

低功率射頻電機 檢驗報告

申請者	台灣山洋電氣股份有限公司
申請者地址	臺北市中山區民生西路3巷9號7樓
製造廠商	SANYO DENKI CO., LTD.
受檢設備名稱	Wireless Adapter
廠牌	SANMOTION
型號	SMC-USBW-01
檢驗依據標準	國家通訊傳播委員會低功率射頻電機 技術規範 (LP0002)
受理日期	109年05月26日
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報告編號	20-05-MAS-062
檢驗結果	合格

財團法人台灣電子檢驗中心

33383桃園市龜山區文明路29巷8號

電話：(03)3276170~74

傳真：(03)3276188

實驗室認可編號及範圍：0371 (9 kHz to 325 GHz)

實驗室認可證書有效期限：110年10月31日



報告內容索引

1 一般資料	5
1.1 產品描述	5
1.2 產品特性	5
1.3 測試方法之依據	5
2 適用規範	6
2.1 規範要求	6
2.2 限制使用之頻帶	8
3 受測裝置之系統說明	9
3.1 受測裝置	9
3.2 測試模式說明	9
4 電源線傳導干擾之量測	17
4.1 適用標準	17
4.2 測試方法	17
4.3 量測電源線傳導干擾之儀器	17
4.4 傳導干擾之量測結果	18
4.5 電源線傳導干擾之測試配置	20
4.6 傳導量測之配置照片	21
5 天線增益之要求	22
5.1 適用標準	22
5.2 天線增益	22
5.3 結果判定	22
6 發射頻寬之要求	23
6.1 適用標準	23
6.2 測試配置	23
6.3 發射頻寬之量測儀器	23
6.4 量測結果	24
6.5 結果判定	32
7 峰值輸出功率之量測	36
7.1 峰值適用標準	36
7.2 峰值輸出功率之測試配置	36
7.3 峰值輸出功率之量測儀器	36
7.4 峰值輸出功率之量測結果	37
7.5 結果判定	39
8 功率密度之量測	40

8.1 適用標準.....	40
8.2 量測功率密度之配置.....	40
8.3 量測功率密度之儀器.....	40
8.4 量測結果.....	41
8.5 結果判定.....	49
9 混附波發射限制之量測.....	53
9.1 適用標準.....	53
9.2 混附波發射限制之測試配置.....	53
9.3 量測混附波發射限制之儀器.....	53
9.4 混附波發射限制之量測結果 (傳導方式量測).....	53
9.5 結果判定.....	65
10 場強輻射之量測.....	71
10.1 適用標準.....	71
10.2 量測方法.....	71
10.3 量測場強輻射之儀器.....	71
10.4 場強度之計算.....	72
10.5 場強輻射之量測結果.....	73
10.6 禁用頻段邊緣輻射場強之量測結果.....	102
10.7 結果判定.....	102
10.8 輻射之測試配置.....	103
10.9 輻射量測之配置照片.....	104
11 MAXIMUM PERMISSIBLE EXPOSURE	105
12 量測之儀器	107

測試報告記錄

申請廠商：台灣山洋電氣股份有限公司
 製造廠商：SANYO DENKI CO., LTD.
 廠牌：SANMOTION
 品名：Wireless Adapter
 型號：SMC-USBW-01
 檢驗依據標準：國家通訊傳播委員會低功率射頻電機技術規範(LP0002)
 規範修訂日期107年01月10日
 發射功率(電場強度)：15.67 dBm (發射功率)
 工作頻率及調變方式：2412 ~ 2462 MHz / DSSS + OFDM
 天線規格：內置固定式天線

- 備註：1. 本試驗報告中是描述本實驗室以最佳的知識和能力進行試驗，我們的責任僅限於合理與謹慎的試驗，並非確保賣方之法律和/或合同的義務。
 2. 本符合性試驗係依據適當的標準及試驗樣品進行測試，本試驗報告的結果僅與測試項目有關，且僅針對受試驗之樣品負責，無法確保產品生產過程中的品質與性能要求。
 3. 非經本中心同意，檢驗報告不得摘錄複印使用。（全部複製除外）。

項次	測試項目	適用規範	量測設備	測試結果	結果判定
1	電源線傳導干擾之要求	低功率射頻電機技術規範 2.3節	請參閱4.3節	請參閱4.4節	合格
2	天線增益之要求	低功率射頻電機技術規範 3.10.1.3	----	請參閱5.2節	----
3	發射頻寬之要求	低功率射頻電機技術規範 3.10.1.6節之(2)(A)	請參閱6.3節	請參閱6.4節	合格
4	峰值輸出功率之要求	低功率射頻電機技術規範 3.10.1.2節之(1)(C)	請參閱7.3節	請參閱7.4節	合格
5	功率密度之要求	低功率射頻電機技術規範 3.10.1.6節之(2)(B)	請參閱8.3節	請參閱8.4節	合格
6	混附波發射限制之要求	低功率射頻電機技術規範 3.10.1.5	請參閱9.3節	請參閱9.4節	合格
7	場強輻射之要求	低功率射頻電機技術規範 3.10.1.5	請參閱10.3節	請參閱10.5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	請參閱11節	請參閱11節	合格
	以下空白				

測量實驗室負責人：鄭景文 直接主管：黃敬輝 量測員：翁如泰
 109.06.30 109.06.30 109.6.30

1 一般資料

1.1 產品描述

- a) 產品型態 : Wireless Adapter
 b) 商 標 : SANMOTION
 c) 產品型號 : SMC-USBW-01
 d) 供應電源 : AC 110V/ 60Hz

備註: 本案經申請者切結器材不提供隨貨配件，配件由實驗室(或申請者)提供併同檢驗。

1.2 產品特性

此裝置為 Wireless Adapter，內含之WLAN其發射頻率落於 2412 至 2462 MHz頻段分為 11 個頻道。採用 IEEE 802.11b/g/n HT20 直接序列展頻調變技術，最高資料傳送速度為 135 Mbps，調變方式為 DSSS (IEEE 802.11b)：DBPSK，DQPSK，CCK 以及 OFDM (IEEE 802.11g/n HT20)：BPSK，QPSK，16QAM，64QAM，其應用為區域網路無線傳輸。主波發射功率為 15.67 dBm，即為 36.90 mW，其頻道對應頻率如下：

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		

1.3 測試方法之依據

本測試報告之所有項目皆依據國家通訊傳播委員會低功率射頻電機技術規範以及參考 IEEE ANSI、歐盟ETSI EN與美國EIA、FCC 47 CFR PART 2、KDB及ARIB STD-T67 等有關檢驗之規定。

試驗室介紹：財團法人台灣電子檢驗中心電磁相容試驗室通過下列評鑑、認可、登錄與相互認可協議：

- ❶ ISO/IEC 17025 : TAF(0371), NVLAP(Lab code: 200133-0), CBTL(TÜ V SÜ D)
- ❷ Recognized : BSMI, NCC, FCC(TW0371, TW1112), ISED(Industry Canada Site # 2949A-2)
- ❸ Filing : VCCI (C-13518, R-13177, G-10098, T-11682)
- ❹ MRA : Australia, New Zealand, Singapore

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之2.3節，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150KHz~30MHz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微亨利及50歐姆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。

頻率範圍 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) 天線增益之要求

低功率發射機，依據國家通訊傳播委員會低功率射頻電機技術規範3.10.1.3之規定，若發射天線之方向性增益超過6dBi時，除符合下列情形外，應依其所超過之dB數降低最大傳導輸出功率。

依據國家通訊傳播委員會低功率射頻電機技術規範3.10.1.3節之(3)規定，除3.10.1.3節之(1)與(2)外，使用超過6dBi方向增益之發射天線時，應依照超過6 dBi天線方向性增益的dBi總量，等量減少最大傳導輸出功率限制值。

(3) 頻寬之要求

對使用數位調變技術之低功率發射機，依據國家通訊傳播委員會低功率射頻電機技術規範3.10.1.6節之(2)(A)規定，6dB頻寬至少應有500 kHz。

(4) 峰值傳導輸出功率之要求

依據國家通訊傳播委員會低功率射頻電機技術規範3.10.1.2節之(1)(C)規定，對使用數位調變技術之低功率發射機，其峰值傳導輸出功率不得大於 1 Watt，且其所使用天線之增益不可大於6 dBi，若使用大於6dBi增益之天線，則其峰值傳導輸出功率相對需衰減天線增益所增加之量(單位為dB)。放寬之條件請參考天線增益之要求。

(5) 功率密度之要求

依據國家通訊傳播委員會低功率射頻電機技術規範3.10.1.6節之(2)(B)規定，對數位調變技術系統，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。

(6) 發射限制之要求

操作頻帶範圍外之任意100 kHz內，發射器所產生的射頻功率相較於使用頻帶範圍中包含最高所需功率之100 kHz內的射頻功率，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，落於第 2.7 節禁用頻段之輻射發射，應符合第 2.8 節之規定。

(7) 輻射之規定

依據國家通訊傳播委員會低功率射頻電機技術規範3.10.1.5之要求，落於2.7節禁用頻段之輻射發射，應符合2.8節之規定：

頻率 MHz	測試距離 m	限制值 μ V/m
0.009 - 0.490(含)	300	2400/頻率(kHz)
0.490(不含) - 1.705(含)	30	24000/頻率(kHz)
1.705(不含) - 30(不含)	30	30
30(含) - 88(含)	3	100
88(不含) - 216(含)	3	150
216(不含) - 960(含)	3	200
960(不含)以上	3	500

2.2 限制使用之頻帶

MHz	MHz
0.090 - 0.110	1660.0 – 1785.0
0.490 - 0.510	1805.0 – 1880.0
2.172 - 2.198	1855.0 – 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	

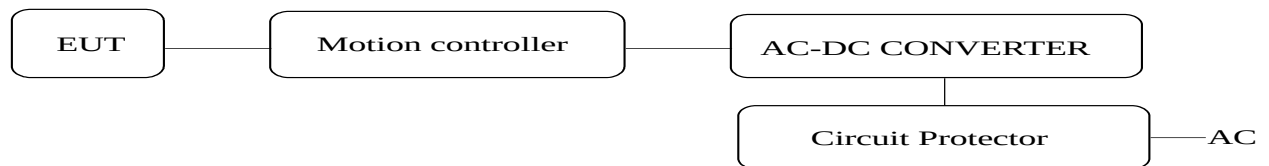
3 受測裝置之系統說明

3.1 受測裝置

裝置名稱	製造者/代理者	型 號	纜線說明
* Wireless Adapter	SANYO DENKI CO., LTD.	SMC-USBW-01	---
Circuit Protector	FUJITSU	CP32FM/7	非隔離電源線 1.8m
AC-DC CONVERTER	TDK-LAMBDA	DLP75-24-1	----
Motion controller	SANYO DENKI	SMC100-B	
USB 延長線	SAMZHE	UK-610	非隔離 1m
USB 延長線	--- (實驗室提供)	--- (實驗室提供)	非隔離10m

註: 1.標記“*”表欲申請之受測物及配件。

2.測試配置：



3. 軟體設定:

軟體名稱:	WLANTEST.exe
軟體設定:	Power: 802.11b → Data rate 1 Mbps (經驗證為最差模式); Power Set: 14
	802.11g → Data rate 6 Mbps (經驗證為最差模式); Power Set: 16
	802.11n HT20 MCS0 (經驗證為最差模式); Power Set: 16

3.2 測試模式說明

3.2.1 調變方式及模式

Test Mode	Modulation	Test Channel	Frequency (MHz)
A	IEEE 802.11b	Channel Low	2412
B	IEEE 802.11g	Channel Mid	2437
C	IEEE 802.11n HT20	Channel High	2462

3.2.2 測試項目及模式

Item	測試項目	測試模式(註1)	測試頻道
1	電源線傳導干擾之量測	C	
2	發射頻寬之量測	A, B, C	L, M, H
3	峰值輸出功率之量測	A, B, C	L, M, H
4	功率密度之量測	A, B, C	L, M, H
5	混附波發射限制之量測	A, B, C	L, M, H
6	場強輻射之量測(主諧波)	A, B, C	L, M, H
6.1	場強輻射之量測(1GHz以下)	C (註1)	M (Worse Case)
6.2	場強輻射之量測(1GHz以上)	A, B, C	L, M, H
7	電波暴露量之評估	C (註 3)	M (註 3)

註: 1. 各調變預掃時無差異，擇一作最終測試並記錄之。

2. 量測場強輻射時，若為手持式或穿戴式之裝置，應對其三個正交軸(X、Y、Z)的方位評估測試，並分別測試以找出最大輻射電場強度軸向，以最差軸模式測試，並記錄其值與軸向放置。

3. 各調變及各頻道以峰值輸出功率最大者做為 Worse Case 並進行評估。

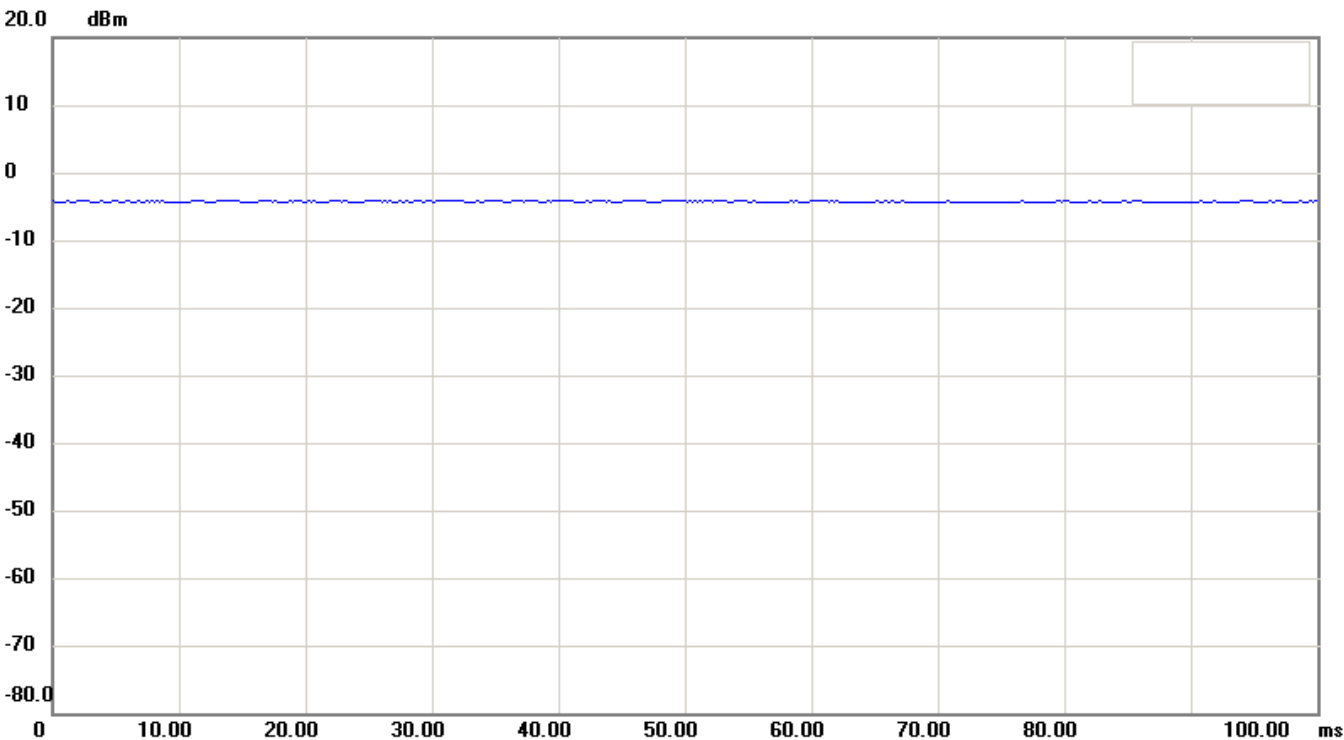
4. 依 NCC 74 次一致性會議：審驗時不具一般正常使用模式者，得不包括一般正常使用模式。

3.2.3 測試場地

項次	測 試 場 地
1	■ RE02 — EMC B1 — N2 第一大樓地下二樓 3m 半電波暗室(N2)
2	■ CE04 — 10M 2F 第三大樓二樓傳導測試室(10m 大樓)
3	■ RF — Cond01 第一大樓地下一樓直量測試區
4	□ RF — Cond02 第一大樓地下二樓直量測試區

3.2.4 Duty cycle
IEEE 802.11b

File:	20-05-MAS-062_B	#12	Date:	2020/6/15	Temperature:	22 ℃
Site:	RF-Cond01				Humidity:	62 %



Condition:		RF Conducted	
EUT:	Wireless Adapter	Sweep Time: 100ms	Att.: 20dB
Model:	SMC-USBW-01	RBW: 1000 KHz	VBW: 1000 KHz
Test Mode:	WIFI-B	Operator:	Bruce
Note:	NCC_LP0002_802.11b Duty Cycle-1		

File: 20-05-MAS-062_B

Site: RF-Cond01

#13

Date: 2020/6/15

Temperature: 22 ℃

Humidity: 62 %



Condition:

EUT: Wireless Adapter

Model: SMC-USBW-01

Test Mode: WIFI-B

Note: 大於 98%

RF Conducted

Sweep Time: 5ms

RBW: 1000 KHz

Operator:

Att.: 20dB

VBW: 1000 KHz

Bruce

IEEE 802.11g

File: 20-05-MAS-062_G

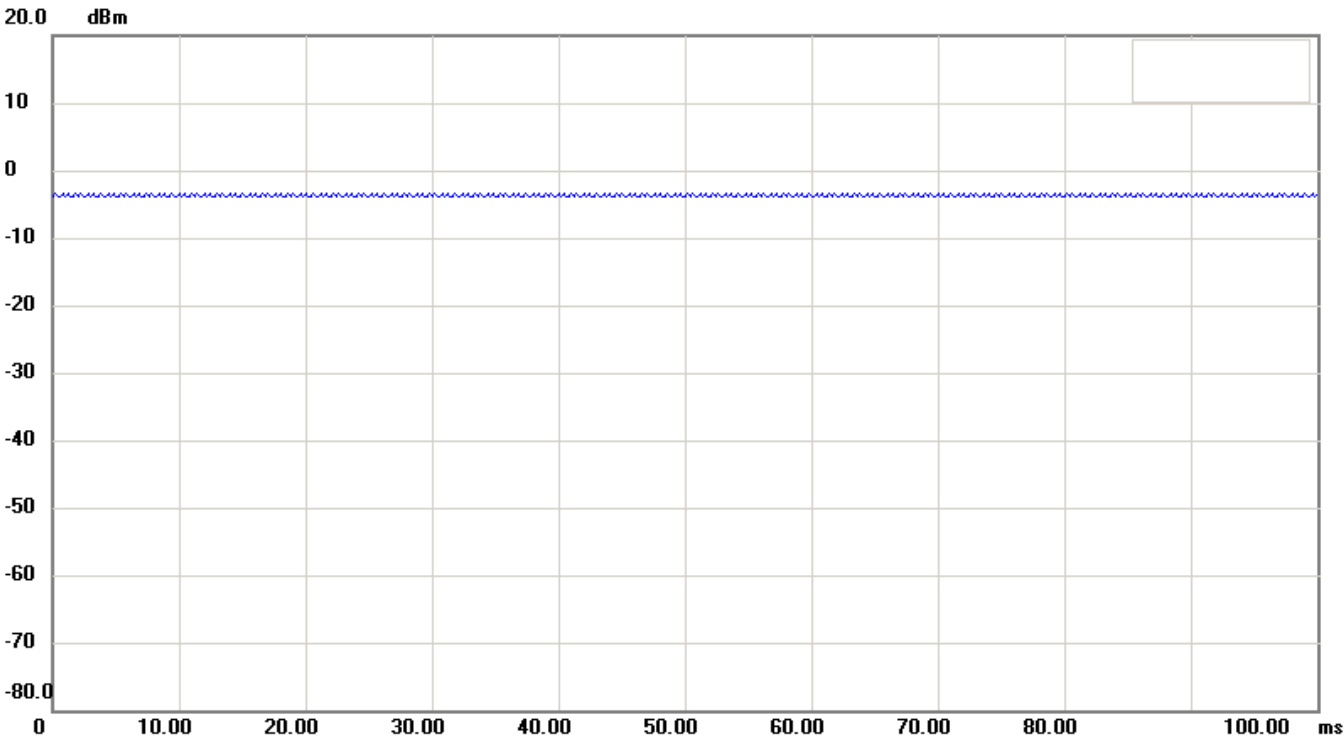
Site: RF-Cond01

#12

Date: 2020/6/15

Temperature: 22 ℃

Humidity: 62 %



Condition:

EUT: Wireless Adapter

Model: SMC-USBW-01

Test Mode: WIFI-G

Note: NCC_LP0002_802.11g Duty Cycle-1

RF Conducted

Sweep Time: 100ms

RBW: 1000 KHz

Operator:

Att.: 20dB

VBW: 1000 KHz

Bruce

File: 20-05-MAS-062_G

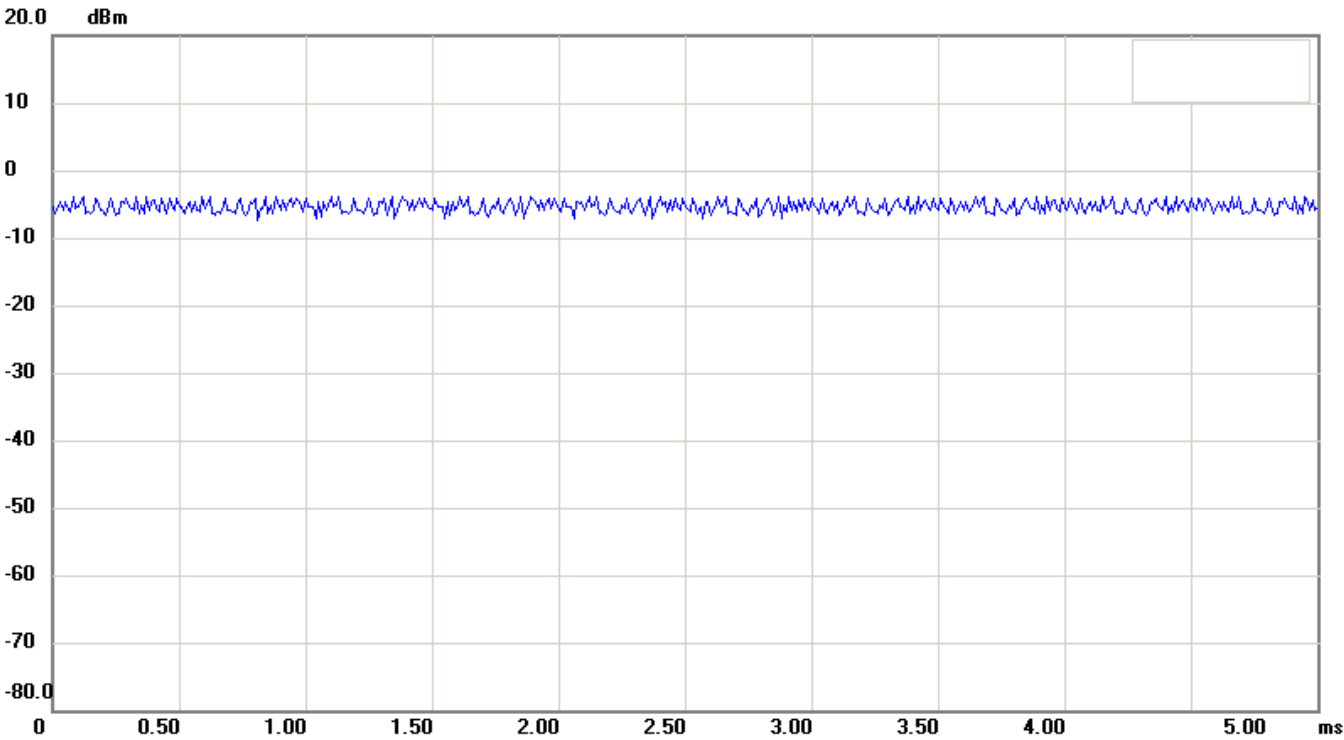
Site: RF-Cond01

#13

Date: 2020/6/15

Temperature: 22 ℃

Humidity: 62 %



Condition:

EUT: Wireless Adapter

Model: SMC-USBW-01

Test Mode: WIFI-G

Note: 大於 98%

RF Conducted

Sweep Time: 5ms

RBW: 1000 KHz

Operator:

Att.: 20dB

VBW: 1000 KHz

Bruce

IEEE 802.11n HT20

File: 20-05-MAS-062_N

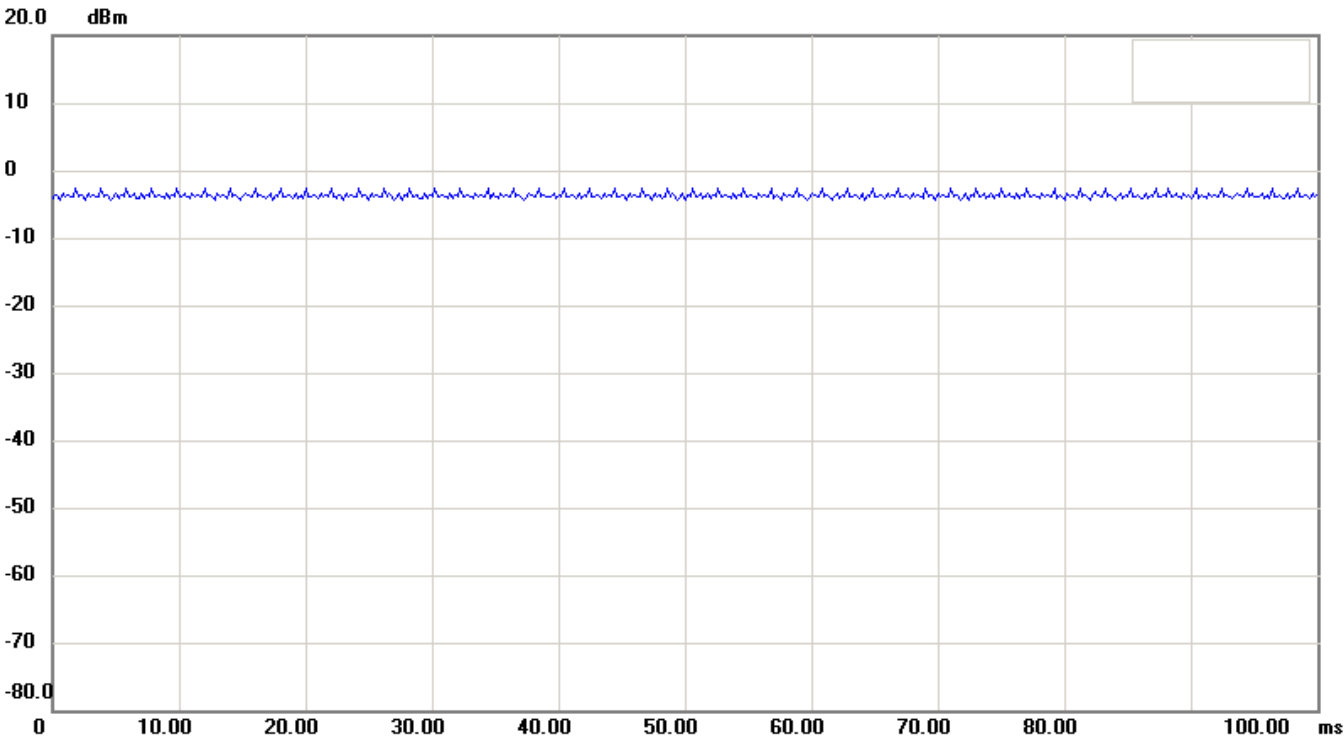
Site: RF-Cond01

#12

Date: 2020/6/15

Temperature: 22 ℃

Humidity: 62 %



Condition:		RF Conducted
EUT:	Wireless Adapter	Sweep Time: 100ms Att.: 20dB
Model:	SMC-USBW-01	RBW: 1000 KHz VBW: 1000 KHz
Test Mode:	WIFI-N	Operator: Bruce
Note:	NCC_LP0002_802.11n20 Duty Cycle-1	

File: 20-05-MAS-062_N

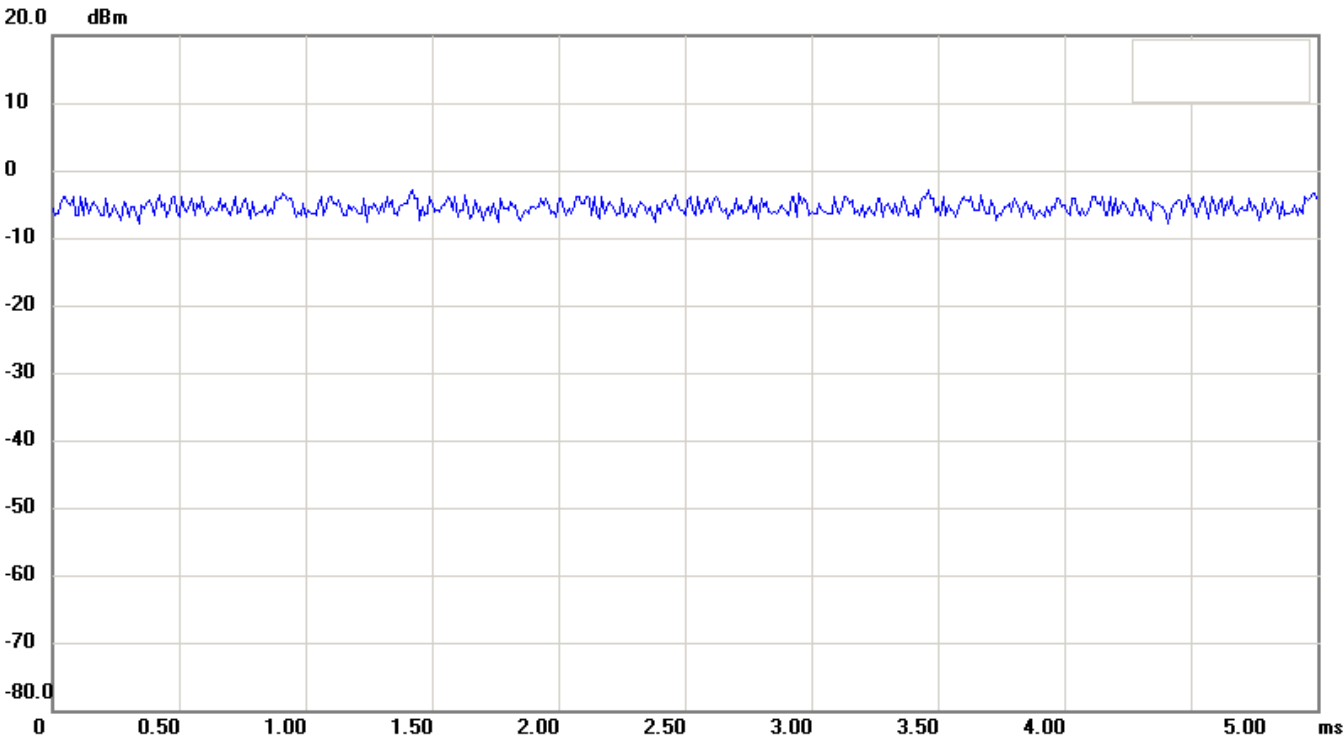
Site: RF-Cond01

#13

Date: 2020/6/15

Temperature: 22 ℃

Humidity: 62 %



Condition:

EUT: Wireless Adapter

Model: SMC-USBW-01

Test Mode: WIFI-N

Note: 大於 98%

RF Conducted

Sweep Time: 5ms Att.: 20dB

RBW: 1000 KHz VBW: 1000 KHz

Operator: Bruce

4 電源線傳導干擾之量測

4.1 適用標準

依據國家通訊傳播委員會低功率射頻電機技術規範2.3節之要求。

4.2 測試方法

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

4.3 量測電源線傳導干擾之儀器

儀器名稱	廠 牌	型 號
EMI Test Receiver	R&S	ESCI
V-LISN	R&S	ENV216

測試軟體: EZ-EMC (Ver. ETC-03A1)

