



NCC

低功率射頻電機型式試驗報告

產品名稱: ACCESS POINT
型號: APEX0574, APEX0575, APEX0577
廠牌: aruba / Hewlett Packard Enterprise
商標:  / 
申請者: 慧與科技股份有限公司
申請者地址: 臺北市南港區經貿二路 66 號 10 樓之 1
測試標準: LP0002 (107 年版)
參考法規: ANSI C63.10-2013
測試結果: 符合
接收日期: 2019.12.25
測試日期: 2020.03.05 ~ 2020.08.10

測試工程師:



(柯文凱)

報告審核人:



(陳柏均)

報告簽屬人:



(柯承志)



本測試報告僅對實驗室所受測之樣品負責

本測試報告非經本公司同意不可局部複製使用

修訂紀錄

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1. 一般資訊

申請者	慧與科技股份有限公司
申請者地址	臺北市南港區經貿二路 66 號 10 樓之 1
製造商	Hewlett Packard Enterprise Company
製造商地址	3333 Scott Blvd, Santa Clara, CA 94089, USA
實驗室	台灣曼瑞檢測科技有限公司
實驗室地址	33377 台灣桃園市龜山區復興二路 38 號
實驗室資訊	1. MRT facility is a FCC registered (Reg. No. 291082) test facility with the site description report on file and is designated by the FCC as an Accredited Test Firm. 2. MRT facility is an IC registered (MRT Reg. No. 21723) test laboratory with the site description on file at Industry Canada. 3. MRT Lab is accredited to ISO 17025 by the Taiwan Accreditation Foundation (TAF Cert. No. 3261) in EMC, Telecommunications and Radio testing for FCC (Designation Number: TW3261), Industry Taiwan, EU and TELEC Rules.
實驗室測試環境條件	溫度 (°C) : 20-35 / 濕度 (%RH) : 30-65
測試樣品 SN 號	APEX0574 S/N: DE29AO0066 APEX0575 S/N: DE29AO005D APEX0577 S/N: DE29AO002D

2. 產品描述

2.1. 產品資訊

產品名稱	ACCESS POINT
產品型號	APEX0574, APEX0575, APEX0577
Wi-Fi 規格	802.11a/b/g/n/ac/ax
藍牙版本	v4.2 single mode only for BLE
Zigbee 規格	802.15.4
軟件版本	V1.02
工作溫度	-40 ~ 65 °C
待測物額定電壓	POE input

Note:

1. The difference between three models is that EUT use different antenna、appearance、brand name, other hardware and software are the same.
2. The applicant provided one PoE adapter (Manufacturer MICROSEMI & Model 9001GO) for approval testing, it is not for sale.

2.2. 產品規格

頻率範圍	2402 ~ 2480 MHz
調變模式	GFSK
傳輸速率	1Mbps

Bluetooth-LE

Channel	Frequency	Channel	Frequency	Channel	Frequency
00	2402 MHz	01	2404 MHz	02	2406 MHz
03	2408 MHz	04	2410 MHz	05	2412 MHz
06	2414 MHz	07	2416 MHz	08	2418 MHz
09	2420 MHz	10	2422 MHz	11	2424 MHz
12	2426 MHz	13	2428 MHz	14	2430 MHz
15	2432 MHz	16	2434 MHz	17	2436 MHz
18	2438 MHz	19	2440 MHz	20	2442 MHz
21	2444 MHz	22	2446 MHz	23	2448 MHz
24	2450 MHz	25	2452 MHz	26	2454 MHz
27	2456 MHz	28	2458 MHz	29	2460 MHz
30	2462 MHz	31	2464 MHz	32	2466 MHz
33	2468 MHz	34	2470 MHz	35	2472 MHz
36	2474 MHz	37	2476 MHz	38	2478 MHz
39	2480 MHz	N/A	N/A	N/A	N/A

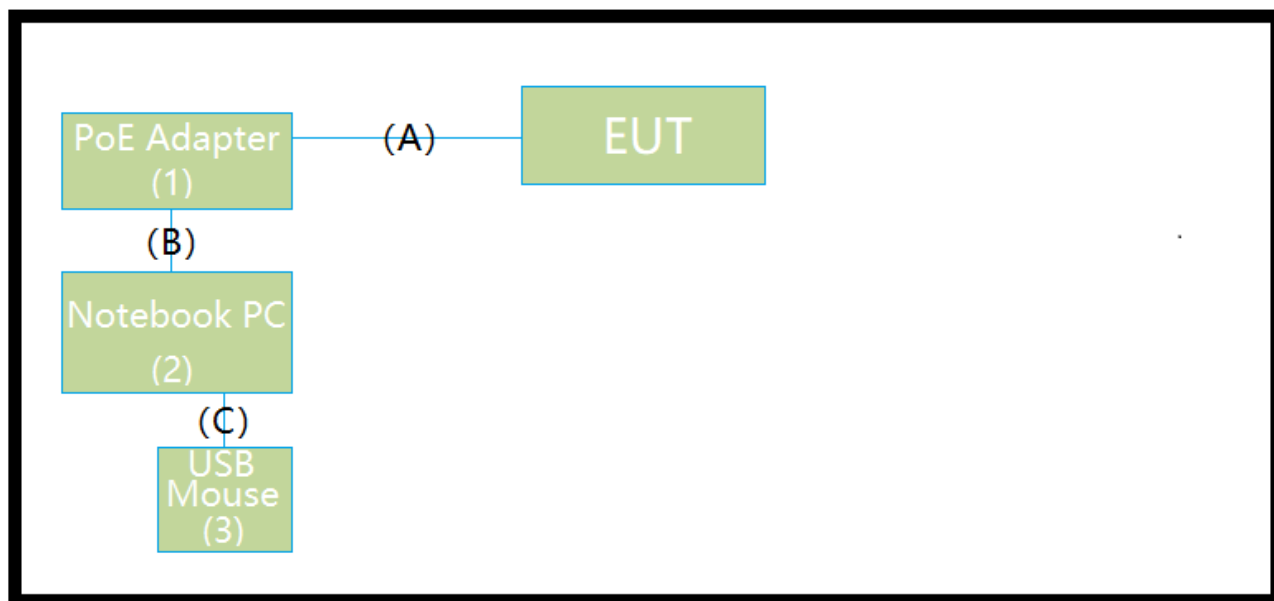
2.3. 測試模式

Test Mode	Mode 1: 發射器 - BLE
	Mode 2: Normal Mode

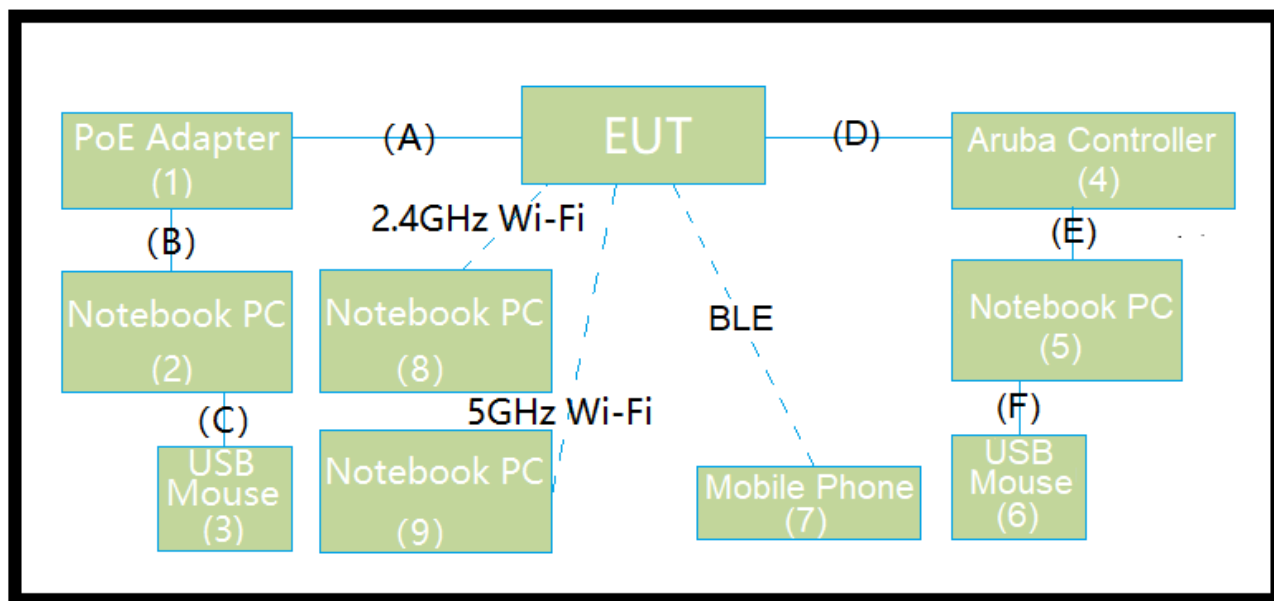
Note：針對電源傳導的測試模式，因僅差在外觀差異，其餘主板電路皆相同，不影響電源傳導測試，故僅針對 APEX0574 評估。

2.4. 測試配置

待測物測試配置圖 (Mode 1)



待測物測試配置圖 (Mode 2)



Signal Cable Type		Signal Cable Description
A	LAN Cable	Non-Shielding, >10m
B	LAN Cable	Non-Shielding, 1.5m
C	USB Mouse Cable	Shielded, 1.6m
D	LAN Cable	Non-Shielding, >10m
E	LAN Cable	Non-Shielding, 1.5m
F	USB Mouse Cable	Shielded, 1.6m

2.5. 測試周邊

待測裝置測試時，其搭配系統測試時之週邊裝置包括如下：

No.	周邊名稱	廠牌	型號	序號	檢磁	電源線
1	PoE Adapter	MICROSEMI	9001GO	N/A	N/A	N/A
2	Notebook	Lenovo	X230i	N/A	N/A	Non-Shielded, 1.8m
3	USB Mouse	Dell	MS111-L	N/A	N/A	N/A
4	Aruba Controller	ARUBA NETWORKS, INC	ARCN7008	CGCWJSP01S	N/A	Non-Shielded, 1.8m
5	Notebook	Lenovo	X201	N/A	N/A	Non-Shielded, 1.8m
6	USB Mouse	Dell	MS111-L	N/A	N/A	N/A
7	Mobile Phone	Apple	A1700	N/A	N/A	N/A
8	Notebook	Lenovo	T460	N/A	N/A	Non-Shielded, 1.8m
9	Notebook	Lenovo	X230	N/A	N/A	Non-Shielded, 1.8m

2.6. 待測裝置測試時之典型操作程式

1.	Turn on the power of all equipment.
2.	Mode 1: Make the EUT powered by POE Adapter on E1 port, communicate with PC and make the PC execute "telnet.exe" program, configure the test channel and the data rate. Mode 2: Make the EUT powered by POE Adapter on E1 port, communicate with PC & E0 port communicate with PC via Controller by LAN Cable, communicate with PC via 2.4GHz & 5GHz Wi-Fi and communicate with mobile phone by Bluetooth
3.	Start to test.

3. 測試設備明細

電源端及電信端傳導干擾量測設備 / Conducted Emissions and Impedance Stabilization Network - SR2 :

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Two-Line V-Network	R&S	ENV216	MRTTWA00019	1 year	2020/3/25
Two-Line V-Network	R&S	ENV216	MRTTWA00020	1 year	2020/4/23
8-Wire ISN (T8-Cat6)	R&S	ENY81 CA6	MRTTWA00017	1 year	2020/4/23
8-Wire ISN (T8)	R&S	ENY81	MRTTWA00018	1 year	2020/4/23
EMI Test Receiver	R&S	ESR3	MRTTWA00045	1 year	2020/5/29
Conducted Cable	Rosnol	N1C50-RG400-B1C50-500CM	MRTTWE00013	1 year	2020/6/22
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00033	1 year	2020/5/30

輻射干擾測設備 / Radiated Disturbance - AC1 :

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Broadband TRILOG Antenna	SCHWARZBECK	VULB 9162	MRTTWA00001	1 year	2020/9/4
Active Loop Antenna	SCHWARZBECK	FMZB 1519B	MRTTWA00002	1 year	2021/4/27
Broadband Hornantenna	SCHWARZBECK	BBHA 9120D	MRTTWA00003	1 year	2021/4/24
Breitband Hornantenna	SCHWARZBECK	BBHA 9170	MRTTWA00004	1 year	2021/4/24
Broadband Preamplifier	SCHWARZBECK	BBV 9718	MRTTWA00005	1 year	2021/4/24
Broadband Amplifier	SCHWARZBECK	BBV 9721	MRTTWA00006	1 year	2021/4/24
Signal Analyzer	R&S	FSV40	MRTTWA00007	1 year	2021/3/24
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2021/3/25
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2020/10/2
EXA Signal Analyzer	KEYSIGHT	N9010B	MRTTWA00074	1 year	2021/7/14
Antenna Cable	HUBERSUHNER	SF106	MRTTWE00010	1 year	2021/6/16
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00032	1 year	2021/5/29
Cable	Rosnol	K1K50-UP026 4-K1K50-4M	MRTTWE00012	1 year	2021/6/21

RF 傳導量測設備：

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
X-Series USB Peak and Average Power Sensor	KEYSIGHT	U2021XA	MRTTWA00014	1 year	2020/4/23
X-Series USB Peak and Average Power Sensor	KEYSIGHT	U2021XA	MRTTWA00015	1 year	2021/3/26
Wideband Radio Communication Taster	R&S	CMW 500	MRTTWA00041	1 year	2021/1/7
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2020/10/2
EXA Signal Analyzer	KEYSIGHT	N9010B	MRTTWA00074	1 year	2020/7/11
Signal Analyzer	R&S	FSV40	MRTTWA00007	1 year	2021/3/24
Temperature & Humidity Chamber	TEN BILLION	TTH-B3UP	MRTTWA00036	1 year	2020/6/10
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00033	1 year	2020/5/30

測試軟體 / Test Software:

Software	Version	Function
e3	9.160520a	EMI Test Software
EMI	V 3	EMI Test Software

4. 量測不確定度

電源傳導量測-電源線 (Conducted Emission- Power Line)
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 0.15MHz~30MHz: $\pm 2.53\text{dB}$
輻射干擾量測 (Radiated Spurious Emission)
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 9kHz~30MHz: $\pm 3.92\text{dB}$ 30MHz~1GHz: $\pm 4.25\text{dB}$ 1GHz~18GHz: $\pm 4.40\text{dB}$ 18GHz~40GHz: $\pm 4.45\text{dB}$
頻率誤差量測 (Frequency Error)
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): $\pm 78.4\text{Hz}$
傳導功率量測 (Conducted Power)
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): $\pm 0.84\text{dB}$
傳導干擾量測 (Conducted Spurious Emission)
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): $\pm 2.65\text{ dB}$
佔用頻寬量測 (Occupied Bandwidth)
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 3.3%
溫度 / 濕度 (Temp. / Humidity)
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): $\pm 0.82^\circ\text{C} / \pm 3\%$
直流電源 (DC Voltage)
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): $\pm 0.3\%$

5. 測試結果

章節	量測項目	限制值	測試結果	測試數據
2.3	電源傳導	低功率射頻電機技術規範 2.3 節	符合	第 5.1 章節
3.10.1.2	峰值傳導輸出功率	$\leq 30.00\text{dBm}$	符合	第 5.2 章節
3.10.1.3	天線之要求	低功率射頻電機技術規範 3.10.1.3 節	符合	第 5.3 章節
3.10.1.5	帶外發射限制	$\leq 20\text{dBc (Peak)}$	符合	第 5.4 章節
2.7	輻射電場強度	低功率射頻電機技術規範 2.8 節	符合	第 5.5 章節
2.7	頻帶邊緣	$\leq 74\text{dBuV/m (Peak)}$ $\leq 54\text{dBuV/m (Average)}$	符合	第 5.6 章節
3.10.1.6(2)(A)	佔用頻寬	$\geq 500\text{kHz}$	符合	第 5.7 章節
3.10.1.6(2)(B)	功率頻譜密度	$\leq 8\text{dBm/3kHz}$	符合	第 5.8 章節

備註：符合性的判定是基於測試結果符合規範的限制值或客戶的宣告要求，測試結果的判定是不考慮測量不確定度的值。

5.1. 電源傳導測試

5.1.1. 量測方法

待測物放置於1m*2m*0.8m之非導體桌面並離垂直牆面40cm（落地型產品置於地上），將待測物之電源線接至電源阻抗網路器(LISN)，同時保持待測物至LISN距80公分，並將電源線多餘部份以30至40公分之八字形捆綁於電源線中央並離地40cm，於在正常工作狀態下，執行待測物之火線(Line)及地線(neutral)各一次量測。

電源端點場強之測量範圍由 0.15MHz –30MHz，所量測之讀值皆為準尖峰值(Quasi-Peak Value)及平均值(Average Value)。場強接收機之解析頻寬為9kHz。

備註：經初測驗證過，電源端點干擾測試對測試頻道數並無明顯差異，因此檢附其中一個測試頻道之測試數。

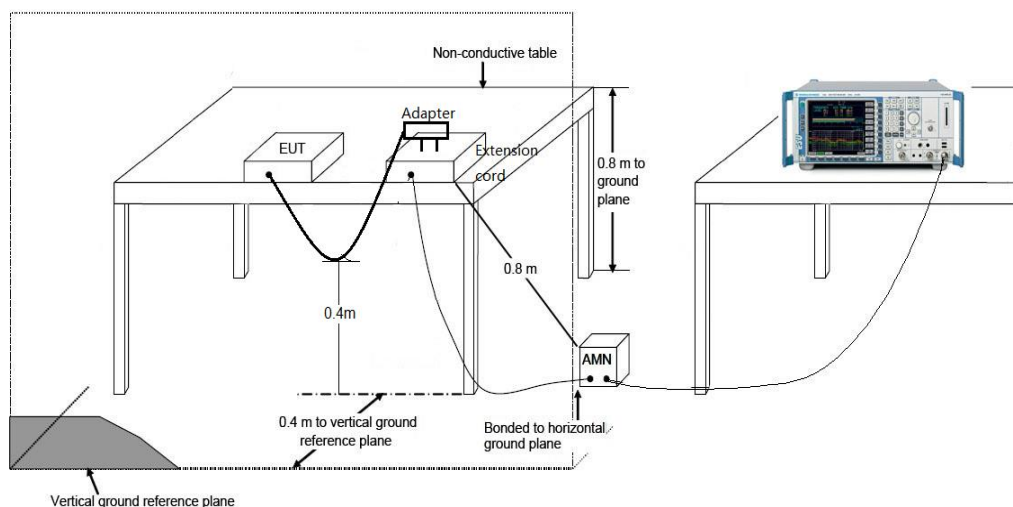
5.1.2. 限制要求

以市電為電源之低功率射頻電機，其傳導回電源線上頻率自150kHz至30MHz之射頻電壓(在電源端子每一電源線對接地點)應小於或等於下表所列之限值。測量時應經過50微亨利(μH)及50歐姆(Ω)之電源線阻抗模擬網路(LISN)。頻率重疊處，以較低限值為準。

Frequency 頻率範圍 MHz	傳導限制值(dBuV)	
	準尖峰值	平均值
0.15 - 0.50	66-56 _(註)	56-46 _(註)
0.50-5.0	56	46
5.0 - 30	60	50

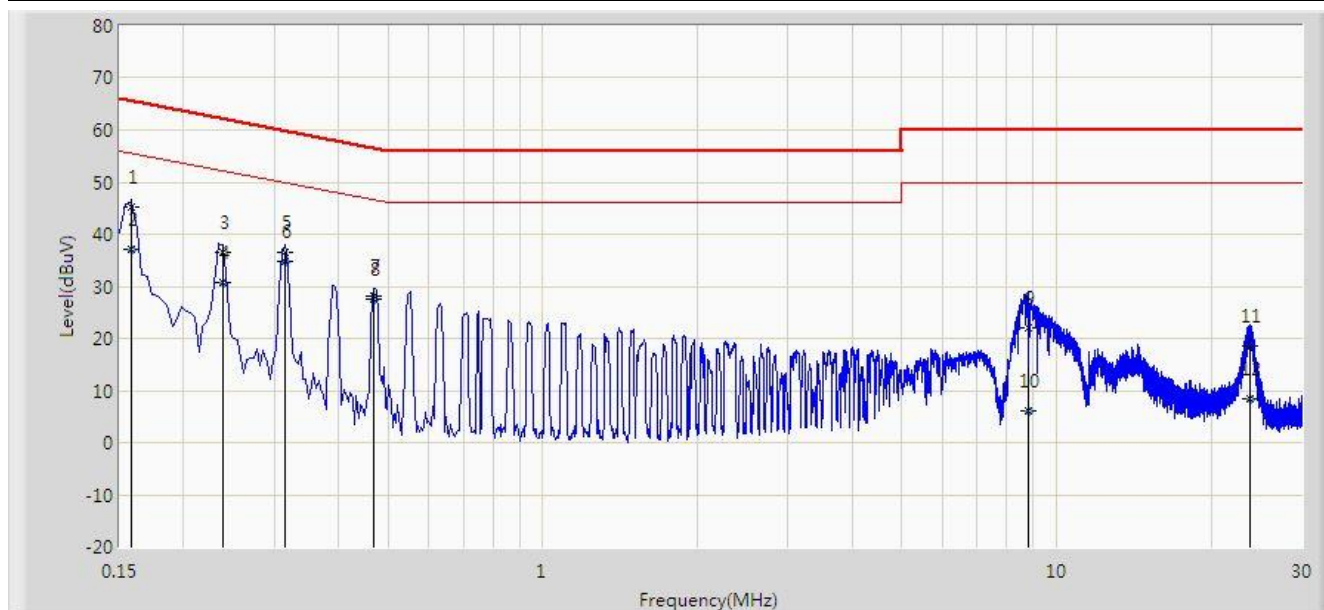
註:隨頻率之對數遞減

5.1.3. 測試架構圖



5.1.4. 電源傳導測試結果

Site: SR2	Time: 2020/03/21 - 18:27
Limit: NCC LP0002_CE_0.15MHz-30MHz	Engineer: Kevin Ker
Probe: CE_ENV216-L1 (Filter ON)	Polarity: Line
EUT: ACCESS POINT	Power: AC 110V/60Hz
Test Mode 1 (APEX0574)	

