

NCC

低功率射頻電機型式試驗報告

產品名稱: ACCESS POINT
型號: APIN0518
廠牌: aruba / Hewlett Packard Enterprise
商標:  / 
申請者: 慧與科技股份有限公司
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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: 2019.12.23
測試日期: 2019.12.25 ~ 2020.09.07

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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	慧興科技股份有限公司
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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, 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
測試樣品序列號	Radiated sample S/N: DE201600CC, Conducted sample S/N: DE29A00006

2. 產品資訊

2.1. 待測物裝置資料

產品名稱	ACCESS POINT
產品型號	APIN0518
Wi-Fi 規格	802.11a/b/g/n/ac/ax
藍牙版本	v5.0 single mode
Zigbee 規格	802.15.4
軟件版本	F.1.01
工作溫度	-40 ~ 65 °C
待測物額定電壓	PoE input

Note:

1. 系列差異說明: 系列型號與主型號差異為廠牌不同,其硬體電路及軟體與主型號相同。該產品亦符合同系列產品技術規格及射頻性能相同。

2.The applicant provided one PoE adapter (Manufacturer: MICROSEMI & Model: PD-9001GR/AT/AC) for approval testing, it is not for sale.

2.2. 產品規格

頻率範圍	For 802.11a/n-HT20/ac-VHT20/ax-HE20: 5180~5320MHz, 5500~5720MHz, 5745~5825MHz For 802.11n-HT40/ac-VHT40/ax-HE40: 5190~5310MHz, 5510~5710MHz, 5755~5795MHz For 802.11ac-VHT80/ax-HE80: 5210MHz, 5290MHz, 5530MHz, 5610MHz, 5690MHz, 5775MHz For 802.11ac-VHT160/ax-HE160: 5250MHz, 5570MHz
調變模式	802.11a/n/ac: OFDM 802.11ax: OFDMA
傳輸速率	802.11a: 6/9/12/18/24/36/48/54Mbps 802.11n: up to 600Mbps 802.11ac: up to 1733.3Mbps 802.11ax: up to 4804Mbps

Note: For other features of this EUT, test report will be issued separately.

2.3. 通道清單

802.11a/n-HT20/ac-VHT20/ax-HE20

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

802.11n-HT40/ac-VHT40/ax-HE40

Channel	Frequency	Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz	54	5270 MHz
62	5310 MHz	102	5510 MHz	110	5550 MHz
118	5590 MHz	126	5630 MHz	134	5670 MHz
142	5710 MHz	151	5755 MHz	159	5795 MHz

802.11ac-VHT80/ax-HE80

Channel	Frequency	Channel	Frequency	Channel	Frequency
42	5210 MHz	58	5290 MHz	106	5530 MHz
122	5610 MHz	138	5690 MHz	155	5775 MHz

802.11ac-VHT160/ax-HE160

Channel	Frequency	Channel	Frequency	Channel	Frequency
50	5250 MHz	114	5570 MHz	--	--

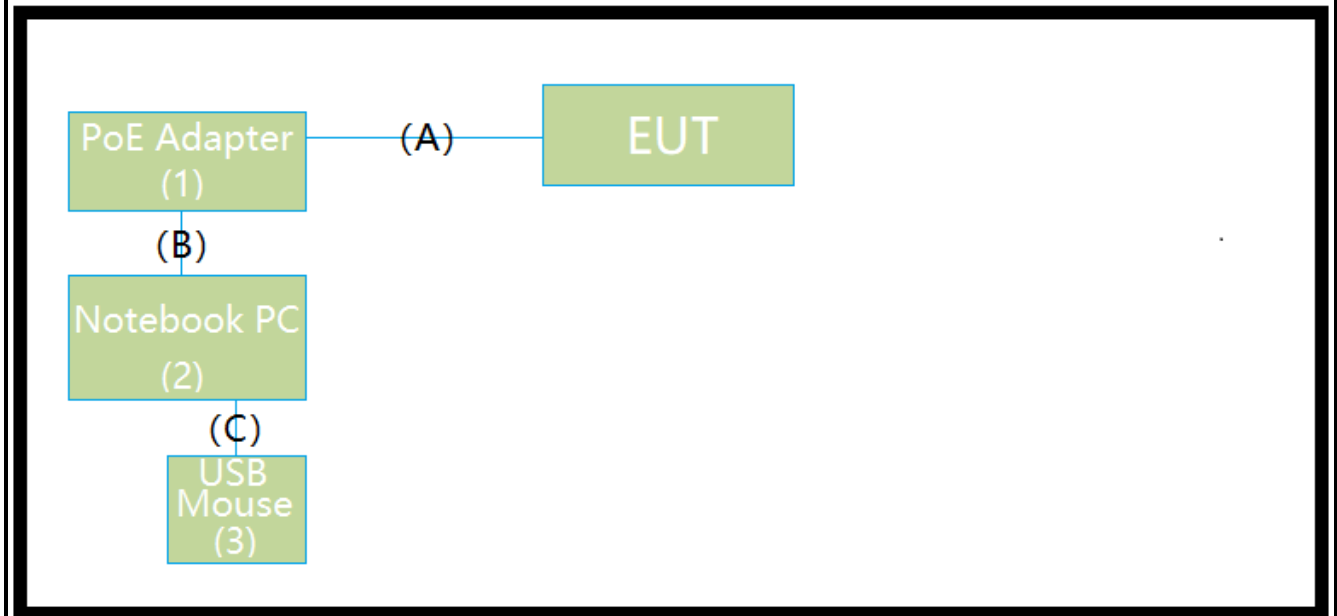
2.4. 測試模式

Test Mode	Mode 1: 發射器 802.11a (6Mbps)
	Mode 2: 發射器 802.11ac-VHT20 (MCS0)
	Mode 3: 發射器 802.11ac-VHT40 (MCS0)
	Mode 4: 發射器 802.11ac-VHT80 (MCS0)
	Mode 5: 發射器 802.11ac-VHT160 (MCS0)
	Mode 6: 發射器 802.11ax-HE20 (MCS0)
	Mode 7: 發射器 802.11ax-HE40 (MCS0)
	Mode 8: 發射器 802.11ax-HE80 (MCS0)
	Mode 9: 發射器 802.11ax-HE160 (MCS0)

Note 1: 802.11n and 802.11ac have same modulation type, using same power parameter, after the assessment, we only showed worst case 802.11ac test data in this report.

2.5. 測試系統組合圖

Connection Diagram (Mode 1 ~ 9)



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

2.6. 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	PD-9001GR/ AT/AC	N/A	N/A	N/A
2	Notebook PC	Lenovo	X230i	N/A	N/A	Non-Shielded, 1.8m
3	USB Mouse	Dell	MS111-L	N/A	N/A	N/A

2.7. 待測裝置測試時之典型操作程式

1.	Turn on the power of all equipment.
2.	Make the EUT powered by POE Adapter on E1 port, communicate with PC and make the PC execute "accessMTool" version "v3.1.0.5" program, configure the test channel and the data rate.
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	2021/3/26
Two-Line V-Network	R&S	ENV216	MRTTWA00020	1 year	2021/4/24
8-Wire ISN (T8-Cat6)	R&S	ENY81 CA6	MRTTWA00017	1 year	2021/5/25
8-Wire ISN (T8)	R&S	ENY81	MRTTWA00018	1 year	2021/5/25
EMI Test Receiver	R&S	ESR3	MRTTWA00045	1 year	2021/5/26
Conducted Cable	Rosnol	N1C50-RG400-B1C50-500CM	MRTTWE00013	1 year	2021/6/21
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00033	1 year	2021/5/28

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	2021/6/20

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	2021/4/24
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	2021/7/14
Signal Analyzer	R&S	FSV40	MRTTWA00007	1 year	2021/3/24
Temperature & Humidity Chamber	TEN BILLION	TTH-B3UP	MRTTWA00036	1 year	2021/6/09
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00033	1 year	2021/5/28

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
4.7.2(1)(2)(3)	峰值傳導輸出功率	參考第 5.2 章節	符合	第 5.2 章節
2.2 及 4.7.8	天線之要求	低功率射頻電機技術規範 2.2 節及 4.7.8 節	符合	第 5.3 章節
4.7.3	操作頻帶外的峰值 發射	低功率射頻電機技術規範 4.7.3 節	符合	第 5.4 章節
2.8 及 4.7.3	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
4.7.5	26dB 佔用頻寬	N/A	符合	第 5.6 章節
4.7.5	6dB 佔用頻寬	$\geq 500\text{KHz}$	符合	第 5.7 章節
4.7.2(1)(2)(3)	功率頻譜密度	參考第 5.8 章節	符合	第 5.8 章節
4.7.4	發射功率控制	至少具有 6dB 低於平均 EIRP 值 30dBm 的能力	符合	第 5.9 章節
4.7.7	頻率穩定性	操作頻帶	符合	第 5.10 章節

5.1. 電源端點干擾測試

5.1.1. 適用標準

依據國家通訊傳播委員會低功率射頻電機技術規範之第 2.3 節，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

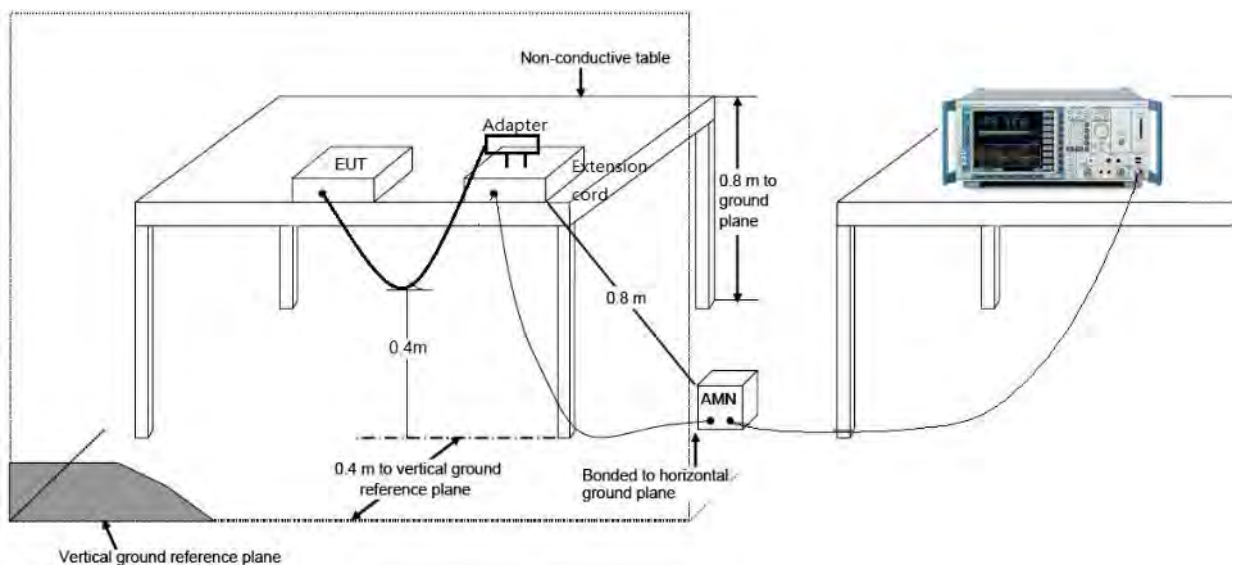
註:隨頻率之對數遞減

5.1.2. 量測方法

待測物置於高 80 公分之非導體桌面（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。

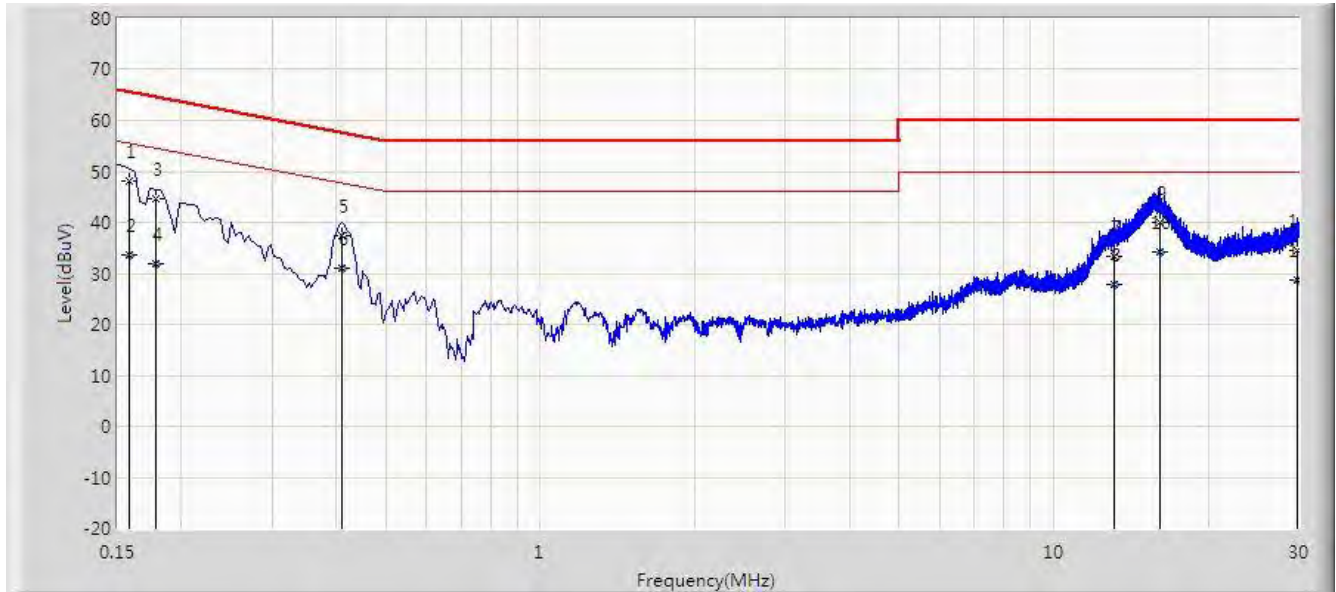
備註：經初測驗證過，電源端點干擾測試對測試頻道數並無差異，因此檢附其中一個測試頻道之測試數。

5.1.3. 測試架構圖



5.1.4. 電源端點測試結果

Site: SR2	Time: 2020/05/18 - 13:36
Limit: NCC LP0002_CE_0.15MHz-30MHz	Engineer: Kevin Ker
Probe: ENV216_101683_Filter On	Polarity: Line
EUT: ACCESS POINT	Power: AC 110V/60Hz
Test Mode 1	

