

低功率射頻電機測試報告

報告編號:

RT180511C16

申請者

Samsung SDS Co., Ltd.

產品名稱

Home Network Wall Pad

型號

SHP-HB700M/TW

製造廠商

Samsung SDS Co., Ltd.

商標或廠牌

SAMSUNG

該產品樣品試驗

國家通訊傳播委員會低功率射頻電機技術規範

依據之試驗標準

107 年 1 月修訂

試驗結果

合格

香港商立德國際商品試驗有限公司桃園分公司 林口實驗室

日期 107 年 06 月 29 日

報告簽署人簽章:



目 錄

報告發行紀錄	6
證 明 書	7
1 低功率射頻電機量測記錄表	8
2 一般敘述	10
2.1 待測設備	10
2.2 輔助測試之週邊設備描述	16
2.3 測試架構圖	16
3 適用規範	17
3.1 規範要求	17
3.2 限制使用之頻帶	24
2.4 GHz 頻段測試紀錄結果	25
4 帶外發射之量測	25
4.1 適用標準	25
4.2 量測方法	25
4.3 量測儀器	26
4.4 測試配置	28
4.5 場強度之計算	29
4.6 量測結果	30
4.6.1 發射諧波	30
4.6.2 接收諧波	54
4.6.3 其它不必要之訊號	56
4.7 量測結果判定	57
5 6 dB 頻寬之要求	58
5.1 適用標準	58
5.2 量測方法	58
5.3 量測儀器	58
5.4 測試配置	58
5.5 量測結果	59
5.6 量測結果判定	60
6 峰值傳導輸出功率之量測	61
6.1 適用標準	61
6.2 量測方法	61
6.3 量測儀器	61
6.4 測試配置	61
6.5 量測結果	62
6.6 量測結果判定	62
7 功率頻譜密度之量測	63
7.1 適用標準	63
7.2 量測方法	63
7.3 量測儀器	63
7.4 測試配置	63
7.5 量測結果	64
7.6 量測結果判定	65
U-NII 頻段測試紀錄結果	66

8 帶外發射之量測	66
8.1 適用標準	66
8.2 量測方法	66
8.3 量測儀器	66
8.4 測試配置	66
8.5 場強度之計算	67
8.6 量測結果	68
8.6.1 發射諧波	68
8.6.2 接收諧波	142
8.6.3 其它不必要之訊號	144
8.7 量測結果判定	145
9 峰值傳導輸出功率量測及發射頻寬之要求	146
9.1 適用標準	146
9.2 量測方法	146
9.3 量測儀器	147
9.4 測試配置	147
9.5 量測結果	148
9.6 量測結果判定	152
10 功率頻譜密度之量測	153
10.1 適用標準	153
10.2 量測方法	153
10.3 量測儀器	153
10.4 測試配置	153
10.5 量測結果	154
10.6 量測結果判定	157
11 6 dB 頻寬之要求	158
11.1 適用標準	158
11.2 量測方法	158
11.3 量測儀器	158
11.4 測試配置	158
11.5 量測結果	159
11.6 量測結果判定	160
ZigBee 頻段測試紀錄結果	161
12 帶外發射之量測	161
12.1 適用標準	161
12.2 量測方法	161
12.3 量測儀器	161
12.4 測試配置	161
12.5 場強度之計算	161
12.6 量測結果	162
12.6.1 發射諧波	162
12.6.2 接收諧波	168
12.6.3 其它不必要之訊號	170
12.7 量測結果判定	171
13 6 dB 頻寬之要求	172
13.1 適用標準	172
13.2 量測方法	172
13.3 量測儀器	172

13.4 測試配置.....	172
13.5 量測結果.....	173
13.6 量測結果判定	173
14 峰值傳導輸出功率之量測	174
14.1 適用標準.....	174
14.2 量測方法.....	174
14.3 量測儀器.....	174
14.4 測試配置.....	174
14.5 量測結果.....	175
14.6 量測結果判定	175
15 功率頻譜密度之量測	176
15.1 適用標準.....	176
15.2 量測方法.....	176
15.3 量測儀器.....	176
15.4 測試配置.....	176
15.5 量測結果.....	177
15.6 量測結果判定	177
16 電源線傳導干擾之量測.....	178
16.1 適用標準.....	178
16.2 量測方法.....	178
16.3 量測儀器.....	178
16.4 測試配置.....	179
16.5 干擾值之計算	179
16.6 量測結果.....	180
16.7 量測結果判定	181
17 電波暴露量之評估.....	182
17.1 適用標準.....	182
17.2 評估方法.....	182
17.3 評估結果.....	182
18 待測物照片	183
附錄：動態頻率選擇	184
1 EUT Information.....	184
1.1 Operating Frequency Bands and Mode of EUT	184
1.2 EUT Software and Firmware Version	184
1.3 Description of Available Antennas to the EUT	184
1.4 EUT Maximum Conducted Power	185
1.5 EUT Maximum E.I.R.P. Power	186
1.6 Transmit Power Control (TPC).....	187
1.7 Statement of Manufacturer	187
2 U-NII DFS Rule Requirements	188
2.1 Working Modes and Required Test Items.....	188
2.2 Test Limits and Radar Signal Parameters	189
3 Test & Support Equipment List.....	191
3.1 Test Instruments.....	191
3.2 Description of Support Units	191
4 Test Procedure.....	192

4.1	ADT DFS Measurement System	192
4.2	Calibration of DFS Detection Threshold Level.....	193
4.3	Deviation from Test Standard.....	194
4.4	Radiated Test Setup Configuration	194
4.4.1	Client without Radar Detection Mode	194
5	Test Results.....	195
5.1	Summary of Test Results	195
5.2	Test Results	196
5.2.1	Test Mode: Device operating in Client without Radar Detection Mode	196
5.2.2	Channel Closing Transmission and Channel Move Time.....	197
5.2.3	Non-Occupancy Period	199
5.2.4	Non-associated test.....	201
5.2.5	Non- Co-Channel Test	201
5.2.6	Test Setup photo.....	201
6	檢測實驗室基本資料	202

報告發行紀錄

Issue No.	Description	Date Issued
RT180511C16	Original release	107 年 06 月 29 日

證 明 書

發行日期：107 年 06 月 29 日

產 品 名 稱： Home Network Wall Pad
商 標： SAMSUNG
型 號： SHP-HB700M/TW
申 請 者： Samsung SDS Co., Ltd.
量 測 規 範： 低功率射頻電機技術規範 LP0002
ANSI C63.10-2013

香港商立德國際商品試驗有限公司桃園分公司在此證明上述待測設備樣品一組(型號：SHP-HB700M/TW)，收件日期 107 年 05 月 11 日，於 107 年 05 月 25 日至 107 年 06 月 26 日，已在本公司的標準測試場地完成量測。報告中所描述之測試結果和待測設備的架構組合，均根據樣品實際的量測情況作詳實的記錄。

立德桃園分公司依“低功率射頻電機技術規範”、“低功率電波輻射性電機管理辦法”及“電信管制射頻器材審驗辦法”製作測試結果報告。

特 此 證 明 ！

報告製作者：



陳美如 / 專 員

， 日 期： 107 年 06 月 29 日

審 核 者：



邱碧民 / 專案工程師

， 日 期： 107 年 06 月 29 日

香港商立德國際商品試驗有限公司桃園分公司

實驗室地址：新北市林口區嘉寶里 14 鄰 47-2 號

此份報告不得摘錄複製，除全份複製外，需經實驗室書面同意。



1 低功率射頻電機量測記錄表

申請廠商: Samsung SDS Co., Ltd.

製造廠商: Samsung SDS Co., Ltd.

申請廠商地址: 125, Olympic-ro 35-gil, Songpa-gu, Seoul, Korea

產品名稱: Home Network Wall Pad

廠牌: SAMSUNG

型號: SHP-HB700M/TW

量測單位名稱: 香港商立德國際商品試驗有限公司桃園分公司

林口實驗室華亞檢測部

量測單位地址: 桃園市龜山區文化里華亞二路 19 號

量測單位認可編號: TAF 2021 (9 kHz ~ 40 GHz)

量測規範: 低功率射頻電機技術規範 LP0002

ANSI C63.10-2013

KDB 558074

KDB 789033

WLAN 2.4 GHz 頻段概要

項次	量測項目	規 範	量測結果判定
1	帶外發射	低功率射頻電機技術規範 3.10.1.5 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	合格
3	6 dB 頻寬	低功率射頻電機技術規範 3.10.1.6 節	合格
4	峰值傳導輸出功率	低功率射頻電機技術規範 3.10.1.2 節	合格
5	功率頻譜密度	低功率射頻電機技術規範 3.10.1.6 節	合格

WLAN 5.150~5.250 GHz 頻段概要

項次	量測項目	規 範	量測結果判定
1	電源線傳導干擾	低功率射頻電機技術規範 2.3 節	合格
2	帶外發射	低功率射頻電機技術規範 4.7.4 節	合格
3	最大傳導輸出功率	低功率射頻電機技術規範 4.7.3.1 節	合格
4	最大功率頻譜密度	低功率射頻電機技術規範 4.7.3.1 節	合格

WLAN 5.250~5.350 GHz 頻段概要

項次	量測項目	規 範	量測結果判定
1	電源線傳導干擾	低功率射頻電機技術規範2.3節	合格
2	帶外發射	低功率射頻電機技術規範4.7.4節	合格
3	最大傳導輸出功率	低功率射頻電機技術規範4.7.3.2節	合格
4	最大功率頻譜密度	低功率射頻電機技術規範4.7.3.2節	合格
5	發射功率控制(TPC)及動態頻率選擇(DFS)	低功率射頻電機技術規範4.7.7.1及4.7.7.2 節	合格

WLAN 5.470~5.725 GHz 頻段概要

項次	量測項目	規 範	量測結果判定
1	電源線傳導干擾	低功率射頻電機技術規範2.3節	合格
2	帶外發射	低功率射頻電機技術規範4.7.4節	合格
3	最大傳導輸出功率	低功率射頻電機技術規範4.7.3.2節	合格
4	最大功率頻譜密度	低功率射頻電機技術規範4.7.3.2節	合格
5	發射功率控制(TPC)及動態頻率選擇(DFS)	低功率射頻電機技術規範4.7.7.1及4.7.7.2 節	合格

WLAN 5.725~5.850 GHz 頻段概要

項次	量測項目	規 範	量測結果判定
1	電源線傳導干擾	低功率射頻電機技術規範2.3節	合格
2	帶外發射	低功率射頻電機技術規範4.7.4節	合格
3	最大傳導輸出功率	低功率射頻電機技術規範4.7.3.3節	合格
4	最大功率頻譜密度	低功率射頻電機技術規範4.7.3.3節	合格
5	6 dB 頻寬	低功率射頻電機技術規範4.7.5節	合格

ZigBee 頻段概要

項次	量測項目	規 範	量測結果判定
1	帶外發射	低功率射頻電機技術規範 3.10.1.5 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	合格
3	6 dB 頻寬	低功率射頻電機技術規範 3.10.1.6 節	合格
4	峰值傳導輸出功率	低功率射頻電機技術規範 3.10.1.2 節	合格
5	功率頻譜密度	低功率射頻電機技術規範 3.10.1.6 節	合格

最大暴露允許值(Maximum Permissible Exposure , MPE)

項次	量測項目	規 範	量測結果判定
1	電波暴露量	低功率射頻電機技術規範第 5.20.2 節	合格

2 一般敘述

2.1 待測設備

產品名稱：	Home Network Wall Pad	
型號：	SHP-HB700M/TW	
額定電源：	17~24 Vdc (Power Supply)	
調變方式：	Wireless LAN	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
	ZigBee	O-QPSK
傳輸速率：	Wireless LAN	802.11b: 11.0/ 5.5/ 2.0/ 1.0 Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0 Mbps 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0 Mbps 802.11n: up to 150.0 Mbps
	ZigBee	250 kbps
載波頻率：	Wireless LAN	2.4 GHz: 2412 ~ 2462 MHz 5.0 GHz: 5180 ~ 5240 MHz, 5260 ~ 5320 MHz, 5500 ~ 5700 MHz, 5745 ~ 5825 MHz
	ZigBee	2405~2480 MHz
頻道數：	Wireless LAN	2.4 GHz: 802.11b, 802.11g, 802.11n (HT20): 11 802.11n (HT40): 7 5.0 GHz: 5180 ~ 5240 MHz 802.11a, 802.11n (HT20): 4 802.11n (HT40): 2 5260 ~ 5320 MHz: 802.11a, 802.11n (HT20): 4 802.11n (HT40): 2 5500 ~ 5700 MHz: 802.11a, 802.11n (HT20): 11 802.11n (HT40): 5 5745 ~ 5825 MHz: 802.11a, 802.11n (HT20): 5 802.11n (HT40): 2
	ZigBee	16
發射功率：	Wireless LAN	2.4 GHz: 802.11b: 19.10 dBm 802.11g: 22.42 dBm 802.11n (HT20): 22.25 dBm 802.11n (HT40): 22.32 dBm 5.0 GHz: 5180 ~ 5240 MHz: 802.11a: 14.15 dBm 802.11n (HT20): 13.30 dBm 802.11n (HT40): 13.46 dBm 5260 ~ 5320 MHz: 802.11a: 14.45 dBm 802.11n (HT20): 13.19 dBm 802.11n (HT40): 13.45 dBm

		5500 ~ 5700 MHz 802.11a: 14.44 dBm 802.11n (HT20): 13.47 dBm 802.11n (HT40): 13.44 dBm 5745 ~ 5825 MHz: 802.11a: 14.20 dBm 802.11n (HT20): 13.26 dBm 802.11n (HT40): 13.26 dBm
	ZigBee	8.03 dBm
天線種類:	見註 2	
電源線類別:	N/A	
信號線類別:	見註 3	
配件:	見註 3	

註:

1. 此待測物之技術的種類為1Tx / 1Rx之組合。

Modulation Mode	Tx Function
802.11b	1TX
802.11g	1TX
802.11a	1TX
802.11n (HT20)	1TX
802.11n (HT40)	1TX

2. 此待測設備搭配測試的天線，其資料如下：

	頻帶 (MHz)	天線型式	天線型號	商標	接頭型式	增益 (dBi)
WLAN	2412 ~ 2462	PCB	TP-WDS-87	N/A	N/A	1.95
	5180 ~ 5240					1.48
	5260 ~ 5320					1.74
	5500 ~ 5700					1.37
	5745 ~ 5825					1.957
ZigBee	2405~2480		TP-ZSS-88	N/A	N/A	0.585

3. 此待測設備搭配使用之配件請參閱產品照編號: 180511C16

4. 此報告中，場強輻射量測經過評估後以下列測試模式進行最終量測。

量測項目	發射	接收
2412 ~ 2462 MHz		
1 GHz 以上量測	802.11b: Ch 1, 6, 11 802.11g: Ch 1, 6, 11 802.11n (HT20): Ch 1, 6, 11 802.11n (HT40): Ch 3, 6, 9	802.11g: Ch 11
其它不必要之訊號	802.11g: Ch 11	802.11g: Ch 11
5180 ~ 5240 MHz, 5260 ~ 5320 MHz, 5500 ~ 5700 MHz & 5745 ~ 5825 MHz		
1 GHz 以上量測	802.11a: Ch 36, 40, 48, 52, 60, 64, 100, 116, 140, 149, 157, 165 802.11n (HT20): Ch 36, 40, 48, 52, 60, 64, 100, 116, 140, 149, 157, 165 802.11n (HT40): Ch 38, 46, 54, 62, 102, 110, 134, 151, 159	802.11n (HT40): Ch 62
其它不必要之訊號	802.11n (HT40): Ch 62	802.11n (HT40): Ch 62
ZigBee		
1 GHz 以上量測	Ch 11, 18, 26	Ch 26
其它不必要之訊號	Ch 26	Ch 26

5. 此報告中傳輸模式，場強輻射量測及電源線傳導干擾量測之外的測試項目，以DSSS調變技術和OFDM調變技術分別進行測試並記錄最終量測結果於報告中。
6. 此報告中，測試模式評估如下
 - (1) 電源線傳導干擾量測經預掃後以模式1具有較大干擾值，故以其模式進行最終測試。
 - (2) 場強輻射量測以模式1~3評估完整測試。

模式	測試狀態
1	WLAN 2.4GHz + Power Supply
2	WLAN 5GHz + Power Supply
3	ZigBee + Power Supply

7. 此待測設備為壁掛式產品，故以垂直擺放方式進行最終量測，並將測試結果紀錄。

8. Duty cycle of test signal.

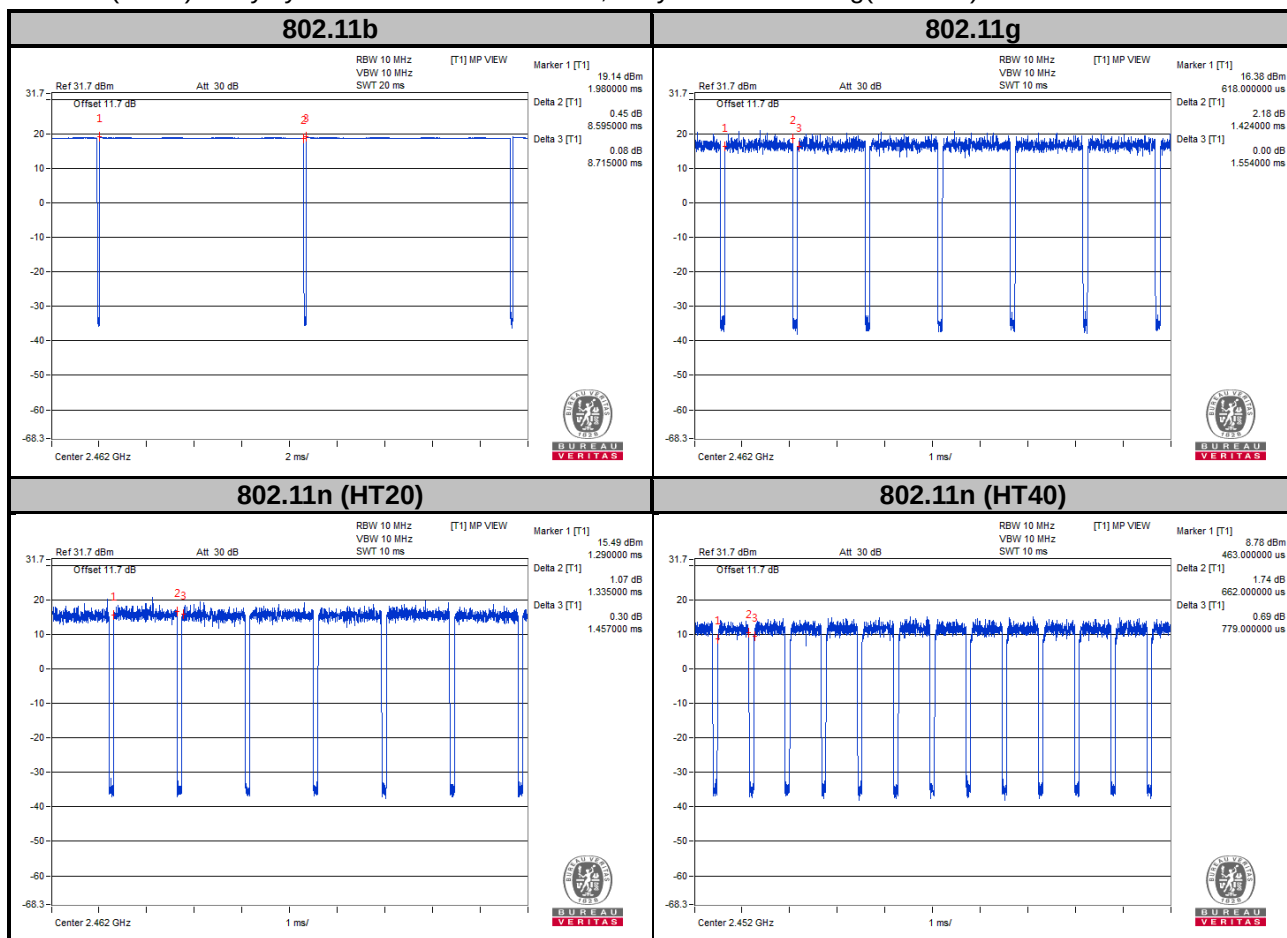
2.4 GHz頻段

802.11b: Duty cycle of test signal is $\geq 98\%$, duty factor is not required.

802.11g: Duty cycle = $1.424/1.554 = 0.916$, Duty factor = $10 * \log(1/0.916) = 0.38$

802.11n (HT20): Duty cycle = $1.335/1.457 = 0.916$, Duty factor = $10 * \log(1/0.916) = 0.38$

802.11n (HT40): Duty cycle = $0.662/0.779 = 0.850$, Duty factor = $10 * \log(1/0.850) = 0.71$



5 GHz频段

802.11a: Duty cycle = $1.423/1.526 = 0.933$, Duty factor = $10 * \log(1/0.933) = 0.30$

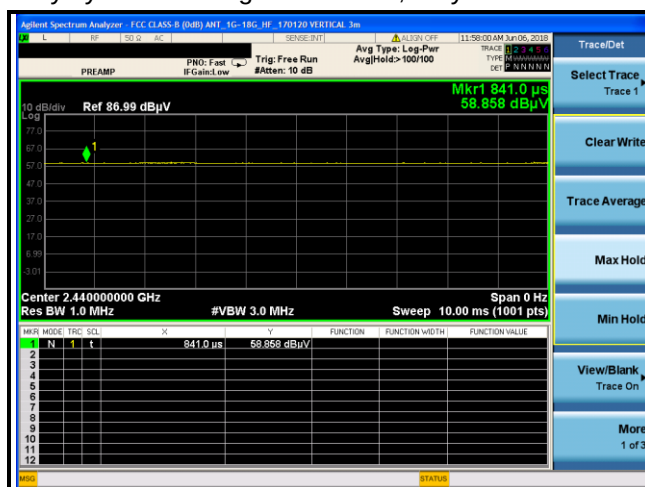
802.11n (HT20): Duty cycle = $1.333/1.436 = 0.928$, Duty factor = $10 * \log(1/0.928) = 0.32$

802.11n (HT40): Duty cycle = $0.659/0.778 = 0.847$, Duty factor = $10 * \log(1/0.847) = 0.72$



ZigBee频段

Duty cycle of test signal is 100 %, duty factor is not required.



此裝置各頻道的中心頻率如下：

2.4 GHz 頻段：

802.11b, 802.11g, 802.11n (HT20):

頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)
01	2412	07	2442
02	2417	08	2447
03	2422	09	2452
04	2427	10	2457
05	2432	11	2462
06	2437		

802.11n (HT40):

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

5 GHz 頻段:

802.11a, 802.11n (HT20):

頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)
36	5180	116	5580
40	5200	120	5600
44	5220	124	5620
48	5240	128	5640
52	5260	132	5660
56	5280	136	5680
60	5300	140	5700
64	5320	149	5745
100	5500	153	5765
104	5520	157	5785
108	5540	161	5805
112	5560	165	5825

802.11n (HT40):

頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)
38	5190	118	5590
46	5230	126	5630
54	5270	134	5670
62	5310	151	5755
102	5510	159	5795
110	5550		

ZigBee 頻段:

頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)
11	2405	17	2435	23	2465
12	2410	18	2440	24	2470
13	2415	19	2445	25	2475
14	2420	20	2450	26	2480
15	2425	21	2455		
16	2430	22	2460		

詳細之規格請參考使用說明書。

2.2 輔助測試之週邊設備描述

待測設備於受測時均接上其所屬的配件或一般用途之相關設備；下列輔助設備或配件測試中所使用的配備，以形成一個代表待測物實際運作的受測系統。

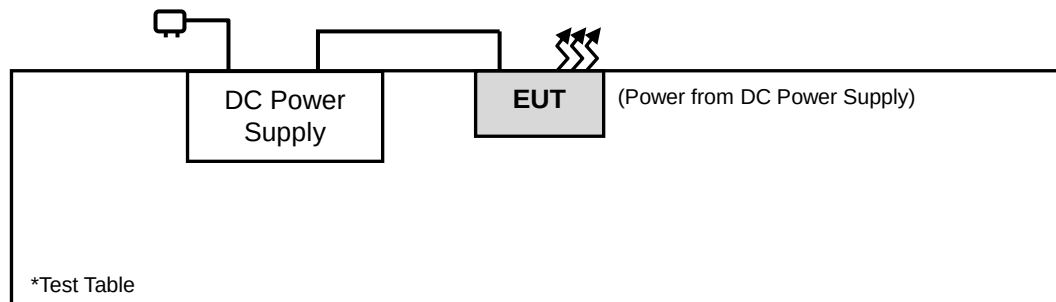
No.	Product	Brand	Model No.	Serial No.	FCC ID
1	DC Power Supply	Topward	3303D	803136	N/A

No.	Signal Cable Description Of The Above Support Units
1	N/A

NOTE:

1. All power cords of the above support units are non shielded (1.8m).

2.3 測試架構圖



3 適用規範

3.1 規範要求

► ZigBee 頻段部分：

(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，電源傳導干擾之限制要求如下：

頻率(MHz)	傳導限制值 (dBuV)	
	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) 帶外發射之規定

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 節之要求，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。

頻率(兆赫)	電場強度(微伏/公尺)	測距(公尺)
0.009 - 0.490 (含)	2,400/頻率(千赫)	300
0.490 (不含) - 1.705 (含)	24,000/頻率(千赫)	30
1.705 (不含) - 30 (不含)	30	30
30 (含) - 88 (含)	100	3
88 (不含) - 216 (含)	150	3
216 (不含) - 960 (含)	200	3
960 (不含)以上	500	3

(3) 天線之規定

天線規格不受第 2.2 節規定之限制。

(4) 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 節(3)之規定如下：

- (A) 進行固定式點對點操作時，其發射天線之方向性增益超過 6 dBi，每超過 3 dBi，最大傳導輸出功率限制值應降低 1 dB。
- (B) 天線以多向波束發射方式(含同時發射或循序發射)將訊號導向多個接收機或接收機群組時，應符合下列規定：
- (a) 非同時發射多向波束者，所有載波或頻道傳輸至所有天線陣列或陣列群之總和傳導輸出功率應符合 3.10.1.2 之功率限制值。如天線/天線陣列群之方向性增益超過 6 dBi，每超過 3 dBi，總和傳導輸出功率限制值應降低 1 dB。方向性增益值應計算如下：
 - (i) 方向性增益值 = $10\log(\text{天線陣列之單元數目}) + \text{各單元中最高之方向性增益值}$ 。
 - (ii) 天線陣列間之遮蔽效應或波束干涉損失能充分佐證時，方向性增益得低於(i)計算數值。
 - (b) 同時發射多向波束於相同或不同頻道者，其每一波束功率應符合(a)之功率限制值。如發射波束有重疊現象，功率應降低，以確保總和傳導輸出功率符合(a)之限制值。同時發射的所有波束總和傳導輸出功率不大於(a) 總和傳導輸出功率限制值加 8 dB。方向性增益值計算同(a)。
 - (c) 發射機之天線具備單向波束功能者，應符合(1)(A)及(3)後段之規定。

除(A)及(B)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限制值。

(5) 6 dB 頻寬之要求

對使用數位調變技術(digital modulation techniques)系統之低功率發射機，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 節之規定，6 dB 頻寬至少應有 500 kHz。

(6) 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 節之規定：

數位調變技術系統：1 W(含)以下。

(7) 功率頻譜密度之要求

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 節之規定，在使用頻率範圍之任一 3 kHz 頻寬內，由發射機傳導至天線之功率頻譜密度在任意傳輸期間內，皆小於或等於 8 毫分貝(dBm)，且應依 3.10.1.3 之方式降低功率頻譜密度限制值。

►WLAN 頻段部分:

(8) 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，電源傳導干擾之限制要求如下:

頻率(MHz)	傳導限制值 (dBuV)	
	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。

(9) 帶外發射之規定

(1) 操作於 2.4000~2.4835 GHz band:

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 節之要求，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。

(2) 操作於 5.15~5.35 GHz 及 5.470~5.725 GHz 頻段:

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.4.1 節之要求，帶外發射之有效等向輻射功率 (EIRP) $\leq$ -27 dBm/MHz。

(3) 操作於 5.725~5.850 GHz 頻段:

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.4.2 節之要求，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 35 (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。

在 5.725~5.850 GHz 頻段操作且天線增益大於 10 dBi 之設備於 106 年 3 月 2 日前得適用 3.10.1.5 帶外發射限制；在 5.725~5.850 GHz 頻段操作且天線增益小於等於 10 dBi 之設備於 107 年 3 月 2 日前得適用 3.10.1.5 帶外發射限制規定。

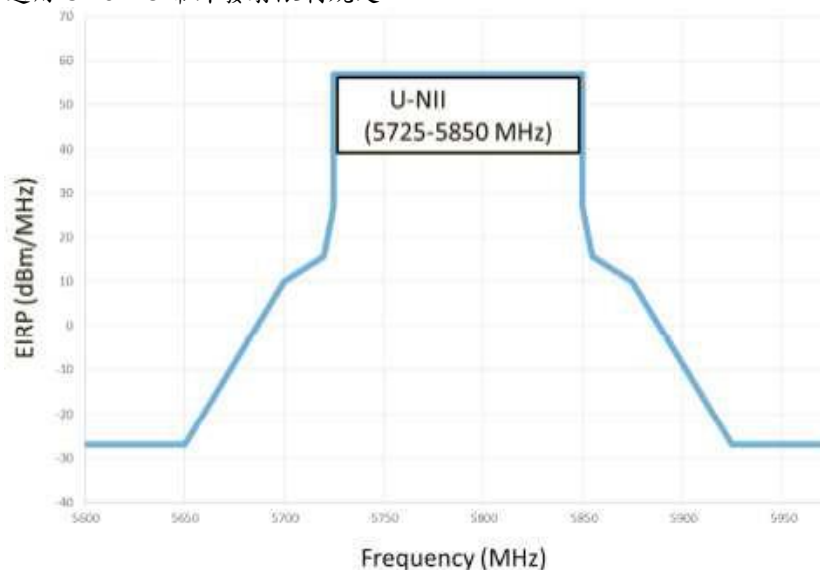


圖 1

在 1 GHz 以下不必要之發射，應符合 2.8 之規定。此外，落於 2.7 禁用頻段之輻射發射，應符合 2.8 之規定。

頻率(兆赫)	電場強度(微伏/公尺)	測距(公尺)
0.009 - 0.490 (含)	2,400/頻率(千赫)	300
0.490 (不含) - 1.705 (含)	24,000/頻率(千赫)	30
1.705 (不含) - 30 (不含)	30	30
30 (含) - 88 (含)	100	3
88 (不含)- 216 (含)	150	3
216 (不含)- 960 (含)	200	3
960 (不含)以上	500	3

(10) 天線之規定

天線規格不受第 2.2 節規定之限制。

(11) 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 節及 4.7.3 節之規定如下：

(1) 操作於 2.400~2.4835 GHz 頻段：

- (A) 進行固定式點對點操作時，其發射天線之方向性增益超過 6 dBi，每超過 3 dBi，最大傳導輸出功率限制值應降低 1 dB。
- (B) 天線以多向波束發射方式(含同時發射或循序發射)將訊號導向多個接收機或接收機群組時，應符合下列規定：
 - (a) 非同時發射多向波束者，所有載波或頻道傳輸至所有天線陣列或陣列群之總和傳導輸出功率應符合 3.10.1.2 之功率限制值。如天線/天線陣列群之方向性增益超過 6 dBi，每超過 3 dBi，總和傳導輸出功率限制值應降低 1 dB。方向性增益值應計算如下：
 - (i) 方向性增益值 = $10\log(\text{天線陣列之單元數目}) + \text{各單元中最高之方向性增益值}$ 。
 - (ii) 天線陣列間之遮蔽效應或波束干涉損失能充分佐證時，方向性增益得低於(i)計算數值。
 - (b) 同時發射多向波束於相同或不同頻道者，其每一波束功率應符合(a)之功率限制值。如發射波束有重疊現象，功率應降低，以確保總和傳導輸出功率符合(a)之限制值。同時發射的所有波束總和傳導輸出功率不大於(a) 總和傳導輸出功率限制值加 8 dB。方向性增益值計算同(a)。
 - (c) 發射機之天線具備單向波束功能者，應符合(1)(A)及(3)後段之規定。

除(A)及(B)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限制值。

(2) 操作於 5.15~5.25 GHz 頻段：

- (A) 供戶外操作使用：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。在水平面仰角超過 30 度時，其最大 EIRP 應小於或等於 21 dBm。
- (B) 供室內操作使用：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。
- (C) 供固定式點對點操作使用：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。固定式點對點操作，不包括點對多點系統、全方向性應用及多台共站發射機傳送相同資訊。
- (D) 供用戶端裝置(Client Device)操作使用：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。

(3) 操作於 5.25~5.35 GHz 與 5.470~5.725 GHz 頻段：

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) 操作於 5.725~5.850 GHz 頻段：

- (A) 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。
- (B) 除(A)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。

(12) 6 dB 頻寬之要求

(1) 操作於 2.400~2.4835 GHz 頻段：

對使用數位調變技術(digital modulation techniques)系統之低功率發射機，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 節之規定，6 dB 頻寬至少應有 500 kHz。

(2) 操作於 5.725~5.850 GHz 頻段：

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.5 節之規定，其 6 dB 頻寬至少應有 500 kHz。

(13) 傳導輸出功率之要求

(1) 操作於 2.4000~2.4835 GHz band:

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 節之規定：

數位調變技術系統：1 W(含)以下。

(2) 操作於 5.15~5.25 GHz 頻段:

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.3.1 節之要求:

(A) 供戶外操作使用/供室內操作使用/供固定式點對點操作使用：最大傳導輸出功率應小於或等於 1 W。

(B) 供用戶端裝置(Client Device)操作使用：最大傳導輸出功率應小於或等於 250 mW。

(3) 操作於 5.25~5.35 GHz 及 5.470~5.725 GHz 頻段:

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.3.2 節之規定，最大傳導輸出功率應小於或等於 250 mW 或 11 dBm+10log B (B 是 26 dB 發射頻寬，單位 MHz)之較小者。

(4) 操作於 5.725~5.850 GHz 頻段:

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.3.3 節之規定，最大傳導輸出功率應小於或等於 1 W。

(14) 功率頻譜密度之要求

(1) 操作於 2.4000~2.4835 GHz band:

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 節之規定，在使用頻率範圍之任一 3 kHz 頻寬內，由發射機傳導至天線之功率頻譜密度在任意傳輸期間內，皆小於或等於 8 毫分貝(dBm)，且應依 3.10.1.3 之方式降低功率頻譜密度限制值。

(2) 操作於 5.15~5.25 GHz 頻段:

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.3.1 節之要求:

(A) 供戶外操作使用/供室內操作使用/供固定式點對點操作使用：在任何 1 MHz 頻帶中最大功率頻譜密度應小於或等於 17 dBm。

(B) 供用戶端裝置(Client Device)操作使用：在任何 1 MHz 頻帶中最大功率頻譜密度應小於或等於 11 dBm。

(3) 操作於 5.25~5.35 GHz 及 5.470~5.725 GHz 頻段:

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.3.2 節之規定，最大功率頻譜密度在任何 1 MHz 頻帶中應小於或等於 11 dBm。

(4) 操作於 5.725 GHz~5.850 GHz 頻段:

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.3.3 節之規定，在任何 500 kHz 頻帶中最大功率頻譜密度應小於或等於 30 dBm。

(15) 發射功率控制(TPC)及動態頻率選擇(DFS)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 4.7.7.1 及 4.7.7.2 節之規定。

發射功率控制(TPC):操作於 5.25~5.35 GHz 與 5.470~5.725 GHz 頻段的設備，應具備發射功率控制功能。

設備必須至少具有 6 dB 低於平均 EIRP 30 dBm 的能力。EIRP 低於 500 mW 之系統不須具備 TPC 功能。

動態頻率選擇(DFS)：操作於 5.25~5.35 GHz 與 5.470~5.725 GHz 頻段之設備應具備動態頻率選擇雷達偵測功能並啟動之，以完整偵測使用頻帶內之雷達訊號，避免與雷達系統同頻道操作。相關規定如下：

(1) 最低動態頻率選擇的偵測門檻

(A) 最大 EIRP 為 200 mW~1 W 之設備，其最低動態頻率選擇的偵測門檻值為-64 dBm。

(B) 最大 EIRP 低於 200 mW，且功率頻譜密度小於 10 dBm/MHz 之設備，其最低動態頻率選擇的偵測門檻值為-62 dBm。

(C) 最大 EIRP 低於 200 mW，且功率頻譜密度大於或等於 10 dBm/MHz 之設備，其最低動態頻率選擇的偵測門檻值為-64 dBm。

(D) 此偵測門檻值為 1 微秒內之平均接收功率，並以 0 dBi 天線為參考基準。頻道初始設定得由系統隨機選取或使用者手動選取。

(2) 操作模式：動態頻率選擇之規定適用於以下之操作模式：

(A) 頻道可用性檢查時間之規定，適用於主控運作模式。

(B) 頻道移動時間之規定，適用於主控及受控運作模式。

(3) 頻道可用性檢查時間：設備必須檢查其可在某一頻道上起始傳送之前是否有雷達系統已經操作在該頻道上，以及何時其必須移動到另一新的頻道，在 60 秒內若沒有偵測到功率位準大過上述之干擾門檻值的雷達訊號時，設備才可開始使用該頻道。

(4) 頻道移動時間：在偵測到雷達的存在後，所有在該操作頻道上的所有傳輸須在 10 秒內停止，在偵測到雷達訊號後，該期間內的傳輸應維持最多 200 毫秒的正常通訊。另外，間歇性的管理與控制訊號可在剩餘的時間中傳送，以便撤離該操作頻道。

(5) 不可佔用期間：某一頻道已被頻道可用性檢查或"服務中"監視顯示含有雷達系統，至少須有 30 分鐘的不可佔用期間。不可佔用期間起始於偵測到雷達系統的當時。

(16) 無線資訊傳輸設備必須擁有安全功能之要求

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.7.3 節之規定，無線資訊傳輸設備必須擁有安全功能，以保護未經授權之一方更改軟體。製造商應提出符合本節規定之相關證明文件或符合性聲明。

(17) 依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.7.4 節之規定，製造商必須在操作於 U-NII 頻段上之數位調變系統中提供安全功能，使第三方團體無法重寫程式，使其操作於非經認證之設定。該軟體必須避免發射機操作於非經認證之頻率、輸出功率、調變形式或其他射頻參數。製造商可使用私有網路，只有經授權的用戶能下載軟體、進行軟體式電子簽章或硬體式的韌體更新，新的軟體可以被合法的載入到設備中，同時又能符合上述事項，並於應用程式中描述設備授權的方法。

(18) 依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.7.5 節之規定，製造商必須確保 DFS 功能無法被無線資訊傳輸設備之操作者取消。

(19) 電波暴露量之評估

依據國家通訊傳播委員會低功率射頻電機技術規範 5.20.2 節之規定，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)以證明其符合電波暴露量之要求。

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：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：MHz。

3.2 限制使用之頻帶

除本規範另有規定外，任何低功率射頻電機之主波皆不得使用下表所列各頻段之頻率；低功率射頻電機落於下表所列頻段之混附發射，其電場強度必須符合 2.8 之限制規定。

頻率(兆赫)	頻率(兆赫)	頻率(兆赫)
0.090~0.110	240.00~285.00	3332.0~3339.0
0.490~0.510	322.00~335.40	3345.8~3358.0
2.172~2.198	399.90~410.00	3500.0~4400.0
3.013~3.033	485.00~510.00	4500.0~5250.0
4.115~4.198	608.00~614.00	5350.0~5460.0
5.670~5.690	703.00~748.00	7250.0~7750.0
6.200~6.300	758.00~803.00	8025.0~8500.0
8.230~8.400	825.00~915.00	9000.0~9200.0
12.265~12.600	930.00~1240.0	9300.0~9500.0
13.340~13.430	1300.0~1427.0	10600~12700
14.965~15.020	1435.0~1626.5	13250~13400
16.700~16.755	1660.0~1785.0	14470~14500
19.965~20.020	1805.0~1880.0	15350~16200
25.500~25.700	1885.0~1900.0	17700~21400
37.475~38.275	1905.0~1985.0	22010~23120
73.500~75.400	2010.0~2025.0	23600~24000
108.00~138.00	2110.0~2170.0	31200~31800
149.90~150.05	2200.0~2300.0	36430~36500
156.70~156.90	2310.0~2390.0	38600 以上
162.01~167.17	2483.5~2900.0	
167.72~173.20	3260.0~3267.0	

2.4 GHz 頻段測試紀錄結果

4 帶外發射之量測

4.1 適用標準

請見本報告 3.1 節第(9)的規定。

4.2 量測方法

在電波暗室，將待測物置於 0.8 米高的非金屬桌面，使其操作在工作狀態。接收天線置於 3 米距離。桌面要 360 度旋轉，另外接收天線從離地 1 米至 4 米升降變化，以找出最大的輻射電場強度，接收天線分別置於水平、垂直極化各執行測試一次。

Note: 對於 1 GHz 以上場強輻射的測試，待測物則置於 1.5 米高的非金屬桌面

發射諧波：

Peak 為 RBW = 1 MHz, VBW = 3 MHz ;

Average

802.11b 為 RBW = 1 MHz, VBW = 10 Hz

802.11g 為 RBW = 1 MHz, VBW = 1 kHz

802.11n (HT20) 為 RBW = 1 MHz, VBW = 1 kHz

802.11n (HT40) 為 RBW = 1 MHz, VBW = 3 kHz

接收諧波：

Peak 為 RBW = 1 MHz, VBW = 3 MHz ; Average 為 RBW = 1 MHz, VBW = 10 Hz

Quasi-Peak 為 RBW = 120 kHz, VBW = 120 kHz

其它不必要之訊號

Peak 為 RBW = 120 kHz, VBW = 360 kHz ; Quasi-Peak 為 RBW = 120 kHz, VBW = 120 kHz

4.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent	N9038A	MY51210203	Mar. 16, 2018	Mar. 15, 2019
Spectrum Analyzer Agilent	N9010A	MY52220314	Nov. 24, 2017	Nov. 23, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019
Double Ridge Guide Horn Antenna EMCO	3115	5619	Nov. 30, 2017	Nov. 29, 2018
BILOG Antenna SCHWARZBECK	VULB 9168	9168-153	Dec. 06, 2017	Dec. 05, 2018
Fixed Attenuator Mini-Circuits	BW-N10W5+	1301	Aug. 14, 2017	Aug. 13, 2018
Loop Antenna	EM-6879	269	Aug. 11, 2017	Aug. 10, 2018
Preamplifier EMCI	EMC001340	980201	Nov. 01, 2017	Oct. 30, 2018
Preamplifier EMCI	EMC 012645	980115	Oct. 20, 2017	Oct. 19, 2018
Preamplifier EMCI	EMC 184045	980116	Oct. 20, 2017	Oct. 19, 2018
Preamplifier EMCI	EMC 330H	980112	Oct. 13, 2017	Oct. 12, 2018
Power Meter Anritsu	ML2495A	1012010	Aug. 15, 2017	Aug. 14, 2018
Power Sensor Anritsu	MA2411B	1315050	Aug. 15, 2017	Aug. 14, 2018
RF Coaxial Cable HUBER+SUHNNER	EMC104-SM-SM-800 0&3000	140811+170717	Oct. 20, 2017	Oct. 19, 2018
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-100 0(140807)	Oct. 20, 2017	Oct. 19, 2018
RF Coaxial Cable Worken	8D-FB	Cable-Ch10-01	Oct. 20, 2017	Oct. 19, 2018
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA

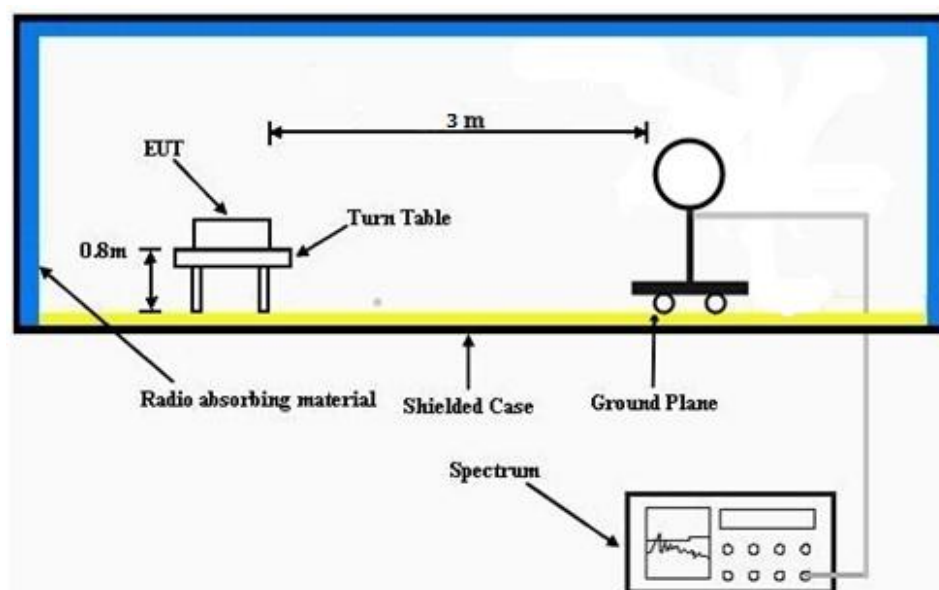
NOTE:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 10.
3. The horn antenna and preamplifier (model: EMC 184045) are used only for the measurement of emission frequency above 1 GHz if tested.
4. The FCC Designation Number is TW0003. The number will be varied with the Lab location and scope as attached.
5. The IC Site Registration No. is IC7450F-10.
6. The following table is for the measurement uncertainty, which is calculated as per the document CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.

