

低功率射頻器材試驗報告



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產品名稱 智能可視超聲波潔牙儀
廠牌 素諾
型號 T11Pro
型號差異 N/A
報告號碼 E2/2021/70029
技術標準 LP0002, 4.10.1 節
試驗件收樣日期 民國110年7月5日
試驗受理日期 民國110年7月5日
試驗執行日期 民國110年7月5日 ~ 民國110年8月10日
報告發行日期 民國110年10月13日

Approved By: _____

裴笛翰

待測裝置已於台灣檢驗科技股份有限公司射頻實驗中心，依據國家通訊傳播委員會於中華民國一百零九年七月頒佈之低功率射頻器材技術規範測試。

台灣檢驗科技股份有限公司根據此條文規範項目測試，測試各項數據皆能符合此規範規定之限度值。

報告中所描述之測試結果和待測設備的架構組合，均根據實際量測情況作詳實的記錄，且本測試報告僅對上述待測樣品負責。

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Revision History

Report Number	Revision	Description	Issue Date	Revised By
E2/2021/70029	00	Original	民國 110 年 10 月 13 日	張嘉芳

Note:

1. Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.

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1 測試實驗室資料

1.1 認可登錄資訊:

實驗室認可登錄： 中華民國實驗室認證體系

認可編號： TAF 3702

認證有效期間： 110年06月14日起至113年06月13日止

實驗室名稱： 台灣檢驗科技股份有限公司射頻實驗中心

實驗室地址： 新北市新北產業園區五工路134號

電話： 886-2-22993939

傳真： 886-2-22982698

1.2 實驗室場地資訊

測試場地	測試場地編號		
新北市新北產業園區五工路 134 號	SAC 1	SAC 3	Conduction 1
	Conducted 1	Conducted 2	Conducted 3
	Conducted 4	Conducted 5	Conducted 6
桃園市龜山區(華亞科技園區)科技一路 2 號	SAC C	SAC D	SAC G
	Conduction C	Conducted A	Conducted B
	Conducted C	Conducted D	Conducted E
	Conducted F	Conducted G	
註: 測試場地編號記錄於每項測試之儀器清單, 用以表示測試場地地址。			

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2 實驗室之量測不確定度

量測項目	量測不確定度			
	(擴充不確定度)			
傳導干擾量測	電源線	0.15-30MHz	2.34	dB
輻射干擾量測 (3m 測距)	水平極化	9kHz - 30MHz	2.64	dB
		30-1000MHz	4.45	dB
		1-18GHz	4.81	dB
		18-40GHz	4.52	dB
	垂直極化	9kHz - 30MHz	2.64	dB
		30-1000MHz	4.93	dB
		1-18GHz	4.81	dB
		18-40GHz	4.52	dB
頻率誤差量測			1.53	Hz
輸出功率	傳導方式		1	dB
有效輻射功率 (輻射方式)	水平極化	30-1000MHz	2	dB
		1-40GHz	3	dB
	垂直極化	30-1000MHz	2.33	dB
		1-40GHz	3	dB
功率頻譜密度	傳導方式		1.53	dB
鄰頻道功率量測 (輻射方式)	水平極化	30-1000MHz	2	dB
	垂直極化	30-1000MHz	2.33	dB
Transmitter Spurious Emission	33GHz-50GHz		3.8	dB
	50GHz-60GHz		4.67	dB
	60GHz-90GHz		4.81	dB
	90GHz-140GHz		4.57	dB
	140GHz-200GHz		5.42	dB

附註: 1. K=2 即代表測試結果具有95%的量測可信度。

2. 本報告中的符合性判定僅依據試驗結果，不考慮其試驗結果的量測不確定度。

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3 一般資料

3.1 產品描述

產品名稱	智能可視超聲波潔牙儀	
廠牌	素諾	
型號	T11Pro	
型號差異	N/A	
USB Cable	Brand: 素諾, Model No.: T11 Pro	
使用電源	3.7V from Li-ion battery 5V from adapter	
	Battery	Model No.: SY16500-1200mAh 加圓形板 Brand: 深圳市三一春華科技有限公司

3.2 射頻特性

WLAN 2.4GHz

Wi-Fi	Frequency Range	Channels	Rated Power in dBm (Peak)	Modulation Technology
802.11b	2412~2462	11	16.92	DSSS
802.11g	2412~2462	11	19.72	OFDM
802.11n20	2412~2462	11	19.97	OFDM
Modulation type:		CCK, DQPSK, DBPSK for DSSS		
		64QAM, 16QAM, QPSK, BPSK for OFDM		
Data Rate:		802.11 b: 1/2/5.5/11 Mbps		
		802.11 g: 6/9/12/18/24/36/48/54 Mbps		
		802.11 n_20MHz: 6.5 - 72.2Mbps		

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3.3 天線資訊

Antenna Type	Brand	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)
monopole	東莞市皓諾電子有限公司	CA13B-029-010000	2.4GHz	0
Note: 1. Antenna information is provided by the applicant.				

3.4 配件資訊

以下不附賣配件經申請者切結，器材不隨貨提供並由實驗室提供併同檢驗。

是否附賣		配件	廠牌	型號	Power Rating (Vdc)
Yes	No				
☐	☒	Adapter	HONG SHAING	MUC-5K	5
☒	☐	USB Cable	素諾	T11 Pro	N/A
☐	☒	USB Cable 2	Bravo-u	AM-AF 1.8M	N/A

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4 產品特性

此裝置符合IEEE Std 802.11標準，使用頻率表如下：

頻寬 20MHz 調變	
頻率範圍 2400 MHz – 2483.5 MHz	
2412	2442
2417	2447
2422	2452
2427	2457
2432	2462
2437	

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5 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器材技術規範(LP0002, 109.7.1 版本)如無國家標準可適用者，得依美國 EIA、IEEE ANSI 檢驗法檢驗，及美國 FCC 47 CFR Part 2 有關檢驗之規定及參考 ANSI C63.10:2013、FCC CFR 47 15.247 之檢驗法。

項次	測試項目	適用規範	測試結果
1	場強輻射	低功率射頻器材技術規範 3.5 & 3.6 節	符合
2	電源線傳導干擾	低功率射頻器材技術規範3.3節	符合
3	天線增益之要求	低功率射頻器材技術規範4.10.1.3 (1) 節	符合
4	發射頻寬	低功率射頻器材技術規範4.10.1.6(2) (A) 節	符合
5	輸出峰值功率	低功率射頻器材技術規範4.10.1.2(1) (C) 節	符合
6	帶外發射限制	低功率射頻器材技術規範4.10.1.5節	符合
7	功率密度	低功率射頻器材技術規範4.10.1.6(2) (B) 節	符合

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6 量測模式

比較所有調變、data rate 測試值後，附上最差模式數據。

Conducted					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11b	1 to 11	1,6,11	DSSS	1	ch0
802.11g	1 to 11	1,6,11	OFDM	6	ch0
802.11n (HT20)	1 to 11	1,6,11	OFDM	MCS0	ch0

RADIATED EMISSION TEST (BELOW 1 GHz)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11g	1 to 11	1,6,11	OFDM	6	ch0

RADIATED EMISSION TEST (ABOVE 1 GHz)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11b	1 to 11	1,6,11	DSSS	1	ch0
802.11g	1 to 11	1,6,11	OFDM	6	ch0
802.11n (HT20)	1 to 11	1,6,11	OFDM	MCS0	ch0

幅射場強測試，待測物依 E1 / E2 / H 三個正交軸向設置於桌面測試比較後，附上最差模式數據。

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7 適用規範

禁用頻帶限制之規定

依據NCC低功率射頻器材技術規範3.5節之要求，任何低功率射頻器材之主波皆不得使用下表所列各頻帶內之頻率；低功率射頻器材落於下表所列頻帶內之混附發射，其電場強度必須符合第3.6節的限制規定。

頻率 (MHz)	頻率 (MHz)	頻率 (MHz)
0.090~0.110	240.00~285.00	3332.0~3339.0
0.490~0.510	322.00~335.40	3345.8~3358.0
2.172~2.198	399.90~410.00	3500.0~4400.0
3.013~3.033	485.00~510.00	4500.0~5250.0
4.115~4.198	608.00~614.00	5350.0~5460.0
5.670~5.690	703.00~748.00	7250.0~7750.0
6.200~6.300	758.00~803.00	8025.0~8500.0
8.230~8.400	825.00~915.00	9000.0~9200.0
12.265~12.600	930.00~1240.0	9300.0~9500.0
13.340~13.430	1300.0~1427.0	10600~12700
14.965~15.020	1435.0~1626.5	13250~13400
16.700~16.755	1660.0~1785.0	14470~14500
19.965~20.020	1805.0~1880.0	15350~16200
25.500~25.700	1885.0~1900.0	17700~21400
37.475~38.275	1905.0~1985.0	22010~23120
73.500~75.400	2010.0~2025.0	23600~24000
108.00~138.00	2110.0~2170.0	31200~31800
149.90~150.05	2200.0~2300.0	36430~36500
156.70~156.90	2310.0~2390.0	38600 以上
162.01~167.17	2483.5~2900.0	
167.72~173.20	3260.0~3267.0	

依據 NCC 低功率射頻器材技術規範 3.9 節之要求，收、發信機為成套銷售者，收、發信機應一併送審或提供經型式認證合格之對應收、發信機之送審資料；送信機之輻射電場強度不得超過第 3.6 節之發射規定，且不得接收、解調第 3.5 節所列之頻率。

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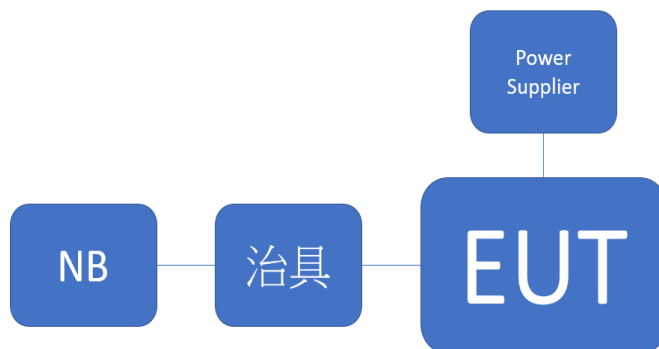
8 測試配置

8.1 待測物與測試週邊配置圖

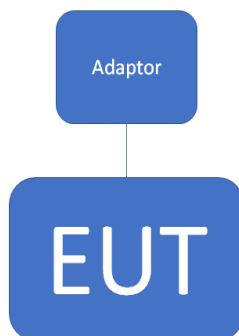
8.1.1 場強輻射量測



8.1.2 天線端傳導測試



8.1.3 AC 電源端傳導干擾



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8.2 測試週邊

編號	產品別	商標	版本	型號	序號
1.	Tera Term	N/A	Version 4.74	N/A	N/A
2.	Adaptor	HONG SHAING	N/A	MUC-5K	AC-USB012
3.	Notebook	Lenovo	N/A	T420	S0012599
4.	治具	素諾	N/A	T11 Pro	N/A
5.	Notebook	Lenovo	N/A	T470	P0001293
6.	Power Supplier	HOLA	N/A	DP-3003	D7070035

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9 量測儀器設備

9.1 AC 電源端傳導干擾之量測儀器

Radiated Emission Test Site: Conduction C					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Test Software	audix	e3	Ver. 6.11-20180419c	N.C.R	N.C.R
LISN	SCHWARZBECK Mess-Elektronik	NSLK8127	974	04/19/2021	04/18/2022
EMI Test Receiver	R&S	ESCI	101342	04/28/2021	04/27/2022
Coaxial Cable	EC Lab	RF-HY-CAB-250	RF-HY-CAB-250-01	03/27/2021	03/26/2022
Pulse Limiter	EC Lab	VTSD 9561F-N	485	03/27/2021	03/26/2022
Notebook	Lenovo	T470	P0001293	N/A	N/A
Test Software	audix	e3	20923 sgs Ver.6	N.C.R	N.C.R
Adapter	HONG SHAING	MUC-5K	AC-USB012	N.C.R	N.C.R
USB Cable	素諾	T11 Pro	USB to Type-c	N.C.R	N.C.R

9.2 天線端傳導測試之量測儀器

Conducted Emission Test Site: Conducted D					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	KEYSIGHT	N9010B	MY59071574	06/25/2021	06/25/2022
Power Meter	Anritsu	ML2496A	1804002	04/14/2021	04/13/2022
Power Sensor	Anritsu	MA2411B	1726105	04/14/2021	04/13/2022
Power Sensor	Anritsu	MA2411B	1726106	04/14/2021	04/13/2022
DC Power Supply	HOLA	DP-3003	D7070035	05/28/2021	05/27/2022
Attenuator	Marvelous	WATT- 218FS-10	RF16	11/19/2020	11/18/2021
DC Block	PASTERNAK	PE8210	RF158	11/19/2020	11/18/2021
Test Software	SGS	Radio Test Software	V21.07.29	N/A	N/A
治具	素諾	T11 Pro	N/A	N.C.R	N.C.R
Notebook	Lenovo	T420	S0012599	N/A	N/A

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9.3 量測場強輻射之量測儀器

Radiated Emission Test Site: SAC D					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Broadband Antenna	TESEQ	CBL 6112D	35240	09/08/2020	09/07/2021
Horn Antenna	Schwarzbeck	BBHA9120D	1341	06/04/2021	06/03/2022
Horn Antenna	Schwarzbeck	BBHA9170	185	07/30/2020	07/29/2021
Loop Antenna	ETS.LINDGREN	6502	143303	05/07/2021	05/06/2022
3m Site NSA	SGS	966 chamber D	N/A	07/12/2021	07/11/2022
Spectrum Analyzer	KEYSIGHT	N9010A	MY54510568	03/22/2021	03/21/2022
Pre-Amplifier	EMC Instruments	EMC184045B	980135	10/27/2020	10/26/2021
Pre-Amplifier	EMC Instruments	EMC9135	980234	11/19/2020	11/18/2021
Pre-Amplifier	EMC Instruments	EMC12630SE	980271	11/19/2020	11/18/2021
Attenuator	Marvelous	WATT-218FS-10	RF25	11/19/2020	11/18/2021
High Pass Filter	R&S	F13 HPF 3GHz	RF175	11/19/2020	11/18/2021
Lowpass Filter	Woken	EWT-56-0019	RF173	11/19/2020	11/18/2021
Notch Filter	Woken	EWT-54-0038	RF178	11/19/2020	11/18/2021
Coaxial Cable	Huber Suhner	EMC106-SM-SM-7200	150703	11/19/2020	11/18/2021
Coaxial Cable	Huber+Suhner	RG 214/U	W21.01	11/19/2020	11/18/2021
Coaxial Cable	Huber Suhner	SUCOFLEX 104	MY17413/4	11/19/2020	11/18/2021
Test Software	audix	e3	20923 sgs Ver.9	N.C.R	N.C.R
治具	素諾	T11 Pro	N/A	N.C.R	N.C.R
Adapter	HONG SHAING	MUC-5K	AC-USB012	N.C.R	N.C.R
USB Cable	Bravo-u	AM-AF 1.8M	N/A	N.C.R	N.C.R
Notebook	Lenovo	T470	P0001293	N/A	N/A

註: 以上部份設備跟量測值沒有影響，且沒有直接關聯，因此不需要進行校正。

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10 電源線傳導干擾之量測

10.1 適用標準

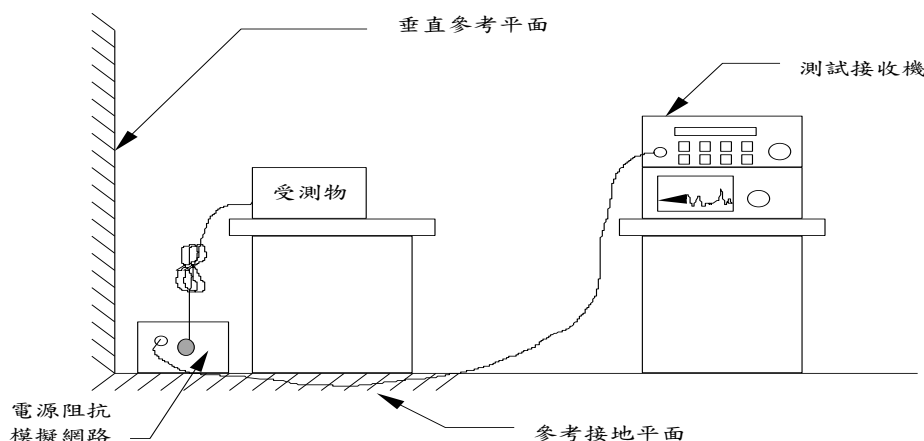
依據NCC低功率射頻器材技術規範之3.3節，以市電為電源之低功率射頻器材，其傳導回電源線上頻率自150 kHz~30 百萬赫(MHz) 之射頻電壓(在電源端子每一電源線對接地點)應小於或等於下表所列之限制值。測量時應經過50 微亨利(uH)及50 歐姆(Ω)之電源線阻抗穩定網路。頻率重疊處，以較低限制值為準。

頻率(MHz)	傳導限制值 (dBuV)	
	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

10.2 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的峰值量側(Peak)並提供掃描圖, Mark 最大的六個頻率點進行準峰值量測(QP),如果準峰值QP結果值已低於AV限制值時將不再進行AV值的量測。

10.3 測試配置



10.4 干擾值之計算

電源傳導干擾電壓之計算公式 =

儀器讀值(QP/AV) + 校正因子 (饋線損失 + 電源阻抗模擬網路損失)

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10.5 傳導干擾之量測結果

Report Number :E2/2021/70029

Test Site :Conduction Room C

Test Mode :System

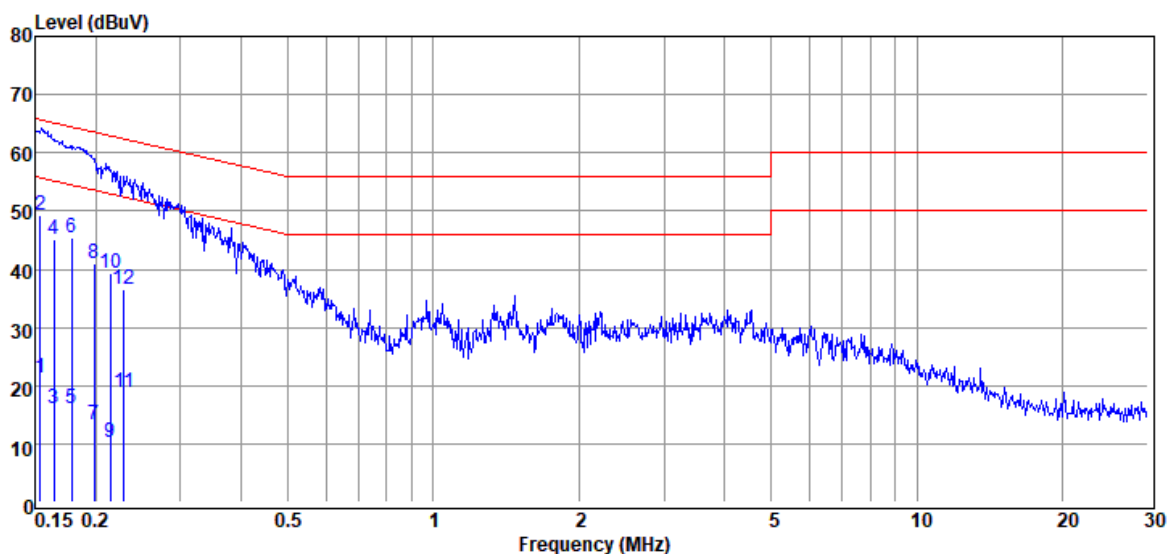
Test Date :2021-07-27

Power :110V/60Hz

Temp./Humi. :23.8/58

Probe :L1

Engineer :Jack Tseng



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV	Limit dBUV	Margin dB
0.15	Average	10.91	10.30	21.21	55.80	-34.59
0.15	QP	39.03	10.30	49.33	65.80	-16.47
0.16	Average	5.67	10.30	15.97	55.26	-39.29
0.16	QP	34.74	10.30	45.04	65.26	-20.22
0.18	Average	5.84	10.30	16.14	54.55	-38.41
0.18	QP	35.11	10.30	45.41	64.55	-19.14
0.20	Average	3.10	10.30	13.40	53.68	-40.28
0.20	QP	30.77	10.30	41.07	63.68	-22.61
0.21	Average	-0.06	10.30	10.24	53.03	-42.79
0.21	QP	29.03	10.30	39.33	63.03	-23.70
0.23	Average	8.40	10.30	18.70	52.47	-33.77
0.23	QP	26.12	10.30	36.42	62.47	-26.05

