

低功率射頻電機測試報告

報告編號:

RT190606C07

申請者

Google LLC

產品名稱

Interactive media streaming device

型號

H2C

製造廠商

Google LLC

商標或廠牌

G

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

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報告簽署人簽章:

邱碧孔



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報告發行紀錄

Issue No.	Description	Date Issued
RT190606C07	Original release	108 年 08 月 01 日

證 明 書

發行日期：108 年 08 月 01 日

產 品 名 稱：Interactive media streaming device
商 標：G
型 號：H2C
申 請 者：Google LLC
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：H2C)，收件日期 108 年 06 月 06 日，於 108 年 06 月 26 日至 108 年 07 月 31 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 ！

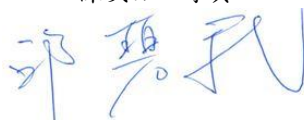
報告製作者：



陳美如 / 專員

， 日 期：108 年 08 月 01 日

審 核 者：



邱碧民 / 專案工程師

， 日 期：108 年 08 月 01 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: Google LLC

製造廠商: Google LLC

申請廠商地址: 1600 Amphitheatre Parkway, Mountain View, CA 94043, USA

產品名稱: Interactive media streaming device

廠牌: G

型號: H2C

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

Bluetooth EDR 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	20 dB 頻寬	低功率射頻電機技術規範 3.10.1.6 節	Note
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	跳頻頻道數之量測	低功率射頻電機技術規範 3.10.1.6 節	合格
6	跳頻頻道間隔之量測	低功率射頻電機技術規範 3.10.1.6 節	合格
7	每一頻道停留時間之量測	低功率射頻電機技術規範 3.10.1.6 節	合格

Note：此頻寬測試值為跳頻頻道間隔之量測參考值。

Bluetooth LE 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

備註：量測結果之判定不考慮量測不確定度的貢獻。

2 一般敘述

2.1 待測設備

產品名稱：	Interactive media streaming device	
型號：	H2C	
額定電源：	14 Vdc (Adapter)	
調變方式：	Wireless LAN	CCK, DQPSK, DBPSK for DSSS 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM
	Bluetooth EDR	GFSK, $\pi/4$ -DQPSK, 8DPSK
	Bluetooth LE	GFSK
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 802.11ac: up to 433.3 Mbps
	Bluetooth EDR	1/ 2/ 3 Mbps
	Bluetooth LE	1 Mbps
載波頻率：	Wireless LAN	2.4 GHz: 2412 ~ 2462 MHz 5.0 GHz: 5180 ~ 5240 MHz, 5260 ~ 5320 MHz, 5500 ~ 5720 MHz, 5745 ~ 5825 MHz
	Bluetooth EDR	2402 ~ 2480 MHz
	Bluetooth LE	2402 ~ 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): 2 802.11ac (VHT80): 1 5260 ~ 5320 MHz: 802.11a, 802.11n (HT20): 4 802.11n (HT40): 2 802.11ac (VHT80): 1 5500 ~ 5720 MHz: 802.11a, 802.11n (HT20): 12 802.11n (HT40): 6 802.11ac (VHT80): 3 5745 ~ 5825 MHz: 802.11a, 802.11n (HT20): 5 802.11n (HT40): 2 802.11ac (VHT80): 1
	Bluetooth EDR	79
	Bluetooth LE	40

發射功率：	Wireless LAN	2.4 GHz: 802.11b: 18.51 dBm 802.11g: 18.24 dBm 802.11n (HT20): 18.43 dBm 802.11n (HT40): 15.54 dBm 5.0 GHz: 5180 ~ 5240 MHz: 802.11a: 21.33 dBm 802.11n (HT20): 21.54 dBm 802.11n (HT40): 21.38 dBm 802.11ac (VHT80): 16.28 dBm 5260 ~ 5320 MHz: 802.11a: 22.52 dBm 802.11n (HT20): 22.63 dBm 802.11n (HT40): 18.89 dBm 802.11ac (VHT80): 13.46 dBm 5500 ~ 5720 MHz: 802.11a: 21.33 dBm 802.11n (HT20): 21.40 dBm 802.11n (HT40): 21.34 dBm 802.11ac (VHT80): 18.25 dBm 5745 ~ 5825 MHz: 802.11a: 22.16 dBm 802.11n (HT20): 22.36 dBm 802.11n (HT40): 22.25 dBm 802.11ac (VHT80): 17.34 dBm
		Bluetooth EDR
		Bluetooth LE
天線種類：	見註 1	
電源線類別：	N/A	
信號線類別：	N/A	
配件：	見註 3	
HW Version：	EVT	
SW Version：	SD8987-16.100.10.P10-C4X15C636a-GPL-<FP100>	
SN：	9514105APZZ2CR (For 直接量測)	
	9514105APZZ2CI (For 電源線傳導干擾量測 / 場強輻射量測)	

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
802.11ac (VHT80)	1TX

** In test mode assessment for 1TX, both antennas (Ant 1 and Ant 2) must be considered for testing, the worst case is determined by the max. antenna gain.

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)	
						Ant 1	Ant 2
WLAN	2412 ~ 2462	PIFA	N/A	N/A	N/A	0.79	1.39
	5180 ~ 5240					4.06	3.00
	5260 ~ 5320					3.10	2.69
	5500 ~ 5720					5.15	5.35
	5745 ~ 5825					5.23	5.29
Bluetooth	2402 ~ 2480				N/A	0.79	1.39

3. 此待測設備搭配使用之配件如下：

配件	廠牌	型號	規格
Adapter	G	G1028	I/P: 100-240 Vac, 50-60Hz, 0.4 A O/P: 14.0 Vdc, 1.1 A 1.5m shielded DC cable w/o core

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, 2, 6, 10, 11 802.11n (HT20): Ch 1, 2, 6, 10, 11 802.11n (HT40): Ch 3, 6, 9	802.11n (HT40): Ch 3
其它不必要之訊號	802.11n (HT40): Ch 3	802.11n (HT40): Ch 3
5180 ~ 5240 MHz, 5260 ~ 5320 MHz, 5500 ~ 5720 MHz & 5745 ~ 5825 MHz		
1 GHz 以上量測	802.11a: Ch 36, 40, 48, 52, 60, 64, 100, 116, 140, 144, 149, 157, 165 802.11n (HT20): Ch 36, 40, 48, 52, 60, 64, 100, 116, 140, 144, 149, 157, 165 802.11n (HT40): Ch 38, 46, 54, 62, 102, 110, 134, 142, 151, 159 802.11ac (VHT80): Ch 42, 58, 106, 122, 138, 155	802.11n (HT40): Ch 38
其它不必要之訊號	802.11n (HT40): Ch 38	802.11n (HT40): Ch 38
2402 ~ 2480 MHz (Bluetooth EDR)		
1 GHz 以上量測	GFSK: Ch 0, 39, 78 8DPSK: Ch 0, 39, 78	GFSK: Ch 0
其它不必要之訊號	GFSK: Ch 0	GFSK: Ch 0
2402 ~ 2480 MHz (Bluetooth LE)		
1 GHz 以上量測	Ch 0, 19, 39	Ch 0
其它不必要之訊號	Ch 0	Ch 0

5. 此報告中傳輸模式，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. Bluetooth EDR傳輸模式DH1、DH3及DH5皆經過預測試，其中以DH5的傳輸模式具有較大干擾雜訊，因此僅以此傳輸模式進行最終量測。

7. Bluetooth LE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GFSK調變技術進行測試並記錄最終量測結果於報告中。

8. 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4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1~4評估完整測試。

模式	測試狀態
1	WLAN 2.4G + Adapter
2	WLAN 5G + Adapter
3	BT + Adapter
4	BT LE+ Adapter

9. 此待測設備，經評估三個正交軸方位評估測試擺設方式：平躺、垂直、側放，其中以平躺擺放為最大干擾值之位置，故以此擺放方式進行最終量測，並將測試結果紀錄。

10. Duty cycle of test signal.

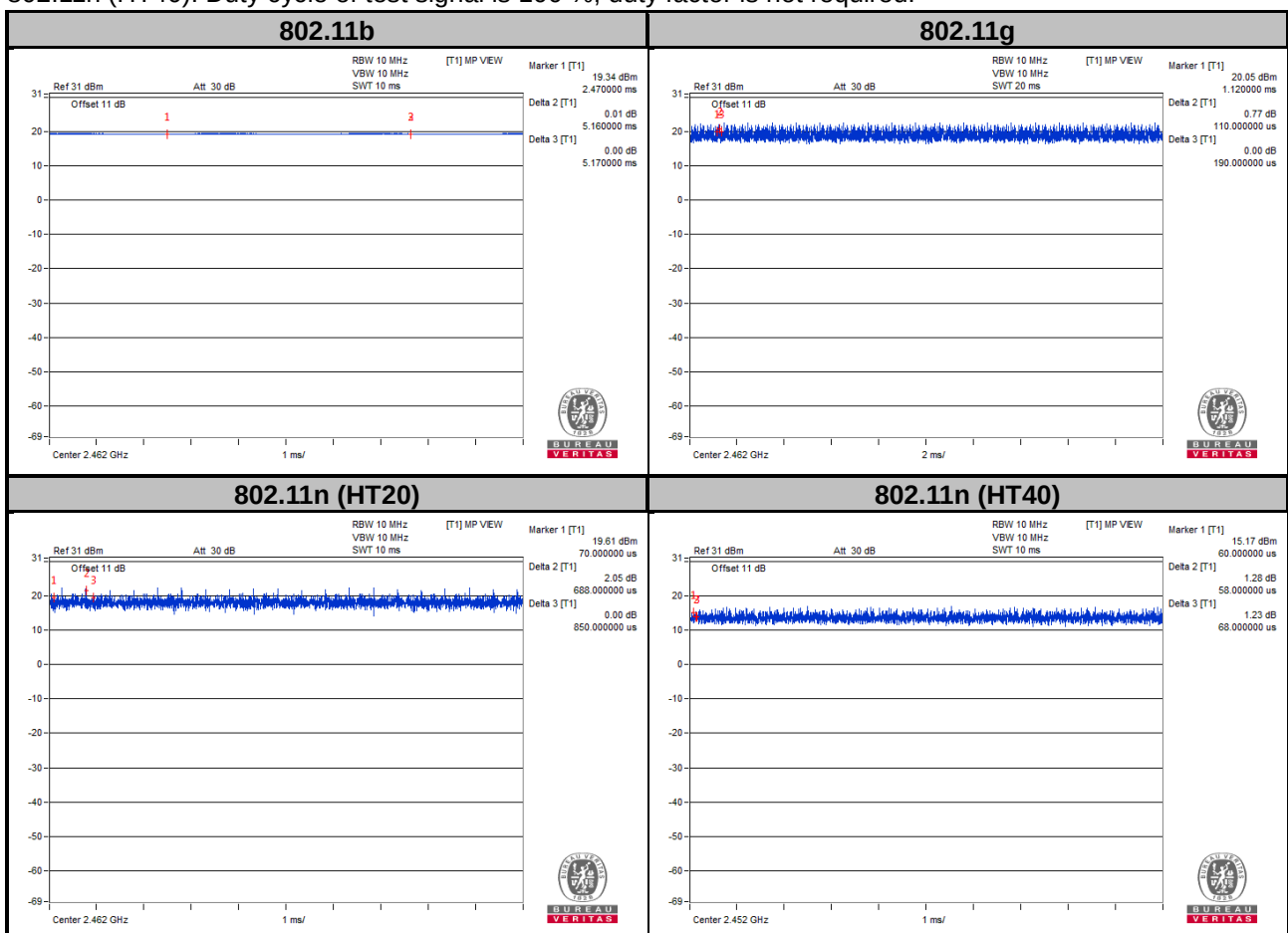
2.4 GHz頻段

802.11b: Duty cycle of test signal is 100 %, duty factor is not required.

802.11g: Duty cycle of test signal is 100 %, duty factor is not required.

802.11n (HT20): Duty cycle of test signal is 100 %, duty factor is not required.

802.11n (HT40): Duty cycle of test signal is 100 %, duty factor is not required.



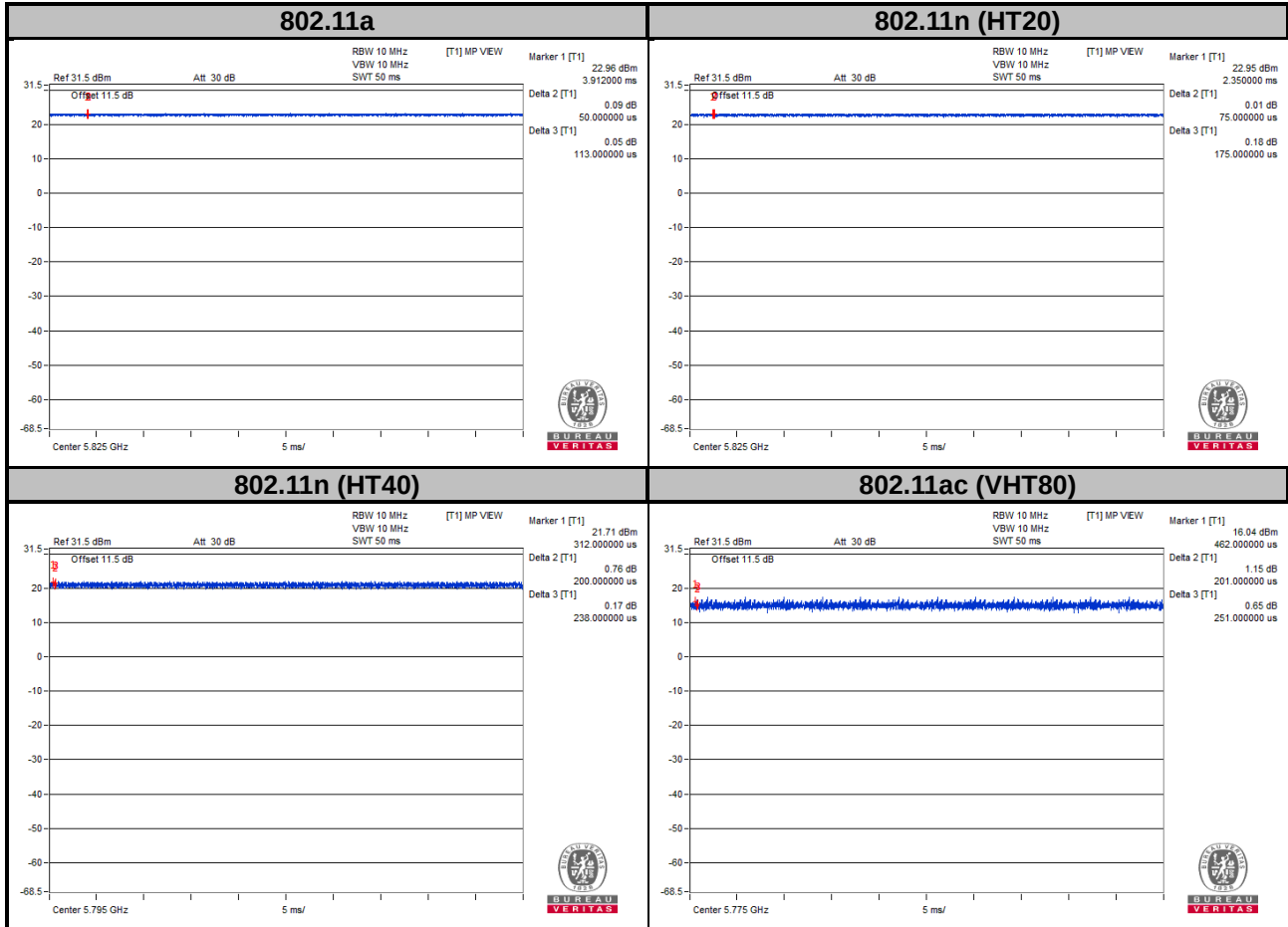
5 GHz频段

802.11a: Duty cycle of test signal is 100 %, duty factor is not required.

802.11n (HT20): Duty cycle of test signal is 100 %, duty factor is not required.

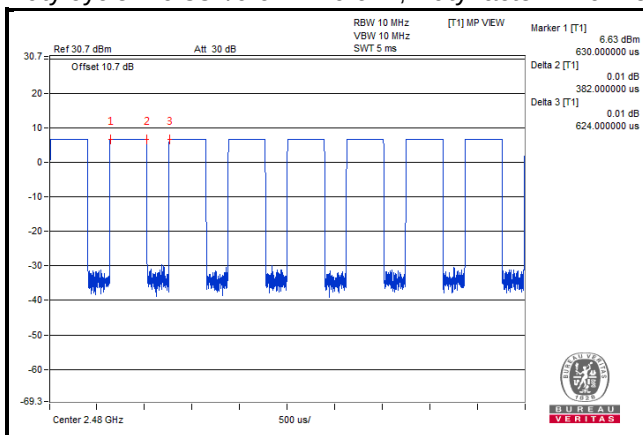
802.11n (HT40): Duty cycle of test signal is 100 %, duty factor is not required.

802.11ac (VHT80): Duty cycle of test signal is 100 %, duty factor is not required.



BT LE频段

Duty cycle = $0.382 / 0.624 = 0.612$, Duty factor = $10 \cdot \log(1/0.612) = 2.13$



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 频段:

802.11a, 802.11n (HT20):

頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)
36	5180	120	5600
40	5200	124	5620
44	5220	128	5640
48	5240	132	5660
52	5260	136	5680
56	5280	140	5700
60	5300	144	5720
64	5320	149	5745
100	5500	153	5765
104	5520	157	5785
108	5540	161	5805
112	5560	165	5825
116	5580		

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	142	5710
102	5510	151	5755
110	5550	159	5795

802.11ac (VHT80):

頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)
42	5210	122	5610
58	5290	138	5690
106	5530	155	5775

Bluetooth EDR 頻段:

頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)
0	2402	17	2419	34	2436	51	2453	68	2470
1	2403	18	2420	35	2437	52	2454	69	2471
2	2404	19	2421	36	2438	53	2455	70	2472
3	2405	20	2422	37	2439	54	2456	71	2473
4	2406	21	2423	38	2440	55	2457	72	2474
5	2407	22	2424	39	2441	56	2458	73	2475
6	2408	23	2425	40	2442	57	2459	74	2476
7	2409	24	2426	41	2443	58	2460	75	2477
8	2410	25	2427	42	2444	59	2461	76	2478
9	2411	26	2428	43	2445	60	2462	77	2479
10	2412	27	2429	44	2446	61	2463	78	2480
11	2413	28	2430	45	2447	62	2464		
12	2414	29	2431	46	2448	63	2465		
13	2415	30	2432	47	2449	64	2466		
14	2416	31	2433	48	2450	65	2467		
15	2417	32	2434	49	2451	66	2468		
16	2418	33	2435	50	2452	67	2469		

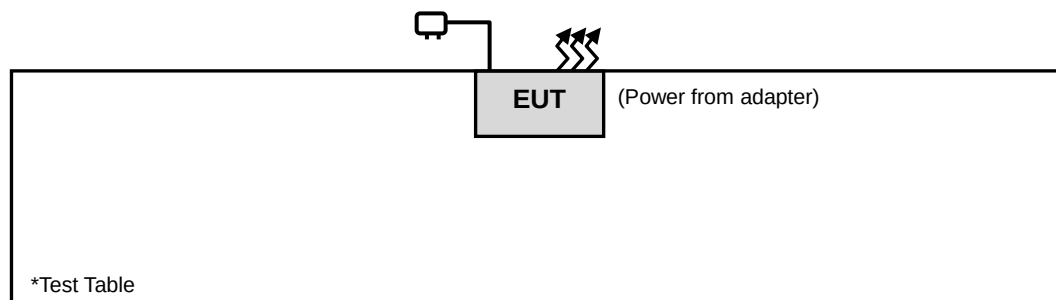
Bluetooth LE 頻段:

頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)
0	2402	8	2418	16	2434	24	2450	32	2466
1	2404	9	2420	17	2436	25	2452	33	2468
2	2406	10	2422	18	2438	26	2454	34	2470
3	2408	11	2424	19	2440	27	2456	35	2472
4	2410	12	2426	20	2442	28	2458	36	2474
5	2412	13	2428	21	2444	29	2460	37	2476
6	2414	14	2430	22	2446	30	2462	38	2478
7	2416	15	2432	23	2448	31	2464	39	2480

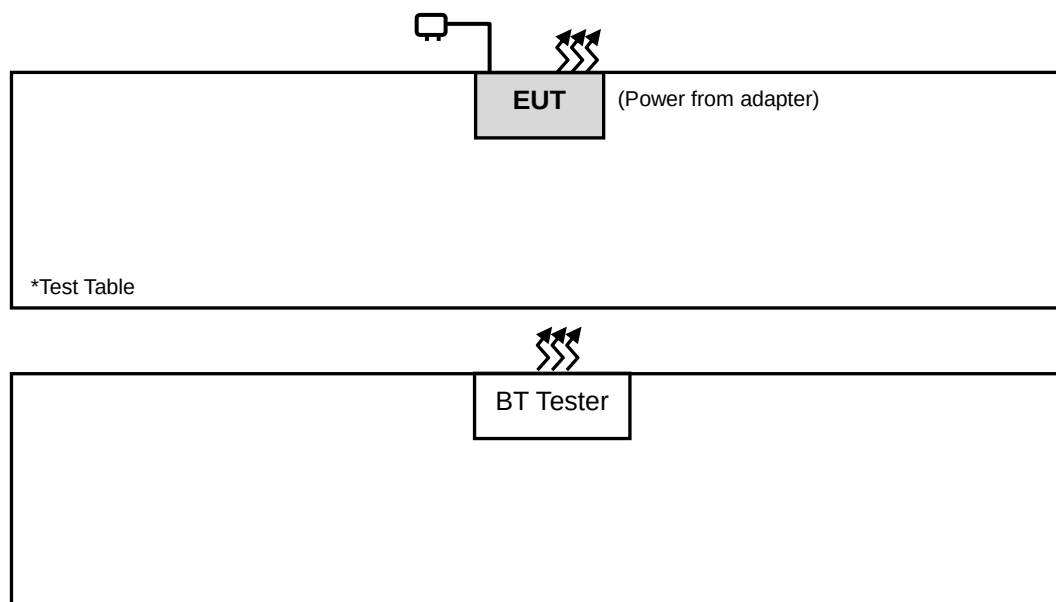
詳細之規格請參考使用說明書。

2.2 測試架構圖

<WLAN & Bluetooth LE>



<Bluetooth EDR>



3 適用規範

3.1 規範要求

► Bluetooth LE 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。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

(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。

(8) 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。

►WLAN 頻段部分:

(9) 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。

(10) 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) ≤ -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) ≤ 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) ≤ 15.6 dBm/MHz~10 dBm/MHz (以線性法計算對應之限制值)；所有頻帶邊緣外 25 MHz~75 MHz，有效等向輻射功率 (EIRP) ≤ 10 dBm/MHz~-27 dBm/MHz (以線性法計算對應之限制值)；所有頻帶邊緣外 ≥ 75 MHz 的頻率之發射，有效等向輻射功率 (EIRP) ≤ -27 dBm/MHz；有關遮罩限制值詳圖 1。

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。

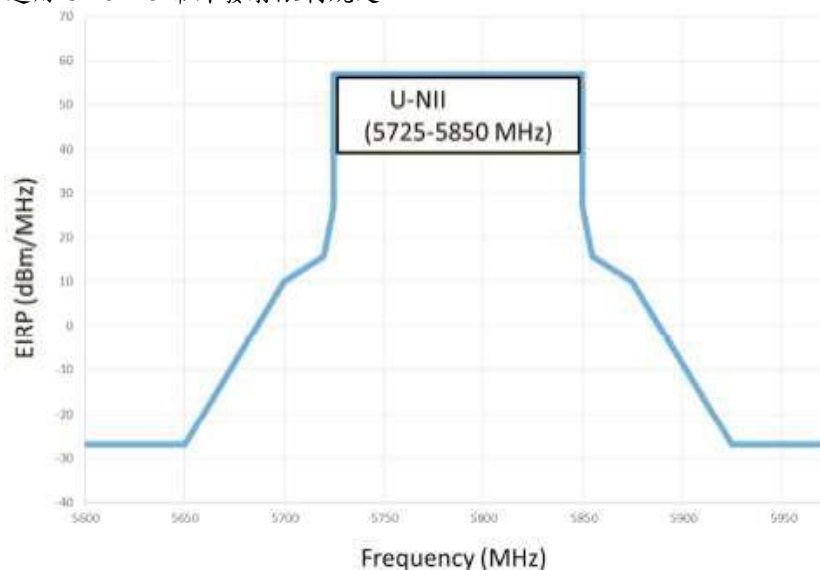


圖 1

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

(11) 天線之規定

天線規格不受第 2.2 節規定之限制。

(12) 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。

(13) 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。

(14) 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。

(15) 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。

(16) 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。

(17) 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。

(18) 依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.7.4 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。

(19) 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。

(20) 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)以證明其符電波暴露量之要求。

限制值如下：

(1) 職業性/可控制之暴露

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

註 1：標記*表平面波等效功率密度。

註 2：f 表測試頻率，單位：百萬赫(MHz)。

(2) 一般人/不可控制之暴露

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

註 1：標記*表平面波等效功率密度。

註 2：f 表測試頻率，單位：百萬赫(MHz)。

► Bluetooth EDR 頻段部分：

(21) 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。

(22) 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。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

(23) 天線之規定

天線規格不受第 2.2 節規定之限制。

(24) 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。

(25) 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：

操作於 2400 MHz~2483.5 MHz 者

(a) 至少使用 75 個跳頻頻道之跳頻系統：1 W(含)以下。

(b) 除(a)外，依 3.10.1.6 (1)(A)(a)之跳頻系統：0.125 W(含)以下。

(c) 數位調變技術系統：1 W(含)以下。

除使用附件二之峰值輸出功率測量方式外，並得使用以最大傳導輸出功率(Maximum Conducted Output Power)作為測量方式。

(26) 跳頻頻道數之量測

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，操作於 2400-2483.5 MHz 之展頻跳頻系統，須使用至少 15 個無重疊的頻道。應使用智慧型跳頻技術，以避免占用於特定跳頻頻道。

(27) 跳頻頻道間隔之量測

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，跳頻系統之載波頻率頻道間隔應大於或等於 25 kHz 或跳頻頻道之 20 dB 頻寬，兩者取較寬者。但操作頻率為 2400 MHz~2483.5 MHz 頻段且輸出功率應小於或等於 125 mW 跳頻系統，其載波頻率頻道間隔不得小於 25 kHz 或跳頻頻道 20 dB 頻寬之三分之二，兩者取較寬者。系統之跳頻頻道應依虛擬亂數排列，在各頻率之跳頻頻道上跳躍。每一發射機必須均等的使用每一頻率。系統接收機應具有與發射機跳躍頻道頻寬相匹配之輸入頻寬，且應隨所發射之訊號同步偏移接收頻率。

(28) 每一頻道停留時間之量測

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，操作於 2400 MHz~2483.5 MHz 之展頻跳頻系統，須使用至少 15 個無重疊的頻道，在 0.4 秒乘以跳頻頻道數之週期內，任一頻率占用之平均時間應小於或等於 0.4 秒。應使用智慧型跳頻技術，以避免占用於特定跳頻頻道。

(29) 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(10)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 = 10 Hz

802.11n (HT20) 為 RBW = 1 MHz, VBW = 10 Hz

802.11n (HT40) 為 RBW = 1 MHz, VBW = 10 Hz

接收諧波：

Below 1 GHz

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

Above 1 GHz:

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

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. 18, 2019	Mar. 17, 2020
Spectrum Analyzer Agilent	N9010A	MY52220314	Dec. 13, 2018	Dec. 12, 2019
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Apr. 15, 2019	Apr. 14, 2020
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-969	Nov. 25, 2018	Nov. 24, 2019
HORN Antenna SCHWARZBECK	BBHA 9170	148	Nov. 25, 2018	Nov. 24, 2019
BILOG Antenna SCHWARZBECK	VULB 9168	9168-472	Nov. 23, 2018	Nov. 22, 2019
Fixed Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	Apr. 15, 2019	Apr. 14, 2020
Loop Antenna	EM-6879	269	Sep. 07, 2018	Sep. 06, 2019
Preamplifier EMCI	EMC001340	980201	Oct. 12, 2018	Oct. 11, 2019
Bluetooth Tester	CBT	100946	Aug. 09, 2018	Aug. 08, 2020
Preamplifier EMCI	EMC 012645	980115	Oct. 12, 2018	Oct. 11, 2019
Preamplifier EMCI	EMC 184045	980116	Oct. 12, 2018	Oct. 11, 2019
Preamplifier EMCI	EMC 330H	980112	Oct. 12, 2018	Oct. 11, 2019
Power Meter Anritsu	ML2495A	1012010	Sep. 05, 2018	Sep. 04, 2019
Power Sensor Anritsu	MA2411B	1315050	Sep. 04, 2018	Sep. 03, 2019
RF Coaxial Cable HUBER+SUHNNER	EMC104-SM-SM-8 000&3000	140811+170717	Oct. 12, 2018	Oct. 11, 2019
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-1 000(140807)	Oct. 12, 2018	Oct. 11, 2019
RF Coaxial Cable WOKEN	8D-FB	Cable-Ch10-01	Oct. 12, 2018	Oct. 11, 2019
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
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

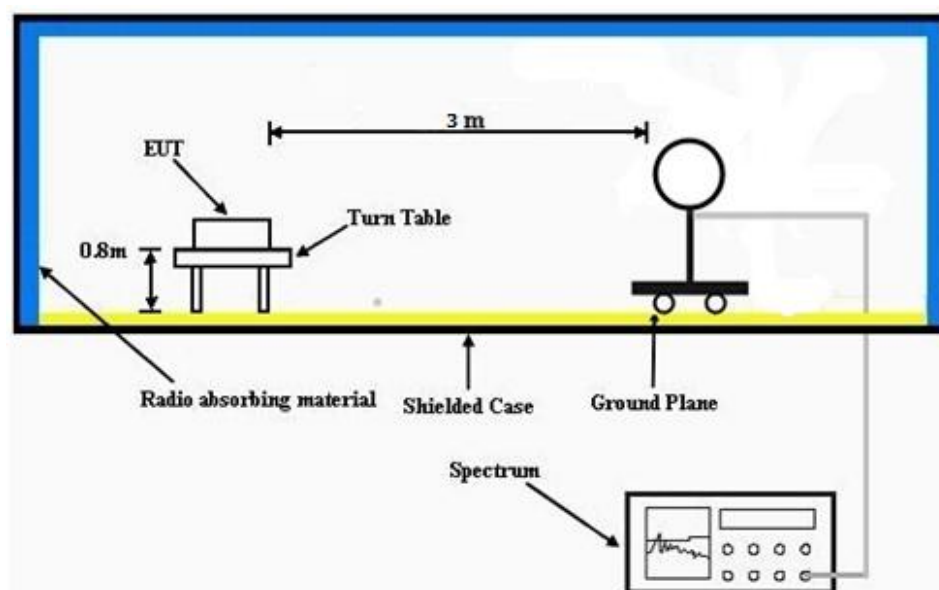
NOTE:

1. The calibration interval of the above test instruments is 12 or 24 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 7450F-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.

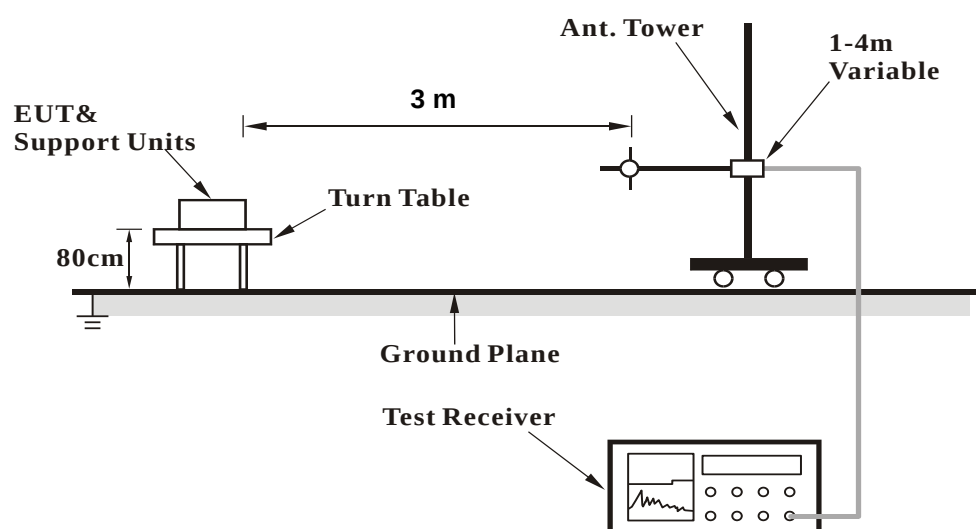
Measurement	Frequency	Uncertainty
Radiated emissions	9 kHz ~ 30 MHz	3.04 dB
	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~1000 MHz	2.95 dB
	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

4.4 測試配置

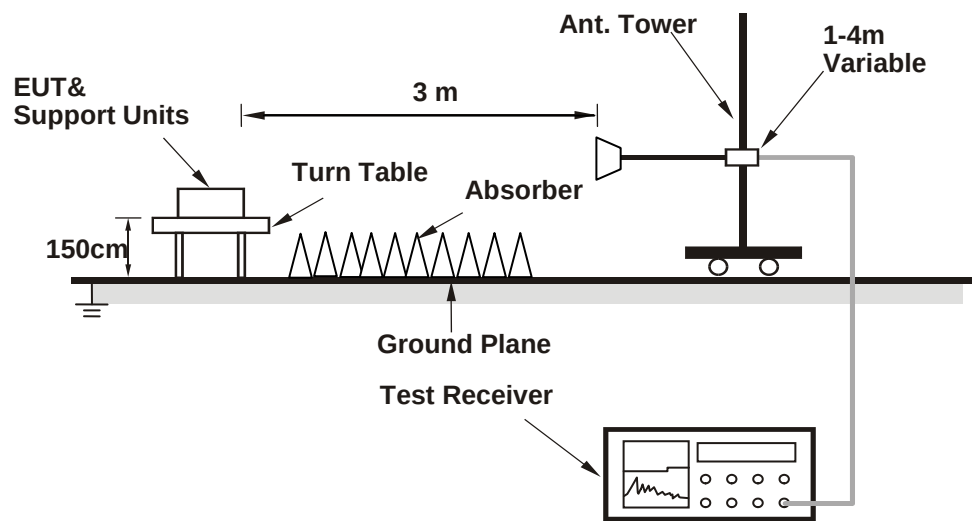
<Frequency Range 9 kHz ~ 30 MHz>



<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。

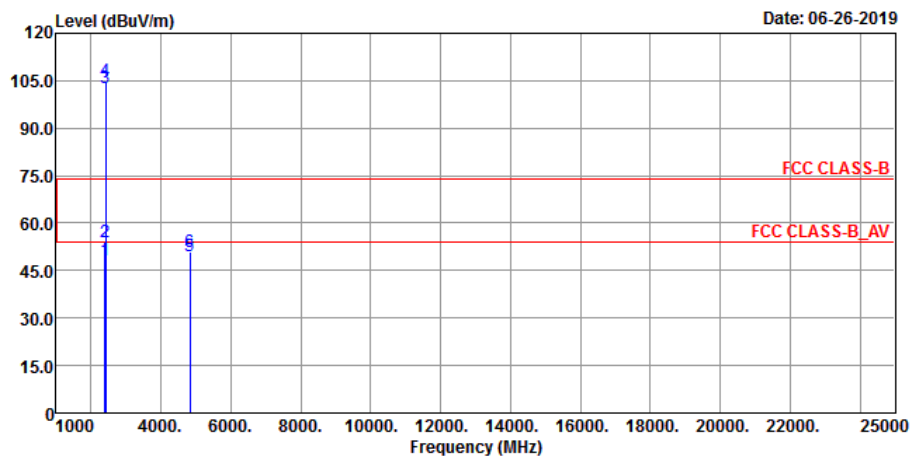
4.6 量測結果

4.6.1 發射諧波

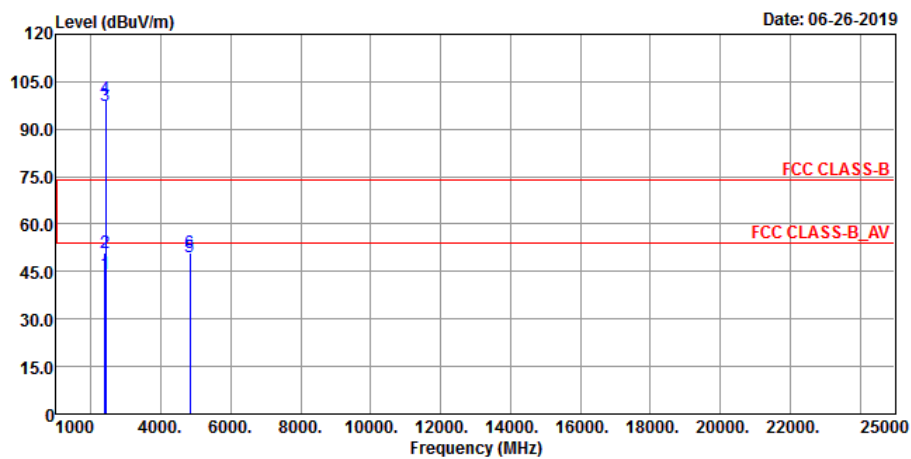
802.11b

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	Thomas Wei

Horizontal



Vertical



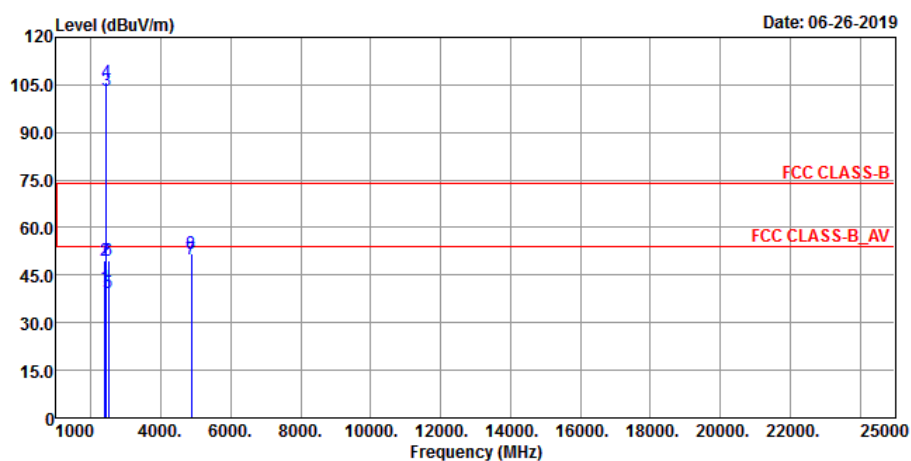
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2386.16	48.13	53.11	-4.98	54	-5.87	123	59	Average
2386.16	53.87	58.85	-4.98	74	-20.13	123	59	Peak
2412	102.54	107.55	-5.01			123	59	Average
2412	105.01	110.02	-5.01			123	59	Peak
4824	49.63	64.01	-14.38	54	-4.37	100	260	Average
4824	50.79	65.17	-14.38	74	-23.21	100	260	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2386.16	44.35	49.33	-4.98	54	-9.65	116	117	Average
2386.16	51.06	56.04	-4.98	74	-22.94	116	117	Peak
2412	97.26	102.27	-5.01			116	117	Average
2412	99.74	104.75	-5.01			116	117	Peak
4824	49.39	63.77	-14.38	54	-4.61	114	95	Average
4824	50.82	65.2	-14.38	74	-23.18	114	95	Peak

Remarks:

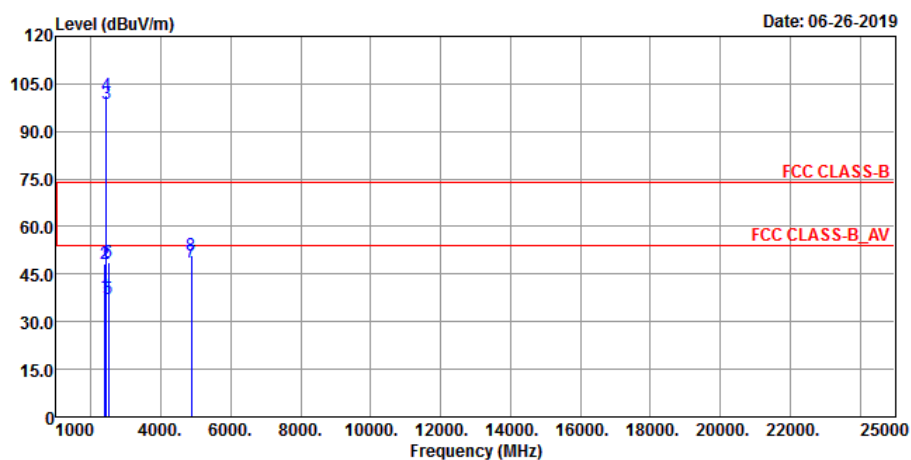
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2412 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

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	Thomas Wei

Horizontal



Vertical



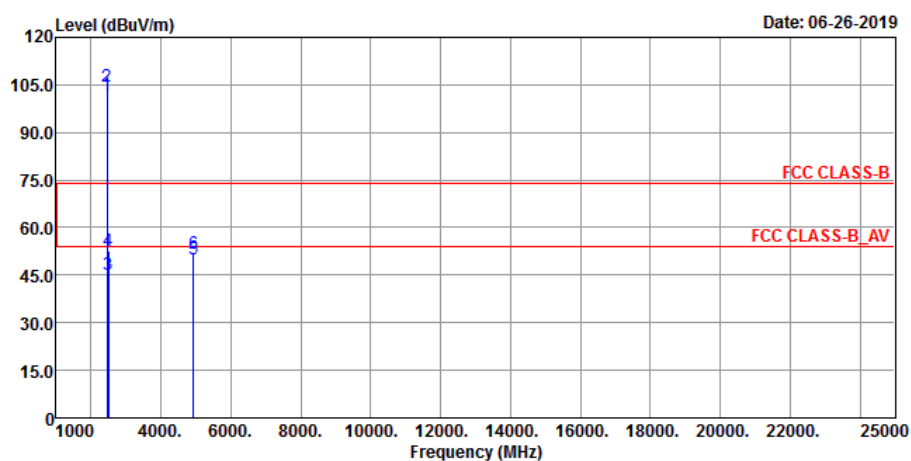
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.1	41.24	46.22	-4.98	54	-12.76	123	57	Average
2389.1	49.78	54.76	-4.98	74	-24.22	123	57	Peak
2437	103.23	108.21	-4.98			123	57	Average
2437	105.73	110.71	-4.98			123	57	Peak
2484.8	39.42	44.27	-4.85	54	-14.58	123	57	Average
2484.8	49.47	54.32	-4.85	74	-24.53	123	57	Peak
4874	49.91	63.99	-14.08	54	-4.09	106	260	Average
4874	51.88	65.96	-14.08	74	-22.12	106	260	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.24	38.15	43.13	-4.98	54	-15.85	125	119	Average
2389.24	48.14	53.12	-4.98	74	-25.86	125	119	Peak
2437	98.83	103.81	-4.98			125	119	Average
2437	101.4	106.38	-4.98			125	119	Peak
2484.8	37.37	42.22	-4.85	54	-16.63	125	119	Average
2484.8	48.91	53.76	-4.85	74	-25.09	125	119	Peak
4874	48.81	62.89	-14.08	54	-5.19	119	93	Average
4874	50.78	64.86	-14.08	74	-23.22	119	93	Peak

Remarks:

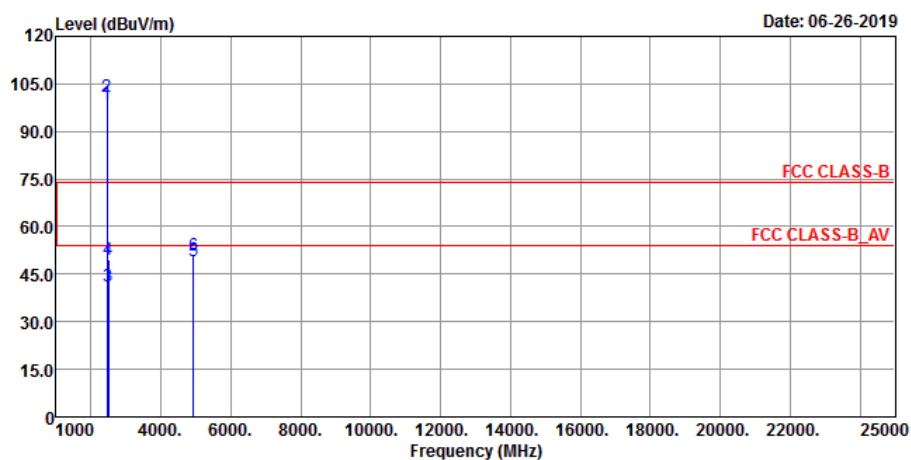
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2437 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

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	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	102.01	106.92	-4.91			160	50	Average
2462	104.43	109.34	-4.91			160	50	Peak
2487.92	45.3	50.15	-4.85	54	-8.7	160	50	Average
2487.92	52.81	57.66	-4.85	74	-21.19	160	50	Peak
4924	49.94	63.9	-13.96	54	-4.06	100	259	Average
4924	51.94	65.9	-13.96	74	-22.06	100	259	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	98.64	103.55	-4.91			147	123	Average
2462	101.17	106.08	-4.91			147	123	Peak
2487.84	41.37	46.22	-4.85	54	-12.63	147	123	Average
2487.84	49.52	54.37	-4.85	74	-24.48	147	123	Peak
4924	49.14	63.1	-13.96	54	-4.86	110	93	Average
4924	50.98	64.94	-13.96	74	-23.02	110	93	Peak

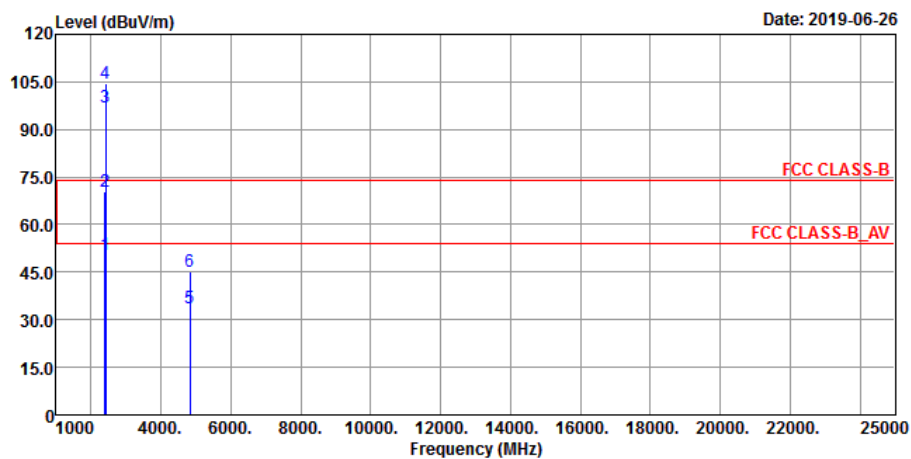
Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2462 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

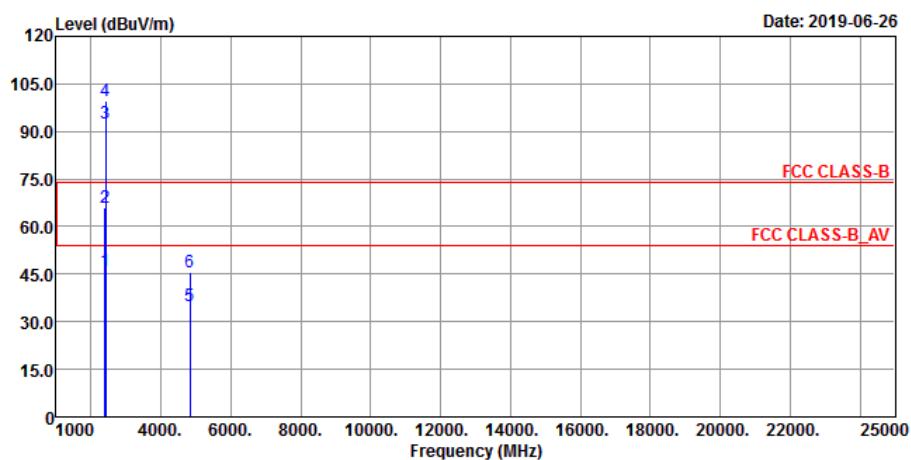
802.11g

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	Thomas Wei

Horizontal



Vertical



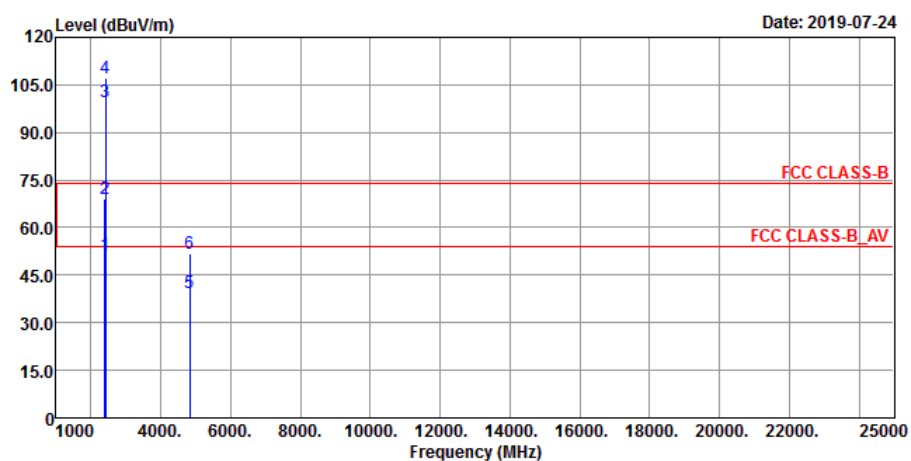
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.66	50.34	55.32	-4.98	54	-3.66	130	195	Average
2389.66	70.43	75.41	-4.98	74	-3.57	130	195	Peak
2412	97.06	102.07	-5.01			130	195	Average
2412	104.57	109.58	-5.01			130	195	Peak
4824	33.76	48.14	-14.38	54	-20.24	167	104	Average
4824	44.98	59.36	-14.38	74	-29.02	167	104	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.66	45.85	50.83	-4.98	54	-8.15	157	148	Average
2389.66	65.8	70.78	-4.98	74	-8.2	157	148	Peak
2412	92.69	97.7	-5.01			157	148	Average
2412	99.52	104.53	-5.01			157	148	Peak
4824	34.84	49.22	-14.38	54	-19.16	120	153	Average
4824	45.73	60.11	-14.38	74	-28.27	120	153	Peak

Remarks:

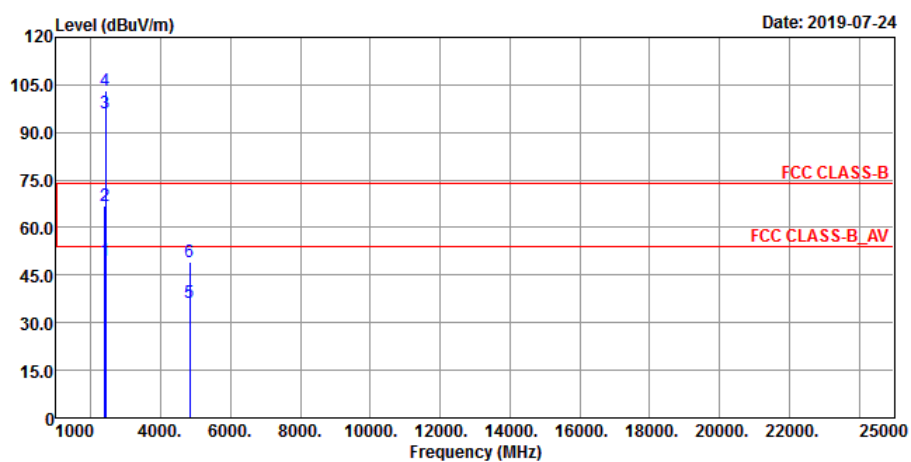
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2412 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 2	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	Thomas Wei

Horizontal



Vertical



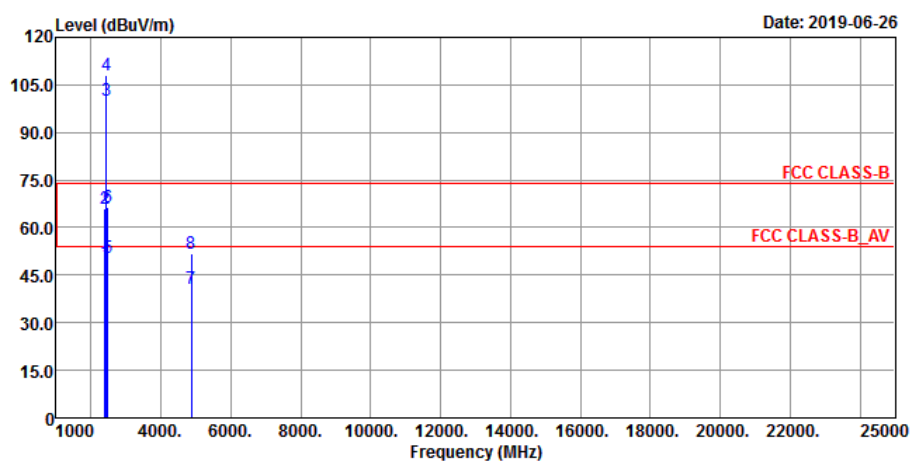
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	51.47	56.47	-5	54	-2.53	353	62	Average
2390	68.97	73.97	-5	74	-5.03	353	62	Peak
2417	99.72	104.67	-4.95			353	62	Average
2417	107.22	112.17	-4.95			353	62	Peak
4834	39.28	53.56	-14.28	54	-14.72	100	246	Average
4834	51.85	66.13	-14.28	74	-22.15	100	246	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	49.78	54.78	-5	54	-4.22	110	121	Average
2390	66.69	71.69	-5	74	-7.31	110	121	Peak
2417	95.93	100.88	-4.95			110	121	Average
2417	103.03	107.98	-4.95			110	121	Peak
4834	36.45	50.73	-14.28	54	-17.55	176	303	Average
4834	49	63.28	-14.28	74	-25	176	303	Peak

Remarks:

