低功率射頻電機
檢驗報告

申請者	台灣索尼互動娛樂股份有限公司
申請者地址	台北市信義區松高路1號9樓
製造廠商	**Sony Interactive Entertainment Inc.**
受檢設備名稱	主測: **PlayStation®4 (With WLAN, Bluetooth Module)** 系列: **PlayStation®4 Testing Kit (With WLAN, Bluetooth Module)**
廠牌	**SONY**
型號	主測: **CUH-7218B** 系列: **DUH-T7200AA**
檢驗依據標準	國家通訊傳播委員會低功率射頻電機技術規範 **(LP0002)**
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實驗室認可編號及範圍: 0371 (9 kHz to 325 GHz)
實驗室認可證書有效期限: 107年10月31日

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測試報告記錄

申請廠商 ：台灣索尼互動娛樂股份有限公司

製造廠商 ：Sony Interactive Entertainment Inc.

廠牌 ：SONY

品名 ：主測: PlayStation®4 (With WLAN, Bluetooth Module)
系列: PlayStation®4 Testing Kit (With WLAN, Bluetooth Module)

型號 ：主測: CUH-7218B ; 系列: DUH-T7200AA

檢驗依據標準 ：國家通訊傳播委員會低功率射頻電機技術規範(LP0002)
規範修訂日期107年01月10日

發射功率(電場強度) ：11.01 dBm (發射功率)

工作頻率及調變方式 ：5260 ~ 5320 MHz / DSSS + OFDM

天線規格 ：廠牌/型號/天線增益：LUXSHARE-ICT / L34RF022 / 5.0dBi (5GHz)
廠牌/型號/天線增益：LUXSHARE-ICT / L34RF024 / 5.6dBi (5GHz)

備註：1. 本測試報告僅對受測之樣品負責。
2. 非經本中心同意，測試報告不得摘錄複印使用。（全部複製除外）

項次	測試項目	適用規範	量測設備	測試結果	結果判定
1	電源線傳導干擾之要求	低功率射頻電機技術規範2.3節	請參閱4.3節	請參閱4.4節	合格
2	天線增益之要求	低功率射頻電機技術規範4.7.8節	----	請參閱5.2節	----
3	發射頻寬之量測	低功率射頻電機技術規範4.7.3.2節(1)	請參閱6.3節	請參閱6.4節	----
4	最大傳導輸出功率之要求	低功率射頻電機技術規範4.7.3.2節(1)	請參閱7.3節	請參閱7.4節	合格
5	功率密度之要求	低功率射頻電機技術規範4.7.3.2節(2)	請參閱8.3節	請參閱8.4節	合格
6	混附波發射限制之要求	低功率射頻電機技術規範4.7.4.1節	請參閱10.3節	請參閱10.4節	合格
7	場強輻射之要求	低功率射頻電機技術規範4.7.4.4、4.7.4.7節	請參閱11.3節	請參閱11.5節	合格
8	DFS之要求	低功率射頻電機技術規範4.7.7.2節	請參閱12.3節	請參閱12.5節	合格
	以下空白				

測量實驗室負責人：鄭敬 107/08/31 直接主管：林志傑 107/08/31 量測員：羅世嘉 107/08/31

1 一般資料

1.1 產品描述

a) 產品型態 : 主測: PlayStation®4 (With WLAN, Bluetooth Module)
系列: PlayStation®4 Testing Kit (With WLAN, Bluetooth Module)

b) 商　　標 : SONY

c) 產品型號 : 主測: CUH-7218B ; 系列: DUH-T7200AA

d) 供應電源 : AC 110V

備註：1.本產品內含 Bluetooth、Bluetooth LE 及 WLAN 無線技術，WLAN 部份包含 DTS 與 UNII 頻帶。本報告僅記錄 UNII Band 2 (5260 至 5320 MHz)部份，Bluetooth 部份請見 ETC 報告編號: 17-07-MAS-037-01，Bluetooth LE 部份請見 ETC 報告編號: 17-07-MAS-037-02，DTS 部份請見 ETC 報告編號: 17-07-MAS-037-03，UNII Band 1 (5180 MHz 至 5240 MHz) 部份請見 ETC 報告編號: 17-07-MAS-037-04，UNII Band 3 (5500 至 5700 MHz) 部份請見 ETC 報告編號: 17-07-MAS-037-06，UNII Band 4 (5725 至 5850 MHz) 部份請見 ETC 報告編號: 17-07-MAS-037-07。

2. 本器材不具備主控運作模式動態頻率選擇與Ad-hoc功能。

3. 主測: CUH-7218B 與系列: DUH-T7200AA之差異如下表所示:

	主型號	系列型號
Model Name	CUH-7218B	DUH-T7200AA
PCB Layouts (電路設計)	O	O
Equipment structure (設備結構)	O	O
Circuit Layout (電路設計)	O	O
RF Module (無線模組)	O	O
Others (其他)	-	型號不同
器材名稱	--	PlayStation®4 Testing Kit (With WLAN, Bluetooth Module)

(1) 完全一致請標示"O"。
完全不一致請標示"X"，或於其他說明欄說明差異處。
主機型符合通信規範時，系列機種差異說明如上，並不影響其符合通信規範，若有不實，願無條件接受 貴單位撤銷該設備審定證明之處分外，並承擔一切法律責任。

4. 該產品確符合同系列產品技術規格及射頻性能相同。

1.2 產品特性

此裝置為PlayStation®4 (with WLAN, Bluetooth Module)，其發射頻率落於 5260 至 5320 MHz 頻段，採用 IEEE 802.11a/n/ac 直接序列展頻調變技術。其應用為區域網路無線傳輸。主波發射功率為 11.01 dBm，即為 12.62 mW，其無線特性列表如下：

RF chain	2T2R	
Operating Frequency	IEEE802.11a/an 20/ac20MHz: 5.28GHz ~5.32GHz, 4ch; IEEE 802.11an 40MHz/ac 40MHz 5.27GHz~5.31GHz, 2ch IEEE 802.11ac 80MHz 5.29GHz,1ch	
Modulation	IEEE 802.11a(OFDM/DSSS) 48/54 Mbps (QAM-64) 24/36 Mbps (QAM-64) 12/18 Mbps (QPSK) 6/19 Mbps (BPSK)	IEEE 802.11an(OFDM/DSSS) QAM-64 QAM-16 QPSK BPSK
	IEEE 802.11ac(20MHz,40MHz,80MHz)(OFDM/DSSS) QAM-256, QAM-64, QAM-16, QPSK,BPSK	

1.3 測試方法之依據

本測試報告之所有項目皆依據國家通訊傳播委員會低功率射頻電機技術規範以及參考IEEE ANSI、歐盟ETSI EN與美國EIA、FCC 47 CFR PART 2、KDB及ARIB STD-T67 等有關檢驗之規定。

試驗室介紹 ： 財團法人台灣電子檢驗中心電磁相容試驗室通過下列評鑑、認可、登錄與相互認可協議:

① ISO9001: TüV Product Service

② ISO/IEC 17025: BSMI, TAF, NCC, NVLAP, ILAC MRA, UL, Compliance

③ Filing: FCC, Industry Canada, VCCI

④ MRA: Australia, Hong Kong, New Zealand, Singapore, USA, Japan, Korea, China, APLAC through TAF

⑤ FCC Registration Number: TW0371, TW1112

⑥ Industry Canada Site Registration Number: IC 2949A-2

2 適用規範

2.1 規範要求

(1) 傳導之規定

依據國家通訊傳播委員會低功率射頻電機技術規範之2.3節，電源傳導干擾之限制要求如下：

頻率範圍 MHz	傳導限制值(dBμV)	
	準峰值(Quasi-peak)	平均值(Average)
0.15 – 0.5	66-56(註)	56-46(註)
0.5 – 5	56	46
5 – 30	60	50

註:隨頻率之對數遞減

(2) 天線增益之要求

天線的規格不受國家通訊傳播委員會低功率射頻電機技術規範(2.2)節規定之限制。若使用超過 6dBi 方向增益之發射天線，則以超過 6dBi 天線方向增益的 dBi 總量，等量減少峰值發射功率以及峰值功率頻譜密度。

(3) 頻寬之量測

依據國家通訊傳播委員會低功率射頻電機技術規範4.7.3.2節(1)之規定，5.25-5.35 GHz 頻帶，在操作頻帶下之峰值發射功率不能超過 250 mW 或11分貝毫瓦(dBm) +10 log B (B是26dB 發射頻寬，單位 MHz) 之較小者。

(4) 發射輸出功率與功率密度之要求

依據國家通訊傳播委員會低功率射頻電機技術規範4.7.3.2節之規定:

(1) 5.25-5.35 GHz 頻帶，在操作頻帶下之最大傳導輸出功率應小於或等於 250 mW 或11分貝毫瓦(dBm) +10 log B (B是26dB 發射頻寬，單位 MHz) 之較小者。

(2) 最大功率頻譜密度在任何 1 MHz 頻帶中應小於或等於 11 dBm。

(3) 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力率及最大功率頻譜密度。

依據國家通訊傳播委員會低功率射頻電機技術規範4.7.3.4節之規定:

(1) 最大傳導輸出功率必須使用依據均方根等效電壓校準之儀器測量於任何連傳輸之時段，測量結果須依儀器限制(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測量，以符合本段落所提之發射定義。

(2) 最大功率頻譜密度檢驗規定:

(A) 應將測試儀器直接連接待測物，以傳導方式執行。

(B) 5.15-5.25 GHz 、5.25-5.35 GHz 及 5.470-5.725 GHz 頻段，測試儀器之頻寬應設定為 1 MHz 頻寬或待測物之 26 dB 發射頻寬，兩者取較小者。

(C) 5.725-5.850 GHz 頻段，測試儀器之頻寬應設定為 500 kHz 或待測物之 26 dB 發射頻寬，兩者取較小者。

(D) 解析頻寬小於 (B)或 (C)時，應以補償方式計算總功率頻譜密度。

(5) 發射限制之要求

依據國家通訊傳播委員會低功率射頻電機技術規範4.7.4.1之規定，在 5.15-5.35 GHz 及 5.470-5.725 GHz 頻帶操作的發射器: 帶外發射之有效等向輻射功率 (EIRP) 不應超過 –27 dBm/MHz。

依據國家通訊傳播委員會低功率射頻電機技術規範4.7.4.3之規定，測量不必要發射時，應使用之最低解析頻寬為 1 MHz。必要時，於頻帶邊緣附近可使用小於 1 MHz 之解析頻寬，並以補償方式計算其總值。

(6) 輻射之規定

依據國家通訊傳播委員會低功率射頻電機技術規範4.7.4.5節之規定，在 1GHz 以下的不必要之發射，應符合第 2.8 節之規定，任何使用交流市電為供應電之設備亦須符合第 2.3 節之電源線傳導限制值。

依據國家通訊傳播委員會低功率射頻電機技術規範4.7.4.6節之規定，不必要發射頻率屬 2.7 規定頻段者，應符合 2.8節之規定。

落於2.7節禁用頻段之輻射干擾需符合2.8節之一般限制要求：

頻率 MHz	測試距離 m	限制值 μV/m
0.009 - 0.490(含)	300	2400/頻率(kHz)
0.490(不含) - 1.705(含)	30	24000/頻率(kHz)
1.705(不含) - 30(不含)	30	30
30(含) - 88(含)	3	100
88(不含) - 216(含)	3	150
216(不含) - 960(含)	3	200
960(不含)以上	3	500

(7) 發射功率控制(TPC)及動態頻率選擇(DFS)之規定

依據國家通訊傳播委員會低功率射頻電機技術規範4.7.4節之規定:

(1) 無線資訊傳輸設備應在”無資料傳輸”或”操作失效”時自動中斷傳輸，此規定並不預先排除傳送控制或信號(signaling)資訊或使用運用數位技術完成碼框或資料突發(burst)區間的重複碼(repetitive codes)，申請人應在申請型式認證文件中提供如何符合本規範之說明。

(2) 發射功率控制(TPC)及動態頻率選擇(DFS):

(2.1) 發射功率控制(TPC):操作於5.470~5.725秭赫頻帶的設備，應具備發射功率控制機能。設備必須至少具有6dB低於平均EIRP值30dBm的能力。EIRP值低於500mW之系統不須具備TPC機能。

(2.2) 動態頻率選擇(DFS)之雷達偵測功能: 操作於5.470~5.725 GHz 頻帶之設備必需具備動態頻率選擇雷達偵測機能以偵測雷達系統之存在，並避免與雷達系統同頻道操作，對最大EIRP為200mW至1W之設備，其最低動態頻率選擇的偵測門檻值為

-64dBm，對最大EIRP低於200mW之設備，其最低動態頻率選擇的偵測門檻值為-62dBm。此偵測門檻值以0dBi天線為參考基準，在1微秒內之平均接收功率。動態頻率選擇的運作應提供所有可用頻道均勻分配使用。

(2.2.1) 操作模式，動態頻率選擇的規定適用於以下之操作模式:

(i) 頻道可用性檢查時間的規定，適用於主控運作模式。

(ii) 頻道移動時間的規定，適用於主控及受控運作模式。

(2.2.2) 頻道可用性檢查時間:設備必須檢查其可在某一頻道上起始傳送之前是否有雷達系統已經操作在該頻道上，以及何時其必須移動到另一新的頻道，在60秒內若沒有偵測到功率位準大過上述之干擾門檻值的雷達信號時，設備才可開始使用該頻道。

(2.2.3) 頻道移動時間:在偵測到雷達的存在後，所有在該操作頻道上的所有傳輸須在10秒內停止，在偵測到雷達信號後，該期間內的傳輸應維持最多200毫秒的正常通訊。另外，間歇性的管理與控制信號可在剩餘的時間中傳送，以便撤離該操作頻道。

(2.2.4) 不可佔用期間:某一頻道已被頻道可用性檢查或”服務中”監視顯示含有雷達系統，至少須有30分鐘的不可佔用期間。不可佔用期間起始於偵測到雷達系統的當時。

2.2 限制使用之頻帶

MHz	MHz
0.090 - 0.110	1660.0 – 1785.0
0.490 - 0.510	1805.0 – 1880.0
2.172 - 2.198	1855.0 – 1900.0
3.013 - 3.033	1905.0 – 1985.0
4.115 - 4.198	2010.0 – 2025.0
5.670 - 5.690	2110.0 – 2170.0
6.200 - 6.300	2200.0 – 2300.0
8.230 - 8.400	2310.0 - 2390.0
12.265 - 12.600	2483.5 - 2900.0
13.340 - 13.430	3260.0 – 3267.0
14.965 - 15.020	3332.0 – 3339.0
16.700 - 16.755	3345.8 – 3358.0
19.965 - 20.020	3500.0 - 4400.0
25.500 - 25.700	4500.0 – 5250.0
37.475 - 38.275	5350.0 - 5460.0
73.500 - 75.400	7250.0 - 7750.0
108.00 - 138.00	8025.0 - 8500.0
149.90 - 150.05	9000.0 - 9200.0
156.70 - 156.90	9300.0 - 9500.0
162.01 – 167.17	10600 - 12700
167.72 – 173.20	13250 - 13400
240.00 – 285.00	14470 - 14500
322.00 – 335.40	15350 - 16200
399.90 – 410.00	17700 - 21400
485.00 – 510.00	22010 - 23120
608.00 – 614.00	23600 - 24000
703.00 – 748.00	31200 - 31800
758.00 – 803.00	36430 - 36500
825.00 – 915.00	38600 以上
930.00 – 1240.0	
1300.0 – 1427.0	
1435.0 – 1626.5	

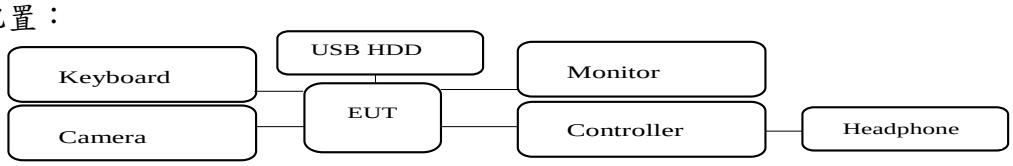
3 受測裝置之系統說明

3.1 受測裝置

裝置名稱	製造者/代理者	型 號	纜線說明
* PlayStation®4 (With WLAN, Bluetooth Module)	Sony Interactive Entertainment Inc.	主測: CUH-7218B	----
Camera	Sony	N/A	隔離信號線 1.8m * 1
Keyboard	Sony	N/A	隔離信號線 2.0m * 1 (USB)
Controller	Sony	CUH-ZCT2G	隔離信號線 1.5m * 1 (USB)
USB HDD	Sony	HD-EG5	隔離信號線 1.0m * 1 (USB 3.0)
Headphone	Sony	N/A	非隔離信號線 1.0m * 1
Monitor	DELL	SE2216Hf	非隔離電源線 1.8m * 1 隔離信號線 1.8m * 1 (HDMI)

註: 1.標記"*"表欲申請之受測物。

2.測試配置：



3. 測試模式:

3.1 IEEE 802.11a, 802.11an HT20, IEEE 802.11ac (20MHz) mode:

測試頻道如下:

Channel	Frequency (MHz)
Low = 56	5260
Middle = 60	5300
High = 64	5320

IEEE 802.11a mode: 6 Mbps data rate is the worse case for full testing.

IEEE 802.11an HT20 mode: MCS0 6.5 Mbps, data rate is the worse case for full testing.

IEEE 802.11ac (20MHz) mode: MCS0 6.5 Mbps, data rate is the worse case for full testing.

3.2 IEEE 802.11an HT40, IEEE 802.11ac (40MHz) mode:

測試頻道如下:

Channel	Frequency (MHz)
54	5270
62	5310

IEEE 802.11an HT40 mode: MCS0 13.5 Mbps, data rate is the worse case for full testing.

IEEE 802.11ac (40MHz) mode: MCS0 13.5 Mbps, data rate is the worse case for full testing.

3.3 IEEE 802.11ac (80MHz) mode:

測試頻道如下:

Channel	Frequency (MHz)
58	5290

IEEE 802.11ac (80MHz) mode: MCS0 29.3 Mbps, data rate is the worse case for full testing.

4. 軟體設定:

	Power Setting
IEEE 802.11a	8
	8
	8
IEEE 802.11an HT20	8
	8
	8
IEEE 802.11an HT40	8
	8
IEEE 802.11ac (20MHz)	8
	8
	8
IEEE 802.11ac (40MHz)	8
	8
IEEE 802.11ac (80MHz)	8

3.2 測試模式說明

3.2.1 調變方式及模式

Test Mode	Modulation	Note
A	IEEE 802.11a	-
B	IEEE 802.11an HT20	-
C	IEEE 802.11an HT40	-
D	IEEE 802.11ac (20MHz)	-
E	IEEE 802.11ac (40MHz)	-
F	IEEE 802.11ac (80MHz)	-

Mode	IEEE 802.11a/an20/ac (20MHz)	IEEE 802.11an40/ac (40MHz)	IEEE 802.11ac (80MHz)
Test Channel	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)
Channel Low (L)	5260	5270	5290
Channel Mid (M)	5300	-	-
Channel High (H)	5320	5310	-

3.2.2 測試項目及模式

Item	測試項目	測試模式	測試頻率(MHz)
1	電源線傳導干擾之量測	B (註1)	M (註2)
2	發射頻寬之量測	A，B，C，F (註3)	L，M，H
3	最大輸出功率之量測	A，B，C，D，E，F(註4)	L，M，H
4	功率密度之量測	A，B，C，F (註3、4)	L，M，H
5	混附波發射限制之量測	A，B，C，F (註3)	L，M，H
6	場強輻射之量測(主諧波)	A，B，C，F (註3)	L，M，H
6.1	場強輻射之量測(1GHz以下)	B (註1)	M (註2)
6.2	場強輻射之量測(1GHz以上)	A，B，C，F (註3)	L，M，H
7	DFS之量測	A，B，C (註4)	5280-5320 MHz

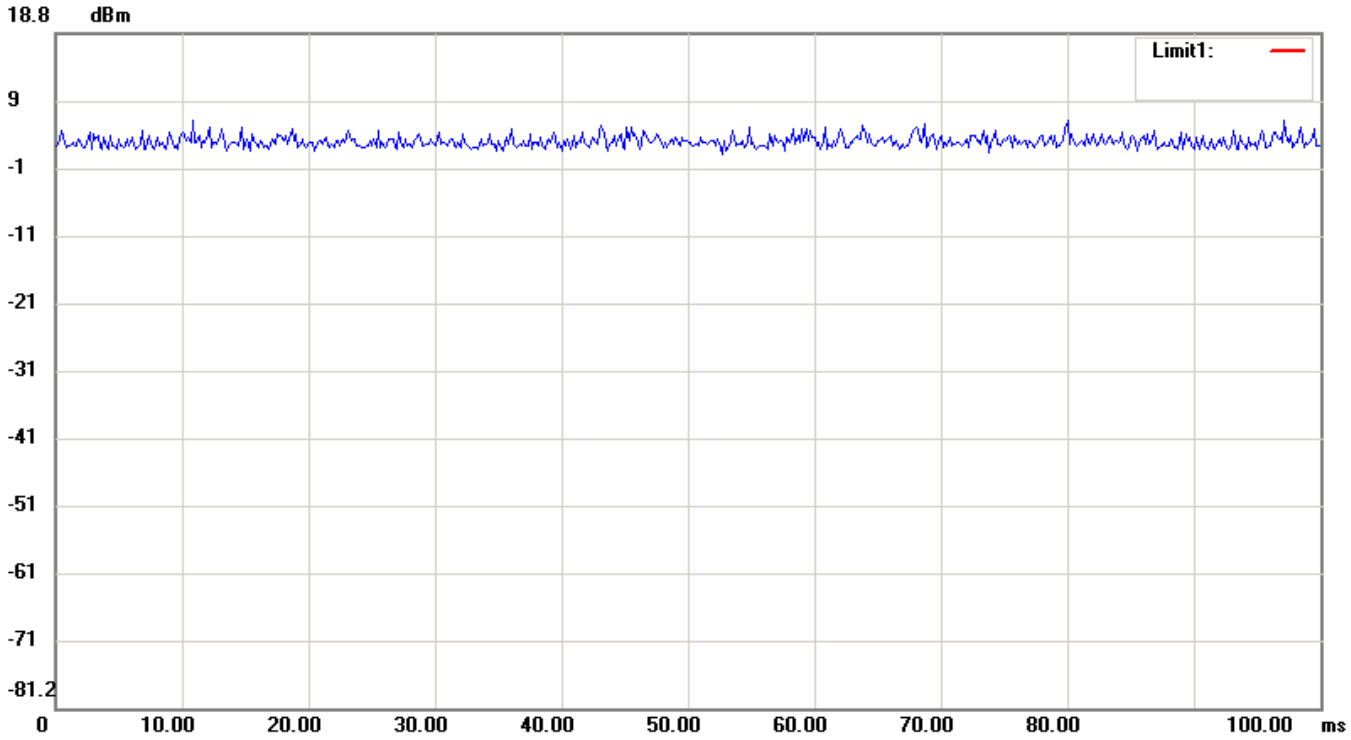
註: 1. 以上調變方式預掃時無差異，擇一作最終測試並記錄之。
2. 高，中，低頻道預掃時無差異，擇中間頻道作最終測試並記錄之。
3. Test Mode B 與 Test Mode D / Test Mode C 與 Test Mode E 使用相同調變技術及頻寬，故以峰值輸出功率較大者 Test Mode B 及 Test Mode C 為 Worse case，作最終測試並記錄之。
4. 本產品內含雙天線，802.11an/ac模式下有MIMO之功能，故對兩隻天線分別進行測試再加總並記綠之。802.11a無MIMO之功能，以最大輸出功率較大者做為Worse Case，進行其他項目之量測。
5. 進行 DFS 測試時，產品操作於 Normal mode，並對所有的調變及頻道進行測試，確認所有調變及頻道均合格後，擇一做最終測試並記錄之。
6. 此產品為手持式分別要以二軸相(X、Y)放置，並分別測試以找出最大輻射電場強度軸相，其中以 X 軸模式較差，並記錄其讀值。
7. 本產品搭配兩顆相同容量但廠牌不同之硬碟，HGST mode；Toshiba mode。場強輻射之量測1GHz以下時，分別對兩個不同的搭配進行測試並記錄；場強輻射 1GHz以上時，經預掃後以結果較差之模式進行最終測試並記錄。

3.2.3 Duty cycle

Modulation	Duty cycle
IEEE 802.11a	>98%

File: **18-07-037_5-3a_A0** **#9** **Date:** **2018/8/9** **Temperature:** **25 ℃**

Time: **下午 03:20:23** **Humidity:** **60 %**



Condition: **UNII-Band1-2-Bandedge** **RF Conducted**

EUT: **Sweep Time: 100ms** **Att.: 20dB**

Model: **RBW: 1000 KHz** **VBW: 1000 KHz**

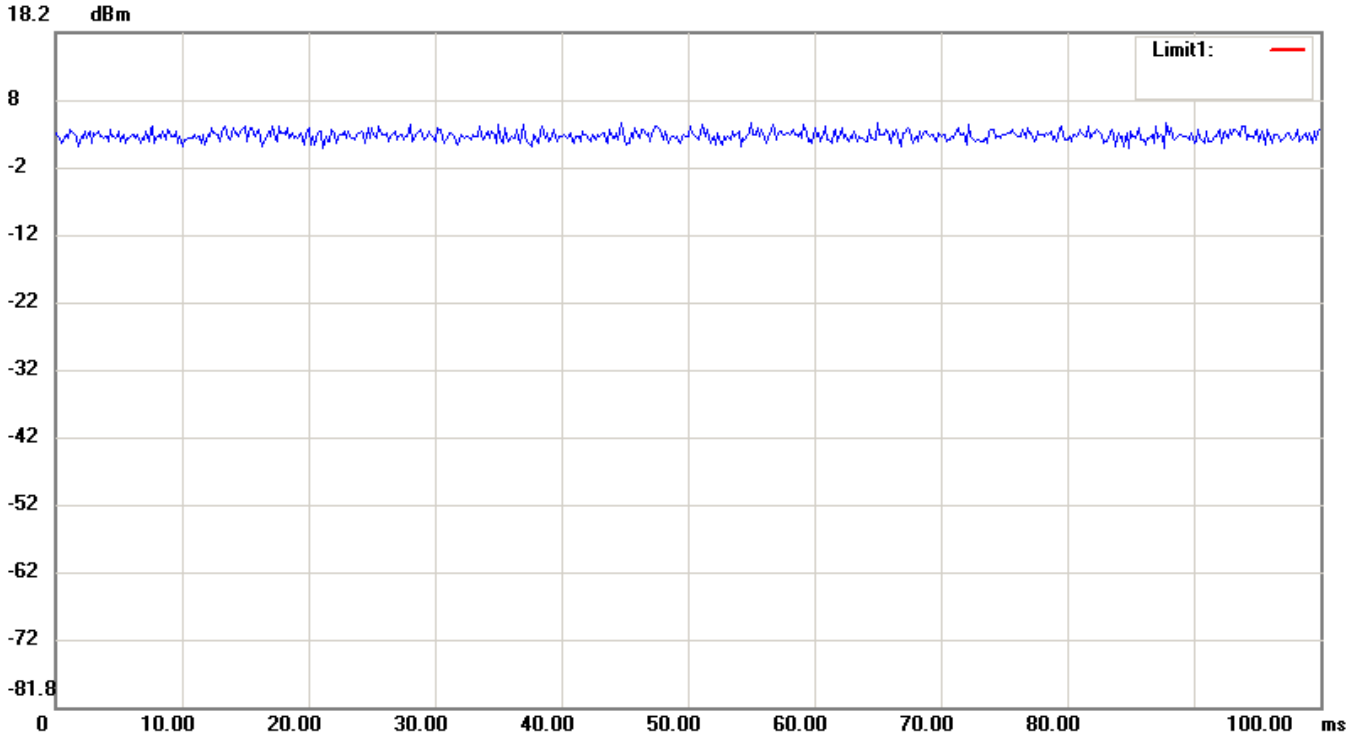
Test Mode:

Note: **NCC_11a_Duty Cycle-1**

Modulation	Duty cycle
IEEE 802.11an HT20	>98%

File: **18-07-037_5-3an20_A0** **#9** **Date:** **2018/8/9** **Temperature:** **25 ℃**

Time: **下午 01:31:55** **Humidity:** **60 %**



Condition: **UNII-Band1-2-Bandedge** **RF Conducted**

EUT: **Sweep Time: 100ms** **Att.: 20dB**

Model: **RBW: 1000 KHz** **VBW: 1000 KHz**

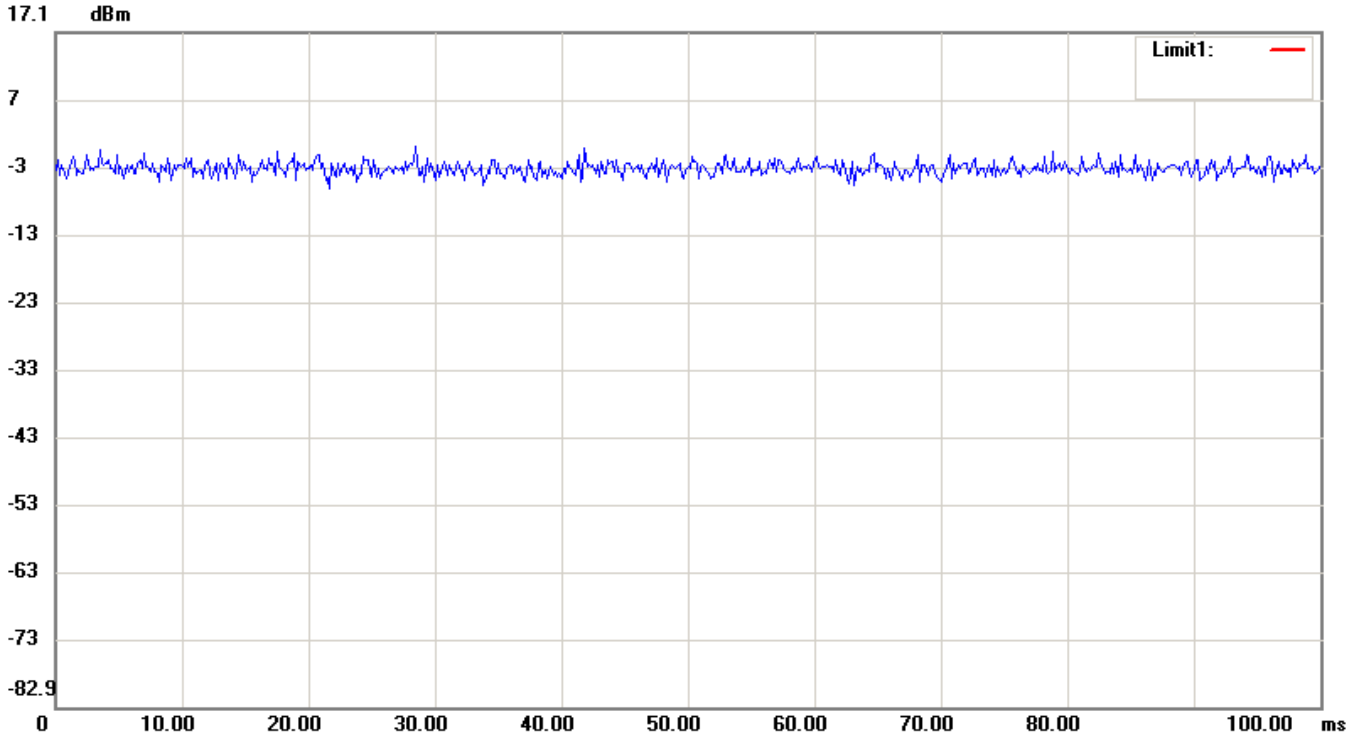
Test Mode:

Note: **NCC_11an20_Duty Cycle-1**

Modulation	Duty cycle
IEEE 802.11an HT40	>98%

File: 18-07-037_5-3an40_A0 **#7** **Date:** 2018/8/9 **Temperature:** 25 ℃

Time: 下午 01:09:02 **Humidity:** 60 %



Condition: UNII-Band1-2-Bandedge **RF Conducted**

EUT: **Sweep Time: 100ms** **Att.: 20dB**

Model: **RBW: 1000 KHz** **VBW: 1000 KHz**

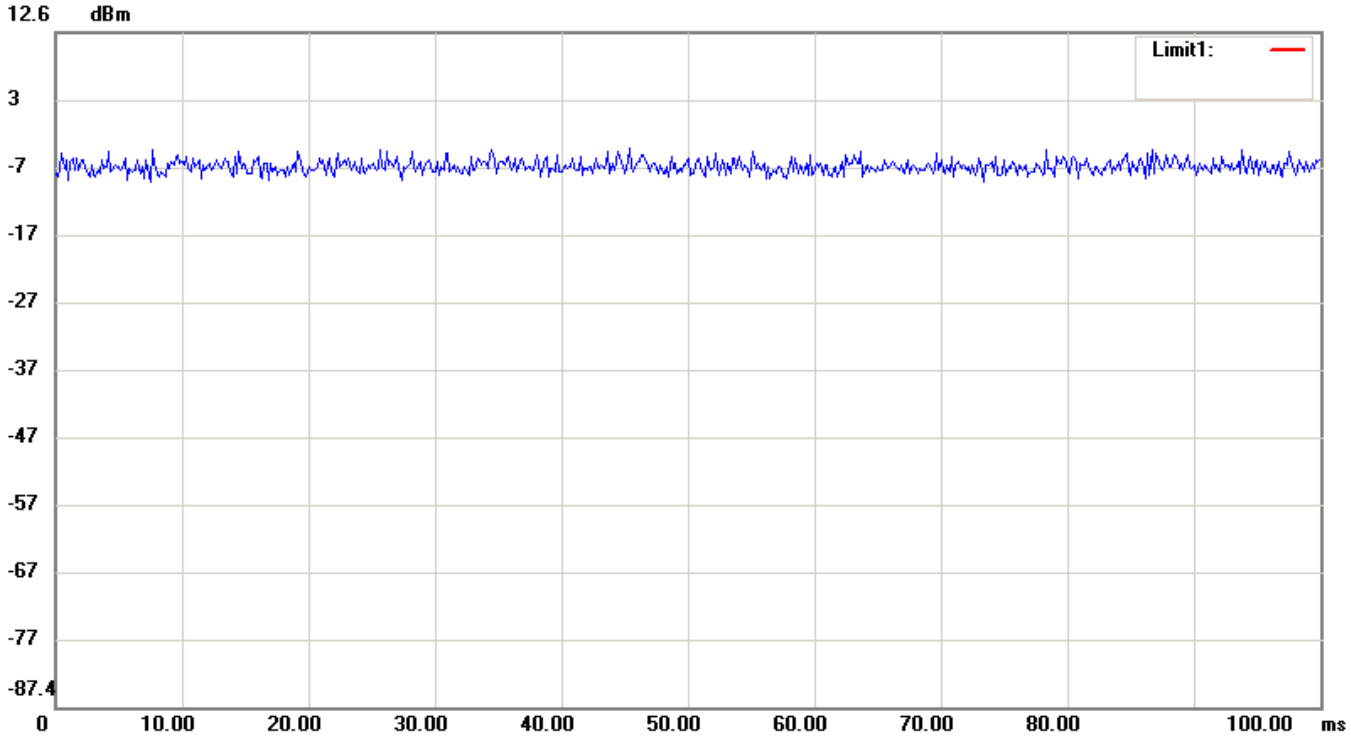
Test Mode:

Note: NCC_11an40_Duty Cycle-1

Modulation	Duty cycle
IEEE 802.11ac HT80	>98%

File: **18-07-037_5-3ac80_A0** **#5** **Date:** **2018/8/8** **Temperature:** **25 ℃**

Time: **下午 07:20:46** **Humidity:** **60 %**



Condition: **UNII-Band1-2-Bandedge** **Horizontal**

EUT: **Sweep Time: 100ms** **Att.: 20dB**

Model: **RBW: 1000 KHz** **VBW: 1000 KHz**

Test Mode:

Note: **NCC_11ac80_Duty Cycle-1**

4 電源線傳導干擾之量測

4.1 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2.3節之要求。

4.2 測試方法

將待測物置於0.8米高的非金屬桌面，使其在工作狀態，待測物電源線接至電源線阻抗穩定網路上，從測試接收機記錄頻率由 0.15MHz 至 30MHz 之間之電源線傳導干擾強度。

4.3 量測電源線傳導干擾之儀器

儀器名稱	廠　牌	型　號
EMI Test Receiver	R&S	ESCI
V-LISN	R&S	ENV216

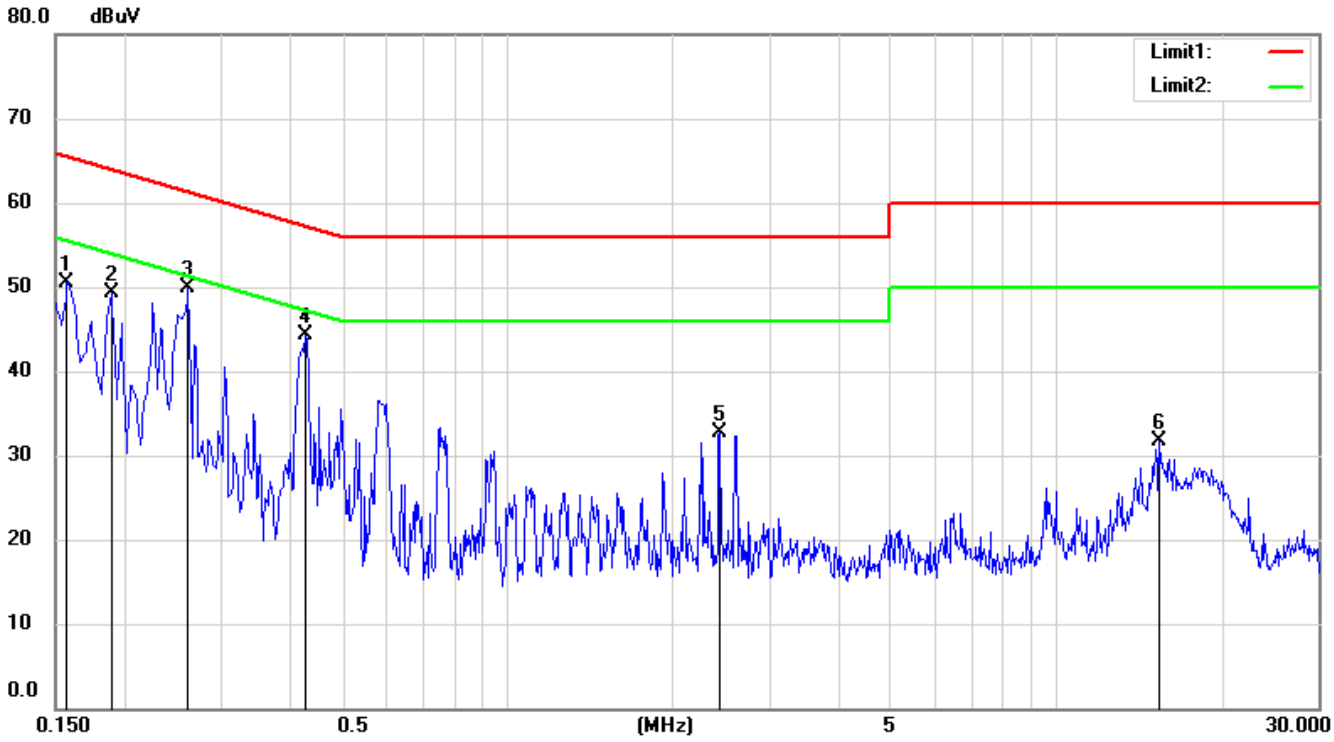
測試軟體: EZ-EMC (Ver. ETC-03A1)

4.4 傳導干擾之量測結果

測試工程師: 羅世勇

4.4.1 測試狀態: HGST mode

File: **PS4_2018_08** **#24** **Date:** **2018/8/28** **Temperature:** **20 ℃**
Time: **下午 05:41:44** **Humidity:** **58 %**

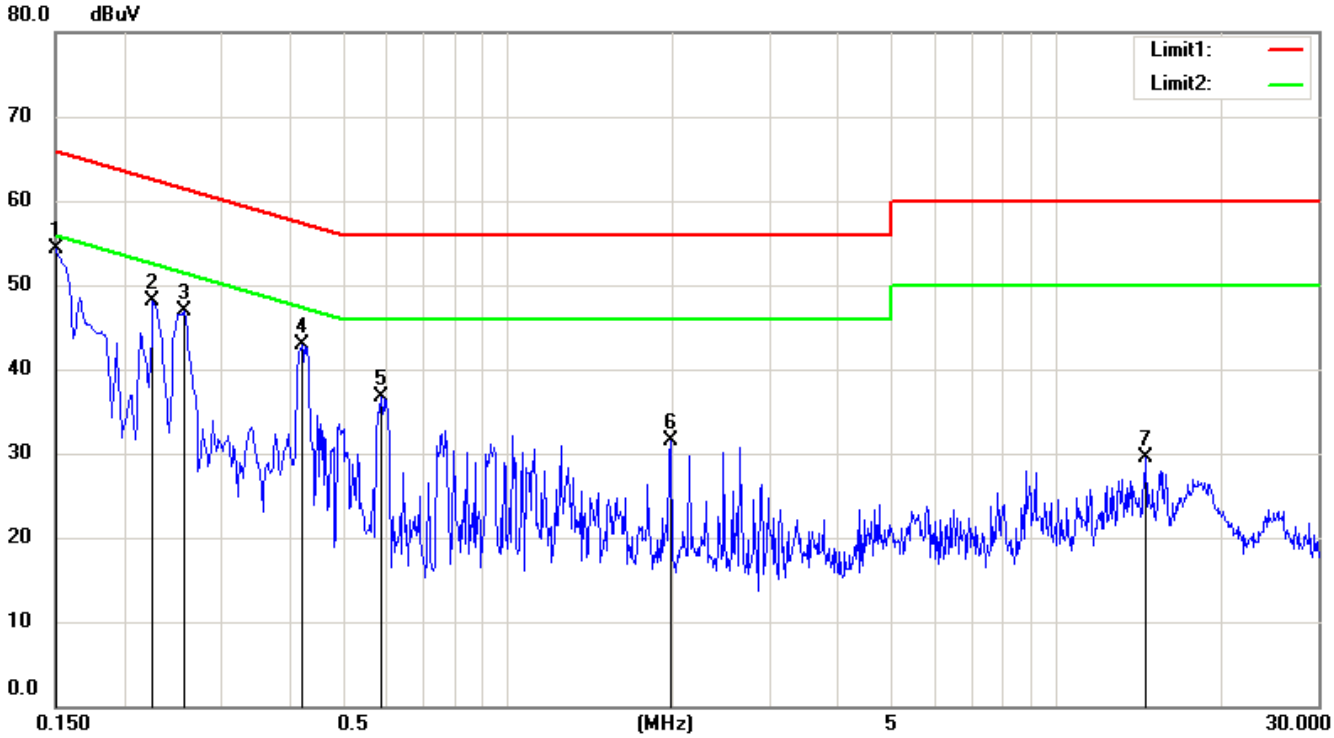


Condition: **Phase:** **L1**
EUT:
Model:
Test Mode: **1TB HGST**
Note: **5.3**

No.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)
1	0.1580	40.83	QP	9.68	50.51	65.57	-15.06
2	0.1900	39.71	QP	9.67	49.38	64.04	-14.66
3	0.2620	40.30	QP	9.67	49.97	61.37	-11.40
4	0.4300	34.58	QP	9.68	44.26	57.25	-12.99
5	2.4380	23.05	QP	9.73	32.78	56.00	-23.22
6	15.3940	21.74	QP	9.91	31.65	60.00	-28.35

註： 1. “----“表示量測準峰值的結果符合平均值的限制值，則視為同時符合準峰值與平均值的限制值，不需再對其平均值進行量測。
2. “#“表示干擾值太小，直接量取其峰值。
3. 標記“***”表示為本地震盪頻率及其諧波。
4. 量測不準確度: ±2.5dB(150kHz≦f≦30MHz)。

File: PS4_2018_08 **#23** **Date:** 2018/8/28 **Temperature:** 20 ℃
Time: 下午 05:40:04 **Humidity:** 58 %



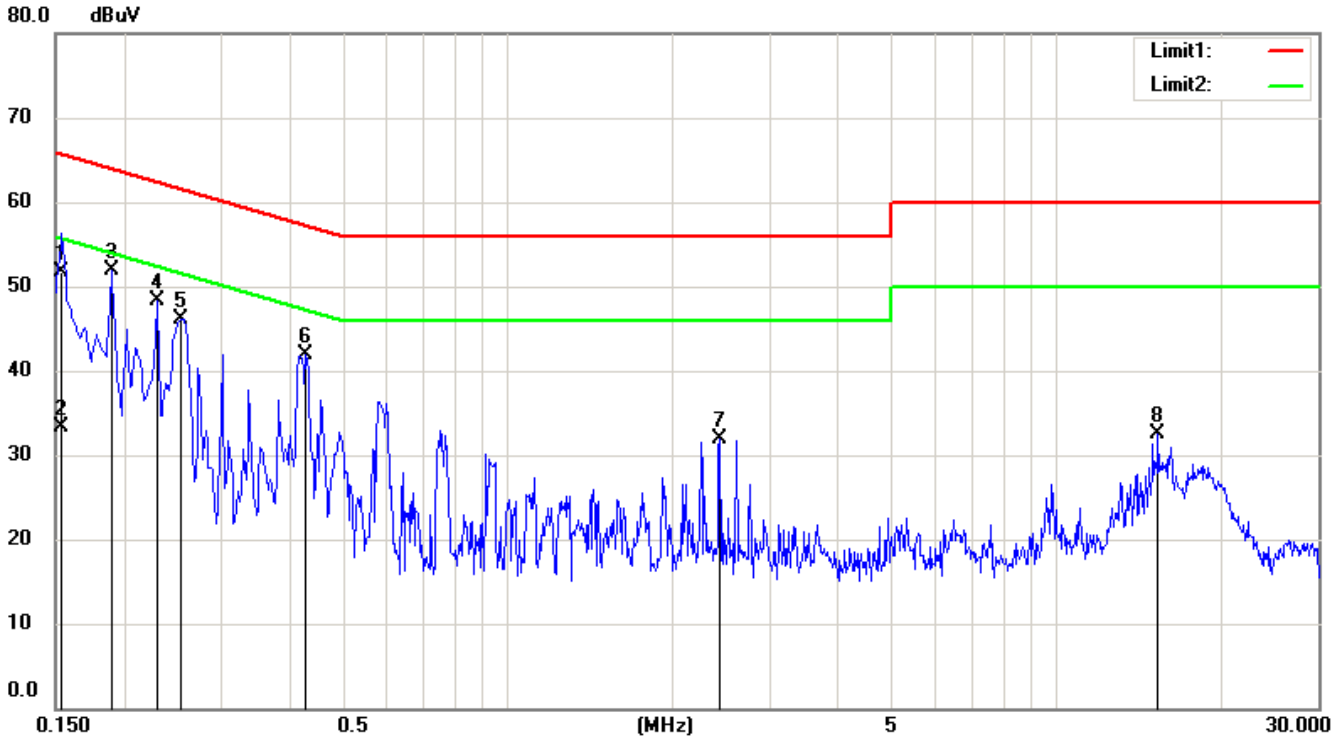
Condition: **Phase:** N
EUT:
Model:
Test Mode: 1TB HGST
Note: 5.3

No.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)
1	0.1500	44.58	QP	9.68	54.26	66.00	-11.74
2	0.2260	38.52	QP	9.67	48.19	62.60	-14.41
3	0.2580	37.26	QP	9.67	46.93	61.50	-14.57
4	0.4220	33.18	QP	9.68	42.86	57.41	-14.55
5	0.5900	27.02	QP	9.68	36.70	56.00	-19.30
6	1.9820	21.71	QP	9.71	31.42	56.00	-24.58
7	14.5460	19.63	QP	9.97	29.60	60.00	-30.40

註： 1. “----“表示量測準峰值的結果符合平均值的限制值，則視為同時符合準峰值與平均值的限制值，不需再對其平均值進行量測。
2. “#“表示干擾值太小，直接量取其峰值。
3. 標記“***”表示為本地震盪頻率及其諧波。
4. 量測不準確度: ±2.5dB(150kHz≦f≦30MHz)。

4.4.2 測試狀態: Toshiba mode

File: **PS4_2018_08** **#37** **Date:** **2018/8/28** **Temperature:** **20 ℃**
Time: **下午 06:06:50** **Humidity:** **58 %**

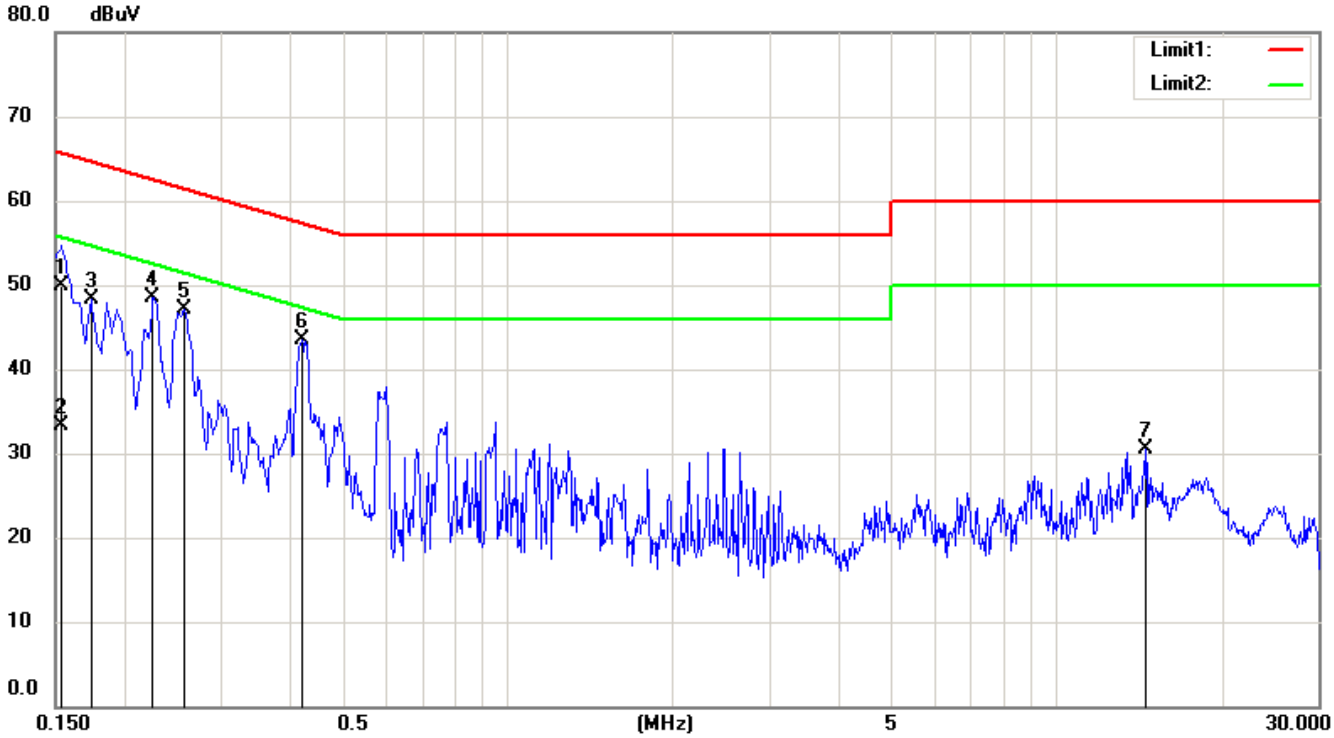


Condition: **Phase:** **L1**
EUT:
Model:
Test Mode: **1TB TOSHIBA**
Note: **5.3**

No.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)
1	0.1540	42.04	QP	9.68	51.72	65.78	-14.06
2	0.1540	23.63	AVG	9.68	33.31	55.78	-22.47
3	0.1900	42.27	QP	9.67	51.94	64.04	-12.10
4	0.2300	38.68	QP	9.67	48.35	62.45	-14.10
5	0.2540	36.48	QP	9.67	46.15	61.63	-15.48
6	0.4300	32.13	QP	9.68	41.81	57.25	-15.44
7	2.4420	22.24	QP	9.73	31.97	56.00	-24.03
8	15.3220	22.62	QP	9.91	32.53	60.00	-27.47

註： 1. “----“表示量測準峰值的結果符合平均值的限制值，則視為同時符合準峰值與平均值的限制值，不需再對其平均值進行量測。
2. “#“表示干擾值太小，直接量取其峰值。
3. 標記“***”表示為本地震盪頻率及其諧波。
4. 量測不準確度: ±2.5dB(150kHz≦f≦30MHz)。

File: PS4_2018_08 **#38** **Date:** 2018/8/28 **Temperature:** 20 ℃
Time: 下午 06:10:34 **Humidity:** 58 %



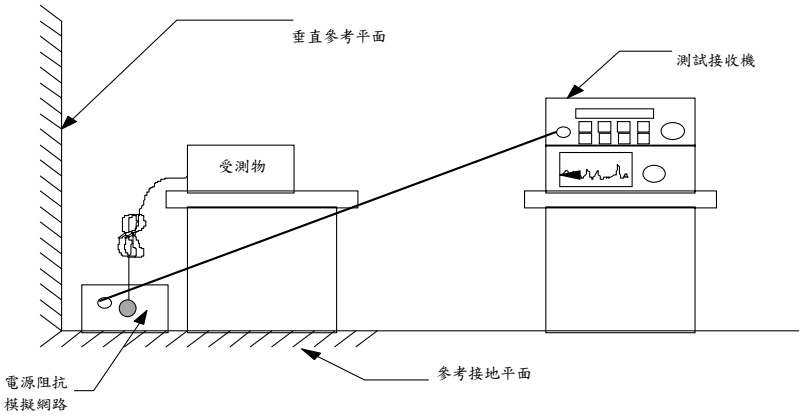
Condition: **Phase:** N
EUT:
Model:
Test Mode: 1TB TOSHIBA
Note: 5.3

No.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)
1	0.1540	40.29	QP	9.68	49.97	65.78	-15.81
2	0.1540	23.54	AVG	9.68	33.22	55.78	-22.56
3	0.1740	38.59	QP	9.68	48.27	64.77	-16.50
4	0.2260	38.93	QP	9.67	48.60	62.60	-14.00
5	0.2580	37.42	QP	9.67	47.09	61.50	-14.41
6	0.4220	33.74	QP	9.68	43.42	57.41	-13.99
7	14.5300	20.55	QP	9.97	30.52	60.00	-29.48

註： 1. “----“表示量測準峰值的結果符合平均值的限制值，則視為同時符合準峰值與平均值的限制值，不需再對其平均值進行量測。
2. “#“表示干擾值太小，直接量取其峰值。
3. 標記“***”表示為本地震盪頻率及其諧波。
4. 量測不準確度: ±2.5dB(150kHz≦f≦30MHz)。

4.5 電源線傳導干擾之測試配置

圖 1



4.6 傳導量測之配置照片

請參考產品照片

5 天線增益之要求

5.1 適用標準

天線的規格不受國家通訊傳播委員會低功率射頻電機技術規範(2.2)節規定之限制。若使用超過 6dBi 方向增益之發射天線，則以超過 6dBi 天線方向增益的 dBi 總量，等量減少峰值發射功率以及峰值功率頻譜密度。

5.2 天線增益

此裝置使用內接式天線，其天線資料如下:

5GHz CHAIN 0 :廠牌: LUXSHARE-ICT 型號: L34RF022

Antenna Type	PIFA
Operation Frequency Range	5.15~5.85 GHz
Antenna Gain	5.0 dBi

5GHz CHAIN 1 :廠牌: LUXSHARE-ICT 型號: L34RF024

Antenna Type	PIFA
Operation Frequency Range	5.15~5.85 GHz
Antenna Gain	5.6 dBi

(參照天線規格資料)

5.3 結果判定

CHAIN 0 之方向性增益為5.0 dBi，CHAIN 1 之方向性增益為5.6dBi，皆未超過 6 dBi，因此不需減少最大傳導輸出功率限制值。

操作在 MIMO 模式下，CHAIN 0 + CHAIN 1 之天線增益為 8.32 dBi ，高於 6dBi 需減少最大傳導輸出功率及功率密度之限制值。

6 發射頻寬之量測

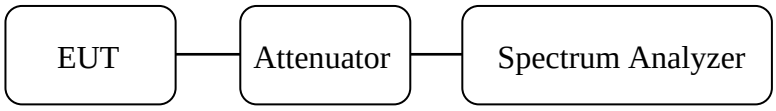
6.1 適用標準

依據國家通訊傳播委員會低功率射頻電機技術規範4.7.3.2節(1)之規定。

5.25-5.35 GHz 頻帶，在操作頻帶下之最大傳導輸出功率應小於或等於 250 mW 或11分貝毫瓦(dBm) +10 log B (B是26dB 發射頻寬，單位 MHz) 之較小者。

6.2 測試配置

圖 2 : 發射頻寬之測試配置



6.3 發射頻寬之量測儀器

儀器名稱	製造者	型　　號
Spectrum Analyzer	Agilent	E4446A
Attenuator	WEINSCHEL	56-10

測試軟體: LZ-RF (Ver. ETC-3A2)

6.4 量測結果

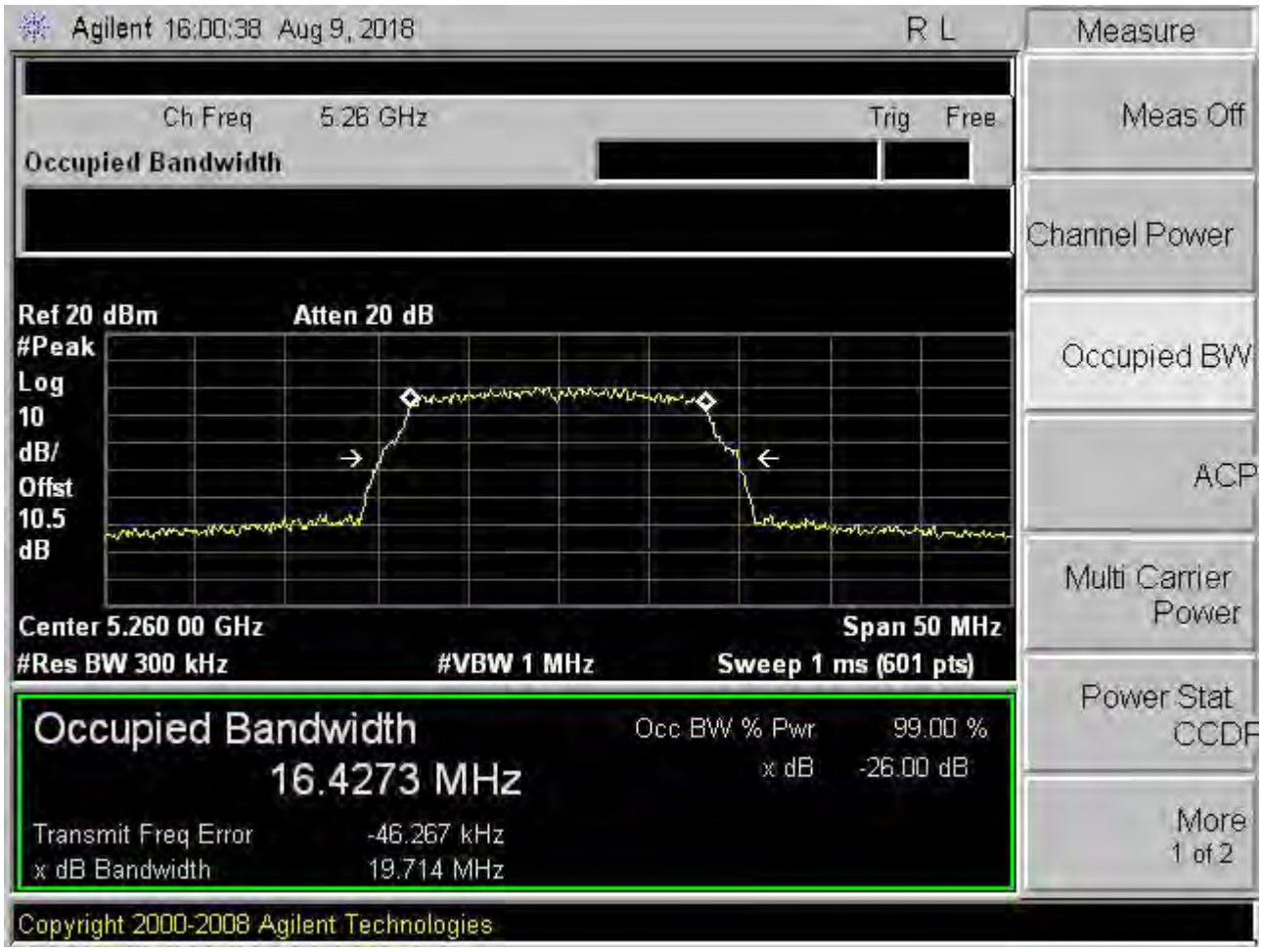
測試工程師: 羅世勇

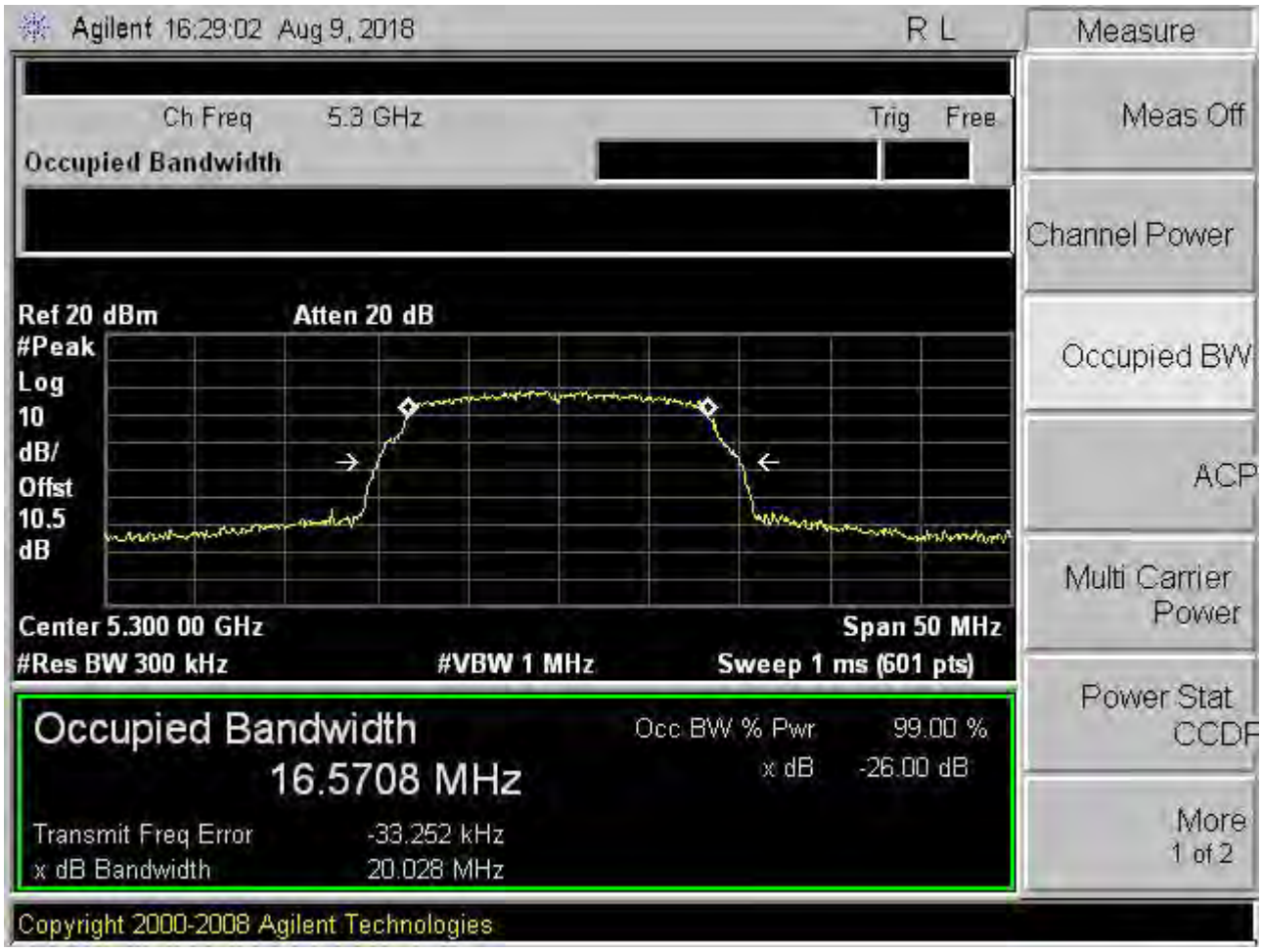
6.4.1 調變技術: IEEE 802.11a

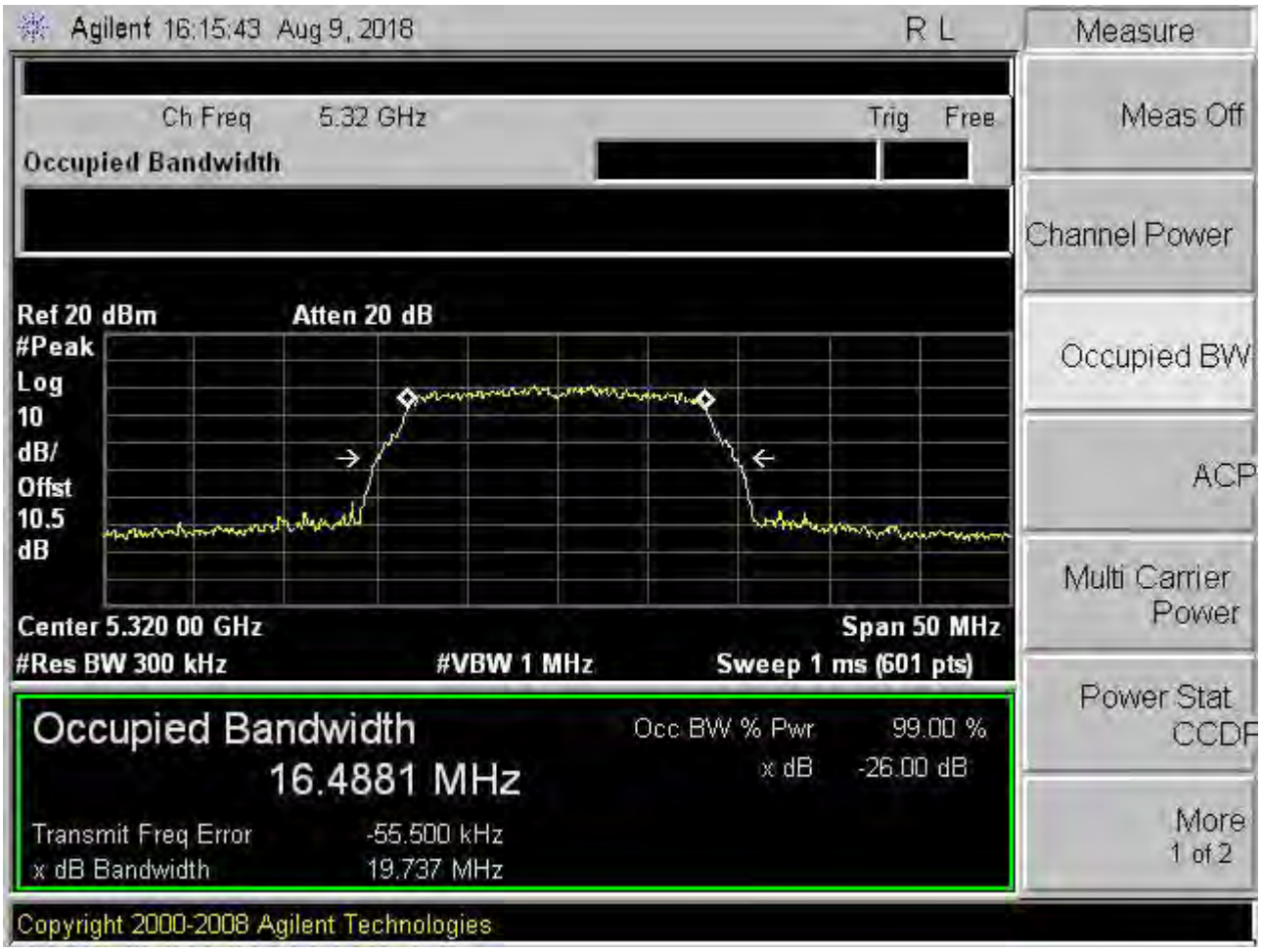
測試日期: Aug. 09, 2018 環境溫度 : 24℃ 環境濕度: 60%

Channel	26dB Bandwidth (MHz)	Chart
L	19.714	Page 27
M	20.028	Page 28
H	19.737	Page 29

註：1. 繪圖資料請參考第 27-29 頁。
2. 量測不準確度8.25×10^{-7}(1GHz≦f≦18GHz)


Agilent 16:00:38 Aug 9, 2018
R L
Measure
Ch Freq 5.26 GHz
Trig Free
Occupied Bandwidth
Meas Off
Channel Power
Ref 20 dBm
Atten 20 dB
#Peak
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.260 00 GHz
Span 50 MHz
#Res BW 300 kHz
#VBW 1 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Occupied Bandwidth
16.4273 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -46.267 kHz
x dB Bandwidth 19.714 MHz
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 16:29:02 Aug 9, 2018
R L
Measure
Ch Freq 5.3 GHz
Trig Free
Occupied Bandwidth
Meas Off
Channel Power
Ref 20 dBm
Atten 20 dB
#Peak
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.300 00 GHz
Span 50 MHz
#Res BW 300 kHz
#VBW 1 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Occupied Bandwidth
16.5708 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -33.252 kHz
x dB Bandwidth 20.028 MHz
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 16:15:43 Aug 9, 2018
R L
Measure
Ch Freq 5.32 GHz
Trig Free
Occupied Bandwidth
Meas Off
Channel Power
Ref 20 dBm
Atten 20 dB
#Peak
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.320 00 GHz
Span 50 MHz
#Res BW 300 kHz
#VBW 1 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Occupied Bandwidth
16.4881 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -55.500 kHz
x dB Bandwidth 19.737 MHz
More 1 of 2
Copyright 2000-2008 Agilent Technologies

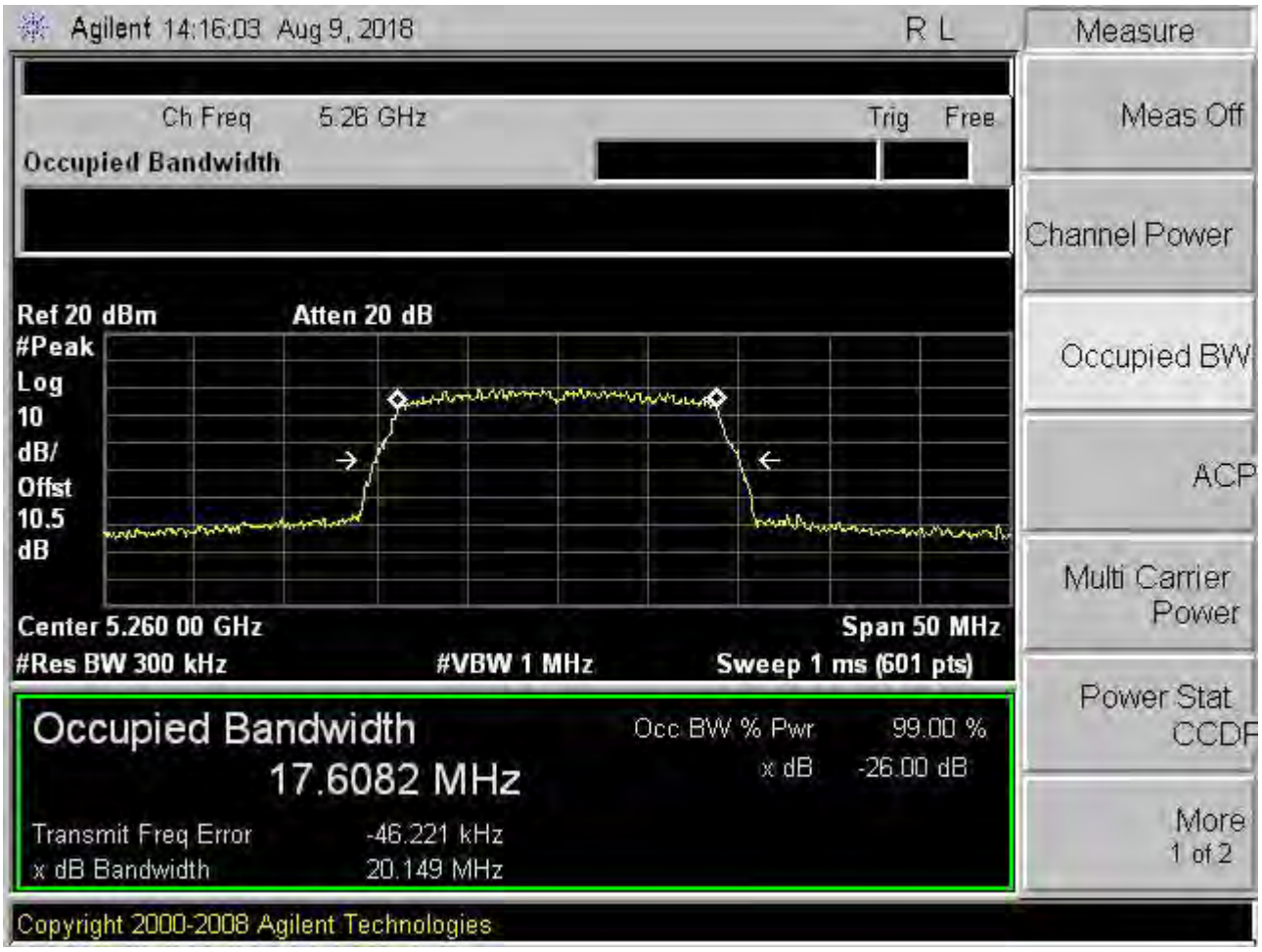
6.4.2 調變技術: IEEE 802.11an HT20

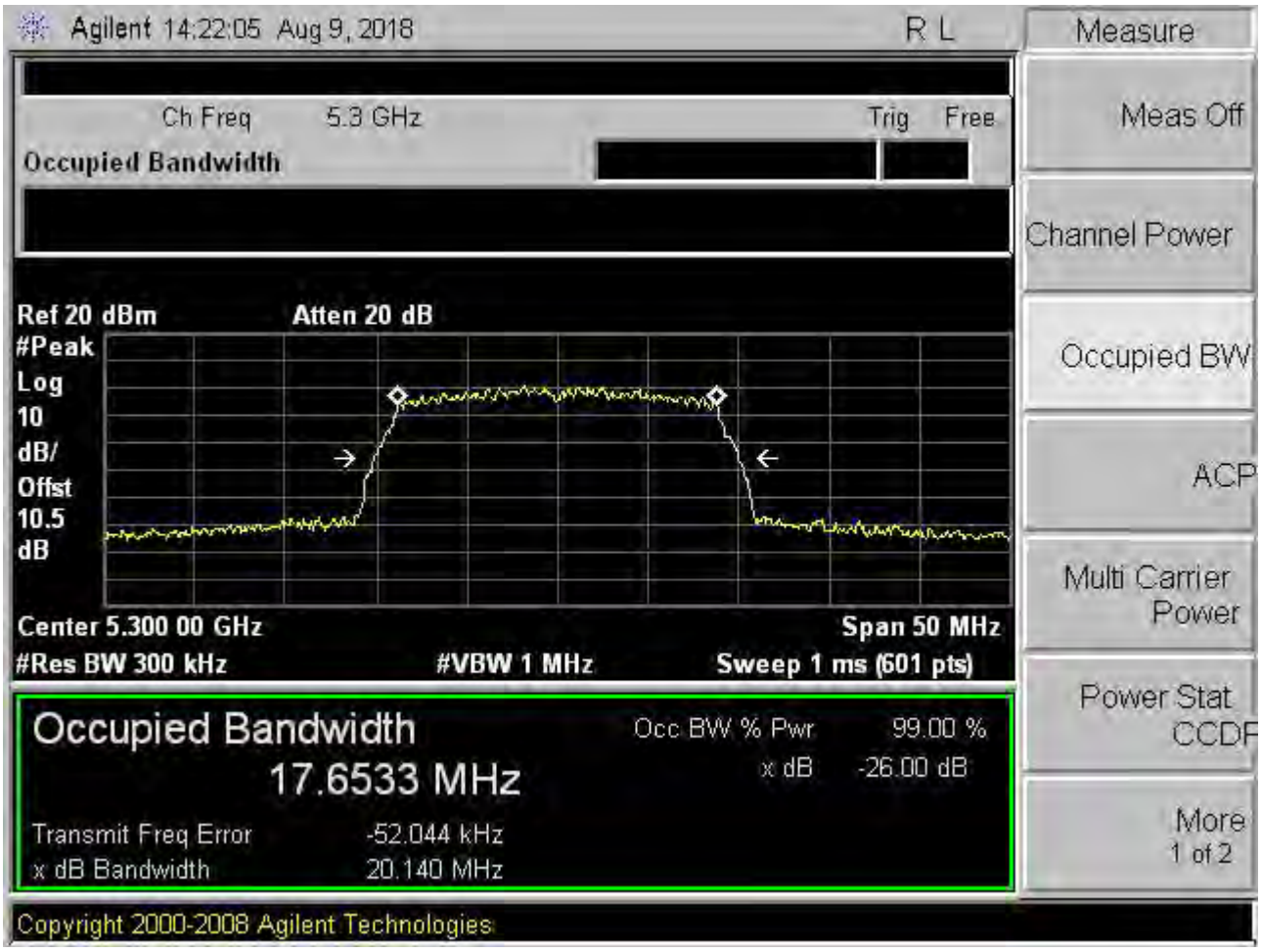
6.4.2.1 CHAIN 0

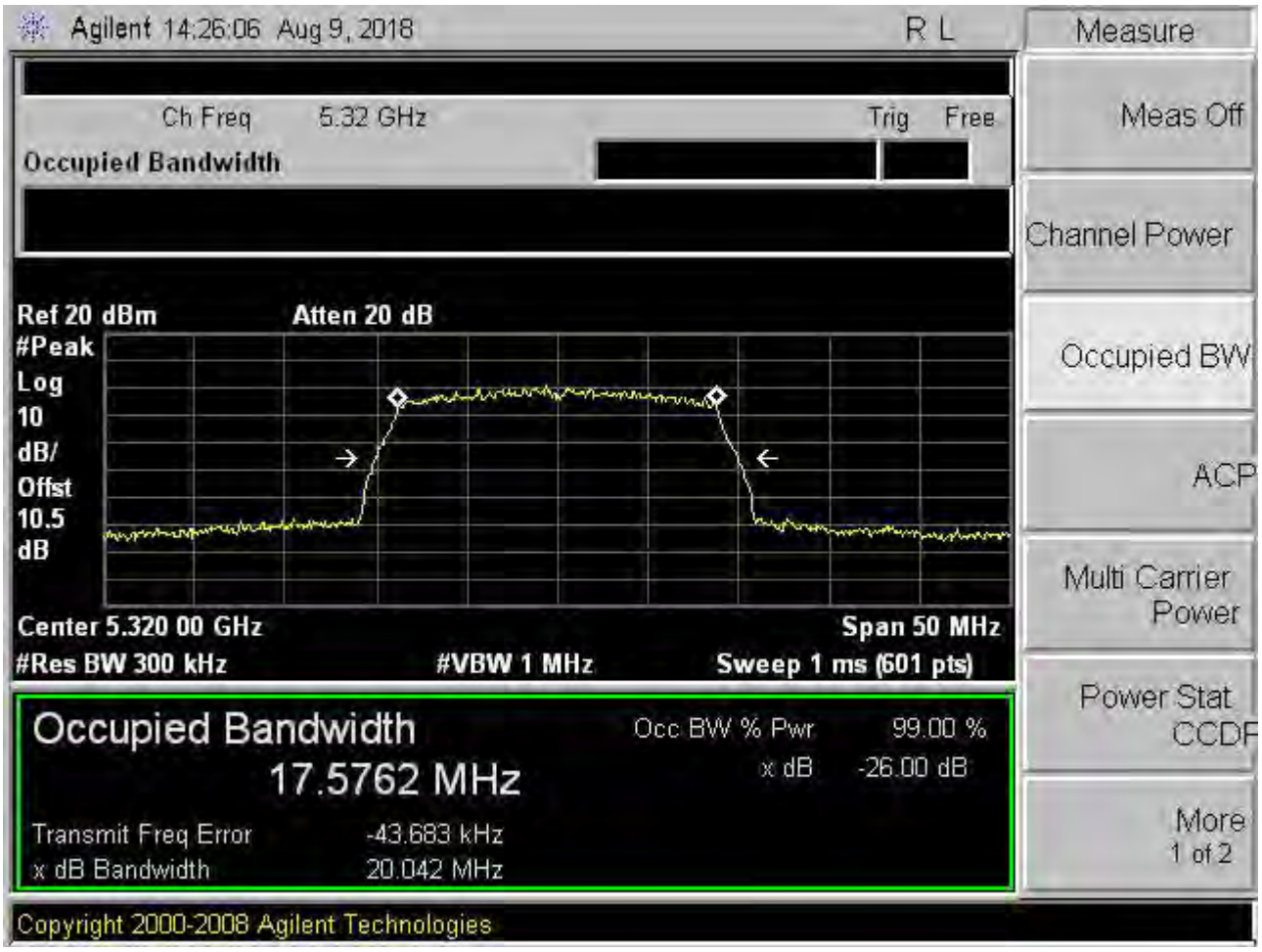
測試日期: Aug. 09, 2018 環境溫度: 24℃ 環境濕度: 60%

Channel	26dB Bandwidth (MHz)	Chart
L	20.149	Page 31
M	20.140	Page 32
H	20.042	Page 33

