



低功率射頻電機測試報告

Part II- 802.11a/n/ac

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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低功率射頻電機測試報告



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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 : 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) : 802.11a (5.745-5.825GHz) :14.7 dBm
802.11n/ac HT-20 (5.745-5.825GHz): 19.12 dBm
802.11n/ac HT-40 (5.755-5.795GHz): 19.05 dBm
802.11ac HT-80 (5.775GHz):12.05 dBm
工作頻率及調變方式 : 5.745~5.825GHz (OFDM, OFDM-MIMO 20M Mode; 5CH、OFDM-MIMO 40M Mode; 2CH、OFDM-MIMO 80M Mode; 1CH)
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 107 年 01 月 10 日。

(下頁續)

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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 4.7.4.5節(5)、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4.5.8 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4.7.5 節	請參閱7.4節	請參閱7.3節	合格
5	輸出功率	低功率射頻電機技術規範 4.7.3.1節、4.7.3.2節	請參閱8.4節	請參閱8.3節	合格
6	不必要發射	低功率射頻電機技術規範 4.7.4.1節、4.7.4.2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 4.7.3.1節、4.7.3.2節、4.7.3.3 節	請參閱10.4節	請參閱10.3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 802.11a/n/ac無線模組，使用頻率範圍為5725-5850MHz，採用OFDM (Orthogonal Frequency Division Multiplexing) 正交分頻多工調變技術。

使用頻道數：

5.8GHz頻帶(802.11a/n/ac)：802.11a、802.11n 20M為5個頻道(5745-5825MHz)，802.11n/ac 40M為2個頻道(5755MHz-5795MHz)，802.11n/ac 80M為1個頻道 (5775MHz)。

實測輸出功率如下：

802.11a (5.745-5.825GHz) :14.7 dBm(29.512 mW)
802.11n/ac HT-20 (5.745-5.825GHz): 19.12 dBm(81.568mW)
802.11n/ac HT-40 (5.755-5.795GHz): 19.05dBm (80.299 mW)
802.11ac HT-80 (5.775GHz):12.05 dBm (16.015 mW)

電磁波曝露量 MPE 標準值 1mW/cm²，送測產品實測值為 0.0105 mW/cm²。

各頻道對應之頻率如下：

5.8GHz頻道如下：

802.11a、802.11n/ac 20M頻道如下：

頻道	對應頻率(MHz)	頻道	對應頻率(MHz)
01	5745	04	5805
02	5765	05	5825
03	5785		

802.11n/ac 40M頻道如下：

頻道	對應頻率(MHz)
01	5755
02	5795

802.11ac 80M頻道如下：

頻道	對應頻率(MHz)
01	5775

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

依據低功率射頻電機技術規範4.7.4.5節之要求，任何使用市電為供應電源之設備亦須符合2.3 之電源線傳導限制值：

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。

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4.7.4.5節之要求，在1 GHz 以下不必要之發射，應符合2.8 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

依據低功率射頻電機技術規範4.7.8節之規定，天線之規格不受2.2 規定之限制。

依據低功率射頻電機技術規範4.7.3.1節(1)(C)、4.7.3.1節(2)(C)、4.7.3.1節(4)(C)及4.7.3.2節(3)之規定，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及最大功率頻譜密度。

依據低功率射頻電機技術規範4.7.3.1節(3)(C)之規定，使用超過23 dBi方向增益之指向性天線時，應依超過23 dBi天線方向增益的dBi總量，等量減少最大傳導輸出功率及最大功率頻譜密度。

依據低功率射頻電機技術規範4.7.3.3節之規定：

(3) 供固定式點對點操作時，使用方向增益超過6 dBi 之發射天線，可不需對應減少發射器之傳導輸出功率限制值。

(4) 除(3)外，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及最大功率頻譜密度。

(4) 頻寬之要求

依據低功率射頻電機技術規範4.7.5節之規定，在5.725 GHz～5.850 GHz 頻段操作之設備，其6 dB頻寬至少應有500 kHz。

(5) 輸出功率之要求

依據低功率射頻電機技術規範4.7.3.1節(1)(A)、4.7.3.1節(2)(A)、4.7.3.1節(3)(A)及4.7.3.3節(1)之規定，最大傳導輸出功率應小於或等於1 W。

依據低功率射頻電機技術規範4.7.3.1節(4)(A)之規定，最大傳導輸出功率應小於或等於250 mW。

依據低功率射頻電機技術規範4.7.3.2節(1)之規定，最大傳導輸出功率應小於或等於250 mW或 $11\text{dBm} + 10\log B$ (B是26 dB發射頻寬，單位MHz)之較小者。

(6) 功率密度之要求

依據低功率射頻電機技術規範4.7.3.1節(1)(B)、4.7.3.1節(2)(B)及4.7.3.1節(3)(B)之規定，在任何1 MHz 頻帶中最大功率頻譜密度應小於或等於17 dBm。

依據低功率射頻電機技術規範4.7.3.1節(4)(B) 及4.7.3.2節(2)之規定，在任何1 MHz 頻帶中最大功率頻譜密度應小於或等於11 dBm。

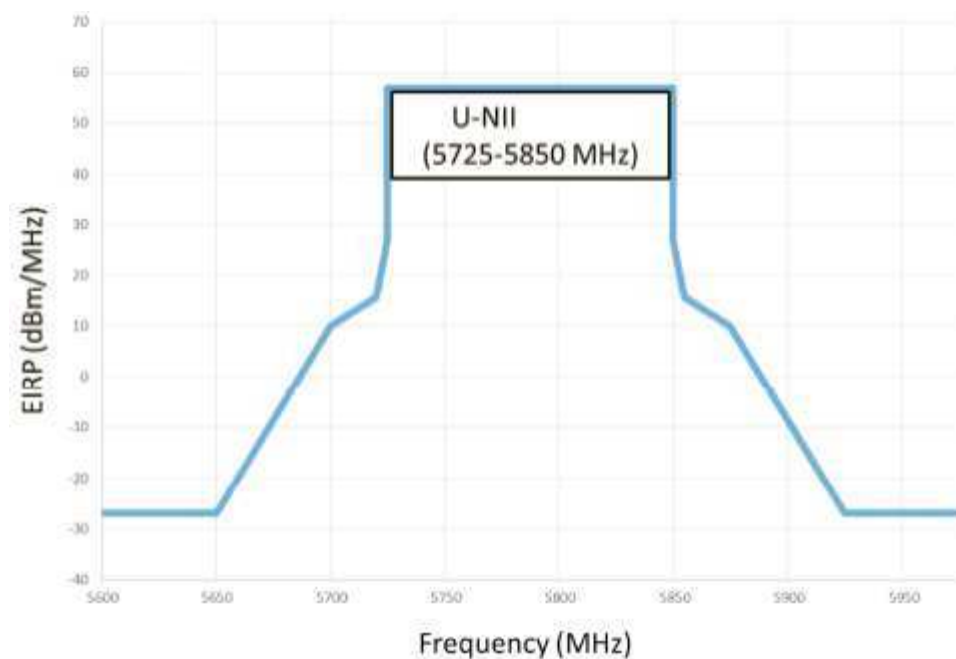
依據低功率射頻電機技術規範4.7.3.3節(2)之規定，在任何500 kHz 頻帶中最大功率頻譜密度應小於或等於30 dBm。

(7) 不必要發射之要求

依據低功率射頻電機技術規範4.7.4節之規定，不必要發射之限制值：在操作頻帶外的峰值發射應衰減至符合下列限制值：

4.7.4.1 在5.15 GHz～5.35 GHz 及5.470 GHz～5.725 GHz 頻段操作的發射器：帶外發射之有效等向輻射功率(EIRP) ≤ -27 dBm/MHz。

4.7.4.2 在5.725 GHz～5.850 GHz 的頻段操作之發射器：所有頻帶邊緣向外5 MHz 內頻率之發射，有效等向輻射功率(EIRP) ≤ 27 dBm/MHz ~ 15.6 dBm/MHz (以線性法計算對應之限制值)；所有頻帶邊緣向外5 MHz ~ 25 MHz，有效等向輻射功率(EIRP) ≤ 15.6 dBm/MHz ~ 10 dBm/MHz (以線性法計算對應之限制值)；所有頻帶邊緣外 25 MHz ~ 75 MHz，有效等向輻射功率(EIRP) ≤ 10 dBm/MHz ~ -27 dBm/MHz(以線性法計算對應之限制值)；所有頻帶邊緣外 ≥ 75 MHz 的頻率之發射，有效等向輻射功率(EIRP) ≤ -27 dBm/MHz；有關遮罩限制值詳圖1。



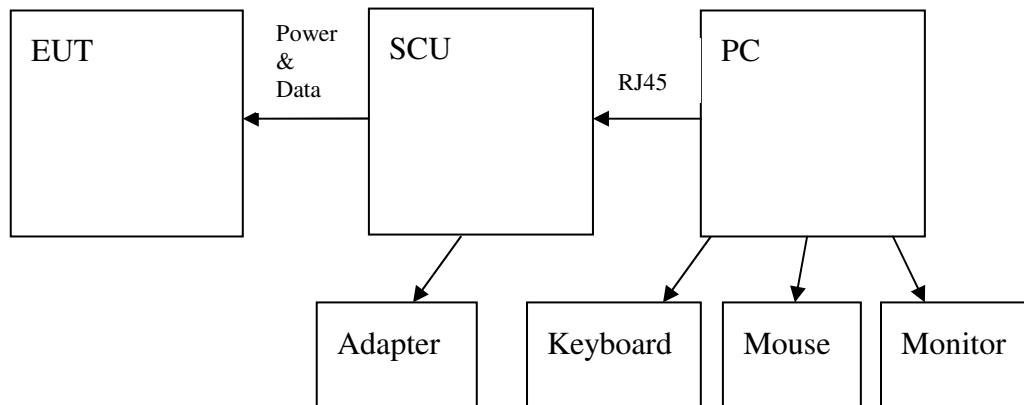
2.2 限制使用之頻帶

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	

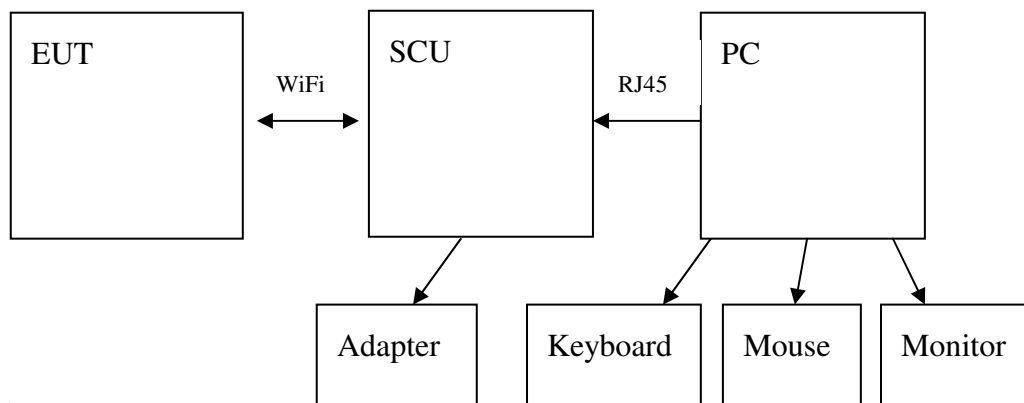
3 受測裝置之系統說明

3.1 量測配置圖

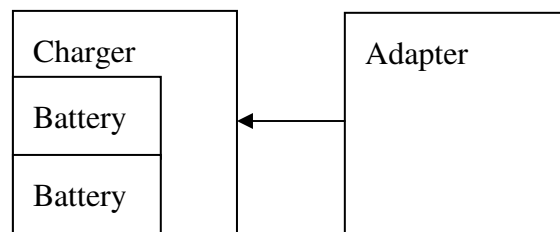
模式一(有線傳輸):



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4.7.4.5節之要求，在1 GHz 以下不必要之發射，應符合2.8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
EMI Test Receiver	Rohde & Schwarz	ESU 40	2019/10/25	2020/10/24
Bi-Log Antenna	ETC	MCTD 2786	2019/07/01	2020/06/30
Horn Antenna	EMCO	3115	2019/10/22	2020/10/21
Horn Antenna	EMCO	3116	2018/12/05	2019/12/04
Amplifier	HP	8447D	2019/05/06	2020/05/05
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. 802.11a Band 4

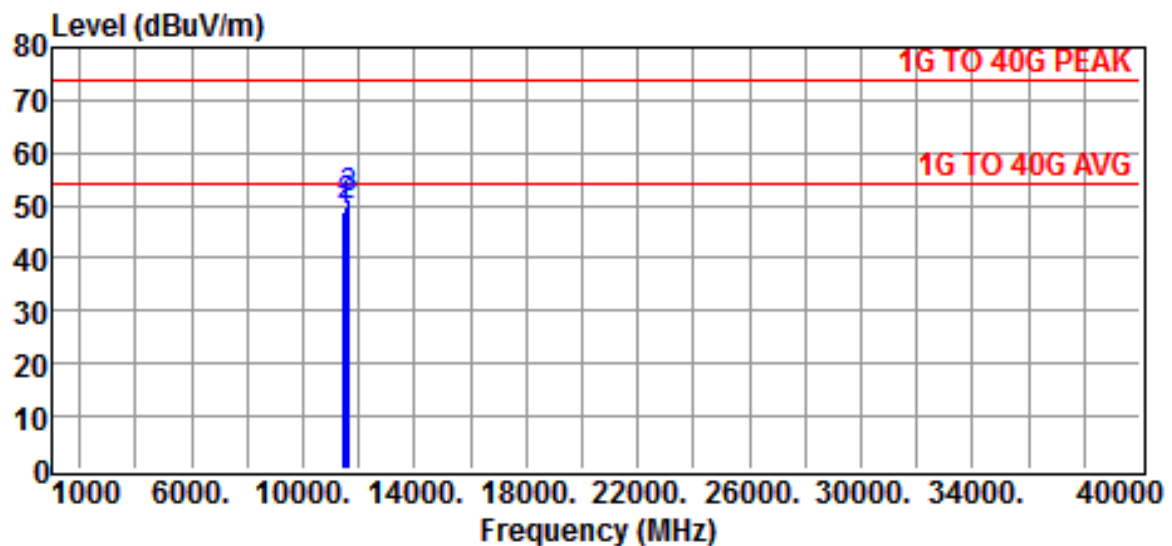
操作模式 : 發射接收

基本波頻率 : LO:5745MHz ,MI:5785MHz ,HI:5825MHz

(Local Frequency : LO:5745MHz ,MI:5785MHz ,HI:5825MHz)

測試結果 : 合格

測試者 : 何仁逸

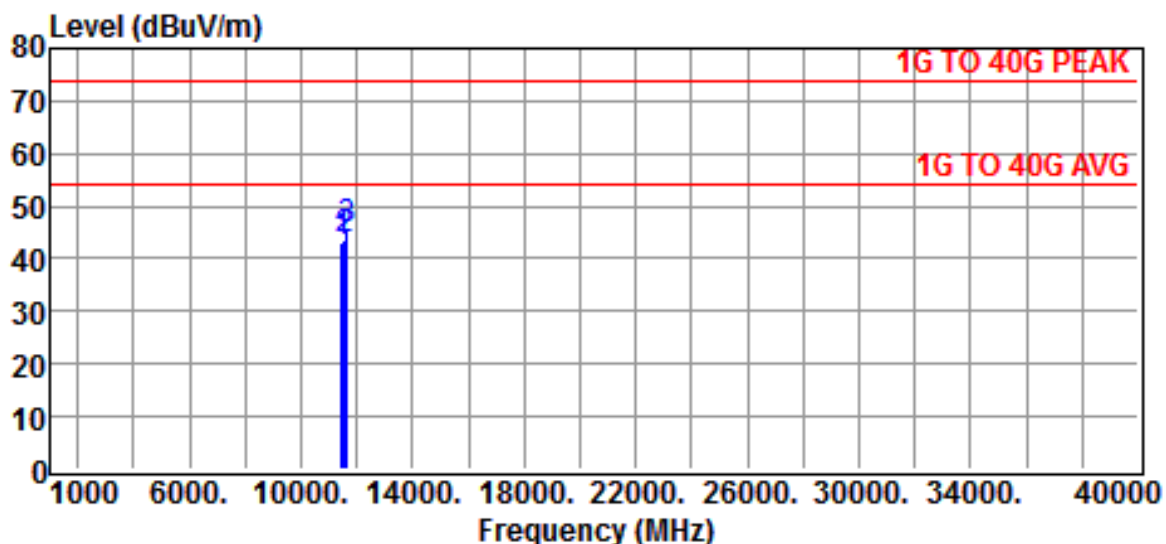


Site	:Chamber #2	Date	:2019-07-19
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 5G-A-Band 4		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
11490.0000	37.64	11.05	48.69	74.00	-25.31	Peak
11570.0000	38.82	11.07	49.89	74.00	-24.11	Peak
11650.0000	40.11	11.09	51.20	74.00	-22.80	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 5G-A-Band 4		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
11490.0000	31.96	11.05	43.01	74.00	-30.99	Peak
11570.0000	32.72	11.07	43.79	74.00	-30.21	Peak
11650.0000	34.22	11.09	45.31	74.00	-28.69	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. 802.11 n/ac-20 Band 4

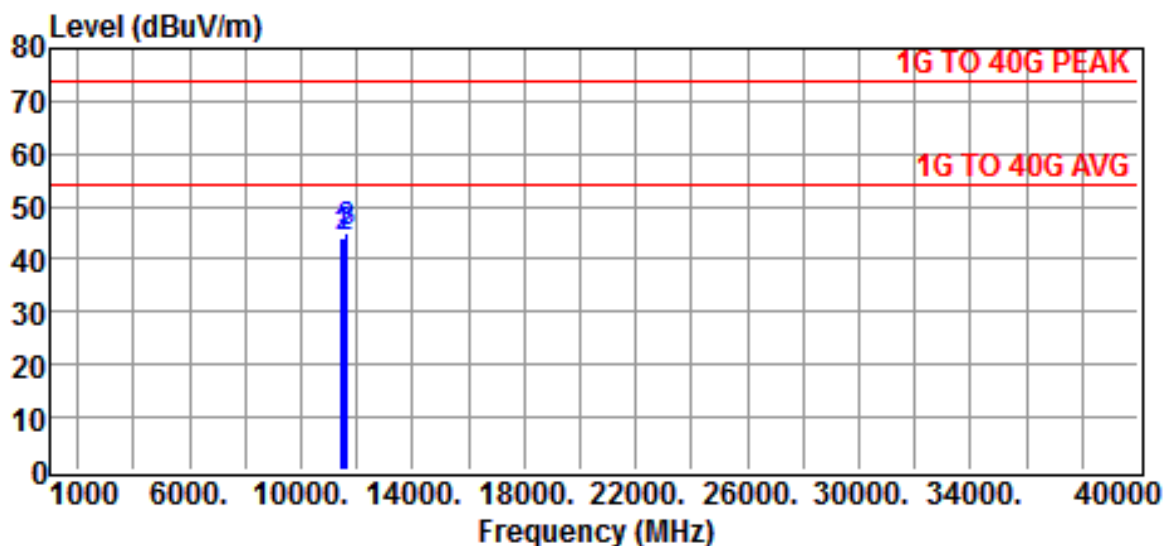
操作模式 : 發射接收

基本波頻率 : LO:5745MHz ,MI:5785MHz ,HI:5825MHz

(Local Frequency : LO:5745MHz ,MI:5785MHz ,HI:5825MHz)

測試結果 : 合格

測試者 : 何仁逸

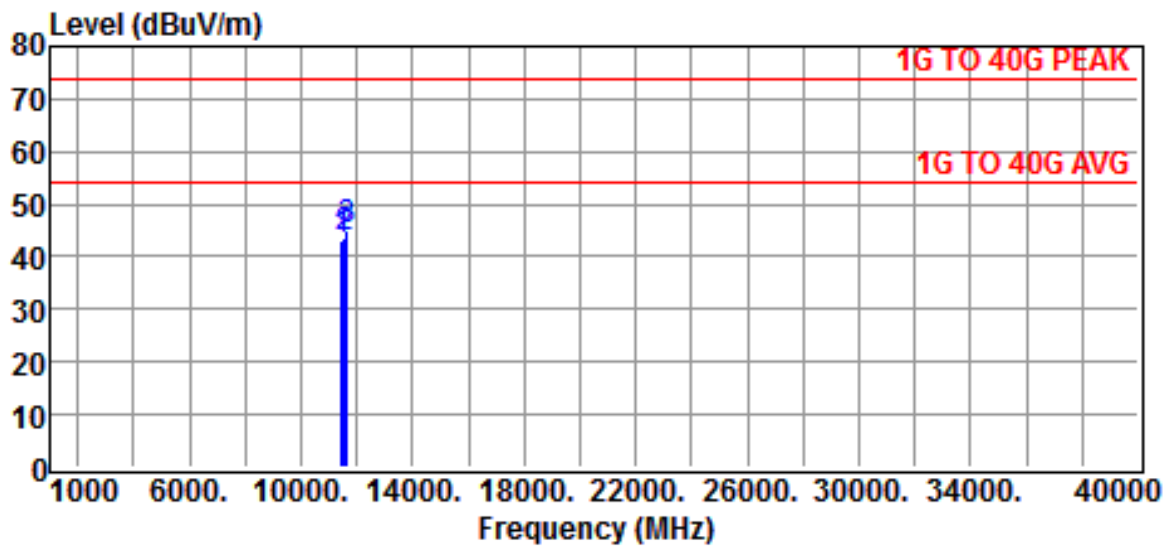


Site	:Chamber #2	Date	:2019-07-19
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 5G-N&AC20-Band 4		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
11490.0000	32.82	11.05	43.87	74.00	-30.13	Peak
11570.0000	32.97	11.07	44.04	74.00	-29.96	Peak
11650.0000	33.73	11.09	44.82	74.00	-29.18	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 5G-N&AC20-Band 4		

Freq	Reading	Correction	Result	Limits	Over limit	Detector
MHz	dBuV	Factor	dBuV/m	dBuV/m	dB	
11490.0000	32.04	11.05	43.09	74.00	-30.91	Peak
11570.0000	32.64	11.07	43.71	74.00	-30.29	Peak
11650.0000	33.82	11.09	44.91	74.00	-29.09	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. 802.11 n/ac-40 Band 4

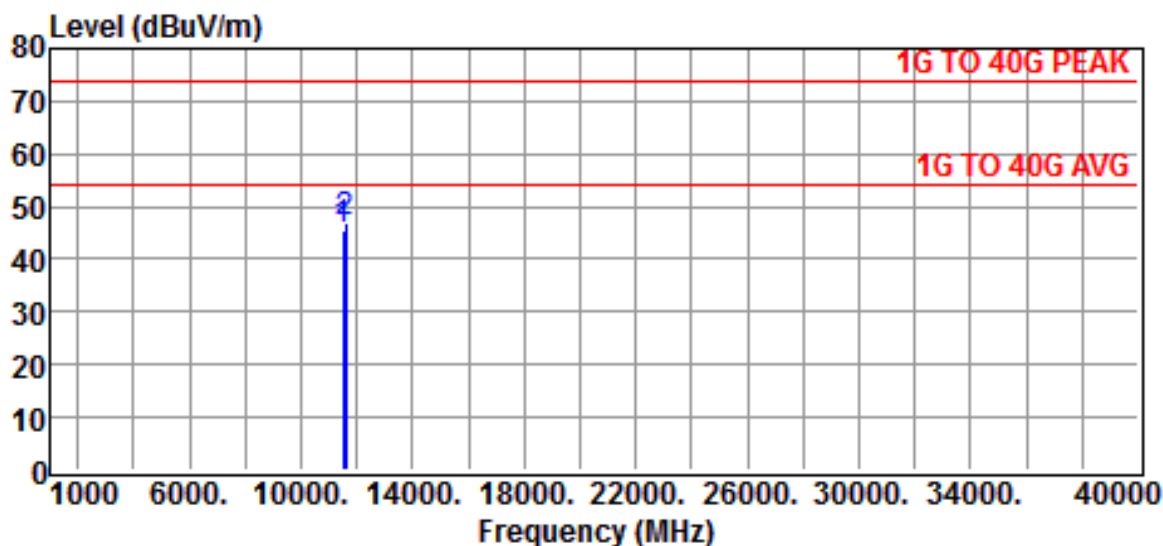
操作模式 : 發射接收

基本波頻率 : LO:5755MHz ,HI:5795MHz

(Local Frequency : LO:5755MHz ,HI:5795MHz)

測試結果 : 合格

測試者 : 何仁逸

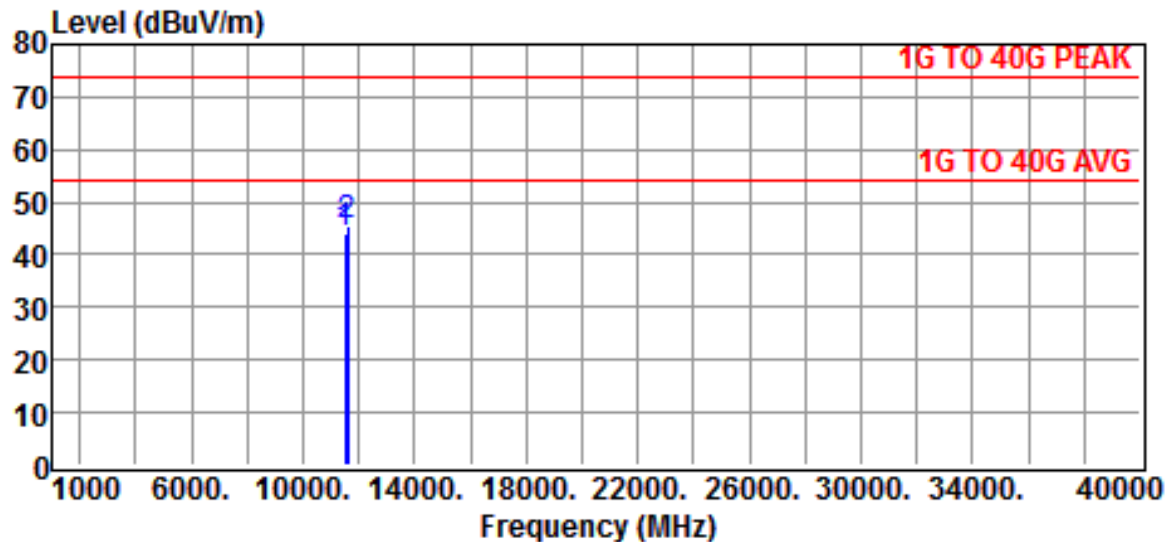


Site	:Chamber #2	Date	:2019-07-19
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 5G-N&AC40-Band 4		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
11510.0000	34.40	11.06	45.46	74.00	-28.54	Peak
11590.0000	35.77	11.08	46.85	74.00	-27.15	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 5G-N&AC40-Band 4		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
11510.0000	33.10	11.06	44.16	74.00	-29.84	Peak
11590.0000	34.54	11.08	45.62	74.00	-28.38	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.

D. 802.11 ac-80 Band 4

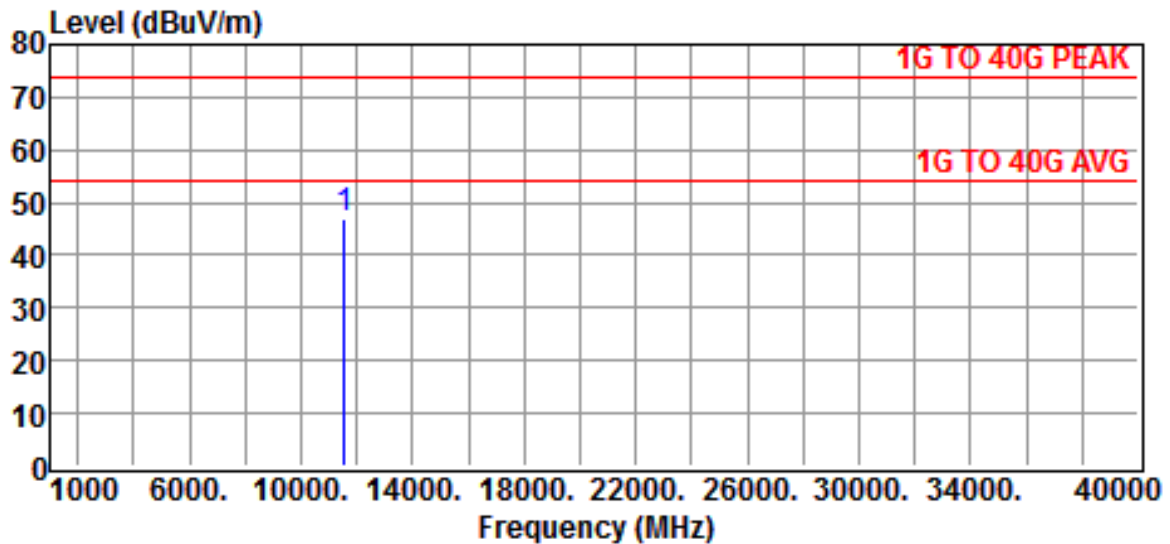
操作模式 : 發射接收

基本波頻率 : MI:5775MHz

(Local Frequency : MI:5775MHz)

測試結果 : 合格

測試者 : 何仁逸

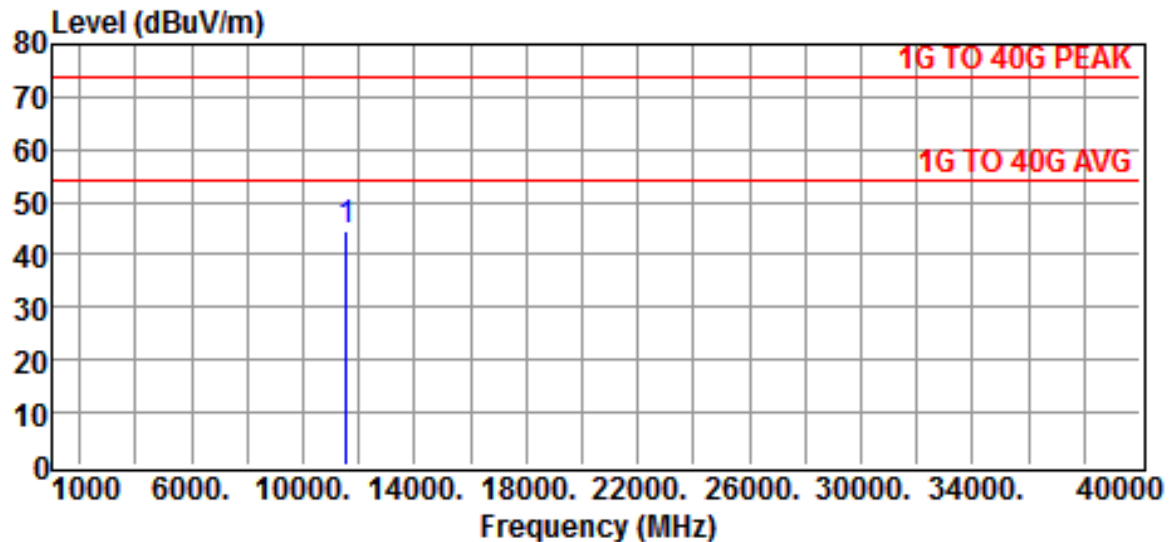


Site	:Chamber #2	Date	:2019-07-19
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 5G-AC80-Band 4		

Freq	Reading	Correction	Result	Limits	Over limit	Detector
MHz	dBuV	Factor dB	dBuV/m	dBuV/m	dB	
11550.0000	36.08	11.07	47.15	74.00	-26.85	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 5G-AC80-Band 4		

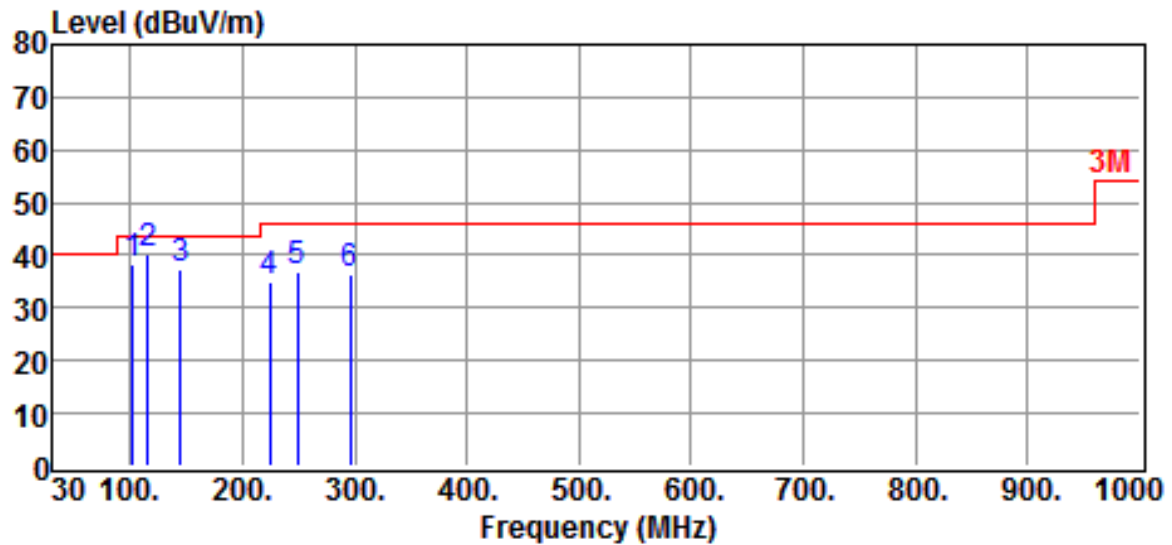
Freq	Reading	Correction	Result	Limits	Over limit	Detector
MHz	dBuV	Factor dB	dBuV/m	dBuV/m	dB	
11550.0000	33.34	11.07	44.41	74.00	-29.59	Peak

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

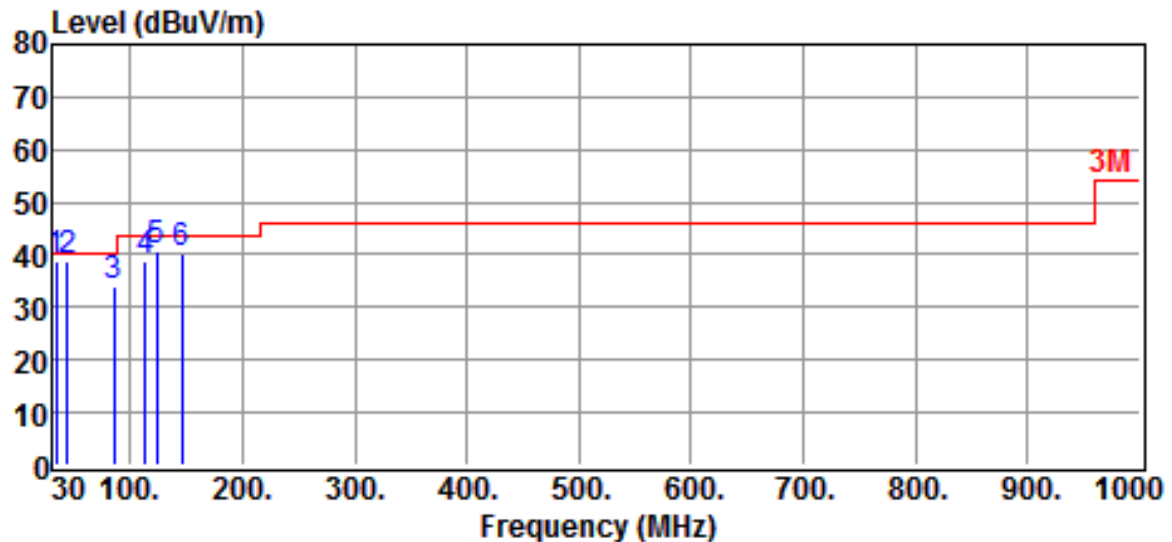


Site	:Chamber #2	Date	:2019-09-11
Limit	:3M	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:AC110V 60Hz	Temp.	:26 °C
Engineer	: Kazuma Ho	Humi.	:57 %
Test Mode	:Mode 1(有線傳輸)		

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.

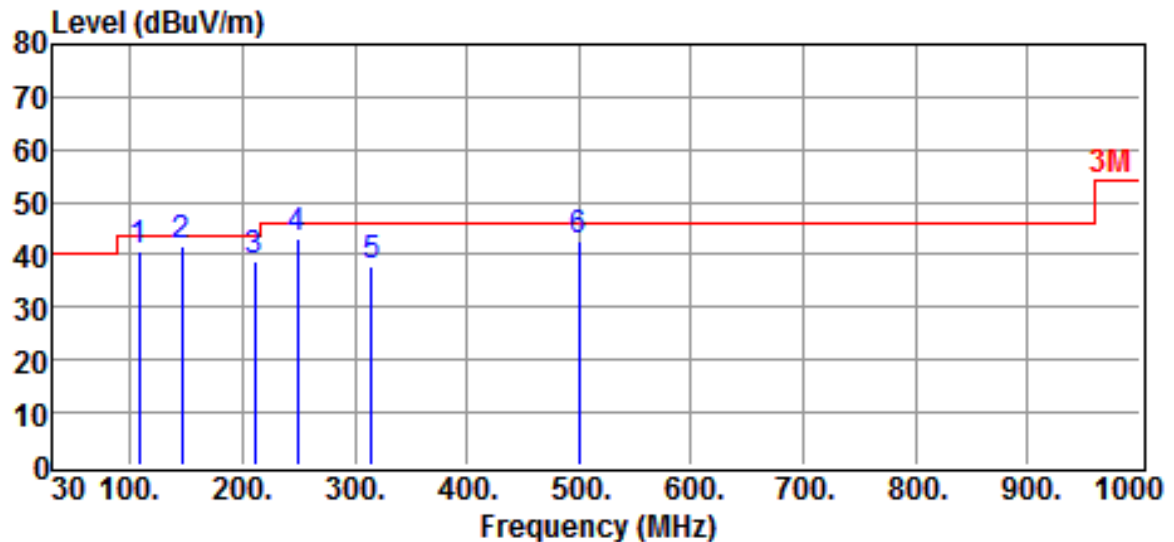


Site	:Chamber #2	Date	:2019-09-11
Limit	:3M	Ant. Pol.	:VERTICAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:AC110V 60Hz	Temp.	:26 °C
Engineer	: Kazuma Ho	Humi.	:57 %
Test Mode	:Mode 1(有線傳輸)		

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.

