

低功率射頻電機測試報告

報告編號:

RT180705C05G-1

申請者

Intel Corp.

產品名稱

RFID Sensor Platform (RSP)

型號

H4000

製造廠商

INTEL Corp.

商標或廠牌

Intel®

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:



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RT180705C05G-1	Original release	108 年 02 月 22 日

證 明 書

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產 品 名 稱：RFID Sensor Platform (RSP)
商 標：Intel
型 號：H4000
申 請 者：Intel Corp.
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：H4000) 為 RT180705C05B 之系列報告，其差異為變更產品名稱，此變更不影響測試結果，故沿用原報告測試數據。原案收件日期 107 年 08 月 28 日，於 107 年 09 月 05 日至 107 年 09 月 30 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 02 月 22 日

審 核 者：



邱碧民 / 專案工程師

， 日 期： 108 年 02 月 22 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: Intel Corp.

製造廠商: INTEL Corp.

申請廠商地址: 2200 MISSION COLLEGE BLVD SANTA CLARA, CA 95054-1537 USA

產品名稱: RFID Sensor Platform (RSP)

廠牌: Intel®

型號: H4000

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 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：	RFID Sensor Platform (RSP)	
型號：	H4000	
額定電源：	48 Vdc (PoE)	
調變方式：	Wireless LAN	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
	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
	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 ~ 5700 MHz, 5745 ~ 5825 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 5260 ~ 5320 MHz: 802.11a, 802.11n (HT20): 4 802.11n (HT40): 2 5500 ~ 5700 MHz: 802.11a, 802.11n (HT20): 11 802.11n (HT40): 5 5745 ~ 5825 MHz: 802.11a, 802.11n (HT20): 5 802.11n (HT40): 2
	Bluetooth LE	40
發射功率：	Wireless LAN	2.4 GHz: 802.11b: 21.23 dBm 802.11g: 24.61 dBm 802.11n (HT20): 25.43 dBm 802.11n (HT40): 14.82 dBm 5.0 GHz: 5180 ~ 5240 MHz: 802.11a: 11.32 dBm 802.11n (HT20): 11.74 dBm 802.11n (HT40): 5.94 dBm 5260 ~ 5320 MHz: 802.11a: 7.33 dBm 802.11n (HT20): 6.62 dBm 802.11n (HT40): 5.73 dBm

		5500 ~ 5700 MHz 802.11a: 8.83 dBm 802.11n (HT20): 8.97 dBm 802.11n (HT40): 5.83 dBm 5745 ~ 5825 MHz: 802.11a: 7.44 dBm 802.11n (HT20): 6.34 dBm 802.11n (HT40): 4.73 dBm
	Bluetooth LE	12.99 dBm
天線種類:	見註 2	
電源線類別:	N/A	
信號線類別:	見註 3	
配件:	見註 3	

註:

1. 此待測物之技術的種類為1Tx / 1Rx之組合。

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

** In test mode assessment for 1TX, both antennas (Ant 0 and Ant 1) 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-0	Ant-1
WLAN	2412 ~ 2462	Dipole	Ant-0: 1415-06QG000 Ant-1: 1415-06QF000	Hongbo / Wanshih	I-PEX	0.93	0.91
	5180 ~ 5240					4.01	3.68
	5260 ~ 5320					4.13	3.70
	5500 ~ 5700					4.29	3.71
	5745 ~ 5825					4.35	3.97
Bluetooth	2402 ~ 2480					0.93	-

3. 此待測設備搭配使用之配件請參閱產品照編號: 180705C05B

4. 此報告中，場強輻射量測經過評估後以下列測試模式進行最終量測。

量測項目	發射	接收
2412 ~ 2462 MHz		
1 GHz 以上量測	802.11b: Ch 1, 6, 11 802.11g: Ch 1, 6, 11 802.11n (HT20): Ch 1, 6, 11 802.11n (HT40): Ch 3, 6, 9	802.11n (HT20): Ch 1
其它不必要之訊號	802.11n (HT20): Ch 1	802.11n (HT20): Ch 1
5180 ~ 5240 MHz, 5260 ~ 5320 MHz, 5500 ~ 5700 MHz & 5745 ~ 5825 MHz		
1 GHz 以上量測	802.11a: Ch 36, 40, 48, 52, 60, 64, 100, 116, 140, 149, 157, 165 802.11n (HT20): Ch 36, 40, 48, 52, 60, 64, 100, 116, 140, 149, 157, 165 802.11n (HT40): Ch 38, 46, 54, 62, 102, 110, 134, 151, 159	802.11a: Ch 140
其它不必要之訊號	802.11a: Ch 140	802.11a: Ch 140
2402 ~ 2480 MHz (Bluetooth LE)		
1 GHz 以上量測	Ch 0, 19, 39	Ch 39
其它不必要之訊號	Ch 39	Ch 39

5. 此報告中傳輸模式，場強輻射量測及電源線傳導干擾量測之外的測試項目，以DSSS調變技術和OFDM調變技術分別進行測試並記錄最終量測結果於報告中。

6. 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。

7. 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3具有較大干擾值，故以其模式進行最終測試。

(2) 場強輻射量測以模式1~3評估完整測試。

模式	測試狀態
1	BT LE + LAN + PoE
2	WLAN 2.4G + LAN + PoE
3	WLAN 5G + LAN + PoE

8. 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，其各擺放最大干擾值之位置如下表，故以此擺放方式進行最終量測，並將測試結果紀錄。

	WLAN 2.4 GHz	5180~5240 MHz	5260~5320 MHz & 5500~5700 MHz	5745~5825 MHz	Bluetooth LE
擺放方式	垂直	垂直	垂直	垂直	垂直

9. Duty cycle of test signal.

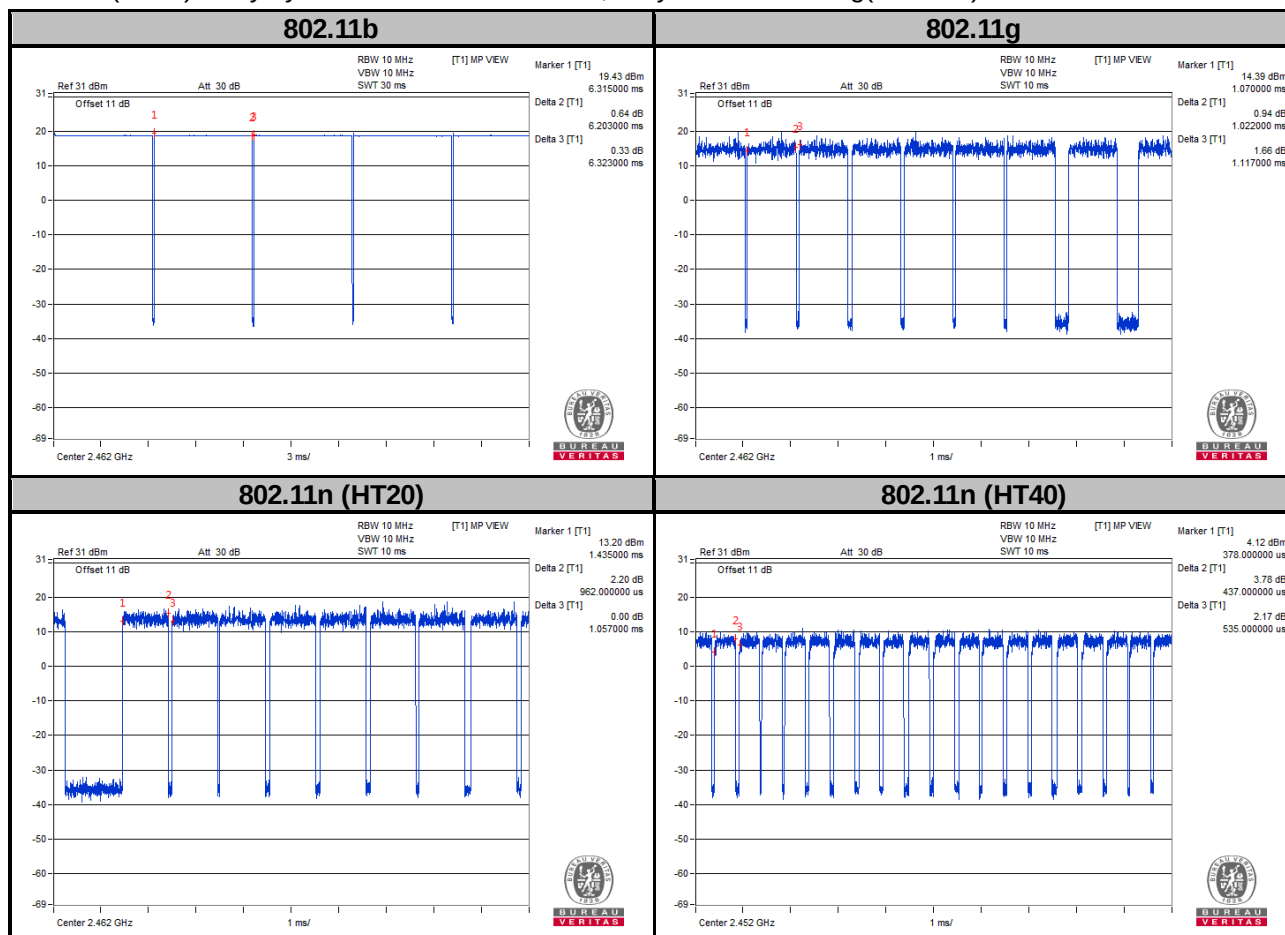
2.4 GHz 频段

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

802.11g: Duty cycle = $1.022/1.117 = 0.915$, Duty factor = $10 * \log(1/0.915) = 0.39$

802.11n (HT20): Duty cycle = $0.962/1.057 = 0.910$, Duty factor = $10 * \log(1/0.910) = 0.41$

802.11n (HT40): Duty cycle = $0.437/0.535 = 0.817$, Duty factor = $10 * \log(1/0.817) = 0.88$

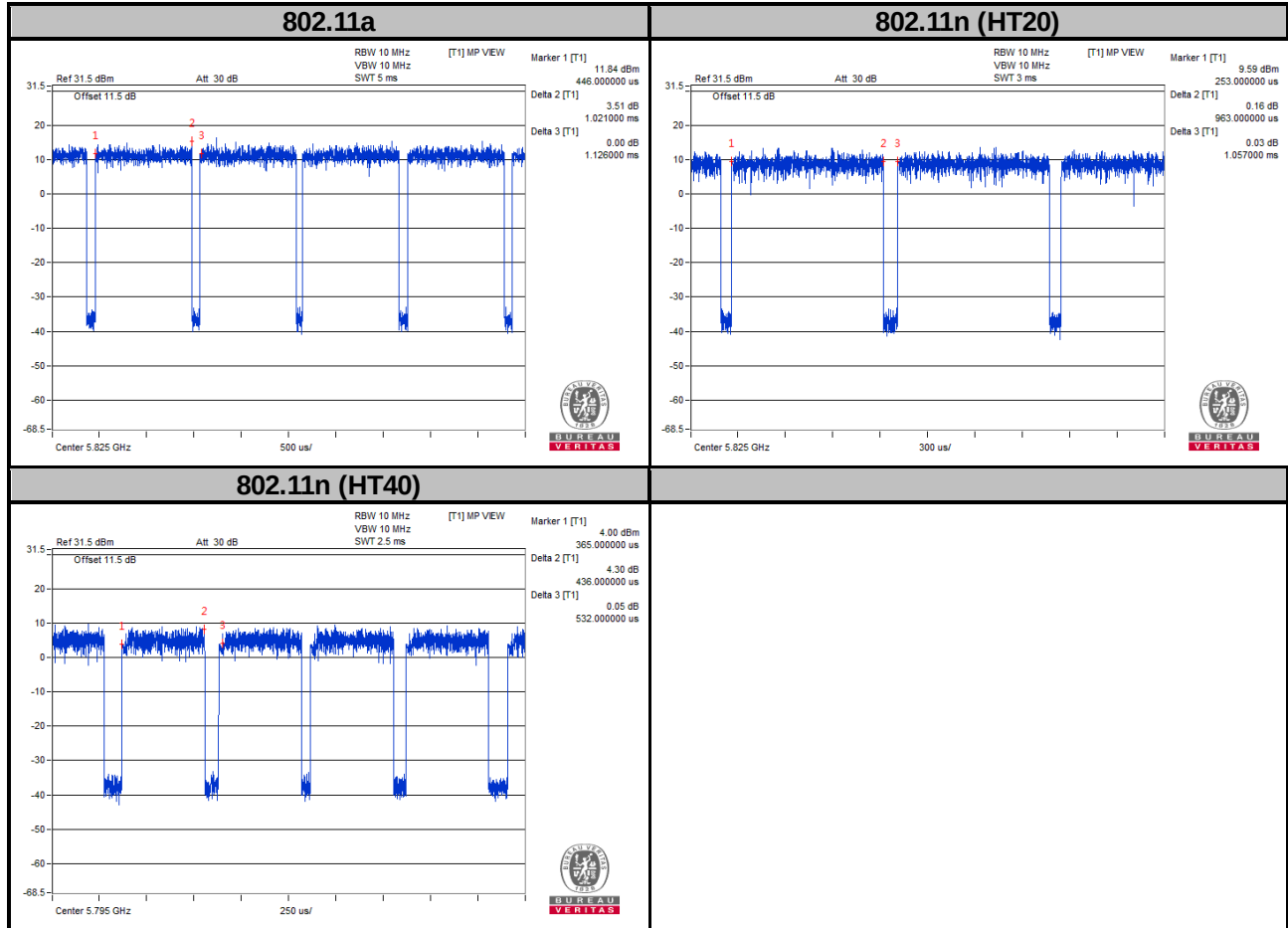


5 GHz频段

802.11a: Duty cycle = $1.021/1.126 = 0.907$, Duty factor = $10 * \log(1/0.907) = 0.42$

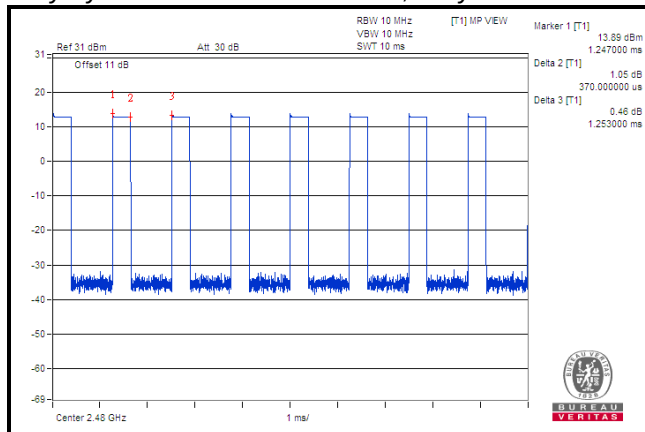
802.11n (HT20): Duty cycle = $0.963/1.057 = 0.911$, Duty factor = $10 * \log(1/0.911) = 0.40$

802.11n (HT40): Duty cycle = $0.436/0.532 = 0.820$, Duty factor = $10 * \log(1/0.820) = 0.86$



BT LE频段

Duty cycle = $0.370/1.253 = 0.295$, Duty factor = $10 * \log(1/0.295) = 5.30$



此裝置各頻道的中心頻率如下：

2.4 GHz 頻段：

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

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

802.11n (HT40):

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

5 GHz 頻段:

802.11a, 802.11n (HT20):

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

802.11n (HT40):

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

802.11ac (VHT80):

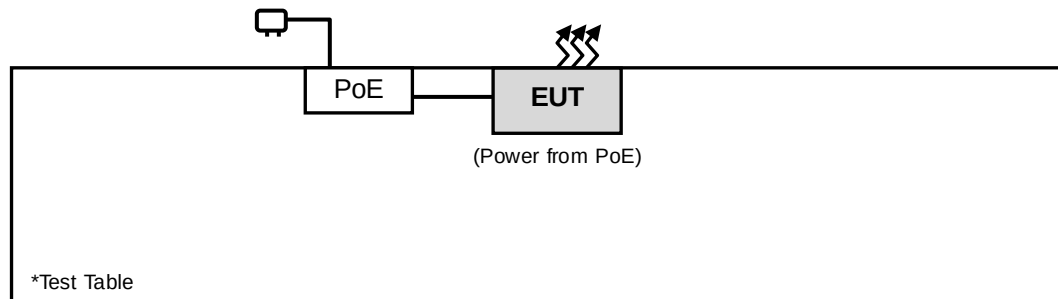
頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)
42	5210	122	5610
58	5290	155	5775
106	5530		

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



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) $\leq$ -27 dBm/MHz。

(3) 操作於 5.725~5.850 GHz 頻段:

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.4.2 節之要求，所有頻帶邊緣向外 5 MHz 內頻率之發射，有效等向輻射功率 (EIRP) $\leq$ 27 dBm/MHz~-15.6 dBm/MHz (以線性法計算對應之限制值)；所有頻帶邊緣向外 5 MHz~25 MHz，有效等向輻射功率 35 (EIRP) $\leq$ 15.6 dBm/MHz~10 dBm/MHz (以線性法計算對應之限制值)；所有頻帶邊緣外 25 MHz~75 MHz，有效等向輻射功率 (EIRP) $\leq$ 10 dBm/MHz~-27 dBm/MHz (以線性法計算對應之限制值)；所有頻帶邊緣外 $\geq$ 75 MHz 的頻率之發射，有效等向輻射功率 (EIRP) $\leq$ -27 dBm/MHz；有關遮罩限制值詳圖 1。

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

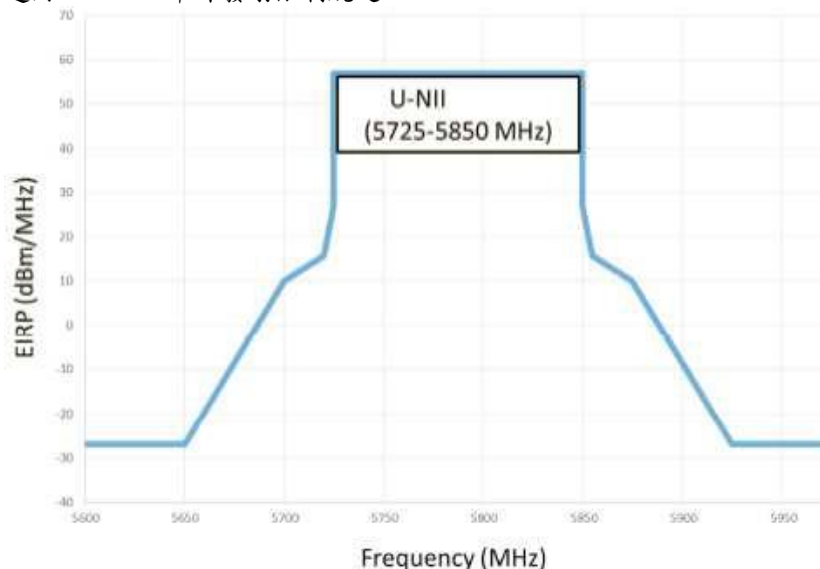


圖 1

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

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

(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)。

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 = 300 Hz

802.11g 為 RBW = 1 MHz, VBW = 1 kHz

802.11n (HT20) 為 RBW = 1 MHz, VBW = 3 kHz

802.11n (HT40) 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

4.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Test Receiver Agilent	N9038A	MY51210203	Mar. 16, 2018	Mar. 15, 2019
Spectrum Analyzer Agilent	N9010A	MY52220314	Nov. 24, 2017	Nov. 23, 2018
Broadband Horn Antenna SCHWARZBECK	BBHA 9170	148	Dec. 13, 2017	Dec. 12, 2018
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-969	Dec. 12, 2017	Dec. 11, 2018
BILOG Antenna SCHWARZBECK	VULB 9168	9168-472	Dec. 06, 2017	Dec. 05, 2018
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 16, 2018	Apr. 15, 2019
Loop Antenna	LPA600	270	Aug. 11, 2018	Aug. 10, 2019
Preamplifier EMCI	EMC001340	980201	Jan. 23, 2018	Jan. 22, 2019
Preamplifier EMCI	EMC 012645	980115	Oct. 20, 2017	Oct. 19, 2018
Preamplifier EMCI	EMC 184045	980116	Oct. 20, 2017	Oct. 19, 2018
Preamplifier EMCI	EMC 330H	980112	Oct. 13, 2017	Oct. 12, 2018
RF Coaxial Cable HUBER+SUHNER	EMC104-SM-SM-8000&3000	140811+170717	Oct. 20, 2017	Oct. 19, 2018
RF Coaxial Cable HUBER+SUHNER	SUCOFLEX 104	EMC104-SM-SM-1000 (140807)	Oct. 20, 2017	Oct. 19, 2018
RF Coaxial Cable Worken	8D-FB	Cable-Ch10-01	Oct. 20, 2017	Oct. 19, 2018
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA

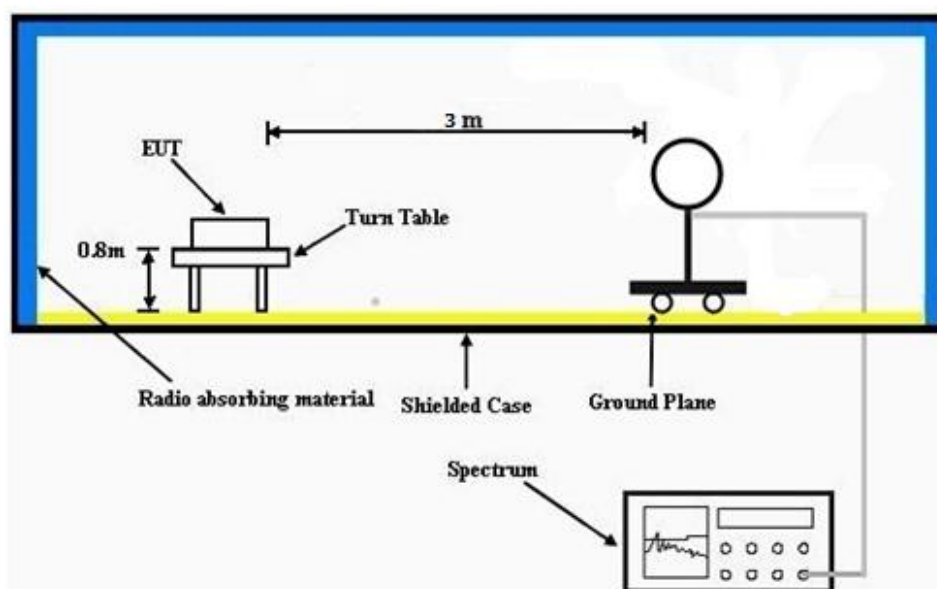
NOTE:

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

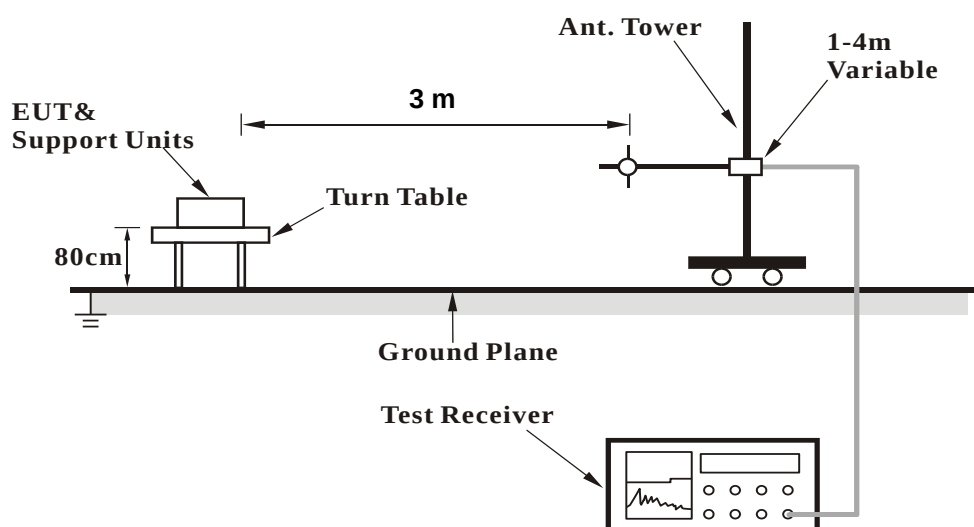
Measurement	Frequency	Uncertainty
Radiated emissions	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~1000 MHz	2.95 dB
	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

4.4 測試配置

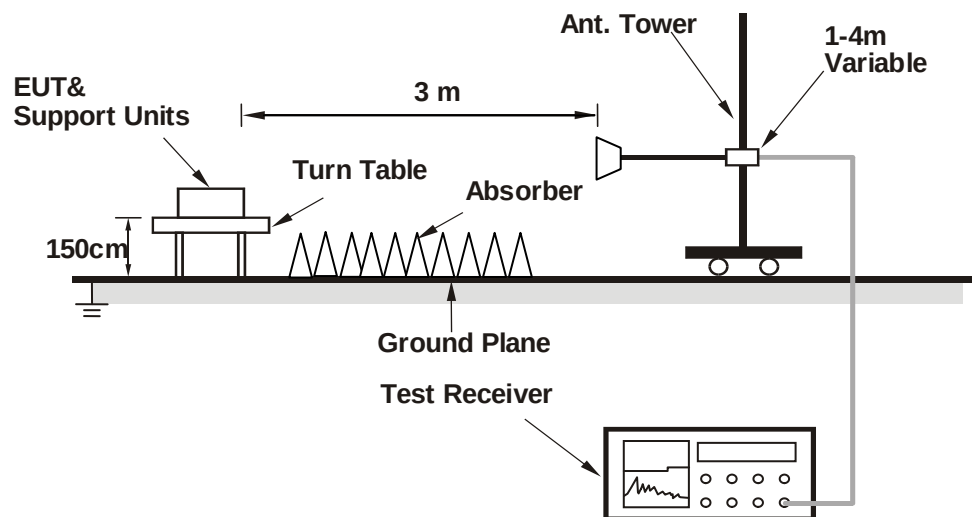
<Frequency Range 9 kHz ~ 30 MHz>



<Frequency Range below 1 GHz>



<Frequency Range above 1 GHz>



4.5 場強度之計算

場強之計算公式如下：

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

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

量測結果請見下頁。

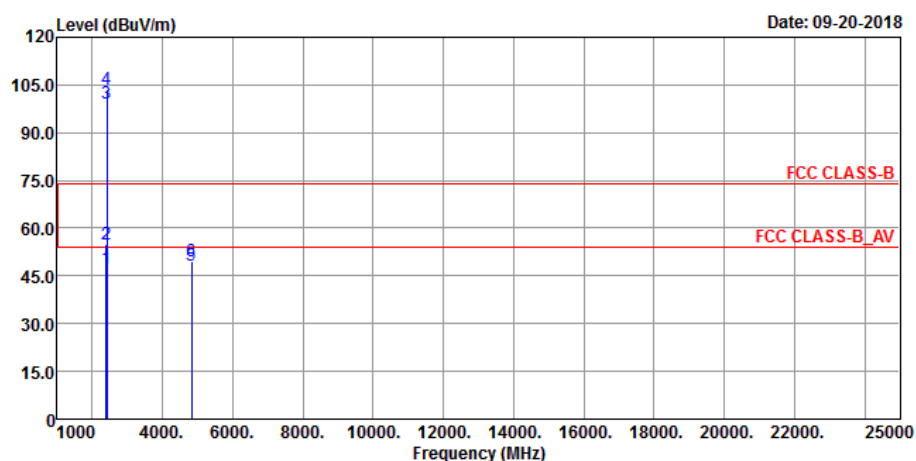
4.6 量測結果

4.6.1 發射諧波

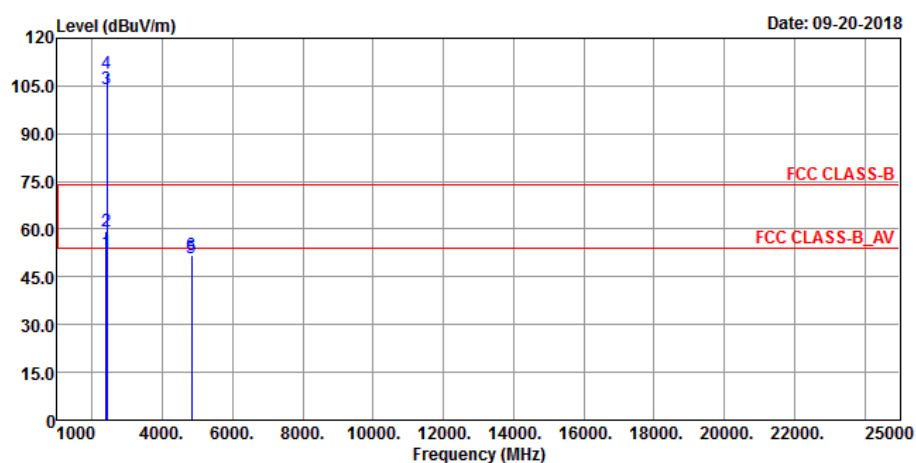
802.11b

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

Horizontal



Vertical



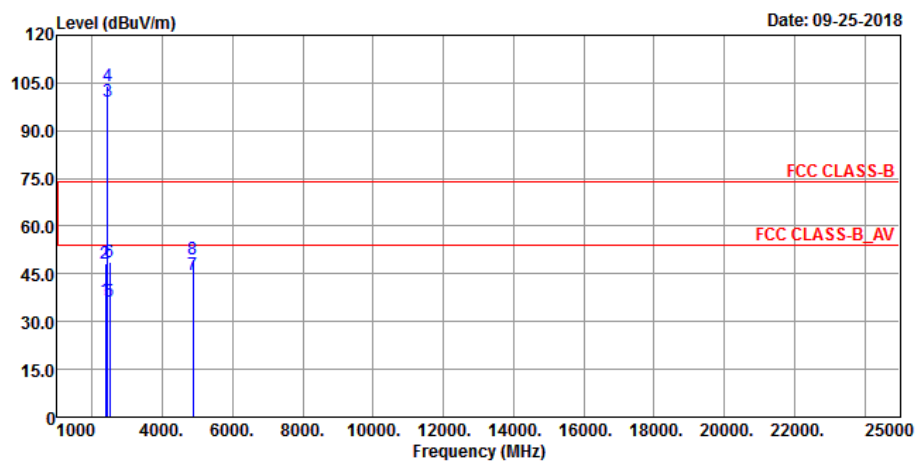
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	47.37	53.37	54	-6.63	27.16	4.36	37.52	103	24	Average
2389.94	54.97	60.97	74	-19.03	27.16	4.36	37.52	103	24	Peak
2412	99.13	105.04			27.23	4.38	37.52	103	24	Average
2412	103.7	109.61			27.23	4.38	37.52	103	24	Peak
4824	48.11	63.02	54	-5.89	31.17	6.81	52.89	152	111	Average
4824	49.78	64.69	74	-24.22	31.17	6.81	52.89	152	111	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
52.65	58.65	54	-1.35	27.16	4.36	37.52	189	360	Average	52.65
59.37	65.37	74	-14.63	27.16	4.36	37.52	189	360	Peak	59.37
104.23	110.14	54			4.38	37.52	189	360	Average	104.23
109.14	115.05	74			4.38	37.52	189	360	Peak	109.14
51.12	66.03	54	-2.88	31.17	6.81	52.89	100	330	Average	51.12
51.75	66.66	74	-22.25	31.17	6.81	52.89	100	330	Peak	51.75

Remarks:

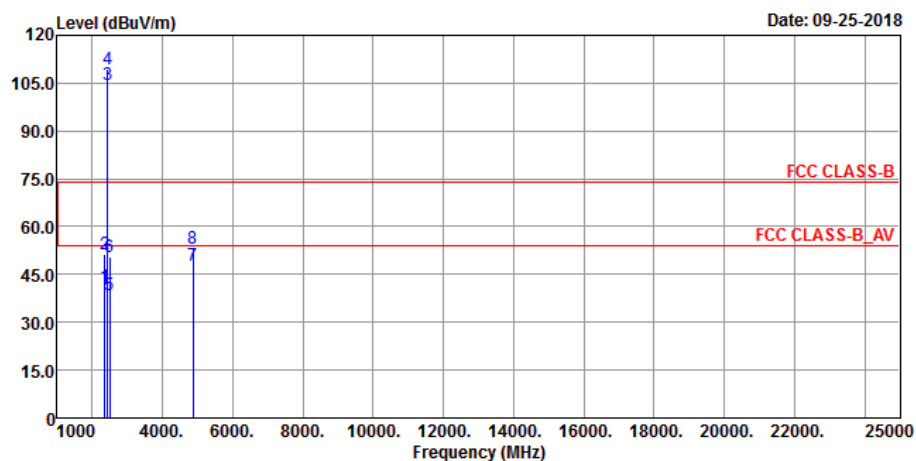
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2412 MHz: Fundamental Frequency.
- The other emission levels were very low against the limit.

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

Horizontal



Vertical



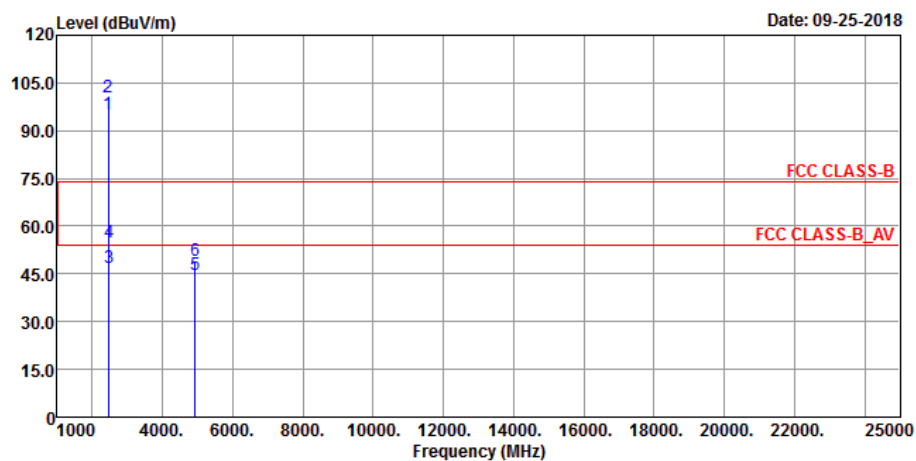
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2376.64	36.77	42.85	54	-17.23	27.08	4.34	37.5	136	21	Average
2376.64	48.47	54.55	74	-25.53	27.08	4.34	37.5	136	21	Peak
2437	99.34	105.02			27.38	4.4	37.46	136	21	Average
2437	103.9	109.58			27.38	4.4	37.46	136	21	Peak
2489.68	36.09	41.37	54	-17.91	27.61	4.43	37.32	136	21	Average
2489.68	48.59	53.87	74	-25.41	27.61	4.43	37.32	136	21	Peak
4874	44.77	59.52	54	-9.23	31.25	6.86	52.86	152	111	Average
4874	49.61	64.36	74	-24.39	31.25	6.86	52.86	152	111	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2352.28	40.98	47.14	54	-13.02	27.01	4.32	37.49	164	10	Average
2352.28	51.38	57.54	74	-22.62	27.01	4.32	37.49	164	10	Peak
2437	104.3	109.98			27.38	4.4	37.46	164	10	Average
2437	109.47	115.15			27.38	4.4	37.46	164	10	Peak
2484.64	38.38	43.74	54	-15.62	27.53	4.43	37.32	164	10	Average
2484.64	50.51	55.87	74	-23.49	27.53	4.43	37.32	164	10	Peak
4874	47.77	62.52	54	-6.23	31.25	6.86	52.86	165	231	Average
4874	52.92	67.67	74	-21.08	31.25	6.86	52.86	165	231	Peak

Remarks:

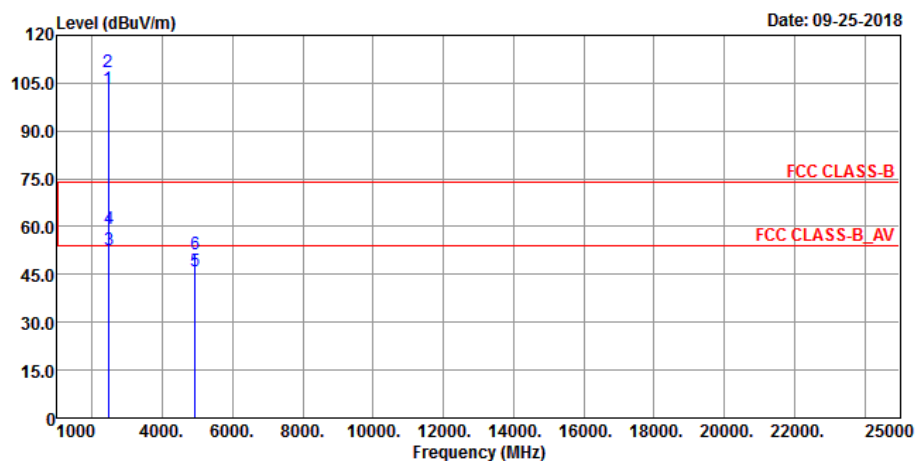
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 2437 MHz: Fundamental Frequency.
3. The other emission levels were very low against the limit.

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

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	95.39	100.91			27.46	4.41	37.39	154	18	Average
2462	100.63	106.15			27.46	4.41	37.39	154	18	Peak
2483.52	46.91	52.27	54	-7.09	27.53	4.43	37.32	154	18	Average
2483.52	55.01	60.37	74	-18.99	27.53	4.43	37.32	154	18	Peak
4924	44.86	59.52	54	-9.14	31.34	6.89	52.89	152	111	Average
4924	49.34	64	74	-24.66	31.34	6.89	52.89	152	111	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	103.39	108.91			27.46	4.41	37.39	165	5	Average
2462	108.46	113.98			27.46	4.41	37.39	165	5	Peak
2483.52	52.75	58.11	54	-1.25	27.53	4.43	37.32	165	5	Average
2483.52	59.23	64.59	74	-14.77	27.53	4.43	37.32	165	5	Peak
4924	46.19	60.85	54	-7.81	31.34	6.89	52.89	102	251	Average
4924	51.3	65.96	74	-22.7	31.34	6.89	52.89	102	251	Peak

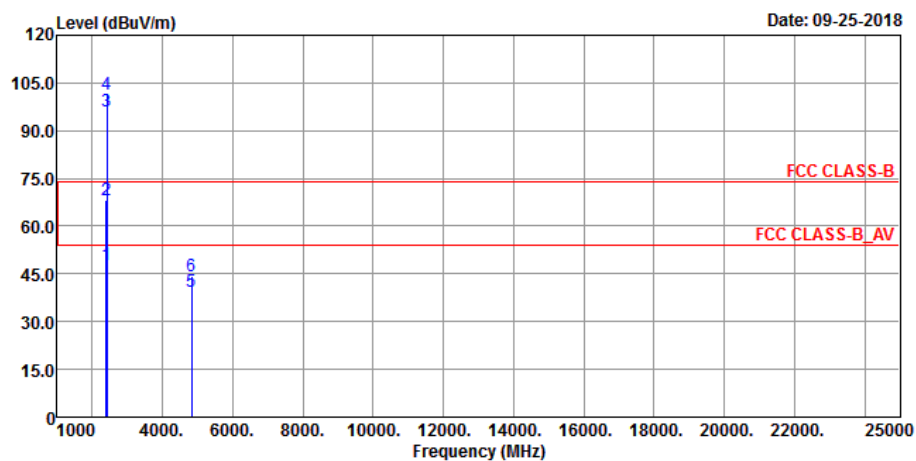
Remarks:

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

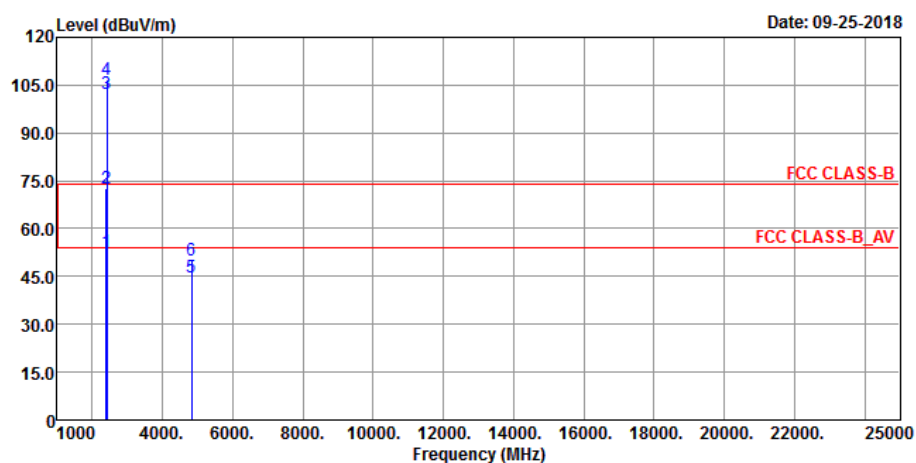
802.11g

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

Horizontal



Vertical



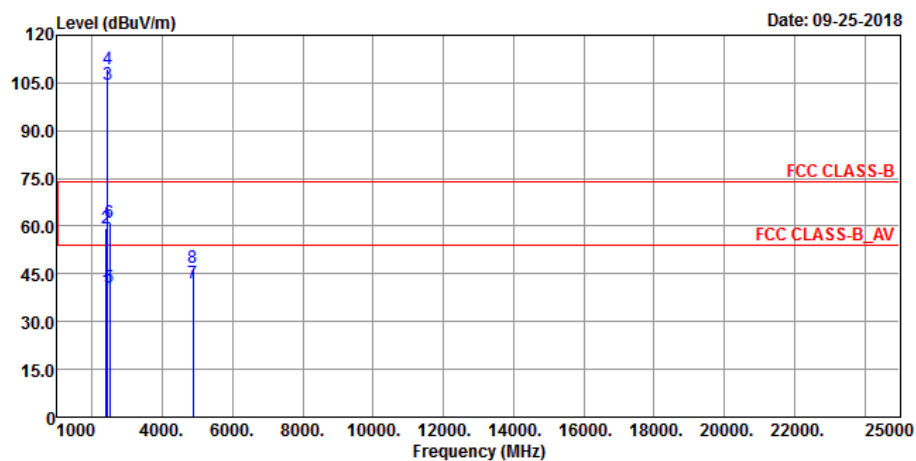
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	48.01	54.01	54	-5.99	27.16	4.36	37.52	107	16	Average
2389.94	68	74	74	-6	27.16	4.36	37.52	107	16	Peak
2412	96.13	102.04			27.23	4.38	37.52	107	16	Average
2412	101.35	107.26			27.23	4.38	37.52	107	16	Peak
4824	39.61	54.52	54	-14.39	31.17	6.81	52.89	152	111	Average
4824	44.28	59.19	74	-29.72	31.17	6.81	52.89	152	111	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	52.89	58.89	54	-1.11	27.16	4.36	37.52	167	10	Average
2389.94	72.52	78.52	74	-1.48	27.16	4.36	37.52	167	10	Peak
2412	102.13	108.04			27.23	4.38	37.52	167	10	Average
2412	106.63	112.54			27.23	4.38	37.52	167	10	Peak
4824	44.94	59.85	54	-9.06	31.17	6.81	52.89	165	231	Average
4824	50.01	64.92	74	-23.99	31.17	6.81	52.89	165	231	Peak

Remarks:

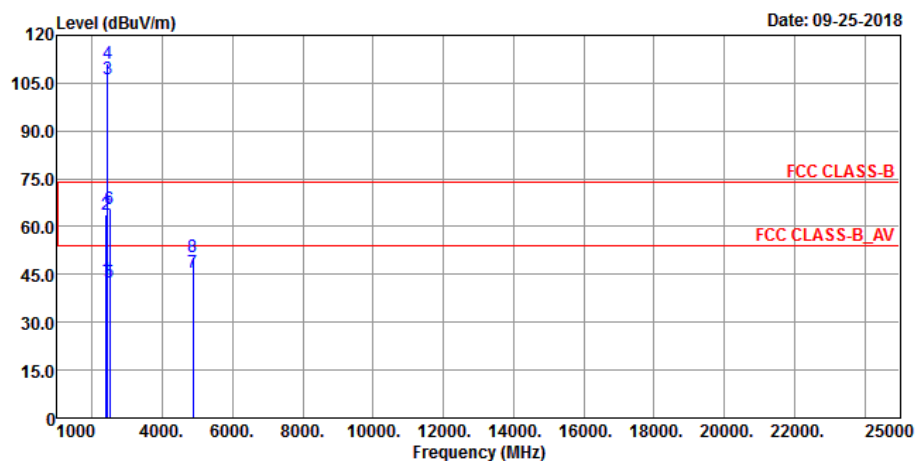
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2412 MHz: Fundamental Frequency.
- The other emission levels were very low against the limit.