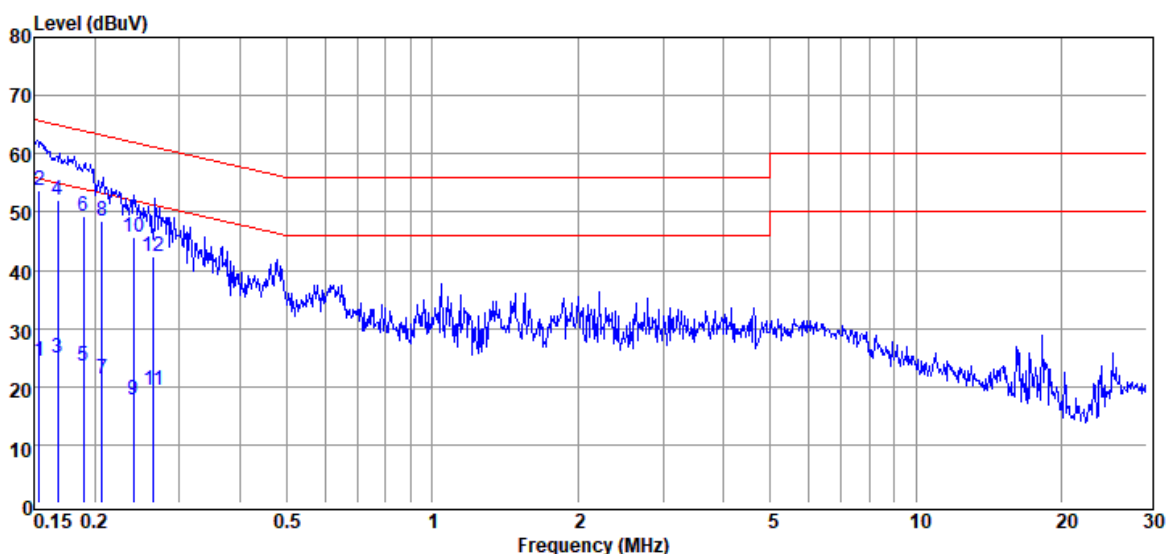
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Report Number :E2/2021/70029
Test Mode :System
Power :110V/60Hz
Probe :N

Test Site :Conduction Room C
Test Date :2021-07-27
Temp./Humi. :23.8/58
Engineer :Jack Tseng



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV	Limit dBUV	Margin dB
0.15	Average	14.18	10.31	24.49	55.80	-31.31
0.15	QP	43.49	10.31	53.80	65.80	-12.00
0.17	Average	14.51	10.31	24.82	55.06	-30.24
0.17	QP	41.66	10.31	51.97	65.06	-13.09
0.19	Average	13.24	10.30	23.54	54.03	-30.49
0.19	QP	38.91	10.30	49.21	64.03	-14.82
0.21	Average	11.08	10.30	21.38	53.32	-31.94
0.21	QP	38.17	10.30	48.47	63.32	-14.85
0.24	Average	7.41	10.30	17.71	52.08	-34.37
0.24	QP	35.46	10.30	45.76	62.08	-16.32
0.26	Average	9.08	10.31	19.39	51.28	-31.89
0.26	QP	32.18	10.31	42.49	61.28	-18.79

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11 場強輻射之量測

11.1 適用標準

依據NCC低功率射頻器材技術規範3.6 之要求，低功率射頻器材其電場強度應小於或等於下表之限制值，且其不必要之發射皆不得大於主波發射強度，此外，落於3.5禁用頻段之輻射發射，應符合3.6之規定。

Frequency (MHz)	Field strength (microvolts/meter)	Distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

11.2 量測方法

將待測物置於非金屬桌面，測試頻率1GHz以下時，使用桌高0.8 米，1GHz以上時，使用桌高1.5米，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。

以下為頻譜儀的設定：

頻率	RBW	VBW	Detector
9kHz~150kHz	300Hz	300Hz	Quasi-Peak
150kHz~30MHz	10kHz	10kHz	Quasi-Peak
1GHz以下	100kHz	100kHz	Peak / Quasi-Peak
1GHz以上	1MHz	3MHz	Peak
1GHz以上 Duty Cycle $\geq$ 98%	1MHz	10Hz	Average
1GHz以上 Duty Cycle < 98%	1MHz	1/T	Average

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11.3 場強計算

1. Distance extrapolation = $40 \cdot \log (\text{Required Distance(m)} / \text{Test Distance(m)})$
2. Emission level (dB μ V/m) = $20 \log \text{Emission level } (\mu\text{V/m})$
3. Actual FS(dB μ V/m) = SPA. Reading level(dB μ V) + Factor(dB)
Factor(dB) = Antenna Factor(dB μ V/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

註:

9 kHz ~ 30MHz 之輻射量測皆低於限制值 20dB 以上，依據LP0002 6.13規定混附發射毋需記錄。
輻射量測僅放最差模式（30MHz 以上）。

比較 H Plane、E1 Plane 和 E2 Plane 測試值後，附上最差模式數據。

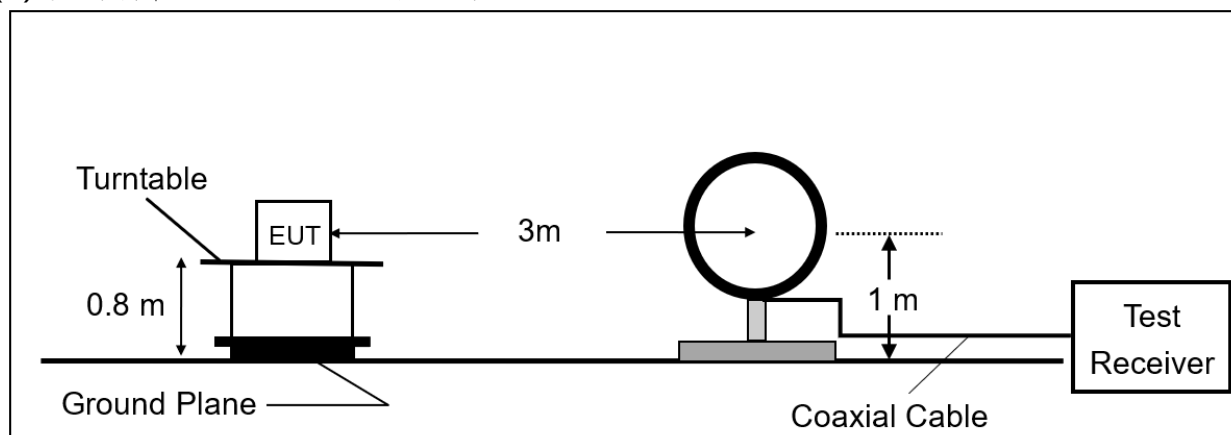
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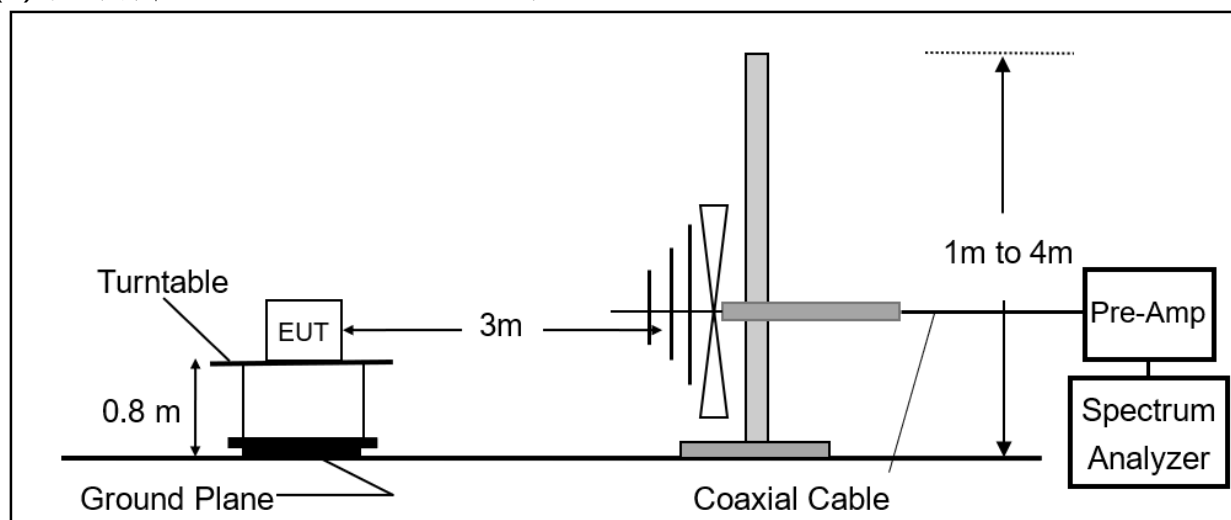
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11.4 輻射之測試配置

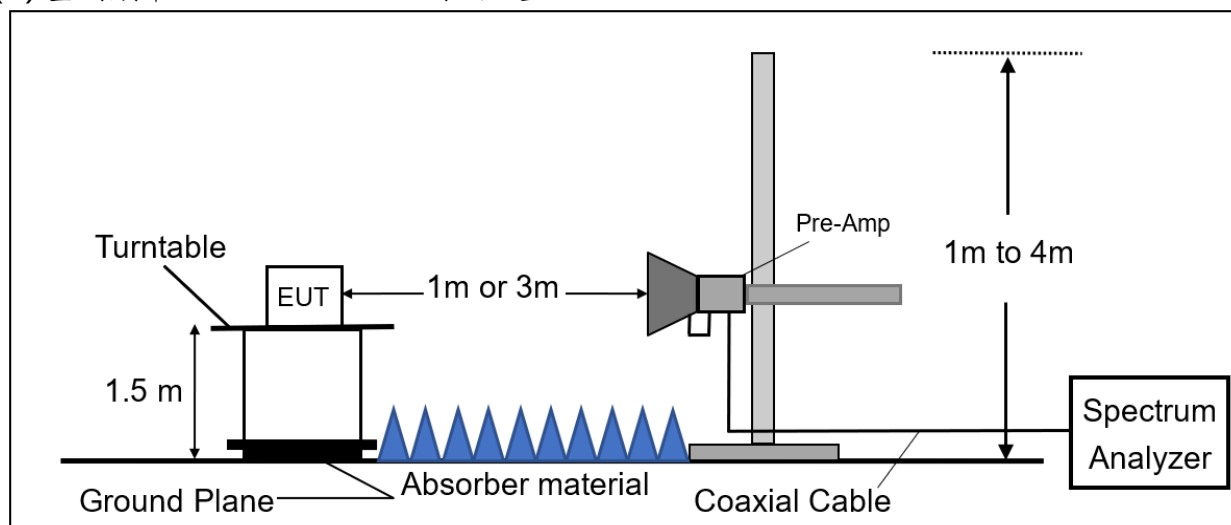
(A) 量測頻率低於 30MHz 以下之測試配置



(B) 量測頻率 30MHz 至 1000MHz 之測試配置



(C) 量測頻率 1000MHz 以上之測試配置



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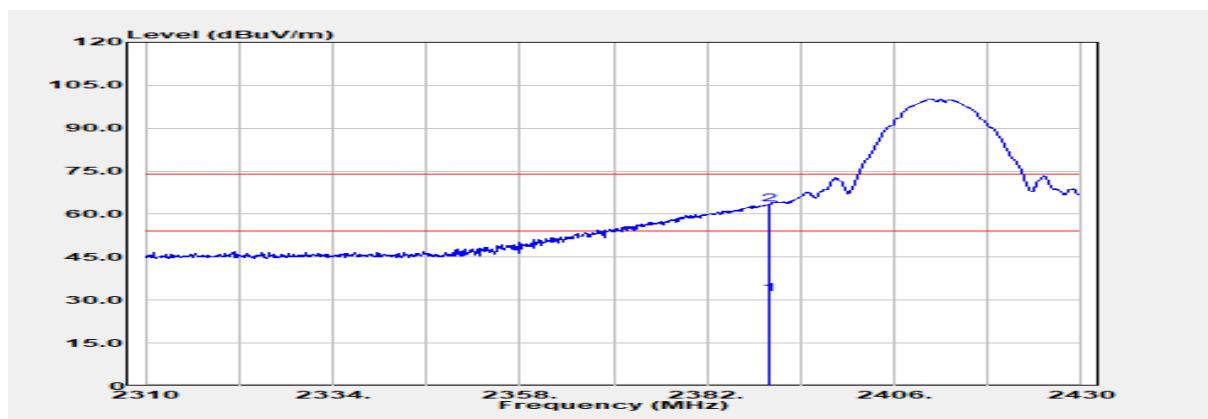
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11.5 場強輻射之量測結果

11.5.1 禁用頻帶輻射量測值

Report Number :E2/2021/70029
Operation Mode :802.11b
Test Frequency :2412 MHz
Test Mode :BE CH LOW
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-23
Temp./Humi. :21.8/70
Antenna Pol. :Vertical
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2390.000	Average	39.94	-7.89	32.05	54.00	-21.95
2390.000	Peak	71.46	-7.89	63.57	74.00	-10.43

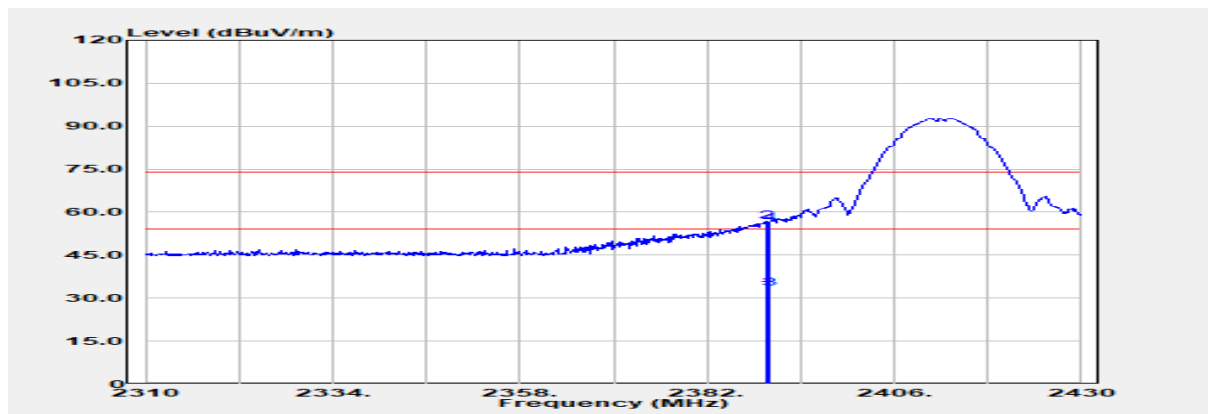
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Report Number :E2/2021/70029
Operation Mode :802.11b
Test Frequency :2412 MHz
Test Mode :BE CH LOW
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-23
Temp./Humi. :21.8/70
Antenna Pol. :Horizontal
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
2389.560	Average	40.74	-7.87	32.87	54.00	-21.13
2389.560	Peak	64.79	-7.87	56.92	74.00	-17.08
2390.000	Average	41.32	-7.89	33.43	54.00	-20.57
2390.000	Peak	63.98	-7.89	56.09	74.00	-17.91

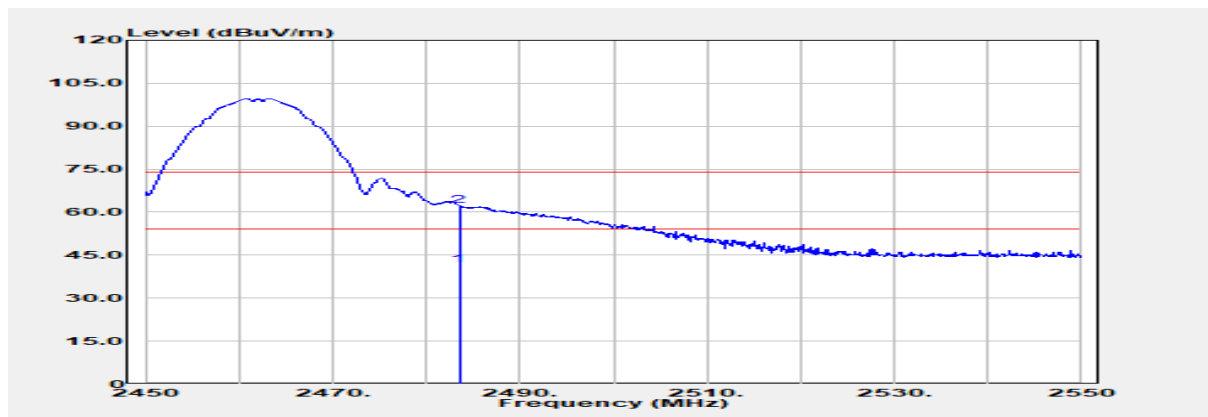
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Report Number :E2/2021/70029
Operation Mode :802.11b
Test Frequency :2462 MHz
Test Mode :BE CH HIGH
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-23
Temp./Humi. :21.8/70
Antenna Pol. :Vertical
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
2483.500	Average	49.65	-8.15	41.50	54.00	-12.50
2483.500	Peak	70.32	-8.15	62.17	74.00	-11.83

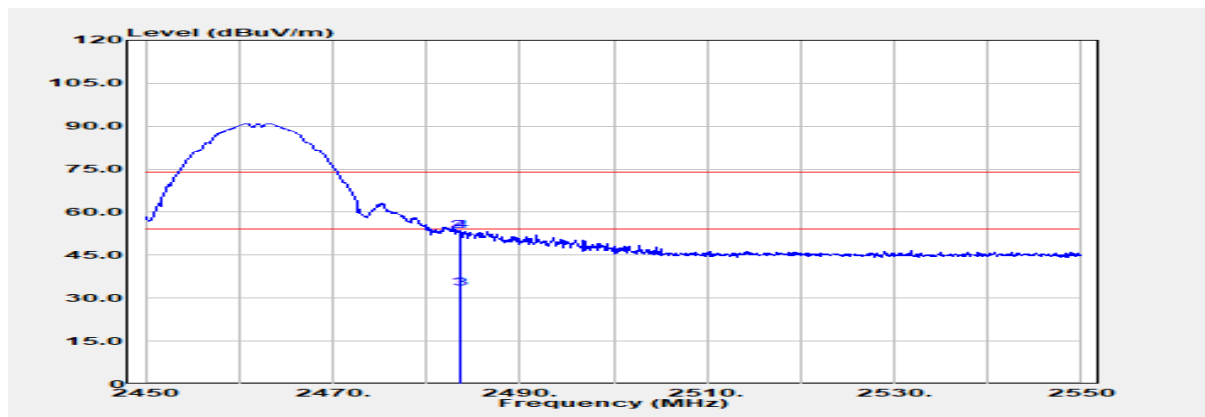
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Report Number :E2/2021/70029
Operation Mode :802.11b
Test Frequency :2462 MHz
Test Mode :BE CH HIGH
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-23
Temp./Humi. :21.8/70
Antenna Pol. :Horizontal
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
2483.500	Average	41.73	-8.15	33.57	54.00	-20.43
2483.500	Peak	61.58	-8.15	53.43	74.00	-20.57
2483.600	Average	41.53	-8.15	33.38	54.00	-20.62
2483.600	Peak	61.73	-8.15	53.58	74.00	-20.42

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Report Number :E2/2021/70029

Test Site :SAC D

Operation Mode :802.11g

Test Date :2021-07-23

Test Frequency :2412 MHz

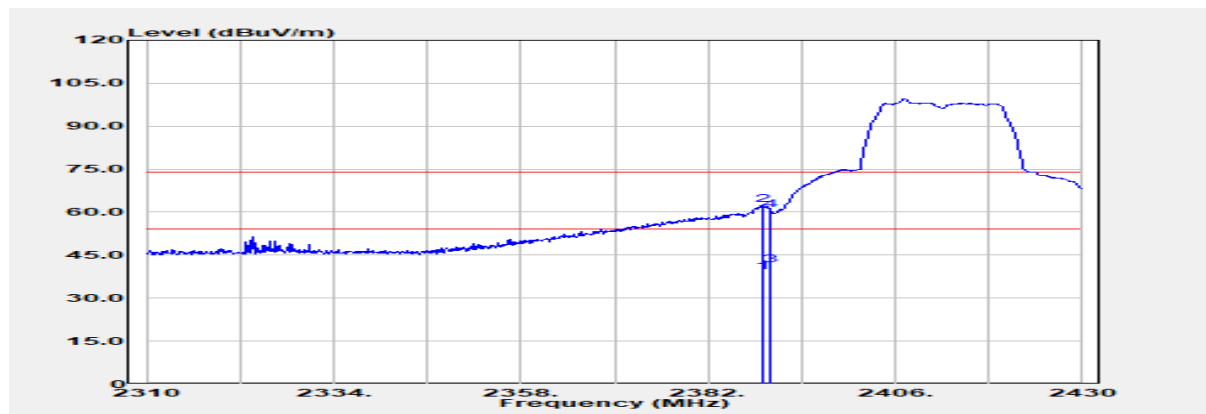
Temp./Humi. :21.8/70

Test Mode :BE CH LOW

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
2389.080	Average	47.09	-7.86	39.23	54.00	-14.77
2389.080	Peak	70.33	-7.86	62.47	74.00	-11.53
2390.000	Average	49.45	-7.89	41.56	54.00	-12.44
2390.000	Peak	68.72	-7.89	60.83	74.00	-13.17