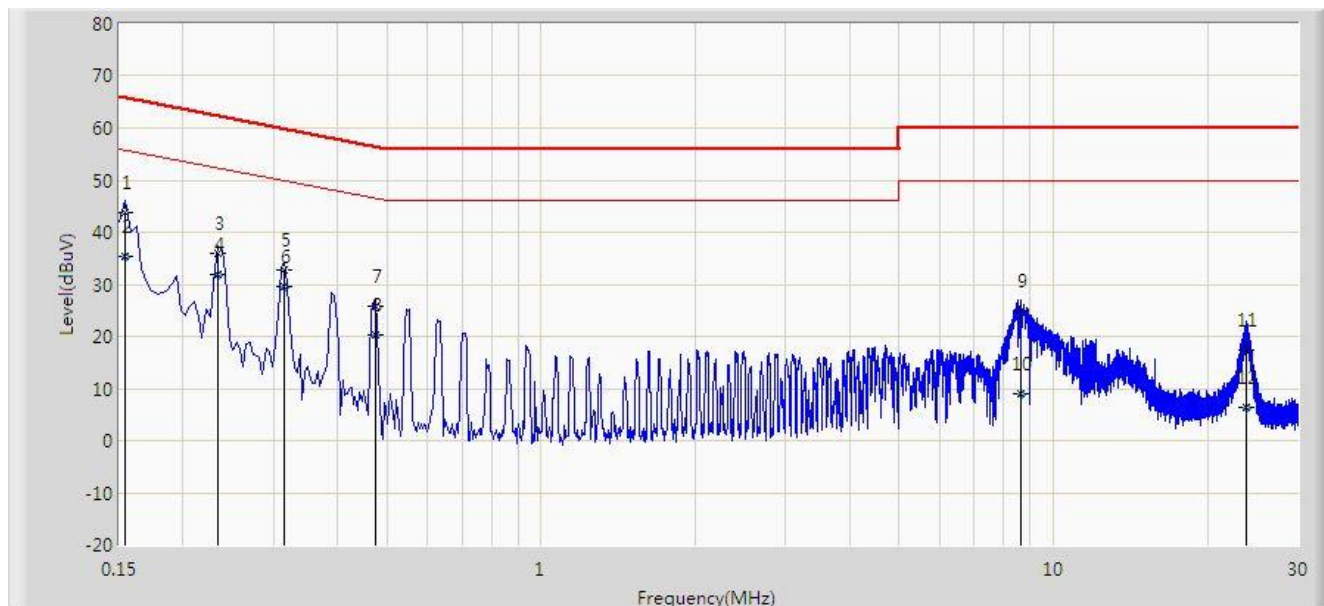


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV)	Factor (dB)	Type
1			0.158	45.110	34.799	-20.459	65.568	10.311	QP
2			0.158	37.062	26.751	-18.506	55.568	10.311	AV
3			0.238	36.524	26.570	-25.642	62.166	9.954	QP
4			0.238	30.609	20.655	-21.557	52.166	9.954	AV
5			0.314	36.636	26.621	-23.228	59.864	10.015	QP
6		*	0.314	34.902	24.887	-14.962	49.864	10.015	AV
7			0.470	28.134	17.992	-28.380	56.514	10.142	QP
8			0.470	27.465	17.323	-19.049	46.514	10.142	AV
9			8.790	22.030	11.866	-37.970	60.000	10.164	QP
10			8.790	6.217	-3.947	-43.783	50.000	10.164	AV
11			23.718	18.596	8.405	-41.404	60.000	10.191	QP
12			23.718	8.500	-1.691	-41.500	50.000	10.191	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB)

Site: SR2	Time: 2020/03/21 - 18:25
Limit: NCC LP0002_CE_0.15MHz-30MHz	Engineer: Kevin Ker
Probe: CE_ENV216-N (Filter ON)	Polarity: Neutral
EUT: ACCESS POINT	Power: AC 110V/60Hz
Test Mode 1 (APEX0574)	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.154	43.734	33.018	-22.048	65.781	10.716	QP
2			0.154	35.225	24.509	-20.556	55.781	10.716	AV
3			0.234	35.915	25.926	-26.391	62.307	9.989	QP
4			0.234	31.975	21.986	-20.332	52.307	9.989	AV
5			0.314	32.861	22.813	-27.003	59.864	10.048	QP
6		*	0.314	29.540	19.492	-20.324	49.864	10.048	AV
7			0.474	25.695	15.527	-30.749	56.444	10.167	QP
8			0.474	20.363	10.195	-26.081	46.444	10.167	AV
9			8.634	24.915	14.716	-35.085	60.000	10.198	QP
10			8.634	9.093	-1.105	-40.907	50.000	10.198	AV
11			23.802	17.352	7.080	-42.648	60.000	10.271	QP
12			23.802	6.483	-3.789	-43.517	50.000	10.271	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB)

5.2. 峰值傳導輸出功率

5.2.1. 量測方法

待測物之天線埠經由適當之衰減直接連至頻譜分析儀RF輸入端，設定頻譜分析儀之解析度頻寬大於6dB發射頻寬或使用峰值功率表。除使用上述測量方式外，並得使用以最大傳導輸出功率作為測量方式。

5.2.2. 限制要求

國家通訊傳播委員會低功率射頻電機技術規範之第3.10.1.2節，峰值傳導輸出功率：

操作於 2400 MHz～2483.5 MHz 者

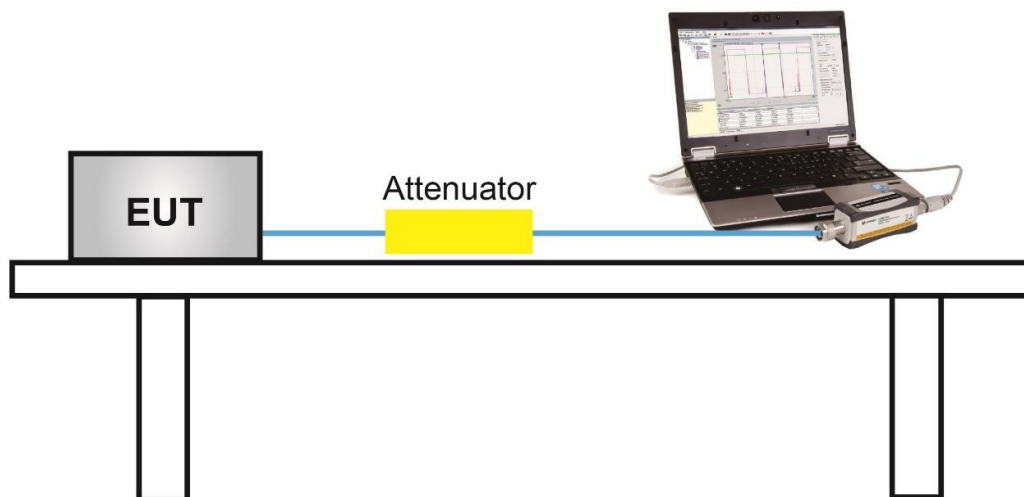
(A) 至少使用75 個跳頻頻道之跳頻系統：1 W(含)以下。

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

(C) 數位調變技術系統：1 W(含) 以下。

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

5.2.3. 測試架構圖



5.2.4. 峰值傳導輸出功率測試結果

待測物名稱	ACCESS POINT	測試日期	2020/3/30
待測物型號	APEX0574	溫度 / 濕度	27°C / 65%
測試場地 / 測試工程師	AC1 / Kevin		

Test Mode	Channel No.	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)
Bluetooth-LE	00	2402	7.11	≤ 30
Bluetooth-LE	19	2440	7.29	≤ 30
Bluetooth-LE	39	2480	7.45	≤ 30

Test Mode	Channel No.	Frequency (MHz)	Average Power (dBm)	Limit (dBm)
Bluetooth-LE	00	2402	7.06	≤ 30
Bluetooth-LE	19	2440	7.21	≤ 30
Bluetooth-LE	39	2480	7.37	≤ 30

備註：此 Average Power 量測值僅用於 Health 評估。

待測物名稱	ACCESS POINT	測試日期	2020/3/30
待測物型號	APEX0577	溫度 / 濕度	27°C / 65%
測試場地 / 測試工程師	AC1 / Kevin		

Test Mode	Channel No.	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)
Bluetooth-LE	00	2402	6.41	≤ 30
Bluetooth-LE	19	2440	6.47	≤ 30
Bluetooth-LE	39	2480	6.51	≤ 30

Test Mode	Channel No.	Frequency (MHz)	Average Power (dBm)	Limit (dBm)
Bluetooth-LE	00	2402	6.30	≤ 30
Bluetooth-LE	19	2440	6.35	≤ 30
Bluetooth-LE	39	2480	6.42	≤ 30

備 註：此 Average Power 量測值僅用於 Health 評估。

待測物名稱	ACCESS POINT	測試日期	2020/3/30
待測物型號	APEX0575	溫度 / 濕度	27°C / 65%
測試場地 / 測試工程師	AC1 / Kevin		

Test Mode	Channel No.	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)
Bluetooth-LE	00	2402	6.32	≤ 30
Bluetooth-LE	19	2440	6.40	≤ 30
Bluetooth-LE	39	2480	6.43	≤ 30

Test Mode	Channel No.	Frequency (MHz)	Average Power (dBm)	Limit (dBm)
Bluetooth-LE	00	2402	6.22	≤ 30
Bluetooth-LE	19	2440	6.29	≤ 30
Bluetooth-LE	39	2480	6.33	≤ 30

備註：此 Average Power 量測值僅用於 Health 評估。

5.3. 天線之要求

5.3.1. 限制要求

依據國家通訊傳播委員會低功率射頻電機技術規範之第3.10.1.4節規定，天線之規格可不受下述規定之限制。

低功率射頻電機之發射機或收發信機所使用之天線，應為全固定、半固定式或以獨特之耦合(unique coupling)方式連接機體。製造者可設計供使用者因損壞而替換之天線，但不得設計或使用原認證以外之天線或可供引接各類電纜之標準天線插座或電氣連接頭，如：BNC、F type、N type、M type、UG type、RCA、SMA、SMB...等及其他各類工業或通訊標準接頭。

5.3.2. 天線樣式

此 ACCESS POINT 其天線檢附天線規格書

Model No.: APEX0574

Antenna No.	Antenna Type	Frequency Band (GHz)	Model No. (Brand: Aruba)	Max Peak Gain (dBi)	30 Degree Ant Gain (dBi)	BF Dir Gain (dBi)	CDD Dir Gain (dBi)	
							For Power	For PSD
Wi-Fi External Antenna List (2.4GHz 2*2 MIMO, 5GHz 4*4 MIMO)								
1 (Note 3)	Omni	2.4	ANT-2x2-2005	5.0	N/A	5.0	5.0	5.0
2 (Note 3)	Omni	5	ANT-2x2-5005	5.0	0	8.01	5.0	8.01
3 (Note 3)	Omni	5	ANT-2x2-5010	10.0	0	13.01	10.0	13.01
4 (Note 3)	Directional	2.4	ANT-2x2-2314	14.0	N/A	14.0	14.0	14.0
5 (Note 3)	Directional	5	ANT-3x3-5712	11.5	1.5	14.51	11.5	14.51
6 (Note 3)	Directional	5	ANT-4x4-5314	14.0	6.0	17.01	14.0	17.01
7 (Note 3)	Directional	5	(Brand: MTI) MT-484052/NVH	16.0	3.0	19.01	16.0	19.01
8 (Note 3)	Directional	2.4	ANT-3x3-D608	7.5	N/A	10.51	7.5	10.51
		5		7.5	4.5	10.51	7.5	10.51
9 (Note 3)	Directional	2.4	ANT-3x3-D100	5.0	N/A	8.01	5.0	8.01
		5		5.0	4.0	8.01	5.0	8.01
Bluetooth Internal Antenna (Brand : Aruba/ 型號: ANT-574)								
PCB		2.4		4.2				

Model No.: APEX0577

Antenna Type (Brand : Aruba / Model No. :ANT-577)	Frequency Band (GHz)	Max Peak Gain (dBi)	30 Degree Ant Gain (dBi)	BF Dir Gain (dBi)	CDD Dir Gain (dBi)	
					For Power	For PSD
Wi-Fi Internal Antenna List (2.4GHz 2*2 MIMO, 5GHz 4*4 MIMO)						
Directional (Note 3)	2.4	6.8	N/A	6.80	6.8	6.80
Directional (Note 3)	5	5.6	5.6	8.60	5.6	8.60
Bluetooth Internal Antenna						
PCB	2.4	8.4				

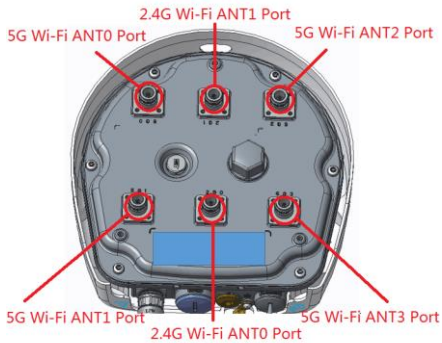
Model No.: APEX0575

Antenna Type (Brand : Aruba / Model No. :ANT-575)	Frequency Band (GHz)	Max Peak Gain (dBi)	30 Degree Ant Gain (dBi)	BF Dir Gain (dBi)	CDD Dir	
					Gain (dBi)	
					For Power	For PSD
Wi-Fi Internal Antenna List (2.4GHz 2*2 MIMO, 5GHz 4*4 MIMO)						
Omni (Note 3)	2.4	3.4	N/A	3.4	3.4	3.4
Omni (Note 3)	5	5.0	-2.7	8.0	5.0	8.0
Bluetooth Internal Antenna						
PCB	2.4	6.0				

Note:

- The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.
- For CDD transmissions, directional gain is calculated as follows, $N_{ANT} = 2$ or 4 , $N_{SS} = 1$.
If all antennas have the same gain, G_{ANT} , Directional gain = $G_{ANT} + \text{Array Gain}$, where Array Gain is as follows.
 - For power spectral density (PSD) measurements on all devices,
Array Gain = $10 \log (N_{ANT} / N_{SS})$ dB = 3.01;
 - For power measurements on IEEE 802.11 devices,
Array Gain = 0 dB for $N_{ANT} \leq 4$;
Abbreviation "Dir" means directional.
- The EUT also supports Beam Forming mode, and the Beam Forming support 802.11n/ac/ax, not include 802.11a/b/g.
Directional gain = $G_{ANT} + \text{BF Gain}$, BF Gain was declared by the applicant.
- These antennas have Cross-Polarized design, only each two outputs driving a pair of antennas that are cross-polarized, the detail see the antenna specification.

5.3.3. 天線端口描述

Antenna RF Port						
--	2.4GHz RF Port		5GHz RF Port			
Software Control Port	Ant 0	Ant 1	Ant 0	Ant 1	Ant 2	Ant 3
APEX0574						
 Diagram of APEX0574 antenna ports. Labels include: 5G Wi-Fi ANT0 Port, 2.4G Wi-Fi ANT1 Port, 5G Wi-Fi ANT2 Port, 5G Wi-Fi ANT1 Port, 2.4G Wi-Fi ANT0 Port, and 5G Wi-Fi ANT3 Port.			 Photo of APEX0574 antenna ports. Label includes: BLE/ZigBee Port.			
APEX0577			APEX0575			
 Photo of APEX0577 antenna ports. Labels include: 2.4G/5G Wi-Fi ANT0 Port, 2.4G/5G Wi-Fi ANT1 Port, 5G Wi-Fi ANT2 Port, 5G Wi-Fi ANT3 Port, and BLE/ZigBee Port.			 Photo of APEX0575 antenna ports. Labels include: 2.4G/5G Wi-Fi ANT0 Port, 2.4G/5G Wi-Fi ANT1 Port, 5G Wi-Fi ANT2 Port, 5G Wi-Fi ANT3 Port, and BLE/ZigBee Port.			

5.4. 帶外發射限制

5.4.1. 量測方法

待測物之天線埠經由適當之衰減直接連至頻譜分析儀 RF 輸入端，

- (1) 頻率掃描範圍足以檢測頻帶內的發射波峰位準以及由受測物產生之最低頻率到第 10 次諧波的所有混附發射，通常需要分幾段以涵蓋全部頻率範圍。
- (2) 解析頻寬為 100 kHz，視訊頻寬不小於解析頻寬。
- (3) 掃描時間為自動，檢波功能為峰值，訊號軌跡為最大保留(Max Hold)。
- (4) 將標記設定於任何欲紀錄之波峰上，所顯示之位準值必須符合指定之限制值。

備註

解析頻寬設置為 1.3 MHz 是為了提供量測速度。

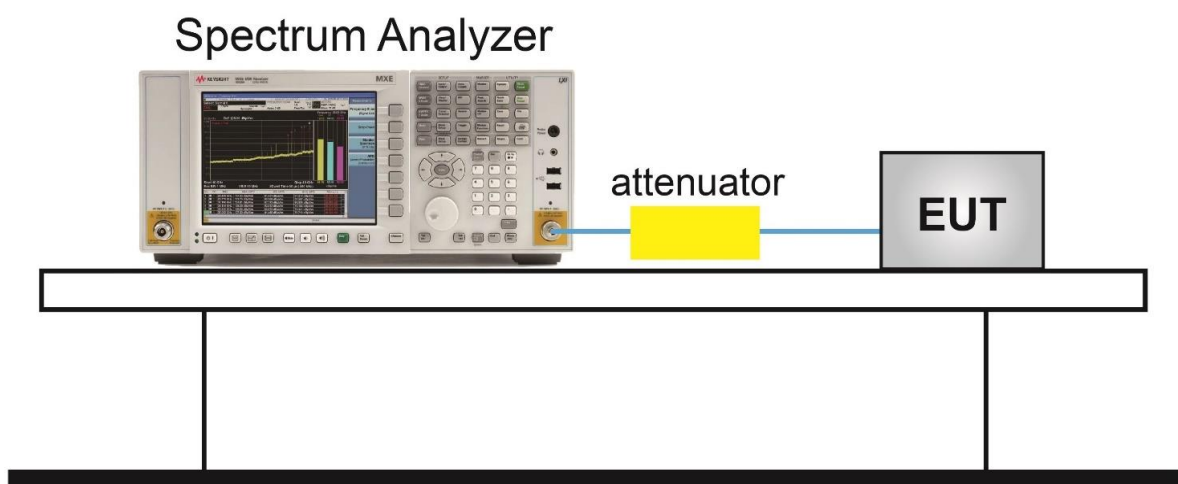
使用限值還是法規定義的基於解析頻寬 100 kHz 情形下主波下降 20dB,如果量測波形接近限值，我們會使用降低解析頻寬方式作驗證。

5.4.2. 限制要求

使用頻帶範圍外之任意 100 千赫 (kHz)內，發射器所產生的射頻功率相較於使用頻帶範圍中包含最高所需功率之 100 千赫 (kHz)內的射頻功率，衰減值限制如下：

- (1) 輸出功率以低功率射頻電機技術規範附件二之峰值輸出功率方式量測者，至少須衰減 20 dB，可使用射頻傳導或輻射方式測量。
- (2) 輸出功率以數位調變技術系統之最大傳導輸出功率量測方式者，至少須衰減 30 dB。
- (3) 若落於禁用頻段之輻射發射，應符合低功率射頻電機技術規範第 2.8 節之規定。

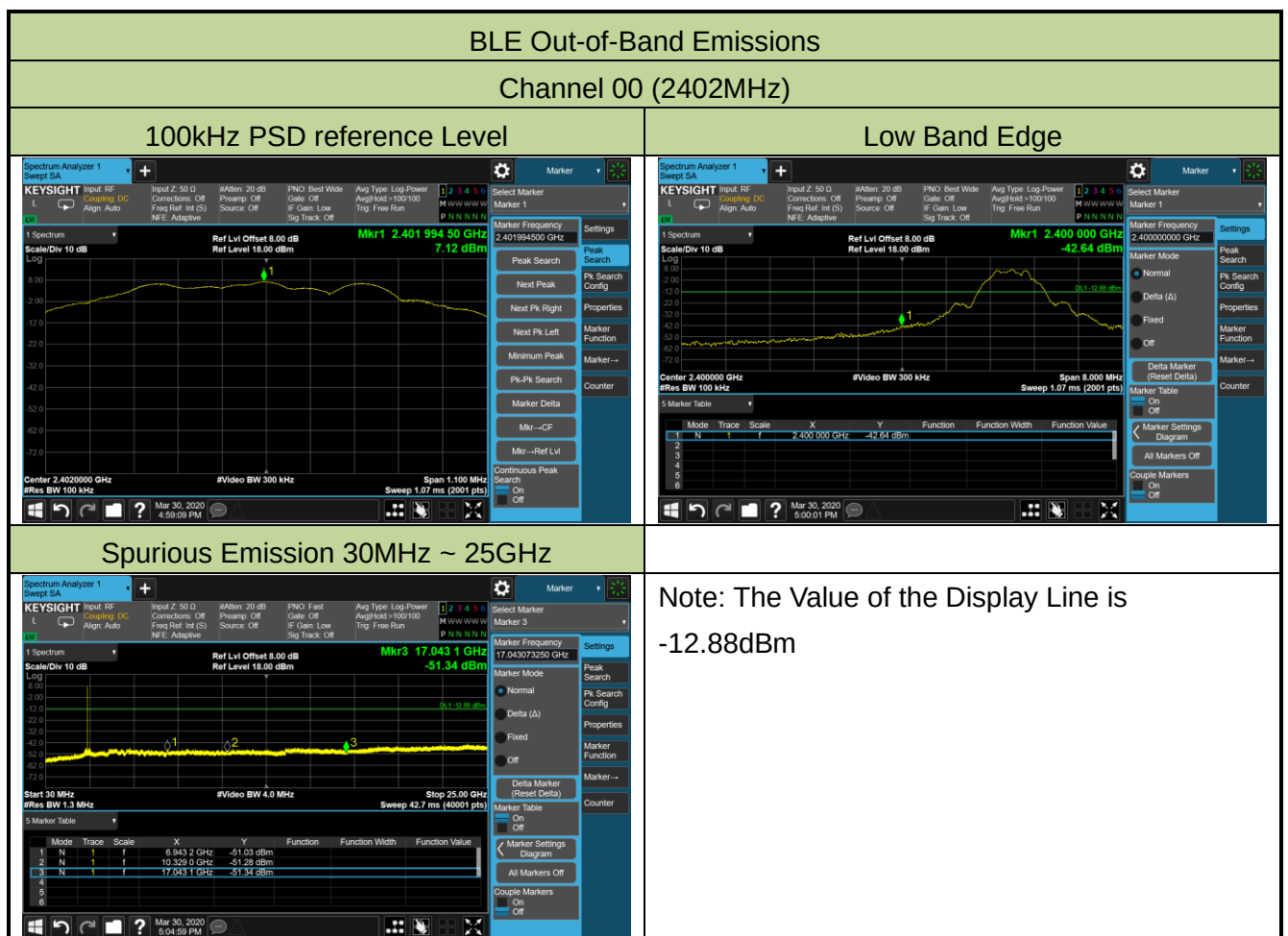
5.4.3. 測試架構圖



5.4.4. 帶外輻射測試結果

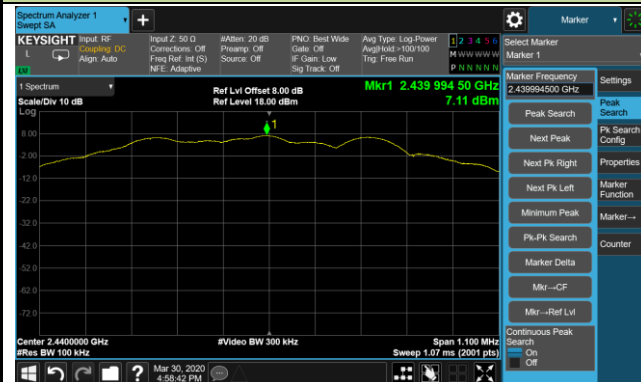
待測物名稱	ACCESS POINT	測試日期	2020/03/30
待測物型號	APEX0574	溫度 / 濕度	27°C / 65%
測試場地	SR2	測試工程師	Kevin Ker