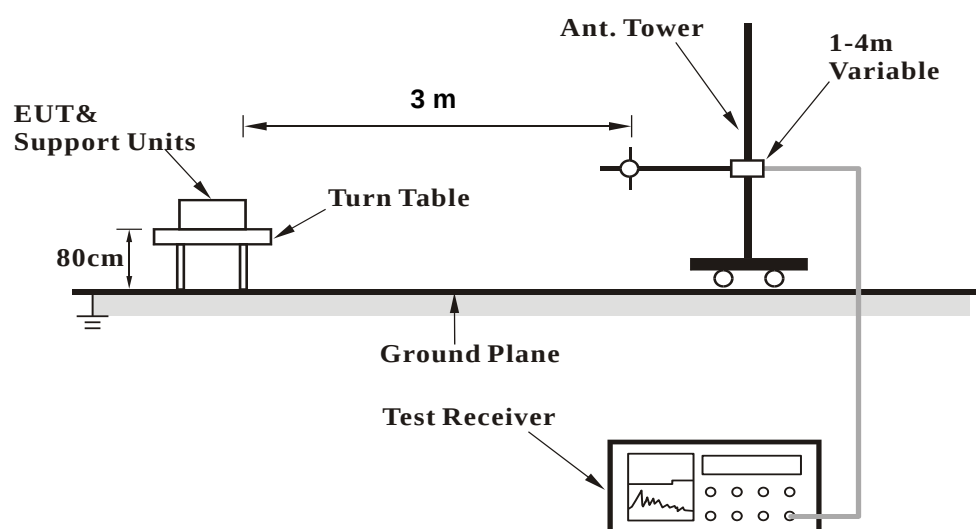
Measurement	Frequency	Uncertainty
Radiated emissions	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~1000 MHz	2.95 dB
	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

4.4 測試配置

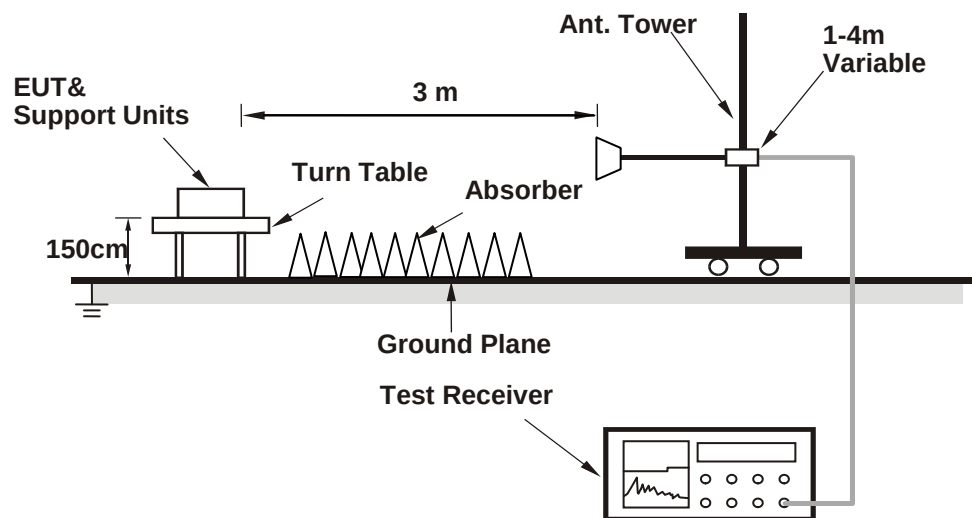
<Frequency Range 9 kHz ~ 30 MHz>



<Frequency Range below 1 GHz>



<Frequency Range above 1 GHz>



4.5 場強度之計算

場強之計算公式如下：

結果值 Emission level (dBuV/m) = 機器讀值 Raw Value (dBuV) + 校正因子 Correction Factor (dB/m)

餘裕度 Margin(dB) = 結果值 Emission level (dBuV/m) - 限制值 Limit value (dBuV/m)

量測結果請見下頁。

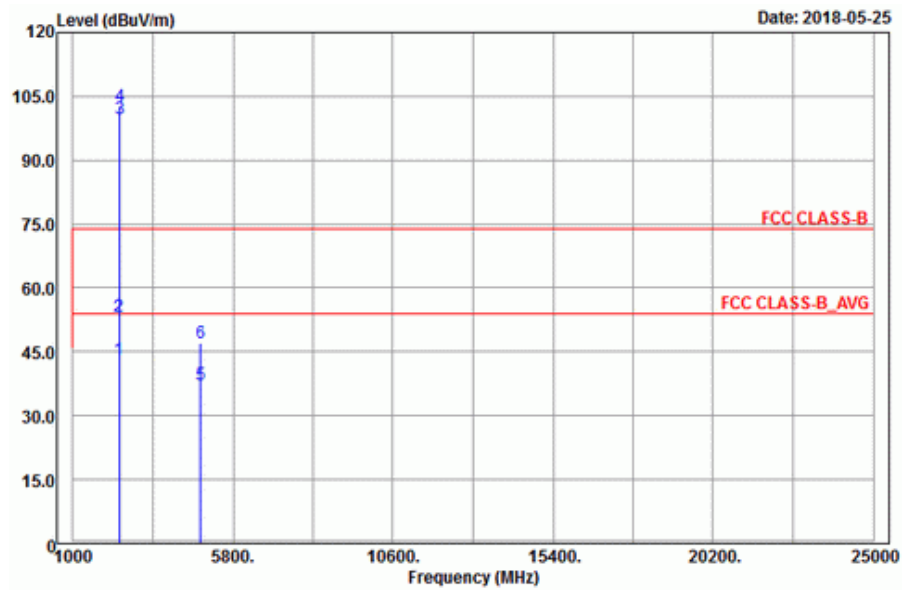
4.6 量測結果

4.6.1 發射諧波

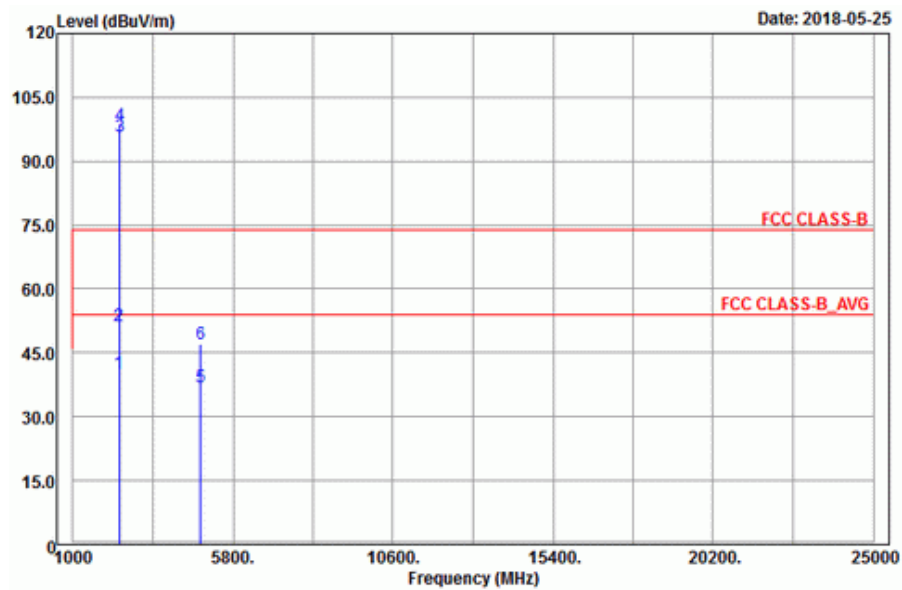
802.11b

EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



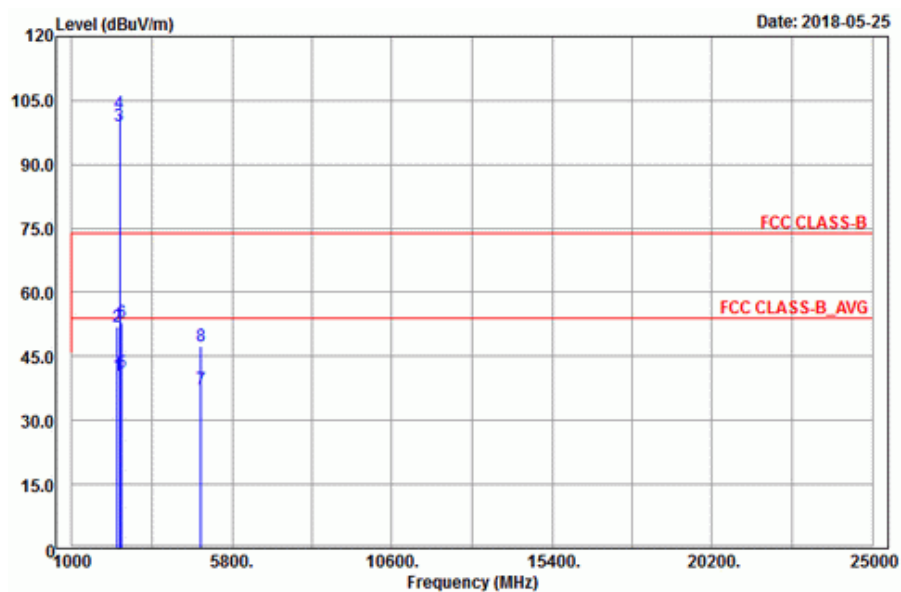
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2388.39	43.04	41.33	54	-10.96	31.8	5.4	35.49	266	358	Average
2388.39	53.17	51.46	74	-20.83	31.8	5.4	35.49	266	358	Peak
2412	99.78	98.01			31.81	5.43	35.47	266	358	Average
2412	102.68	100.91			31.81	5.43	35.47	266	358	Peak
4824	37.13	29	54	-16.87	33.97	8.26	34.1	169	321	Average
4824	47.21	39.08	74	-26.79	33.97	8.26	34.1	169	321	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2386.14	40.29	38.58	54	-13.71	31.8	5.4	35.49	179	0	Average
2386.14	51.33	49.62	74	-22.67	31.8	5.4	35.49	179	0	Peak
2412	95.73	93.96			31.81	5.43	35.47	179	0	Average
2412	98.44	96.67			31.81	5.43	35.47	179	0	Peak
4824	37.01	28.88	54	-16.99	33.97	8.26	34.1	134	180	Average
4824	46.96	38.83	74	-27.04	33.97	8.26	34.1	134	180	Peak

Remarks:

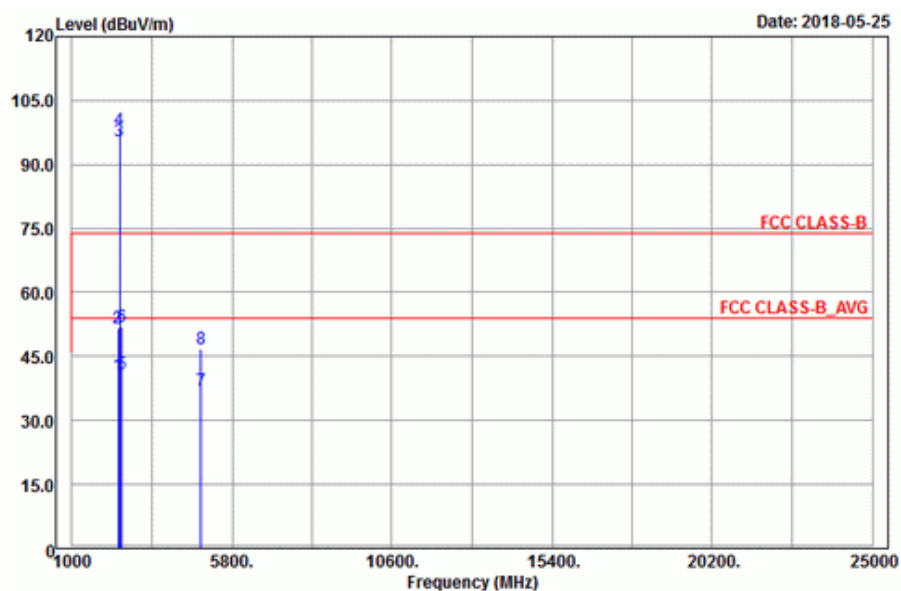
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2412 MHz: Fundamental Frequency.
- The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



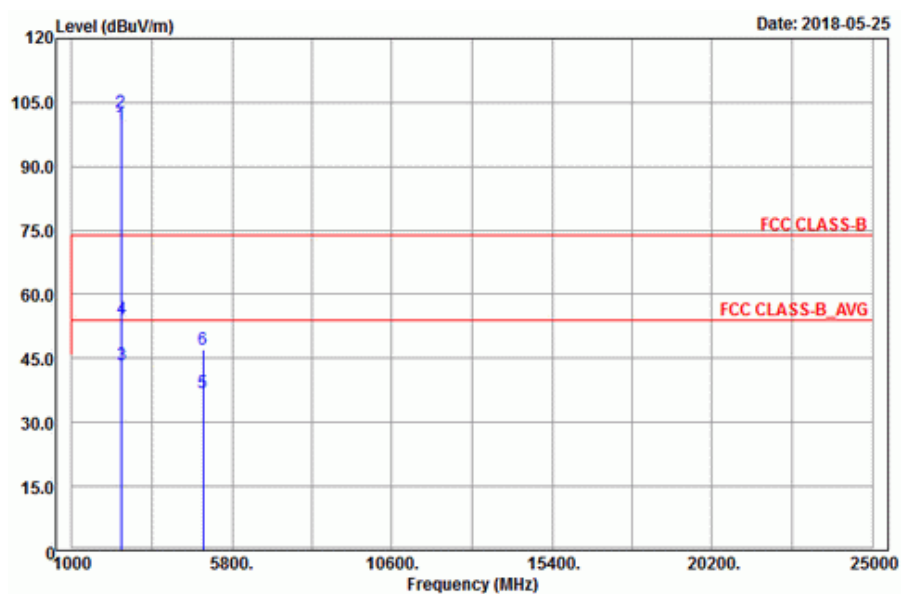
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2361.21	40.71	39.08	54	-13.29	31.76	5.37	35.5	294	358	Average
2361.21	52.1	50.47	74	-21.9	31.76	5.37	35.5	294	358	Peak
2437	99.23	97.38			31.85	5.46	35.46	294	358	Average
2437	102.09	100.24			31.85	5.46	35.46	294	358	Peak
2491.72	41.19	39.18	54	-12.81	31.9	5.53	35.42	294	358	Average
2491.72	52.98	50.97	74	-21.02	31.9	5.53	35.42	294	358	Peak
4874	37.24	29.05	54	-16.76	33.98	8.27	34.06	153	121	Average
4874	47.33	39.14	74	-26.67	33.98	8.27	34.06	153	121	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2379.57	40.5	38.84	54	-13.5	31.78	5.37	35.49	140	61	Average
2379.57	51.64	49.98	74	-22.36	31.78	5.37	35.49	140	61	Peak
2437	95.4	93.55			31.85	5.46	35.46	140	61	Average
2437	98.12	96.27			31.85	5.46	35.46	140	61	Peak
2496.24	40.76	38.74	54	-13.24	31.9	5.53	35.41	140	61	Average
2496.24	52.07	50.05	74	-21.93	31.9	5.53	35.41	140	61	Peak
4874	36.93	28.74	54	-17.07	33.98	8.27	34.06	192	246	Average
4874	46.86	38.67	74	-27.14	33.98	8.27	34.06	192	246	Peak

Remarks:

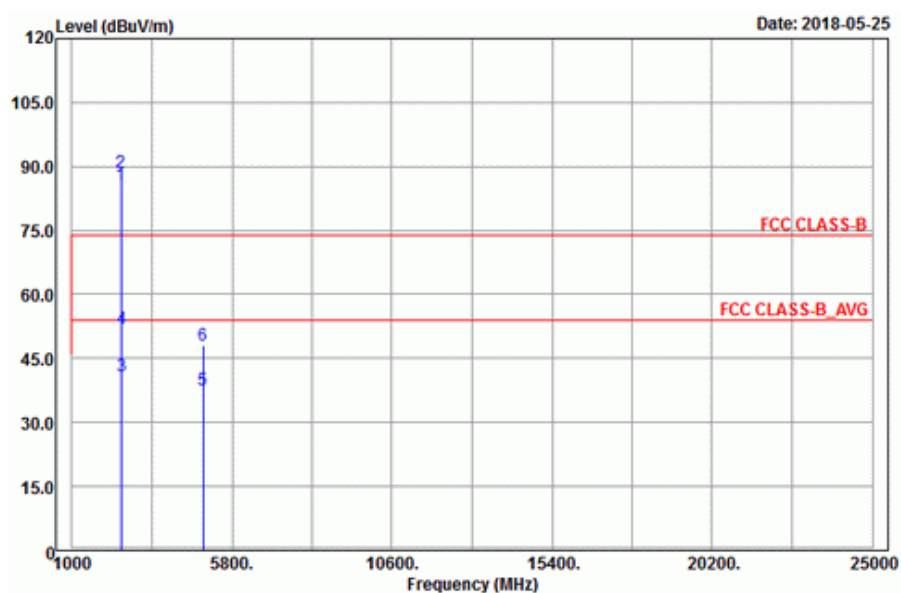
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 2437 MHz: Fundamental Frequency.
3. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	99.77	97.84			31.87	5.5	35.44	254	350	Average
2462	102.63	100.7			31.87	5.5	35.44	254	350	Peak
2484.08	43.34	41.38	54	-10.66	31.88	5.5	35.42	254	350	Average
2484.08	54.19	52.23	74	-19.81	31.88	5.5	35.42	254	350	Peak
4924	37.11	28.86	54	-16.89	33.99	8.28	34.02	108	73	Average
4924	46.98	38.73	74	-27.02	33.99	8.28	34.02	108	73	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	85.66	83.73			31.87	5.5	35.44	140	32	Average
2462	88.74	86.81			31.87	5.5	35.44	140	32	Peak
2488.24	40.91	38.9	54	-13.09	31.9	5.53	35.42	140	32	Average
2488.24	52.12	50.11	74	-21.88	31.9	5.53	35.42	140	32	Peak
4924	37.52	29.27	54	-16.48	33.99	8.28	34.02	163	342	Average
4924	47.92	39.67	74	-26.08	33.99	8.28	34.02	163	342	Peak

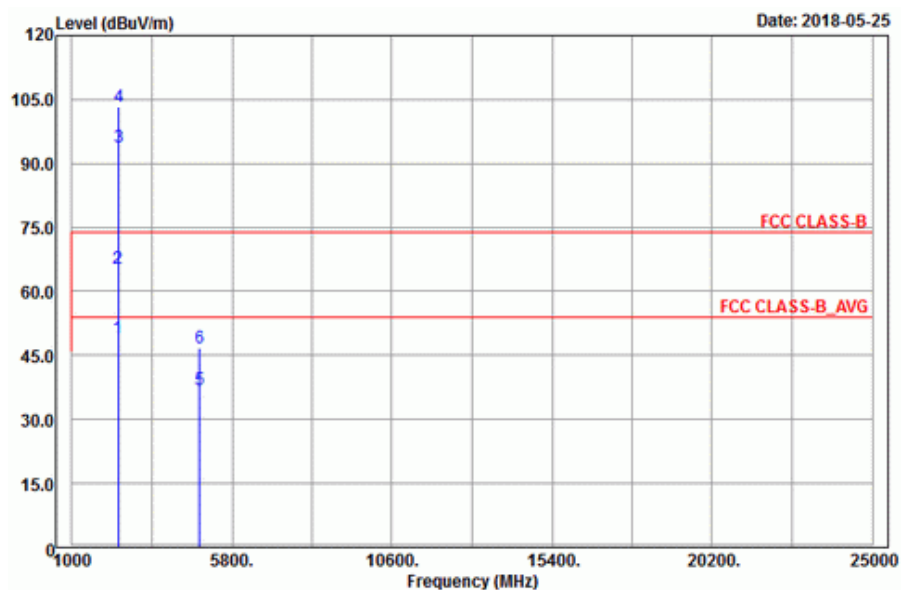
Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2462 MHz: Fundamental Frequency.
- The other emission levels were very low against the limit.

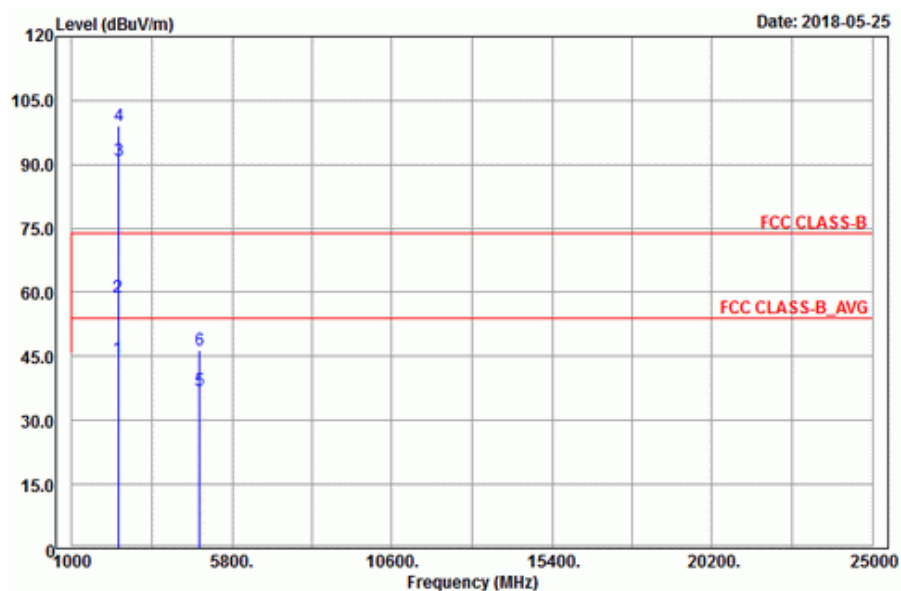
802.11g

EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



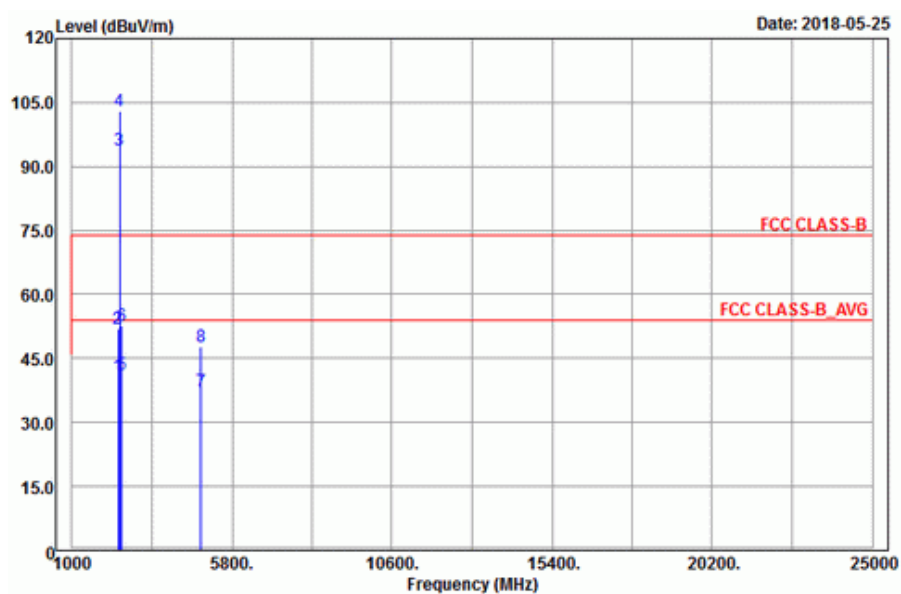
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.92	48.99	47.26	54	-5.01	31.8	5.4	35.47	266	358	Average
2389.92	65.51	63.78	74	-8.49	31.8	5.4	35.47	266	358	Peak
2412	93.92	92.15			31.81	5.43	35.47	266	358	Average
2412	103.26	101.49			31.81	5.43	35.47	266	358	Peak
4824	37.03	28.9	54	-16.97	33.97	8.26	34.1	132	305	Average
4824	46.91	38.78	74	-27.09	33.97	8.26	34.1	132	305	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.65	44.49	42.78	54	-9.51	31.8	5.4	35.49	179	0	Average
2389.65	58.73	57.02	74	-15.27	31.8	5.4	35.49	179	0	Peak
2412	90.86	89.09			31.81	5.43	35.47	179	0	Average
2412	99.17	97.4			31.81	5.43	35.47	179	0	Peak
4824	36.83	28.7	54	-17.17	33.97	8.26	34.1	146	172	Average
4824	46.29	38.16	74	-27.71	33.97	8.26	34.1	146	172	Peak

Remarks:

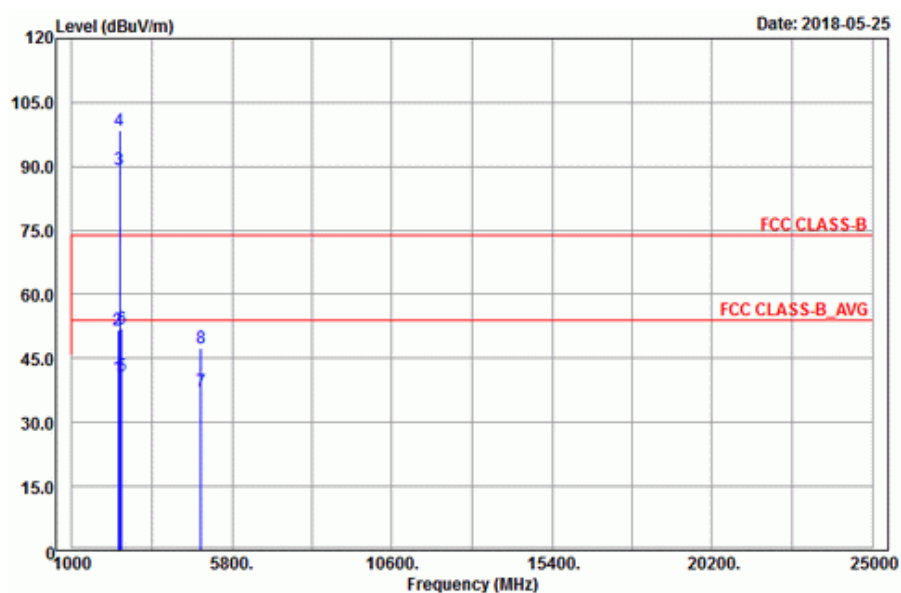
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2412 MHz: Fundamental Frequency.
- The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



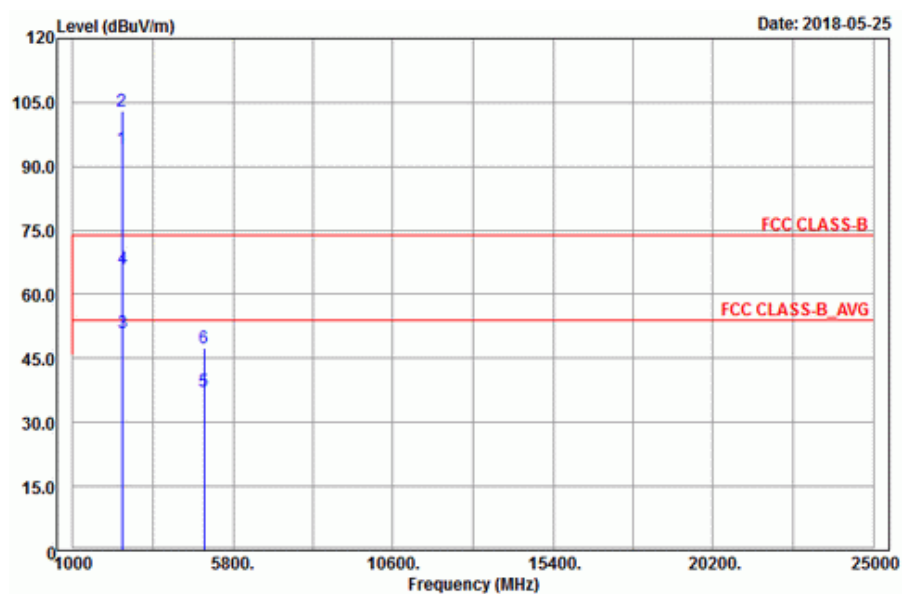
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.83	40.95	39.22	54	-13.05	31.8	5.4	35.47	294	358	Average
2389.83	51.84	50.11	74	-22.16	31.8	5.4	35.47	294	358	Peak
2437	93.74	91.89			31.85	5.46	35.46	294	358	Average
2437	102.84	100.99			31.85	5.46	35.46	294	358	Peak
2485.04	41.28	39.29	54	-12.72	31.88	5.53	35.42	294	358	Average
2485.04	52.5	50.51	74	-21.5	31.88	5.53	35.42	294	358	Peak
4874	37.39	29.2	54	-16.61	33.98	8.27	34.06	129	46	Average
4874	47.68	39.49	74	-26.32	33.98	8.27	34.06	129	46	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2386.68	40.55	38.84	54	-13.45	31.8	5.4	35.49	140	61	Average
2386.68	51.66	49.95	74	-22.34	31.8	5.4	35.49	140	61	Peak
2437	89.22	87.37			31.85	5.46	35.46	140	61	Average
2437	98.51	96.66			31.85	5.46	35.46	140	61	Peak
2487.4	40.92	38.93	54	-13.08	31.88	5.53	35.42	140	61	Average
2487.4	51.87	49.88	74	-22.13	31.88	5.53	35.42	140	61	Peak
4874	37.36	29.17	54	-16.64	33.98	8.27	34.06	135	224	Average
4874	47.53	39.34	74	-26.47	33.98	8.27	34.06	135	224	Peak

Remarks:

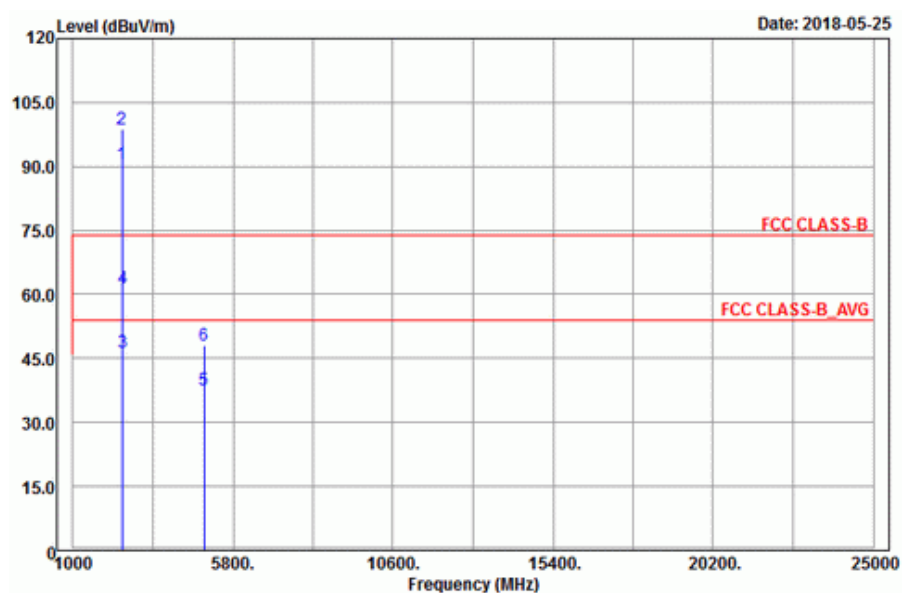
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 2437 MHz: Fundamental Frequency.
3. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	94.14	92.21			31.87	5.5	35.44	254	350	Average
2462	103	101.07			31.87	5.5	35.44	254	350	Peak
2483.52	51	49.04	54	-3	31.88	5.5	35.42	254	350	Average
2483.52	66.15	64.19	74	-7.85	31.88	5.5	35.42	254	350	Peak
4924	37.3	29.05	54	-16.7	33.99	8.28	34.02	185	93	Average
4924	47.51	39.26	74	-26.49	33.99	8.28	34.02	185	93	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	90.49	88.56			31.87	5.5	35.44	140	32	Average
2462	98.61	96.68			31.87	5.5	35.44	140	32	Peak
2483.56	46.34	44.38	54	-7.66	31.88	5.5	35.42	140	32	Average
2483.56	61.61	59.65	74	-12.39	31.88	5.5	35.42	140	32	Peak
4924	37.61	29.36	54	-16.39	33.99	8.28	34.02	175	315	Average
4924	47.99	39.74	74	-26.01	33.99	8.28	34.02	175	315	Peak

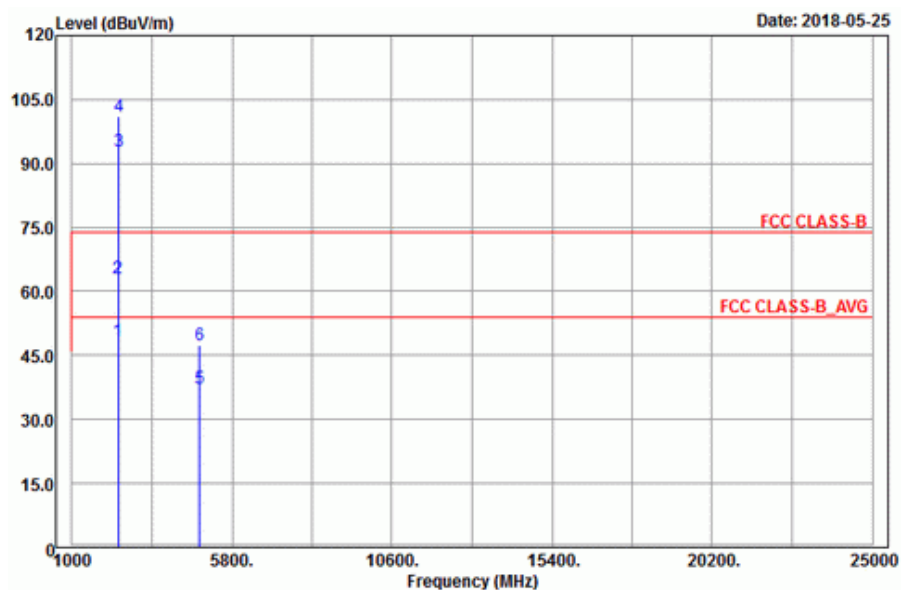
Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2462 MHz: Fundamental Frequency.
- The other emission levels were very low against the limit.

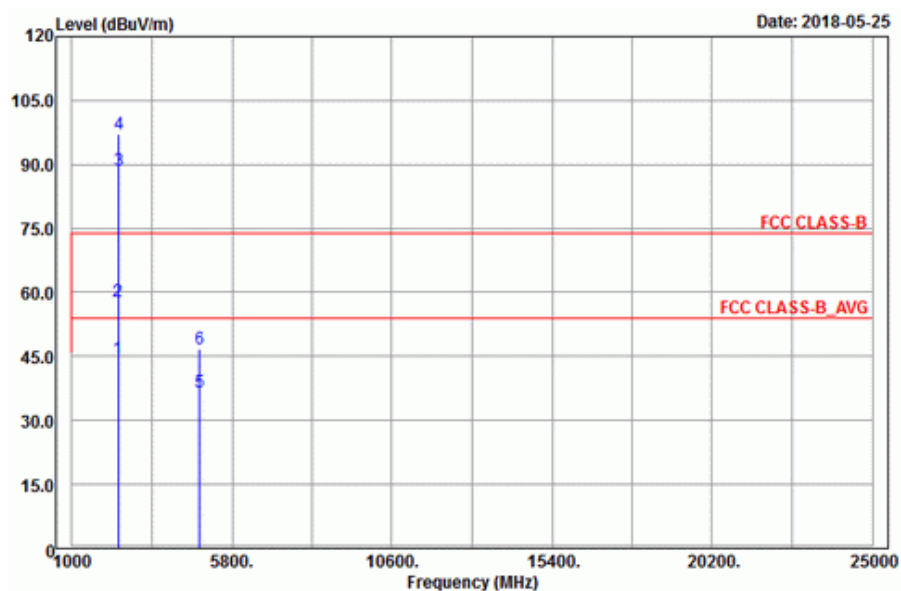
802.11n (HT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



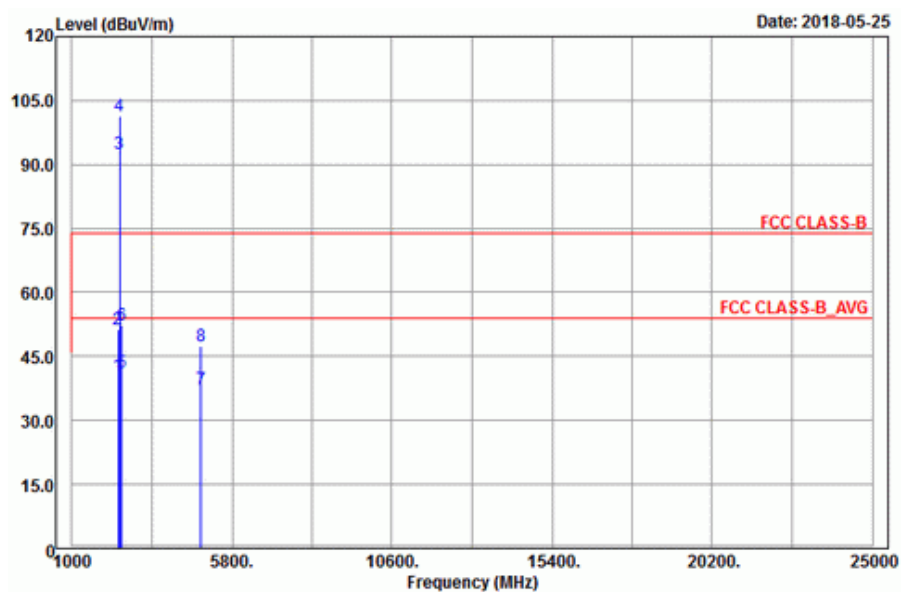
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.92	48.37	46.64	54	-5.63	31.8	5.4	35.47	266	355	Average
2389.92	63.26	61.53	74	-10.74	31.8	5.4	35.47	266	355	Peak
2412	92.95	91.18			31.81	5.43	35.47	266	355	Average
2412	101.04	99.27			31.81	5.43	35.47	266	355	Peak
4824	37.25	29.12	54	-16.75	33.97	8.26	34.1	133	216	Average
4824	47.5	39.37	74	-26.5	33.97	8.26	34.1	133	216	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.86	44.5	42.77	54	-9.5	31.8	5.4	35.47	179	0	Average
2389.86	57.77	56.04	74	-16.23	31.8	5.4	35.47	179	0	Peak
2412	88.71	86.94			31.81	5.43	35.47	179	0	Average
2412	97.16	95.39			31.81	5.43	35.47	179	0	Peak
4824	36.57	28.44	54	-17.43	33.97	8.26	34.1	113	284	Average
4824	46.63	38.5	74	-27.37	33.97	8.26	34.1	113	284	Peak

Remarks:

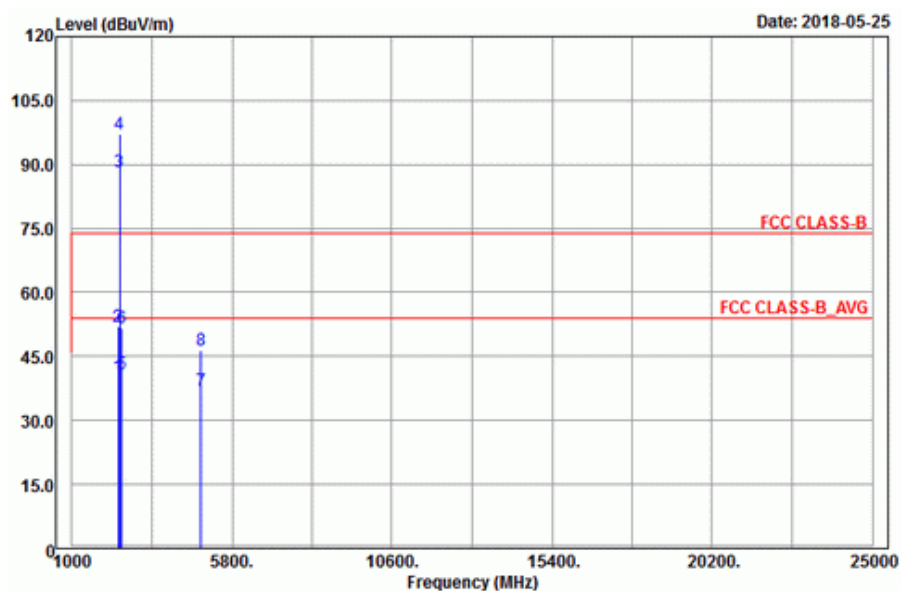
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2412 MHz: Fundamental Frequency.
- The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



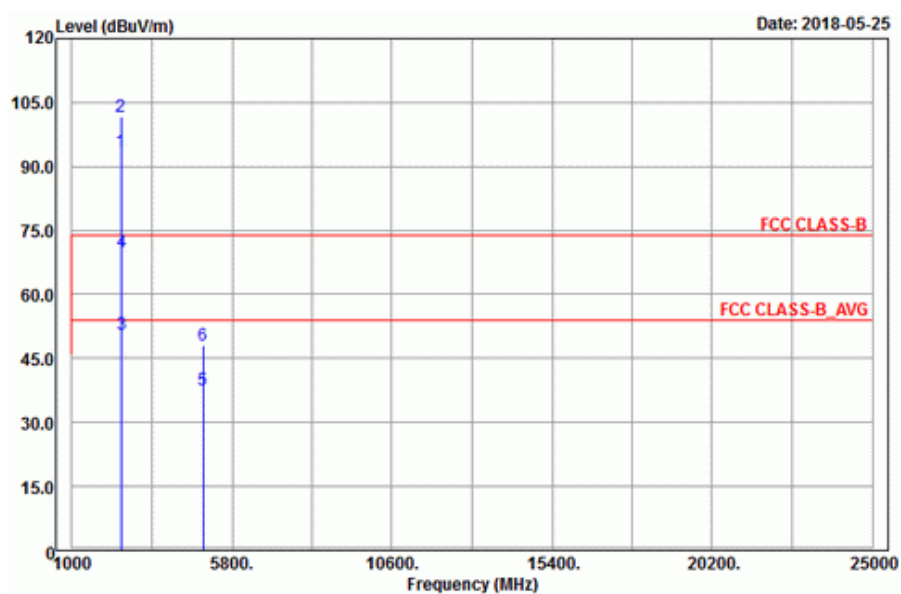
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2386.41	40.68	38.97	54	-13.32	31.8	5.4	35.49	294	358	Average
2386.41	51.46	49.75	74	-22.54	31.8	5.4	35.49	294	358	Peak
2437	92.67	90.82			31.85	5.46	35.46	294	358	Average
2437	101.22	99.37			31.85	5.46	35.46	294	358	Peak
2485.8	41.21	39.22	54	-12.79	31.88	5.53	35.42	294	358	Average
2485.8	52.16	50.17	74	-21.84	31.88	5.53	35.42	294	358	Peak
4874	37.42	29.23	54	-16.58	33.98	8.27	34.06	160	218	Average
4874	47.52	39.33	74	-26.48	33.98	8.27	34.06	160	218	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2385.42	40.22	38.53	54	-13.78	31.78	5.4	35.49	140	61	Average
2385.42	51.92	50.23	74	-22.08	31.78	5.4	35.49	140	61	Peak
2437	88.3	86.45			31.85	5.46	35.46	140	61	Average
2437	97.19	95.34			31.85	5.46	35.46	140	61	Peak
2490.12	40.89	38.88	54	-13.11	31.9	5.53	35.42	140	61	Average
2490.12	51.72	49.71	74	-22.28	31.9	5.53	35.42	140	61	Peak
4874	36.88	28.69	54	-17.12	33.98	8.27	34.06	125	199	Average
4874	46.48	38.29	74	-27.52	33.98	8.27	34.06	125	199	Peak

Remarks:

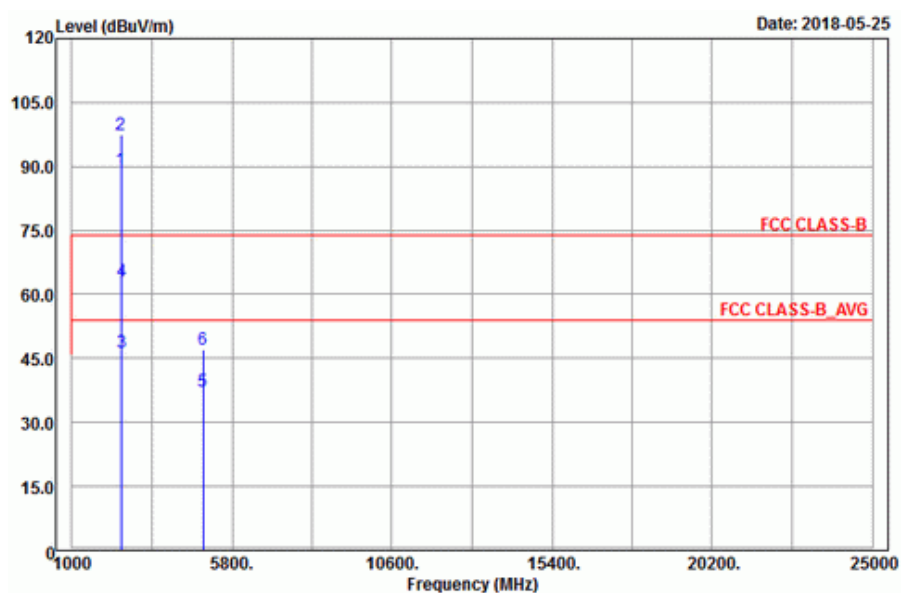
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 2437 MHz: Fundamental Frequency.
3. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	93.36	91.43			31.87	5.5	35.44	254	350	Average
2462	101.53	99.6			31.87	5.5	35.44	254	350	Peak
2483.52	50.75	48.79	54	-3.25	31.88	5.5	35.42	254	350	Average
2483.52	69.98	68.02	74	-4.02	31.88	5.5	35.42	254	350	Peak
4924	37.73	29.48	54	-16.27	33.99	8.28	34.02	108	186	Average
4924	47.91	39.66	74	-26.09	33.99	8.28	34.02	108	186	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	89.19	87.26			31.87	5.5	35.44	140	32	Average
2462	97.28	95.35			31.87	5.5	35.44	140	32	Peak
2483.64	46.39	44.43	54	-7.61	31.88	5.5	35.42	140	32	Average
2483.64	63.09	61.13	74	-10.91	31.88	5.5	35.42	140	32	Peak
4924	37.14	28.89	54	-16.86	33.99	8.28	34.02	162	229	Average
4924	47.21	38.96	74	-26.79	33.99	8.28	34.02	162	229	Peak

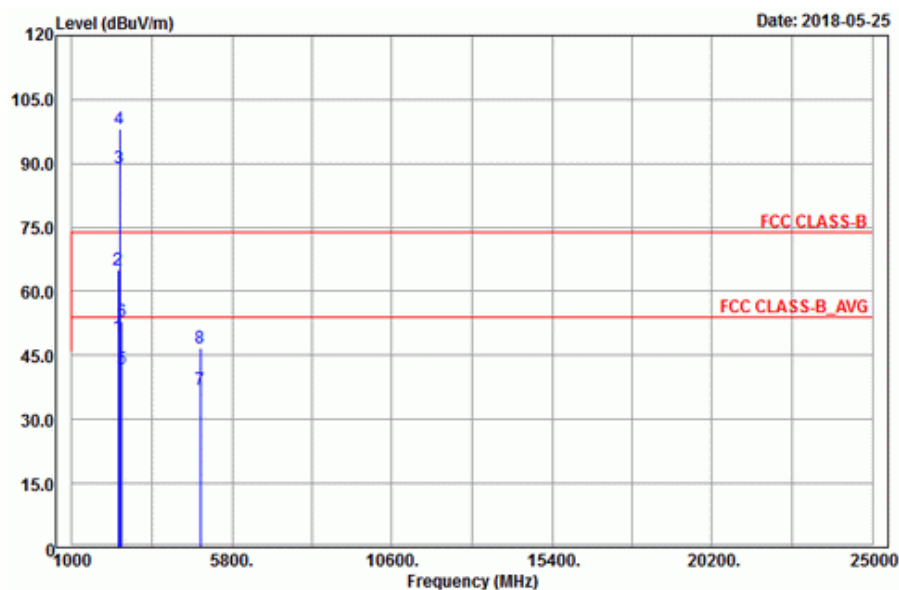
Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2462 MHz: Fundamental Frequency.
- The other emission levels were very low against the limit.

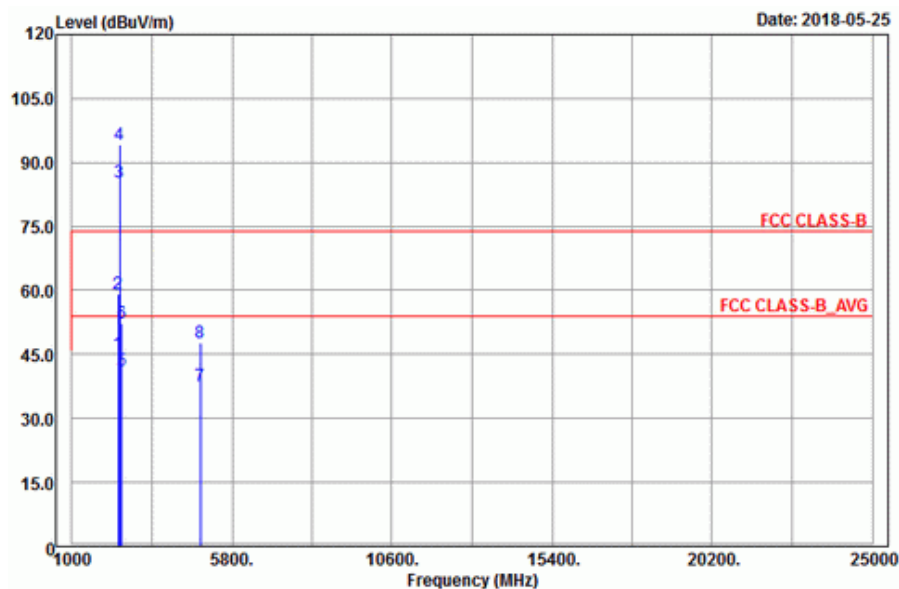
802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 3	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



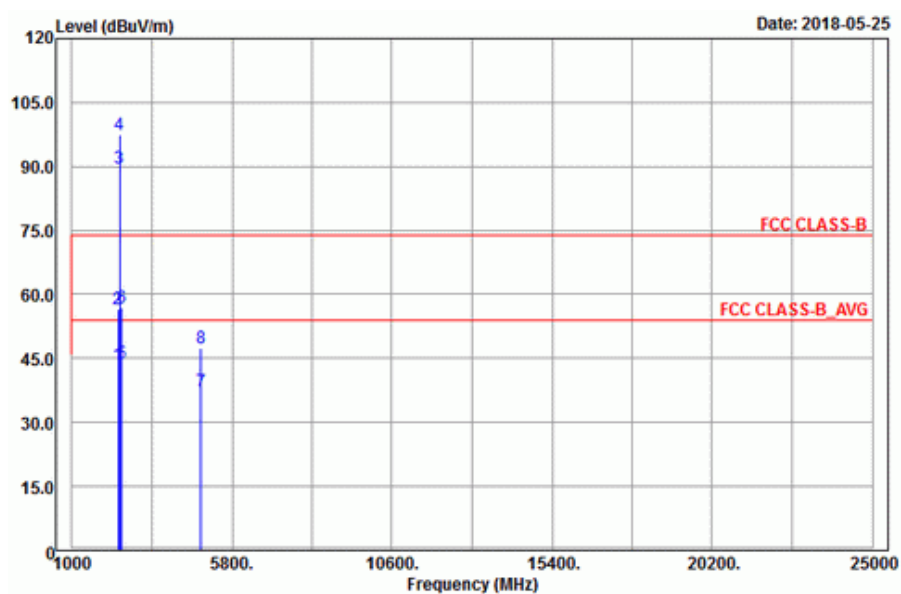
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.92	49.4	47.67	54	-4.6	31.8	5.4	35.47	266	355	Average
2389.92	65.16	63.43	74	-8.84	31.8	5.4	35.47	266	355	Peak
2422	89.03	87.23			31.83	5.43	35.46	266	355	Average
2422	98	96.2			31.83	5.43	35.46	266	355	Peak
2487.44	41.73	39.74	54	-12.27	31.88	5.53	35.42	266	355	Average
2487.44	53.01	51.02	74	-20.99	31.88	5.53	35.42	266	355	Peak
4844	37.05	28.9	54	-16.95	33.97	8.26	34.08	163	69	Average
4844	46.86	38.71	74	-27.14	33.97	8.26	34.08	163	69	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2388.66	45.27	43.56	54	-8.73	31.8	5.4	35.49	179	0	Average
2388.66	59.24	57.53	74	-14.76	31.8	5.4	35.49	179	0	Peak
2422	85.18	83.38			31.83	5.43	35.46	179	0	Average
2422	94.07	92.27			31.83	5.43	35.46	179	0	Peak
2493.52	41.24	39.22	54	-12.76	31.9	5.53	35.41	179	0	Average
2493.52	52.45	50.43	74	-21.55	31.9	5.53	35.41	179	0	Peak
4844	37.45	29.3	54	-16.55	33.97	8.26	34.08	108	223	Average
4844	47.64	39.49	74	-26.36	33.97	8.26	34.08	108	223	Peak

Remarks:

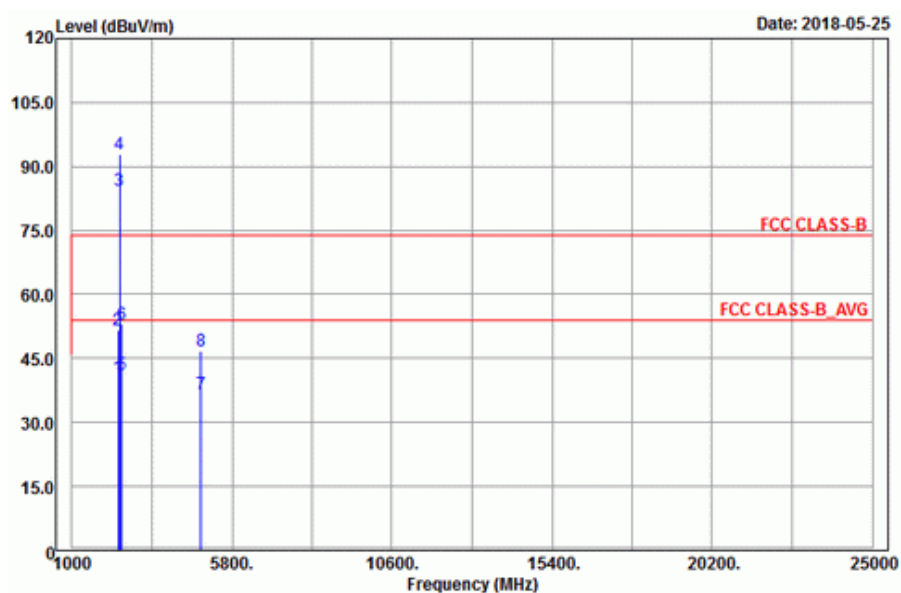
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 2422 MHz: Fundamental Frequency.
3. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



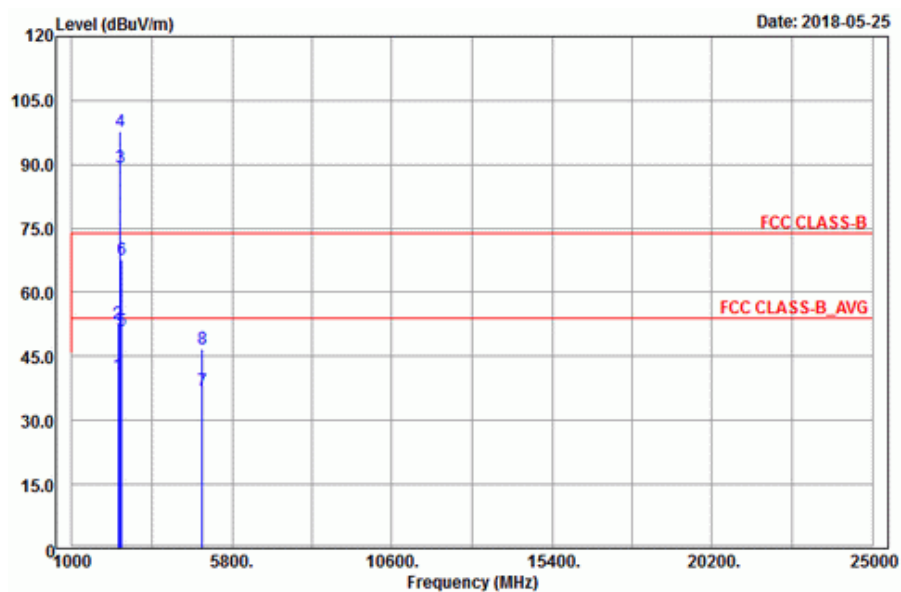
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.83	43.65	41.92	54	-10.35	31.8	5.4	35.47	290	358	Average
2389.83	56.53	54.8	74	-17.47	31.8	5.4	35.47	290	358	Peak
2437	89.45	87.6			31.85	5.46	35.46	290	358	Average
2437	97.55	95.7			31.85	5.46	35.46	290	358	Peak
2483.68	43.95	41.99	54	-10.05	31.88	5.5	35.42	290	358	Average
2483.68	57.04	55.08	74	-16.96	31.88	5.5	35.42	290	358	Peak
4874	37.24	29.05	54	-16.76	33.98	8.27	34.06	109	352	Average
4874	47.34	39.15	74	-26.66	33.98	8.27	34.06	109	352	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2388.66	40.69	38.98	54	-13.31	31.8	5.4	35.49	140	61	Average
2388.66	51.74	50.03	74	-22.26	31.8	5.4	35.49	140	61	Peak
2437	84.39	82.54			31.85	5.46	35.46	140	61	Average
2437	92.91	91.06			31.85	5.46	35.46	140	61	Peak
2488.44	41.29	39.28	54	-12.71	31.9	5.53	35.42	140	61	Average
2488.44	52.86	50.85	74	-21.14	31.9	5.53	35.42	140	61	Peak
4874	36.65	28.46	54	-17.35	33.98	8.27	34.06	133	245	Average
4874	46.71	38.52	74	-27.29	33.98	8.27	34.06	133	245	Peak

Remarks:

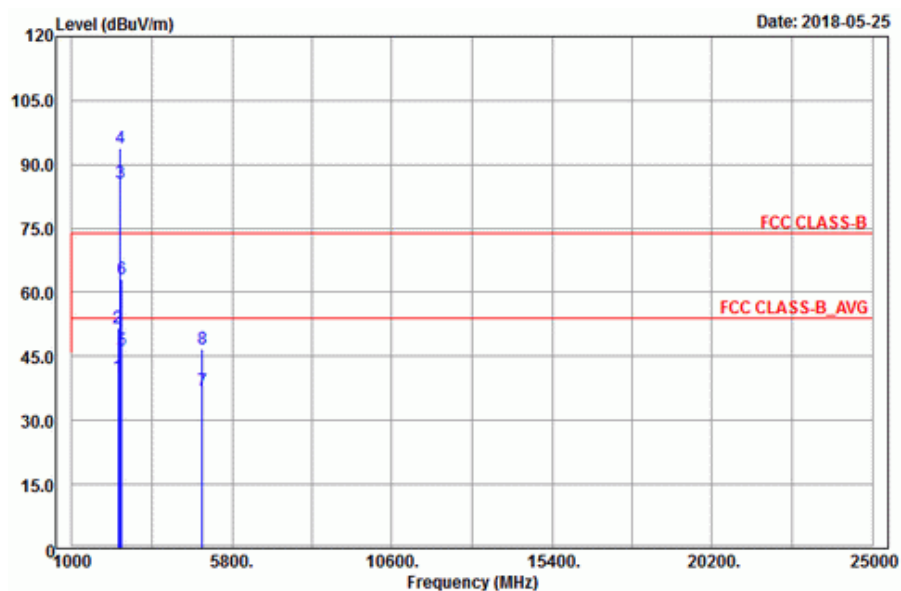
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 2437 MHz: Fundamental Frequency.
3. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 9	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.65	40.67	38.96	54	-13.33	31.8	5.4	35.49	254	350	Average
2389.65	52.61	50.9	74	-21.39	31.8	5.4	35.49	254	350	Peak
2452	89.27	87.4			31.85	5.46	35.44	254	350	Average
2452	97.85	95.98			31.85	5.46	35.44	254	350	Peak
2483.76	50.98	49.02	54	-3.02	31.88	5.5	35.42	254	350	Average
2483.76	67.85	65.89	74	-6.15	31.88	5.5	35.42	254	350	Peak
4904	36.92	28.7	54	-17.08	33.98	8.28	34.04	152	206	Average
4904	46.86	38.64	74	-27.14	33.98	8.28	34.04	152	206	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2377.77	40.24	38.58	54	-13.76	31.78	5.37	35.49	140	32	Average
2377.77	51.62	49.96	74	-22.38	31.78	5.37	35.49	140	32	Peak
2452	85.65	83.78			31.85	5.46	35.44	140	32	Average
2452	93.92	92.05			31.85	5.46	35.44	140	32	Peak
2483.84	46.44	44.48	54	-7.56	31.88	5.5	35.42	140	32	Average
2483.84	62.98	61.02	74	-11.02	31.88	5.5	35.42	140	32	Peak
4904	37.03	28.81	54	-16.97	33.98	8.28	34.04	112	173	Average
4904	46.75	38.53	74	-27.25	33.98	8.28	34.04	112	173	Peak

Remarks:

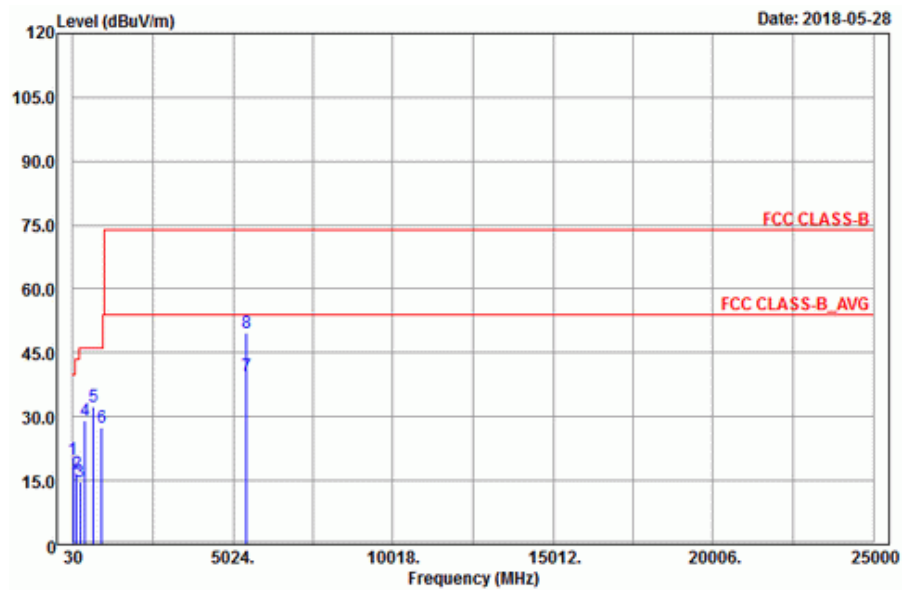
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 2452 MHz: Fundamental Frequency.
3. The other emission levels were very low against the limit.

