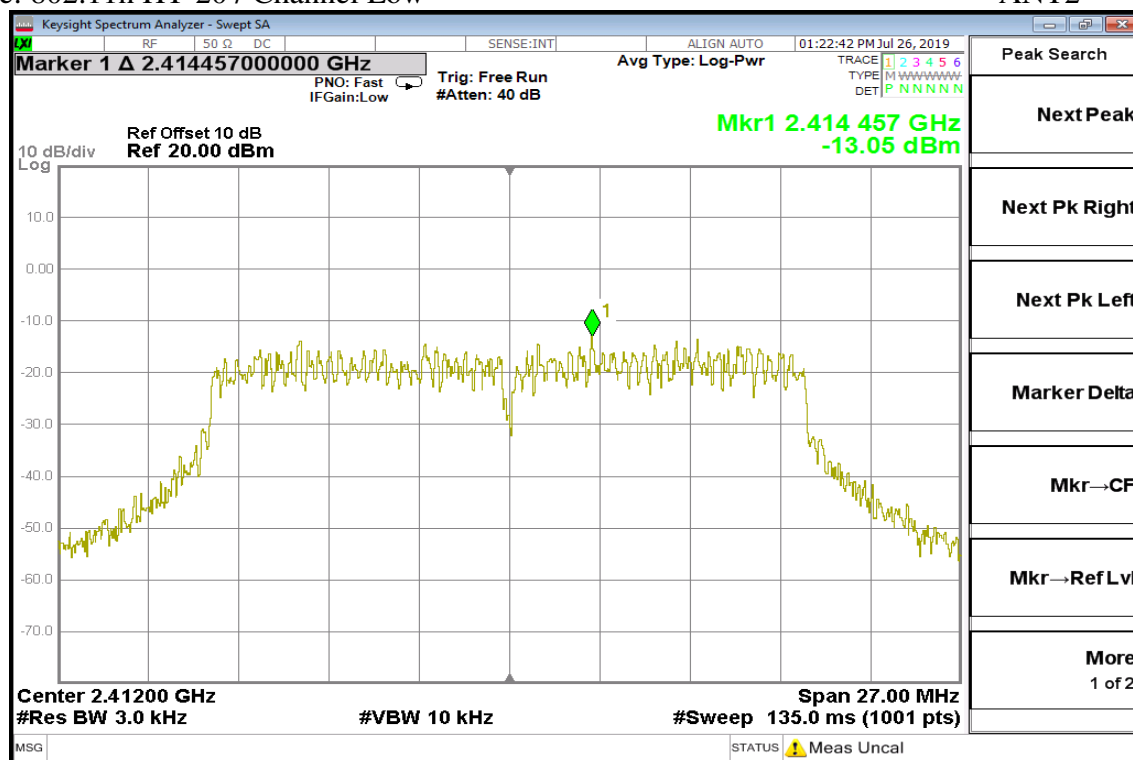


Mode: 802.11n HT-20 / Channel High

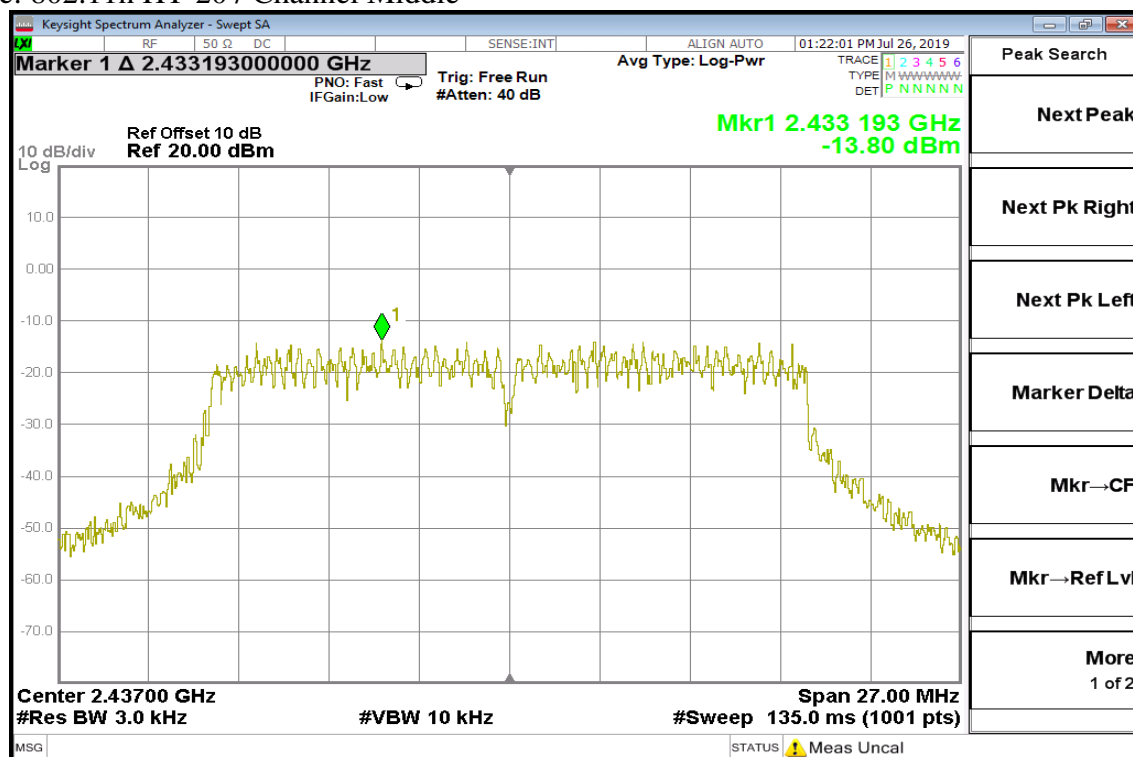


Mode: 802.11n HT-20 / Channel Low

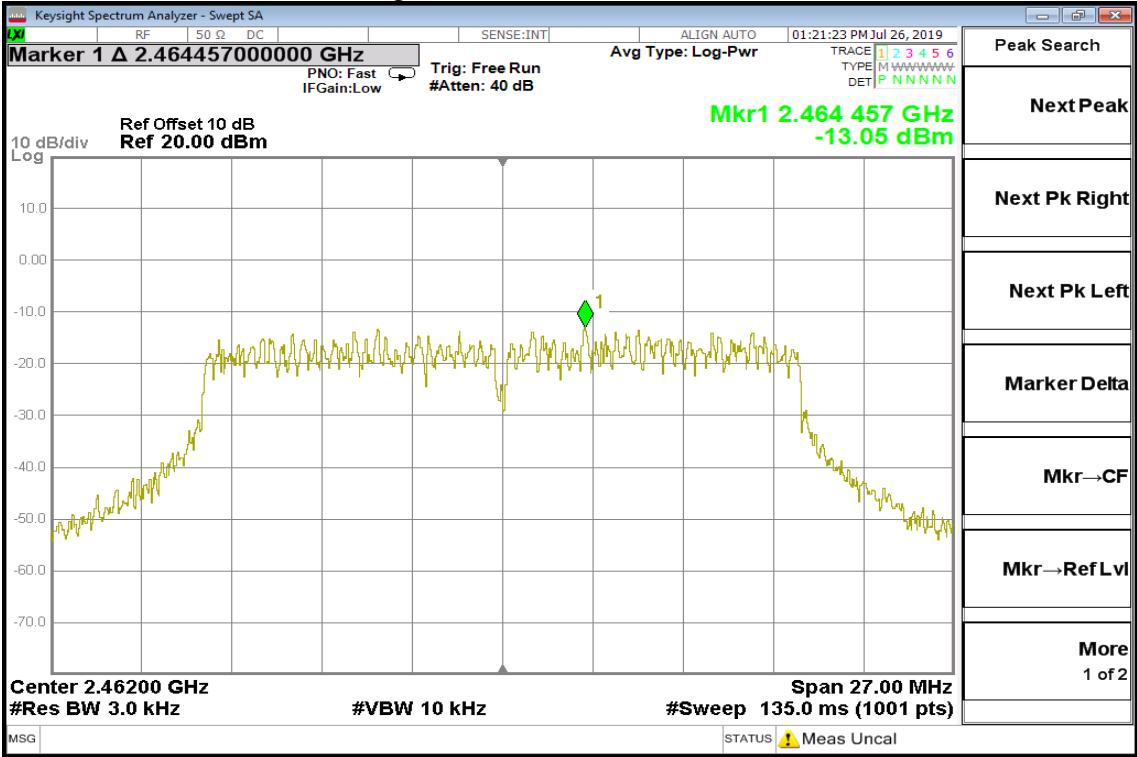
ANT2



Mode: 802.11n HT-20 / Channel Middle

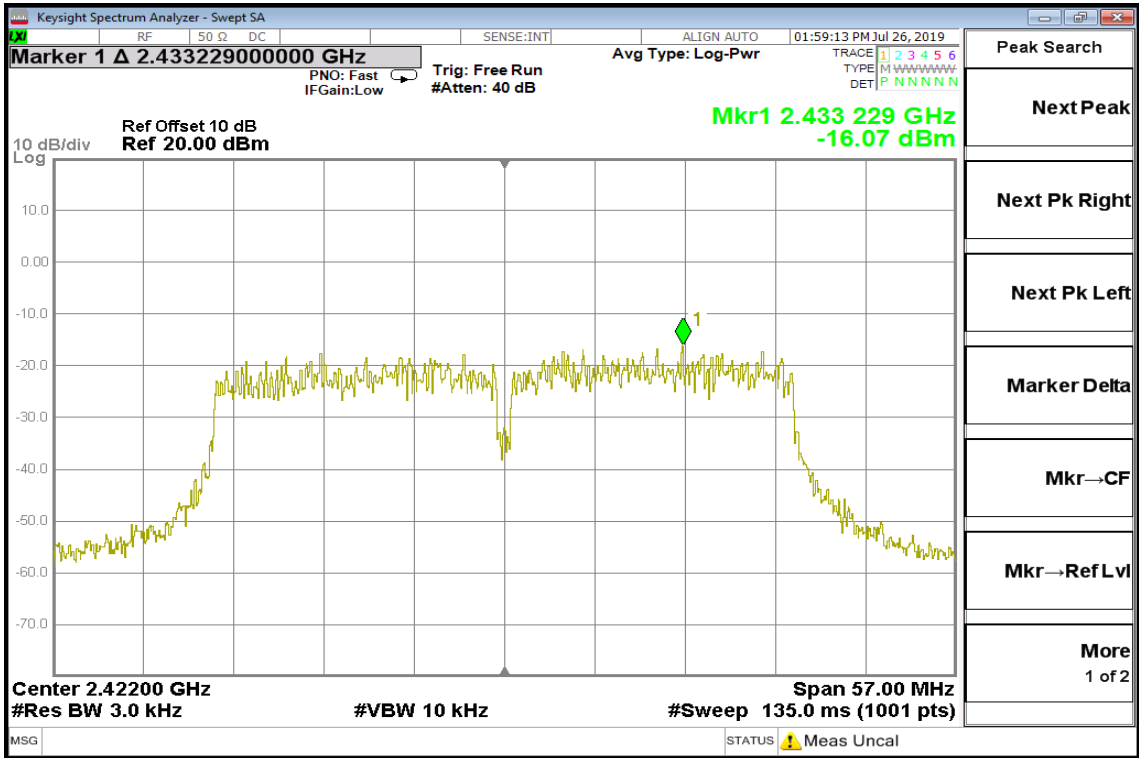


Mode: 802.11n HT-20 / Channel High

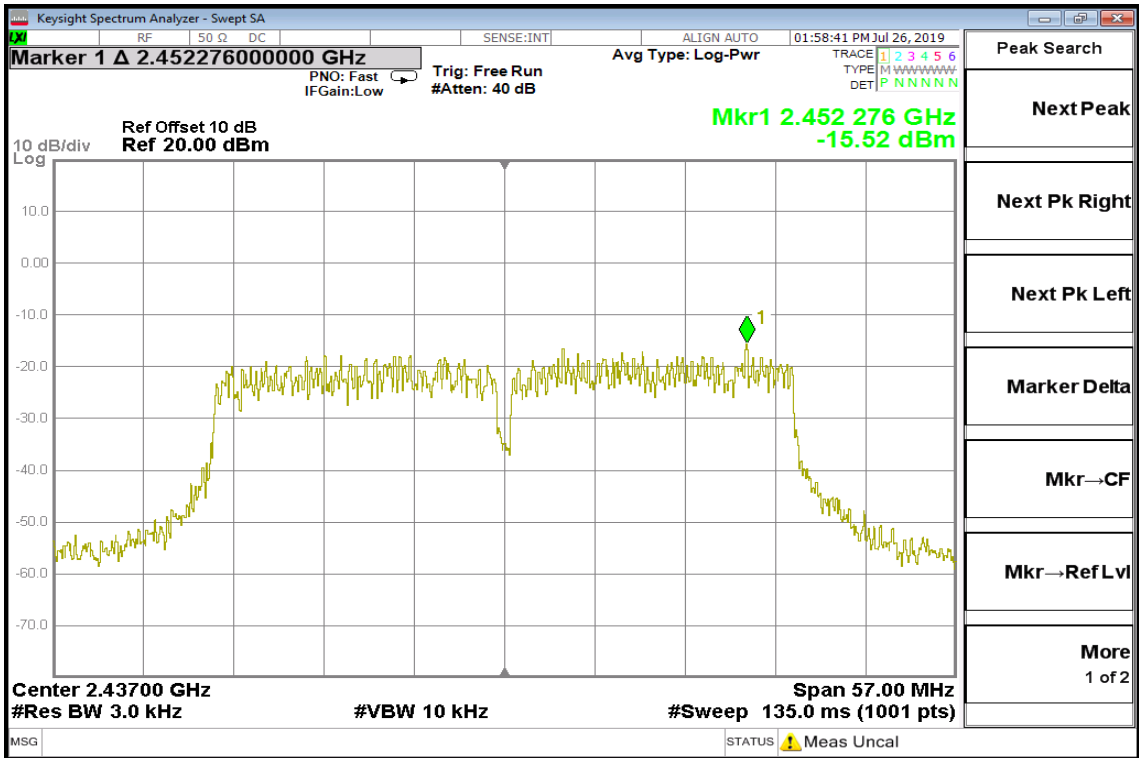