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Limit	Result
BLE	1	00	2402	20dBc	Pass
BLE	1	19	2440	20dBc	Pass
BLE	1	39	2480	20dBc	Pass

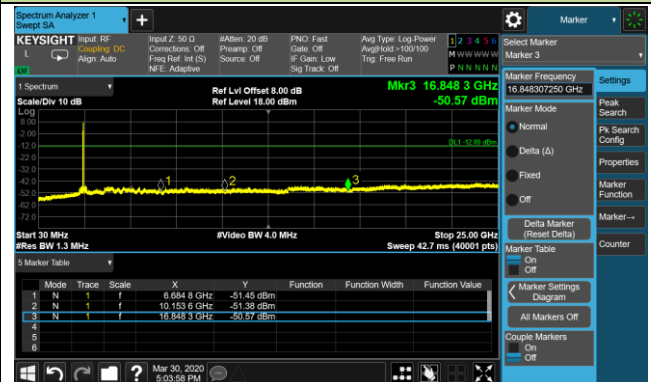


Channel 19 (2440MHz)

100kHz PSD reference Level



Spurious Emission 30MHz ~ 25GHz



Note: The Value of the Display Line is -12.89dBm

Channel 39 (2480MHz)

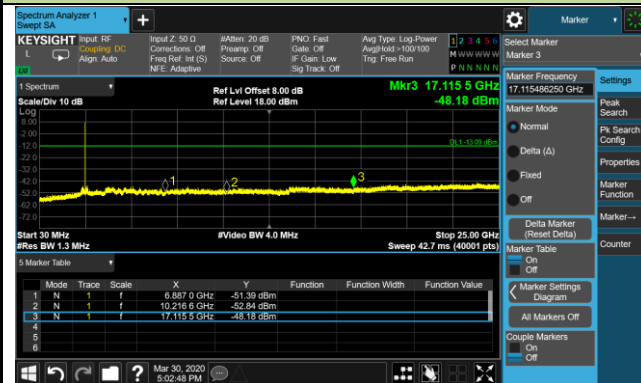
100kHz PSD reference Level



High Band Edge



Spurious Emission 30MHz ~ 25GHz



Note: The Value of the Display Line is -13.09dBm

5.5. 輻射電場強度

5.5.1. 量測方法

待測物置於非導體桌面（落地型產品置於地上），受測物使用交流電源時，將其與任何配件設備之電源線連接至位於旋轉桌的交流電源。受測物使用電池時，測試時應裝置新電池或充電完全的電池。受測物與配件設備之電源線無須束綁，桌面上受測設備的所有電源線由桌子的後緣垂下沿旋轉桌表面接至交流插座。落地型設備的交流電源線可以方便的型態走線。桌面可 360 度旋轉，接收天線置於距待測物 3m 距離，高度可在 1 至 4 公尺間變動，以量測待測物之最大輻射電場強度，接收天線並應於水準及垂直極化方向各量測一次。（待測物擺設方式根據 ANSI C63.10-2013 版本，待測物放置桌中心，1G 以下擺設高度為 80cm/1G 以上擺設高度為 150cm）

- (1) 任一頻率小於或等於 1000 MHz 之訊號,使用 CISPR 準峰值檢波器
- (2) 任一頻率大於 1000 MHz 之訊號，使用平均值檢波器測量，當規定之發射限制值為平均值時(含 1000 MHz 以下)，受測訊號藉由峰值檢波器(RBW:1MHz,VBW:3MHz)所測量之峰值，亦須符合峰值發射限制值，其峰值發射限制值為最大容許平均值加 20 dB。

5.5.2. 限制要求

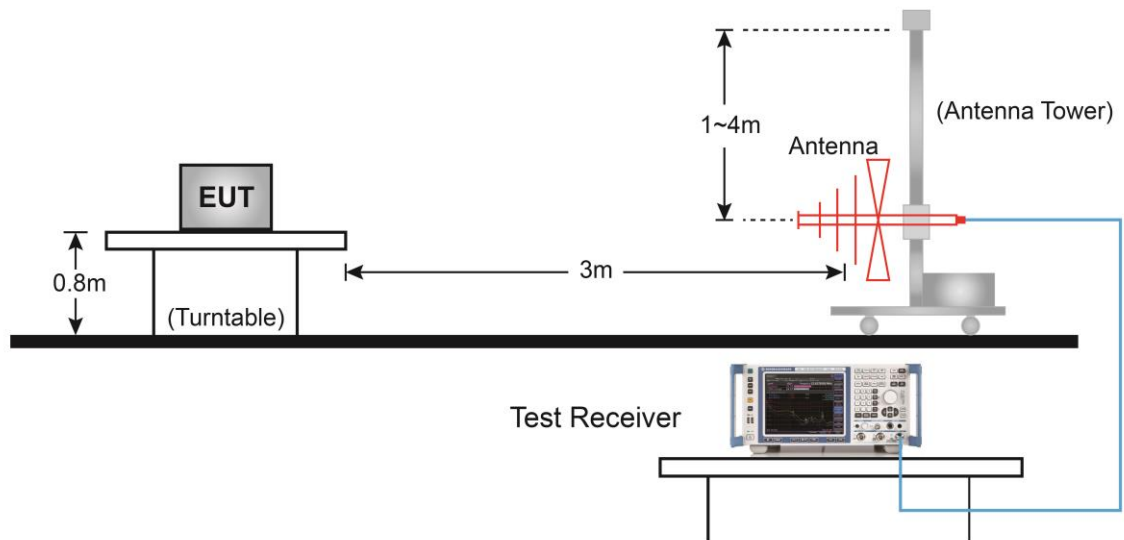
其電場強度不得超過下表之限值，且其不必要之發射皆不得大於主波發射強度。各頻段重疊處，以較嚴格之限制值為準。

頻 率 (MHz)	電場強度(uV/m)	測距(m)
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

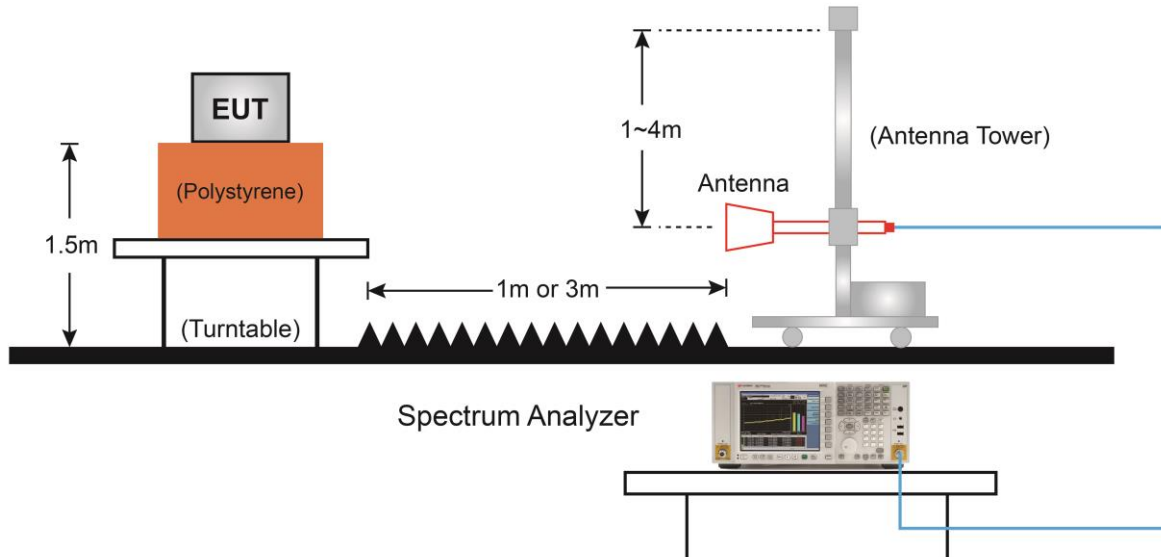
上表規定之電場強度，頻率在 9-90kHz 千赫(kHz)、110-490 千赫(kHz)以及 1000 兆赫(MHz)以上之發射，其量測以平均值檢波器為基準，且須符合低功率射頻電機技術規範第 5.15.2 節之規定；其他頻率之發射，應以 CISPR 準峰值(quasi-peak) 檢波器測量；非以上表所指定之距離測量時須符合低功率射頻電機技術規範第 5.5 節之規定，而輻射發射之量測頻率範圍須符合低功率射頻電機技術規範第 5.14 節之規定。

5.5.3. 測試架構圖

Below 1GHz Test Setup:



Above 1GHz Test Setup:



5.5.4. 輻射電場強度測試結果

Product	ACCESS POINT	Temperature	26°C
Test Engineer	Kevin Ker	Relative Humidity	56%
Test Site	AC1	Test Date	2020/03/30
Model No.	APEX0574	Test Channel	00
Remark	1. Average measurement was not performed if peak level lower than average limit. So the margin was calculated using the average limit for emissions fall within the restricted bands. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	4085.5	40.4	0.5	40.9	54.0	-13.1	PK	Horizontal
	4799.5	41.7	3.1	44.8	54.0	-9.2	PK	Horizontal
*	5938.5	38.9	5.6	44.5	81.4	-36.9	PK	Horizontal
*	6567.5	37.5	8.1	45.6	81.4	-35.8	PK	Horizontal
	3975.0	42.2	0.0	42.2	54.0	-11.8	PK	Vertical
	4859.0	39.4	3.3	42.7	54.0	-11.3	PK	Vertical
*	5734.5	38.9	4.8	43.7	81.4	-37.7	PK	Vertical
*	6627.0	37.5	8.4	45.9	81.4	-35.5	PK	Vertical

Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (101.4dBμV/m) or LP0002 clause 2.8 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Product	ACCESS POINT	Temperature	26°C
Test Engineer	Kevin Ker	Relative Humidity	56%
Test Site	AC1	Test Date	2020/03/30
Model No.	APEX0574	Test Channel	19
Remark	1. Average measurement was not performed if peak level lower than average limit. So the margin was calculated using the average limit for emissions fall within the restricted bands. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	4196.0	40.7	1.0	41.7	54.0	-12.3	PK	Horizontal
	5063.0	39.9	3.6	43.5	54.0	-10.5	PK	Horizontal
*	6142.5	38.1	6.3	44.4	81.7	-37.3	PK	Horizontal
*	6610.0	37.2	8.3	45.5	81.7	-36.2	PK	Horizontal
	4009.0	41.4	0.1	41.5	54.0	-12.5	PK	Vertical
	4825.0	40.9	3.2	44.1	54.0	-9.9	PK	Vertical
*	5972.5	38.7	5.7	44.4	81.7	-37.3	PK	Vertical
*	6678.0	37.4	8.7	46.1	81.7	-35.6	PK	Vertical

Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (101.7dBμV/m) or LP0002 clause 2.8 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Product	ACCESS POINT	Temperature	26°C
Test Engineer	Kevin Ker	Relative Humidity	56%
Test Site	AC1	Test Date	2020/03/30
Model No.	APEX0574	Test Channel	39
Remark	1. Average measurement was not performed if peak level lower than average limit. So the margin was calculated using the average limit for emissions fall within the restricted bands. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	4204.5	40.4	1.1	41.5	54.0	-12.5	PK	Horizontal
	4859.0	39.5	3.3	42.8	54.0	-11.2	PK	Horizontal
*	5947.0	39.3	5.6	44.9	82.5	-37.6	PK	Horizontal
*	6652.5	36.9	8.6	45.5	82.5	-37.0	PK	Horizontal
	3992.0	41.2	0.1	41.3	54.0	-12.7	PK	Vertical
	4808.0	39.2	3.2	42.4	54.0	-11.6	PK	Vertical
*	5947.0	39.0	5.6	44.6	82.5	-37.9	PK	Vertical
*	6584.5	37.0	8.2	45.2	82.5	-37.3	PK	Vertical

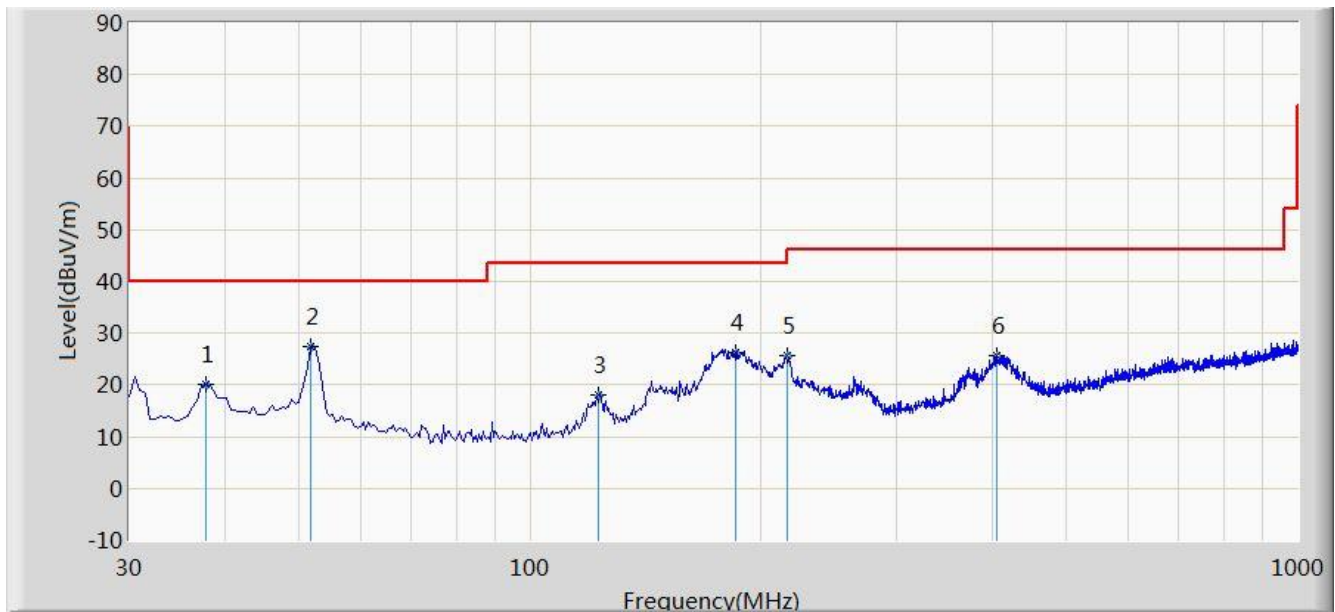
Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (102.5dBμV/m) or LP0002 clause 2.8 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

The Worst Case of Radiated Emission below 1GHz:

Site: AC1	Time: 2020/03/05 - 15:02
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: VULB 9162	Polarity: Horizontal
EUT: ACCESS POINT (APEX0574)	Power: By PoE
Worse Case Mode: Transmit by BLE at channel 2402MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			37.760	20.212	0.287	-19.788	40.000	19.925	QP
2		*	51.825	27.543	6.179	-12.457	40.000	21.364	QP
3			122.635	18.120	1.428	-25.380	43.500	16.691	QP
4			184.715	26.237	8.281	-17.263	43.500	17.956	QP
5			215.755	25.701	6.860	-17.799	43.500	18.841	QP
6			404.905	25.739	1.507	-20.261	46.000	24.232	QP

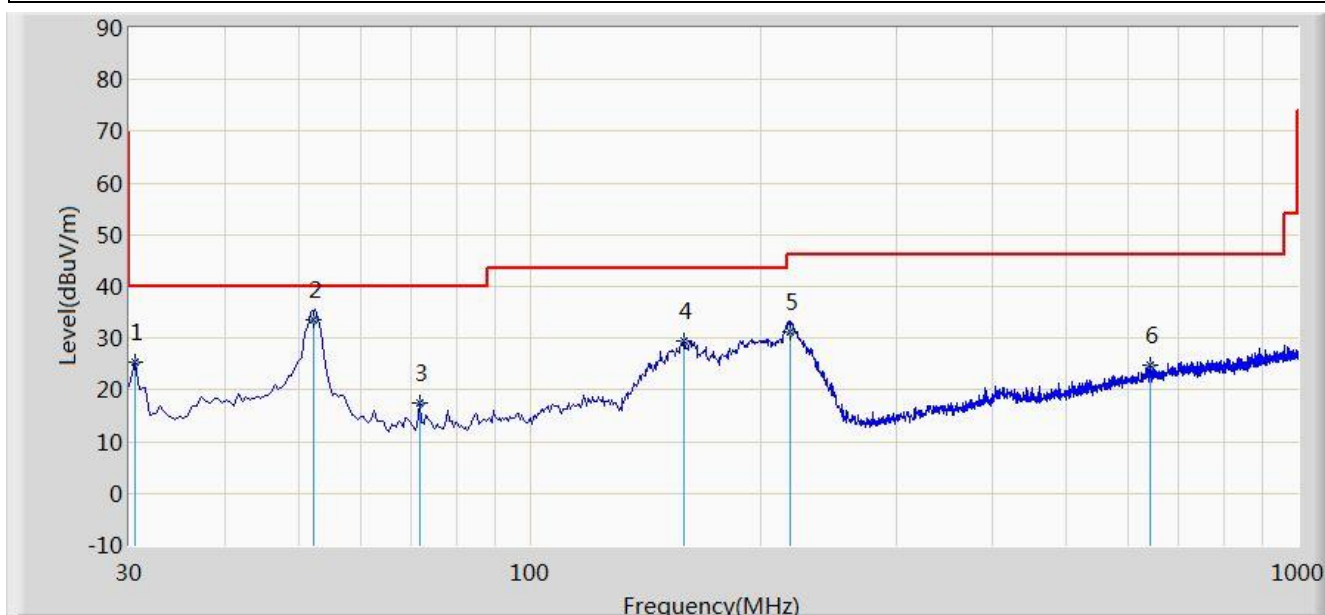
Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

Note 3: 經初測驗證過，1GHz 以下輻射干擾測試對測試頻道數並無差異，故僅檢附最差狀況之測試頻道。

Site: AC1	Time: 2020/03/16 - 19:20
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: VULB 9162	Polarity: Vertical
EUT: ACCESS POINT (APEX0574)	Power: By PoE
Worse Case Mode: Transmit by BLE at channel 2402MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			30.485	25.257	7.175	-14.743	40.000	18.082	QP
2		*	52.230	33.642	12.340	-6.358	40.000	21.303	QP
3			71.710	17.573	1.516	-22.427	40.000	16.057	QP
4			158.525	29.421	13.355	-14.079	43.500	16.067	QP
5			217.670	31.154	12.230	-14.846	46.000	18.923	QP
6			643.040	24.684	-3.514	-21.316	46.000	28.198	QP

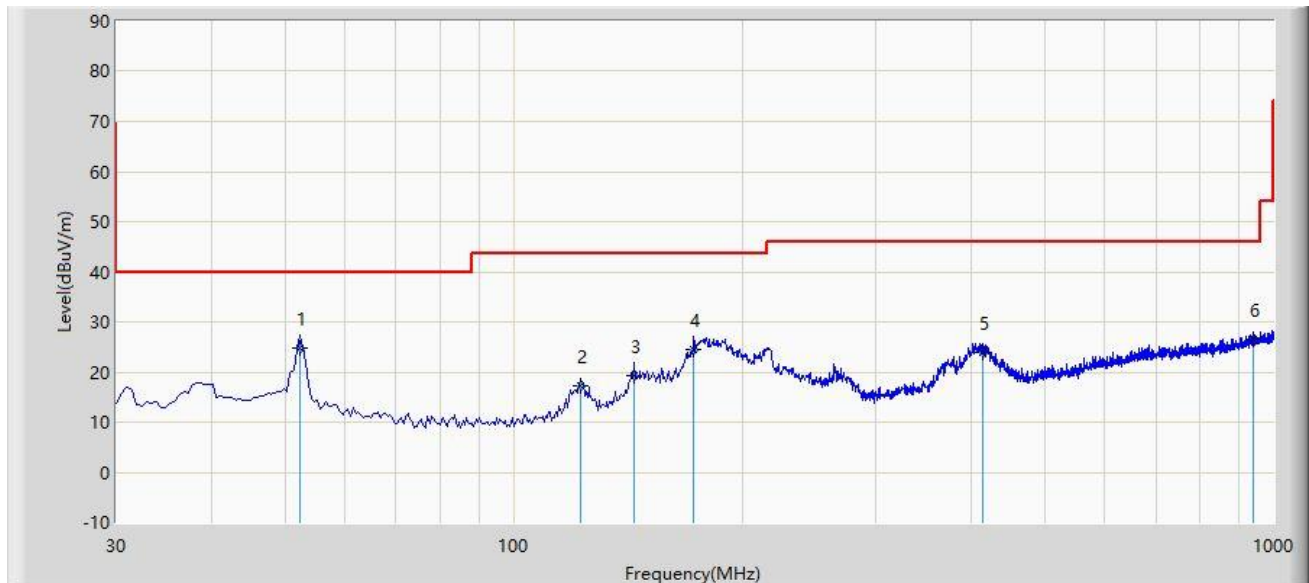
Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

Note 3: 經初測驗證過，1GHz 以下輻射干擾測試對測試頻道數並無差異，故僅檢附最差狀況之測試頻道。

Site: AC1	Time: 2020/08/10 - 09:18
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: VULB 9162	Polarity: Horizontal
EUT: APEX0574	Power: By PoE
Test Mode: Normal Operation	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	52.320	24.799	3.510	-15.201	40.000	21.288	QP
2			122.650	17.190	0.500	-26.310	43.500	16.690	QP
3			143.950	19.156	3.590	-24.344	43.500	15.567	QP
4			172.550	24.617	8.030	-18.883	43.500	16.587	QP
5			414.650	23.793	-0.580	-22.207	46.000	24.374	QP
6			939.850	26.411	-5.290	-19.589	46.000	31.701	QP

