

低功率射頻電機技術規範測試報告 (802.11ad)

報告編號:

RT190214C31

申請者

台灣國際標準電子股份有限公司

產品名稱

WPON

型號

WPON AP-AC

製造廠商

Nokia Shanghai Bell Co., Ltd.

商標或廠牌

Nokia

該產品樣品試驗

國家通訊傳播委員會低功率射頻電機技術規範

依據之試驗標準

107 年 1 月修訂

試驗結果

合格

香港商立德國際商品試驗有限公司桃園分公司 新竹實驗室

日期 108 年 3 月 26 日

報告簽署人簽章:

陳瓊美



目 錄

報告發行紀錄.....	4
1 低功率射頻電機量測記錄表.....	6
2 一般敘述.....	7
2.1 待測設備 (802.11ad).....	7
2.2 輔助測試之週邊設備描述.....	9
2.3 測試架構圖	10
3 適用規範.....	11
3.1 規範要求	11
3.2 限制使用之頻帶	13
4 混附發射之量測.....	14
4.1 適用標準	14
4.2 量測方法	14
4.3 量測儀器	15
4.4 測試配置	17
4.5 場強度之計算.....	18
4.6 量測結果	19
4.6.1 混附發射	19
4.6.2 谐波接收	40
4.7 量測結果判定.....	45
4.8 配置照片	45
5 電源線傳導干擾之量測.....	46
5.1 適用標準	46
5.2 量測方法	46
5.3 量測儀器	46
5.4 測試配置	47
5.5 干擾值之計算.....	47
5.6 量測結果	48
5.7 量測結果判定.....	49
5.8 配置照片	49
6 發射頻寬之要求.....	50
6.1 適用標準	50
6.2 量測方法	50
6.3 量測儀器	50
6.4 測試配置	50
6.5 量測結果	51
6.6 量測結果判定.....	51
7 有效等向輻射功率與峰值傳導輸出功率之量測.....	52
7.1 適用標準	52
7.2 量測方法	52
7.3 量測儀器	53
7.4 測試配置	53
7.5 量測結果	54
7.6 量測結果判定.....	54
8 天線之要求	55

8.1	適用標準	55
8.2	天線之規定	55
8.3	結果判定	55
9	頻率穩定度之量測	56
9.1	適用標準	56
9.2	量測方法	56
9.3	量測儀器	56
9.4	頻率穩定度之測試配置	56
9.5	量測結果	57
9.6	量測結果判定	57
10	檢測實驗室基本資料	58

報告發行紀錄

Issue No.	Description	Date Issued
RT190214C31	Original release.	108 年 3 月 26 日

證 明 書

產 品 名 稱： WPON
商 標： Nokia
型 號： WPON AP-AC
申 請 者： 台灣國際標準電子股份有限公司
量 測 規 範： 低功率射頻電機技術規範 LP0002
ANSI C63.10-2013

香港商立德國際商品試驗有限公司桃園分公司在此證明上述待測設備樣品(型號：WPON AP-AC)，
收件日期 108 年 2 月 14 日，於 108 年 3 月 04 日至 15 日，已在本公司的標準測試場地完成量測。
報告中所描述之測試結果和待測設備的架構組合，均根據樣品實際的量測情況作詳實的記錄。

立德桃園分公司依“低功率射頻電機技術規範”、“低功率電波輻射性電機管理辦法”及“電信管制射頻
器材審驗辦法”製作測試結果報告。

特 此 證 明 ！

報告製作者：

黃健琳

， 日 期：

108 年 3 月 26 日

黃健琳 / 專員

審 核 者：

陳瓊美

， 日 期：

108 年 3 月 26 日

陳瓊美 / 經理

香港商立德國際商品試驗有限公司桃園分公司

實驗室地址：300 新竹市科學工業園區力行一路 1 號 E-2

此份報告不得摘錄複製，除全份
複製外，需經實驗室書面同意。



1 低功率射頻電機量測記錄表

申請廠商：台灣國際標準電子股份有限公司

製造廠商：Nokia Shanghai Bell Co., Ltd.

申請廠商地址：11493 台北市內湖區堤頂大道二段 409 號 8 樓

廠牌：Nokia

產品名稱：WPON

型號：WPON AP-AC

量測單位名稱：香港商立德國際商品試驗有限公司桃園分公司 新竹實驗室

量測單位地址：300 新竹市科學工業園區力行一路 1 號 E-2

量測單位認可編號：TAF 2022

量測規範：低功率射頻電機技術規範 LP0002
ANSI C63.10-2013
KDB 200443

項次	量測項目	規 範	量測結果判定
1	發射頻寬	低功率射頻電機技術規範 3.13.1.3 節	合格
2	有效等向輻射功率	低功率射頻電機技術規範 3.13.1.1 節	合格
3	峰值傳導輸出功率	低功率射頻電機技術規範 3.13.1.3 節	合格
4	混附發射	低功率射頻電機技術規範 3.13.1.2 節& 2.8 節	合格
5	頻率穩定度	低功率射頻電機技術規範 3.13.1.4 節	合格
6	電源線傳導干擾	低功率射頻電機技術規範 2.3 節	合格
7	天線之要求	低功率射頻電機技術規範 2.2 節	合格

備註：量測結果之判定不考慮量測不確定度的貢獻。

2 一般敘述

2.1 待測設備 (802.11ad)

產品名稱：	WPON
型號：	WPON AP-AC
額定電源：	110 ~ 230Vac
調變技術：	OFDM
傳輸速率：	Up to 2.3 Gbit/s (PHY)
工作頻率：	57 ~ 64 GHz
頻道數：	3
發射功率：	33.9 dBm (Peak EIRP)
天線種類：	見註
電源線類別：	見註
信號線類別：	NA
配件：	NA

註：

1. Simultaneously transmission condition.

Condition	Technology	
1	802.11ad	Bluetooth

Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.

2. 此待測設備天線規格,詳列如下:

For 802.11ad						
Antenna No.	Brand	Model	Antenna Gain (dBi)	Frequency range (GHz)	Antenna Type	Connector Type
1	Semco	SWL-W14	19	57~64	PCB	mini-ipex
2	Semco	SWL-W14	19	57~64	PCB	mini-ipex
3	Semco	SWL-W14	19	57~64	PCB	mini-ipex
4	Semco	SWL-W14	19	57~64	PCB	mini-ipex
5	Semco	SWL-W14	19	57~64	PCB	mini-ipex
6	Semco	SWL-W14	19	57~64	PCB	mini-ipex
7	Semco	SWL-W14	19	57~64	PCB	mini-ipex

Note: There are total seven 60GHz antennas and only one antenna can transmit at the same time.