註：1. 繪圖資料請參考第 31-33 頁。
2. 量測不準確度 8.25×10^{-7} (1GHz≦f≦18GHz)。


Agilent 14:16:03 Aug 9, 2018
R L
Measure
Ch Freq 5.26 GHz
Trig Free
Occupied Bandwidth
Meas Off
Channel Power
Ref 20 dBm
Atten 20 dB
#Peak
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.260 00 GHz
Span 50 MHz
#Res BW 300 kHz
#VBW 1 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Occupied Bandwidth
17.6082 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -46.221 kHz
x dB Bandwidth 20.149 MHz
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 14:22:05 Aug 9, 2018
R L
Measure
Ch Freq 5.3 GHz
Trig Free
Occupied Bandwidth
Meas Off
Channel Power
Ref 20 dBm
Atten 20 dB
#Peak
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.300 00 GHz
Span 50 MHz
#Res BW 300 kHz
#VBW 1 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Occupied Bandwidth
17.6533 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -52.044 kHz
x dB Bandwidth 20.140 MHz
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 14:26:06 Aug 9, 2018
R L
Measure
Ch Freq 5.32 GHz
Trig Free
Occupied Bandwidth
Meas Off
Channel Power
Ref 20 dBm
Atten 20 dB
#Peak
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.320 00 GHz
Span 50 MHz
#Res BW 300 kHz
#VBW 1 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Occupied Bandwidth
17.5762 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -43.683 kHz
x dB Bandwidth 20.042 MHz
More 1 of 2
Copyright 2000-2008 Agilent Technologies

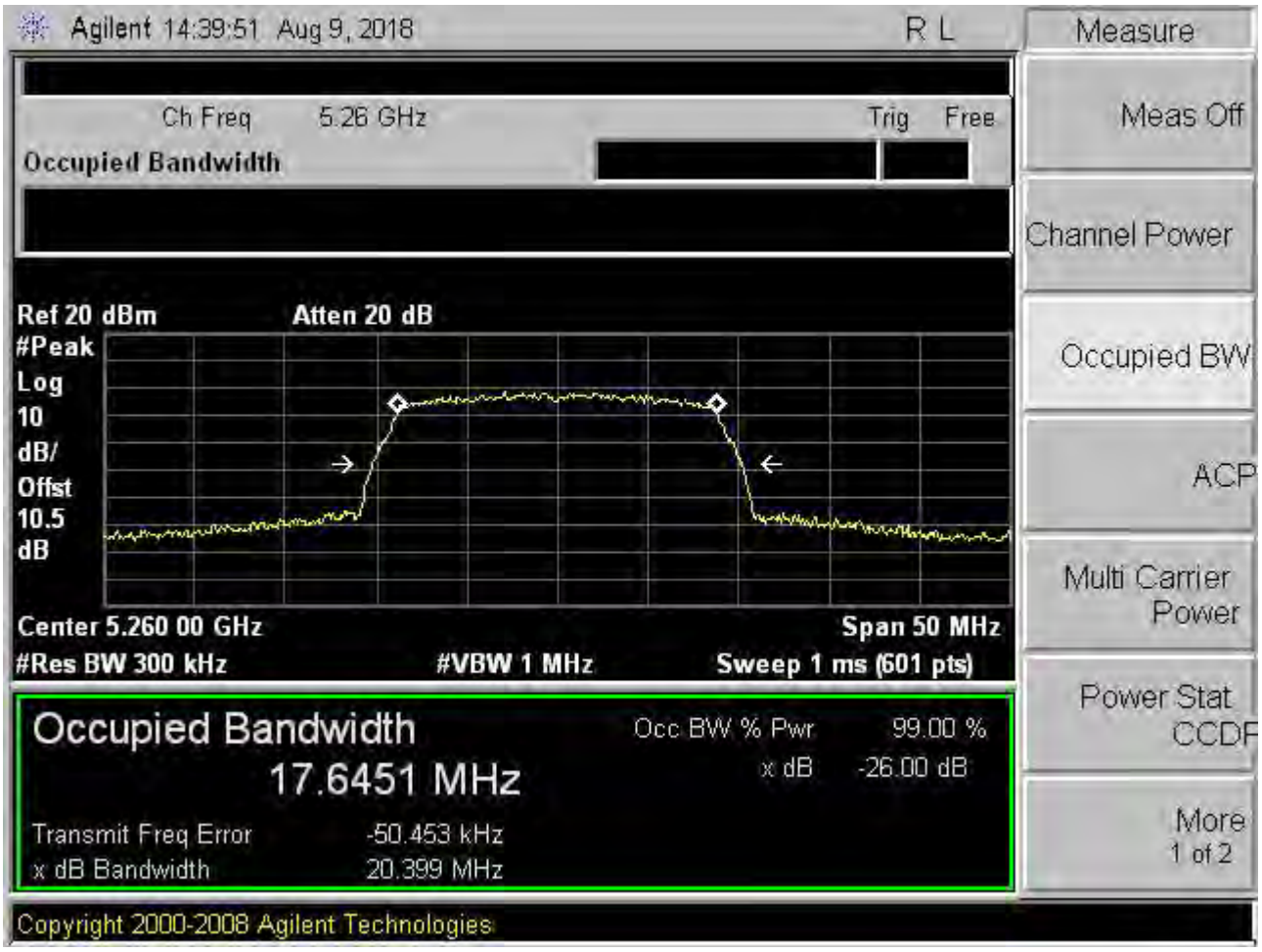
6.4.2.2 CHAIN 1

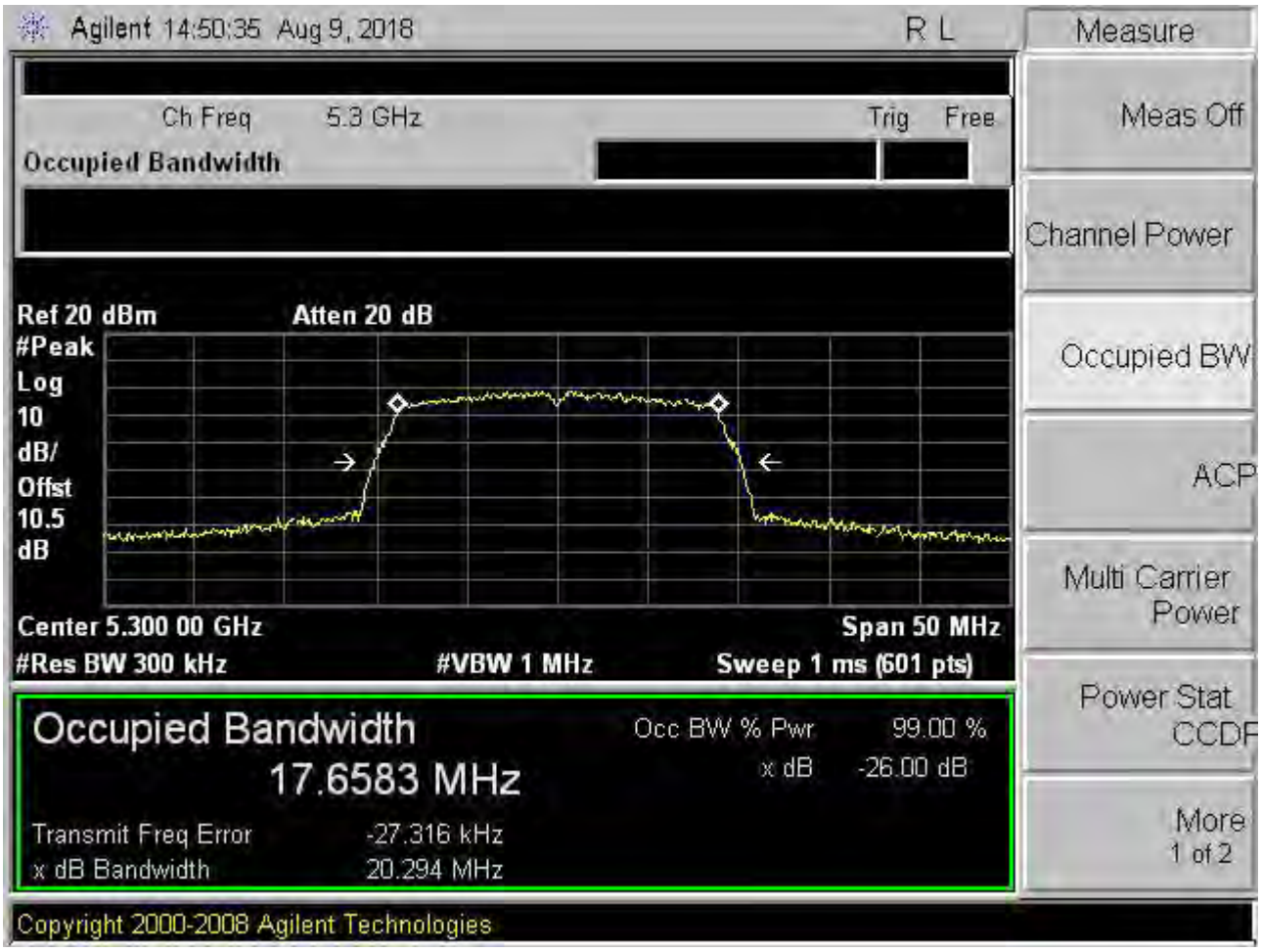
測試日期: Aug. 09, 2018 環境溫度: 24℃ 環境濕度: 60%

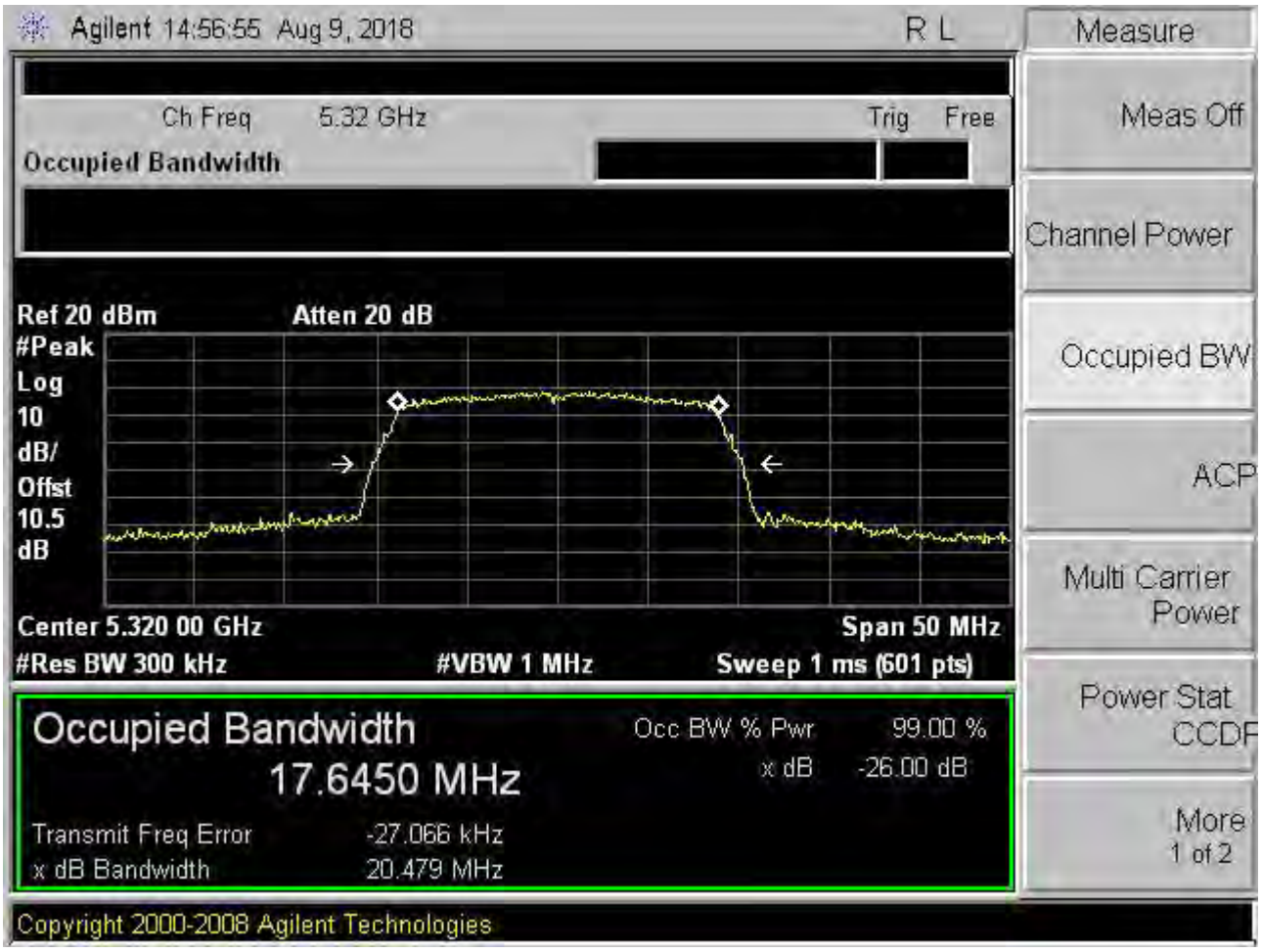
Channel	26dB Bandwidth (MHz)	Chart
L	20.339	Page 35
M	20.294	Page 36
H	20.479	Page 37

註：1. 繪圖資料請參考第 35-37 頁。

2. 量測不準確度 8.25×10^{-7} (1GHz≦f≦18GHz)。


Agilent 14:39:51 Aug 9, 2018
R L
Measure
Ch Freq 5.26 GHz
Trig Free
Occupied Bandwidth
Meas Off
Channel Power
Ref 20 dBm
Atten 20 dB
#Peak
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.260 00 GHz
Span 50 MHz
#Res BW 300 kHz
#VBW 1 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Occupied Bandwidth
17.6451 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -50.453 kHz
x dB Bandwidth 20.399 MHz
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 14:50:35 Aug 9, 2018
R L
Measure
Ch Freq 5.3 GHz
Trig Free
Occupied Bandwidth
Meas Off
Channel Power
Ref 20 dBm
Atten 20 dB
#Peak
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.300 00 GHz
Span 50 MHz
#Res BW 300 kHz
#VBW 1 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Occupied Bandwidth
17.6583 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -27.316 kHz
x dB Bandwidth 20.294 MHz
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 14:56:55 Aug 9, 2018
R L
Measure
Ch Freq 5.32 GHz
Trig Free
Occupied Bandwidth
Meas Off
Channel Power
Ref 20 dBm
Atten 20 dB
#Peak
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.320 00 GHz
Span 50 MHz
#Res BW 300 kHz
#VBW 1 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Occupied Bandwidth
17.6450 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -27.066 kHz
x dB Bandwidth 20.479 MHz
More 1 of 2
Copyright 2000-2008 Agilent Technologies

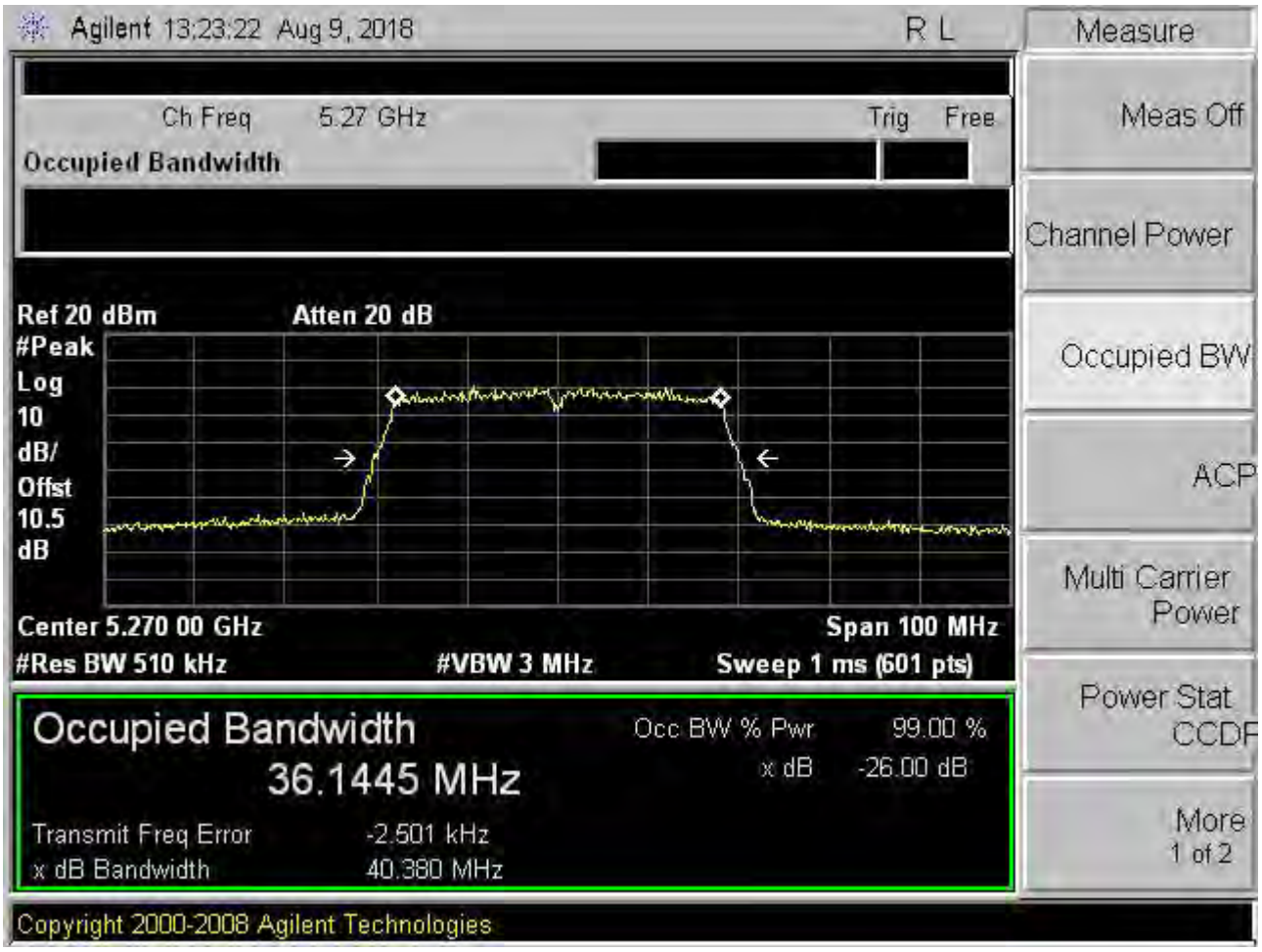
6.4.3 調變技術: IEEE 802.11an HT40

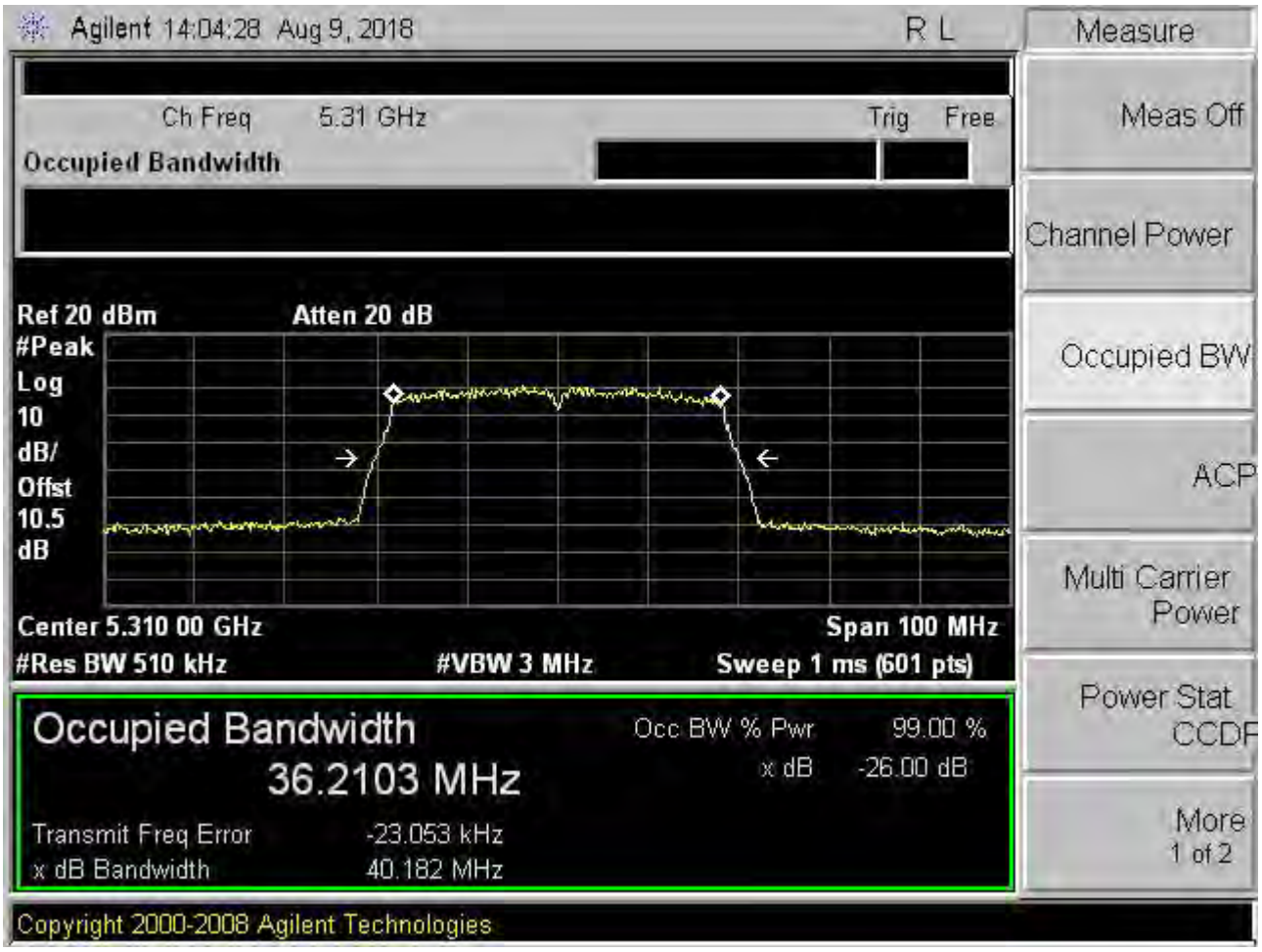
6.4.3.1 CHAIN 0

測試日期: Aug. 09, 2018 環境溫度: 24℃ 環境濕度: 60%

Channel	26dB Bandwidth (MHz)	Chart
L	40.380	Page 39
H	40.182	Page 40

註：1. 繪圖資料請參考第 39-40 頁。
2. 量測不準確度 8.25×10^{-7}(1GHz≦f≦18GHz)。


Agilent 13:23:22 Aug 9, 2018
R L
Measure
Ch Freq 5.27 GHz
Trig Free
Occupied Bandwidth
Meas Off
Channel Power
Ref 20 dBm
Atten 20 dB
#Peak
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.270 00 GHz
Span 100 MHz
#Res BW 510 kHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Occupied Bandwidth
36.1445 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -2.501 kHz
x dB Bandwidth 40.380 MHz
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 14:04:28 Aug 9, 2018
R L
Measure
Ch Freq 5.31 GHz
Trig Free
Occupied Bandwidth
Meas Off
Channel Power
Ref 20 dBm
Atten 20 dB
#Peak
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.310 00 GHz
Span 100 MHz
#Res BW 510 kHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Occupied Bandwidth
36.2103 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -23.053 kHz
x dB Bandwidth 40.182 MHz
More 1 of 2
Copyright 2000-2008 Agilent Technologies

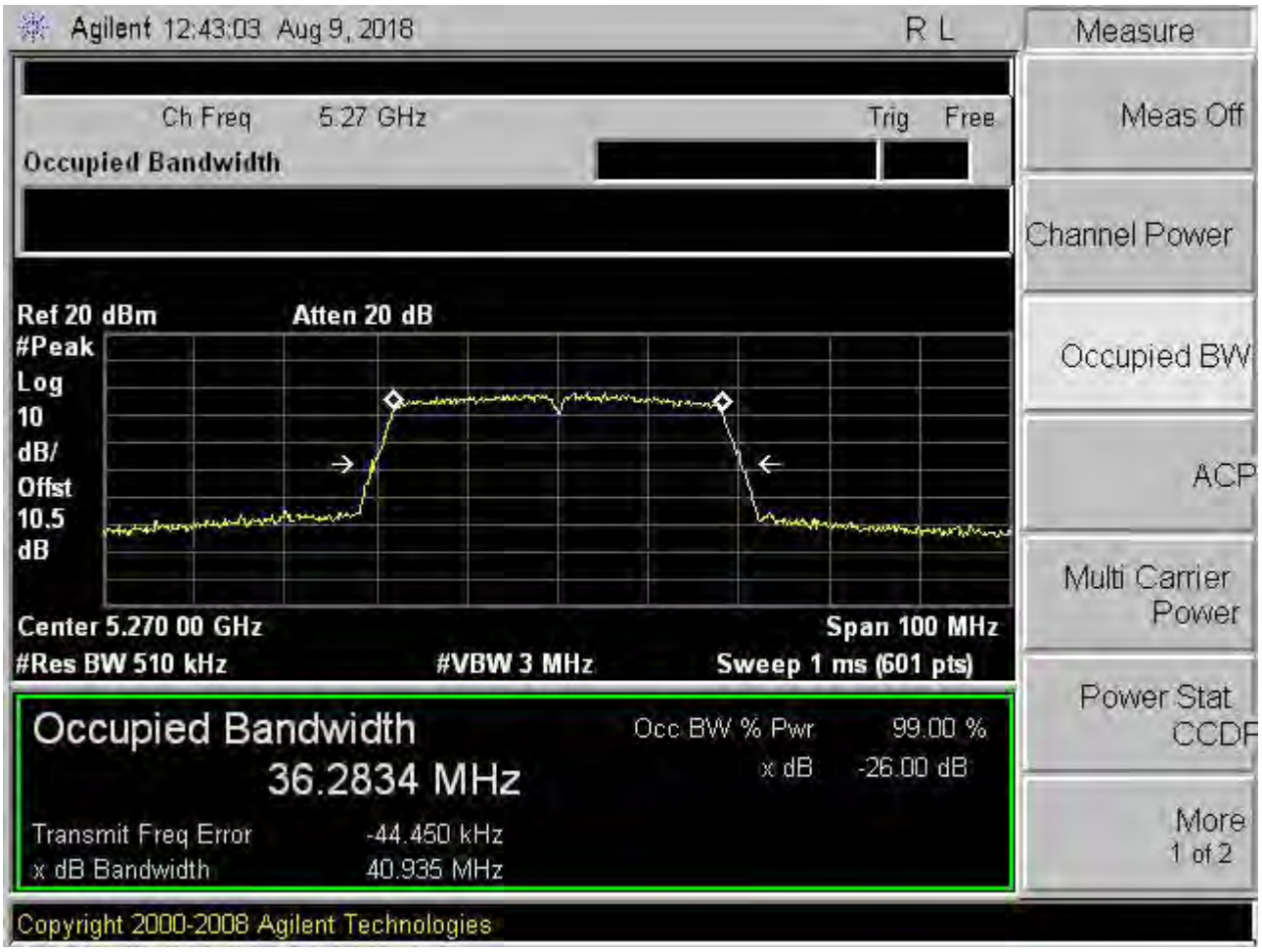
6.4.3.2 CHAIN 1

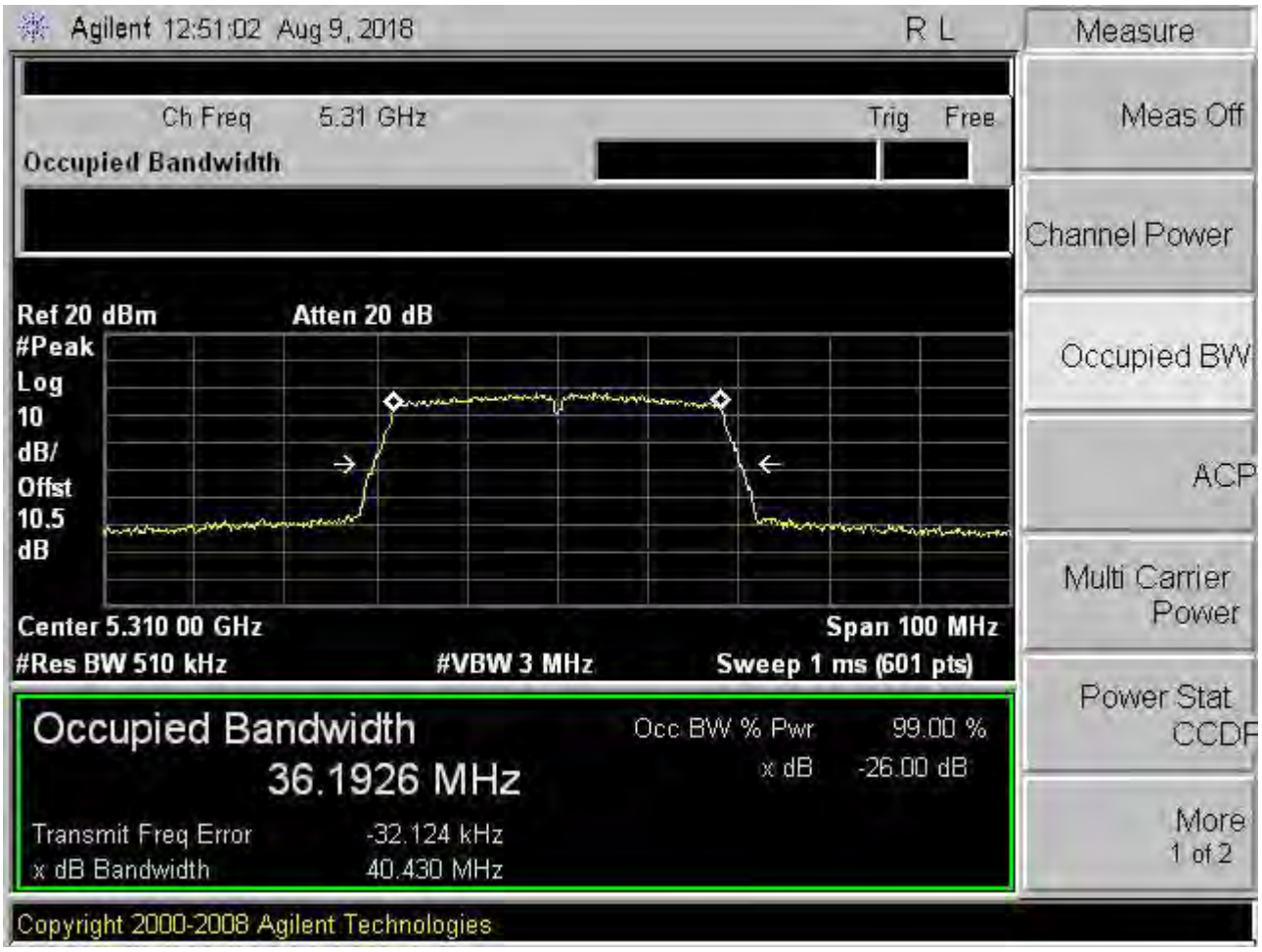
測試日期: Aug. 09, 2018 環境溫度: 24℃ 環境濕度: 60%

Channel	26dB Bandwidth (MHz)	Chart
L	40.935	Page 42
H	40.430	Page 43

註：1. 繪圖資料請參考第 42-43 頁。

2. 量測不準確度 8.25×10^{-7} (1GHz≦f≦18GHz)。


Agilent 12:43:03 Aug 9, 2018
R L
Measure
Ch Freq 5.27 GHz
Trig Free
Occupied Bandwidth
Meas Off
Channel Power
Ref 20 dBm
Atten 20 dB
#Peak
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.270 00 GHz
Span 100 MHz
#Res BW 510 kHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Occupied Bandwidth
36.2834 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -44.450 kHz
x dB Bandwidth 40.935 MHz
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 12:51:02 Aug 9, 2018
R L
Measure
Ch Freq 5.31 GHz
Trig Free
Occupied Bandwidth
Meas Off
Channel Power
Ref 20 dBm
Atten 20 dB
#Peak
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.310 00 GHz
Span 100 MHz
#Res BW 510 kHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Occupied Bandwidth
36.1926 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -32.124 kHz
x dB Bandwidth 40.430 MHz
More 1 of 2
Copyright 2000-2008 Agilent Technologies

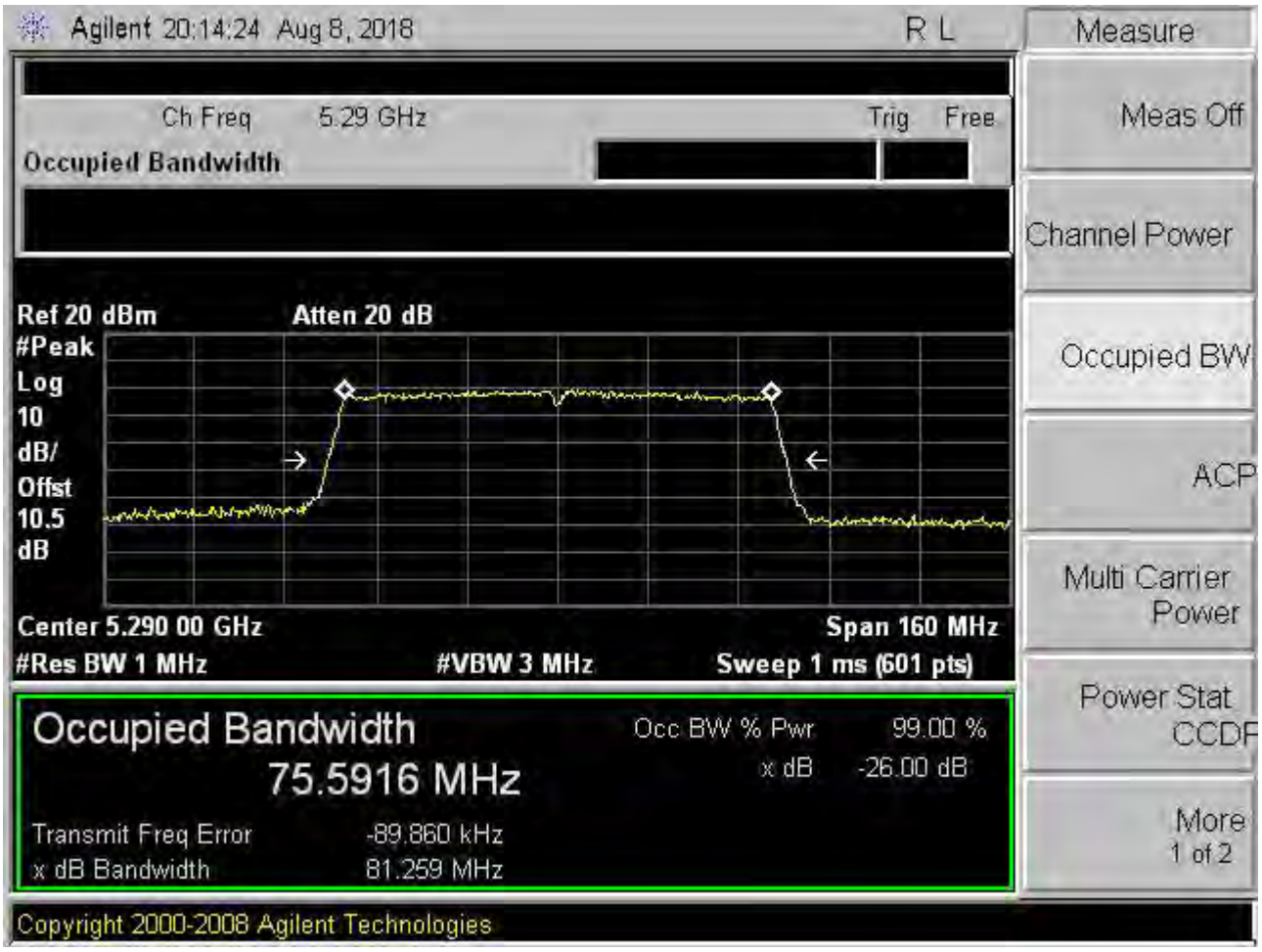
6.4.4 調變技術:IEEE 802.11ac (80MHz)

6.4.4.1 CHAIN 0

測試日期: Aug. 08, 2018 環境溫度: 24℃ 環境濕度: 60%

Channel	26dB Bandwidth (MHz)	Chart
L	81.259	Page 45

註：1. 繪圖資料請參考第 45 頁。
2. 量測不準確度 8.25×10^{-7} (1GHz≦f≦18GHz)。


Agilent 20:14:24 Aug 8, 2018
R L
Measure
Ch Freq 5.29 GHz
Trig Free
Occupied Bandwidth
Meas Off
Channel Power
Ref 20 dBm
Atten 20 dB
#Peak
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.290 00 GHz
Span 160 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Occupied Bandwidth
75.5916 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -89.860 kHz
x dB Bandwidth 81.259 MHz
More 1 of 2
Copyright 2000-2008 Agilent Technologies

6.4.4.2 CHAIN 1

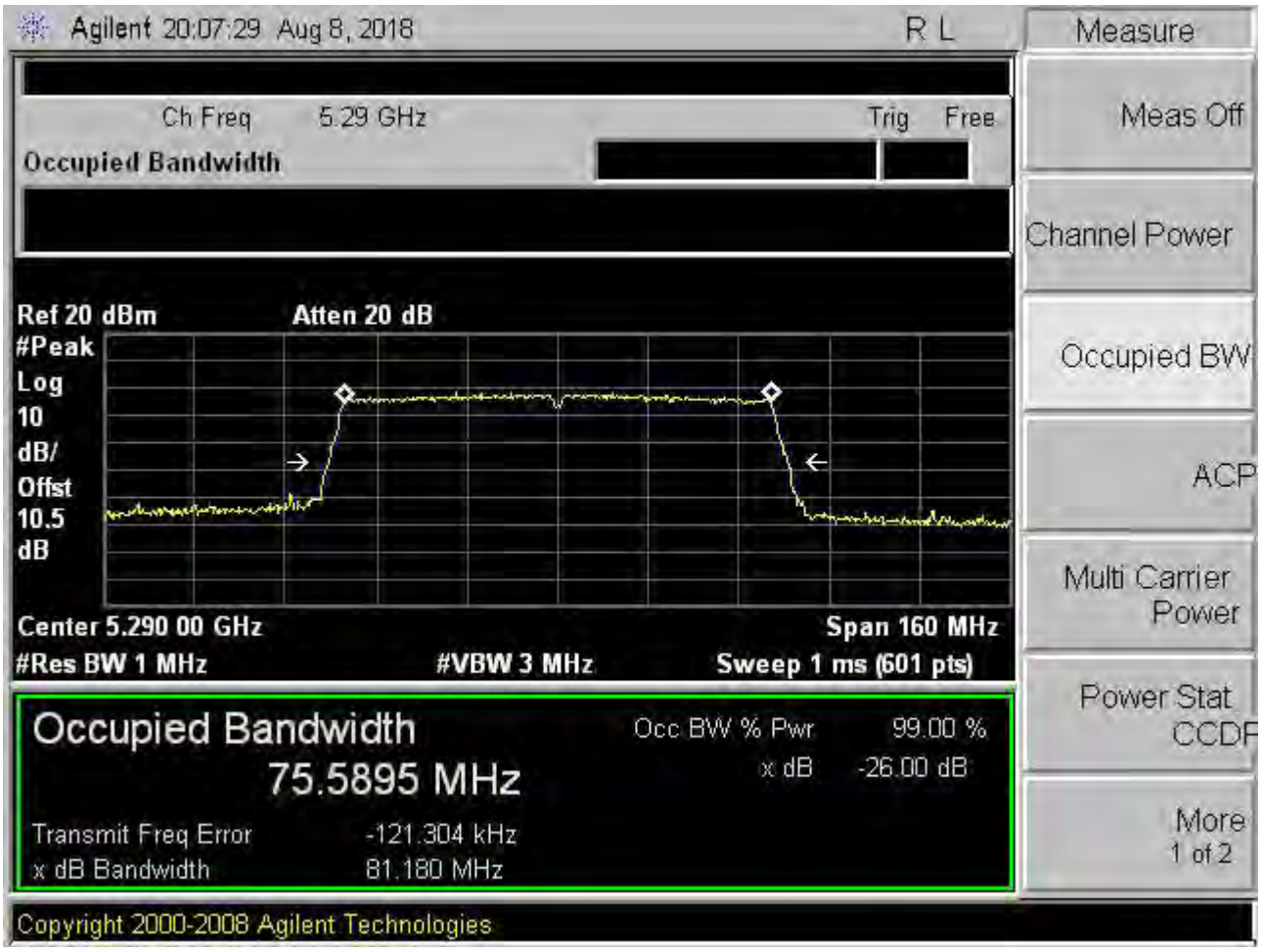
測試日期: Aug. 08, 2018 環境溫度: 24℃ 環境濕度: 60%

Channel	26dB Bandwidth (MHz)	Chart
L	81.180	Page 47

註：1. 繪圖資料請參考第 47 頁。
2. 量測不準確度 8.25×10^{-7} (1GHz≦f≦18GHz)。

6.5 結果判定

僅提供數據，無須判定。


Agilent 20:07:29 Aug 8, 2018
R L
Measure
Ch Freq 5.29 GHz
Trig Free
Occupied Bandwidth
Meas Off
Channel Power
Ref 20 dBm
Atten 20 dB
#Peak
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.290 00 GHz
Span 160 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Occupied Bandwidth
75.5895 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -121.304 kHz
x dB Bandwidth 81.180 MHz
More 1 of 2
Copyright 2000-2008 Agilent Technologies

7 最大傳導輸出功率之量測

7.1 最大傳導輸出功率適用標準

依據國家通訊傳播委員會低功率射頻電機技術規範4.7.3.2節(1)(3)之規定:

(1) 5.25-5.35 GHz 頻帶，在操作頻帶下之最大傳導輸出功率應小於或等於 250 mW 或11分貝毫瓦(dBm) +10 log B (B是26dB 發射頻寬，單位 MHz) 之較小者。

(2) 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力率及最大功率頻譜密度。

7.2 最大傳導輸出功率之測試配置

如圖 2 所示。

7.3 最大傳導輸出功率之量測儀器

儀器名稱	製造者	型　　號
Spectrum Analyzer	Agilent	E4446A
Attenuator	WEINSCHEL	56-10

測試軟體: LZ-RF (Ver. ETC-3A2)

7.4 最大傳導輸出功率之量測結果

測試工程師: 羅世勇

7.4.1 調變技術: IEEE 802.11a

7.4.1.1 CHAIN 0

測試日期: Aug. 20, 2018 環境溫度: 24℃ 環境濕度: 60%

天線增益最大值為 5 dBi ，NCC Limit 如下表所示：

Channel	Fixd limit (dBm)	26dB BW (MHz)	Limit (dBm)	Output Power (dBm)	NCC Limit (dBm)	Chart
L	24	19.714	23.95	7.81	23.95	Page 50
M	24	20.28	24.02	8.42	24.00	Page 51
H	24	19.737	23.95	8.46	23.95	Page 52

註：1. 繪圖資料請參考第 50-52 頁。
2. 最大傳導輸出功率 (Maximum Output Power) 為經儀器校正補償過後的結果值。
3. Fixed Limit = 250mW=24dBm
4. Caculated Limit = 11dBm + 10 log (26dB BW)
5. If antenna gain ≦ 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm
6. If antenna gain > 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)
7. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)

Agilent 18:11:01 Aug 20, 2018
R L
Measure
Ch Freq 5.26 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.260 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Channel Power
Power Spectral Density
7.81 dBm / 20.0000 MHz
-65.20 dBm/Hz
More 1 of 2
Copyright 2000-2008 Agilent Technologies

Agilent 18:16:35 Aug 20, 2018
R L
Measure
Ch Freq 5.3 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.300 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Channel Power
Power Spectral Density
8.42 dBm / 20.0000 MHz
-64.59 dBm/Hz
More 1 of 2
Copyright 2000-2008 Agilent Technologies

Agilent 18:14:59 Aug 20, 2018
R L
Measure
Ch Freq 5.32 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Center 5.320 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Channel Power
8.46 dBm / 20.0000 MHz
Power Spectral Density
-64.55 dBm/Hz
Copyright 2000-2008 Agilent Technologies

7.4.1.2 CHAIN 1

測試日期: Aug. 20, 2018 環境溫度: 24℃ 環境濕度: 60%

天線增益最大值為 5.6 dBi ，NCC Limit 如下表所示：

Channel	Fixd limit (dBm)	26dB BW (MHz)	Limit (dBm)	Output Power (dBm)	NCC Limit (dBm)	Chart
L	24	19.714	23.95	7.06	23.95	Page 54
M	24	20.028	24.02	7.67	24.00	Page 55
H	24	19.737	23.95	7.66	23.95	Page 56

註：1. 繪圖資料請參考第 54-56 頁。

2. 最大傳導輸出功率 (Maximum Output Power) 為經儀器校正補償過後的結果值。

3. Fixed Limit = 250mW=24dBm

4. Caculated Limit = 11dBm + 10 log (26dB BW)

5. If antenna gain ≦ 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm

6. If antenna gain > 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)

7. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)

Agilent 18:21:08 Aug 20, 2018
R L
Measure
Ch Freq 5.26 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.260 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Channel Power
Power Spectral Density
7.06 dBm / 20.0000 MHz
-65.95 dBm/Hz
More 1 of 2
Copyright 2000-2008 Agilent Technologies

Agilent 18:23:27 Aug 20, 2018
R L
Measure
Ch Freq 5.3 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.300 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Channel Power
Power Spectral Density
7.67 dBm / 20.0000 MHz
-65.34 dBm/Hz
More 1 of 2
Copyright 2000-2008 Agilent Technologies

Agilent 18:27:10 Aug 20, 2018
R L
Measure
Ch Freq 5.32 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Center 5.320 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Channel Power
7.66 dBm / 20.0000 MHz
Power Spectral Density
-65.35 dBm/Hz
Copyright 2000-2008 Agilent Technologies

7.4.2 調變技術:IEEE 802.11an HT20

7.4.2.1 CHAIN 0

測試日期: Aug. 20, 2018 環境溫度: 24℃ 環境濕度: 60%

天線增益最大值為 5 dBi ，NCC Limit 如下表所示：

Channel	Fixd limit (dBm)	26dB BW (MHz)	Limit (dBm)	Output Power (dBm)	NCC Limit (dBm)	Chart
L	24	20.149	24.04	7.70	24	Page 58
M	24	20.140	24.04	8.39	24	Page 59
H	24	20.042	24.02	8.40	24	Page 60

註：1. 繪圖資料請參考第 58-60 頁。
2. 最大傳導輸出功率(Maximum Output Power) 為經儀器校正補償過後的結果值。
3. Fixed Limit = 250mW=24dBm
4. Caculated Limit = 11dBm + 10 log (26dB BW)
5. If antenna gain ≦ 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm
6. If antenna gain > 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)
7. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)

Agilent 17:10:22 Aug 20, 2018
R L
Measure
Ch Freq 5.26 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.260 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Channel Power
Power Spectral Density
7.70 dBm / 20.0000 MHz
-65.31 dBm/Hz
More 1 of 2
Copyright 2000-2008 Agilent Technologies

Agilent 17:39:17 Aug 20, 2018
R L
Ch Freq 5.3 GHz
Trig Free
Channel Power
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Center 5.300 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Channel Power
8.39 dBm / 20.0000 MHz
Power Spectral Density
-64.62 dBm/Hz
Sweep
Sweep Time
1.000 ms
Auto
Man
Sweep
Single
Cont
Auto Sweep Time
Norm
Accy
Gate
On
Off
Gate Setup
Points
601
Copyright 2000-2008 Agilent Technologies

Agilent 17:20:29 Aug 20, 2018
R L
Measure
Ch Freq 5.32 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Center 5.320 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Channel Power
8.40 dBm / 20.0000 MHz
Power Spectral Density
-64.61 dBm/Hz
Copyright 2000-2008 Agilent Technologies

7.4.2.2 CHAIN 1

測試日期: Aug. 20, 2018 環境溫度: 24℃ 環境濕度: 60%

天線增益最大值為 5.6 dBi ，NCC Limit 如下表所示：

Channel	Fixd limit (dBm)	26dB BW (MHz)	Limit (dBm)	Output Power (dBm)	NCC Limit (dBm)	Chart
L	24	20.339	24.08	7.12	24	Page 62
M	24	20.294	24.07	7.57	24	Page 63
H	24	20.479	24.11	7.52	24	Page 64

註：1. 繪圖資料請參考第 62-64 頁。

2. 最大傳導輸出功率(Maximum Output Power) 為經儀器校正補償過後的結果值。

3. Fixed Limit = 250mW=24dBm

4. Caculated Limit = 11dBm + 10 log (26dB BW)

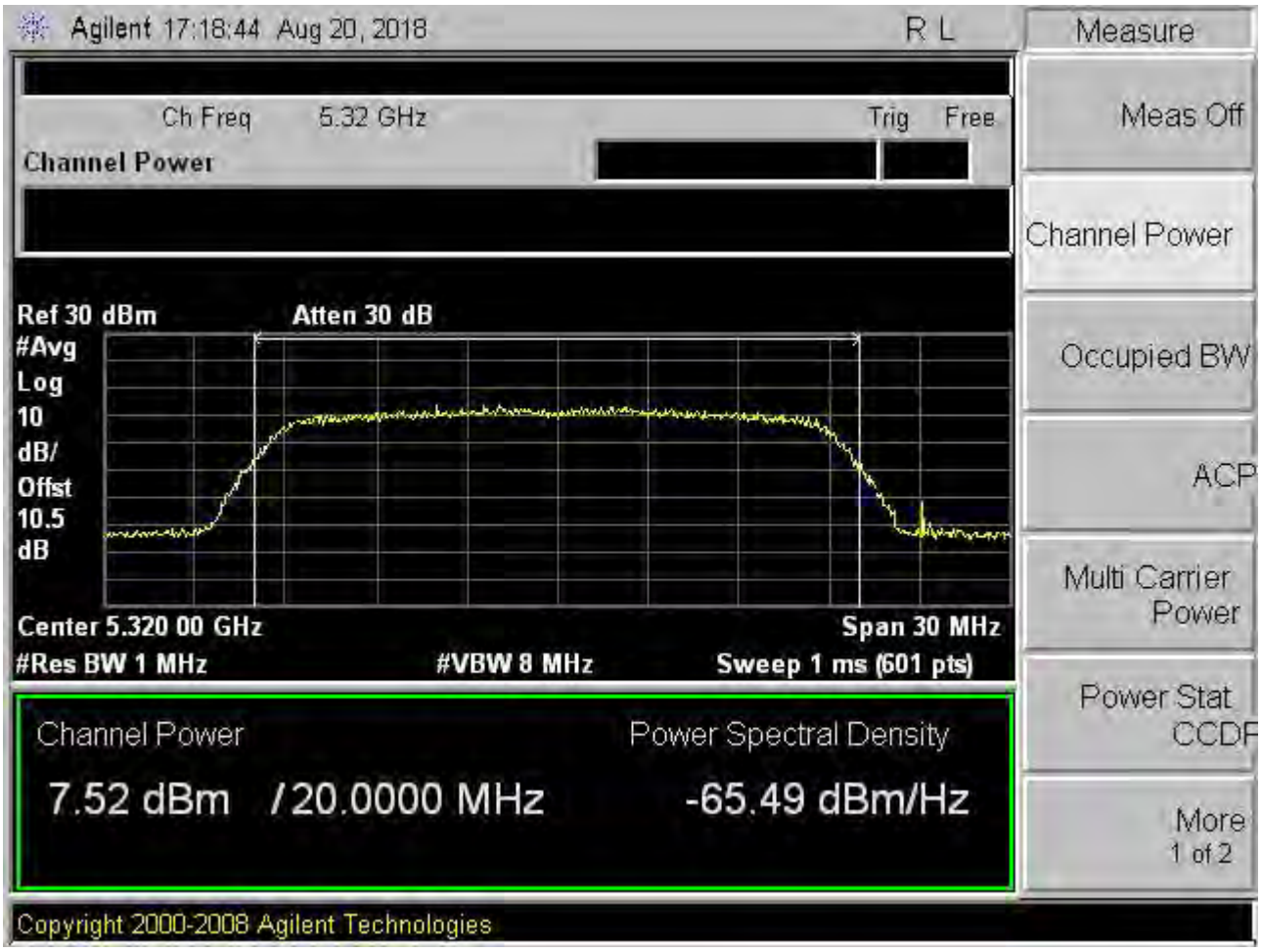
5. If antenna gain ≦ 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm

6. If antenna gain > 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)

7. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)

Agilent 17:11:39 Aug 20, 2018
R L
Measure
Ch Freq 5.26 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Center 5.260 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Channel Power
7.12 dBm / 20.0000 MHz
Power Spectral Density
-65.89 dBm/Hz
Copyright 2000-2008 Agilent Technologies

Agilent 17:22:58 Aug 20, 2018
R L
System
Ch Freq 5.3 GHz
Trig Free
Channel Power
Show Errors
Power On/ Preset
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Time/Date
Alignments
Config I/O
Center 5.300 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Reference
Channel Power
Power Spectral Density
7.57 dBm / 20.0000 MHz
-65.44 dBm/Hz
More
1 of 3
Copyright 2000-2008 Agilent Technologies


Agilent 17:18:44 Aug 20, 2018
R L
Measure
Ch Freq 5.32 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.320 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Channel Power
Power Spectral Density
7.52 dBm / 20.0000 MHz
-65.49 dBm/Hz
More 1 of 2
Copyright 2000-2008 Agilent Technologies

7.4.2.3 CHAIN 0 + CHAIN 1

測試日期: Aug. 20, 2018 環境溫度: 24℃ 環境濕度: 60%

Ant 1 / Ant 2 combination 天線增益最大值為 8.32 dBi，NCC Limit 如下表所示：

Channel	CHAIN 0 Maximum Output Power (dBm)	CHAIN 1 Maximum Output Power (dBm)	TOTAL Power (dBm)	NCC Limit (dBm)	Chart
L	7.70	7.12	10.43	21.68	-
M	8.39	7.57	11.01	21.68	-
H	8.40	7.52	10.99	21.68	-

註: 1. 最大發射輸出功率 (Maximum Output Power) 為經儀器校正補償過後的結果值。

2. Fixed Limit = 250mW = 24dBm

3. Caculated Limit = 11dBm + 10 log (26dB BW)

4. If antenna gain ≦ 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm

5. If antenna gain > 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)

6. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)

7.4.3 調變技術: **:**IEEE 802.11an HT40

7.4.3.1 CHAIN 0

測試日期: Aug. 20, 2018 環境溫度: 24℃ 環境濕度: 60%

天線增益最大值為 5 dBi ，NCC Limit 如下表所示：

Channel	Fixd limit (dBm)	26dB BW (MHz)	Limit (dBm)	Output Power (dBm)	NCC Limit (dBm)	Chart
L	24	40.380	27.06	8.01	24	Page 67
H	24	40.182	27.04	8.21	24	Page 68

註：1. 繪圖資料請參考第 67-68 頁。

2. 最大傳導輸出功率(Maximum Output Power) 為經儀器校正補償過後的結果值。

3. Fixed Limit = 250mW=24dBm

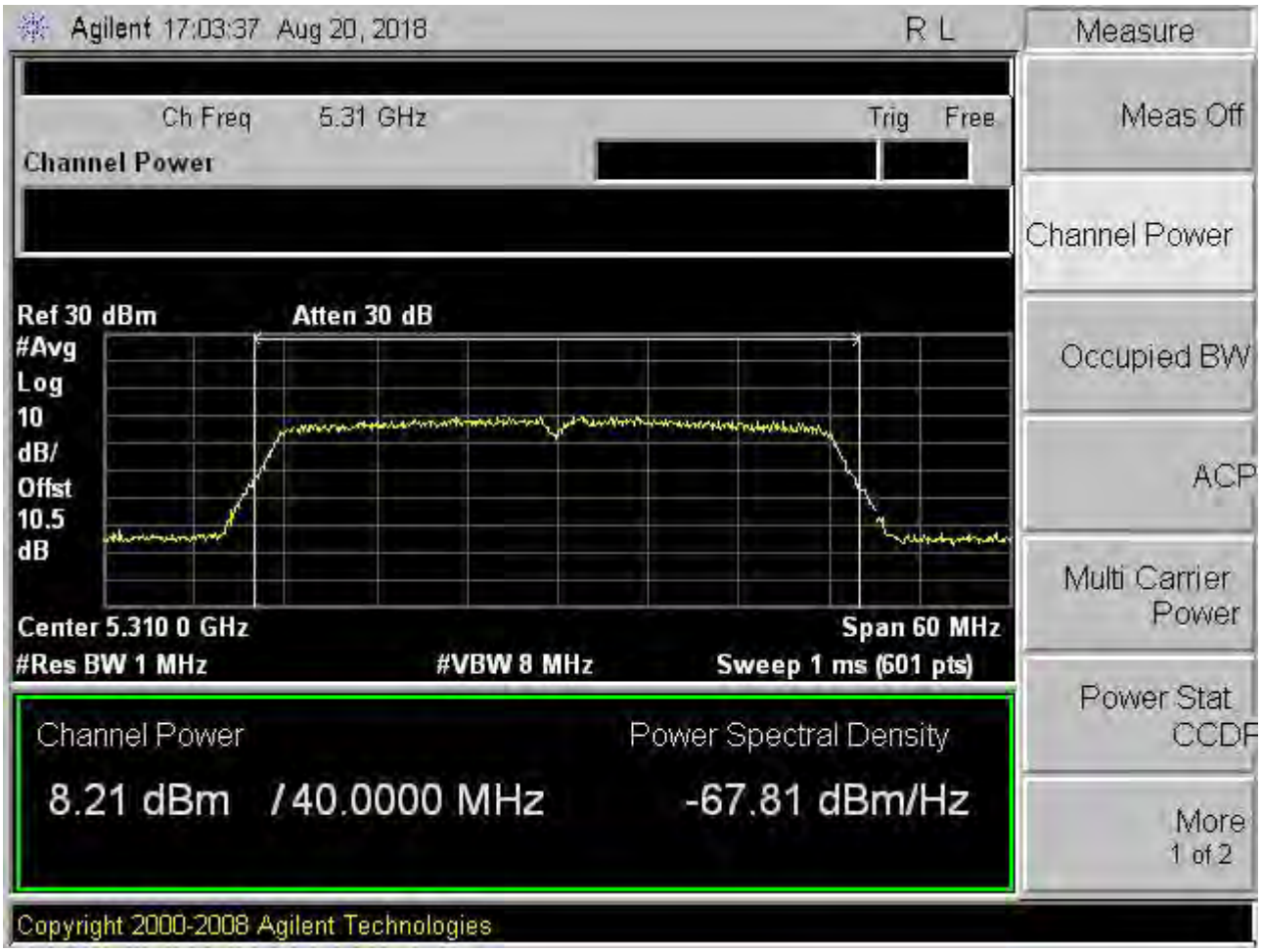
4. Caculated Limit = 11dBm + 10 log (26dB BW)

5. If antenna gain ≦ 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm

6. If antenna gain > 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)

7. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)

Agilent 17:00:02 Aug 20, 2018
R L
Measure
Ch Freq 5.27 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Center 5.270 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Channel Power
8.01 dBm / 40.0000 MHz
Power Spectral Density
-68.01 dBm/Hz
Copyright 2000-2008 Agilent Technologies


Agilent 17:03:37 Aug 20, 2018
R L
Measure
Ch Freq 5.31 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.310 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Channel Power
Power Spectral Density
8.21 dBm / 40.0000 MHz
-67.81 dBm/Hz
More 1 of 2
Copyright 2000-2008 Agilent Technologies

7.4.3.2 CHAIN 1

測試日期: Aug. 20, 2018 環境溫度: 24℃ 環境濕度: 60%

天線增益最大值為 5.6 dBi ，NCC Limit 如下表所示：

Channel	Fixd limit (dBm)	26dB BW (MHz)	Limit (dBm)	Output Power (dBm)	NCC Limit (dBm)	Chart
L	24	40.935	27.12	7.12	24	Page 70
H	24	40.430	27.07	7.41	24	Page 71

註：1. 繪圖資料請參考第 70-71 頁。
2. 最大傳導輸出功率(Maximum Output Power) 為經儀器校正補償過後的結果值。
3. Fixed Limit = 250mW=24dBm
4. Caculated Limit = 11dBm + 10 log (26dB BW)
5. If antenna gain ≦ 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm
6. If antenna gain > 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)
7. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)

Agilent 17:01:14 Aug 20, 2018
R L
Measure
Ch Freq 5.27 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Center 5.270 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Channel Power
7.12 dBm / 40.0000 MHz
Power Spectral Density
-68.90 dBm/Hz
Copyright 2000-2008 Agilent Technologies

Agilent 17:02:42 Aug 20, 2018
R L
Measure
Ch Freq 5.31 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Center 5.310 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Channel Power
7.41 dBm / 40.0000 MHz
Power Spectral Density
-68.62 dBm/Hz
Copyright 2000-2008 Agilent Technologies

7.4.3.3 CHAIN 0 + CHAIN 1

測試日期: Aug. 20, 2018 環境溫度: 24℃ 環境濕度: 60%

Ant 1 / Ant 2 combination 天線增益最大值為 8.32 dBi，NCC Limit 如下表所示：

Channel	CHAIN 0 Maximum Output Power (dBm)	CHAIN 1 Maximum Output Power (dBm)	TOTAL Power (dBm)	NCC Limit (dBm)	Chart
L	8.01	7.12	10.60	21.68	-
H	8.21	7.41	10.84	21.68	-

註: 1. 最大發射輸出功率 (Maximum Output Power) 為經儀器校正補償過後的結果值。

2. Fixed Limit = 250mW = 24dBm

3. Caculated Limit = 4dBm + 10 log (26dB BW)

4. If antenna gain ≦ 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm

5. If antenna gain > 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)

6. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)

7.4.4 調變技術: IEEE 802.11ac (20MHz)

7.4.4.1 CHAIN 0

測試日期: Aug. 20, 2018 環境溫度: 24℃ 環境濕度: 60%

天線增益最大值為 5 dBi ，NCC Limit 如下表所示：

Channel	Fixd limit (dBm)	26dB BW (MHz)	Limit (dBm)	Output Power (dBm)	NCC Limit (dBm)	Chart
L	24	20.149	24.04	7.67	24	Page 74
M	24	20.140	24.04	8.35	24	Page 75
H	24	20.042	24.02	8.36	24	Page 76

註：1. 繪圖資料請參考第 74-76 頁。
2. 最大傳導輸出功率(Maximum Output Power) 為經儀器校正補償過後的結果值。
3. Fixed Limit = 250mW=24dBm
4. Caculated Limit = 11dBm + 10 log (26dB BW)
5. If antenna gain ≦ 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm
6. If antenna gain > 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)
7. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)

Agilent 17:36:50 Aug 20, 2018
R L
Measure
Ch Freq 5.26 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Center 5.260 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Channel Power
7.67 dBm / 20.0000 MHz
Power Spectral Density
-65.34 dBm/Hz
Copyright 2000-2008 Agilent Technologies

Agilent 17:52:02 Aug 20, 2018
R L
Sweep
Ch Freq 5.3 GHz
Trig Free
Channel Power
Sweep Time
1.000 ms
Auto Man
Sweep
Single Cont
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Auto Sweep Time
Norm Accy
Gate
On Off
Gate Setup
Center 5.300 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Points
601
Channel Power
Power Spectral Density
8.35 dBm / 20.0000 MHz
-64.66 dBm/Hz
Copyright 2000-2008 Agilent Technologies

Agilent 17:55:41 Aug 20, 2018
R L
System
Ch Freq 5.32 GHz
Trig Free
Channel Power
Show Errors
Power On/ Preset
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Time/Date
Alignments
Config I/O
Center 5.320 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Reference
Channel Power
Power Spectral Density
8.36 dBm / 20.0000 MHz
-64.65 dBm/Hz
More
1 of 3
Copyright 2000-2008 Agilent Technologies

7.4.4.2 CHAIN 1

測試日期: Aug. 20, 2018 環境溫度: 24℃ 環境濕度: 60%

天線增益最大值為 5.6 dBi ，NCC Limit 如下表所示：

Channel	Fixd limit (dBm)	26dB BW (MHz)	Limit (dBm)	Output Power (dBm)	NCC Limit (dBm)	Chart
L	24	20.339	24.08	7.08	24	Page 78
M	24	20.294	24.07	7.32	24	Page 79
H	24	20.479	24.11	7.48	24	Page 80

註：1. 繪圖資料請參考第 78-80 頁。

2. 最大傳導輸出功率(Maximum Output Power) 為經儀器校正補償過後的結果值。

3. Fixed Limit = 250mW=24dBm

4. Caculated Limit = 11dBm + 10 log (26dB BW)

5. If antenna gain ≦ 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm

6. If antenna gain > 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)

7. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)

Agilent 17:48:57 Aug 20, 2018
R L
Measure
Ch Freq 5.26 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.260 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Channel Power
Power Spectral Density
7.08 dBm /20.0000 MHz
-65.93 dBm/Hz
More 1 of 2
Copyright 2000-2008 Agilent Technologies

Agilent 17:46:00 Aug 20, 2018
R L
Measure
Ch Freq 5.3 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Center 5.300 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Channel Power
7.32 dBm / 20.0000 MHz
Power Spectral Density
-65.69 dBm/Hz
Copyright 2000-2008 Agilent Technologies

Agilent 17:44:13 Aug 20, 2018
R L
Measure
Ch Freq 5.32 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Center 5.320 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Channel Power
7.48 dBm / 20.0000 MHz
Power Spectral Density
-65.53 dBm/Hz
Copyright 2000-2008 Agilent Technologies

7.4.4.3 CHAIN 0 + CHAIN 1

測試日期: Aug. 20, 2018 環境溫度: 24℃ 環境濕度: 60%

Ant 1 / Ant 2 combination 天線增益最大值為 8.32 dBi，NCC Limit 如下表所示：

Channel	CHAIN 0 Maximum Output Power (dBm)	CHAIN 1 Maximum Output Power (dBm)	TOTAL Power (dBm)	NCC Limit (dBm)	Chart
L	7.67	7.08	10.40	21.68	-
M	8.35	7.32	10.88	21.68	-
H	8.36	7.48	10.95	21.68	-

註: 1. 最大發射輸出功率 (Maximum Output Power) 為經儀器校正補償過後的結果值。

2. Fixed Limit = 250mW=24dBm

3. Caculated Limit = 11dBm + 10 log (26dB BW)

4. If antenna gain ≦ 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm

5. If antenna gain > 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)

6. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)

7.4.5 調變技術: IEEE 802.11ac (40MHz)

7.4.5.1 CHAIN 0

測試日期: Aug. 20, 2018 環境溫度: 24℃ 環境濕度: 60%

天線增益最大值為 5 dBi ，NCC Limit 如下表所示：

Channel	Fixd limit (dBm)	26dB BW (MHz)	Limit (dBm)	Output Power (dBm)	NCC Limit (dBm)	Chart
L	24	40.380	27.06	7.93	24	Page 83
H	24	40.182	27.04	8.19	24	Page 84

註：1. 繪圖資料請參考第 83-84 頁。
2. 最大傳導輸出功率(Maximum Output Power) 為經儀器校正補償過後的結果值。
3. Fixed Limit = 250mW=24dBm
4. Caculated Limit = 11dBm + 10 log (26dB BW)
5. If antenna gain ≦ 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm
6. If antenna gain > 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)
7. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)

Agilent 16:30:54 Aug 20, 2018
R L
Measure
Ch Freq 5.27 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Center 5.270 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Channel Power
Power Spectral Density
7.93 dBm / 40.0000 MHz
-68.09 dBm/Hz
Copyright 2000-2008 Agilent Technologies

Agilent 16:49:29 Aug 20, 2018
R L
Measure
Ch Freq 5.31 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Center 5.310 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Channel Power
8.19 dBm / 40.0000 MHz
Power Spectral Density
-67.83 dBm/Hz
Copyright 2000-2008 Agilent Technologies

7.4.5.2 CHAIN 1

測試日期: Aug. 20, 2018 環境溫度: 24℃ 環境濕度: 60%

天線增益最大值為 5.6 dBi ，NCC Limit 如下表所示：

Channel	Fixd limit (dBm)	26dB BW (MHz)	Limit (dBm)	Output Power (dBm)	NCC Limit (dBm)	Chart
L	24	40.935	27.12	7.08	24	Page 86
H	24	40.430	27.07	7.31	24	Page 87

註：1. 繪圖資料請參考第 86-87 頁。

2. 最大傳導輸出功率(Maximum Output Power) 為經儀器校正補償過後的結果值。

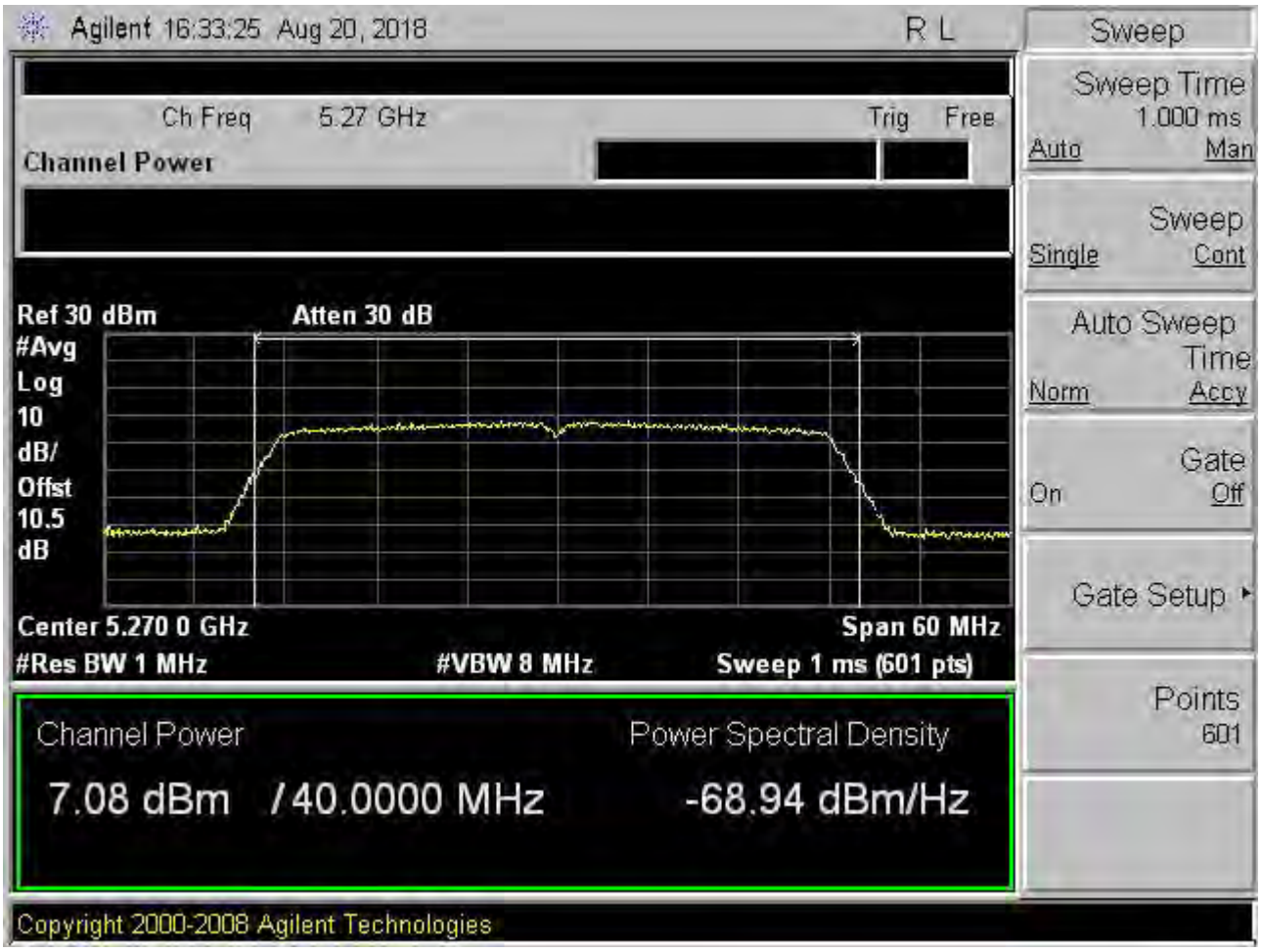
3. Fixed Limit = 250mW=24dBm

4. Caculated Limit = 11dBm + 10 log (26dB BW)

5. If antenna gain ≦ 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm

6. If antenna gain > 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)

7. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)