4.6.2 接收諧波

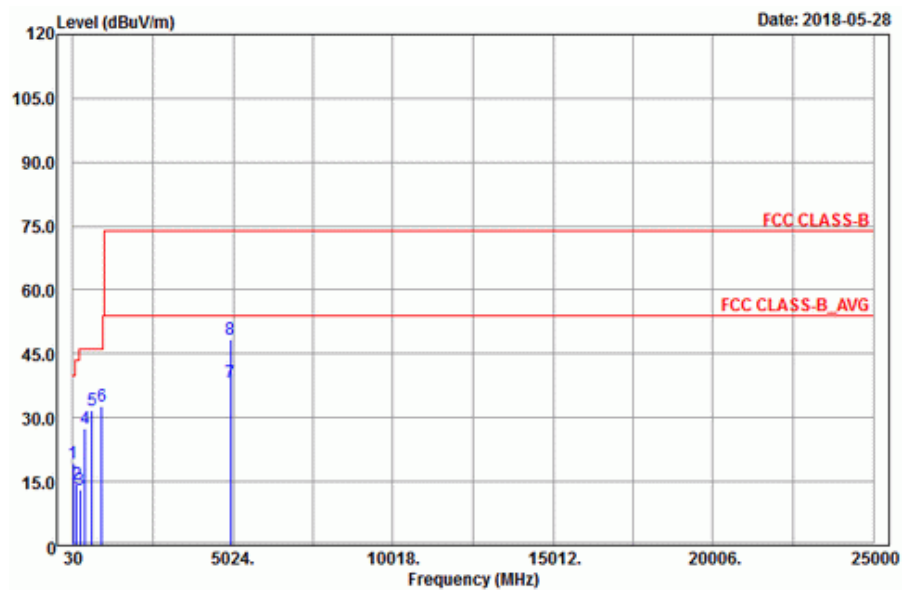
802.11g

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	30 MHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV) Quasi-Peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
51.33	19.85	36.72	40	-20.15	14.46	0.9	32.23	109	125	Peak
154.2	16.7	38.92	43.5	-26.8	8.53	1.52	32.27	187	150	Peak
257.34	14.61	32.33	46	-31.39	12.44	1.94	32.1	164	350	Peak
411.3	29.07	43.74	46	-16.93	15.13	2.41	32.21	185	0	Peak
666.1	32.3	42.73	46	-13.7	18.71	2.99	32.13	129	253	Peak
937	27.58	33.52	46	-18.42	21.65	3.62	31.21	172	116	Peak
5446	39.56	30.3	54	-14.44	34.36	8.94	34.04	135	108	Average
5446	49.56	40.3	74	-24.44	34.36	8.94	34.04	135	108	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
47.28	19.44	36.25	40	-20.56	14.51	0.9	32.22	142	112	Peak
154.2	14.3	36.52	43.5	-29.2	8.53	1.52	32.27	149	241	Peak
268.14	12.98	30.53	46	-33.02	12.62	1.94	32.11	190	222	Peak
411.3	27.38	42.05	46	-18.62	15.13	2.41	32.21	123	46	Peak
617.1	31.59	42.74	46	-14.41	18.1	2.93	32.18	131	166	Peak
937.7	32.58	38.5	46	-13.42	21.66	3.62	31.2	134	126	Peak
4954	38.39	30.12	54	-15.61	33.99	8.29	34.01	174	190	Average
4954	48.39	40.12	74	-25.61	33.99	8.29	34.01	174	190	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

4.6.3 其它不必要之訊號

9 kHz ~ 30 MHz Data:

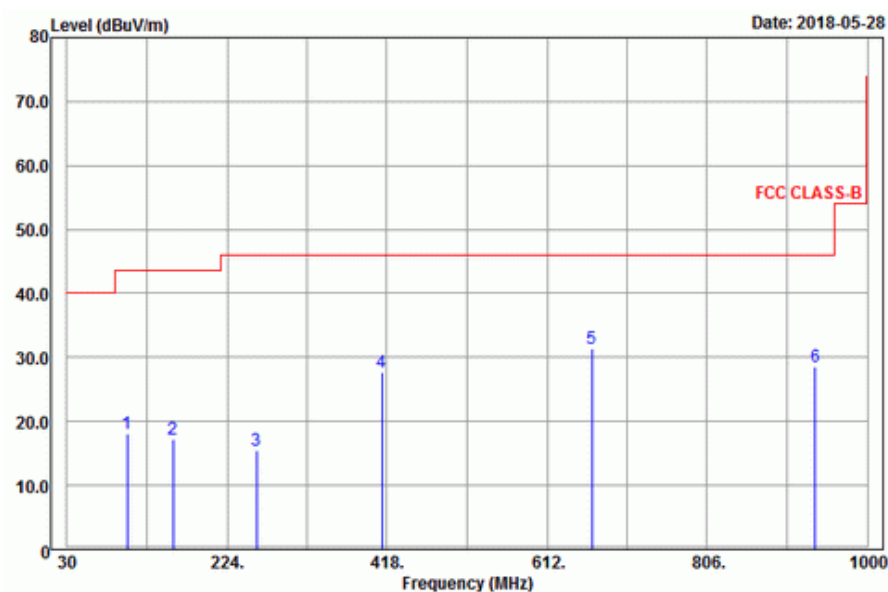
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Data:

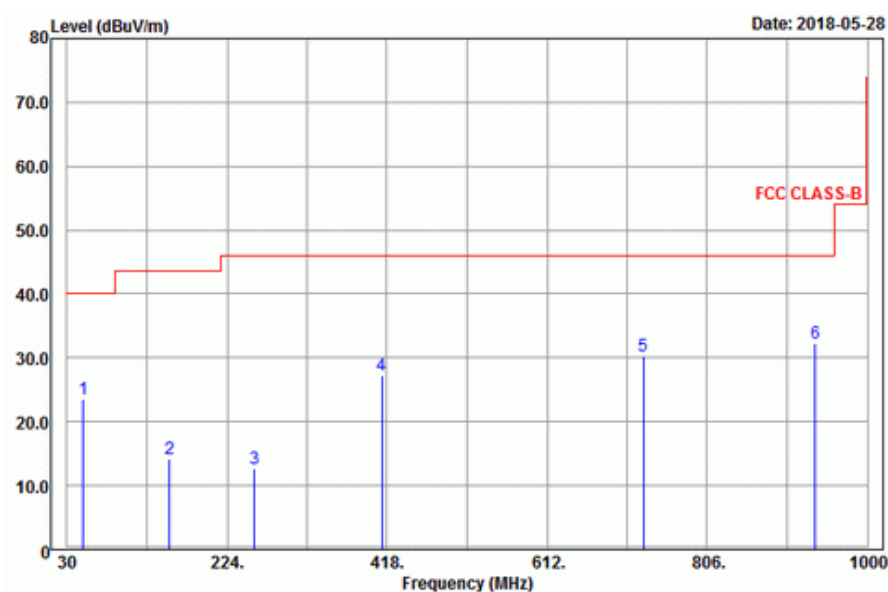
802.11g

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	30 MHz ~ 1 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Quasi-Peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
102.9	18.01	36.63	43.5	-25.49	12.36	1.28	32.26	122	185	Peak
158.25	17.11	39.19	43.5	-26.39	8.67	1.52	32.27	166	19	Peak
259.77	15.56	33.23	46	-30.44	12.49	1.94	32.1	175	204	Peak
411.3	27.58	42.25	46	-18.42	15.13	2.41	32.21	179	165	Peak
666.1	31.48	41.91	46	-14.52	18.71	2.99	32.13	131	240	Peak
937	28.45	34.39	46	-17.55	21.65	3.62	31.21	156	134	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
49.71	23.48	40.25	40	-16.52	14.55	0.9	32.22	163	320	Peak
154.2	14.11	36.33	43.5	-29.39	8.53	1.52	32.27	148	127	Peak
257.07	12.57	30.29	46	-33.43	12.44	1.94	32.1	125	169	Peak
411.3	27.24	41.91	46	-18.76	15.13	2.41	32.21	168	122	Peak
729.1	30.33	39.68	46	-15.67	19.61	3.16	32.12	131	204	Peak
937	32.32	38.26	46	-13.68	21.65	3.62	31.21	198	167	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- The other emission levels were very low against the limit.

4.7 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

5 6 dB 頻寬之要求

5.1 適用標準

請見本報告 3.1 節第(12)項的規定。

5.2 量測方法

- 將待測物輸出經由衰減器接到頻譜分析儀上。
- 設定待測物處於連續發射狀態。
- 計算最大輸出功率峰值減 6 dB 的最大頻率範圍。

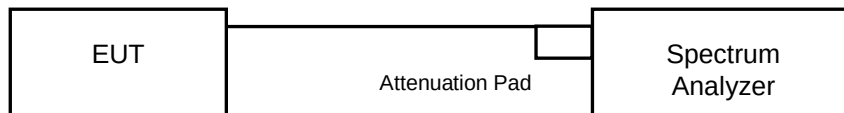
5.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Spectrum Analyzer R&S	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019

Note:

- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
- The measurement uncertainty is 207 Hz, which is calculated as per the document ETSI TR 100 028. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of $k=2$.

5.4 測試配置



5.5 量測結果

操作模式	發射	測試日期	107 年 06 月 01 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	邱智勇		

802.11b

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	8.07	0.5	Pass
6	2437	8.07	0.5	Pass
11	2462	8.03	0.5	Pass

802.11g

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	16.42	0.5	Pass
6	2437	16.44	0.5	Pass
11	2462	16.44	0.5	Pass

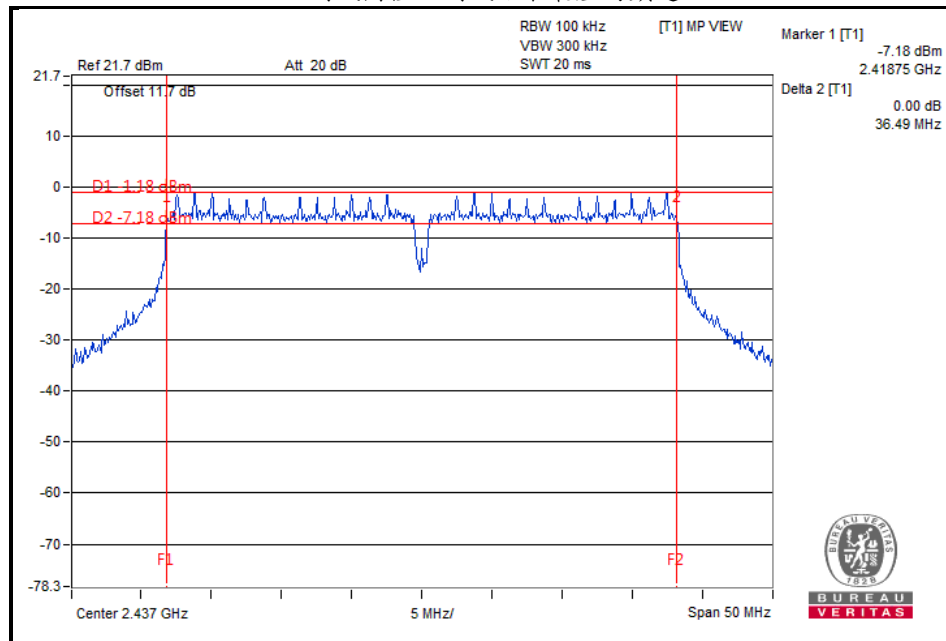
802.11n (HT20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	17.66	0.5	Pass
6	2437	17.66	0.5	Pass
11	2462	17.63	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
3	2422	36.45	0.5	Pass
6	2437	36.49	0.5	Pass
9	2452	36.45	0.5	Pass

**此測試圖僅放測試結果最差的頻道。



5.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

6 峰值傳導輸出功率之量測

6.1 適用標準

請見本報告 3.1 節第(11)及(13)項的規定。

6.2 量測方法

- 將待測物輸出經由衰減器接到功率計上。
- 設定待測物處於連續發射狀態。
- 計算其輸出功率峰值。

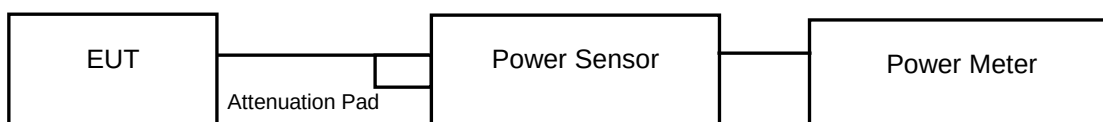
6.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Power Meter Anritsu	ML2495A	1232002	Dec. 07, 1017	Dec. 06, 2018
Power Sensor Anritsu	MA2411B	1207325	Dec. 07, 1017	Dec. 06, 2018

Note:

- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
- The measurement uncertainty is 1.393 dB, which is calculated as per the document ETSI TR 100 028. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.
- Measurement Bandwidth of ML2495A is 65 MHz greater than 6 dB bandwidth of emission.

6.4 測試配置



6.5 量測結果

操作模式	發射	測試日期	107 年 06 月 01 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	邱智勇		

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	78.343	18.94	30	Pass
6	2437	81.283	19.10	30	Pass
11	2462	80.724	19.07	30	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	167.494	22.24	30	Pass
6	2437	174.582	22.42	30	Pass
11	2462	171.791	22.35	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	167.88	22.25	30	Pass
6	2437	164.059	22.15	30	Pass
11	2462	165.196	22.18	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
3	2422	170.608	22.32	30	Pass
6	2437	167.494	22.24	30	Pass
9	2452	164.816	22.17	30	Pass

6.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

7 功率頻譜密度之量測

7.1 適用標準

請見本報告 3.1 節第(14)項的規定。

7.2 量測方法

- 將待測物之天線埠經由適當之衰減直接連至測試儀器。
- 設定解析頻寬為 3 kHz，視訊頻寬為 10 kHz，掃描時間為 auto
- 掃描頻寬設於足夠觀察發射機所產生的主頻信號，並找到最大的峰值準位。

7.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Spectrum Analyzer R&S	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019

Note:

- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
- The measurement uncertainty is 207 Hz, which is calculated as per the document ETSI TR 100 028. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.

7.4 測試配置



7.5 量測結果

操作模式	發射	測試日期	107 年 06 月 01 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	邱智勇		

802.11b

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
1	2412	-5.62	8	Pass
6	2437	-5.57	8	Pass
11	2462	-5.08	8	Pass

802.11g

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/3 kHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
1	2412	-9.76	0.38	-9.29	8	Pass
6	2437	-10.65	0.38	-10.27	8	Pass
11	2462	-9.78	0.38	-9.40	8	Pass

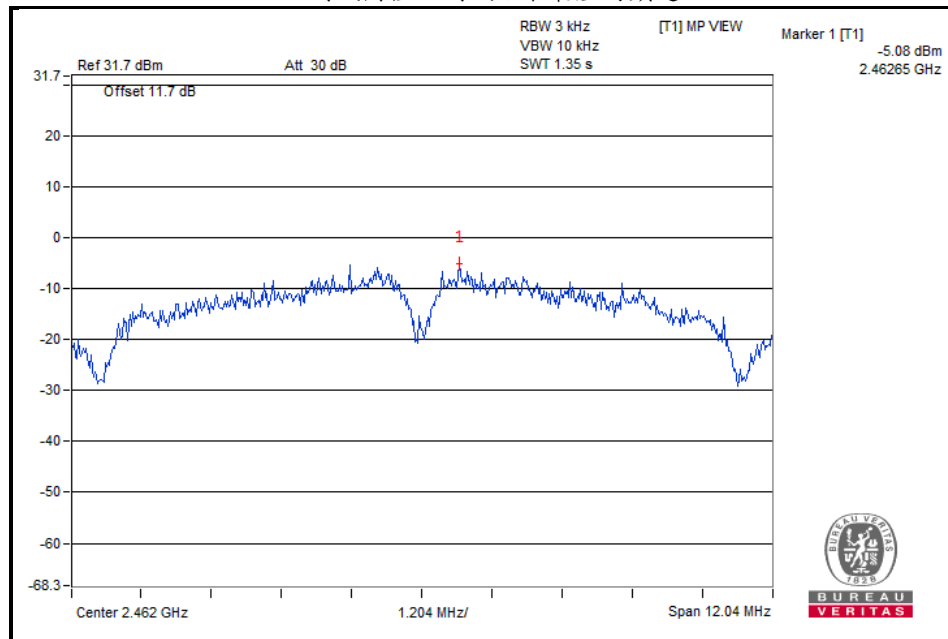
802.11n (HT20)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/3 kHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
1	2412	-11.81	0.38	-11.43	8	Pass
6	2437	-10.79	0.38	-10.41	8	Pass
11	2462	-11.89	0.38	-11.51	8	Pass

802.11n (HT40)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/3 kHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
3	2422	-15.41	0.71	-14.70	8	Pass
6	2437	-14.77	0.71	-14.06	8	Pass
9	2452	-15.36	0.71	-14.65	8	Pass

**此測試圖僅放測試結果最差的頻道。



7.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

U-NII 頻段測試紀錄結果

8 帶外發射之量測

8.1 適用標準

待測物操作頻帶	適用標準
☒ 5.15 GHz~5.25 GHz	請見本報告 3.1 節第(9)項(2)的規定
☒ 5.25 GHz~5.35 GHz	請見本報告 3.1 節第(9)項(2)的規定
☒ 5.470 GHz~5.725 GHz	請見本報告 3.1 節第(9)項(2)的規定
☒ 5.725 GHz~5.850 GHz	請見本報告 3.1 節第(9)項(3)的規定

8.2 量測方法

在電波暗室，將待測物置於 0.8 米高的非金屬桌面，使其操作在工作狀態。接收天線置於 3 米距離。桌面要 360 度旋轉，另外接收天線從離地 1 米至 4 米升降變化，以找出最大的輻射電場強度，接收天線分別置於水平、垂直極化各執行測試一次。

Note: 對於 1 GHz 以上場強輻射的測試，待測物則置於 1.5 米高的非金屬桌面

發射諧波：

Peak 為 RBW = 1 MHz, VBW = 3 MHz ;

Average

802.11a 為 RBW = 1 MHz, VBW = 1 kHz

802.11n (HT20) 為 RBW = 1 MHz, VBW = 1 kHz

802.11n (HT40) 為 RBW = 1 MHz, VBW = 3 kHz

接收諧波：

Peak 為 RBW = 1 MHz, VBW = 3 MHz ; Average 為 RBW = 1 MHz, VBW = 10 Hz

Quasi-Peak 為 RBW = 120 kHz, VBW = 120 kHz

其它不必要之訊號

Peak 為 RBW = 120 kHz, VBW = 360 kHz ; Quasi-Peak 為 RBW = 120 kHz, VBW = 120 kHz

8.3 量測儀器

同 4.3 節

8.4 測試配置

同 4.4 節

8.5 場強度之計算

場強之計算公式如下：

結果值 Emission level (dBuV/m) = 機器讀值 Raw Value (dBuV) + 校正因子 Correction Factor (dB/m)

餘裕度 Margin(dB) = 結果值 Emission level (dBuV/m) - 限制值 Limit value (dBuV/m)

*有效等向輻射功率限制值轉換場強值如下：

Applicable To			Limit	
789033 D02 General UNII Test Procedure New Rules v02r01			Field Strength at 3 m	
			PK: 74 (dBμV/m)	AV: 54 (dBμV/m)
操作頻帶	Applicable To		EIRP Limit	Equivalent Field Strength at 3 m
5150~5250 MHz	技術規範 4.7.4.1 節		PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m)
5250~5350 MHz	技術規範 4.7.4.1 節			
5470~5725 MHz	技術規範 4.7.4.1 節			
5725~5850 MHz	☒	技術規範 4.7.4.2 節	PK: -27 (dBm/MHz) ^{*1} PK: 10 (dBm/MHz) ^{*2} PK: 15.6 (dBm/MHz) ^{*3} PK: 27 (dBm/MHz) ^{*4}	PK: 68.2 (dBμV/m) ^{*1} PK: 105.2 (dBμV/m) ^{*2} PK: 110.8 (dBμV/m) ^{*3} PK: 122.2 (dBμV/m) ^{*4}
	☐	技術規範 4.7.4.7 節	適用 3.10.1.5 節帶外發射限制	
^{*1} beyond 75 MHz or more above of the band edge.				
^{*2} below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.				
^{*3} below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.				
^{*4} from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.				

備註：有效等向輻射功率限制值轉換場強之公式如下：

$$E = (30PG)^{1/2} / d$$

E: 以最寬解析頻寬所測得之最大場強值，單位: V/m。

G: 發射天線相對於全向性輻射器之數值增益。

d: 測試場強的距離，單位: m。

P: 求得之功率，單位: W。

量測結果請見下頁。

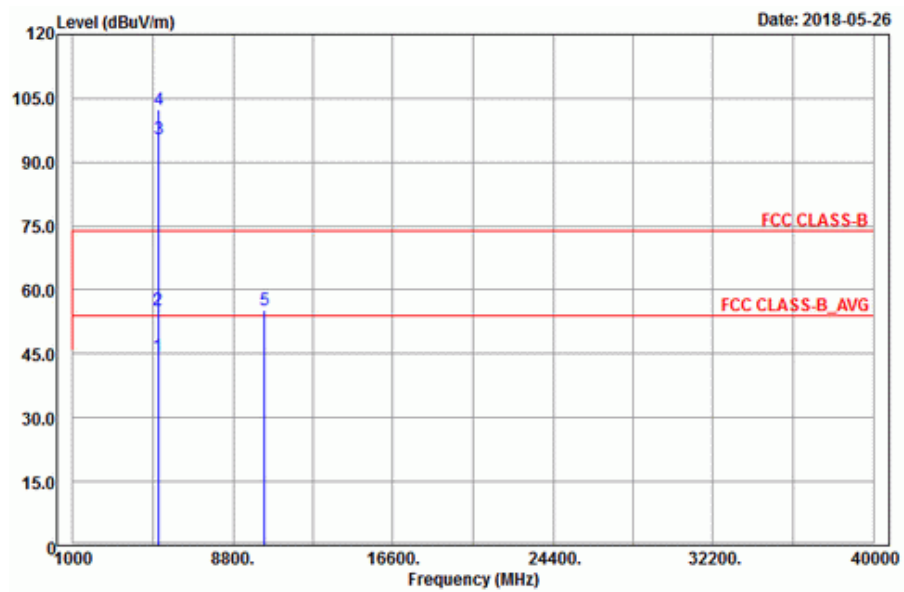
8.6 量測結果

8.6.1 發射諧波

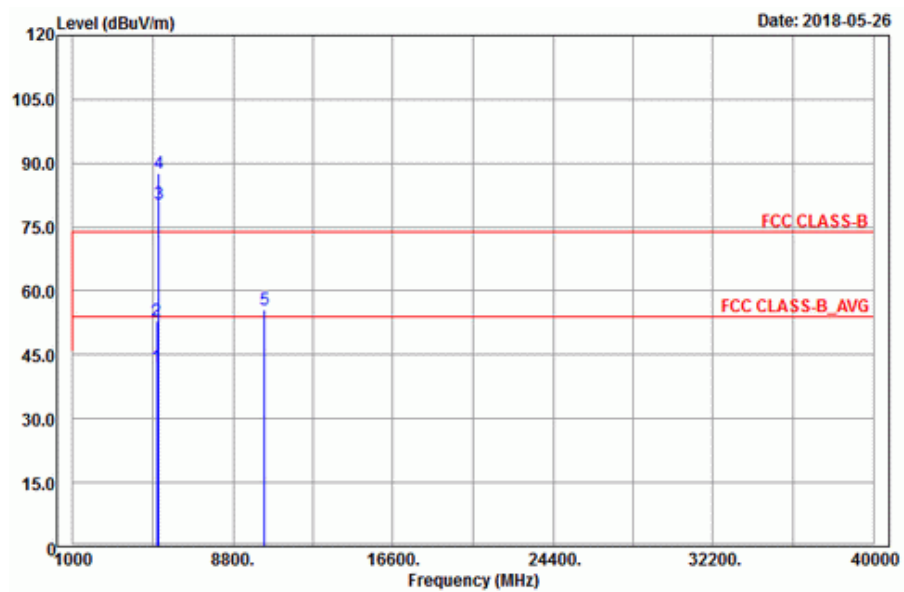
802.11a

EUT Test Condition		Measurement Detail	
Channel	Channel 36	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



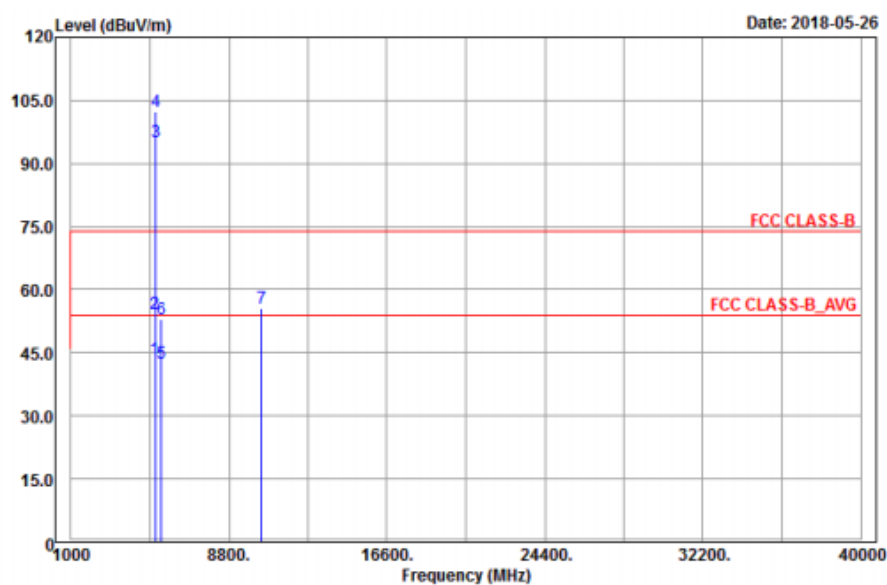
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5147.45	44.59	36.34	54	-9.41	34.12	8.13	34	232	42	Average
5147.45	55.21	46.96	74	-18.79	34.12	8.13	34	232	42	Peak
5180	95.47	87.16			34.15	8.16	34	232	42	Average
5180	102.3	93.99			34.15	8.16	34	232	42	Peak
*10360	55.13	40.83	68.2	-13.07	37.12	12.3	35.12	131	1	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5102.75	42.24	34.08	54	-11.76	34.08	8.07	33.99	109	44	Average
5102.75	52.96	44.8	74	-21.04	34.08	8.07	33.99	109	44	Peak
5180	80.54	72.23			34.15	8.16	34	109	44	Average
5180	87.47	79.16			34.15	8.16	34	109	44	Peak
*10360	55.71	41.41	68.2	-12.49	37.12	12.3	35.12	170	155	Peak

Remarks:

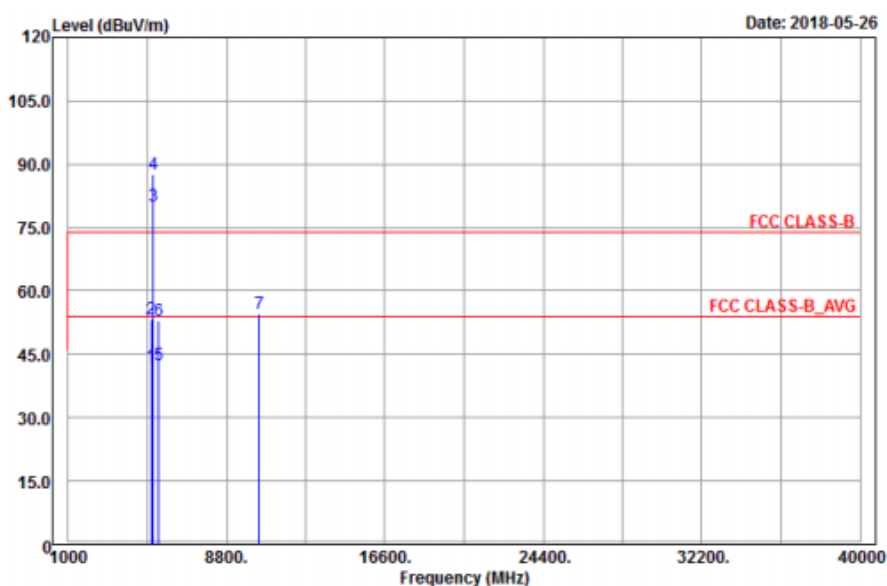
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5180 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 40	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



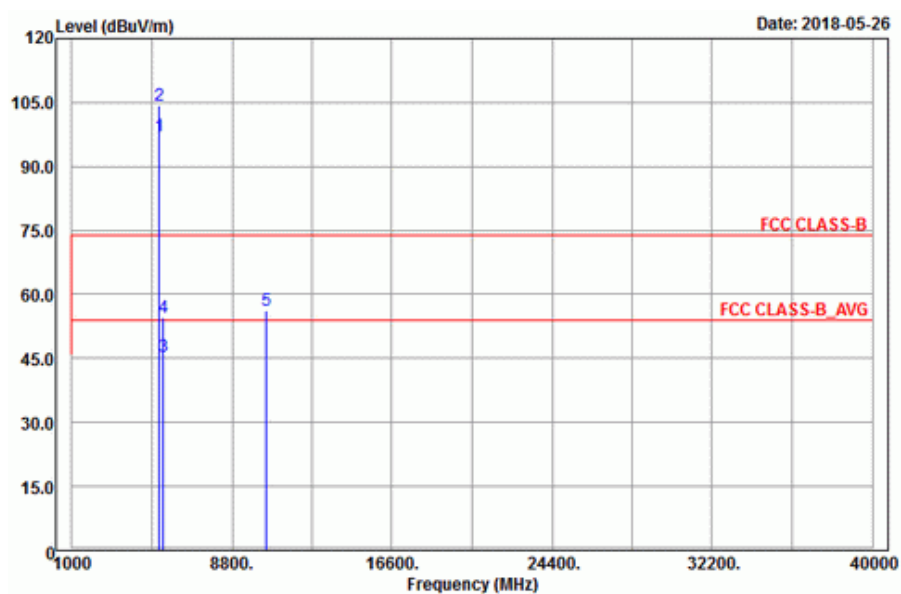
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5146.85	43.61	35.36	54	-10.39	34.12	8.13	34	232	42	Average
5146.85	54.43	46.18	74	-19.57	34.12	8.13	34	232	42	Peak
5200	95.11	86.76			34.16	8.19	34	232	42	Average
5200	102.35	94			34.16	8.19	34	232	42	Peak
5451.2	42.41	33.59	54	-11.59	34.36	8.51	34.05	232	42	Average
5451.2	52.92	44.1	74	-21.08	34.36	8.51	34.05	232	42	Peak
*10400	55.58	41.24	68.2	-12.62	37.14	12.36	35.16	116	255	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5075.9	42.24	34.12	54	-11.76	34.07	8.03	33.98	109	44	Average
5075.9	53.42	45.3	74	-20.58	34.07	8.03	33.98	109	44	Peak
5200	80.02	71.67			34.16	8.19	34	109	44	Average
5200	87.59	79.24			34.16	8.19	34	109	44	Peak
5442.73	42.36	33.57	54	-11.64	34.35	8.48	34.04	109	44	Average
5442.73	52.97	44.18	74	-21.03	34.35	8.48	34.04	109	44	Peak
*10400	54.72	40.38	68.2	-13.48	37.14	12.36	35.16	116	135	Peak

Remarks:

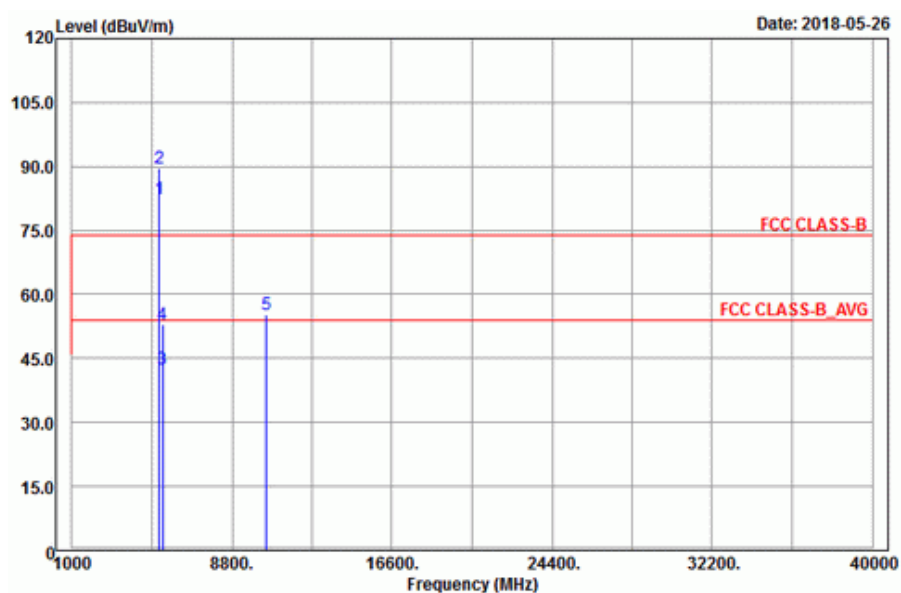
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5200 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 48	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



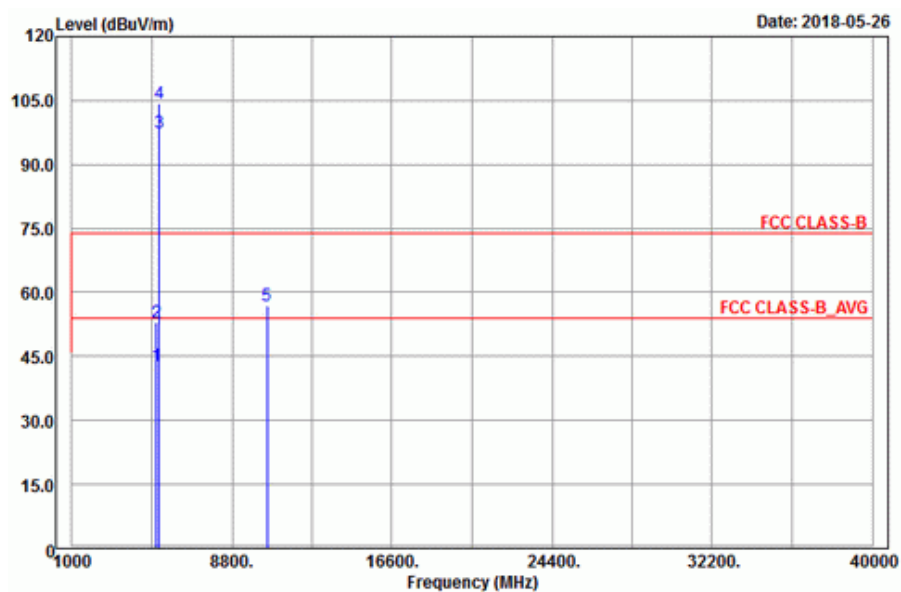
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5240	97.23	88.79			34.19	8.26	34.01	232	42	Average
5240	104.38	95.94			34.19	8.26	34.01	232	42	Peak
5458.13	45.31	36.49	54	-8.69	34.36	8.51	34.05	232	42	Average
5458.13	54.56	45.74	74	-19.44	34.36	8.51	34.05	232	42	Peak
*10480	56.37	41.86	68.2	-11.83	37.19	12.53	35.21	144	119	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5240	82.37	73.93			34.19	8.26	34.01	109	44	Average
5240	89.58	81.14			34.19	8.26	34.01	109	44	Peak
5408.85	42.37	33.65	54	-11.63	34.32	8.44	34.04	109	44	Average
5408.85	52.94	44.22	74	-21.06	34.32	8.44	34.04	109	44	Peak
*10480	55.12	40.61	68.2	-13.08	37.19	12.53	35.21	118	200	Peak

Remarks:

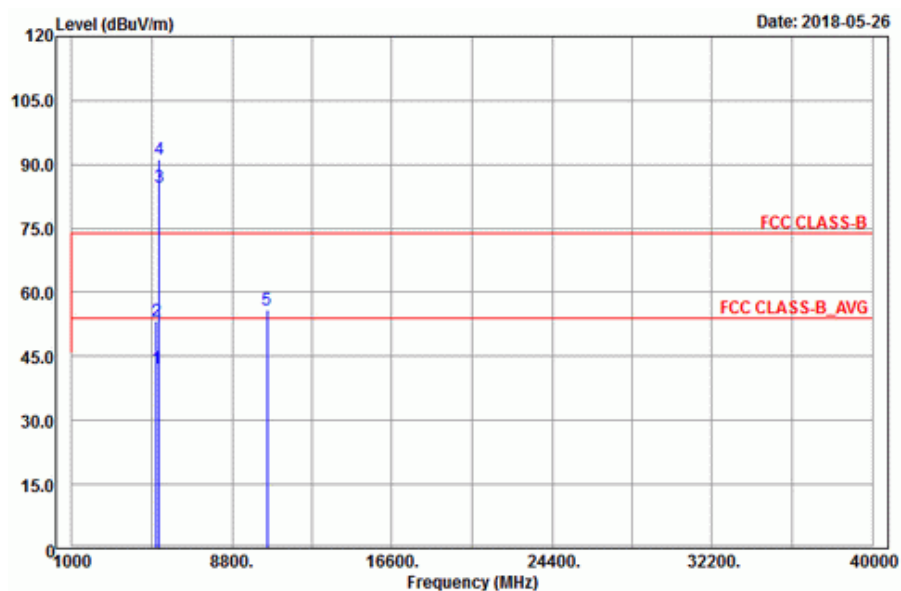
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5240 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 52	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5113.25	42.96	34.76	54	-11.04	34.09	8.1	33.99	223	38	Average
5113.25	53.08	44.88	74	-20.92	34.09	8.1	33.99	223	38	Peak
5260	97.6	89.14			34.21	8.26	34.01	223	38	Average
5260	104.43	95.97			34.21	8.26	34.01	223	38	Peak
*10520	56.78	42.19	68.2	-11.42	37.21	12.61	35.23	180	111	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5126.9	42.28	34.06	54	-11.72	34.11	8.1	33.99	100	38	Average
5126.9	53.44	45.22	74	-20.56	34.11	8.1	33.99	100	38	Peak
5260	84.56	76.1			34.21	8.26	34.01	100	38	Average
5260	91.3	82.84			34.21	8.26	34.01	100	38	Peak
*10520	55.94	41.35	68.2	-12.26	37.21	12.61	35.23	134	340	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5260 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 60	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

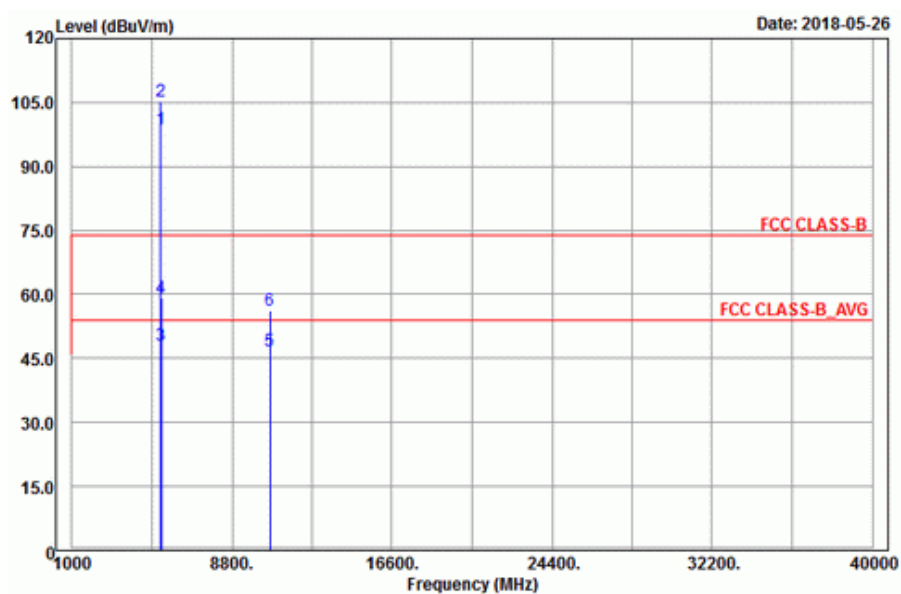
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5079.05	43.66	35.54	54	-10.34	34.07	8.03	33.98	223	38	Average
5079.05	53.2	45.08	74	-20.8	34.07	8.03	33.98	223	38	Peak
5300	97.2	88.66			34.24	8.32	34.02	223	38	Average
5300	104.63	96.09			34.24	8.32	34.02	223	38	Peak
5350.66	45.48	36.85	54	-8.52	34.28	8.38	34.03	223	38	Average
5350.66	55.78	47.15	74	-18.22	34.28	8.38	34.03	223	38	Peak
10600	46.68	32	54	-7.32	37.28	12.67	35.27	128	282	Average
10600	55.76	41.08	74	-18.24	37.28	12.67	35.27	128	282	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5125.55	42.12	33.9	54	-11.88	34.11	8.1	33.99	100	38	Average
5125.55	52.58	44.36	74	-21.42	34.11	8.1	33.99	100	38	Peak
5300	84.41	75.87			34.24	8.32	34.02	100	38	Average
5300	91.63	83.09			34.24	8.32	34.02	100	38	Peak
5449.77	42.45	33.63	54	-11.55	34.36	8.51	34.05	100	38	Average
5449.77	53.55	44.73	74	-20.45	34.36	8.51	34.05	100	38	Peak
10600	46.67	31.99	54	-7.33	37.28	12.67	35.27	127	117	Average
10600	55.41	40.73	74	-18.59	37.28	12.67	35.27	127	117	Peak

Remarks:

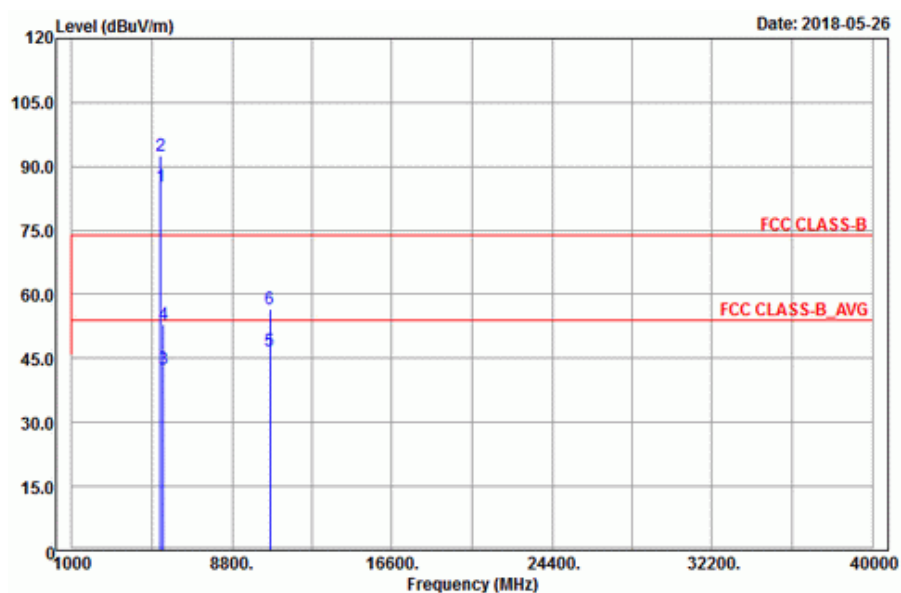
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5300 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 64	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



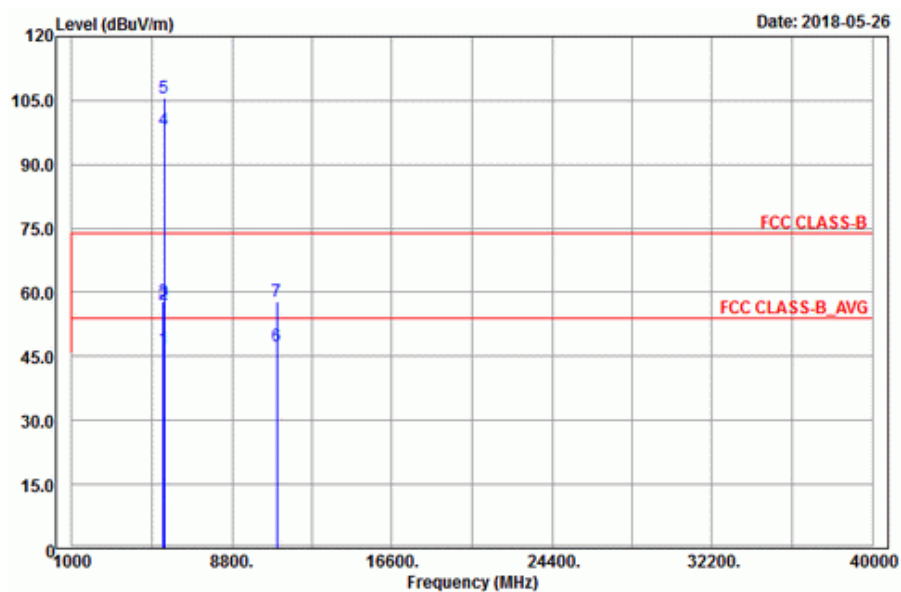
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	98.63	90.05			34.25	8.35	34.02	223	38	Average
5320	105.45	96.87			34.25	8.35	34.02	223	38	Peak
5351.65	48	39.37	54	-6	34.28	8.38	34.03	223	38	Average
5351.65	59.27	50.64	74	-14.73	34.28	8.38	34.03	223	38	Peak
10640	46.72	31.99	54	-7.28	37.31	12.71	35.29	134	159	Average
10640	56.24	41.51	74	-17.76	37.31	12.71	35.29	134	159	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	85.32	76.74			34.25	8.35	34.02	100	38	Average
5320	92.39	83.81			34.25	8.35	34.02	100	38	Peak
5459.67	42.55	33.73	54	-11.45	34.36	8.51	34.05	100	38	Average
5459.67	52.98	44.16	74	-21.02	34.36	8.51	34.05	100	38	Peak
10640	46.77	32.04	54	-7.23	37.31	12.71	35.29	117	165	Average
10640	56.72	41.99	74	-17.28	37.31	12.71	35.29	117	165	Peak

Remarks:

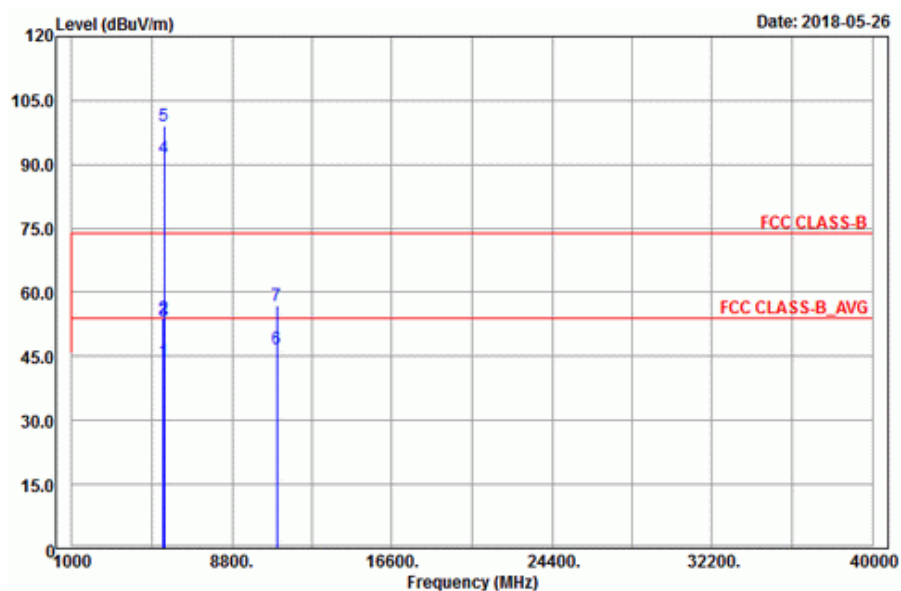
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5320 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 100	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



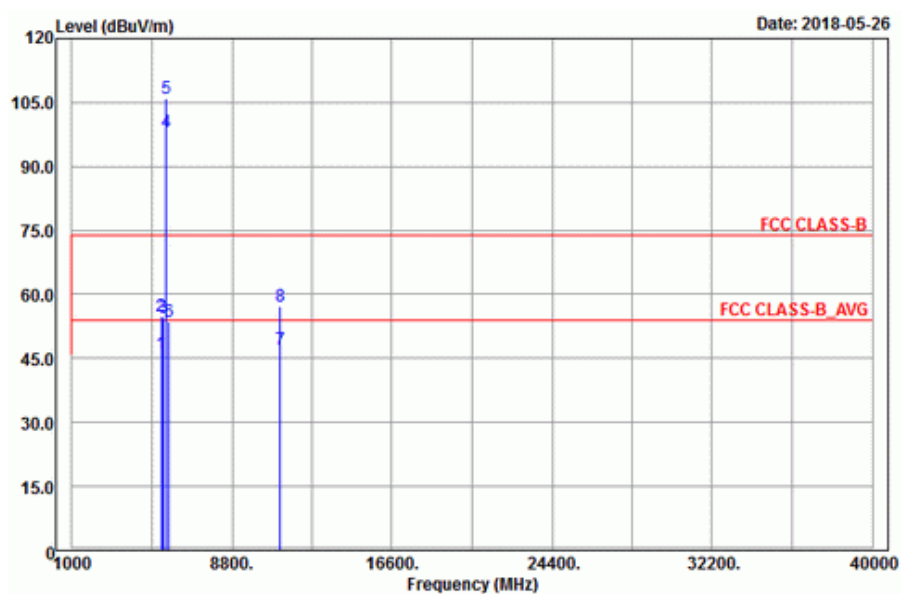
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5458.96	46.83	38.01	54	-7.17	34.36	8.51	34.05	198	34	Average
5458.96	57.37	48.55	74	-16.63	34.36	8.51	34.05	198	34	Peak
*5468.24	57.73	48.9	68.2	-10.47	34.37	8.51	34.05	198	34	Peak
5500	98.25	89.33			34.4	8.57	34.05	198	34	Average
5500	105.5	96.58			34.4	8.57	34.05	198	34	Peak
11000	47.51	32.43	54	-6.49	37.6	12.96	35.48	146	254	Average
11000	57.73	42.65	74	-16.27	37.6	12.96	35.48	146	254	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.76	43.8	34.98	54	-10.2	34.36	8.51	34.05	274	65	Average
5459.76	53.98	45.16	74	-20.02	34.36	8.51	34.05	274	65	Peak
*5469.36	53.26	44.43	68.2	-14.94	34.37	8.51	34.05	274	65	Peak
5500	91.66	82.74			34.4	8.57	34.05	274	65	Average
5500	99.21	90.29			34.4	8.57	34.05	274	65	Peak
11000	46.63	31.55	54	-7.37	37.6	12.96	35.48	136	195	Average
11000	56.77	41.69	74	-17.23	37.6	12.96	35.48	136	195	Peak

Remarks:

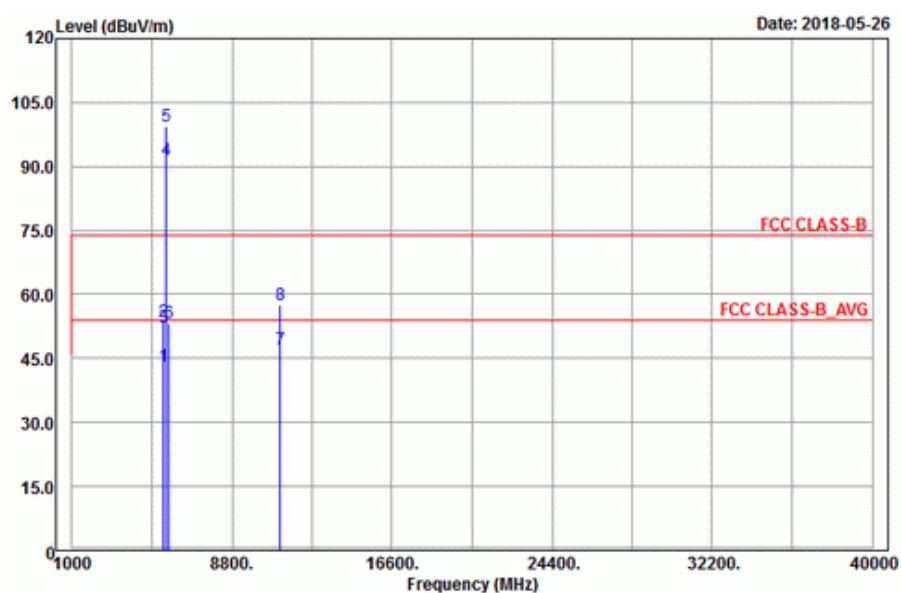
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5500 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 116	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



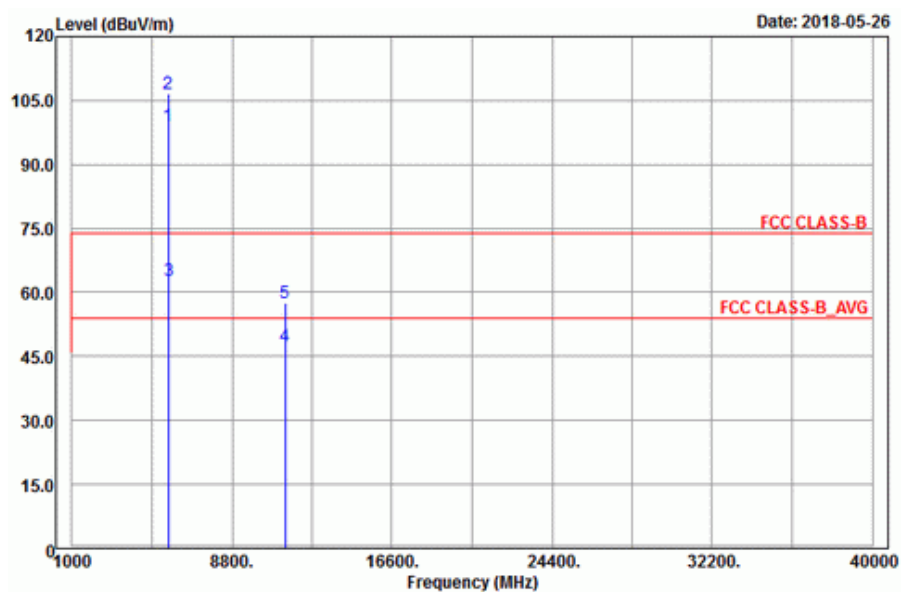
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5373.2	46.16	37.49	54	-7.84	34.29	8.41	34.03	197	34	Average
5373.2	54.78	46.11	74	-19.22	34.29	8.41	34.03	197	34	Peak
*5470.8	54.61	45.75	68.2	-13.59	34.37	8.54	34.05	197	34	Peak
5580	98.02	89.03			34.47	8.6	34.08	197	34	Average
5580	105.87	96.88			34.47	8.6	34.08	197	34	Peak
*5724.44	53.78	44.62	68.2	-14.42	34.62	8.65	34.11	197	34	Peak
11160	47.02	31.94	54	-6.98	37.7	12.83	35.45	149	19	Average
11160	57.14	42.06	74	-16.86	37.7	12.83	35.45	149	19	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5446.8	43.12	34.29	54	-10.88	34.36	8.51	34.04	274	65	Average
5446.8	53.73	44.9	74	-20.27	34.36	8.51	34.04	274	65	Peak
*5470.64	52.31	43.48	68.2	-15.89	34.37	8.51	34.05	274	65	Peak
5580	91.69	82.7			34.47	8.6	34.08	274	65	Average
5580	99.48	90.49			34.47	8.6	34.08	274	65	Peak
*5725.4	53.26	44.1	68.2	-14.94	34.62	8.65	34.11	274	65	Peak
11160	47.24	32.16	54	-6.76	37.7	12.83	35.45	132	108	Average
11160	57.51	42.43	74	-16.49	37.7	12.83	35.45	132	108	Peak

Remarks:

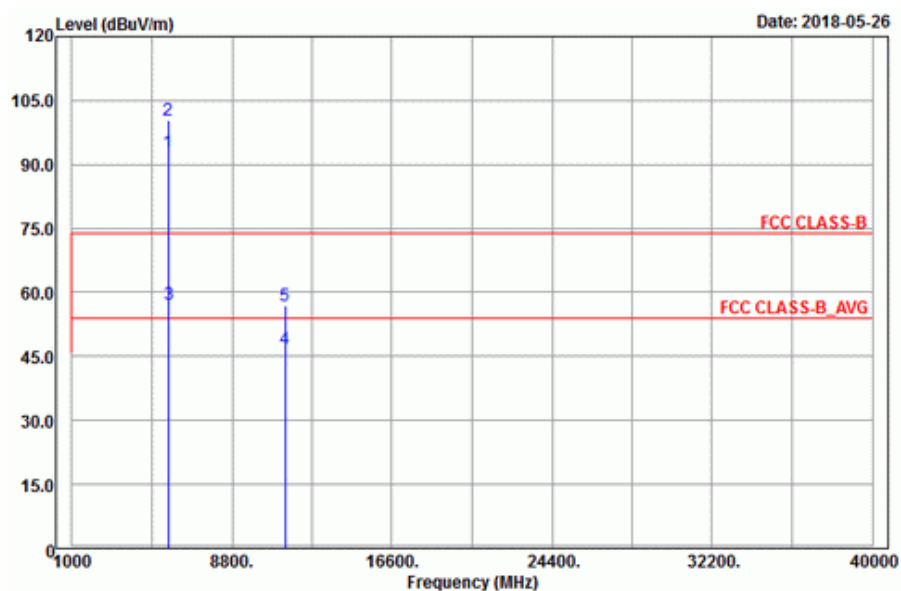
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5580 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 140	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



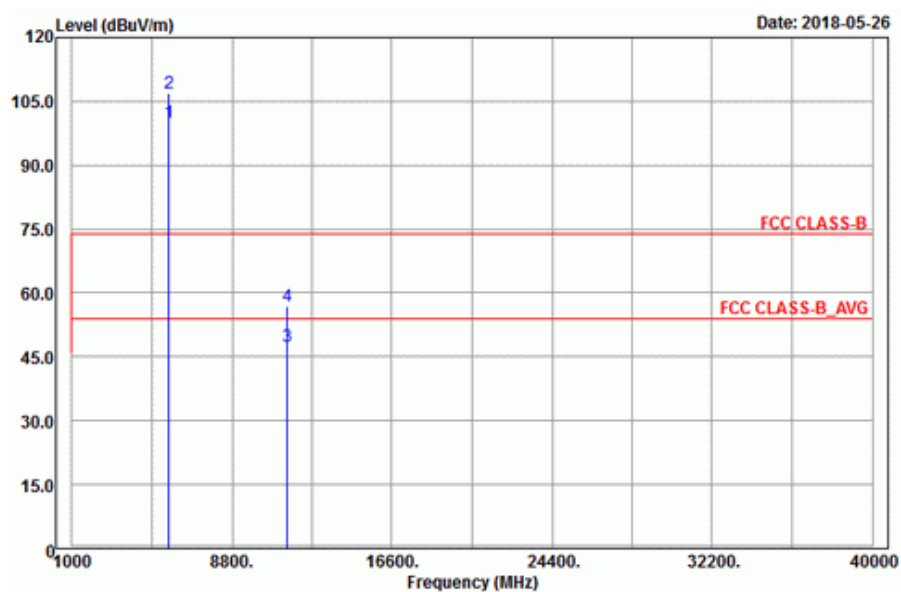
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5700	98.92	89.79			34.59	8.64	34.1	222	48	Average
5700	106.57	97.44			34.59	8.64	34.1	222	48	Peak
*5725.4	62.82	53.66	68.2	-5.38	34.62	8.65	34.11	222	48	Peak
11400	47.33	32.23	54	-6.67	37.84	12.67	35.41	147	131	Average
11400	57.47	42.37	74	-16.53	37.84	12.67	35.41	147	131	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5700	92.71	83.58			34.59	8.64	34.1	258	57	Average
5700	100.46	91.33			34.59	8.64	34.1	258	57	Peak
*5724.6	57.15	47.99	68.2	-11.05	34.62	8.65	34.11	258	57	Peak
11400	46.83	31.73	54	-7.17	37.84	12.67	35.41	152	231	Average
11400	56.75	41.65	74	-17.25	37.84	12.67	35.41	152	231	Peak

Remarks:

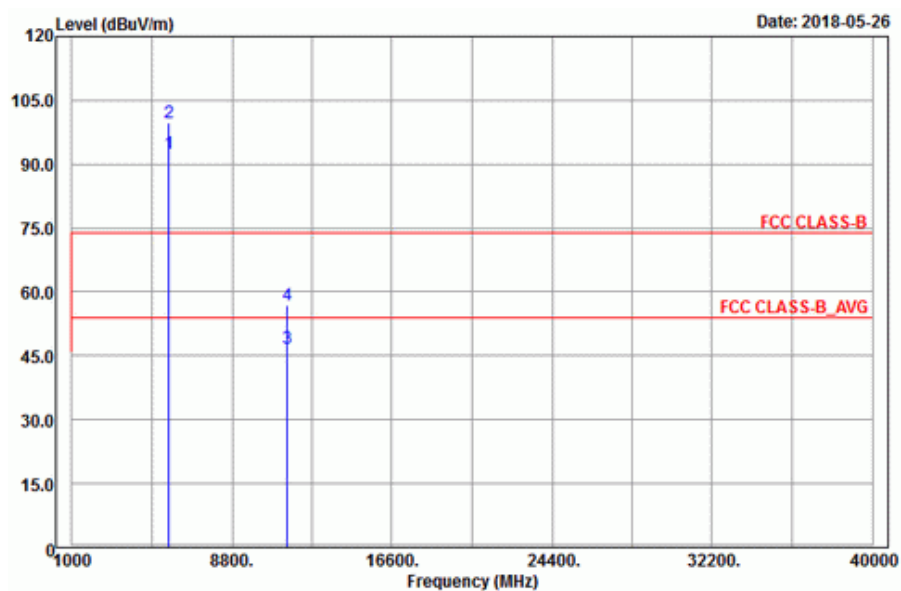
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5700 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 149	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

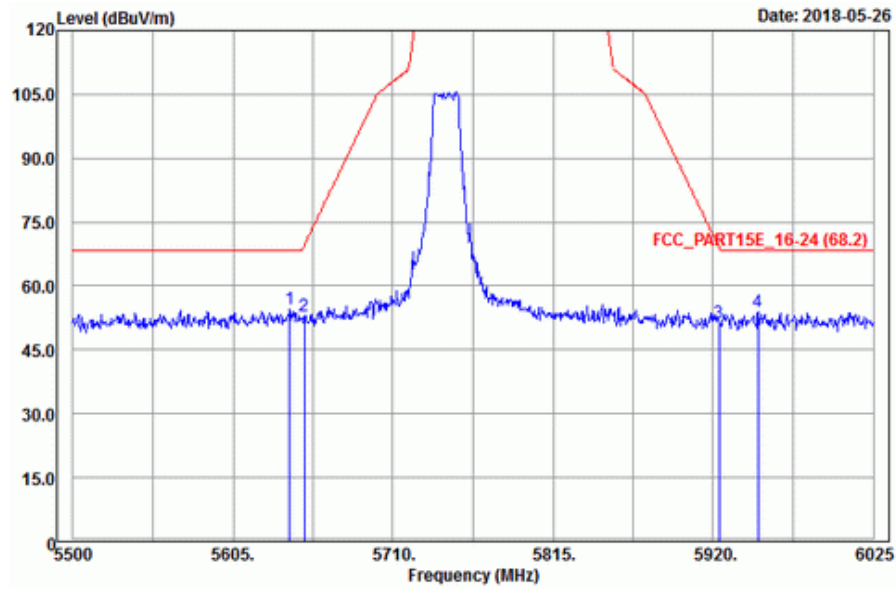
<Spurious Emission> Horizontal



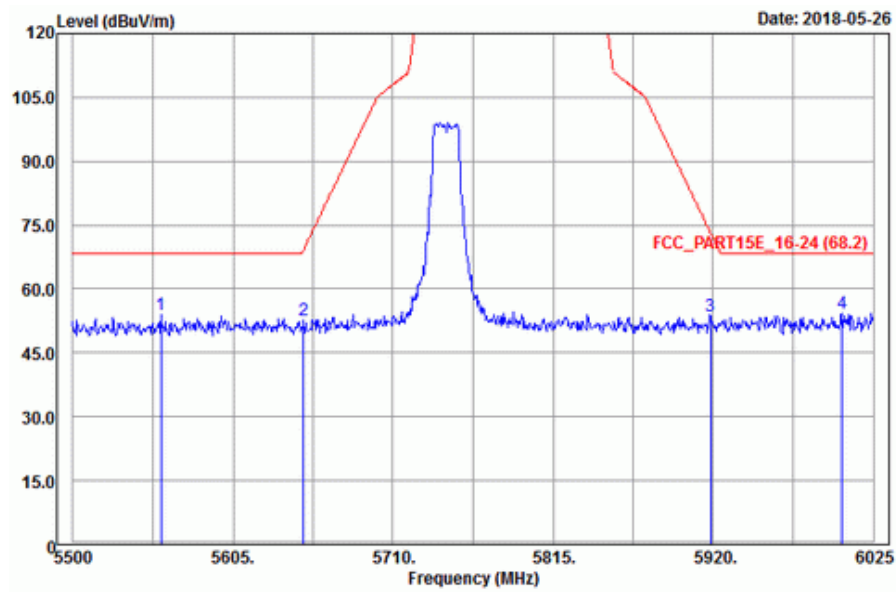
Vertical



<Out of Band Emission (OOBE)> Horizontal



Vertical



<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	99.95	90.76			34.64	8.66	34.11	213	47	Average
5745	106.92	97.73			34.64	8.66	34.11	213	47	Peak
11490	47.53	32.41	54	-6.47	37.89	12.62	35.39	129	116	Average
11490	56.74	41.62	74	-17.26	37.89	12.62	35.39	129	116	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	92.49	83.3			34.64	8.66	34.11	277	57	Average
5745	99.81	90.62			34.64	8.66	34.11	277	57	Peak
11490	46.69	31.57	54	-7.31	37.89	12.62	35.39	126	283	Average
11490	56.82	41.7	74	-17.18	37.89	12.62	35.39	126	283	Peak

<Out of Band Emission (OOBE)>

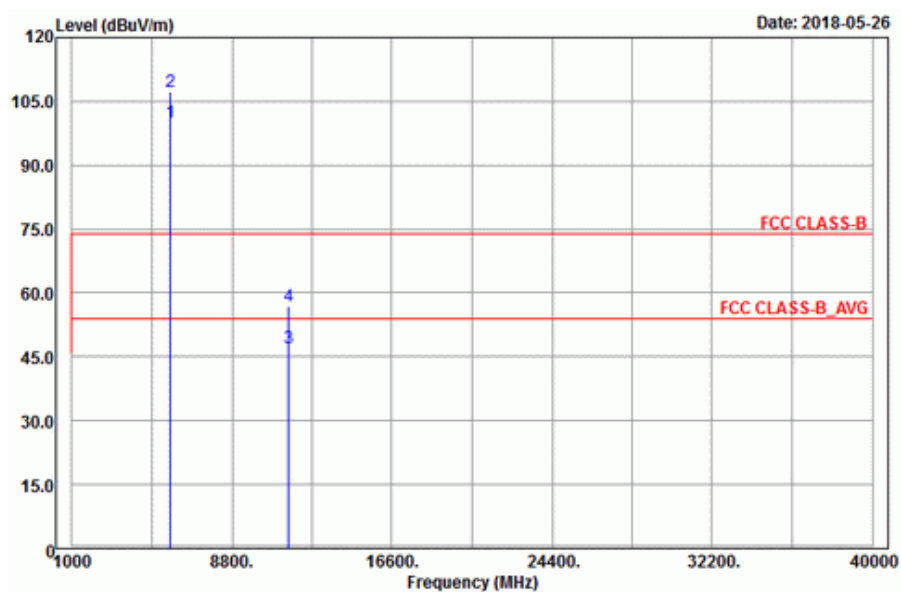
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5642.275	54.49	45.42	68.2	-13.71	34.54	8.62	34.09	213	47	Peak
5651.725	52.99	43.9	69.48	-16.49	34.56	8.62	34.09	213	47	Peak
5923.675	51.34	41.94	69.18	-17.84	34.83	8.73	34.16	213	47	Peak
*5949.4	54.01	44.58	68.2	-14.19	34.85	8.74	34.16	213	47	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5557.75	54.05	45.08	68.2	-14.15	34.45	8.59	34.07	277	57	Peak
5651.2	52.51	43.42	69.09	-16.58	34.56	8.62	34.09	277	57	Peak
5918.425	53.52	44.14	73.07	-19.55	34.81	8.73	34.16	277	57	Peak
*6004.525	54.28	44.79	68.2	-13.92	34.9	8.76	34.17	277	57	Peak

Remarks:

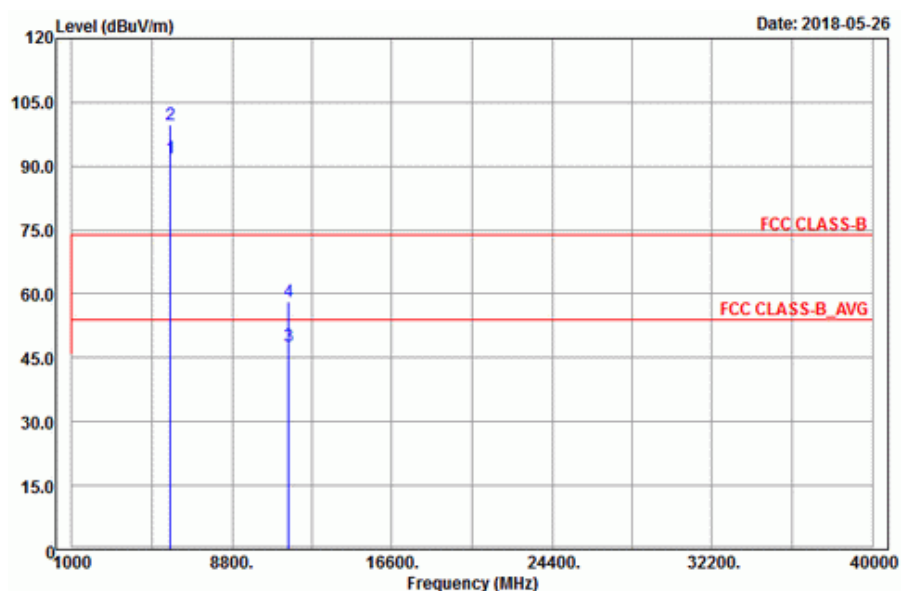
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5745 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 157	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

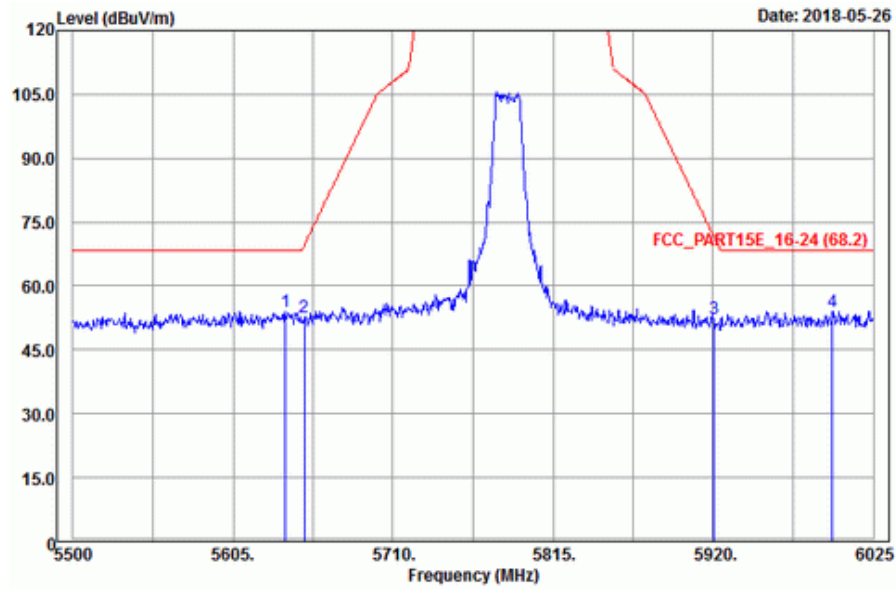
<Spurious Emission> Horizontal



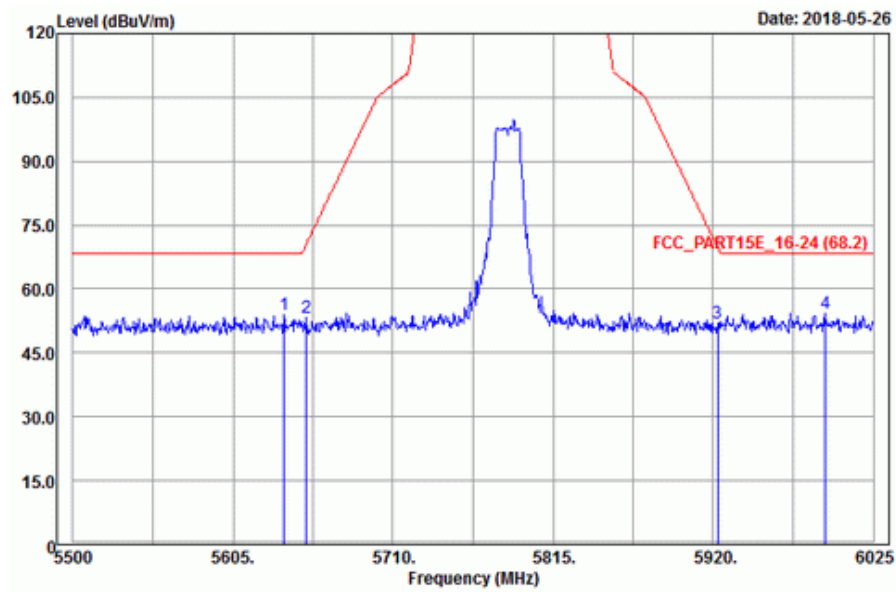
Vertical



<Out of Band Emission (OOBE)> Horizontal



Vertical



<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	100.03	90.8			34.68	8.68	34.13	213	47	Average
5785	107.18	97.95			34.68	8.68	34.13	213	47	Peak
11570	47.11	31.8	54	-6.89	38	12.68	35.37	124	105	Average
11570	56.91	41.6	74	-17.09	38	12.68	35.37	124	105	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	92.02	82.79			34.68	8.68	34.13	277	57	Average
5785	99.57	90.34			34.68	8.68	34.13	277	57	Peak
11570	47.59	32.28	54	-6.41	38	12.68	35.37	162	333	Average
11570	58.13	42.82	74	-15.87	38	12.68	35.37	162	333	Peak

<Out of Band Emission (OOBE)>

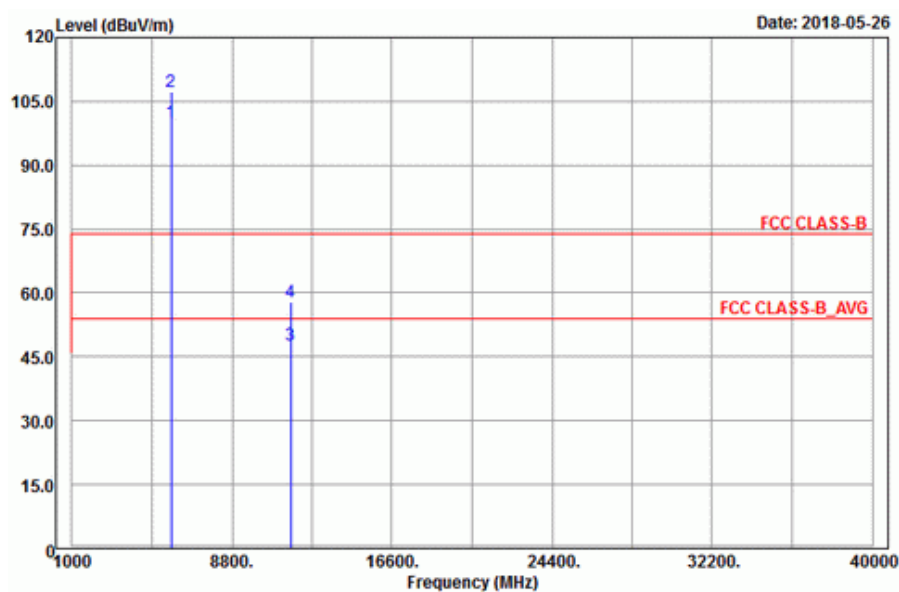
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5639.65	54.02	44.95	68.2	-14.18	34.54	8.62	34.09	213	47	Peak
5651.725	52.52	43.43	69.48	-16.96	34.56	8.62	34.09	213	47	Peak
5920.525	52.48	43.1	71.51	-19.03	34.81	8.73	34.16	213	47	Peak
*5998.225	54.09	44.6	68.2	-14.11	34.9	8.76	34.17	213	47	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5638.6	53.9	44.83	68.2	-14.3	34.54	8.62	34.09	277	57	Peak
5653.3	53.21	44.11	70.64	-17.43	34.56	8.63	34.09	277	57	Peak
5923.15	52.08	42.68	69.57	-17.49	34.83	8.73	34.16	277	57	Peak
*5993.5	54.31	44.82	68.2	-13.89	34.9	8.76	34.17	277	57	Peak

Remarks:

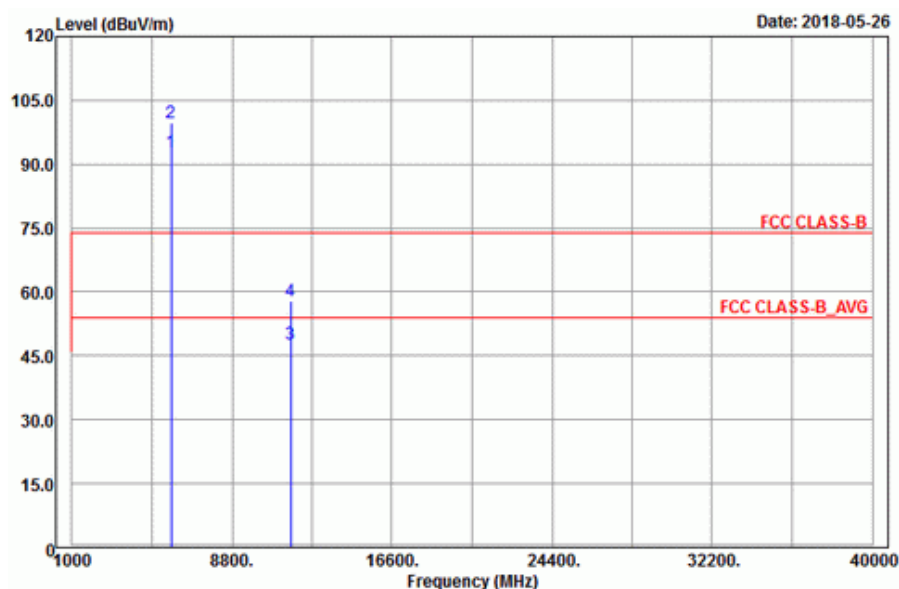
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5785 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 165	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

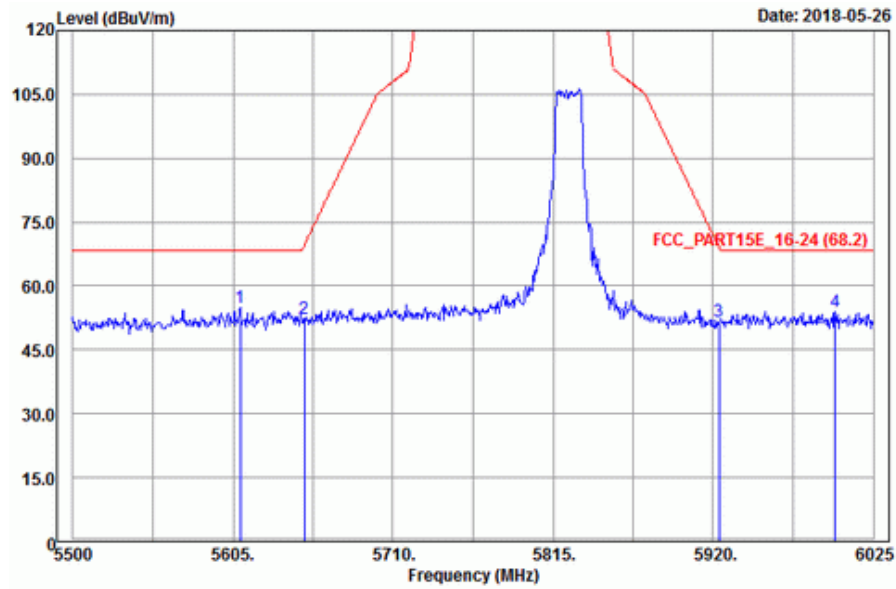
<Spurious Emission> Horizontal



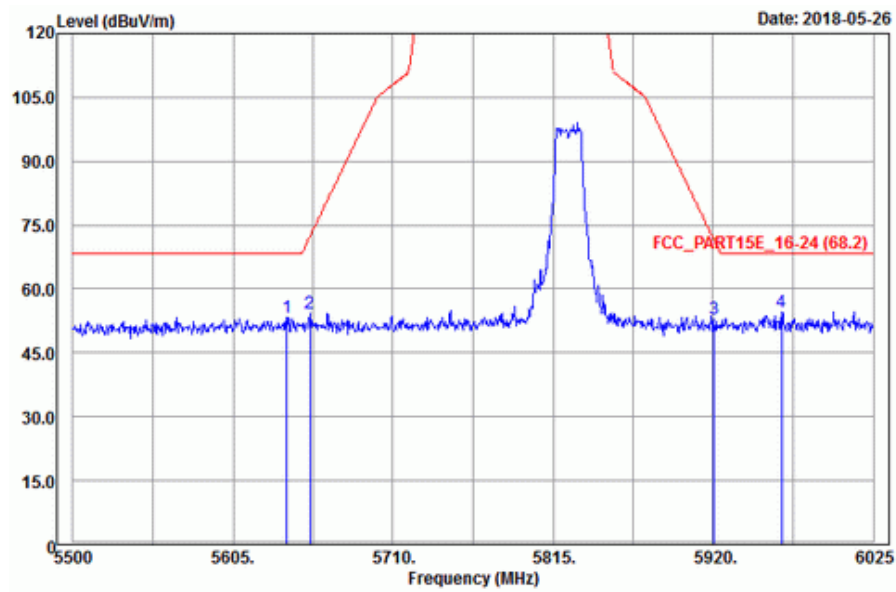
Vertical



<Out of Band Emission (OOBE)> Horizontal



Vertical



<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	100.11	90.82			34.73	8.69	34.13	213	47	Average
5825	107.14	97.85			34.73	8.69	34.13	213	47	Peak
11650	47.61	32.08	54	-6.39	38.09	12.8	35.36	173	48	Average
11650	58.02	42.49	74	-15.98	38.09	12.8	35.36	173	48	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	92.71	83.42			34.73	8.69	34.13	277	57	Average
5825	99.84	90.55			34.73	8.69	34.13	277	57	Peak
11650	47.63	32.1	54	-6.37	38.09	12.8	35.36	162	224	Average
11650	57.71	42.18	74	-16.29	38.09	12.8	35.36	162	224	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5609.725	54.99	45.96	68.2	-13.21	34.5	8.61	34.08	213	47	Peak
5651.725	52.47	43.38	69.48	-17.01	34.56	8.62	34.09	213	47	Peak
5923.675	51.7	42.3	69.18	-17.48	34.83	8.73	34.16	213	47	Peak
*6000.325	54.02	44.53	68.2	-14.18	34.9	8.76	34.17	213	47	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5640.175	53.45	44.38	68.2	-14.75	34.54	8.62	34.09	277	57	Peak
5655.4	54.17	45.08	72.2	-18.03	34.56	8.63	34.1	277	57	Peak
5920.525	52.86	43.48	71.51	-18.65	34.81	8.73	34.16	277	57	Peak
*5965.15	54.64	45.19	68.2	-13.56	34.87	8.75	34.17	277	57	Peak

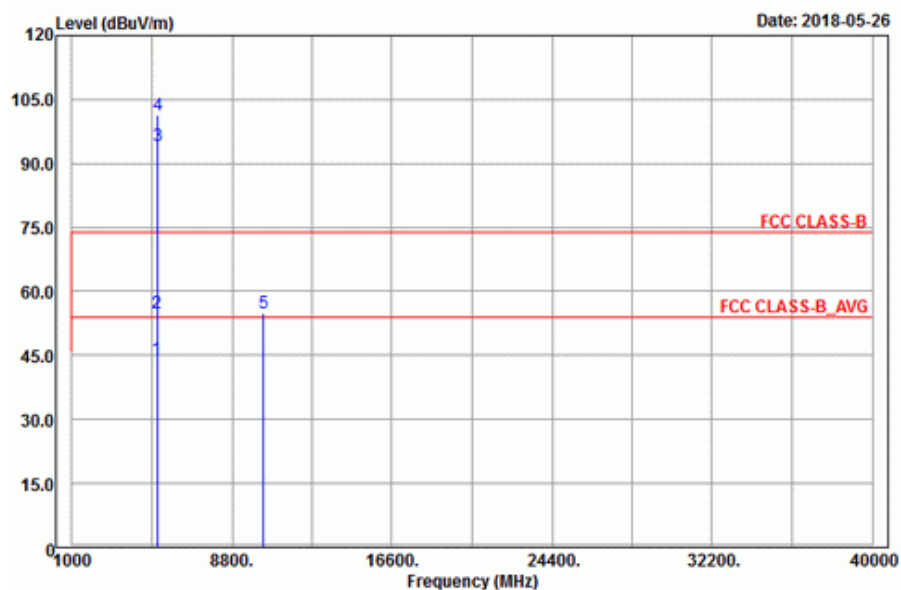
Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5825 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

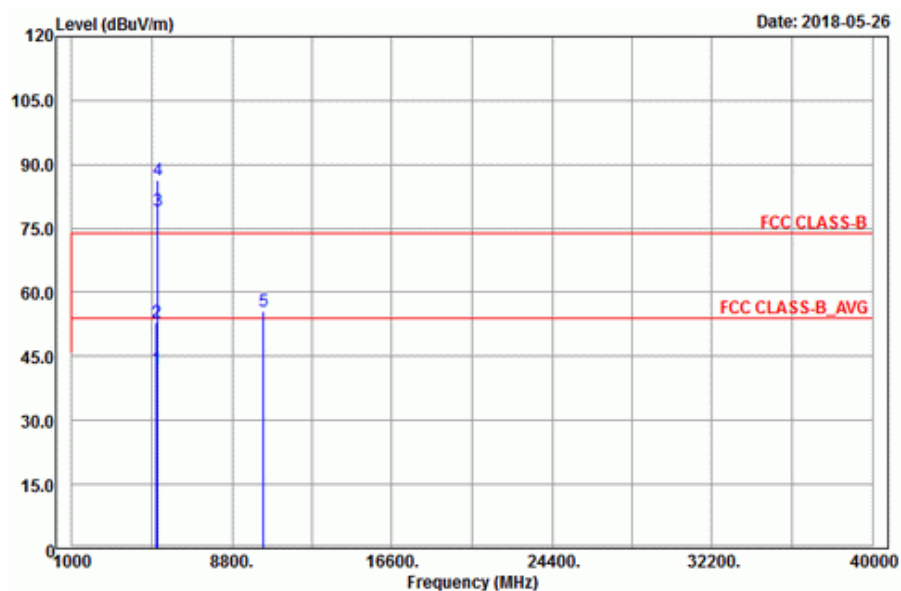
802.11n (HT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 36	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



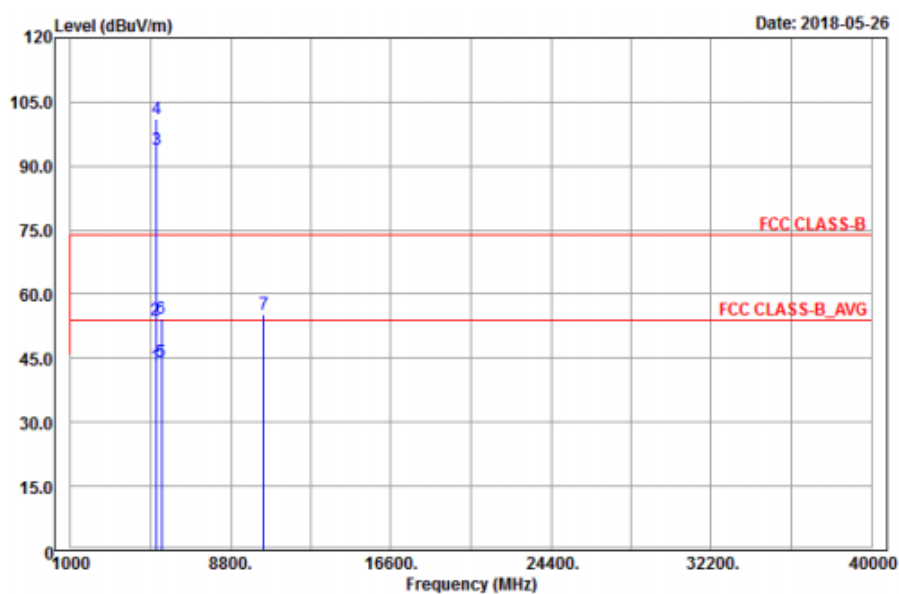
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5147.75	44.13	35.88	54	-9.87	34.12	8.13	34	232	42	Average
5147.75	54.9	46.65	74	-19.1	34.12	8.13	34	232	42	Peak
5180	94.32	86.01			34.15	8.16	34	232	42	Average
5180	101.29	92.98			34.15	8.16	34	232	42	Peak
*10360	55	40.7	68.2	-13.2	37.12	12.3	35.12	115	190	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5129.3	42.27	34.05	54	-11.73	34.11	8.1	33.99	109	44	Average
5129.3	52.85	44.63	74	-21.15	34.11	8.1	33.99	109	44	Peak
5180	79.13	70.82			34.15	8.16	34	109	44	Average
5180	86.29	77.98			34.15	8.16	34	109	44	Peak
*10360	55.44	41.14	68.2	-12.76	37.12	12.3	35.12	102	111	Peak

Remarks:

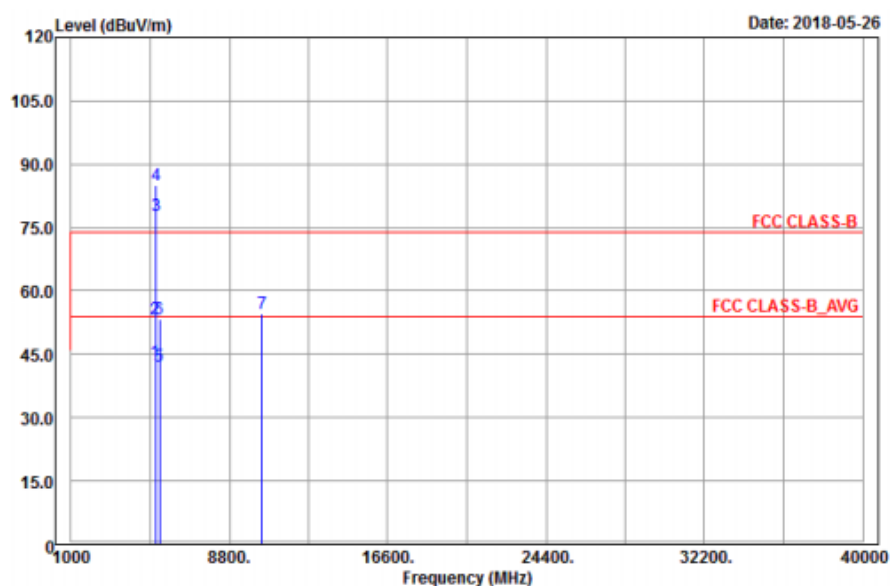
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5180 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 40	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



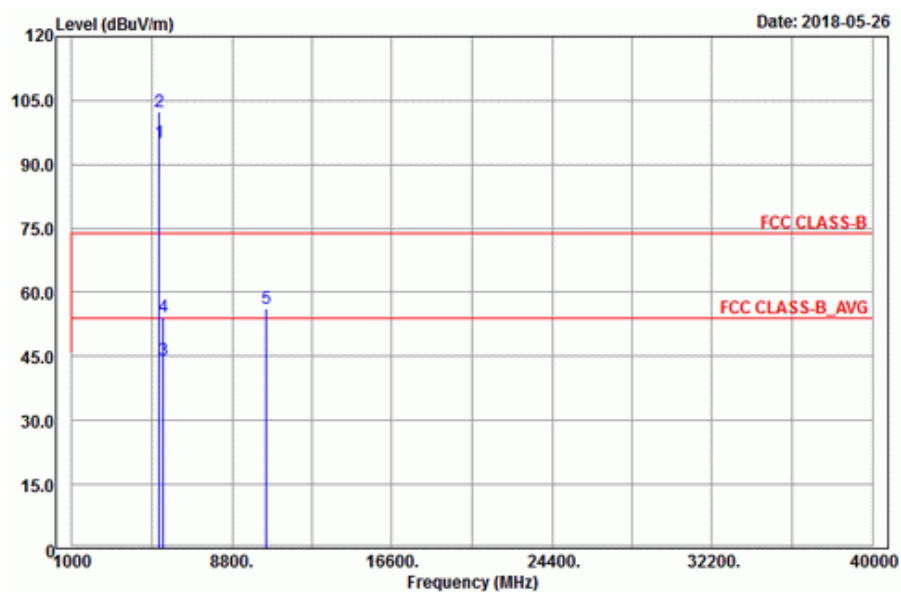
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5146.55	43.19	34.94	54	-10.81	34.12	8.13	34	232	42	Average
5146.55	53.99	45.74	74	-20.01	34.12	8.13	34	232	42	Peak
5200	93.95	85.6			34.16	8.19	34	232	42	Average
5200	101.15	92.8			34.16	8.19	34	232	42	Peak
5437.34	44.16	35.37	54	-9.84	34.35	8.48	34.04	232	42	Average
5437.34	54.19	45.4	74	-19.81	34.35	8.48	34.04	232	42	Peak
*10400	55.33	40.99	68.2	-12.87	37.14	12.36	35.16	115	75	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	43.01	34.76	54	-10.99	34.12	8.13	34	109	44	Average
5150	53.44	45.19	74	-20.56	34.12	8.13	34	109	44	Peak
5200	77.88	69.53			34.16	8.19	34	109	44	Average
5200	85.04	76.69			34.16	8.19	34	109	44	Peak
5364.3	42.25	33.61	54	-11.75	34.29	8.38	34.03	109	44	Average
5364.3	53.14	44.5	74	-20.86	34.29	8.38	34.03	109	44	Peak
*10400	54.62	40.28	68.2	-13.58	37.14	12.36	35.16	116	305	Peak

Remarks:

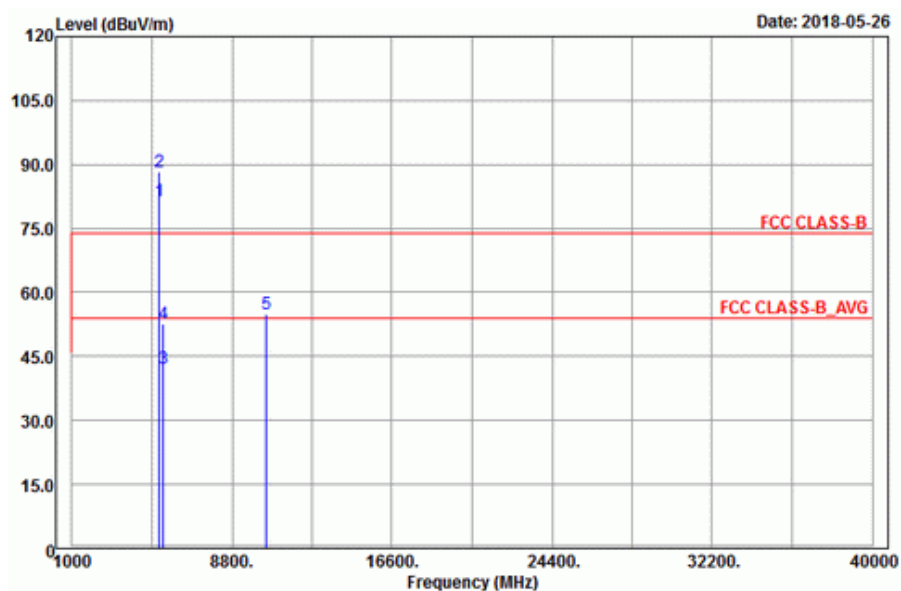
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5200 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 48	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