For Bluetooth						
Antenna No.	Brand	Model	Antenna Gain (dBi)	Frequency range (MHz)	Antenna Type	Connector Type
8	Glead	LA52H2450-A36	4.97	2400-2483.5	CHIP	NA

3. The EUT incorporates a SISO function.

Technology	TX & RX Configuration	
802.11ad	1TX (diversity)	1RX (diversity)

本測報測試頻道的中心頻率如下：

頻道	對應頻率 (GHz)	頻道	對應頻率 (GHz)
1	58.32	3	62.64
2	60.48		

*電源線傳導干擾、頻率穩定度量測經過評估後選擇 CH1 為最終測試模式。

詳細之規格請參考使用說明書，產品的照片請參照 BV 編號: 190214C31。

2.2 輔助測試之週邊設備描述

待測設備於受測時均接上其所屬的配件或一般用途之相關設備；下列輔助設備或配件測試中所使用的配備，以形成一個代表待測物實際運作的受測系統。

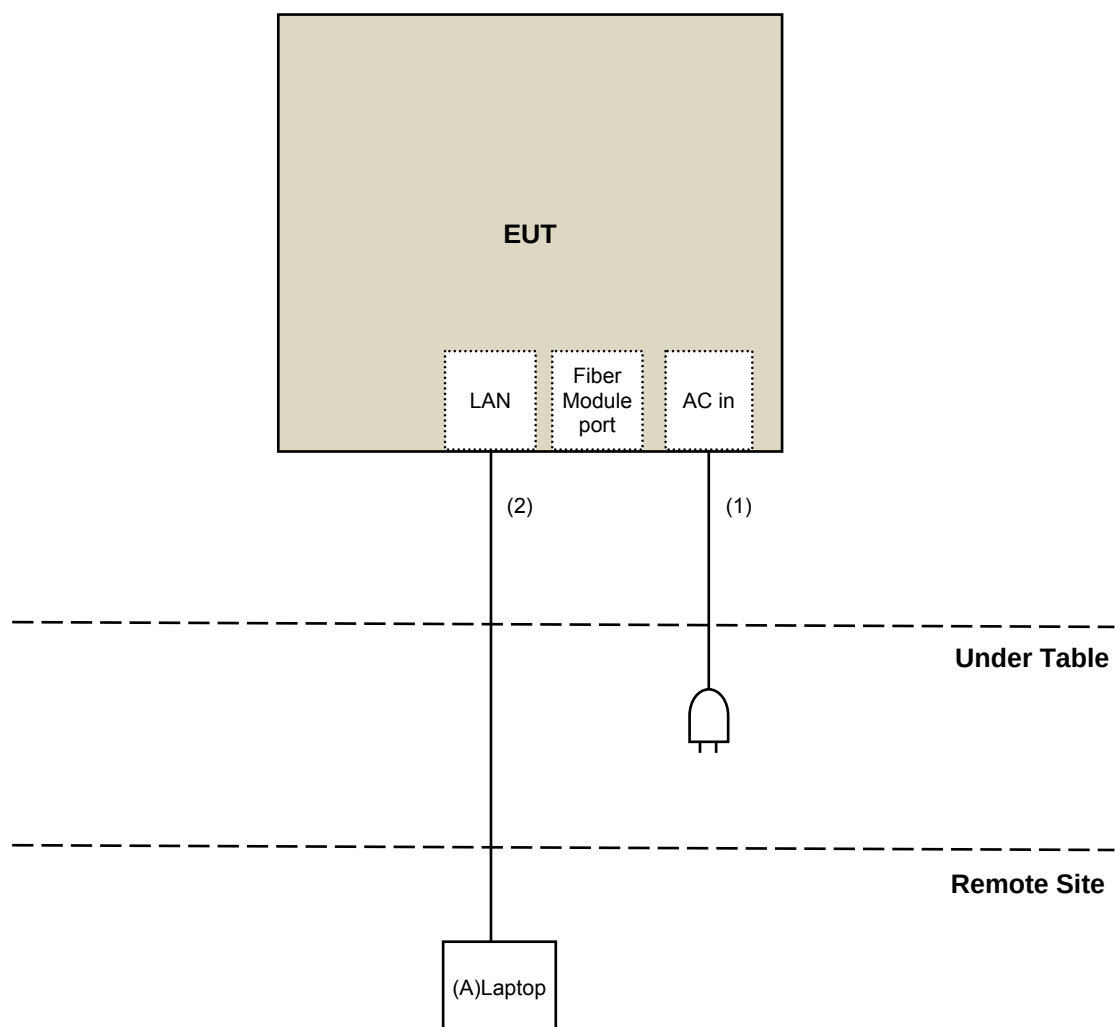
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E6420	B92T3R1	FCC DoC	Provided by Lab

Note:

1. All power cords of the above support units are non-shielded (1.8m).

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	AC Cable	1	0.9	No	0	Supplied by client
2.	RJ-45 Cable	1	10	No	0	Provided by Lab

2.3 測試架構圖



3 適用規範

3.1 規範要求

(1) 傳導之規定

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

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

(註)：隨頻率之對數遞減。

(2) 混附發射之規定

依據國家通訊傳播委員會低功率射頻電機技術規範 3.13.1.2 節之要求，低於 40GHz 的輻射發射應符合 2.8 節之一般限制要求：

頻 率(兆赫)	電場強度(微伏/公尺)	測距(公尺)
0.009 - 0.490(含)	2,400/頻率(千赫)	300
0.490 (不含) - 1.705 (含)	24,000/頻率(千赫)	30
1.705(不含) - 30 (不含)	30	30
30 (含) - 88 (含)	100	3
88 (不含)- 216 (含)	150	3
216 (不含)- 960 (含)	200	3
960 (不含)以上	500	3

(3) 天線之規定

低功率射頻電機之發射機或收發信機所使用之天線，除本規範章節中另有規定外，應為全固定、半固定式或以獨特之耦合 (unique coupling) 方式連接機體。製造者可設計供使用者因損壞而替換之天線，但不得設計或使用原認證以外之天線或可供引接各類電纜之標準天線插座或電氣連接頭，如：BNC、F type、N type、M type、UG type、RCA、SMA、SMB...等及其他各類工業或通訊標準接頭。

(4) 有效等向輻射功率 (EIRP)：

依據國家通訊傳播委員會低功率射頻電機技術規範 3.13.1.1 節之規定如下，

在 57 GHz~66 GHz 者，須符合下列之有效等向輻射功率 (EIRP)：

(1) 固定式場強擾動感測器主波占用頻寬小於或等於 500 MHz 且全部位於 61.0 GHz~61.5 GHz 者：

(A) 在發射期間所測得任何發射之主波平均功率應小於或等於 40 dBm，任何發射之主波峰值功率應小於或等於 43 dBm。

(B) 57 GHz~61.0 GHz 與 61.5 GHz~66.0 GHz 之發射，其平均功率應小於或等於 10 dBm，而峰值功率應小於或等於 13 dBm。

