

NCC

低功率射頻電機型式試驗報告

產品名稱 : AC2300 Wireless MU-MIMO Gigabit Router
型號 : Archer A10
廠牌 : tp-link
申請者 : 聯洲國際有限公司
申請者地址 : 新北市板橋區中山路一段 156 號 13 樓
測試標準 : LP0002 (105 年版) 4.7 章節
參考法規 : ANSI C63.10-2013
測試結果 : 符合
測試日期 : 2017.12.16 ~ 2018.01.24
發行日期 : 2018.03.27

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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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CONTENTS

Description	Page
1. 一般資訊	5
2. 產品資訊	6
2.1. 待測物裝置資料	6
2.2. 通道清單	7
2.3. 測試模式	7
2.4. 測試系統組合圖	8
2.5. 測試周邊	8
2.6. 待測裝置測試時之典型操作程式	8
3. 量測不確定度	9
4. 測試設備明細	10
5. 測試結果	11
5.1. 電源端點干擾測試	12
5.1.1. 適用標準	12
5.1.2. 量測方法	12
5.1.3. 測試架構圖	13
5.1.4. 電源端點測試結果	14
5.2. 功率限制值	16
5.2.1. 適用標準	16
5.2.2. 量測方法	16
5.2.3. 測試架構圖	16
5.2.4. 功率限制值測試結果	17
5.3. 天線之要求	20
5.3.1. 適用標準	20
5.3.2. 天線樣式	20
5.4. 26dB 佔用頻寬	21
5.4.1. 適用標準	21
5.4.2. 量測方法	21
5.4.3. 測試架構圖	21
5.4.4. 26dB 佔用頻寬測試結果	22
5.5. 6dB 佔用頻寬	30
5.5.1. 適用標準	30
5.5.2. 量測方法	30
5.5.3. 測試架構圖	30
5.5.4. 6dB 佔用頻寬測試結果	31

5.6.	最大功率頻譜密度	36
5.6.1.	適用標準	36
5.6.2.	量測方法	36
5.6.3.	測試架構圖	36
5.6.4.	峰值功率頻譜密度測試結果	37
5.7.	操作頻帶外的峰值發射	77
5.7.1.	適用標準	77
5.7.2.	量測方法	77
5.7.3.	測試架構圖	78
5.7.4.	操作頻帶外的峰值發射測試結果	80
5.8.	不必要之發射	149
5.8.1.	適用標準	149
5.8.2.	量測方法	149
5.8.3.	測試架構圖	150
5.8.4.	不必要之發射測試結果	153
5.9.	發射功率控制	195
5.9.1.	適用標準	195
5.9.2.	量測方法	195
5.9.3.	測試架構圖	195
5.9.4.	發射功率控制測試結果	195
5.10.	頻率穩定性	196
5.10.1.	適用標準	196
5.10.2.	量測方法	196
5.10.3.	測試架構圖	197
5.10.4.	頻率穩定性測試結果	198

1. 一般資訊

申請者	聯洲國際有限公司
申請者地址	新北市板橋區中山路一段 156 號 13 樓
製造商	普聯技術有限公司
製造商地址	深圳市南山區深南路科技園工業廠房 24 棟南段 1 層、3-5 層、28 棟北段 1-4 層
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. 21723-1) 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

2. 產品資訊

2.1. 待測物裝置資料

產品名稱	AC2300 Wireless MU-MIMO Gigabit Router
產品型號	Archer A10
天線樣式	Refer to the table "Antenna List"
天線規格	Refer to the table "Antenna List"
待測物額定電壓	AC adapter input
調變模式	802.11a/n/ac: OFDM
傳輸速率	802.11a: 6/9/12/18/24/36/48/54Mbps 802.11n: up to 600Mbps 802.11ac: up to 1733.2Mbps
頻道控制	Auto
附件	
適配器	Model No.: T120150-2B1 Input Power: 100 - 240V ~ 50/60Hz, 0.6A Output Power: 12VDC/1.5A

2.2. 通道清單

802.11a/n-HT20/ac-VHT20

Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180 MHz	40	5200 MHz	44	5220 MHz
48	5240 MHz	149	5745 MHz	153	5765 MHz
157	5785 MHz	161	5805 MHz	165	5825 MHz

802.11n-HT40/ac-VHT40

Channel	Frequency	Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz	151	5755 MHz
159	5795 MHz	--	--	--	--

802.11ac-VHT80

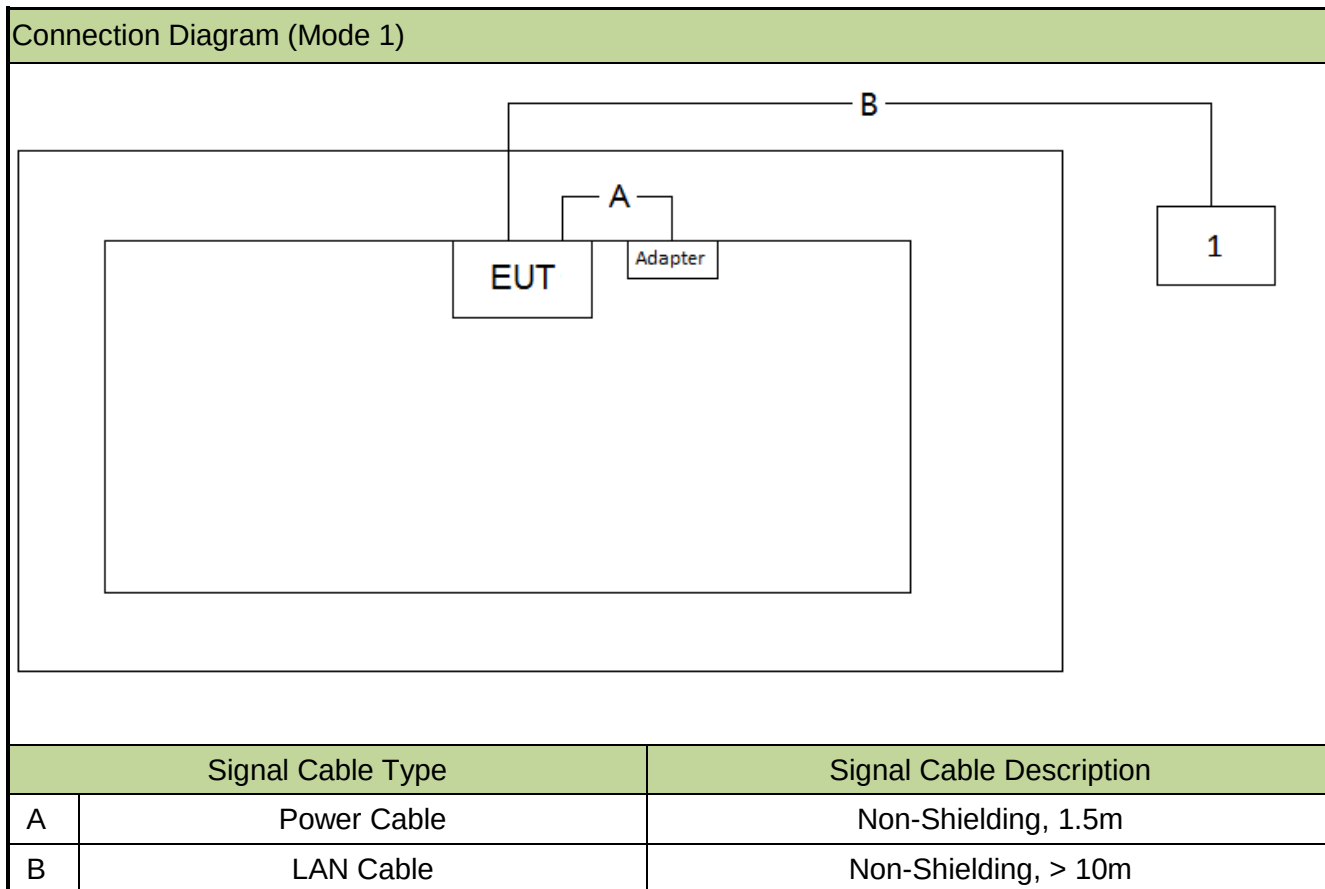
Channel	Frequency	Channel	Frequency	Channel	Frequency
42	5210 MHz	155	5775 MHz	--	--

2.3. 測試模式

Mode 1: 發射器 802.11a (6Mbps)
Mode 2: 發射器 802.11n-HT20 (MCS0)
Mode 3: 發射器 802.11n-HT40 (MCS0)
Mode 4: 發射器 802.11ac-VHT20 (MCS0)
Mode 5: 發射器 802.11ac-VHT40 (MCS0)
Mode 6: 發射器 802.11ac-VHT80 (MCS0)

5GHz Test Mode	Ant 0 + 1 + 2 + 3	
	CDD	Beam-Forming
802.11a	√	×
802.11n-HT20	√	×
802.11n-HT40	√	×
802.11ac-VHT20	√	√
802.11ac-VHT40	√	√
802.11ac-VHT80	√	√

2.4. 測試系統組合圖



2.5. 測試周邊

Item	Product	Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook	Lenovo	E430c	N/A	Non-Shielded, 1.8m

2.6. 待測裝置測試時之典型操作程式

1.	Setup the EUT and simulators as shown on 2.4
2.	Turn on the power of all equipment.
3.	Execute "QATool_Dbg.exe (MT7615 QA)" program.
4.	Configure the test channel and the data rate.
5.	Start test.