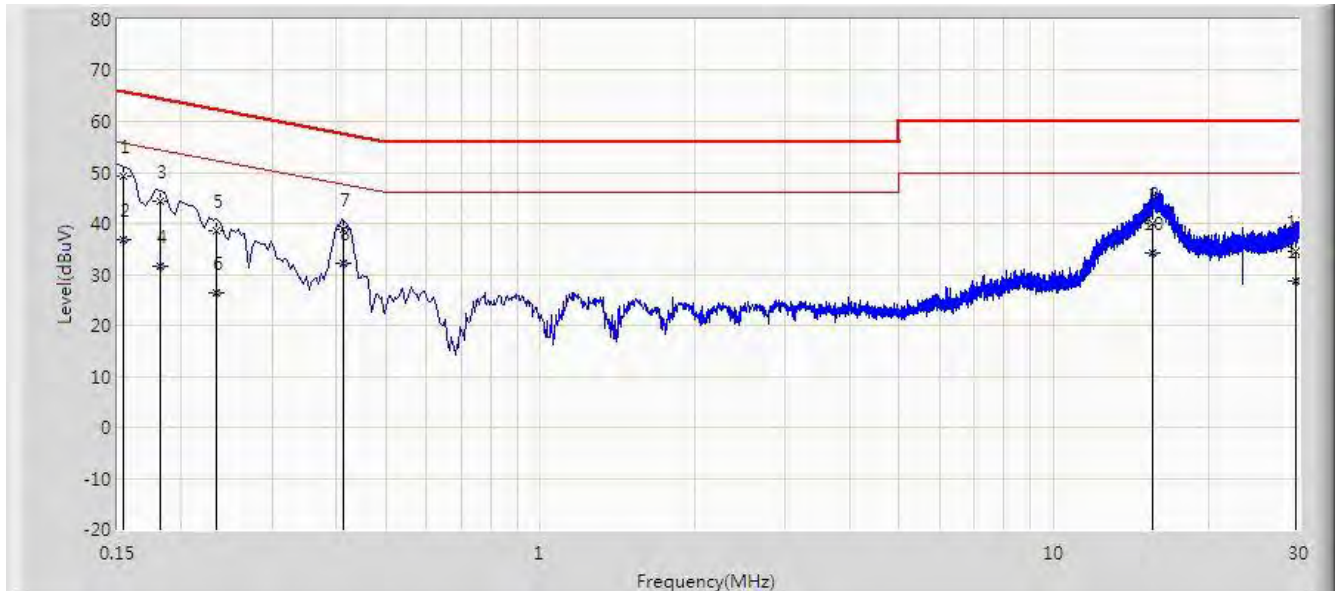


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.158	48.169	38.523	-17.399	65.568	9.646	QP
2			0.158	33.684	24.037	-21.885	55.568	9.646	AV
3			0.178	44.587	34.931	-19.992	64.578	9.655	QP
4			0.178	31.828	22.173	-22.751	54.578	9.655	AV
5			0.410	37.495	27.777	-20.154	57.648	9.717	QP
6			0.410	31.001	21.283	-16.648	47.648	9.717	AV
7			13.086	33.467	23.144	-26.533	60.000	10.323	QP
8			13.086	27.682	17.359	-22.318	50.000	10.323	AV
9			16.090	40.136	29.826	-19.864	60.000	10.310	QP
10		*	16.090	34.269	23.959	-15.731	50.000	10.310	AV
11			29.894	34.590	24.020	-25.410	60.000	10.570	QP
12			29.894	28.794	18.224	-21.206	50.000	10.570	AV

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

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

Site: SR2	Time: 2020/05/18 - 13:44
Limit: NCC LP0002_CE_0.15MHz-30MHz	Engineer: Kevin Ker
Probe: ENV216_101683_Filter On	Polarity: Neutral
EUT: ACCESS POINT	Power: AC 110V/60Hz
Test Mode 1	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.154	49.312	39.708	-16.469	65.781	9.605	QP
2			0.154	36.891	27.286	-18.891	55.781	9.605	AV
3			0.182	44.389	34.772	-20.005	64.394	9.617	QP
4			0.182	31.579	21.962	-22.815	54.394	9.617	AV
5			0.234	38.457	28.827	-23.849	62.307	9.631	QP
6			0.234	26.430	16.799	-25.877	52.307	9.631	AV
7			0.414	38.833	29.195	-18.734	57.568	9.639	QP
8		*	0.414	32.146	22.508	-15.421	47.568	9.639	AV
9			15.554	40.007	29.817	-19.993	60.000	10.190	QP
10			15.554	34.177	23.987	-15.823	50.000	10.190	AV
11			29.650	34.627	24.062	-25.373	60.000	10.565	QP
12			29.650	28.740	18.175	-21.260	50.000	10.565	AV

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

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

5.2. 功率限制值

5.2.1. 適用標準

依據國家通訊傳播委員會低功率射頻電機技術規範之第 4.7.3 節：

使用於 5.15 GHz~5.25 GHz 頻段，供室外操作使用，最大傳導輸出功率應小於或等於 1 W。

使用頻率於 5.25 GHz~5.35 GHz 與 5.470 GHz~5.725 GHz 頻段，最大傳導輸出功率應小於或等於 250 mW 或 $11\text{dBm} + 10\log B$ (B 是 26 dB 發射頻寬，單位 MHz)之較小者。

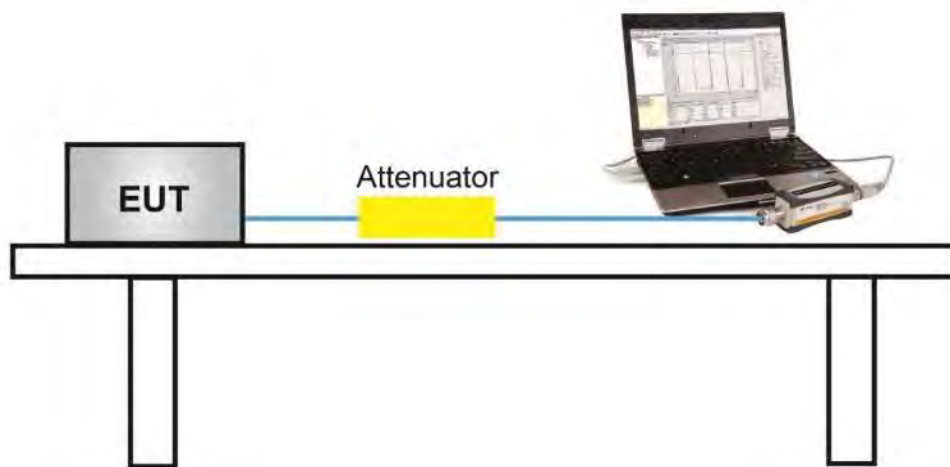
使用頻率於 5.725 GHz~5.850 GHz 頻段，最大傳導輸出功率應小於或等於 1 W。

使用超過 6 dBi 方向增益之發射天線時，應依超過 6 dBi 天線方向增益的 dBi 總量，等量減少最大傳導輸出功率及最大功率頻譜密度。

5.2.2. 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，峰值發射功率必須使用依據均方根等效電壓校準之儀器量測於任何連續傳輸之時段，量測結果須依儀器限制(如偵測器反應時間、相較於發射頻寬有限之解析頻寬能力，靈敏度等)調整得出正確之峰值量測或使用峰值功率表。

5.2.3. 測試架構圖



5.2.4. 功率限制值測試結果

Power output test was verified over all data rates of each mode shown as below table, and then choose the maximum power output (gray marker) for final test of each channel.

For Ant 0 / Ant 0 + 1 port of Omni Antenna (AP-ANT-20W):

Test Mode	Bandwidth	Channel	Frequency (MHz)	Data Rate/ MCS	Average Power (dBm)
802.11a	20	36	5180	6Mbps	19.05
				24Mbps	18.79
				54Mbps	18.67
802.11ac	20	36	5180	MCS0	19.52
				MCS4	19.31
				MCS8	19.08
802.11ac	40	38	5190	MCS0	15.42
				MCS4	15.26
				MCS9	15.02
802.11ac	80	42	5210	MCS0	15.07
				MCS4	14.78
				MCS9	14.62
802.11ac	160	50	5250	MCS0	10.75
				MCS4	10.61
				MCS9	10.33
802.11ax	20	36	5180	MCS0	19.01
				MCS6	18.85
				MCS11	18.63
802.11ax	40	38	5190	MCS0	16.41
				MCS6	16.24
				MCS11	16.05
802.11ax	80	42	5210	MCS0	15.27
				MCS6	15.10
				MCS11	14.92
802.11ax	160	50	5250	MCS0	12.61
				MCS6	12.46
				MCS11	12.31

待測物名稱	ACCESS POINT	溫度	24°C
測試工程師	Kevin Ker	濕度	59%
測試場地	SR2	測試日期	2020/01/06
天線類型	Omni Antenna (AP-ANT-20W)	測試項目	Output Power

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Average Power (dBm)				Total Average Power (dBm)	Average Power Limit (dBm)	Result
				Ant 0	Ant 1	Ant 2	Ant 3			
Ant 0 + 1 + 2 + 3 (CDD Mode)										
11a	6Mbps	36	5180	19.05	17.89	18.46	18.36	24.48	≤ 30.00	Pass
11a	6Mbps	44	5220	19.02	19.31	19.46	19.22	25.28	≤ 30.00	Pass
11a	6Mbps	48	5240	19.16	19.02	19.04	19.58	25.23	≤ 30.00	Pass
11a	6Mbps	52	5260	14.39	13.69	14.03	13.29	19.89	≤ 23.98	Pass
11a	6Mbps	60	5300	14.48	13.46	13.22	13.49	19.71	≤ 23.98	Pass
11a	6Mbps	64	5320	14.14	13.44	13.57	13.41	19.67	≤ 23.98	Pass
11a	6Mbps	100	5500	14.47	13.52	13.45	13.91	19.88	≤ 23.98	Pass
11a	6Mbps	120	5600	14.56	13.67	13.41	13.46	19.82	≤ 23.98	Pass
11a	6Mbps	140	5700	14.53	13.52	13.23	13.33	19.71	≤ 23.98	Pass
11a	6Mbps	144	5720	14.67	13.38	13.47	13.54	19.82	≤ 23.98	Pass
11a	6Mbps	149	5745	21.10	21.74	22.24	21.38	27.66	≤ 30.00	Pass
11a	6Mbps	157	5785	21.14	19.75	21.13	21.57	26.97	≤ 30.00	Pass
11a	6Mbps	165	5825	20.92	21.75	22.04	21.13	27.50	≤ 30.00	Pass
11ac-VHT20	MCS0	36	5180	19.52	19.06	19.05	19.23	25.24	≤ 30.00	Pass
11ac-VHT20	MCS0	44	5220	20.65	21.45	20.05	19.57	26.51	≤ 30.00	Pass
11ac-VHT20	MCS0	48	5240	21.73	20.48	20.16	20.59	26.80	≤ 30.00	Pass
11ac-VHT20	MCS0	52	5260	14.47	13.46	14.21	13.34	19.92	≤ 23.98	Pass
11ac-VHT20	MCS0	60	5300	14.29	13.41	14.09	13.35	19.83	≤ 23.98	Pass
11ac-VHT20	MCS0	64	5320	14.18	13.45	14.05	13.21	19.76	≤ 23.98	Pass
11ac-VHT20	MCS0	100	5500	14.54	13.16	14.07	13.57	19.89	≤ 23.98	Pass
11ac-VHT20	MCS0	120	5600	14.52	13.42	13.88	13.20	19.81	≤ 23.98	Pass
11ac-VHT20	MCS0	140	5700	14.57	13.11	13.49	12.81	19.57	≤ 23.98	Pass
11ac-VHT20	MCS0	144	5720	14.42	13.44	13.58	13.07	19.68	≤ 23.98	Pass
11ac-VHT20	MCS0	149	5745	21.34	21.97	21.14	20.03	27.20	≤ 30.00	Pass
11ac-VHT20	MCS0	157	5785	22.44	22.12	21.72	20.31	27.74	≤ 30.00	Pass
11ac-VHT20	MCS0	165	5825	22.17	20.83	21.42	19.44	27.10	≤ 30.00	Pass

11ac-VHT40	MCS0	38	5190	15.42	14.78	14.16	14.70	20.81	≤ 30.00	Pass
11ac-VHT40	MCS0	46	5230	21.76	21.35	20.96	20.78	27.25	≤ 30.00	Pass
11ac-VHT40	MCS0	54	5270	17.62	16.82	16.29	16.42	22.84	≤ 23.98	Pass
11ac-VHT40	MCS0	62	5310	14.86	13.94	13.46	13.79	20.07	≤ 23.98	Pass
11ac-VHT40	MCS0	102	5510	16.68	16.16	15.87	16.09	22.23	≤ 23.98	Pass
11ac-VHT40	MCS0	118	5590	17.68	16.94	16.49	16.91	23.05	≤ 23.98	Pass
11ac-VHT40	MCS0	134	5670	17.91	17.18	16.67	16.94	23.22	≤ 23.98	Pass
11ac-VHT40	MCS0	142	5710	17.86	17.25	16.61	16.82	23.18	≤ 23.98	Pass
11ac-VHT40	MCS0	151	5755	22.04	22.32	21.88	21.34	27.93	≤ 30.00	Pass
11ac-VHT40	MCS0	159	5795	22.19	21.36	21.78	20.82	27.59	≤ 30.00	Pass
11ac-VHT80	MCS0	42	5210	15.07	14.17	13.55	14.04	20.26	≤ 30.00	Pass
11ac-VHT80	MCS0	58	5290	14.74	13.67	13.54	13.88	20.00	≤ 23.98	Pass
11ac-VHT80	MCS0	106	5530	15.14	14.02	13.95	13.94	20.31	≤ 23.98	Pass
11ac-VHT80	MCS0	122	5610	17.77	17.38	17.67	17.27	23.55	≤ 23.98	Pass
11ac-VHT80	MCS0	138	5690	17.71	17.03	17.53	17.01	23.35	≤ 23.98	Pass
11ac-VHT80	MCS0	155	5775	19.97	19.19	18.98	19.08	25.34	≤ 30.00	Pass
802.11ac-VHT160 Straddle 5.15-5.25GHz										
11ac-VHT160	MCS0	50	5250	10.75	10.62	10.62	10.62	16.67	≤ 30.00	Pass
802.11ac-VHT160 Straddle 5.25-5.35GHz										
11ac-VHT160	MCS0	50	5250	10.69	10.56	10.13	10.76	16.56	≤ 23.98	Pass
11ac-VHT160	MCS0	50	5250	13.73	13.60	13.39	13.70	19.63	N/A	N/A
Note: The total power was calculated through formula and recorded the value for reference only.										
11ac-VHT160	MCS0	114	5570	14.54	13.78	13.34	13.57	19.85	≤ 23.98	Pass
11ax-HE20	MCS0	36	5180	19.01	18.64	18.97	18.77	24.87	≤ 30.00	Pass
11ax-HE20	MCS0	44	5220	20.27	20.52	20.36	20.04	26.32	≤ 30.00	Pass
11ax-HE20	MCS0	48	5240	19.85	20.22	19.91	19.79	25.97	≤ 30.00	Pass
11ax-HE20	MCS0	52	5260	14.78	14.01	13.89	13.64	20.12	≤ 23.98	Pass
11ax-HE20	MCS0	60	5300	14.69	14.14	13.96	13.59	20.13	≤ 23.98	Pass
11ax-HE20	MCS0	64	5320	14.74	13.95	13.94	13.47	20.07	≤ 23.98	Pass
11ax-HE20	MCS0	100	5500	12.12	11.17	10.87	11.03	17.35	≤ 23.98	Pass
11ax-HE20	MCS0	120	5600	14.79	13.98	13.41	13.38	19.95	≤ 23.98	Pass
11ax-HE20	MCS0	140	5700	11.48	10.47	10.44	10.59	16.79	≤ 23.98	Pass
11ax-HE20	MCS0	144	5720	14.64	13.97	13.22	13.48	19.88	≤ 23.98	Pass
11ax-HE20	MCS0	149	5745	21.14	22.21	21.01	21.24	27.45	≤ 30.00	Pass
11ax-HE20	MCS0	157	5785	22.16	22.13	21.76	21.70	27.96	≤ 30.00	Pass
11ax-HE20	MCS0	165	5825	20.89	22.07	20.75	20.97	27.22	≤ 30.00	Pass