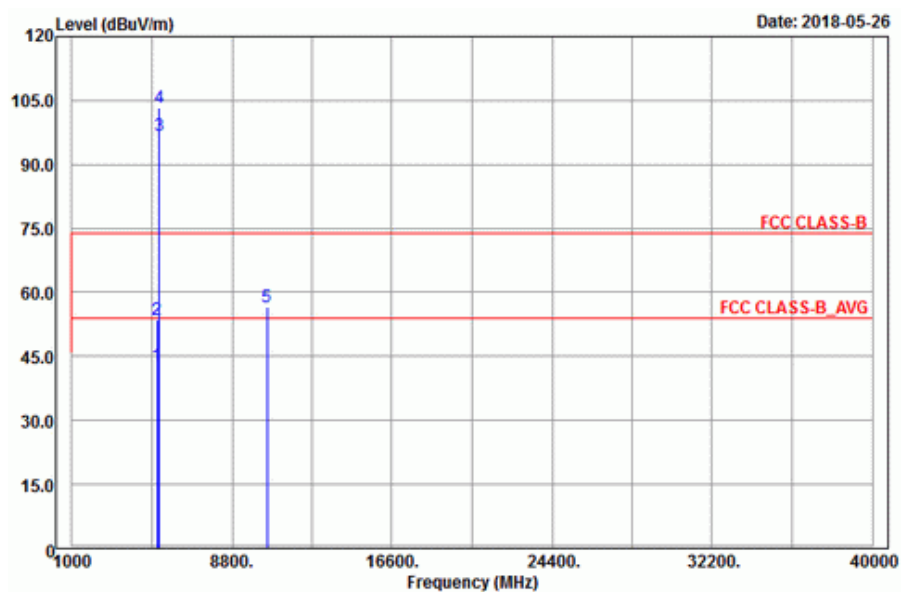
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5240	95.07	86.63			34.19	8.26	34.01	232	42	Average
5240	102.23	93.79			34.19	8.26	34.01	232	42	Peak
5458.46	44.19	35.37	54	-9.81	34.36	8.51	34.05	232	42	Average
5458.46	54.16	45.34	74	-19.84	34.36	8.51	34.05	232	42	Peak
*10480	56.22	41.71	68.2	-11.98	37.19	12.53	35.21	119	125	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5240	81.49	73.05			34.19	8.26	34.01	109	44	Average
5240	88.32	79.88			34.19	8.26	34.01	109	44	Peak
5449.55	42.3	33.47	54	-11.7	34.36	8.51	34.04	109	44	Average
5449.55	52.68	43.85	74	-21.32	34.36	8.51	34.04	109	44	Peak
*10480	55.06	40.55	68.2	-13.14	37.19	12.53	35.21	119	345	Peak

Remarks:

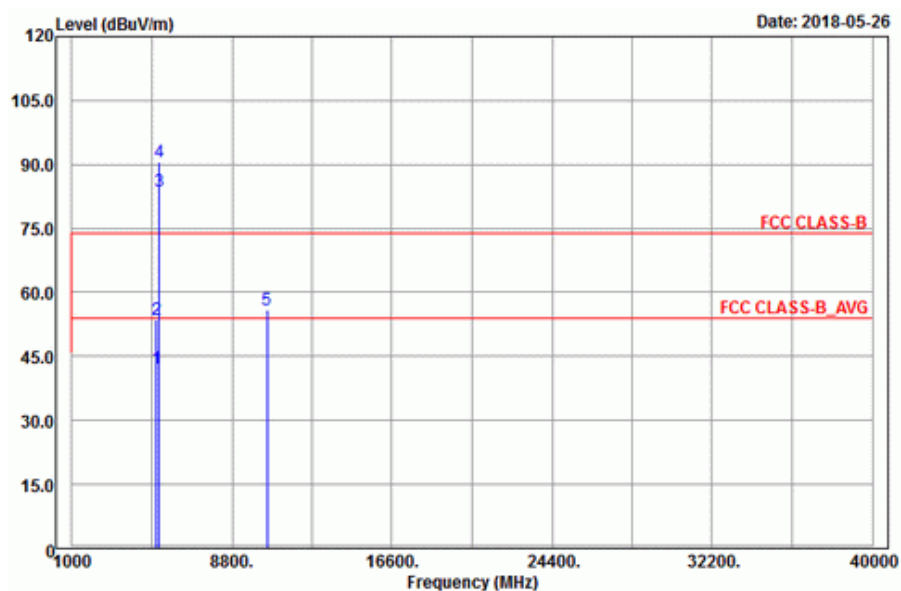
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5240 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 52	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



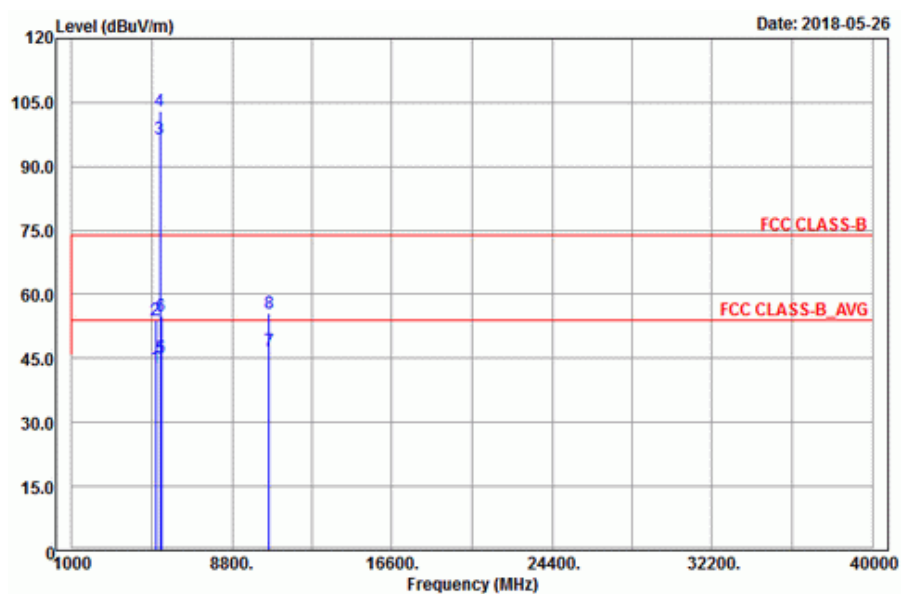
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5144.15	42.78	34.53	54	-11.22	34.12	8.13	34	223	38	Average
5144.15	53.69	45.44	74	-20.31	34.12	8.13	34	223	38	Peak
5260	96.67	88.21			34.21	8.26	34.01	223	38	Average
5260	103.17	94.71			34.21	8.26	34.01	223	38	Peak
*10520	56.66	42.07	68.2	-11.54	37.21	12.61	35.23	125	258	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5134.1	42.18	33.93	54	-11.82	34.11	8.13	33.99	100	38	Average
5134.1	53.52	45.27	74	-20.48	34.11	8.13	33.99	100	38	Peak
5260	83.85	75.39			34.21	8.26	34.01	100	38	Average
5260	90.63	82.17			34.21	8.26	34.01	100	38	Peak
*10520	55.79	41.2	68.2	-12.41	37.21	12.61	35.23	154	213	Peak

Remarks:

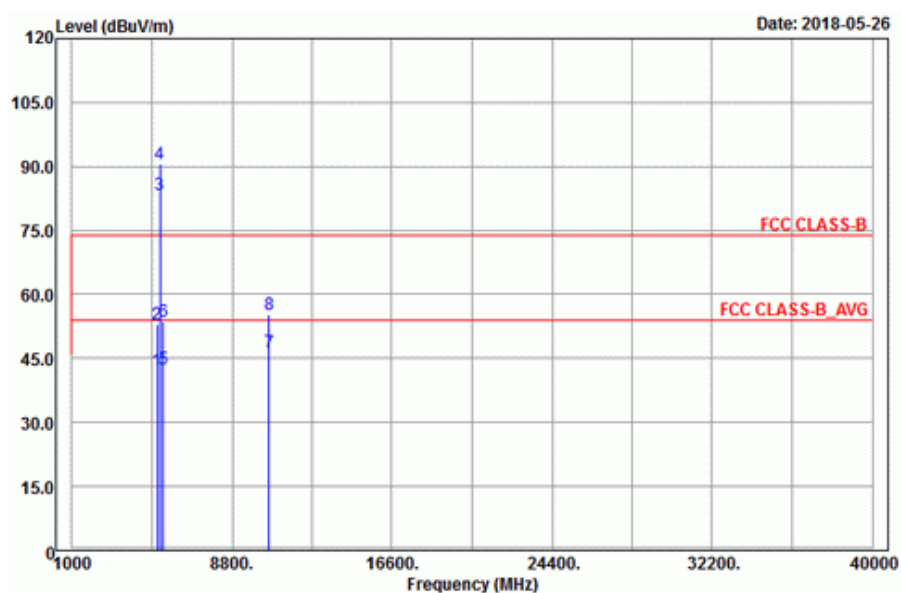
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5260 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 60	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



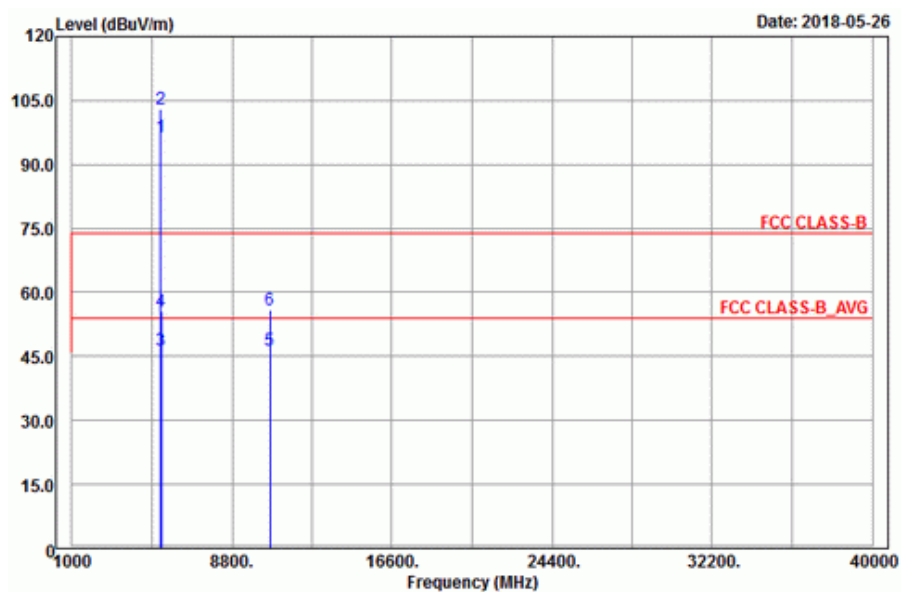
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5079.2	42.79	34.67	54	-11.21	34.07	8.03	33.98	223	38	Average
5079.2	53.99	45.87	74	-20.01	34.07	8.03	33.98	223	38	Peak
5300	96.47	87.93			34.24	8.32	34.02	223	38	Average
5300	103.03	94.49			34.24	8.32	34.02	223	38	Peak
5350.11	45.06	36.43	54	-8.94	34.28	8.38	34.03	223	38	Average
5350.11	54.84	46.21	74	-19.16	34.28	8.38	34.03	223	38	Peak
10600	46.68	32	54	-7.32	37.28	12.67	35.27	126	226	Average
10600	55.48	40.8	74	-18.52	37.28	12.67	35.27	126	226	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5146.1	42.16	33.91	54	-11.84	34.12	8.13	34	100	38	Average
5146.1	52.97	44.72	74	-21.03	34.12	8.13	34	100	38	Peak
5300	83.22	74.68			34.24	8.32	34.02	100	38	Average
5300	90.57	82.03			34.24	8.32	34.02	100	38	Peak
5457.8	42.45	33.63	54	-11.55	34.36	8.51	34.05	100	38	Average
5457.8	53.7	44.88	74	-20.3	34.36	8.51	34.05	100	38	Peak
10600	46.57	31.89	54	-7.43	37.28	12.67	35.27	137	228	Average
10600	55.27	40.59	74	-18.73	37.28	12.67	35.27	137	228	Peak

Remarks:

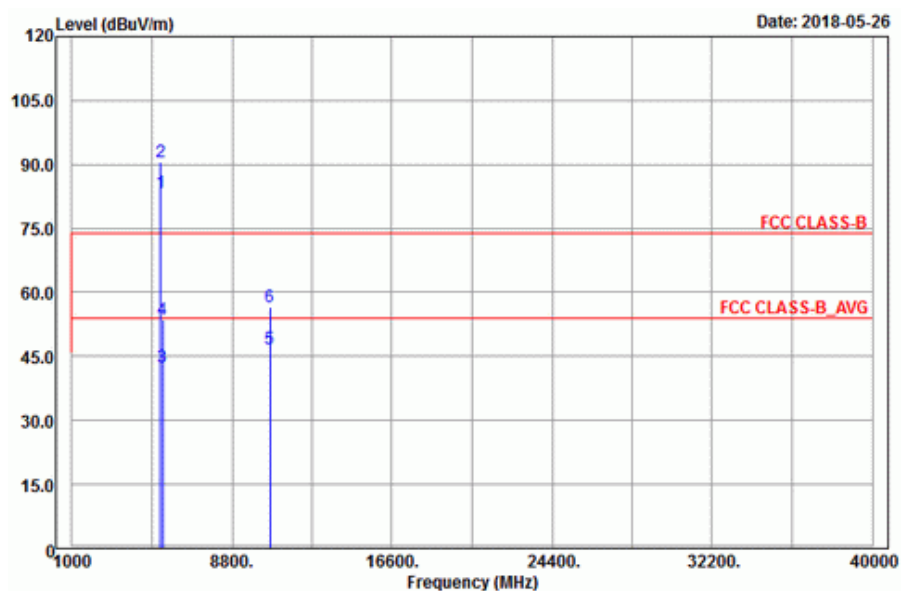
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5300 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 64	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



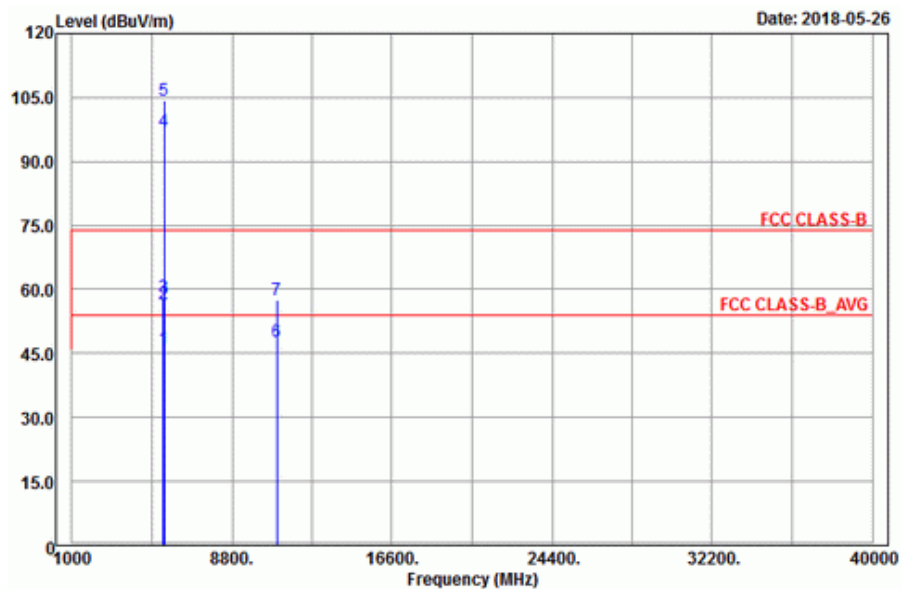
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	96.33	87.75			34.25	8.35	34.02	223	38	Average
5320	103.06	94.48			34.25	8.35	34.02	223	38	Peak
5351.65	46.48	37.85	54	-7.52	34.28	8.38	34.03	223	38	Average
5351.65	55.65	47.02	74	-18.35	34.28	8.38	34.03	223	38	Peak
10640	46.5	31.77	54	-7.5	37.31	12.71	35.29	105	310	Average
10640	56	41.27	74	-18	37.31	12.71	35.29	105	310	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	83.44	74.86			34.25	8.35	34.02	100	38	Average
5320	90.59	82.01			34.25	8.35	34.02	100	38	Peak
5438.11	42.52	33.73	54	-11.48	34.35	8.48	34.04	100	38	Average
5438.11	53.59	44.8	74	-20.41	34.35	8.48	34.04	100	38	Peak
10640	46.67	31.94	54	-7.33	37.31	12.71	35.29	164	106	Average
10640	56.55	41.82	74	-17.45	37.31	12.71	35.29	164	106	Peak

Remarks:

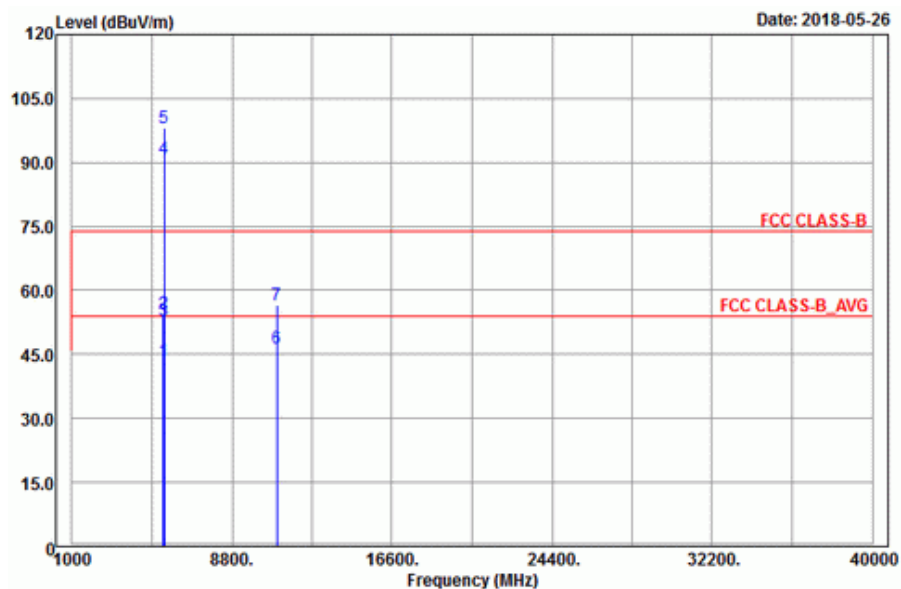
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5320 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 100	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



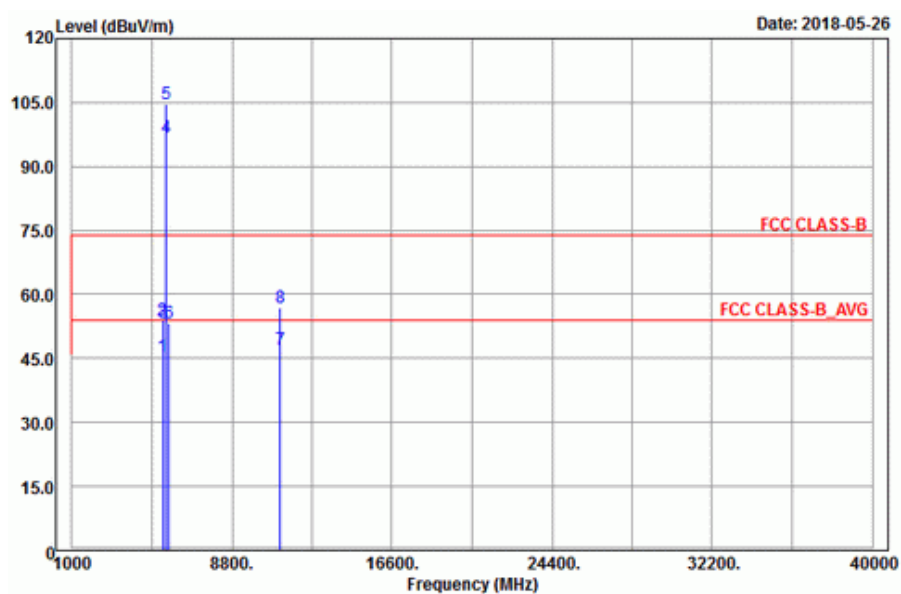
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.92	46.17	37.35	54	-7.83	34.36	8.51	34.05	197	34	Average
5459.92	56.56	47.74	74	-17.44	34.36	8.51	34.05	197	34	Peak
*5470	58.23	49.4	68.2	-9.97	34.37	8.51	34.05	197	34	Peak
5500	97.15	88.23			34.4	8.57	34.05	197	34	Average
5500	104.45	95.53			34.4	8.57	34.05	197	34	Peak
11000	47.61	32.53	54	-6.39	37.6	12.96	35.48	186	326	Average
11000	57.65	42.57	74	-16.35	37.6	12.96	35.48	186	326	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5458	43.57	34.75	54	-10.43	34.36	8.51	34.05	274	65	Average
5458	54.72	45.9	74	-19.28	34.36	8.51	34.05	274	65	Peak
*5470.8	52.9	44.04	68.2	-15.3	34.37	8.54	34.05	274	65	Peak
5500	90.76	81.84			34.4	8.57	34.05	274	65	Average
5500	98.18	89.26			34.4	8.57	34.05	274	65	Peak
11000	46.34	31.26	54	-7.66	37.6	12.96	35.48	136	198	Average
11000	56.59	41.51	74	-17.41	37.6	12.96	35.48	136	198	Peak

Remarks:

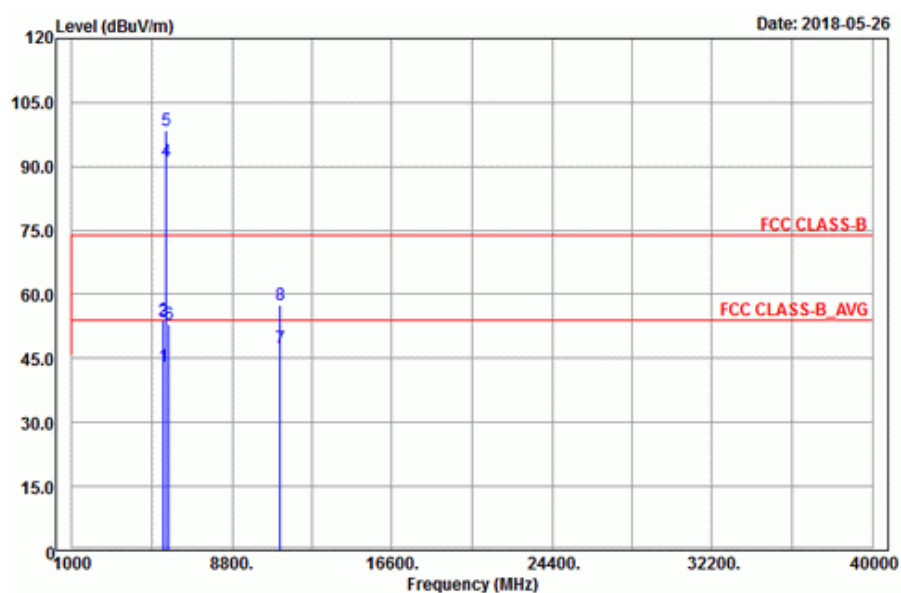
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 5500 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 116	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



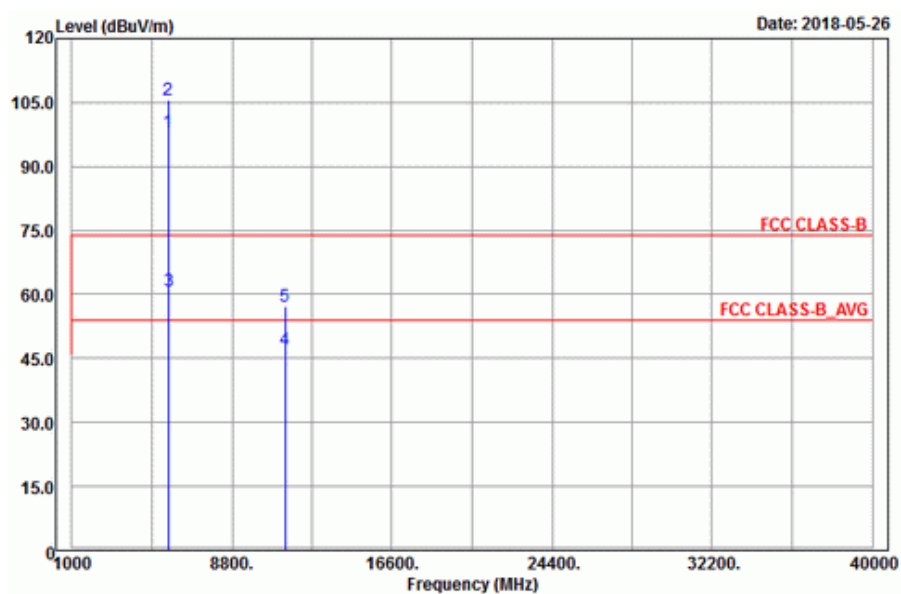
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5437.84	45.36	36.57	54	-8.64	34.35	8.48	34.04	197	34	Average
5437.84	54.02	45.23	74	-19.98	34.35	8.48	34.04	197	34	Peak
*5469.04	53.28	44.45	68.2	-14.92	34.37	8.51	34.05	197	34	Peak
5580	96.63	87.64			34.47	8.6	34.08	197	34	Average
5580	104.6	95.61			34.47	8.6	34.08	197	34	Peak
*5724.68	53.27	44.11	68.2	-14.93	34.62	8.65	34.11	197	34	Peak
11160	47.01	31.93	54	-6.99	37.7	12.83	35.45	103	68	Average
11160	56.98	41.9	74	-17.02	37.7	12.83	35.45	103	68	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5452.24	43.03	34.21	54	-10.97	34.36	8.51	34.05	274	65	Average
5452.24	53.83	45.01	74	-20.17	34.36	8.51	34.05	274	65	Peak
*5469.84	53.47	44.64	68.2	-14.73	34.37	8.51	34.05	274	65	Peak
5580	91.1	82.11			34.47	8.6	34.08	274	65	Average
5580	98.52	89.53			34.47	8.6	34.08	274	65	Peak
*5724.68	53.07	43.91	68.2	-15.13	34.62	8.65	34.11	274	65	Peak
11160	47.26	32.18	54	-6.74	37.7	12.83	35.45	146	122	Average
11160	57.49	42.41	74	-16.51	37.7	12.83	35.45	146	122	Peak

Remarks:

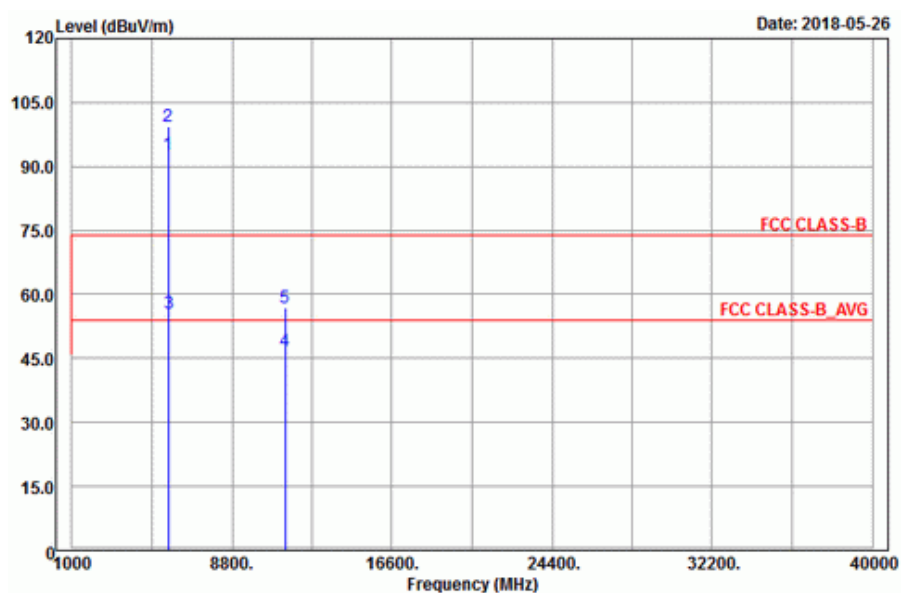
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5580 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 140	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



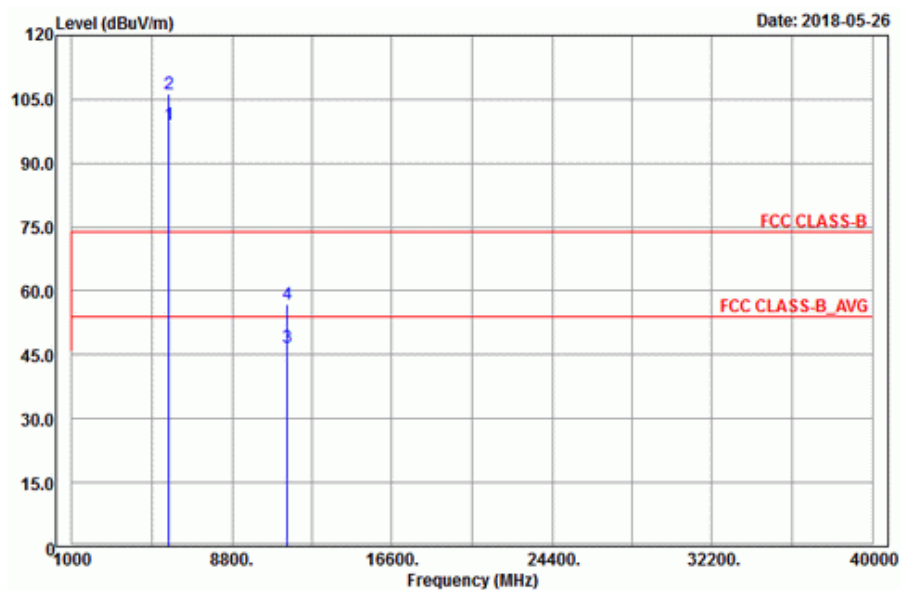
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5700	97.97	88.84			34.59	8.64	34.1	222	48	Average
5700	105.47	96.34			34.59	8.64	34.1	222	48	Peak
*5723.96	60.79	51.63	68.2	-7.41	34.62	8.65	34.11	222	48	Peak
11400	47.15	32.05	54	-6.85	37.84	12.67	35.41	121	190	Average
11400	57.38	42.28	74	-16.62	37.84	12.67	35.41	121	190	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5700	92.82	83.69			34.59	8.64	34.1	258	57	Average
5700	99.26	90.13			34.59	8.64	34.1	258	57	Peak
*5724.36	55.53	46.37	68.2	-12.67	34.62	8.65	34.11	258	57	Peak
11400	46.74	31.64	54	-7.26	37.84	12.67	35.41	135	264	Average
11400	56.8	41.7	74	-17.2	37.84	12.67	35.41	135	264	Peak

Remarks:

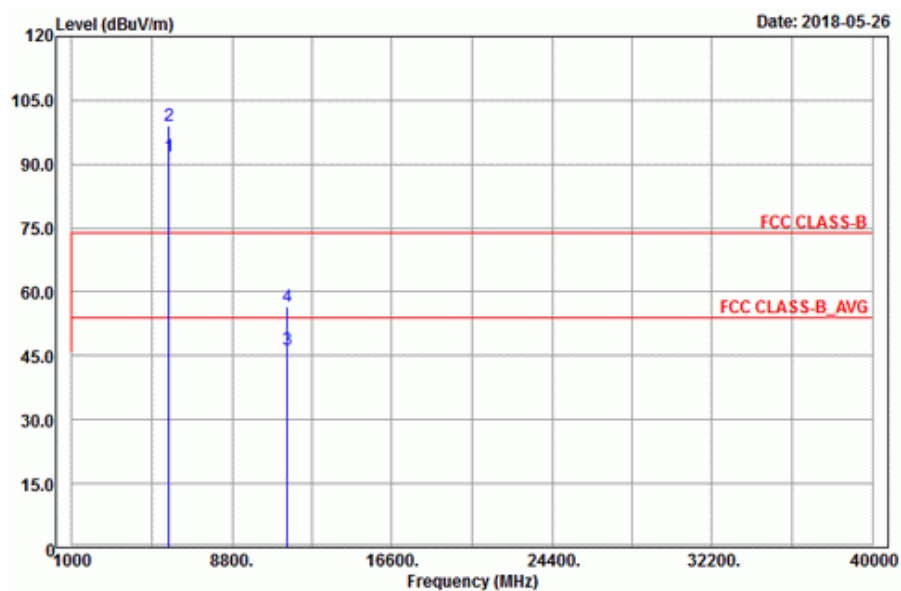
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5700 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 149	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

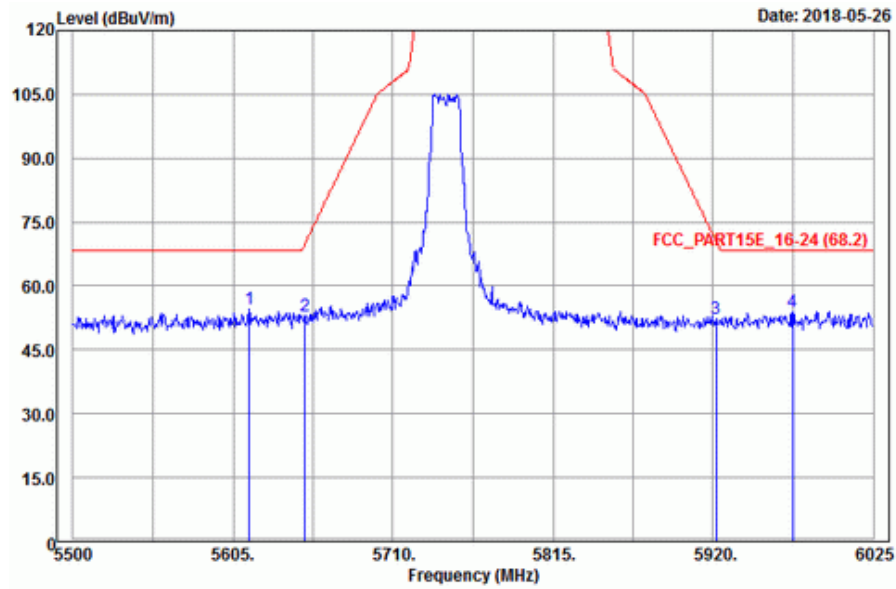
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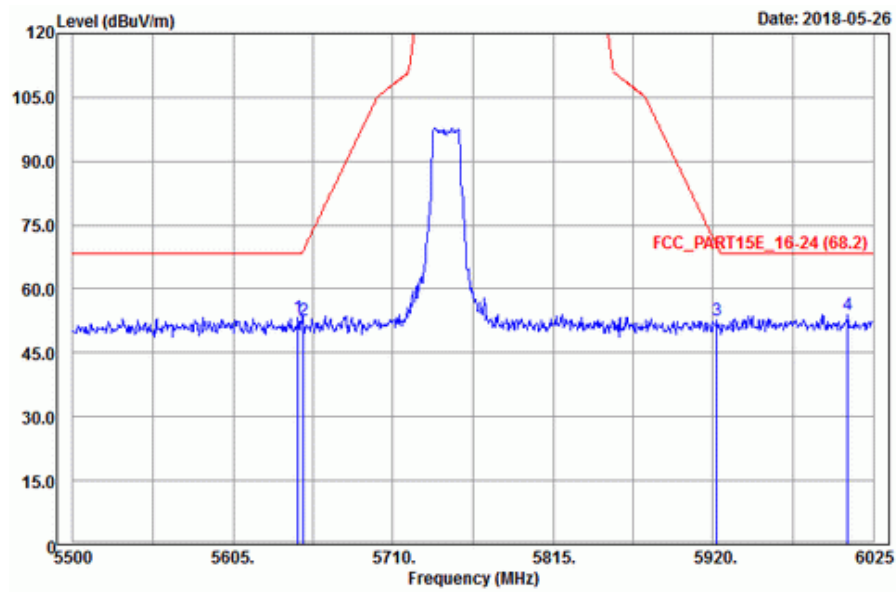
Vertical



<Out of Band Emission (OOBE)> Horizontal



Vertical



<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	99.02	89.83			34.64	8.66	34.11	213	47	Average
5745	106.16	96.97			34.64	8.66	34.11	213	47	Peak
11490	46.73	31.61	54	-7.27	37.89	12.62	35.39	139	77	Average
11490	57.05	41.93	74	-16.95	37.89	12.62	35.39	139	77	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	91.72	82.53			34.64	8.66	34.11	277	57	Average
5745	99.06	89.87			34.64	8.66	34.11	277	57	Peak
11490	46.51	31.39	54	-7.49	37.89	12.62	35.39	103	217	Average
11490	56.72	41.6	74	-17.28	37.89	12.62	35.39	103	217	Peak

<Out of Band Emission (OOBE)>

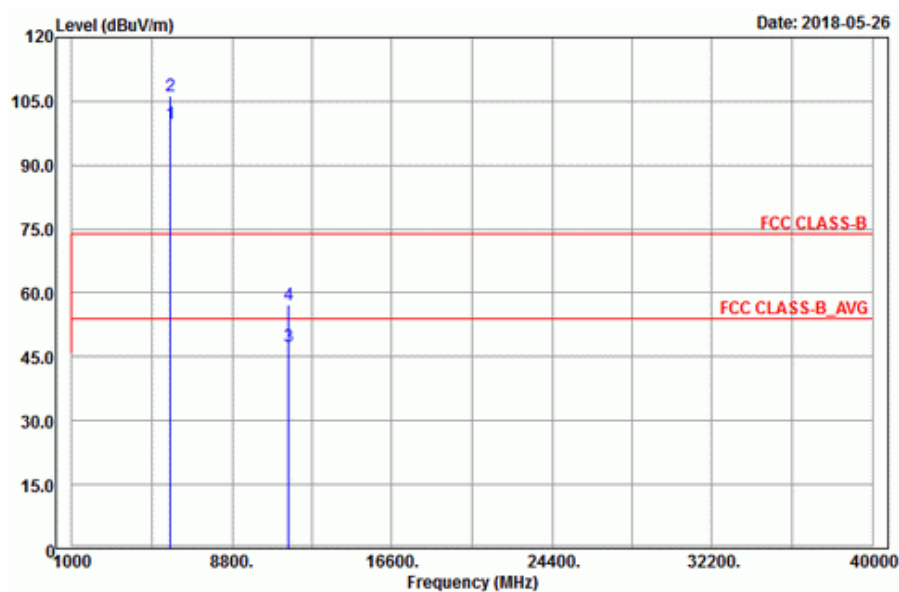
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5615.5	54.58	45.53	68.2	-13.62	34.52	8.61	34.08	213	47	Peak
5652.25	52.98	43.89	69.86	-16.88	34.56	8.62	34.09	213	47	Peak
5922.1	52.35	42.95	70.35	-18	34.83	8.73	34.16	213	47	Peak
*5972.5	54.04	44.59	68.2	-14.16	34.87	8.75	34.17	213	47	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5647.525	53.45	44.38	68.2	-14.75	34.54	8.62	34.09	277	57	Peak
5651.2	52.71	43.62	69.09	-16.38	34.56	8.62	34.09	277	57	Peak
5922.625	52.5	43.1	69.96	-17.46	34.83	8.73	34.16	277	57	Peak
*6008.2	54.08	44.57	68.2	-14.12	34.92	8.76	34.17	277	57	Peak

Remarks:

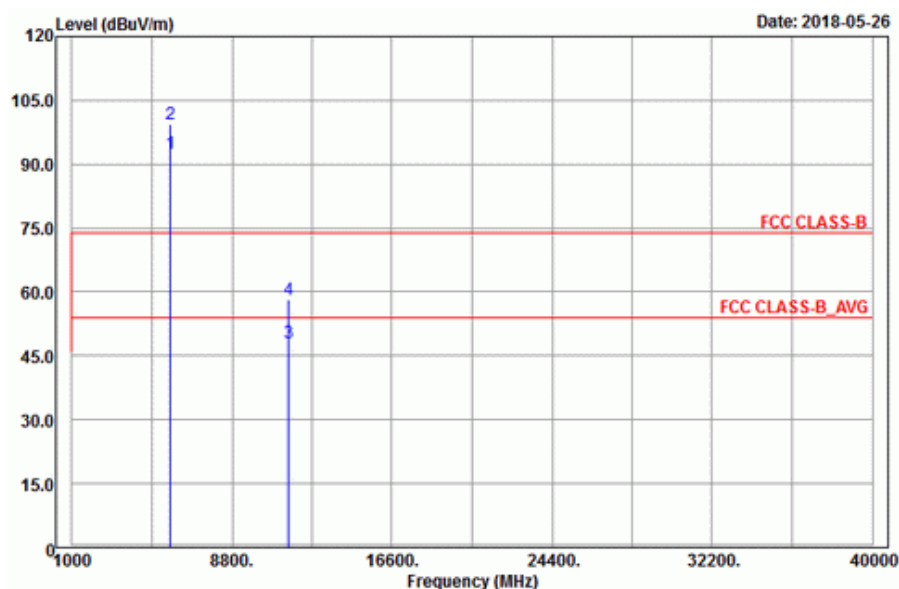
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5745 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 157	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

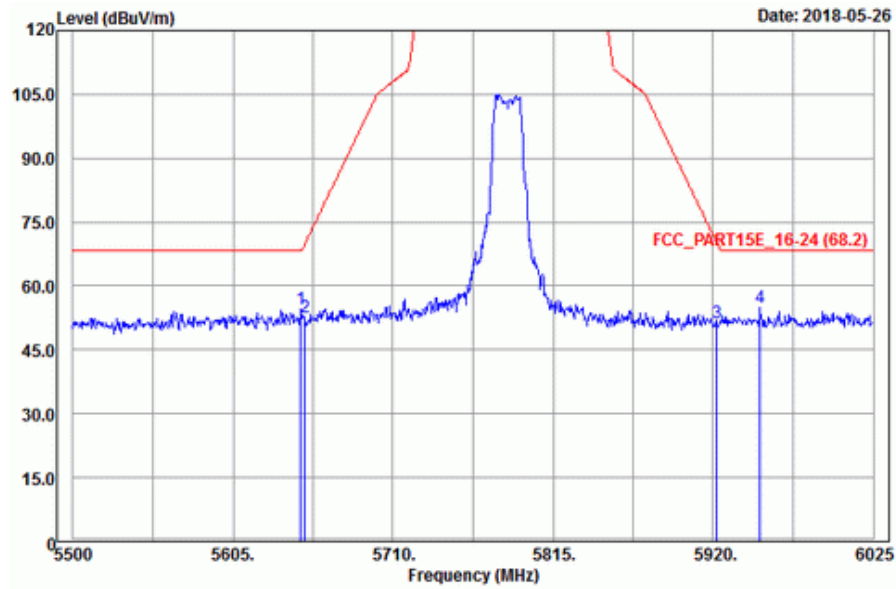
<Spurious Emission> Horizontal



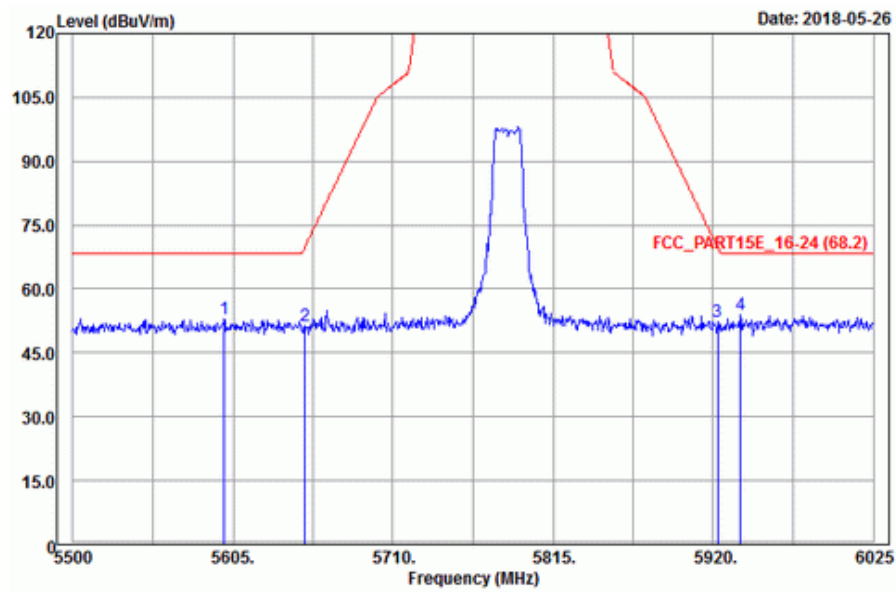
Vertical



<Out of Band Emission (OOBE)> Horizontal



Vertical



<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	99.58	90.35			34.68	8.68	34.13	213	47	Average
5785	106.41	97.18			34.68	8.68	34.13	213	47	Peak
11570	47.31	32	54	-6.69	38	12.68	35.37	101	98	Average
11570	57.27	41.96	74	-16.73	38	12.68	35.37	101	98	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	92.45	83.22			34.68	8.68	34.13	277	57	Average
5785	99.44	90.21			34.68	8.68	34.13	277	57	Peak
11570	47.92	32.61	54	-6.08	38	12.68	35.37	146	232	Average
11570	58.21	42.9	74	-15.79	38	12.68	35.37	146	232	Peak

<Out of Band Emission (OOBE)>

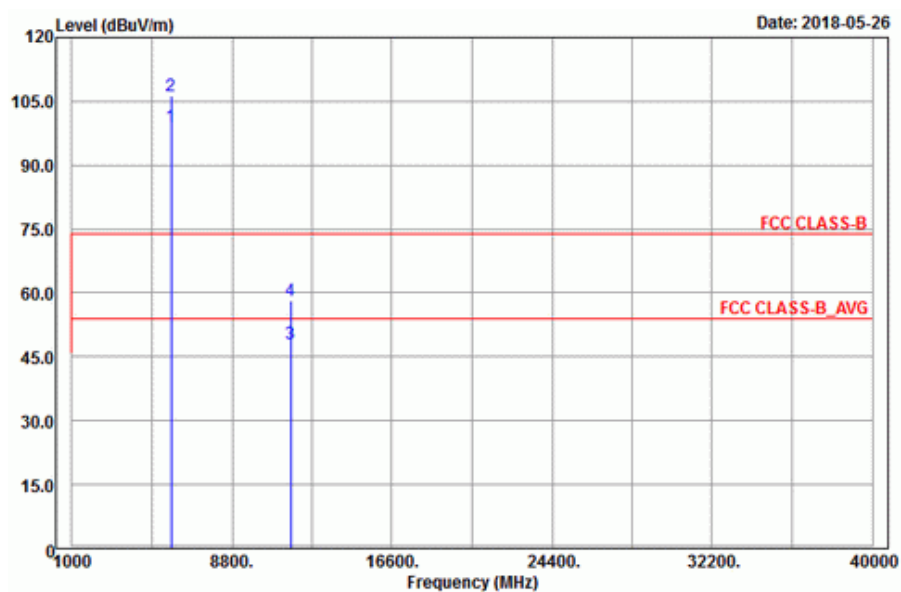
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5649.625	54.53	45.44	68.2	-13.67	34.56	8.62	34.09	213	47	Peak
5652.25	52.67	43.58	69.86	-17.19	34.56	8.62	34.09	213	47	Peak
5922.625	51.38	41.98	69.96	-18.58	34.83	8.73	34.16	213	47	Peak
*5950.975	54.89	45.46	68.2	-13.31	34.85	8.74	34.16	213	47	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5599.225	53.12	44.1	68.2	-15.08	34.5	8.6	34.08	277	57	Peak
5652.25	51.24	42.15	69.86	-18.62	34.56	8.62	34.09	277	57	Peak
5923.15	52.27	42.87	69.57	-17.3	34.83	8.73	34.16	277	57	Peak
*5937.85	53.98	44.58	68.2	-14.22	34.83	8.73	34.16	277	57	Peak

Remarks:

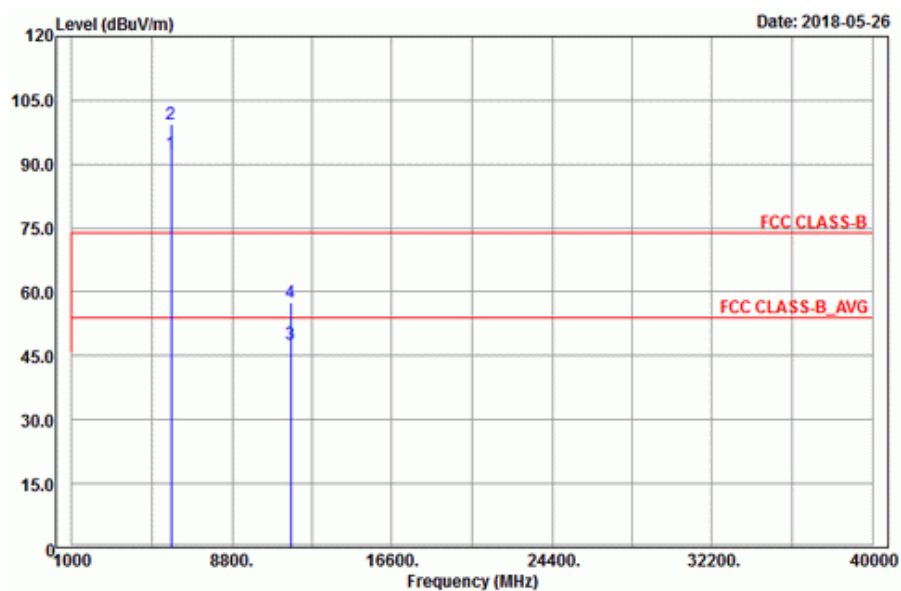
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5785 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 165	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

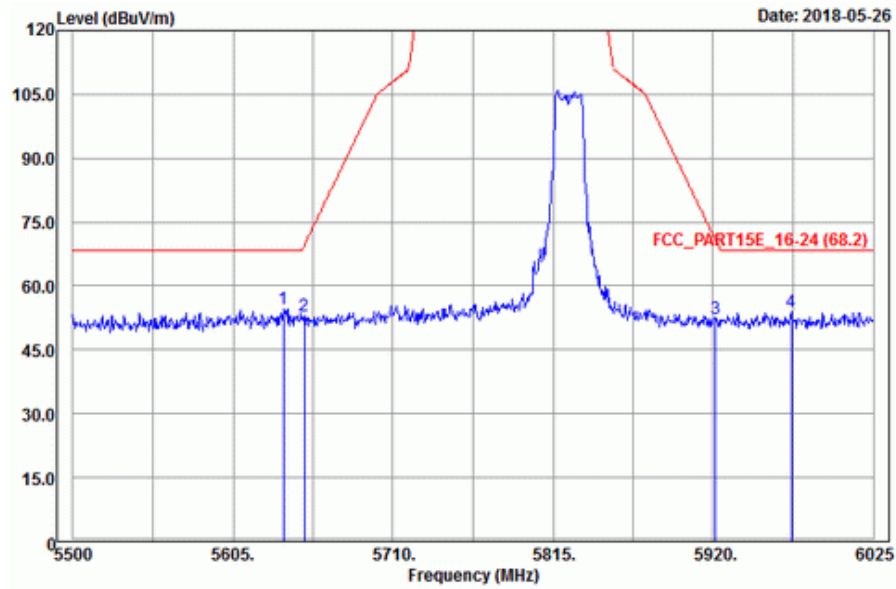
<Spurious Emission> Horizontal



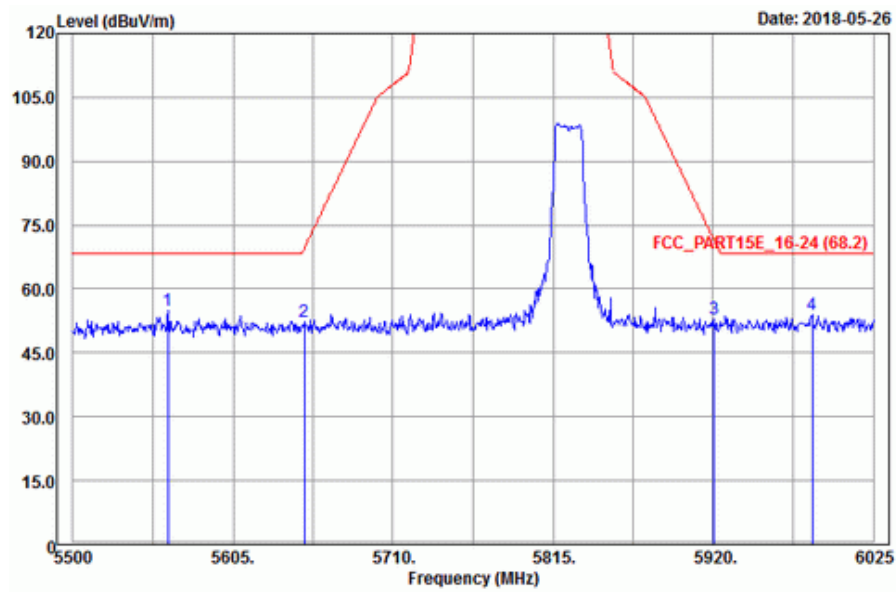
Vertical



<Out of Band Emission (OOBE)> Horizontal



Vertical



<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	99.03	89.74			34.73	8.69	34.13	213	47	Average
5825	106.16	96.87			34.73	8.69	34.13	213	47	Peak
11650	48.06	32.53	54	-5.94	38.09	12.8	35.36	147	325	Average
11650	58.26	42.73	74	-15.74	38.09	12.8	35.36	147	325	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	92.69	83.4			34.73	8.69	34.13	277	57	Average
5825	99.38	90.09			34.73	8.69	34.13	277	57	Peak
11650	47.58	32.05	54	-6.42	38.09	12.8	35.36	185	207	Average
11650	57.49	41.96	74	-16.51	38.09	12.8	35.36	185	207	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5638.075	54.7	45.63	68.2	-13.5	34.54	8.62	34.09	213	47	Peak
5651.725	53.05	43.96	69.48	-16.43	34.56	8.62	34.09	213	47	Peak
5921.575	52.37	42.97	70.73	-18.36	34.83	8.73	34.16	213	47	Peak
*5971.45	53.99	44.54	68.2	-14.21	34.87	8.75	34.17	213	47	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5562.475	55.01	46.04	68.2	-13.19	34.45	8.59	34.07	277	57	Peak
5651.725	52.3	43.21	69.48	-17.18	34.56	8.62	34.09	277	57	Peak
5920.525	53.1	43.72	71.51	-18.41	34.81	8.73	34.16	277	57	Peak
*5985.1	53.8	44.34	68.2	-14.4	34.88	8.75	34.17	277	57	Peak