(2) 固定式場強擾動感測器除(1)情況外，發射機峰值傳導輸出功率應小於或等於 -10 dBm，且其 EIRP 的峰值功率應小於或等於 10 dBm。

(3) 除固定式場強擾動感測器外之器材，發射期間 EIRP 值應符合下列規定：

(A) 位於室外之發射機，其天線增益(G；dBi)大於 51 dBi 的任何發射之平均功率 ≤ 82 dBm，峰值功率 ≤ 85 dBm；天線增益小於 51 dBi 時，平均功率 $\leq 82 - 2 \times (51 - G)$ dBm，峰值功率 $\leq 85 - 2 \times (51 - G)$ dBm。

(B) 除本款(A)的情形外，任何發射之平均功率應小於或等於 40 dBm，任何發射之峰值功率應小於或等於 43 dBm。

(5) 混附發射之要求

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 3.13.1.2 節之規定如下：

混附發射之限制值

- (1) 在 57 GHz~66 GHz 頻段外任何發射之功率密度只能來自混附發射。
- (2) 低於 40 GHz 的輻射發射應符合 2.8 之規定。
- (3) 介於 40 GHz~200 GHz 之間，距待測物 3 公尺處測量，其混附發射功率密度應小於或等於 90 皮瓦特/平方公分(pW/cm²)。

(6) 峰值傳導輸出功率之要求

依據國家通訊傳播委員會低功率射頻電機技術規範 3.13.1.3 節之規定如下：

發射傳導總峰值輸出功率限制值

- (1) 發射頻寬大於或等於 100 MHz 之發射機，其峰值傳導輸出功率應小於或等於 500mW。
- (2) 發射頻寬小於 100 MHz 之發射機，其峰值發射傳導輸出功率應小於或等於 500 mW 乘以發射頻寬(MHz)除以 100 MHz。
- (3) 3.13 之 6 dB 發射頻寬係指頻譜分析儀 RBW 設定值為 100 kHz，以峰值方式測量具調變之穩定輻射訊號其瞬間頻率佔用範圍，且在此頻寬範圍外之輻射功率頻譜密度，應低於該頻寬範圍內之最大輻射功率頻譜密度。非以固定頻率操作之器材(如跳頻器材)，測量時須以固定頻率方式測量。
- (4) 峰值功率及峰值傳導輸出功率之測量，須使用具 RF 檢波器功能的儀器測量，其測量頻帶範圍須包含 57 GHz~66 GHz 且設定 VBW 至少為 10 MHz，或使用等效之測量方法。

(7) 頻率穩定度之要求

依據國家通訊傳播委員會低功率射頻電機技術規範 3.13.1.4 節之規定如下：

在正常供應電壓下，溫度在-20℃~50℃間變化；及在 20℃下，供應電壓在額定值之 15%內變化時，發射的頻率應維持在 57 GHz~66 GHz 頻段。以電池作業者，應以新電池測試，並須符合 5.18 之要求。

3.2 限制使用之頻帶

除本規範另有規定外，任何低功率射頻電機之主波皆不得使用下表所列各頻段之頻率；低功率射頻電機落於下表所列頻段之混附發射，其電場強度必須符合 2.8 之限制規定。

頻率(兆赫)	頻率(兆赫)	頻率(兆赫)
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	

4 混附發射之量測

4.1 適用標準

請見本報告 3.1 節第(2) & (5)項的規定

4.2 量測方法

<Frequency Range below 1GHz>

將待測物置於 0.8 米高的非金屬桌面，使其操作在工作狀態。接收天線置於 3 米距離。桌面要 360 度旋轉，另外接收天線從離地 1 米至 4 米升降變化，以找出最大的輻射電場強度，接收天線分別置於水平、垂直極化各執行測試一次。

<Frequency Range 1GHz ~ 40GHz>

將待測物置於 1.5 米高的非金屬桌面，使其操作在工作狀態。接收天線置於 3 米距離。桌面要 360 度旋轉，另外接收天線從離地 1 米至 4 米升降變化，以找出最大的輻射電場強度，接收天線分別置於水平、垂直極化各執行測試一次。

<Frequency Range above 40GHz> (or 40GHz ~ 200GHz>)

將待測物置於 1.5 米高的非金屬桌面，使其操作在工作狀態。接收天線置於適當量測距離。桌面要 360 度旋轉，另外接收天線從離地 1 米至 4 米升降變化，以找出最大的輻射電場強度，接收天線分別置於水平、垂直極化各執行測試一次。

4.3 量測儀器

For below 40GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY50010156	July 12, 2018	July 11, 2019
Pre-Amplifier EMCI	EMC001340	980142	Jan. 25, 2019	Jan. 24, 2020
Loop Antenna Electro-Metrics	EM-6879	269	Sep. 07, 2018	Sep. 06, 2019
RF Cable	NA	LOOPCAB-001	Jan. 14, 2019	Jan. 13, 2020
RF Cable	NA	LOOPCAB-002	Jan. 14, 2019	Jan. 13, 2020
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-05	May 05, 2018	May 04, 2019
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Nov. 22, 2018	Nov. 21, 2019
RF Cable	8D	966-3-1	Mar. 20, 2018	Mar. 19, 2019
RF Cable	8D	966-3-2	Mar. 20, 2018	Mar. 19, 2019
RF Cable	8D	966-3-3	Mar. 20, 2018	Mar. 19, 2019
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	Sep. 27, 2018	Sep. 26, 2019
Horn Antenna SCHWARZBECK	BBHA9120-D	9120D-406	Nov. 25, 2018	Nov. 24, 2019
Pre-Amplifier EMCI	EMC12630SE	980384	Jan. 28, 2019	Jan. 27, 2020
RF Cable	EMC104-SM-SM-1200	160922	Jan. 28, 2019	Jan. 27, 2020
RF Cable	EMC104-SM-SM-2000	180601	June 12, 2018	June 11, 2019
RF Cable	EMC104-SM-SM-6000	180602	June 12, 2018	June 11, 2019
Spectrum Analyzer Keysight	N9030A	MY54490679	July 23, 2018	July 22, 2019
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 28, 2019	Jan. 27, 2020
Horn Antenna SCHWARZBECK	BBHA 9170	BBHA9170519	Nov. 25, 2018	Nov. 24, 2019
RF Cable	EMC102-KM-KM-1200	160924	Jan. 28, 2019	Jan. 27, 2020
RF Cable	EMC102-KM-KM-1200	160925	Jan. 28, 2019	Jan. 27, 2020
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 966 Chamber No. 3.
3. Loop antenna was used for all emissions below 30 MHz.
4. The following table is for the measurement uncertainty, which is calculated as per the document CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement	Frequency	Uncertainty
Radiated emissions	30MHz ~ 1GHz	5.1dB
	1 GHz ~ 6 GHz	5.1dB
	6GHz ~ 18GHz	5.0dB
	18GHz ~ 40GHz	5.2dB

