

NCC

低功率射頻電機型式試驗報告

產品名稱 : OmniAccess Stellar
型號 : OAW-AP1201
廠牌 : Alcatel-Lucent Enterprise
申請者 : 皇輝科技股份有限公司
申請者地址 : 臺北市內湖區民權東路6段11巷43之1號3樓
測試標準 : LP0002 (107 年版)
參考法規 : ANSI C63.10-2013
測試結果 : 符合
測試日期 : 2018.11.15 ~ 2018.11.30

測試工程師 : 
(柯文凱)
報告審核人 : 
(陳柏均)
報告簽屬人 : 
(柯承志)



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修訂紀錄

報告編號	版本	描述	發行日期
1811TW0111-T2	1.0	Original Report	2018-12-07

1. 一般資訊

申請者	:	皇輝科技股份有限公司
申請者地址	:	臺北市內湖區民權東路 6 段 11 巷 43 之 1 號 3 樓
製造商	:	ALE International
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 Film. 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

2. 產品描述

2.1 產品資訊

產品名稱	OmniAccess Stellar
產品型號	OAW-AP1201
廠牌	Alcatel-Lucent Enterprise
藍牙版本	V5.0 dual mode
頻率範圍	2402 ~ 2480 MHz
傳輸速率	1Mbps & 2Mbps
待測物電壓	POE input or AC adapter input
配件(選配)	
充電器 1	Model No.: ADP-30HR B Input Power: 100 - 240V ~ 50/60Hz, 1.0A Output Power: 48VDC/0.66A
充電器 2	Model No.: PD-9001 GR/AT/AC Input Power: 100 - 240V ~ 50/60Hz, 0.67A Output Power: 55VDC/0.6A

2.2 通道清單

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	--	--	--	--

2.3 測試模式

Test Mode	Mode 1: Transmit by BLE 1Mbps
	Mode 2: Transmit by BLE 2Mbps

2.4 操作程式

1.	Turn on the power of all equipment.
2.	Execute "Console" software in the notebook to control the EUT by console cable.
3.	Configure the test channel and the data rate.
4.	Start test.

3. 測試設備明細

電源傳導 - SR2

儀器名稱	製造商	型號	財產編號	校正週期	有效日期
Two-Line V-Network	R&S	ENV216	MRTTWA00019	1 year	2019/3/20
Two-Line V-Network	R&S	ENV216	MRTTWA00020	1 year	2019/3/20
8-Wire ISN (T8)	R&S	ENY81	MRTTWA00018	1 year	2019/4/24
EMI Test Receiver	R&S	ESR3	MRTTWA00045	1 year	2019/5/14

輻射干擾 - AC1

儀器名稱	製造商	型號	財產編號	校正週期	有效日期
Active Loop Antenna	SCHWARZBECK	FMZB 1519B	MRTTWA00002	1 year	2019/4/24
Broadband TRILOG Antenna	SCHWARZBECK	VULB 9162	MRTTWA00001	1 year	2019/5/22
Broadband Hornantenna	SCHWARZBECK	BBHA 9120D	MRTTWA00003	1 year	2019/4/24
Breitband Hornantenna	SCHWARZBECK	BBHA 9170	MRTTWA00004	1 year	2019/4/23
Broadband Preamplifier	SCHWARZBECK	BBV 9718	MRTTWA00005	1 year	2019/4/23
Broadband Amplifier	SCHWARZBECK	BBV 9721	MRTTWA00006	1 year	2019/4/23
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2019/3/19
EXA Signal Analyzer	KEYSIGHT	N9010B	MRTTWA00012	1 year	2019/7/30
Antenna Cable	HUBERSUHNER	SF106	MRTTWE00010	1 year	2019/5/18
Temperature/Humidity Meter	TFA	35.1078.10.1 T	MRTTWA00032	1 year	2019/5/21

傳導測試 - SR2

儀器名稱	製造商	型號	財產編號	校正週期	有效日期
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2019/7/30
EXA Signal Analyzer	KEYSIGHT	N9010B	MRTSUE06457	1 year	2019/7/19
X-Series USB Peak and Average Power Sensor	KEYSIGHT	U2021XA	MRTTWA00014	1 year	2019/4/24

EMI 測試軟體

軟體名稱	製造商	版本
e3	Audix	9.160520a
EMI	Quietek	V3

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% ($U=2U_c(y)$): 2.53dB
輻射干擾量測 (Radiated Spurious Emission)
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 3.92dB (Below 30M)
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 4.25dB (30M~1G)
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 4.40dB (1G~18G)
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 4.45dB (18G~40G)

5. 測試結果

產品名稱 OmniAccess Stellar
型號 OAW-AP1201

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	$\leq 8\text{dBm}$	符合	第 5.8 章節

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。

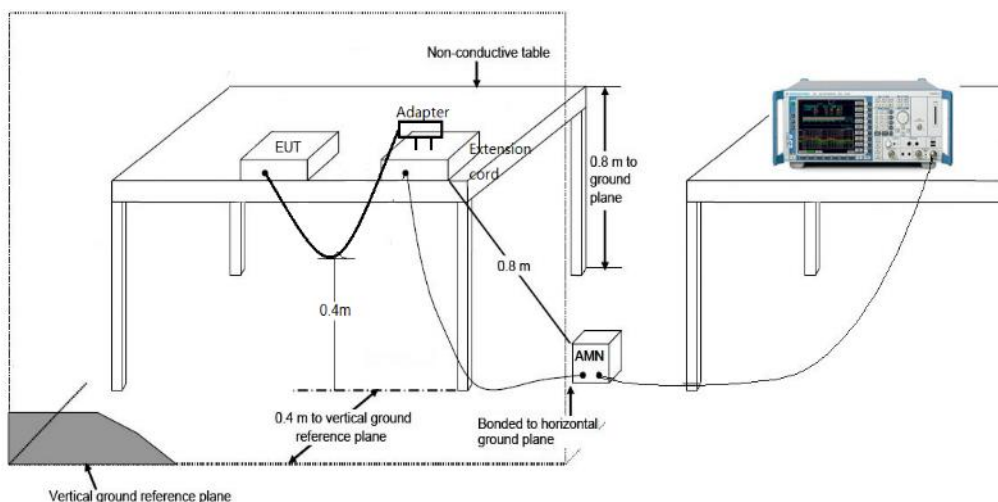
5.1.2 限制要求

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(μ H)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

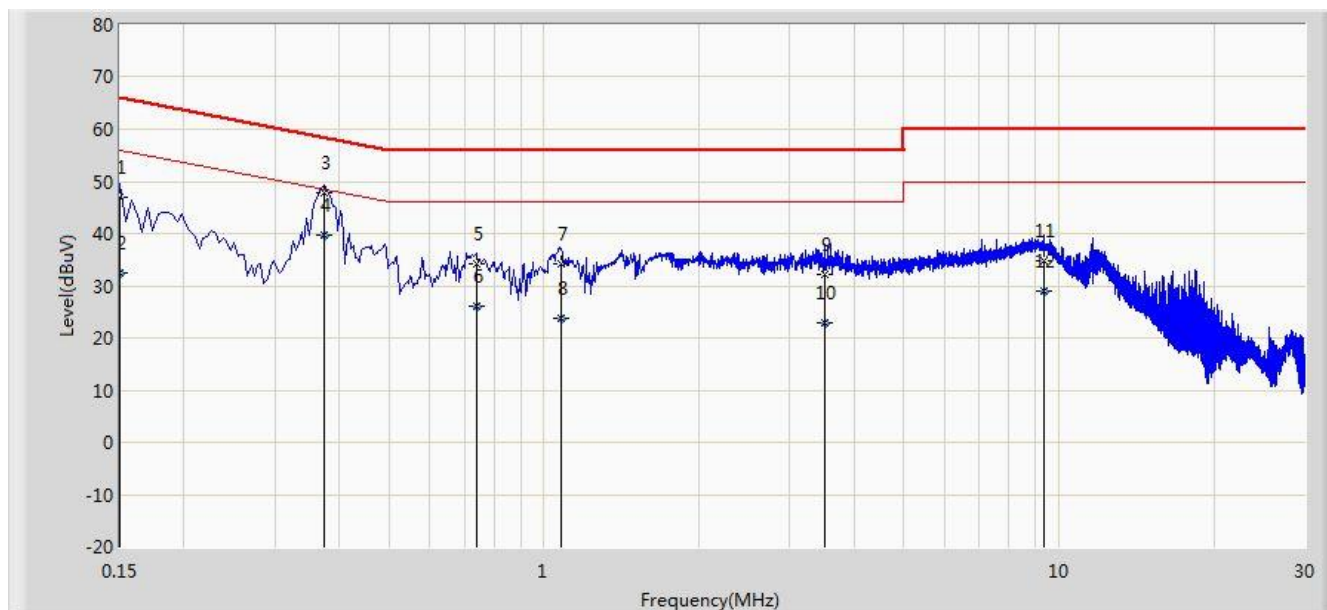
註：隨頻率之對數遞減

5.1.3 測試架構圖



5.1.4 電源端點測試結果

Site: SR2	Time: 2018/11/27 - 10:12
Limit: NCC LP0002_CE_0.15MHz-30MHz	Engineer: Kevin Ker
Probe: CE_ENV216-L1 (Filter ON)	Polarity: Neutral
EUT: OmniAccess Stellar	Power: AC 110V/60Hz
Test Mode 1	

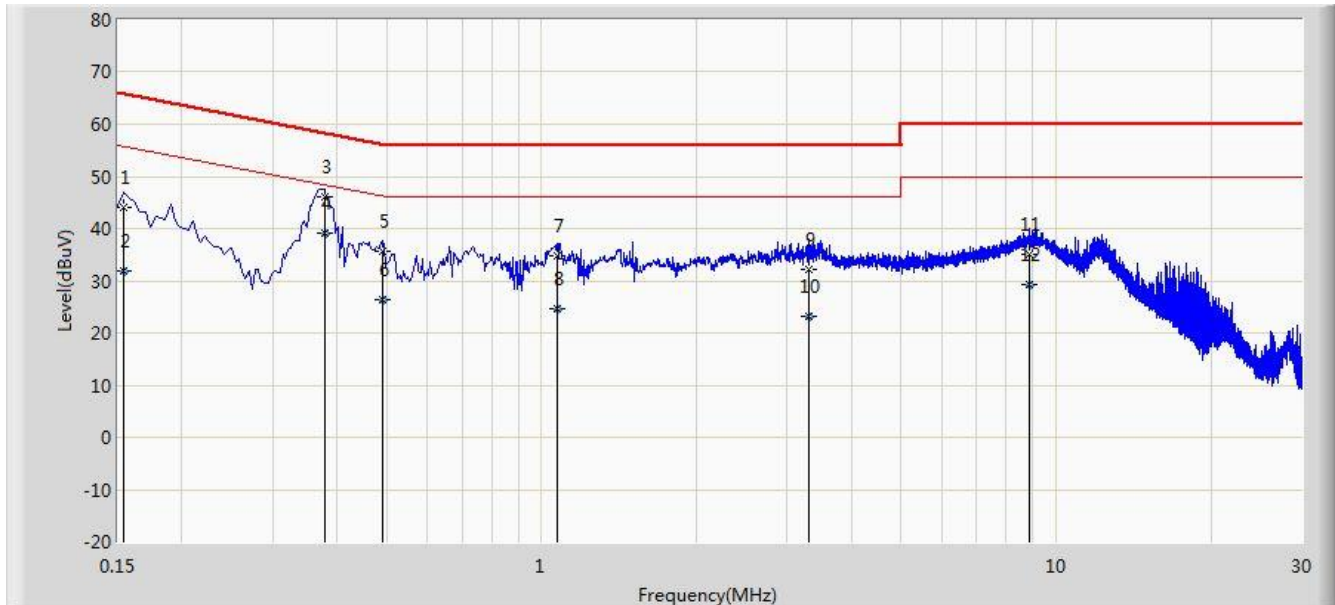


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.150	46.980	35.812	-19.020	66.000	11.168	QP
2			0.150	32.523	21.354	-23.477	56.000	11.168	AV
3			0.374	47.793	37.729	-10.618	58.412	10.064	QP
4		*	0.374	39.597	29.533	-8.814	48.412	10.064	AV
5			0.738	34.333	24.289	-21.667	56.000	10.044	QP
6			0.738	25.988	15.945	-20.012	46.000	10.044	AV
7			1.082	34.329	24.424	-21.671	56.000	9.905	QP
8			1.082	23.882	13.977	-22.118	46.000	9.905	AV
9			3.514	32.040	22.131	-23.960	56.000	9.909	QP
10			3.514	22.902	12.992	-23.098	46.000	9.909	AV
11			9.370	34.864	24.714	-25.136	60.000	10.150	QP
12			9.370	29.027	18.877	-20.973	50.000	10.150	AV

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

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

Site: SR2	Time: 2018/11/27 - 10:17
Limit: NCC LP0002_CE_0.15MHz-30MHz	Engineer: Kevin Ker
Probe: CE_ENV216-L1 (Filter ON)	Polarity: Line
EUT: OmniAccess Stellar	Power: AC 110V/60Hz
Test Mode 1	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.154	44.166	33.450	-21.615	65.781	10.716	QP
2			0.154	31.903	21.187	-23.879	55.781	10.716	AV
3			0.378	46.032	35.936	-12.292	58.323	10.096	QP
4		*	0.378	39.243	29.147	-9.080	48.323	10.096	AV
5			0.490	35.531	25.353	-20.636	56.168	10.179	QP
6			0.490	26.416	16.237	-19.752	46.168	10.179	AV
7			1.074	34.698	24.792	-21.302	56.000	9.906	QP
8			1.074	24.591	14.685	-21.409	46.000	9.906	AV
9			3.314	32.162	22.263	-23.838	56.000	9.900	QP
10			3.314	23.327	13.427	-22.673	46.000	9.900	AV
11			8.858	35.074	24.903	-24.926	60.000	10.171	QP
12			8.858	29.403	19.232	-20.597	50.000	10.171	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