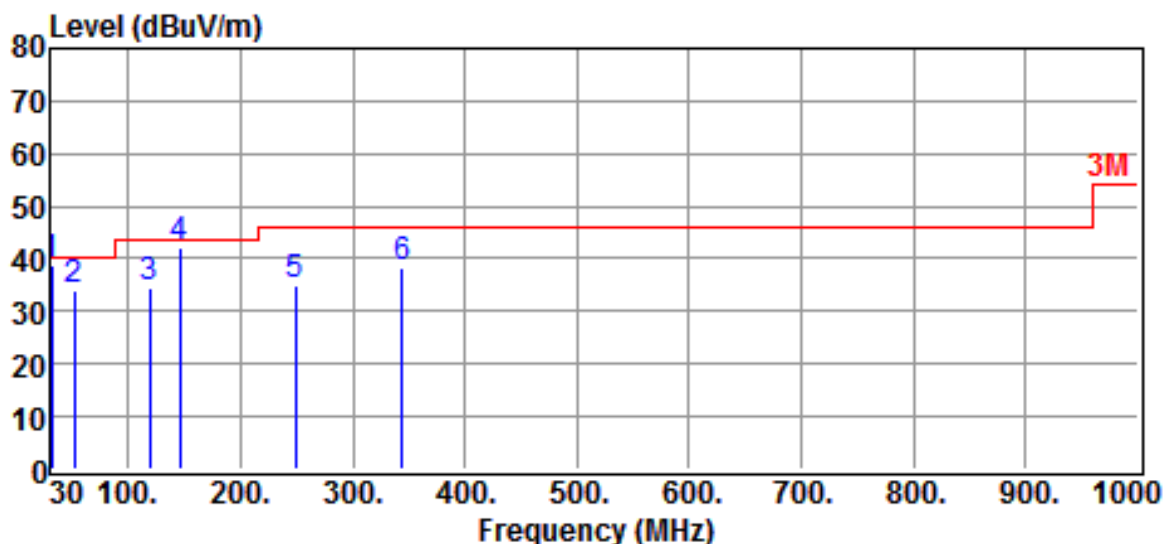


Site	:Chamber #2	Date	:2019-09-11
Limit	:3M	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC Battery	Temp.	:26 °C
Engineer	: Kazuma Ho	Humi.	:57 %
Test Mode	:Mode 2(無線傳輸)		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
107.6000	49.59	-8.93	40.66	43.50	-2.84	QP
146.4000	49.12	-7.37	41.75	43.50	-1.75	QP
210.4200	45.54	-6.64	38.90	43.50	-4.60	QP
249.2200	48.15	-5.18	42.97	46.00	-3.03	QP
315.1800	40.66	-2.84	37.82	46.00	-8.18	QP
499.4800	42.43	0.17	42.60	46.00	-3.40	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.

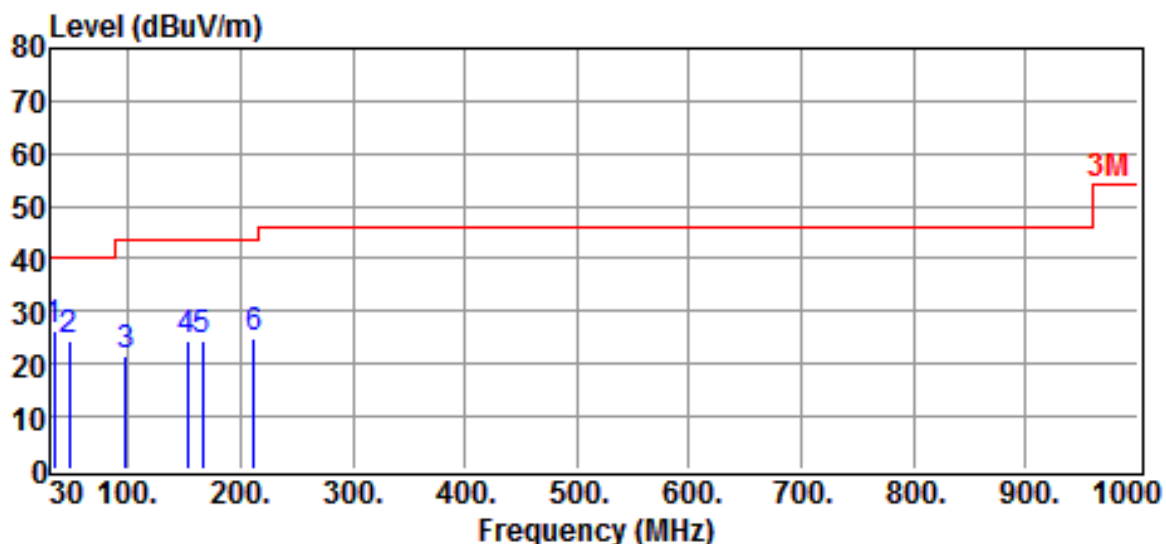


Site	:Chamber #2	Date	:2019-09-11
Limit	:3M	Ant. Pol.	:VERTICAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC Battery	Temp.	:26 °C
Engineer	: Kazuma Ho	Humi.	:57 %
Test Mode	:Mode 2(無線傳輸)		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
31.9400	40.52	-1.61	38.91	40.00	-1.09	QP
51.3400	46.54	-12.40	34.14	40.00	-5.86	QP
119.2400	42.59	-8.17	34.42	43.50	-9.08	QP
146.4000	49.53	-7.37	42.16	43.50	-1.34	QP
249.2200	40.37	-5.18	35.19	46.00	-10.81	QP
344.2800	40.62	-2.46	38.16	46.00	-7.84	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.



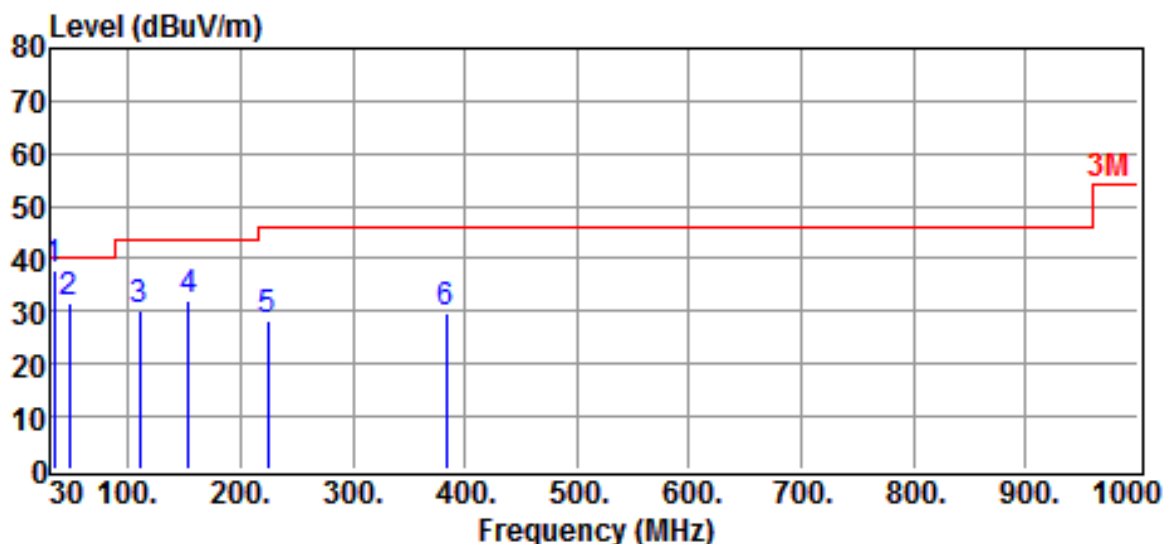
Site :CHAMBER #2
 Limit :3M
 EUT :無線數位影像系統
 Power Rating :AC110V 60Hz
 Engineer : Kazuma Ho
 Test Mode :Mode 3(Charging)

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.



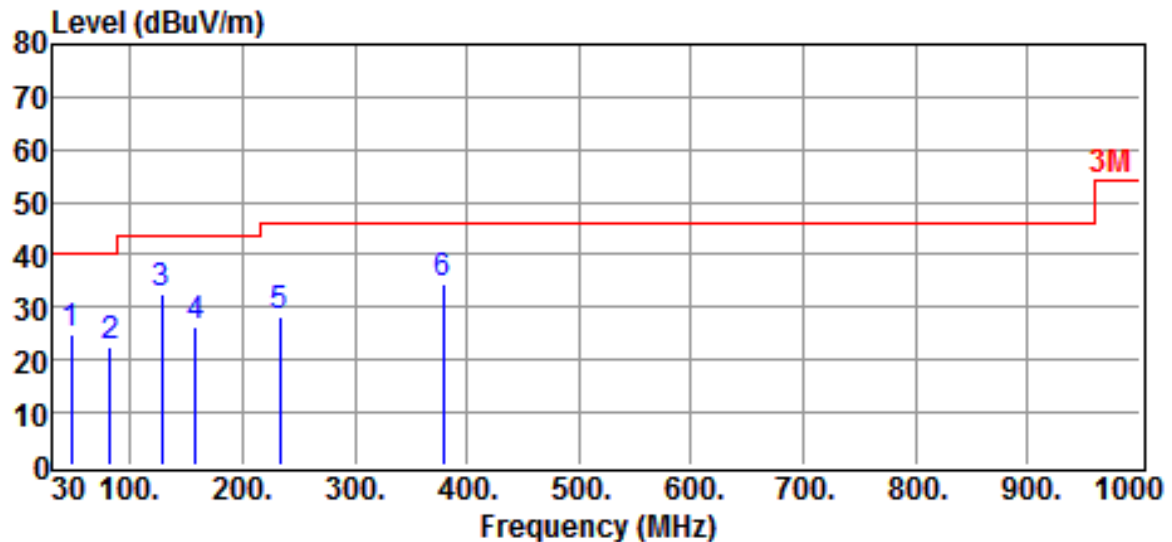
Site :CHAMBER #2
 Limit :3M
 EUT :無線數位影像系統
 Power Rating :AC110V 60Hz
 Engineer : Kazuma Ho
 Test Mode :Mode 3(Charging)

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.



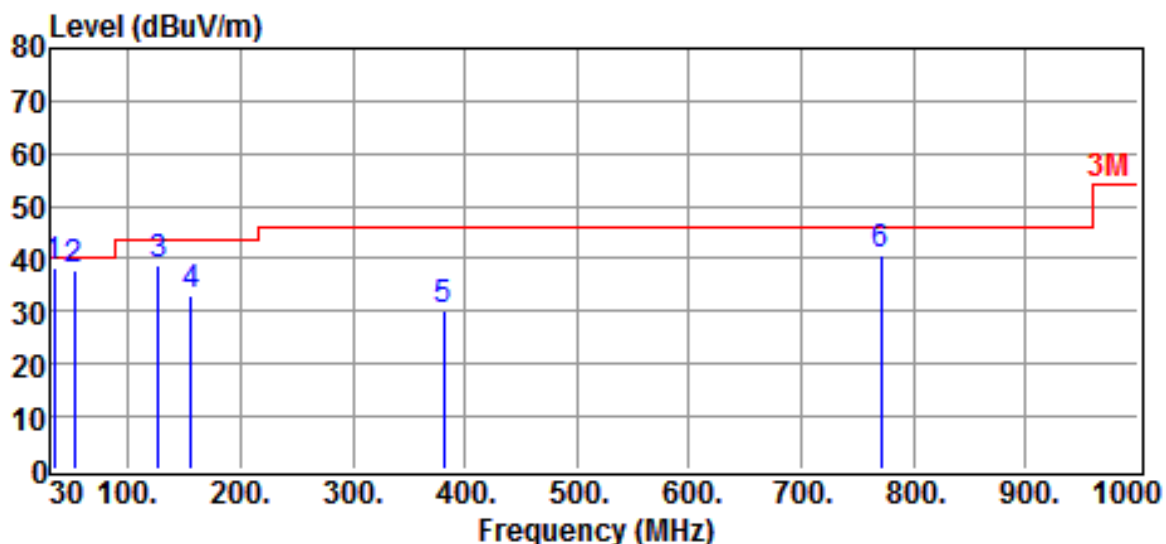
Site :CHAMBER #2
 Limit :3M
 EUT :無線數位影像系統
 Power Rating :AC110V 60Hz
 Engineer : Kazuma Ho
 Test Mode :Mode 4(Charging)

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	Date	:2019-11-08
Limit	:3M	Ant. Pol.	:VERTICAL
EUT	:無線數位影像系統	Model	:FXRC-03A
Power Rating	:AC110V 60Hz	Temp.	:22 °C
Engineer	: Kazuma Ho	Humi.	:66 %
Test Mode	:Mode 4(Charging)		

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

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。

4.6 輻射之測試配置

圖 1：量測頻率低於1GHz之測試配置

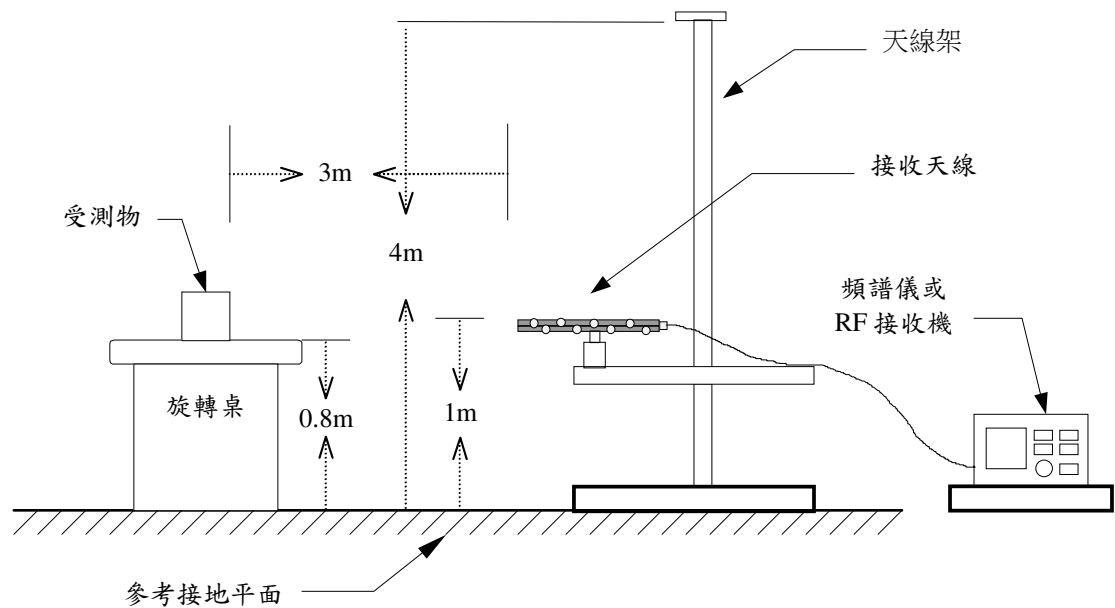
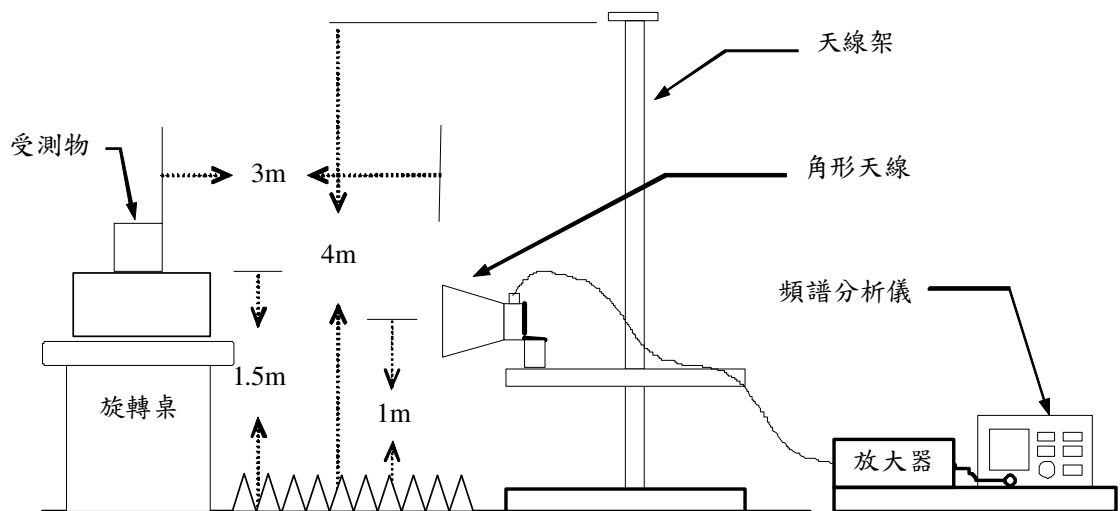


圖 2：量測頻率高於1GHz之測試配置



4.7 輻射量測之配置照片

(30~1000MHz)

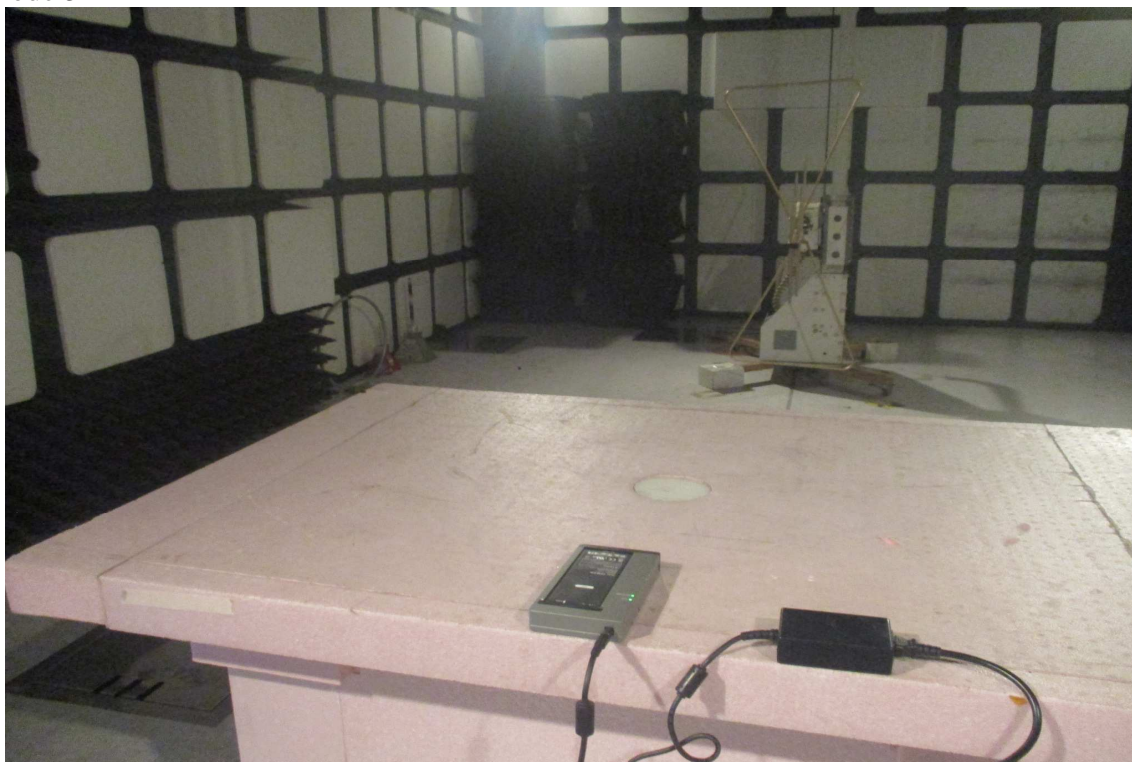
Mode 1



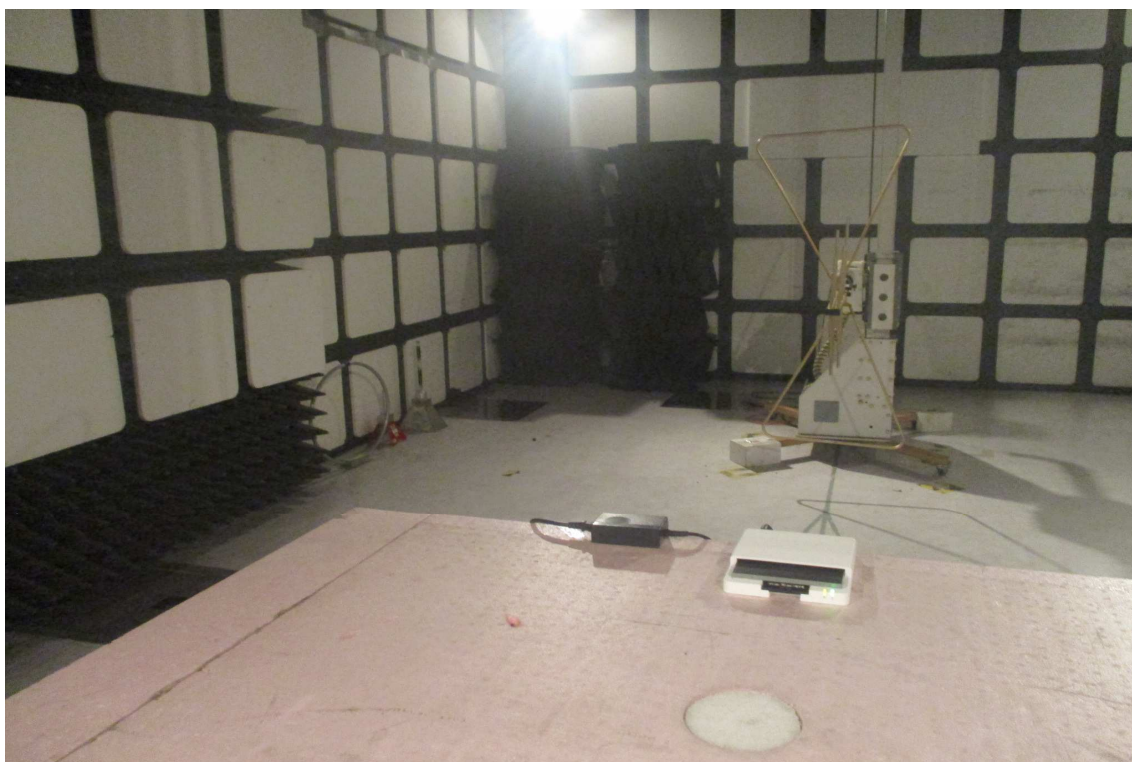
Mode 2



Mode 3

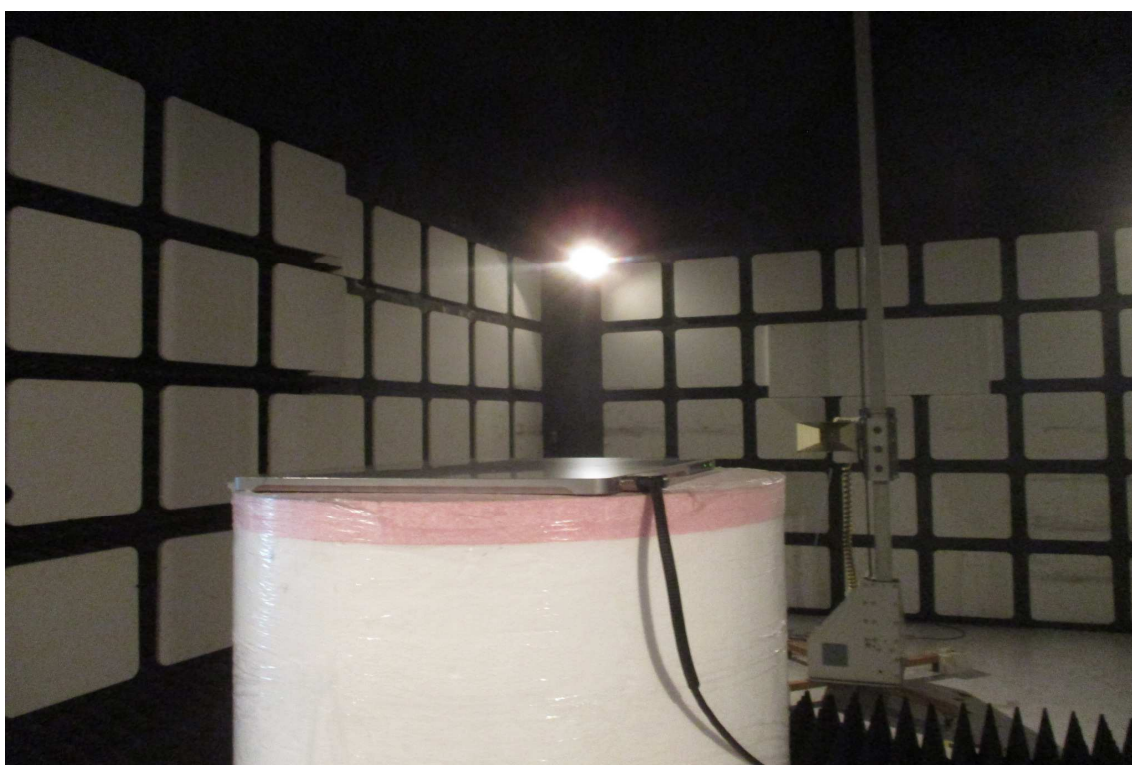


Mode 4



(1GHz 以上)

Mode 1



Mode 2



5 電源線傳導干擾之量測

5.1 適用標準

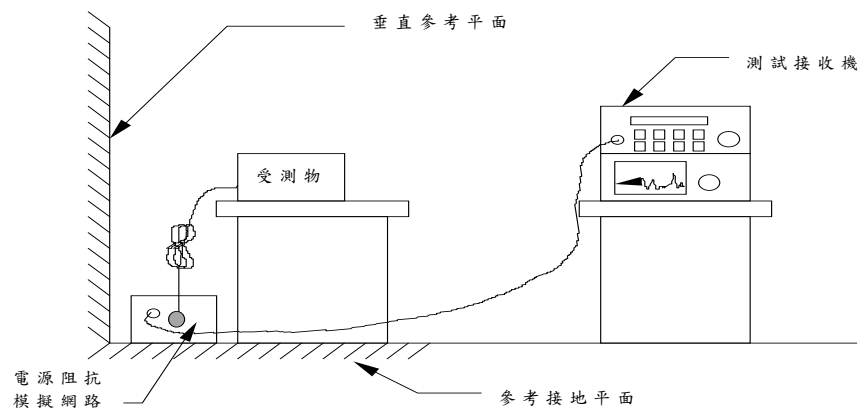
依據低功率射頻電機技術規範2.3節之要求。

5.2 測試方法

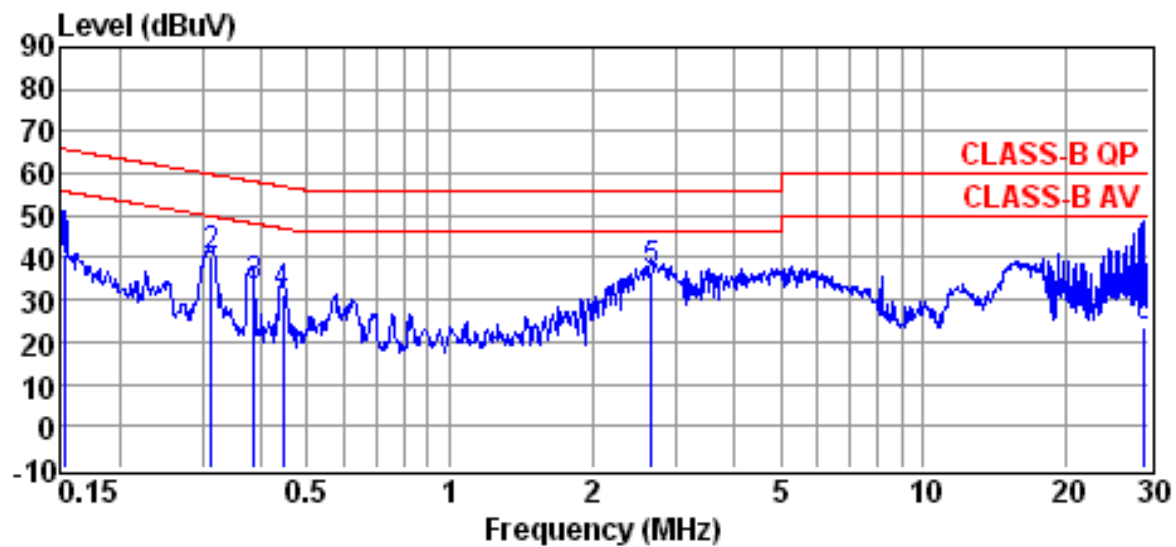
將待測物置於0.8米高的非金屬桌面，使其在工作狀態，待測物電源線接至電源線阻抗穩定網路上，從測試接收機記錄頻率由 0.15MHz 至 30MHz 之間之電源線傳導放射強度。

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
 Condition : CLASS-B QP
 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

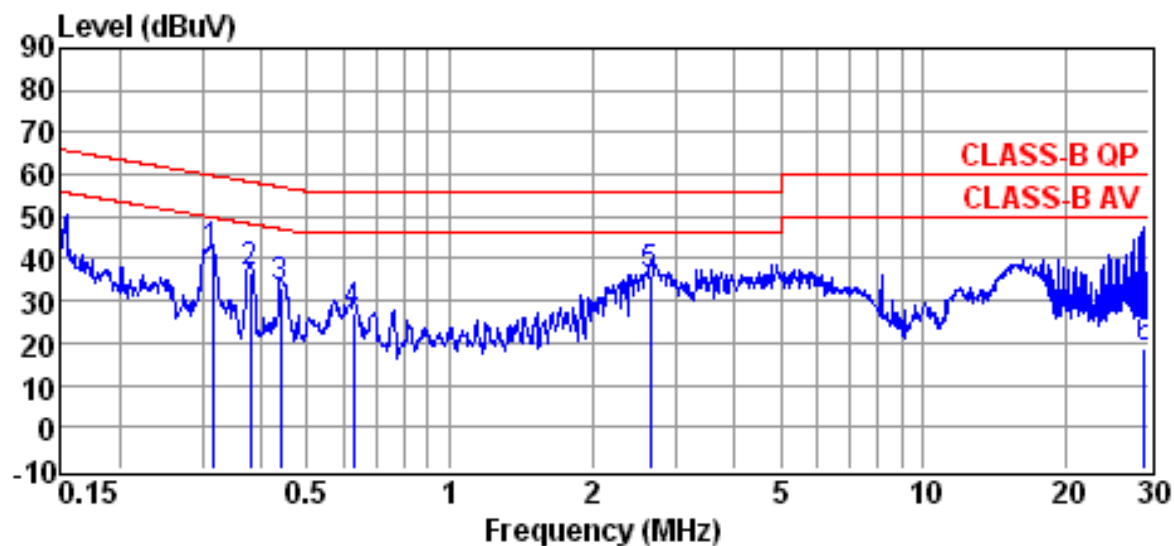
Date : 09-16-2019
 LISN : NEUTRAL

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

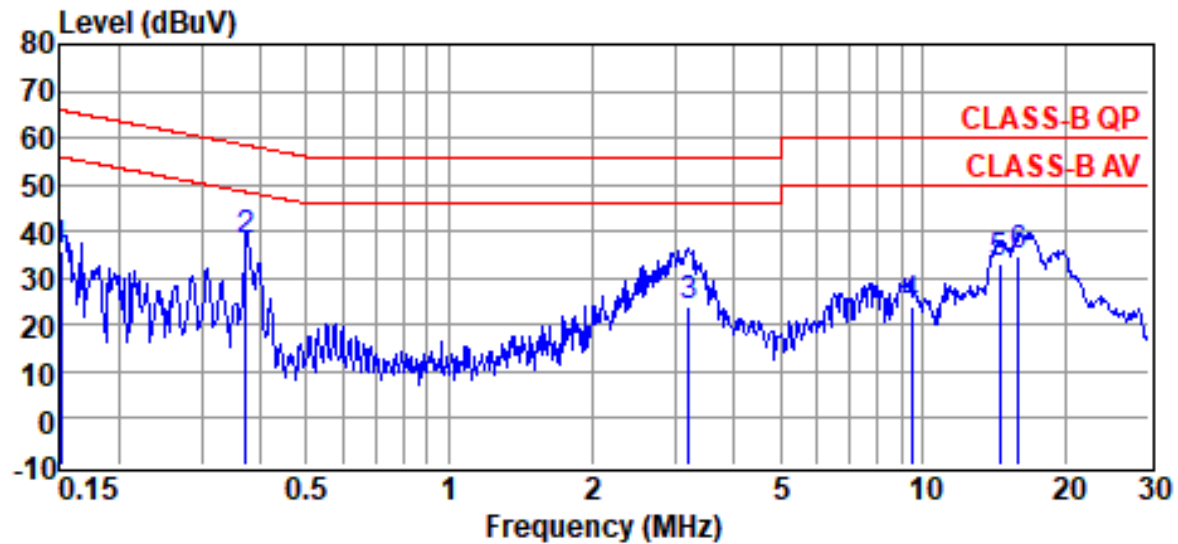


Site : conducted #1 Date : 09-16-2019
 Condition : CLASS-B QP LISN : LINE
 Tem / Hum : 25 °C / 65%
 Test Mode : Mode 1(有線傳輸)
 EUT : 無線數位影像系統
 Power Rating : AC110V 60Hz
 Engineer : Kazuma Ho Memo :

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



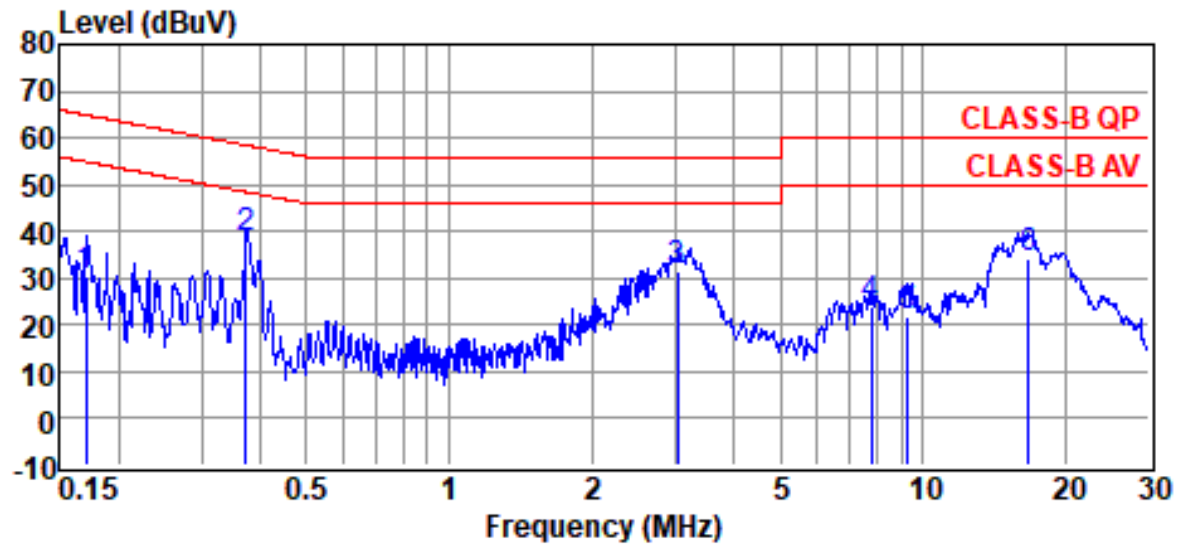
Site : conducted #1
 Condition : CLASS-B QP
 Tem / Hum : 25 °C / 68%
 Test Mode : Mode 3(Charging)
 EUT : 無線數位影像系統
 Power Rating : AC110V 60Hz
 Engineer : Kazuma Ho

Date : 2019-11-07
 LISN : NEUTRAL
 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

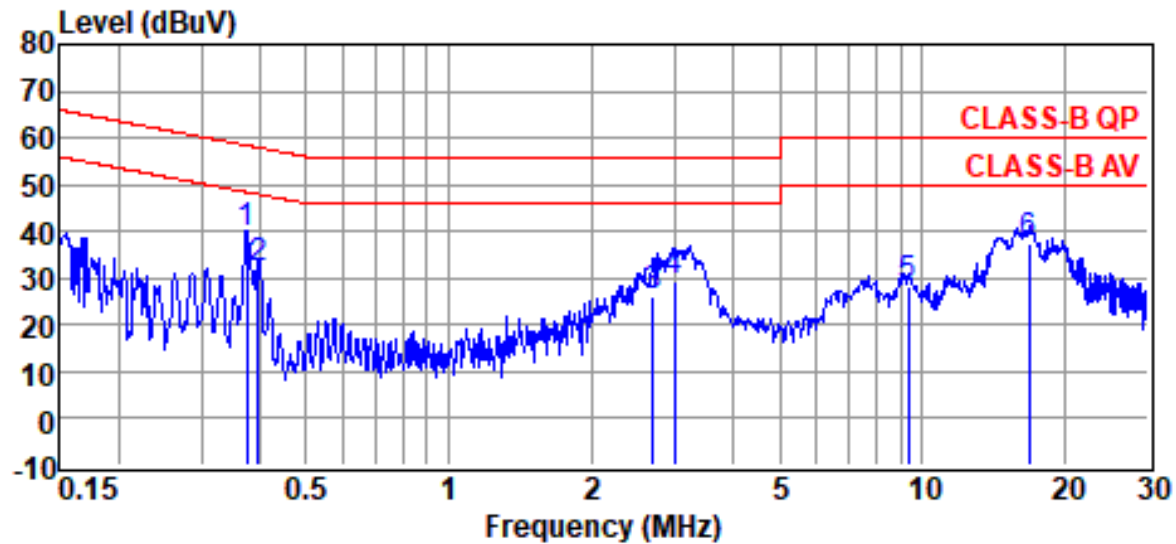
Memo :

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



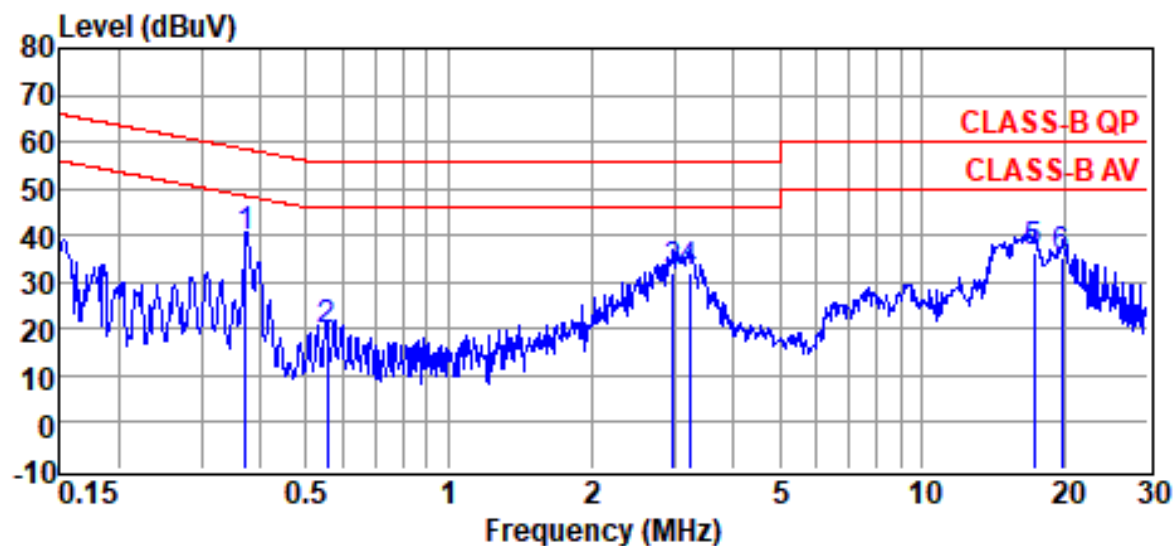
Site : conducted #1
 Condition : CLASS-B QP
 Tem / Hum : 25 °C / 68%
 Test Mode : Mode 4(Charging)
 EUT : 無線數位影像系統
 Power Rating : AC110V 60Hz
 Engineer : Kazuma Ho

