



報告編號 : 4789309442-TW-R0-V0

頁碼 : 1 of 59

報告發行日期 : 2020/12/15

低功率射頻電機試驗報告

產品名稱 : U-WAVE-TCB/IP67 TYPE
U-WAVE-TCB/BUZZER TYPE

型號 : 264-624

系列型號 : 264-625

申請廠商 : 台灣三豐儀器股份有限公司

申請者地址 : 臺北市內湖區洲子街 71 號 4 樓

製造廠商 : Mitutoyo Corporation

製造商地址 : 20-1, Sakado, 1-Chome, Takatsu-ku, Kawasaki-shi, Kanagawa, 213-8533, Japan

實驗室名稱 : 優力國際安全認證有限公司

實驗室地址 : 新竹縣竹東鎮中興路四段 372-7 號 B 戶、E 戶

試驗受理日期 : 109 年 4 月 21 日

試驗完成日期 : 109 年 5 月 11 日 ~ 109 年 11 月 5 日

待測物接收日期 : 109 年 4 月 21 日

依據標準 : 低功率射頻電機技術規 (LP0002) 107 年 1 月版



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4. 此案產品內外觀照請參考報告編號 4789309442-EP, 4789309442-1-EP。

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Doc No: 17-EM-F0880 / 5.0



認可報告之試驗機構

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財團法人全國認證基金會

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報告製作者：

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, 日期： 109 年 12 月 15 日

審核與授權者：

官聲宇

, 日期： 109 年 12 月 15 日

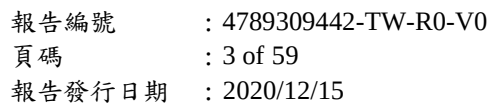
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測試項目與結果判定總表

項次	測試項目	適用規範	結果判定
1	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
2	發射頻寬	低功率射頻電機技術規範 3.10.1.6 節	合格
3	功率頻譜密度	低功率射頻電機技術規範 3.10.1.6 節	合格
4	混附波及頻帶邊緣之傳導發射	低功率射頻電機技術規範 3.10.1.5 節	合格
5	場強輻射	低功率射頻電機技術規範 2.8 節、 3.10.1.5 節	合格
6	電波暴露量	低功率射頻電機技術規範 5.20.2 節	合格
7	電源線傳導干擾	低功率射頻電機技術規範 2.3 節	Note2

Note:

1. 對於頻帶邊緣輻射測試圖記錄在附錄 I，混附波輻射測試圖記錄在附錄 II。
2. 待測物只能安裝鈕扣電池，與電源無關，因此無執行電源傳導測試。

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1. 一般資料

1.1 產品描述

產 品 名 稱	U-WAVE-TCB/IP67 TYPE U-WAVE-TCB/BUZZER TYPE
廠 牌	Mitutoyo
型 號	264-624
系 列 型 號	264-625
額 定 電 壓	3 Vdc from battery
調 變 方 式	GFSK
傳 輸 速 率	1Mbps
頻 率 使 用 範 圍	2402 MHz ~ 2480 MHz
頻 道 數 量	40
發 射 功 率	-9.39 dBm
S/N	264-624: 0699999110, 0699999506 264-625: 0699999167, 0699999911
天 線 型 態	見註 2

註:

1. 型號差異如下:

器材名稱	型號	蜂鳴器	Connector Part Number
U-WAVE-TCB/IP67 TYPE	264-624	No	-
U-WAVE-TCB/BUZZER TYPE	264-625	Yes	SM02B-SURS-TF (LF) (SN)

2. 此待測設備搭配測試的天線，其資料如下：

Ant. No.	天線型式	天線型號	商標	接頭型式	增益 (dBi)
1	Chip	ANT016008LCS2442MA2	TDK	N/A	2.5
Note : 1. 適用規範請見本報告 3.1 節第 (5)、(6) 的規定。 2. 依據測試數據結果，符合低功率射頻電機技術規範之要求。 3. 此天線資訊由客戶提供，詳請參閱製造商的產品規格或使用手冊。					

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3. 配件清單如下:

配件	廠牌	型號	規格
鋰電池	LITHIUM	CR2032	3Vdc, 225mAh
0 號螺絲起子	N/A	05CZA619	N/A
電池蓋鑰匙	N/A	06AEY282	N/A

4. 此報告中待測物測試模式評估如下表。當待測物在發射狀態，場強輻射之1 GHz以上量測以模式1之測試通道39為最差模式，故場強輻射之其他不必要之訊號量測以此模式進行最終量測；當待測物在接收狀態，依照場強輻射量測的Harmonic 來選出最差模式進行最終量測。

模式	測試狀態
模式 1	Bluetooth LE4.0 (1M)TX_Ch00,19,39
模式 2	Bluetooth LE RX_Ch39

5. 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。
6. 此待測設備，經評估三個正交軸方位評估測試擺設方式：平躺、垂直、側放，其中以平躺擁有最大場強輻射量測干擾值，故以此擺放方式進行最終量測，並將測試結果紀錄。
7. 經確認，系列型號之射頻輸出功率與主型號相似，兩者誤差在 ± 0.5 Bm內。

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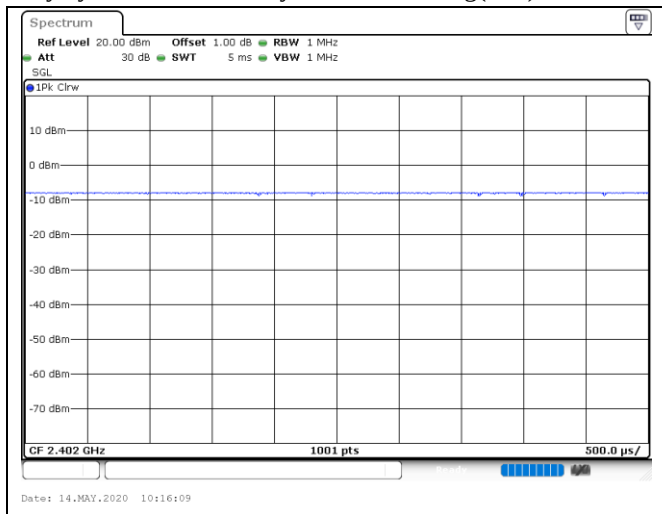
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8. Duty cycle of test signal.

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

Duty cycle = $1/1 = 1$, Duty factor = $10 * \log(1/1) = 0$



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9. 此裝置各頻道的中心頻率如下：

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

詳細之規格請參考使用說明書。

10. 此裝置的功率設置如下：

頻道	功率設置
0	Default
19	Default
39	Default



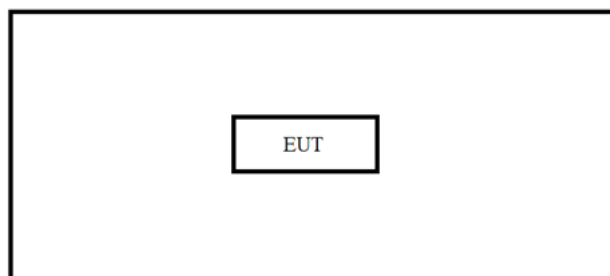
1.2 補助測試之週邊設備

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

裝置名稱	廠牌	型號	序號	Remark
DC Power Supply	GW Insrek	GPD-2303S	GEQ902318	N/A

1.3 測試架構圖

待測物裝上新的鈕扣電池，在按下 Button 進行控制。該測試軟體用於啟用連續傳輸或接收模式，並根據需要選擇測試通道，數據速率，調變方式和功率設置。





2. 量測儀器及測試配置說明

2.1 量測設備

Test Equipment List					
Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
Radiated Spurious Emission					
Spectrum Analyzer	Keysight	N9010A	MY56070827	Nov. 13, 2019	1 year
EMI Test Receiver	Rohde & Schwarz	ESR7	101754	Dec. 17, 2019	1 year
Loop Antenna	ETS lindgren	6502	00213440	Dec. 19, 2019	1 year
Trilog-Broadband Antenna with 5dB Attenuator	Schwarzbeck & EMCI	VULB 9168 & N-6-05	774 & AT-N0538	Jan. 3, 2020	1 year
Horn Antenna (1-18 GHz)	Schwarzbeck	BBHA 9120 D	01690	Jan. 3, 2020	1 year
Horn Antenna (18-40 GHz)	Schwarzbeck	BBHA 9170	781	Dec. 27, 2019	1 year
Preamplifier (30-1000 MHz)	EMCI	EMC330E	980405	Feb. 4, 2020 Jun. 9, 2020	1 year
Preamplifier (1-18 GHz)	EMCI	EMC051835BE	980406	Feb. 4, 2020	1 year
Preamplifier (18-40GHz)	EMCI	EMC184040SEE	980426	May 8, 2019 May 19, 2020	1 year
Cables	Hanyitek	K1K50-UP0264-K1K50-2500	170214-4 & 170425-2	Jan. 8, 2020 Jul. 2, 2020	1 year
Cables	Hanyitek	K1K50-UP0264-K1K50-2500	170214-1 & 170214-2	Jan. 8, 2020	1 year

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Test Equipment List					
Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
Antenna Port Conducted Measurement					
Spectrum Analyzer	Keysight	N9010A	MY56070834	Nov. 6, 2019	1 year
Pulse Power Sensor	Anritsu	MA2411B	1531202	Dec. 23, 2019	1 year
Power Meter	Anritsu	ML2495A	1645002	Dec. 23, 2019	1 year
AC power Line Conducted Emission					
EMI Test Receiver	Rohde & Schwarz	ESR7	101753	Nov. 19, 2019	1 year
Two-Line V-Network	Rohde & Schwarz	ENV216	102136	Aug. 8, 2019 Aug. 19, 2020	1 year
Impuls-Begrenzer Pulse Limiter	Rohde & Schwarz	ESH3-Z2	102219-Qt	Aug. 6, 2019 Aug. 12, 2020	1 year
Cables	HARBOUR INDUSTRIES	LL142	170205-5000-1	Feb. 5, 2020	1 year

UL Software

Software	Test Item	Version
EZ EMC	Radiated measurement	1.1.4.2
Keysight.TestSystem	Conducted measurement	1.0.0.0

2.2 測試應用參考標準

本報告中記錄的測試程序參照如下：

KDB558074 D01 Meas Guidance v05r02, KDB414788 D01 Radiated Test Site v01r01 and ANSI C63.10-2013.