3. 量測不確定度

AC Conducted Emission Measurement - SR2
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 150kHz~30MHz: 3.46dB
Radiated Emission Measurement - AC1
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 9kHz ~ 1GHz: 4.18dB 1GHz ~ 25GHz: 4.76dB
Spurious Emissions, Conducted - SR1
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 0.78dB
Output Power - SR1
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 1.13dB
Power Spectrum Density - SR1
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 1.15dB
Occupied Bandwidth - SR1
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 0.28%

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

4. 測試設備明細

Conducted Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTTWA00045	1 year	2018/5/9
Two-Line V-Network	R&S	ENV216	MRTTWA00019	1 year	2019/3/20
Two-Line V-Network	R&S	ENV216	MRTTWA00020	1 year	2018/4/18
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00033	1 year	2018/06/08

Radiated Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Signal Analyzer	R&S	FSV40	MRTTWA00007	1 year	2019/3/20
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2019/3/19
Broadband Preamplifier	SCHWARZBECK	BBV 9718	MRTTWA00005	1 year	2018/4/19
Broadband Amplifier	SCHWARZBECK	BBV 9721	MRTTWA00006	1 year	2018/4/24
Active Loop Antenna	SCHWARZBECK	FMZB 1519B	MRTTWA00002	1 year	2018/4/13
Broadband TRILOG Antenna	SCHWARZBECK	VULB 9162	MRTTWA00001	1 year	2018/5/14
Broadband Hornantenna	SCHWARZBECK	BBHA 9120D	MRTTWA00003	1 year	2018/4/17
Breitband Hornantenna	SCHWARZBECK	BBHA 9170	MRTTWA00004	1 year	2018/4/24
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00033	1 year	2018/06/08

Conducted Test Equipment

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2018/7/24
X-Series USB Peak and Average Power Sensor	KEYSIGHT	U2021XA	MRTTWA00014	1 year	2018/4/19
X-Series USB Peak and Average Power Sensor	KEYSIGHT	U2021XA	MRTTWA00015	1 year	2019/3/20
Programmable Temperature & Humidity Chamber	TEN BILLION	TTH-B3UP	MRTTWA00036	1 year	2018/05/10
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00033	1 year	2018/06/08

Software	Version	Function
e3	Audix	9.160520a
EMI	Quietek	V3

5. 測試結果

產品名稱 AC2300 Wireless MU-MIMO Gigabit Router
型號 Archer A10

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

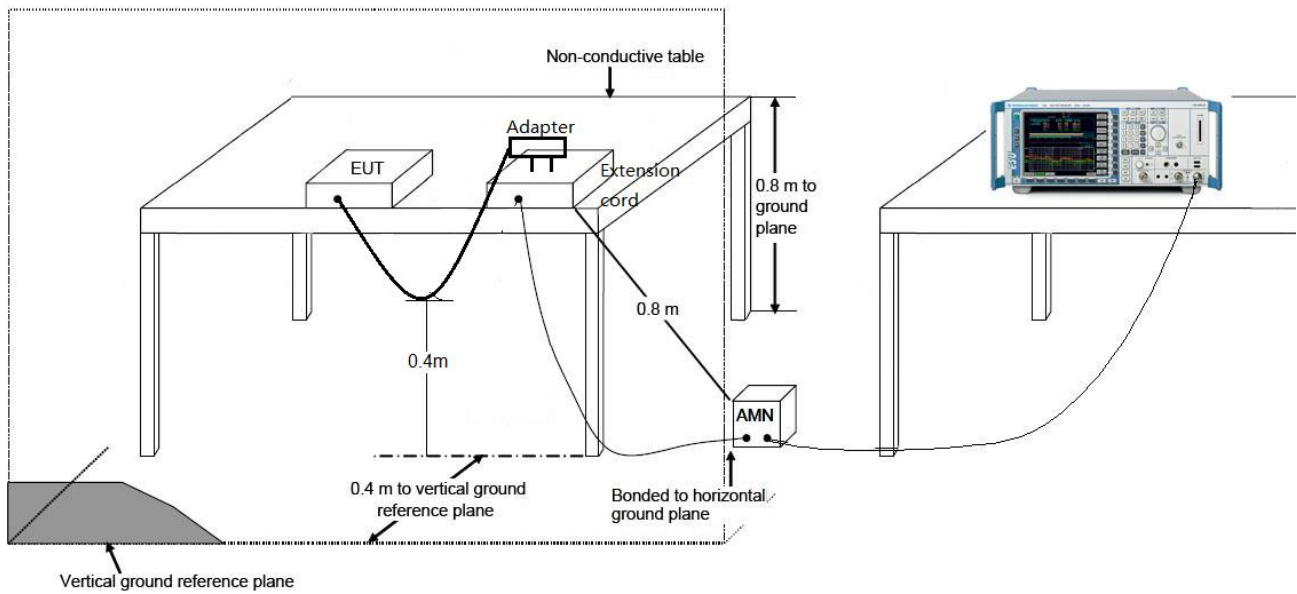
註:隨頻率之對數遞減

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。

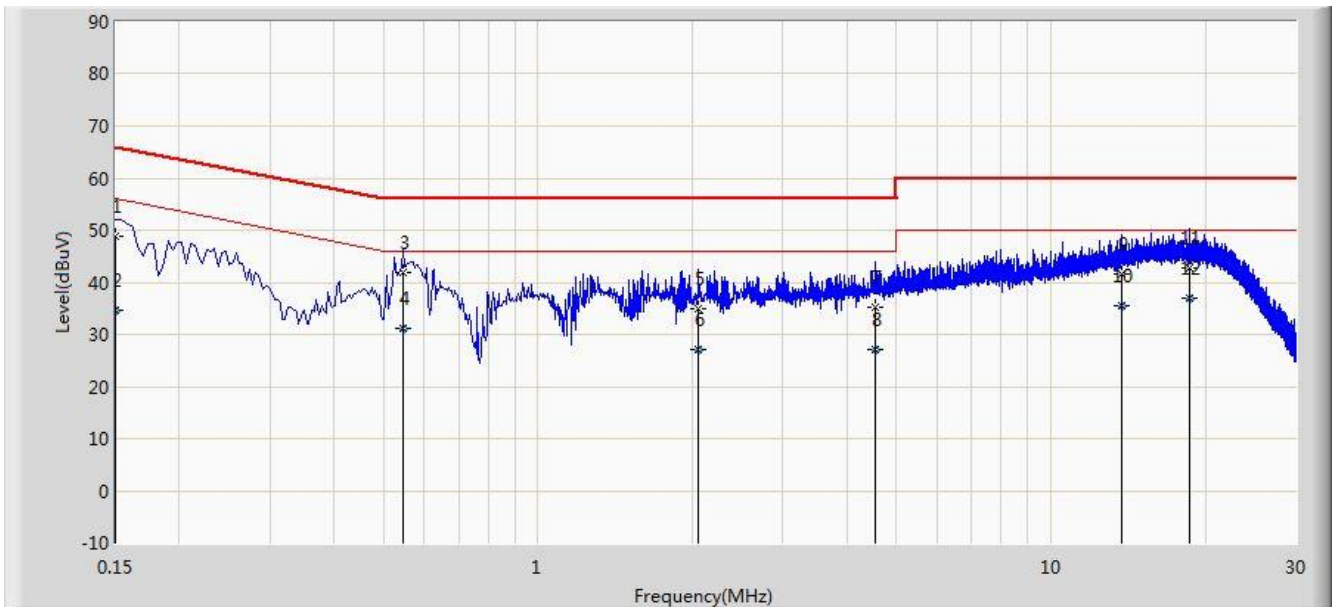
備 註: 經初測驗證過，電源端點干擾測試對測試頻道數並無差異，因此檢附其中一個測試頻道之測試數。

5.1.3. 測試架構圖



5.1.4. 電源端點測試結果

Site: SR2	Time: 2018/01/24 - 20:04
Limit: NCC LP0002_CE_0.15MHz-30MHz	Engineer: Kevin Ker
Probe: ENV216_101683_Filter On	Polarity: Line
EUT: AC2300 Wireless MU-MIMO Gigabit Router	Power: AC 110V/60Hz
Test Mode: Mode 1	