Agilent 16:33:25 Aug 20, 2018
R L
Ch Freq 5.27 GHz
Trig Free
Channel Power
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Center 5.270 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Channel Power
7.08 dBm / 40.0000 MHz
Power Spectral Density
-68.94 dBm/Hz
Sweep
Sweep Time
1.000 ms
Auto
Man
Sweep
Single
Cont
Auto Sweep Time
Norm
Accy
Gate
On
Off
Gate Setup
Points
601
Copyright 2000-2008 Agilent Technologies

Agilent 16:39:04 Aug 20, 2018
R L
Measure
Ch Freq 5.31 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Center 5.310 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 8 MHz
Sweep 1 ms (601 pts)
Channel Power
7.31 dBm / 40.0000 MHz
Power Spectral Density
-68.71 dBm/Hz
Copyright 2000-2008 Agilent Technologies

7.4.5.3 CHAIN 0 + CHAIN 1

測試日期: Aug. 20, 2018 環境溫度: 24℃ 環境濕度: 60%

Ant 1 / Ant 2 combination 天線增益最大值為 8.32 dBi，NCC Limit 如下表所示：

Channel	CHAIN 0 Maximum Output Power (dBm)	CHAIN 1 Maximum Output Power (dBm)	TOTAL Power (dBm)	NCC Limit (dBm)	Chart
L	7.93	7.08	10.54	21.68	-
H	8.19	7.31	10.78	21.68	-

註: 1. 最大發射輸出功率 (Maximum Output Power) 為經儀器校正補償過後的結果值。

2. Fixed Limit = 250mW=24dBm

3. Caculated Limit = 11dBm + 10 log (26dB BW)

4. If antenna gain ≦ 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm

5. If antenna gain > 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)

6. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)

7.4.6 調變技術: IEEE 802.11ac (80MHz)

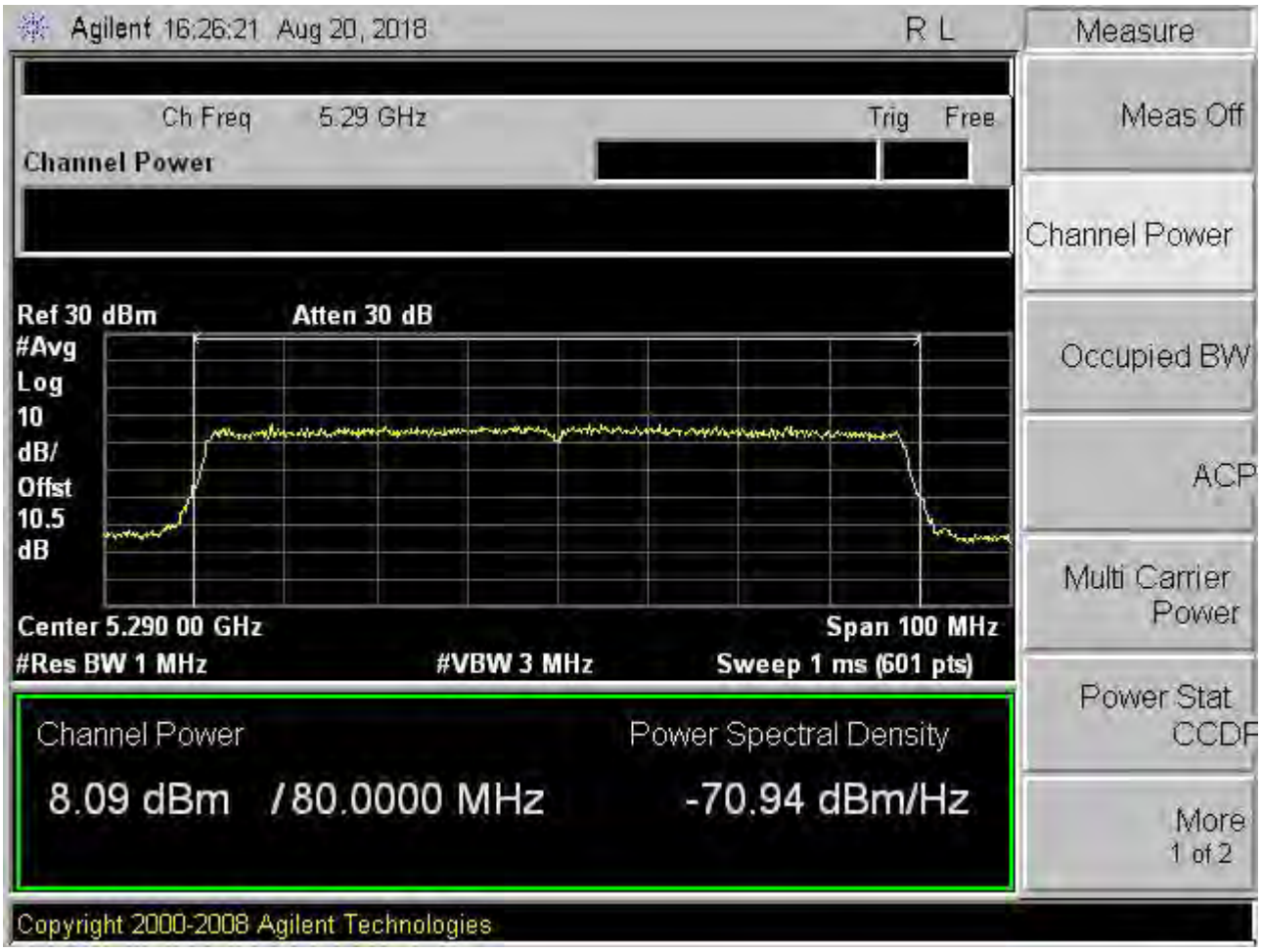
7.4.6.1 CHAIN 0

測試日期: Aug. 20, 2018 環境溫度: 24℃ 環境濕度: 60%

天線增益最大值為 5 dBi ，NCC Limit 如下表所示：

Channel	Fixd limit (dBm)	26dB BW (MHz)	Limit (dBm)	Output Power (dBm)	NCC Limit (dBm)	Chart
L	24	81.259	30.1	8.09	24	Page 90

註：1. 繪圖資料請參考第 90 頁。
2. 最大傳導輸出功率(Maximum Output Power) 為經儀器校正補償過後的結果值。
3. Fixed Limit = 250mW=24dBm
4. Caculated Limit = 11dBm + 10 log (26dB BW)
5. If antenna gain ≦ 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm
6. If antenna gain > 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)
7. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)


Agilent 16:26:21 Aug 20, 2018
R L
Measure
Ch Freq 5.29 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Center 5.290 00 GHz
Span 100 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
8.09 dBm /80.0000 MHz
Power Spectral Density
-70.94 dBm/Hz
Copyright 2000-2008 Agilent Technologies

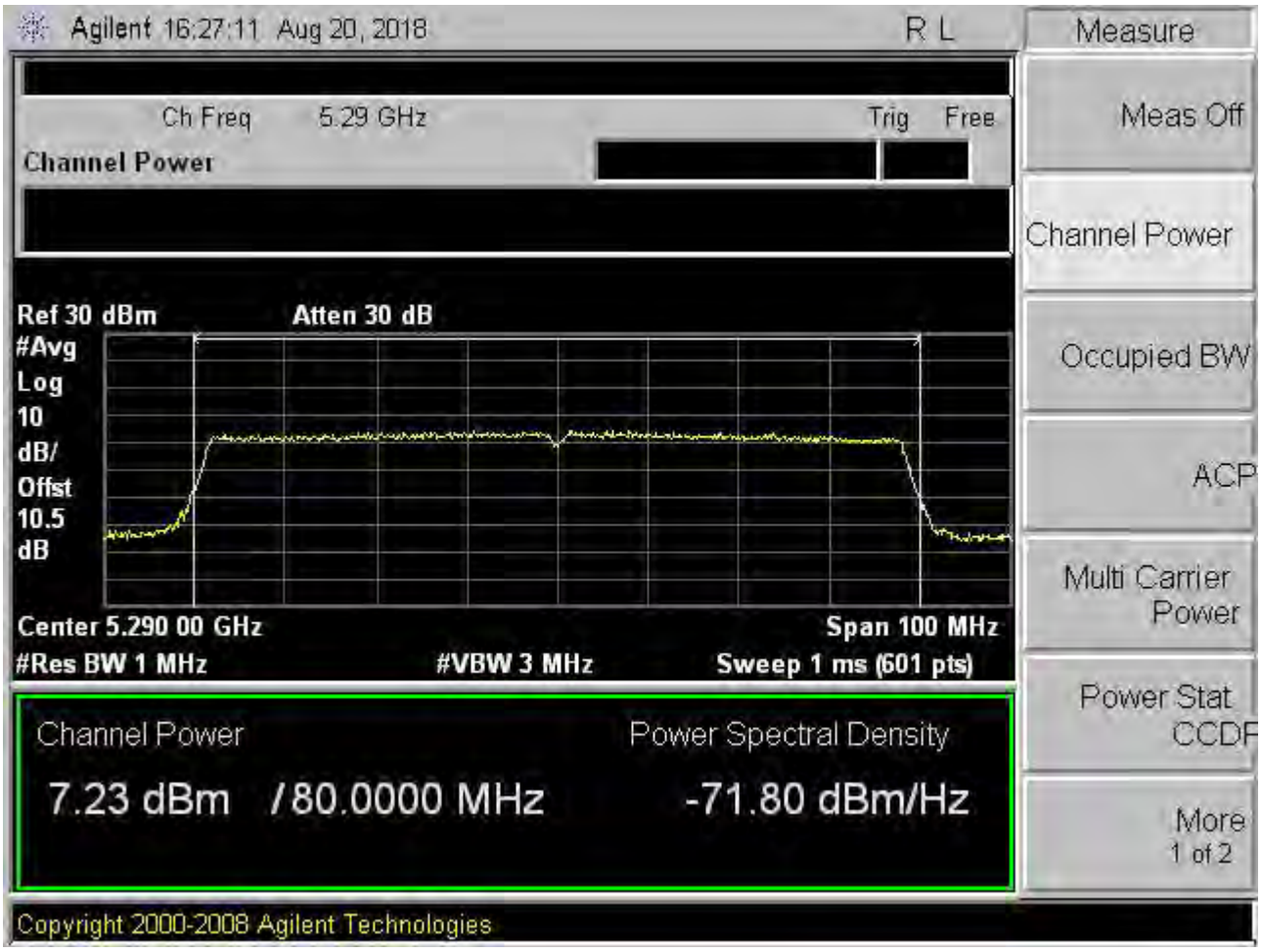
7.4.6.2 CHAIN1

測試日期: Aug. 20, 2018 環境溫度: 24℃ 環境濕度: 60%

天線增益最大值為 5.6 dBi ，NCC Limit 如下表所示：

Channel	Fixd limit (dBm)	26dB BW (MHz)	Limit (dBm)	Output Power (dBm)	NCC Limit (dBm)	Chart
L	24	81.180	30.09	7.23	24	Page 92

註：1. 繪圖資料請參考第 92 頁。
2. 最大傳導輸出功率(Maximum Output Power) 為經儀器校正補償過後的結果值。
3. Fixed Limit = 250mW=24dBm
4. Caculated Limit = 11dBm + 10 log (26dB BW)
5. If antenna gain ≦ 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm
6. If antenna gain > 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)
7. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)


Agilent 16:27:11 Aug 20, 2018
R L
Measure
Ch Freq 5.29 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Ref 30 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
10.5
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.290 00 GHz
Span 100 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Channel Power
Power Spectral Density
7.23 dBm /80.0000 MHz
-71.80 dBm/Hz
More 1 of 2
Copyright 2000-2008 Agilent Technologies

7.4.6.3 CHAIN 0 + CHAIN 1

測試日期: Aug. 20, 2018 環境溫度: 24℃ 環境濕度: 60%

Ant 1 / Ant 2 combination 天線增益最大值為 8.32 dBi，NCC Limit 如下表所示：

Channel	CHAIN 0 Maximum Output Power (dBm)	CHAIN 1 Maximum Output Power (dBm)	TOTAL Power (dBm)	NCC Limit (dBm)	Chart
L	8.09	7.23	10.69	21.68	-

註: 1. 最大發射輸出功率 (Maximum Output Power) 為經儀器校正補償過後的結果值。

2. Fixed Limit = 250mW=24dBm

3. Caculated Limit = 4dBm + 10 log (26dB BW)

4. If antenna gain ≦ 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm

5. If antenna gain > 6dBi, NCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)

6. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)

7.5 結果判定

高、中、低頻段的最大傳導輸出功率皆低於限制值。

8 功率密度之量測

8.1 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4.7.3.2節(2)(3)之規定:

(1) 最大功率頻譜密度在任何 1 MHz 頻帶中應小於或等於 11 dBm。

(2) 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力率及最大功率頻譜密度。

8.2 量測功率密度之配置

如圖 2 所示。

8.3 量測功率密度之儀器

儀器名稱	製造者	型　　號
Spectrum Analyzer	Agilent	E4446A
Attenuator	WEINSCHEL	56-10

測試軟體: LZ-RF (Ver. ETC-3A2)

8.4 量測結果

測試工程師: 羅世勇

8.4.1 調變技術: IEEE 802.11a

測試日期: Aug. 09, 2018 環境溫度: 24℃ 環境濕度: 60%

天線增益最大值為 5 dBi ，NCC Limit 如下表所示：

Channel	Power Spectral Density (dBm)	NCC Limit (dBm)	Chart
L	3.58	11	Page 96
M	3.78	11	Page 97
H	4.15	11	Page 98

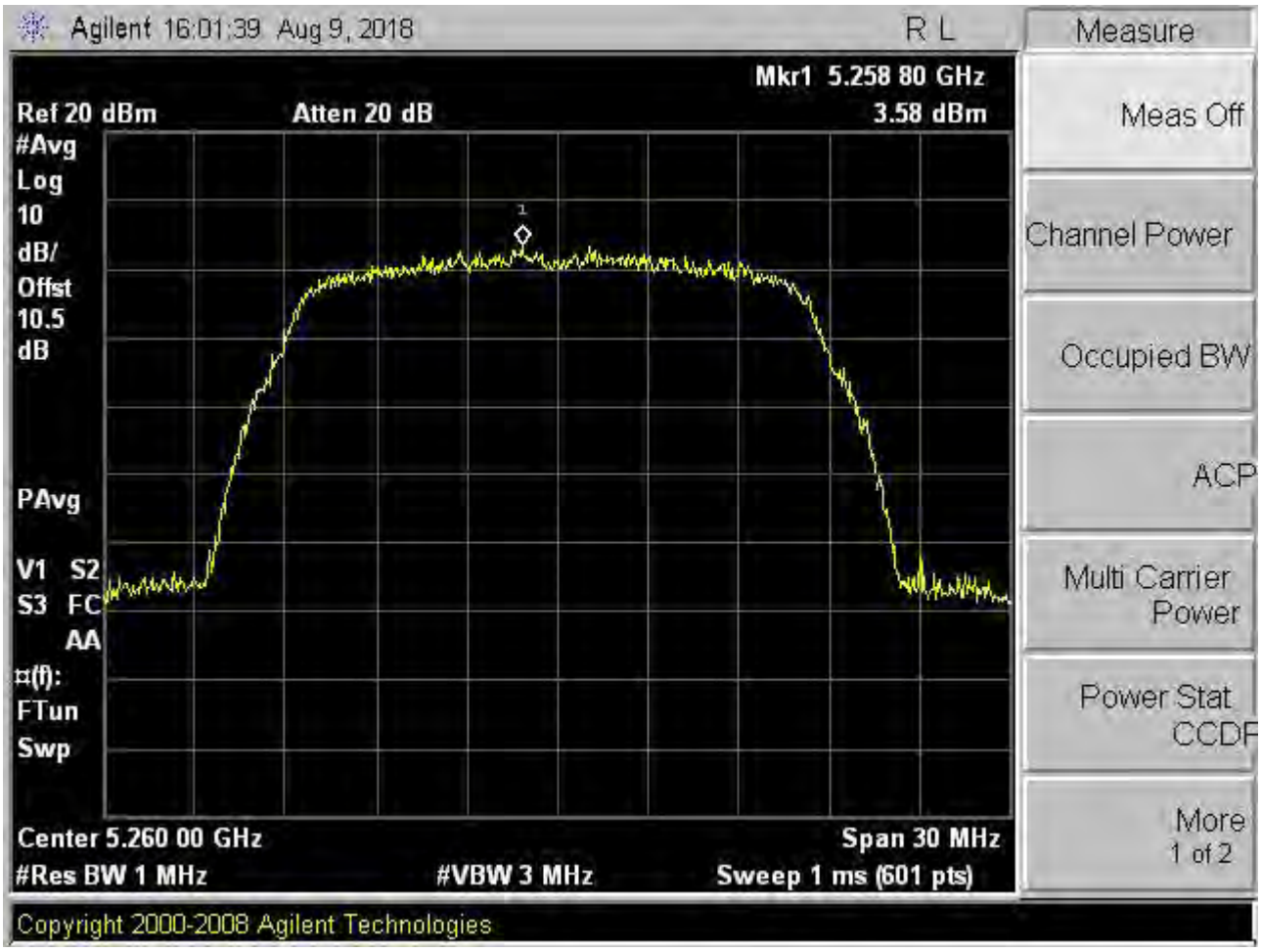
註：1. 繪圖資料請參考第 96-98 頁。

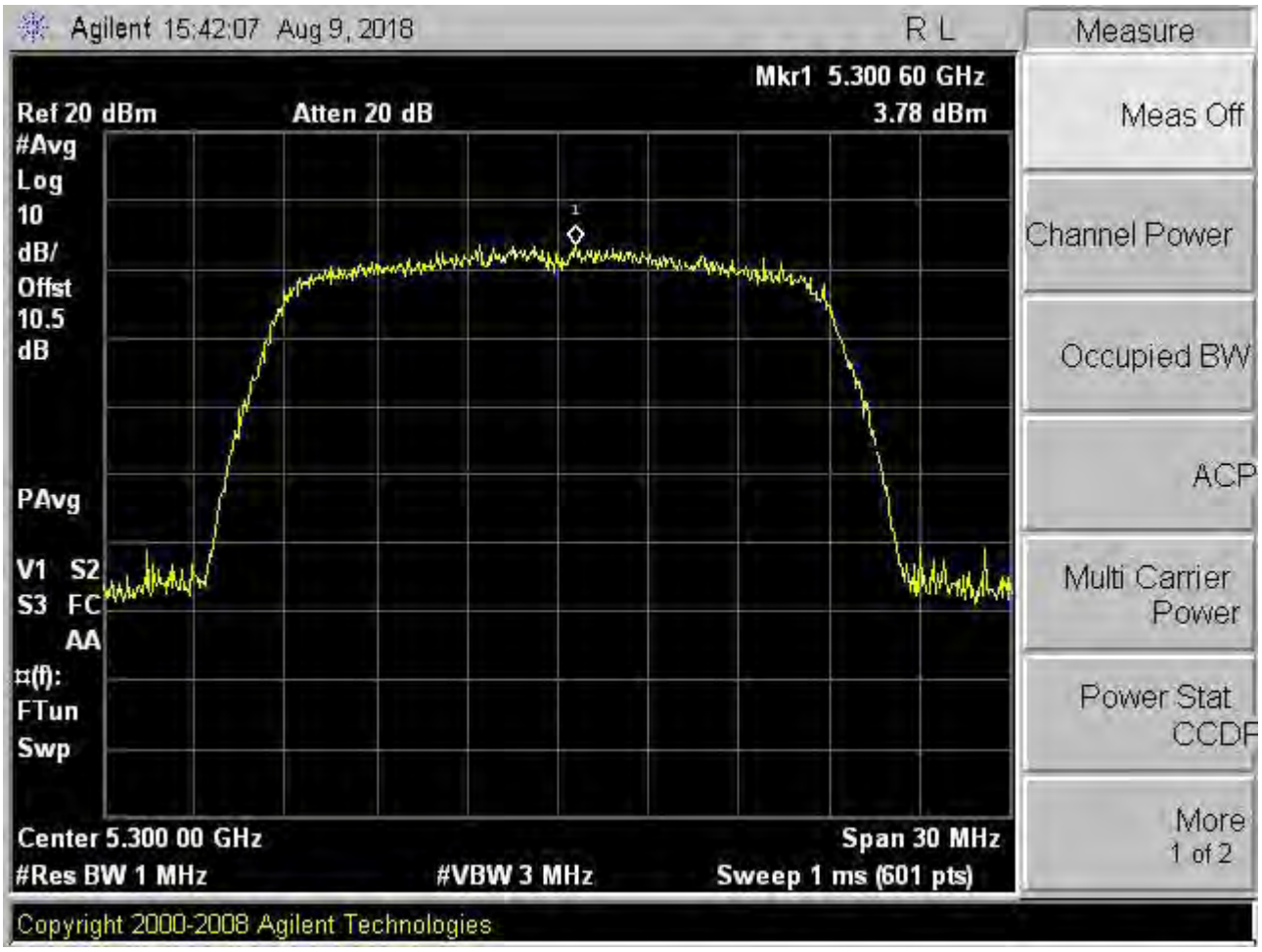
2. 功率頻譜密度 (Power Spectral Density) 為經儀器校正補償過後的結果值。

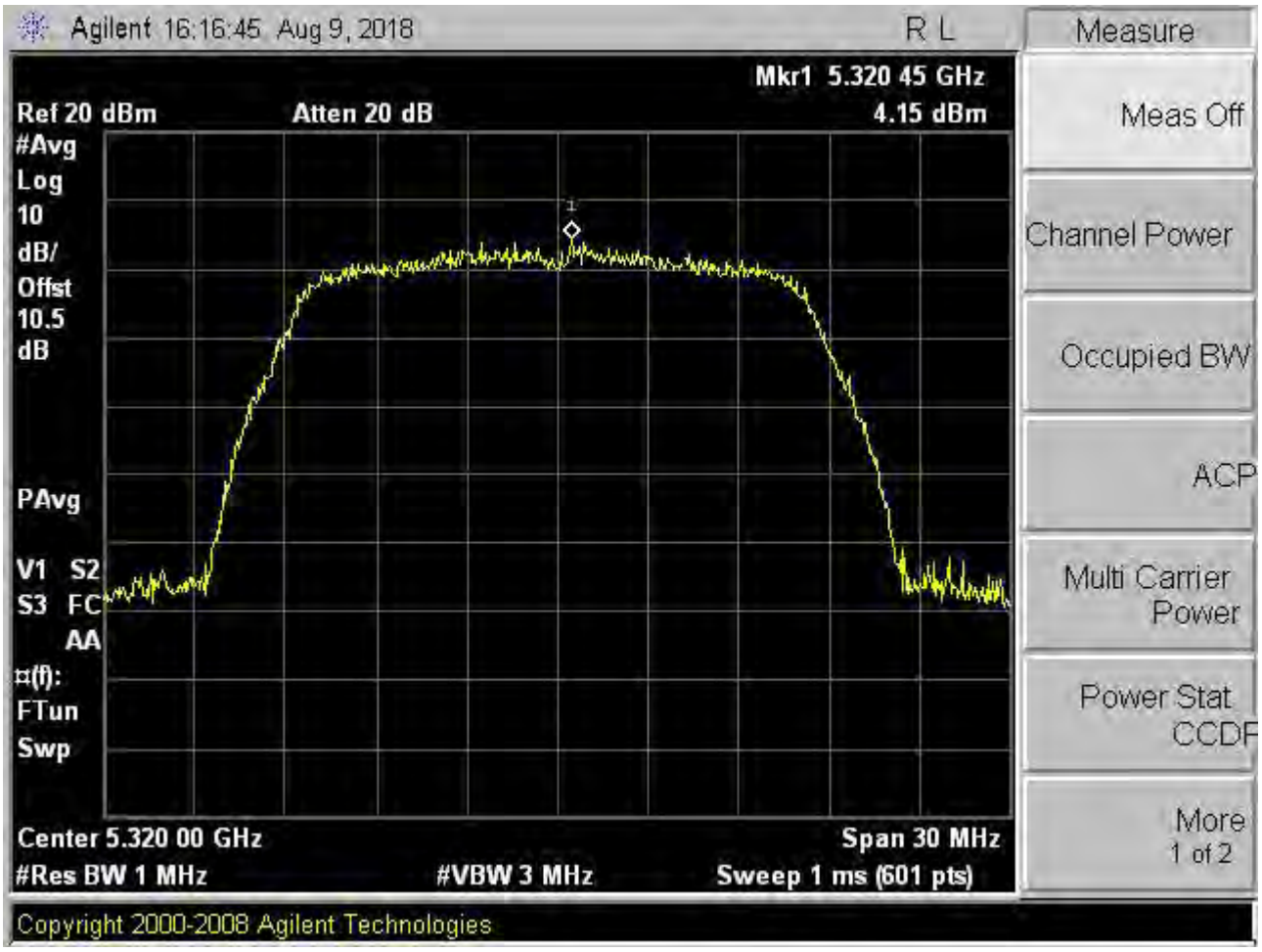
3. If antenna gain ≦ 6dBi, NCC Limit = 11dBm

4. If antenna gain > 6dBi, NCC Limit = 11dBm – (highest antenna gain – 6 dBi)

5. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)


Agilent 16:01:39 Aug 9, 2018
R L
Measure
Mkr1 5.258 80 GHz
3.58 dBm
Ref 20 dBm
Atten 20 dB
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 5.260 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 15:42:07 Aug 9, 2018
R L
Measure
Mkr1 5.300 60 GHz
3.78 dBm
Ref 20 dBm
Atten 20 dB
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 5.300 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 16:16:45 Aug 9, 2018
R L
Measure
Mkr1 5.320 45 GHz
Ref 20 dBm
Atten 20 dB
4.15 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 5.320 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

8.4.2 調變技術:IEEE 802.11an HT20

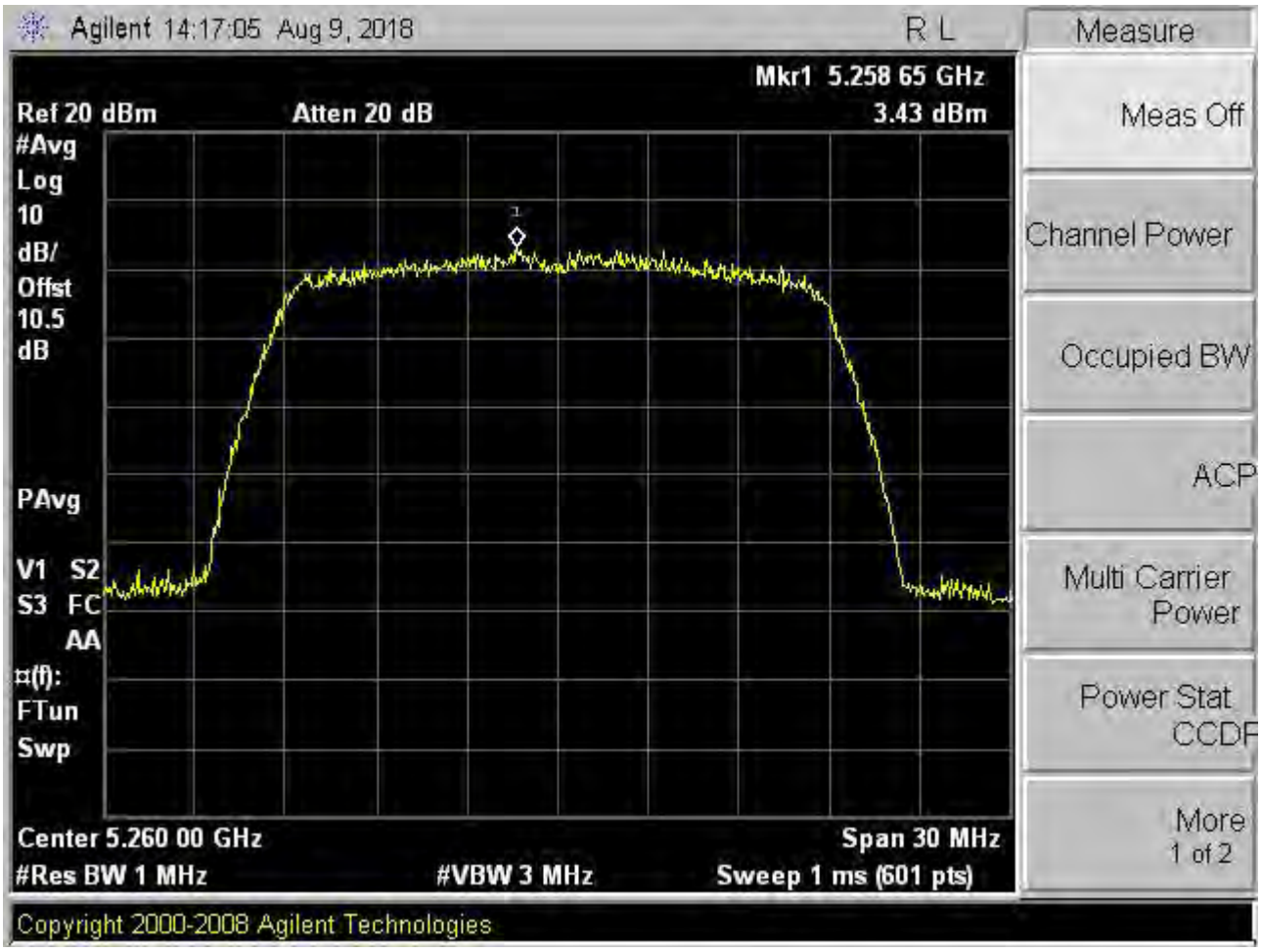
8.4.2.1 CHAIN 0

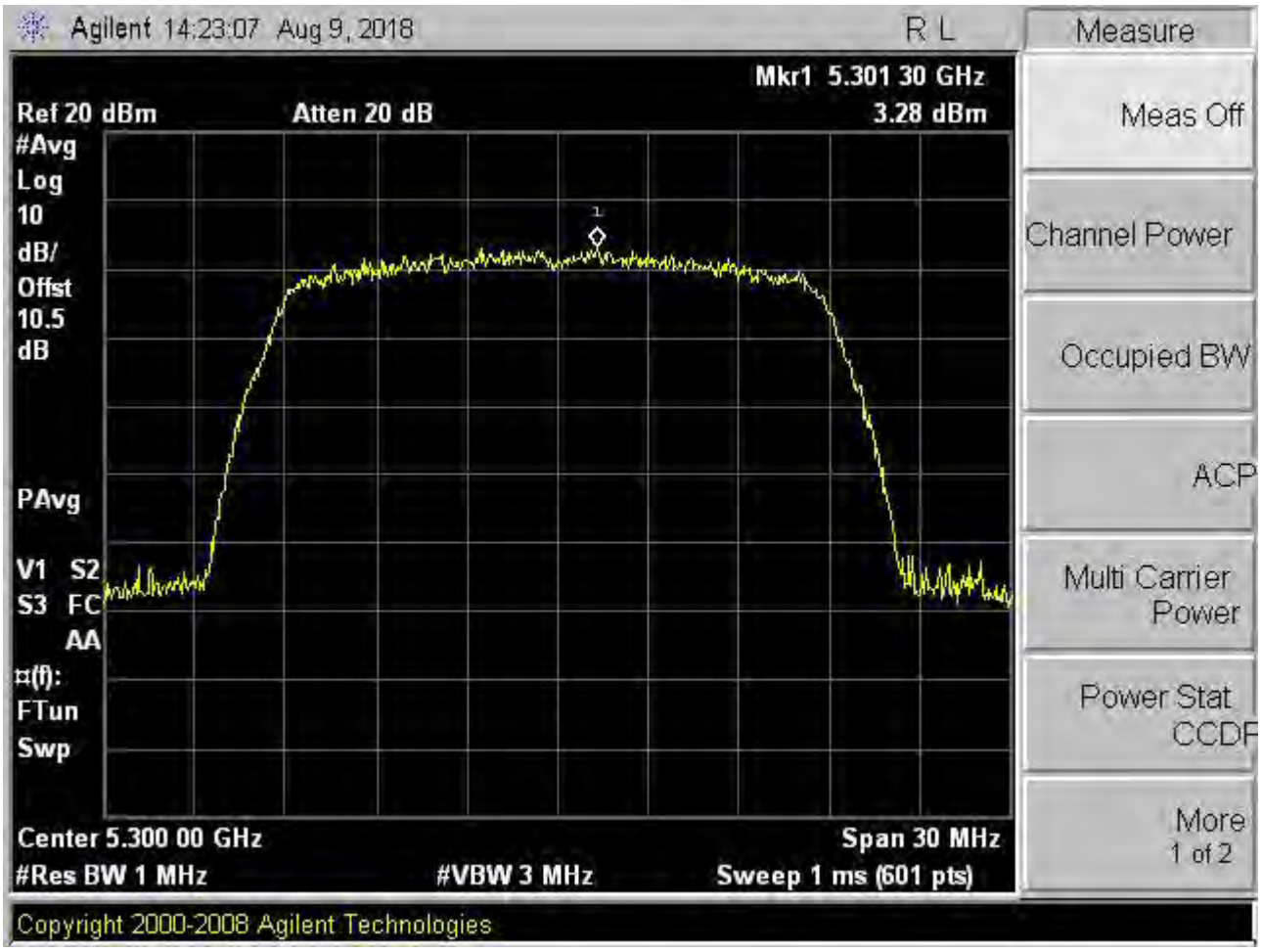
測試日期: Aug. 09, 2018 環境溫度: 24℃ 環境濕度: 60%

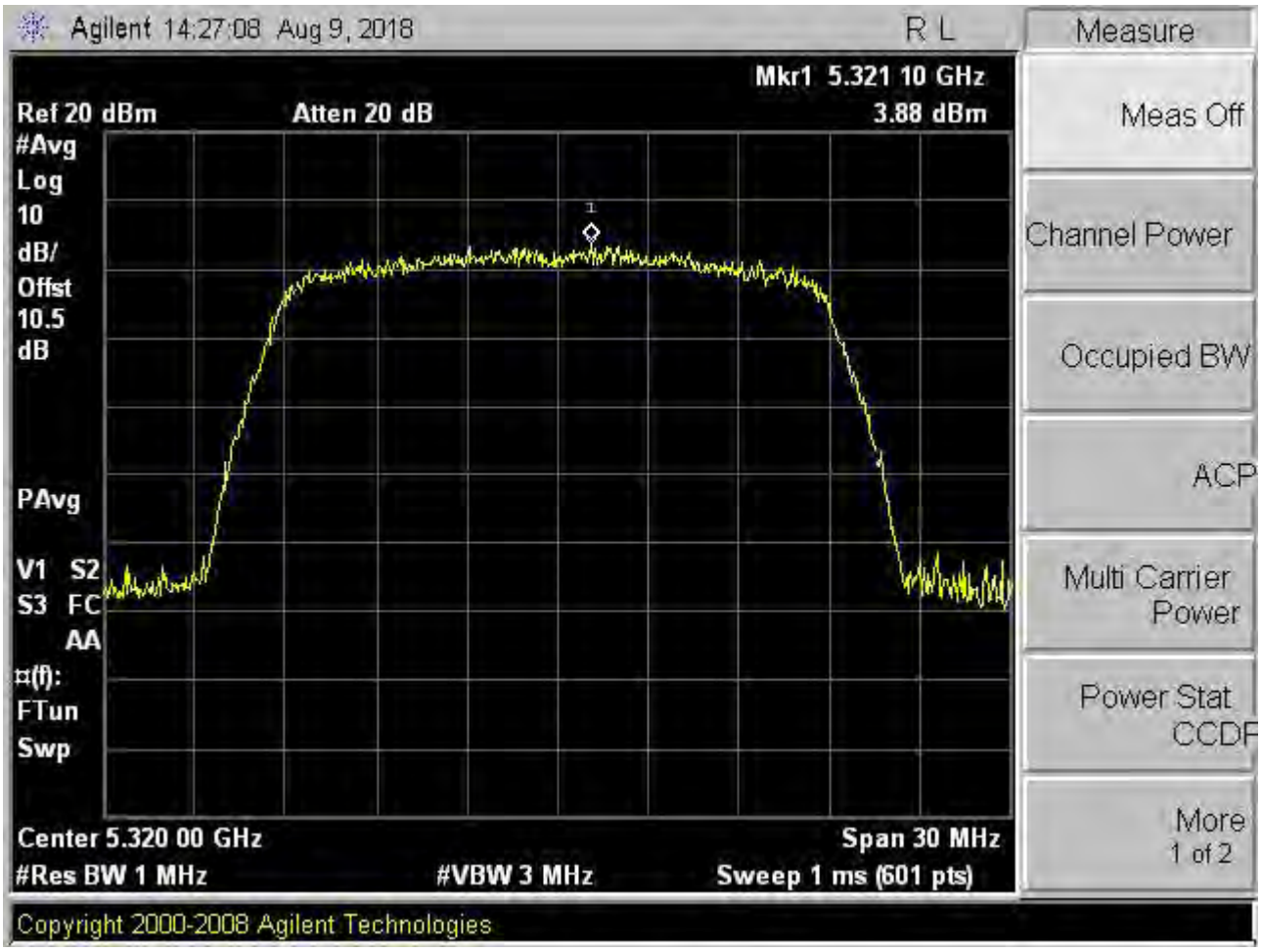
天線增益最大值為 5 dBi ，NCC Limit 如下表所示：

Channel	Power Spectral Density (dBm)	NCC Limit (dBm)	Chart
L	3.43	11	Page 100
M	3.28	11	Page 101
H	3.88	11	Page 102

註：1. 繪圖資料請參考第 100-102 頁。
2. 功率頻譜密度 (Power Spectral Density) 為經儀器校正補償過後的結果值。
3. If antenna gain ≦ 6dBi, NCC Limit = 11 dBm
4. If antenna gain > 6dBi, NCC Limit = 11 dBm – (highest antenna gain – 6 dBi)
5. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)


Agilent 14:17:05 Aug 9, 2018
R L
Measure
Mkr1 5.258 65 GHz
Ref 20 dBm
Atten 20 dB
3.43 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Center 5.260 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Copyright 2000-2008 Agilent Technologies


Agilent 14:23:07 Aug 9, 2018
R L
Measure
Mkr1 5.301 30 GHz
3.28 dBm
Ref 20 dBm
Atten 20 dB
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 5.300 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 14:27:08 Aug 9, 2018
R L
Measure
Mkr1 5.321 10 GHz
3.88 dBm
Ref 20 dBm
Atten 20 dB
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 5.320 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

8.4.2.2 CHAIN 1

測試日期: Aug. 09, 2018 環境溫度: 24℃ 環境濕度: 60%

天線增益最大值為 5.6 dBi ，NCC Limit 如下表所示：

Channel	Power Spectral Density (dBm)	NCC Limit (dBm)	Chart
L	0.73	11	Page 104
M	1.27	11	Page 105
H	1.18	11	Page 106

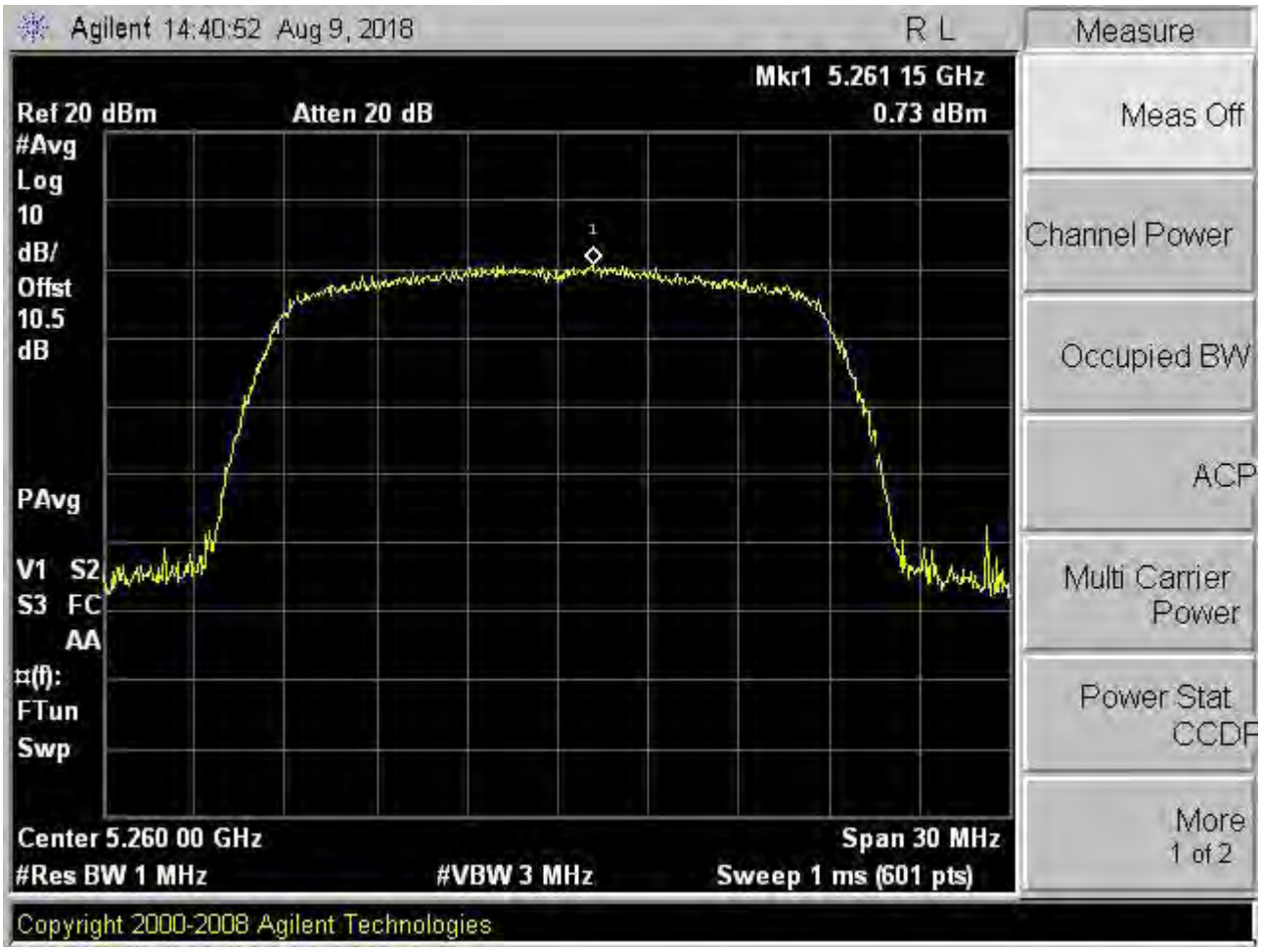
註：1. 繪圖資料請參考第 104-106 頁。

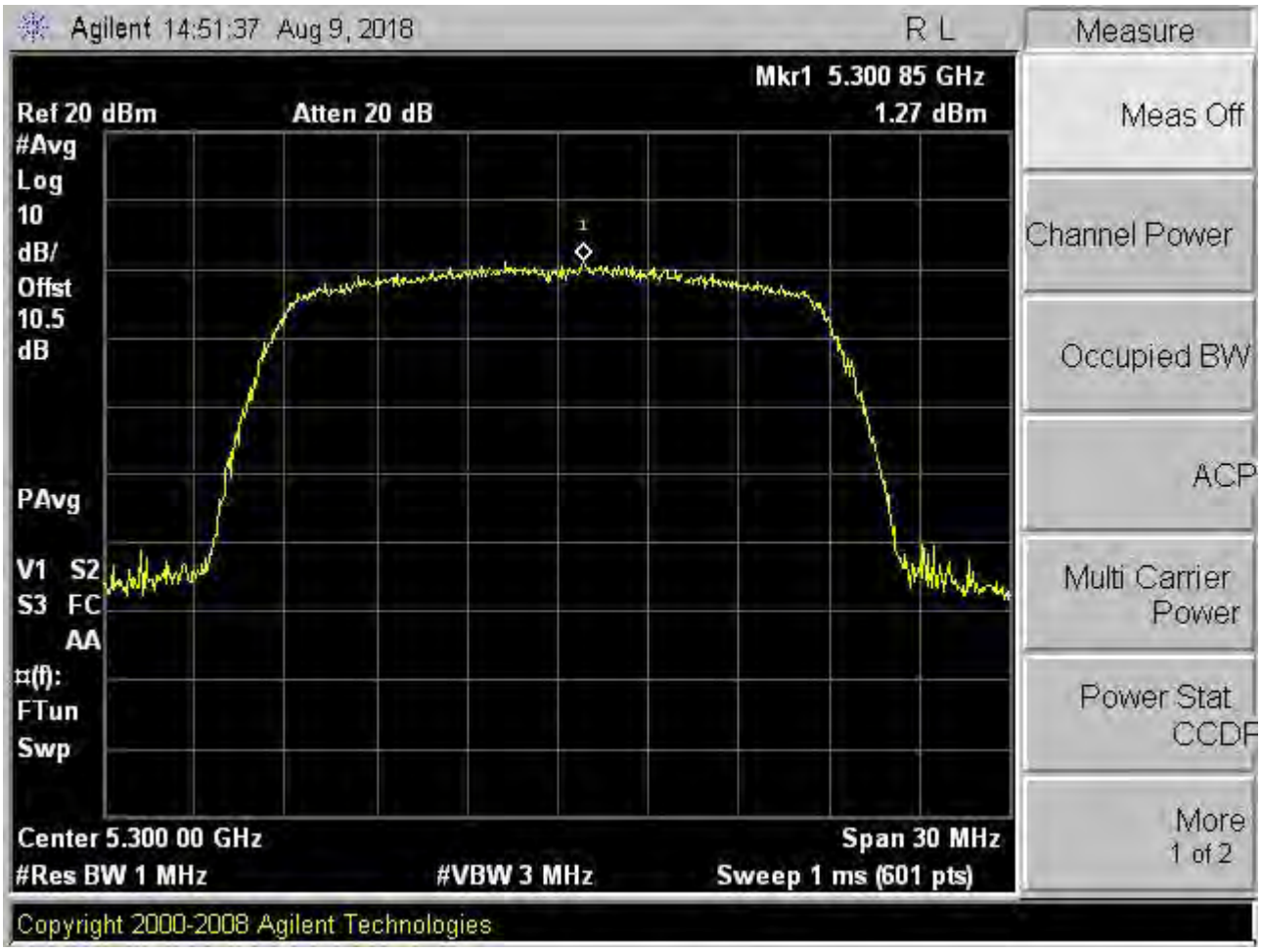
2. 功率頻譜密度 (Power Spectral Density) 為經儀器校正補償過後的結果值。

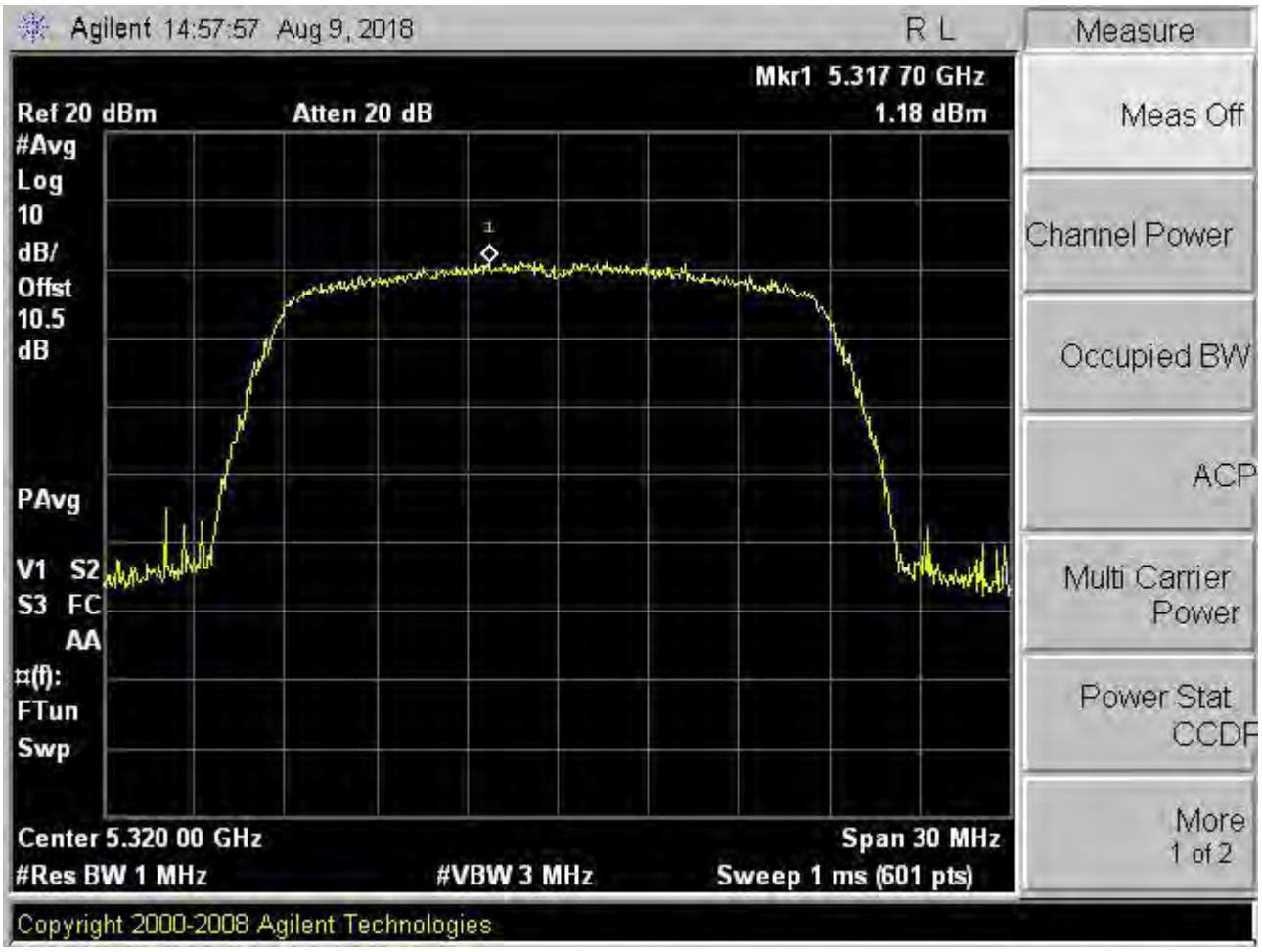
3. If antenna gain ≦ 6dBi, NCC Limit = 11 dBm

4. If antenna gain > 6dBi, NCC Limit = 11 dBm – (highest antenna gain – 6 dBi)

5. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)


Agilent 14:40:52 Aug 9, 2018
R L
Measure
Mkr1 5.261 15 GHz
Ref 20 dBm
Atten 20 dB
0.73 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Center 5.260 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Copyright 2000-2008 Agilent Technologies


Agilent 14:51:37 Aug 9, 2018
R L
Measure
Mkr1 5.300 85 GHz
Ref 20 dBm
Atten 20 dB
1.27 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Center 5.300 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Copyright 2000-2008 Agilent Technologies


Agilent 14:57:57 Aug 9, 2018
R L
Measure
Mkr1 5.317 70 GHz
Ref 20 dBm
Atten 20 dB
1.18 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 5.320 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

8.4.2.3 CHAIN 0 + CHAIN 1

測試日期: Aug. 09, 2018 環境溫度: 24℃ 環境濕度: 60%

Total power density calculation formula:

10 log (10^(Chain 0 PPSD / 10) + 10^(Chain 1 PPSD / 10)

天線增益最大值為 8.32 dBi，NCC Limit 如下表所示：

Channel	Peak Power Spectral Density (dBm)			Total Peak Power Spectral Density (dBm)	NCC Limit (dBm)	Chart
	Chain 0	Chain 1	Chain 2			
L	3.43	0.73	n/a	5.30	8.68	-
M	3.28	1.27	n/a	5.40	8.68	-
H	3.88	1.18	n/a	5.75	8.68	-

註：1.功率頻譜密度 (Power Spectral Density) 為經儀器校正補償過後的結果值。

2. If antenna gain ≦ 6dBi, NCC Limit = 11 dBm

3. If antenna gain > 6dBi, NCC Limit = 11dBm – (highest antenna gain – 6 dBi)

4. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)

8.4.3 調變技術: IEEE 802.11an HT40

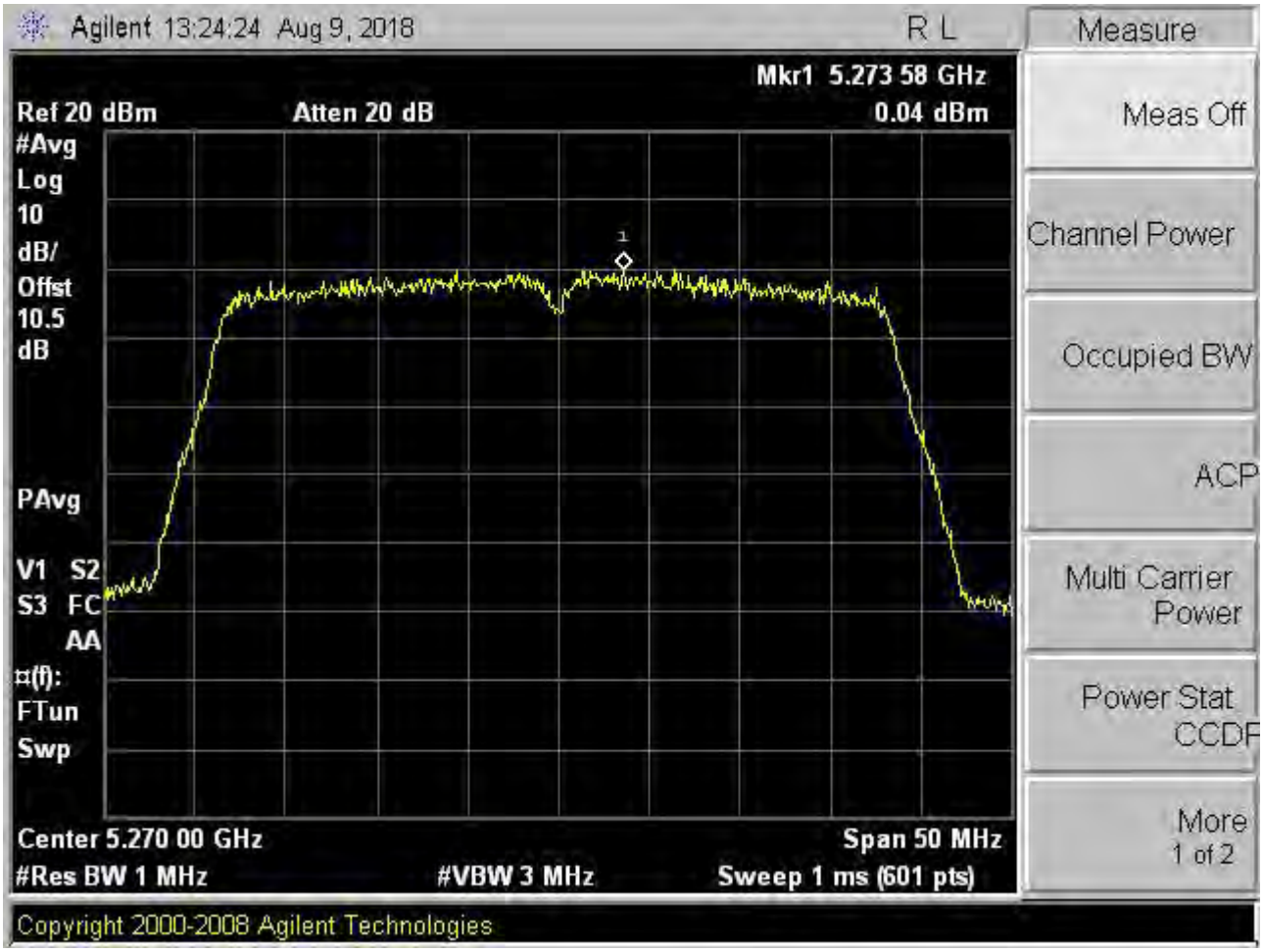
8.4.3.1 CHAIN 0

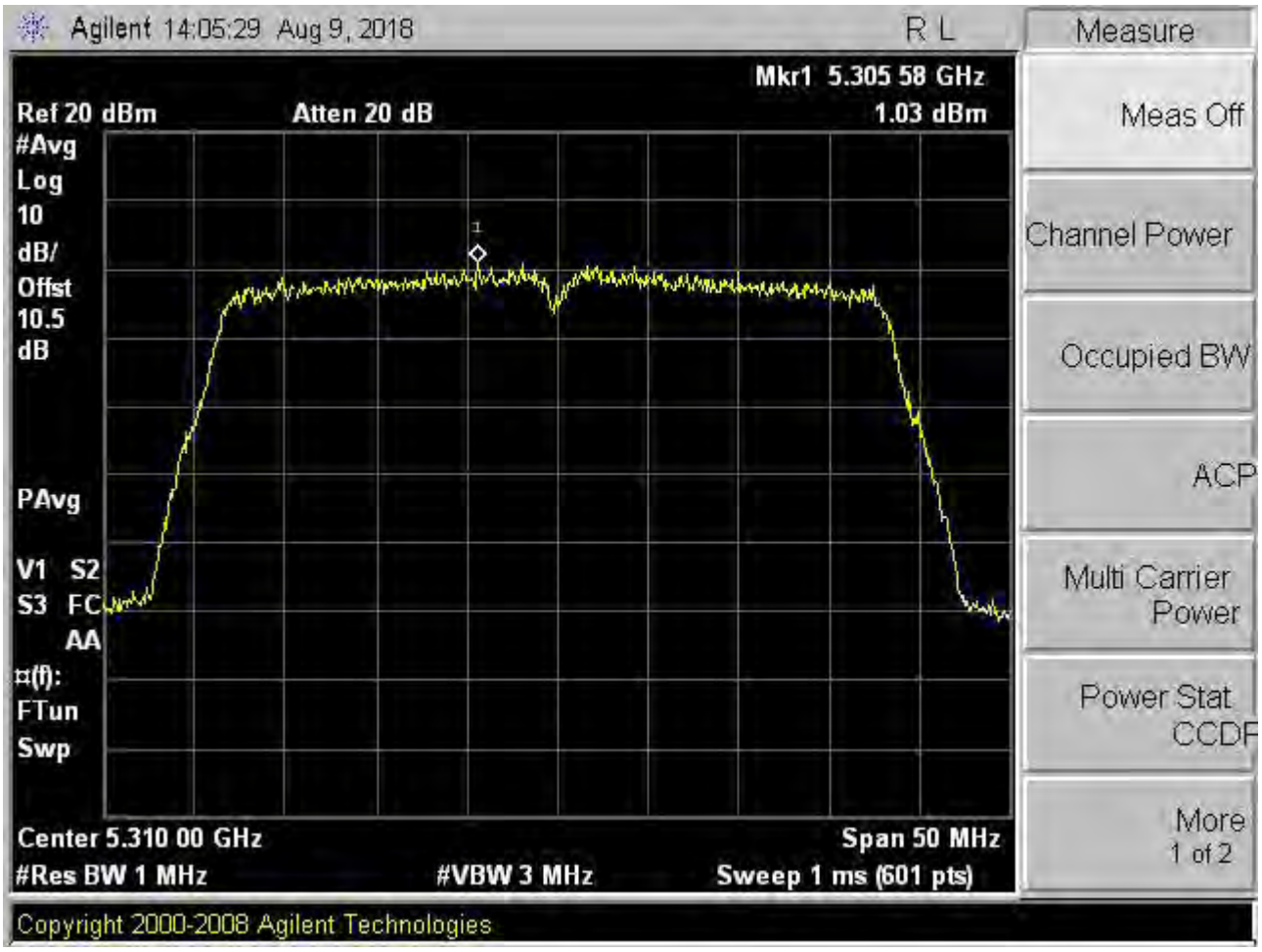
測試日期: Aug. 09, 2018 環境溫度: 24℃ 環境濕度: 60%

天線增益最大值為 5 dBi ，NCC Limit 如下表所示：

Channel	Power Spectral Density (dBm)	NCC Limit (dBm)	Chart
L	0.04	11	Page 109
H	1.03	11	Page 110

註：1. 繪圖資料請參考第 109-110 頁。
2. 功率頻譜密度 (Power Spectral Density) 為經儀器校正補償過後的結果值。
3. If antenna gain ≦ 6dBi, NCC Limit = 11 dBm
4. If antenna gain > 6dBi, NCC Limit = 11 dBm – (highest antenna gain – 6 dBi)
5. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)


Agilent 13:24:24 Aug 9, 2018
R L
Measure
Mkr1 5.273 58 GHz
Ref 20 dBm
Atten 20 dB
0.04 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Center 5.270 00 GHz
Span 50 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Copyright 2000-2008 Agilent Technologies


Agilent 14:05:29 Aug 9, 2018
R L
Measure
Mkr1 5.305 58 GHz
Ref 20 dBm
Atten 20 dB
1.03 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 5.310 00 GHz
Span 50 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

8.4.3.2 CHAIN 1

測試日期: Aug. 09, 2018 環境溫度: 24℃ 環境濕度: 60%

天線增益最大值為 5.6 dBi ，NCC Limit 如下表所示：

Channel	Power Spectral Density (dBm)	NCC Limit (dBm)	Chart
L	-2.08	11	Page 112
H	-2.20	11	Page 113

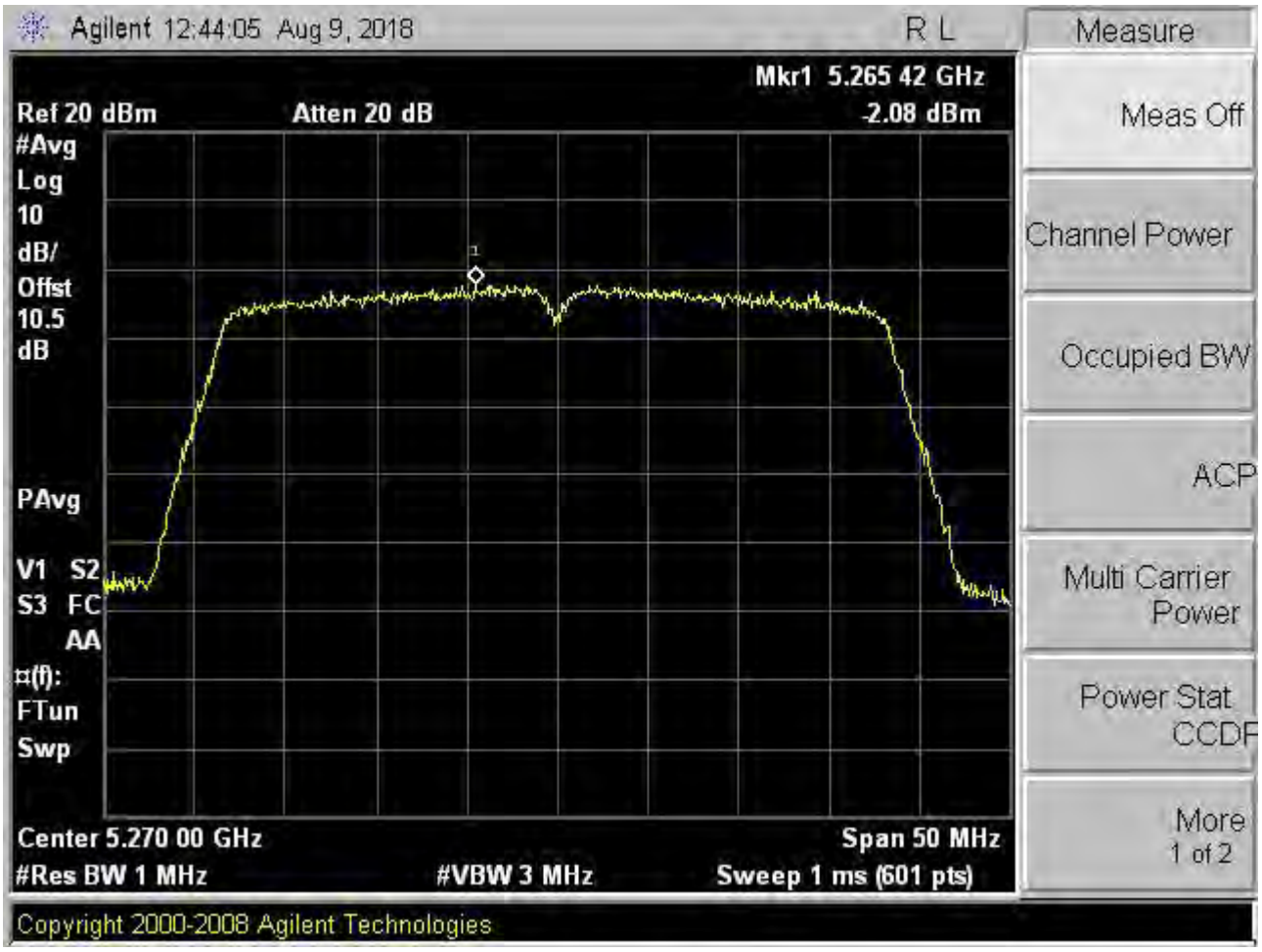
註：1. 繪圖資料請參考第 112-113 頁。

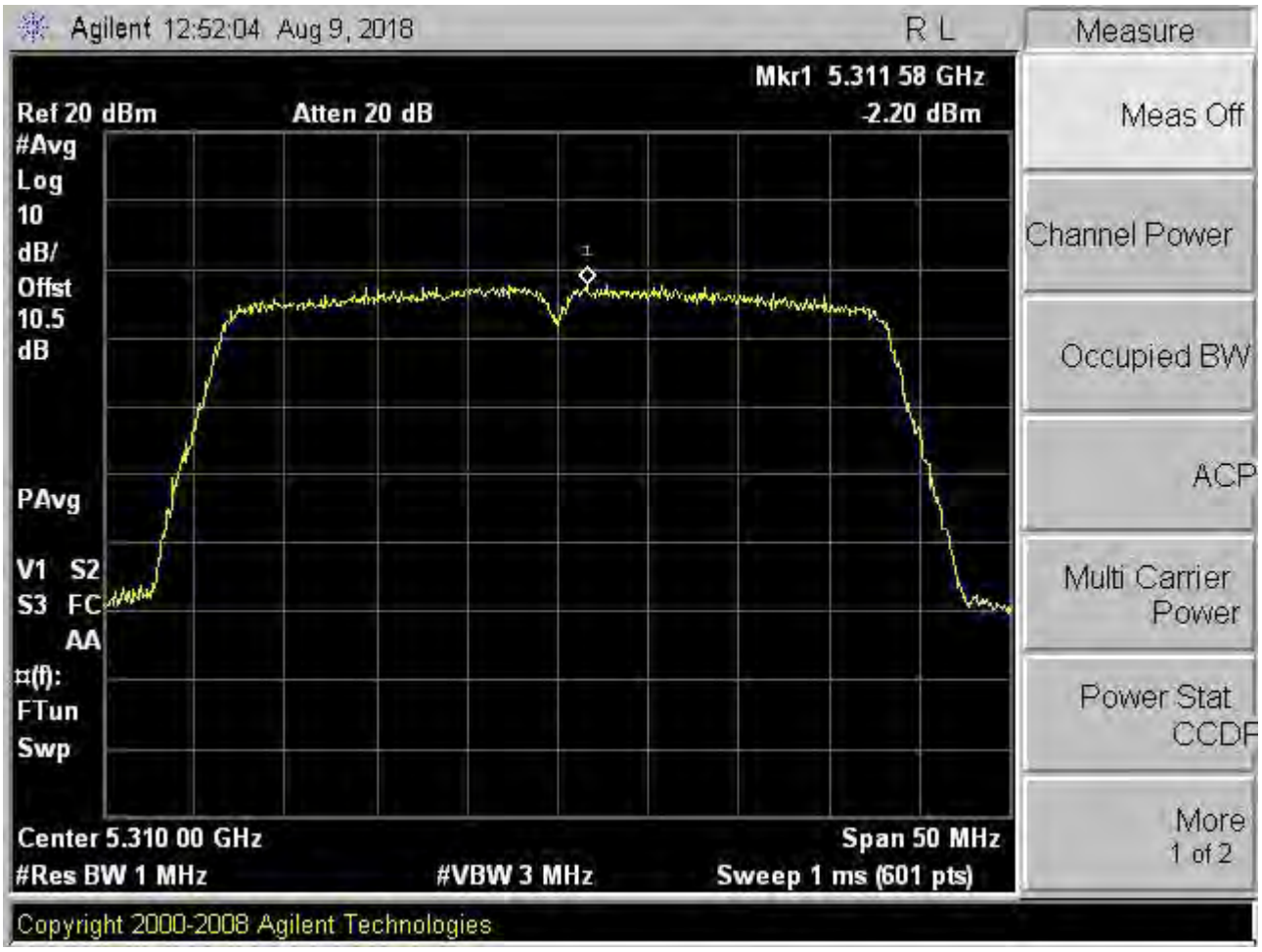
2. 功率頻譜密度 (Power Spectral Density) 為經儀器校正補償過後的結果值。

3. If antenna gain ≦ 6dBi, NCC Limit = 11 dBm

4. If antenna gain > 6dBi, NCC Limit = 11 dBm – (highest antenna gain – 6 dBi)

5. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)


Agilent 12:44:05 Aug 9, 2018
R L
Measure
Mkr1 5.265 42 GHz
Ref 20 dBm
Atten 20 dB
-2.08 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 5.270 00 GHz
Span 50 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 12:52:04 Aug 9, 2018
R L
Measure
Mkr1 5.311 58 GHz
Ref 20 dBm
Atten 20 dB
-2.20 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 5.310 00 GHz
Span 50 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

8.4.3.3 CHAIN 0 + CHAIN 1

測試日期: Aug. 09, 2018 環境溫度: 24℃ 環境濕度: 60%

Total power density calculation formula:

10 log (10^(Chain 0 PPSD / 10) + 10^(Chain 1 PPSD / 10)

天線增益最大值為 8.32 dBi，NCC Limit 如下表所示：

Channel	Peak Power Spectral Density (dBm)			Total Peak Power Spectral Density (dBm)	NCC Limit (dBm)	Chart
	Chain 0	Chain 1	Chain 2			
L	0.04	-2.08	n/a	2.12	8.68	-
H	1.03	-2.20	n/a	2.72	8.68	-

註：1.功率頻譜密度 (Power Spectral Density) 為經儀器校正補償過後的結果值。

2. If antenna gain ≦ 6dBi, NCC Limit = 11 dBm

3. If antenna gain > 6dBi, NCC Limit = 11 dBm – (highest antenna gain – 6 dBi)

4. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)

8.4.4 調變技術: IEEE 802.11ac (80MHz)

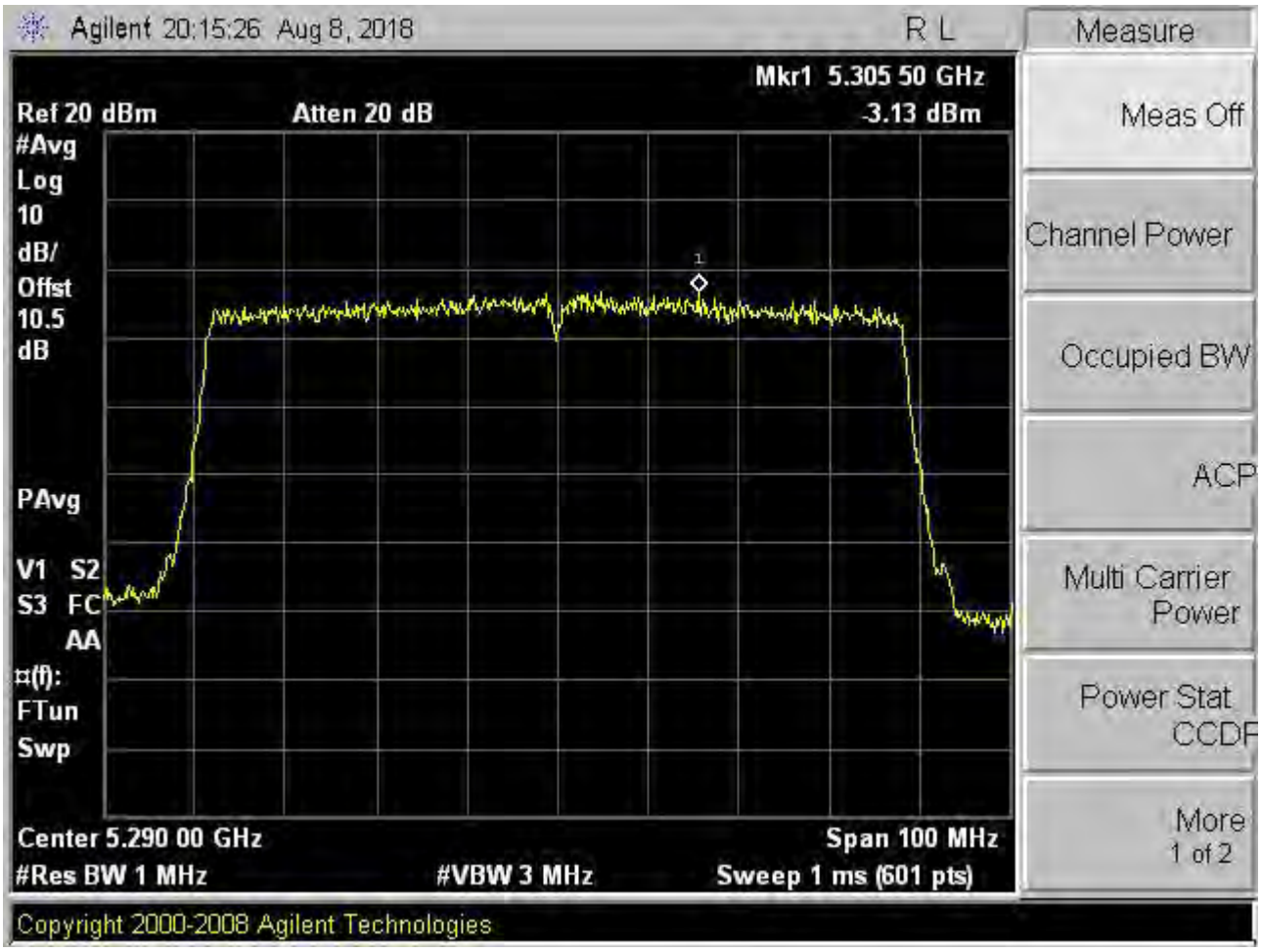
8.4.4.1 CHAIN 0

測試日期: Aug. 08, 2018 環境溫度: 24℃ 環境濕度: 60%

天線增益最大值為 5 dBi ，NCC Limit 如下表所示：

Channel	Power Spectral Density (dBm)	NCC Limit (dBm)	Chart
L	-3.13	11	Page 116

註：1. 繪圖資料請參考第 116 頁。
2. 功率頻譜密度 (Power Spectral Density) 為經儀器校正補償過後的結果值。
3. If antenna gain ≦ 6dBi, NCC Limit = 11dBm
4. If antenna gain > 6dBi, NCC Limit =11 dBm – (highest antenna gain – 6 dBi)
5. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)


Agilent 20:15:26 Aug 8, 2018
R L
Measure
Mkr1 5.305 50 GHz
Ref 20 dBm
Atten 20 dB
-3.13 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 5.290 00 GHz
Span 100 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

8.4.4.2 CHAIN 1

測試日期: Aug. 08, 2018 環境溫度: 24℃ 環境濕度: 60%

天線增益最大值為 5.6 dBi ，NCC Limit 如下表所示：

Channel	Power Spectral Density (dBm)	NCC Limit (dBm)	Chart
L	-5.13	11	Page 118

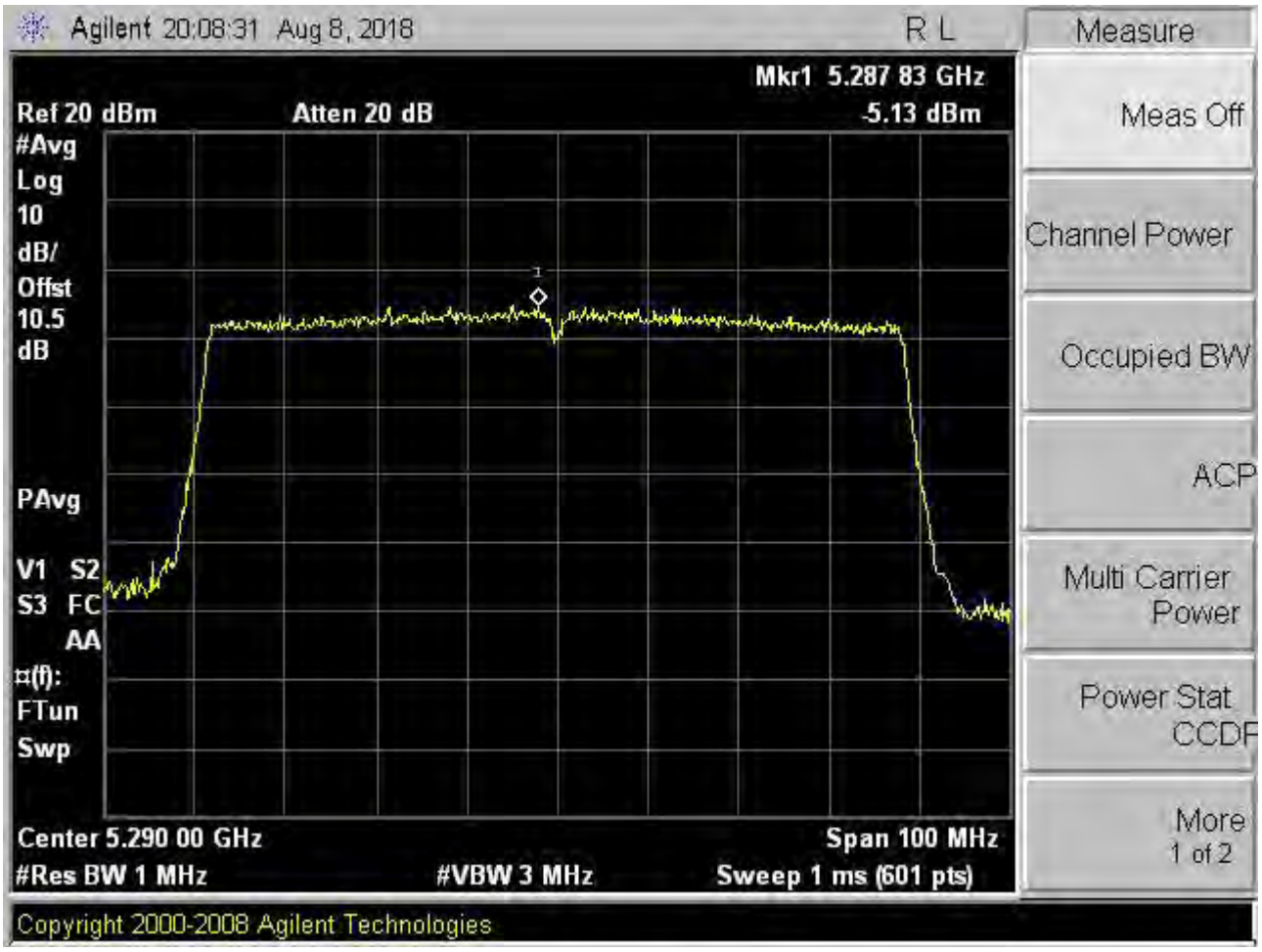
註：1. 繪圖資料請參考第 118 頁。

2. 功率頻譜密度 (Power Spectral Density) 為經儀器校正補償過後的結果值。

3. If antenna gain ≦ 6dBi, NCC Limit = 11dBm

4. If antenna gain > 6dBi, NCC Limit =11 dBm – (highest antenna gain – 6 dBi)

5. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)


