

低功率射頻電機試驗報告

產品名稱	5G WIFI AC 模組
申請廠商	鴻興亞太貿易股份有限公司
製造商	惠州高盛達科技有限公司
廠牌	PERSONA
主型號	5G-WIFI-AC
操作頻率	Wi-Fi 2.4G: 2412 - 2462 MHz
該產品樣品試驗 依據之試驗標準	低功率射頻電機技術規範 (低功率 0002 (LP0002) 107.01.10 版本)
試驗結果	合格

試驗機構: 倍科檢驗科技有限公司(林口實驗室)

機構地址: 桃園市龜山區文德二路 6 號

案件受理日期: 108 年 12 月 26 日

報告發行日期: 109 年 06 月 04 日

報告編號: RLK191226002-07A



謝育勝 簽章

附註:

1. 未經本實驗室書面許可，不得部份複製本報告內容。
2. 本報告僅對檢送樣品負責，且分離使用無效。
3. 本報告需加本所負責人簽名始生效。

報告發行紀錄:

版次	報告號碼	發行日期	說明
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1. 一般描述

1.1 待測設備樣品/特性

產品名稱	5G WIFI AC 模組
產品型號	5G-WIFI-AC
廠 牌	PERSONA
申 請 者	鴻興亞太貿易股份有限公司
地 址	高雄市前鎮區中山二路2號9樓之6
製造廠商	惠州高盛達科技有限公司
使用頻率	IEEE 802.11b/g/n HT20: 2412 - 2462 MHz; IEEE 802.11n HT40: 2412 - 2462 MHz
使用頻道數	IEEE 802.11b/g/n HT20: 11 Channels IEEE 802.11n HT40: 9 Channels
頻道間隔	5 MHz
發射頻寬	IEEE 802.11b Mode: 10.04 MHz IEEE 802.11g Mode: 16.60 MHz IEEE 802.11n HT20 Mode: 17.72 MHz IEEE 802.11n HT40 Mode: 36.56 MHz
輸出功率	IEEE 802.11b Mode: 21.79 dBm IEEE 802.11g Mode: 25.91 dBm IEEE 802.11n HT20 Mode: 25.26 dBm IEEE 802.11n HT40 Mode: 23.35 dBm
傳輸速率	IEEE 802.11b Mode: 1 - 11 Mbps; IEEE 802.11g Mode: 6 - 54Mbps IEEE 802.11n HT20/HT40 mode: MCS0-MCS7
調變方式	IEEE 802.11b: DSSS; IEEE 802.11g/n HT20/HT40 : OFDM
測試日期	109年05月01日至109年05月06日。
供應電源	From Host System: 3.3Vdc

1.2 測試實驗室資料

實驗室認可登錄	中華民國實驗室認證體系 認可編號：TAF: 3546 認證有效期間：108年05月03日至111年05月02日止 認可頻率範圍9kHz ~ 40GHz。
測試場地/實驗室地址	桃園市龜山區文德二路6號
實驗室名稱	倍科檢驗科技有限公司(林口實驗室)
電話/傳真	03-397-1072/03-397-1027

1.3 試驗室之測試不確定度

Parameter	Expanded Measurement uncertainty
RF output power with Power Meter	± 1.488 dB
Occupied Channel Bandwidth	± 453.927 Hz
RF Conducted test with Spectrum	± 2.77 dB
AC Power Line Conducted Emission	± 2.66 dB
Radiated Below 1G	± 3.78 dB
Radiated Above 1G	± 4.29 dB

2. 測試規範

2.1 適用規範及條文

項次	測試項目	適用規範	測試結果	量測設備
1.	電源線傳導干擾	低功率射頻電機技術規範2.3節	請參閱5.4節	請參閱4節
2.	場強輻射	低功率射頻電機技術規範2.8節 低功率射頻電機技術規範2.7節	請參閱6.4節	請參閱4節
3.	天線增益之要求	低功率射頻電機技術規範3.10.1.3	請參閱7.2節	-----
4.	發射頻寬	低功率射頻電機技術規範3.10.1.6	請參閱8.4節	請參閱4節
5.	輸出峰值功率	低功率射頻電機技術規範3.10.1.2	請參閱9.4節	請參閱4節
6.	開放頻帶邊緣之發射	低功率射頻電機技術規範3.10.1.5	請參閱10.4節	請參閱4節
7.	功率密度	低功率射頻電機技術規範3.10.1.6(2)(B)	請參閱11.4節	請參閱4節
8.	電波暴露量之評估	低功率射頻電機技術規範5.20.2.2節	請參閱12.2節	-----

2.2 限制使用之頻帶

根據<國家通訊傳播委員會低功率射頻電機技術規範>第二章第 2.7 節(一般規定)，任何低功率射頻電機之主波皆不得使用下表所列各頻帶內之頻率；低功率射頻電機落於下表所列頻帶內之混附發射，其電場強度必須符合第 2.8 節的限制規定。

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

3. 受測裝置之系統說明

3.1 待測物與測試設備系統圖

EUT & peripherals setup diagram is shown in appendix setup photos.

3.2 輔助測試週邊設備名稱描述

輔助測試週邊

No.	Description	Brand	Model Number
1.	PC	BenQ	N/A
2	Monitor	DELL	U2412M
3	Keyboard	ASUS	AW211
4	Mouse	ASUS	MOBTU0A

3.3 占空比評估

	B Mode	G Mode	N HT20 Mode	N HT40 Mode
Duty cycle (%)	100	100	100	100
Duty factor (dB)	0	0	0	0

$Duty\ cycle(D) = Tx\ on(ms)/(Tx\ on+off(ms))$, $Duty\ factor = 10*\log(1/D)$

3.4 測試模式與測試描述

- 待測物設定 Low, Middle與 High三個Channel, ;執行法規規定之測試項目.
- 輻射低頻會測試 Worst Power 的模式.
- Pre-scan with three orthogonal axis, and worse case as X axis

3.5 測試資訊與環境

Test Site	Test Date	Temperature (°C)	Relative Humidity (%)	Test Engineer
Conduction (Con-01)	May 06, 2020	26.7	57	David Lee
Radiated (966B)	May 01, 2020 ~ May 05, 2020	22~24	50~58	Howard He
Conducted (TH-02)	May 05, 2020	22.7	60	David Lee

4. 量測儀器一覽表

儀器名稱	廠商	型號	序號	校驗日期	下次校驗日期
AC Line Conduction Room (CON-01)					
LISN	Rohde & Schwarz	ENV216	100010	2019/09/02	2020/09/01
EMI Test Receiver	Rohde & Schwarz	ESR3	102448	2019/06/27	2020/06/23
Pulse Limiter	SCHWARZBECK	VSTD 9561-F	00432	2019/08/28	2020/08/27
RF Cable	EMCI	EMCCFD300-BM-BM-8000	180526	2019/08/08	2020/08/07
Software	Audix	e3 v9	E3LK-03	N.C.R	N.C.R
Radiation 3M Room (966B)					
Active Loop	EMCO	6502	0001-3322	2020/03/16	2021/03/15
Bilog Antenna/6 dB Attenuator	SUNOL SCIENCES & EMEC /EMCI	JB3/N-6-06	A111513/AT-N0668	2020/03/19	2021/03/18
Horn Antenna	ETS-Lindgren	3115	00109141	2019/07/05	2020/07/04
Horn Antenna	ETS-Lindgren	3160-09	00123852	2019/07/11	2020/07/10
Preamplifier	A.H. Systems	PAM-0118	470	2020/03/16	2021/03/15
Preamplifier	A.H. Systems	PAM-1840VH	174	2020/03/25	2021/03/24
Signal and Spectrum Analyzer	Rohde & Schwarz	FSV40	101456	2019/07/12	2020/07/11
Microflex Cable (1m)	EMCI	EMC106-SM-SM-2000	180515	2019/08/07	2020/08/06
Microflex Cable (2m)	MTJ	H0919	00000-MT28A-100	2019/08/07	2020/08/06
Microflex Cable (8m)	UTIFLEX	UFA210A-1-3149-300300	MFR 64639 232490-001	2019/08/07	2020/08/06
Turn Table	Chaintek	T-200-S-1	003501	N.C.R	N.C.R
Antenna Tower	Chaintek	MBD-400-1	003504	N.C.R	N.C.R
Controller	Chaintek	3000-1	003507	N.C.R	N.C.R
Software	Audix	e3 v9	E3LK-01	N.C.R	N.C.R
Conducted Room(TH-02)					
Spectrum Analyzer	Rohde & Schwarz	FSU26	100406	2020/03/11	2021/03/10
USB Wideband Power Sensor	Agilent	U2021XA	MY56120026	2019/09/06	2020/09/05

***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).

5. 電源線傳導干擾之量測

5.1 適用標準

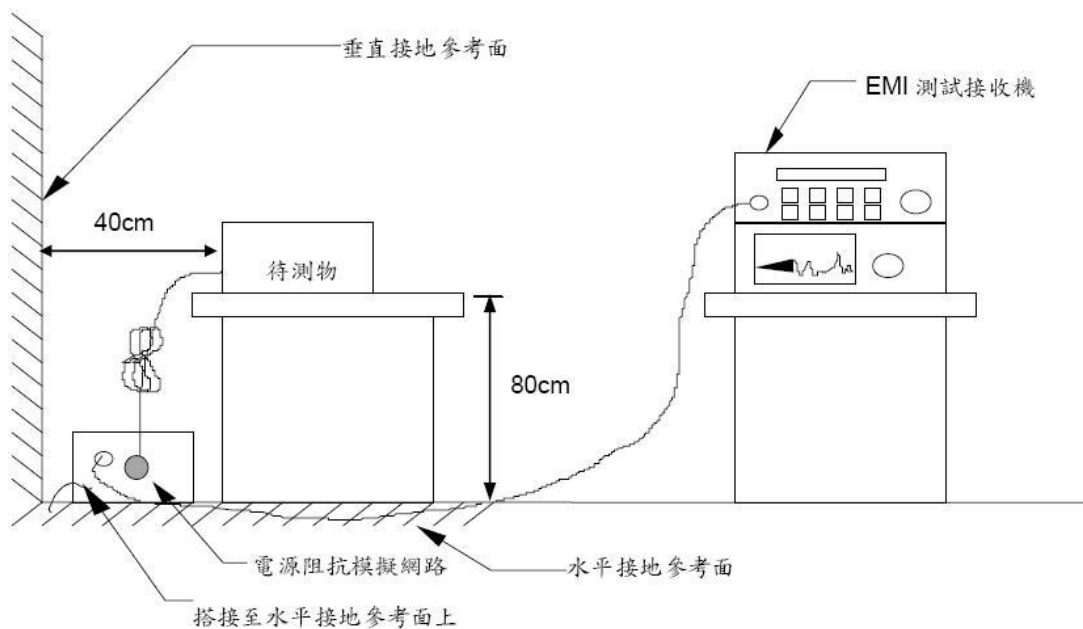
依據國家通訊傳播委員會低功率射頻電機技術規範之2.3節，電源傳導干擾之限制要求如下：

頻率 (MHz)	傳導限制值 (dB μ V)	
	準峰值 (Quasi – peak)	平均值 (Average)
0.15 – 0.5	66 – 56	56 – 46
0.5 – 5	56	46
5 – 30	60	50

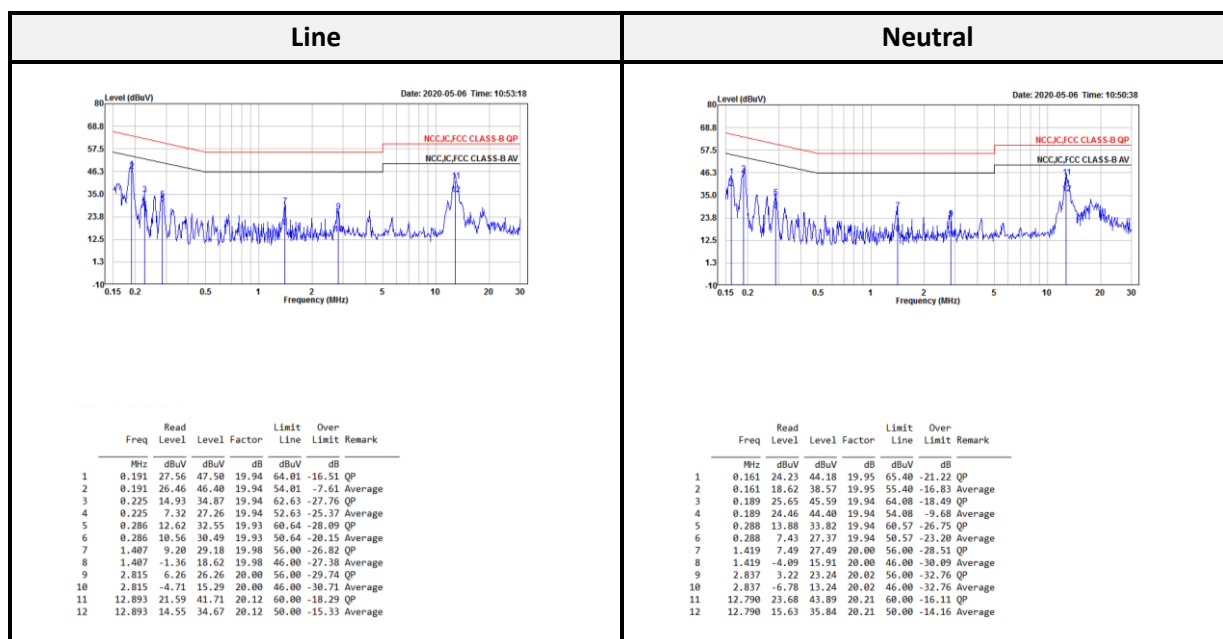
5.2 測試方法

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 之間之電源線傳導放射強度。

5.3 測試配置



5.4 傳導干擾之量測結果



Note:

Level = Read Level + Factor

Over Limit = Level – Limit Line

Factor = (LISN, ISN, PLC or current probe) Factor + Cable Loss + Attenuator

6. 場強輻射之量測

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2.8之要求，其他開放頻帶外不必要之輻射干擾需符合2.8節之一般限制要求。

頻率 (MHz)	測試距離 (m)	干擾限制 ($\mu\text{V}/\text{m}$)	干擾限制 (dB $\mu\text{V}/\text{m}$)
0.009 – 0.490 (含)	300	2,400/頻率(千赫)	(註1)
0.490 (不含) – 1.705 (含)	30	24,000 / 頻率 (千赫)	(註1)
1.705 (不含) – 30 (不含)	30	30	29.5
30 (含) – 88 (含)	3	100	40.0
88 (不含) – 216 (含)	3	150	43.5
216 (不含) – 960 (含)	3	200	46.0
960 (不含)以上	3	500	54.0

註 1: 其干擾限制值 = $20 \cdot \text{LOG}(2400/F) + 40 \cdot \text{LOG}(300/\text{量測距離})$

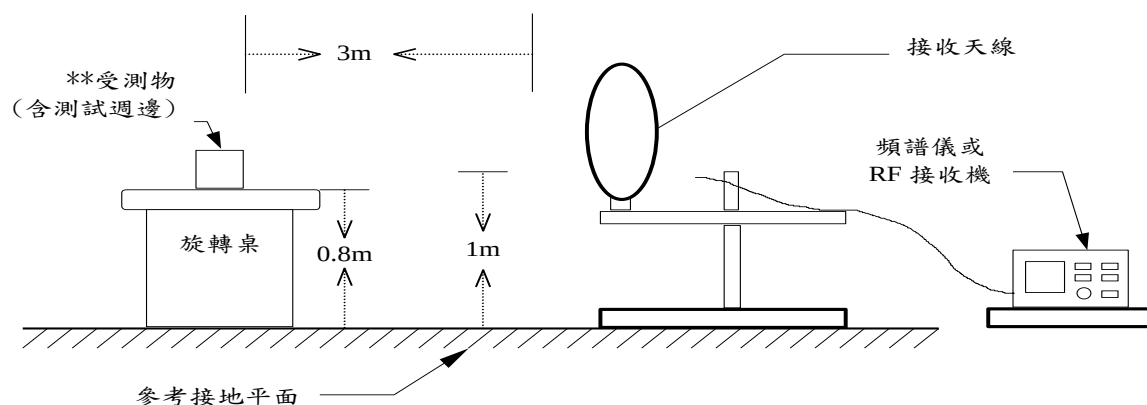
6.2 測試方法

將待測物置於 0.8 or 1.5 米高的非金屬桌面，使其在工作狀態，接收天線置於 3 米外相同的高度。
待測物分別要垂直或水平放置，而且桌面要 360 度旋轉，另外接收天線也要從 1.0 米至 4.0 米升降變化，以找出最大的輻射電場強度，接收天線置於水平、垂直極向各執行測試一次。若量測頻率低於30兆赫(MHz)時，得於所規定距離以內進行測試，但應盡量避免於近場做測試。當測試距離較規定距離為近時，測試結果應以插補系數換算至規定距離之值：對同一輻射方向最少兩個距離作量測以決定適當的插補系數或線性距離平方反比(40dB/10倍距離)。