11ax-HE40	MCS0	38	5190	16.41	15.72	15.26	15.42	21.75	≤ 30.00	Pass
11ax-HE40	MCS0	46	5230	21.32	21.88	21.21	21.38	27.48	≤ 30.00	Pass
11ax-HE40	MCS0	54	5270	17.56	17.31	17.02	16.79	23.20	≤ 23.98	Pass
11ax-HE40	MCS0	62	5310	14.83	13.88	13.85	13.85	20.14	≤ 23.98	Pass
11ax-HE40	MCS0	102	5510	17.13	16.25	16.19	16.51	22.56	≤ 23.98	Pass
11ax-HE40	MCS0	118	5590	17.63	17.19	16.58	16.77	23.08	≤ 23.98	Pass
11ax-HE40	MCS0	134	5670	17.77	17.26	16.68	16.66	23.14	≤ 23.98	Pass
11ax-HE40	MCS0	142	5710	17.43	17.05	16.43	16.56	22.91	≤ 23.98	Pass
11ax-HE40	MCS0	151	5755	21.61	21.34	20.73	21.03	27.21	≤ 30.00	Pass
11ax-HE40	MCS0	159	5795	21.73	21.77	20.78	20.99	27.36	≤ 30.00	Pass
11ax-HE80	MCS0	42	5210	15.27	14.97	14.24	14.24	20.72	≤ 30.00	Pass
11ax-HE80	MCS0	58	5290	14.55	13.68	13.48	13.45	19.83	≤ 23.98	Pass
11ax-HE80	MCS0	106	5530	16.32	15.19	15.38	15.78	21.71	≤ 23.98	Pass
11ax-HE80	MCS0	122	5610	17.84	17.14	17.71	17.16	23.49	≤ 23.98	Pass
11ax-HE80	MCS0	138	5690	17.77	17.19	17.62	16.85	23.39	≤ 23.98	Pass
11ax-HE80	MCS0	155	5775	19.43	18.97	18.85	18.69	25.01	≤ 30.00	Pass
802.11ax-HE160 Straddle 5.15-5.25GHz										
11ax-HE160	MCS0	50	5250	12.61	12.30	12.28	11.31	18.17	≤ 30.00	Pass
802.11ax-HE160 Straddle 5.25-5.35GHz										
11ax-HE160	MCS0	50	5250	12.35	12.39	11.97	10.37	17.86	≤ 23.98	Pass
11ax-HE160	MCS0	50	5250	15.49	15.36	15.14	13.88	21.03	N/A	N/A
Note: The total power was calculated through formula and recorded the value for reference only.										
11ax-HE160	MCS0	114	5570	15.33	14.96	14.87	15.02	21.07	≤ 23.98	Pass

Note 1: Total Average Power (dBm) = $10 \cdot \log\{10^{(\text{Ant 0 Average Power} / 10)} + 10^{(\text{Ant 1 Average Power} / 10)} + 10^{(\text{Ant 2 Average Power} / 10)} + 10^{(\text{Ant 3 Average Power} / 10)}\}$.

Note 2:

NII-1 Band, Average Power Limit (dBm) = 30dBm.

NII-2 Band, Average Power Limit (dBm) = 23.98dBm.

待測物名稱	ACCESS POINT	溫度	22 ~ 27°C
測試工程師	Kevin Ker	濕度	46 ~ 65%
測試場地	SR2	測試日期	2020/08/01 ~ 2020/08/28
天線類型	Omni Antenna (ANT-4x4-5314)	測試項目	Output Power

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Average Power (dBm)				Total Average Power (dBm)	Average Power Limit (dBm)	Result
				Ant 0	Ant 1	Ant 2	Ant 3			
Ant 0 + 1 + 2 + 3 (CDD Mode)										
11a	6Mbps	36	5180	7.08	6.05	6.29	6.38	12.49	≤ 22.00	Pass
11a	6Mbps	44	5220	6.88	7.44	7.48	7.10	13.25	≤ 22.00	Pass
11a	6Mbps	48	5240	7.18	6.96	6.96	7.43	13.16	≤ 22.00	Pass
11a	6Mbps	52	5260	2.57	1.86	2.01	1.08	7.93	≤ 15.98	Pass
11a	6Mbps	60	5300	2.55	1.55	1.39	1.40	7.77	≤ 15.98	Pass
11a	6Mbps	64	5320	1.96	1.60	1.64	1.58	7.72	≤ 15.98	Pass
11a	6Mbps	100	5500	2.49	1.70	1.41	2.10	7.96	≤ 15.98	Pass
11a	6Mbps	120	5600	2.70	1.85	1.30	1.56	7.91	≤ 15.98	Pass
11a	6Mbps	140	5700	2.50	1.65	1.21	1.53	7.77	≤ 15.98	Pass
11a	6Mbps	144	5720	2.81	1.27	1.57	1.41	7.83	≤ 15.98	Pass
11a	6Mbps	149	5745	9.16	9.59	10.42	9.30	15.67	≤ 22.00	Pass
11a	6Mbps	157	5785	9.17	7.63	9.11	9.49	14.93	≤ 22.00	Pass
11a	6Mbps	165	5825	9.01	9.84	9.88	9.30	15.54	≤ 22.00	Pass
11ac-VHT20	MCS0	36	5180	2.99	2.34	1.64	2.10	8.32	≤ 22.00	Pass
11ac-VHT20	MCS0	44	5220	2.86	1.65	1.51	2.01	8.06	≤ 22.00	Pass
11ac-VHT20	MCS0	48	5240	3.04	1.94	2.02	1.80	8.25	≤ 22.00	Pass
11ac-VHT20	MCS0	52	5260	4.16	3.81	4.06	4.15	10.07	≤ 15.98	Pass
11ac-VHT20	MCS0	60	5300	4.55	4.36	4.67	4.52	10.55	≤ 15.98	Pass
11ac-VHT20	MCS0	64	5320	4.57	4.44	4.62	4.38	10.52	≤ 15.98	Pass
11ac-VHT20	MCS0	100	5500	2.76	1.54	1.45	1.61	7.89	≤ 15.98	Pass
11ac-VHT20	MCS0	120	5600	4.41	4.24	4.69	4.18	10.41	≤ 15.98	Pass
11ac-VHT20	MCS0	140	5700	4.89	4.75	4.82	4.92	10.87	≤ 15.98	Pass
11ac-VHT20	MCS0	144	5720	4.90	4.72	4.68	4.94	10.83	≤ 15.98	Pass
11ac-VHT20	MCS0	149	5745	2.96	1.95	1.76	1.85	8.18	≤ 22.00	Pass
11ac-VHT20	MCS0	157	5785	2.64	2.17	1.89	1.68	8.13	≤ 22.00	Pass
11ac-VHT20	MCS0	165	5825	2.73	1.91	1.99	1.34	8.04	≤ 22.00	Pass

11ac-VHT40	MCS0	38	5190	2.70	1.13	2.11	1.46	7.91	≤ 22.00	Pass
11ac-VHT40	MCS0	46	5230	2.83	1.79	1.65	1.55	8.01	≤ 22.00	Pass
11ac-VHT40	MCS0	54	5270	2.88	2.15	1.58	1.44	8.07	≤ 15.98	Pass
11ac-VHT40	MCS0	62	5310	2.54	1.21	1.57	0.84	7.61	≤ 15.98	Pass
11ac-VHT40	MCS0	102	5510	2.66	1.95	1.07	1.54	7.87	≤ 15.98	Pass
11ac-VHT40	MCS0	118	5590	7.68	7.22	7.47	7.38	13.46	≤ 15.98	Pass
11ac-VHT40	MCS0	134	5670	7.68	7.53	7.47	7.18	13.49	≤ 15.98	Pass
11ac-VHT40	MCS0	142	5710	4.41	3.91	3.11	3.51	9.78	≤ 15.98	Pass
11ac-VHT40	MCS0	151	5755	9.20	9.84	9.11	9.55	15.46	≤ 22.00	Pass
11ac-VHT40	MCS0	159	5795	5.74	5.35	4.81	4.93	11.24	≤ 22.00	Pass
11ac-VHT80	MCS0	42	5210	3.01	1.72	1.76	1.89	8.15	≤ 22.00	Pass
11ac-VHT80	MCS0	58	5290	5.31	4.21	4.28	4.37	10.59	≤ 15.98	Pass
11ac-VHT80	MCS0	106	5530	5.84	5.26	4.65	4.90	11.21	≤ 15.98	Pass
11ac-VHT80	MCS0	122	5610	5.79	5.11	4.68	4.67	11.11	≤ 15.98	Pass
11ac-VHT80	MCS0	138	5690	5.74	5.44	4.56	4.49	11.11	≤ 15.98	Pass
11ac-VHT80	MCS0	155	5775	5.26	4.96	4.47	4.35	10.80	≤ 22.00	Pass
802.11ac-VHT160 Straddle 5.15-5.25GHz										
11ac-VHT160	MCS0	50	5250	6.58	6.42	5.98	6.05	12.29	≤ 22.00	Pass
802.11ac-VHT160 Straddle 5.25-5.35GHz										
11ac-VHT160	MCS0	50	5250	6.63	6.25	6.04	6.26	12.32	≤ 15.98	Pass
11ac-VHT160	MCS0	50	5250	9.62	9.35	9.02	9.17	15.32	N/A	N/A
Note: The total power was calculated through formula and recorded the value for reference only.										
11ac-VHT160	MCS0	114	5570	9.59	9.57	8.73	9.14	15.29	≤ 15.98	Pass
11ax-HE20	MCS0	36	5180	9.59	9.57	8.73	9.14	15.29	≤ 22.00	Pass
11ax-HE20	MCS0	44	5220	3.34	3.01	2.37	2.22	8.78	≤ 22.00	Pass
11ax-HE20	MCS0	48	5240	2.74	1.70	1.28	1.36	7.83	≤ 22.00	Pass
11ax-HE20	MCS0	52	5260	4.33	3.06	3.33	3.68	9.65	≤ 15.98	Pass
11ax-HE20	MCS0	60	5300	5.80	5.32	5.80	5.04	11.52	≤ 15.98	Pass
11ax-HE20	MCS0	64	5320	5.64	5.32	5.41	4.70	11.30	≤ 15.98	Pass
11ax-HE20	MCS0	100	5500	7.36	7.11	6.91	6.50	13.00	≤ 15.98	Pass
11ax-HE20	MCS0	120	5600	3.73	2.39	2.75	2.23	8.84	≤ 15.98	Pass
11ax-HE20	MCS0	140	5700	2.42	2.01	2.15	2.12	8.20	≤ 15.98	Pass
11ax-HE20	MCS0	144	5720	2.49	2.05	2.58	2.38	8.40	≤ 15.98	Pass
11ax-HE20	MCS0	149	5745	2.42	2.08	2.26	2.40	8.31	≤ 22.00	Pass
11ax-HE20	MCS0	157	5785	9.07	10.09	9.13	9.12	15.39	≤ 22.00	Pass
11ax-HE20	MCS0	165	5825	10.16	10.10	9.67	9.72	15.94	≤ 22.00	Pass

11ax-HE40	MCS0	38	5190	4.28	3.86	4.22	4.49	10.24	≤ 22.00	Pass
11ax-HE40	MCS0	46	5230	9.48	9.71	9.20	9.37	15.46	≤ 22.00	Pass
11ax-HE40	MCS0	54	5270	5.39	5.19	5.02	4.83	11.13	≤ 15.98	Pass
11ax-HE40	MCS0	62	5310	2.78	1.73	1.78	1.94	8.10	≤ 15.98	Pass
11ax-HE40	MCS0	102	5510	5.12	4.92	5.22	5.55	11.23	≤ 15.98	Pass
11ax-HE40	MCS0	118	5590	5.71	5.08	5.58	5.63	11.53	≤ 15.98	Pass
11ax-HE40	MCS0	134	5670	5.90	5.40	4.85	4.61	11.24	≤ 15.98	Pass
11ax-HE40	MCS0	142	5710	5.59	4.93	5.27	5.55	11.36	≤ 15.98	Pass
11ax-HE40	MCS0	151	5755	9.46	9.51	9.64	9.88	15.65	≤ 22.00	Pass
11ax-HE40	MCS0	159	5795	9.60	9.60	9.91	9.86	15.77	≤ 22.00	Pass
11ax-HE80	MCS0	42	5210	3.10	2.83	3.08	3.33	9.11	≤ 22.00	Pass
11ax-HE80	MCS0	58	5290	2.57	2.05	2.40	2.54	8.42	≤ 15.98	Pass
11ax-HE80	MCS0	106	5530	4.48	3.84	4.19	4.26	10.22	≤ 15.98	Pass
11ax-HE80	MCS0	122	5610	5.72	5.08	5.80	5.17	11.47	≤ 15.98	Pass
11ax-HE80	MCS0	138	5690	5.67	5.04	5.79	5.21	11.46	≤ 15.98	Pass
11ax-HE80	MCS0	155	5775	7.60	6.94	6.83	6.77	13.07	≤ 22.00	Pass
802.11ax-HE160 Straddle 5.15-5.25GHz										
11ax-HE160	MCS0	50	5250	0.65	0.60	0.68	0.62	6.66	≤ 22.00	Pass
802.11ax-HE160 Straddle 5.25-5.35GHz										
11ax-HE160	MCS0	50	5250	0.62	0.56	0.63	0.66	6.64	≤ 15.98	Pass
11ax-HE160	MCS0	50	5250	3.65	3.59	3.67	3.65	9.66	N/A	N/A
Note: The total power was calculated through formula and recorded the value for reference only.										
11ax-HE160	MCS0	114	5570	3.26	2.93	3.01	3.47	9.19	≤ 15.98	Pass

Note 1: Total Average Power (dBm) = $10 \cdot \log\{10^{(\text{Ant 0 Average Power} / 10)} + 10^{(\text{Ant 1 Average Power} / 10)} + 10^{(\text{Ant 2 Average Power} / 10)} + 10^{(\text{Ant 3 Average Power} / 10)}\}$.