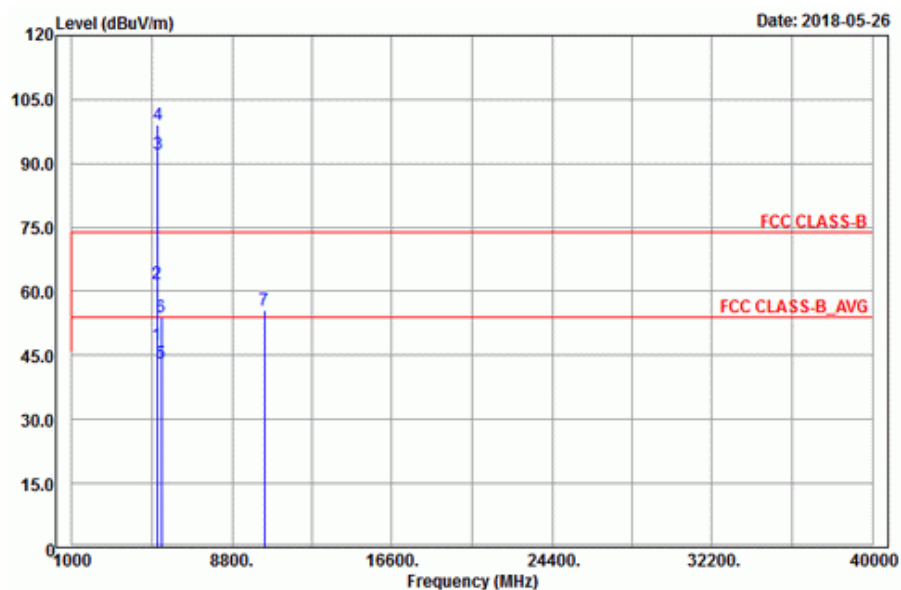
Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5825 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

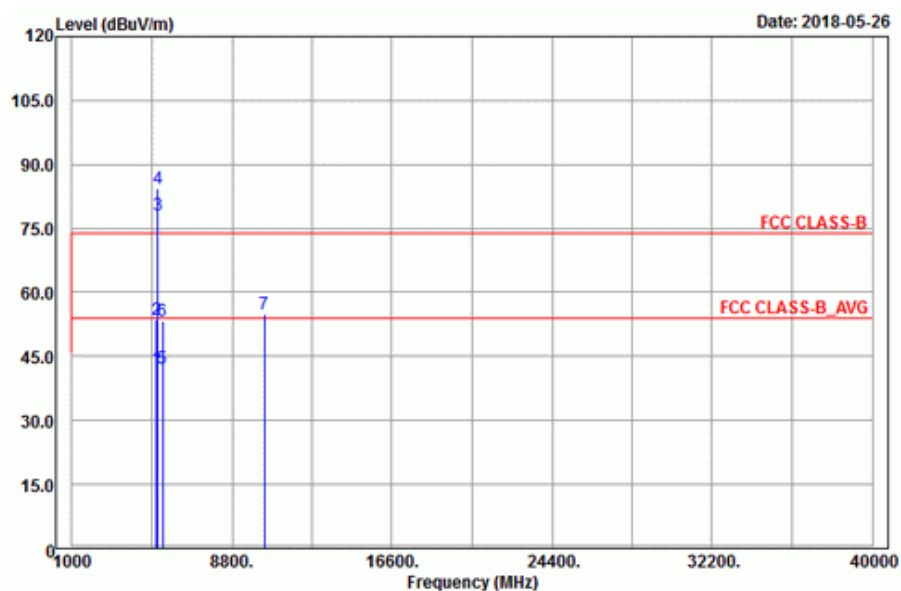
802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 38	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



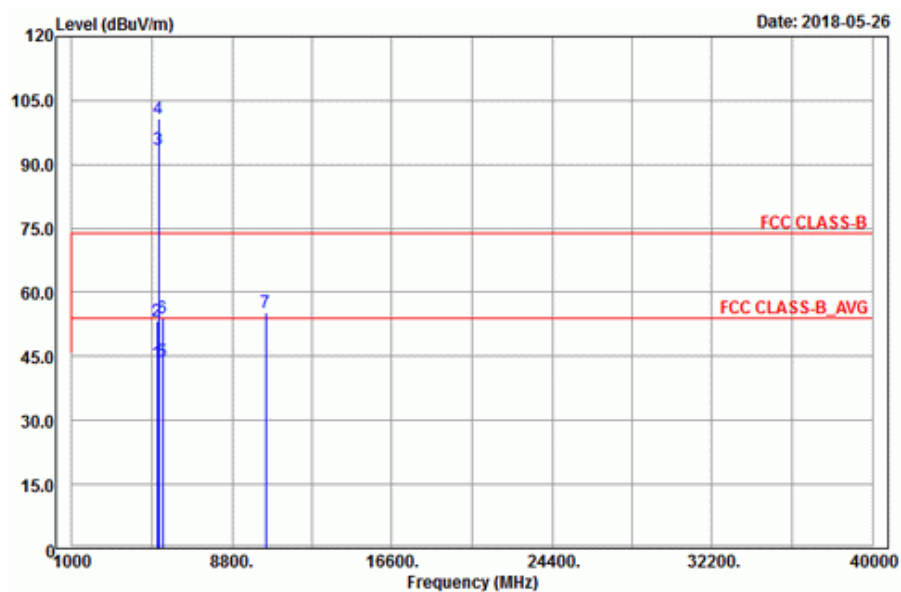
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.85	47.39	39.14	54	-6.61	34.12	8.13	34	216	42	Average
5149.85	61.76	53.51	74	-12.24	34.12	8.13	34	216	42	Peak
5190	92.18	83.84			34.15	8.19	34	216	42	Average
5190	99.07	90.73			34.15	8.19	34	216	42	Peak
5370.02	43.02	34.35	54	-10.98	34.29	8.41	34.03	216	42	Average
5370.02	53.96	45.29	74	-20.04	34.29	8.41	34.03	216	42	Peak
*10380	55.58	41.23	68.2	-12.62	37.13	12.36	35.14	131	119	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5126.45	42.16	33.94	54	-11.84	34.11	8.1	33.99	109	44	Average
5126.45	53.68	45.46	74	-20.32	34.11	8.1	33.99	109	44	Peak
5190	78.2	69.86			34.15	8.19	34	109	44	Average
5190	84.26	75.92			34.15	8.19	34	109	44	Peak
5441.74	42.3	33.51	54	-11.7	34.35	8.48	34.04	109	44	Average
5441.74	53.13	44.34	74	-20.87	34.35	8.48	34.04	109	44	Peak
*10380	54.86	40.51	68.2	-13.34	37.13	12.36	35.14	113	224	Peak

Remarks:

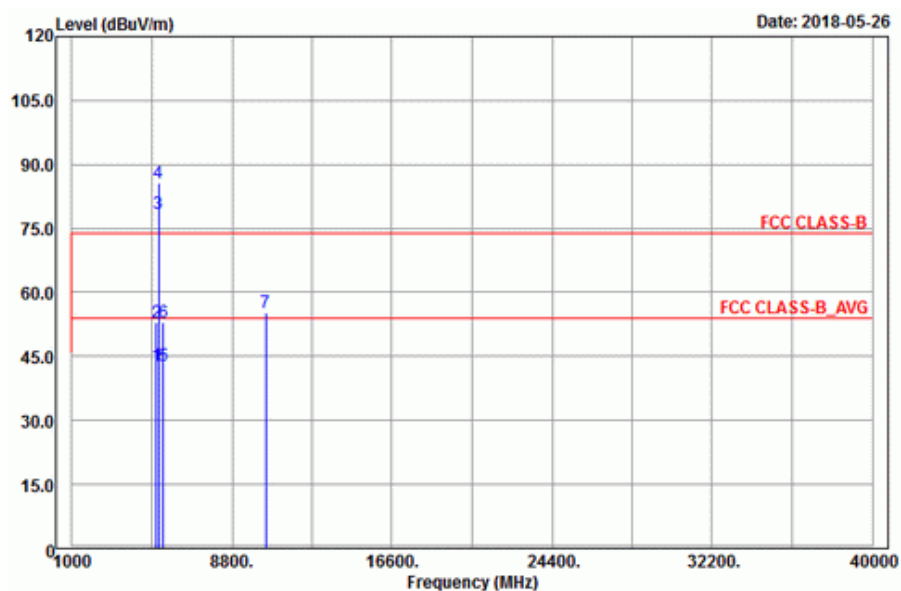
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 5190 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 46	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



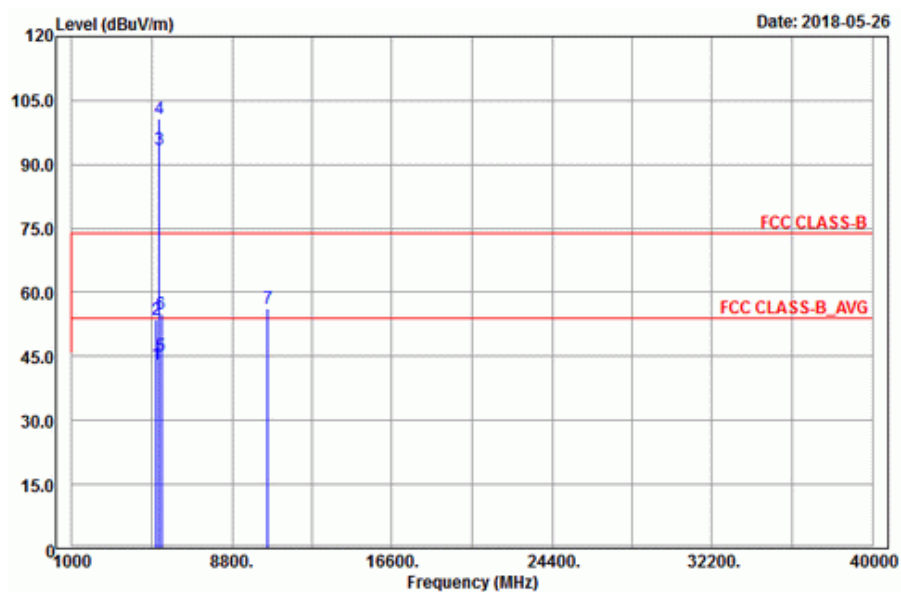
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5148.2	43.57	35.32	54	-10.43	34.12	8.13	34	216	42	Average
5148.2	53.17	44.92	74	-20.83	34.12	8.13	34	216	42	Peak
5230	93.49	85.09			34.19	8.22	34.01	216	42	Average
5230	100.6	92.2			34.19	8.22	34.01	216	42	Peak
5416.88	43.89	35.16	54	-10.11	34.33	8.44	34.04	216	42	Average
5416.88	53.82	45.09	74	-20.18	34.33	8.44	34.04	216	42	Peak
10460	55.39	40.88	68.2	-12.81	37.17	12.53	35.19	174	119	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5135	42.79	34.54	54	-11.21	34.11	8.13	33.99	109	44	Average
5135	52.86	44.61	74	-21.14	34.11	8.13	33.99	109	44	Peak
5230	78.49	70.09			34.19	8.22	34.01	109	44	Average
5230	85.52	77.12			34.19	8.22	34.01	109	44	Peak
5451.64	42.77	33.95	54	-11.23	34.36	8.51	34.05	109	44	Average
5451.64	53.11	44.29	74	-20.89	34.36	8.51	34.05	109	44	Peak
10460	55.21	40.7	68.2	-12.99	37.17	12.53	35.19	118	346	Peak

Remarks:

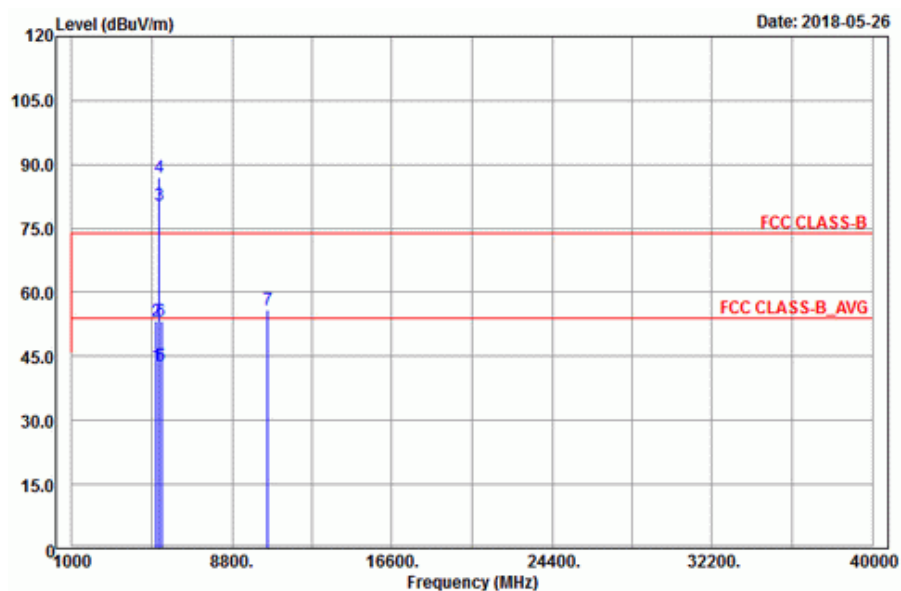
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 5230 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 54	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



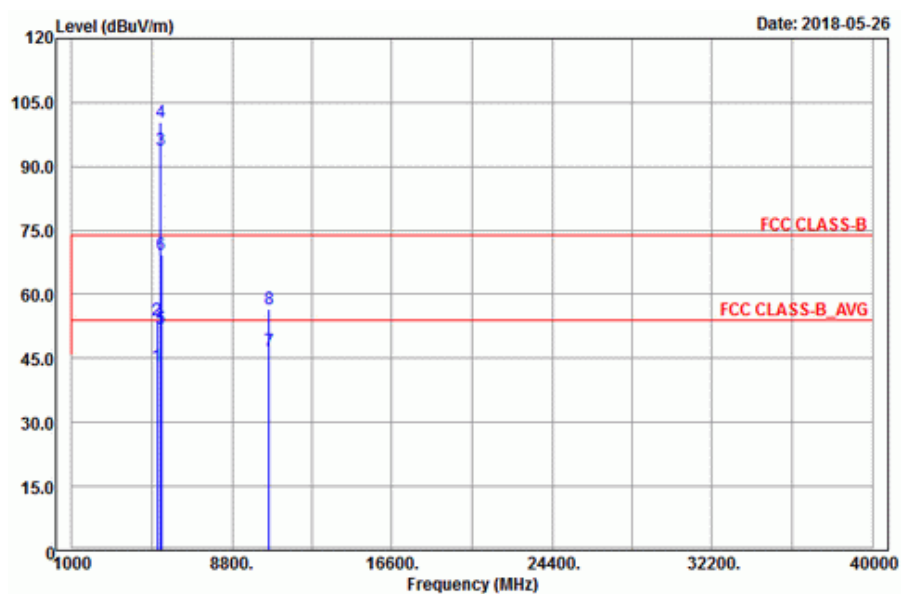
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5129.45	43.27	35.05	54	-10.73	34.11	8.1	33.99	223	38	Average
5129.45	53.73	45.51	74	-20.27	34.11	8.1	33.99	223	38	Peak
5270	93.61	85.12			34.21	8.29	34.01	223	38	Average
5270	100.82	92.33			34.21	8.29	34.01	223	38	Peak
5352.2	45.26	36.63	54	-8.74	34.28	8.38	34.03	223	38	Average
5352.2	54.9	46.27	74	-19.1	34.28	8.38	34.03	223	38	Peak
*10540	56.14	41.52	68.2	-12.06	37.23	12.63	35.24	159	22	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5111.15	42.74	34.54	54	-11.26	34.09	8.1	33.99	100	38	Average
5111.15	53.41	45.21	74	-20.59	34.09	8.1	33.99	100	38	Peak
5270	80.46	71.97			34.21	8.29	34.01	100	38	Average
5270	87.11	78.62			34.21	8.29	34.01	100	38	Peak
5367.93	42.91	34.24	54	-11.09	34.29	8.41	34.03	100	38	Average
5367.93	53.19	44.52	74	-20.81	34.29	8.41	34.03	100	38	Peak
*10540	55.86	41.24	68.2	-12.34	37.23	12.63	35.24	135	228	Peak

Remarks:

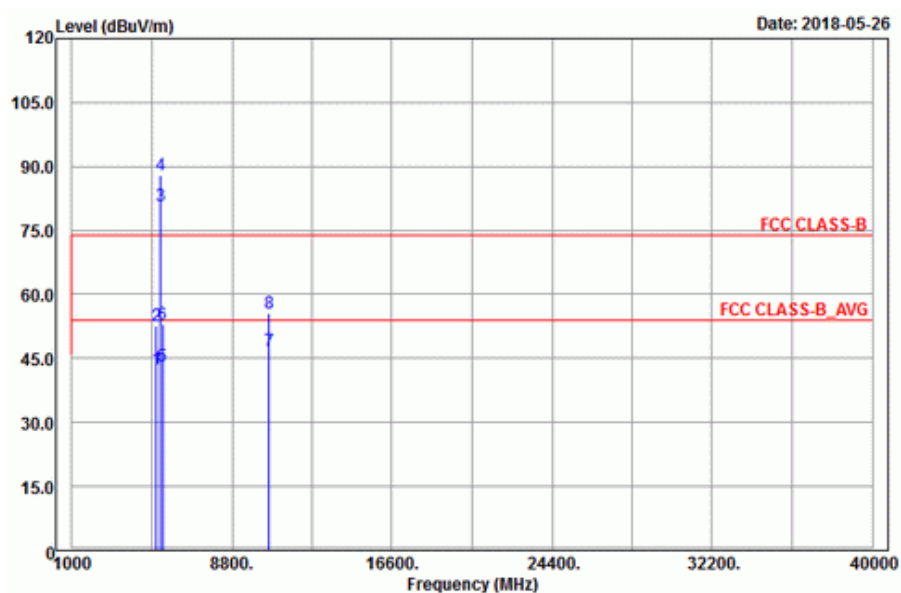
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5270 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 62	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



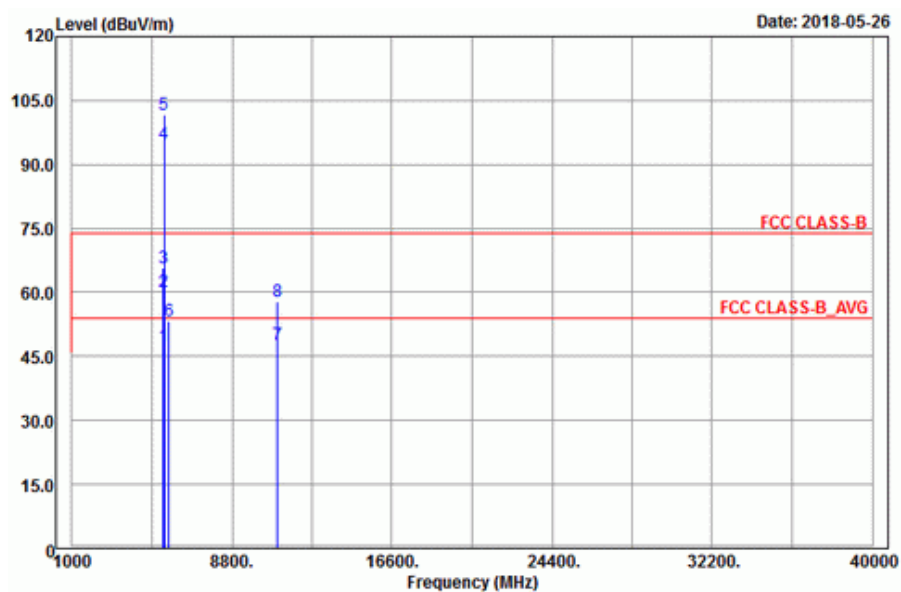
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5144.6	43.11	34.86	54	-10.89	34.12	8.13	34	223	38	Average
5144.6	53.91	45.66	74	-20.09	34.12	8.13	34	223	38	Peak
5310	93.88	85.33			34.25	8.32	34.02	223	38	Average
5310	100.4	91.85			34.25	8.32	34.02	223	38	Peak
5350.33	51.94	43.31	54	-2.06	34.28	8.38	34.03	223	38	Average
5350.33	69.4	60.77	74	-4.6	34.28	8.38	34.03	223	38	Peak
10620	46.87	32.16	54	-7.13	37.3	12.69	35.28	155	258	Average
10620	56.6	41.89	74	-17.4	37.3	12.69	35.28	155	258	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5114.6	42.66	34.46	54	-11.34	34.09	8.1	33.99	100	38	Average
5114.6	52.67	44.47	74	-21.33	34.09	8.1	33.99	100	38	Peak
5310	80.77	72.22			34.25	8.32	34.02	100	38	Average
5310	87.97	79.42			34.25	8.32	34.02	100	38	Peak
5440.75	43	34.21	54	-11	34.35	8.48	34.04	100	38	Average
5440.75	53.04	44.25	74	-20.96	34.35	8.48	34.04	100	38	Peak
10620	46.86	32.15	54	-7.14	37.3	12.69	35.28	124	114	Average
10620	55.7	40.99	74	-18.3	37.3	12.69	35.28	124	114	Peak

Remarks:

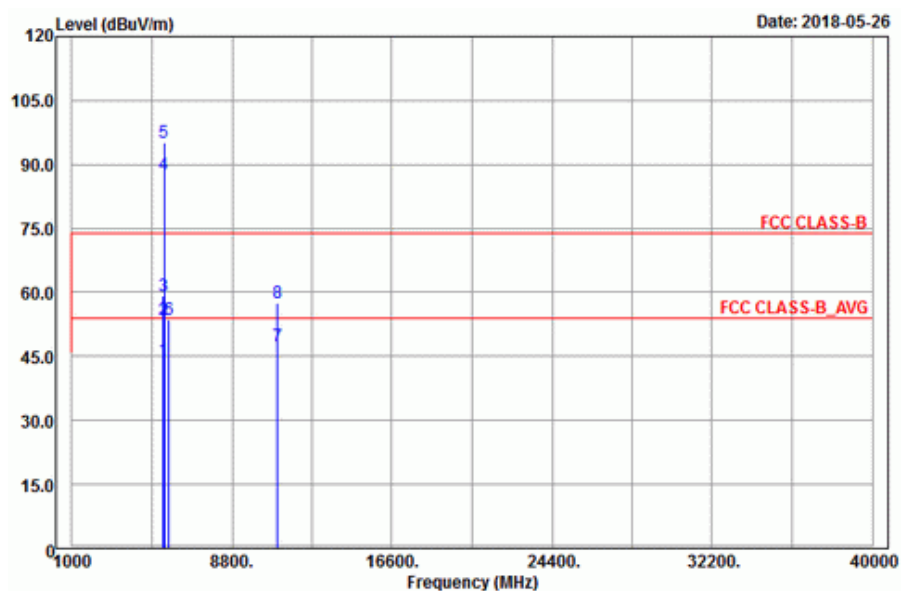
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5310 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 102	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



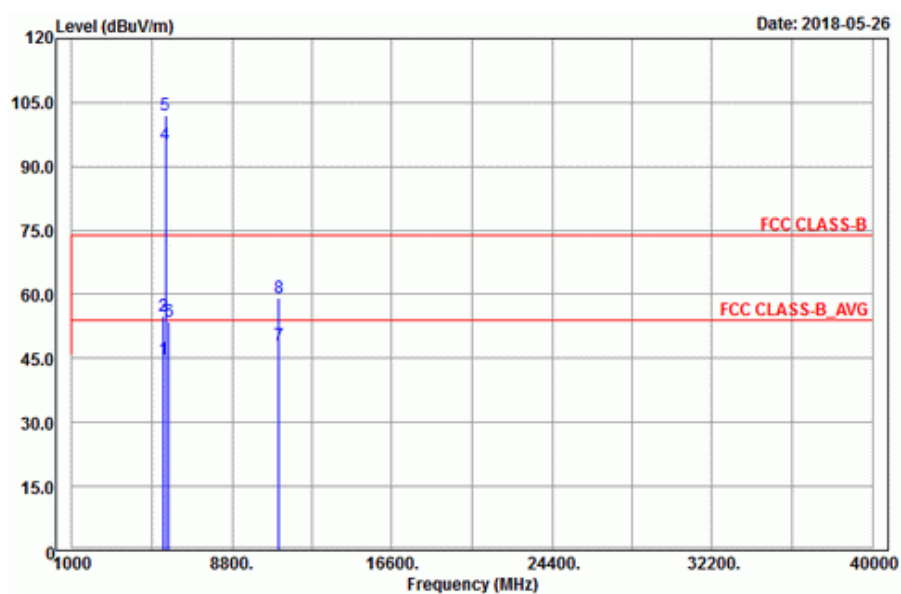
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.76	47.36	38.54	54	-6.64	34.36	8.51	34.05	197	34	Average
5459.76	60.24	51.42	74	-13.76	34.36	8.51	34.05	197	34	Peak
*5468.24	65.67	56.84	68.2	-2.53	34.37	8.51	34.05	197	34	Peak
5510	94.84	85.93			34.4	8.57	34.06	197	34	Average
5510	101.71	92.8			34.4	8.57	34.06	197	34	Peak
*5724.2	53.2	44.04	68.2	-15	34.62	8.65	34.11	197	34	Peak
11020	47.84	32.77	54	-6.16	37.61	12.94	35.48	164	205	Average
11020	57.96	42.89	74	-16.04	37.61	12.94	35.48	164	205	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460.08	44	35.18	54	-10	34.36	8.51	34.05	274	65	Average
5460.08	53.48	44.66	74	-20.52	34.36	8.51	34.05	274	65	Peak
*5468.4	59.06	50.23	68.2	-9.14	34.37	8.51	34.05	274	65	Peak
5510	87.66	78.75			34.4	8.57	34.06	274	65	Average
5510	95.12	86.21			34.4	8.57	34.06	274	65	Peak
*5724.28	53.64	44.48	68.2	-14.56	34.62	8.65	34.11	274	65	Peak
11020	47.52	32.45	54	-6.48	37.61	12.94	35.48	152	237	Average
11020	57.39	42.32	74	-16.61	37.61	12.94	35.48	152	237	Peak

Remarks:

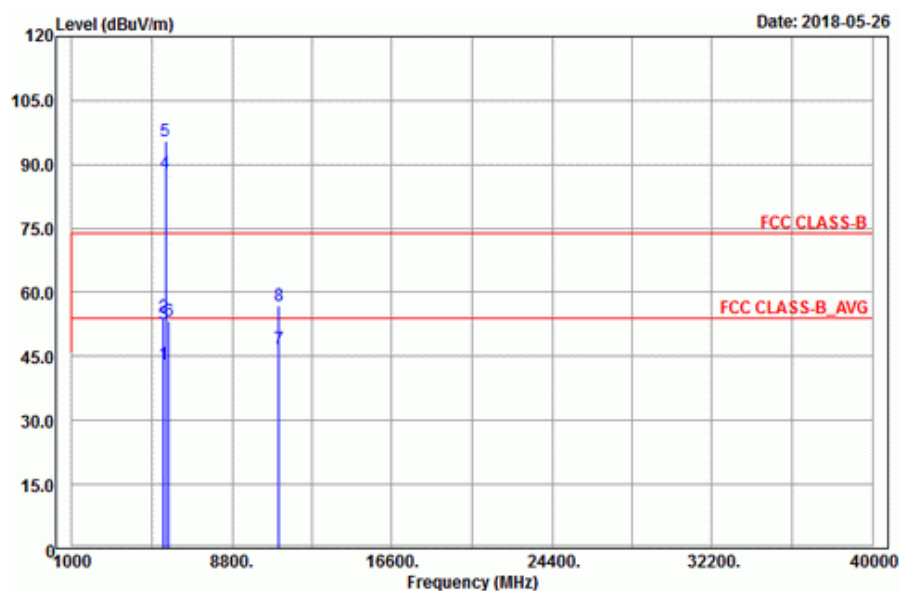
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5510 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 110	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



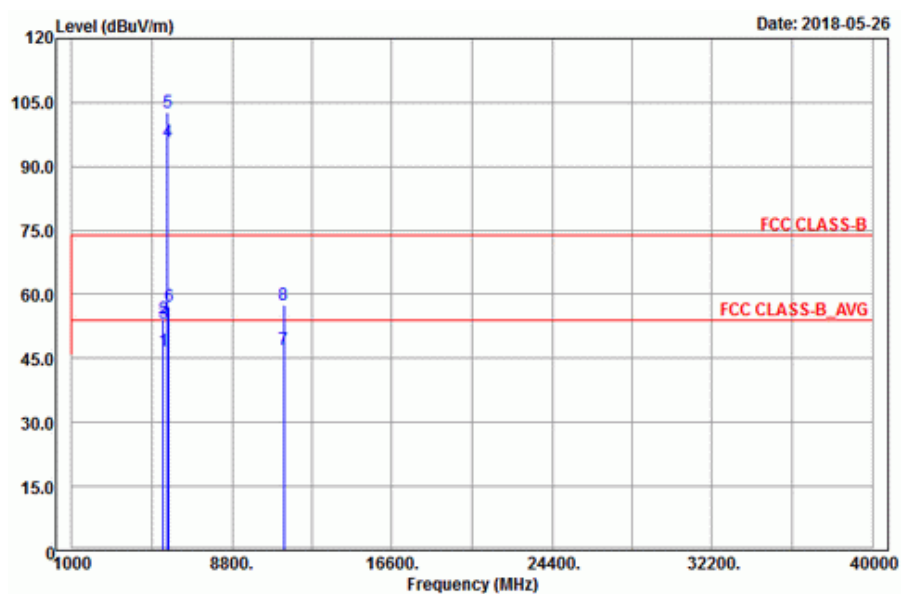
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.76	44.82	36	54	-9.18	34.36	8.51	34.05	197	34	Average
5459.76	54.81	45.99	74	-19.19	34.36	8.51	34.05	197	34	Peak
*5470.64	54.95	46.12	68.2	-13.25	34.37	8.51	34.05	197	34	Peak
5550	95.06	86.09			34.45	8.59	34.07	197	34	Average
5550	101.98	93.01			34.45	8.59	34.07	197	34	Peak
*5723.96	53.69	44.53	68.2	-14.51	34.62	8.65	34.11	197	34	Peak
11100	48.12	33.03	54	-5.88	37.66	12.89	35.46	153	69	Average
11100	59.02	43.93	74	-14.98	37.66	12.89	35.46	153	69	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5458.32	43.06	34.24	54	-10.94	34.36	8.51	34.05	274	65	Average
5458.32	54.28	45.46	74	-19.72	34.36	8.51	34.05	274	65	Peak
*5469.36	52.52	43.69	68.2	-15.68	34.37	8.51	34.05	274	65	Peak
5550	87.81	78.84			34.45	8.59	34.07	274	65	Average
5550	95.45	86.48			34.45	8.59	34.07	274	65	Peak
*5725.4	53.38	44.22	68.2	-14.82	34.62	8.65	34.11	274	65	Peak
11100	46.79	31.7	54	-7.21	37.66	12.89	35.46	169	125	Average
11100	56.83	41.74	74	-17.17	37.66	12.89	35.46	169	125	Peak

Remarks:

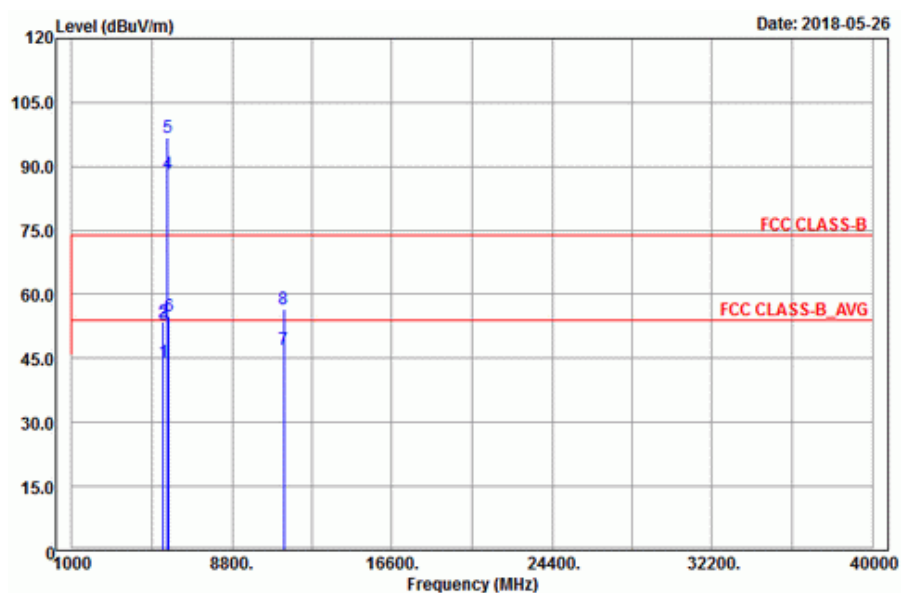
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5550 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 134	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



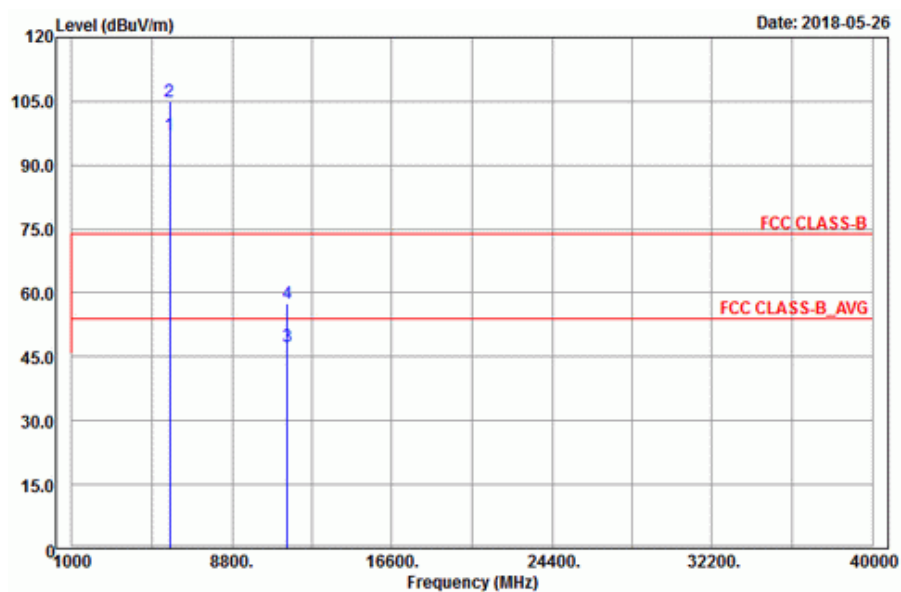
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460.08	46.61	37.79	54	-7.39	34.36	8.51	34.05	222	48	Average
5460.08	54.38	45.56	74	-19.62	34.36	8.51	34.05	222	48	Peak
*5470.48	53.36	44.53	68.2	-14.84	34.37	8.51	34.05	222	48	Peak
5670	95.79	86.69			34.57	8.63	34.1	222	48	Average
5670	102.78	93.68			34.57	8.63	34.1	222	48	Peak
*5725.88	57.14	47.98	68.2	-11.06	34.62	8.65	34.11	222	48	Peak
11340	47.22	32.13	54	-6.78	37.8	12.71	35.42	187	39	Average
11340	57.53	42.44	74	-16.47	37.8	12.71	35.42	187	39	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460.08	44.18	35.36	54	-9.82	34.36	8.51	34.05	258	57	Average
5460.08	53.48	44.66	74	-20.52	34.36	8.51	34.05	258	57	Peak
*5469.84	52.91	44.08	68.2	-15.29	34.37	8.51	34.05	258	57	Peak
5670	88.29	79.19			34.57	8.63	34.1	258	57	Average
5670	96.64	87.54			34.57	8.63	34.1	258	57	Peak
*5725.72	54.81	45.65	68.2	-13.39	34.62	8.65	34.11	258	57	Peak
11340	47.02	31.93	54	-6.98	37.8	12.71	35.42	128	356	Average
11340	56.7	41.61	74	-17.3	37.8	12.71	35.42	128	356	Peak

Remarks:

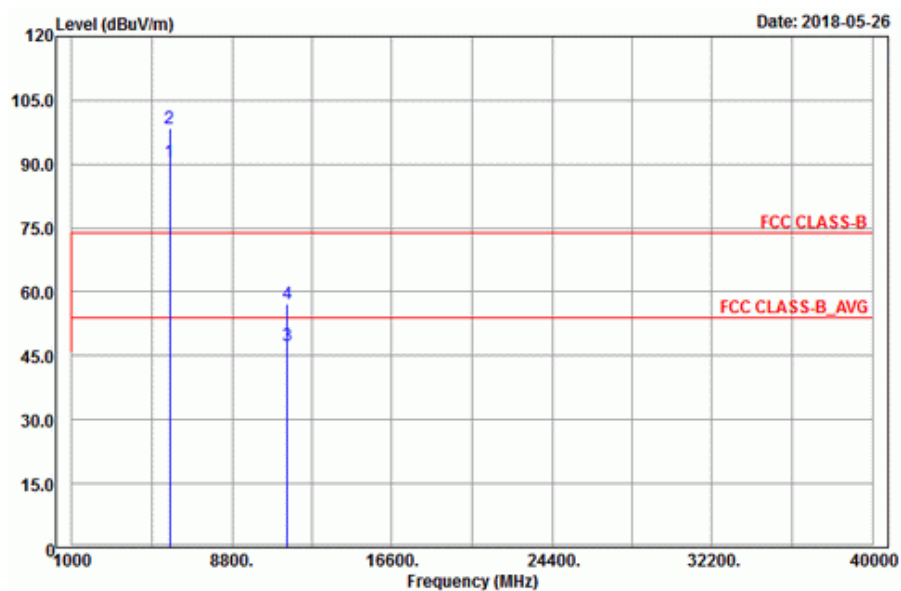
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5670 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 151	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

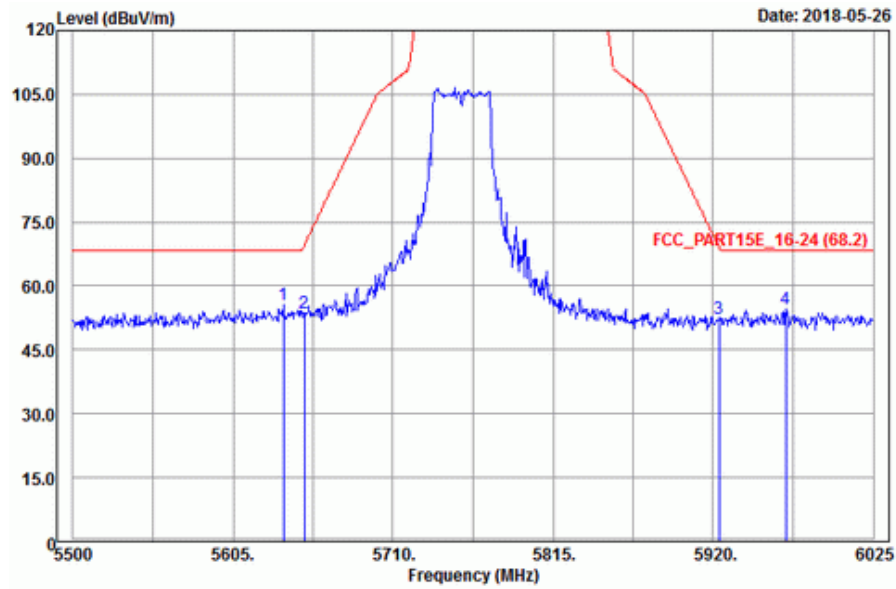
<Spurious Emission> Horizontal



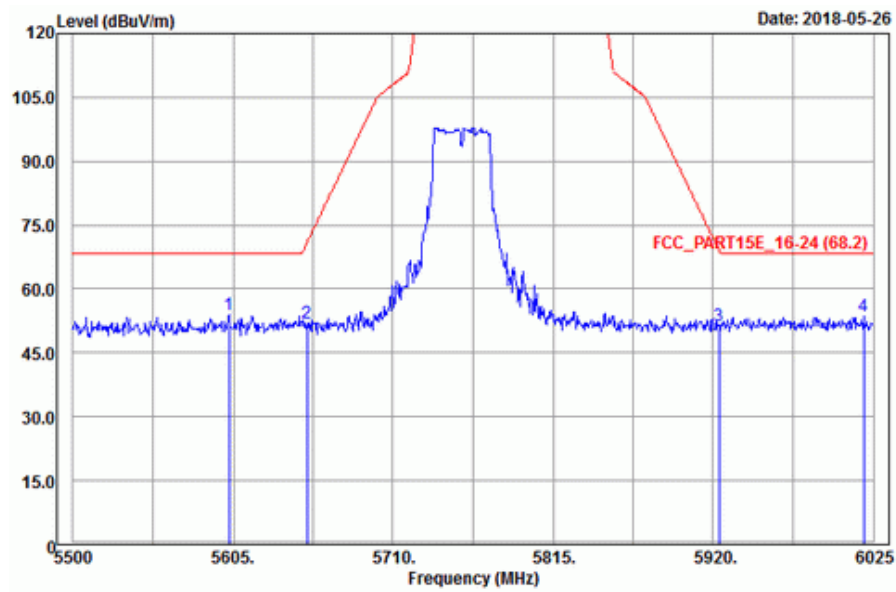
Vertical



<Out of Band Emission (OOBE)> Horizontal



Vertical



<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5755	97.09	87.88			34.66	8.66	34.11	213	47	Average
5755	104.88	95.67			34.66	8.66	34.11	213	47	Peak
11510	47.36	32.25	54	-6.64	37.9	12.6	35.39	126	260	Average
11510	57.64	42.53	74	-16.36	37.9	12.6	35.39	126	260	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5755	90.71	81.5			34.66	8.66	34.11	277	57	Average
5755	98.3	89.09			34.66	8.66	34.11	277	57	Peak
11510	47.39	32.28	54	-6.61	37.9	12.6	35.39	135	251	Average
11510	57.27	42.16	74	-16.73	37.9	12.6	35.39	135	251	Peak

<Out of Band Emission (OOBE)>

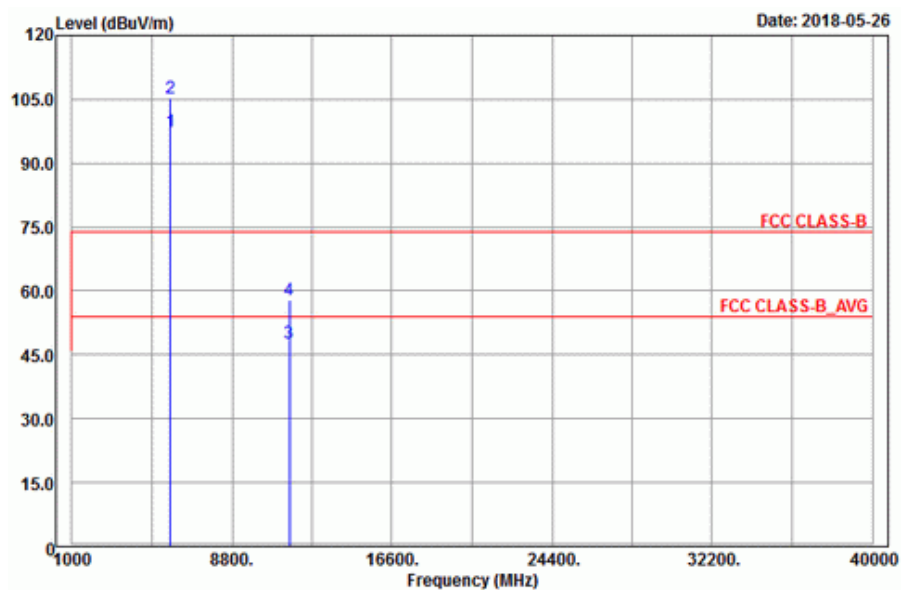
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5638.075	55.52	46.45	68.2	-12.68	34.54	8.62	34.09	213	47	Peak
5651.725	53.69	44.6	69.48	-15.79	34.56	8.62	34.09	213	47	Peak
5923.675	52.44	43.04	69.18	-16.74	34.83	8.73	34.16	213	47	Peak
*5967.775	54.57	45.12	68.2	-13.63	34.87	8.75	34.17	213	47	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5602.375	53.87	44.84	68.2	-14.33	34.5	8.61	34.08	277	57	Peak
5653.825	51.87	42.78	71.03	-19.16	34.56	8.63	34.1	277	57	Peak
5923.675	51.31	41.91	69.18	-17.87	34.83	8.73	34.16	277	57	Peak
*6018.7	53.78	44.27	68.2	-14.42	34.92	8.77	34.18	277	57	Peak

Remarks:

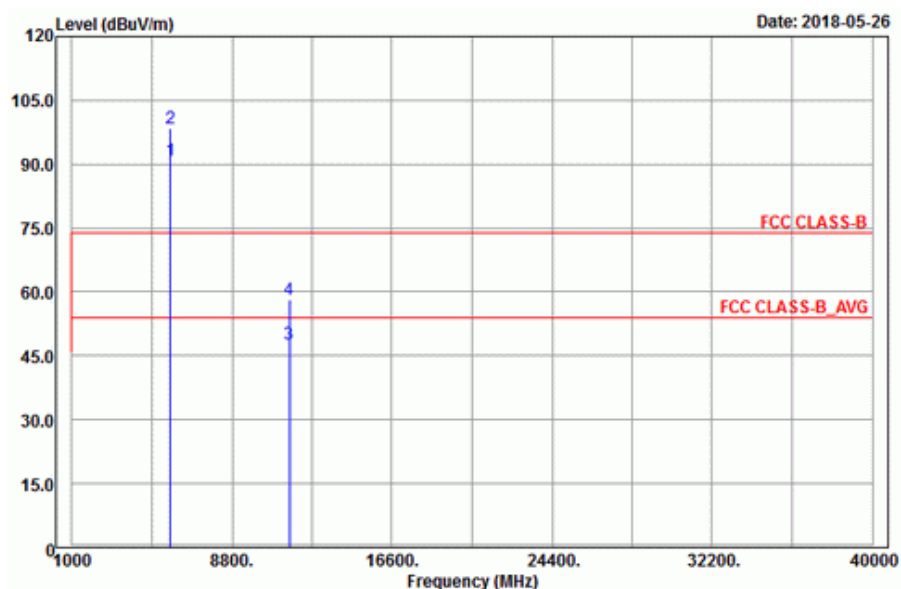
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5755 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 159	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

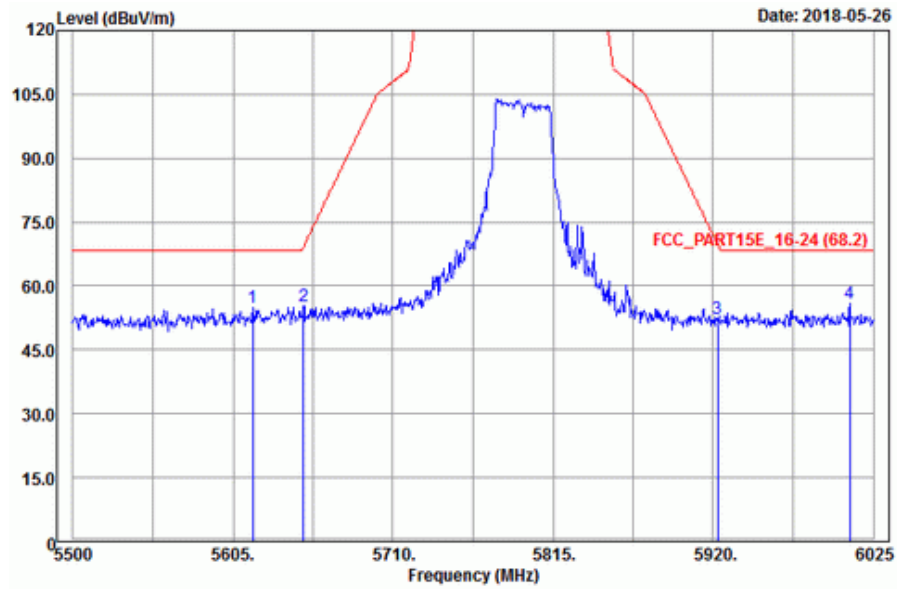
<Spurious Emission> Horizontal



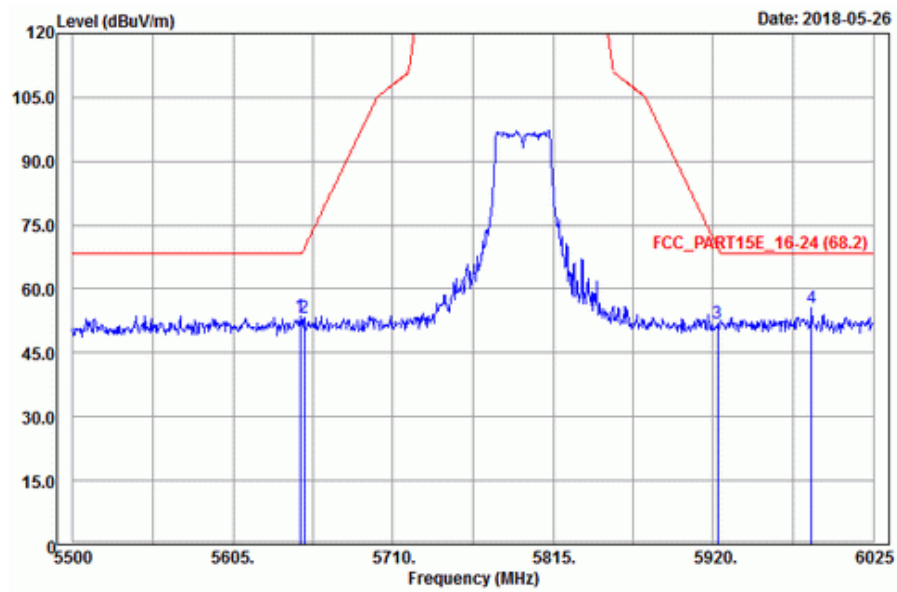
Vertical



<Out of Band Emission (OOBE)> Horizontal



Vertical



<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5795	97.54	88.3			34.69	8.68	34.13	213	47	Average
5795	105.15	95.91			34.69	8.68	34.13	213	47	Peak
11590	47.82	32.45	54	-6.18	38.02	12.72	35.37	131	122	Average
11590	57.91	42.54	74	-16.09	38.02	12.72	35.37	131	122	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5795	90.9	81.66			34.69	8.68	34.13	277	57	Average
5795	98.58	89.34			34.69	8.68	34.13	277	57	Peak
11590	47.83	32.46	54	-6.17	38.02	12.72	35.37	142	228	Average
11590	58.08	42.71	74	-15.92	38.02	12.72	35.37	142	228	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5618.125	55.06	46.01	68.2	-13.14	34.52	8.61	34.08	213	47	Peak
5651.2	55.28	46.19	69.09	-13.81	34.56	8.62	34.09	213	47	Peak
5923.15	52.43	43.03	69.57	-17.14	34.83	8.73	34.16	213	47	Peak
*6009.775	55.99	46.48	68.2	-12.21	34.92	8.76	34.17	213	47	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5649.1	53.63	44.56	68.2	-14.57	34.54	8.62	34.09	277	57	Peak
5651.725	53.24	44.15	69.48	-16.24	34.56	8.62	34.09	277	57	Peak
5923.15	51.88	42.48	69.57	-17.69	34.83	8.73	34.16	277	57	Peak
*5984.575	55.58	46.12	68.2	-12.62	34.88	8.75	34.17	277	57	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5795 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
102.9	18.68	37.3	43.5	-24.82	12.36	1.28	32.26	125	304	Peak
157.17	16.92	39.03	43.5	-26.58	8.64	1.52	32.27	148	176	Peak
257.07	14.84	32.56	46	-31.16	12.44	1.94	32.1	150	86	Peak
411.3	30.94	45.61	46	-15.06	15.13	2.41	32.21	171	23	Peak
666.1	31.08	41.51	46	-14.92	18.71	2.99	32.13	189	105	Peak
937	27.05	32.99	46	-18.95	21.65	3.62	31.21	133	56	Peak
5428	39.36	30.17	54	-14.64	34.33	8.9	34.04	196	311	Average
5428	49.36	40.17	74	-24.64	34.33	8.9	34.04	196	311	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
52.68	25.81	42.76	40	-14.19	14.38	0.9	32.23	190	122	Peak
154.2	14.75	36.97	43.5	-28.75	8.53	1.52	32.27	169	340	Peak
257.07	12.48	30.2	46	-33.52	12.44	1.94	32.1	170	224	Peak
411.3	28.69	43.36	46	-17.31	15.13	2.41	32.21	151	100	Peak
666.1	31.1	41.53	46	-14.9	18.71	2.99	32.13	127	115	Peak
937.7	31.59	37.51	46	-14.41	21.66	3.62	31.2	164	139	Peak
5302	38.76	29.81	54	-15.24	34.24	8.73	34.02	128	66	Average
5302	48.76	39.81	74	-25.24	34.24	8.73	34.02	128	66	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