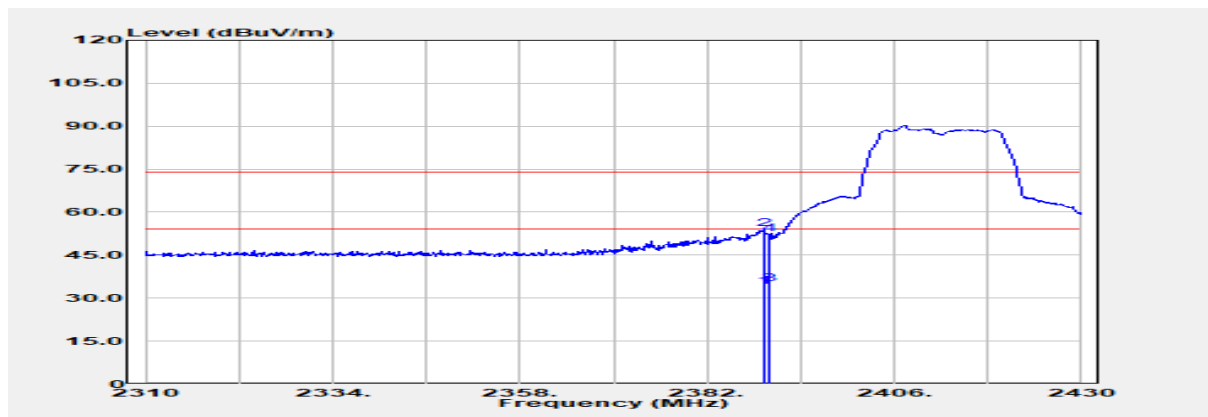
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Report Number :E2/2021/70029
Operation Mode :802.11g
Test Frequency :2412 MHz
Test Mode :BE CH LOW
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-23
Temp./Humi. :21.8/70
Antenna Pol. :Horizontal
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
2389.200	Average	41.97	-7.86	34.10	54.00	-19.90
2389.200	Peak	62.14	-7.86	54.28	74.00	-19.72
2390.000	Average	42.80	-7.89	34.91	54.00	-19.09
2390.000	Peak	60.18	-7.89	52.30	74.00	-21.70

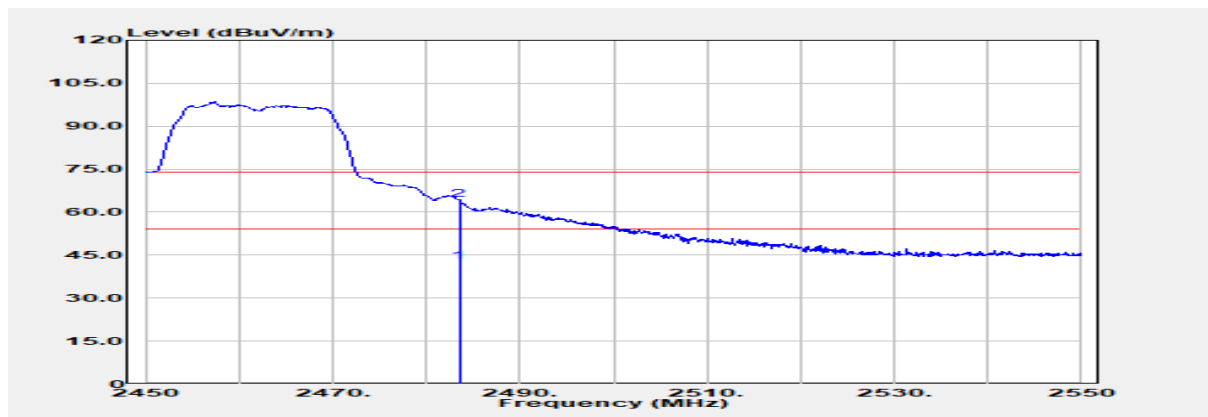
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Report Number :E2/2021/70029
Operation Mode :802.11g
Test Frequency :2462 MHz
Test Mode :BE CH HIGH
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-23
Temp./Humi. :21.8/70
Antenna Pol. :Vertical
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2483.500	Average	50.84	-8.15	42.68	54.00	-11.32
2483.500	Peak	72.38	-8.15	64.23	74.00	-9.77

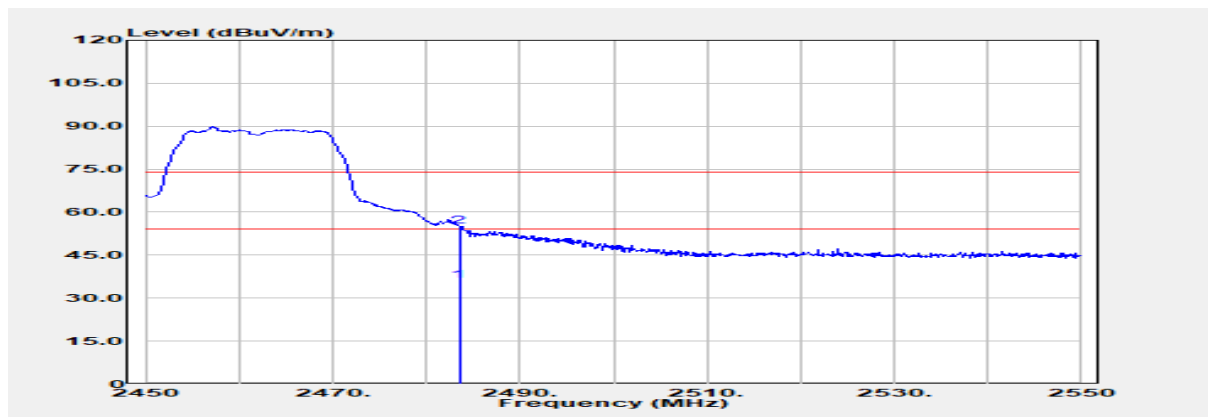
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Report Number :E2/2021/70029
Operation Mode :802.11g
Test Frequency :2462 MHz
Test Mode :BE CH HIGH
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-23
Temp./Humi. :21.8/70
Antenna Pol. :Horizontal
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
2483.500	Average	44.20	-8.15	36.05	54.00	-17.95
2483.500	Peak	63.25	-8.15	55.10	74.00	-18.90

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Report Number :E2/2021/70029

Test Site :SAC D

Operation Mode :802.11n20

Test Date :2021-07-23

Test Frequency :2412 MHz

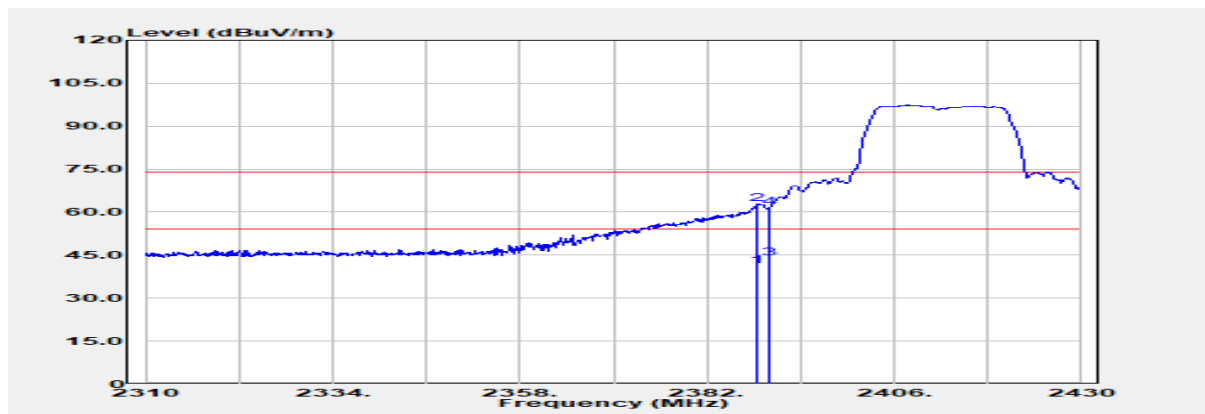
Temp./Humi. :21.8/70

Test Mode :BE CH LOW

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
2388.480	Average	49.18	-7.84	41.34	54.00	-12.66
2388.480	Peak	70.74	-7.84	62.89	74.00	-11.11
2390.000	Average	51.85	-7.89	43.96	54.00	-10.04
2390.000	Peak	69.59	-7.89	61.70	74.00	-12.30

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Report Number :E2/2021/70029

Test Site :SAC D

Operation Mode :802.11n20

Test Date :2021-07-23

Test Frequency :2412 MHz

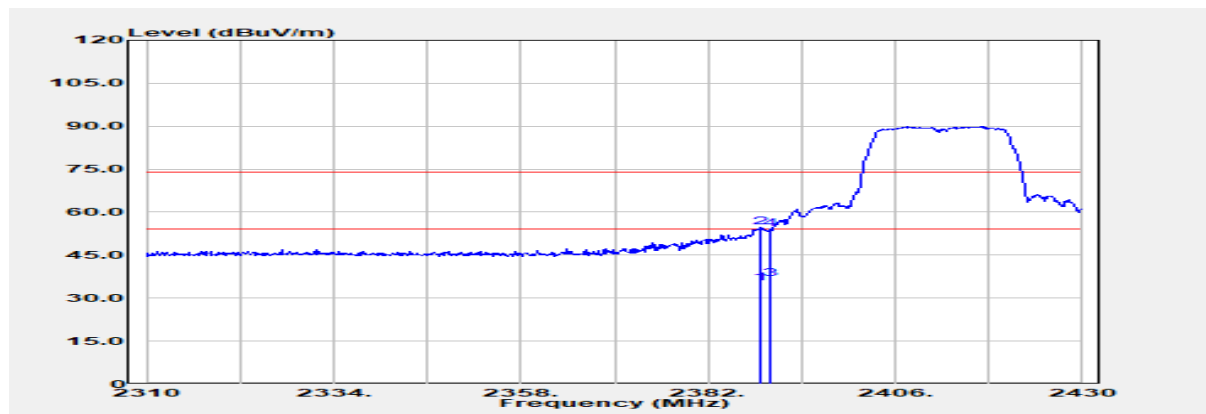
Temp./Humi. :21.8/70

Test Mode :BE CH LOW

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
2388.720	Average	43.13	-7.85	35.28	54.00	-18.72
2388.720	Peak	62.61	-7.85	54.76	74.00	-19.24
2390.000	Average	44.43	-7.89	36.55	54.00	-17.45
2390.000	Peak	61.92	-7.89	54.04	74.00	-19.96

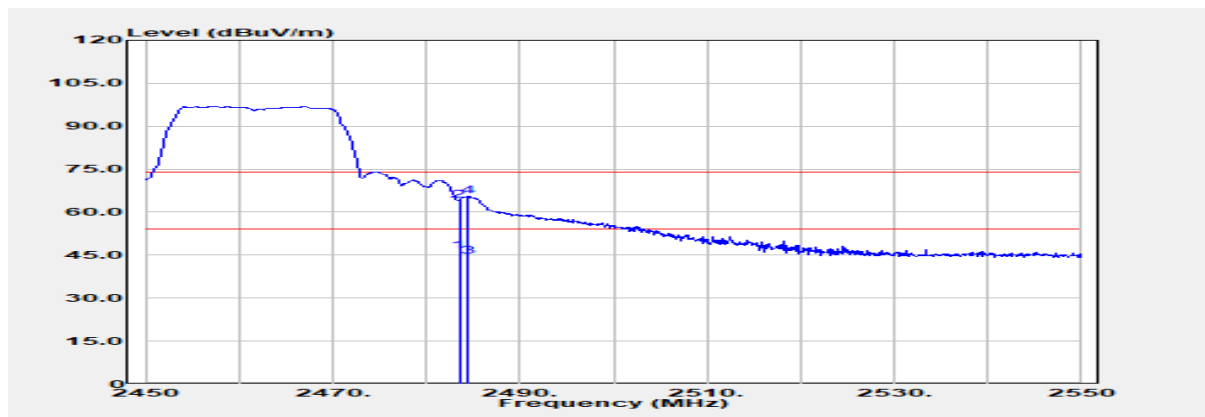
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Report Number :E2/2021/70029
Operation Mode :802.11n20
Test Frequency :2462 MHz
Test Mode :BE CH HIGH
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-23
Temp./Humi. :21.8/70
Antenna Pol. :Vertical
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
2483.500	Average	54.33	-8.15	46.18	54.00	-7.82
2483.500	Peak	72.15	-8.15	64.00	74.00	-10.00
2484.300	Average	52.68	-8.15	44.53	54.00	-9.47
2484.300	Peak	73.66	-8.15	65.50	74.00	-8.50

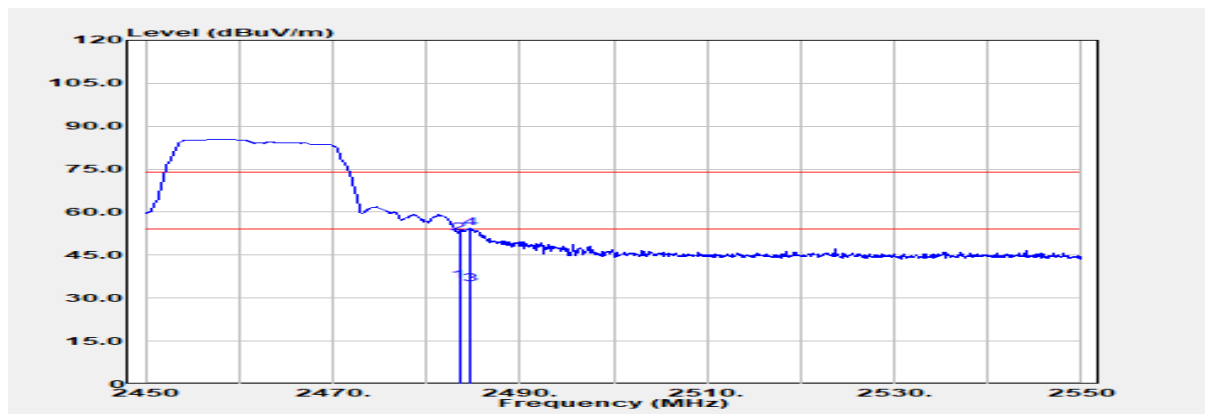
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Report Number :E2/2021/70029
Operation Mode :802.11n20
Test Frequency :2462 MHz
Test Mode :BE CH HIGH
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-23
Temp./Humi. :21.8/70
Antenna Pol. :Horizontal
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
2483.500	Average	44.32	-8.15	36.16	54.00	-17.84
2483.500	Peak	60.86	-8.15	52.70	74.00	-21.30
2484.700	Average	43.05	-8.16	34.89	54.00	-19.11
2484.700	Peak	62.66	-8.16	54.51	74.00	-19.49

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11.5.2 發射模式 1GHz 以下測試 (最差模式)

Report Number :E2/2021/70029

Test Site :SAC D

Operation Mode :802.11g

Test Date :2021-07-26

Test Frequency :2437 MHz

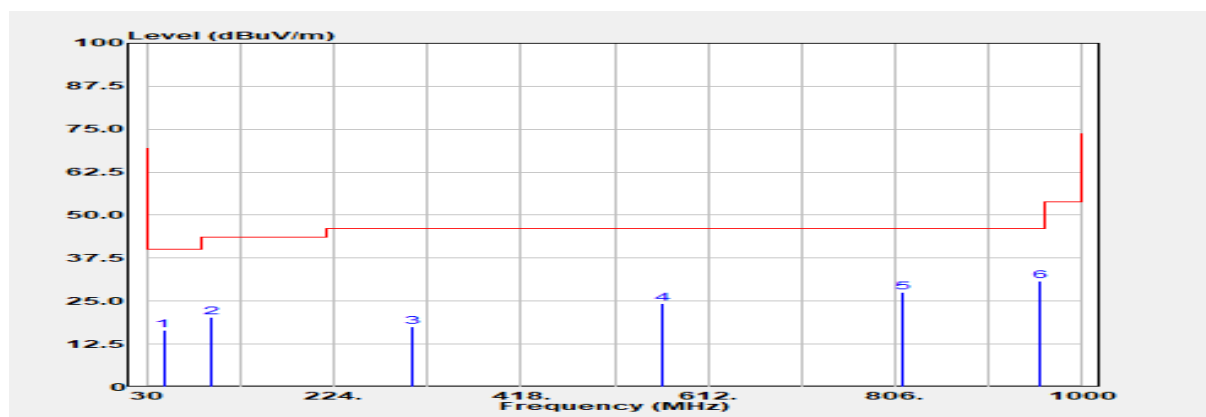
Temp./Humi. :21.7/66

Test Mode :TX CH MID

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
47.460	Peak	34.01	-17.54	16.47	40.00	-23.53
97.900	Peak	42.75	-22.38	20.37	43.50	-23.13
305.480	Peak	33.45	-15.97	17.47	46.00	-28.53
564.470	Peak	34.74	-10.43	24.31	46.00	-21.69
812.790	Peak	34.19	-6.68	27.51	46.00	-18.49
956.350	Peak	35.63	-4.91	30.72	46.00	-15.28

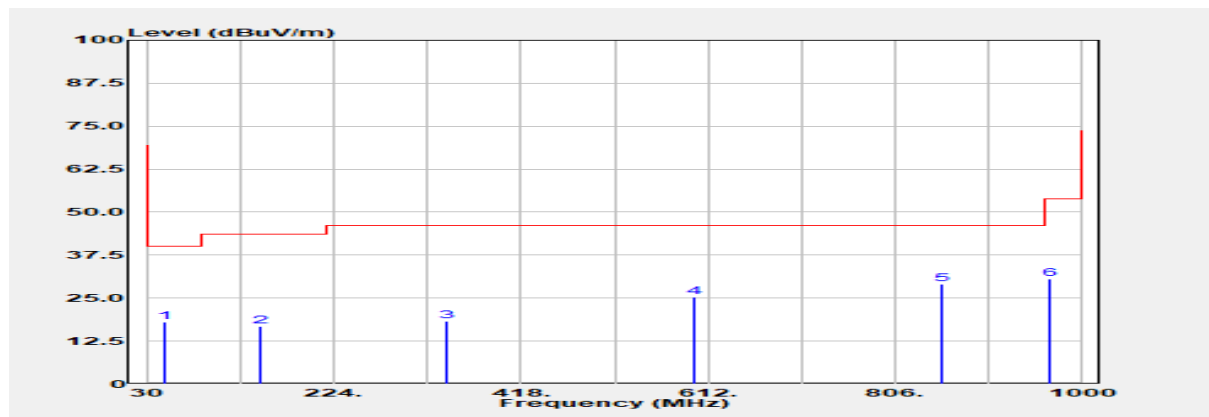
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Report Number :E2/2021/70029
Operation Mode :802.11g
Test Frequency :2437 MHz
Test Mode :TX CH MID
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-26
Temp./Humi. :21.7/66
Antenna Pol. :Horizontal
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
48.430	Peak	35.81	-17.64	18.17	40.00	-21.83
147.370	Peak	33.55	-16.81	16.74	43.50	-26.76
341.370	Peak	33.72	-15.30	18.42	46.00	-27.58
597.450	Peak	34.37	-8.98	25.39	46.00	-20.61
855.470	Peak	34.88	-5.75	29.13	46.00	-16.87
967.020	Peak	34.88	-4.40	30.48	54.00	-23.52