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

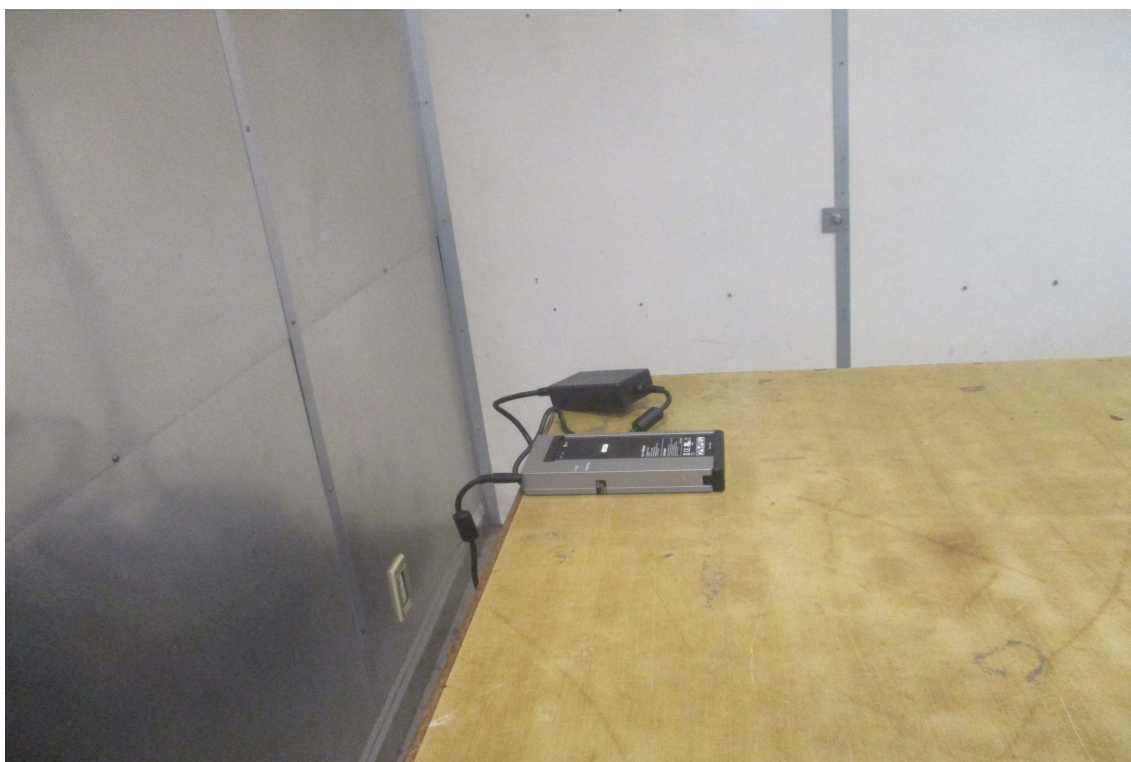
儀器名稱	製造者	型號	本次校驗日期	下次校驗日期
EMI Test Receiver	Rohde & Schwarz	ESCI	2019/10/18	2020/10/17
LISN	Schwarzbeck	NSLK 8127 PLC	2018/04/12	2020/04/10
LISN	Rohde & Schwarz	ESH2-Z5	2019/05/16	2020/05/15

5.7 傳導量測之配置照片

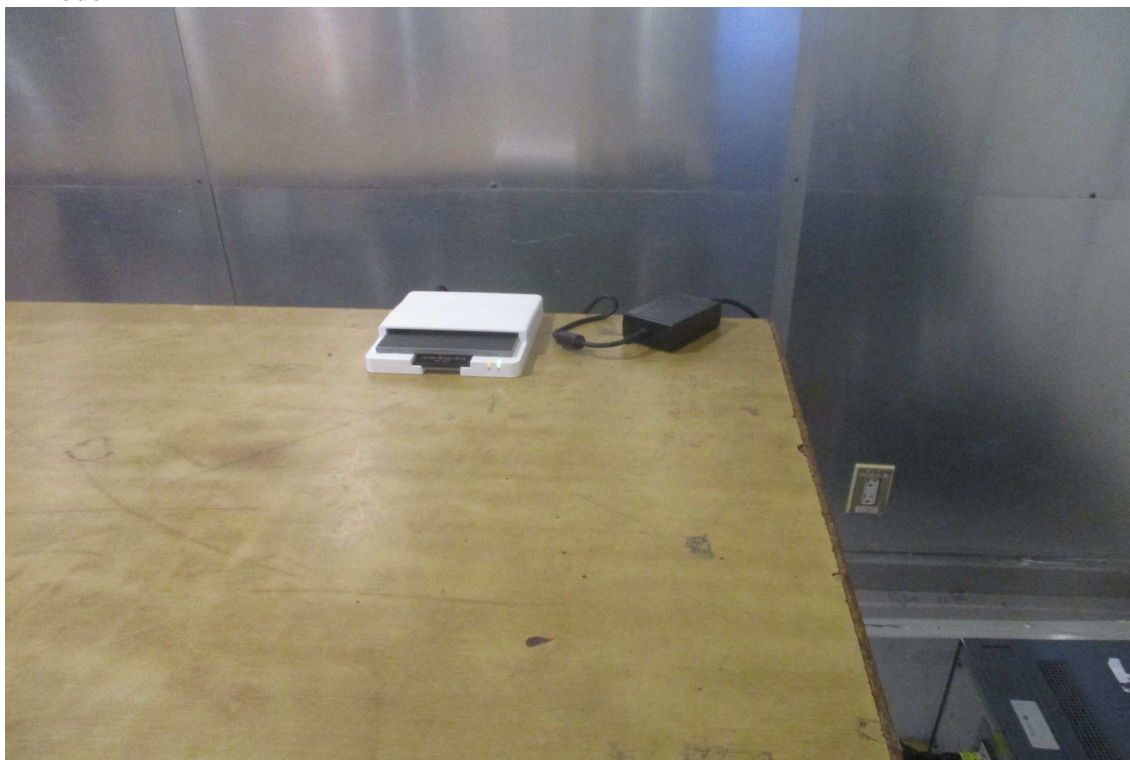
Mode 1



Mode 3



Mode 4



6 天線增益之要求

6.1 適用標準

依據低功率射頻電機技術規範4.7.8節之規定，天線之規格不受2.2 規定之限制。

依據低功率射頻電機技術規範4.7.3.1節(1)(C)、4.7.3.1節(2)(C)、4.7.3.1節(4)(C)及4.7.3.2節(3)之規定，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及最大功率頻譜密度。

依據低功率射頻電機技術規範4.7.3.1節(3)(C)之規定，使用超過23 dBi方向增益之指向性天線時，應依超過23 dBi天線方向增益的dBi總量，等量減少最大傳導輸出功率及最大功率頻譜密度。

依據低功率射頻電機技術規範4.7.3.3節之規定：

(3) 供固定式點對點操作時，使用方向增益超過6 dBi 之發射天線，可不需對應減少發射器之傳導輸出功率限制值。

(4) 除(3)外，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及最大功率頻譜密度。

6.2 天線增益

此裝置使用天線規格如下。

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	-2

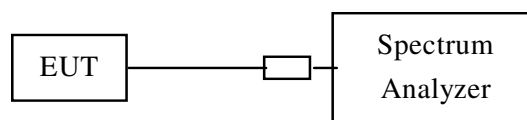
7 發射頻寬之量測

7.1 適用標準

依據低功率射頻電機技術規範4.7.5節之規定，在5.725 GHz～5.850 GHz 頻段操作之設備，其6 dB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	2019/10/25	2020/10/24
Attenuator	WEINSCHEL ENGINEERING	AS3696	2018/12/13	2019/12/12

7.4 發射頻寬之量測結果

測試日期 : Jul.17, 2019
測試結果 : 合格

環境溫度 : 24°C

環境濕度 : 65 %
測試者 : 何仁逸

5.8GHz(802.11a) – ANT 0

- a) Channel Low : 6 dB 發射頻帶寬度為 16.50 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 16.50 MHz。

5.8GHz(802.11a) – ANT 1

- a) Channel Low : 6 dB 發射頻帶寬度為 16.50 MHz。
- b) Channel Middle : 6 dB 發射頻帶寬度為 16.50 MHz。
- c) Channel High : 6 dB 發射頻帶寬度為 16.50 MHz。

5.8GHz(802.11a) – ANT 2

- a) Channel Low : 6 dB 發射頻帶寬度為 16.50 MHz。
- b) Channel Middle : 6 dB 發射頻帶寬度為 16.50 MHz。
- c) Channel High : 6 dB 發射頻帶寬度為 16.50 MHz。

5.8GHz(802.11n/ac -20)- ANT 0

- 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 17.70MHz。
- c) Channel High : 6 dB 發射頻帶寬度為 17.76 MHz。

5.8GHz(802.11n/ac -20) -ANT 1

- a) Channel Low : 6 dB 發射頻帶寬度為 17.76 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 17.76 MHz。

5.8GHz(802.11n/ac -20) -ANT 2

- a) Channel Low : 6 dB 發射頻帶寬度為 17.76 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 17.76 MHz。

5.8GHz(802.11n/ac -40)- ANT 0

- a) Channel Low : 6 dB 發射頻帶寬度為 36.50 MHz。
- b) Channel High : 6 dB 發射頻帶寬度為 36.50 MHz。

5.8GHz(802.11n/ac -40) ANT 1

- a) Channel Low : 6 dB 發射頻帶寬度為 36.50 MHz。
- b) Channel High : 6 dB 發射頻帶寬度為 36.40 MHz。

5.8GHz(802.11n/ac -40) ANT 2

- a) Channel Low : 6 dB 發射頻帶寬度為 36.50 MHz。
- b) Channel High : 6 dB 發射頻帶寬度為 36.40 MHz。

5.8GHz(802.11ac -80)- ANT 0

- a) Channel Middle : 6 dB 發射頻帶寬度為 75.96 MHz。

5.8GHz(802.11ac -80)- ANT 1

- a) Channel Middle : 6 dB 發射頻帶寬度為 75.96 MHz。

5.8GHz(802.11ac -80)- ANT 2

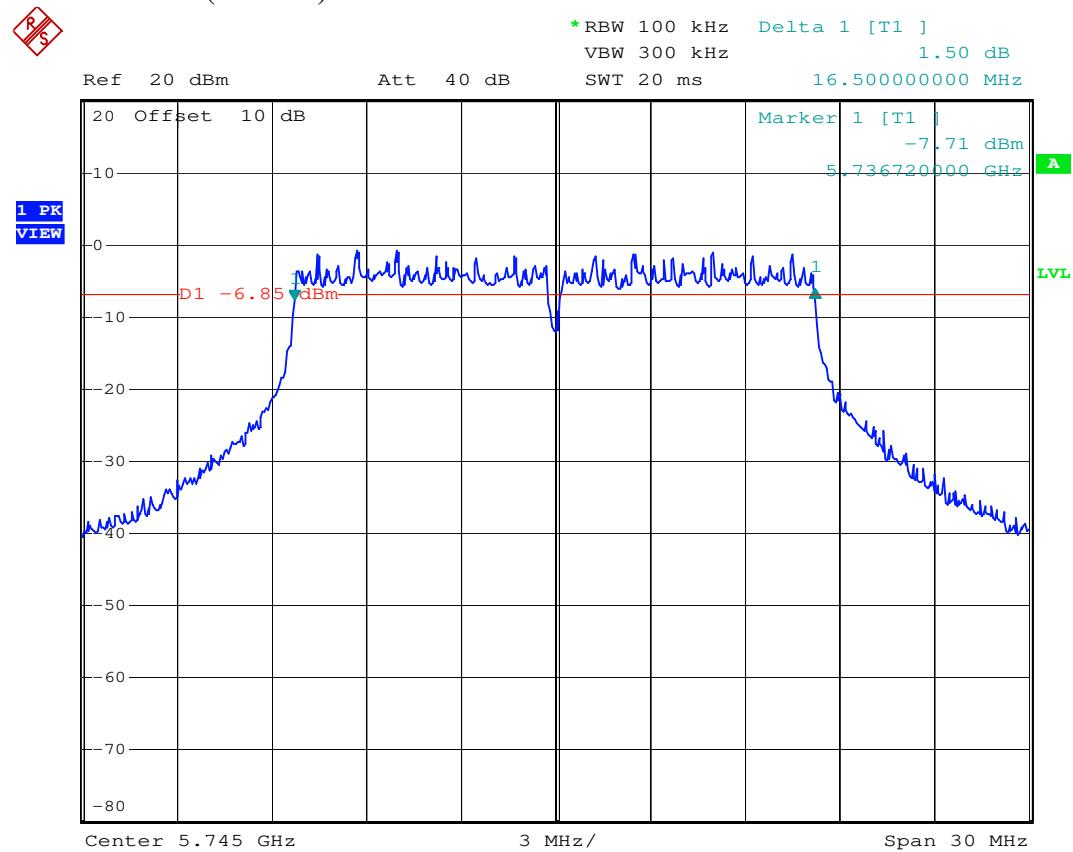
- a) Channel Middle : 6 dB 發射頻帶寬度為 75.96 MHz。

註：

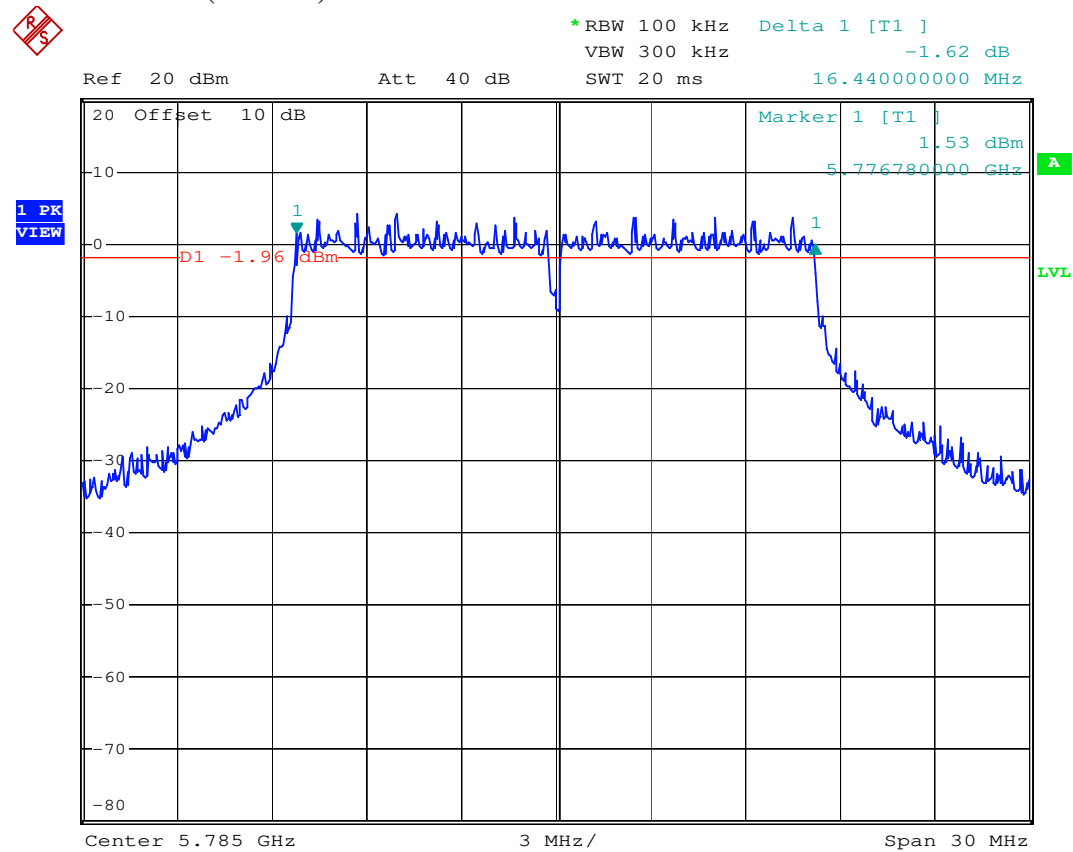
1. 本實驗室發射頻寬檢驗之擴充不確定度1500Hz。
2. 繪圖資料請參考下頁。