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2.3 量測不確定度

此報告中關於量測之符合性聲明，採用 ISO Guide 98-4 的 8.2.4 與 8.2.5 章節中描述的準確度方法為判定規則。

下列量測不確定水準是參照量測儀器 CISPR 16-4-2 所規定之不確定度。

Test Item	Measurement Frequency Range	K	U(dB)
Conducted disturbance at mains terminals ports	0.15 MHz ~ 30 MHz	2	1.5
RF Conducted	9 kHz – 40 GHz	2	1.0
Radiated disturbance below 30MHz	9 kHz - 30 MHz	2	1.9
Radiated disturbance below 1 GHz	30 MHz ~ 1 GHz	2	5.4
Radiated disturbance above 1GHz	1 GHz ~ 40 GHz	2	4.7

2.4 試驗環境

產品測試時之環境條件如下：

測試項目	環境條件	輸入功率	測試日期	測試人員
峰值傳導輸出功率	23~26°C / 63~68%RH	3Vdc	2020/05/11 ~ 2020/11/5	蔡顯佳
發射頻寬	23~26°C / 63~68%RH	3Vdc	2020/05/11 ~ 2020/11/5	蔡顯佳
功率頻譜密度	23~26°C / 63~68%RH	3Vdc	2020/05/11 ~ 2020/11/5	蔡顯佳
混附波及頻帶邊緣之傳導發射	23~26°C / 63~68%RH	3Vdc	2020/05/11 ~ 2020/11/5	蔡顯佳
場強輻射	22~26°C / 62~68%RH	3Vdc	2020/05/11 ~ 2020/11/5	蔡顯佳

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3. 適用規範

3.1 規範要求

(1) 峰值傳導輸出功率之要求

操作於 2.4000~2.4835 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 3.10.1.2 節之規定：

數位調變技術系統：1 W(含)以下。

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

(2) 發射頻寬之要求

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。

(3) 功率頻譜密度之要求

操作於 2.400~2.4835 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 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。

(4) 帶外發射之要求

操作於 2.400~2.4835 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 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(f) (MHz)	電場強度 (微伏特/公尺, uV/m)	測距(公尺)
0.009 - 0.490 (含)	2,400/f(kHz)	300
0.490 (不含) - 1.705 (含)	24,000/f(kHz)	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

(5) 天線之規定

天線規格不受第 2.2 節規定之限制。

(6) 天線增益之要求

低功率發射機，依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1.3 節之規定如下：

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

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(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。

(7) 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。

(8) 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。



(9) 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(MHz)	頻率(MHz)	頻率(MHz)
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	-

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(10) 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：(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 - 1.34	614	1.63	@100	30
1.34 - 30	842/f	2.19/f	@180/f ²	30
30 - 300	27.5	0.073	0.2	30
300 - 1,500	---	---	f/1500	30
1,500 - 100,000	---	---	1.0	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)。



4. 測試紀錄結果

4.1 峰值傳導輸出功率

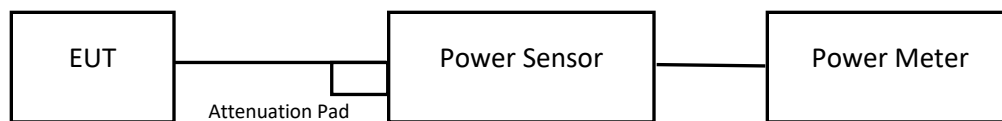
4.1.1 適用標準

請見本報告 3.1 節第 (1) 的規定。

4.1.2 測試方法

- a) 將待測物之天線埠經由適當之衰減器接到功率計上。
- b) 設定待測物處於連續發射狀態。
- c) 計算其輸出功率峰值。

4.1.3 測試配置圖



The loss between RF output port of the EUT and the input port of the Power Meter has been taken into consideration.



4.1.4 測試結果

Peak Power

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
0	2402	0.12	-9.39	30	Pass
19	2440	0.10	-9.92	30	Pass
39	2480	0.08	-11.11	30	Pass

Average Power (Reference Only)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	0.11	-9.58
19	2440	0.10	-10.15
39	2480	0.07	-11.48

4.1.5 測試結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

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4.2 發射頻寬

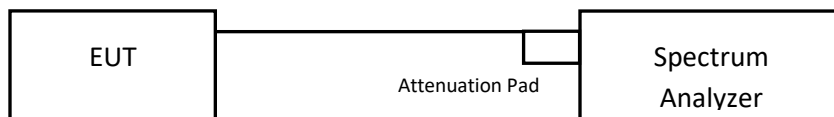
4.2.1 適用標準

請見本報告 3.1 節第 (2) 的規定。

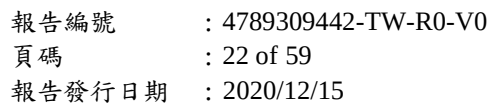
4.2.2 測試方法

- 將待測物之天線埠經由適當之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。

4.2.3 測試配置圖



The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.



Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	0.722	0.5	Pass
19	2440	0.728	0.5	Pass
39	2480	0.737	0.5	Pass

Spectrum

Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz
Att 30 dB SWT 18.9 μ s VBW 300 kHz Mode Auto FFT

1Pk View

10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm

D1 -6.280 dBm
D2 -12.280 dBm

M1
M2
M3

M1[1] -12.43 dBm
2.40158941 GHz
M3[1] -6.28 dBm
2.40220380 GHz

CF 2.402 GHz 1001 pts Span 3.0 MHz

Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.40158941 GHz	-12.43 dBm		
D2	M1	1	722.28 kHz	0.25 dB		
M3		1	2.4022038 GHz	-6.28 dBm		

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4.3 功率頻譜密度

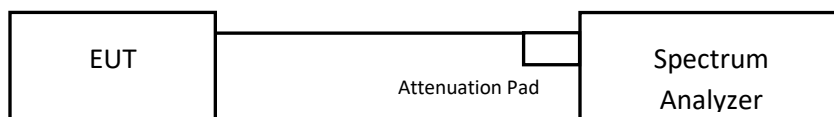
4.3.1 適用標準

請見本報告 3.1 節第 (3) 的規定。

4.3.2 測試方法

- 將待測物之天線埠經由適當之衰減器接到頻譜分析儀上。
- 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。

4.3.3 測試配置圖



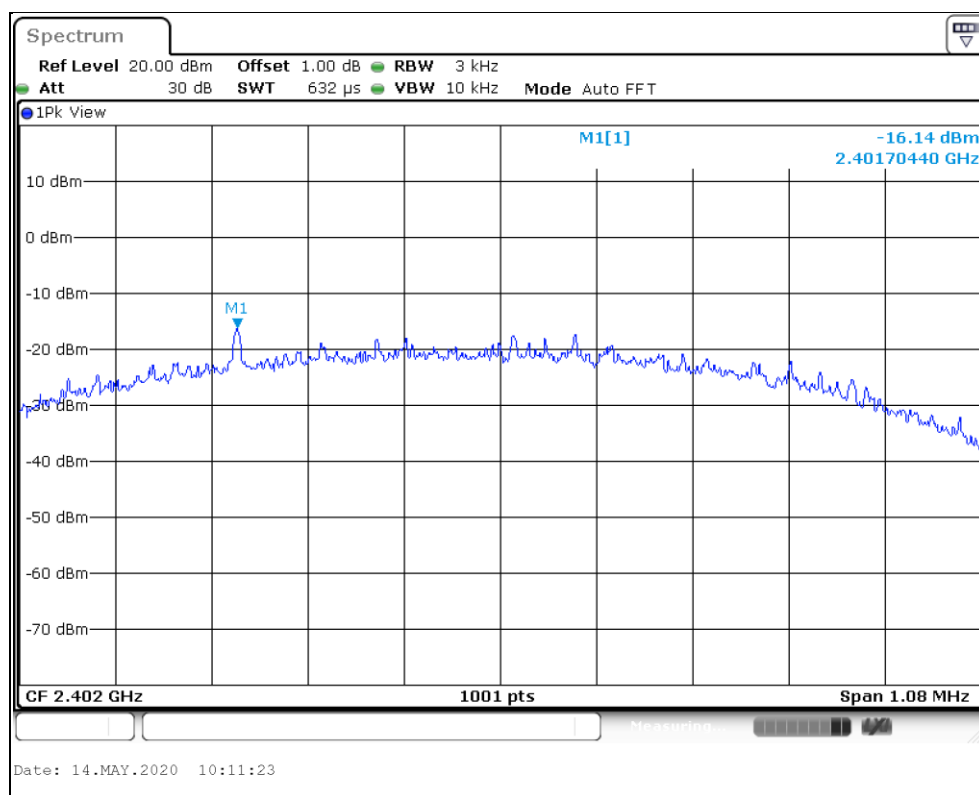
The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.



4.3.4 測試結果

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
0	2402	-16.14	8	Pass
19	2440	-17.32	8	Pass
39	2480	-19.01	8	Pass

此測試圖僅放測試結果最差的頻道



4.3.5 測試結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

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4.4 混附波及頻帶邊緣之傳導發射

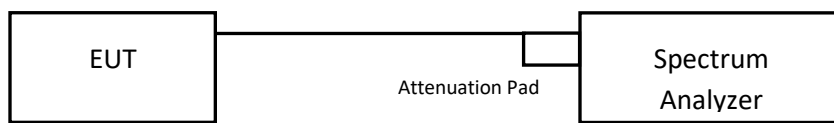
4.4.1 適用標準

請見本報告 3.1 節第 (4) 的規定。

4.4.2 測試方法

將射頻輸出連接到頻譜分析儀，設定頻譜分析儀之解析頻寬為 100 kHz，視訊頻寬不小於解析頻寬，所有諧波與混附波必須比許可頻段中最高發射峰值至少低 20dB，並評估許可頻段之最高與最低的頻帶邊緣發射及混附波發射。

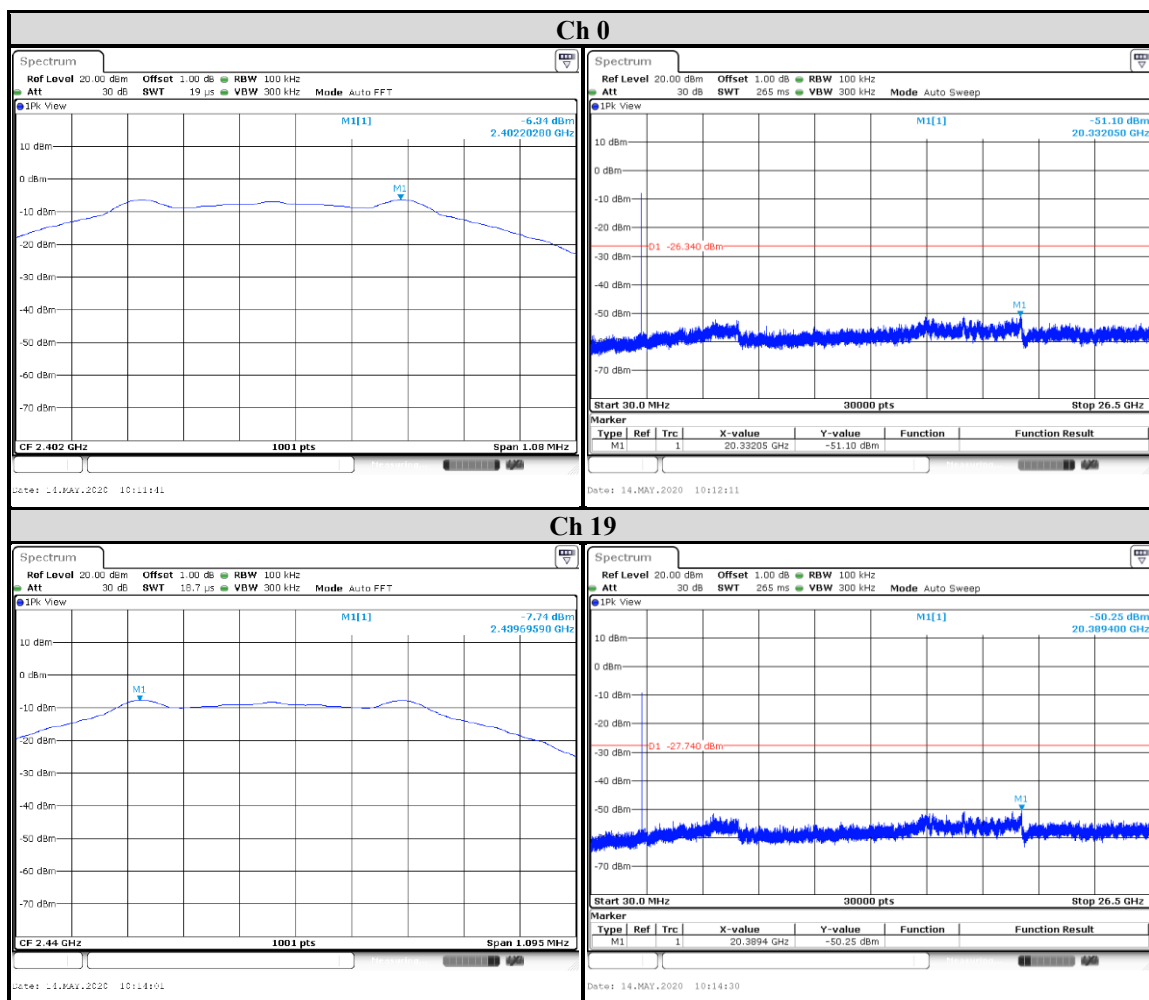
4.4.3 測試配置圖



The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.