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Fully System

Report Number :E2/2021/70029

Test Site :SAC D

Operation Mode :System

Test Date :2021-07-26

Test Frequency :System

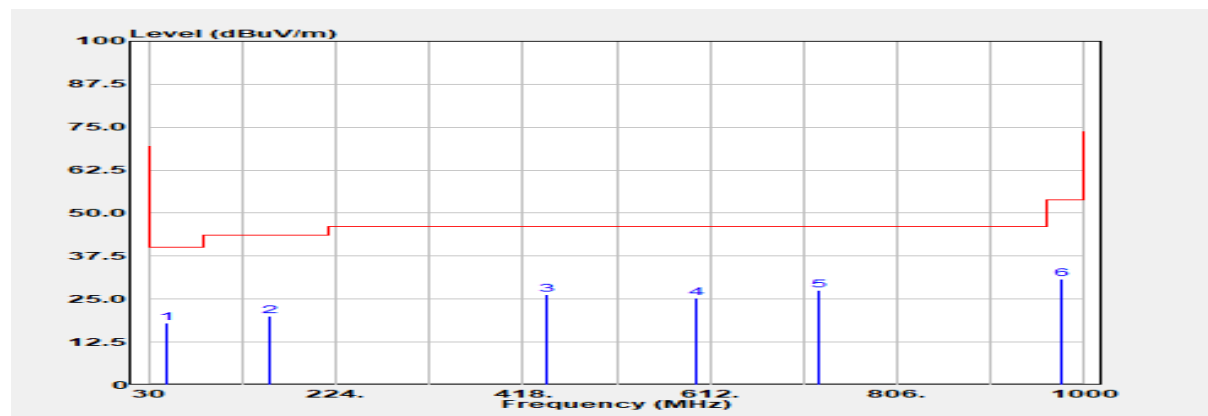
Temp./Humi. :21.7/66

Test Mode :System

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Jack Tseng



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
48.430	Peak	35.65	-17.64	18.01	40.00	-21.99
155.130	Peak	36.79	-16.70	20.10	43.50	-23.40
443.220	Peak	38.89	-12.62	26.26	46.00	-19.74
596.480	Peak	34.25	-9.03	25.22	46.00	-20.78
724.520	Peak	34.95	-7.41	27.54	46.00	-18.46
976.720	Peak	35.37	-4.49	30.88	54.00	-23.12

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Report Number :E2/2021/70029

Test Site :SAC D

Operation Mode :System

Test Date :2021-07-26

Test Frequency :System

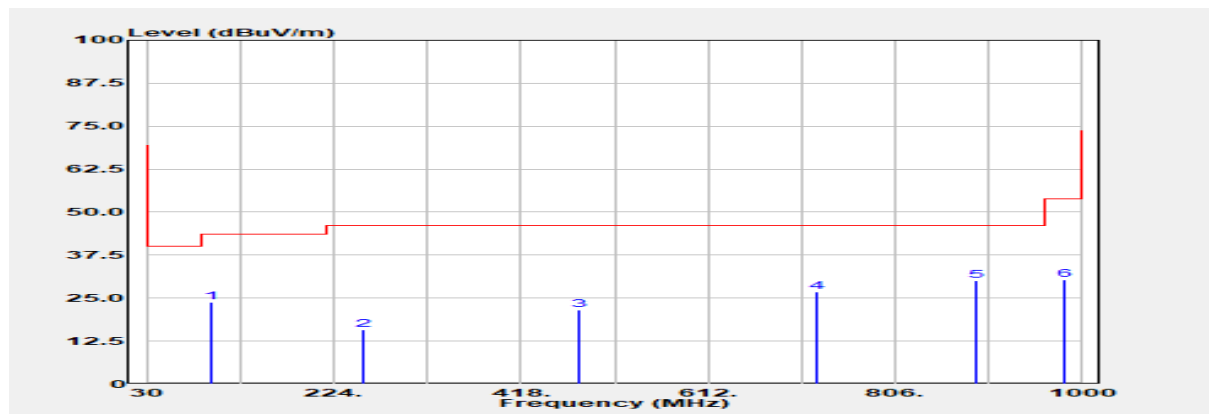
Temp./Humi. :21.7/66

Test Mode :System

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Jack Tseng



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
97.900	Peak	46.18	-22.38	23.80	43.50	-19.70
255.040	Peak	33.45	-17.75	15.70	46.00	-30.30
477.170	Peak	33.43	-11.80	21.63	46.00	-24.37
724.520	Peak	34.19	-7.41	26.79	46.00	-19.21
889.420	Peak	35.91	-5.91	30.00	46.00	-16.00
980.600	Peak	34.86	-4.64	30.22	54.00	-23.78

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11.5.3 發射模式 1GHz 以上測試

Report Number :E2/2021/70029

Test Site :SAC D

Operation Mode :802.11b

Test Date :2021-07-23

Test Frequency :2412 MHz

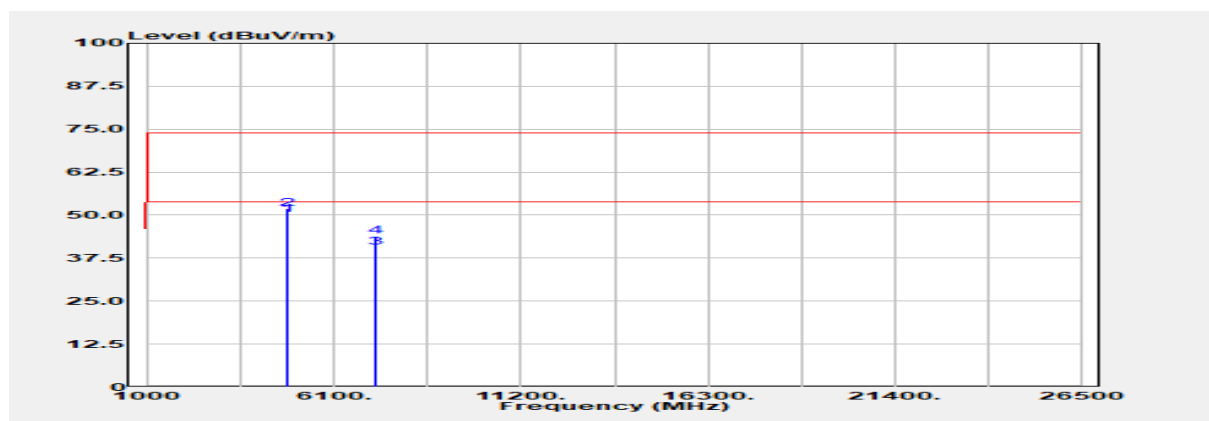
Temp./Humi. :21.8/70

Test Mode :TX CH LOW

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
4824.000	Average	53.27	-3.18	50.10	54.00	-3.90
4824.000	Peak	54.96	-3.18	51.78	74.00	-22.22
7236.000	Average	38.25	2.41	40.66	54.00	-13.34
7236.000	Peak	41.43	2.41	43.84	74.00	-30.16

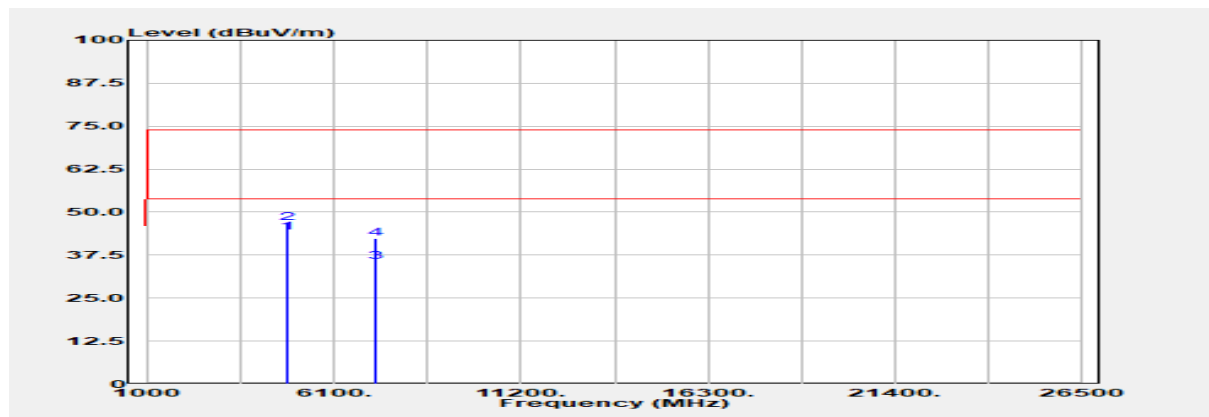
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Report Number :E2/2021/70029
Operation Mode :802.11b
Test Frequency :2412 MHz
Test Mode :TX CH LOW
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-23
Temp./Humi. :21.8/70
Antenna Pol. :Horizontal
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
4824.000	Average	47.32	-3.18	44.15	54.00	-9.85
4824.000	Peak	50.08	-3.18	46.91	74.00	-27.09
7236.000	Average	33.11	2.41	35.52	54.00	-18.48
7236.000	Peak	39.83	2.41	42.24	74.00	-31.76

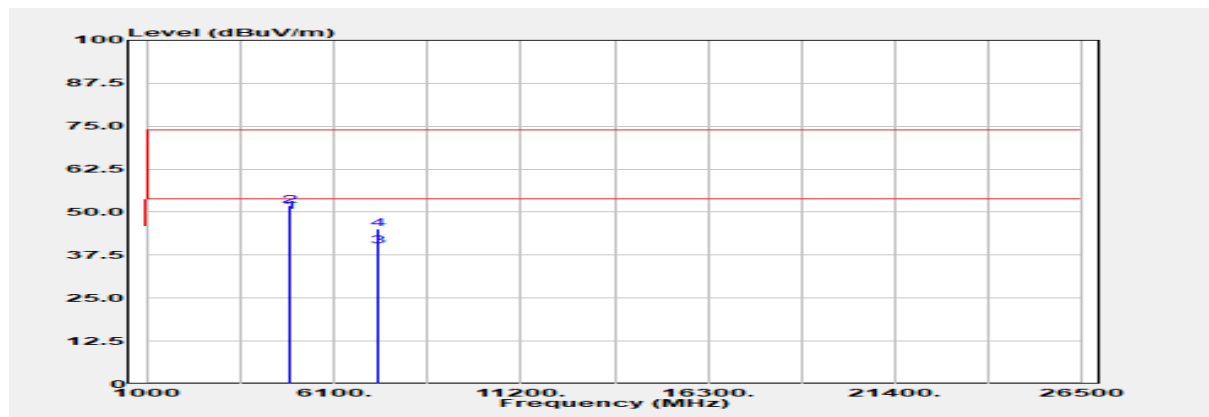
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Report Number :E2/2021/70029
Operation Mode :802.11b
Test Frequency :2437 MHz
Test Mode :TX CH MID
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-23
Temp./Humi. :21.8/70
Antenna Pol. :Vertical
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
4874.000	Average	53.27	-3.05	50.22	54.00	-3.78
4874.000	Peak	54.82	-3.05	51.76	74.00	-22.24
7311.000	Average	36.31	3.91	40.22	54.00	-13.78
7311.000	Peak	41.23	3.91	45.14	74.00	-28.86

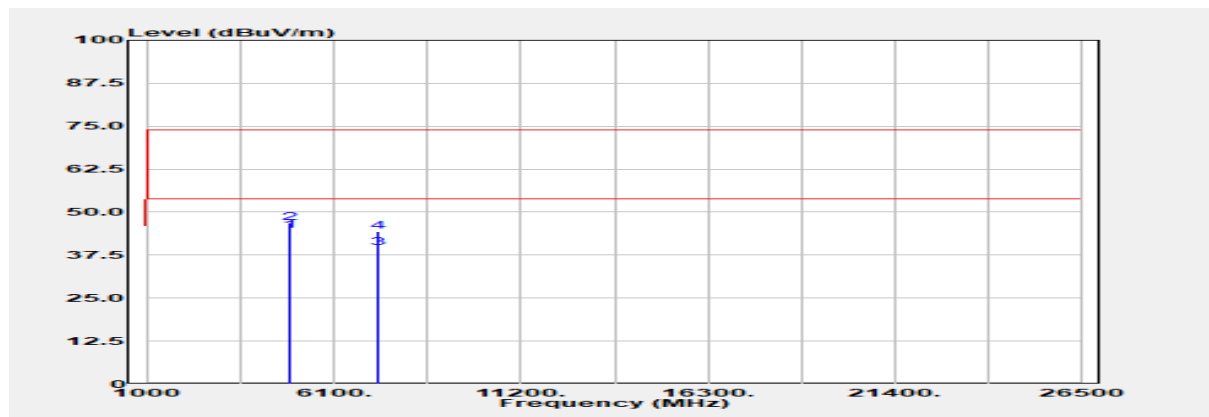
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Report Number :E2/2021/70029
Operation Mode :802.11b
Test Frequency :2437 MHz
Test Mode :TX CH MID
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-24
Temp./Humi. :21.8/70
Antenna Pol. :Horizontal
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
4874.000	Average	47.64	-3.05	44.59	54.00	-9.41
4874.000	Peak	49.93	-3.05	46.88	74.00	-27.12
7311.000	Average	35.66	3.91	39.57	54.00	-14.43
7311.000	Peak	40.43	3.91	44.33	74.00	-29.67

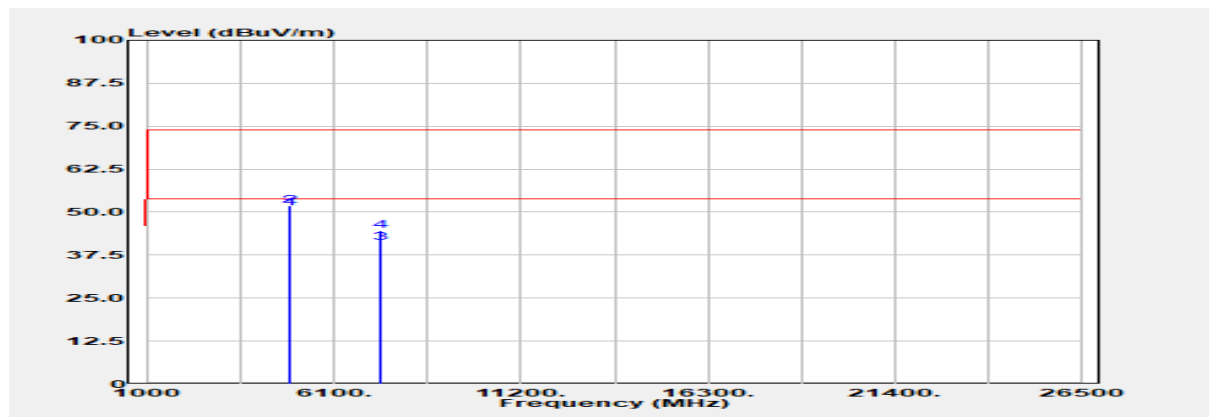
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Report Number :E2/2021/70029
Operation Mode :802.11b
Test Frequency :2462 MHz
Test Mode :TX CH HIGH
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-24
Temp./Humi. :21.8/70
Antenna Pol. :Vertical
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
4924.000	Average	54.24	-3.21	51.03	54.00	-2.97
4924.000	Peak	54.98	-3.21	51.77	74.00	-22.23
7386.000	Average	37.76	3.24	41.00	54.00	-13.00
7386.000	Peak	41.42	3.24	44.66	74.00	-29.34

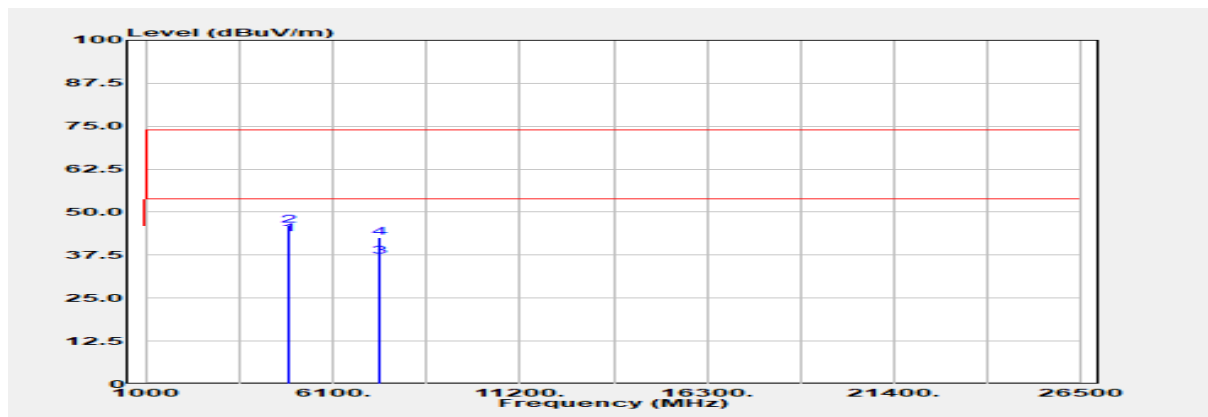
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Report Number :E2/2021/70029
Operation Mode :802.11b
Test Frequency :2462 MHz
Test Mode :TX CH HIGH
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-24
Temp./Humi. :21.8/70
Antenna Pol. :Horizontal
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
4924.000	Average	46.79	-3.21	43.58	54.00	-10.42
4924.000	Peak	49.40	-3.21	46.19	74.00	-27.81
7386.000	Average	33.89	3.24	37.13	54.00	-16.87
7386.000	Peak	39.31	3.24	42.55	74.00	-31.45

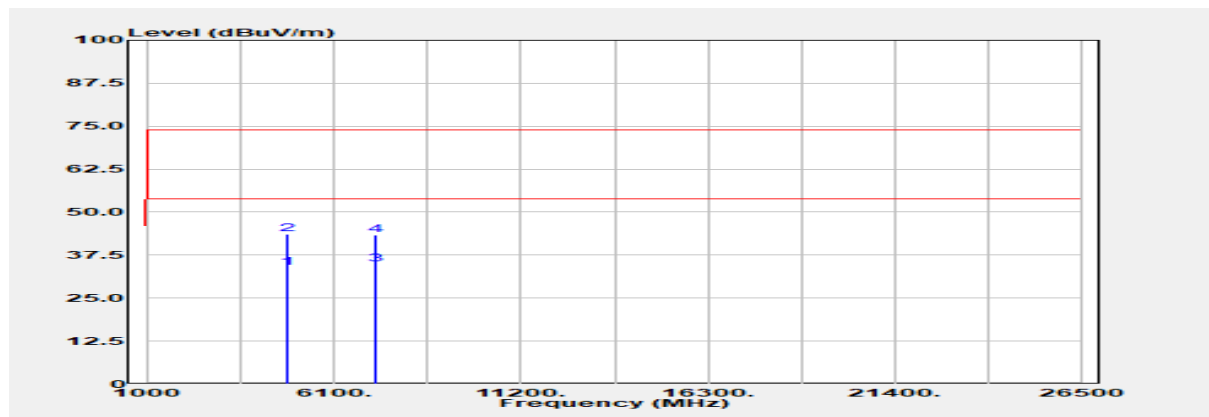
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Report Number :E2/2021/70029
Operation Mode :802.11g
Test Frequency :2412 MHz
Test Mode :TX CH LOW
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-24
Temp./Humi. :21.8/70
Antenna Pol. :Vertical
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
4824.000	Average	37.10	-3.18	33.92	54.00	-20.08
4824.000	Peak	46.80	-3.18	43.63	74.00	-30.37
7236.000	Average	32.43	2.41	34.84	54.00	-19.16
7236.000	Peak	40.88	2.41	43.30	74.00	-30.70

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Report Number :E2/2021/70029

Test Site :SAC D

Operation Mode :802.11g

Test Date :2021-07-24

Test Frequency :2412 MHz

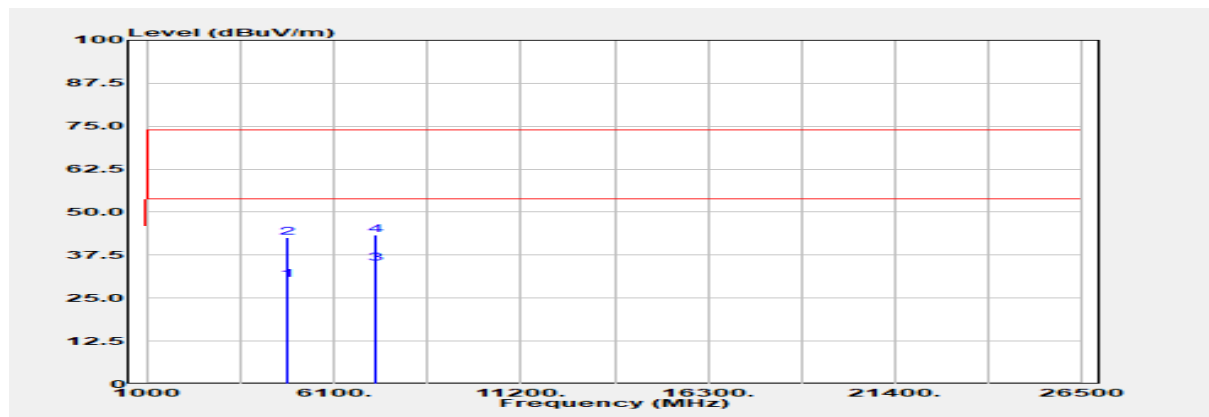
Temp./Humi. :21.8/70

Test Mode :TX CH LOW

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
4824.000	Average	33.59	-3.18	30.41	54.00	-23.59
4824.000	Peak	45.70	-3.18	42.52	74.00	-31.48
7236.000	Average	32.68	2.41	35.09	54.00	-18.91
7236.000	Peak	41.00	2.41	43.41	74.00	-30.59