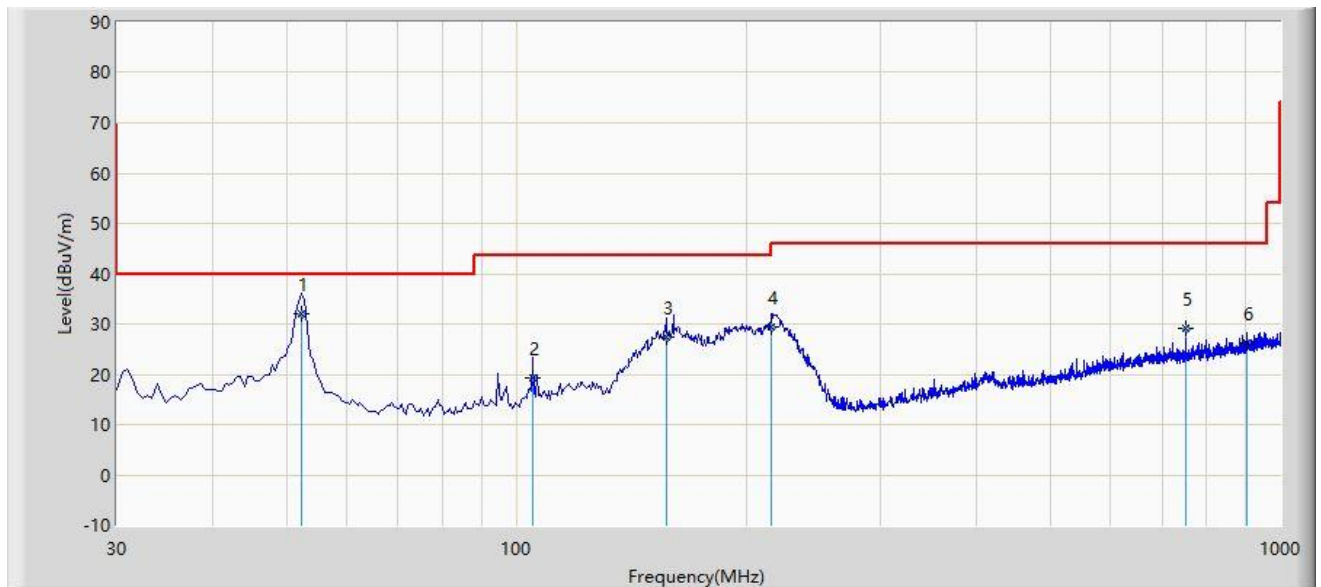
Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

Note 3: 經初測驗證過，1GHz 以下輻射干擾測試對測試頻道數並無差異，故僅檢附最差狀況之測試頻道。

Site: AC1	Time: 2020/08/10 - 09:20
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: VULB 9162	Polarity: Vertical
EUT: APEX0574	Power: By PoE
Test Mode: Normal Operation	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	52.350	32.064	10.780	-7.936	40.000	21.285	QP
2			105.150	19.351	0.180	-24.149	43.500	19.171	QP
3			157.050	27.496	11.480	-16.004	43.500	16.016	QP
4			215.250	29.308	10.490	-14.192	43.500	18.818	QP
5			752.600	29.255	-0.580	-16.745	46.000	29.836	QP
6			904.950	26.119	-5.380	-19.881	46.000	31.499	QP

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

Note 3: 經初測驗證過，1GHz 以下輻射干擾測試對測試頻道數並無差異，故僅檢附最差狀況之測試頻道。

Product	ACCESS POINT	Temperature	26°C
Test Engineer	Kevin Ker	Relative Humidity	56%
Test Site	AC1	Test Date	2020/03/30
Model No.	APEX0575	Test Channel	00
Remark	1. Average measurement was not performed if peak level lower than average limit. So the margin was calculated using the average limit for emissions fall within the restricted bands. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3907.0	41.9	-0.2	41.7	54.0	-12.3	PK	Horizontal
	4833.5	39.7	3.2	42.9	54.0	-11.1	PK	Horizontal
*	5887.5	38.9	5.4	44.3	85.0	-40.7	PK	Horizontal
*	6958.5	36.8	10.4	47.1	85.0	-37.9	PK	Horizontal
	4179.0	40.6	1.0	41.5	54.0	-12.5	PK	Vertical
	4808.0	43.4	3.2	46.6	54.0	-7.4	PK	Vertical
*	5777.0	39.4	4.9	44.4	85.0	-40.6	PK	Vertical
*	6465.5	38.2	7.6	45.8	85.0	-39.2	PK	Vertical

Note 1: "*" is not in restricted band, its limit is 20dBc of the fundamental emission level (105.0dBμV/m) or LP0002 clause 2.8 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Product	ACCESS POINT	Temperature	26°C
Test Engineer	Kevin Ker	Relative Humidity	56%
Test Site	AC1	Test Date	2020/03/30
Model No.	APEX0575	Test Channel	19
Remark	1. Average measurement was not performed if peak level lower than average limit. So the margin was calculated using the average limit for emissions fall within the restricted bands. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3949.5	42.2	-0.1	42.2	54.0	-11.8	PK	Horizontal
	4927.0	39.6	3.4	43.0	54.0	-11.0	PK	Horizontal
*	5836.5	39.5	5.2	44.7	84.7	-40.0	PK	Horizontal
*	6499.5	37.5	7.7	45.2	84.7	-39.5	PK	Horizontal
	4145.0	40.8	0.8	41.6	54.0	-12.4	PK	Vertical
	4876.0	43.0	3.3	46.3	54.0	-7.7	PK	Vertical
*	5921.5	38.6	5.5	44.1	84.7	-40.6	PK	Vertical
*	6499.5	37.5	7.7	45.2	84.7	-39.5	PK	Vertical

Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (104.7dBμV/m) or LP0002 clause 2.8 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Product	ACCESS POINT	Temperature	26°C
Test Engineer	Kevin Ker	Relative Humidity	56%
Test Site	AC1	Test Date	2020/03/30
Model No.	APEX0575	Test Channel	39
Remark	1. Average measurement was not performed if peak level lower than average limit. So the margin was calculated using the average limit for emissions fall within the restricted bands. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3932.5	41.8	-0.1	41.8	54.0	-12.2	PK	Horizontal
	4850.5	40.8	3.3	44.0	54.0	-10.0	PK	Horizontal
*	5811.0	39.4	5.1	44.5	85.7	-41.2	PK	Horizontal
*	6593.0	37.9	8.2	46.1	85.7	-39.6	PK	Horizontal
	4094.0	39.9	0.5	40.5	54.0	-13.5	PK	Vertical
	4825.0	39.9	3.2	43.1	54.0	-10.9	PK	Vertical
*	5938.5	38.7	5.6	44.2	85.7	-41.5	PK	Vertical
*	6610.0	37.8	8.3	46.2	85.7	-39.5	PK	Vertical

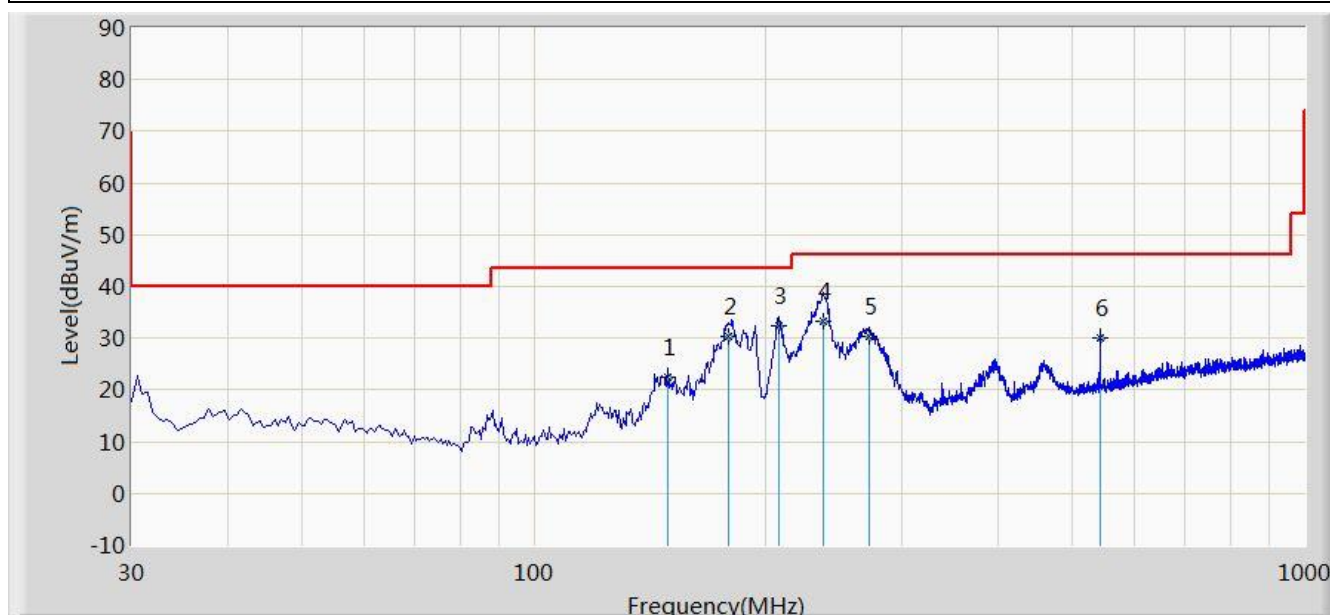
Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (105.7dBμV/m) or LP0002 clause 2.8 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

The Worst Case of Radiated Emission below 1GHz:

Site: AC1	Time: 2020/03/05 - 14:42
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: VULB 9162 30MHz-8GHz	Polarity: Horizontal
EUT: ACCESS POINT (APEX0575)	Power: By PoE
Worse Case Mode: Transmit by BLE at channel 2402MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			148.750	22.481	6.750	-21.019	43.500	15.731	QP
2			178.890	30.437	13.260	-13.063	43.500	17.177	QP
3		*	207.430	32.332	13.650	-11.168	43.500	18.682	QP
4			237.140	33.345	13.240	-12.655	46.000	20.105	QP
5			272.130	30.425	9.650	-15.575	46.000	20.775	QP
6			543.120	30.151	3.650	-15.849	46.000	26.502	QP

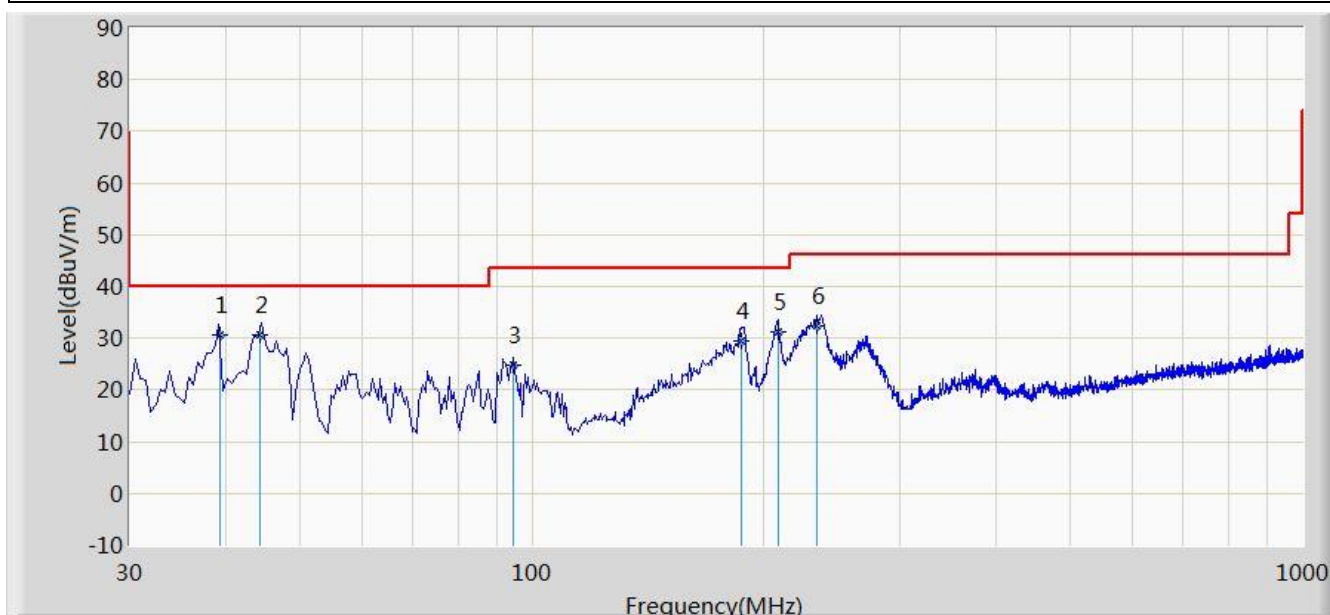
Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

Note 3: 經初測驗證過，1GHz 以下輻射干擾測試對測試頻道數並無差異，故僅檢附最差狀況之測試頻道。

Site: AC1	Time: 2020/03/05 - 14:44
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: VULB 9162 30MHz-8GHz	Polarity: Vertical
EUT: ACCESS POINT (APEX0575)	Power: By PoE
Worse Case Mode: Transmit by BLE at channel 2402MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			39.220	30.665	10.260	-9.335	40.000	20.405	QP
2		*	44.270	30.723	9.430	-9.277	40.000	21.293	QP
3			94.340	24.686	6.540	-18.814	43.500	18.145	QP
4			187.120	29.532	11.230	-13.968	43.500	18.302	QP
5			208.320	31.189	12.540	-12.311	43.500	18.649	QP
6			234.140	32.344	12.340	-13.656	46.000	20.003	QP

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

Note 3: 經初測驗證過，1GHz 以下輻射干擾測試對測試頻道數並無差異，故僅檢附最差狀況之測試頻道。

Product	ACCESS POINT	Temperature	26°C
Test Engineer	Kevin Ker	Relative Humidity	56%
Test Site	AC1	Test Date	2020/03/30
Model No.	APEX0577	Test Channel	00
Remark	1. Average measurement was not performed if peak level lower than average limit. So the margin was calculated using the average limit for emissions fall within the restricted bands. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	4085.5	40.6	0.5	41.1	54.0	-12.9	PK	Horizontal
	4808.0	48.0	3.2	51.2	54.0	-2.8	PK	Horizontal
*	5734.5	38.9	4.8	43.7	83.6	-39.9	PK	Horizontal
*	6601.5	37.1	8.3	45.4	83.6	-38.2	PK	Horizontal
	4017.5	40.6	0.2	40.8	54.0	-13.2	PK	Vertical
	4808.0	47.0	3.2	50.2	54.0	-3.8	PK	Vertical
*	5947.0	39.0	5.6	44.6	83.6	-39.0	PK	Vertical
*	6593.0	37.2	8.2	45.4	83.6	-38.2	PK	Vertical

Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (103.6dBμV/m) or LP0002 clause 2.8 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Product	ACCESS POINT	Temperature	26°C
Test Engineer	Kevin Ker	Relative Humidity	56%
Test Site	AC1	Test Date	2020/03/30
Model No.	APEX0577	Test Channel	19
Remark	1. Average measurement was not performed if peak level lower than average limit. So the margin was calculated using the average limit for emissions fall within the restricted bands. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3958.0	40.9	0.0	40.9	54.0	-13.1	PK	Horizontal
	4876.0	45.6	3.3	48.9	54.0	-5.1	PK	Horizontal
*	5811.0	36.6	5.1	41.7	83.6	-41.9	PK	Horizontal
*	6499.5	36.3	7.7	44.0	83.6	-39.6	PK	Horizontal
	3915.5	41.3	-0.1	41.2	54.0	-12.8	PK	Vertical
	4876.0	45.3	3.3	48.6	54.0	-5.4	PK	Vertical
*	5947.0	38.5	5.6	44.1	83.6	-39.5	PK	Vertical
*	6559.0	37.0	8.0	45.0	83.6	-38.6	PK	Vertical

Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (103.6dBμV/m) or LP0002 clause 2.8 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Product	ACCESS POINT	Temperature	26°C
Test Engineer	Kevin Ker	Relative Humidity	56%
Test Site	AC1	Test Date	2020/03/30
Model No.	APEX0577	Test Channel	39
Remark	1. Average measurement was not performed if peak level lower than average limit. So the margin was calculated using the average limit for emissions fall within the restricted bands. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3813.5	41.9	-0.4	41.5	54.0	-12.5	PK	Horizontal
	5012.0	40.9	3.6	44.5	54.0	-9.5	PK	Horizontal
*	5794.0	38.1	5.0	43.1	84.2	-41.1	PK	Horizontal
*	6406.0	37.4	7.3	44.7	84.2	-39.5	PK	Horizontal
	4102.5	41.0	0.6	41.6	54.0	-12.4	PK	Vertical
	4833.5	40.5	3.2	43.7	54.0	-10.3	PK	Vertical
*	5921.5	38.8	5.5	44.3	84.2	-39.9	PK	Vertical
*	6610.0	36.9	8.3	45.2	84.2	-39.0	PK	Vertical

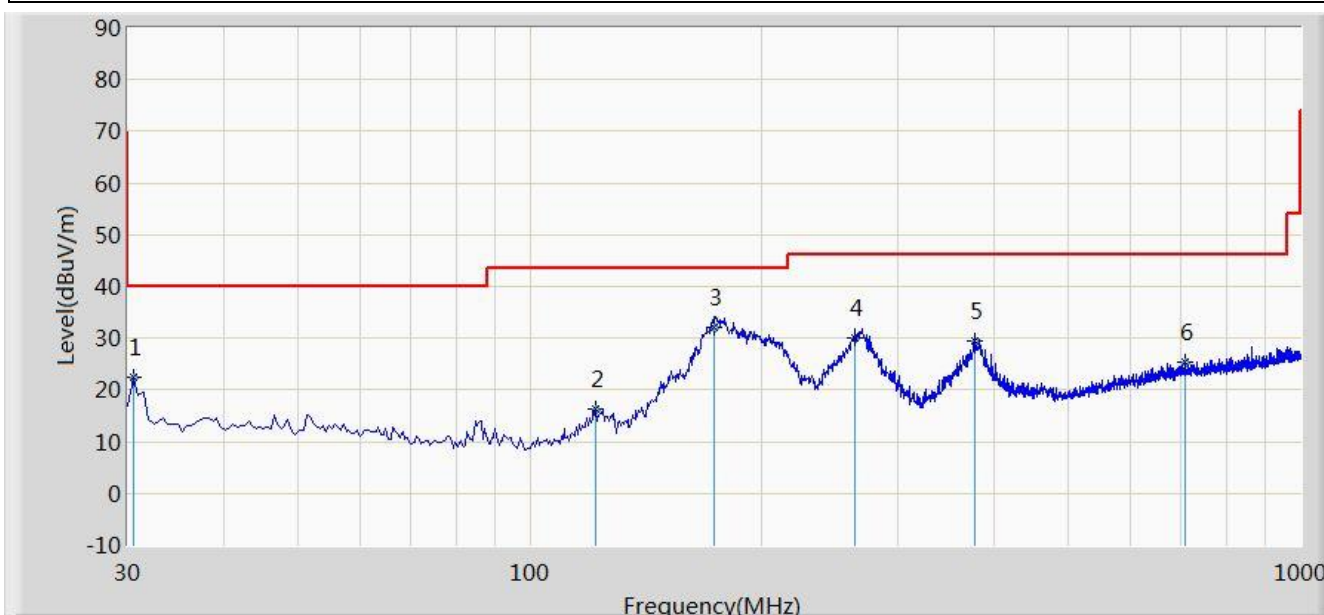
Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (104.2dBμV/m) or LP0002 clause 2.8 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

The Worst Case of Radiated Emission below 1GHz:

Site: AC1	Time: 2020/03/05 - 13:59
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: VULB 9162 30MHz-8GHz	Polarity: Horizontal
EUT: ACCESS POINT (APEX0577)	Power: By PoE
Worse Case Mode: Transmit by Bluetooth-LE at channel 2402MHz	



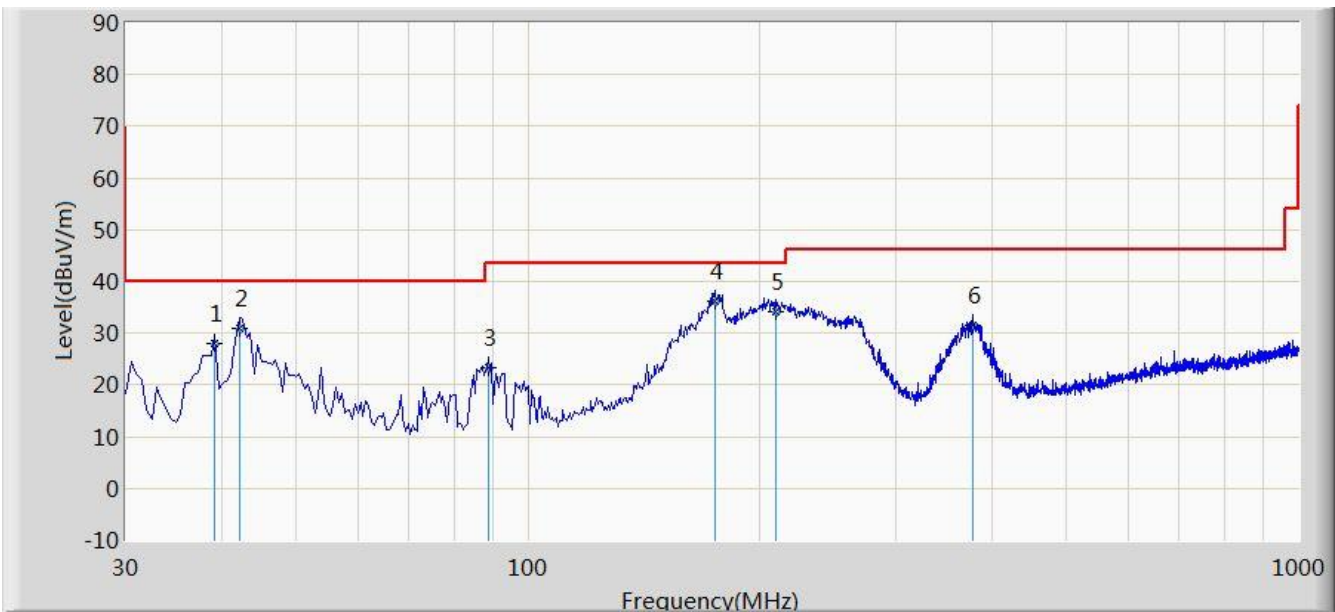
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			30.485	22.384	4.302	-17.616	40.000	18.082	QP
2			121.665	16.460	-0.325	-27.040	43.500	16.785	QP
3		*	173.010	32.060	15.430	-11.440	43.500	16.630	QP
4			264.230	29.948	9.320	-16.052	46.000	20.627	QP
5			377.760	29.486	5.650	-16.514	46.000	23.835	QP
6			708.030	25.333	-3.982	-20.667	46.000	29.315	QP

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The amplitude of spurious emissions (frequency range 9kHz ~ 30MHz, 18GHz ~ 40GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

Site: AC1	Time: 2020/03/05 - 14:01
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: VULB 9162 30MHz-8GHz	Polarity: Vertical
EUT: ACCESS POINT (APEX0577)	Power: By PoE
Worse Case Mode: Transmit by Bluetooth-LE at channel 2402MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			39.210	28.051	7.650	-11.949	40.000	20.401	QP
2			42.140	30.847	9.870	-9.153	40.000	20.978	QP
3			88.670	23.356	6.760	-20.144	43.500	16.596	QP
4		*	174.530	36.332	19.560	-7.168	43.500	16.772	QP
5			209.430	34.039	15.430	-9.461	43.500	18.609	QP
6			377.750	31.485	7.650	-14.515	46.000	23.835	QP