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

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	39.78	45.78	54	-14.22	27.16	4.36	37.52	240	303	Average
2389.94	59.45	65.45	74	-14.55	27.16	4.36	37.52	240	303	Peak
2437	104.3	109.98			27.38	4.4	37.46	240	303	Average
2437	109.2	114.88			27.38	4.4	37.46	240	303	Peak
2484.16	40.74	46.1	54	-13.26	27.53	4.43	37.32	240	303	Average
2484.16	61.01	66.37	74	-12.99	27.53	4.43	37.32	240	303	Peak
4874	42.1	56.85	54	-11.9	31.25	6.86	52.86	152	132	Average
4874	46.86	61.61	74	-27.14	31.25	6.86	52.86	152	132	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

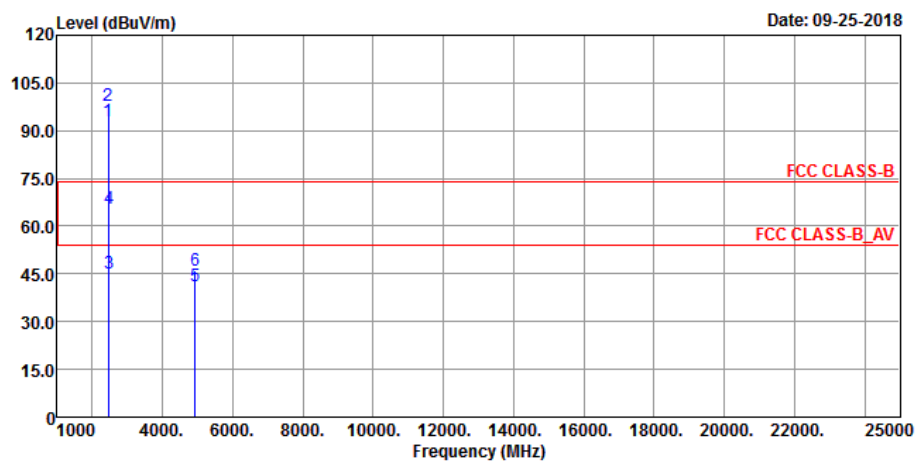
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2387.7	43.26	49.24	54	-10.74	27.16	4.36	37.5	186	22	Average
2387.7	63.63	69.61	74	-10.37	27.16	4.36	37.5	186	22	Peak
2437	106.3	111.98			27.38	4.4	37.46	186	22	Average
2437	111.15	116.83			27.38	4.4	37.46	186	22	Peak
2484.36	42.55	47.91	54	-11.45	27.53	4.43	37.32	186	22	Average
2484.36	65.67	71.03	74	-8.33	27.53	4.43	37.32	186	22	Peak
4874	45.57	60.32	54	-8.43	31.25	6.86	52.86	111	185	Average
4874	50.56	65.31	74	-23.44	31.25	6.86	52.86	111	185	Peak

Remarks:

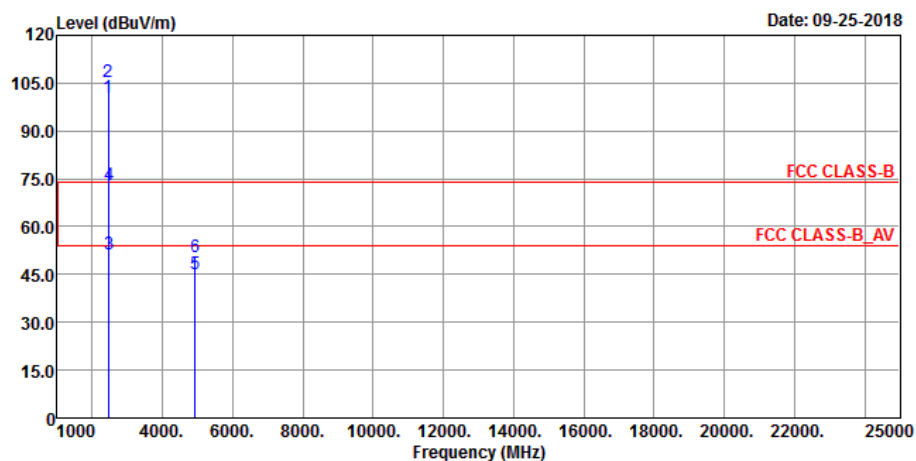
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2437 MHz: Fundamental Frequency.
- The other emission levels were very low against the limit.

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

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	92.77	98.29			27.46	4.41	37.39	134	21	Average
2462	97.78	103.3			27.46	4.41	37.39	134	21	Peak
2483.64	45.07	50.43	54	-8.93	27.53	4.43	37.32	134	21	Average
2483.64	65.34	70.7	74	-8.66	27.53	4.43	37.32	134	21	Peak
4924	40.99	55.65	54	-13.01	31.34	6.89	52.89	185	265	Average
4924	46	60.66	74	-28	31.34	6.89	52.89	185	265	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	100.39	105.91			27.46	4.41	37.39	180	5	Average
2462	105.45	110.97			27.46	4.41	37.39	180	5	Peak
2483.6	51.18	56.54	54	-2.82	27.53	4.43	37.32	180	5	Average
2483.6	72.85	78.21	74	-1.15	27.53	4.43	37.32	180	5	Peak
4924	45.19	59.85	54	-8.81	31.34	6.89	52.89	152	265	Average
4924	50.29	64.95	74	-23.71	31.34	6.89	52.89	152	265	Peak

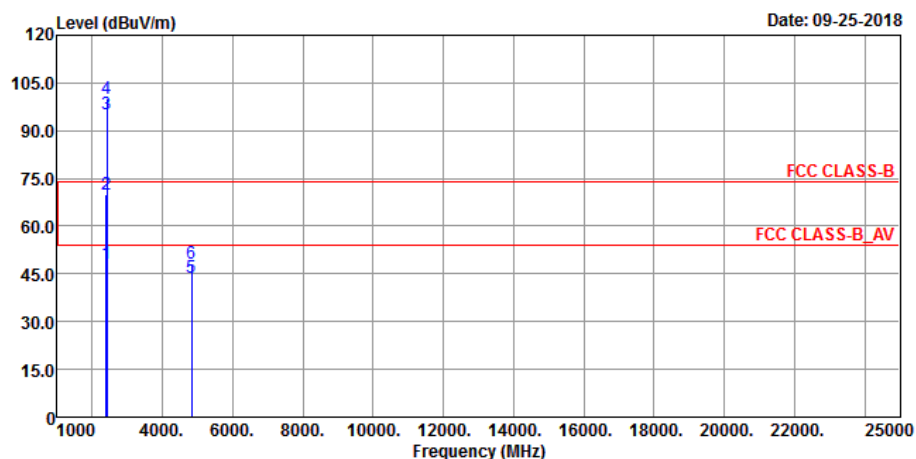
Remarks:

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

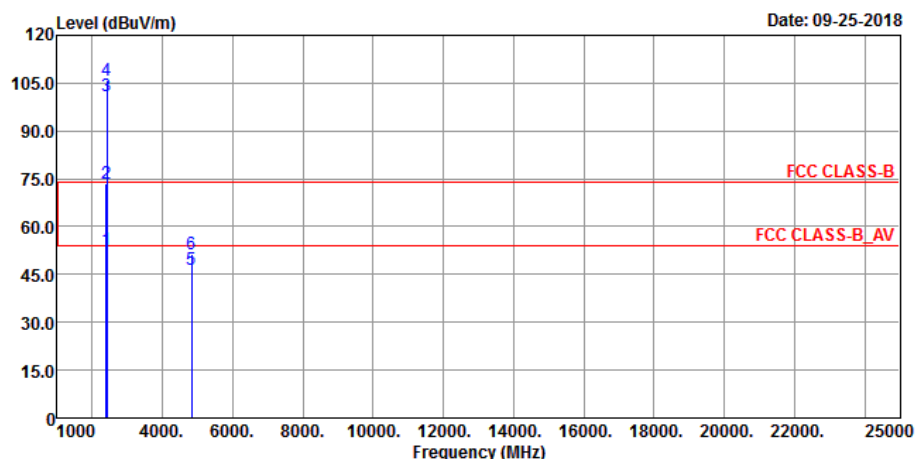
802.11n (HT20)

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

Horizontal



Vertical



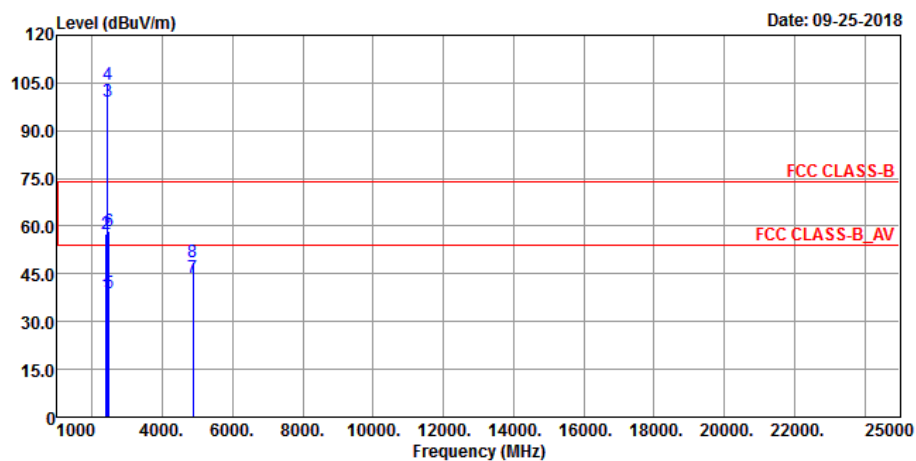
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.24	48.12	54.1	54	-5.88	27.16	4.36	37.5	118	20	Average
2389.24	69.82	75.8	74	-4.18	27.16	4.36	37.5	118	20	Peak
2412	95.13	101.04			27.23	4.38	37.52	118	20	Average
2412	100.29	106.2			27.23	4.38	37.52	118	20	Peak
4824	43.71	58.62	54	-10.29	31.17	6.81	52.89	152	111	Average
4824	48.25	63.16	74	-25.75	31.17	6.81	52.89	152	111	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.1	52.69	58.67	54	-1.31	27.16	4.36	37.5	185	7	Average
2389.1	73.65	79.63	74	-0.35	27.16	4.36	37.5	185	7	Peak
2412	101.13	107.04			27.23	4.38	37.52	185	7	Average
2412	105.99	111.9			27.23	4.38	37.52	185	7	Peak
4824	46.34	61.25	54	-7.66	31.17	6.81	52.89	185	265	Average
4824	51.52	66.43	74	-22.48	31.17	6.81	52.89	185	265	Peak

Remarks:

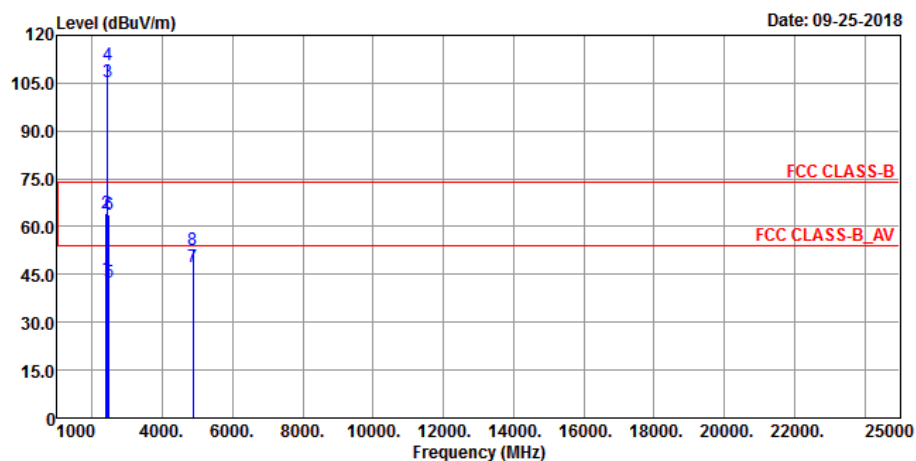
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2412 MHz: Fundamental Frequency.
- The other emission levels were very low against the limit.

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

Horizontal



Vertical



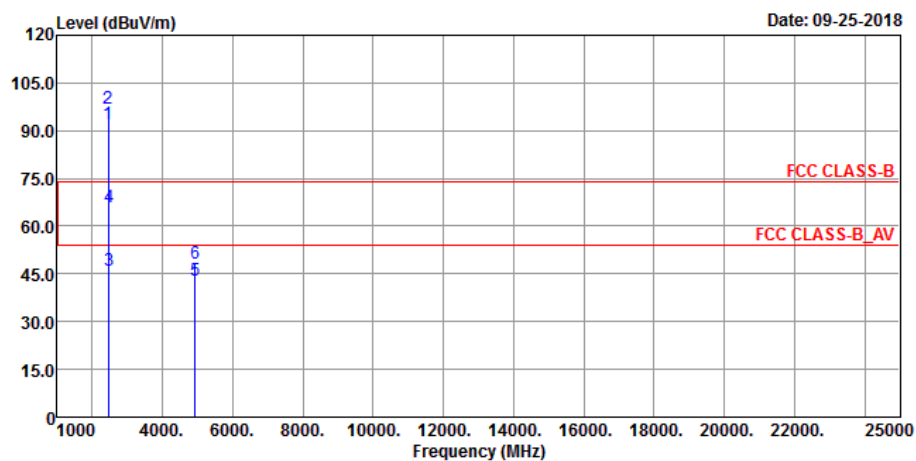
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.24	38.65	44.65	54	-15.35	27.16	4.36	37.52	132	22	Average
2389.24	57.77	63.75	74	-16.23	27.16	4.36	37.5	132	22	Peak
2437	99.3	104.98			27.38	4.4	37.46	132	22	Average
2437	104.65	110.33			27.38	4.4	37.46	132	22	Peak
2484	38.75	44.11	54	-15.25	27.53	4.43	37.32	132	22	Average
2484	58.44	63.8	74	-15.56	27.53	4.43	37.32	132	22	Peak
4874	43.9	58.65	54	-10.1	31.25	6.86	52.86	152	231	Average
4874	48.75	63.5	74	-25.25	31.25	6.86	52.86	152	231	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.38	44.02	50	54	-9.98	27.16	4.36	37.5	167	6	Average
2389.38	64.27	70.25	74	-9.73	27.16	4.36	37.5	167	6	Peak
2437	105.3	110.98			27.38	4.4	37.46	167	6	Average
2437	110.72	116.4			27.38	4.4	37.46	167	6	Peak
2483.64	42.53	47.89	54	-11.47	27.53	4.43	37.32	167	6	Average
2483.64	63.75	69.11	74	-10.25	27.53	4.43	37.32	167	6	Peak
4874	47.4	62.15	54	-6.6	31.25	6.86	52.86	185	265	Average
4874	52.53	67.28	74	-21.47	31.25	6.86	52.86	185	265	Peak

Remarks:

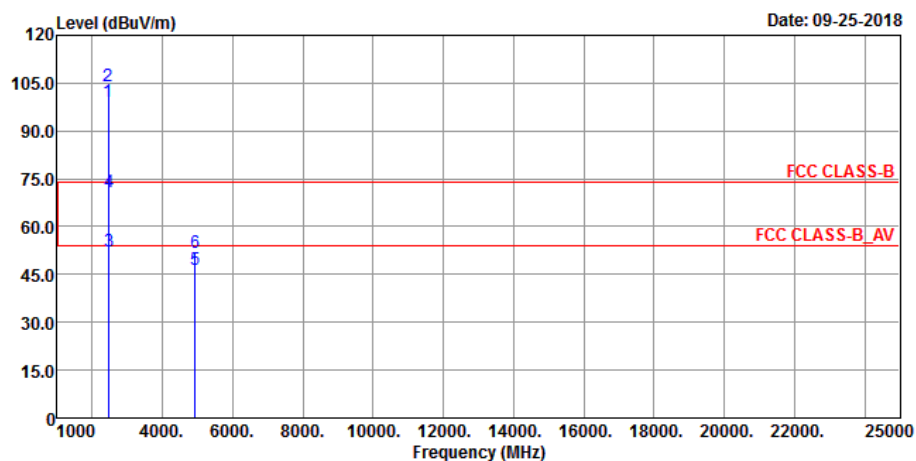
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 2437 MHz: Fundamental Frequency.
3. The other emission levels were very low against the limit.

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

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	92.07	97.59			27.46	4.41	37.39	169	22	Average
2462	97.08	102.6			27.46	4.41	37.39	169	22	Peak
2483.8	46.17	51.53	54	-7.83	27.53	4.43	37.32	169	22	Average
2483.8	65.81	71.17	74	-8.19	27.53	4.43	37.32	169	22	Peak
4924	42.96	57.62	54	-11.04	31.34	6.89	52.89	152	285	Average
4924	48.25	62.91	74	-25.75	31.34	6.89	52.89	152	285	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	99.39	104.91			27.46	4.41	37.39	165	8	Average
2462	104.24	109.76			27.46	4.41	37.39	165	8	Peak
2483.52	52.25	57.61	54	-1.75	27.53	4.43	37.32	165	8	Average
2483.52	71.03	76.39	74	-2.97	27.53	4.43	37.32	165	8	Peak
4924	46.59	61.25	54	-7.41	31.34	6.89	52.89	165	231	Average
4924	52.01	66.67	74	-21.99	31.34	6.89	52.89	165	231	Peak

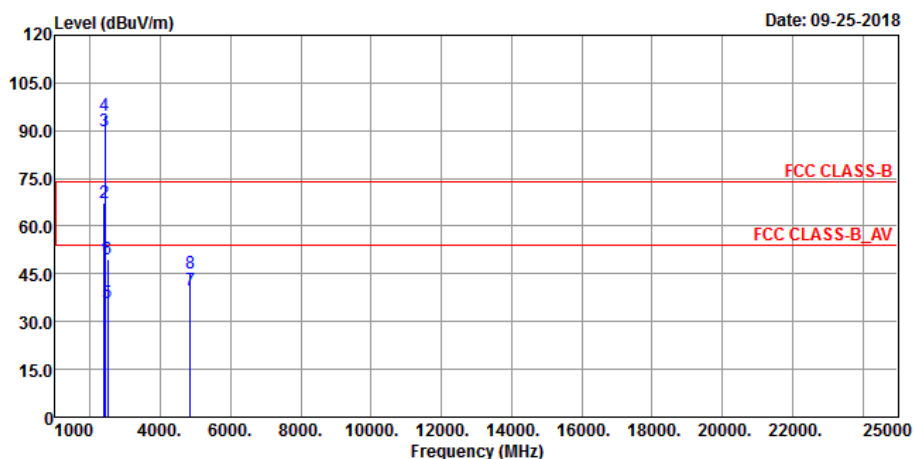
Remarks:

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

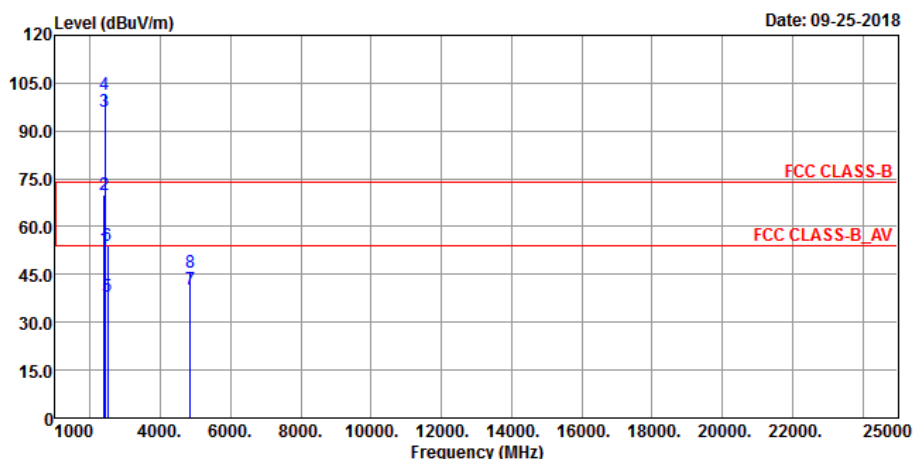
802.11n (HT40)

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

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.66	49.38	55.36	54	-4.62	27.16	4.36	37.5	111	18	Average
2389.66	67.3	73.28	74	-6.7	27.16	4.36	37.5	111	18	Peak
2422	89.86	95.62			27.31	4.39	37.46	111	18	Average
2422	94.91	100.67			27.31	4.39	37.46	111	18	Peak
2485.16	36.09	41.45	54	-17.91	27.53	4.43	37.32	111	18	Average
2485.16	49.4	54.76	74	-24.6	27.53	4.43	37.32	111	18	Peak
4844	39.95	54.8	54	-14.05	31.2	6.83	52.88	152	231	Average
4844	45.02	59.87	74	-28.98	31.2	6.83	52.88	152	231	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

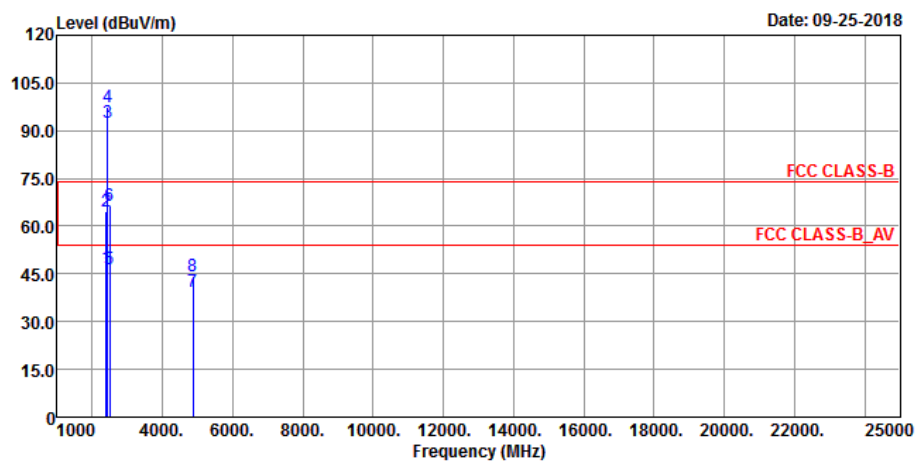
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2387.98	53.18	59.16	54	-0.82	27.16	4.36	37.5	183	9	Average
2387.98	70.13	76.11	74	-3.87	27.16	4.36	37.5	183	9	Peak
2422	96.21	101.97			27.31	4.39	37.46	183	9	Average
2422	101.53	107.29			27.31	4.39	37.46	183	9	Peak
2486.16	38.22	43.58	54	-15.78	27.53	4.43	37.32	183	9	Average
2486.16	54.1	59.46	74	-19.9	27.53	4.43	37.32	183	9	Peak
4844	40.45	55.3	54	-13.55	31.2	6.83	52.88	152	111	Average
4844	45.5	60.35	74	-28.5	31.2	6.83	52.88	152	111	Peak

Remarks:

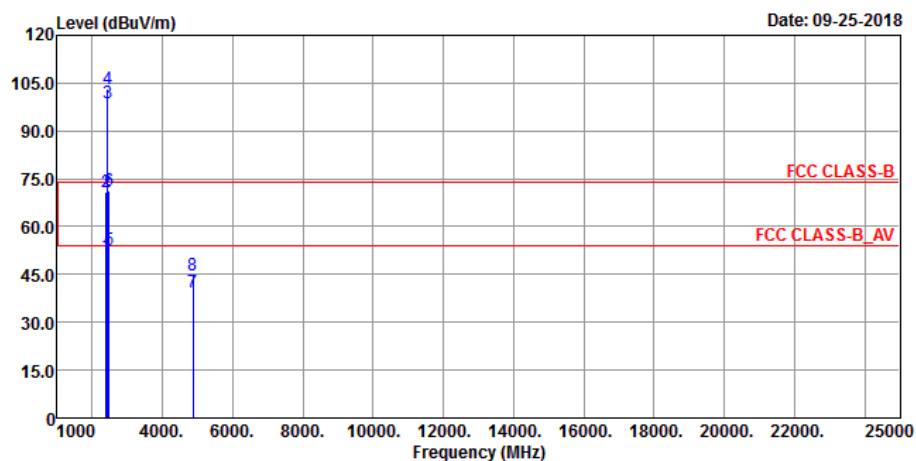
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2422 MHz: Fundamental Frequency.
- The other emission levels were very low against the limit.

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

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	46.79	52.79	54	-7.21	27.16	4.36	37.52	138	17	Average
2389.94	64.83	70.83	74	-9.17	27.16	4.36	37.52	138	17	Peak
2437	92.63	98.31			27.38	4.4	37.46	138	17	Average
2437	97.55	103.23			27.38	4.4	37.46	138	17	Peak
2484.08	46.55	51.91	54	-7.45	27.53	4.43	37.32	138	17	Average
2484.08	66.23	71.59	74	-7.77	27.53	4.43	37.32	138	17	Peak
4874	39.27	54.02	54	-14.73	31.25	6.86	52.86	152	285	Average
4874	44.31	59.06	74	-29.69	31.25	6.86	52.86	152	285	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

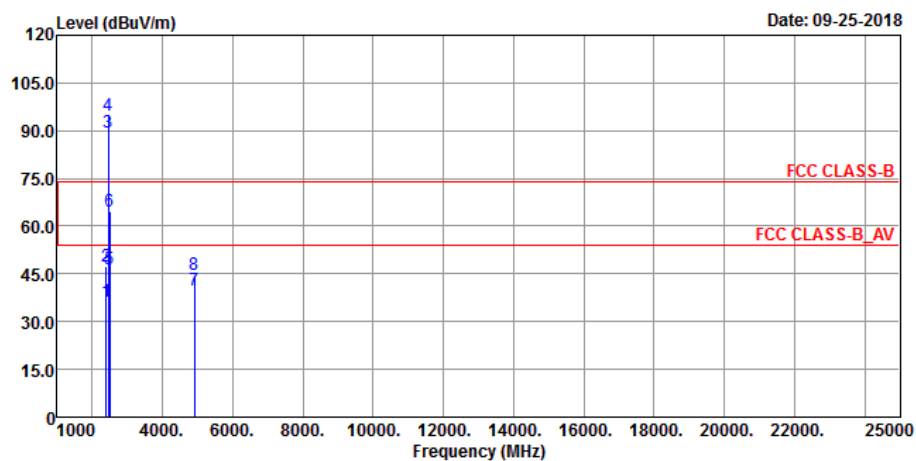
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.8	50.73	56.73	54	-3.27	27.16	4.36	37.52	183	6	Average
2389.8	70.65	76.65	74	-3.35	27.16	4.36	37.52	183	6	Peak
2437	98.63	104.31			27.38	4.4	37.46	183	6	Average
2437	103.31	108.99			27.38	4.4	37.46	183	6	Peak
2483.88	52.75	58.11	54	-1.25	27.53	4.43	37.32	183	6	Average
2483.88	71.15	76.51	74	-2.85	27.53	4.43	37.32	183	6	Peak
4874	39.5	54.25	54	-14.5	31.25	6.86	52.86	295	265	Average
4874	44.5	59.25	74	-29.5	31.25	6.86	52.86	295	265	Peak

Remarks:

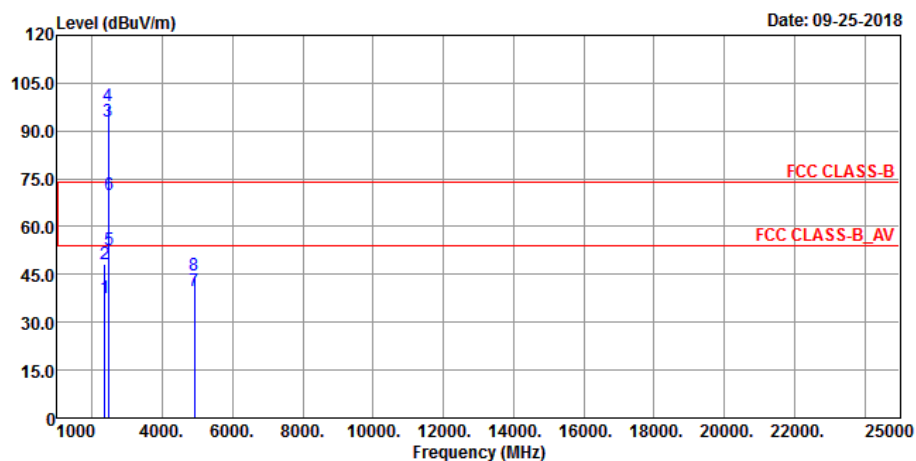
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 2437 MHz: Fundamental Frequency.
3. The other emission levels were very low against the limit.

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

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2385.04	36.3	42.37	54	-17.7	27.08	4.35	37.5	240	302	Average
2385.04	47.44	53.51	74	-26.56	27.08	4.35	37.5	240	302	Peak
2452	89.31	94.91			27.38	4.41	37.39	240	302	Average
2452	94.61	100.21			27.38	4.41	37.39	240	302	Peak
2485.04	46.31	51.67	54	-7.69	27.53	4.43	37.32	240	302	Average
2485.04	64.49	69.85	74	-9.51	27.53	4.43	37.32	240	302	Peak
4904	39.86	54.52	54	-14.14	31.31	6.88	52.85	132	111	Average
4904	44.66	59.32	74	-29.34	31.31	6.88	52.85	132	111	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2349.48	37.74	43.99	54	-16.26	26.93	4.31	37.49	180	2	Average
2349.48	48.46	54.71	74	-25.54	26.93	4.31	37.49	180	2	Peak
2452	92.91	98.51			27.38	4.41	37.39	180	2	Average
2452	97.97	103.57			27.38	4.41	37.39	180	2	Peak
2483.72	52.72	58.08	54	-1.28	27.53	4.43	37.32	180	2	Average
2483.72	69.77	75.13	74	-4.23	27.53	4.43	37.32	180	2	Peak
4904	39.84	54.5	54	-14.16	31.31	6.88	52.85	105	231	Average
4904	44.86	59.52	74	-29.14	31.31	6.88	52.85	105	231	Peak

Remarks:

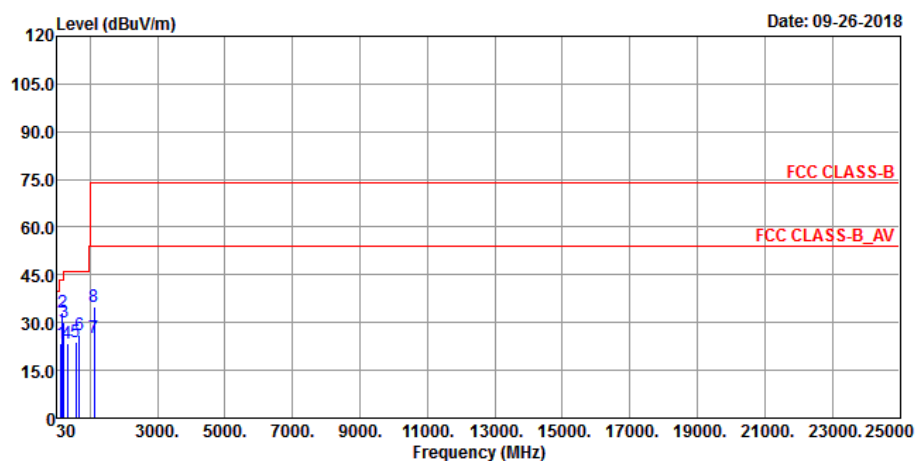
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 2452 MHz: Fundamental Frequency.
3. The other emission levels were very low against the limit.

4.6.2 接收諧波

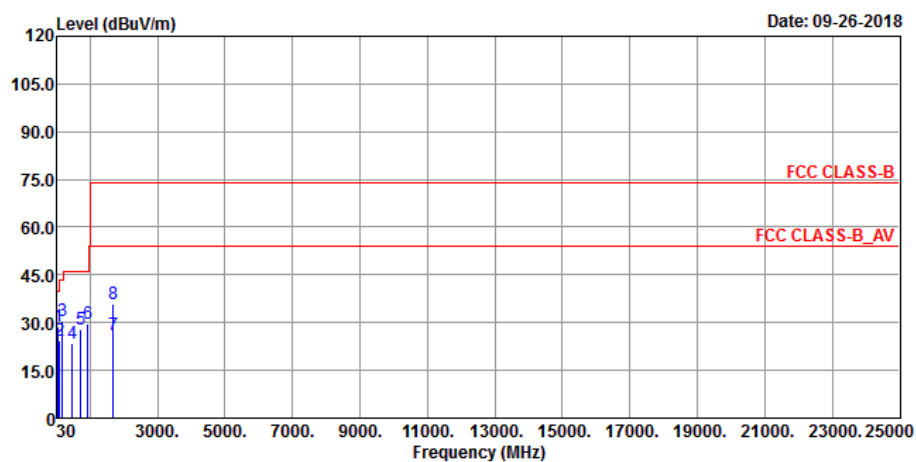
802.11n (HT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 1	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	Jisyong Wang

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
147.37	23.6	41.64	43.5	-19.9	12.61	0.97	31.62	152	231	Peak
187.14	33	53.3	43.5	-10.5	10.26	1.16	31.72	165	295	Peak
224.97	30.33	50.33	46	-15.67	10.42	1.36	31.78	111	174	Peak
338.46	23.55	39.67	46	-22.45	13.87	1.83	31.82	152	231	Peak
575.14	23.82	34.09	46	-22.18	19.03	2.8	32.1	165	285	Peak
675.05	26.17	34.29	46	-19.83	20.51	3.2	31.83	111	162	Peak
1116	25.16	50.26	54	-28.84	25.06	3.29	53.45	154	256	Average
1116	35.19	60.29	74	-38.81	25.06	3.29	53.45	154	256	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
47.46	28.99	46.41	40	-11.01	13.28	0.52	31.22	185	295	Peak
99.84	24.34	46.49	43.5	-19.16	9.06	0.75	31.96	147	152	Peak
188.11	30.56	50.91	43.5	-12.94	10.19	1.16	31.7	165	231	Peak
475.23	23.62	36.27	46	-22.38	16.83	2.39	31.87	111	102	Peak
725.49	27.97	34.99	46	-18.03	21.18	3.42	31.62	174	152	Peak
940.83	29.77	33.76	46	-16.23	23.74	4.19	31.92	165	285	Peak
1691	25.99	50.21	54	-28.01	25.4	4.08	53.7	254	298	Average
1691	36.07	60.29	74	-37.93	25.4	4.08	53.7	254	298	Peak

Remarks:

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

4.6.3 其它不必要之訊號

9 kHz ~ 30 MHz Data:

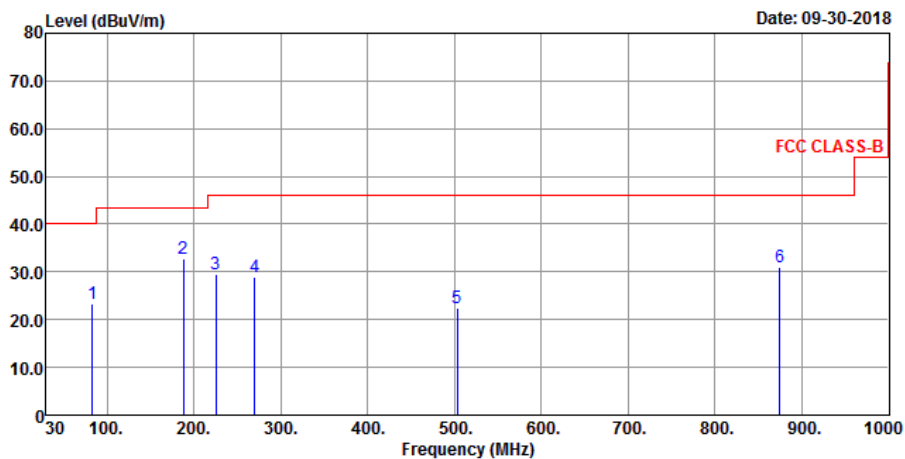
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Data:

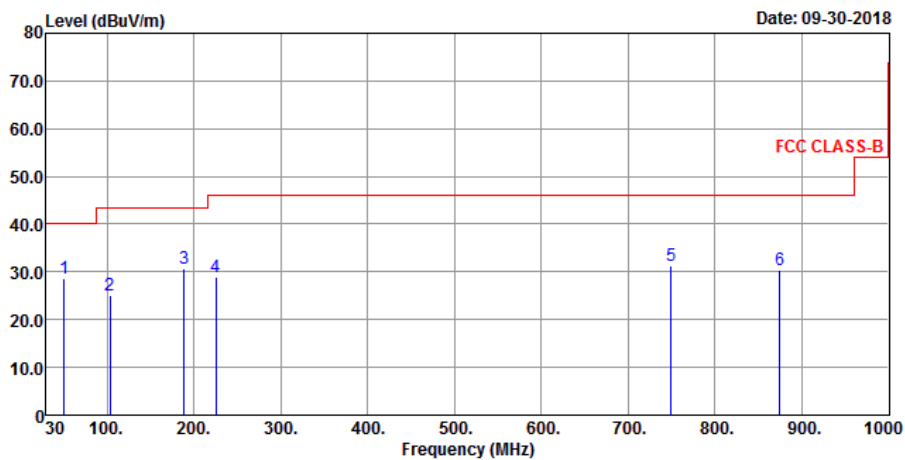
802.11n (HT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 1	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	Jisyong Wang

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
83.35	23.33	46.12	40	-16.67	8.18	0.68	31.65	152	231	Peak
188.11	32.71	53.06	43.5	-10.79	10.19	1.16	31.7	111	195	Peak
224.97	29.56	49.56	46	-16.44	10.42	1.36	31.78	185	274	Peak
269.59	28.82	47.27	46	-17.18	12.05	1.53	32.03	102	251	Peak
503.36	22.34	34.02	46	-23.66	17.4	2.53	31.61	165	239	Peak
874.87	30.93	35.78	46	-15.07	23.19	3.95	31.99	111	178	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
50.37	28.74	46.55	40	-11.26	12.97	0.53	31.31	152	231	Peak
103.72	24.95	46.66	43.5	-18.55	9.43	0.77	31.91	165	295	Peak
189.08	30.61	51.01	43.5	-12.89	10.12	1.17	31.69	111	185	Peak
224.97	28.98	48.98	46	-17.02	10.42	1.36	31.78	147	152	Peak
749.74	31.16	37.43	46	-14.84	21.52	3.51	31.3	132	265	Peak
874.87	30.4	35.25	46	-15.6	23.19	3.95	31.99	102	285	Peak

Remarks:

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

4.7 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

5 6 dB 頻寬之要求

5.1 適用標準

請見本報告 3.1 節第(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。

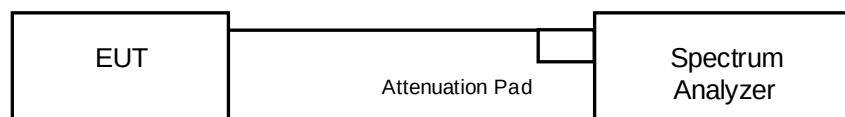
5.3 量測儀器

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

Note:

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

5.4 測試配置



5.5 量測結果

操作模式	發射	測試日期	107 年 09 月 05 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	邱智勇		

802.11b

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	10.04	0.5	Pass
6	2437	10.07	0.5	Pass
11	2462	10.05	0.5	Pass

802.11g

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	16.37	0.5	Pass
6	2437	16.38	0.5	Pass
11	2462	16.39	0.5	Pass