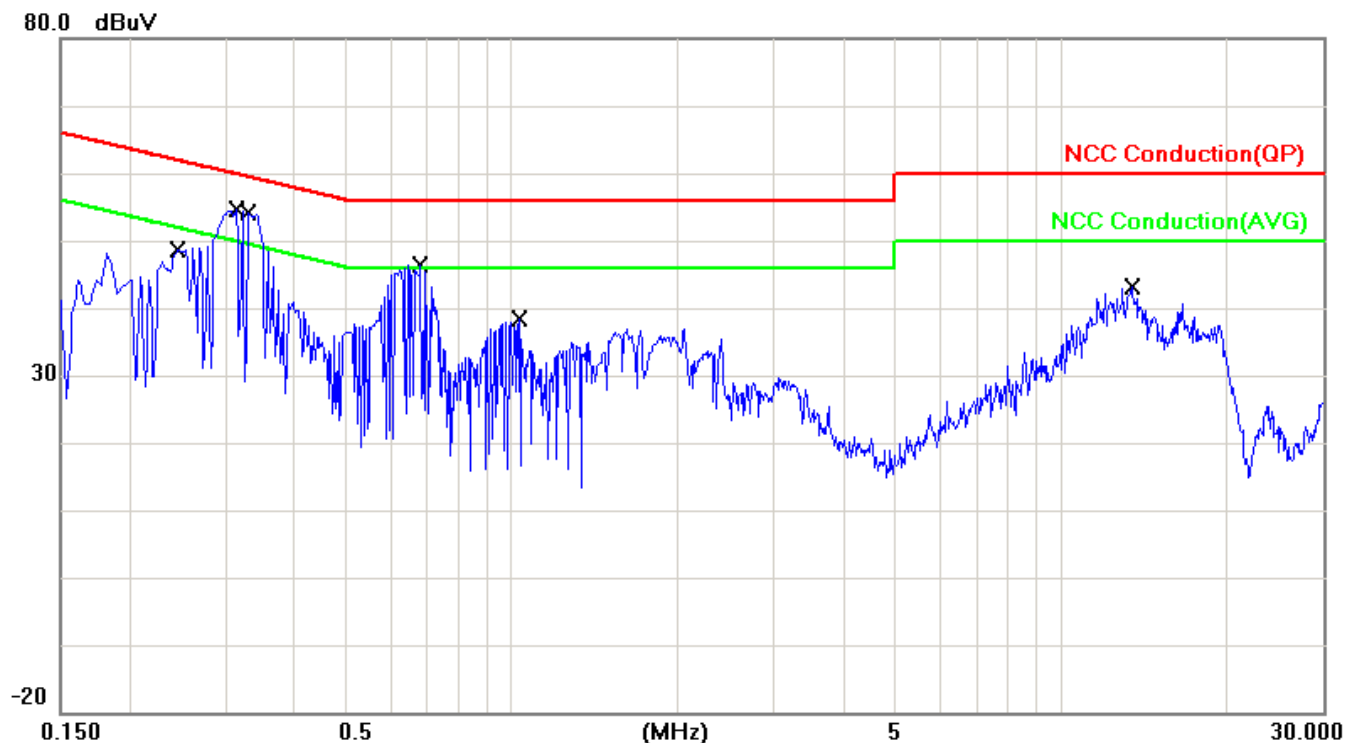
4.4 傳導干擾之量測結果

測試工程師: 許志宏

File: 20-05-MAS-062 #1

Date: 2020/6/18
Time: 下午 06:14:53

Temperature: 25 °C
Humidity: 65 %



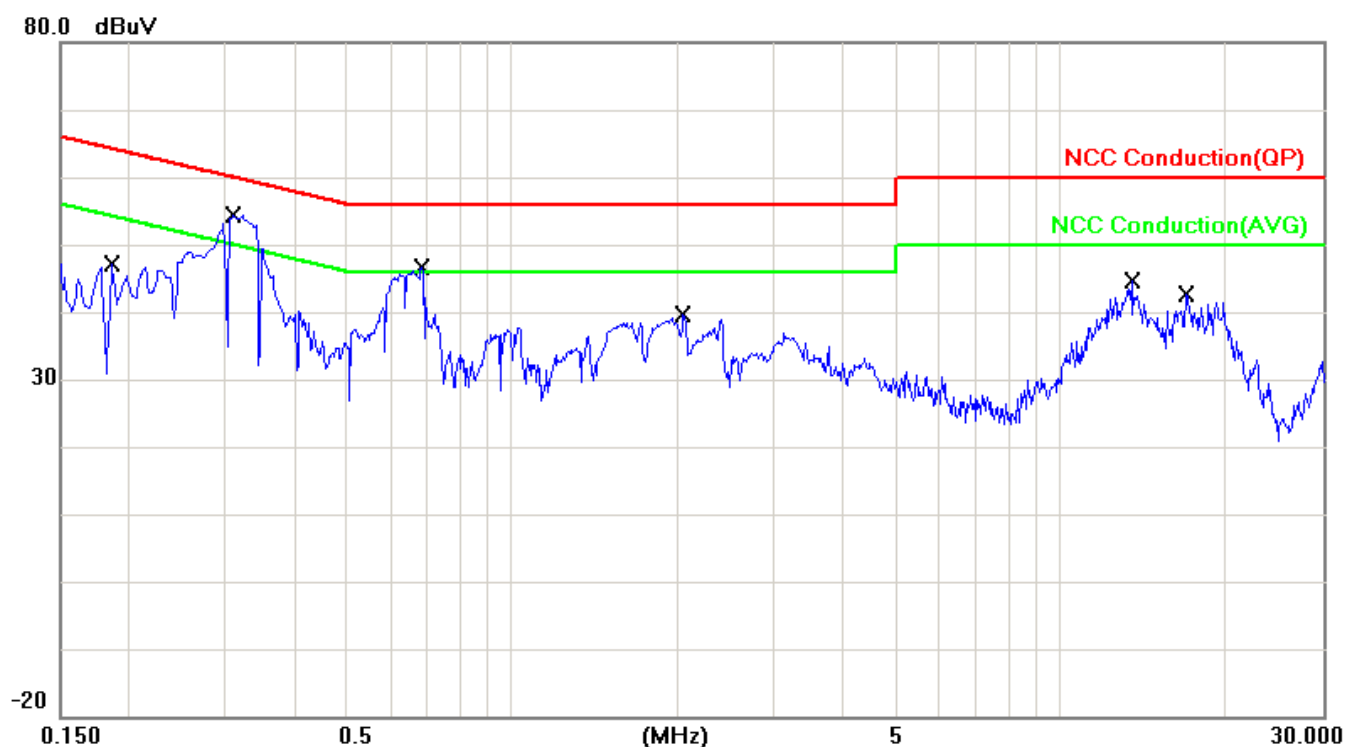
Site: CE04-10M 2F
Condition: NCC Conduction(QP)
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI
Note:

Phase: L1
Power: AC 110V/60Hz
Operator: Bruce

No.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)
1	0.246	39.01	QP	9.66	48.67	61.89	-13.22
2	0.314	42.45	QP	9.66	52.11	59.86	-7.75
3	0.314	21.39	AVG	9.66	31.05	49.86	-18.81
*4	0.330	42.07	QP	9.66	51.73	59.44	-7.71
5	0.330	21.06	AVG	9.66	30.72	49.44	-18.72
6	0.682	33.26	QP	9.66	42.92	56.00	-13.08
7	0.682	12.71	AVG	9.66	22.37	46.00	-23.63
8	1.030	28.65	QP	9.67	38.32	56.00	-17.68
9	13.422	33.19	QP	9.88	43.07	60.00	-16.93

- 註： 1. “---”表示量測準峰值的結果符合平均值的限制值，則視為同時符合準峰值與平均值的限制值，不需再對其平均值進行量測。
2. “#”表示干擾值太小，直接量取其峰值。
3. 標記“***”表示為本地震盪頻率及其諧波。
4. 量測不準確度: $\pm 2.5\text{dB}$ ($150\text{kHz} \leq f \leq 30\text{MHz}$)。

File: 20-05-MAS-062 #2

Date: 2020/6/18
Time: 下午 06:17:15Temperature: 25 °C
Humidity: 65 %

Site: CE04-10M 2F
 Condition: NCC Conduction(QP)
 EUT: Wireless Adapter
 Model: SMC-USBW-01
 Test Mode: WIFI
 Note:

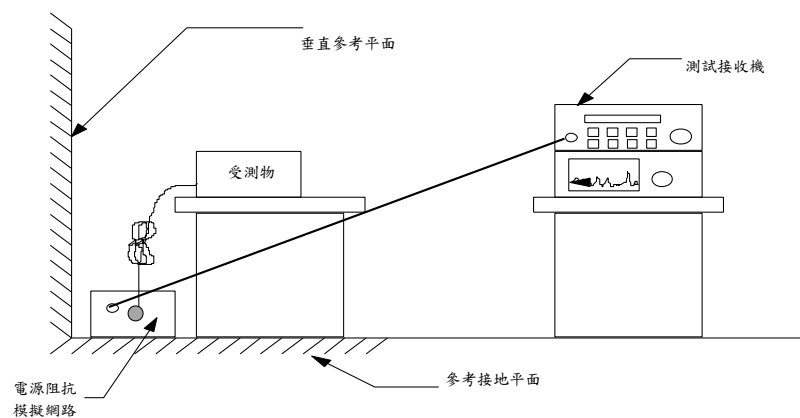
Phase: N
 Power: AC 110V/60Hz
 Operator: Bruce

No.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)
1	0.186	37.53	QP	9.60	47.13	64.21	-17.08
*2	0.310	41.83	QP	9.60	51.43	59.97	-8.54
3	0.310	21.02	AVG	9.60	30.62	49.97	-19.35
4	0.686	33.62	QP	9.60	43.22	56.00	-12.78
5	0.686	12.96	AVG	9.60	22.56	46.00	-23.44
6	2.050	29.97	QP	9.65	39.62	56.00	-16.38
7	13.450	34.84	QP	9.88	44.72	60.00	-15.28
8	16.918	32.60	QP	9.95	42.55	60.00	-17.45

- 註： 1. “---”表示量測準峰值的結果符合平均值的限制值，則視為同時符合準峰值與平均值的限制值，不需再對其平均值進行量測。
 2. “#”表示干擾值太小，直接量取其峰值。
 3. 標記“***”表示為本地震盪頻率及其諧波。
 4. 量測不準確度: $\pm 2.5\text{dB}$ ($150\text{kHz} \leq f \leq 30\text{MHz}$)。

4.5 電源線傳導干擾之測試配置

圖 1



4.6 傳導量測之配置照片

請參考產品照片

5 天線增益之要求

5.1 適用標準

低功率發射機，依據國家通訊傳播委員會低功率射頻電機技術規範3.10.1.3之規定，若發射天線之方向性增益超過6dBi時，除符合下列情形外，應依其所超過之dB數降低最大傳導輸出功率。

依據國家通訊傳播委員會低功率射頻電機技術規範3.10.1.3節之(3)規定，除3.10.1.3節之(1)與(2)外，使用超過6dBi方向增益之發射天線時，應依照超過6 dBi天線方向性增益的dBi總量，等量減少最大傳導輸出功率限制值。

5.2 天線增益

此裝置使用內接固定式天線連接於主體內 PCB 板上，天線增益 -1.0 dBi，未超過 6 dBi，不須降低峰值輸出功率。

5.3 結果判定

天線之方向性增益皆低於6dBi，因此無需減少峰值輸出功率及功率密度之限制值。

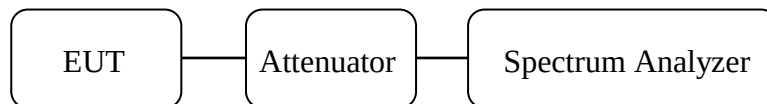
6 發射頻寬之要求

6.1 適用標準

對使用直接序列技術之低功率發射機，依據國家通訊傳播委員會低功率射頻電機技術規範3.10.1.6節之(2)(A)之規定，6dB頻寬至少應有500 kHz。

6.2 測試配置

圖 2：發射頻寬之測試配置



6.3 發射頻寬之量測儀器

儀器名稱	製造者	型 號
Spectrum Analyzer	R&S	FSV
Attenuator	WEINSCHEL	56-10

測試軟體: LZ-RF (Ver. ETC-3A2)

6.4 量測結果

測試工程師: 許志宏

6.4.1 調變技術: IEEE 802.11b

測試日期: Jun. 15, 2020

環境溫度 : 22°C

環境濕度 : 62%

Channel	6dB Bandwidth (MHz)	NCC Limit (kHz)	Chart
L	9.7	500	Page 25
M	9.9	500	Page 26
H	8.8	500	Page 27

註：繪圖資料請參考第 25-27 頁。

File: 20-05-MAS-062_B
Site: RF-Cond01

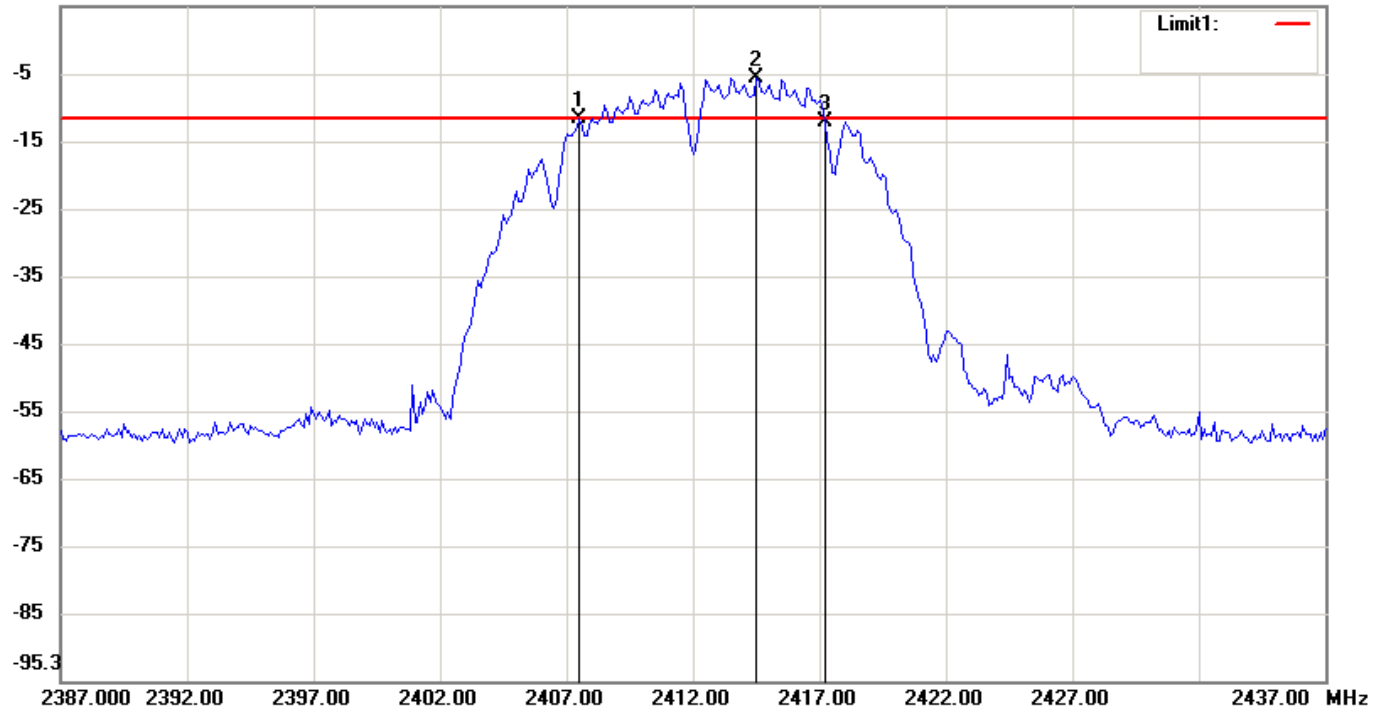
#1

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %

4.7 dBm



Condition: -11.92dBm
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-B
Note: NCC_LP0002_802.11b Channel 01-6dB EBW

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2407.50000	-11.92
2	2414.50000	-5.92
3	2417.20000	-12.40

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	9.7	-0.48

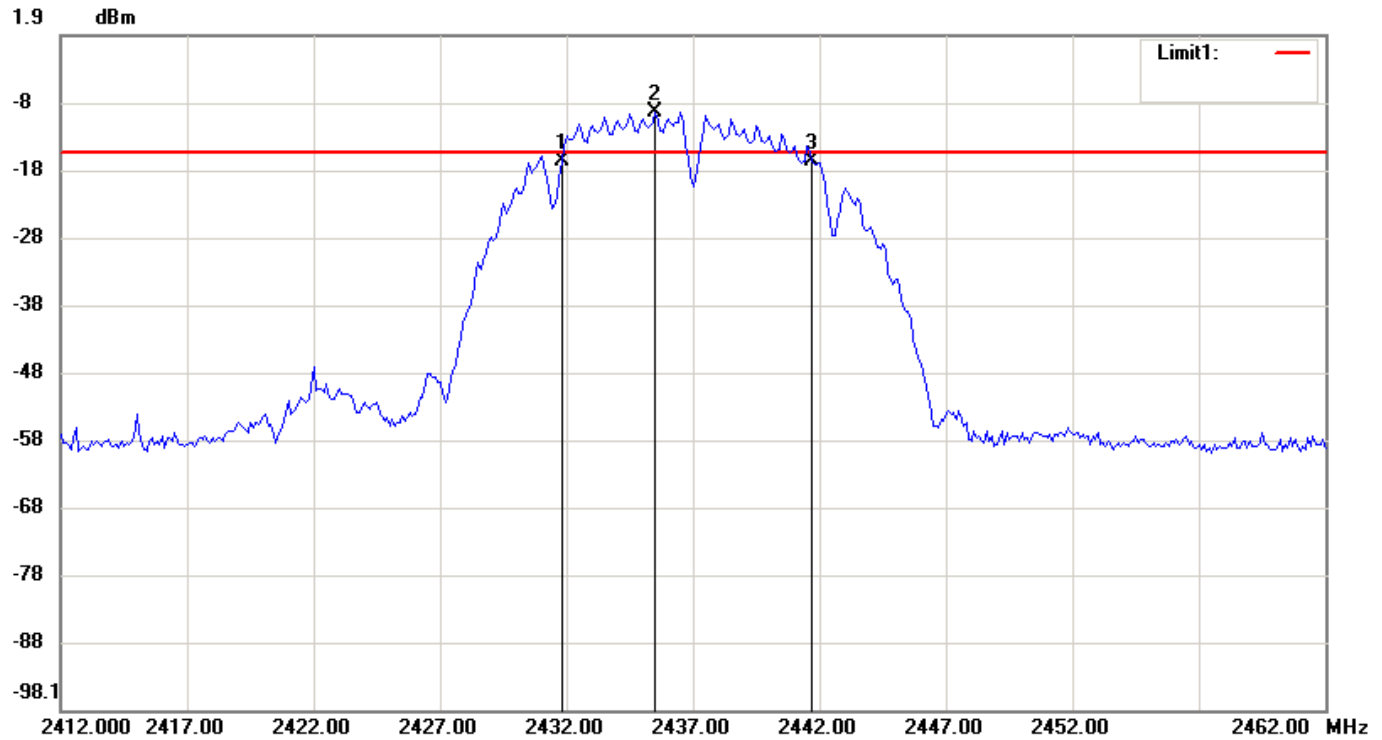
File: 20-05-MAS-062_B
Site: RF-Cond01

#5

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %



Condition: -15.5dBm
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-B
Note: NCC_LP0002_802.11b Channel 06-6dB EBW

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2431.80000	-16.82
2	2435.50000	-9.50
3	2441.70000	-16.75

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	9.9	0.07

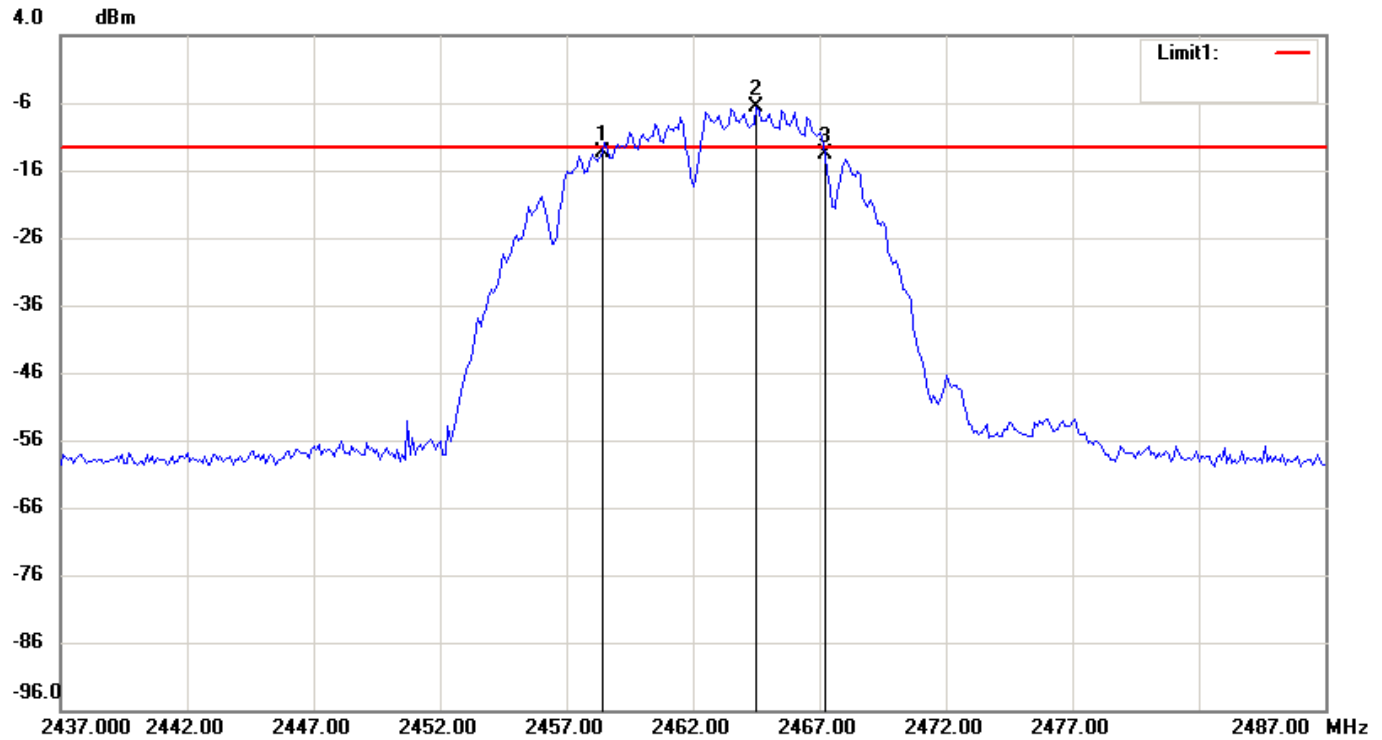
File: 20-05-MAS-062_B
Site: RF-Cond01

#8

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %



Condition: -12.73dBm
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-B
Note: NCC_LP0002_802.11b Channel 11-6dB EBW

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2458.40000	-13.38
2	2464.50000	-6.73
3	2467.20000	-13.60

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	8.8	-0.22

6.4.2 調變技術: IEEE 802.11g

測試日期: Jun. 15, 2020

環境溫度 : 22°C

環境濕度 : 62%

Channel	6dB Bandwidth (MHz)	NCC Limit (kHz)	Chart
L	15.1	500	Page 29
M	16.0	500	Page 30
H	11.2	500	Page 31

註：繪圖資料請參考第 29-31 頁。

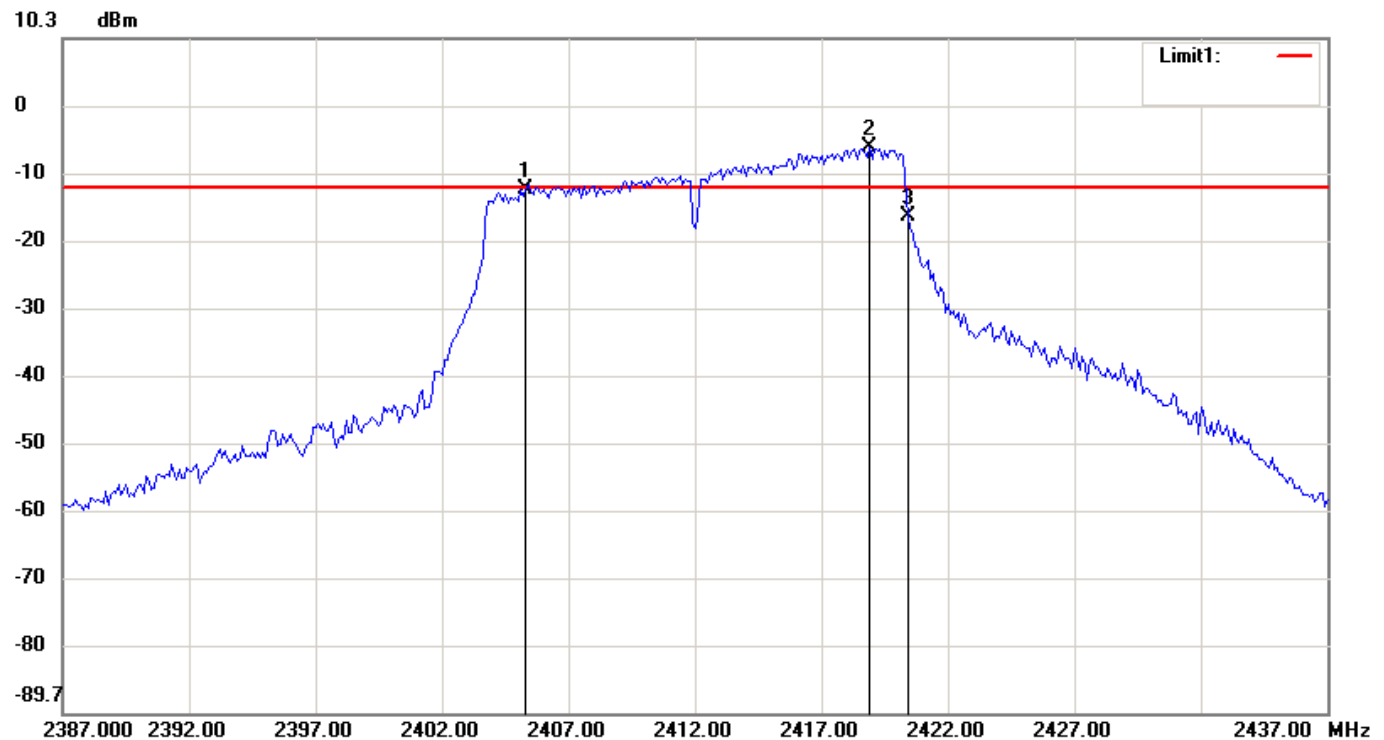
File: 20-05-MAS-062_G
Site: RF-Cond01

#1

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %



Condition: -11.76dBm
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-G
Note: NCC_LP0002_802.11g Channel 01-6dB EBW

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2405.30000	-11.95
2	2418.90000	-5.76
3	2420.40000	-16.15

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	15.1	-4.2

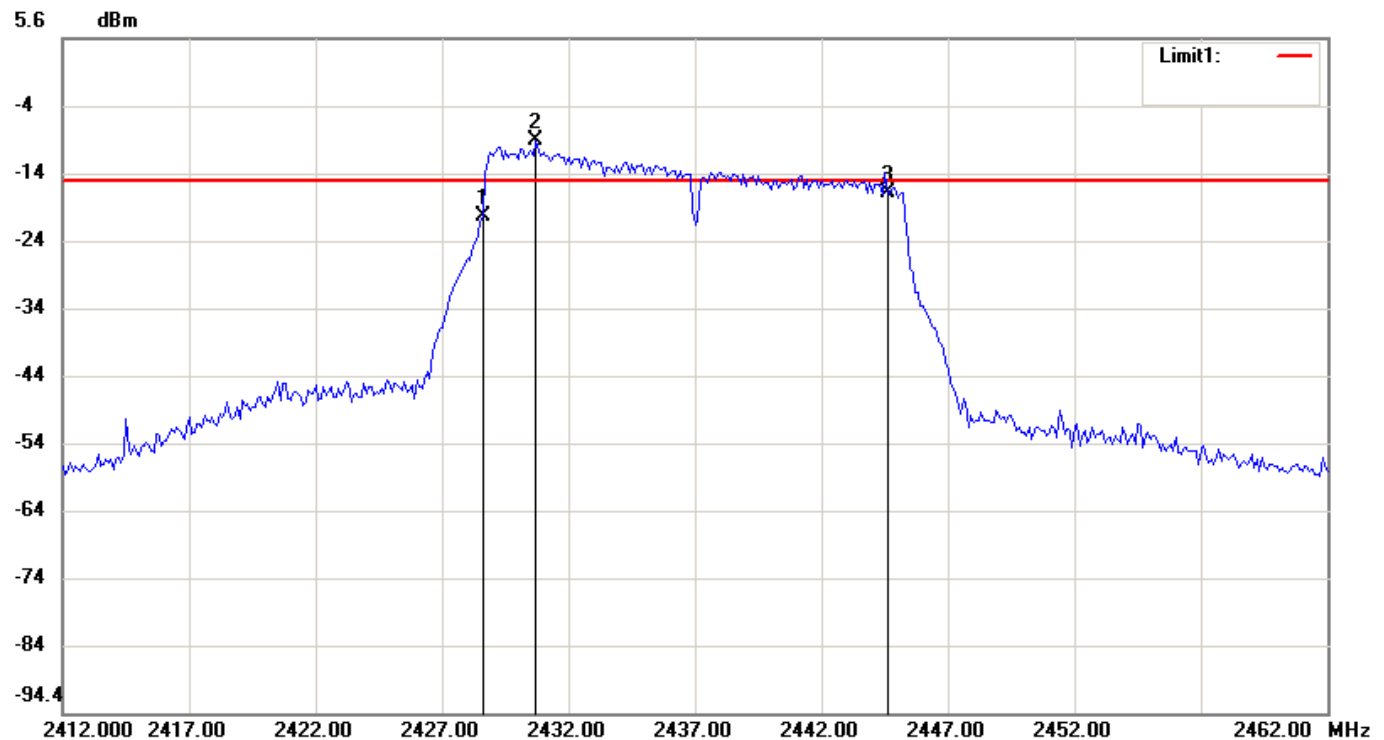
File: 20-05-MAS-062_G
Site: RF-Cond01

#5

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %



Condition: -15.52dBm
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-G
Note: NCC_LP0002_802.11g Channel 06-6dB EBW

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2428.60000	-20.68
2	2430.70000	-9.52
3	2444.60000	-17.19

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	16	3.49

File: 20-05-MAS-062_G
Site: RF-Cond01

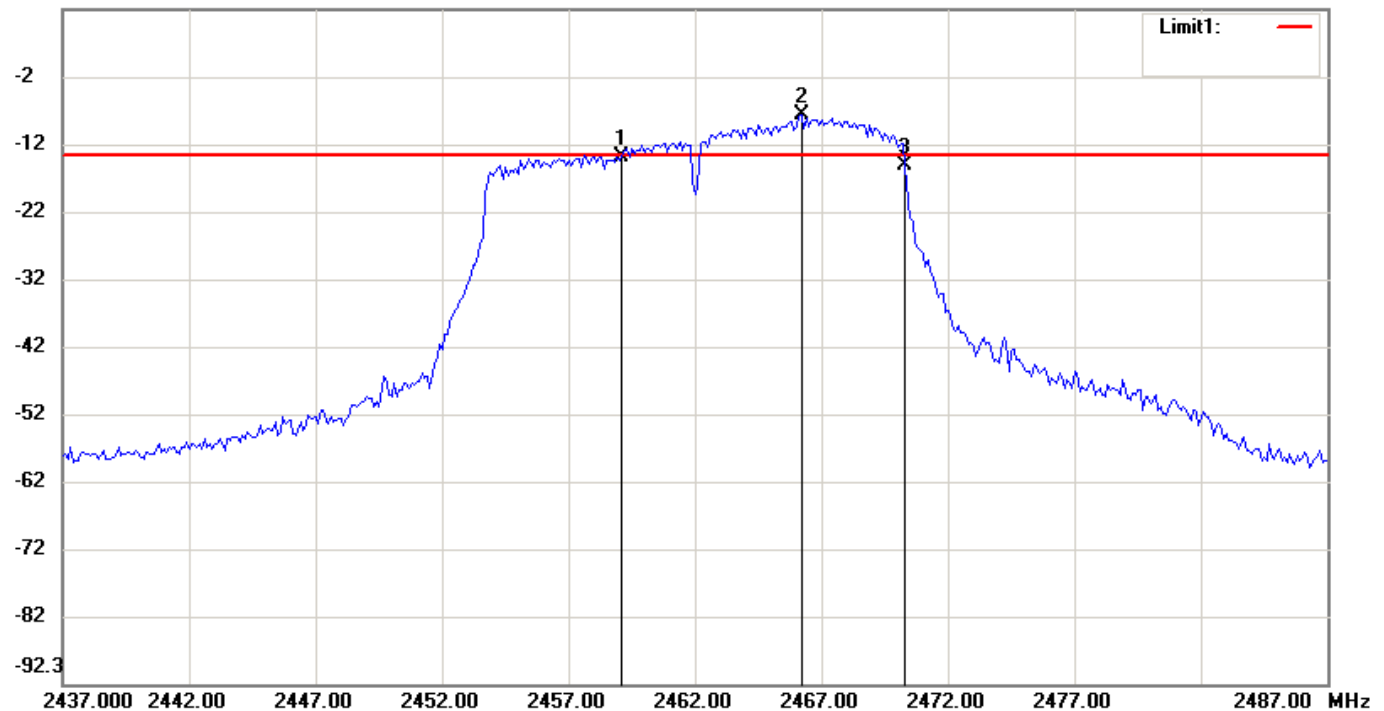
#8

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %

7.7 dBm



Condition: -14.04dBm
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-G
Note: NCC_LP0002_802.11g Channel 11-6dB EBW

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2459.10000	-14.10
2	2466.20000	-8.04
3	2470.30000	-15.54

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	11.2	-1.44

6.4.3 調變技術: IEEE 802.11n HT20

測試日期: Jun. 15, 2020

環境溫度 : 22°C

環境濕度 : 62%

Channel	6dB Bandwidth (MHz)	NCC Limit (kHz)	Chart
L	14.8	500	Page 33
M	17.5	500	Page 34
H	15.5	500	Page 35

註：繪圖資料請參考第 33-35 頁。

6.5 結果判定

高、中、低頻段的6dB頻寬皆大於500KHz。

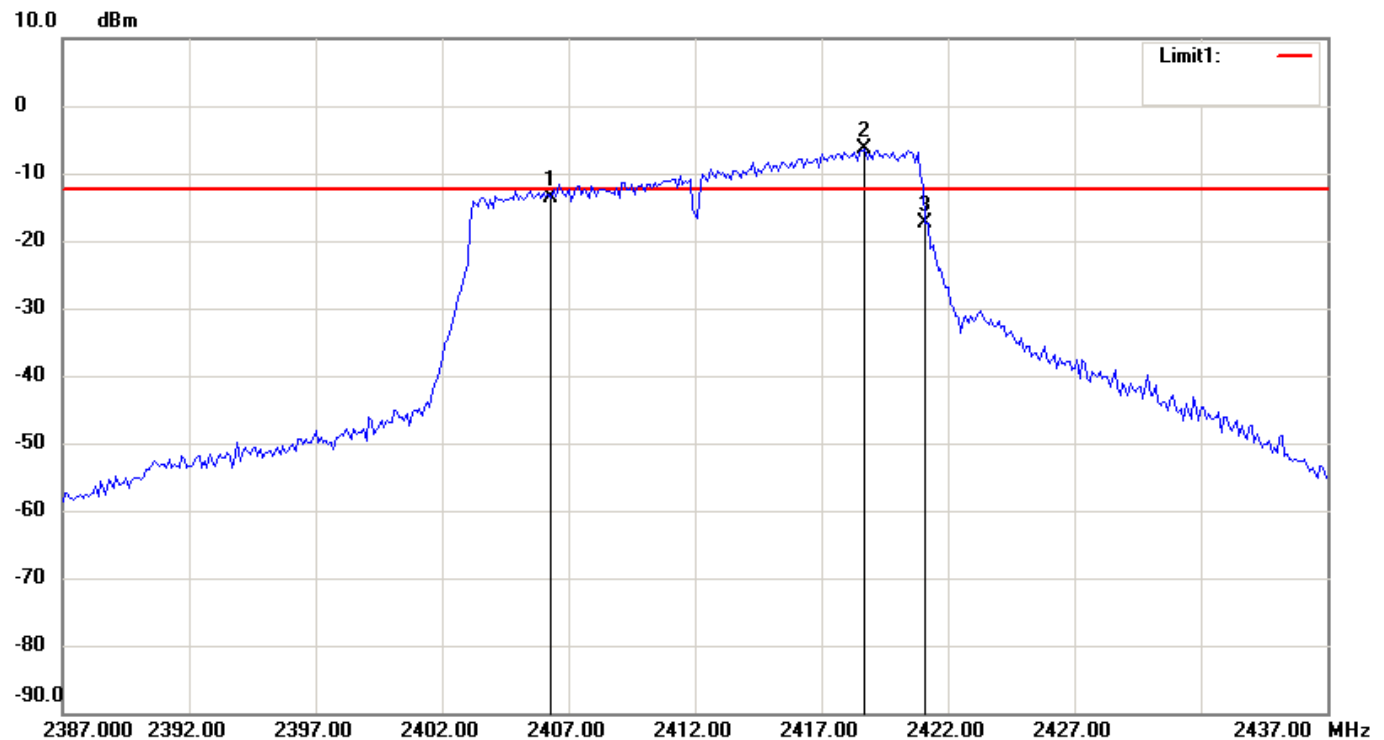
File: 20-05-MAS-062_N
Site: RF-Cond01

#1

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %



Condition: -12.5dBm
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-N
Note: NCC_LP0002_802.11n-HT20 Channel 01-6dB EBW