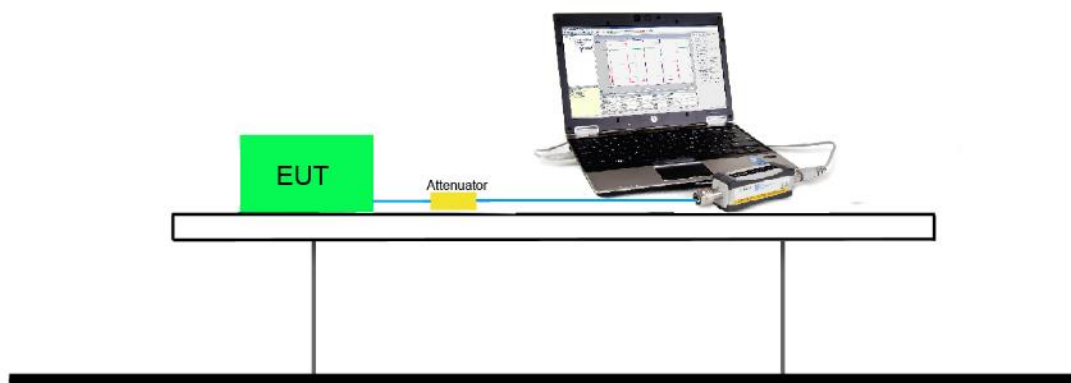
國家通訊傳播委員會低功率射頻電機技術規範之第3.10.1.2節 峰值傳導輸出功率：

- (1) 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。
- (2) 操作於5725 MHz~5850 MHz 之所有跳頻系統：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。

若用於非固定式點對點操作時，若其發射天線之方向性增益超過6dBi，應依所超過之dB數等量降低峰值輸出功率。

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	OmniAccess Stellar	測試日期	2018/11/18
待測物型號	OAW-AP1201	溫度 / 濕度	24°C / 55%
測試場地	SR2	測試工程師	Kevin Ker

Test Result of Peak Output Power

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Result
BLE	1	00	2402	19.68	≤ 30	Pass
BLE	1	19	2440	19.59	≤ 30	Pass
BLE	1	39	2480	16.34	≤ 30	Pass
BT5.0	2	00	2402	19.73	≤ 30	Pass
BT5.0	2	19	2440	19.68	≤ 30	Pass
BT5.0	2	39	2480	8.99	≤ 30	Pass

Test Result of Average Output Power (Reporting Only)

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Average Power (dBm)	Limit (dBm)	Result
BLE	1	00	2402	19.51	≤ 30	Pass
BLE	1	19	2440	19.43	≤ 30	Pass
BLE	1	39	2480	16.18	≤ 30	Pass
BT5.0	2	00	2402	19.54	≤ 30	Pass
BT5.0	2	19	2440	19.45	≤ 30	Pass
BT5.0	2	39	2480	8.77	≤ 30	Pass

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

Antenna Type	Frequency Band (GHz)	TX Paths	Per Chain Max Antenna Gain (dBi)		Beam-Forming Directional Gain (dBi)	CDD Directional Gain(dBi)	
			Ant 0	Ant 1		For Power	For PSD
Wi-Fi Internal Antenna							
PCB	2412 ~ 2462	2	4.70	3.70	7.22	4.70	7.71
	5150 ~ 5250	2	3.80	3.00	6.42	3.80	6.81
	5250 ~ 5350	2	3.80	3.00	6.42	3.80	6.81
	5470 ~ 5725	2	4.60	3.80	7.22	4.60	7.61
	5725 ~ 5850	2	4.60	3.00	6.85	4.60	7.61
Bluetooth Internal Antenna							
PCB	2402 ~ 2480	1	3.70		--		

Note:

- The EUT supports SISO technology for 802.11b mode only.
- The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.
For CDD transmissions, directional gain is calculated as follows, $N_{ANT} = 2$, $N_{SS} = 1$.
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 = $10 \log (N_{ANT} / N_{SS}) \text{ dB} = 3.01$;
 - For power measurements on IEEE 802.11 devices,
Array Gain = 0 dB for $N_{ANT} \leq 4$;
- The EUT also supports Beam Forming mode, and the Beam Forming support 802.11n/ac, not include 802.11a/b/g. The Beam-Forming Directional Gain (dBi) = 3.0 dBi.

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。

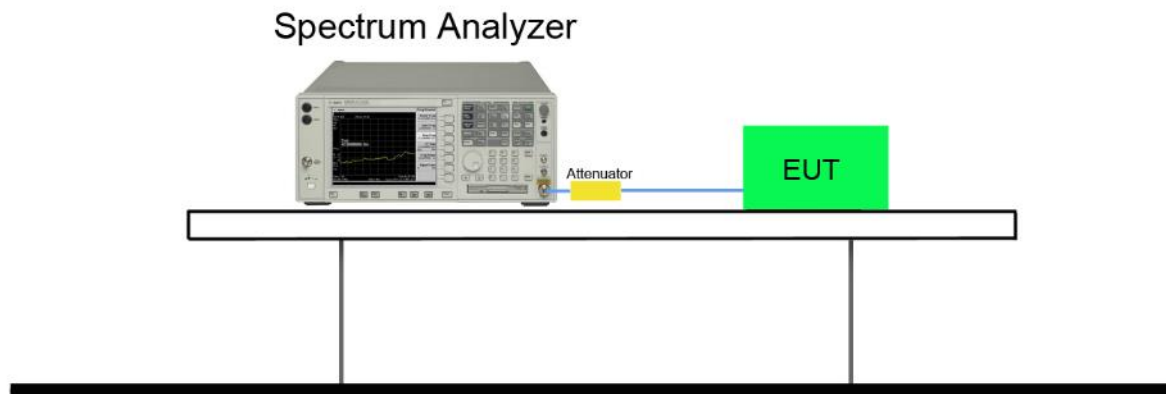
5.4.2 限制要求

依據國家通訊傳播委員會低功率射頻電機技術規範之第 3.10.1.5 節規定。

帶外發射限制：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。

5.4.3 測試架構圖



5.4.4 帶外輻射測試結果

待測物名稱	OmniAccess Stellar	測試日期	2018/11/19
待測物型號	OAW-AP1201	溫度 / 濕度	24°C / 55%
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
BT5.0	2	00	2402	20dBc	Pass
BT5.0	2	19	2440	20dBc	Pass
BT5.0	2	39	2480	20dBc	Pass

BLE Out-of-Band Emissions

Channel 00 (2402MHz)

100kHz PSD reference Level



Low Band Edge



Spurious Emission

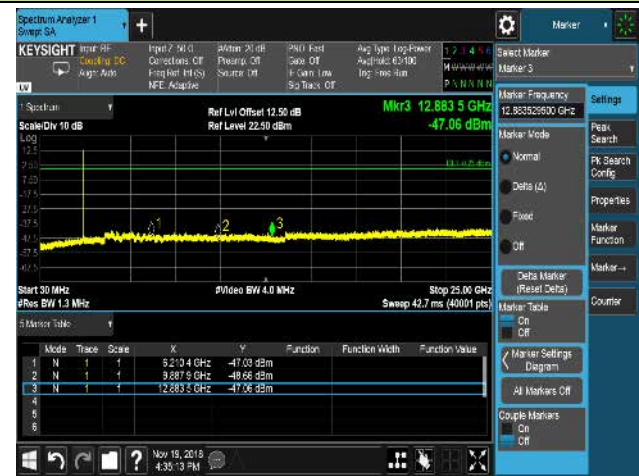


Channel 19 (2440MHz)

100kHz PSD reference Level



Spurious Emission



Channel 39 (2480MHz)

100kHz PSD reference Level



High Band Edge



Spurious Emission



BT5.0 Out-of-Band Emissions

Channel 00 (2402MHz)

100kHz PSD reference Level



Low Band Edge



Spurious Emission

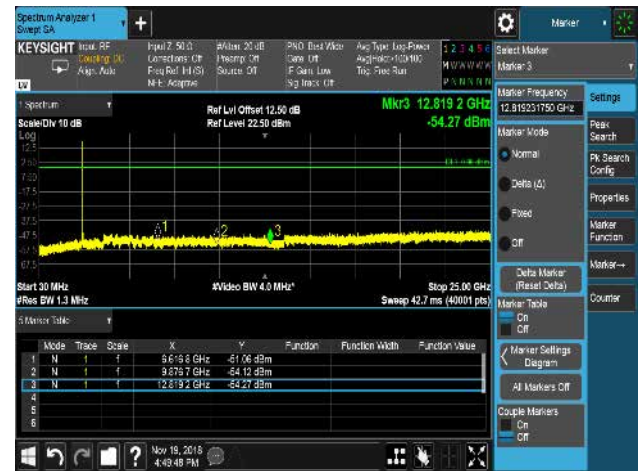


Channel 19 (2440MHz)

100kHz PSD reference Level



Spurious Emission



Channel 39 (2480MHz)

100kHz PSD reference Level



High Band Edge



Spurious Emission



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 C63.10-2014 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(RBW:1MHz,VBW:10Hz)，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

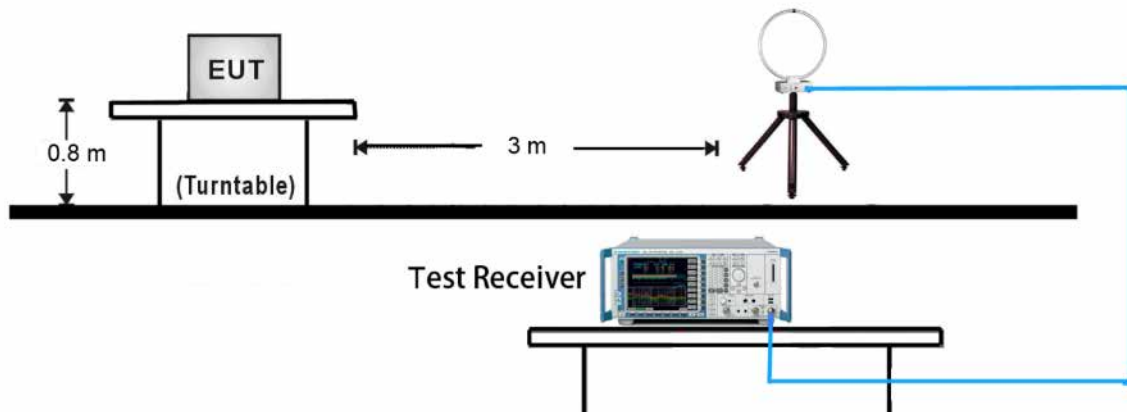
其電場強度不得超過下表之限值，且其不必要之發射皆不得大於主波發射強度。各頻段重疊處，以較嚴格之限制值為準。

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

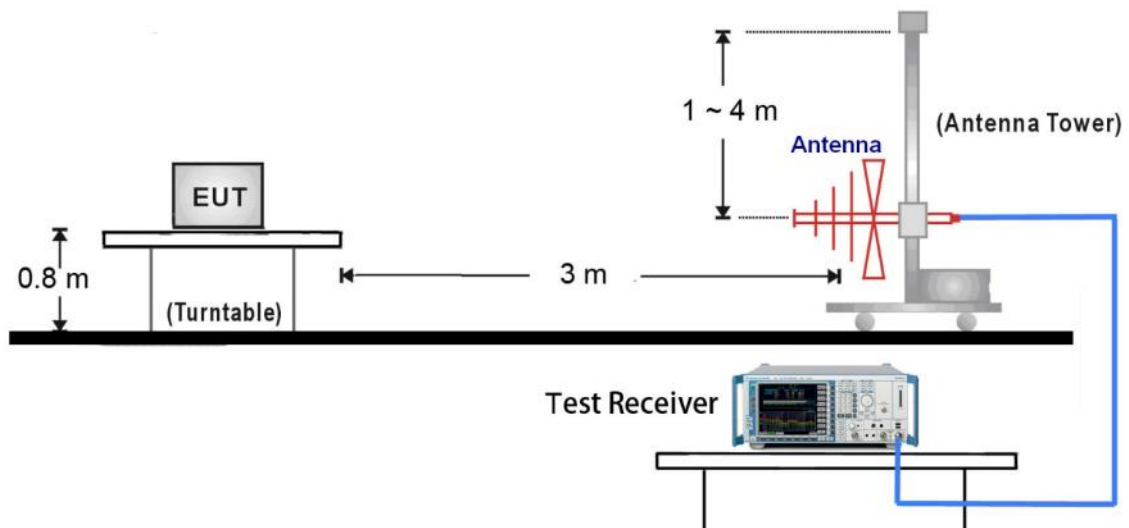
上表規定之電場強度，頻率在 9-90kHz 千赫(kHz)、110-490 千赫(kHz)以及 1000 兆赫(MHz)以上之發射，其量測以平均值檢波器為基準，且須符合低功率射頻電機技術規範第 5.14 節之規定；其他頻率之發射，應以 CISPR 準峰值(quasi-peak) 檢波器測量；非以上表所指定之距離測量時須符合低功率射頻電機技術規範第 5.5 節之規定，而輻射發射之量測頻率範圍須符合低功率射頻電機技術規範第 5.12 節之規定。