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Report Number :E2/2021/70029

Test Site :SAC D

Operation Mode :802.11g

Test Date :2021-07-24

Test Frequency :2437 MHz

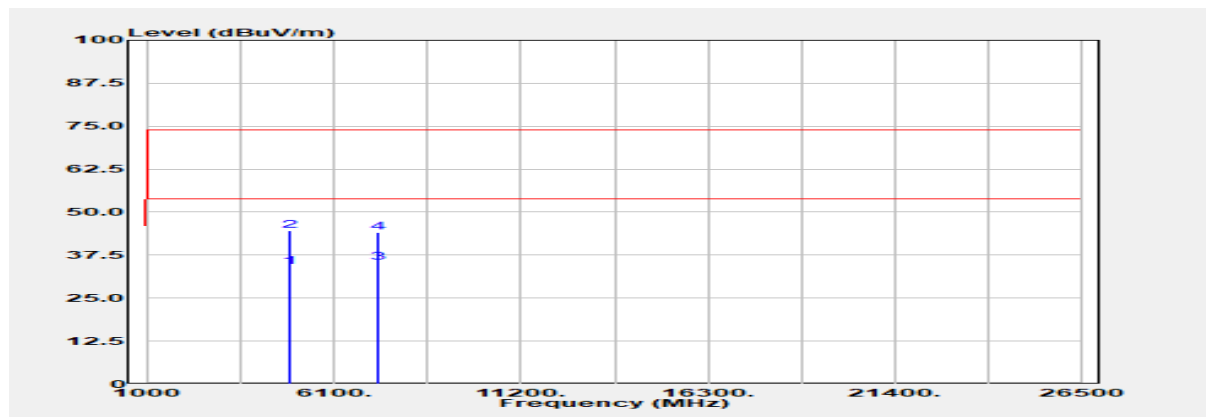
Temp./Humi. :21.8/70

Test Mode :TX CH MID

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
4874.000	Average	37.05	-3.05	34.00	54.00	-20.00
4874.000	Peak	47.78	-3.05	44.73	74.00	-29.27
7311.000	Average	31.55	3.91	35.46	54.00	-18.54
7311.000	Peak	40.13	3.91	44.03	74.00	-29.97

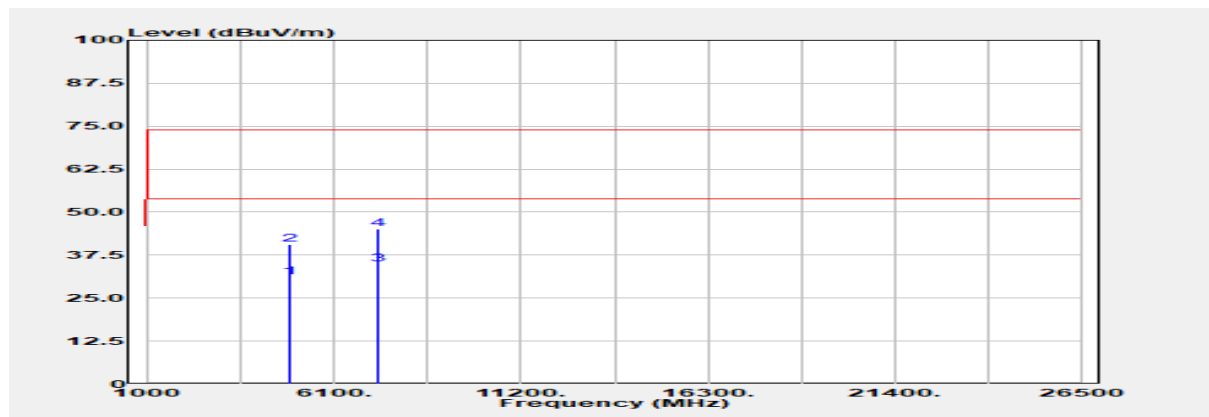
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Report Number :E2/2021/70029
Operation Mode :802.11g
Test Frequency :2437 MHz
Test Mode :TX CH MID
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-24
Temp./Humi. :21.8/70
Antenna Pol. :Horizontal
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
4874.000	Average	34.11	-3.05	31.06	54.00	-22.94
4874.000	Peak	43.73	-3.05	40.68	74.00	-33.32
7311.000	Average	30.84	3.91	34.75	54.00	-19.25
7311.000	Peak	41.29	3.91	45.19	74.00	-28.81

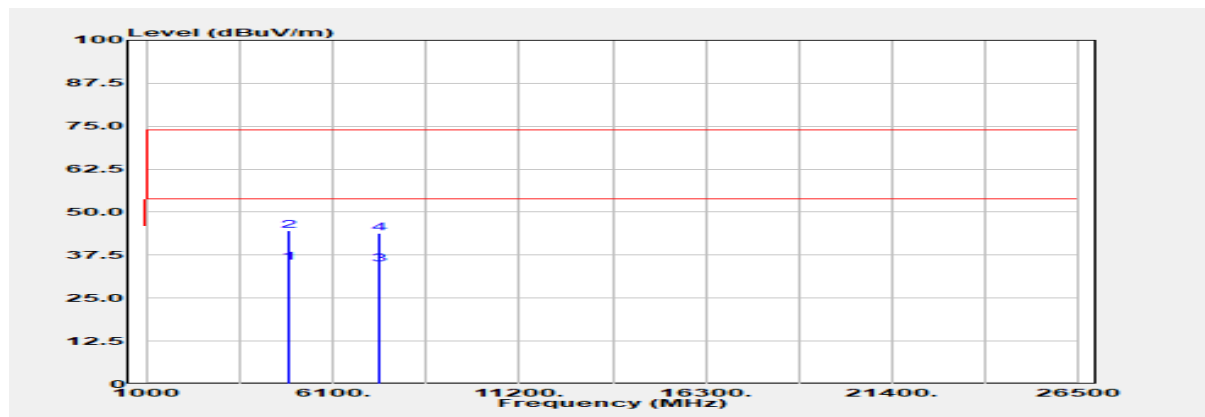
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Report Number :E2/2021/70029
Operation Mode :802.11g
Test Frequency :2462 MHz
Test Mode :TX CH HIGH
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-26
Temp./Humi. :21.7/66
Antenna Pol. :Vertical
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
4924.000	Average	38.66	-3.21	35.45	54.00	-18.55
4924.000	Peak	47.92	-3.21	44.71	74.00	-29.29
7386.000	Average	31.58	3.24	34.82	54.00	-19.18
7386.000	Peak	40.50	3.24	43.74	74.00	-30.26

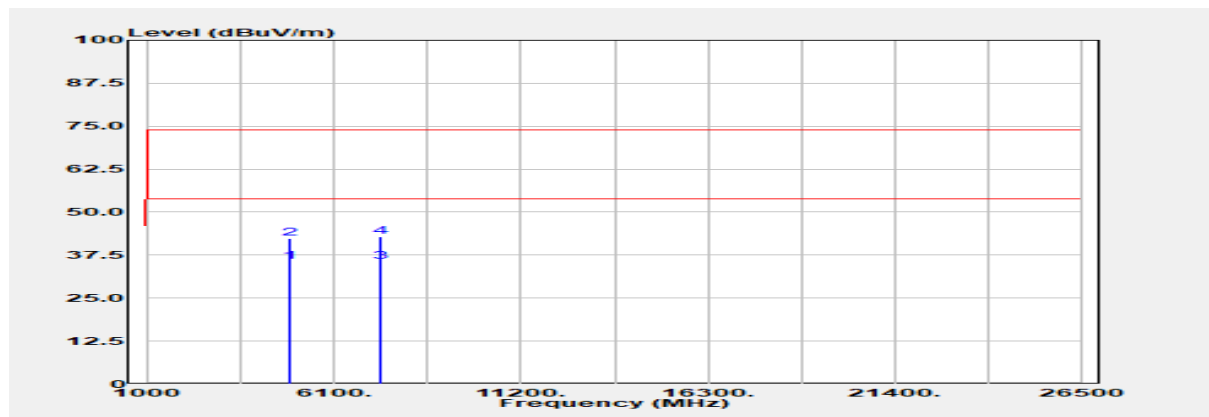
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Report Number :E2/2021/70029
Operation Mode :802.11g
Test Frequency :2462 MHz
Test Mode :TX CH HIGH
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-26
Temp./Humi. :21.7/66
Antenna Pol. :Horizontal
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
4924.000	Average	38.68	-3.21	35.47	54.00	-18.53
4924.000	Peak	45.53	-3.21	42.32	74.00	-31.68
7386.000	Average	32.44	3.24	35.68	54.00	-18.32
7386.000	Peak	39.50	3.24	42.74	74.00	-31.26

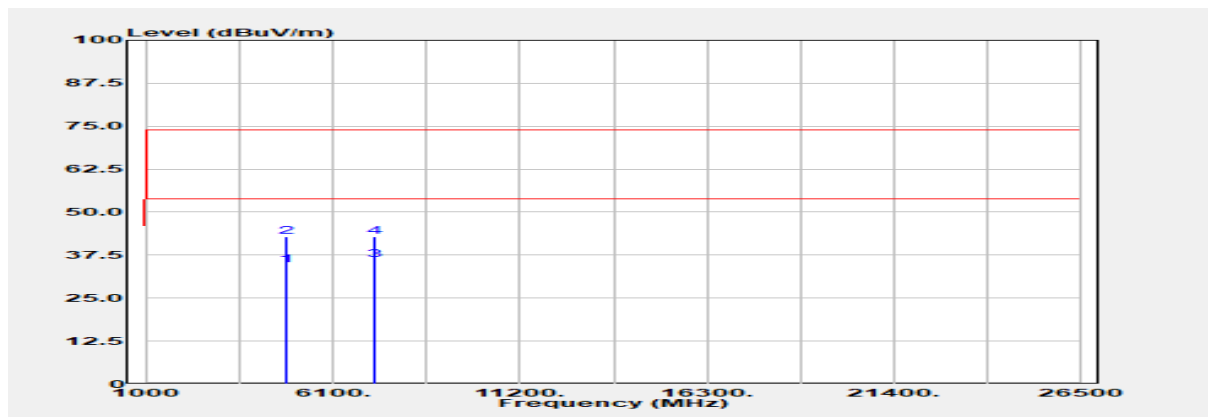
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Report Number :E2/2021/70029
Operation Mode :802.11n20
Test Frequency :2412 MHz
Test Mode :TX CH LOW
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-26
Temp./Humi. :21.7/66
Antenna Pol. :Vertical
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
4824.000	Average	37.66	-3.18	34.48	54.00	-19.52
4824.000	Peak	45.94	-3.18	42.76	74.00	-31.24
7236.000	Average	33.56	2.41	35.97	54.00	-18.03
7236.000	Peak	40.54	2.41	42.95	74.00	-31.05

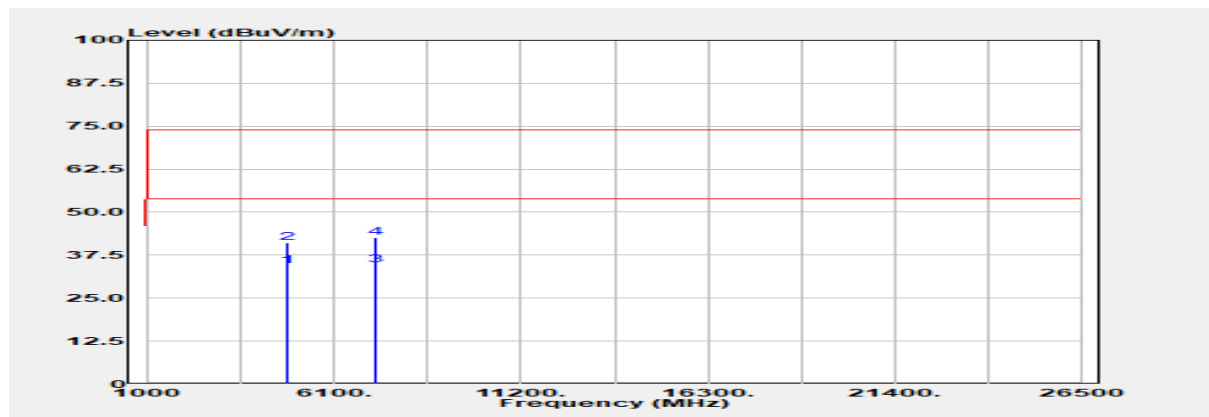
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Report Number :E2/2021/70029
Operation Mode :802.11n20
Test Frequency :2412 MHz
Test Mode :TX CH LOW
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-26
Temp./Humi. :21.7/66
Antenna Pol. :Horizontal
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
4824.000	Average	37.58	-3.18	34.40	54.00	-19.60
4824.000	Peak	44.18	-3.18	41.00	74.00	-33.00
7236.000	Average	32.16	2.41	34.57	54.00	-19.43
7236.000	Peak	40.10	2.41	42.51	74.00	-31.49

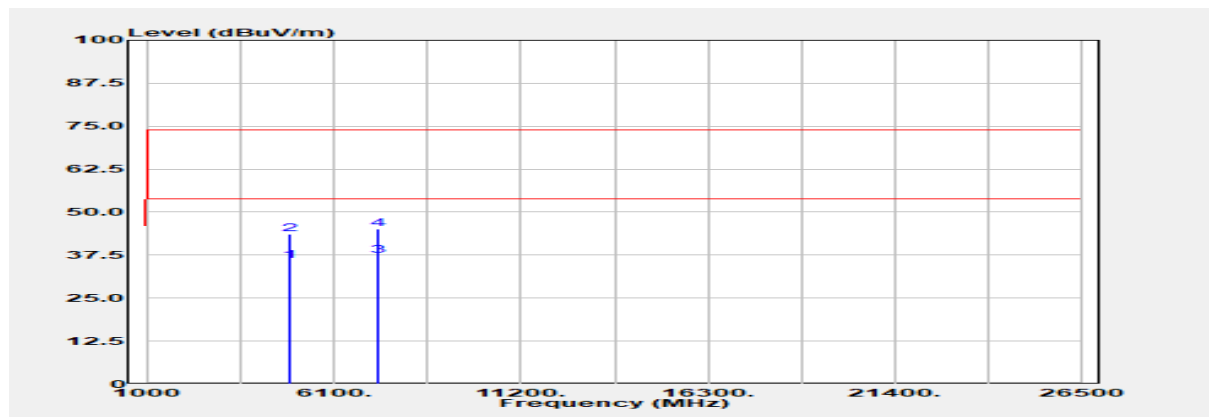
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Report Number :E2/2021/70029
Operation Mode :802.11n20
Test Frequency :2437 MHz
Test Mode :TX CH MID
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-26
Temp./Humi. :21.7/66
Antenna Pol. :Vertical
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
4874.000	Average	38.85	-3.05	35.80	54.00	-18.20
4874.000	Peak	46.70	-3.05	43.65	74.00	-30.35
7311.000	Average	33.52	3.91	37.43	54.00	-16.57
7311.000	Peak	41.11	3.91	45.02	74.00	-28.98

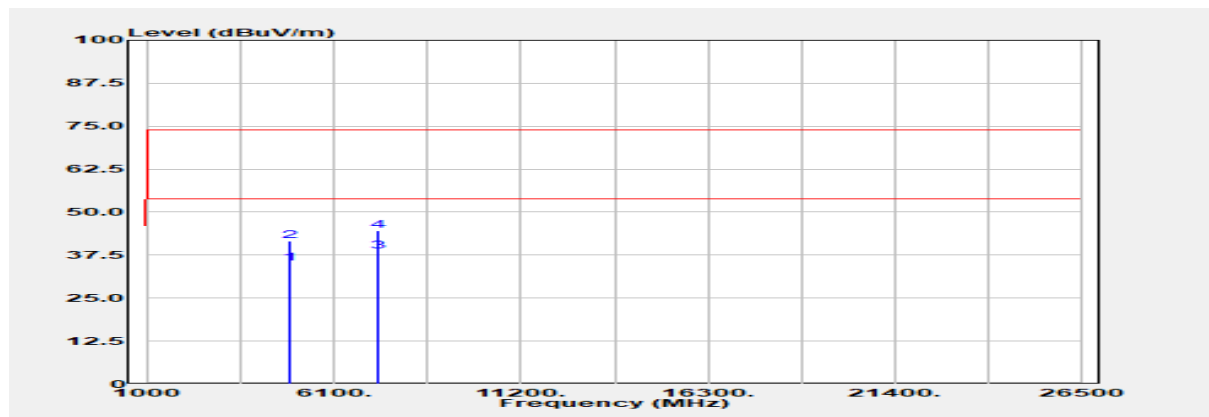
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Report Number :E2/2021/70029
Operation Mode :802.11n20
Test Frequency :2437 MHz
Test Mode :TX CH MID
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-26
Temp./Humi. :21.7/66
Antenna Pol. :Horizontal
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
4874.000	Average	38.24	-3.05	35.18	54.00	-18.82
4874.000	Peak	44.77	-3.05	41.72	74.00	-32.28
7311.000	Average	34.58	3.91	38.49	54.00	-15.51
7311.000	Peak	40.71	3.91	44.61	74.00	-29.39

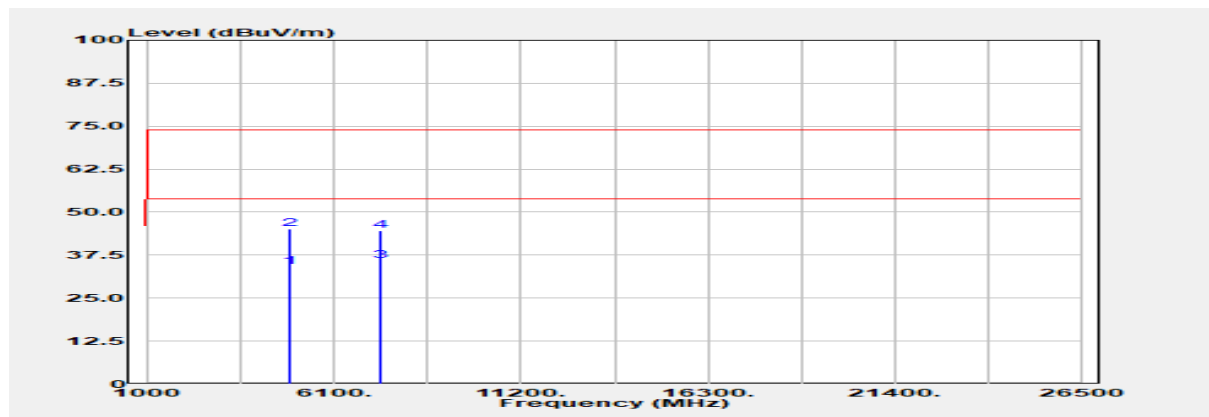
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Report Number :E2/2021/70029
Operation Mode :802.11n20
Test Frequency :2462 MHz
Test Mode :TX CH HIGH
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-26
Temp./Humi. :21.7/66
Antenna Pol. :Vertical
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
4924.000	Average	37.26	-3.21	34.05	54.00	-19.95
4924.000	Peak	48.35	-3.21	45.14	74.00	-28.86
7386.000	Average	32.55	3.24	35.79	54.00	-18.21
7386.000	Peak	41.35	3.24	44.59	74.00	-29.41