6.3 測試擺設圖

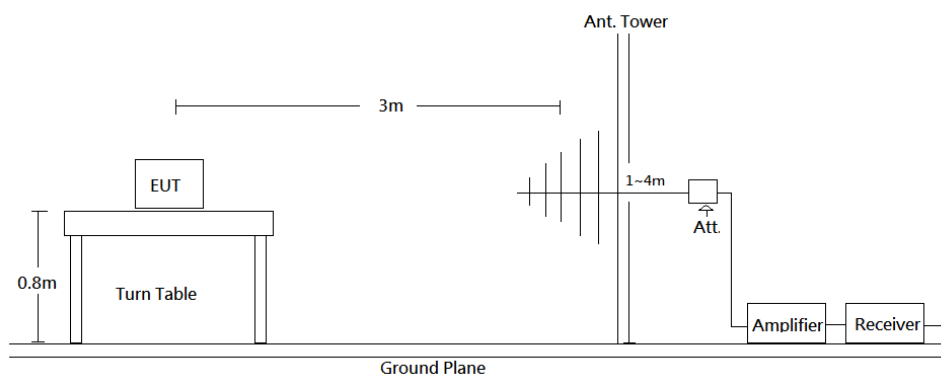
輻射架構圖

圖 1:量測頻率9kHz ~ 30MHz之測試配置



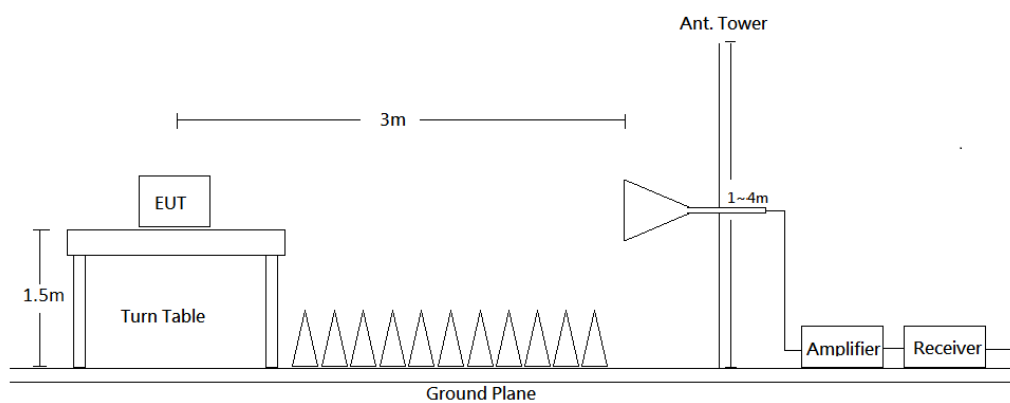
註: **請參照3.2節

圖 2:量測頻率30MHz~1GHz之測試配置



註:**請參照3.2節

圖 3:量測頻率1GHz以上之測試配置

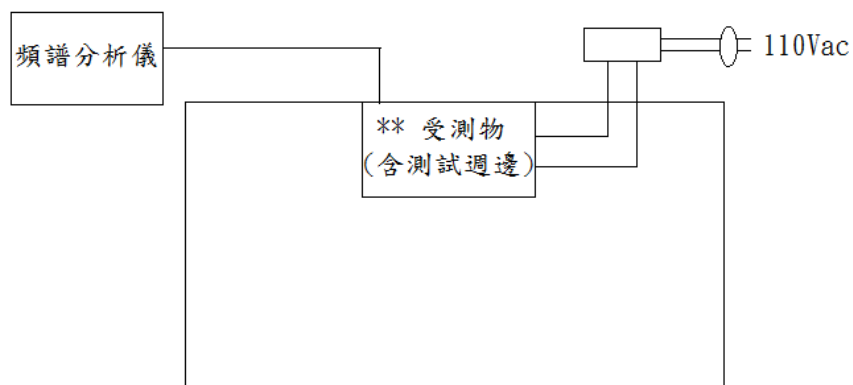


註:**請

參照3.2節

量測參閱 ANSI C63.4:2014.ANSI C63.10:2013.

直量架構圖



6.4 量測設定

1GHz以下:

頻譜分析儀設定: Quasi-Peak: RBW = VBW: 120kHz

1GHz以上:

頻譜分析儀設定: Peak: RBW: 1MHz; VBW: 1MHz / Average: RBW: 1MHz; VBW: 10Hz

6.5 場強輻射之量測結果

發射機 / 接收機 其它不必要之訊號 (9kHz ~ 30MHz)

此頻率之干擾值低於限制值20dB以下，被考量為背景雜訊值並不予記錄。

發射機 / 接收機 其它不必要之訊號 (30MHz ~ 1GHz)

此案件測試模為 Worst Power

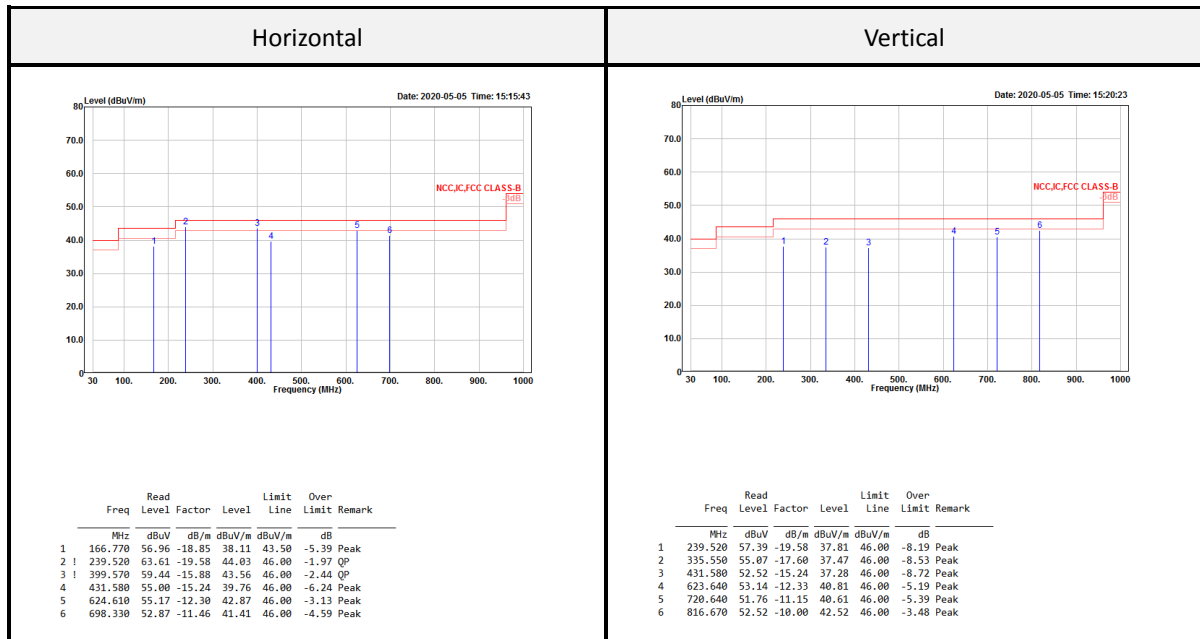
發射機 其它不必要之訊號 (1GHz ~ 26.5GHz)

此案件測試模式分別為Low、Mid、High CH.

接收機 其它不必要之訊號 (1GHz ~ 26.5GHz)

此案件測試模式分別為 Receiver 模式.

場強輻射之量測值 (TX / 1GHz 以下)

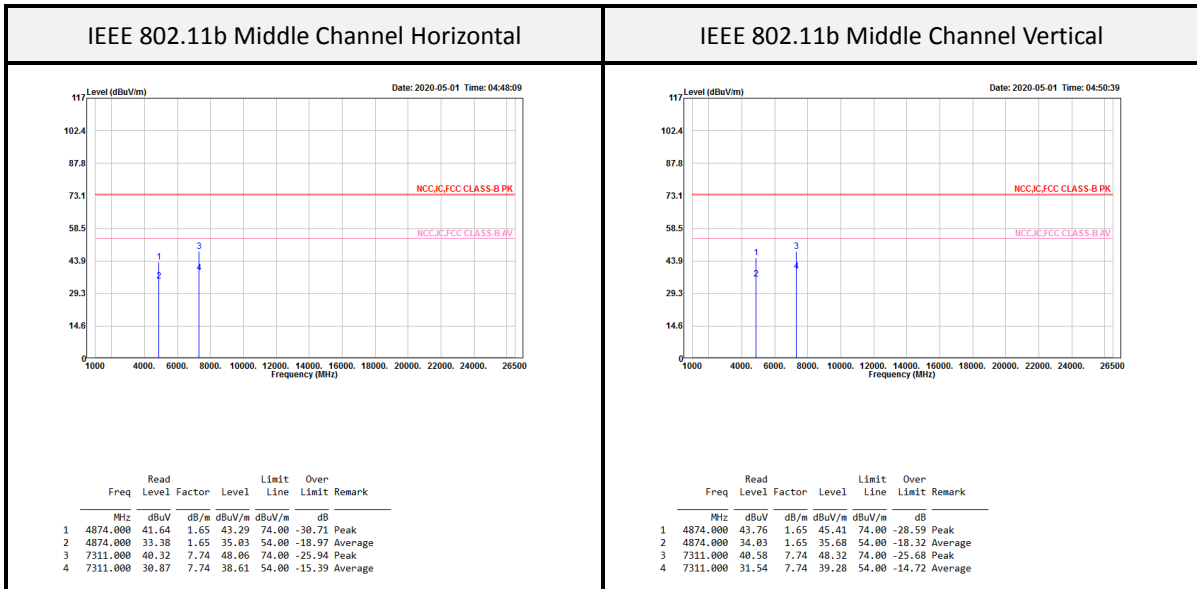
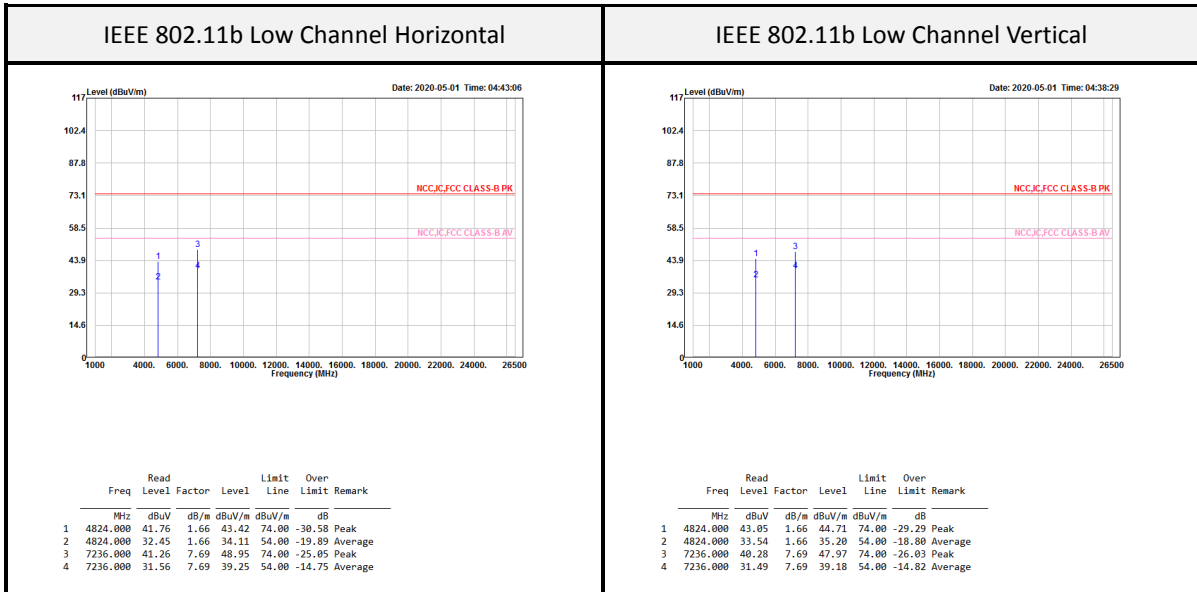


Note: Result = Reading + Correct Factor

Margin = Result - Limit

Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain

發射機其它不必要之訊號 (TX / 1GHz 以上)



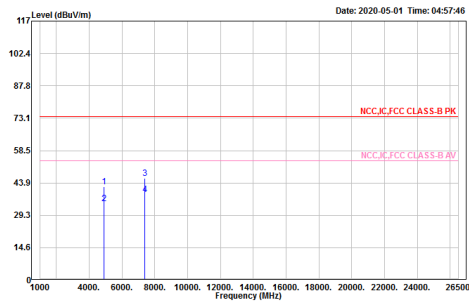
Note:

Result = Reading + Correct Factor

Margin = Result – Limit

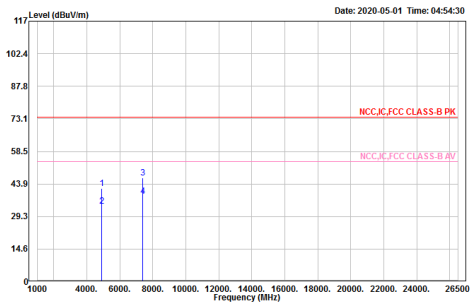
Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

IEEE 802.11b High Channel Horizontal



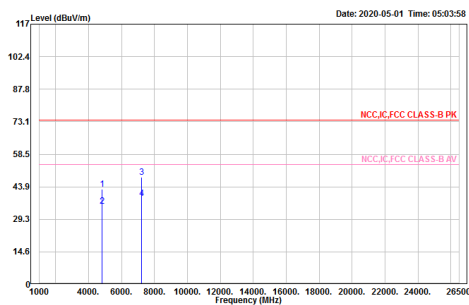
		Read			Limit	Over	
	Freq	Level	Factor	Level	Line	Limit	Remark
	MHz	dBuV		dBm	dBuV/m	dBuV/m	dB
1	4924.000	40.55	1.69	42.24	74.00	-31.76	Peak
2	4924.000	32.90	1.69	34.59	54.00	-19.41	Average
3	7386.000	38.02	7.99	46.01	74.00	-27.99	Peak
4	7386.000	30.56	7.99	38.55	54.00	-15.45	Average

IEEE 802.11b High Channel Vertical



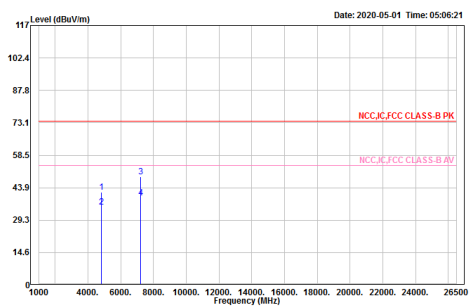
		Read			Limit	Over	
	Freq	Level	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	4924.000	40.14	1.69	41.83	74.00	-32.17	Peak
2	4924.000	32.19	1.69	33.88	54.00	-20.12	Average
3	7386.000	38.64	7.99	46.63	74.00	-27.37	Peak
4	7386.000	30.45	7.99	38.44	54.00	-15.56	Average

IEEE 802.11g Low Channel Horizontal



	Read			Limit		Over
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1	4824.000	41.29	1.66	42.95	74.00	-31.05 Peak
2	4824.000	33.65	1.66	35.31	54.00	-18.69 Average
3	7236.000	40.49	7.69	48.18	74.00	-25.82 Peak
4	7236.000	31.12	7.69	38.81	54.00	-15.19 Average

IEEE 802.11g Low Channel Vertical



		neu			Limit	over	
	Freq	Level	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	4824.000	40.20	1.66	41.86	74.00	-32.14	Peak
2	4824.000	33.56	1.66	35.22	54.00	-18.78	Average
3	7236.000	41.28	7.69	48.97	74.00	-25.03	Peak
4	7236.000	31.77	7.69	39.46	54.00	-14.54	Average

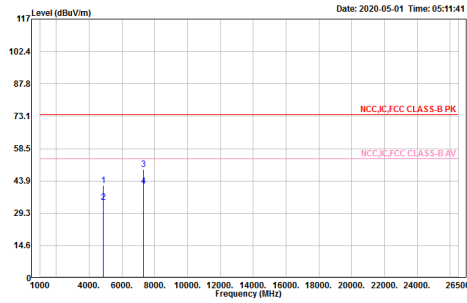
Note:

Result = Reading + Correct Factor

Margin = Result – Limit

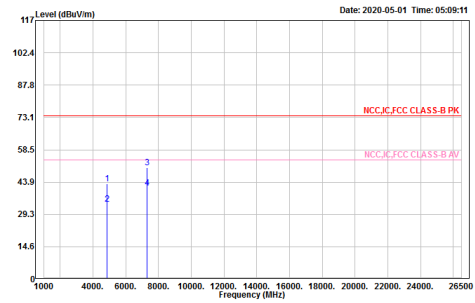
Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

IEEE 802.11g Middle Channel Horizontal



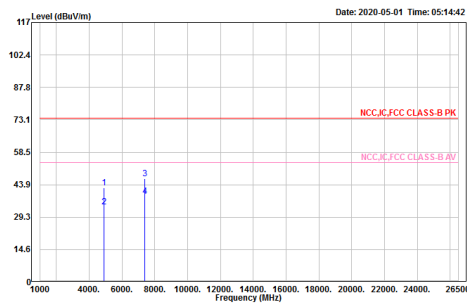
	Read			Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1	4874.000	40.17	1.65	41.82	74.00	-32.18 Peak
2	4874.000	32.45	1.65	34.10	54.00	-19.90 Average
3	7311.000	41.48	7.74	49.14	74.00	-24.86 Peak
4	7311.000	33.68	7.74	41.42	54.00	-12.58 Average

IEEE 802.11g Middle Channel Vertical



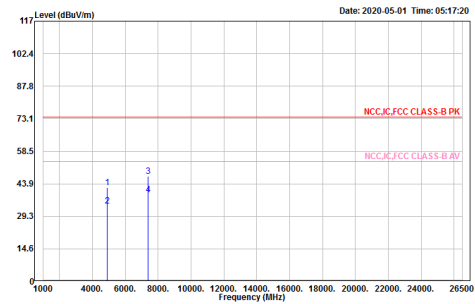
	Read			Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1	4874.000	41.31	1.65	42.96	74.00	-31.04 Peak
2	4874.000	32.19	1.65	33.84	54.00	-20.16 Average
3	7311.000	42.70	7.74	50.44	74.00	-23.56 Peak
4	7311.000	33.45	7.74	41.19	54.00	-12.81 Average

IEEE 802.11g High Channel Horizontal



	Read			Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1	4924.000	40.64	1.69	42.33	74.00	-31.67 Peak
2	4924.000	32.13	1.69	33.82	54.00	-20.18 Average
3	7386.000	38.54	7.99	46.53	74.00	-27.47 Peak
4	7386.000	30.78	7.99	38.77	54.00	-15.23 Average

IEEE 802.11g High Channel Vertical



	Read			Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1	4924.000	40.62	1.69	42.31	74.00	-31.69 Peak
2	4924.000	32.14	1.69	33.83	54.00	-20.17 Average
3	7386.000	39.21	7.99	47.20	74.00	-26.80 Peak
4	7386.000	30.88	7.99	38.87	54.00	-15.13 Average