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2406.30000	-13.72
2	2418.70000	-6.50
3	2421.10000	-17.34

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	14.8	-3.62

File: 20-05-MAS-062_N
Site: RF-Cond01

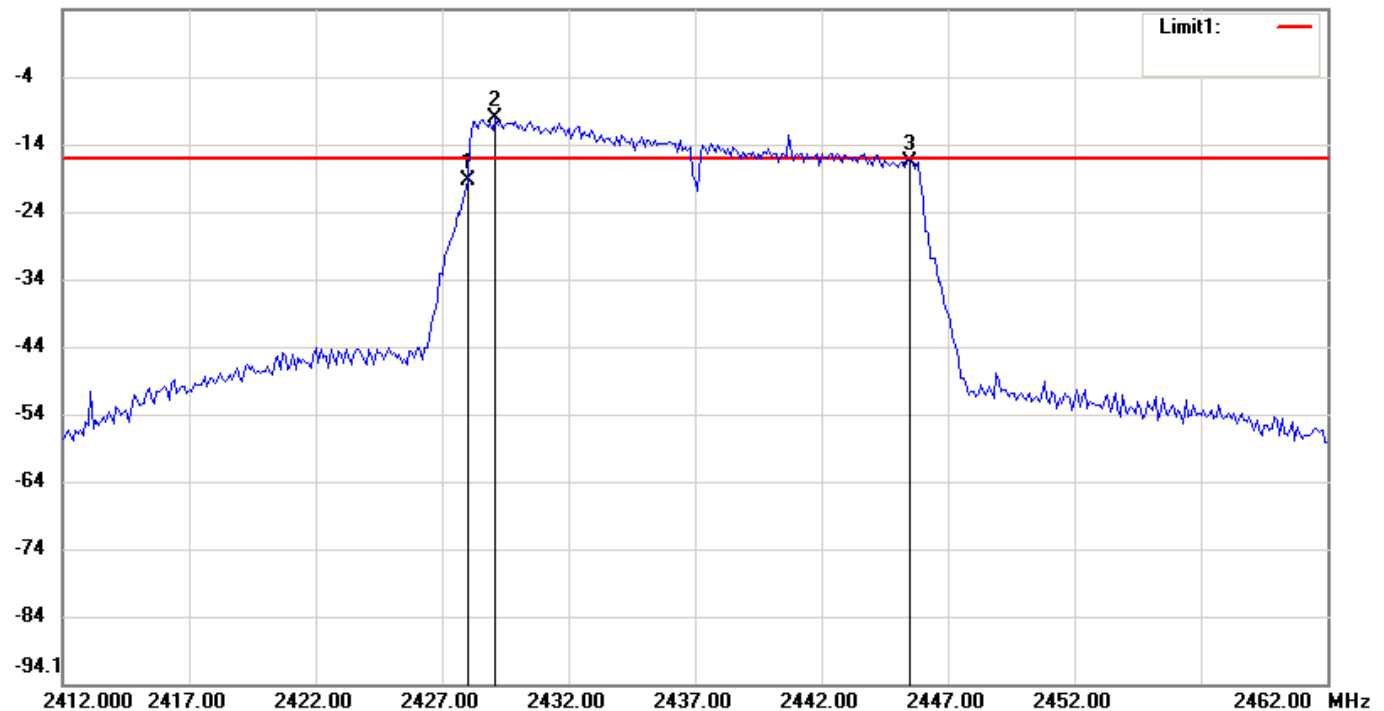
#5

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %

5.9 dBm



Condition: -16.29dBm
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-N
Note: NCC_LP0002_802.11n-HT20 Channel 06-6dB EBW

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2428.00000	-19.40
2	2429.10000	-10.29
3	2445.50000	-16.68

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	17.5	2.72

File: 20-05-MAS-062_N
Site: RF-Cond01

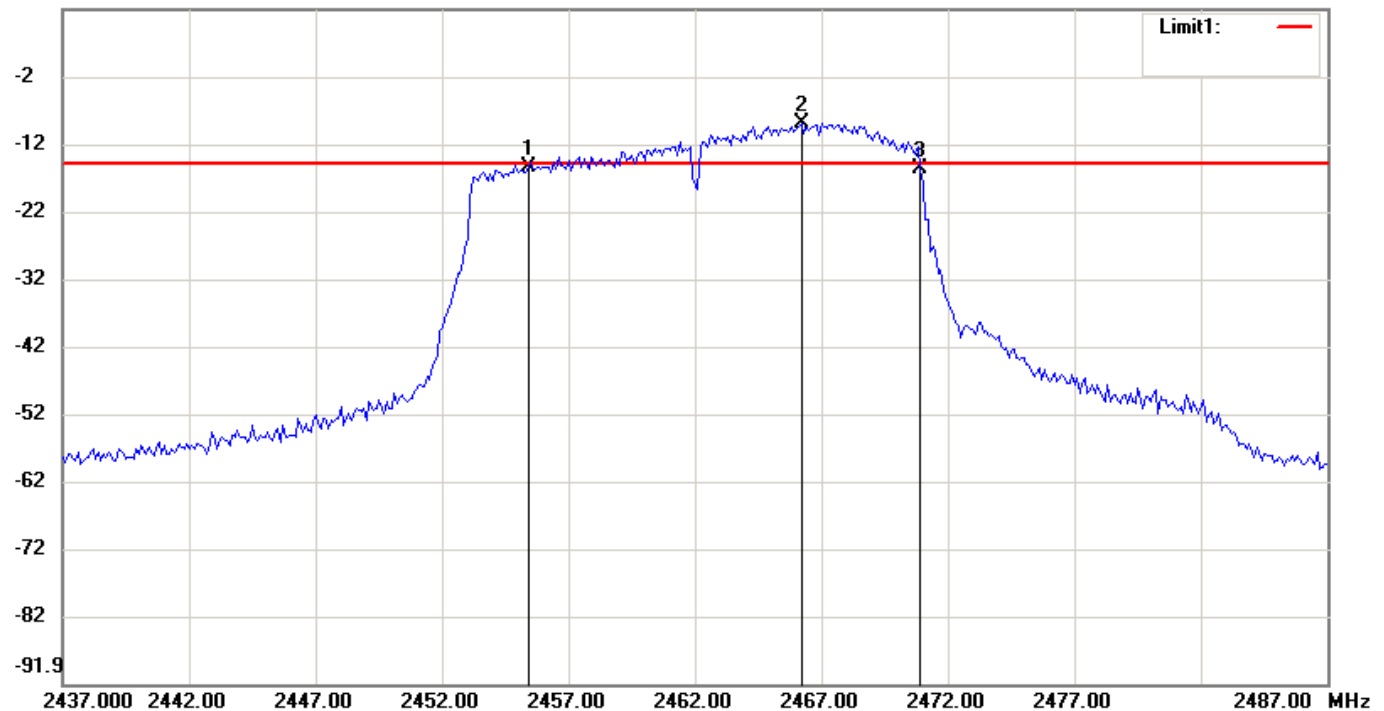
#8

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %

8.1 dBm



Condition: -14.75dBm
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-N
Note: NCC_LP0002_802.11n-HT20 Channel 11-6dB EBW

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2455.40000	-15.20
2	2466.20000	-8.75
3	2470.90000	-15.40

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	15.5	-0.2

7 峰值輸出功率之量測

7.1 峰值適用標準

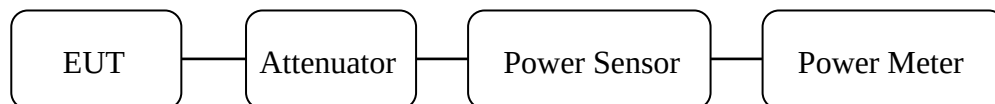
依據國家通訊傳播委員會低功率射頻電機技術規範3.10.1.2節之(1)(C)規定，操作於2400-2483.5兆赫(MHz)之所有數位調變技術系統:1瓦(W)(含)以下。

用於非於固定式點對點操作時，若其發射天線之方向性增益超過6dBi，應依所超過之dB數等量降低峰值輸出功率。如用於固定式點對點操作時，應符合下列情形：

操作於2400-2483.5兆赫(MHz)者，其發射天線之方向性增益超過6dBi，每超過3 dBi，最大傳導輸出功率限制值應降低1dB。

7.2 峰值輸出功率之測試配置

圖 3：峰值輸出功率之測試配置



7.3 峰值輸出功率之量測儀器

儀器名稱	製造者	型 號
Power Meter	Agilent	N1912A
Power Sensor	Agilent	N1922A
Attenuator	WEINSCHEL	56-10

測試軟體: LZ-RF (Ver. ETC-3A2)

7.4 峰值輸出功率之量測結果

測試工程師: 許志宏

7.4.1 調變技術: IEEE 802.11b

測試日期: Jun. 15, 2020

環境溫度: 22°C

環境濕度: 62%

Channel	Maximum Peak Output Power (dBm)	NCC Limit (dBm)	Chart
L	7.69	30	-
M	3.63	30	-
H	6.77	30	-

註：1. 最大峰值輸出功率 (Maximum Peak Output Power) 為經儀器校正補償過後的結果值。

2. If antenna gain $\leq$ 6dBi, NCC Limit = 30 dBm

3. If antenna gain > 6dBi, NCC Limit = 30dBm – (highest antenna gain – 6 dBi)

4. NCC Limit (dBm)=10 log NCC Limit (mW)

5. 量測不準確度: $\pm 1.5\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)

7.4.2 調變技術: IEEE 802.11g

測試日期: Jun. 15, 2020

環境溫度: 22°C

環境濕度: 62%

Channel	Maximum Peak Output Power (dBm)	NCC Limit (dBm)	Chart
L	15.50	30	-
M	11.97	30	-
H	13.68	30	-

註：1. 最大峰值輸出功率 (Maximum Peak Output Power) 為經儀器校正補償過後的結果值。

2. If antenna gain $\leq$ 6dBi, NCC Limit = 30 dBm

3. If antenna gain > 6dBi, NCC Limit = 30dBm – (highest antenna gain – 6 dBi)

4. NCC Limit (dBm)=10 log NCC Limit (mW)

5. 量測不準確度: $\pm 1.5\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)

7.4.3 調變技術: IEEE 802.11n HT20

測試日期: Jun. 15, 2020

環境溫度: 22°C

環境濕度: 62%

Channel	Maximum Peak Output Power (dBm)	NCC Limit (dBm)	Chart
L	15.67	30	-
M	11.42	30	-
H	13.20	30	-

註：1. 最大峰值輸出功率 (Maximum Peak Output Power) 為經儀器校正補償過後的結果值。

2. If antenna gain $\leq$ 6dBi, NCC Limit = 30 dBm

3. If antenna gain > 6dBi, NCC Limit = 30dBm – (highest antenna gain – 6 dBi)

4. NCC Limit (dBm)=10 log NCC Limit (mW)

5. 量測不準確度: $\pm 1.5\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)

7.5 結果判定

高、中、低頻段的峰值輸出功率皆低於限制值。

8 功率密度之量測

8.1 適用標準

依據國家通訊傳播委員會低功率射頻電機技術規範3.10.1.6節之(2)(B)規定，對數位調變技術系統，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。

8.2 量測功率密度之配置

如圖 2 所示。

8.3 量測功率密度之儀器

儀器名稱	製造者	型 號
Spectrum Analyzer	R&S	FSV
Attenuator	WEINSCHEL	56-10

測試軟體: LZ-RF (Ver. ETC-3A2)

8.4 量測結果

測試工程師: 許志宏

8.4.1 調變技術: IEEE 802.11b

測試日期: Jun. 15, 2020

環境溫度: 22°C

環境濕度: 62%

Channel	Peak Power Spectral Density (dBm)	NCC Limit (dBm)	Chart
L	-22.09	8	Page 42
M	-25.91	8	Page 43
H	-24.06	8	Page 44

註: 1. 繪圖資料請參考第 42-44 頁。

2. If antenna gain $\leq$ 6dBi, NCC Limit = 8 dBm

3. If antenna gain $>$ 6dBi, NCC Limit = 8dBm – (highest antenna gain – 6 dBi)

4. 量測不準確度: $\pm 1.5\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)

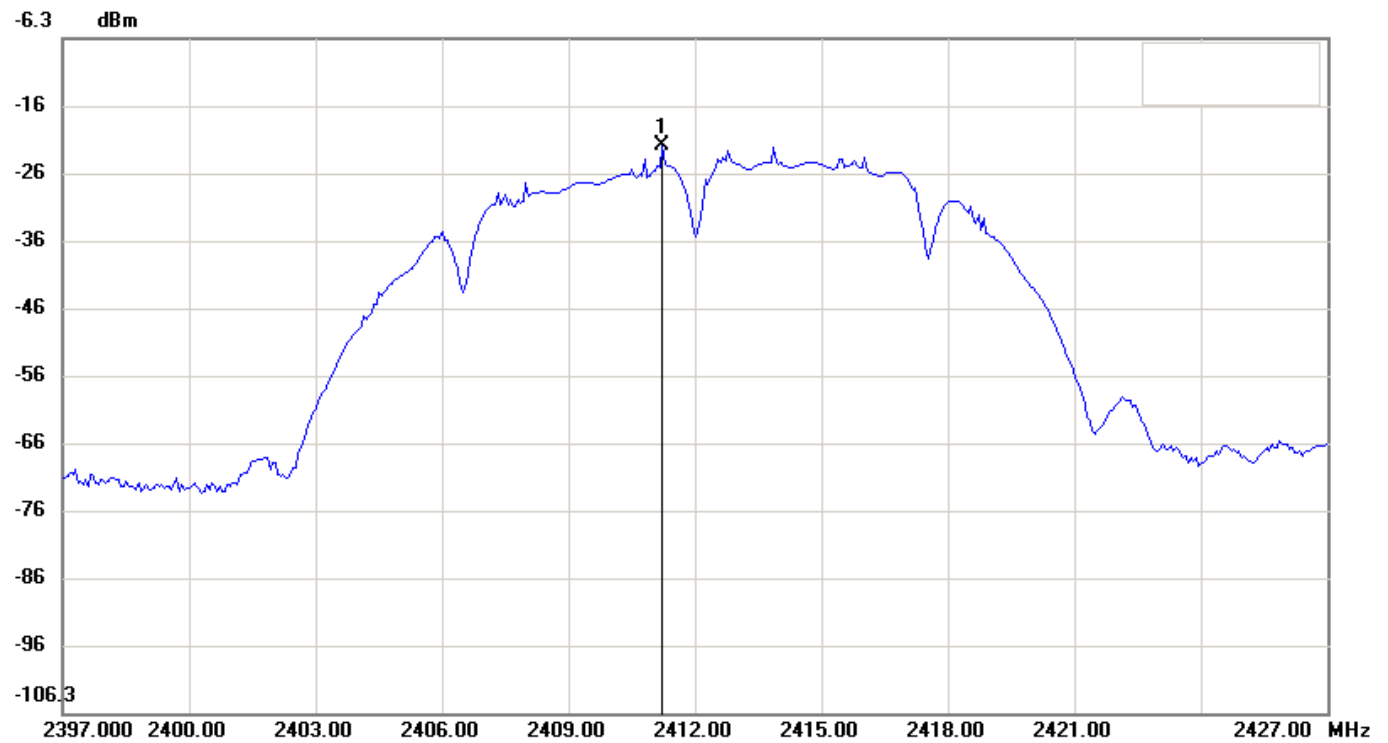
File: 20-05-MAS-062_B
Site: RF-Cond01

#3

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %



Condition:

EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-B
Note: NCC_LP0002_802.11b Channel 01-Power Density (PK)

RF Conducted

Sweep Time: 334ms Att.: 20dB
RBW: 3 KHz VBW: 10 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2411.22000	-22.09

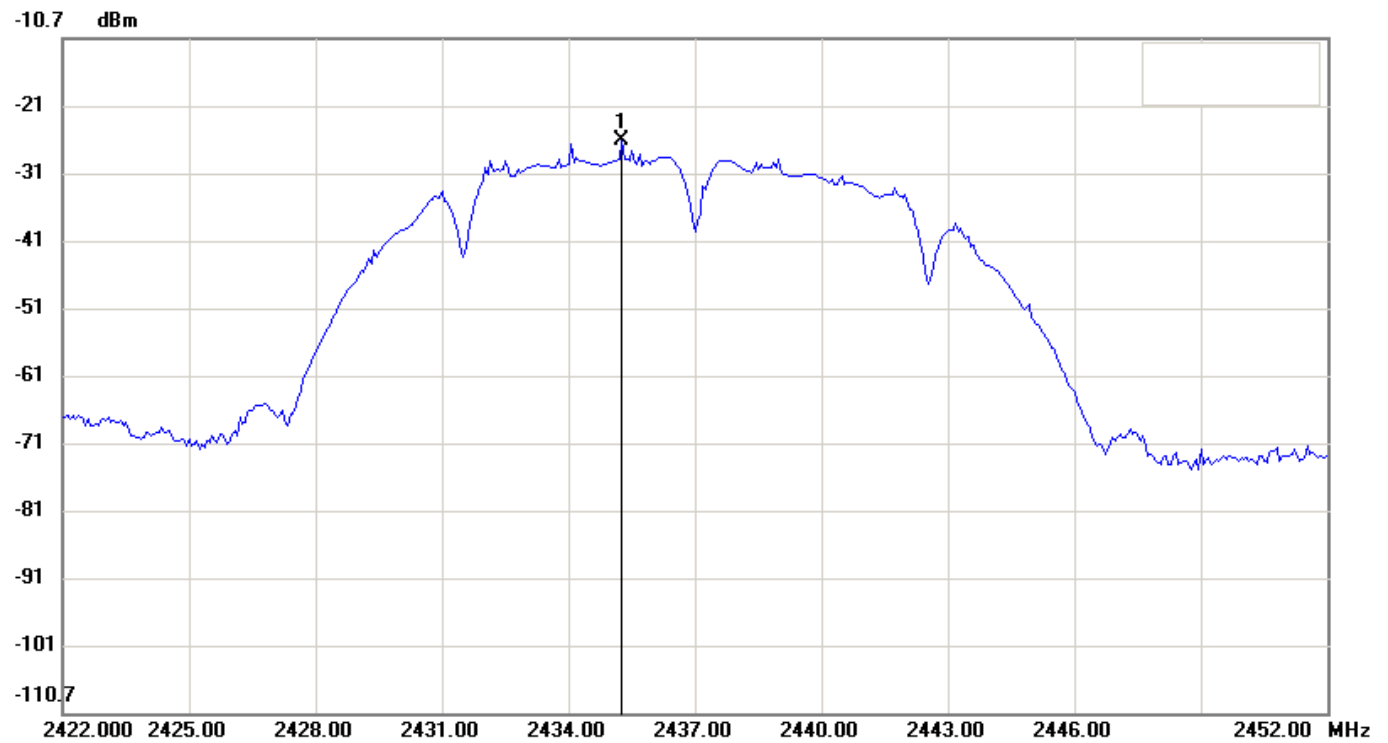
File: 20-05-MAS-062_B
Site: RF-Cond01

#7

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %



Condition:

EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-B
Note: NCC_LP0002_802.11b Channel 06-Power Density (PK)

RF Conducted

Sweep Time: 334ms Att.: 20dB
RBW: 3 KHz VBW: 10 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2435.26000	-25.91

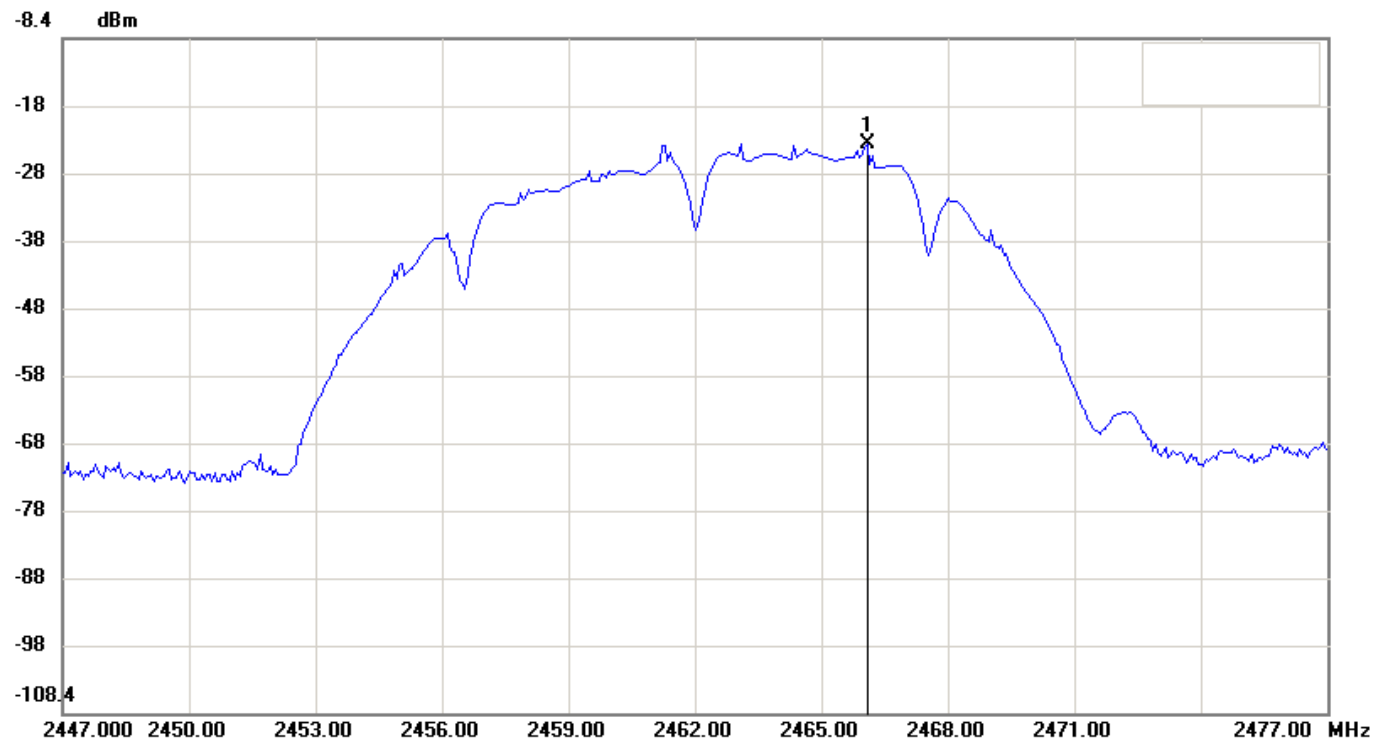
File: 20-05-MAS-062_B
Site: RF-Cond01

#10

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %



Condition:

EUT: Wireless Adapter

Model: SMC-USBW-01

Test Mode: WIFI-B

Note: NCC_LP0002_802.11b Channel 11-Power Density (PK)

RF Conducted

Sweep Time: 334ms Att.: 20dB

RBW: 3 KHz

VBW: 10 KHz

Operator:

Bruce

No.	Frequency(MHz)	Level(dBm)
1	2466.08000	-24.06

8.4.2 調變技術: IEEE 802.11g

測試日期: Jun. 15, 2020

環境溫度: 22°C

環境濕度: 62%

Channel	Peak Power Spectral Density (dBm)	NCC Limit (dBm)	Chart
L	-20.28	8	Page 46
M	-25.36	8	Page 47
H	-22.86	8	Page 48

註：1. 繪圖資料請參考第 46-48 頁。

2. If antenna gain $\leq 6\text{dBi}$, NCC Limit = 8 dBm

3. If antenna gain $> 6\text{dBi}$, NCC Limit = 8dBm – (highest antenna gain – 6 dBi)

4. 量測不準確度: $\pm 1.5\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)

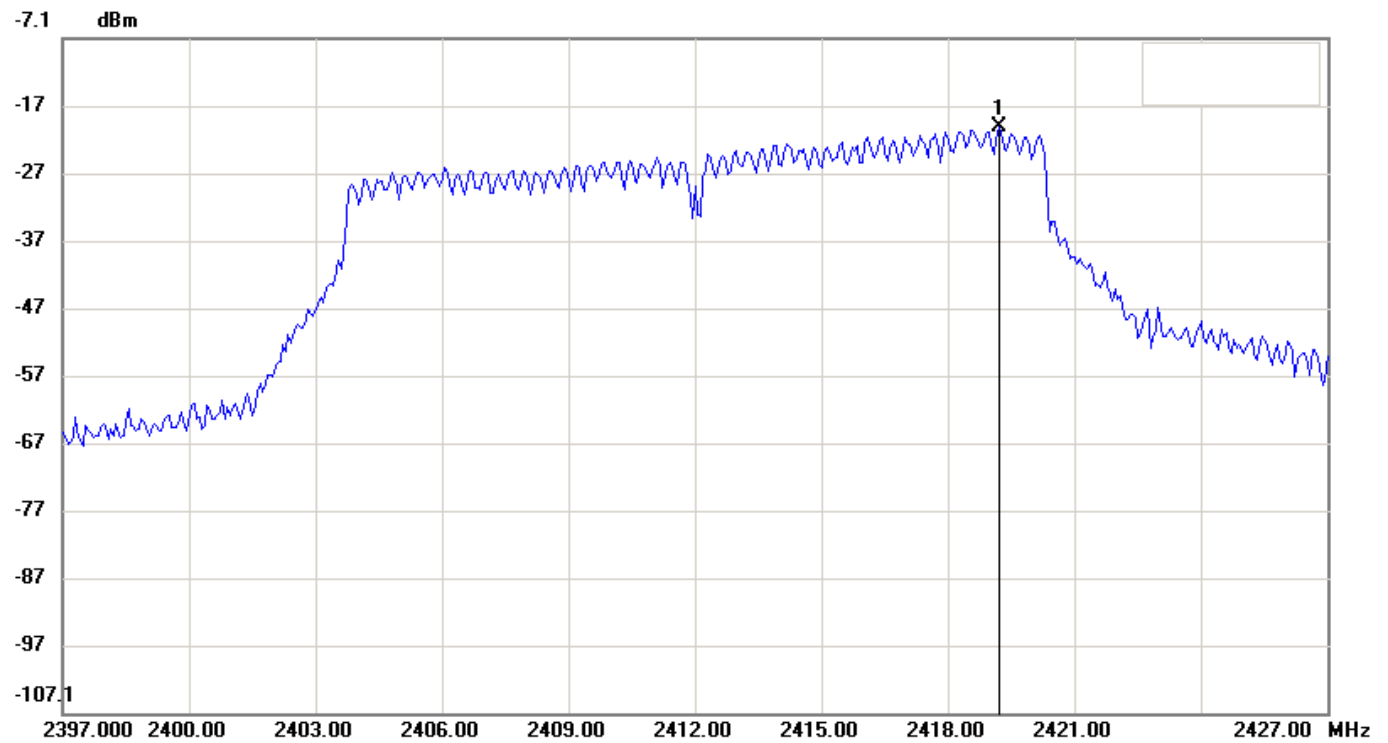
File: 20-05-MAS-062_G
Site: RF-Cond01

#3

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %



Condition:

EUT: Wireless Adapter

Model: SMC-USBW-01

Test Mode: WIFI-G

Note: NCC_LP0002_802.11g Channel 01-Power Density (PK)

RF Conducted

Sweep Time: 334ms Att.: 20dB

RBW: 3 KHz

VBW: 10 KHz

Operator:

Bruce

No.	Frequency(MHz)	Level(dBm)
1	2419.20000	-20.28

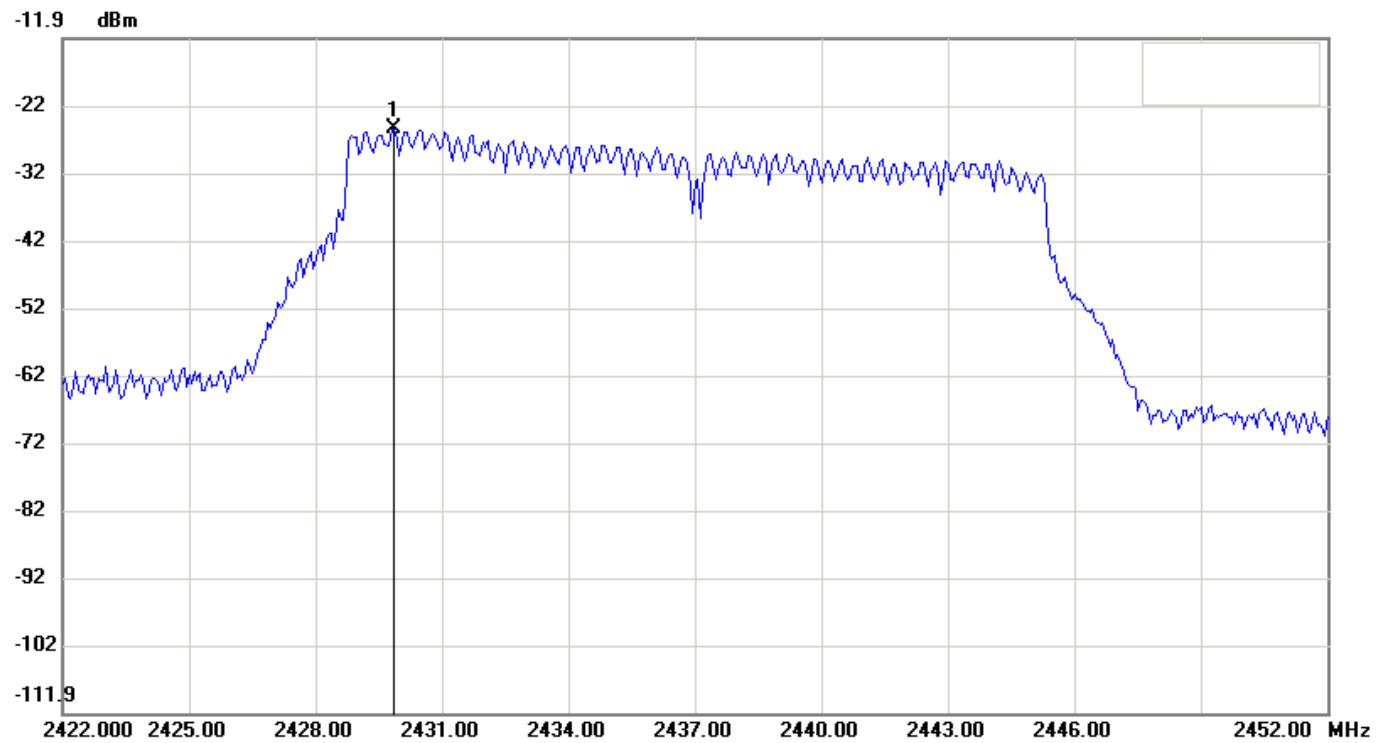
File: 20-05-MAS-062_G
Site: RF-Cond01

#7

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %



Condition:

EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-G
Note: NCC_LP0002_802.11g Channel 06-Power Density (PK)

RF Conducted

Sweep Time: 334ms Att.: 20dB
RBW: 3 KHz VBW: 10 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2429.86000	-25.36

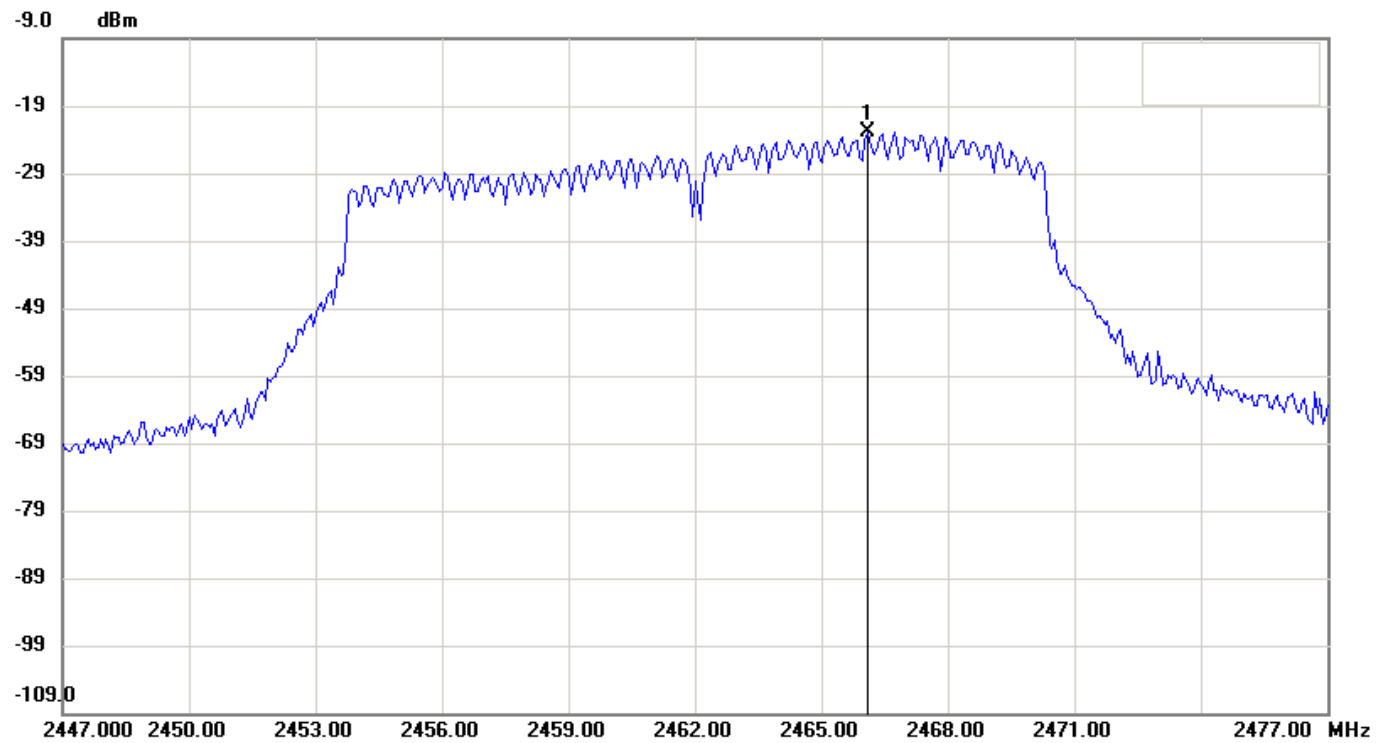
File: 20-05-MAS-062_G
Site: RF-Cond01

#10

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %



Condition:

EUT: Wireless Adapter

Model: SMC-USBW-01

Test Mode: WIFI-G

Note: NCC_LP0002_802.11g Channel 11-Power Density (PK)

RF Conducted

Sweep Time: 334ms Att.: 20dB

RBW: 3 KHz

VBW: 10 KHz

Operator:

Bruce

No.	Frequency(MHz)	Level(dBm)
1	2466.08000	-22.86

8.4.3 調變技術: IEEE 802.11n HT20

測試日期: Jun. 15, 2020

環境溫度: 22°C

環境濕度: 62%

Channel	Peak Power Spectral Density (dBm)	NCC Limit (dBm)	Chart
L	-19.20	8	Page 50
M	-23.18	8	Page 51
H	-21.38	8	Page 52

註：1. 繪圖資料請參考第 50-52 頁。

2. If antenna gain $\leq 6\text{dBi}$, NCC Limit = 8 dBm

3. If antenna gain $> 6\text{dBi}$, NCC Limit = 8dBm – (highest antenna gain – 6 dBi)

4. 量測不準確度: $\pm 1.5\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)

8.5 結果判定

高、中、低頻段的3kHz功率密度皆低於限制值，合乎標準規定。

File: 20-05-MAS-062_N
Site: RF-Cond01

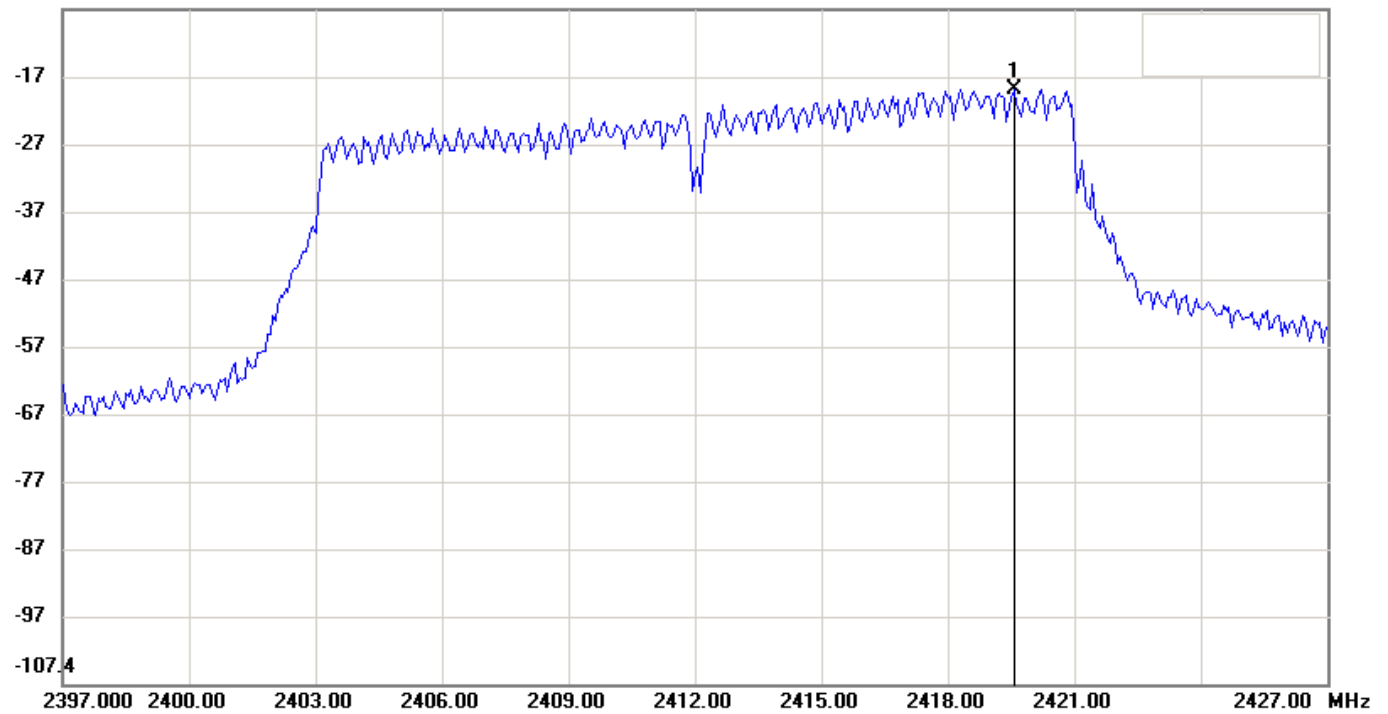
#3

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %

-7.4 dBm



Condition:

EUT: Wireless Adapter

Model: SMC-USBW-01

Test Mode: WIFI-N

Note: NCC_LP0002_802.11n-HT20 Channel 01-Power Density (PK)

RF Conducted

Sweep Time: 334ms Att.: 20dB

RBW: 3 KHz

VBW: 10 KHz

Operator:

Bruce

No.	Frequency(MHz)	Level(dBm)
1	2419.56000	-19.20

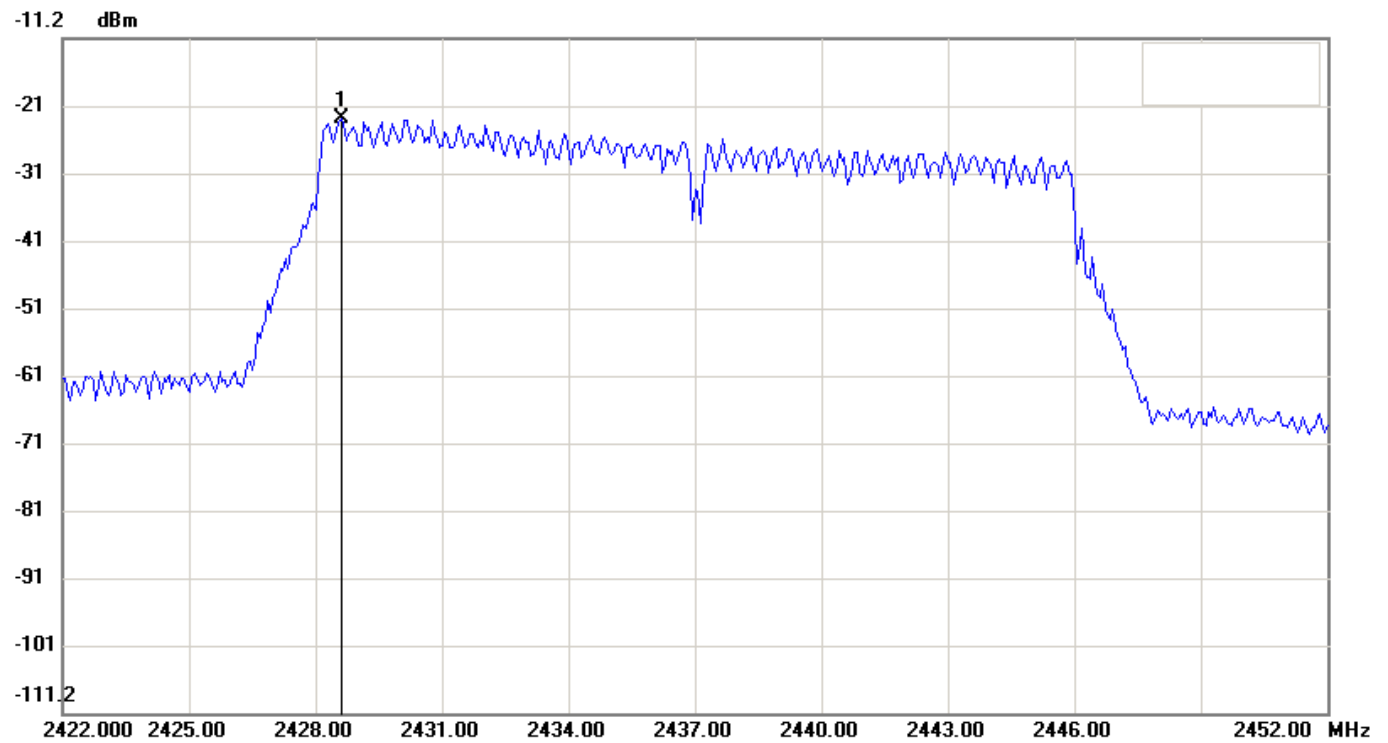
File: 20-05-MAS-062_N
Site: RF-Cond01

#7

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %



Condition:

EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-N
Note: NCC_LP0002_802.11n-HT20 Channel 06-Power Density (PK)

RF Conducted

Sweep Time: 334ms Att.: 20dB
RBW: 3 KHz VBW: 10 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2428.60000	-23.18

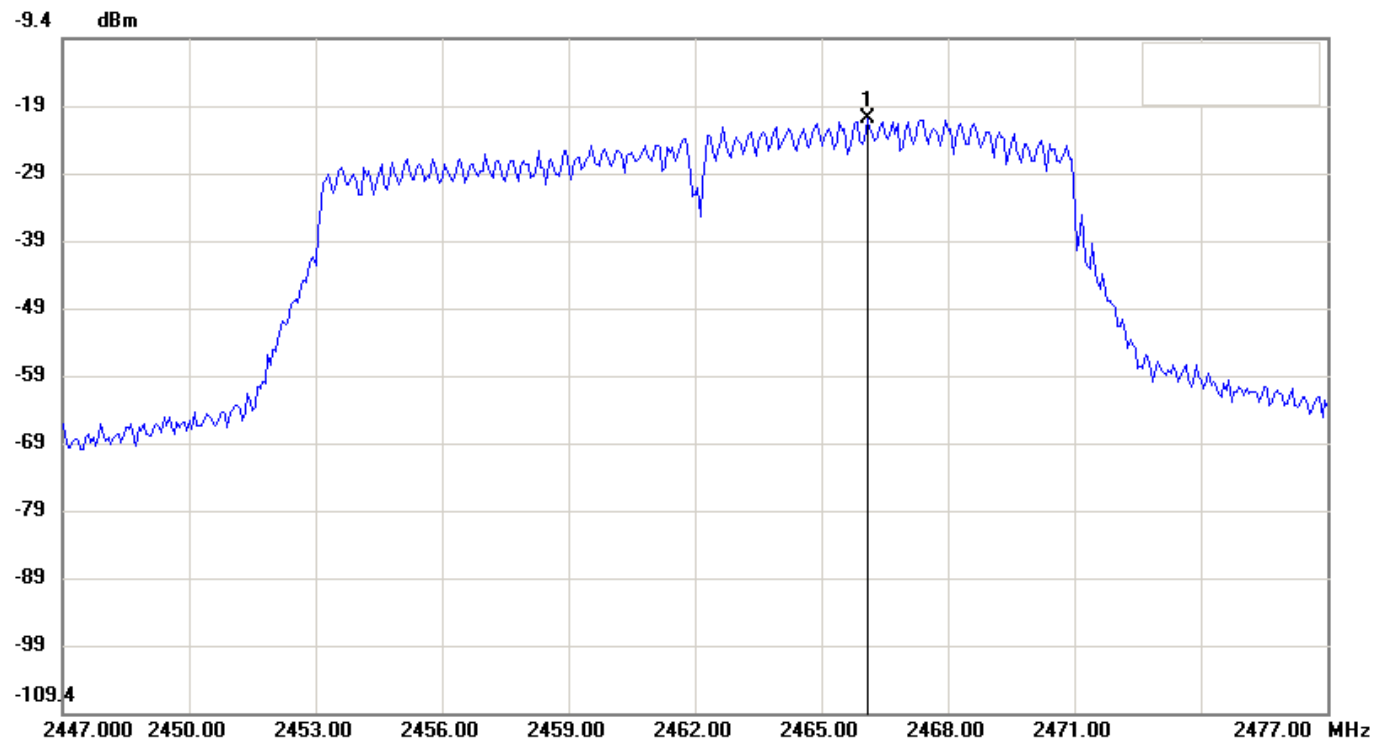
File: 20-05-MAS-062_N
Site: RF-Cond01

#10

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %



Condition:

EUT: Wireless Adapter

Model: SMC-USBW-01

Test Mode: WIFI-N

Note: NCC_LP0002_802.11n-HT20 Channel 11-Power Density (PK)

RF Conducted

Sweep Time: 334ms Att.: 20dB

RBW: 3 KHz

VBW: 10 KHz

Operator:

Bruce

No.	Frequency(MHz)	Level(dBm)
1	2466.08000	-21.38

9 混附波發射限制之量測

9.1 適用標準

依據國家通訊傳播委員會低功率射頻電機技術規範3.10.1.5之規定，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，落於國家通訊傳播委員會低功率射頻電機技術規範第2.7節禁用頻段之輻射發射，應符合國家通訊傳播委員會低功率射頻電機技術規範第2.8節之規定。

9.2 混附波發射限制之測試配置

如圖2 所示。

9.3 量測混附波發射限制之儀器

儀器名稱	製造者	型 號
Spectrum Analyzer	R&S	FSV
Attenuator	WEINSCHEL	56-10

測試軟體: LZ-RF (Ver. ETC-3A2)

9.4 混附波發射限制之量測結果 (傳導方式量測)

測試工程師: 許志宏

9.4.1 調變技術: IEEE 802.11b

測試日期: Jun. 15, 2020

環境溫度: 22°C

環境濕度: 62%

- a. 下邊緣頻帶：距下頻帶邊緣40MHz內最大混附波產生於 2395.150 MHz，比主波低20dB以上，合乎標準規定。
- b. 上邊緣頻帶：距上頻帶邊緣40MHz內最大混附波產生於 2498.396 MHz，比主波低20dB以上，合乎標準規定。

註：1. 繪圖資料請參考第 54-58 頁。

2. 量測不準確度: $\pm 1.5\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)

File: 20-05-MAS-062_B

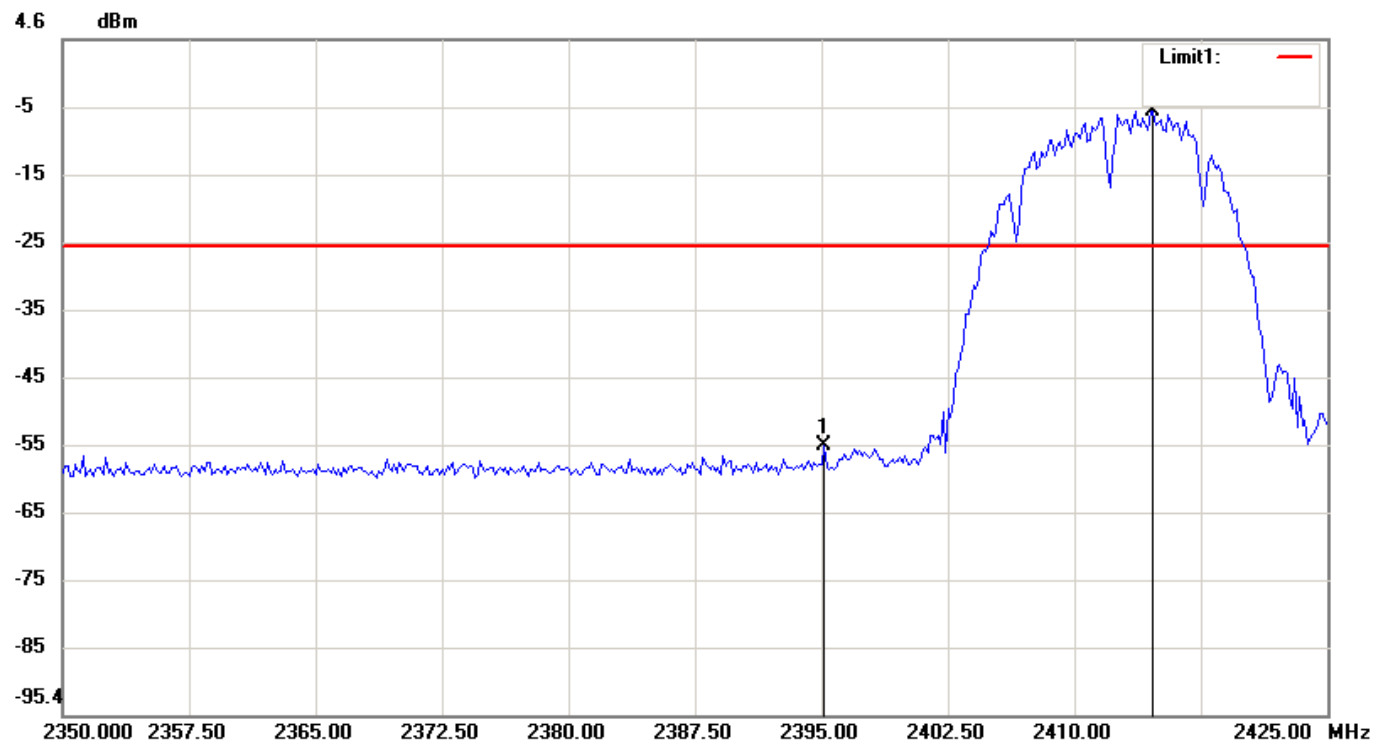
#4

Date: 2020/6/15

Temperature: 22 °C

Site: RF-Cond01

Humidity: 62 %



Condition: -26.1dBm

EUT: Wireless Adapter

Model: SMC-USBW-01

Test Mode: WIFI-B

Note: NCC_LP0002_802.11b Channel 01-Bandedge

RF Conducted

Sweep Time: 500ms Att.: 20dB

RBW: 100 KHz

VBW: 300 KHz

Operator:

Bruce

No.	Frequency(MHz)	Level(dBm)
1	2395.15000	-55.44
2	2414.65000	-6.10

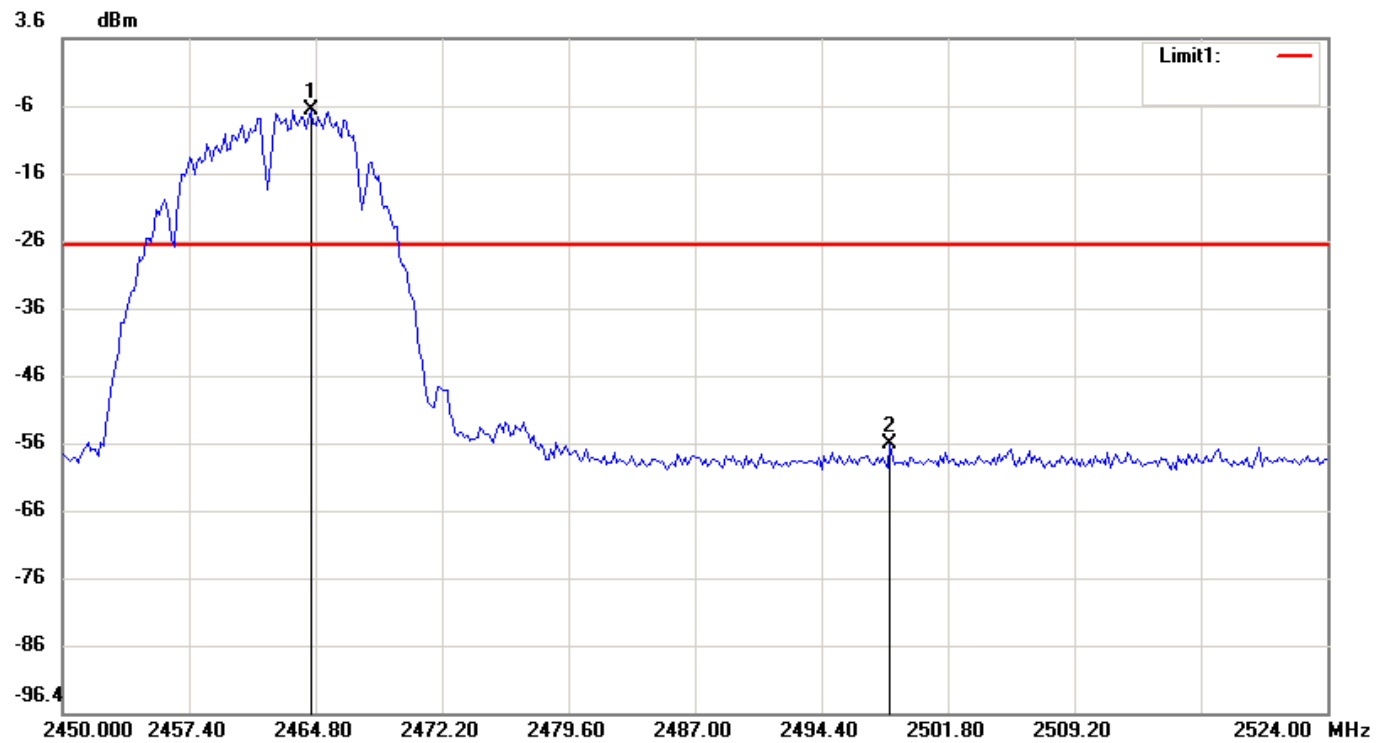
File: 20-05-MAS-062_B
Site: RF-Cond01

#11

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %



Condition: -26.98dBm
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-B
Note: NCC_LP0002_802.11b Channel 11-Bandedge

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2464.50400	-6.98
2	2498.39600	-56.55

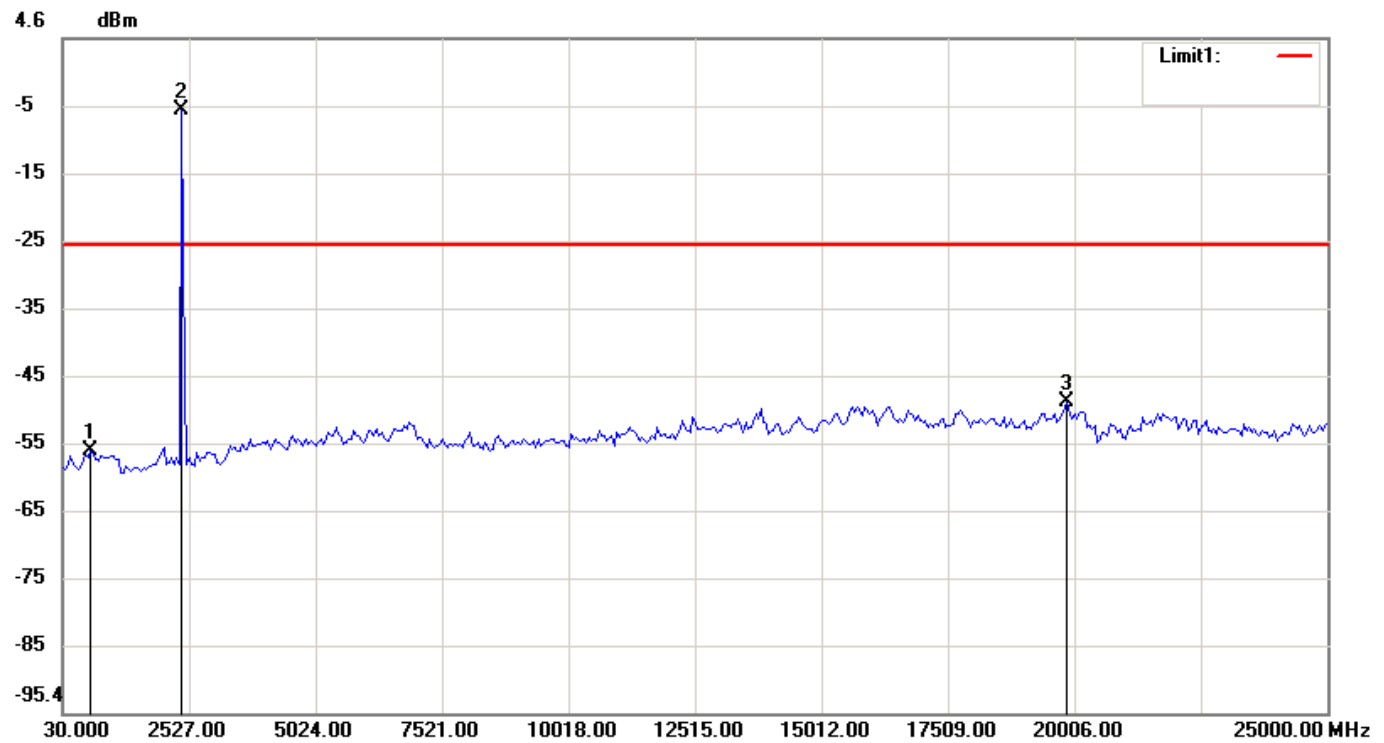
File: 20-05-MAS-062_B
Site: RF-Cond01

#2

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %



Condition: -26.01dBm
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-B
Note: NCC_LP0002_802.11b Channel 01-Conducted Spurious

RF Conducted
Sweep Time: 250ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	579.3400	-56.54
2	2377.18000	-6.01
3	19856.18000	-49.18

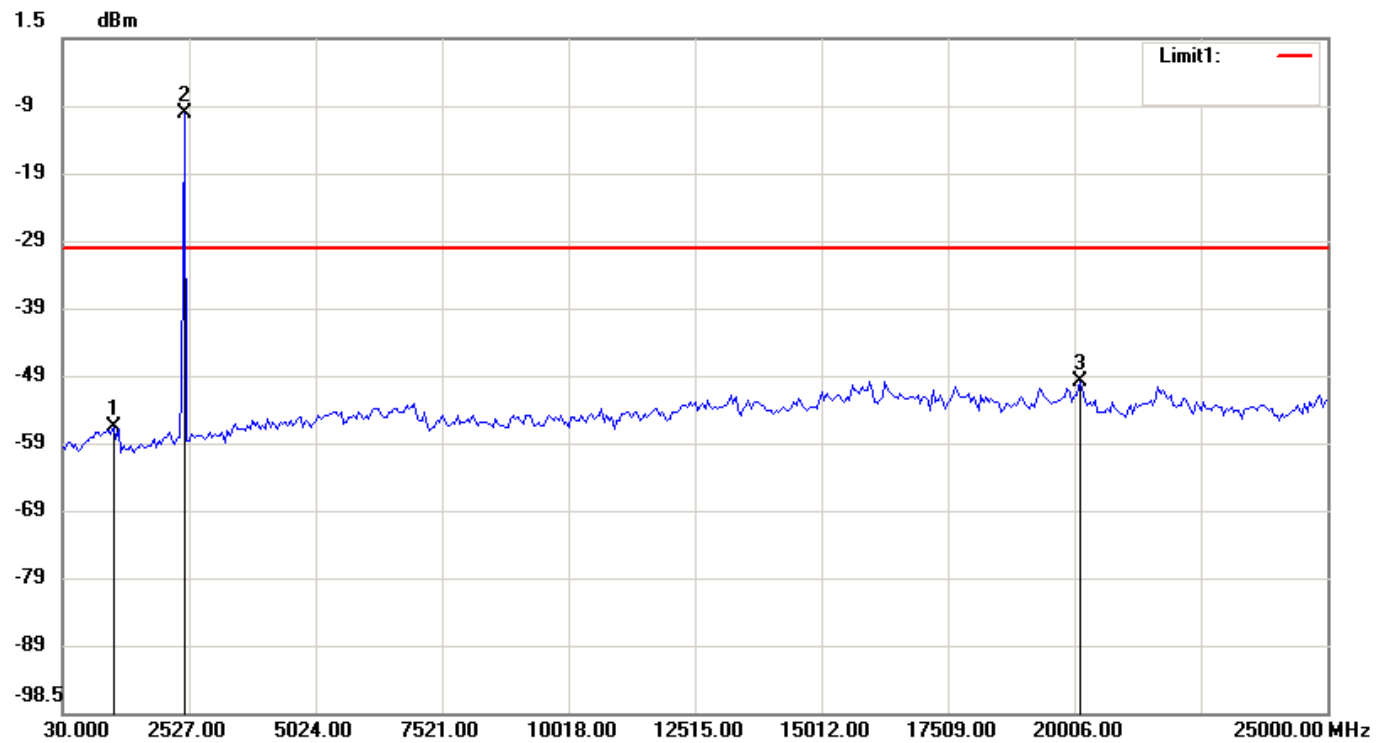
File: 20-05-MAS-062_B
Site: RF-Cond01

#6

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %



Condition: -29.55dBm
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-B
Note: NCC_LP0002_802.11b Channel 06-Conducted Spurious

RF Conducted
Sweep Time: 250ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	1028.80000	-56.25
2	2427.12000	-9.55
3	20105.88000	-49.42

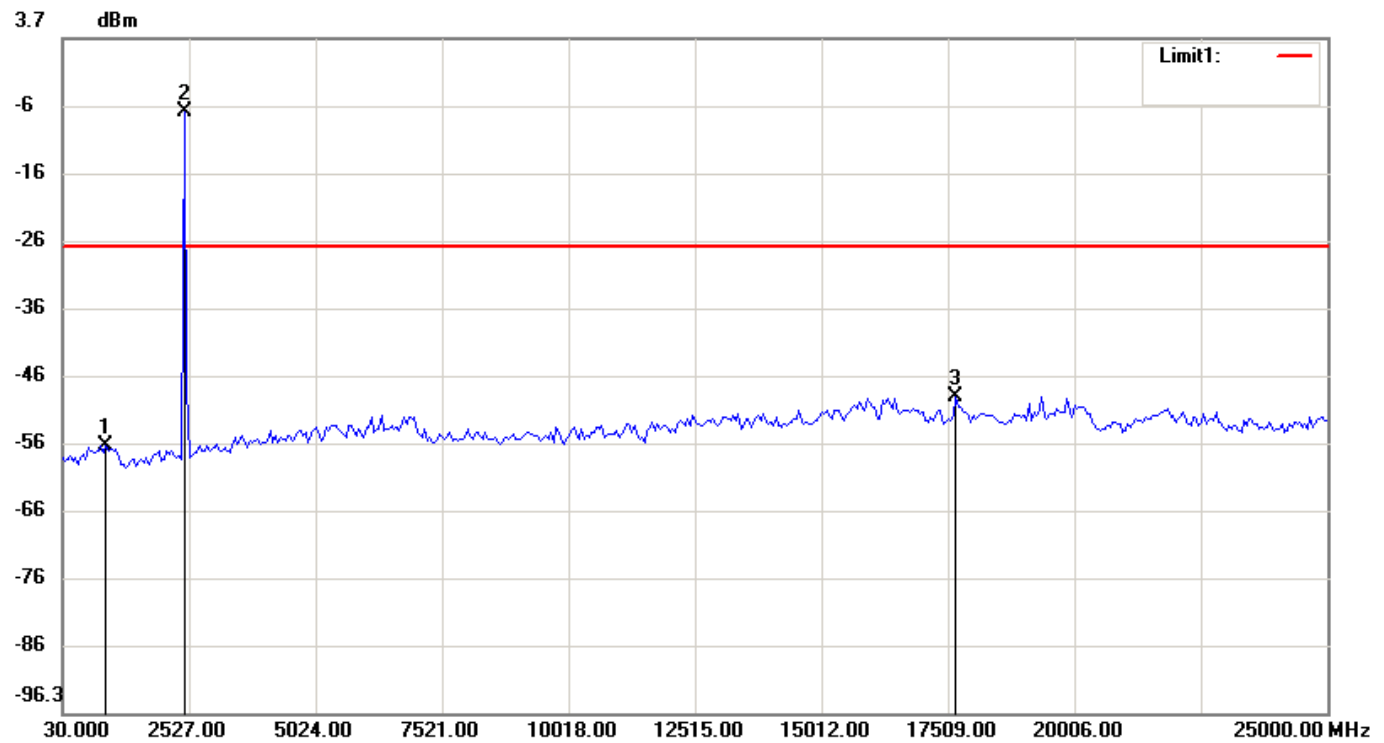
File: 20-05-MAS-062_B
Site: RF-Cond01

#9

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %



Condition: -27.07dBm
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-B
Note: NCC_LP0002_802.11b Channel 11-Conducted Spurious

RF Conducted
Sweep Time: 250ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	878.9800	-56.77
2	2427.12000	-7.07
3	17658.82000	-49.45

9.4.2 調變技術: IEEE 802.11g

測試日期: Jun. 15, 2020

環境溫度: 22°C

環境濕度: 62%

- a. 下邊緣頻帶：距下頻帶邊緣40MHz內最大混附波產生於 2399.800 MHz，比主波低 20dB以上，合乎標準規定。
- b. 上邊緣頻帶：距上頻帶邊緣40MHz內最大混附波產生於 2488.184 MHz，比主波低 20dB以上，合乎標準規定。

註：1. 繪圖資料請參考第 60-64 頁。

2. 量測不準確度: $\pm 1.5\text{dB}(1\text{GHz} \leq f \leq 18\text{GHz})$

File: 20-05-MAS-062_G
Site: RF-Cond01

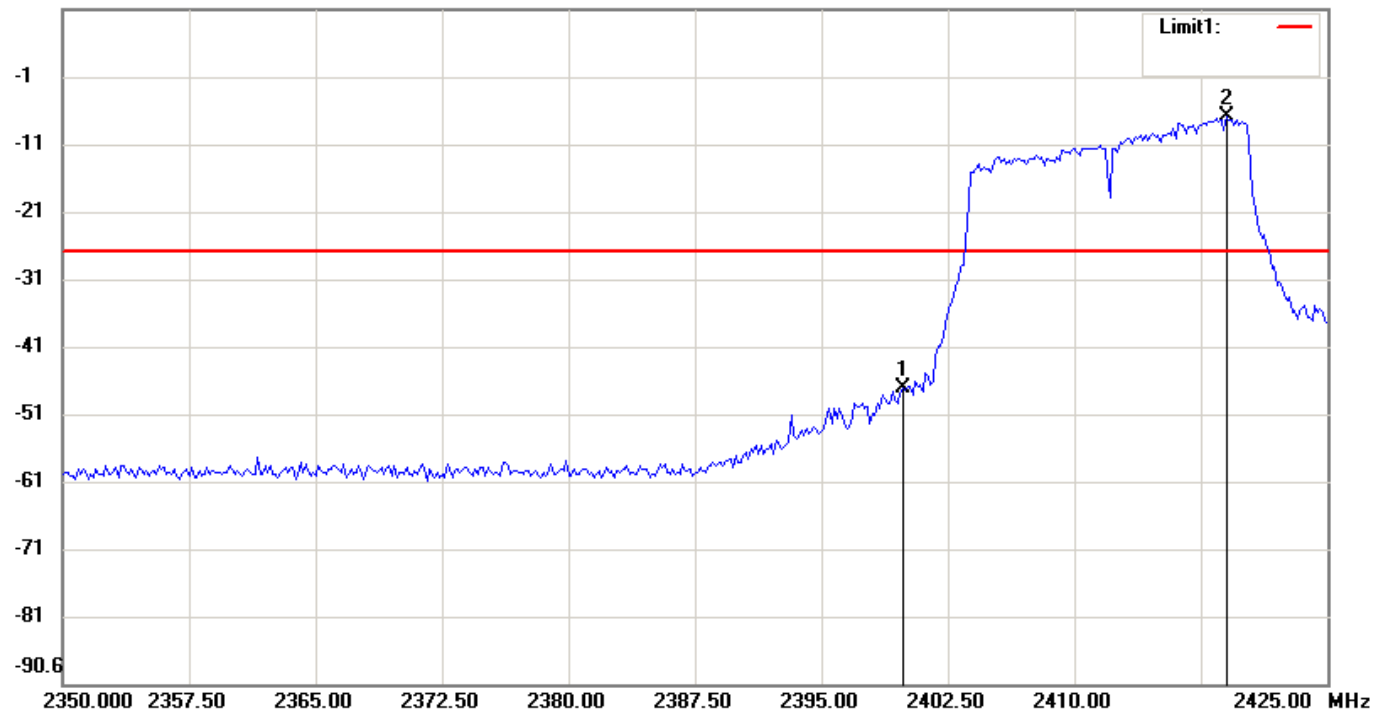
#4

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %

9.4 dBm



Condition: -26.55dBm
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-G
Note: NCC_LP0002_802.11g Channel 01-Bandedge