Note 2:

NII-1 / 4Band, Average Power Limit (dBm) = 30dBm-(14dBi-6dB)=22dBm.

NII-2A/2C Band, Average Power Limit (dBm) = 23.98dBm-(14dBi-6dB)=15.98dBm.

5.3. 天線之要求

5.3.1. 適用標準

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 No.	Antenna Type	Frequency Band (GHz)	Model No.	Max Peak 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	Omni	2.4	AP-ANT-40	4.0	7.01	4.0	7.01
		5		5.0	11.02	5.0	11.02
2	Omni	2.4	AP-ANT-19	3.0	6.01	3.0	6.01
		5		6.0	12.02	6.0	12.02
3	Omni	2.4	AP-ANT-1W	3.8	6.81	3.8	6.81
		5		5.8	11.82	5.8	11.82
4	Omni	2.4	AP-ANT-13B	2.3	5.31	2.3	5.31
		5		4.0	10.02	4.0	10.02
5	Omni	2.4	AP-ANT-20W	2.0	5.01	2.0	5.01
		5		2.0	8.02	2.0	8.02
6	Omni	2.4	AP-ANT-22	2.0	5.01	2.0	5.01
		5		4.0	10.02	4.0	10.02
7	Omni	2.4	AP-ANT-16	3.9	6.91	3.9	6.91
		5		4.7	10.72	4.7	10.72
8 (Note 3)	Directional	2.4	AP-ANT-45	4.5	4.5	4.5	4.5
		5		5.5	8.51	5.5	8.51
9 (Note 3)	Directional	2.4	AP-ANT-48	8.5	8.5	8.5	8.5
		5		8.5	11.51	8.5	11.51
10 (Note 3)	Directional	2.4	ANT-2x2-2314	14.0	14.0	14.0	14.0
11 (Note 3)	Directional	5	ANT-4x4-5314	14.0	17.01	14.0	17.01
12 (Note 3)	Directional	5	ANT-3x3-5712	11.5	14.51	11.5	14.51
13 (Note 3)	Directional	2.4	AP-ANT-25A	5.0	5.0	5.0	5.0
		5		5.0	8.01	5.0	8.01
14 (Note 3)	Directional	2.4	AP-ANT-28	7.5	7.5	7.5	7.5
		5		7.5	10.51	7.5	10.51
Bluetooth / ZigBee Internal Antenna(ANT-518)							
PCB		2.4		4.2			

Note:

1. 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,

$$\text{Array Gain} = 10 \log (N_{ANT} / N_{SS}) \text{ dB} = 3.01;$$

- For power measurements on IEEE 802.11 devices,

$$\text{Array Gain} = 0 \text{ dB for } N_{ANT} \leq 4;$$

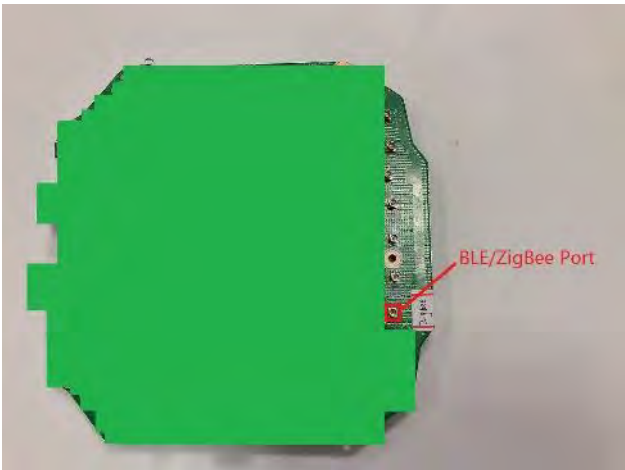
2. The EUT also supports Beam Forming mode, and the Beam Forming support 802.11n/ac/ax, not include 802.11a/b/g. Directional gain = $G_{ANT} + \text{BF Gain}$, BF Gain was declared by the applicant.

3. 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.

4. Low gain antenna (AP-ANT-20W) was selected to perform all RF testing that can get maximum power setting, high gain directional antenna (ANT-2x2-2314 & ANT-4x4-5314) were selected to perform radiated spurious emission and band edge testing. High gain antenna power setting will be reduced according to difference value of antenna gain declared by applicant.

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

5.4. 26dB 佔用頻寬

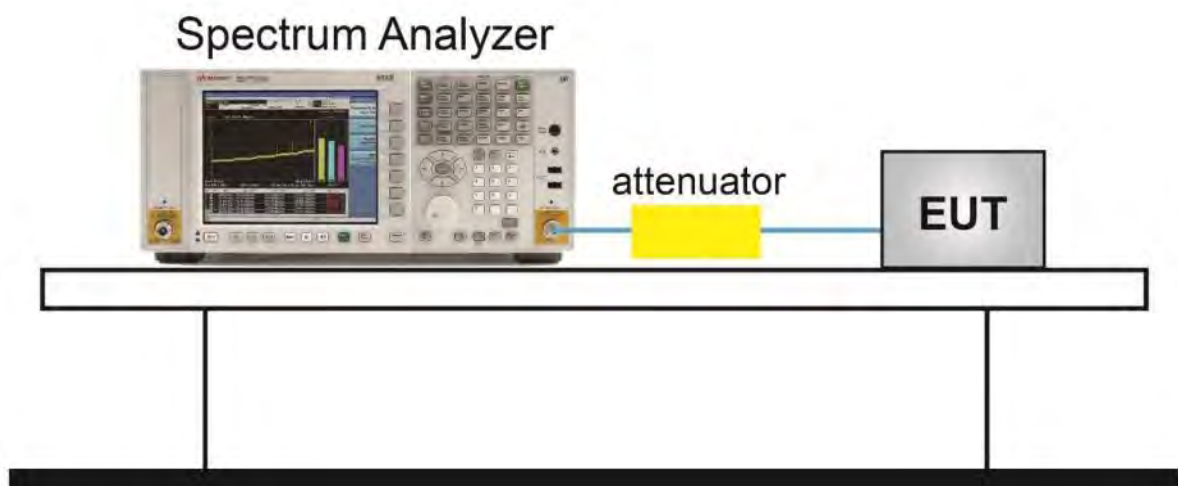
5.4.1. 適用標準

N/A

5.4.2. 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，峰值發射功率必須使用依據均方根等效電壓校準之儀器量測於任何連續傳輸之時段，量測結果須依儀器限制(如偵測器反應時間、相較於發射頻寬有限之解析頻寬能力，靈敏度等)調整得出正確之峰值量測或使用峰值功率表。

5.4.3. 測試架構圖



5. 4. 4. 26dB 佔用頻寬測試結果

待測物名稱	ACCESS POINT	溫度	24 ~ 25°C
測試工程師	Kevin Ker	濕度	48 ~ 59%
測試場地	SR2	測試日期	2020/01/08 ~ 2020/01/14

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Ant 0 / Ant 0 + 1 + 2 + 3					
802.11a	6Mbps	36	5180	21.09	16.67
802.11a	6Mbps	44	5220	20.95	16.66
802.11a	6Mbps	48	5240	20.99	16.66
802.11a	6Mbps	52	5260	21.24	16.70
802.11a	6Mbps	60	5300	20.91	16.69
802.11a	6Mbps	64	5320	21.07	16.71
802.11a	6Mbps	100	5500	21.11	16.74
802.11a	6Mbps	120	5600	21.00	16.71
802.11a	6Mbps	140	5700	21.11	16.66
802.11a	6Mbps	144	5720	20.94	16.71
802.11a	6Mbps	149	5745	21.10	16.68
802.11a	6Mbps	157	5785	21.65	16.76
802.11a	6Mbps	165	5825	21.66	16.80
802.11ac-VHT20	MCS0	36	5180	21.53	17.82
802.11ac-VHT20	MCS0	44	5220	21.31	17.81
802.11ac-VHT20	MCS0	48	5240	21.33	17.82
802.11ac-VHT20	MCS0	52	5260	21.37	17.87
802.11ac-VHT20	MCS0	60	5300	21.41	17.85
802.11ac-VHT20	MCS0	64	5320	21.32	17.86
802.11ac-VHT20	MCS0	100	5500	21.53	17.87
802.11ac-VHT20	MCS0	120	5600	21.59	17.89
802.11ac-VHT20	MCS0	140	5700	21.64	17.88
802.11ac-VHT20	MCS0	144	5720	21.39	17.84
802.11ac-VHT20	MCS0	149	5745	21.48	17.85
802.11ac-VHT20	MCS0	157	5785	21.48	17.85
802.11ac-VHT20	MCS0	165	5825	21.45	17.86

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Ant 0 / Ant 0 + 1 + 2 + 3					
802.11ac-VHT40	MCS0	38	5190	39.55	36.22
802.11ac-VHT40	MCS0	46	5230	40.08	36.27
802.11ac-VHT40	MCS0	54	5270	39.99	36.24
802.11ac-VHT40	MCS0	62	5310	39.99	36.26
802.11ac-VHT40	MCS0	102	5510	39.86	37.57
802.11ac-VHT40	MCS0	118	5590	39.89	37.57
802.11ac-VHT40	MCS0	134	5670	39.72	37.61
802.11ac-VHT40	MCS0	142	5710	39.51	37.60
802.11ac-VHT40	MCS0	151	5755	62.77	36.42
802.11ac-VHT40	MCS0	159	5795	56.45	36.37
802.11ac-VHT80	MCS0	42	5210	81.43	75.69
802.11ac-VHT80	MCS0	58	5290	81.78	75.67
802.11ac-VHT80	MCS0	106	5530	81.58	75.76
802.11ac-VHT80	MCS0	122	5610	81.84	75.72
802.11ac-VHT80	MCS0	138	5690	81.61	75.71
802.11ac-VHT80	MCS0	155	5775	81.44	75.70
802.11ac-VHT160	MCS0	50	5250	284.00	154.84
802.11ac-VHT160	MCS0	114	5570	284.50	155.33
802.11ax-HE20	MCS0	36	5180	21.45	19.01
802.11ax-HE20	MCS0	44	5220	21.49	19.01
802.11ax-HE20	MCS0	48	5240	21.00	18.99
802.11ax-HE20	MCS0	52	5260	21.31	19.04
802.11ax-HE20	MCS0	60	5300	21.21	19.01
802.11ax-HE20	MCS0	64	5320	21.11	19.02
802.11ax-HE20	MCS0	100	5500	21.37	19.01
802.11ax-HE20	MCS0	120	5600	21.29	19.03
802.11ax-HE20	MCS0	140	5700	21.23	19.02
802.11ax-HE20	MCS0	144	5720	21.33	19.00
802.11ax-HE20	MCS0	149	5745	21.39	19.03
802.11ax-HE20	MCS0	157	5785	24.23	19.06
802.11ax-HE20	MCS0	165	5825	21.47	19.00

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Ant 0 / Ant 0 + 1 + 2 + 3					
802.11ax-HE40	MCS0	38	5190	39.73	37.55
802.11ax-HE40	MCS0	46	5230	39.77	37.62
802.11ax-HE40	MCS0	54	5270	39.71	37.60
802.11ax-HE40	MCS0	62	5310	39.98	37.57
802.11ax-HE40	MCS0	102	5510	39.36	37.57
802.11ax-HE40	MCS0	118	5590	39.42	37.54
802.11ax-HE40	MCS0	134	5670	39.63	37.56
802.11ax-HE40	MCS0	142	5710	39.40	37.58
802.11ax-HE40	MCS0	151	5755	39.84	37.64
802.11ax-HE40	MCS0	159	5795	39.99	37.60
802.11ax-HE80	MCS0	42	5210	80.67	76.90
802.11ax-HE80	MCS0	58	5290	82.12	76.92
802.11ax-HE80	MCS0	106	5530	82.04	77.06
802.11ax-HE80	MCS0	122	5610	81.18	76.95
802.11ax-HE80	MCS0	138	5690	81.66	76.98
802.11ax-HE80	MCS0	155	5775	80.72	76.79
802.11ax-HE160	MCS0	50	5250	217.40	155.26
802.11ax-HE160	MCS0	114	5570	267.00	155.83

802.11a 26dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 36 (5180MHz)



Channel 44 (5220MHz)



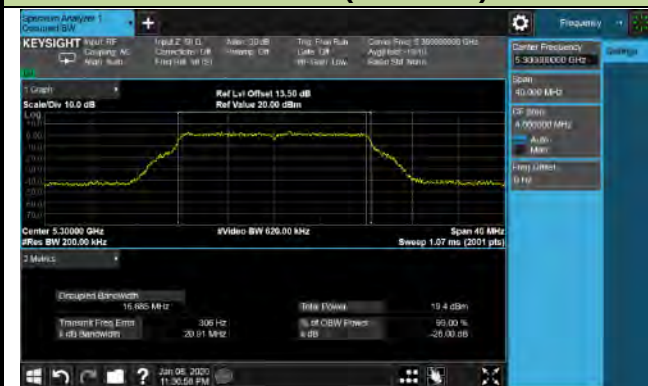
Channel 48 (5240MHz)



Channel 52 (5260MHz)



Channel 60 (5300MHz)



Channel 64 (5320MHz)



Channel 100 (5500MHz)



Channel 120 (5600MHz)



802.11a 26dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 140 (5700MHz)