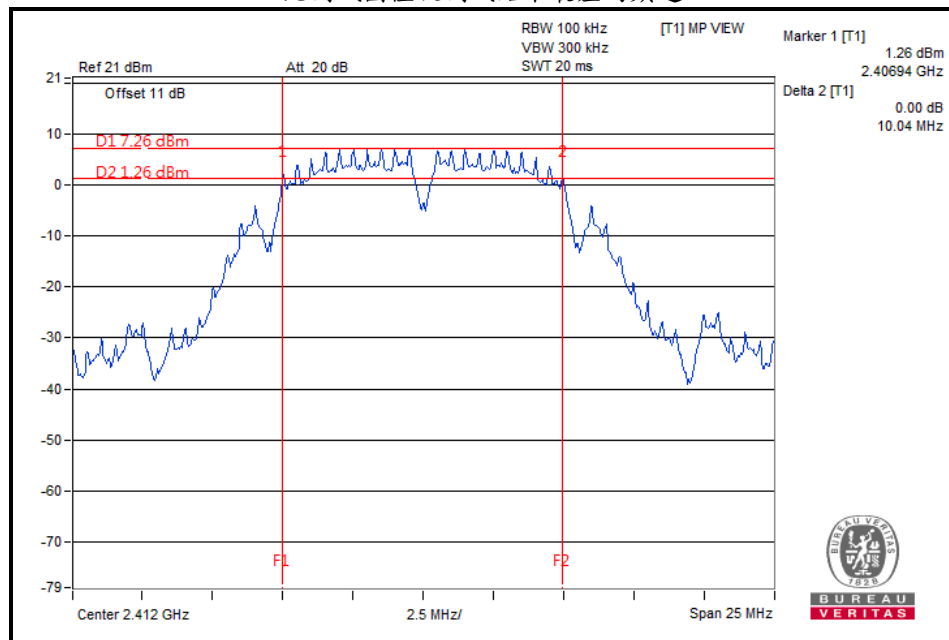
802.11n (HT20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	17.61	0.5	Pass
6	2437	17.61	0.5	Pass
11	2462	17.61	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
3	2422	36.47	0.5	Pass
6	2437	36.54	0.5	Pass
9	2452	36.56	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。

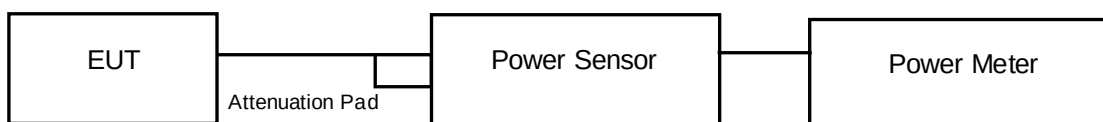
6.3 量測儀器

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

Note:

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

6.4 測試配置



6.5 量測結果

操作模式	發射	測試日期	107 年 09 月 05 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	邱智勇		

Peak Power

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	85.507	19.32	30	Pass
6	2437	132.739	21.23	30	Pass
11	2462	83.368	19.21	30	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	112.202	20.50	30	Pass
6	2437	289.068	24.61	30	Pass
11	2462	84.723	19.28	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	60.954	17.85	30	Pass
6	2437	349.14	25.43	30	Pass
11	2462	29.174	14.65	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
3	2422	15.812	11.99	30	Pass
6	2437	30.339	14.82	30	Pass
9	2452	17.701	12.48	30	Pass

Average Power (For reference)

802.11b

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	37.411	15.73	30	Pass
6	2437	53.827	17.31	30	Pass
11	2462	36.898	15.67	30	Pass

802.11g

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	11.722	10.69	30	Pass
6	2437	56.624	17.53	30	Pass
11	2462	9.528	9.79	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	7.112	8.52	30	Pass
6	2437	60.395	17.81	30	Pass
11	2462	3.483	5.42	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
3	2422	1.786	2.52	30	Pass
6	2437	3.412	5.33	30	Pass
9	2452	2.254	3.53	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 3 kHz，視訊頻寬為 10 kHz，掃描時間為 auto
- 掃描頻寬設於足夠觀察發射機所產生的主頻信號，並找到最大的峰值準位。

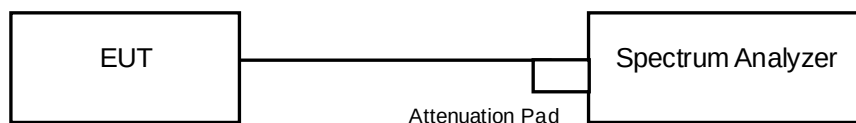
7.3 量測儀器

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

Note:

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

7.4 測試配置



7.5 量測結果

操作模式	發射	測試日期	107 年 09 月 05 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	邱智勇		

802.11b

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
1	2412	-7.04	8	Pass
6	2437	-6.05	8	Pass
11	2462	-7.68	8	Pass

802.11g

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
1	2412	-11.69	8	Pass
6	2437	-8.02	8	Pass
11	2462	-13.45	8	Pass

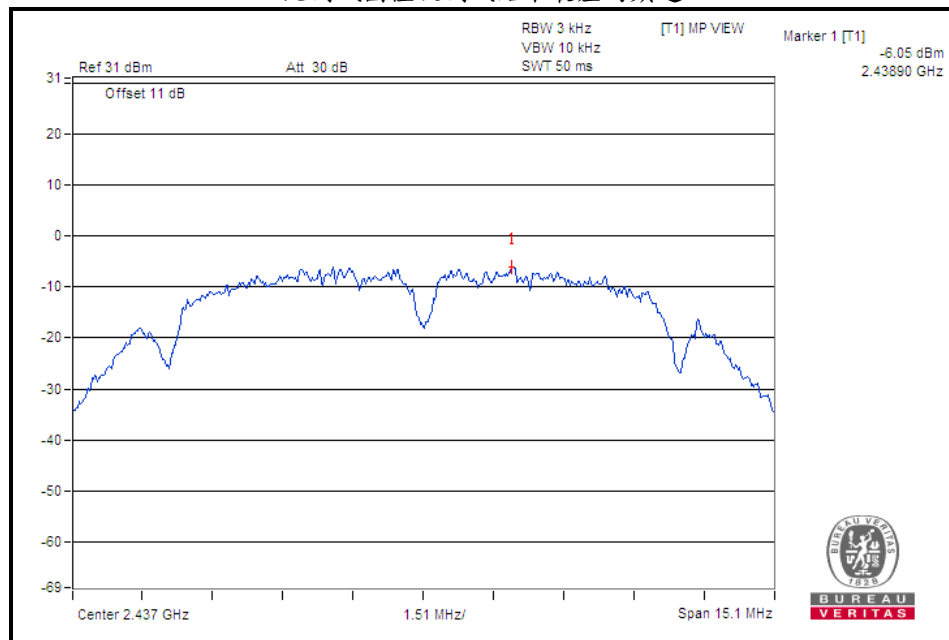
802.11n (HT20)

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
1	2412	-12.60	8	Pass
6	2437	-7.63	8	Pass
11	2462	-14.39	8	Pass

802.11n (HT40)

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
3	2422	-18.94	8	Pass
6	2437	-16.26	8	Pass
9	2452	-21.48	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 = 3 kHz

802.11n (HT20) 為 RBW = 1 MHz, VBW = 3 kHz

802.11n (HT40) 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

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。

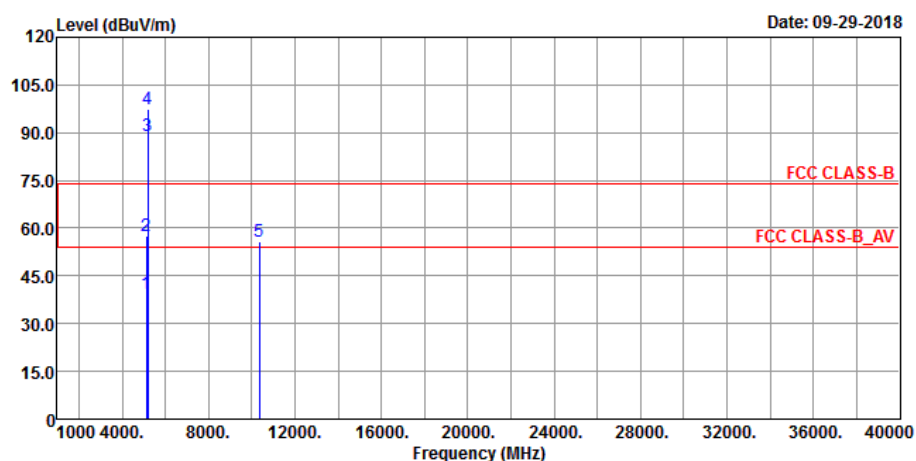
8.6 量測結果

8.6.1 發射諧波

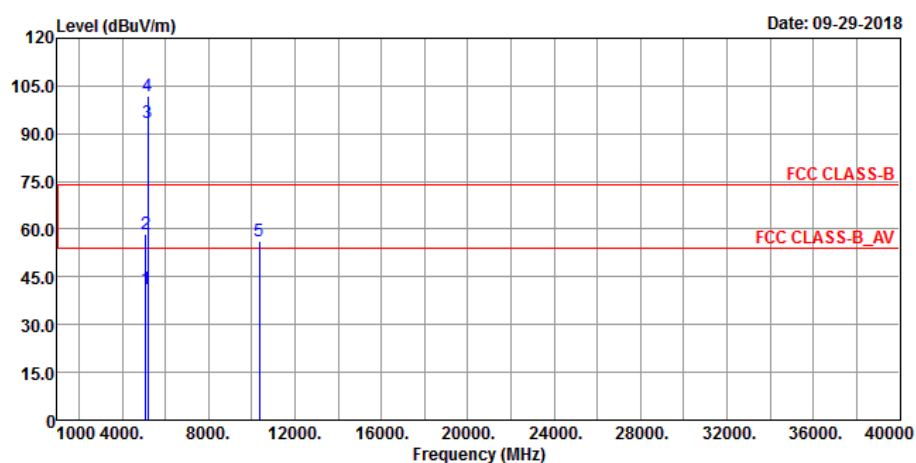
802.11a

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	Thomas Wei

Horizontal



Vertical



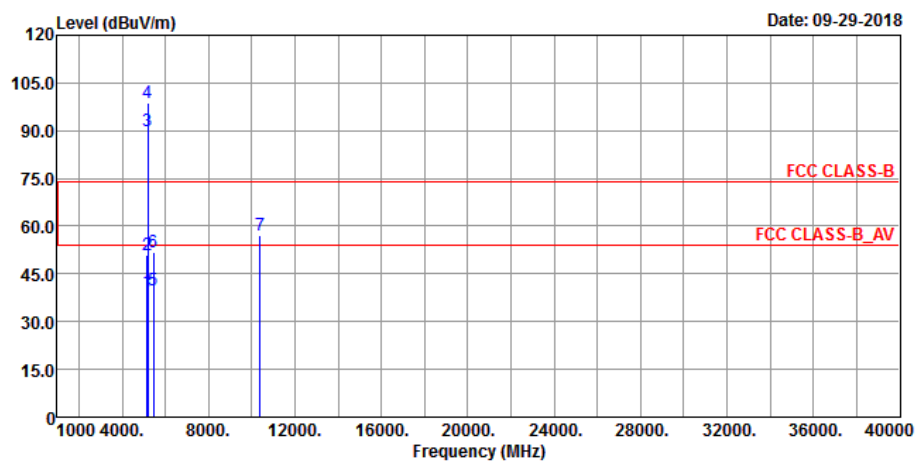
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5139.65	39.2	38.61	54	-14.8	31.56	6.33	37.3	137	336	Average
5139.65	57.48	56.89	74	-16.52	31.56	6.33	37.3	137	336	Peak
5180	88.96	88.34			31.59	6.37	37.34	137	336	Average
5180	97.26	96.64			31.59	6.37	37.34	137	336	Peak
10360	55.84	58.6	68.2	-12.36	39.48	10.21	52.45	127	146	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5099.9	41.24	40.7	54	-12.76	31.53	6.29	37.28	100	35	Average
5099.9	58.63	58.09	74	-15.37	31.53	6.29	37.28	100	35	Peak
5180	93.59	92.97			31.59	6.37	37.34	100	35	Average
5180	101.63	101.01			31.59	6.37	37.34	100	35	Peak
10360	56.02	58.78	68.2	-12.18	39.48	10.21	52.45	133	219	Peak

Remarks:

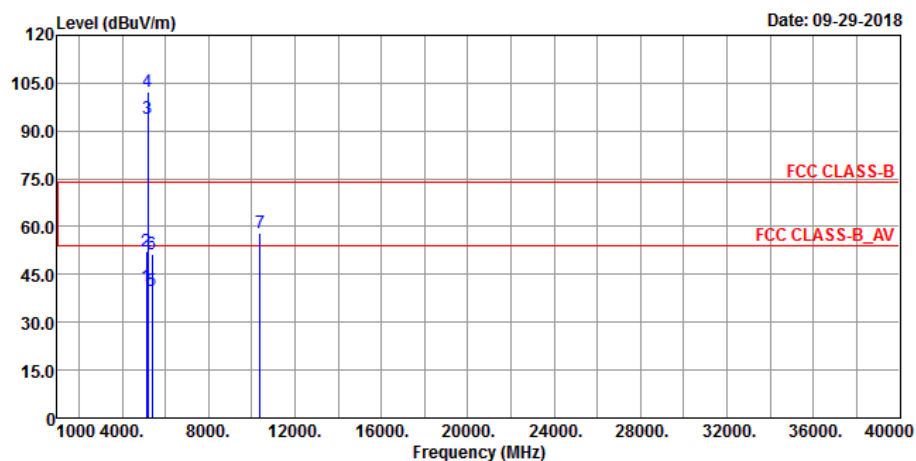
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5180 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

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

Horizontal



Vertical



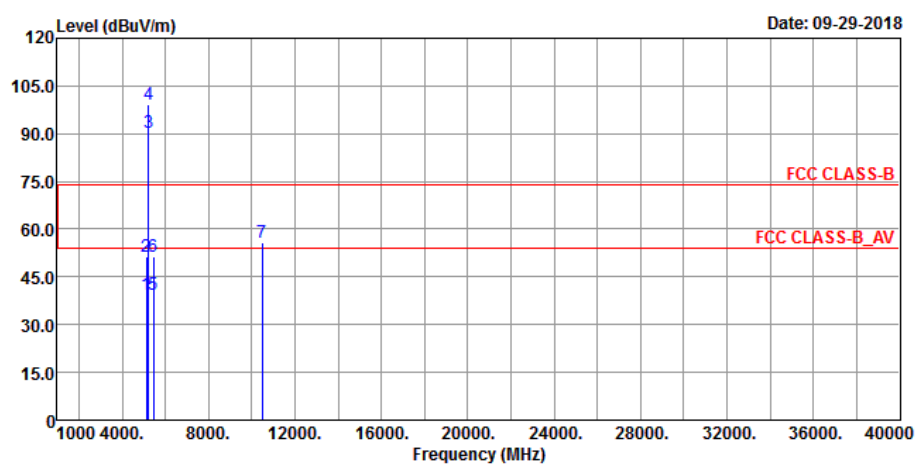
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5147.6	39.47	38.89	54	-14.53	31.56	6.34	37.32	152	319	Average
5147.6	50.98	50.4	74	-23.02	31.56	6.34	37.32	152	319	Peak
5200	89.92	89.29			31.6	6.39	37.36	152	319	Average
5200	98.54	97.91			31.6	6.39	37.36	152	319	Peak
5459.78	39.68	38.48	54	-14.32	31.77	6.51	37.08	152	319	Average
5459.78	51.97	50.77	74	-22.03	31.77	6.51	37.08	152	319	Peak
*10400	57.32	60.06	68.2	-10.88	39.51	10.2	52.45	151	234	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5119.85	41.34	40.79	54	-12.66	31.54	6.31	37.3	119	36	Average
5119.85	52.3	51.75	74	-21.7	31.54	6.31	37.3	119	36	Peak
5200	93.69	93.06			31.6	6.39	37.36	119	36	Average
5200	102.19	101.56			31.6	6.39	37.36	119	36	Peak
5397.74	39.77	38.74	54	-14.23	31.74	6.47	37.18	119	36	Average
5397.74	51.18	50.15	74	-22.82	31.74	6.47	37.18	119	36	Peak
*10400	57.85	60.59	68.2	-10.35	39.51	10.2	52.45	162	314	Peak

Remarks:

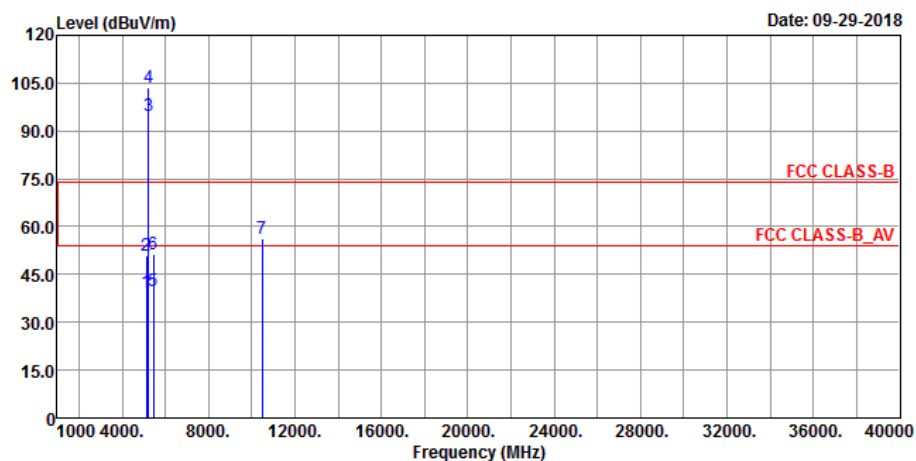
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 5200 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The other emission levels were very low against the limit.

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

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5136.8	39.4	38.82	54	-14.6	31.55	6.33	37.3	133	336	Average
5136.8	51.32	50.74	74	-22.68	31.55	6.33	37.3	133	336	Peak
5240	90.39	89.67			31.62	6.42	37.32	133	336	Average
5240	99.05	98.33			31.62	6.42	37.32	133	336	Peak
5444.27	39.58	38.45	54	-14.42	31.76	6.5	37.13	133	336	Average
5444.27	51.17	50.04	74	-22.83	31.76	6.5	37.13	133	336	Peak
*10480	55.98	58.82	68.2	-12.22	39.6	10.22	52.66	139	157	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

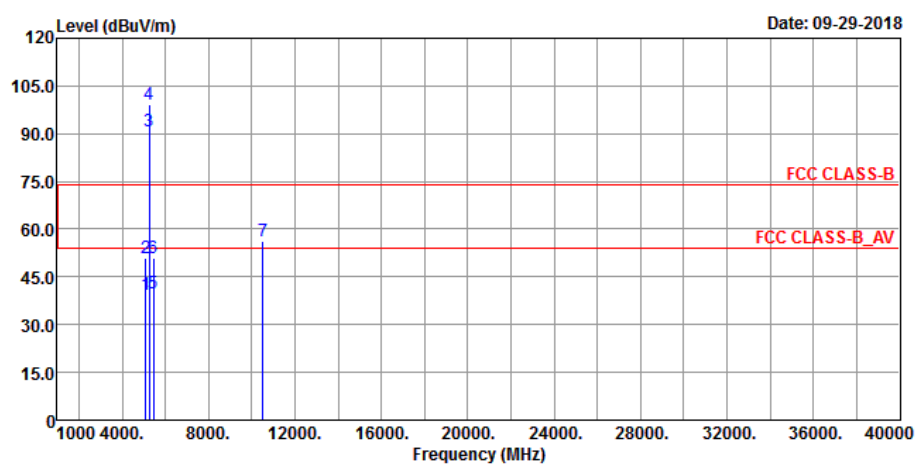
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5131.55	39.4	38.83	54	-14.6	31.55	6.32	37.3	112	34	Average
5131.55	50.99	50.42	74	-23.01	31.55	6.32	37.3	112	34	Peak
5240	94.86	94.14			31.62	6.42	37.32	112	34	Average
5240	103.76	103.04			31.62	6.42	37.32	112	34	Peak
5445.26	39.68	38.55	54	-14.32	31.76	6.5	37.13	112	34	Average
5445.26	51.5	50.37	74	-22.5	31.76	6.5	37.13	112	34	Peak
*10480	56.21	59.05	68.2	-11.99	39.6	10.22	52.66	174	130	Peak

Remarks:

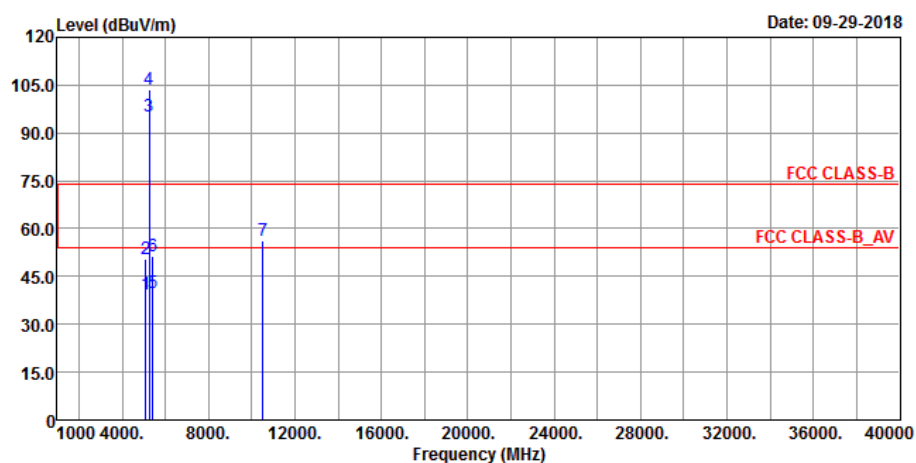
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 5240 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The other emission levels were very low against the limit.

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

Horizontal



Vertical



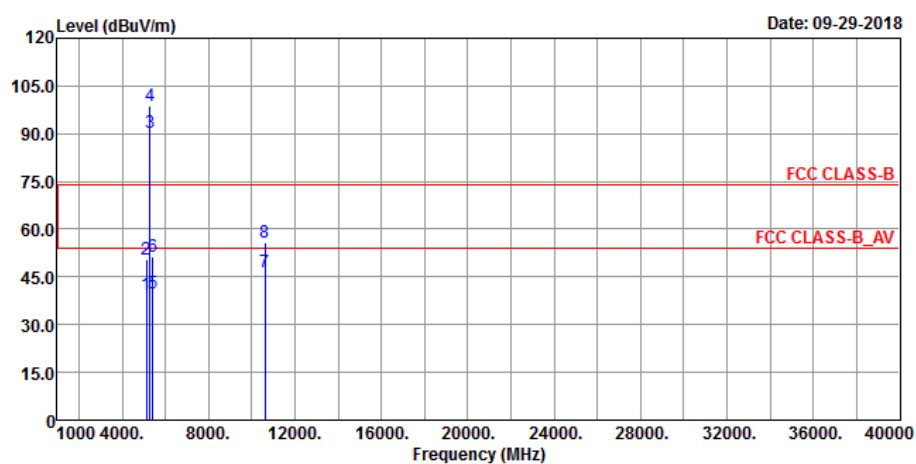
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5102.9	39.35	38.81	54	-14.65	31.53	6.29	37.28	153	335	Average
5102.9	50.84	50.3	74	-23.16	31.53	6.29	37.28	153	335	Peak
5260	90.58	89.77			31.65	6.43	37.27	153	335	Average
5260	99.38	98.57			31.65	6.43	37.27	153	335	Peak
5439.76	39.64	38.51	54	-14.36	31.76	6.5	37.13	153	335	Average
5439.76	50.91	49.78	74	-23.09	31.76	6.5	37.13	153	335	Peak
*10520	56.13	58.93	68.2	-12.07	39.66	10.27	52.73	181	78	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5099.9	39.41	38.87	54	-14.59	31.53	6.29	37.28	126	35	Average
5099.9	50.45	49.91	74	-23.55	31.53	6.29	37.28	126	35	Peak
5260	95.31	94.5			31.65	6.43	37.27	126	35	Average
5260	103.46	102.65			31.65	6.43	37.27	126	35	Peak
5424.8	39.82	38.71	54	-14.18	31.75	6.49	37.13	126	35	Average
5424.8	51.51	50.4	74	-22.49	31.75	6.49	37.13	126	35	Peak
*10520	56.37	59.17	68.2	-11.83	39.66	10.27	52.73	145	201	Peak

Remarks:

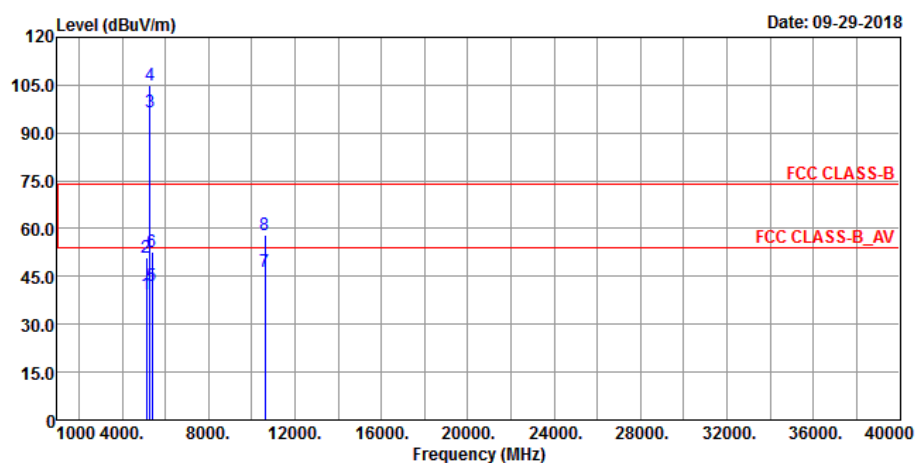
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 5260 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The other emission levels were very low against the limit.

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

Horizontal



Vertical



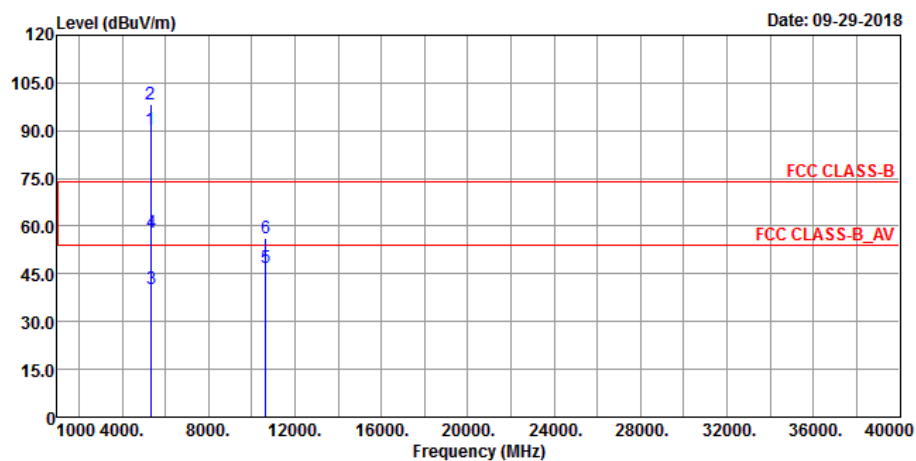
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5115.5	39.49	38.92	54	-14.51	31.54	6.31	37.28	153	335	Average
5115.5	50.34	49.77	74	-23.66	31.54	6.31	37.28	153	335	Peak
5300	90.43	89.49			31.67	6.46	37.19	153	335	Average
5300	98.87	97.93			31.67	6.46	37.19	153	335	Peak
5425.57	39.7	38.59	54	-14.3	31.75	6.49	37.13	153	335	Average
5425.57	51.38	50.27	74	-22.62	31.75	6.49	37.13	153	335	Peak
10600	46.4	49.23	54	-7.6	39.85	10.43	53.11	136	179	Average
10600	55.89	58.72	74	-18.11	39.85	10.43	53.11	136	179	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5131.85	39.45	38.88	54	-14.55	31.55	6.32	37.3	120	33	Average
5131.85	50.86	50.29	74	-23.14	31.55	6.32	37.3	120	33	Peak
5300	96.43	95.49			31.67	6.46	37.19	120	33	Average
5300	105.09	104.15			31.67	6.46	37.19	120	33	Peak
5379.81	42.07	41.05	54	-11.93	31.73	6.47	37.18	120	33	Average
5379.81	52.81	51.79	74	-21.19	31.73	6.47	37.18	120	33	Peak
10600	46.69	49.52	54	-7.31	39.85	10.43	53.11	152	311	Average
10600	57.81	60.64	74	-16.19	39.85	10.43	53.11	152	311	Peak

Remarks:

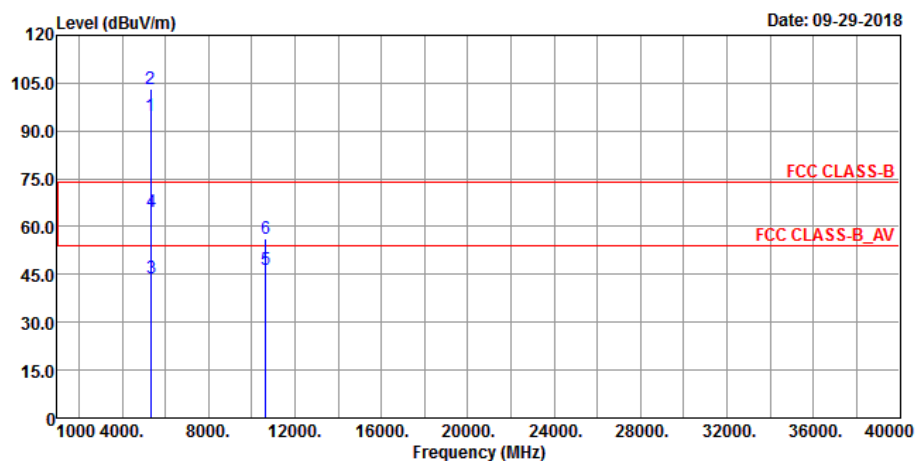
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5300 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

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

Horizontal



Vertical



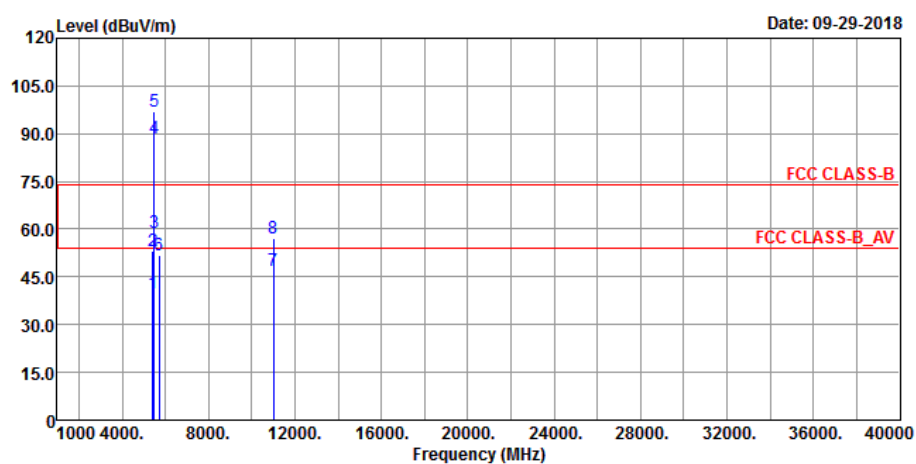
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	90.14	89.19			31.68	6.46	37.19	152	315	Average
5320	98.5	97.55			31.68	6.46	37.19	152	315	Peak
5350	40.38	39.39	54	-13.62	31.7	6.47	37.18	152	315	Average
5350	57.92	56.93	74	-16.08	31.7	6.47	37.18	152	315	Peak
10640	46.8	49.58	54	-7.2	39.93	10.36	53.07	184	239	Average
10640	56.45	59.23	74	-17.55	39.93	10.36	53.07	184	239	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	94.64	93.69			31.68	6.46	37.19	118	32	Average
5320	103.37	102.42			31.68	6.46	37.19	118	32	Peak
5350	44.03	43.04	54	-9.97	31.7	6.47	37.18	118	32	Average
5350	64.72	63.73	74	-9.28	31.7	6.47	37.18	118	32	Peak
10640	46.69	49.47	54	-7.31	39.93	10.36	53.07	166	281	Average
10640	56.26	59.04	74	-17.74	39.93	10.36	53.07	166	281	Peak

Remarks:

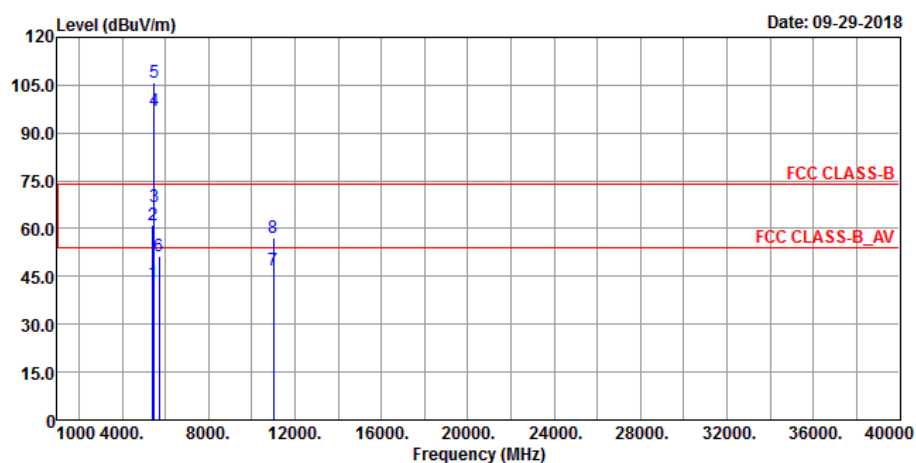
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5320 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

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

Horizontal



Vertical



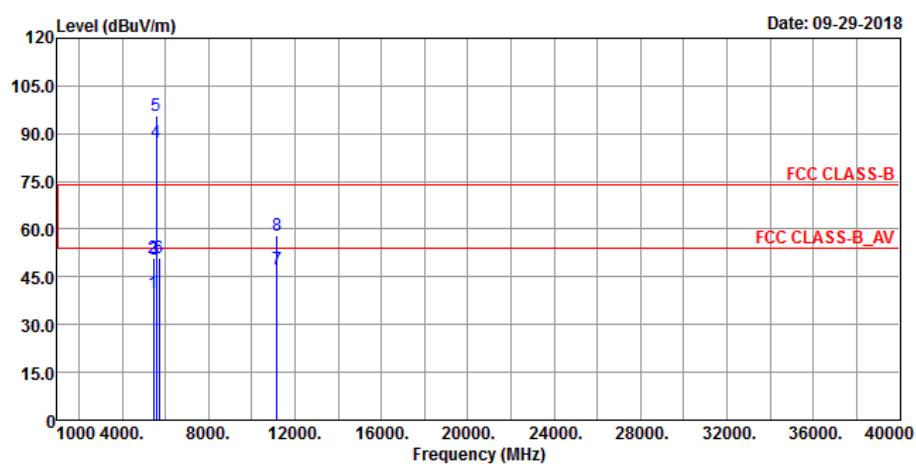
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5420.24	39.97	38.92	54	-14.03	31.75	6.48	37.18	190	250	Average
5420.24	53.03	51.98	74	-20.97	31.75	6.48	37.18	190	250	Peak
*5470	58.95	57.72	68.2	-9.25	31.79	6.52	37.08	190	250	Peak
5500	88.39	87.07			31.81	6.54	37.03	190	250	Average
5500	96.82	95.5			31.81	6.54	37.03	190	250	Peak
*5725	51.83	50.32	68.2	-16.37	32.18	6.76	37.43	190	250	Peak
11000	47.01	48.91	54	-6.99	40.73	10.4	53.03	151	317	Average
11000	56.93	58.83	74	-17.07	40.73	10.4	53.03	151	317	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5419.92	42.96	41.91	54	-11.04	31.75	6.48	37.18	151	25	Average
5419.92	61.08	60.03	74	-12.92	31.75	6.48	37.18	151	25	Peak
*5470	66.84	65.61	68.2	-1.36	31.79	6.52	37.08	151	25	Peak
5500	97.16	95.84			31.81	6.54	37.03	151	25	Average
5500	105.9	104.58			31.81	6.54	37.03	151	25	Peak
*5725	51.54	50.03	68.2	-16.66	32.18	6.76	37.43	151	25	Peak
11000	46.79	48.69	54	-7.21	40.73	10.4	53.03	178	247	Average
11000	57.1	59	74	-16.9	40.73	10.4	53.03	178	247	Peak

Remarks:

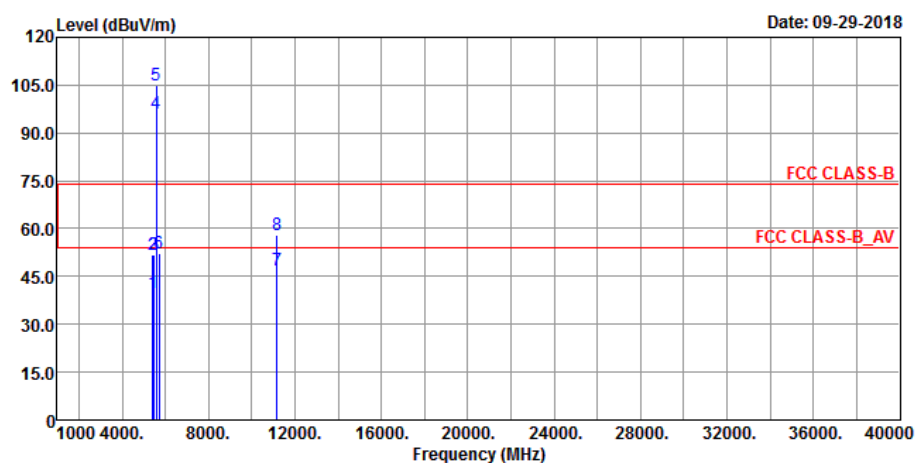
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5500 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

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

Horizontal



Vertical



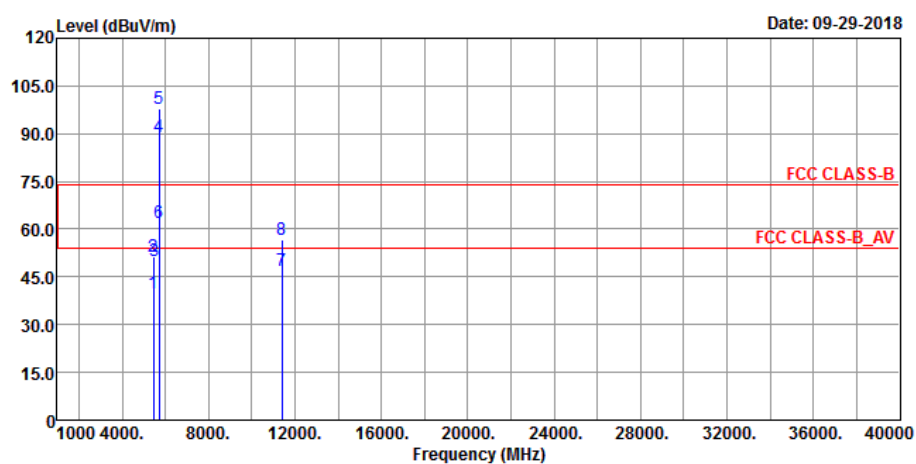
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5446.48	39.87	38.73	54	-14.13	31.77	6.5	37.13	164	301	Average
5446.48	50.97	49.83	74	-23.03	31.77	6.5	37.13	164	301	Peak
*5470	50.4	49.17	68.2	-17.8	31.79	6.52	37.08	164	301	Peak
5580	87.05	85.64			31.92	6.65	37.16	164	301	Average
5580	95.67	94.26			31.92	6.65	37.16	164	301	Peak
*5725	51.09	49.58	68.2	-17.11	32.18	6.76	37.43	164	301	Peak
11160	47.34	49.04	54	-6.66	40.56	10.52	52.78	190	234	Average
11160	58.06	59.76	74	-15.94	40.56	10.52	52.78	190	234	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5419.76	40.01	38.96	54	-13.99	31.75	6.48	37.18	164	26	Average
5419.76	51.62	50.57	74	-22.38	31.75	6.48	37.18	164	26	Peak
*5470	51.76	50.53	68.2	-16.44	31.79	6.52	37.08	164	26	Peak
5580	96.28	94.87			31.92	6.65	37.16	164	26	Average
5580	105.14	103.73			31.92	6.65	37.16	164	26	Peak
*5725	52.12	50.61	68.2	-16.08	32.18	6.76	37.43	164	26	Peak
11160	47.08	48.78	54	-6.92	40.56	10.52	52.78	140	81	Average
11160	57.86	59.56	74	-16.14	40.56	10.52	52.78	140	81	Peak

Remarks:

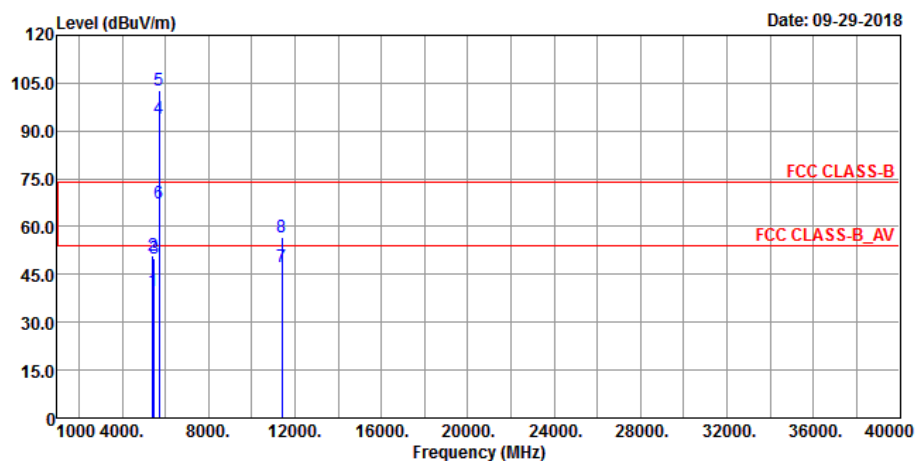
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5580 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