5.5.3 測試架構圖

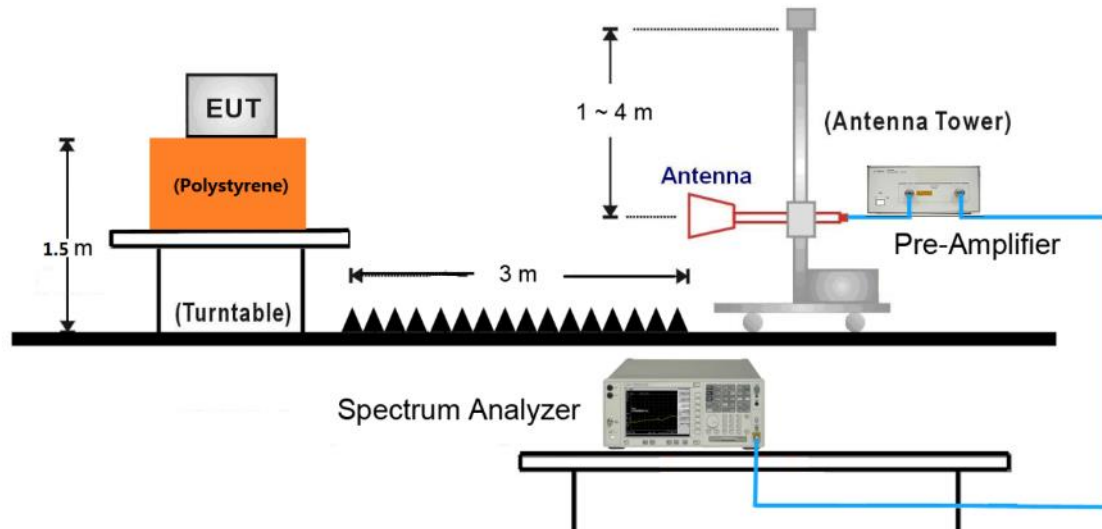
Under 30MHz Test Setup:



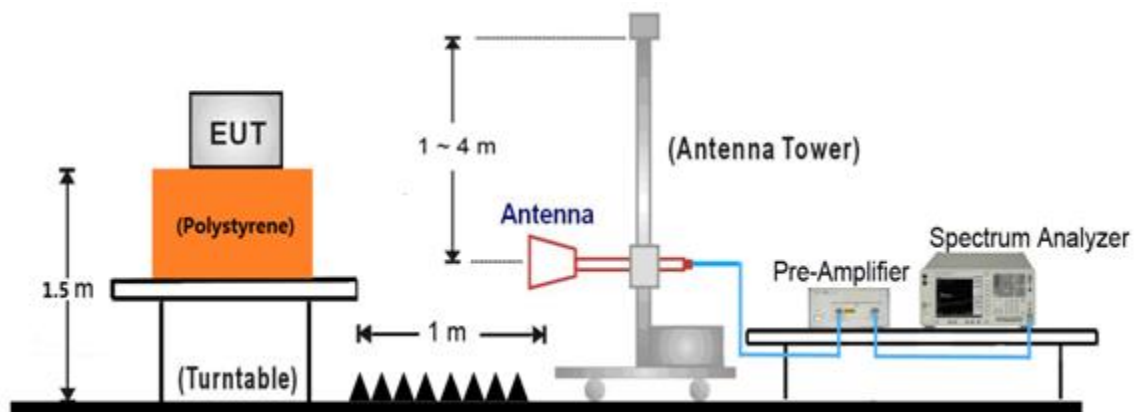
Under 1GHz Test Setup:



1GHz ~ 18GHz Test Setup:



18GHz ~25GHz Test Setup:



5.5.4 輻射電場強度測試結果

Test Mode:	BLE	Test Site:	AC1
Test Channel:	00	Test Engineer:	Kevin Ker
Remark:	1. Average measurement was not performed if peak level lower than average limit. 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
	3915.5	39.3	0.3	39.6	74.0	-34.4	Peak	Horizontal
	4799.5	43.8	3.7	47.5	74.0	-26.5	Peak	Horizontal
*	6253.0	39.6	7.0	46.6	94.8	-48.2	Peak	Horizontal
*	10316.0	34.2	16.7	50.9	94.8	-43.9	Peak	Horizontal
	4051.5	38.9	0.5	39.4	74.0	-34.6	Peak	Vertical
	4799.5	45.0	3.7	48.7	74.0	-25.3	Peak	Vertical
*	6253.0	37.2	7.0	44.2	94.8	-50.6	Peak	Vertical
*	10001.5	34.1	15.4	49.5	94.8	-45.3	Peak	Vertical

Note 1: "*" is not in restricted band, its limit is 20dBc of the fundamental emission level (114.8dBμV/m) or 15.209 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)

Test Mode:	BLE	Test Site:	AC1
Test Channel:	19	Test Engineer:	Kevin Ker
Remark:	1. Average measurement was not performed if peak level lower than average limit. 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
	4000.5	39.0	0.4	39.4	74.0	-34.6	Peak	Horizontal
	4884.5	43.0	3.7	46.7	74.0	-27.3	Peak	Horizontal
*	6253.0	38.4	7.0	45.4	94.4	-49.0	Peak	Horizontal
*	9865.5	31.8	16.0	47.8	94.4	-46.6	Peak	Horizontal
	3847.5	39.7	0.3	40.0	74.0	-34.0	Peak	Vertical
	4884.5	44.0	3.7	47.7	74.0	-26.3	Peak	Vertical
*	6882.0	35.5	9.7	45.2	94.4	-49.2	Peak	Vertical
*	10188.5	31.3	16.2	47.5	94.4	-46.9	Peak	Vertical

Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (114.4dBμV/m) or 15.209 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)

Test Mode:	BLE	Test Site:	AC1
Test Channel:	39	Test Engineer:	Kevin Ker
Remark:	1. Average measurement was not performed if peak level lower than average limit. 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
	4009.0	39.1	0.4	39.5	74.0	-34.5	Peak	Horizontal
	4961.0	38.5	3.7	42.2	74.0	-31.8	Peak	Horizontal
*	6253.0	39.1	7.0	46.1	91.2	-45.1	Peak	Horizontal
*	9772.0	32.8	14.9	47.7	91.2	-43.5	Peak	Horizontal
	4153.5	39.1	0.9	40.0	74.0	-34.0	Peak	Vertical
	4961.0	38.3	3.7	42.0	74.0	-32.0	Peak	Vertical
*	7060.5	34.1	11.1	45.2	91.2	-46.0	Peak	Vertical
*	9976.0	31.6	15.3	46.9	91.2	-44.3	Peak	Vertical

Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (111.2dBμV/m) or 15.209 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)

Test Mode:	BT5.0	Test Site:	AC1
Test Channel:	00	Test Engineer:	Kevin Ker
Remark:	1. Average measurement was not performed if peak level lower than average limit. 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
	3941.0	39.3	0.3	39.6	74.0	-34.4	Peak	Horizontal
	4808.0	43.9	3.7	47.6	74.0	-26.4	Peak	Horizontal
*	6253.0	38.9	7.0	45.9	95.1	-49.2	Peak	Horizontal
*	10146.0	34.0	16.0	50.0	95.1	-45.1	Peak	Horizontal
	3983.5	39.1	0.4	39.5	74.0	-34.5	Peak	Vertical
	4808.0	45.4	3.7	49.1	74.0	-24.9	Peak	Vertical
*	6610.0	35.6	8.7	44.3	95.1	-50.8	Peak	Vertical
*	10112.0	34.3	15.8	50.1	95.1	-45.0	Peak	Vertical

Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (115.1dBμV/m) or 15.209 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)

Test Mode:	BT5.0	Test Site:	AC1
Test Channel:	19	Test Engineer:	Kevin Ker
Remark:	1. Average measurement was not performed if peak level lower than average limit. 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
	4145.0	38.7	0.9	39.6	74.0	-34.4	Peak	Horizontal
	4876.0	43.5	3.7	47.2	74.0	-26.8	Peak	Horizontal
*	6253.0	38.9	7.0	45.9	95.0	-49.1	Peak	Horizontal
*	10231.0	34.1	16.4	50.5	95.0	-44.5	Peak	Horizontal
	4204.5	38.5	1.1	39.6	74.0	-34.4	Peak	Vertical
	4876.0	45.2	3.7	48.9	74.0	-25.1	Peak	Vertical
*	6253.0	36.4	7.0	43.4	95.0	-51.6	Peak	Vertical
*	10044.0	32.1	15.5	47.6	95.0	-47.4	Peak	Vertical

Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (115.0dBμV/m) or 15.209 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)

Test Mode:	BT5.0	Test Site:	AC1
Test Channel:	39	Test Engineer:	Kevin Ker
Remark:	1. Average measurement was not performed if peak level lower than average limit. 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
	4145.0	39.0	0.9	39.9	74.0	-34.1	Peak	Horizontal
	4961.0	43.3	3.7	47.0	74.0	-27.0	Peak	Horizontal
*	6253.0	39.5	7.0	46.5	81.8	-35.3	Peak	Horizontal
*	10375.5	34.4	16.9	51.3	81.8	-30.5	Peak	Horizontal
	4213.0	39.1	1.2	40.3	74.0	-33.7	Peak	Vertical
	4961.0	42.6	3.7	46.3	74.0	-27.7	Peak	Vertical
*	6593.0	36.5	8.7	45.2	81.8	-36.6	Peak	Vertical
*	10035.5	34.3	15.5	49.8	81.8	-32.0	Peak	Vertical

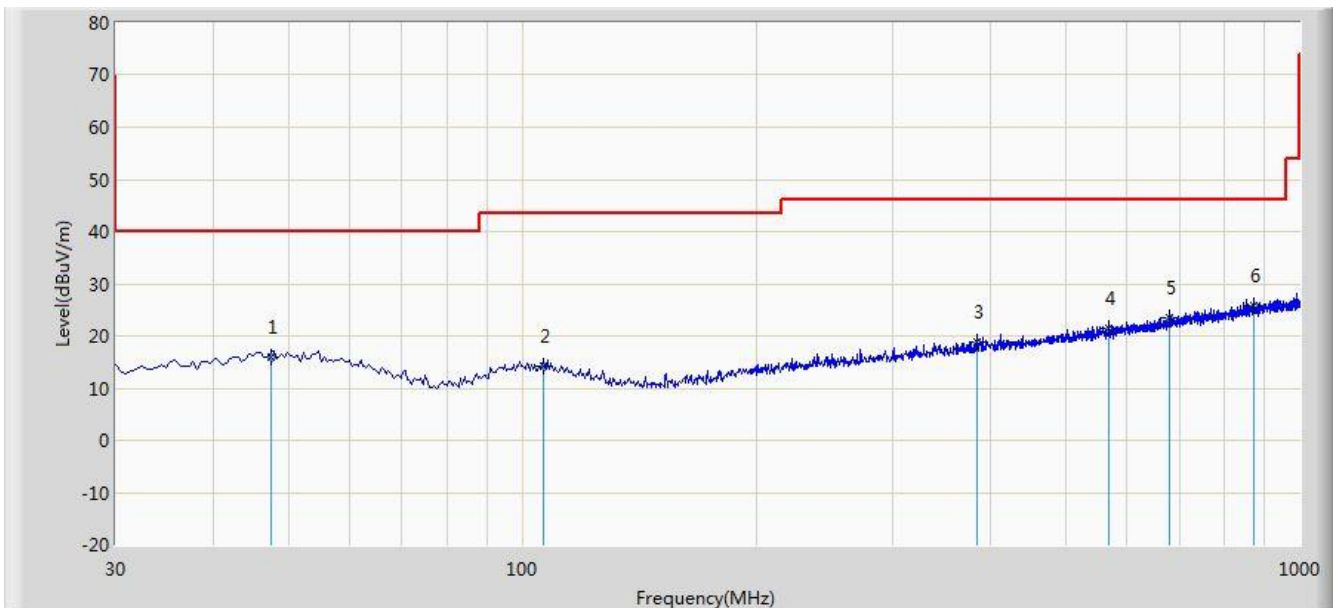
Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (101.8dBμV/m) or 15.209 which is higher.

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: 2018/11/30 - 01:34
Limit: NCC LP0002_30MHz-1GHz	Engineer: Kevin Ker
Probe: VULB9162_0.03GHz_8GHz	Polarity: Horizontal
EUT: OmniAccess Stellar	Power: AC 110V/60Hz
Worse Case Mode: Transmit by BLE at channel 2402MHz	



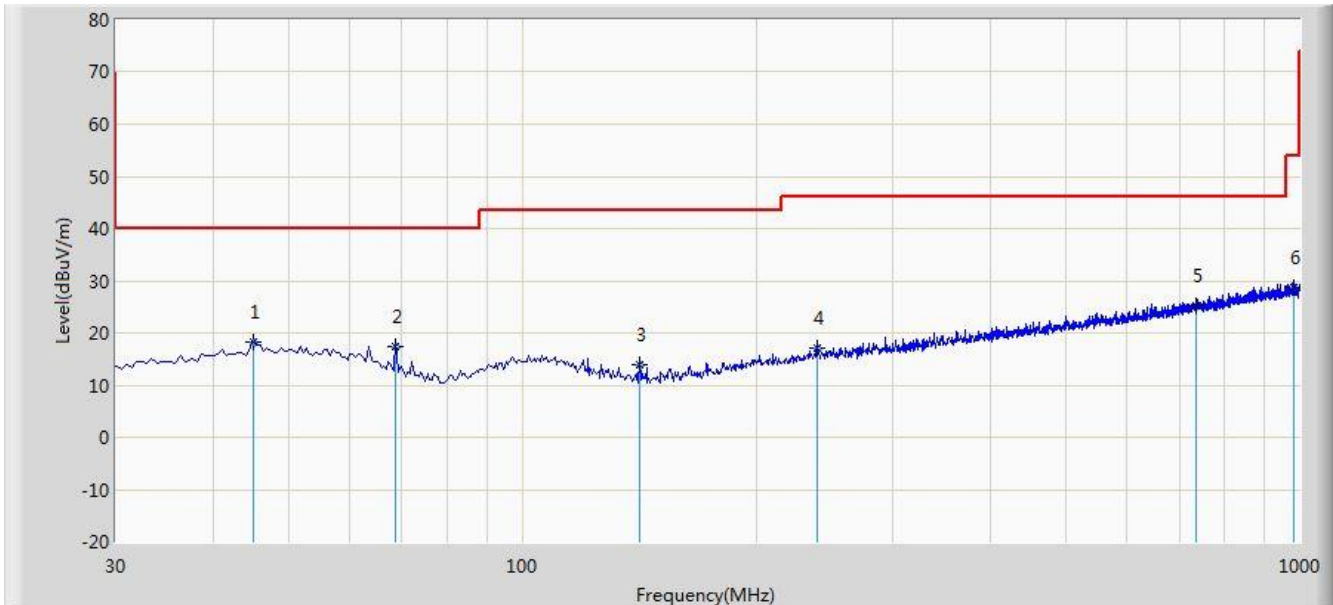
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			47.460	15.917	0.830	-24.083	40.000	15.086	QP
2			106.630	14.301	1.070	-29.199	43.500	13.231	QP
3			385.020	18.981	2.260	-27.019	46.000	16.721	QP
4			568.350	21.555	1.660	-24.445	46.000	19.894	QP
5			681.355	23.372	1.730	-22.628	46.000	21.642	QP
6		*	874.385	25.748	1.410	-20.252	46.000	24.338	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.