Mode: 802.11n HT-40 / Channel Low

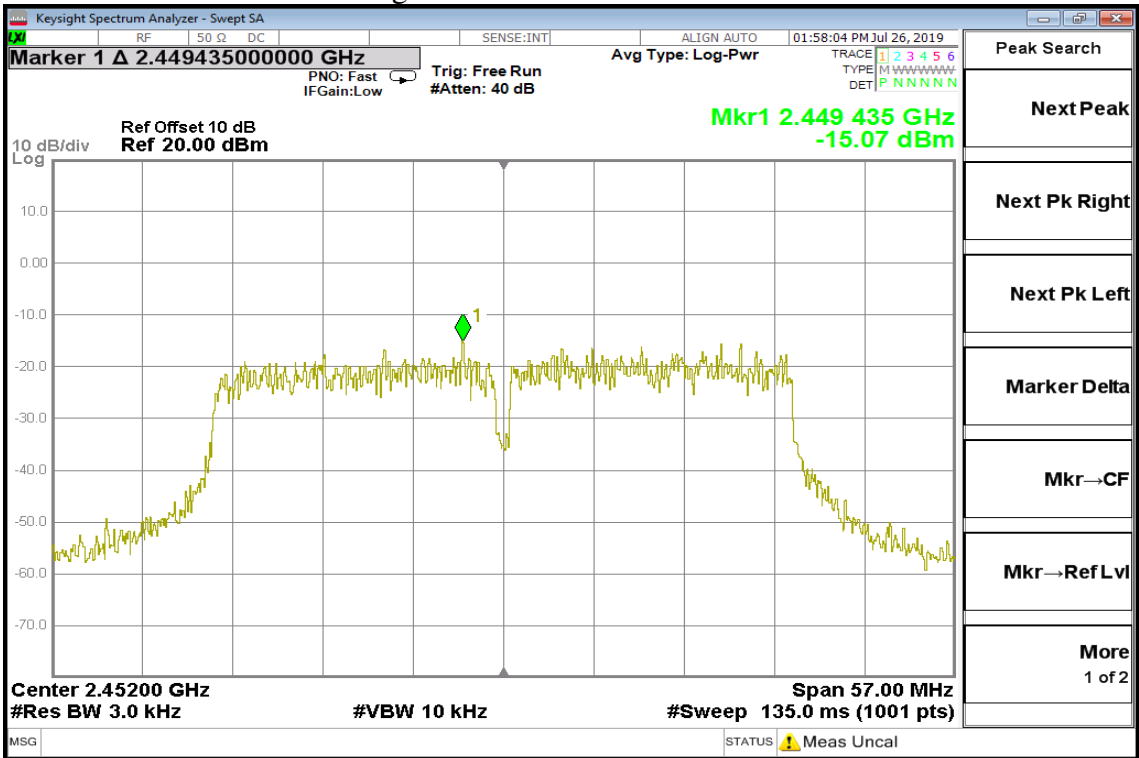
ANT0



Mode: 802.11n HT-40 / Channel Middle

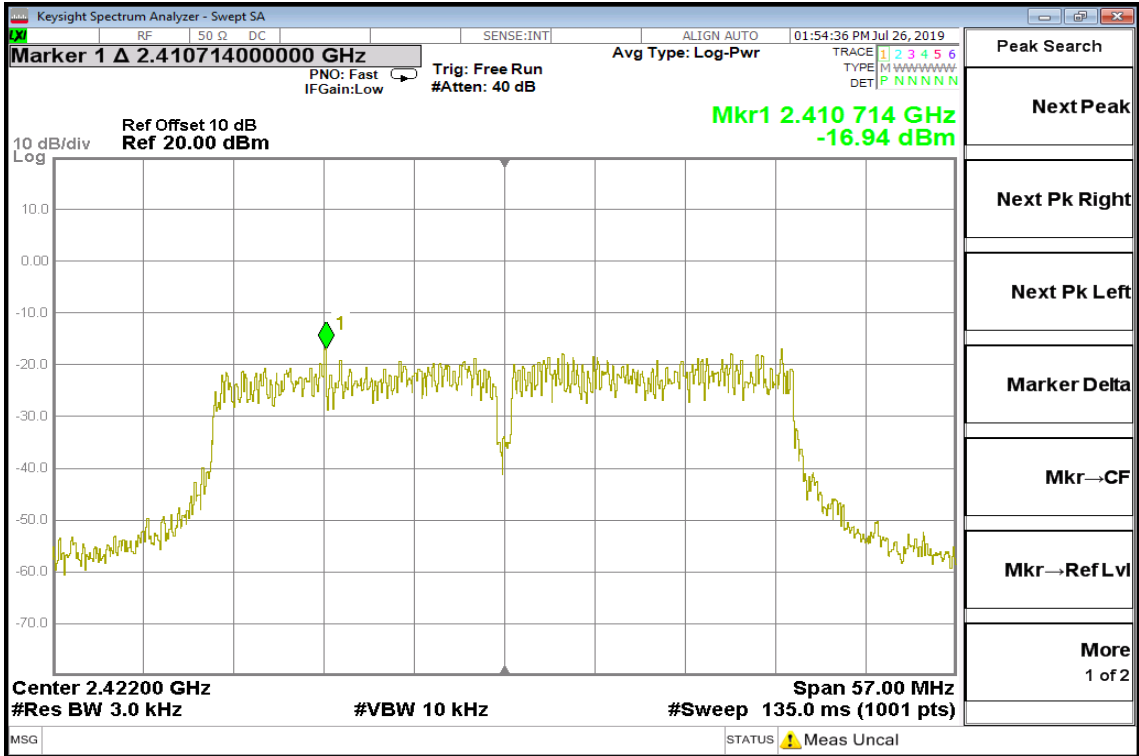


Mode: 802.11n HT-40 / Channel High

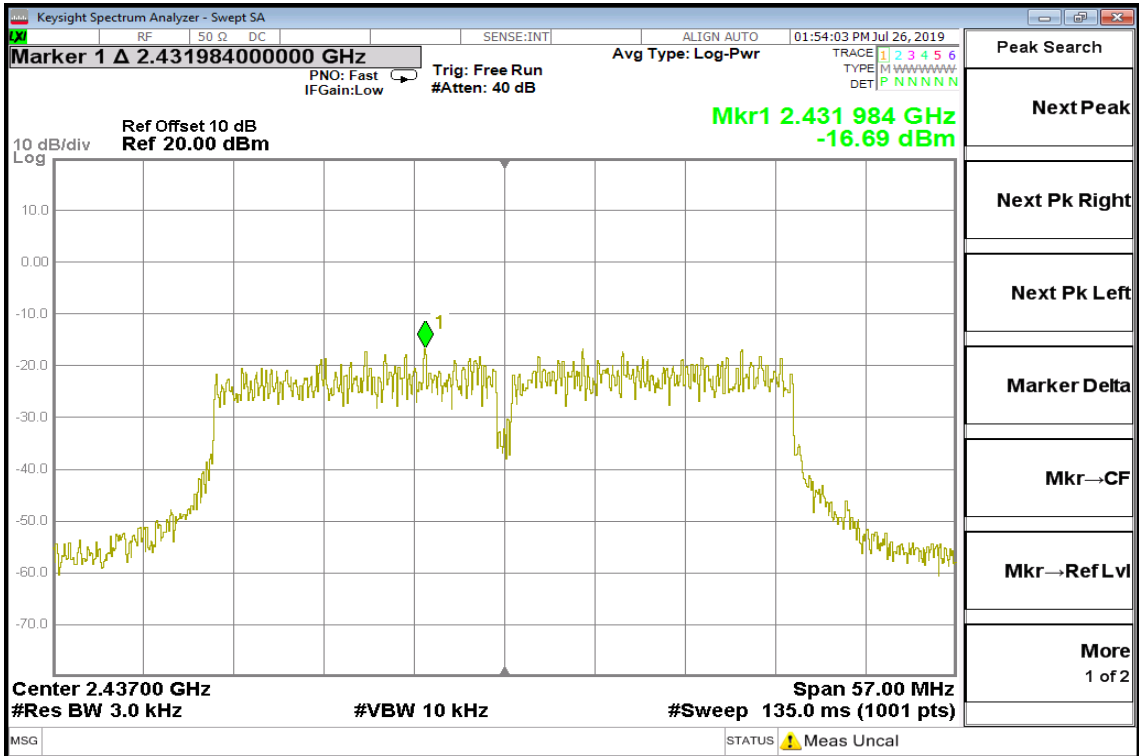


Mode: 802.11n HT-40 / Channel Low

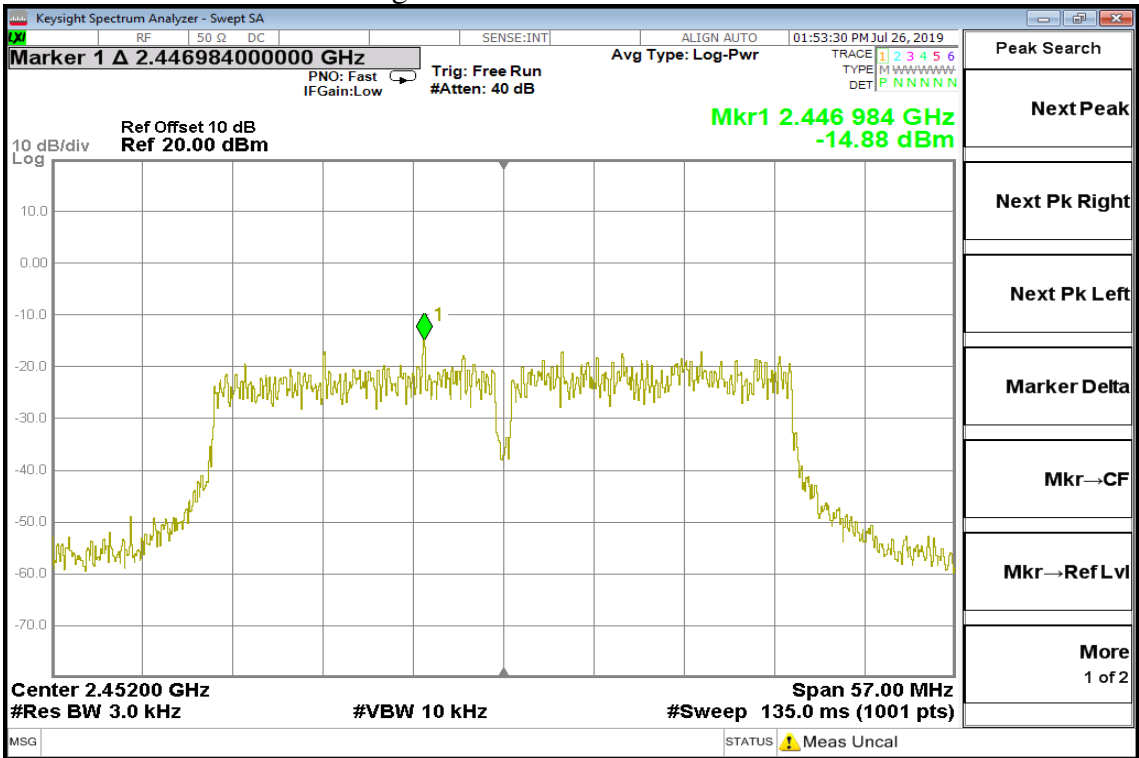
ANT1



Mode: 802.11n HT-40 / Channel Middle