Channel 144 (5720MHz)



Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)



802.11ac-VHT20 26dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 36 (5180MHz)



Channel 44 (5220MHz)



Channel 48 (5240MHz)



Channel 52 (5260MHz)



Channel 60 (5300MHz)



Channel 64 (5320MHz)



Channel 100 (5500MHz)



Channel 120 (5600MHz)



802.11ac-VHT20 26dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 140 (5700MHz)



Channel 144 (5720MHz)



Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)



802.11ac-VHT40 26dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 38 (5190MHz)



Channel 46 (5230MHz)



Channel 54 (5270MHz)



Channel 62 (5310MHz)



Channel 102 (5510MHz)



Channel 118 (5590MHz)



Channel 134 (5670MHz)



Channel 142 (5710MHz)



802.11ac-VHT40 26dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 151 (5755MHz)



Channel 159 (5795MHz)



802.11ac-VHT80 26dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 42 (5210MHz)



Channel 58 (5290MHz)



Channel 106 (5530MHz)



Channel 122 (5610MHz)



Channel 138 (5690MHz)



Channel 155 (5775MHz)



802.11ac-VHT160 26dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 50 (5250MHz)



Channel 114 (5570MHz)



802.11ax-HE20 26dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 36 (5180MHz)



Channel 44 (5220MHz)



Channel 48 (5240MHz)



Channel 52 (5260MHz)



Channel 60 (5300MHz)



Channel 64 (5320MHz)



Channel 100 (5500MHz)



Channel 120 (5600MHz)



802.11ax-HE20 26dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 140 (5700MHz)



Channel 144 (5720MHz)



Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)



802.11ax-HE40 26dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 38 (5190MHz)



Channel 46 (5230MHz)



Channel 54 (5270MHz)



Channel 62 (5310MHz)



Channel 102 (5510MHz)



Channel 118 (5590MHz)

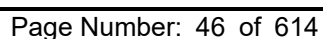


Channel 134 (5670MHz)



Channel 142 (5710MHz)





802.11ax-HE80 26dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 42 (5210MHz)



Channel 58 (5290MHz)



Channel 106 (5530MHz)



Channel 122 (5610MHz)



Channel 138 (5690MHz)



Channel 155 (5775MHz)



802.11ax-HE160 26dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 50 (5250MHz)



Channel 114 (5570MHz)



5.5. 6dB 佔用頻寬

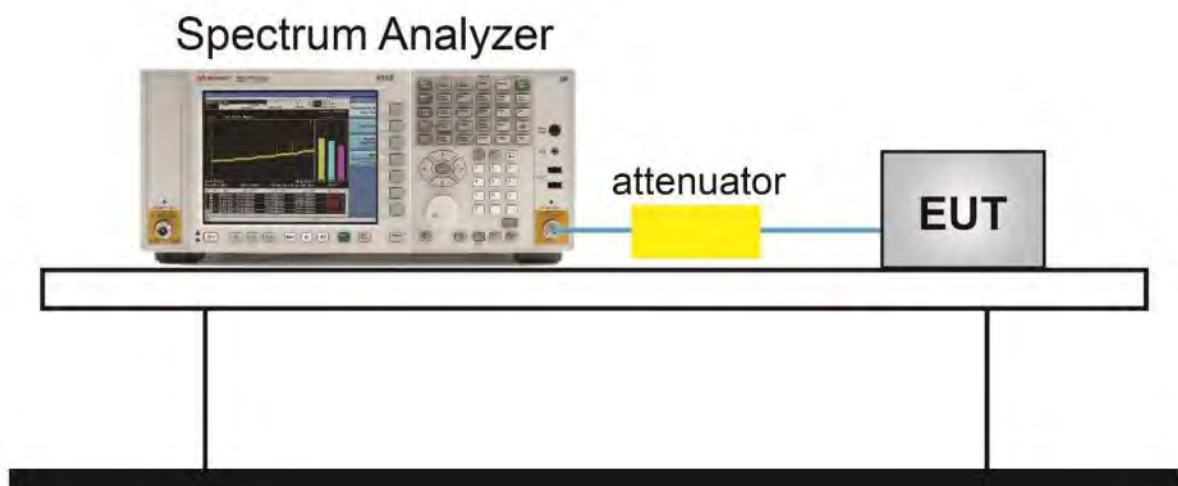
5.5.1. 適用標準

在 5.725 GHz~5.850 GHz 頻段操作之設備，其 6 dB 頻寬至少應有 500 kHz。

5.5.2. 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，峰值發射功率必須使用依據均方根等效電壓校準之儀器量測於任何連續傳輸之時段，量測結果須依儀器限制(如偵測器反應時間、相較於發射頻寬有限之解析頻寬能力，靈敏度等)調整得出正確之峰值量測或使用峰值功率表。

5.5.3. 測試架構圖



5.5.4. 6dB 佔用頻寬測試結果

待測物名稱	ACCESS POINT	溫度	25°C
測試工程師	Kevin Ker	濕度	52%
測試場地	SR2	測試日期	2020/01/15

Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Ant 0 / Ant 0 + 1 + 2 + 3						
802.11a	6Mbps	149	5745	16.37	≥ 0.5	Pass
802.11a	6Mbps	157	5785	16.33	≥ 0.5	Pass
802.11a	6Mbps	165	5825	16.37	≥ 0.5	Pass
802.11ac-VHT20	MCS0	149	5745	17.58	≥ 0.5	Pass
802.11ac-VHT20	MCS0	157	5785	17.58	≥ 0.5	Pass
802.11ac-VHT20	MCS0	165	5825	17.58	≥ 0.5	Pass
802.11ac-VHT40	MCS0	151	5755	36.10	≥ 0.5	Pass
802.11ac-VHT40	MCS0	159	5795	36.08	≥ 0.5	Pass
802.11ac-VHT80	MCS0	155	5775	75.26	≥ 0.5	Pass
802.11ax-HE20	MCS0	149	5745	19.01	≥ 0.5	Pass
802.11ax-HE20	MCS0	157	5785	18.98	≥ 0.5	Pass
802.11ax-HE20	MCS0	165	5825	18.97	≥ 0.5	Pass
802.11ax-HE40	MCS0	151	5755	37.45	≥ 0.5	Pass
802.11ax-HE40	MCS0	159	5795	36.66	≥ 0.5	Pass
802.11ax-HE80	MCS0	155	5775	76.09	≥ 0.5	Pass

802.11a 6dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)



802.11ac-VHT20 6dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)



802.11ac-VHT40 6dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 151 (5755MHz)



Channel 159 (5795MHz)



802.11ac-VHT80 6dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 155 (5775MHz)



802.11ax-HE20 6dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)

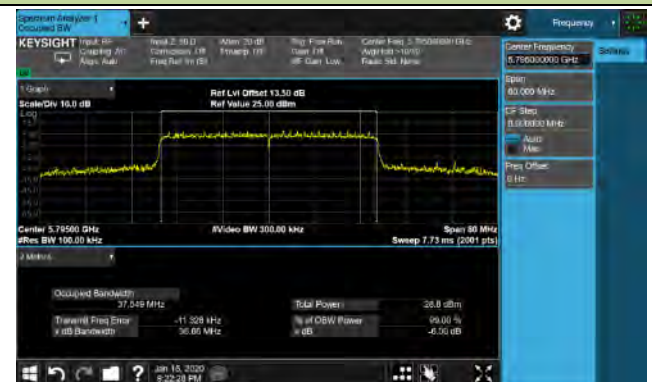


802.11ax-HE40 6dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 151 (5755MHz)



Channel 159 (5795MHz)



802.11ax-HE80 6dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 155 (5775MHz)



5.6. 最大功率頻譜密度

5.6.1. 適用標準

依據國家通訊傳播委員會低功率射頻電機技術規範之第4.7.2(1)(2)(3)節

使用於5.15 GHz~5.25 GHz 頻段，供室內操作使用，在任何1 MHz 頻帶中最大功率頻譜密度應小於或等於17 dBm。

使用頻率於5.25 GHz~5.35 GHz 與5.470 GHz~5.725 GHz 頻段，最大功率頻譜密度在任何1 MHz 頻帶中應小於或等於11 dBm。

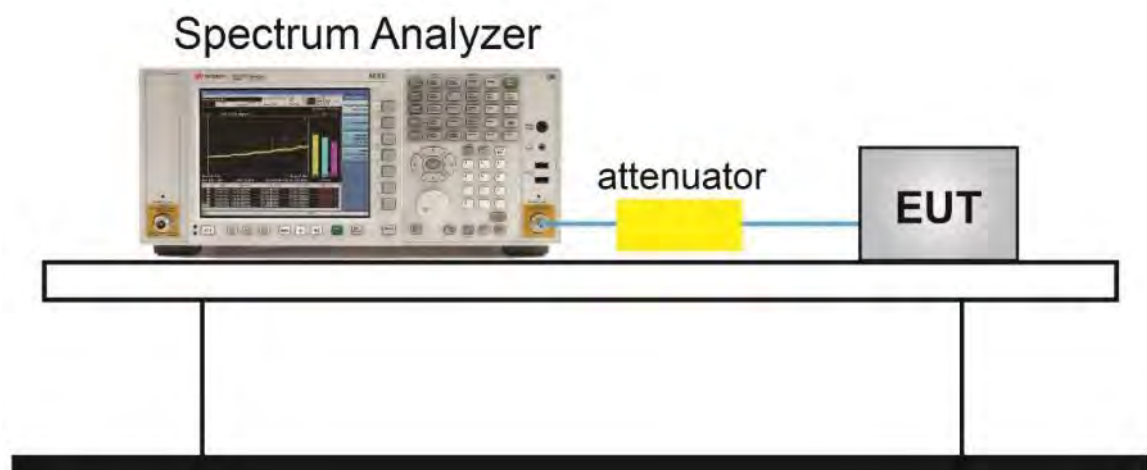
使用頻率於5.725 GHz~5.850 GHz 頻段，在任何500 kHz 頻帶中最大功率頻譜密度應小於或等於30 dBm。

使用超過6 dBi 方向增益之發射天線時，應依超過6 dBi 天線方向增益的dBi 總量，等量減少最大功率頻譜密度。

5.6.2. 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，量測定於1MHz/500kHz頻寬。

5.6.3. 測試架構圖



5.6.4. 峰值功率頻譜密度測試結果

待測物名稱	ACCESS POINT	溫度	24℃
測試工程師	Kevin Ker	濕度	59%
測試場地	SR2	測試日期	2020/01/09 ~ 2020/03/23
測試項目	Power Spectral Density (UNII-Band 1 and UNII-Band 2) (AP-ANT-20W)		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 PSD (dBm/MHz)	Ant 1 PSD (dBm/MHz)	Ant 2 PSD (dBm/MHz)	Ant 3 PSD (dBm/MHz)	Duty Cycle (%)	Total PSD (dBm/MHz)	PSD Limit (dBm/MHz)	Result
Ant 0 + 1 + 2 + 3											
11a	6Mbps	36	5180	8.25	7.94	7.75	7.97	95.12	14.22	≤14.98	Pass
11a	6Mbps	44	5220	9.15	8.63	8.65	7.15	95.12	14.69	≤14.98	Pass
11a	6Mbps	48	5240	8.60	9.02	8.72	7.49	95.12	14.73	≤14.98	Pass
11a	6Mbps	52	5260	3.00	2.54	2.61	2.04	95.12	8.80	≤8.98	Pass
11a	6Mbps	60	5300	3.14	2.57	2.39	2.10	95.12	8.80	≤8.98	Pass
11a	6Mbps	64	5320	3.00	2.64	2.74	2.17	95.12	8.89	≤8.98	Pass
11a	6Mbps	100	5500	2.99	2.32	2.42	2.33	95.12	8.76	≤8.98	Pass
11a	6Mbps	120	5600	3.20	2.45	2.19	2.07	95.12	8.74	≤8.98	Pass
11a	6Mbps	140	5700	2.95	2.26	1.93	2.11	95.12	8.57	≤8.98	Pass
11a	6Mbps	144	5720	2.96	2.35	2.57	2.16	95.12	8.76	≤8.98	Pass
11ac-VHT20	MCS0	36	5180	8.38	8.09	7.99	8.14	97.92	14.26	≤14.98	Pass
11ac-VHT20	MCS0	44	5220	7.84	8.76	8.87	8.61	97.92	14.65	≤14.98	Pass
11ac-VHT20	MCS0	48	5240	7.61	9.11	8.77	8.67	97.92	14.69	≤14.98	Pass
11ac-VHT20	MCS0	52	5260	2.33	2.28	2.55	2.28	97.92	8.47	≤8.98	Pass
11ac-VHT20	MCS0	60	5300	2.80	2.68	2.46	2.33	97.92	8.68	≤8.98	Pass
11ac-VHT20	MCS0	64	5320	2.82	2.62	2.60	2.06	97.92	8.65	≤8.98	Pass
11ac-VHT20	MCS0	100	5500	3.23	1.88	2.03	2.35	97.92	8.52	≤8.98	Pass
11ac-VHT20	MCS0	120	5600	3.18	2.29	2.10	1.62	97.92	8.45	≤8.98	Pass
11ac-VHT20	MCS0	140	5700	3.07	2.27	1.92	2.04	97.92	8.46	≤8.98	Pass
11ac-VHT20	MCS0	144	5720	3.24	2.66	2.49	2.19	97.92	8.77	≤8.98	Pass