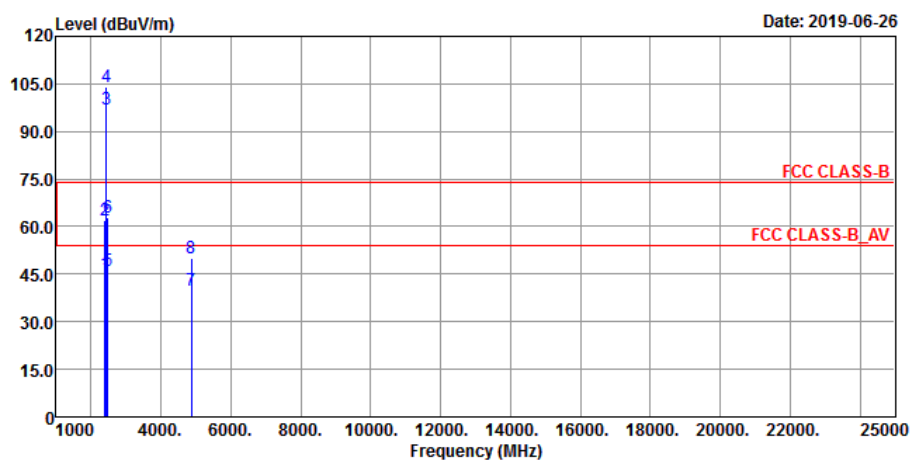
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2417 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

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	Thomas Wei

Horizontal



Vertical



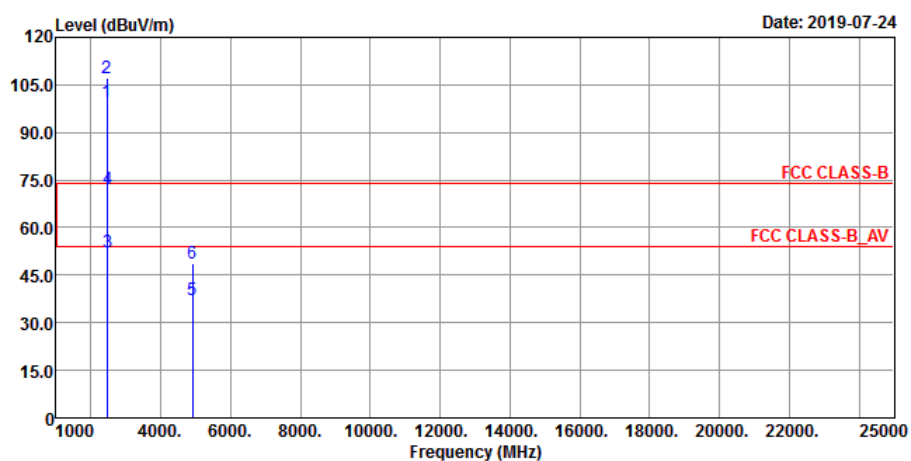
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	49.06	54.06	-5	54	-4.94	122	66	Average
2390	65.92	70.92	-5	74	-8.08	122	66	Peak
2437	100.26	105.24	-4.98			122	66	Average
2437	108.21	113.19	-4.98			122	66	Peak
2483.5	50.49	55.34	-4.85	54	-3.51	122	66	Average
2483.5	66.35	71.2	-4.85	74	-7.65	122	66	Peak
4874	40.95	55.03	-14.08	54	-13.05	152	133	Average
4874	51.64	65.72	-14.08	74	-22.36	152	133	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	45.07	50.07	-5	54	-8.93	110	118	Average
2390	61.98	66.98	-5	74	-12.02	110	118	Peak
2437	96.79	101.77	-4.98			110	118	Average
2437	103.93	108.91	-4.98			110	118	Peak
2483.5	45.91	50.76	-4.85	54	-8.09	110	118	Average
2483.5	62.84	67.69	-4.85	74	-11.16	110	118	Peak
4874	39.82	53.9	-14.08	54	-14.18	103	111	Average
4874	50.14	64.22	-14.08	74	-23.86	103	111	Peak

Remarks:

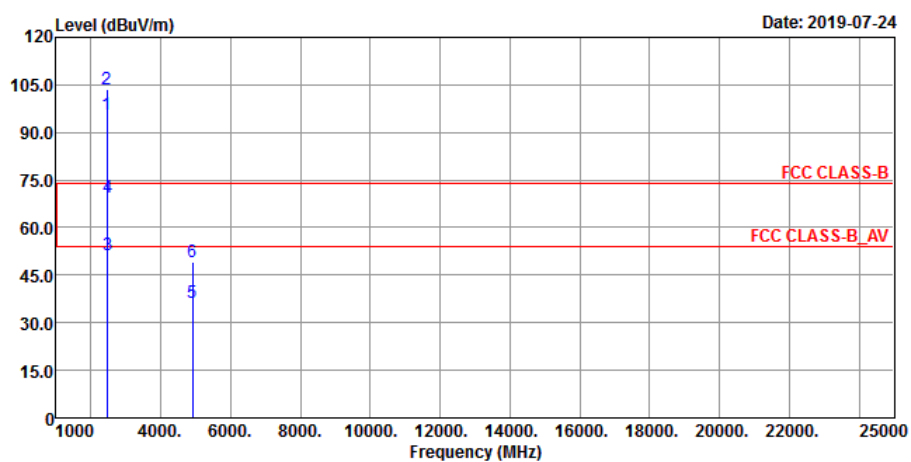
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2437 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 10	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	Thomas Wei

Horizontal



Vertical



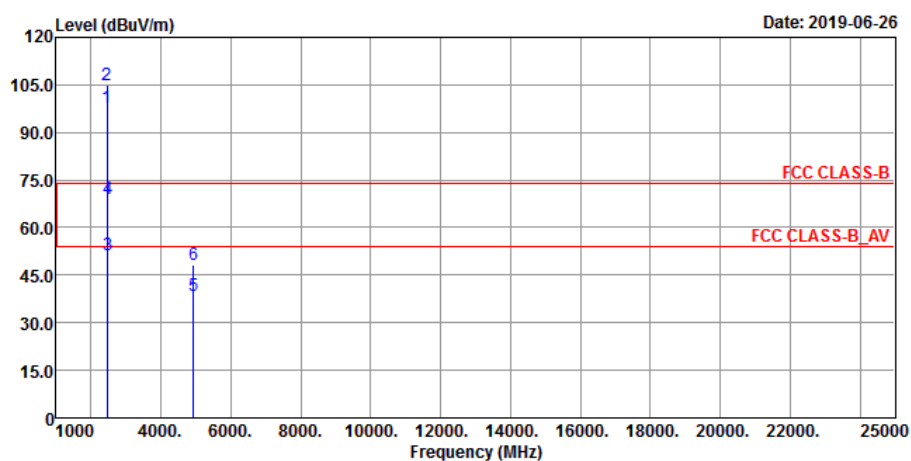
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2457	99.54	104.45	-4.91			344	61	Average
2457	107.13	112.04	-4.91			344	61	Peak
2483.5	52.14	56.99	-4.85	54	-1.86	344	61	Average
2483.5	72.03	76.88	-4.85	74	-1.97	344	61	Peak
4914	37.35	51.33	-13.98	54	-16.65	203	198	Average
4914	48.78	62.76	-13.98	74	-25.22	203	198	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2457	95.76	100.67	-4.91			125	123	Average
2457	103.41	108.32	-4.91			125	123	Peak
2483.5	51.58	56.43	-4.85	54	-2.42	125	123	Average
2483.5	69.68	74.53	-4.85	74	-4.32	125	123	Peak
4914	36.4	50.38	-13.98	54	-17.6	133	204	Average
4914	49.32	63.3	-13.98	74	-24.68	133	204	Peak

Remarks:

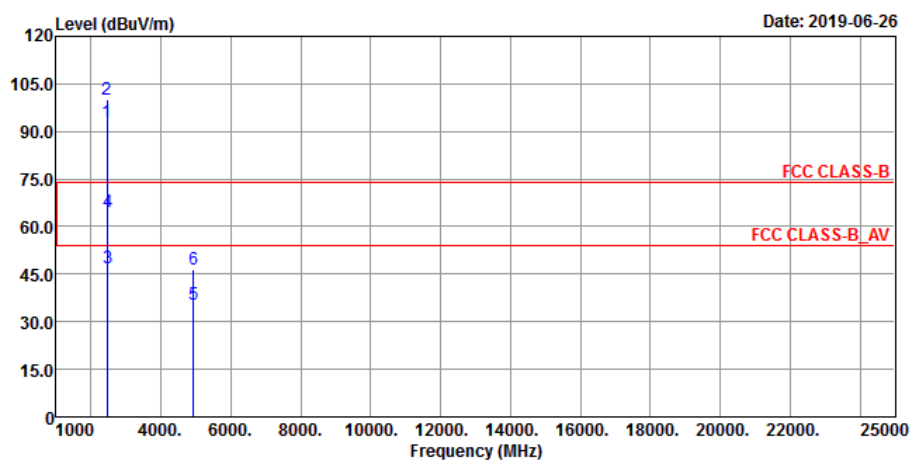
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2457 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

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	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	97.64	102.55	-4.91			121	54	Average
2462	104.86	109.77	-4.91			121	54	Peak
2483.5	51.38	56.23	-4.85	54	-2.62	121	54	Average
2483.5	69.09	73.94	-4.85	74	-4.91	121	54	Peak
4924	38.56	52.52	-13.96	54	-15.44	100	244	Average
4924	48.33	62.29	-13.96	74	-25.67	100	244	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	92.81	97.72	-4.91			124	141	Average
2462	99.96	104.87	-4.91			124	141	Peak
2483.5	47.15	52	-4.85	54	-6.85	124	141	Average
2483.5	64.64	69.49	-4.85	74	-9.36	124	141	Peak
4924	35.36	49.32	-13.96	54	-18.64	100	6	Average
4924	46.28	60.24	-13.96	74	-27.72	100	6	Peak

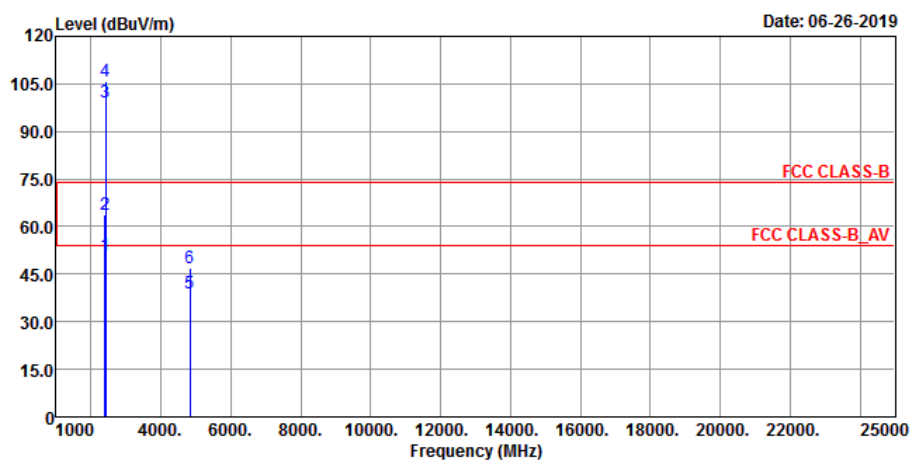
Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2462 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

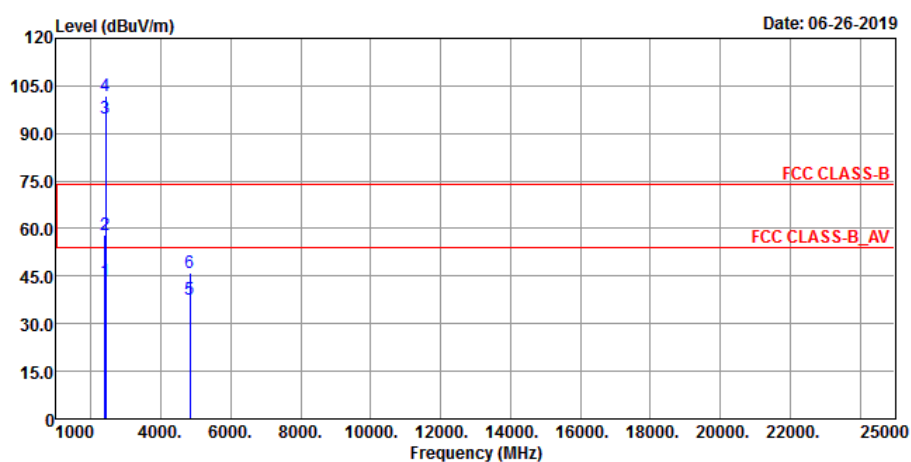
802.11n (HT20)

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	Thomas Wei

Horizontal



Vertical



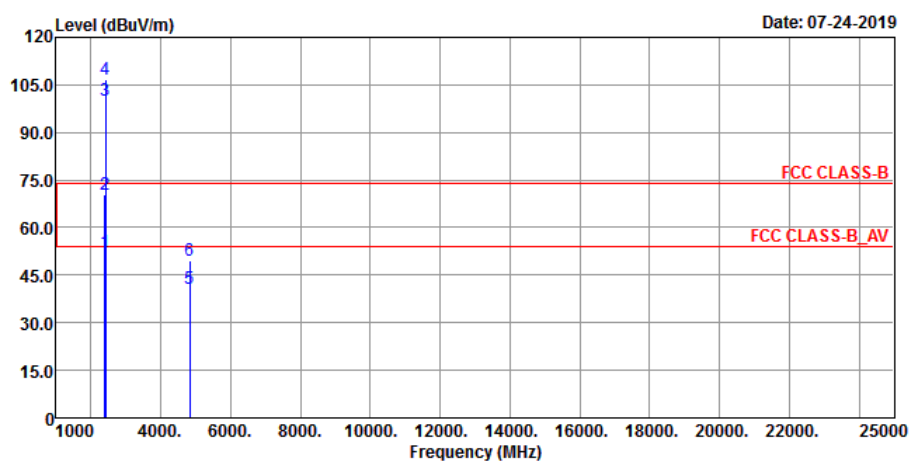
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.8	50.77	55.77	-5	54	-3.23	104	198	Average
2389.8	63.7	68.7	-5	74	-10.3	104	198	Peak
2412	99.28	66.77	32.51			104	198	Average
2412	106.01	73.5	32.51			104	198	Peak
4824	39.08	53.46	-14.38	54	-14.92	100	244	Average
4824	47.04	61.42	-14.38	74	-26.96	100	244	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	43.38	48.38	-5	54	-10.62	112	138	Average
2389.94	57.99	62.99	-5	74	-16.01	112	138	Peak
2412	94.78	62.27	32.51			112	138	Average
2412	101.63	69.12	32.51			112	138	Peak
4824	37.85	52.23	-14.38	54	-16.15	129	82	Average
4824	46.22	60.6	-14.38	74	-27.78	129	82	Peak

Remarks:

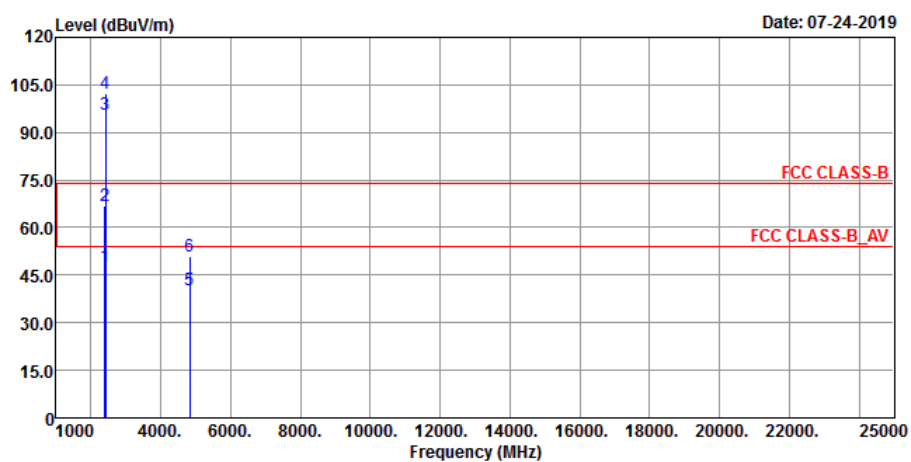
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2412 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 2	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	Thomas Wei

Horizontal



Vertical



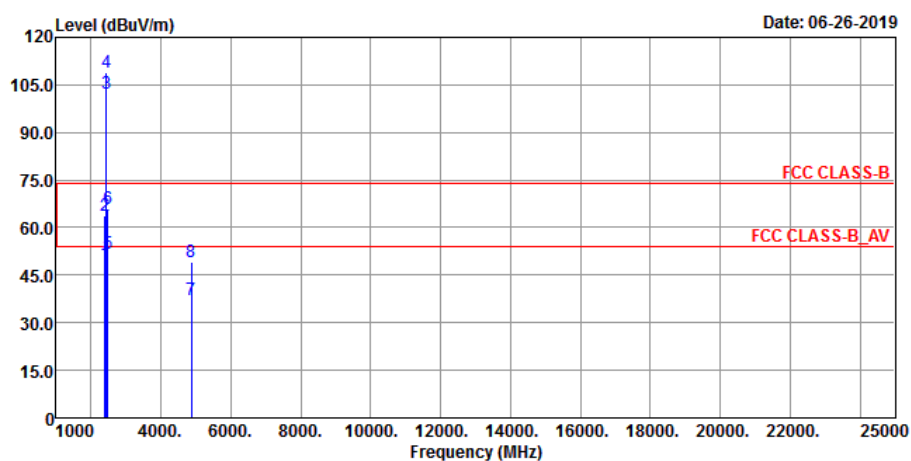
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.8	52.15	57.15	-5	54	-1.85	111	201	Average
2389.8	70.61	75.61	-5	74	-3.39	111	201	Peak
2417	99.93	104.88	-4.95			111	201	Average
2417	106.67	111.62	-4.95			111	201	Peak
4834	40.72	55	-14.28	54	-13.28	100	254	Average
4834	49.58	63.86	-14.28	74	-24.42	100	254	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	47.94	52.94	-5	54	-6.06	121	137	Average
2389.94	66.83	71.83	-5	74	-7.17	121	137	Peak
2417	95.68	100.63	-4.95			121	137	Average
2417	102.49	107.44	-4.95			121	137	Peak
4834	40.32	54.6	-14.28	54	-13.68	113	106	Average
4834	50.82	65.1	-14.28	74	-23.18	113	106	Peak

Remarks:

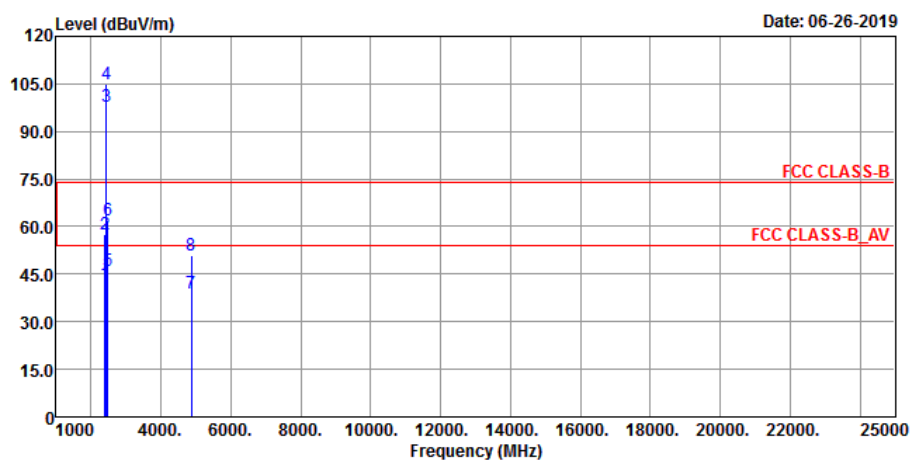
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2417 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

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	Thomas Wei

Horizontal



Vertical



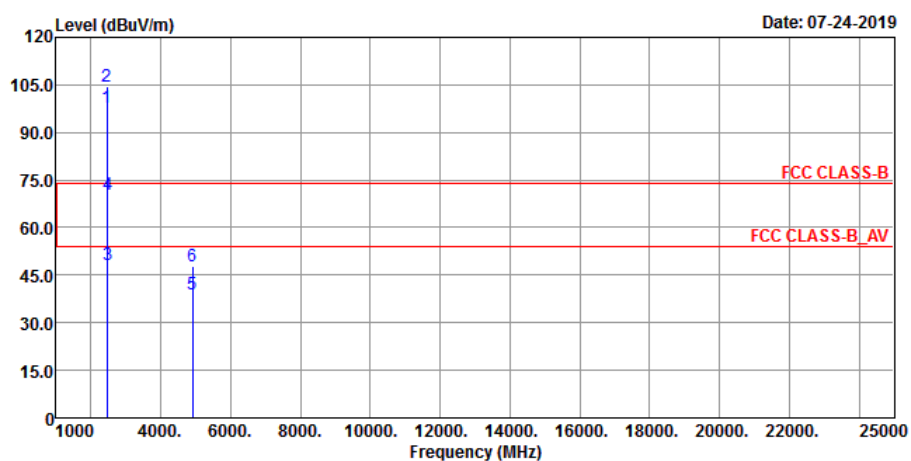
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.24	48.74	53.72	-4.98	54	-5.26	100	198	Average
2389.24	63.78	68.76	-4.98	74	-10.22	100	198	Peak
2437	102.21	69.73	32.48			100	198	Average
2437	108.86	76.38	32.48			100	198	Peak
2483.68	51.9	56.75	-4.85	54	-2.1	100	198	Average
2483.68	65.98	70.83	-4.85	74	-8.02	100	198	Peak
4874	37.41	51.49	-14.08	54	-16.59	121	224	Average
4874	49.19	63.27	-14.08	74	-24.81	121	224	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.38	42.19	47.17	-4.98	54	-11.81	108	137	Average
2389.38	57.41	62.39	-4.98	74	-16.59	108	137	Peak
2437	97.81	65.33	32.48			108	137	Average
2437	104.86	72.38	32.48			108	137	Peak
2483.52	45.83	50.68	-4.85	54	-8.17	108	137	Average
2483.52	62.13	66.98	-4.85	74	-11.87	108	137	Peak
4874	38.76	52.84	-14.08	54	-15.24	127	82	Average
4874	50.97	65.05	-14.08	74	-23.03	127	82	Peak

Remarks:

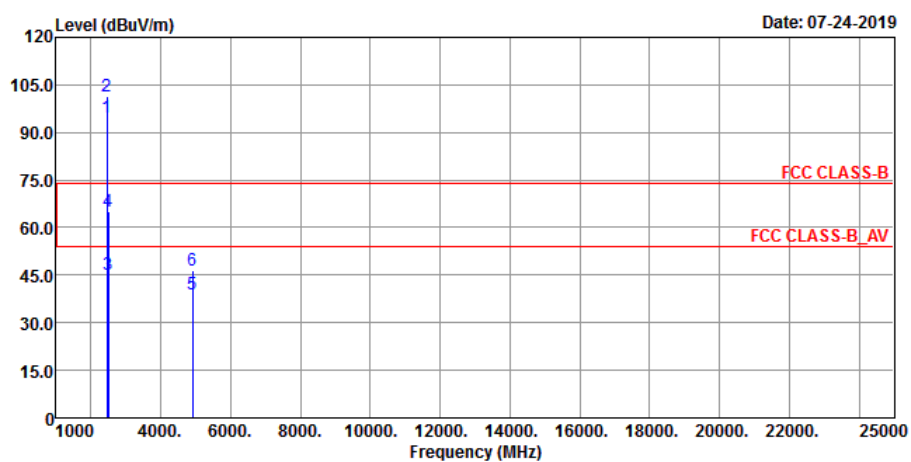
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2437 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 10	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	Thomas Wei

Horizontal



Vertical



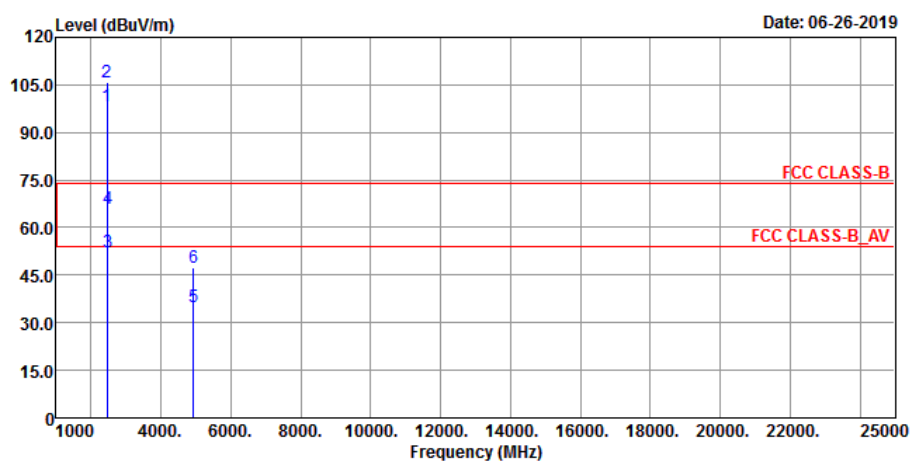
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2457	97.71	102.62	-4.91			100	199	Average
2457	104.57	109.48	-4.91			100	199	Peak
2483.56	48.35	53.2	-4.85	54	-5.65	100	199	Average
2483.56	70.41	75.26	-4.85	74	-3.59	100	199	Peak
4914	39.06	53.04	-13.98	54	-14.94	100	37	Average
4914	47.81	61.79	-13.98	74	-26.19	100	37	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2457	94.69	99.6	-4.91			103	120	Average
2457	101.5	106.41	-4.91			103	120	Peak
2484.2	45.38	50.23	-4.85	54	-8.62	103	120	Average
2484.2	65.24	70.09	-4.85	74	-8.76	103	120	Peak
4914	38.92	52.9	-13.98	54	-15.08	104	107	Average
4914	46.38	60.36	-13.98	74	-27.62	104	107	Peak

Remarks:

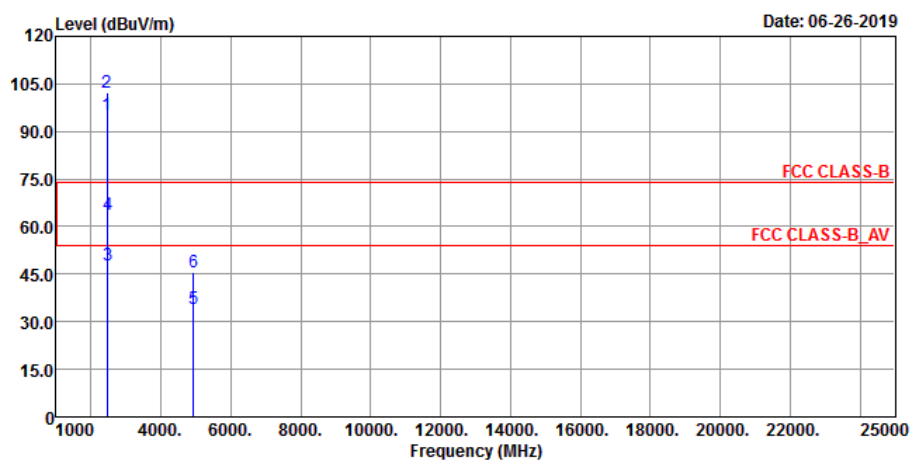
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2457 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

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	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	98.51	66.03	32.48			100	199	Average
2462	106.05	73.57	32.48			100	199	Peak
2483.72	52.06	56.91	-4.85	54	-1.94	100	199	Average
2483.72	65.96	70.81	-4.85	74	-8.04	100	199	Peak
4924	34.77	48.73	-13.96	54	-19.23	125	215	Average
4924	47.5	61.46	-13.96	74	-26.5	125	215	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	95.36	62.88	32.48			108	138	Average
2462	102.24	69.76	32.48			108	138	Peak
2483.56	47.98	52.83	-4.85	54	-6.02	108	138	Average
2483.56	63.65	68.5	-4.85	74	-10.35	108	138	Peak
4924	33.99	47.95	-13.96	54	-20.01	123	79	Average
4924	45.77	59.73	-13.96	74	-28.23	123	79	Peak

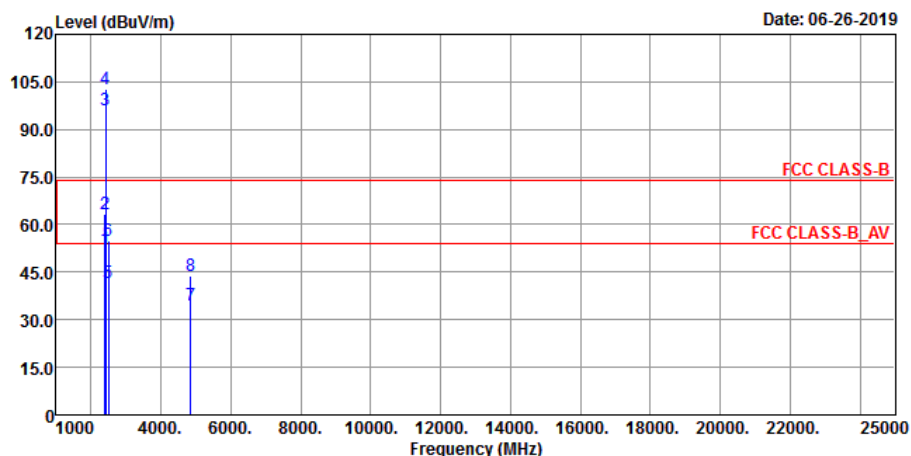
Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2462 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

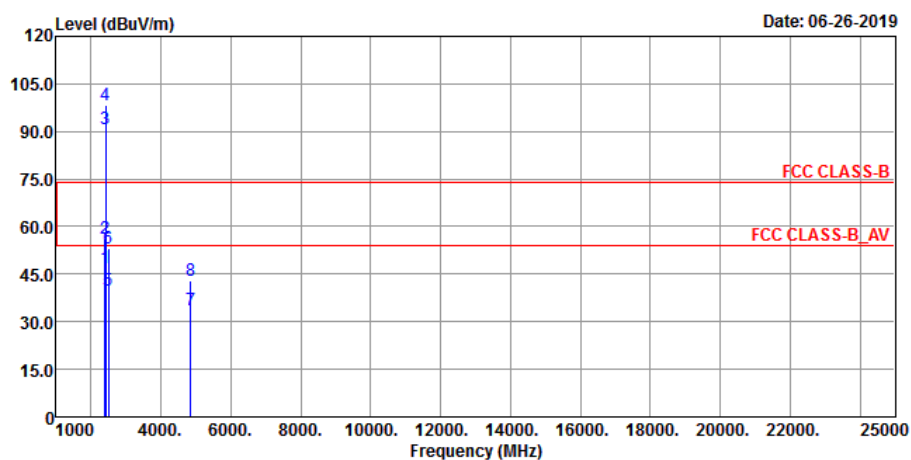
802.11n (HT40)

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	Thomas Wei

Horizontal



Vertical



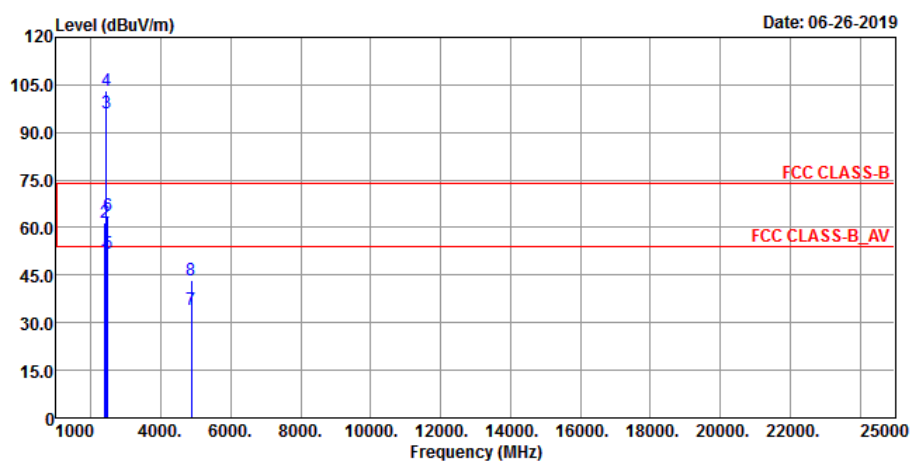
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.24	52.38	57.36	-4.98	54	-1.62	100	199	Average
2389.24	63.34	68.32	-4.98	74	-10.66	100	199	Peak
2422	96.1	63.61	32.49			100	199	Average
2422	102.79	70.3	32.49			100	199	Peak
2484.96	41.44	46.29	-4.85	54	-12.56	100	199	Average
2484.96	54.7	59.55	-4.85	74	-19.3	100	199	Peak
4844	34.69	48.96	-14.27	54	-19.31	106	224	Average
4844	43.66	57.93	-14.27	74	-30.34	106	224	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	47.04	52.04	-5	54	-6.96	130	138	Average
2389.94	56.36	61.36	-5	74	-17.64	130	138	Peak
2422	90.96	58.47	32.49			130	138	Average
2422	98.37	65.88	32.49			130	138	Peak
2484.8	39.75	44.6	-4.85	54	-14.25	130	138	Average
2484.8	53.09	57.94	-4.85	74	-20.91	130	138	Peak
4844	33.49	47.76	-14.27	54	-20.51	125	80	Average
4844	43.14	57.41	-14.27	74	-30.86	125	80	Peak

Remarks:

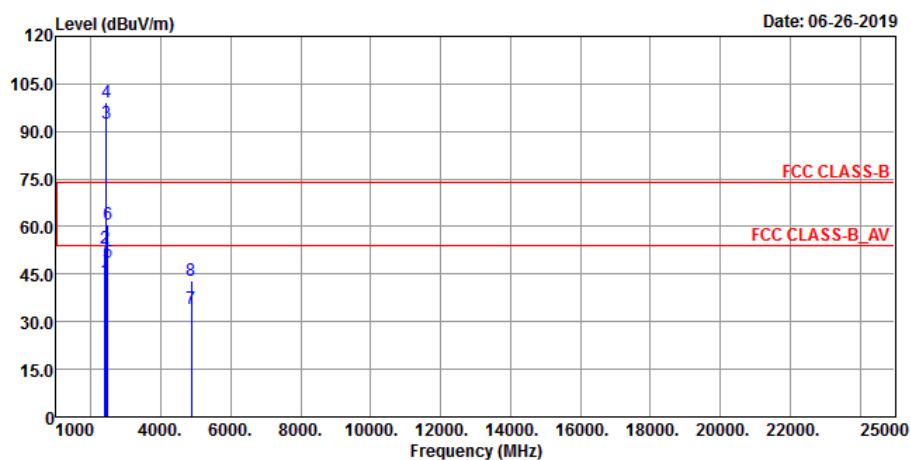
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2422 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

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	Thomas Wei

Horizontal



Vertical



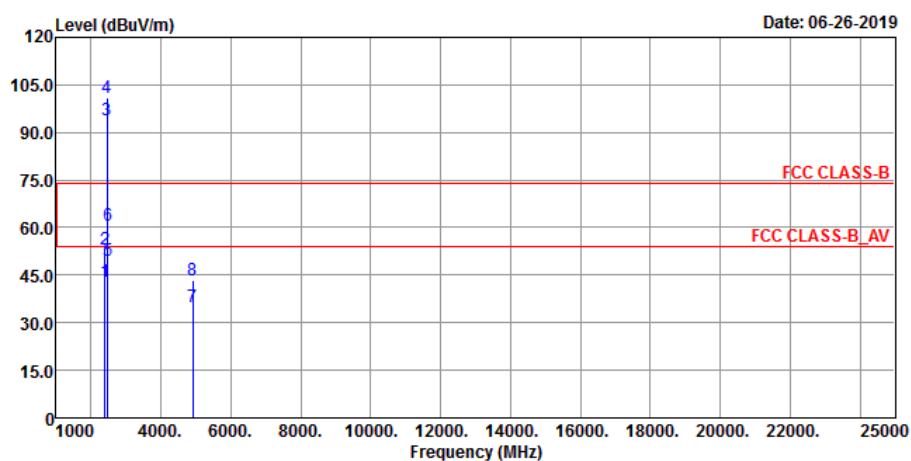
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.38	50.1	55.08	-4.98	54	-3.9	102	199	Average
2389.38	61.62	66.6	-4.98	74	-12.38	102	199	Peak
2437	96.29	63.81	32.48			102	199	Average
2437	103.23	70.75	32.48			102	199	Peak
2483.56	51.59	56.44	-4.85	54	-2.41	102	199	Average
2483.56	63.66	68.51	-4.85	74	-10.34	102	199	Peak
4874	34.13	48.21	-14.08	54	-19.87	105	225	Average
4874	43.36	57.44	-14.08	74	-30.64	105	225	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	42.74	47.74	-5	54	-11.26	149	138	Average
2389.94	53	58	-5	74	-21	149	138	Peak
2437	92.36	59.88	32.48			149	138	Average
2437	99.28	66.8	32.48			149	138	Peak
2483.62	48.79	53.64	-4.85	54	-5.21	149	138	Average
2483.68	60.67	65.52	-4.85	74	-13.33	149	138	Peak
4874	33.93	48.01	-14.08	54	-20.07	124	78	Average
4874	42.98	57.06	-14.08	74	-31.02	124	78	Peak

Remarks:

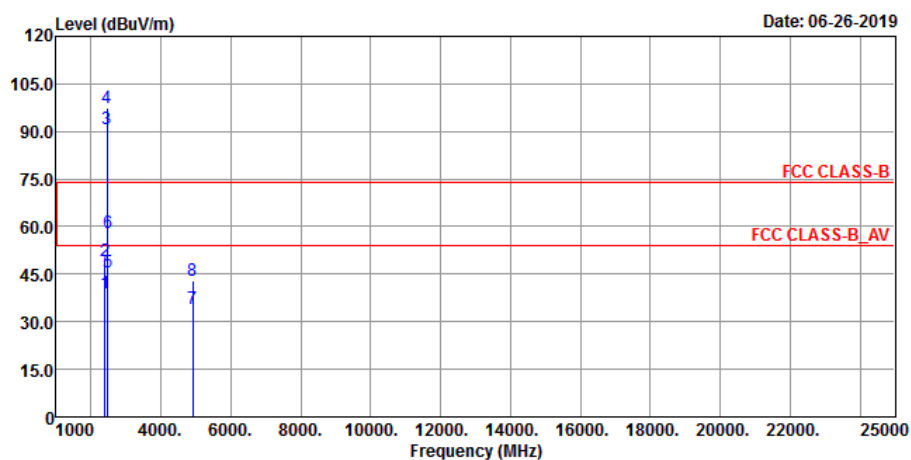
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2437 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

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	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.24	42.89	47.87	-4.98	54	-11.11	100	199	Average
2389.24	53.34	58.32	-4.98	74	-20.66	100	199	Peak
2452	94.03	61.55	32.48			100	199	Average
2452	100.93	68.45	32.48			100	199	Peak
2483.52	49.71	54.56	-4.85	54	-4.29	100	199	Average
2483.52	60.77	65.62	-4.85	74	-13.23	100	199	Peak
4904	34.88	48.86	-13.98	54	-19.12	111	221	Average
4904	43.34	57.32	-13.98	74	-30.66	111	221	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.66	38.93	43.91	-4.98	54	-15.07	108	138	Average
2389.66	49.32	54.3	-4.98	74	-24.68	108	138	Peak
2452	90.83	58.35	32.48			108	138	Average
2452	97.62	65.14	32.48			108	138	Peak
2483.52	45.47	50.32	-4.85	54	-8.53	108	138	Average
2483.52	57.95	62.8	-4.85	74	-16.05	108	138	Peak
4904	33.98	47.96	-13.98	54	-20.02	122	77	Average
4904	43.16	57.14	-13.98	74	-30.84	122	77	Peak

Remarks:

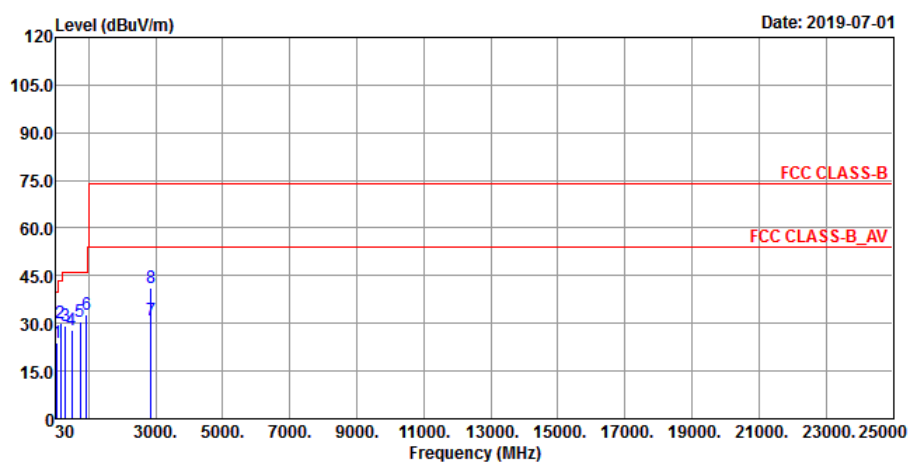
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2452 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

4.6.2 接收諧波

802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 3	Frequency Range	30 MHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Above 1 GHz: Peak (PK) & Average (AV) Below 1 GHz: Peak (PK) or Quasi-Peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

Horizontal



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
52.31	23.77	41.44	-17.67	40	-16.23	193	162	Peak
159.01	30	46.85	-16.85	43.5	-13.5	204	157	Peak
313.24	29.35	45.46	-16.11	46	-16.65	203	264	Peak
497.54	27.72	38.43	-10.71	46	-18.28	194	118	Peak
741.01	30.7	36.35	-5.65	46	-15.3	176	53	Peak
942.77	32.62	35.36	-2.74	46	-13.38	201	307	Peak
2854.37	30.98	50.19	-19.21	54	-23.02	103	172	Average
2854.37	41.18	60.39	-19.21	74	-32.82	103	172	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
40.67	28.89	45.6	-16.71	40	-11.11	102	188	Peak
167.74	26.89	44.31	-17.42	43.5	-16.61	137	66	Peak
522.76	26.88	36.8	-9.92	46	-19.12	108	201	Peak
774.96	30.36	34.83	-4.47	46	-15.64	122	338	Peak
870.99	32.71	37.04	-4.33	46	-13.29	125	299	Peak
943.74	34.45	37.18	-2.73	46	-11.55	104	148	Peak
2094.52	27.4	49.27	-21.87	54	-26.6	124	309	Average
2094.52	38.1	59.97	-21.87	74	-35.9	124	309	Peak

Remarks:

1. Emission Level = Read Level + 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:

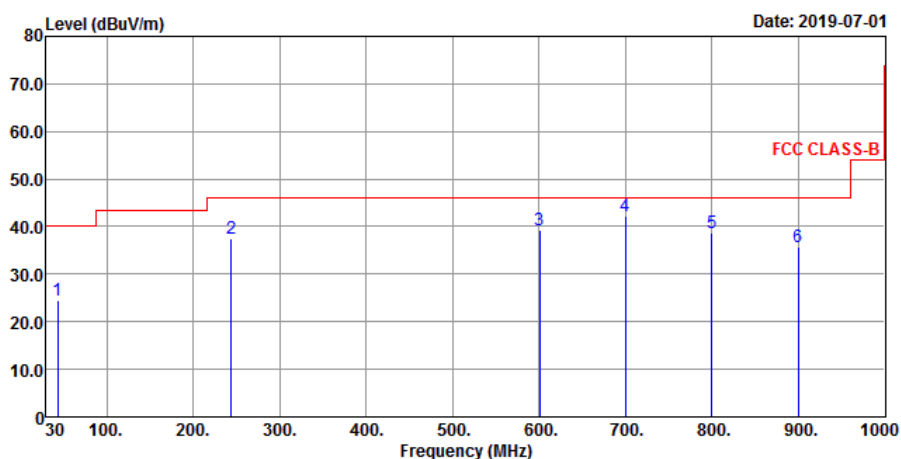
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Data:

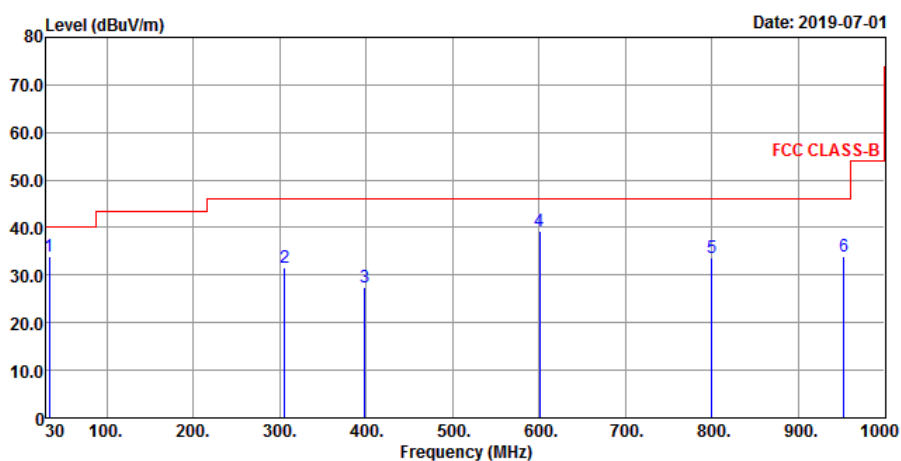
802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 3	Frequency Range	30 MHz ~ 1 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) or Quasi-Peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
43.58	24.63	41.58	-16.95	40	-15.37	194	211	Peak
244.37	37.47	55.34	-17.87	46	-8.53	211	103	Peak
600.36	39.37	47.66	-8.29	46	-6.63	191	176	Peak
700.27	42.33	49.32	-6.99	46	-3.67	189	176	Peak
800.18	38.67	43.94	-5.27	46	-7.33	188	224	Peak
900.09	35.86	40.47	-4.61	46	-10.14	173	206	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
33.88	33.88	50.83	-16.95	40	-6.12	101	196	Peak
305.48	31.53	48.02	-16.49	46	-14.47	103	157	Peak
398.6	27.36	41.45	-14.09	46	-18.64	114	118	Peak
600.36	39.17	47.46	-8.29	46	-6.83	102	226	Peak
800.18	33.64	38.91	-5.27	46	-12.36	103	266	Peak
952.47	33.94	36.91	-2.97	46	-12.06	137	198	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value.
2. The emission levels of other frequencies 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(13)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。

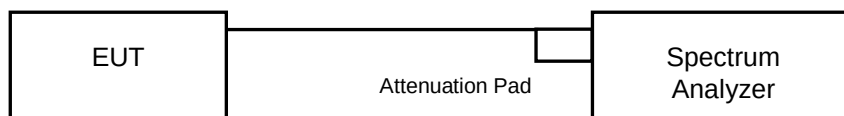
5.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Spectrum Analyzer R&S	FSU43	101261	Apr. 15, 2019	Apr. 14, 2020

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	108 年 07 月 04 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	Alan Wu		

802.11b

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	10.10	0.5	Pass
6	2437	10.11	0.5	Pass
11	2462	10.11	0.5	Pass

802.11g

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	16.64	0.5	Pass
6	2437	16.64	0.5	Pass
11	2462	16.64	0.5	Pass

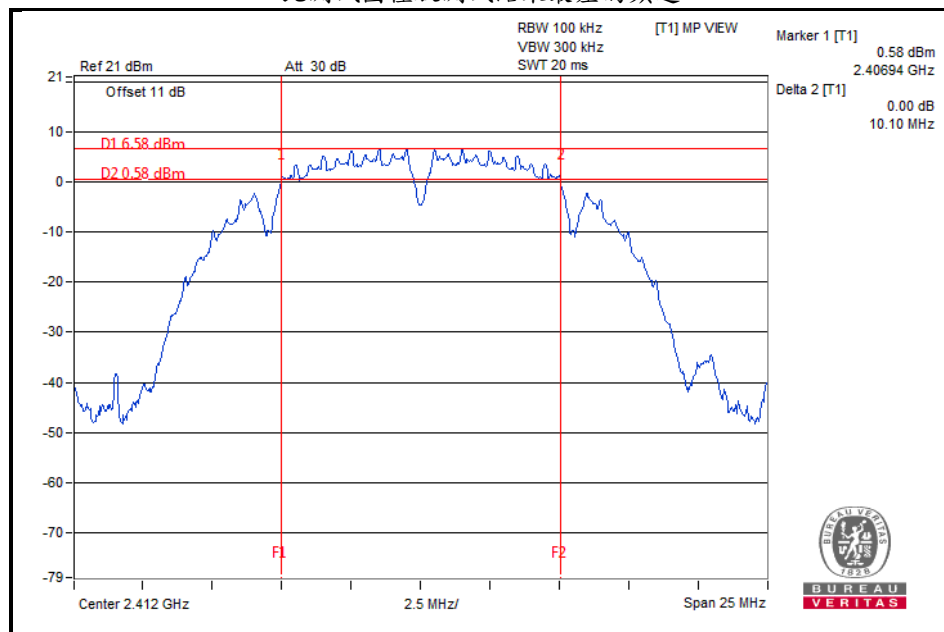
802.11n (HT20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	17.78	0.5	Pass
6	2437	17.76	0.5	Pass
11	2462	17.79	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
3	2422	36.57	0.5	Pass
6	2437	36.57	0.5	Pass
9	2452	36.58	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(12)及(14)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。

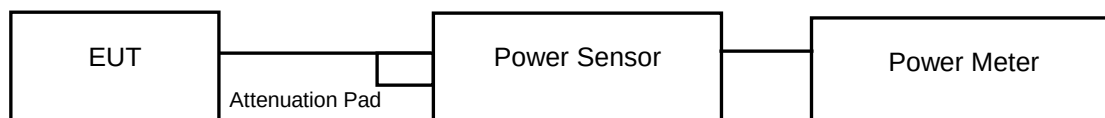
6.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Power Meter Anritsu	ML2495A	1232002	Dec. 17, 2018	Dec. 16, 2019
Power Sensor Anritsu	MA2411B	1207325	Dec. 17, 2018	Dec. 16, 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 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 $k=2$.