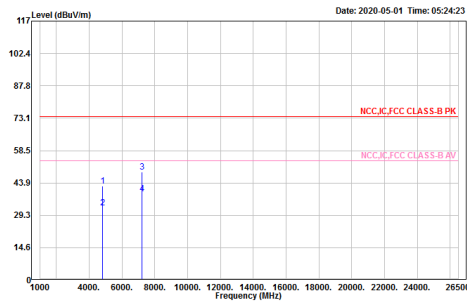
Note:

Result = Reading + Correct Factor

Margin = Result – Limit

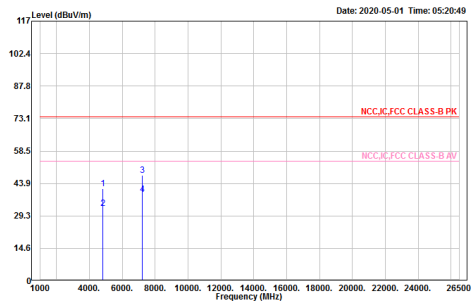
Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

IEEE 802.11n HT20 Low Channel Horizontal



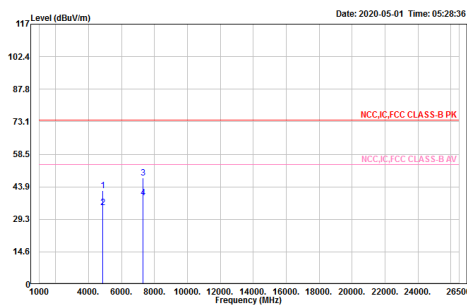
	Read	Factor	Level	Limit	Over	Remark
Freq	Level			Line	Limit	
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1 4824.000	40.74	1.66	42.40	74.00	-31.60	Peak
2 4824.000	30.88	1.66	32.54	54.00	-21.46	Average
3 7236.000	41.17	7.69	48.86	74.00	-25.14	Peak
4 7236.000	31.45	7.69	39.14	54.00	-14.86	Average

IEEE 802.11n HT20 Low Channel Vertical



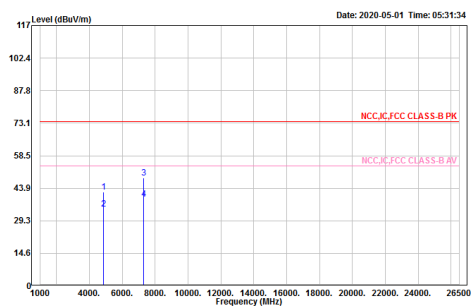
	Read	Factor	Level	Limit	Over	Remark
Freq	Level			Line	Limit	
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1 4824.000	39.80	1.66	41.46	74.00	-32.54	Peak
2 4824.000	30.87	1.66	32.53	54.00	-21.47	Average
3 7236.000	40.01	7.69	47.70	74.00	-26.30	Peak
4 7236.000	31.46	7.69	39.15	54.00	-14.85	Average

IEEE 802.11n HT20 Middle Channel Horizontal



	Read	Factor	Level	Limit	Over	Remark
Freq	Level			Line	Limit	
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1 4874.000	40.59	1.65	42.24	74.00	-31.76	Peak
2 4874.000	32.88	1.65	34.53	54.00	-19.47	Average
3 7311.000	40.27	7.74	48.01	74.00	-25.99	Peak
4 7311.000	31.25	7.74	38.99	54.00	-15.01	Average

IEEE 802.11n HT20 Middle Channel Vertical



	Read	Factor	Level	Limit	Over	Remark
Freq	Level			Line	Limit	
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1 4874.000	40.50	1.65	42.15	74.00	-31.85	Peak
2 4874.000	32.88	1.65	34.53	54.00	-19.47	Average
3 7311.000	40.64	7.74	48.38	74.00	-25.62	Peak
4 7311.000	31.33	7.74	39.07	54.00	-14.93	Average

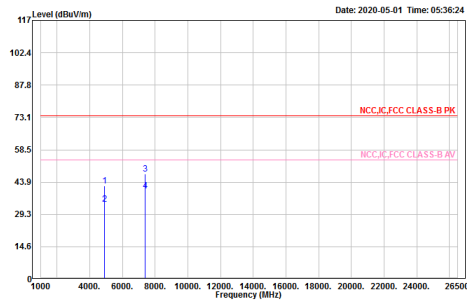
Note:

Result = Reading + Correct Factor

Margin = Result – Limit

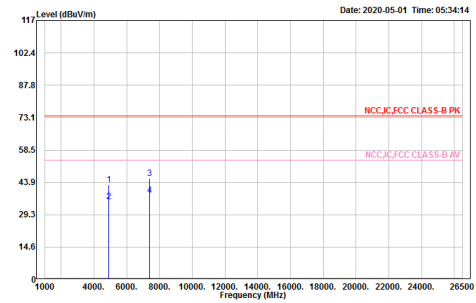
Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

IEEE 802.11n HT20 High Channel Horizontal



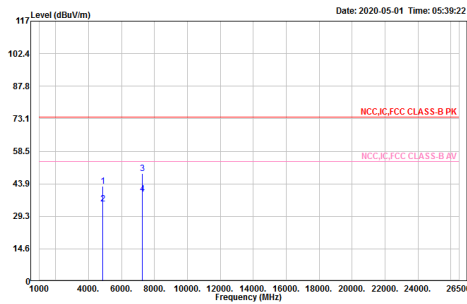
	Read			Limit	Over	
Freq	Level	Factor	Level	Line	Limit	Remark
MHz	dBuV		dB/m	dBuV/m	dB	
1 4924.000	40.48	1.69	42.17	74.00	-31.83	Peak
2 4924.000	32.17	1.69	33.86	54.00	-20.14	Average
3 7386.000	39.42	7.99	47.41	74.00	-26.59	Peak
4 7386.000	31.89	7.99	39.88	54.00	-14.12	Average

IEEE 802.11n HT20 High Channel Vertical



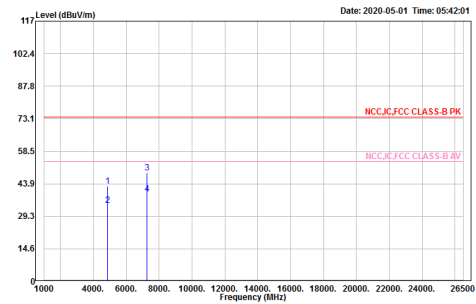
	Read			Limit	Over	
Freq	Level	Factor	Level	Line	Limit	Remark
MHz	dBuV		dB/m	dBuV/m	dB	
1 4924.000	41.26	1.69	42.95	74.00	-31.05	Peak
2 4924.000	33.45	1.69	35.14	54.00	-18.86	Average
3 7386.000	37.60	7.99	45.59	74.00	-28.41	Peak
4 7386.000	29.99	7.99	37.98	54.00	-16.02	Average

IEEE 802.11n HT40 Low Channel Horizontal



	Read			Limit	Over	
Freq	Level	Factor	Level	Line	Limit	Remark
MHz	dBuV		dB/m	dBuV/m	dB	
1 4844.000	41.09	1.69	42.78	74.00	-31.22	Peak
2 4844.000	33.14	1.69	34.83	54.00	-19.17	Average
3 7266.000	40.65	7.74	48.39	74.00	-25.61	Peak
4 7266.000	31.45	7.74	39.19	54.00	-14.81	Average

IEEE 802.11n HT40 Low Channel Vertical



	Read			Limit	Over	
Freq	Level	Factor	Level	Line	Limit	Remark
MHz	dBuV		dB/m	dBuV/m	dB	
1 4844.000	41.20	1.69	42.89	74.00	-31.11	Peak
2 4844.000	32.57	1.69	34.26	54.00	-19.74	Average
3 7266.000	41.14	7.74	48.88	74.00	-25.12	Peak
4 7266.000	31.46	7.74	39.20	54.00	-14.80	Average

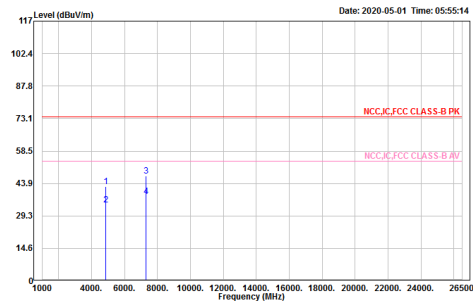
Note:

Result = Reading + Correct Factor

Margin = Result – Limit

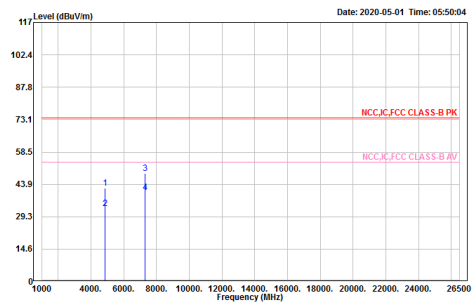
Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

IEEE 802.11n HT40 Middle Channel Horizontal



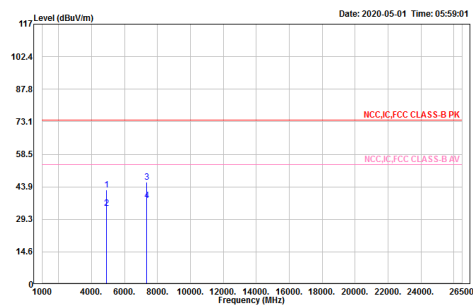
	Read			Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1	4874.000	40.74	1.65	42.39	74.00	-31.61 Peak
2	4874.000	32.46	1.65	34.11	54.00	-19.89 Average
3	7311.000	39.58	7.74	47.32	74.00	-26.68 Peak
4	7311.000	30.29	7.74	38.03	54.00	-15.97 Average

IEEE 802.11n HT40 Middle Channel Vertical



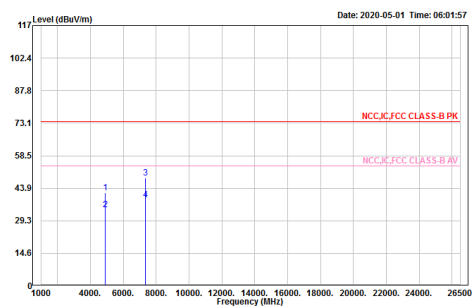
	Read			Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1	4874.000	40.47	1.65	42.12	74.00	-31.88 Peak
2	4874.000	31.46	1.65	33.11	54.00	-20.89 Average
3	7311.000	41.19	7.74	48.93	74.00	-25.07 Peak
4	7311.000	32.47	7.74	40.21	54.00	-13.79 Average

IEEE 802.11n HT40 High Channel Horizontal



	Read			Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1	4904.000	40.72	1.64	42.36	74.00	-31.64 Peak
2	4904.000	32.54	1.64	34.18	54.00	-19.82 Average
3	7356.000	38.10	7.92	46.02	74.00	-27.98 Peak
4	7356.000	29.87	7.92	37.79	54.00	-16.21 Average

IEEE 802.11n HT40 High Channel Vertical



	Read			Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1	4904.000	40.28	1.64	41.92	74.00	-32.08 Peak
2	4904.000	32.45	1.64	34.09	54.00	-19.91 Average
3	7356.000	40.50	7.92	48.42	74.00	-25.58 Peak
4	7356.000	30.86	7.92	38.78	54.00	-15.22 Average

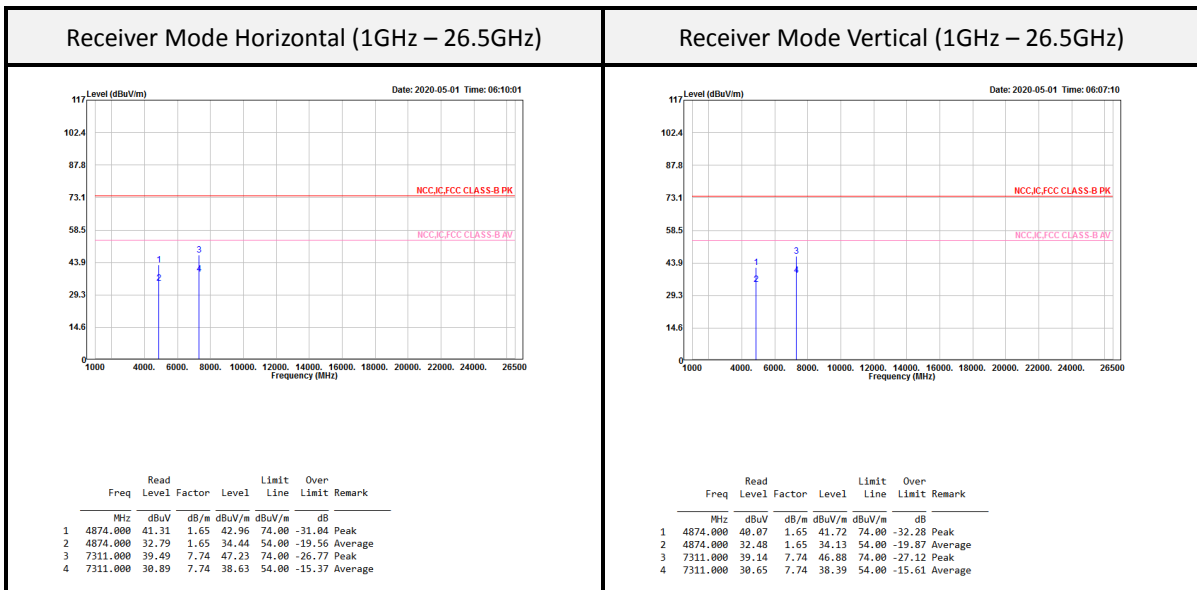
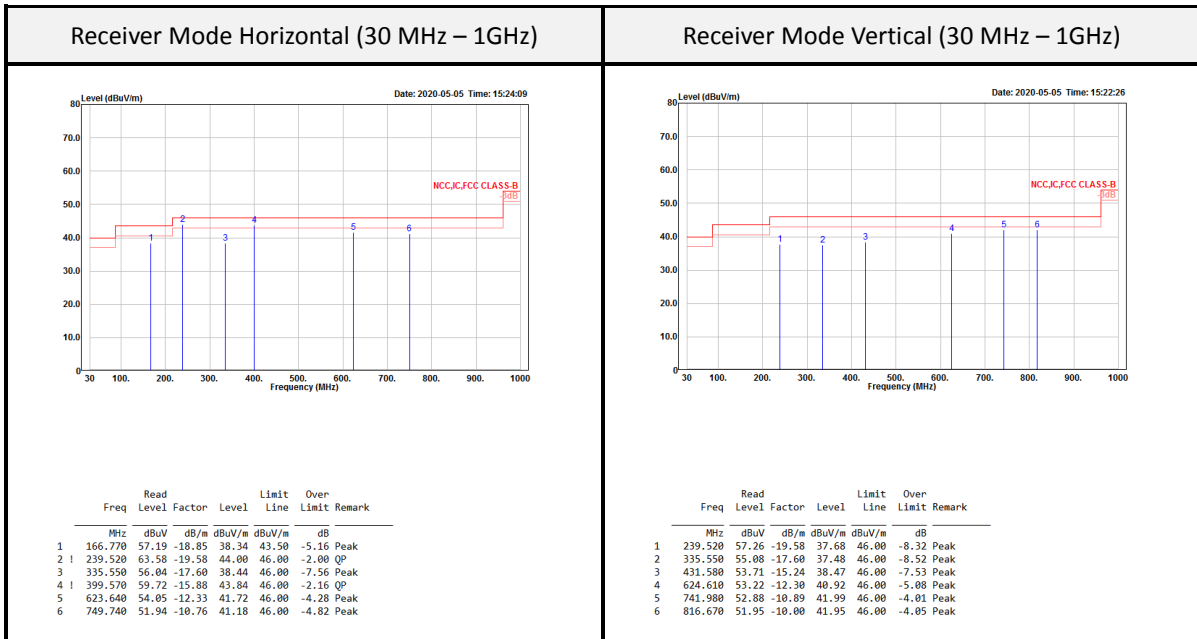
Note:

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

接收機其它不必要之訊號 (RX)



Note:

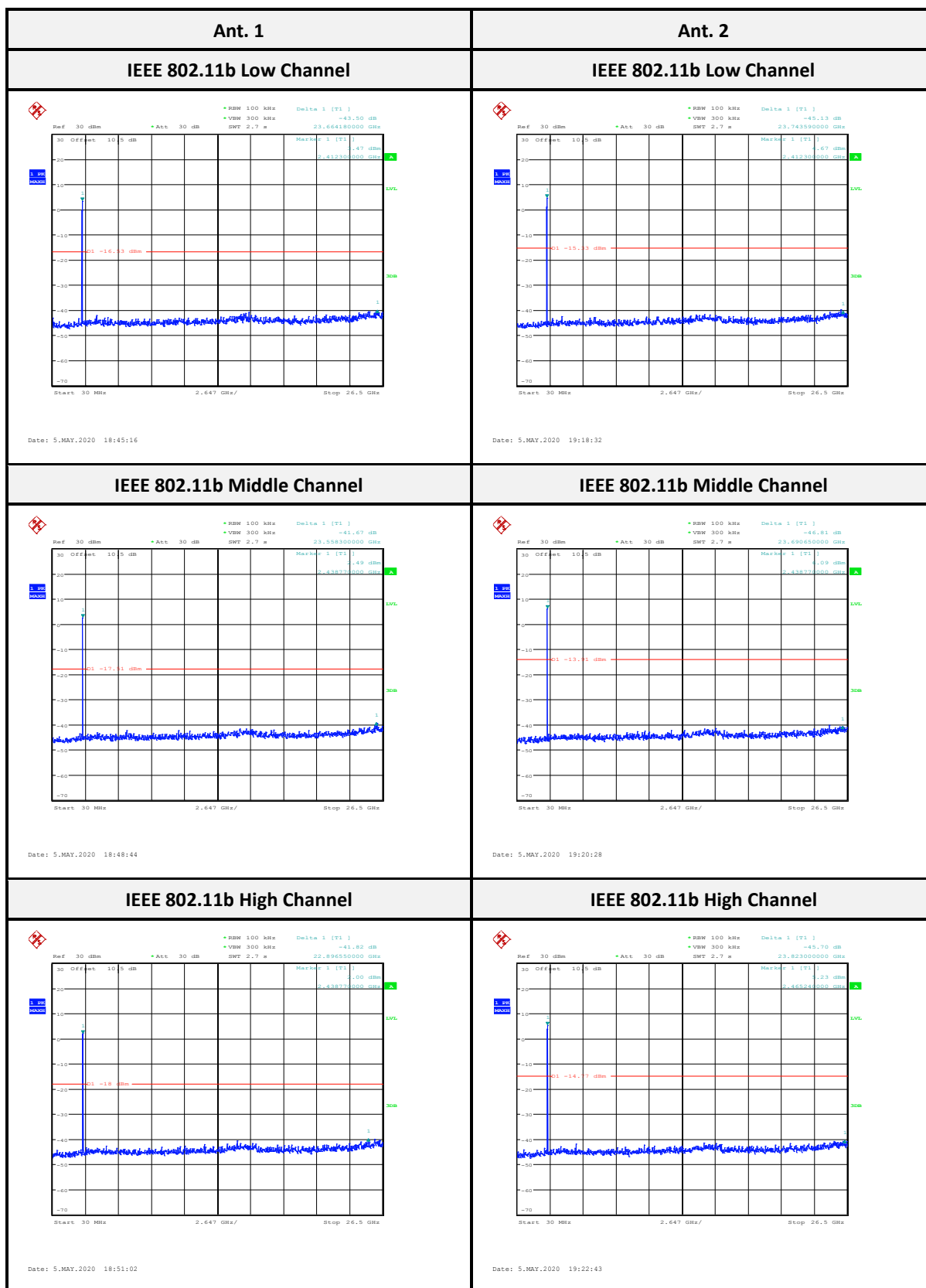
Result = Reading + Correct Factor

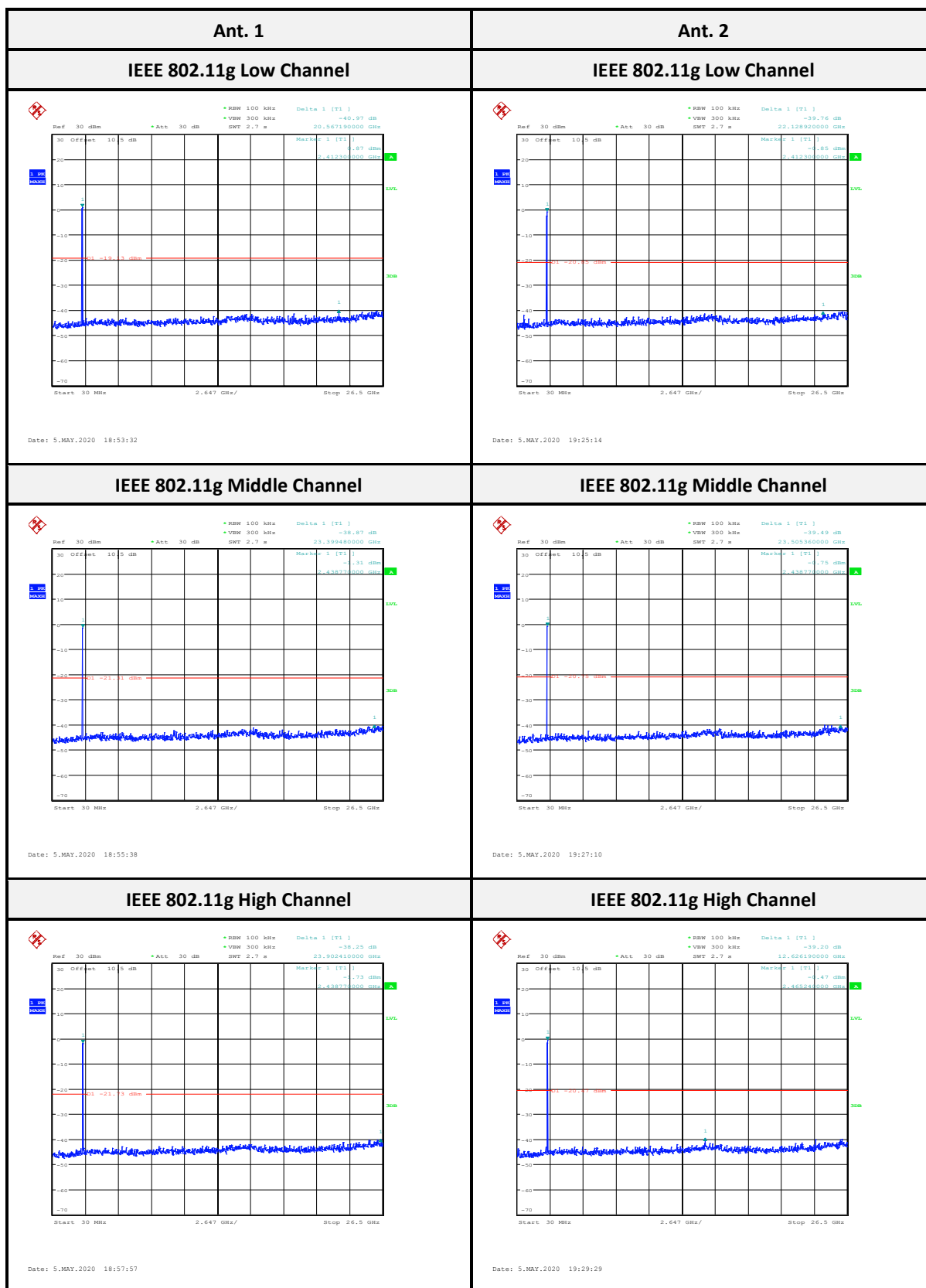
Margin = Result – Limit

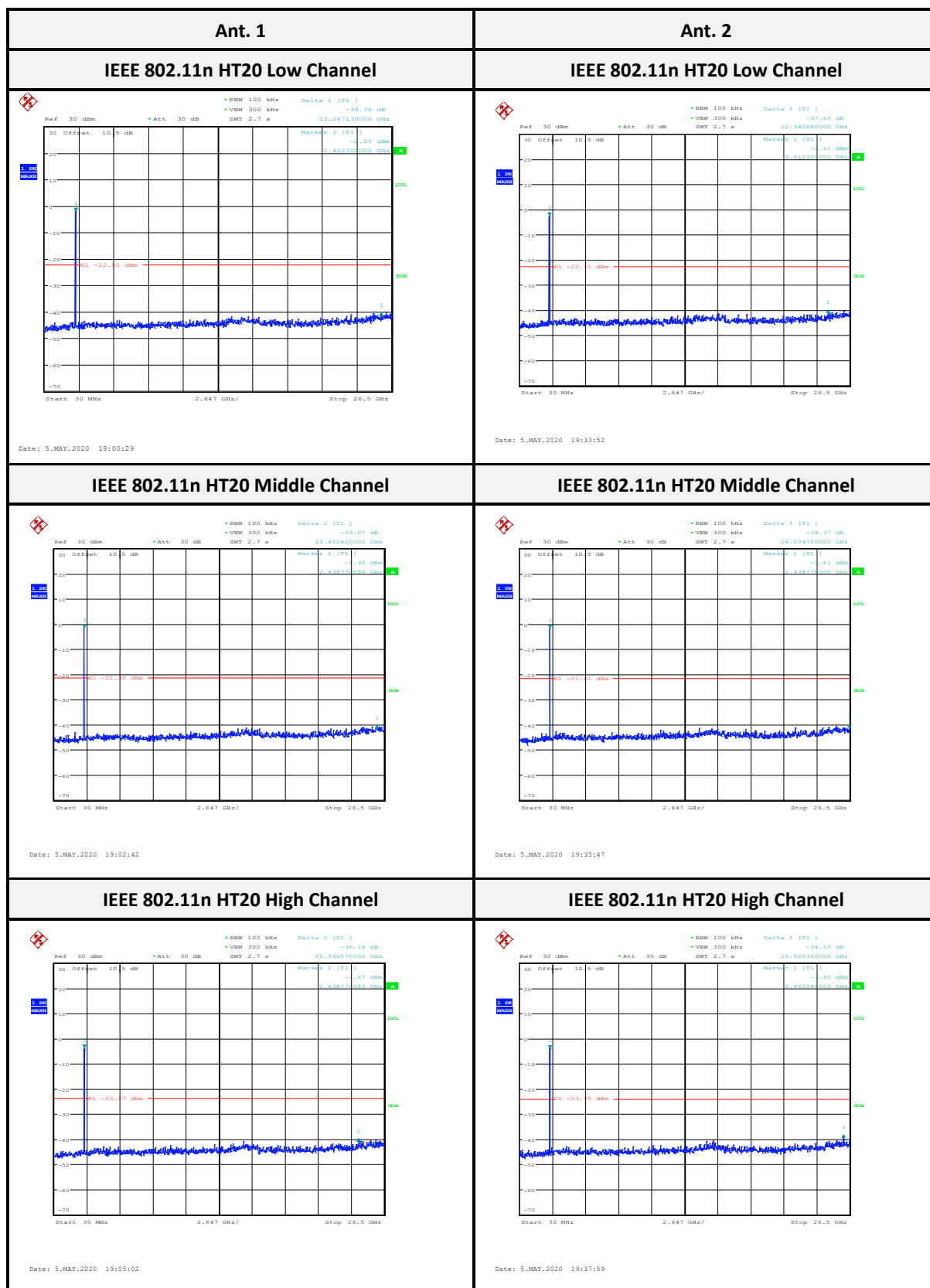
Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

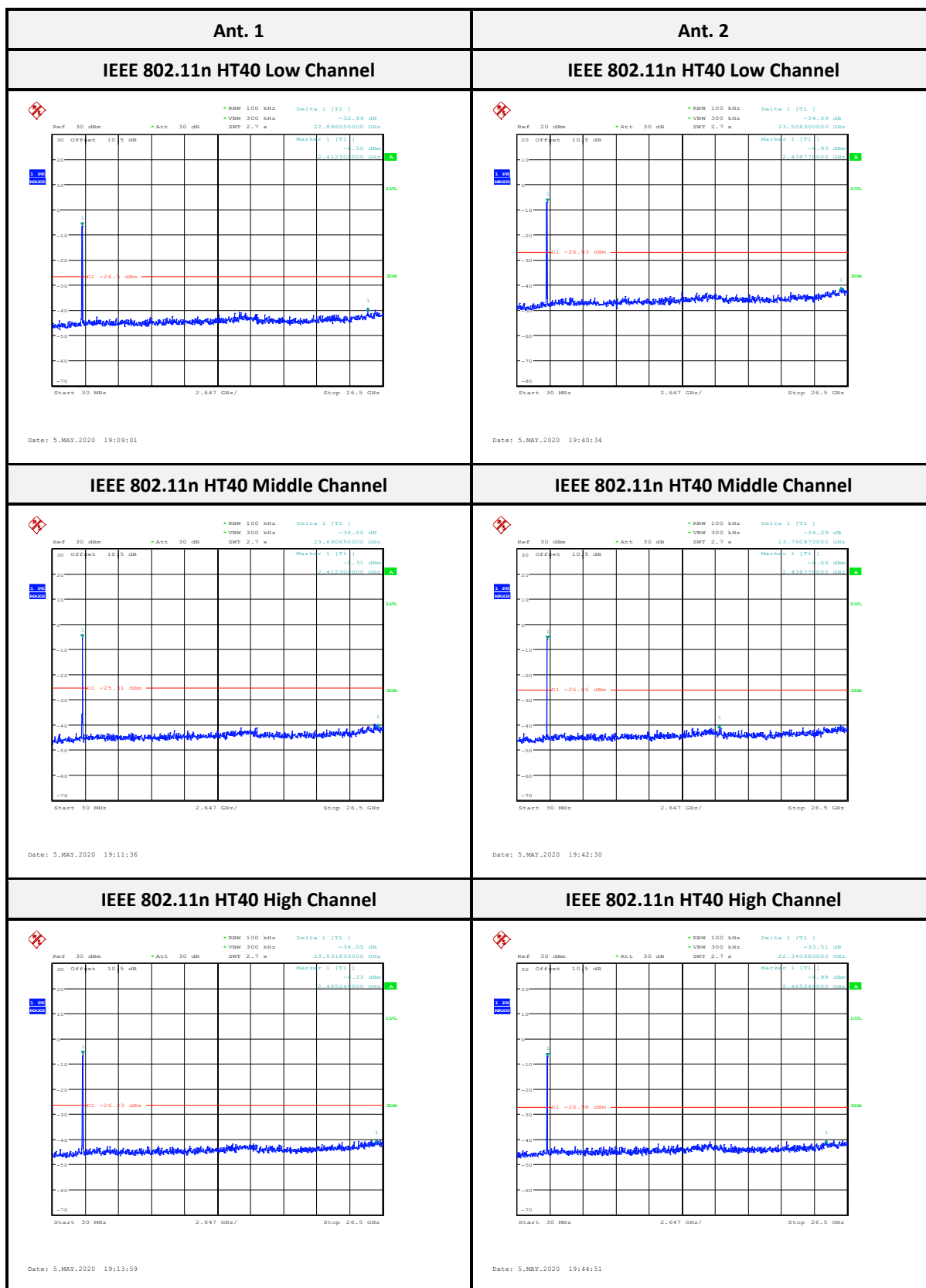
Conducted Spurious Emissions:

Configuration	Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)		Limit (dBc)	Result
			Ant. 1	Ant. 2		
IEEE 802.11b	Low	2412	43.50	45.13	≥ 20	PASS
	Mid	2437	41.67	46.81	≥ 20	PASS
	High	2462	41.82	45.70	≥ 20	PASS
IEEE 802.11g	Low	2412	40.97	39.76	≥ 20	PASS
	Mid	2437	38.87	39.49	≥ 20	PASS
	High	2462	38.25	39.20	≥ 20	PASS
IEEE 802.11n HT20	Low	2412	38.36	37.63	≥ 20	PASS
	Mid	2437	39.07	38.37	≥ 20	PASS
	High	2462	36.16	34.53	≥ 20	PASS
IEEE 802.11n HT40	Low	2422	32.69	34.09	≥ 20	PASS
	Mid	2437	34.55	34.29	≥ 20	PASS
	High	2452	34.05	33.51	≥ 20	PASS









7. 天線增益之要求

7.1 適用標準

低功率發射機，依據國家通訊傳播委員會低功率射頻電機技術規範3.10.1.3節之規定，應符合下列情現之一：

依據國家通訊傳播委員會低功率射頻電機技術規範3.10.1.3節(1)之規定，進行固定式點對點操作時，其發射天線之方向性增益超過6 dBi，每超過3 dBi，最大傳導輸出功率限制值應降低1 dB。

依據國家通訊傳播委員會低功率射頻電機技術規範3.10.1.3節(2)之規定，操作頻率為5725 MHz～5850 MHz 且進行固定式點對點操作時，其發射天線之方向性增益超過6 dBi，不需降低最大傳導輸出功率。

依據國家通訊傳播委員會低功率射頻電機技術規範3.10.1.3節(3)之規定，除(1)(2)外，使用超過6 dBi 方向增益之發射天線時，應依超過6 dBi 天線方向增益的dBi 總量，等量減少最大傳導輸出功率限制值。

7.2 天線增益

此裝置使用的天線明細如下：

天線型態	廠牌	型號	Gain
Dipole Antenna	LANYI	LY-N217-V0	2.13 dBi

** 其詳細規格資料，請參見：天線規格。

判定結果：符合規範

8. 發射頻寬之要求

8.1 適用標準

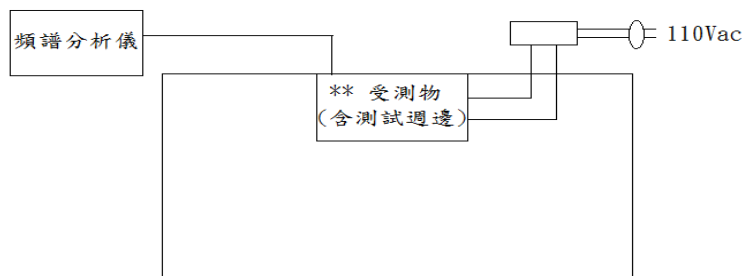
對使用跳頻系統之低功率發射機依據國家通訊傳播委員會低功率射頻電機技術規範3.10.1.6節(1)(A)之規定，跳頻系統之載波頻率頻道間隔應大於或等於25 kHz 或跳頻頻道之20 dB頻寬，兩者取較寬者。但操作頻率為2400 MHz～2483.5 MHz 頻段且輸出功率應小於或等於125 mW 跳頻系統，其載波頻率頻道間隔不得小於25 kHz 或跳頻頻道20 dB頻寬之三分之二，兩者取較寬者。系統之跳頻頻道應依虛擬亂數排列，在各頻率之跳頻頻道上跳躍。每一發射機必須均等的使用每一頻率。系統接收機應具有與發射機跳躍頻道頻寬相匹配之輸入頻寬，且應隨所發射之訊號同步偏移接收頻率。