Mode: 5.8GHz(802.11a) Band 4/ Channel Low

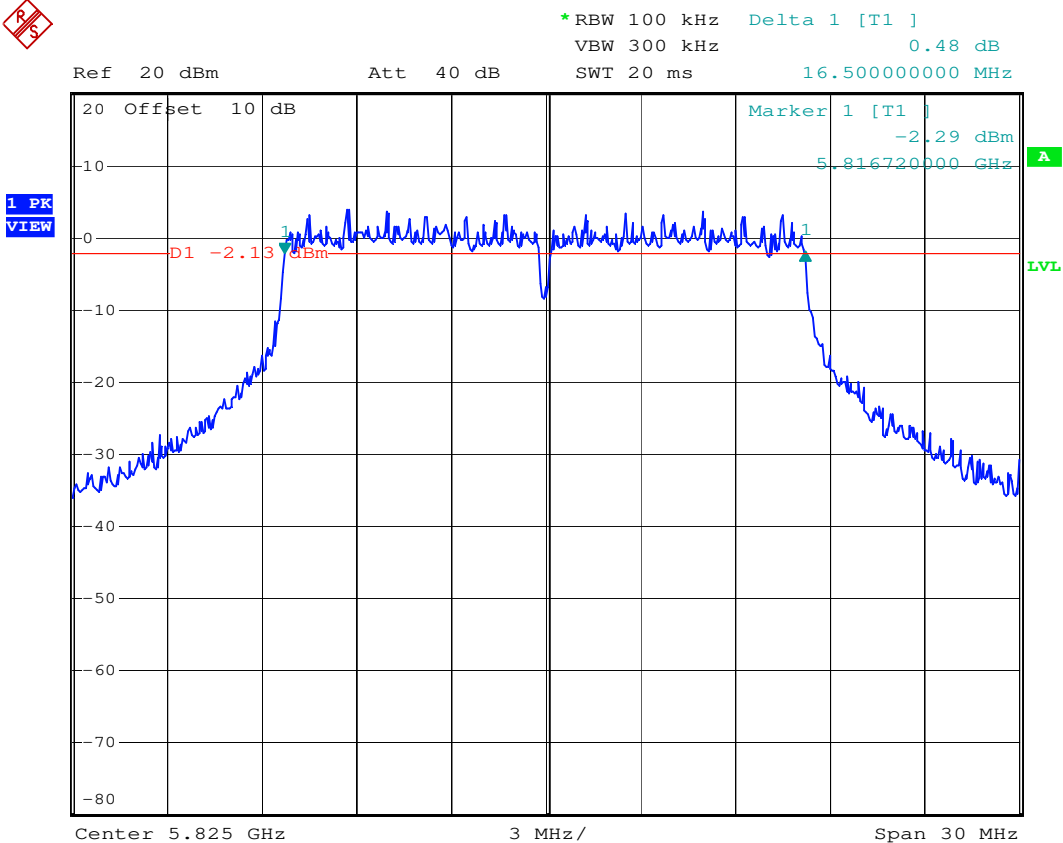
ANT 0



Mode: 5.8GHz(802.11a) Band 4/ Channel Middle

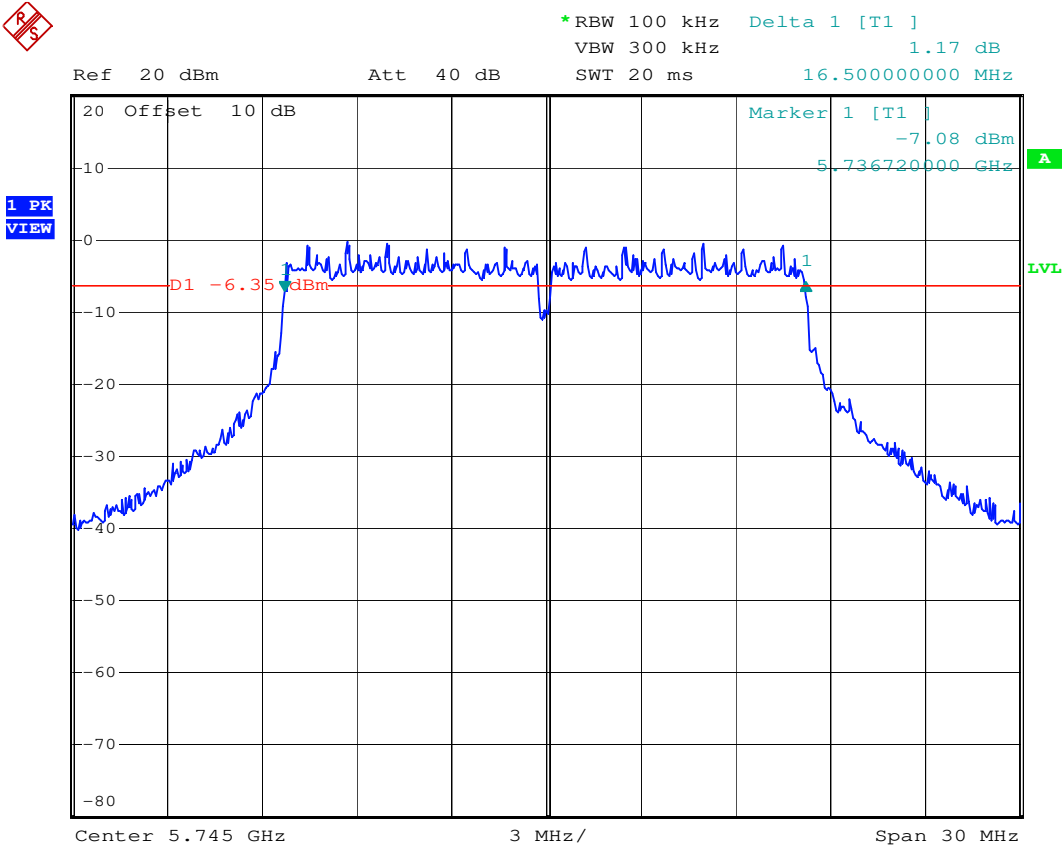


Mode: 5.8GHz(802.11a) Band 4 / Channel High

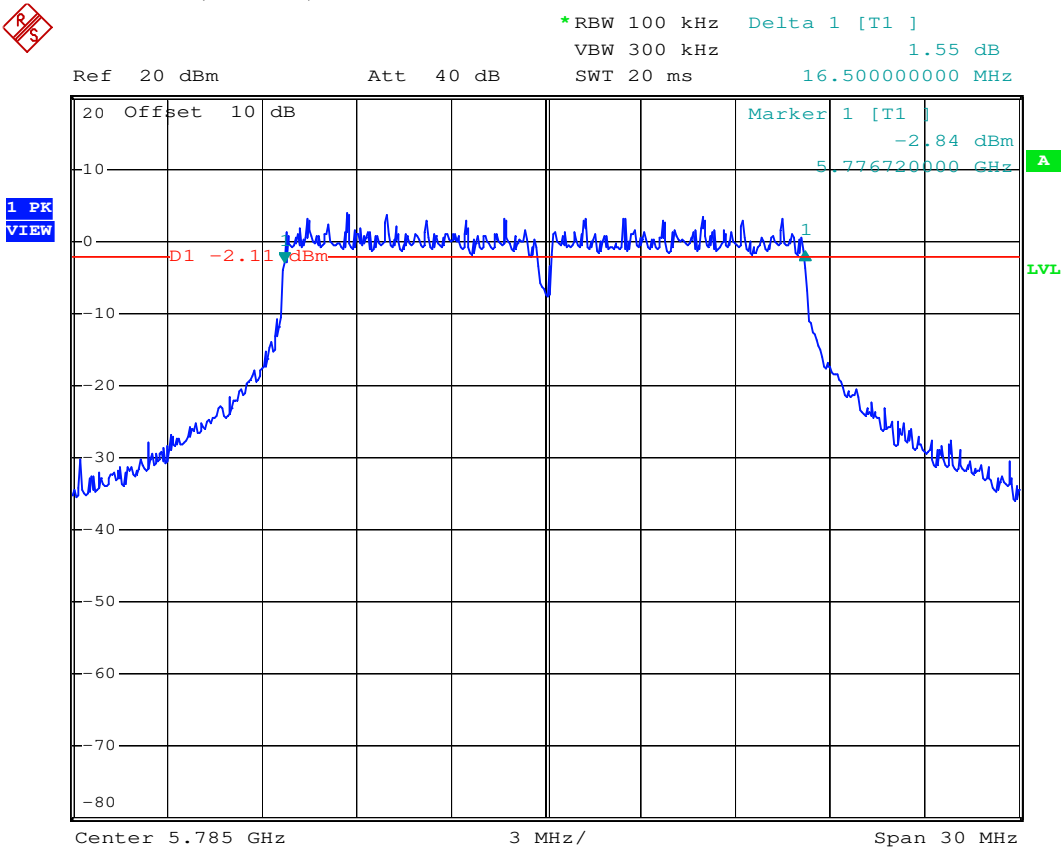


Mode: 5.8GHz(802.11a) Band 4/ Channel Low

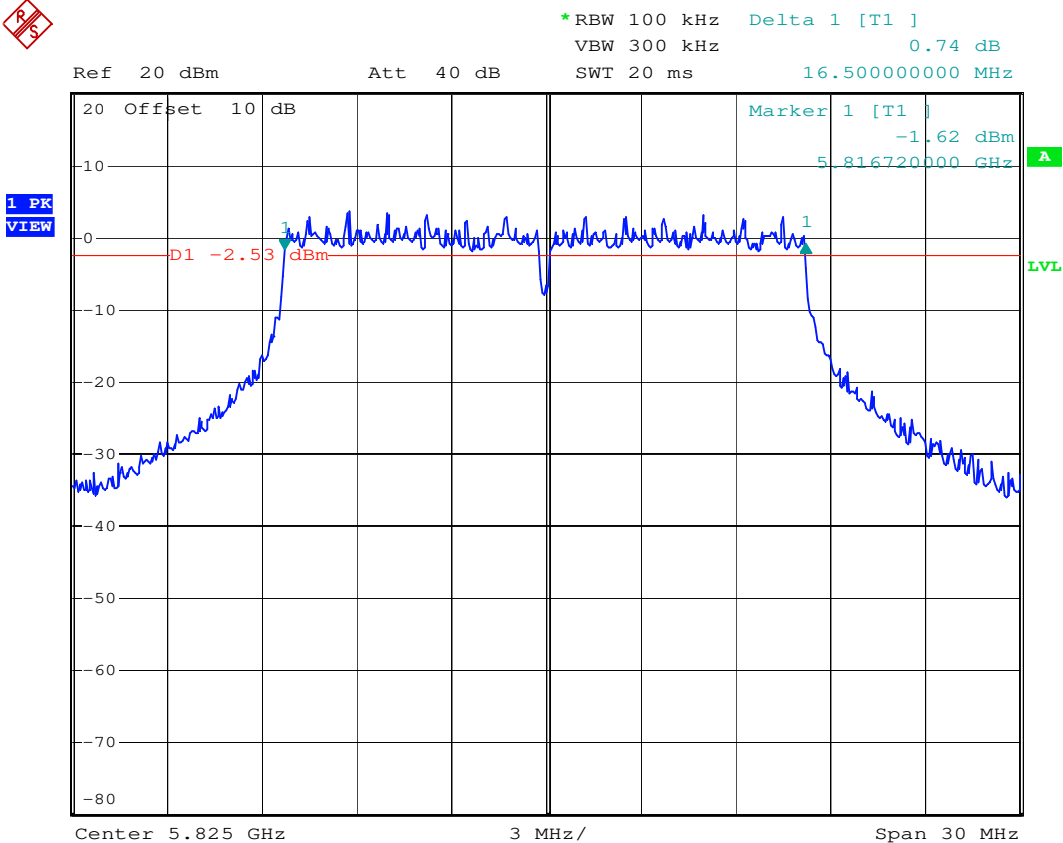
ANT 1



Mode: 5.8GHz(802.11a) Band 4/ Channel Middle

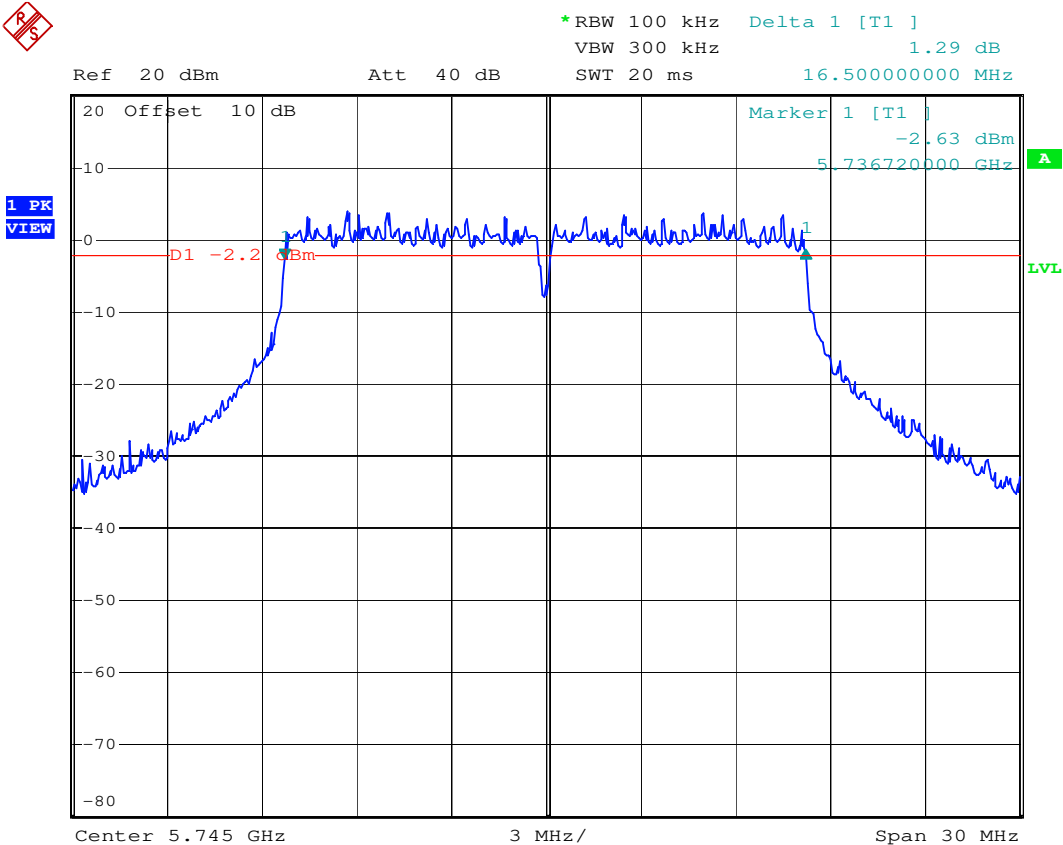


Mode: 5.8GHz(802.11a) Band 4 / Channel High

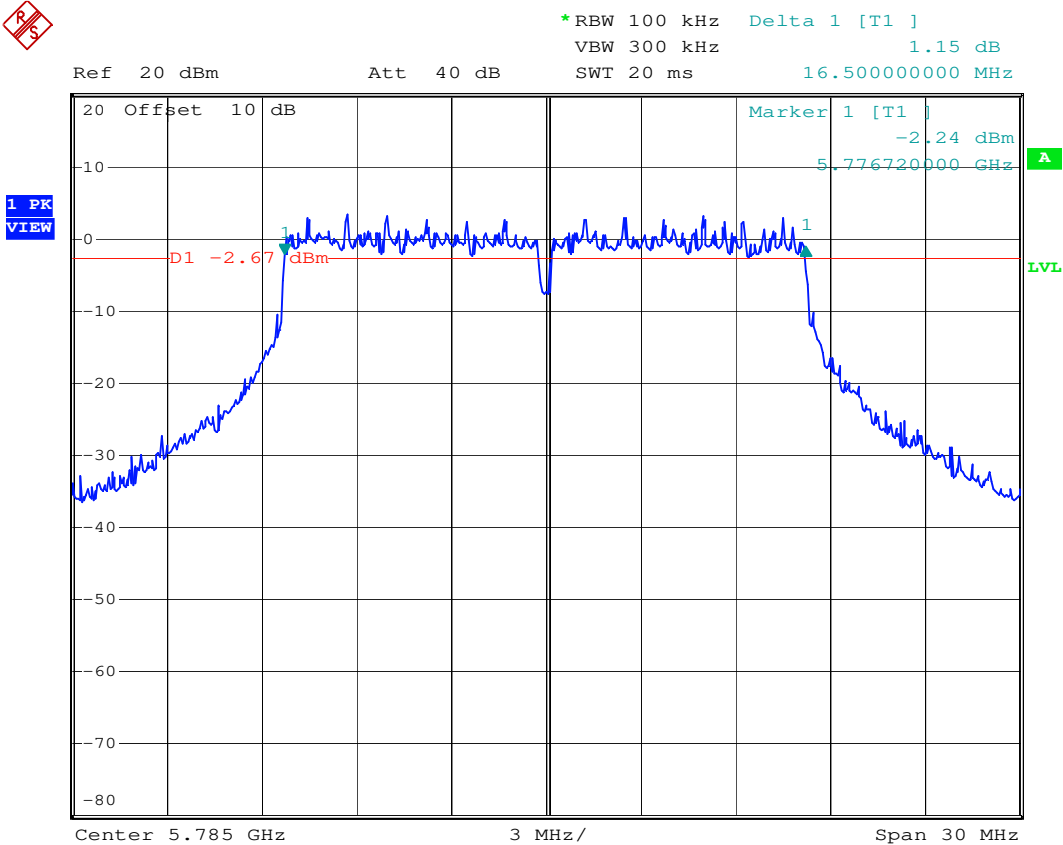


Mode: 5.8GHz(802.11a) Band 4/ Channel Low

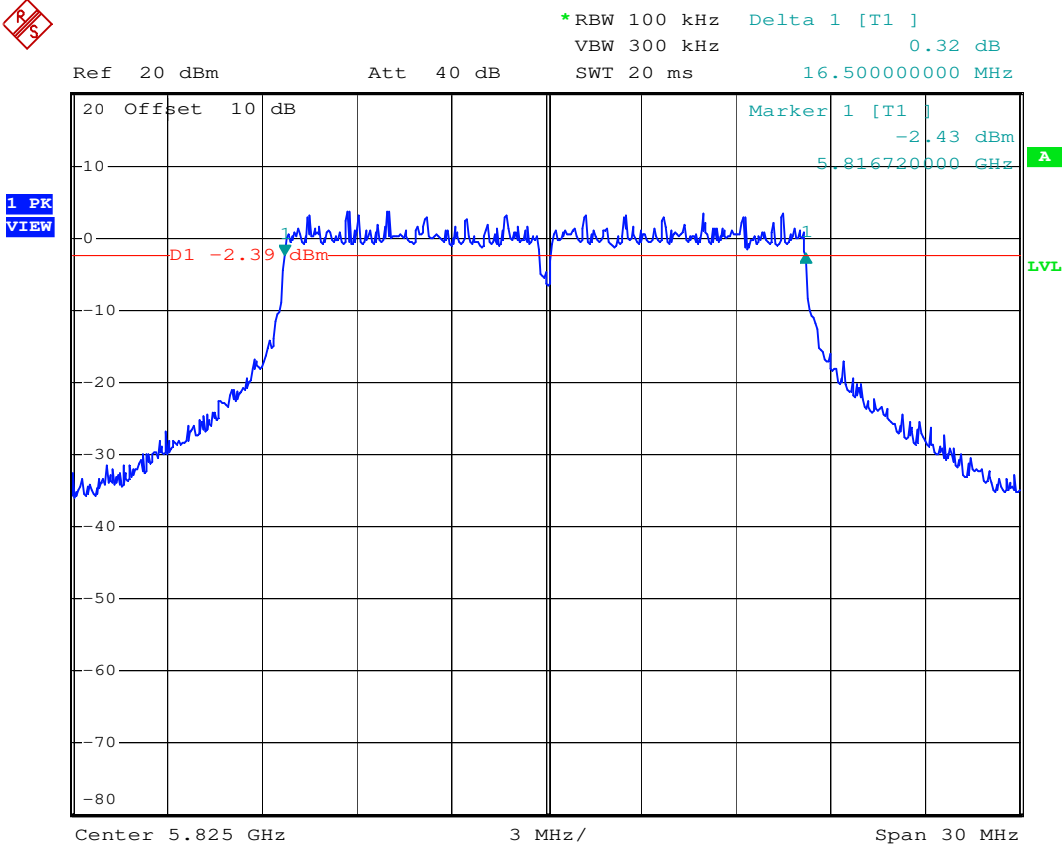
ANT 2



Mode: 5.8GHz(802.11a) Band 4/ Channel Middle

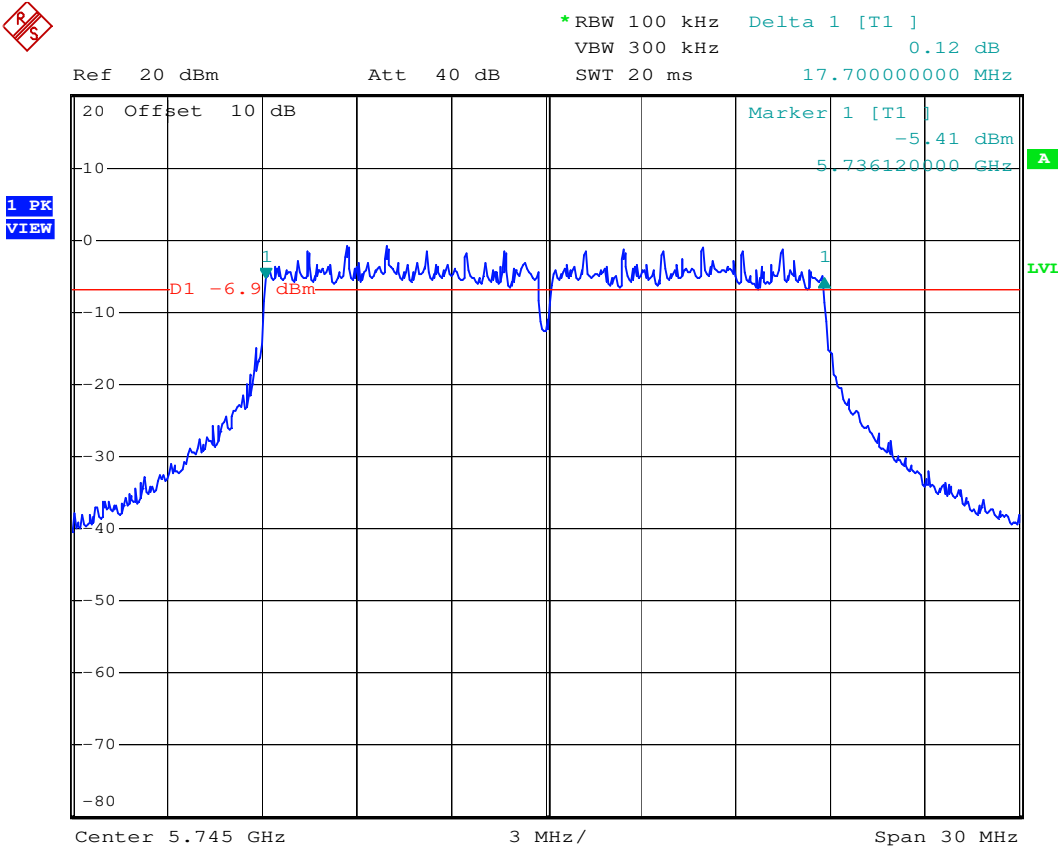


Mode: 5.8GHz(802.11a) Band 4 / Channel High

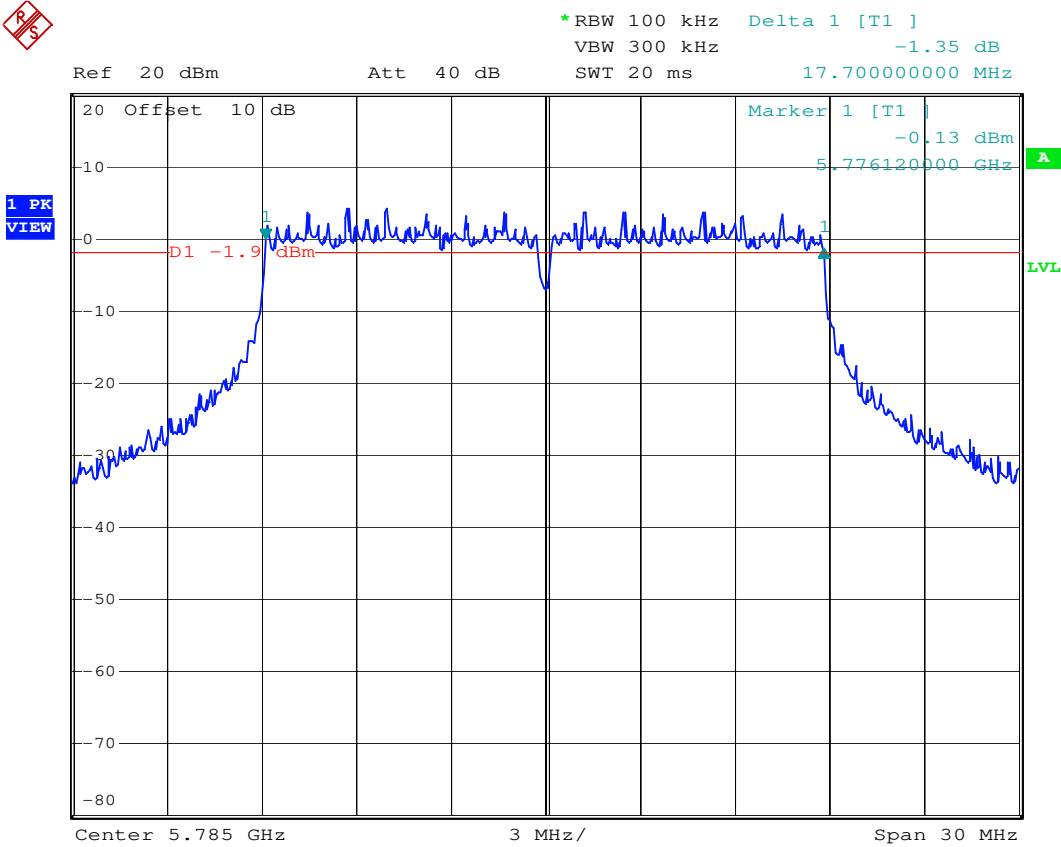


Mode: 5.8GHz(802.11n/ac -20)Band 4 / Channel Low

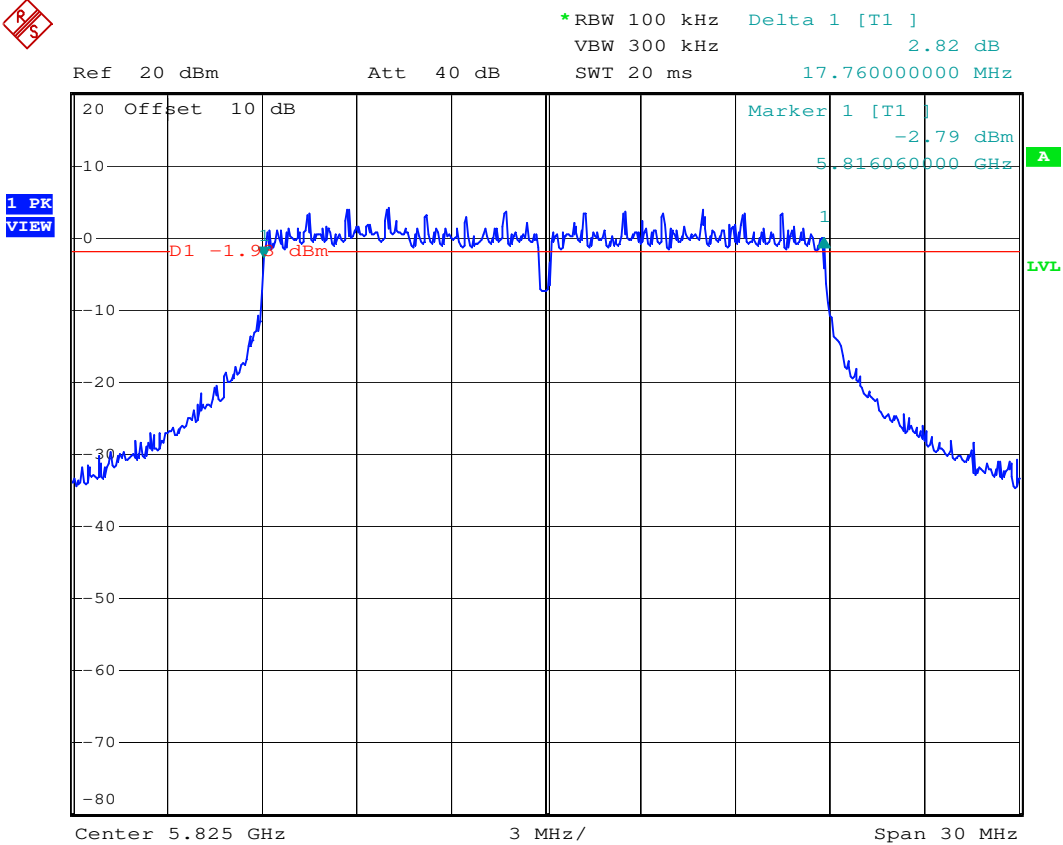
ANT 0



Mode: 5.8GHz(802.11n/ac -20) Band 4/ Channel Middle

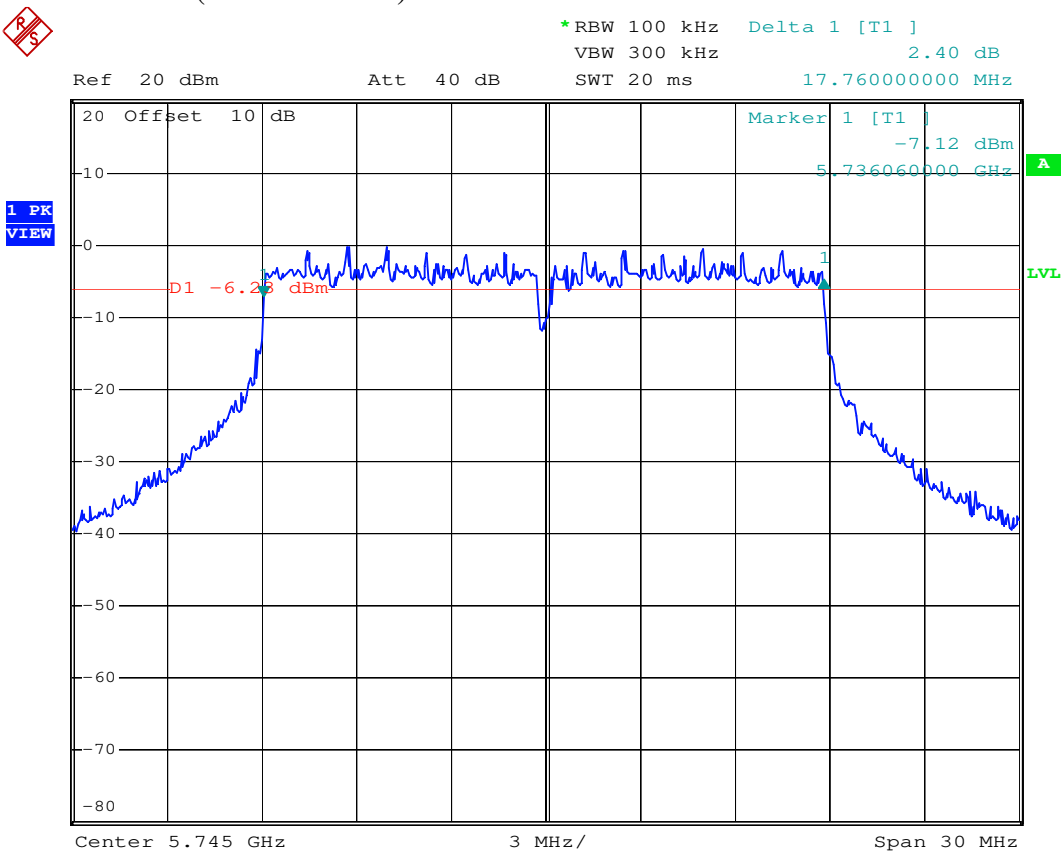


Mode: 5.8GHz(802.11n/ac -20)Band 4/ Channel High

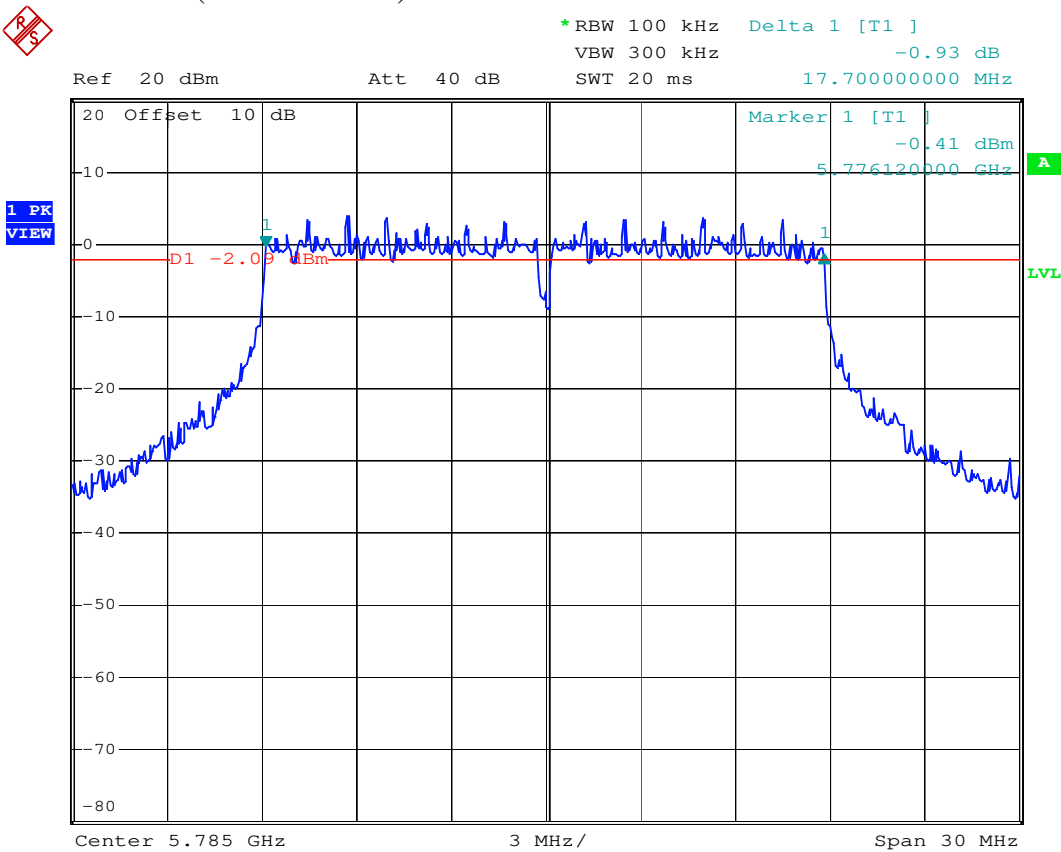


Mode: 5.8GHz(802.11n/ac -20)Band 4 / Channel Low

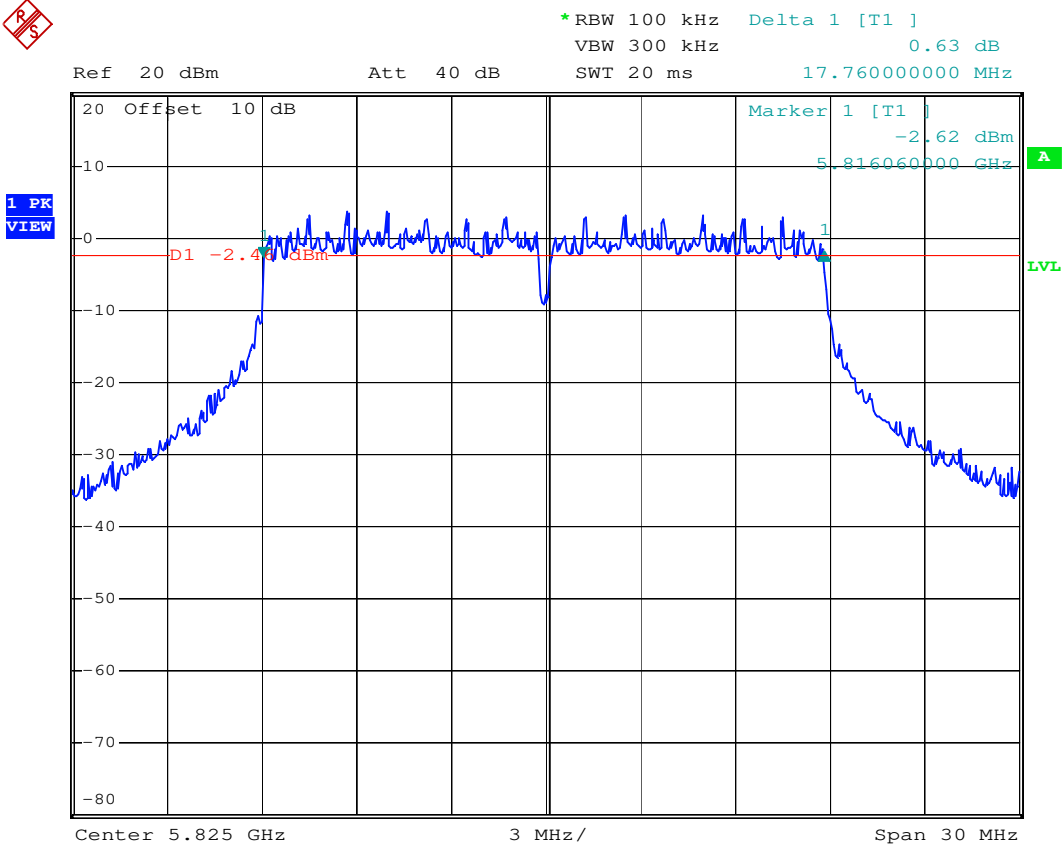
ANT 1



Mode: 5.8GHz(802.11n/ac -20) Band 4/ Channel Middle

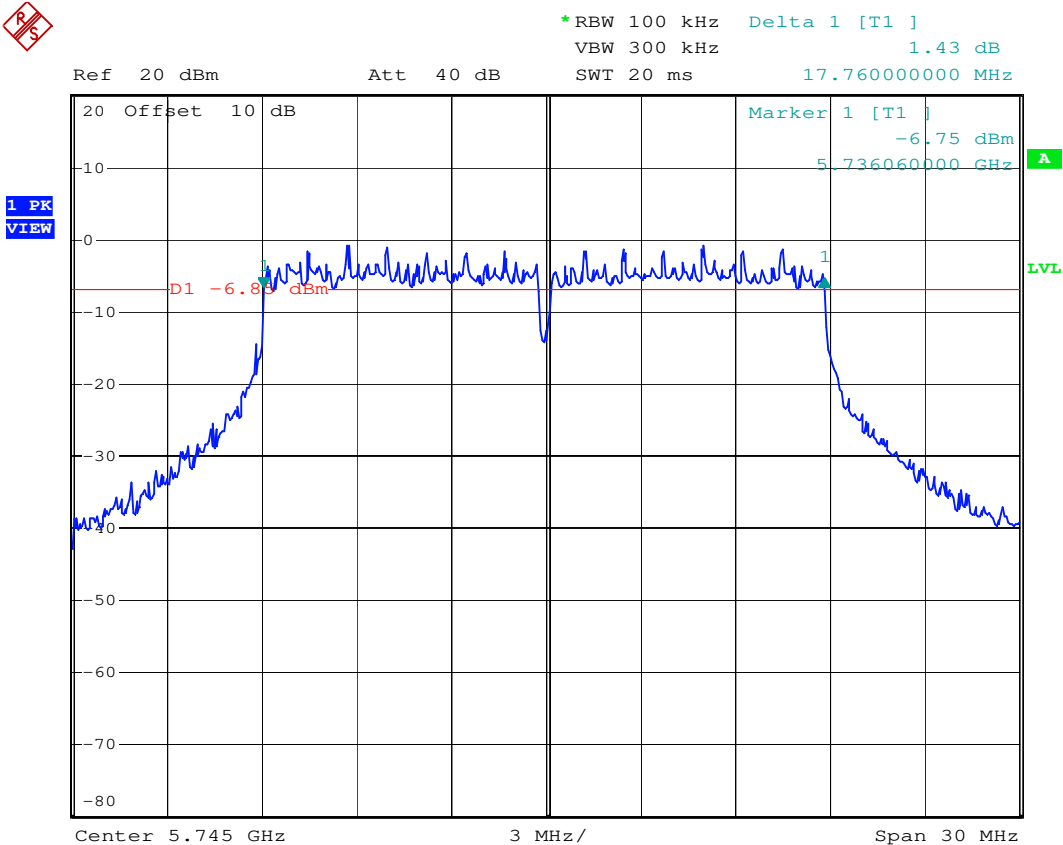


Mode: 5.8GHz(802.11n/ac -20)Band 4/ Channel High

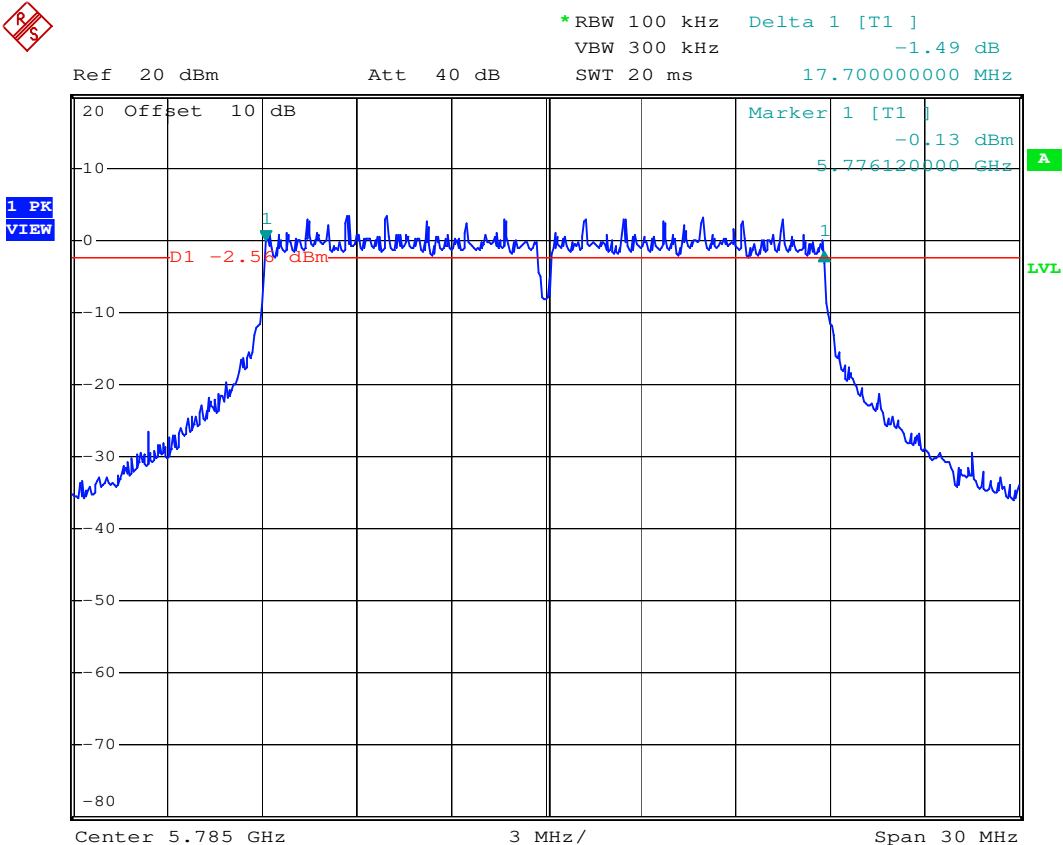


Mode: 5.8GHz(802.11n/ac -20)Band 4 / Channel Low

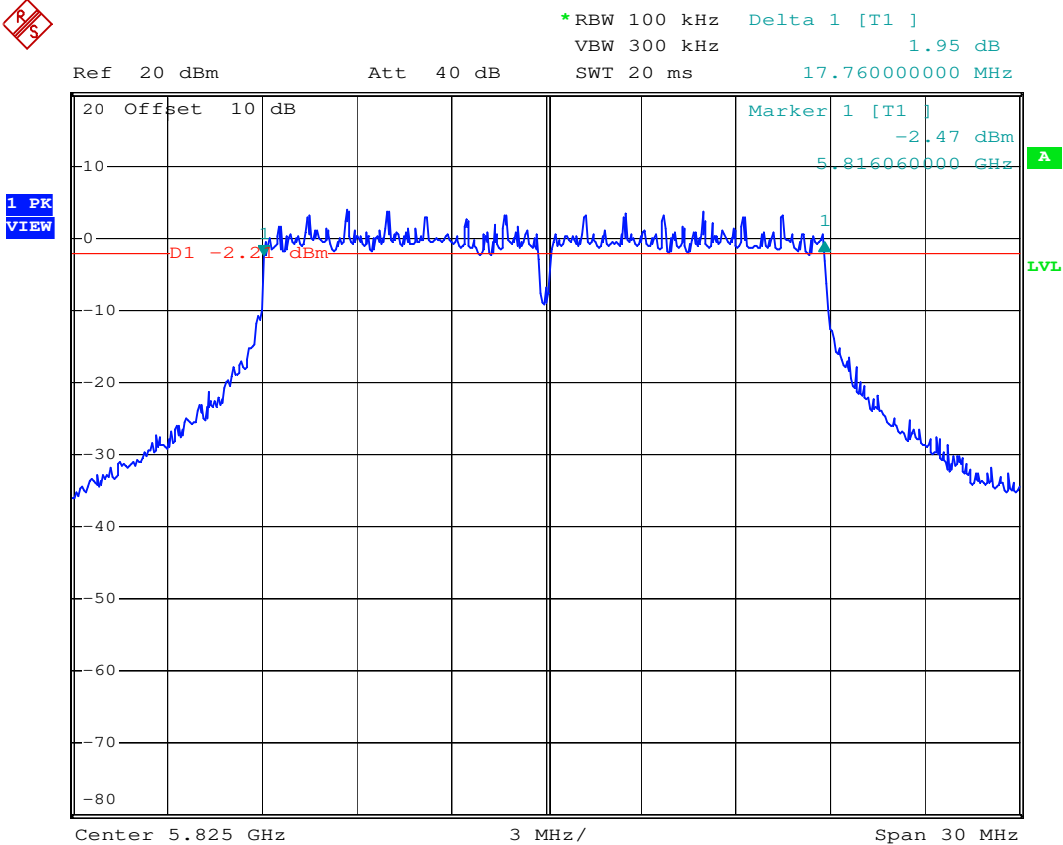
ANT 2



Mode: 5.8GHz(802.11n/ac -20) Band 4/ Channel Middle

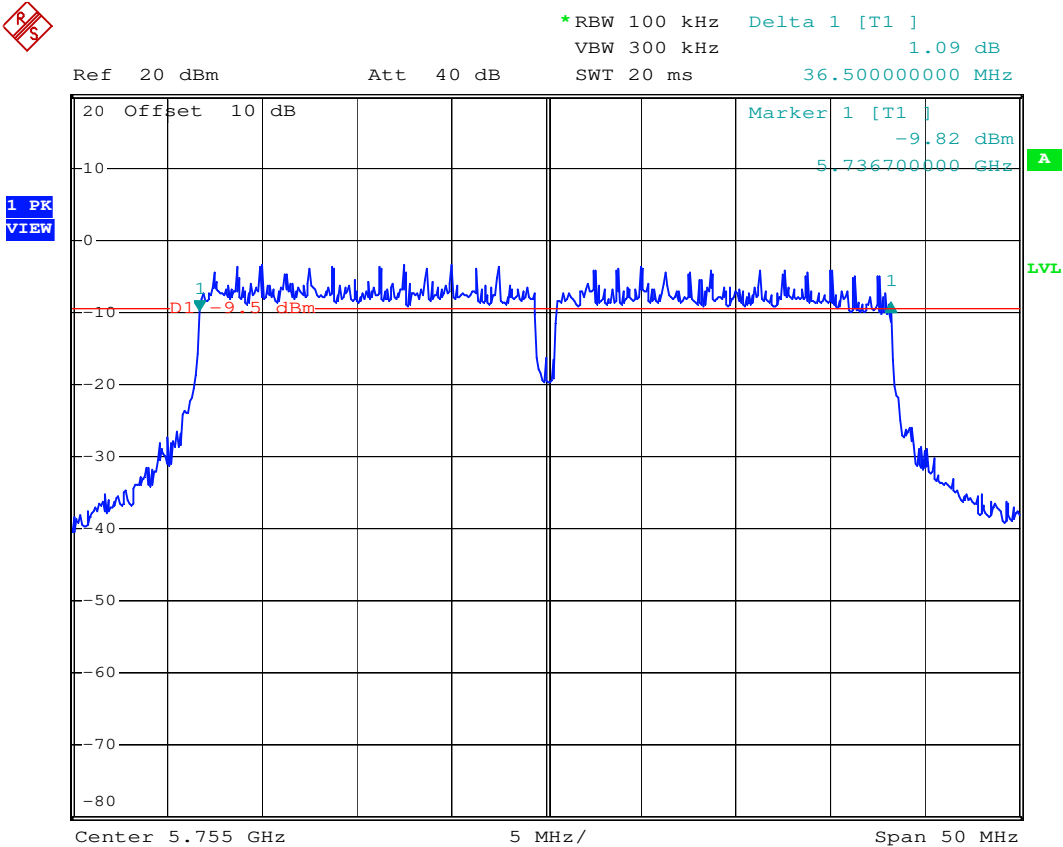


Mode: 5.8GHz(802.11n/ac -20)Band 4/ Channel High

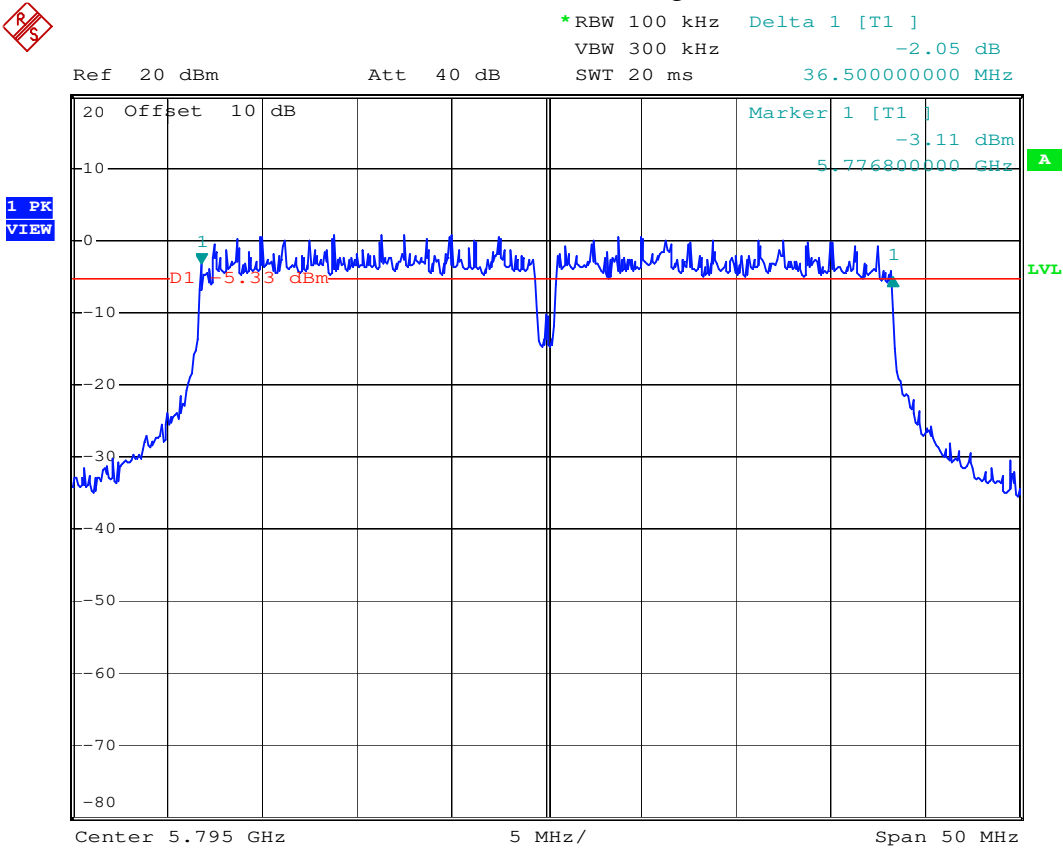


Mode: 5.8GHz(802.11n/ac -40)Band 4/ Channel Low

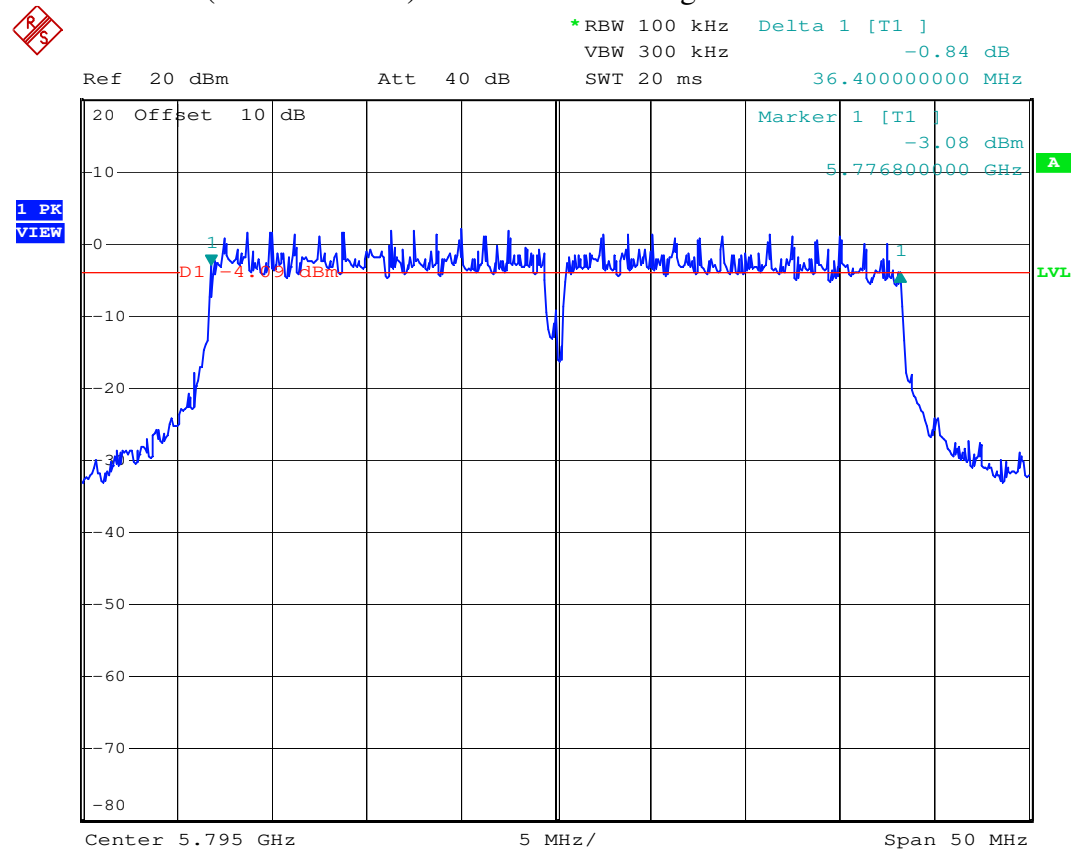
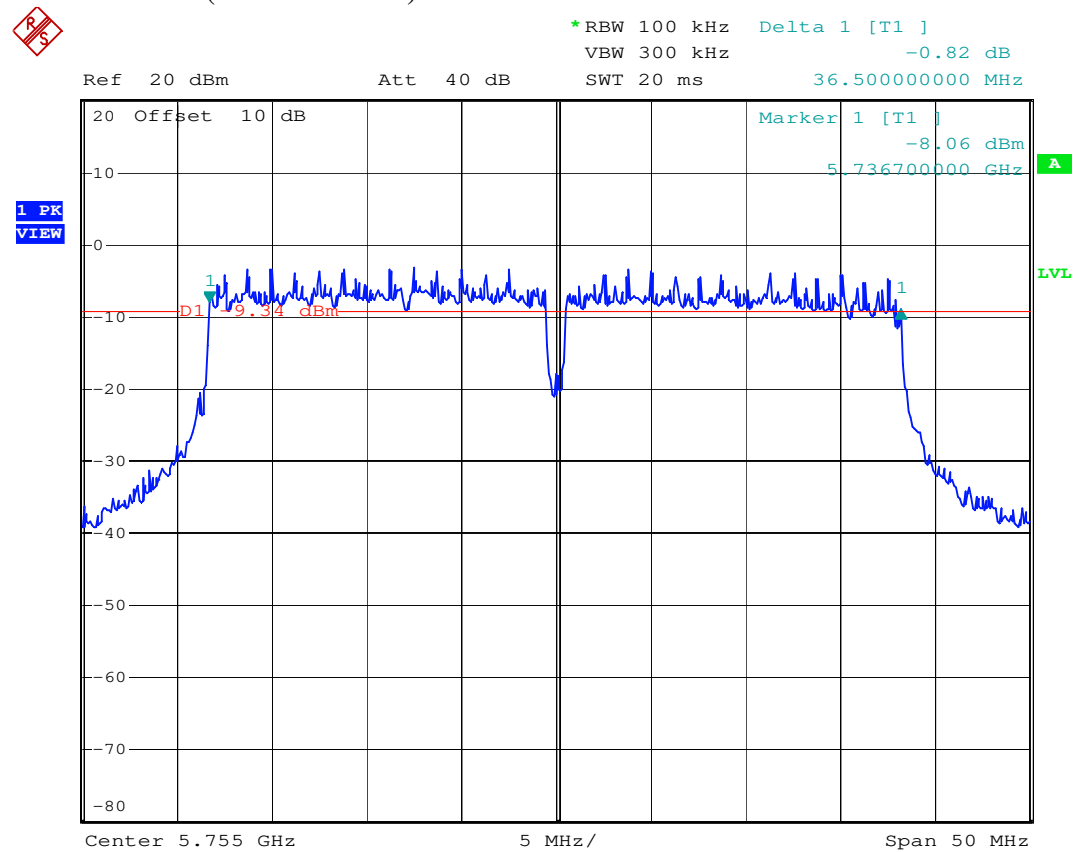
ANT 0