6.4 測試配置



6.5 量測結果

操作模式	發射	測試日期	108 年 07 月 04 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	Alan Wu		

802.11b

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	69.343	18.41	30	Pass
6	2437	70.958	18.51	30	Pass
11	2462	69.183	18.40	30	Pass

802.11g

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	34.514	15.38	30	Pass
2	2417	55.847	17.47	30	Pass
6	2437	66.681	18.24	30	Pass
10	2457	54.702	17.38	30	Pass
11	2462	32.81	15.16	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	35.727	15.53	30	Pass
2	2417	55.208	17.42	30	Pass
6	2437	69.663	18.43	30	Pass
10	2457	44.157	16.45	30	Pass
11	2462	34.914	15.43	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
3	2422	29.04	14.63	30	Pass
6	2437	35.81	15.54	30	Pass
9	2452	22.803	13.58	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(15)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 10 kHz，視訊頻寬為 30 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	Apr. 15, 2019	Apr. 14, 2020

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	108 年 07 月 04 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	Alan Wu		

802.11b

Channel	Frequency (MHz)	PSD (dBm/10 kHz)	Limit (dBm/3 kHz)	Pass / Fail
1	2412	-10.44	8	Pass
6	2437	-10.44	8	Pass
11	2462	-10.47	8	Pass

802.11g

Channel	Frequency (MHz)	PSD (dBm/10 kHz)	Limit (dBm/3 kHz)	Pass / Fail
1	2412	-15.02	8	Pass
6	2437	-12.17	8	Pass
11	2462	-15.30	8	Pass

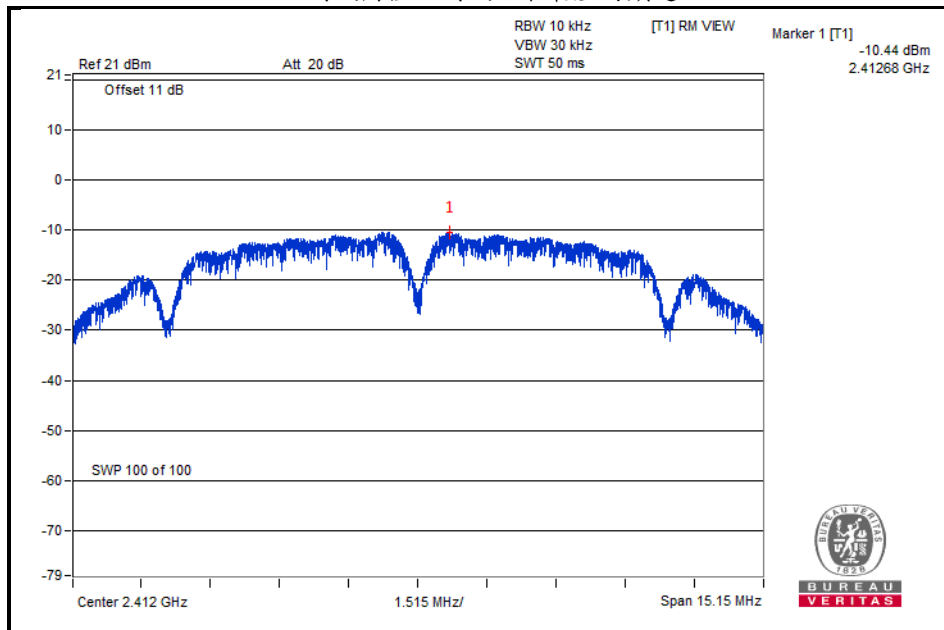
802.11n (HT20)

Channel	Frequency (MHz)	PSD (dBm/10 kHz)	Limit (dBm/3 kHz)	Pass / Fail
1	2412	-14.94	8	Pass
6	2437	-12.37	8	Pass
11	2462	-15.08	8	Pass

802.11n (HT40)

Channel	Frequency (MHz)	PSD (dBm/10 kHz)	Limit (dBm/3 kHz)	Pass / Fail
3	2422	-19.24	8	Pass
6	2437	-18.00	8	Pass
9	2452	-18.99	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(10)項(2)的規定
☒ 5.25 GHz~5.35 GHz	請見本報告 3.1 節第(10)項(2)的規定
☒ 5.470 GHz~5.725 GHz	請見本報告 3.1 節第(10)項(2)的規定
☒ 5.725 GHz~5.850 GHz	請見本報告 3.1 節第(10)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 = 10 Hz

802.11n (HT20) 為 RBW = 1 MHz, VBW = 10 Hz

802.11n (HT40) 為 RBW = 1 MHz, VBW = 10 Hz

802.11ac (VHT80) 為 RBW = 1 MHz, VBW = 10 Hz

接收諧波：

Below 1 GHz

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

Above 1 GHz:

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

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。

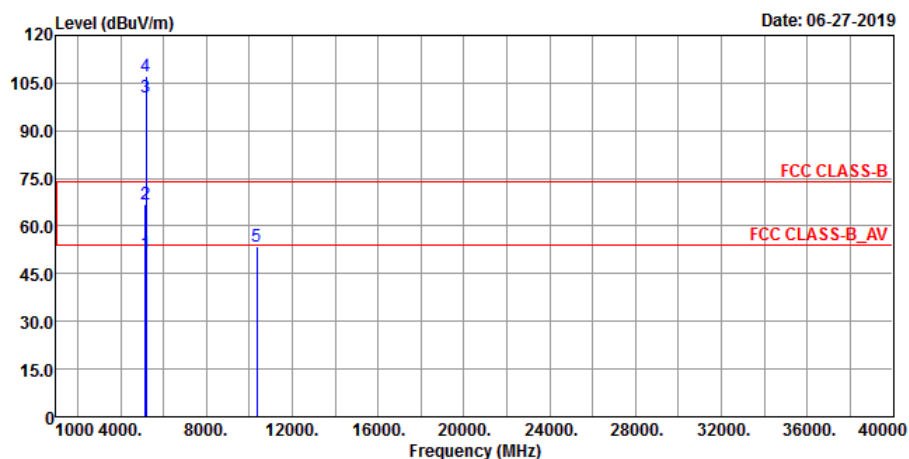
8.6 量測結果

8.6.1 發射諧波

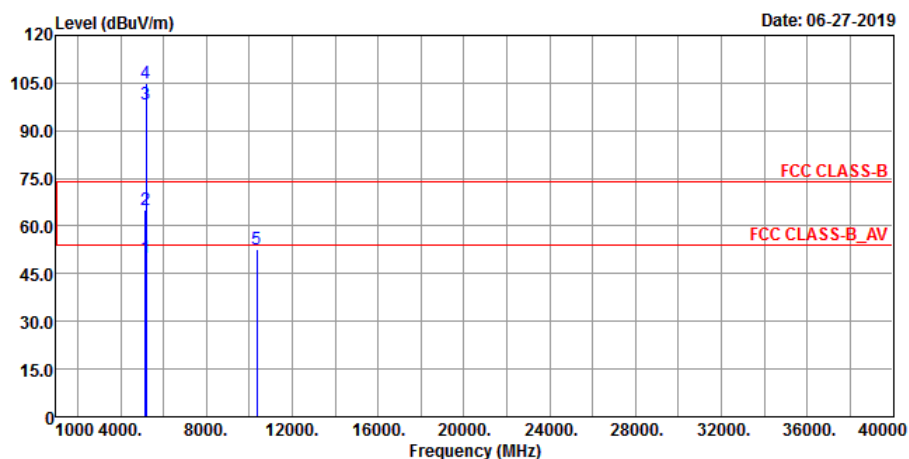
802.11a

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	Getaz Yang

Horizontal



Vertical



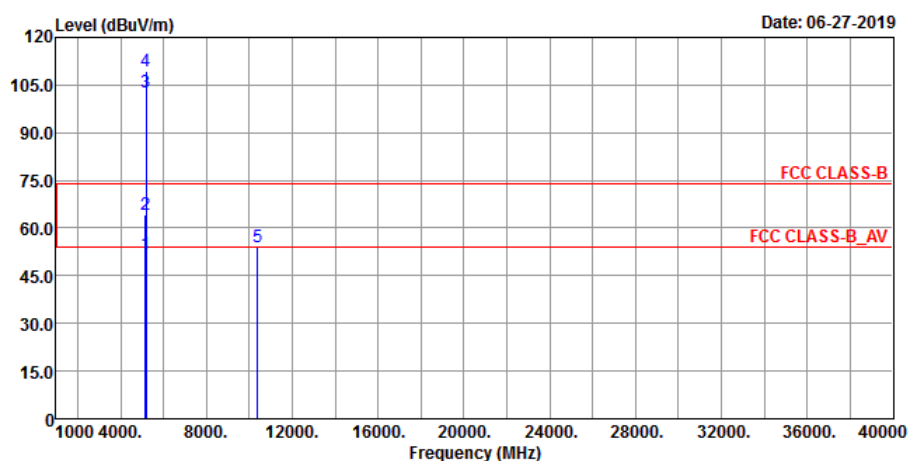
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.85	66.86	65.33	1.53	74	-7.14	100	268	Peak
5149.85	51.5	49.97	1.53	54	-2.5	100	268	Average
5180	100.5	61.63	38.87			100	268	Average
5180	107.3	68.43	38.87			100	268	Peak
*10360	53.73	56.57	-2.84	68.2	-14.47	118	29	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	49.82	48.29	1.53	54	-4.18	131	249	Average
5150	65.27	63.74	1.53	74	-8.73	131	249	Peak
5180	98.13	59.26	38.87			131	249	Average
5180	105.02	66.15	38.87			131	249	Peak
*10360	52.48	55.32	-2.84	68.2	-15.72	187	75	Peak

Remarks:

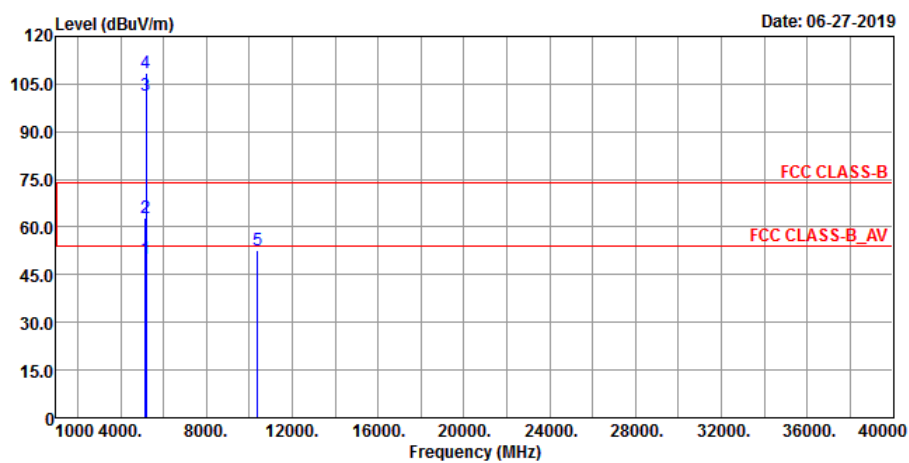
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5180 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

Horizontal



Vertical



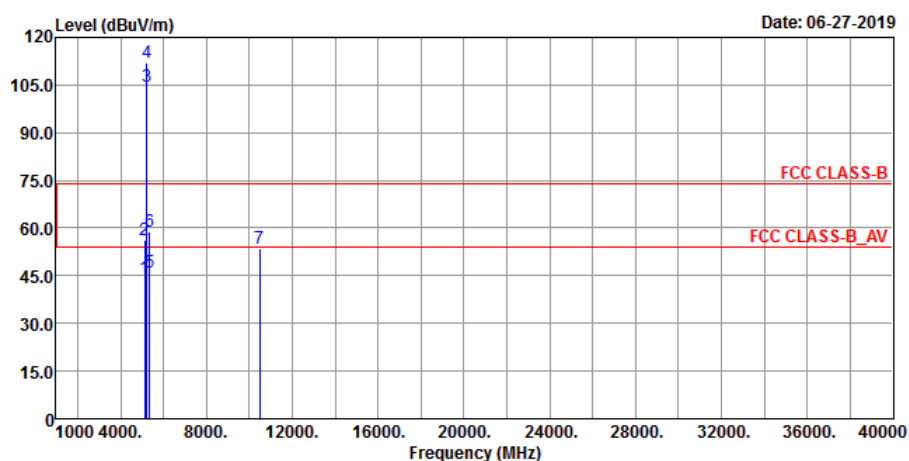
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	51.9	50.37	1.53	54	-2.1	100	268	Average
5150	64.05	62.52	1.53	74	-9.95	100	268	Peak
5200	102.85	63.96	38.89			100	268	Average
5200	109.47	70.58	38.89			100	268	Peak
*10400	54.13	57.02	-2.89	68.2	-14.07	115	31	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	49.92	48.39	1.53	54	-4.08	130	249	Average
5150	62.89	61.36	1.53	74	-11.11	130	249	Peak
5200	101.31	62.42	38.89			130	249	Average
5200	108.35	69.46	38.89			130	249	Peak
*10400	52.7	55.59	-2.89	68.2	-15.5	186	69	Peak

Remarks:

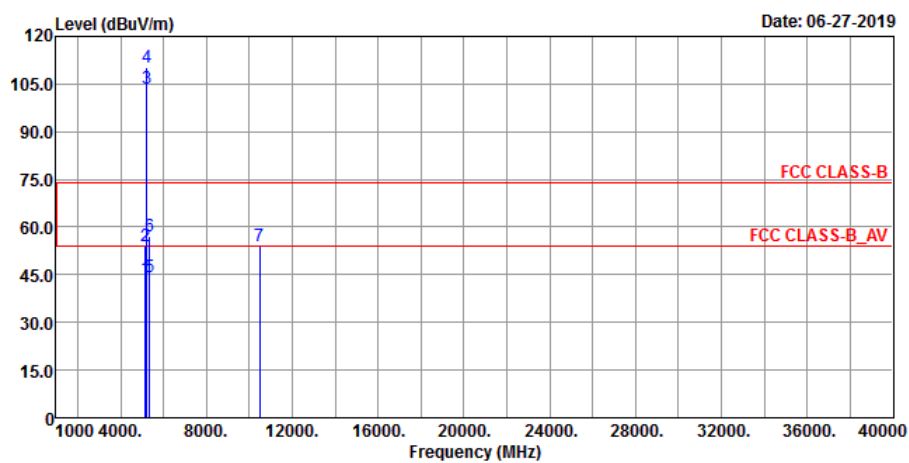
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5200 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

Horizontal



Vertical



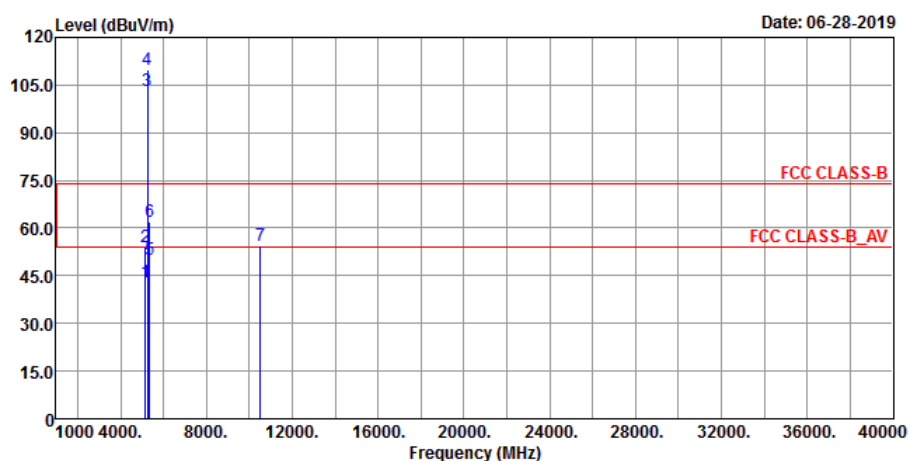
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5111	44.49	43.02	1.47	54	-9.51	100	267	Average
5111	56.07	54.6	1.47	74	-17.93	100	267	Peak
5240	104.7	66	38.7			100	267	Average
5240	111.85	73.15	38.7			100	267	Peak
5350	45.85	44.39	1.46	54	-8.15	100	267	Average
5350	58.86	57.4	1.46	74	-15.14	100	267	Peak
*10480	53.69	56.42	-2.73	68.2	-14.51	117	25	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	43.72	42.19	1.53	54	-10.28	130	250	Average
5150	53.88	52.35	1.53	74	-20.12	130	250	Peak
5240	103.52	64.82	38.7			130	250	Average
5240	110.44	71.74	38.7			130	250	Peak
5350.11	44.09	42.63	1.46	54	-9.91	130	250	Average
5350.11	57.24	55.78	1.46	74	-16.76	130	250	Peak
*10480	53.96	56.69	-2.73	68.2	-14.24	189	77	Peak

Remarks:

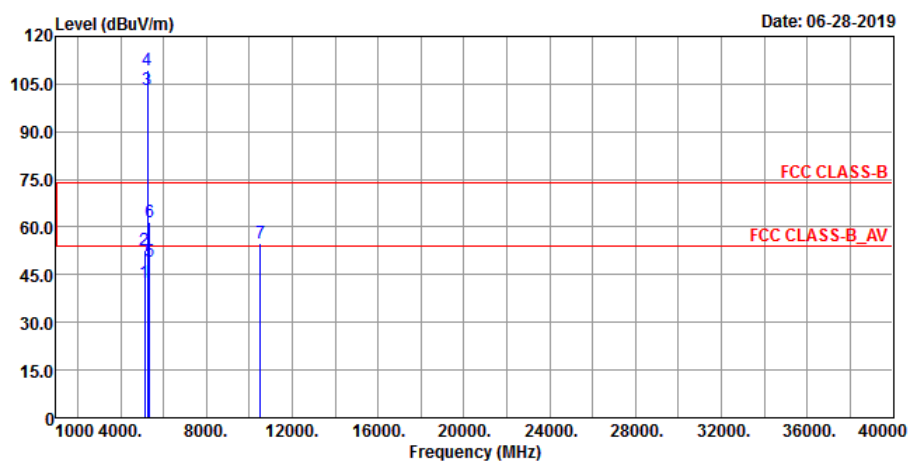
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5240 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

Horizontal



Vertical



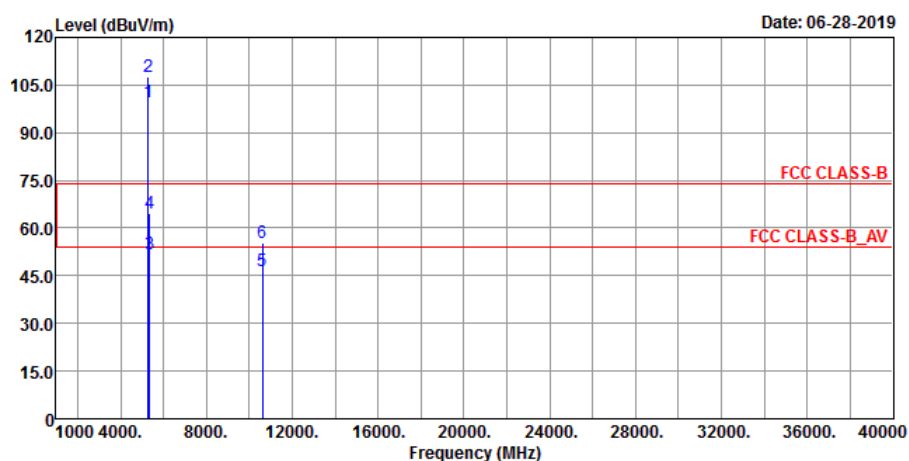
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.4	42.79	41.26	1.53	54	-11.21	132	35	Average
5149.4	54.02	52.49	1.53	74	-19.98	132	35	Peak
5260	103.03	101.72	1.31			132	35	Average
5260	109.84	108.53	1.31			132	35	Peak
5350	49.92	48.46	1.46	54	-4.08	132	35	Average
5350	61.81	60.35	1.46	74	-12.19	132	35	Peak
*10520	54.58	57.3	-2.72	68.2	-13.62	171	246	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5139.5	42.73	41.18	1.55	54	-11.27	142	266	Average
5139.5	52.5	50.95	1.55	74	-21.5	142	266	Peak
5260	103.02	101.71	1.31			142	266	Average
5260	109.56	108.25	1.31			142	266	Peak
5350	49.22	47.76	1.46	54	-4.78	142	266	Average
5350	61.72	60.26	1.46	74	-12.28	142	266	Peak
*10520	55.07	57.79	-2.72	68.2	-13.13	169	108	Peak

Remarks:

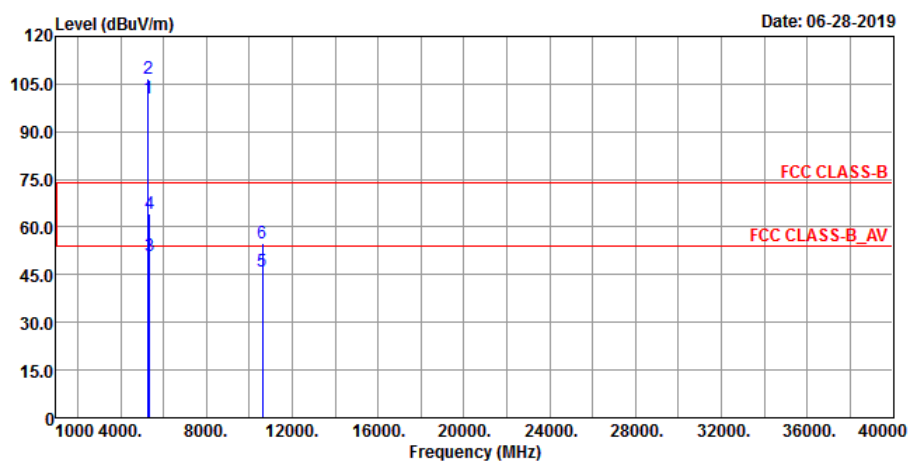
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5260 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

Horizontal



Vertical



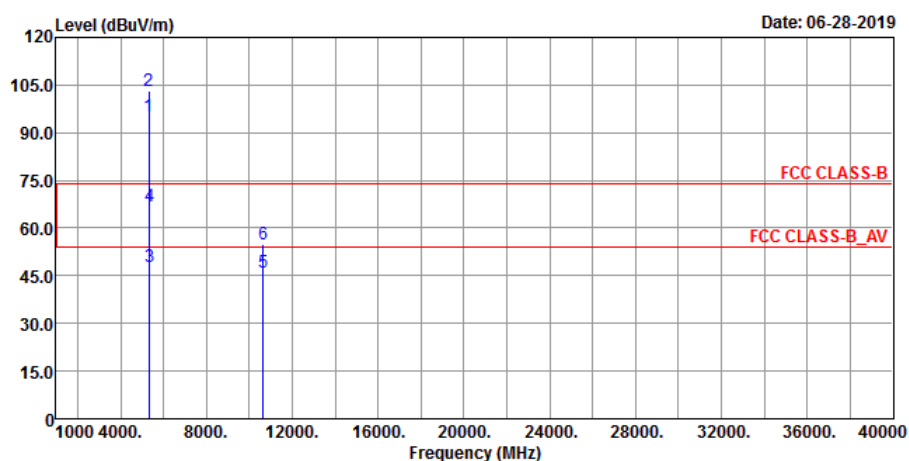
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5300	99.7	98.39	1.31			126	36	Average
5300	107.39	106.08	1.31			126	36	Peak
5350	51.67	50.21	1.46	54	-2.33	126	36	Average
5350	64.83	63.37	1.46	74	-9.17	126	36	Peak
10600	46.37	49.28	-2.91	54	-7.63	159	84	Average
10600	55.34	58.25	-2.91	74	-18.66	159	84	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5300	100.3	98.99	1.31			110	271	Average
5300	106.88	105.57	1.31			110	271	Peak
5350	50.98	49.52	1.46	54	-3.02	110	271	Average
5350	64.22	62.76	1.46	74	-9.78	110	271	Peak
10600	46.12	49.03	-2.91	54	-7.88	184	106	Average
10600	54.99	57.9	-2.91	74	-19.01	184	106	Peak

Remarks:

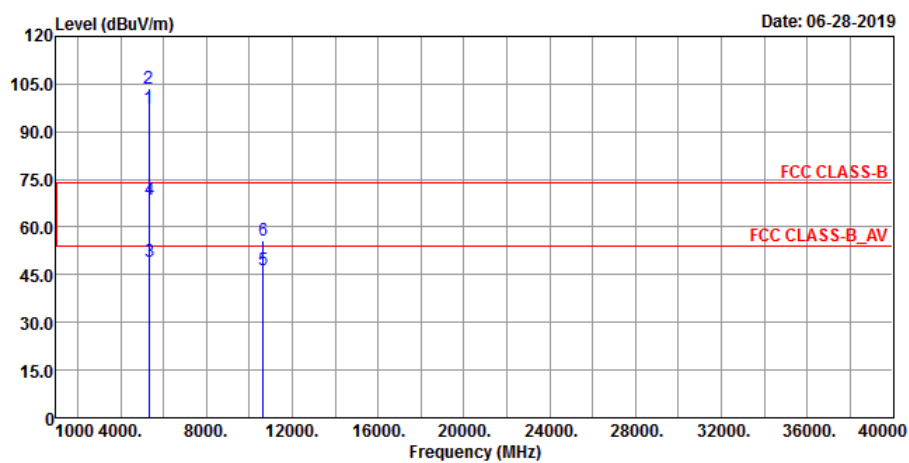
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5300 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

Horizontal



Vertical



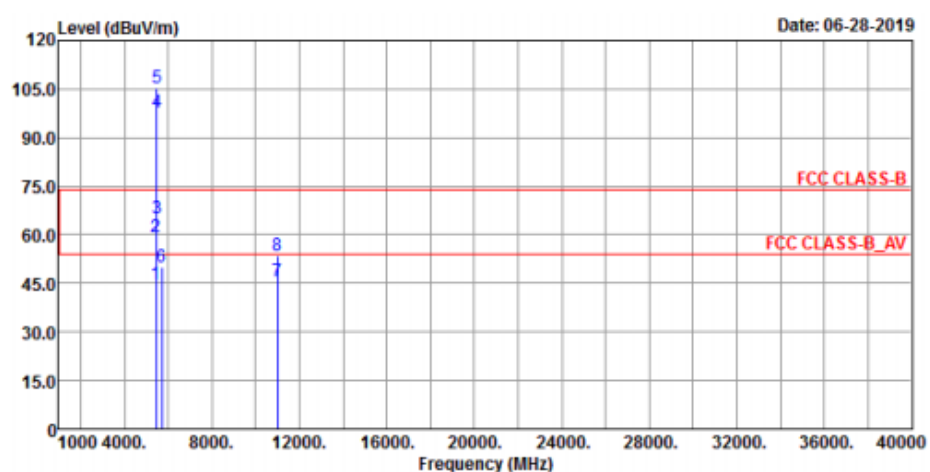
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	95.18	93.82	1.36			154	35	Average
5320	103.21	101.85	1.36			154	35	Peak
5350	47.89	46.43	1.46	54	-6.11	154	35	Average
5350	66.83	65.37	1.46	74	-7.17	154	35	Peak
10640	46.26	49.15	-2.89	54	-7.74	170	132	Average
10640	54.95	57.84	-2.89	74	-19.05	170	132	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	97.22	95.86	1.36			179	312	Average
5320	103.7	102.34	1.36			179	312	Peak
5350	49.06	47.6	1.46	54	-4.94	179	312	Average
5350	68.56	67.1	1.46	74	-5.44	179	312	Peak
10640	46.39	49.28	-2.89	54	-7.61	225	103	Average
10640	55.91	58.8	-2.89	74	-18.09	225	103	Peak

Remarks:

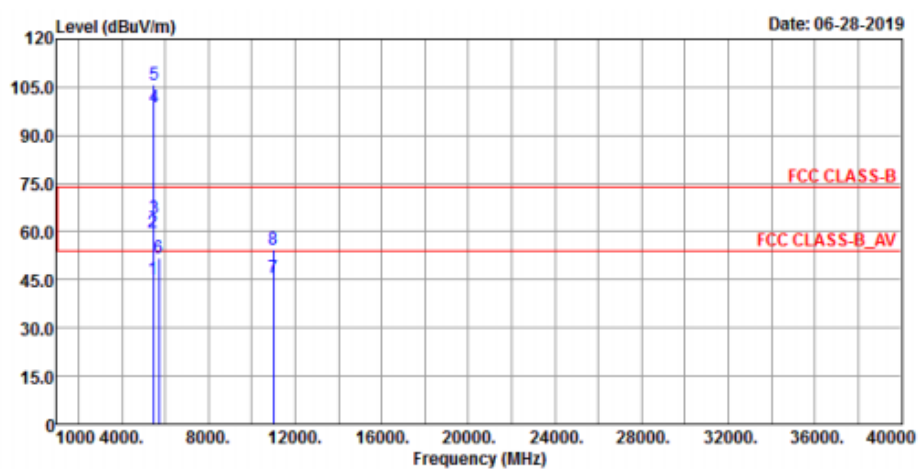
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5320 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

Horizontal



Vertical



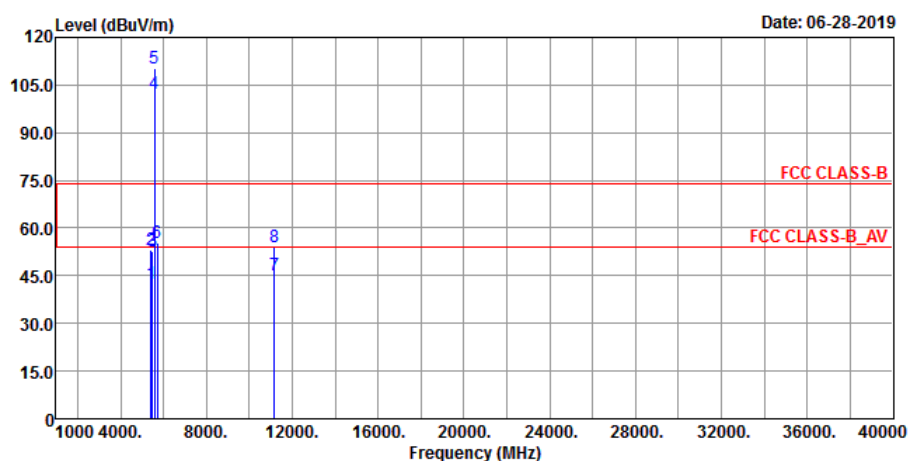
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	44.77	42.9	1.87	54	-9.23	156	28	Average
5460	59.12	57.25	1.87	74	-14.88	156	28	Peak
*5470	64.89	63.03	1.86	68.2	-3.31	156	28	Peak
5500	97.73	95.86	1.87			156	28	Average
5500	105.59	103.72	1.87			156	28	Peak
*5725	49.96	48.2	1.76	68.2	-18.24	156	28	Peak
11000	45.74	48.05	-2.31	54	-8.26	189	206	Average
11000	53.72	56.03	-2.31	74	-20.28	189	206	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	45.03	43.16	1.87	54	-8.97	172	314	Average
5460	59.72	57.85	1.87	74	-14.28	172	314	Peak
*5470	64.38	62.52	1.86	68.2	-3.82	172	314	Peak
5500	98.57	96.7	1.87			172	314	Average
5500	105.66	103.79	1.87			172	314	Peak
*5725	51.7	49.94	1.76	68.2	-16.5	172	314	Peak
11000	45.53	47.84	-2.31	54	-8.47	102	253	Average
11000	54.29	56.6	-2.31	74	-19.71	102	253	Peak

Remarks:

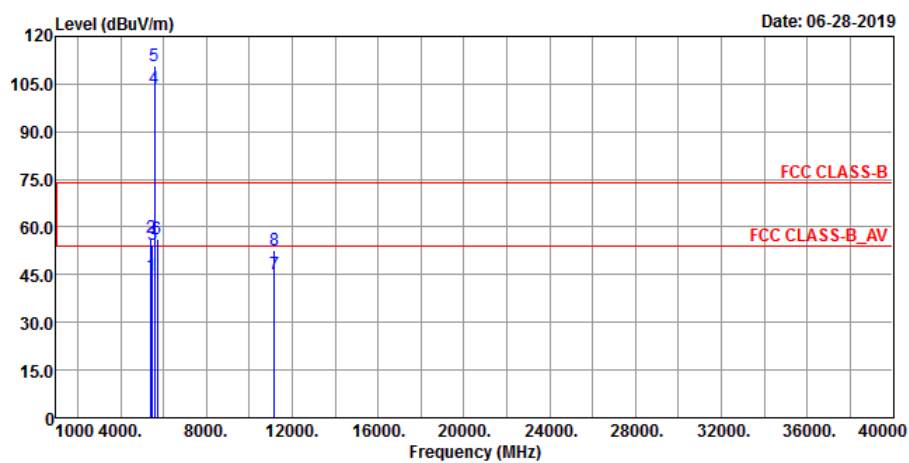
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5500 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

Horizontal



Vertical



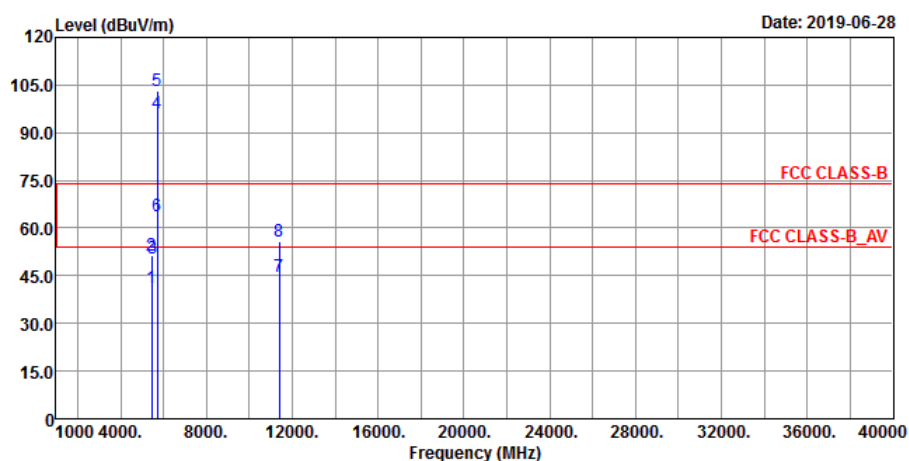
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5427.12	42.64	40.88	1.76	54	-11.36	143	196	Average
5427.12	53.18	51.42	1.76	74	-20.82	143	196	Peak
*5470	52.76	50.9	1.86	68.2	-15.44	143	196	Peak
5580	102.33	100.51	1.82			143	196	Average
5580	110.21	108.39	1.82			143	196	Peak
*5725	55.38	53.62	1.76	68.2	-12.82	143	196	Peak
11160	45.3	47.85	-2.55	54	-8.7	185	211	Average
11160	53.81	56.36	-2.55	74	-20.19	185	211	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5429.52	44.79	43.01	1.78	54	-9.21	138	299	Average
5429.52	56.74	54.96	1.78	74	-17.26	138	299	Peak
*5470	54.59	52.73	1.86	68.2	-13.61	138	299	Peak
5580	103.63	102.22	1.41			138	299	Average
5580	110.73	109.32	1.41			138	299	Peak
*5725	56.42	54.66	1.76	68.2	-11.78	138	299	Peak
11160	45.2	47.75	-2.55	54	-8.8	102	255	Average
11160	52.9	55.45	-2.55	74	-21.1	102	255	Peak

Remarks:

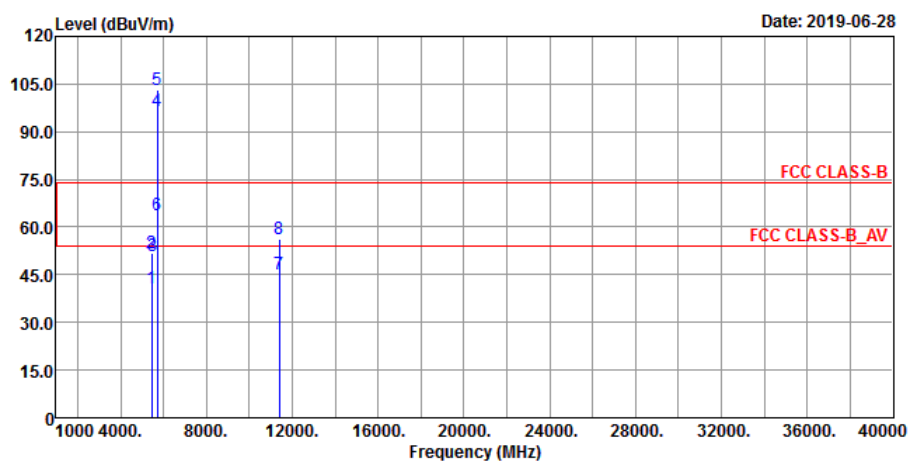
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5580 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

Horizontal



Vertical



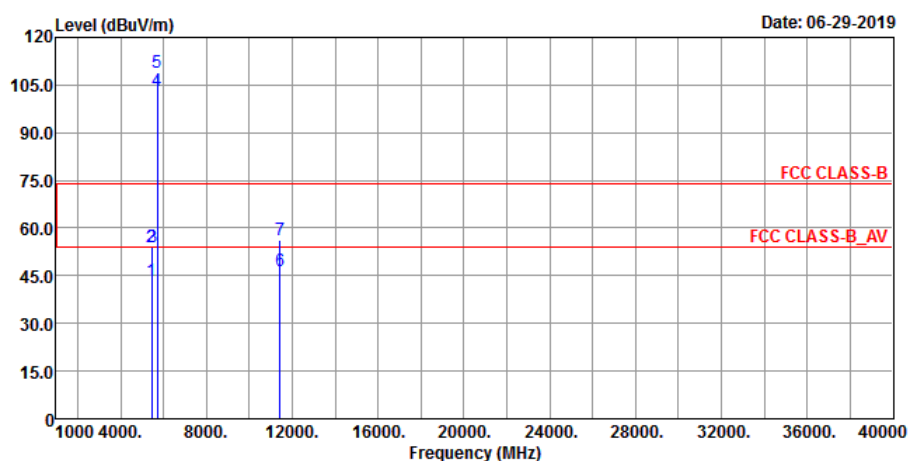
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	41.11	39.24	1.87	54	-12.89	108	239	Average
5460	51.18	49.31	1.87	74	-22.82	108	239	Peak
*5470	50.44	48.58	1.86	68.2	-17.76	108	239	Peak
5700	96.18	94.59	1.59			108	239	Average
5700	103.28	101.69	1.59			108	239	Peak
*5725	63.7	61.94	1.76	68.2	-4.5	108	239	Peak
11400	44.7	46.93	-2.23	54	-9.3	188	206	Average
11400	55.98	58.21	-2.23	74	-18.02	188	206	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5448.24	40.82	39	1.82	54	-13.18	149	300	Average
5448.24	51.78	49.96	1.82	74	-22.22	149	300	Peak
*5470	50.74	48.88	1.86	68.2	-17.46	149	300	Peak
5700	96.34	94.75	1.59			149	300	Average
5700	103.04	101.45	1.59			149	300	Peak
*5725	63.98	62.22	1.76	68.2	-4.22	149	300	Peak
11400	45.35	47.58	-2.23	54	-8.65	103	251	Average
11400	56.44	58.67	-2.23	74	-17.56	103	251	Peak

Remarks:

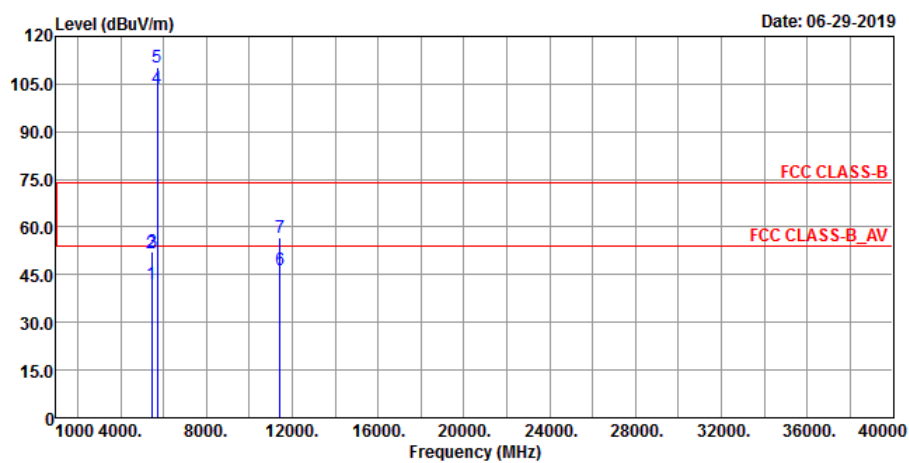
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5700 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 144	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	Getaz Yang

Horizontal



Vertical



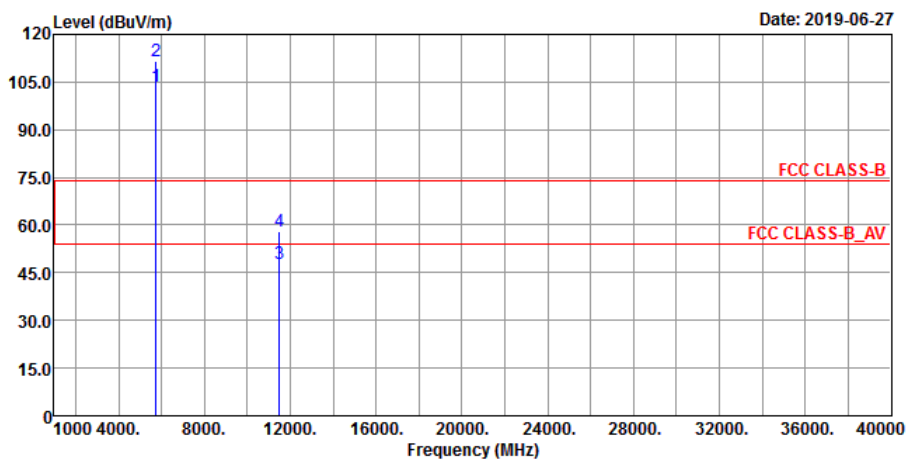
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5444.88	43.23	41.45	1.78	54	-10.77	112	40	Average
5444.88	53.98	52.2	1.78	74	-20.02	112	40	Peak
*5470	54.11	52.25	1.86	68.2	-14.09	112	40	Peak
5720	103.04	101.28	1.76			112	40	Average
5720	109.07	107.31	1.76			112	40	Peak
11440	46.39	48.61	-2.22	54	-7.61	182	171	Average
11440	56.2	58.42	-2.22	74	-17.8	182	171	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5446.48	42.27	40.45	1.82	54	-11.73	128	301	Average
5446.48	51.84	50.02	1.82	74	-22.16	128	301	Peak
*5470	52.47	50.61	1.86	68.2	-15.73	128	301	Peak
5720	103.44	101.68	1.76			128	301	Average
5720	110.21	108.45	1.76			128	301	Peak
11440	46.54	48.76	-2.22	54	-7.46	159	128	Average
11440	56.53	58.75	-2.22	74	-17.47	159	128	Peak

Remarks:

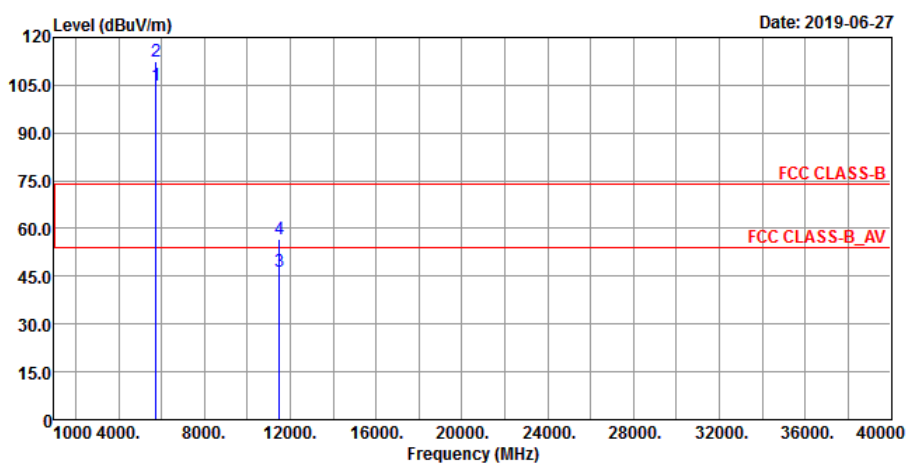
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5720 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

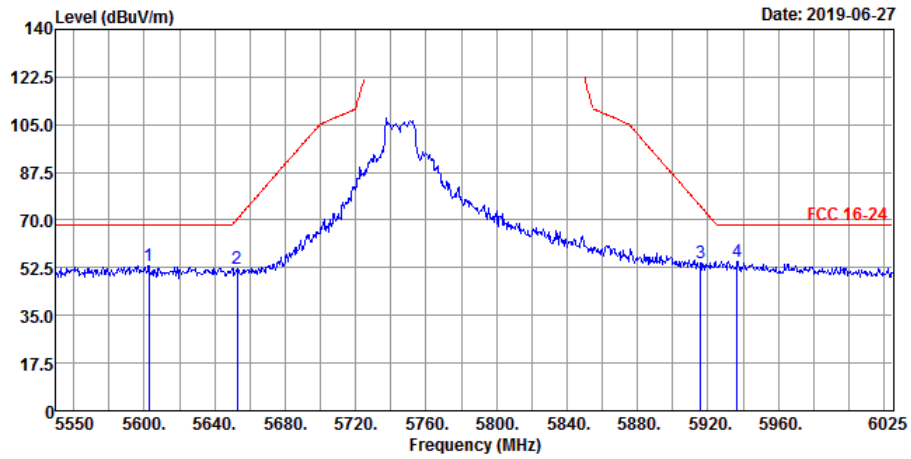
<Spurious Emission> Horizontal



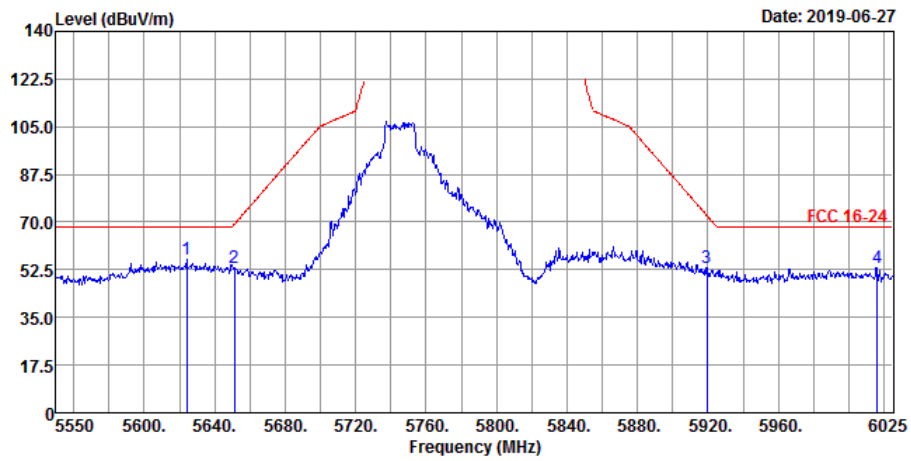
Vertical



<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)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	103.76	101.94	1.82			271	142	Average
5745	111.39	109.57	1.82			271	142	Peak
11490	48.01	50.21	-2.2	54	-5.99	206	313	Average
11490	57.84	60.04	-2.2	74	-16.16	206	313	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	105.01	103.19	1.82			371	262	Average
5745	112.55	110.73	1.82			371	262	Peak
11490	46.31	48.51	-2.2	54	-7.69	108	306	Average
11490	56.54	58.74	-2.2	74	-17.46	108	306	Peak

<Out of Band Emission (OOBE)>

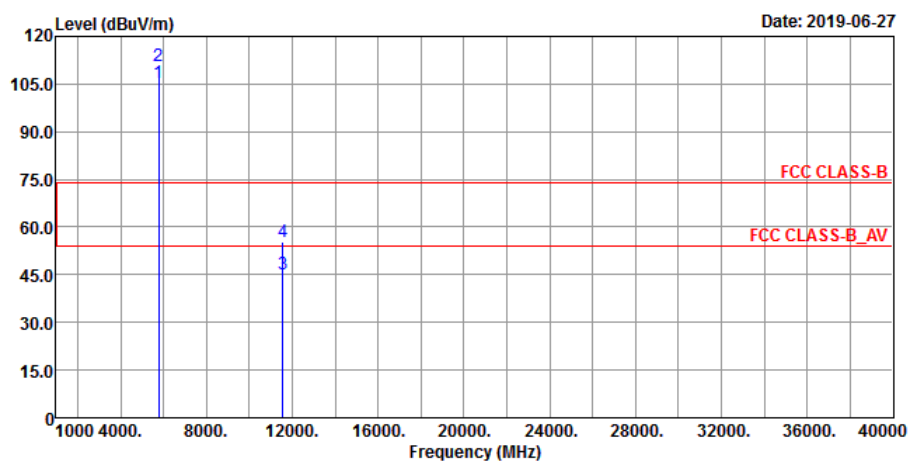
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5602.725	52.99	51.06	1.93	68.2	-15.21	271	142	Peak
5652.6	52.14	50.23	1.91	70.13	-17.99	271	142	Peak
5915.75	54.43	52.12	2.31	75.02	-20.59	271	142	Peak
5936.65	54.99	52.69	2.3	68.2	-13.21	271	142	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5624.1	56.55	54.65	1.9	68.2	-11.65	371	262	Peak
5651.175	53.11	51.2	1.91	69.07	-15.96	371	262	Peak
5919.55	53.25	50.94	2.31	72.22	-18.97	371	262	Peak
6015.975	53.4	51	2.4	68.2	-14.8	371	262	Peak

Remarks:

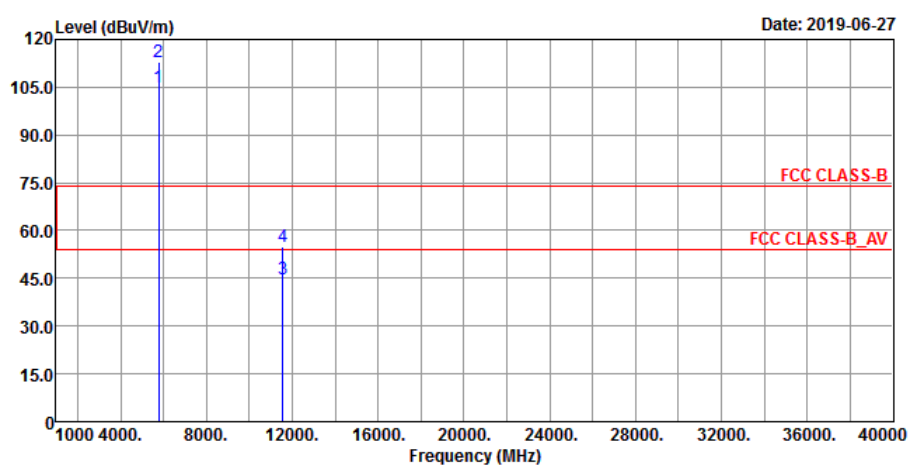
- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5745 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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	Getaz Yang

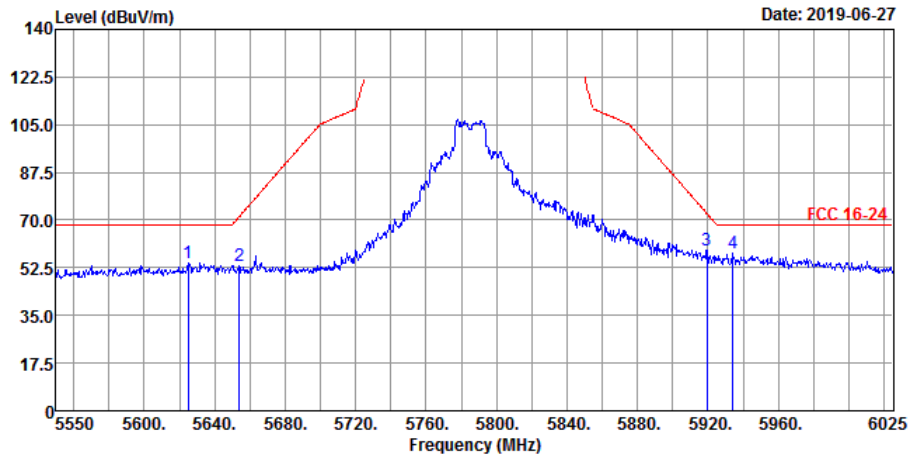
<Spurious Emission> Horizontal



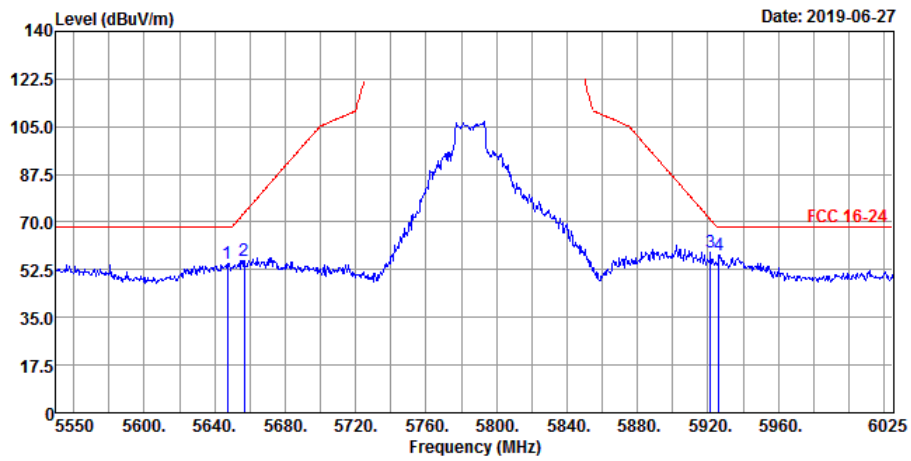
Vertical



<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)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	105.18	103.26	1.92			254	141	Average
5785	110.86	108.94	1.92			254	141	Peak
11570	45.04	47.24	-2.2	54	-8.96	207	164	Average
11570	55.53	57.73	-2.2	74	-18.47	207	164	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	104.92	103	1.92			384	262	Average
5785	112.85	110.93	1.92			384	262	Peak
11570	44.53	46.73	-2.2	54	-9.47	103	67	Average
11570	54.83	57.03	-2.2	74	-19.17	103	67	Peak

<Out of Band Emission (OOBE)>

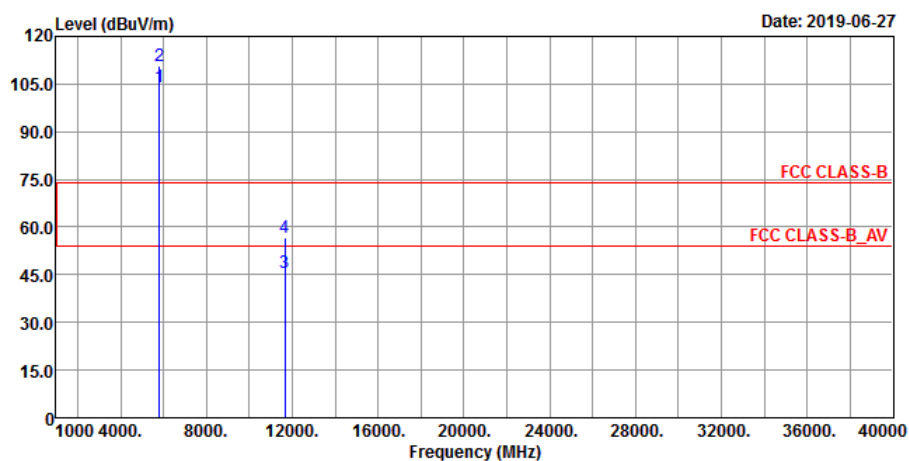
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5625.05	54.26	52.36	1.9	68.2	-13.94	254	141	Peak
5654.025	53.02	51.17	1.85	71.19	-18.17	254	141	Peak
5919.55	59.08	56.77	2.31	72.22	-13.14	254	141	Peak
5934.275	57.79	55.49	2.3	68.2	-10.41	254	141	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5647.375	54.74	52.86	1.88	68.2	-13.46	384	262	Peak
5656.875	55.9	54.05	1.85	73.31	-17.41	384	262	Peak
5921.45	59.06	56.75	2.31	70.82	-11.76	384	262	Peak
5926.2	58.09	55.79	2.3	68.2	-10.11	384	262	Peak

Remarks:

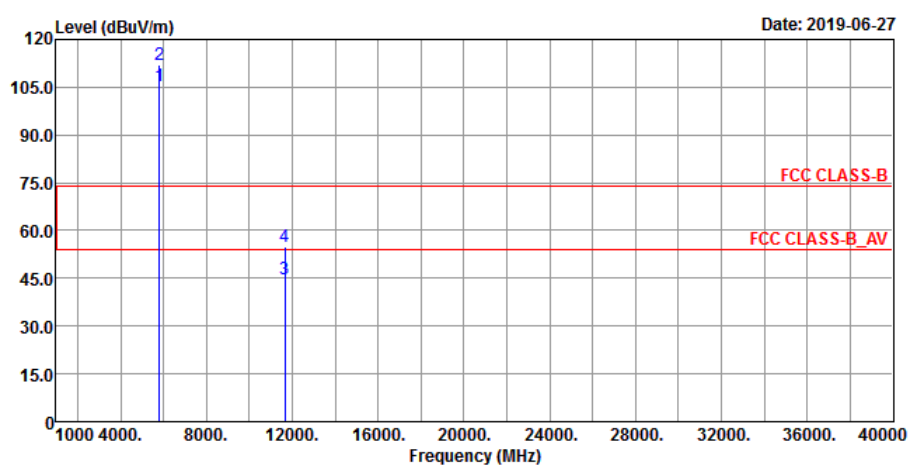
- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5785 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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	Getaz Yang