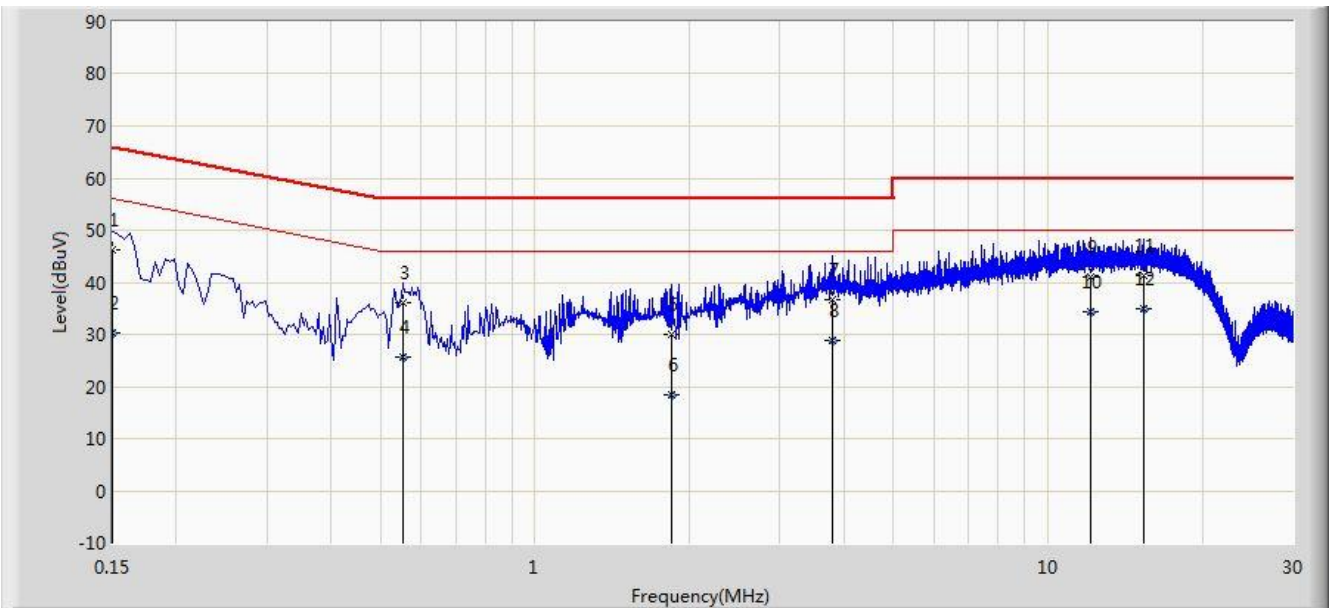


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV)	Factor (dB)	Type
1		*	0.150	48.743	37.575	-17.257	66.000	11.168	QP
2			0.150	34.719	23.550	-21.281	56.000	11.168	AV
3			0.546	41.787	31.645	-14.213	56.000	10.143	QP
4			0.546	31.148	21.005	-14.852	46.000	10.143	AV
5			2.050	35.012	25.143	-20.988	56.000	9.869	QP
6			2.050	26.984	17.115	-19.016	46.000	9.869	AV
7			4.550	35.239	25.245	-20.761	56.000	9.994	QP
8			4.550	27.125	17.131	-18.875	46.000	9.994	AV
9			13.722	41.596	31.541	-18.404	60.000	10.055	QP
10			13.722	35.432	25.378	-14.568	50.000	10.055	AV
11			18.666	42.812	32.699	-17.188	60.000	10.113	QP
12			18.666	36.931	26.818	-13.069	50.000	10.113	AV

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

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

Site: SR2	Time: 2018/01/24 - 20:09
Limit: NCC LP0002_CE_0.15MHz-30MHz	Engineer: Kevin Ker
Probe: ENV216_101683_Filter On	Polarity: Neutral
EUT: AC2300 Wireless MU-MIMO Gigabit Router	Power: AC 110V/60Hz
Test Mode: Mode 1	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.150	46.132	34.990	-19.868	66.000	11.142	QP
2			0.150	30.304	19.162	-25.696	56.000	11.142	AV
3			0.554	35.952	25.795	-20.048	56.000	10.157	QP
4		*	0.554	25.620	15.463	-20.380	46.000	10.157	AV
5			1.842	30.032	20.154	-25.968	56.000	9.878	QP
6			1.842	18.435	8.557	-27.565	46.000	9.878	AV
7			3.802	36.789	26.824	-19.211	56.000	9.965	QP
8			3.802	28.696	18.731	-17.304	46.000	9.965	AV
9			12.090	40.937	30.816	-19.063	60.000	10.121	QP
10			12.090	34.338	24.216	-15.662	50.000	10.121	AV
11			15.402	41.304	31.186	-18.696	60.000	10.118	QP
12			15.402	35.026	24.908	-14.974	50.000	10.118	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。

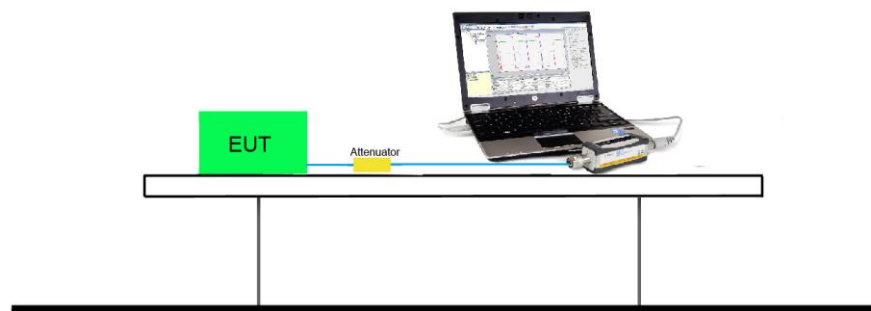
使用頻率於 5.725 GHz~5.850 GHz 頻段，最大傳導輸出功率應小於或等於 1 W。

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 + 2 + 3 port:

Test Mode	Bandwidth	Channel	Frequency (MHz)	Data Rate/ MCS	Average Power (dBm)
802.11a	20	36	5180	6Mbps	20.14
				24Mbps	19.96
				54Mbps	19.72
802.11n	20	36	5180	MCS0	19.85
				MCS3	19.61
				MCS7	19.53
802.11n	40	38	5190	MCS0	19.13
				MCS3	18.87
				MCS7	18.67
802.11ac	20	36	5180	MCS0	19.40
				MCS4	19.17
				MCS8	19.03
802.11ac	40	38	5190	MCS0	19.53
				MCS4	19.30
				MCS9	19.16
802.11ac	80	42	5210	MCS0	18.10
				MCS4	17.88
				MCS9	17.65

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 Average Power (dBm)	Ant 1 Average Power (dBm)	Ant 2 Average Power (dBm)	Ant 3 Average Power (dBm)	Total Average Power (dBm)	Average Power Limit (dBm)	Result
Ant 0 + 1 + 2 + 3 (CDD Mode)										
11a	6Mbps	36	5180	20.14	20.38	19.95	20.06	26.16	≤ 30.00	Pass
11a	6Mbps	44	5220	19.97	20.19	19.68	19.59	25.88	≤ 30.00	Pass
11a	6Mbps	48	5240	19.94	20.03	18.97	19.47	25.64	≤ 30.00	Pass
11a	6Mbps	149	5745	22.52	22.56	22.26	22.15	28.40	≤ 30.00	Pass
11a	6Mbps	157	5785	23.43	23.14	22.44	22.31	28.88	≤ 30.00	Pass
11a	6Mbps	165	5825	19.90	19.69	19.58	18.96	25.57	≤ 30.00	Pass
11n-HT20	MCS0	36	5180	19.85	20.37	19.93	20.15	26.10	≤ 30.00	Pass
11n-HT20	MCS0	44	5220	20.01	20.26	19.67	19.50	25.89	≤ 30.00	Pass
11n-HT20	MCS0	48	5240	19.79	20.13	19.33	19.58	25.74	≤ 30.00	Pass
11n-HT20	MCS0	149	5745	22.07	22.47	22.02	22.06	28.18	≤ 30.00	Pass
11n-HT20	MCS0	157	5785	23.33	23.01	22.24	22.04	28.71	≤ 30.00	Pass
11n-HT20	MCS0	165	5825	22.91	22.76	22.56	22.55	28.72	≤ 30.00	Pass
11n-HT40	MCS0	38	5190	19.13	19.42	19.58	19.77	25.50	≤ 30.00	Pass
11n-HT40	MCS0	46	5230	20.50	20.71	20.29	20.83	26.61	≤ 30.00	Pass
11n-HT40	MCS0	151	5755	22.28	22.06	21.60	21.19	27.82	≤ 30.00	Pass
11n-HT40	MCS0	159	5795	23.04	23.02	22.72	22.57	28.86	≤ 30.00	Pass
11ac-VHT20	MCS0	36	5180	19.40	19.72	19.44	19.61	25.57	≤ 30.00	Pass
11ac-VHT20	MCS0	44	5220	19.34	19.75	19.23	19.28	25.43	≤ 30.00	Pass
11ac-VHT20	MCS0	48	5240	19.28	19.68	19.08	19.01	25.29	≤ 30.00	Pass
11ac-VHT20	MCS0	149	5745	20.44	20.30	19.68	19.26	25.97	≤ 30.00	Pass
11ac-VHT20	MCS0	157	5785	23.03	23.20	22.61	23.05	29.00	≤ 30.00	Pass
11ac-VHT20	MCS0	165	5825	23.42	23.02	22.78	22.44	28.95	≤ 30.00	Pass
11ac-VHT40	MCS0	38	5190	19.53	19.58	19.35	19.41	25.49	≤ 30.00	Pass
11ac-VHT40	MCS0	46	5230	20.12	20.65	19.62	20.43	26.24	≤ 30.00	Pass
11ac-VHT40	MCS0	151	5755	22.12	22.21	21.78	21.46	27.92	≤ 30.00	Pass
11ac-VHT40	MCS0	159	5795	22.73	22.70	22.53	22.03	28.53	≤ 30.00	Pass
11ac-VHT80	MCS0	42	5210	18.10	18.71	18.24	18.05	24.30	≤ 30.00	Pass
11ac-VHT80	MCS0	155	5775	22.45	22.39	22.74	22.02	28.43	≤ 30.00	Pass