Mode: 5.8GHz(802.11n/ac -40) Band 4/ Channel High

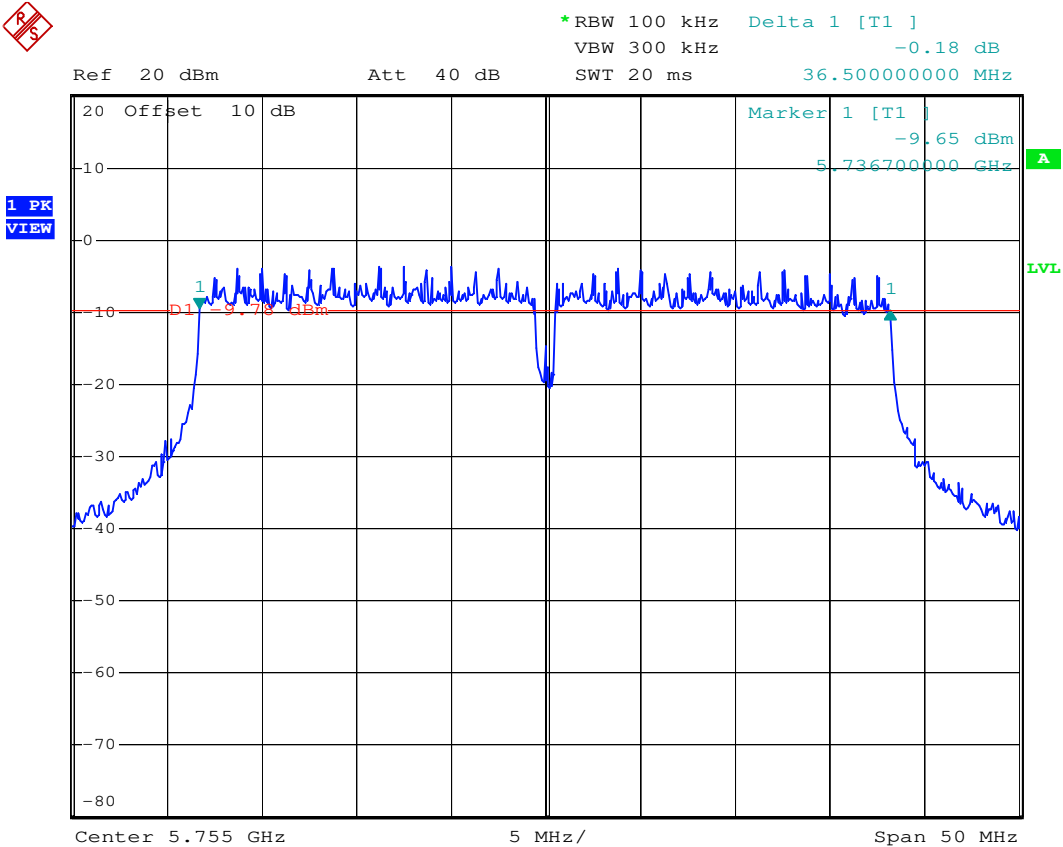


ANT 1

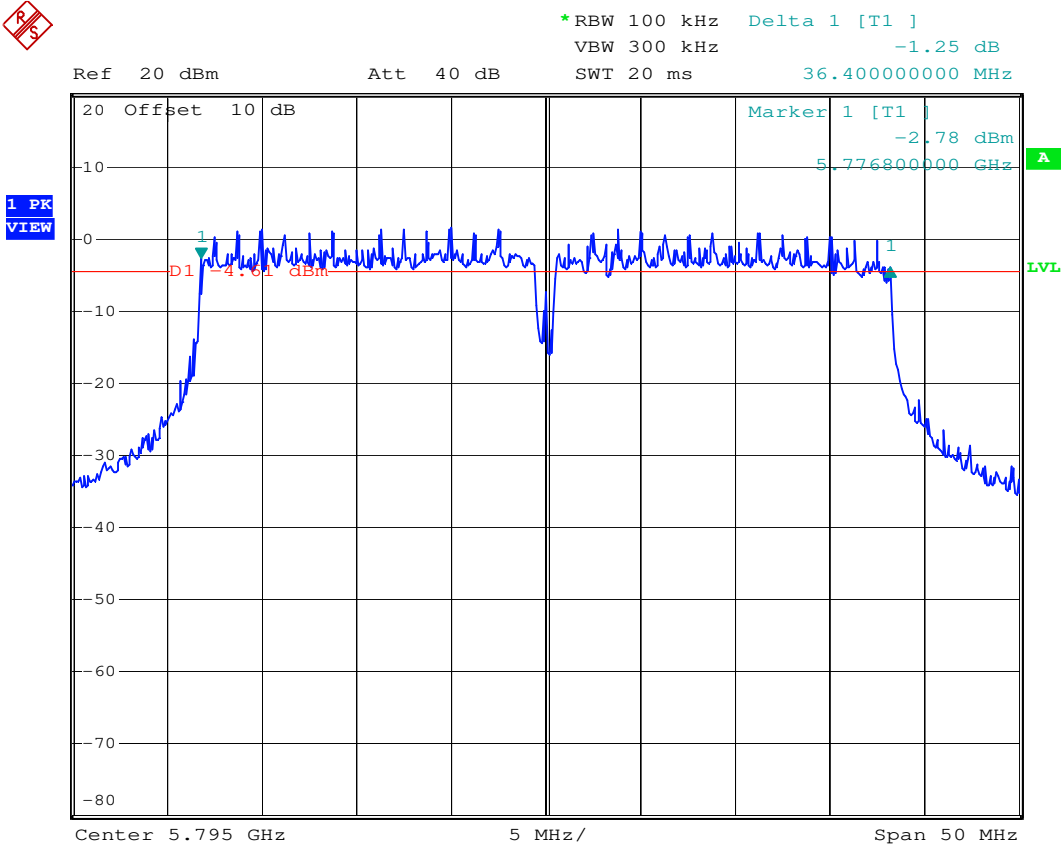


Mode: 5.8GHz(802.11n/ac -40)Band 4/ Channel Low

ANT 2

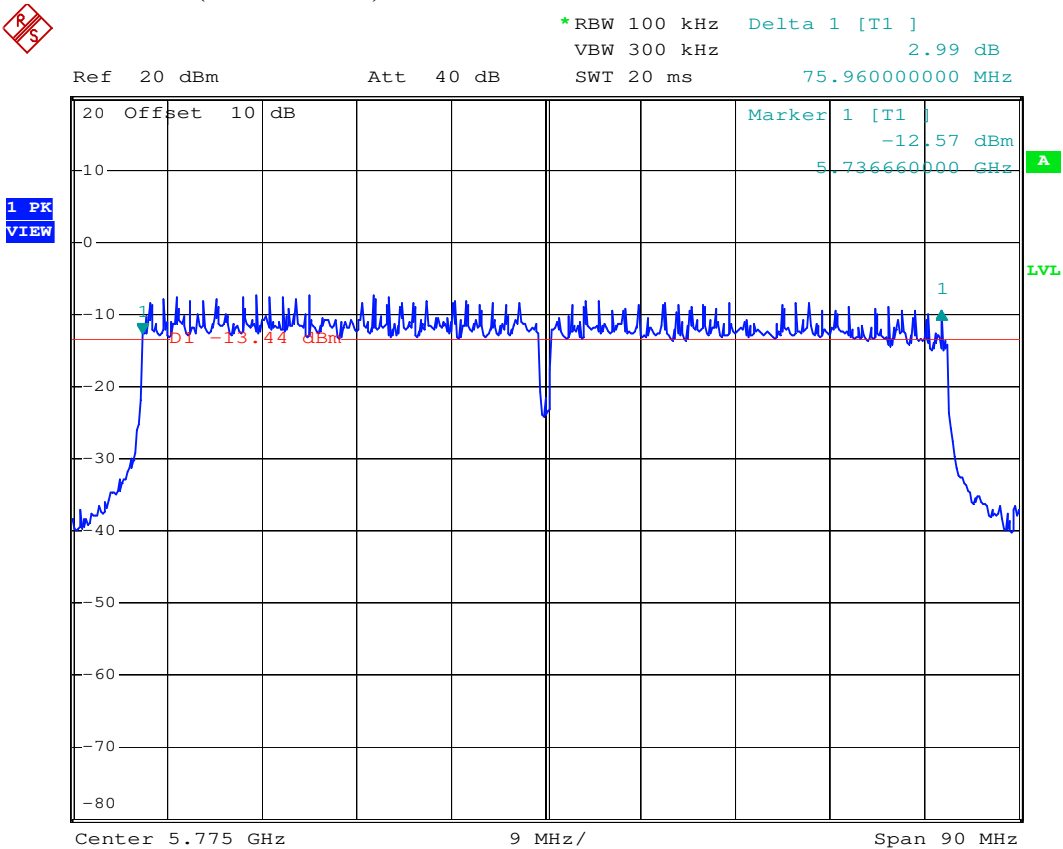


Mode: 5.8GHz(802.11n/ac -40) Band 4/ Channel High



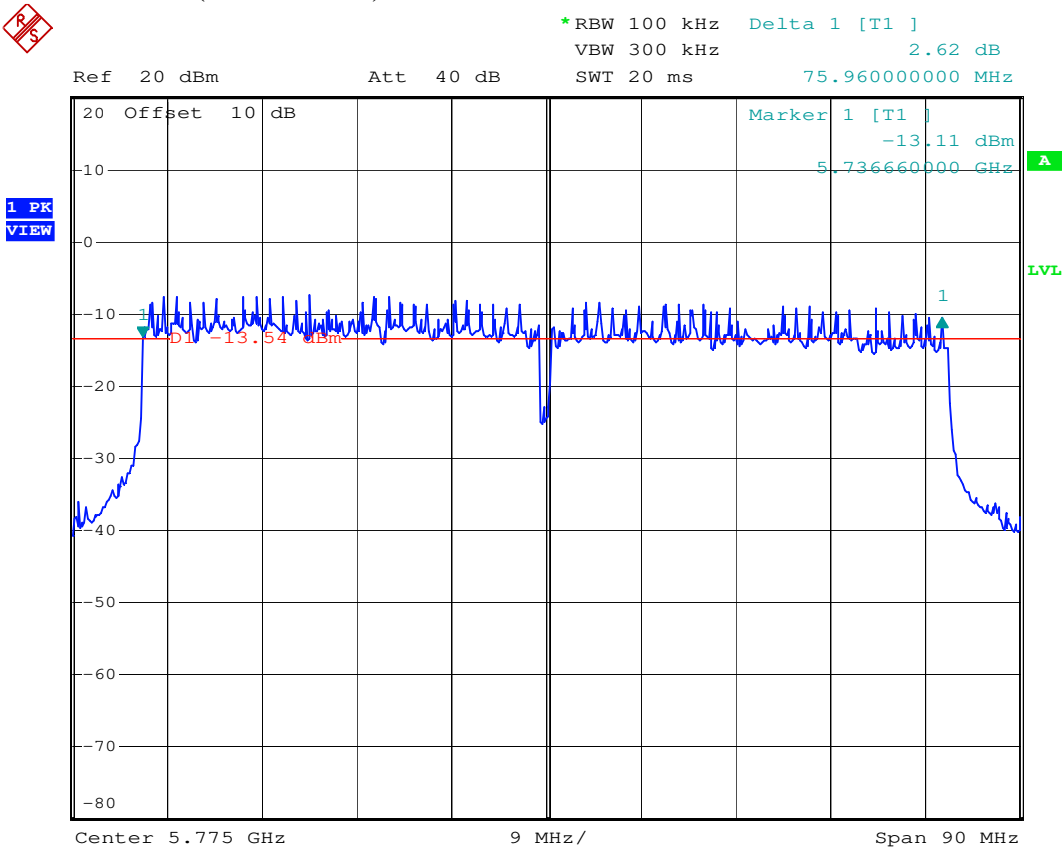
Mode: 5.8GHz(802.11ac -80) Band 4 Channel Middle

ANT 0



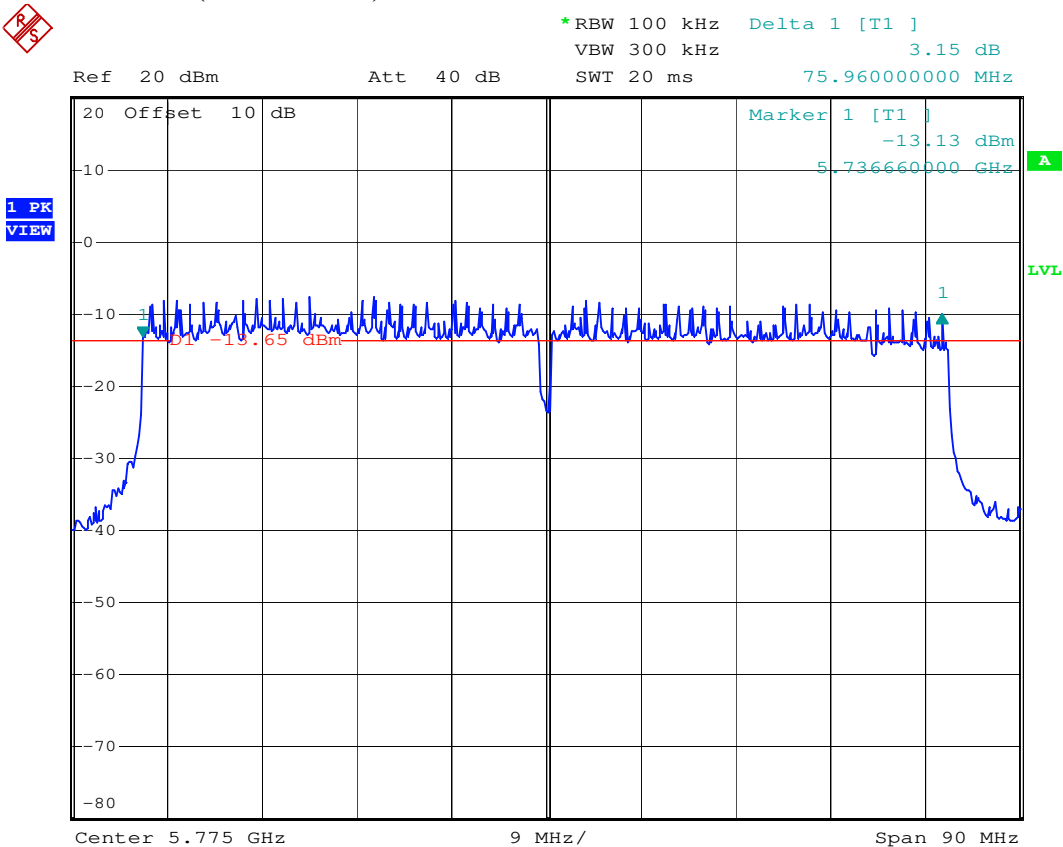
Mode: 5.8GHz(802.11ac -80) Band 4/ Channel Middle

ANT 1



Mode: 5.8GHz(802.11ac -80) Band 4/ Channel Middle

ANT 2



8 輸出功率之量測

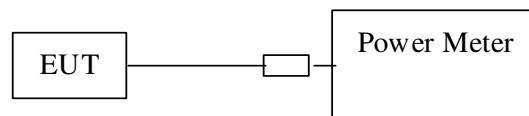
8.1 適用標準

依據低功率射頻電機技術規範4.7.3.1節(1)(A)、4.7.3.1節(2)(A)、4.7.3.1節(3)(A)及4.7.3.3節(1)之規定，最大傳導輸出功率應小於或等於1 W。

依據低功率射頻電機技術規範4.7.3.1節(4)(A)之規定，最大傳導輸出功率應小於或等於250 mW。

依據低功率射頻電機技術規範4.7.3.2節(1)之規定，最大傳導輸出功率應小於或等於250 mW或 $11\text{dBm} + 10\log B$ (B是26 dB發射頻寬，單位MHz)之較小者。

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	WEINSCHTEL ENGINEERING	AS3696	2018/12/13	2019/12/12

8.4 輸出功率之量測結果

測試日期 : Jul.17, 2019
 測試結果 : 合格

環境溫度 : 26°C

環境濕度 : 52 %
 測試者 : 何仁逸

802.11a Band 4

ANT0

- a) CH Low 5745MHz : 輸出功率為 9.8 dBm or 9.549 mW °
- b) CH Middle 5785MHz : 輸出功率為 14.7 dBm or 29.512 mW °
- c) CH High 5825MHz : 輸出功率為 14.42 dBm or 27.669 mW °

ANT1

- a) CH Low 5745MHz : 輸出功率為 10.31 dBm or 10.739 mW °
- b) CH Middle 5785MHz : 輸出功率為 14.43 dBm or 27.733 mW °
- c) CH High 5825MHz : 輸出功率為 14.16 dBm or 26.061 mW °

ANT2

- a) CH Low 5745MHz : 輸出功率為 9.77 dBm or 9.482 mW °
- b) CH Middle 5785MHz : 輸出功率為 14.08 dBm or 25.585 mW °
- c) CH High 5825MHz : 輸出功率為 14.37 dBm or 27.352 mW °

802.11n/ac -20 Band 4

ANT0

- a) CH Low 5745MHz : 輸出功率為 9.75 dBm or 9.440 mW °
- b) CH Middle 5785MHz : 輸出功率為 14.59 dBm or 28.774 mW °
- c) CH High 5825MHz : 輸出功率為 14.38 dBm or 27.415 mW °

ANT1

- a) CH Low 5745MHz : 輸出功率為 10.18 dBm or 10.423 mW °
- b) CH Middle 5785MHz : 輸出功率為 14.43 dBm or 27.733 mW °
- c) CH High 5825MHz : 輸出功率為 14.04 dBm or 25.351 mW °

ANT2

- a) CH Low 5745MHz : 輸出功率為 9.68 dBm or 9.289 mW °
- b) CH Middle 5785MHz : 輸出功率為 13.99 dBm or 25.061 mW °
- c) CH High 5825MHz : 輸出功率為 14.38 dBm or 27.415 mW °

MIMO

- a) CH Low 5745MHz : 輸出功率為 14.65 dBm or 29.153 mW °
- b) CH Middle 5785MHz : 輸出功率為 19.12 dBm or 81.568 mW °
- c) CH High 5825MHz : 輸出功率為 19.04 dBm or 80.182 mW °

802.11n/ac -40 Band 4

ANT0

- a) CH Low 5755MHz : 輸出功率為 9.34 dBm or 8.590 mW °
- b) CH High 5795MHz : 輸出功率為 13.63 dBm or 23.067 mW °

ANT1

- a) CH Low 5755MHz : 輸出功率為 9.48 dBm or 8.871 mW °
- b) CH High 5795MHz : 輸出功率為 14.79 dBm or 30.130 mW °

ANT2

- a) CH Low 5755MHz : 輸出功率為 9.26 dBm or 8.433 mW °
- b) CH High 5795MHz : 輸出功率為 14.33 dBm or 27.101 mW °

MIMO

- a) CH Low 5755MHz : 輸出功率為 14.13 dBm or 25.895 mW °
- b) CH High 5795MHz : 輸出功率為 19.05 dBm or 80.299 mW °

802.11ac -80Band 4

ANT0

- a) CH Low 5775MHz : 輸出功率為 7.39 dBm or 5.482 mW °

ANT1

- a) CH Low 5775MHz : 輸出功率為 7.22 dBm or 5.272 mW °

ANT1

- a) CH Low 5775MHz : 輸出功率為 7.21 dBm or 5.260 mW °

MIMO

- a) CH Low 5775MHz : 輸出功率為 12.05 dBm or 16.015 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 不必要發射之量測

9.1 適用標準

依據低功率射頻電機技術規範4.7.4節之規定，不必要發射之限制值：在操作頻帶外的峰值發射應衰減至符合下列限制值：

4.7.4.1 在5.15 GHz~5.35 GHz 及5.470 GHz~5.725 GHz 頻段操作的發射器：帶外發射之有效等向輻射功率(EIRP) $\leq$ -27 dBm/MHz。

4.7.4.2 在5.725 GHz~5.850 GHz 的頻段操作之發射器：所有頻帶邊緣向外5 MHz 內頻率之發射，有效等向輻射功率(EIRP) $\leq$ 27 dBm/MHz~15.6 dBm/MHz (以線性法計算對應之限制值)；所有頻帶邊緣向外5 MHz~25 MHz，有效等向輻射功率(EIRP) $\leq$ 15.6 dBm/MHz~10 dBm/MHz (以線性法計算對應之限制值)；所有頻帶邊緣外25 MHz~75 MHz，有效等向輻射功率(EIRP) $\leq$ 10 dBm/MHz~-27 dBm/MHz(以線性法計算對應之限制值)；所有頻帶邊緣外 $\geq$ 75 MHz 的頻率之發射，有效等向輻射功率(EIRP) $\leq$ -27 dBm/MHz；有關遮罩限制值詳圖1。

9.2 測試配置

如圖四所示。

9.3 測試儀器

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	2019/07/01	2020/06/30
Horn Antenna	EMCO	3115	2019/10/22	2020/10/21
Horn Antenna	EMCO	3116	2018/12/05	2019/12/04
Amplifier	HP	8447D	2019/05/06	2020/05/05
Amplifier	HP	8449B	2019/10/04	2020/10/03
Amplifier	HP	83051A	2019/09/02	2020/09/01

9.4 量測結果

測試日期 : Jul.19, 2019
測試結果 : 合格

環境溫度 : 27°C

環境濕度 : 65 %
測試者 : 何仁逸

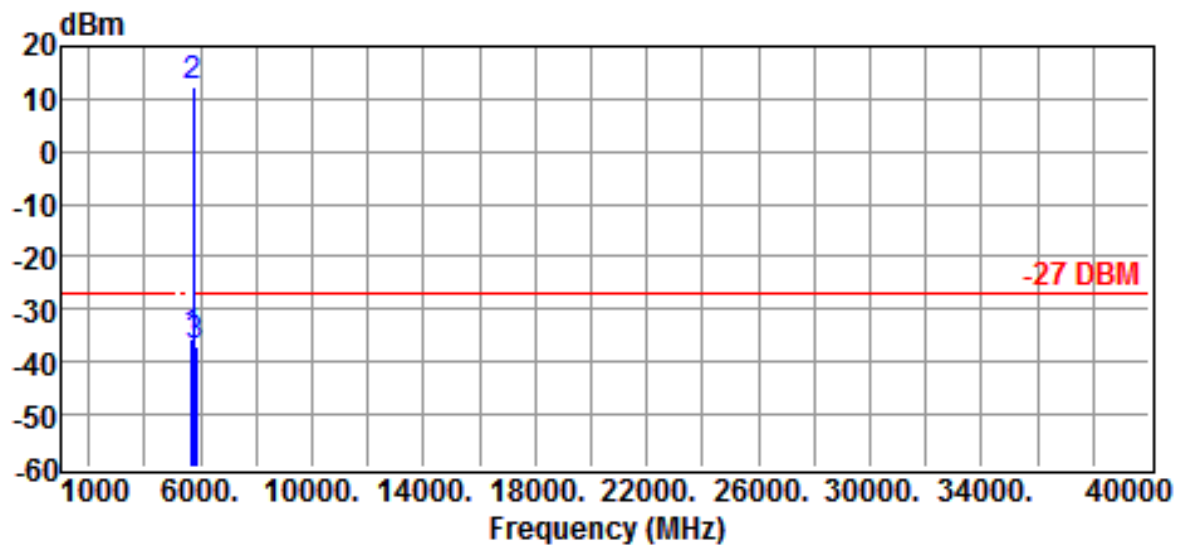
5.8GHz 頻帶

在5.725 GHz~5.850 GHz 頻段的所有頻帶邊緣向外5 MHz 內頻率之發射，有效等向輻射功率(EIRP) ≤ 27 dBm/MHz~15.6 dBm/MHz (以線性法計算對應之限制值)；所有頻帶邊緣向外5 MHz~25 MHz，有效等向輻射功率(EIRP) ≤ 15.6 dBm/MHz~10 dBm/MHz (以線性法計算對應之限制值)；所有頻帶邊緣外25 MHz~75 MHz，有效等向輻射功率(EIRP) ≤ 10 dBm/MHz~-27 dBm/MHz(以線性法計算對應之限制值)；所有頻帶邊緣外 ≥ 75 MHz 的頻率之發射，有效等向輻射功率(EIRP) ≤ -27 dBm/MHz，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 ± 2 dB。
2. 繪圖資料請參考下頁。

Mode: 5.8GHz(802.11a) / Channel Low

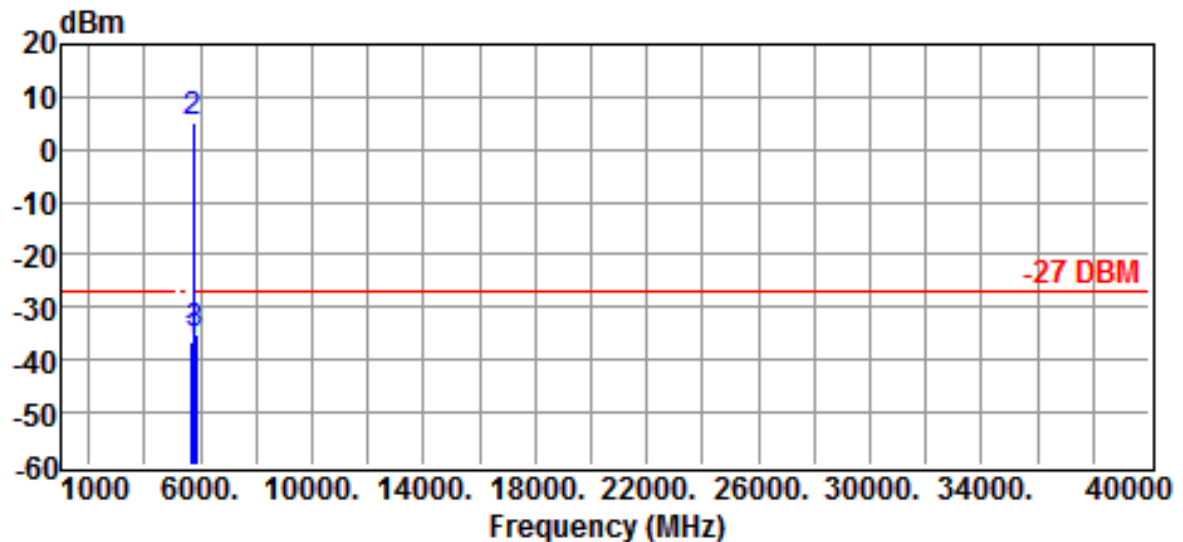


Site	:Chamber #2	Date	:2019-07-19
Limit	: -27 DBM	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 5G-A-B4-5745		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBm	Limits dBm	Over limit dB	Detector
5725.0000	55.96	-91.64	-35.68	-27.00	-8.68	Peak
5745.0000	104.11	-91.60	12.51	----	----	Peak
5850.0000	54.36	-91.47	-37.11	-27.00	-10.11	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)-EIRP Factor
 {EIRP Factor = -101.2dB (9kHz-30MHz) or -99.9dB (30MHz-1GHz)
 or -95.2dB (1GHz Above)}
3. The margin value=Limit - Result



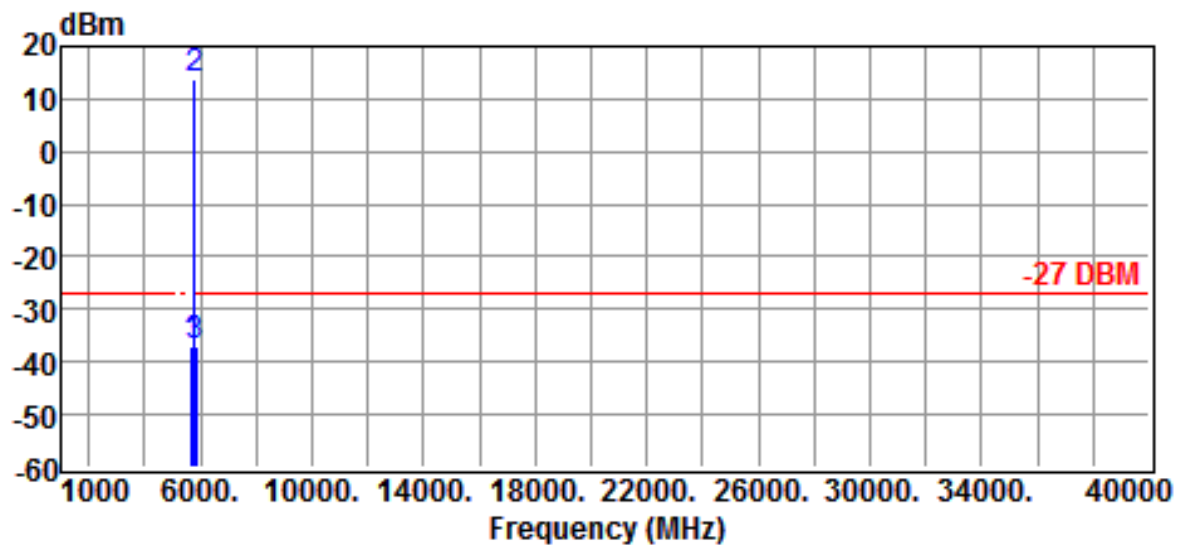
Site	:Chamber #2	Date	:2019-07-19
Limit	:-27 DBM	Ant. Pol.	:VERTICAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 5G-A-B4-5745		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBm	Limits dBm	Over limit dB	Detector
5725.0000	54.94	-91.64	-36.70	-27.00	-9.70	Peak
5745.0000	96.52	-91.60	4.92	----	----	Peak
5850.0000	56.41	-91.47	-35.06	-27.00	-8.06	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)-EIRP Factor
 {EIRP Factor = -101.2dB (9kHz-30MHz) or -99.9dB (30MHz-1GHz)
 or -95.2dB (1GHz Above)}
3. The margin value=Limit - Result

Mode: 5.8GHz(802.11a) / Channel Middle

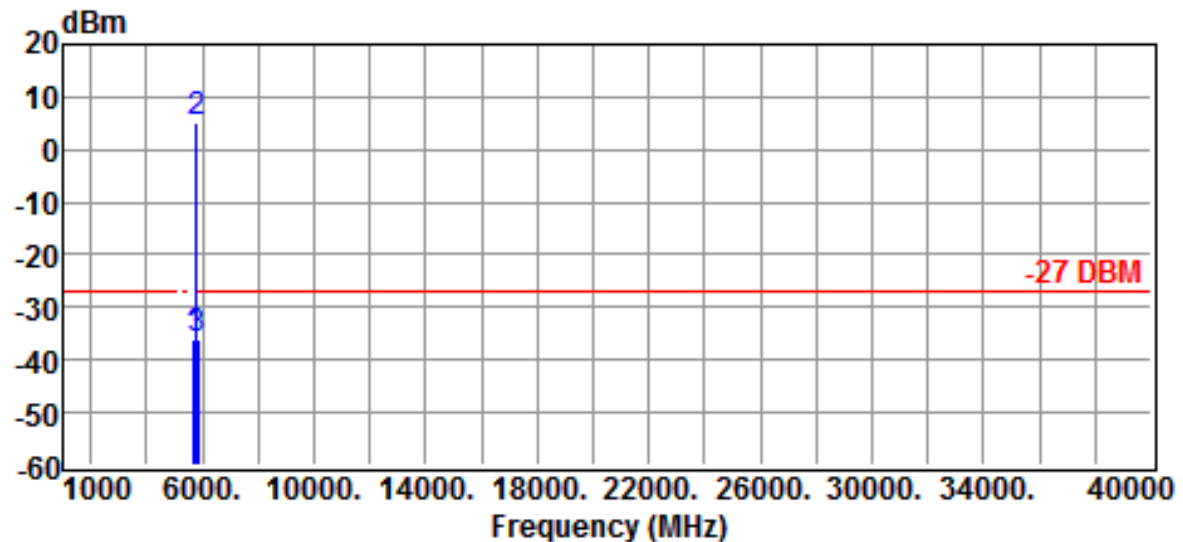


Site	:Chamber #2	Date	:2019-07-19
Limit	: -27 DBM	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 5G-A-B4-5785		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBm	Limits dBm	Over limit dB	Detector
5725.0000	54.84	-91.64	-36.80	-27.00	-9.80	Peak
5785.0000	105.32	-91.55	13.77	----	----	Peak
5850.0000	54.70	-91.47	-36.77	-27.00	-9.77	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)-EIRP Factor
 {EIRP Factor = -101.2dB (9kHz-30MHz) or -99.9dB (30MHz-1GHz)
 or -95.2dB (1GHz Above)}
3. The margin value=Limit - Result



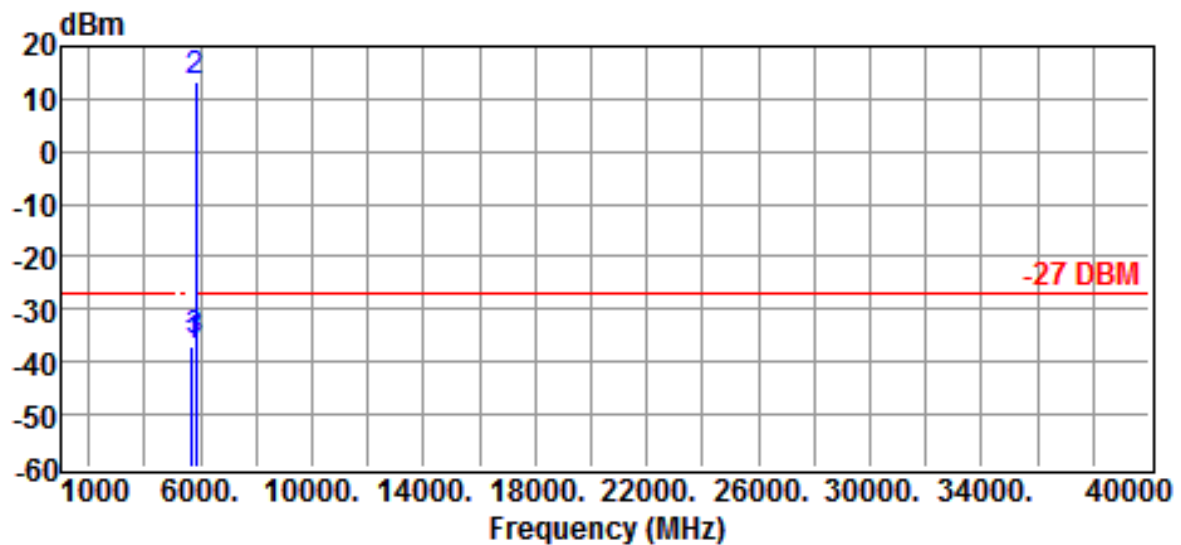
Site	:Chamber #2	Date	:2019-07-19
Limit	: -27 DBM	Ant. Pol.	:VERTICAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 5G-A-B4-5785		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBm	Limits dBm	Over limit dB	Detector
5725.0000	55.73	-91.64	-35.91	-27.00	-8.91	Peak
5785.0000	96.86	-91.55	5.31	----	----	Peak
5850.0000	55.25	-91.47	-36.22	-27.00	-9.22	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)-EIRP Factor
 {EIRP Factor = -101.2dB (9kHz-30MHz) or -99.9dB (30MHz-1GHz)
 or -95.2dB (1GHz Above)}
3. The margin value=Limit - Result

Mode: 5.8GHz(802.11a) / Channel High

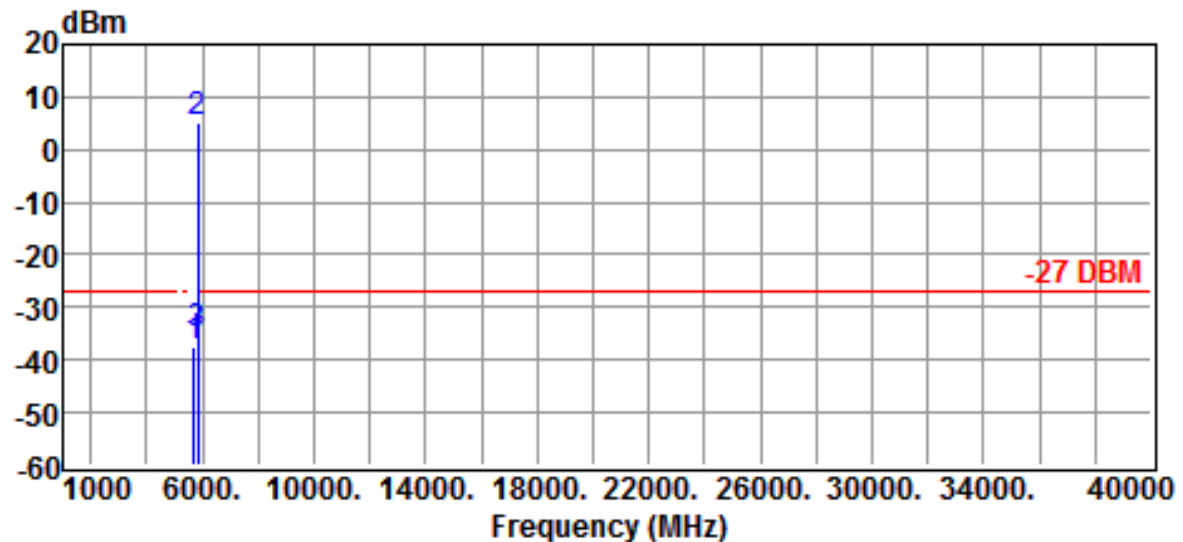


Site	:Chamber #2	Date	:2019-07-19
Limit	: -27 DBM	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 5G-A-B4-5825		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBm	Limits dBm	Over limit dB	Detector
5725.0000	54.40	-91.64	-37.24	-27.00	-10.24	Peak
5825.0000	104.83	-91.50	13.33	----	----	Peak
5850.0000	55.30	-91.47	-36.17	-27.00	-9.17	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)-EIRP Factor
 {EIRP Factor = -101.2dB (9kHz-30MHz) or -99.9dB (30MHz-1GHz)
 or -95.2dB (1GHz Above)}
3. The margin value=Limit - Result



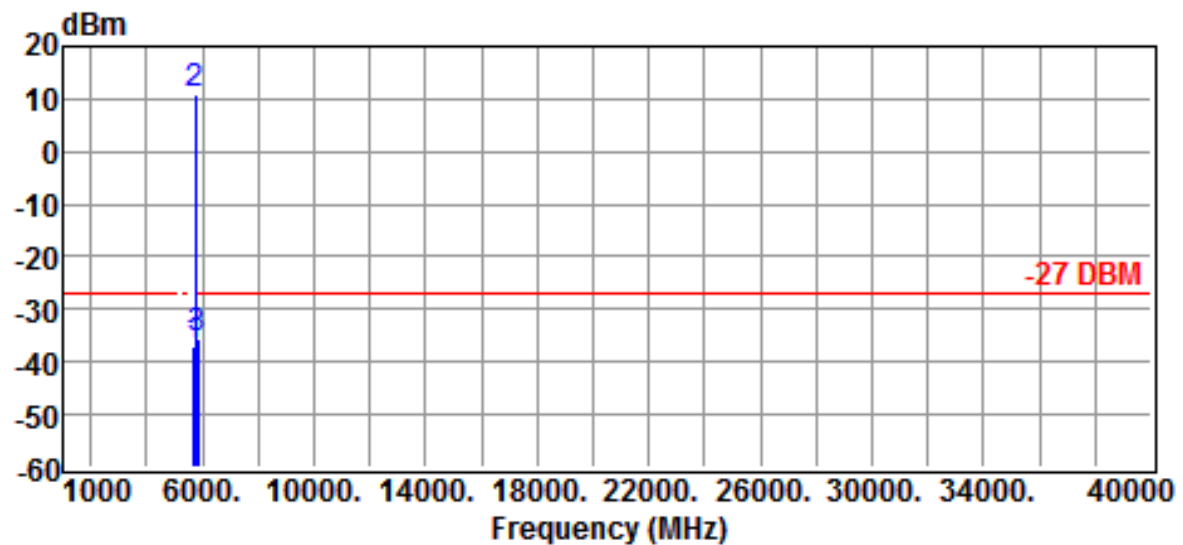
Site	:Chamber #2	Date	:2019-07-19
Limit	: -27 DBM	Ant. Pol.	:VERTICAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 5G-A-B4-5825		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBm	Limits dBm	Over limit dB	Detector
5725.0000	53.93	-91.64	-37.71	-27.00	-10.71	Peak
5825.0000	96.42	-91.50	4.92	----	----	Peak
5850.0000	56.44	-91.47	-35.03	-27.00	-8.03	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)-EIRP Factor
 {EIRP Factor = -101.2dB (9kHz-30MHz) or -99.9dB (30MHz-1GHz)
 or -95.2dB (1GHz Above)}
3. The margin value=Limit - Result