4.4.4 測試結果



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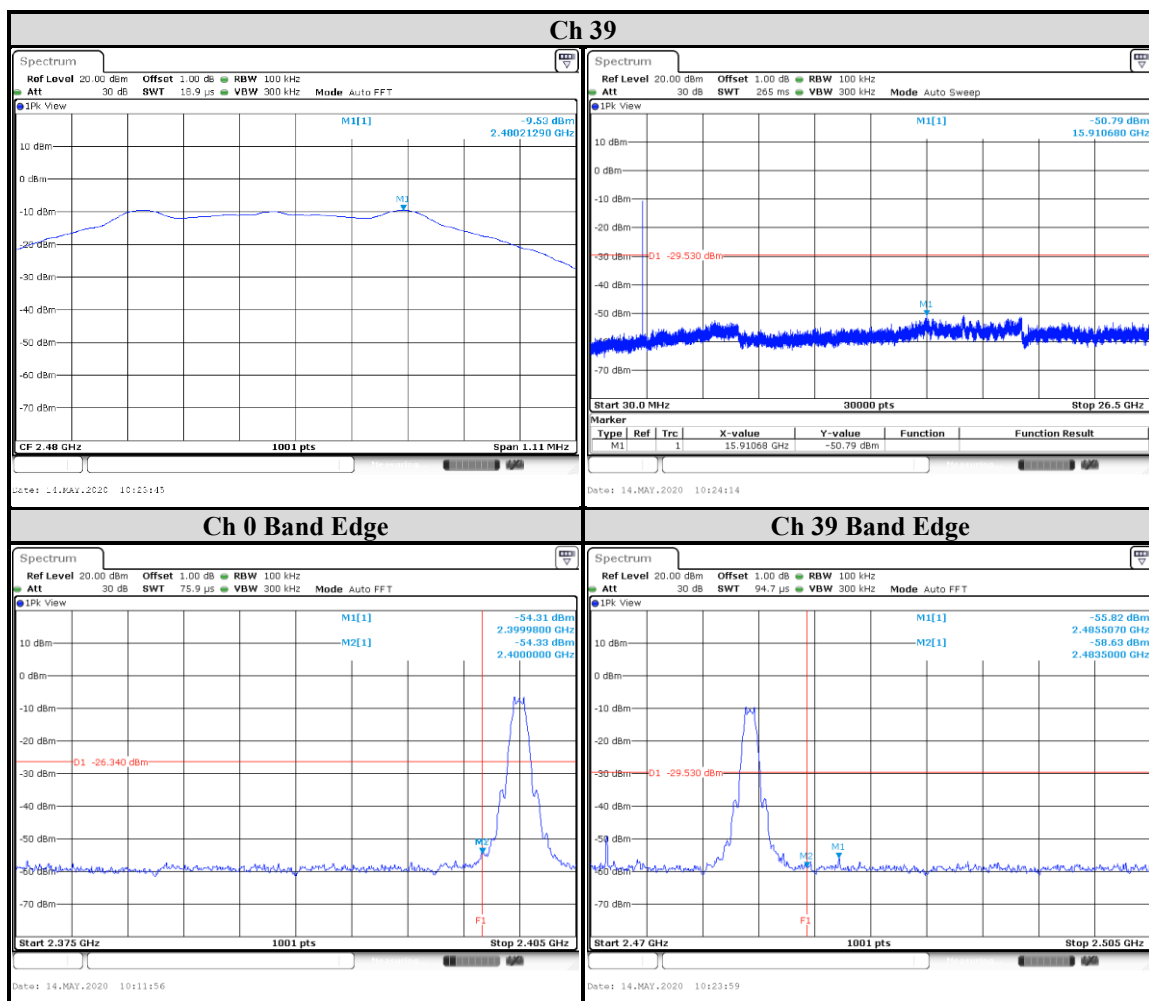
Doc No: 17-EM-F0880 / 5.0



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報告發行日期 : 2020/12/15



4.4.5 測試結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

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4.5 場強輻射

4.5.1 適用標準

請見本報告 3.1 節第 (4)、(9) 的規定。

4.5.2 測試方法

在半電波暗室，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

頻譜設定如下：

Peak

頻率範圍	RBW	VBW
9 kHz~150 kHz	200 Hz	600 Hz
150 kHz~30 MHz	10 kHz	30 kHz
30 MHz~1 GHz	120 kHz	360 kHz
Above 1GHz	1 MHz	3 MHz

Average

調變方式	RBW	VBW
Bluetooth LE	1 MHz	1 kHz

Note:

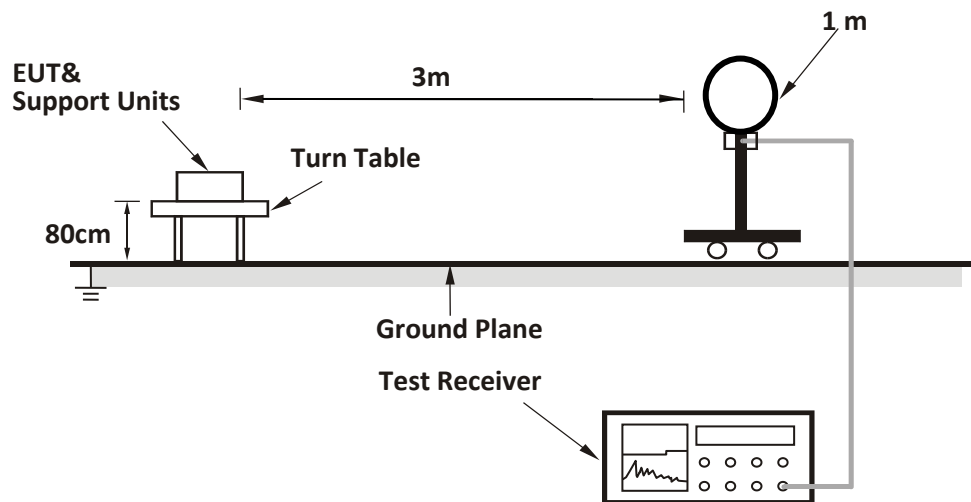
- Quasi-Peak RBW = 120 kHz
- The Duty cycle = $\geq 98\%$, Therefore VBW configuration is 10 Hz for testing.
- Refer to section 1.1 for duty cycle.

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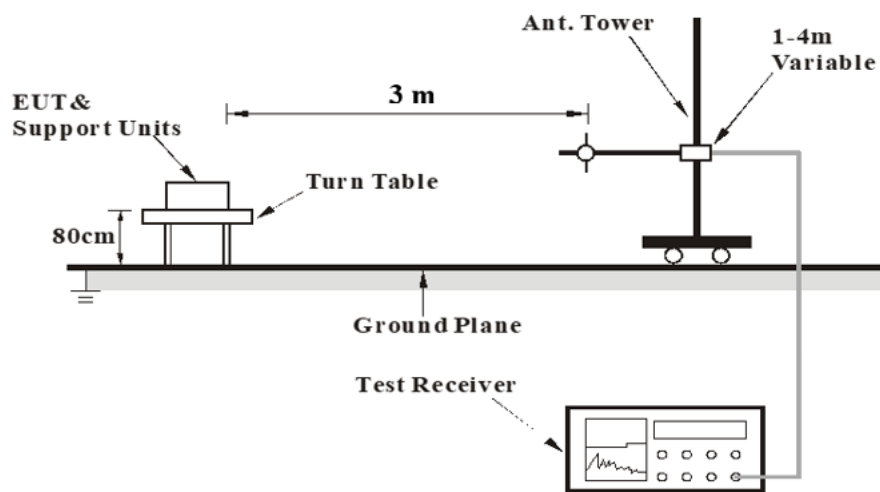
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4.5.3 測試配置圖

<Frequency Range 9 kHz ~ 30 MHz>



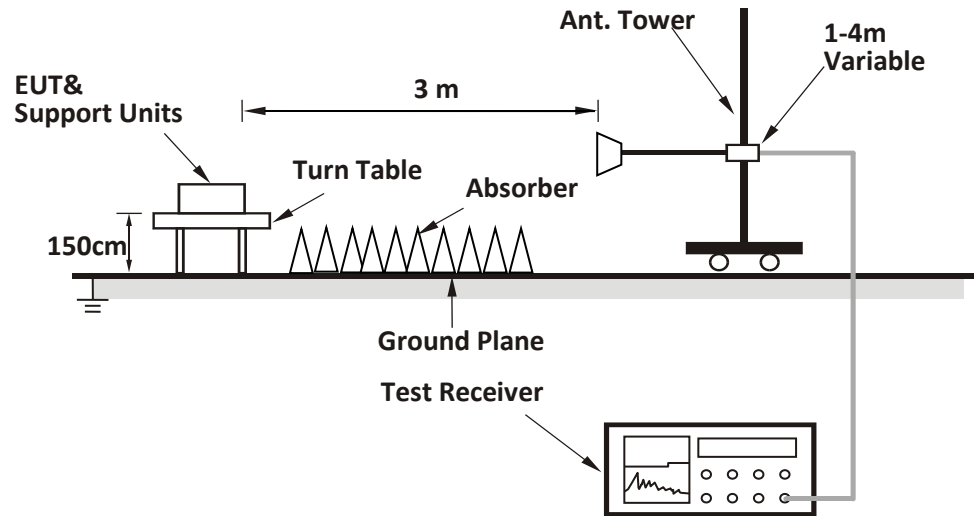
<Frequency Range 30 MHz ~ 1 GHz >



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<Frequency Range above 1 GHz>



For the actual test configuration, please refer to the Appendix III.

4.5.4 場強之計算公式

結果值 Result value (dBuV/m) = 機器讀值 Reading value (dBuV/m) + 校正因子
 Correction Factor (dB/m)

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



4.5.5 測試結果

發射模式

Above 1GHz Data

Model: 264-624

EUT Test Condition		Measurement Detail	
Mode 1	Channel 00	Frequency Range	1 GHz ~ 26.5 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	2389	44.87	-3.27	41.6	74	-32.4	Peak
@	2402	99.09	-3.27	95.82	-	-	Peak
-	2388.2	30.31	-3.27	27.04	54	-26.96	Average
@	2402	98.54	-3.27	95.27	-	-	Average
*	4804	49.2	3.47	52.67	74	-21.33	Peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	2373.8	43.25	-3.27	39.98	74	-34.02	Peak
@	2402	92.94	-3.27	89.67	-	-	Peak
-	2388.2	27.32	-3.27	24.05	54	-29.95	Average
@	2402	92.54	-3.27	89.27	-	-	Average
*	4804	47.74	3.47	51.21	74	-22.79	Peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. " * ": The peak result under 20 dB above and complies with AVG limit, AVG result is deemed to comply with AVG limit.
6. The other emission levels were very low against the limit.

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EUT Test Condition		Measurement Detail	
Mode 1	Channel 19	Frequency Range	1 GHz ~ 26.5 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	2376.8	43.51	-3.26	40.25	74	-33.75	Peak
@	2440	98.98	-3.43	95.55	-	-	Peak
-	2508.6	45.88	-3.44	42.44	74	-31.56	Peak
-	2350	26.63	-3.27	23.36	54	-30.64	Average
@	2440	98.51	-3.43	95.08	-	-	Average
-	2500.4	27.98	-3.47	24.51	54	-29.49	Average
-	4880	48.77	3.64	52.41	54	-1.59	Average
-	4880	50.91	3.64	54.55	74	-19.45	Peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	2389.8	43.9	-3.26	40.64	74	-33.36	Peak
@	2440	92.98	-3.43	89.55	-	-	Peak
-	2506.8	46.16	-3.45	42.71	74	-31.29	Peak
-	2388.6	25.64	-3.27	22.37	54	-31.63	Average
@	2440	92.35	-3.43	88.92	-	-	Average
-	2499.6	27.86	-3.47	24.39	54	-29.61	Average
-	4880	46.9	3.64	50.54	54	-3.46	Average
-	4880	50.85	3.64	54.49	74	-19.51	Peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. The other emission levels were very low against the limit.