Note 1: The 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: Average Power Limit (dBm) = 30.00dBm.

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 Average Power (dBm)	Ant 1 Average Power (dBm)	Ant 2 Average Power (dBm)	Ant 3 Average Power (dBm)	Total Average Power (dBm)	Average Power Limit (dBm)	Result
Ant 0 + 1 + 2 + 3 (Beam-Forming Mode)										
11ac-VHT20	MCS0	36	5180	19.47	19.38	19.40	19.43	25.44	≤ 28.98	Pass
11ac-VHT20	MCS0	44	5220	21.03	21.03	20.90	21.13	27.04	≤ 28.98	Pass
11ac-VHT20	MCS0	48	5240	20.66	20.84	20.25	20.77	26.66	≤ 28.98	Pass
11ac-VHT20	MCS0	149	5745	22.42	22.54	22.63	22.27	28.49	≤ 28.98	Pass
11ac-VHT20	MCS0	157	5785	22.44	22.53	22.06	22.22	28.34	≤ 28.98	Pass
11ac-VHT20	MCS0	165	5825	22.46	22.67	22.09	22.69	28.50	≤ 28.98	Pass
11ac-VHT40	MCS0	38	5190	22.63	22.47	22.04	22.87	28.53	≤ 28.98	Pass
11ac-VHT40	MCS0	46	5230	22.51	22.64	22.01	22.64	28.48	≤ 28.98	Pass
11ac-VHT40	MCS0	151	5755	22.35	22.56	22.49	22.69	28.54	≤ 28.98	Pass
11ac-VHT40	MCS0	159	5795	22.38	22.24	22.18	22.03	28.23	≤ 28.98	Pass
11ac-VHT80	MCS0	42	5210	17.93	17.83	17.74	17.87	23.86	≤ 28.98	Pass
11ac-VHT80	MCS0	155	5775	20.17	20.11	20.21	20.01	26.15	≤ 28.98	Pass

Note 1: The 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: Average Power Limit (dBm) = 30dBm - (7.02dBi - 6.00dBi) = 28.98dBm.

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 Type	Frequency Band (MHz)	TX Paths	Max Antenna Gain (dBi)	CDD Directional Gain (dBi)	
				For Power	For PSD
Dipole Antenna for Ant 0/1/2	2412 ~ 2462	4	1.0	1.0	7.02
PCB Antenna for Ant 3	5150 ~ 5850	4	1.0	1.0	7.02

Note 1: The EUT supports Cyclic Delay Diversity (CDD) technology for 802.11a/b/g/n/ac mode, and the transmitter output signal is correlated.

For CDD transmissions, directional gain is calculated as follows, $N_{ANT} = 4$, $N_{SS} = 1$.

Three antennas have the same gain, G_{ANT} , Directional gain = $G_{ANT} + \text{Array Gain}$, where Array Gain is as follows.

- For power spectral density (PSD) measurements on all devices,
Array Gain = $10 \log (N_{ANT}/N_{SS})$ dB = 6.02;
- For power measurements on IEEE 802.11 devices,
Array Gain = 0 dB for $N_{ANT} \leq 4$;

Note 2: The EUT also supports Beam Forming technology, and the Beam Forming only support 802.11ac mode. Three antennas have the same gain, G_{ANT} :

Directional gain = $G_{ANT} + 10 \log (N_{ANT}/N_{SS})$ dBi, where N_{SS} = the number of independent spatial streams of data and G_{ANT} is the antenna gain in dBi.

5.4. 26dB 佔用頻寬

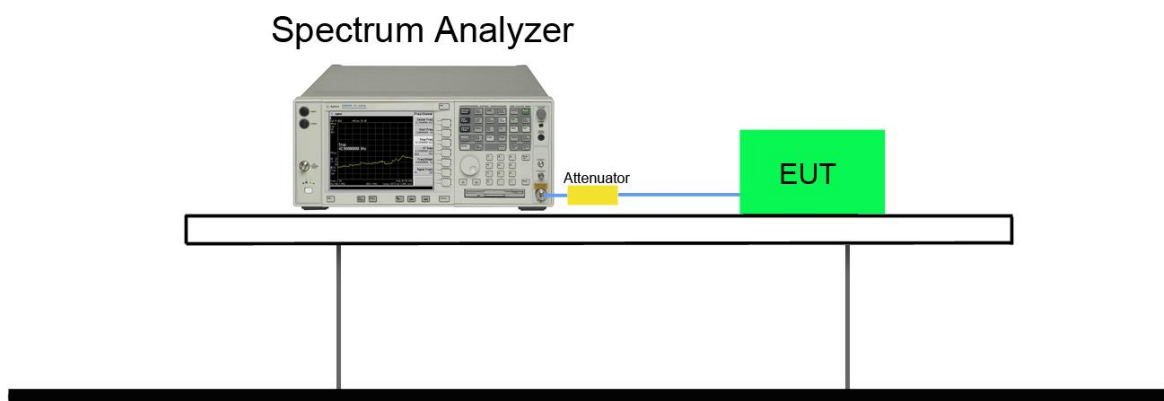
5.4.1. 適用標準

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

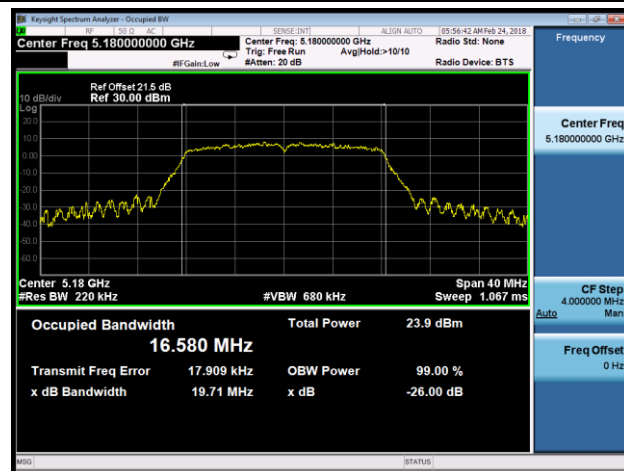
Product	AC2300 Wireless MU-MIMO Gigabit Router	Temperature	24°C
Test Engineer	Kevin Ker	Relative Humidity	56%
Test Site	SR2	Test Date	2018/02/24

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	19.71	16.58
802.11a	6Mbps	44	5220	19.78	16.56
802.11a	6Mbps	48	5240	19.83	16.57
802.11a	6Mbps	149	5745	19.83	16.53
802.11a	6Mbps	157	5785	29.61	16.99
802.11a	6Mbps	165	5825	29.68	16.99
802.11n-HT20	MCS0	36	5180	20.08	17.59
802.11n-HT20	MCS0	44	5220	20.21	17.60
802.11n-HT20	MCS0	48	5240	20.32	17.60
802.11n-HT20	MCS0	149	5745	29.63	17.87
802.11n-HT20	MCS0	157	5785	31.63	17.96
802.11n-HT20	MCS0	165	5825	35.30	18.49
802.11n-HT40	MCS0	38	5190	40.27	36.02
802.11n-HT40	MCS0	46	5230	40.42	36.09
802.11n-HT40	MCS0	151	5755	65.18	36.30
802.11n-HT40	MCS0	159	5795	67.97	36.62
802.11ac-VHT20	MCS0	36	5180	20.21	17.60
802.11ac-VHT20	MCS0	44	5220	20.25	17.61
802.11ac-VHT20	MCS0	48	5240	20.15	17.59
802.11ac-VHT20	MCS0	149	5745	20.20	17.62
802.11ac-VHT20	MCS0	157	5785	33.76	18.21
802.11ac-VHT20	MCS0	165	5825	29.10	17.87
802.11ac-VHT40	MCS0	38	5190	40.20	36.08
802.11ac-VHT40	MCS0	46	5230	40.98	36.10
802.11ac-VHT40	MCS0	151	5755	63.71	36.45
802.11ac-VHT40	MCS0	159	5795	67.69	36.53