Agilent 20:08:31 Aug 8, 2018
R L
Measure
Mkr1 5.287 83 GHz
Ref 20 dBm
Atten 20 dB
-5.13 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
V1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 5.290 00 GHz
Span 100 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

8.4.4.3 CHAIN 0 + CHAIN 1

測試日期: Aug. 08, 2018 環境溫度: 24℃ 環境濕度: 60%

Total power density calculation formula:

10 log (10^(Chain 0 PPSD / 10) + 10^(Chain 1 PPSD / 10)

天線增益最大值為 8.32 dBi，NCC Limit 如下表所示：

Channel	Peak Power Spectral Density (dBm)			Total Peak Power Spectral Density (dBm)	NCC Limit (dBm)	Chart
	Chain 0	Chain 1	Chain 2			
L	-3.13	-5.13	n/a	-1.01	8.68	-

註：1.功率頻譜密度 (Power Spectral Density) 為經儀器校正補償過後的結果值。

2. If antenna gain ≦ 6dBi, NCC Limit = 11 dBm

3. If antenna gain > 6dBi, NCC Limit = 11 dBm – (highest antenna gain – 6 dBi)

4. 量測不準確度:±1.5dB(1GHz≦f≦18GHz)

8.5 結果判定

高、中、低頻段的功率頻譜密度皆低於限值，合乎標準規定。

9 混附波發射限制之量測

9.1 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4.7.4.1之規定，在 5.15-5.35 GHz 及 5.470-5.725 GHz 頻帶操作的發射器: 帶外發射之有效等向輻射功率 (EIRP) 不應超過 –27 dBm/MHz。

依據國家通訊傳播委員會低功率射頻電機技術規範4.7.4.3之規定，測量不必要發射時，應使用之最低解析頻寬為 1 MHz。必要時，於頻帶邊緣附近可使用小於 1 MHz 之解析頻寬，並以補償方式計算其總值。

9.2 混附波發射限制之測試配置

如圖2 所示。

9.3 量測混附波發射限制之儀器

儀器名稱	製造者	型　　號
Spectrum Analyzer	Agilent	E4446A
Attenuator	WEINSCHEL	56-10

測試軟體: LZ-RF (Ver. ETC-3A2)

9.4 混附波發射限制之量測結果 (傳導方式量測)

Single Conducted Limit:

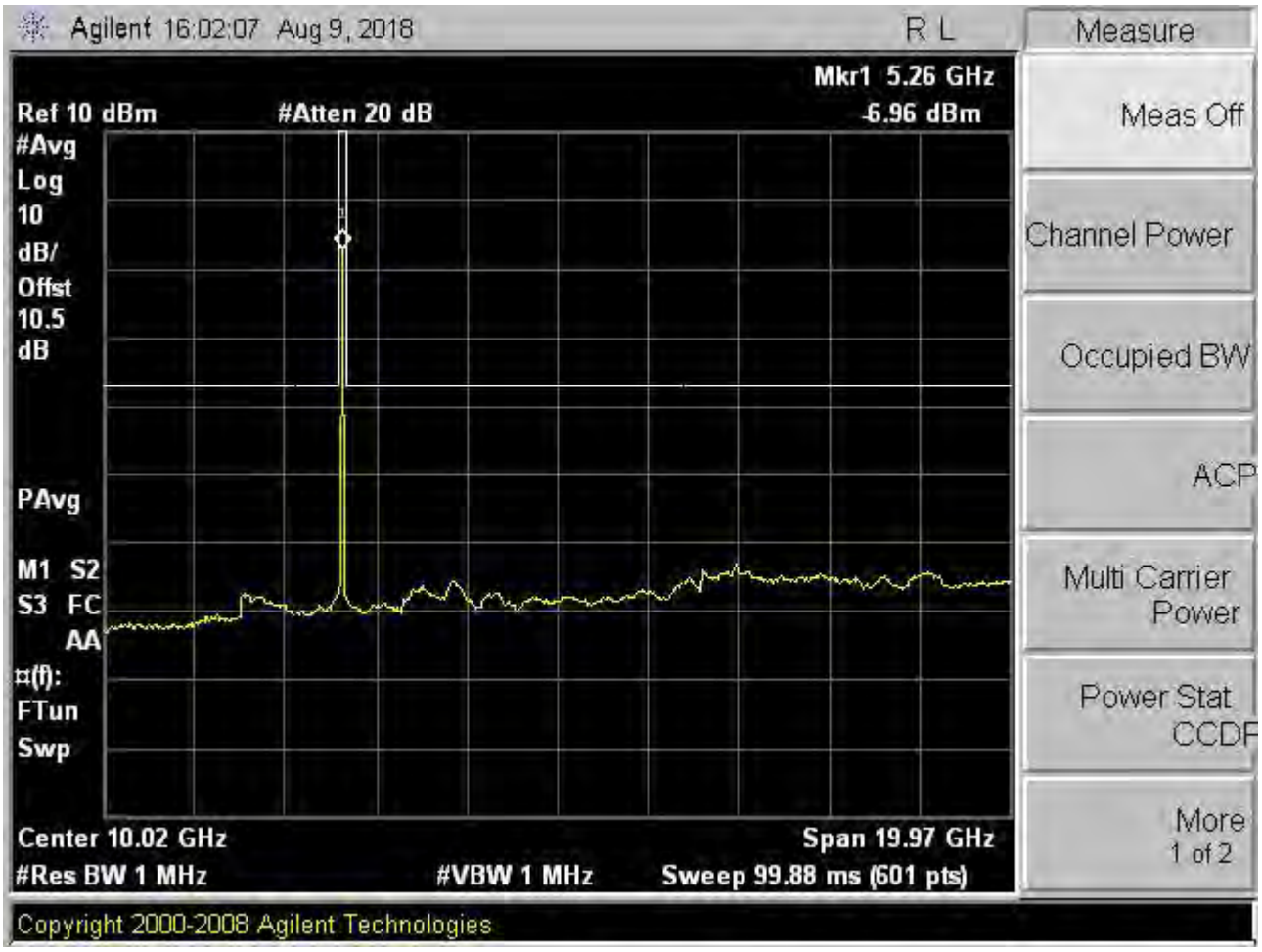
Eirp Limit – Antenna Directional Gain – 10 log[number of Tx output(s)]

測試工程師: 羅世勇

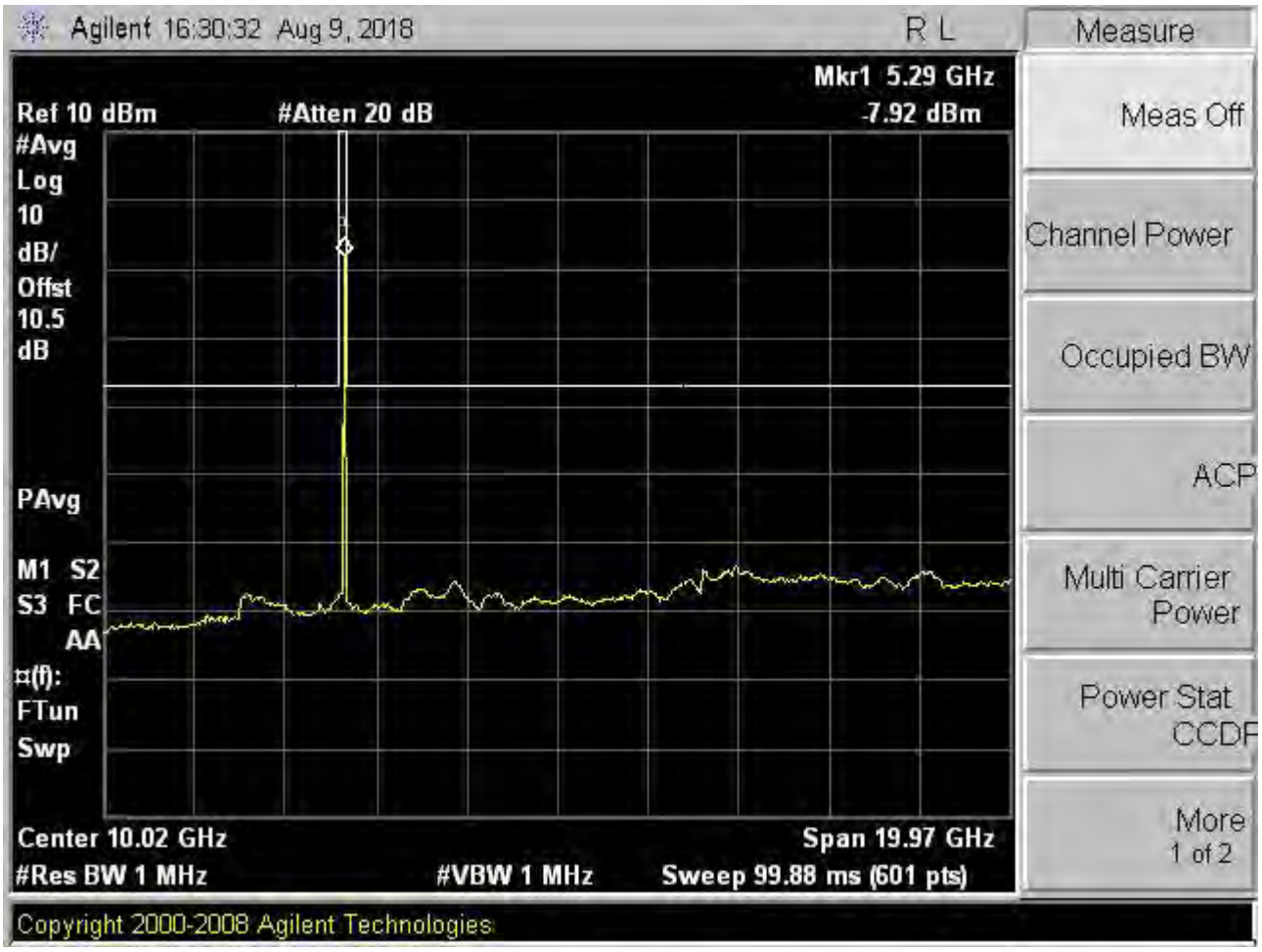
9.4.1 調變技術: IEEE 802.11a

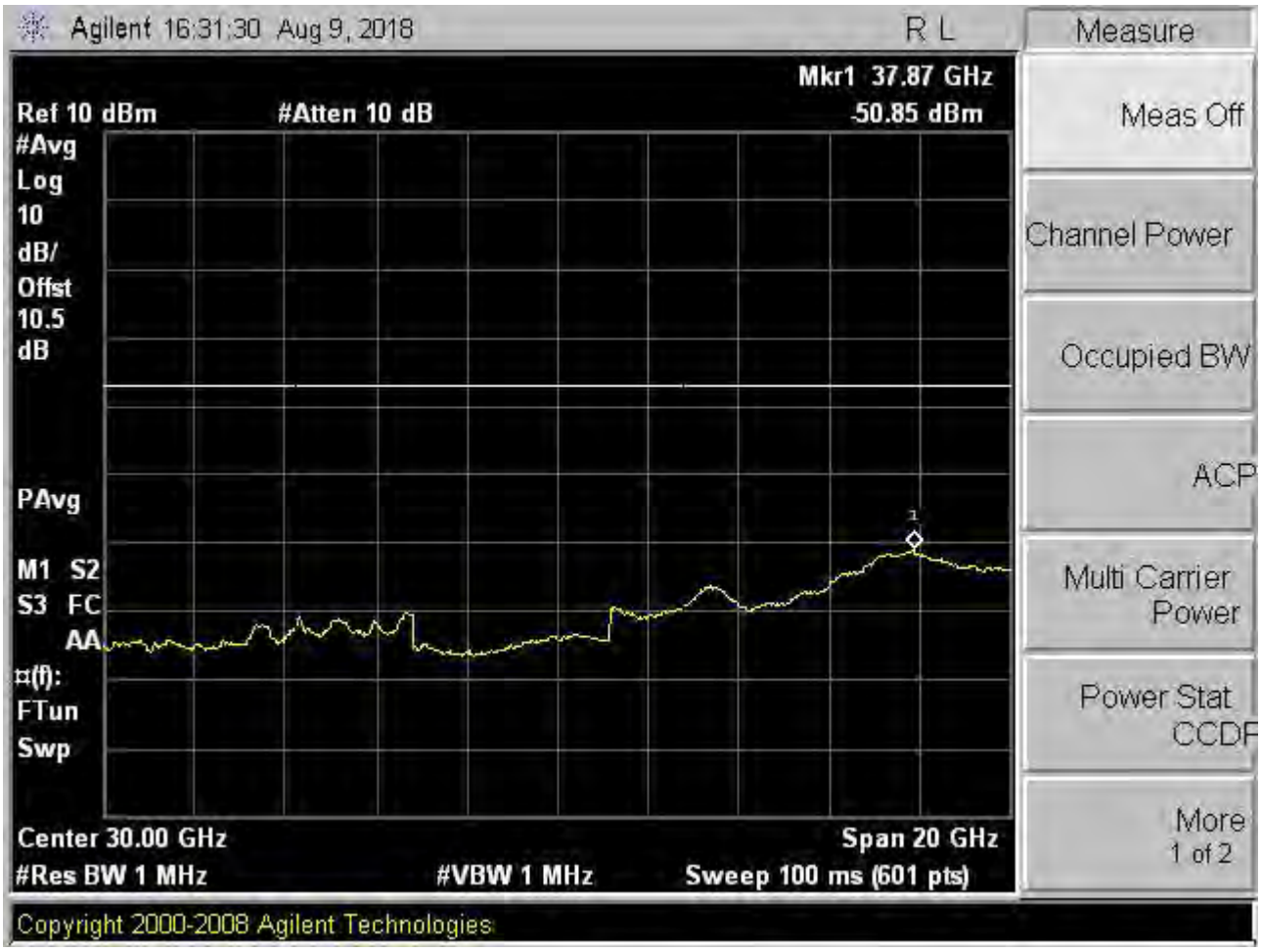
測試日期: Aug. 09, 2018　　環境溫度: 24℃　　環境濕度: 60%

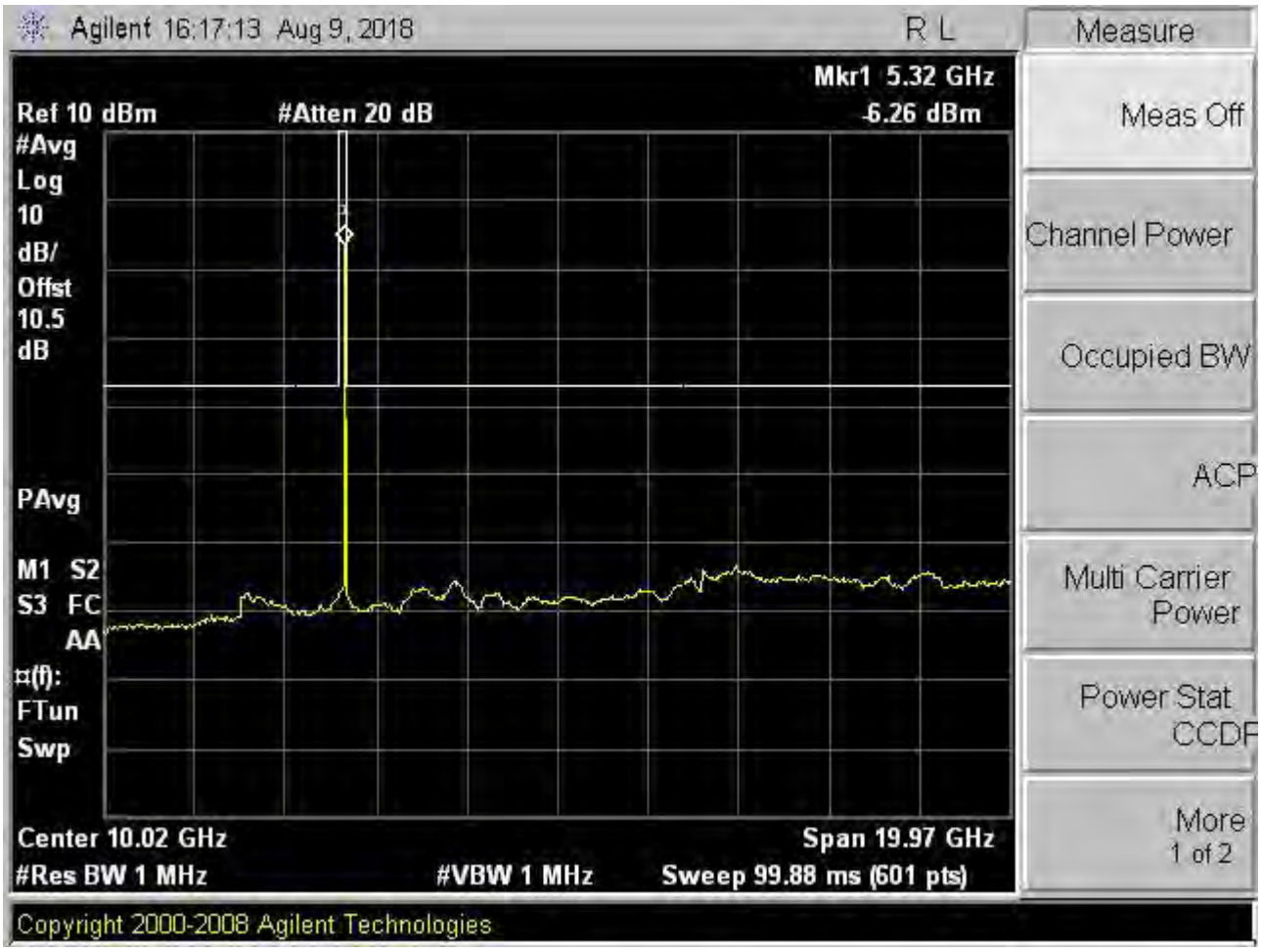
註：1. 繪圖資料請參考第 121-126 頁。
2. 量測不準確度:±1.5dB(1GHz≦f≦40GHz)


Agilent 16:02:07 Aug 9, 2018
R L
Measure
Mkr1 5.26 GHz
Ref 10 dBm
#Atten 20 dB
-6.96 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 10.02 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.88 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

Agilent 16:06:17 Aug 9, 2018
R L
Measure
Mkr1 37.80 GHz
Ref 10 dBm
#Atten 10 dB
-50.99 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 16:30:32 Aug 9, 2018
R L
Measure
Mkr1 5.29 GHz
Ref 10 dBm
#Atten 20 dB
-7.92 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 10.02 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.88 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 16:31:30 Aug 9, 2018
R L
Measure
Mkr1 37.87 GHz
Ref 10 dBm
#Atten 10 dB
-50.85 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 16:17:13 Aug 9, 2018
R L
Measure
Mkr1 5.32 GHz
Ref 10 dBm
#Atten 20 dB
-6.26 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 10.02 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.88 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

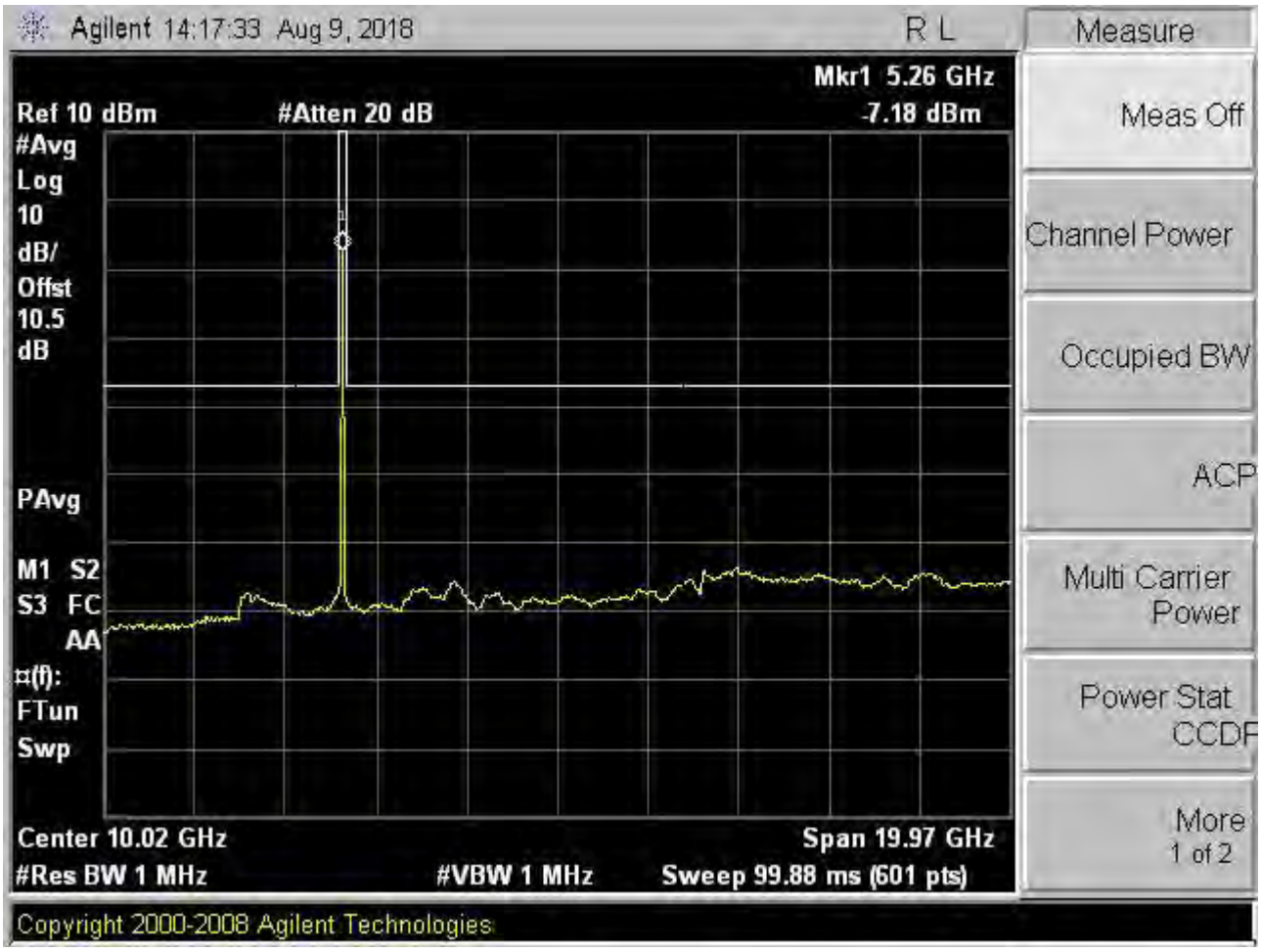
Agilent 16:18:07 Aug 9, 2018
R L
Measure
Mkr1 37.80 GHz
Ref 10 dBm
#Atten 10 dB
-50.93 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

9.4.2 調變技術:IEEE 802.11an HT20

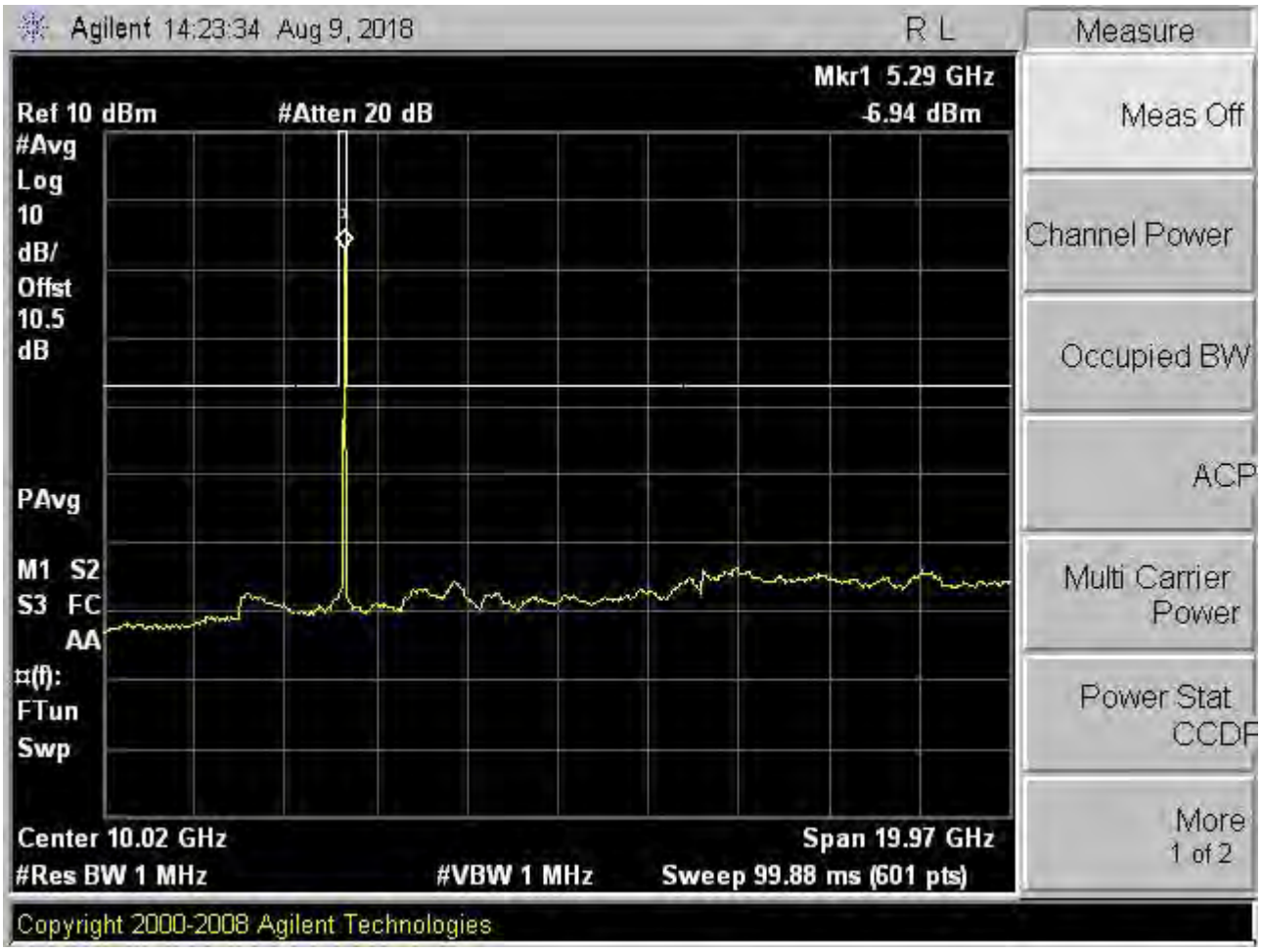
9.4.2.1 CHAIN 0

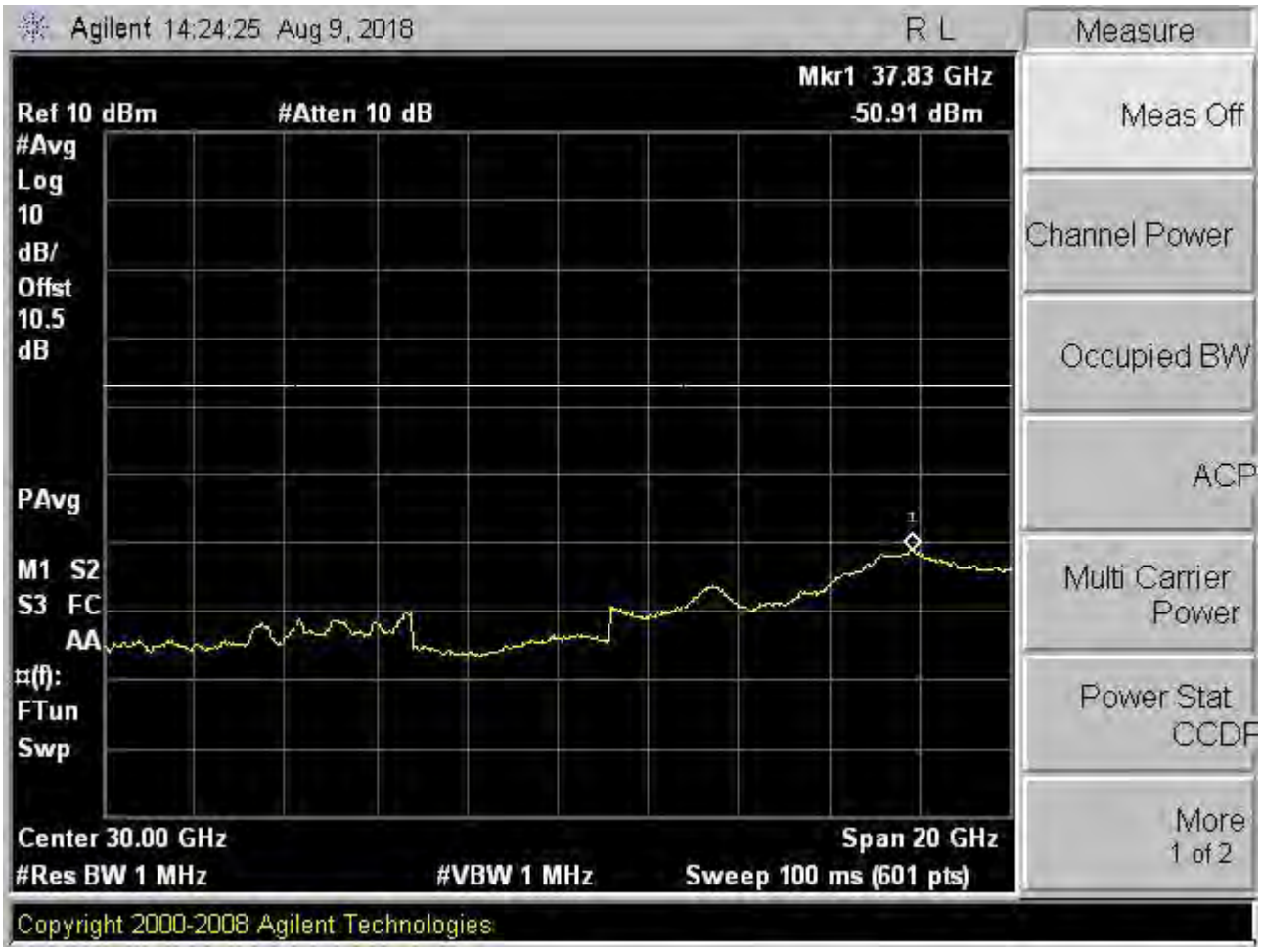
測試日期: Aug. 09, 2018 環境溫度: 24℃ 環境濕度: 60%

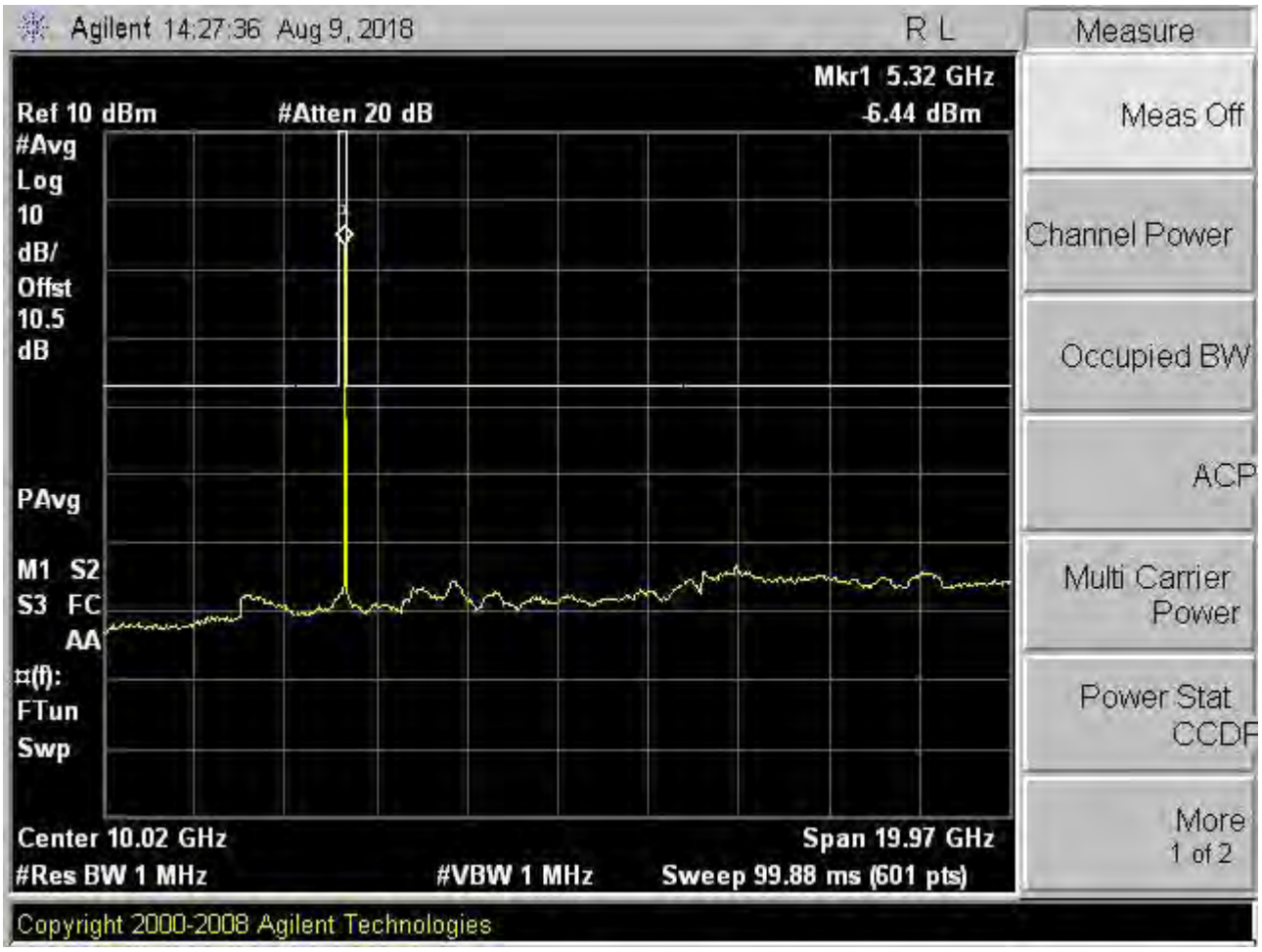
註：1. 繪圖資料請參考第 128-133 頁。
2. 量測不準確度:±1.5dB(1GHz≦f≦40GHz)


Agilent 14:17:33 Aug 9, 2018
R L
Measure
Mkr1 5.26 GHz
Ref 10 dBm
#Atten 20 dB
-7.18 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 10.02 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.88 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

Agilent 14:18:42 Aug 9, 2018
R L
Measure
Mkr1 37.83 GHz
Ref 10 dBm
#Atten 10 dB
-50.71 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 14:23:34 Aug 9, 2018
R L
Measure
Mkr1 5.29 GHz
Ref 10 dBm
#Atten 20 dB
-6.94 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 10.02 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.88 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 14:24:25 Aug 9, 2018
R L
Measure
Mkr1 37.83 GHz
Ref 10 dBm
#Atten 10 dB
-50.91 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

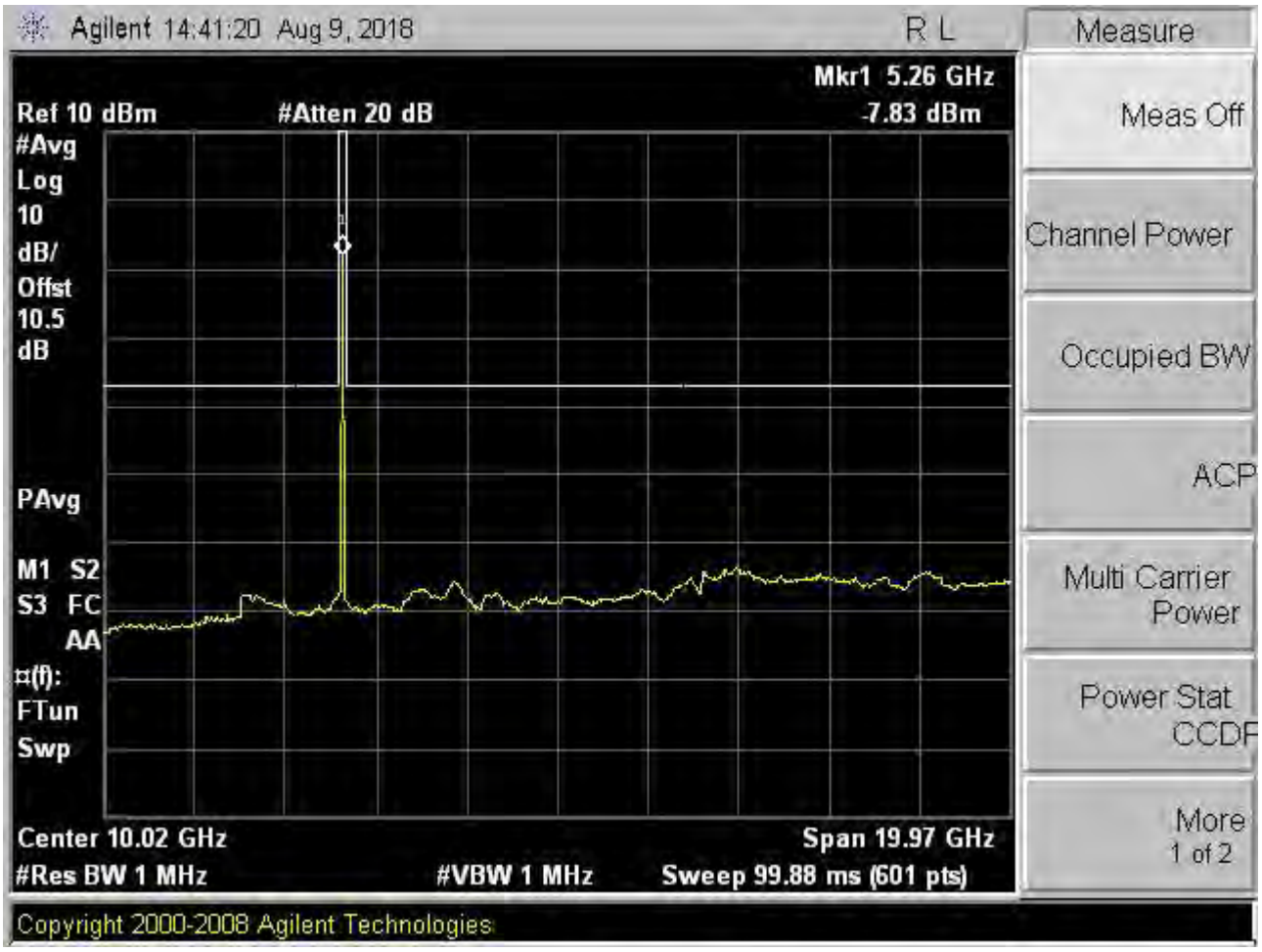

Agilent 14:27:36 Aug 9, 2018
R L
Measure
Mkr1 5.32 GHz
Ref 10 dBm
#Atten 20 dB
-6.44 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 10.02 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.88 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

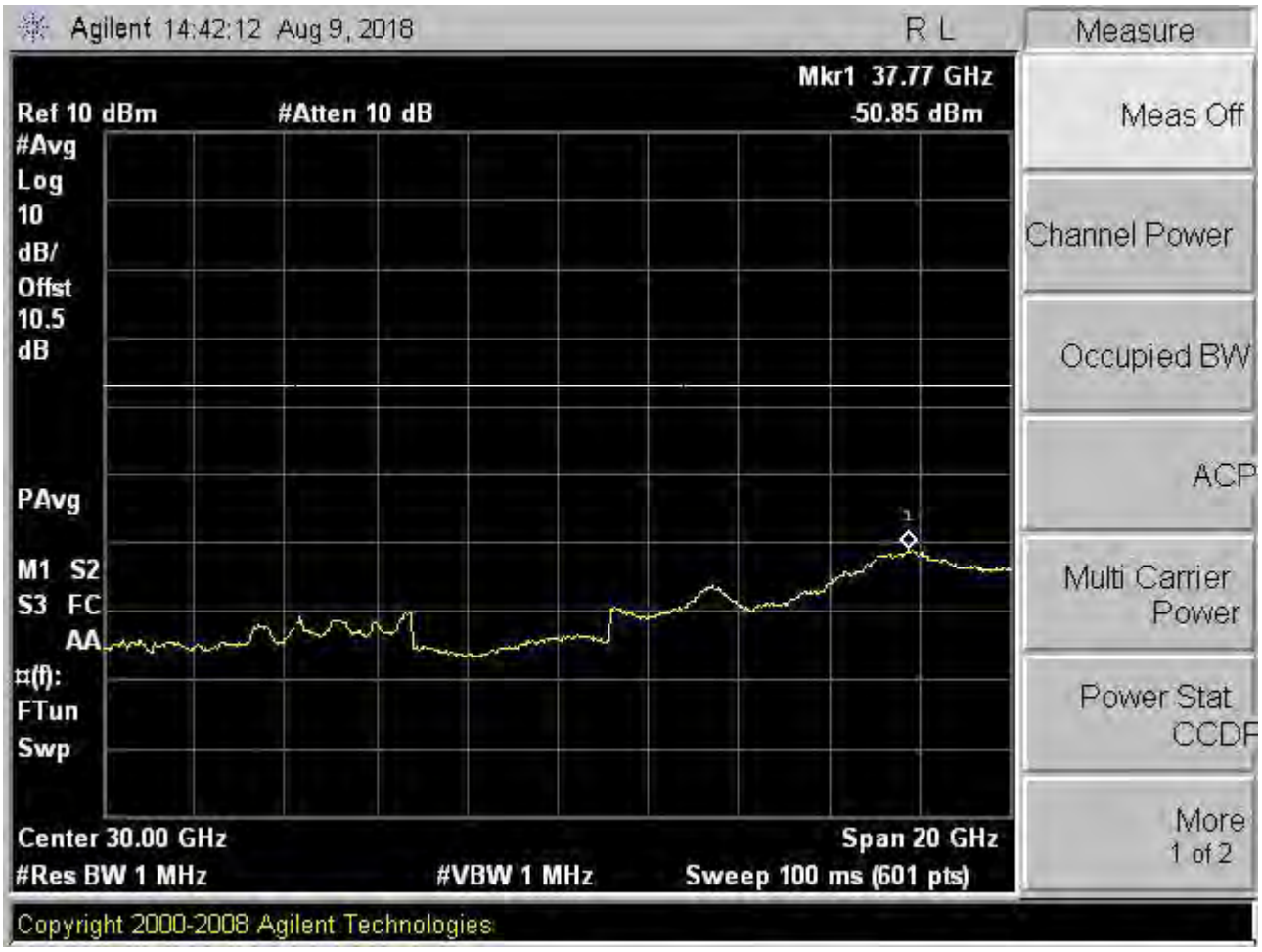
Agilent 14:29:39 Aug 9, 2018
R L
Measure
Mkr1 37.83 GHz
Ref 10 dBm
#Atten 10 dB
-50.93 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

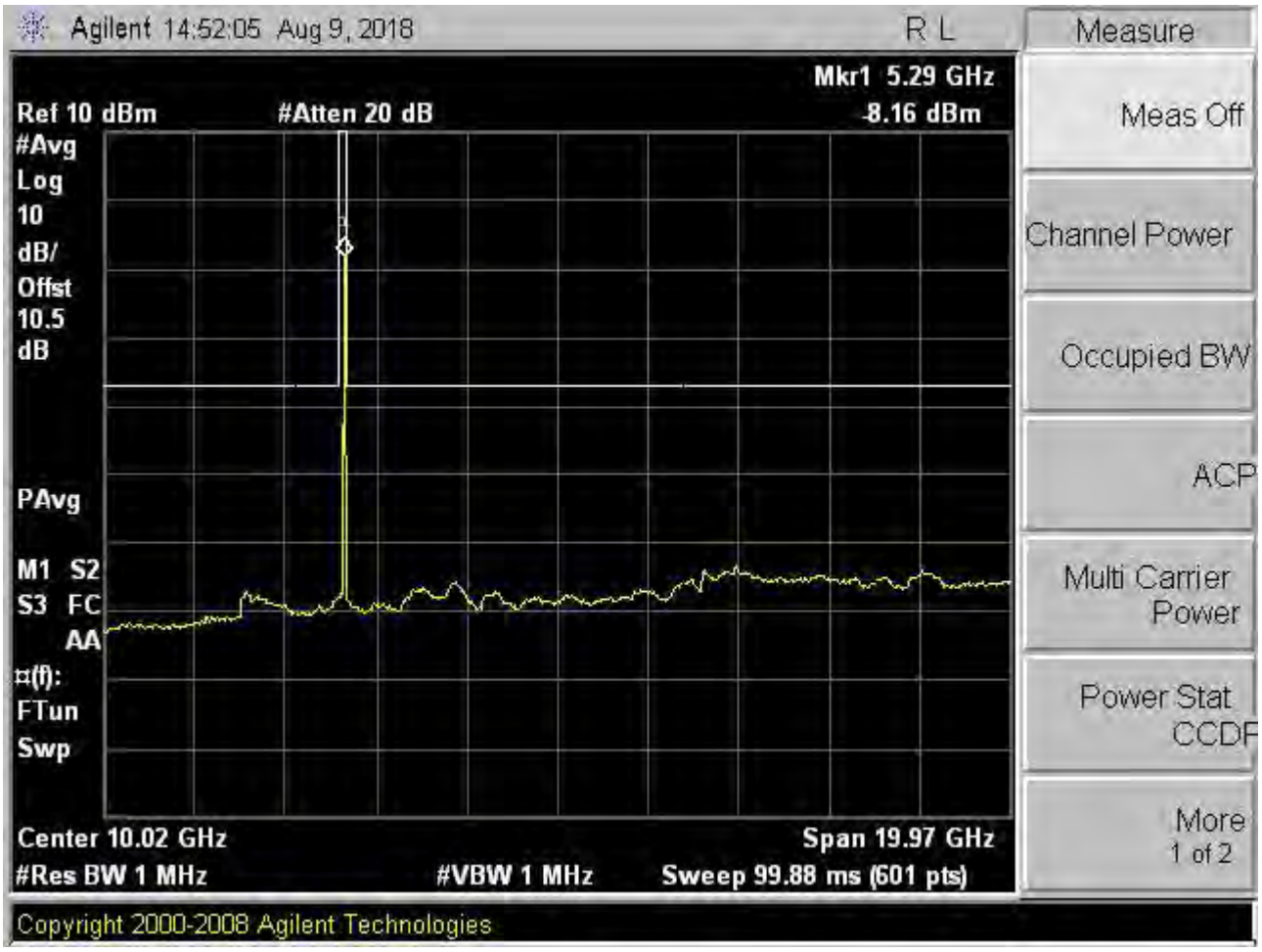
9.4.2.2 CHAIN 1

測試日期: Aug. 09, 2018 環境溫度: 24℃ 環境濕度: 60%

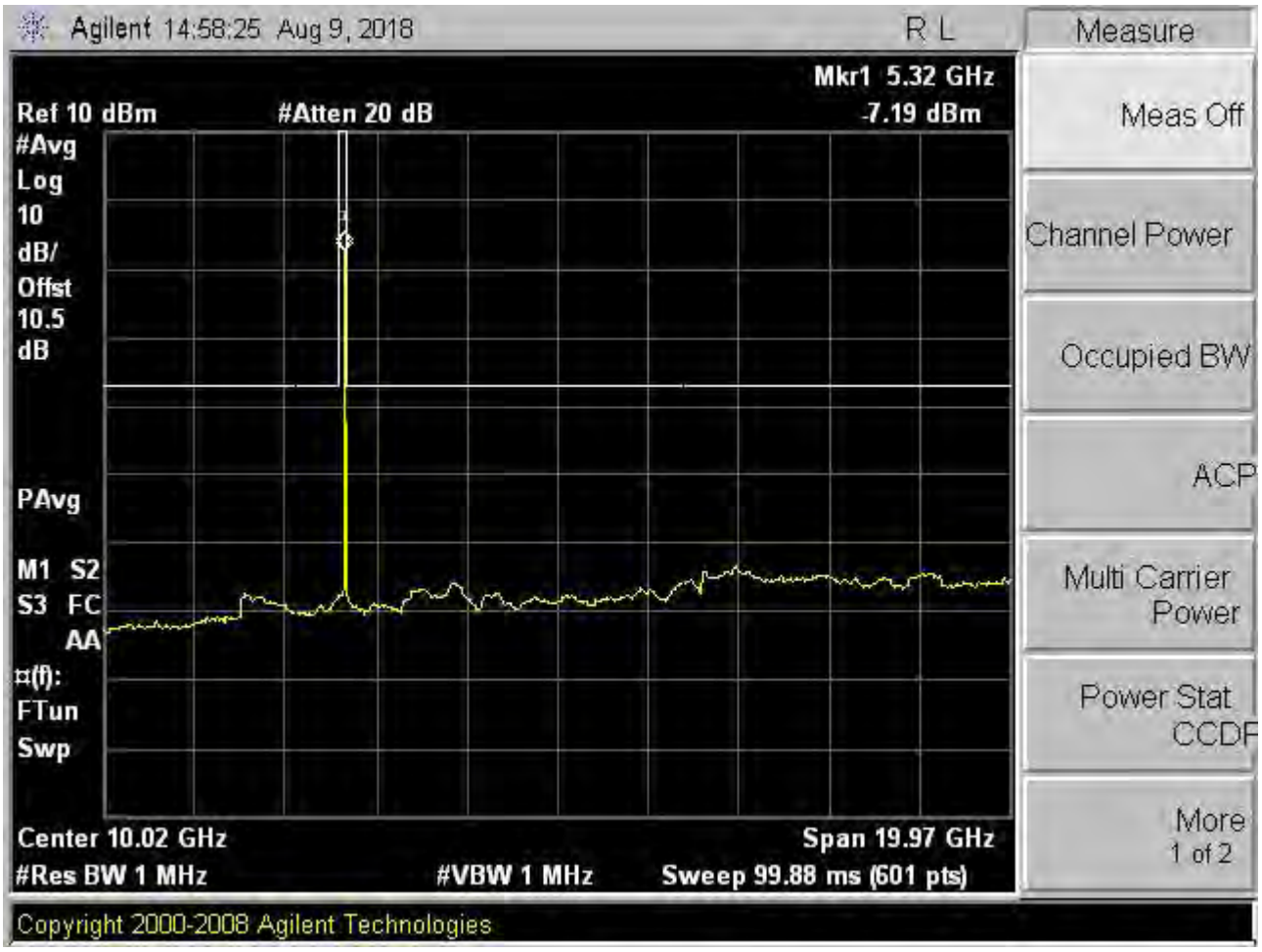
註：1. 繪圖資料請參考第 134-140 頁。
2. 量測不準確度:±1.5dB(1GHz≦f≦40GHz)


Agilent 14:41:20 Aug 9, 2018
R L
Measure
Mkr1 5.26 GHz
Ref 10 dBm
#Atten 20 dB
-7.83 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 10.02 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.88 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 14:42:12 Aug 9, 2018
R L
Measure
Mkr1 37.77 GHz
Ref 10 dBm
#Atten 10 dB
-50.85 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 14:52:05 Aug 9, 2018
R L
Measure
Mkr1 5.29 GHz
Ref 10 dBm
#Atten 20 dB
-8.16 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 10.02 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.88 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

Agilent 14:52:55 Aug 9, 2018
R L
Measure
Mkr1 37.80 GHz
Ref 10 dBm
#Atten 10 dB
-50.81 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 14:58:25 Aug 9, 2018
R L
Measure
Mkr1 5.32 GHz
Ref 10 dBm
#Atten 20 dB
-7.19 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 10.02 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.88 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

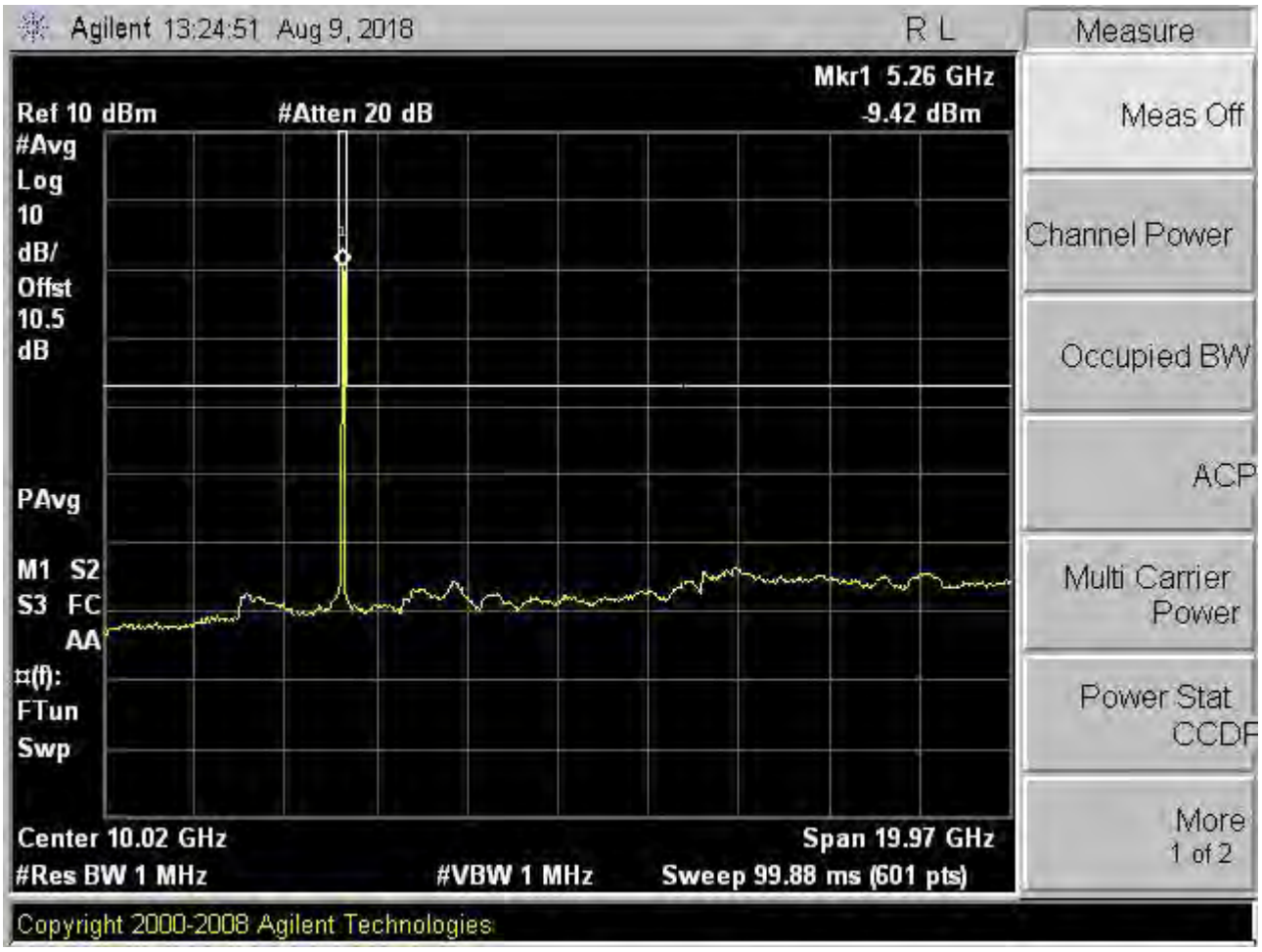
Agilent 15:09:32 Aug 9, 2018
R L
Measure
Mkr1 37.83 GHz
Ref 10 dBm
#Atten 10 dB
-50.82 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

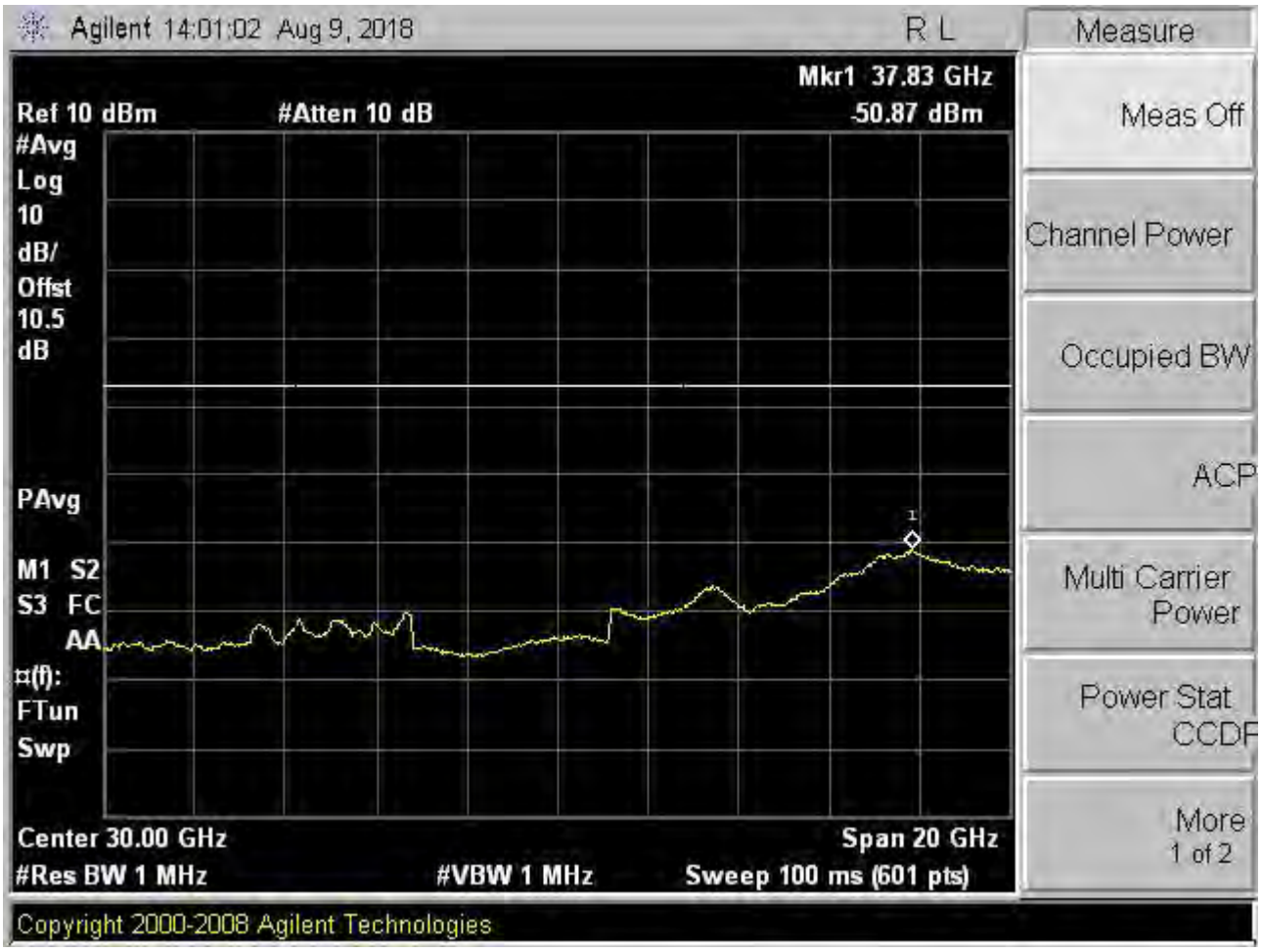
9.4.3 調變技術: IEEE 802.11an HT40

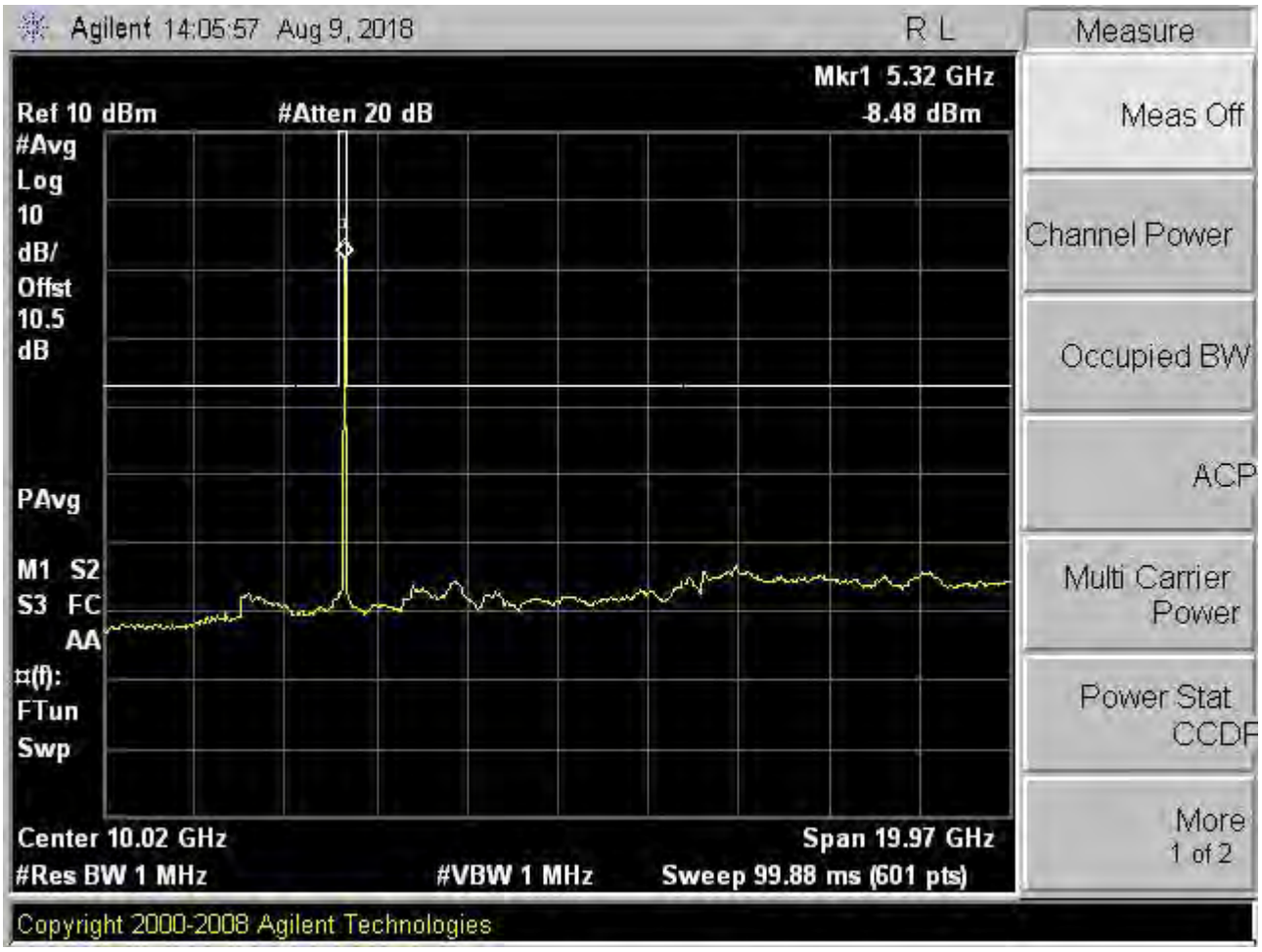
9.4.3.1 CHAIN 0

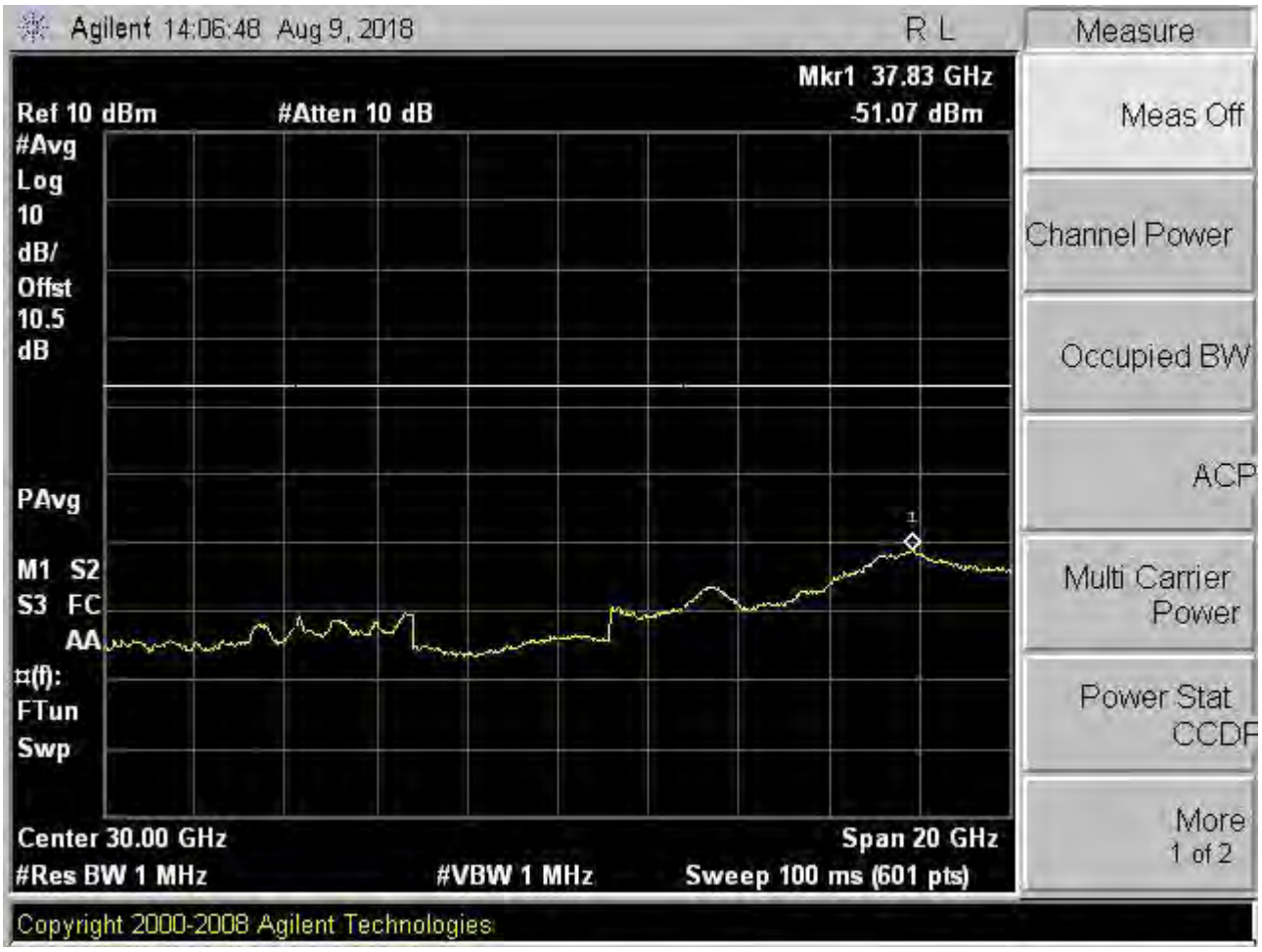
測試日期: Aug. 09, 2018 環境溫度: 24℃ 環境濕度: 60%

註：1. 繪圖資料請參考第 142-145 頁。
2. 量測不準確度:±1.5dB(1GHz≦f≦40GHz)


Agilent 13:24:51 Aug 9, 2018
R L
Measure
Mkr1 5.26 GHz
Ref 10 dBm
#Atten 20 dB
-9.42 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 10.02 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.88 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 14:01:02 Aug 9, 2018
R L
Measure
Mkr1 37.83 GHz
Ref 10 dBm
#Atten 10 dB
-50.87 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

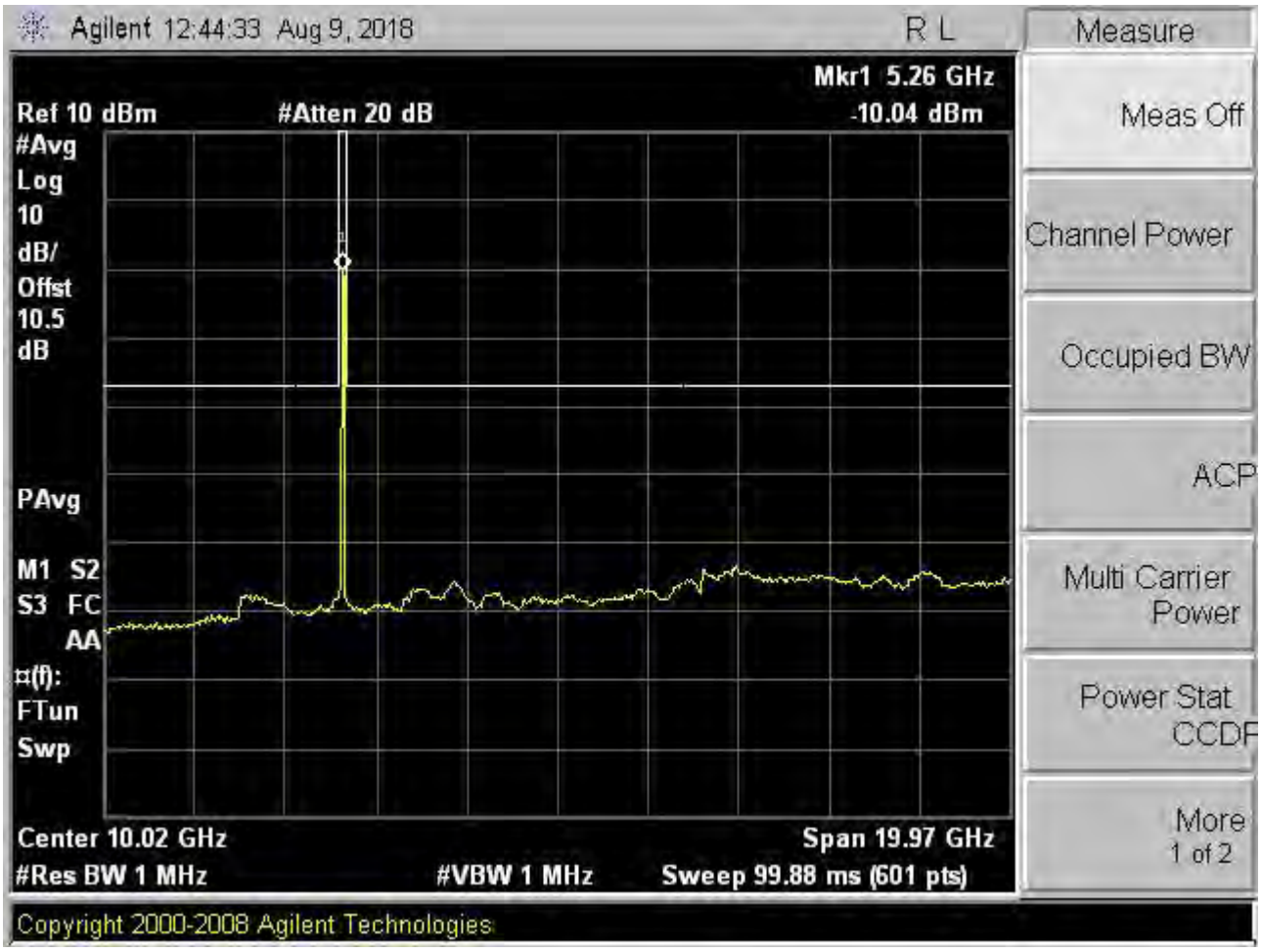

Agilent 14:05:57 Aug 9, 2018
R L
Measure
Mkr1 5.32 GHz
Ref 10 dBm
#Atten 20 dB
-8.48 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 10.02 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.88 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

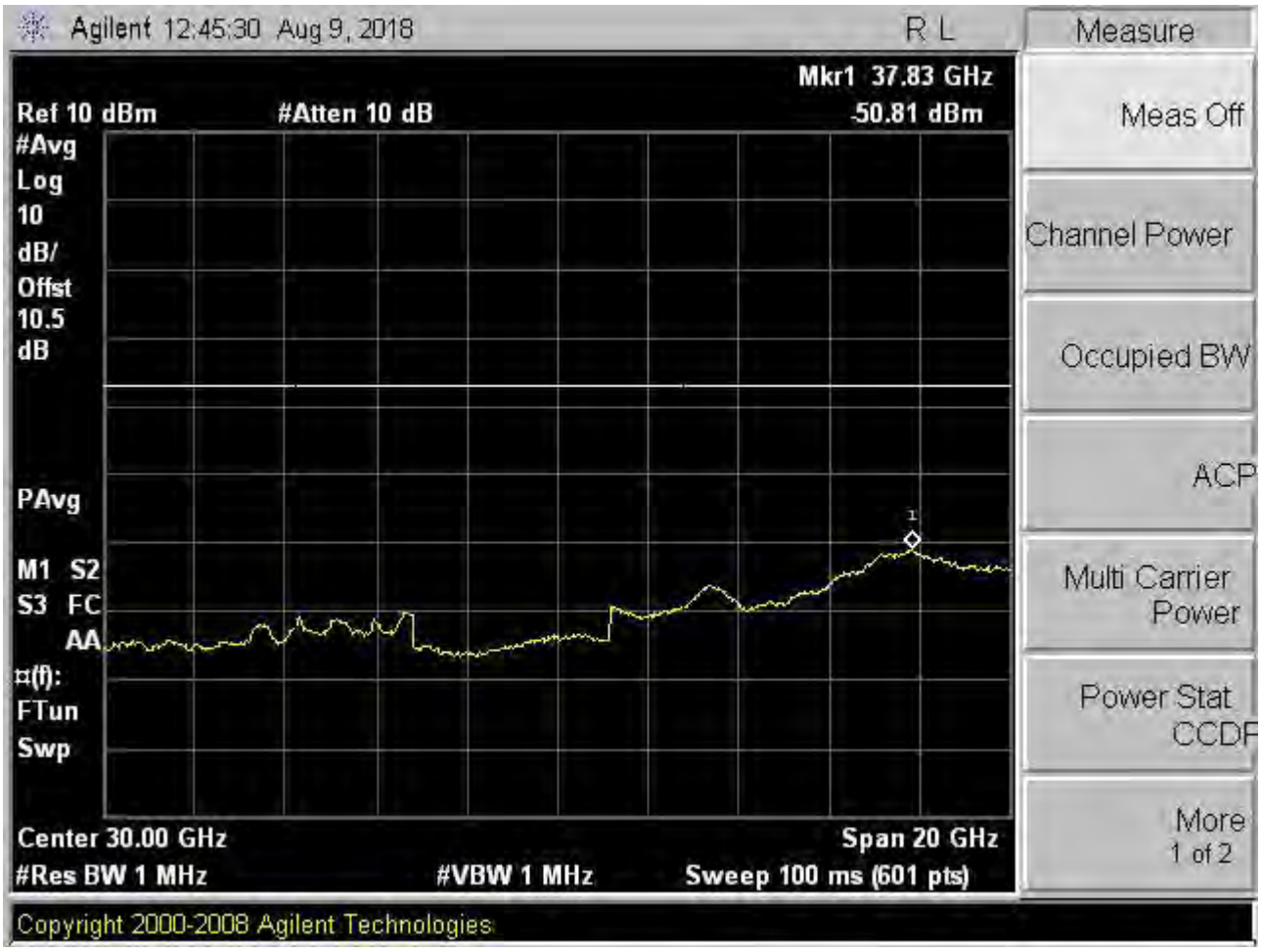

Agilent 14:06:48 Aug 9, 2018
R L
Measure
Mkr1 37.83 GHz
Ref 10 dBm
#Atten 10 dB
-51.07 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