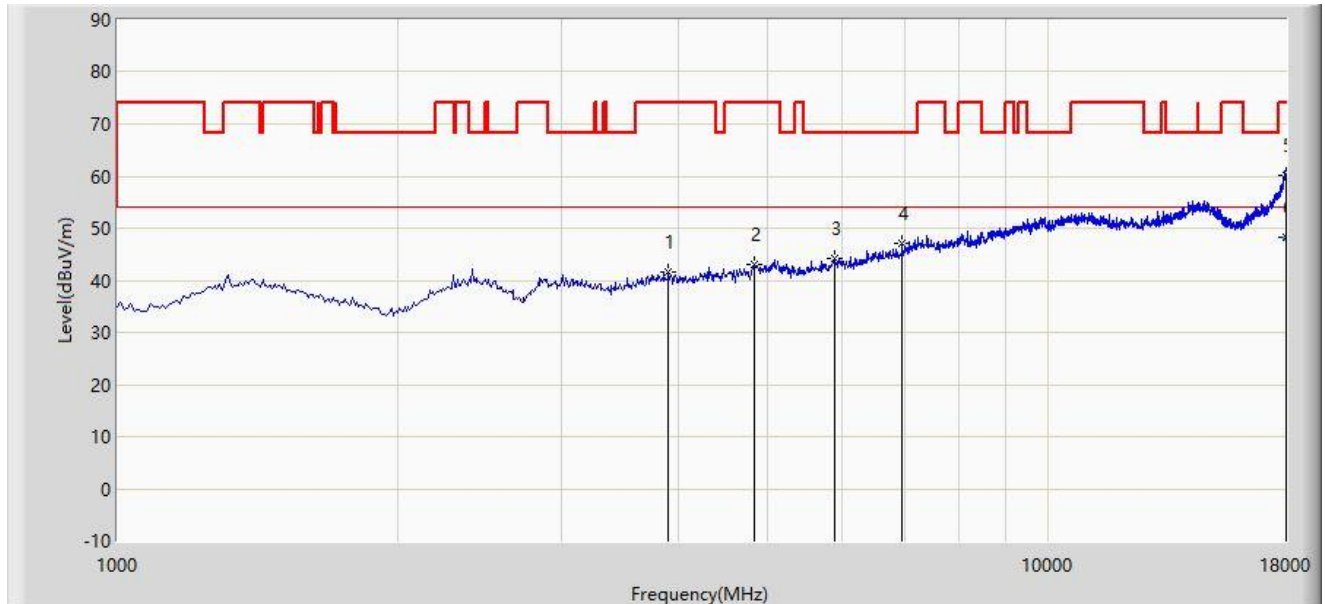
Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The amplitude of spurious emissions (frequency range 9kHz ~ 30MHz, 18GHz ~ 25GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

The Worst Case of Radiated Emission above 1GHz:

Site: AC1	Time: 2020/03/31 - 02:42
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Horizontal
EUT: ACCESS POINT (APEX0575)	Power: By PoE
Test Mode: Transmit by BLE at Channel 2402MHz	



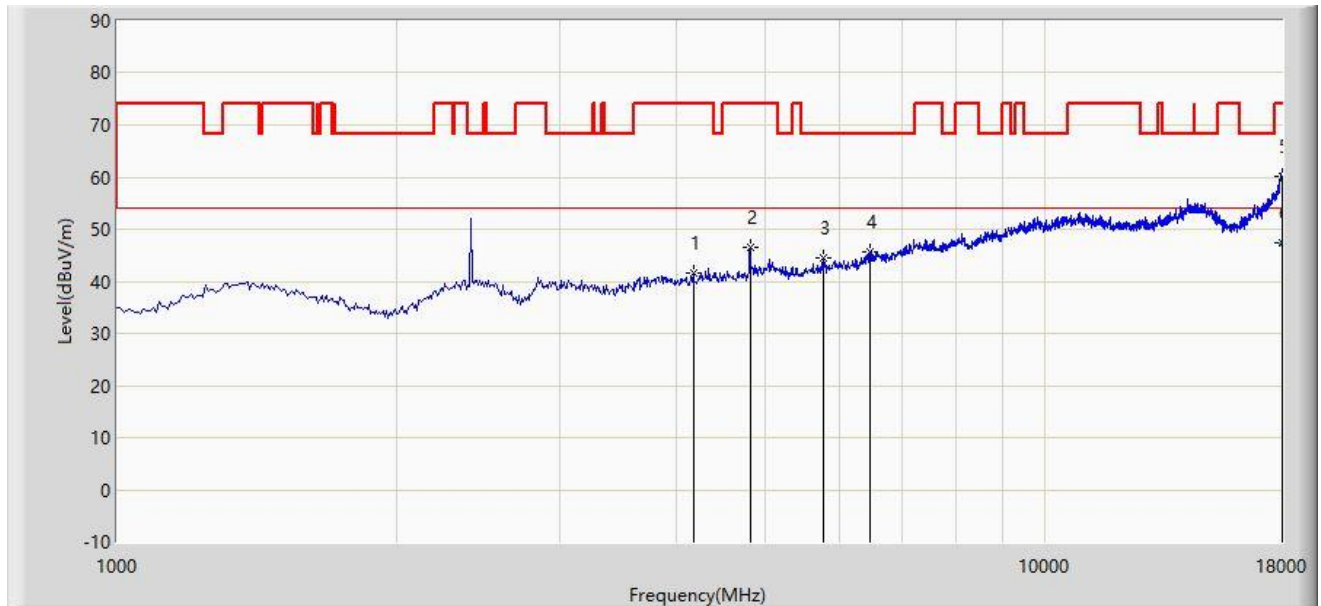
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			3907.000	41.711	41.876	-32.289	74.000	-0.165	PK
2			4833.500	42.935	39.718	-31.065	74.000	3.217	PK
3			5887.500	44.294	38.936	-23.906	68.200	5.358	PK
4			6958.500	47.110	36.751	-21.090	68.200	10.359	PK
5			18000.000	60.061	28.591	-13.939	74.000	31.470	PK
6		*	18000.000	48.190	16.720	-5.810	54.000	31.470	AV

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Note 2: The amplitude of spurious emissions (frequency range 9kHz ~ 30MHz, 18GHz ~ 25GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

Site: AC1	Time: 2020/03/31 - 02:44
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Vertical
EUT: ACCESS POINT (APEX0575)	Power: By PoE
Test Mode: Transmit by BLE at Channel 2402MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			4179.000	41.530	40.566	-32.470	74.000	0.964	PK
2			4808.000	46.568	43.402	-27.432	74.000	3.166	PK
3			5777.000	44.358	39.424	-23.842	68.200	4.934	PK
4			6465.500	45.753	38.190	-22.447	68.200	7.563	PK
5			18000.000	60.120	28.650	-13.880	74.000	31.470	PK
6		*	18000.000	47.500	16.030	-6.500	54.000	31.470	AV

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Note 2: The amplitude of spurious emissions (frequency range 9kHz ~ 30MHz, 18GHz ~ 25GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

5.6. 頻帶邊緣

5.6.1. 量測方法

待測物置於非導體桌面（落地型產品置於地上），受測物使用交流電源時，將其與任何配件設備之電源線連接至位於旋轉桌的交流電源。受測物使用電池時，測試時應裝置新電池或充電完全的電池。受測物與配件設備之電源線無須束綁，桌面上受測設備的所有電源線由桌子的後緣垂下沿旋轉桌表面接至交流插座。落地型設備的交流電源線可以方便的型態走線。桌面可360度旋轉，接收天線置於距待測物3m距離，高度可在1至4公尺間變動，以量測待測物之最大輻射電場強度，接收天線並應於水準及垂直極化方向各量測一次。（待測物擺設方式根據 ANSI C63.10-2013版，待測物放置桌中心，1G以下擺設高度為80cm/1G以上擺設高度為150cm）

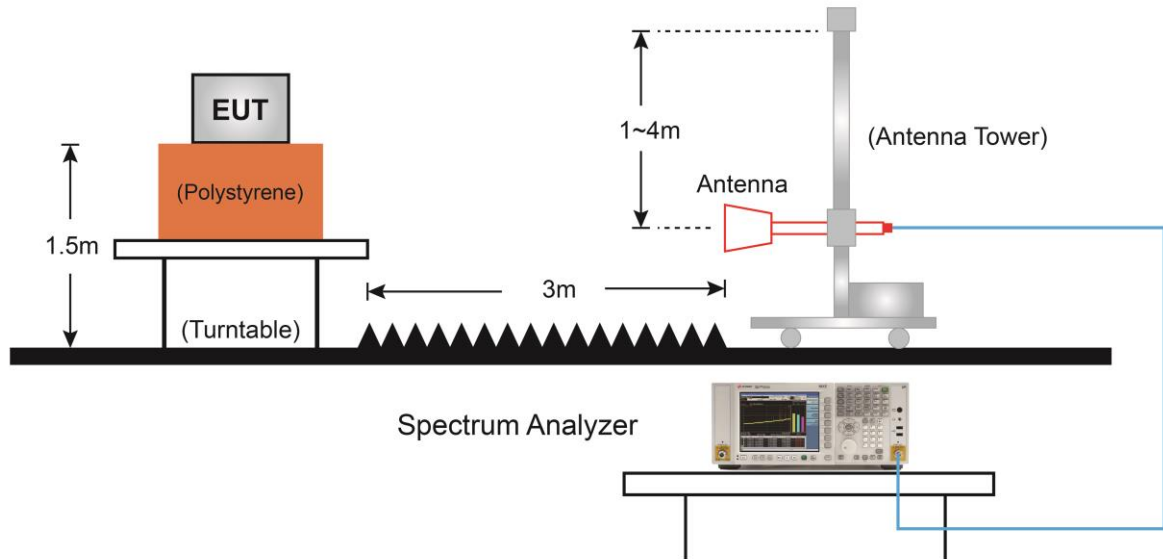
- (1) 任一頻率小於或等於1000 MHz 之訊號,使用CISPR準峰值檢波器
- (2) 任一頻率大於1000 MHz 之訊號，使用平均值檢波器測量，當規定之發射限制值為平均值時(含1000 MHz 以下)，受測訊號藉由峰值檢波器(RBW:1MHz,VBW:3MHz)所測量之峰值，亦須符合峰值發射限制值，其峰值發射限制值為最大容許平均值加20 dB。

5.6.2. 限制要求

除低功率射頻電機技術規範另有規定外，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帶內之混附發射，其電場強度必須符合低功率射頻電機技術規範之第2.8節限制規定

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

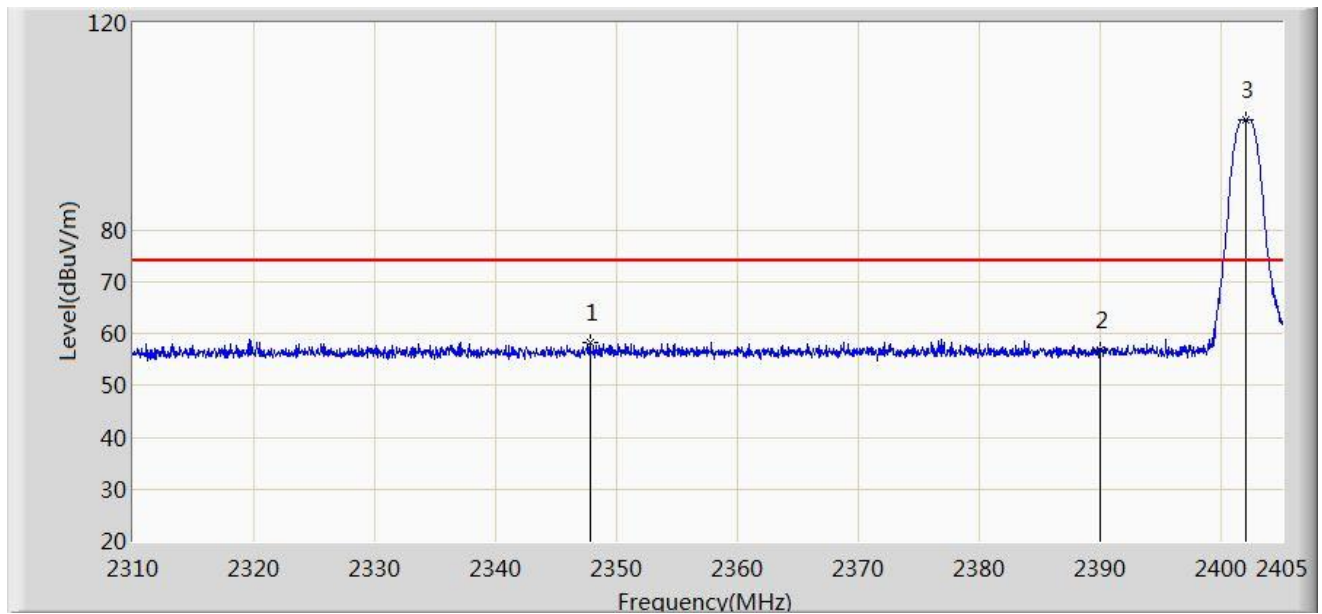
5.6.3. 測試架構圖



5.6.4. 頻帶邊緣測試結果

For APEX0574

Site: AC1	Time: 2020/03/31 - 01:47
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by BLE at channel 2402MHz	

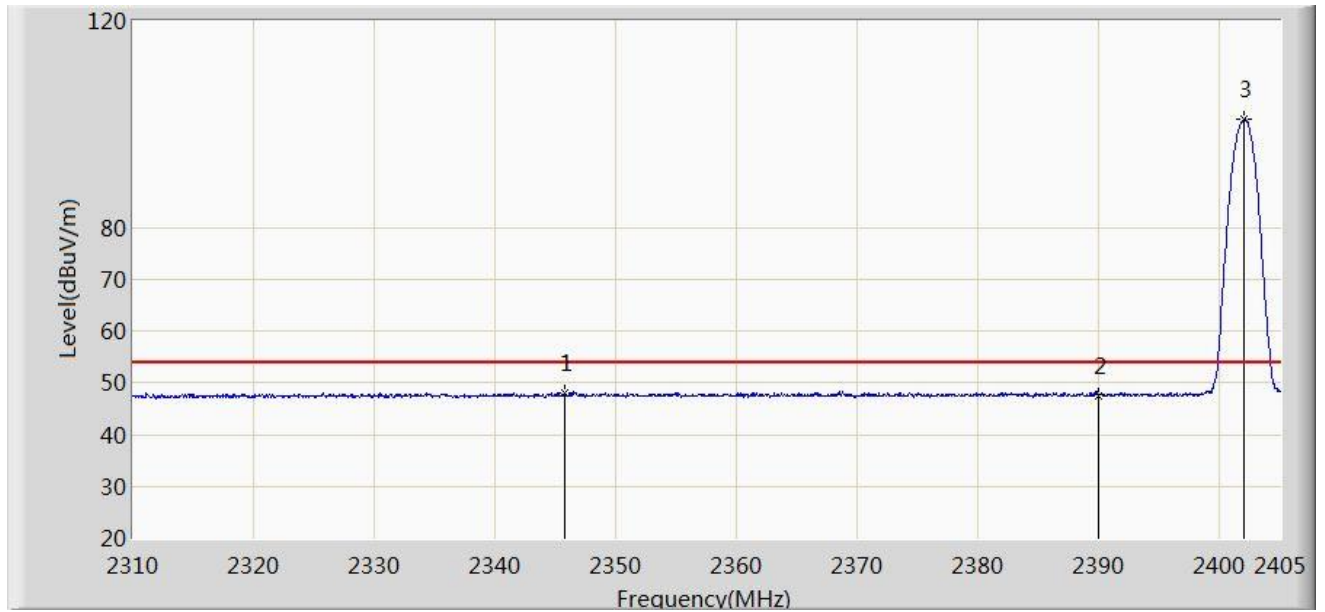


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2347.762	58.321	26.241	-15.679	74.000	32.079	PK
2			2390.000	56.967	24.693	-17.033	74.000	32.274	PK
3		*	2402.008	101.353	69.024	N/A	N/A	32.329	PK

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/31 - 01:50
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Horizontal
EUT: ACCESS POINT	Power: By POE
Test Mode: Transmit by BLE at channel 2402MHz	

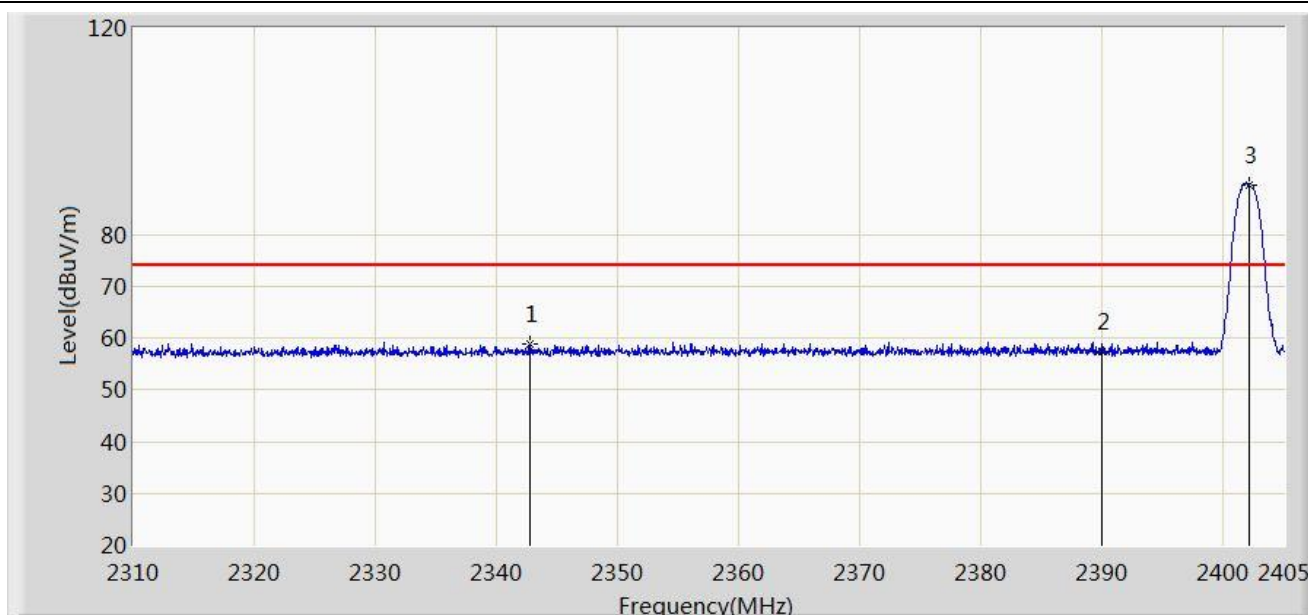


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2345.720	48.113	16.043	-5.887	54.000	32.070	AV
2			2390.000	47.611	15.337	-6.389	54.000	32.274	AV
3		*	2402.008	100.949	68.620	N/A	N/A	32.329	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/31 - 01:51
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Vertical
EUT: ACCESS POINT	Power: By POE
Test Mode: Transmit by BLE at channel 2402MHz	

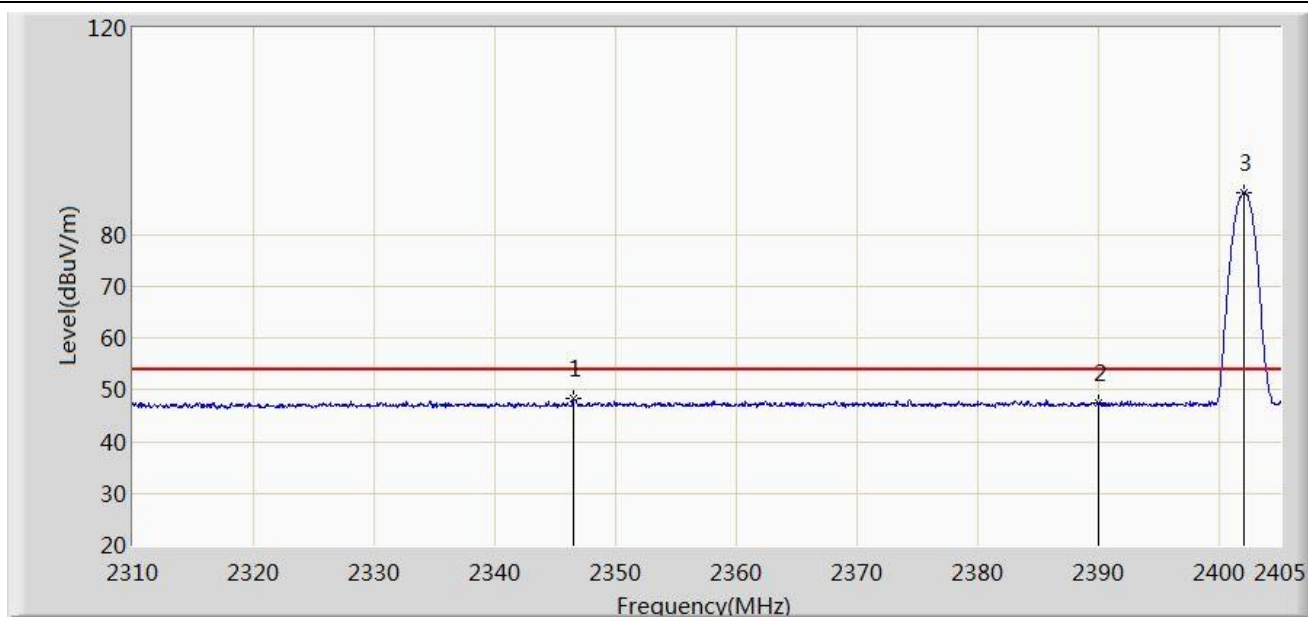


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2342.775	58.867	26.810	-15.133	74.000	32.056	PK
2			2390.000	57.417	25.143	-16.583	74.000	32.274	PK
3		*	2402.150	89.736	57.406	N/A	N/A	32.329	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/31 - 01:53
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Vertical
EUT: ACCESS POINT	Power: By POE
Test Mode: Transmit by BLE at channel 2402MHz	