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

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5442.96	39.72	38.59	54	-14.28	31.76	6.5	37.13	100	298	Average
5442.96	51.49	50.36	74	-22.51	31.76	6.5	37.13	100	298	Peak
*5470	49.91	48.68	68.2	-18.29	31.79	6.52	37.08	100	298	Peak
5700	89.06	50.21			32.12	6.73	0	100	298	Average
5700	97.72	58.87			32.12	6.73	0	100	298	Peak
*5725	61.94	60.43	68.2	-6.26	32.18	6.76	37.43	100	298	Peak
11400	47.09	48.99	54	-6.91	40.33	10.47	52.7	162	108	Average
11400	56.55	58.45	74	-17.45	40.33	10.47	52.7	162	108	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5411.6	39.76	38.71	54	-14.24	31.75	6.48	37.18	149	324	Average
5411.6	50.92	49.87	74	-23.08	31.75	6.48	37.18	149	324	Peak
*5470	50.21	48.98	68.2	-17.99	31.79	6.52	37.08	149	324	Peak
5700	93.95	92.5			32.12	6.73	37.4	149	324	Average
5700	102.65	101.2			32.12	6.73	37.4	149	324	Peak
*5725	67.3	65.79	68.2	-0.9	32.18	6.76	37.43	149	324	Peak
11400	47.16	49.06	54	-6.84	40.33	10.47	52.7	134	201	Average
11400	56.8	58.7	74	-17.2	40.33	10.47	52.7	134	201	Peak

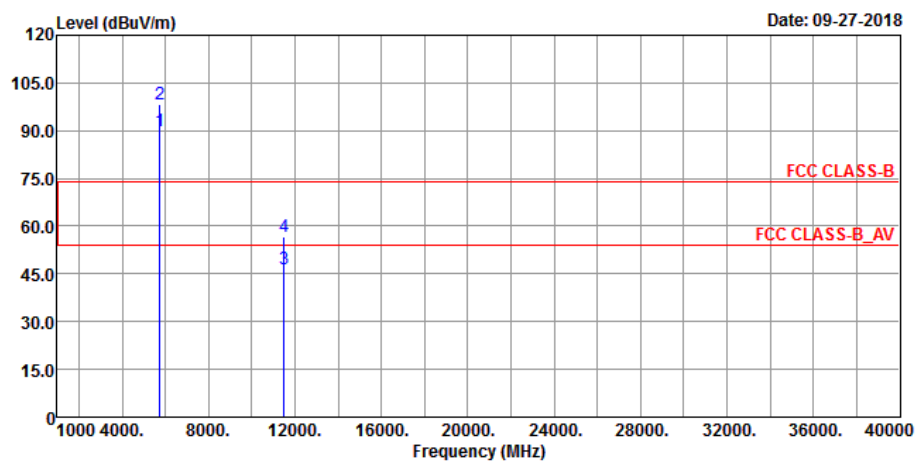
Remarks:

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

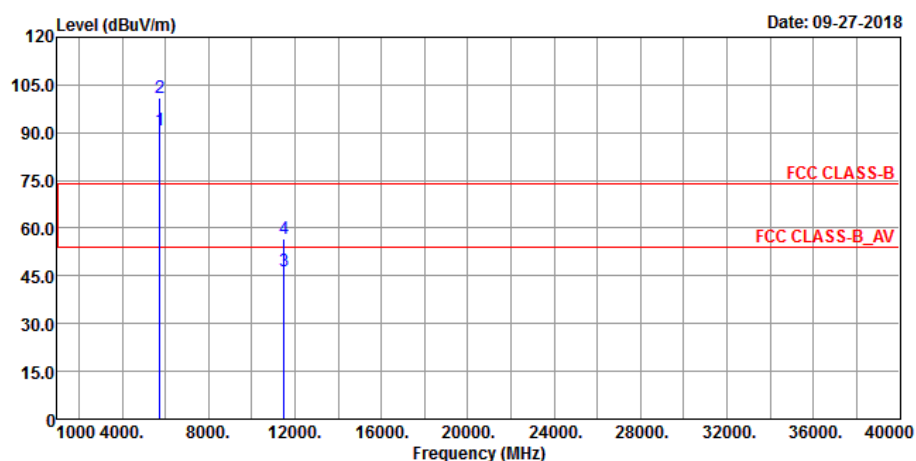
EUT Test Condition		Measurement Detail	
Channel	Channel 149	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

<Spurious Emission>

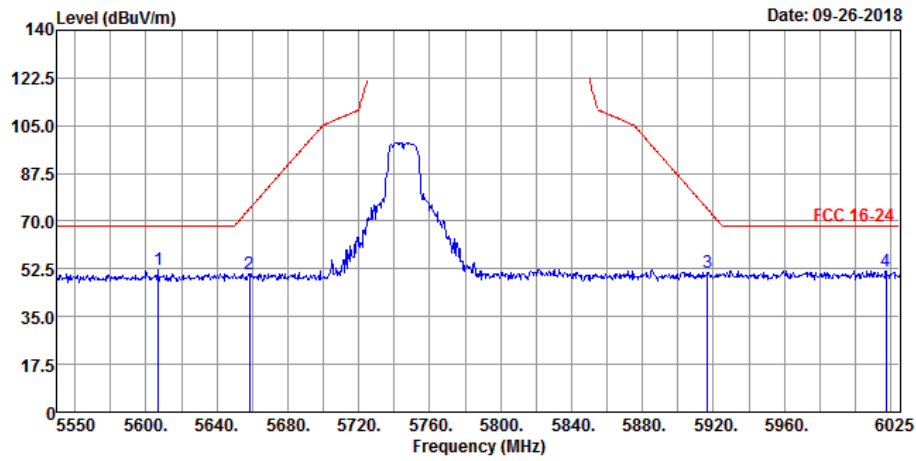
Horizontal



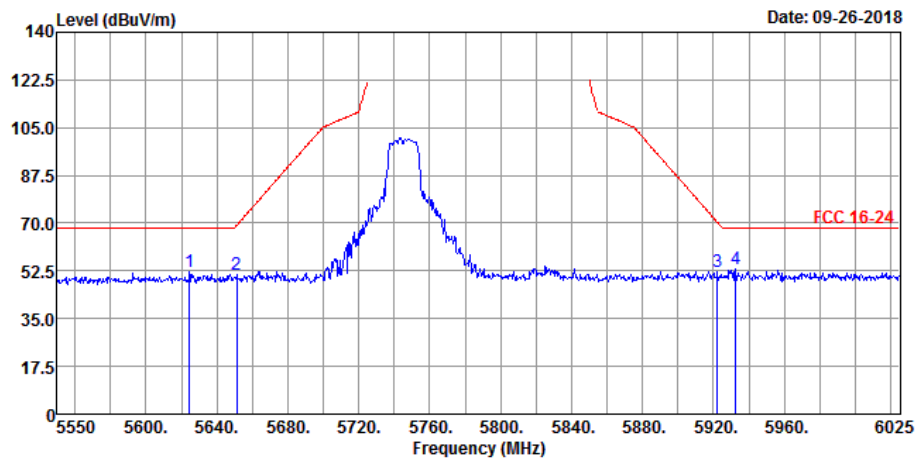
Vertical



<Out of Band Emission (OOBE)> Horizontal



Vertical



<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	89.91	88.39			32.21	6.78	37.47	102	300	Average
5745	98.43	96.91			32.21	6.78	37.47	102	300	Peak
11490	46.48	48.35	54	-7.52	40.25	10.66	52.78	152	111	Average
11490	56.49	58.36	74	-17.51	40.25	10.66	52.78	152	111	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	90.89	89.37			32.21	6.78	37.47	105	310	Average
5745	100.98	99.46			32.21	6.78	37.47	105	310	Peak
11490	46.66	48.53	54	-7.34	40.25	10.66	52.78	252	211	Average
11490	56.67	58.54	74	-17.33	40.25	10.66	52.78	252	211	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5607	51.99	50.55	68.2	-16.21	31.98	6.68	37.22	102	300	Peak
5658.3	50.84	49.41	74.36	-23.52	32.06	6.71	37.34	102	300	Peak
5916.7	51.18	49.33	74.32	-23.14	32.49	6.86	37.5	102	300	Peak
6017.4	51.79	49.72	68.2	-16.41	32.67	6.9	37.5	102	300	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5624.575	51.99	50.51	68.2	-16.21	32.01	6.69	37.22	105	310	Peak
5651.175	50.9	49.41	69.07	-18.17	32.06	6.71	37.28	105	310	Peak
5922.4	52.21	50.33	70.12	-17.91	32.52	6.86	37.5	105	310	Peak
5932.375	53	51.12	68.2	-15.2	32.52	6.86	37.5	105	310	Peak

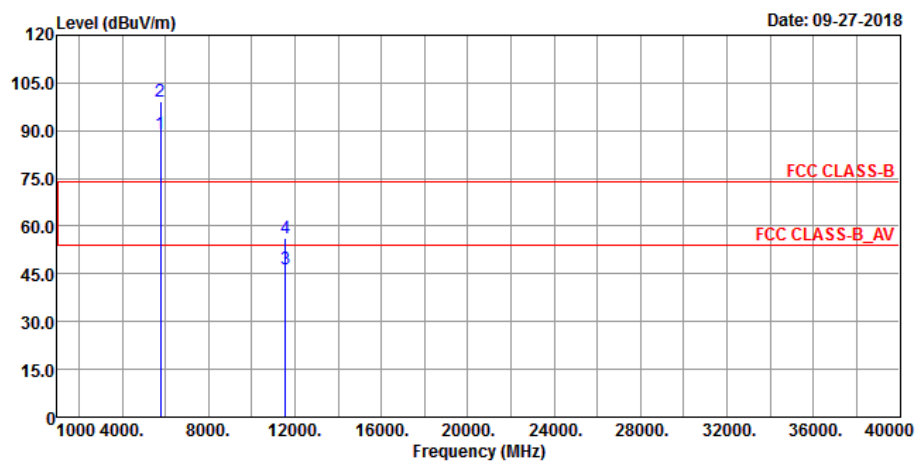
Remarks:

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

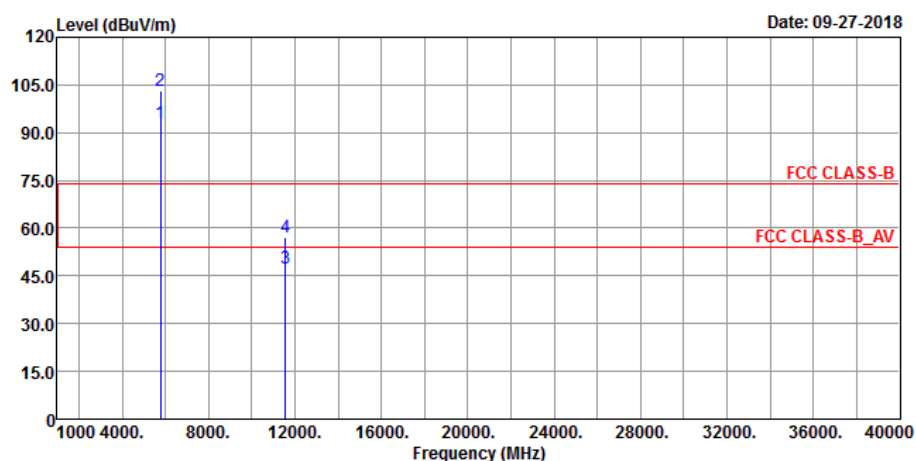
EUT Test Condition		Measurement Detail	
Channel	Channel 157	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

<Spurious Emission>

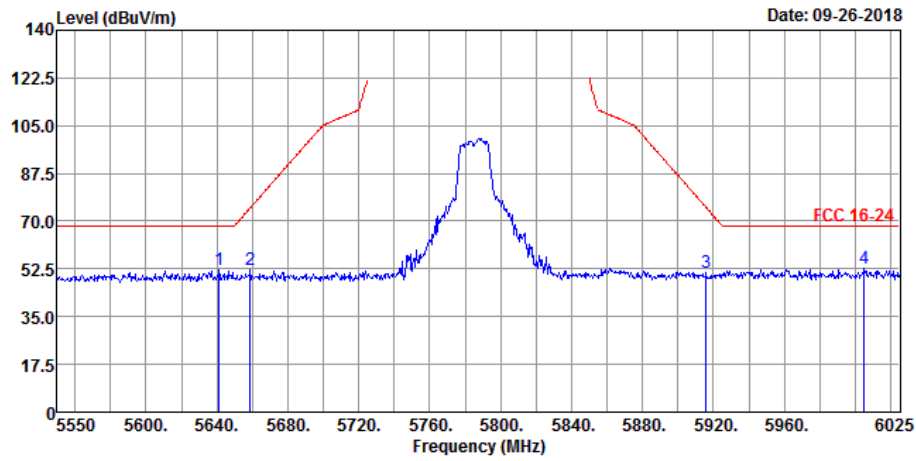
Horizontal



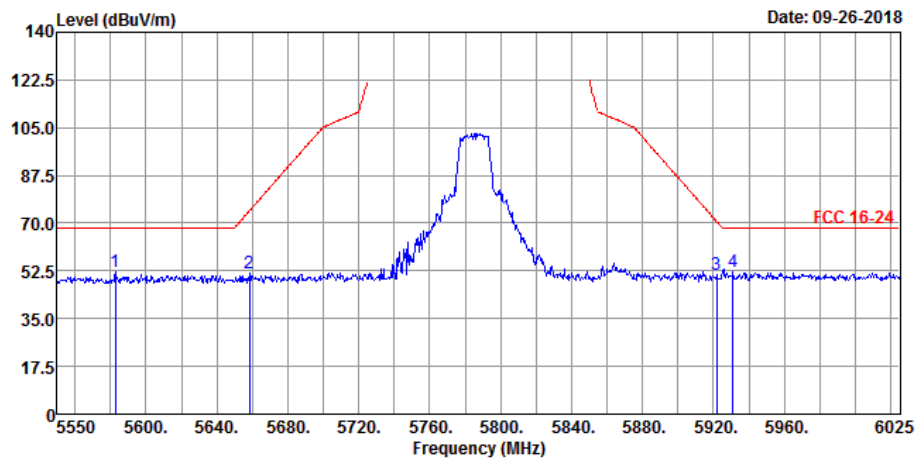
Vertical



<Out of Band Emission (OOBE)> Horizontal



Vertical



<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	89.11	87.57			32.26	6.82	37.54	115	303	Average
5785	99.11	97.57			32.26	6.82	37.54	115	303	Peak
11570	46.31	48.43	54	-7.69	40.13	10.76	53.01	185	265	Average
11570	56.31	58.43	74	-17.69	40.13	10.76	53.01	185	265	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	92.97	91.43			32.26	6.82	37.54	156	301	Average
5785	102.96	101.42			32.26	6.82	37.54	156	301	Peak
11570	47.21	49.33	54	-6.79	40.13	10.76	53.01	295	265	Average
11570	57.21	59.33	74	-16.79	40.13	10.76	53.01	295	265	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5641.2	52.44	50.98	68.2	-15.76	32.04	6.7	37.28	115	303	Peak
5658.775	52.04	50.61	74.72	-22.68	32.06	6.71	37.34	115	303	Peak
5915.75	50.92	49.07	75.02	-24.1	32.49	6.86	37.5	115	303	Peak
6005.05	52.46	50.45	68.2	-15.74	32.63	6.89	37.51	115	303	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5582.775	52.03	50.58	68.2	-16.17	31.95	6.66	37.16	156	301	Peak
5658.3	51.88	50.45	74.36	-22.48	32.06	6.71	37.34	156	301	Peak
5921.925	51.27	49.39	70.47	-19.2	32.52	6.86	37.5	156	301	Peak
5930.95	52.12	50.24	68.2	-16.08	32.52	6.86	37.5	156	301	Peak

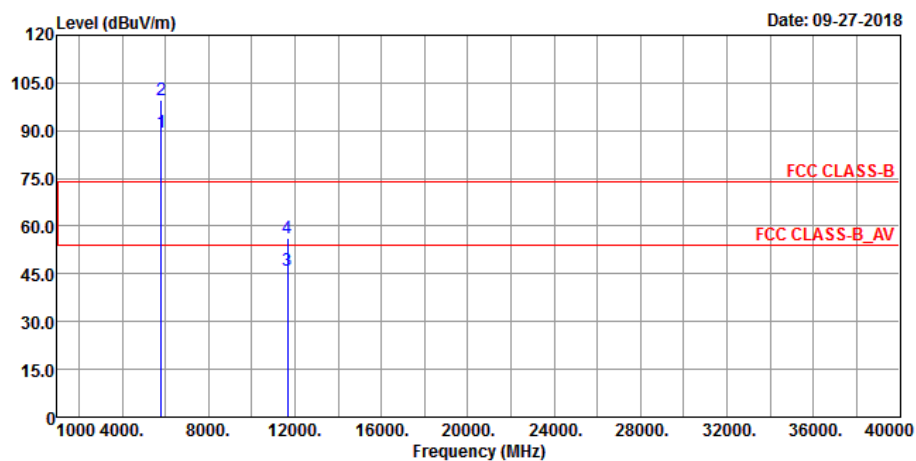
Remarks:

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

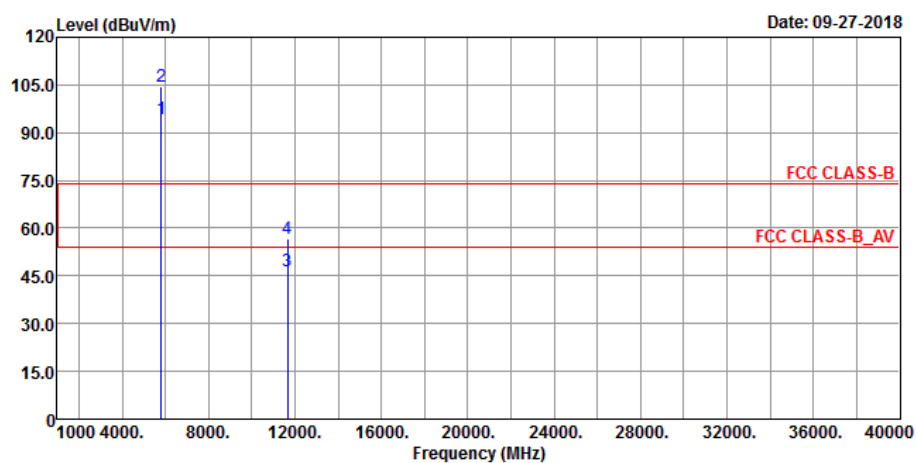
EUT Test Condition		Measurement Detail	
Channel	Channel 165	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

<Spurious Emission>

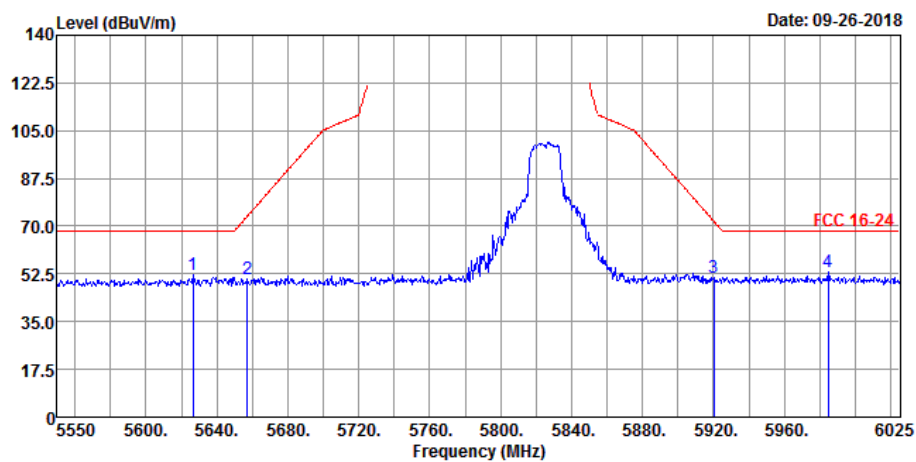
Horizontal



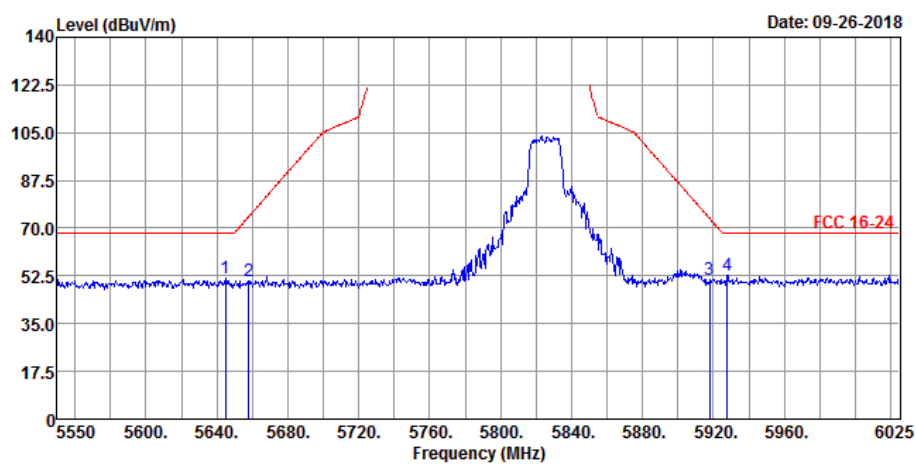
Vertical



<Out of Band Emission (OOBE)> Horizontal



Vertical



<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	89.53	87.87			32.35	6.84	37.53	106	304	Average
5825	99.53	97.87			32.35	6.84	37.53	106	304	Peak
11650	46.14	48.45	54	-7.86	40.03	10.8	53.14	152	231	Average
11650	56.14	58.45	74	-17.86	40.03	10.8	53.14	152	231	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	94.5	92.84			32.35	6.84	37.53	112	301	Average
5825	104.51	102.85			32.35	6.84	37.53	112	301	Peak
11650	46.55	48.86	54	-7.45	40.03	10.8	53.14	102	252	Average
11650	56.55	58.86	74	-17.45	40.03	10.8	53.14	102	252	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5626.475	52.03	50.55	68.2	-16.17	32.01	6.69	37.22	106	304	Peak
5657.35	50.62	49.19	73.66	-23.04	32.06	6.71	37.34	106	304	Peak
5920.025	51.01	49.16	71.87	-20.86	32.49	6.86	37.5	106	304	Peak
5984.625	53.08	51.11	68.2	-15.12	32.6	6.88	37.51	106	304	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5645	51.76	50.3	68.2	-16.44	32.04	6.7	37.28	112	301	Peak
5657.825	50.74	49.31	74.01	-23.27	32.06	6.71	37.34	112	301	Peak
5917.65	51.4	49.55	73.62	-22.22	32.49	6.86	37.5	112	301	Peak
5927.625	52.68	50.8	68.2	-15.52	32.52	6.86	37.5	112	301	Peak

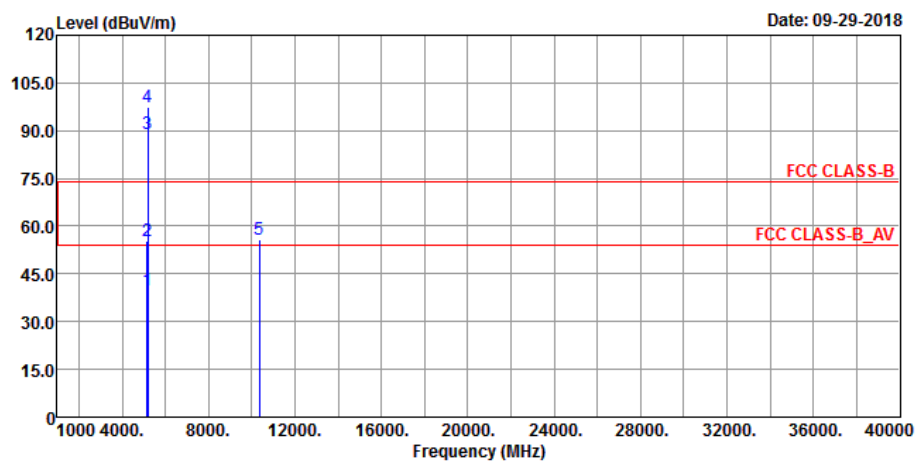
Remarks:

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

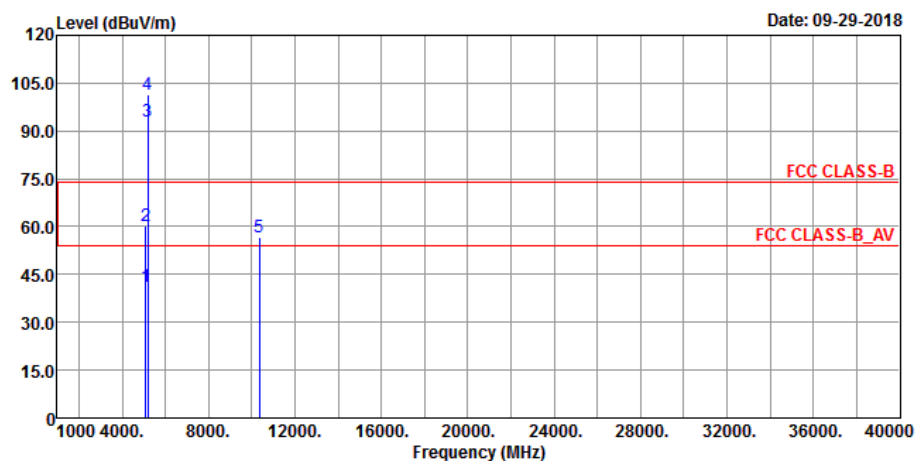
802.11n (HT20)

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

Horizontal



Vertical



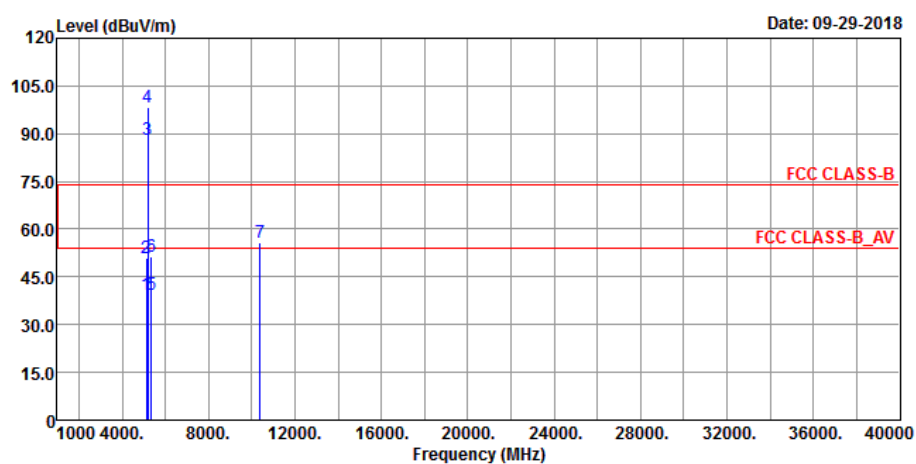
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	39.85	39.27	54	-14.15	31.56	6.34	37.32	146	339	Average
5150	55.28	54.7	74	-18.72	31.56	6.34	37.32	146	339	Peak
5180	89.16	88.54			31.59	6.37	37.34	146	339	Average
5180	97.3	96.68			31.59	6.37	37.34	146	339	Peak
*10360	55.85	58.63	68.2	-12.35	39.46	10.21	52.45	148	251	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5100.05	41.04	40.5	54	-12.96	31.53	6.29	37.28	104	36	Average
5100.05	60.24	59.7	74	-13.76	31.53	6.29	37.28	104	36	Peak
5180	92.96	92.34			31.59	6.37	37.34	104	36	Average
5180	101.39	100.77			31.59	6.37	37.34	104	36	Peak
*10360	56.67	59.43	68.2	-11.53	39.48	10.21	52.45	138	221	Peak

Remarks:

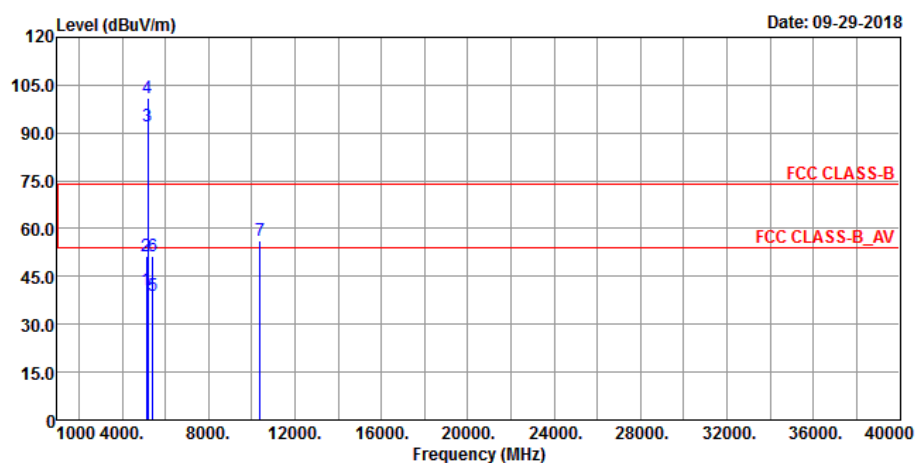
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5180 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

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

Horizontal



Vertical



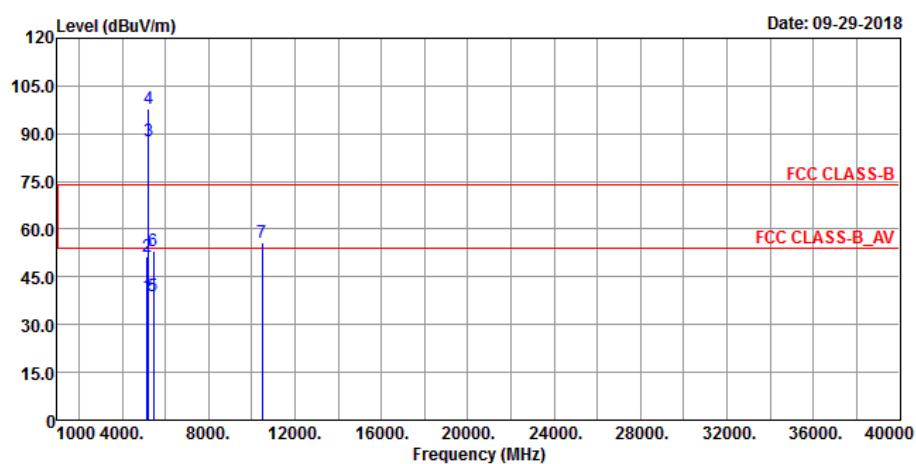
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5116.64	39.27	38.7	54	-14.73	31.54	6.31	37.28	157	337	Average
5116.64	50.86	50.29	74	-23.14	31.54	6.31	37.28	157	337	Peak
5200	88.15	87.52			31.6	6.39	37.36	157	337	Average
5200	98.15	97.52			31.6	6.39	37.36	157	337	Peak
5361.33	39.24	38.23	54	-14.76	31.72	6.47	37.18	157	337	Average
5361.33	51.53	50.52	74	-22.47	31.72	6.47	37.18	157	337	Peak
*10400	55.61	58.35	68.2	-12.59	39.51	10.2	52.45	162	239	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5129.24	40.57	40	54	-13.43	31.55	6.32	37.3	110	39	Average
5129.24	51.35	50.78	74	-22.65	31.55	6.32	37.3	110	39	Peak
5200	91.94	91.31			31.6	6.39	37.36	110	39	Average
5200	101.06	100.43			31.6	6.39	37.36	110	39	Peak
5424.58	39.18	38.07	54	-14.82	31.75	6.49	37.13	110	39	Average
5424.58	51.31	50.2	74	-22.69	31.75	6.49	37.13	110	39	Peak
*10400	56.09	58.83	68.2	-12.11	39.51	10.2	52.45	172	69	Peak

Remarks:

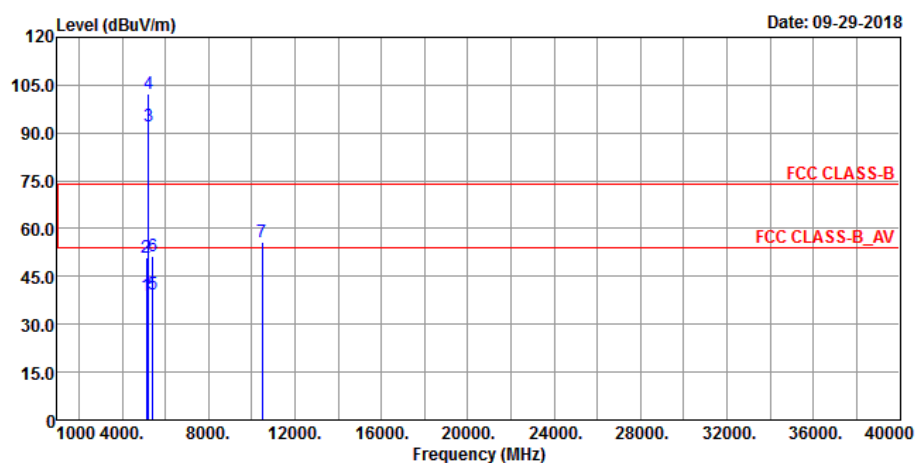
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 5200 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The other emission levels were very low against the limit.

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

Horizontal



Vertical



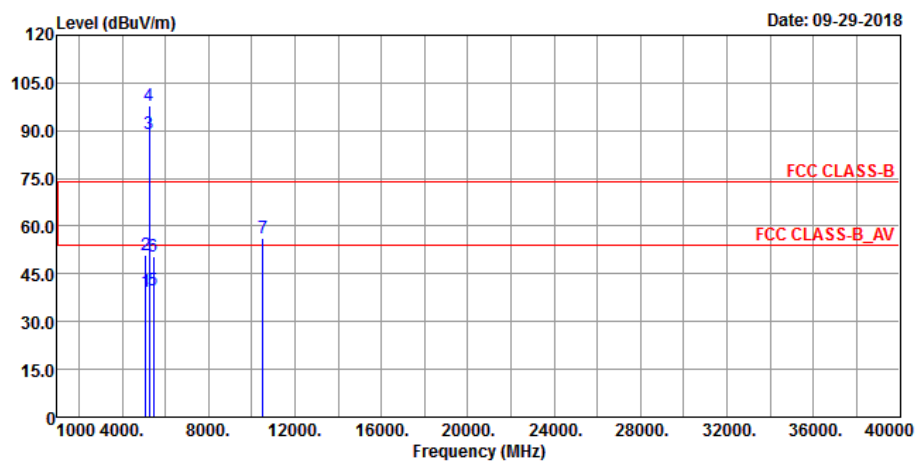
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5145.62	38.87	38.29	54	-15.13	31.56	6.34	37.32	156	337	Average
5145.62	51.28	50.7	74	-22.72	31.56	6.34	37.32	156	337	Peak
5240	87.7	86.98			31.62	6.42	37.32	156	337	Average
5240	97.71	96.99			31.62	6.42	37.32	156	337	Peak
5438.33	39.14	38.01	54	-14.86	31.76	6.5	37.13	156	337	Average
5438.33	52.92	51.79	74	-21.08	31.76	6.5	37.13	156	337	Peak
*10480	55.66	58.5	68.2	-12.54	39.6	10.22	52.66	149	220	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5135.72	38.92	38.34	54	-15.08	31.55	6.33	37.3	126	40	Average
5135.72	50.94	50.36	74	-23.06	31.55	6.33	37.3	126	40	Peak
5240	92.24	91.52			31.62	6.42	37.32	126	40	Average
5240	102.25	101.53			31.62	6.42	37.32	126	40	Peak
5424.47	39.37	38.26	54	-14.63	31.75	6.49	37.13	126	40	Average
5424.47	51.31	50.2	74	-22.69	31.75	6.49	37.13	126	40	Peak
*10480	55.95	58.79	68.2	-12.25	39.6	10.22	52.66	167	334	Peak

Remarks:

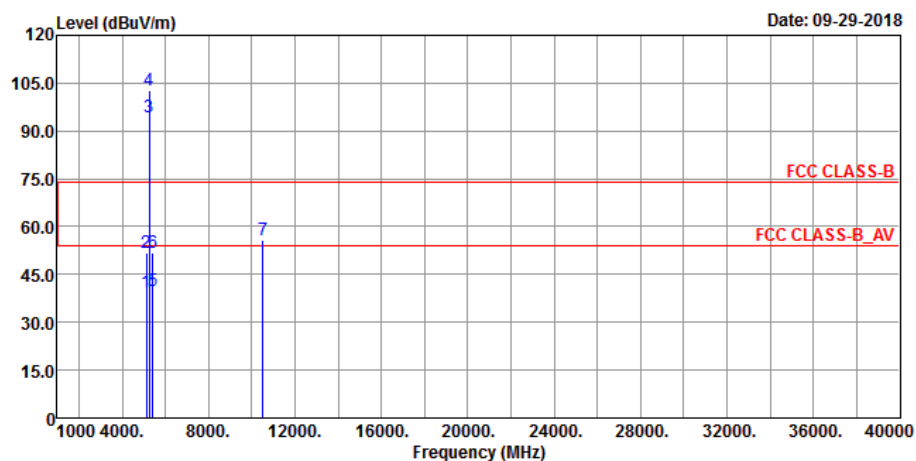
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 5240 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The other emission levels were very low against the limit.

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

Horizontal



Vertical



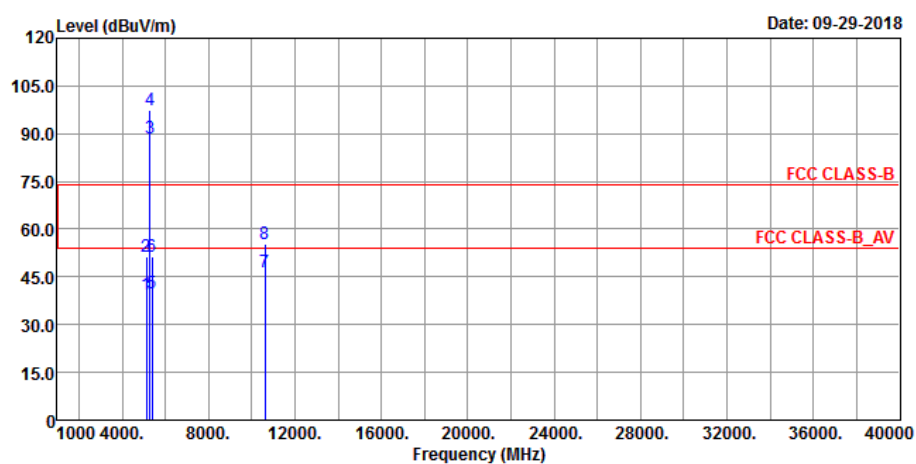
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5082.95	39.23	38.7	54	-14.77	31.52	6.28	37.27	145	313	Average
5082.95	50.84	50.31	74	-23.16	31.52	6.28	37.27	145	313	Peak
5260	88.94	88.13			31.65	6.43	37.27	145	313	Average
5260	97.79	96.98			31.65	6.43	37.27	145	313	Peak
5451.09	39.69	38.49	54	-14.31	31.77	6.51	37.08	145	313	Average
5451.09	50.69	49.49	74	-23.31	31.77	6.51	37.08	145	313	Peak
*10520	56.15	58.95	68.2	-12.05	39.66	10.27	52.73	194	255	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5132.6	39.53	38.96	54	-14.47	31.55	6.32	37.3	112	32	Average
5132.6	51.99	51.42	74	-22.01	31.55	6.32	37.3	112	32	Peak
5260	94.18	93.37			31.65	6.43	37.27	112	32	Average
5260	102.84	102.03			31.65	6.43	37.27	112	32	Peak
5417.54	39.75	38.7	54	-14.25	31.75	6.48	37.18	112	32	Average
5417.54	51.7	50.65	74	-22.3	31.75	6.48	37.18	112	32	Peak
*10520	55.8	58.6	68.2	-12.4	39.66	10.27	52.73	204	118	Peak

Remarks:

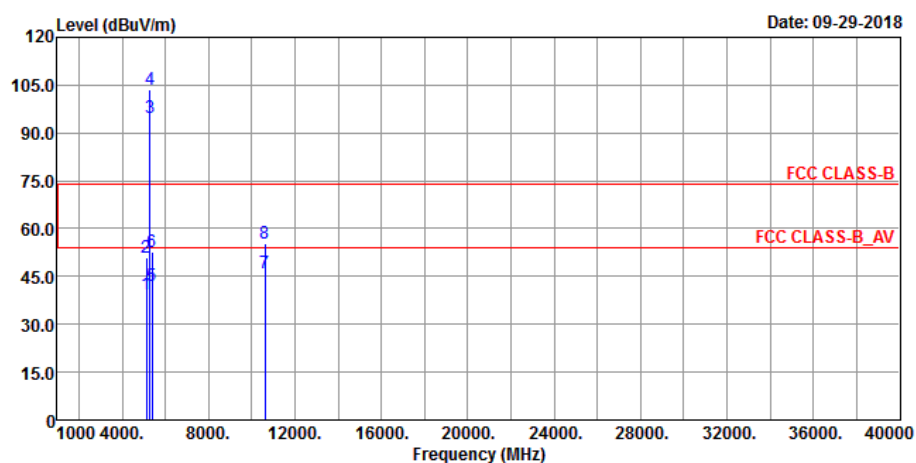
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 5260 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The other emission levels were very low against the limit.