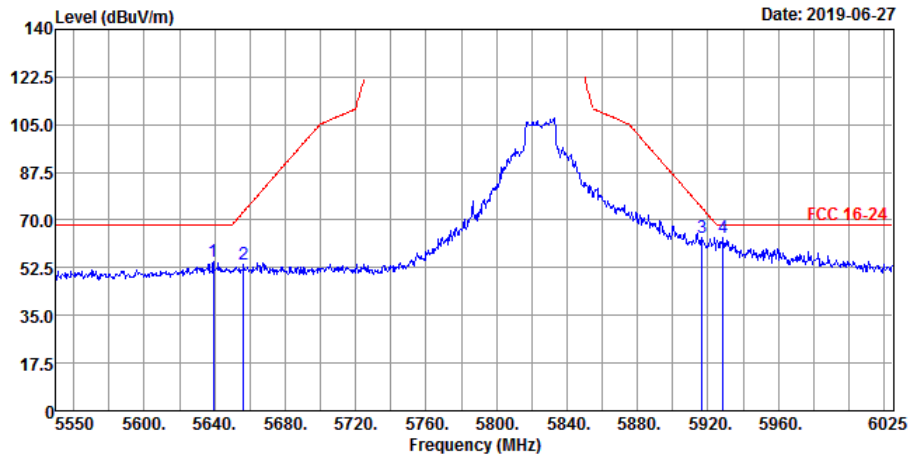
<Spurious Emission> Horizontal



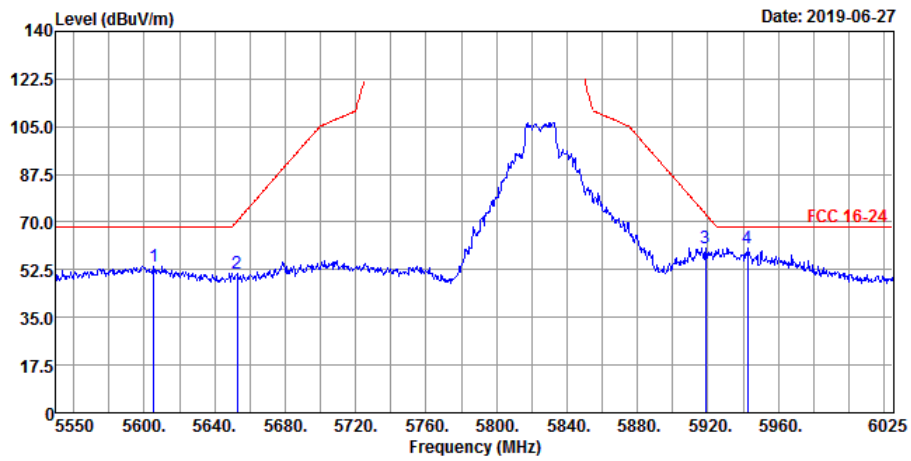
Vertical



<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)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	104.19	102.11	2.08			266	141	Average
5825	110.61	108.53	2.08			266	141	Peak
11650	45.83	48.22	-2.39	54	-8.17	172	108	Average
11650	56.56	58.95	-2.39	74	-17.44	172	108	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	105.4	103.32	2.08			397	261	Average
5825	111.81	109.73	2.08			397	261	Peak
11650	44.72	47.11	-2.39	54	-9.28	106	355	Average
11650	54.96	57.35	-2.39	74	-19.04	106	355	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5639.3	54.55	52.67	1.88	68.2	-13.65	266	141	Peak
5656.4	53.5	51.65	1.85	72.95	-19.45	266	141	Peak
5916.7	63.74	61.43	2.31	74.32	-10.58	266	141	Peak
5928.575	63.33	61.03	2.3	68.2	-4.87	266	141	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5605.575	53.86	51.99	1.87	68.2	-14.34	397	261	Peak
5652.6	51.25	49.34	1.91	70.13	-18.88	397	261	Peak
5918.6	60.61	58.3	2.31	72.92	-12.31	397	261	Peak
5942.35	60.45	58.16	2.29	68.2	-7.75	397	261	Peak

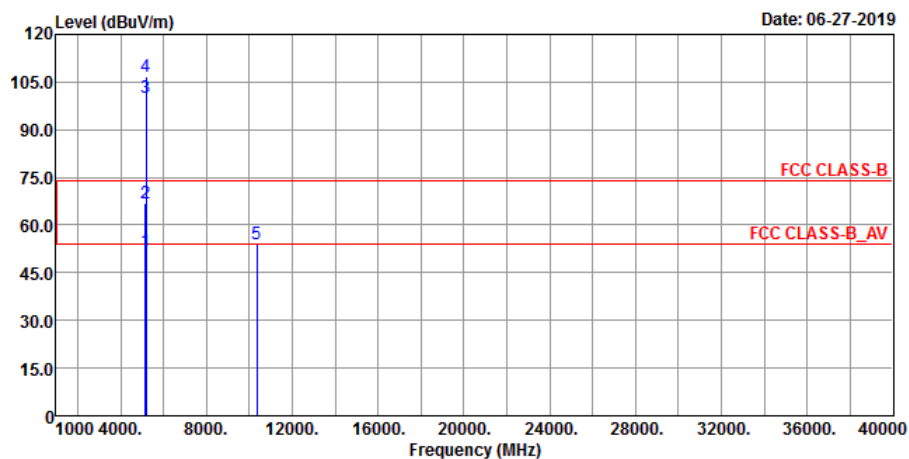
Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5825 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

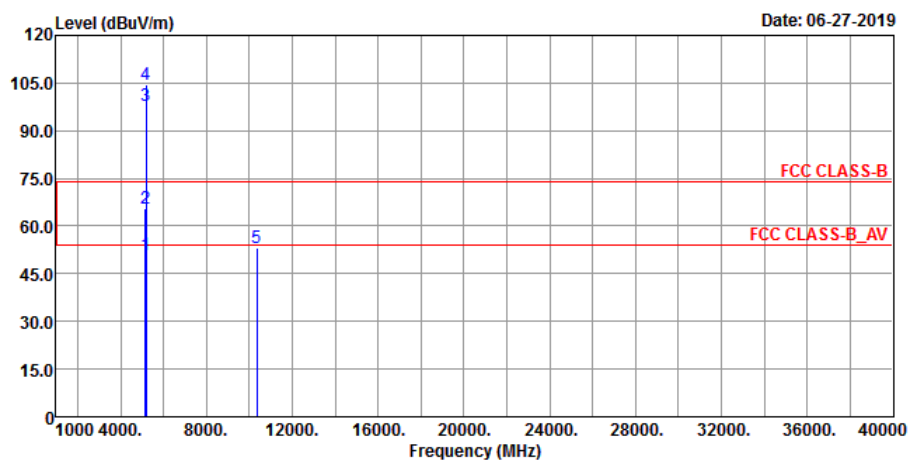
802.11n (HT20)

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	Getaz Yang

Horizontal



Vertical



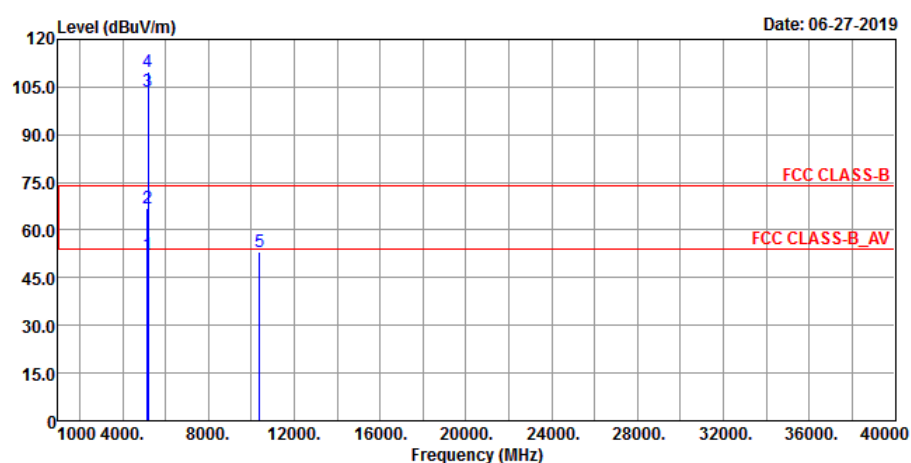
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	51.59	50.06	1.53	54	-2.41	100	267	Average
5150	66.75	65.22	1.53	74	-7.25	100	267	Peak
5180	100.17	61.3	38.87			100	267	Average
5180	106.71	67.84	38.87			100	267	Peak
*10360	53.93	56.77	-2.84	68.2	-14.27	115	31	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	50.83	49.3	1.53	54	-3.17	116	247	Average
5150	65.62	64.09	1.53	74	-8.38	116	247	Peak
5180	97.76	58.89	38.87			116	247	Average
5180	104.41	65.54	38.87			116	247	Peak
*10360	53.09	55.93	-2.84	68.2	-15.11	191	74	Peak

Remarks:

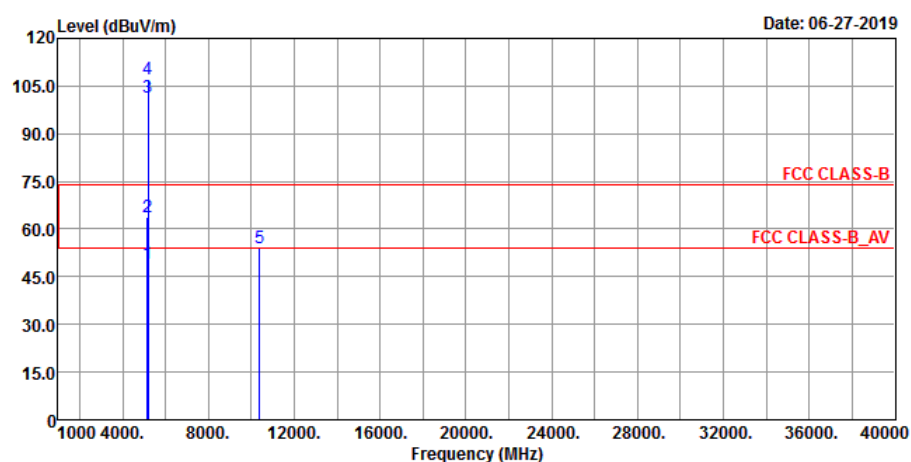
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5180 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

Horizontal



Vertical



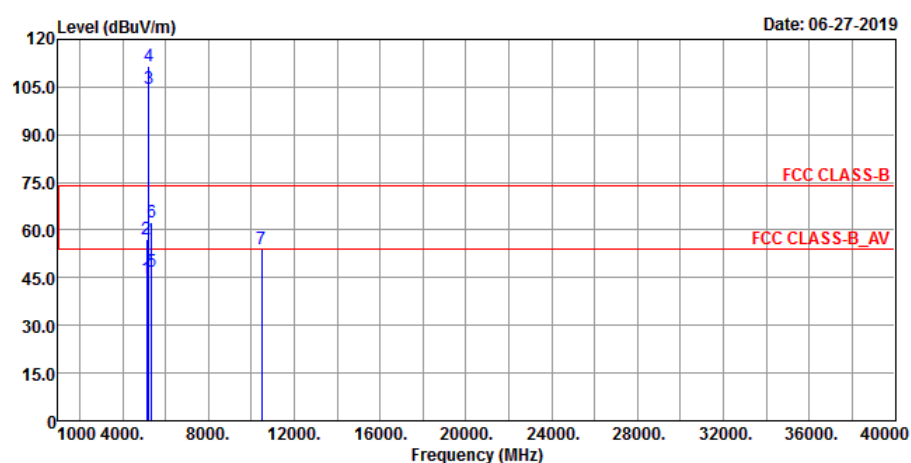
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	52.27	50.74	1.53	54	-1.73	115	267	Average
5150	66.86	65.33	1.53	74	-7.14	115	267	Peak
5200	103.47	64.58	38.89			115	267	Average
5200	109.79	70.9	38.89			115	267	Peak
*10400	53.21	56.1	-2.89	68.2	-14.99	115	33	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	49.14	47.61	1.53	54	-4.86	112	248	Average
5150	63.63	62.1	1.53	74	-10.37	112	248	Peak
5200	101.49	62.6	38.89			112	248	Average
5200	107.23	68.34	38.89			112	248	Peak
*10400	54.23	57.12	-2.89	68.2	-13.97	194	81	Peak

Remarks:

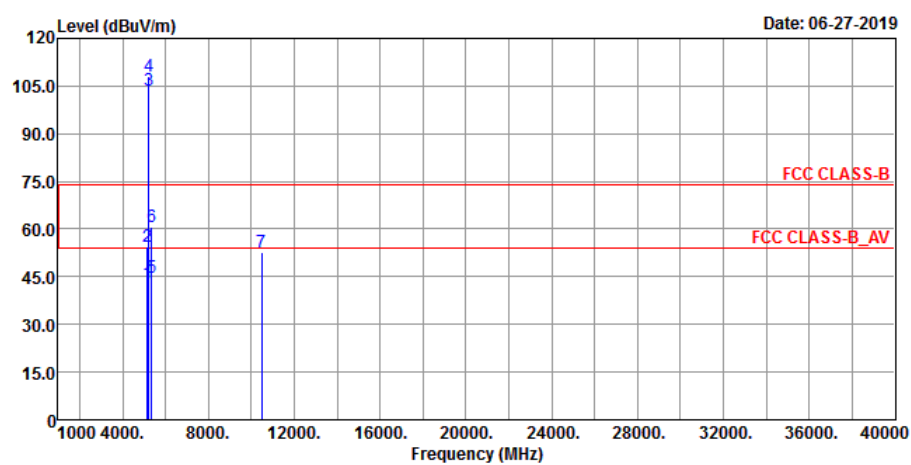
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5200 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

Horizontal



Vertical



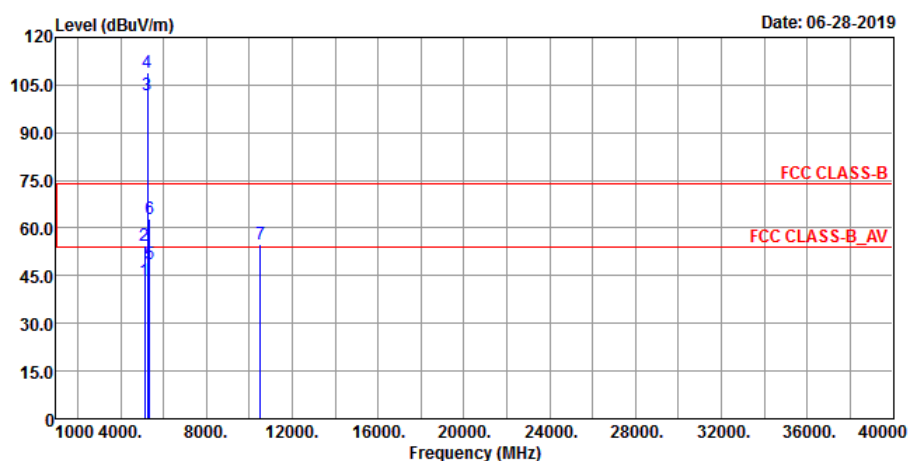
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5117.45	44.91	43.44	1.47	54	-9.09	100	267	Average
5117.45	57.25	55.78	1.47	74	-16.75	100	267	Peak
5240	104.72	66.02	38.7			100	267	Average
5240	111.58	72.88	38.7			100	267	Peak
5350	46.82	45.36	1.46	54	-7.18	100	267	Average
5350	62.6	61.14	1.46	74	-11.4	100	267	Peak
*10480	53.93	56.66	-2.73	68.2	-14.27	111	31	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.85	43.08	41.55	1.53	54	-10.92	130	248	Average
5149.85	54.51	52.98	1.53	74	-19.49	130	248	Peak
5240	103.43	64.73	38.7			130	248	Average
5240	108.05	69.35	38.7			130	248	Peak
5350	44.85	43.39	1.46	54	-9.15	130	248	Average
5350	60.75	59.29	1.46	74	-13.25	130	248	Peak
*10480	52.78	55.51	-2.73	68.2	-15.42	182	79	Peak

Remarks:

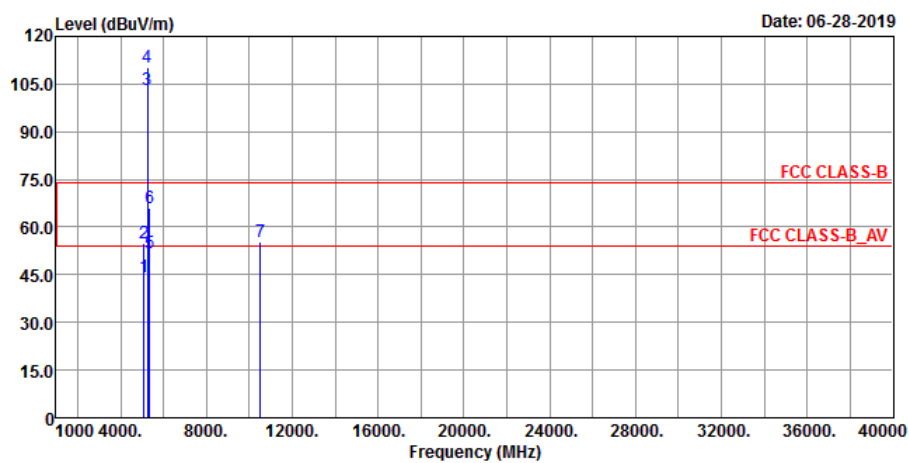
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5240 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

Horizontal



Vertical



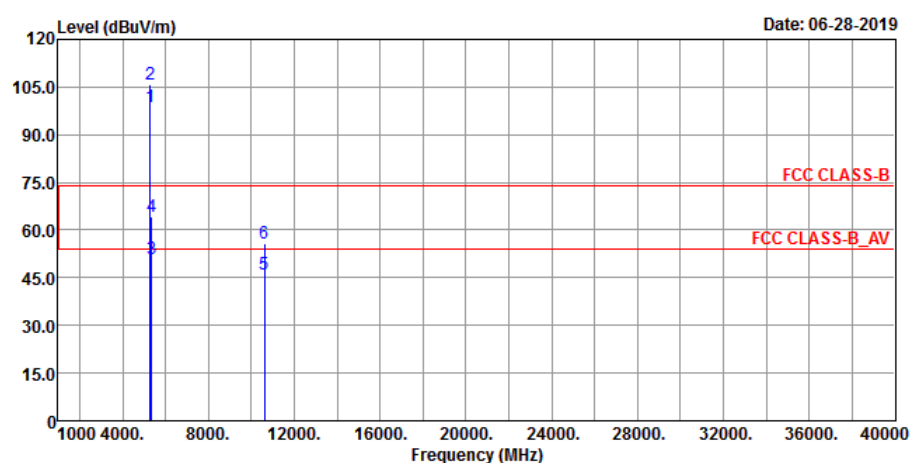
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5114.48	43.23	41.76	1.47	54	-10.77	219	235	Average
5114.48	54.28	52.81	1.47	74	-19.72	219	235	Peak
5260	101.88	100.57	1.31			219	235	Average
5260	109.14	107.83	1.31			219	235	Peak
5350	48.56	47.1	1.46	54	-5.44	219	235	Average
5350	62.98	61.52	1.46	74	-11.02	219	235	Peak
*10520	54.75	57.47	-2.72	68.2	-13.45	136	124	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5099.36	44.1	42.69	1.41	54	-9.9	158	357	Average
5099.36	54.83	53.42	1.41	74	-19.17	158	357	Peak
5260	103.22	101.91	1.31			158	357	Average
5260	110.46	109.15	1.31			158	357	Peak
5350.11	51.99	50.53	1.46	54	-2.01	158	357	Average
5350.11	66.01	64.55	1.46	74	-7.99	158	357	Peak
*10520	55.24	57.96	-2.72	68.2	-12.96	184	105	Peak

Remarks:

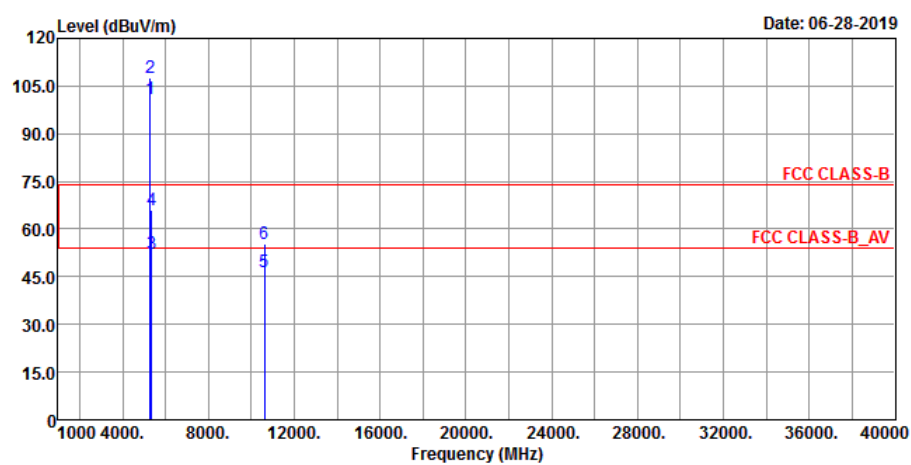
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5260 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

Horizontal



Vertical



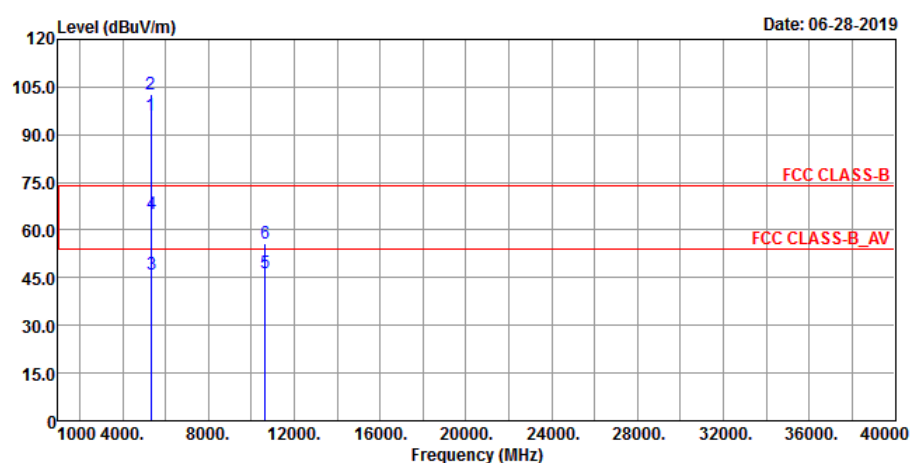
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5300	98.88	97.57	1.31			153	34	Average
5300	105.64	104.33	1.31			153	34	Peak
5350	50.75	49.29	1.46	54	-3.25	153	34	Average
5350	64.34	62.88	1.46	74	-9.66	153	34	Peak
10600	46.2	49.11	-2.91	54	-7.8	163	248	Average
10600	55.67	58.58	-2.91	74	-18.33	163	248	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5300	100.76	99.45	1.31			176	315	Average
5300	107.62	106.31	1.31			176	315	Peak
5350	52.37	50.91	1.46	54	-1.63	176	315	Average
5350	66.01	64.55	1.46	74	-7.99	176	315	Peak
10600	46.4	49.31	-2.91	54	-7.6	156	172	Average
10600	55.38	58.29	-2.91	74	-18.62	156	172	Peak

Remarks:

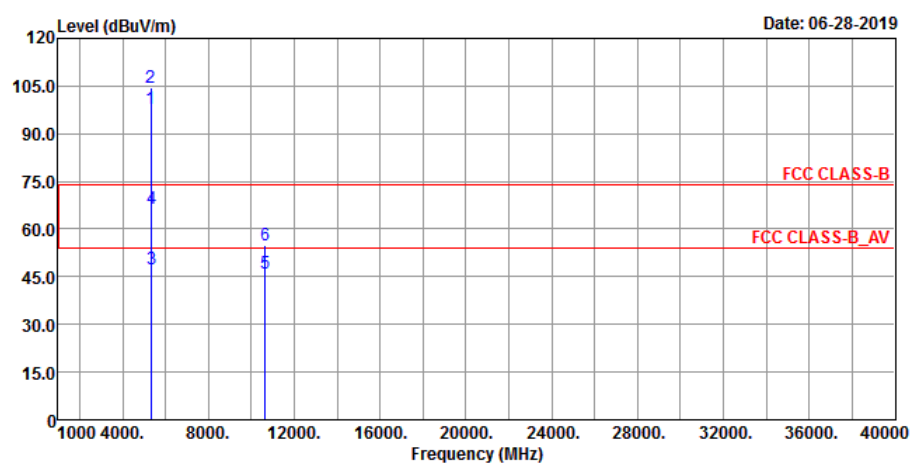
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5300 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

Horizontal



Vertical



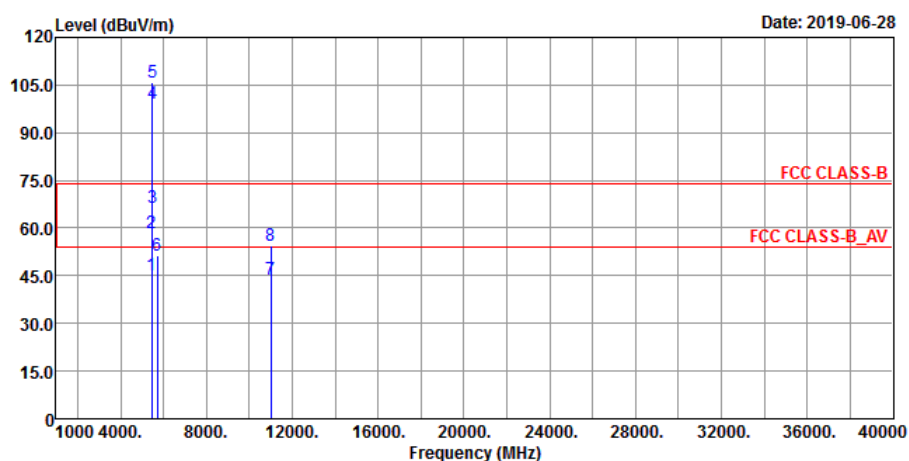
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	96.21	94.85	1.36			155	35	Average
5320	102.89	101.53	1.36			155	35	Peak
5351.76	46.11	44.65	1.46	54	-7.89	155	35	Average
5351.76	65.12	63.66	1.46	74	-8.88	155	35	Peak
10640	46.49	49.38	-2.89	54	-7.51	183	261	Average
10640	55.6	58.49	-2.89	74	-18.4	183	261	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	97.86	96.5	1.36			177	314	Average
5320	104.44	103.08	1.36			177	314	Peak
5350.55	47.34	45.88	1.46	54	-6.66	177	314	Average
5350.55	66.51	65.05	1.46	74	-7.49	177	314	Peak
10640	46.25	49.14	-2.89	54	-7.75	176	100	Average
10640	54.87	57.76	-2.89	74	-19.13	176	100	Peak

Remarks:

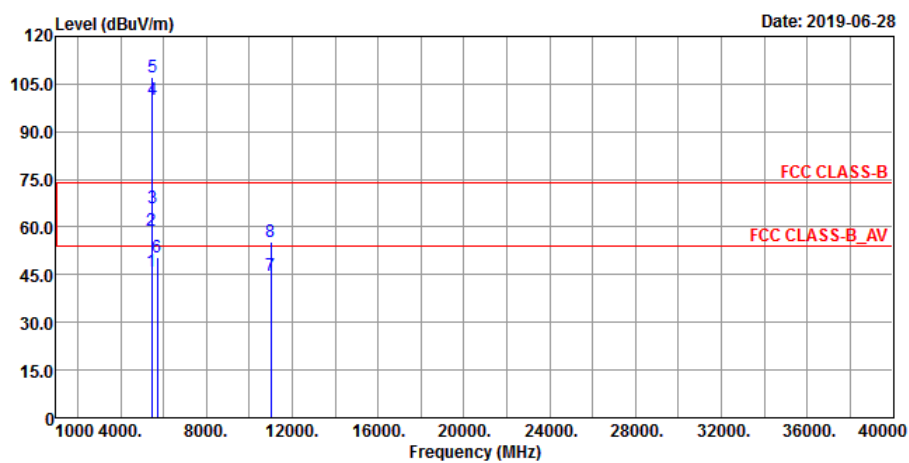
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5320 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

Horizontal



Vertical



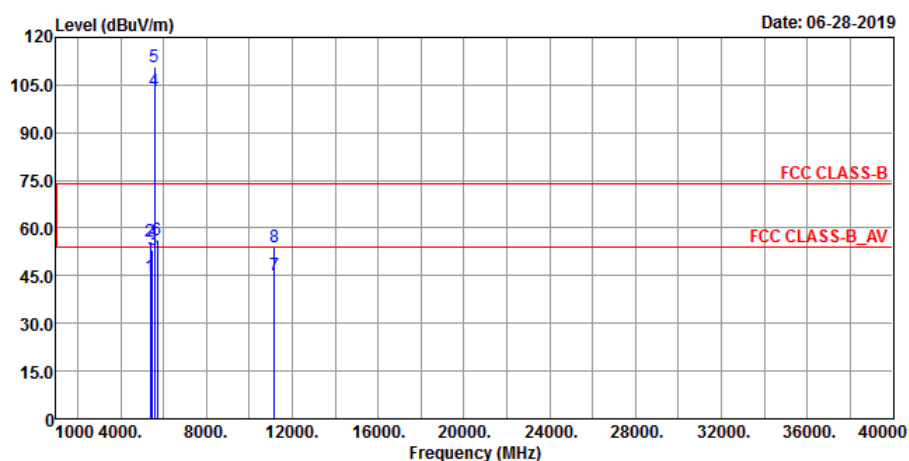
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	45.15	43.28	1.87	54	-8.85	104	45	Average
5460	58.24	56.37	1.87	74	-15.76	104	45	Peak
*5470	66.58	64.72	1.86	68.2	-1.62	104	45	Peak
5500	99.12	60.22	38.9			104	45	Average
5500	105.93	67.03	38.9			104	45	Peak
*5725	51.22	49.46	1.76	68.2	-16.98	104	45	Peak
11000	44.01	46.32	-2.31	54	-9.99	219	94	Average
11000	54.44	56.75	-2.31	74	-19.56	219	94	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	45.94	44.07	1.87	54	-8.06	112	276	Average
5460	58.74	56.87	1.87	74	-15.26	112	276	Peak
*5470	65.92	64.06	1.86	68.2	-2.28	112	276	Peak
5500	99.99	98.12	1.87			112	276	Average
5500	106.99	105.12	1.87			112	276	Peak
*5725	50.37	48.61	1.76	68.2	-17.83	112	276	Peak
11000	44.51	46.82	-2.31	54	-9.49	101	217	Average
11000	55.33	57.64	-2.31	74	-18.67	101	217	Peak

Remarks:

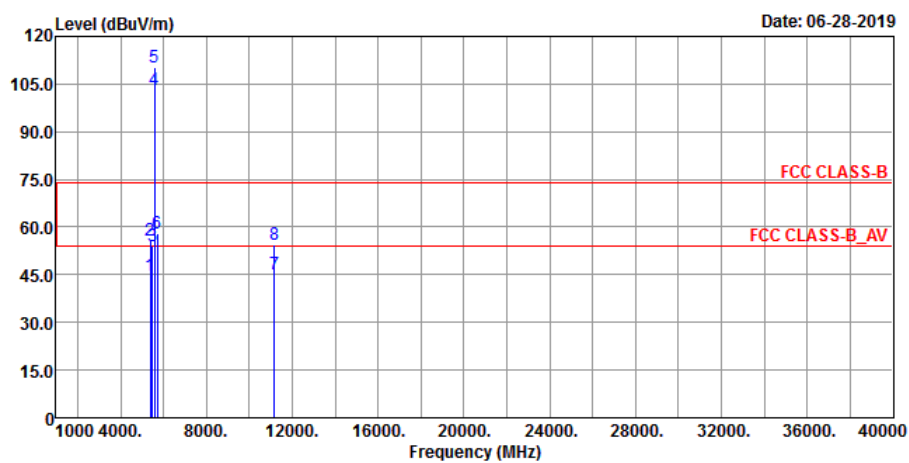
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5500 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

Horizontal



Vertical



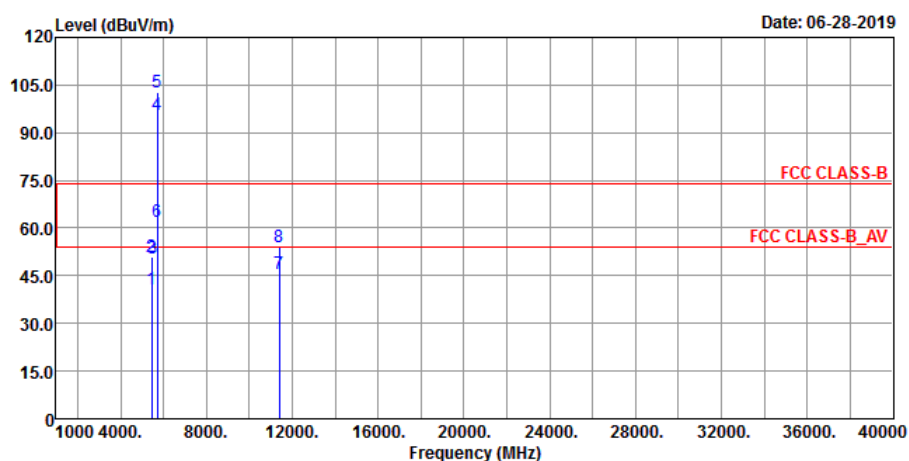
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5404.08	44.66	42.99	1.67	54	-9.34	103	45	Average
5404.08	55.93	54.26	1.67	74	-18.07	103	45	Peak
*5470	53.21	51.35	1.86	68.2	-14.99	103	45	Peak
5580	103.16	64.18	38.98			103	45	Average
5580	110.6	71.62	38.98			103	45	Peak
*5725	56.11	54.35	1.76	68.2	-12.09	103	45	Peak
11160	45.11	47.66	-2.55	54	-8.89	189	203	Average
11160	54.08	56.63	-2.55	74	-19.92	189	203	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5403.44	44.5	42.83	1.67	54	-9.5	108	276	Average
5403.44	55.98	54.31	1.67	74	-18.02	108	276	Peak
*5470	53.92	52.06	1.86	68.2	-14.28	108	276	Peak
5580	103.14	64.16	38.98			108	276	Average
5580	110.39	71.41	38.98			108	276	Peak
*5725	58.01	56.25	1.76	68.2	-10.19	108	276	Peak
11160	45.1	47.65	-2.55	54	-8.9	107	245	Average
11160	54.53	57.08	-2.55	74	-19.47	107	245	Peak

Remarks:

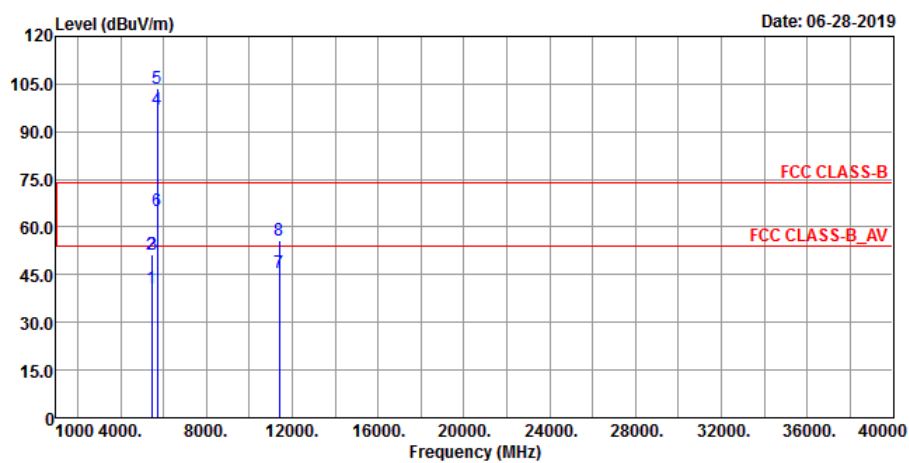
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5580 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

Horizontal



Vertical



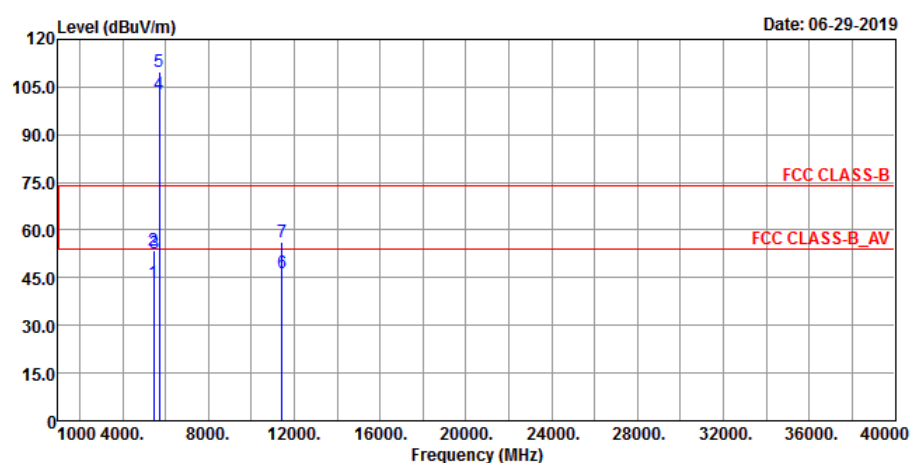
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5457.04	40.82	38.95	1.87	54	-13.18	106	38	Average
5457.04	50.93	49.06	1.87	74	-23.07	106	38	Peak
*5470	50.32	48.46	1.86	68.2	-17.88	106	38	Peak
5700	95.85	56.86	38.99			106	38	Average
5700	102.71	63.72	38.99			106	38	Peak
*5725	62.09	60.33	1.76	68.2	-6.11	106	38	Peak
11400	45.52	47.75	-2.23	54	-8.48	188	205	Average
11400	53.96	56.19	-2.23	74	-20.04	188	205	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	40.85	38.98	1.87	54	-13.15	114	266	Average
5460	51.2	49.33	1.87	74	-22.8	114	266	Peak
*5470	51.2	49.34	1.86	68.2	-17	114	266	Peak
5700	96.93	57.94	38.99			114	266	Average
5700	103.82	64.83	38.99			114	266	Peak
*5725	65.06	63.3	1.76	68.2	-3.14	114	266	Peak
11400	45.72	47.95	-2.23	54	-8.28	103	255	Average
11400	55.84	58.07	-2.23	74	-18.16	103	255	Peak

Remarks:

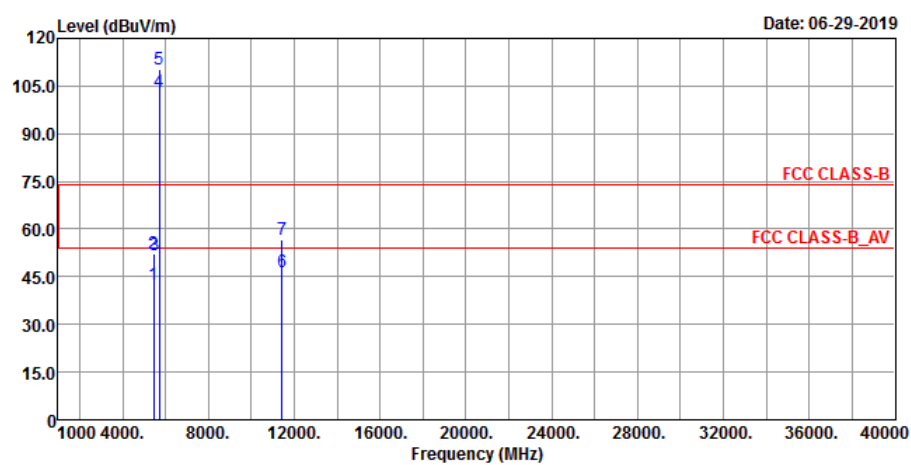
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5700 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 144	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	Getaz Yang

Horizontal



Vertical



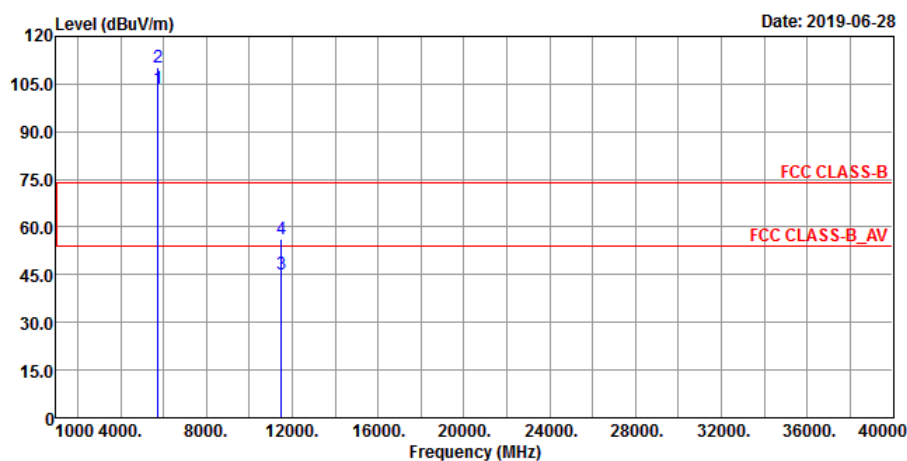
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.44	43.6	41.73	1.87	54	-10.4	118	41	Average
5459.44	53.47	51.6	1.87	74	-20.53	118	41	Peak
*5470	52.62	50.76	1.86	68.2	-15.58	118	41	Peak
5720	102.79	101.03	1.76			118	41	Average
5720	110	108.24	1.76			118	41	Peak
11440	46.37	48.59	-2.22	54	-7.63	151	48	Average
11440	56.14	58.36	-2.22	74	-17.86	151	48	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5444.56	42.37	40.59	1.78	54	-11.63	128	301	Average
5444.56	52.12	50.34	1.78	74	-21.88	128	301	Peak
*5470	51.79	49.93	1.86	68.2	-16.41	128	301	Peak
5720	103.36	101.6	1.76			128	301	Average
5720	110.14	108.38	1.76			128	301	Peak
11440	46.6	48.82	-2.22	54	-7.4	177	154	Average
11440	56.68	58.9	-2.22	74	-17.32	177	154	Peak

Remarks:

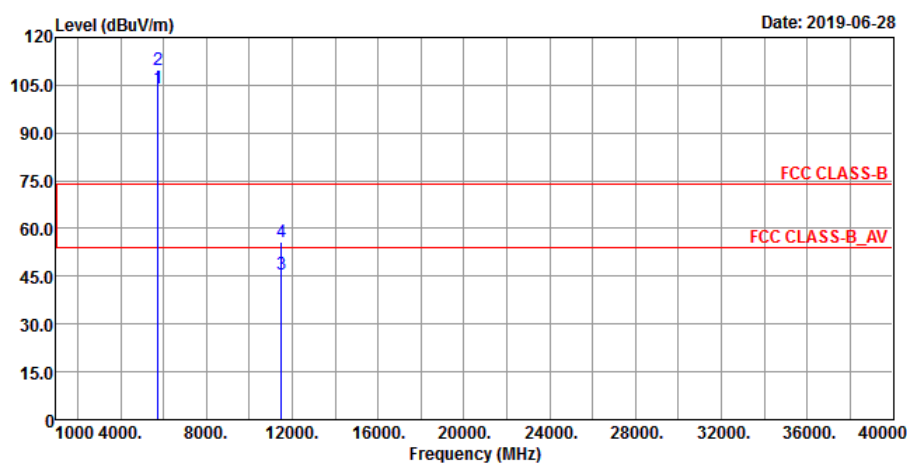
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5720 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

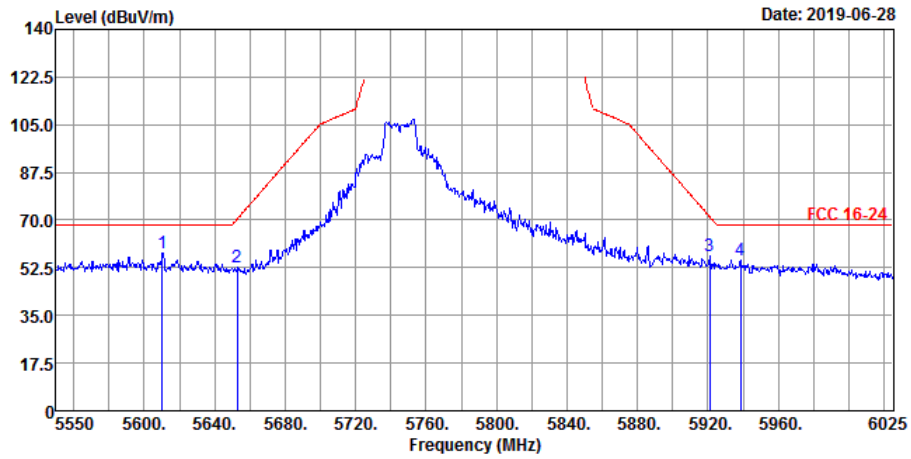
<Spurious Emission> Horizontal



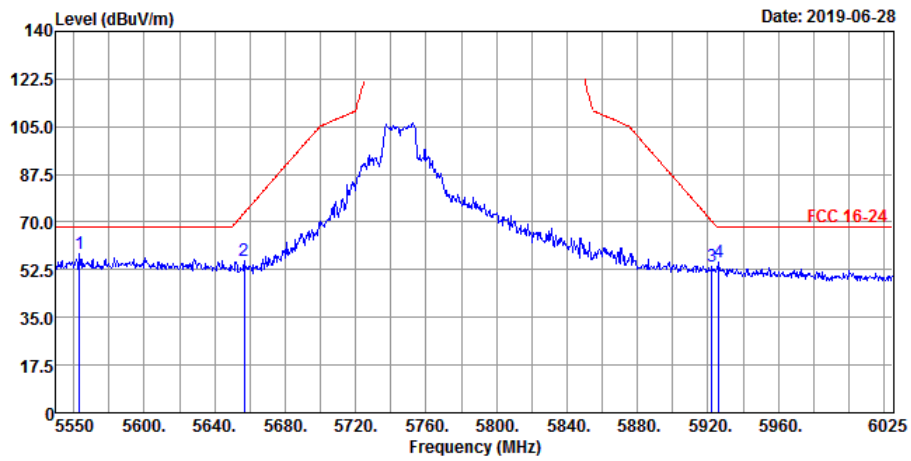
Vertical



<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)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	103.51	101.69	1.82			106	115	Average
5745	110.07	108.25	1.82			106	115	Peak
11490	45.02	47.22	-2.2	54	-8.98	202	177	Average
11490	56.11	58.31	-2.2	74	-17.89	202	177	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	103.91	102.09	1.82			100	287	Average
5745	109.77	107.95	1.82			100	287	Peak
11490	45.65	47.85	-2.2	54	-8.35	123	304	Average
11490	55.97	58.17	-2.2	74	-18.03	123	304	Peak

<Out of Band Emission (OOBE)>

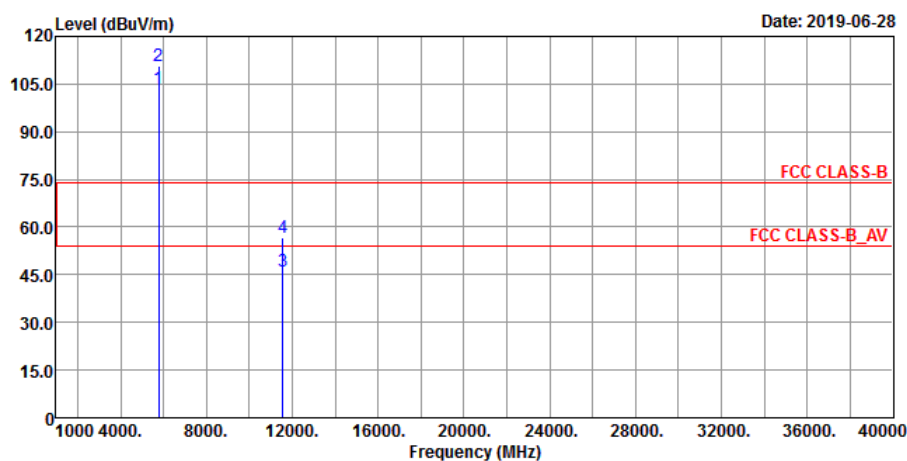
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5610.325	57.86	55.99	1.87	68.2	-10.34	106	115	Peak
5652.6	52.62	50.71	1.91	70.13	-17.51	106	115	Peak
5920.975	56.81	54.5	2.31	71.17	-14.36	106	115	Peak
5938.55	55.22	52.93	2.29	68.2	-12.98	106	115	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5563.3	58.24	56.44	1.8	68.2	-9.96	100	287	Peak
5656.875	55.84	53.99	1.85	73.31	-17.47	100	287	Peak
5922.4	53.54	51.24	2.3	70.12	-16.58	100	287	Peak
5926.2	55.36	53.06	2.3	68.2	-12.84	100	287	Peak

Remarks:

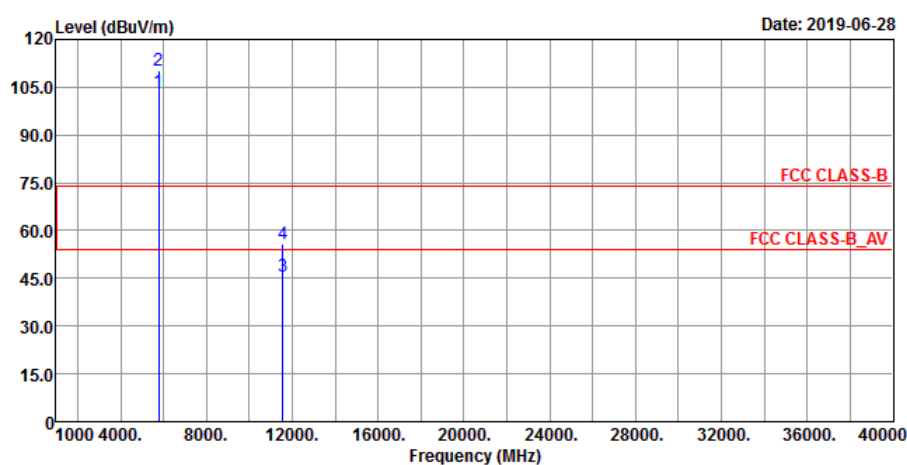
- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5745 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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	Getaz Yang

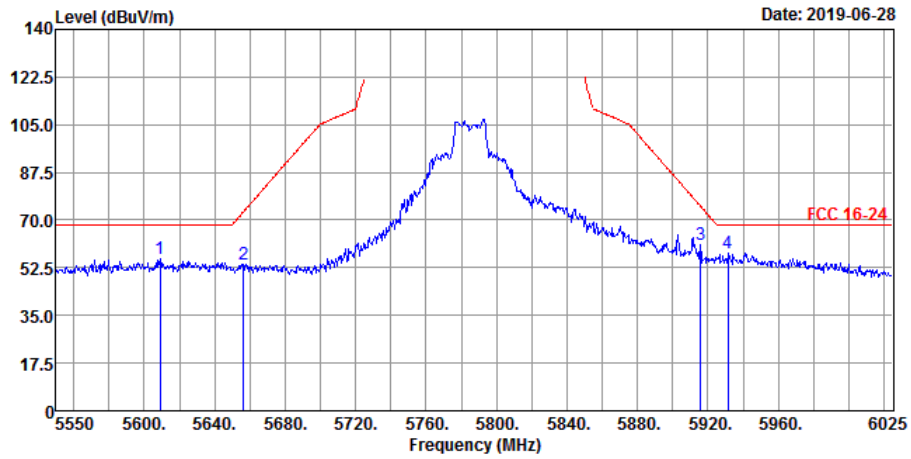
<Spurious Emission> Horizontal



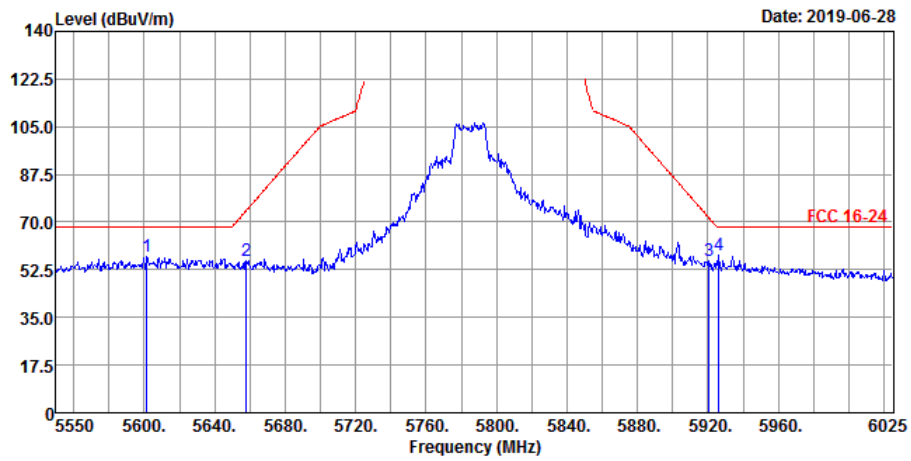
Vertical



<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)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	103.45	101.53	1.92			105	114	Average
5785	110.76	108.84	1.92			105	114	Peak
11570	46	48.2	-2.2	54	-8	193	122	Average
11570	56.66	58.86	-2.2	74	-17.34	193	122	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	103.74	101.82	1.92			100	287	Average
5785	110.07	108.15	1.92			100	287	Peak
11570	45.53	47.73	-2.2	54	-8.47	116	108	Average
11570	55.78	57.98	-2.2	74	-18.22	116	108	Peak

<Out of Band Emission (OOBE)>

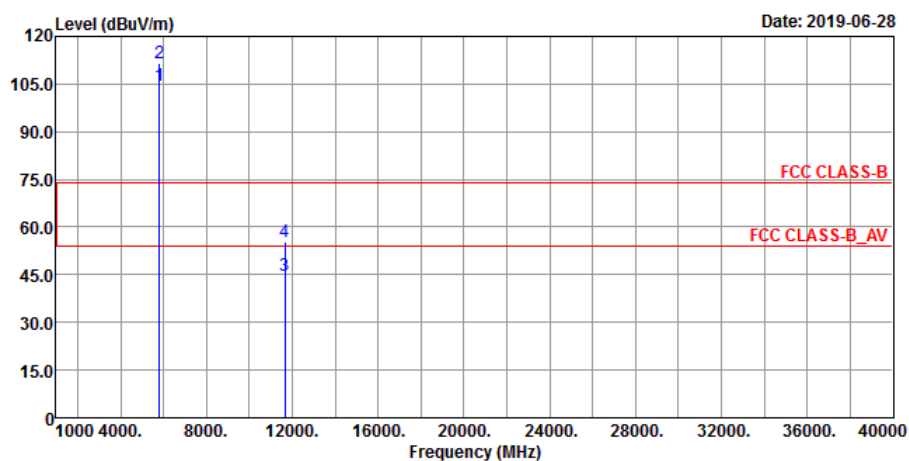
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5608.9	55.89	54.02	1.87	68.2	-12.31	105	114	Peak
5656.4	53.83	51.98	1.85	72.95	-19.12	105	114	Peak
5915.75	60.82	58.51	2.31	75.02	-14.2	105	114	Peak
5931.425	58.03	55.73	2.3	68.2	-10.17	105	114	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5601.3	57.09	55.16	1.93	68.2	-11.11	100	287	Peak
5657.825	55.97	54.12	1.85	74.01	-18.04	100	287	Peak
5920.5	55.95	53.64	2.31	71.52	-15.57	100	287	Peak
5926.2	58.03	55.73	2.3	68.2	-10.17	100	287	Peak

Remarks:

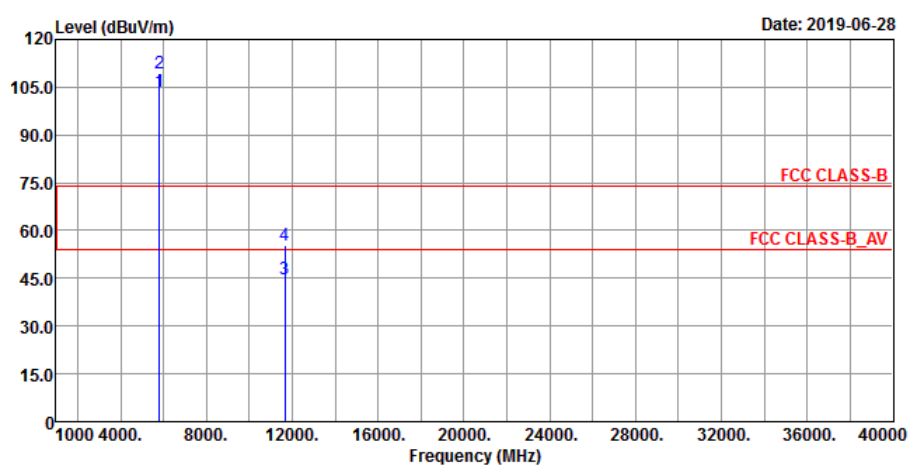
- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5785 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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	Getaz Yang

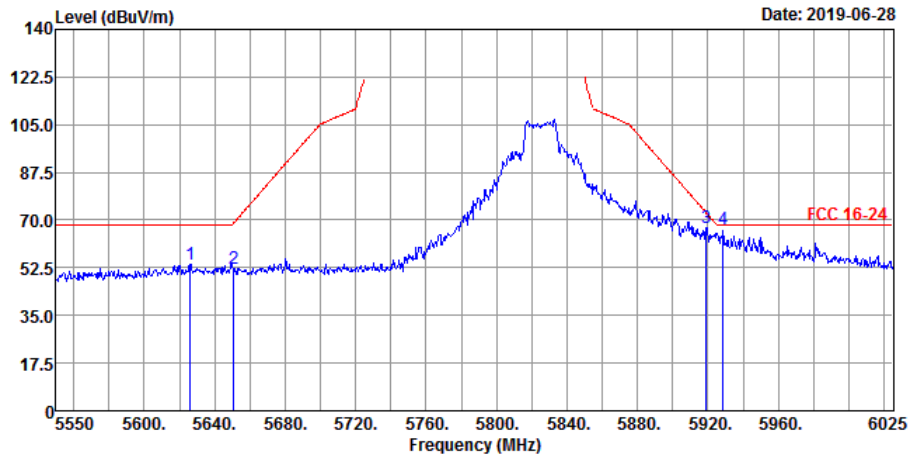
<Spurious Emission> Horizontal



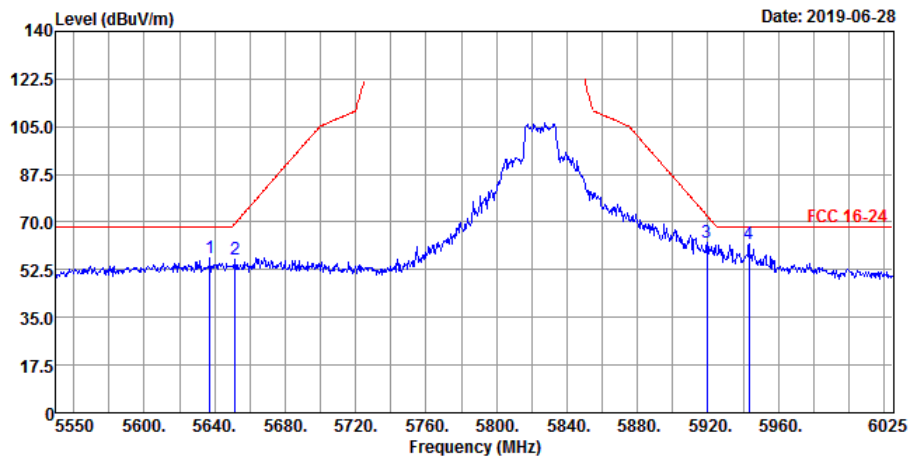
Vertical



<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)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	104.62	102.54	2.08			108	102	Average
5825	111.75	109.67	2.08			108	102	Peak
11650	44.72	47.11	-2.39	54	-9.28	167	305	Average
11650	55.18	57.57	-2.39	74	-18.82	167	305	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	103.68	101.6	2.08			112	288	Average
5825	109.55	107.47	2.08			112	288	Peak
11650	44.85	47.24	-2.39	54	-9.15	108	193	Average
11650	55.33	57.72	-2.39	74	-18.67	108	193	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5626	53.72	51.82	1.9	68.2	-14.48	108	102	Peak
5650.7	52.38	50.47	1.91	68.72	-16.34	108	102	Peak
5919.075	67.23	64.92	2.31	72.57	-5.34	108	102	Peak
5928.575	66.56	64.26	2.3	68.2	-1.64	108	102	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5637.4	56.92	55.04	1.88	68.2	-11.28	112	288	Peak
5651.65	56.13	54.22	1.91	69.43	-13.3	112	288	Peak
5919.55	62.75	60.44	2.31	72.22	-9.47	112	288	Peak
5943.3	61.76	59.47	2.29	68.2	-6.44	112	288	Peak

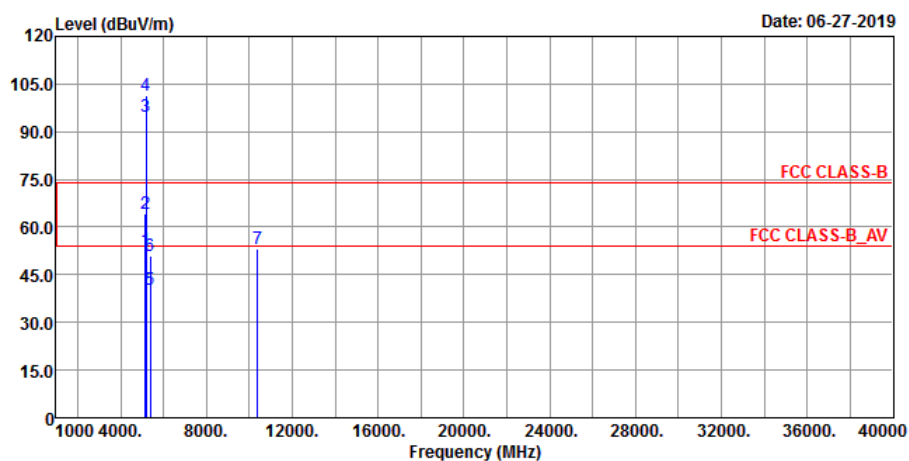
Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5825 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

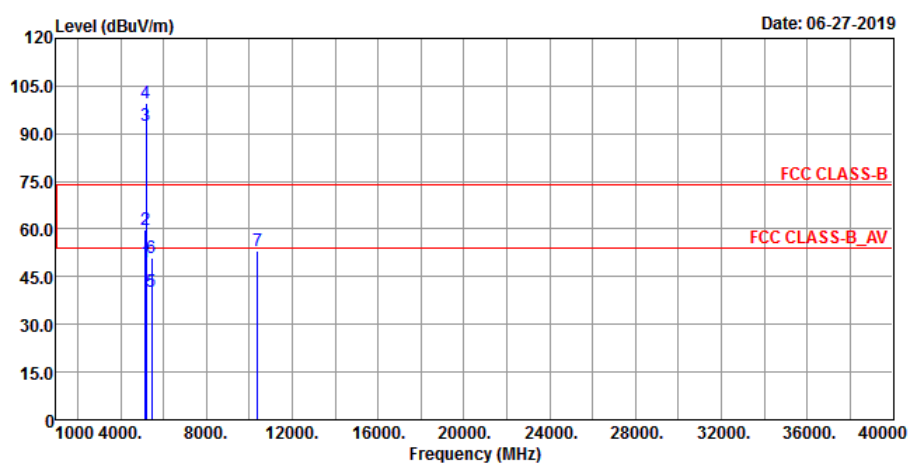
802.11n (HT40)

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	Getaz Yang

Horizontal



Vertical



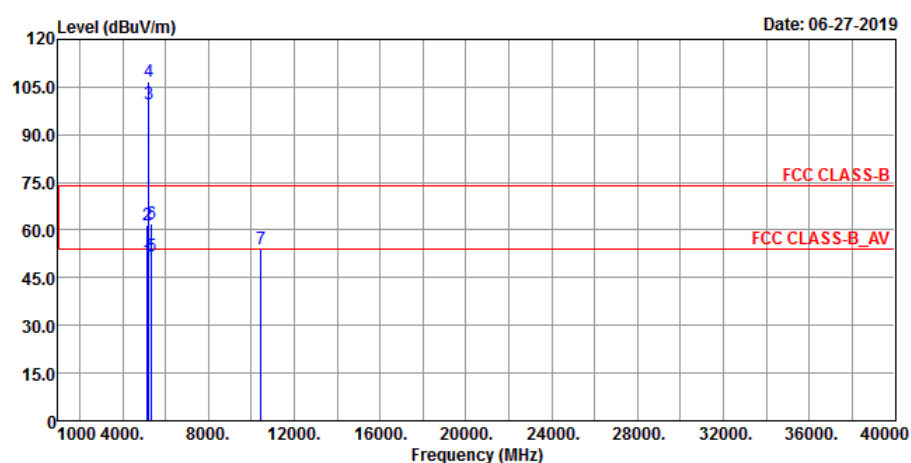
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	52.5	50.97	1.53	54	-1.5	100	267	Average
5150	64.08	62.55	1.53	74	-9.92	100	267	Peak
5190	94.78	55.91	38.87			100	267	Average
5190	101.48	62.61	38.87			100	267	Peak
5384.98	40.27	38.67	1.6	54	-13.73	100	267	Average
5384.98	50.71	49.11	1.6	74	-23.29	100	267	Peak
*10380	52.92	55.79	-2.87	68.2	-15.28	118	22	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	49.7	48.17	1.53	54	-4.3	115	249	Average
5150	59.96	58.43	1.53	74	-14.04	115	249	Peak
5190	92.36	53.49	38.87			115	249	Average
5190	99.84	60.97	38.87			115	249	Peak
5449.44	40.13	38.31	1.82	54	-13.87	115	249	Average
5449.44	50.74	48.92	1.82	74	-23.26	115	249	Peak
*10380	52.93	55.8	-2.87	68.2	-15.27	184	74	Peak

Remarks:

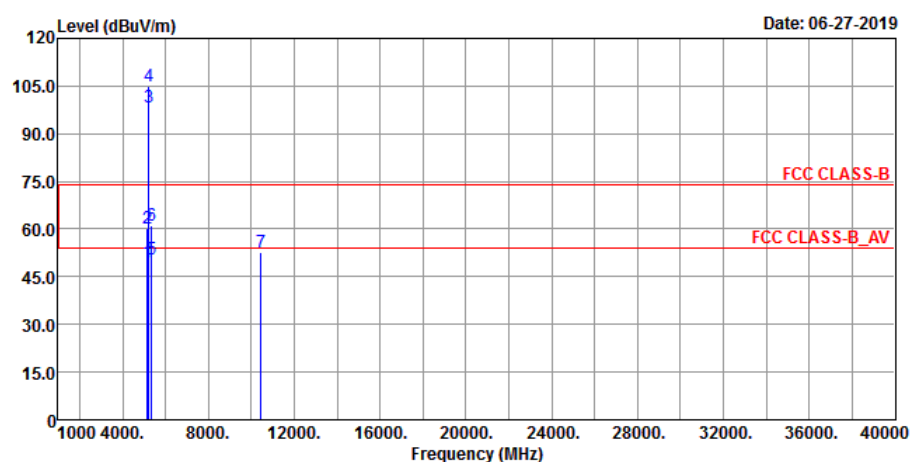
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5190 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

Horizontal



Vertical



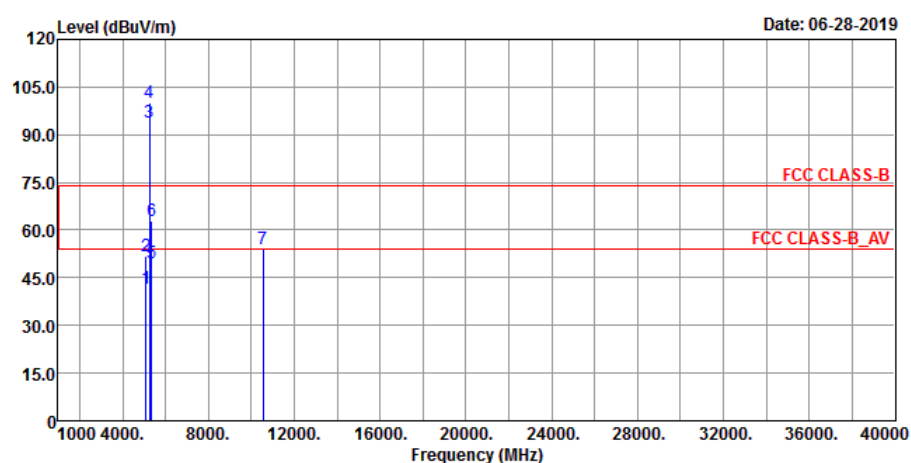
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	50.44	48.91	1.53	54	-3.56	100	268	Average
5150	61.65	60.12	1.53	74	-12.35	100	268	Peak
5230	99.81	61.11	38.7			100	268	Average
5230	106.72	68.02	38.7			100	268	Peak
5350.66	51.99	50.53	1.46	54	-2.01	100	268	Average
5350.66	62.04	60.58	1.46	74	-11.96	100	268	Peak
*10460	54.09	56.88	-2.79	68.2	-14.11	116	23	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	49.5	47.97	1.53	54	-4.5	118	251	Average
5150	60.33	58.8	1.53	74	-13.67	118	251	Peak
5230	98.11	59.41	38.7			118	251	Average
5230	105	66.3	38.7			118	251	Peak
5350.22	50.68	49.22	1.46	54	-3.32	118	251	Average
5350.22	61.33	59.87	1.46	74	-12.67	118	251	Peak
*10460	52.53	55.32	-2.79	68.2	-15.67	188	64	Peak

Remarks:

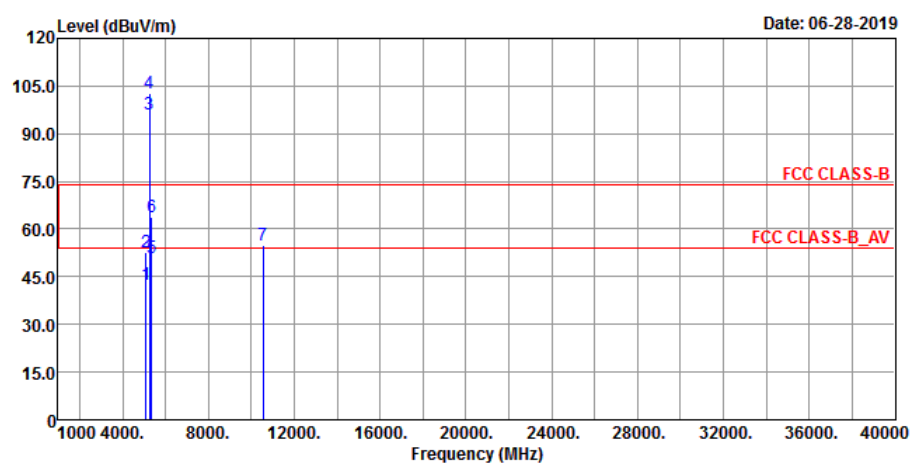
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5230 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

Horizontal



Vertical



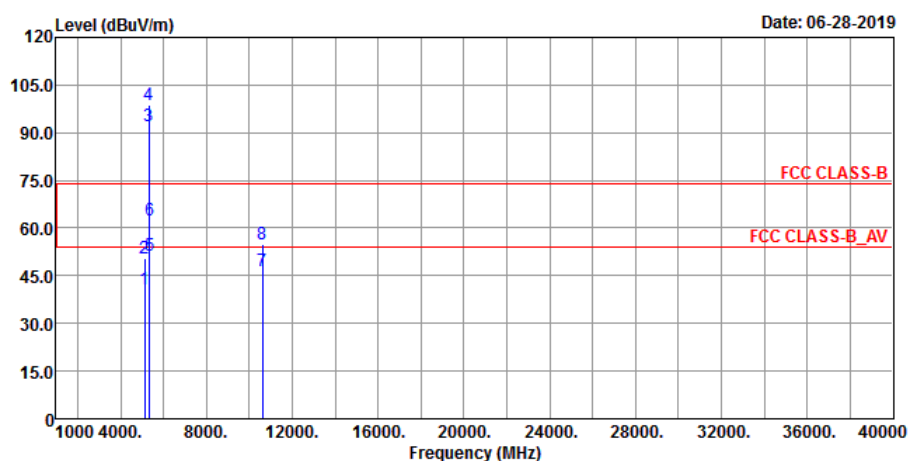
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5099.72	41.5	40.09	1.41	54	-12.5	136	34	Average
5099.72	51.64	50.23	1.41	74	-22.36	136	34	Peak
5270	93.83	92.52	1.31			136	34	Average
5270	100.08	98.77	1.31			136	34	Peak
5350.11	49.75	48.29	1.46	54	-4.25	136	34	Average
5350.11	62.8	61.34	1.46	74	-11.2	136	34	Peak
*10540	54.15	56.92	-2.77	68.2	-14.05	154	103	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5102.06	42.61	41.2	1.41	54	-11.39	159	356	Average
5102.06	52.75	51.34	1.41	74	-21.25	159	356	Peak
5270	96.14	94.83	1.31			159	356	Average
5270	102.88	101.57	1.31			159	356	Peak
5350.11	51.05	49.59	1.46	54	-2.95	159	356	Average
5350.11	63.72	62.26	1.46	74	-10.28	159	356	Peak
*10540	54.84	57.61	-2.77	68.2	-13.36	149	237	Peak

Remarks:

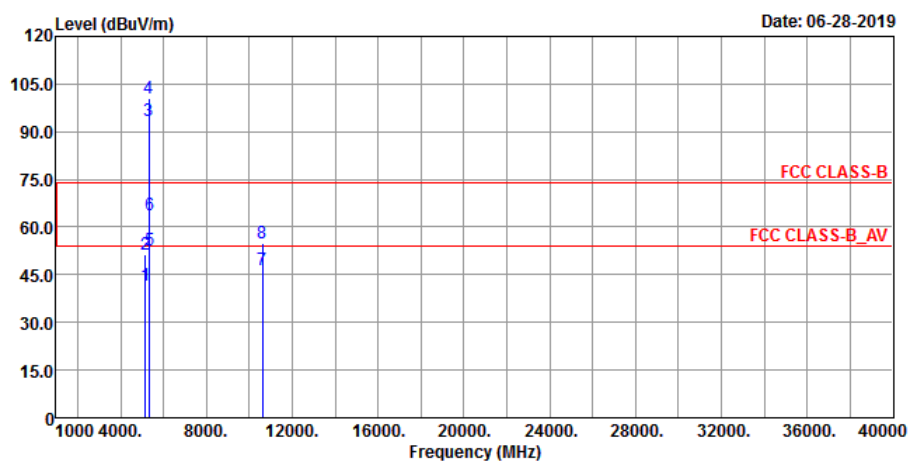
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5270 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

Horizontal



Vertical



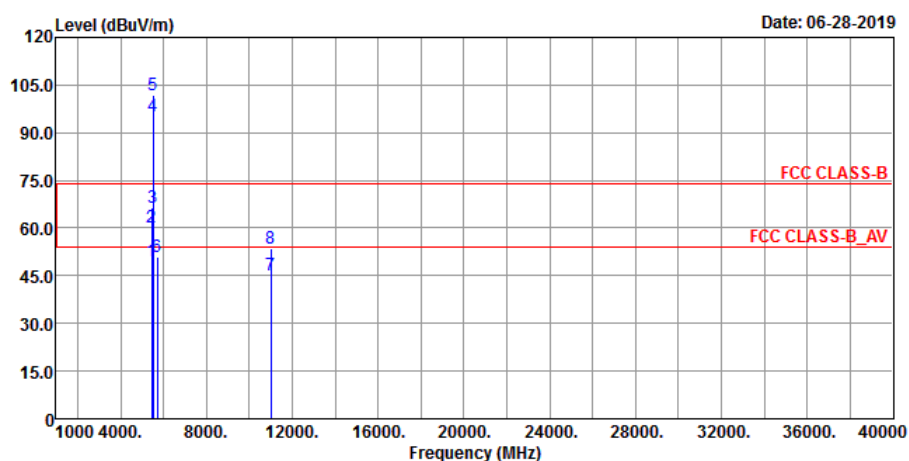
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5132.66	40.53	39.04	1.49	54	-13.47	155	35	Average
5132.66	50.65	49.16	1.49	74	-23.35	155	35	Peak
5310	92.16	90.8	1.36			155	35	Average
5310	98.72	97.36	1.36			155	35	Peak
5350	51.22	49.76	1.46	54	-2.78	155	35	Average
5350	62.22	60.76	1.46	74	-11.78	155	35	Peak
10620	46.47	49.36	-2.89	54	-7.53	151	267	Average
10620	54.7	57.59	-2.89	74	-19.3	151	267	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.22	41.55	40.02	1.53	54	-12.45	176	314	Average
5149.22	51.31	49.78	1.53	74	-22.69	176	314	Peak
5310	93.65	92.29	1.36			176	314	Average
5310	100.57	99.21	1.36			176	314	Peak
5350	52.49	51.03	1.46	54	-1.51	176	314	Average
5350	63.55	62.09	1.46	74	-10.45	176	314	Peak
10620	46.35	49.24	-2.89	54	-7.65	183	117	Average
10620	54.94	57.83	-2.89	74	-19.06	183	117	Peak

Remarks:

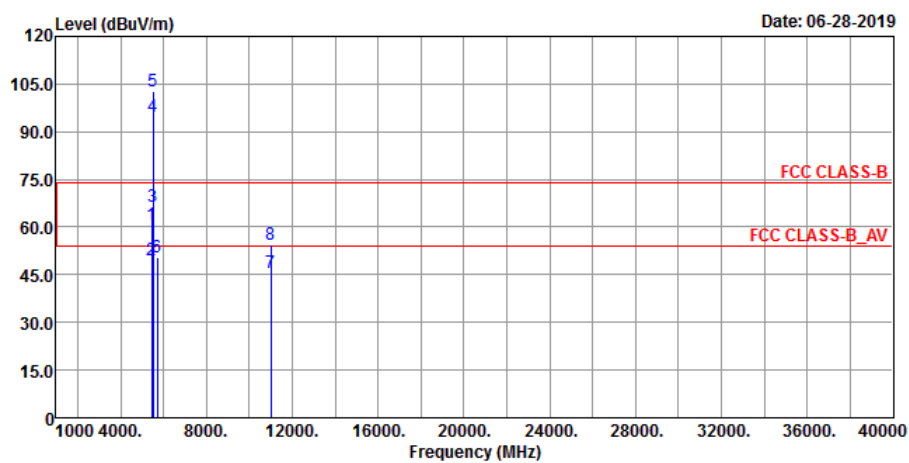
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5310 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

Horizontal



Vertical



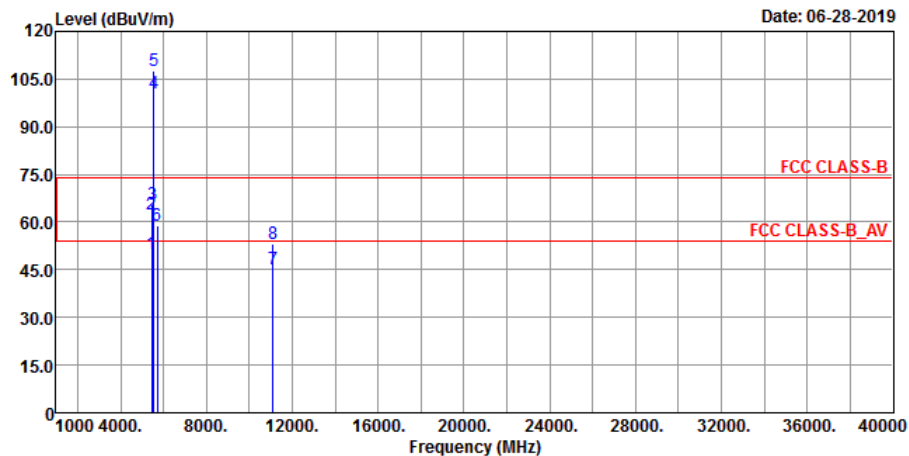
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	49.74	47.87	1.87	54	-4.26	154	181	Average
5460	60.3	58.43	1.87	74	-13.7	154	181	Peak
*5470	66.32	64.46	1.86	68.2	-1.88	154	181	Peak
5510	95.04	56.14	38.9			154	181	Average
5510	101.91	63.01	38.9			154	181	Peak
*5725	51.05	49.29	1.76	68.2	-17.15	154	181	Peak
11020	45.35	47.69	-2.34	54	-8.65	184	202	Average
11020	53.42	55.76	-2.34	74	-20.58	184	202	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	60.67	58.8	1.87	74	-13.33	116	267	Peak
5460.08	49.65	47.78	1.87	54	-4.35	116	267	Average
*5470	66.61	64.75	1.86	68.2	-1.59	116	267	Peak
5510	94.9	56	38.9			116	267	Average
5510	102.56	63.66	38.9			116	267	Peak
*5725	50.28	48.52	1.76	68.2	-17.92	116	267	Peak
11020	45.51	47.85	-2.34	54	-8.49	105	249	Average
11020	54.42	56.76	-2.34	74	-19.58	105	249	Peak

Remarks:

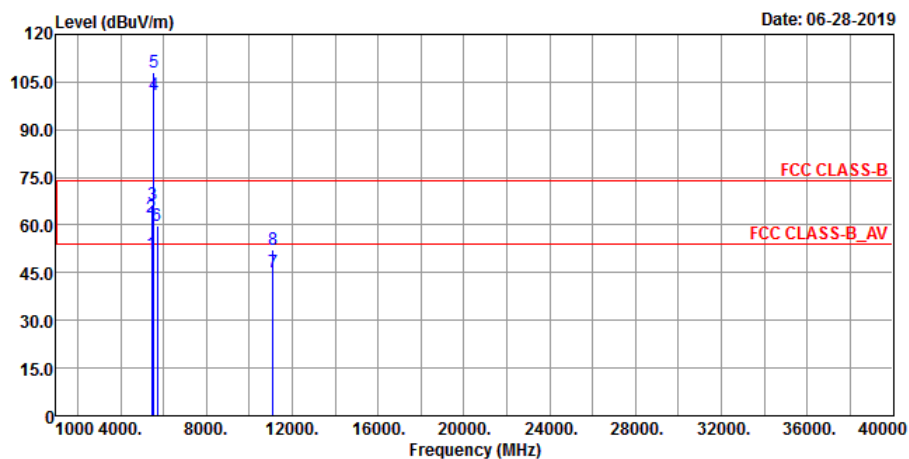
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5510 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

Horizontal



Vertical



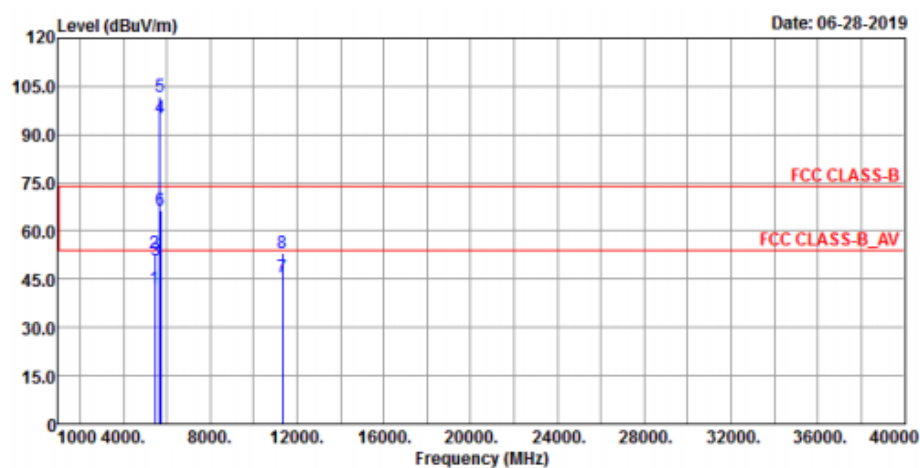
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	50.19	48.32	1.87	54	-3.81	125	34	Average
5460	62.4	60.53	1.87	74	-11.6	125	34	Peak
*5470	65.63	63.77	1.86	68.2	-2.57	125	34	Peak
5550	100.53	61.61	38.92			125	34	Average
5550	107.65	68.73	38.92			125	34	Peak
*5725	58.82	57.06	1.76	68.2	-9.38	125	34	Peak
11110	45.14	47.66	-2.52	54	-8.86	198	199	Average
11110	53.21	55.73	-2.52	74	-20.79	198	199	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	50.83	48.96	1.87	54	-3.17	115	281	Average
5460	62.55	60.68	1.87	74	-11.45	115	281	Peak
*5470	66.52	64.66	1.86	68.2	-1.68	115	281	Peak
5550	101.04	62.12	38.92			115	281	Average
5550	108	69.08	38.92			115	281	Peak
*5725	59.83	58.07	1.76	68.2	-8.37	115	281	Peak
11110	45.33	47.85	-2.52	54	-8.67	112	265	Average
11110	52.36	54.88	-2.52	74	-21.64	112	265	Peak

Remarks:

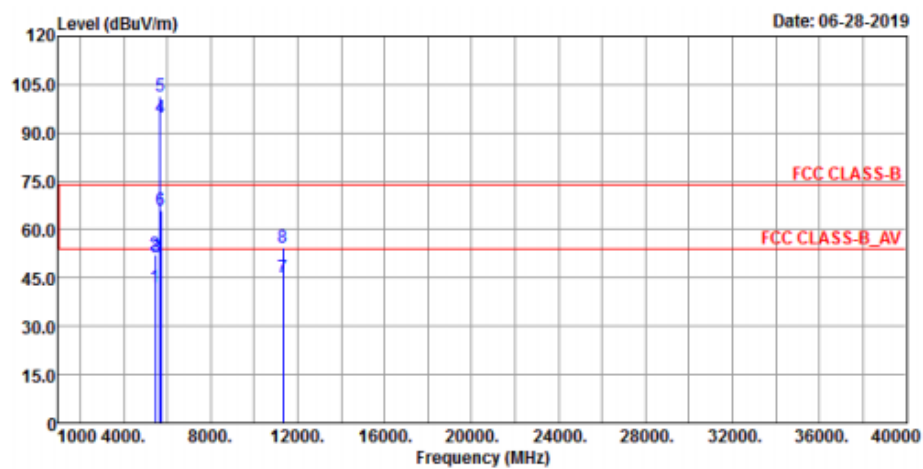
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5550 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

Horizontal



Vertical



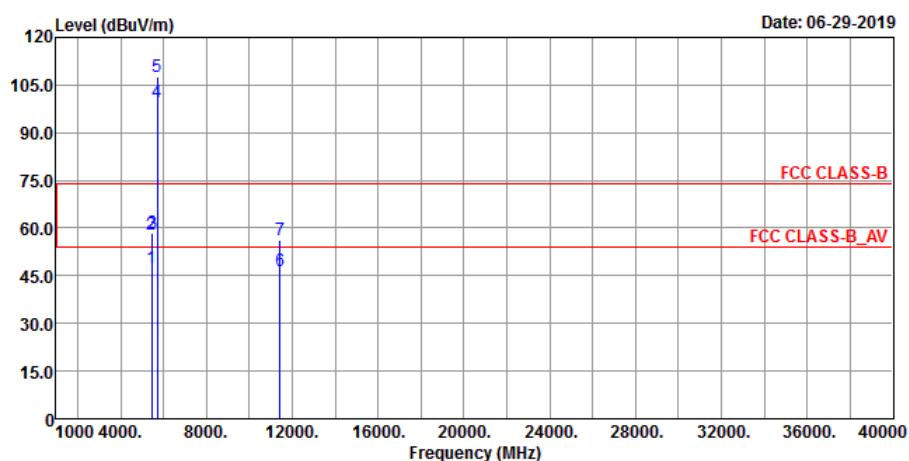
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5450.32	41.86	39.99	1.87	54	-12.14	134	36	Average
5450.32	53.08	51.21	1.87	74	-20.92	134	36	Peak
*5470	50.71	48.85	1.86	68.2	-17.49	134	36	Peak
5670	95.22	56.12	39.1			134	36	Average
5670	101.85	62.75	39.1			134	36	Peak
*5725	66.23	64.47	1.76	68.2	-1.97	134	36	Peak
11340	45.59	47.95	-2.36	54	-8.41	184	210	Average
11340	53.17	55.53	-2.36	74	-20.83	184	210	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.92	41.9	40.03	1.87	54	-12.1	127	277	Average
5459.92	52.12	50.25	1.87	74	-21.88	127	277	Peak
*5470	51.47	49.61	1.86	68.2	-16.73	127	277	Peak
5670	94.6	55.5	39.1			127	277	Average
5670	101.41	62.31	39.1			127	277	Peak
*5725	66	64.24	1.76	68.2	-2.2	127	277	Peak
11340	45.39	47.75	-2.36	54	-8.61	102	255	Average
11340	54.61	56.97	-2.36	74	-19.39	102	255	Peak

Remarks:

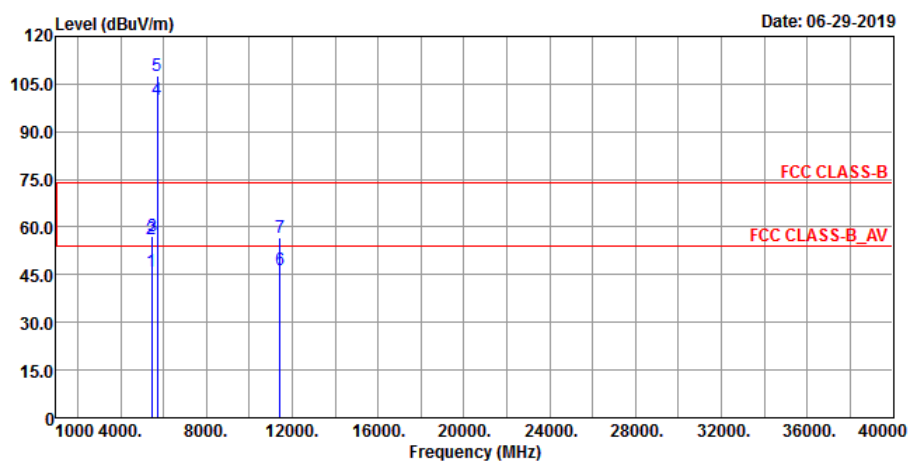
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5670 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 142	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	Getaz Yang

Horizontal



Vertical



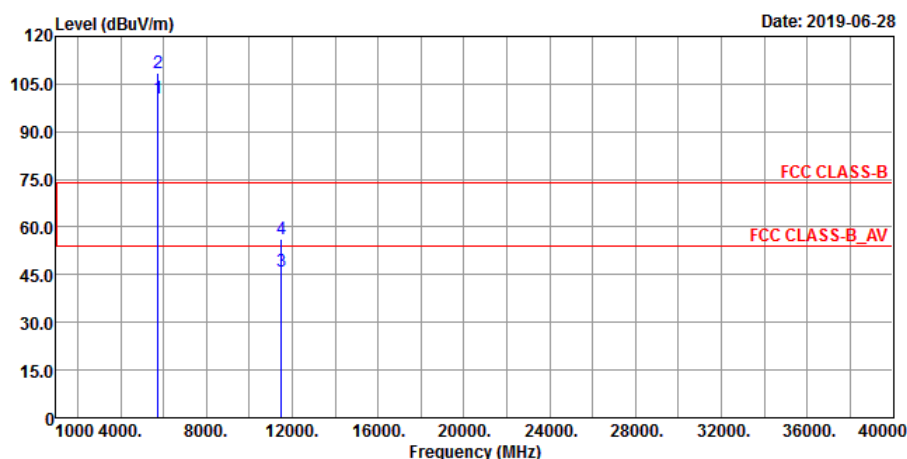
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.6	47.57	45.7	1.87	54	-6.43	119	41	Average
5459.6	57.92	56.05	1.87	74	-16.08	119	41	Peak
*5470	58.29	56.43	1.86	68.2	-9.91	119	41	Peak
5710	99.84	98.18	1.66			119	41	Average
5710	107.59	105.93	1.66			119	41	Peak
11420	46.43	48.67	-2.24	54	-7.57	147	195	Average
11420	56.39	58.63	-2.24	74	-17.61	147	195	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.76	45.87	44	1.87	54	-8.13	128	301	Average
5459.76	56.4	54.53	1.87	74	-17.6	128	301	Peak
*5470	56.99	55.13	1.86	68.2	-11.21	128	301	Peak
5710	100.27	98.61	1.66			128	300	Average
5710	107.59	105.93	1.66			128	300	Peak
11420	46.66	48.9	-2.24	54	-7.34	164	257	Average
11420	56.51	58.75	-2.24	74	-17.49	164	257	Peak

Remarks:

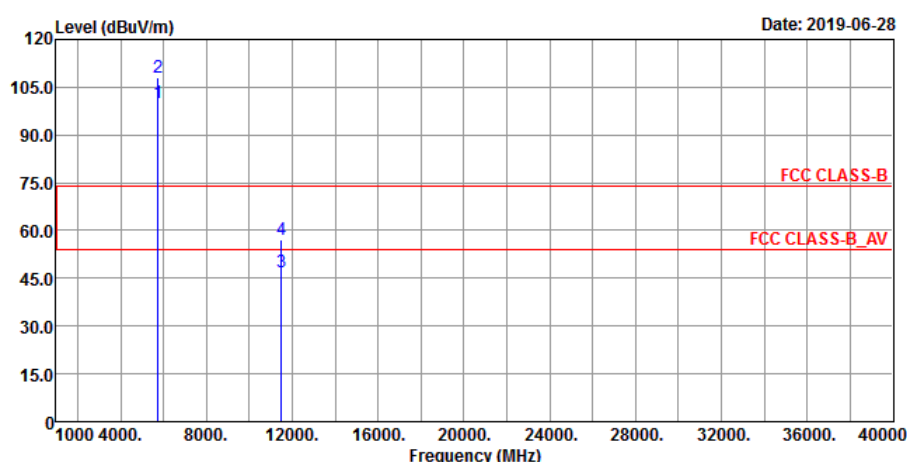
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5710 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

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	Getaz Yang

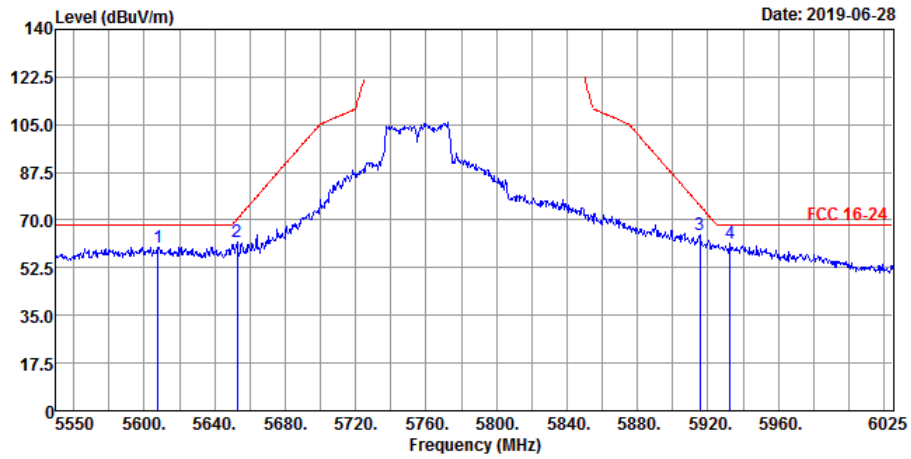
<Spurious Emission> Horizontal



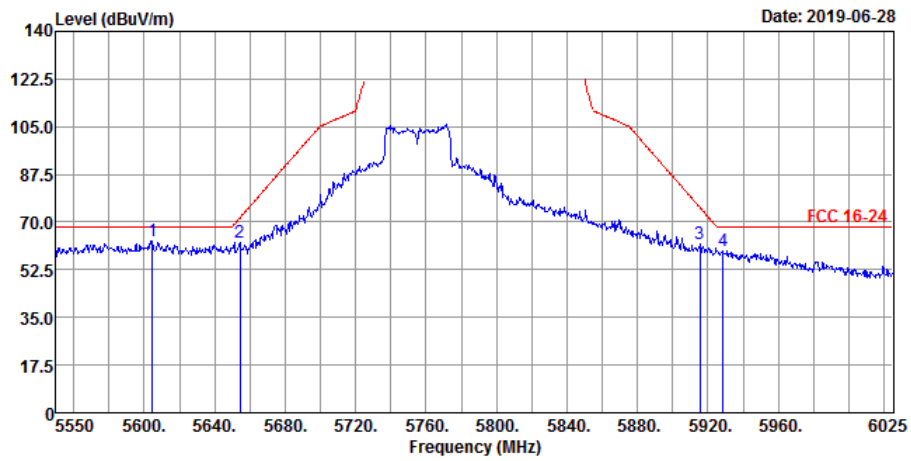
Vertical



<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)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5755	100.72	98.82	1.9			107	115	Average
5755	108.29	106.39	1.9			107	115	Peak
11510	46.1	48.31	-2.21	54	-7.9	195	166	Average
11510	56.4	58.61	-2.21	74	-17.6	195	166	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5755	100.22	98.32	1.9			105	288	Average
5755	108	106.1	1.9			105	288	Peak
11510	47.01	49.22	-2.21	54	-6.99	137	91	Average
11510	57.13	59.34	-2.21	74	-16.87	137	91	Peak

<Out of Band Emission (OOBE)>

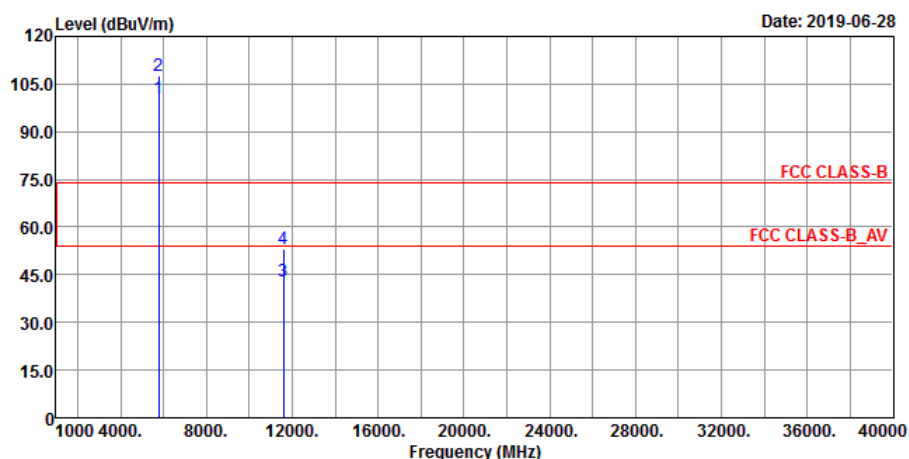
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5607.95	60.13	58.26	1.87	68.2	-8.07	107	115	Peak
5652.6	62.08	60.17	1.91	70.13	-8.05	107	115	Peak
5915.275	64.5	62.19	2.31	75.37	-10.87	107	115	Peak
5932.375	61.64	59.34	2.3	68.2	-6.56	107	115	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5604.625	62.97	61.1	1.87	68.2	-5.23	105	288	Peak
5654.5	62.5	60.65	1.85	71.54	-9.04	105	288	Peak
5915.275	61.93	59.62	2.31	75.37	-13.44	105	288	Peak
5928.575	59.54	57.24	2.3	68.2	-8.66	105	288	Peak

Remarks:

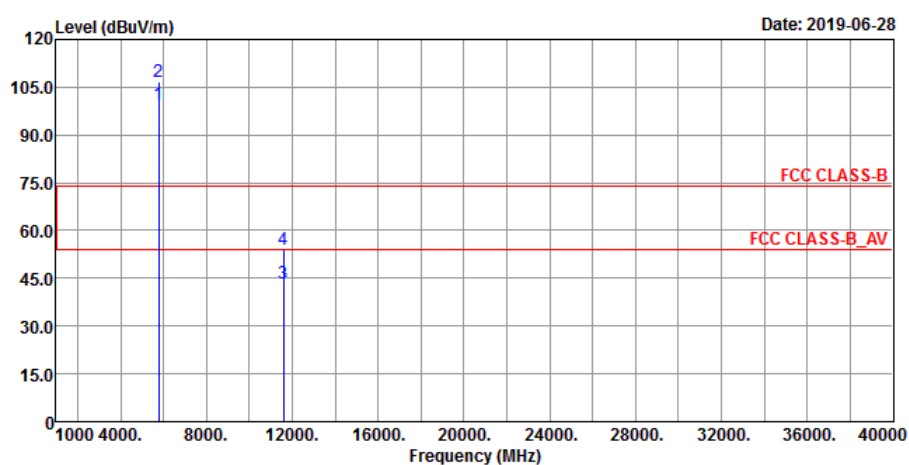
- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5755 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

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	Getaz Yang

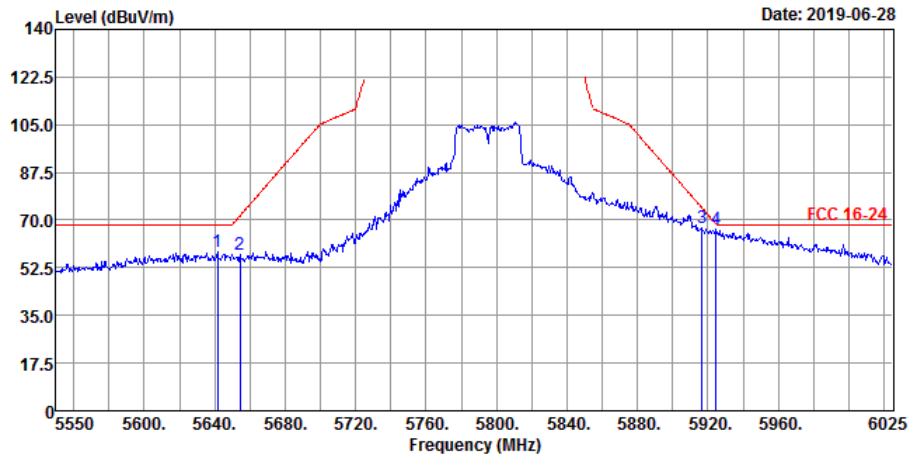
<Spurious Emission> Horizontal



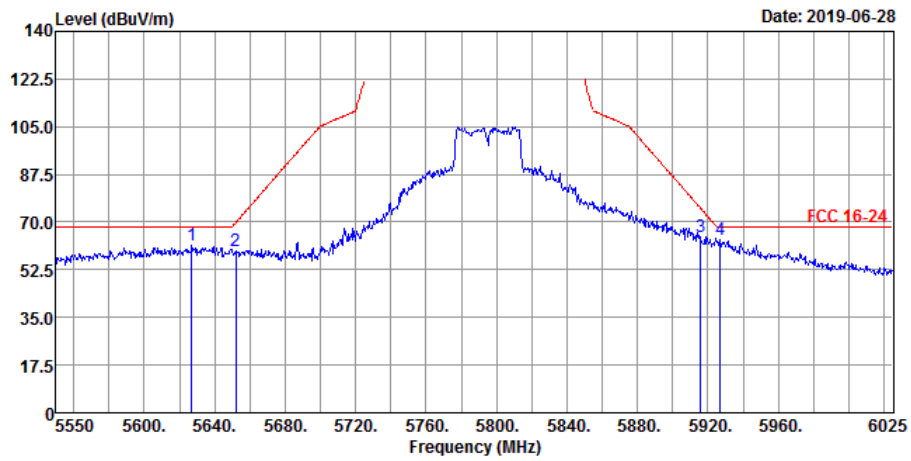
Vertical



<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)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5795	100.32	98.32	2			118	105	Average
5795	107.69	105.69	2			118	105	Peak
11590	42.74	44.93	-2.19	54	-11.26	158	147	Average
11590	53.23	55.42	-2.19	74	-20.77	158	147	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5795	99.47	97.47	2			100	288	Average
5795	106.88	104.88	2			100	288	Peak
11590	43.19	45.38	-2.19	54	-10.81	119	273	Average
11590	53.89	56.08	-2.19	74	-20.11	119	273	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5641.675	58.25	56.37	1.88	68.2	-9.95	118	105	Peak
5654.5	57.18	55.33	1.85	71.54	-14.36	118	105	Peak
5916.7	67.06	64.75	2.31	74.32	-7.26	118	105	Peak
5924.775	66.83	64.53	2.3	68.37	-1.54	118	105	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5626.95	61.28	59.38	1.9	68.2	-6.92	100	288	Peak
5652.125	59.56	57.65	1.91	69.78	-10.22	100	288	Peak
5915.75	64.56	62.25	2.31	75.02	-10.46	100	288	Peak
5927.15	63.39	61.09	2.3	68.2	-4.81	100	288	Peak

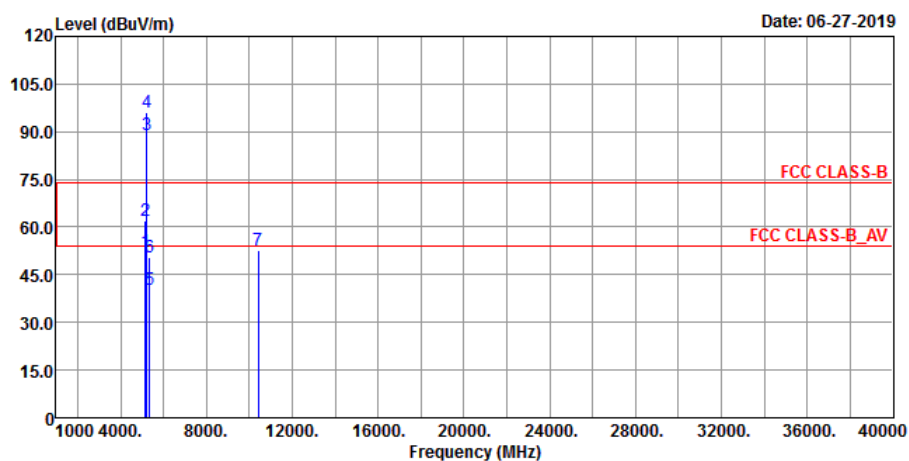
Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5795 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

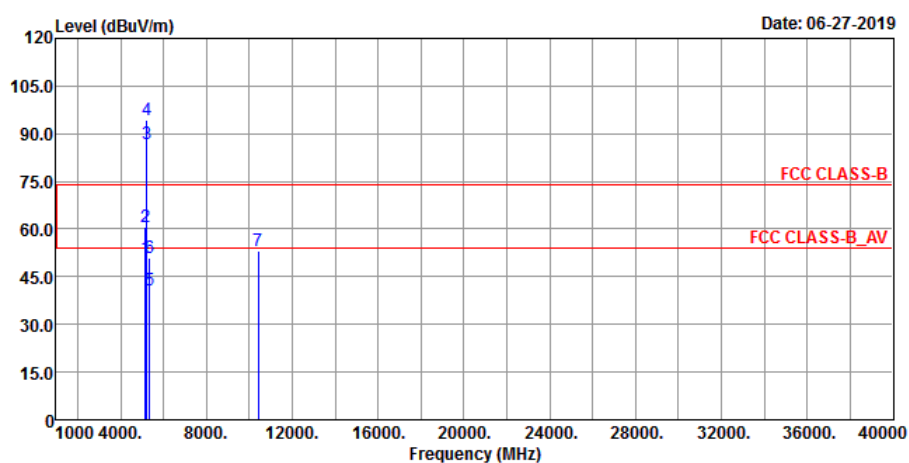
802.11ac (VHT80)

EUT Test Condition		Measurement Detail	
Channel	Channel 42	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	Getaz Yang

Horizontal



Vertical



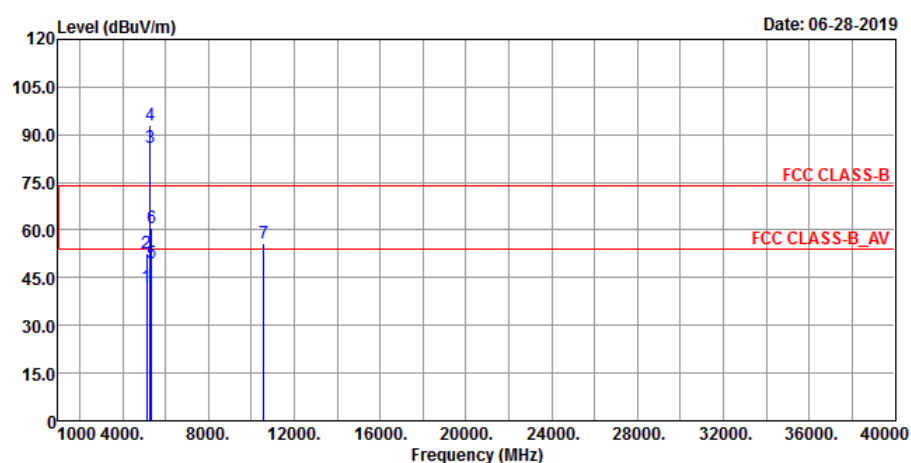
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5145.2	52.37	50.84	1.53	54	-1.63	100	268	Average
5145.2	62.15	60.62	1.53	74	-11.85	100	268	Peak
5210	88.79	49.99	38.8			100	268	Average
5210	95.88	57.08	38.8			100	268	Peak
5357.48	40.49	39.03	1.46	54	-13.51	100	268	Average
5357.48	50.37	48.91	1.46	74	-23.63	100	268	Peak
*10420	52.56	55.41	-2.85	68.2	-15.64	112	22	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	50.88	49.35	1.53	54	-3.12	115	251	Average
5150	60.46	58.93	1.53	74	-13.54	115	251	Peak
5210	86.81	48.01	38.8			115	251	Average
5210	94.19	55.39	38.8			115	251	Peak
5350.22	40.56	39.1	1.46	54	-13.44	115	251	Average
5350.22	50.97	49.51	1.46	74	-23.03	115	251	Peak
*10420	53.33	56.18	-2.85	68.2	-14.87	193	88	Peak

Remarks:

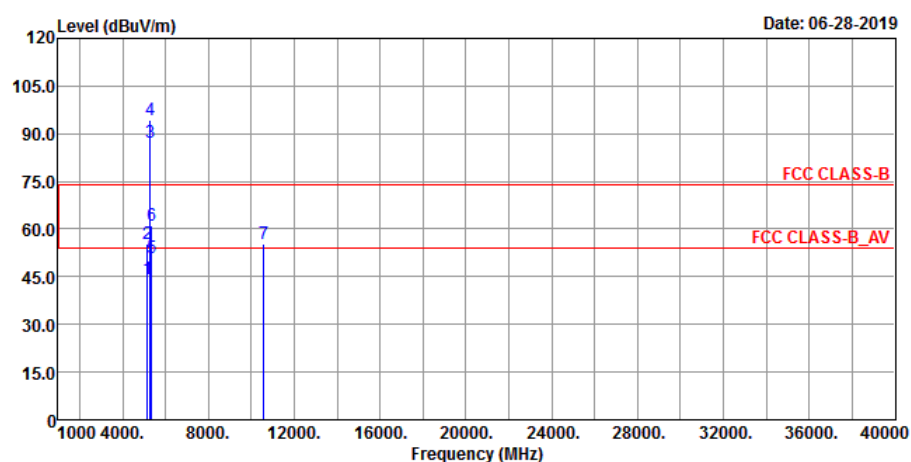
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5210 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 58	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	Getaz Yang

Horizontal



Vertical



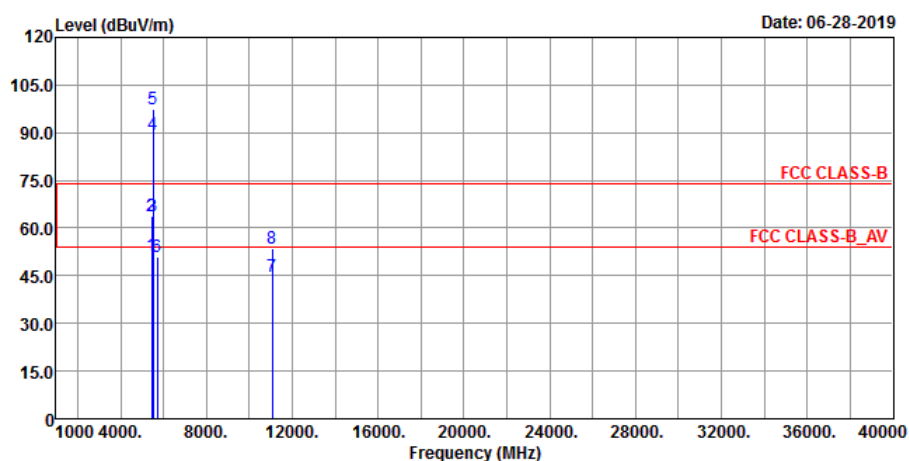
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5134.64	42.02	40.53	1.49	54	-11.98	137	36	Average
5134.64	52.67	51.18	1.49	74	-21.33	137	36	Peak
5290	85.85	84.54	1.31			137	36	Average
5290	93	91.69	1.31			137	36	Peak
5350	49.68	48.22	1.46	54	-4.32	137	36	Average
5350	60.47	59.01	1.46	74	-13.53	137	36	Peak
*10580	55.69	58.57	-2.88	68.2	-12.51	149	128	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.4	44.48	42.95	1.53	54	-9.52	177	314	Average
5149.4	55.21	53.68	1.53	74	-18.79	177	314	Peak
5290	87.39	86.08	1.31			177	314	Average
5290	94.16	92.85	1.31			177	314	Peak
5350	50.8	49.34	1.46	54	-3.2	177	314	Average
5350	61.01	59.55	1.46	74	-12.99	177	314	Peak
*10580	55.22	58.1	-2.88	68.2	-12.98	156	203	Peak

Remarks:

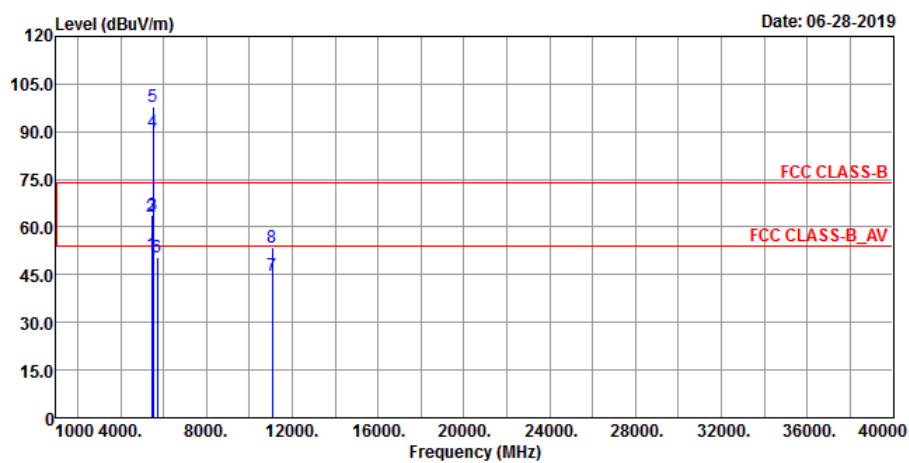
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5290 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 106	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	Getaz Yang

Horizontal



Vertical



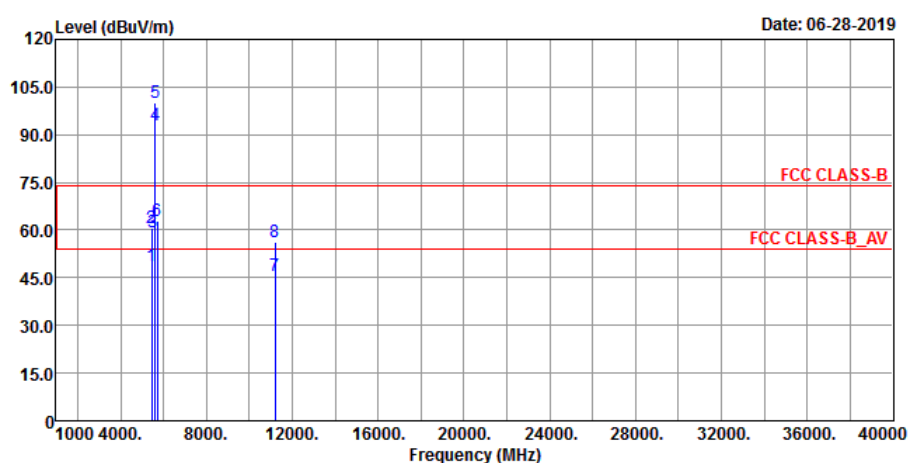
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	51.53	49.66	1.87	54	-2.47	124	38	Average
5460	63.61	61.74	1.87	74	-10.39	124	38	Peak
*5470	63.54	61.68	1.86	68.2	-4.66	124	38	Peak
5530	89.46	50.56	38.9			124	38	Average
5530	97.22	58.32	38.9			124	38	Peak
*5725	50.88	49.12	1.76	68.2	-17.32	124	38	Peak
11060	44.94	47.36	-2.42	54	-9.06	185	205	Average
11060	53.53	55.95	-2.42	74	-20.47	185	205	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	51.49	49.62	1.87	54	-2.51	137	278	Average
5460	63.41	61.54	1.87	74	-10.59	137	278	Peak
*5470	63.85	61.99	1.86	68.2	-4.35	137	278	Peak
5530	89.81	50.91	38.9			137	278	Average
5530	97.67	58.77	38.9			137	278	Peak
*5725	50.67	48.91	1.76	68.2	-17.53	137	278	Peak
11060	44.75	47.17	-2.42	54	-9.25	121	221	Average
11060	53.65	56.07	-2.42	74	-20.35	121	221	Peak

Remarks:

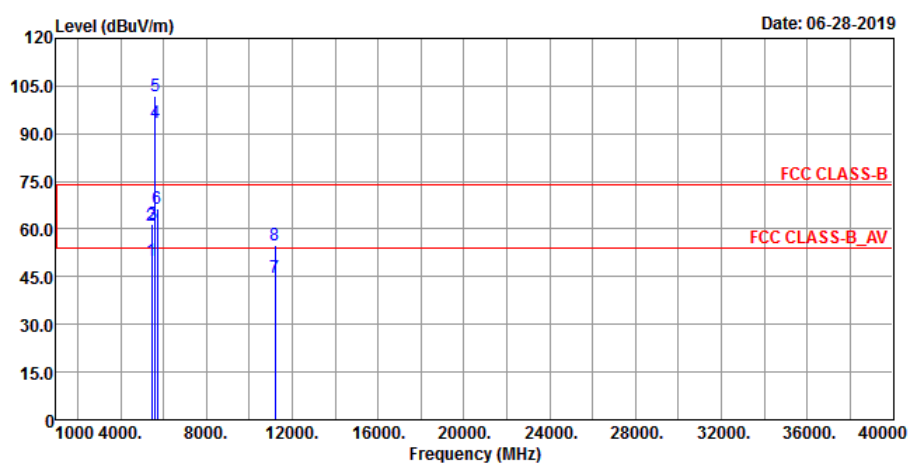
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5530 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 122	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	Getaz Yang

Horizontal



Vertical



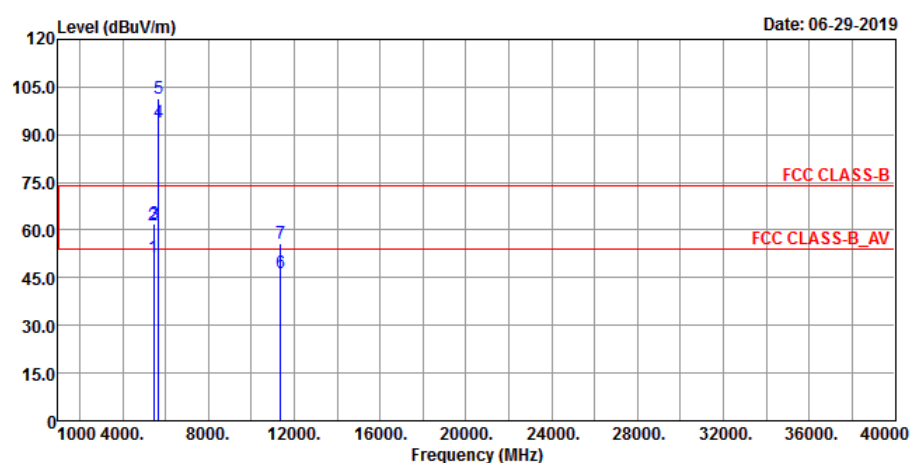
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	48.67	46.8	1.87	54	-5.33	146	36	Average
5460	60.65	58.78	1.87	74	-13.35	146	36	Peak
*5470	59.49	57.63	1.86	68.2	-8.71	146	36	Peak
5610	92.95	53.86	39.09			146	36	Average
5610	99.96	60.87	39.09			146	36	Peak
*5725	62.97	61.21	1.76	68.2	-5.23	146	36	Peak
11220	45.5	48.02	-2.52	54	-8.5	187	204	Average
11220	56.14	58.66	-2.52	74	-17.86	187	204	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5460	49.85	47.98	1.87	54	-4.15	137	294	Average
5460	60.99	59.12	1.87	74	-13.01	137	294	Peak
*5470	61.49	59.63	1.86	68.2	-6.71	137	294	Peak
5610	93.37	54.28	39.09			137	294	Average
5610	101.63	62.54	39.09			137	294	Peak
*5725	66.29	64.53	1.76	68.2	-1.91	137	294	Peak
11220	44.94	47.46	-2.52	54	-9.06	108	257	Average
11220	54.75	57.27	-2.52	74	-19.25	108	257	Peak

Remarks:

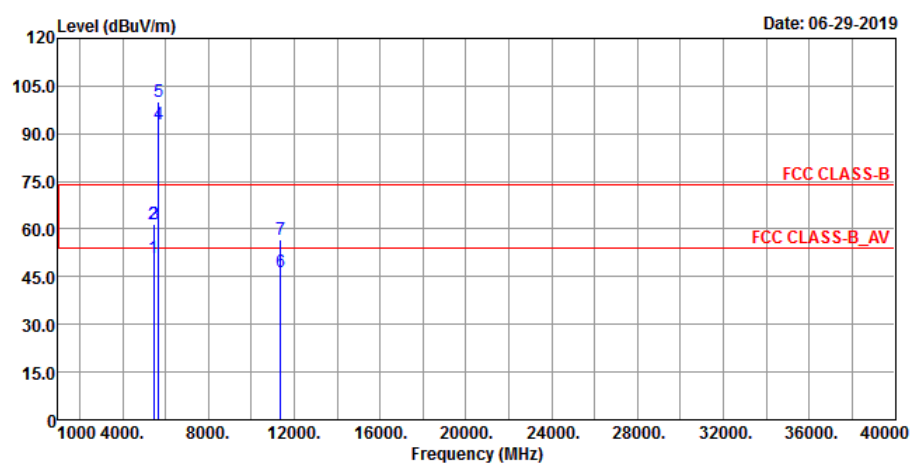
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5610 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 138	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	Getaz Yang

Horizontal



Vertical



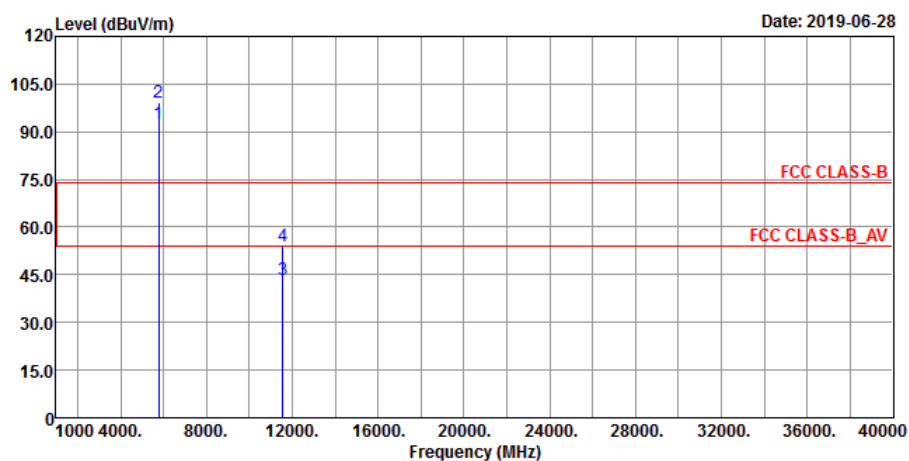
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.92	51.42	49.55	1.87	54	-2.58	133	40	Average
5459.92	61.37	59.5	1.87	74	-12.63	133	40	Peak
*5470	62	60.14	1.86	68.2	-6.2	133	40	Peak
5690	93.77	92.18	1.59			133	40	Average
5690	101.25	99.66	1.59			133	40	Peak
11380	46.44	48.7	-2.26	54	-7.56	143	215	Average
11380	55.93	58.19	-2.26	74	-18.07	143	215	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.92	50.74	48.87	1.87	54	-3.26	130	285	Average
5459.92	61.74	59.87	1.87	74	-12.26	130	285	Peak
*5470	61.51	59.65	1.86	68.2	-6.69	130	285	Peak
5690	92.94	91.35	1.59			130	285	Average
5690	100.28	98.69	1.59			130	285	Peak
11380	46.67	48.93	-2.26	54	-7.33	167	103	Average
11380	56.62	58.88	-2.26	74	-17.38	167	103	Peak

Remarks:

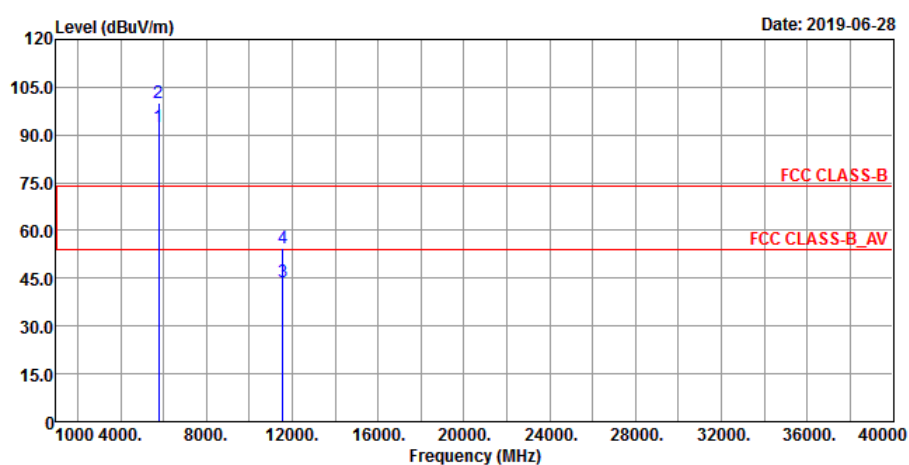
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5690 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

EUT Test Condition		Measurement Detail	
Channel	Channel 155	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	Getaz Yang

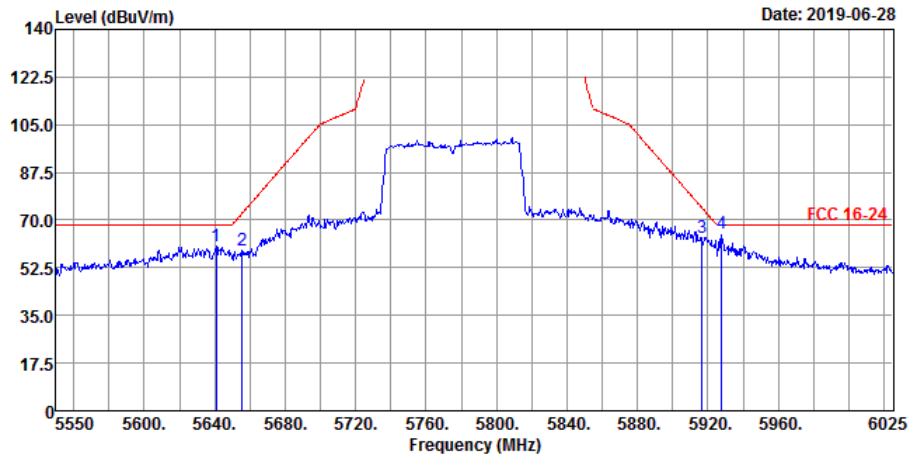
<Spurious Emission> Horizontal



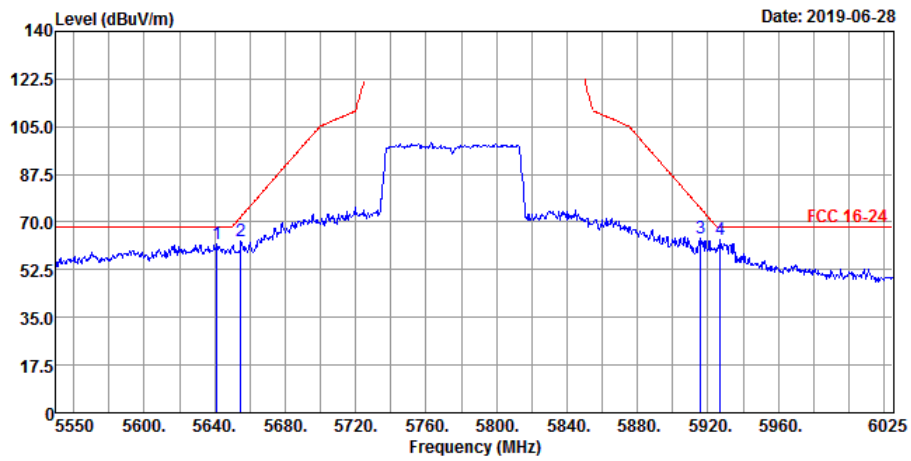
Vertical



<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)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5775	92.4	90.44	1.96			100	213	Average
5775	99.23	97.27	1.96			100	213	Peak
11550	43.52	45.72	-2.2	54	-10.48	142	261	Average
11550	53.8	56	-2.2	74	-20.2	142	261	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5775	92.34	90.38	1.96			100	288	Average
5775	100.2	98.24	1.96			100	288	Peak
11550	44.03	46.23	-2.2	54	-9.97	204	95	Average
11550	54.59	56.79	-2.2	74	-19.41	204	95	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5640.725	60.53	58.65	1.88	68.2	-7.67	100	213	Peak
5655.45	58.89	57.04	1.85	72.25	-13.36	100	213	Peak
5916.7	63.67	61.36	2.31	74.32	-10.65	100	213	Peak
5927.625	65.15	62.85	2.3	68.2	-3.05	100	213	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5641.2	61.81	59.93	1.88	68.2	-6.39	100	288	Peak
5654.975	63.1	61.25	1.85	71.9	-8.8	100	288	Peak
5915.75	63.87	61.56	2.31	75.02	-11.15	100	288	Peak
5927.15	63.65	61.35	2.3	68.2	-4.55	100	288	Peak

Remarks:

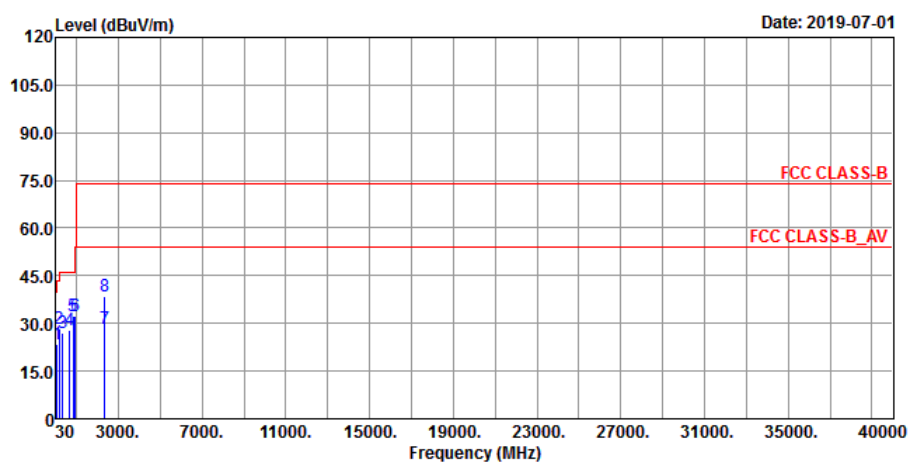
- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5775 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The emission levels of other frequencies were very low against the limit

8.6.2 接收諧波

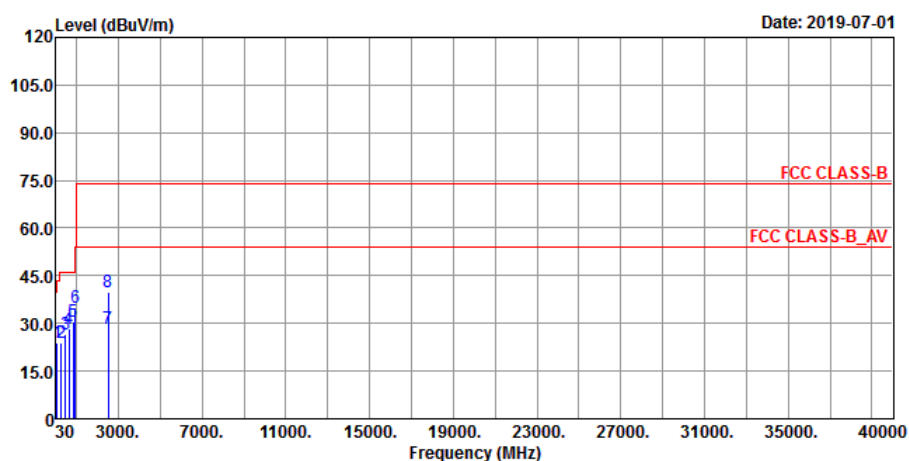
802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 38	Frequency Range	30 MHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Above 1 GHz: Peak (PK) & Average (AV) Below 1 GHz: Peak (PK) or Quasi-Peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Getaz Yang

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
80.44	23.43	44.96	-21.53	40	-16.57	193	162	Peak
187.14	28.38	47.49	-19.11	43.5	-15.12	174	124	Peak
344.28	26.85	41.74	-14.89	46	-19.15	196	234	Peak
687.66	27.7	34.67	-6.97	46	-18.3	157	202	Peak
827.34	32.42	37.13	-4.71	46	-13.58	199	364	Peak
940.83	32.24	35	-2.76	46	-13.76	145	229	Peak
2334.16	28.25	48.73	-20.48	54	-25.75	157	336	Average
2334.16	38.73	59.21	-20.48	74	-35.27	157	336	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
68.8	24.12	43.75	-19.63	40	-15.88	118	277	Peak
266.68	23.76	40.74	-16.98	46	-22.24	137	145	Peak
475.23	26.6	38.64	-12.04	46	-19.4	122	159	Peak
656.62	28.13	35.93	-7.8	46	-17.87	108	299	Peak
839.95	30.48	34.71	-4.23	46	-15.52	104	172	Peak
955.38	35.1	38.18	-3.08	46	-10.9	101	99	Peak
2517.206	28.4	49.3	-20.9	54	-25.6	168	225	Average
2517.206	39.72	60.62	-20.9	74	-34.28	168	225	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. The emission levels of other frequencies were very low against the limit

8.6.3 其它不必要之讯号

9 kHz ~ 30 MHz Data:

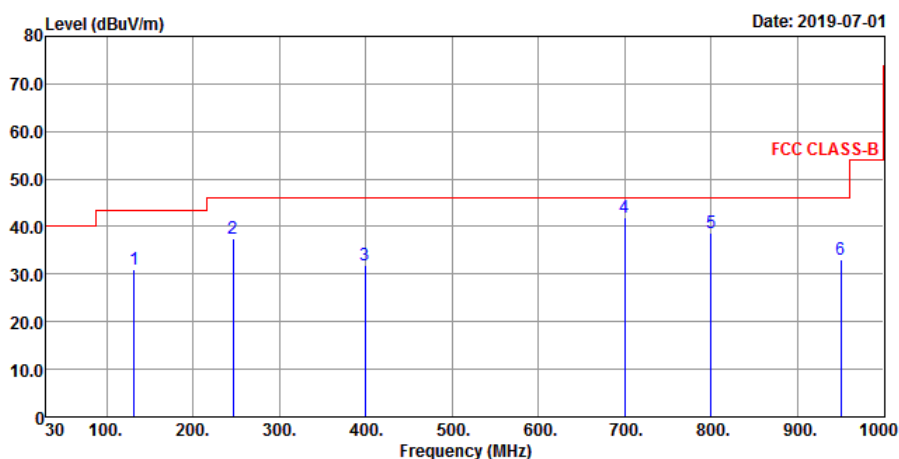
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Data:

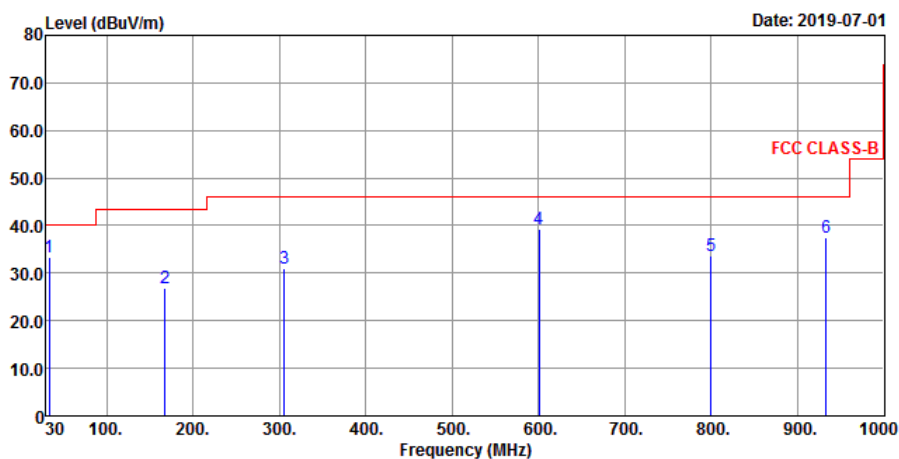
802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 38	Frequency Range	30 MHz ~ 1 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) or Quasi-Peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Getaz Yang

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
131.85	31.12	49.88	-18.76	43.5	-12.38	192	111	Peak
246.31	37.55	55.33	-17.78	46	-8.45	178	233	Peak
399.57	31.85	45.89	-14.04	46	-14.15	196	247	Peak
700.27	41.99	48.98	-6.99	46	-4.01	189	177	Peak
800.18	38.58	43.85	-5.27	46	-7.42	193	306	Peak
950.53	33.15	36.05	-2.9	46	-12.85	177	144	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
33.88	33.44	50.39	-16.95	40	-6.56	102	151	Peak
167.74	26.76	44.18	-17.42	43.5	-16.74	126	193	Peak
305.48	31.01	47.5	-16.49	46	-14.99	107	188	Peak
600.36	39.32	47.61	-8.29	46	-6.68	115	346	Peak
800.18	33.72	38.99	-5.27	46	-12.28	109	185	Peak
933.07	37.57	40.39	-2.82	46	-8.43	106	144	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. The emission levels of other frequencies 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(12)項(2)及(14)項(2)的規定
☒ 5.25 GHz~5.35 GHz	請見本報告 3.1 節第(12)項(3)及(14)項(3)的規定
☒ 5.470 GHz~5.725 GHz	請見本報告 3.1 節第(12)項(3)及(14)項(3)的規定
☒ 5.725 GHz~5.850 GHz	請見本報告 3.1 節第(12)項(4)及(14)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

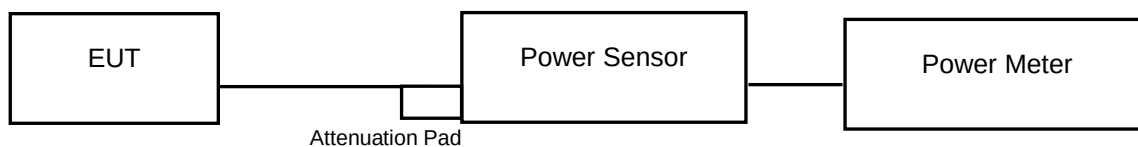
Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Power Meter Anritsu	ML2495A	1232002	Dec. 17, 2018	Dec. 16, 2019
Power Sensor Anritsu	MA2411B	1207325	Dec. 17, 2018	Dec. 16, 2019
Spectrum Analyzer R&S	FSU43	101261	Apr. 15, 2019	Apr. 14, 2020

Note:

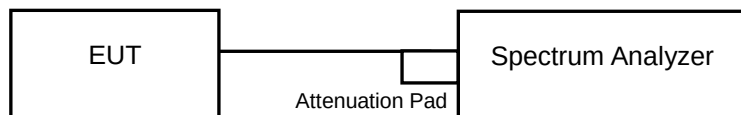
- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
- The measurement uncertainty is 207 Hz, which is calculated as per the document ETSI TR 100 028. This uncertainty represents an expanded uncertainty expressed at approximately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

9.4 測試配置

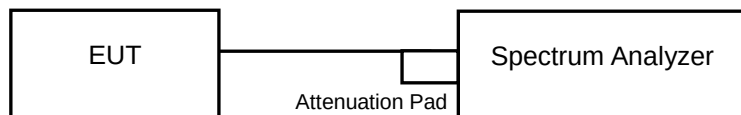
輸出峰值功率測試配置:



or



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	108 年 07 月 04 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	Alan Wu		

802.11a

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	60.395	17.81	24	Pass
40	5200	135.831	21.33	24	Pass
48	5240	112.202	20.50	24	Pass
52	5260	178.649	22.52	24	Pass
60	5300	93.972	19.73	24	Pass
64	5320	47.424	16.76	24	Pass
100	5500	62.517	17.96	24	Pass
116	5580	135.831	21.33	24	Pass
140	5700	28.642	14.57	24	Pass
144	5720 (U-NII-2C)	86.099	19.35	24	Pass
144	5720 (U-NII-3)	23.067	13.63	30	Pass
149	5745	161.436	22.08	30	Pass
157	5785	164.437	22.16	30	Pass
165	5825	160.694	22.06	30	Pass

Note:

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

1. $11 \text{ dBm} + 10\log(44.83) = 27.51 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log(35.43) = 26.49 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log(20.17) = 24.04 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log(26.99) = 25.31 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log(45.32) = 27.56 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log(20.09) = 24.02 \text{ dBm} > 24 \text{ dBm}$.
7. $11 \text{ dBm} + 10\log(5725.00 - 5697.17) = 25.44 \text{ dBm} > 24 \text{ dBm}$.

802.11n (HT20)

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	63.68	18.04	24	Pass
40	5200	142.561	21.54	24	Pass
48	5240	116.145	20.65	24	Pass
52	5260	183.231	22.63	24	Pass
60	5300	98.175	19.92	24	Pass
64	5320	51.05	17.08	24	Pass
100	5500	66.374	18.22	24	Pass
116	5580	138.038	21.40	24	Pass
140	5700	30.549	14.85	24	Pass
144	5720 (U-NII-2C)	86.298	19.36	24	Pass
144	5720 (U-NII-3)	26.002	14.15	30	Pass
149	5745	172.187	22.36	30	Pass
157	5785	169.434	22.29	30	Pass
165	5825	165.959	22.20	30	Pass

Note:

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

1. $11 \text{ dBm} + 10\log (49.03) = 27.90 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log (36.63) = 26.63 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log (20.40) = 24.09 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log (20.77) = 24.17 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log (49.11) = 27.91 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log (20.39) = 24.09 \text{ dBm} > 24 \text{ dBm}$.
7. $11 \text{ dBm} + 10\log (5725.00 - 5695.00) = 25.77 \text{ dBm} > 24 \text{ dBm}$.

802.11n (HT40)

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
38	5190	39.811	16.00	24	Pass
46	5230	137.404	21.38	24	Pass
54	5270	77.446	18.89	24	Pass
62	5310	40.365	16.06	24	Pass
102	5510	52.119	17.17	24	Pass
110	5550	136.144	21.34	24	Pass
134	5670	47.753	16.79	24	Pass
142	5710 (U-NII-2C)	101.859	20.08	24	Pass
142	5710 (U-NII-3)	12.618	11.01	30	Pass
151	5755	167.88	22.25	30	Pass
159	5795	151.356	21.80	30	Pass

Note:

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

1. $11 \text{ dBm} + 10\log (73.37) = 29.65 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log (42.13) = 27.24 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log (42.06) = 27.23 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log (101.53) = 31.06 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log (42.15) = 27.24 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log (5725.00 - 5668.33) = 28.53 \text{ dBm} > 24 \text{ dBm}$.

802.11ac (VHT80)

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
42	5210	42.462	16.28	24	Pass
58	5290	22.182	13.46	24	Pass
106	5530	23.442	13.70	24	Pass
122	5610	56.494	17.52	24	Pass
138	5690 (U-NII-2C)	66.834	18.25	24	Pass
138	5690 (U-NII-3)	3.597	5.56	30	Pass
155	5775	54.2	17.34	30	Pass

Note:

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

1. $11 \text{ dBm} + 10\log (82.51) = 30.16 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log (82.49) = 30.16 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log (86.38) = 30.36 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log (5725.00 - 5604.31) = 31.81 \text{ dBm} > 24 \text{ dBm}$.

26 dB Bandwidth:

802.11a

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
36	5180	25.76
40	5200	39.51
48	5240	38.61
52	5260	44.83
60	5300	35.43
64	5320	20.17
100	5500	26.99
116	5580	45.32
140	5700	20.09
144	5720 (U-NII-2C)	27.83
144	5720 (U-NII-3)	16.93

802.11n (HT20)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
36	5180	20.59
40	5200	44.04
48	5240	42.30
52	5260	49.03
60	5300	36.63
64	5320	20.40
100	5500	20.77
116	5580	49.11
140	5700	20.39
144	5720 (U-NII-2C)	30.00
144	5720 (U-NII-3)	19.23

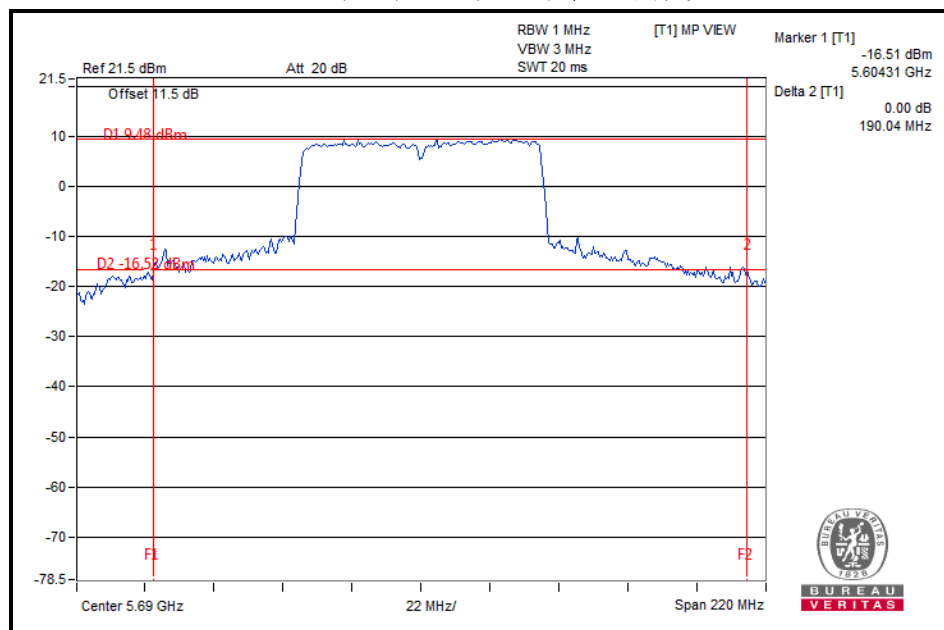
802.11n (HT40)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
38	5190	42.06
46	5230	90.21
54	5270	73.37
62	5310	42.13
102	5510	42.06
110	5550	101.53
134	5670	42.15
142	5710 (U-NII-2C)	56.67
142	5710 (U-NII-3)	32.85

802.11ac (VHT80)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
42	5210	82.75
58	5290	82.51
106	5530	82.49
122	5610	86.38
138	5690 (U-NII-2C)	120.69
138	5690 (U-NII-3)	69.35

**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(12)項(2)及(15)項(2)的規定
☒ 5.25 GHz~5.35 GHz	請見本報告 3.1 節第(12)項(3)及(15)項(3)的規定
☒ 5.470 GHz~5.725 GHz	請見本報告 3.1 節第(12)項(3)及(15)項(3)的規定
☒ 5.725 GHz~5.850 GHz	請見本報告 3.1 節第(12)項(4)及(15)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-1

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

※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 300 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

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	108 年 07 月 04 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	Alan Wu		

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

802.11a

Channel	Frequency (MHz)	PSD (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
36	5180	3.64	11	Pass
40	5200	7.15	11	Pass
48	5240	6.48	11	Pass
52	5260	8.48	11	Pass
60	5300	5.82	11	Pass
64	5320	2.96	11	Pass
100	5500	3.93	11	Pass
116	5580	7.75	11	Pass
140	5700	0.80	11	Pass
144	5720 (U-NII-2C)	8.41	11	Pass

802.11n (HT20)

Channel	Frequency (MHz)	PSD (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
36	5180	3.63	11	Pass
40	5200	7.07	11	Pass
48	5240	6.44	11	Pass
52	5260	8.29	11	Pass
60	5300	5.76	11	Pass
64	5320	2.90	11	Pass
100	5500	3.92	11	Pass
116	5580	8.02	11	Pass
140	5700	0.72	11	Pass
144	5720 (U-NII-2C)	8.16	11	Pass

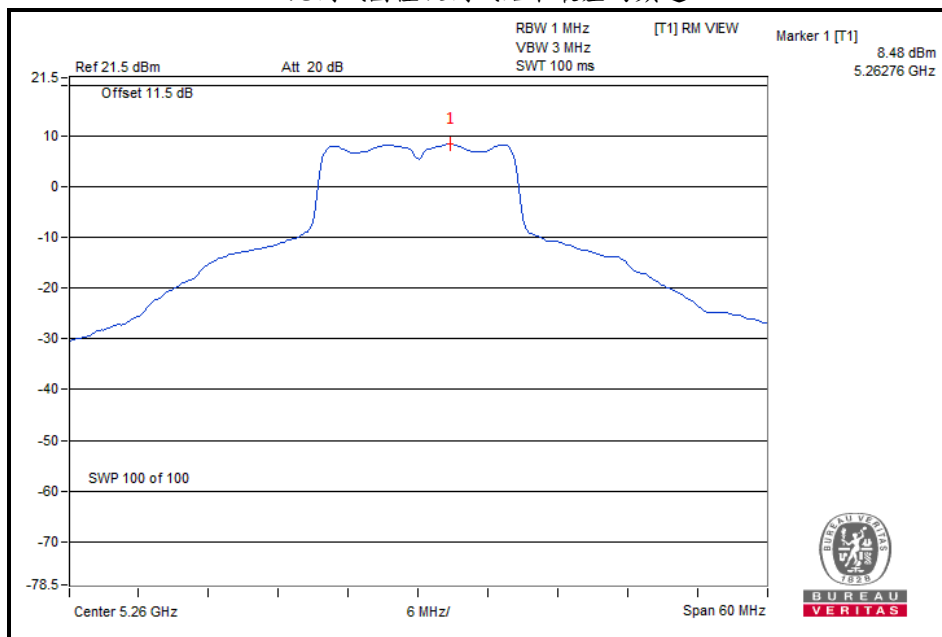
802.11n (HT40)

Channel	Frequency (MHz)	PSD (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
38	5190	-1.35	11	Pass
46	5230	4.31	11	Pass
54	5270	1.88	11	Pass
62	5310	-0.97	11	Pass
102	5510	0.08	11	Pass
110	5550	5.12	11	Pass
134	5670	-0.16	11	Pass
142	5710 (U-NII-2C)	5.23	11	Pass

802.11ac (VHT80):

Channel	Frequency (MHz)	PSD (dBm/MHz)	Maximum Limit (dBm/MHz)	Pass / Fail
42	5210	-4.63	11	Pass
58	5290	-7.40	11	Pass
106	5530	-7.26	11	Pass
122	5610	-3.13	11	Pass
138	5690 (U-NII-2C)	-0.61	11	Pass

**此測試圖僅放測試結果最差的頻道。



For U-NII-3 Band

802.11a

Channel	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
144	5720 (U-NII-3)	-0.04	2.18	30	Pass
149	5745	0.26	2.48	30	Pass
157	5785	0.34	2.56	30	Pass
165	5825	0.32	2.54	30	Pass

802.11n (HT20)

Channel	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
144	5720 (U-NII-3)	-0.36	1.86	30	Pass
149	5745	0.18	2.40	30	Pass
157	5785	0.08	2.30	30	Pass
165	5825	0.04	2.26	30	Pass

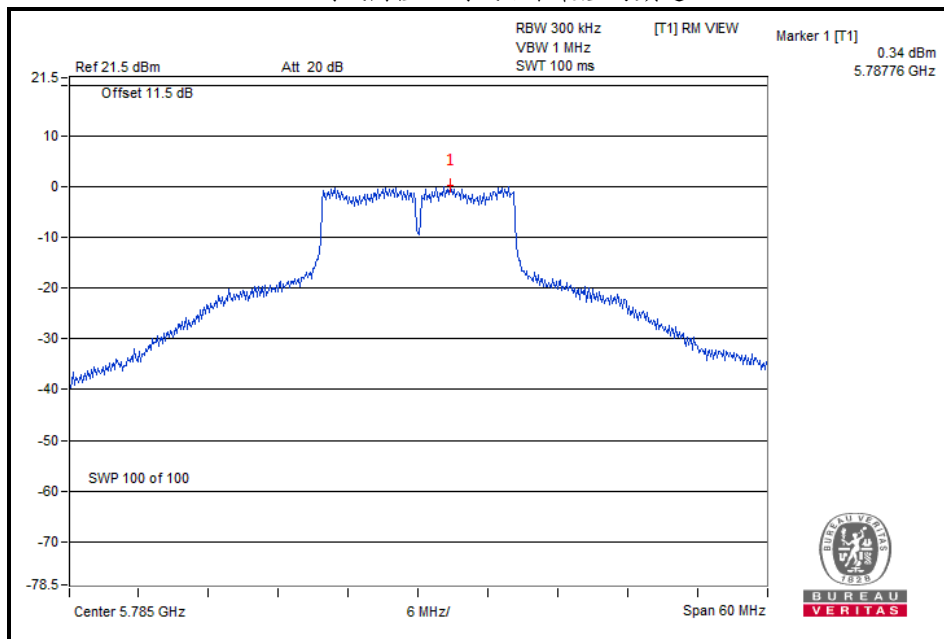
802.11n (HT40)

Channel	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
142	5710 (U-NII-3)	-3.53	-1.31	30	Pass
151	5755	-3.41	-1.19	30	Pass
159	5795	-3.79	-1.57	30	Pass

802.11ac (VHT80):

Channel	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
138	5690 (U-NII-3)	-9.86	-7.64	30	Pass
155	5775	-11.59	-9.37	30	Pass

**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(13)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。

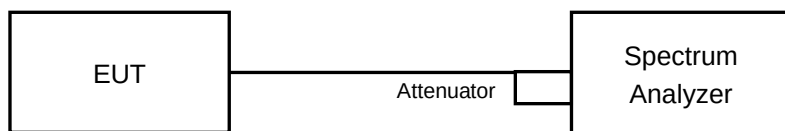
11.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Spectrum Analyzer R&S	FSU43	101261	Apr. 15, 2019	Apr. 14, 2020

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	108 年 07 月 04 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	Alan Wu		

802.11a

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
144	5720 (U-NII-3)	16.60	0.5	Pass
149	5745	16.60	0.5	Pass
157	5785	16.60	0.5	Pass
165	5825	16.60	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
144	5720 (U-NII-3)	17.87	0.5	Pass
149	5745	17.88	0.5	Pass
157	5785	17.87	0.5	Pass
165	5825	17.87	0.5	Pass

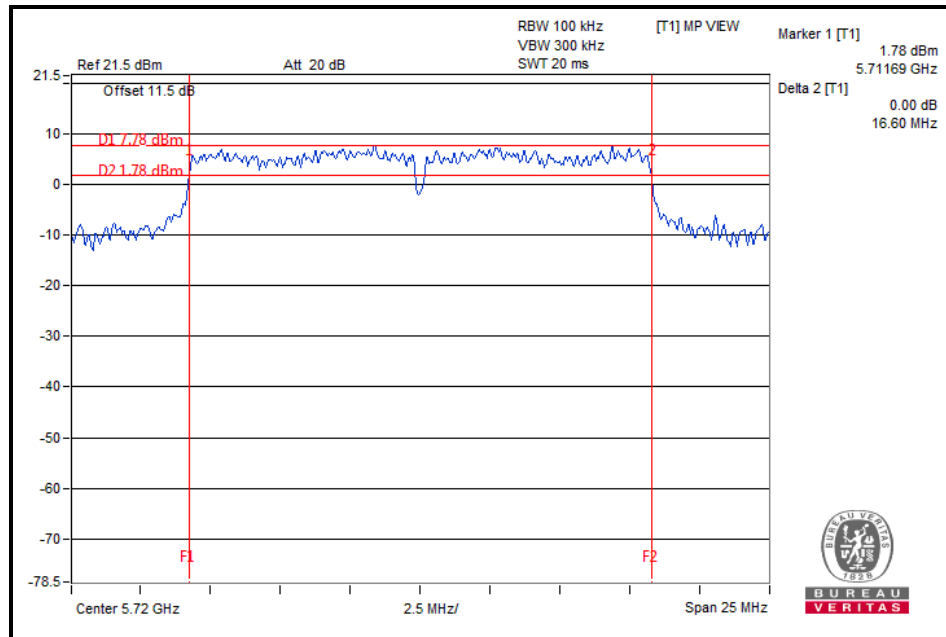
802.11n (HT40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
142	5710 (U-NII-3)	36.56	0.5	Pass
151	5755	36.58	0.5	Pass
159	5795	36.54	0.5	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
138	5690 (U-NII-3)	76.84	0.5	Pass
155	5775	76.86	0.5	Pass

**此測試圖僅放測試結果最差的頻道。



BLUETOOTH EDR 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(22)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 = 1 kHz

接收諧波：

Below 1 GHz

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

Above 1 GHz:

Peak 為 RBW = 1 MHz, VBW = 3 MHz；Average 為 RBW = 1 MHz, VBW = 1 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。

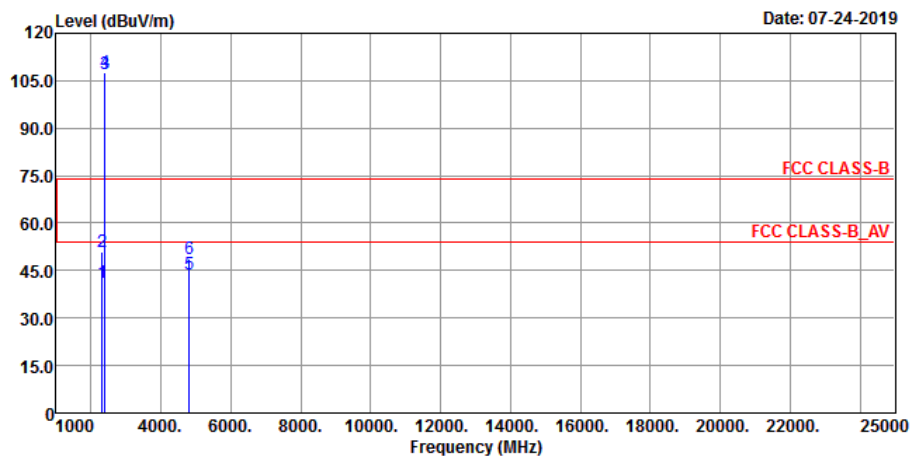
12.6 量測結果

12.6.1 發射諧波

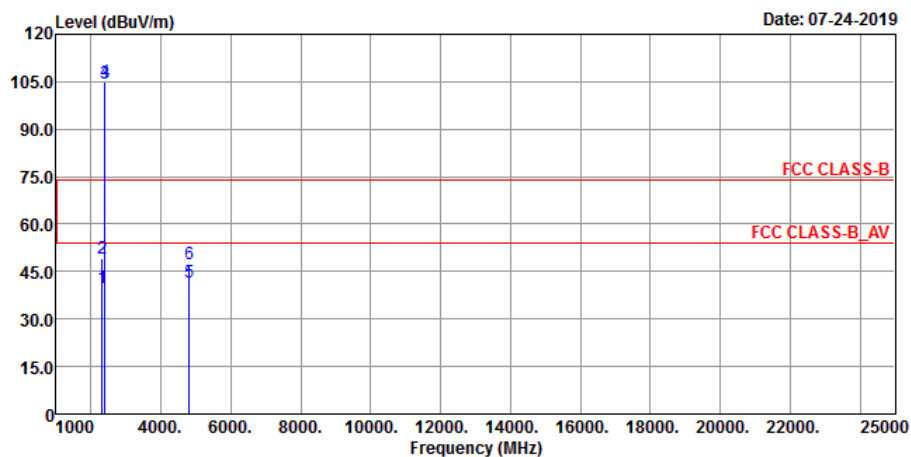
GFSK

EUT Test Condition		Measurement Detail	
Channel	Channel 0	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	Thomas Wei

Horizontal



Vertical



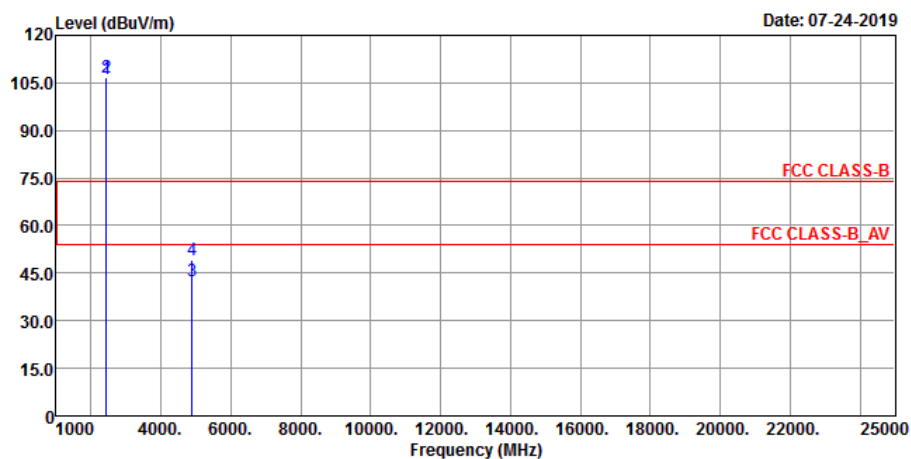
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2312.94	41.26	45.72	-4.46	54	-12.74	214	318	Average
2312.94	51.08	55.54	-4.46	74	-22.92	214	318	Peak
2402	106.98	111.98	-5			214	318	Average
2402	107.39	112.39	-5			214	318	Peak
4804	43.86	58.33	-14.47	54	-10.14	132	73	Average
4804	48.61	63.08	-14.47	74	-25.39	132	73	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2313.78	40.03	44.51	-4.48	54	-13.97	127	147	Average
2313.78	49.36	53.84	-4.48	74	-24.64	127	147	Peak
2402	104.6	109.6	-5			127	147	Average
2402	105	110	-5			127	147	Peak
4804	41.53	56	-14.47	54	-12.47	100	119	Average
4804	47.53	62	-14.47	74	-26.47	100	119	Peak

Remarks:

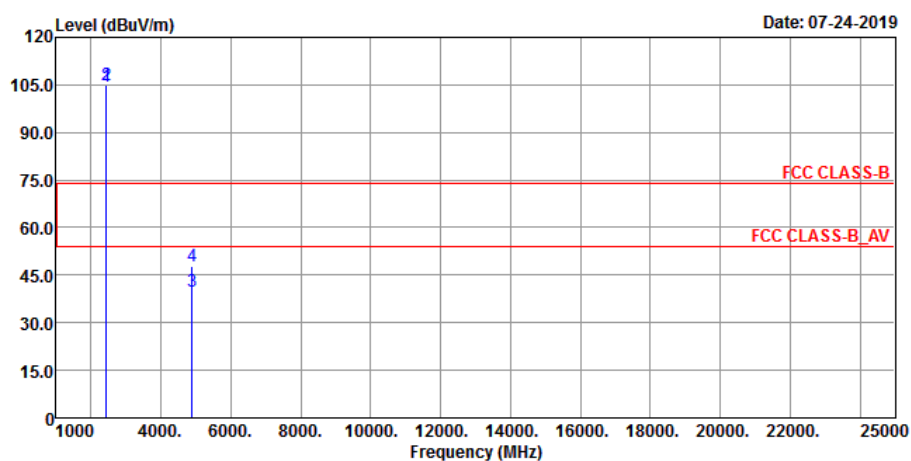
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2402 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 39	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)