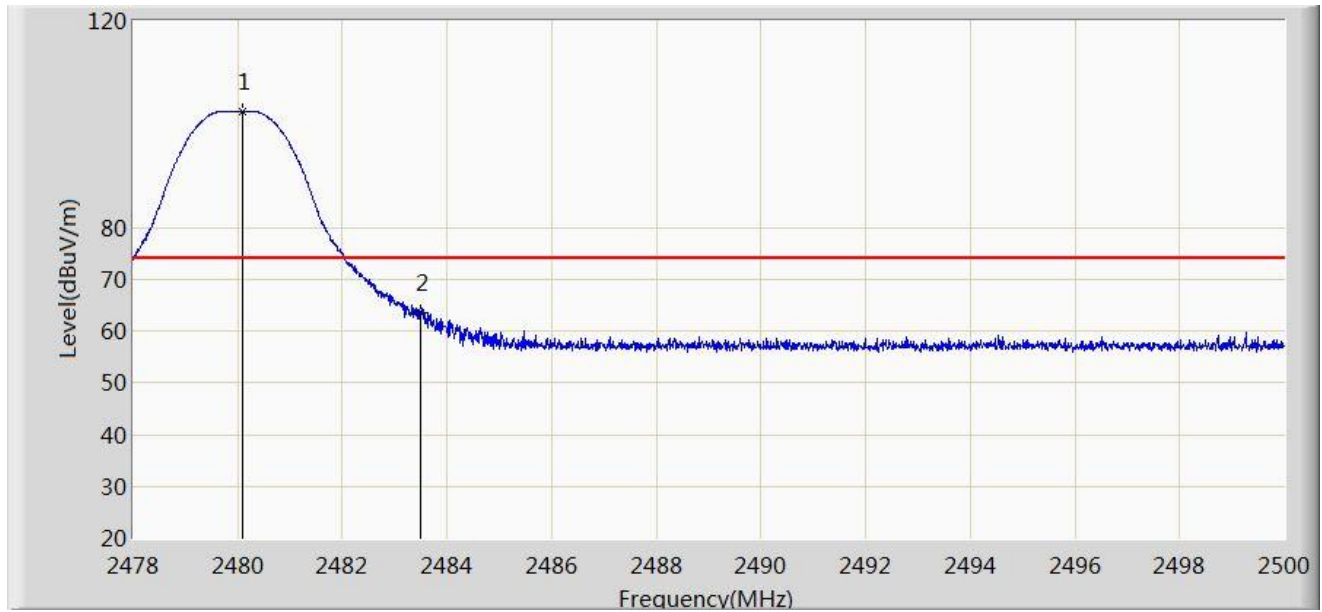


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2346.433	48.222	16.148	-5.778	54.000	32.074	AV
2			2390.000	47.471	15.197	-6.529	54.000	32.274	AV
3		*	2402.008	88.205	55.876	N/A	N/A	32.329	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/31 - 01:54
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Horizontal
EUT: ACCESS POINT	Power: By POE
Test Mode: Transmit by BLE at channel 2480MHz	

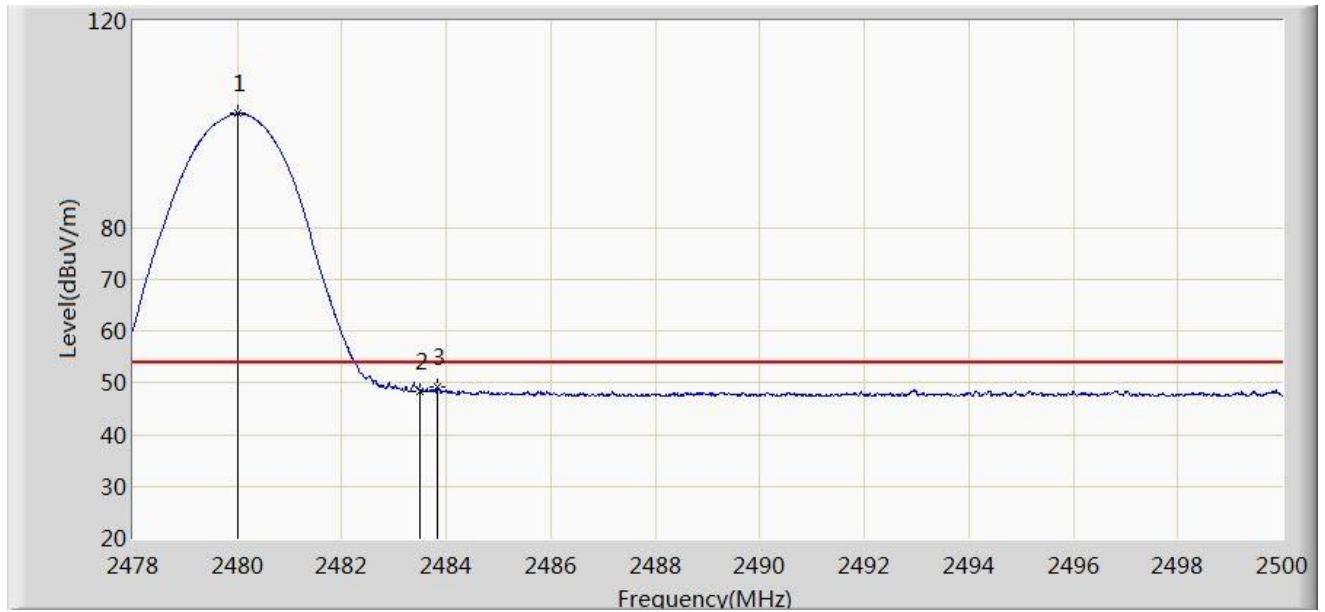


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.079	102.457	69.768	N/A	N/A	32.689	PK
2			2483.500	63.622	30.918	-10.378	74.000	32.704	PK

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/31 - 01:56
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Horizontal
EUT: ACCESS POINT	Power: By POE
Test Mode: Transmit by BLE at channel 2480MHz	

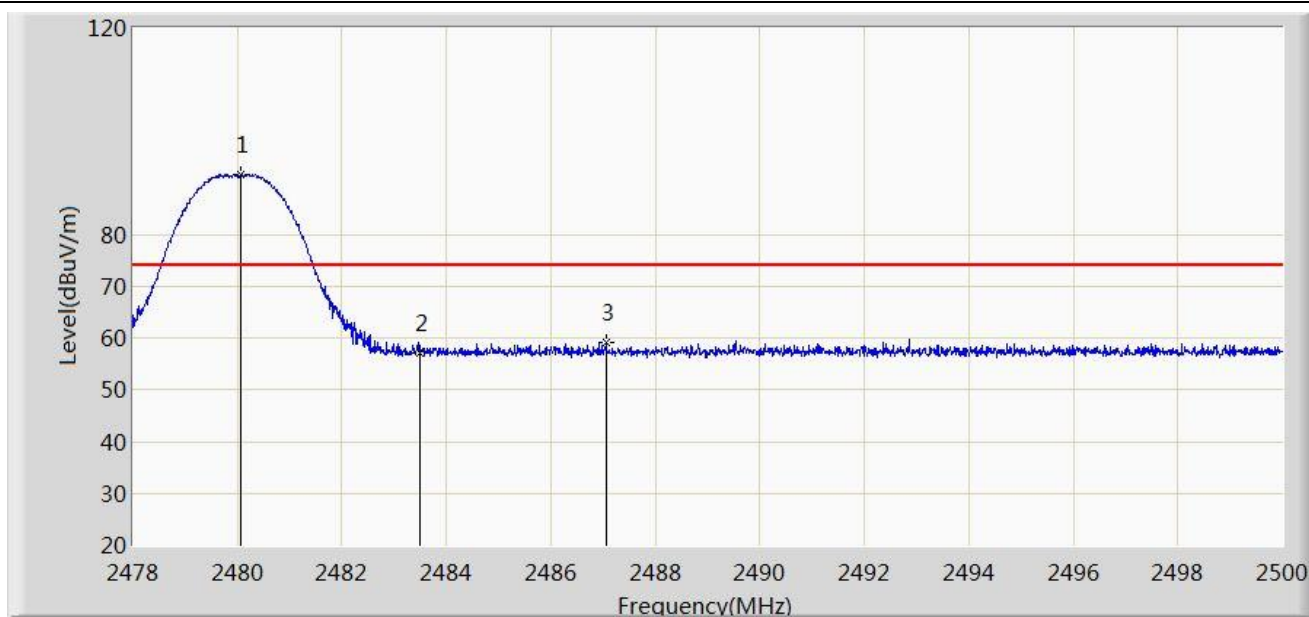


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.002	102.054	69.366	N/A	N/A	32.688	AV
2			2483.500	48.412	15.708	-5.588	54.000	32.704	AV
3			2483.841	49.152	16.446	-4.848	54.000	32.706	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/31 - 01:57
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Vertical
EUT: ACCESS POINT	Power: By POE
Test Mode: Transmit by BLE at channel 2480MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.057	91.590	58.901	N/A	N/A	32.689	PK
2			2483.500	57.016	24.312	-16.984	74.000	32.704	PK
3			2487.053	59.242	26.521	-14.758	74.000	32.721	PK

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/31 - 01:58
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Vertical
EUT: ACCESS POINT	Power: By POE
Test Mode: Transmit by BLE at channel 2480MHz	



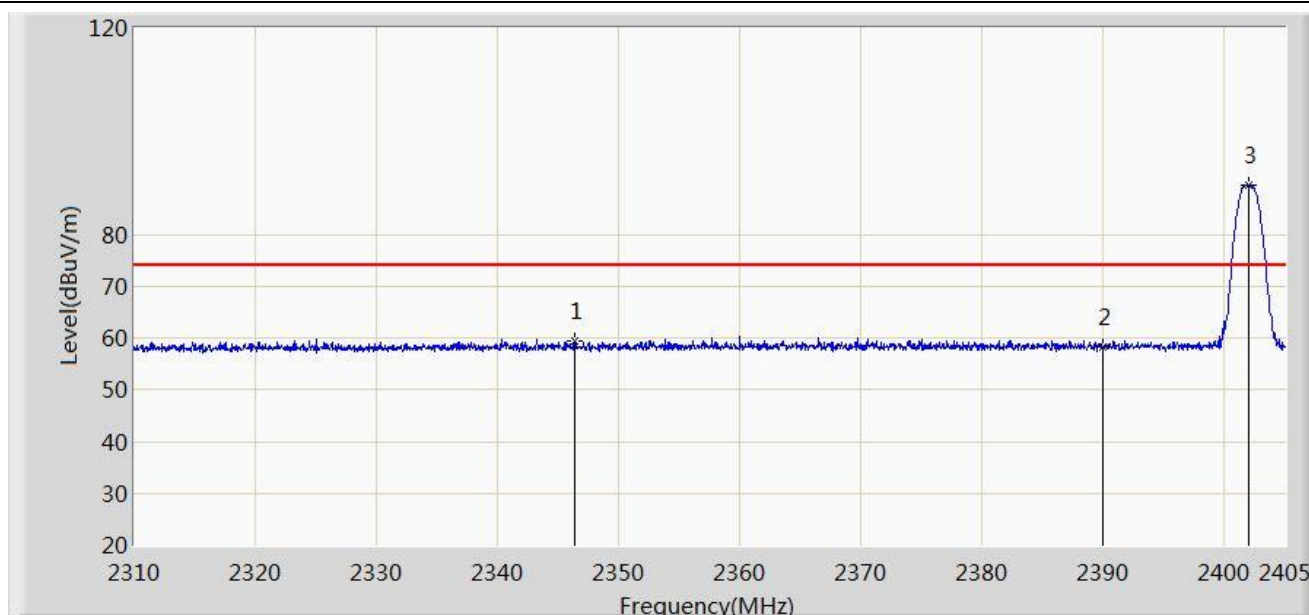
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.112	89.819	57.130	N/A	N/A	32.689	AV
2			2483.500	47.260	14.556	-6.740	54.000	32.704	AV
3			2486.679	48.189	15.470	-5.811	54.000	32.719	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

For APEX0575

Site: AC1	Time: 2020/03/31 - 00:07
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Horizontal
EUT: ACCESS POINT	Power: By POE
Test Mode: Transmit by BLE at Channel 2402MHz	

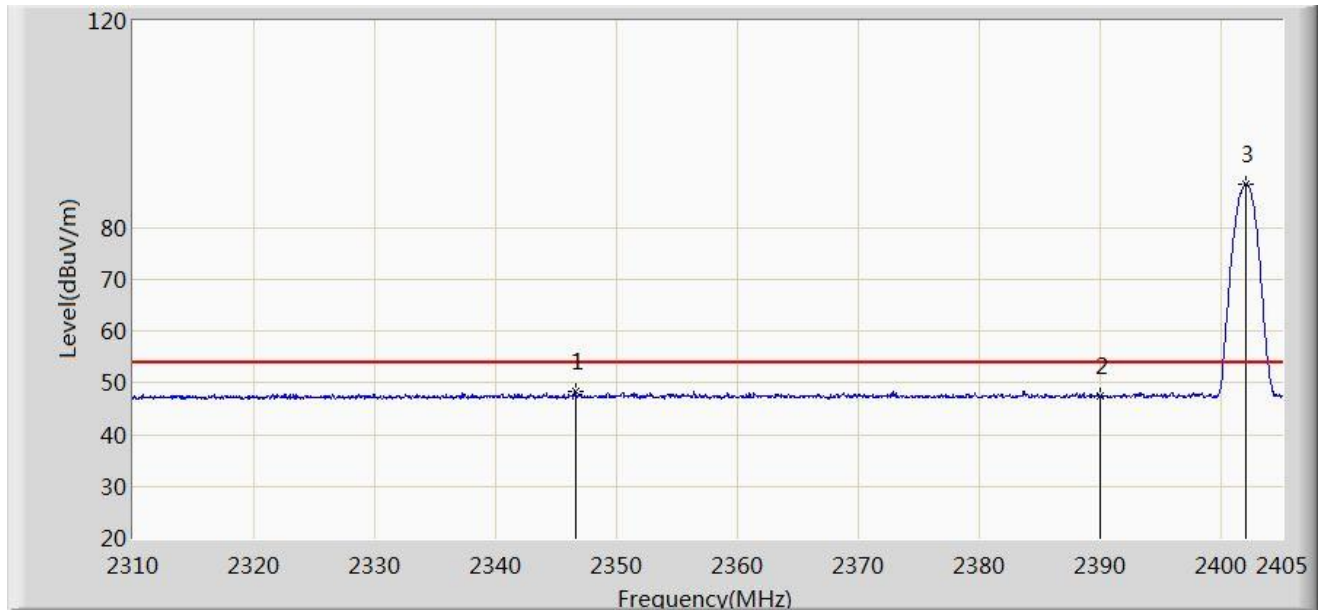


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2346.337	59.502	27.429	-14.498	74.000	32.073	PK
2			2390.000	58.162	25.888	-15.838	74.000	32.274	PK
3		*	2402.008	89.614	57.285	N/A	N/A	32.329	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/31 - 00:12
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Horizontal
EUT: ACCESS POINT	Power: By POE
Test Mode: Transmit by BLE at Channel 2402MHz	

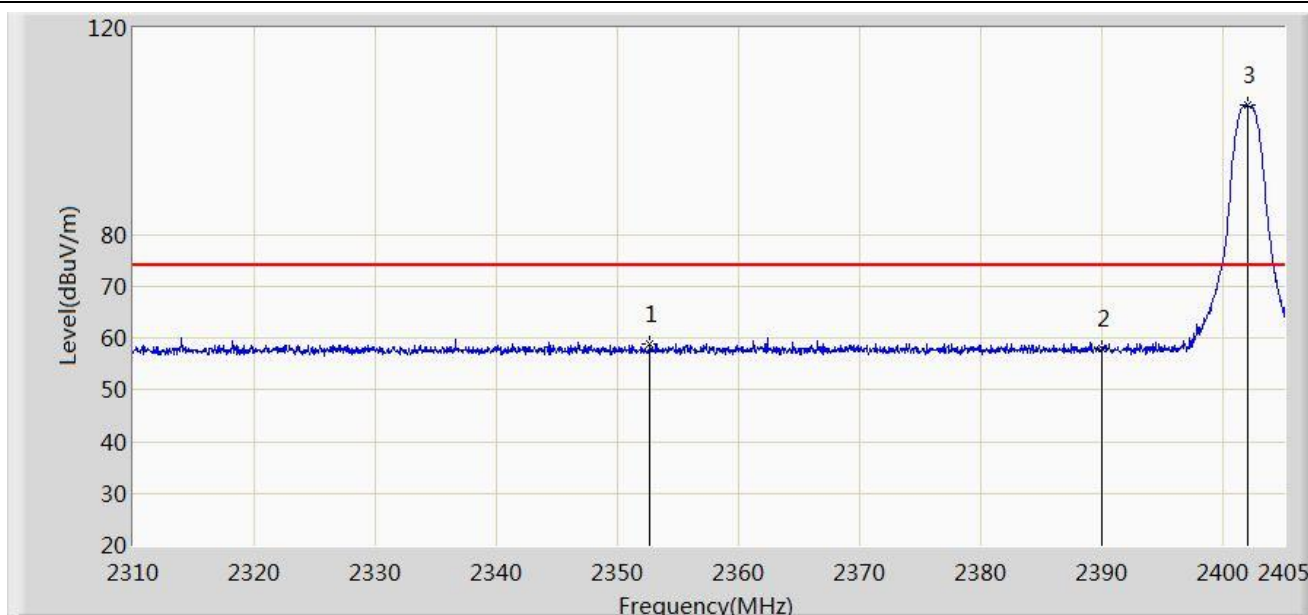


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2346.575	48.379	16.305	-5.621	54.000	32.074	AV
2			2390.000	47.437	15.163	-6.563	54.000	32.274	AV
3		*	2402.008	88.528	56.199	N/A	N/A	32.329	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/31 - 00:12
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Vertical
EUT: ACCESS POINT	Power: By POE
Test Mode: Transmit by BLE at Channel 2402MHz	

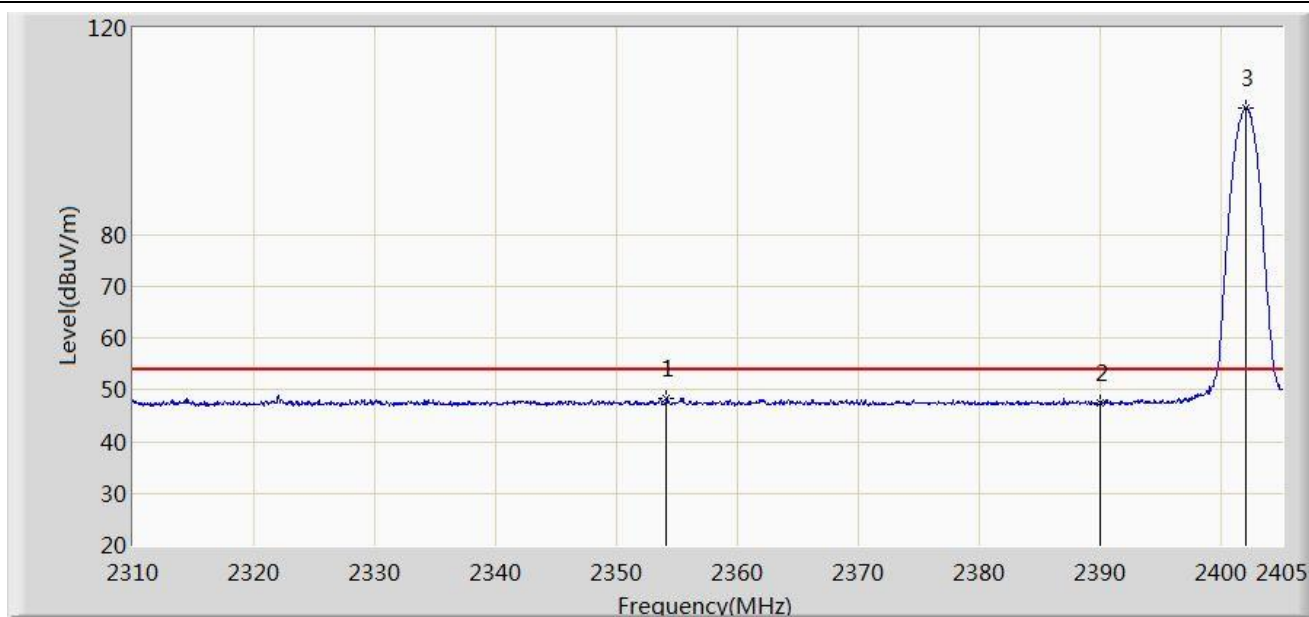


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2352.655	58.985	26.883	-15.015	74.000	32.102	PK
2			2390.000	57.938	25.664	-16.062	74.000	32.274	PK
3		*	2402.008	104.972	72.643	N/A	N/A	32.329	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/31 - 00:15
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Vertical
EUT: ACCESS POINT	Power: By POE
Test Mode: Transmit by BLE at Channel 2402MHz	

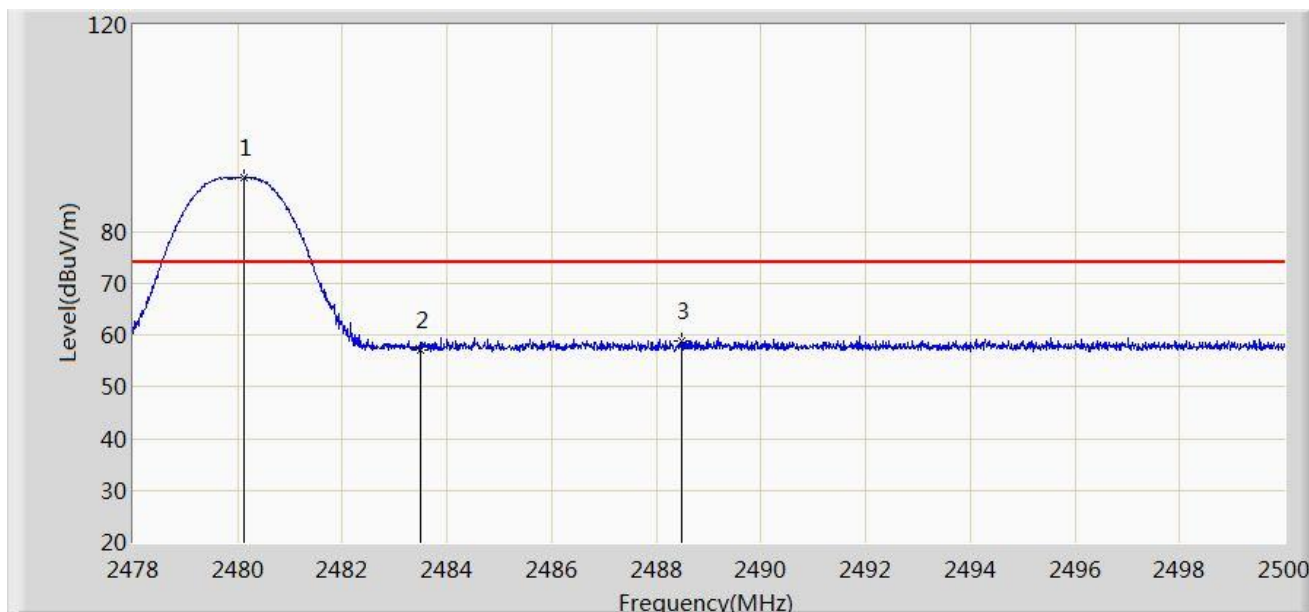


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2354.127	48.501	16.392	-5.499	54.000	32.109	AV
2			2390.000	47.397	15.123	-6.603	54.000	32.274	AV
3		*	2402.008	104.373	72.044	N/A	N/A	32.329	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/31 - 00:16
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Horizontal
EUT: ACCESS POINT	Power: By POE
Test Mode: Transmit by BLE at Channel 2480MHz	