11ac-VHT40	MCS0	38	5190	1.21	0.72	0.19	0.38	96.51	6.82	≤14.98	Pass
11ac-VHT40	MCS0	46	5230	7.86	5.71	7.40	6.36	96.51	13.09	≤14.98	Pass
11ac-VHT40	MCS0	54	5270	2.54	2.53	2.36	1.64	96.51	8.46	≤8.98	Pass
11ac-VHT40	MCS0	62	5310	0.46	-0.44	-0.06	-0.42	96.51	6.08	≤8.98	Pass
11ac-VHT40	MCS0	102	5510	2.10	1.24	1.16	1.22	96.51	7.62	≤8.98	Pass
11ac-VHT40	MCS0	118	5590	3.36	2.68	2.13	2.64	96.51	8.90	≤8.98	Pass
11ac-VHT40	MCS0	134	5670	3.59	2.68	2.28	2.36	96.51	8.93	≤8.98	Pass
11ac-VHT40	MCS0	142	5710	3.45	2.63	2.26	2.51	96.51	8.91	≤8.98	Pass
11ac-VHT80	MCS0	42	5210	-1.66	-2.65	-2.92	-2.79	94.05	3.81	≤14.98	Pass
11ac-VHT80	MCS0	58	5290	-2.60	-3.36	-3.41	-3.52	94.05	3.08	≤8.98	Pass
11ac-VHT80	MCS0	106	5530	-2.26	-3.33	-3.66	-2.48	94.05	3.39	≤8.98	Pass
11ac-VHT80	MCS0	122	5610	0.58	0.23	0.54	-0.11	94.05	6.61	≤8.98	Pass
11ac-VHT80	MCS0	138	5690	0.36	-0.24	0.39	-0.64	94.05	6.28	≤8.98	Pass
802.11ac-VHT160 Straddle 5.15-5.25GHz											
11ac-VHT160	MCS0	50	5250	-6.10	-6.07	-6.49	-5.79	86.95	0.52	≤14.98	Pass
802.11ac-VHT160 Straddle 5.25-5.35GHz											
11ac-VHT160	MCS0	50	5250	-6.21	-6.29	-6.86	-6.66	86.95	0.13	≤8.98	Pass
11ax-HE20	MCS0	36	5180	8.14	7.97	7.65	7.84	97.70	14.03	≤14.98	Pass
11ax-HE20	MCS0	44	5220	9.35	9.17	8.33	8.29	97.70	14.93	≤14.98	Pass
11ax-HE20	MCS0	48	5240	9.44	8.68	8.94	8.20	97.70	14.96	≤14.98	Pass
11ax-HE20	MCS0	52	5260	2.73	2.36	2.03	2.38	97.70	8.50	≤8.98	Pass
11ax-HE20	MCS0	60	5300	2.65	2.07	2.36	2.11	97.70	8.43	≤8.98	Pass
11ax-HE20	MCS0	64	5320	2.78	2.21	2.64	1.83	97.70	8.50	≤8.98	Pass
11ax-HE20	MCS0	100	5500	0.75	-0.14	-0.08	0.02	97.70	6.27	≤8.98	Pass
11ax-HE20	MCS0	120	5600	3.27	2.24	2.14	1.96	97.70	8.56	≤8.98	Pass
11ax-HE20	MCS0	140	5700	-0.05	-0.99	-1.00	-1.24	97.70	5.33	≤8.98	Pass
11ax-HE20	MCS0	144	5720	2.98	2.20	2.49	1.70	97.70	8.49	≤8.98	Pass
11ax-HE40	MCS0	38	5190	2.70	2.37	1.99	1.93	94.86	8.51	≤14.98	Pass
11ax-HE40	MCS0	46	5230	8.16	7.99	7.45	7.37	94.86	14.01	≤14.98	Pass
11ax-HE40	MCS0	54	5270	3.01	2.61	2.58	2.31	94.86	8.88	≤8.98	Pass
11ax-HE40	MCS0	62	5310	0.47	-1.03	-0.60	-0.84	94.86	5.79	≤8.98	Pass
11ax-HE40	MCS0	102	5510	2.13	1.65	1.28	1.52	94.86	7.91	≤8.98	Pass
11ax-HE40	MCS0	118	5590	3.14	2.56	2.25	2.52	94.86	8.88	≤8.98	Pass
11ax-HE40	MCS0	134	5670	3.01	2.44	2.26	2.71	94.86	8.86	≤8.98	Pass
11ax-HE40	MCS0	142	5710	3.07	2.69	2.02	2.94	94.86	8.95	≤8.98	Pass

11ax-HE80	MCS0	42	5210	-0.83	-1.78	-2.10	-2.28	92.53	4.65	≤14.98	Pass
11ax-HE80	MCS0	58	5290	-3.11	-4.38	-3.90	-4.51	92.53	2.42	≤8.98	Pass
11ax-HE80	MCS0	106	5530	-0.79	-2.23	-2.32	-1.56	92.53	4.68	≤8.98	Pass
11ax-HE80	MCS0	122	5610	2.80	0.08	0.41	0.02	92.53	7.35	≤8.98	Pass
11ax-HE80	MCS0	138	5690	0.20	-0.31	-0.09	-0.50	92.53	6.19	≤8.98	Pass
802.11ax-HE160 Straddle 5.15-5.25GHz											
11ax-HE160	MCS0	50	5250	-4.44	-4.41	-4.10	-5.31	88.29	2.02	≤14.98	Pass
802.11ax-HE160 Straddle 5.25-5.35GHz											
11ax-HE160	MCS0	50	5250	-4.67	-4.99	-4.63	-5.96	88.29	1.53	≤8.98	Pass

Note 1: When EUT duty cycle ≥ 98%, Total PSD (dBm/MHz) = $10 \cdot \log\{10^{(\text{Ant 0 PSD}/10)} + 10^{(\text{Ant 1 PSD}/10)} + 10^{(\text{Ant 2 PSD}/10)} + 10^{(\text{Ant 3 PSD}/10)}\}$ (dBm/MHz).

Note 2: When EUT duty cycle < 98%, Total PSD (dBm/MHz) = $10 \cdot \log\{10^{(\text{Ant 0 PSD}/10)} + 10^{(\text{Ant 1 PSD}/10)} + 10^{(\text{Ant 2 PSD}/10)} + 10^{(\text{Ant 3 PSD}/10)}\}$ (dBm/MHz) + $10 \cdot \log(1/\text{Duty Cycle})$.

Note 3: NII-1 Band, PSD Limit (dBm/MHz) = 17dBm/MHz - (8.02dBi - 6dBi) = 14.98dBm/MHz.

NII-2 Band, PSD Limit (dBm/MHz) = 11dBm/MHz - (8.02dBi - 6dBi) = 8.98dBm/MHz.

待測物名稱	ACCESS POINT	溫度	22°C
測試工程師	Kevin Ker	濕度	54%
測試場地	SR2	測試日期	2020/01/09 ~ 2020/03/18
測試項目	Power Spectral Density (UNII-Band 4)		
天線類型	Omin Antenna (AP-ANT-20W)		

Test Mode	Data Rate/MCS	Channel No.	Freq. (MHz)	Ant 0 PSD (dBm/100kHz)	Ant 1 PSD (dBm/100kHz)	Ant 2 PSD (dBm/100kHz)	Ant 3 PSD (dBm/100kHz)	Duty Cycle (%)	Constant Factor (dB)	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
Ant 0 + 1 + 2 + 3												
11a	6Mbps	149	5745	2.77	2.63	2.86	2.12	95.12	6.99	15.83	≤ 27.98	Pass
11a	6Mbps	157	5785	1.82	2.19	2.64	1.78	95.12	6.99	15.35	≤ 27.98	Pass
11a	6Mbps	165	5825	1.84	2.28	2.80	2.01	95.12	6.99	15.48	≤ 27.98	Pass
11ac-VHT20	MCS0	149	5745	1.40	2.11	2.57	1.64	97.92	6.99	15.06	≤ 27.98	Pass
11ac-VHT20	MCS0	157	5785	1.65	1.98	2.07	1.33	97.92	6.99	14.87	≤ 27.98	Pass
11ac-VHT20	MCS0	165	5825	1.34	1.28	2.67	1.26	97.92	6.99	14.78	≤ 27.98	Pass
11ac-VHT40	MCS0	151	5755	-0.49	-0.54	0.08	-0.53	96.51	6.99	12.80	≤ 27.98	Pass
11ac-VHT40	MCS0	159	5795	-0.79	-0.77	0.09	-0.65	96.51	6.99	12.65	≤ 27.98	Pass
11ac-VHT80	MCS0	155	5775	-5.73	-5.84	-5.55	-6.38	94.05	6.99	7.41	≤ 27.98	Pass
11ax-HE20	MCS0	149	5745	1.30	1.80	2.22	1.24	97.70	6.99	14.77	≤ 27.98	Pass
11ax-HE20	MCS0	157	5785	1.52	1.44	2.23	1.30	97.70	6.99	14.75	≤ 27.98	Pass
11ax-HE20	MCS0	165	5825	-0.79	1.27	2.24	1.14	97.70	6.99	14.21	≤ 27.98	Pass
11ax-HE40	MCS0	151	5755	-1.15	-1.44	-0.66	-1.41	94.86	6.99	12.09	≤ 27.98	Pass
11ax-HE40	MCS0	159	5795	-1.69	-1.59	-0.88	-1.54	94.86	6.99	11.83	≤ 27.98	Pass
11ax-HE80	MCS0	155	5775	-6.61	-6.72	-6.52	-7.73	92.53	6.99	6.48	≤ 27.98	Pass

Note 1: When EUT duty cycle ≥ 98%, Total PSD (dBm/500kHz) = $10 \cdot \log\{10^{(\text{Ant 0 PSD}/10)} + 10^{(\text{Ant 1 PSD}/10)} + 10^{(\text{Ant 2 PSD}/10)} + 10^{(\text{Ant 3 PSD}/10)}\}$ (dBm/100kHz) + Constant Factor.

Note 2: When EUT duty cycle < 98%, Total PSD (dBm/500kHz) = $10 \cdot \log\{10^{(\text{Ant 0 PSD}/10)} + 10^{(\text{Ant 1 PSD}/10)} + 10^{(\text{Ant 2 PSD}/10)} + 10^{(\text{Ant 3 PSD}/10)}\}$ (dBm/100kHz) + Constant Factor + $10 \cdot \log(1/\text{Duty Cycle})$.

Note 3: PSD Limit (dBm/500kHz) = 30dBm/500kHz - (8.02dBi - 6dBi) = 27.98dBm/500kHz.

802.11a Power Spectral Density - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 36 (5180MHz)



Channel 44 (5220MHz)



Channel 48 (5240MHz)



Channel 52 (5260MHz)



Channel 60 (5300MHz)



Channel 64 (5320MHz)



Channel 100 (5500MHz)



Channel 120 (5600MHz)



802.11a Power Spectral Density - Ant 0 / Ant 0 + 1 + 2 + 3 (CDD Mode)

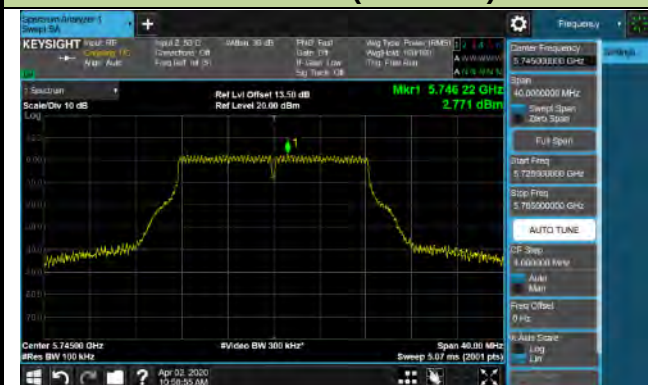
Channel 140 (5700MHz)



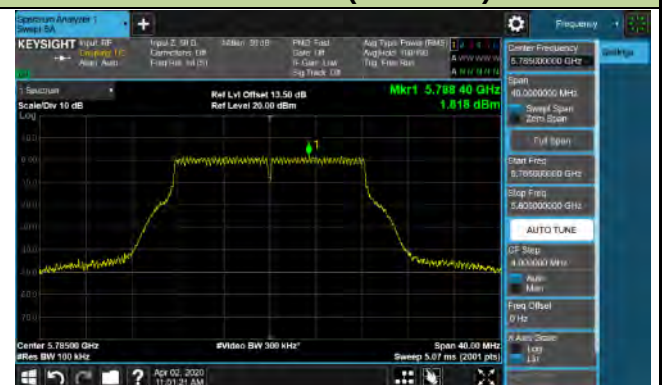
Channel 144 (5720MHz)



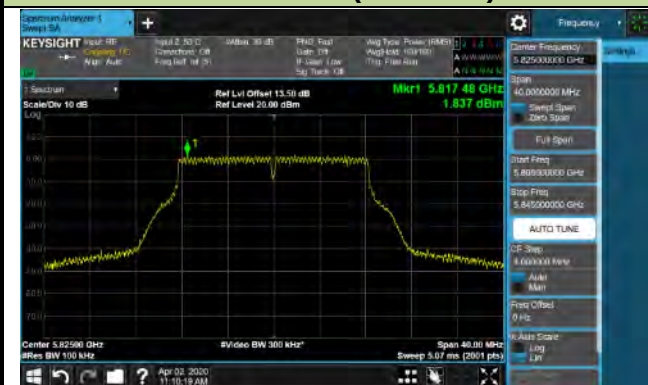
Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)



802.11ac-VHT20 Power Spectral Density - Ant 0 / Ant 0 + 1 + 2 + 3 (CDD Mode)

Channel 36 (5180MHz)



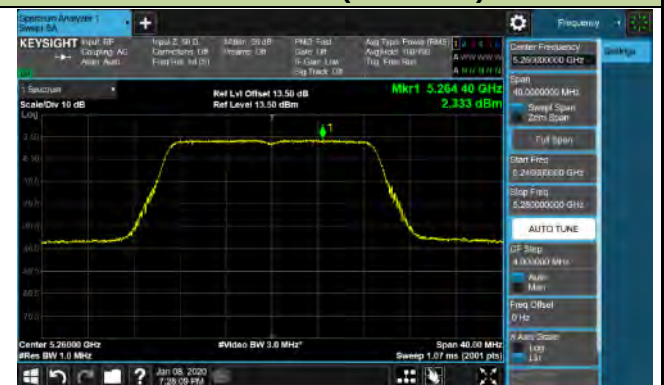
Channel 44 (5220MHz)



Channel 48 (5240MHz)



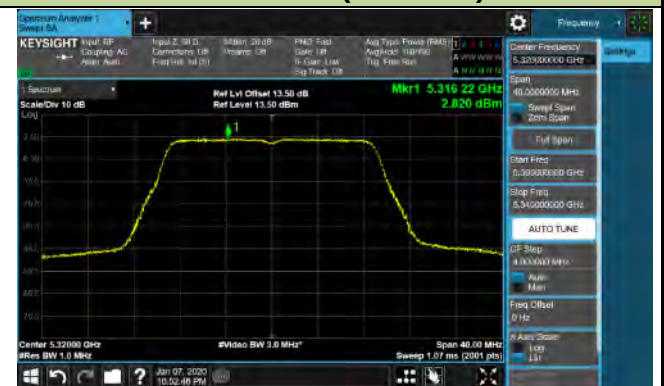
Channel 52 (5260MHz)



Channel 60 (5300MHz)



Channel 64 (5320MHz)



Channel 100 (5500MHz)



Channel 120 (5600MHz)



802.11ac-VHT20 Power Spectral Density - Ant 0 / Ant 0 + 1 + 2 + 3 (CDD Mode)