Horizontal



Vertical



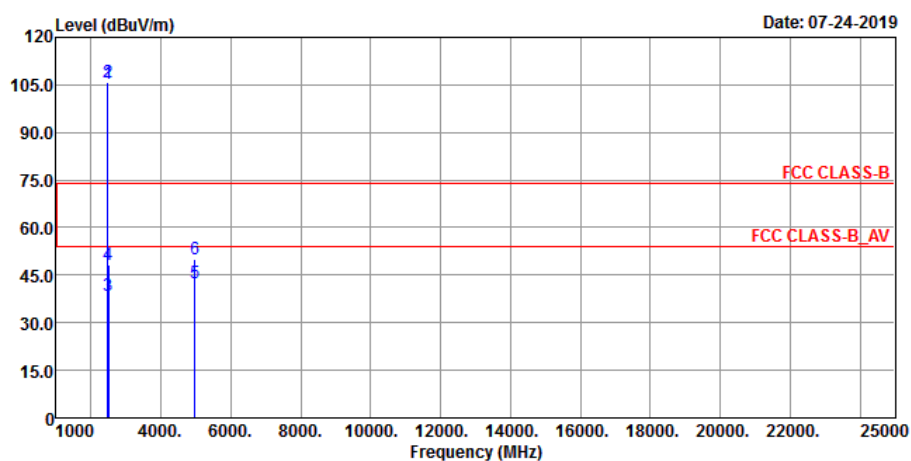
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2441	106.09	111	-4.91			203	318	Average
2441	106.52	111.43	-4.91			203	318	Peak
4882	42.51	56.59	-14.08	54	-11.49	126	78	Average
4882	49.22	63.3	-14.08	74	-24.78	126	78	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2441	104.51	109.42	-4.91			121	131	Average
2441	104.92	109.83	-4.91			121	131	Peak
4882	40.03	54.11	-14.08	54	-13.97	105	137	Average
4882	47.93	62.01	-14.08	74	-26.07	105	137	Peak

Remarks:

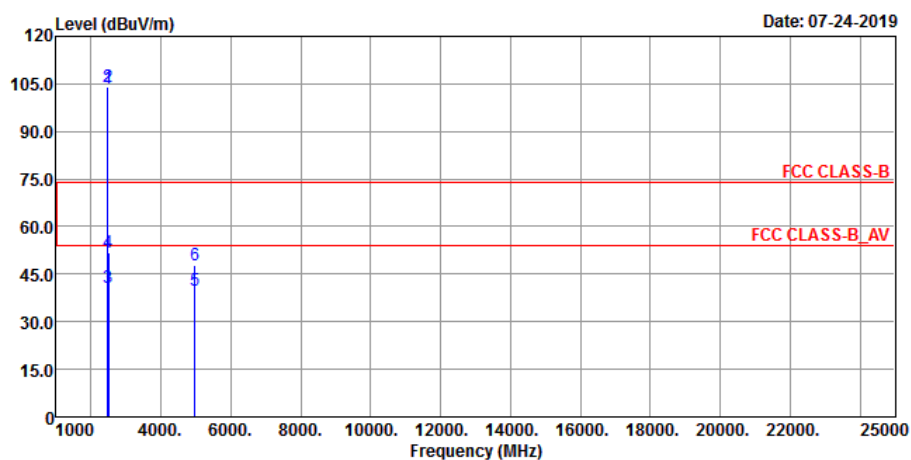
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2441 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 78	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	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	105.47	110.32	-4.85			190	323	Average
2480	105.84	110.69	-4.85			190	323	Peak
2487.52	38.69	43.54	-4.85	54	-15.31	190	323	Average
2487.52	48.46	53.31	-4.85	74	-25.54	190	323	Peak
4960	42.36	56.25	-13.89	54	-11.64	139	84	Average
4960	50.07	63.96	-13.89	74	-23.93	139	84	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	103.72	108.57	-4.85			118	140	Average
2480	104.12	108.97	-4.85			118	140	Peak
2487.64	40.81	45.66	-4.85	54	-13.19	118	140	Average
2487.64	51.99	56.84	-4.85	74	-22.01	118	140	Peak
4960	39.77	53.66	-13.89	54	-14.23	113	129	Average
4960	47.75	61.64	-13.89	74	-26.25	113	129	Peak

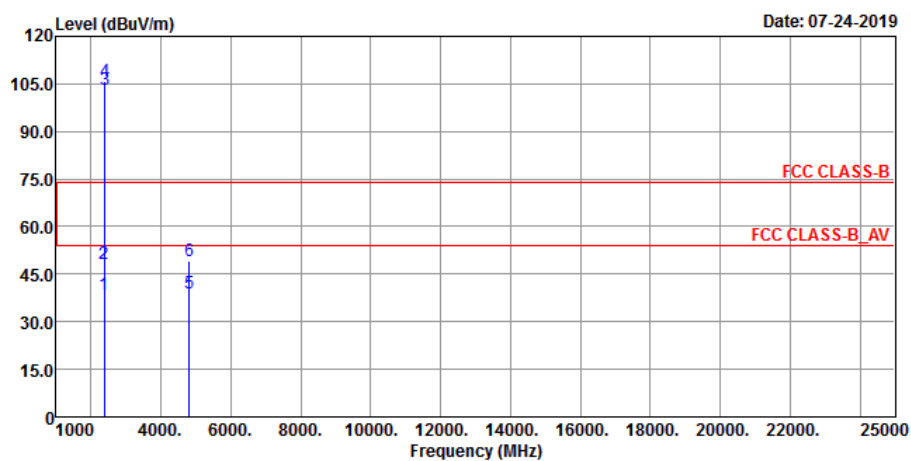
Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2480 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

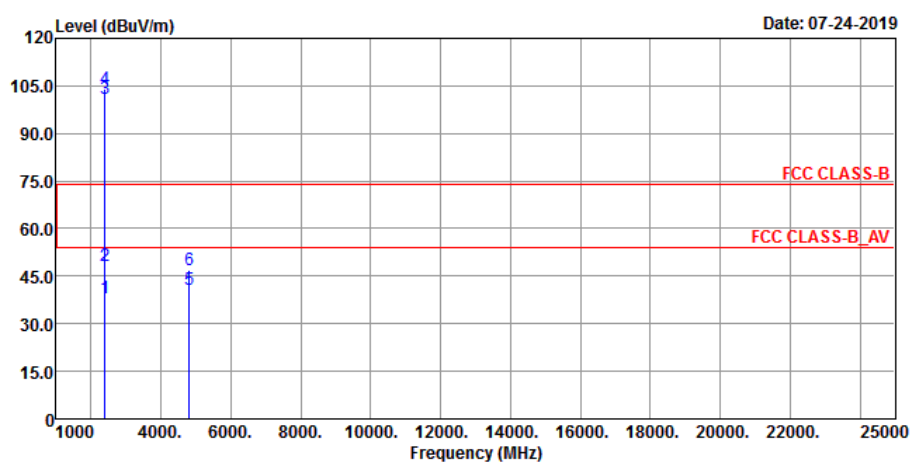
8DPSK

EUT Test Condition		Measurement Detail	
Channel	Channel 0	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	Thomas Wei

Horizontal



Vertical



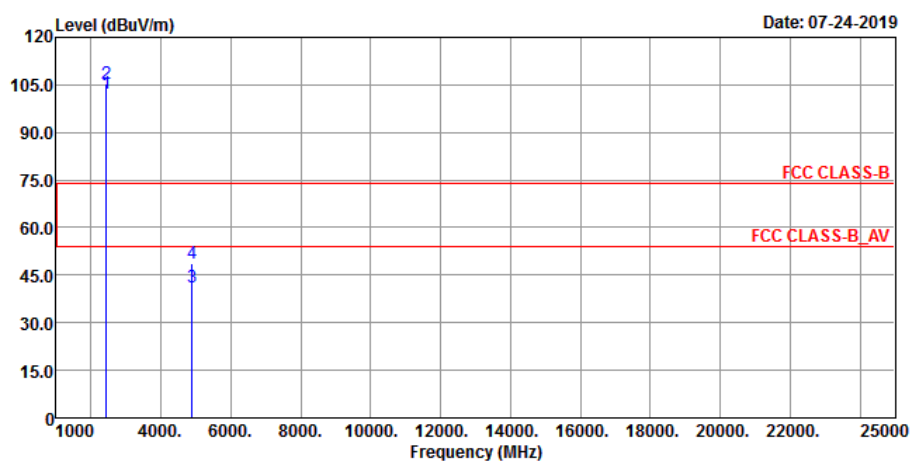
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2363.9	38.44	43.25	-4.81	54	-15.56	215	319	Average
2363.9	48.3	53.11	-4.81	74	-25.7	215	319	Peak
2402	103.09	108.09	-5			215	319	Average
2402	105.81	110.81	-5			215	319	Peak
4804	39.05	53.52	-14.47	54	-14.95	155	162	Average
4804	48.95	63.42	-14.47	74	-25.05	155	162	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2385.74	37.89	42.87	-4.98	54	-16.11	128	147	Average
2385.74	48.46	53.44	-4.98	74	-25.54	128	147	Peak
2402	100.79	105.79	-5			128	147	Average
2402	103.86	108.86	-5			128	147	Peak
4804	40.91	55.38	-14.47	54	-13.09	153	246	Average
4804	46.75	61.22	-14.47	74	-27.25	153	246	Peak

Remarks:

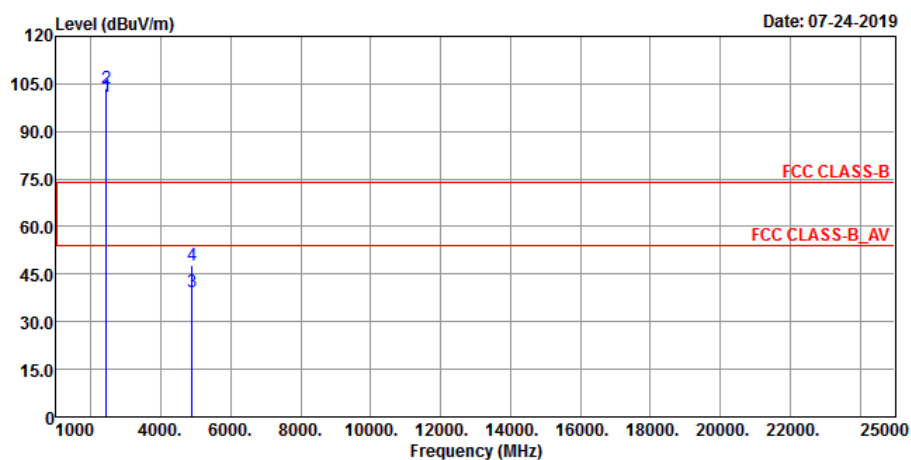
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2402 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 39	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	Thomas Wei

Horizontal



Vertical



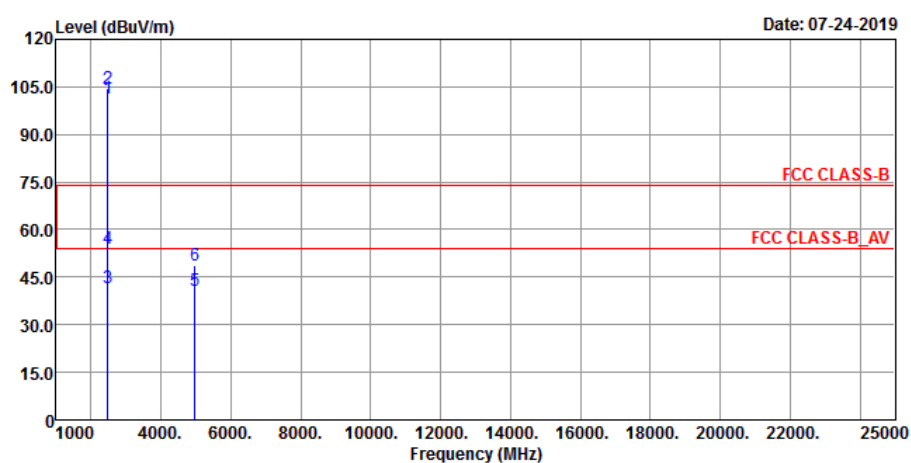
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2441	102.39	107.3	-4.91			189	327	Average
2441	105.28	110.19	-4.91			189	327	Peak
4882	41.32	55.4	-14.08	54	-12.68	146	155	Average
4882	48.51	62.59	-14.08	74	-25.49	146	155	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2441	100.83	105.74	-4.91			122	132	Average
2441	103.8	108.71	-4.91			122	132	Peak
4882	39.48	53.56	-14.08	54	-14.52	182	105	Average
4882	47.79	61.87	-14.08	74	-26.21	182	105	Peak

Remarks:

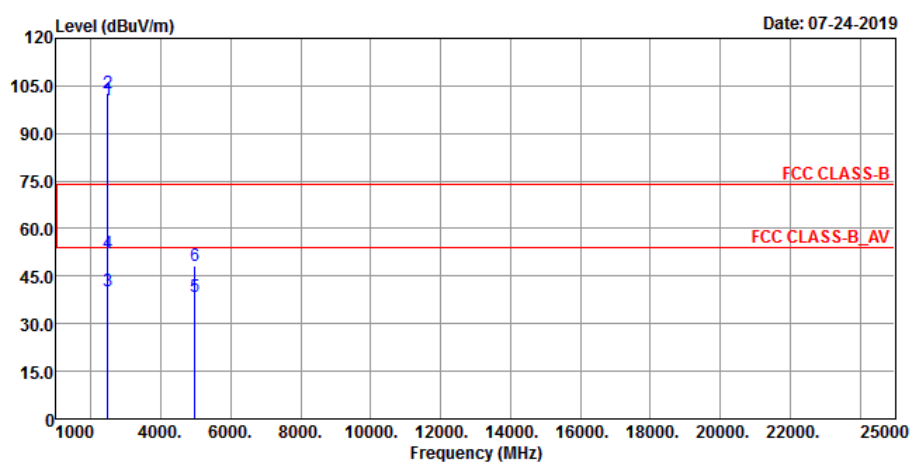
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2441 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 78	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	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	101.61	106.46	-4.85			190	325	Average
2480	104.32	109.17	-4.85			190	325	Peak
2483.52	41.45	46.3	-4.85	54	-12.55	190	325	Average
2483.52	54.23	59.08	-4.85	74	-19.77	190	325	Peak
4960	40.94	54.83	-13.89	54	-13.06	142	48	Average
4960	48.68	62.57	-13.89	74	-25.32	142	48	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	100.41	105.26	-4.85			122	138	Average
2480	102.75	107.6	-4.85			122	138	Peak
2483.52	40.44	45.29	-4.85	54	-13.56	122	138	Average
2483.52	52.05	56.9	-4.85	74	-21.95	122	138	Peak
4960	38.38	52.27	-13.89	54	-15.62	126	144	Average
4960	48.44	62.33	-13.89	74	-25.56	126	144	Peak

Remarks:

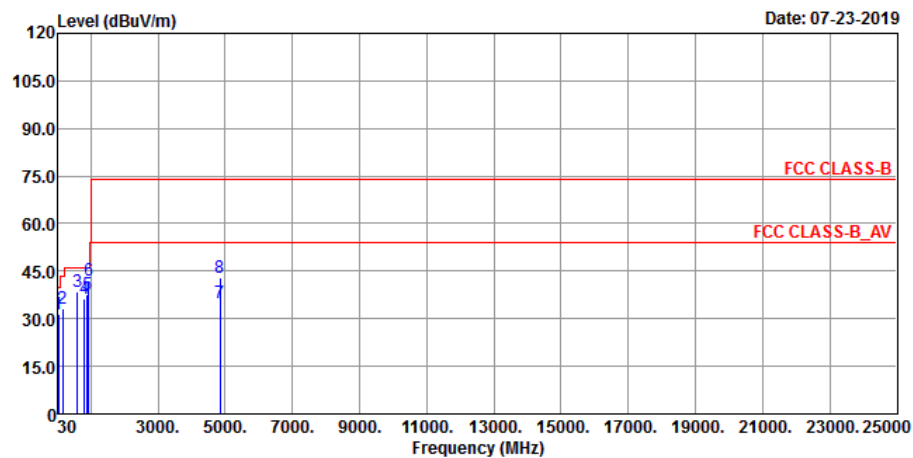
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2480 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

12.6.2 接收諧波

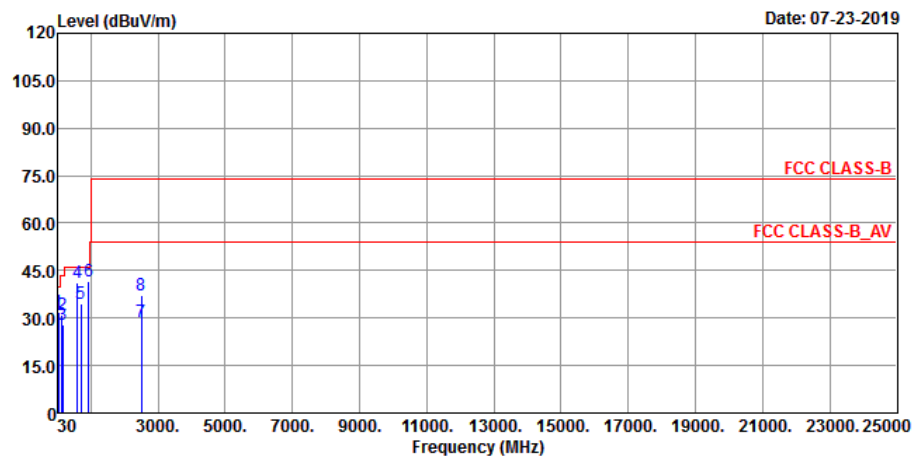
GFSK

EUT Test Condition		Measurement Detail	
Channel	Channel 0	Frequency Range	30 MHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Above 1 GHz: Peak (PK) & Average (AV) Below 1 GHz: Peak (PK) or Quasi-Peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
43.58	31.46	48.41	-16.95	40	-8.54	128	146	Peak
170.65	33.08	50.66	-17.58	43.5	-10.42	154	169	Peak
600.36	38.46	46.75	-8.29	46	-7.54	206	211	Peak
800.18	36.12	41.39	-5.27	46	-9.88	248	255	Peak
900.09	37.42	42.03	-4.61	46	-8.58	279	284	Peak
932.1	42.01	44.84	-2.83	46	-3.99	315	337	Peak
4850	35.13	49.4	-14.27	54	-18.87	179	203	Average
4850	43.17	57.44	-14.27	74	-30.83	179	203	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
43.58	32	48.95	-16.95	40	-8	134	146	Peak
145.43	30.81	48.33	-17.52	43.5	-12.69	155	163	Peak
170.65	27.71	45.29	-17.58	43.5	-15.79	189	200	Peak
600.36	41.12	49.41	-8.29	46	-4.88	235	254	Peak
700.27	34.48	41.47	-6.99	46	-11.52	276	284	Peak
932.1	41.78	44.61	-2.83	46	-4.22	299	315	Peak
2495	28.57	49.55	-20.98	54	-25.43	166	157	Average
2495	37.3	58.28	-20.98	74	-36.7	166	157	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- The emission levels of other frequencies were very low against the limit.

12.6.3 其它不必要之訊號

9 kHz ~ 30 MHz Data:

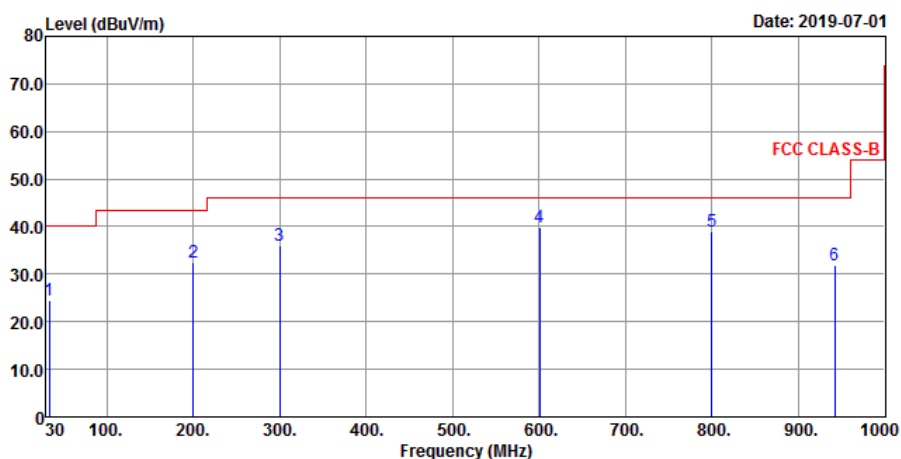
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Data:

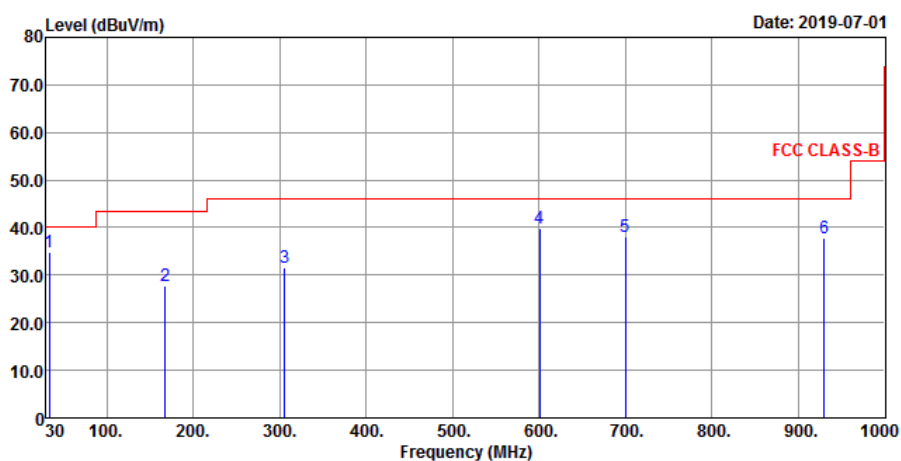
GFSK

EUT Test Condition		Measurement Detail	
Channel	Channel 0	Frequency Range	30 MHz ~ 1 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) or Quask-Peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
33.88	24.48	41.43	-16.95	40	-15.52	194	133	Peak
199.75	32.46	52.25	-19.79	43.5	-11.04	176	207	Peak
299.66	35.95	52.63	-16.68	46	-10.05	206	348	Peak
600.36	39.92	48.21	-8.29	46	-6.08	182	206	Peak
800.18	38.9	44.17	-5.27	46	-7.1	199	116	Peak
941.8	31.79	34.54	-2.75	46	-14.21	202	101	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
33.88	34.86	51.81	-16.95	40	-5.14	137	159	Peak
167.74	27.7	45.12	-17.42	43.5	-15.8	109	313	Peak
305.48	31.67	48.16	-16.49	46	-14.33	125	146	Peak
600.36	39.92	48.21	-8.29	46	-6.08	102	97	Peak
700.27	38.18	45.17	-6.99	46	-7.82	117	294	Peak
930.16	37.76	40.61	-2.85	46	-8.24	103	248	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. The emission levels of other frequencies 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 20 dB 頻寬之要求

13.1 適用標準

請見本報告 3.1 節第(27)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 20 dB 的最大頻率範圍。

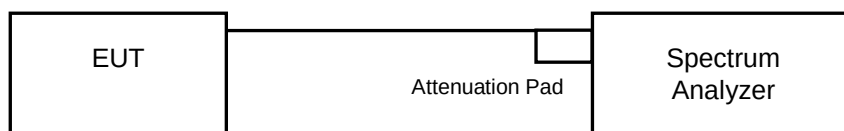
13.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Spectrum Analyzer R&S	FSU43	101261	Apr. 15, 2019	Apr. 14, 2020

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



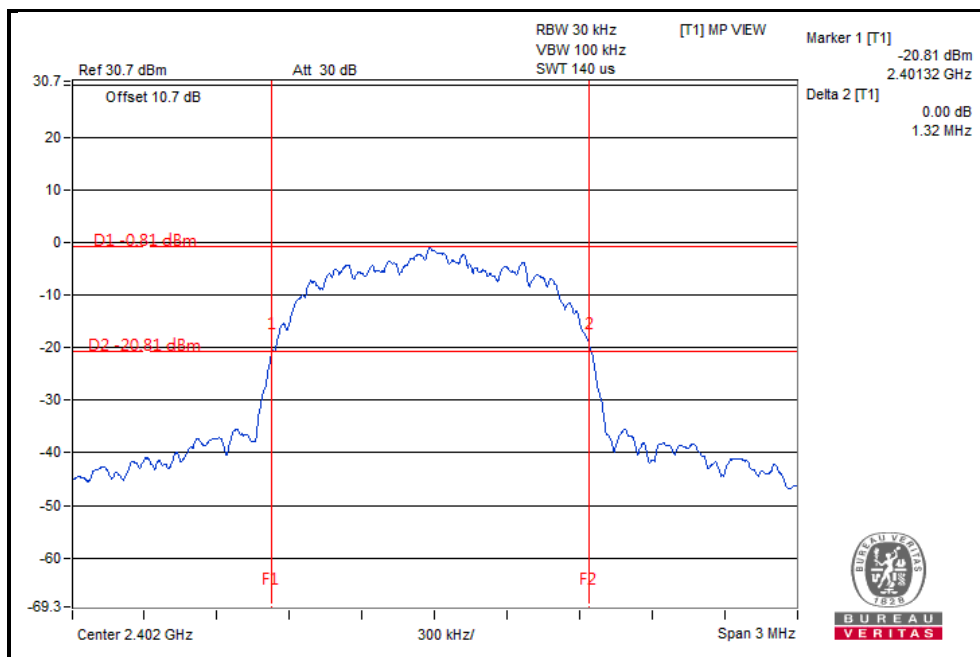
13.5 量測結果

操作模式	發射	測試日期	108 年 07 月 31 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	Vincent Huang		

Channel	Channel Frequency (MHz)	20 dB Bandwidth (MHz)		>= 25 kHz
		GFSK	8DPSK	
0	2402	1.03	1.32	Yes
39	2441	1.03	1.31	Yes
78	2480	1.04	1.32	Yes

註：對操作於 2400~2483.5 MHz 頻段的跳頻系統技術之低功率發射機，依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1.6 節之(1)(A)條規定，跳頻系統之載波頻率頻道間隔應至少 25 千赫(kHz)或跳頻頻道之 20 dB 頻寬之三分之二，兩者取較寬者。依據上述條文之規定，對操作於 2400~2483.5 MHz 頻段的跳頻產品之頻寬乃為該產品載波頻率頻道間隔的判定限制之一。

**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，三分之二 20 dB 頻寬值乃為此產品之載波頻率頻道間隔的判定限制值。

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(25)項的規定。

14.2 量測方法

- 將待測物輸出接到功率計上。
- 設定待測物處於連續發射狀態。
- 量測待測物輸出功率峰值。

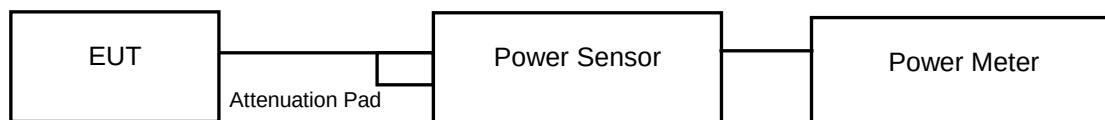
14.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Power Meter Anritsu	ML2495A	1232002	Dec. 17, 2018	Dec. 16, 2019
Power Sensor Anritsu	MA2411B	1207325	Dec. 17, 2018	Dec. 16, 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 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.

14.4 測試配置



14.5 量測結果

操作模式	發射	測試日期	108 年 07 月 31 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	Vincent Huang		

Channel	Channel Frequency (MHz)	Peak Power Output (dBm)		Peak Power Limit (dBm)	Pass / Fail
		GFSK	8DPSK		
0	2402	3.07	2.77	30	Pass
39	2441	2.94	2.66	30	Pass
78	2480	2.80	2.53	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 跳頻頻道數之量測

15.1 適用標準

請見本報告 3.1 節第(26)項的規定。

15.2 量測方法

- 將待測物輸出接到頻譜分析儀上。
- 設定待測物處於正常傳輸跳頻模式下。
- 設定 RBW = 100 kHz，VBW = 300 kHz，量測跳頻頻道數。

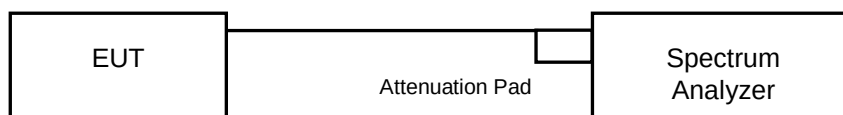
15.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Spectrum Analyzer R&S	FSU43	101261	Apr. 15, 2019	Apr. 14, 2020

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.

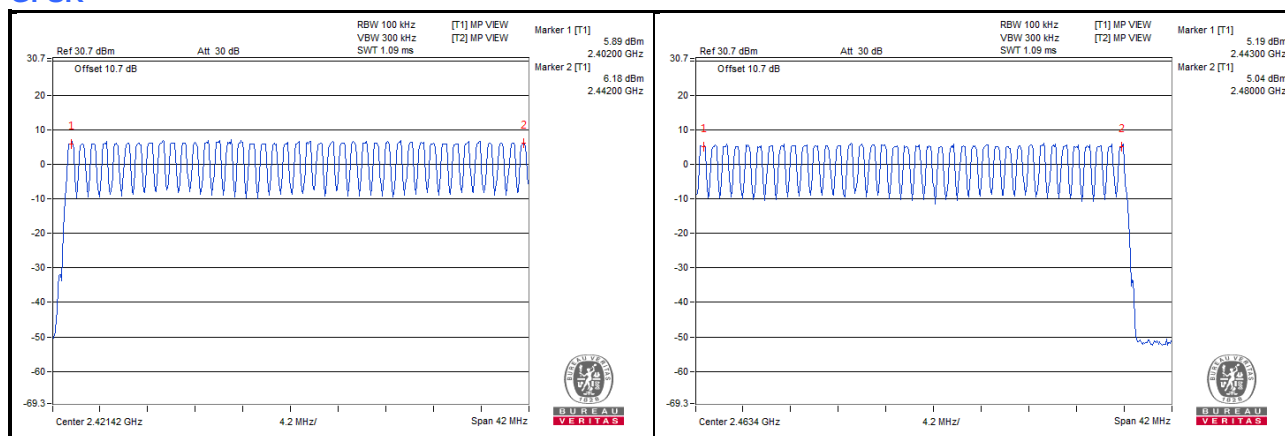
15.4 測試配置



15.5 量測結果

其掃描圖請參閱下圖。跳頻頻道數共有 79 個，符合至少 15 個的規定。

GFSK



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 跳頻頻道間隔之量測

16.1 適用標準

請見本報告 3.1 節第(26)項規定。

16.2 量測方法

- 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 RBW = 30 kHz，300 kHz，量測相鄰兩個頻道間的間隔。

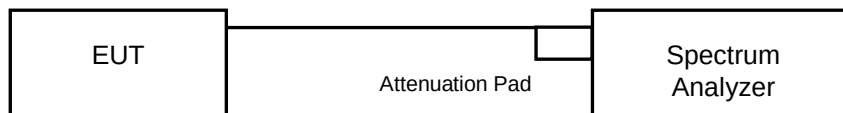
16.3 量測場強輻射之儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Spectrum Analyzer R&S	FSU43	101261	Apr. 15, 2019	Apr. 14, 2020

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.

16.4 測試配置



16.5 量測結果

操作模式	發射	測試日期	108 年 07 月 31 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	Vincent Huang		

GFSK

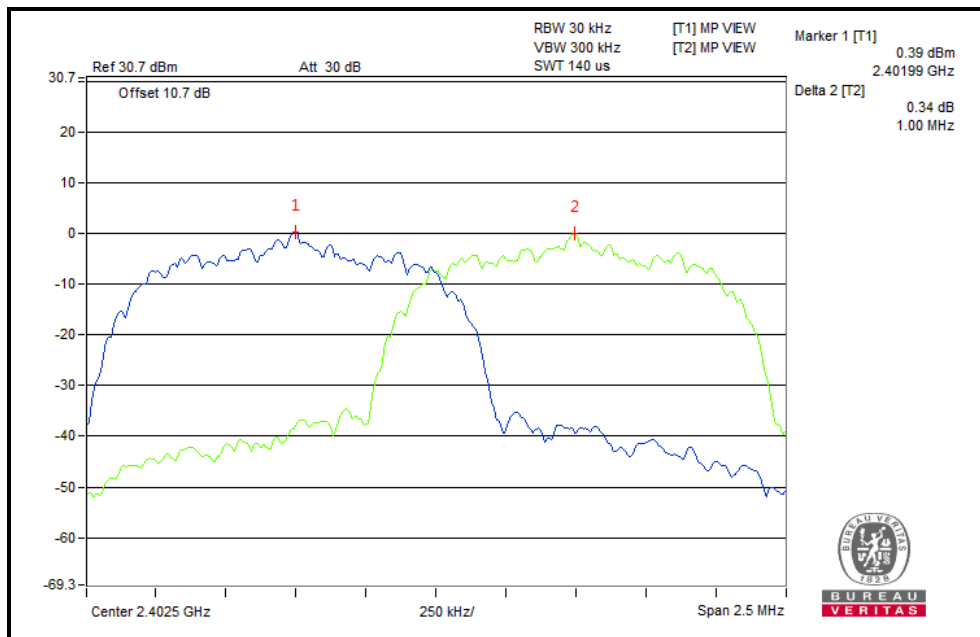
Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	20 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	1.00	1.03	0.69	Pass
39	2441	1.00	1.03	0.69	Pass
78	2480	1.00	1.04	0.70	Pass

8DPSK

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	20 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	1.00	1.32	0.88	Pass
39	2441	1.00	1.31	0.88	Pass
78	2480	1.00	1.32	0.88	Pass

本項測試的 limit 為至少為三分之二 20 dB 頻寬。

**此測試圖僅放測試結果最差的頻道。



16.6 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。

17 每一頻道停留時間之量測

17.1 適用標準

請見本報告 3.1 節第(28)項的規定。

17.2 量測方法

- 將待測物輸出接到頻譜分析儀上。
- 設定待測物處於正常傳輸跳頻模式下。
- 設定 RBW = 100 kHz, VBW = 300 kHz, 量測在不同傳輸模式下的頻道停留時間。

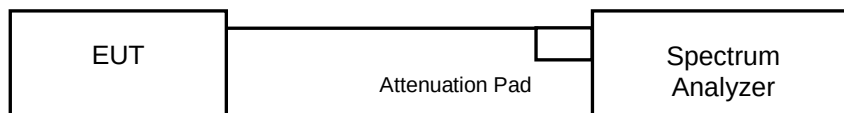
17.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Spectrum Analyzer R&S	FSU43	101261	Apr. 15, 2019	Apr. 14, 2020

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.

17.4 測試配置



17.5 量測結果

GFSK

Mode	Number of Transmission in a 31.6 (79 Hopping*0.4)	Length of Transmission Time (msec)	Result (msec)	Limit (msec)
DH1	50 (times / 5 sec) * 6.32 = 316 times	0.46	145.4	400
DH3	25 (times / 5 sec) * 6.32 = 158 times	1.72	271.8	400
DH5	17 (times / 5 sec) * 6.32 = 107.44 times	2.97	319.1	400

註:因為 Bluetooth 每秒跳 1600 次，會平均落在每個頻道，所以僅測試 Ch 39 作為代表。

其掃描圖請參閱下方

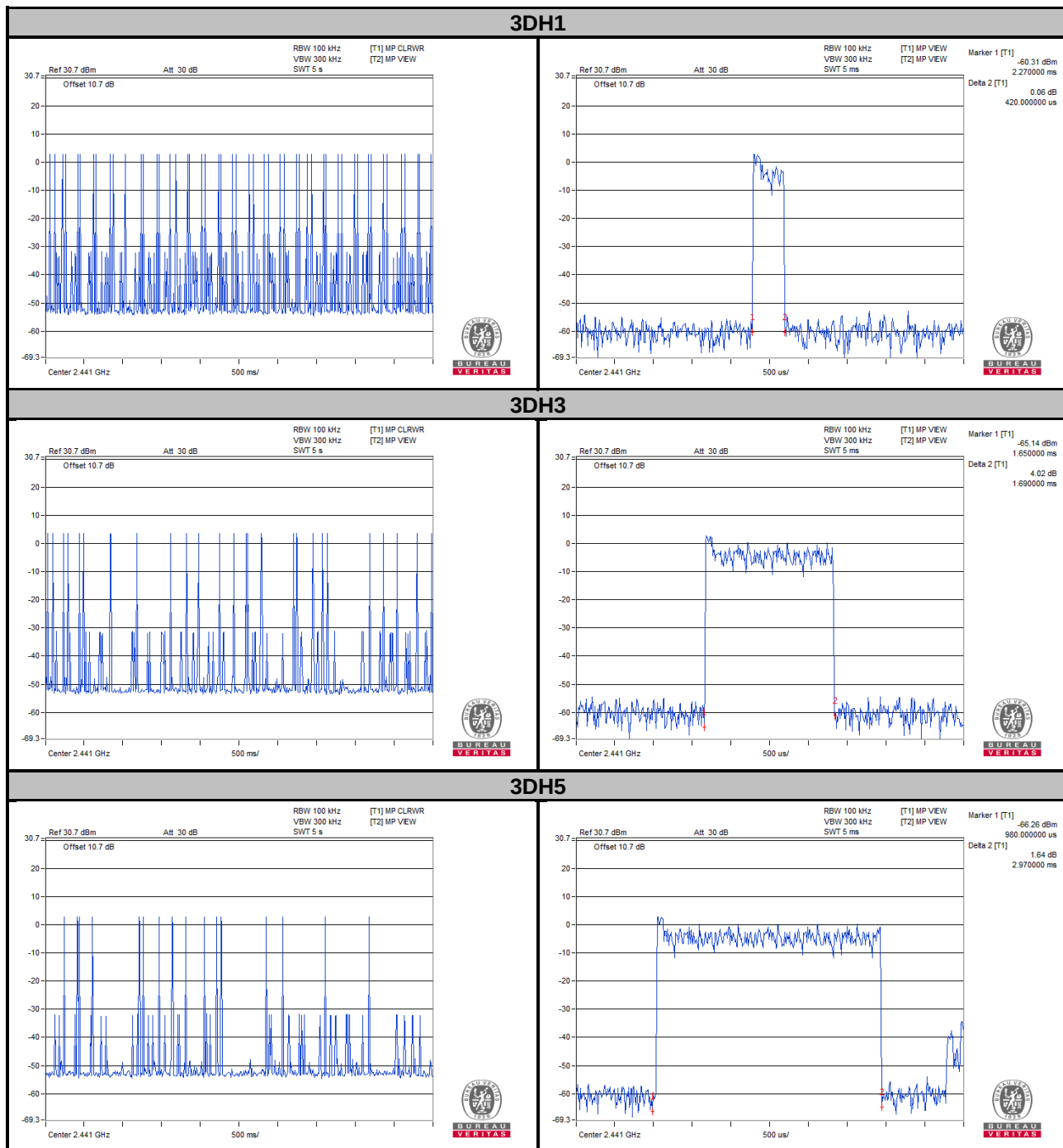


8DPSK

Mode	Number of Transmission in a 31.6 (79 Hopping*0.4)	Length of Transmission Time (msec)	Result (msec)	Limit (msec)
3DH1	50 (times / 5 sec) * 6.32 = 316 times	0.42	132.7	400
3DH3	26 (times / 5 sec) * 6.32 = 164.32 times	1.69	277.7	400
3DH5	16 (times / 5 sec) * 6.32 = 101.12 times	2.97	300.3	400

註:因為 Bluetooth 每秒跳 1600 次，會平均落在每個頻道，所以僅測試 Ch 39 作為代表。

其掃描圖請參閱下方



17.6 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。

BLUETOOTH LE 頻段測試紀錄結果

18 帶外發射之量測

18.1 適用標準

請見本報告 3.1 節第(2)項的規定。

18.2 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 = 3 kHz

接收諧波：

Below 1 GHz

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

Above 1 GHz:

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

18.3 量測儀器

同 4.3 節

18.4 測試配置

同 4.4 節

18.5 場強度之計算

同 4.5 節

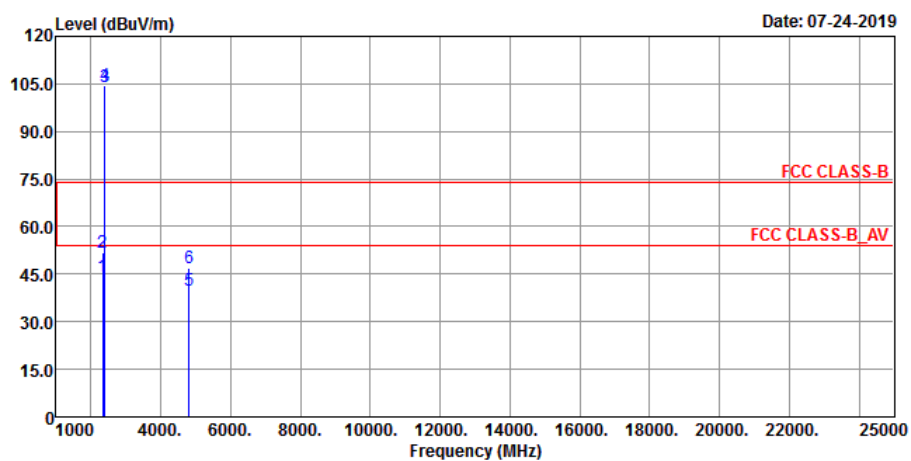
量測結果請見下頁。

18.6 量測結果

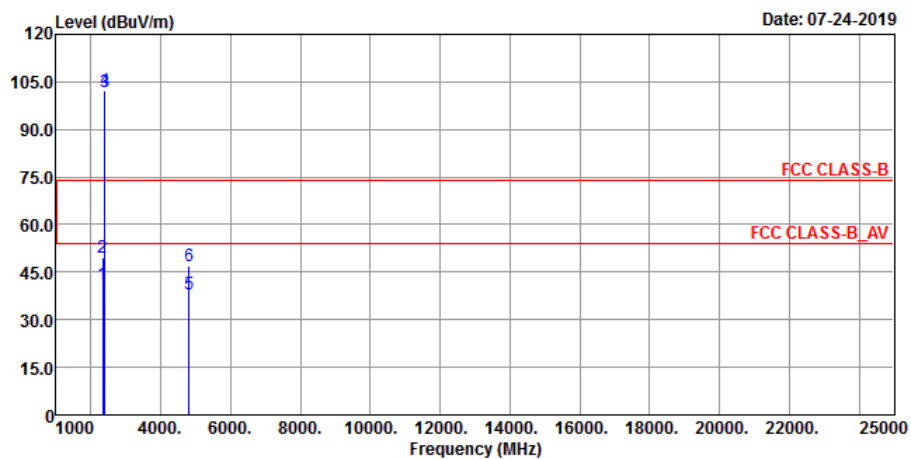
18.6.1 發射諧波

EUT Test Condition		Measurement Detail	
Channel	Channel 0	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	Thomas Wei

Horizontal



Vertical



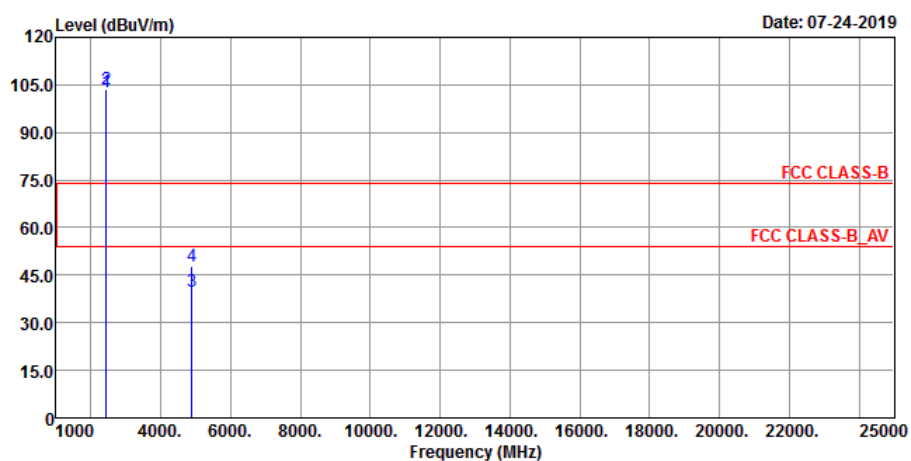
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2339.26	44.31	49.04	-4.73	54	-9.69	214	319	Average
2339.26	51.79	56.52	-4.73	74	-22.21	214	319	Peak
2402	103.87	108.87	-5			214	319	Average
2402	104.6	109.6	-5			214	319	Peak
4804	40.03	54.5	-14.47	54	-13.97	130	75	Average
4804	46.76	61.23	-14.47	74	-27.24	130	75	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2339.12	41.4	46.13	-4.73	54	-12.6	169	147	Average
2339.12	49.46	54.19	-4.73	74	-24.54	169	147	Peak
2402	101.74	106.74	-5			169	147	Average
2402	102.49	107.49	-5			169	147	Peak
4804	38.16	52.63	-14.47	54	-15.84	142	208	Average
4804	46.9	61.37	-14.47	74	-27.1	142	208	Peak

Remarks:

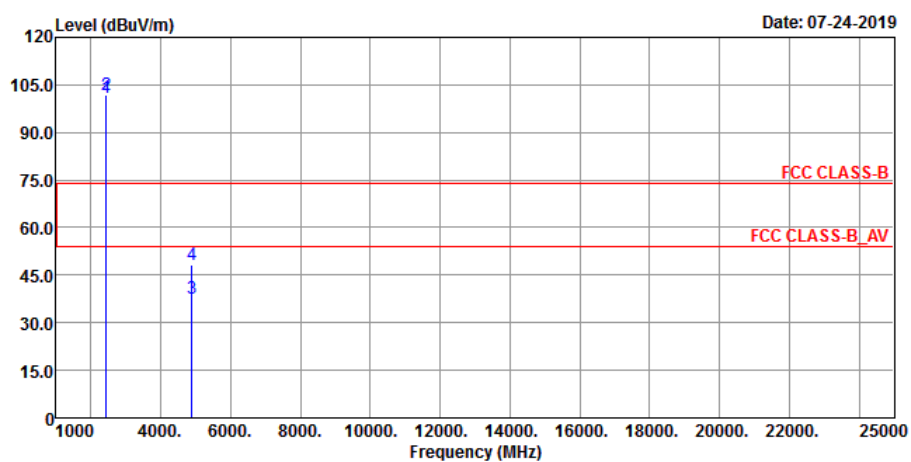
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2402 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 19	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	Thomas Wei

Horizontal



Vertical



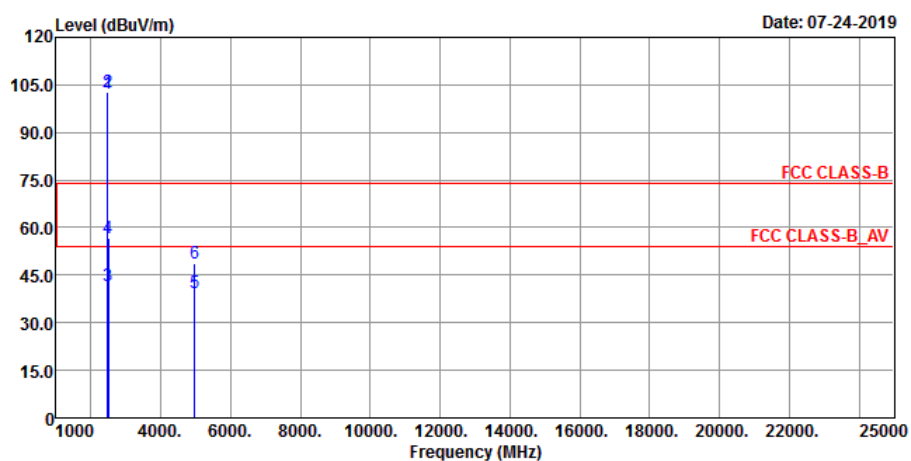
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2440	102.71	107.69	-4.98			187	326	Average
2440	103.45	108.43	-4.98			187	326	Peak
4880	39.8	53.88	-14.08	54	-14.2	135	81	Average
4880	47.97	62.05	-14.08	74	-26.03	135	81	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2440	101.17	106.15	-4.98			123	132	Average
2440	101.89	106.87	-4.98			123	132	Peak
4880	37.85	51.93	-14.08	54	-16.15	152	184	Average
4880	48.19	62.27	-14.08	74	-25.81	152	184	Peak

Remarks:

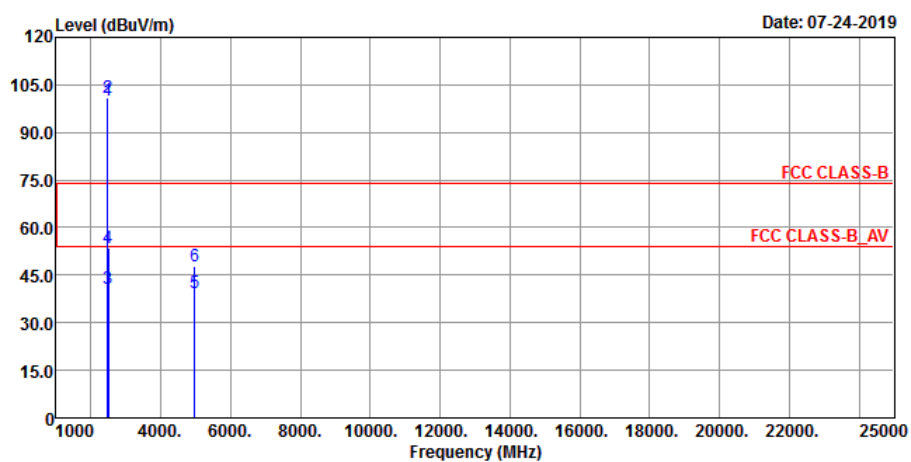
1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2440 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 39	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	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	102.11	106.96	-4.85			190	324	Average
2480	102.84	107.69	-4.85			190	324	Peak
2487.72	41.62	46.47	-4.85	54	-12.38	190	324	Average
2487.72	56.5	61.35	-4.85	74	-17.5	190	324	Peak
4960	39.32	53.21	-13.89	54	-14.68	139	106	Average
4960	48.55	62.44	-13.89	74	-25.45	139	106	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	100.16	105.01	-4.85			120	138	Average
2480	100.88	105.73	-4.85			120	138	Peak
2487.56	40.79	45.64	-4.85	54	-13.21	120	138	Average
2487.56	53.67	58.52	-4.85	74	-20.33	120	138	Peak
4960	39.22	53.11	-13.89	54	-14.78	177	95	Average
4960	47.94	61.83	-13.89	74	-26.06	177	95	Peak

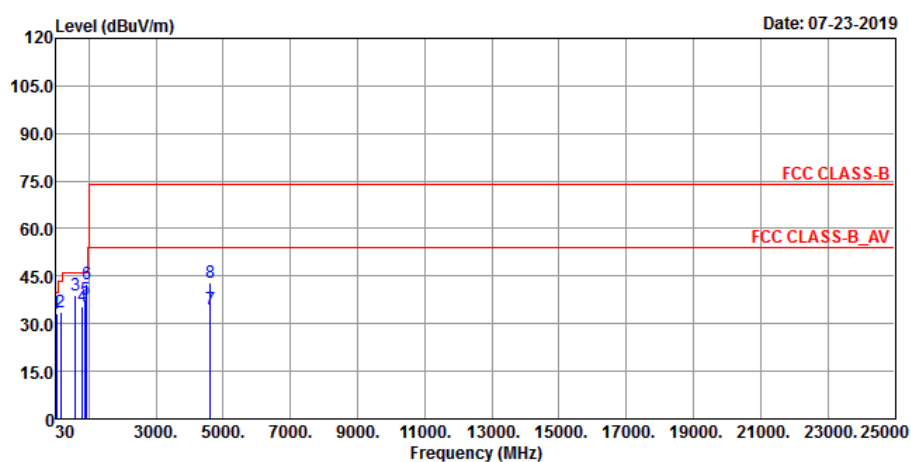
Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2480 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

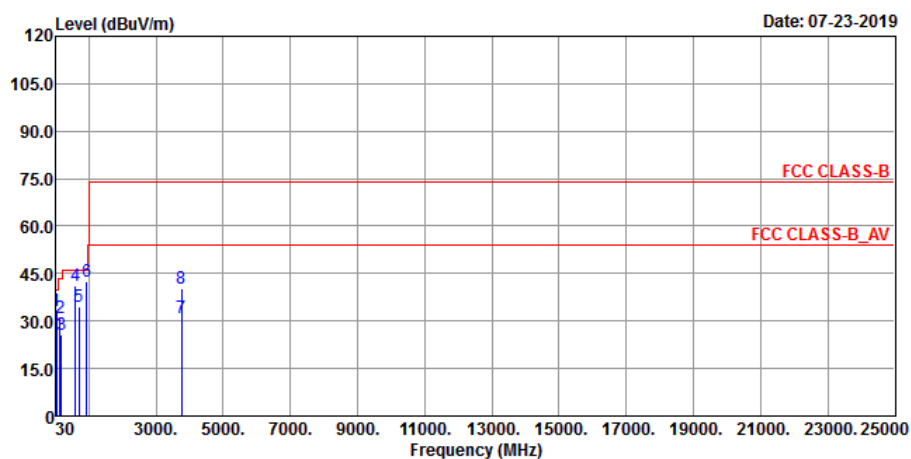
18.6.2 接收諧波

EUT Test Condition		Measurement Detail	
Channel	Channel 0	Frequency Range	30 MHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Above 1 GHz: Peak (PK) & Average (AV) Below 1 GHz: Peak (PK) or Quasi-Peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
43.58	33	49.95	-16.95	40	-7	131	148	Peak
170.65	33.68	51.26	-17.58	43.5	-9.82	156	164	Peak
600.36	38.9	47.19	-8.29	46	-7.1	203	219	Peak
800.18	35.32	40.59	-5.27	46	-10.68	255	262	Peak
900.09	37.75	42.36	-4.61	46	-8.25	286	294	Peak
930.16	42.65	45.5	-2.85	46	-3.35	316	337	Peak
4625	34.38	49.33	-14.95	54	-19.62	156	177	Average
4625	42.85	57.8	-14.95	74	-31.15	156	177	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
43.58	33.13	50.08	-16.95	40	-6.87	128	139	Peak
144.46	31.13	48.66	-17.53	43.5	-12.37	149	157	Peak
180.35	25.68	44.12	-18.44	43.5	-17.82	195	203	Peak
600.36	41.33	49.62	-8.29	46	-4.67	248	255	Peak
700.27	34.39	41.38	-6.99	46	-11.61	279	288	Peak
932.1	42.37	45.2	-2.83	46	-3.63	304	319	Peak
3755	31.2	48.77	-17.57	54	-22.8	142	107	Average
3755	40.49	58.06	-17.57	74	-33.51	142	107	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- The emission levels of other frequencies were very low against the limit.