Mode: 5.8GHz(802.11n/ac -20) / Channel Low

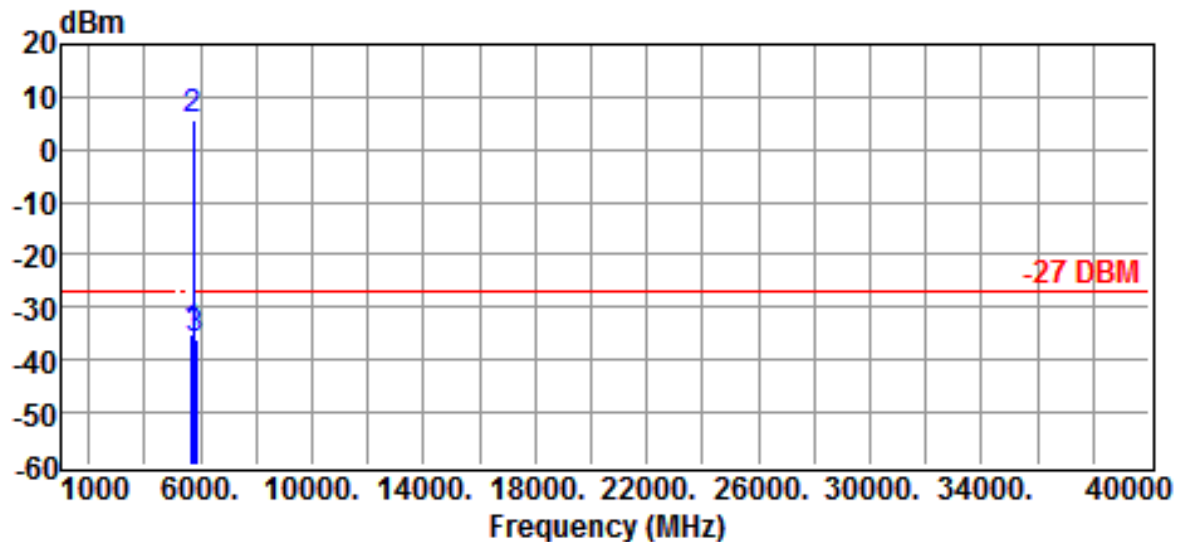


Site	:Chamber #2	Date	:2019-07-19
Limit	: -27 DBM	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 5G-N&AC20-B4-5745		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBm	Limits dBm	Over limit dB	Detector
5725.0000	54.77	-91.64	-36.87	-27.00	-9.87	Peak
5745.0000	102.71	-91.60	11.11	----	----	Peak
5850.0000	55.74	-91.47	-35.73	-27.00	-8.73	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)-EIRP Factor
 {EIRP Factor = -101.2dB (9kHz-30MHz) or -99.9dB (30MHz-1GHz)
 or -95.2dB (1GHz Above)}
3. The margin value=Limit - Result



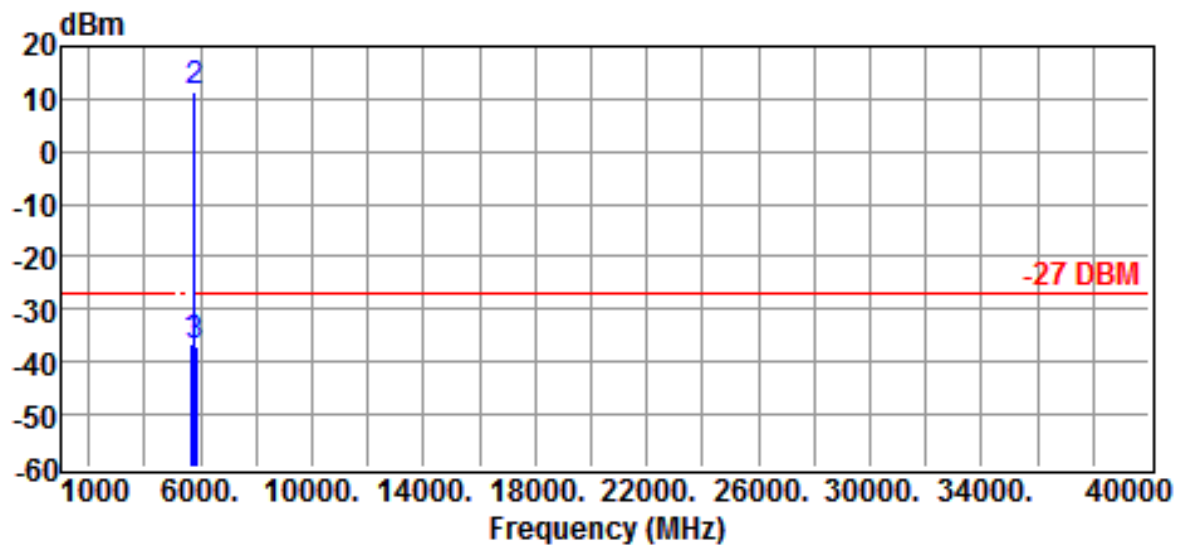
Site	:Chamber #2	Date	:2019-07-19
Limit	:-27 DBM	Ant. Pol.	:VERTICAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 5G-N&AC20-B4-5745		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBm	Limits dBm	Over limit dB	Detector
5725.0000	56.36	-91.64	-35.28	-27.00	-8.28	Peak
5745.0000	97.24	-91.60	5.64	----	----	Peak
5850.0000	55.51	-91.47	-35.96	-27.00	-8.96	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)-EIRP Factor
 {EIRP Factor = -101.2dB (9kHz-30MHz) or -99.9dB (30MHz-1GHz)
 or -95.2dB (1GHz Above)}
3. The margin value=Limit - Result

Mode: 5.8GHz(802.11n/ac -20) / Channel Middle

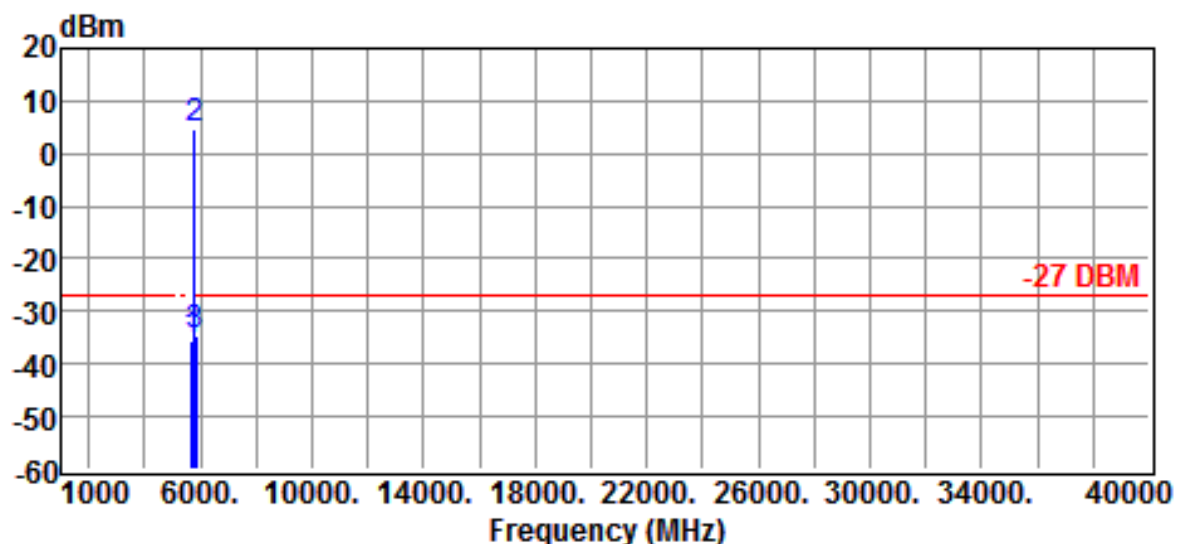


Site	:Chamber #2	Date	:2019-07-19
Limit	: -27 DBM	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 5G-N&AC20-B4-5785		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBm	Limits dBm	Over limit dB	Detector
5725.0000	55.03	-91.64	-36.61	-27.00	-9.61	Peak
5785.0000	102.92	-91.55	11.37	----	----	Peak
5850.0000	54.30	-91.47	-37.17	-27.00	-10.17	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)-EIRP Factor
 {EIRP Factor = -101.2dB (9kHz-30MHz) or -99.9dB (30MHz-1GHz)
 or -95.2dB (1GHz Above)}
3. The margin value=Limit - Result



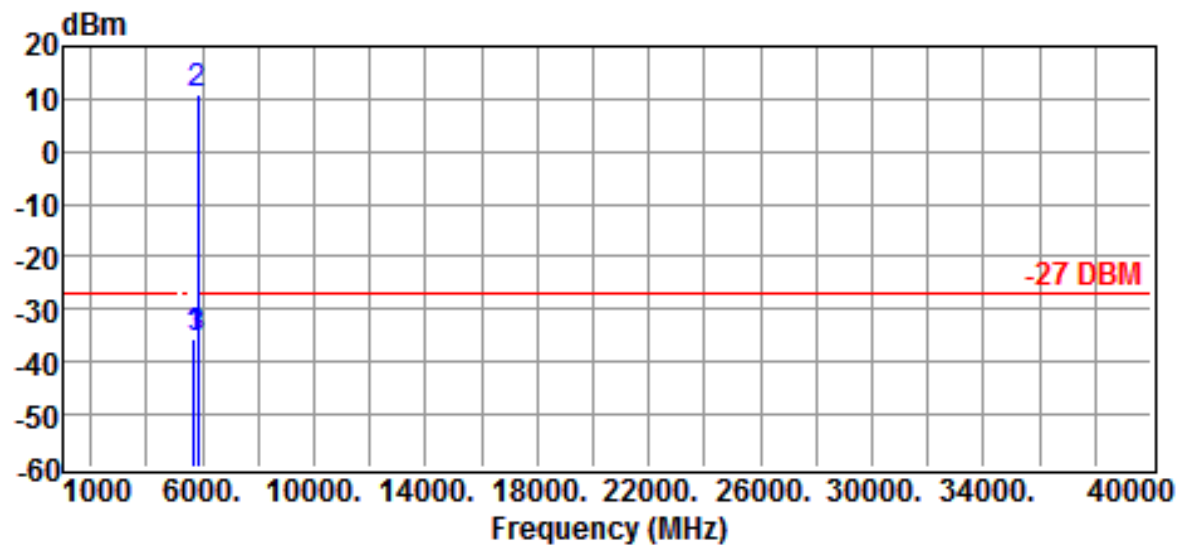
Site	:Chamber #2	Date	:2019-07-19
Limit	:-27 DBM	Ant. Pol.	:VERTICAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 5G-N&AC20-B4-5785		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBm	Limits dBm	Over limit dB	Detector
5725.0000	56.02	-91.64	-35.62	-27.00	-8.62	Peak
5785.0000	96.39	-91.55	4.84	----	----	Peak
5850.0000	56.85	-91.47	-34.62	-27.00	-7.62	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)-EIRP Factor
 {EIRP Factor = -101.2dB (9kHz-30MHz) or -99.9dB (30MHz-1GHz)
 or -95.2dB (1GHz Above)}
3. The margin value=Limit - Result

Mode: 5.8GHz(802.11n/ac -20) / Channel High

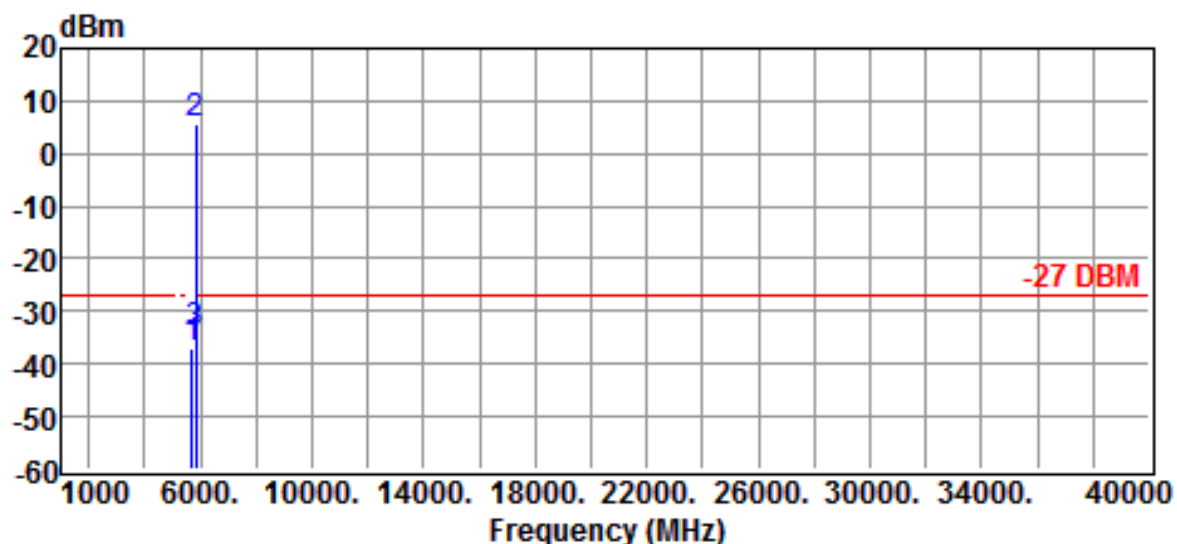


Site	:Chamber #2	Date	:2019-07-19
Limit	: -27 DBM	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 5G-N&AC20-B4-5825		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBm	Limits dBm	Over limit dB	Detector
5725.0000	56.00	-91.64	-35.64	-27.00	-8.64	Peak
5825.0000	102.37	-91.50	10.87	----	----	Peak
5850.0000	55.98	-91.47	-35.49	-27.00	-8.49	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)-EIRP Factor
 {EIRP Factor = -101.2dB (9kHz-30MHz) or -99.9dB (30MHz-1GHz)
 or -95.2dB (1GHz Above)}
3. The margin value=Limit - Result



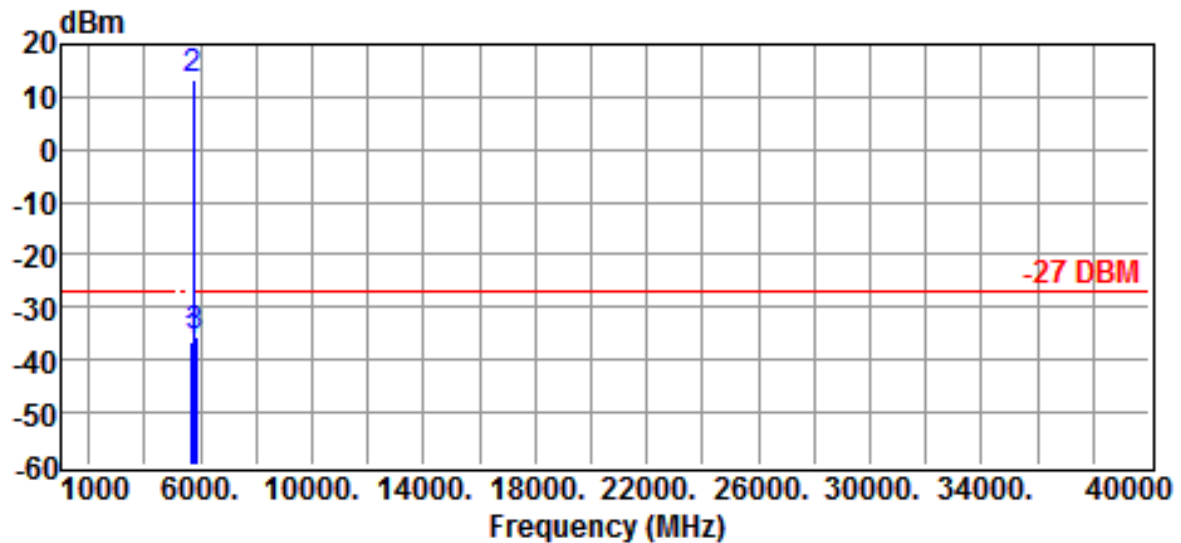
Site	:Chamber #2	Date	:2019-07-19
Limit	: -27 DBM	Ant. Pol.	:VERTICAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 5G-N&AC20-B4-5825		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBm	Limits dBm	Over limit dB	Detector
5725.0000	54.79	-91.64	-36.85	-27.00	-9.85	Peak
5825.0000	97.10	-91.50	5.60	----	----	Peak
5850.0000	57.35	-91.47	-34.12	-27.00	-7.12	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)-EIRP Factor
 {EIRP Factor = -101.2dB (9kHz-30MHz) or -99.9dB (30MHz-1GHz)
 or -95.2dB (1GHz Above)}
3. The margin value=Limit - Result

Mode: 5.8GHz(802.11n/ac -40) / Channel Low

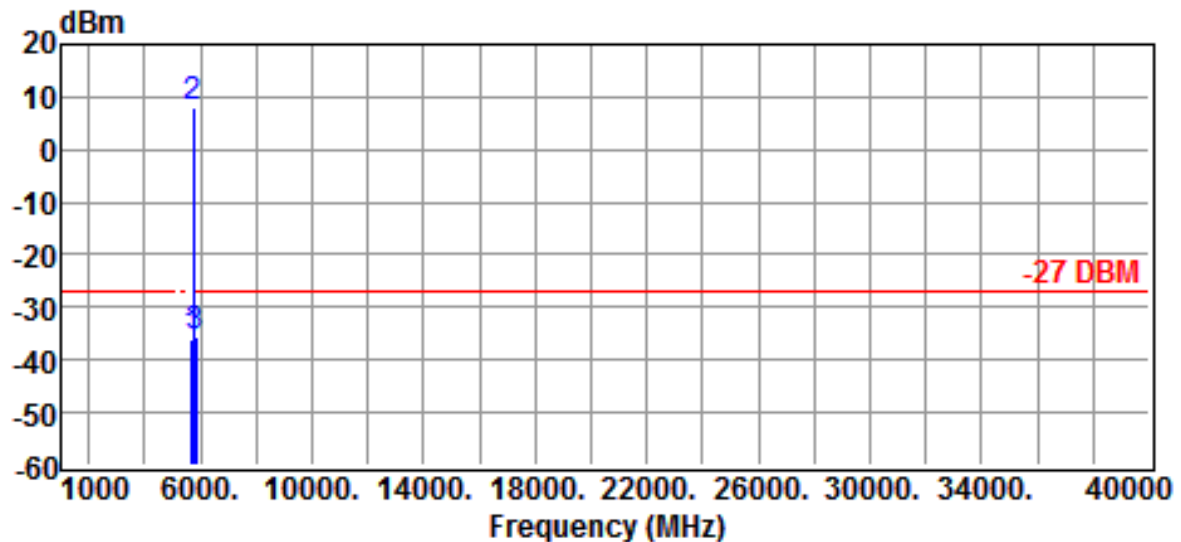


Site	:Chamber #2	Date	:2019-07-19
Limit	: -27 DBM	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 5G-N&AC40-B4-5755		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBm	Limits dBm	Over limit dB	Detector
5725.0000	55.34	-91.64	-36.30	-27.00	-9.30	Peak
5755.0000	104.75	-91.60	13.15	----	----	Peak
5850.0000	56.10	-91.47	-35.37	-27.00	-8.37	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)-EIRP Factor
{EIRP Factor = -101.2dB (9kHz-30MHz) or -99.9dB (30MHz-1GHz)
or -95.2dB (1GHz Above)}
3. The margin value=Limit - Result



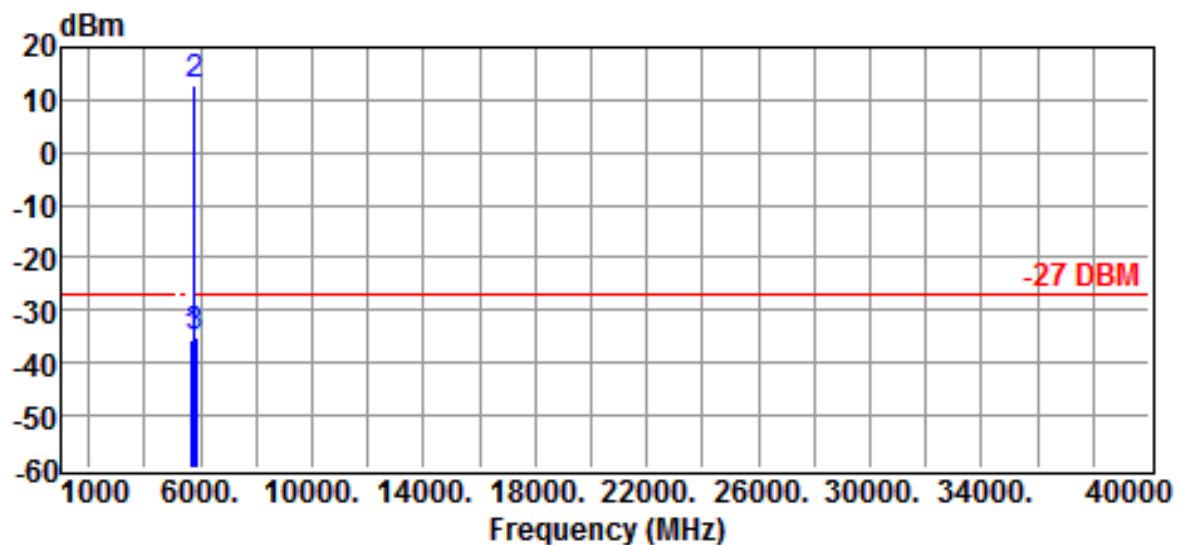
Site	:Chamber #2	Date	:2019-07-19
Limit	: -27 DBM	Ant. Pol.	:VERTICAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 5G-N&AC40-B4-5755		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBm	Limits dBm	Over limit dB	Detector
5725.0000	55.80	-91.64	-35.84	-27.00	-8.84	Peak
5755.0000	99.44	-91.60	7.84	----	----	Peak
5850.0000	55.71	-91.47	-35.76	-27.00	-8.76	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)-EIRP Factor
 {EIRP Factor = -101.2dB (9kHz-30MHz) or -99.9dB (30MHz-1GHz)
 or -95.2dB (1GHz Above)}
3. The margin value=Limit - Result

Mode: 5.8GHz(802.11n/ac -40) / Channel High

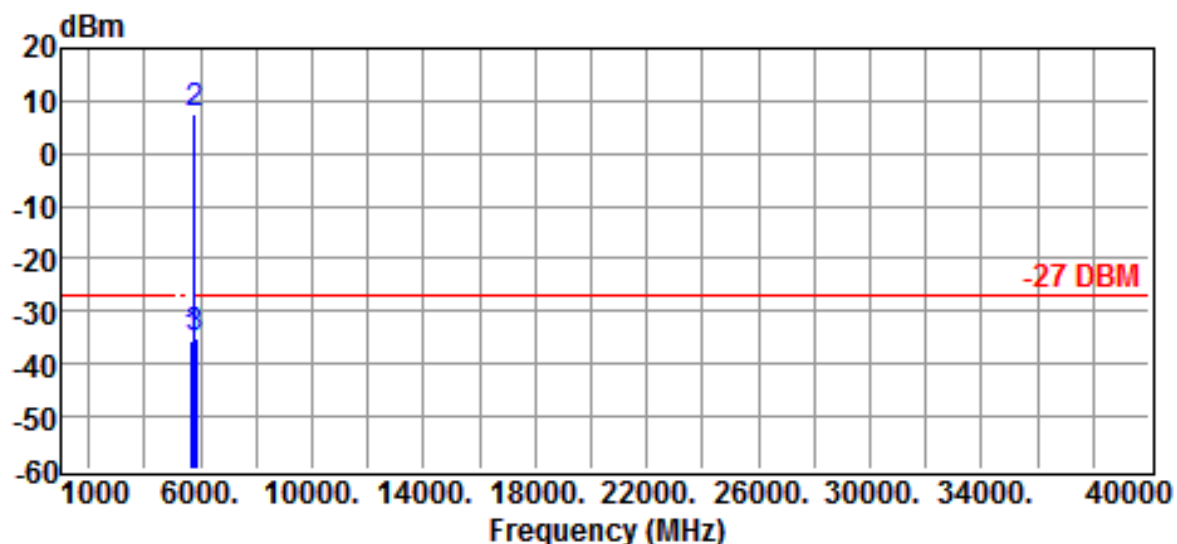


Site	:Chamber #2	Date	:2019-07-19
Limit	: -27 DBM	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 5G-N&AC40-B4-5795		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBm	Limits dBm	Over limit dB	Detector
5725.0000	55.87	-91.64	-35.77	-27.00	-8.77	Peak
5795.0000	104.56	-91.54	13.02	----	----	Peak
5850.0000	56.30	-91.47	-35.17	-27.00	-8.17	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)-EIRP Factor
{EIRP Factor = -101.2dB (9kHz-30MHz) or -99.9dB (30MHz-1GHz)
or -95.2dB (1GHz Above)}
3. The margin value=Limit - Result



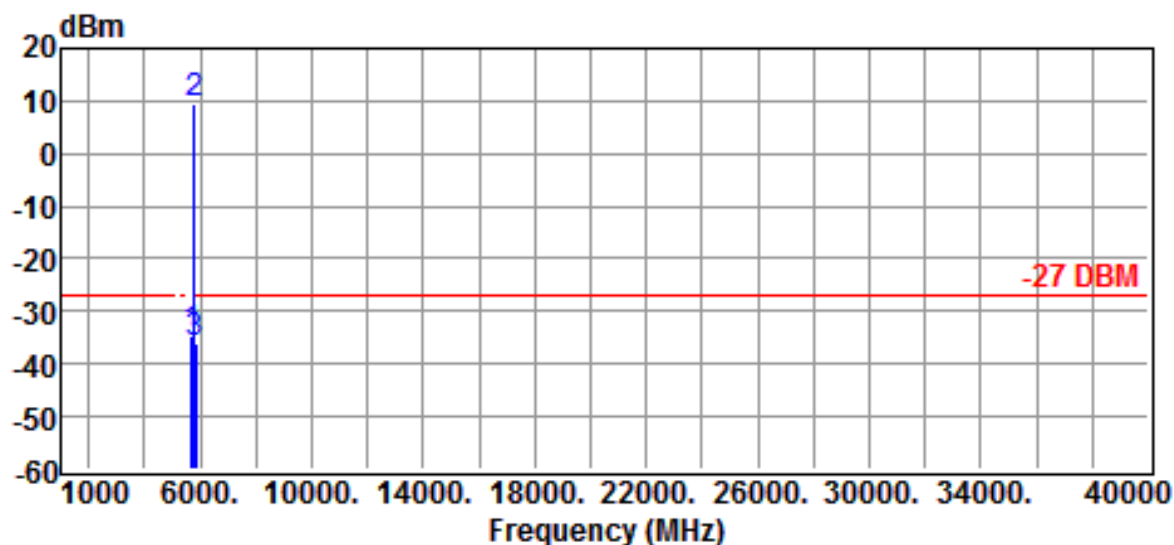
Site	:Chamber #2	Date	:2019-07-19
Limit	: -27 DBM	Ant. Pol.	:VERTICAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 5G-N&AC40-B4-5795		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBm	Limits dBm	Over limit dB	Detector
5725.0000	56.06	-91.64	-35.58	-27.00	-8.58	Peak
5795.0000	98.90	-91.54	7.36	----	----	Peak
5850.0000	56.17	-91.47	-35.30	-27.00	-8.30	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)-EIRP Factor
 {EIRP Factor = -101.2dB (9kHz-30MHz) or -99.9dB (30MHz-1GHz)
 or -95.2dB (1GHz Above)}
3. The margin value=Limit - Result

Mode: 5.8GHz(802.11ac -80)

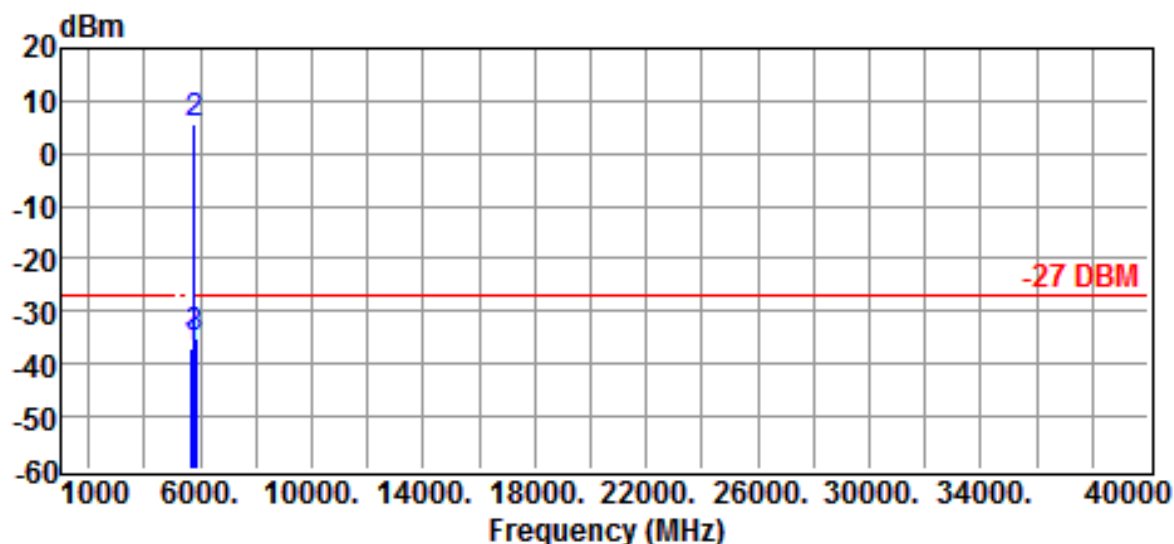


Site	:Chamber #2	Date	:2019-07-19
Limit	: -27 DBM	Ant. Pol.	:HORIZONTAL
EUT	:無線數位影像系統	Model	:FXRD-1417NAW
Power Rating	:DC24V(Power from Adapter)	Temp.	:27 °C
Engineer	: Kazuma Ho	Humi.	:65 %
Test Mode	:WiFi 5G-AC80-B4-5775		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBm	Limits dBm	Over limit dB	Detector
5725.0000	56.79	-91.64	-34.85	-27.00	-7.85	Peak
5775.0000	101.20	-91.56	9.64	----	----	Peak
5850.0000	55.21	-91.47	-36.26	-27.00	-9.26	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)-EIRP Factor
 {EIRP Factor = -101.2dB (9kHz-30MHz) or -99.9dB (30MHz-1GHz)
 or -95.2dB (1GHz Above)}
3. The margin value=Limit - Result



Site	:Chamber #2	Date	:2019-07-19
Limit	:-27 DBM	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 5G-AC80-B4-5775		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBm	Limits dBm	Over limit dB	Detector
5725.0000	54.86	-91.64	-36.78	-27.00	-9.78	Peak
5775.0000	97.14	-91.56	5.58	----	----	Peak
5850.0000	56.31	-91.47	-35.16	-27.00	-8.16	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)-EIRP Factor
 {EIRP Factor = -101.2dB (9kHz-30MHz) or -99.9dB (30MHz-1GHz)
 or -95.2dB (1GHz Above)}
3. The margin value=Limit - Result

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4.7.3.1節(1)(B)、4.7.3.1節(2)(B)及4.7.3.1節(3)(B)之規定，在任何1 MHz 頻帶中最大功率頻譜密度應小於或等於17 dBm。

依據低功率射頻電機技術規範4.7.3.1節(4)(B) 及4.7.3.2節(2)之規定，在任何1 MHz 頻帶中最大功率頻譜密度應小於或等於11 dBm。

依據低功率射頻電機技術規範4.7.3.3節(2)之規定，在任何500 kHz 頻帶中最大功率頻譜密度應小於或等於30 dBm。

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	2019/10/25	2020/10/24
Attenuator	WEINSCHEL ENGINEERING	AS3696	2018/12/13	2019/12/12

10.4 功率密度量測結果

測試日期 : Jul.16, 2019
測試結果 : 合格

環境溫度 : 26°C

環境濕度 : 65 %
測試者 : 何仁逸

5.8GHz(802.11a) Band 4

ANT0

- a) Channel Low : 功率密度為 -2.86 dBm
- b) Channel Middle : 功率密度為 1.63 dBm
- c) Channel High : 功率密度為 1.98 dBm

ANT1

- a) Channel Low : 功率密度為 -2.46 dBm
- b) Channel Middle : 功率密度為 1.50 dBm
- c) Channel High : 功率密度為 1.54 dBm

ANT2

- a) Channel Low : 功率密度為 -2.58 dBm
- b) Channel Middle : 功率密度為 0.96 dBm
- c) Channel High : 功率密度為 1.76 dBm

5.8GHz(802.11n/ac -20) Band 4

ANT0

- a) Channel Low : 功率密度為 -2.94 dBm
- b) Channel Middle : 功率密度為 1.53 dBm
- c) Channel High : 功率密度為 1.50 dBm

ANT1

- a) Channel Low : 功率密度為 -1.93 dBm
- b) Channel Middle : 功率密度為 1.52 dBm
- c) Channel High : 功率密度為 1.11 dBm

ANT2

- a) Channel Low : 功率密度為 -3.53 dBm
- b) Channel Middle : 功率密度為 0.81 dBm
- c) Channel High : 功率密度為 1.59 dBm

5.8GHz(802.11n/ac -40) Band 4

ANT0

- a) Channel Low : 功率密度為 -7.46 dBm
- b) Channel High : 功率密度為 -2.99 dBm

ANT1

- a) Channel Low : 功率密度為 -7.44 dBm
- b) Channel High : 功率密度為 -2.39 dBm

ANT2

- a) Channel Low : 功率密度為 -7.49 dBm
- b) Channel High : 功率密度為 -2.74 dBm

5.8GHz(802.11ac -80) Band 4

ANT0

- a) Channel Middle : 功率密度為-13.15 dBm

ANT1

- a) Channel Middle : 功率密度為-13.21 dBm

ANT2

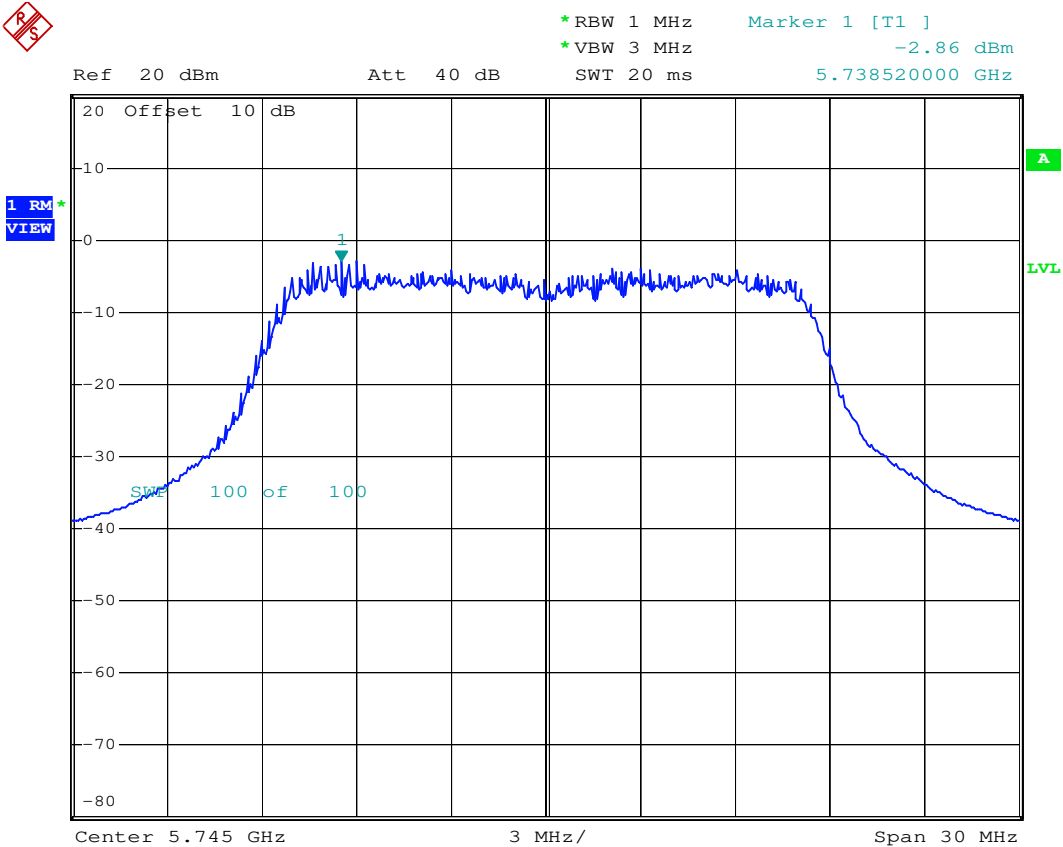
- a) Channel Middle : 功率密度為-13.33 dBm

註：

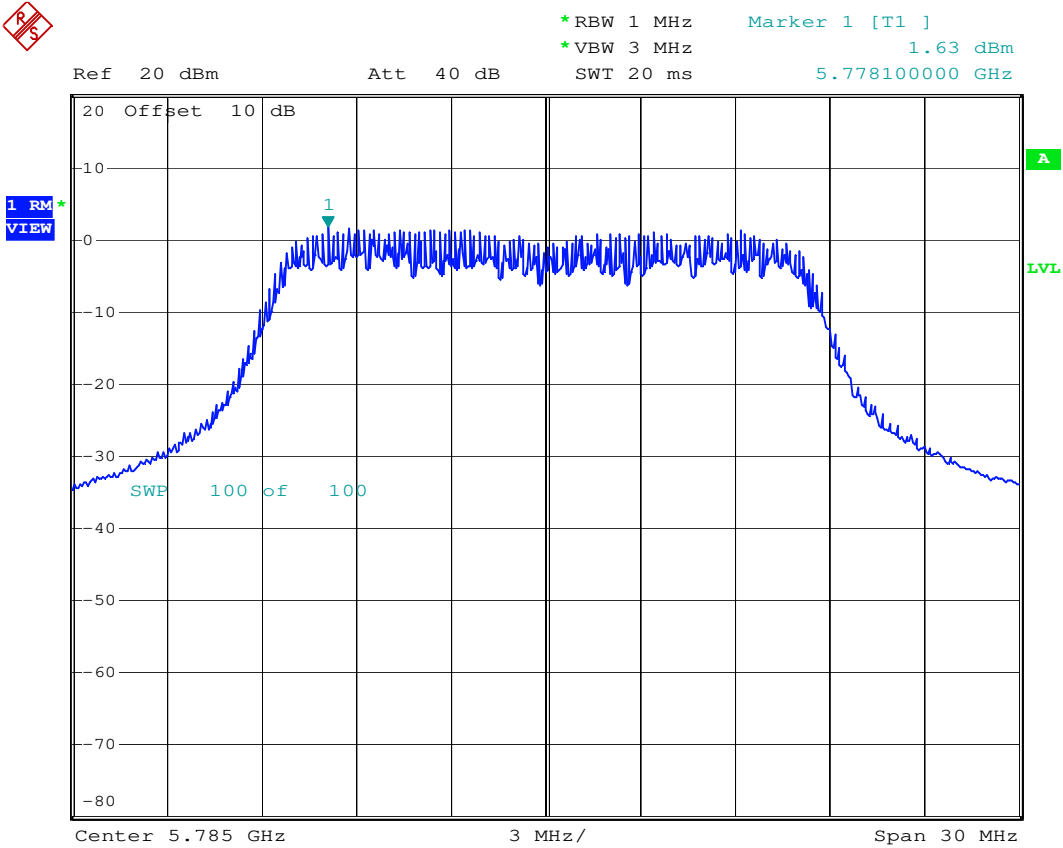
1. 本實驗室功率密度檢驗之擴充不確定度 ± 2 dB。
2. 繪圖資料請參考下頁。