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Doc No: 17-EM-F0880 / 5.0



報告編號 : 4789309442-TW-R0-V0

頁碼 : 33 of 59

報告發行日期 : 2020/12/15

EUT Test Condition		Measurement Detail	
Mode 1	Channel 39	Frequency Range	1 GHz ~ 26.5 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
@	2480	97.26	-3.47	93.79	-	-	Peak
-	2483.6	47.49	-3.47	44.02	74	-29.98	Peak
@	2480	96.75	-3.47	93.28	-	-	Average
-	2483.6	35.44	-3.47	31.97	54	-22.03	Average
-	4960	48.7	3.75	52.45	54	-1.55	Average
-	4960	50.91	3.75	54.66	74	-19.34	Peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
@	2480	91.8	-3.47	88.33	-	-	Peak
-	2489.4	46.23	-3.47	42.76	74	-31.24	Peak
@	2480	91.3	-3.47	87.83	-	-	Average
-	2483.6	30.97	-3.47	27.5	54	-26.5	Average
-	4960	49.19	3.75	52.94	54	-1.06	Average
-	4960	51.95	3.75	55.7	74	-18.3	Peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. The other emission levels were very low against the limit.

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Doc No: 17-EM-F0880 / 5.0



報告編號 : 4789309442-TW-R0-V0

頁碼 : 34 of 59

報告發行日期 : 2020/12/15

Model: 264-625

EUT Test Condition		Measurement Detail	
Mode 1	Channel 00	Frequency Range	1 GHz ~ 26.5 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
*	4804	49.12	3.47	52.59	74	-21.41	Peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
*	4804	47.6	3.47	51.07	74	-22.93	Peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. " * ": The peak result under 20 dB above and complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.
6. The other emission levels were very low against the limit.

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Doc No: 17-EM-F0880 / 5.0



報告編號 : 4789309442-TW-R0-V0

頁碼 : 35 of 59

報告發行日期 : 2020/12/15

EUT Test Condition		Measurement Detail	
Mode 1	Channel 19	Frequency Range	1 GHz ~ 26.5 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	4880	48.59	3.64	52.23	54	-1.77	Average
-	4880	50.75	3.64	54.39	74	-19.61	Peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	4880	46.75	3.64	50.39	54	-3.61	Average
-	4880	50.72	3.64	54.36	74	-19.64	Peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.
5. The other emission levels were very low against the limit.

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EUT Test Condition		Measurement Detail	
Mode 1	Channel 39	Frequency Range	1 GHz ~ 26.5 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	4960	48.58	3.75	52.33	54	-1.67	Average
-	4960	50.8	3.75	54.55	74	-19.45	Peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	4960	49.04	3.75	52.79	54	-1.21	Average
-	4960	51.84	3.75	55.59	74	-18.41	Peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.
5. The other emission levels were very low against the limit.

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其他不必要之訊號

9 kHz ~ 30 MHz Data:

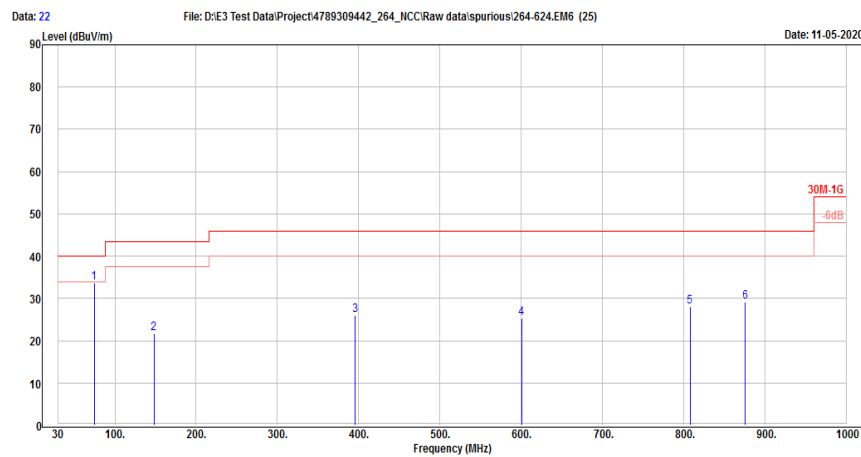
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Data

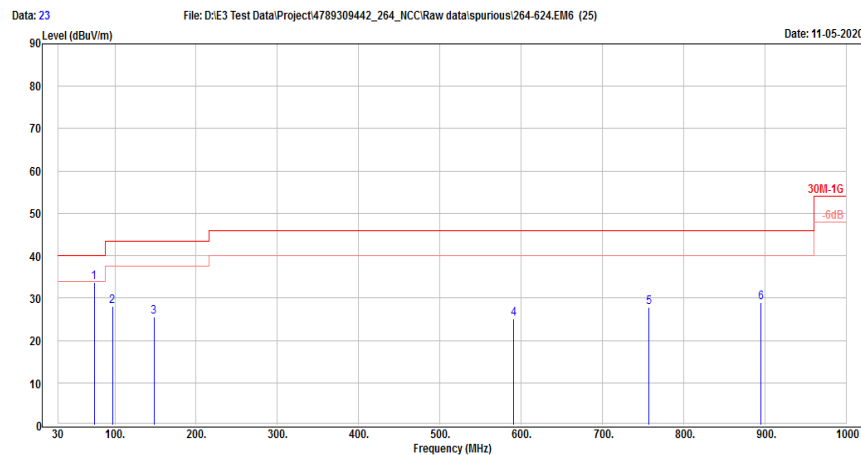
Model: 264-624

EUT Test Condition		Measurement Detail	
Mode 1	Channel 39	Frequency Range	30 MHz ~ 1 GHz

Horizontal



Vertical



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報告編號 : 4789309442-TW-R0-V0

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Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	74.62	48.81	-15.13	33.68	40	-6.32	Peak
2	148.34	33.36	-11.68	21.68	43.5	-21.82	Peak
3	395.69	33.32	-7.33	25.99	46	-20.01	Peak
4	600.36	27.61	-2.36	25.25	46	-20.75	Peak
5	807.94	27.03	1.12	28.15	46	-17.85	Peak
6	875.84	26.76	2.52	29.28	46	-16.72	Peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	74.62	48.76	-15.13	33.63	40	-6.37	Peak
2	96.93	44.93	-16.83	28.1	43.5	-15.4	Peak
3	148.34	37.14	-11.68	25.46	43.5	-18.04	Peak
4	590.66	27.62	-2.43	25.19	46	-20.81	Peak
5	757.5	26.84	0.87	27.71	46	-18.29	Peak
6	895.24	26	2.94	28.94	46	-17.06	Peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. The peak result complies with QP limit, QP result is deemed to comply with QP limit.
5. The other emission levels were very low against the limit.

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報告編號 : 4789309442-TW-R0-V0

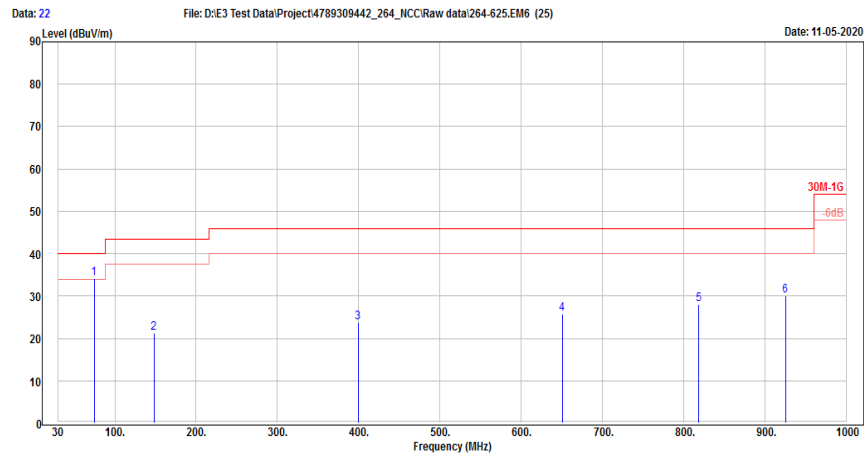
頁碼 : 39 of 59

報告發行日期 : 2020/12/15

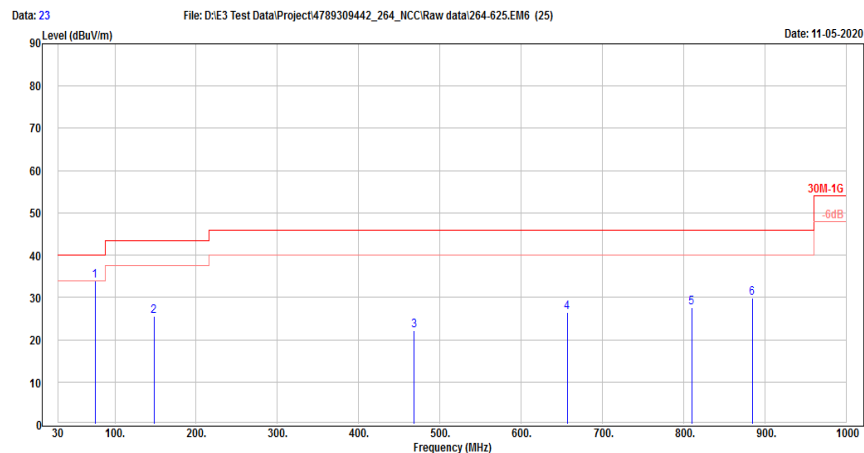
Model: 264-625

EUT Test Condition		Measurement Detail	
Mode 1	Channel 39	Frequency Range	30 MHz ~ 1 GHz

Horizontal



Vertical



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Doc No: 17-EM-F0880 / 5.0



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Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	74.62	49.21	-15.13	34.08	40	-5.92	Peak
2	148.34	32.94	-11.68	21.26	43.5	-22.24	Peak
3	399.57	31	-7.16	23.84	46	-22.16	Peak
4	650.8	27.16	-1.34	25.82	46	-20.18	Peak
5	818.61	26.71	1.23	27.94	46	-18.06	Peak
6	925.31	26.78	3.31	30.09	46	-15.91	Peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	75.59	49.27	-15.26	34.01	40	-5.99	Peak
2	148.34	37.29	-11.68	25.61	43.5	-17.89	Peak
3	468.44	27.22	-5.07	22.15	46	-23.85	Peak
4	656.62	27.74	-1.35	26.39	46	-19.61	Peak
5	809.88	26.39	1.21	27.6	46	-18.4	Peak
6	884.57	27.05	2.75	29.8	46	-16.2	Peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. The peak result complies with QP limit, QP result is deemed to comply with QP limit.
5. The other emission levels were very low against the limit.