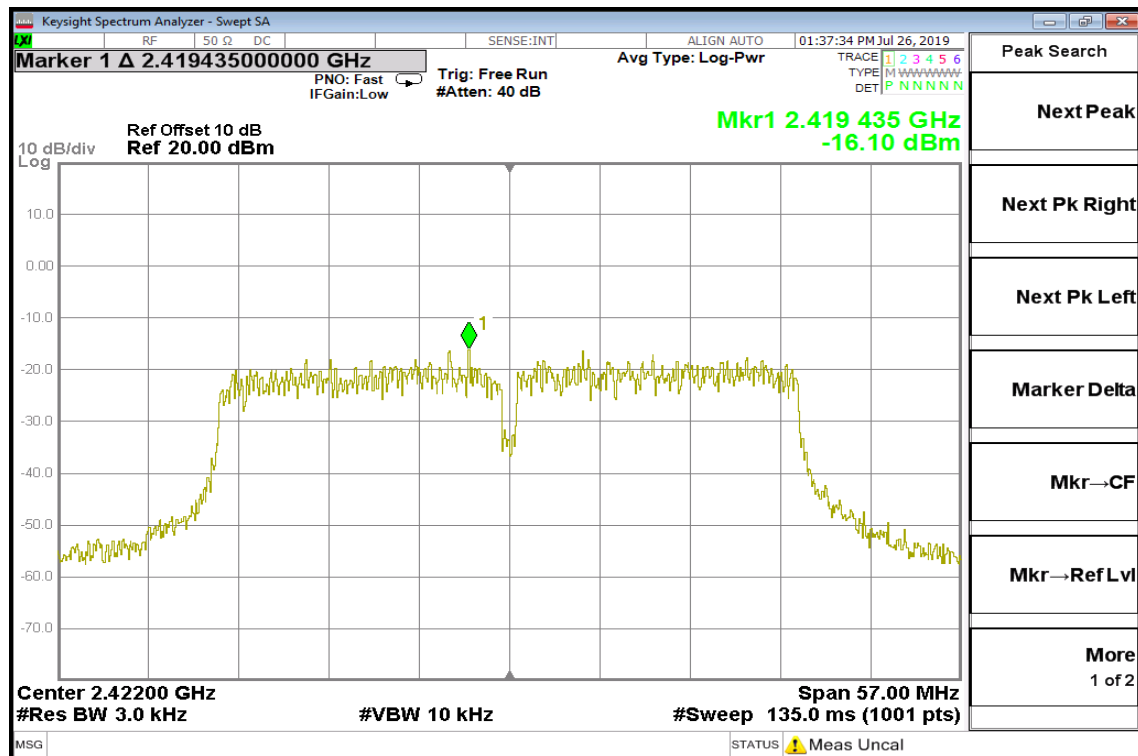


Mode: 802.11n HT-40 / Channel High

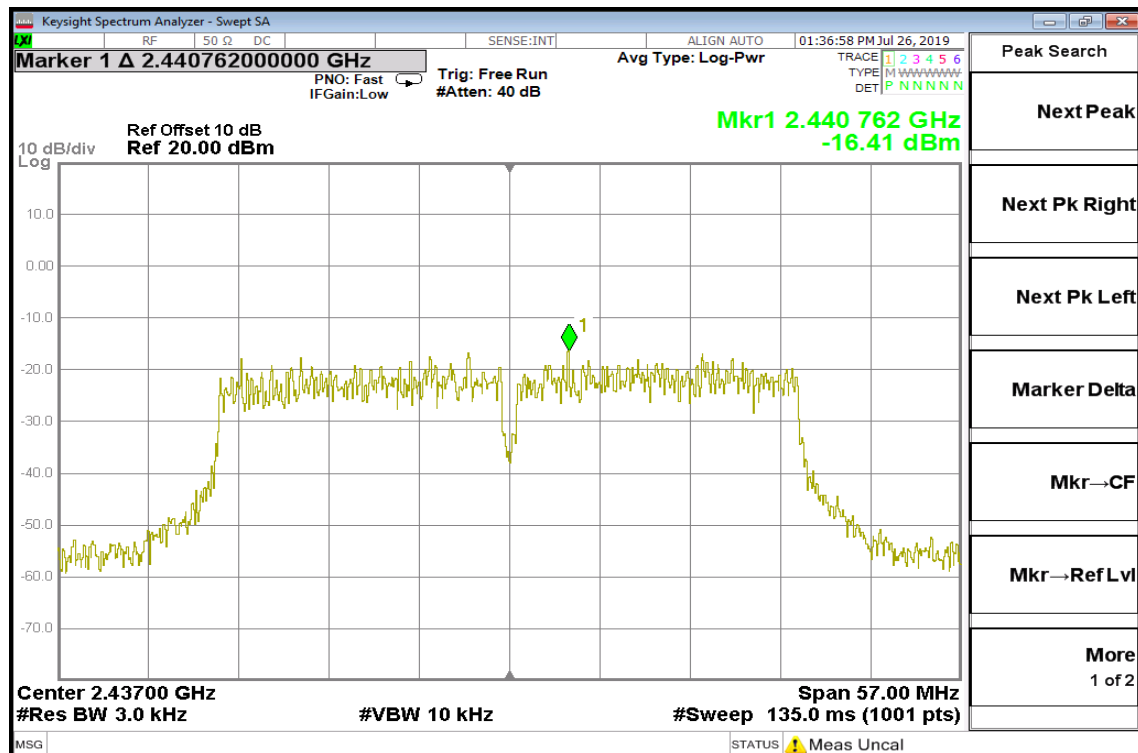


Mode: 802.11n HT-40 / Channel Low

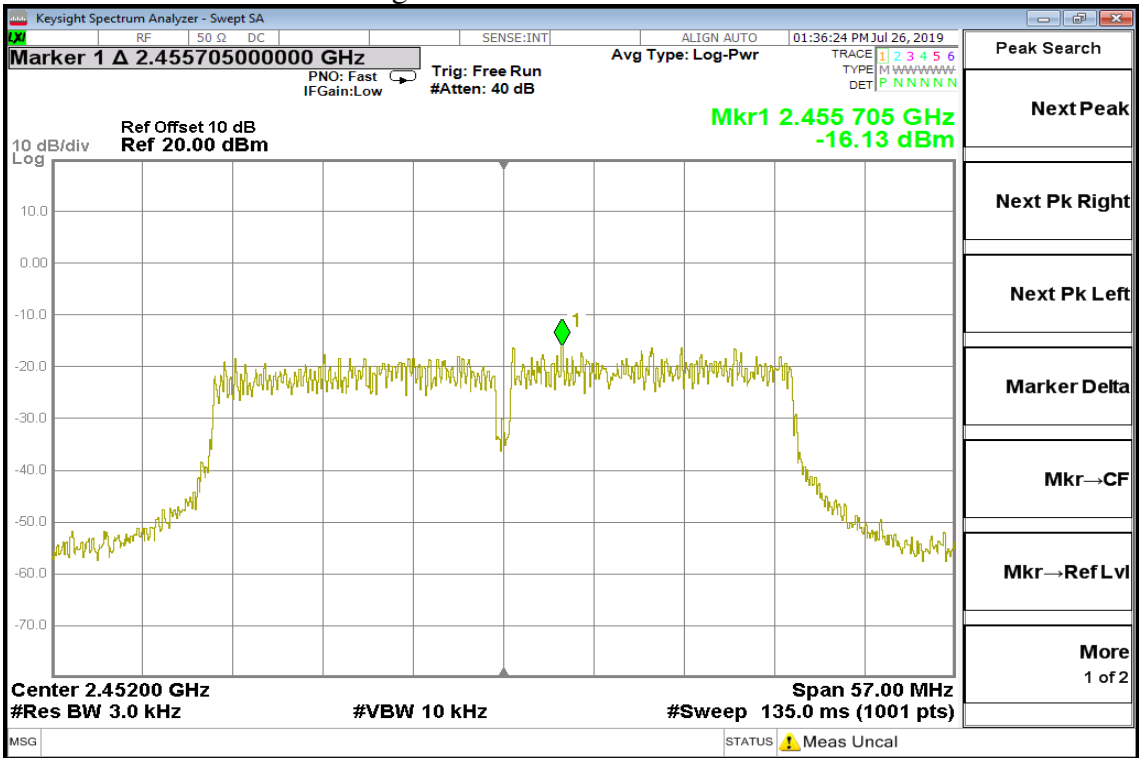
ANT2



Mode: 802.11n HT-40 / Channel Middle



Mode: 802.11n HT-40 / Channel High



11 電波暴露量之評估

11.1 適用標準

低功率射頻電機技術規範5.20節(5.20.2)之規定，若受測物於正常操作模式下，其發射機距離人體20公分以上者，可測試最大暴露允許值(Maximum Permissible Exposure，MPE)以證明其符電波暴露量之要求。限制值如下：