對使用數位調變技術之低功率發射機，依據國家通訊傳播委員會低功率射頻電機技術規範3.10.1.6節(2)(A)之規定，6dB之頻寬至少應有500kHz。

8.2 測試方法

測量時，頻譜分析儀之解析頻寬為100kHz，視訊頻寬不小於解析頻寬。為求得精確測量，頻率掃描範圍(Span)遠大於解析頻寬。

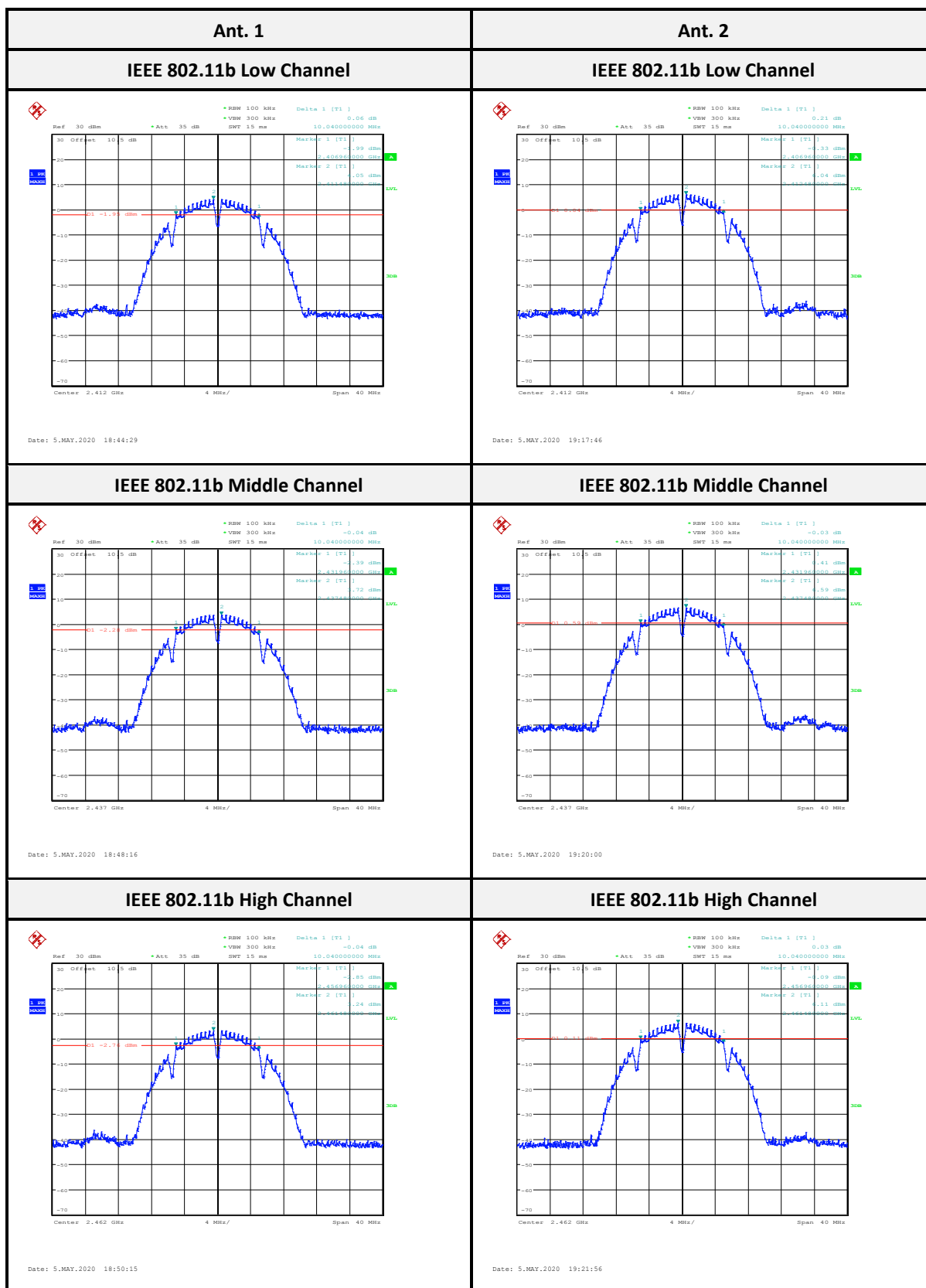
8.3 測試配置

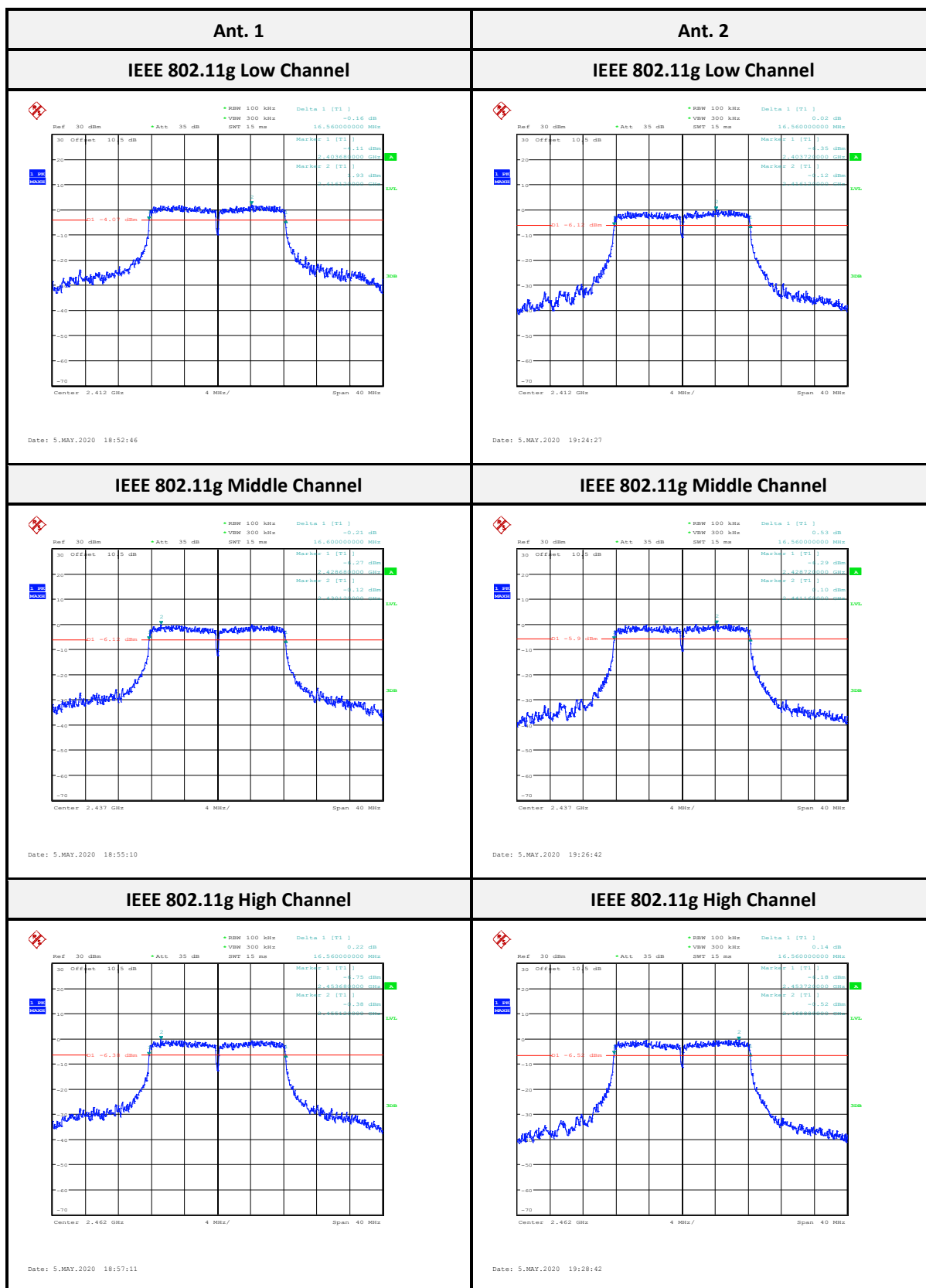


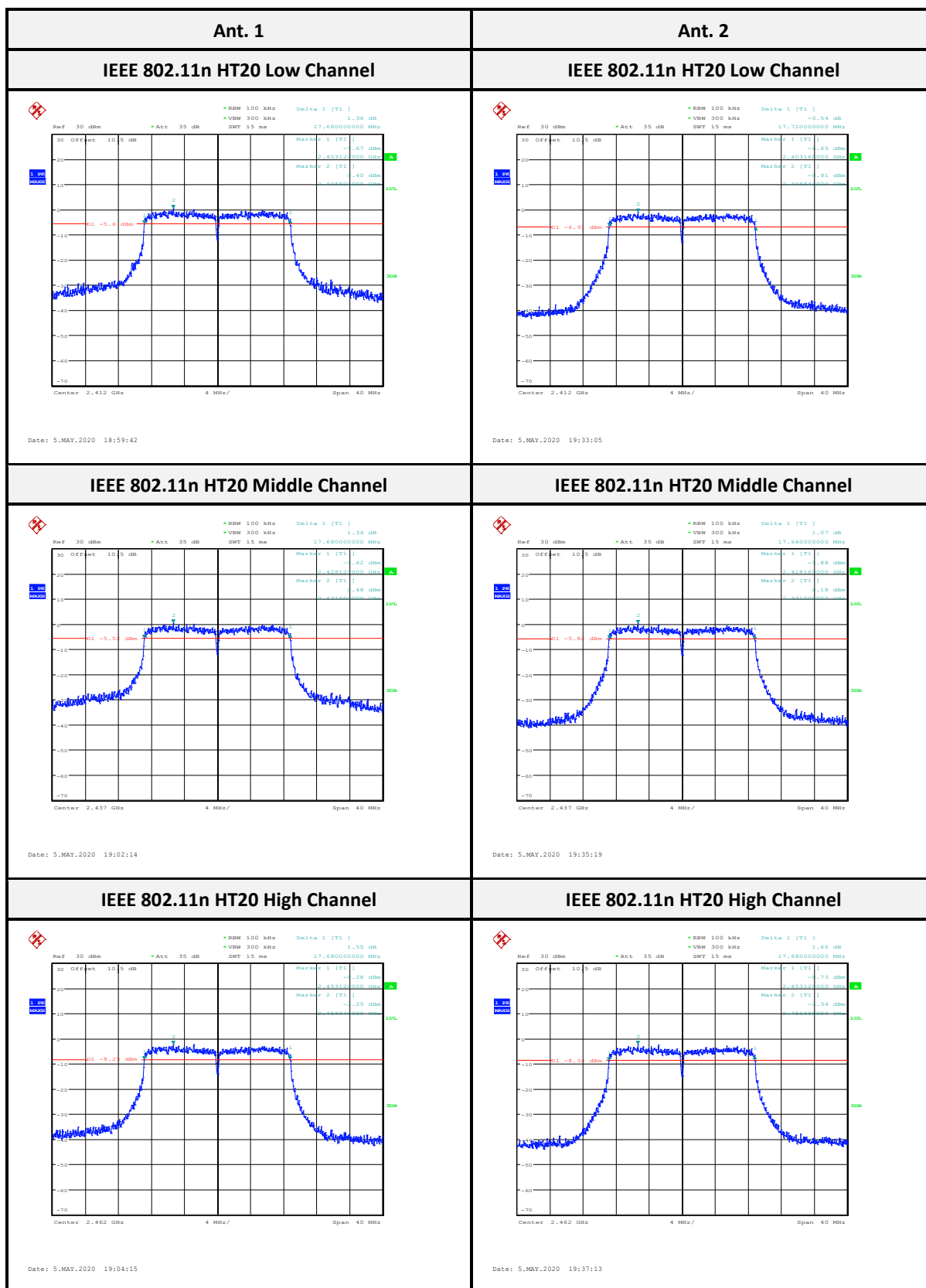
註: **請參照 3.2 節

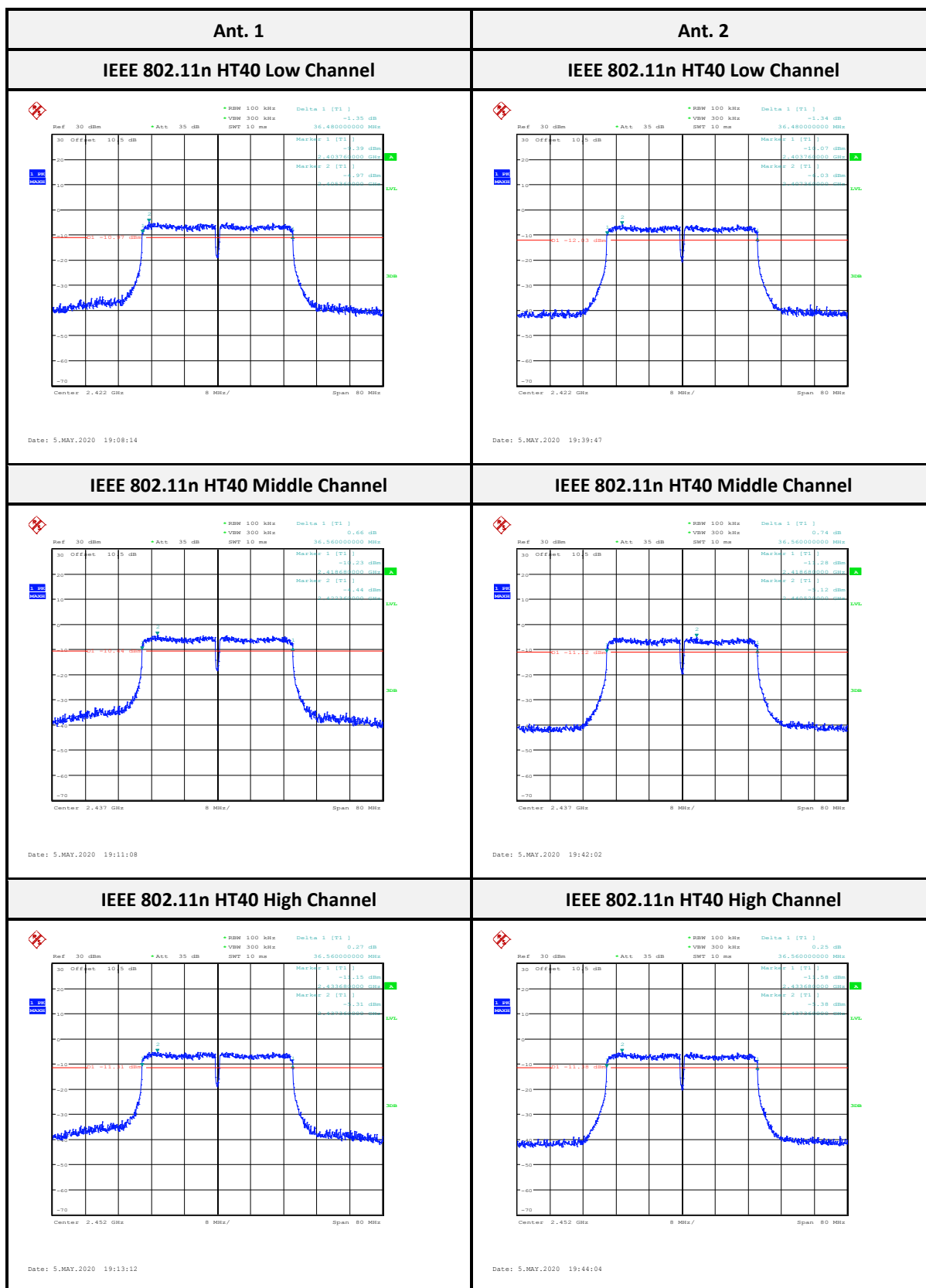
8.4 發射頻寬之量測結果

Configuration	Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)		Limit (kHz)	Result
			Ant. 1	Ant. 2		
IEEE 802.11b	Low	2412	10.04	10.04	>500	PASS
	Mid	2437	10.04	10.04		PASS
	High	2462	10.04	10.04		PASS
IEEE 802.11g	Low	2412	16.56	16.56	>500	PASS
	Mid	2437	16.60	16.56		PASS
	High	2462	16.56	16.56		PASS
IEEE 802.11n HT20	Low	2412	17.68	17.72	>500	PASS
	Mid	2437	17.68	17.64		PASS
	High	2462	17.68	17.68		PASS
IEEE 802.11n HT40	Low	2422	36.48	36.48	>500	PASS
	Mid	2437	36.56	36.56		PASS
	High	2452	36.56	36.56		PASS









9. 輸出峰值功率之量測

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 3.10.1.2 節(1)(A)之規定，跳頻系統至少使用 75 個跳頻頻道：1 W(含) 以下。

依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1.2 節(1)(B)之規定，跳頻系統除 3.10.1.2 節(1)(A)外，依 3.10.1.6(1)(A)(a)：0.125 W(含) 以下。

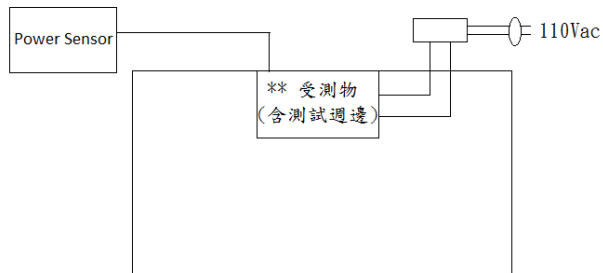
依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1.2 節(1)(C)之規定，數位調變技術系統：1 W(含) 以下。

9.2 測試方法

1. 將受測物的 RF 埠經由一條 50 歐姆纜線連接至功率分析儀。
2. 設定量測頻率為量測頻道。
3. 紀錄最大峰值輸出功率。

上述之測試步驟應注意外接之衰減與纜線損失。

9.3 測試配置



註: **請參照 3.2 節

9.4 輸出功率之量測結果

Configuration	Channel	Frequency (MHz)	Output Power (dBm)			Limit (dBm)
			Ant. 1	Ant. 2	Sum	
IEEE 802.11b	Low	2412	17.33	19.40	21.50	30.00
	Mid	2437	17.49	19.78	21.79	30.00
	High	2462	17.06	18.95	21.12	30.00
IEEE 802.11g	Low	2412	22.95	22.45	25.72	30.00
	Mid	2437	22.83	22.96	25.91	30.00
	High	2462	23.02	22.34	25.70	30.00
IEEE 802.11n HT20	Low	2412	21.54	21.90	24.73	30.00
	Mid	2437	21.92	22.55	25.26	30.00
	High	2462	20.31	20.85	23.60	30.00
IEEE 802.11n HT40	Low	2422	19.31	19.55	22.44	30.00
	Mid	2437	20.13	20.54	23.35	30.00
	High	2452	20.20	19.90	23.06	30.00

10. 開放頻帶邊緣 100kHz 頻寬內之限制

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3.10.1.5節之規定，使用頻帶範圍外之任意100kHz 內，發射器所產生的射頻功率相較於使用頻帶範圍中包含最高所需功率之100kHz 內的射頻功率，峰值輸出功率方式測量者須衰減20分貝 (dB)，以射頻傳導或輻射方式測量。最大傳導輸出功率測量方式者，至少須衰減30 dB。此外，落於第2.7節禁用頻段之輻射發射，應符合第2.8節之規定。