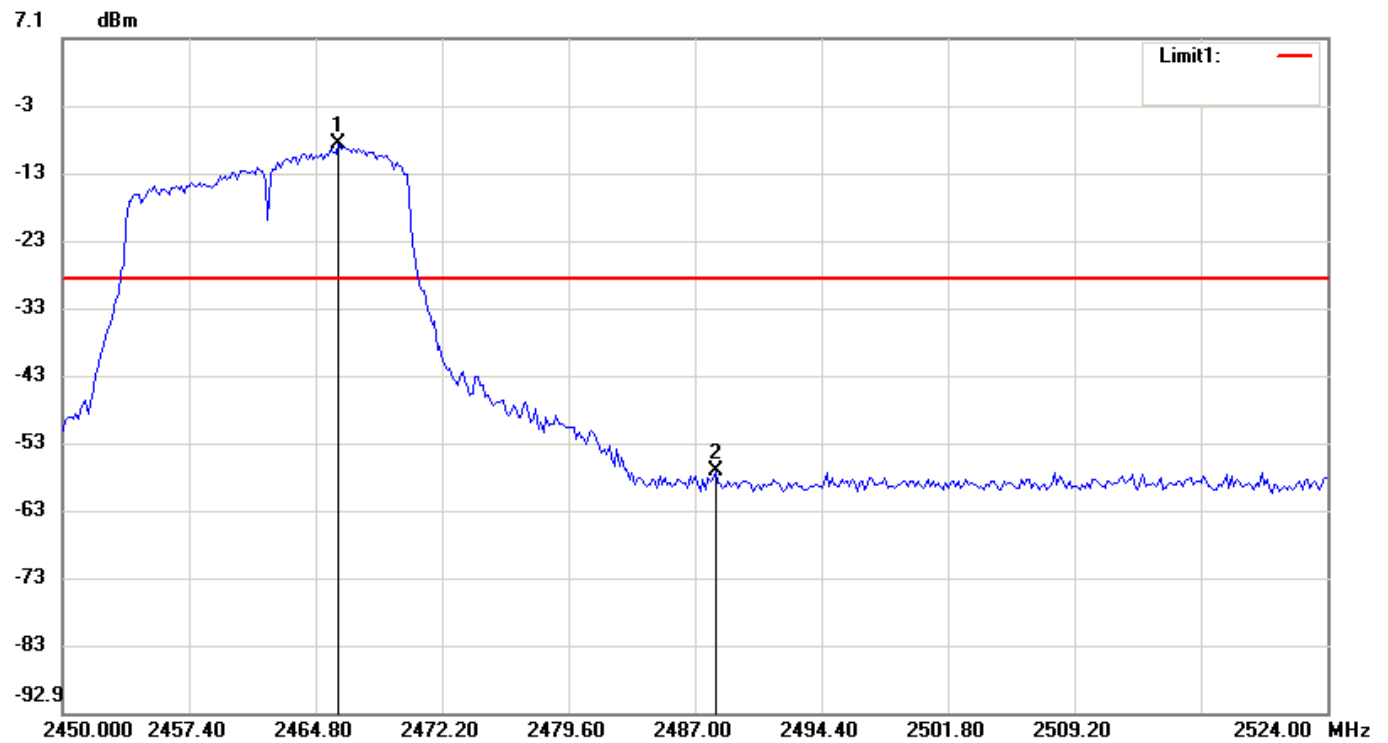
RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2399.80000	-46.61
2	2419.00000	-6.55

File: 20-05-MAS-062_G
Site: RF-Cond01

#11 Date: 2020/6/15

Temperature: 22 °C
Humidity: 62 %



Condition: -28.64dBm
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-G
Note: NCC_LP0002_802.11g Channel 11-Bandedge

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2466.13200	-8.64
2	2488.18400	-56.97

File: 20-05-MAS-062_G
Site: RF-Cond01

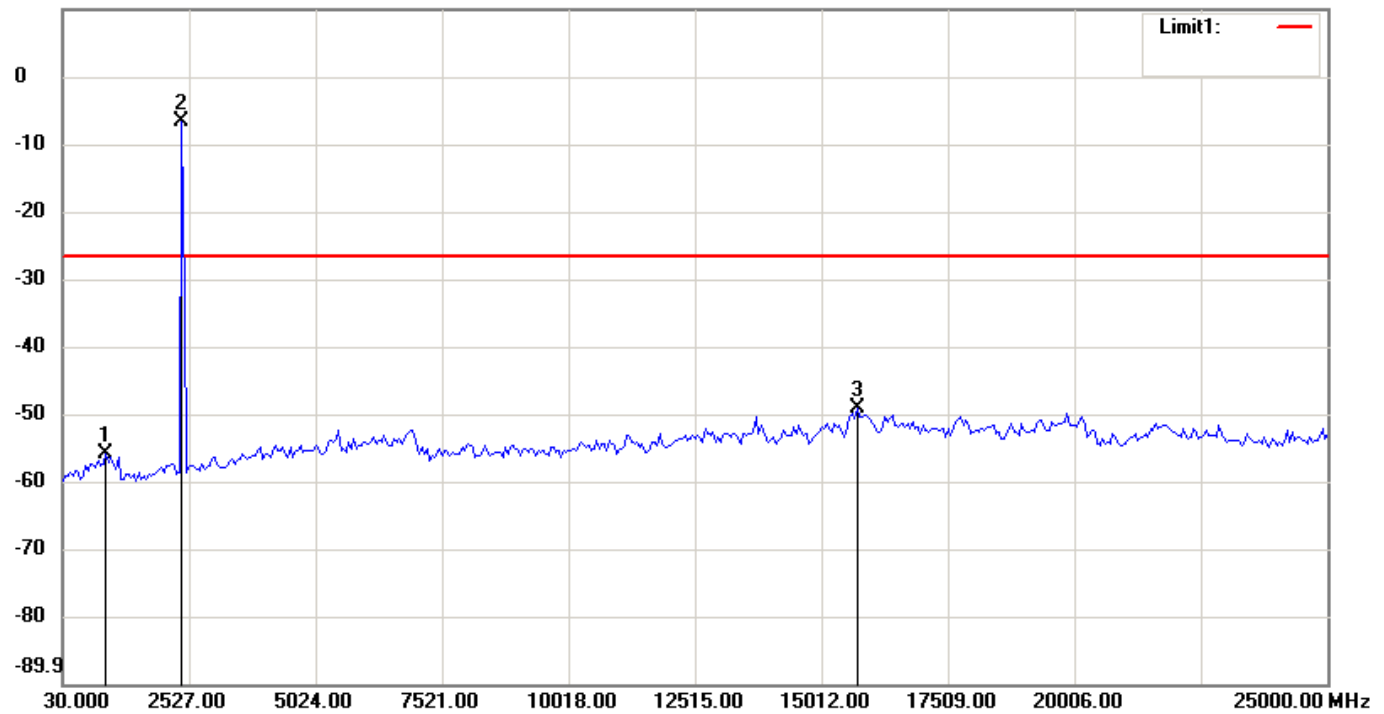
#2

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %

10.1 dBm



Condition: -26.44dBm
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-G
Note: NCC_LP0002_802.11g Channel 01-Conducted Spurious

RF Conducted
Sweep Time: 250ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	878.9800	-55.71
2	2377.18000	-6.44
3	15711.16000	-48.92

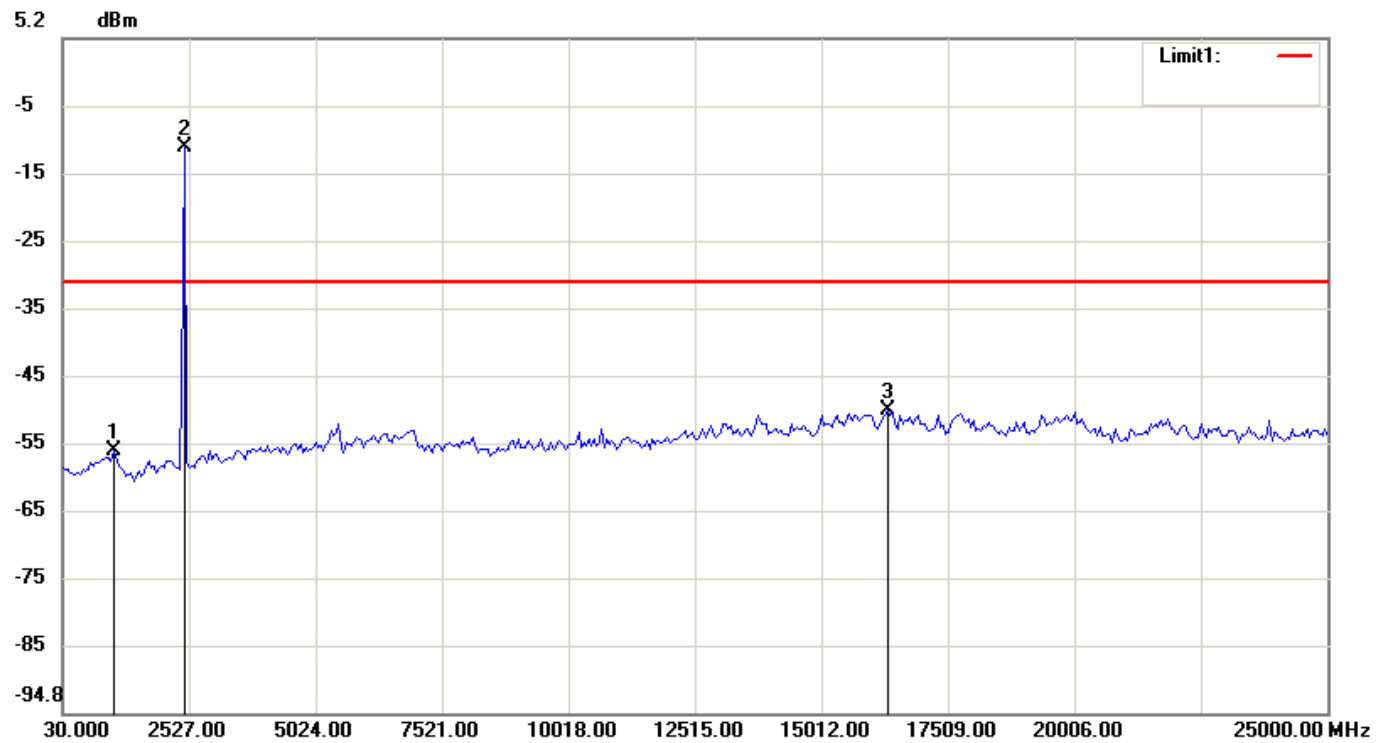
File: 20-05-MAS-062_G
Site: RF-Cond01

#6

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %



Condition: -31.01dBm
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-G
Note: NCC_LP0002_802.11g Channel 06-Conducted Spurious

RF Conducted
Sweep Time: 250ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	1028.80000	-55.99
2	2427.12000	-11.01
3	16310.44000	-49.89

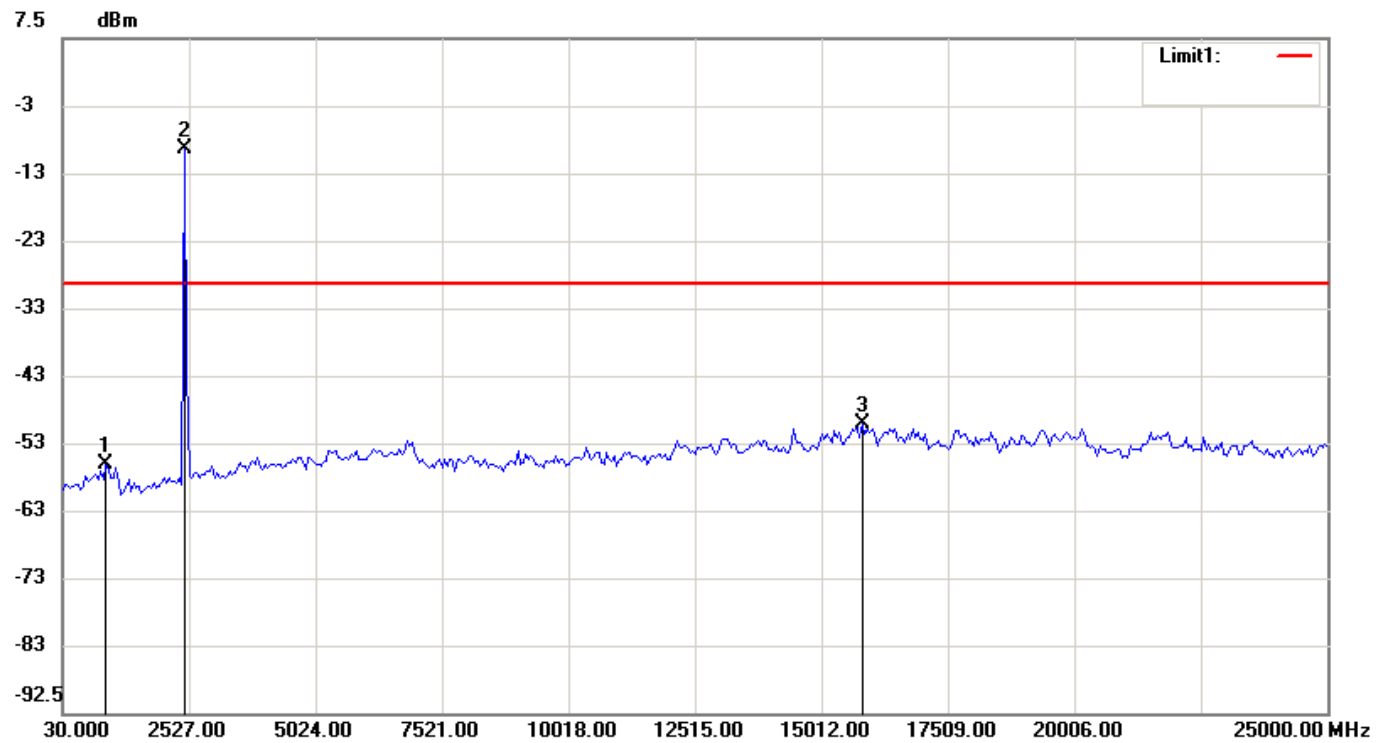
File: 20-05-MAS-062_G
Site: RF-Cond01

#9

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %



Condition: -28.91dBm
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-G
Note: NCC_LP0002_802.11g Channel 11-Conducted Spurious

RF Conducted
Sweep Time: 250ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	878.9800	-55.75
2	2427.12000	-8.91
3	15811.04000	-49.75

9.4.3 調變技術: IEEE 802.11n HT20

測試日期: Jun. 15, 2020

環境溫度: 22°C

環境濕度: 62%

- a. 下邊緣頻帶：距下頻帶邊緣40MHz內最大混附波產生於 2399.350 MHz，比主波低 20dB以上，合乎標準規定。
- b. 上邊緣頻帶：距上頻帶邊緣40MHz內最大混附波產生於 2518.672 MHz，比主波低 20dB以上，合乎標準規定。

註：1. 繪圖資料請參考第 66-70 頁。

2. 量測不準確度: $\pm 1.5\text{dB}(1\text{GHz} \leq f \leq 18\text{GHz})$

9.5 結果判定

混附波之發射皆低於使用頻帶內最高的射頻功率20dB以上，符合標準規定。

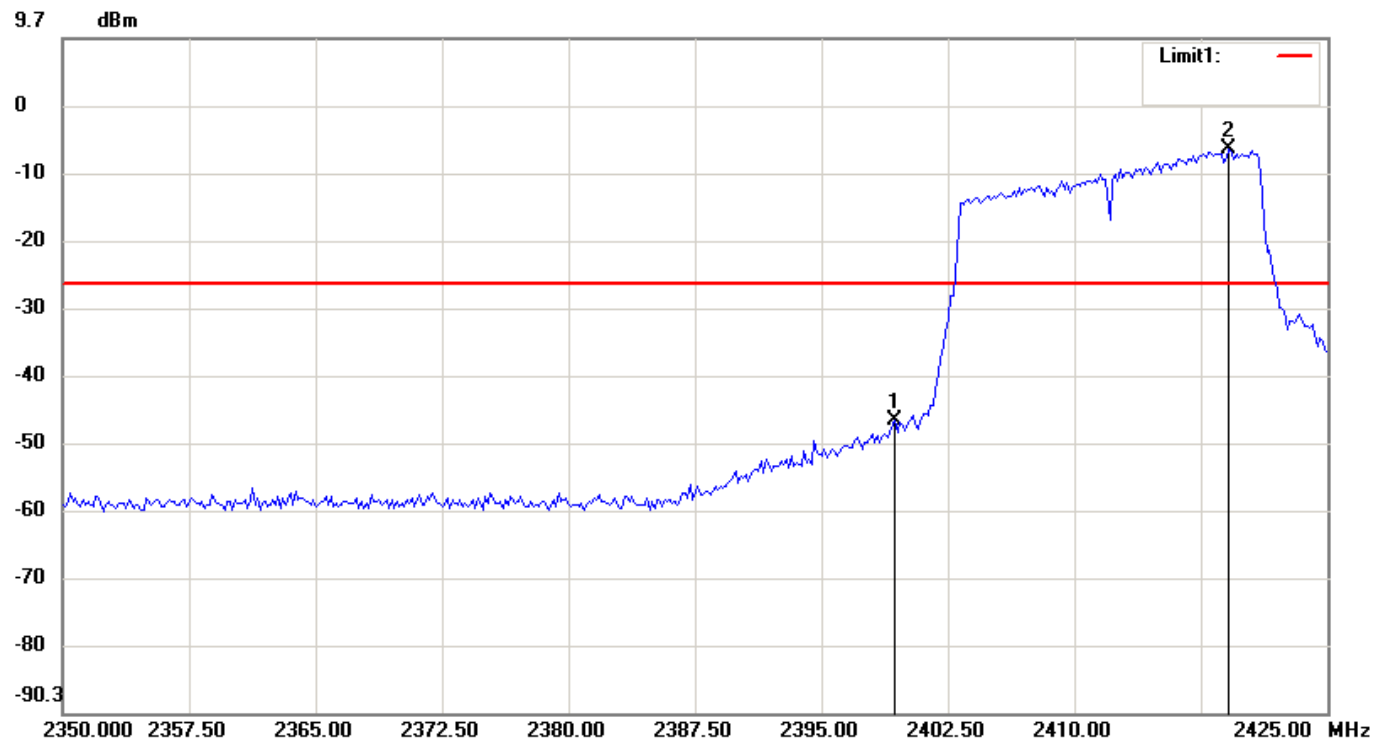
File: 20-05-MAS-062_N
Site: RF-Cond01

#4

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %



Condition: -26.76dBm
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-N
Note: NCC_LP0002_802.11n-HT20 Channel 01-Bandedge

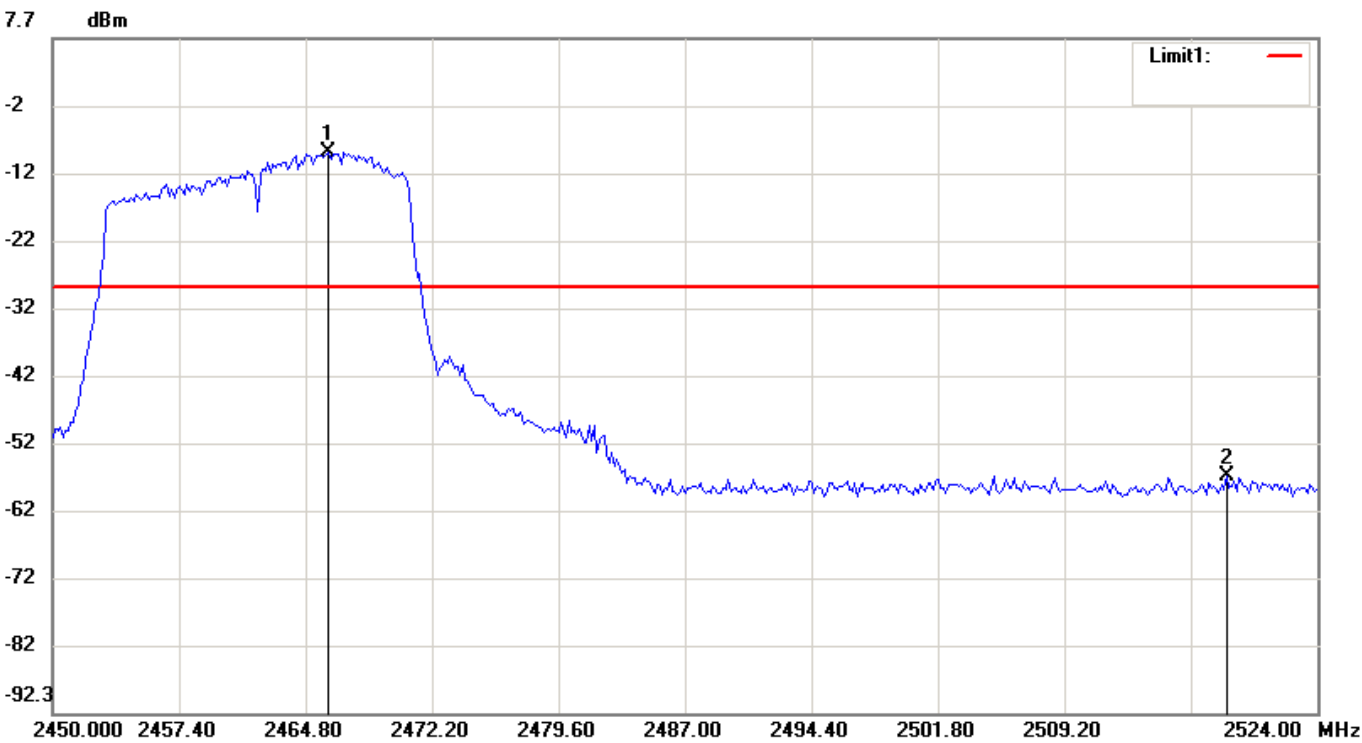
RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2399.35000	-46.98
2	2419.15000	-6.76

File: 20-05-MAS-062_N
Site: RF-Cond01

#11 Date: 2020/6/15

Temperature: 22 °C
Humidity: 62 %



Condition:	-29.18dBm	RF Conducted
EUT:	Wireless Adapter	Sweep Time: 500ms Att.: 20dB
Model:	SMC-USBW-01	RBW: 100 KHz VBW: 300 KHz
Test Mode:	WIFI-N	Operator: Bruce
Note:	NCC_LP0002_802.11n-HT20 Channel 11-Bandedge	

No.	Frequency(MHz)	Level(dBm)
1	2466.13200	-9.18
2	2518.67200	-57.16

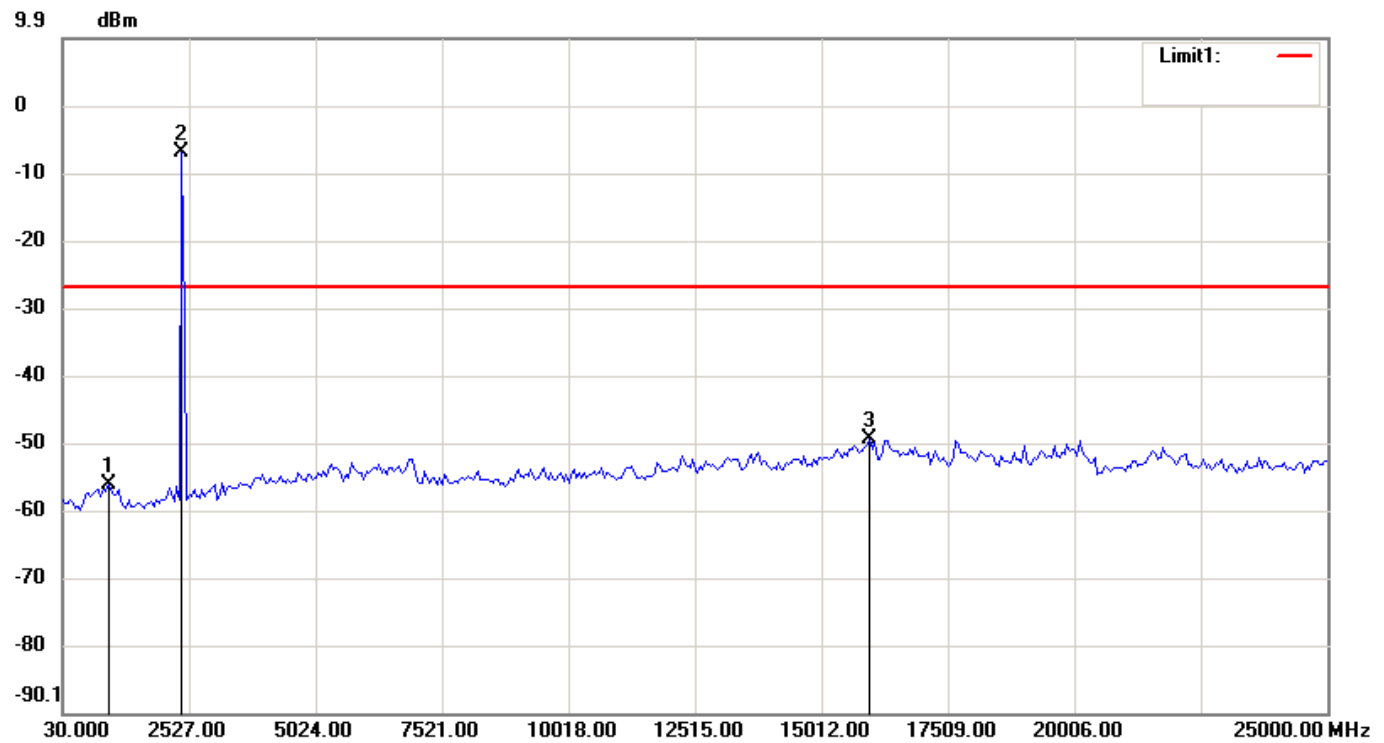
File: 20-05-MAS-062_N
Site: RF-Cond01

#2

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %



Condition: -26.97dBm
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-N
Note: NCC_LP0002_802.11n-HT20 Channel 01-Conducted Spurious

RF Conducted
Sweep Time: 250ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	928.9200	-56.32
2	2377.18000	-6.97
3	15960.86000	-49.58

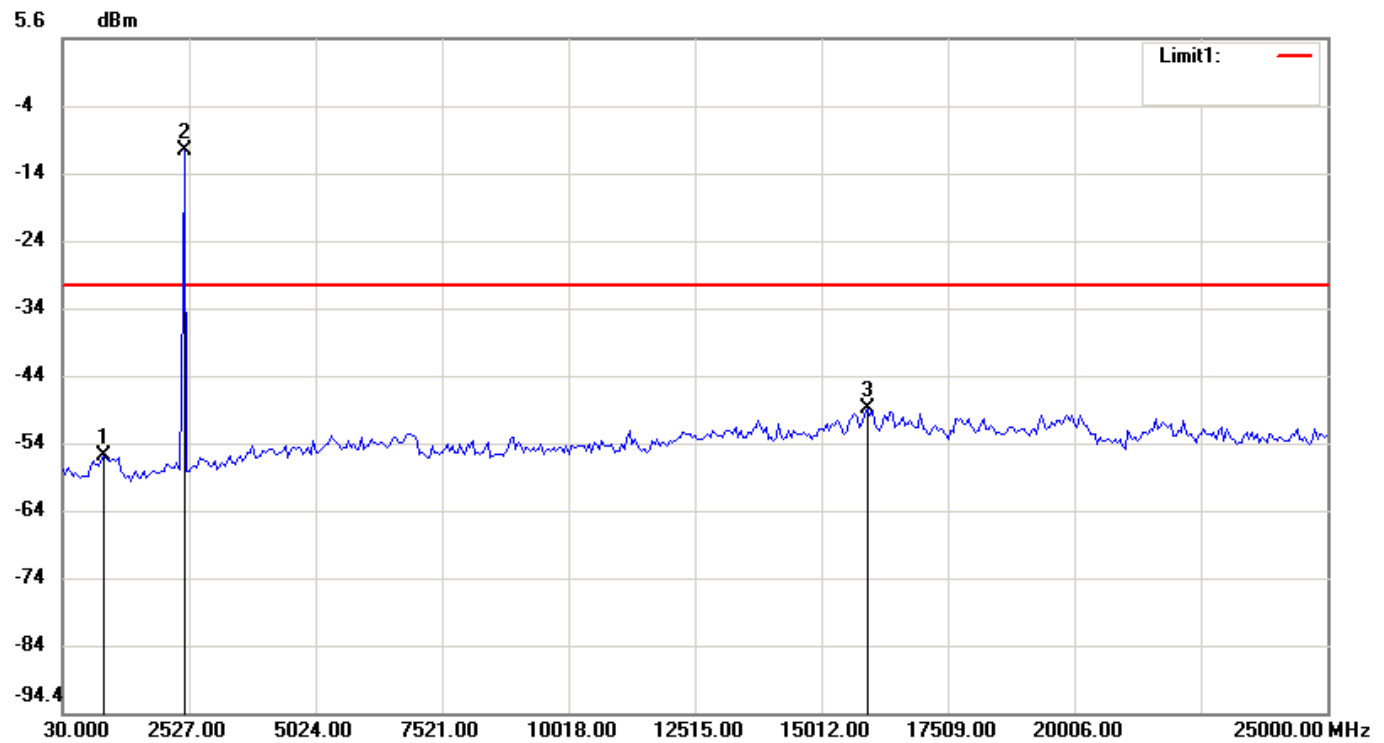
File: 20-05-MAS-062_N
Site: RF-Cond01

#6

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %



Condition: -31.01dBm
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-N
Note: NCC_LP0002_802.11n-HT20 Channel 06-Conducted Spurious

RF Conducted
Sweep Time: 250ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	829.0400	-56.18
2	2427.12000	-11.01
3	15910.92000	-49.27

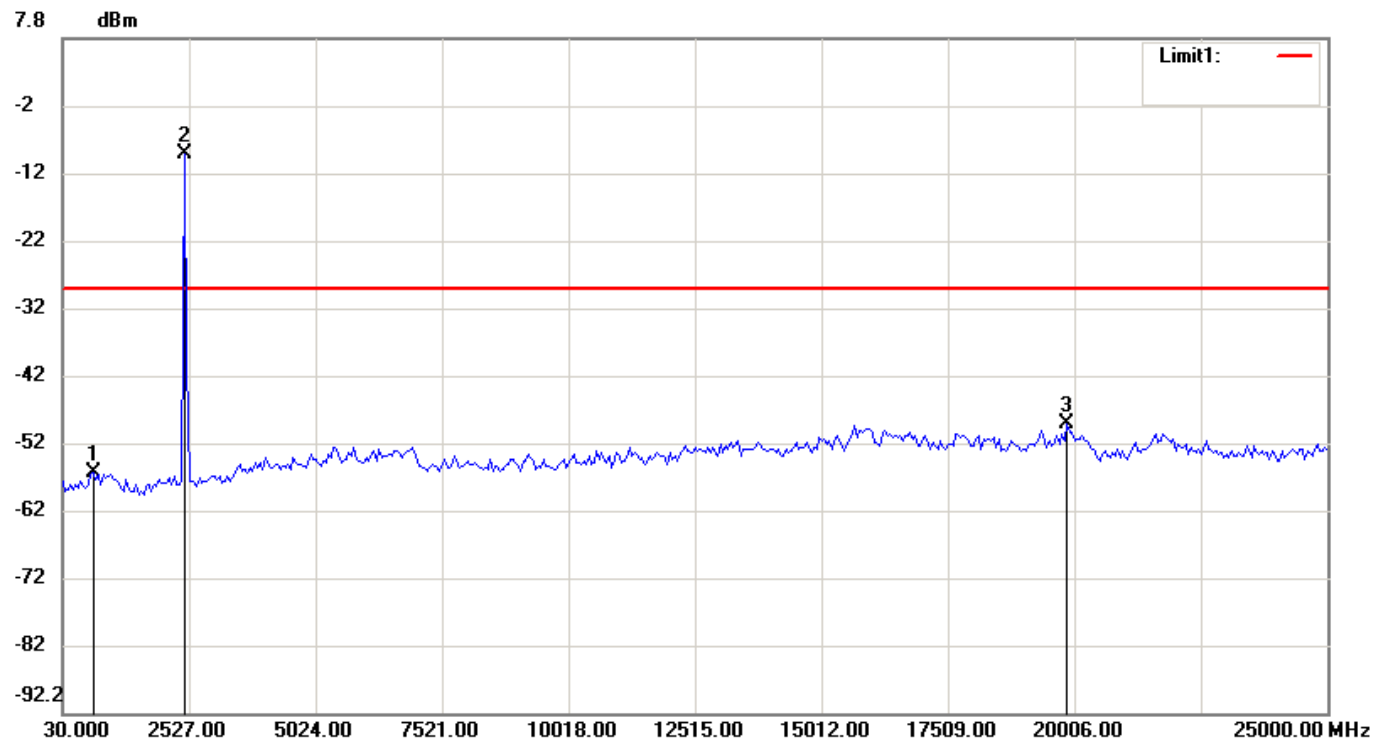
File: 20-05-MAS-062_N
Site: RF-Cond01

#9

Date: 2020/6/15

Temperature: 22 °C

Humidity: 62 %



Condition: -29.38dBm
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-N
Note: NCC_LP0002_802.11n-HT20 Channel 11-Conducted Spurious