Mode: 5.8GHz(802.11a) Band4 / Channel Low

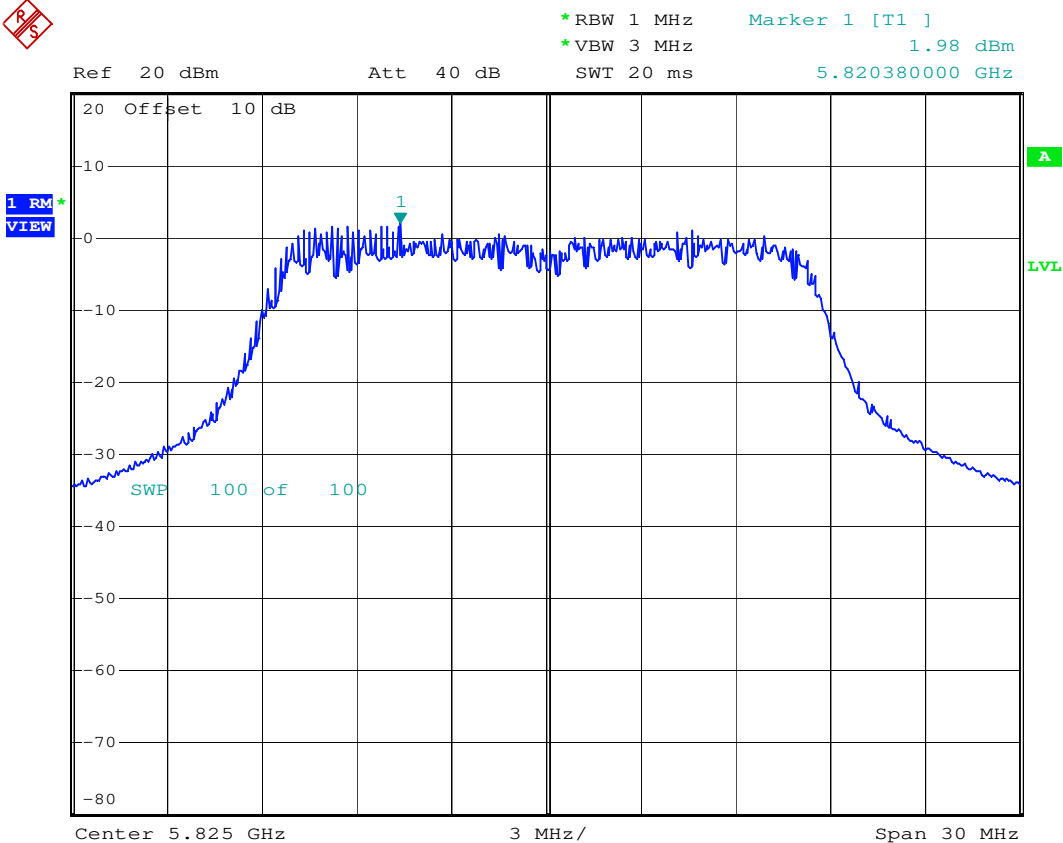
ANT 0



Mode: 5.8GHz(802.11a) Band4 / Channel Middle

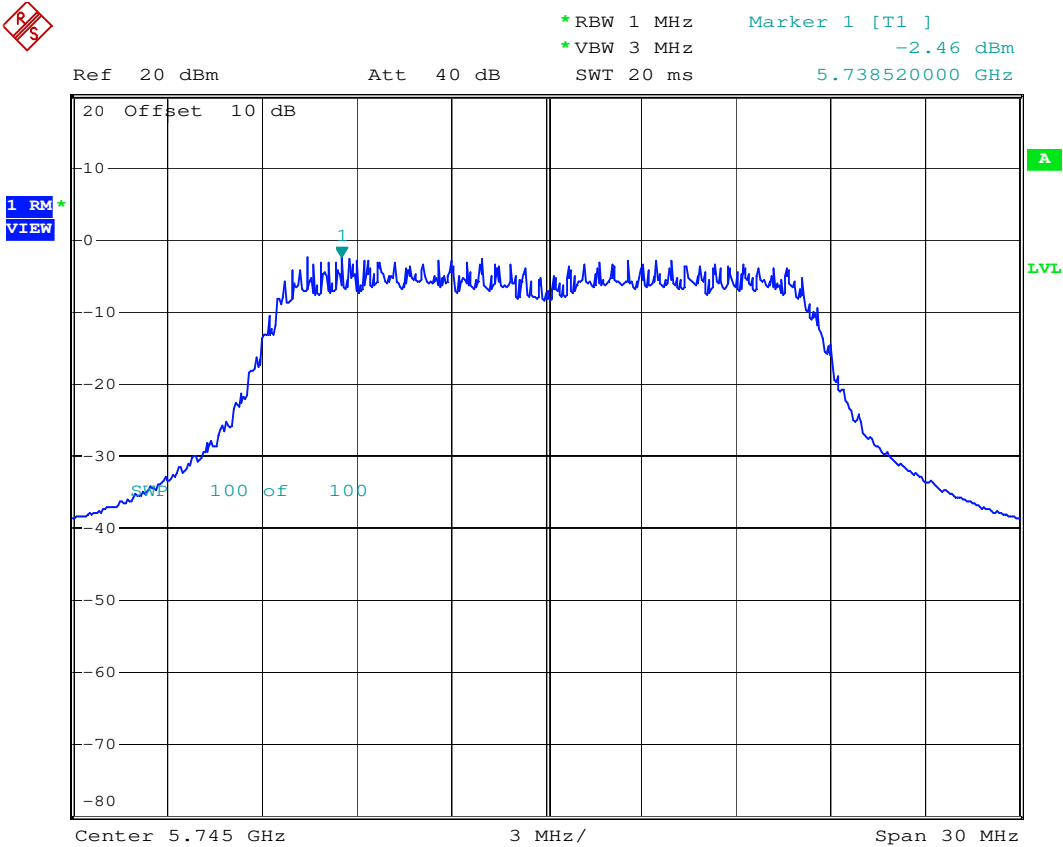


Mode: 5.8GHz(802.11a) Band4 / Channel High

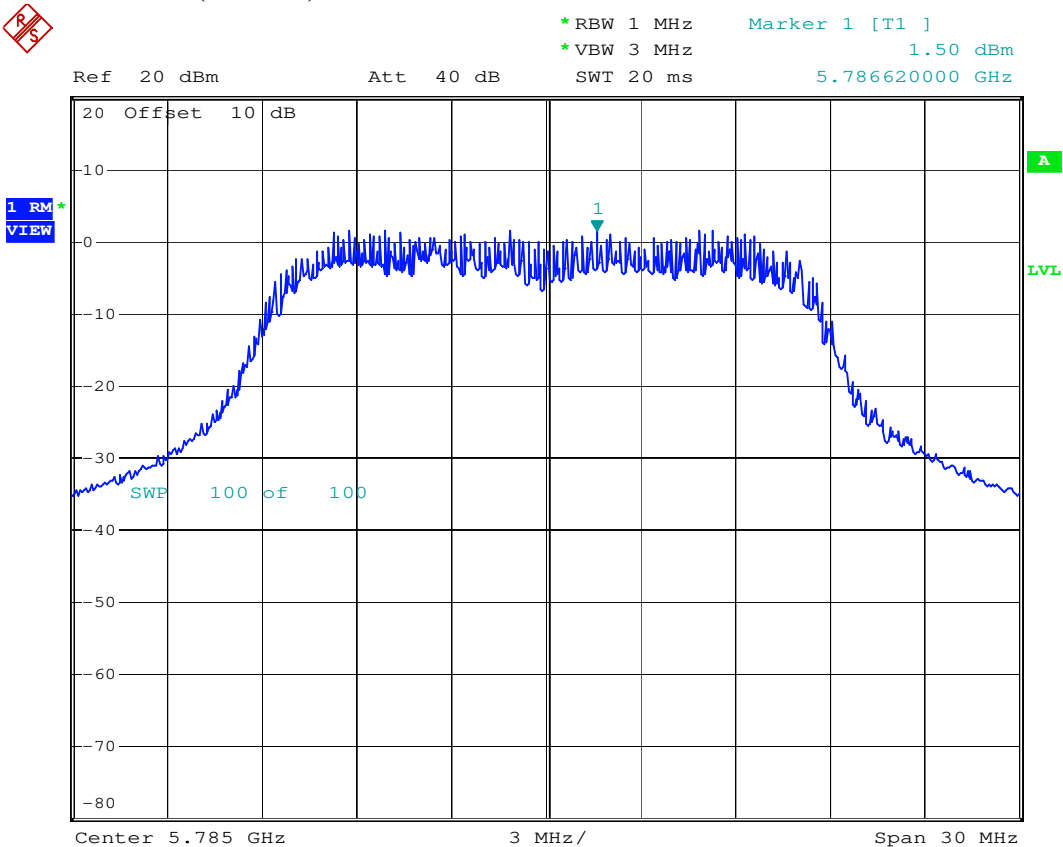


Mode: 5.8GHz(802.11a) Band4 / Channel Low

ANT 1



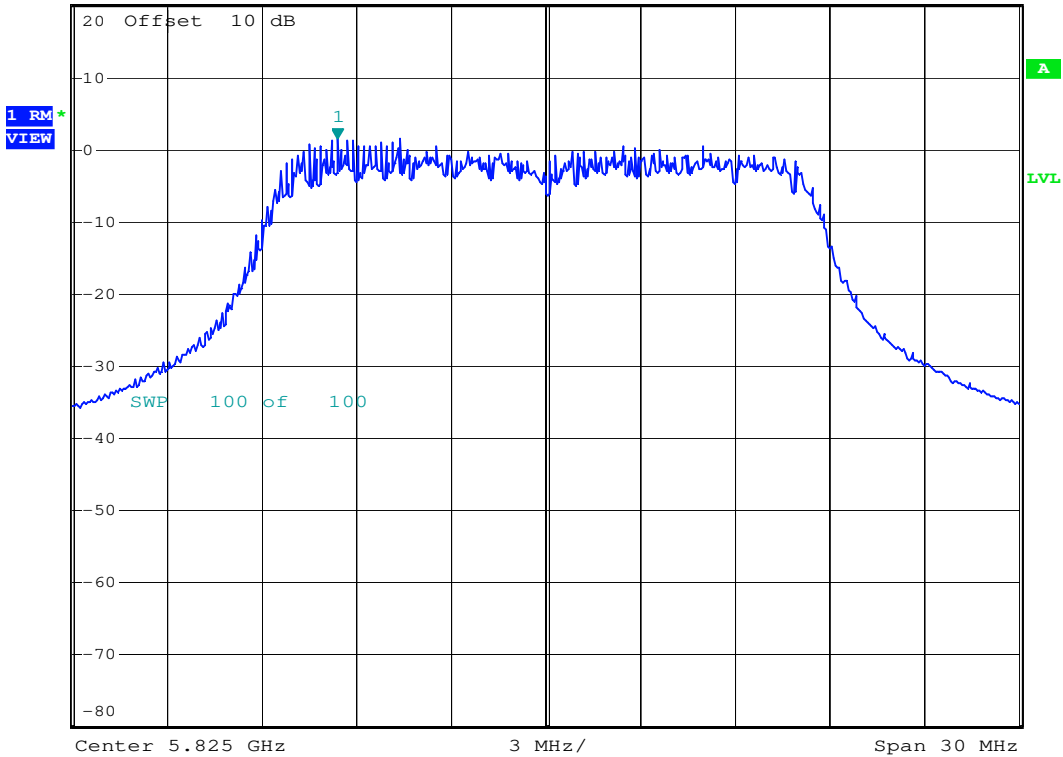
Mode: 5.8GHz(802.11a) Band4 / Channel Middle



Mode: 5.8GHz(802.11a) Band4 / Channel High

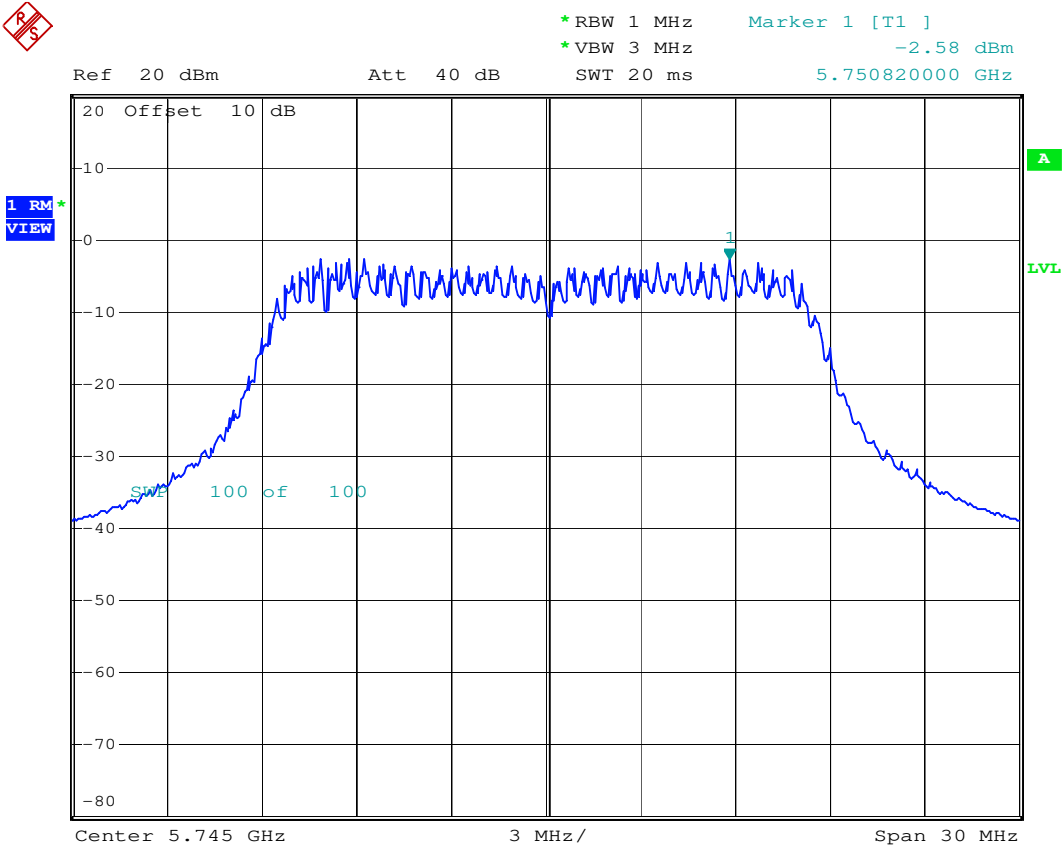


*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 1.54 dBm
Ref 20 dBm Att 40 dB SWT 20 ms 5.818400000 GHz