8.6.3 其它不必要之訊號

9 kHz ~ 30 MHz Data:

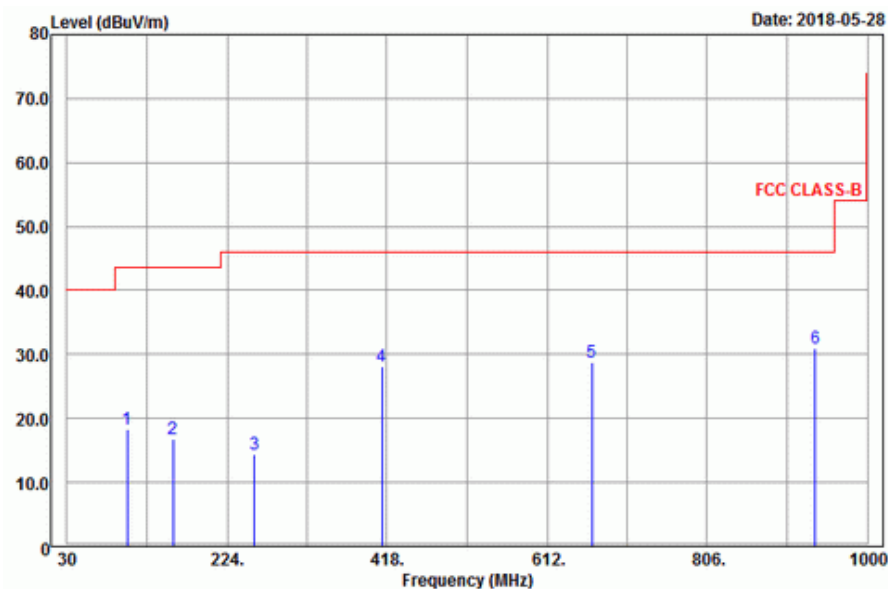
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Data:

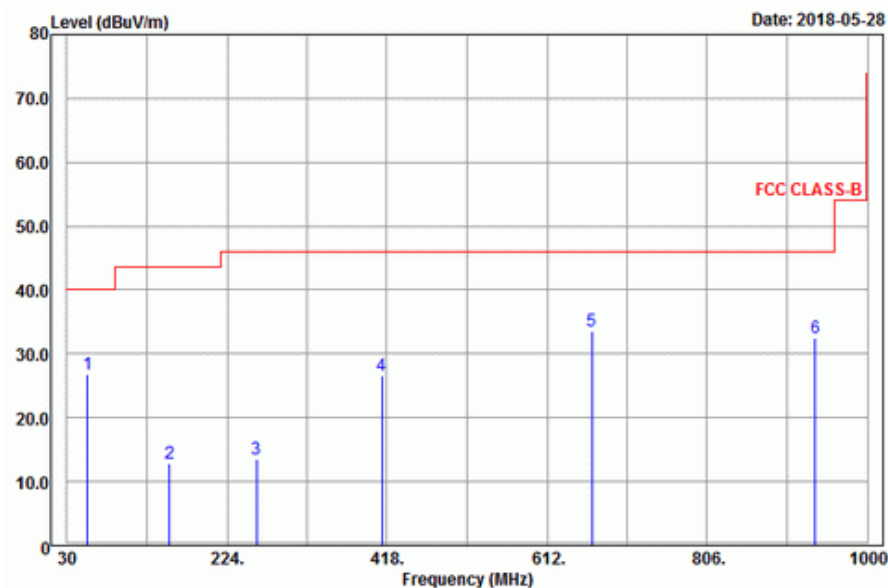
802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 62	Frequency Range	30 MHz ~ 1 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Quasi-Peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
102.9	18.41	37.03	43.5	-25.09	12.36	1.28	32.26	151	20	Peak
158.52	16.81	38.89	43.5	-26.69	8.67	1.52	32.27	175	143	Peak
257.07	14.43	32.15	46	-31.57	12.44	1.94	32.1	162	185	Peak
411.3	28.1	42.77	46	-17.9	15.13	2.41	32.21	196	246	Peak
666.1	28.71	39.14	46	-17.29	18.71	2.99	32.13	128	133	Peak
937	31.02	36.96	46	-14.98	21.65	3.62	31.21	178	143	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
55.11	26.82	44.01	40	-13.18	14.14	0.9	32.23	190	326	Peak
154.2	12.93	35.15	43.5	-30.57	8.53	1.52	32.27	147	204	Peak
259.77	13.54	31.21	46	-32.46	12.49	1.94	32.1	132	105	Peak
411.3	26.54	41.21	46	-19.46	15.13	2.41	32.21	177	145	Peak
666.1	33.53	43.96	46	-12.47	18.71	2.99	32.13	112	105	Peak
937	32.39	38.33	46	-13.61	21.65	3.62	31.21	196	45	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

8.7 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

9 峰值傳導輸出功率量測及發射頻寬之要求

9.1 適用標準

待測物操作頻帶	適用標準
☒ 5.15 GHz~5.25 GHz	請見本報告 3.1 節第(11)項(2)及(13)項(2)的規定
☒ 5.25 GHz~5.35 GHz	請見本報告 3.1 節第(11)項(3)及(13)項(3)的規定
☒ 5.470 GHz~5.725 GHz	請見本報告 3.1 節第(11)項(3)及(13)項(3)的規定
☒ 5.725 GHz~5.850 GHz	請見本報告 3.1 節第(11)項(4)及(13)項(4)的規定

9.2 量測方法

輸出峰值功率量測方法：

- 將待測物輸出經由衰減器接到功率計上。
- 設定待測物處於連續發射狀態，設置功率計的 gate 功能確保量測功率皆為 Burst on 的功率。
- 計算其輸出功率峰值。

For transmission above 5.725 GHz where the EBW crosses 5.725 GHz

- 將待測物輸出接到頻譜分析儀上。
- 設定待測物處於連續發射狀態。
- 設定頻譜掃瞄寬為 26 dB occupied bandwidth。
- 設置解析頻寬為 1 MHz，視訊頻寬為 3 倍的解析頻寬。
- 設置測試掃瞄點數要大於 2 倍的(span/RBW)。
- 設置檢波器為 RMS。
- 設置掃瞄時間為 auto。
- 設置 Trigger 模式為 free run (當 Duty cycle 大於 98 %)；設置 Trigger 模式為 Video trigger (當 Duty cycle 小於 98 %)。
- 設置 Trace mode 為 average 至少 100 次。
- 待掃描結果穩定。
- 使用頻譜的內建 band power 功能，量測 26 dB bandwidth 內最大功率值。

發射頻寬量測方法：

- 將待測物輸出經由衰減器接到頻譜分析儀上。
- 設定待測物處於連續發射狀態。
- 最大輸出功率峰值減 26 dB 的最大頻率範圍。

9.3 量測儀器

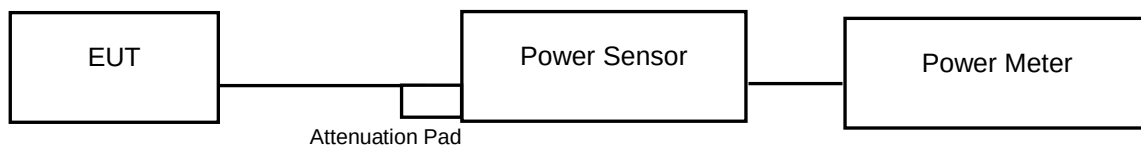
Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Power Meter	ML2495A	1232002	Dec. 07, 2017	Dec. 06, 2018
Power Sensor	MA2411B	1207325	Dec. 07, 2017	Dec. 06, 2018
Spectrum Analyzer R&S	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019

Note:

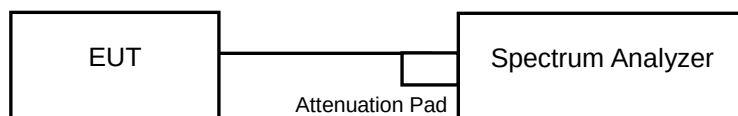
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The measurement uncertainty is 207 Hz, which is calculated as per the document ETSI TR 100 028. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of $k=2$.

9.4 測試配置

輸出峰值功率測試配置:



發射頻寬之測試配置:



9.5 量測結果

操作模式	發射	測試日期	107 年 06 月 01 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	邱智勇		

802.11a

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	26.002	14.15	24	Pass
40	5200	25.704	14.10	24	Pass
48	5240	25.823	14.12	24	Pass
52	5260	26.002	14.15	24	Pass
60	5300	26.424	14.22	24	Pass
64	5320	27.861	14.45	24	Pass
100	5500	25.763	14.11	24	Pass
116	5580	27.227	14.35	24	Pass
140	5700	27.797	14.44	24	Pass
149	5745	26.002	14.15	30	Pass
157	5785	26.303	14.20	30	Pass
165	5825	26.062	14.16	30	Pass

Note:

For U-NII-2A, U-NII-2C Band:

1. $11 \text{ dBm} + 10\log (23.12) = 24.64 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log (24.64) = 24.92 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log (24.50) = 24.89 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log (23.82) = 24.77 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log (23.27) = 24.67 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log (23.43) = 24.70 \text{ dBm} > 24 \text{ dBm}$.

802.11n (HT20)

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	21.135	13.25	24	Pass
40	5200	20.512	13.12	24	Pass
48	5240	21.38	13.30	24	Pass
52	5260	20.845	13.19	24	Pass
60	5300	20.845	13.19	24	Pass
64	5320	20.464	13.11	24	Pass
100	5500	21.627	13.35	24	Pass
116	5580	21.727	13.37	24	Pass
140	5700	22.233	13.47	24	Pass
149	5745	21.184	13.26	30	Pass
157	5785	20.749	13.17	30	Pass
165	5825	20.989	13.22	30	Pass

Note:

For U-NII-2A, U-NII-2C Band:

1. $11 \text{ dBm} + 10\log (23.56) = 24.72 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log (24.13) = 24.83 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log (24.01) = 24.80 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log (23.82) = 24.77 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log (23.77) = 24.76 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log (24.09) = 24.82 \text{ dBm} > 24 \text{ dBm}$.

802.11n (HT40)

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
38	5190	22.182	13.46	24	Pass
46	5230	20.654	13.15	24	Pass
54	5270	22.131	13.45	24	Pass
62	5310	21.979	13.42	24	Pass
102	5510	22.08	13.44	24	Pass
110	5550	20.941	13.21	24	Pass
134	5670	21.528	13.33	24	Pass
151	5755	21.184	13.26	30	Pass
159	5795	20.845	13.19	30	Pass

Note:

For U-NII-2A, U-NII-2C Band:

1. $11 \text{ dBm} + 10\log(74.01) = 29.69 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log(73.97) = 29.69 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log(53.37) = 28.27 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log(51.57) = 28.12 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log(51.18) = 28.09 \text{ dBm} > 24 \text{ dBm}$.

26 dB Bandwidth:

802.11a

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
36	5180	23.64
40	5200	23.84
48	5240	23.85
52	5260	23.12
60	5300	24.64
64	5320	24.50
100	5500	23.82
116	5580	23.27
140	5700	23.43

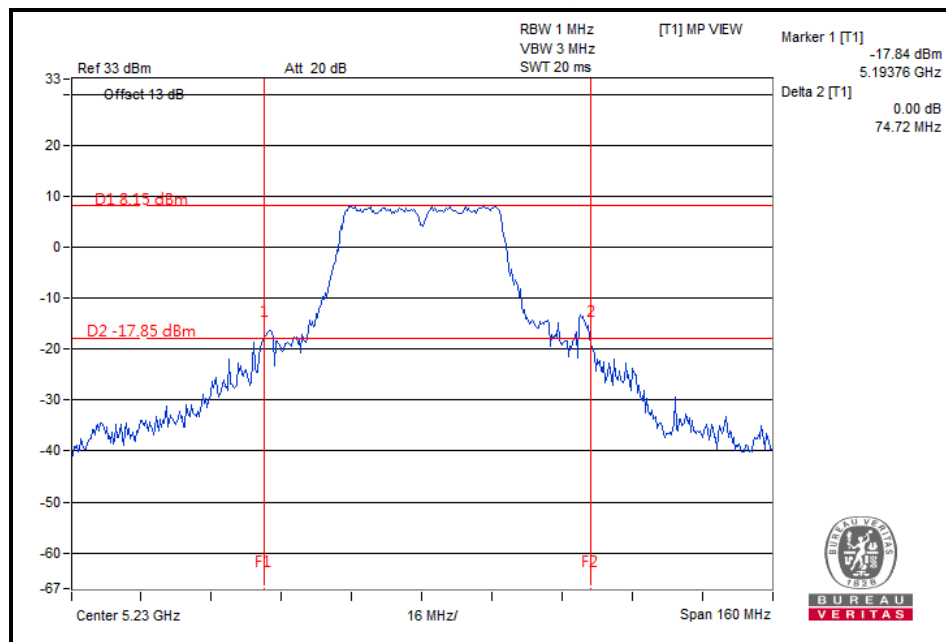
802.11n (HT20)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
36	5180	23.80
40	5200	23.67
48	5240	23.63
52	5260	23.56
60	5300	24.13
64	5320	24.01
100	5500	23.82
116	5580	23.77
140	5700	24.09

802.11n (HT40)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
38	5190	65.16
46	5230	74.72
54	5270	74.01
62	5310	73.97
102	5510	53.37
110	5550	51.57
134	5670	51.18

**此測試圖僅放測試結果最差的頻道。



9.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

10 功率頻譜密度之量測

10.1 適用標準

待測物操作頻帶	適用標準
☒ 5.15 GHz~5.25 GHz	請見本報告 3.1 節第(11)項(2)及(14)項(2)的規定
☒ 5.25 GHz~5.35 GHz	請見本報告 3.1 節第(11)項(3)及(14)項(3)的規定
☒ 5.470 GHz~5.725 GHz	請見本報告 3.1 節第(11)項(3)及(14)項(3)的規定
☒ 5.725 GHz~5.850 GHz	請見本報告 3.1 節第(11)項(4)及(14)項(4)的規定

10.2 量測方法

For U-NII-1, U-NII-2A, U-NII-2C band:

Using method SA-2

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW $\geq$ 3 RBW, Detector = RMS
3. Sweep time = auto, trigger set to "free run".
4. Trace average at least 100 traces in power averaging mode.
5. Record the max value and add 10 log (1/duty cycle)

※For U-NII-3:

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 300 kHz, Set VBW $\geq$ 3 RBW, Detector = RMS
3. Use the peak marker function to determine the maximum power level in any 500 kHz band segment within the fundamental EBW.
4. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(500 \text{ kHz}/300 \text{ kHz})$
5. Sweep time = auto, trigger set to "free run".
6. Trace average at least 100 traces in power averaging mode.
7. Record the max value and add 10 log (1/duty cycle)

10.3 量測儀器

同 7.3 節。

10.4 測試配置

同 7.4 節

10.5 量測結果

操作模式	發射	測試日期	107 年 06 月 01 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	邱智勇		

For U-NII-1, U-NII-2A, U-NII-2C Band

802.11a

Channel	Frquency (MHz)	PSD w/o Duty Factor (dBm)	Duty Factor (dB)	PSD with Duty Factor (dBm)	Maximum Limit (dBm)	Pass / Fail
36	5180	-1.51	0.30	-1.21	11	Pass
40	5200	-1.69	0.30	-1.39	11	Pass
48	5240	-0.47	0.30	-0.17	11	Pass
52	5260	-0.37	0.30	-0.07	11	Pass
60	5300	-0.61	0.30	-0.31	11	Pass
64	5320	0.13	0.30	0.43	11	Pass
100	5500	-0.05	0.30	0.25	11	Pass
116	5580	0.75	0.30	1.05	11	Pass
140	5700	0.41	0.30	0.71	11	Pass

Note: Refer to section 2.1註8 for duty cycle spectrum plot.

802.11n (HT20)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm)	Duty Factor (dB)	PSD with Duty Factor (dBm)	Maximum Limit (dBm)	Pass / Fail
36	5180	-1.32	0.32	-1.00	11	Pass
40	5200	-1.59	0.32	-1.27	11	Pass
48	5240	-1.24	0.32	-0.92	11	Pass
52	5260	-1.44	0.32	-1.12	11	Pass
60	5300	-1.58	0.32	-1.26	11	Pass
64	5320	-1.82	0.32	-1.50	11	Pass
100	5500	-1.06	0.32	-0.74	11	Pass
116	5580	-1.40	0.32	-1.08	11	Pass
140	5700	-1.55	0.32	-1.23	11	Pass

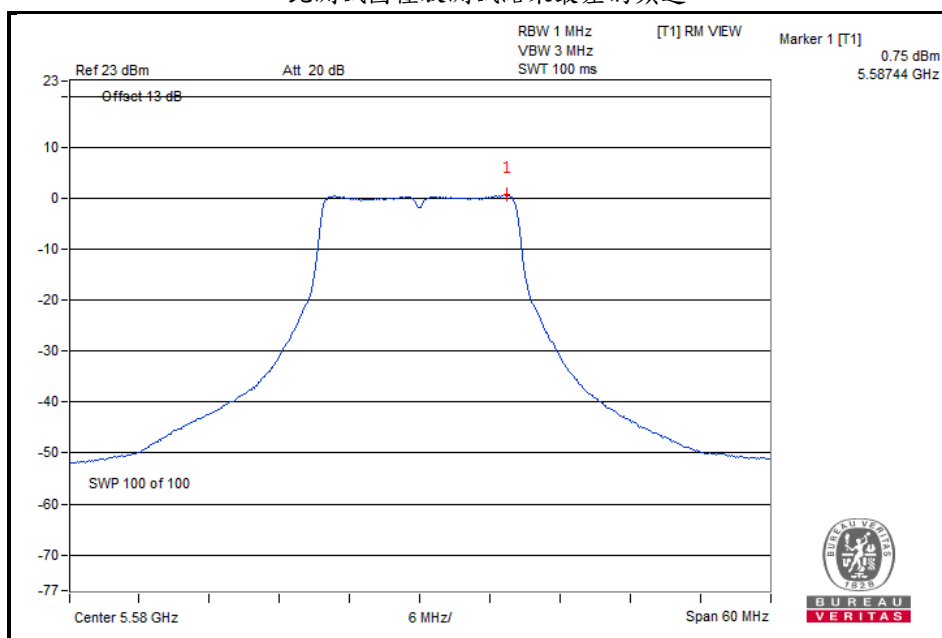
Note: Refer to section 2.1註8 for duty cycle spectrum plot.

802.11n (HT40)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm)	Duty Factor (dB)	PSD with Duty Factor (dBm)	Maximum Limit (dBm)	Pass / Fail
38	5190	-3.14	0.72	-2.42	11	Pass
46	5230	-3.19	0.72	-2.47	11	Pass
54	5270	-3.63	0.72	-2.91	11	Pass
62	5310	-3.22	0.72	-2.50	11	Pass
102	5510	-3.60	0.72	-2.88	11	Pass
110	5550	-3.18	0.72	-2.46	11	Pass
134	5670	-3.37	0.72	-2.65	11	Pass

Note: Refer to section 2.1註8 for duty cycle spectrum plot.

**此測試圖僅放測試結果最差的頻道。



For U-NII-3 Band

802.11a

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/300 kHz)	PSD w/o Duty Factor (dBm/500 kHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
149	5745	-7.61	-5.39	0.30	-5.09	30	Pass
157	5785	-7.77	-5.55	0.30	-5.25	30	Pass
165	5825	-7.74	-5.52	0.30	-5.22	30	Pass

Note: Refer to section 2.1註8 for duty cycle spectrum plot.

802.11n (HT20)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/300 kHz)	PSD w/o Duty Factor (dBm/500 kHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
149	5745	-8.82	-6.60	0.32	-6.28	30	Pass
157	5785	-8.93	-6.71	0.32	-6.39	30	Pass
165	5825	-8.80	-6.58	0.32	-6.26	30	Pass

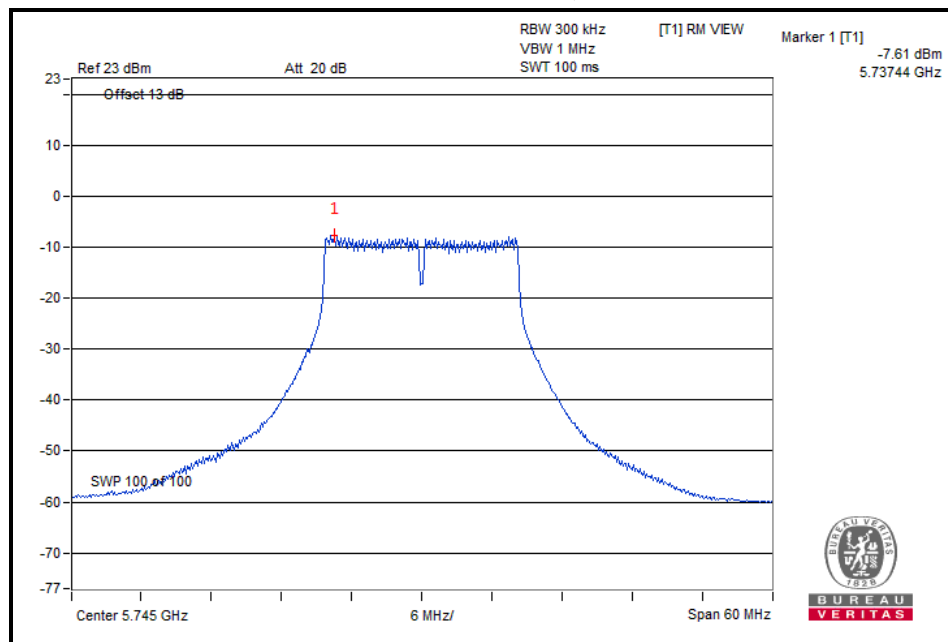
NOTE: Refer to section 2.1註8 for duty cycle spectrum plot.

802.11n (HT40)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/300 kHz)	PSD w/o Duty Factor (dBm/500 kHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
151	5755	-10.22	-8.00	0.72	-7.28	30	Pass
159	5795	-10.59	-8.37	0.72	-7.65	30	Pass

NOTE: Refer to section 2.1 註8 for duty cycle spectrum plot.

**此測試圖僅放測試結果最差的頻道。



10.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

11 6 dB 頻寬之要求

11.1 適用標準

待測物操作頻帶	適用標準
☒ 5.725 GHz ~ 5.850 GHz	請見本報告 3.1 節第(12)項(2)的規定

11.2 量測方法

- 將待測物輸出經由衰減器接到頻譜分析儀上。
- 設定待測物處於連續發射狀態。
- 計算由最大輸出功率峰值減 6 dB 的最大頻率範圍。

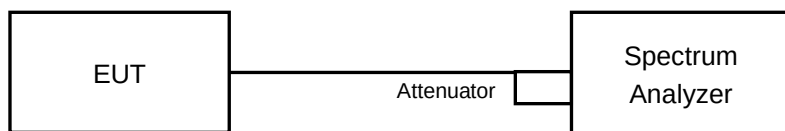
11.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Spectrum Analyzer R&S	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019

Note:

- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
- The measurement uncertainty is 207 Hz, which is calculated as per the document ETSI TR 100 028. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.

11.4 測試配置



11.5 量測結果

操作模式	發射	測試日期	107 年 06 月 01 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	邱智勇		

802.11a

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	16.46	0.5	Pass
157	5785	16.45	0.5	Pass
165	5825	16.45	0.5	Pass

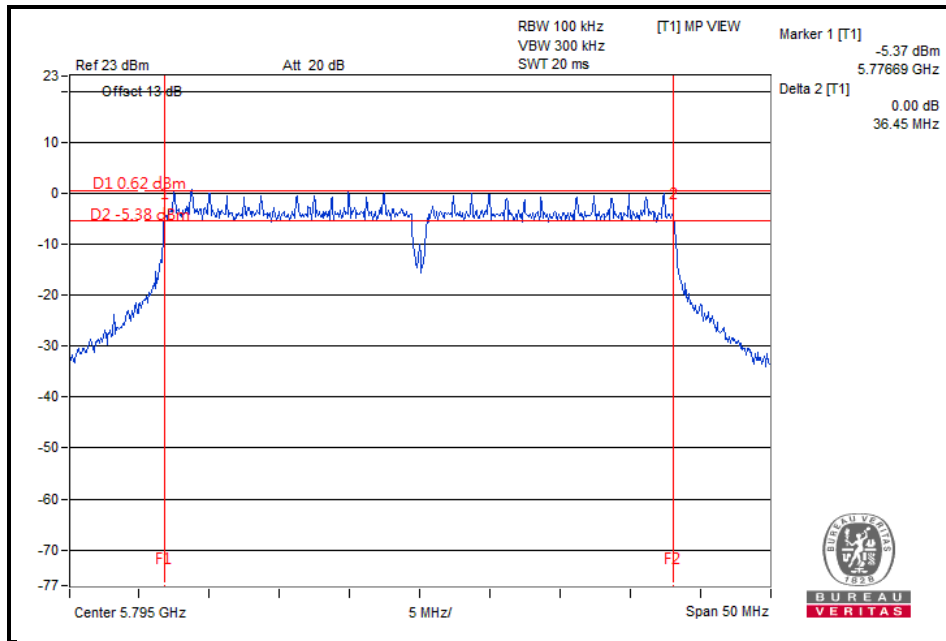
802.11n (HT20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	17.68	0.5	Pass
157	5785	17.67	0.5	Pass
165	5825	17.66	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
151	5755	36.44	0.5	Pass
159	5795	36.45	0.5	Pass

**此測試圖僅放測試結果最差的頻道。



11.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

ZigBee 頻段測試紀錄結果

12 帶外發射之量測

12.1 適用標準

請見本報告 3.1 節第(2)項的規定。

12.2 量測方法

在電波暗室，將待測物置於 0.8 米高的非金屬桌面，使其操作在工作狀態。接收天線置於 3 米距離。桌面要 360 度旋轉，另外接收天線從離地 1 米至 4 米升降變化，以找出最大的輻射電場強度，接收天線分別置於水平、垂直極化各執行測試一次。

Note: 對於 1 GHz 以上場強輻射的測試，待測物則置於 1.5 米高的非金屬桌面。

發射諧波：

Peak 為 RBW = 1 MHz, VBW = 3 MHz；

Average 為 RBW = 1 MHz, VBW = 10 Hz

接收諧波：

Peak 為 RBW = 1 MHz, VBW = 3 MHz；Average 為 RBW = 1 MHz, VBW = 10 Hz

Quasi-Peak 為 RBW = 120 kHz, VBW = 120 kHz

其它不必要之訊號

Peak 為 RBW = 120 kHz, VBW = 360 kHz；Quasi-Peak 為 RBW = 120 kHz, VBW = 120 kHz

12.3 量測儀器

同 4.3 節

12.4 測試配置

同 4.4 節

12.5 場強度之計算

同 4.5 節

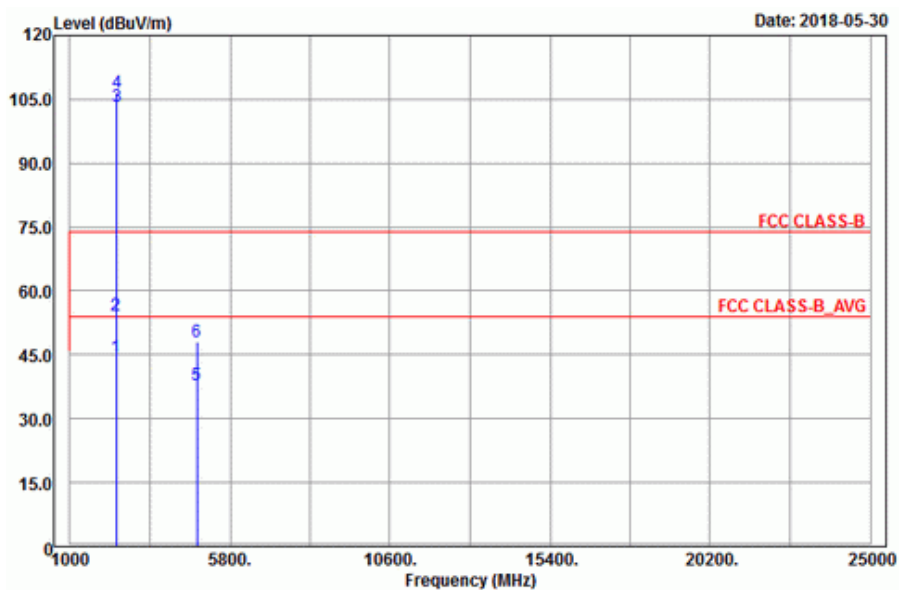
量測結果請見下頁。

12.6 量測結果

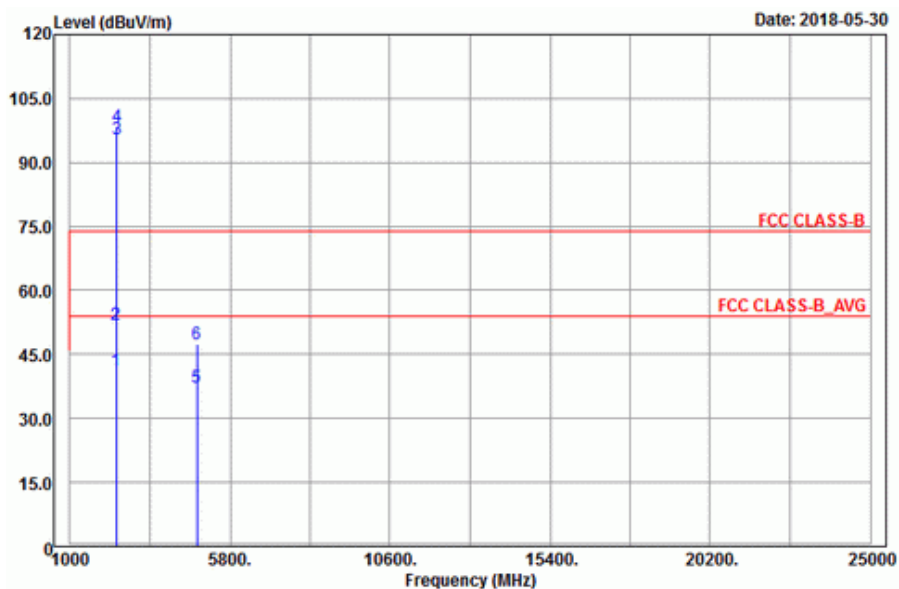
12.6.1 發射諧波

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



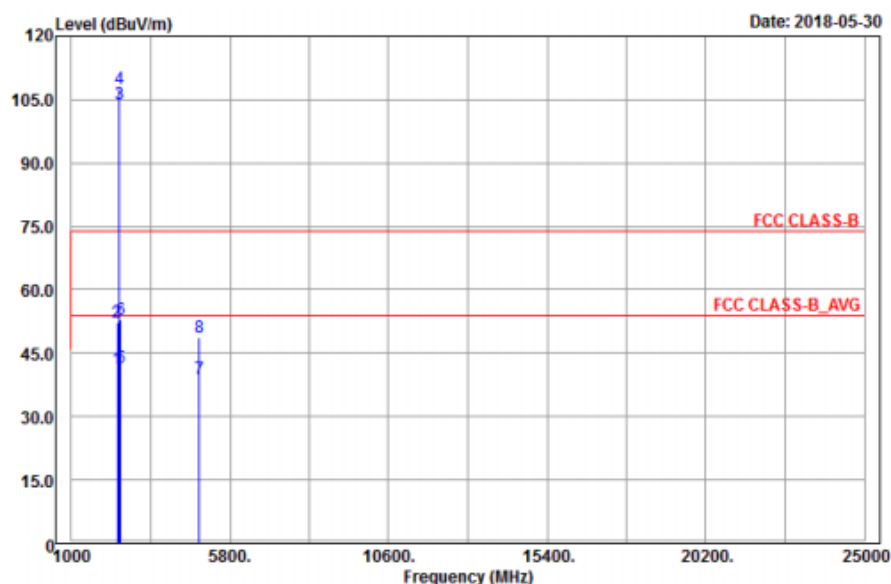
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.92	44.63	42.9	54	-9.37	31.8	5.4	35.47	168	342	Average
2389.92	54.12	52.39	74	-19.88	31.8	5.4	35.47	168	342	Peak
2405	103.43	101.69			31.81	5.4	35.47	168	342	Average
2405	106.73	104.99			31.81	5.4	35.47	168	342	Peak
4810	37.9	29.81	54	-16.1	33.96	8.25	34.12	137	114	Average
4810	48	39.91	74	-26	33.96	8.25	34.12	137	114	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2388.93	41.28	39.57	54	-12.72	31.8	5.4	35.49	107	331	Average
2388.93	51.93	50.22	74	-22.07	31.8	5.4	35.49	107	331	Peak
2405	95.34	93.6			31.81	5.4	35.47	107	331	Average
2405	98.39	96.65			31.81	5.4	35.47	107	331	Peak
4810	37.36	29.27	54	-16.64	33.96	8.25	34.12	169	223	Average
4810	47.45	39.36	74	-26.55	33.96	8.25	34.12	169	223	Peak

Remarks:

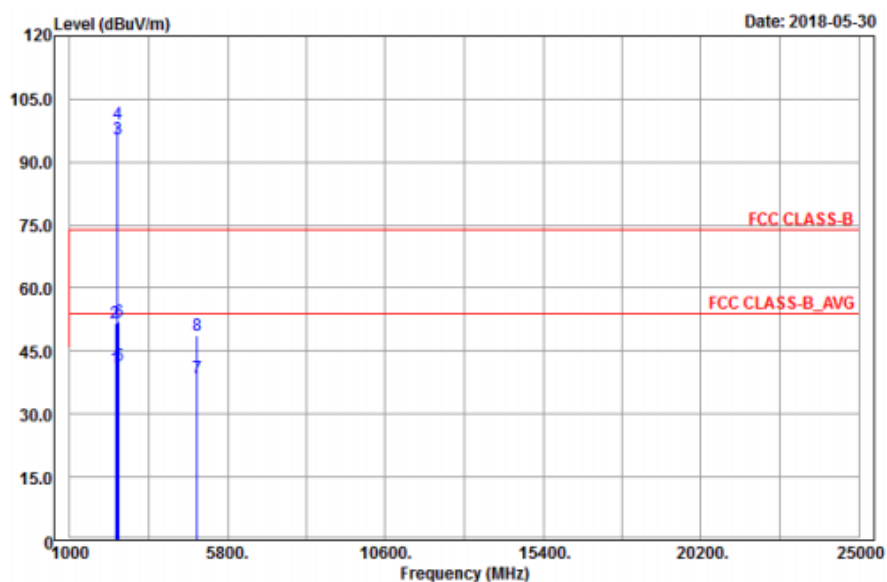
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2405 MHz: Fundamental Frequency
- The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 18	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



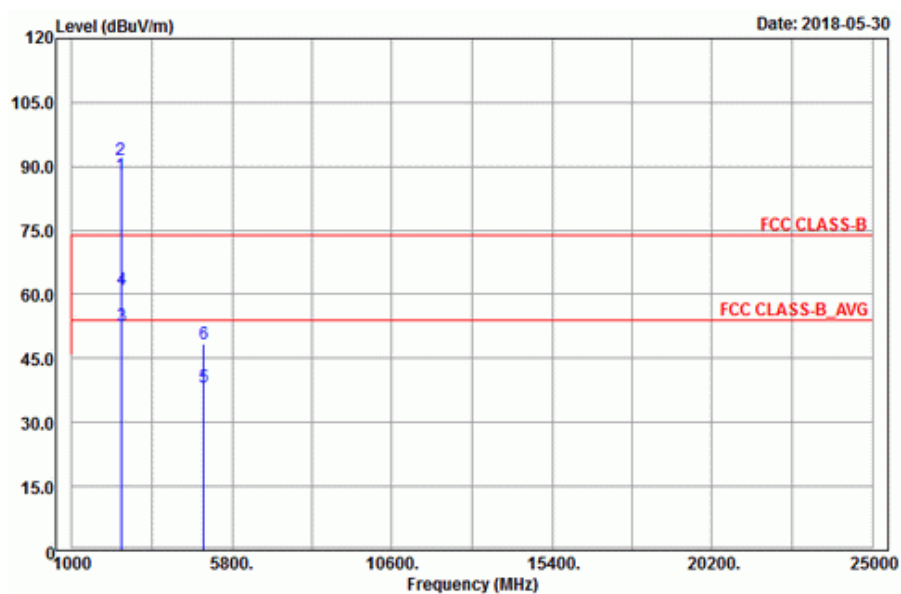
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.74	41.16	39.45	54	-12.84	31.8	5.4	35.49	168	342	Average
2389.74	52.26	50.55	74	-21.74	31.8	5.4	35.49	168	342	Peak
2440	103.96	102.11			31.85	5.46	35.46	168	342	Average
2440	107.47	105.62			31.85	5.46	35.46	168	342	Peak
2496.76	41.41	39.39	54	-12.59	31.9	5.53	35.41	168	342	Average
2496.76	52.85	50.83	74	-21.15	31.9	5.53	35.41	168	342	Peak
4880	38.86	30.67	54	-15.14	33.98	8.27	34.06	108	69	Average
4880	48.72	40.53	74	-25.28	33.98	8.27	34.06	108	69	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2387.85	40.91	39.2	54	-13.09	31.8	5.4	35.49	107	331	Average
2387.85	51.75	50.04	74	-22.25	31.8	5.4	35.49	107	331	Peak
2440	95.41	93.56			31.85	5.46	35.46	107	331	Average
2440	99.02	97.17			31.85	5.46	35.46	107	331	Peak
2489.8	41.47	39.46	54	-12.53	31.9	5.53	35.42	107	331	Average
2489.8	52.08	50.07	74	-21.92	31.9	5.53	35.42	107	331	Peak
4880	38.61	30.42	54	-15.39	33.98	8.27	34.06	154	131	Average
4880	48.84	40.65	74	-25.16	33.98	8.27	34.06	154	131	Peak

Remarks:

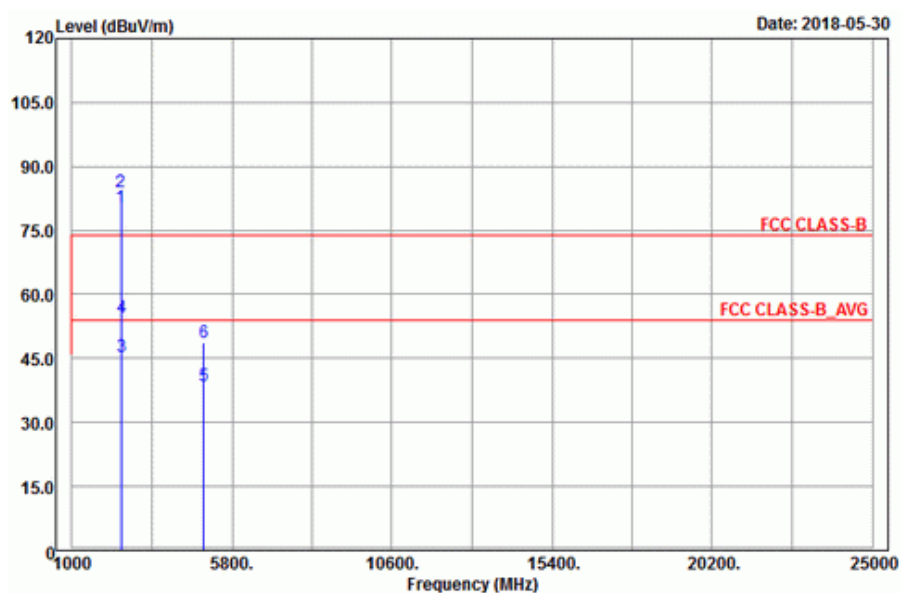
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 2440 MHz: Fundamental Frequency
3. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 26	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	88.01	86.05			31.88	5.5	35.42	168	342	Average
2480	91.41	89.45			31.88	5.5	35.42	168	342	Peak
2483.52	52.68	50.72	54	-1.32	31.88	5.5	35.42	168	342	Average
2483.52	61.02	59.06	74	-12.98	31.88	5.5	35.42	168	342	Peak
4960	38.24	29.97	54	-15.76	33.99	8.29	34.01	121	83	Average
4960	48.43	40.16	74	-25.57	33.99	8.29	34.01	121	83	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	80.51	78.55			31.88	5.5	35.42	107	331	Average
2480	83.96	82			31.88	5.5	35.42	107	331	Peak
2483.52	45.59	43.63	54	-8.41	31.88	5.5	35.42	107	331	Average
2483.52	54.7	52.74	74	-19.3	31.88	5.5	35.42	107	331	Peak
4960	38.59	30.32	54	-15.41	33.99	8.29	34.01	123	257	Average
4960	48.84	40.57	74	-25.16	33.99	8.29	34.01	123	257	Peak

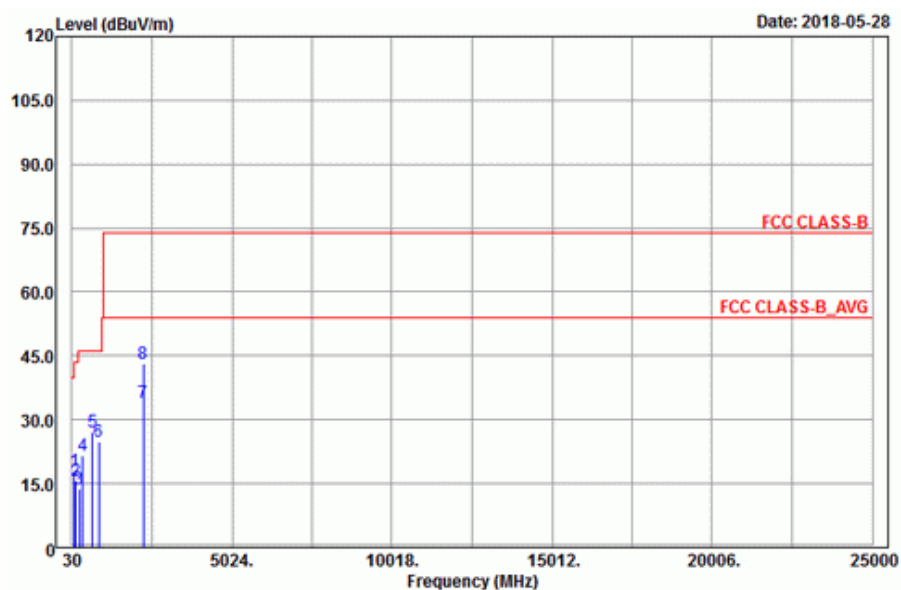
Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2480 MHz: Fundamental Frequency
- The other emission levels were very low against the limit.

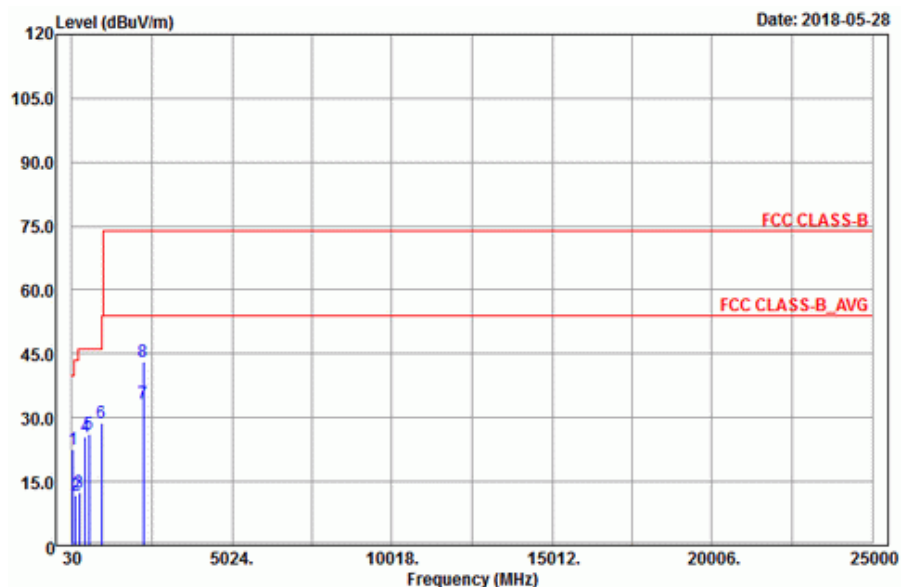
12.6.2 接收諧波

EUT Test Condition		Measurement Detail	
Channel	Channel 26	Frequency Range	30 MHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV) Quasi-Peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
102.63	18.12	36.74	43.5	-25.38	12.36	1.28	32.26	127	124	Peak
159.87	15.67	37.67	43.5	-27.83	8.75	1.52	32.27	165	33	Peak
259.77	13.82	31.49	46	-32.18	12.49	1.94	32.1	188	244	Peak
360.2	21.46	36.95	46	-24.54	14.35	2.26	32.1	142	45	Peak
676.6	27.04	37.23	46	-18.96	18.88	3.05	32.12	106	24	Peak
874.7	24.72	31.58	46	-21.28	21.29	3.49	31.64	188	346	Peak
2266	34	32.39	54	-20	31.66	5.5	35.55	129	242	Average
2266	43	41.39	74	-31	31.66	5.5	35.55	129	242	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
54.3	22.56	39.67	40	-17.44	14.22	0.9	32.23	157	88	Peak
159.6	11.79	33.79	43.5	-31.71	8.75	1.52	32.27	165	152	Peak
257.07	12.27	29.99	46	-33.73	12.44	1.94	32.1	198	99	Peak
462.4	25.48	39.29	46	-20.52	15.76	2.56	32.13	198	99	Peak
565.3	26.28	38.28	46	-19.72	17.38	2.82	32.2	185	5	Peak
946.1	28.87	34.67	46	-17.13	21.72	3.62	31.14	175	205	Peak
2248	33.31	31.77	54	-20.69	31.64	5.47	35.57	157	88	Average
2248	43.31	41.77	74	-30.69	31.64	5.47	35.57	157	88	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

12.6.3 其它不必要之訊號

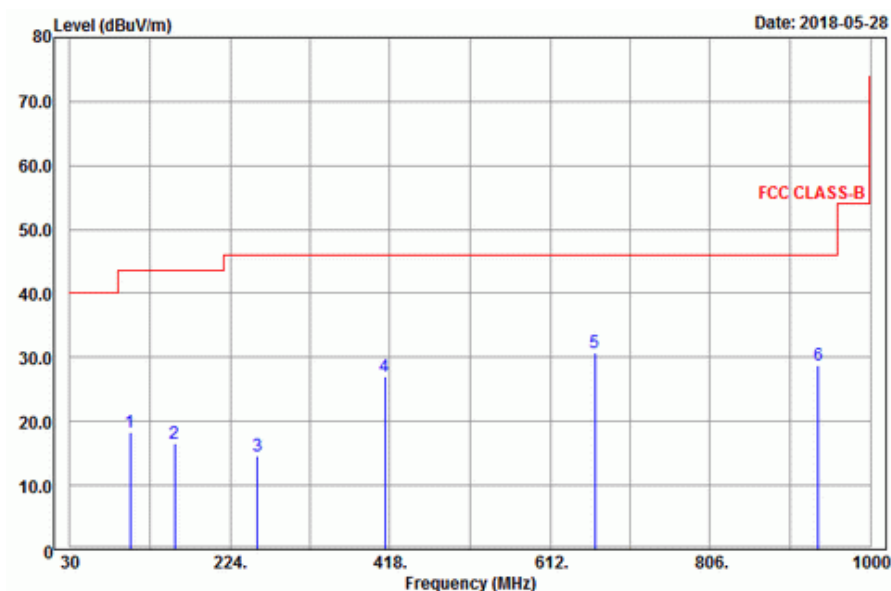
9 kHz ~ 30 MHz Data:

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

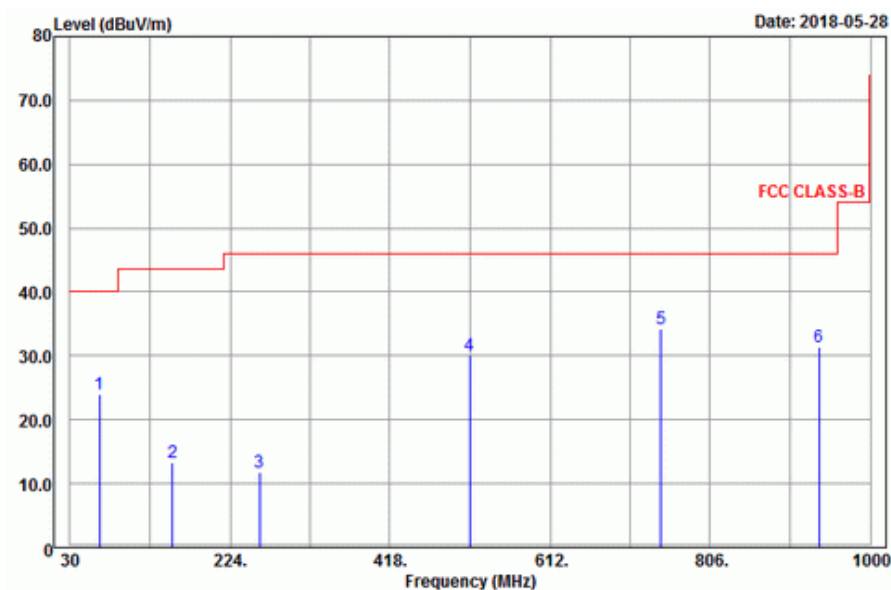
30 MHz ~ 1 GHz Data:

EUT Test Condition		Measurement Detail	
Channel	Channel 26	Frequency Range	30 MHz ~ 1 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Quasi-Peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
102.9	18.25	36.87	43.5	-25.25	12.36	1.28	32.26	125	172	Peak
156.63	16.55	38.66	43.5	-26.95	8.64	1.52	32.27	112	164	Peak
257.07	14.5	32.22	46	-31.5	12.44	1.94	32.1	137	156	Peak
411.3	27.08	41.75	46	-18.92	15.13	2.41	32.21	131	169	Peak
666.1	30.75	41.18	46	-15.25	18.71	2.99	32.13	133	206	Peak
937	28.83	34.77	46	-17.17	21.65	3.62	31.21	172	52	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
66.18	23.88	43.5	40	-16.12	11.7	0.9	32.22	150	161	Peak
154.2	13.2	35.42	43.5	-30.3	8.53	1.52	32.27	185	49	Peak
259.77	11.8	29.47	46	-34.2	12.49	1.94	32.1	132	150	Peak
514.2	30.1	42.99	46	-15.9	16.53	2.7	32.12	192	181	Peak
746.6	34.22	43.36	46	-11.78	19.78	3.22	32.14	133	326	Peak
937.7	31.37	37.29	46	-14.63	21.66	3.62	31.2	124	137	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- The other emission levels were very low against the limit.