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

Horizontal



Vertical



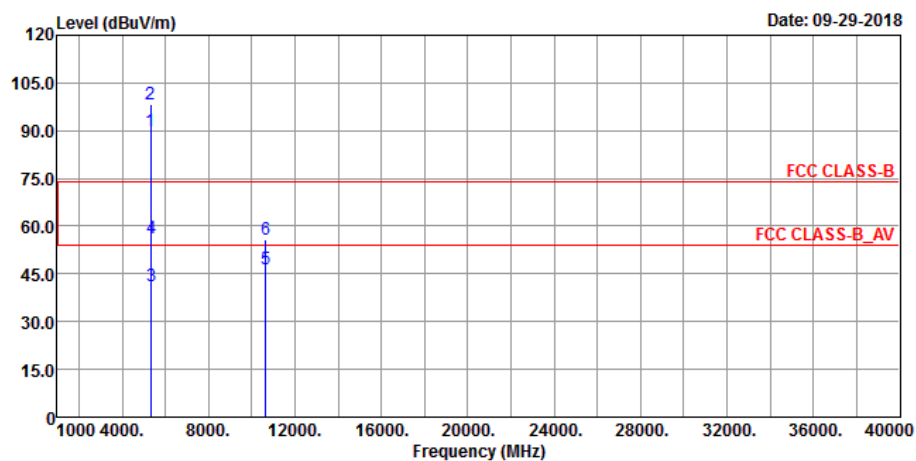
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5133.35	39.54	38.97	54	-14.46	31.55	6.32	37.3	143	313	Average
5133.35	51.27	50.7	74	-22.73	31.55	6.32	37.3	143	313	Peak
5300	88.69	87.75			31.67	6.46	37.19	143	313	Average
5300	97.6	96.66			31.67	6.46	37.19	143	313	Peak
5379.92	39.97	38.95	54	-14.03	31.73	6.47	37.18	143	313	Average
5379.92	51.55	50.53	74	-22.45	31.73	6.47	37.18	143	313	Peak
10600	46.55	49.38	54	-7.45	39.85	10.43	53.11	216	191	Average
10600	55.48	58.31	74	-18.52	39.85	10.43	53.11	216	191	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5140.1	39.37	38.78	54	-14.63	31.56	6.33	37.3	118	32	Average
5140.1	50.92	50.33	74	-23.08	31.56	6.33	37.3	118	32	Peak
5300	94.76	93.82			31.67	6.46	37.19	118	32	Average
5300	103.42	102.48			31.67	6.46	37.19	118	32	Peak
5380.8	42	40.98	54	-12	31.73	6.47	37.18	118	32	Average
5380.8	52.56	51.54	74	-21.44	31.73	6.47	37.18	118	32	Peak
10600	46.06	48.89	54	-7.94	39.85	10.43	53.11	128	251	Average
10600	55.51	58.34	74	-18.49	39.85	10.43	53.11	128	251	Peak

Remarks:

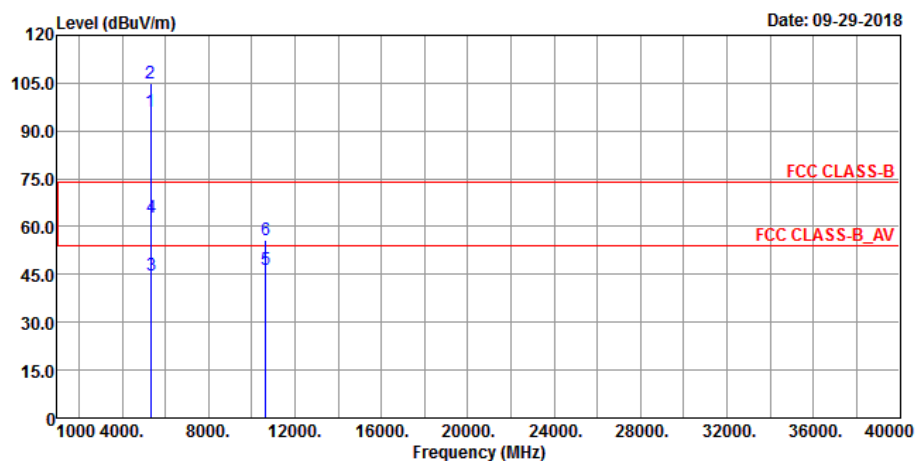
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5300 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

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

Horizontal



Vertical



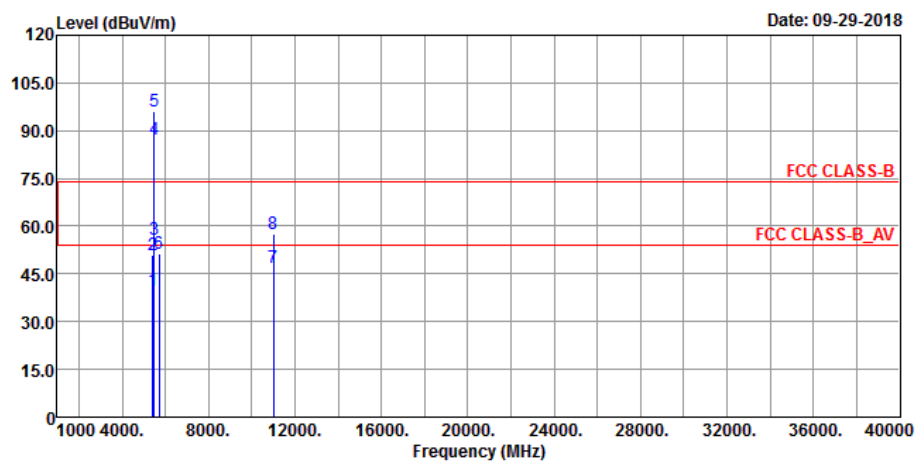
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	89.97	89.02			31.68	6.46	37.19	160	313	Average
5320	98.37	97.42			31.68	6.46	37.19	160	313	Peak
5351.21	41.02	40.03	54	-12.98	31.7	6.47	37.18	160	313	Average
5351.21	56.21	55.22	74	-17.79	31.7	6.47	37.18	160	313	Peak
10640	46.63	49.41	54	-7.37	39.93	10.36	53.07	199	135	Average
10640	55.99	58.77	74	-18.01	39.93	10.36	53.07	199	135	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320	96.04	95.09			31.68	6.46	37.19	120	32	Average
5320	104.76	103.81			31.68	6.46	37.19	120	32	Peak
5350.22	44.79	43.8	54	-9.21	31.7	6.47	37.18	120	32	Average
5350.22	62.9	61.91	74	-11.1	31.7	6.47	37.18	120	32	Peak
10640	46.29	49.07	54	-7.71	39.93	10.36	53.07	157	64	Average
10640	55.74	58.52	74	-18.26	39.93	10.36	53.07	157	64	Peak

Remarks:

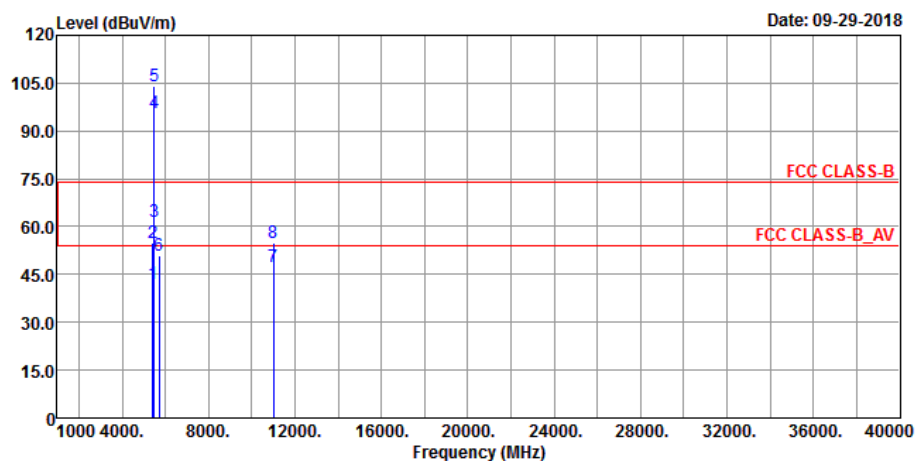
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 5320 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The other emission levels were very low against the limit.

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

Horizontal



Vertical



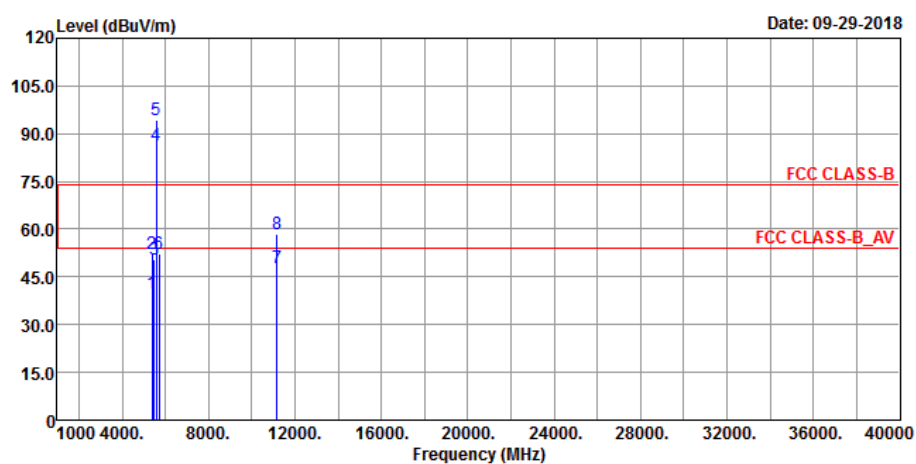
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5425.68	39.99	38.88	54	-14.01	31.75	6.49	37.13	179	352	Average
5425.68	51.1	49.99	74	-22.9	31.75	6.49	37.13	179	352	Peak
*5470	55.94	54.71	68.2	-12.26	31.79	6.52	37.08	179	352	Peak
5500	87.39	86.07			31.81	6.54	37.03	179	352	Average
5500	96.19	94.87			31.81	6.54	37.03	179	352	Peak
*5725	51.36	49.85	68.2	-16.84	32.18	6.76	37.43	179	352	Peak
11000	47.02	48.92	54	-6.98	40.73	10.4	53.03	167	208	Average
11000	57.56	59.46	74	-16.44	40.73	10.4	53.03	167	208	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5419.92	42.17	41.12	54	-11.83	31.75	6.48	37.18	150	26	Average
5419.92	54.96	53.91	74	-19.04	31.75	6.48	37.18	150	26	Peak
*5470	61.51	60.28	68.2	-6.69	31.79	6.52	37.08	150	26	Peak
5500	95.85	94.53			31.81	6.54	37.03	150	26	Average
5500	104.25	102.93			31.81	6.54	37.03	150	26	Peak
*5725	50.73	49.22	68.2	-17.47	32.18	6.76	37.43	150	26	Peak
11000	47.53	49.43	54	-6.47	40.73	10.4	53.03	221	156	Average
11000	55.06	56.96	74	-18.94	40.73	10.4	53.03	221	156	Peak

Remarks:

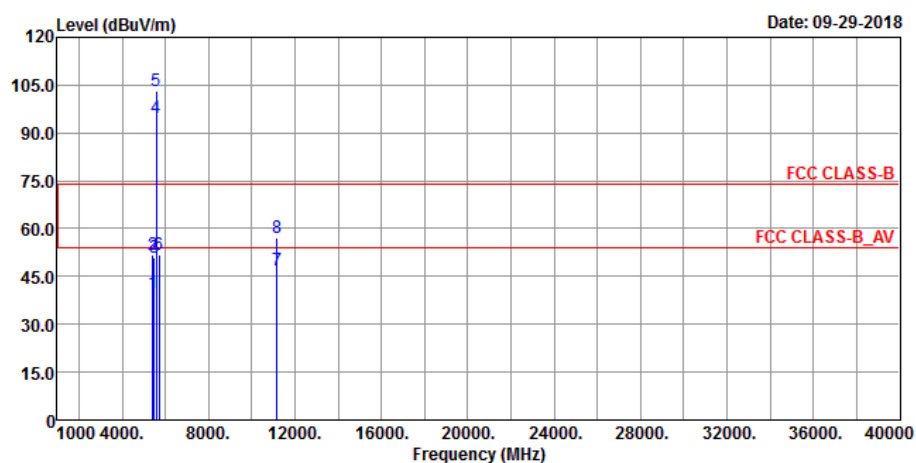
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5500 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

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

Horizontal



Vertical



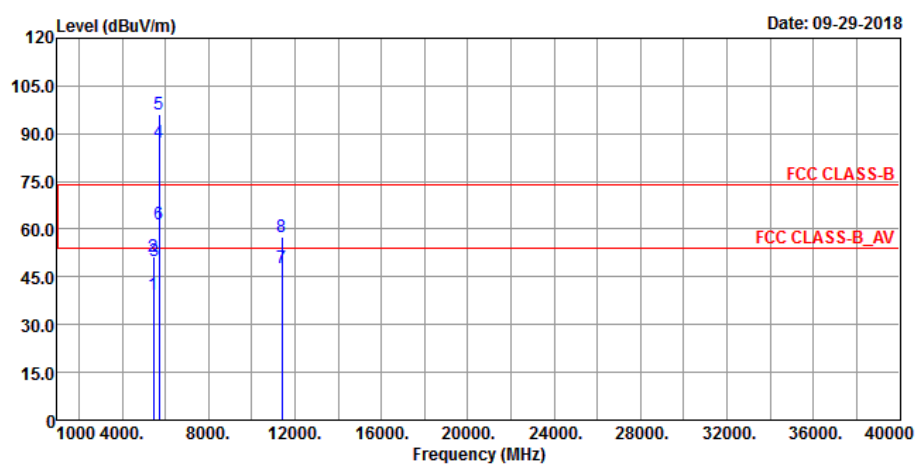
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5376.88	39.79	38.78	54	-14.21	31.72	6.47	37.18	156	300	Average
5376.88	52.29	51.28	74	-21.71	31.72	6.47	37.18	156	300	Peak
*5470	50.36	49.13	68.2	-17.84	31.79	6.52	37.08	156	300	Peak
5580	86.18	84.77			31.92	6.65	37.16	156	300	Average
5580	94.2	92.79			31.92	6.65	37.16	156	300	Peak
*5725	52.07	50.56	68.2	-16.13	32.18	6.76	37.43	156	300	Peak
11160	47.64	49.34	54	-6.36	40.56	10.52	52.78	176	289	Average
11160	58.3	60	74	-15.7	40.56	10.52	52.78	176	289	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5424.4	39.93	38.82	54	-14.07	31.75	6.49	37.13	157	26	Average
5424.4	51.69	50.58	74	-22.31	31.75	6.49	37.13	157	26	Peak
*5470	51.11	49.88	68.2	-17.09	31.79	6.52	37.08	157	26	Peak
5580	94.81	93.4			31.92	6.65	37.16	157	26	Average
5580	103.06	101.65			31.92	6.65	37.16	157	26	Peak
*5725	51.85	50.34	68.2	-16.35	32.18	6.76	37.43	157	26	Peak
11160	46.98	48.68	54	-7.02	40.56	10.52	52.78	118	94	Average
11160	56.97	58.67	74	-17.03	40.56	10.52	52.78	118	94	Peak

Remarks:

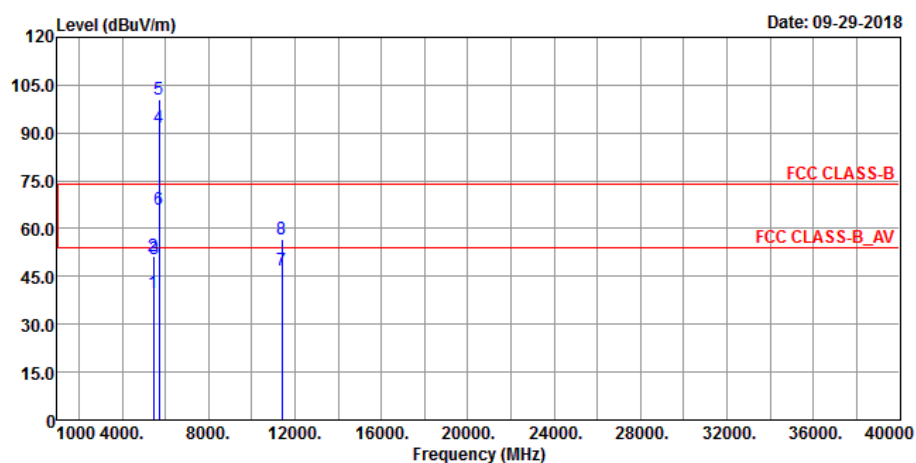
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5580 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

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

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5444.08	39.61	38.48	54	-14.39	31.76	6.5	37.13	100	298	Average
5444.08	51.28	50.15	74	-22.72	31.76	6.5	37.13	100	298	Peak
*5470	50.19	48.96	68.2	-18.01	31.79	6.52	37.08	100	298	Peak
5700	87.45	86			32.12	6.73	37.4	100	298	Average
5700	96.19	94.74			32.12	6.73	37.4	100	298	Peak
*5725	61.69	60.18	68.2	-6.51	32.18	6.76	37.43	100	298	Peak
11400	47.62	49.52	54	-6.38	40.33	10.47	52.7	235	129	Average
11400	57.34	59.24	74	-16.66	40.33	10.47	52.7	235	129	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.12	39.65	38.45	54	-14.35	31.77	6.51	37.08	148	321	Average
5459.12	51.23	50.03	74	-22.77	31.77	6.51	37.08	148	321	Peak
*5470	50.26	49.03	68.2	-17.94	31.79	6.52	37.08	148	321	Peak
5700	91.65	90.2			32.12	6.73	37.4	148	321	Average
5700	100.67	99.22			32.12	6.73	37.4	148	321	Peak
*5725	66.09	64.58	68.2	-2.11	32.18	6.76	37.43	148	321	Peak
11400	47.11	49.01	54	-6.89	40.33	10.47	52.7	146	264	Average
11400	56.71	58.61	74	-17.29	40.33	10.47	52.7	146	264	Peak

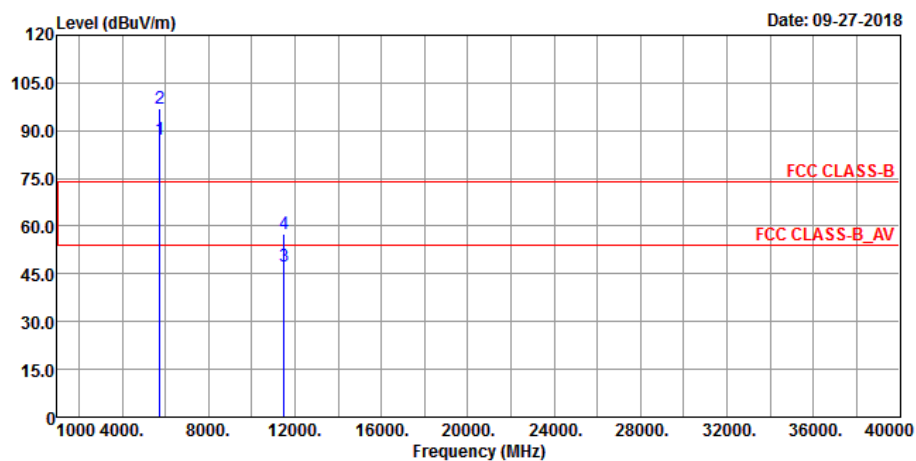
Remarks:

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

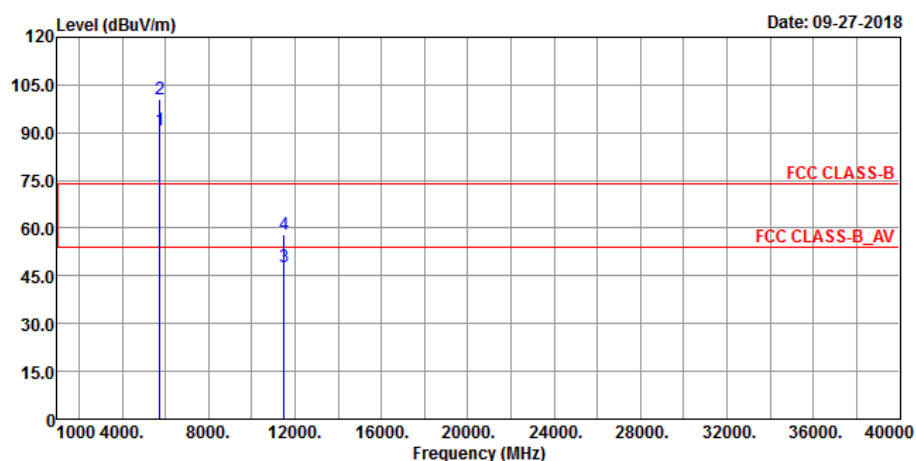
EUT Test Condition		Measurement Detail	
Channel	Channel 149	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

<Spurious Emission>

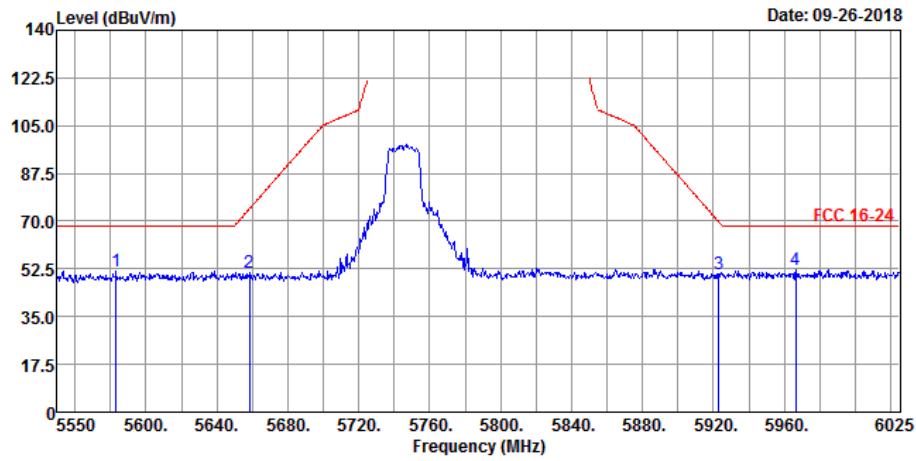
Horizontal



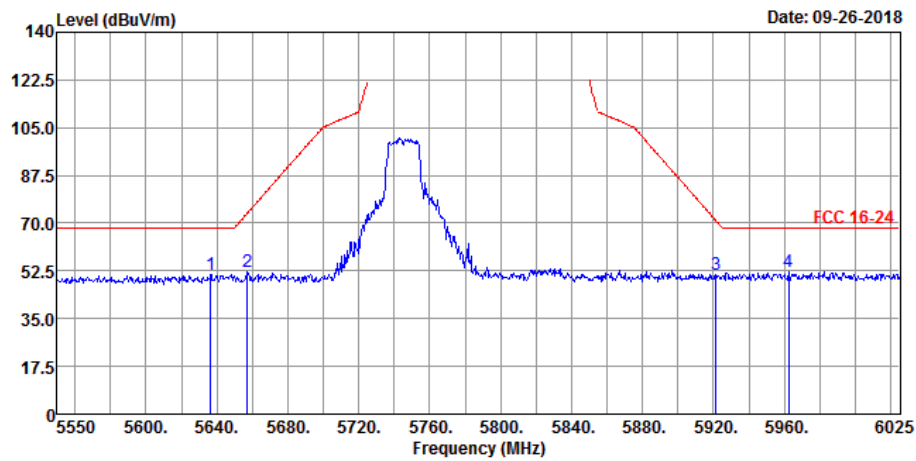
Vertical



<Out of Band Emission (OOBE)> Horizontal



Vertical



<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	87.08	85.56			32.21	6.78	37.47	102	302	Average
5745	97.08	95.56			32.21	6.78	37.47	102	302	Peak
11490	47.56	49.43	54	-6.44	40.25	10.66	52.78	165	258	Average
11490	57.57	59.44	74	-16.43	40.25	10.66	52.78	165	258	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745	90.69	89.17			32.21	6.78	37.47	104	305	Average
5745	100.69	99.17			32.21	6.78	37.47	104	305	Peak
11490	47.98	49.85	54	-6.02	40.25	10.66	52.78	152	213	Average
11490	57.99	59.86	74	-16.01	40.25	10.66	52.78	152	213	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5583.25	51.53	50.08	68.2	-16.67	31.95	6.66	37.16	102	302	Peak
5658.3	51.19	49.76	74.36	-23.17	32.06	6.71	37.34	102	302	Peak
5922.875	50.67	48.79	69.77	-19.1	32.52	6.86	37.5	102	302	Peak
5966.575	52.31	50.37	68.2	-15.89	32.57	6.88	37.51	102	302	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5636.45	51.25	49.79	68.2	-16.95	32.04	6.7	37.28	104	305	Peak
5657.35	52.13	50.7	73.66	-21.53	32.06	6.71	37.34	104	305	Peak
5921.45	51.22	49.37	70.82	-19.6	32.49	6.86	37.5	104	305	Peak
5962.3	52.02	50.09	68.2	-16.18	32.57	6.87	37.51	104	305	Peak

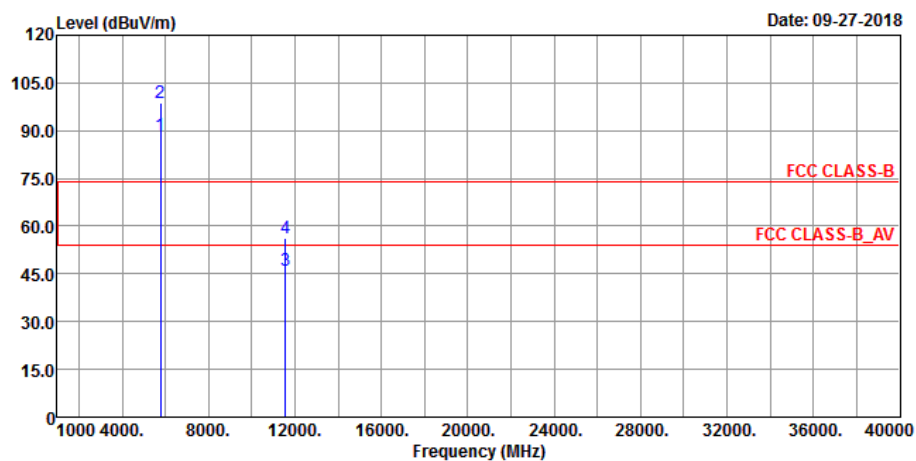
Remarks:

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

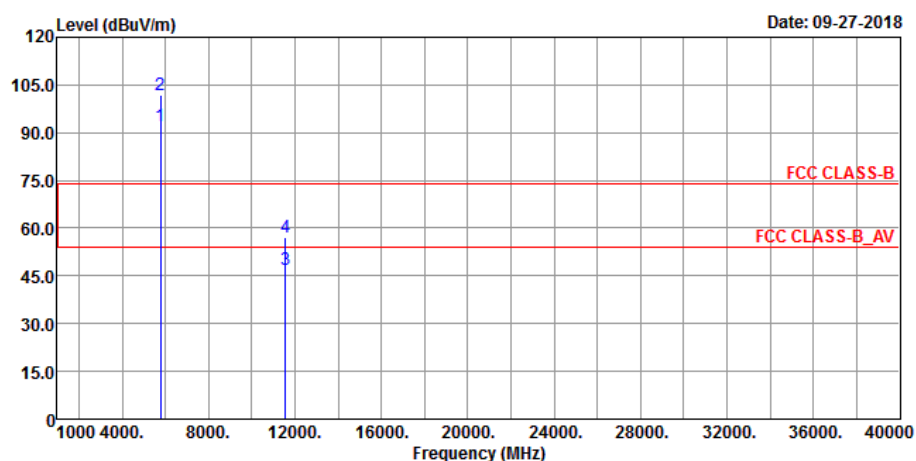
EUT Test Condition		Measurement Detail	
Channel	Channel 157	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

<Spurious Emission>

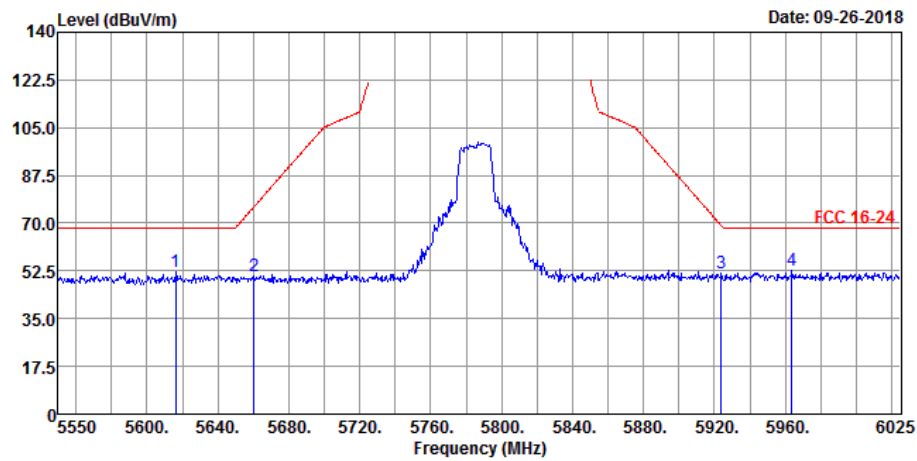
Horizontal



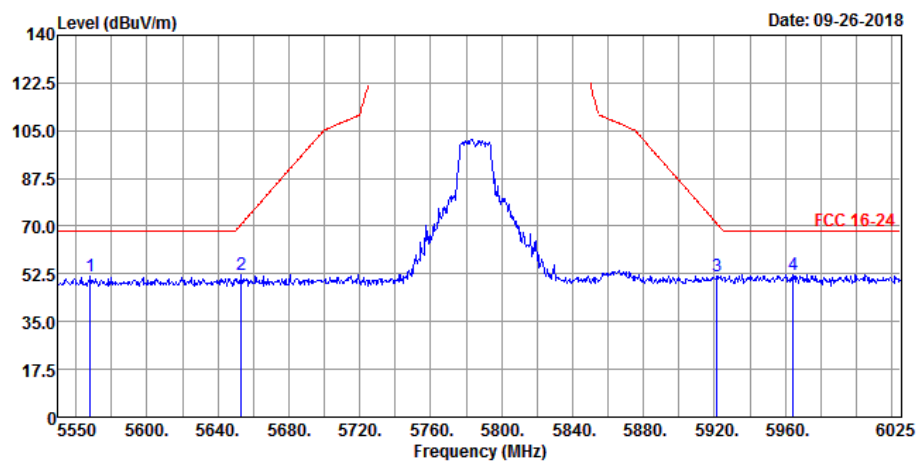
Vertical



<Out of Band Emission (OOBE)> Horizontal



Vertical



<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	88.74	87.2			32.26	6.82	37.54	110	303	Average
5785	98.72	97.18			32.26	6.82	37.54	110	303	Peak
11570	46.18	48.3	54	-7.82	40.13	10.76	53.01	152	231	Average
11570	56.18	58.3	74	-17.82	40.13	10.76	53.01	152	231	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785	91.99	90.45			32.26	6.82	37.54	101	304	Average
5785	102.07	100.53			32.26	6.82	37.54	101	304	Peak
11570	47.03	49.15	54	-6.97	40.13	10.76	53.01	222	265	Average
11570	57.03	59.15	74	-16.97	40.13	10.76	53.01	222	265	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5616.025	51.98	50.5	68.2	-16.22	32.01	6.69	37.22	110	303	Peak
5660.2	50.5	49.07	75.77	-25.27	32.06	6.71	37.34	110	303	Peak
5923.825	51.8	49.92	69.07	-17.27	32.52	6.86	37.5	110	303	Peak
5963.725	52.46	50.52	68.2	-15.74	32.57	6.88	37.51	110	303	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5568.05	51.51	50.07	68.2	-16.69	31.92	6.64	37.12	101	304	Peak
5653.075	51.99	50.5	70.49	-18.5	32.06	6.71	37.28	101	304	Peak
5921.45	51.63	49.78	70.82	-19.19	32.49	6.86	37.5	101	304	Peak
5964.2	52.37	50.43	68.2	-15.83	32.57	6.88	37.51	101	304	Peak

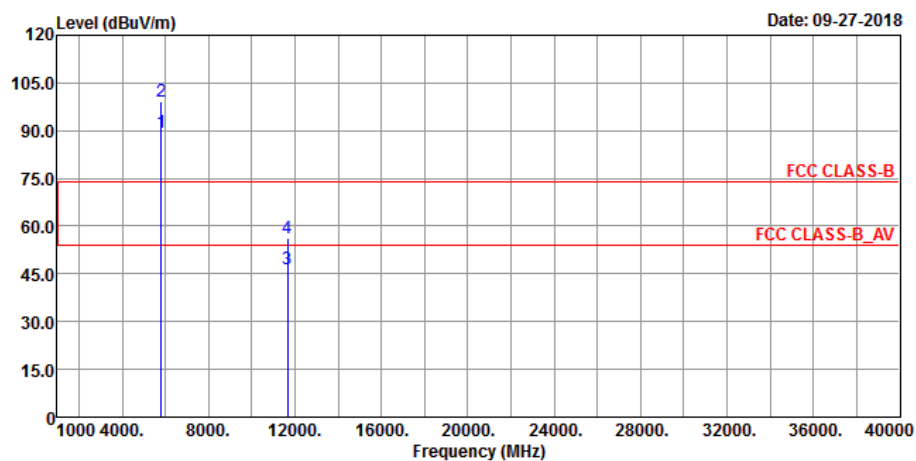
Remarks:

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

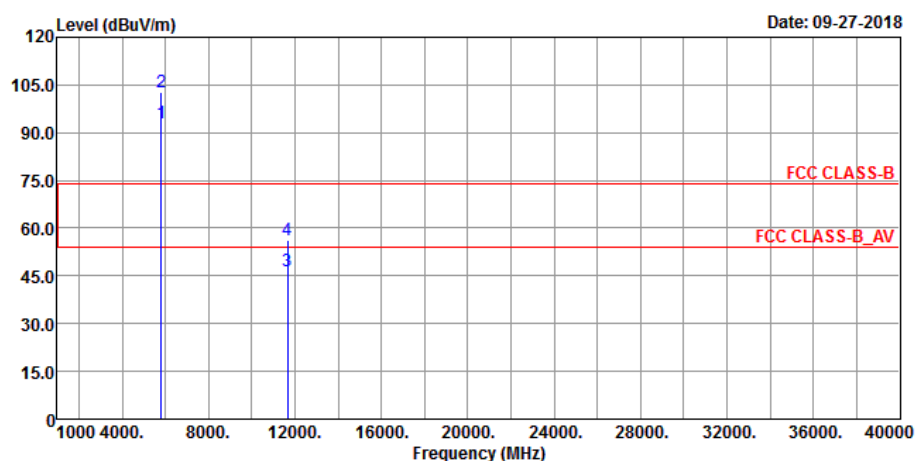
EUT Test Condition		Measurement Detail	
Channel	Channel 165	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

<Spurious Emission>

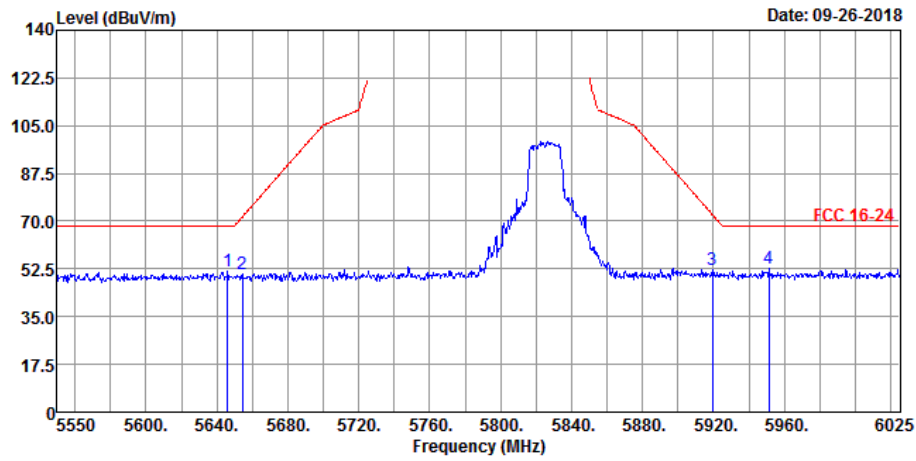
Horizontal



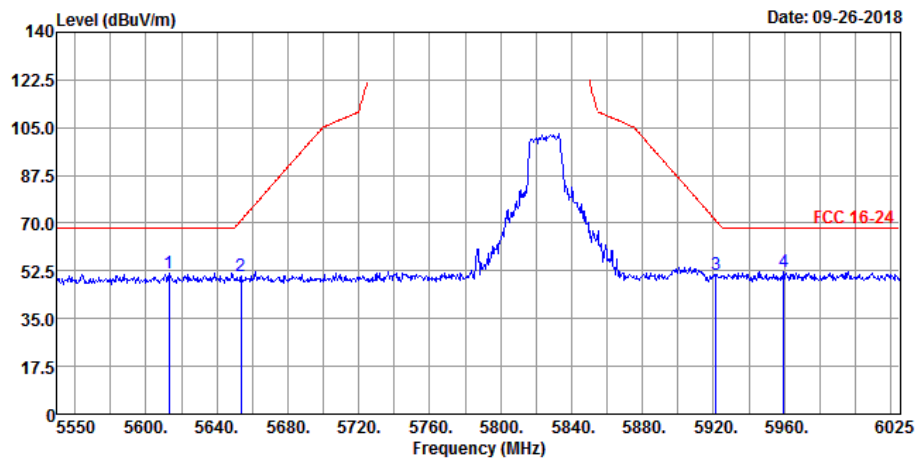
Vertical



<Out of Band Emission (OOBE)> Horizontal



Vertical



<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	89.33	87.67			32.35	6.84	37.53	112	299	Average
5825	99.33	97.67			32.35	6.84	37.53	112	299	Peak
11650	46.42	48.73	54	-7.58	40.03	10.8	53.14	102	231	Average
11650	56.43	58.74	74	-17.57	40.03	10.8	53.14	102	231	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825	92.87	91.21			32.35	6.84	37.53	102	302	Average
5825	102.87	101.21			32.35	6.84	37.53	102	302	Peak
11650	46.3	48.61	54	-7.7	40.03	10.8	53.14	174	192	Average
11650	56.31	58.62	74	-17.69	40.03	10.8	53.14	174	192	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5645.95	51.58	50.12	68.2	-16.62	32.04	6.7	37.28	112	299	Peak
5654.5	50.45	49.02	71.54	-21.09	32.06	6.71	37.34	112	299	Peak
5919.55	52.13	50.28	72.22	-20.09	32.49	6.86	37.5	112	299	Peak
5951.375	52.82	50.9	68.2	-15.38	32.55	6.87	37.5	112	299	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5613.175	51.75	50.3	68.2	-16.45	31.98	6.69	37.22	102	302	Peak
5653.55	50.7	49.21	70.84	-20.14	32.06	6.71	37.28	102	302	Peak
5921.45	51.25	49.4	70.82	-19.57	32.49	6.86	37.5	102	302	Peak
5959.45	52.41	50.47	68.2	-15.79	32.57	6.87	37.5	102	302	Peak

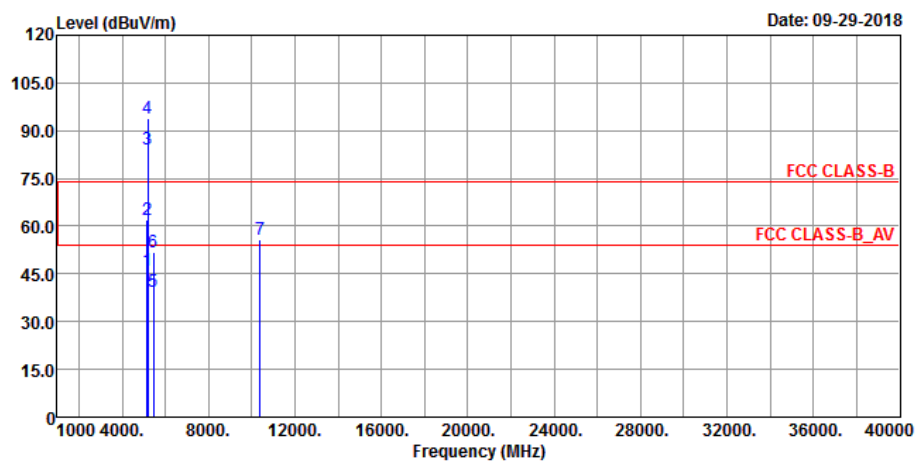
Remarks:

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

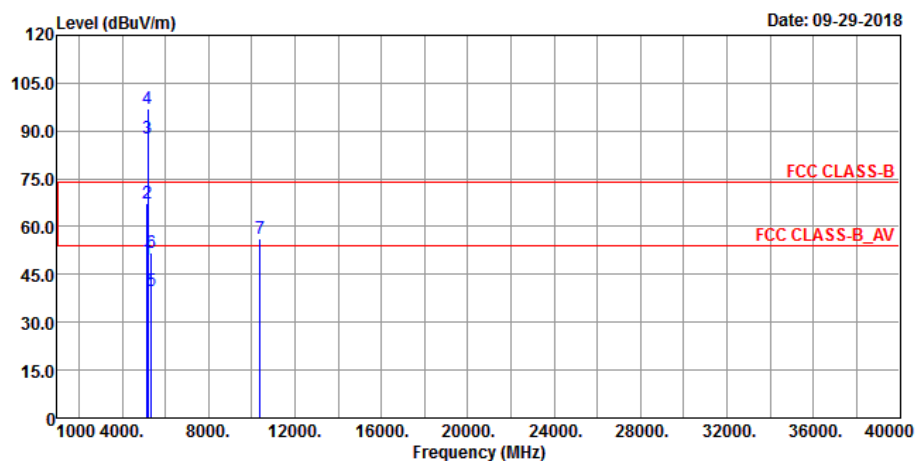
802.11n (HT40)

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

Horizontal



Vertical



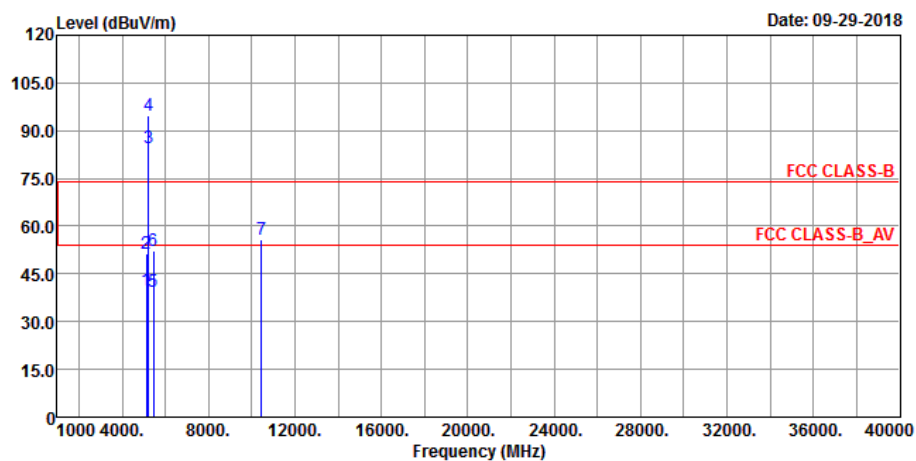
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.94	46.09	45.51	54	-7.91	31.56	6.34	37.32	165	339	Average
5149.94	61.81	61.23	74	-12.19	31.56	6.34	37.32	165	339	Peak
5190	84.07	83.44			31.59	6.38	37.34	165	339	Average
5190	94.08	93.45			31.59	6.38	37.34	165	339	Peak
5452.63	39.35	38.15	54	-14.65	31.77	6.51	37.08	165	339	Average
5452.63	51.74	50.54	74	-22.26	31.77	6.51	37.08	165	339	Peak
*10380	55.65	58.39	68.2	-12.55	39.5	10.21	52.45	152	168	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.76	49.68	49.1	54	-4.32	31.56	6.34	37.32	118	38	Average
5149.76	67.39	66.81	74	-6.61	31.56	6.34	37.32	118	38	Peak
5190	87.49	86.86			31.59	6.38	37.34	118	38	Average
5190	97.14	96.51			31.59	6.38	37.34	118	38	Peak
5368.37	39.75	38.74	54	-14.25	31.72	6.47	37.18	118	38	Average
5368.37	51.89	50.88	74	-22.11	31.72	6.47	37.18	118	38	Peak
*10380	56.35	59.09	68.2	-11.85	39.5	10.21	52.45	192	316	Peak

Remarks:

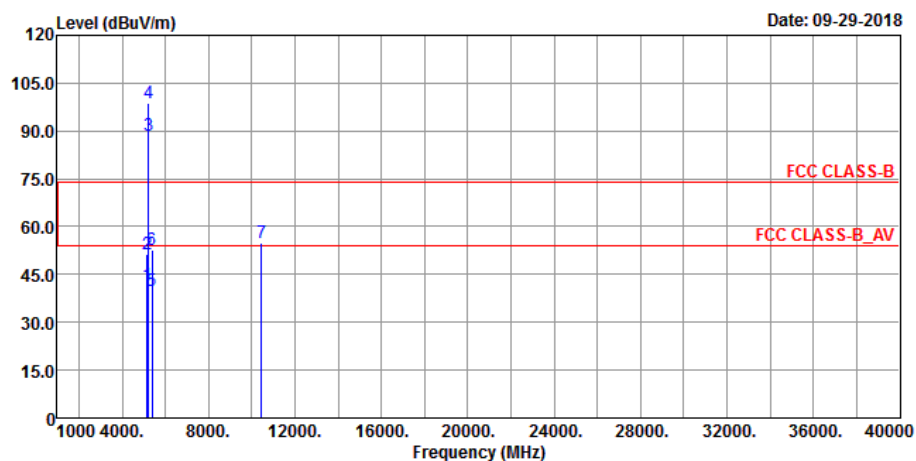
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 5190 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The other emission levels were very low against the limit.