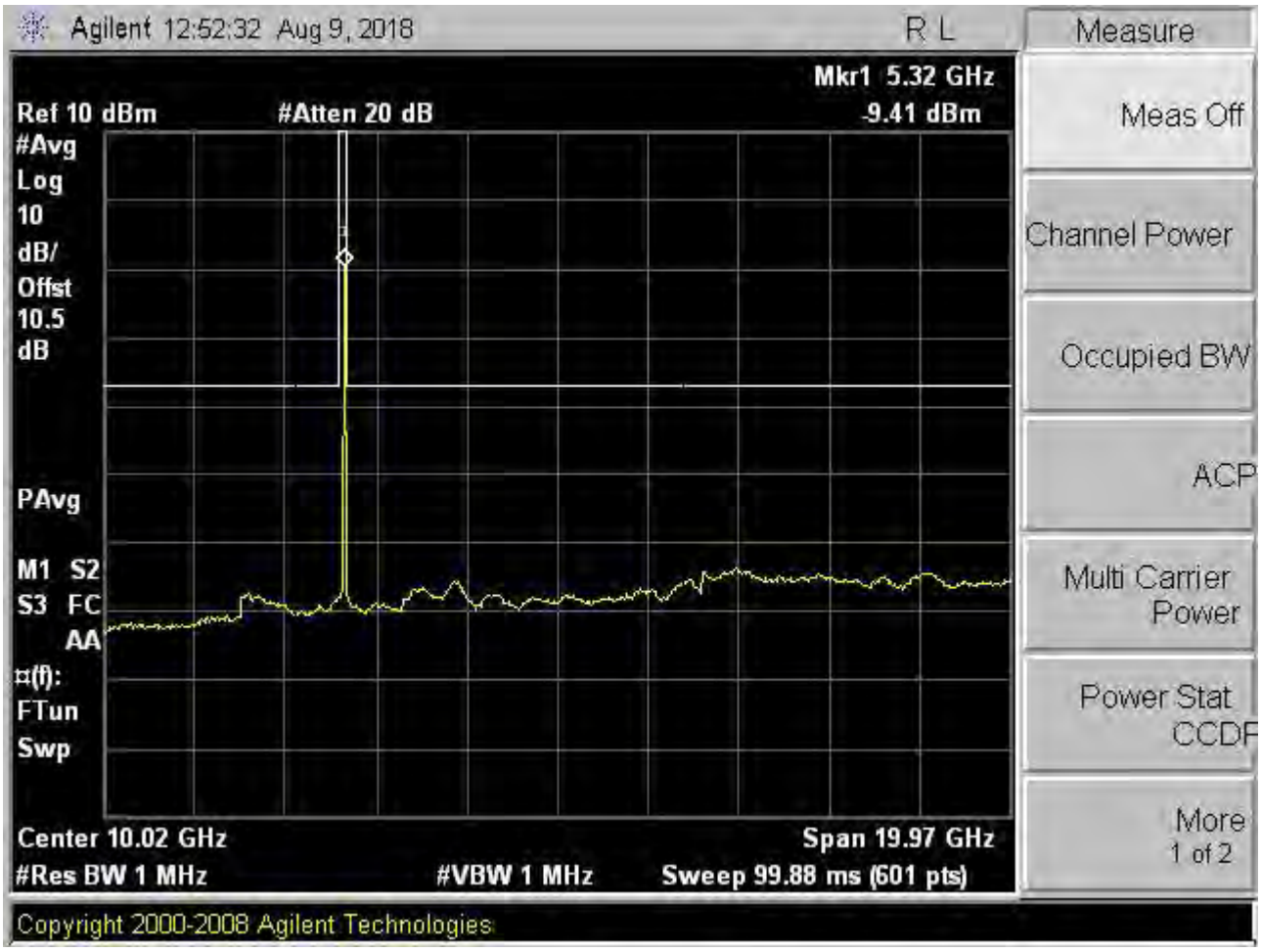
9.4.3.2 CHAIN 1

測試日期: Aug. 09, 2018 環境溫度: 24℃ 環境濕度: 60%

註：1. 繪圖資料請參考第 147-150 頁。
2. 量測不準確度:±1.5dB(1GHz≦f≦40GHz)


Agilent 12:44:33 Aug 9, 2018
R L
Measure
Mkr1 5.26 GHz
Ref 10 dBm
#Atten 20 dB
-10.04 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 10.02 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.88 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 12:45:30 Aug 9, 2018
R L
Measure
Mkr1 37.83 GHz
Ref 10 dBm
#Atten 10 dB
-50.81 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 12:52:32 Aug 9, 2018
R L
Measure
Mkr1 5.32 GHz
Ref 10 dBm
#Atten 20 dB
-9.41 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 10.02 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.88 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

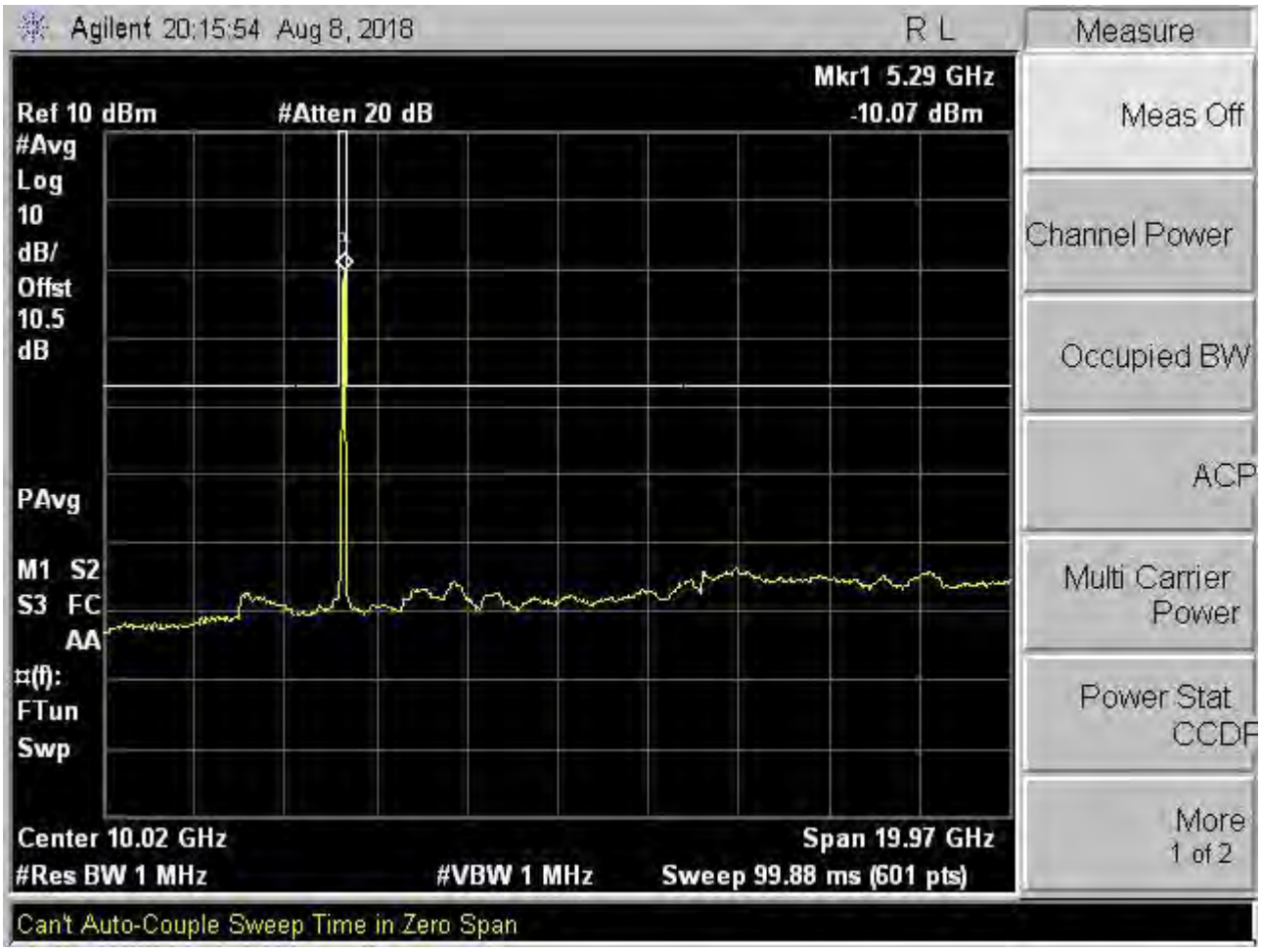
Agilent 12:53:24 Aug 9, 2018
R L
Measure
Mkr1 37.80 GHz
Ref 10 dBm
#Atten 10 dB
-50.89 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

9.4.4 調變技術: IEEE 802.11ac (80MHz)

9.4.4.1 CHAIN 0

測試日期: Aug. 08, 2018 環境溫度: 24℃ 環境濕度: 60%

註：1. 繪圖資料請參考第 152-153 頁。
2. 量測不準確度:±1.5dB(1GHz≦f≦40GHz)


Agilent 20:15:54 Aug 8, 2018
R L
Measure
Mkr1 5.29 GHz
Ref 10 dBm
#Atten 20 dB
-10.07 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 10.02 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.88 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Can't Auto-Couple Sweep Time in Zero Span

Agilent 20:17:57 Aug 8, 2018
R L
Measure
Mkr1 37.77 GHz
Ref 10 dBm
#Atten 10 dB
-50.98 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

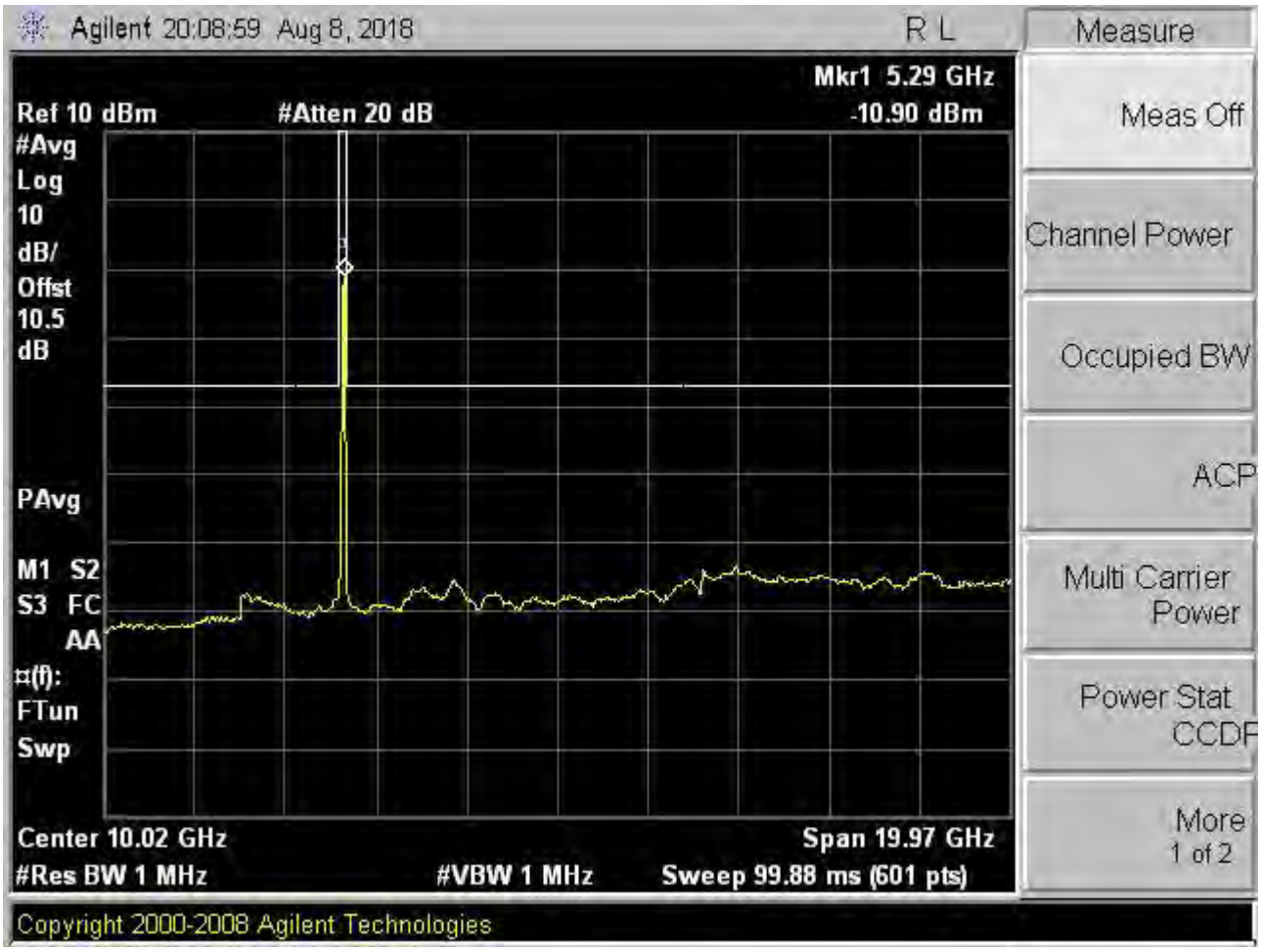
9.4.4.2 CHAIN 1

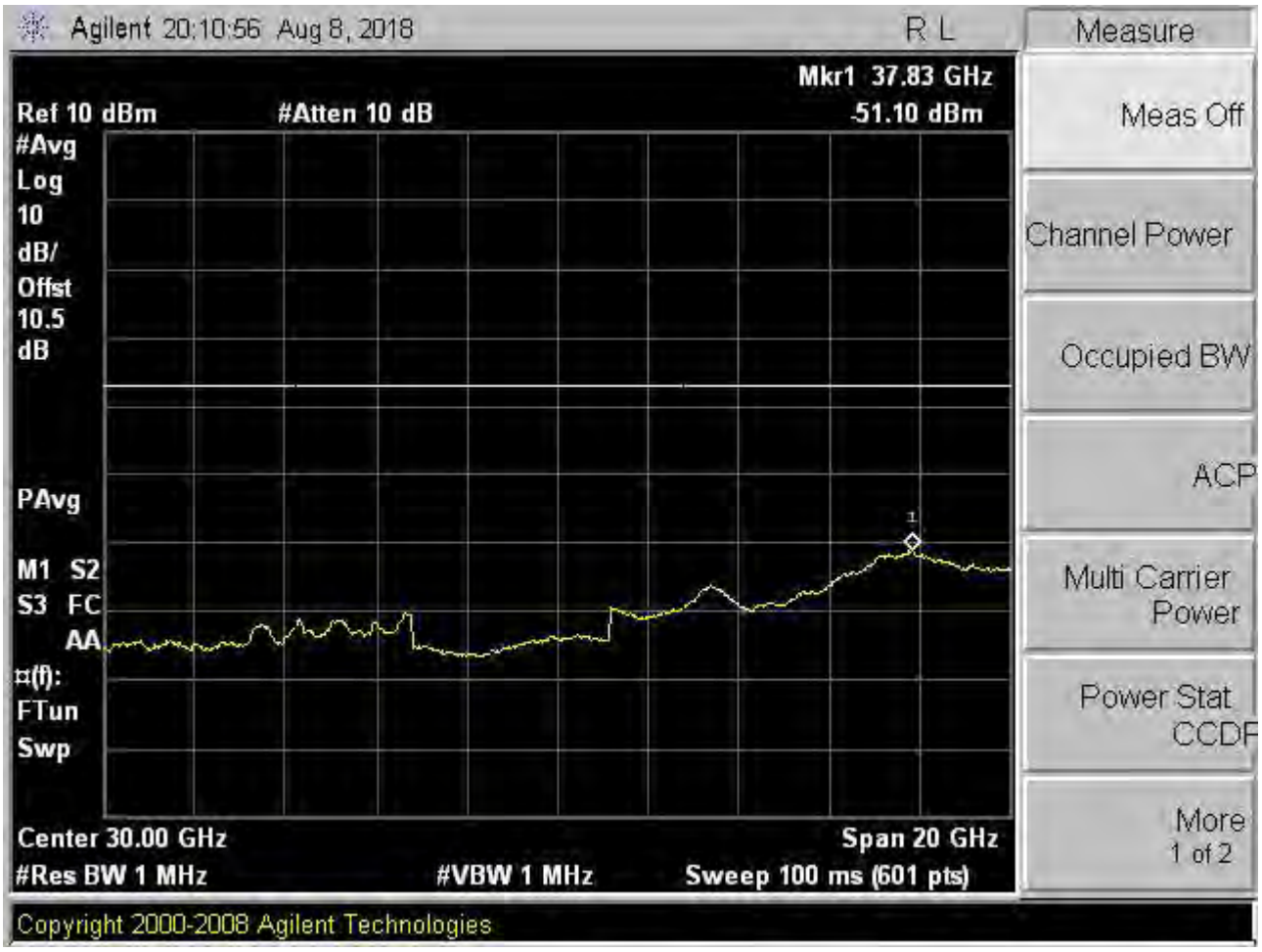
測試日期: Aug. 08, 2018 環境溫度: 24℃ 環境濕度: 60%

註：1. 繪圖資料請參考第 155-156 頁。
2. 量測不準確度:±1.5dB(1GHz≦f≦40GHz)

9.5 結果判定

混附波之發射皆低於限值，符合標準規定。


Agilent 20:08:59 Aug 8, 2018
R L
Measure
Mkr1 5.29 GHz
Ref 10 dBm
#Atten 20 dB
-10.90 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 10.02 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.88 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies


Agilent 20:10:56 Aug 8, 2018
R L
Measure
Mkr1 37.83 GHz
Ref 10 dBm
#Atten 10 dB
-51.10 dBm
#Avg
Log
10
dB/
Offst
10.5
dB
PAvg
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (601 pts)
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Copyright 2000-2008 Agilent Technologies

10 場強輻射之量測

10.1 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4.7.4.5節之規定，在 1GHz 以下的不必要之發射，應符合第 2.8 節之規定，任何使用交流市電為供應電之設備亦須符合第 2.3 節之電源線傳導限制值。

依據國家通訊傳播委員會低功率射頻電機技術規範4.7.4.6節之規定，不必要發射頻率屬 2.7 規定頻段者，應符合 2.8節之規定。

10.2 量測方法

將待測物置於非金屬桌面，使其在測試模式狀態，且設定為高、中、低各頻道產生最高峰值輸出功率的傳輸速率，接收天線置於3米外，且桌面要360度旋轉，另外接收天線也要從1米至4米升降變化，接收天線置於水平、垂直極向各執行測試一次。待測物若為手持式則分別要以三軸相放置，並分別測試以找出最大輻射電場強度。

10.3 量測場強輻射之儀器

(1)量測儀器

儀器名稱	製　造　者	型　　號
EMI Receiver	R&S	ESCI
Spectrum Analyzer	R&S	FSU46
Horn Antenna	EMCO	3115
Horn Antenna	EMCO	3116
PRE-Amplifier	Agilent	8449B
PRE-Amplifier	Agilent	8447D
BiLog Antenna	ETC	MCTD 2786B
PRE-Amplifier	Agilent	83051

測試軟體: LZ-RF (Ver. ETC-3A2)

(2)儀器設定

Frequency Band (MHz)	Instrument	Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	RF Test Receiver	Quasi-Peak	120 kHz	300 kHz
	RF Test Receiver	Peak	120 kHz	300 kHz
Above 1000	Spectrum Analyzer	Peak	1 MHz	1 MHz
	Spectrum Analyzer	Average	1 MHz	10 Hz

10.4 場強度之計算

場強之計算公式如下

結果值 = 讀值 + 校正因子

其中校正因子為：

天線因子+ 饋線損失 + 濾波器損失（若有使用） - 放大器增益（若有使用）

量測結果請見下頁。

10.5 場強輻射之量測結果

10.5.1 諧波發射

測試工程師: 羅世勇

測試日期: Aug. 24, 2018 環境溫度: 21℃ 環境濕度: 63%

10.5.1.1 調變技術: IEEE 802.11a

a. Channel Low

基本波頻率 : 5260 MHz

輻射頻率	天線極性	機器讀值 (dBuV/m)@3m		校正因子	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
10520.0000	H	---	---	3.59	---	---	74.0	54.0	---
10520.0000	V	---	---	3.59	---	---	74.0	54.0	---
15780.0000	H	---	---	3.42	---	---	74.0	54.0	---
15780.0000	V	---	---	3.42	---	---	74.0	54.0	---
21040.0000	H	---	---	13.89	---	---	74.0	54.0	---
21040.0000	V	---	---	13.89	---	---	74.0	54.0	---
26300.0000	H	---	---	14.62	---	---	74.0	54.0	---
26300.0000	V	---	---	14.62	---	---	74.0	54.0	---

註：

1. 標記“---”表發射之訊號太弱而儀器無法量測。
2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值，在此以標記“#”表之。
3. 標記“*”表示為本地震盪頻率及其諧波
4. 量測不準確度: ±4.1dB(1GHz≦f<18GHz)

b. Channel Mid

基本波頻率 ：5300 MHz

輻射頻率	天線極性	機器讀值 (dBuV/m)@3m		校正因子	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
10600.0000	H	---	---	3.54	---	---	74.0	54.0	---
10600.0000	V	---	---	3.54	---	---	74.0	54.0	---
15900.0000	H	---	---	3.32	---	---	74.0	54.0	---
15900.0000	V	---	---	3.32	---	---	74.0	54.0	---
21200.0000	H	---	---	12.22	---	---	74.0	54.0	---
21200.0000	V	---	---	12.22	---	---	74.0	54.0	---
26500.0000	H	---	---	13.70	---	---	74.0	54.0	---
26500.0000	V	---	---	13.70	---	---	74.0	54.0	---

註：

1. 標記“---”表發射之訊號太弱而儀器無法量測。
2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值，在此以標記“#”表之。
3. 標記“*”表示為本地震盪頻率及其諧波
4. 量測不準確度: ±4.1dB(1GHz≦f<18GHz)

c. Channel High

基本波頻率 ：5320 MHz

輻射頻率	天線極性	機器讀值 (dBuV/m)@3m		校正因子	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
10640.0000	H	---	---	3.59	---	---	74.0	54.0	---
10640.0000	V	---	---	3.59	---	---	74.0	54.0	---
15960.0000	H	---	---	3.25	---	---	74.0	54.0	---
15960.0000	V	---	---	3.25	---	---	74.0	54.0	---
21280.0000	H	---	---	12.18	---	---	74.0	54.0	---
21280.0000	V	---	---	12.18	---	---	74.0	54.0	---
26600.0000	H	---	---	13.68	---	---	74.0	54.0	---
26600.0000	V	---	---	13.68	---	---	74.0	54.0	---

註：

1. 標記“---”表發射之訊號太弱而儀器無法量測。
2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值，在此以標記“#”表之。
3. 標記“*”表示為本地震盪頻率及其諧波
4. 量測不準確度: ±4.1dB(1GHz≦f<18GHz)
   ±4.4dB(18GHz≦f≦40GHz)

10.5.1.2 調變技術: IEEE 802.11an HT20

a. Channel Low

基本波頻率 : 5260 MHz

輻射頻率	天線極性	機器讀值 (dBuV/m)@3m		校正因子	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
10520.0000	H	---	---	3.59	---	---	74.0	54.0	---
10520.0000	V	---	---	3.59	---	---	74.0	54.0	---
15780.0000	H	---	---	3.42	---	---	74.0	54.0	---
15780.0000	V	---	---	3.42	---	---	74.0	54.0	---
21040.0000	H	---	---	13.89	---	---	74.0	54.0	---
21040.0000	V	---	---	13.89	---	---	74.0	54.0	---
26300.0000	H	---	---	14.62	---	---	74.0	54.0	---
26300.0000	V	---	---	14.62	---	---	74.0	54.0	---

註：

1. 標記“---”表發射之訊號太弱而儀器無法量測。
2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值，在此以標記“#”表之。
3. 標記“*”表示為本地震盪頻率及其諧波
4. 量測不準確度: ±4.1dB(1GHz≦f<18GHz)

b. Channel Mid

基本波頻率 ：5300 MHz

輻射頻率	天線極性	機器讀值 (dBuV/m)@3m		校正因子	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
10600.0000	H	---	---	3.54	---	---	74.0	54.0	---
10600.0000	V	---	---	3.54	---	---	74.0	54.0	---
15900.0000	H	---	---	3.32	---	---	74.0	54.0	---
15900.0000	V	---	---	3.32	---	---	74.0	54.0	---
21200.0000	H	---	---	12.22	---	---	74.0	54.0	---
21200.0000	V	---	---	12.22	---	---	74.0	54.0	---
26500.0000	H	---	---	13.70	---	---	74.0	54.0	---
26500.0000	V	---	---	13.70	---	---	74.0	54.0	---

註：

1. 標記“---”表發射之訊號太弱而儀器無法量測。
2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值，在此以標記“#”表之。
3. 標記“*”表示為本地震盪頻率及其諧波
4. 量測不準確度: ±4.1dB(1GHz≦f<18GHz)

c. Channel High

基本波頻率 ：5320 MHz

輻射頻率	天線極性	機器讀值 (dBuV/m)@3m		校正因子	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
10640.0000	H	---	---	3.59	---	---	74.0	54.0	---
10640.0000	V	---	---	3.59	---	---	74.0	54.0	---
15960.0000	H	---	---	3.25	---	---	74.0	54.0	---
15960.0000	V	---	---	3.25	---	---	74.0	54.0	---
21280.0000	H	---	---	12.18	---	---	74.0	54.0	---
21280.0000	V	---	---	12.18	---	---	74.0	54.0	---
26600.0000	H	---	---	13.68	---	---	74.0	54.0	---
26600.0000	V	---	---	13.68	---	---	74.0	54.0	---

註：

1. 標記“---”表發射之訊號太弱而儀器無法量測。
2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值，在此以標記“#”表之。
3. 標記“*”表示為本地震盪頻率及其諧波
4. 量測不準確度: ±4.1dB(1GHz≦f<18GHz)
   ±4.4dB(18GHz≦f≦40GHz)

10.5.1.3 調變技術: IEEE 802.11an HT40

a. Channel Low

基本波頻率 : 5270 MHz

輻射頻率	天線極性	機器讀值 (dBuV/m)@3m		校正因子	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
10540.0000	H	---	---	3.65	---	---	74.0	54.0	---
10540.0000	V	---	---	3.65	---	---	74.0	54.0	---
15810.0000	H	---	---	3.38	---	---	74.0	54.0	---
15810.0000	V	---	---	3.38	---	---	74.0	54.0	---
21080.0000	H	---	---	-4.36	---	---	74.0	54.0	---
21080.0000	V	---	---	-4.36	---	---	74.0	54.0	---
26350.0000	H	---	---	-6.06	---	---	74.0	54.0	---
26350.0000	V	---	---	-6.06	---	---	74.0	54.0	---

註：

1. 標記“---”表發射之訊號太弱而儀器無法量測。
2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值，在此以標記“#”表之。
3. 標記“*”表示為本地震盪頻率及其諧波
4. 量測不準確度: ±4.1dB(1GHz≦f<18GHz)

b.Channel High

基本波頻率 ：5310 MHz

輻射頻率	天線極性	機器讀值 (dBuV/m)@3m		校正因子	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
10620.0000	H	---	---	3.56	---	---	74.0	54.0	---
10620.0000	V	---	---	3.56	---	---	74.0	54.0	---
15930.0000	H	---	---	3.29	---	---	74.0	54.0	---
15930.0000	V	---	---	3.29	---	---	74.0	54.0	---
21240.0000	H	---	---	12.20	---	---	74.0	54.0	---
21240.0000	V	---	---	12.20	---	---	74.0	54.0	---
26550.0000	H	---	---	13.69	---	---	74.0	54.0	---
26550.0000	V	---	---	13.69	---	---	74.0	54.0	---

註：

1. 標記“---”表發射之訊號太弱而儀器無法量測。
2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值，在此以標記“#”表之。
3. 標記“*”表示為本地震盪頻率及其諧波
4. 量測不準確度: ±4.1dB(1GHz≦f<18GHz)
   ±4.4dB(18GHz≦f≦40GHz)

10.5.1.4 IEEE 802.11ac (80MHz)

Channel High

基本波頻率 ：5290 MHz

輻射頻率	天線極性	機器讀值 (dBuV/m)@3m		校正因子	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
10580.0000	H	---	---	3.52	---	---	74.0	54.0	---
10580.0000	V	---	---	3.52	---	---	74.0	54.0	---
15870.0000	H	---	---	3.35	---	---	74.0	54.0	---
15870.0000	V	---	---	3.35	---	---	74.0	54.0	---
21160.0000	H	---	---	12.24	---	---	74.0	54.0	---
21160.0000	V	---	---	12.24	---	---	74.0	54.0	---
26450.0000	H	---	---	13.60	---	---	74.0	54.0	---
26450.0000	V	---	---	13.60	---	---	74.0	54.0	---

註：

1. 標記“---”表發射之訊號太弱而儀器無法量測。
2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值，在此以標記“#”表之。
3. 標記“*”表示為本地震盪頻率及其諧波
4. 量測不準確度: ±4.1dB(1GHz≦f<18GHz)
   ±4.4dB(18GHz≦f≦40GHz)

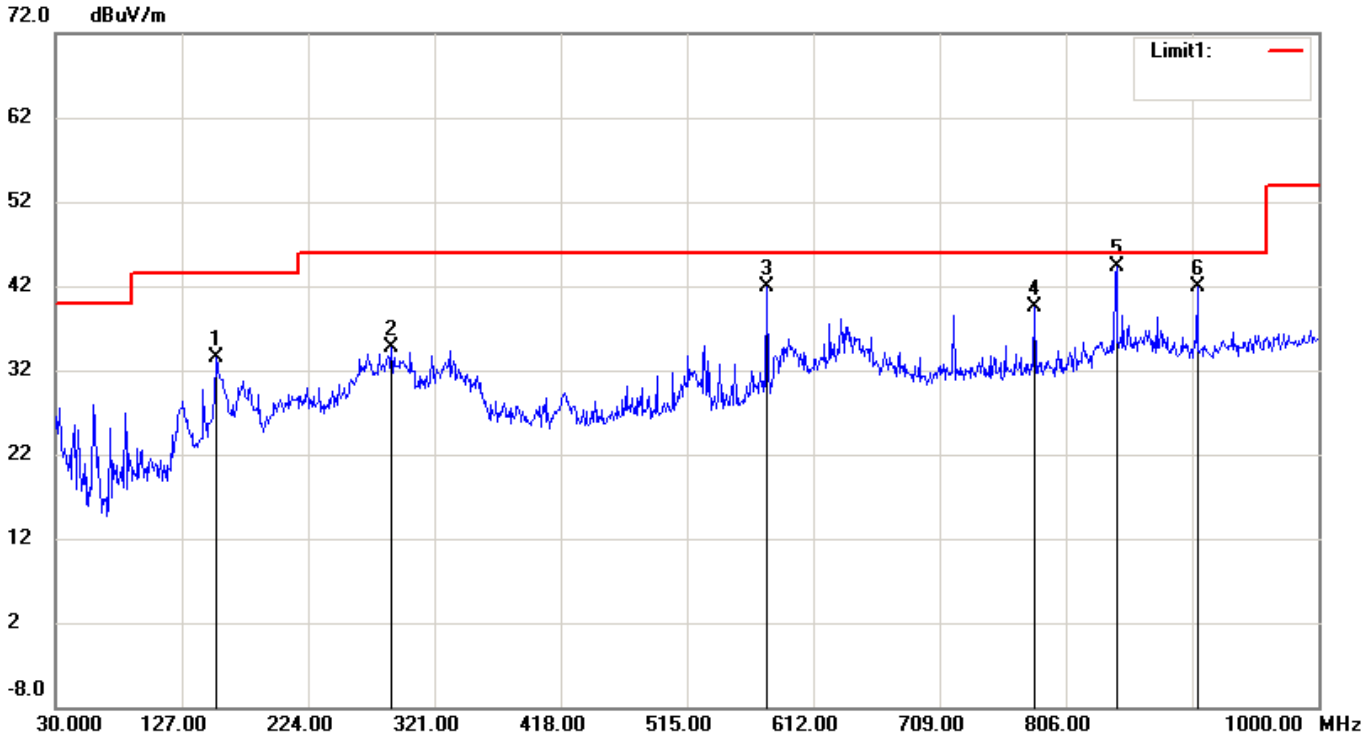
10.5.2 其它不必要之訊號

10.5.2.1 測試狀態: HGST mode

10.5.2.1.1 1GHz以下

File: **18-07-MAS-037_Below 1G** **#23** **Date:** **2018/8/24** **Temperature:** **21 ℃**

Time: **下午 12:04:08** **Humidity:** **63 %**

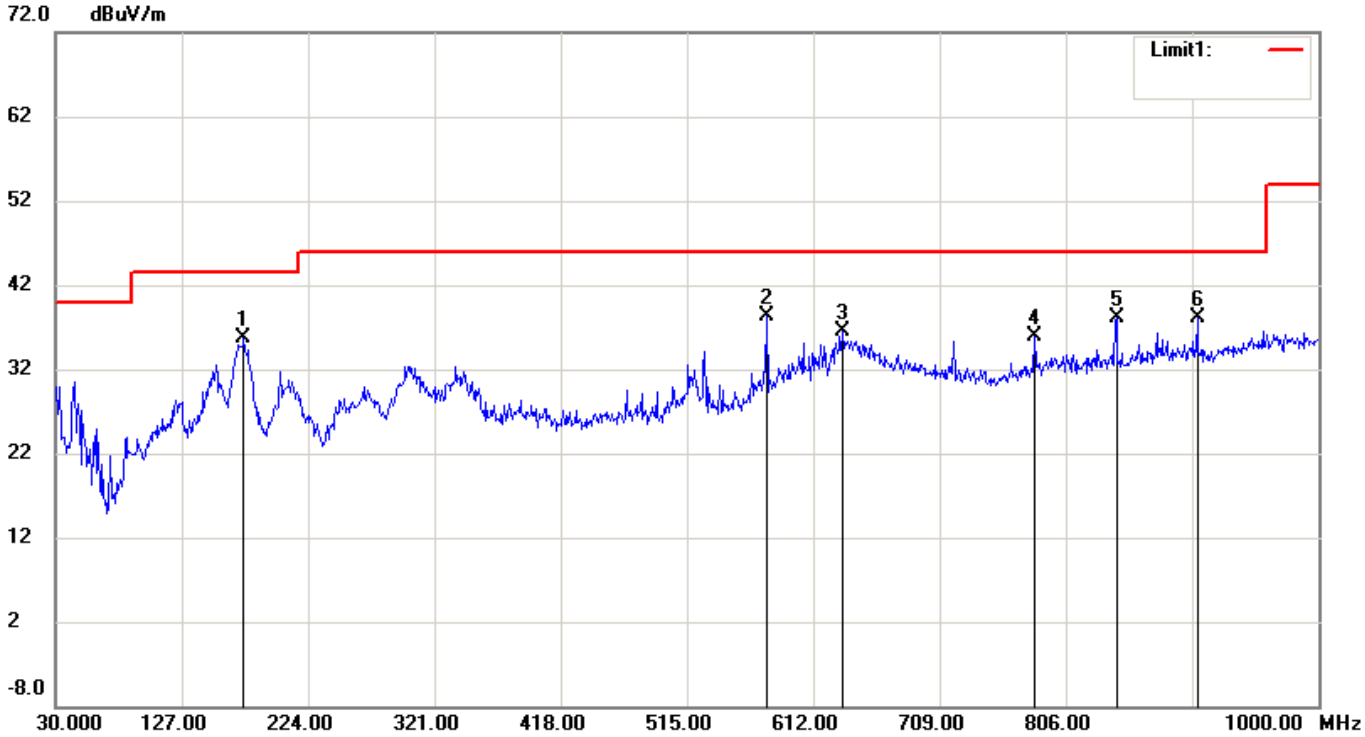


Condition: **NCC_LP0002_30-1000MHz** **Polarization:** **Horizontal**
EUT: **Distance:** **3m**
Model:
Test Mode: **1TB HGST**
Note: **5-3**

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	153.1900	41.73	QP	-8.31	33.42	43.50	-10.08
2	288.0200	38.79	QP	-4.06	34.73	46.00	-11.27
3	576.1100	41.22	QP	0.61	41.83	46.00	-4.17
4	781.7500	35.07	QP	4.48	39.55	46.00	-6.45
5	844.8000	38.31	QP	6.05	44.36	46.00	-1.64
6	906.8800	34.55	QP	7.27	41.82	46.00	-4.18

File: 18-07-MAS-037_Below 1G **#24** **Date:** 2018/8/24 **Temperature:** 21 ℃

Time: 下午 12:08:46 **Humidity:** 63 %



Condition: NCC_LP0002_30-1000MHz **Polarization:** Vertical
EUT: **Distance:** 3m
Model:
Test Mode: 1TB HGST
Note: 5-3

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	174.5300	44.95	QP	-9.17	35.78	43.50	-7.72
2	576.1100	37.68	QP	0.61	38.29	46.00	-7.71
3	634.3100	34.38	QP	2.22	36.60	46.00	-9.40
4	781.7500	31.50	QP	4.48	35.98	46.00	-10.02
5	844.8000	31.98	QP	6.05	38.03	46.00	-7.97
6	906.8800	30.89	QP	7.27	38.16	46.00	-7.84

10.5.2.1.2 1GHz以上

10.5.2.1.2.1 調變技術: IEEE 802.11a

10.5.2.1.2.1.1 操作頻率 : 5260 MHz

輻射頻率	天線極性	機器讀值 (dBuV/m) @3m		校正因子	結果值 (dBuV/m) @3m		限制值 (dBuV/m) @3m		餘裕值 (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
1000.0000	V	53.6	---	-13.40	40.2	---	74	54	-13.8
1068.1090	H	53.3	---	-13.00	40.3	---	74	54	-13.7
1177.0833	H	53.8	---	-12.50	41.3	---	74	54	-12.7
1183.8941	V	53.1	---	-12.40	40.7	---	74	54	-13.3
1326.9230	H	52.3	---	-11.70	40.6	---	74	54	-13.4
1435.8974	H	52.0	---	-11.10	40.9	---	74	54	-13.1
1442.7083	V	53.0	---	-11.10	41.9	---	74	54	-12.1
2907.0513	V	49.9	---	-5.00	44.9	---	74	54	-9.1
2961.5385	H	51.9	---	-4.80	47.1	---	74	54	-6.9
3036.4582	H	50.7	---	-4.50	46.2	---	74	54	-7.8
3233.9744	V	50.4	---	-3.90	46.5	---	74	54	-7.5
3417.8685	V	49.5	---	-3.30	46.2	---	74	54	-7.8
6548.2691	V	47.6	---	1.70	49.3	---	74	54	-4.7

10.5.2.1.2.1.2 操作頻率 : 5300 MHz

輻射頻率	天線極性	機器讀值 (dBuV/m) @3m		校正因子	結果值 (dBuV/m) @3m		限制值 (dBuV/m) @3m		餘裕值 (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
1006.8108	V	53.6	---	-13.40	40.2	---	74	54	-13.8
1074.9200	H	53.7	---	-13.00	40.7	---	74	54	-13.3
1170.2724	V	54.1	---	-12.50	41.6	---	74	54	-12.4
1224.7596	H	54.0	---	-12.20	41.8	---	74	54	-12.2
1388.2211	V	53.7	---	-11.40	42.3	---	74	54	-11.7
1429.0864	V	52.3	---	-11.10	41.2	---	74	54	-12.8
1435.8974	H	52.5	---	-11.10	41.4	---	74	54	-12.6
1578.9263	H	52.4	---	-10.30	42.1	---	74	54	-11.9
2423.4776	V	50.3	---	-6.50	43.8	---	74	54	-10.2
2934.2948	H	52.6	---	-4.90	47.7	---	74	54	-6.3
3050.0801	H	51.0	---	-4.50	46.5	---	74	54	-7.5
3935.4967	V	47.9	---	-1.20	46.7	---	74	54	-7.3
6852.8365	H	49.8	32.0	2.30	52.1	34.3	74	54	-19.7

10.5.2.1.2.1.3 操作頻率 ：5320 MHz

輻射頻率	天線極性	機器讀值 (dBuV/m) @3m		校正因子	結果值 (dBuV/m) @3m		限制值 (dBuV/m) @3m		餘裕值 (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
1068.1090	V	53.7	---	-13.00	40.7	---	74	54	-13.3
1074.9200	H	54.1	---	-13.00	41.1	---	74	54	-12.9
1170.2724	H	53.3	---	-12.50	40.8	---	74	54	-13.2
1170.2724	V	53.0	---	-12.50	40.5	---	74	54	-13.5
1333.7340	V	52.2	---	-11.60	40.6	---	74	54	-13.4
1347.3558	H	52.6	---	-11.60	41.0	---	74	54	-13.0
1456.3300	H	52.5	---	-11.00	41.5	---	74	54	-12.5
2947.9167	V	49.9	---	-4.80	45.1	---	74	54	-8.9
3050.0801	H	51.8	---	-4.50	47.3	---	74	54	-6.7
3084.1345	V	50.1	---	-4.40	45.7	---	74	54	-8.3
3145.4326	H	51.0	---	-4.20	46.8	---	74	54	-7.2
3397.4358	V	49.4	---	-3.40	46.0	---	74	54	-8.0
6852.8365	H	52.7	32.9	2.30	55.0	35.2	74	54	-18.8

註：1. 繪圖資料請參考第 179-196 頁。
2. 〝#〞，表示干擾值很低，記錄其峰值。
3. 標記”---“表發射之訊號太弱而儀器無法量測。
4. 量測不準確度: +4.20dB/ -4.24 dB (30MHz≦f<1GHz)
+4.10dB/ -4.10 dB (1GHz≦f<18GHz)
+4.40dB/ -4.42 dB (18GHz≦f≦40GHz)

10.5.2.1.2.2 調變技術: IEEE 802.11an HT20

10.5.2.1.2.2.1 操作頻率 : 5260 MHz

輻射頻率	天線極性	機器讀值 (dBuV/m) @3m		校正因子	結果值 (dBuV/m) @3m		限制值 (dBuV/m) @3m		餘裕值 (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
1006.8108	V	53.9	---	-13.40	40.5	---	74	54	-13.5
1074.9200	V	54.3	---	-13.00	41.3	---	74	54	-12.7
1081.7308	H	53.4	---	-13.00	40.4	---	74	54	-13.6
1163.4614	V	54.3	---	-12.50	41.8	---	74	54	-12.2
1429.0864	V	52.6	---	-11.10	41.5	---	74	54	-12.5
1585.7372	H	53.3	---	-10.20	43.1	---	74	54	-10.9
2947.9167	H	52.7	---	-4.80	47.9	---	74	54	-6.1
3111.3478	V	50.9	---	-4.30	46.6	---	74	54	-7.4
3131.8106	H	51.3	---	-4.20	47.1	---	74	54	-6.9
3240.7853	V	51.7	---	-3.90	47.8	---	74	54	-6.2
3247.5961	H	50.9	---	-3.80	47.1	---	74	54	-6.9
3370.1923	H	50.6	---	-3.50	47.1	---	74	54	-6.9
6873.1410	H	49.8	32.2	2.30	52.1	34.5	74	54	-19.5

10.5.2.1.2.2.2 操作頻率 : 5300 MHz

輻射頻率	天線極性	機器讀值 (dBuV/m) @3m		校正因子	結果值 (dBuV/m) @3m		限制值 (dBuV/m) @3m		餘裕值 (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
1000.0000	V	54.6	---	-13.40	41.2	---	74	54	-12.8
1061.2980	H	53.7	---	-13.10	40.6	---	74	54	-13.4
1074.9200	V	53.5	---	-13.00	40.5	---	74	54	-13.5
1170.2724	V	53.8	---	-12.50	41.3	---	74	54	-12.7
1177.0833	H	53.5	---	-12.50	41.0	---	74	54	-13.0
1429.0864	V	52.7	---	-11.10	41.6	---	74	54	-12.4
1429.1086	H	53.1	---	-11.10	42.0	---	74	54	-12.0
1538.0608	H	52.5	---	-10.50	42.0	---	74	54	-12.0
2934.2948	V	49.9	---	-4.90	45.0	---	74	54	-9.0
3118.1891	V	50.9	---	-4.30	46.6	---	74	54	-7.4
3574.5192	H	50.3	---	-2.70	47.6	---	74	54	-6.4
4303.2852	H	48.5	---	-1.00	47.5	---	74	54	-6.5
6812.2276	H	51.9	32.6	2.20	54.1	34.8	74	54	-19.2

10.5.2.1.2.2.3 操作頻率 ：5320 MHz

輻射頻率	天線極性	機器讀值 (dBuV/m) @3m		校正因子	結果值 (dBuV/m) @3m		限制值 (dBuV/m) @3m		餘裕值 (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
1006.8108	V	54.0	---	-13.40	40.6	---	74	54	-13.4
1074.9200	V	54.0	---	-13.00	41.0	---	74	54	-13.0
1081.7308	H	53.1	---	-13.00	40.1	---	74	54	-13.9
1177.0833	H	53.1	---	-12.50	40.6	---	74	54	-13.4
1395.0320	V	53.0	---	-11.30	41.7	---	74	54	-12.3
1442.7083	H	54.1	---	-11.10	43.0	---	74	54	-11.0
2382.6122	V	49.6	---	-6.60	43.0	---	74	54	-11.0
2941.1057	H	51.4	---	-4.80	46.6	---	74	54	-7.4
2961.5385	V	50.9	---	-4.80	46.1	---	74	54	-7.9
3090.9456	V	51.1	---	-4.30	46.8	---	74	54	-7.2
3138.6217	H	50.7	---	-4.20	46.5	---	74	54	-7.5
3322.5160	H	50.1	---	-3.60	46.5	---	74	54	-7.5

註：1. 繪圖資料請參考第 197-214 頁。
2. 〝#〞，表示干擾值很低，記錄其峰值。
3. 標記”---“表發射之訊號太弱而儀器無法量測。
4. 量測不準確度: +4.20dB/ -4.24 dB (30MHz≦f<1GHz)
+4.10dB/ -4.10 dB (1GHz≦f<18GHz)
+4.40dB/ -4.42 dB (18GHz≦f≦40GHz)

10.5.2.1.2.3 調變技術: IEEE 802.11an HT40

10.5.2.1.2.3.1 操作頻率 : 5270 MHz

輻射頻率	天線極性	機器讀值 (dBuV/m) @3m		校正因子	結果值 (dBuV/m) @3m		限制值 (dBuV/m) @3m		餘裕值 (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
1000.0000	V	54.5	---	-13.40	41.1	---	74	54	-12.9
1081.7308	H	53.3	---	-13.00	40.3	---	74	54	-13.7
1170.2724	V	52.8	---	-12.50	40.3	---	74	54	-13.7
1272.4358	H	53.5	---	-12.00	41.5	---	74	54	-12.5
1401.8430	V	52.7	---	-11.30	41.4	---	74	54	-12.6
1429.0864	H	54.1	---	-11.10	43.0	---	74	54	-11.0
1572.1153	H	53.0	---	-10.30	42.7	---	74	54	-11.3
2913.8622	V	50.7	---	-4.90	45.8	---	74	54	-8.2
2927.4840	H	52.4	---	-4.90	47.5	---	74	54	-6.5
3056.8910	V	50.4	---	-4.50	45.9	---	74	54	-8.1
3138.6217	H	51.4	---	-4.20	47.2	---	74	54	-6.8
3240.7853	V	50.3	---	-3.90	46.4	---	74	54	-7.6
6852.8365	H	49.7	32.0	2.30	52.0	34.3	74	54	-19.7

10.5.2.1.2.3.2 操作頻率 ：5310 MHz

輻射頻率	天線極性	機器讀值 (dBuV/m) @3m		校正因子	結果值 (dBuV/m) @3m		限制值 (dBuV/m) @3m		餘裕值 (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
1074.9200	H	53.5	---	-13.00	40.5	---	74	54	-13.5
1088.5416	V	53.6	---	-12.90	40.7	---	74	54	-13.3
1177.0833	H	54.2	---	-12.50	41.7	---	74	54	-12.3
1177.0833	V	52.6	---	-12.50	40.1	---	74	54	-13.9
1224.7596	H	53.8	---	-12.20	41.6	---	74	54	-12.4
1279.2467	V	52.2	---	-11.90	40.3	---	74	54	-13.7
1435.8974	V	52.0	---	-11.10	40.9	---	74	54	-13.1
1476.7627	H	52.6	---	-10.90	41.7	---	74	54	-12.3
2859.3750	H	51.7	---	-5.10	46.6	---	74	54	-7.4
2920.6730	H	52.4	---	-4.90	47.5	---	74	54	-6.5
2927.4840	V	50.4	---	-4.90	45.5	---	74	54	-8.5
3111.3782	V	50.5	---	-4.30	46.2	---	74	54	-7.8

註：1. 繪圖資料請參考第 215-226 頁。
2. 〝#〞，表示干擾值很低，記錄其峰值。
3. 標記”---“表發射之訊號太弱而儀器無法量測。
4. 量測不準確度: +4.20dB/ -4.24 dB (30MHz≦f<1GHz)
+4.10dB/ -4.10 dB (1GHz≦f<18GHz)
+4.40dB/ -4.42 dB (18GHz≦f≦40GHz)

10.5.2.1.2.4 IEEE 802.11ac (80MHz)

操作頻率 : 5290 MHz

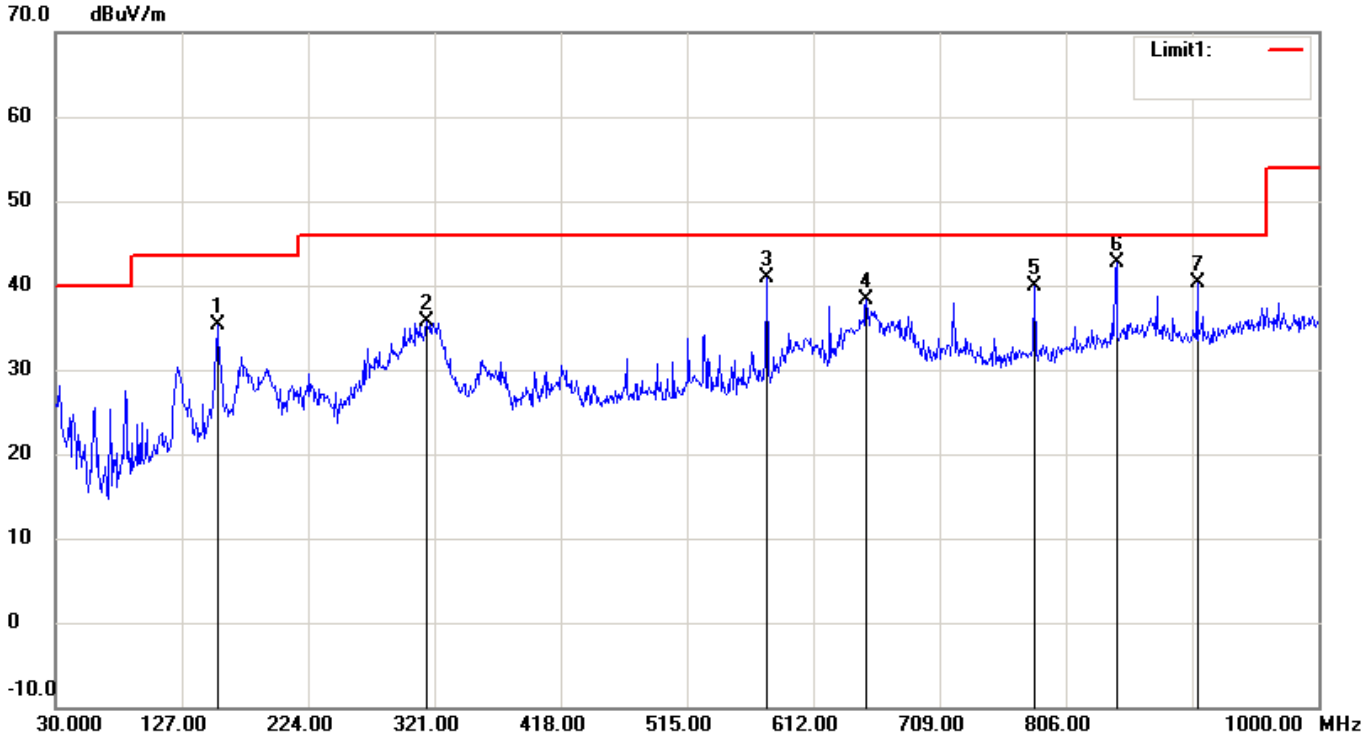
輻射頻率	天線極性	機器讀值 (dBuV/m) @3m		校正因子	結果值 (dBuV/m) @3m		限制值 (dBuV/m) @3m		餘裕值 (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
1006.8108	V	53.3	---	-13.40	39.9	---	74	54	-14.1
1074.9200	H	54.5	---	-13.00	41.5	---	74	54	-12.5
1074.9200	V	54.8	---	-13.00	41.8	---	74	54	-12.2
1177.0833	H	55.7	---	-12.50	43.2	---	74	54	-10.8
1388.2211	V	54.7	---	-11.40	43.3	---	74	54	-10.7
1422.2755	V	54.6	---	-11.20	43.4	---	74	54	-10.6
1435.8974	H	55.3	---	-11.10	44.2	---	74	54	-9.8
2750.4005	H	52.6	---	-5.50	47.1	---	74	54	-6.9
2750.4005	V	51.0	---	-5.50	45.5	---	74	54	-8.5
2927.4840	H	52.5	---	-4.90	47.6	---	74	54	-6.4
3131.8108	H	51.9	---	-4.20	47.7	---	74	54	-6.3
3131.8108	V	50.7	---	-4.20	46.5	---	74	54	-7.5

註：1. 繪圖資料請參考第 227-232 頁。
2. 〝#〞，表示干擾值很低，記錄其峰值。
3. 標記”---“表發射之訊號太弱而儀器無法量測。
4. 量測不準確度: +4.20dB/ -4.24 dB (30MHz≦f<1GHz)
+4.10dB/ -4.10 dB (1GHz≦f<18GHz)
+4.40dB/ -4.42 dB (18GHz≦f≦40GHz)

10.5.2.2 測試狀態：Toshiba mode

File: 18-07-MAS-037_Below 1G **#5** **Date:** 2018/8/23 **Temperature:** 21 ℃

Time: 下午 07:33:47 **Humidity:** 63 %

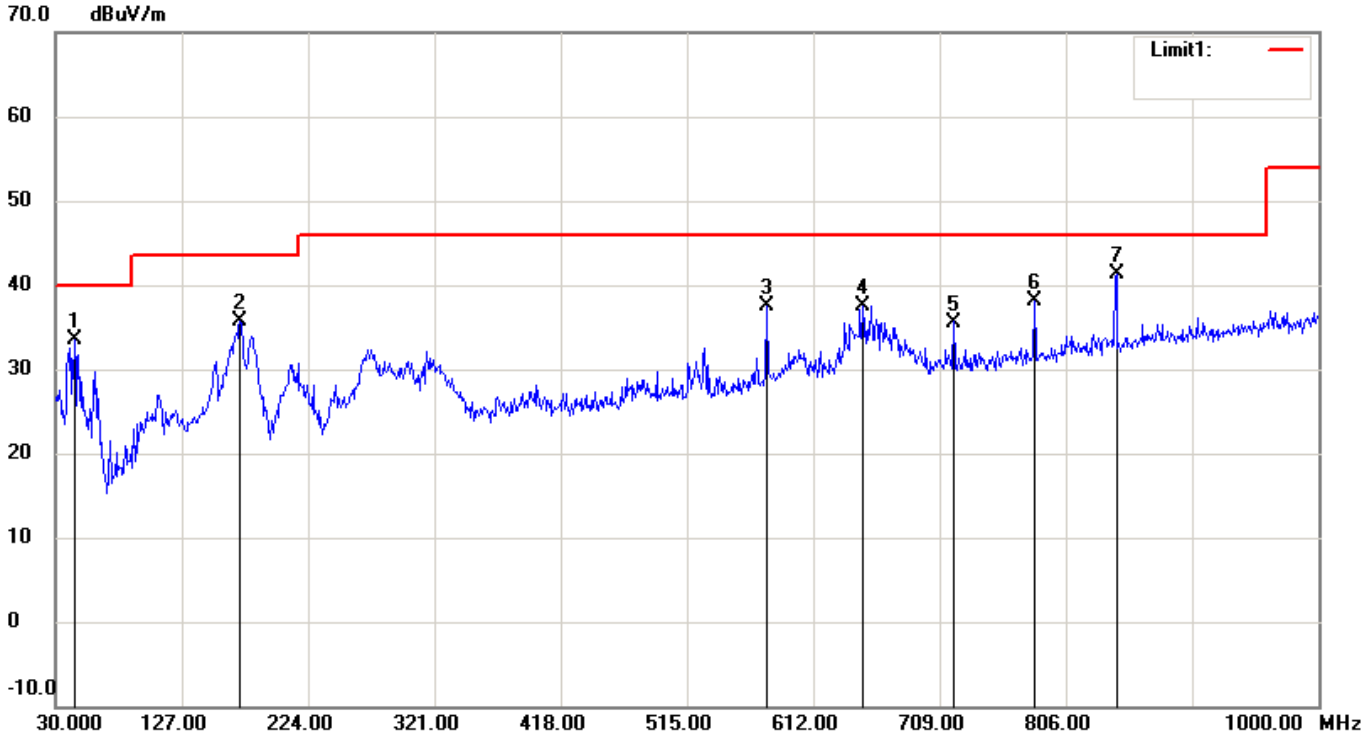


Condition: NCC_LP0002_30-1000MHz **Polarization:** Horizontal
EUT: **Distance:** 3m
Model:
Test Mode: 1TB TOSHIBA
Note: 5-3

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	154.1600	43.68	QP	-8.34	35.34	43.50	-8.16
2	315.1800	39.08	QP	-3.44	35.64	46.00	-10.36
3	576.1100	40.29	QP	0.61	40.90	46.00	-5.10
4	652.7400	35.39	QP	2.92	38.31	46.00	-7.69
5	781.7500	35.46	QP	4.48	39.94	46.00	-6.06
6	844.8000	36.73	QP	6.05	42.78	46.00	-3.22
7	906.8800	33.12	QP	7.27	40.39	46.00	-5.61

File: 18-07-MAS-037_Below 1G **#6** **Date:** 2018/8/23 **Temperature:** 21 ℃

Time: 下午 07:38:26 **Humidity:** 63 %

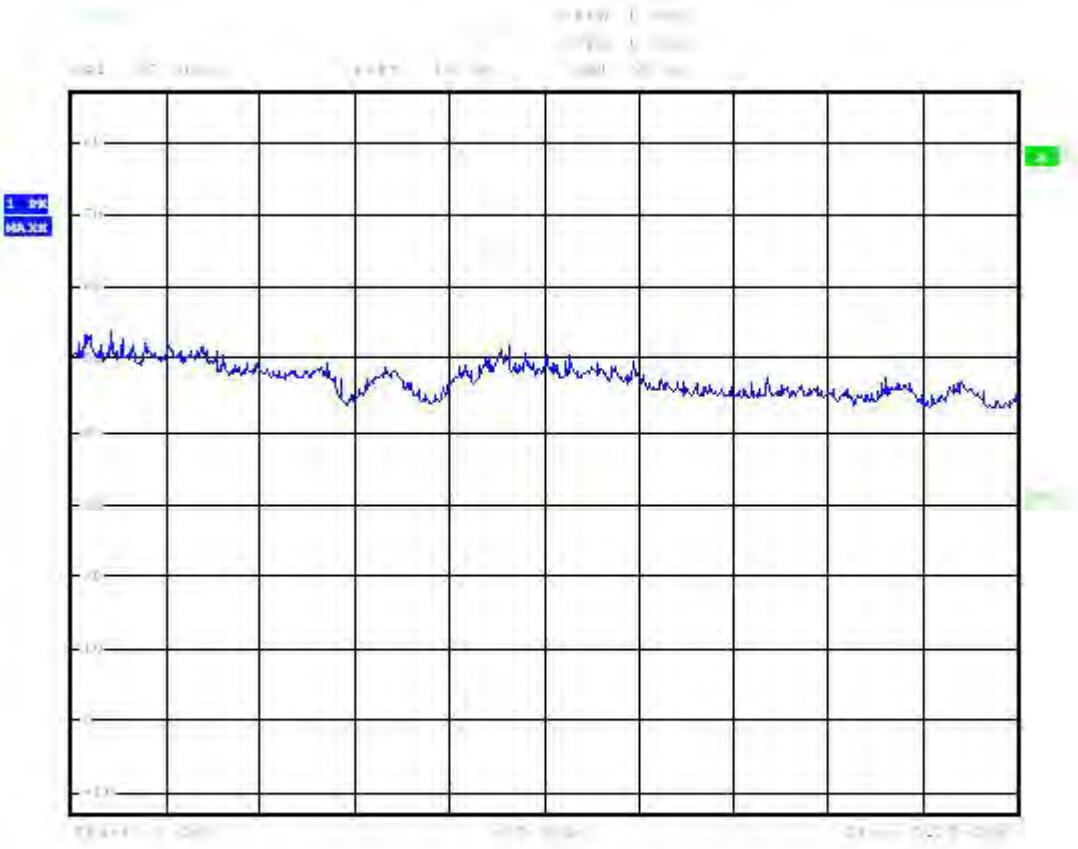


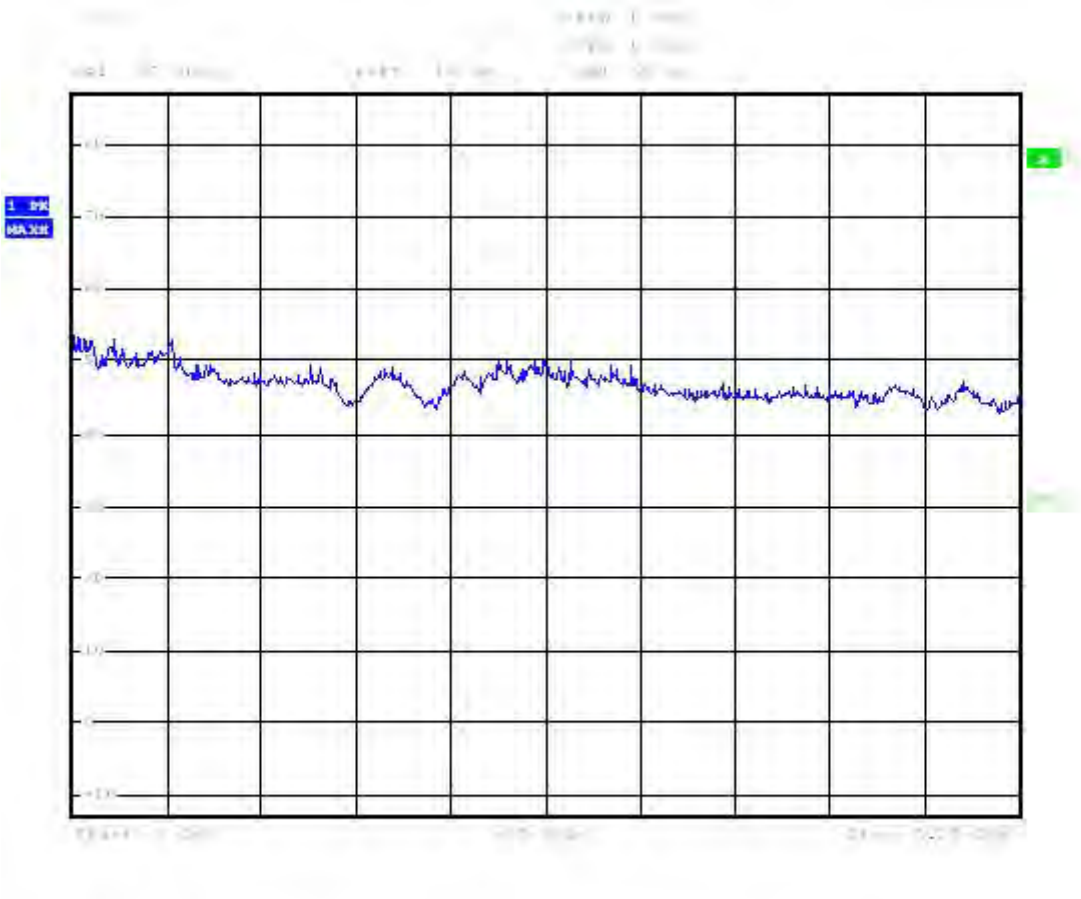
Condition: NCC_LP0002_30-1000MHz **Polarization:** Vertical
EUT: **Distance:** 3m
Model:
Test Mode: 1TB TOSHIBA
Note: 5-3

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	44.5500	42.98	QP	-9.49	33.49	40.00	-6.51
2	171.6200	44.70	QP	-8.95	35.75	43.50	-7.75
3	576.1100	36.81	QP	0.61	37.42	46.00	-8.58
4	649.8300	34.71	QP	2.88	37.59	46.00	-8.41
5	719.6700	32.15	QP	3.45	35.60	46.00	-10.40
6	781.7500	33.69	QP	4.48	38.17	46.00	-7.83
7	844.8000	35.17	QP	6.05	41.22	46.00	-4.78

註：
1. 〝#〞，表示干擾值很低，記錄其峰值。
2. 標記”---“表發射之訊號太弱而儀器無法量測。
3. 量測不準確度: +4.20dB/ -4.24 dB (30MHz≦f<1GHz)
+4.10dB/ -4.10 dB (1GHz≦f<18GHz)
+4.40dB/ -4.42 dB (18GHz≦f≦40GHz)
+4.40dB/ -4.42 dB (18GHz≦f≦40GHz)

調變技術: IEEE 802.11a

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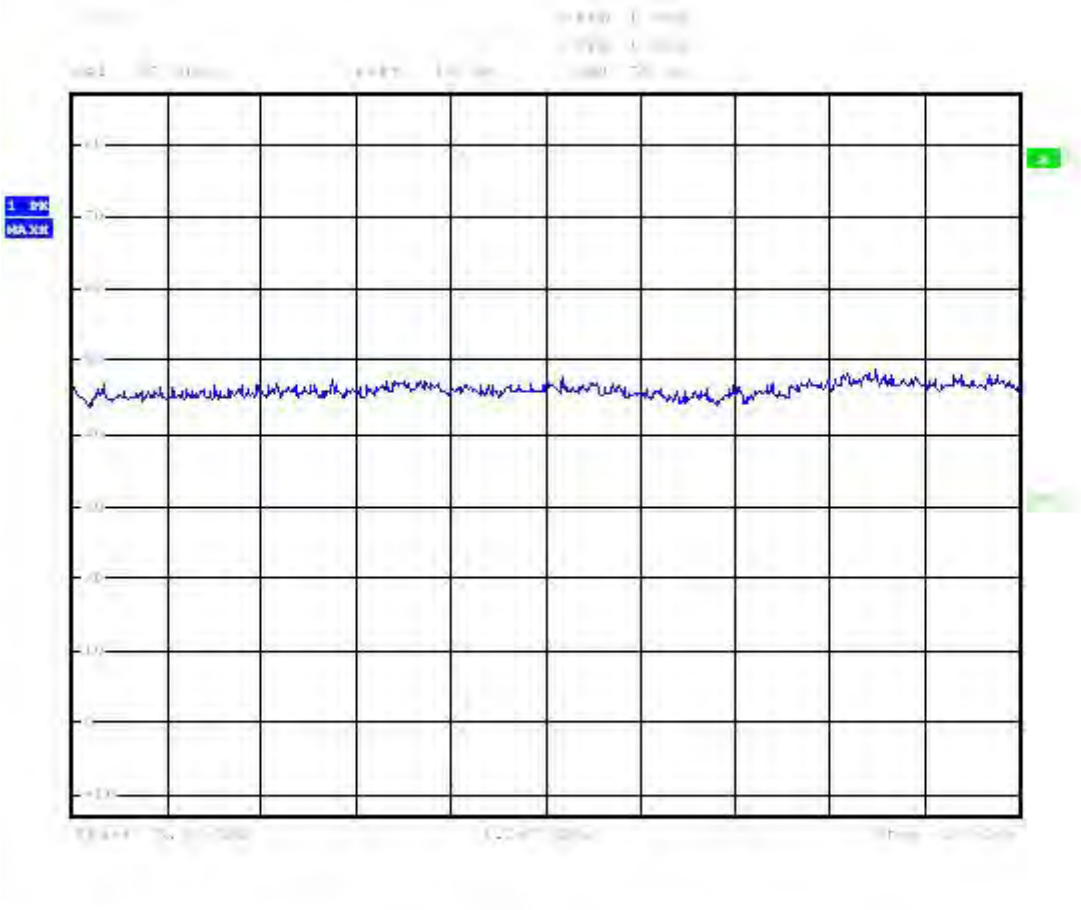
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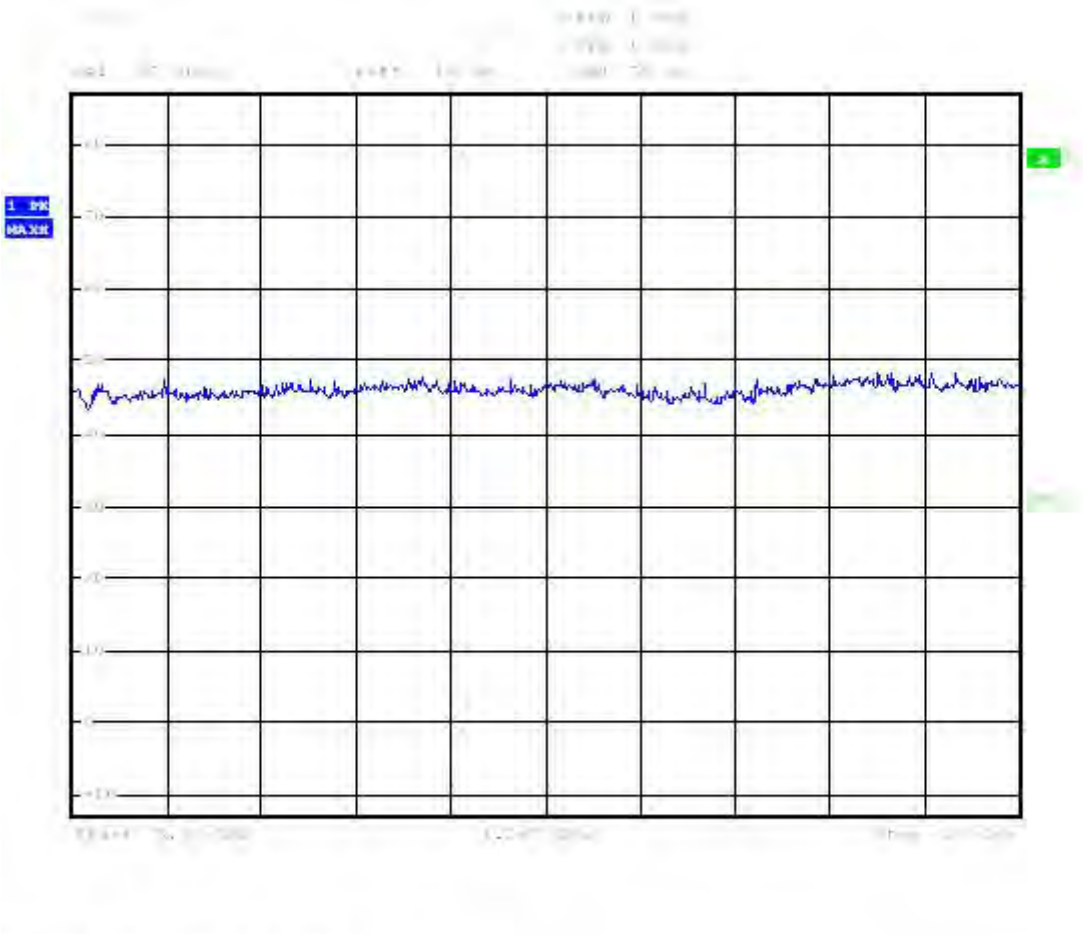

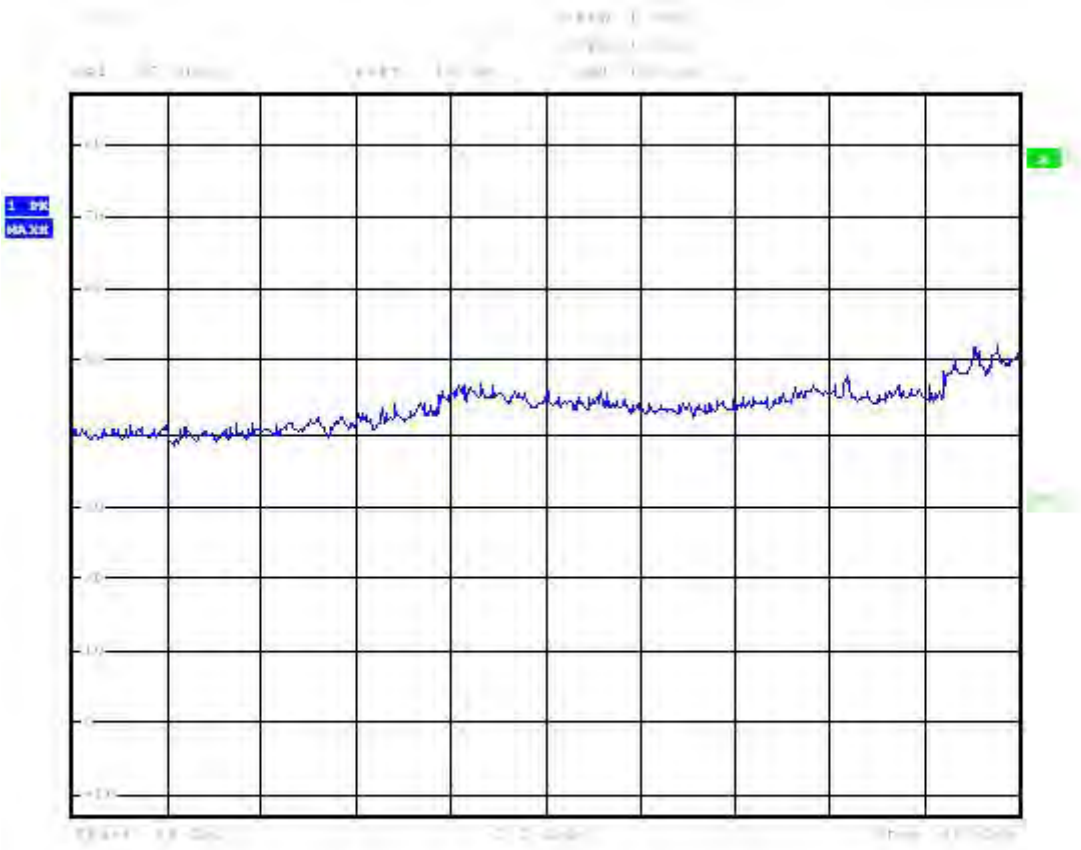
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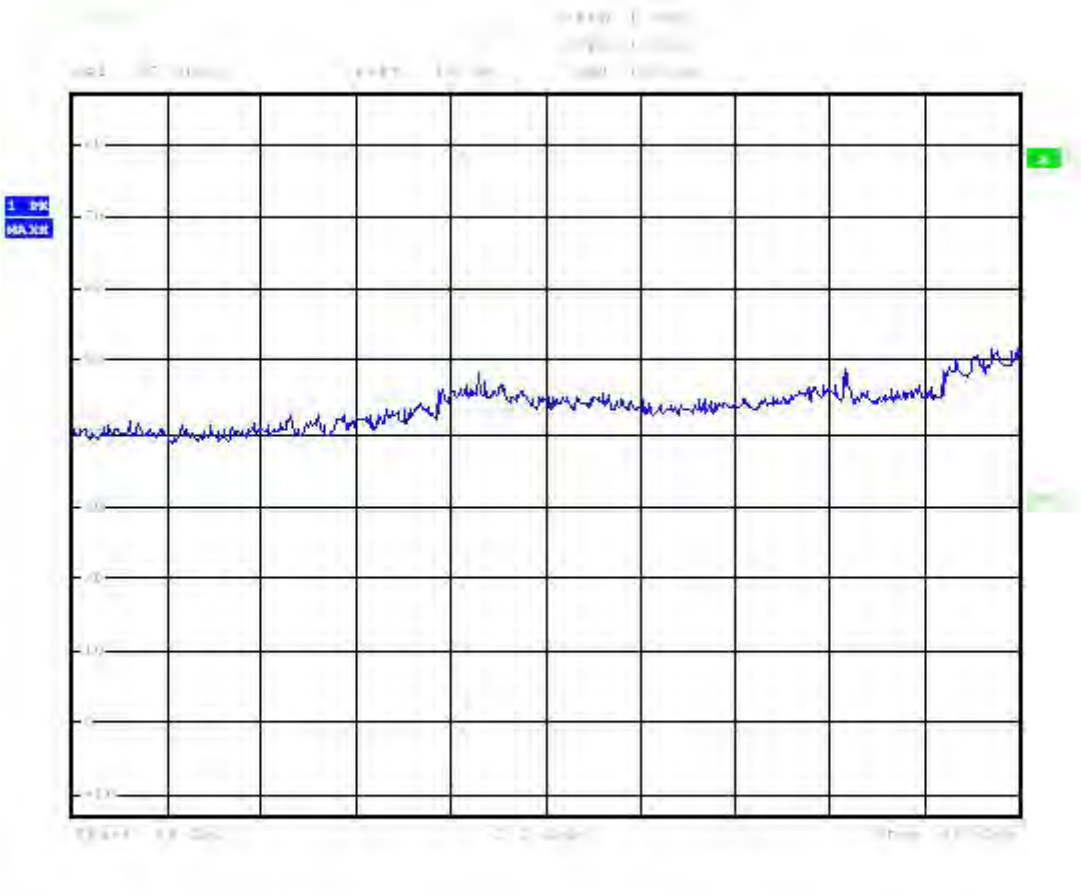
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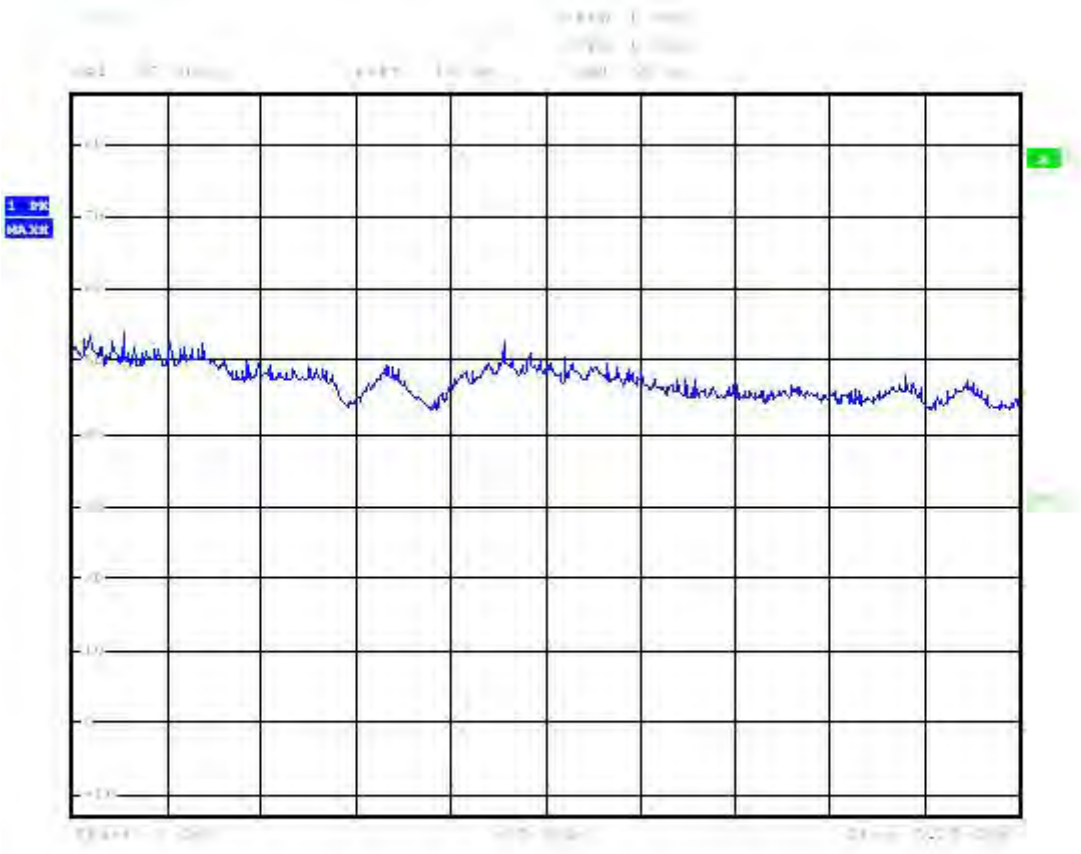