RF Conducted
Sweep Time: 250ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	629.2800	-56.49
2	2427.12000	-9.38
3	19856.18000	-49.39

10 場強輻射之量測

10.1 適用標準

依據國家通訊傳播委員會低功率射頻電機技術規範3.10.1.5之要求，落於2.7節禁用頻段之輻射干擾需符合2.8節之一般限制要求。

10.2 量測方法

將待測物置於非金屬桌面，使其在測試模式狀態，且設定為高、中、低各頻道產生最高峰值輸出功率的傳輸速率，接收天線置於3米外，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，接收天線置於水平、垂直極向各執行測試一次。待測物若為手持式則分別要以三軸相放置，並分別測試以找出最大輻射電場強度。

10.3 量測場強輻射之儀器

(1)量測儀器

儀器名稱	製造者	型號
EMI Receiver	R&S	ESCI
Spectrum Analyzer	R&S	FSU46
Horn Antenna	EMCO	3117
Hom Antenna	EMCO	3116
PRE-Amplifier	Agilent	8449B
PRE-Amplifier	Agilent	8447D
BiLog Antenna	ETC	MCTD 2786
Spectrum Analyzer	R&S	FSV

測試軟體: LZ-RF (Ver. ETC-3A2)

(2)儀器設定

Frequency Band (MHz)	Instrument	Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	RF Test Receiver	Quasi-Peak	120 kHz	300 kHz
	RF Test Receiver	Peak	120 kHz	300 kHz
Above 1000	Spectrum Analyzer	Peak	1 MHz	1 MHz
	Spectrum Analyzer	Average	1 MHz	10 Hz

10.4 場強度之計算

場強之計算公式如下

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

其中校正因子為：

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

10.5 場強輻射之量測結果

測試工程師: 許志宏

10.5.1 諧波發射量測值

10.5.1.1 調變技術: IEEE 802.11b

a. Channel Low

操作模式 : 發射接收

基本波頻率 : 2412 MHz

測試日期: Jun. 18, 2020

環境溫度: 20°C

環境濕度: 60%

輻射 頻率 (MHz)	天線 極性 H/V	機器讀值 (dBuV/m)@3m		校正 因子 (dB)	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (dB) (worse)
		Peak	AVG		Peak	AVG	Peak	AVG	
4824.0000	H	---	---	1.06	---	---	74.0	54.0	---
4824.0000	V	---	---	1.06	---	---	74.0	54.0	---
7236.0000	H	---	---	3.64	---	---	74.0	54.0	---
7236.0000	V	---	---	3.64	---	---	74.0	54.0	---
9648.0000	H	---	---	4.70	---	---	74.0	54.0	---
9648.0000	V	---	---	4.70	---	---	74.0	54.0	---
12060.0000	H	---	---	8.06	---	---	74.0	54.0	---
12060.0000	V	---	---	8.06	---	---	74.0	54.0	---

註：1. 標記“---”表發射之訊號太弱而儀器無法量測。

2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

3. 量測不準確度: $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f < 18\text{GHz}$)
 $\pm 4.4\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

b. Channel Mid

操作模式：發射接收

基本波頻率：2437 MHz

測試日期：Jun. 18, 2020

環境溫度：20°C

環境濕度：60%

輻射 頻率	天線 極性	機器讀值 (dBuV/m)@3m		校正 因子	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse)
		Peak	AVG		Peak	AVG	Peak	AVG	
4874.0000	H	---	---	1.17	---	---	74.0	54.0	---
4874.0000	V	---	---	1.17	---	---	74.0	54.0	---
7311.0000	H	---	---	3.66	---	---	74.0	54.0	---
7311.0000	V	---	---	3.66	---	---	74.0	54.0	---
9748.0000	H	---	---	4.82	---	---	74.0	54.0	---
9748.0000	V	---	---	4.82	---	---	74.0	54.0	---
12185.0000	H	---	---	8.29	---	---	74.0	54.0	---
12185.0000	V	---	---	8.29	---	---	74.0	54.0	---

註：1. 標記“---”表發射之訊號太弱而儀器無法量測。

2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

3. 量測不準確度： $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f < 18\text{GHz}$)
 $\pm 4.4\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

c. Channel High

操作模式：發射接收

基本波頻率：2462 MHz

測試日期：Jun. 18, 2020

環境溫度：20°C

環境濕度：60%

輻射 頻率	天線 極性	機器讀值 (dBuV/m)@3m		校正 因子	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse)
		Peak	AVG		Peak	AVG	Peak	AVG	
(MHz)	H/V			(dB)					(dB)
4924.0000	H	---	---	1.28	---	---	74.0	54.0	---
4924.0000	V	---	---	1.28	---	---	74.0	54.0	---
7386.0000	H	---	---	3.68	---	---	74.0	54.0	---
7386.0000	V	---	---	3.68	---	---	74.0	54.0	---
9848.0000	H	---	---	4.94	---	---	74.0	54.0	---
9848.0000	V	---	---	4.94	---	---	74.0	54.0	---
14772.0000	H	---	---	10.74	---	---	74.0	54.0	---
14772.0000	V	---	---	10.74	---	---	74.0	54.0	---

註：1. 標記“---”表發射之訊號太弱而儀器無法量測。

2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

3. 量測不準確度： $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f < 18\text{GHz}$)
 $\pm 4.4\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

10.5.1.2 調變技術: IEEE 802.11g

a. Channel Low

操作模式：發射接收

基本波頻率：2412 MHz

測試日期: Jun. 18, 2020

環境溫度: 20°C

環境濕度: 60%

輻射 頻率 (MHz)	天線 極性 H/V	機器讀值 (dBuV/m)@3m		校正 因子 (dB)	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse) (dB)
		Peak	AVG		Peak	AVG	Peak	AVG	
4824.0000	H	---	---	1.06	---	---	74.0	54.0	---
4824.0000	V	---	---	1.06	---	---	74.0	54.0	---
7236.0000	H	---	---	3.64	---	---	74.0	54.0	---
7236.0000	V	---	---	3.64	---	---	74.0	54.0	---
9648.0000	H	---	---	4.70	---	---	74.0	54.0	---
9648.0000	V	---	---	4.70	---	---	74.0	54.0	---
12060.0000	H	---	---	8.06	---	---	74.0	54.0	---
12060.0000	V	---	---	8.06	---	---	74.0	54.0	---

註：1. 標記“---”表發射之訊號太弱而儀器無法量測。

2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

3. 量測不準確度: $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f < 18\text{GHz}$)
 $\pm 4.4\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

b. Channel Mid

操作模式：發射接收

基本波頻率：2437 MHz

測試日期：Jun. 18, 2020

環境溫度：20°C

環境濕度：60%

輻射 頻率	天線 極性	機器讀值 (dBuV/m)@3m		校正 因子	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse)
		Peak	AVG		Peak	AVG	Peak	AVG	
(MHz)	H/V			(dB)					(dB)
4874.0000	H	---	---	1.17	---	---	74.0	54.0	---
4874.0000	V	---	---	1.17	---	---	74.0	54.0	---
7311.0000	H	---	---	3.66	---	---	74.0	54.0	---
7311.0000	V	---	---	3.66	---	---	74.0	54.0	---
9748.0000	H	---	---	4.82	---	---	74.0	54.0	---
9748.0000	V	---	---	4.82	---	---	74.0	54.0	---
12185.0000	H	---	---	8.29	---	---	74.0	54.0	---
12185.0000	V	---	---	8.29	---	---	74.0	54.0	---

註：1. 標記“---”表發射之訊號太弱而儀器無法量測。

2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

3. 量測不準確度： $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

c. Channel High

操作模式：發射接收

基本波頻率：2462 MHz

測試日期：Jun. 18, 2020

環境溫度：20°C

環境濕度：60%

輻射 頻率	天線 極性	機器讀值 (dBuV/m)@3m		校正 因子	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse)
		Peak	AVG		Peak	AVG	Peak	AVG	
4924.0000	H	---	---	1.28	---	---	74.0	54.0	---
4924.0000	V	---	---	1.28	---	---	74.0	54.0	---
7386.0000	H	---	---	3.68	---	---	74.0	54.0	---
7386.0000	V	---	---	3.68	---	---	74.0	54.0	---
9848.0000	H	---	---	4.94	---	---	74.0	54.0	---
9848.0000	V	---	---	4.94	---	---	74.0	54.0	---
14772.0000	H	---	---	10.74	---	---	74.0	54.0	---
14772.0000	V	---	---	10.74	---	---	74.0	54.0	---

註：1. 標記“---”表發射之訊號太弱而儀器無法量測。

2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

3. 量測不準確度： $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

10.5.1.3 調變技術: IEEE 802.11n HT20

a. Channel Low

操作模式：發射接收

基本波頻率：2412 MHz

測試日期: Jun. 18, 2020

環境溫度: 20°C

環境濕度: 60%

輻射 頻率 (MHz)	天線 極性 H/V	機器讀值 (dBuV/m)@3m		校正 因子 (dB)	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse) (dB)
		Peak	AVG		Peak	AVG	Peak	AVG	
4824.0000	H	---	---	1.06	---	---	74.0	54.0	---
4824.0000	V	---	---	1.06	---	---	74.0	54.0	---
7236.0000	H	---	---	3.64	---	---	74.0	54.0	---
7236.0000	V	---	---	3.64	---	---	74.0	54.0	---
9648.0000	H	---	---	4.70	---	---	74.0	54.0	---
9648.0000	V	---	---	4.70	---	---	74.0	54.0	---
12060.0000	H	---	---	8.06	---	---	74.0	54.0	---
12060.0000	V	---	---	8.06	---	---	74.0	54.0	---

註：1. 標記“---”表發射之訊號太弱而儀器無法量測。

2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

3. 量測不準確度: $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f < 18\text{GHz}$)
 $\pm 4.4\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

b. Channel Mid

操作模式：發射接收

基本波頻率：2437 MHz

測試日期：Jun. 18, 2020

環境溫度：20°C

環境濕度：60%

輻射 頻率	天線 極性	機器讀值 (dBuV/m)@3m		校正 因子	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse)
		Peak	AVG		Peak	AVG	Peak	AVG	
(MHz)	H/V			(dB)					(dB)
4874.0000	H	---	---	1.17	---	---	74.0	54.0	---
4874.0000	V	---	---	1.17	---	---	74.0	54.0	---
7311.0000	H	---	---	3.66	---	---	74.0	54.0	---
7311.0000	V	---	---	3.66	---	---	74.0	54.0	---
9748.0000	H	---	---	4.82	---	---	74.0	54.0	---
9748.0000	V	---	---	4.82	---	---	74.0	54.0	---
12185.0000	H	---	---	8.29	---	---	74.0	54.0	---
12185.0000	V	---	---	8.29	---	---	74.0	54.0	---

註：1. 標記“---”表發射之訊號太弱而儀器無法量測。

2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

3. 量測不準確度： $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

c. Channel High

操作模式：發射接收

基本波頻率：2462 MHz

測試日期：Jun. 18, 2020

環境溫度：20°C

環境濕度：60%

輻射 頻率 (MHz)	天線 極性 H/V	機器讀值 (dBuV/m)@3m		校正 因子 (dB)	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse) (dB)
		Peak	AVG		Peak	AVG	Peak	AVG	
4924.0000	H	---	---	1.28	---	---	74.0	54.0	---
4924.0000	V	---	---	1.28	---	---	74.0	54.0	---
7386.0000	H	---	---	3.68	---	---	74.0	54.0	---
7386.0000	V	---	---	3.68	---	---	74.0	54.0	---
9848.0000	H	---	---	4.94	---	---	74.0	54.0	---
9848.0000	V	---	---	4.94	---	---	74.0	54.0	---
14772.0000	H	---	---	10.74	---	---	74.0	54.0	---
14772.0000	V	---	---	10.74	---	---	74.0	54.0	---

註：1. 標記“---”表發射之訊號太弱而儀器無法量測。

2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

3. 量測不準確度： $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f < 18\text{GHz}$) $\pm 4.4\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

10.5.2 諧波及其它不必要之訊號測試圖

10.5.2.1 調變技術: IEEE 802.11b

a. Channel Low

操作模式：發射接收

基本波頻率：2412 MHz

File: 20-05-MAS-062_B

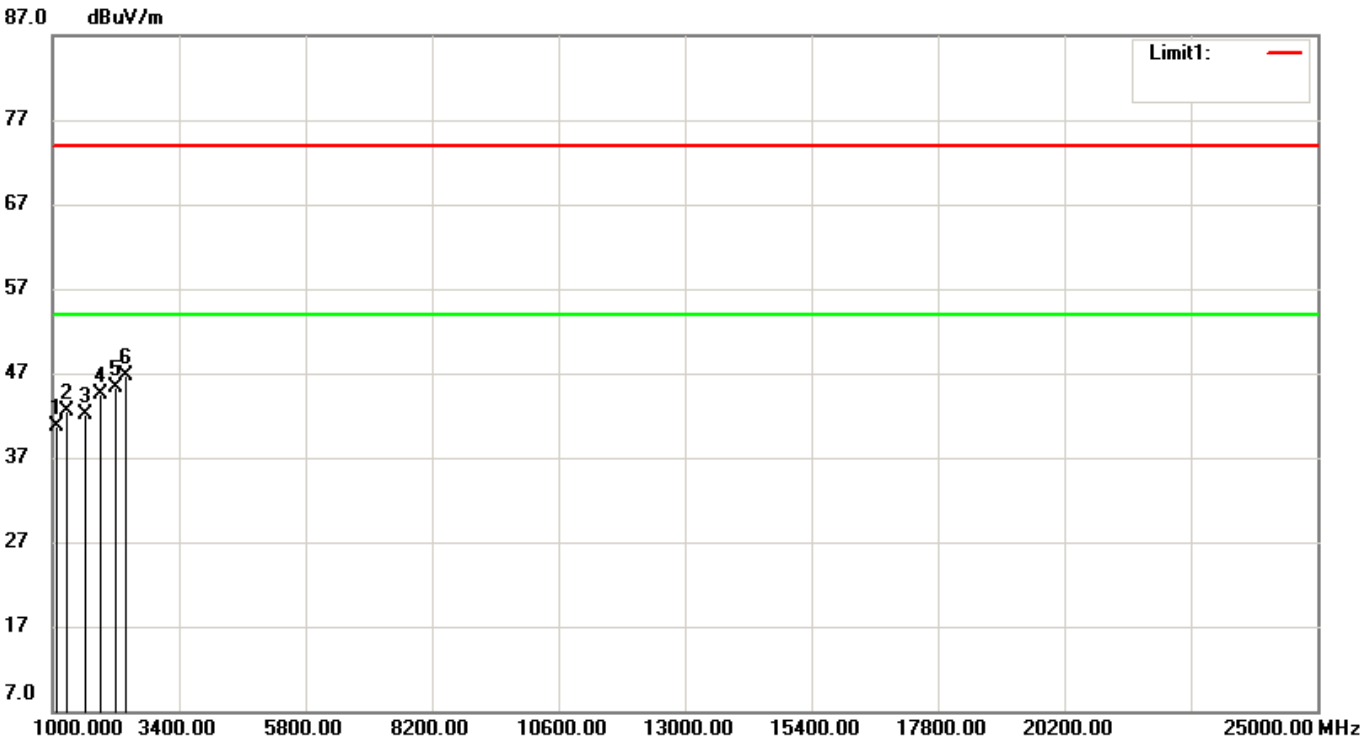
#41

Date: 2020/6/18

Temperature: 20 °C

Site: RE02-EMC B1- N2

Humidity: 60 %



Condition: NCC_Above1G_Pk

Polarization: Horizontal

EUT: Wireless Adapter

Distance: 3m

Model: SMC-USBW-01

Operator: Bruce

Test Mode: WIFI-B-LOW

Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1069.55120	49.99	peak	-9.31	40.68	74.00	-33.32
2	1264.74350	51.32	peak	-8.81	42.51	74.00	-31.49
3	1583.33330	49.59	peak	-7.45	42.14	74.00	-31.86
4	1901.92300	49.04	peak	-4.59	44.45	74.00	-29.55
5	2184.61530	48.52	peak	-3.22	45.30	74.00	-28.70
6	2364.10250	49.39	peak	-2.73	46.66	74.00	-27.34

註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

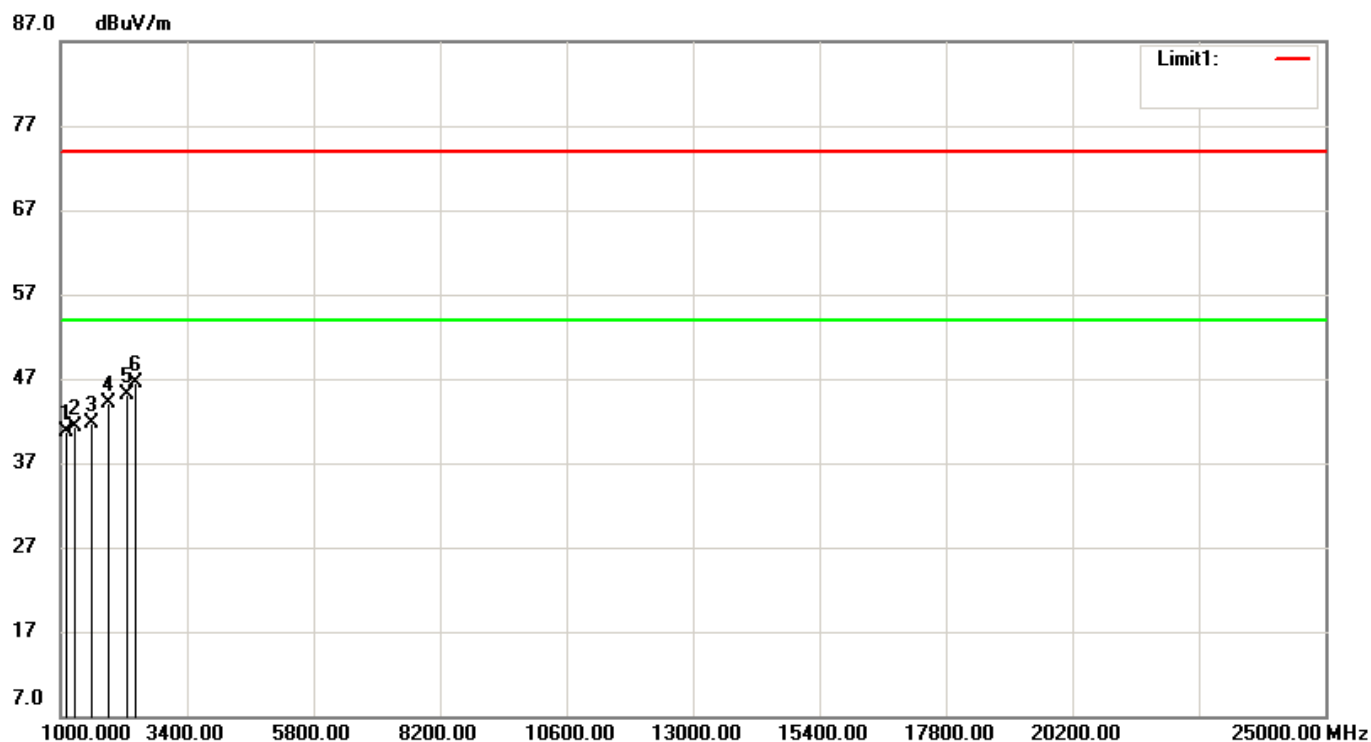
2. 量測不準確度: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

操作模式：發射接收
基本波頻率：2412 MHz

File: 20-05-MAS-062_B
Site: RE02-EMC B1- N2

#42 Date: 2020/6/18

Temperature: 20 °C
Humidity: 60 %



Condition: NCC_Above1G_Pk
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-B-LOW
Note:

Polarization: Vertical
Distance: 3m
Operator: Bruce

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1096.47430	49.85	peak	-9.24	40.61	74.00	-33.39
2	1235.57700	50.11	peak	-8.88	41.23	74.00	-32.77
3	1567.62820	49.26	peak	-7.59	41.67	74.00	-32.33
4	1906.41020	48.70	peak	-4.54	44.16	74.00	-29.84
5	2231.73060	48.11	peak	-3.09	45.02	74.00	-28.98
6	2397.75640	49.22	peak	-2.65	46.57	74.00	-27.43

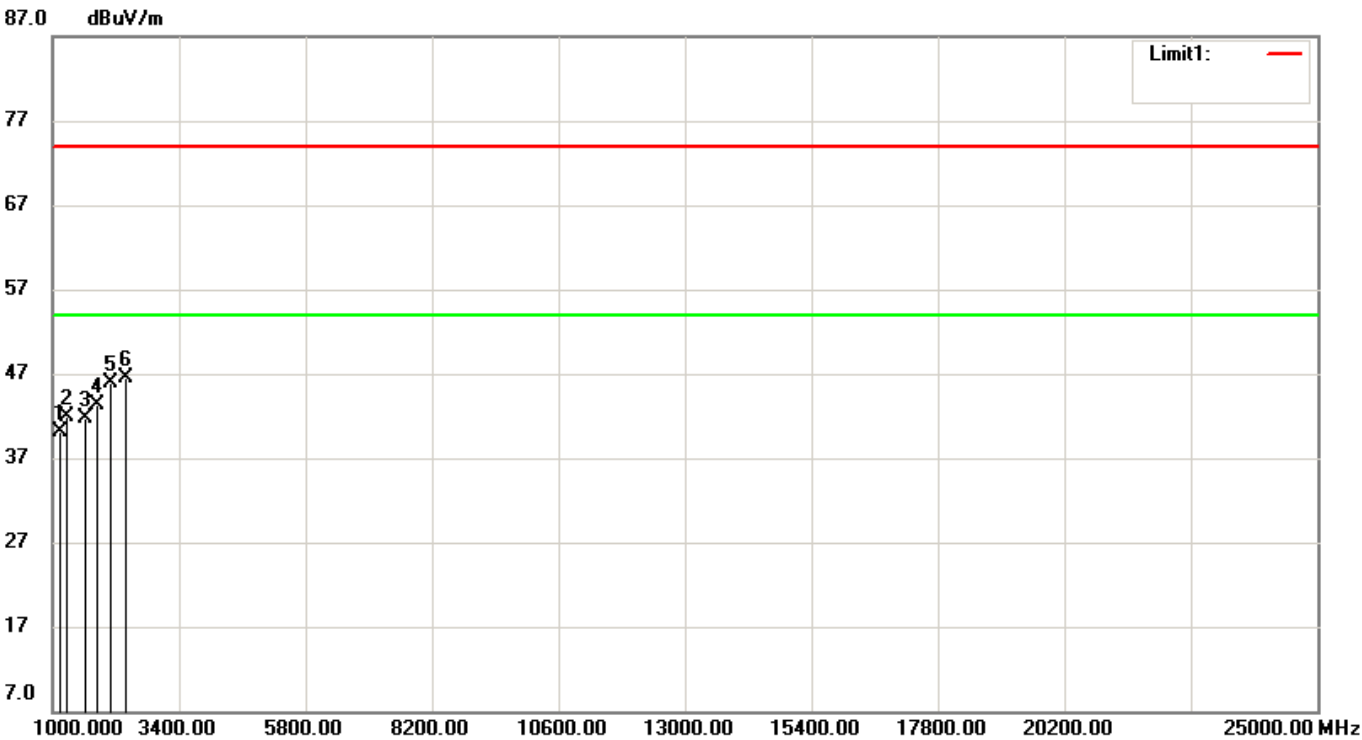
註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度: $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f < 18\text{GHz}$)
 $\pm 4.4\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

b. Channel Mid

操作模式：發射接收
基本波頻率：2437 MHz

File: 20-05-MAS-062_B #43 Date: 2020/6/18 Temperature: 20 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



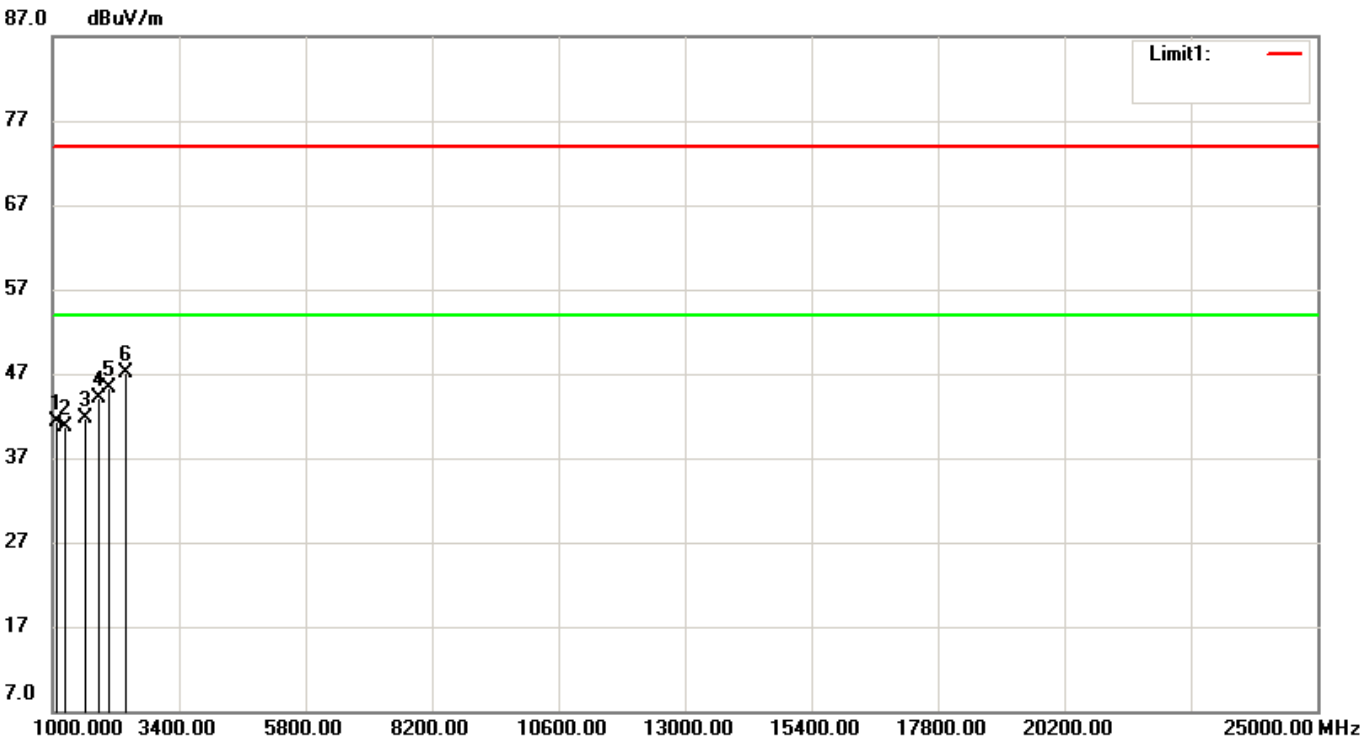
Condition: NCC_Above1G_Pk Polarization: Horizontal
EUT: Wireless Adapter Distance: 3m
Model: SMC-USBW-01
Test Mode: WIFI-B-MID Operator: Bruce
Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1123.39740	49.37	peak	-9.18	40.19	74.00	-33.81
2	1262.50000	50.67	peak	-8.81	41.86	74.00	-32.14
3	1596.79470	49.01	peak	-7.32	41.69	74.00	-32.31
4	1836.85900	48.42	peak	-5.17	43.25	74.00	-30.75
5	2081.41010	49.46	peak	-3.49	45.97	74.00	-28.03
6	2382.05120	49.11	peak	-2.69	46.42	74.00	-27.58

註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。
2. 量測不準確度: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

操作模式：發射接收
基本波頻率：2437 MHz

File: 20-05-MAS-062_B #44 Date: 2020/6/18 Temperature: 20 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



Condition: NCC_Above1G_Pk Polarization: Vertical
EUT: Wireless Adapter Distance: 3m
Model: SMC-USBW-01
Test Mode: WIFI-B-MID Operator: Bruce
Note:

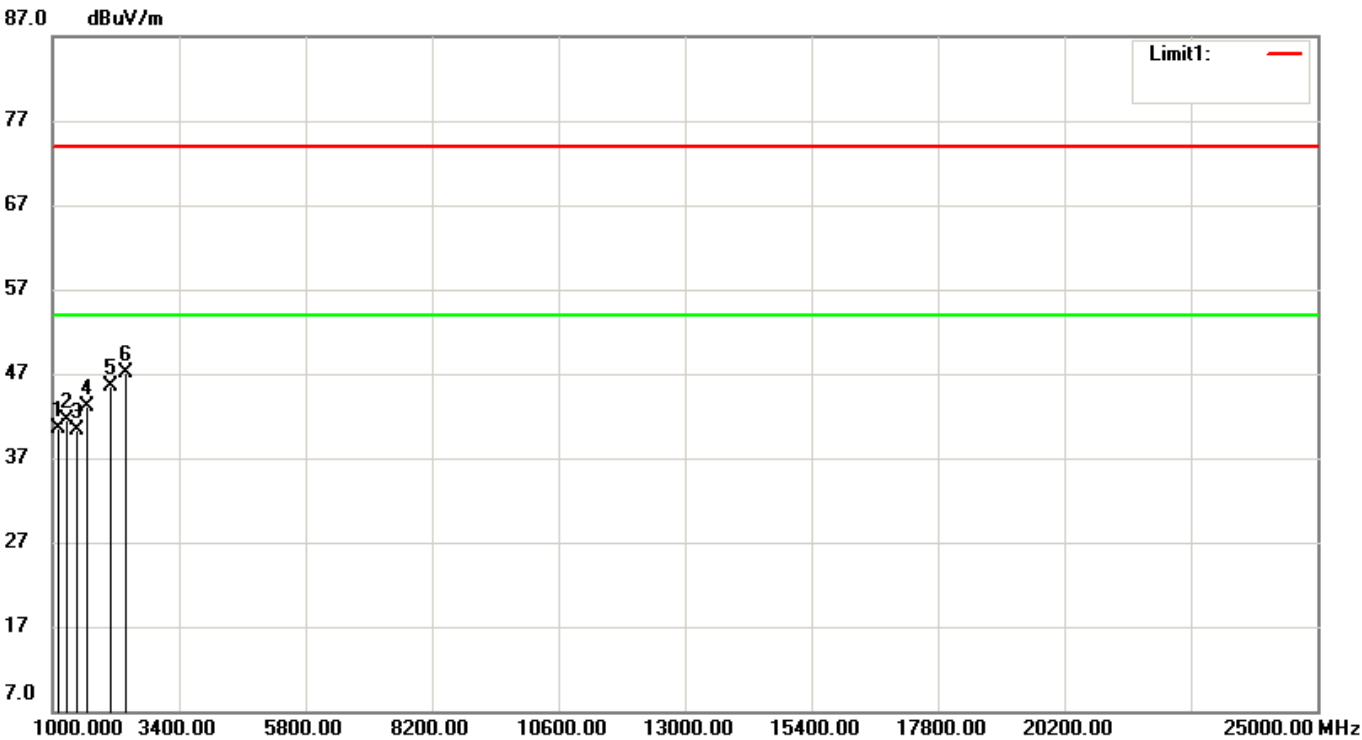
No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1047.11530	50.72	peak	-9.37	41.35	74.00	-32.65
2	1213.14100	49.73	peak	-8.94	40.79	74.00	-33.21
3	1581.08970	49.12	peak	-7.47	41.65	74.00	-32.35
4	1861.53840	49.06	peak	-4.94	44.12	74.00	-29.88
5	2074.67940	48.91	peak	-3.51	45.40	74.00	-28.60
6	2384.29480	49.79	peak	-2.69	47.10	74.00	-26.90

註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。
2. 量測不準確度: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

c. Channel High

操作模式：發射接收
基本波頻率：2462 MHz

File: 20-05-MAS-062_B #45 Date: 2020/6/18 Temperature: 20 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



Condition: NCC_Above1G_Pk Polarization: Horizontal
EUT: Wireless Adapter Distance: 3m
Model: SMC-USBW-01
Test Mode: WIFI-B-HIGH Operator: Bruce
Note:

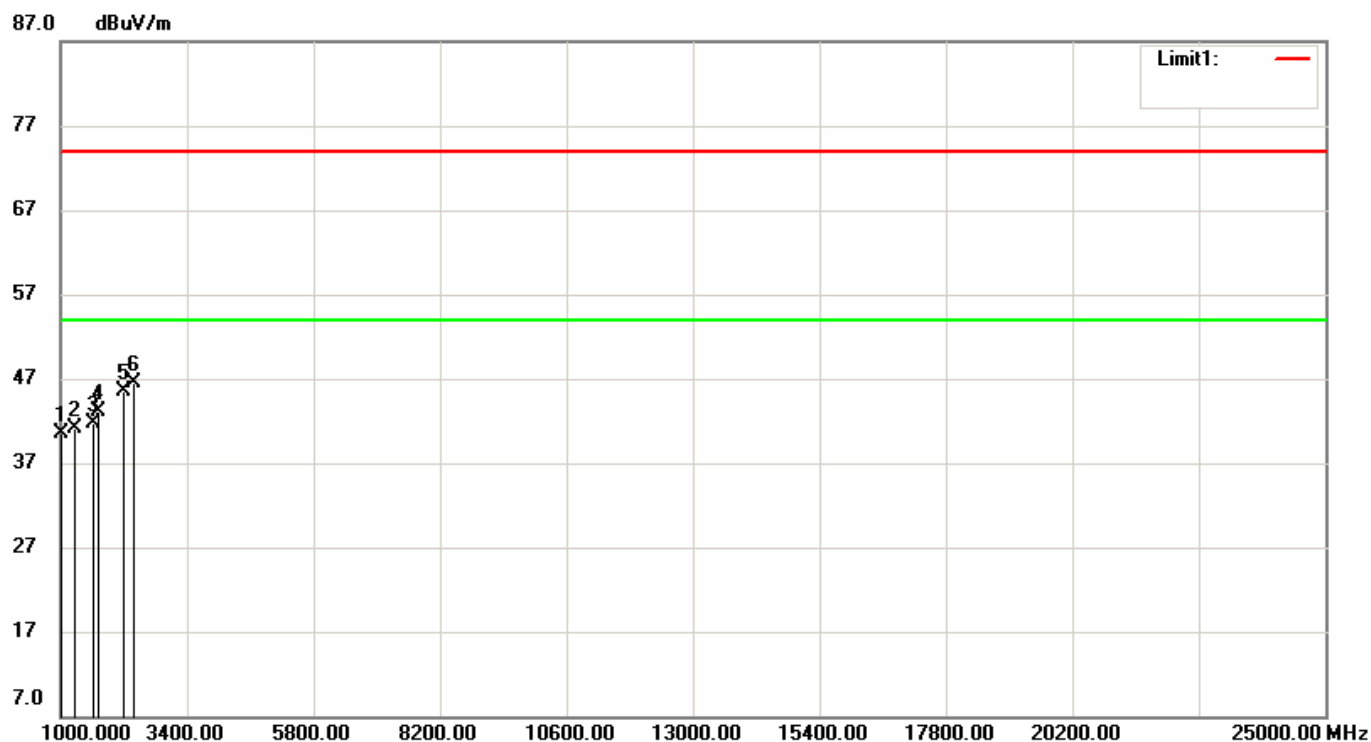
No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1080.76920	49.70	peak	-9.28	40.42	74.00	-33.58
2	1240.06410	50.34	peak	-8.87	41.47	74.00	-32.53
3	1448.71800	48.55	peak	-8.33	40.22	74.00	-33.78
4	1634.93580	50.03	peak	-6.99	43.04	74.00	-30.96
5	2081.41010	48.95	peak	-3.49	45.46	74.00	-28.54
6	2357.37170	49.90	peak	-2.76	47.14	74.00	-26.86