For above 40GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250254	Nov. 14, 2018	Nov. 13, 2019
*Harmonic Mixer (33~55GHz) OML	M22HWD	110215-1	Oct. 17, 2017	Oct. 16, 2019
*Horn Antenna (33~55GHz) OML	M22RH	110215-1	Oct. 17, 2017	Oct. 16, 2019
*Harmonic Mixer (50~75GHz) OML	M15RH	110215-1	Oct. 17, 2017	Oct. 16, 2019
*Horn Antenna (50~75GHz) OML	M15HWD	110215-1	Oct. 17, 2017	Oct. 16, 2019
*Harmonic Mixer (75~110GHz) OML	M10HWD	110215-1	Oct. 17, 2017	Oct. 16, 2019
*Horn Antenna (75~110GHz) OML	M10RH	110215-1	Oct. 17, 2017	Oct. 16, 2019
*Harmonic Mixer (110~170GHz) OML	M06RH	110215-1	Oct. 17, 2017	Oct. 16, 2019
*Horn Antenna(110~170GHz) OML	M06HWD	110215-1	Oct. 17, 2017	Oct. 16, 2019
*Harmonic Mixer (140~220GHz) OML	M05HWD	110215-1	Oct. 17, 2017	Oct. 16, 2019
*Horn Antenna (140~220GHz) OML	M05RH	110215-1	Oct. 17, 2017	Oct. 16, 2019
*Diplexer EMCI	DPL26	DPL26_01	Oct. 17, 2017	Oct. 16, 2019
*Diplexer EMCI	DPL26	DPL26_02	Oct. 17, 2017	Oct. 16, 2019
*Precision 30dB Attenuator Keysight	11708A	MY55260015	Oct. 17, 2017	Oct. 16, 2019
*Zero-Bias Detector (50~75GHz) Vdi	WR15ZBD	WR15R5 1-30	Oct. 17, 2017	Oct. 16, 2019
Digital Storage Oscilloscope Keysight	DSOX6002A+DSOX6000-AMG	MY56270092	Jan. 17, 2019	Jan. 16, 2020
*WR15CH Conical Horn Keysight	WR15CH	WR15CH-01	Oct. 17, 2017	Oct. 16, 2019
*WR10CH Conical Horn Keysight	WR10CH	WR10CH-01	Oct. 17, 2017	Oct. 16, 2019
*Millimeter-Wave Signal Generator Frequency Extension Module (50~75 GHz) Keysight	E8257DV15	US54250106	Oct. 17, 2017	Oct. 16, 2019
*Millimeter-Wave Signal Generator Frequency Extension Module (75~110 GHz) Keysight	E8257DV10	US53250009	Oct. 17, 2017	Oct. 16, 2019
PSG analog signal generator Keysight	E8257D	MY53401987	June 26, 2018	June 25, 2019
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Spectrum Analyzer R&S	FSV40	100964	June 20, 2018	June 19, 2019
AC Power Source Extech Electronics	6205	1440452	NA	NA
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	Jan. 09, 2019	Jan. 08, 2020
True RMS Clamp Meter FLUKE	325	31130711WS	May 22, 2018	May 21, 2019

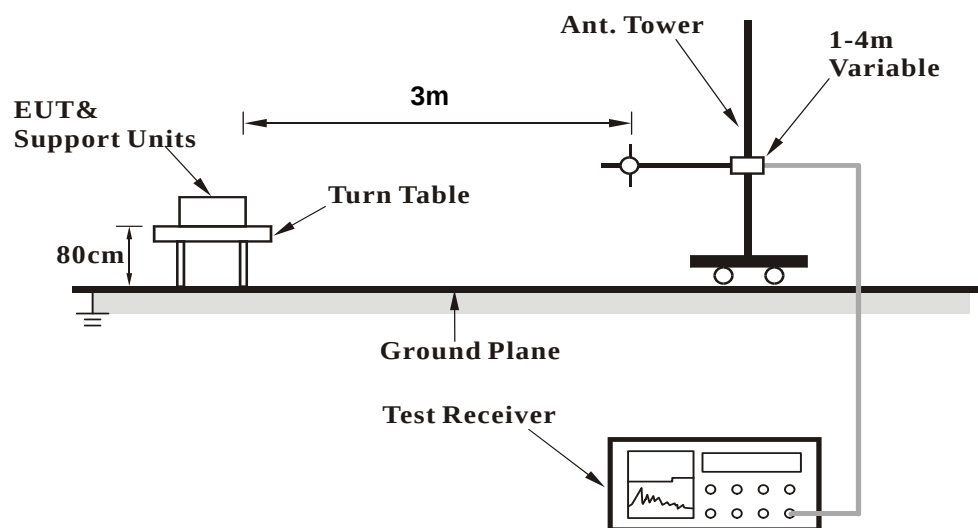
Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. *The calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in 966 Chamber No. 3
4. The following table is for the measurement uncertainty, which is calculated as per the document CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

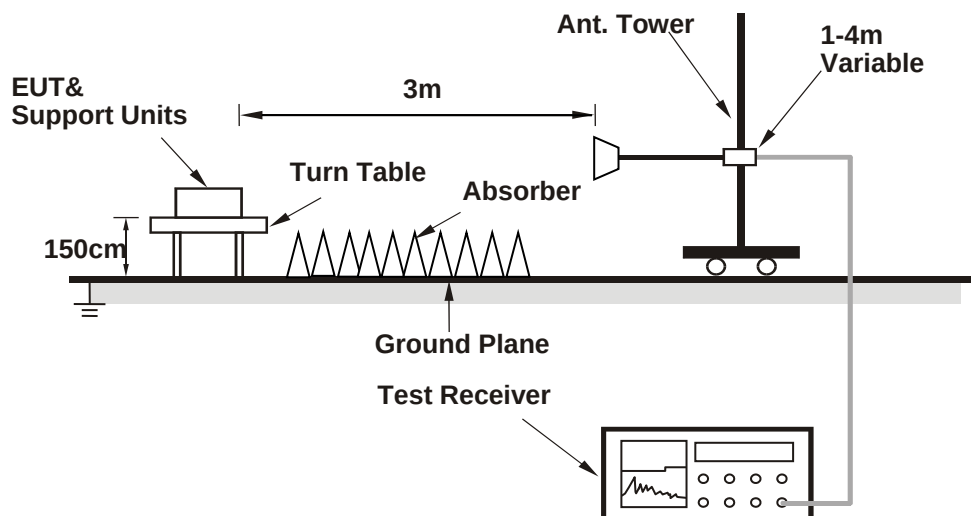
Measurement	Frequency	Uncertainty
Radiated emissions	40GHz ~ 200GHz	5.4 dB