(1) 職業性/可控制之暴露

頻率範圍 (MHz)	電場強度 (V/m)	磁場強度 (A/m)	功率密度 (mW/cm ²)	平均時間 (minutes)
0.3-3.0	614	1.63	*100	6
3-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1,500	-----	-----	f/300	6
1,500-100,000	-----	-----	5.0	6

註1：標記*表平面波等效功率密度。

註2：f表測試頻率，單位：百萬赫(MHz)。

(2) 一般人/不可控制之暴露

頻率範圍 (MHz)	電場強度 (V/m)	磁場強度 (A/m)	功率密度 (mW/cm ²)	平均時間 (minutes)
0.3-3.0	614	1.63	*100	30
3-30	1842/f	4.89/f	*180/f ²	30
30-300	27.5	0.073	1.0	30
300-1,500	-----	-----	f/1500	30
1,500-100,000	-----	-----	1.0	30

註1：標記*表平面波等效功率密度。

註2：f表測試頻率，單位：百萬赫(MHz)。

11.2 電波暴露量評估結果

(1) 使用之天線如下：

No.	天線廠牌	天線型號	天線型式	天線增益 (dBi)
1	Vieworks	VWi-2450/5500DP-C1.32[A/B/C]	固定式PCB天線	0

(2) 實測輸出功率如下：

802.11b 主波輸出功率為	20.91	dBm =	123.310	mW