Site: AC1	Time: 2018/11/30 - 01:35
Limit: NCC LP0002_30MHz-1GHz	Engineer: Kevin Ker
Probe: VULB9162_0.03GHz_8GHz	Polarity: Vertical
EUT: OmniAccess Stellar	Power: AC 110V/60Hz
Worse Case Mode: Transmit by BLE at channel 2402MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			45.035	18.127	3.190	-21.873	40.000	14.937	QP
2			68.800	17.488	6.070	-22.512	40.000	11.417	QP
3			141.550	13.878	4.230	-29.622	43.500	9.647	QP
4			239.520	16.967	3.310	-29.033	46.000	13.657	QP
5		*	737.130	25.132	2.650	-20.868	46.000	22.481	QP
6			982.055	28.723	3.460	-25.277	54.000	25.264	QP

Note 1: Measure Level (dBμV/m) = Reading Level (dBμV) + 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.

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 C63.10-2014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(RBW:1MHz,VBW:10Hz)，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。

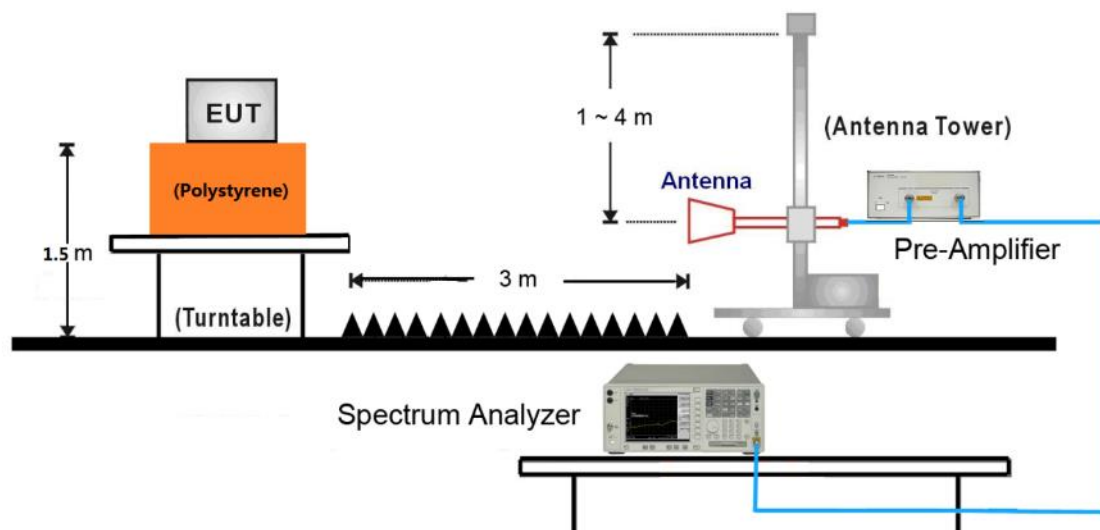
5.6.2 限制要求

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	

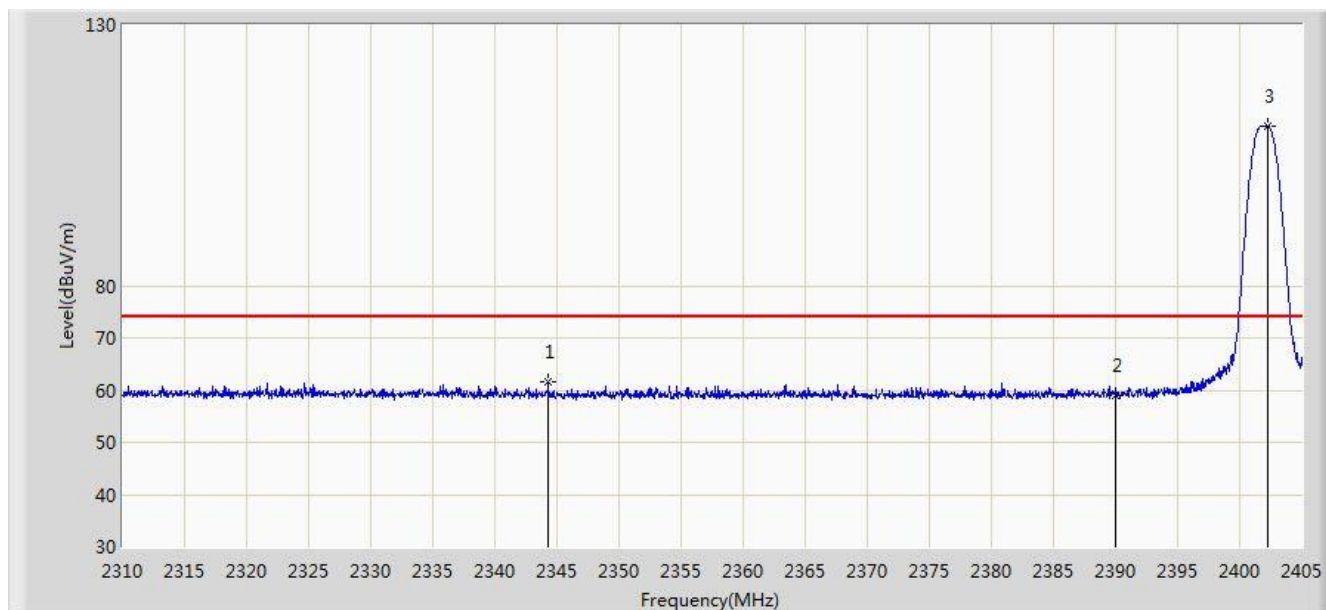
5.6.3 測試架構圖

1GHz ~ 18GHz Test Setup:



5.6.4 頻帶邊緣測試結果

Site: AC1	Time: 2018/11/22 - 20:34
Limit: NCC_LP0002_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Horizontal
EUT: OmniAccess Stellar	Power: AC 110V/60Hz
Test Mode: Transmit by BLE at channel 2402MHz	

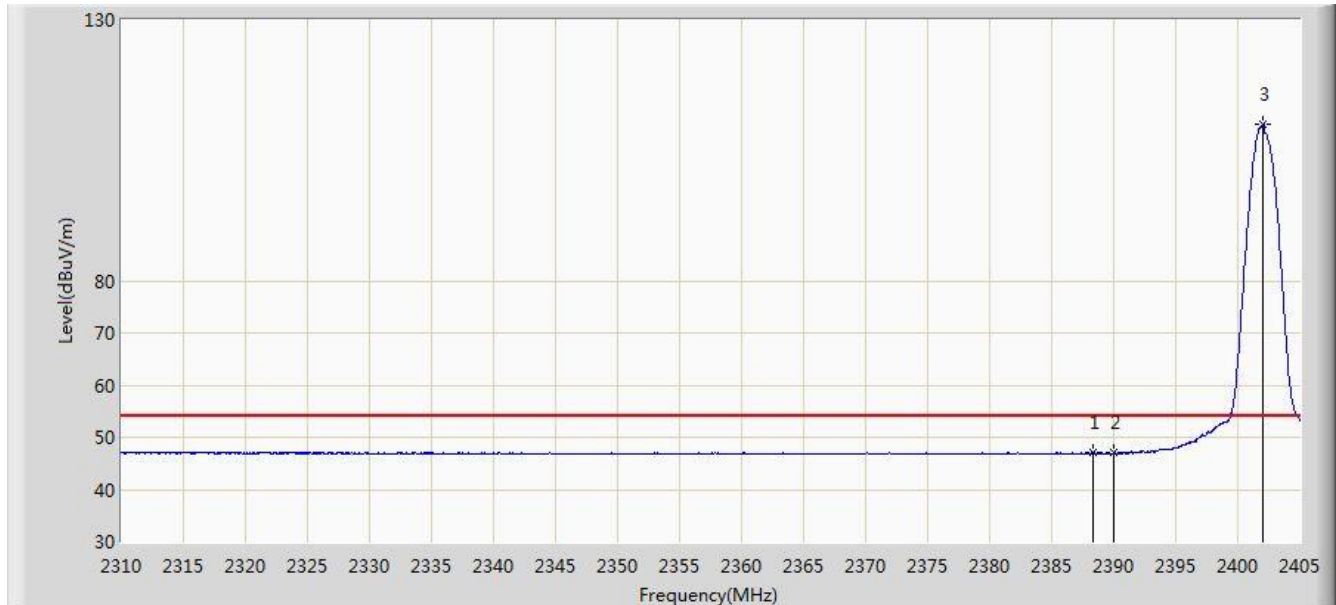


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2344.295	61.671	29.035	-12.329	74.000	32.636	PK
2			2390.000	58.867	26.313	-15.133	74.000	32.554	PK
3		*	2402.245	110.628	78.090	N/A	N/A	32.539	PK

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

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

Site: AC1	Time: 2018/11/22 - 20:38
Limit: NCC_LP0002_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Horizontal
EUT: OmniAccess Stellar	Power: AC 110V/60Hz
Test Mode: Transmit by BLE at channel 2402MHz	

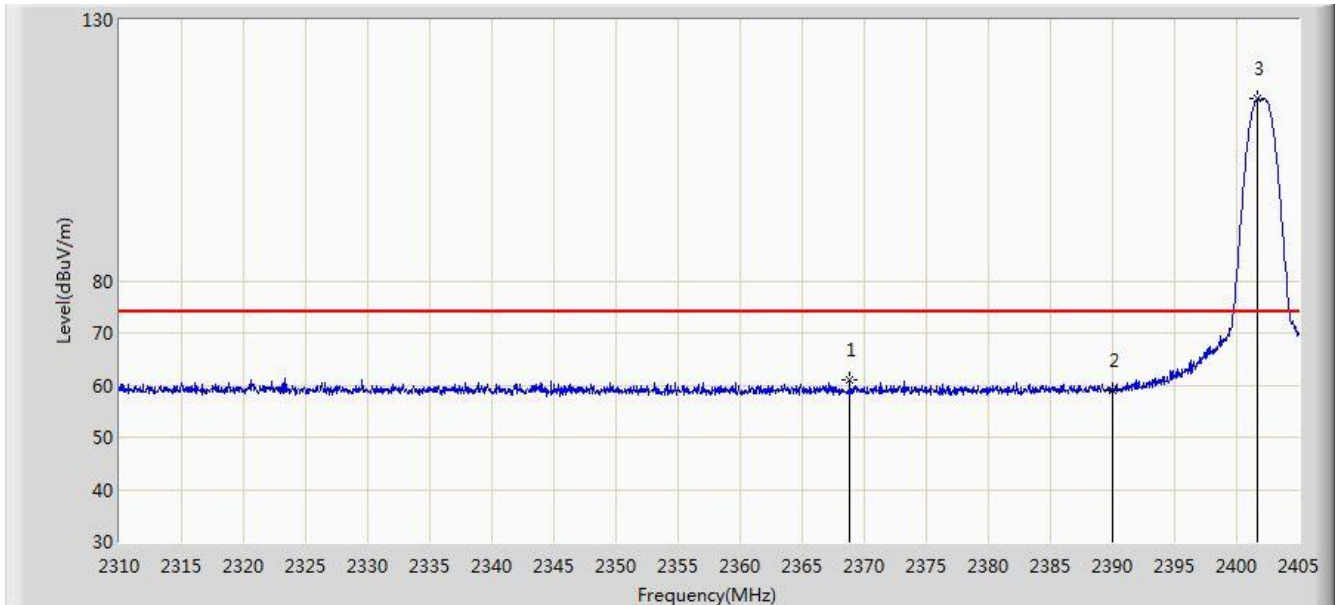


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2388.327	47.051	14.494	-6.949	54.000	32.557	AV
2			2390.000	46.973	14.419	-7.027	54.000	32.554	AV
3		*	2402.055	109.884	77.346	N/A	N/A	32.538	AV

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

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

Site: AC1	Time: 2018/11/22 - 20:39
Limit: NCC_LP0002_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Vertical
EUT: OmniAccess Stellar	Power: AC 110V/60Hz
Test Mode: Transmit by BLE at channel 2402MHz	