4.4 測試配置

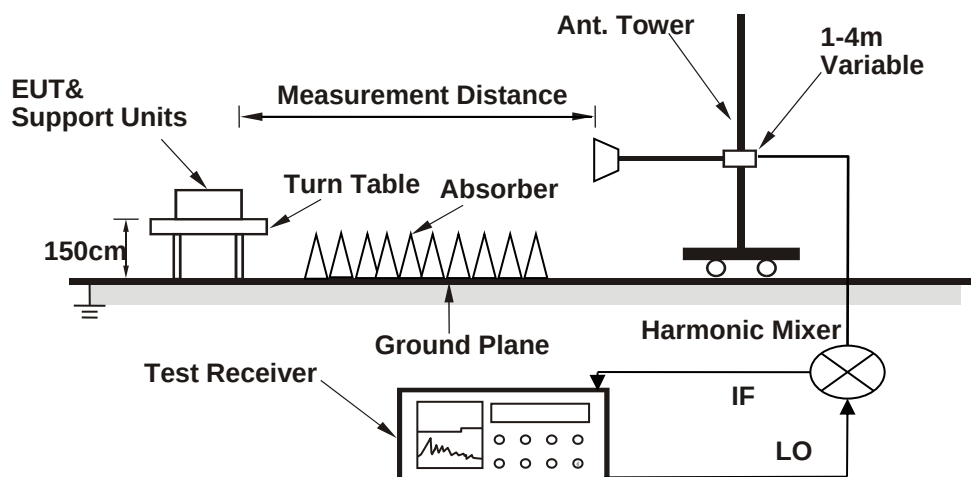
<Frequency Range below 1GHz>



<Frequency Range above 1GHz ~ 40GHz>



<Frequency Range above 40GHz>



4.5 場強度之計算

場強之計算公式如下：

結果值 Emission level (dBuV/m)=機器讀值 Raw Value (dBuV) +校正因子 Correction Factor (dB/m)

餘裕度 Margin(dB)= 結果值 Emission level (dBuV/m)-限制值 Limit value (dBuV/m)

量測結果請見下頁。

4.6 量測結果

4.6.1 混附發射

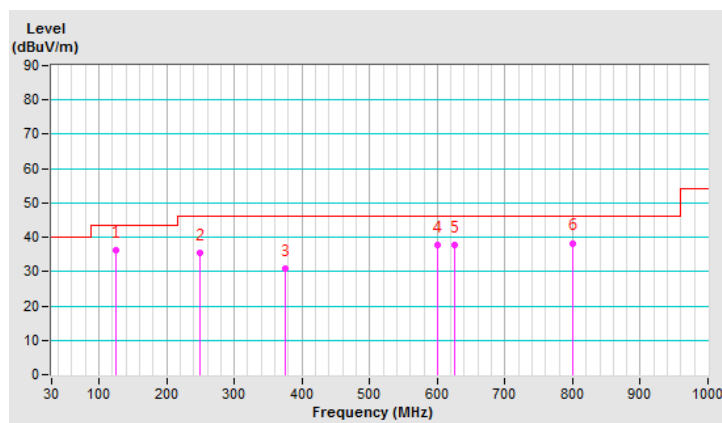
For below 1GHz

操作模式：	發射接收	調變技術：	OFDM
基本波頻率：	CH 1 : 58.32 GHz	測試儀器：	(QP) RB=120kHz
量測場地溫度：	23°C	量測場地濕度：	67%RH
測試日期：	108 年 3 月 6 日	測試者：	杜維倫

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	125.01	36.1 QP	43.5	-7.4	4.00 H	49	46.1	-10.0
2	250.02	35.5 QP	46.0	-10.5	1.00 H	360	44.4	-8.9
3	375.03	30.9 QP	46.0	-15.1	1.00 H	39	36.1	-5.2
4	600.12	37.7 QP	46.0	-8.3	1.00 H	332	37.5	0.2
5	625.10	37.7 QP	46.0	-8.3	1.00 H	333	37.1	0.6
6	800.08	38.3 QP	46.0	-7.7	1.00 H	288	35.1	3.2

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



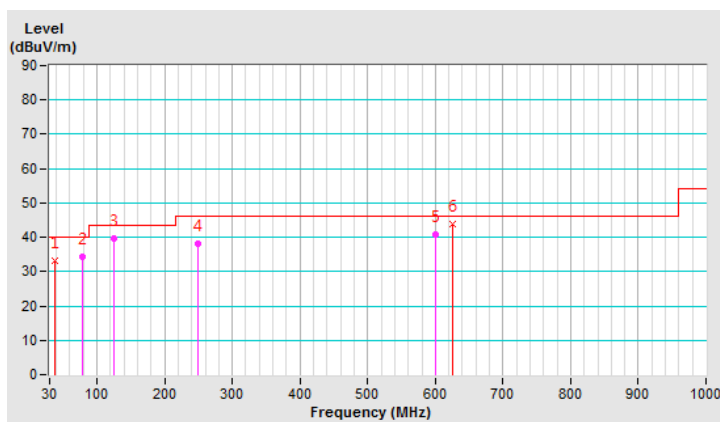
操作模式：	發射接收	調變技術：	OFDM
基本波頻率：	CH 1 : 58.32 GHz	測試儀器：	(QP) RB=120kHz
量測場地溫度：	23°C	量測場地濕度：	67%RH
測試日期：	108 年 3 月 6 日	測試者：	杜維倫

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	37.86	33.0 QP	40.0	-7.0	1.00 V	1	42.7	-9.7
2	77.68	34.3 QP	40.0	-5.7	1.50 V	360	47.3	-13.0
3	125.01	39.8 QP	43.5	-3.7	1.50 V	360	49.8	-10.0
4	250.04	38.2 QP	46.0	-7.8	2.50 V	360	47.1	-8.9
5	600.07	40.8 QP	46.0	-5.2	1.50 V	360	40.6	0.2
6	625.07	43.8 QP	46.0	-2.2	1.33 V	0	43.2	0.6

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



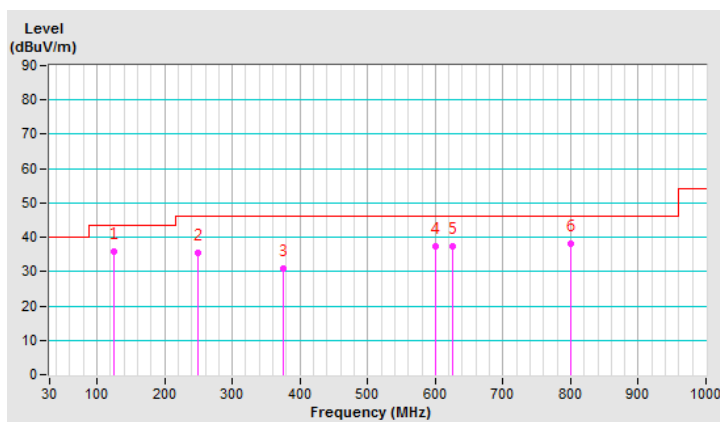
操作模式：	發射接收	調變技術：	OFDM
基本波頻率：	CH 2 : 60.48 GHz	測試儀器：	(QP) RB=120kHz
量測場地溫度：	23°C	量測場地濕度：	67%RH
測試日期：	108 年 3 月 7 日	測試者：	杜維倫