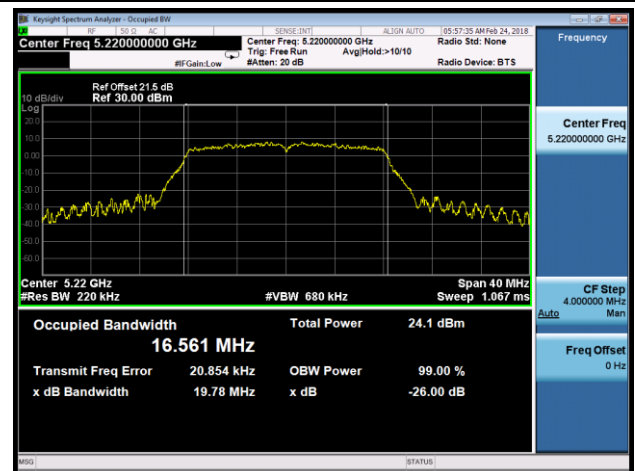
Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
802.11ac-VHT80	MCS0	42	5210	81.12	75.53
802.11ac-VHT80	MCS0	155	5775	137.80	76.82

802.11a 26dB Bandwidth & 99% Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

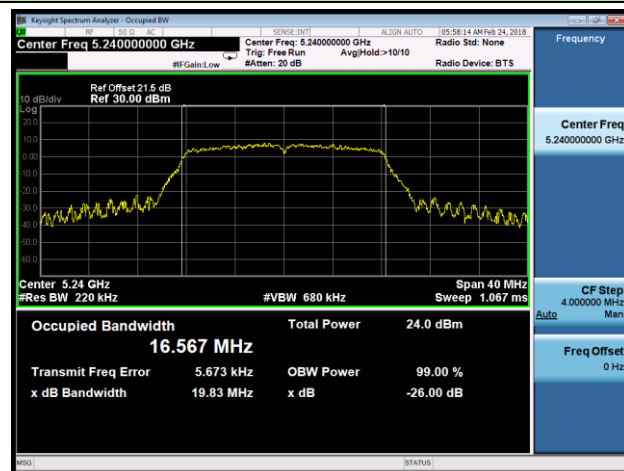
Channel 36 (5180MHz)



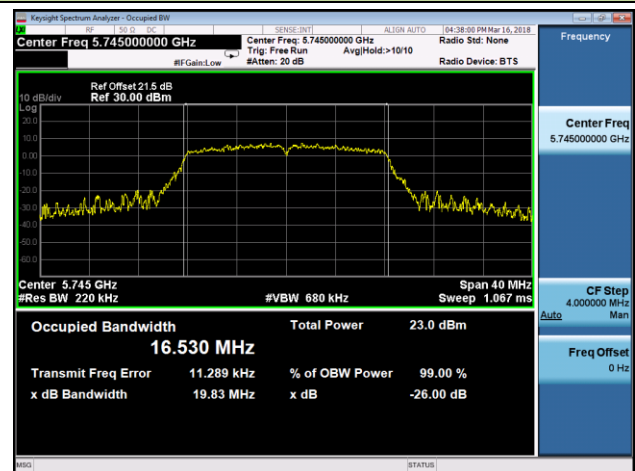
Channel 44 (5220MHz)



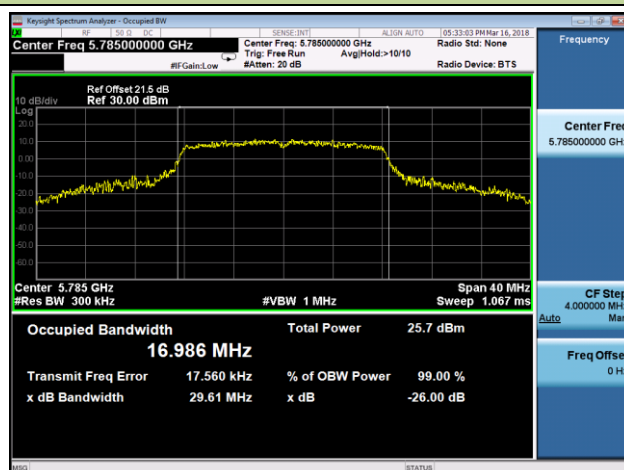
Channel 48 (5240MHz)



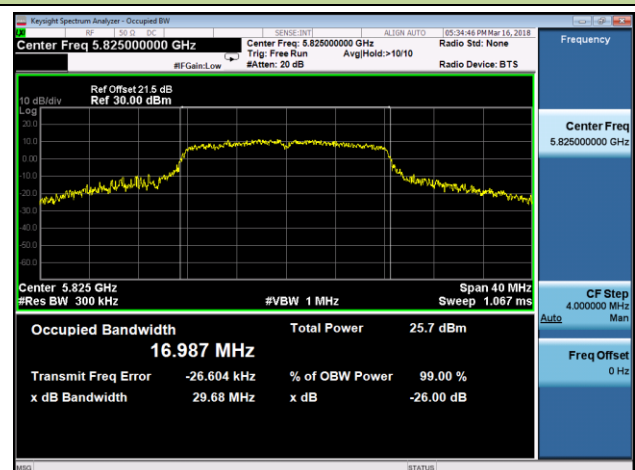
Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)

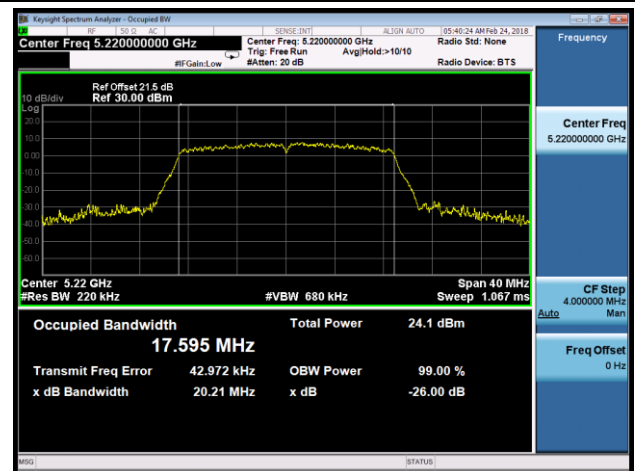


802.11n-HT20 26dB Bandwidth & 99% Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

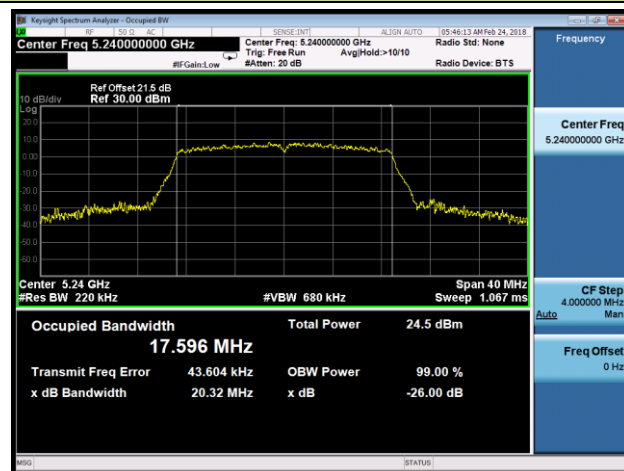
Channel 36 (5180MHz)



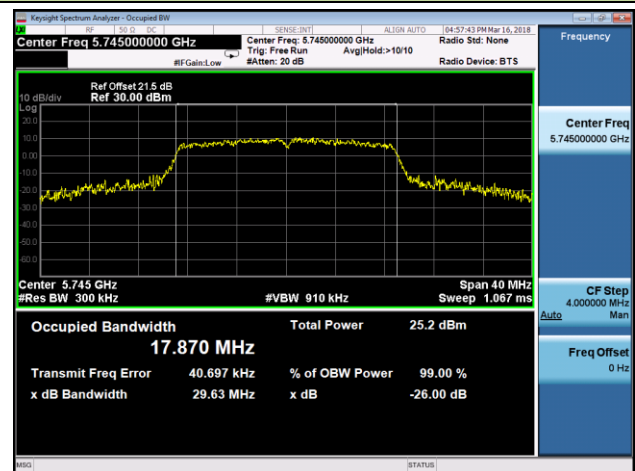
Channel 44 (5220MHz)