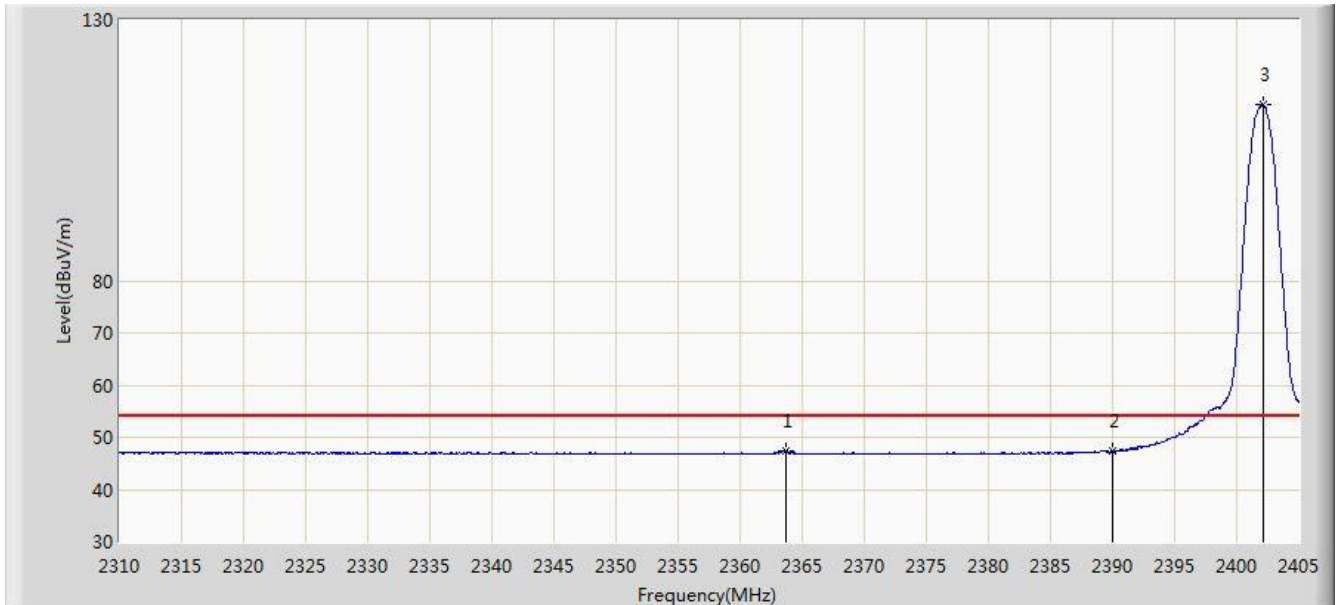


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2368.805	61.005	28.421	-12.995	74.000	32.584	PK
2			2390.000	59.114	26.560	-14.886	74.000	32.554	PK
3		*	2401.722	114.819	82.280	N/A	N/A	32.539	PK

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

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

Site: AC1	Time: 2018/11/22 - 20:40
Limit: NCC_LP0002_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Vertical
EUT: OmniAccess Stellar	Power: AC 110V/60Hz
Test Mode: Transmit by BLE at channel 2402MHz	

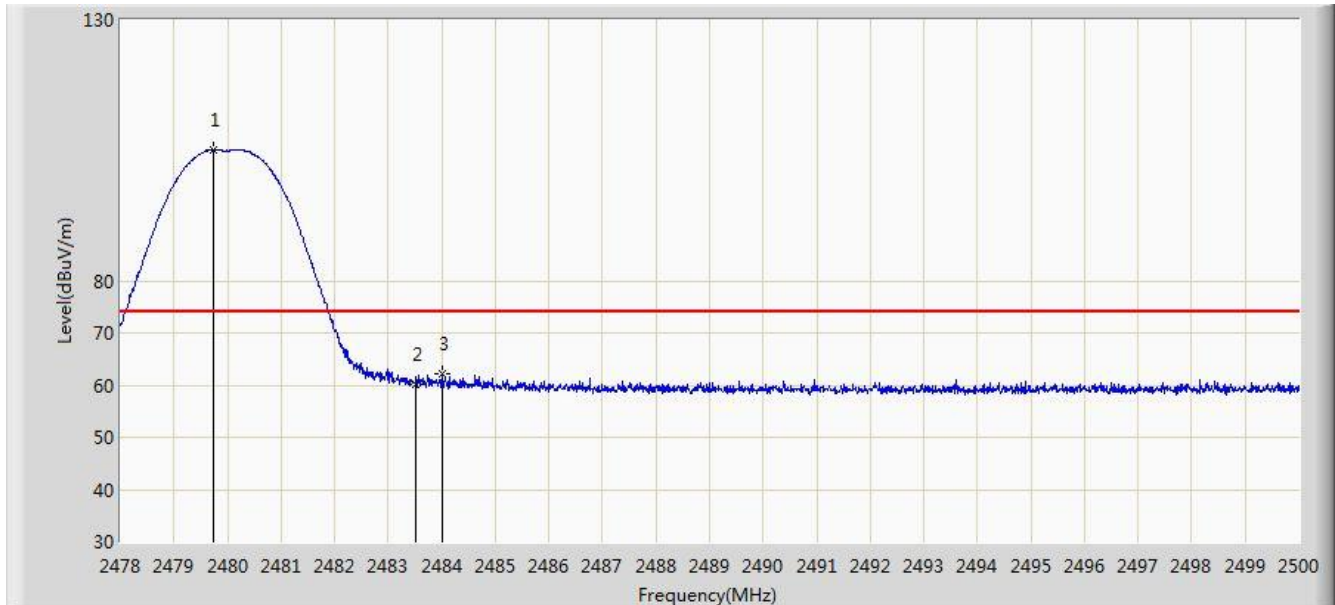


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2363.722	47.386	14.795	-6.614	54.000	32.591	AV
2			2390.000	47.367	14.813	-6.633	54.000	32.554	AV
3		*	2402.103	113.773	81.235	N/A	N/A	32.538	AV

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

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

Site: AC1	Time: 2018/11/22 - 20:50
Limit: NCC_LP0002_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Horizontal
EUT: OmniAccess Stellar	Power: AC 110V/60Hz
Test Mode: Transmit by BLE at channel 2480MHz	

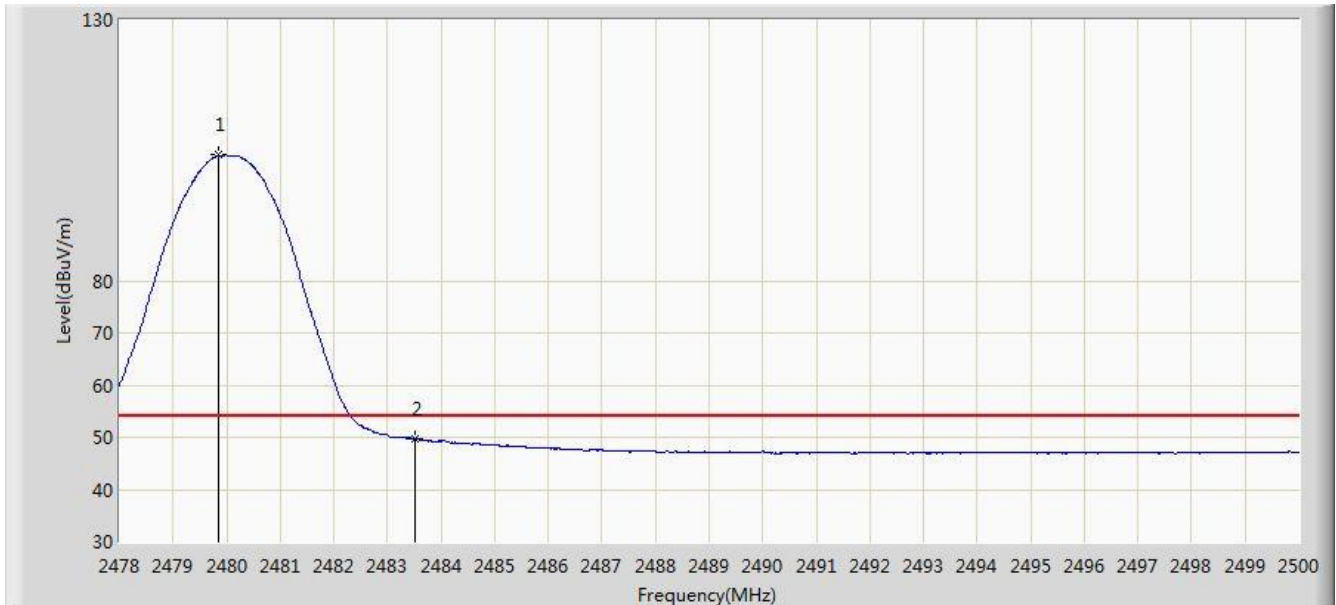


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.727	105.028	72.459	N/A	N/A	32.569	PK
2			2483.500	60.162	27.581	-13.838	74.000	32.580	PK
3			2484.006	62.301	29.719	-11.699	74.000	32.582	PK

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

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

Site: AC1	Time: 2018/11/22 - 20:51
Limit: NCC_LP0002_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Horizontal
EUT: OmniAccess Stellar	Power: AC 110V/60Hz
Test Mode: Transmit by BLE at channel 2480MHz	

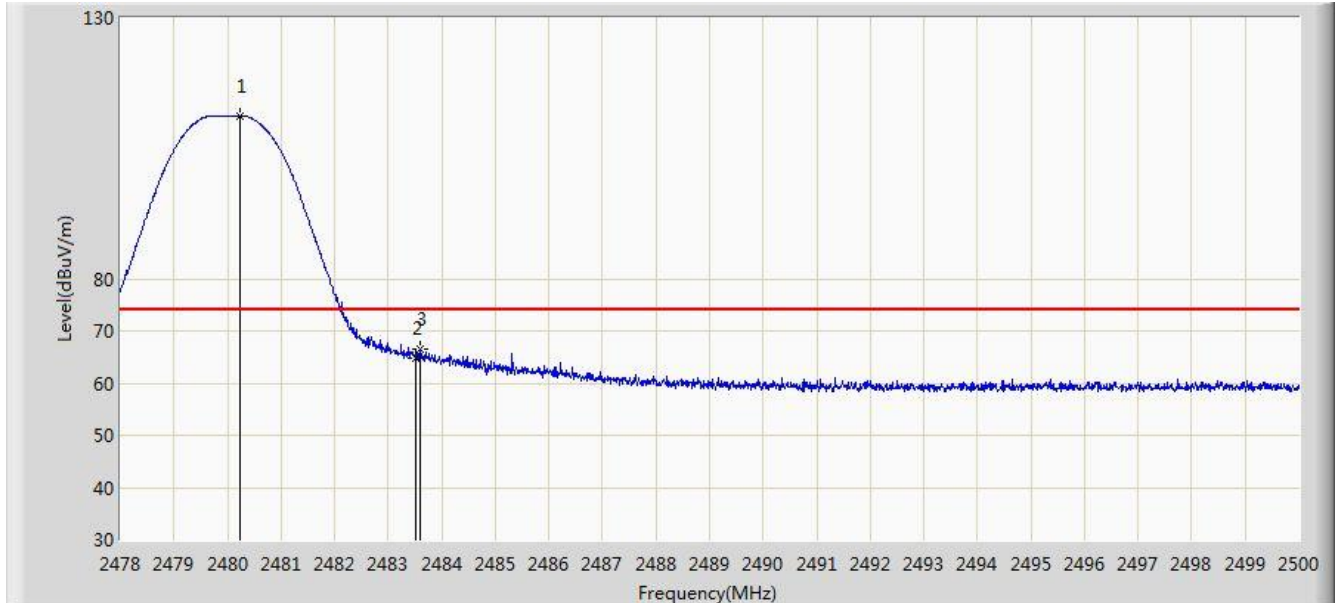


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.848	104.126	71.557	N/A	N/A	32.570	AV
2			2483.500	49.831	17.250	-4.169	54.000	32.580	AV

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

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

Site: AC1	Time: 2018/11/22 - 20:49
Limit: NCC_LP0002_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Vertical
EUT: OmniAccess Stellar	Power: AC 110V/60Hz
Test Mode: Transmit by BLE at channel 2480MHz	

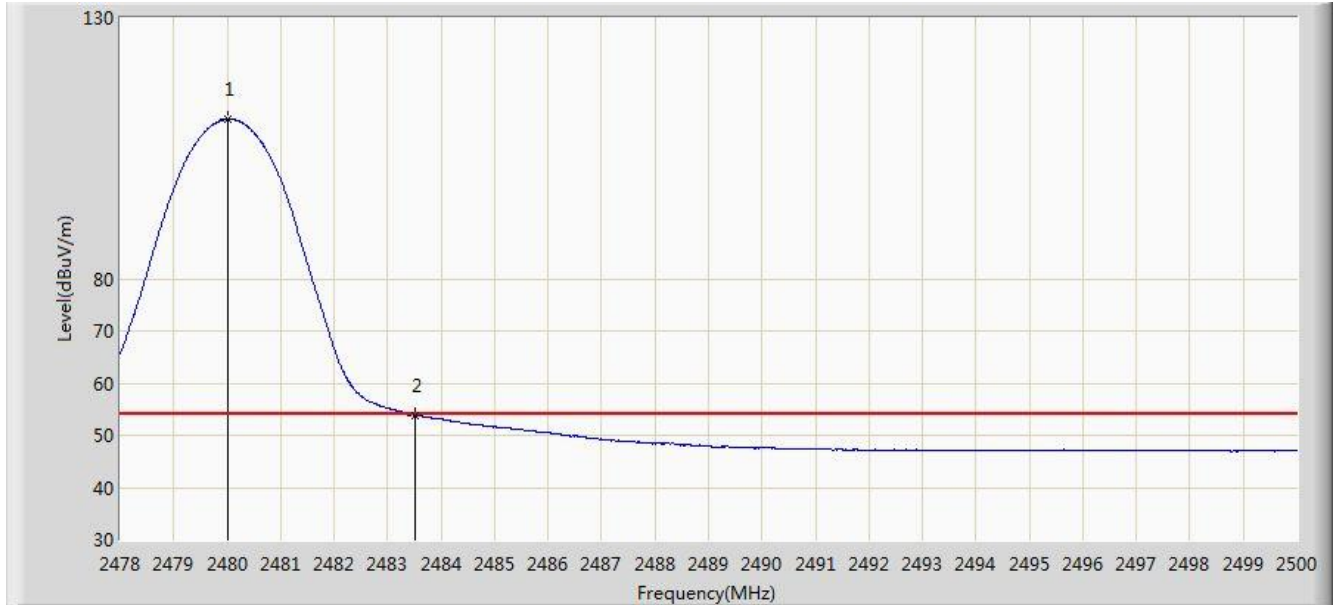


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.222	111.238	78.667	N/A	N/A	32.570	PK
2			2483.500	64.645	32.064	-9.355	74.000	32.580	PK
3			2483.588	66.385	33.804	-7.615	74.000	32.580	PK