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	125.01	35.8 QP	43.5	-7.7	3.50 H	162	45.8	-10.0
2	250.02	35.3 QP	46.0	-10.7	1.00 H	154	44.2	-8.9
3	375.03	30.7 QP	46.0	-15.3	1.00 H	264	35.9	-5.2
4	600.12	37.5 QP	46.0	-8.5	1.00 H	279	37.3	0.2
5	625.10	37.4 QP	46.0	-8.6	1.00 H	238	36.8	0.6
6	800.08	38.1 QP	46.0	-7.9	1.00 H	165	34.9	3.2

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



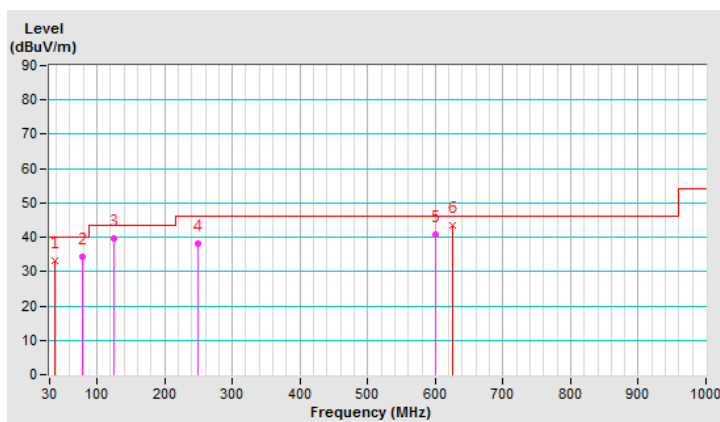
操作模式：	發射接收	調變技術：	OFDM
基本波頻率：	CH 2：60.48 GHz	測試儀器：	(QP) RB=120kHz
量測場地溫度：	23°C	量測場地濕度：	67%RH
測試日期：	108 年 3 月 7 日	測試者：	杜維倫

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	37.86	33.2 QP	40.0	-6.8	1.00 V	132	42.9	-9.7
2	77.68	34.3 QP	40.0	-5.7	1.50 V	265	47.3	-13.0
3	125.01	39.6 QP	43.5	-3.9	1.49 V	281	49.6	-10.0
4	250.04	38.0 QP	46.0	-8.0	2.00 V	338	46.9	-8.9
5	600.07	40.7 QP	46.0	-5.3	1.50 V	194	40.5	0.2
6	625.07	43.6 QP	46.0	-2.4	1.36 V	215	43.0	0.6

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



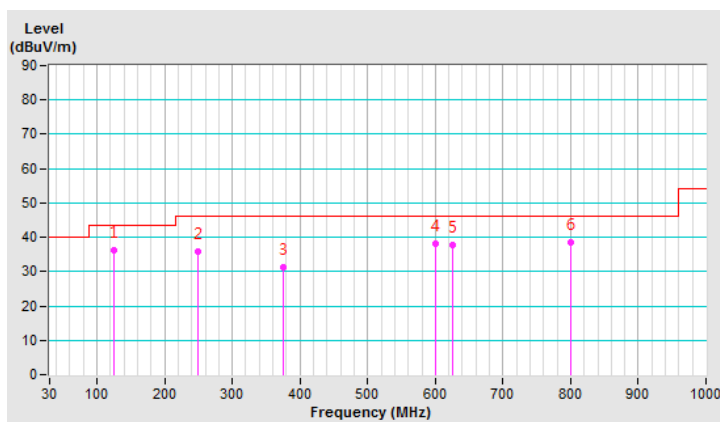
操作模式：	發射接收	調變技術：	OFDM
基本波頻率：	CH 3 : 62.64 GHz	測試儀器：	(QP) RB=120kHz
量測場地溫度：	23°C	量測場地濕度：	67%RH
測試日期：	108 年 3 月 7 日	測試者：	杜維倫

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	125.01	36.3 QP	43.5	-7.2	3.00 H	142	46.3	-10.0
2	250.02	35.8 QP	46.0	-10.2	1.50 H	163	44.7	-8.9
3	375.03	31.4 QP	46.0	-14.6	1.00 H	225	36.6	-5.2
4	600.12	38.1 QP	46.0	-7.9	1.00 H	201	37.9	0.2
5	625.10	37.8 QP	46.0	-8.2	1.00 H	265	37.2	0.6
6	800.08	38.5 QP	46.0	-7.5	1.00 H	117	35.3	3.2

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



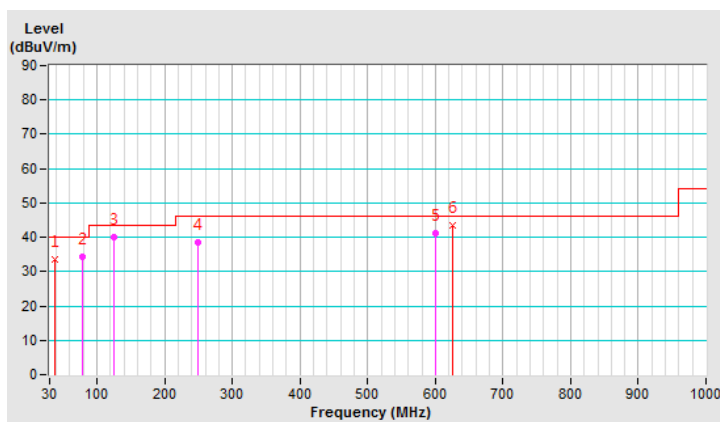
操作模式：	發射接收	調變技術：	OFDM
基本波頻率：	CH 3 : 62.64 GHz	測試儀器：	(QP) RB=120kHz
量測場地溫度：	23°C	量測場地濕度：	67%RH
測試日期：	108 年 3 月 7 日	測試者：	杜維倫

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	37.86	33.4 QP	40.0	-6.6	1.10 V	265	43.1	-9.7
2	77.68	34.4 QP	40.0	-5.6	1.49 V	273	47.4	-13.0
3	125.01	39.9 QP	43.5	-3.6	1.59 V	264	49.9	-10.0
4	250.04	38.4 QP	46.0	-7.6	2.50 V	242	47.3	-8.9
5	600.07	41.1 QP	46.0	-4.9	1.55 V	169	40.9	0.2
6	625.07	43.5 QP	46.0	-2.5	1.44 V	238	42.9	0.6