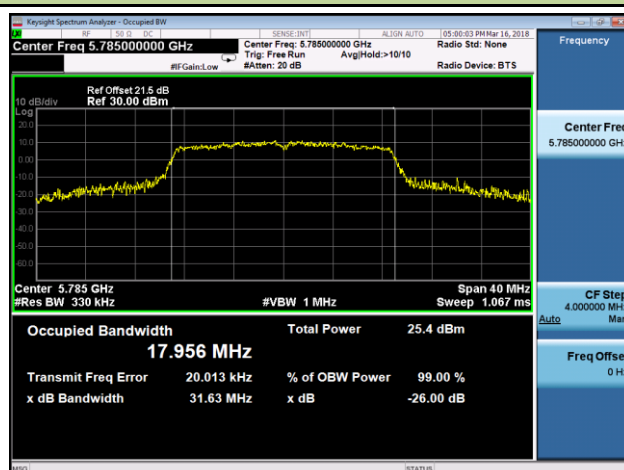
Channel 48 (5240MHz)



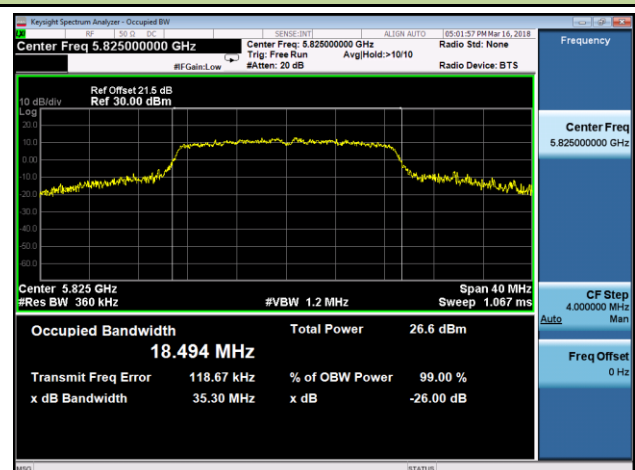
Channel 149 (5745MHz)



Channel 157 (5785MHz)

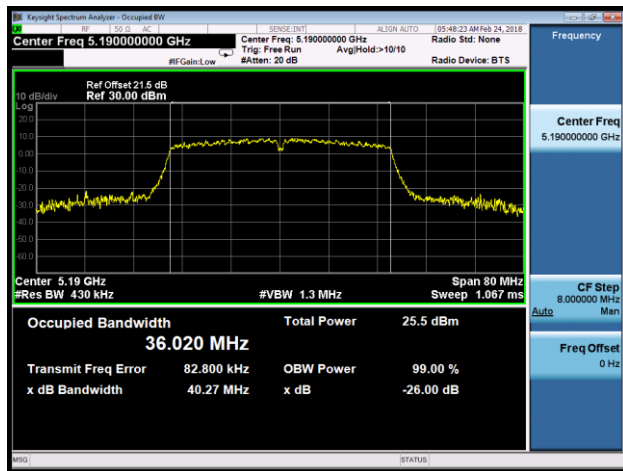


Channel 165 (5825MHz)

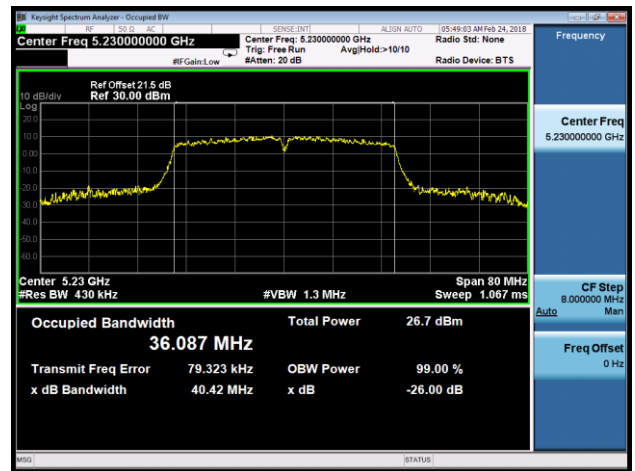


802.11n-HT40 26dB Bandwidth & 99% Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

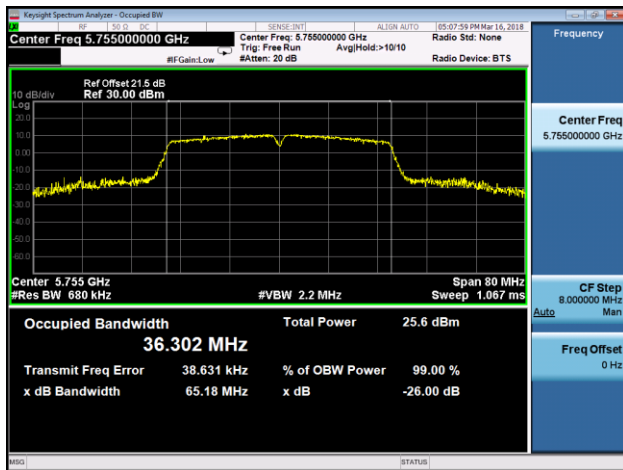
Channel 38 (5190MHz)



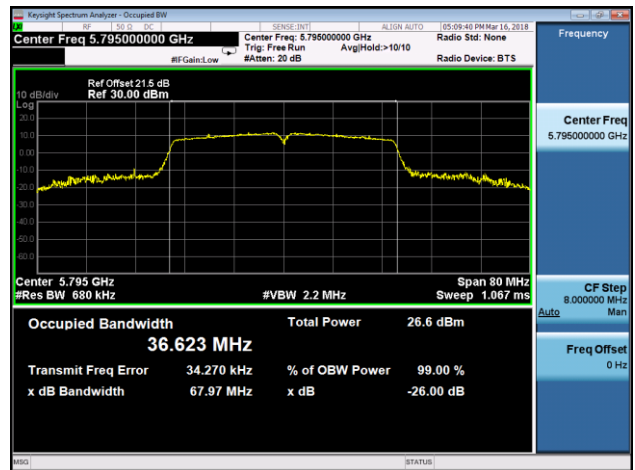
Channel 46 (5230MHz)



Channel 151 (5755MHz)

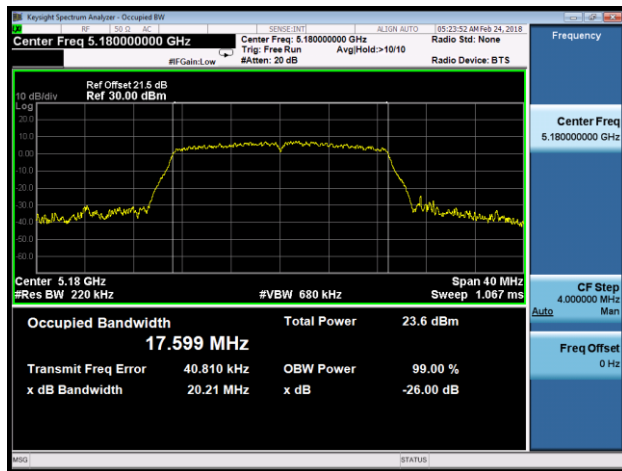


Channel 159 (5795MHz)

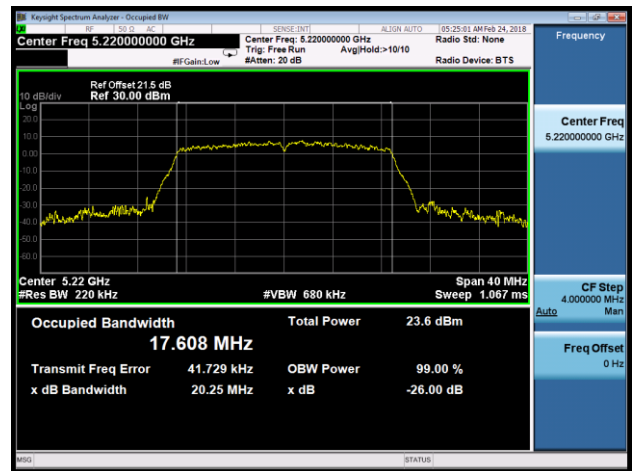


802.11ac-VHT20 26dB Bandwidth & 99% Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

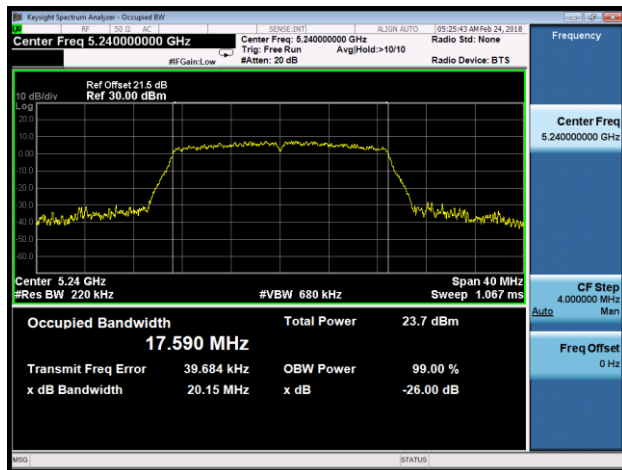
Channel 36 (5180MHz)