註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。
2. 量測不準確度: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

操作模式：發射接收
基本波頻率：2462 MHz

File: 20-05-MAS-062_B
Site: RE02-EMC B1- N2

#46 Date: 2020/6/18 Temperature: 20 °C
Humidity: 60 %



Condition: NCC_Above1G_Pk
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI-B-HIGH
Note:

Polarization: Vertical
Distance: 3m
Operator: Bruce

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1022.43580	49.98	peak	-9.43	40.55	74.00	-33.45
2	1235.57700	49.93	peak	-8.88	41.05	74.00	-32.95
3	1603.52560	48.92	peak	-7.27	41.65	74.00	-32.35
4	1720.19230	49.29	peak	-6.22	43.07	74.00	-30.93
5	2177.88460	48.79	peak	-3.23	45.56	74.00	-28.44
6	2377.56410	49.15	peak	-2.70	46.45	74.00	-27.55

註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度: $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f < 18\text{GHz}$)
 $\pm 4.4\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

10.5.2.2 調變技術: IEEE 802.11g

a. Channel Low

操作模式 : 發射接收

基本波頻率 : 2412 MHz

File: 20-05-MAS-062_G

#35

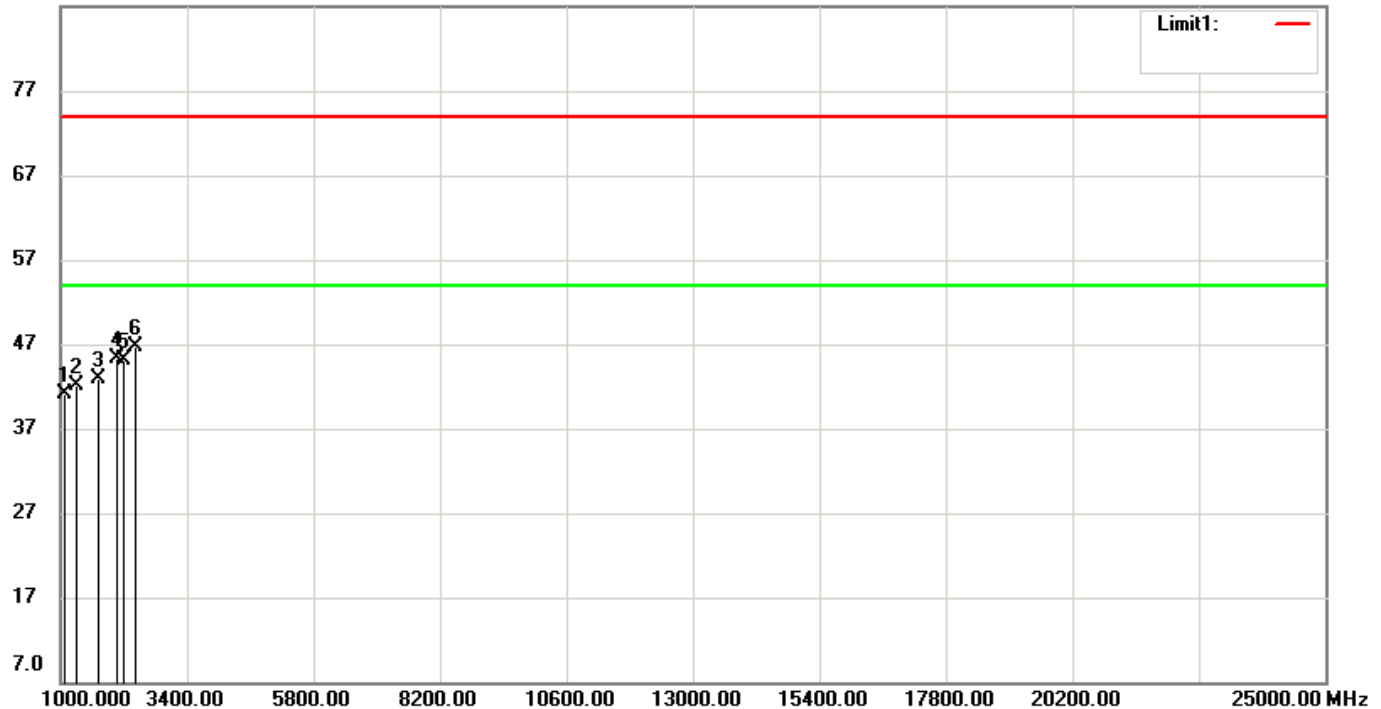
Date: 2020/6/18

Temperature: 20 °C

Site: RE02-EMC B1- N2

Humidity: 60 %

87.0 dBuV/m



Condition: NCC_Above1G_Pk

Polarization:

Horizontal

EUT: Wireless Adapter

Distance:

3m

Model: SMC-USBW-01

Test Mode: WIFI-G-LOW

Operator:

Bruce

Note:

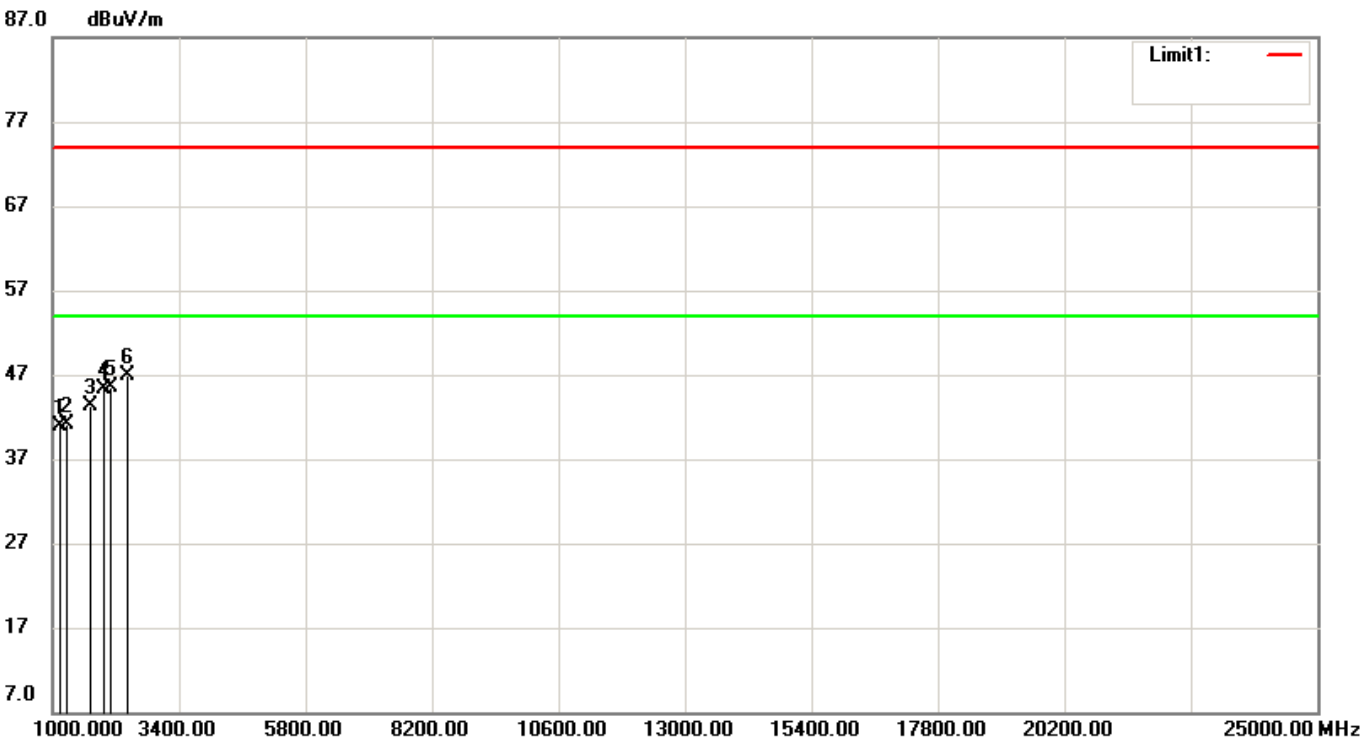
No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1069.55120	50.35	peak	-9.31	41.04	74.00	-32.96
2	1307.37170	50.82	peak	-8.70	42.12	74.00	-31.88
3	1693.26920	49.42	peak	-6.46	42.96	74.00	-31.04
4	2045.51280	48.90	peak	-3.58	45.32	74.00	-28.68
5	2184.61530	48.37	peak	-3.22	45.15	74.00	-28.85
6	2400.00000	49.43	peak	-2.65	46.78	74.00	-27.22

註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度: $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f < 18\text{GHz}$)
 $\pm 4.4\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

操作模式：發射接收
基本波頻率：2412 MHz

File: 20-05-MAS-062_G #36 Date: 2020/6/18 Temperature: 20 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



Condition: NCC_Above1G_Pk Polarization: Vertical
EUT: Wireless Adapter Distance: 3m
Model: SMC-USBW-01
Test Mode: WIFI-G-LOW Operator: Bruce
Note:

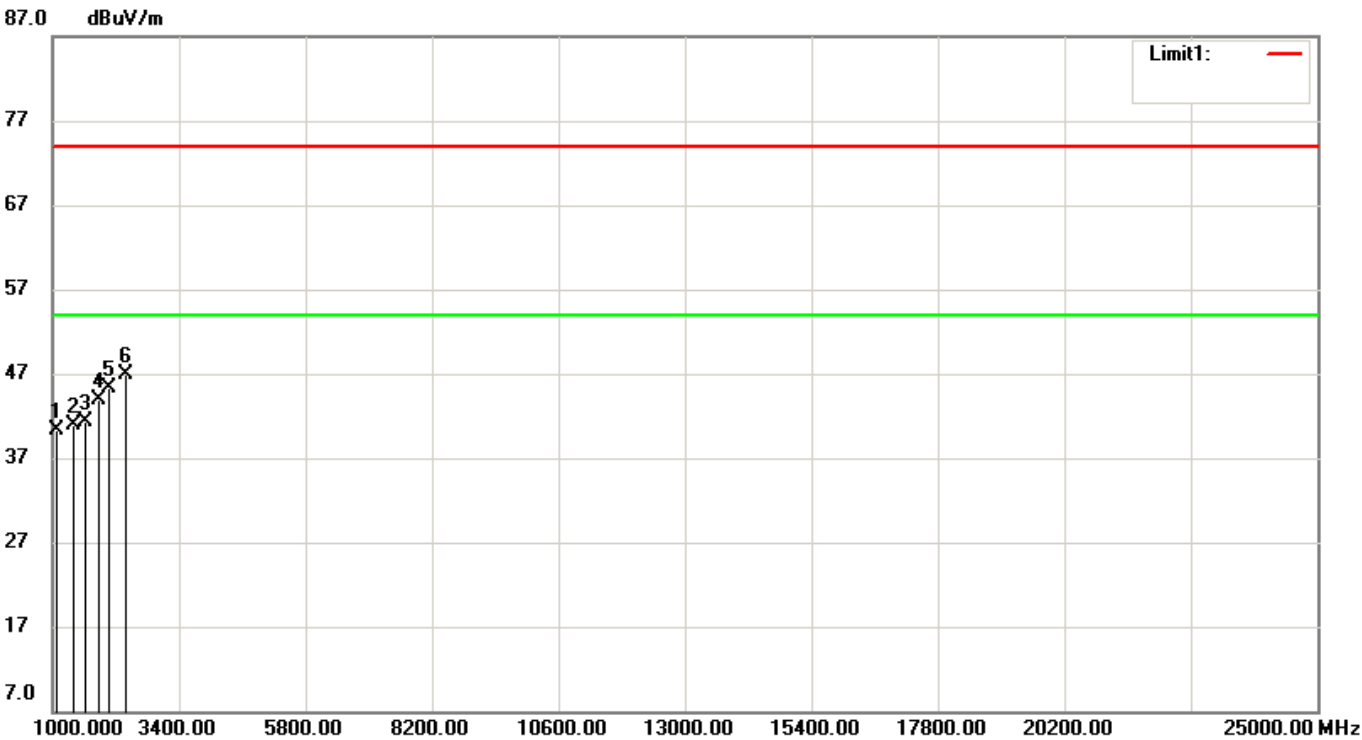
No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1121.15380	50.07	peak	-9.18	40.89	74.00	-33.11
2	1240.06410	49.90	peak	-8.87	41.03	74.00	-32.97
3	1693.26920	49.82	peak	-6.46	43.36	74.00	-30.64
4	1928.84610	49.61	peak	-4.34	45.27	74.00	-28.73
5	2103.84610	48.86	peak	-3.42	45.44	74.00	-28.56
6	2393.26920	49.52	peak	-2.66	46.86	74.00	-27.14

註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。
2. 量測不準確度: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

b. Channel Mid

操作模式：發射接收
基本波頻率：2437 MHz

File: 20-05-MAS-062_G #37 Date: 2020/6/18 Temperature: 20 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



Condition: NCC_Above1G_Pk Polarization: Horizontal
EUT: Wireless Adapter Distance: 3m
Model: SMC-USBW-01
Test Mode: WIFI-G-MID Operator: Bruce
Note:

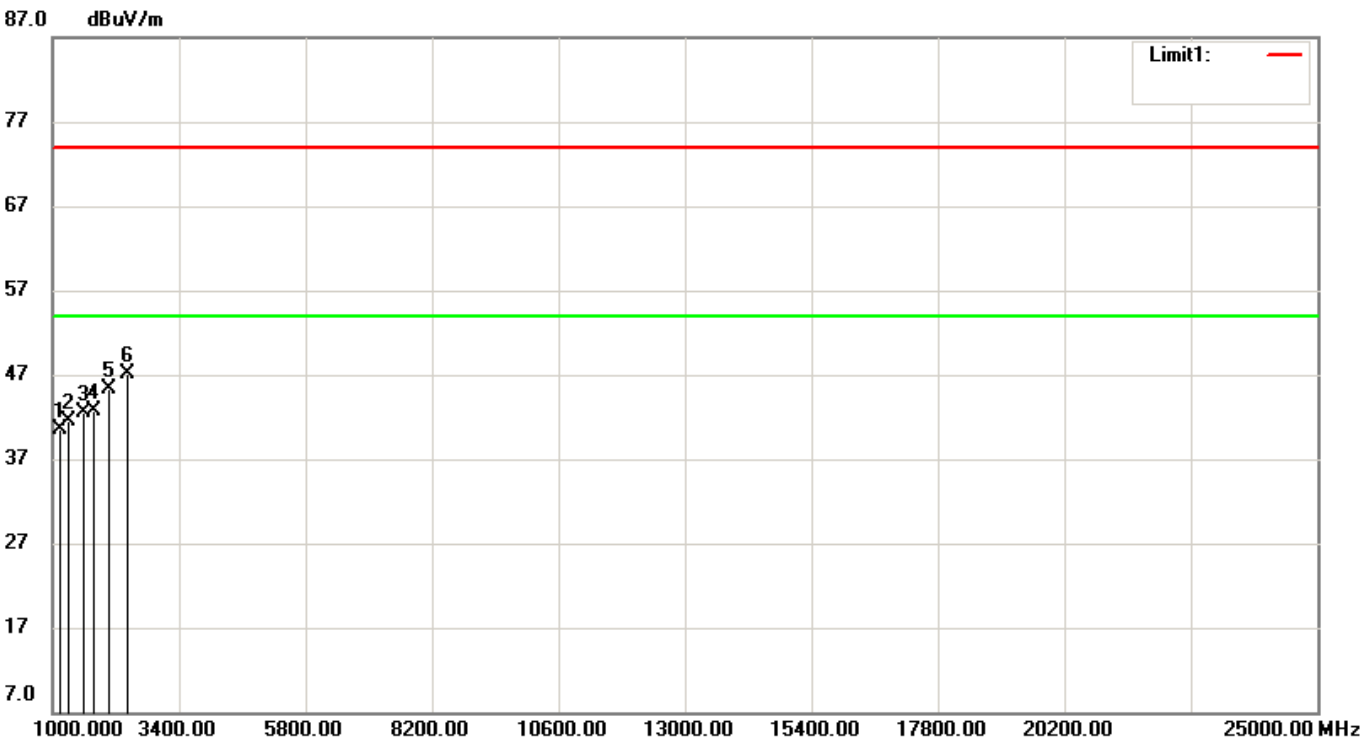
No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1069.55120	49.67	peak	-9.31	40.36	74.00	-33.64
2	1361.21800	49.55	peak	-8.56	40.99	74.00	-33.01
3	1590.06410	48.63	peak	-7.39	41.24	74.00	-32.76
4	1859.29480	48.78	peak	-4.97	43.81	74.00	-30.19
5	2063.46150	48.77	peak	-3.54	45.23	74.00	-28.77
6	2350.64100	49.72	peak	-2.78	46.94	74.00	-27.06

註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。
2. 量測不準確度: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

操作模式：發射接收
基本波頻率：2437 MHz

File: 20-05-MAS-062_G#38Date: 2020/6/18Temperature: 20 °CHumidity: 60 %

Site: RE02-EMC B1- N2



Condition: NCC_Above1G_PkPolarization: Vertical

EUT: Wireless AdapterDistance: 3m

Model: SMC-USBW-01

Test Mode: WIFI-G-MIDOperator: Bruce

Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1116.66660	49.76	peak	-9.19	40.57	74.00	-33.43
2	1287.17940	50.34	peak	-8.75	41.59	74.00	-32.41
3	1563.14100	50.22	peak	-7.63	42.59	74.00	-31.41
4	1758.33330	48.55	peak	-5.88	42.67	74.00	-31.33
5	2056.73060	48.88	peak	-3.55	45.33	74.00	-28.67
6	2395.51280	49.83	peak	-2.66	47.17	74.00	-26.83

註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

c. Channel High

操作模式：發射接收

基本波頻率：2462 MHz

File: 20-05-MAS-062_G

#39

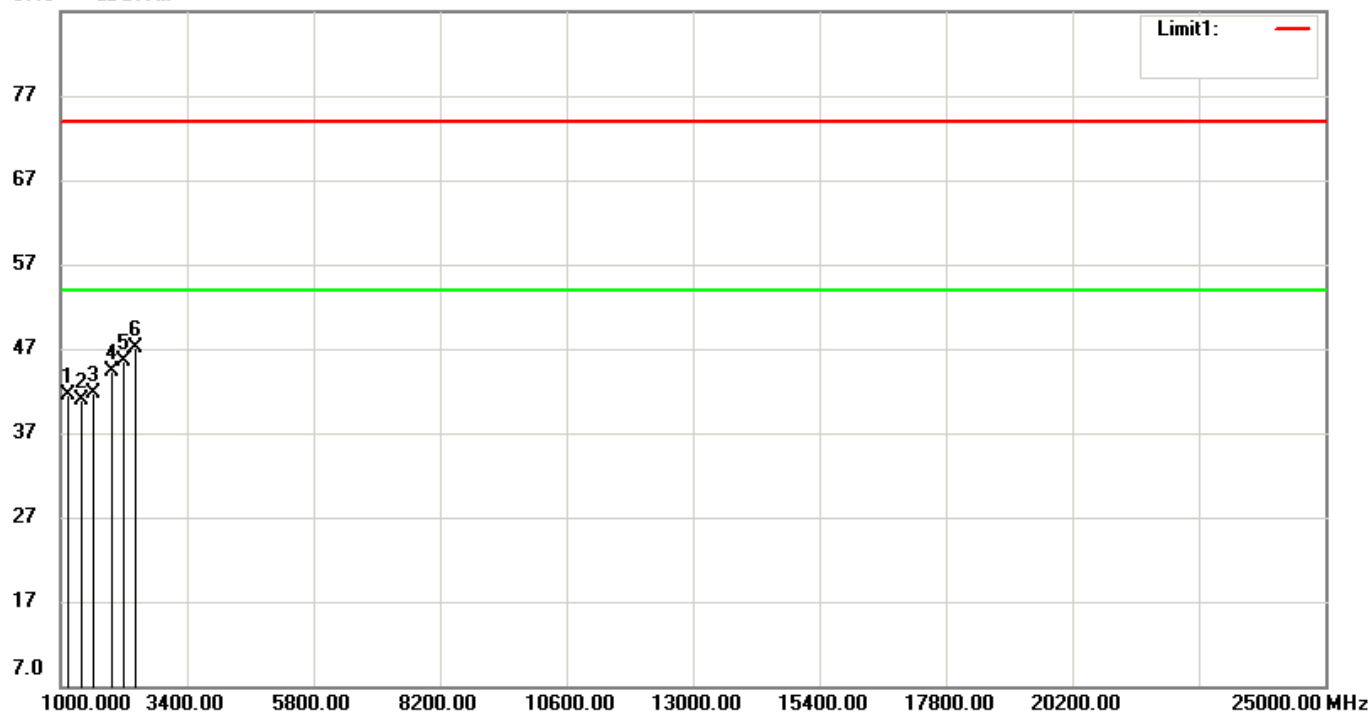
Date: 2020/6/18

Temperature: 20 °C

Site: RE02-EMC B1- N2

Humidity: 60 %

87.0 dBuV/m



Condition: NCC_Above1G_Pk

Polarization:

Horizontal

EUT: Wireless Adapter

Distance:

3m

Model: SMC-USBW-01

Operator:

Bruce

Test Mode: WIFI-G-HIGH

Note:

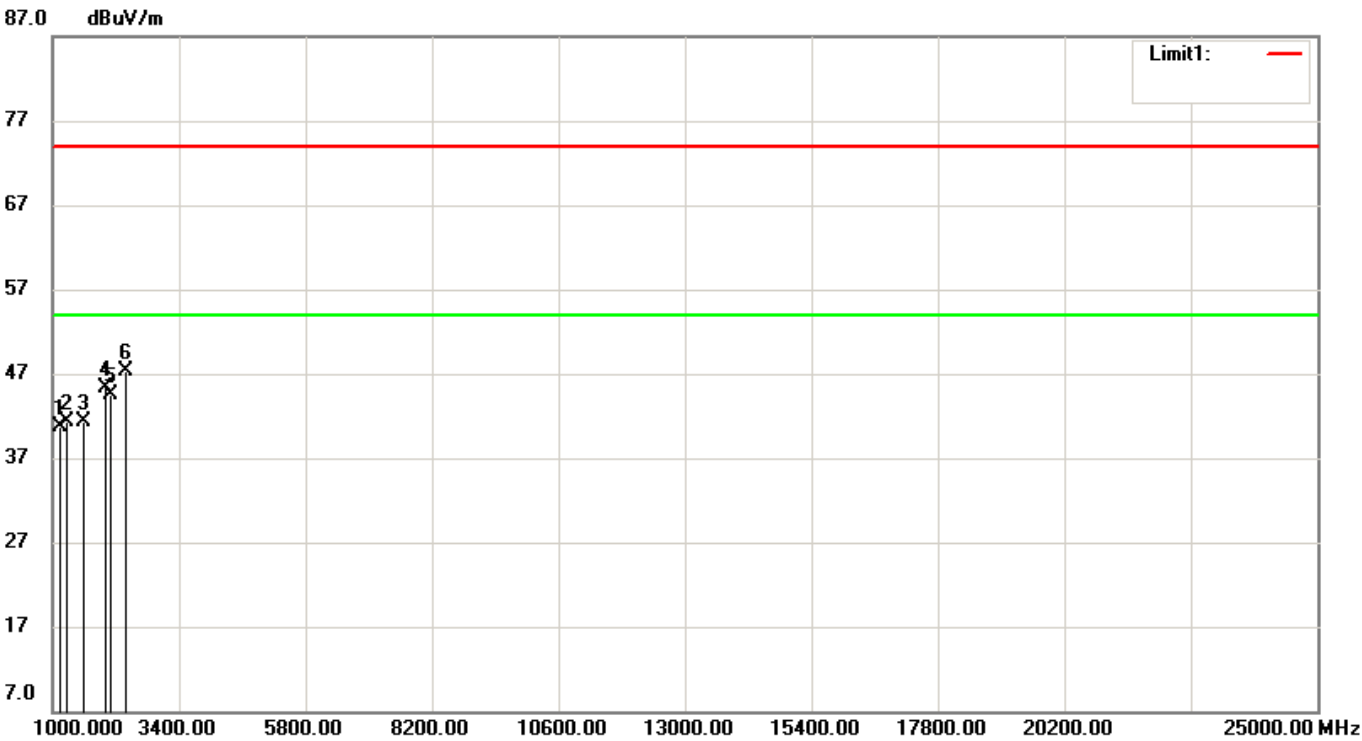
No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1141.34610	50.65	peak	-9.12	41.53	74.00	-32.47
2	1356.73070	49.49	peak	-8.57	40.92	74.00	-33.08
3	1603.52560	48.99	peak	-7.27	41.72	74.00	-32.28
4	1944.55120	48.60	peak	-4.20	44.40	74.00	-29.60
5	2175.64100	48.66	peak	-3.23	45.43	74.00	-28.57
6	2386.53840	49.79	peak	-2.67	47.12	74.00	-26.88

註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度: $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f < 18\text{GHz}$)
 $\pm 4.4\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

操作模式：發射接收
基本波頻率：2462 MHz

File: 20-05-MAS-062_G #40 Date: 2020/6/18 Temperature: 20 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



Condition: NCC_Above1G_Pk Polarization: Vertical
EUT: Wireless Adapter Distance: 3m
Model: SMC-USBW-01
Test Mode: WIFI-G-HIGH Operator: Bruce
Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1118.91020	49.98	peak	-9.18	40.80	74.00	-33.20
2	1260.25640	50.07	peak	-8.82	41.25	74.00	-32.75
3	1574.35900	48.85	peak	-7.53	41.32	74.00	-32.68
4	1966.98710	49.24	peak	-3.99	45.25	74.00	-28.75
5	2110.57700	47.96	peak	-3.41	44.55	74.00	-29.45
6	2368.58950	49.97	peak	-2.73	47.24	74.00	-26.76

註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。
2. 量測不準確度: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

10.5.2.3 調變技術: IEEE 802.11n HT20

a. Channel Low

操作模式：發射接收

基本波頻率：2412 MHz

File: 20-05-MAS-062_N

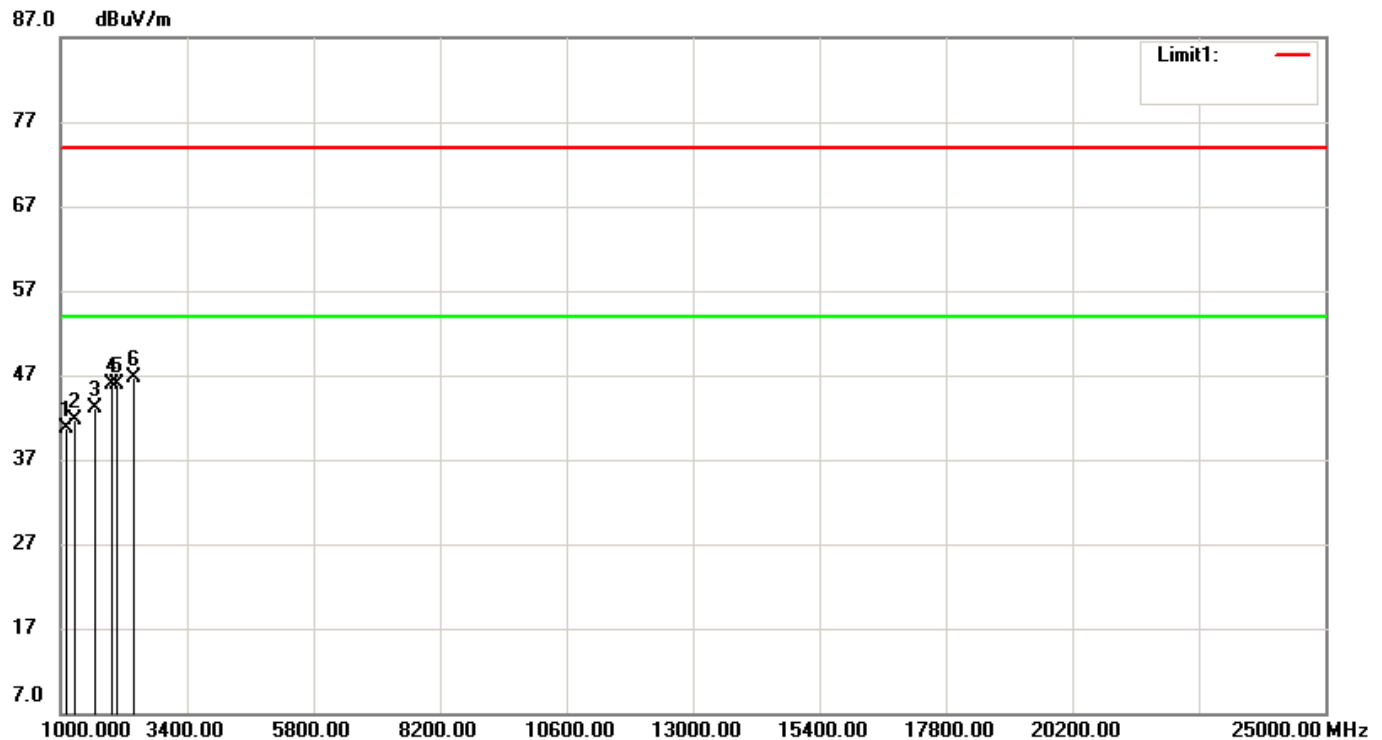
#35

Date: 2020/6/18

Temperature: 20 °C

Site: RE02-EMC B1- N2

Humidity: 60 %



Condition: NCC_Above1G_Pk

Polarization: Horizontal

EUT: Wireless Adapter

Distance: 3m

Model: SMC-USBW-01

Test Mode: WIFI-N-LOW

Operator: Bruce

Note:

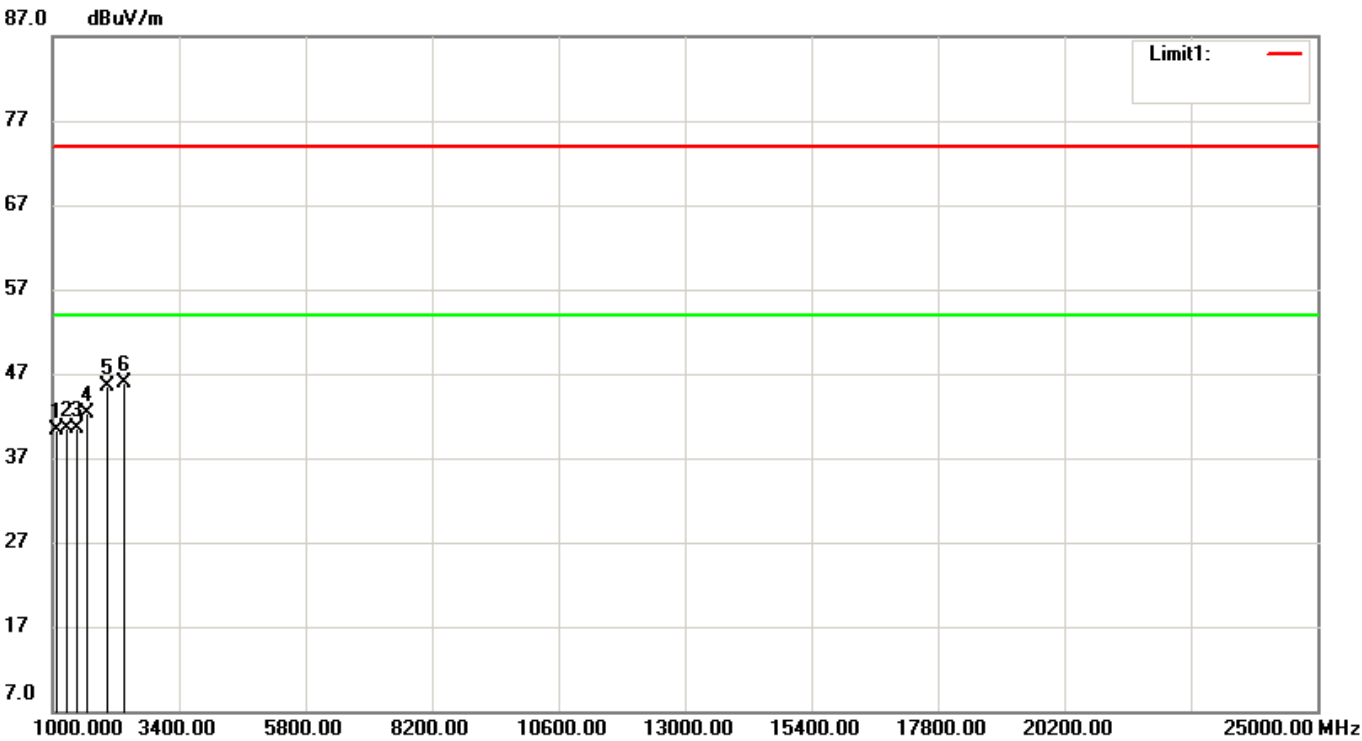
No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1114.42300	49.95	peak	-9.19	40.76	74.00	-33.24
2	1242.30760	50.66	peak	-8.87	41.79	74.00	-32.21
3	1639.42300	49.96	peak	-6.94	43.02	74.00	-30.98
4	1942.30760	50.11	peak	-4.22	45.89	74.00	-28.11
5	2038.78200	49.42	peak	-3.59	45.83	74.00	-28.17
6	2382.05120	49.39	peak	-2.69	46.70	74.00	-27.30

註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度: $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f < 18\text{GHz}$)
 $\pm 4.4\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

操作模式：發射接收
基本波頻率：2412 MHz

File: 20-05-MAS-062_N #36 Date: 2020/6/18 Temperature: 20 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



Condition: NCC_Above1G_Pk Polarization: Vertical
EUT: Wireless Adapter Distance: 3m
Model: SMC-USBW-01
Test Mode: WIFI-N-LOW Operator: Bruce
Note:

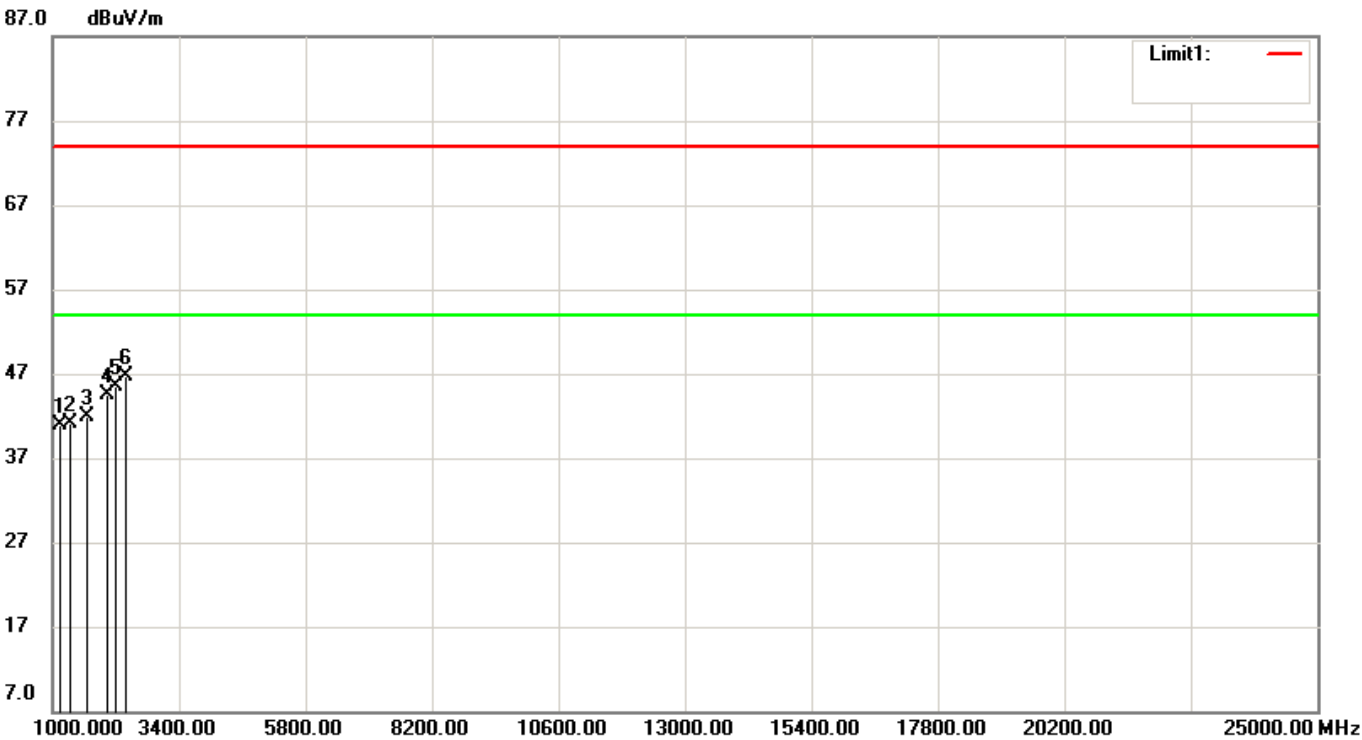
No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1044.87170	49.63	peak	-9.37	40.26	74.00	-33.74
2	1237.82050	49.44	peak	-8.88	40.56	74.00	-33.44
3	1450.96150	48.83	peak	-8.33	40.50	74.00	-33.50
4	1639.42300	49.16	peak	-6.94	42.22	74.00	-31.78
5	2020.83330	49.18	peak	-3.65	45.53	74.00	-28.47
6	2319.23060	48.83	peak	-2.86	45.97	74.00	-28.03

註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。
2. 量測不準確度: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

b. Channel Mid

操作模式：發射接收
基本波頻率：2437 MHz

File: 20-05-MAS-062_N #37 Date: 2020/6/18 Temperature: 20 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



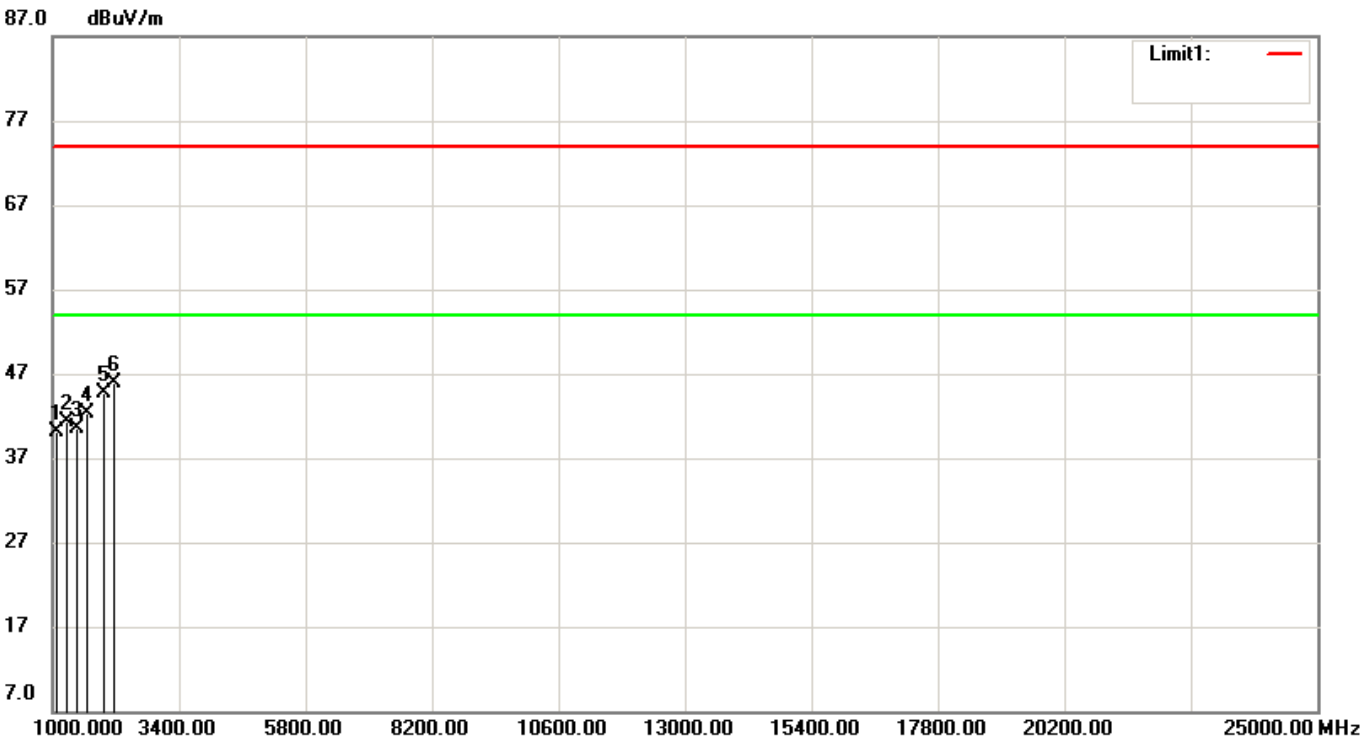
Condition: NCC_Above1G_Pk Polarization: Horizontal
EUT: Wireless Adapter Distance: 3m
Model: SMC-USBW-01
Test Mode: WIFI-N-MID Operator: Bruce
Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1121.15380	50.01	peak	-9.18	40.83	74.00	-33.17
2	1311.85900	49.77	peak	-8.69	41.08	74.00	-32.92
3	1623.71800	48.95	peak	-7.08	41.87	74.00	-32.13
4	2014.10250	48.19	peak	-3.66	44.53	74.00	-29.47
5	2184.61530	48.69	peak	-3.22	45.47	74.00	-28.53
6	2368.58950	49.41	peak	-2.73	46.68	74.00	-27.32

註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。
2. 量測不準確度: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

操作模式：發射接收
基本波頻率：2437 MHz

File: 20-05-MAS-062_N #38 Date: 2020/6/18 Temperature: 20 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



Condition: NCC_Above1G_Pk Polarization: Vertical
EUT: Wireless Adapter Distance: 3m
Model: SMC-USBW-01
Test Mode: WIFI-N-MID Operator: Bruce
Note:

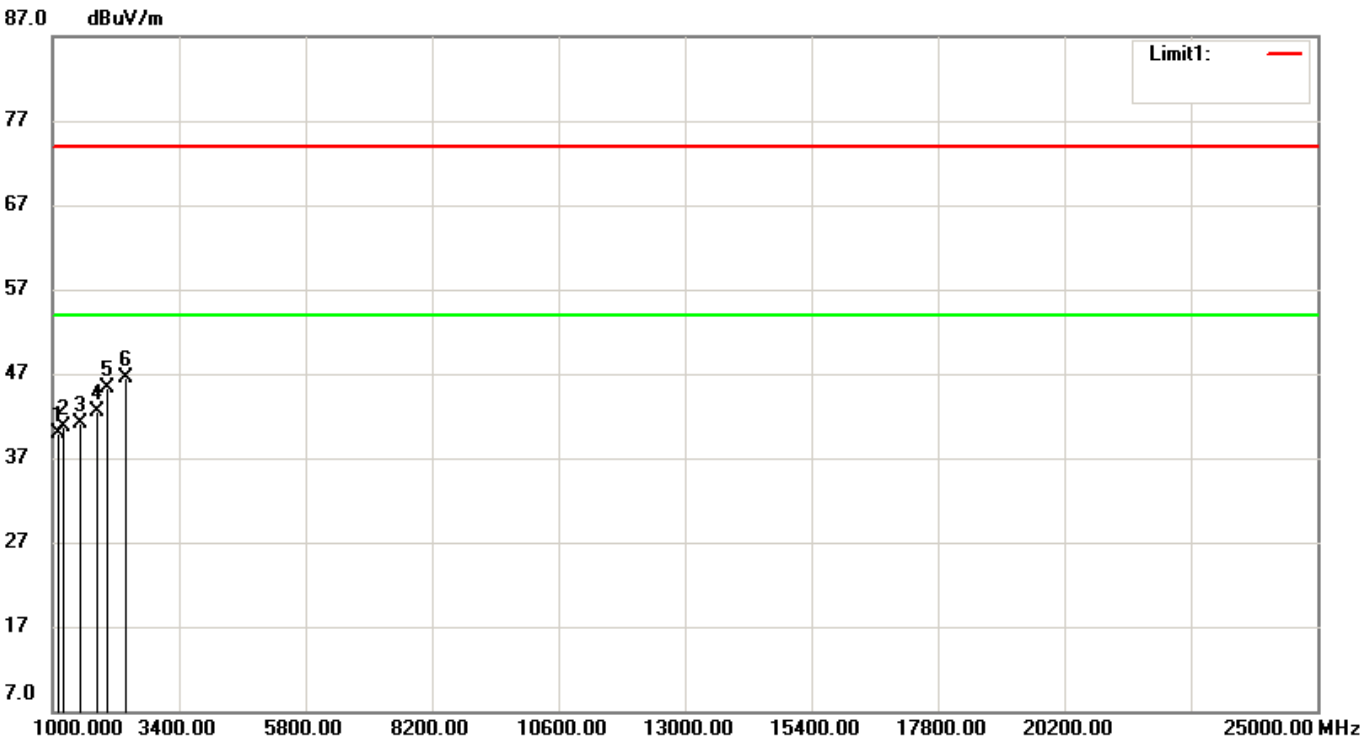
No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1074.03840	49.38	peak	-9.30	40.08	74.00	-33.92
2	1237.82050	50.27	peak	-8.88	41.39	74.00	-32.61
3	1433.01280	48.83	peak	-8.38	40.45	74.00	-33.55
4	1652.88460	49.14	peak	-6.82	42.32	74.00	-31.68
5	1958.01280	48.88	peak	-4.08	44.80	74.00	-29.20
6	2124.03840	49.20	peak	-3.38	45.82	74.00	-28.18

註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。
2. 量測不準確度: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

c. Channel High

操作模式：發射接收
基本波頻率：2462 MHz

File: 20-05-MAS-062_N #39 Date: 2020/6/18 Temperature: 20 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



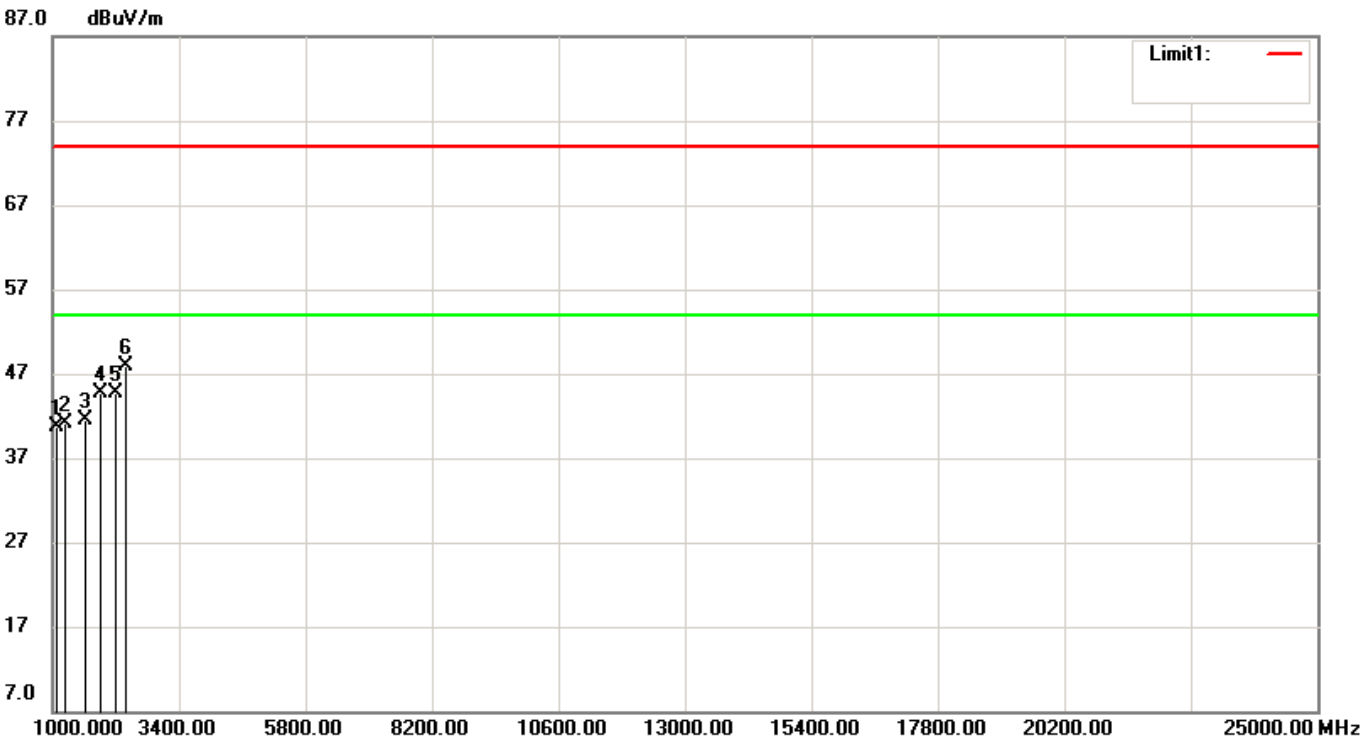
Condition: NCC_Above1G_Pk Polarization: Horizontal
EUT: Wireless Adapter Distance: 3m
Model: SMC-USBW-01
Test Mode: WIFI-N-HIGH Operator: Bruce
Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1087.50000	49.10	peak	-9.27	39.83	74.00	-34.17
2	1190.70500	49.79	peak	-9.00	40.79	74.00	-33.21
3	1518.26920	49.05	peak	-8.03	41.02	74.00	-32.98
4	1836.85900	47.77	peak	-5.17	42.60	74.00	-31.40
5	2009.61530	49.06	peak	-3.67	45.39	74.00	-28.61
6	2382.05120	49.19	peak	-2.69	46.50	74.00	-27.50

註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。
2. 量測不準確度: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

操作模式：發射接收
基本波頻率：2462 MHz

File: 20-05-MAS-062_N #40 Date: 2020/6/18 Temperature: 20 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



Condition: NCC_Above1G_Pk Polarization: Vertical
EUT: Wireless Adapter Distance: 3m
Model: SMC-USBW-01
Test Mode: WIFI-N-HIGH Operator: Bruce
Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1042.62820	50.09	peak	-9.38	40.71	74.00	-33.29
2	1213.14100	50.09	peak	-8.94	41.15	74.00	-32.85
3	1599.03840	48.80	peak	-7.31	41.49	74.00	-32.51
4	1906.41020	49.25	peak	-4.54	44.71	74.00	-29.29
5	2186.85900	48.00	peak	-3.21	44.79	74.00	-29.21
6	2379.80760	50.54	peak	-2.70	47.84	74.00	-26.16

註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。
2. 量測不準確度: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

10.5.2.4 其它不必要之訊號1GHz以下

File: 20-05-MAS-062

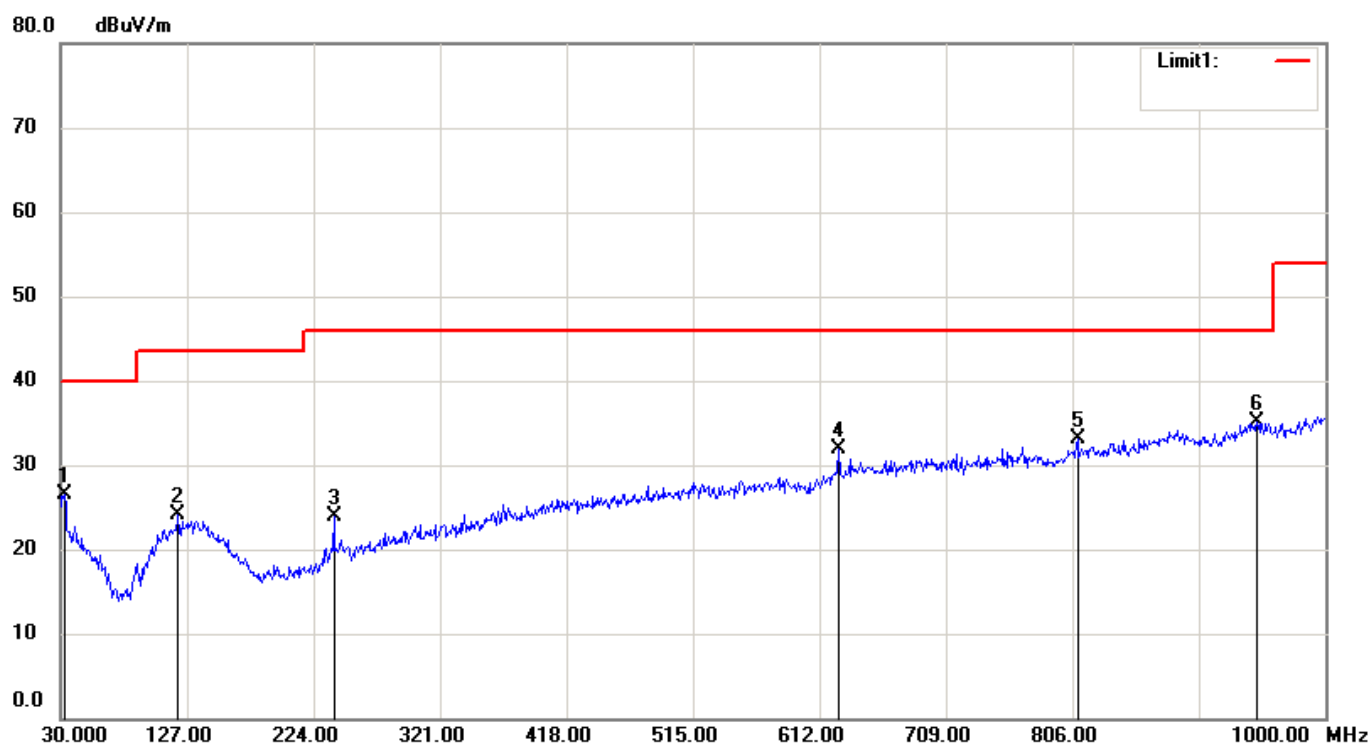
#1

Date: 2020/6/17

Temperature: 23 °C

Site: RE02-EMC B1- N2

Humidity: 60 %



Condition: NCC_LP0002_30-1000MHz

Polarization: Horizontal

EUT: Wireless Adapter

Distance: 3m

Model: SMC-USBW-01

Test Mode: WIFI

Operator: Bruce

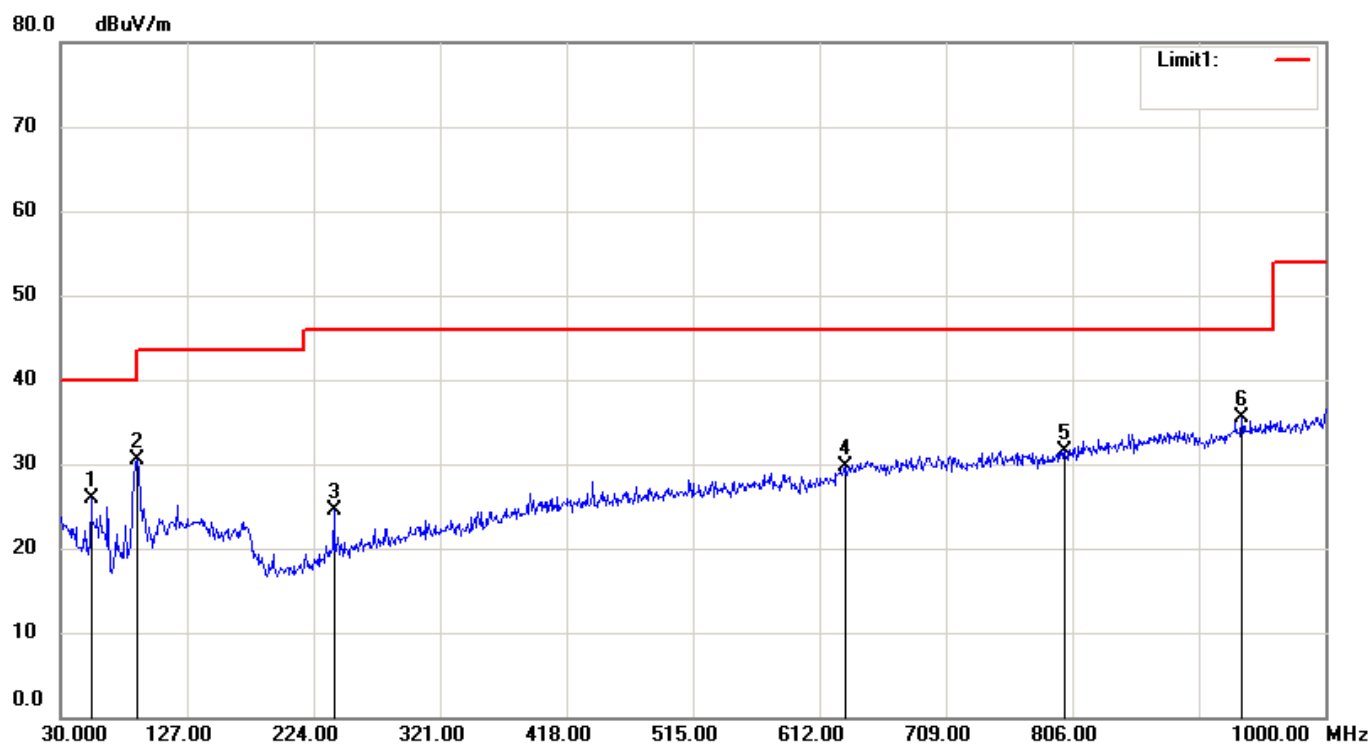
Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	32.9100	30.80	peak	-4.28	26.52	40.00	-13.48
2	120.2100	28.08	peak	-4.03	24.05	43.50	-19.45
3	239.5200	31.05	peak	-7.24	23.81	46.00	-22.19
4	626.5500	30.38	peak	1.44	31.82	46.00	-14.18
5	809.8800	28.56	peak	4.49	33.05	46.00	-12.95
6	947.6200	27.45	peak	7.67	35.12	46.00	-10.88

File: 20-05-MAS-062
Site: RE02-EMC B1- N2

#2 Date: 2020/6/17

Temperature: 23 °C
Humidity: 60 %



Condition: NCC_LP0002_30-1000MHz
EUT: Wireless Adapter
Model: SMC-USBW-01
Test Mode: WIFI
Note:

Polarization: Vertical
Distance: 3m
Operator: Bruce

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	53.2800	33.86	peak	-7.87	25.99	40.00	-14.01
2	89.1700	41.77	peak	-11.24	30.53	43.50	-12.97
3	239.5200	31.69	peak	-7.24	24.45	46.00	-21.55
4	631.4000	28.06	peak	1.64	29.70	46.00	-16.30
5	800.1800	27.42	peak	4.17	31.59	46.00	-14.41
6	935.9800	28.19	peak	7.36	35.55	46.00	-10.45

註：1. 若以峰值檢測功能測量之值符合準峰值限制值，則可視同以準峰值功能測量之值亦符合準峰值限制值。

2. 量測不準確度: +4.20dB/ -4.24 dB ($30\text{MHz} \leq f < 1\text{GHz}$)

10.6 禁用頻段邊緣輻射場強之量測結果

操作模式: 發射接收

測試日期: Jun. 18, 2020

環境溫度: 20°C

環境濕度: 60%

10.6.1 調變技術: IEEE 802.11b

主波 頻道	輻射 頻率	儀器讀值@3m (dBuV/m)				校正 因子	結果值		限制值@3m		餘裕值 (worse)	
		水平		垂直			(dBuV/m)		(dBuV/m)		(dB)	
	(MHz)	峰值	平均值	峰值	平均值	(dB)	峰值	平均值	峰值	平均值	峰值	平均值
CH Low	2386.667	28.2	14.1	27.7	14.1	34.7	62.9	48.8	74	54	-11.1	-5.2
CH High	2499.075	28.0	14.2	28.3	14.1	34.9	63.2	49.1	74	54	-10.8	-4.9

10.6.2 調變技術: IEEE 802.11g

主波 頻道	輻射 頻率	儀器讀值@3m (dBuV/m)				校正 因子	結果值		限制值@3m		餘裕值 (worse)	
		水平		垂直			(dBuV/m)		(dBuV/m)		(dB)	
	(MHz)	峰值	平均值	峰值	平均值	(dB)	峰值	平均值	峰值	平均值	峰值	平均值
CH Low	2390.000	27.1	14.1	27.2	14.1	34.7	61.9	48.8	74	54	-12.1	-5.2
CH High	2497.858	28.1	14.1	27.8	14.1	34.9	63.0	49.0	74	54	-11.0	-5.0

10.6.3 調變技術: IEEE 802.11n HT20

主波 頻道	輻射 頻率	儀器讀值@3m (dBuV/m)				校正 因子	結果值		限制值@3m		餘裕值 (worse)	
		水平		垂直			(dBuV/m)		(dBuV/m)		(dB)	
	(MHz)	峰值	平均值	峰值	平均值	(dB)	峰值	平均值	峰值	平均值	峰值	平均值
CH Low	2389.744	27.9	14.2	27.5	14.1	34.7	62.6	48.9	74	54	-11.4	-5.1
CH High	2483.500	28.1	14.2	28.4	14.1	34.9	63.3	49.1	74	54	-10.7	-4.9

註:1. 量測不準確度: $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)

2. 量測頻率範圍為 2310 ~ 2390 MHz 及 2483.5 ~ 2900 MHz, 並記錄兩頻率範圍中之最大讀值。

10.7 結果判定

以上之場強輻射測試結果皆低於限制值，合乎標準規定。

10.8 輻射之測試配置

圖 4: 量測頻率低於1GHz之測試配置

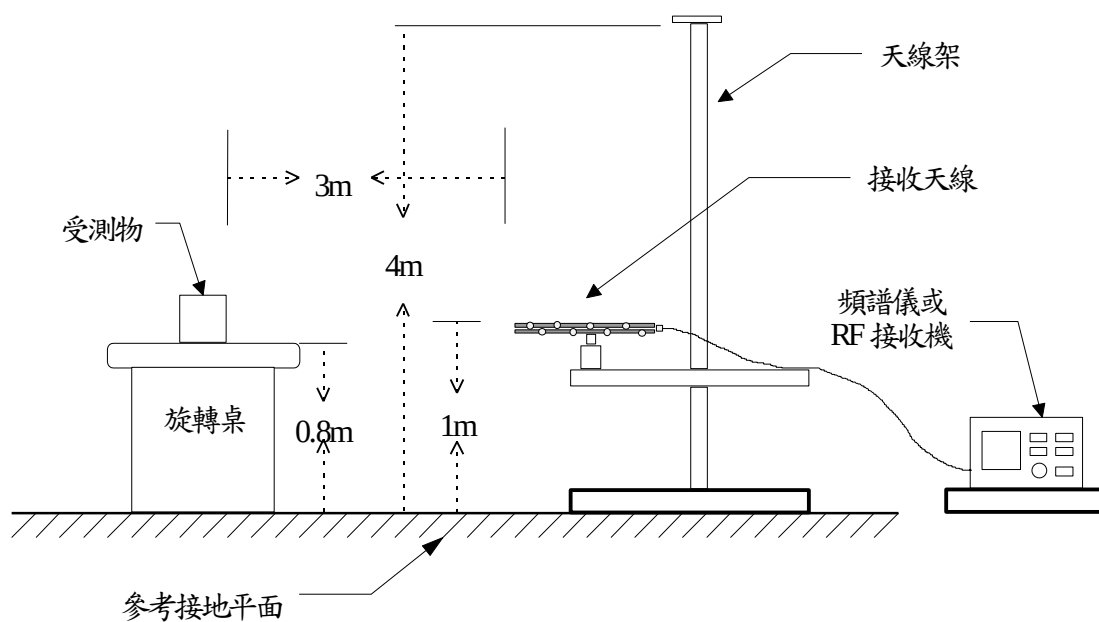
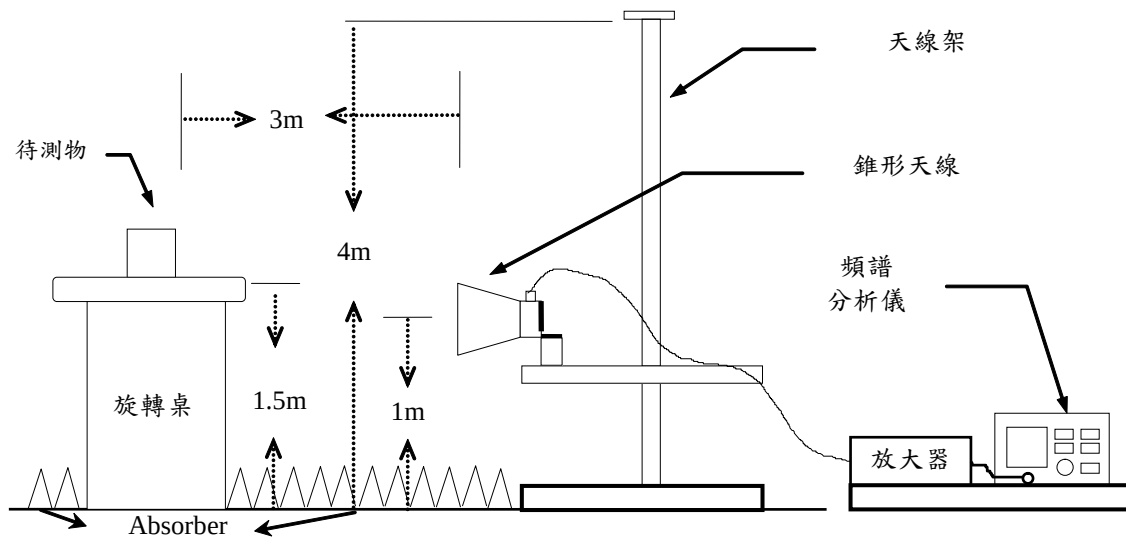


圖 5: 量測頻率高於1GHz之測試配置



10.9 輻射量測之配置照片

請參考產品照片

11 MAXIMUM PERMISSIBLE EXPOSURE

Standard Applicable

According to FCC Part1.1310: Radiofrequency radiation exposure limits. The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency radiation as specified in 1.1307(b) LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range	Electric field strength	Magnetic field strength	Power density	Averaging time
(MHz)	(V/m)	(A/m)	(mW/cm ²)	(minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1	30

F = Frequency in MHz

Calculations

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

r = distance between observation point and center of the radiator in cm

The limit of P_d is 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance where the P_d at 20 mm is meet the limit of MPE.

Result (Worse case mode)

測試日期: Jun. 18, 2020

環境溫度: 20°C

環境濕度: 60%

Radio Technology	Operation Frequency (MHz)	Distance (mm)	Maximu Output Power with Antenna Gain (mW)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2.4 GHz	2412	20	29.31	0.0058	1

The **P_d** at 20 mm distance calculated from the Friis transmission formula is much smaller than the limit requirement 1 mW/cm² or 10W/m².

The **Installation Manual** instructs the user to install the device such that it has a separation of at least 20 mm from persons to comply with the FCC's requirements. This separation of 20 mm more than meets the FCC's and Industry Canada RF exposure requirements.

Simultaneous Evaluation:

All MPE evaluations are less than 1, which confirm the device comply the MPE limit.

12 量測之儀器

儀器名稱	製造者	型號	財產編號/序號	校驗日期	下次校驗日期
EMI Test Receiver	R&S	ESCI	13054418-001	11/26/2019	11/25/2020
V-LISN	R&S	ENV216	13057719-001	09/20/2019	09/19/2020
Spectrum Analyzer	R&S	FSV	13052017-001	07/05/2019	07/04/2020
Attenuator	WEINSCHEL	56-10	58772	04/24/2020	04/23/2021
Power Meter	Agilent	N1912A	13050625-001	10/08/2019	10/07/2020
Power Sensor	Agilent	N1922A	13053523-001	10/08/2019	10/07/2020
EMI Receiver	R&S	ESCI	13054423-001	12/24/2019	12/25/2020
Spectrum Analyzer	R&S	FSU46	13040904-001	06/10/2019	06/09/2020
Horn Antenna	EMCO	3117	13059211-004	04/21/2020	04/20/2021
Horn Antenna	EMCO	3116	13059202-001	11/15/2019	11/14/2020
PRE-Amplifier	Agilent	8449B	13040709-001	12/31/2019	12/30/2020
PRE-Amplifier	Agilent	8447D	13040715-002	04/22/2020	04/21/2021
BiLog Antenna	ETC	MCTD 2786	BL19J04024	01/14/2020	01/13/2021