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

Horizontal



Vertical



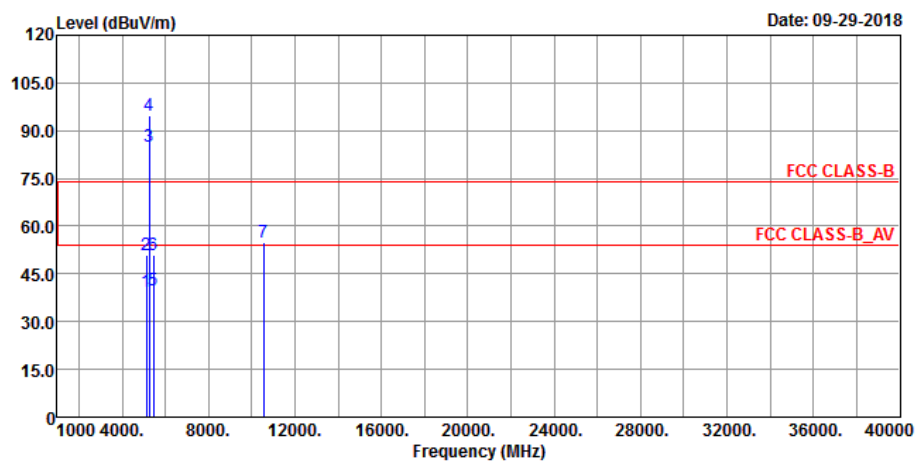
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5136.26	39.73	39.15	54	-14.27	31.55	6.33	37.3	162	339	Average
5136.26	51.48	50.9	74	-22.52	31.55	6.33	37.3	162	339	Peak
5230	84.72	84.01			31.62	6.41	37.32	162	339	Average
5230	94.73	94.02			31.62	6.41	37.32	162	339	Peak
5439.32	39.25	38.12	54	-14.75	31.76	6.5	37.13	162	339	Average
5439.32	52.15	51.02	74	-21.85	31.76	6.5	37.13	162	339	Peak
*10460	55.81	58.61	68.2	-12.39	39.57	10.22	52.59	116	261	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.94	41.7	41.12	54	-12.3	31.56	6.34	37.32	130	46	Average
5149.94	51.25	50.67	74	-22.75	31.56	6.34	37.32	130	46	Peak
5230	88.62	87.91			31.62	6.41	37.32	130	46	Average
5230	98.63	97.92			31.62	6.41	37.32	130	46	Peak
5386.19	39.81	38.79	54	-14.19	31.73	6.47	37.18	130	46	Average
5386.19	52.57	51.55	74	-21.43	31.73	6.47	37.18	130	46	Peak
*10460	54.88	57.68	68.2	-13.32	39.57	10.22	52.59	128	213	Peak

Remarks:

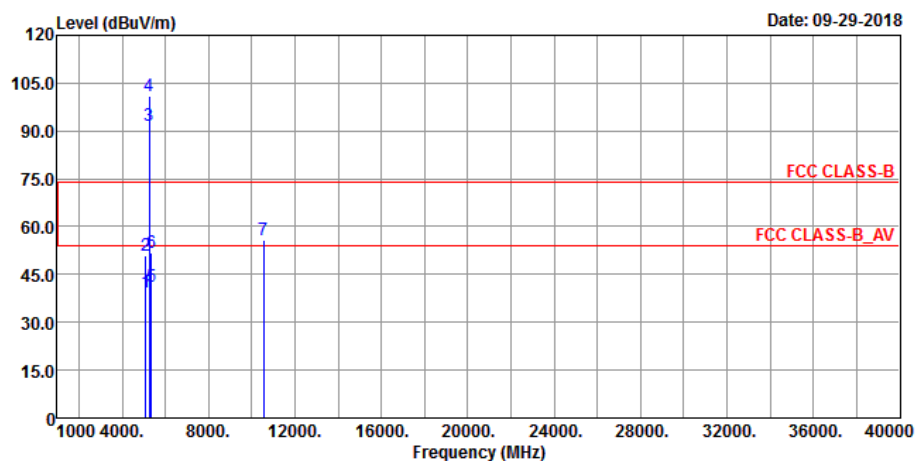
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 5230 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The other emission levels were very low against the limit.

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

Horizontal



Vertical



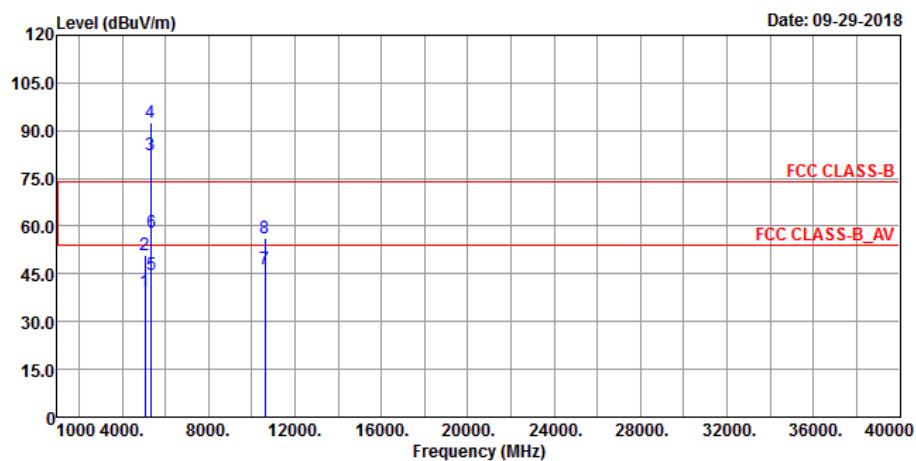
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5118.2	39.29	38.72	54	-14.71	31.54	6.31	37.28	136	310	Average
5118.2	50.86	50.29	74	-23.14	31.54	6.31	37.28	136	310	Peak
5270	85.18	84.36			31.65	6.44	37.27	136	310	Average
5270	94.7	93.88			31.65	6.44	37.27	136	310	Peak
5454.83	39.76	38.56	54	-14.24	31.77	6.51	37.08	136	310	Average
5454.83	51.1	49.9	74	-22.9	31.77	6.51	37.08	136	310	Peak
*10540	54.82	57.67	68.2	-13.38	39.7	10.31	52.86	180	261	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5110.1	39.44	38.88	54	-14.56	31.54	6.3	37.28	112	32	Average
5110.1	51.07	50.51	74	-22.93	31.54	6.3	37.28	112	32	Peak
5270	91.83	91.01			31.65	6.44	37.27	112	32	Average
5270	100.89	100.07			31.65	6.44	37.27	112	32	Peak
5350.11	41.19	40.2	54	-12.81	31.7	6.47	37.18	112	32	Average
5350.11	51.81	50.82	74	-22.19	31.7	6.47	37.18	112	32	Peak
*10540	55.9	58.75	68.2	-12.3	39.7	10.31	52.86	149	217	Peak

Remarks:

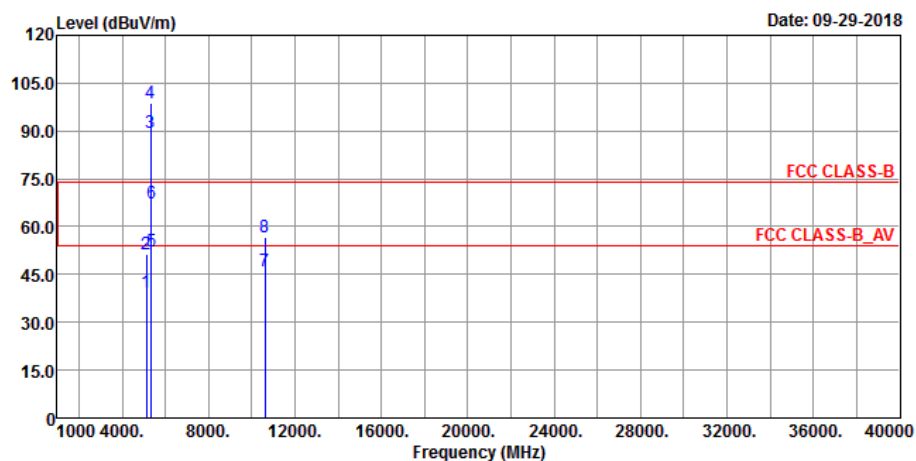
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 5270 MHz: Fundamental Frequency
- *: Out of Restricted Band
- The other emission levels were very low against the limit.

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

Horizontal



Vertical



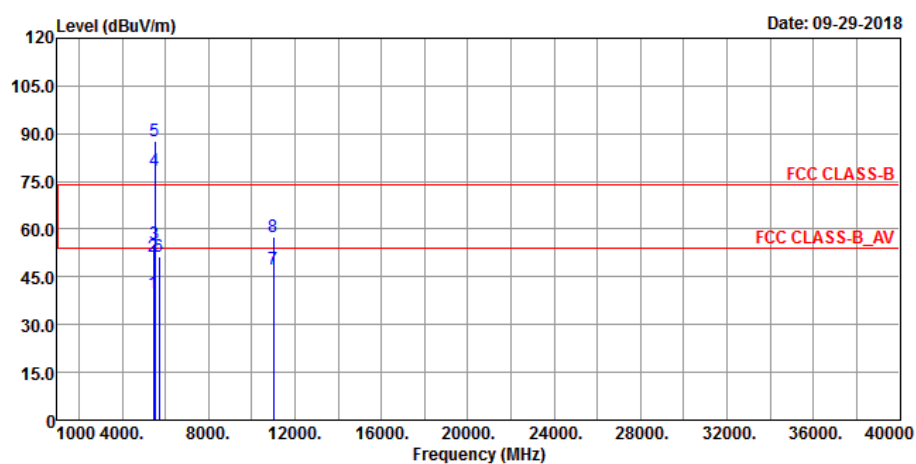
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5057.6	39.36	38.84	54	-14.64	31.51	6.26	37.25	133	350	Average
5057.6	51.02	50.5	74	-22.98	31.51	6.26	37.25	133	350	Peak
5310	82.39	81.44			31.68	6.46	37.19	133	350	Average
5310	92.68	91.73			31.68	6.46	37.19	133	350	Peak
5350.22	44.79	43.8	54	-9.21	31.7	6.47	37.18	133	350	Average
5350.22	57.89	56.9	74	-16.11	31.7	6.47	37.18	133	350	Peak
10620	46.46	49.27	54	-7.54	39.89	10.39	53.09	205	163	Average
10620	56.21	59.02	74	-17.79	39.89	10.39	53.09	205	163	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5130.8	39.44	38.87	54	-14.56	31.55	6.32	37.3	125	32	Average
5130.8	51.49	50.92	74	-22.51	31.55	6.32	37.3	125	32	Peak
5310	89.44	88.49			31.68	6.46	37.19	125	32	Average
5310	98.85	97.9			31.68	6.46	37.19	125	32	Peak
5350.11	52.24	51.25	54	-1.76	31.7	6.47	37.18	125	32	Average
5350.11	67.18	66.19	74	-6.82	31.7	6.47	37.18	125	32	Peak
10620	45.95	48.76	54	-8.05	39.89	10.39	53.09	170	306	Average
10620	56.83	59.64	74	-17.17	39.89	10.39	53.09	170	306	Peak

Remarks:

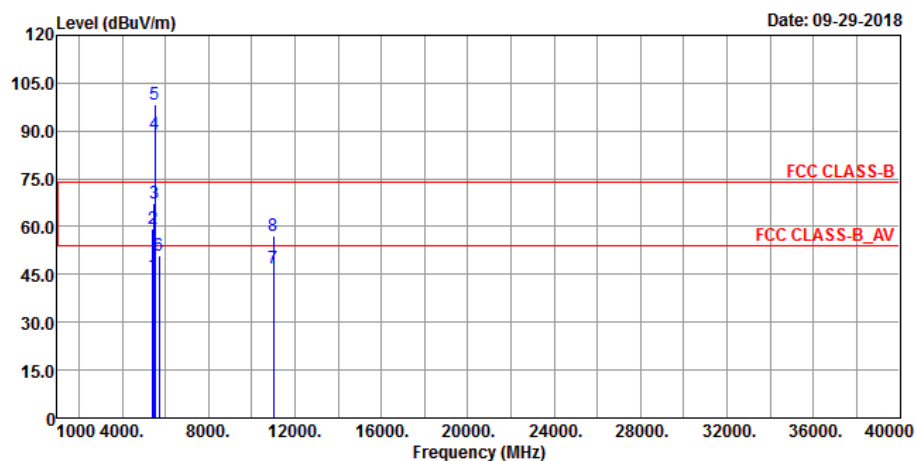
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5310 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

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

Horizontal



Vertical



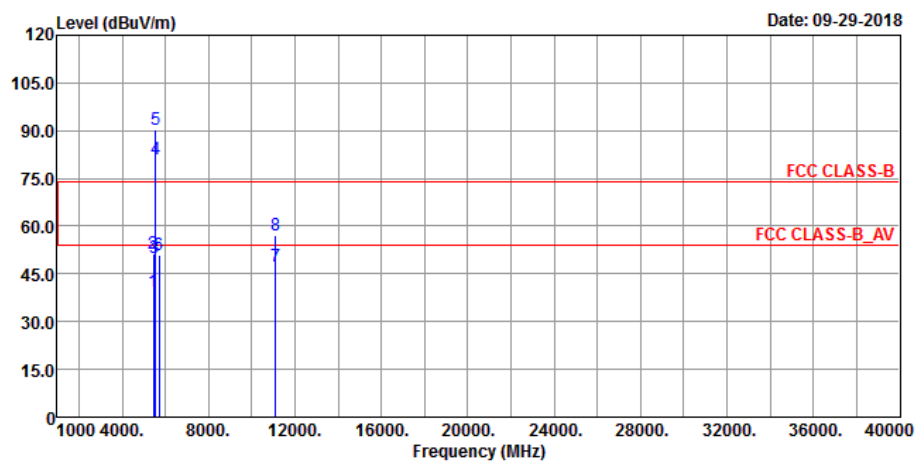
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5457.84	39.73	38.53	54	-14.27	31.77	6.51	37.08	100	304	Average
5457.84	51.52	50.32	74	-22.48	31.77	6.51	37.08	100	304	Peak
*5470	55.37	54.14	68.2	-12.83	31.79	6.52	37.08	100	304	Peak
5510	78.19	76.89			31.81	6.55	37.06	100	304	Average
5510	87.6	86.3			31.81	6.55	37.06	100	304	Peak
*5725	51.36	49.85	68.2	-16.84	32.18	6.76	37.43	100	304	Peak
11020	47.44	49.27	54	-6.56	40.71	10.41	52.95	218	103	Average
11020	57.72	59.55	74	-16.28	40.71	10.41	52.95	218	103	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5430	44.59	43.47	54	-9.41	31.76	6.49	37.13	139	325	Average
5430	59.25	58.13	74	-14.75	31.76	6.49	37.13	139	325	Peak
*5470	67.14	65.91	68.2	-1.06	31.79	6.52	37.08	139	325	Peak
5510	89.07	87.77			31.81	6.55	37.06	139	325	Average
5510	98.21	96.91			31.81	6.55	37.06	139	325	Peak
*5725	50.98	49.47	68.2	-17.22	32.18	6.76	37.43	139	325	Peak
11020	46.9	48.73	54	-7.1	40.71	10.41	52.95	195	48	Average
11020	57.1	58.93	74	-16.9	40.71	10.41	52.95	195	48	Peak

Remarks:

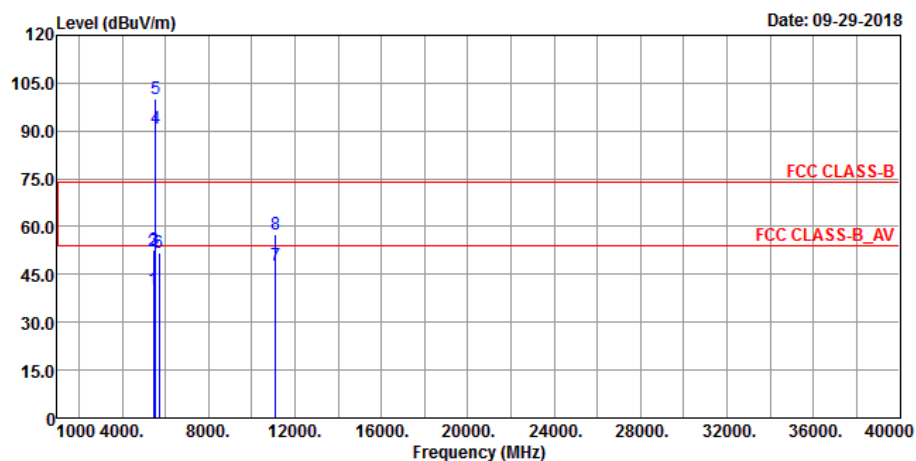
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5510 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

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

Horizontal



Vertical



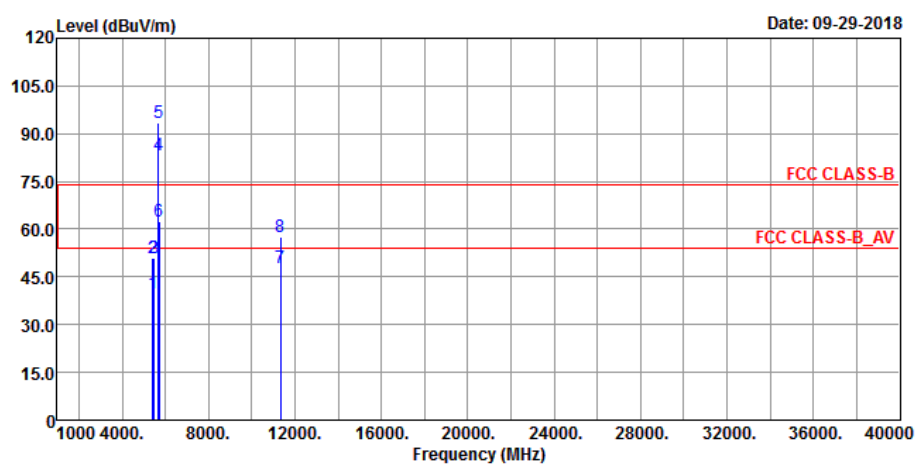
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5453.68	39.62	38.42	54	-14.38	31.77	6.51	37.08	102	299	Average
5453.68	51.29	50.09	74	-22.71	31.77	6.51	37.08	102	299	Peak
*5470	50.01	48.78	68.2	-18.19	31.79	6.52	37.08	102	299	Peak
5550	81.1	79.69			31.89	6.61	37.09	102	299	Average
5550	90.28	88.87			31.89	6.61	37.09	102	299	Peak
*5725	50.92	49.41	68.2	-17.28	32.18	6.76	37.43	102	299	Peak
11100	47.21	48.82	54	-6.79	40.63	10.47	52.71	157	235	Average
11100	57.15	58.76	74	-16.85	40.63	10.47	52.71	157	235	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5459.28	40.28	39.08	54	-13.72	31.77	6.51	37.08	158	26	Average
5459.28	52.2	51	74	-21.8	31.77	6.51	37.08	158	26	Peak
*5470	52.79	51.56	68.2	-15.41	31.79	6.52	37.08	158	26	Peak
5550	90.9	89.49			31.89	6.61	37.09	158	26	Average
5550	99.91	98.5			31.89	6.61	37.09	158	26	Peak
*5725	51.64	50.13	68.2	-16.56	32.18	6.76	37.43	158	26	Peak
11100	47.67	49.28	54	-6.33	40.63	10.47	52.71	170	138	Average
11100	57.46	59.07	74	-16.54	40.63	10.47	52.71	170	138	Peak

Remarks:

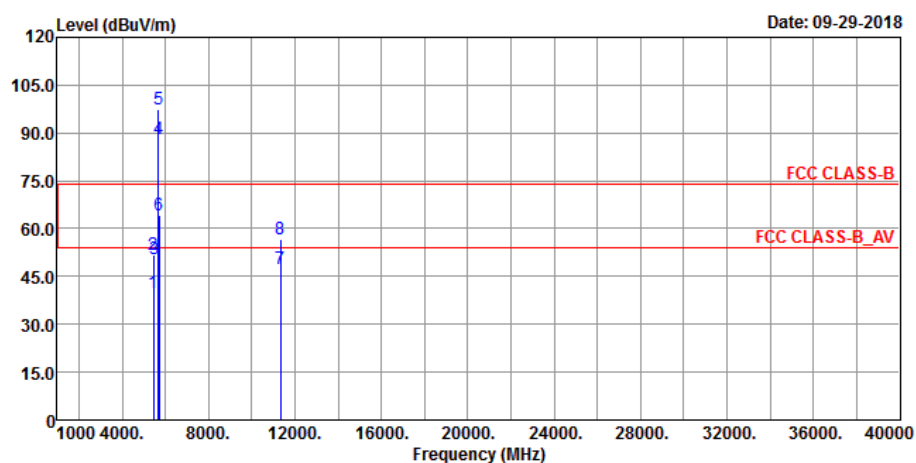
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5550 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

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

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5427.28	39.66	38.55	54	-14.34	31.75	6.49	37.13	100	301	Average
5427.28	51.06	49.95	74	-22.94	31.75	6.49	37.13	100	301	Peak
*5470	50.81	49.58	68.2	-17.39	31.79	6.52	37.08	100	301	Peak
5670	83.41	81.94			32.09	6.72	37.34	100	301	Average
5670	93.27	91.8			32.09	6.72	37.34	100	301	Peak
5725	62.28	60.77	68.2	-5.92	32.18	6.76	37.43	100	301	Peak
11340	47.61	49.41	54	-6.39	40.4	10.52	52.72	199	177	Average
11340	57.64	59.44	74	-16.36	40.4	10.52	52.72	199	177	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5443.44	39.78	38.65	54	-14.22	31.76	6.5	37.13	143	300	Average
5443.44	51.69	50.56	74	-22.31	31.76	6.5	37.13	143	300	Peak
*5470	50.42	49.19	68.2	-17.78	31.79	6.52	37.08	143	300	Peak
5670	88.21	86.74			32.09	6.72	37.34	143	300	Average
5670	97.21	95.74			32.09	6.72	37.34	143	300	Peak
*5725	64.36	62.85	68.2	-3.84	32.18	6.76	37.43	143	300	Peak
11340	47.2	49	54	-6.8	40.4	10.52	52.72	135	345	Average
11340	56.5	58.3	74	-17.5	40.4	10.52	52.72	135	345	Peak

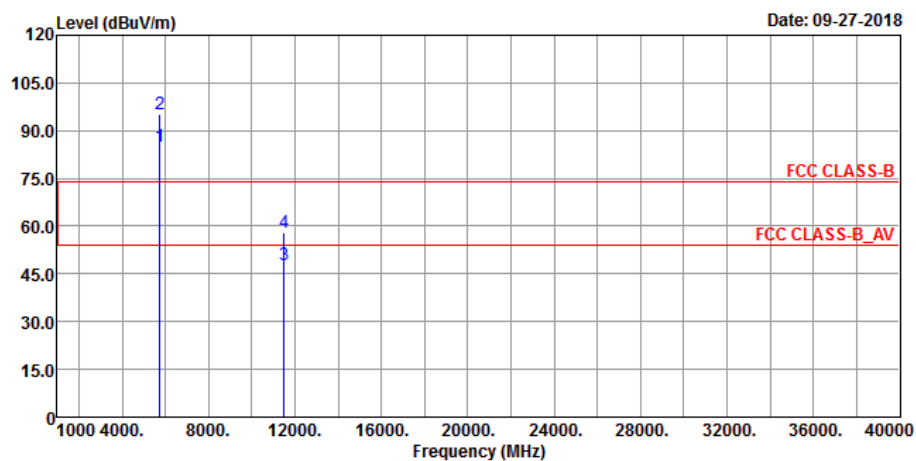
Remarks:

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

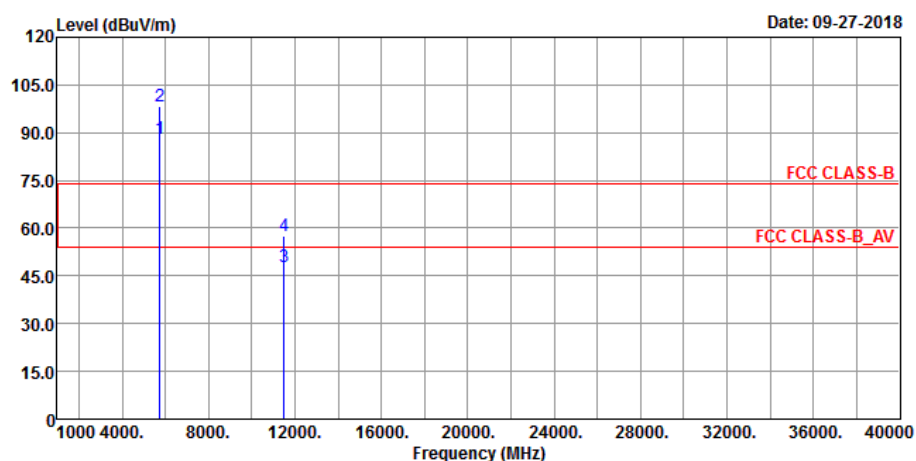
EUT Test Condition		Measurement Detail	
Channel	Channel 151	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

<Spurious Emission>

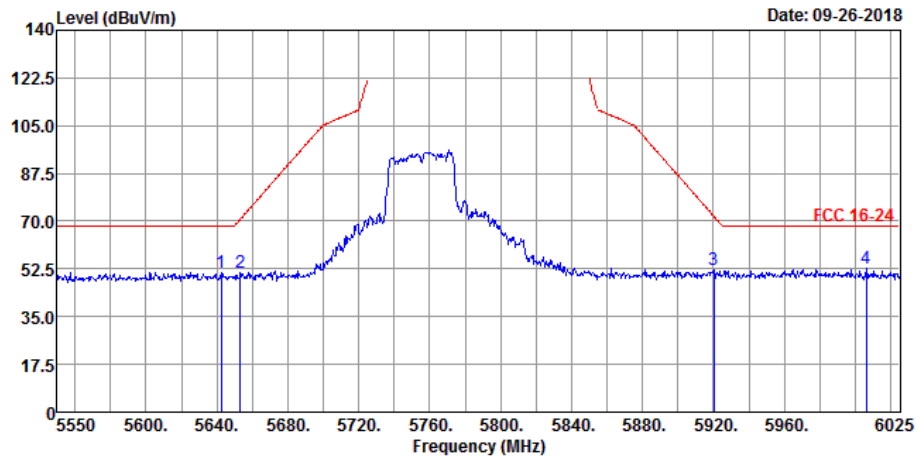
Horizontal



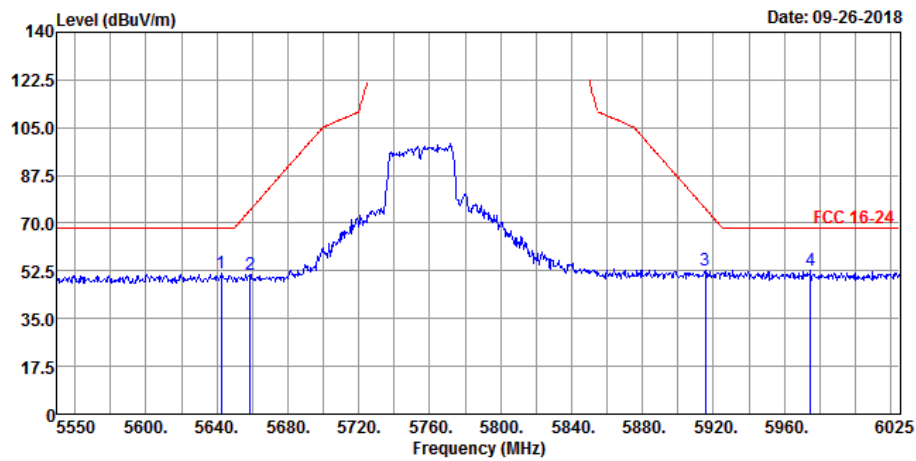
Vertical



<Out of Band Emission (OOBE)> Horizontal



Vertical



<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5755	84.98	83.43			32.23	6.79	37.47	108	302	Average
5755	94.99	93.44			32.23	6.79	37.47	108	302	Peak
11510	47.85	49.74	54	-6.15	40.23	10.69	52.81	102	251	Average
11510	57.85	59.74	74	-16.15	40.23	10.69	52.81	102	251	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5755	88.16	86.61			32.23	6.79	37.47	100	300	Average
5755	98.17	96.62			32.23	6.79	37.47	100	300	Peak
11510	47.76	49.65	54	-6.24	40.23	10.69	52.81	265	231	Average
11510	57.77	59.66	74	-16.23	40.23	10.69	52.81	265	231	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5642.625	51.21	49.75	68.2	-16.99	32.04	6.7	37.28	108	302	Peak
5653.075	51.31	49.82	70.49	-19.18	32.06	6.71	37.28	108	302	Peak
5920.025	51.94	50.09	71.87	-19.93	32.49	6.86	37.5	108	302	Peak
6006	52.5	50.49	68.2	-15.7	32.63	6.89	37.51	108	302	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5642.625	51.63	50.17	68.2	-16.57	32.04	6.7	37.28	100	300	Peak
5658.775	51.39	49.96	74.72	-23.33	32.06	6.71	37.34	100	300	Peak
5915.275	52.87	51.02	75.37	-22.5	32.49	6.86	37.5	100	300	Peak
5974.65	52.62	50.65	68.2	-15.58	32.6	6.88	37.51	100	300	Peak

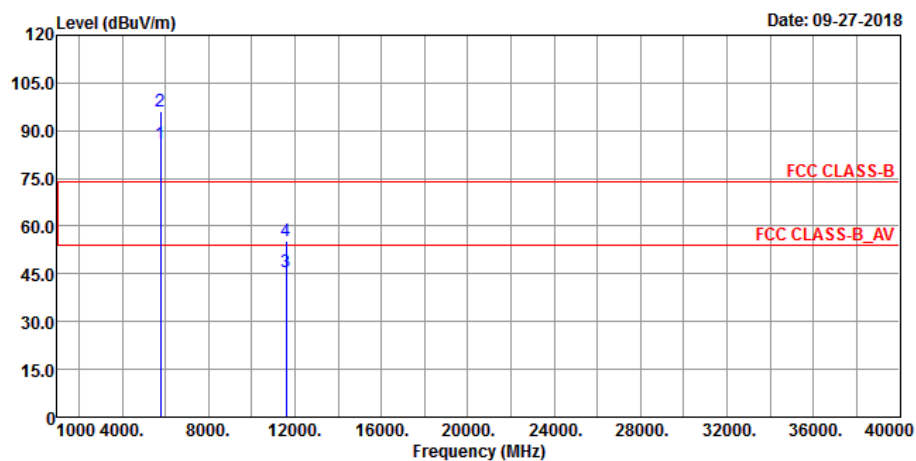
Remarks:

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

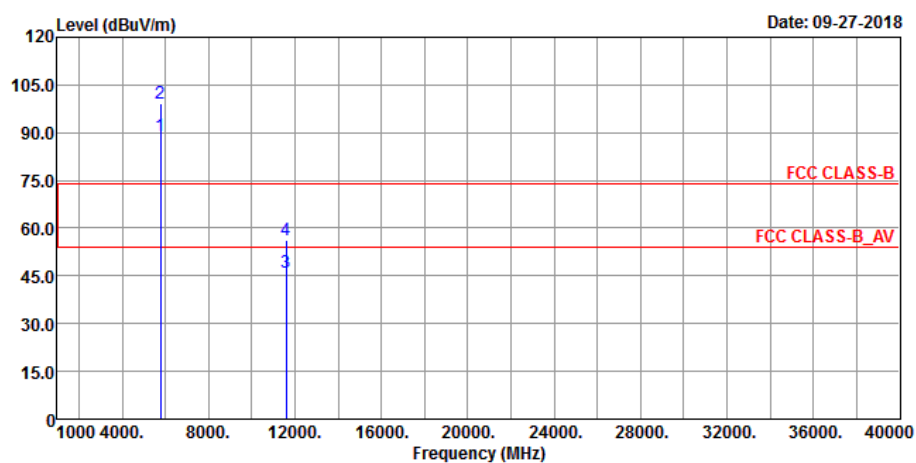
EUT Test Condition		Measurement Detail	
Channel	Channel 159	Frequency Range	1 GHz ~ 40 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

<Spurious Emission>

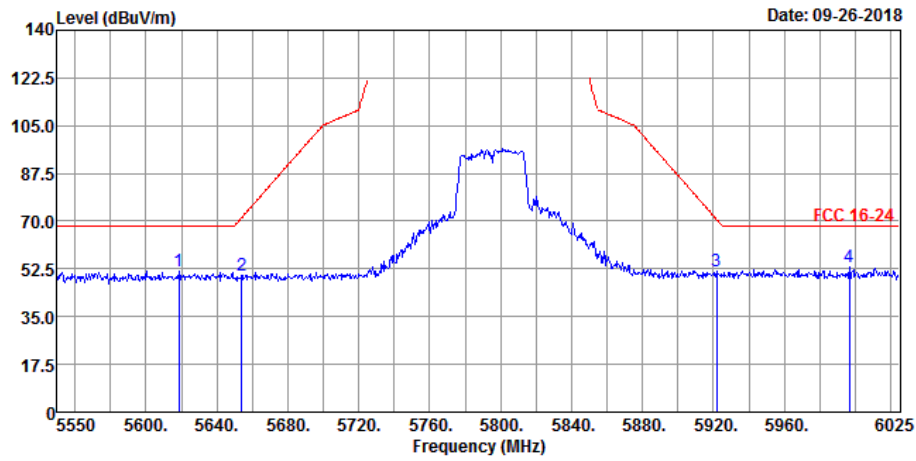
Horizontal



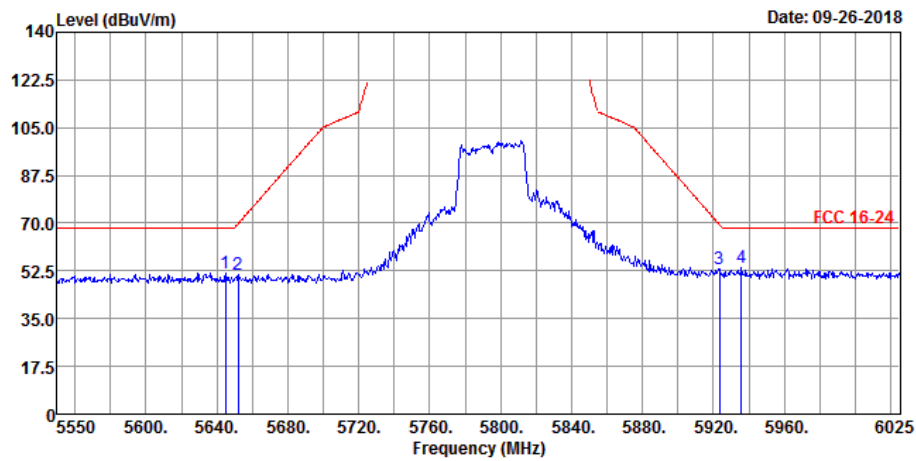
Vertical



<Out of Band Emission (OOBE)> Horizontal



Vertical



<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5795	86.09	84.51			32.29	6.83	37.54	104	298	Average
5795	96.12	94.54			32.29	6.83	37.54	104	298	Peak
11590	45.39	47.51	54	-8.61	40.11	10.78	53.01	165	295	Average
11590	55.39	57.51	74	-18.61	40.11	10.78	53.01	165	295	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5795	88.93	87.35			32.29	6.83	37.54	102	303	Average
5795	99	97.42			32.29	6.83	37.54	102	303	Peak
11590	46.05	48.17	54	-7.95	40.11	10.78	53.01	295	265	Average
11590	56.06	58.18	74	-17.94	40.11	10.78	53.01	295	265	Peak

<Out of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5618.4	51.79	50.31	68.2	-16.41	32.01	6.69	37.22	104	298	Peak
5654.025	50.36	48.93	71.19	-20.83	32.06	6.71	37.34	104	298	Peak
5921.925	51.4	49.52	70.47	-19.07	32.52	6.86	37.5	104	298	Peak
5996.5	53.41	51.4	68.2	-14.79	32.63	6.89	37.51	104	298	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5645	51.86	50.4	68.2	-16.34	32.04	6.7	37.28	102	303	Peak
5652.125	50.98	49.49	69.78	-18.8	32.06	6.71	37.28	102	303	Peak
5923.35	52.99	51.11	69.42	-16.43	32.52	6.86	37.5	102	303	Peak
5935.7	53.48	51.6	68.2	-14.72	32.52	6.86	37.5	102	303	Peak

Remarks:

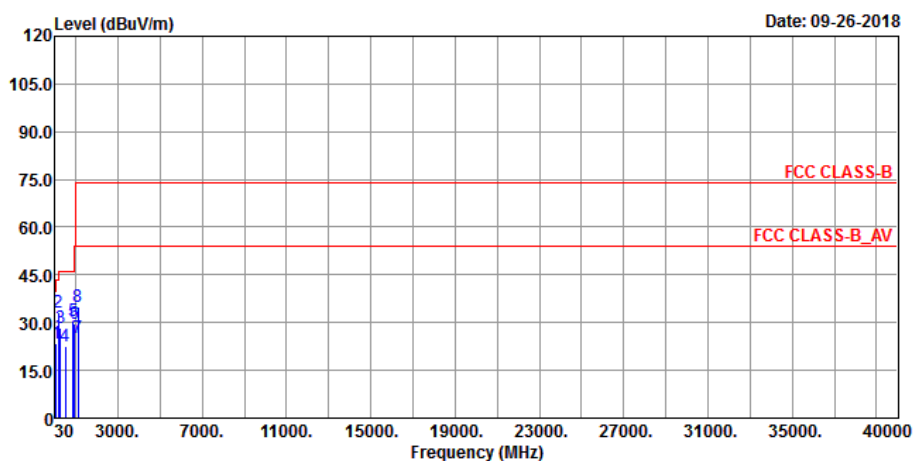
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 5795 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The other emission levels were very low against the limit.