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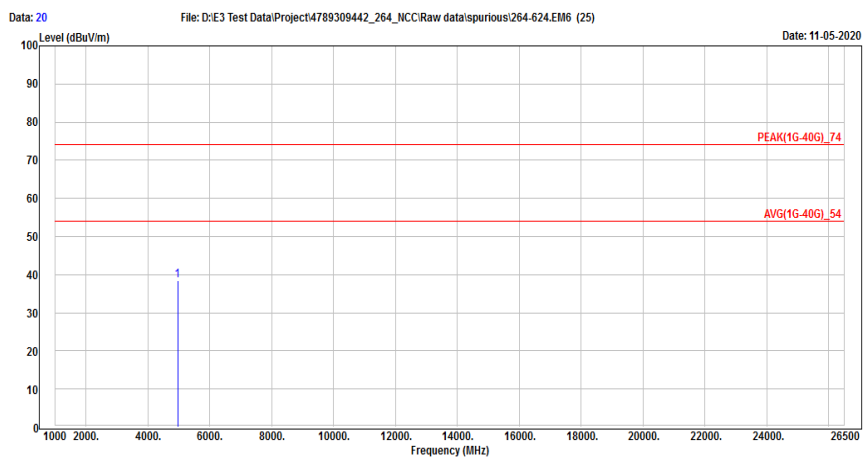
接收模式

Above 1 GHz Data

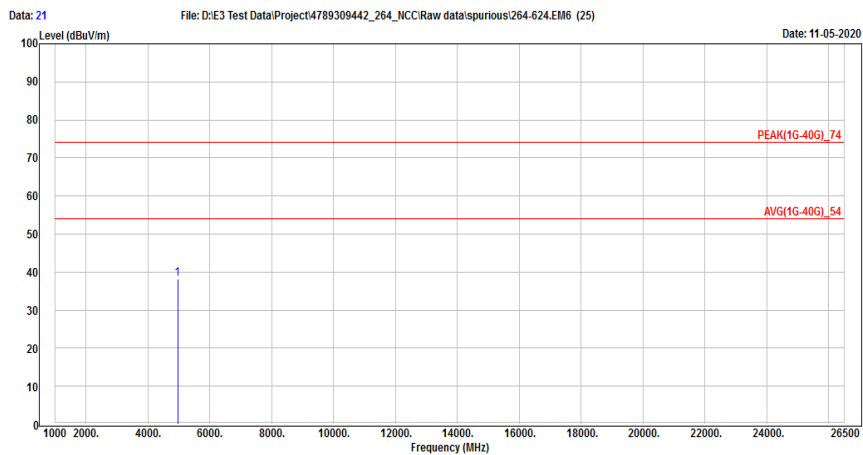
Model: 264-624

EUT Test Condition		Measurement Detail	
Mode 2	Bluetooth LE RX	Frequency Range	1 GHz ~ 26.5 GHz

Horizontal



Vertical



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Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
*	4960	34.6	3.75	38.35	74	-35.65	Peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
*	4960	34.49	3.75	38.24	74	-35.76	Peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. " * ": The peak result under 20 dB above and complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.
6. The other emission levels were very low against the limit.

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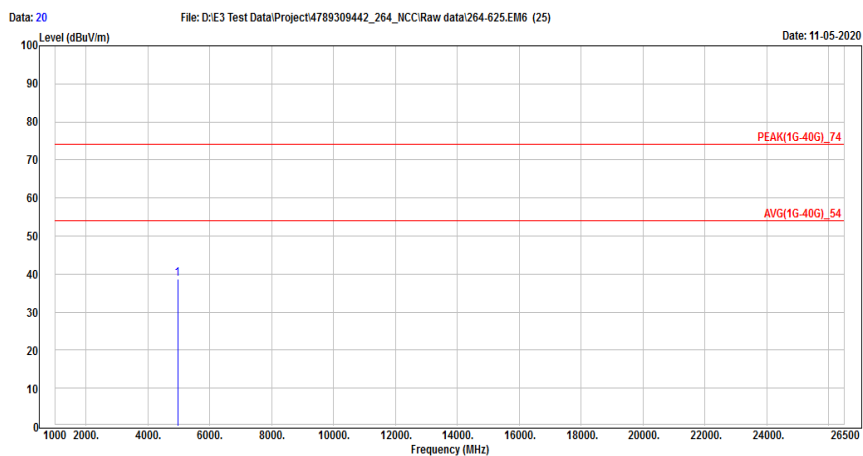
頁碼 : 43 of 59

報告發行日期 : 2020/12/15

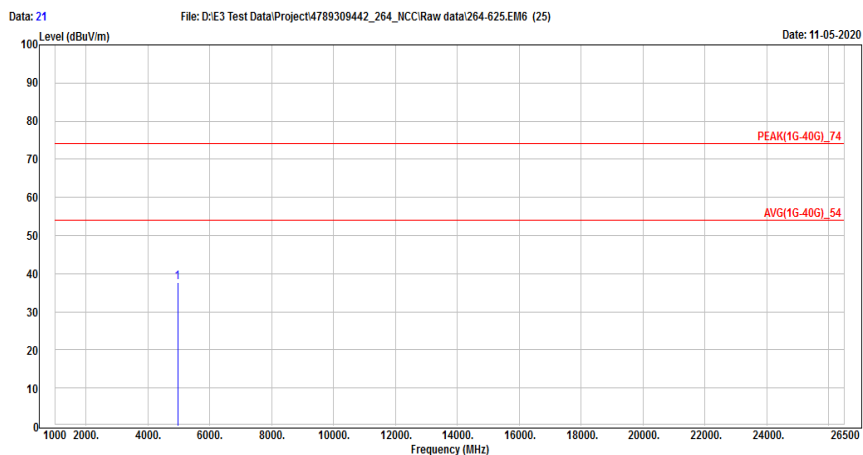
Model: 264-625

EUT Test Condition		Measurement Detail	
Mode 2	Bluetooth LE RX	Frequency Range	1 GHz ~ 26.5 GHz

Horizontal



Vertical



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報告發行日期 : 2020/12/15

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
*	4960	34.95	3.75	38.7	74	-35.3	Peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
*	4960	33.86	3.75	37.61	74	-36.39	Peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. " * ": The peak result under 20 dB above and complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.
6. The other emission levels were very low against the limit.

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其他不必要之訊號

9 kHz ~ 30 MHz Data:

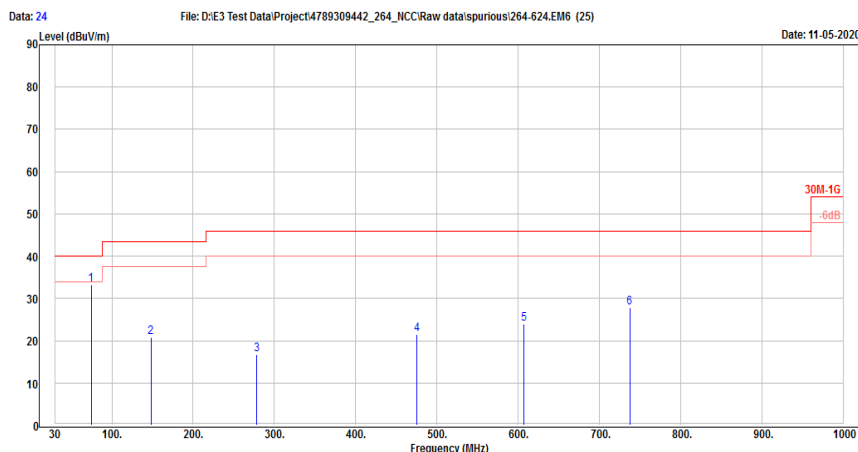
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Data

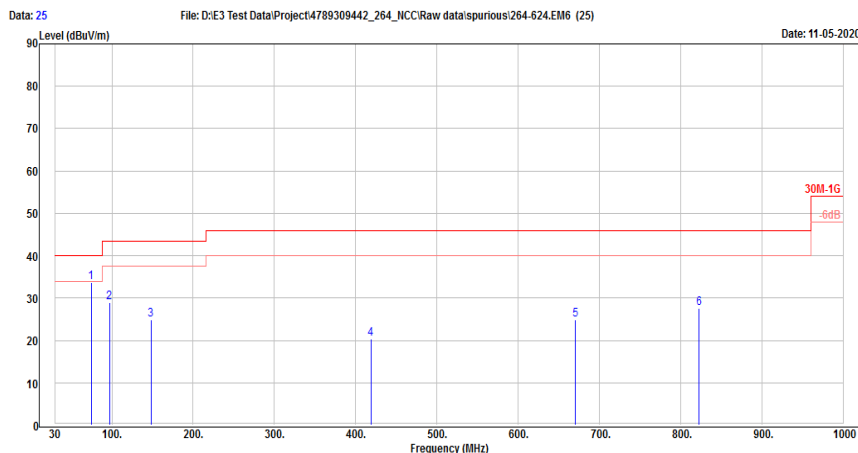
Model: 264-624

EUT Test Condition		Measurement Detail	
Mode 2	Bluetooth LE RX	Frequency Range	30 MHz ~ 1 GHz

Horizontal



Vertical



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Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	74.62	48.39	-15.13	33.26	40	-6.74	Peak
2	148.34	32.45	-11.68	20.77	43.5	-22.73	Peak
3	278.32	27.27	-10.48	16.79	46	-29.21	Peak
4	475.23	26.35	-4.93	21.42	46	-24.58	Peak
5	607.15	26.14	-2.2	23.94	46	-22.06	Peak
6	737.13	27.24	0.48	27.72	46	-18.28	Peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	74.62	48.82	-15.13	33.69	40	-6.31	Peak
2	96.93	45.77	-16.83	28.94	43.5	-14.56	Peak
3	148.34	36.56	-11.68	24.88	43.5	-18.62	Peak
4	418.97	26.91	-6.46	20.45	46	-25.55	Peak
5	670.2	26.06	-1.23	24.83	46	-21.17	Peak
6	822.49	26.16	1.35	27.51	46	-18.49	Peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. The peak result complies with QP limit, QP result is deemed to comply with QP limit.
5. The other emission levels were very low against the limit.

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報告編號 : 4789309442-TW-R0-V0

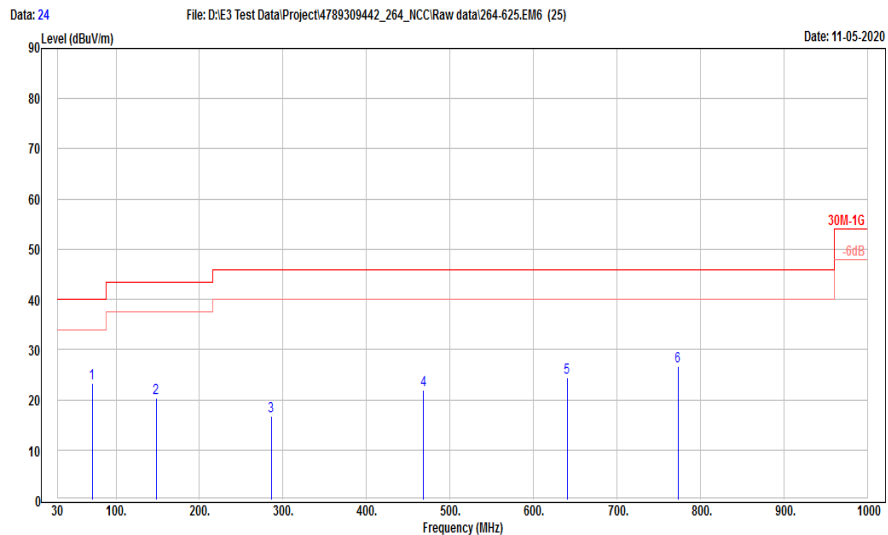
頁碼 : 47 of 59

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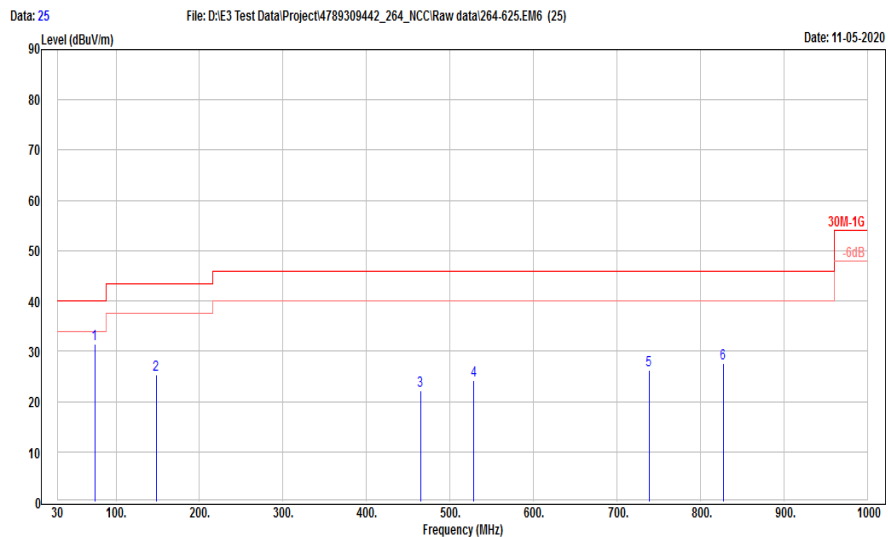
Model: 264-625

EUT Test Condition		Measurement Detail	
Mode 2	Bluetooth LE RX	Frequency Range	30 MHz ~ 1 GHz

Horizontal



Vertical



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Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	71.71	37.79	-14.44	23.35	40	-16.65	Peak
2	148.34	31.97	-11.68	20.29	43.5	-23.21	Peak
3	286.08	27.15	-10.41	16.74	46	-29.26	Peak
4	468.44	26.94	-5.07	21.87	46	-24.13	Peak
5	640.13	25.66	-1.16	24.5	46	-21.5	Peak
6	773.02	25.58	1.02	26.6	46	-19.4	Peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	74.62	46.45	-15.13	31.32	40	-8.68	Peak
2	148.34	36.9	-11.68	25.22	43.5	-18.28	Peak
3	464.56	27.3	-5.12	22.18	46	-23.82	Peak
4	528.58	27.72	-3.59	24.13	46	-21.87	Peak
5	738.1	25.64	0.48	26.12	46	-19.88	Peak
6	827.34	26.19	1.42	27.61	46	-18.39	Peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. The peak result complies with QP limit, QP result is deemed to comply with QP limit.
5. The other emission levels were very low against the limit.