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

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

Site: AC1	Time: 2018/11/22 - 20:49
Limit: NCC_LP0002_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Vertical
EUT: OmniAccess Stellar	Power: AC 110V/60Hz
Test Mode: Transmit by BLE at channel 2480MHz	

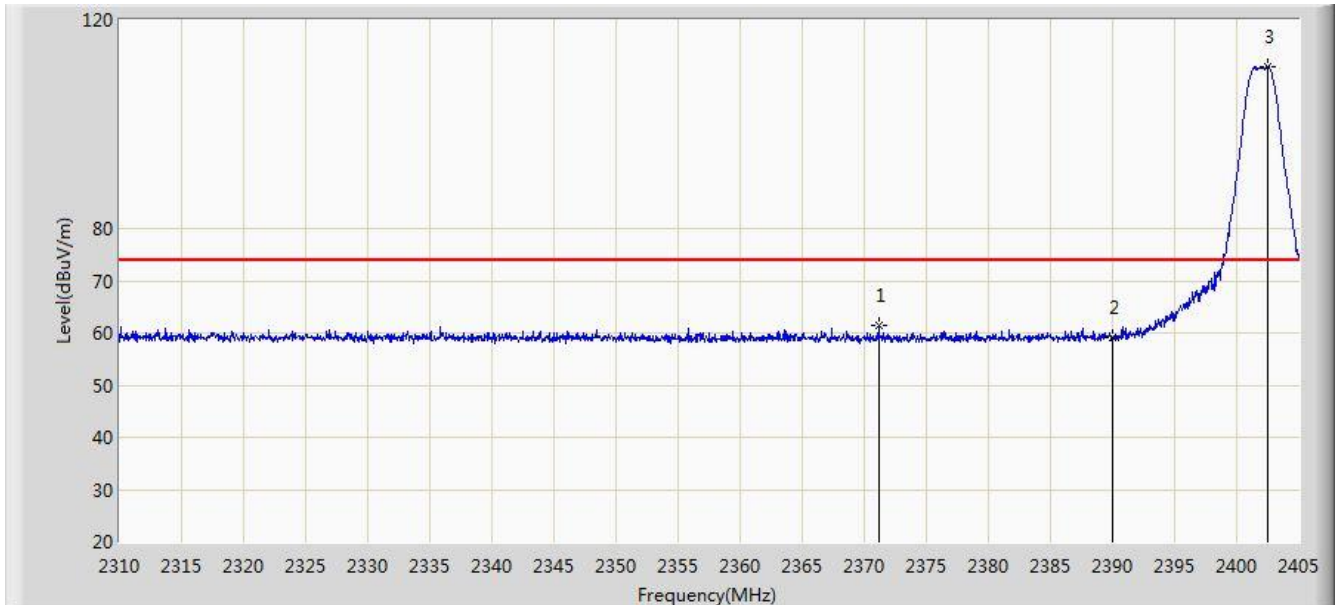


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	X	*	2480.024	110.562	77.992	N/A	N/A	32.570	AV
2			2483.500	53.900	21.319	-0.100	54.000	32.580	AV

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

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

Site: AC1	Time: 2018/11/22 - 20:54
Limit: NCC_LP0002_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Horizontal
EUT: OmniAccess Stellar	Power: AC 110V/60Hz
Test Mode: Transmit by BT5.0 at channel 2402MHz	

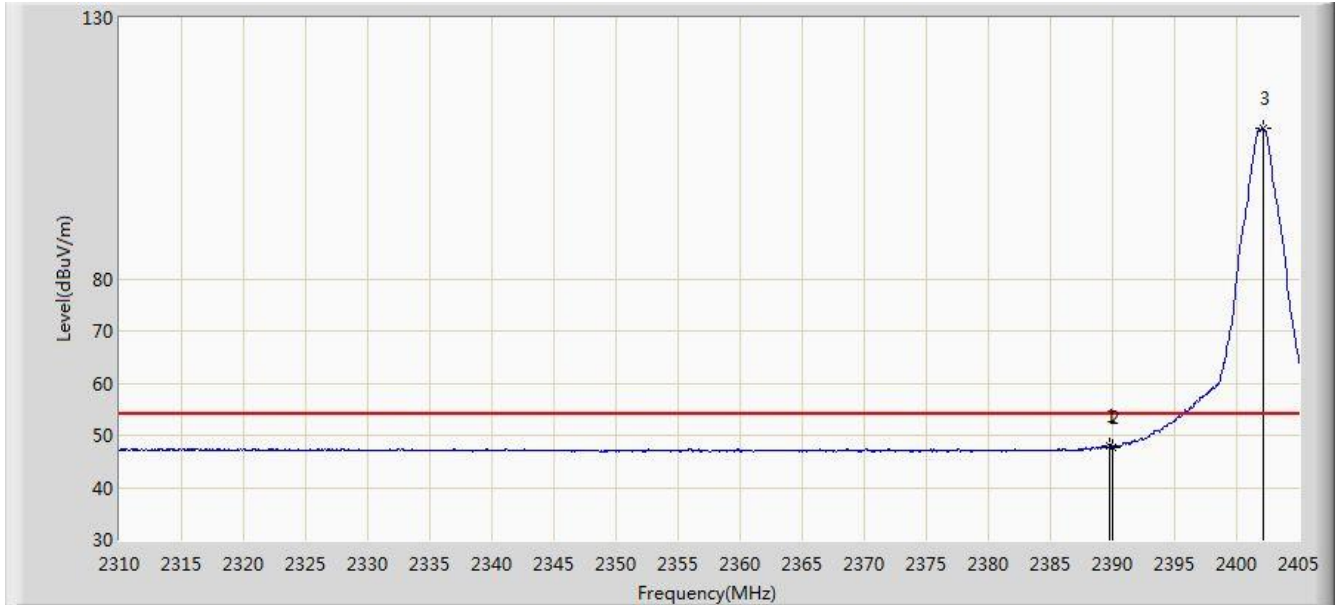


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2371.133	61.551	28.971	-12.449	74.000	32.580	PK
2			2390.000	59.124	26.570	-14.876	74.000	32.554	PK
3		*	2402.482	111.019	78.481	N/A	N/A	32.538	PK

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

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

Site: AC1	Time: 2018/11/22 - 20:56
Limit: NCC_LP0002_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Horizontal
EUT: OmniAccess Stellar	Power: AC 110V/60Hz
Test Mode: Transmit by BT5.0 at channel 2402MHz	

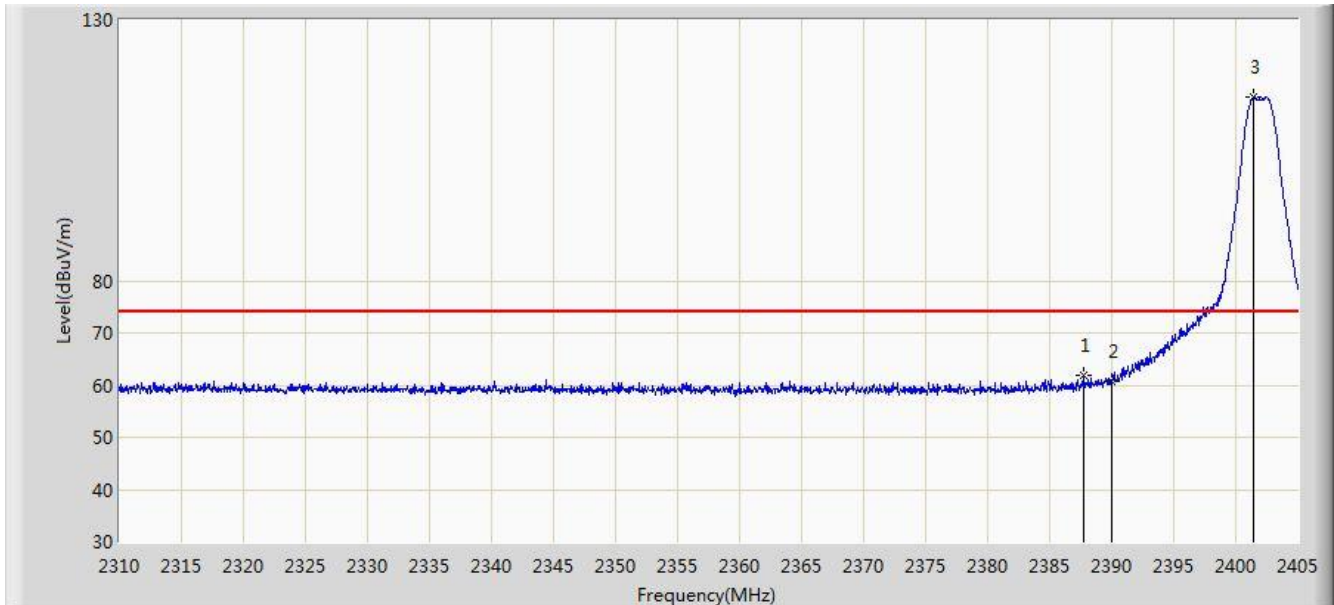


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2389.800	48.059	15.504	-5.941	54.000	32.555	AV
2			2390.000	47.711	15.157	-6.289	54.000	32.554	AV
3		*	2402.150	108.805	76.267	N/A	N/A	32.538	AV

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

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

Site: AC1	Time: 2018/11/22 - 20:57
Limit: NCC_LP0002_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Vertical
EUT: OmniAccess Stellar	Power: AC 110V/60Hz
Test Mode: Transmit by BT5.0 at channel 2402MHz	

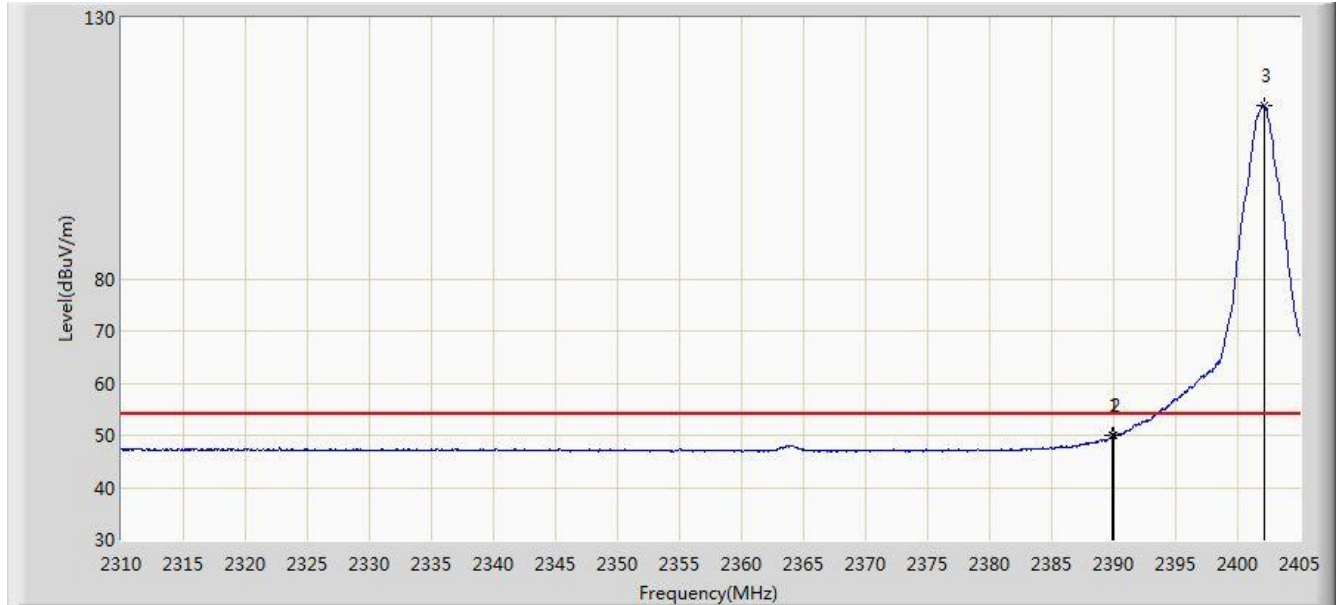


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2387.758	61.842	29.284	-12.158	74.000	32.557	PK
2			2390.000	60.625	28.071	-13.375	74.000	32.554	PK
3		*	2401.485	115.097	82.558	N/A	N/A	32.540	PK

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

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

Site: AC1	Time: 2018/11/22 - 20:59
Limit: NCC_LP0002_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Vertical
EUT: OmniAccess Stellar	Power: AC 110V/60Hz
Test Mode: Transmit by BT5.0 at channel 2402MHz	