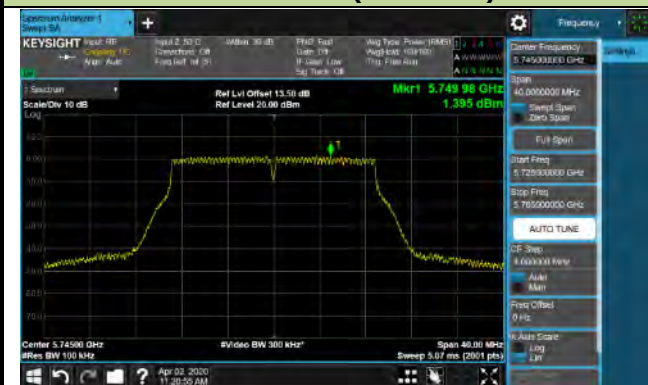
Channel 140 (5700MHz)



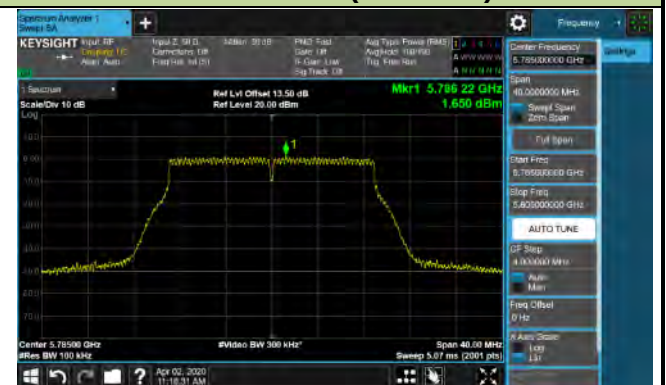
Channel 144 (5720MHz)



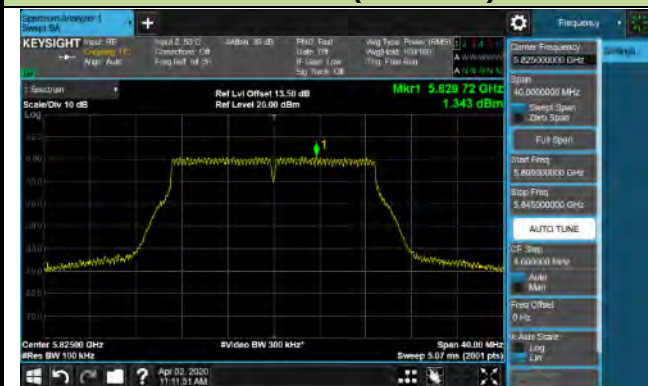
Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)

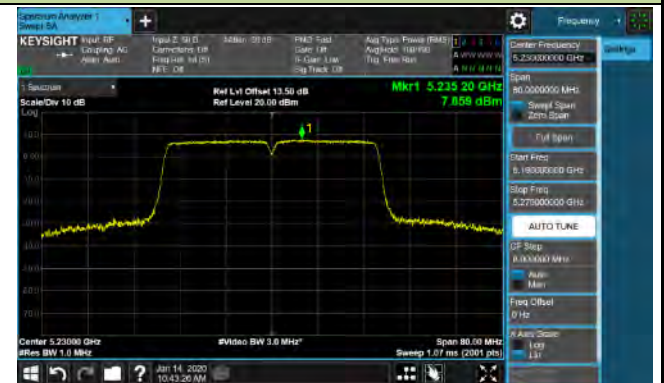


802.11ac-VHT40 Power Spectral Density - Ant 0 / Ant 0 + 1 + 2 + 3 (CDD Mode)

Channel 38 (5190MHz)



Channel 46 (5230MHz)



Channel 54 (5270MHz)



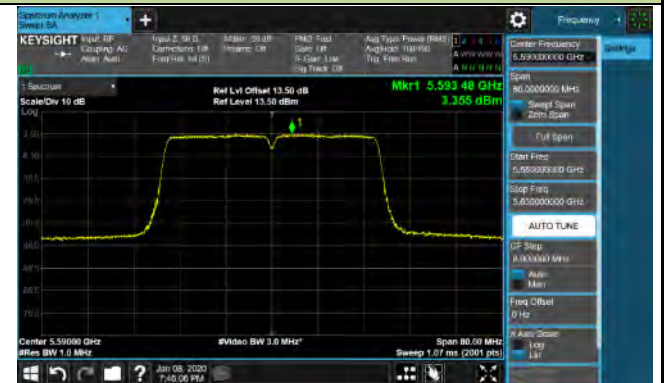
Channel 62 (5310MHz)



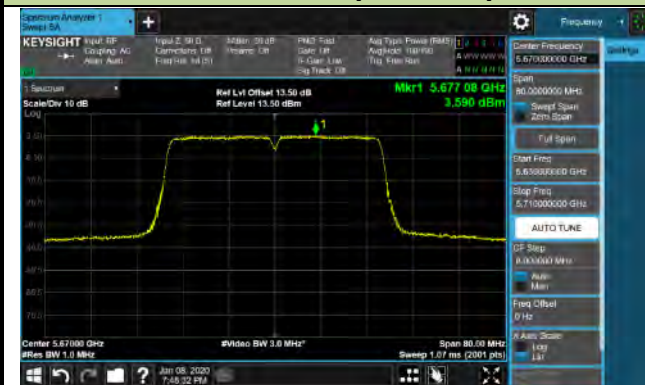
Channel 102 (5510MHz)



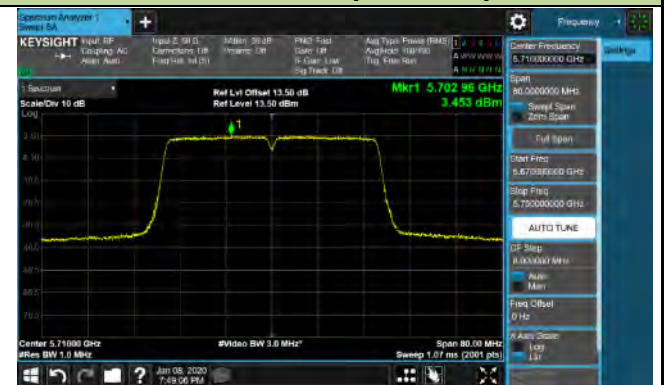
Channel 118 (5590MHz)



Channel 134 (5670MHz)

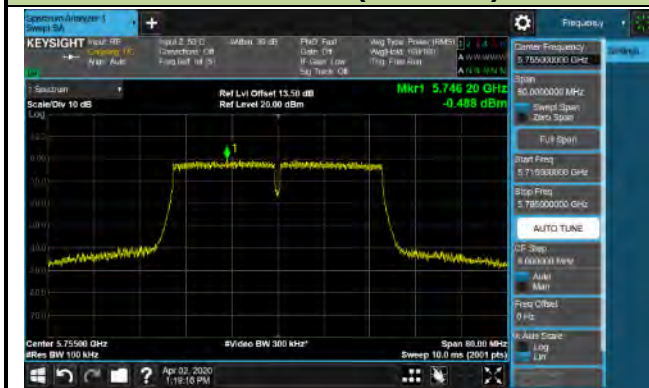


Channel 142 (5710MHz)

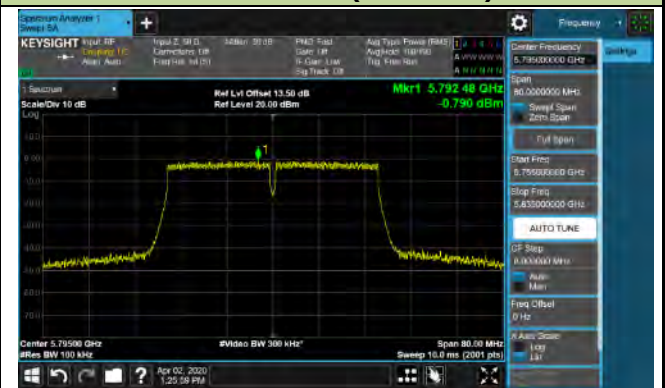


802.11ac-VHT40 Power Spectral Density - Ant 0 / Ant 0 + 1 + 2 + 3 (CDD Mode)

Channel 151 (5755MHz)



Channel 159 (5795MHz)



802.11ac-VHT80 Power Spectral Density - Ant 0 / Ant 0 + 1 + 2 + 3 (CDD Mode)

Channel 42 (5210MHz)



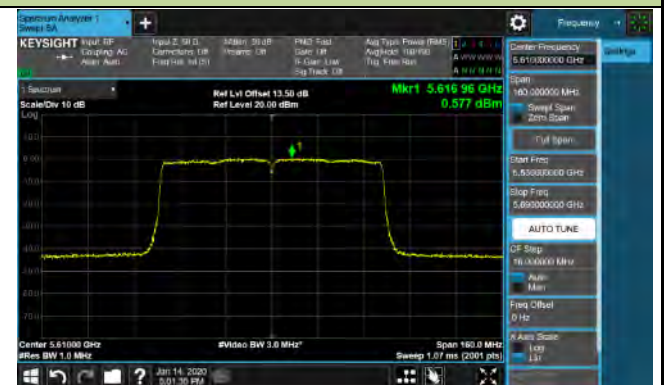
Channel 58 (5290MHz)



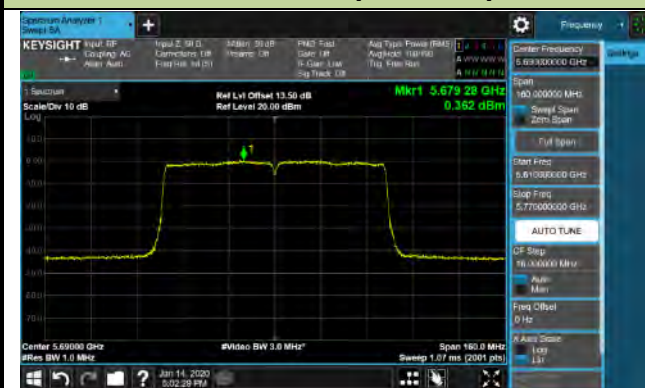
Channel 106 (5530MHz)



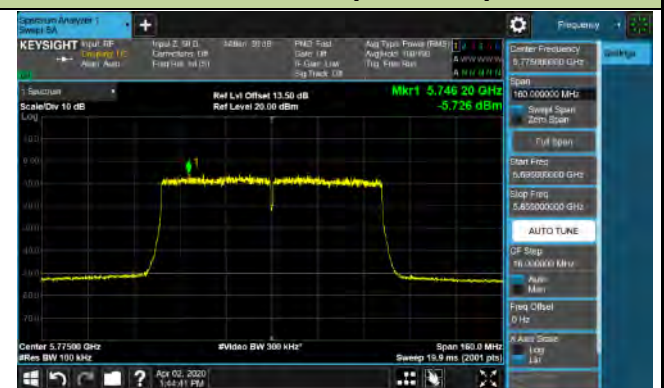
Channel 122 (5610MHz)



Channel 138 (5690MHz)



Channel 155 (5775MHz)



802.11ac-VHT160 Power Spectral Density - Ant 0 / Ant 0 + 1 + 2 + 3 (CDD Mode)

Channel 50 (5250MHz)

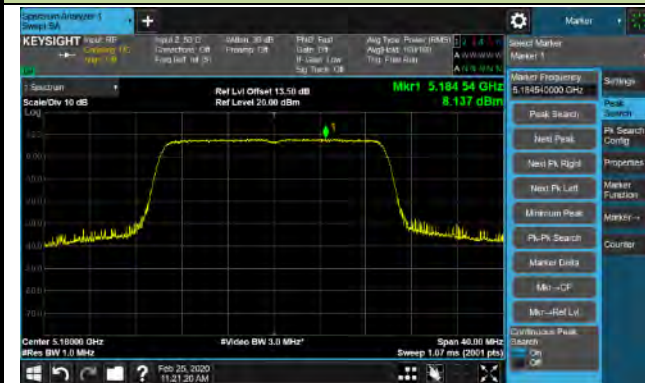


Channel 114 (5570MHz)



802.11ax-HE20 Power Spectral Density - Ant 0 / Ant 0 + 1 + 2 + 3 (CDD Mode)

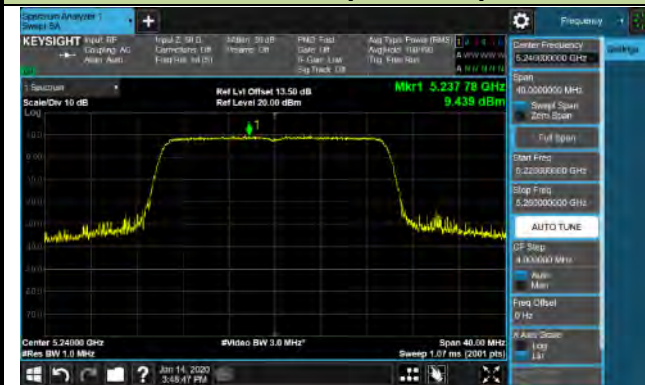
Channel 36 (5180MHz)



Channel 44 (5220MHz)



Channel 48 (5240MHz)



Channel 52 (5260MHz)



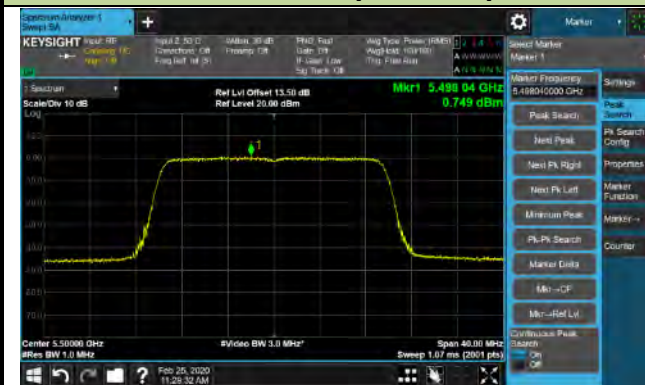
Channel 60 (5300MHz)



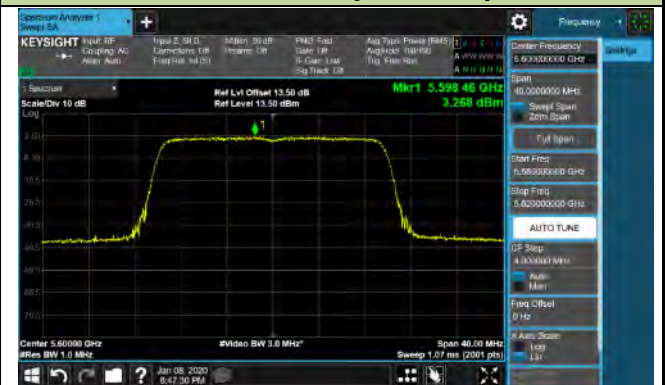
Channel 64 (5320MHz)