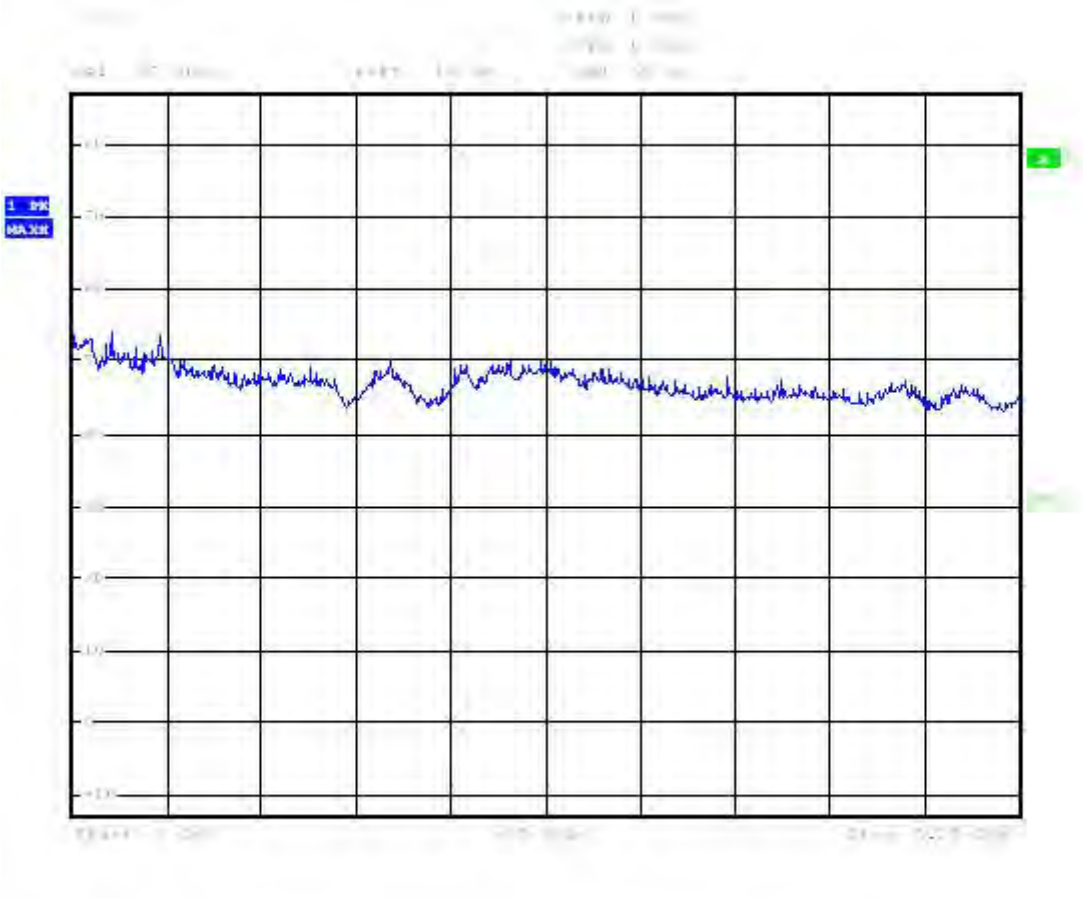

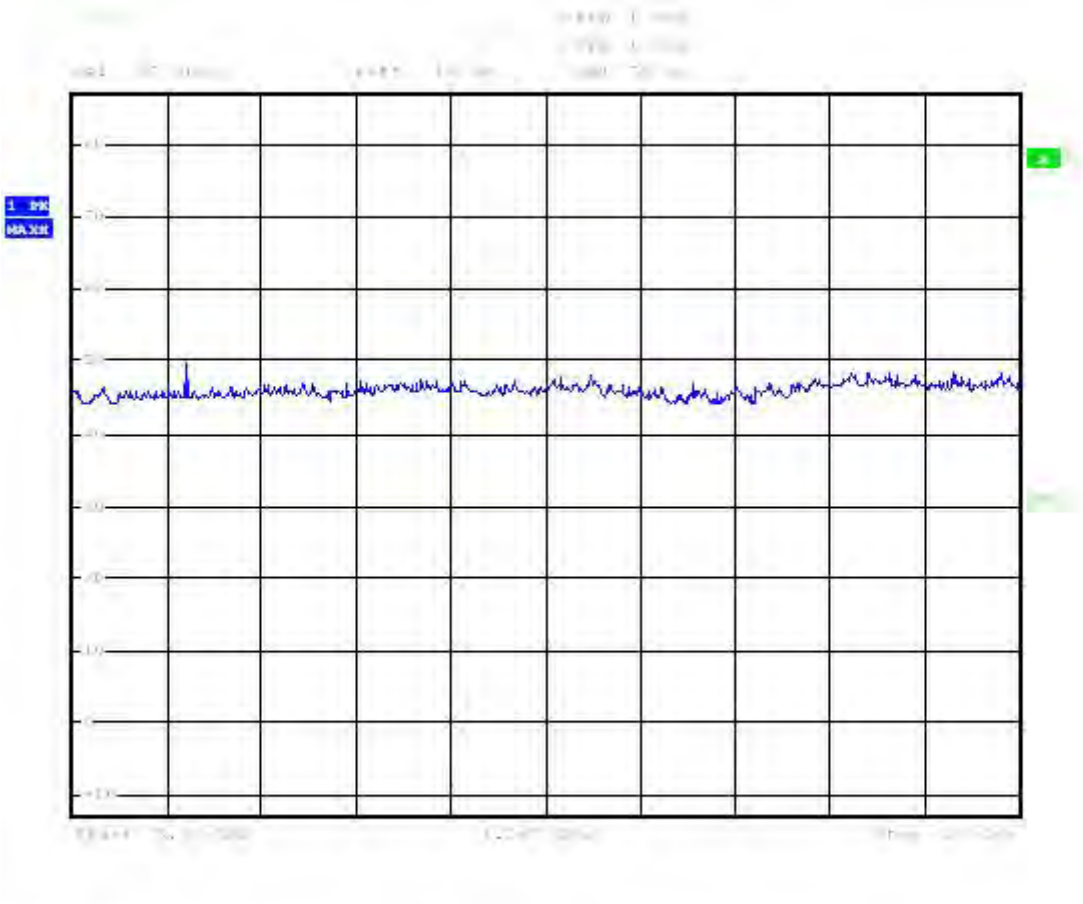
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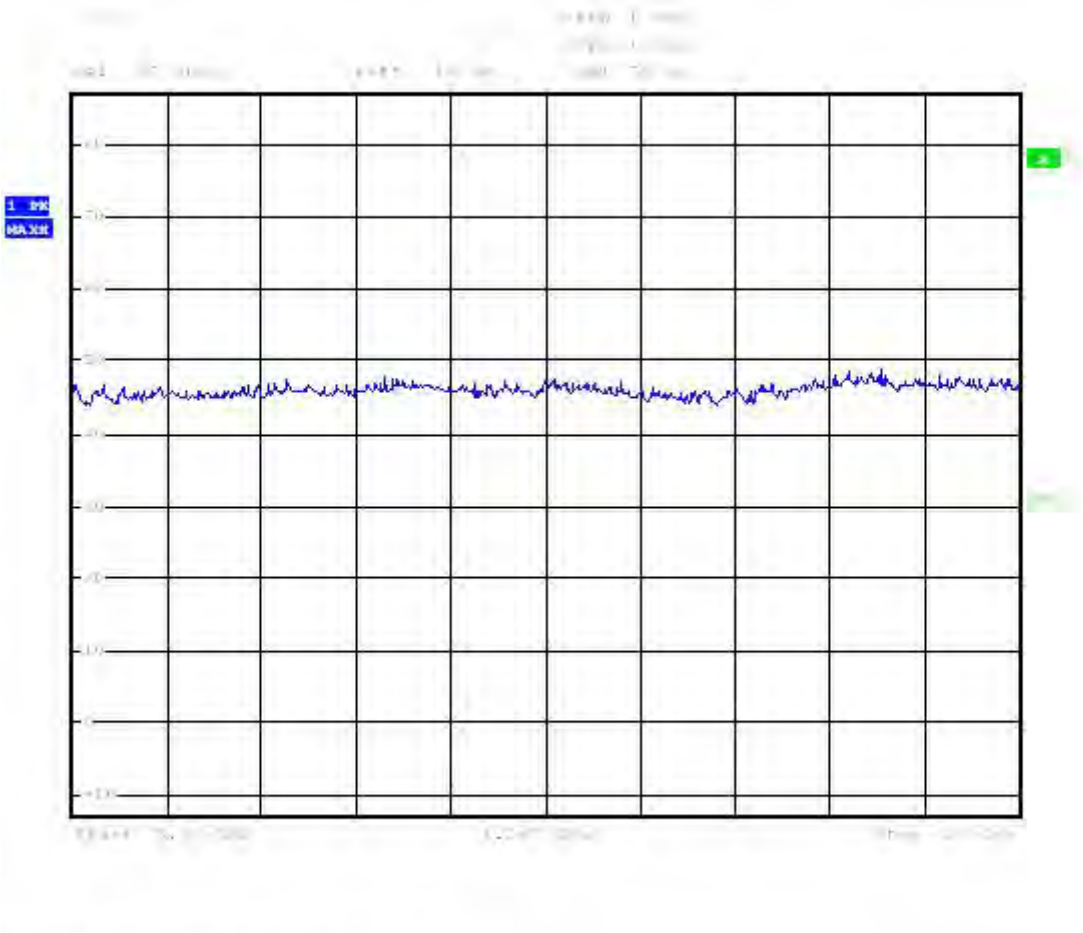
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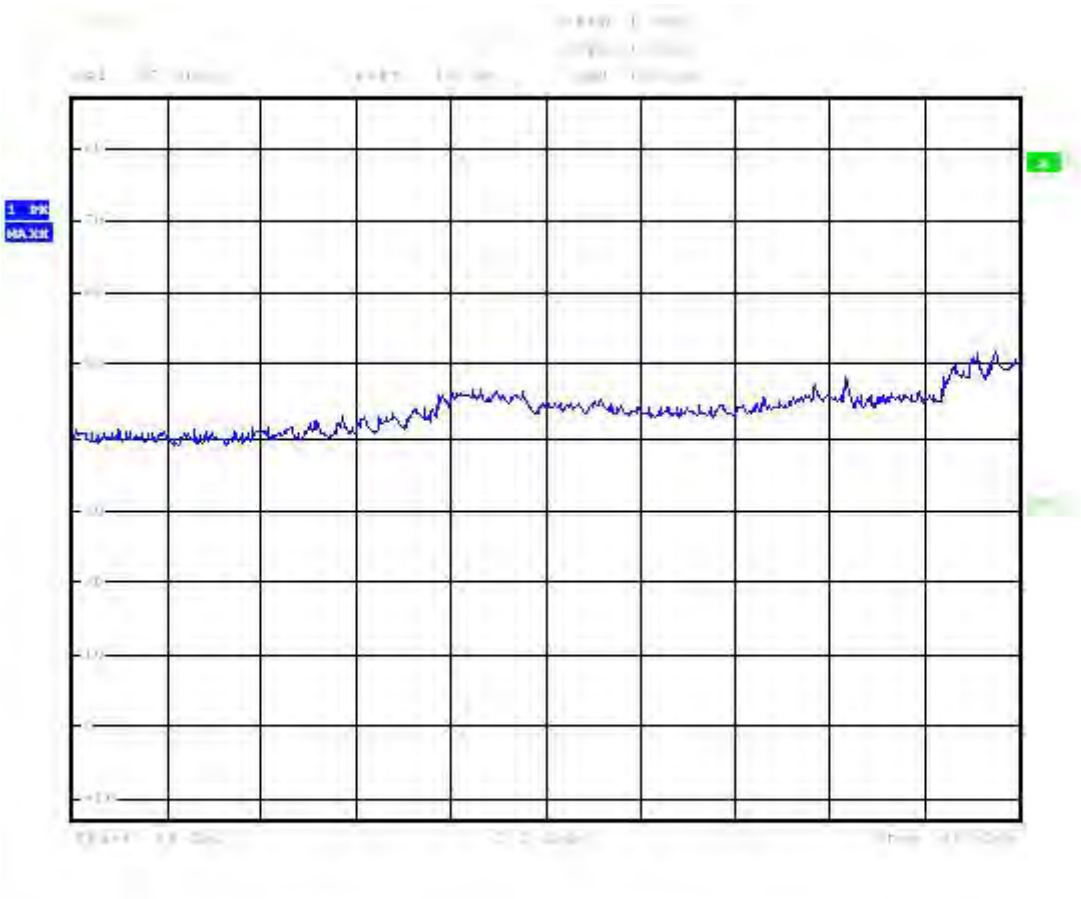
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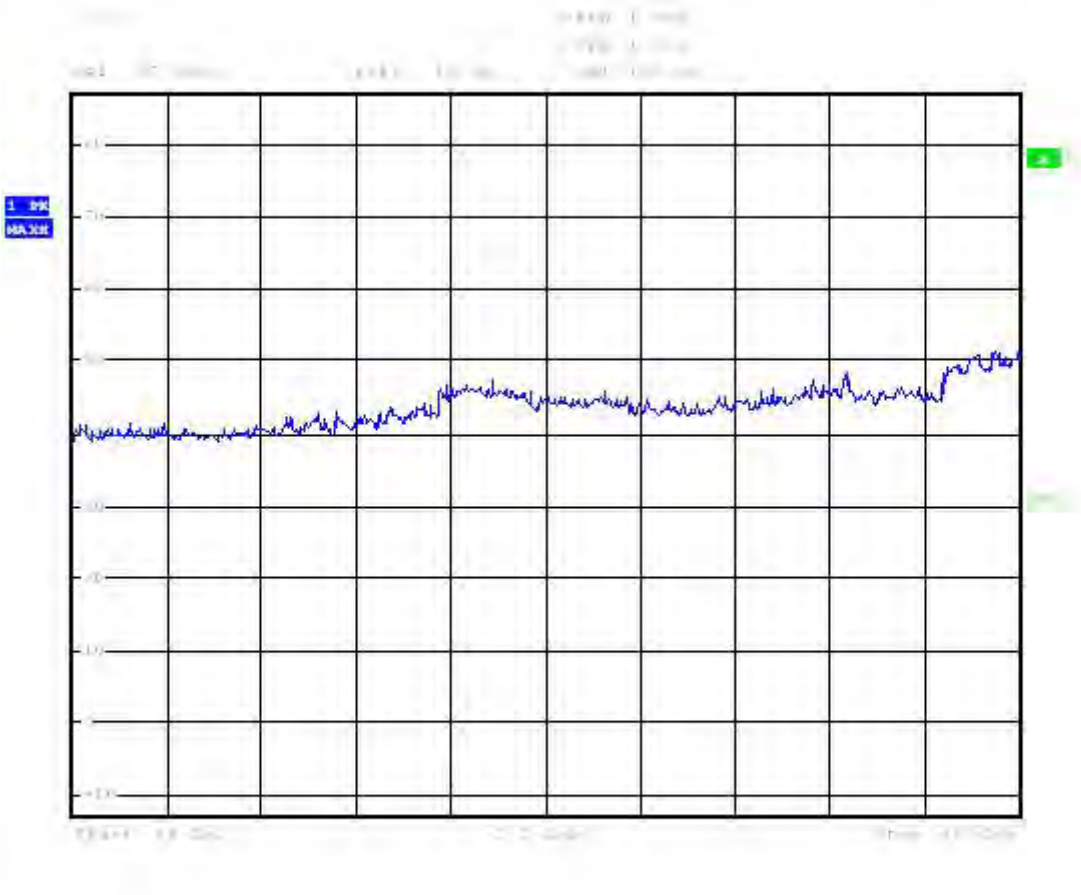
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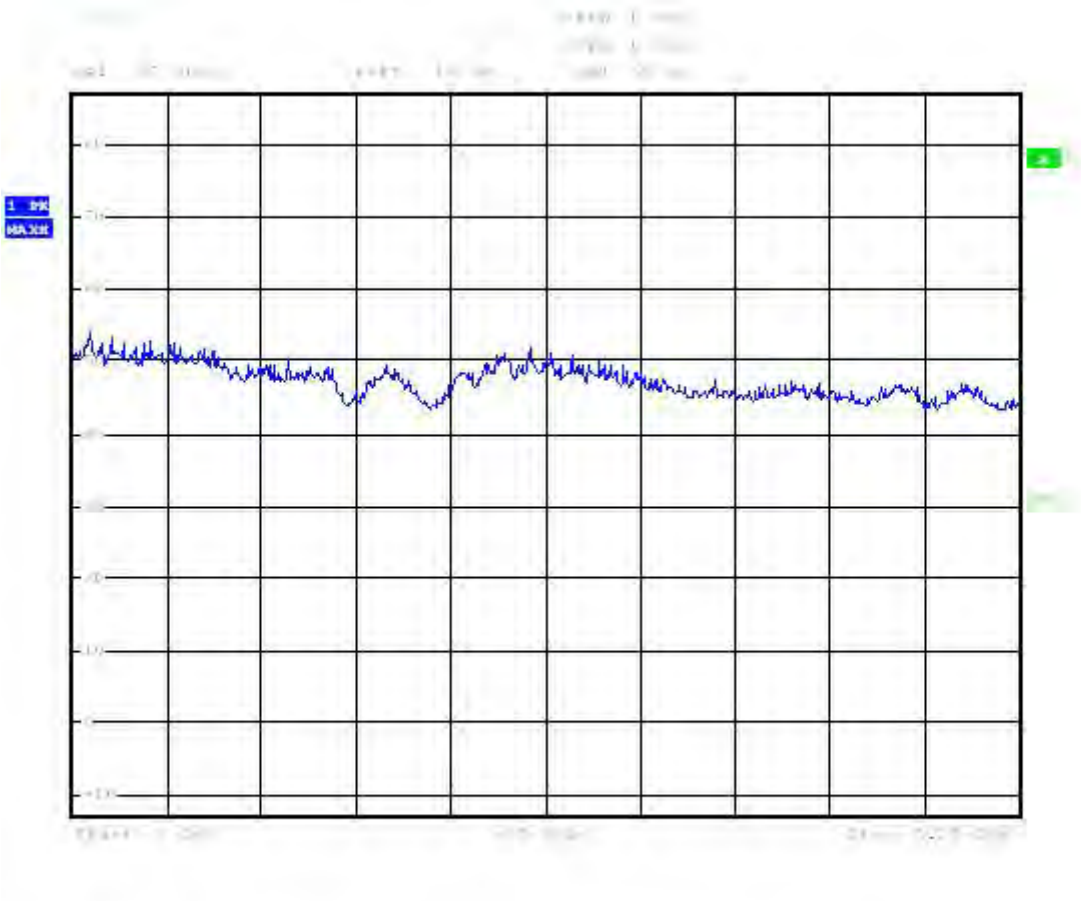
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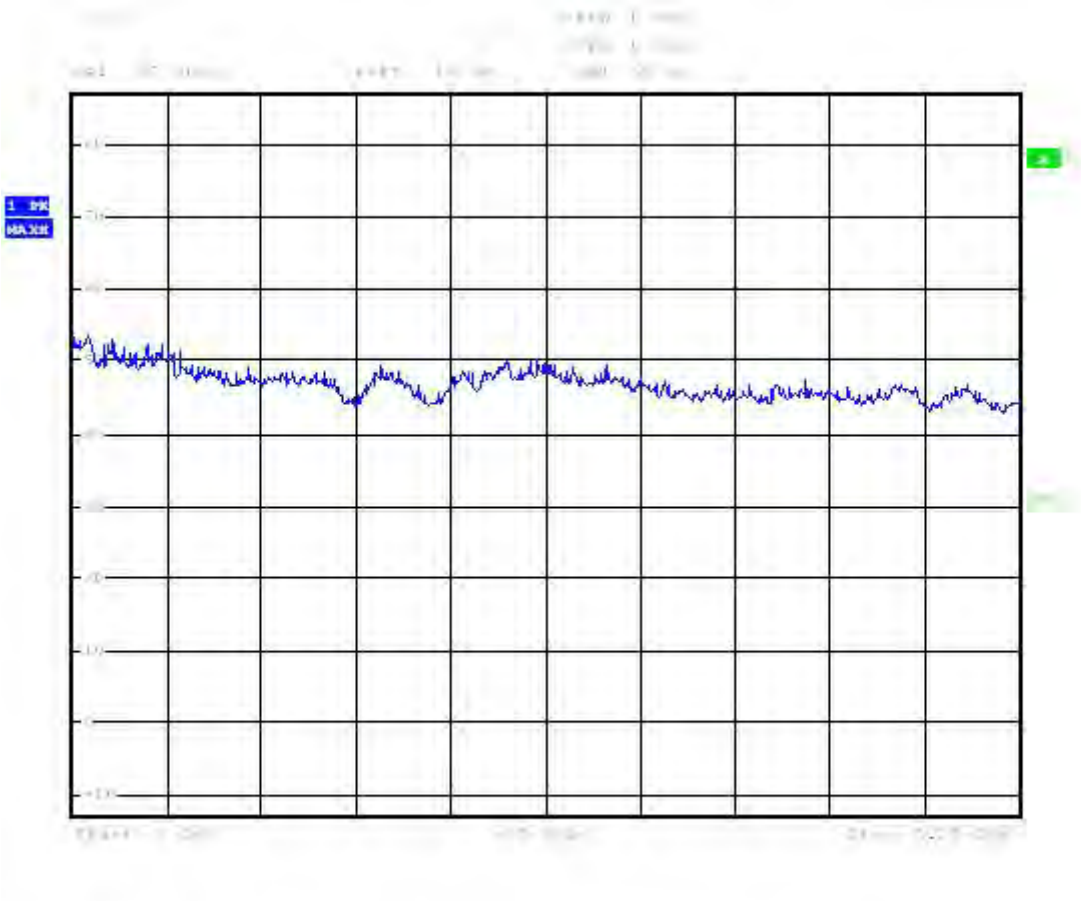
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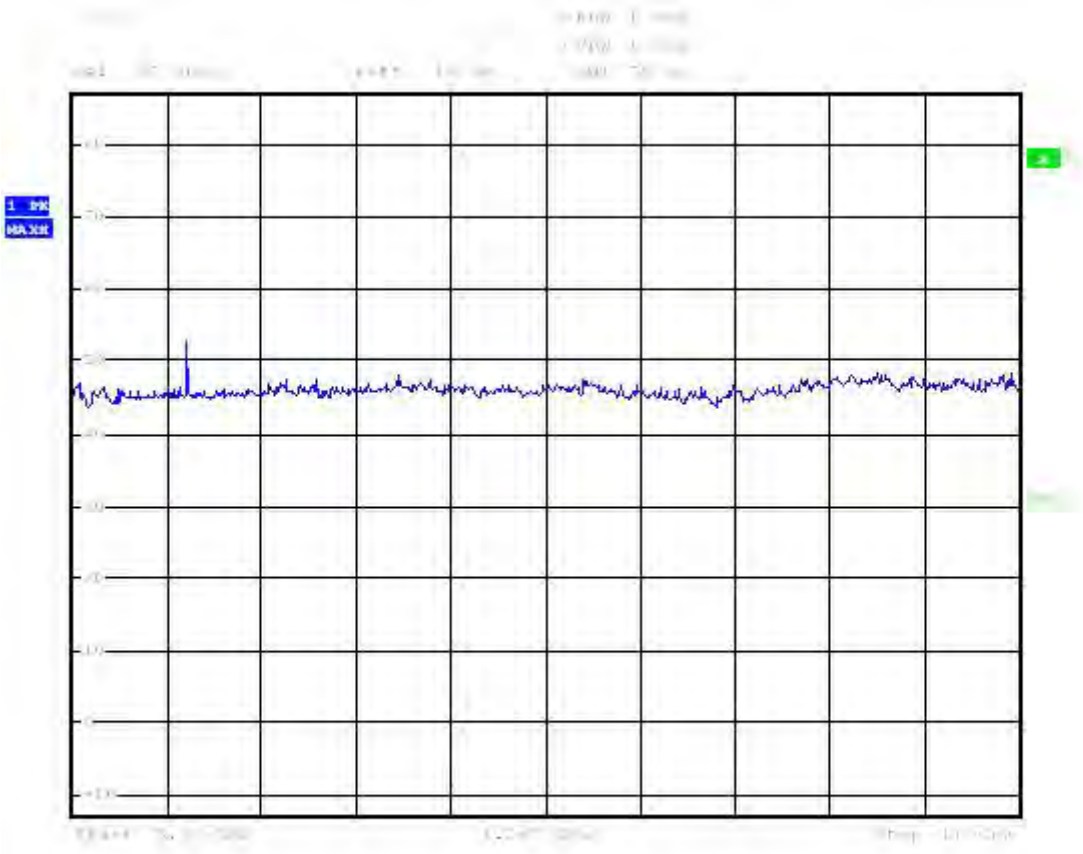
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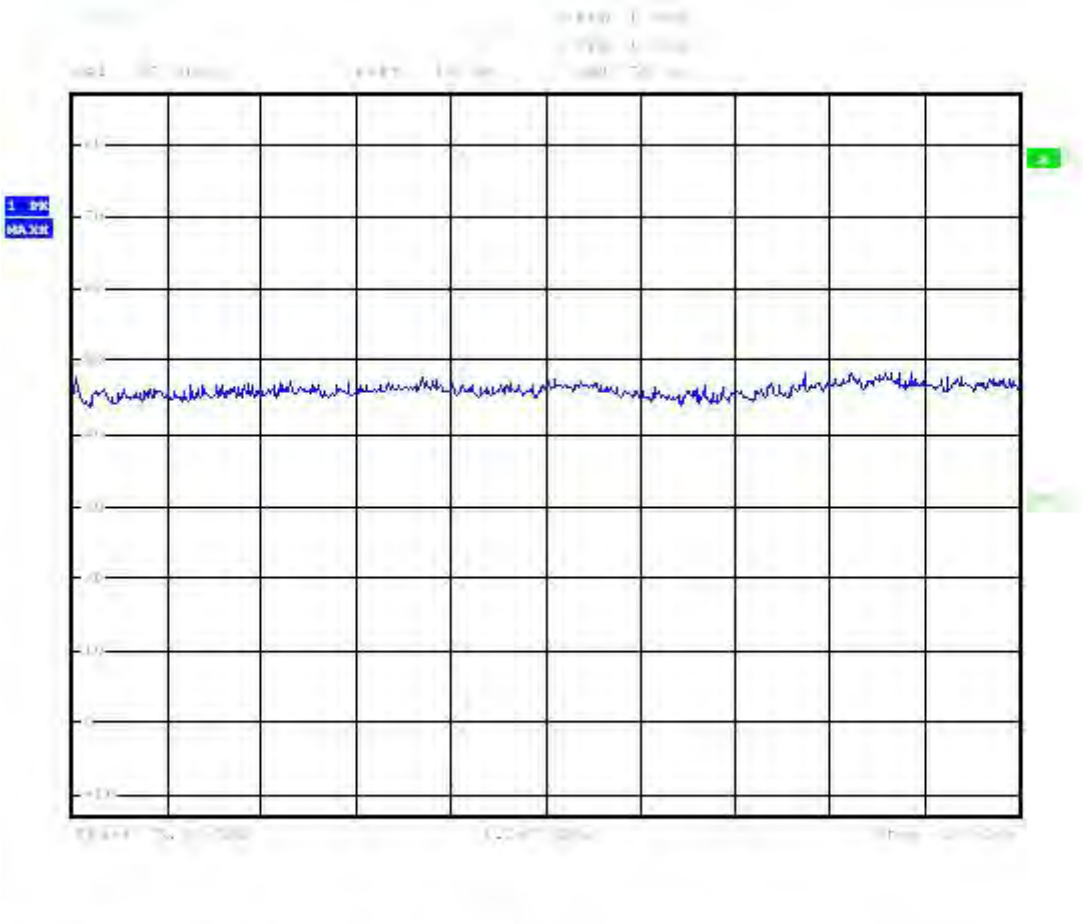

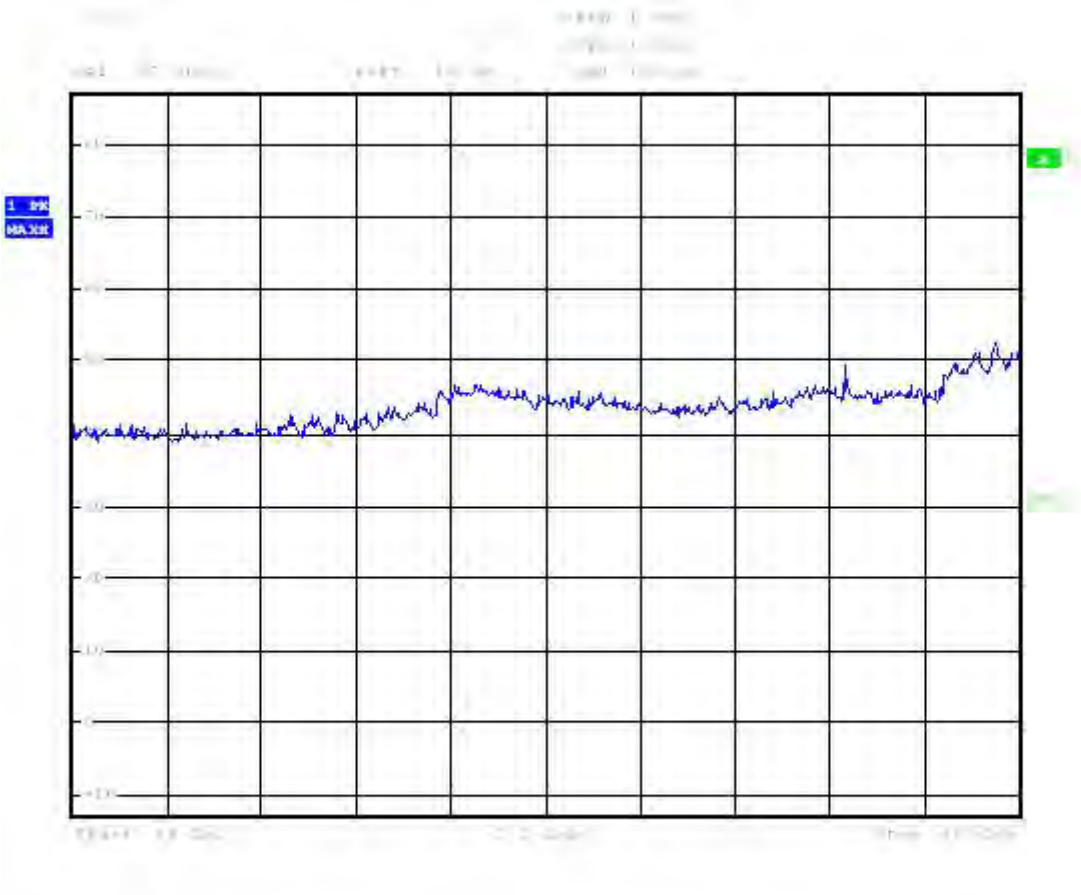
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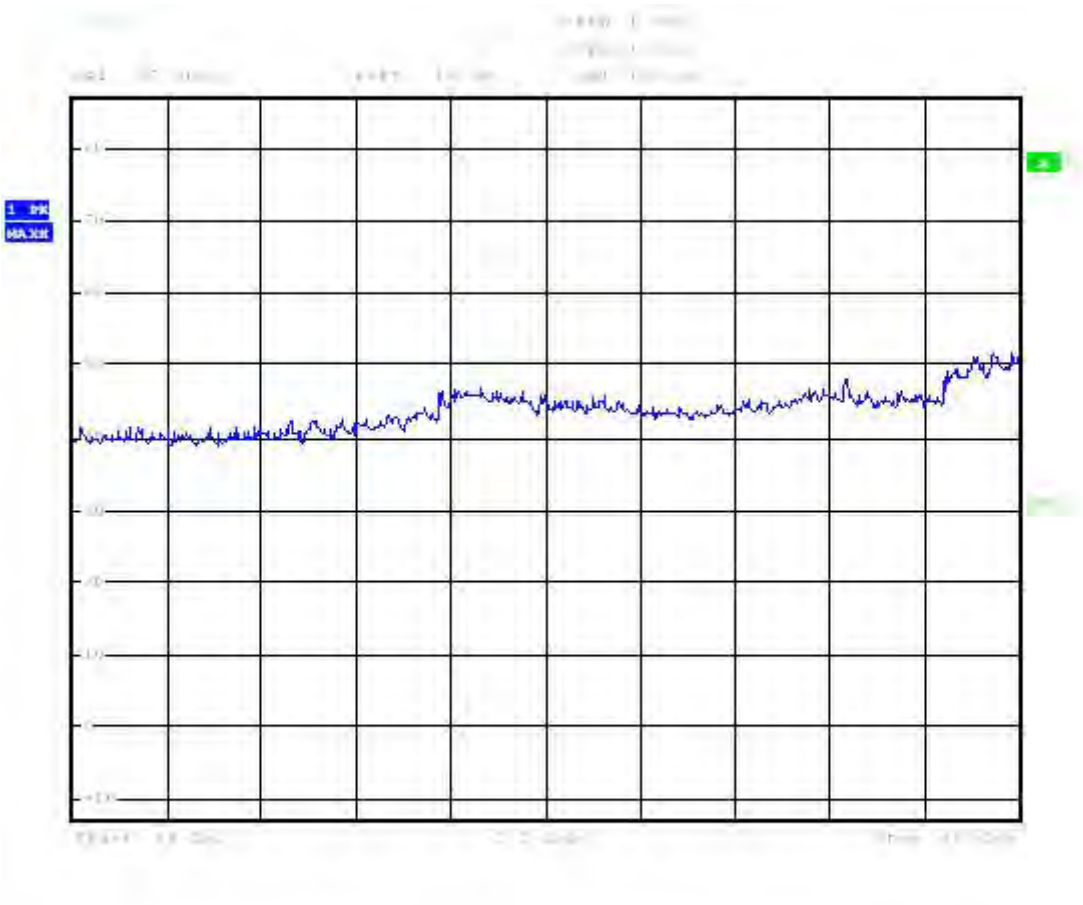
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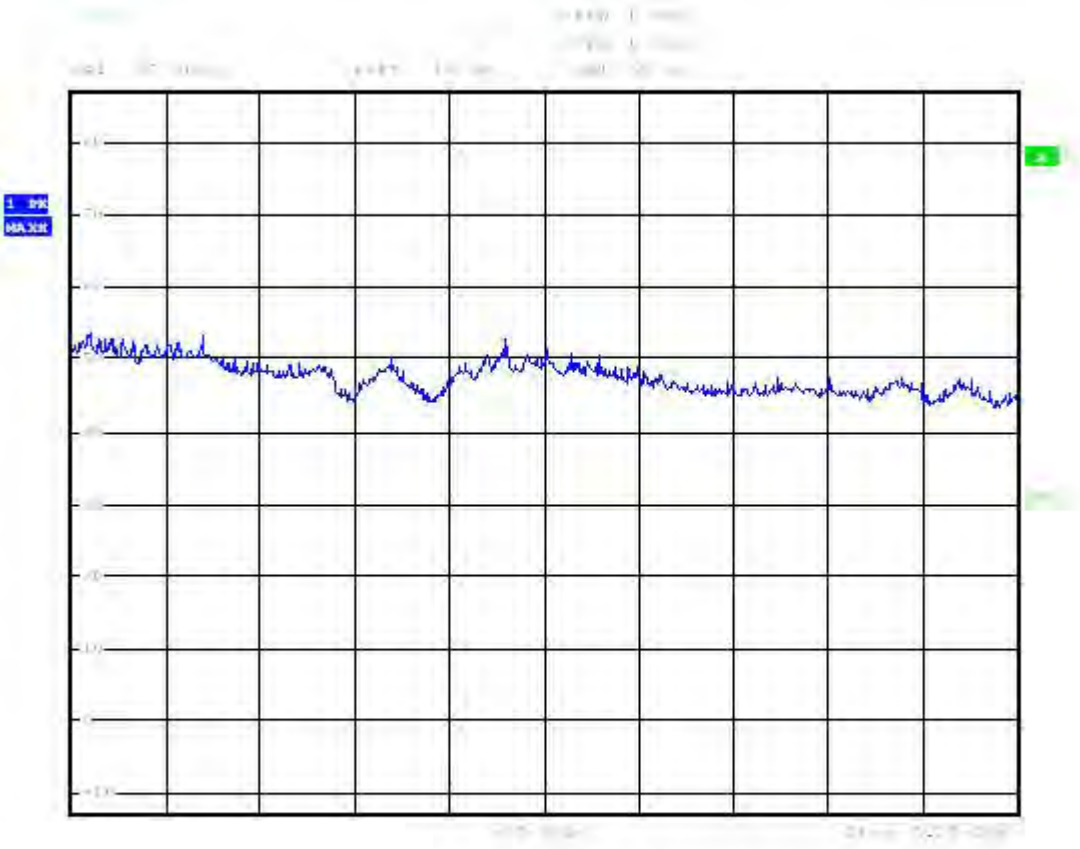
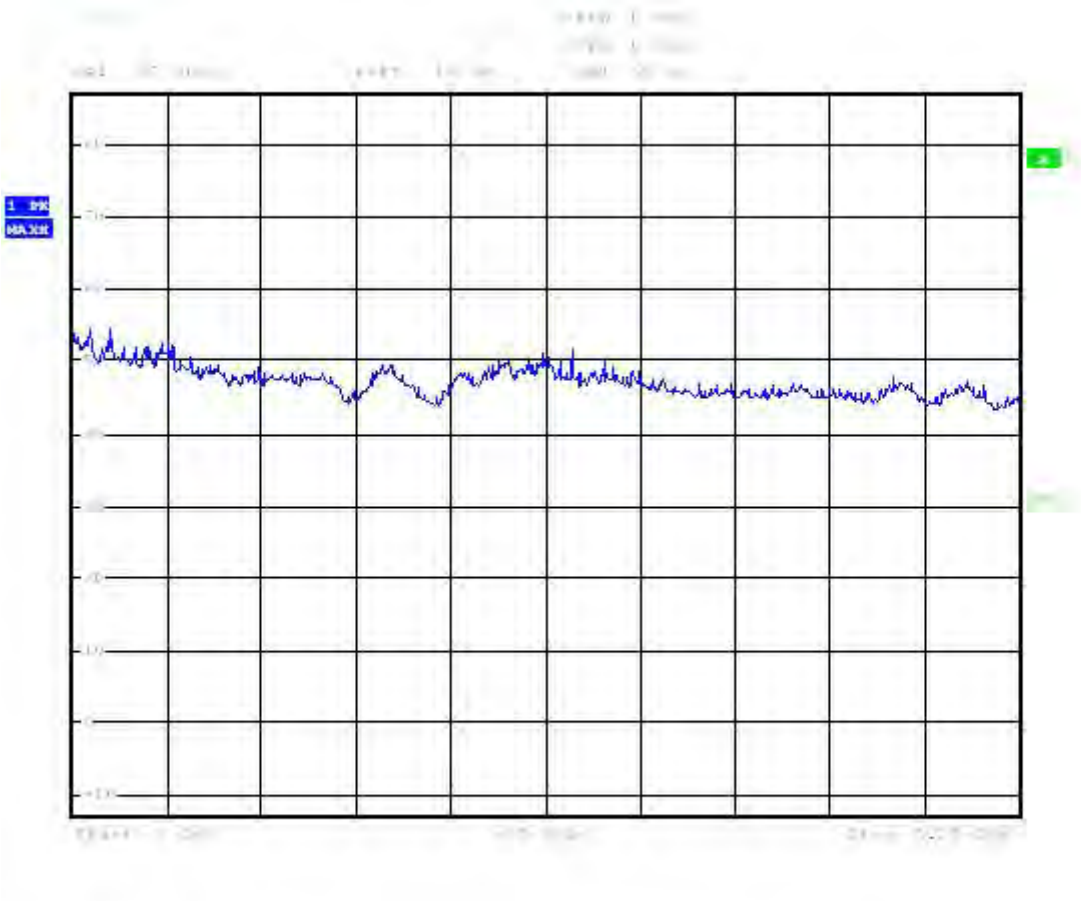
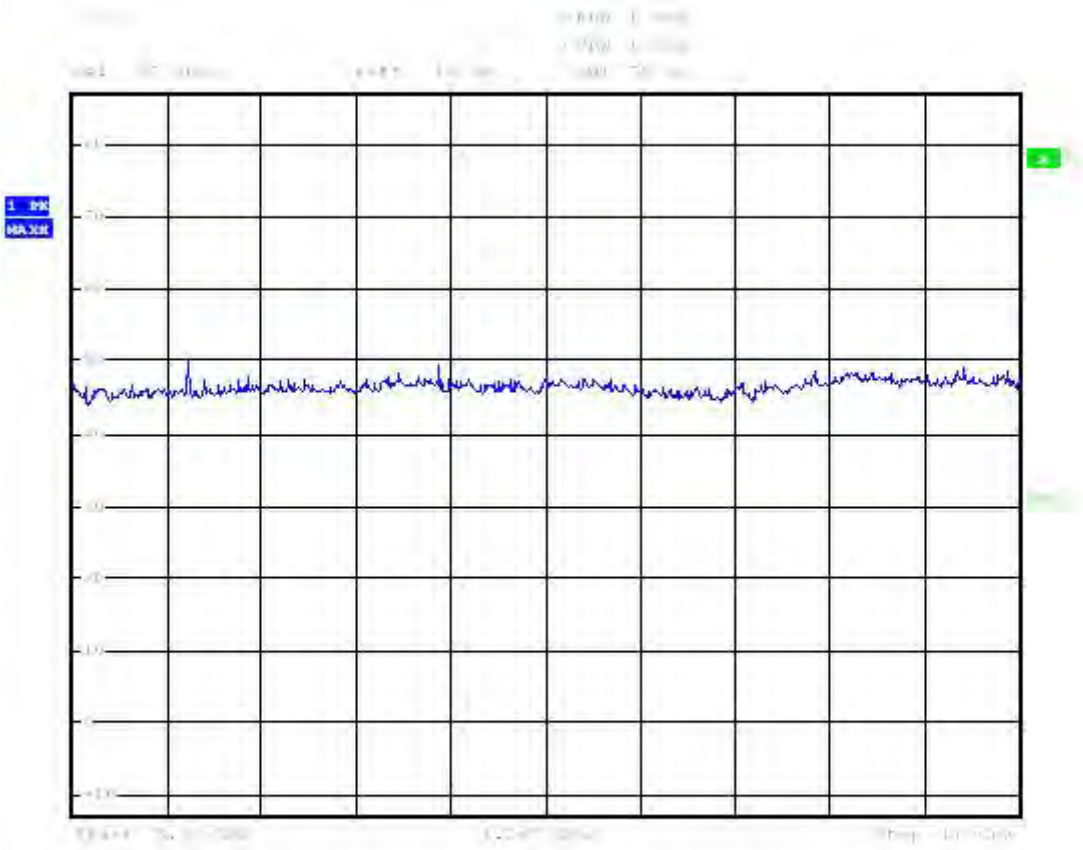
調變技術: IEEE 802.11an HT20



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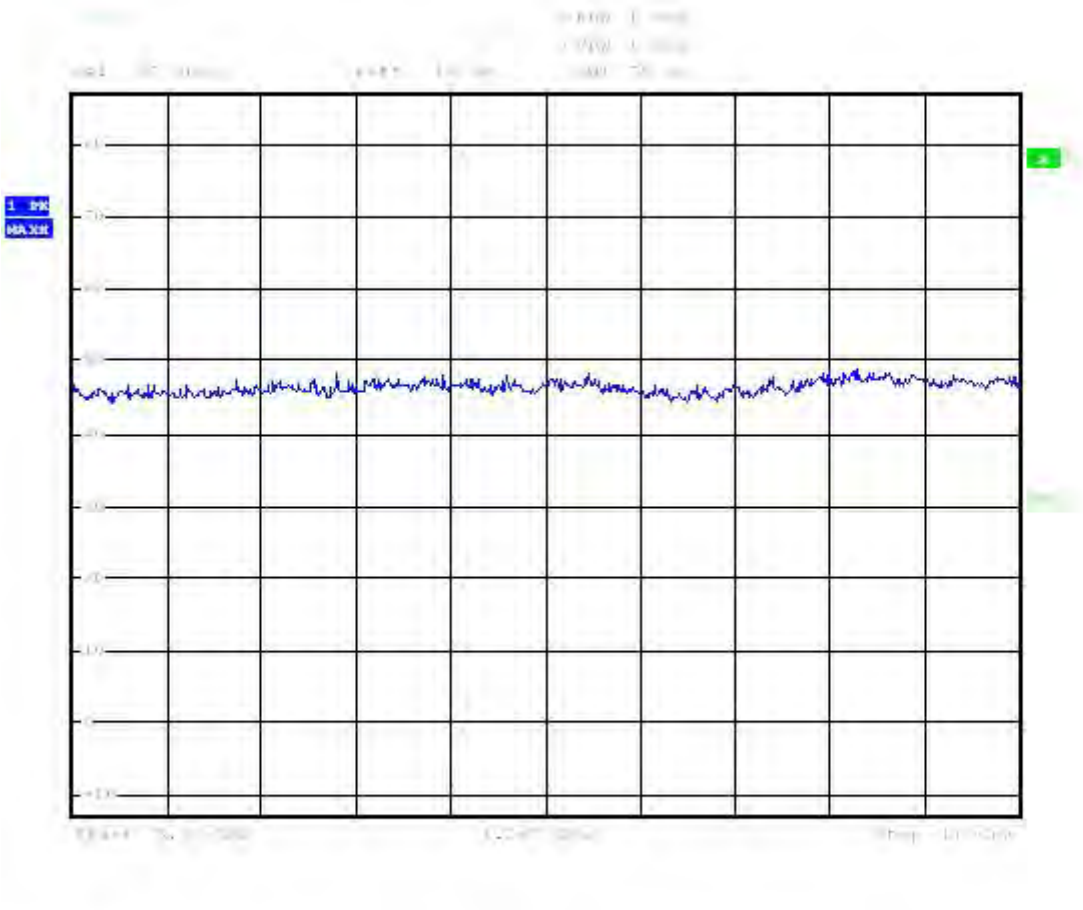
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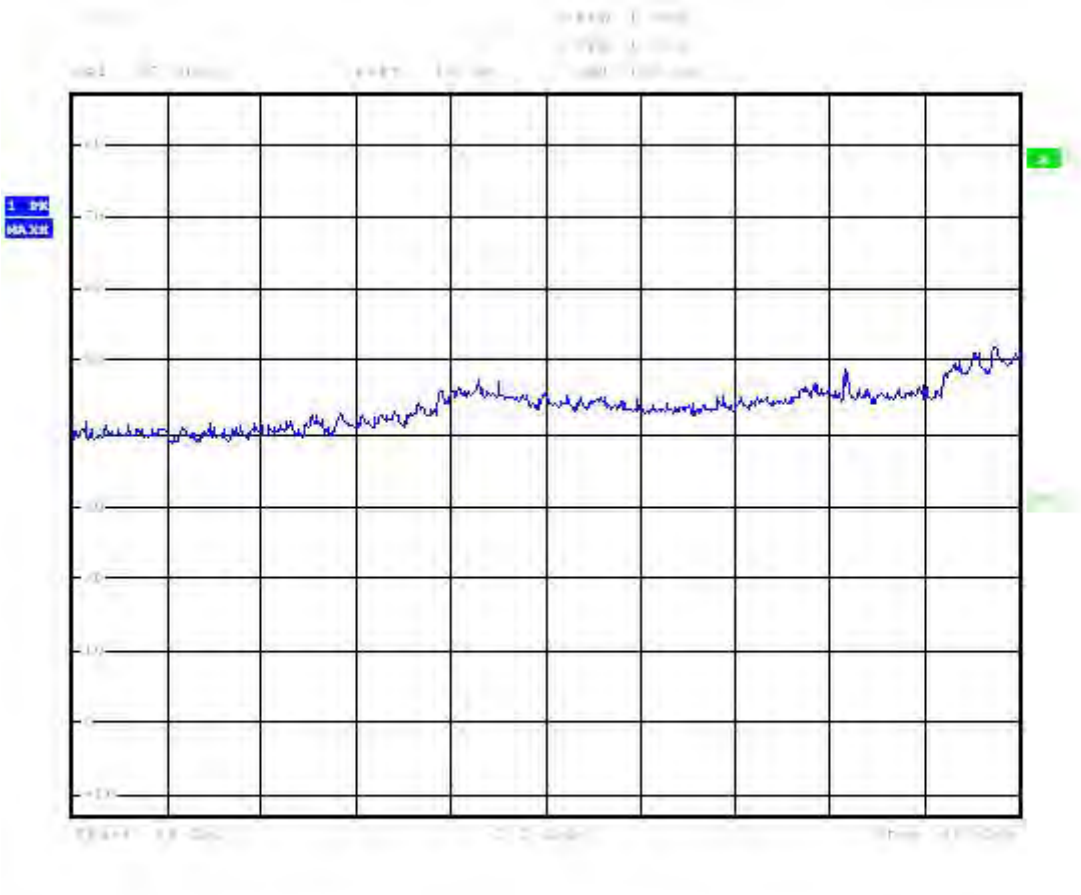
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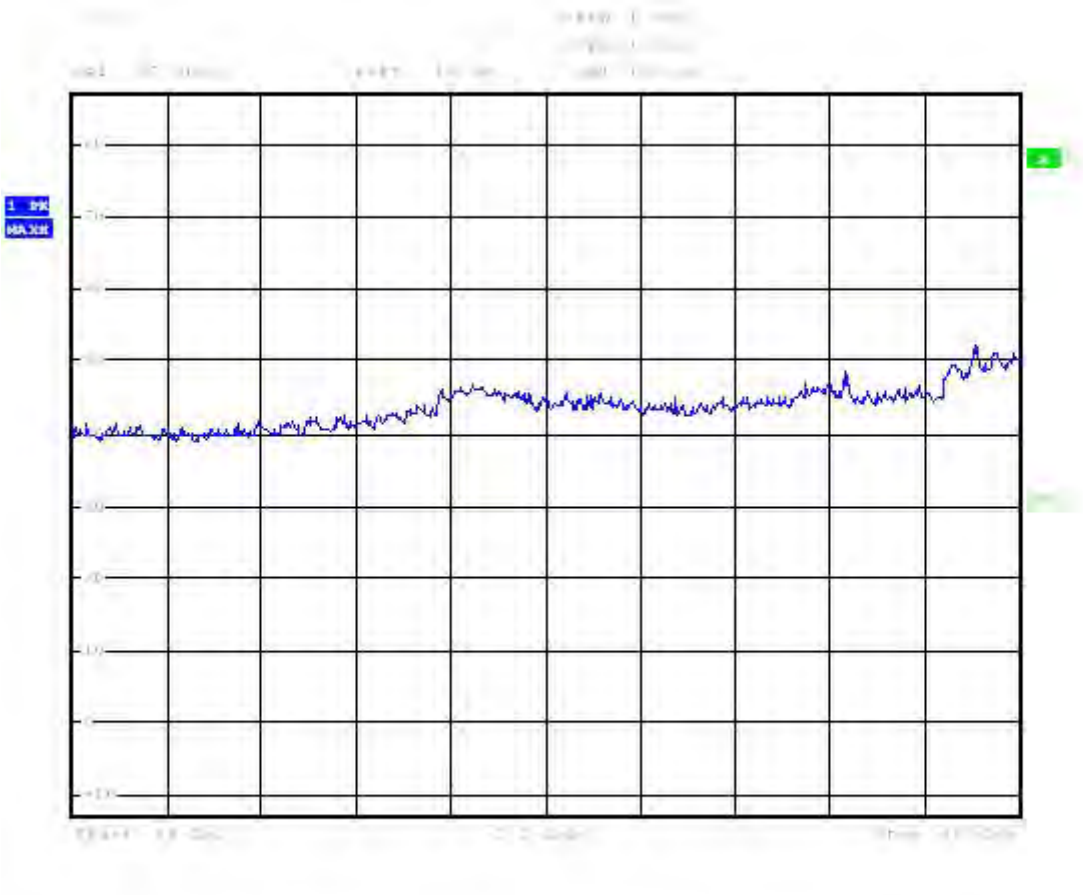
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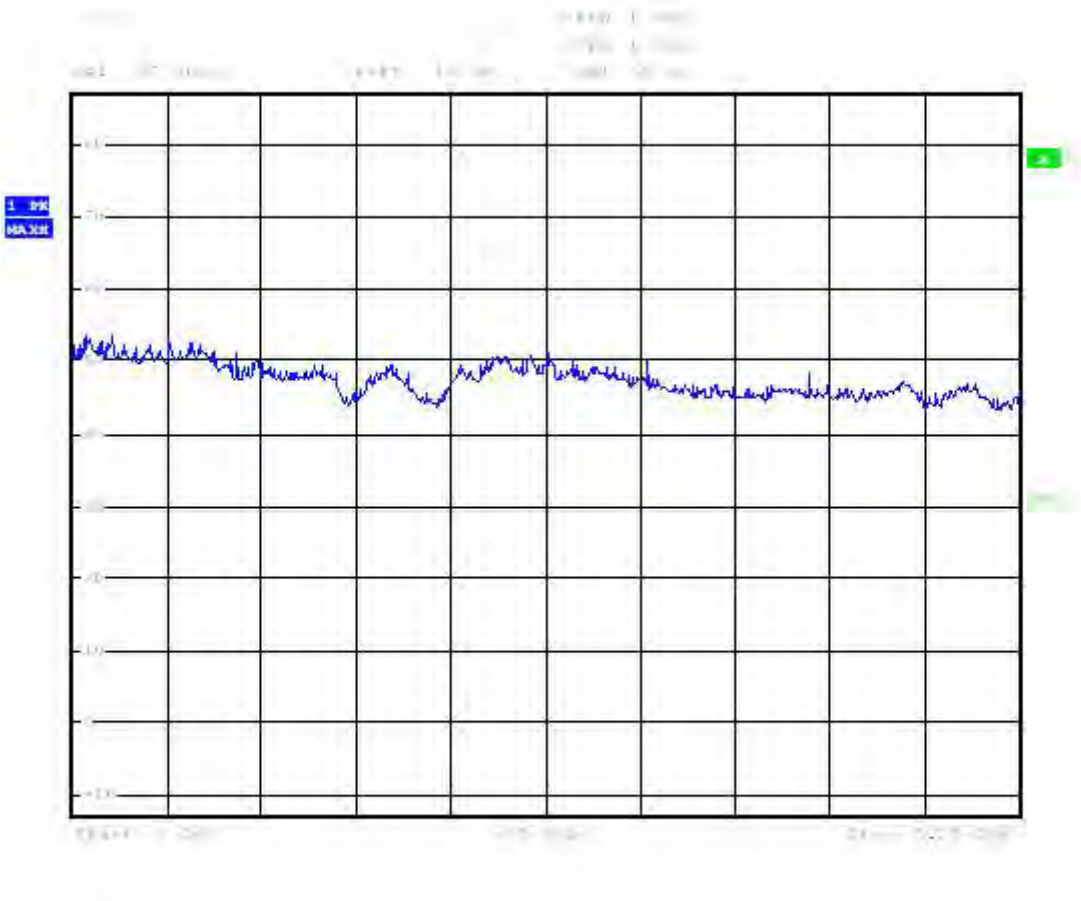
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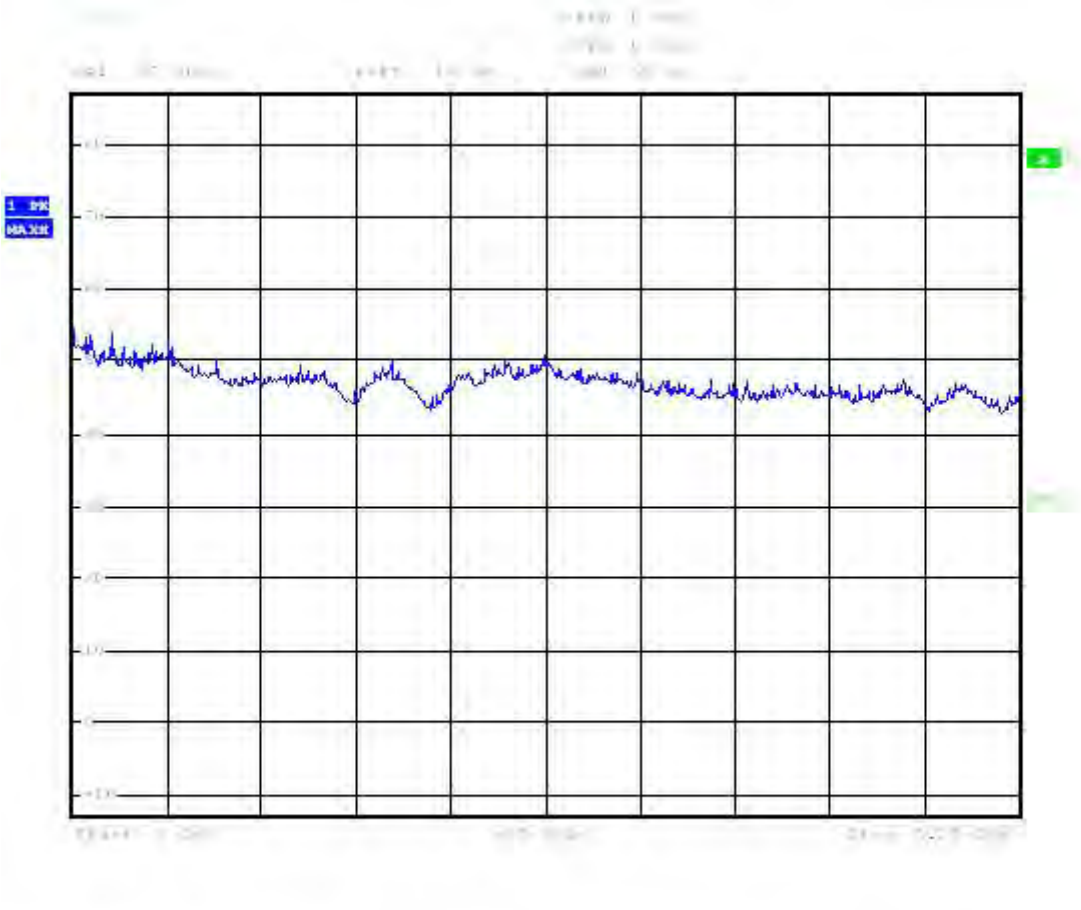

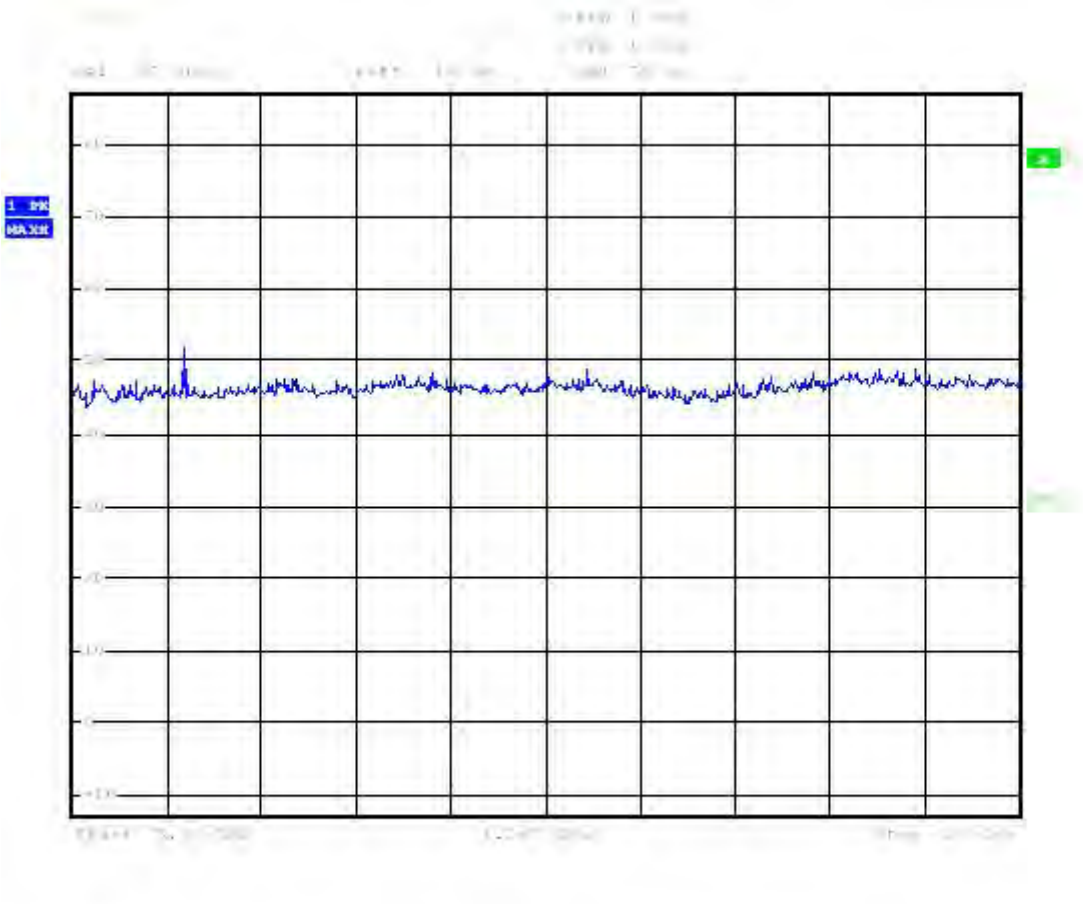
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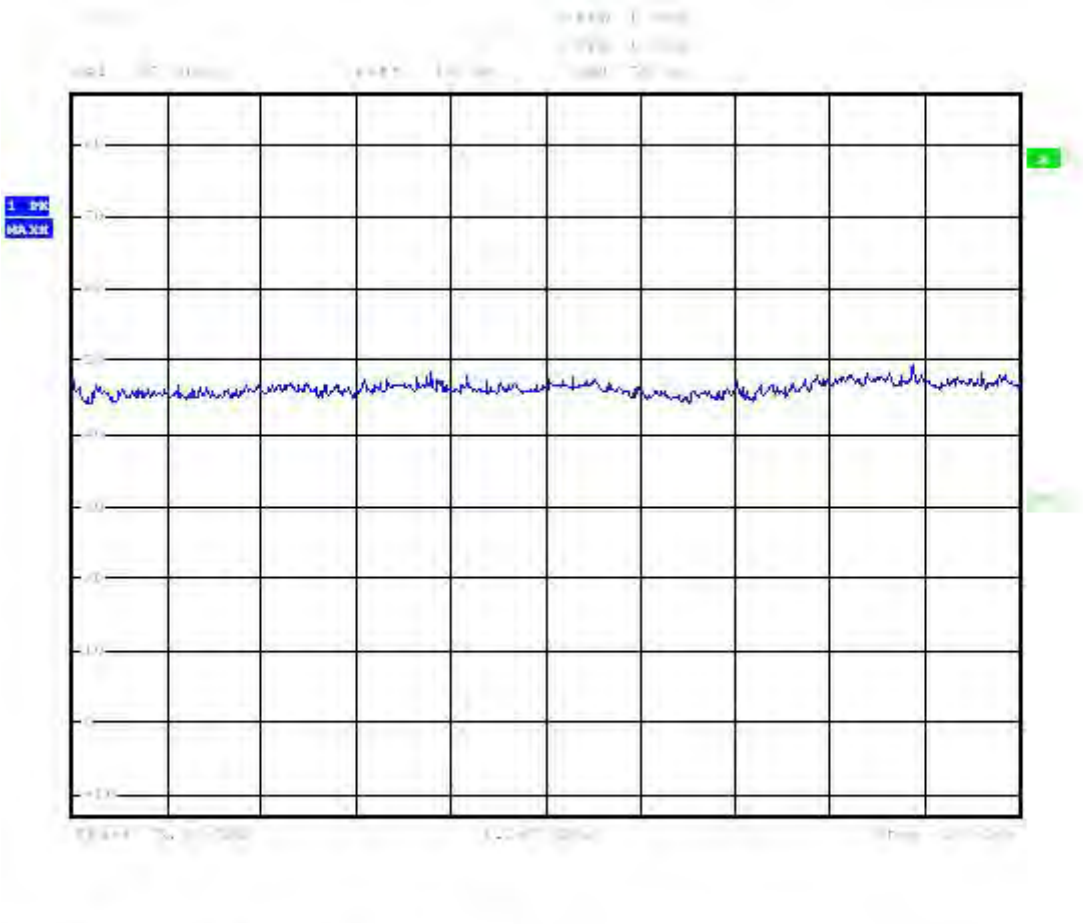