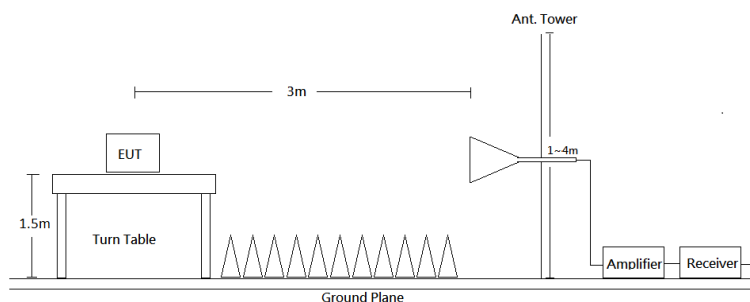
10.2 測試方法

- 1 頻率掃描範圍足以涵蓋操作在最靠近頻帶邊緣之頻道的發射波峰位準以及任何落於許可頻帶外之調變產物。
- 2 解析頻寬大於1%頻率掃描範圍寬度，視訊頻寬不小於解析頻寬。掃描時間為自動，檢波功能為峰值，訊號軌跡為最大保留(Max Hold)。
- 3 將標記設定於在頻帶邊緣上的發射，或將標記設定於最大之頻帶外調變產物上若其位準大於頻帶邊緣上的發射。啟動標記差值之功能，利用標記至波峰功能(Marker to Peak)功能以標記頻帶內發射之波峰，所顯示之標記差值必須符合指定之限制值。

以上述相同的步驟決定由跳頻功能所產生的任何混附波是否亦符合規定之限制值。

10.3 測試配置

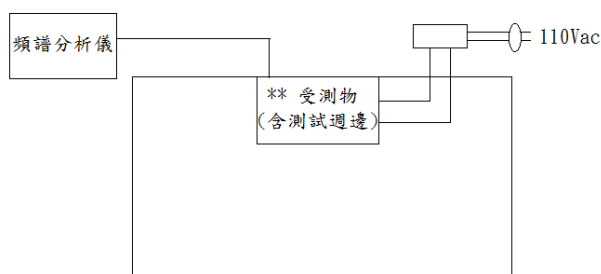
輻射配置圖



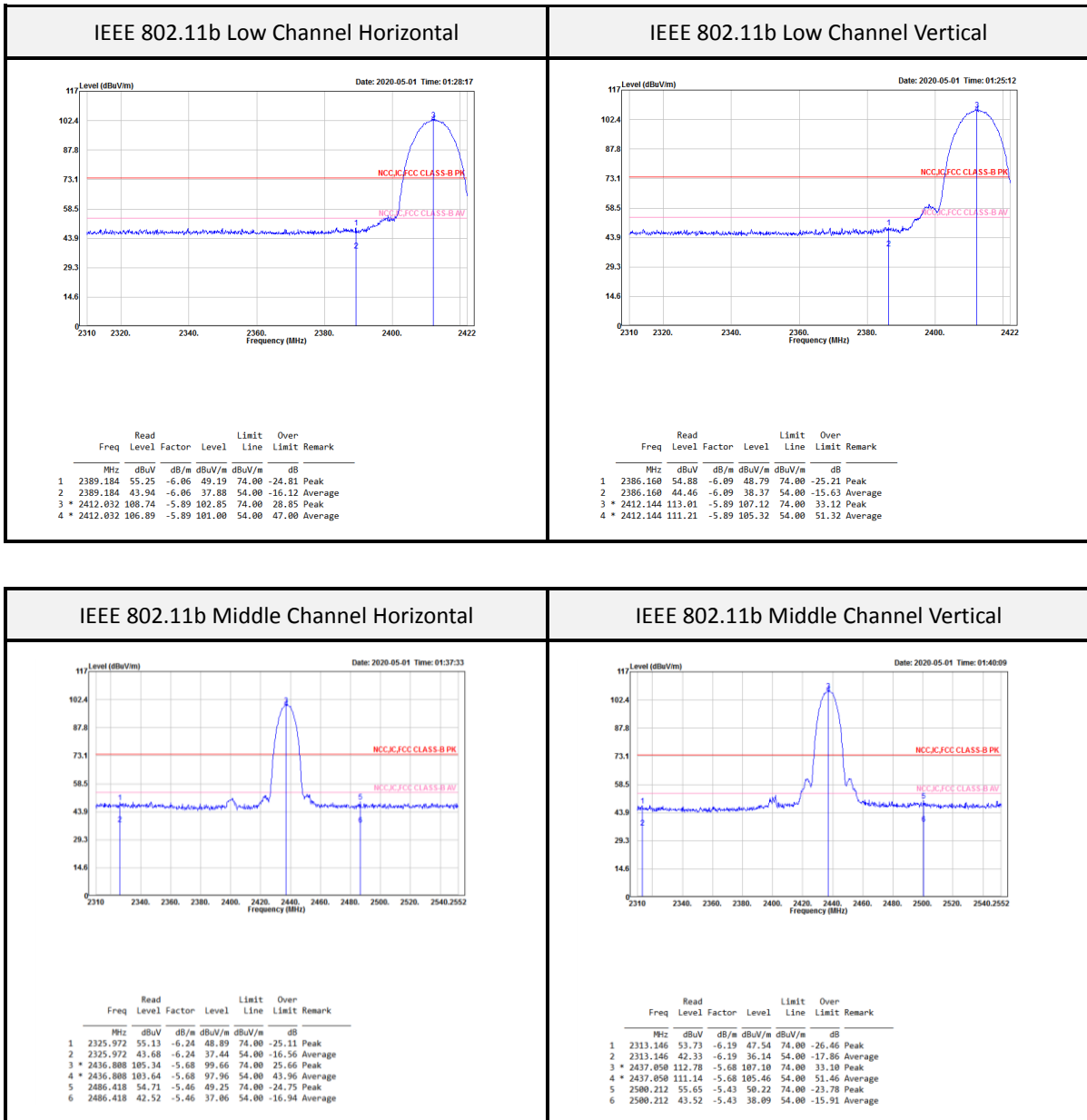
註: **請參照 3.2 節

依據 ANSI C63.10:2013 架設

直量配置圖



10.4 開放頻帶邊緣之量測結果



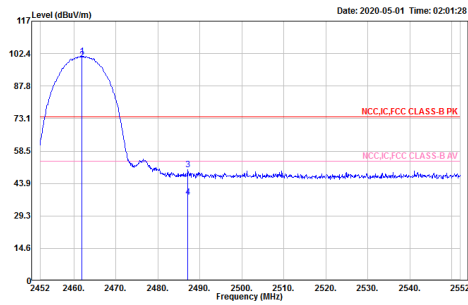
Note:

Result = Reading + Correct Factor

Margin = Result – Limit

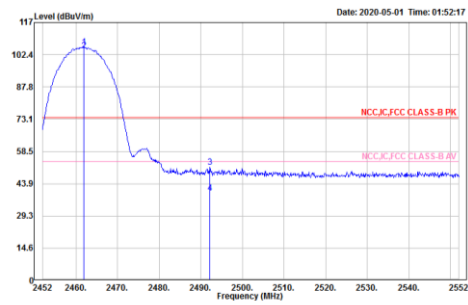
Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

IEEE 802.11b High Channel Horizontal



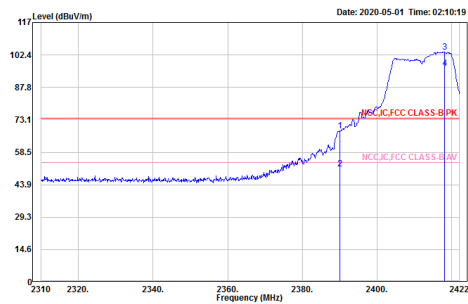
	Read			Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1 *	2462.000	106.80	-5.53	101.27	74.00	27.27 Peak
2 *	2462.000	105.16	-5.53	99.63	54.00	45.63 Average
3	2487.100	55.42	-5.46	49.96	74.00	-24.04 Peak
4	2487.100	43.25	-5.46	37.79	54.00	-16.21 Average

IEEE 802.11b High Channel Vertical



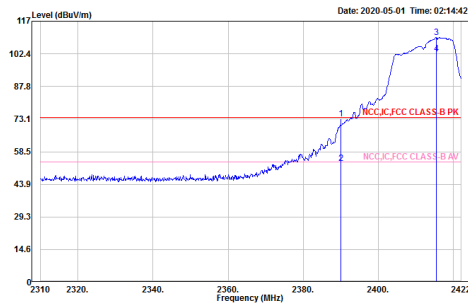
	Read			Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1 *	2461.900	111.38	-5.53	105.85	74.00	31.85 Peak
2 *	2461.900	109.89	-5.53	104.36	54.00	50.36 Average
3	2492.200	56.66	-5.45	51.21	74.00	-22.79 Peak
4	2492.200	45.24	-5.45	39.79	54.00	-14.21 Average

IEEE 802.11g Low Channel Horizontal



	Read			Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1	2389.968	74.22	-6.06	68.16	74.00	-5.84 Peak
2	2389.968	57.24	-6.06	51.18	54.00	-2.82 Average
3 *	2417.968	109.54	-5.84	103.70	74.00	29.70 Peak
4 *	2417.968	102.38	-5.84	96.54	54.00	42.54 Average

IEEE 802.11g Low Channel Vertical



	Read			Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1	2389.968	79.23	-6.06	73.17	74.00	-0.83 Peak
2	2389.968	59.44	-6.06	53.38	54.00	-0.62 Average
3 *	2415.392	115.70	-5.86	109.84	74.00	35.84 Peak
4 *	2415.392	108.14	-5.86	102.28	54.00	48.28 Average

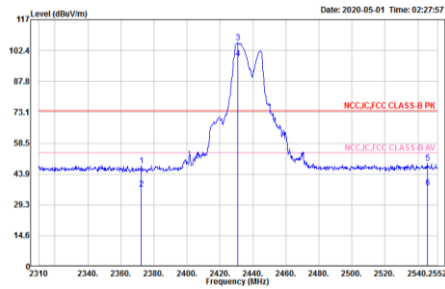
Note:

Result = Reading + Correct Factor

Margin = Result – Limit

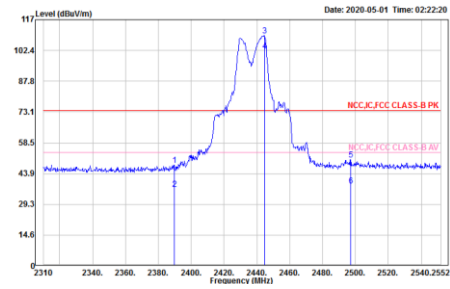
Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

IEEE 802.11g Middle Channel Horizontal



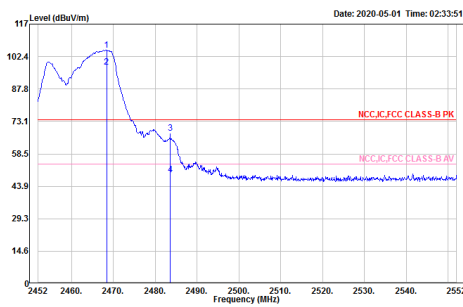
	Read			Limit	Over	
Freq	Level	Factor	Level	Line	Limit	Remark
MHz	dBuV		dB/m	dBuV/m	dB	
1	2372.436	54.20	-6.17	48.03	74.00	-25.97 Peak
2	2372.436	42.91	-6.17	36.74	54.00	-17.26 Average
3	* 2431.000	111.84	-5.73	106.11	74.00	32.11 Peak
4	* 2431.000	104.41	-5.73	98.68	54.00	44.68 Average
5	2545.708	54.41	-5.20	49.21	74.00	-24.79 Peak
6	2545.708	42.60	-5.20	37.40	54.00	-16.60 Average

IEEE 802.11g Middle Channel Vertical



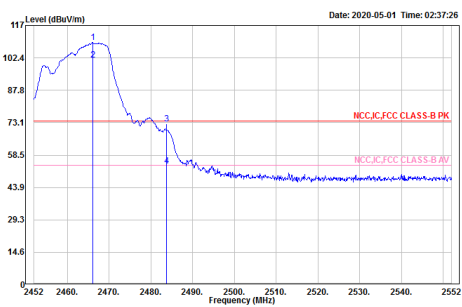
	Read			Limit	Over	
Freq	Level	Factor	Level	Line	Limit	Remark
MHz	dBuV		dB/m	dBuV/m	dB	
1	2389.618	54.02	-6.06	47.96	74.00	-26.04 Peak
2	2389.618	42.59	-6.06	36.53	54.00	-17.47 Average
3	* 2444.552	114.85	-5.60	109.25	74.00	35.25 Peak
4	* 2444.552	107.56	-5.60	101.96	54.00	47.96 Average
5	2497.066	55.96	-5.44	50.52	74.00	-23.48 Peak
6	2497.066	43.58	-5.44	38.14	54.00	-15.86 Average

IEEE 802.11g High Channel Horizontal



	Read			Limit	Over	
Freq	Level	Factor	Level	Line	Limit	Remark
MHz	dBuV		dB/m	dBuV/m	dB	
1	* 2466.100	110.71	-5.52	105.19	74.00	31.19 Peak
2	* 2466.100	103.32	-5.52	97.80	54.00	43.80 Average
3	2483.800	73.45	-5.47	67.98	74.00	-6.02 Peak
4	2483.800	54.50	-5.47	49.03	54.00	-4.97 Average

IEEE 802.11g High Channel Vertical



	Read			Limit	Over	
Freq	Level	Factor	Level	Line	Limit	Remark
MHz	dBuV		dB/m	dBuV/m	dB	
1	* 2466.100	114.78	-5.52	109.26	74.00	35.26 Peak
2	* 2466.100	107.14	-5.52	101.62	54.00	47.62 Average
3	2483.800	78.07	-5.47	72.60	74.00	-1.40 Peak
4	2483.800	59.00	-5.47	53.53	54.00	-0.47 Average

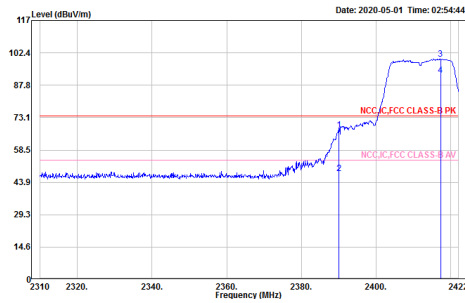
Note:

Result = Reading + Correct Factor

Margin = Result – Limit

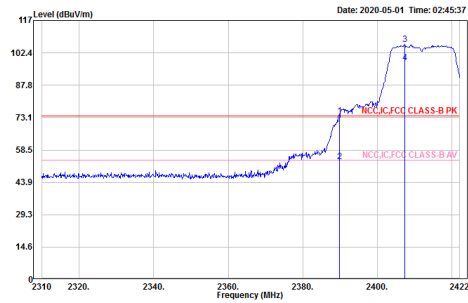
Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

IEEE 802.11n HT20 Low Channel Horizontal



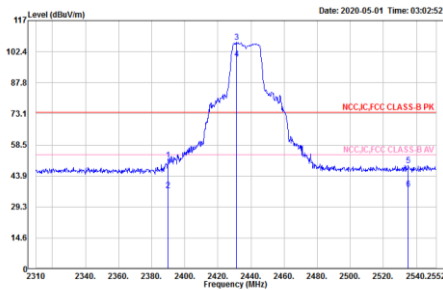
	Read			Limit	Over	
Freq	Level	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1 2389.968	73.63	-6.06	67.57	74.00	-6.43	Peak
2 2389.968	53.86	-6.06	47.80	54.00	-6.20	Average
3 * 2417.184	105.42	-5.85	99.57	74.00	25.57	Peak
4 * 2417.184	98.04	-5.85	92.19	54.00	38.19	Average

IEEE 802.11n HT20 Low Channel Vertical



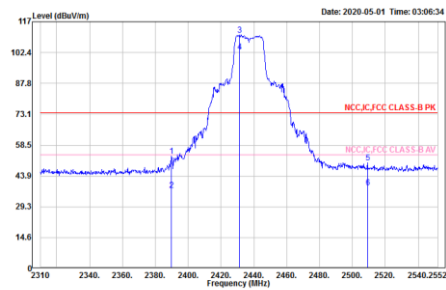
	Read			Limit	Over	
Freq	Level	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1 2389.856	80.01	-6.06	73.95	74.00	-0.05	Peak
2 2389.856	59.48	-6.06	53.42	54.00	-0.58	Average
3 * 2407.328	112.17	-5.93	106.24	74.00	32.24	Peak
4 * 2407.328	103.98	-5.93	98.05	54.00	44.05	Average

IEEE 802.11n HT20 Middle Channel Horizontal



	Read			Limit	Over	
Freq	Level	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1 2389.860	57.48	-6.06	51.42	74.00	-22.58	Peak
2 2389.860	43.21	-6.06	37.15	54.00	-16.85	Average
3 * 2431.242	112.56	-5.73	106.83	74.00	32.83	Peak
4 * 2431.242	104.66	-5.73	98.93	54.00	44.93	Average
5 2535.060	54.16	-5.24	48.92	74.00	-25.08	Peak
6 2535.060	42.86	-5.24	37.62	54.00	-16.38	Average

IEEE 802.11n HT20 Middle Channel Vertical



	Read			Limit	Over	
Freq	Level	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1 2389.860	59.25	-6.06	53.19	74.00	-20.81	Peak
2 2389.860	43.22	-6.06	37.16	54.00	-16.84	Average
3 * 2431.242	116.39	-5.73	110.66	74.00	36.66	Peak
4 * 2431.242	108.61	-5.73	102.88	54.00	48.88	Average
5 2509.166	55.36	-5.38	49.98	74.00	-24.02	Peak
6 2509.166	43.74	-5.38	38.36	54.00	-15.64	Average

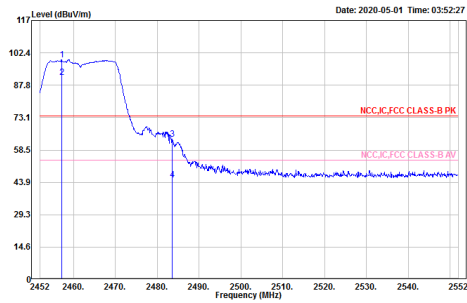
Note:

Result = Reading + Correct Factor

Margin = Result – Limit

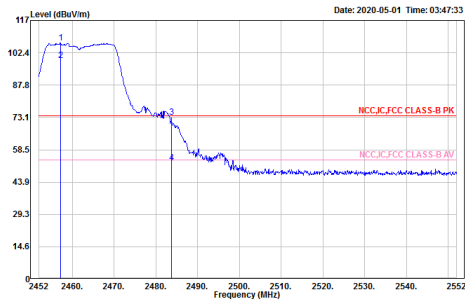
Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

IEEE 802.11n HT20 High Channel Horizontal



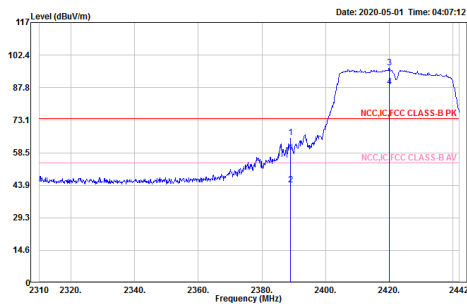
	Read			Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1 *	2457.200	104.76	-5.54	99.22	74.00	25.22 Peak
2 *	2457.200	96.97	-5.54	91.43	54.00	37.43 Average
3	2483.600	68.82	-5.47	63.35	74.00	-10.65 Peak
4	2483.600	50.48	-5.47	45.01	54.00	-8.99 Average

IEEE 802.11n HT20 High Channel Vertical



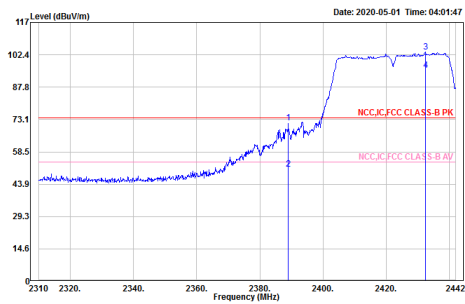
	Read			Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1 *	2457.300	112.29	-5.54	106.75	74.00	32.75 Peak
2 *	2457.300	104.56	-5.54	99.02	54.00	45.02 Average
3	2483.700	78.59	-5.47	73.12	74.00	-0.88 Peak
4	2483.700	58.04	-5.47	52.57	54.00	-1.43 Average

IEEE 802.11n HT40 Low Channel Horizontal



	Read			Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1	2388.936	71.22	-6.06	65.16	74.00	-8.84 Peak
2	2388.936	50.06	-6.06	44.00	54.00	-10.00 Average
3 *	2419.956	102.45	-5.82	96.63	74.00	22.63 Peak
4 *	2419.956	93.97	-5.82	88.15	54.00	34.15 Average

IEEE 802.11n HT40 Low Channel Vertical



	Read			Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1	2388.936	77.57	-6.06	71.51	74.00	-2.49 Peak
2	2388.936	56.79	-6.06	50.73	54.00	-3.27 Average
3 *	2432.364	109.29	-5.72	103.57	74.00	29.57 Peak
4 *	2432.364	101.00	-5.72	95.28	54.00	41.28 Average

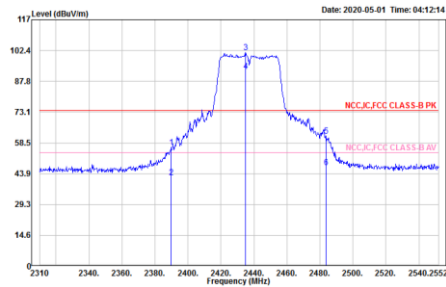
Note:

Result = Reading + Correct Factor

Margin = Result – Limit

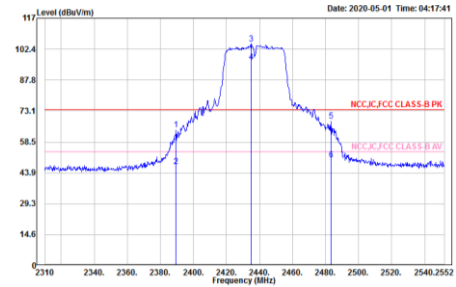
Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

IEEE 802.11n HT40 Middle Channel Horizontal



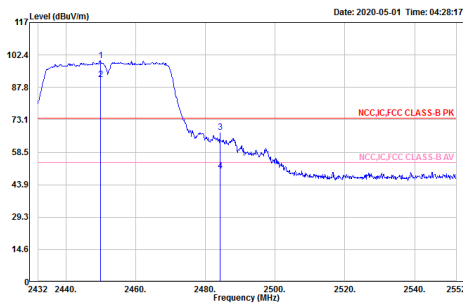
	Read Freq	Level	Factor	Level	Limit	Over	Limit	Remark
	MHz	dBuV		dB/m	dBuV/m	dBuV/m	dB	
1	2389.860	62.53	-6.06	56.47	74.00	-17.53	Peak	
2	2389.860	48.28	-6.06	42.22	54.00	-11.78	Average	
3	2434.872	107.83	-5.70	102.13	74.00	27.33	Peak	
4	2434.872	98.28	-5.70	92.58	54.00	38.58	Average	
5	2483.756	67.35	-5.47	61.88	74.00	-12.12	Peak	
6	2483.756	52.31	-5.47	46.84	54.00	-7.16	Average	

IEEE 802.11n HT40 Middle Channel Vertical



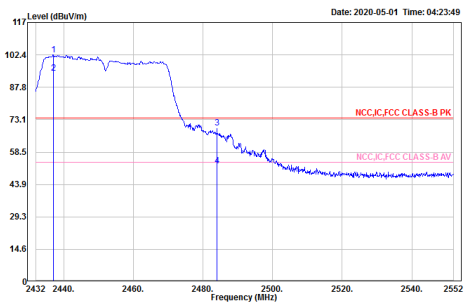
	Read Freq	Level	Factor	Level	Limit	Over	Limit	Remark
	MHz	dBuV		dB/m	dBuV/m	dBuV/m	dB	
1	2389.376	70.31	-6.06	64.25	74.00	-9.75	Peak	
2	2389.376	53.10	-6.06	47.04	54.00	-6.96	Average	
3	2434.872	110.56	-5.70	104.86	74.00	30.86	Peak	
4	2434.872	102.13	-5.70	96.43	54.00	42.43	Average	
5	2483.272	74.01	-5.47	68.54	74.00	-5.46	Peak	
6	2483.272	55.65	-5.47	50.18	54.00	-3.82	Average	

IEEE 802.11n HT40 High Channel Horizontal



	Read Freq	Level	Factor	Level	Limit	Over	Limit	Remark
	MHz	dBuV		dB/m	dBuV/m	dBuV/m	dB	
1	2449.880	105.39	-5.56	99.83	74.00	25.83	Peak	
2	2449.880	96.97	-5.56	91.41	54.00	37.41	Average	
3	2484.200	73.01	-5.47	67.54	74.00	-6.46	Peak	
4	2484.200	55.45	-5.47	49.98	54.00	-4.02	Average	

IEEE 802.11n HT40 High Channel Vertical



	Read Freq	Level	Factor	Level	Limit	Over	Limit	Remark
	MHz	dBuV		dB/m	dBuV/m	dBuV/m	dB	
1	2437.040	108.18	-5.68	102.50	74.00	28.50	Peak	
2	2437.040	99.85	-5.68	94.17	54.00	40.17	Average	
3	2484.080	74.77	-5.47	69.30	74.00	-4.70	Peak	
4	2484.080	57.70	-5.47	52.23	54.00	-1.77	Average	

Note:

Result = Reading + Correct Factor

Margin = Result – Limit

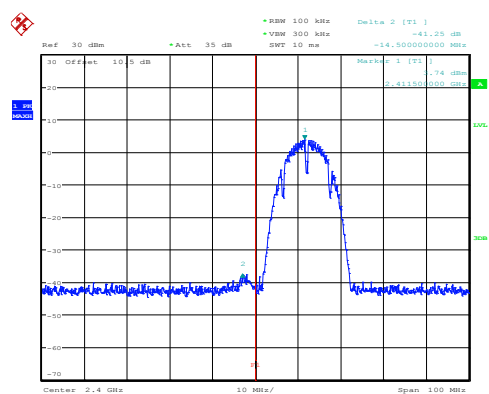
Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Conducted Band Edge

Configuration	Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)		Limit (dBc)	Result
			Ant. 1	Ant. 2		
IEEE 802.11b	Low	2412	41.25	45.52	≥ 20	PASS
	High	2462	43.31	45.86	≥ 20	PASS
IEEE 802.11g	Low	2412	25.46	31.07	≥ 20	PASS
	High	2462	38.06	38.96	≥ 20	PASS
IEEE 802.11n HT20	Low	2412	28.78	33.84	≥ 20	PASS
	High	2462	37.49	36.95	≥ 20	PASS
IEEE 802.11n HT40	Low	2422	28.05	31.88	≥ 20	PASS
	High	2452	32.90	33.28	≥ 20	PASS

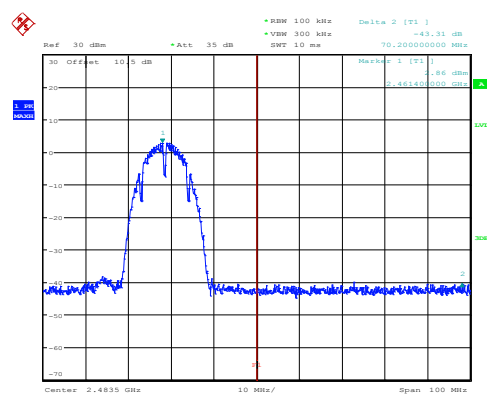
Ant. 1

IEEE 802.11b Low Channel



Date: 5.MAY.2020 18:44:58

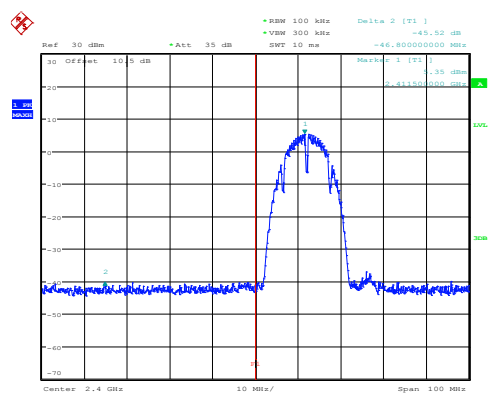
IEEE 802.11b High Channel



Date: 5.MAY.2020 18:50:43

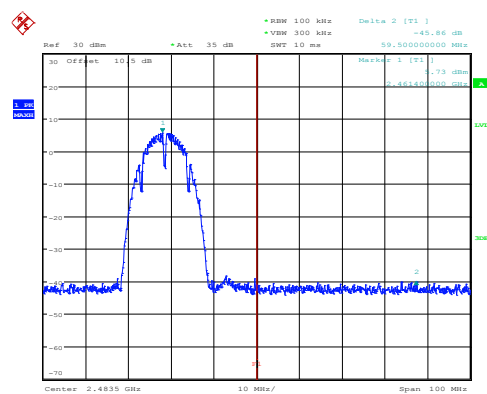
Ant. 2

IEEE 802.11b Low Channel



Date: 5.MAY.2020 19:18:14

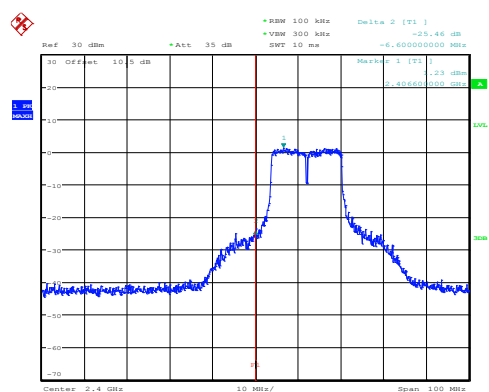
IEEE 802.11b High Channel



Date: 5.MAY.2020 19:22:24

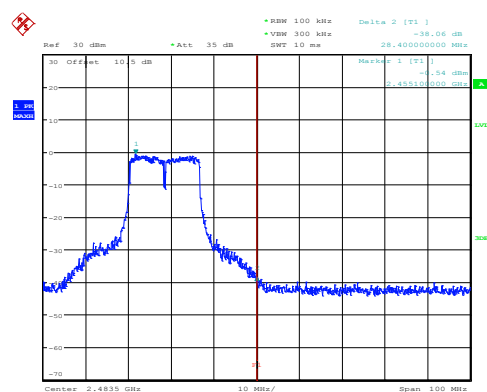
Ant. 1

IEEE 802.11g Low Channel



Date: 5.MAY.2020 18:53:14

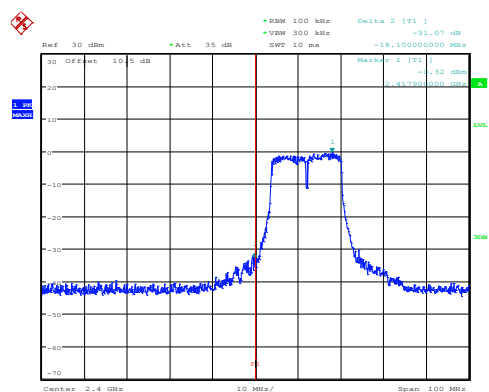
IEEE 802.11g High Channel



Date: 5.MAY.2020 18:57:39

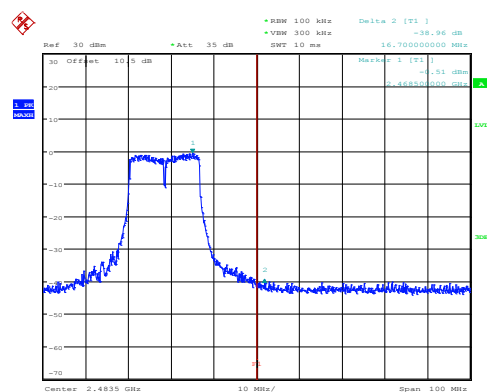
Ant. 2

IEEE 802.11g Low Channel



Date: 5.MAY.2020 19:24:56

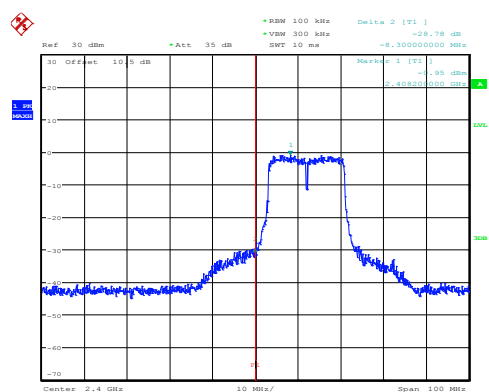
IEEE 802.11g High Channel



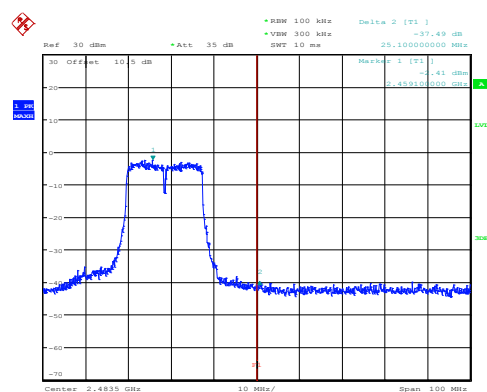
Date: 5.MAY.2020 19:29:11

Ant. 1

IEEE 802.11n HT20 Low Channel

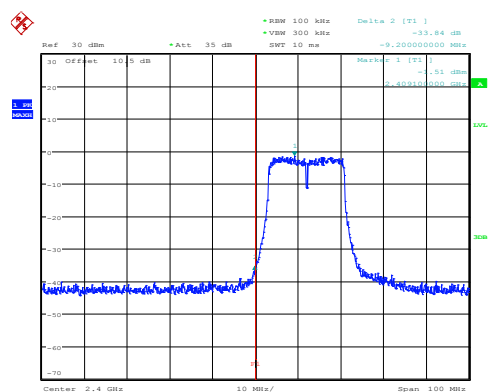


IEEE 802.11n HT20 High Channel

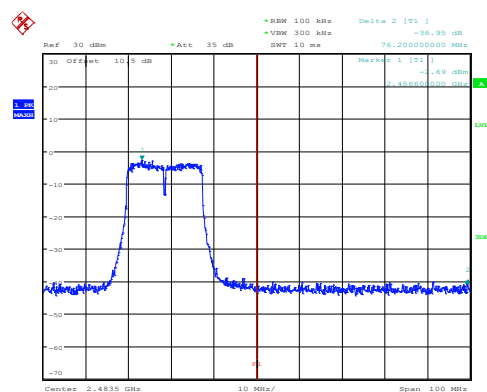


Ant. 2

IEEE 802.11n HT20 Low Channel



IEEE 802.11n HT20 High Channel



11. 功率密度之量測

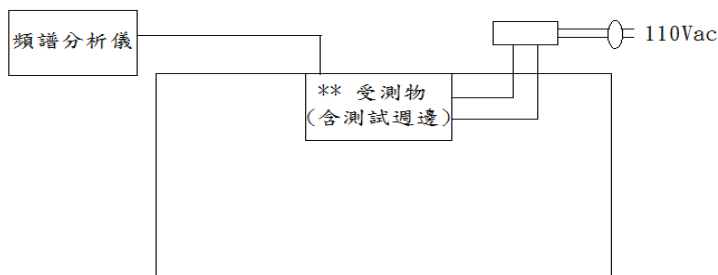
11.1 適用標準

依據國家通訊傳播委員會低功率射頻電機技術規範3.10.1.6節之(2)(B)條規定，在使用頻率範圍之任一3 kHz 頻寬內，由發射機傳導至天線之功率頻譜密度在任意傳輸期間內，皆小於或等於8 毫分貝 (dBm)，且應依3.10.1.3 之方式降低功率頻譜密度限制值。

11.2 測試方法

1. 將發射機之天線埠經由適當之衰減直接連至測試儀器。找出發射峰值並擴展於通帶內，設定解析頻寬為3 kHz，視訊頻寬大於解析頻寬，掃描時間為頻率掃描範圍除以3 kHz。所測得之峰值位準必須應小於或等於8 dBm。
2. 若受測裝置之頻譜線間隔小於3 kHz，測量時應將解析頻寬降低以使頻譜線間隔大於3kHz，所測得之數據再藉加總3 kHz 頻帶內所有個別頻譜線之功率(即標準化至3 kHz)以決定是否符合規定。
3. 依據FCC 558074 D01 DTS Meas Guidance v04 之要求。