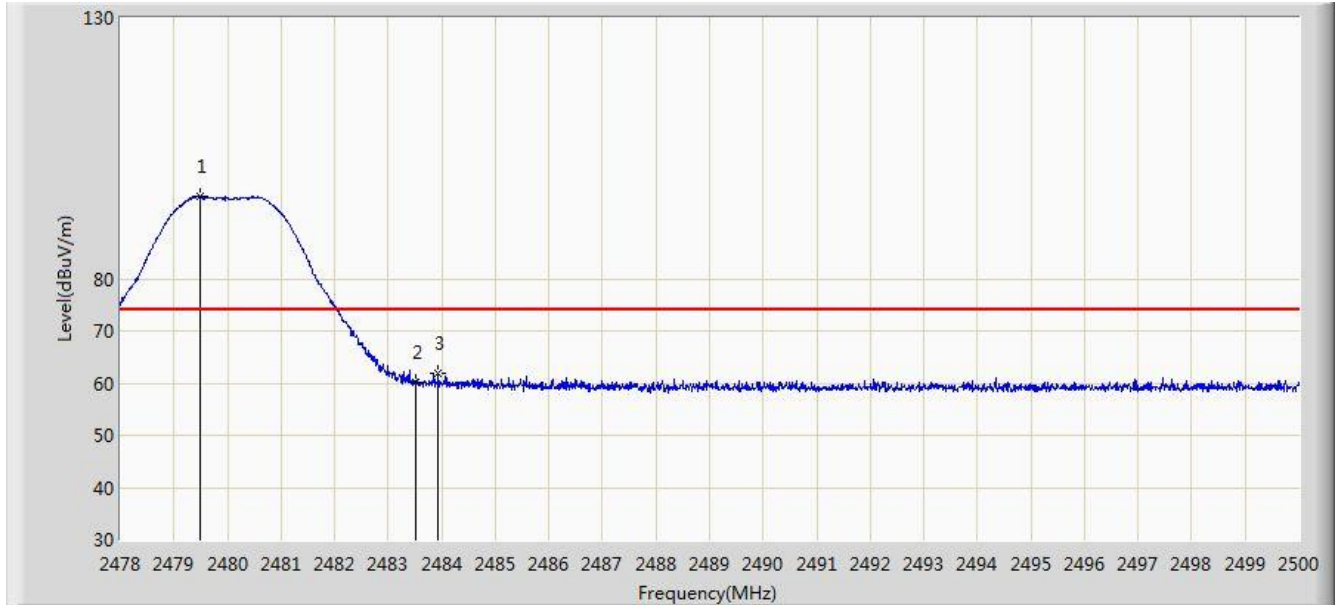


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2389.895	50.002	17.447	-3.998	54.000	32.555	AV
2			2390.000	49.949	17.395	-4.051	54.000	32.554	AV
3		*	2402.103	113.302	80.764	N/A	N/A	32.538	AV

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

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

Site: AC1	Time: 2018/11/22 - 21:09
Limit: NCC_LP0002_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Horizontal
EUT: OmniAccess Stellar	Power: AC 110V/60Hz
Test Mode: Transmit by BT5.0 at channel 2480MHz	

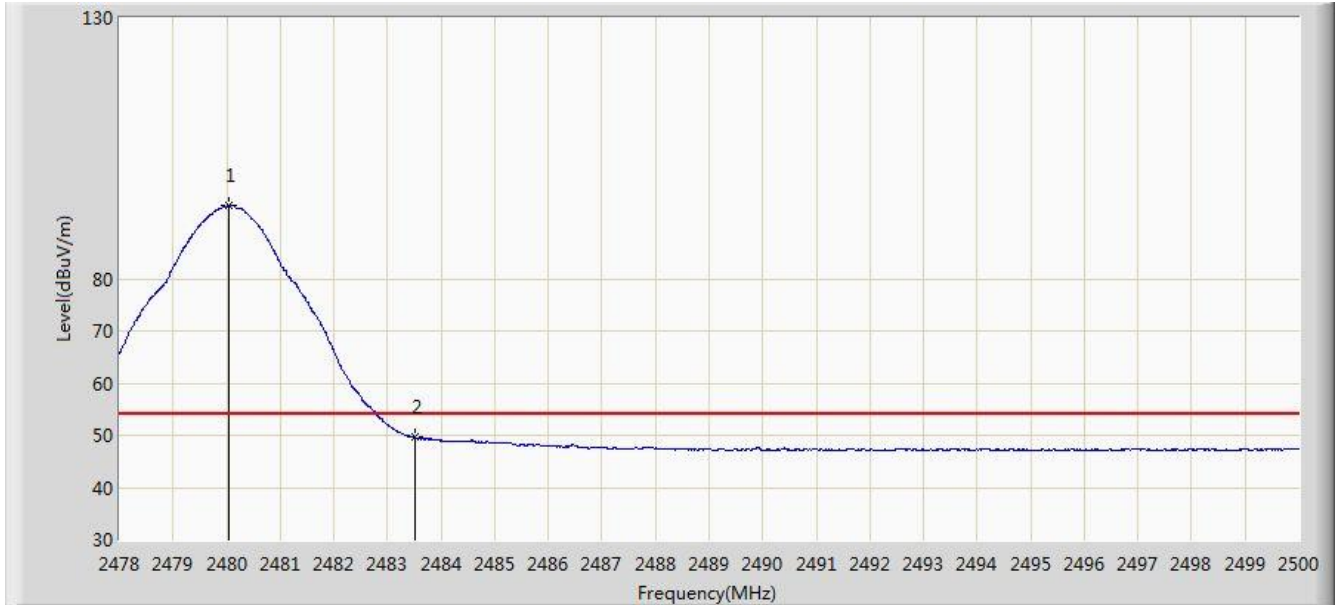


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.496	95.797	63.229	N/A	N/A	32.568	PK
2			2483.500	60.064	27.483	-13.936	74.000	32.580	PK
3			2483.940	62.010	29.428	-11.990	74.000	32.582	PK

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

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

Site: AC1	Time: 2018/11/22 - 21:11
Limit: NCC_LP0002_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Horizontal
EUT: OmniAccess Stellar	Power: AC 110V/60Hz
Test Mode: Transmit by BT5.0 at channel 2480MHz	

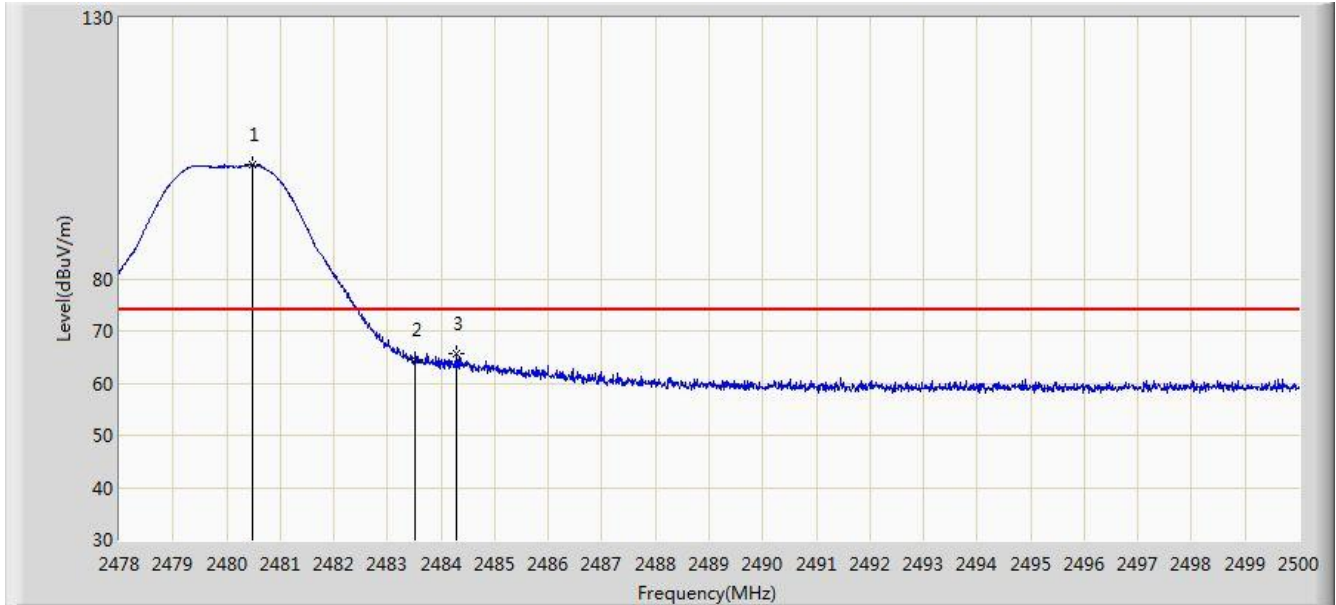


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.046	93.993	61.423	N/A	N/A	32.570	AV
2			2483.500	49.610	17.029	-4.390	54.000	32.580	AV

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

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

Site: AC1	Time: 2018/11/22 - 21:09
Limit: NCC_LP0002_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Vertical
EUT: OmniAccess Stellar	Power: AC 110V/60Hz
Test Mode: Transmit by BT5.0 at channel 2480MHz	

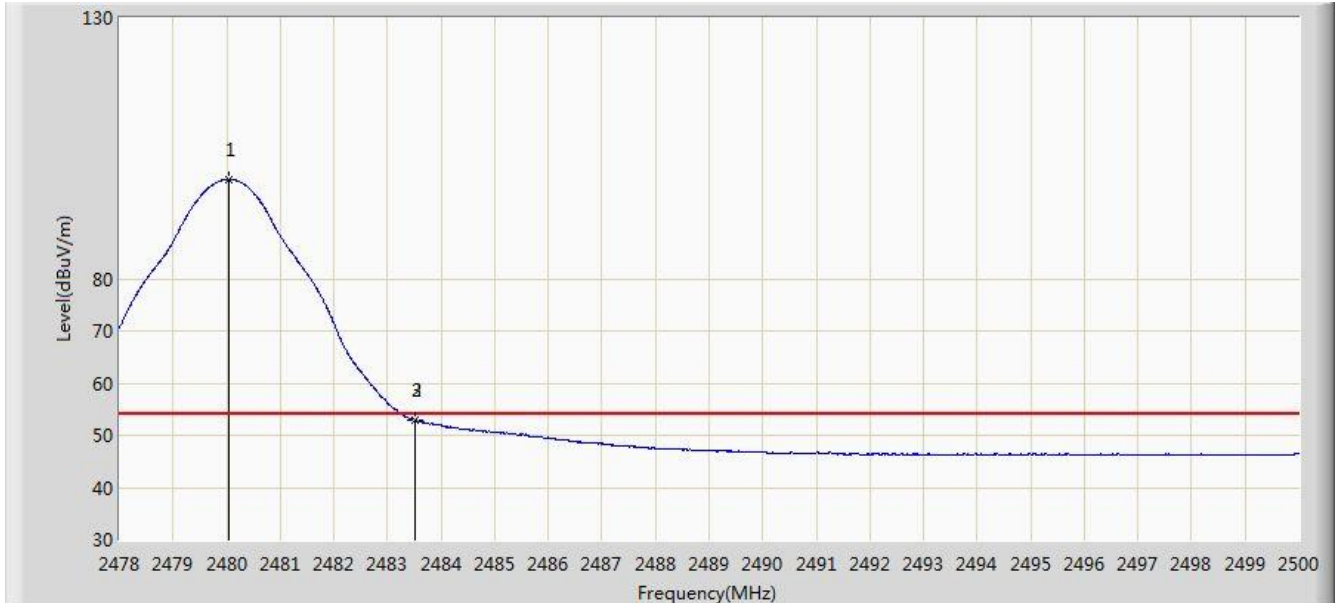


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.475	101.767	69.196	N/A	N/A	32.572	PK
2			2483.500	64.529	31.948	-9.471	74.000	32.580	PK
3			2484.281	65.607	33.024	-8.393	74.000	32.583	PK

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

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

Site: AC1	Time: 2018/11/22 - 15:01
Limit: NCC_LP0002_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Vertical
EUT: OmniAccess Stellar	Power: AC 110V/60Hz
Test Mode: Transmit by BT5.0 at channel 2480MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.046	99.081	66.511	N/A	N/A	32.570	AV
2			2483.500	52.996	20.416	-1.004	54.000	32.580	AV
3			2483.511	53.007	20.427	-0.993	54.000	32.580	AV

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

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

5.7 佔用頻寬

5.7.1 量測方法

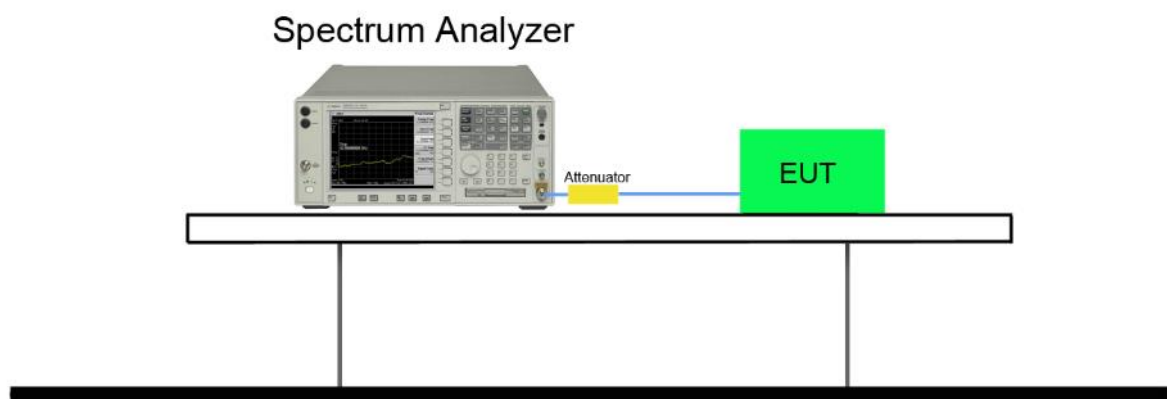
將發射機之天線埠經由適當之衰減直接連至測試儀器。找出發射峰值並擴展於通帶內，設定解析頻寬為3 kHz，視訊頻寬大於解析頻寬，掃描時間為頻率掃描範圍除以3 kHz。所測得之峰值位準必須應小於或等於8 dBm。