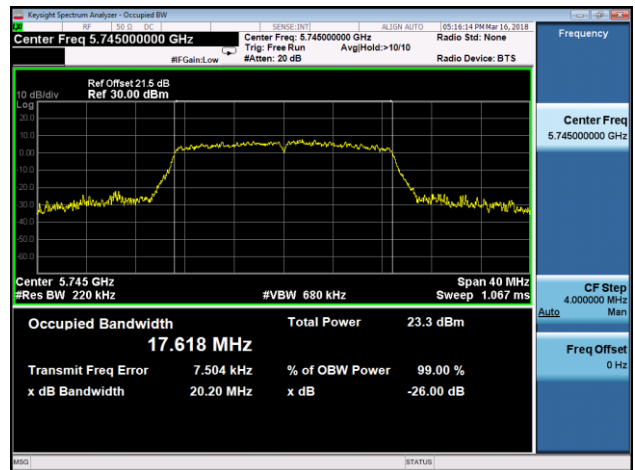
Channel 44 (5220MHz)



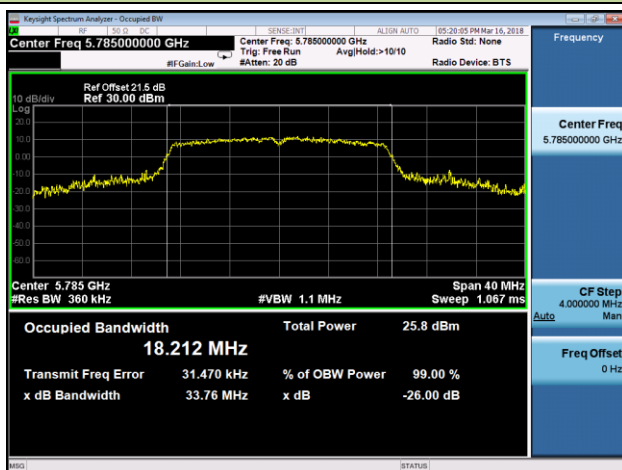
Channel 48 (5240MHz)



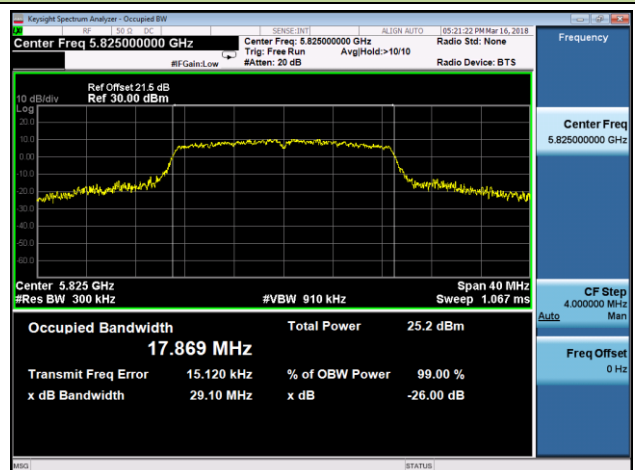
Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)

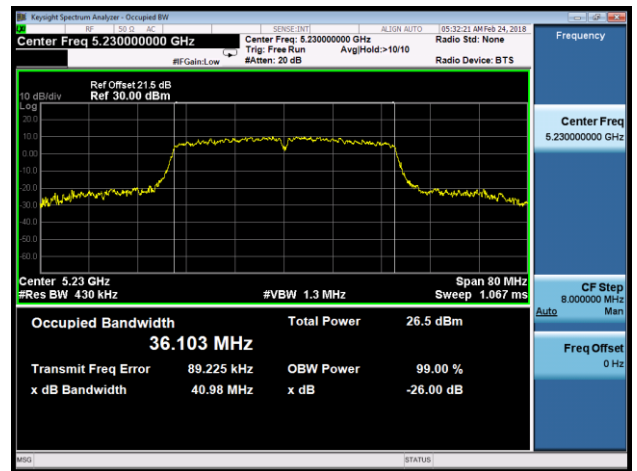


802.11ac-VHT40 26dB Bandwidth & 99% Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

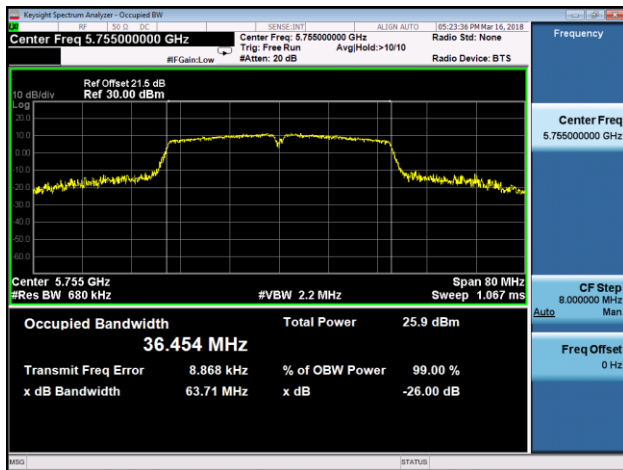
Channel 38 (5190MHz)



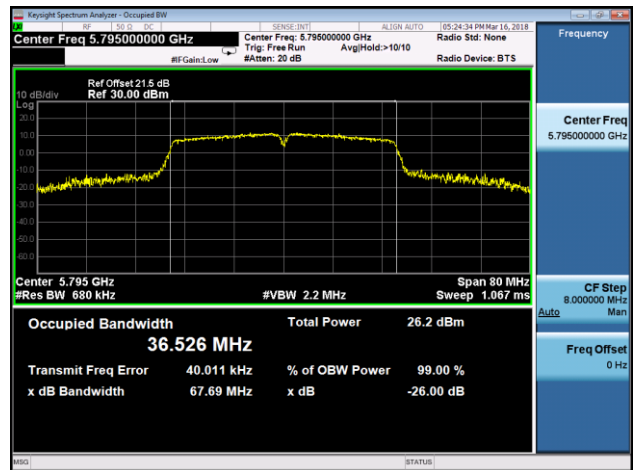
Channel 46 (5230MHz)



Channel 151 (5755MHz)

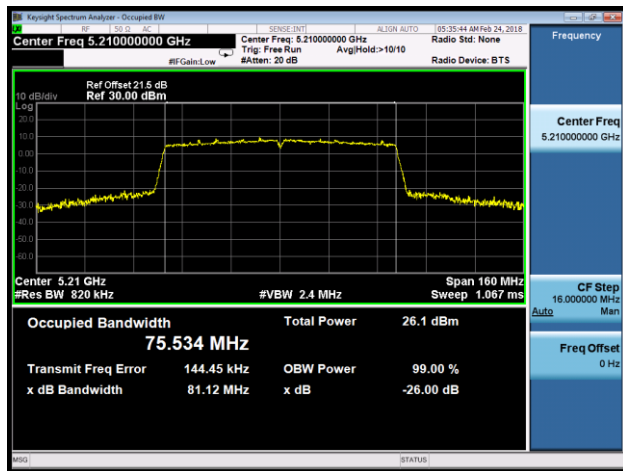


Channel 159 (5795MHz)



802.11ac-VHT80 26dB Bandwidth & 99% Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 42 (5210MHz)



Channel 155 (5775MHz)



5.5. 6dB 佔用頻寬

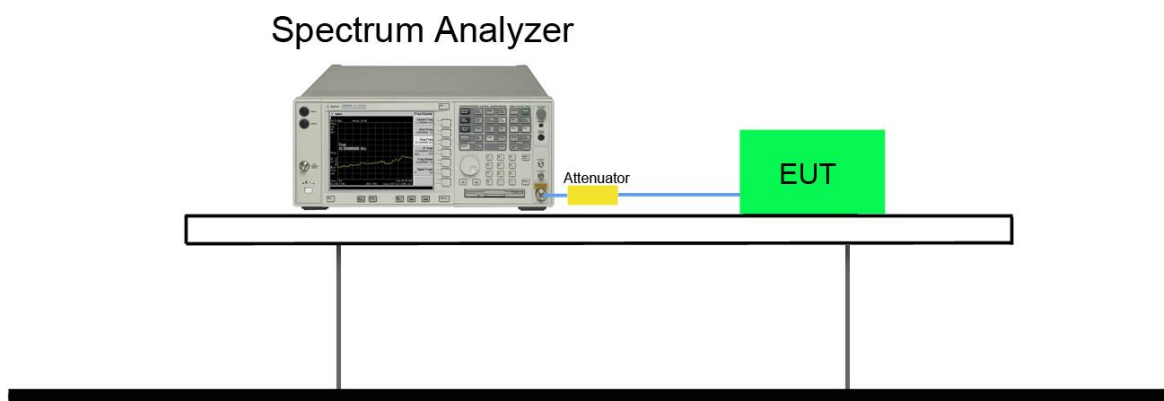
5.5.1. 適用標準

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



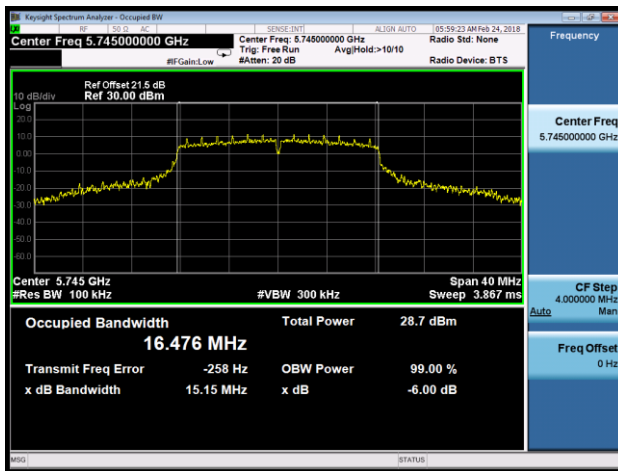
5.5.4. 6dB 佔用頻寬測試結果

Product	AC2300 Wireless MU-MIMO Gigabit Router	Temperature	24°C
Test Engineer	Kevin Ker	Relative Humidity	56%
Test Site	SR2	Test Date	2018/02/24