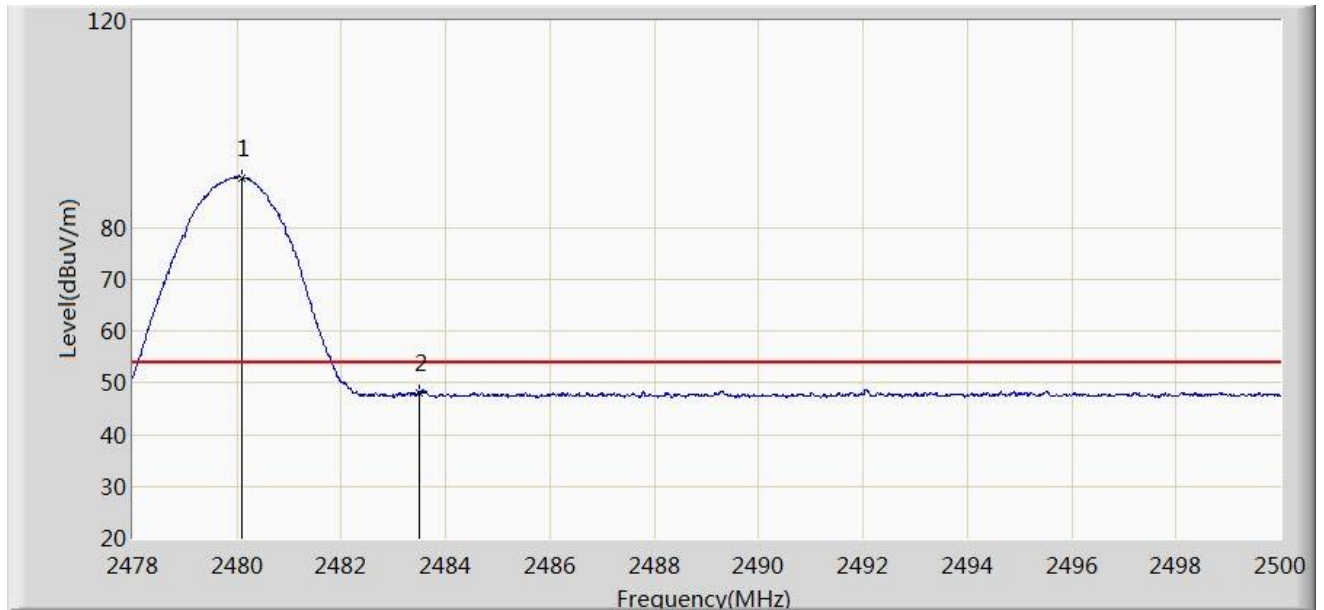


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.123	90.440	57.751	N/A	N/A	32.689	PK
2			2483.500	57.204	24.500	-16.796	74.000	32.704	PK
3			2488.472	58.993	26.266	-15.007	74.000	32.727	PK

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/31 - 00:18
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Horizontal
EUT: ACCESS POINT	Power: By POE
Test Mode: Transmit by BLE at Channel 2480MHz	

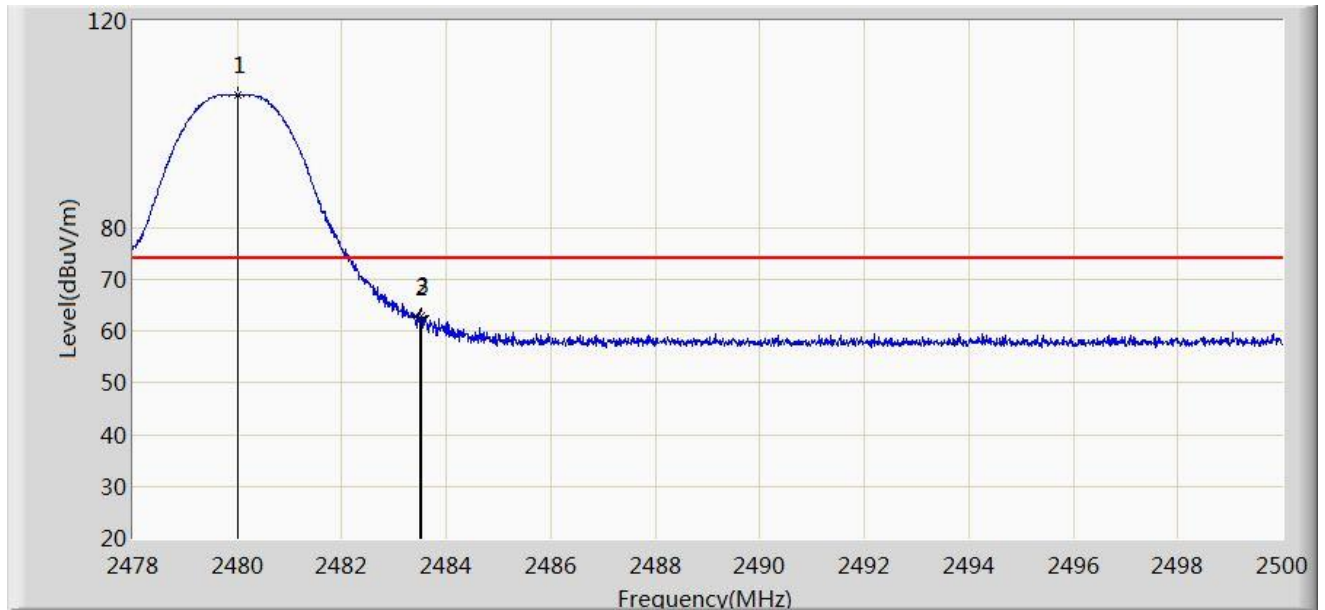


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.079	89.736	57.047	N/A	N/A	32.689	AV
2			2483.500	48.173	15.469	-5.827	54.000	32.704	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/31 - 00:19
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Vertical
EUT: ACCESS POINT	Power: By POE
Test Mode: Transmit by BLE at Channel 2480MHz	

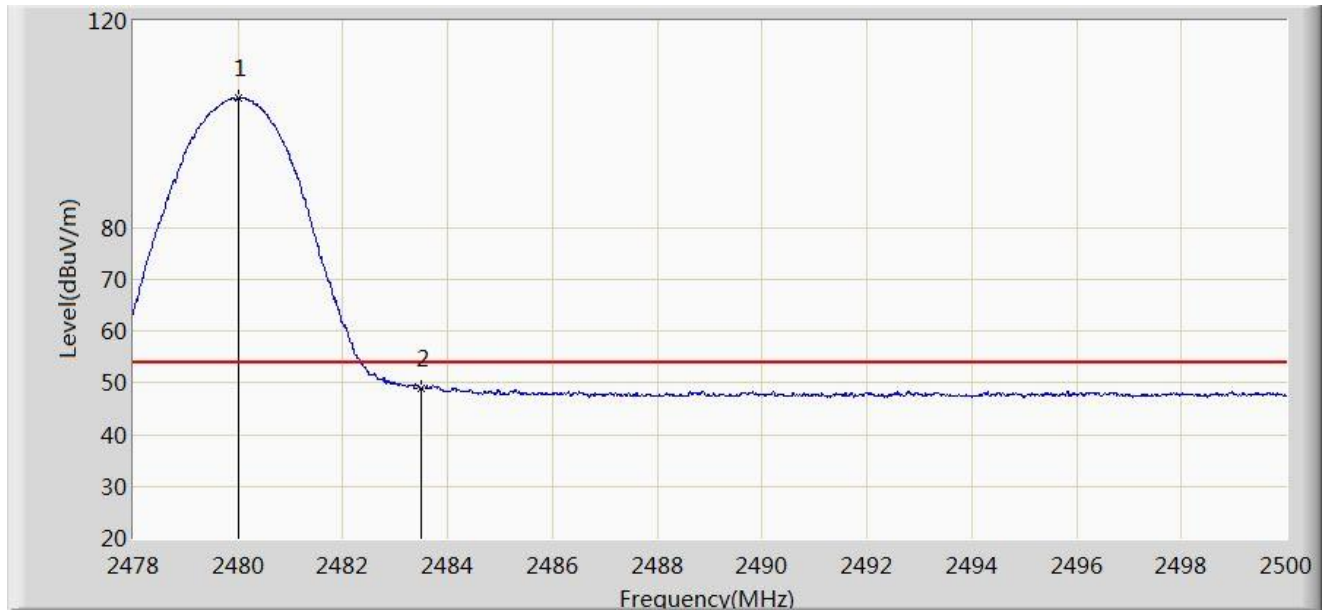


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.002	105.666	72.978	N/A	N/A	32.688	PK
2			2483.500	62.677	29.973	-11.323	74.000	32.704	PK
3			2483.522	62.960	30.255	-11.040	74.000	32.704	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/31 - 00:20
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Vertical
EUT: ACCESS POINT	Power: By POE
Test Mode: Transmit by BLE at Channel 2480MHz	



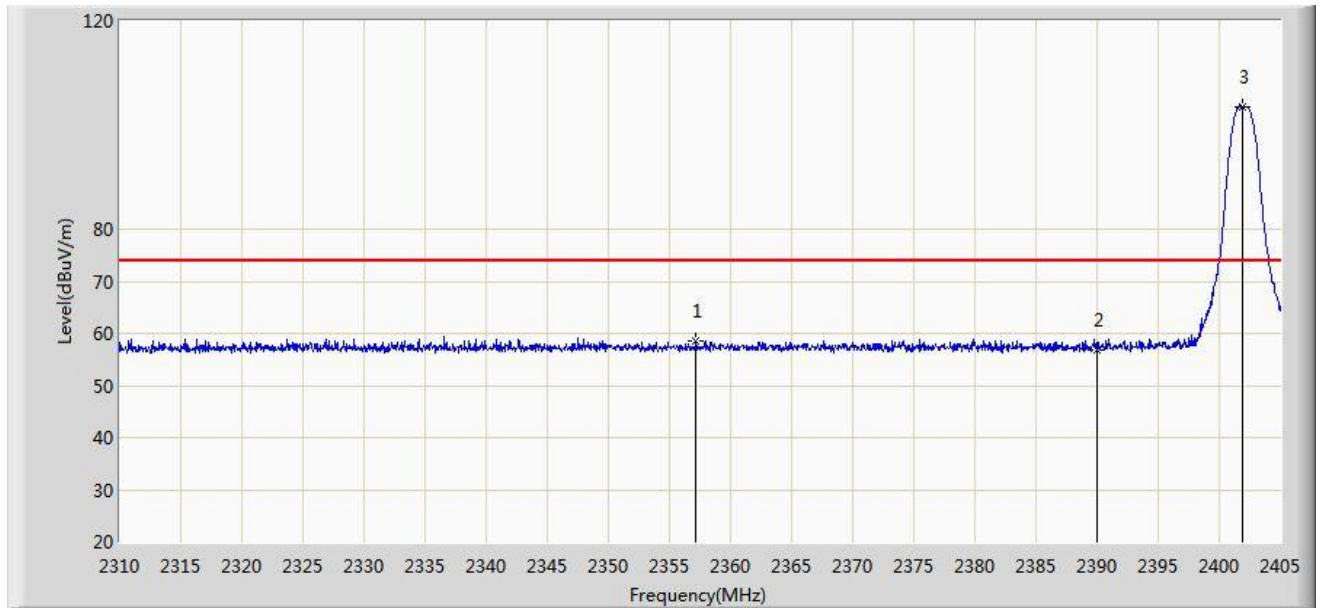
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.002	105.056	72.368	N/A	N/A	32.688	AV
2			2483.500	49.011	16.307	-4.989	54.000	32.704	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

For APEX0577

Site: AC1	Time: 2020/03/31 - 01:22
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Horizontal
EUT: ACCESS POINT	Power: By POE
Test Mode: Transmit by BLE at channel 2402MHz	

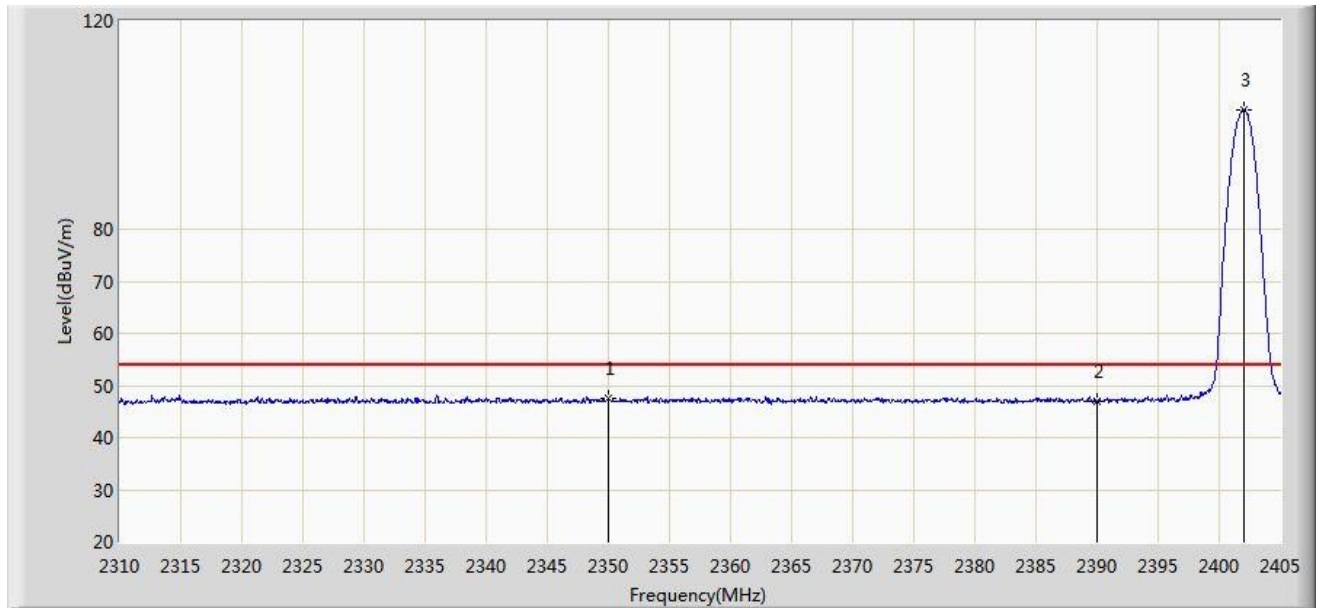


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2357.167	58.671	26.548	-15.329	74.000	32.123	PK
2			2390.000	56.685	24.411	-17.315	74.000	32.274	PK
3		*	2401.865	103.576	71.247	N/A	N/A	32.328	PK

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/31 - 01:22
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Horizontal
EUT: ACCESS POINT	Power: By POE
Test Mode: Transmit by BLE at channel 2402MHz	

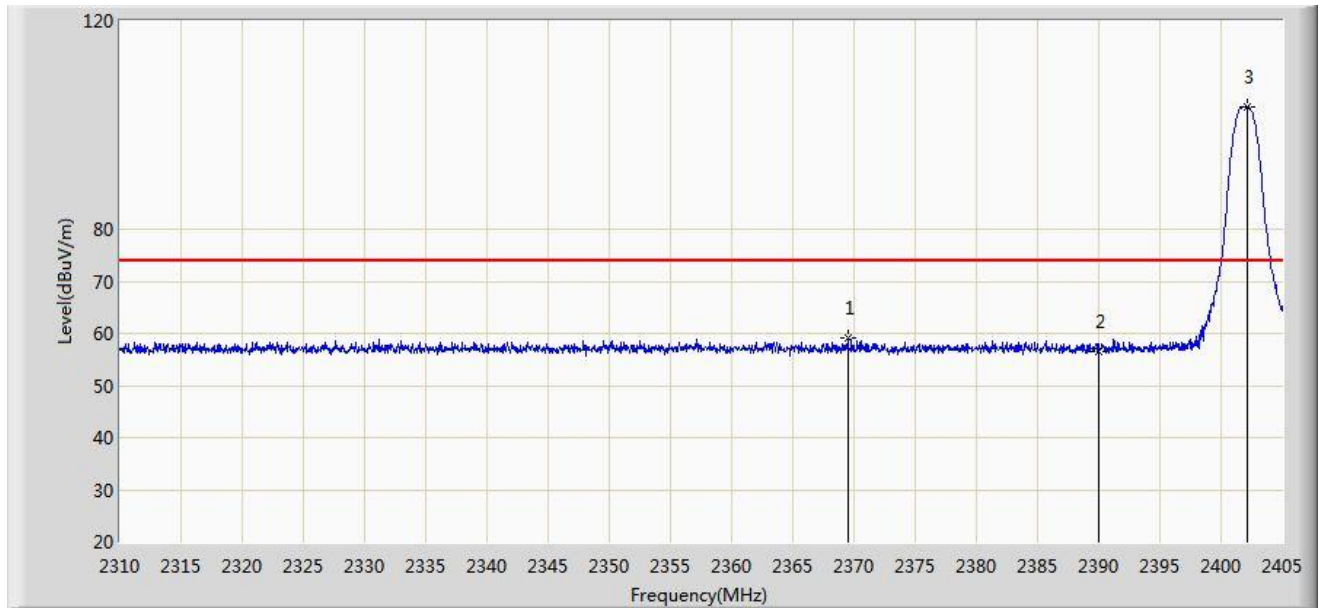


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2349.995	47.490	15.400	-6.510	54.000	32.090	AV
2			2390.000	46.851	14.577	-7.149	54.000	32.274	AV
3		*	2402.008	102.956	70.627	N/A	N/A	32.329	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/31 - 01:22
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Vertical
EUT: ACCESS POINT	Power: By POE
Test Mode: Transmit by BLE at channel 2402MHz	

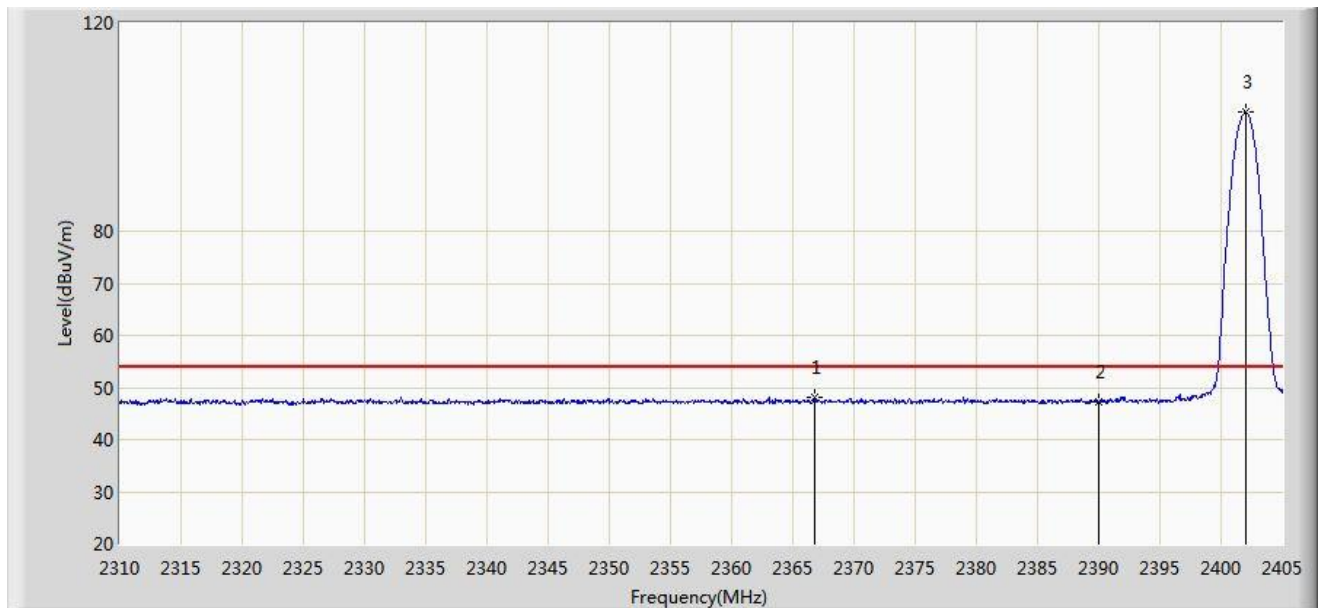


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2369.470	59.043	26.863	-14.957	74.000	32.179	PK
2			2390.000	56.504	24.230	-17.496	74.000	32.274	PK
3		*	2402.198	103.388	71.058	N/A	N/A	32.330	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/31 - 01:23
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Vertical
EUT: ACCESS POINT	Power: By POE
Test Mode: Transmit by BLE at channel 2402MHz	

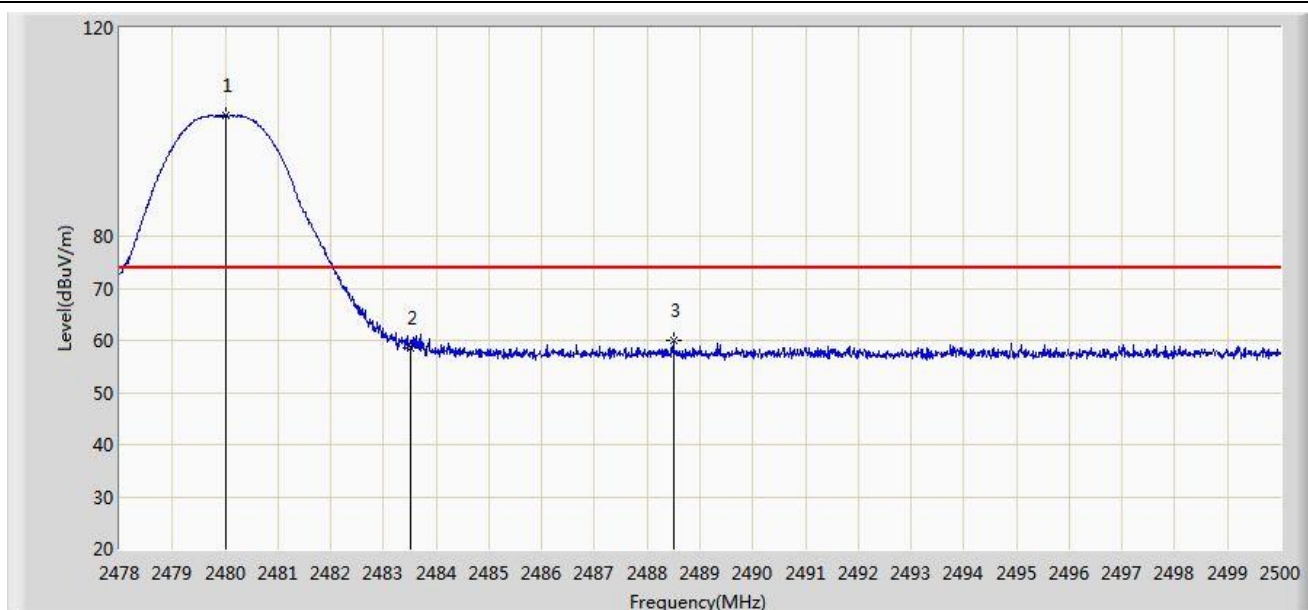


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2366.810	48.072	15.904	-5.928	54.000	32.167	AV
2			2390.000	47.238	14.964	-6.762	54.000	32.274	AV
3		*	2402.008	102.802	70.473	N/A	N/A	32.329	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/31 - 01:24
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Horizontal
EUT: ACCESS POINT	Power: By POE
Test Mode: Transmit by BLE at channel 2480MHz	