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



For 1~18GHz

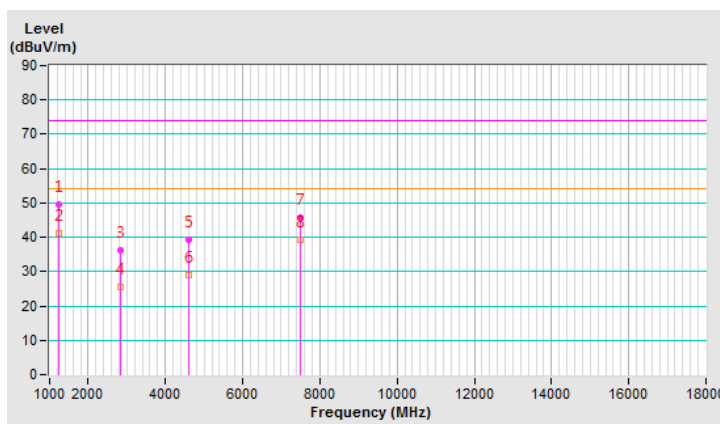
操作模式：	發射	調變技術：	OFDM
基本波頻率：	CH 1：58.32 GHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	21℃	量測場地濕度：	63%RH
測試日期：	108 年 3 月 13 日	測試者：	杜維倫

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	1250.00	49.4 PK	74.0	-24.6	1.60 H	30	54.7	-5.3
2	1250.00	41.3 AV	54.0	-12.7	1.60 H	30	46.6	-5.3
3	2836.00	36.2 PK	74.0	-37.8	1.67 H	39	37.4	-1.2
4	2836.00	25.4 AV	54.0	-28.6	1.67 H	39	26.6	-1.2
5	4604.00	39.3 PK	74.0	-34.7	1.61 H	42	37.5	1.8
6	4604.00	29.0 AV	54.0	-25.0	1.61 H	42	27.2	1.8
7	7500.00	45.6 PK	74.0	-28.4	1.62 H	45	37.0	8.6
8	7500.00	39.1 AV	54.0	-14.9	1.62 H	45	30.5	8.6

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.



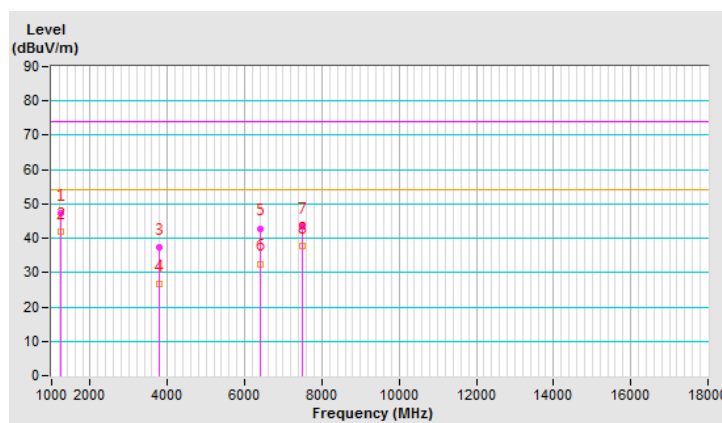
操作模式：	發射	調變技術：	OFDM
基本波頻率：	CH 1 : 58.32 GHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	21°C	量測場地濕度：	63%RH
測試日期：	108 年 3 月 13 日	測試者：	杜維倫

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	1250.00	47.3 PK	74.0	-26.7	1.67 V	23	52.6	-5.3
2	1250.00	42.0 AV	54.0	-12.0	1.67 V	23	47.3	-5.3
3	3788.00	37.4 PK	74.0	-36.6	1.54 V	31	37.3	0.1
4	3788.00	26.8 AV	54.0	-27.2	1.54 V	31	26.7	0.1
5	6406.00	42.9 PK	74.0	-31.1	1.61 V	32	37.4	5.5
6	6406.00	32.6 AV	54.0	-21.4	1.61 V	32	27.1	5.5
7	7500.00	43.4 PK	74.0	-30.6	1.50 V	13	34.8	8.6
8	7500.00	37.9 AV	54.0	-16.1	1.50 V	13	29.3	8.6

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.



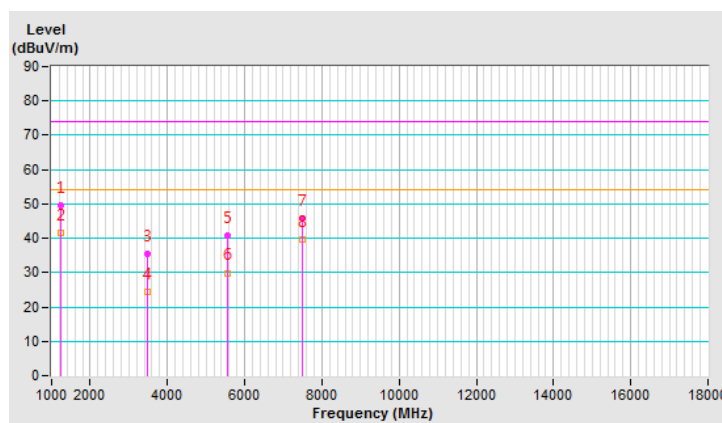
操作模式：	發射	調變技術：	OFDM
基本波頻率：	CH 2 : 60.48 GHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	21°C	量測場地濕度：	63%RH
測試日期：	108 年 3 月 13 日	測試者：	杜維倫

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	1250.00	49.6 PK	74.0	-24.4	1.57 H	28	54.9	-5.3
2	1250.00	41.6 AV	54.0	-12.4	1.57 H	28	46.9	-5.3
3	3482.00	35.4 PK	74.0	-38.6	1.58 H	42	35.8	-0.4
4	3482.00	24.3 AV	54.0	-29.7	1.58 H	42	24.7	-0.4
5	5556.00	40.9 PK	74.0	-33.1	1.52 H	55	37.6	3.3
6	5556.00	29.9 AV	54.0	-24.1	1.52 H	55	26.6	3.3
7	7500.00	45.9 PK	74.0	-28.1	1.59 H	49	37.3	8.6
8	7500.00	39.5 AV	54.0	-14.5	1.59 H	49	30.9	8.6

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

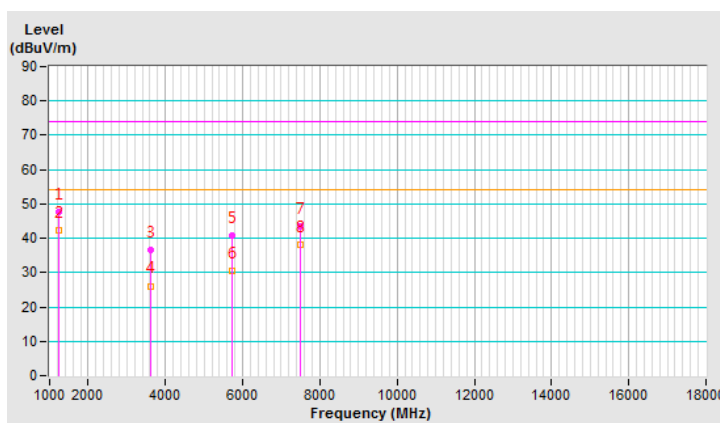


操作模式：	發射	調變技術：	OFDM
基本波頻率：	CH 2 : 60.48 GHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	21°C	量測場地濕度：	63%RH
測試日期：	108 年 3 月 13 日	測試者：	杜維倫

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	1250.00	47.5 PK	74.0	-26.5	1.62 V	31	52.8	-5.3
2	1250.00	42.2 AV	54.0	-11.8	1.62 V	31	47.5	-5.3
3	3618.00	36.7 PK	74.0	-37.3	1.59 V	44	36.7	0.0
4	3618.00	26.1 AV	54.0	-27.9	1.59 V	44	26.1	0.0
5	5726.00	40.7 PK	74.0	-33.3	1.59 V	65	37.2	3.5
6	5726.00	30.6 AV	54.0	-23.4	1.59 V	65	27.1	3.5
7	7500.00	43.6 PK	74.0	-30.4	1.51 V	18	35.0	8.6
8	7500.00	38.2 AV	54.0	-15.8	1.51 V	18	29.6	8.6

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.