4.5.6 測試結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

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4.6 電波暴露量之評估

4.7.1 適用標準

請見本報告 3.1 節第 (10) 的規定。

4.7.2 測試方法

a) 以 4.1.4 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

4.7.2 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
2412-2462	-9.58	2.5	20	0.00004	1	Pass

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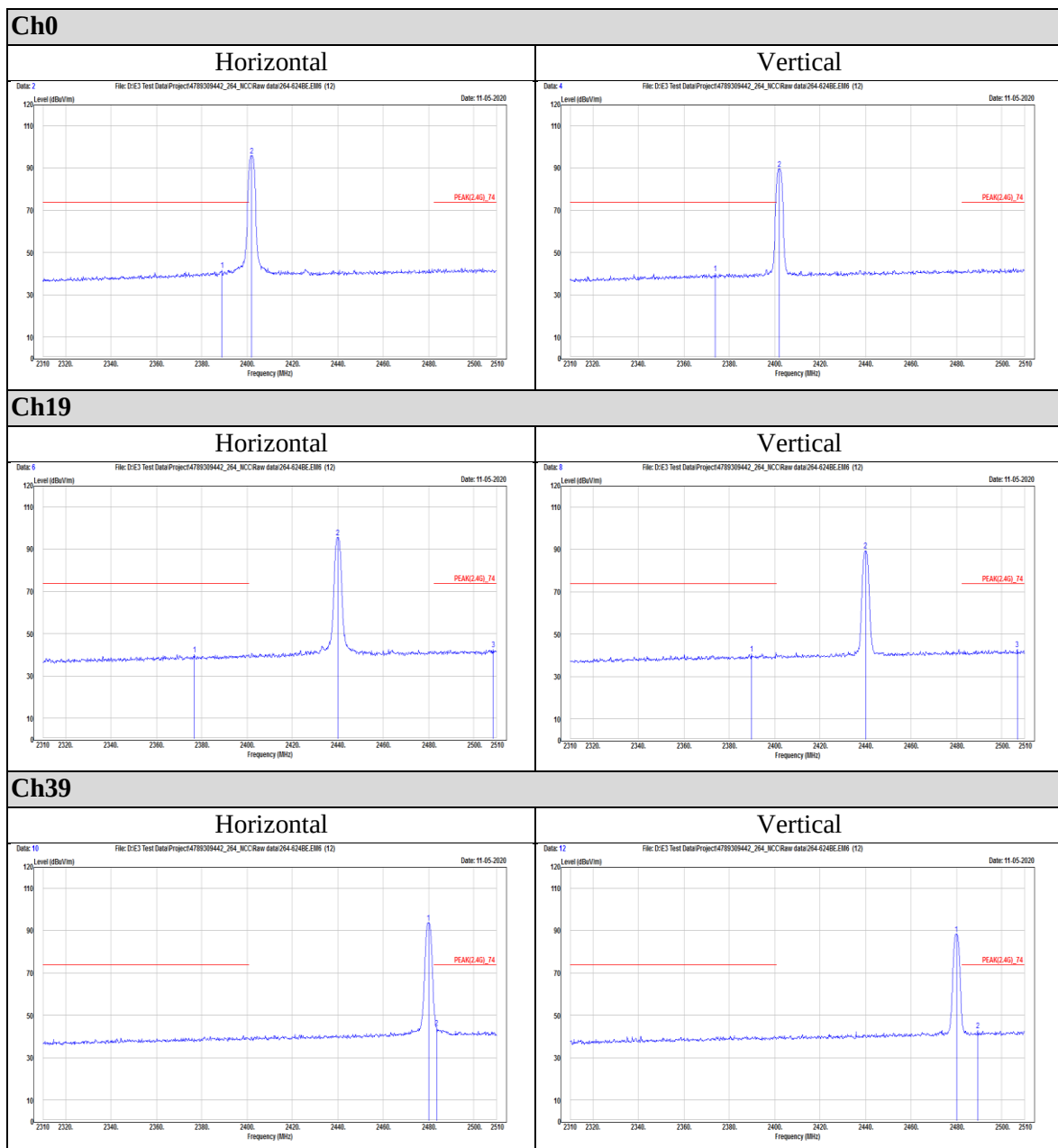
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附錄 I 頻帶邊緣輻射量測

Model: 264-624

Peak



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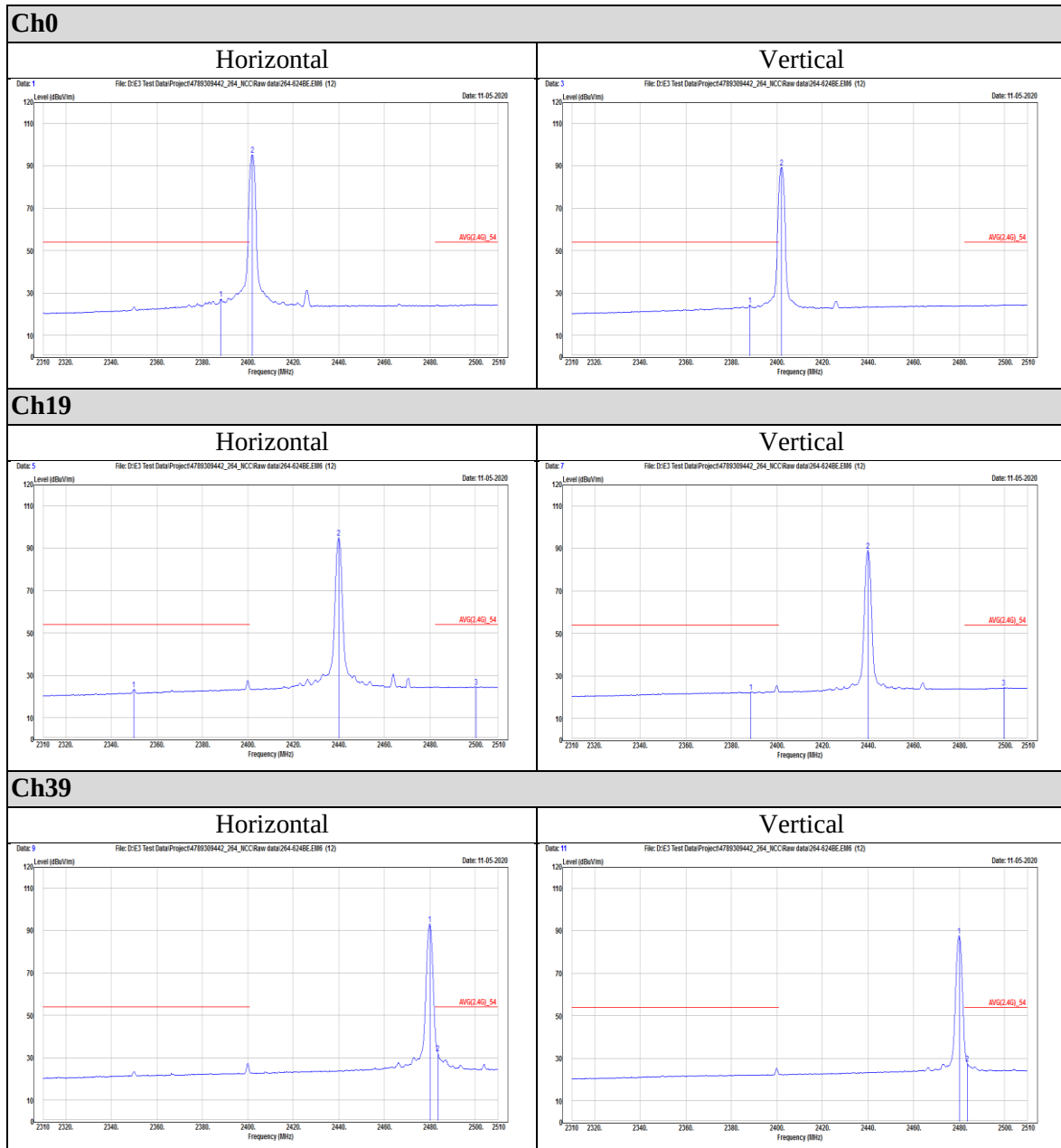


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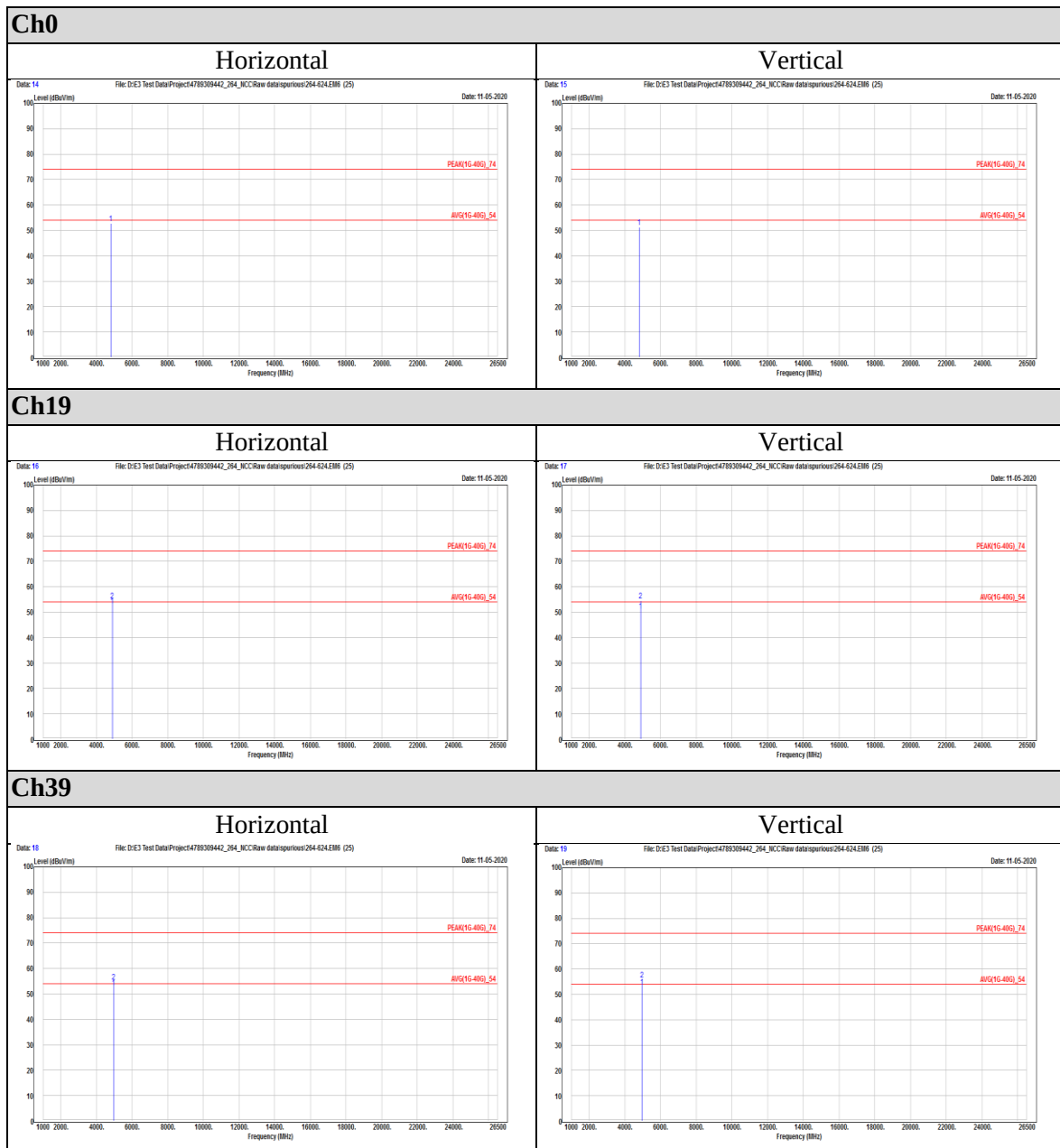
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附錄 II 混附波輻射量測