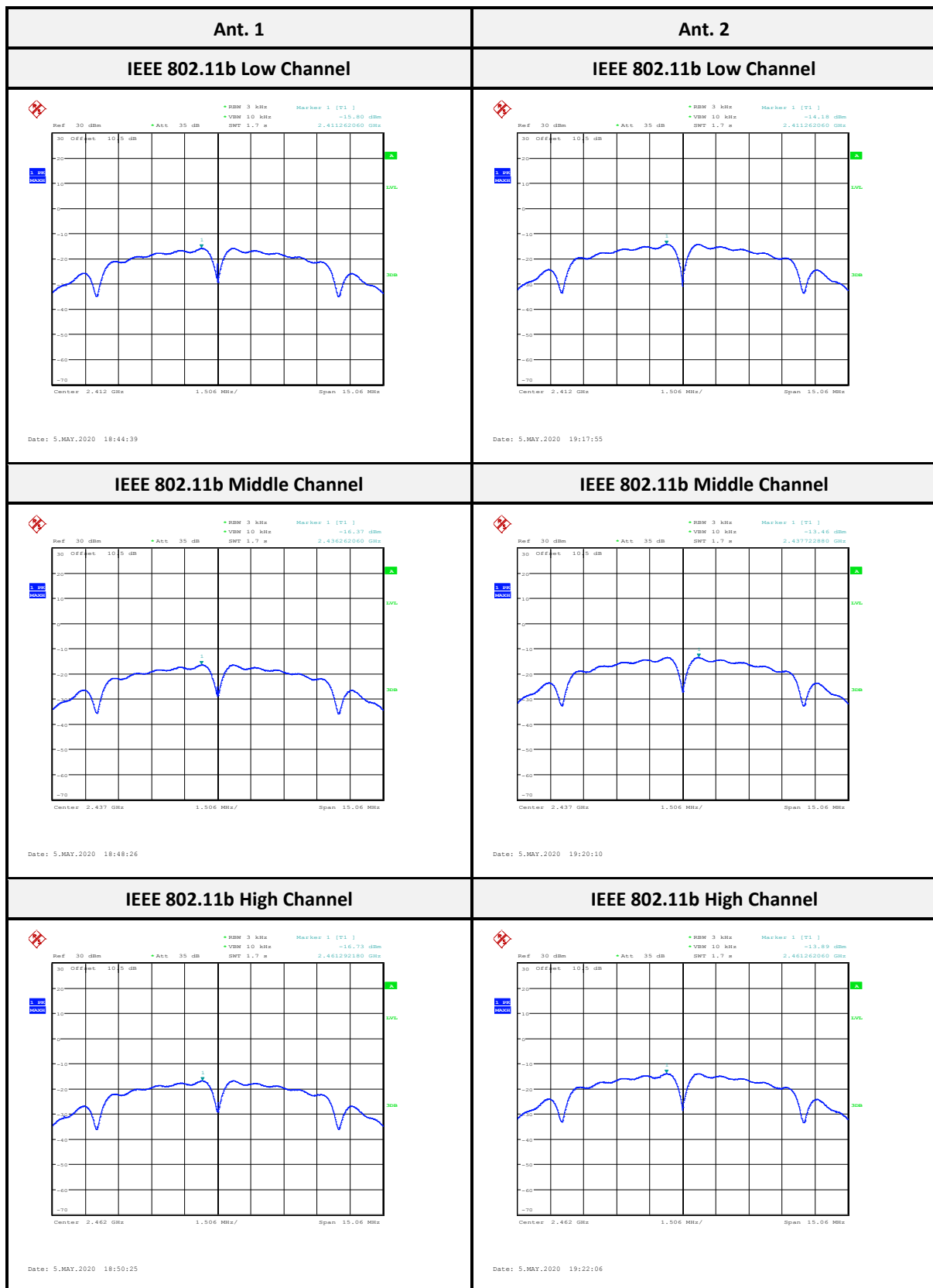
11.3 測試配置

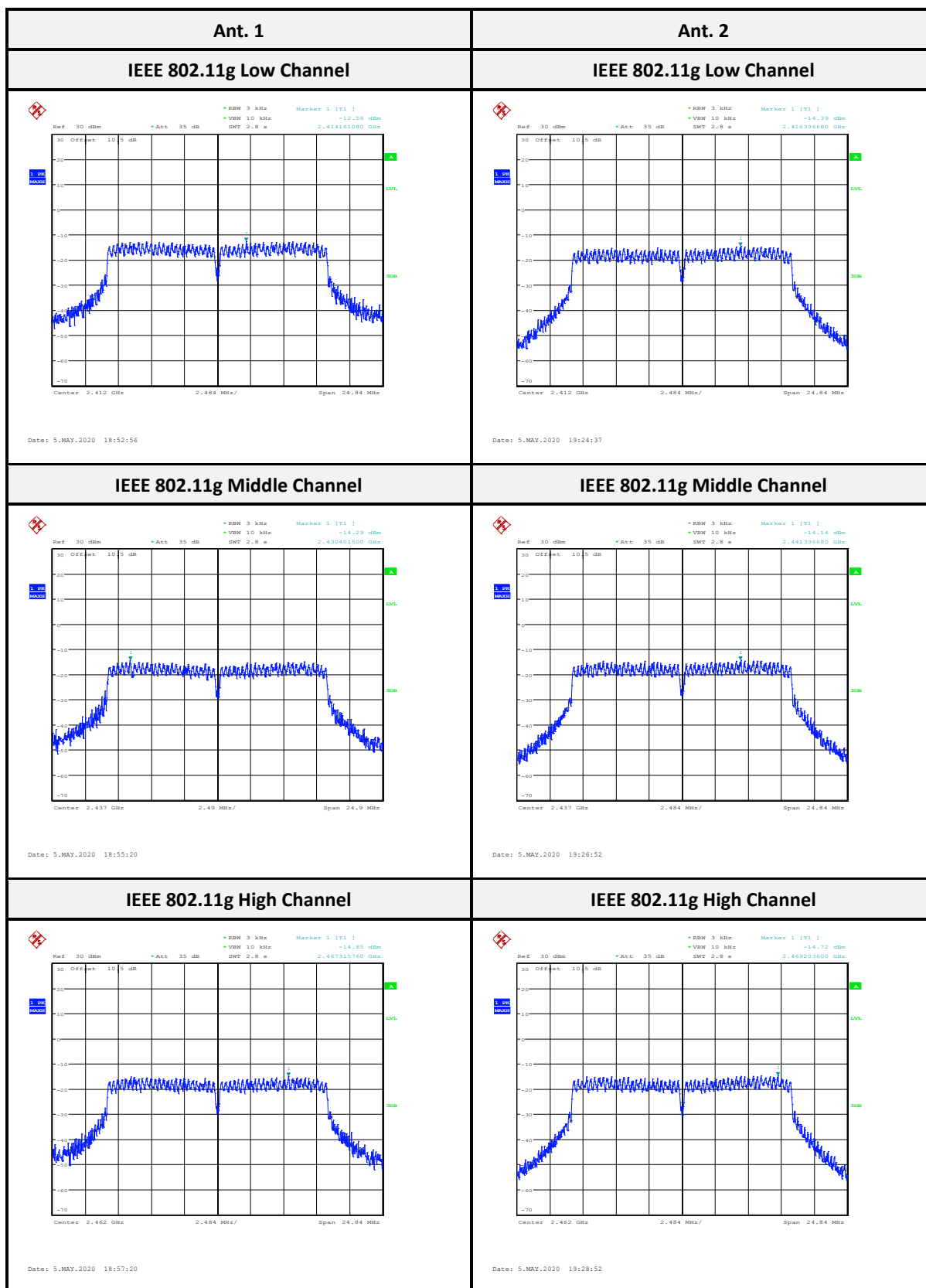


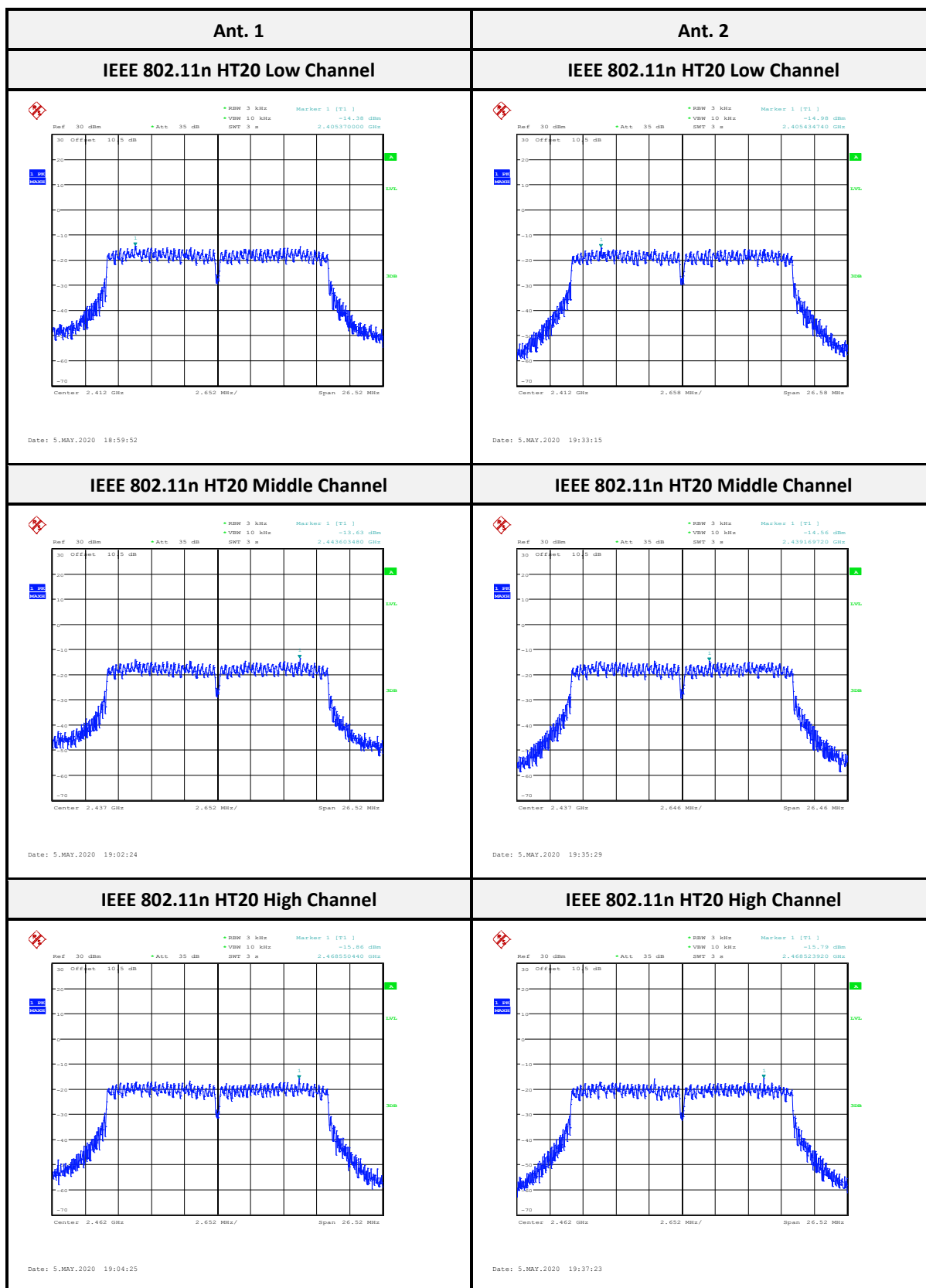
註: **請參照 3.2 節

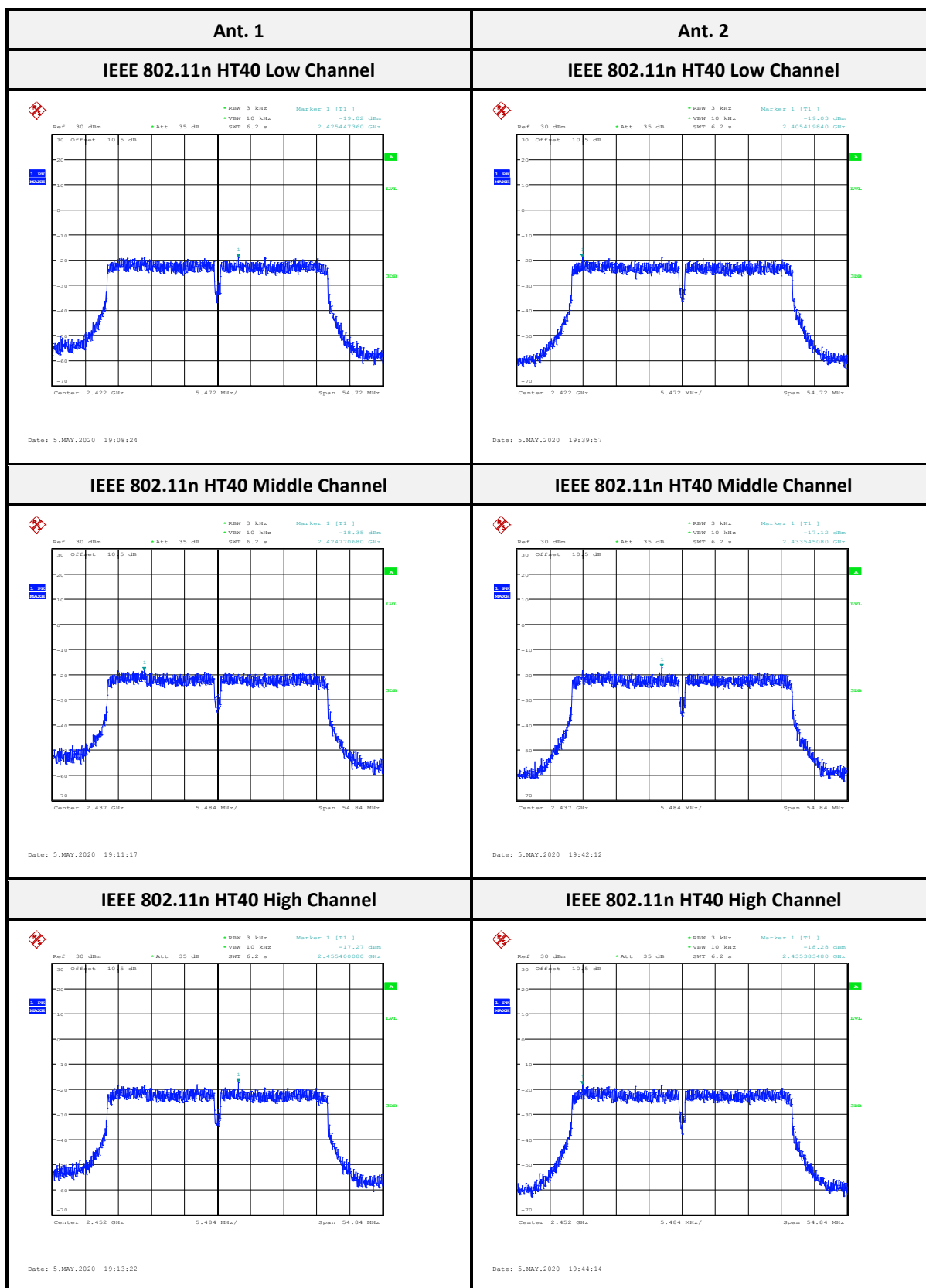
11.4 功率密度之量測結果

Configuration	Channel	Frequency (MHz)	PPSD (dBm)		Limit (dBm)	Result
			Ant. 1	Ant. 2		
IEEE 802.11b	Low	2412	-15.80	-14.18	8.00	PASS
	Mid	2437	-16.37	-13.46		PASS
	High	2462	-16.73	-13.89		PASS
IEEE 802.11g	Low	2412	-12.56	-14.39	8.00	PASS
	Mid	2437	-14.29	-14.14		PASS
	High	2462	-14.85	-14.72		PASS
IEEE 802.11n HT20	Low	2412	-14.38	-14.98	8.00	PASS
	Mid	2437	-13.63	-14.56		PASS
	High	2462	-15.86	-15.79		PASS
IEEE 802.11n HT40	Low	2422	-19.02	-19.03	8.00	PASS
	Mid	2437	-18.35	-17.12		PASS
	High	2452	-17.27	-18.28		PASS









12. 電波暴露量

12.1 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5.20.2.2節之規定，若受測物於正常操作模式下，其發射機距人體 20 公分以上者，可測試最大暴露允許值(Maximum Permissible Exposure, MPE)以證明其符合電波暴露量之要求。(限制值如下)

Limits for General Population/Uncontrolled Exposure [Ⓢ]				
Frequency Range (MHz) [Ⓢ]	Electric Field Strength (V/m) [Ⓢ]	Magnetic Field Strength (A/m) [Ⓢ]	Power Density [Ⓢ] (mW/cm ²) [Ⓢ]	Averaging Time [Ⓢ] (minutes) [Ⓢ]
0.3-1.34 [Ⓢ]	614 [Ⓢ]	1.63 [Ⓢ]	*(100) [Ⓢ]	30 [Ⓢ]
1.34-30 [Ⓢ]	824/f [Ⓢ]	2.19/f [Ⓢ]	*(180/f ²) [Ⓢ]	30 [Ⓢ]
30-300 [Ⓢ]	27.5 [Ⓢ]	0.073 [Ⓢ]	0.2 [Ⓢ]	30 [Ⓢ]
300-1500 [Ⓢ]	/ [Ⓢ]	/ [Ⓢ]	f/1500 [Ⓢ]	30 [Ⓢ]
1500-100,000 [Ⓢ]	/ [Ⓢ]	/ [Ⓢ]	1.0 [Ⓢ]	30 [Ⓢ]

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:

Predication of MPE limit at a given distance

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

12.2 電波暴露量之評估

Mode	Frequency Range (MHz)	Antenna Gain		Target Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
Wi-Fi 2.4G	2412-2462	2.13	1.6331	25.91	389.9420	20	0.1268	1

***** END OF REPORT *****