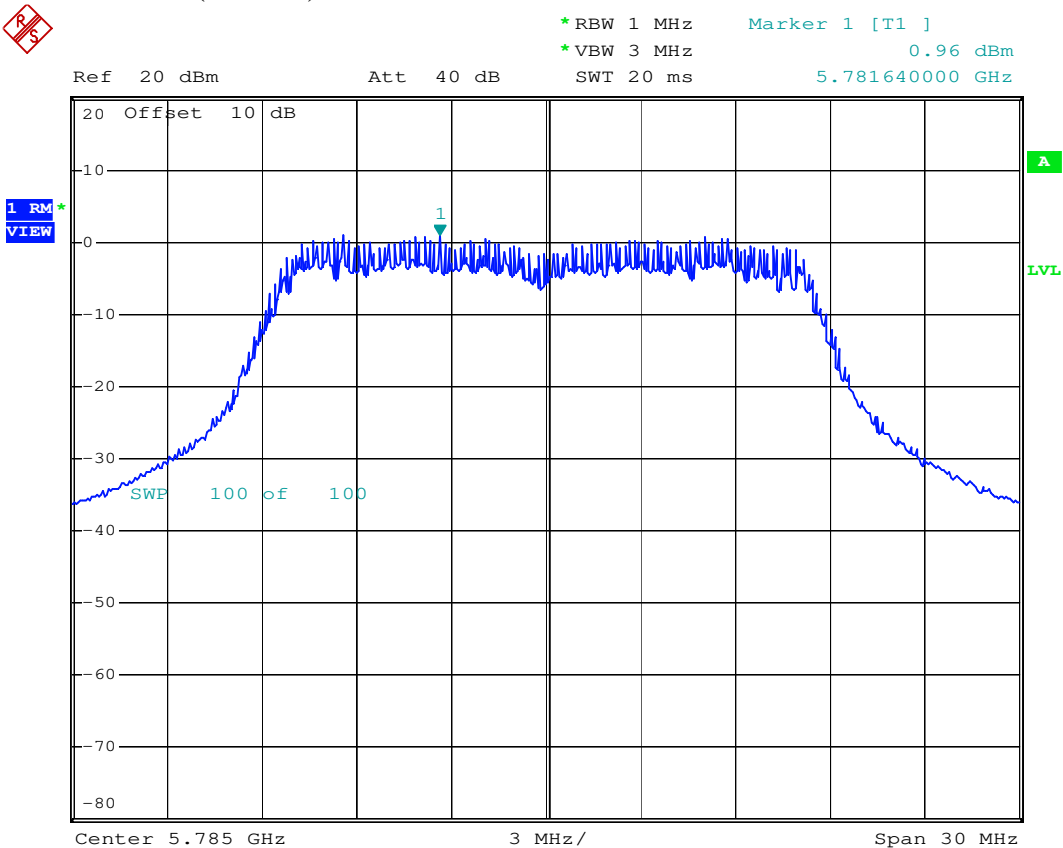


Mode: 5.8GHz(802.11a) Band4 / Channel Low

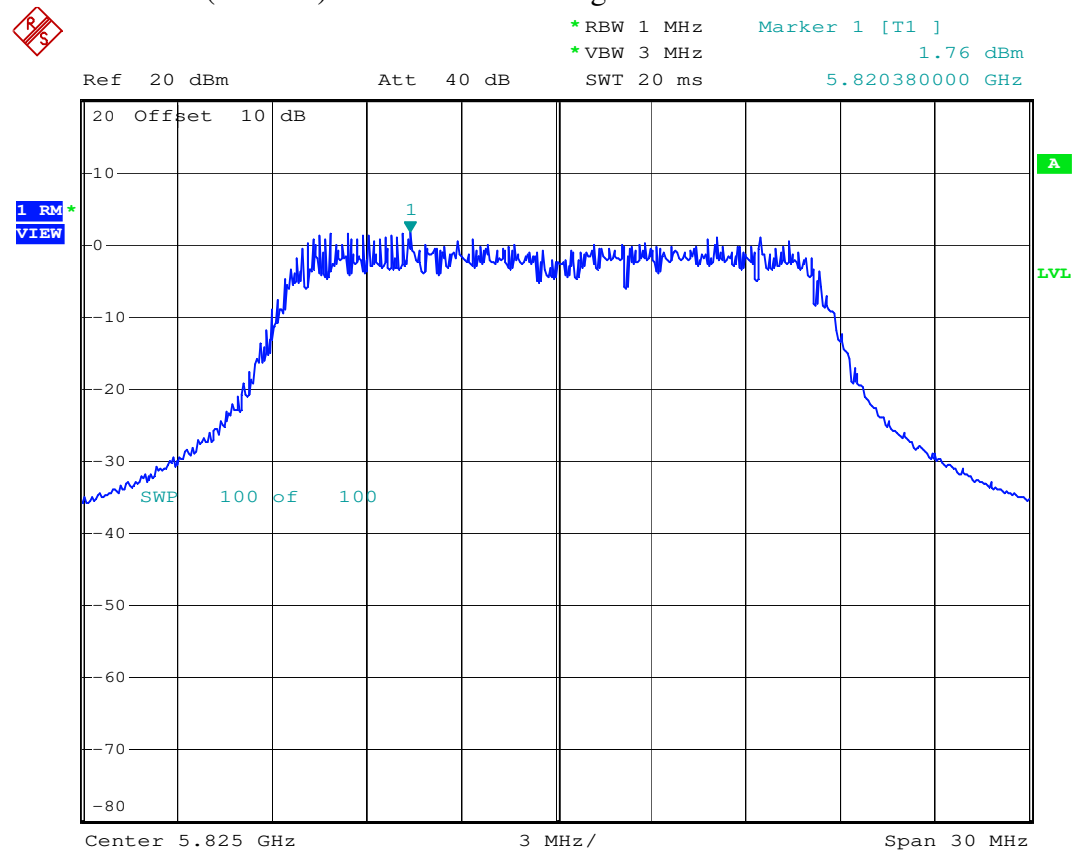
ANT 2



Mode: 5.8GHz(802.11a) Band4 / Channel Middle

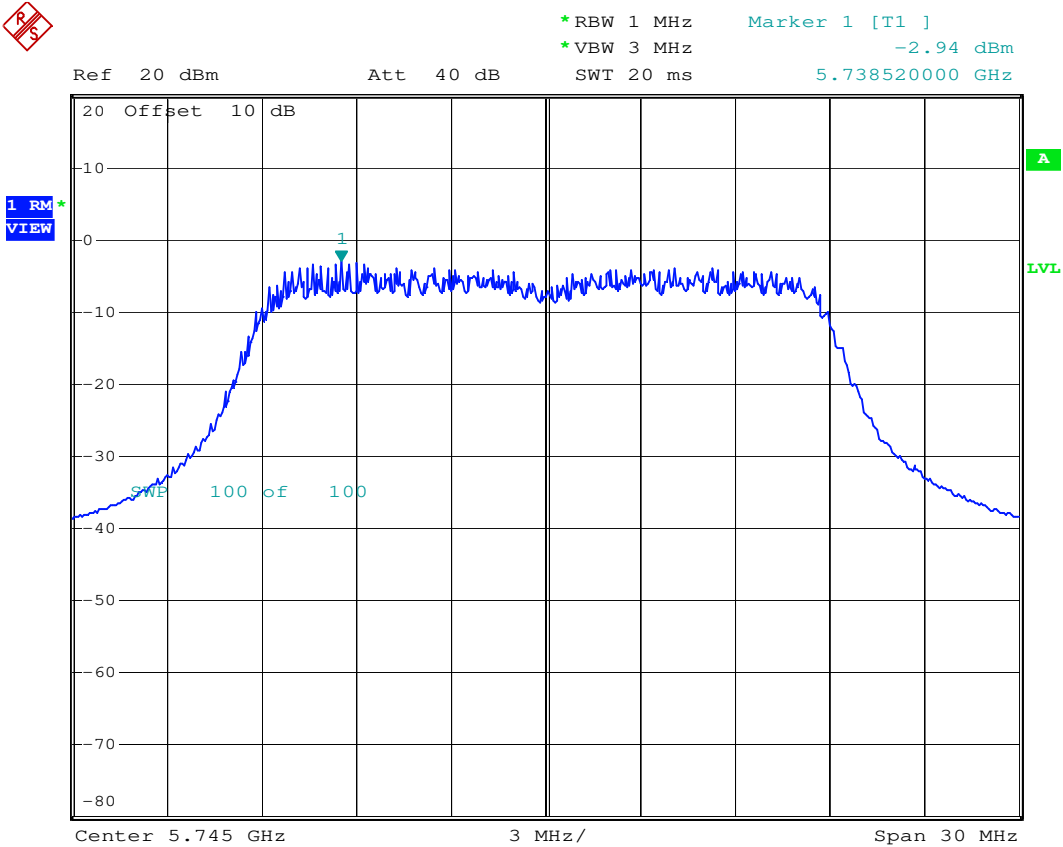


Mode: 5.8GHz(802.11a) Band4 / Channel High

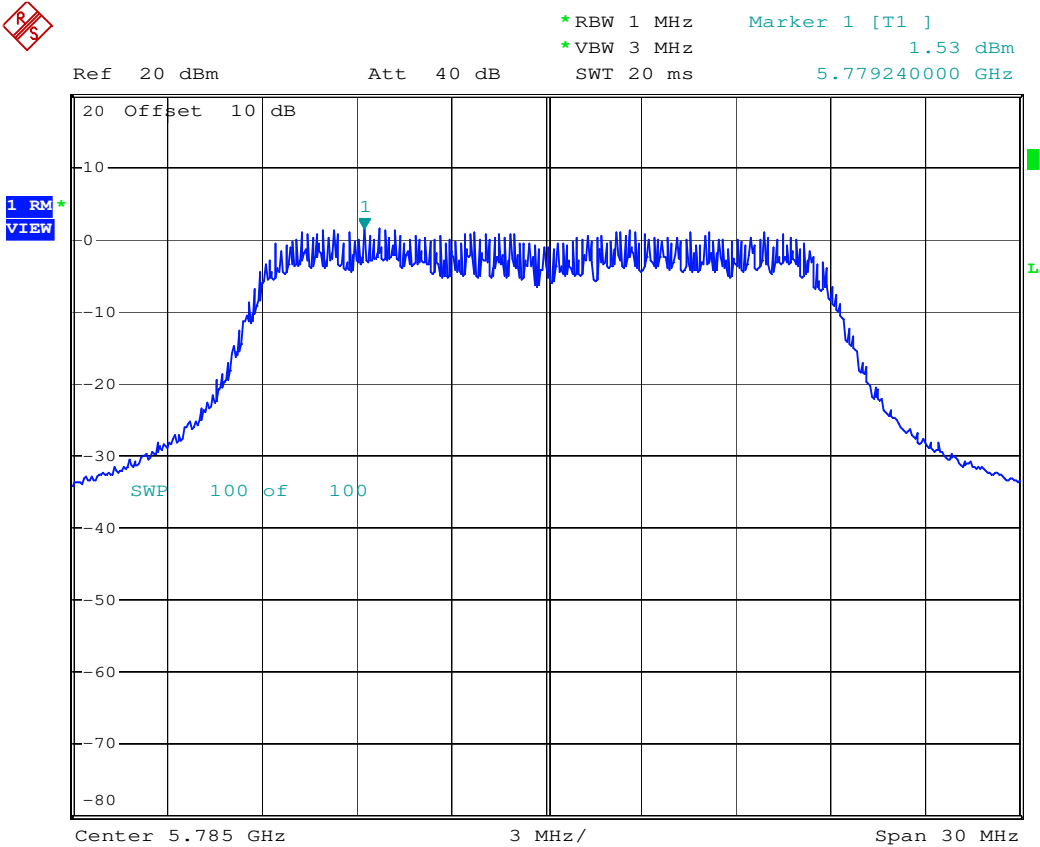


Mode: 5.8GHz(802.11n/ac -20) Band4 / Channel Low

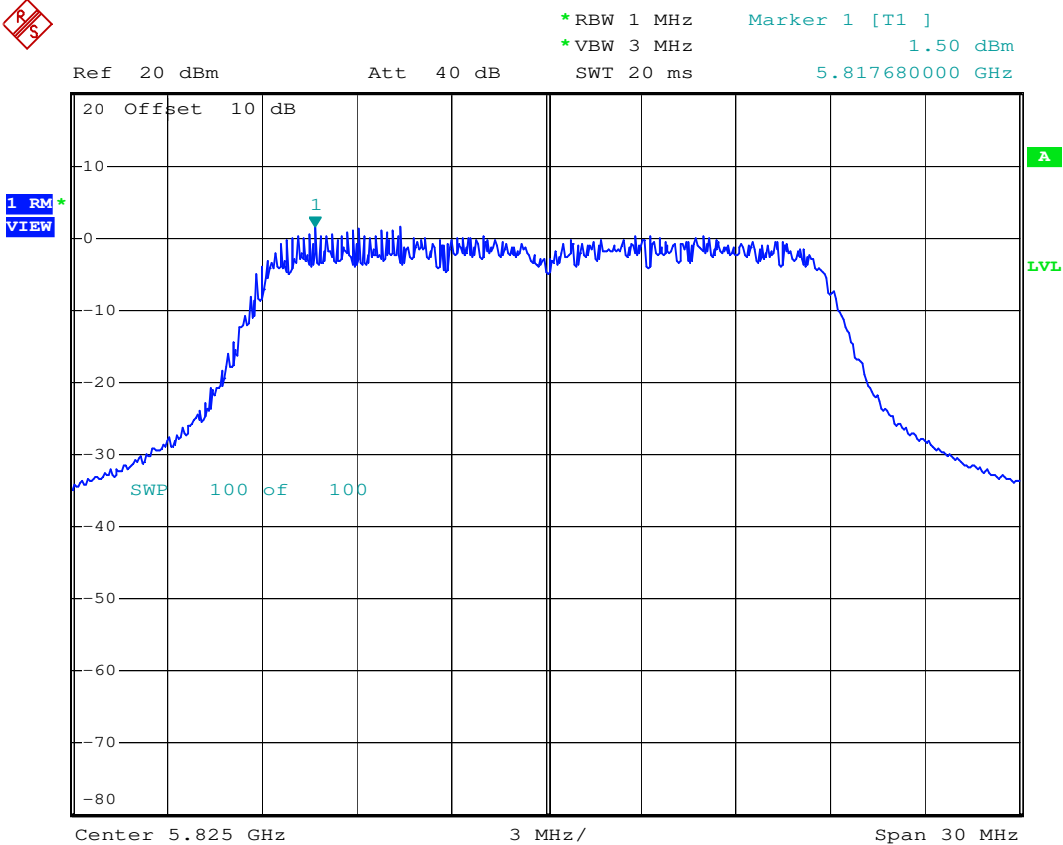
ANT 0



Mode: 5.8GHz(802.11n/ac -20) Band4 / Channel Middle

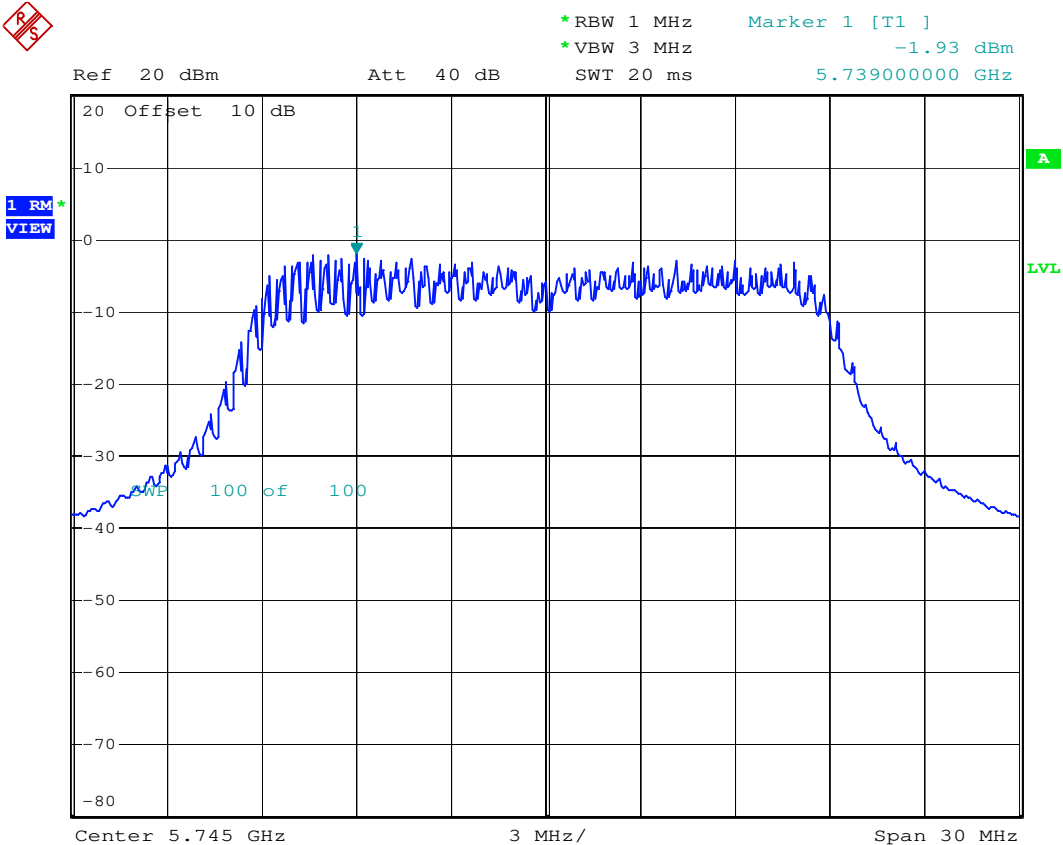


Mode: 5.8GHz(802.11n/ac -20) Band4 / Channel High

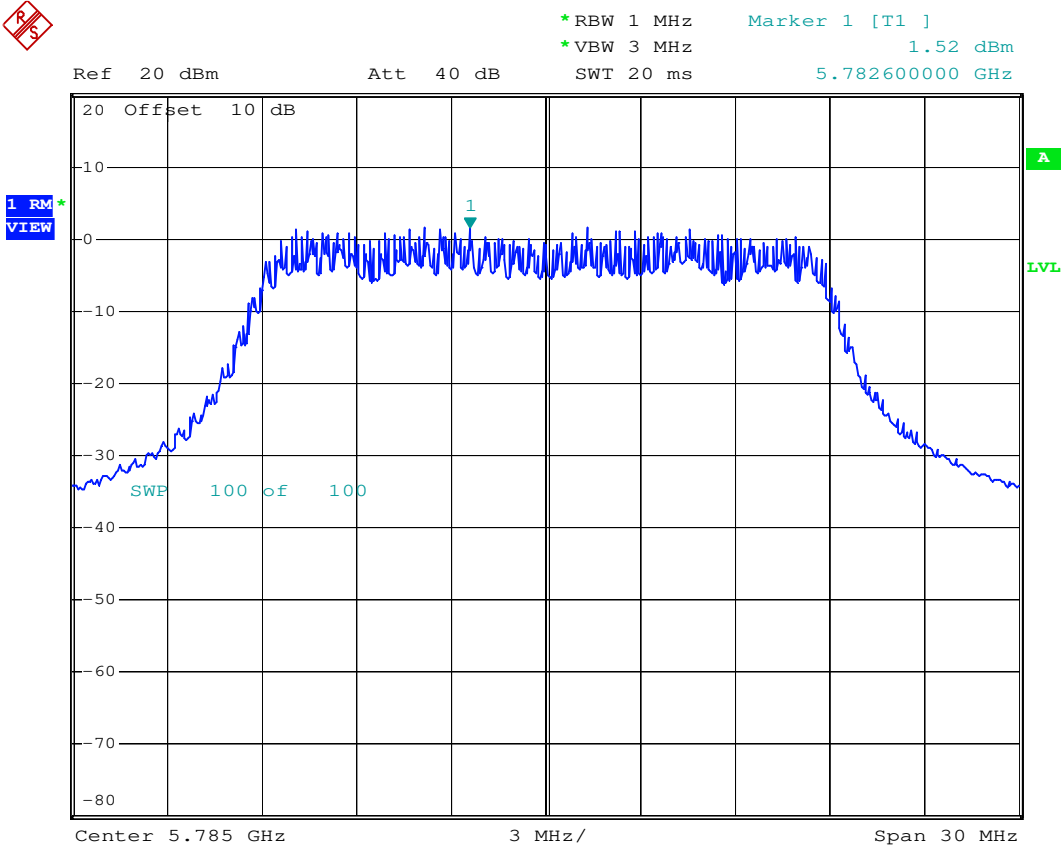


Mode: 5.8GHz(802.11n/ac -20) Band4 / Channel Low

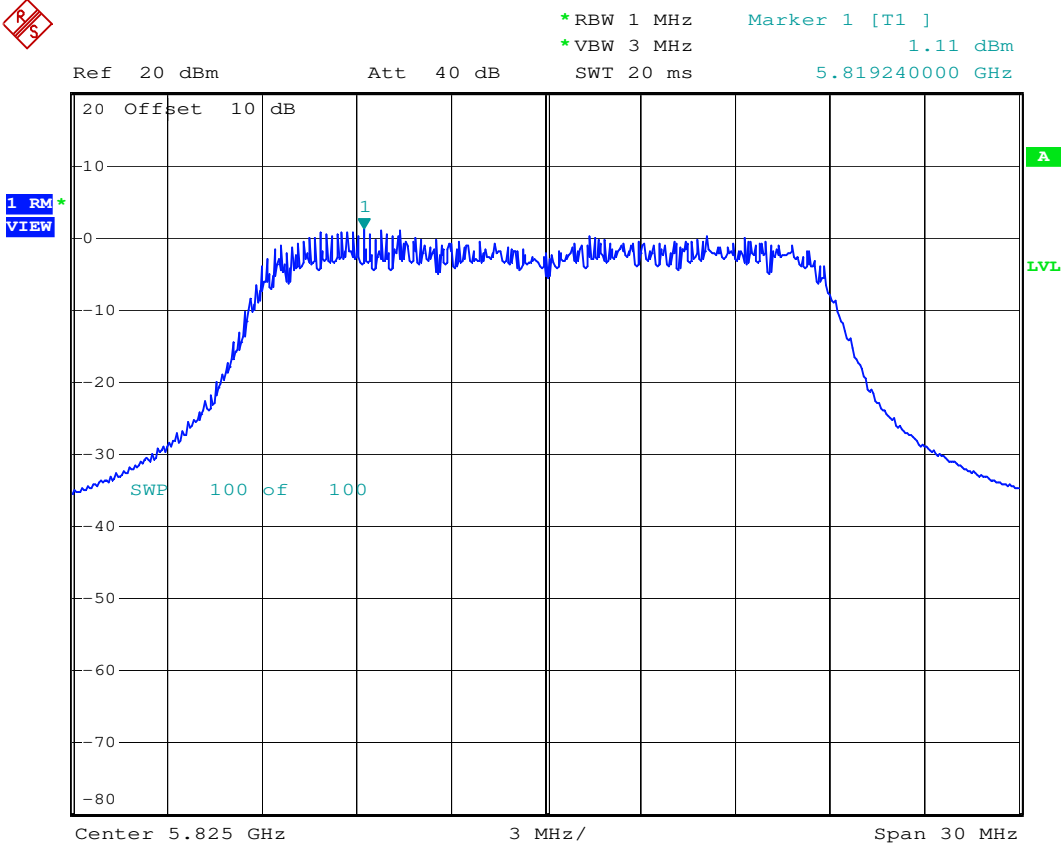
ANT 1



Mode: 5.8GHz(802.11n/ac -20) Band4 / Channel Middle

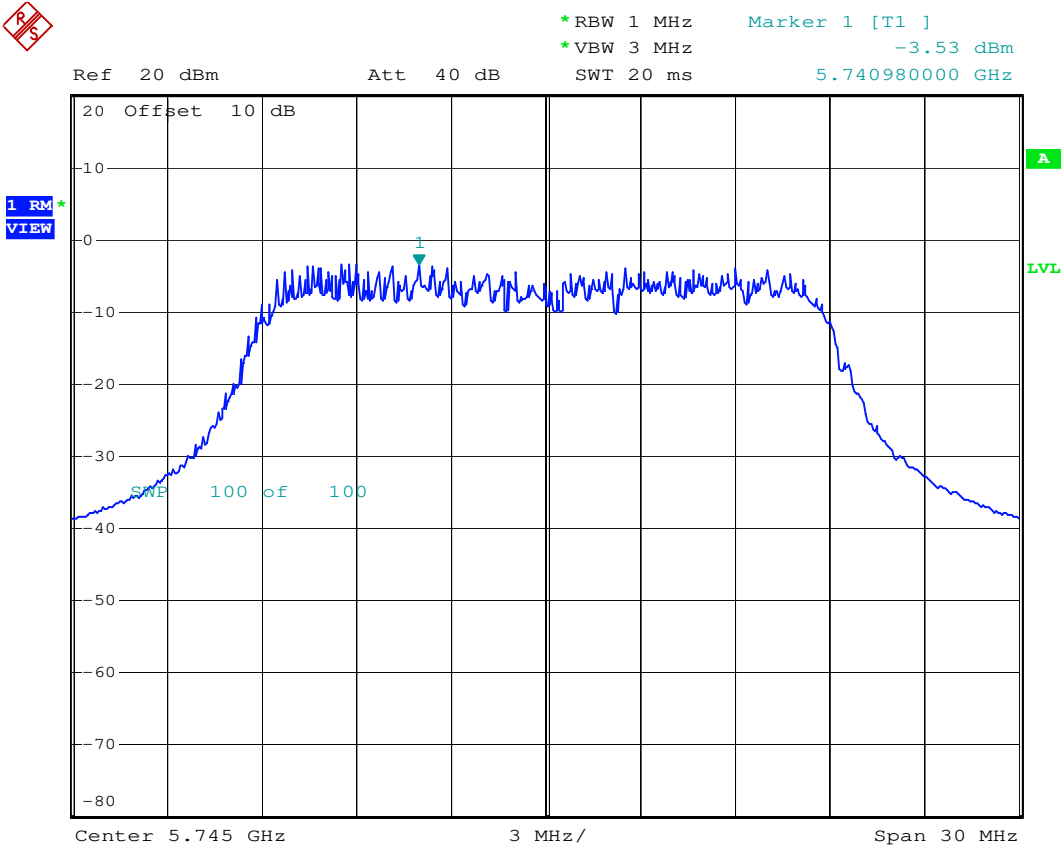


Mode: 5.8GHz(802.11n/ac -20) Band4 / Channel High

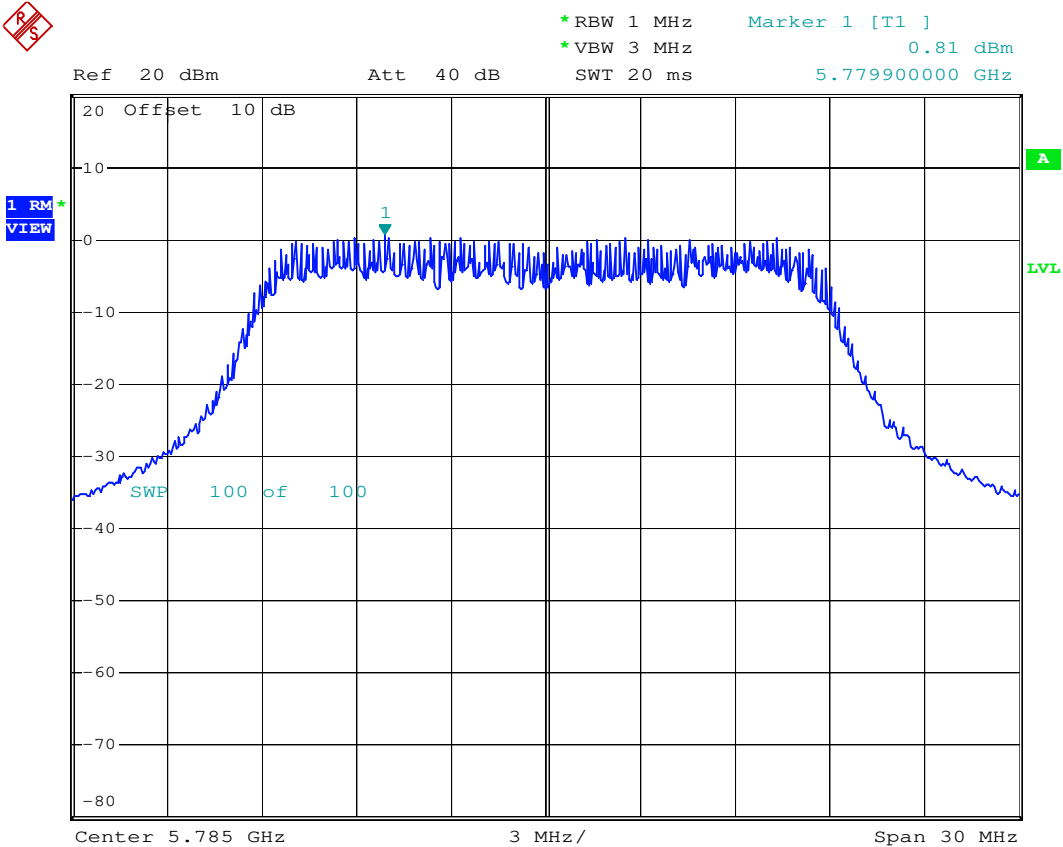


Mode: 5.8GHz(802.11n/ac -20) Band4 / Channel Low

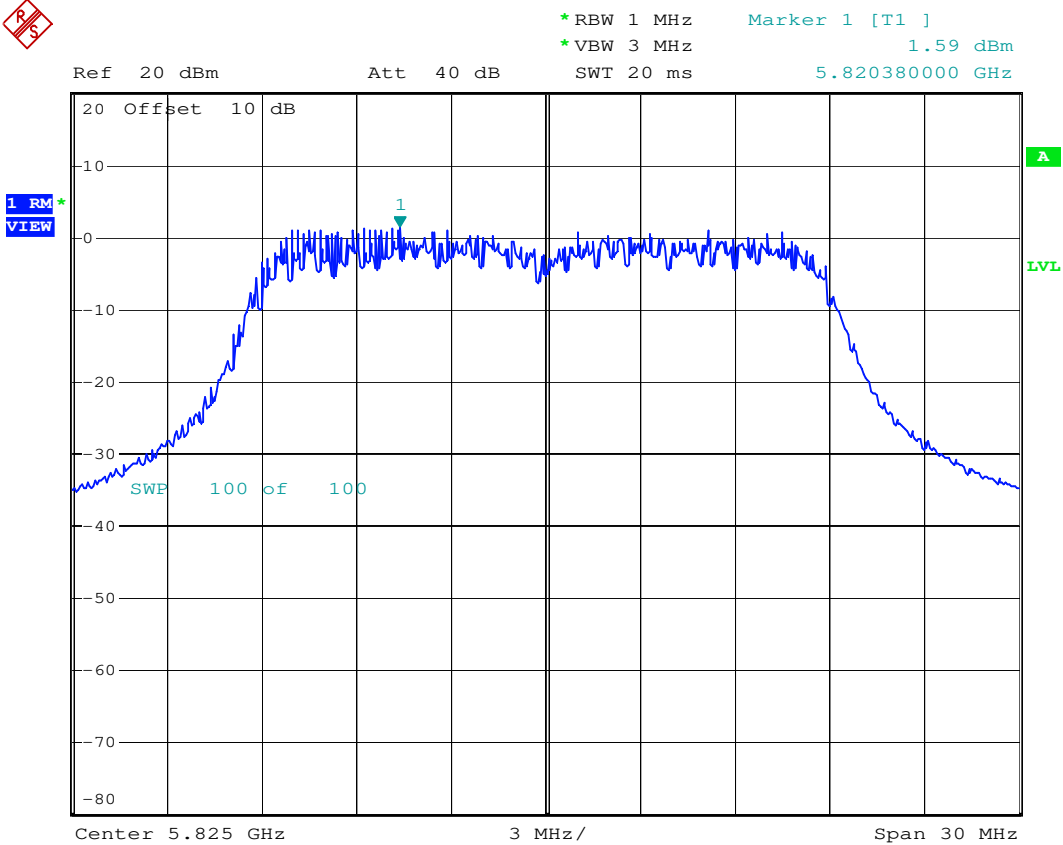
ANT 2



Mode: 5.8GHz(802.11n/ac -20) Band4 / Channel Middle

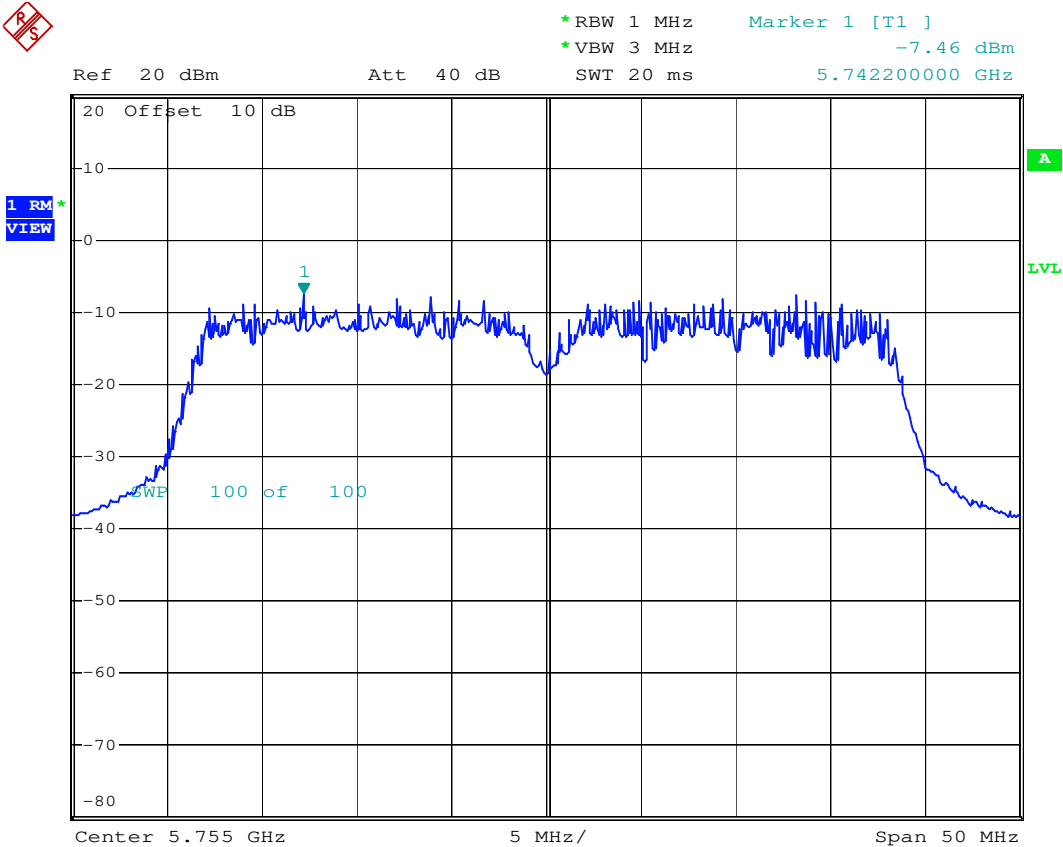


Mode: 5.8GHz(802.11n/ac -20) Band4 / Channel High

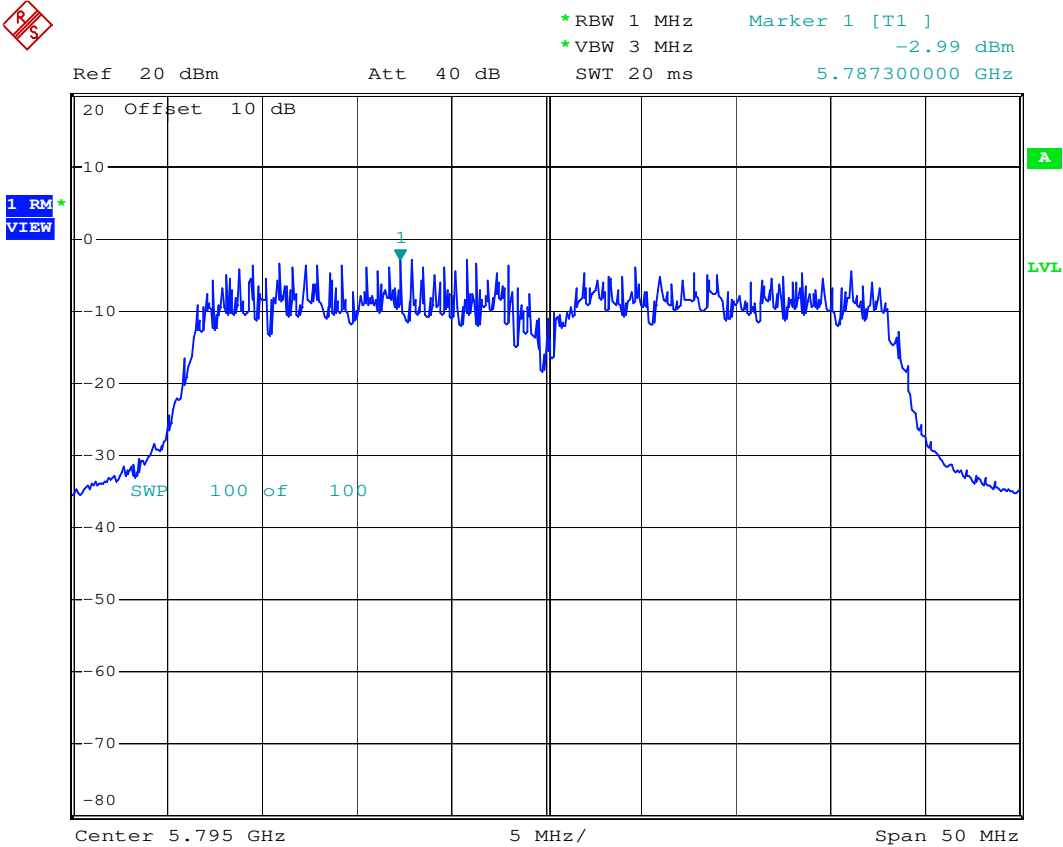


Mode: 5.8GHz(802.11n/ac -40) Band4 / Channel Low

ANT 0

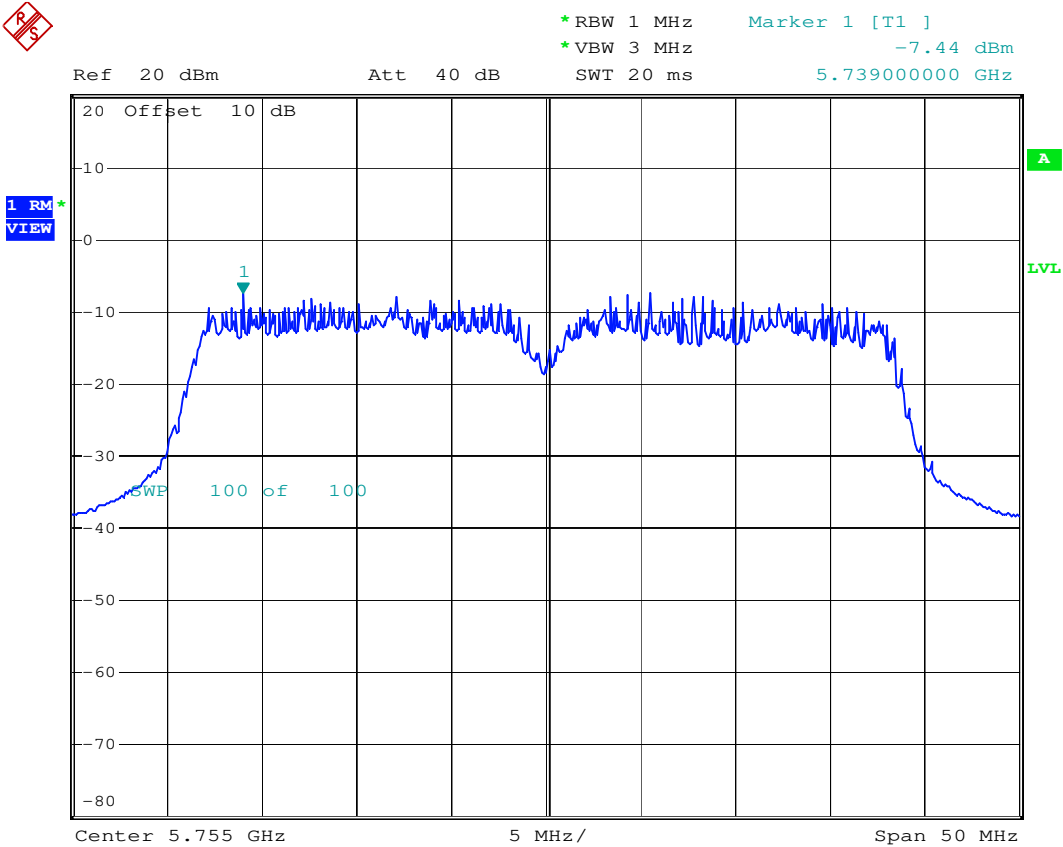


Mode: 5.8GHz(802.11n/ac -40)Band4 / Channel High

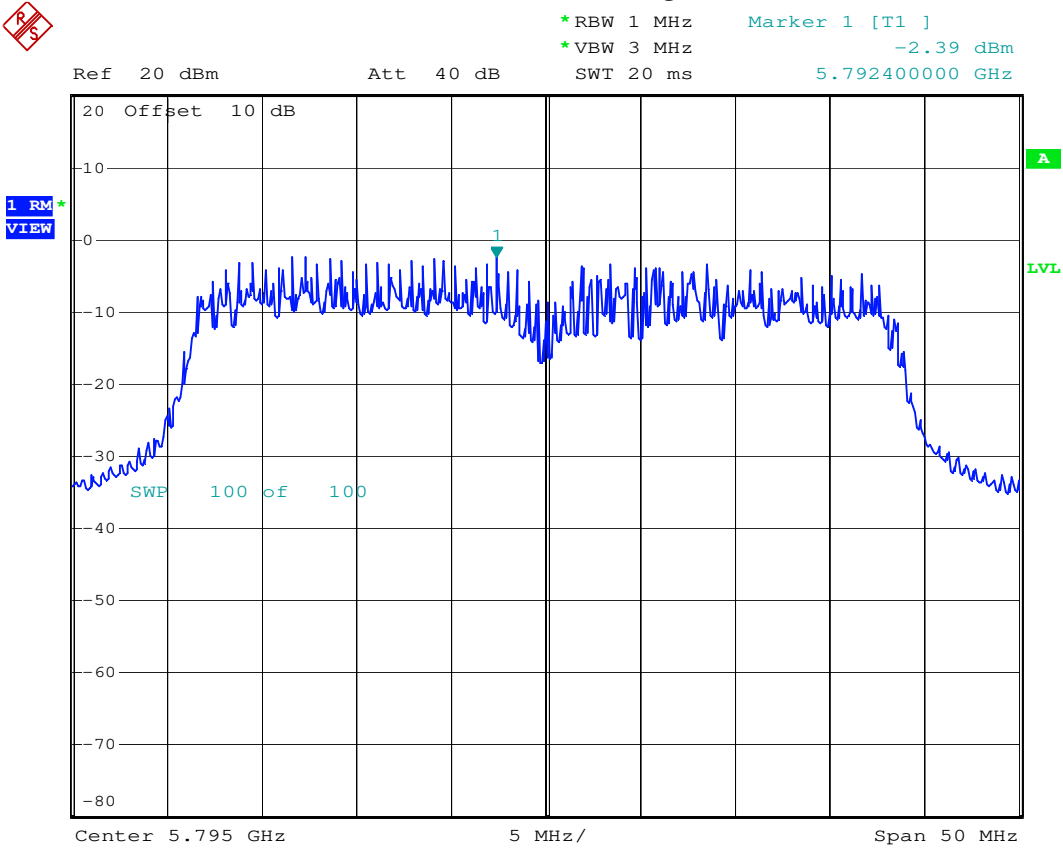


Mode: 5.8GHz(802.11n/ac -40) Band4 / Channel Low

ANT 1

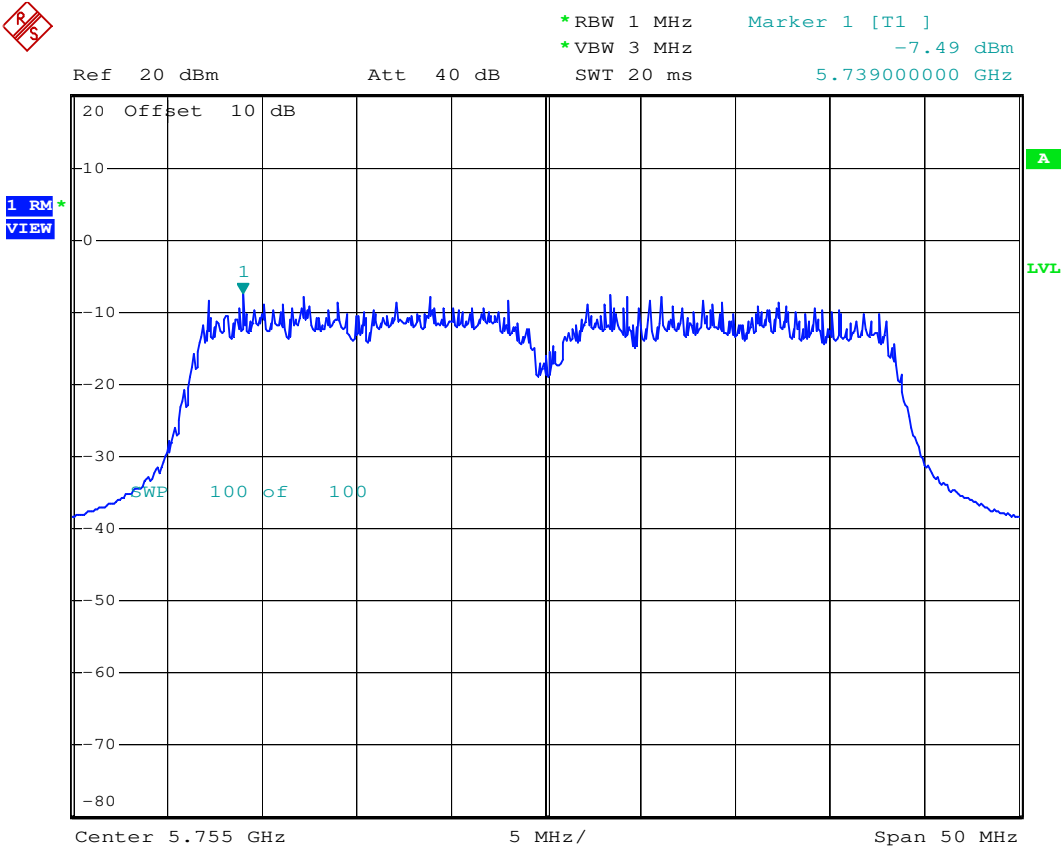


Mode: 5.8GHz(802.11n/ac -40)Band4 / Channel High

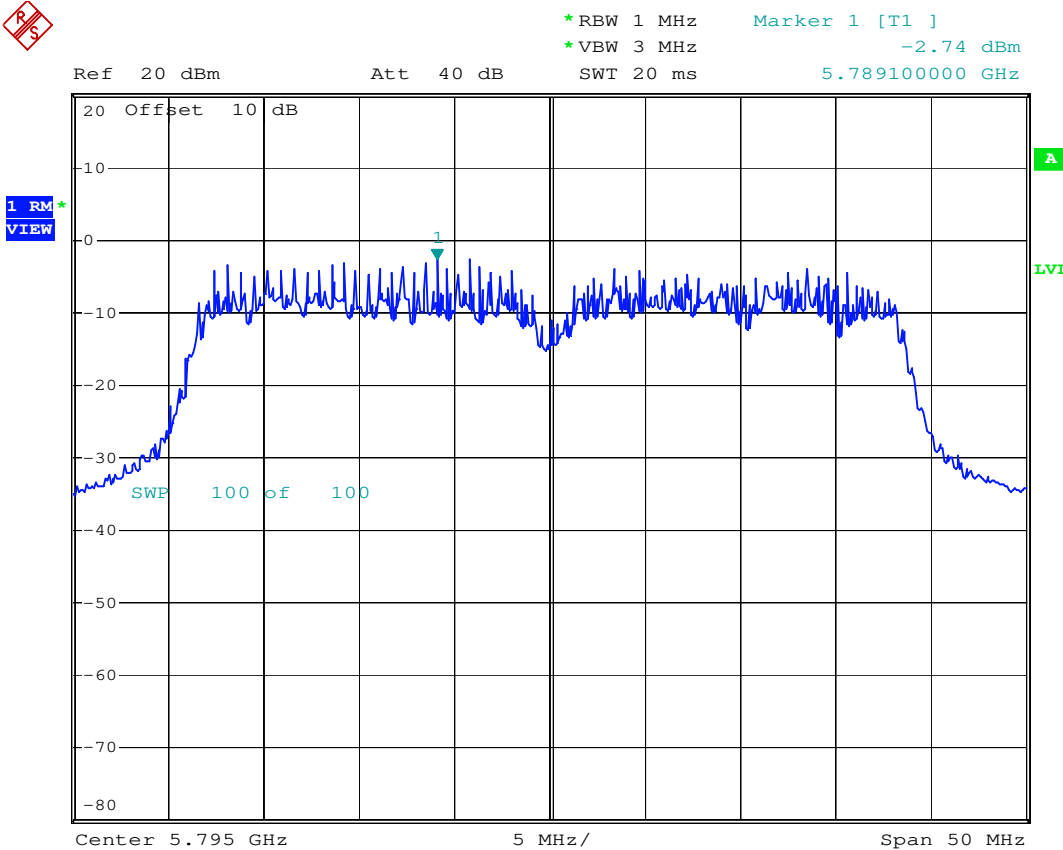


Mode: 5.8GHz(802.11n/ac -40) Band4 / Channel Low

ANT 2

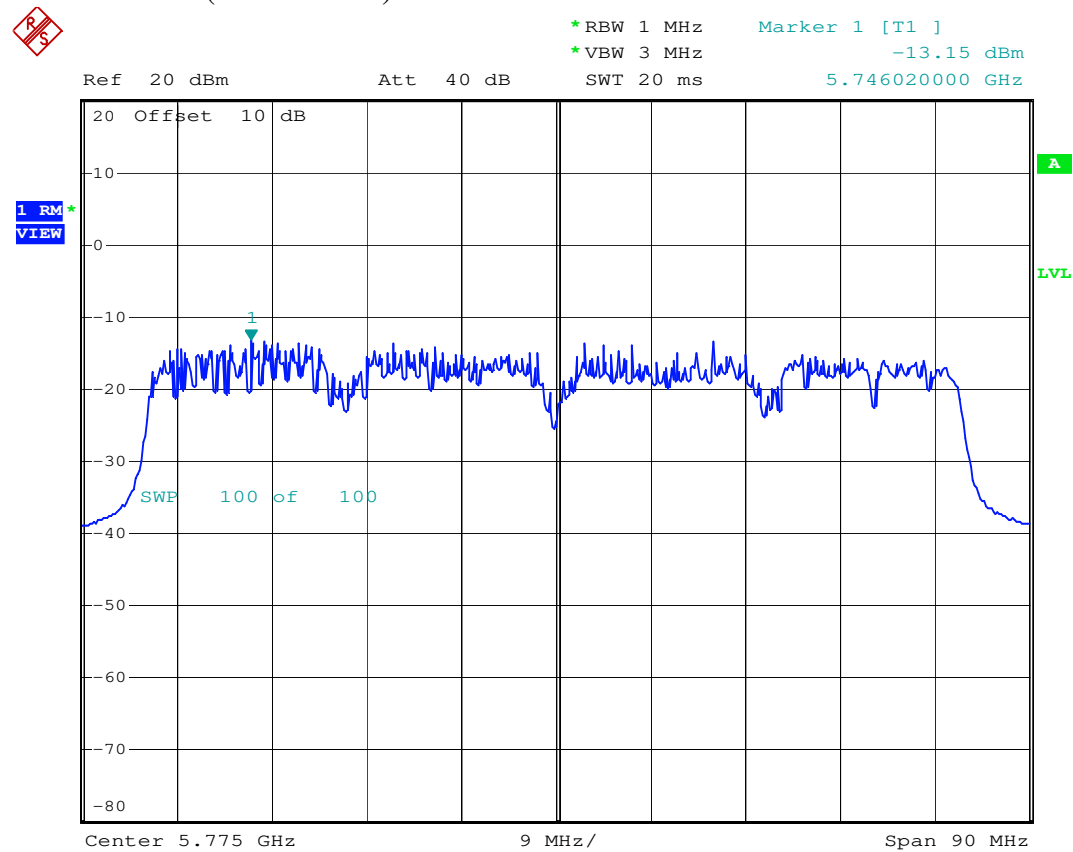


Mode: 5.8GHz(802.11n/ac -40)Band4 / Channel High



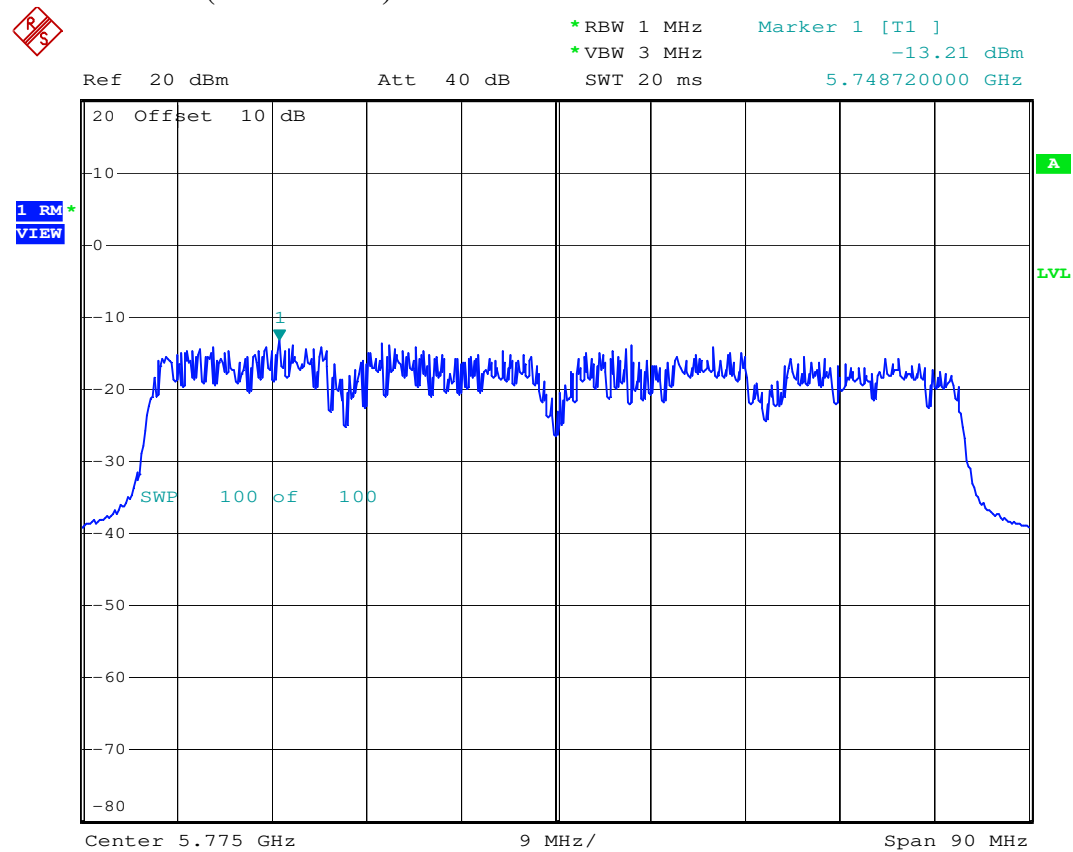
Mode: 5.8GHz(802.11ac -80) Band4 / Channel Middle

ANT 0



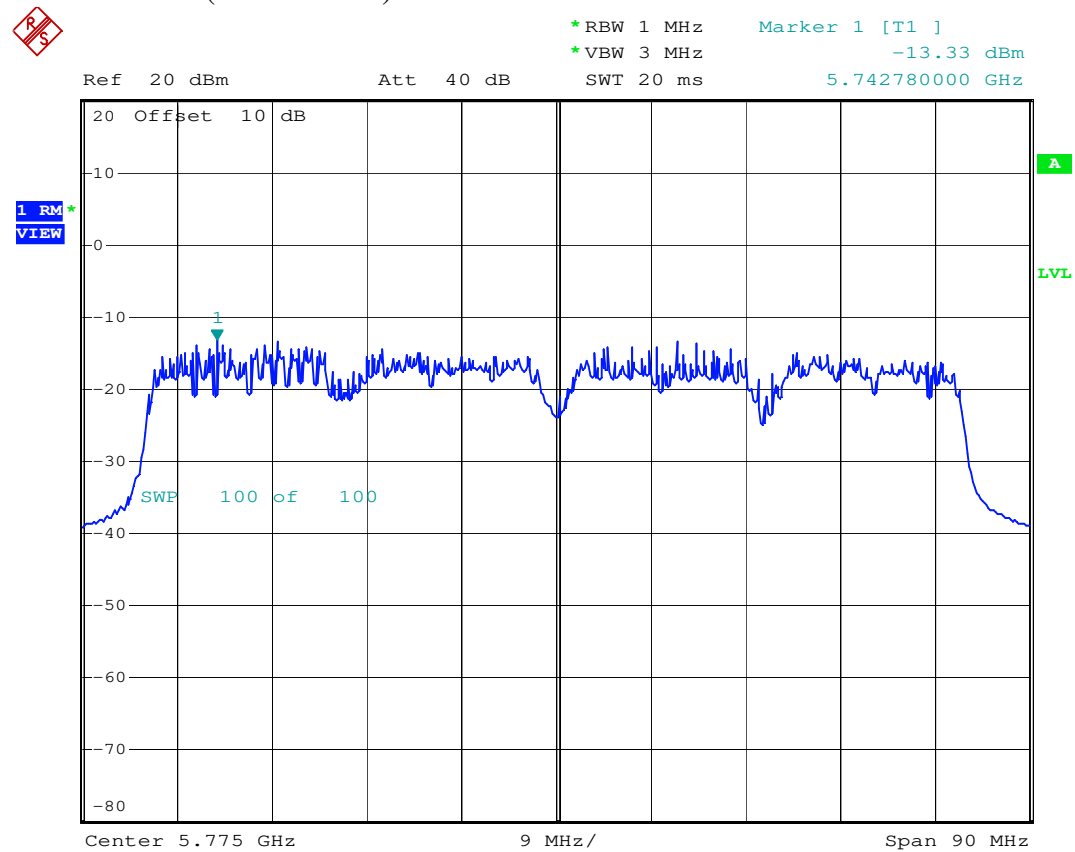
Mode: 5.8GHz(802.11ac -80) Band4 / Channel Middle

ANT 1



Mode: 5.8GHz(802.11ac -80) Band4 / Channel Middle

ANT 2



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	-2.0

(2) 實測輸出功率如下：

802.11a	天線 1 主波輸出功率為	14.7	dBm =	29.512	mW
802.11a	天線 1 主波輸出功率為	14.43	dBm =	27.733	mW
802.11a	天線 1 主波輸出功率為	14.37	dBm =	27.353	mW
802.11 n20 & ac20	天線 1 主波輸出功率為	14.59	dBm =	28.774	mW
802.11 n20 & ac20	天線 2 主波輸出功率為	14.43	dBm =	27.733	mW
802.11 n20 & ac20	天線 3 主波輸出功率為	14.38	dBm =	27.416	mW
802.11 n40 & ac40	天線 1 主波輸出功率為	13.63	dBm =	23.067	mW
802.11 n40 & ac40	天線 2 主波輸出功率為	14.79	dBm =	30.130	mW
802.11 n40 & ac40	天線 3 主波輸出功率為	14.33	dBm =	27.102	mW
802.11 ac80	天線 1 主波輸出功率為	7.39	dBm =	5.483	mW
802.11 ac80	天線 2 主波輸出功率為	7.22	dBm =	5.272	mW
802.11 ac80	天線 3 主波輸出功率為	7.21	dBm =	5.260	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)			
802.11a ANT0	29.512	-2.00	0.63	20	0.0037	1
802.11a ANT1	27.733	-2.00	0.63	20	0.0035	1
802.11a ANT2	27.353	-2.00	0.63	20	0.0034	1
802.11n HT-20 & ac20 ANT0	28.774	-2.00	0.63	20	0.0036	1
802.11n HT-20 & ac20 ANT1	27.733	-2.00	0.63	20	0.0035	1
802.11n HT-20 & ac20 ANT2	27.416	-2.00	0.63	20	0.0034	1
802.11n HT-20 & ac20 MIMO	83.923	-2.00	0.63	20	0.0105	1
802.11n HT-40 & ac40 ANT0	23.067	-2.00	0.63	20	0.0029	1
802.11n HT-40 & ac40 ANT1	30.130	-2.00	0.63	20	0.0038	1
802.11n HT-40 & ac40 ANT2	27.102	-2.00	0.63	20	0.0034	1
802.11n HT-40 & ac40 MIMO	80.299	-2.00	0.63	20	0.0101	1
802.11 ac80 ANT0	5.483	-2.00	0.63	20	0.0007	1
802.11 ac80 ANT1	5.272	-2.00	0.63	20	0.0007	1
802.11 ac80 ANT2	5.260	-2.00	0.63	20	0.0007	1
802.11 ac80 MIMO	16.015	-2.00	0.63	20	0.0020	1
電波暴露量評估結果：合格						

電磁波暴露量MPE標準值1mW/cm²，送測產品實測值為 0.0105 mW/cm²。