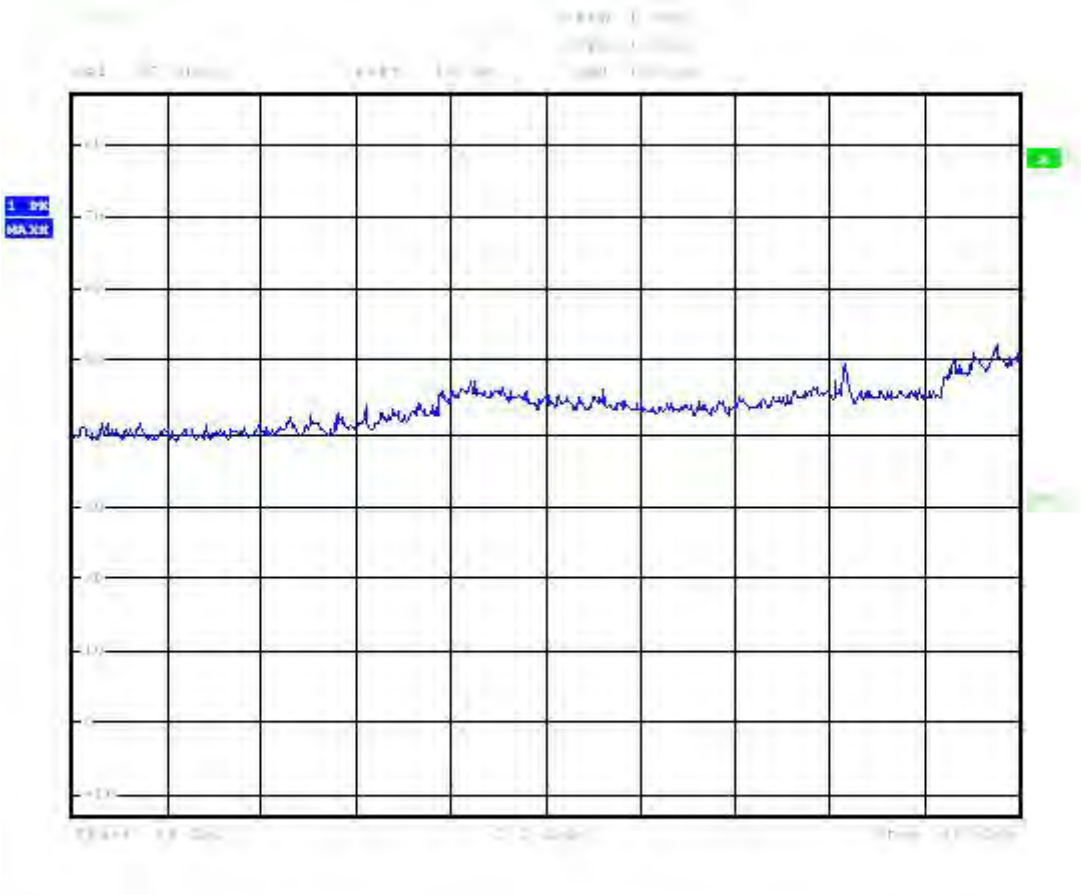
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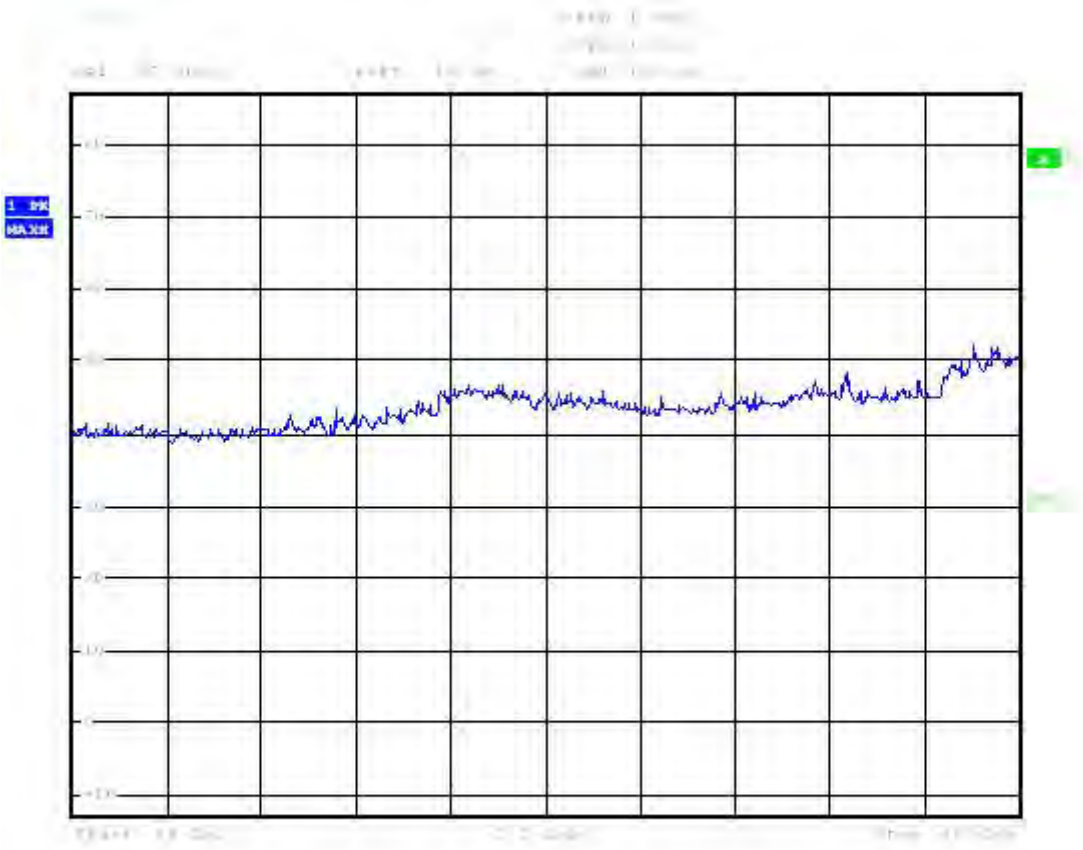
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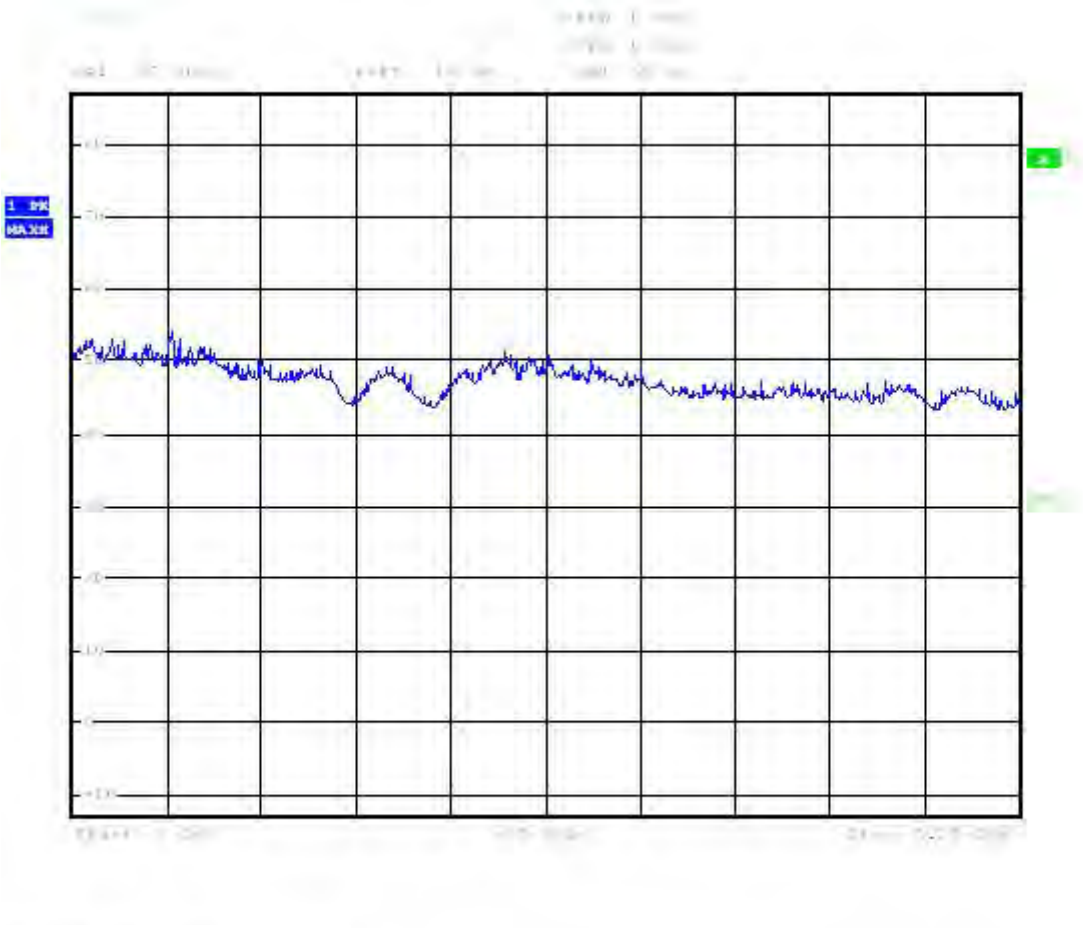
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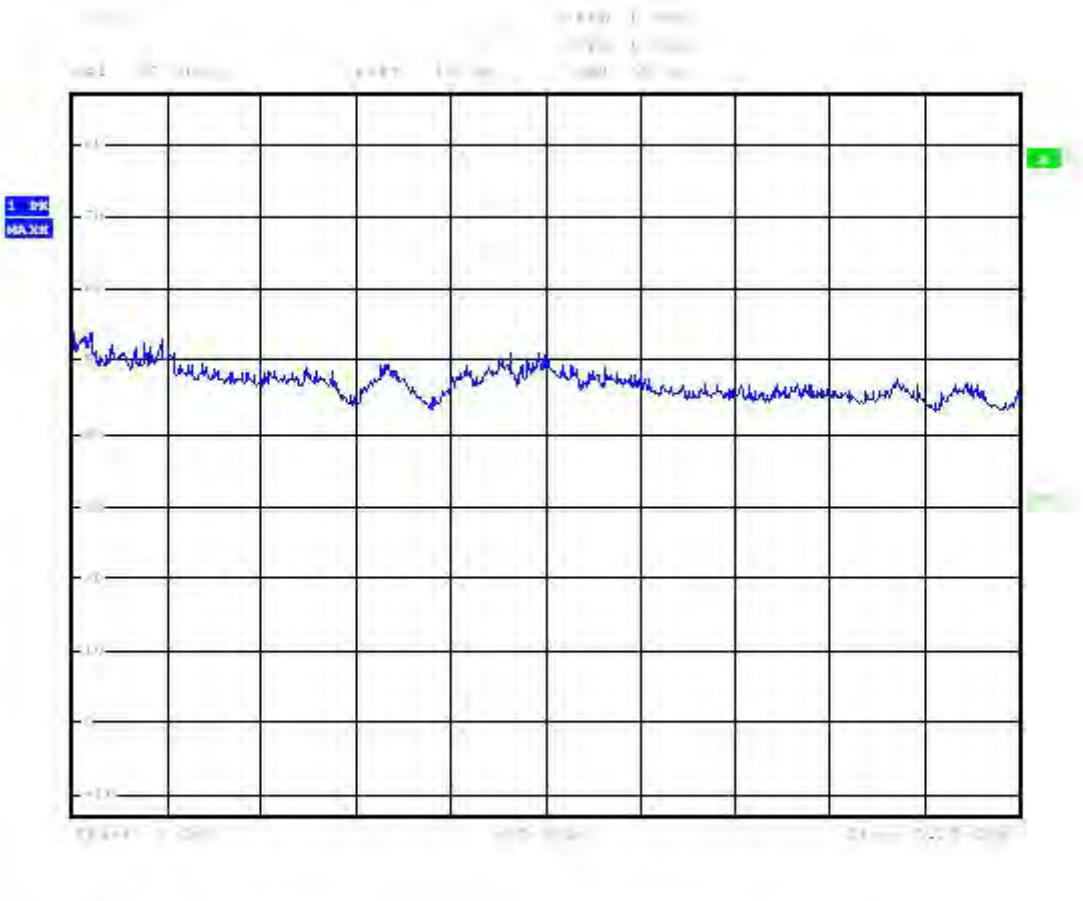
MAXH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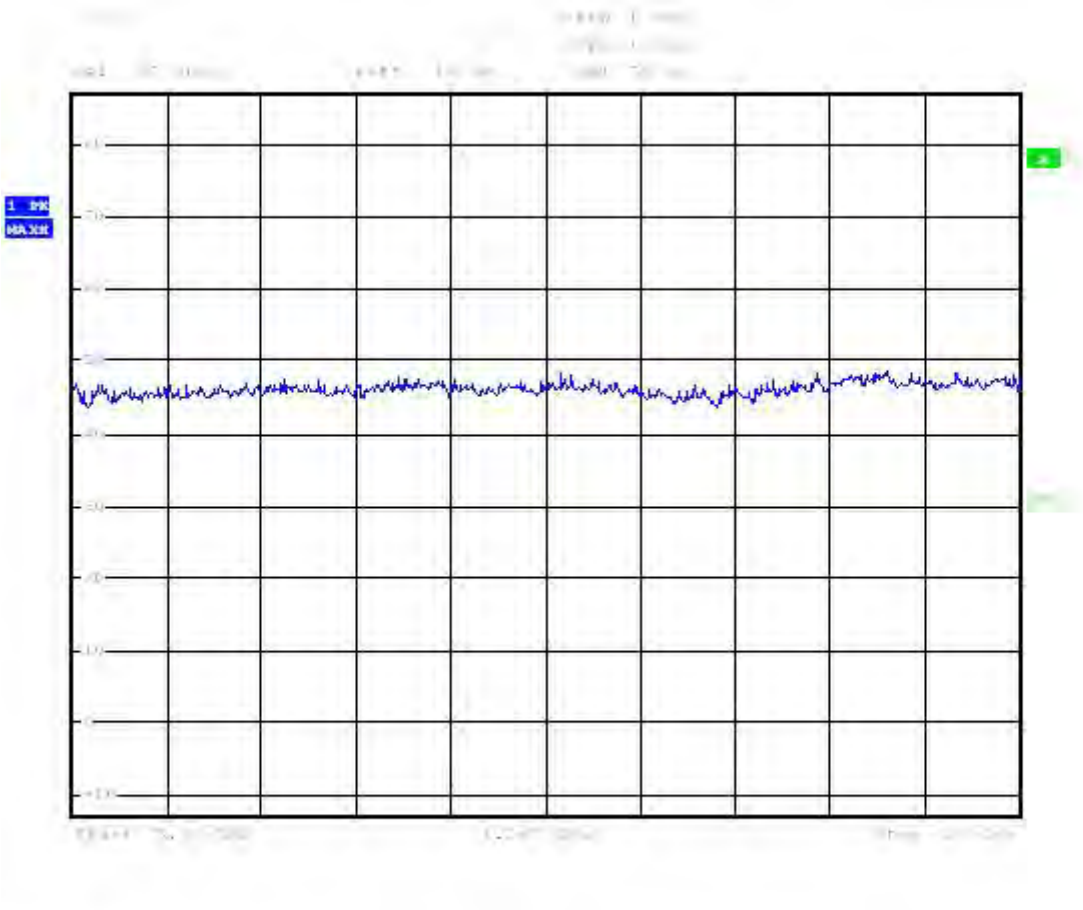
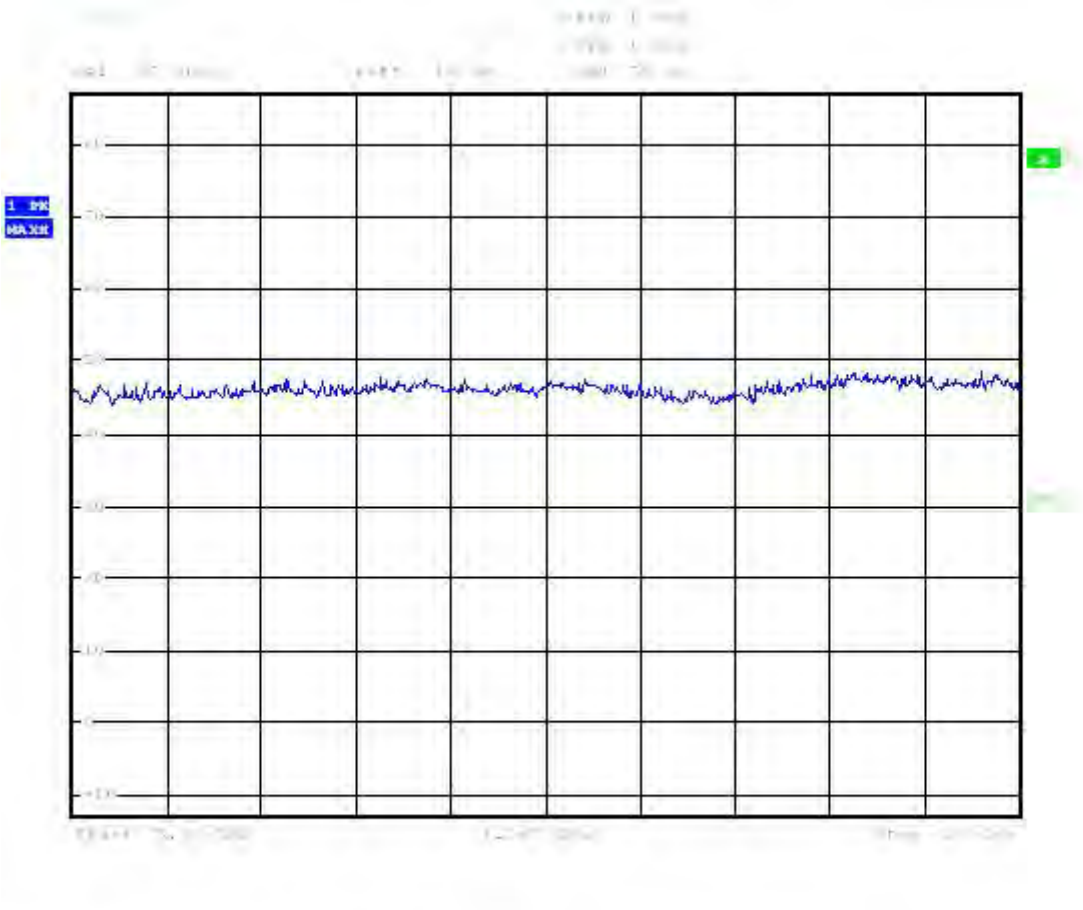
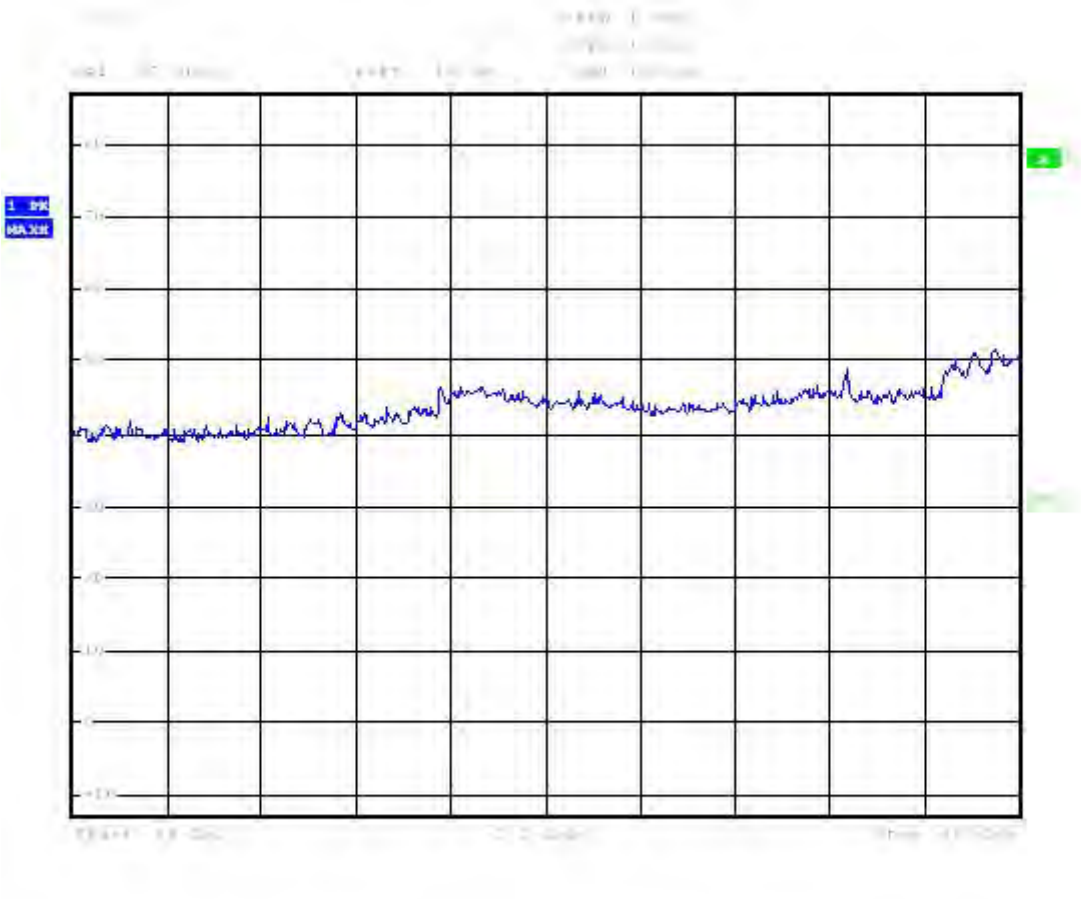
MAXH


MAXH

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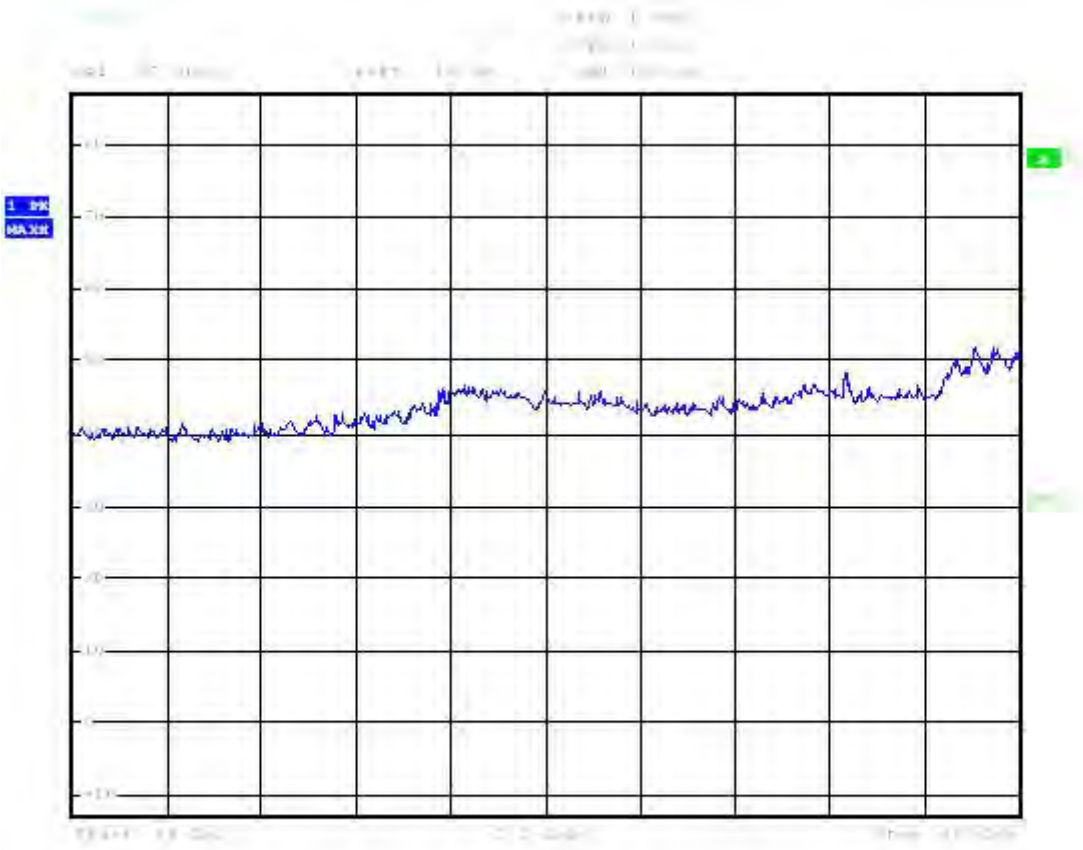
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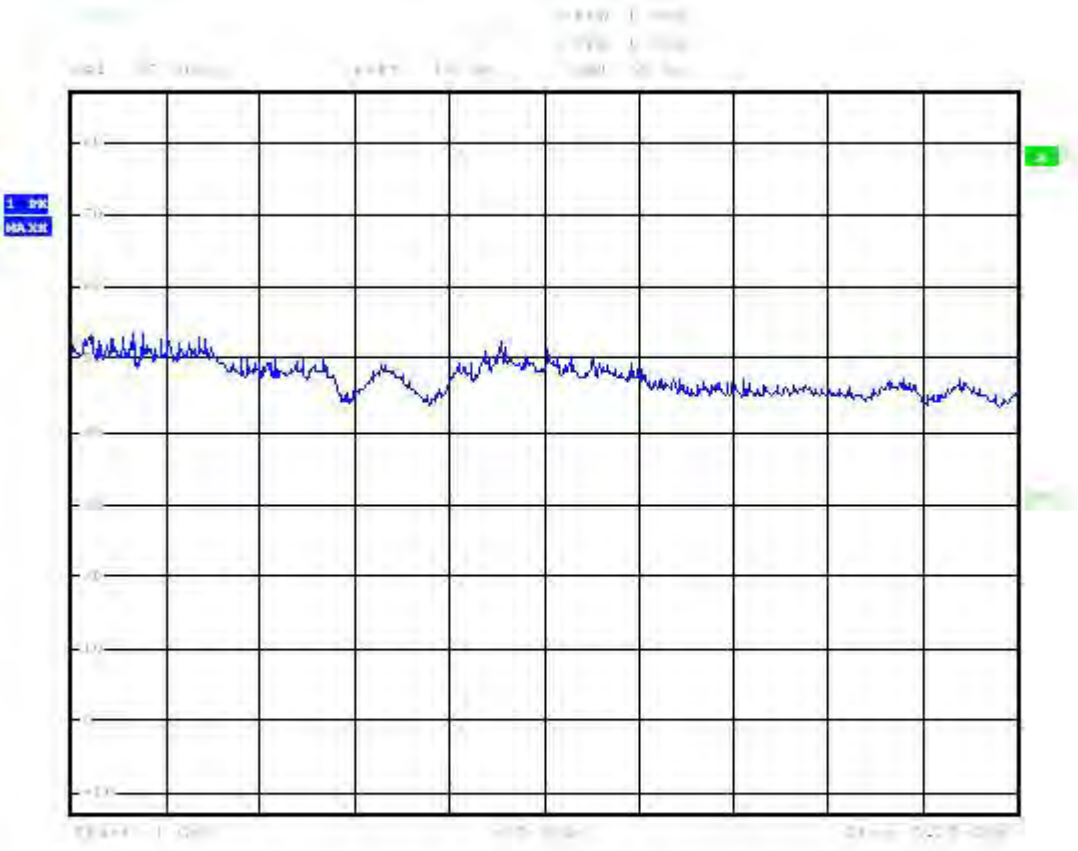
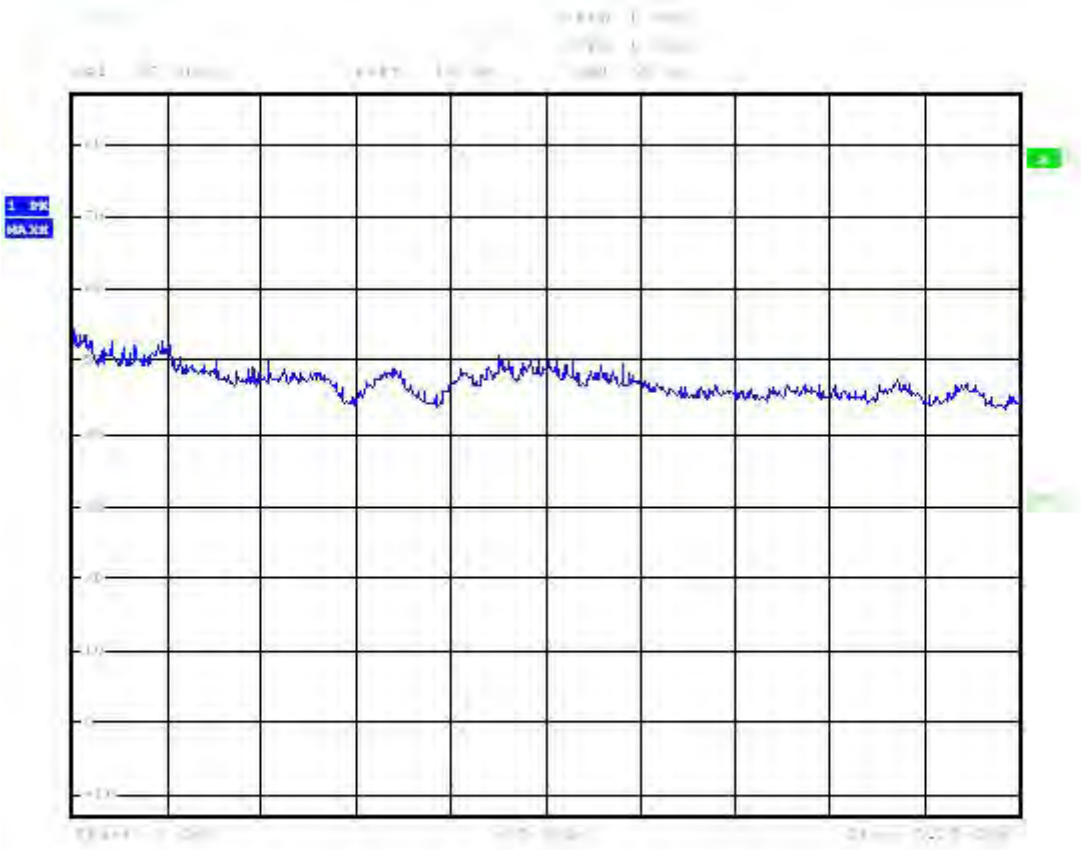
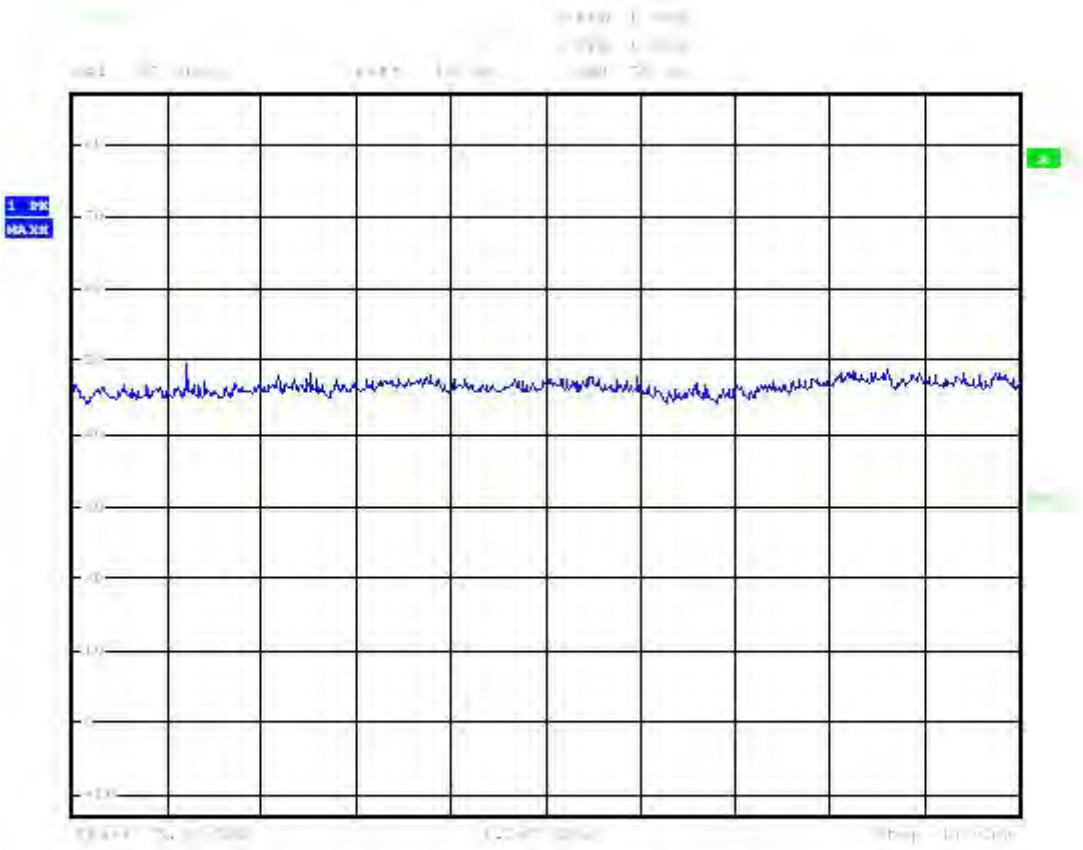
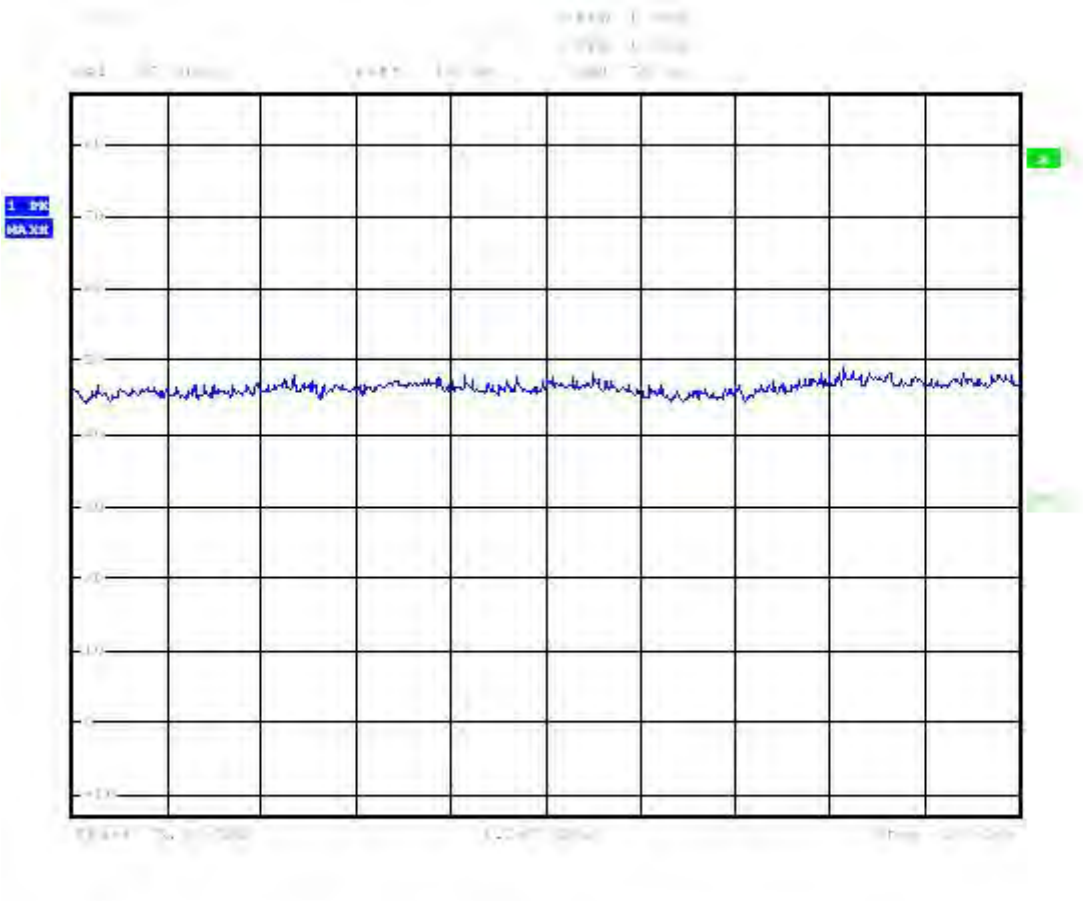
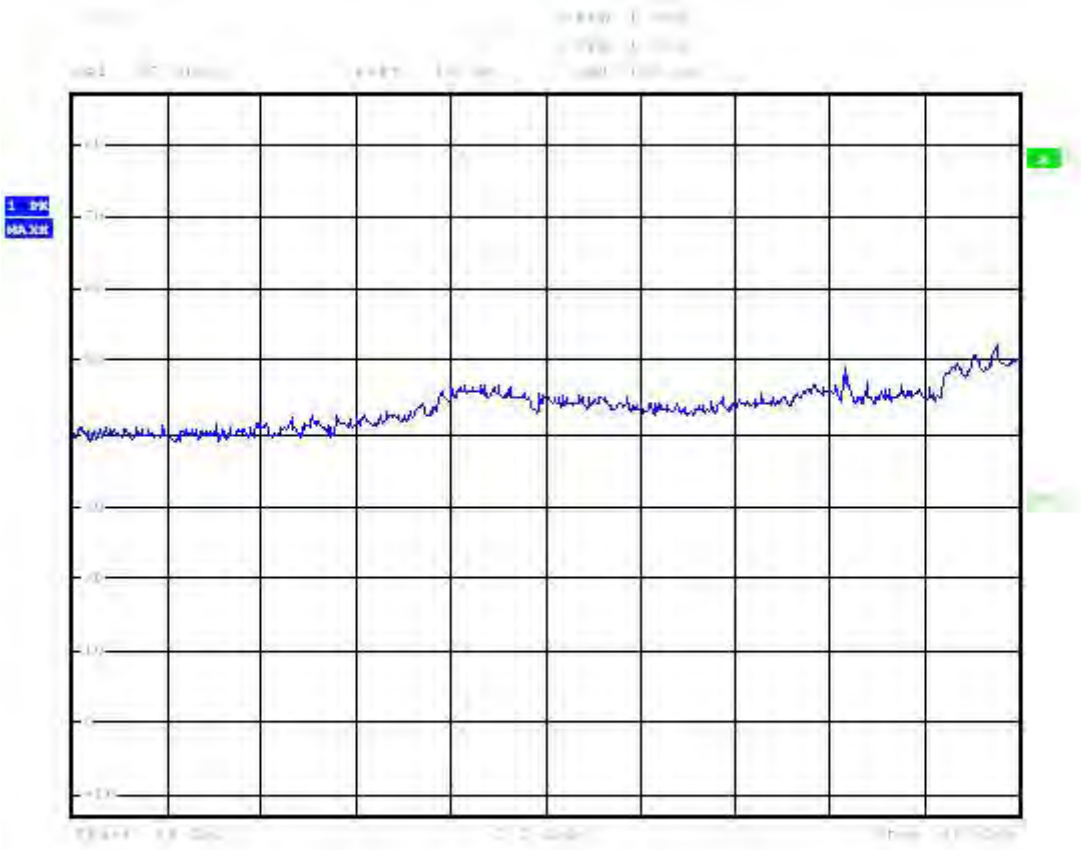
調變技術: IEEE 802.11an HT40




1 PK
MAXH



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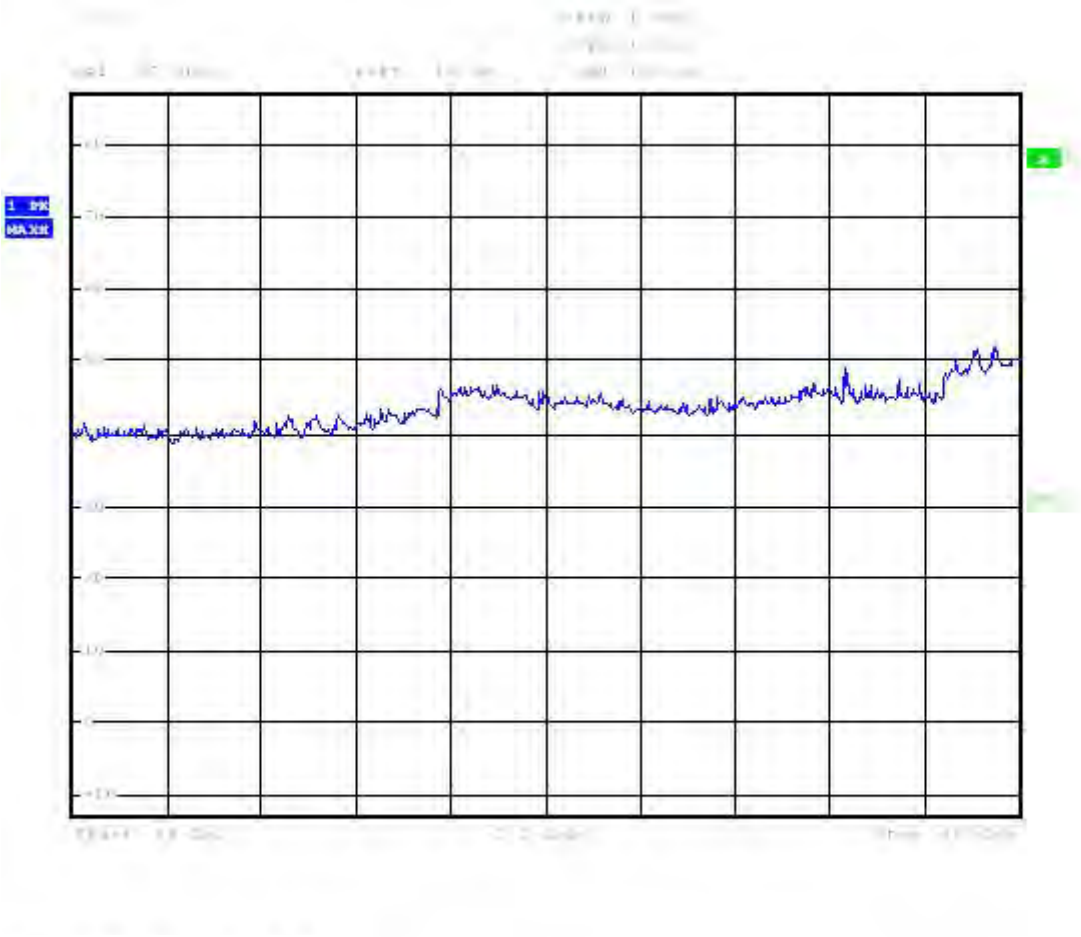
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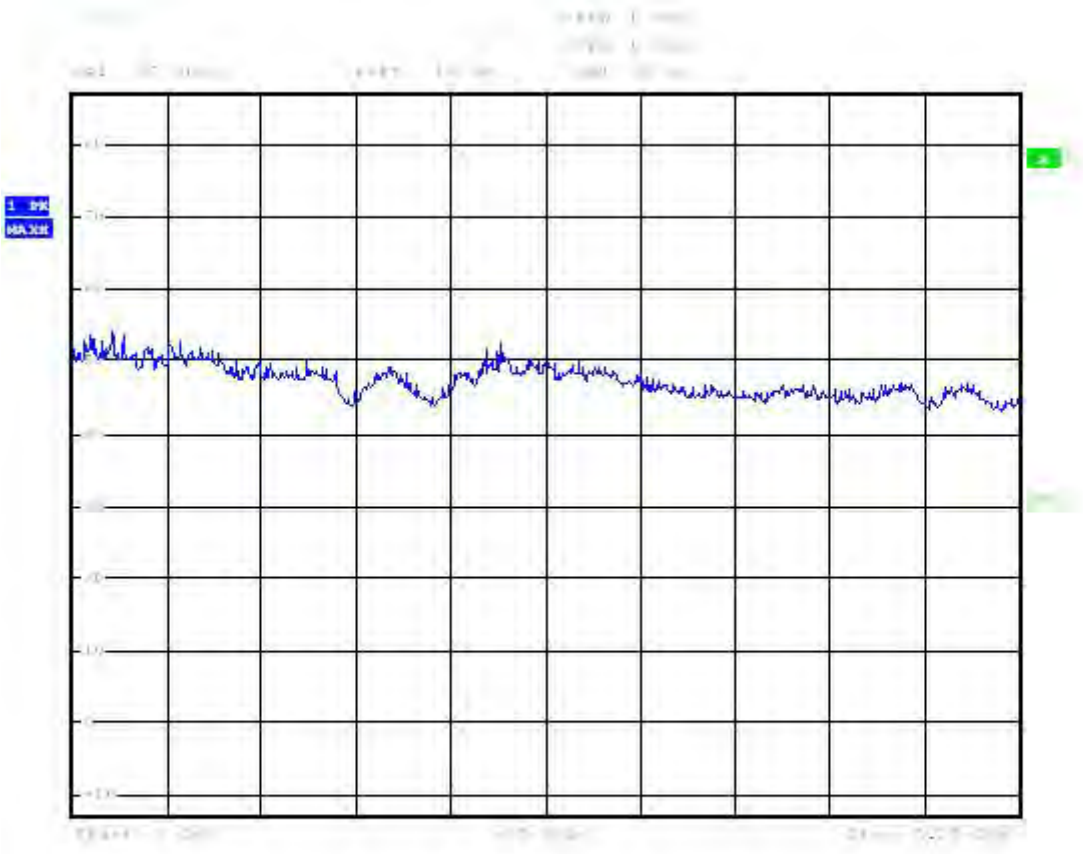
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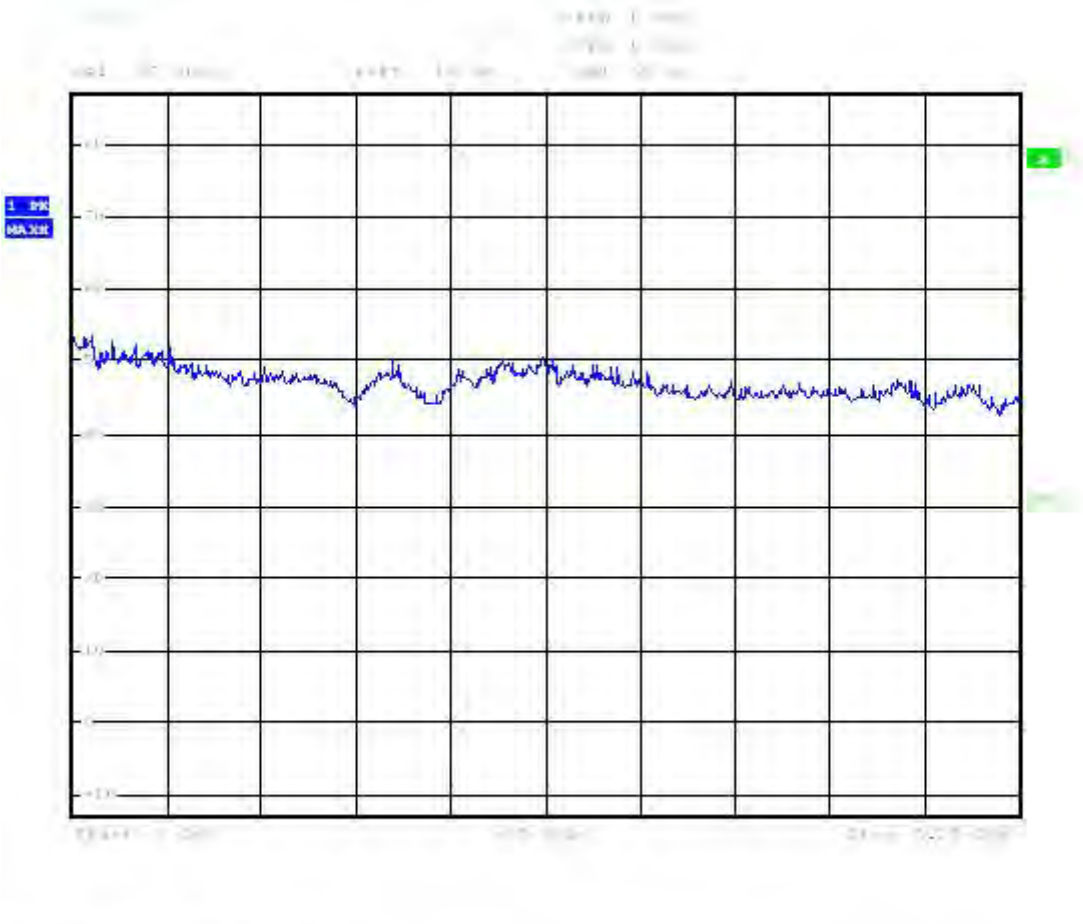
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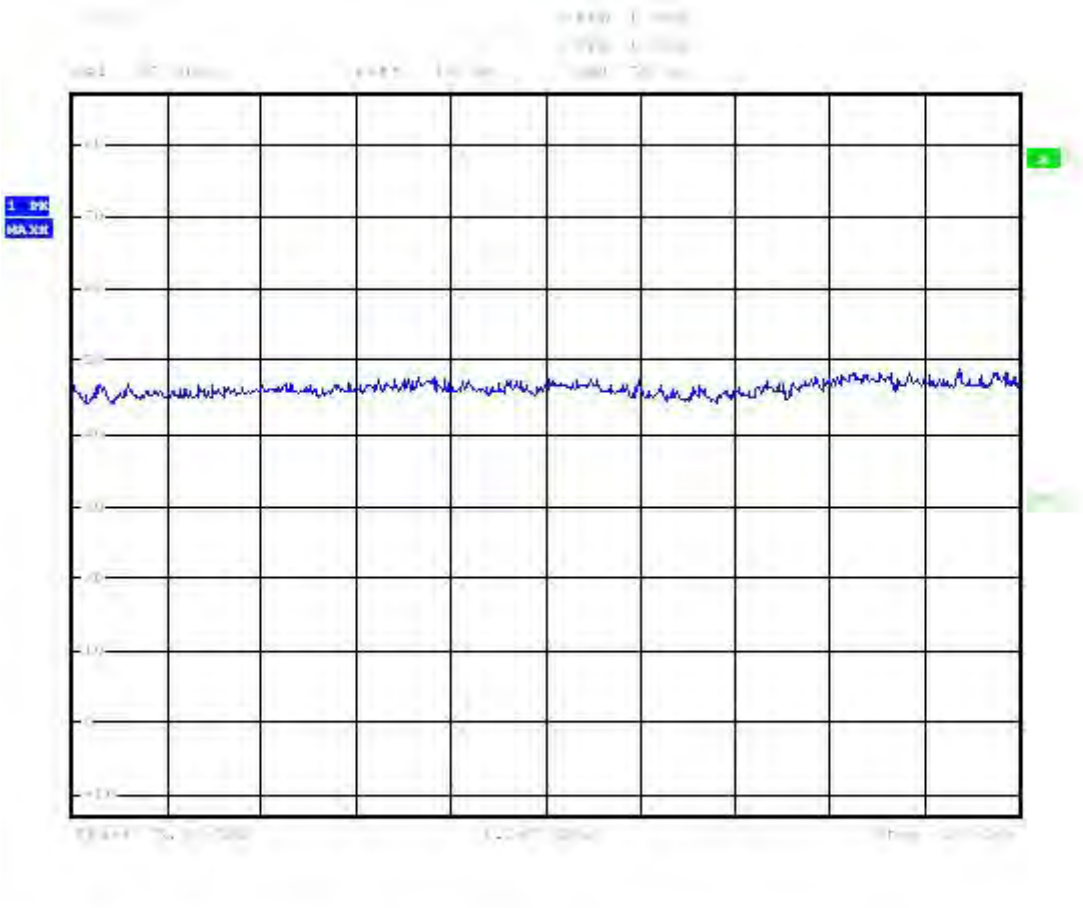
MAXH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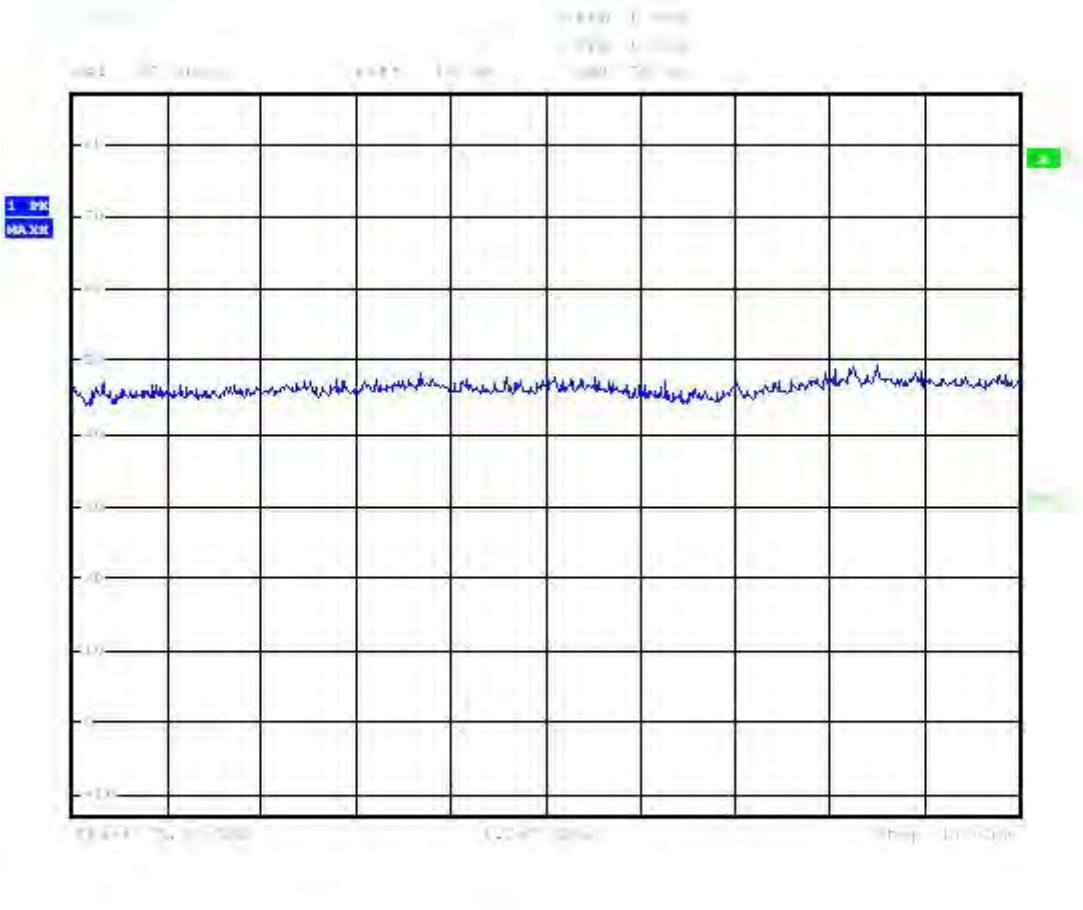
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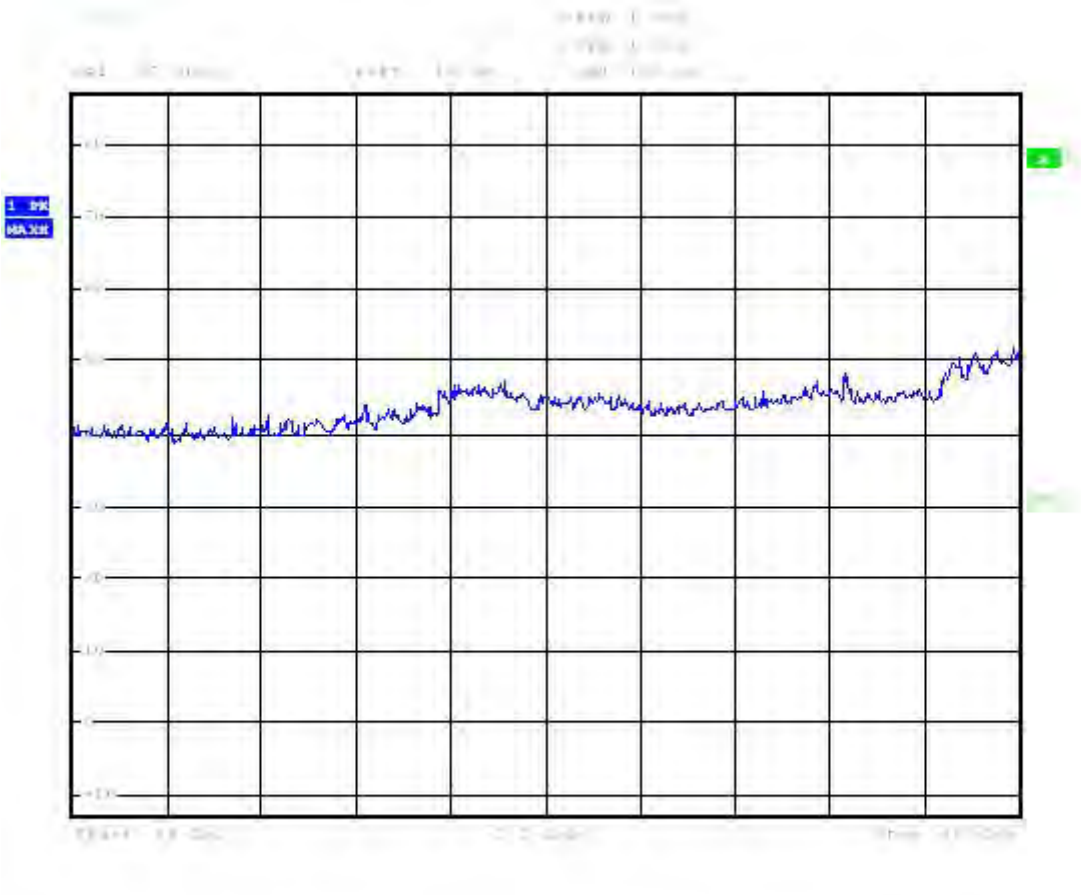
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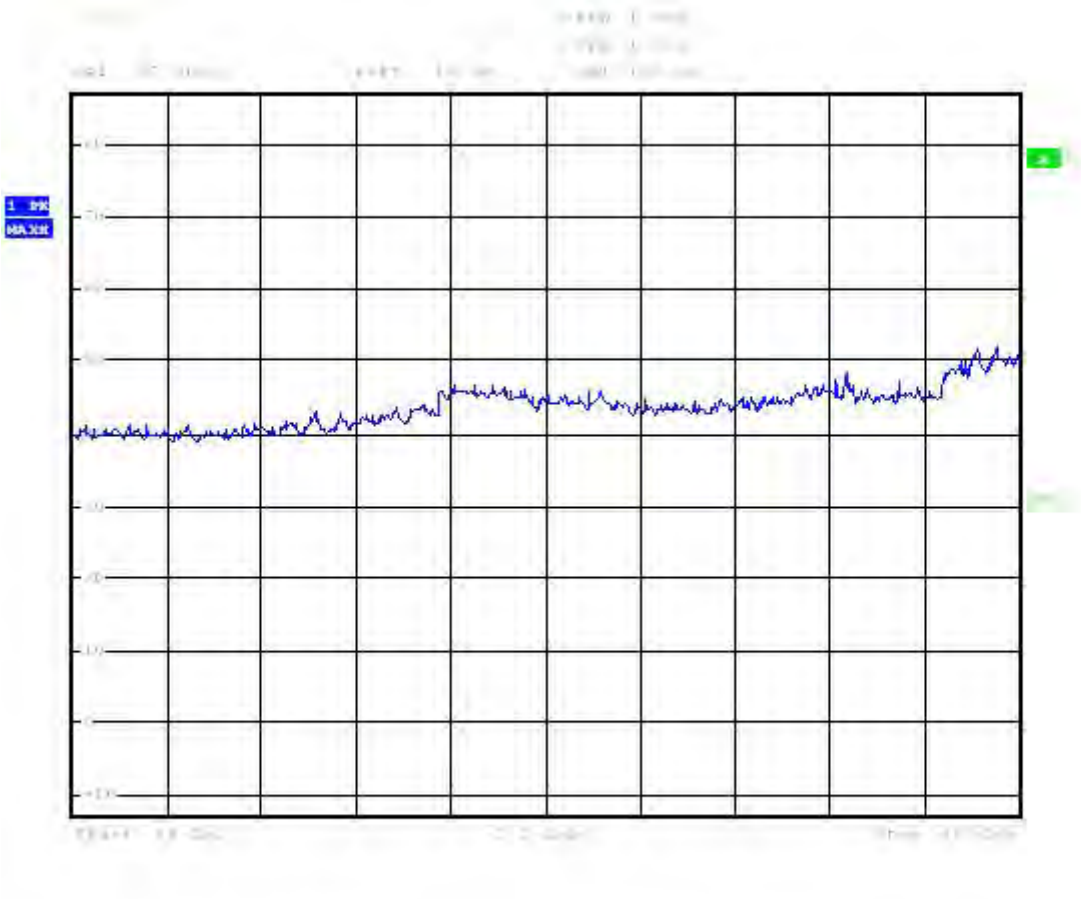
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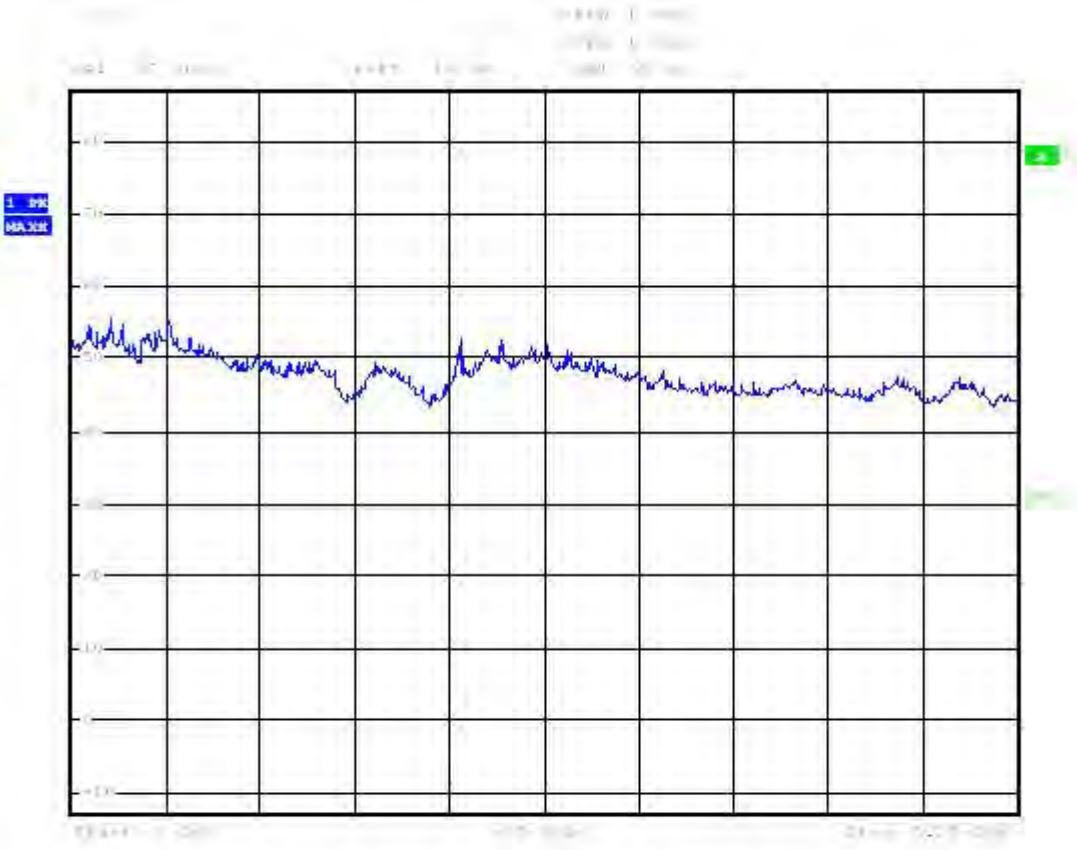
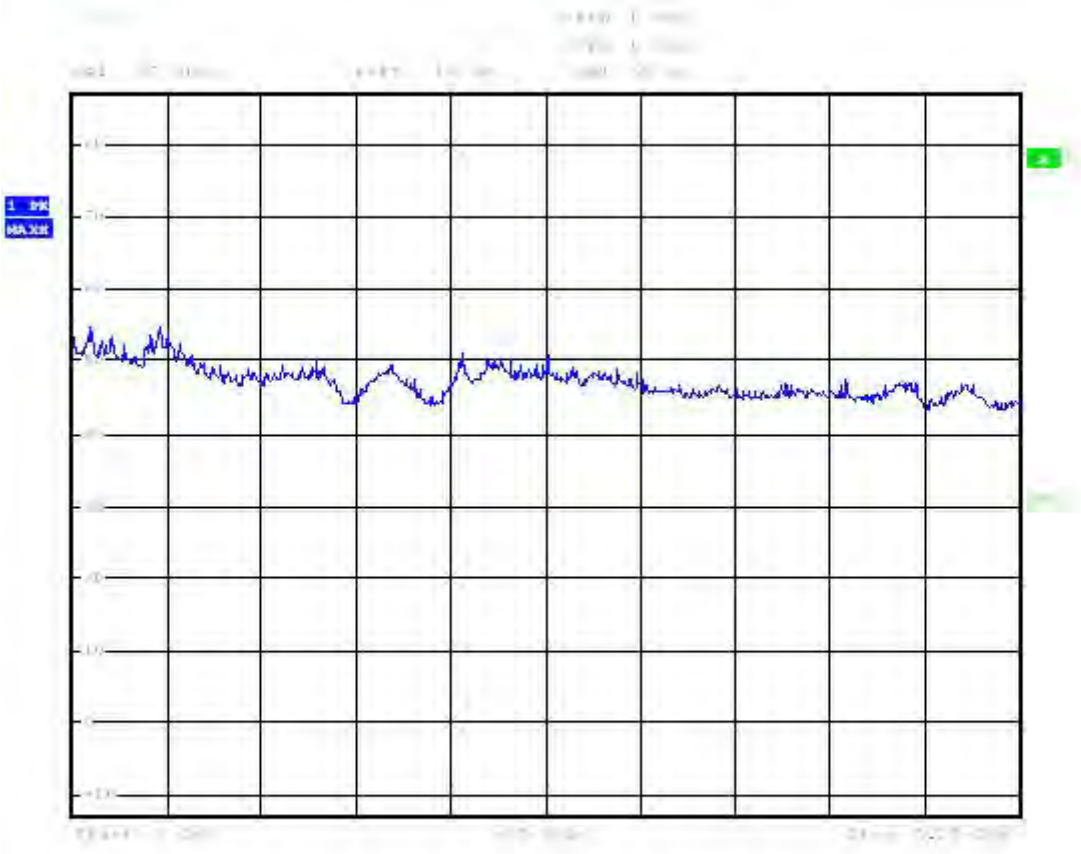
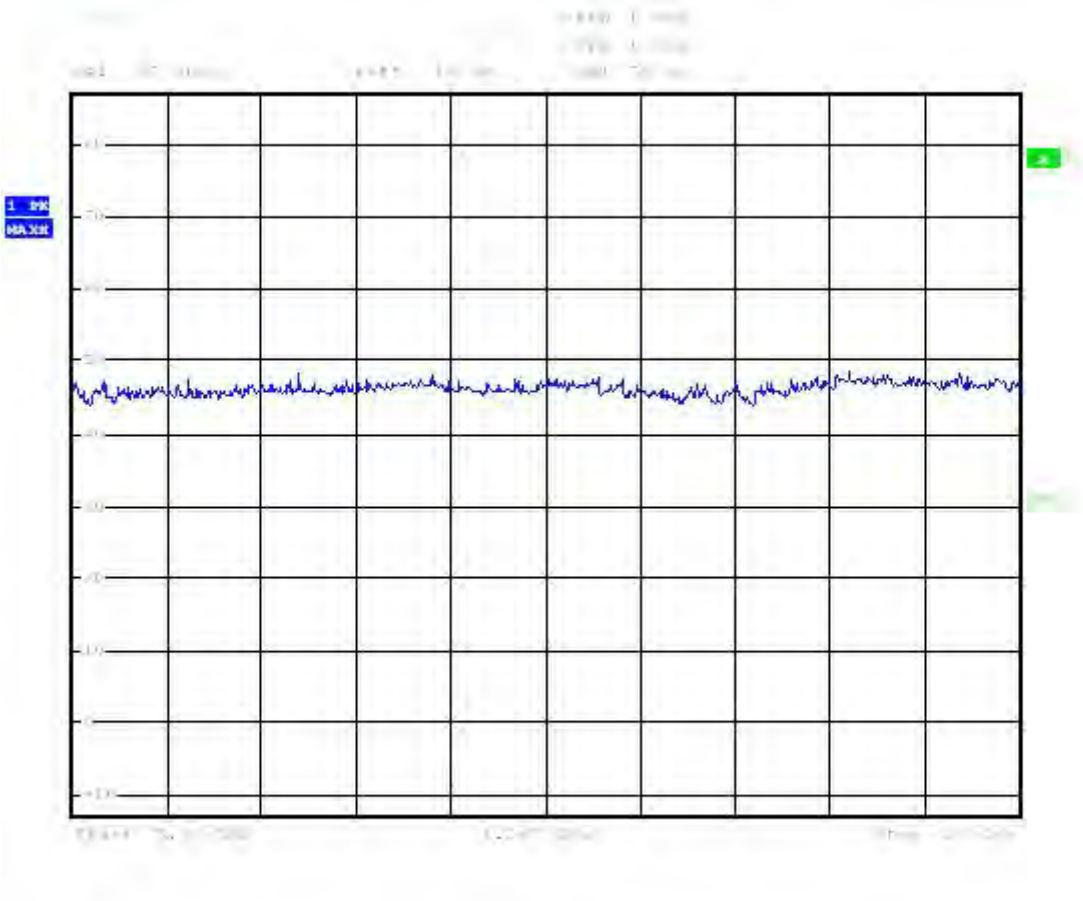
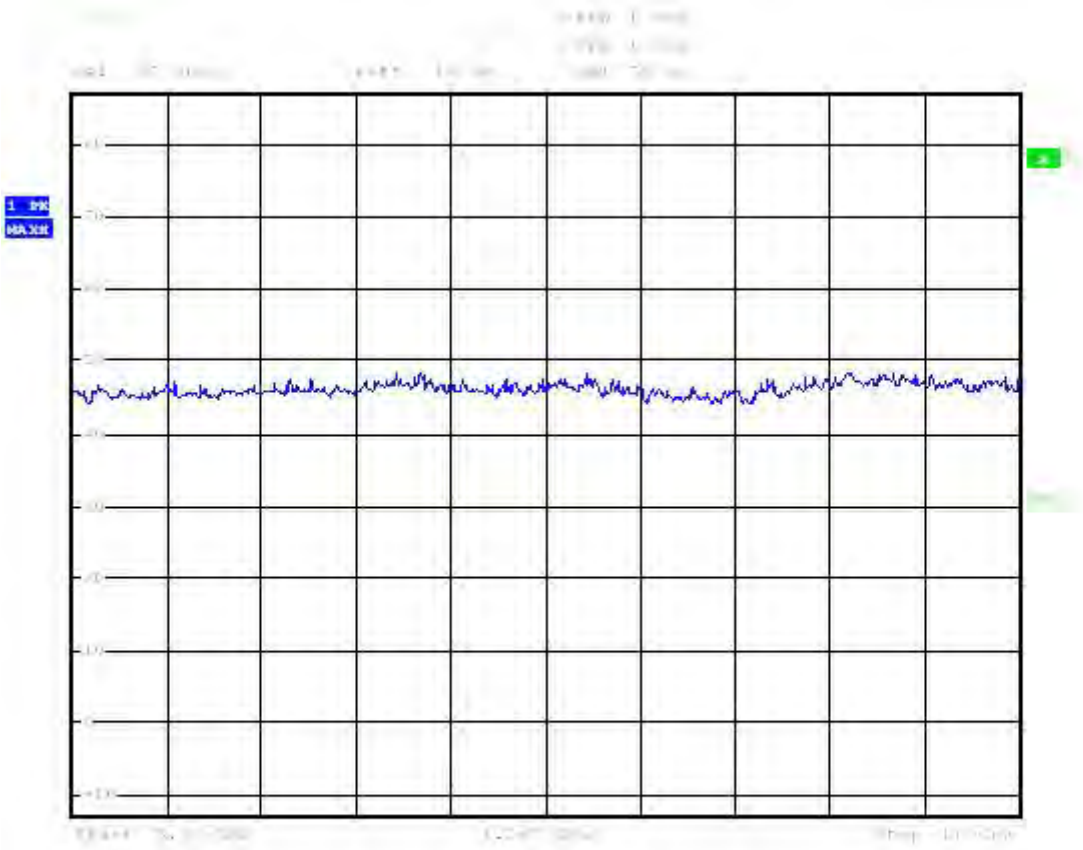
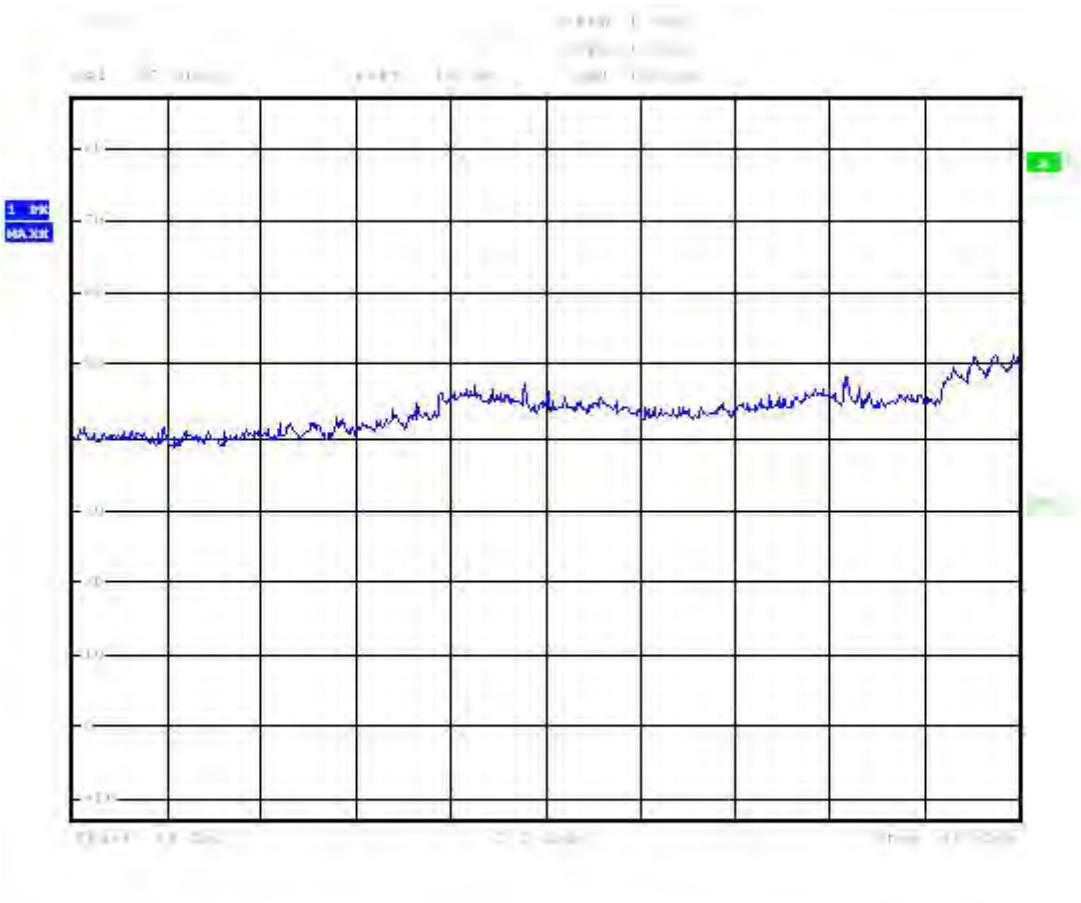
調變技術: IEEE 802.11ac80







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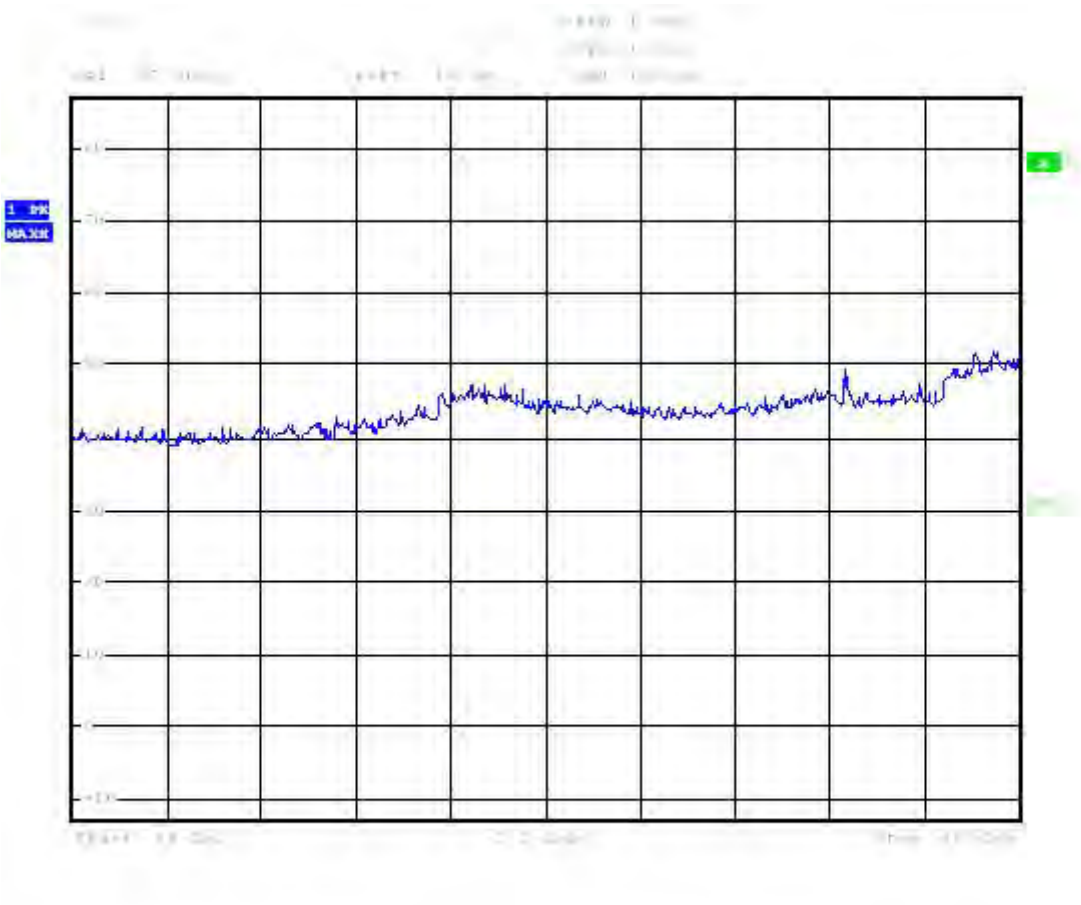

MAXH

10.6 頻帶外邊緣輻射場強之量測結果

10.6.1 調變技術: IEEE 802.11a

操作模式: 發射接收

測試日期: Aug. 24, 2018 環境溫度: 21℃ 環境濕度: 63%

輻射頻率	儀器讀值@3m (dBuV/m)				校正因子	結果值		限制值@3m		餘裕值 (worse)	
	水平		垂直			(dBuV/m)		(dBuV/m)		(dB)	
(MHz)	峰值	平均值	峰值	平均值	(dB)	峰值	平均值	峰值	平均值	峰值	平均值
5150.000	27.3	12.7	27.3	12.7	37.3	64.6	50	74.0	54.0	-9.4	-4.0
5350.000	26.9	12.8	27.1	12.7	37.6	64.8	50.5	74.0	54.0	-9.2	-3.5

10.6.2 調變技術: IEEE 802.11an HT20

輻射頻率	儀器讀值@3m (dBuV/m)				校正因子	結果值		限制值@3m		餘裕值 (worse)	
	水平		垂直			(dBuV/m)		(dBuV/m)		(dB)	
(MHz)	峰值	平均值	峰值	平均值	(dB)	峰值	平均值	峰值	平均值	峰值	平均值
5150.000	26.8	12.7	27.4	12.7	37.3	64.7	50.0	74.0	54.0	-9.3	-4.0
5350.000	27.6	12.8	26.6	12.8	37.6	65.3	50.5	74.0	54.0	-8.7	-3.5

10.6.3 調變技術: IEEE 802.11an HT40

輻射頻率	儀器讀值@3m (dBuV/m)				校正因子	結果值		限制值@3m		餘裕值 (worse)	
	水平		垂直			(dBuV/m)		(dBuV/m)		(dB)	
(MHz)	峰值	平均值	峰值	平均值	(dB)	峰值	平均值	峰值	平均值	峰值	平均值
5150.000	27.4	12.7	27.8	12.6	37.3	65.1	50.0	74.0	54.0	-8.9	-4.0
5350.000	27.8	12.9	27.4	12.5	37.6	65.5	50.5	74.0	54.0	-8.5	-3.5

10.6.4 調變技術: IEEE 802.11ac (80MHz)

輻射頻率	儀器讀值@3m (dBuV/m)				校正因子	結果值		限制值@3m		餘裕值 (worse)	
	水平		垂直			(dBuV/m)		(dBuV/m)		(dB)	
(MHz)	峰值	平均值	峰值	平均值	(dB)	峰值	平均值	峰值	平均值	峰值	平均值
5150.000	27.3	12.7	27.3	12.7	37.3	64.6	50.0	74.0	54.0	-9.4	-4.0
5350.000	27.7	12.9	27.5	12.8	37.6	65.3	50.5	74.0	54.0	-8.7	-3.5

註:1. “----“表示干擾值太小而儀器無法量得。

2. “#“表示干擾值太小，直接量取其峰值。

3. 標記“***”表示為本地震盪頻率及其諧波。

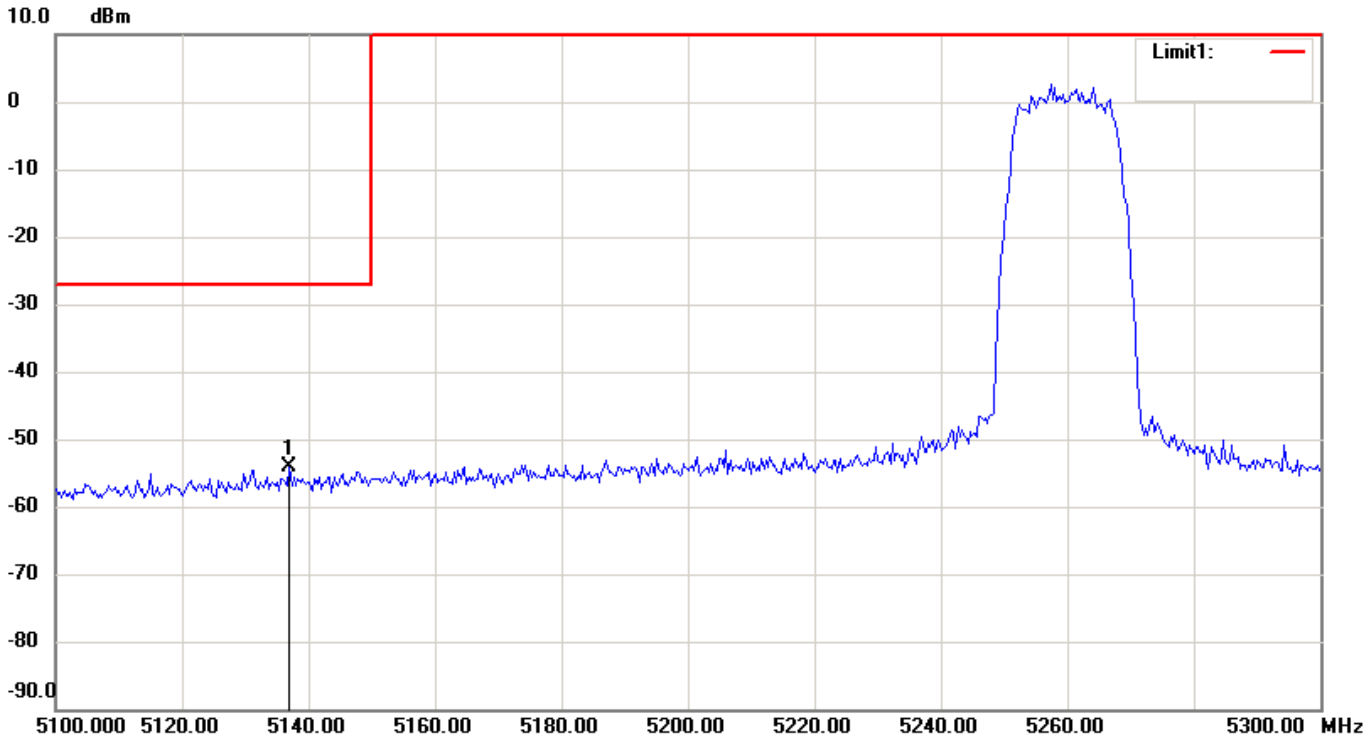
4. 量測不準確度: ±4.1dB(1GHz≦f≦18GHz)

5. 量測頻率範圍為 4500 ~ 5250 MHz及 5350 ~ 5460 MHz，並記錄兩頻率範圍中之最大讀

10.7 頻帶外邊緣直接量測之量測結果

調變技術: IEEE 802.11a

File:	**18-07-037_5-3a_A0**	**#3**	**Date:**	**2018/8/9**	**Temperature:** 25 ℃
			Time:	**下午 03:07:45**	**Humidity:** 60 %