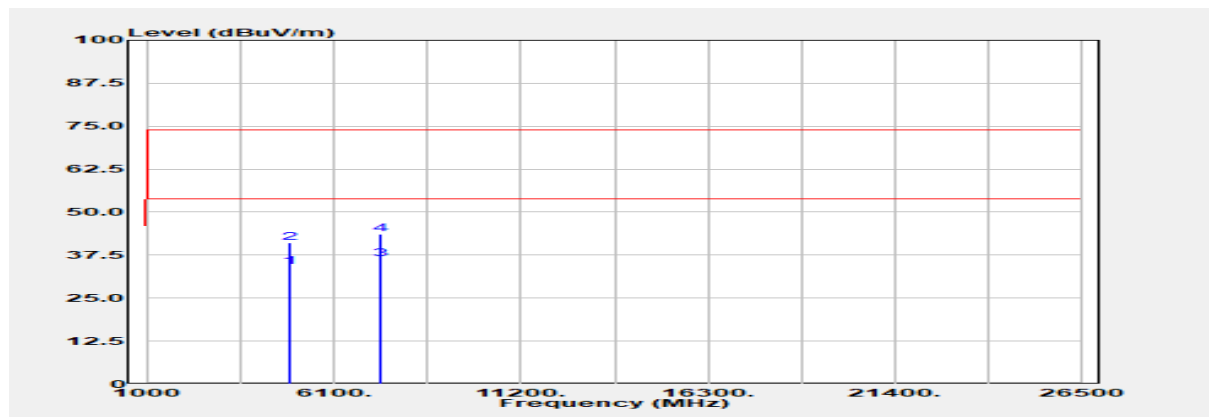
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Report Number :E2/2021/70029
Operation Mode :802.11n20
Test Frequency :2462 MHz
Test Mode :TX CH HIGH
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-26
Temp./Humi. :21.7/66
Antenna Pol. :Horizontal
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
4924.000	Average	37.36	-3.21	34.15	54.00	-19.85
4924.000	Peak	44.19	-3.21	40.98	74.00	-33.02
7386.000	Average	33.18	3.24	36.42	54.00	-17.58
7386.000	Peak	40.40	3.24	43.64	74.00	-30.36

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11.5.4 接收機場強輻射之量測結果(1GHz 以下) (最差模式)

Report Number :E2/2021/70029

Test Site :SAC D

Operation Mode :802.11g

Test Date :2021-07-26

Test Frequency :2437 MHz

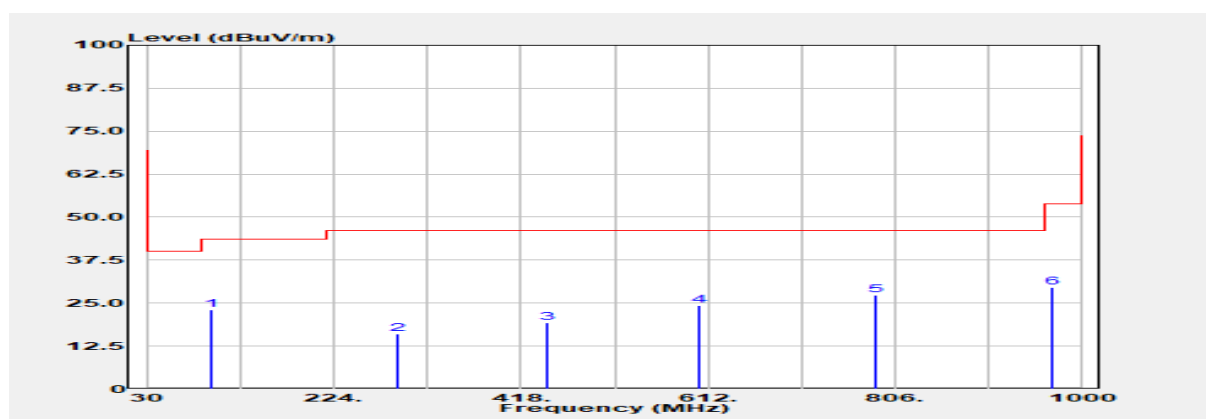
Temp./Humi. :21.7/66

Test Mode :RX CH MID

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
97.900	Peak	45.42	-22.38	23.03	43.50	-20.47
290.930	Peak	32.34	-16.35	15.99	46.00	-30.01
444.190	Peak	31.98	-12.64	19.34	46.00	-26.66
603.270	Peak	32.99	-8.74	24.25	46.00	-21.75
786.600	Peak	34.40	-7.13	27.26	46.00	-18.74
968.960	Peak	33.65	-4.04	29.61	54.00	-24.39

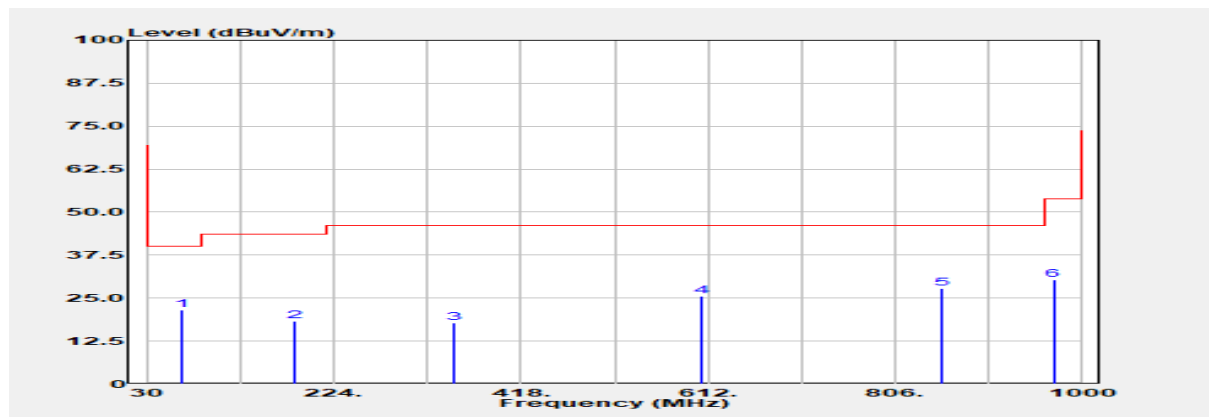
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Report Number :E2/2021/70029
Operation Mode :802.11g
Test Frequency :2437 MHz
Test Mode :RX CH MID
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-26
Temp./Humi. :21.7/66
Antenna Pol. :Horizontal
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
65.890	Peak	40.33	-18.80	21.53	40.00	-18.47
184.230	Peak	36.91	-18.71	18.21	43.50	-25.29
349.130	Peak	33.18	-15.30	17.88	46.00	-28.12
604.240	Peak	34.37	-8.70	25.66	46.00	-20.34
855.470	Peak	33.59	-5.75	27.84	46.00	-18.16
969.930	Peak	34.07	-3.85	30.21	54.00	-23.79

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11.5.5 接收機場強輻射之量測結果(1GHz 以上) (最差模式)

Report Number :E2/2021/70029

Test Site :SAC D

Operation Mode :802.11g

Test Date :2021-07-26

Test Frequency :2437 MHz

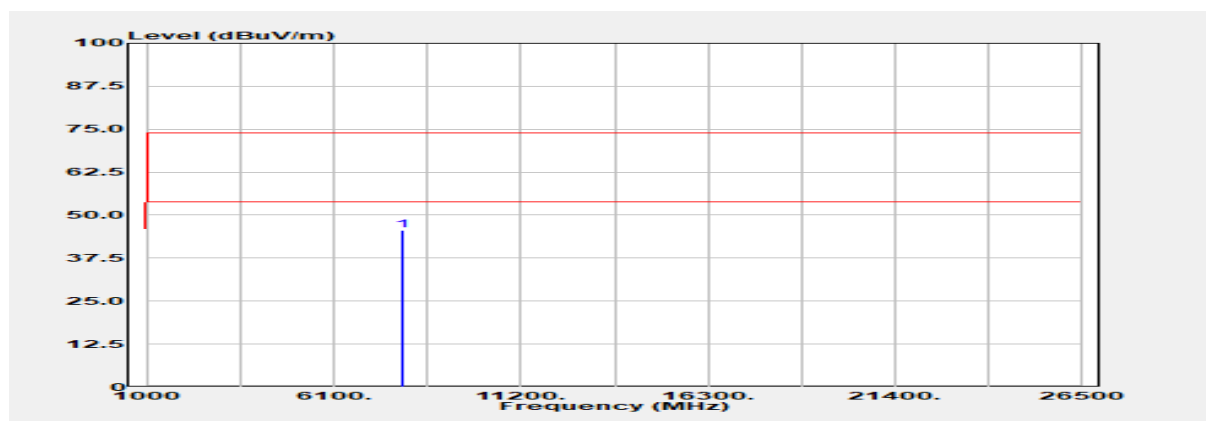
Temp./Humi. :21.7/66

Test Mode :RX CH MID

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	Factor dB	Actual FS dBuV/m	Limit @3m dBuV/m	Margin dB
7965.000	Peak	41.18	4.50	45.69	74.00	-28.31

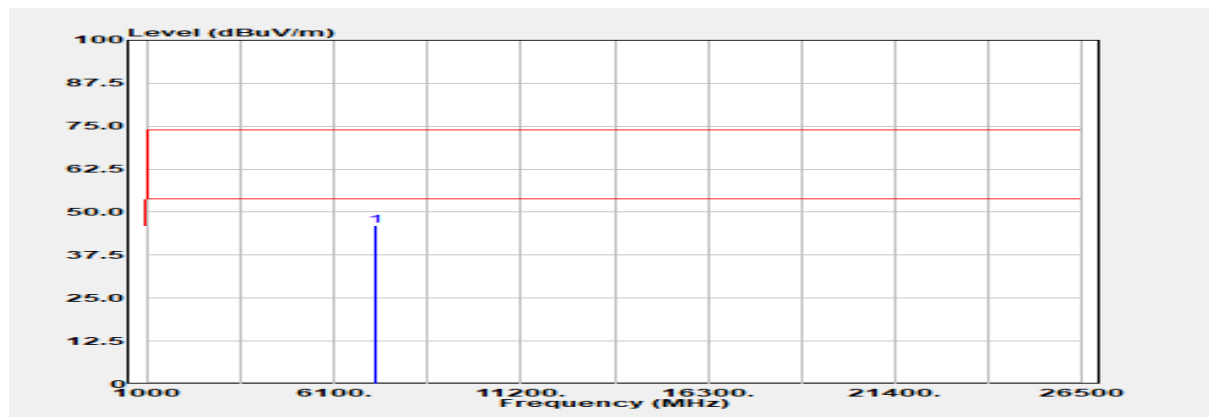
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Report Number :E2/2021/70029
Operation Mode :802.11g
Test Frequency :2437 MHz
Test Mode :RX CH MID
EUT Pol :H Plane

Test Site :SAC D
Test Date :2021-07-26
Temp./Humi. :21.7/66
Antenna Pol. :Horizontal
Engineer :Andy Wang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBUV	Factor dB	Actual FS dBUV/m	Limit @3m dBUV/m	Margin dB
7265.000	Peak	42.95	3.18	46.14	74.00	-27.86

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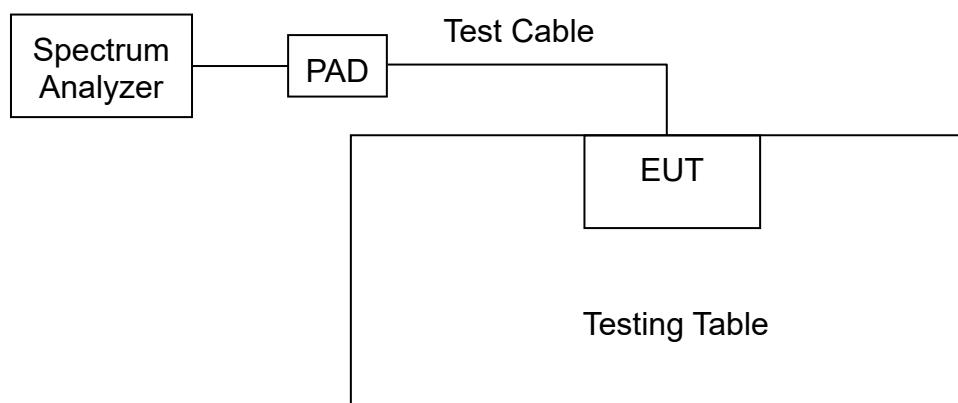
12 發射頻寬之要求

12.1 適用標準

對使用數位調變技術之低功率發射機，依據 NCC 低功率射頻器材技術規範 4.10.1.6(2) (A) 之規定，6dB 之頻寬至少應有 500kHz。

12.2 測試配置

圖 4: 發射頻寬之測試配置



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12.3 量測結果

802.11b Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	10070.00	≥ 500	PASS
2437	10070.00	≥ 500	PASS
2462	10070.00	≥ 500	PASS

802.11g Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	16380.00	≥ 500	PASS
2437	16380.00	≥ 500	PASS
2462	16390.00	≥ 500	PASS

802.11_n_HT20 Ch0

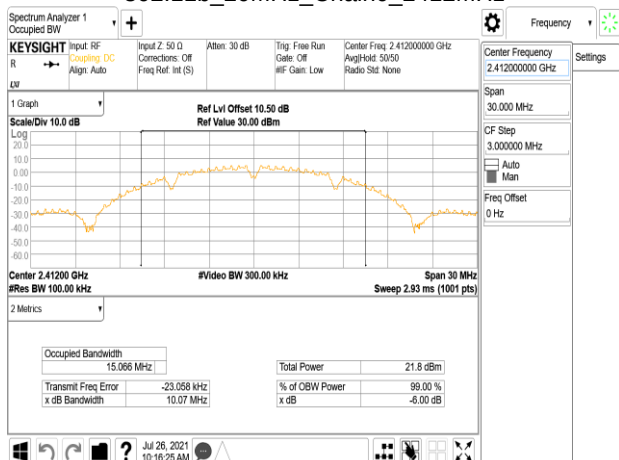
Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	17640.00	≥ 500	PASS
2437	17630.00	≥ 500	PASS
2462	17630.00	≥ 500	PASS

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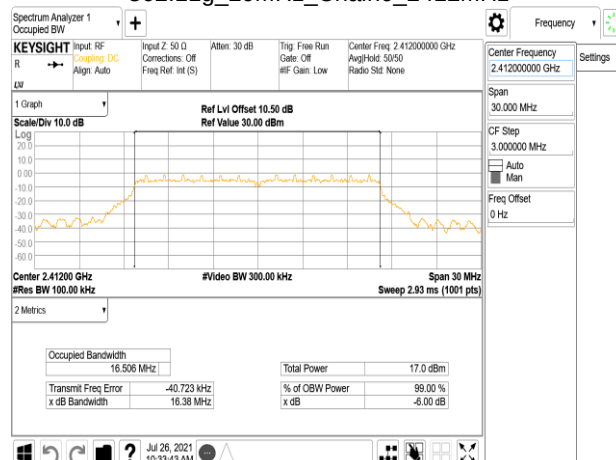
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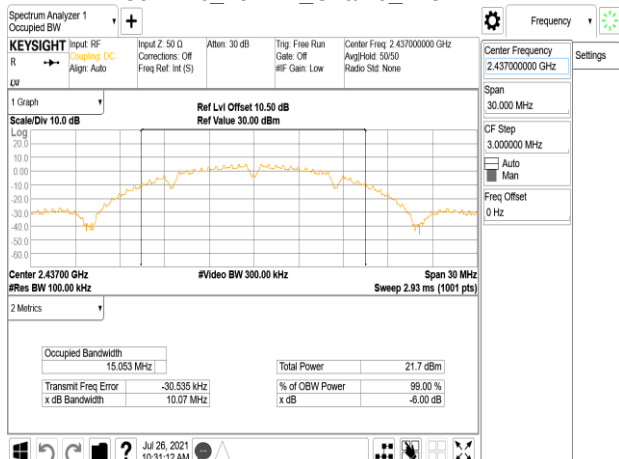
802.11b_20MHz_Chain0_2412MHz



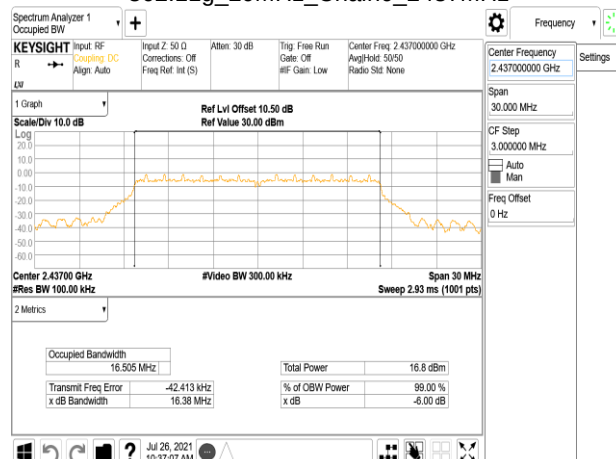
802.11g_20MHz_Chain0_2412MHz



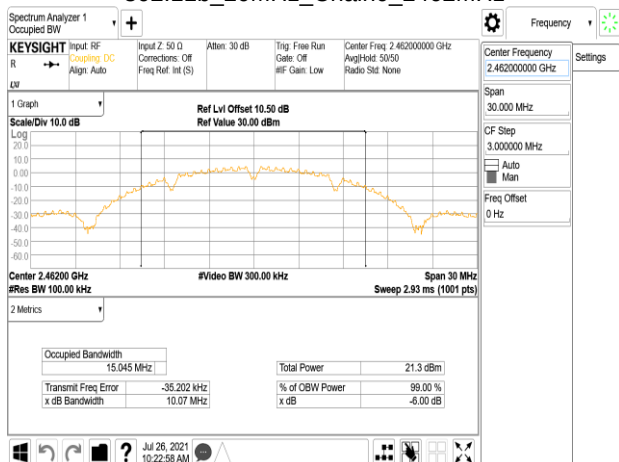
802.11b_20MHz_Chain0_2437MHz



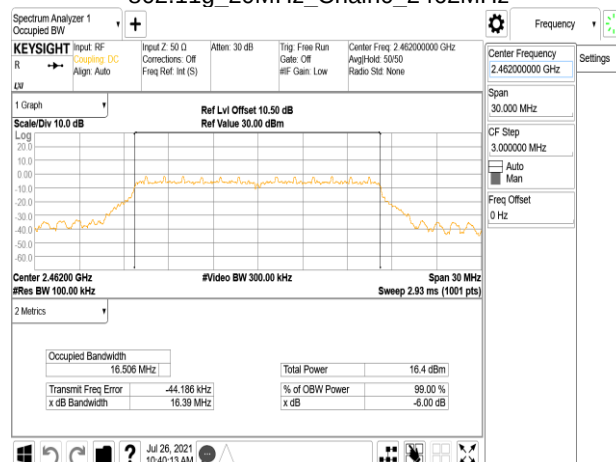
802.11g_20MHz_Chain0_2437MHz



802.11b_20MHz_Chain0_2462MHz



802.11g_20MHz_Chain0_2462MHz

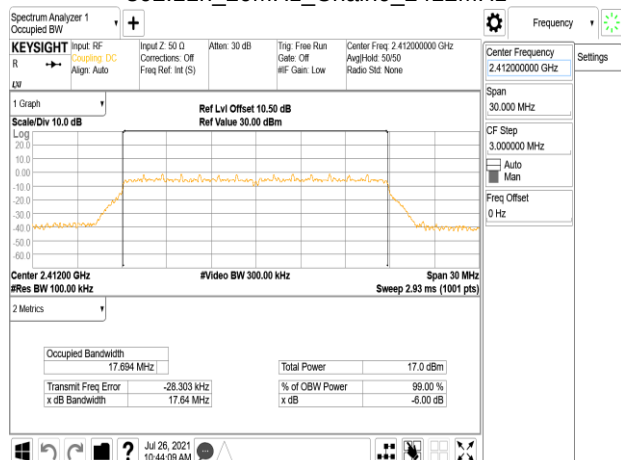


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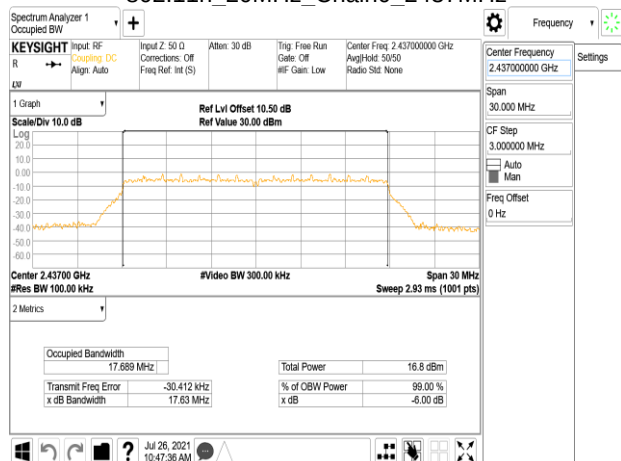
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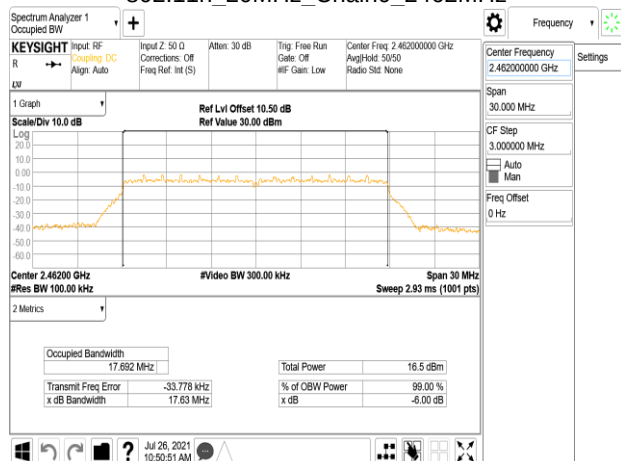
802.11n_20MHz_Chain0_2412MHz