8.6.2 接收諧波

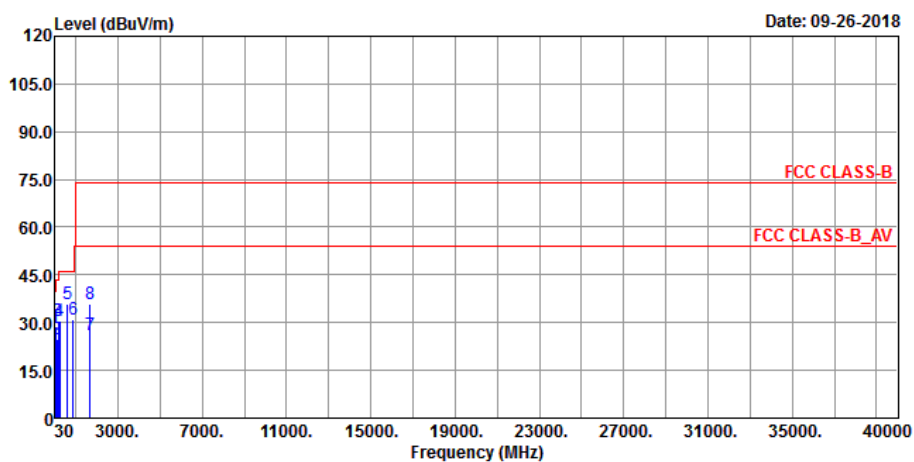
802.11a

EUT Test Condition		Measurement Detail	
Channel	Channel 140	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	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
83.35	23.32	46.11	40	-16.68	8.18	0.68	31.65	102	231	Peak
187.14	33	53.3	43.5	-10.5	10.26	1.16	31.72	111	162	Peak
275.41	28.56	46.7	46	-17.44	12.22	1.56	31.92	185	295	Peak
500.45	22.59	34.36	46	-23.41	17.33	2.52	31.62	158	147	Peak
874.87	30.66	35.51	46	-15.34	23.19	3.95	31.99	162	231	Peak
960.23	29.56	33.37	54	-24.44	23.85	4.27	31.93	111	152	Peak
1117	25.16	50.25	54	-28.84	25.06	3.3	53.45	154	256	Average
1117	35.19	60.28	74	-38.81	25.06	3.3	53.45	154	256	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
47.46	28.99	46.41	40	-11.01	13.28	0.52	31.22	111	152	Peak
104.69	24.78	46.38	43.5	-18.72	9.53	0.77	31.9	111	152	Peak
188.11	30.56	50.91	43.5	-12.94	10.19	1.16	31.7	265	295	Peak
224.97	30.41	50.41	46	-15.59	10.42	1.36	31.78	202	231	Peak
600.36	35.85	45.59	46	-10.15	19.61	2.9	32.25	165	295	Peak
874.87	31.16	36.01	46	-14.84	23.19	3.95	31.99	147	185	Peak
1692	25.99	50.21	54	-28.01	25.4	4.08	53.7	254	298	Average
1692	36.07	60.29	74	-37.93	25.4	4.08	53.7	254	298	Peak

Remarks:

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

8.6.3 其它不必要之訊號

9 kHz ~ 30 MHz Data:

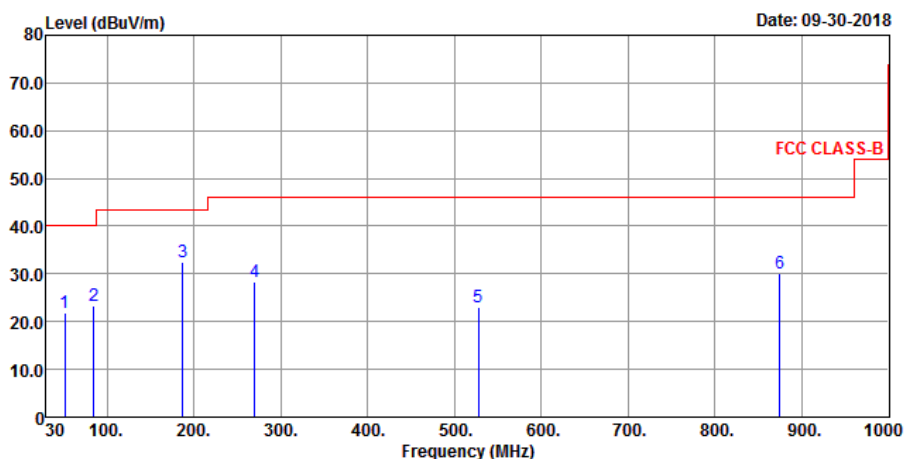
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Data:

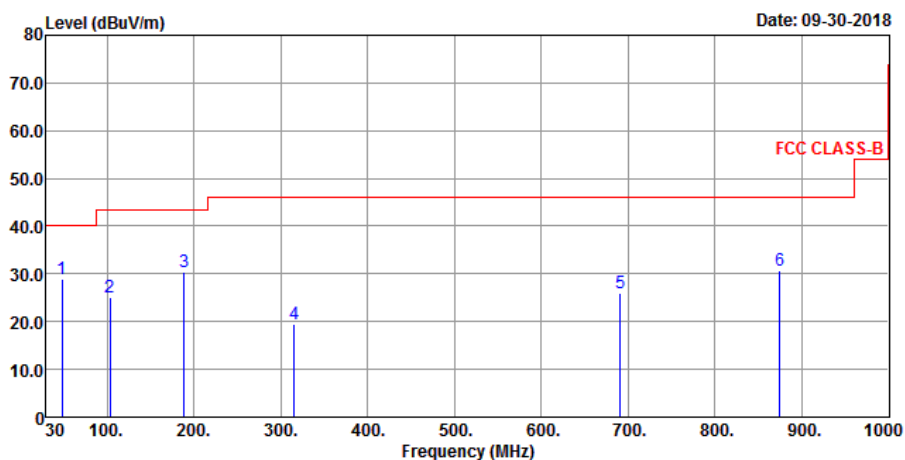
802.11a

EUT Test Condition		Measurement Detail	
Channel	Channel 140	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)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
51.34	21.81	39.71	40	-18.19	12.87	0.54	31.31	152	141	Peak
84.32	23.35	46.15	40	-16.65	8.2	0.69	31.69	265	185	Peak
187.14	32.5	52.8	43.5	-11	10.26	1.16	31.72	102	231	Peak
269.59	28.26	46.71	46	-17.74	12.05	1.53	32.03	111	165	Peak
527.61	23.03	34.13	46	-22.97	17.95	2.62	31.67	285	274	Peak
874.87	30.16	35.01	46	-15.84	23.19	3.95	31.99	195	265	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
48.43	28.89	46.44	40	-11.11	13.18	0.52	31.25	111	152	Peak
103.72	25.06	46.77	43.5	-18.44	9.43	0.77	31.91	165	231	Peak
189.08	30.5	50.9	43.5	-13	10.12	1.17	31.69	174	185	Peak
315.18	19.41	36.29	46	-26.59	13.31	1.73	31.92	202	265	Peak
690.57	26	33.88	46	-20	20.7	3.26	31.84	165	295	Peak
874.87	30.75	35.6	46	-15.25	23.19	3.95	31.99	111	132	Peak

Remarks:

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

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

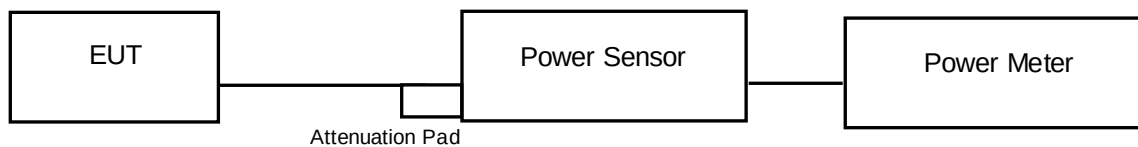
Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Power Meter	ML2495A	1232002	Dec. 07, 2017	Dec. 06, 2018
Power Sensor	MA2411B	1207325	Dec. 07, 2017	Dec. 06, 2018
Spectrum Analyzer R&S	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019

Note:

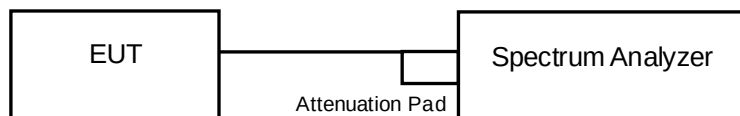
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The measurement uncertainty is 207 Hz, which is calculated as per the document ETSI TR 100 028. This uncertainty represents an expanded uncertainty expressed at approximately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

9.4 測試配置

輸出峰值功率測試配置:



發射頻寬之測試配置:



9.5 量測結果

操作模式	發射	測試日期	107 年 09 月 05 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	邱智勇		

802.11a

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	13.213	11.21	24	Pass
40	5200	13.552	11.32	24	Pass
48	5240	12.106	10.83	24	Pass
52	5260	5.408	7.33	24	Pass
60	5300	5.297	7.24	24	Pass
64	5320	3.141	4.97	24	Pass
100	5500	2.234	3.49	24	Pass
116	5580	7.499	8.75	24	Pass
140	5700	7.638	8.83	24	Pass
149	5745	2.084	3.19	30	Pass
157	5785	2.061	3.14	30	Pass
165	5825	5.546	7.44	30	Pass

Note:

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

1. $11 \text{ dBm} + 10\log (30.94) = 25.91 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log (30.72) = 25.87 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log (33.14) = 26.20 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log (33.71) = 26.28 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log (33.89) = 26.30 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log (32.62) = 26.13 \text{ dBm} > 24 \text{ dBm}$.

802.11n (HT20)

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	14.655	11.66	24	Pass
40	5200	14.928	11.74	24	Pass
48	5240	14.859	11.72	24	Pass
52	5260	4.592	6.62	24	Pass
60	5300	4.539	6.57	24	Pass
64	5320	3.483	5.42	24	Pass
100	5500	1.239	0.93	24	Pass
116	5580	7.78	8.91	24	Pass
140	5700	7.889	8.97	24	Pass
149	5745	1.626	2.11	30	Pass
157	5785	4.198	6.23	30	Pass
165	5825	4.305	6.34	30	Pass

Note:

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

1. $11 \text{ dBm} + 10\log (32.12) = 26.07 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log (31.50) = 25.98 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log (34.98) = 26.44 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log (35.08) = 26.45 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log (35.96) = 26.56 \text{ dBm} > 24 \text{ dBm}$.
6. $11 \text{ dBm} + 10\log (33.28) = 26.22 \text{ dBm} > 24 \text{ dBm}$.

802.11n (HT40)

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
38	5190	3.926	5.94	24	Pass
46	5230	3.864	5.87	24	Pass
54	5270	3.733	5.72	24	Pass
62	5310	3.741	5.73	24	Pass
102	5510	3.828	5.83	24	Pass
110	5550	3.707	5.69	24	Pass
134	5670	3.698	5.68	24	Pass
151	5755	1.183	0.73	30	Pass
159	5795	2.972	4.73	30	Pass

Note:

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

1. $11 \text{ dBm} + 10\log (64.98) = 29.13 \text{ dBm} > 24 \text{ dBm}$.
2. $11 \text{ dBm} + 10\log (66.72) = 29.24 \text{ dBm} > 24 \text{ dBm}$.
3. $11 \text{ dBm} + 10\log (68.78) = 29.37 \text{ dBm} > 24 \text{ dBm}$.
4. $11 \text{ dBm} + 10\log (70.37) = 29.47 \text{ dBm} > 24 \text{ dBm}$.
5. $11 \text{ dBm} + 10\log (75.30) = 29.77 \text{ dBm} > 24 \text{ dBm}$.

26 dB Bandwidth:

802.11a

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
36	5180	36.02
40	5200	36.14
48	5240	34.01
52	5260	30.94
60	5300	30.72
64	5320	33.14
100	5500	33.71
116	5580	33.89
140	5700	32.62

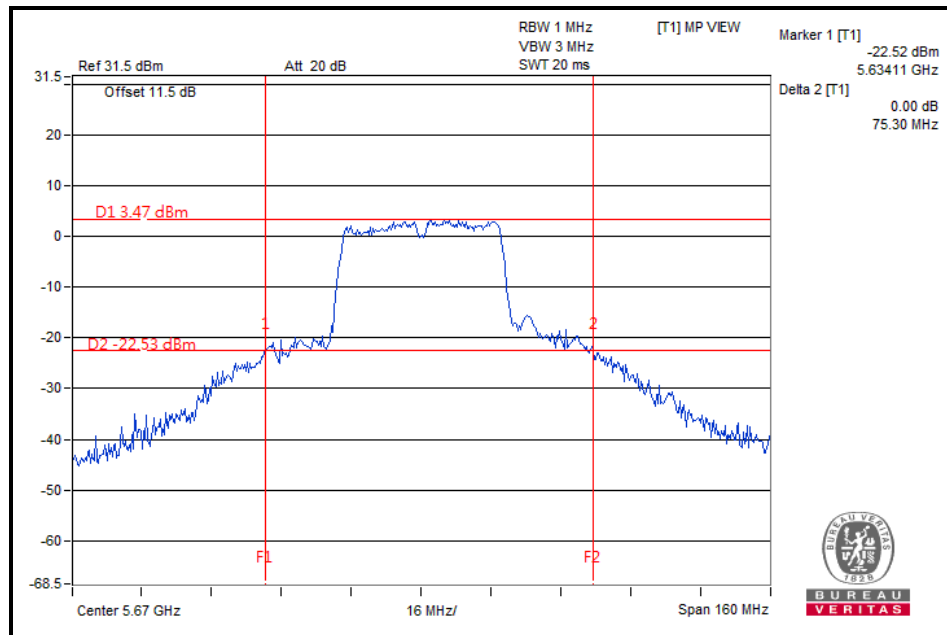
802.11n (HT20)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
36	5180	41.41
40	5200	39.05
48	5240	40.17
52	5260	32.12
60	5300	31.50
64	5320	34.98
100	5500	35.08
116	5580	35.96
140	5700	33.28

802.11n (HT40)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)
38	5190	68.01
46	5230	71.78
54	5270	64.98
62	5310	66.72
102	5510	68.78
110	5550	70.37
134	5670	75.30

**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-2

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

※For U-NII-3:

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

10.3 量測儀器

同 7.3 節。

10.4 測試配置

同 7.4 節

10.5 量測結果

操作模式	發射	測試日期	107 年 09 月 05 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	邱智勇		

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

802.11a

Channel	Frquency (MHz)	PSD w/o Duty Factor (dBm)	Duty Factor (dB)	PSD with Duty Factor (dBm)	Maximum Limit (dBm)	Pass / Fail
36	5180	-2.47	0.42	-2.05	11	Pass
40	5200	-2.48	0.42	-2.06	11	Pass
48	5240	-3.00	0.42	-2.58	11	Pass
52	5260	-4.43	0.42	-4.01	11	Pass
60	5300	-4.01	0.42	-3.59	11	Pass
64	5320	-3.88	0.42	-3.46	11	Pass
100	5500	-3.52	0.42	-3.10	11	Pass
116	5580	-3.29	0.42	-2.87	11	Pass
140	5700	-3.15	0.42	-2.73	11	Pass

Note: Refer to section 2.1註9 for duty cycle spectrum plot.

802.11n (HT20)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm)	Duty Factor (dB)	PSD with Duty Factor (dBm)	Maximum Limit (dBm)	Pass / Fail
36	5180	-2.96	0.40	-2.56	11	Pass
40	5200	-3.03	0.40	-2.63	11	Pass
48	5240	-3.02	0.40	-2.62	11	Pass
52	5260	-5.91	0.40	-5.51	11	Pass
60	5300	-5.72	0.40	-5.32	11	Pass
64	5320	-5.05	0.40	-4.65	11	Pass
100	5500	-4.87	0.40	-4.47	11	Pass
116	5580	-4.86	0.40	-4.46	11	Pass
140	5700	-4.82	0.40	-4.42	11	Pass

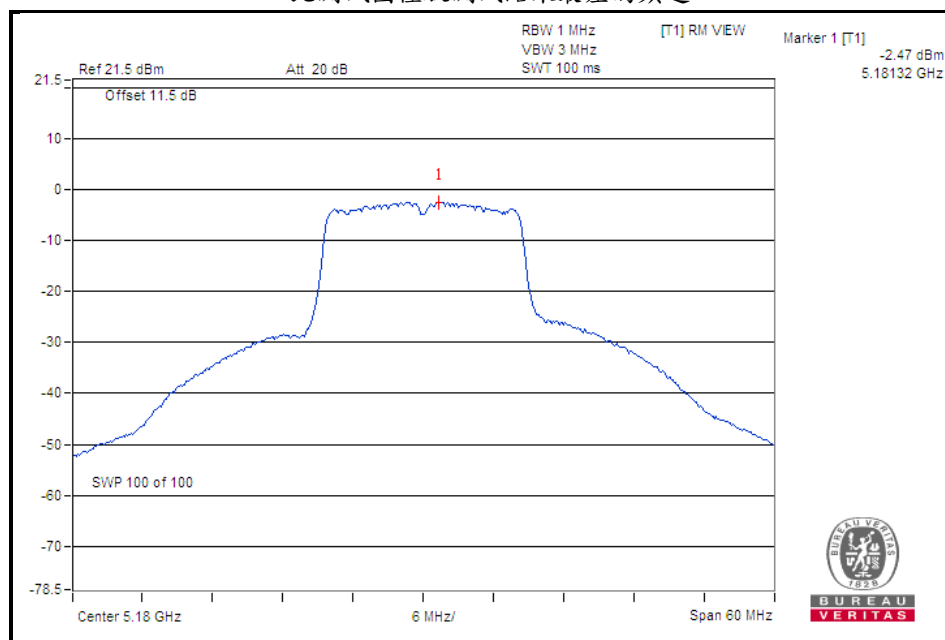
Note: Refer to section 2.1註9 for duty cycle spectrum plot.

802.11n (HT40)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm)	Duty Factor (dB)	PSD with Duty Factor (dBm)	Maximum Limit (dBm)	Pass / Fail
38	5190	-9.67	0.86	-8.80	11	Pass
46	5230	-9.71	0.86	-8.85	11	Pass
54	5270	-9.23	0.86	-8.37	11	Pass
62	5310	-9.47	0.86	-8.60	11	Pass
102	5510	-9.95	0.86	-9.08	11	Pass
110	5550	-9.81	0.86	-8.94	11	Pass
134	5670	-8.40	0.86	-7.54	11	Pass

Note: Refer to section 2.1註9 for duty cycle spectrum plot.

**此測試圖僅放測試結果最差的頻道。



For U-NII-3 Band

802.11a

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/300 kHz)	PSD w/o Duty Factor (dBm/500 kHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
149	5745	-11.99	-9.77	0.42	-9.35	30	Pass
157	5785	-11.95	-9.73	0.42	-9.31	30	Pass
165	5825	-11.92	-9.70	0.42	-9.28	30	Pass

Note: Refer to section 2.1註9 for duty cycle spectrum plot.

802.11n (HT20)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/300 kHz)	PSD w/o Duty Factor (dBm/500 kHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
149	5745	-12.96	-10.74	0.40	-10.34	30	Pass
157	5785	-12.97	-10.75	0.40	-10.35	30	Pass
165	5825	-13.56	-11.34	0.40	-10.94	30	Pass

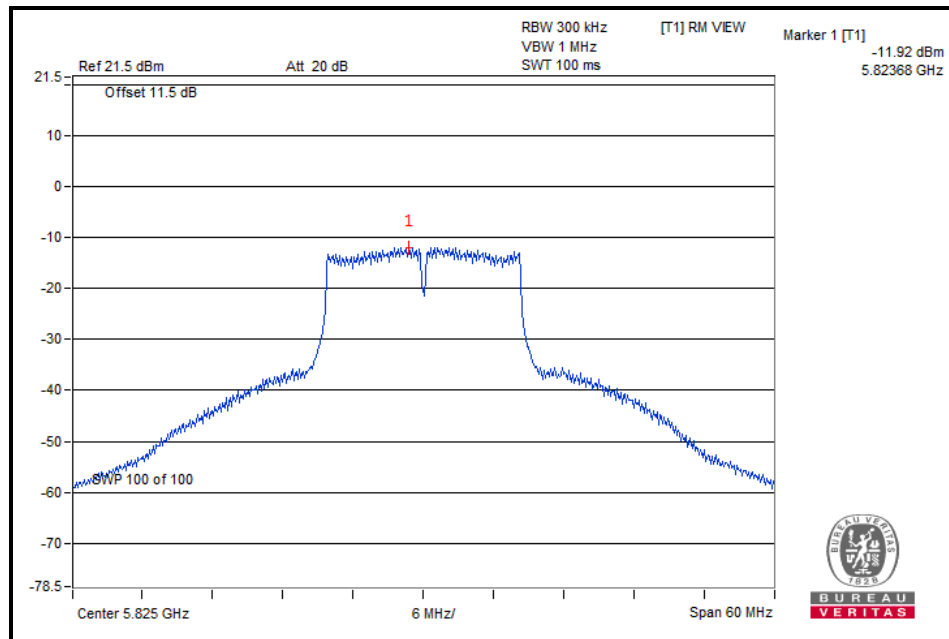
NOTE: Refer to section 2.1註9 for duty cycle spectrum plot.

802.11n (HT40)

Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/300 kHz)	PSD w/o Duty Factor (dBm/500 kHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
151	5755	-17.25	-15.03	0.86	-14.17	30	Pass
159	5795	-17.29	-15.07	0.86	-14.21	30	Pass

NOTE: Refer to section 2.1 註9 for duty cycle spectrum plot.

**此測試圖僅放測試結果最差的頻道。



10.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

11 6 dB 頻寬之要求

11.1 適用標準

待測物操作頻帶	適用標準
☒ 5.725 GHz ~ 5.850 GHz	請見本報告 3.1 節第(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。

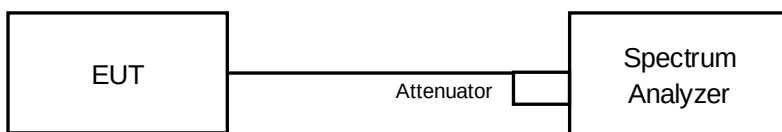
11.3 量測儀器

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

Note:

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

11.4 測試配置



11.5 量測結果

操作模式	發射	測試日期	107 年 09 月 05 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	邱智勇		

802.11a

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	16.36	0.5	Pass
157	5785	16.37	0.5	Pass
165	5825	16.38	0.5	Pass

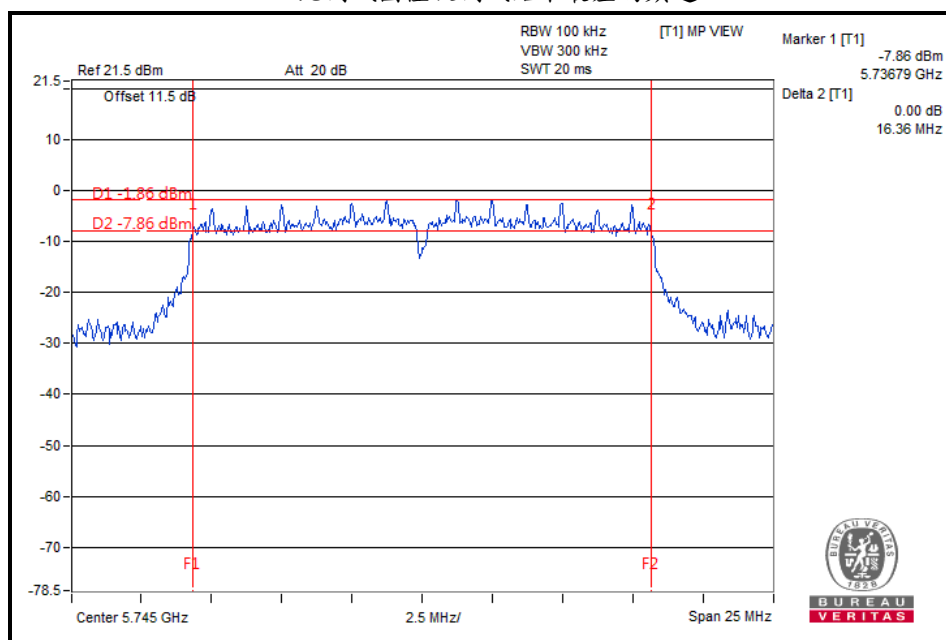
802.11n (HT20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	17.60	0.5	Pass
157	5785	17.60	0.5	Pass
165	5825	17.62	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
151	5755	36.22	0.5	Pass
159	5795	36.28	0.5	Pass

**此測試圖僅放測試結果最差的頻道。



BLUETOOTH LE 頻段測試紀錄結果

12 帶外發射之量測

12.1 適用標準

請見本報告 3.1 節第(2)項的規定。

12.2 量測方法

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

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

發射諧波：

Peak 為 RBW = 1 MHz, VBW = 3 MHz；

Average 為 RBW = 1 MHz, VBW = 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

12.3 量測儀器

同 4.3 節

12.4 測試配置

同 4.4 節

12.5 場強度之計算

同 4.5 節

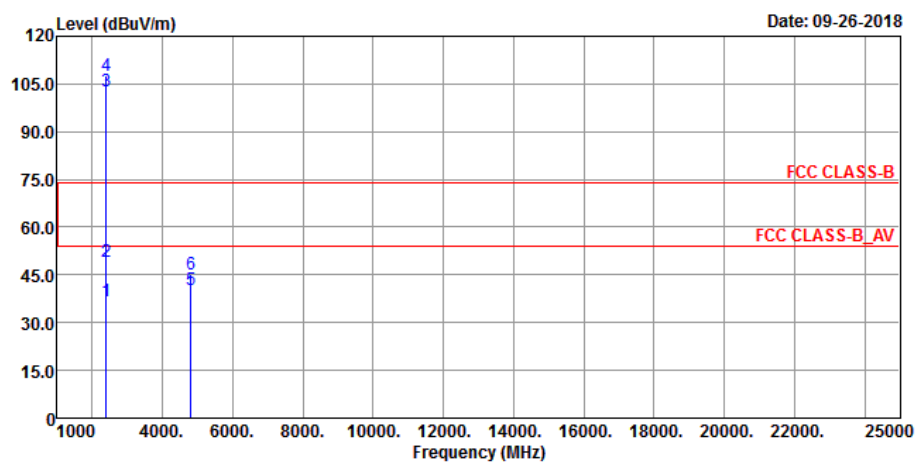
量測結果請見下頁。

12.6 量測結果

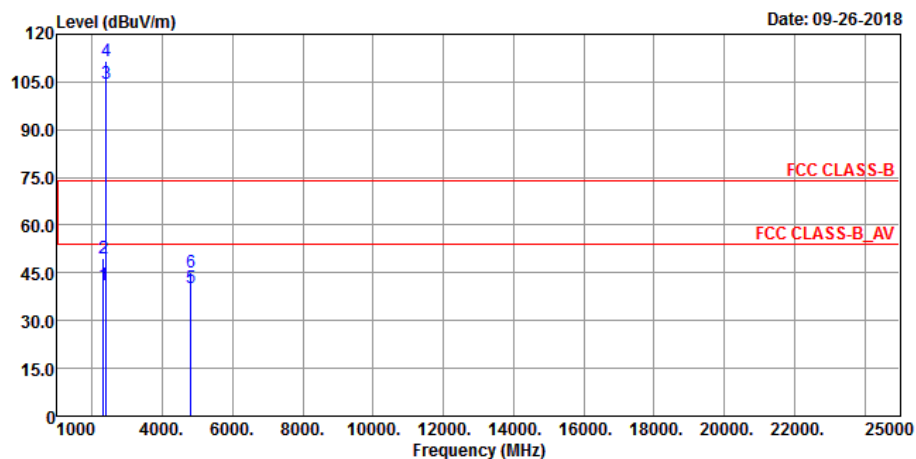
12.6.1 發射諧波

EUT Test Condition		Measurement Detail	
Channel	Channel 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	Jisyong Wang

Horizontal



Vertical



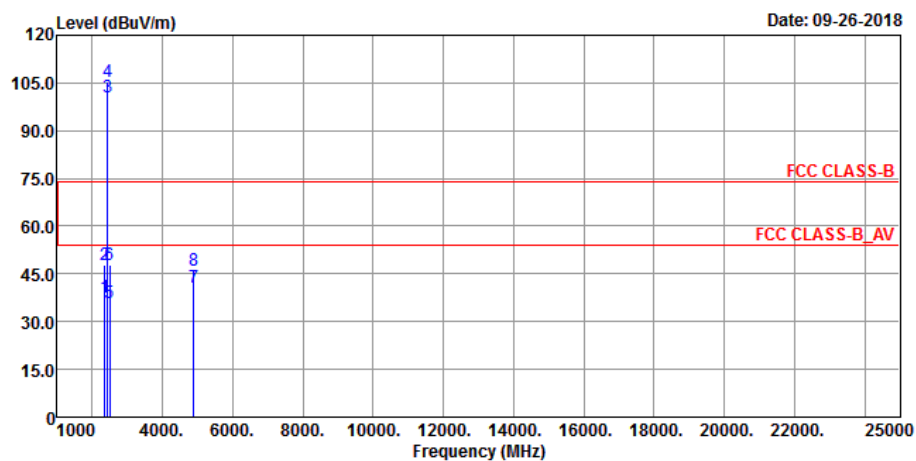
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.8	36.89	42.89	54	-17.11	27.16	4.36	37.52	178	347	Average
2389.8	49.28	55.28	74	-24.72	27.16	4.36	37.52	178	347	Peak
2402	102.73	108.72			27.16	4.37	37.52	178	347	Average
2402	107.81	113.8			27.16	4.37	37.52	178	347	Peak
4804	40.09	55.06	54	-13.91	31.14	6.79	52.9	152	111	Average
4804	45.12	60.09	74	-28.88	31.14	6.79	52.9	152	111	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2321.9	41.11	47.45	54	-12.89	26.85	4.28	37.47	186	356	Average
2321.9	49.57	55.91	74	-24.43	26.85	4.28	37.47	186	356	Peak
2402	104.55	110.54			27.16	4.37	37.52	186	356	Average
2402	111.38	117.37			27.16	4.37	37.52	186	356	Peak
4804	40.23	55.2	54	-13.77	31.14	6.79	52.9	132	251	Average
4804	45.26	60.23	74	-28.74	31.14	6.79	52.9	132	251	Peak

Remarks:

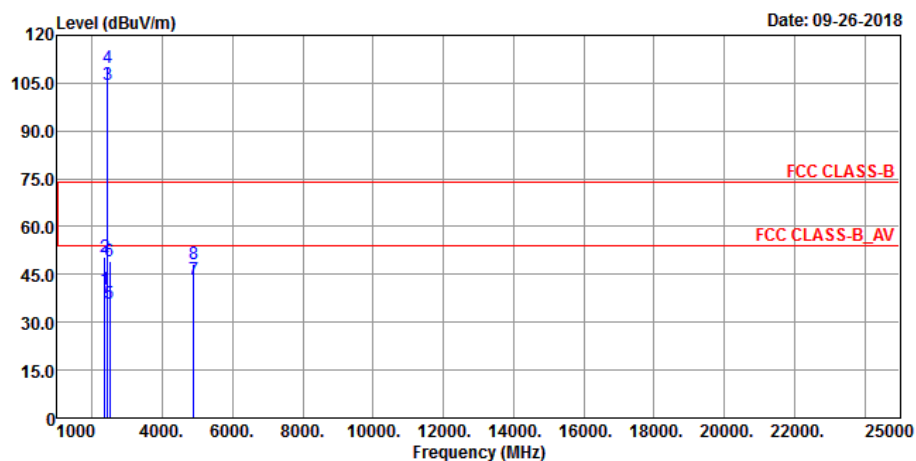
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2402 MHz: Fundamental Frequency
- The other emission levels were very low against the limit.

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	Jisyong Wang

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2360.12	37.82	43.97	54	-16.18	27.01	4.33	37.49	192	348	Average
2360.12	47.95	54.1	74	-26.05	27.01	4.33	37.49	192	348	Peak
2440	100.3	105.98			27.38	4.4	37.46	192	348	Average
2440	105.37	111.05			27.38	4.4	37.46	192	348	Peak
2489.76	35.65	40.93	54	-18.35	27.61	4.43	37.32	192	348	Average
2489.76	48	53.28	74	-26	27.61	4.43	37.32	192	348	Peak
4880	40.75	55.5	54	-13.25	31.25	6.86	52.86	102	251	Average
4880	45.83	60.58	74	-28.17	31.25	6.86	52.86	102	251	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

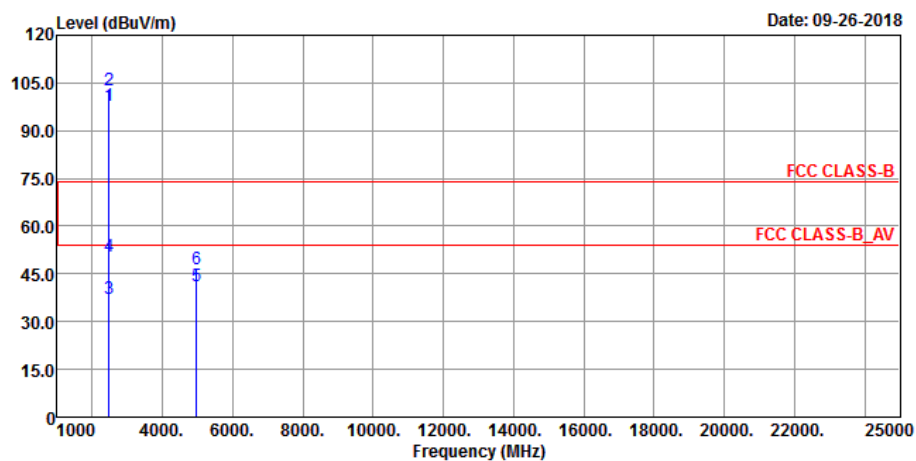
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2360.12	40.3	46.45	54	-13.7	27.01	4.33	37.49	193	344	Average
2360.12	50.51	56.66	74	-23.49	27.01	4.33	37.49	193	344	Peak
2440	104.3	109.98			27.38	4.4	37.46	193	344	Average
2440	109.62	115.3			27.38	4.4	37.46	193	344	Peak
2496.2	36.04	41.24	54	-17.96	27.61	4.44	37.25	193	344	Average
2496.2	49.26	54.46	74	-24.74	27.61	4.44	37.25	193	344	Peak
4880	43.48	60.02	54	-10.52	30.58	6.6	53.72	165	265	Average
4880	48.48	65.02	74	-25.52	30.58	6.6	53.72	165	265	Peak

Remarks:

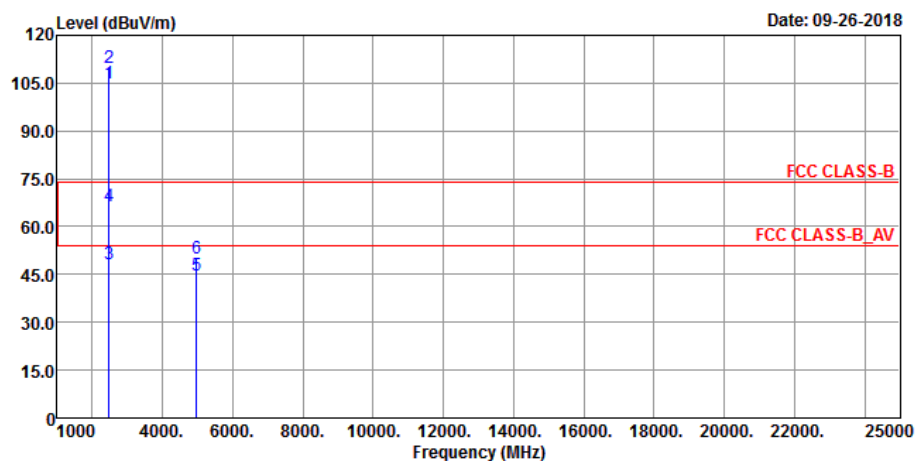
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 2440 MHz: Fundamental Frequency
3. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 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	Jisyong Wang

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	97.66	103.02			27.53	4.43	37.32	170	350	Average
2480	102.71	108.07			27.53	4.43	37.32	170	350	Peak
2483.52	37.12	42.48	54	-16.88	27.53	4.43	37.32	170	350	Average
2483.52	50.48	55.84	74	-23.52	27.53	4.43	37.32	170	350	Peak
4960	41.29	55.91	54	-12.71	31.4	6.9	52.92	125	111	Average
4960	46.29	60.91	74	-27.71	31.4	6.9	52.92	125	111	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	105.05	110.41			27.53	4.43	37.32	187	353	Average
2480	109.88	115.24			27.53	4.43	37.32	187	353	Peak
2483.52	48.11	53.47	54	-5.89	27.53	4.43	37.32	187	353	Average
2483.52	66.6	71.96	74	-7.4	27.53	4.43	37.32	187	353	Peak
4960	44.93	59.55	54	-9.07	31.4	6.9	52.92	100	0	Average
4960	50.25	64.87	74	-23.75	31.4	6.9	52.92	100	0	Peak

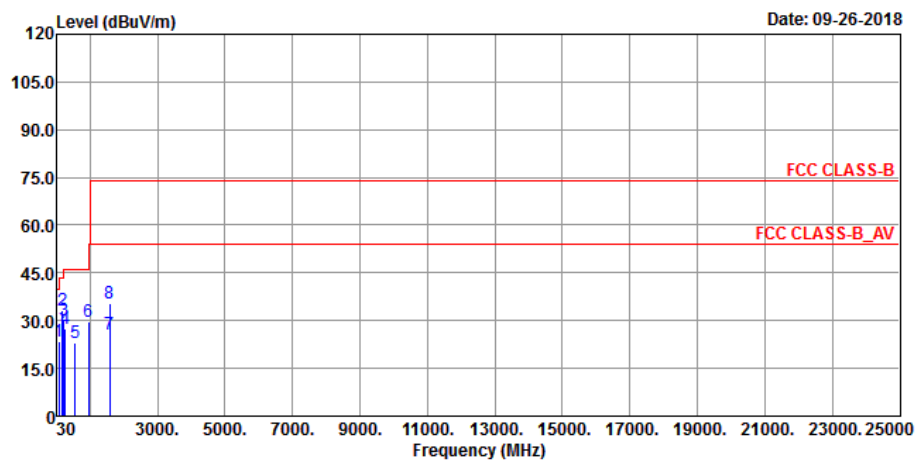
Remarks:

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

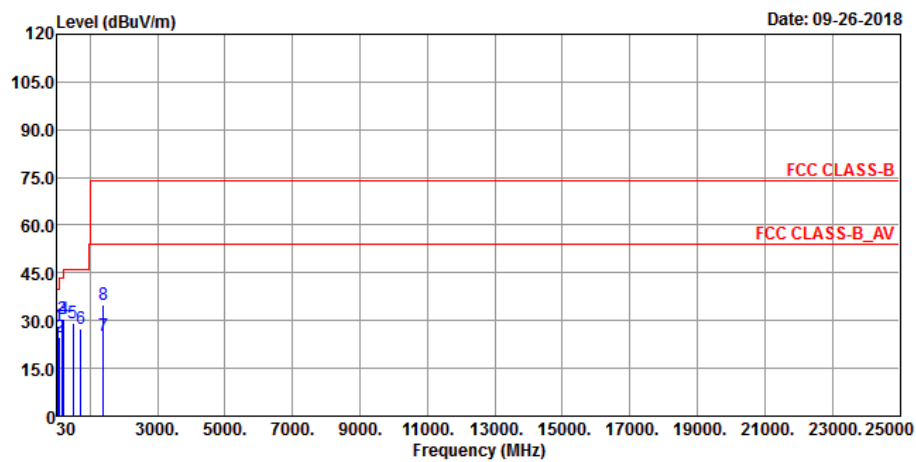
12.6.2 接收諧波

EUT Test Condition		Measurement Detail	
Channel	Channel 39	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	Jisyong Wang

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
83.35	23.32	46.11	40	-16.68	8.18	0.68	31.65	152	231	Peak
187.14	33	53.3	43.5	-10.5	10.26	1.16	31.72	165	285	Peak
224.97	30.33	50.33	46	-15.67	10.42	1.36	31.78	147	152	Peak
267.65	27.54	46.01	46	-18.46	12	1.52	31.99	102	231	Peak
551.86	22.93	33.7	46	-23.07	18.5	2.7	31.97	111	162	Peak
960.23	29.56	33.37	54	-24.44	23.85	4.27	31.93	285	265	Peak
1586	25.48	49.85	54	-28.52	25.39	3.95	53.71	145	252	Average
1586	35.28	59.65	74	-38.72	25.39	3.95	53.71	145	252	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
51.34	28.5	46.4	40	-11.5	12.87	0.54	31.31	111	195	Peak
104.69	24.78	46.38	43.5	-18.72	9.53	0.77	31.9	102	285	Peak
188.11	30.56	50.91	43.5	-12.94	10.19	1.16	31.7	165	231	Peak
224.97	30.41	50.41	46	-15.59	10.42	1.36	31.78	147	152	Peak
499.48	29.15	40.96	46	-16.85	17.31	2.51	31.63	102	295	Peak
724.52	27.29	34.34	46	-18.71	21.16	3.42	31.63	132	265	Peak
1401	25.25	49.96	54	-28.75	25.31	3.71	53.73	198	225	Average
1401	34.96	59.67	74	-39.04	25.31	3.71	53.73	198	225	Peak

Remarks:

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

12.6.3 其它不必要之訊號

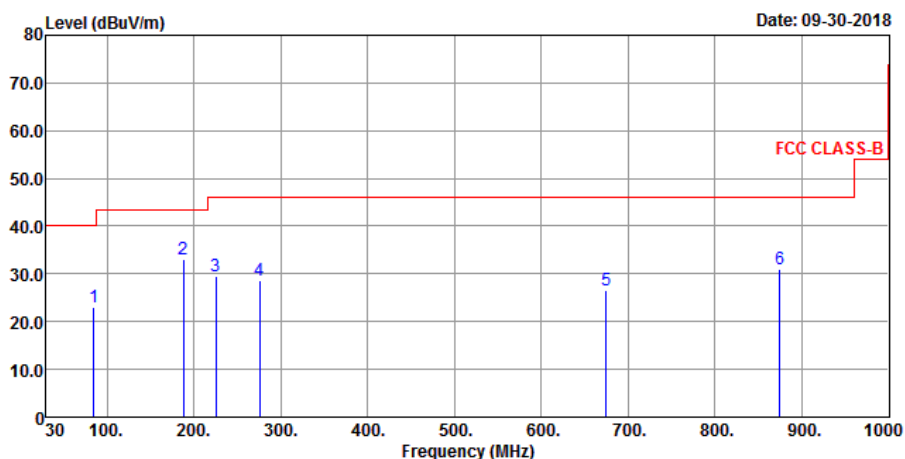
9 kHz ~ 30 MHz Data:

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

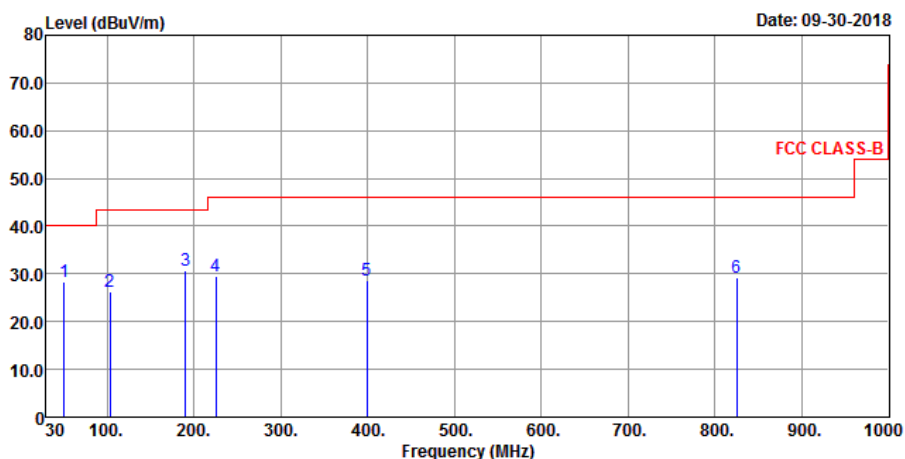
30 MHz ~ 1 GHz Data:

EUT Test Condition		Measurement Detail	
Channel	Channel 39	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	Jisyong Wang

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
84.32	23.06	45.86	40	-16.94	8.2	0.69	31.69	102	251	Peak
188.11	32.94	53.29	43.5	-10.56	10.19	1.16	31.7	165	251	Peak
224.97	29.62	49.62	46	-16.38	10.42	1.36	31.78	195	285	Peak
275.41	28.64	46.78	46	-17.36	12.22	1.56	31.92	165	231	Peak
675.05	26.5	34.62	46	-19.5	20.51	3.2	31.83	111	147	Peak
874.87	31.05	35.9	46	-14.95	23.19	3.95	31.99	205	265	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
50.37	28.27	46.08	40	-11.73	12.97	0.53	31.31	111	102	Peak
103.72	26.13	47.84	43.5	-17.37	9.43	0.77	31.91	195	285	Peak
190.05	30.74	51.19	43.5	-12.76	10.05	1.17	31.67	111	165	Peak
224.97	29.44	49.44	46	-16.56	10.42	1.36	31.78	132	285	Peak
399.57	28.59	43.3	46	-17.41	15.33	2.09	32.13	174	185	Peak
825.4	29.25	34.61	46	-16.75	22.55	3.76	31.67	102	265	Peak

Remarks:

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

12.7 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

13 6 dB 頻寬之要求

13.1 適用標準

請見本報告 3.1 節第(5)項的規定。

13.2 量測方法

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

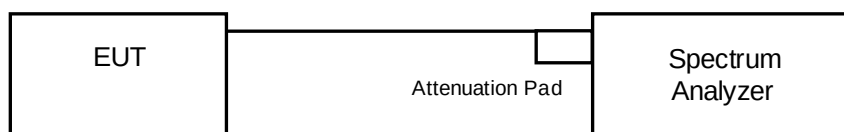
13.3 量測儀器

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

Note:

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

13.4 測試配置

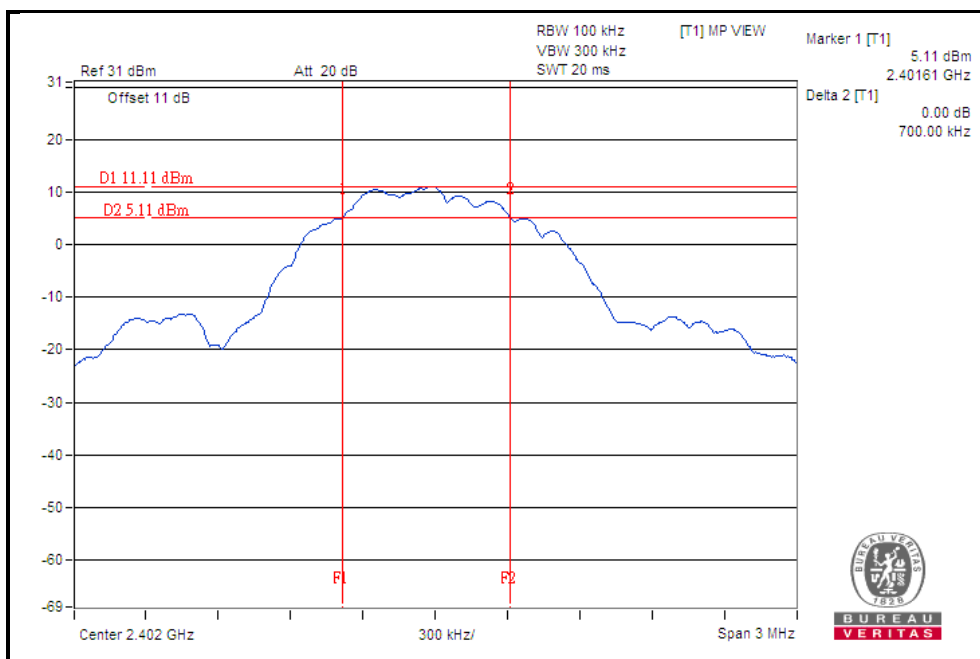


13.5 量測結果

操作模式	發射	測試日期	107 年 09 月 13 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	邱智勇		

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	0.70	0.5	Pass
19	2440	0.73	0.5	Pass
39	2480	0.71	0.5	Pass

**此測試圖僅放測試結果最差的頻道。



13.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

14 峰值傳導輸出功率之量測

14.1 適用標準

請見本報告 3.1 節第(4)及(6)項的規定。

14.2 量測方法

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

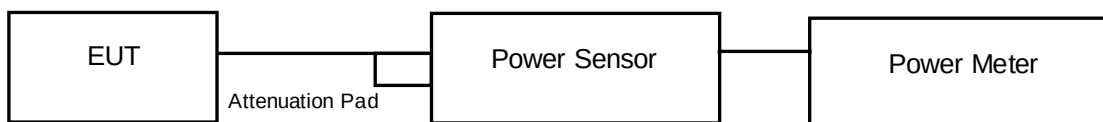
14.3 量測儀器

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

Note:

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

14.4 測試配置



14.5 量測結果

操作模式	發射	測試日期	107 年 09 月 13 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	邱智勇		

Peak Power

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
0	2402	18.793	12.74	30	Pass
19	2440	19.815	12.97	30	Pass
39	2480	19.907	12.99	30	Pass

Average Power (For reference)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
0	2402	17.783	12.50	30	Pass
19	2440	18.836	12.75	30	Pass
39	2480	19.099	12.81	30	Pass

14.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

15 功率頻譜密度之量測

15.1 適用標準

請見本報告 3.1 節第(7)項的規定。

15.2 量測方法

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

15.3 量測儀器

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

Note:

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

15.4 測試配置

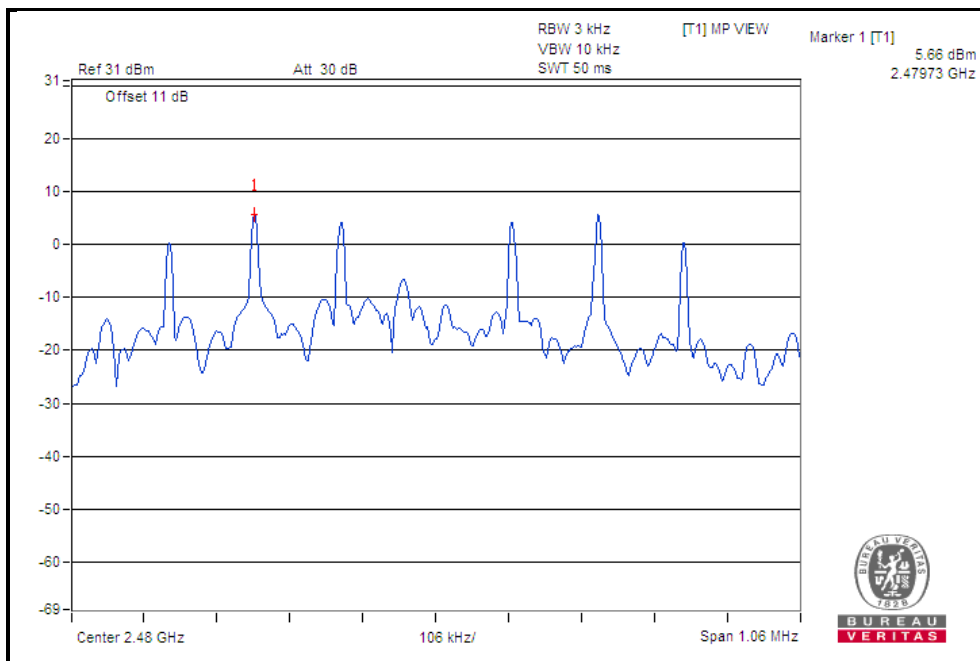


15.5 量測結果

操作模式	發射	測試日期	107 年 09 月 13 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	邱智勇		

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
0	2402	5.35	8	Pass
19	2440	5.58	8	Pass
39	2480	5.66	8	Pass

**此測試圖僅放測試結果最差的頻道。



15.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

16 電源線傳導干擾之量測

16.1 適用標準

請見本報告 3.1 節第(1)項的規定。

16.2 量測方法

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

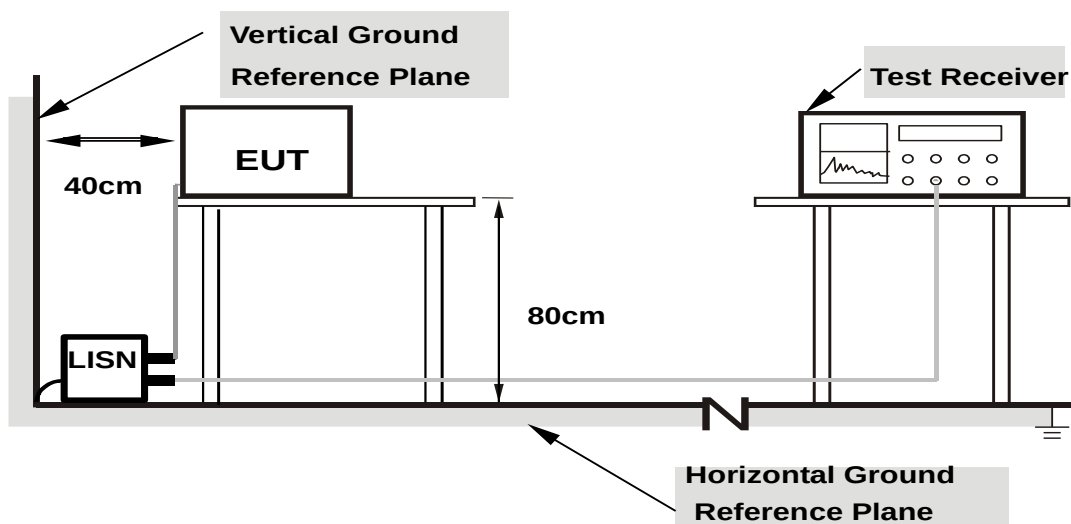
16.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Nov. 23, 2017	Nov. 22, 2018
RF signal cable Woken	5D-FB	Cable-cond1-01	Sep. 05, 2018	Sep. 04, 2019
LISN/AMN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 26, 2018	Feb. 25, 2019
LISN/AMN 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-2040.
4. The measurement uncertainty is 2.44 dB, which is calculated as per the document CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.

16.4 測試配置



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

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

16.5 干擾值之計算

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

電源傳導干擾電壓之計算公式如下

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

其中校正因子 Correction Factor (dB)為：

饋線損失+電源阻抗模擬網路損失

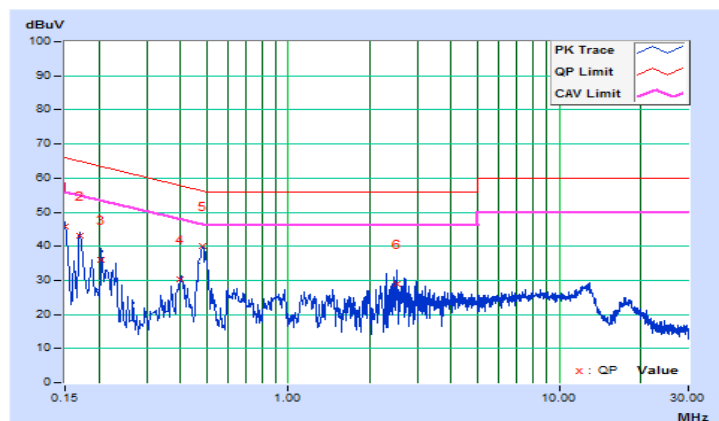
16.6 量測結果

量測頻率範圍	150kHz ~ 30MHz	檢測器與頻寬	準峰值 (QP) / 平均值 (AV), 9kHz
量測電壓值	110Vac, 60Hz	量測場地溫濕度	25°C, 75%RH
測試者	王紀雄	測試日期	2018/9/28

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	0.15000	9.67	36.28	18.02	45.95	27.69	66.00	56.00	-20.05	-28.31
2	0.16967	9.67	33.57	16.59	43.24	26.26	64.98	54.98	-21.74	-28.72
3	0.20474	9.67	26.37	12.31	36.04	21.98	63.42	53.42	-27.38	-31.44
4	0.40055	9.66	20.53	5.59	30.19	15.25	57.84	47.84	-27.65	-32.59
5	0.48295	9.66	30.32	15.95	39.98	25.61	56.29	46.29	-16.31	-20.68
6	2.53119	9.69	19.40	3.41	29.09	13.10	56.00	46.00	-26.91	-32.90

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)

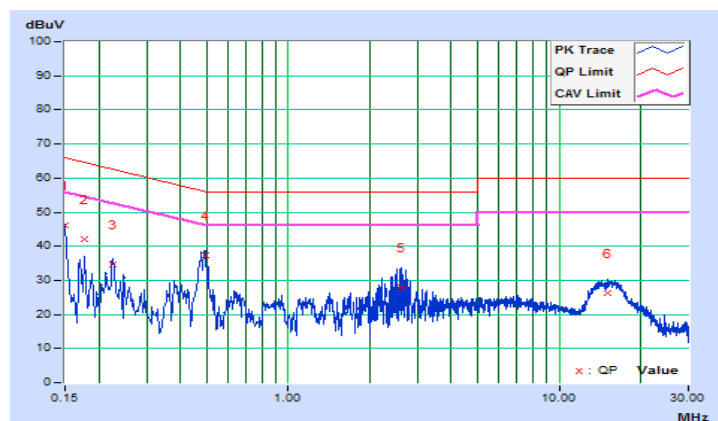


量測頻率範圍	150kHz ~ 30MHz	檢測器與頻寬	準峰值 (QP) / 平均值 (AV), 9kHz
量測電壓值	110Vac, 60Hz	量測場地溫濕度	25°C, 75%RH
測試者	王紀雄	測試日期	2018/9/28

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	0.15000	9.68	36.49	18.07	46.17	27.75	66.00	56.00	-19.83	-28.25
2	0.17737	9.67	32.57	14.45	42.24	24.12	64.61	54.61	-22.37	-30.49
3	0.22434	9.67	25.03	10.78	34.70	20.45	62.66	52.66	-27.96	-32.21
4	0.49324	9.67	27.84	15.64	37.51	25.31	56.11	46.11	-18.60	-20.80
5	2.62894	9.70	18.34	3.54	28.04	13.24	56.00	46.00	-27.96	-32.76
6	15.07838	9.94	16.40	2.66	26.34	12.60	60.00	50.00	-33.66	-37.40

附註：

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



16.7 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

17 電波暴露量之評估

17.1 適用標準

請見本報告 3.1 節第(8)&(20)項的規定。

17.2 評估方法

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

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

where

P_d = power density in mW/cm^2

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

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

17.3 評估結果

Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)	Pass/Fail
WLAN 2412 ~ 2462	25.43	0.93	20	0.086	1	Pass
WLAN 5180 ~ 5240	11.74	4.01	20	0.007	1	Pass
WLAN 5260 ~ 5320	7.33	4.13	20	0.003	1	Pass
WLAN 5500 ~ 5700	8.97	4.29	20	0.004	1	Pass
WLAN 5745 ~ 5825	7.44	4.35	20	0.003	1	Pass
Bluetooth LE	12.99	0.93	20	0.005	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

$$WLAN\ 2.4G + BT\ LE = 0.086 + 0.005 = 0.091$$

Therefore, the maximum calculation of this situation is 0.091, which is less than the "1" limit.

18 待測物照片

請參照 BV CPS 報告編號：180705C05B

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	Responsive Retail Sensor (RRS)	H4000	ARFID Firmware Version: 3.0.7

1.3 Description of Available Antennas to the EUT

Table 3: Antenna list

Ant No.	Antenna Type	Operation Frequency Range (MHz)	Max. Gain (dBi)	Min. Gain (dBi)
1	Dipole	5250~5350	4.13	3.70
		5470~5725	4.29	3.71

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	7.33	5.408
5470~5725	8.83	7.638

802.11n (HT20)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	6.62	4.592
5470~5725	8.97	7.889

802.11n (HT40)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	5.73	3.741
5470~5725	5.83	3.828

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	11.46	13.996
5470~5725	13.12	20.512

802.11n (HT20)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	10.75	11.885
5470~5725	13.26	21.184

802.11n (HT40)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	9.86	9.683
5470~5725	10.12	10.280

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

1.7 Statement of Manufacturer

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

2 U-NII DFS Rule Requirements

2.1 Working Modes and Required Test Items

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

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

Requirement	Operational Mode		
	Master	Client without radar detection	Client with radar detection
Non-Occupancy Period	✓	✓ _{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:

$$FL + (0.4 * ChirpWidth \text{ [inMHz]})$$

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:

$$FH - (0.4 * ChirpWidth \text{ [inMHz]})$$

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. 01, 2018	Feb. 28, 2019
Signal generator	8645A	Agilent	Aug. 17, 2018	Aug. 16, 2019
Horn antenna	BBHA 9120 D	Schwarzbeck	Dec 14, 2017	Dec. 13, 2018
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	AC2300 Smart WiFi Router	NETGEAR	R7000P	PY316200351	5G Ant gain : 1.8dBi Maximum EIRP : 25.71dBm

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

Table 3: Software/Firmware information

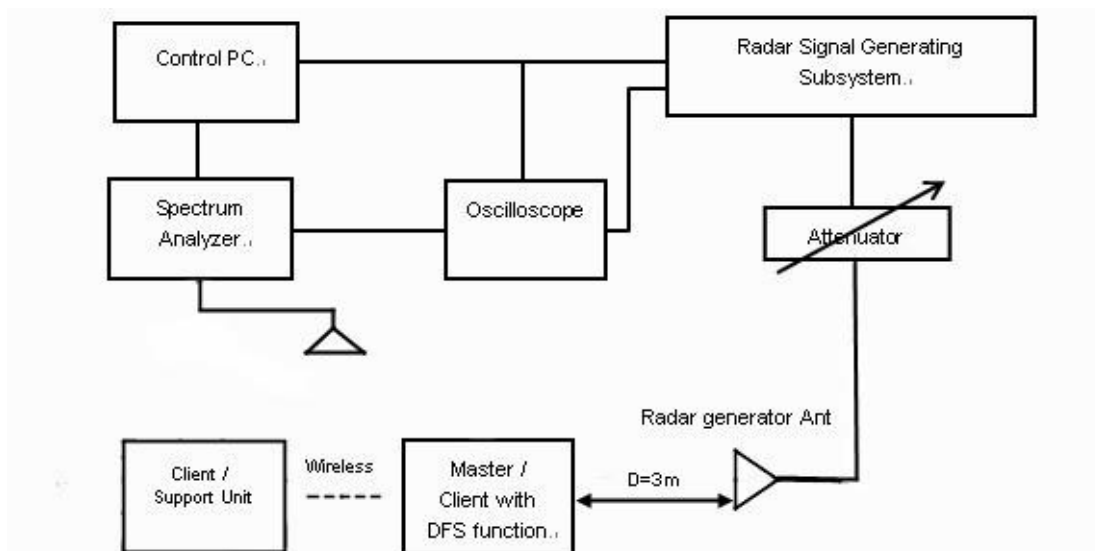
No.	Product	Model No.	Software/Firmware Version
1.	AC2300 Smart WiFi Router	R7000P	R7000P V1.0.0.39_20170111_dfs_debug

4 Test Procedure

4.1 ADT DFS Measurement System

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

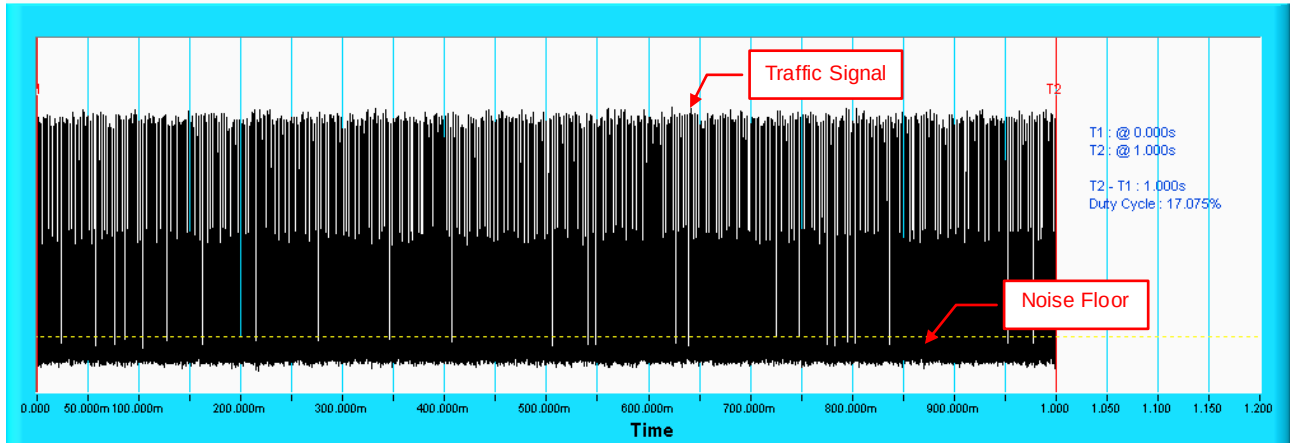
Radiated setup configuration of ADT DFS Measurement System



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

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

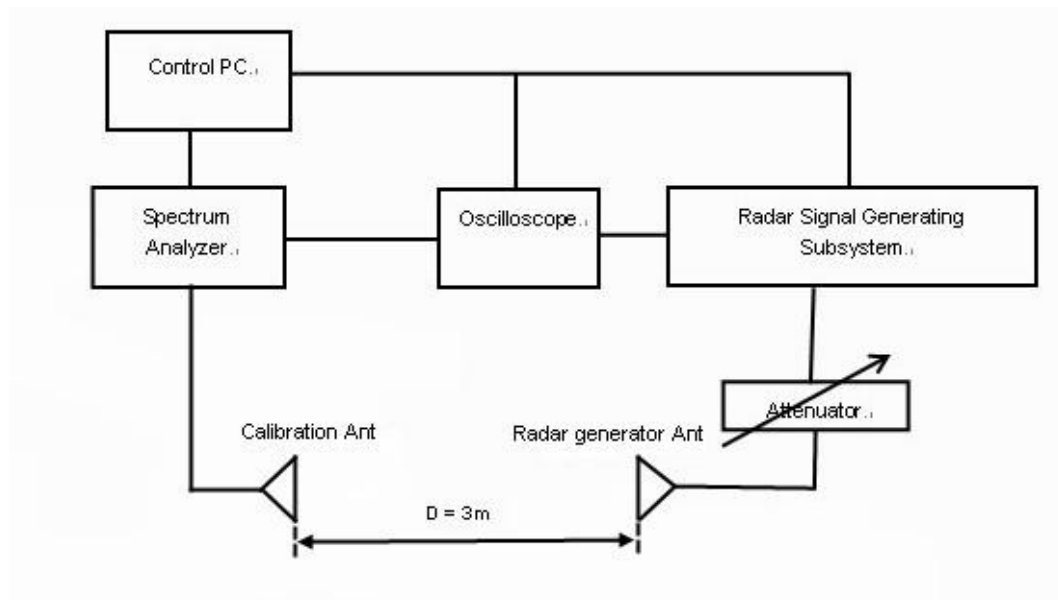
Wireless Traffic Loading Duty Cycle



4.2 Calibration of DFS Detection Threshold Level

The measured channel is 5500 MHz, 5510 MHz 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

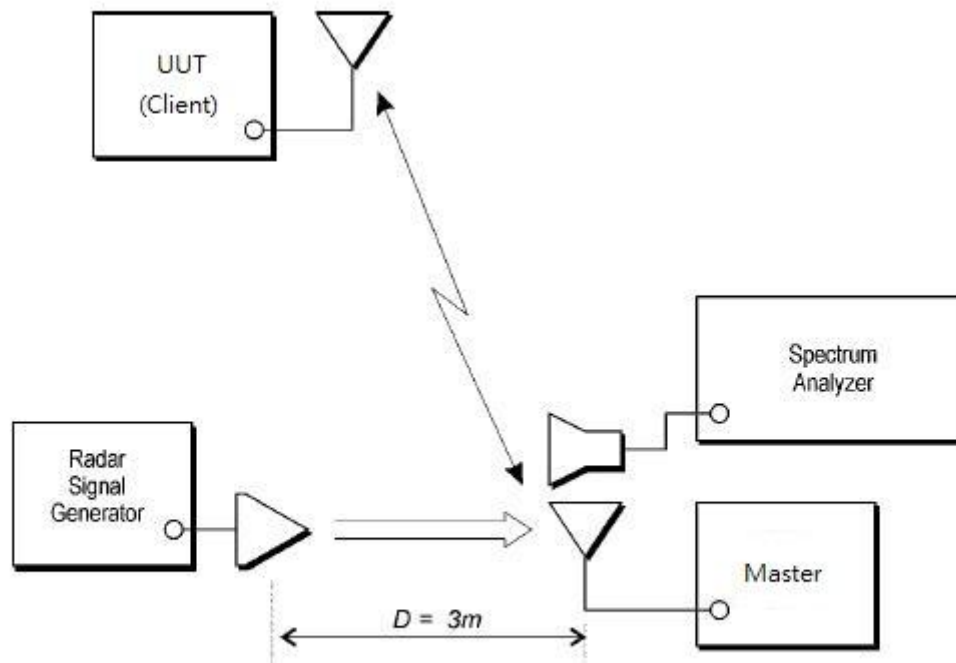


4.3 Deviation from Test Standard

No deviation.

4.4 Radiated Test Setup Configuration

4.4.1 Client without Radar Detection Mode



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

5 Test Results

5.1 Summary of Test Results

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

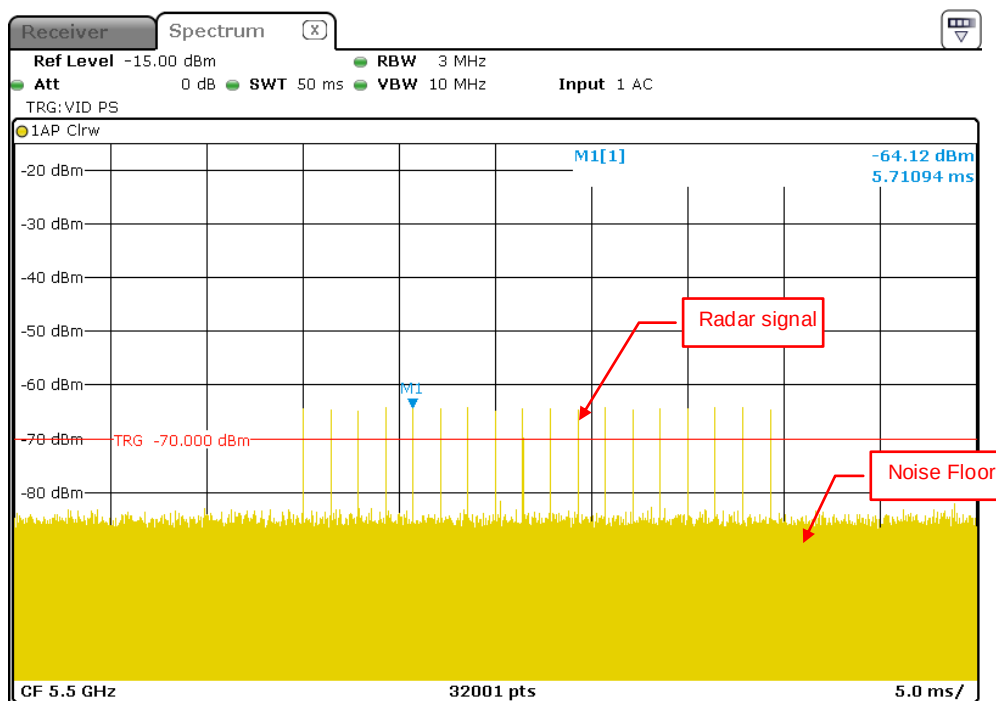
5.2 Test Results

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

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

DFS Detection Threshold

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



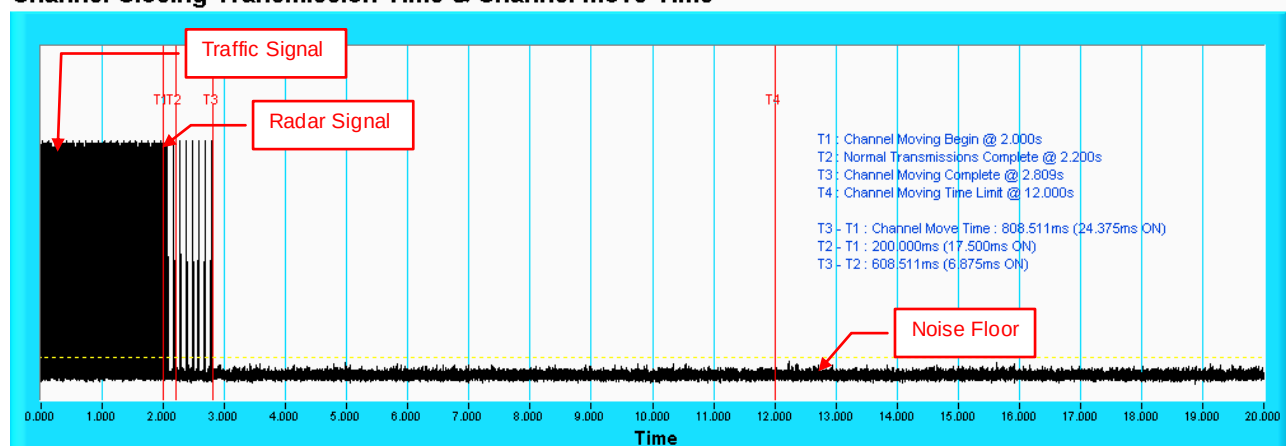
Radar Signal 0

5.2.2 Channel Closing Transmission and Channel Move Time

Radar Signal 0

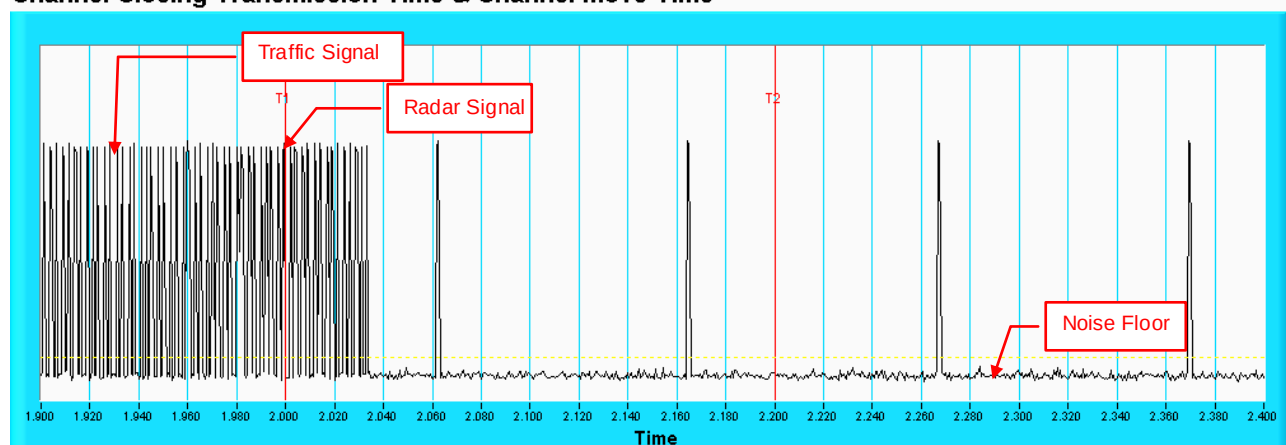
802.11n (HT20)

Channel Closing Transmission Time & Channel Move Time



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

Channel Closing Transmission Time & Channel Move Time

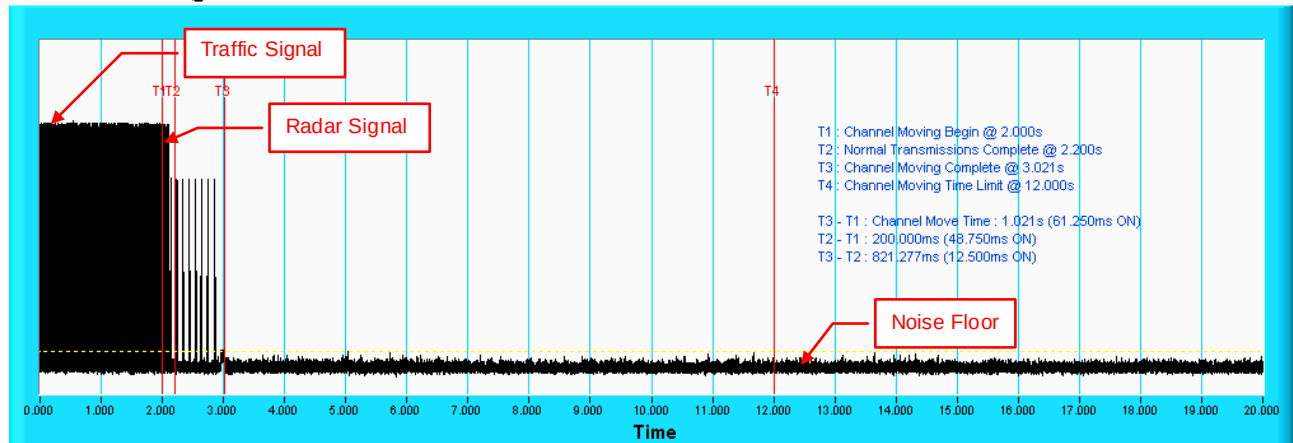


NOTE: An expanded plot for the device vacates the channel in the required 500 ms.

Radar signal 0

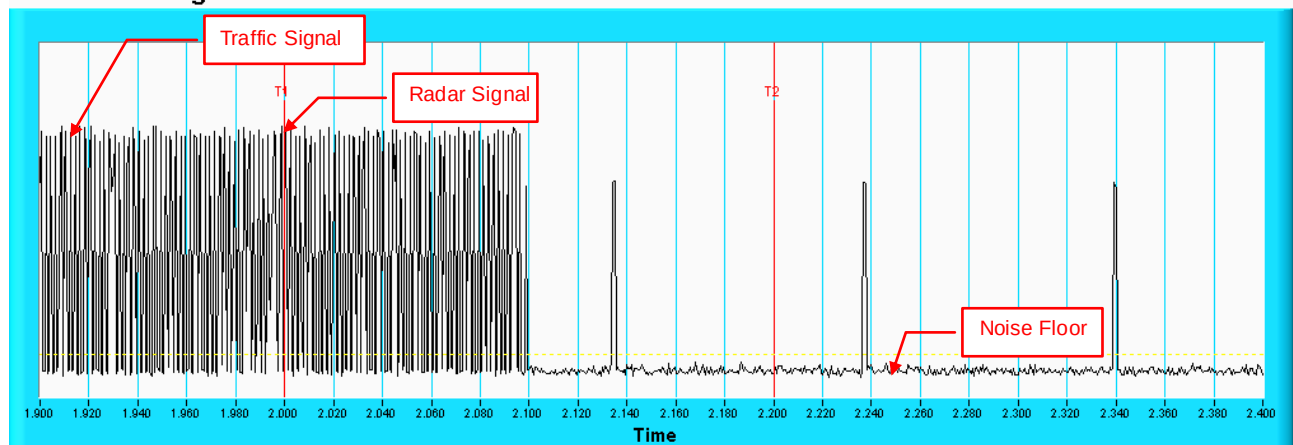
802.11n (HT40)

Channel Closing Transmission Time & Channel Move Time



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

Channel Closing Transmission Time & Channel Move Time



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

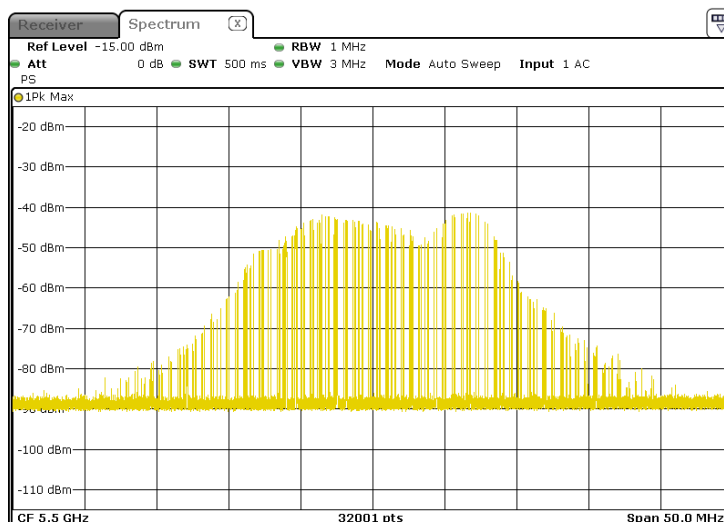
5.2.3 Non-Occupancy Period

Associate test:

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

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

Waveform of EUT links up with Master



- 2) Client plays specified files via master.

Waveform of transmission



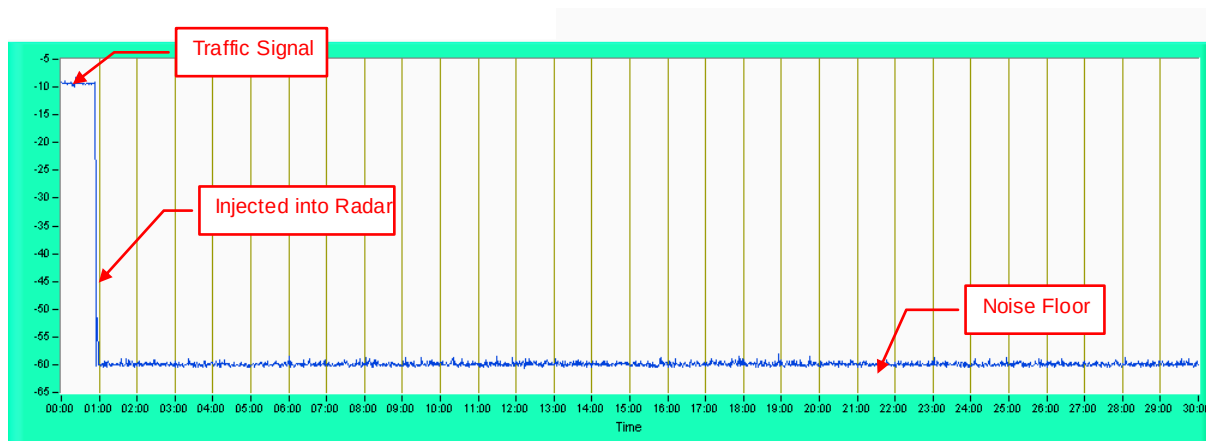
3) Radar signal 0 is applied to the Master device and WiFi traffic signal stop immediately.

Radar signal applied to the master and traffic stopped as described in section 5.2.2.

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

Plot of 30 minutes period

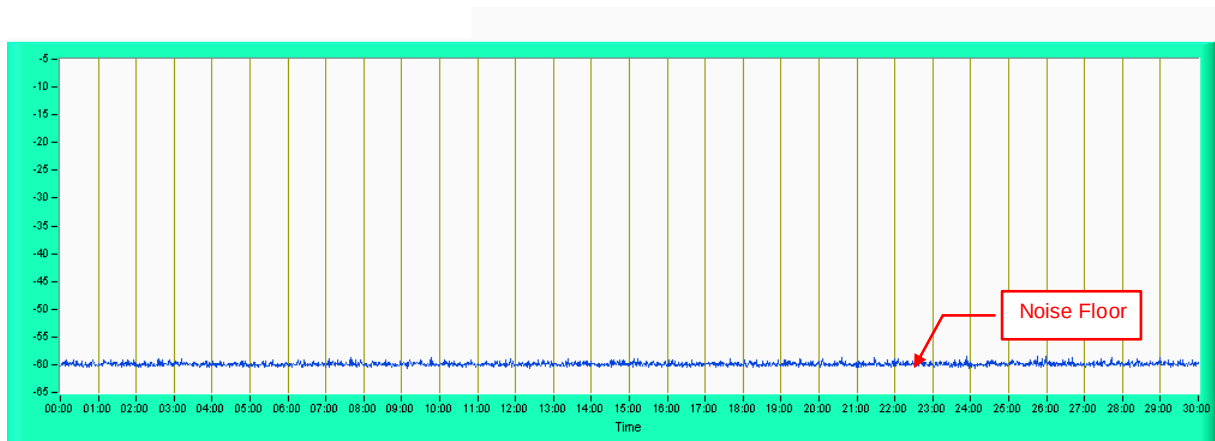
802.11n (HT20)



5.2.4 Non-associated test

Master was off.

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



5.2.5 Non- Co-Channel Test

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

5.2.6 Test Setup photo

請參閱附件（測試設置照片）

6 檢測實驗室基本資料

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: 886-3-5935343

Fax: 886-3-5935342

華亞 EMC / RF / Safety 實驗室：

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

您也可以我們的網站內找到各實驗室的地圖。

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