Model: 264-624



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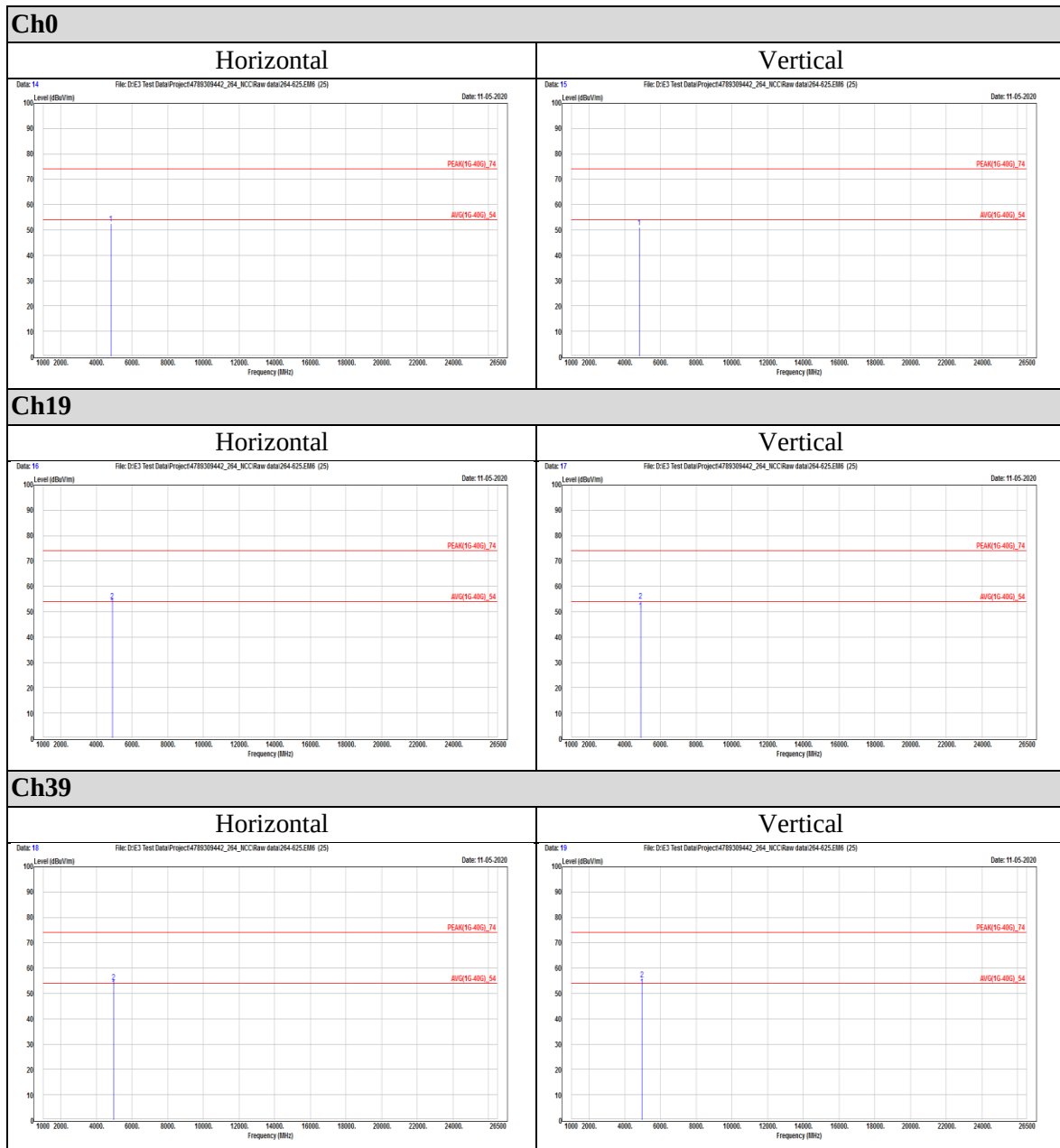


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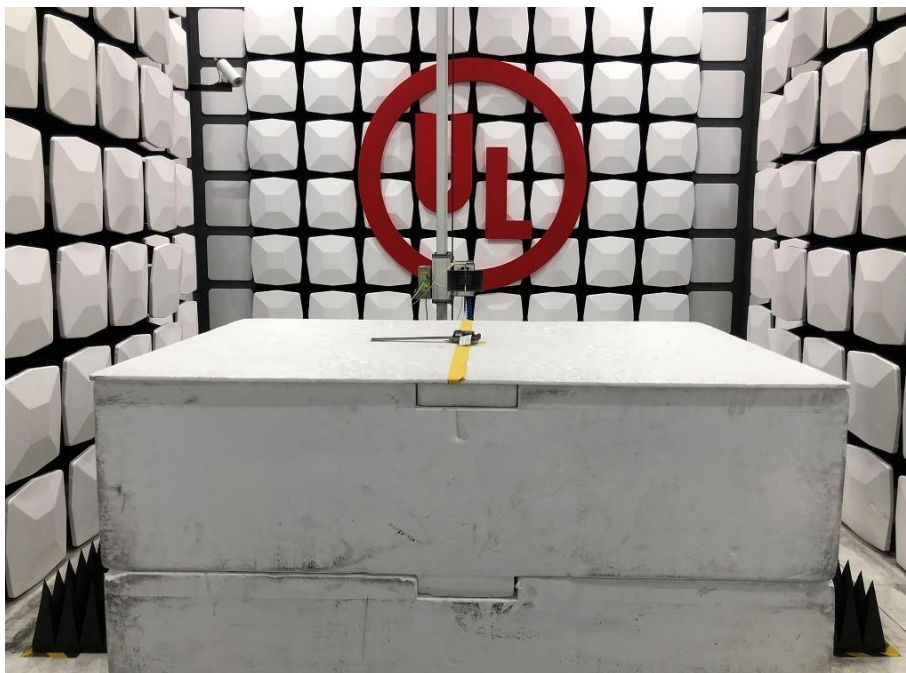
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附錄 III 場強輻射配置照片

Above 1GHz

Model: 264-624



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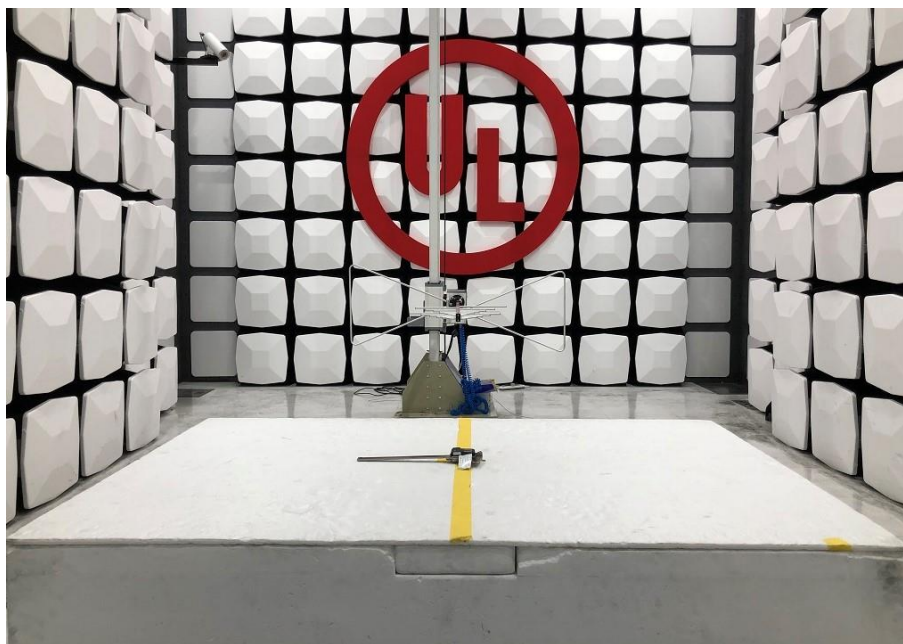
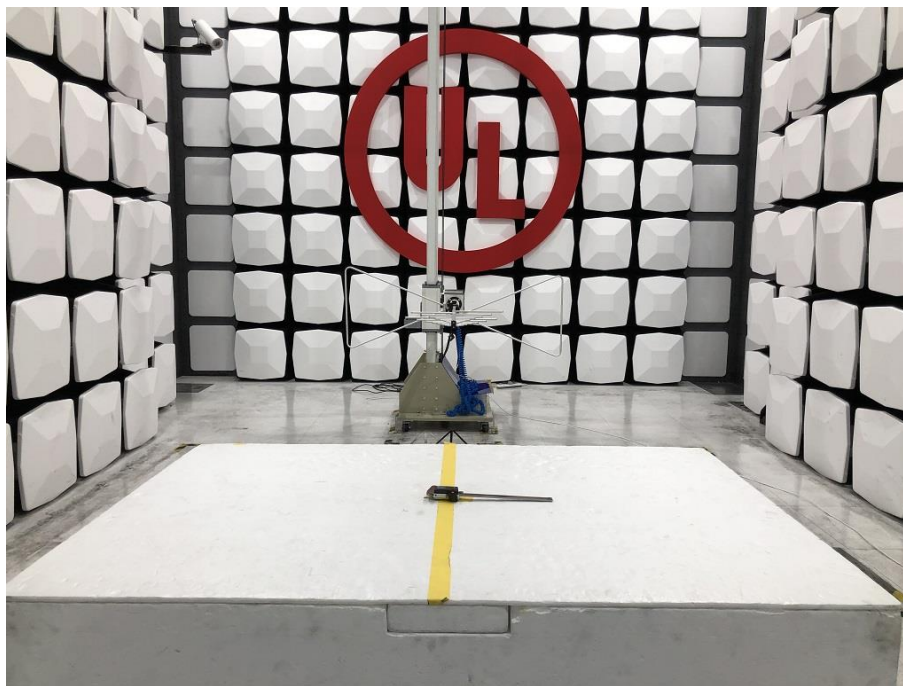
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30 MHz ~ 1 GHz