802.11n_20MHz_Chain0_2437MHz



802.11n_20MHz_Chain0_2462MHz



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13 輸出峰值功率之量測

13.1 適用標準

依據 NCC 低功率射頻器材技術規範 4.10.1.2(1) (A)(C)之規定，操作於 2400-2483.5MHz 與 5725-5850MHz 之所有數位調變技術系統：1 Watt(含)以下。

依據NCC低功率射頻器材技術規範4.10.1.3之規定，用於非固定式點對點操作時，若其發射天線之方向性增益超過6dBi，應依所超過之dB數等量降低峰值輸出功率。如用於固定式點對點操作時，應符合下列情形之一：

依據NCC低功率射頻器材技術規範4.10.1.3 (1)之規定，操作於2400-2483.5MHz 者，僅用於固定式點對點操作，其發射天線之方向性增益超過 6dBi，每超過3dB應降低1dB之峰值輸出功率。

依據NCC低功率射頻器材技術規範4.10.1.3 (2)之規定，操作於5725-5850MHz 者，其發射天線之方向性增益超過 6dBi，無須降低峰值輸出功率。

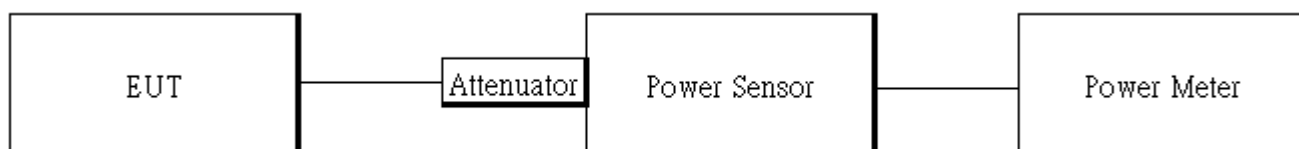
依據NCC低功率射頻器材技術規範4.10.1.3 (3)之規定，用於點對多點操作時，如其發射天線之方向性增益超過 6dBi，應依所超過之dB數等量降低最大傳導輸出功率。

註：固定式點對點操作使用方式，並不包括使用點對多點之系統、全向性之應用以及發射相同資訊之共同安裝的多重發射機。展頻或數位調變之發射器需要專業安裝，該設備操作者或安裝者有責任確認該系統是限用於固定式、點對點之操作，隨機所附之使用手冊必須包含此訊息以告知使用者或安裝者須負之責任。

13.2 載波頻率工作週期之量測

在進行功率測量前，應檢查每種模式的工作週期以補償工作週期校正因子 (Duty Factor)。

13.3 測試配置



13.4 量測方式

13.4.1 載波頻率工作週期儀器設定

Span = Zero, RBW = 8MHz, VBW = 8MHz, Detector = Peak

13.4.2 輸出功率量測

1. 將 EUT 置於發射模式。
2. 移除天線，使用 low loss cable 連接 EUT 的 antenna port 及 power meter。
3. 紀錄最大功率讀值。

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13.5 量測結果

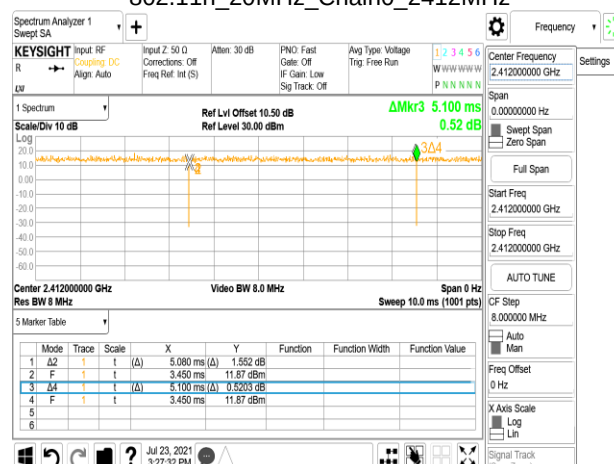
13.5.1 載波頻率工作週期

	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11b	99.64	0.02	0.12	0.01
802.11g	98.58	0.06	0.72	0.01
802.11n_20	99.60	0.02	0.20	0.01

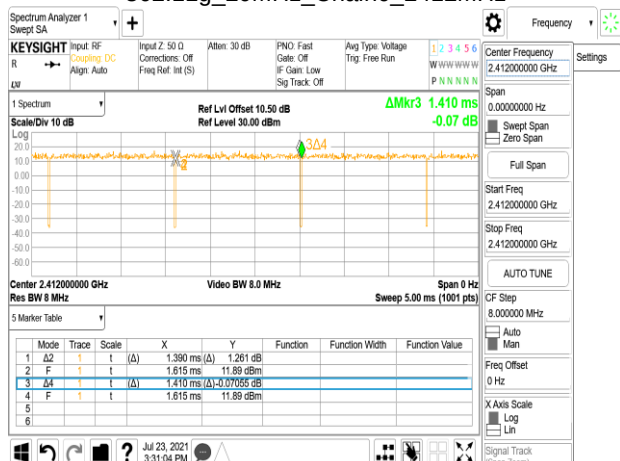
802.11b_20MHz_Chain0_2412MHz



802.11n_20MHz_Chain0_2412MHz



802.11g_20MHz_Chain0_2412MHz



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13.5.2 輸出功率

802.11b Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	1	default	16.92	30.00	PASS
6	2437	1	default	16.71	30.00	PASS
11	2462	1	default	16.47	30.00	PASS
802.11b Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
1	2412	1	default	15.14	30.00	PASS
6	2437	1	default	14.92	30.00	PASS
11	2462	1	default	14.70	30.00	PASS
802.11g Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	6	default	19.72	30.00	PASS
6	2437	6	default	19.55	30.00	PASS
11	2462	6	default	19.48	30.00	PASS
802.11g Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
1	2412	6	default	10.41	30.00	PASS
6	2437	6	default	10.18	30.00	PASS
11	2462	6	default	9.92	30.00	PASS
802.11n_HT20M Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	default	19.97	30.00	PASS
6	2437	MCS0	default	19.77	30.00	PASS
11	2462	MCS0	default	19.68	30.00	PASS
802.11n_HT20M Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	default	10.40	30.00	PASS
6	2437	MCS0	default	10.19	30.00	PASS
11	2462	MCS0	default	9.90	30.00	PASS

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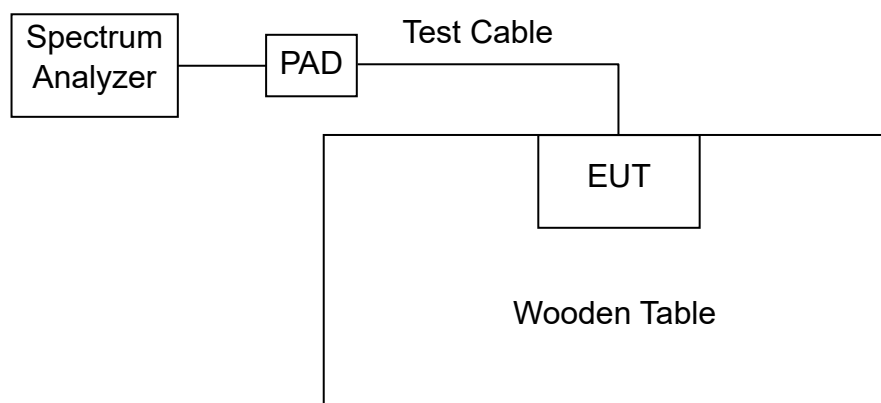
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14 帶外發射之限制

14.1 適用標準

依據 NCC 低功率射頻器材技術規範 4.10.1.5 之規定，操作頻帶範圍外之任意 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，須衰減 20 分貝 (dB)，以射頻傳導或輻射方式測量。此外，落於第 3.5 節禁用頻段之輻射發射，應符合第 3.6 節之規定。

14.2 帶外發射測試配置



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14.3 量測結果

Reference Level of Limit 802.11b mode		
Freq. (MHz)	PSD (dBm)	Reference Level of Limit (dBm)
2412	5.08	-14.92
2437	4.92	-15.08
2462	4.55	-15.45

Reference Level of Limit 802.11g mode		
Freq. (MHz)	PSD (dBm)	Reference Level of Limit (dBm)
2412	-1.06	-21.06
2437	-1.30	-21.30
2462	-1.64	-21.64

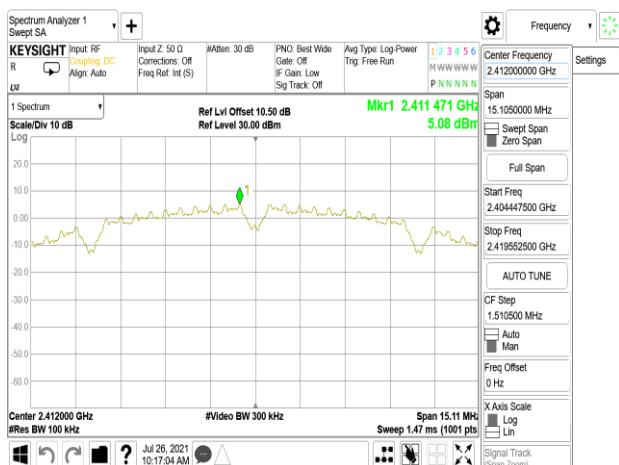
Reference Level of Limit 802.11n20 mode		
Freq. (MHz)	PSD (dBm)	Reference Level of Limit (dBm)
2412	-1.03	-21.03
2437	-1.35	-21.35
2462	-1.63	-21.63

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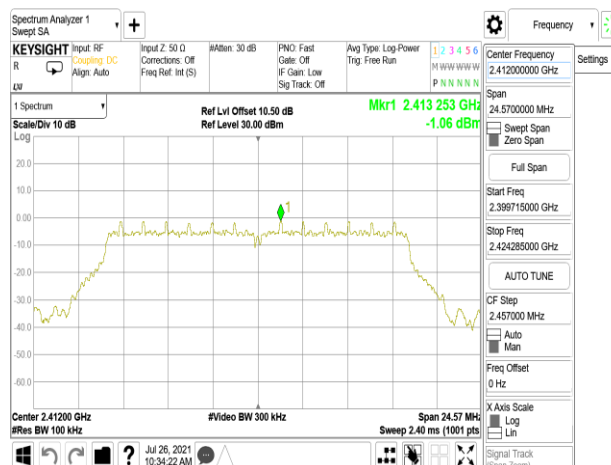
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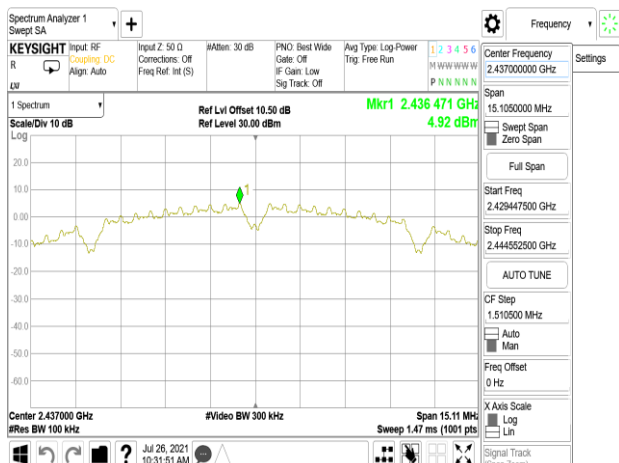
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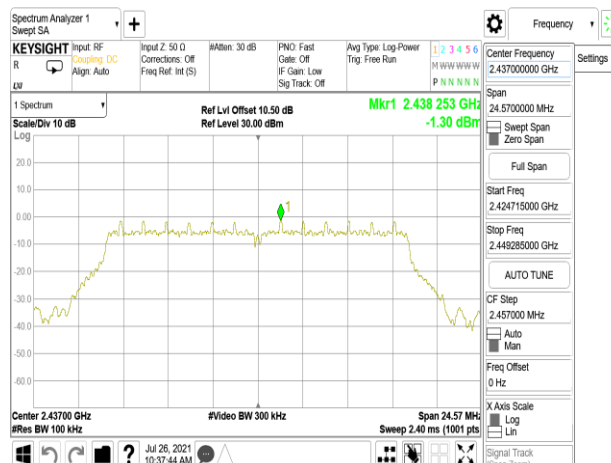
802.11g_20MHz_Chain0_2412MHz



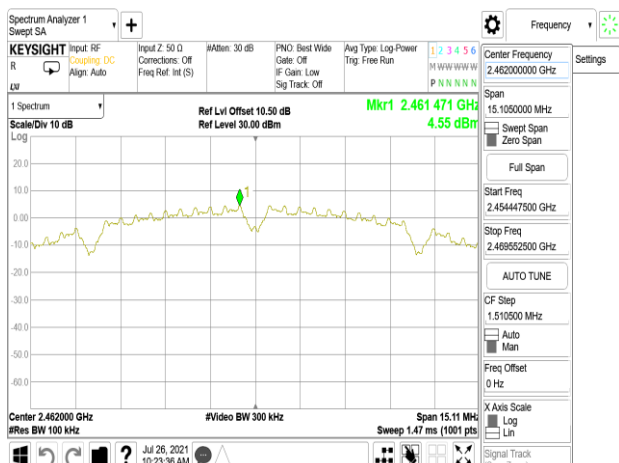
802.11b_20MHz_Chain0_2437MHz



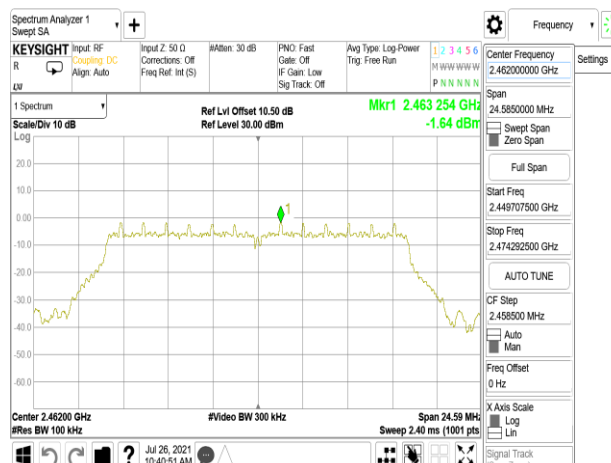
802.11g_20MHz_Chain0_2437MHz



802.11b_20MHz_Chain0_2462MHz



802.11g_20MHz_Chain0_2462MHz

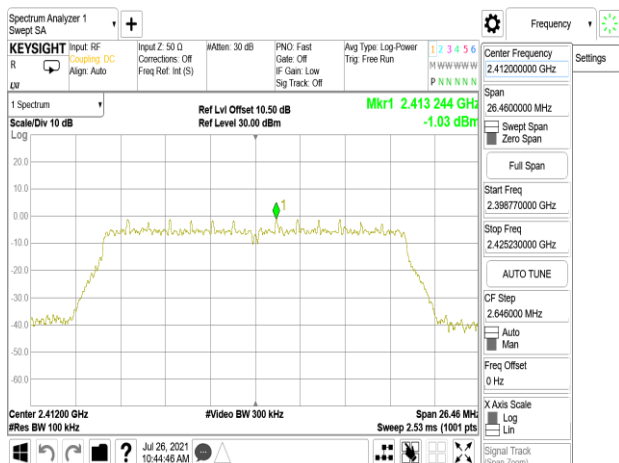


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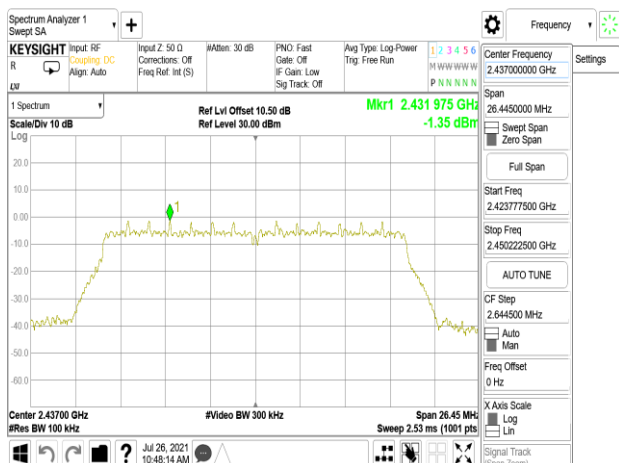
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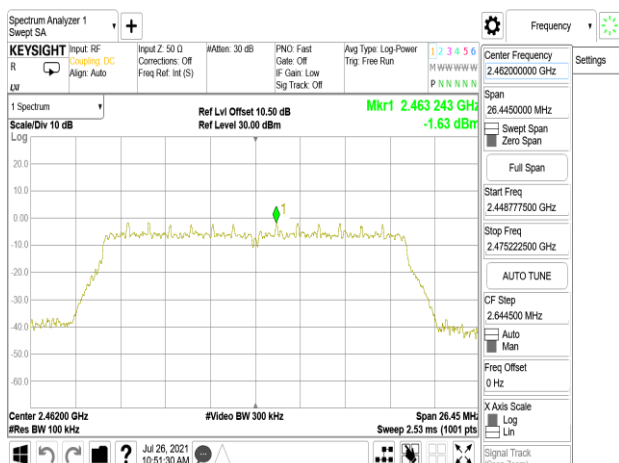
802.11n_20MHz_Chain0_2412MHz



802.11n_20MHz_Chain0_2437MHz



802.11n_20MHz_Chain0_2462MHz

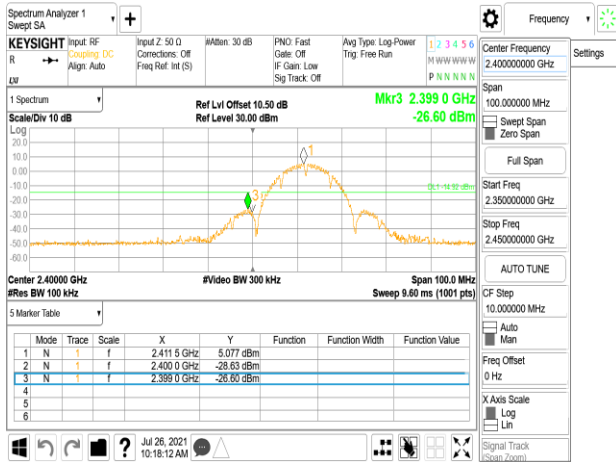


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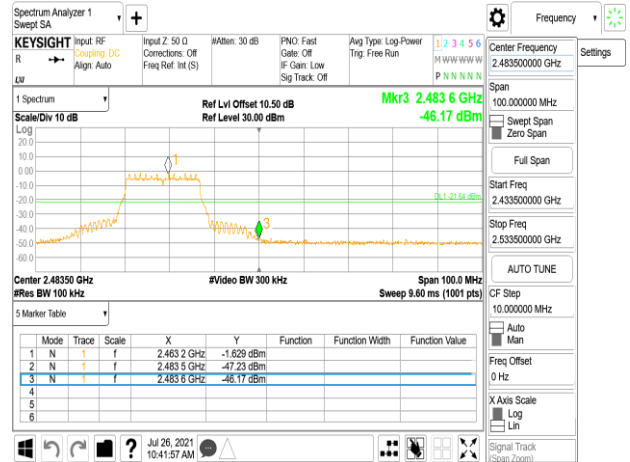
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802.11b_20MHz_Chain0_2412MHz