12.7 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

13 6 dB 頻寬之要求

13.1 適用標準

請見本報告 3.1 節第(5)項的規定。

13.2 量測方法

- 將待測物輸出經由衰減器接到頻譜分析儀上。
- 設定待測物處於連續發射狀態。
- 計算由最大輸出功率峰值減 6 dB 的最大頻率範圍。

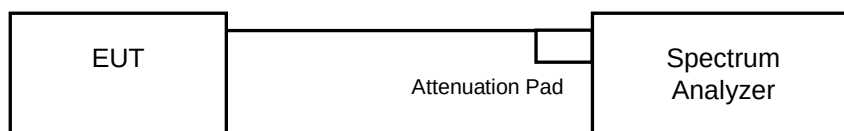
13.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Spectrum Analyzer R&S	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019

Note:

- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
- The measurement uncertainty is 207 Hz, which is calculated as per the document ETSI TR 100 028. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.

13.4 測試配置

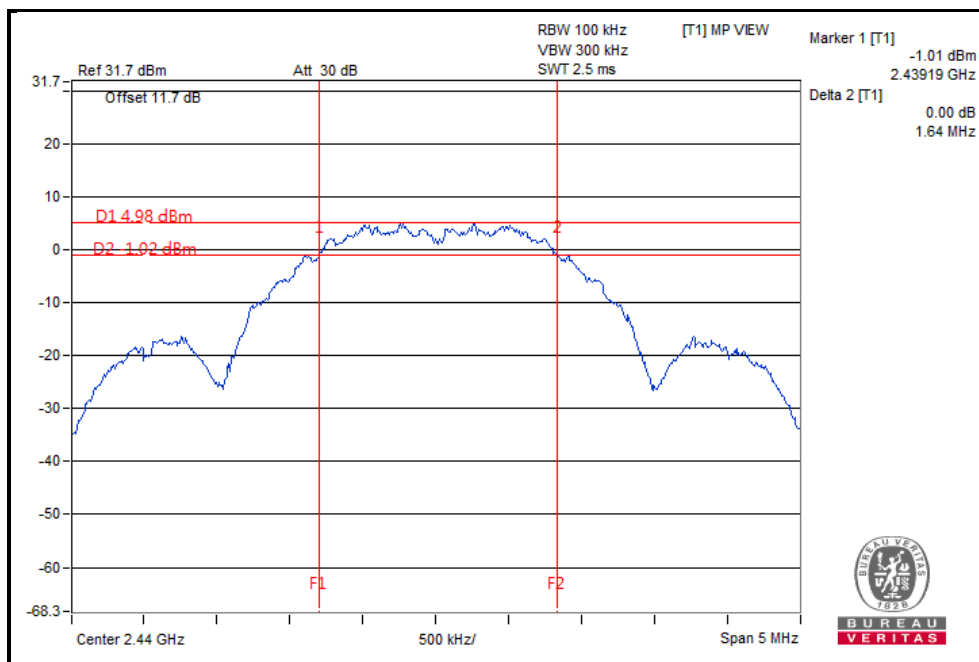


13.5 量測結果

操作模式	發射	測試日期	107 年 06 月 01 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	邱智勇		

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
11	2405	1.62	0.5	Pass
18	2440	1.64	0.5	Pass
26	2480	1.58	0.5	Pass

**此測試圖僅放測試結果最差的頻道。



13.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

14 峰值傳導輸出功率之量測

14.1 適用標準

請見本報告 3.1 節第(4)及(6)項的規定。

14.2 量測方法

- 將待測物輸出經由衰減器接到功率計上。
- 設定待測物處於連續發射狀態。
- 計算其輸出功率峰值。

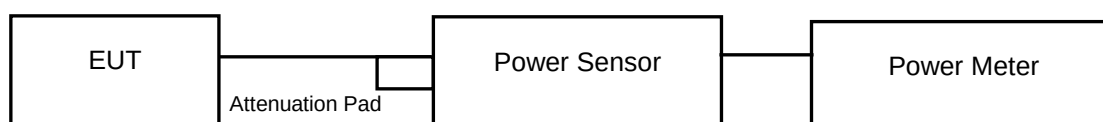
14.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Power Meter Anritsu	ML2495A	1232002	Dec. 07, 2017	Dec. 06, 2018
Power Sensor Anritsu	MA2411B	1207325	Dec. 07, 2017	Dec. 06, 2018

Note:

- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
- The measurement uncertainty is 1.393 dB, which is calculated as per the document ETSI TR 100 028. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.
- Measurement Bandwidth of ML2495A is 65 MHz greater than 6 dB bandwidth of emission.

14.4 測試配置



14.5 量測結果

操作模式	發射	測試日期	107 年 06 月 01 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	邱智勇		

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
11	2405	6.353	8.03	30	Pass
18	2440	5.984	7.77	30	Pass
26	2480	0.2328	-6.33	30	Pass

14.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

15 功率頻譜密度之量測

15.1 適用標準

請見本報告 3.1 節第(7)項的規定。

15.2 量測方法

- 將待測物之天線埠經由適當之衰減直接連至測試儀器。
- 設定解析頻寬為 3 kHz，視訊頻寬為 10 kHz，掃描時間為 auto。
- 掃描頻寬設於足夠觀察發射機所產生的主頻信號，並找到最大的峰值準位。
- 其峰值位準必須不大於+8 dBm。

15.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Spectrum Analyzer R&S	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019

Note:

- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
- The measurement uncertainty is 207 Hz, which is calculated as per the document ETSI TR 100 028. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.

15.4 測試配置

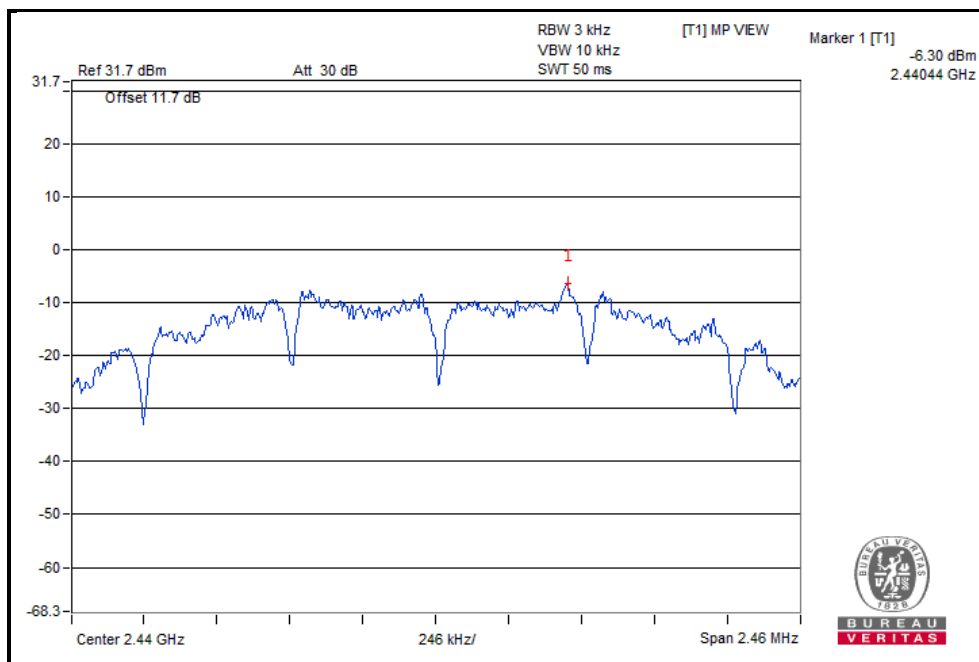


15.5 量測結果

操作模式	發射	測試日期	107 年 06 月 01 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	邱智勇		

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
11	2405	-6.90	8	Pass
18	2440	-6.30	8	Pass
26	2480	-22.50	8	Pass

**此測試圖僅放測試結果最差的頻道。



15.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

16 電源線傳導干擾之量測

16.1 適用標準

請見本報告 3.1 節第(1)項的規定。

16.2 量測方法

將待測物置於 0.8 米高的非金屬桌面，使其操作在工作狀態，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 0.15 MHz 至 30 MHz 之間之電源線傳導放射強度。

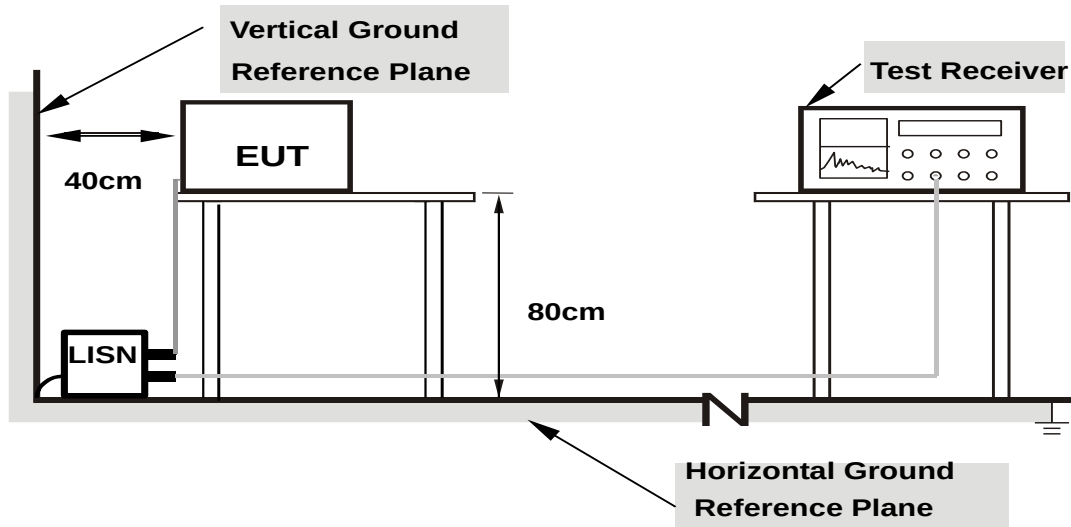
16.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Nov. 23, 2017	Nov. 22, 2018
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Sep. 05, 2017	Sep. 04, 2018
LISN/AMN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Mar. 06, 2018	Mar. 05, 2019
LISN/AMN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 15, 2017	Aug. 14, 2018
Software ADT	BV ADT_Cond_ V7.3.7.4	NA	NA	NA

NOTE:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 1.
3. The VCCI Site Registration No. is C-2040.
4. The measurement uncertainty is 2.44 dB, which is calculated as per the document CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.

16.4 測試配置



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

16.5 干擾值之計算

餘裕度 Margin(dB)= 結果值 Emission level (dBuV)-限制值 Limit value (dBuV)

電源傳導干擾電壓之計算公式如下

結果值 Emission level (dBuV)=校正因子 Correction Factor (dB)+儀器讀值 Reading value (dBuV)

其中校正因子 Correction Factor (dB)為：

饋線損失+電源阻抗模擬網路損失

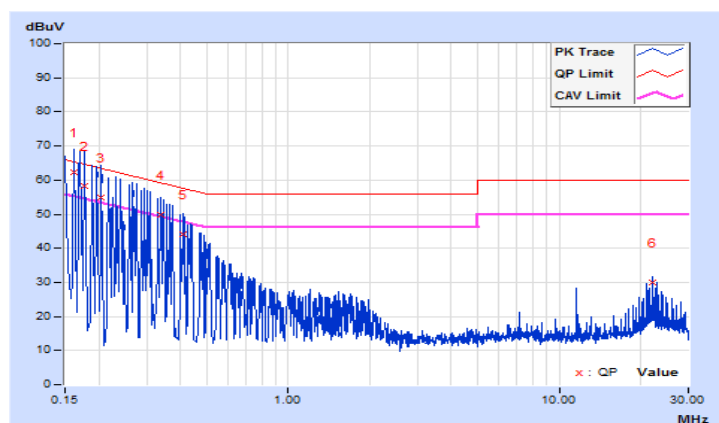
16.6 量測結果

量測頻率範圍	150kHz ~ 30MHz	檢測器與頻寬	準峰值 (QP) / 平均值 (AV), 9kHz
量測電壓值	110Vac, 60Hz	量測場地溫濕度	25°C, 65%RH
測試者	楊建煌	測試日期	2018/6/5

量測電源端點：火線 (L1)										
No	頻率 (MHz)	修正 因子 (dB)	量測讀值 (dBuV)		干擾值 (dBuV)		限制值 (dBuV)		餘裕 (dB)	
			準峰值	平均值	準峰值	平均值	準峰值	平均值	準峰值	平均值
1	0.16173	10.10	52.29	20.92	62.39	31.02	65.37	55.37	-2.98	-24.35
2	0.17737	10.10	48.25	17.44	58.35	27.54	64.61	54.61	-6.26	-27.07
3	0.20474	10.10	44.79	14.00	54.89	24.10	63.42	53.42	-8.53	-29.32
4	0.33768	10.11	39.69	10.12	49.80	20.23	59.26	49.26	-9.46	-29.03
5	0.40806	10.12	34.15	4.62	44.27	14.74	57.69	47.69	-13.42	-32.95
6	22.00299	11.25	18.57	7.33	29.82	18.58	60.00	50.00	-30.18	-31.42

附註：

1. 其它頻率的干擾值對限制值而言非常低，所以未記錄。
2. 餘裕值(dB) = 干擾值(dBuV) - 限制值(dBuV)
3. 干擾值(dBuV) = 修正因子(dB) + 量測讀值(dBuV)

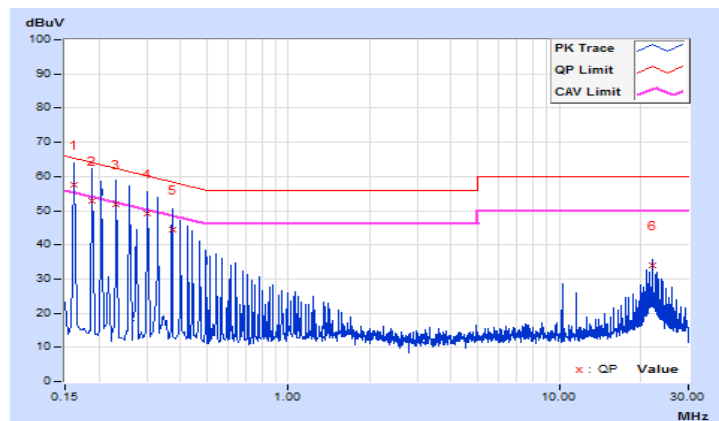


量測頻率範圍	150kHz ~ 30MHz	檢測器與頻寬	準峰值 (QP) / 平均值 (AV), 9kHz
量測電壓值	110Vac, 60Hz	量測場地溫濕度	25°C, 65%RH
測試者	楊建煌	測試日期	2018/6/5

量測電源端點：中性線 (N)										
No	頻率 (MHz)	修正因子 (dB)	量測讀值 (dBuV)		干擾值 (dBuV)		限制值 (dBuV)		餘裕 (dB)	
			準峰值	平均值	準峰值	平均值	準峰值	平均值	準峰值	平均值
1	0.16173	10.10	47.59	16.21	57.69	26.31	65.37	55.37	-7.68	-29.06
2	0.18910	10.10	42.81	11.62	52.91	21.72	64.08	54.08	-11.17	-32.36
3	0.23211	10.11	41.90	11.68	52.01	21.79	62.37	52.37	-10.36	-30.58
4	0.30249	10.11	39.13	8.28	49.24	18.39	60.17	50.17	-10.93	-31.78
5	0.37287	10.11	34.27	3.82	44.38	13.93	58.44	48.44	-14.06	-34.51
6	22.03427	10.97	22.88	7.89	33.85	18.86	60.00	50.00	-26.15	-31.14

附註：

1. 其它頻率的干擾值對限制值而言非常低，所以未記錄。
2. 餘裕值(dB) = 干擾值(dBuV) - 限制值(dBuV)
3. 干擾值(dBuV) = 修正因子(dB) + 量測讀值(dBuV)



16.7 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

17 電波暴露量之評估

17.1 適用標準

請見本報告 3.1 節第(19)項的規定。

17.2 評估方法

a) 以 6.5、9.5、14.5 節所測得的最大輸出功率值再加上待測物天線的增益值(Gain)帶入下面公式換算出待測物所輻射的功率密度。

$$b) P_d = (P_{out} * G) / (4 * \pi * r^2)$$

where

P_d = power density in mW/cm^2

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

17.3 評估結果

Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)	Pass/Fail
WLAN 2412 ~ 2462	22.42	1.95	20	0.054	1	Pass
WLAN 5180 ~ 5240	14.15	1.48	20	0.007	1	Pass
WLAN 5260 ~ 5320	14.45	1.74	20	0.008	1	Pass
WLAN 5500 ~ 5700	14.44	1.37	20	0.008	1	Pass
WLAN 5745 ~ 5825	14.20	1.957	20	0.008	1	Pass
ZigBee 2405~2480	8.03	0.585	20	0.001	1	Pass

CONCLUSION:

Both of the WLAN 2.4G & WLAN 5G can transmit simultaneously, the formula of calculated the MPE is:

$$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

$$\text{WLAN 2.4G} + \text{ZigBee} = 0.054 + 0.001 = 0.055$$

$$\text{WLAN 5.0G} + \text{ZigBee} = 0.008 + 0.001 = 0.009$$

Therefore, the maximum calculation of this situation is 0.055, which is less than the "1" limit.

18 待測物照片

請參照 BV CPS 報告編號：180511C16

附錄：動態頻率選擇

1 EUT Information

1.1 Operating Frequency Bands and Mode of EUT

Table 1: Operating frequency bands and mode of EUT

Operational Mode	Operating Frequency Range	
	5250 ~ 5350 MHz	5470 ~ 5725 MHz
Client without radar detection and ad hoc function	✓	✓

1.2 EUT Software and Firmware Version

Table 2: The EUT software/firmware version

No.	Product	Model No.	Software/Firmware Version
1	Home Network Wall Pad	SHP-HB700M/TW	2.0.2/1.1.2/1.1.9

1.3 Description of Available Antennas to the EUT

Table 3: Antenna list

Ant No.	Antenna Type	Operation Frequency Range (MHz)	Max. Gain (dBi)
1	PCB	5250~5350	1.74
1	PCB	5470~5725	1.37

1.4 EUT Maximum Conducted Power

Table 4: The measured conducted output power

802.11a

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	14.45	27.861
5470~5725	14.44	27.797

802.11n (HT20)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	13.19	20.845
5470~5725	13.47	22.233

802.11n (HT40)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	13.45	22.131
5470~5725	13.44	22.08

1.5 EUT Maximum E.I.R.P. Power

Table 5: The E.I.R.P output power list

802.11a

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	16.19	41.591
5470~5725	15.81	38.107

802.11n (HT20)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	14.93	31.117
5470~5725	14.84	30.479

802.11n (HT40)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	15.19	33.037
5470~5725	14.81	30.269

1.6 Transmit Power Control (TPC)

U-NII devices operating in the 5.25-5.35 GHz band and the 5.47-5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW. Maximum EIRP of this device is 41.591 mW which less than 500 mW, therefore it's not require TPC function.

1.7 Statement of Manufacturer

Manufacturer statement confirming that information regarding the parameters of the detected Radar Waveforms is not available to the end user. **And the device doesn't have Ad Hoc mode on DFS frequency band.**

2 U-NII DFS Rule Requirements

2.1 Working Modes and Required Test Items

The manufacturer shall state whether the UUT is capable of operating as a Master and/or a Client. If the UUT is capable of operating in more than one operating mode then each operating mode shall be tested separately. See tables 6 and 7 for the applicability of DFS requirements for each of the operational modes.

Table 6: Applicability of DFS Requirements Prior to Use a Channel

Requirement	Operational Mode		
	Master	Client without radar detection	Client with radar detection
Non-Occupancy Period	✓	Not required	✓
DFS Detection Threshold	✓	Not required	✓
Channel Availability Check Time	✓	Not required	Not required
U-NII Detection Bandwidth	✓	Not required	✓

Table 7: Applicability of DFS Requirements during Normal Operation

Requirement	Operational Mode	
	Master or Client with radar detection	Client without radar detection
DFS Detection Threshold	✓	Not required
Channel Closing Transmission Time	✓	✓
Channel Move Time	✓	✓
U-NII Detection Bandwidth	✓	Not required

Additional requirements for devices with multiple bandwidth modes	Master or Client with radar detection	Client without radar detection
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All Other Tests	Any single BW mode	Not required

Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in all 20 MHz channel blocks and null frequencies between the bonded 20 MHz channel blocks.

2.2 Test Limits and Radar Signal Parameters

Detection Threshold Values

Table 8: DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection

Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP $\geq$ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.

Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.

Note 3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

Table 9: DFS Response Requirement Values

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second periods. See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 100 % of the U-NII 99 % transmission power bandwidth. See Note 3

Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.

Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

Parameters of DFS Test Signals

Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.

Table 10: Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (μsec)	PRI (μsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a. Test B: 15 unique PRI values randomly selected within the range of 518-3066 μsec, with a minimum increment of 1 μsec, excluding PRI values selected in Test A.	$\text{Roundup} \left\{ \left(\frac{1}{360} \right) \cdot \left(\frac{19 \cdot 10^6}{\text{PRI}_{\mu\text{sec}}} \right) \right\}$	60 %	30
2	1-5	150-230	23-29	60 %	30
3	6-10	200-500	16-18	60 %	30
4	11-20	200-500	12-16	60 %	30
Aggregate (Radar Types 1-4)				80 %	120

Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.

Table 11: Long Pulse Radar Test Waveform

Radar Type	Pulse Width (μsec)	Chirp Width (MHz)	PRI (μsec)	Number of Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Number of Trials
5	50-100	5-20	1000-2000	1-3	8-20	80 %	30

Table 12: Frequency Hopping Radar Test Waveform

Radar Type	Pulse Width (μsec)	PRI (μsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	333	9	0.333	300	70 %	30

3 Test & Support Equipment List

3.1 Test Instruments

Table 1: Test Instruments List

Description & Manufacturer	Model No.	Brand	Date Of Calibration	Due Date Of Calibration
Spectrum analyzer	ESR	R&S	2018/03/01	2019/02/28
Signal generator	8645A	Agilent	2017/08/11	2018/08/10
Horn antenna	BBHA 9120 D	Schwarzbeck	2017/12/14	2018/12/13
RF coaxial cable	CA3501-3501-G.90(3m) & CA3501-3501-F.90(2m)	INFINET	2017/08/21	2018/08/20

3.2 Description of Support Units

Table 2: Support Unit information

No.	Product	Brand	Model No.	ID	Spec.
1	Router	NETGEAR	R7800	PY315100319	5G Ant gain : 1.61dBi Maximum EIRP : 25.47dBm

NOTE: This device was functioned as a ☒ Master ☐ Slave device during the DFS test.

Table 3: Software/Firmware information

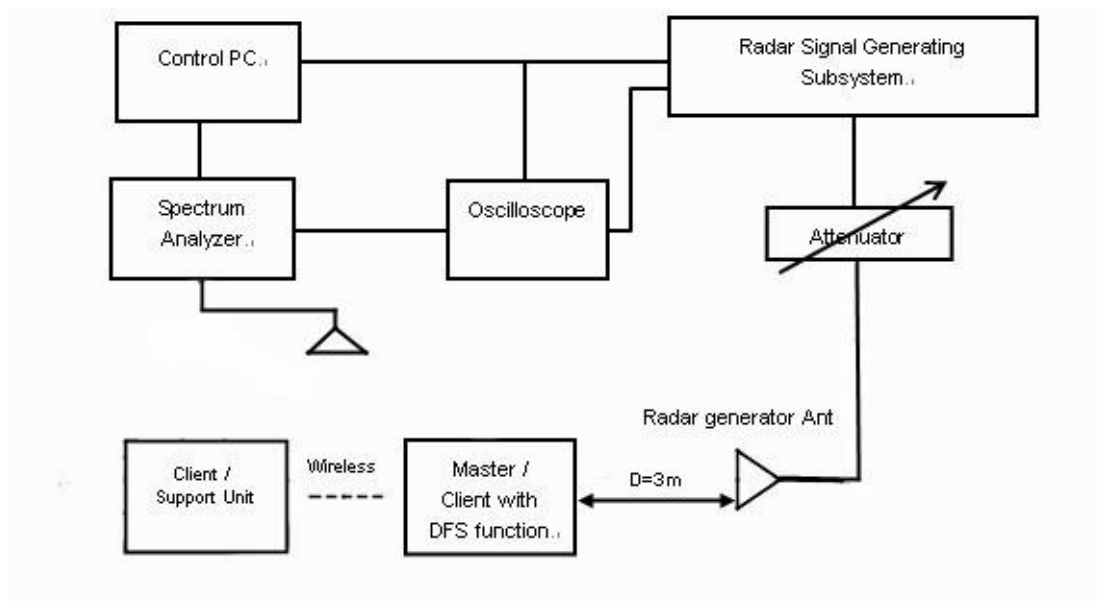
No.	Product	Model No.	Software/Firmware Version
1.	Router	R7800	V1.0.1.30

4 Test Procedure

4.1 ADT DFS Measurement System

A complete ADT DFS Measurement System consists of two subsystems: (1) the Radar Signal Generating Subsystem and (2) the Traffic Monitoring Subsystem. The control PC is necessary for generating the Radar waveforms in Table 10, 11 and 12. The traffic monitoring subsystem is specified to the type of unit under test (UUT).

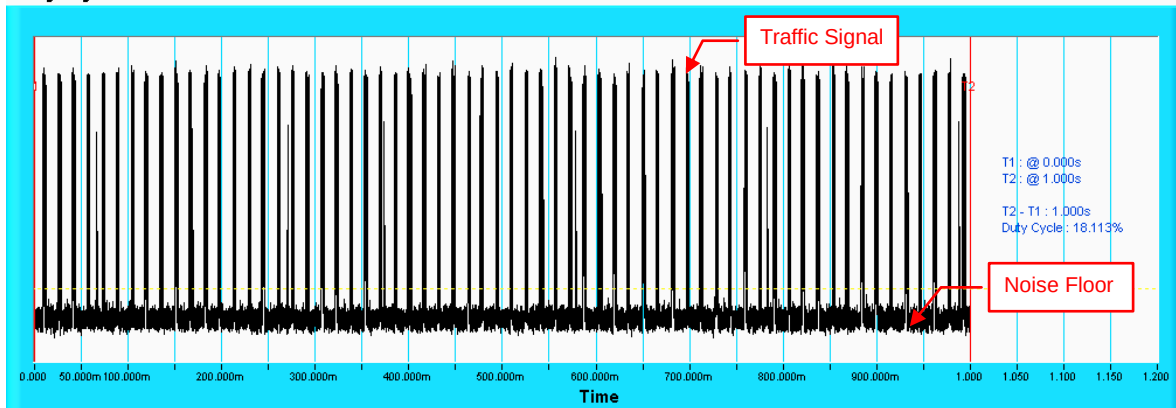
Radiated setup configuration of ADT DFS Measurement System



System testing will be performed with channel-loading using means appropriate to the data types that are used by the unlicensed device. The following requirements apply:

	a) The data file must be of a type that is typical for the device (i.e., MPEG-2, MPEG-4, WAV, MP3, MP4, AVI, etc.) and must generally be transmitting in a streaming mode.
	b) Software to ping the client is permitted to simulate data transfer but must have random ping intervals.
v	c) Timing plots are required with calculations demonstrating a minimum channel loading of approximately 17 % or greater.
	d) Unicast or Multicast protocols are preferable but other protocols may be used. The appropriate protocol used must be described in the test procedures.

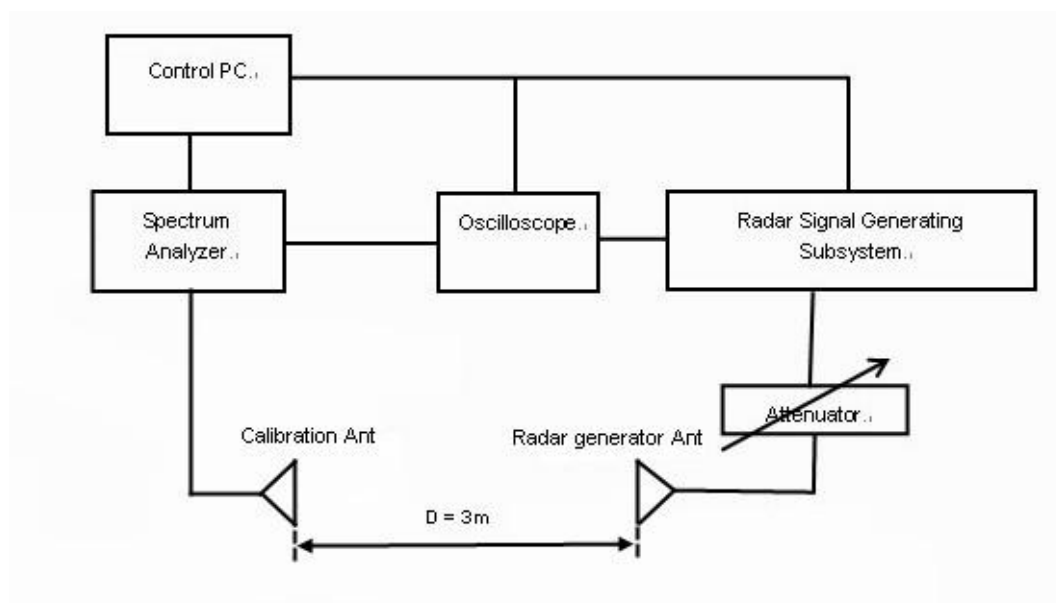
Wireless Traffic Loading Duty Cycle



4.2 Calibration of DFS Detection Threshold Level

The measured channel is 5500 MHz, 5510 MHz. The radar signal was the same as transmitted channels, and injected into the antenna of AP (master) or Client Device with Radar Detection, measured the channel closing transmission time and channel move time. The calibrated detection threshold level is set to -64 dBm. The tested level is lower than required level hence it provides margin to the limit.

Radiated setup configuration of Calibration of DFS Detection Threshold Level

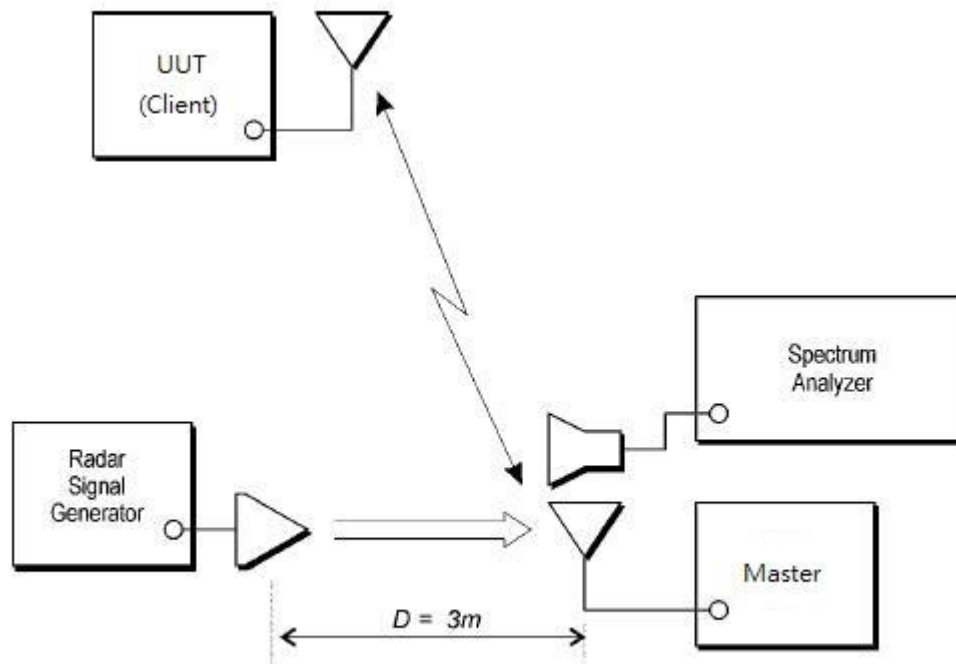


4.3 Deviation from Test Standard

No deviation.

4.4 Radiated Test Setup Configuration

4.4.1 Client without Radar Detection Mode



The UUT is a U-NII Device operating in Client mode without radar detection. The radar test signals are injected into the Master Device.

5 Test Results

5.1 Summary of Test Results

Clause	Test Parameter	Remarks	Pass / Fail
4.7.7	DFS Detection Threshold	Not Applicable	NA
4.7.7	Channel Availability Check Time	Not Applicable	NA
4.7.7	Channel Move Time	Applicable	Pass
4.7.7	Channel Closing Transmission Time	Applicable	Pass
4.7.7	Non- Occupancy Period	Applicable	Pass
4.7.7	Uniform Spreading	Not Applicable	NA
4.7.7	U-NII Detection Bandwidth	Not Applicable	NA
4.7.7	Non-associated test	Applicable	Pass
4.7.7	Non-Co-Channel test	Applicable	Pass

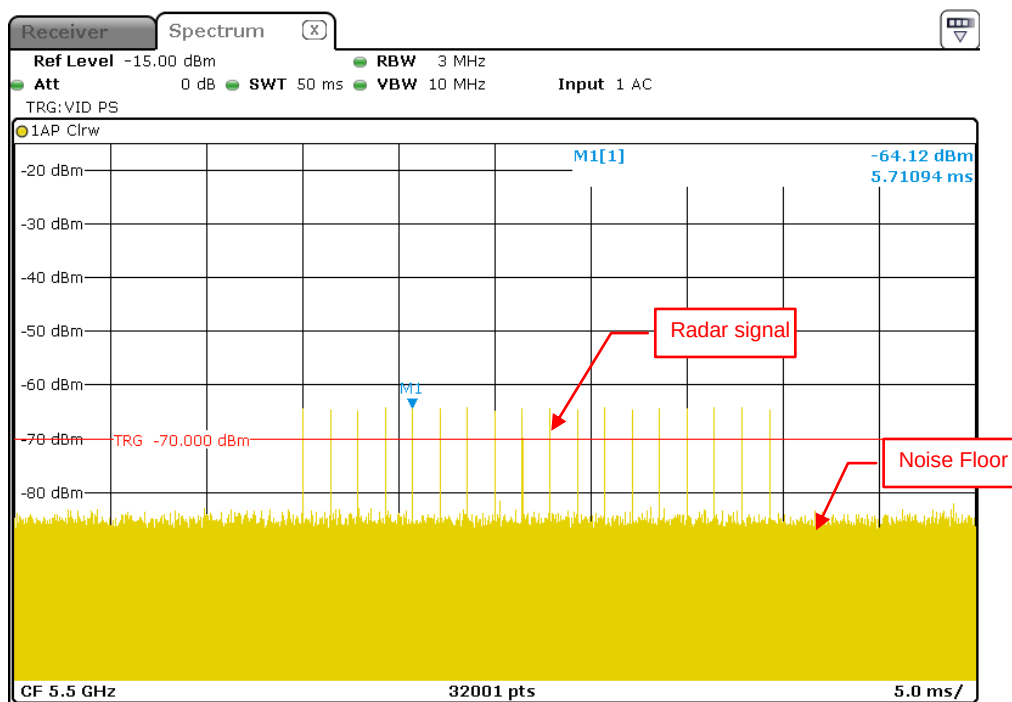
5.2 Test Results

5.2.1 Test Mode: Device operating in Client without Radar Detection Mode

Client with injection at the Master. (The radar test signals are injected into the Master Device)

DFS Detection Threshold

For a detection threshold level of -64 dBm, the required signal strength at EUT antenna location is -64 dBm. The tested level is lower than required level hence it provides margin to the limit.



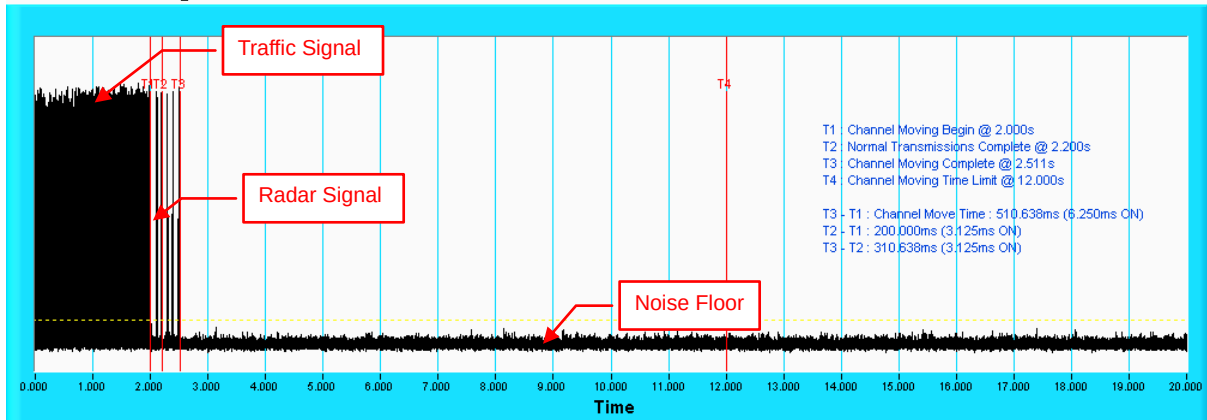
Radar Signal 0

5.2.2 Channel Closing Transmission and Channel Move Time

Radar Signal 0

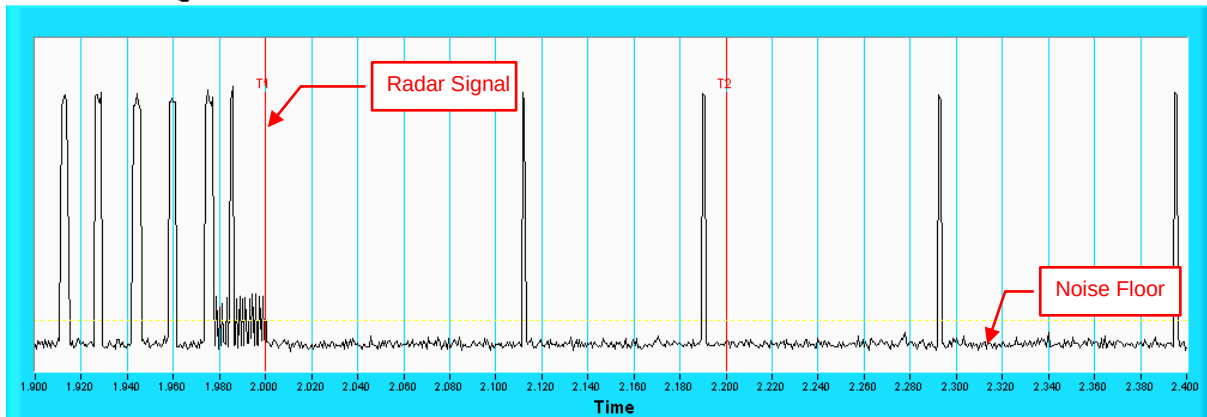
802.11n (HT20)

Channel Closing Transmission Time & Channel Move Time



NOTE: T1 denotes the start of Channel Move Time upon the end of the last Radar burst. T2 denotes the data transmission time of 200 ms from T1. T3 denotes the end of Channel Move Time. T4 denotes the 10 second from T1 to observe the aggregate duration of transmissions.

Channel Closing Transmission Time & Channel Move Time

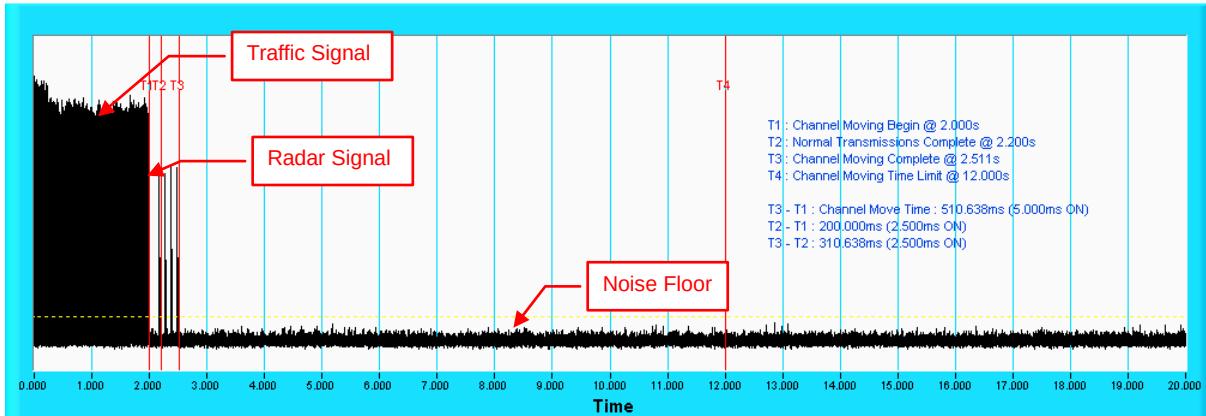


NOTE: An expanded plot for the device vacates the channel in the required 500 ms.

Radar signal 0

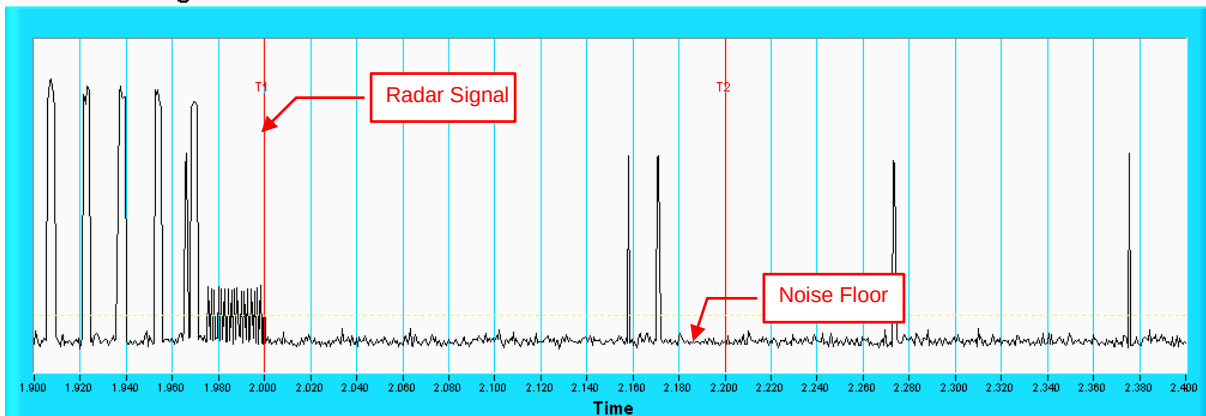
802.11n (HT40)

Channel Closing Transmission Time & Channel Move Time



NOTE: T1 denotes the start of Channel Move Time upon the end of the last Radar burst. T2 denotes the data transmission time of 200 ms from T1. T3 denotes the end of Channel Move Time. T4 denotes the 10 second from T1 to observe the aggregate duration of transmissions.

Channel Closing Transmission Time & Channel Move Time



NOTE: An expanded plot for the device vacates the channel in the required 500 ms.

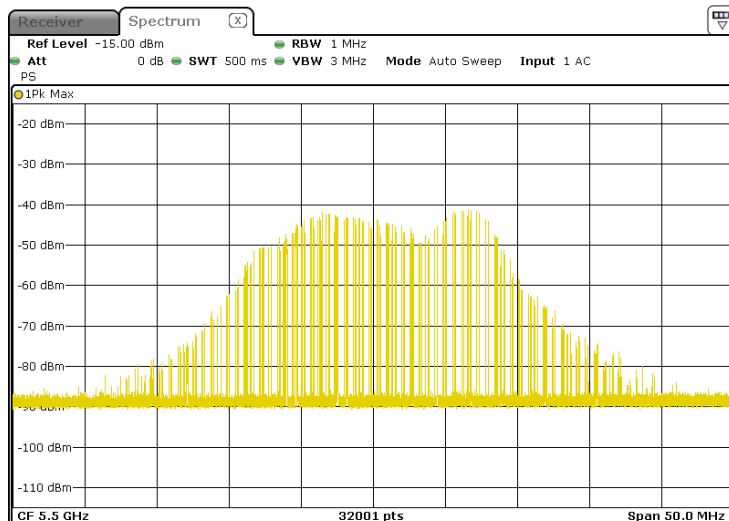
5.2.3 Non-Occupancy Period

Associate test:

During the 30 minutes observation time, UUT did not make any transmissions on a channel after a radar signal was detected on that channel by either the Channel Availability Check or the In-Service Monitoring.

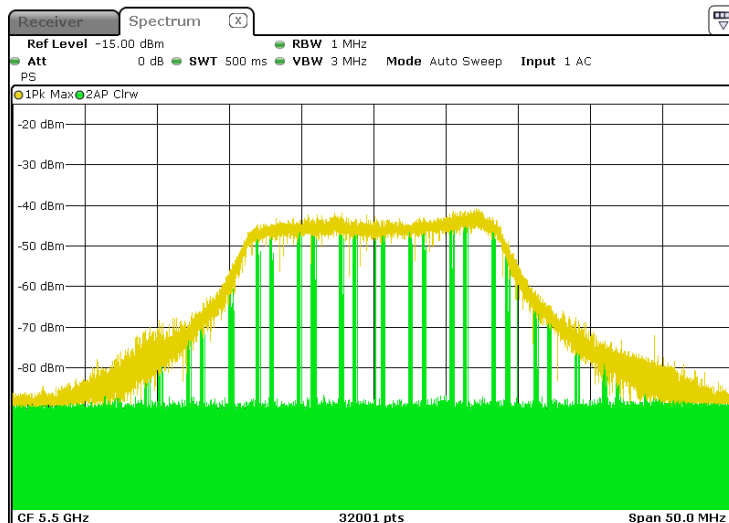
- 1) EUT (Client) links with master on 5500 MHz.

Waveform of EUT links up with Master



- 2) Client plays specified files via master.

Waveform of transmission



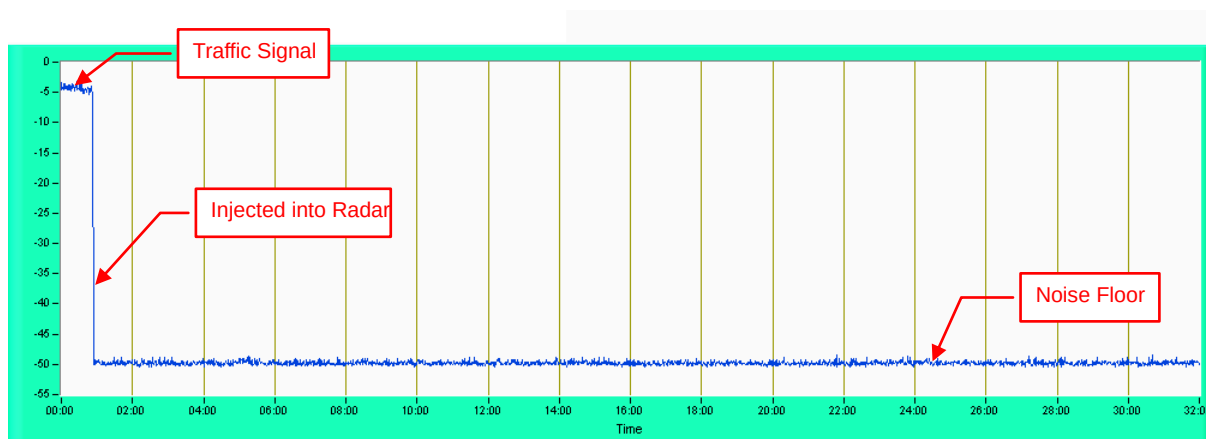
3) Radar signal 0 is applied to the Master device and WiFi traffic signal stop immediately.



4) 5500 MHz has been monitored in 30 minutes period. In this period, no any transmission occurs.

Plot of 30 minutes period

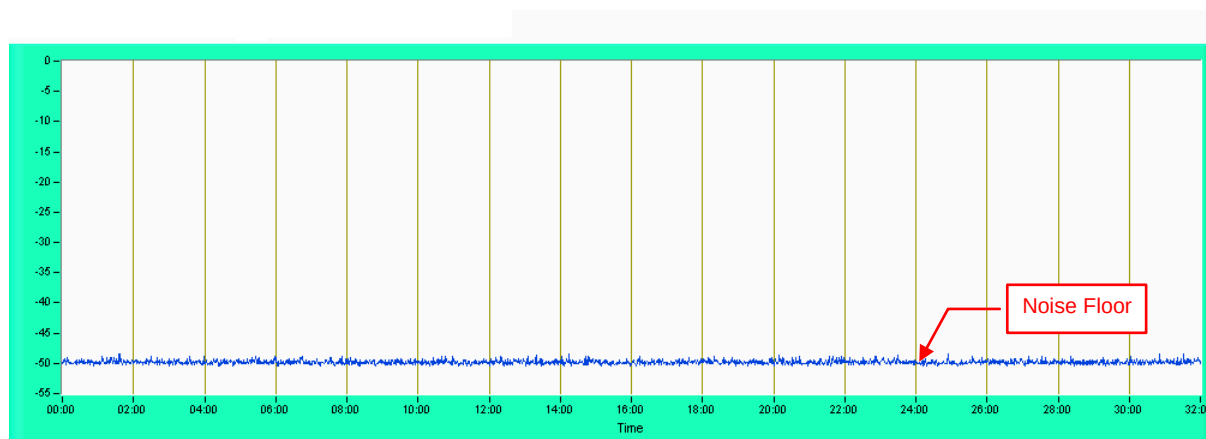
802.11n (HT20)



5.2.4 Non-associated test

Master was off.

During the 30 minutes observation time, the UUT did not make any transmissions in the DFS band after UUT power up.



5.2.5 Non- Co-Channel Test

The UUT was investigated after radar was detected the channel and made sure no co-channel operation with radars.

5.2.6 Test Setup photo

請參閱附件（測試設置照片）

6 檢測實驗室基本資料

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林口 EMC / RF 實驗室：

Tel: 886-2-26052180

Fax: 886-2-26051924

新竹 EMC / RF 及通訊實驗室：

Tel: 886-3-5935343

Fax: 886-3-5935342

華亞 EMC / RF / Safety 實驗室：

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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---END---