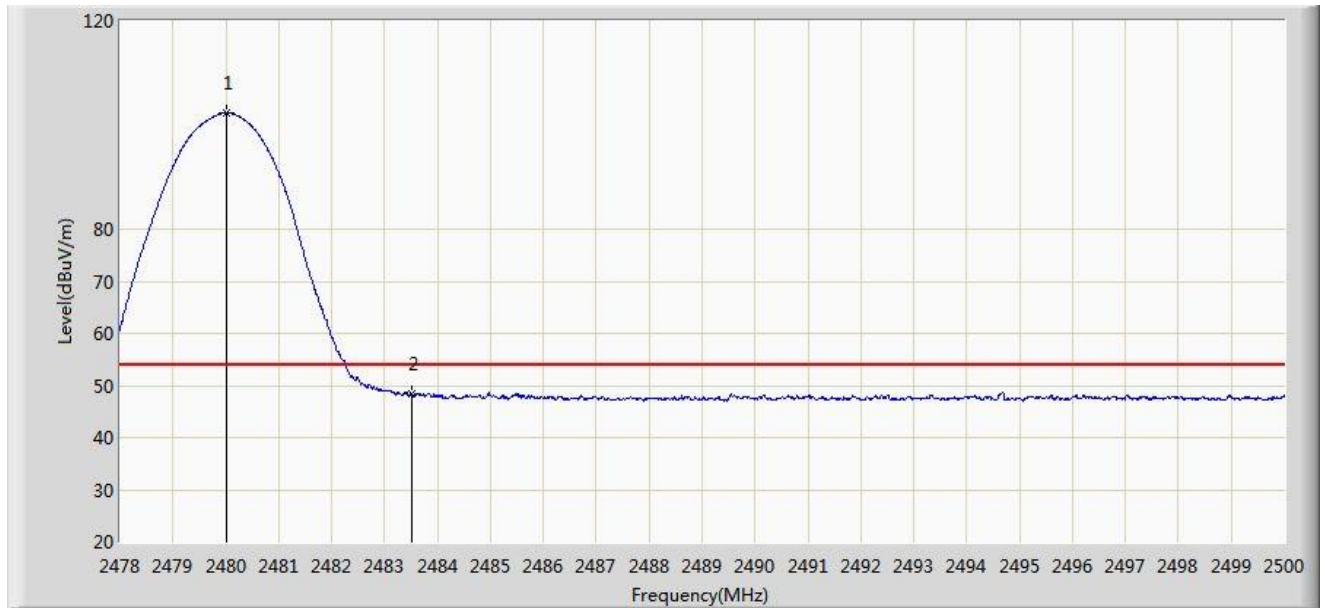


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.013	103.120	70.431	N/A	N/A	32.688	PK
2			2483.500	58.408	25.704	-15.592	74.000	32.704	PK
3			2488.494	60.083	27.356	-13.917	74.000	32.727	PK

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/31 - 01:25
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Horizontal
EUT: ACCESS POINT	Power: By POE
Test Mode: Transmit by BLE at channel 2480MHz	

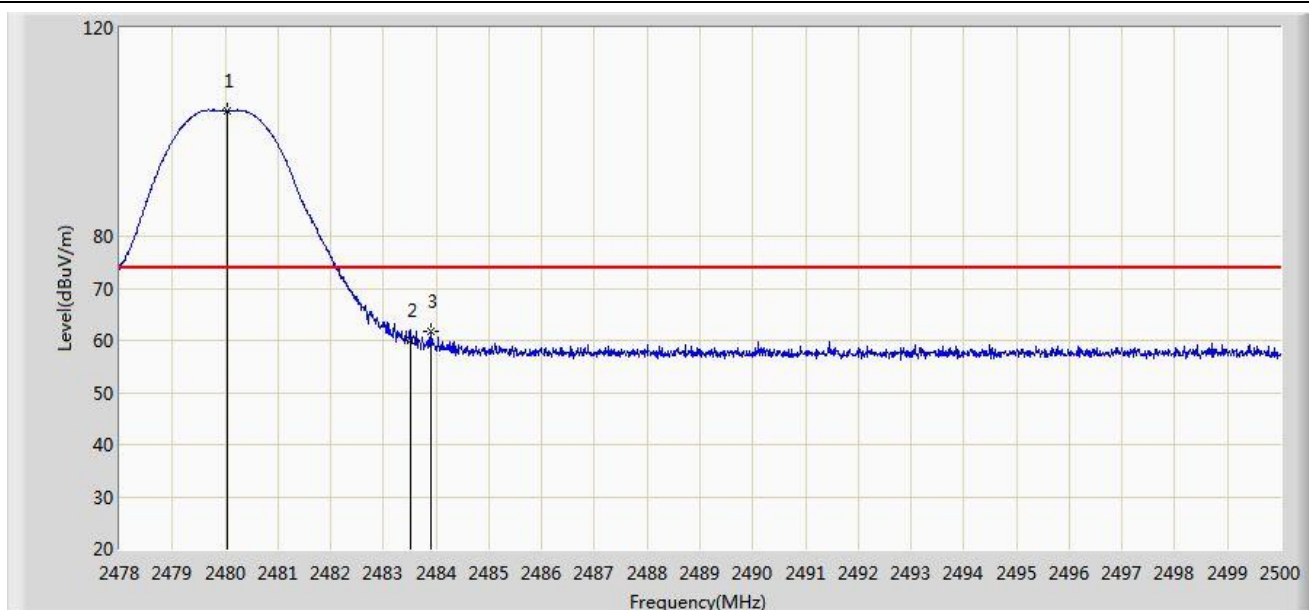


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.002	102.253	69.565	N/A	N/A	32.688	AV
2			2483.500	48.490	15.786	-5.510	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/31 - 01:26
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Vertical
EUT: ACCESS POINT	Power: By POE
Test Mode: Transmit by BLE at channel 2480MHz	

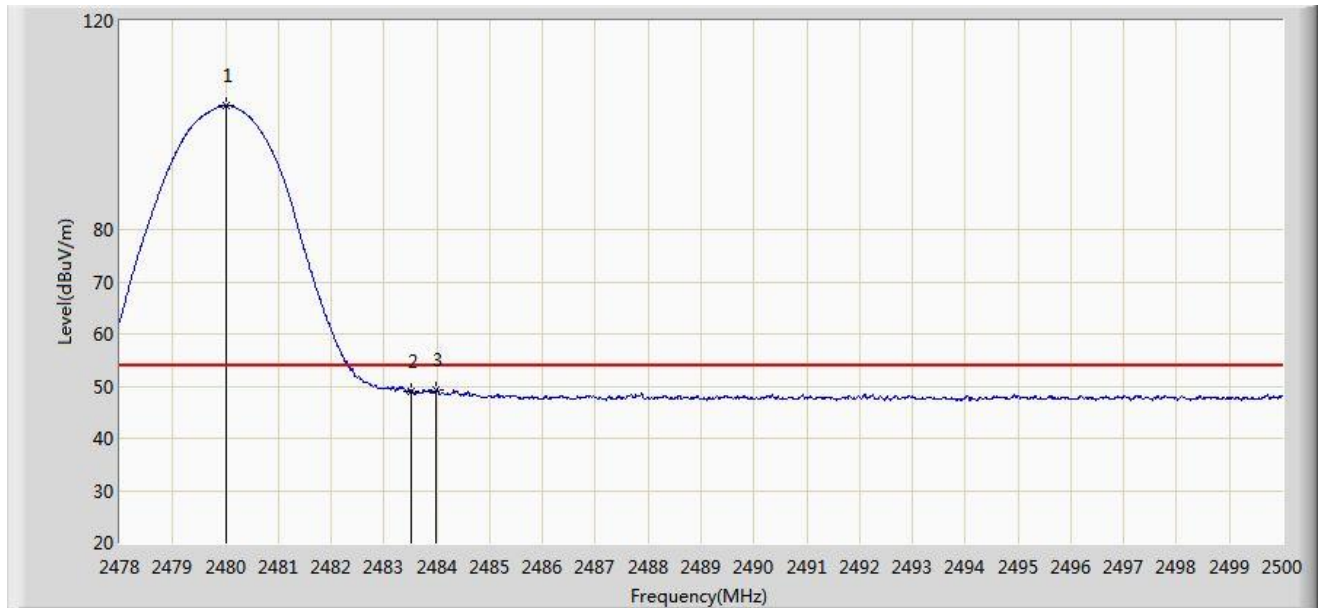


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.046	104.191	71.502	N/A	N/A	32.689	PK
2			2483.500	59.978	27.274	-14.022	74.000	32.704	PK
3			2483.907	61.639	28.933	-12.361	74.000	32.706	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/31 - 01:27
Limit: NCC LP0002_1GHz-40GHz	Engineer: Kevin Ker
Probe: BBHA 9120D	Polarity: Vertical
EUT: ACCESS POINT	Power: By POE
Test Mode: Transmit by BLE at channel 2480MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.002	103.696	71.008	N/A	N/A	32.688	AV
2			2483.500	49.097	16.393	-4.903	54.000	32.704	AV
3			2483.995	49.136	16.429	-4.864	54.000	32.707	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

5.7. 6dB 佔用頻寬

5.7.1. 量測方法

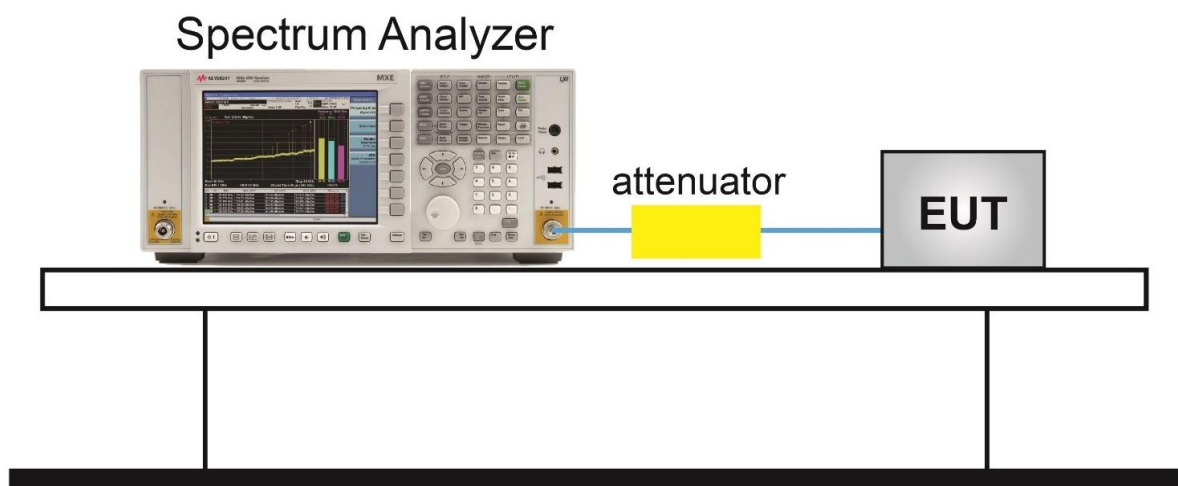
待測物之天線埠經由適當之衰減直接連至頻譜分析儀 RF 輸入端，設定頻譜分析儀之解析度頻寬為 100kHz，視訊頻寬不小於解析度頻寬，頻率掃描範圍(SPAN)遠大於解析度頻寬。

待測物應在正常發射狀態下量測。

5.7.2. 限制要求

依據國家通訊傳播委員會低功率射頻電機技術規範之第3.10.1.6(2)(A)節之要求，6dB頻寬至少應有 500kHz。

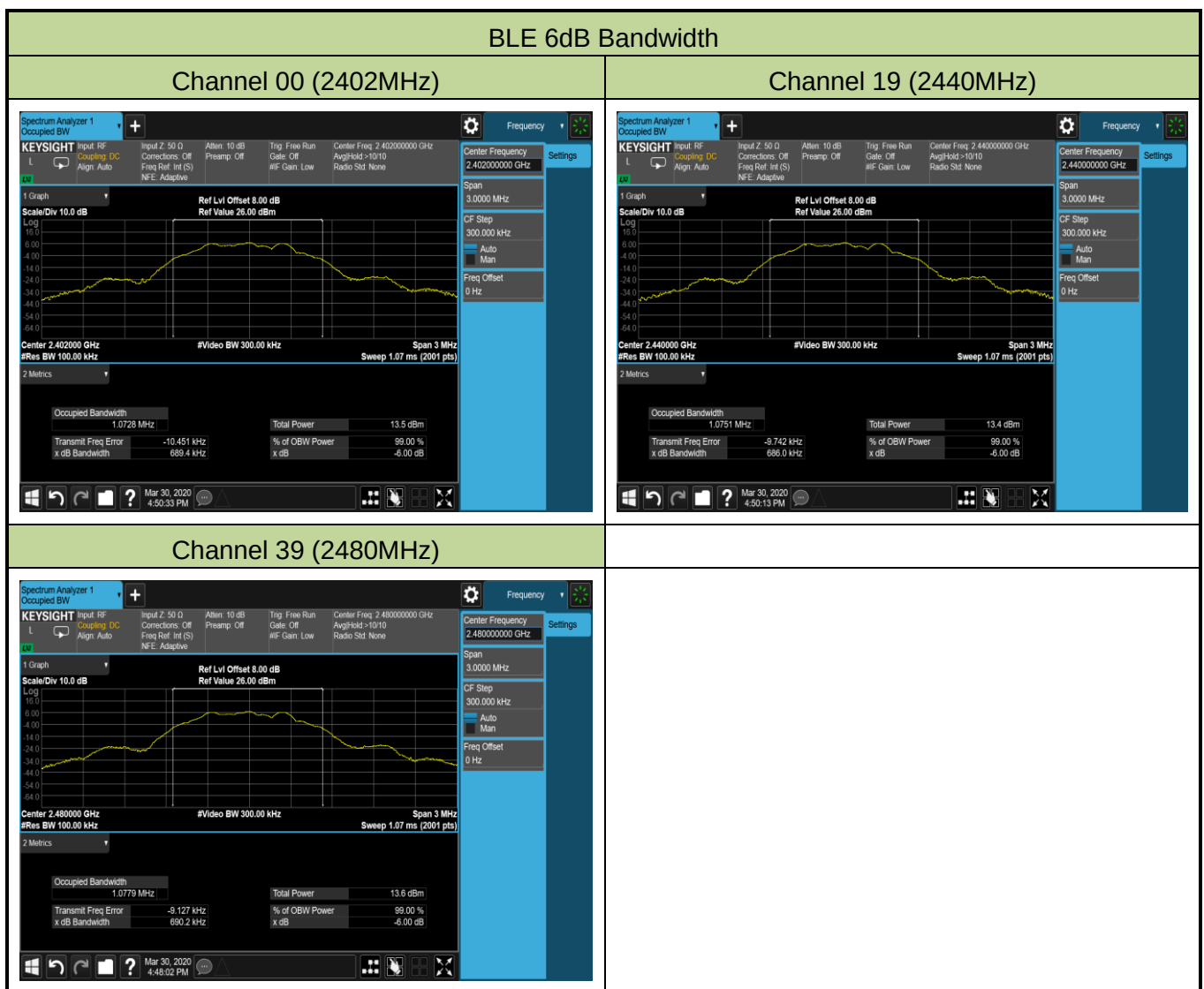
5.7.3. 測試架構圖



5.7.4. 佔用頻寬測試結果

待測物名稱	ACCESS POINT	測試日期	2020/03/30
待測物型號	APEX0574	溫度 / 濕度	27°C / 65%
測試場地	SR2	測試工程師	Kevin Ker

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
BLE	1	00	2402	0.69	≥ 0.5	Pass
BLE	1	19	2440	0.69	≥ 0.5	Pass
BLE	1	39	2480	0.69	≥ 0.5	Pass



5.8. 發射電功率頻譜密度

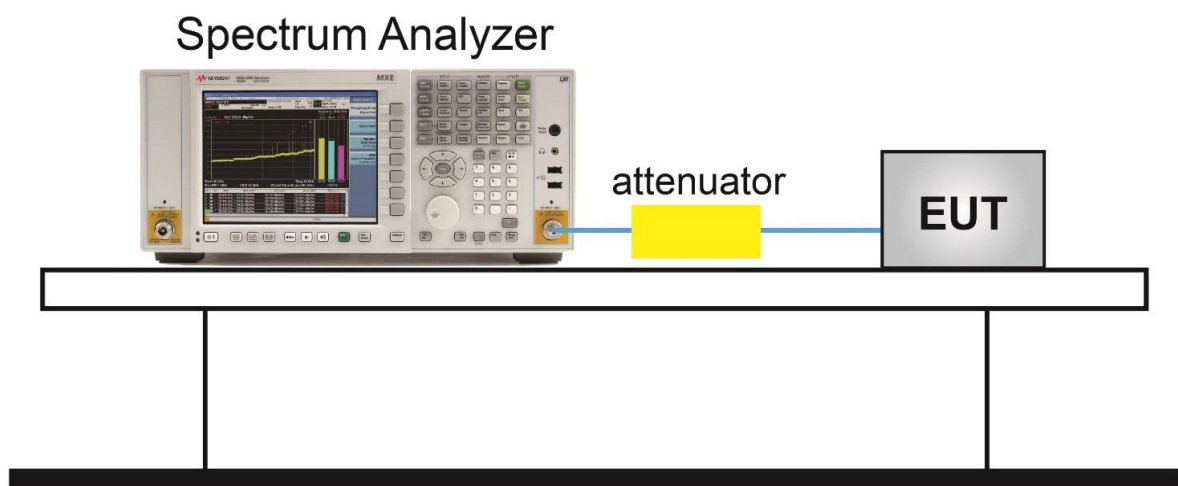
5.8.1. 量測方法

待測物之天線埠經由適當之衰減直接連至頻譜分析儀 RF 輸入端。找出發射峰值並擴展於通帶內，設定頻譜分析儀之解析度頻寬為 3kHz，視訊頻寬大於解析度頻寬，掃瞄時間為頻率掃瞄範圍除以 3kHz。
($\text{SWEEP TIME} = \text{SPAN}/3\text{kHz}$)。

5.8.2. 限制要求

依據國家通訊傳播委員會低功率射頻電機技術規範之第 3.10.1.6(2)(B)節，在使用頻率範圍之任意 3 千赫(kHz)頻寬內，由發射機傳導至天線之峰值發射電功率密度在任意期間內，皆不得大於 8dBm。

5.8.3. 測試架構圖

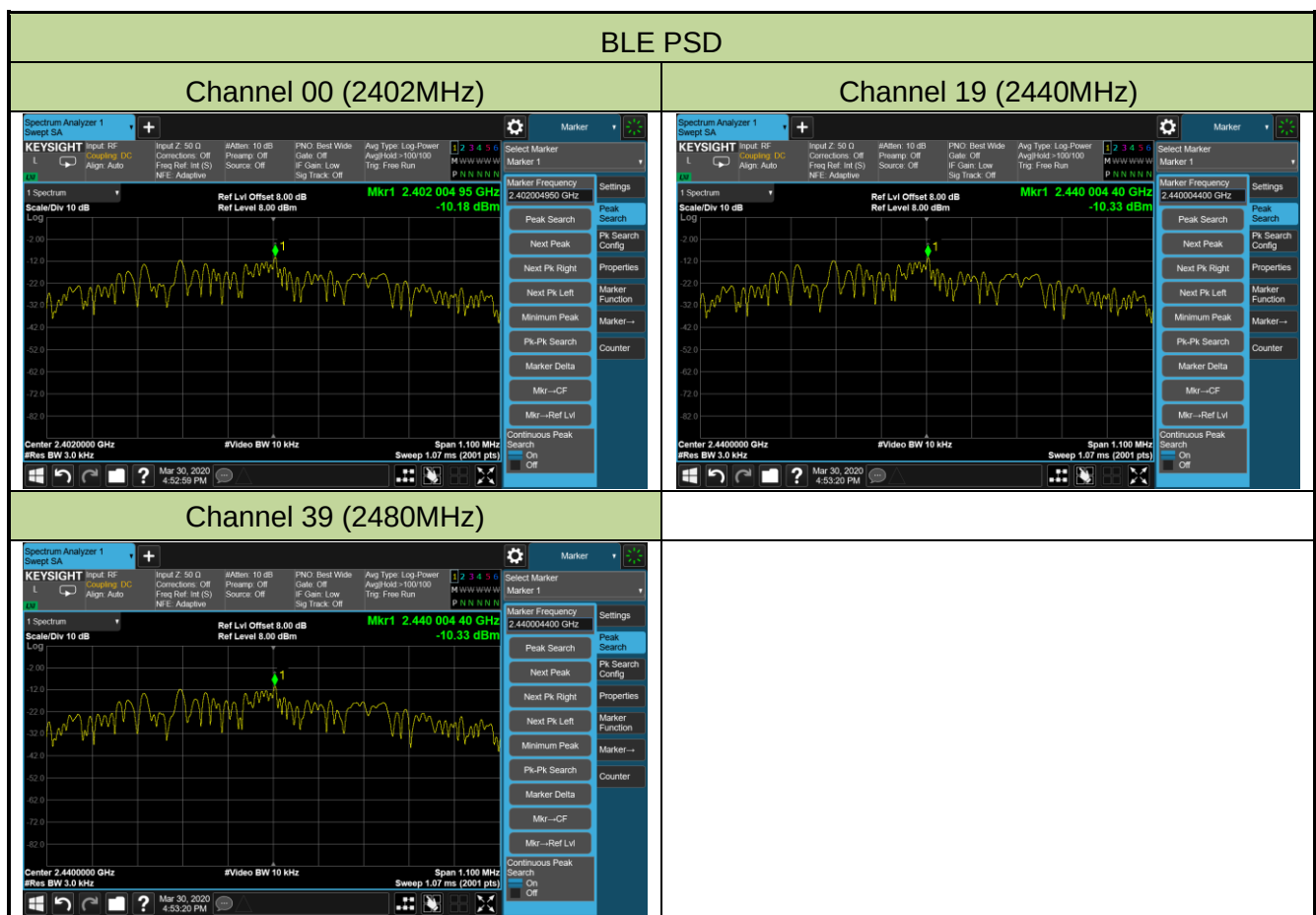


5.8.4. 功率頻譜密度量測結果

待測物名稱	ACCESS POINT	溫度	27°C
待測物型號	APEX0574	濕度	65%
測試場地	SR2	測試日期	2020/03/30
測試項目	Power Spectral Density	測試工程師	Kevin Ker

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	PSD Result (dBm / 3kHz)	Limit (dBm / 3kHz)	Result
BLE	1	00	2402	-10.18	≤ 5.60	Pass
BLE	1	19	2440	-10.33	≤ 5.60	Pass
BLE	1	39	2480	-10.33	≤ 5.60	Pass

Note: Limit = 8dBm/3kHz - (8.4dBi - 6dBi) = 5.6dBm/3kHz.



The End