802.11g_20MHz_Chain0_2462MHz



802.11b_20MHz_Chain0_2462MHz



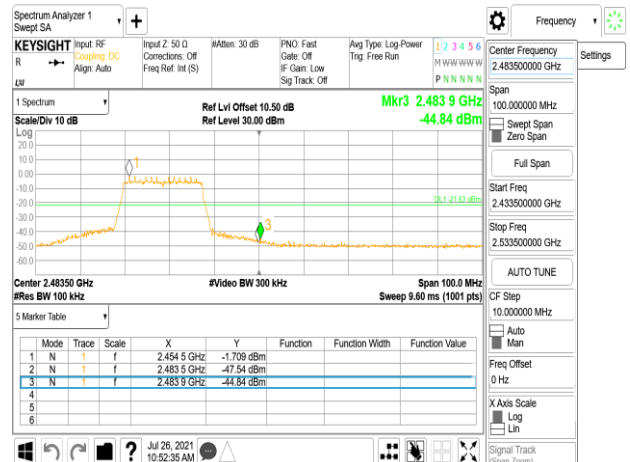
802.11n_20MHz_Chain0_2412MHz



802.11g_20MHz_Chain0_2412MHz



802.11n_20MHz_Chain0_2462MHz

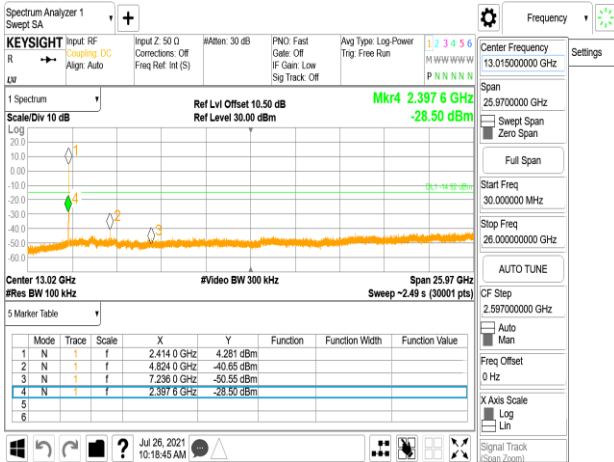


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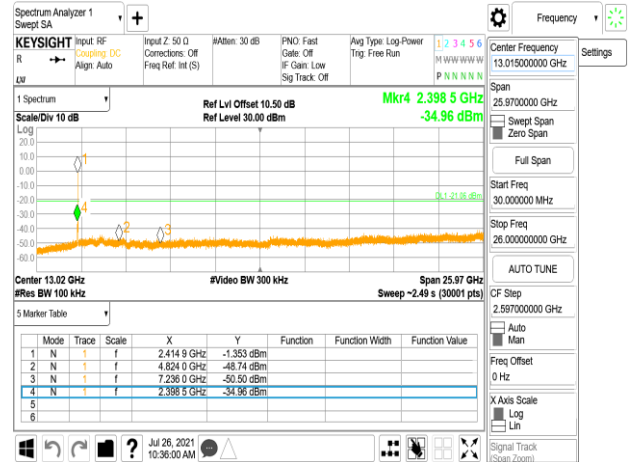
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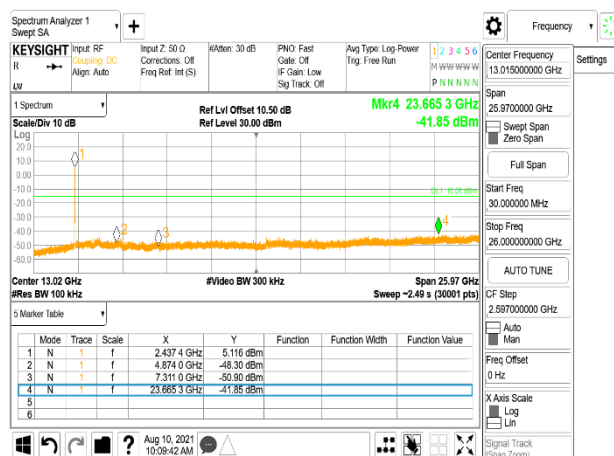
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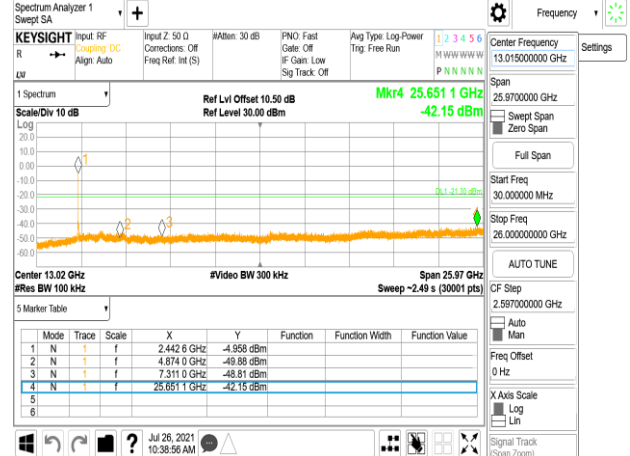
802.11g_20MHz_Chain0_2412MHz



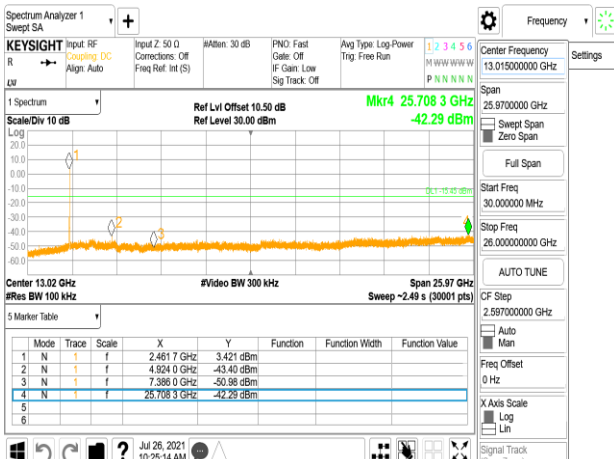
802.11b_20MHz_Chain0_2437MHz



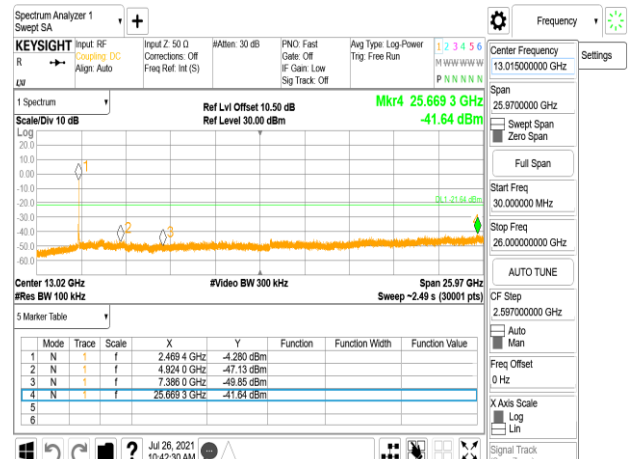
802.11g_20MHz_Chain0_2437MHz



802.11b_20MHz_Chain0_2462MHz



802.11g_20MHz_Chain0_2462MHz

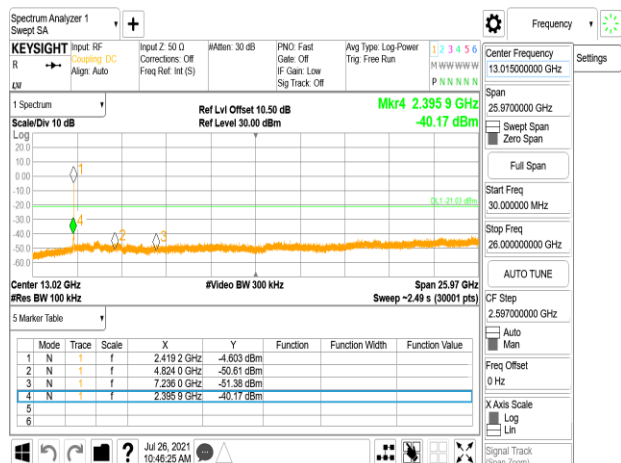


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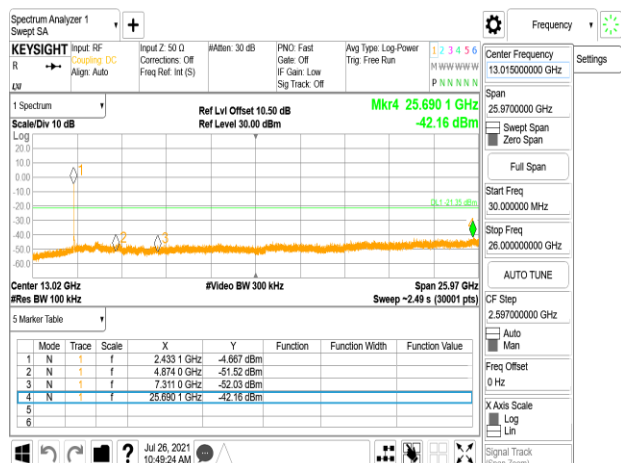
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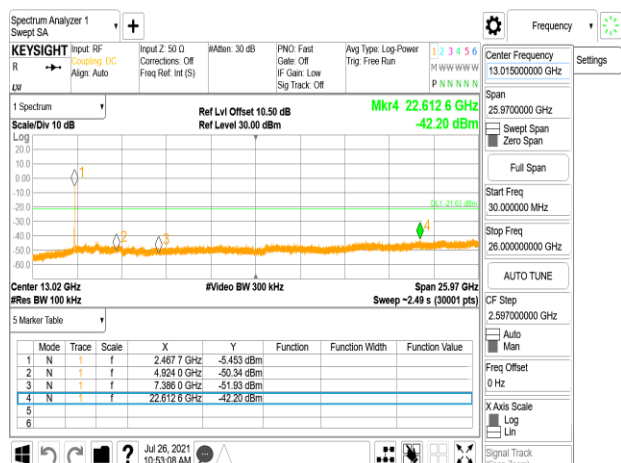
802.11n_20MHz_Chain0_2412MHz



802.11n_20MHz_Chain0_2437MHz



802.11n_20MHz_Chain0_2462MHz



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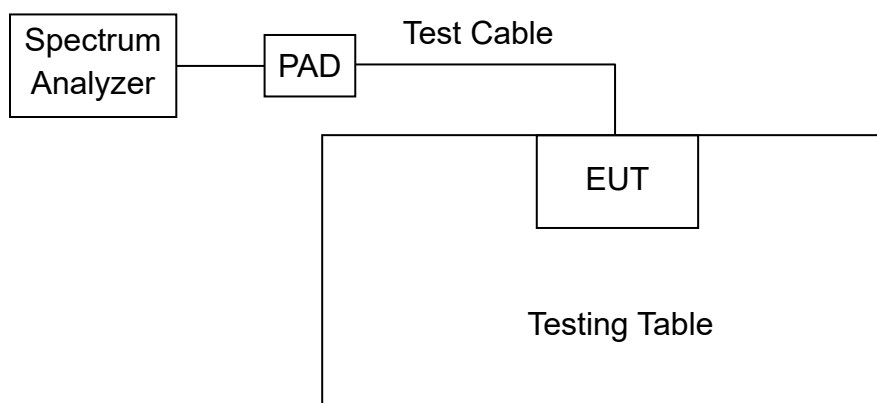
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15 功率密度之量測

15.1 適用標準

依據 NCC 低功率射頻器材技術規範 4.10.1.6(2) (B)規定，對數位調變之展頻系統，在使用頻率範圍之任意 3kHz 頻寬內，由發射機傳導至天線之峰值發射電功率密度在任意期間內，皆不得大於 8dBm。

15.2 功率密度之測試配置



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15.3 功率密度量測結果

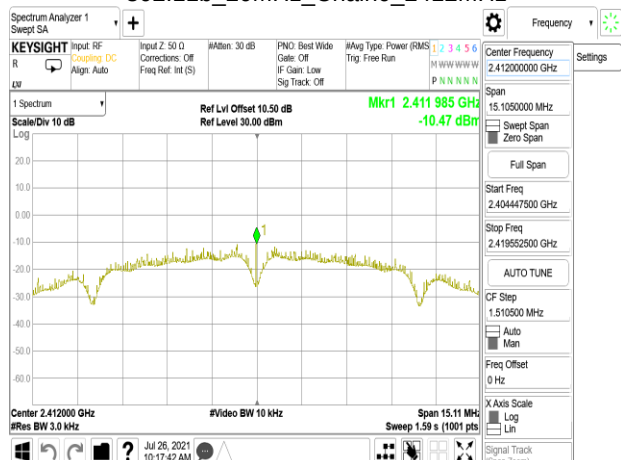
POWER DENSITY 802.11b				
Freq. (MHz)	Ch0 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-10.5	-10.47	8.00	PASS
2437	-10.7	-10.72	8.00	PASS
2462	-10.9	-10.88	8.00	PASS
POWER DENSITY 802.11g				
Freq. (MHz)	Ch0 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-10.9	-10.85	8.00	PASS
2437	-11	-10.99	8.00	PASS
2462	-11.3	-11.31	8.00	PASS
POWER DENSITY 802.11n HT20				
Freq. (MHz)	Ch0 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-10.5	-10.47	8.00	PASS
2437	-10.6	-10.59	8.00	PASS
2462	-11.1	-11.08	8.00	PASS

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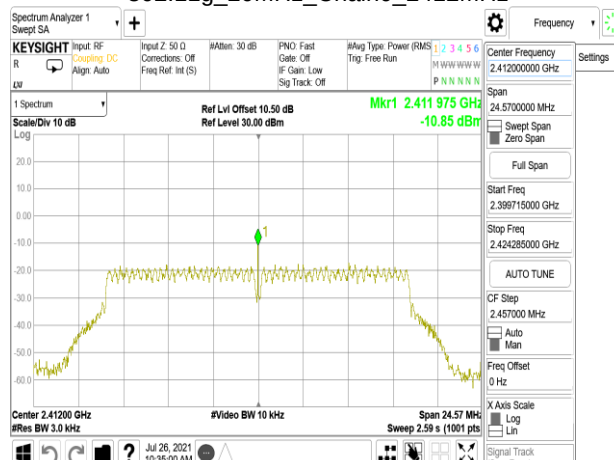
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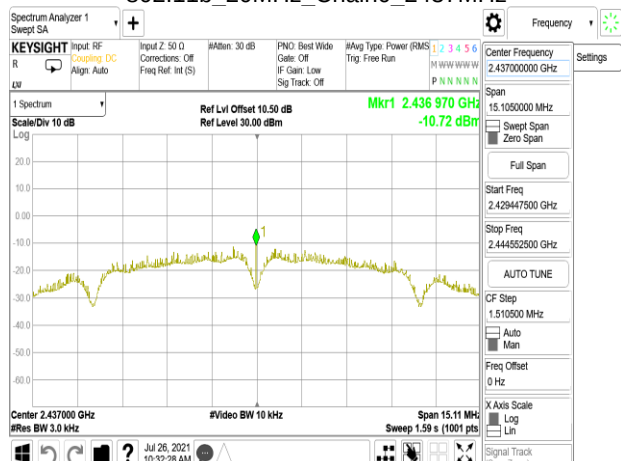
802.11b_20MHz_Chain0_2412MHz



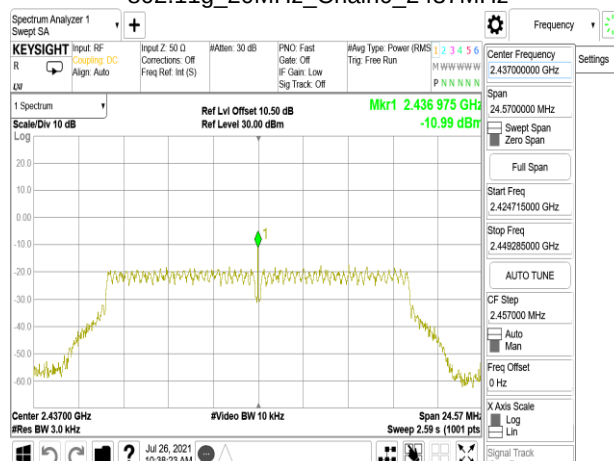
802.11g_20MHz_Chain0_2412MHz



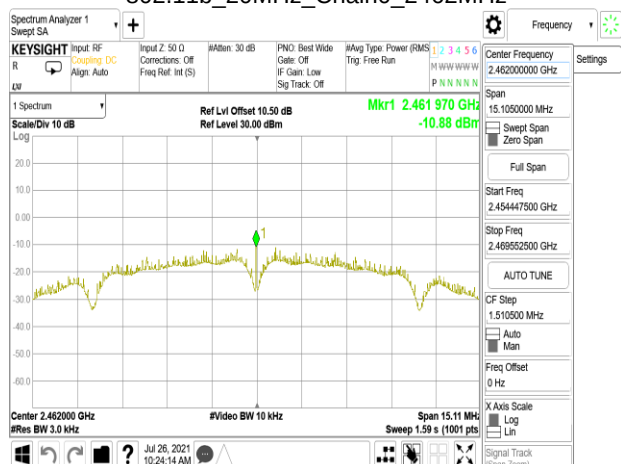
802.11b_20MHz_Chain0_2437MHz



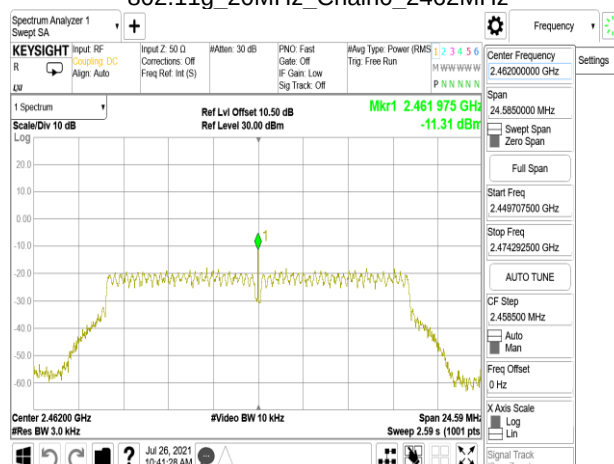
802.11g_20MHz_Chain0_2437MHz



802.11b_20MHz_Chain0_2462MHz



802.11g_20MHz_Chain0_2462MHz

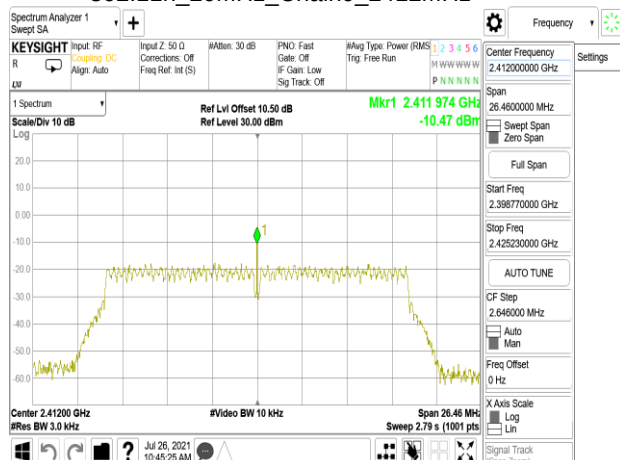


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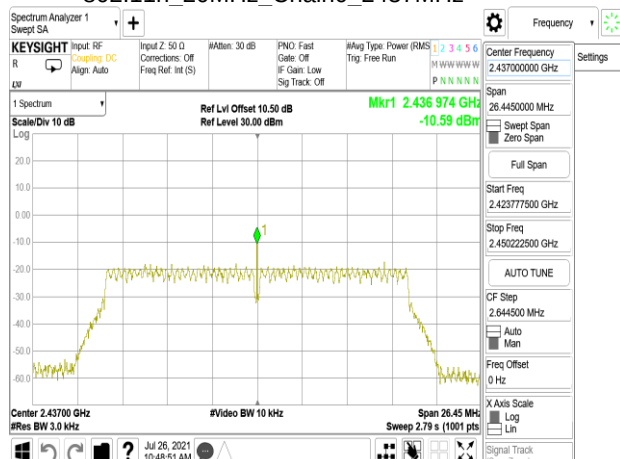
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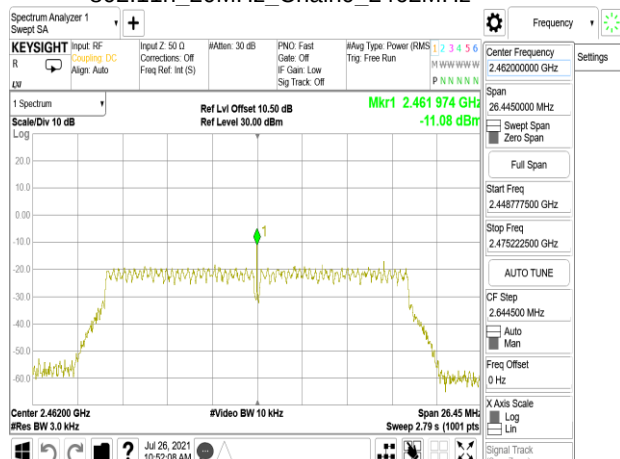
802.11n_20MHz_Chain0_2412MHz



802.11n_20MHz_Chain0_2437MHz



802.11n_20MHz_Chain0_2462MHz



~ End of Report ~

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