若受測裝置之頻譜線間隔小於3 kHz，測量時應將解析頻寬降低以使頻譜線間隔大於3kHz，所測得之數據再藉加總3 kHz 頻帶內所有個別頻譜線之功率(即標準化至3 kHz)以決定是否符合規定。

5.7.2 限制要求

6dB頻寬至少應有500kHz。

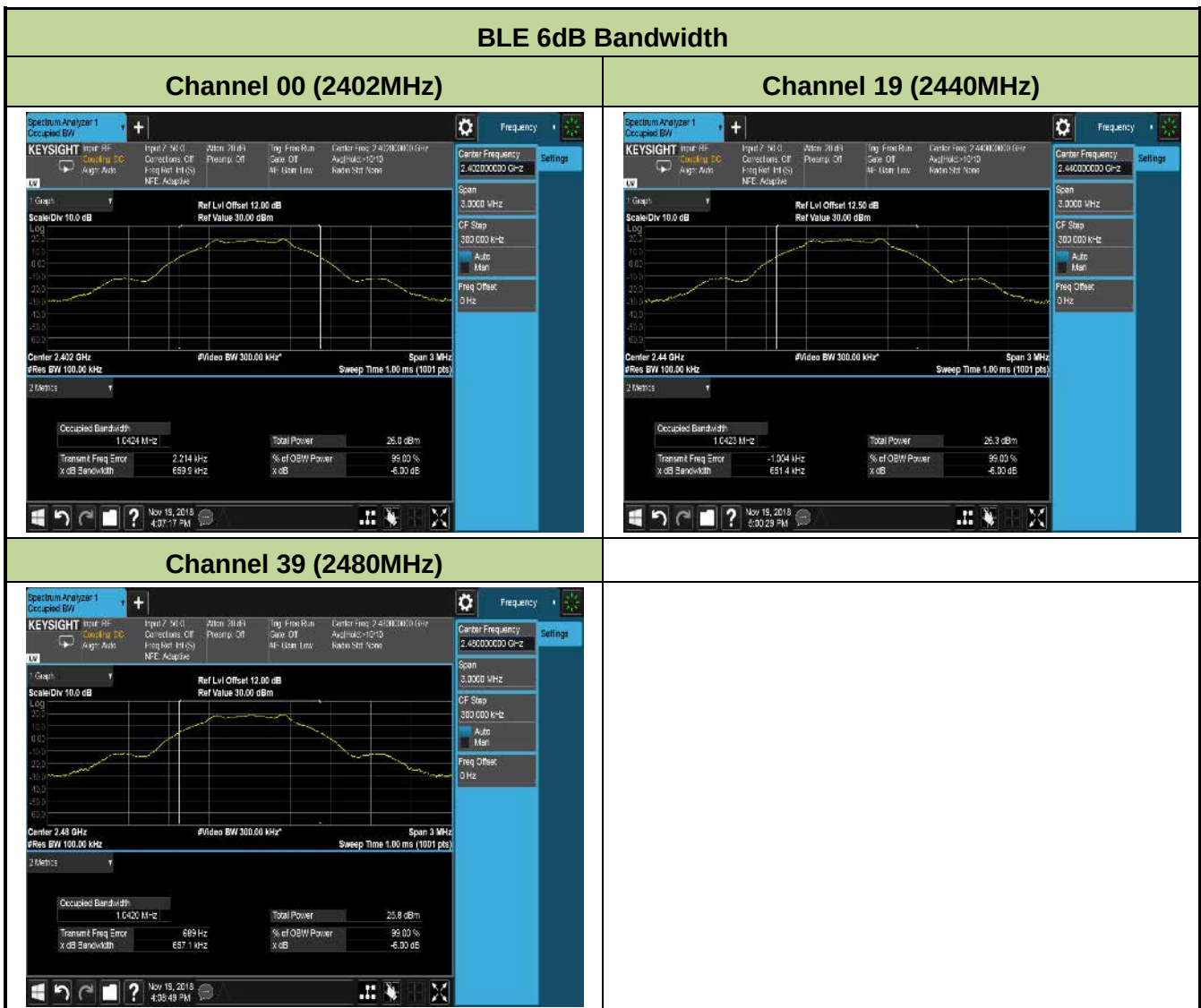
5.7.3 測試架構圖



5.7.4 佔用頻寬測試結果

待測物名稱	OmniAccess Stellar	測試日期	2018/11/19
待測物型號	OAW-AP1201	溫度 / 濕度	24°C / 55%
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	0.66	≥ 0.5	Pass
BLE	1	19	2440	0.65	≥ 0.5	Pass
BLE	1	39	2480	0.66	≥ 0.5	Pass
BT5.0	2	00	2402	1.15	≥ 0.5	Pass
BT5.0	2	19	2440	1.15	≥ 0.5	Pass
BT5.0	2	39	2480	1.15	≥ 0.5	Pass

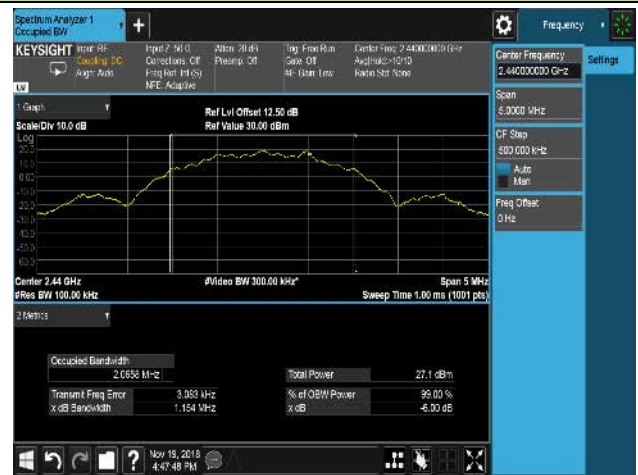


BT5.0 6dB Bandwidth

Channel 00 (2402MHz)



Channel 19 (2440MHz)



Channel 39 (2480MHz)



5.8. 功率頻譜密度

5.8.1 量測方法

將發射機之天線埠經由適當之衰減直接連至測試儀器。找出發射峰值並擴展於通帶內，設定解析頻寬為3 kHz，視訊頻寬大於解析頻寬，掃描時間為頻率掃描範圍除以3 kHz。所測得之峰值位準必須應小於或等於8 dBm。

若受測裝置之頻譜線間隔小於3 kHz，測量時應將解析頻寬降低以使頻譜線間隔大於3 kHz，所測得之數據再藉加總3 kHz 頻帶內所有個別頻譜線之功率(即標準化至3 kHz)以決定是否符合規定。

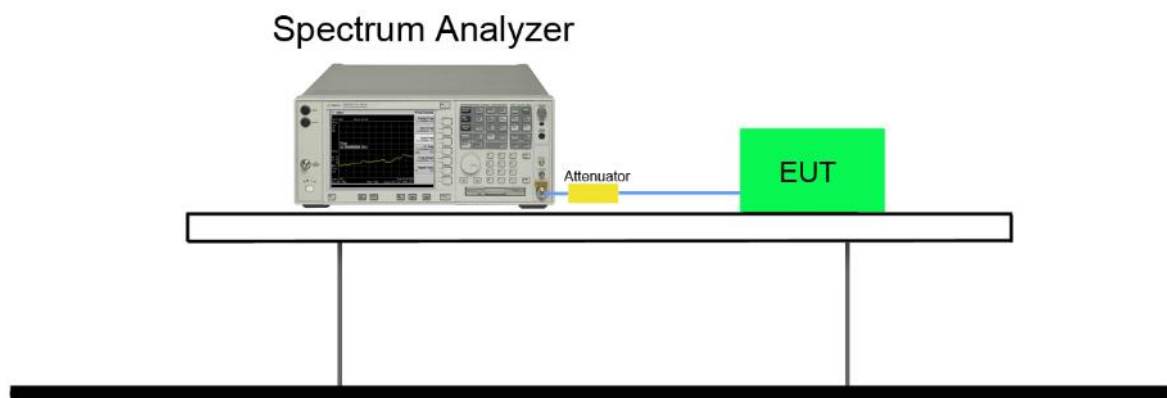
5.8.2 限制要求

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。

若用於非固定式點對點操作時，若其發射天線之方向性增益超過6dBi，應依所超過之dB數等量降低峰值輸出功率。如用於固定式點對點(註)操作時，應符合下列情形之一：

- (1)操作於2400-2483.5兆赫(MHz)者，其發射天線之方向性增益超過6dBi，應於每超過3dB降低1dB之峰值輸出功率。
- (2) 操作於5725-5850兆赫(MHz)者，其發射天線之方向性增益超過6dBi，不需降低峰值輸出功率。

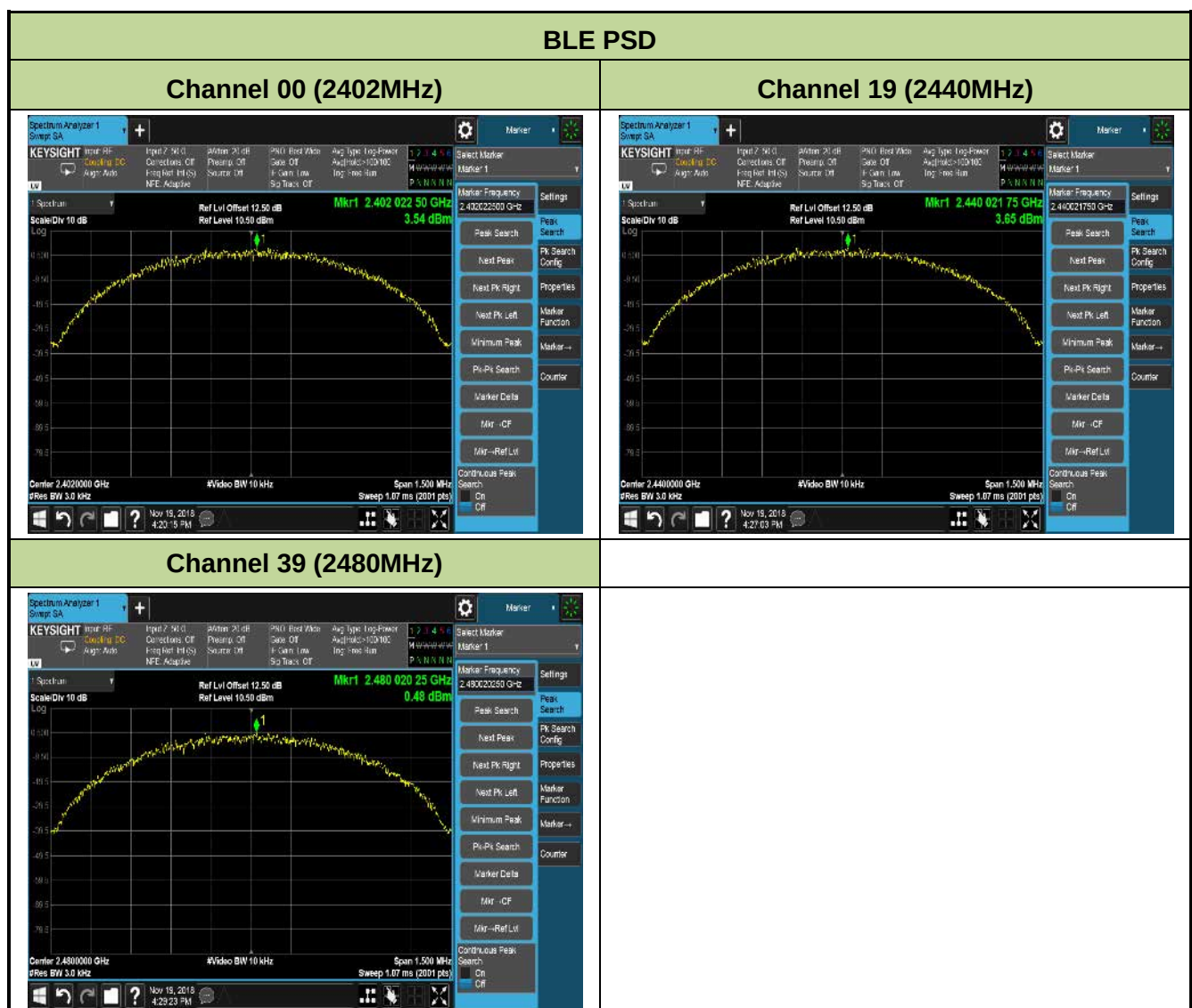
5.8.3 測試架構圖



5.8.4 功率頻譜密度測試結果

待測物名稱	OmniAccess Stellar	測試日期	2018/11/19
待測物型號	OAW-AP1201	溫度 / 濕度	24°C / 55%
測試場地	SR2	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	3.54	≤ 8.00	Pass
BLE	1	19	2440	3.65	≤ 8.00	Pass
BLE	1	39	2480	0.48	≤ 8.00	Pass
BT5.0	2	00	2402	0.52	≤ 8.00	Pass
BT5.0	2	19	2440	0.64	≤ 8.00	Pass
BT5.0	2	39	2480	-10.19	≤ 8.00	Pass



BT5.0 PSD

Channel 00 (2402MHz)



Channel 19 (2440MHz)



Channel 39 (2480MHz)



The End