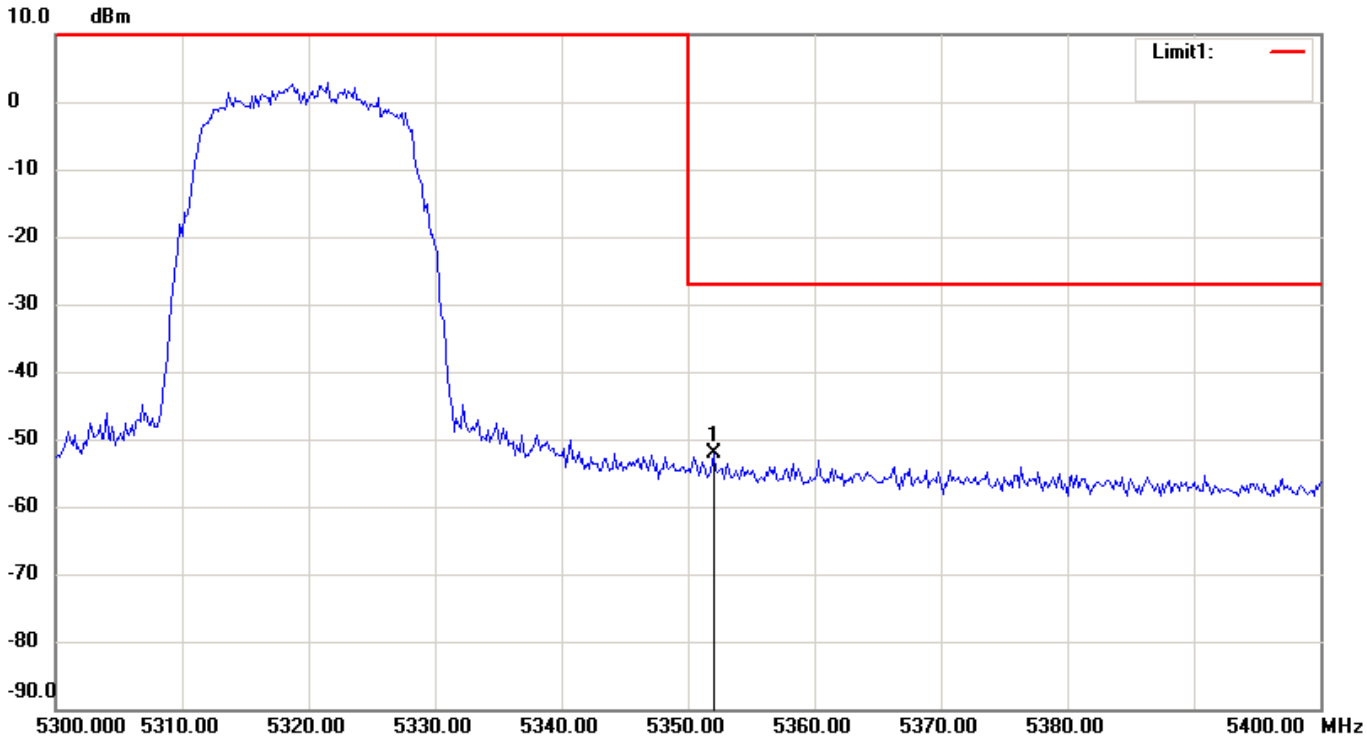


Condition:	**UNII-Band1-2-Bandedge**	**RF Conducted**	
EUT:		**Sweep Time: 1ms**	**Att.: 10dB**
Model:		**RBW: 1000 KHz**	**VBW: 3000 KHz**
Test Mode:			
Note:	**5260_a_Low_bandedge**		

No.	Frequency(MHz)	Level(dBm)
1	5137.00000	-54.09

File: 18-07-037_5-3a_A0 **#8** **Date:** 2018/8/9 **Temperature:** 25 ℃

Time: 下午 03:19:34 **Humidity:** 60 %



Condition: UNII-Band1-2-Bandedge **RF Conducted**

EUT: **Sweep Time: 1ms** **Att.: 10dB**

Model: **RBW: 1000 KHz** **VBW: 3000 KHz**

Test Mode:

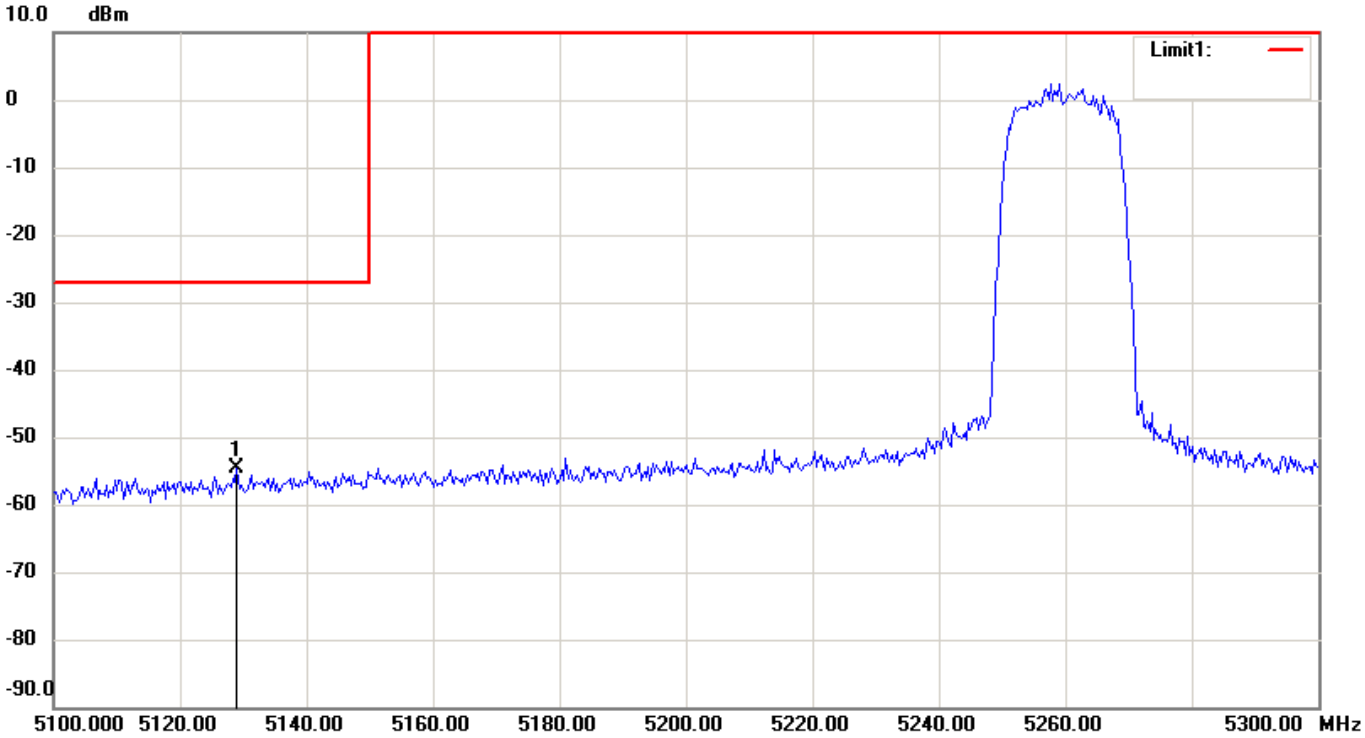
Note: 5320_a_High_bandedge

No.	Frequency(MHz)	Level(dBm)
1	5352.00000	-52.11

調變技術: IEEE 802.11an HT20

CHAIN 0

File:	**18-07-037_5-3an20_A0**	**#3**	**Date:**	**2018/8/9**	**Temperature:**	**25 ℃**
			Time:	**下午 01:20:12**	**Humidity:**	**60 %**

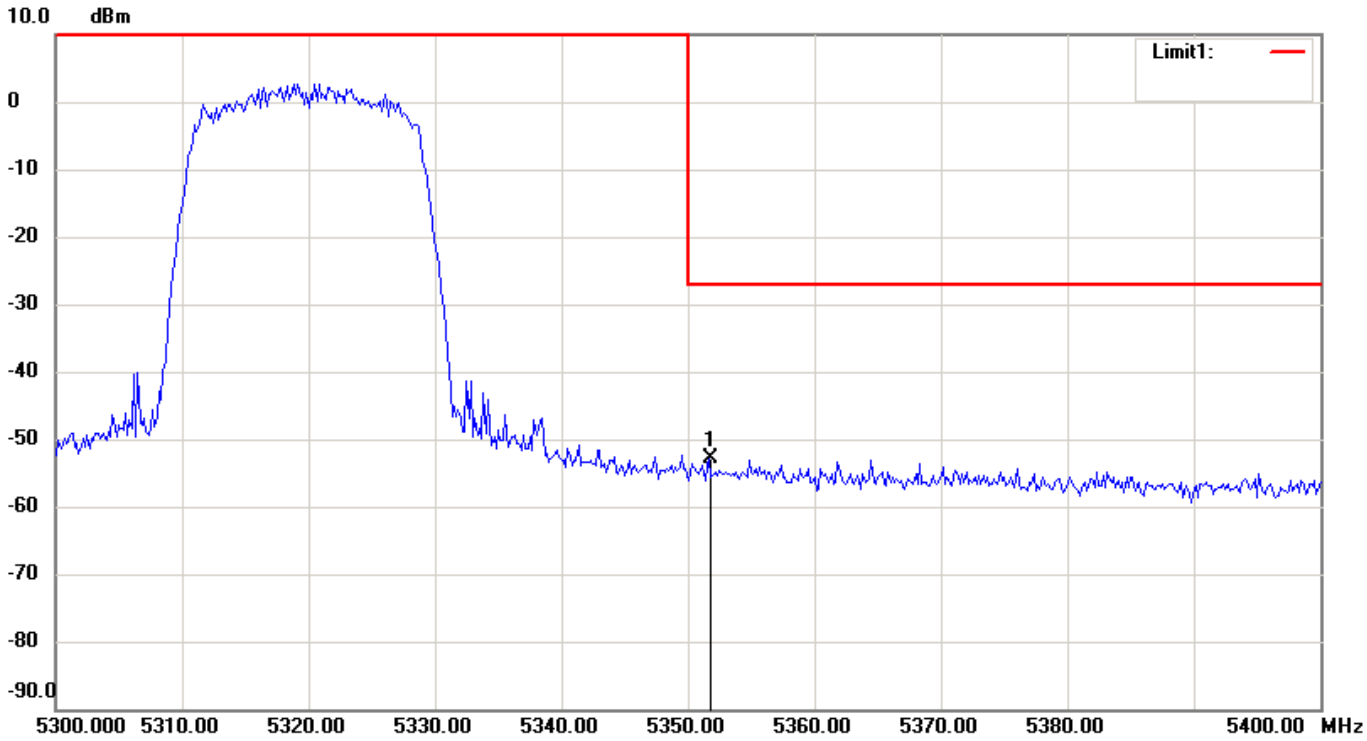


Condition:	**UNII-Band1-2-Bandedge**	**RF Conducted**	
EUT:		**Sweep Time: 1ms**	**Att.: 10dB**
Model:		**RBW: 1000 KHz**	**VBW: 3000 KHz**
Test Mode:			
Note:	**5260_an20_Low_bandedge**		

No.	Frequency(MHz)	Level(dBm)
1	5129.00000	-54.50

File: 18-07-037_5-3an20_A0 **#8** **Date:** 2018/8/9 **Temperature:** 25 ℃

Time: 下午 01:31:10 **Humidity:** 60 %



Condition: UNII-Band1-2-Bandedge **RF Conducted**

EUT: **Sweep Time: 1ms** **Att.: 10dB**

Model: **RBW: 1000 KHz** **VBW: 3000 KHz**

Test Mode:

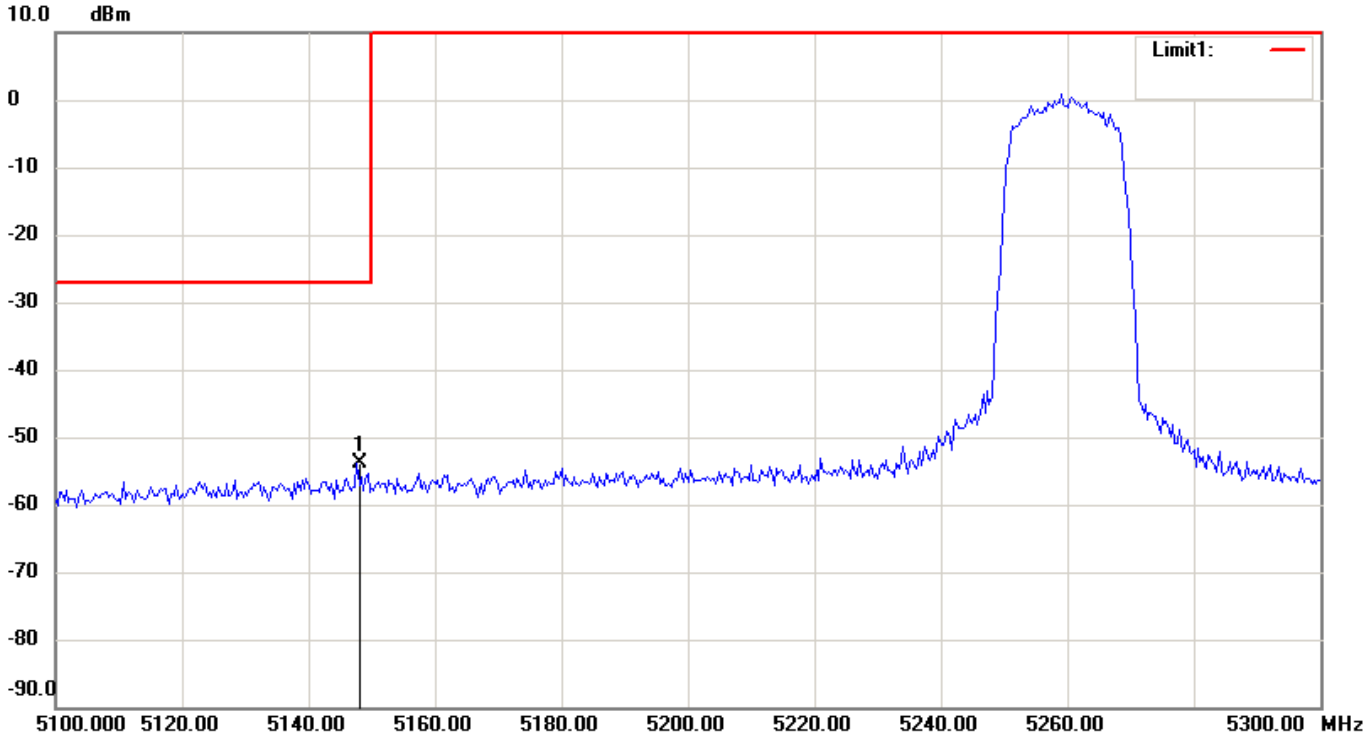
Note: 5320_an20_High_bandedge

No.	Frequency(MHz)	Level(dBm)
1	5351.66670	-52.92

調變技術: IEEE 802.11an HT20

CHAIN 1

File:	**18-07-037_5-3an20_A1**	**#3**	**Date:**	**2018/8/9**	**Temperature:**	**25 ℃**
			Time:	**下午 01:43:42**	**Humidity:**	**60 %**

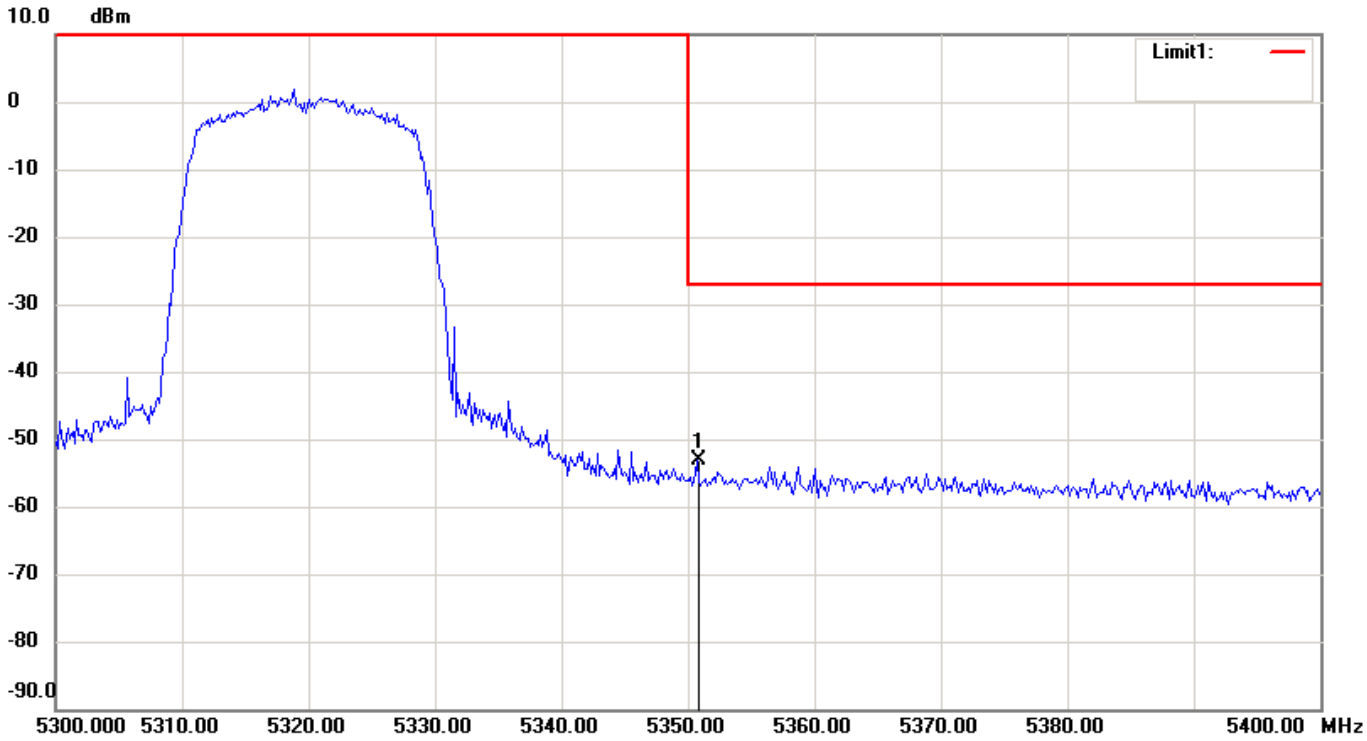


Condition:	**UNII-Band1-2-Bandedge**	**RF Conducted**	
EUT:		**Sweep Time: 1ms**	**Att.: 10dB**
Model:		**RBW: 1000 KHz**	**VBW: 3000 KHz**
Test Mode:			
Note:	**5260_an20_Low_bandedge**		

No.	Frequency(MHz)	Level(dBm)
1	5147.66670	-53.91

File: 18-07-037_5-3an20_A1 **#8** **Date:** 2018/8/9 **Temperature:** 25 ℃

Time: 下午 02:11:03 **Humidity:** 60 %



Condition: UNII-Band1-2-Bandedge **RF Conducted**

EUT: **Sweep Time: 1ms** **Att.: 10dB**

Model: **RBW: 1000 KHz** **VBW: 3000 KHz**

Test Mode:

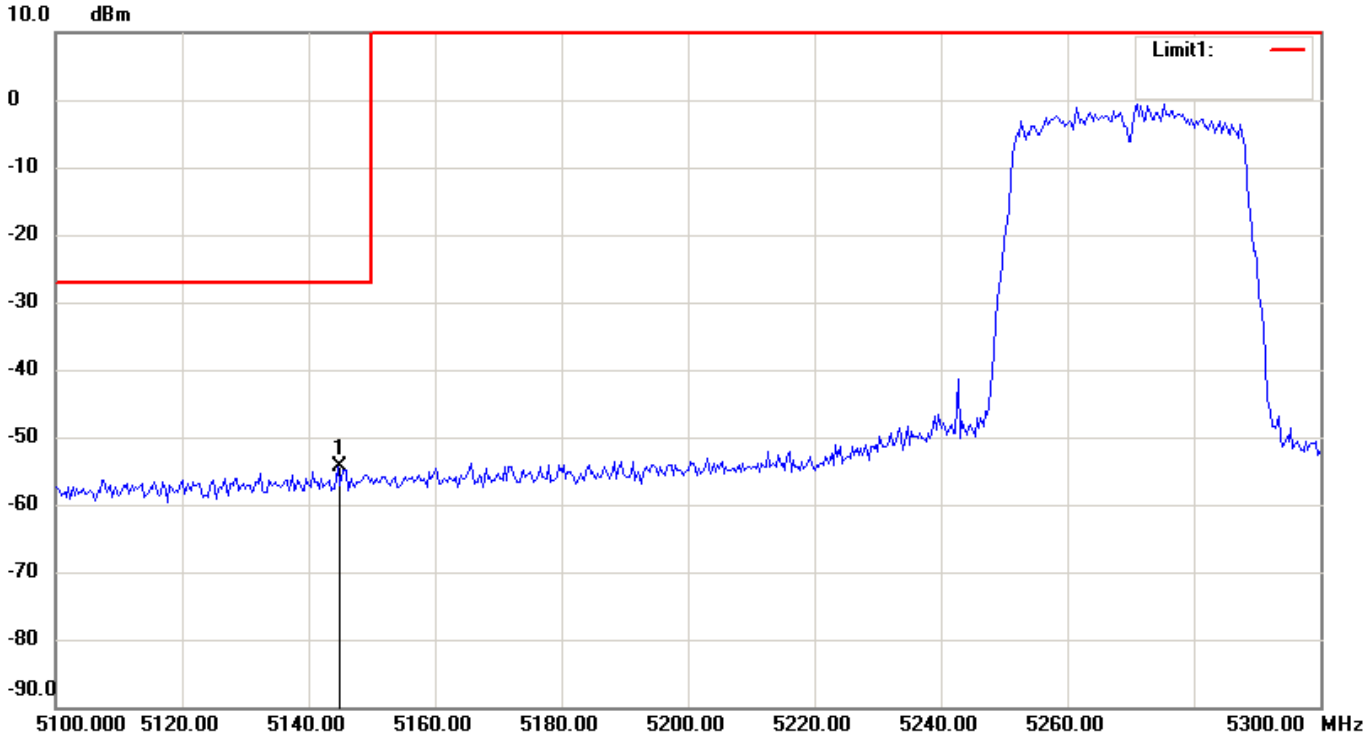
Note: 5320_an20_High_bandedge

No.	Frequency(MHz)	Level(dBm)
1	5350.66670	-53.16

調變技術: IEEE 802.11an HT40

CHAIN 0

File:	**18-07-037_5-3an40_A0**	**#3**	**Date:**	**2018/8/9**	**Temperature:** 25 ℃
			Time:	**下午 01:02:33**	**Humidity:** 60 %



Condition: **UNII-Band1-2-Bandedge** **RF Conducted**

EUT: **Sweep Time: 1ms** **Att.: 10dB**

Model: **RBW: 1000 KHz** **VBW: 3000 KHz**

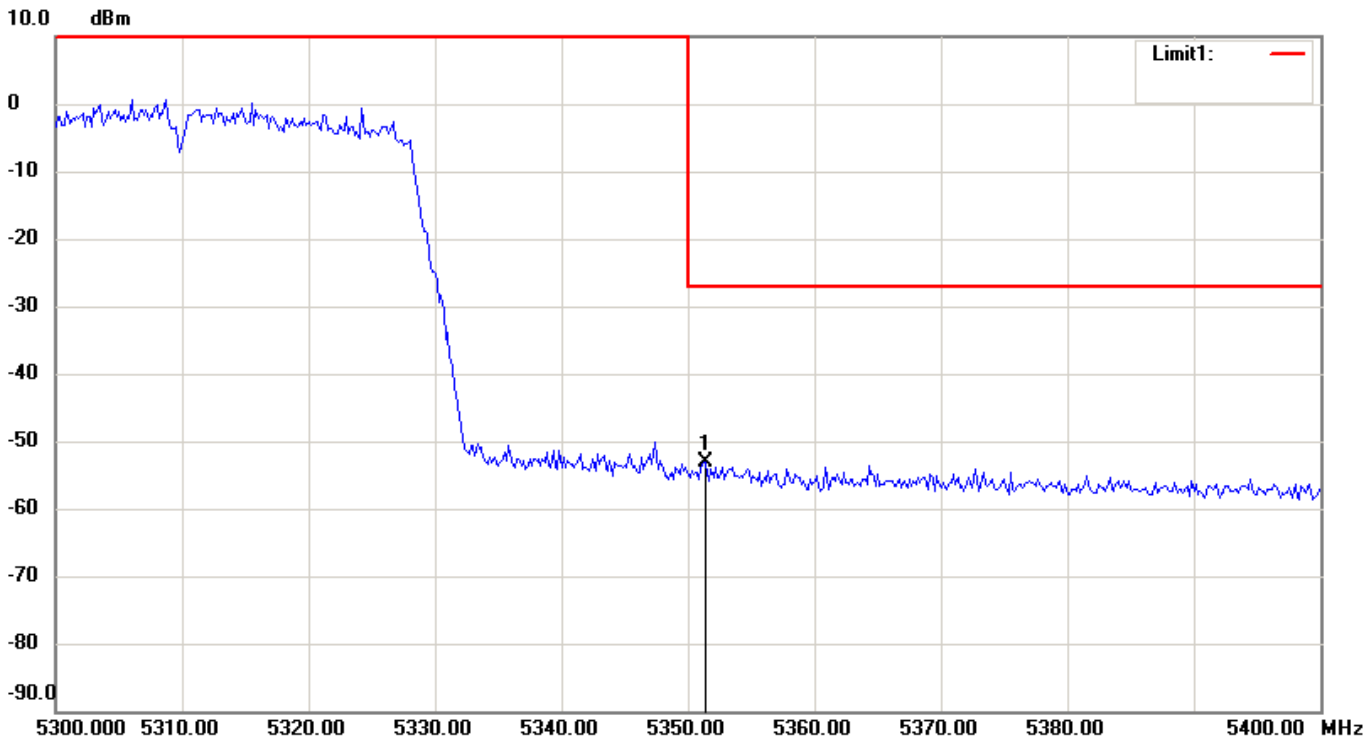
Test Mode:

Note: **5270_an40_Low_bandedge**

No.	Frequency(MHz)	Level(dBm)
1	5144.66670	-54.32

File: 18-07-037_5-3an40_A0 **#6** **Date:** 2018/8/9 **Temperature:** 25 ℃

Time: 下午 01:08:18 **Humidity:** 60 %



Condition: UNII-Band1-2-Bandedge **RF Conducted**

EUT: **Sweep Time: 1ms** **Att.: 10dB**

Model: **RBW: 1000 KHz** **VBW: 3000 KHz**

Test Mode:

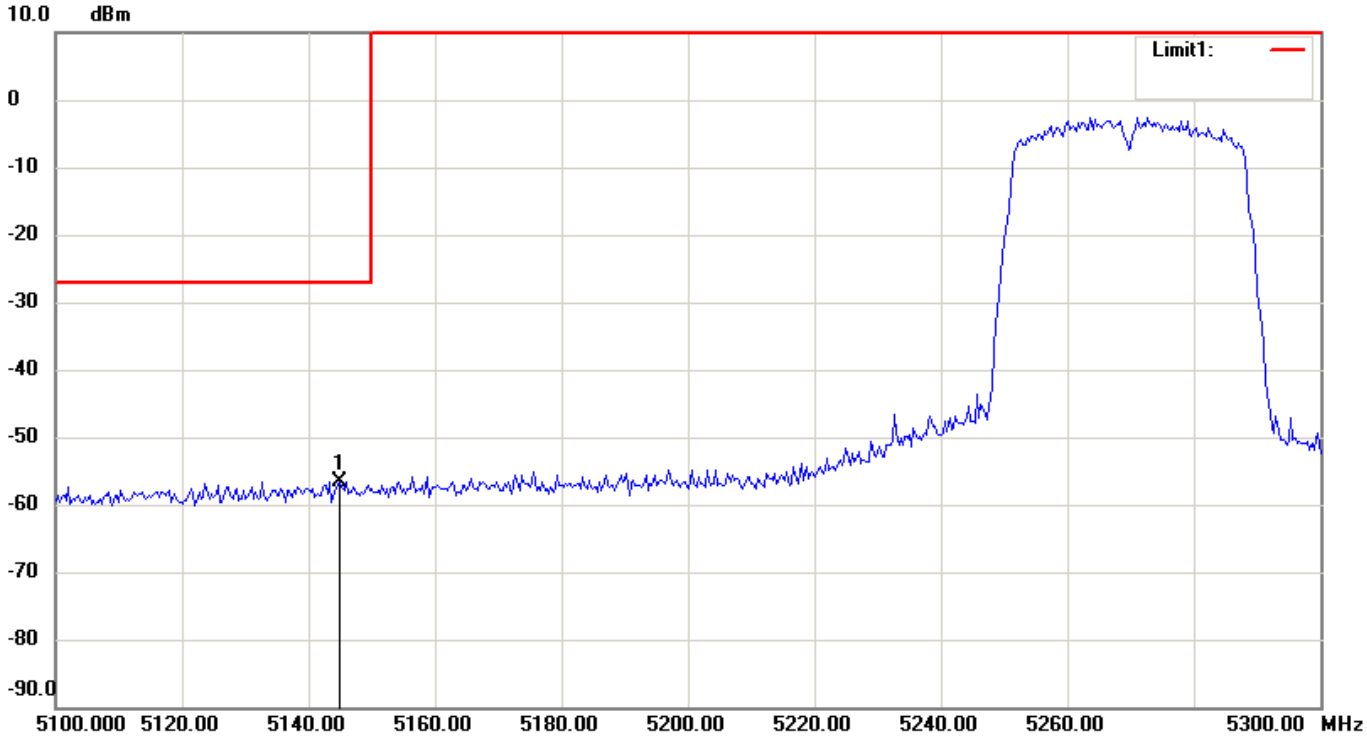
Note: 5310_an40_High_bandedge

No.	Frequency(MHz)	Level(dBm)
1	5351.33330	-53.22

調變技術: IEEE 802.11an HT40

CHAIN 1

File:	**18-07-037_5-3an40_A1**	**#3**	**Date:**	**2018/8/9**	**Temperature:**	**25 ℃**
			Time:	**上午 11:47:04**	**Humidity:**	**60 %**

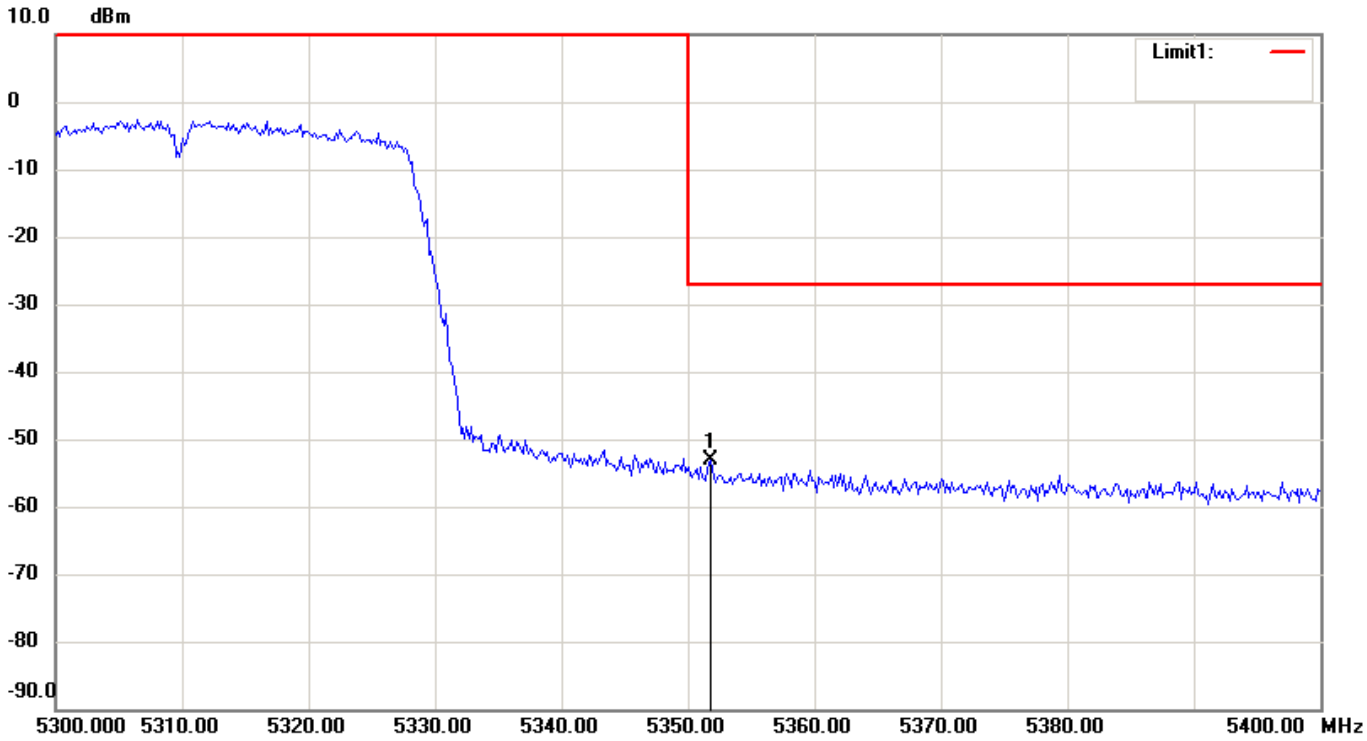


Condition:	**UNII-Band1-2-Bandedge**	**RF Conducted**	
EUT:		**Sweep Time: 1ms**	**Att.: 10dB**
Model:		**RBW: 1000 KHz**	**VBW: 3000 KHz**
Test Mode:			
Note:	**5270_an40_Low_bandedge**		

No.	Frequency(MHz)	Level(dBm)
1	5145.00000	-56.51

File: 18-07-037_5-3an40_A1 **#6** **Date:** 2018/8/9 **Temperature:** 25 ℃

Time: 上午 11:54:55 **Humidity:** 60 %



Condition: UNII-Band1-2-Bandedge **RF Conducted**

EUT: **Sweep Time: 1ms** **Att.: 10dB**

Model: **RBW: 1000 KHz** **VBW: 3000 KHz**

Test Mode:

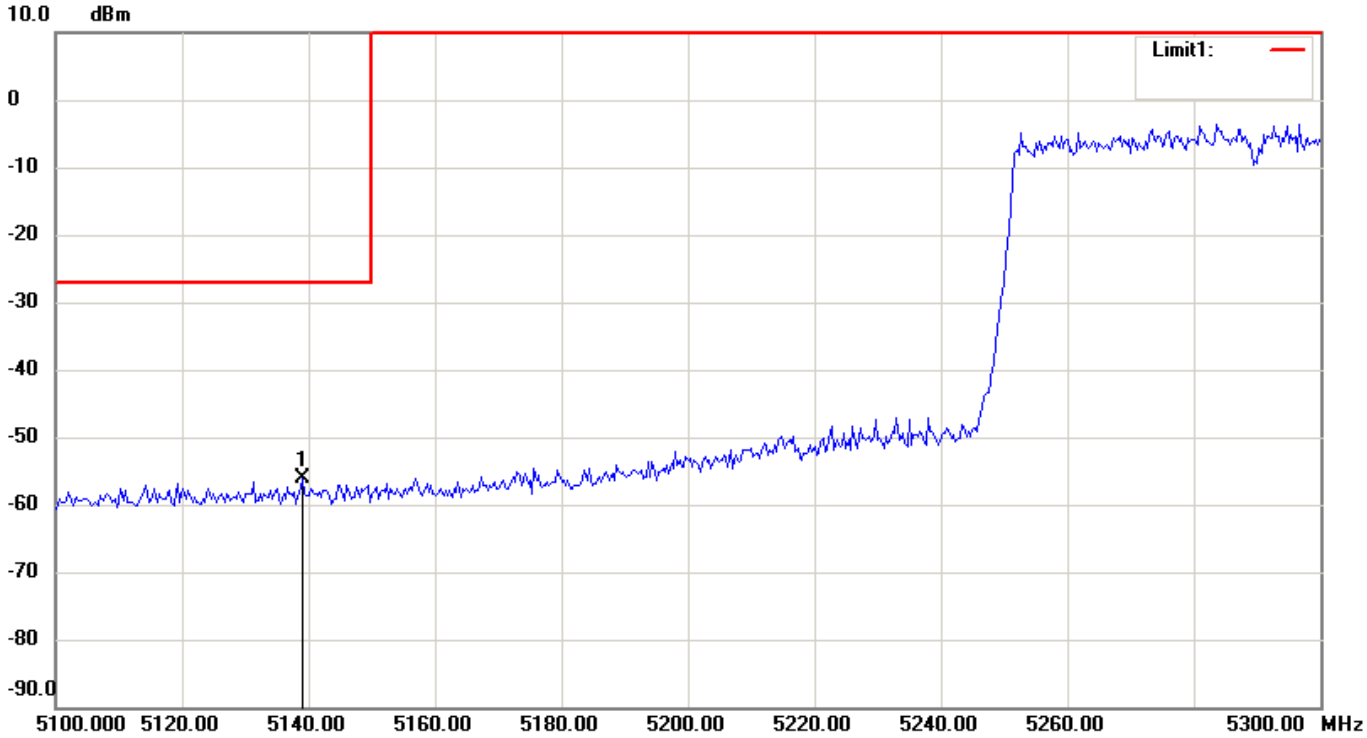
Note: 5310_an40_High_bandedge

No.	Frequency(MHz)	Level(dBm)
1	5351.83330	-53.05

調變技術: IEEE 802.11ac80

CHAIN 0

File:	**18-07-037_5-3ac80_A0**	**#3**	**Date:**	**2018/8/8**	**Temperature:**	**25 ℃**
			Time:	**下午 07:19:26**	**Humidity:**	**60 %**

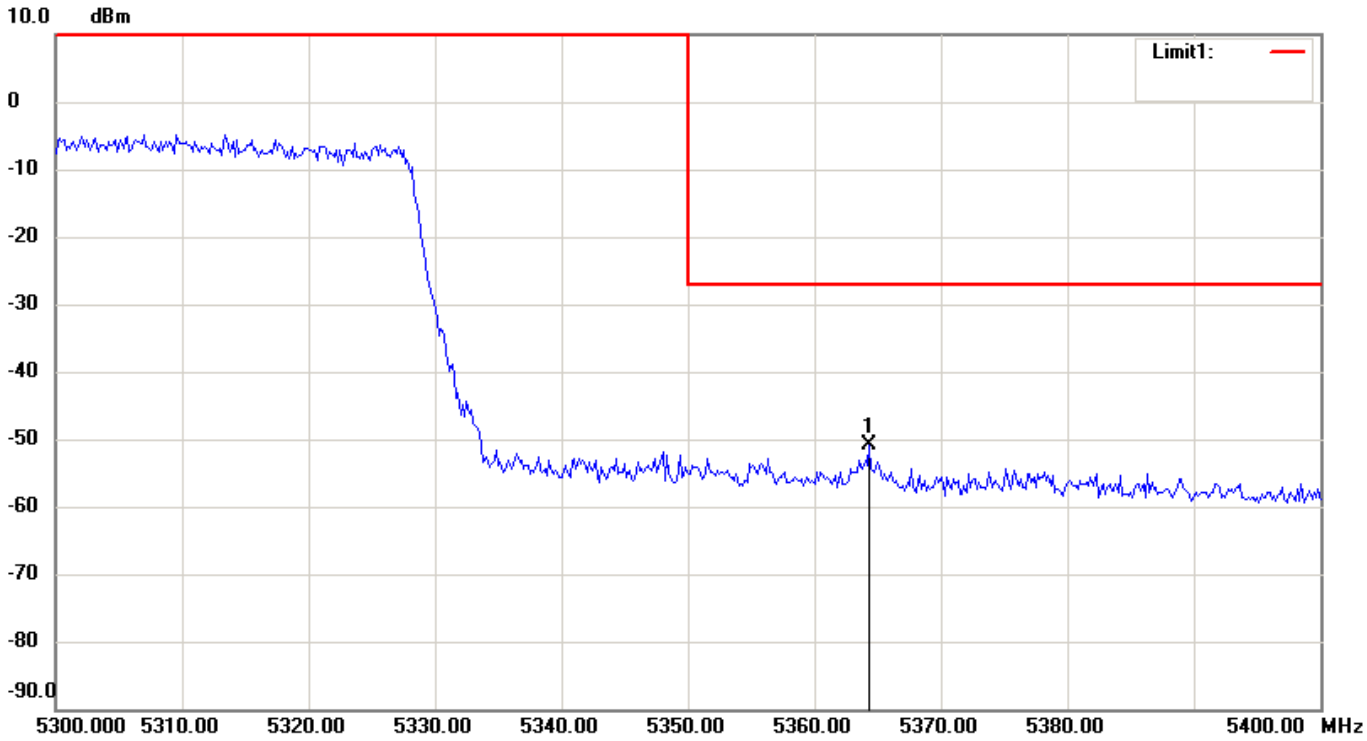


Condition:	**UNII-Band1-2-Bandedge**	**Horizontal**	
EUT:		**Sweep Time: 1ms**	**Att.: 10dB**
Model:		**RBW: 1000 KHz**	**VBW: 3000 KHz**
Test Mode:			
Note:	**5290_ac80_Low_bandedge**		

No.	Frequency(MHz)	Level(dBm)
1	5139.00000	-56.07

File: 18-07-037_5-3ac80_A0 **#4** **Date:** 2018/8/8 **Temperature:** 25 ℃

Time: 下午 07:20:02 **Humidity:** 60 %



Condition: UNII-Band1-2-Bandedge **Horizontal**

EUT: **Sweep Time: 1ms** **Att.: 10dB**

Model: **RBW: 1000 KHz** **VBW: 3000 KHz**

Test Mode:

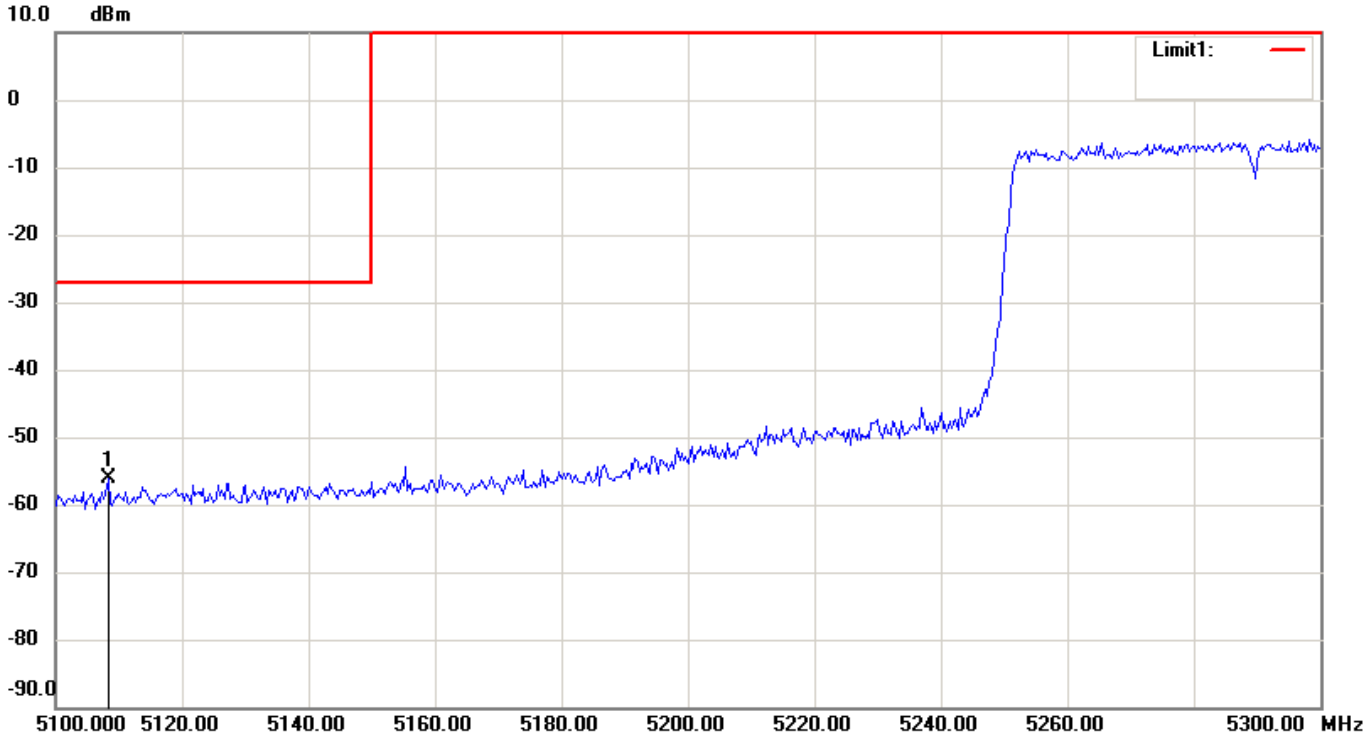
Note: 5290_ac80_High_bandedge

No.	Frequency(MHz)	Level(dBm)
1	5364.33330	-50.94

調變技術: IEEE 802.11ac80

CHAIN 1

File:	**18-07-037_5-3ac80_A1**	**#3**	**Date:**	**2018/8/8**	**Temperature:**	**25 ℃**
			Time:	**下午 07:12:27**	**Humidity:**	**60 %**

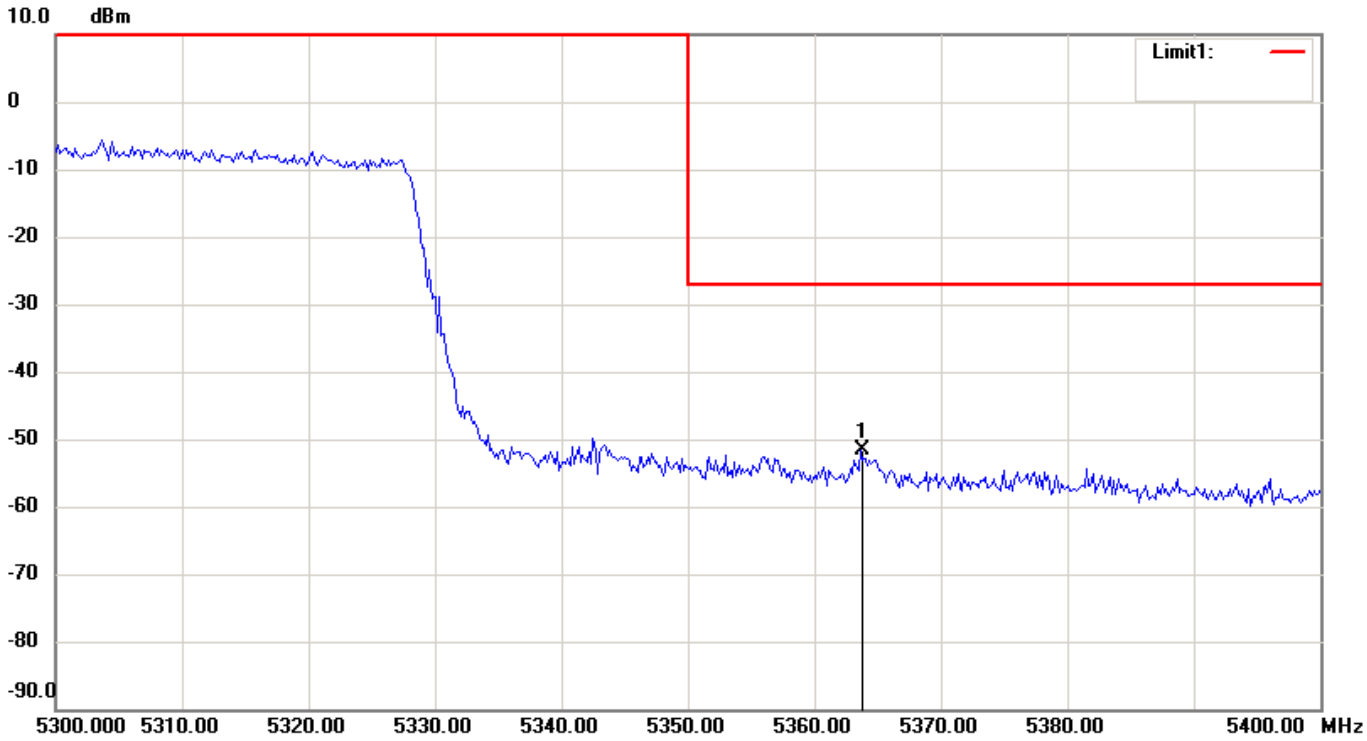


Condition:	**UNII-Band1-2-Bandedge**	**Horizontal**	
EUT:		**Sweep Time: 1ms**	**Att.: 10dB**
Model:		**RBW: 1000 KHz**	**VBW: 3000 KHz**
Test Mode:			
Note:	**5290_ac80_Low_bandedge**		

No.	Frequency(MHz)	Level(dBm)
1	5108.33330	-56.19

File: 18-07-037_5-3ac80_A1 **#4** **Date:** 2018/8/8 **Temperature:** 25 ℃

Time: 下午 07:13:07 **Humidity:** 60 %



Condition: UNII-Band1-2-Bandedge **Horizontal**

EUT: **Sweep Time: 1ms** **Att.: 10dB**

Model: **RBW: 1000 KHz** **VBW: 3000 KHz**

Test Mode:

Note: 5290_ac80_High_bandedge

No.	Frequency(MHz)	Level(dBm)
1	5363.66670	-51.62

10.8 結果判定

以上頻帶外邊緣測試之結果皆低於限制值-27dBm，合乎標準規定。

10.9 輻射之測試配置

圖 3: 量測頻率低於1GHz之測試配置

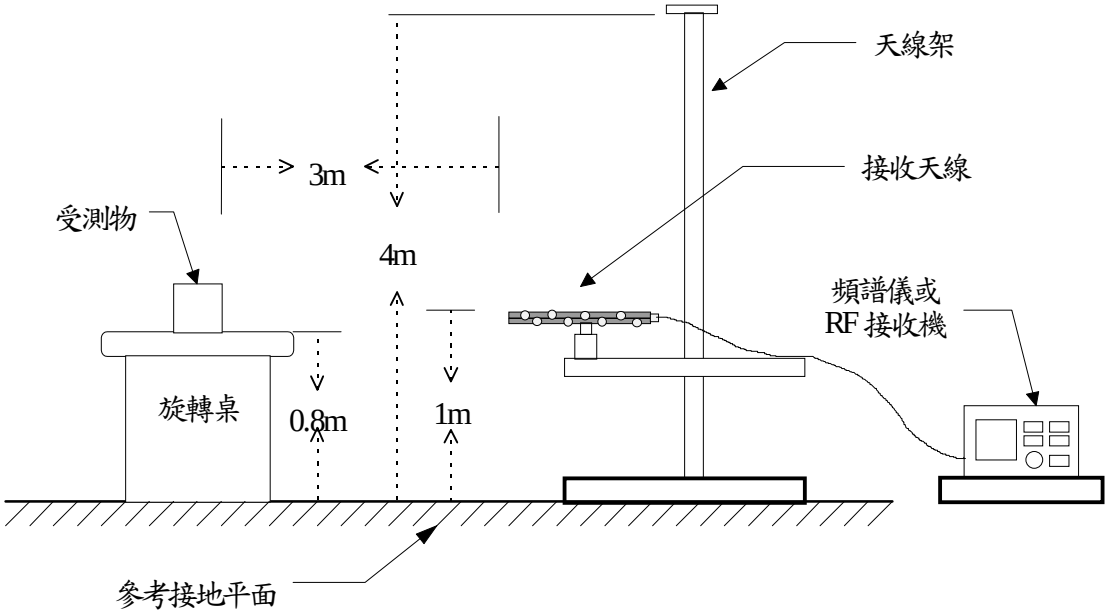
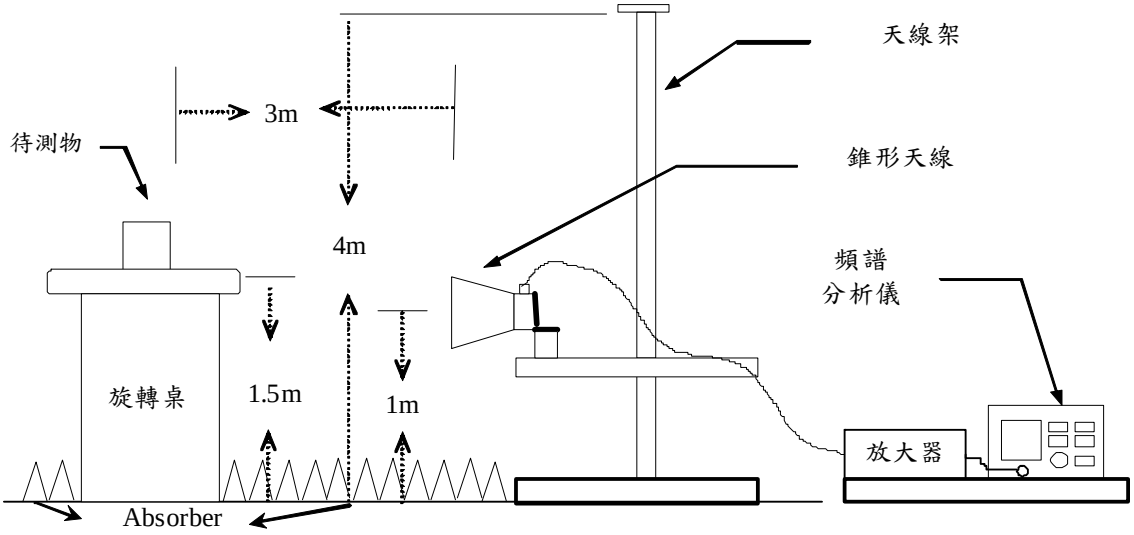


圖 4: 量測頻率高於1GHz之測試配置



10.10 輻射量測之配置照片

請參考產品照片

11 發射功率控制(TPC)之量測

11.1 發射功率控制(TPC)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4.7.7.1節之規定，操作於 5.25GHz ~5.35GHz 與5.470GHz~5.725GHz 頻段的設備，應具備發射功率控制機能。設備必須至少具有6dB 低於平均 EIRP 30dBm 的能力。EIRP 低於 500mW 之系統不須具備TPC機能。

11.2 發射功率控制(TPC)之測試配置

如圖 2 所示。

11.3 發射功率控制(TPC)之量測儀器

儀器名稱	製造者	型 號
Spectrum Analyzer	Agilent	E4446A

11.4 適用性

Highest Power Level in DFS Band (EIRP)		12.52dBm+0.27dBi =12.79dBm =19.01mW
☒	EIRP < 500 mW	Not Applicable
☐	EIRP ≧500 mW	Applicable

12 動態頻率選擇(DFS)之量測

12.1 LIMITS

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.7.2 節之規定與 NCC KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02 COMPLIANCE MEASUREMENT PROCEDURES FOR UNLICENSED-NATIONAL INFORMATION INFRASTRUCTURE DEVICES OPERATING IN THE 5250-5350 MHz AND 5470-5725 MHz BANDS INCORPORATING DYNAMIC FREQUENCY SELECTION.

Table 1: Applicability of DFS Requirements Prior to Use of a Channel

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode	
	Master Device or Client with Radar Detection	Client Without Radar Detection
DFS Detection Threshold	Yes	Not required
Channel Closing Transmission Time	Yes	Yes
Channel Move Time	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required

Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar Detection	Client Without Radar Detection
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required
Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.		

Table 3: DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection

Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP ≥ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna. **Note 2:** Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response. **Note3:** EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.	

Table 4: DFS Response Requirement Values

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.

Note 1: *Channel Move Time* and the *Channel Closing Transmission Time* should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.
Note 2: The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required to facilitate a *Channel* move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.
Note 3: During the *U-NII Detection Bandwidth* detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

Table 5 – Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (µsec)	PRI (µsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a	$\text{Roundup}\left\{\left(\frac{1}{360}\right)\cdot\left(\frac{19\cdot 10^6}{\text{PRI}_{\mu\text{sec}}}\right)\right\}$	60%	30
		Test B: 15 unique PRI values randomly selected within the range of 518-3066 µsec, with a minimum increment of 1 µsec, excluding PRI values selected in Test A			
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.

Table 5a - Pulse Repetition Intervals Values for Test A

Pulse Repetition Frequency Number	Pulse Repetition Frequency (Pulses Per Second)	Pulse Repetition Interval (Microseconds)
1	1930.5	518
2	1858.7	538
3	1792.1	558
4	1730.1	578
5	1672.2	598
6	1618.1	618
7	1567.4	638
8	1519.8	658
9	1474.9	678
10	1432.7	698
11	1392.8	718
12	1355	738
13	1319.3	758
14	1285.3	778
15	1253.1	798
16	1222.5	818
17	1193.3	838
18	1165.6	858
19	1139	878
20	1113.6	898
21	1089.3	918
22	1066.1	938
23	326.2	3066

Table 6 – Long Pulse Radar Test Waveform

Radar Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Number of Pulses per *Burst*	Number of *Bursts*	Minimum Percentage of Successful Detection	Minimum Number of Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

12.2 產品描述

12.2.1 待測物

DFS 操作頻帶	☒5250MHz~5350MHz
操作模式	☐主控 (Master)
	☒受控 (Client without In-Service Monitoring)
	☐受控 (Client with In-Service Monitoring)
頻道負載運作方式	☒IP Based System
	☐Frame Based System
	☐Other System _____

Note: The tested level is lower than the required level hence it provides margin to the limit.

12.3 測試系統

12.3.1 系統描述

12.3.1.1 雷達信號

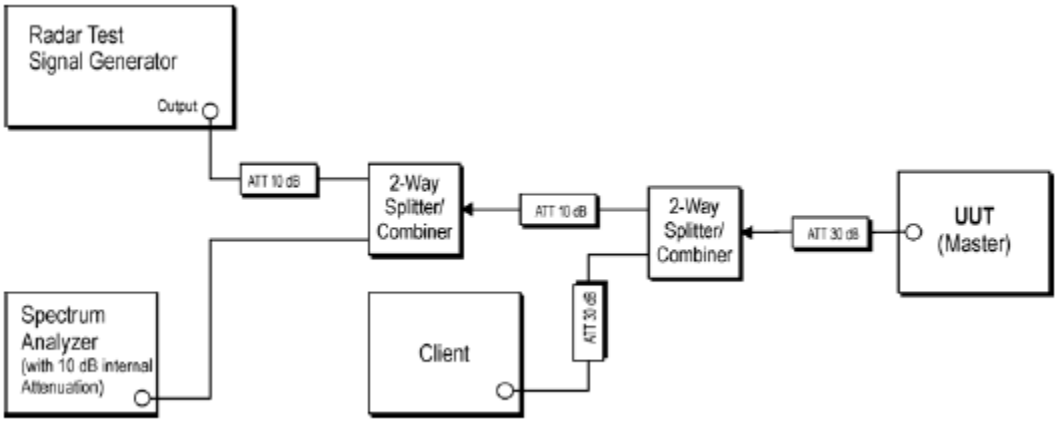
所有雷達信號依據 NCC KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02 之規定產生。

12.3.1.2 參考信號負載

無線傳輸信號負載使用由美國電信資訊署(N.T.I.A)參考系統所提供之 MPEG 影像檔。資料傳送方向由 Master 傳送到 Client。

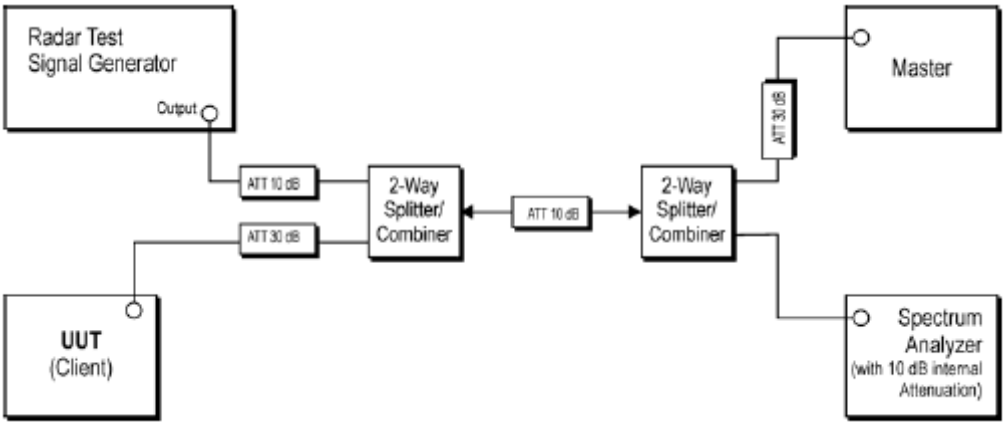
12.3.2 系統配置

12.3.2.1 Setup for Master with injection at the Master



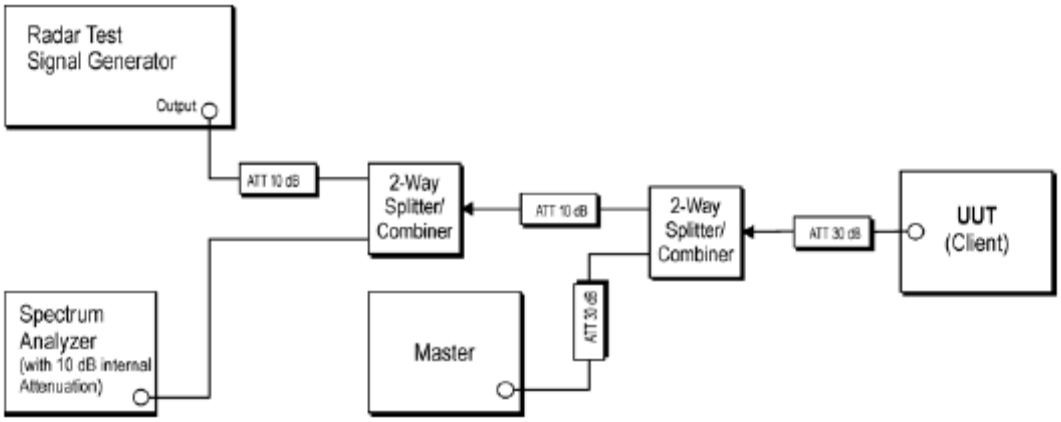
主控設備配置圖

12.3.2.2 Setup for Client with injection at the Master



受控設備配置圖 1(Client without In-Service Monitoring)

12.3.2.3 Setup for Client with injection at the Client



受控設備配置圖 2 (Client with In-Service Monitoring)

12.3.3 量測儀器

儀器名稱	製造者	型　號
Spectrum Analyzer	R&S	FSU46
Vector Signal Generator	R&S	SMU200A

12.3.4 使用週邊

裝置名稱	製造者/代理者	型　號	纜 線 說 明
Notebook	Dell	Inspiron 1420	非隔離電源線 3.3m*1 / Adaptor 非隔離信號線 1.0m*1/RJ45
Notebook	HP	nx6320	非隔離電源線 3.3m*1 / Adaptor 非隔離信號線 1.0m*1/RJ45
Access Point	Cisco	AIR-AP1252AG-A-K9	非隔離電源線 1.8m*1 / Adaptor 非隔離信號線 1.0m*1/RJ45
Access Point	Cisco	AIR-CAP2702y-A-K9	非隔離電源線 1.8m*1 / Adaptor 非隔離信號線 1.0m*1/RJ45

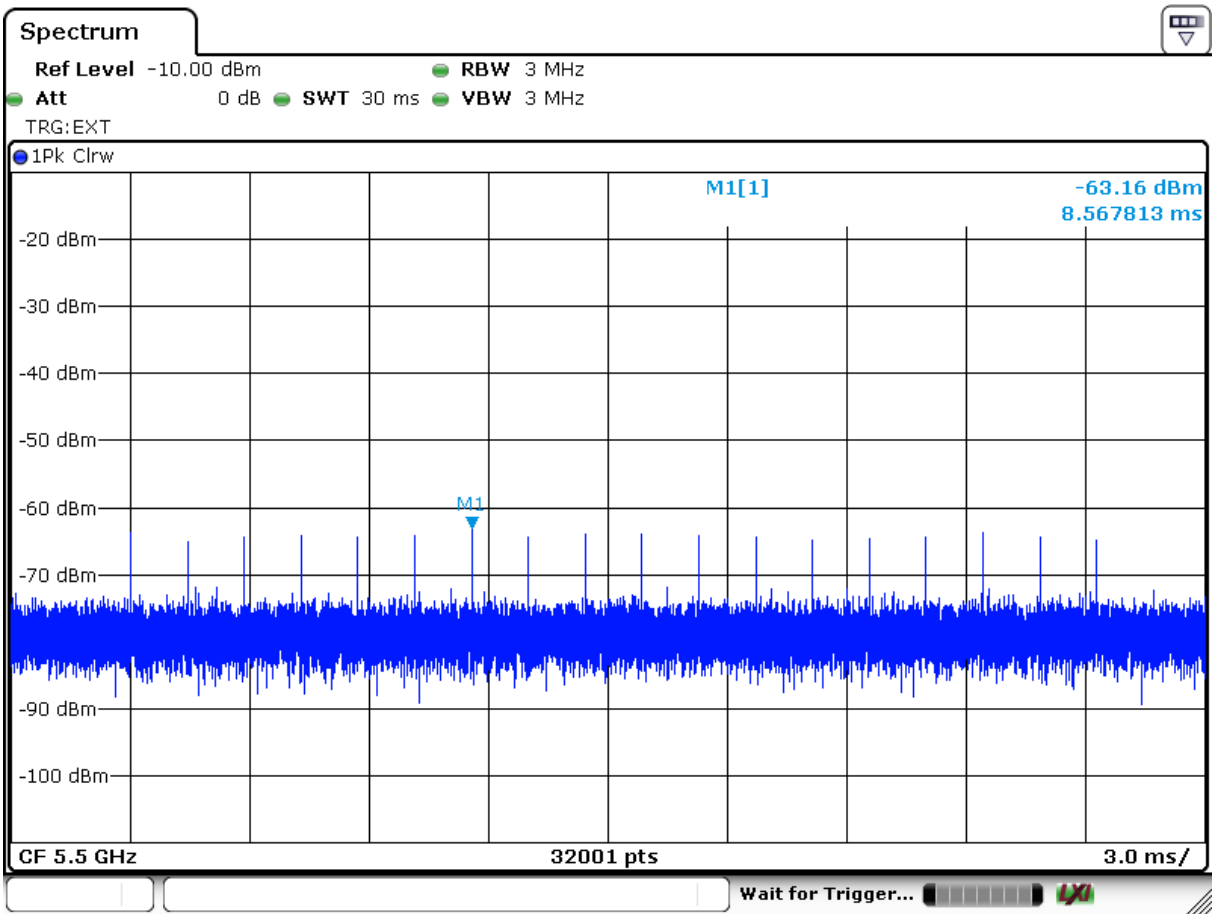
12.4 測試頻道及測試方法

12.4.1

測試方法	☒直接量測方式	☐輻射方式

12.4.2 使用雷達信號

Short Pulse Radar Type 0

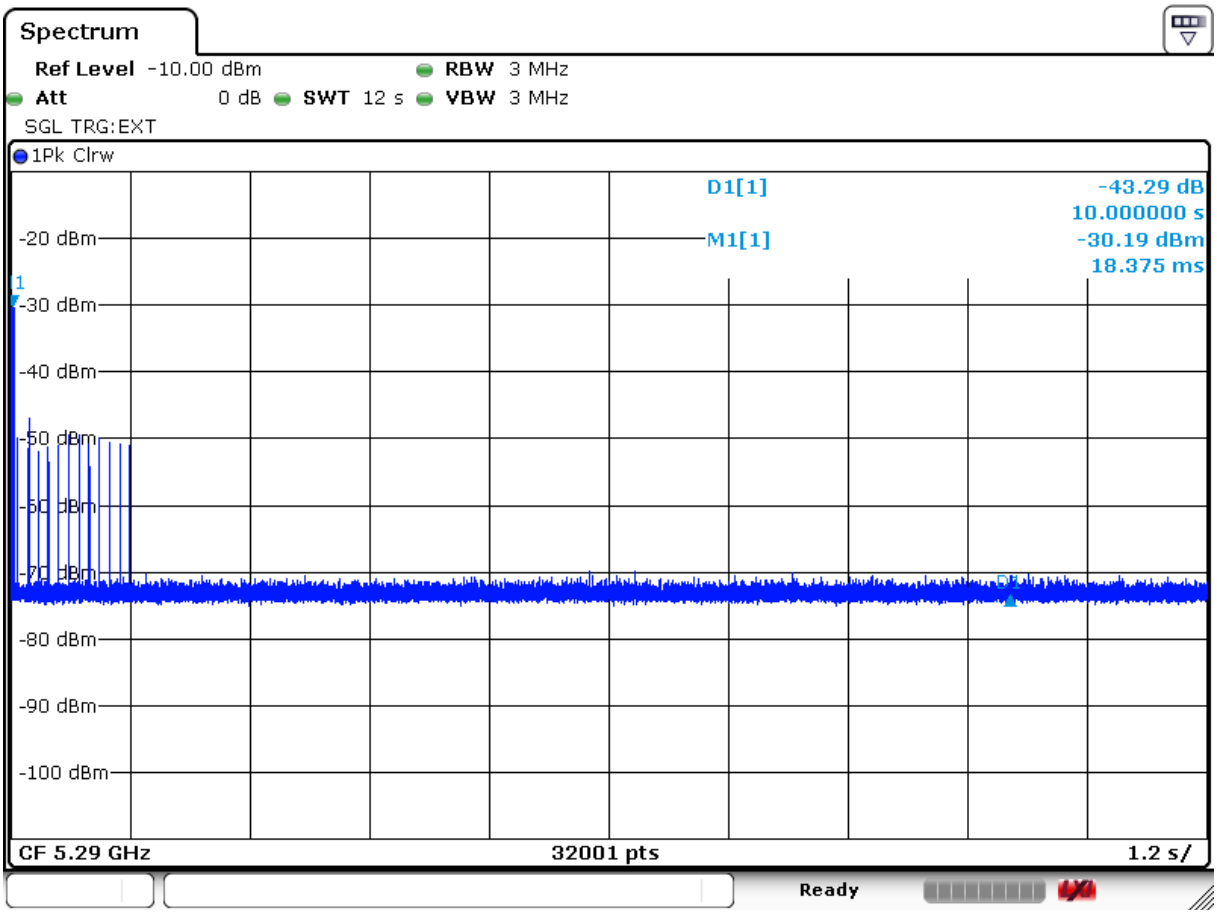


12.5 量測結果

12.5.1 Radar TYPE 0 CHANNEL MOVE TIME RESULTS

結果判定：符合標準規定。

Modulation	Operation Frequency (MHz)	Channel Move Time (s)	Limit (s)
IEEE 802.11ac VHT80	5290	< 10S	10



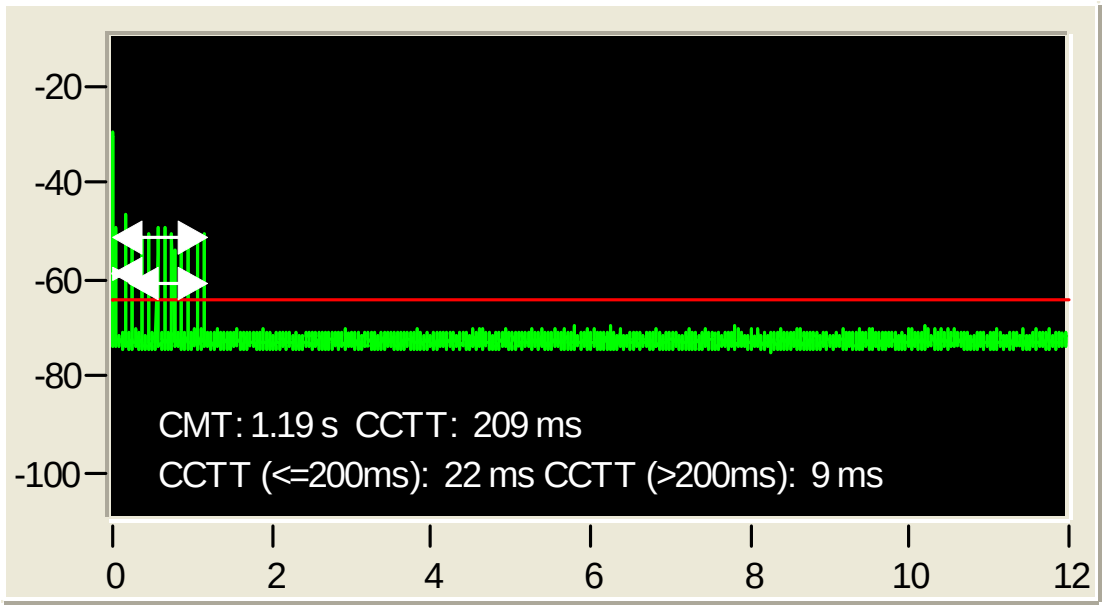
Date: 8.AUG.2018 11:33:33

12.5.2 Radar TYPE 0 CHANNEL CLOSING TRANSMISSION TIME RESULTS

The following plot demonstrates a channel close time of <200ms, with an aggregate of no more than 60 ms.

結果判定：符合標準規定。

Modulation	Operation Frequency (MHz)	Aggregate Transmission Time (ms)	Limit (ms)
IEEE 802.11ac VHT80	5290	9	60

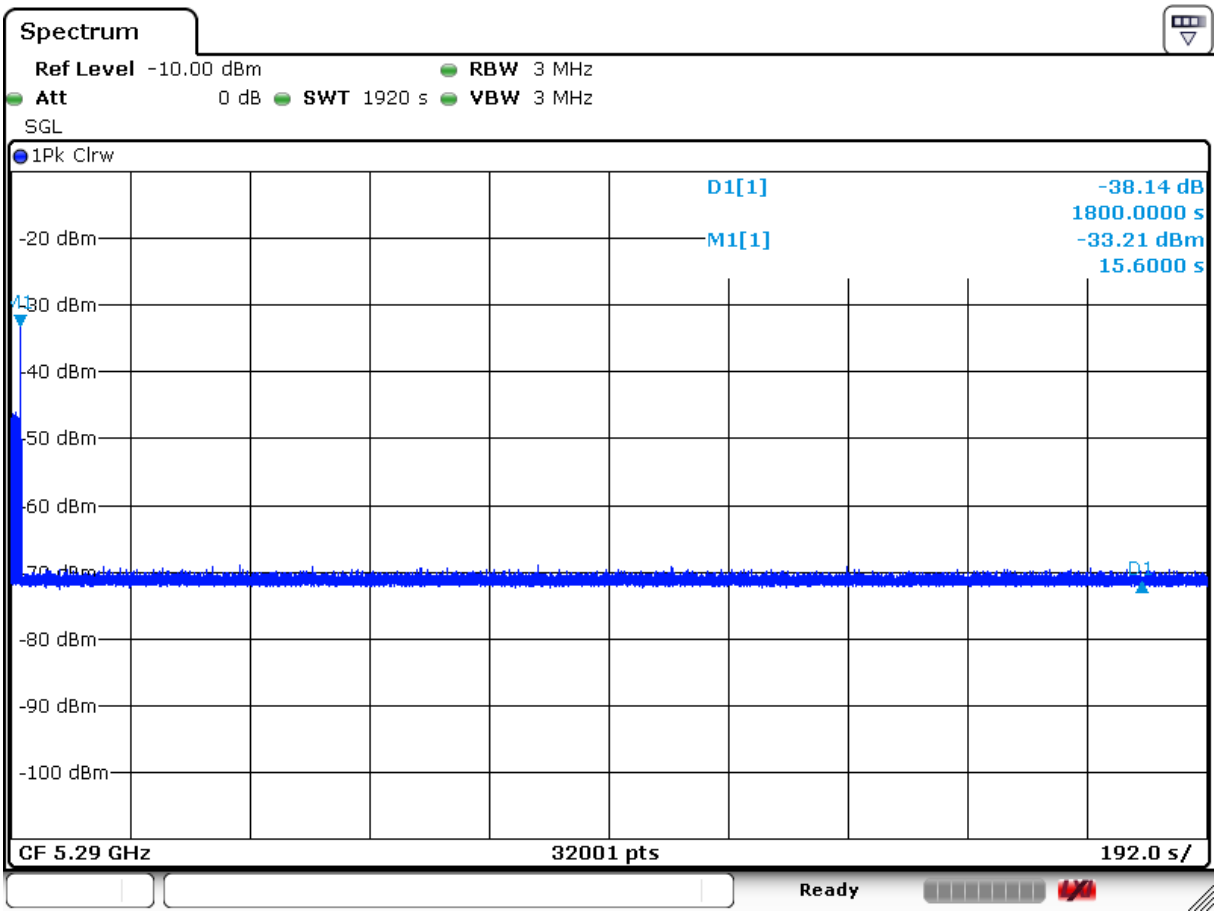


Aggregate Transmission Time =
(Number of analyzer bins showing transmission) * (dwell time per bin)
=9ms

12.5.3 Non-occupancy Period (Associated Test)

No EUT transmissions were observed on the test channel during the 30-minute observation time.

結果判定：符合標準規定。



Date: 8.AUG.2018 12:27:27

13 量測之儀器

儀器名稱	製造者	型 號	財產編號/序號	校驗日期	下次校驗日期
EMI Test Receiver	R&S	ESCI	13054418-001	01/19/2018	01/18/2019
V-LISN	R&S	ENV216	13057719-001	09/12/2017	09/11/2018
Spectrum Analyzer	Agilent	E4446A	13052013-001	12/27/2017	12/26/2018
Attenuator	WEINSCHEL	56-10	58772	04/27/2018	04/26/2019
EMI Receiver	R&S	ESCI	13054423-001	01/19/2018	01/18/2019
Spectrum Analyzer	R&S	FSU46	13040904-001	01/08/2018	01/07/2019
Horn Antenna	EMCO	3115	13059201-001	11/29/2017	11/28/2018
Horn Antenna	EMCO	3116	13059202-001	11/04/2017	11/03/2018
PRE-Amplifier	Agilent	8449B	13040709-001	01/04/2018	01/03/2019
PRE-Amplifier	Agilent	8447D	13040715-002	04/23/2018	04/22/2019
BiLog Antenna	ETC	MCTD 2786	BL11M03003	05/12/2018	05/11/2019
PRE-Amplifier	Agilent	83051	MY53010020	04/25/2018	04/24/2019
Vector Signal Generator	R&S	SMU200A	13549901-002	06/20/2018	06/19/2019