802.11g 主波輸出功率為	20.37	dBm =	108.893	mW
802.11n HT-20 天線 1 主波輸出功率為	20.26	dBm =	106.170	mW
802.11n HT-20 天線 2 主波輸出功率為	20.03	dBm =	100.693	mW
802.11n HT-20 天線 3 主波輸出功率為	20.23	dBm =	105.439	mW
802.11n HT-40 天線 1 主波輸出功率為	20.24	dBm =	105.682	mW
802.11n HT-40 天線 2 主波輸出功率為	20.15	dBm =	103.514	mW
802.11n HT-40 天線 3 主波輸出功率為	20.32	dBm =	107.647	mW

根據公式：

$$S = PG / 4 \pi R^2$$

S = 功率密度 (mW/cm²)

P = 輸出功率 (mW)

G = 天線相對於全向性輻射器之數值增益

R = 發射機與人體之距離 (cm)

可推得如下之關係式：

$$R = (PG / 4 \pi S)^{1/2}$$

(3) 電波暴露量評估(距離人體20公分)：

發射模式	輸出功率 (mW)	天線增益		距離 (cm)	功率密度 (mW/cm ²)	限制值 (mW/cm ²)
		(dBi)	(numeric)			
802.11b	123.310	0.00	1.00	20	0.0245	1
802.11g	108.893	0.00	1.00	20	0.0217	1
802.11n HT-20 ANT0	106.170	0.00	1.00	20	0.0211	1
802.11n HT-20 ANT1	100.693	0.00	1.00	20	0.0200	1
802.11n HT-20 ANT2	105.439	0.00	1.00	20	0.0210	1
802.11n HT-20 MIMO	312.301	0.00	1.00	20	0.0621	1
802.11n HT-40 ANT0	105.682	0.00	1.00	20	0.0210	1
802.11n HT-40 ANT1	103.514	0.00	1.00	20	0.0206	1
802.11n HT-40 ANT2	107.647	0.00	1.00	20	0.0214	1
802.11n HT-40 MIMO	316.842	0.00	1.00	20	0.0630	1
電波暴露量評估結果：合格						

電磁波曝露量MPE標準值1mW/cm²，送測產品實測值為 0.0630 mW/cm²。