Channel 100 (5500MHz)



Channel 120 (5600MHz)



802.11ax-HE20 Power Spectral Density - Ant 0 / Ant 0 + 1 + 2 + 3 (CDD Mode)

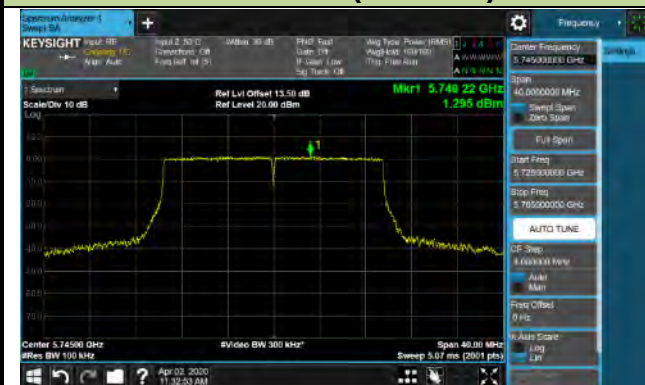
Channel 140 (5700MHz)



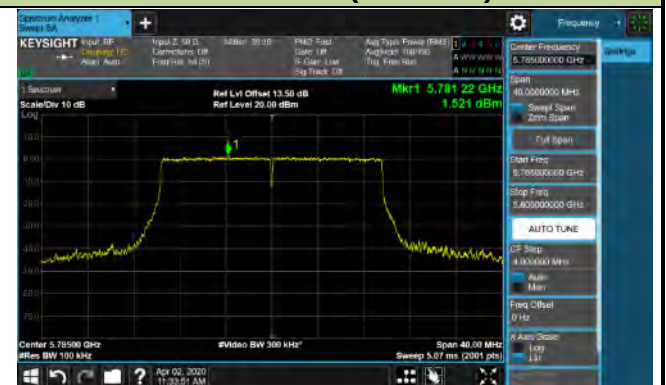
Channel 144 (5720MHz)



Channel 149 (5745MHz)



Channel 157 (5785MHz)

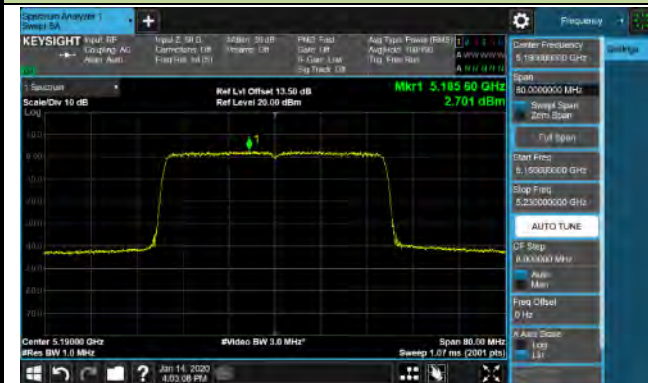


Channel 165 (5825MHz)



802.11ax-HE40 Power Spectral Density - Ant 0 / Ant 0 + 1 + 2 + 3 (CDD Mode)

Channel 38 (5190MHz)



Channel 46 (5230MHz)



Channel 54 (5270MHz)



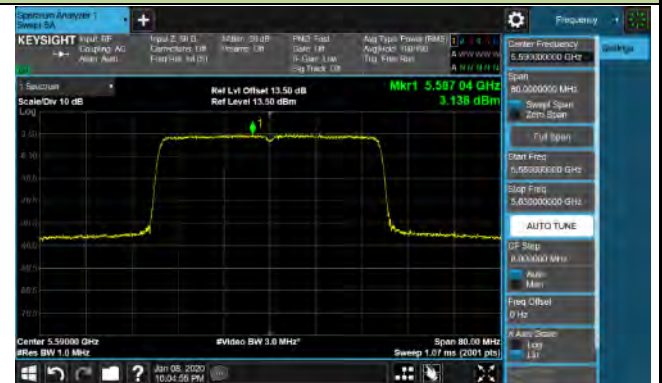
Channel 62 (5310MHz)



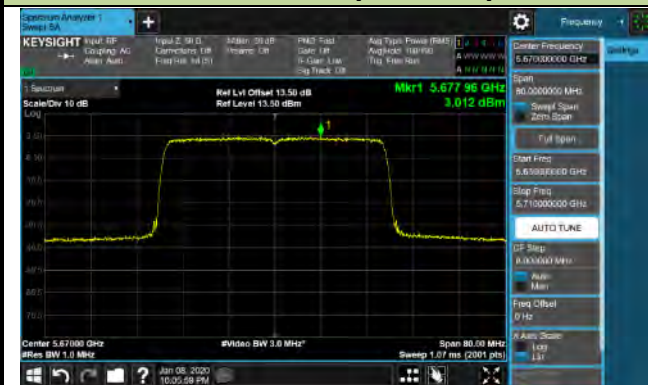
Channel 102 (5510MHz)



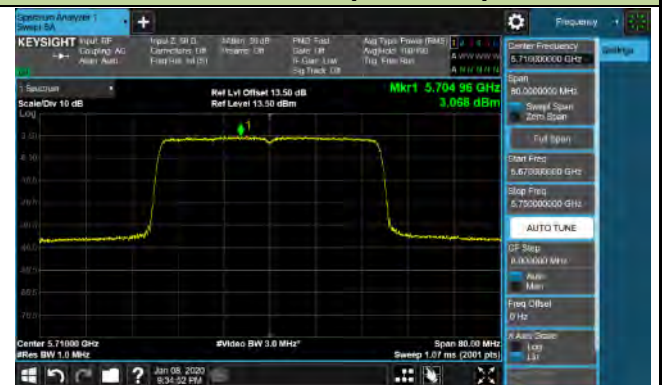
Channel 118 (5590MHz)



Channel 134 (5670MHz)



Channel 142 (5710MHz)

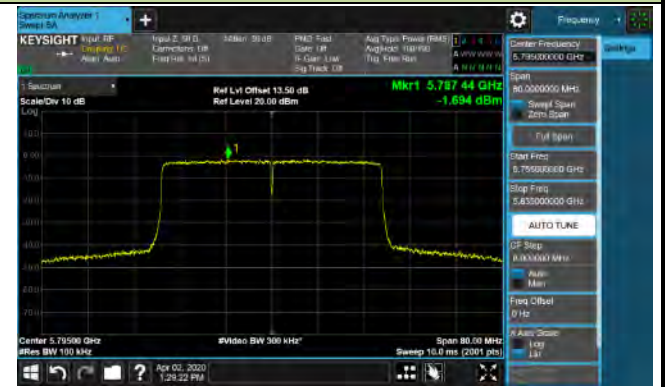


802.11ax-HE40 Power Spectral Density - Ant 0 / Ant 0 + 1 + 2 + 3 (CDD Mode)

Channel 151 (5755MHz)



Channel 159 (5795MHz)



802.11ax-HE80 Power Spectral Density - Ant 0 / Ant 0 + 1 + 2 + 3 (CDD Mode)

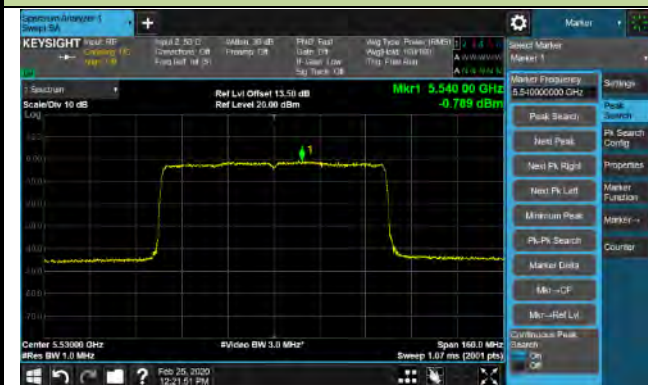
Channel 42 (5210MHz)



Channel 58 (5290MHz)



Channel 106 (5530MHz)



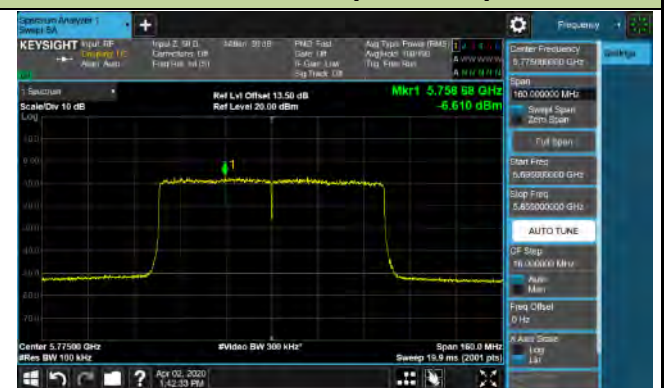
Channel 122 (5610MHz)



Channel 138 (5690MHz)



Channel 155 (5775MHz)



802.11a Power Spectral Density - Ant 1 / Ant 0 + 1 + 2 + 3 (CDD Mode)

Channel 36 (5180MHz)



Channel 44 (5220MHz)



Channel 48 (5240MHz)



Channel 52 (5260MHz)



Channel 60 (5300MHz)



Channel 64 (5320MHz)



Channel 100 (5500MHz)



Channel 120 (5600MHz)



802.11a Power Spectral Density - Ant 1 / Ant 0 + 1 + 2 + 3 (CDD Mode)

Channel 140 (5700MHz)



Channel 144 (5720MHz)



Channel 149 (5745MHz)



Channel 157 (5785MHz)

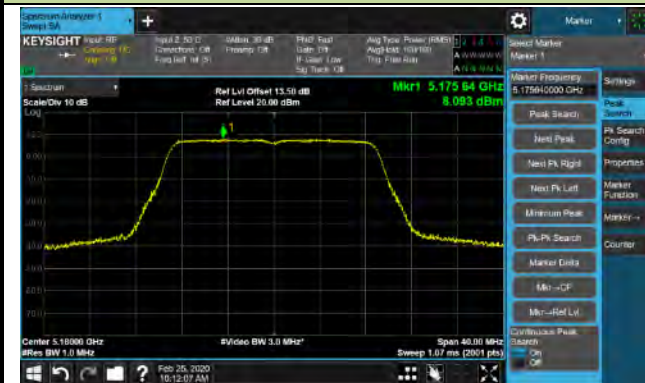


Channel 165 (5825MHz)

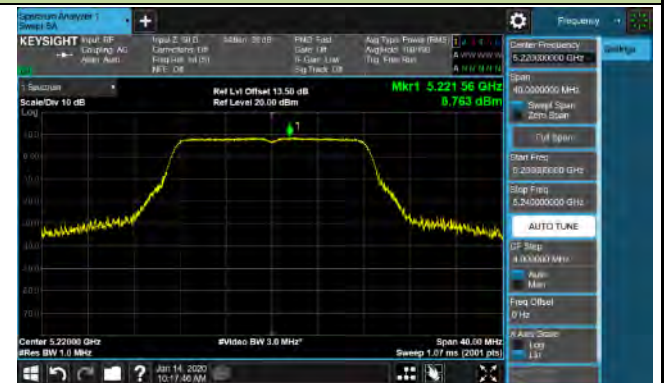


802.11ac-VHT20 Power Spectral Density - Ant 1 / Ant 0 + 1 + 2 + 3 (CDD Mode)

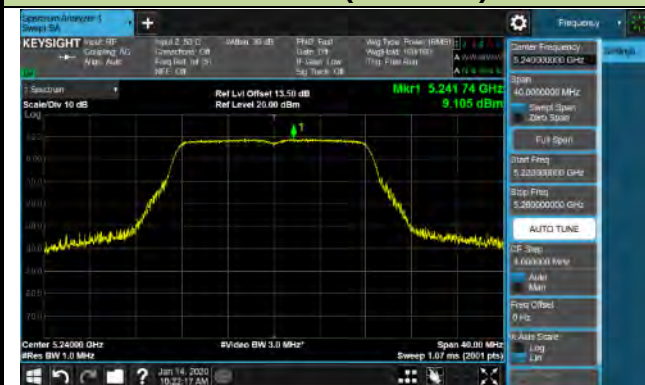
Channel 36 (5180MHz)



Channel 44 (5220MHz)



Channel 48 (5240MHz)



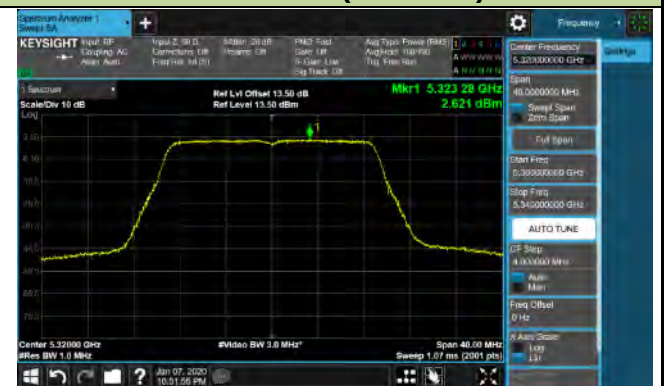
Channel 52 (5260MHz)



Channel 60 (5300MHz)



Channel 64 (5320MHz)



Channel 100 (5500MHz)



Channel 120 (5600MHz)



802.11ac-VHT20 Power Spectral Density - Ant 1 / Ant 0 + 1 + 2 + 3 (CDD Mode)

Channel 140 (5700MHz)



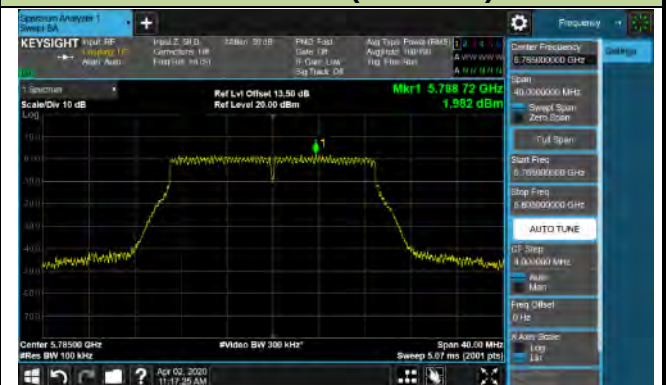
Channel 144 (5720MHz)



Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)