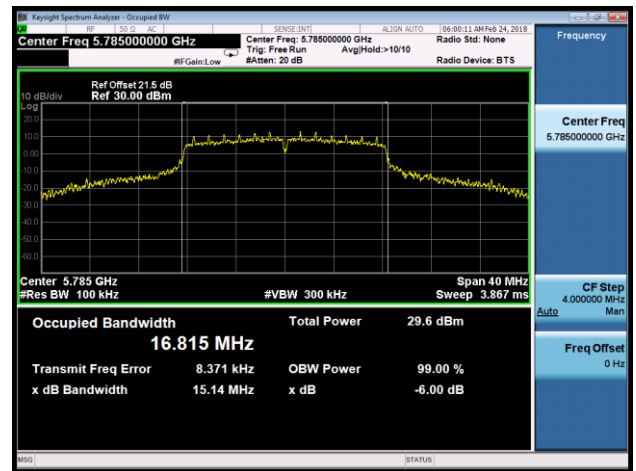
Test Mode	Data Rate/ MCS	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Ant 0 / Ant 0 + 1 + 2 + 3						
802.11a	6Mbps	149	5745	15.15	≥ 0.5	Pass
802.11a	6Mbps	157	5785	15.14	≥ 0.5	Pass
802.11a	6Mbps	165	5825	15.13	≥ 0.5	Pass
802.11n-HT20	MCS0	149	5745	15.11	≥ 0.5	Pass
802.11n-HT20	MCS0	157	5785	15.13	≥ 0.5	Pass
802.11n-HT20	MCS0	165	5825	15.12	≥ 0.5	Pass
802.11n-HT40	MCS0	151	5755	35.15	≥ 0.5	Pass
802.11n-HT40	MCS0	159	5795	35.15	≥ 0.5	Pass
802.11ac-VHT20	MCS0	149	5745	15.15	≥ 0.5	Pass
802.11ac-VHT20	MCS0	157	5785	15.15	≥ 0.5	Pass
802.11ac-VHT20	MCS0	165	5825	15.13	≥ 0.5	Pass
802.11ac-VHT40	MCS0	151	5755	35.13	≥ 0.5	Pass
802.11ac-VHT40	MCS0	159	5795	35.15	≥ 0.5	Pass
802.11ac-VHT80	MCS0	155	5775	75.23	≥ 0.5	Pass

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

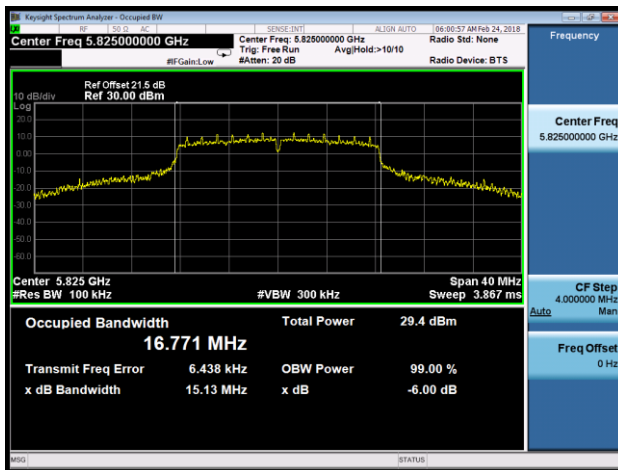
Channel 149 (5745MHz)



Channel 157 (5785MHz)

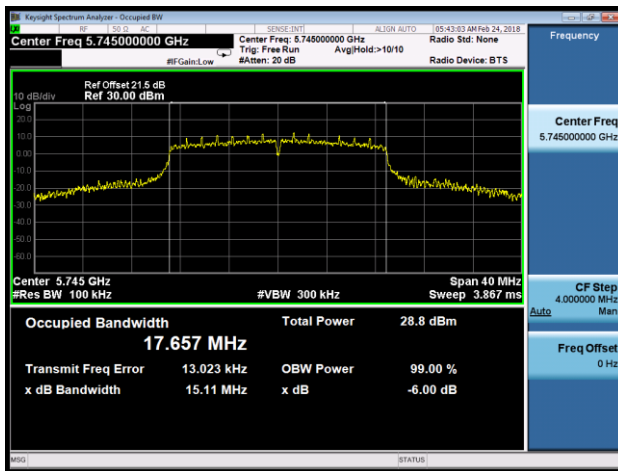


Channel 165 (5825MHz)

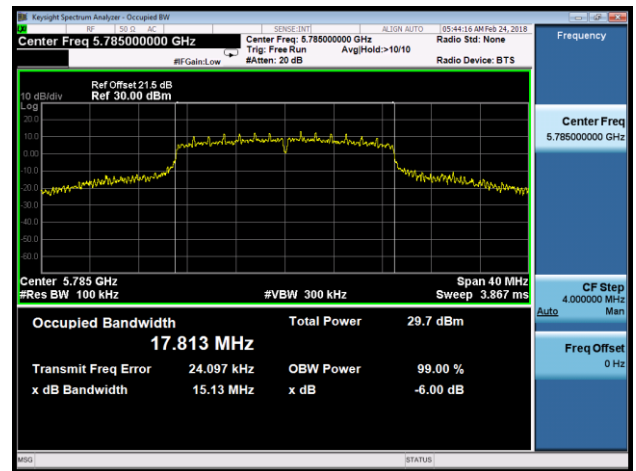


802.11n-HT20 6dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

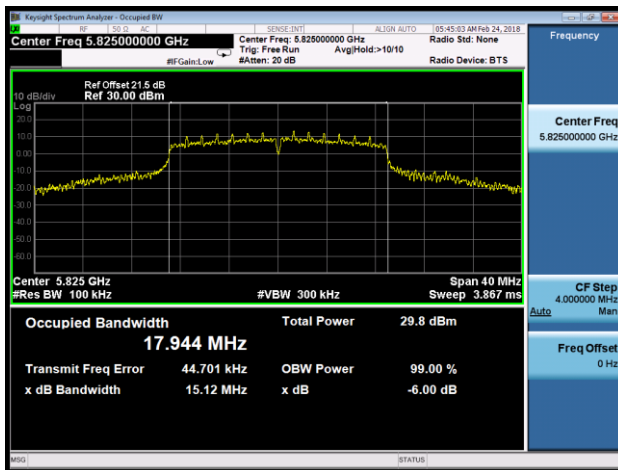
Channel 149 (5745MHz)



Channel 157 (5785MHz)

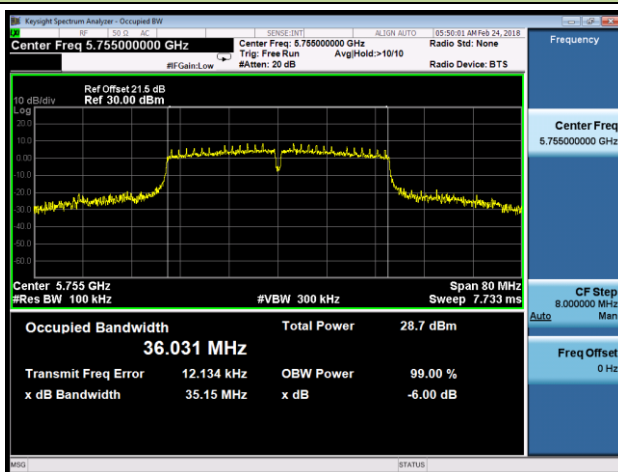


Channel 165 (5825MHz)



802.11n-HT40 6dB Bandwidth - Ant 0 / Ant 0 + 1 + 2 + 3

Channel 151 (5755MHz)



Channel 159 (5795MHz)