18.6.3 其它不必要之訊號

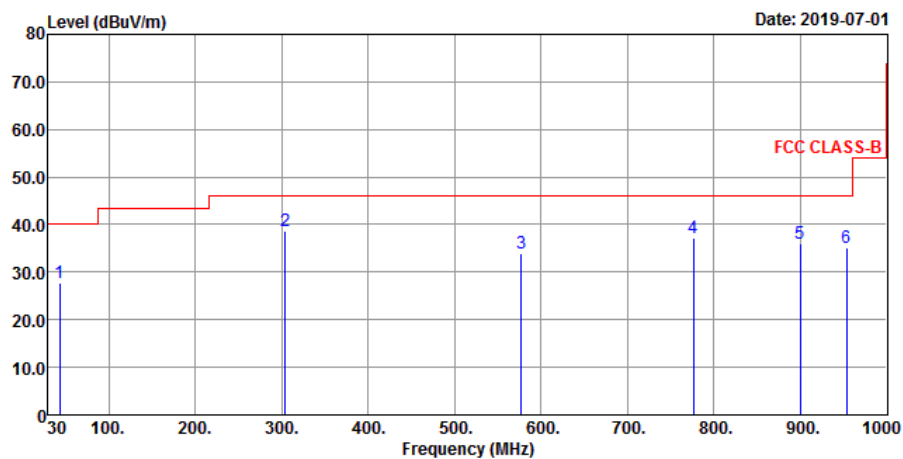
9 kHz ~ 30 MHz Data:

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

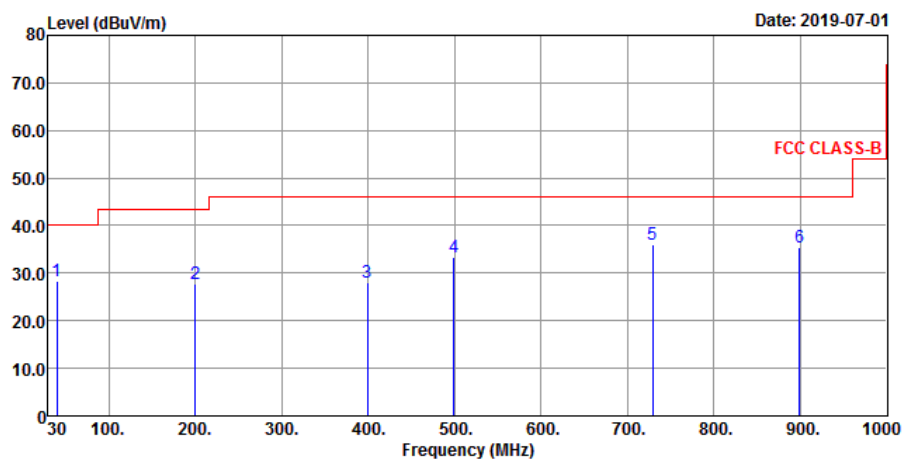
30 MHz ~ 1 GHz Data:

EUT Test Condition		Measurement Detail	
Channel	Channel 0	Frequency Range	30 MHz ~ 1 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) or Quasi-Peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
43.58	27.75	44.7	-16.95	40	-12.25	193	15	Peak
304.51	38.63	55.15	-16.52	46	-7.37	202	144	Peak
577.08	33.91	43.42	-9.51	46	-12.09	196	155	Peak
775.93	37.23	41.7	-4.47	46	-8.77	178	308	Peak
900.09	36.06	40.67	-4.61	46	-9.94	199	101	Peak
953.44	34.99	37.99	-3	46	-11.01	188	227	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
39.7	28.21	45.42	-17.21	40	-11.79	103	121	Peak
199.75	27.71	47.5	-19.79	43.5	-15.79	101	299	Peak
399.57	27.93	41.97	-14.04	46	-18.07	131	177	Peak
499.48	33.38	43.95	-10.57	46	-12.62	123	169	Peak
729.37	35.88	42.44	-6.56	46	-10.12	114	68	Peak
899.12	35.53	40.15	-4.62	46	-10.47	126	122	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. The emission levels of other frequencies were very low against the limit.

18.7 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。

19 6 dB 頻寬之要求

19.1 適用標準

請見本報告 3.1 節第(5)項的規定。

19.2 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。

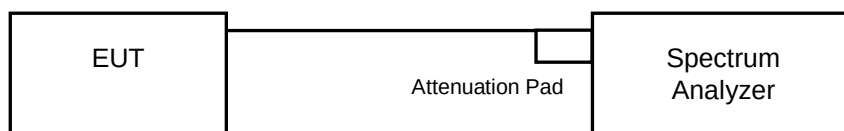
19.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Spectrum Analyzer R&S	FSU43	101261	Apr. 15, 2019	Apr. 14, 2020

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.

19.4 測試配置

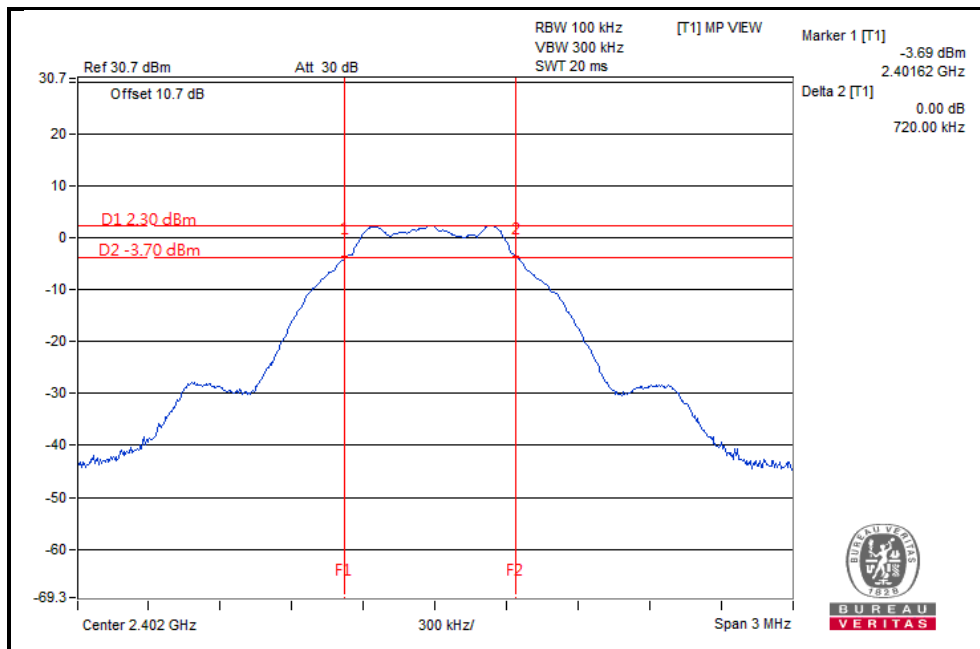


19.5 量測結果

操作模式	發射	測試日期	108 年 07 月 31 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	Vincent Huang		

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	0.72	0.5	Pass
19	2440	0.72	0.5	Pass
39	2480	0.72	0.5	Pass

**此測試圖僅放測試結果最差的頻道。



19.6 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。

20 峰值傳導輸出功率之量測

20.1 適用標準

請見本報告 3.1 節第(4)及(6)項的規定。

20.2 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。

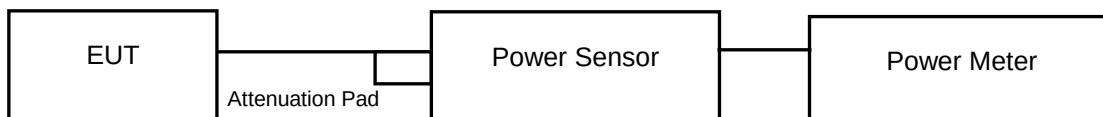
20.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Power Meter Anritsu	ML2495A	1232002	Dec. 17, 2018	Dec. 16, 2019
Power Sensor Anritsu	MA2411B	1207325	Dec. 17, 2018	Dec. 16, 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 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 $k=2$.

20.4 測試配置



20.5 量測結果

操作模式	發射	測試日期	108 年 07 月 31 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	Vincent Huang		

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
0	2402	2.018	3.05	30	Pass
19	2440	1.959	2.92	30	Pass
39	2480	1.892	2.77	30	Pass

20.6 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。

21 功率頻譜密度之量測

21.1 適用標準

請見本報告 3.1 節第(7)項的規定。

21.2 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。

21.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Spectrum Analyzer R&S	FSU43	101261	Apr. 15, 2019	Apr. 14, 2020

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.

21.4 測試配置

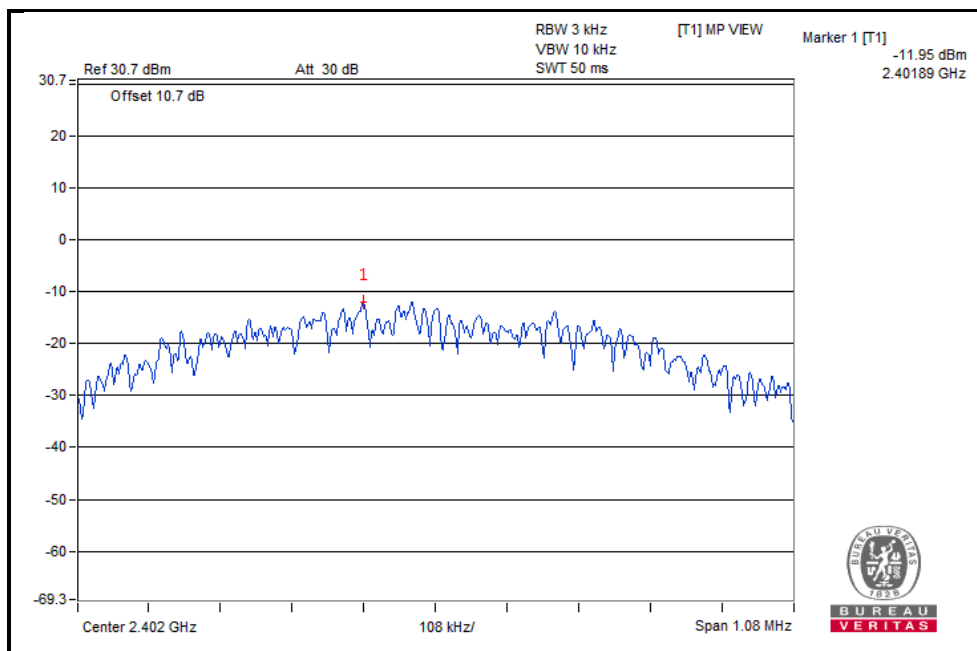


21.5 量測結果

操作模式	發射	測試日期	108 年 07 月 31 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	Vincent Huang		

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
0	2402	-11.95	8	Pass
19	2440	-12.08	8	Pass
39	2480	-12.27	8	Pass

**此測試圖僅放測試結果最差的頻道。



21.6 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。

22 電源線傳導干擾之量測

22.1 適用標準

請見本報告 3.1 節第(1)項的規定。

22.2 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。

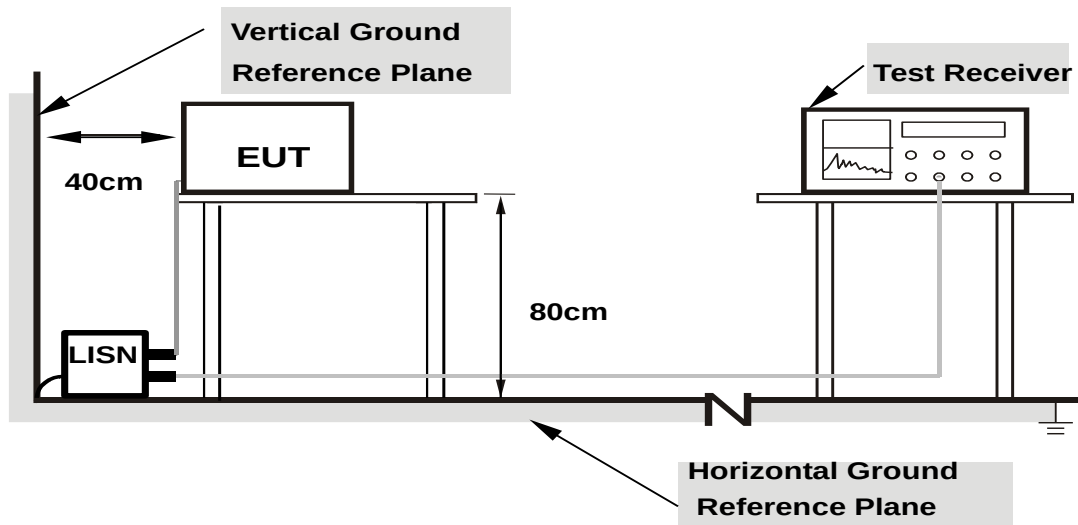
22.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Dec. 10, 2018	Dec. 09, 2019
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Sep. 05, 2018	Sep. 04, 2019
LISN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 21, 2019	Feb. 20, 2020
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 19, 2018	Aug. 18, 2019
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-12040.
4. The measurement uncertainty is 2.94 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.

22.4 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

22.5 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

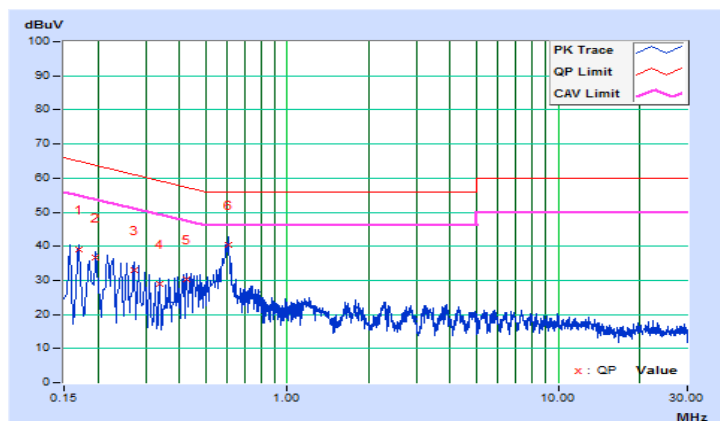
22.6 量測結果

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, 75%RH
測試者	Thomas Wei	測試日期	2019/6/29

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	0.16955	9.84	29.25	12.21	39.09	22.05	64.98	54.98	-25.89	-32.93
2	0.19692	9.85	26.92	11.83	36.77	21.68	63.74	53.74	-26.97	-32.06
3	0.27120	9.86	23.15	9.09	33.01	18.95	61.08	51.08	-28.07	-32.13
4	0.33768	9.87	19.22	3.87	29.09	13.74	59.26	49.26	-30.17	-35.52
5	0.42370	9.88	20.33	8.14	30.21	18.02	57.38	47.38	-27.17	-29.36
6	0.60737	9.89	30.68	22.77	40.57	32.66	56.00	46.00	-15.43	-13.34

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)

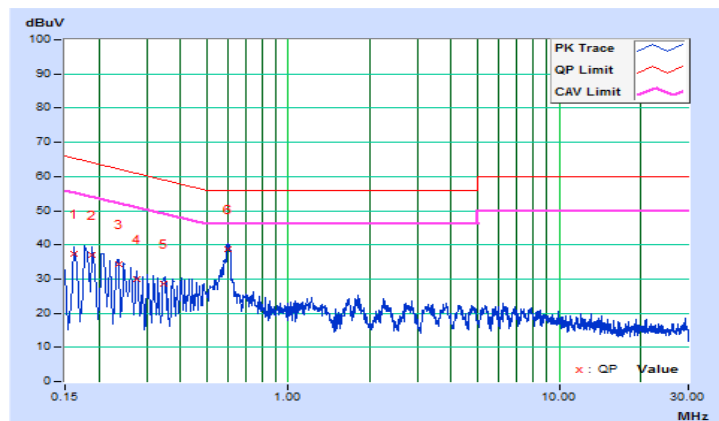


量測頻率範圍	150kHz ~ 30MHz	檢測器與頻寬	準峰值 (QP) / 平均值 (AV), 9kHz
量測電壓值	110Vac, 60Hz	量測場地溫濕度	25°C, 75%RH
測試者	Thomas Wei	測試日期	2019/6/29

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	0.16181	9.82	27.62	11.67	37.44	21.49	65.37	55.37	-27.93	-33.88
2	0.18910	9.84	27.29	11.53	37.13	21.37	64.08	54.08	-26.95	-32.71
3	0.23586	9.85	24.66	9.31	34.51	19.16	62.24	52.24	-27.73	-33.08
4	0.27512	9.85	20.00	7.12	29.85	16.97	60.96	50.96	-31.11	-33.99
5	0.34560	9.86	18.90	4.25	28.76	14.11	59.07	49.07	-30.31	-34.96
6	0.59627	9.87	28.74	19.78	38.61	29.65	56.00	46.00	-17.39	-16.35

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)



22.7 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。

23 電波暴露量之評估

23.1 適用標準

請見本報告 3.1 節第(8)&(20)&(29)項的規定。

23.2 評估方法

a) 以 6.5、9.5、14.5、20.5 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

23.3 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	18.51	1.39	20	0.019	1	Pass
WLAN 5180 ~ 5240	21.54	4.06	20	0.072	1	Pass
WLAN 5260 ~ 5320	22.63	3.10	20	0.074	1	Pass
WLAN 5500 ~ 5720	21.40	5.35	20	0.094	1	Pass
WLAN 5745 ~ 5825	22.36	5.29	20	0.116	1	Pass
BT 2402-2480	3.07	1.39	20	0.001	1	Pass

CONCLUSION:

Both of the WLAN & BT 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

$$WLAN\ 5GHz + BT = 0.126 / 1 + 0.001 / 1 = 0.127$$

Therefore, the maximum calculation of this situation is 0.145, which is less than the "1" limit.

24 待測物照片

請參照 BV CPS 報告編號：190606C07

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	Interactive media streaming device	H2C	SD8987-16.100.10.P10-C4X15C636a-GPL-<FP100>

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	PIFA	5250~5350	3.10
1	PIFA	5470~5725	5.35

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	22.52	178.649
5470~5725	21.33	135.831

802.11n (HT20)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	22.63	183.231
5470~5725	21.40	138.038

802.11n (HT40)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	18.89	77.446
5470~5725	21.34	136.144

802.11ac (VHT80)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	13.46	22.182
5470~5725	18.25	66.834

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	25.62	364.754
5470~5725	26.68	465.586

802.11n (HT20)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	25.73	374.111
5470~5725	26.75	473.151

802.11n (HT40)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	21.99	158.125
5470~5725	26.69	466.659

802.11ac (VHT80)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	16.56	45.290
5470~5725	23.60	229.087

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 473.151mW which less than 500mW, therefore it's not require TPC function.

Applicable	E.I.R.P	LP0002 4.7.7.1 章節
	>500mW	The TPC mechanism is required for system with an E.I.R.P of above 500mW
√	<500mW	The TPC mechanism is not required for system with an E.I.R.P of less 500mW

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	✓	✓ note	✓
DFS Detection Threshold	✓	Not required	✓
Channel Availability Check Time	✓	Not required	Not required
U-NII Detection Bandwidth	✓	Not required	✓

Note: Per KDB 905462 D03 UNII Clients Without Radar Detection New Rules v01r02 section (b)(5/6), If the client moves with the master, the device is considered compliant if nothing appears in the client non-occupancy period test. For devices that shut down (rather than moving channels), no beacons should appear. An analyzer plot that contains a single 30-minute sweep on the original channel.

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 each of the bonded 20 MHz channels and the channel center frequency.

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.	$\text{Roundup} \left\{ \begin{array}{l} \left(\frac{1}{360} \right) \\ \left(\frac{19 \cdot 10^6}{\text{PRI}_{\mu\text{sec}}} \right) \end{array} \right\}$	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

Three subsets of trials will be performed with a minimum of ten trials per subset. The subset of trials differ in where the Long Pulse Type 5 Signal is tuned in frequency.

a) the Channel center frequency
b) tuned frequencies such that 90% of the Long Pulse Type 5 frequency modulation is within the low edge of the UUT Occupied Bandwidth
c) tuned frequencies such that 90% of the Long Pulse Type 5 frequency modulation is within the high edge of the UUT Occupied Bandwidth

It include 10 trails for every subset, the formula as below,

For subset case 1: the center frequency of the signal generator will remain fixed at the center of the UUT Channel.

For subset case 2: to retain 90% frequency overlap between the radar signal and the UUT Occupied Bandwidth, the center frequency of the signal generator will vary for each of the ten trials in subset case 2. The center frequency of the signal generator for each trial is calculated by:

$$FL + (0.4 * \text{Chirp Width [in MHz]})$$

For subset case 3: to retain 90% frequency overlap between the radar signal and the UUT Occupied Bandwidth, the center frequency of the signal generator will vary for each of the ten trials in subset case 3. The center frequency of the signal generator for each trial is calculated by:

$$FH - (0.4 * \text{Chirp Width [in MHz]})$$

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	Mar. 06, 2019	Mar. 05, 2020
Signal generator	MXG	KEYSIGHT	Dec. 24, 2018	Dec. 23, 2019
Horn antenna	BBHA 9120 D	Schwarzbeck	Nov. 25, 2018	Nov. 24, 2019
RF coaxial cable	SUCOFLEX 104	HUBER SUHNER	Aug. 23, 2018	Aug. 22, 2019

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

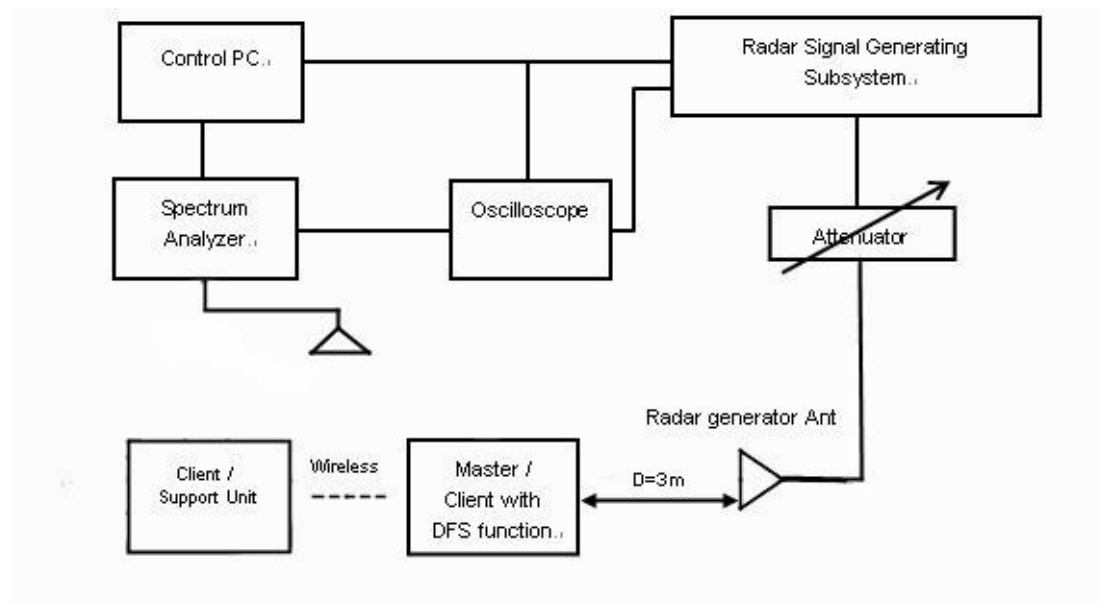
No.	Product	Model No.	Software/Firmware Version
1.	Router	R7800	V1.0.2.36

4 Test Procedure

4.1 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).

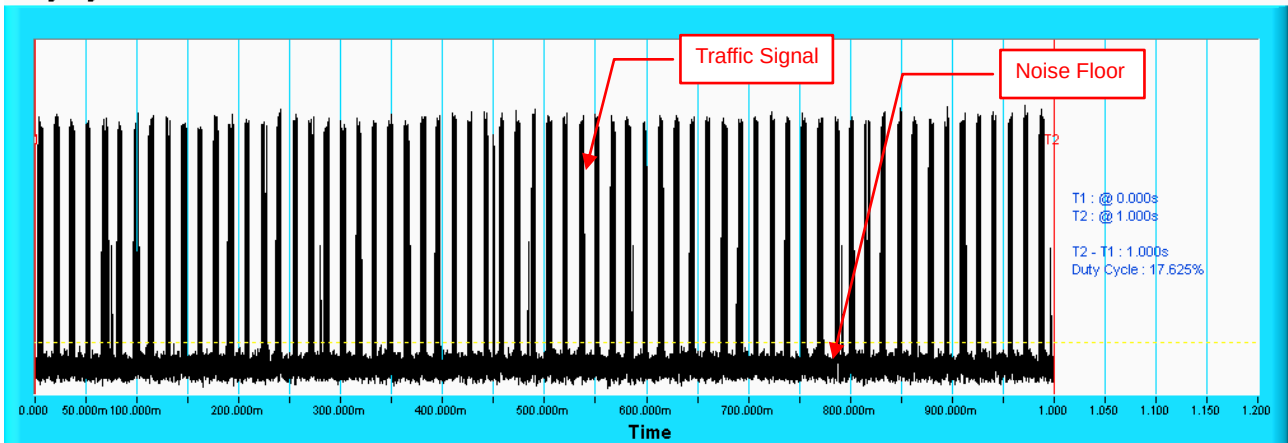
Radiated setup configuration of DFS Measurement System



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



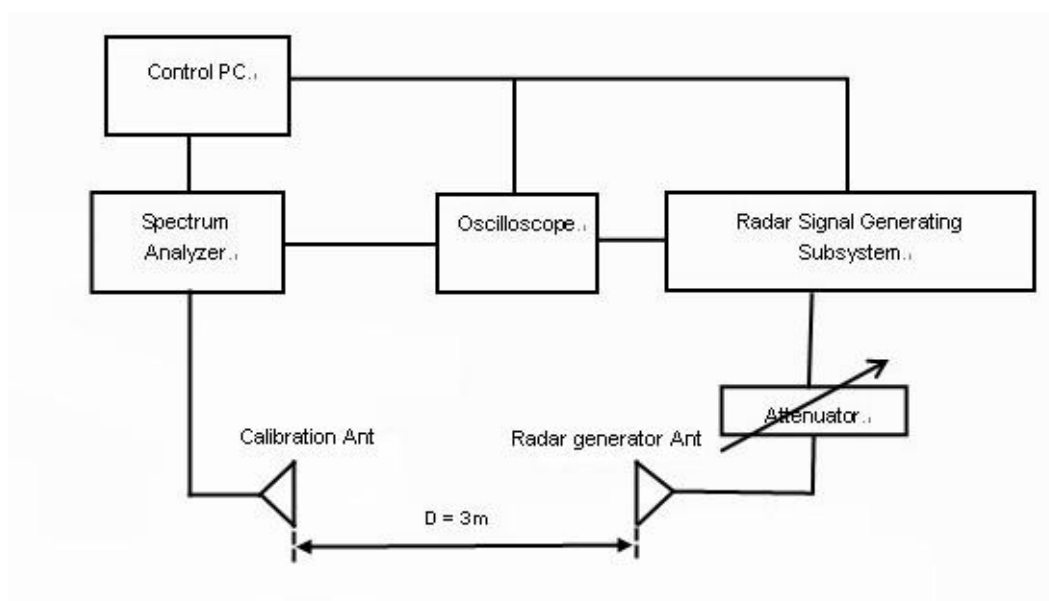
4.2 Calibration of DFS Detection Threshold Level

The measured channel is 5500 MHz, 5510 MHz and 5530 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

The radar signal generate system is generating waveform pattern of radar types. The amplitude of the radar signal generator system is adjusted to yield a level of - 64 dBm as measured on the spectrum analyzer.

The interference detection threshold level is lower than - 64dBm hence it provides margin to the limit.

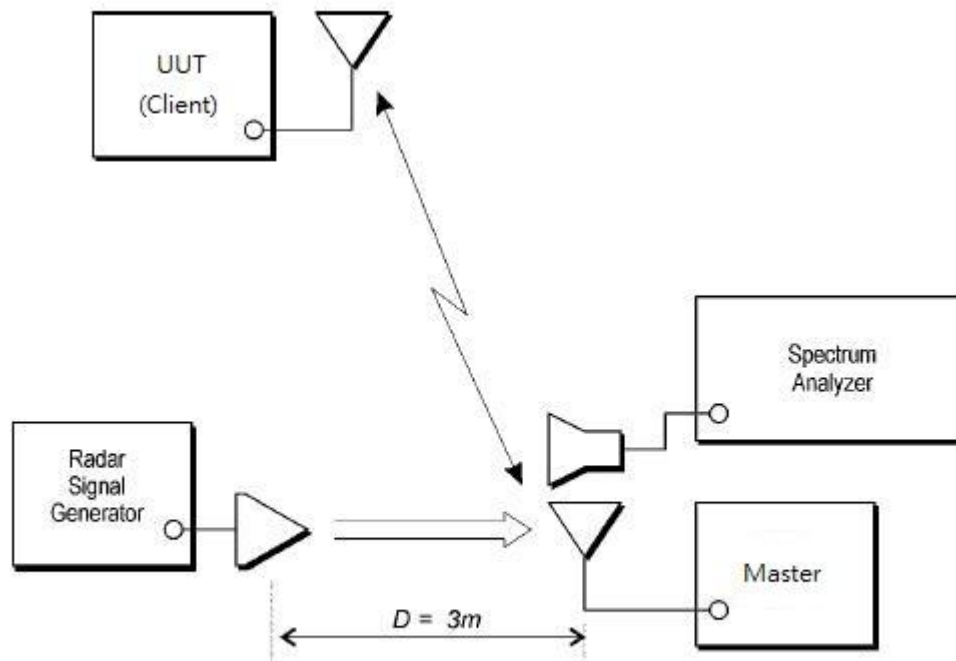


4.3 Deviation from Test Standard

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

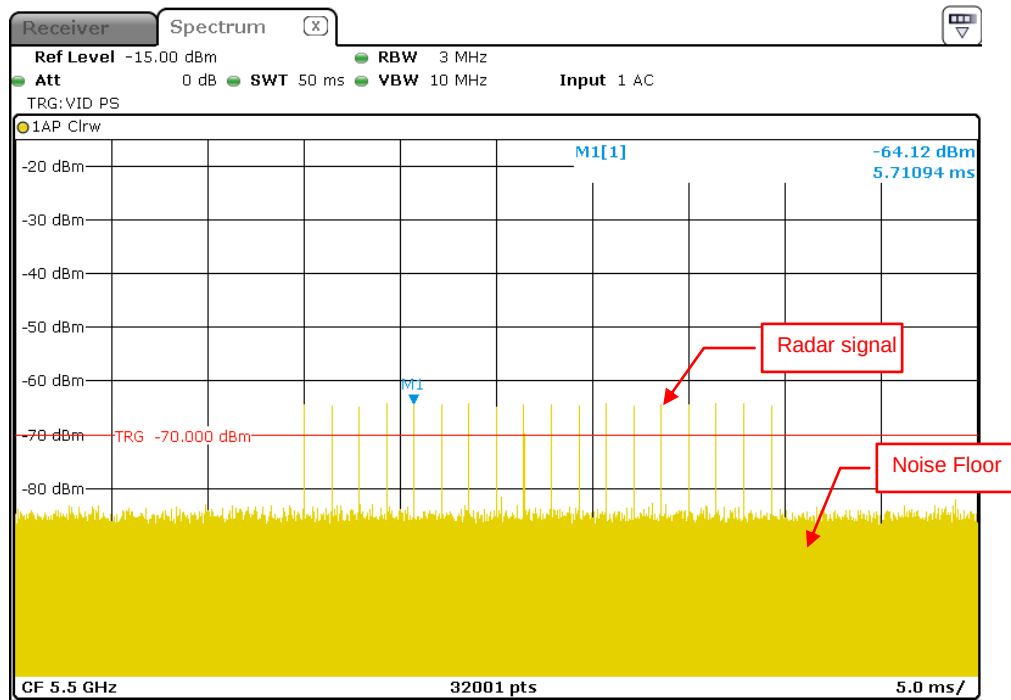
5.2 Test Results

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 AP antenna location is -64 dBm. The tested level is lower than required level hence it provides margin to the limit.



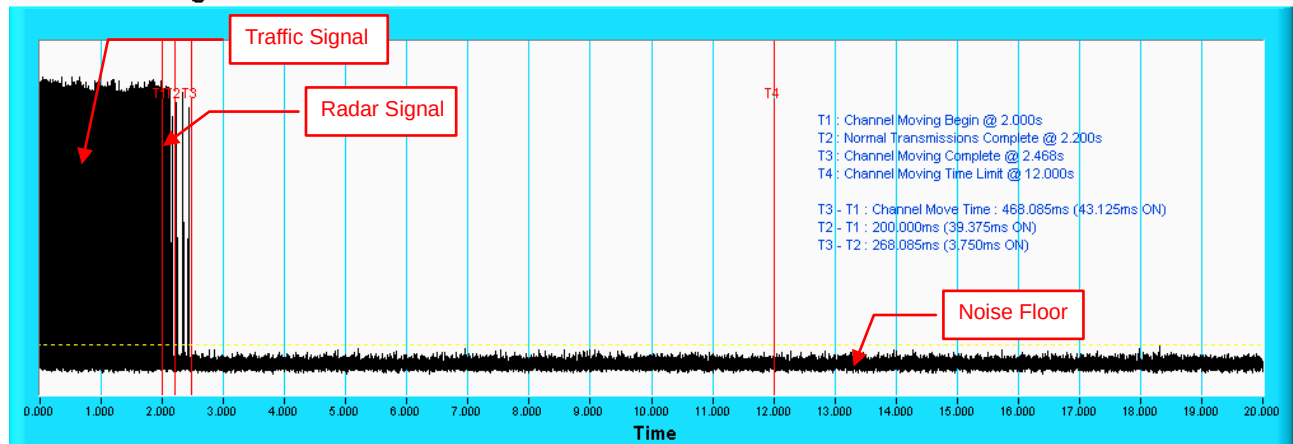
Radar Signal 0

5.2.2 Channel Closing Transmission and Channel Move Time

Radar Signal 0

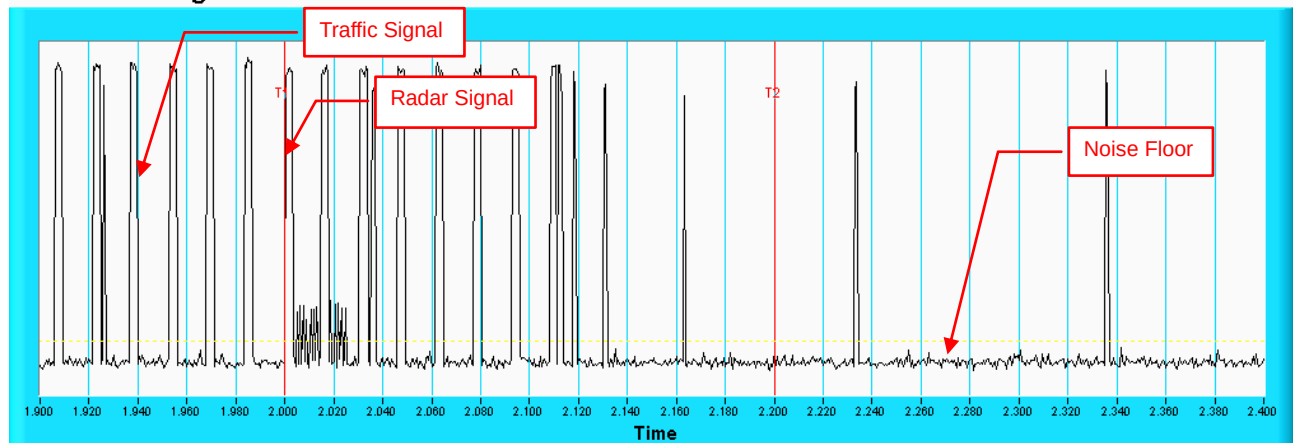
802.11n (HT20)_CH100

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

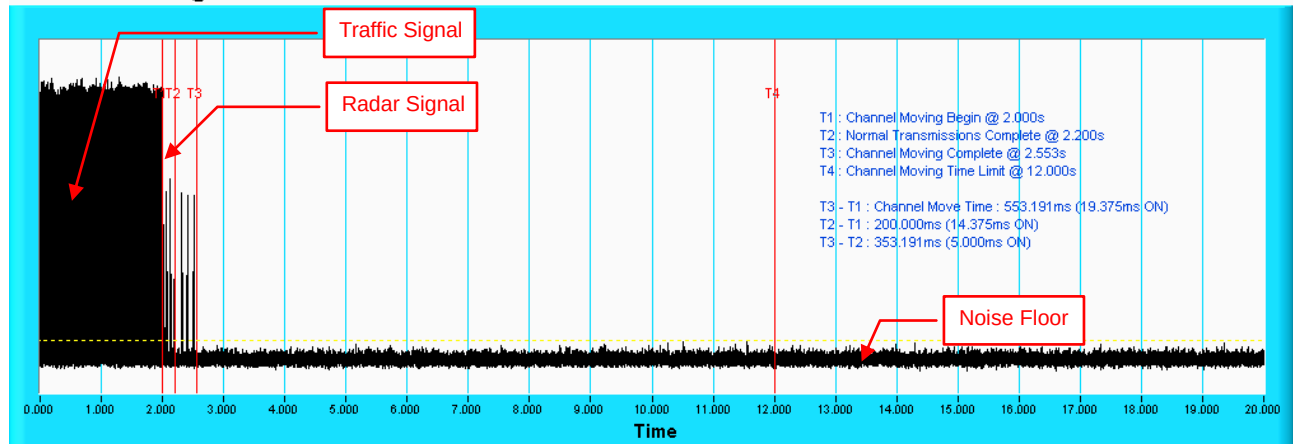


NOTE: An expanded plot for the device vacates the channel in the required 500 ms.

Radar signal 0

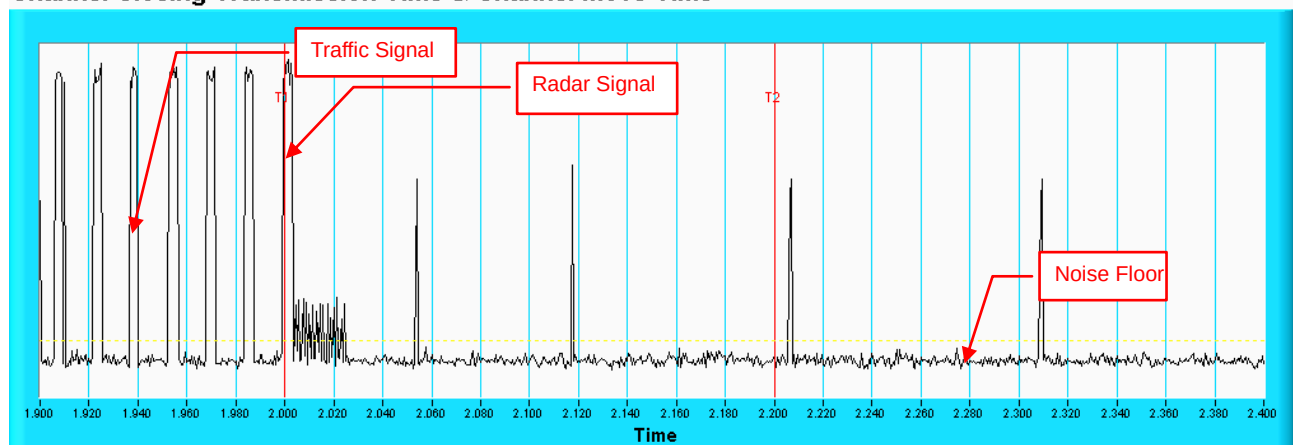
802.11n (HT40)_CH102

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

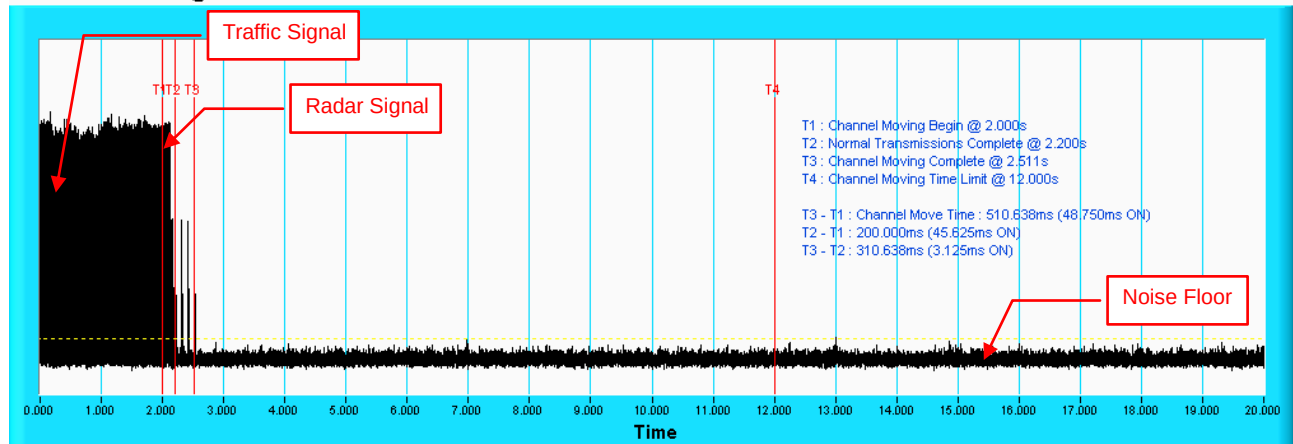


NOTE: An expanded plot for the device vacates the channel in the required 500 ms.

Radar signal 0

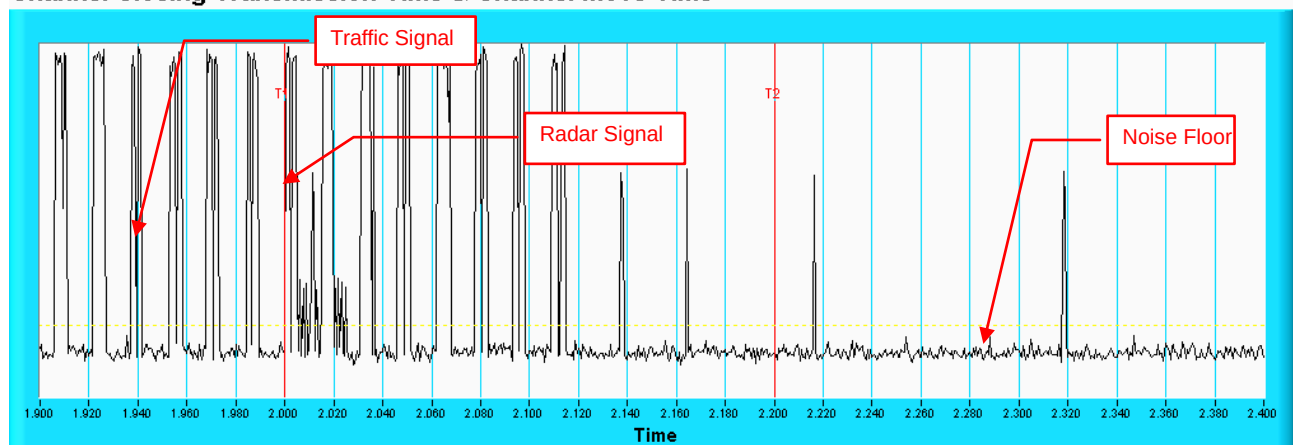
802.11ac (VHT80)_CH106

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.

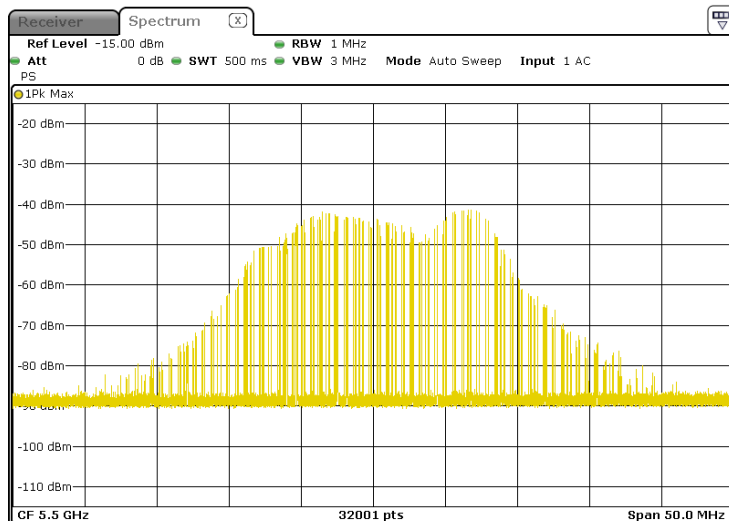
5.2.3 Non-Occupancy Period

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.

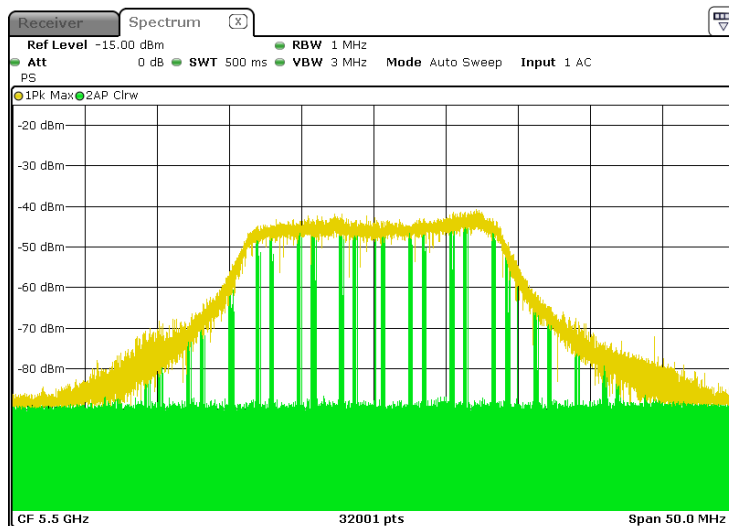
- 1) EUT (Client) links with master on 5500 MHz.

Waveform of EUT links up with Master

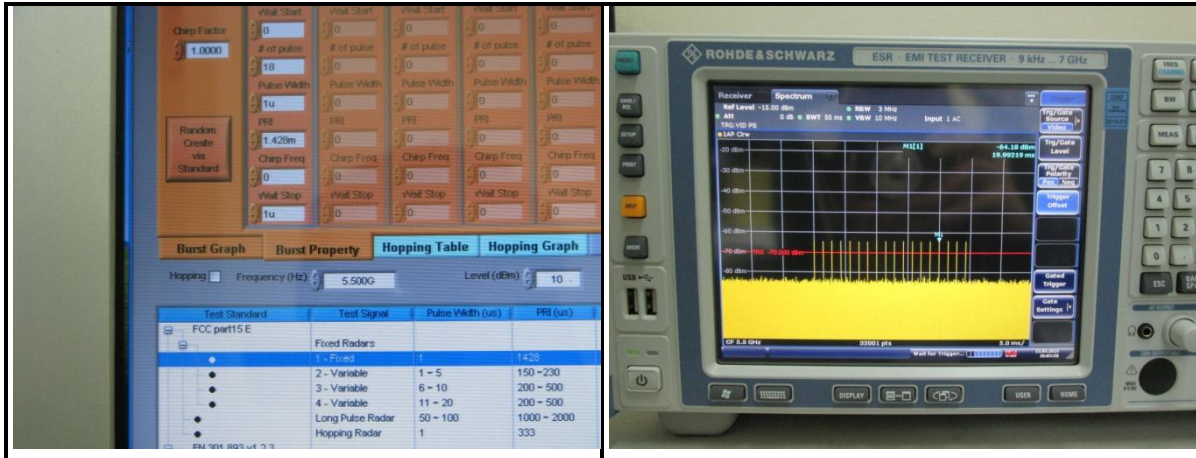


- 2) Client plays specified files via master.

Waveform of transmission



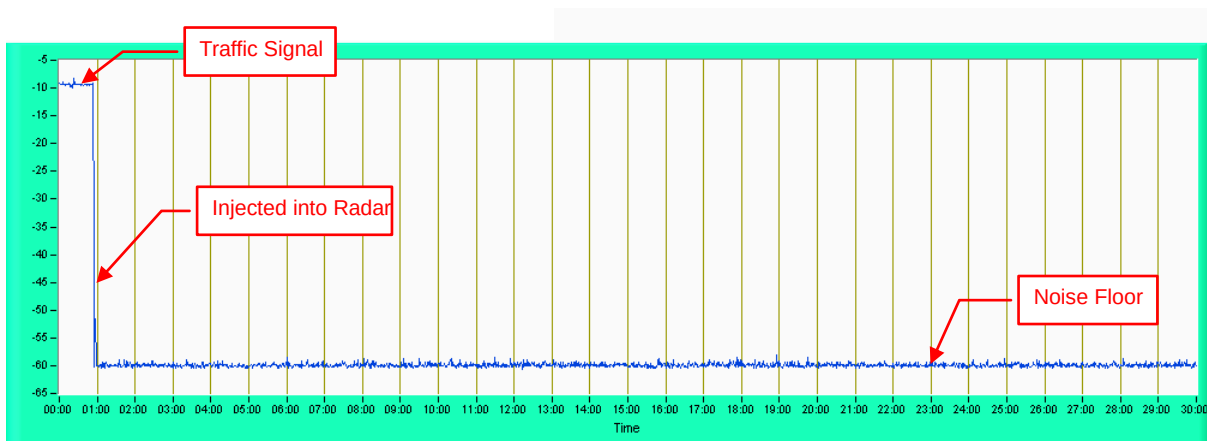
3) Radar signal 0 is applied to the Master device and WiFi traffic signal stop immediately.



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

Plot of 30 minutes period

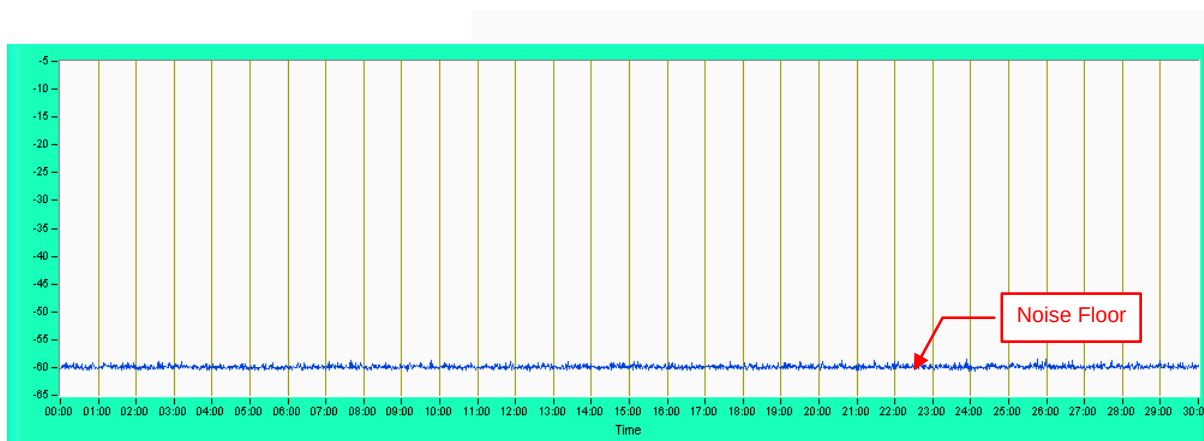
802.11n (HT20)



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

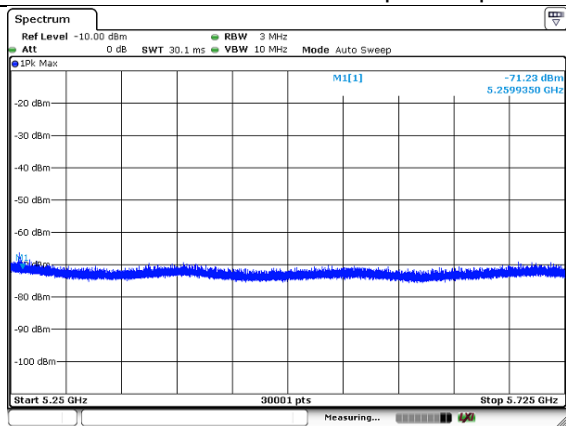
The UUT was investigated after radar was detected the channel and made sure no co-channel operation with radars.

5.2.6 Test Setup photo

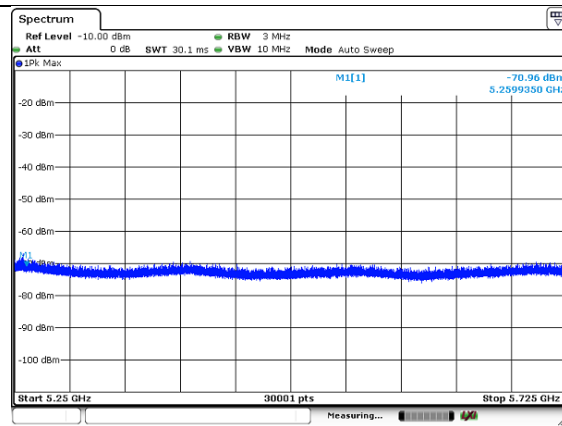
請參閱附件（測試設置照片）

5.2.7 Appendix - Non Beacon On DFS Band

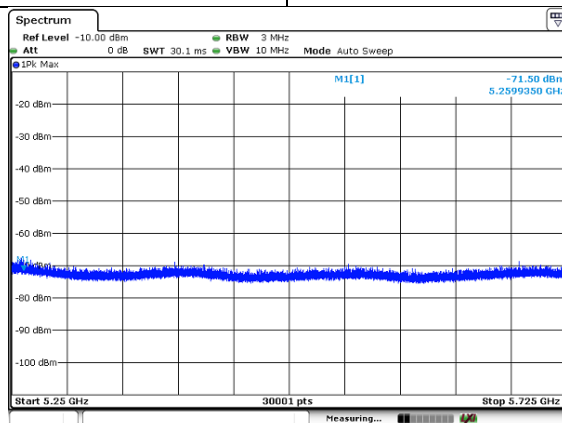
- (1) Test results demonstrating no any beacon on DFS band after power up.
- (2) Observation time is 10min after power up.



Client (UUT) no transmit on 802.11n HT20 mode



Client (UUT) no transmit on 802.11n HT40 mode



Client (UUT) no transmit on 802.11ac VHT80 mode

6 檢測實驗室基本資料

立德國際商品試驗有限公司桃園分公司提供產業界最佳的檢測以及諮詢服務。
本公司為 ISO/IEC 17025 認可實驗室。

如您有任何問題或建議，請與下列實驗室聯絡：

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: 886-3-6668565

Fax: 886-3-6668323

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

您也可以我們的網站內找到各實驗室的地圖。

---END---