Model: 264-624



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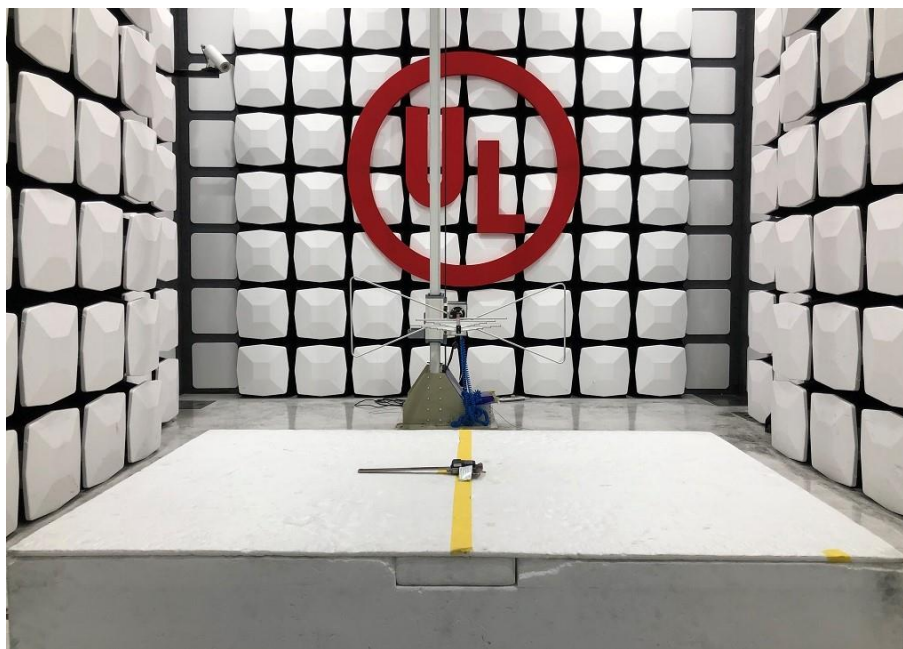
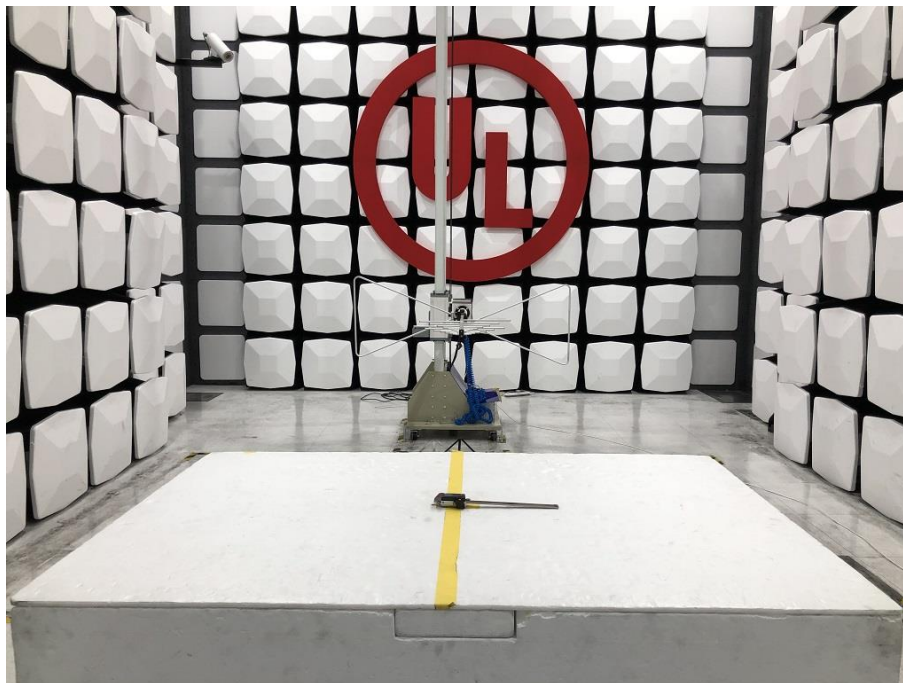
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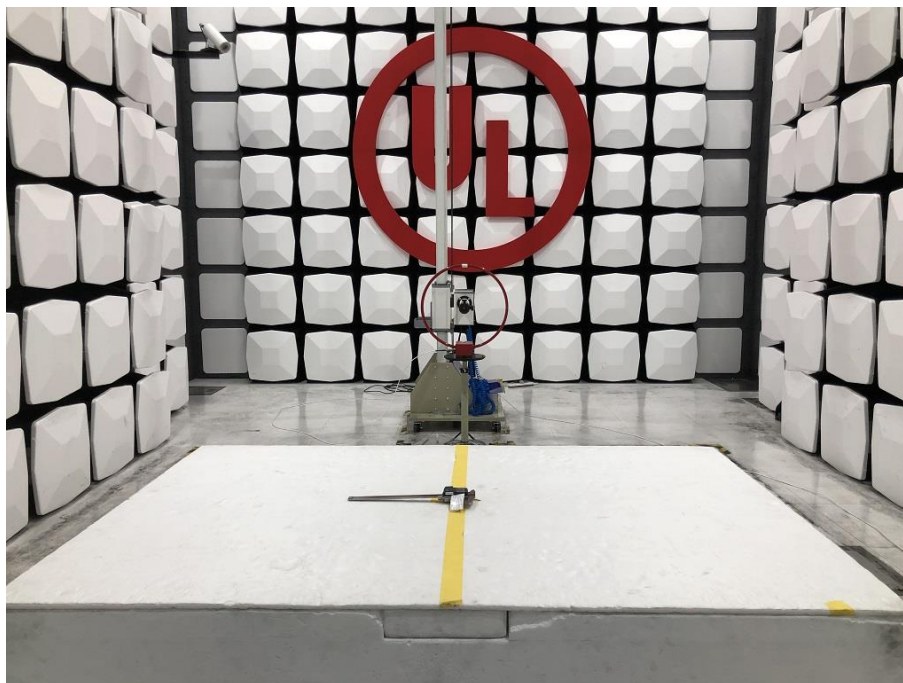
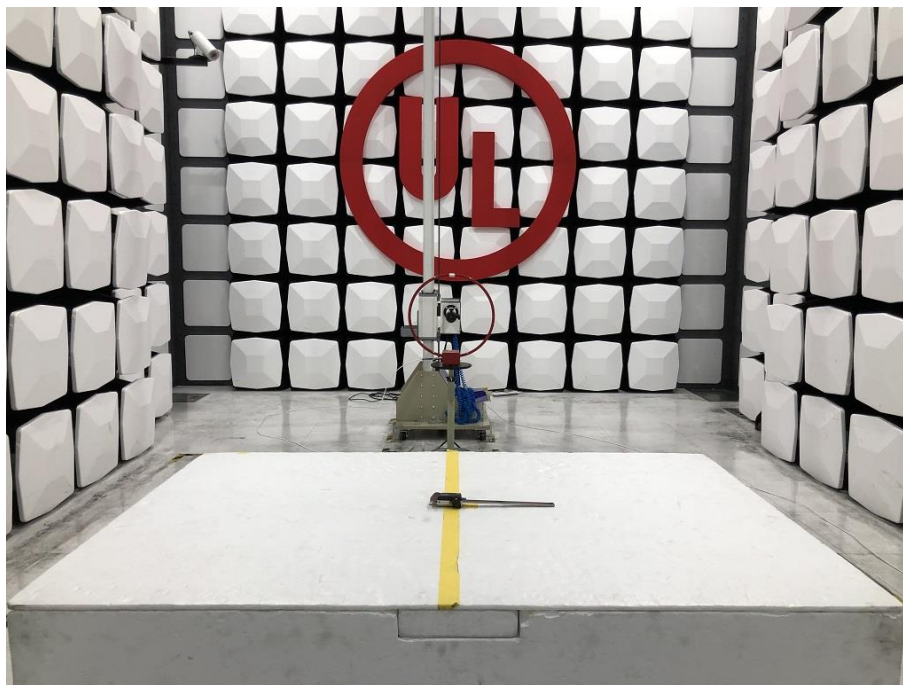
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9 kHz ~ 30 MHz

Model: 264-624



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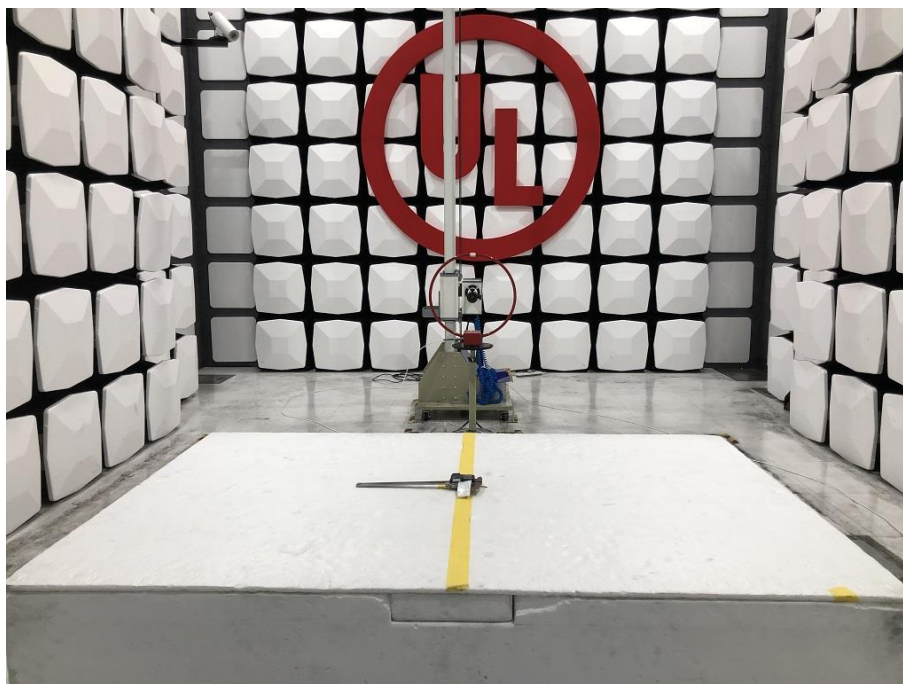
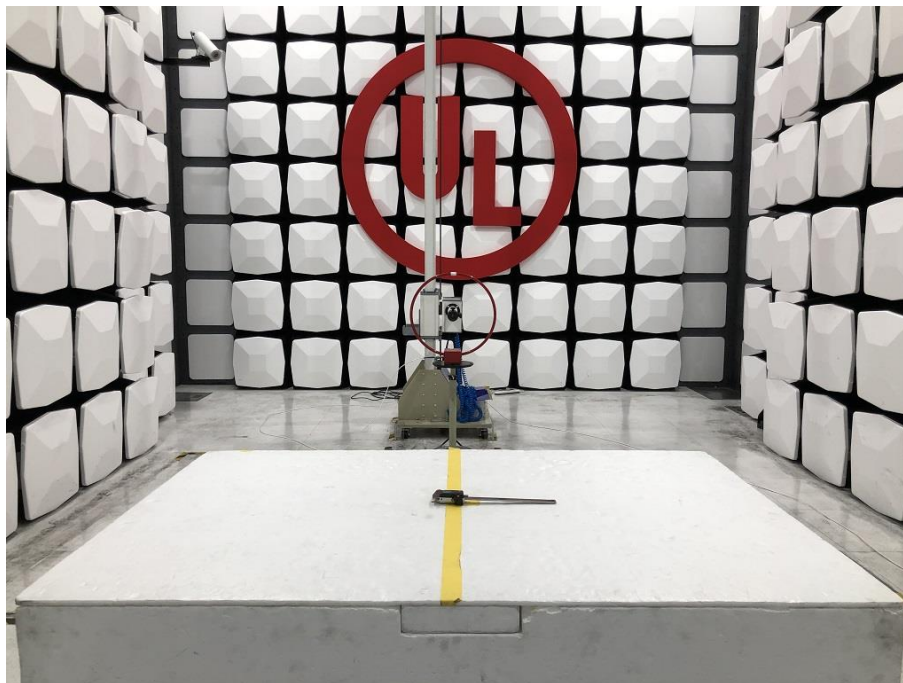
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