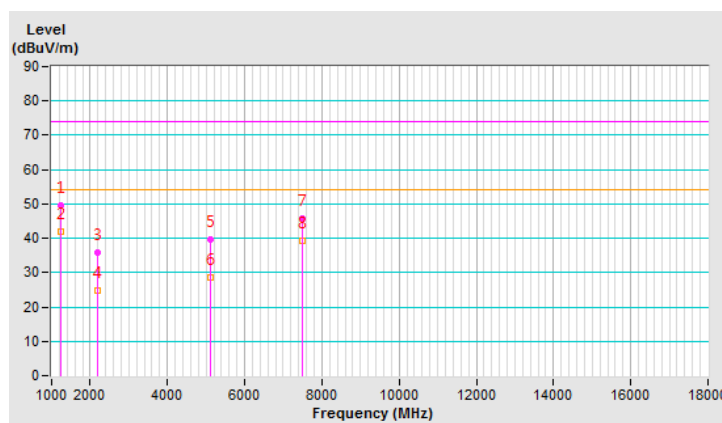
操作模式：	發射	調變技術：	OFDM
基本波頻率：	CH 3 : 62.64 GHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	21°C	量測場地濕度：	63%RH
測試日期：	108 年 3 月 13 日	測試者：	杜維倫

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	1250.00	49.7 PK	74.0	-24.3	1.56 H	42	55.0	-5.3
2	1250.00	41.8 AV	54.0	-12.2	1.56 H	42	47.1	-5.3
3	2190.00	35.8 PK	74.0	-38.2	1.60 H	19	37.5	-1.7
4	2190.00	24.7 AV	54.0	-29.3	1.60 H	19	26.4	-1.7
5	5114.00	39.6 PK	74.0	-34.4	1.61 H	61	36.2	3.4
6	5114.00	28.7 AV	54.0	-25.3	1.61 H	61	25.3	3.4
7	7500.00	45.8 PK	74.0	-28.2	1.64 H	58	37.2	8.6
8	7500.00	39.3 AV	54.0	-14.7	1.64 H	58	30.7	8.6

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.



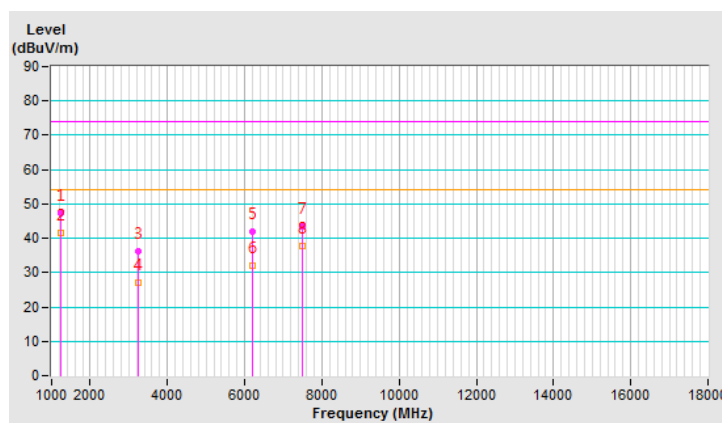
操作模式：	發射	調變技術：	OFDM
基本波頻率：	CH 3 : 62.64 GHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	21°C	量測場地濕度：	63%RH
測試日期：	108 年 3 月 13 日	測試者：	杜維倫

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	1250.00	47.1 PK	74.0	-26.9	1.54 V	61	52.4	-5.3
2	1250.00	41.6 AV	54.0	-12.4	1.54 V	61	46.9	-5.3
3	3244.00	36.3 PK	74.0	-37.7	1.59 V	55	37.0	-0.7
4	3244.00	27.1 AV	54.0	-26.9	1.59 V	55	27.8	-0.7
5	6202.00	41.9 PK	74.0	-32.1	1.68 V	72	37.4	4.5
6	6202.00	32.1 AV	54.0	-21.9	1.68 V	72	27.6	4.5
7	7500.00	43.4 PK	74.0	-30.6	1.62 V	55	34.8	8.6
8	7500.00	37.7 AV	54.0	-16.3	1.62 V	55	29.1	8.6

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.



For 18~40GHz

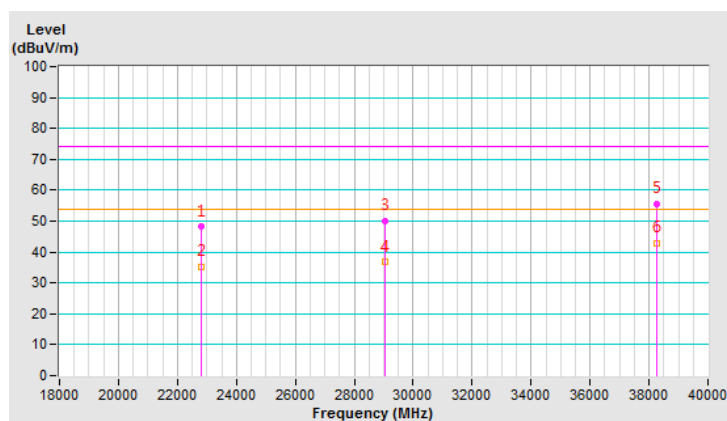
操作模式：	發射	調變技術：	OFDM
基本波頻率：	CH 1 : 58.32 GHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	21°C	量測場地濕度：	66%RH
測試日期：	108 年 3 月 13 日	測試者：	杜維倫

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	22819.10	48.1 PK	74.0	-25.9	1.48 H	139	56.3	-8.2
2	22819.10	35.1 AV	54.0	-18.9	1.48 H	139	43.3	-8.2
3	29053.35	49.9 PK	74.0	-24.1	1.55 H	168	58.0	-8.1
4	29053.35	36.7 AV	54.0	-17.3	1.55 H	168	44.8	-8.1
5	38244.40	55.7 PK	74.0	-18.3	1.53 H	147	58.9	-3.2
6	38244.40	42.7 AV	54.0	-11.3	1.53 H	147	45.9	-3.2

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

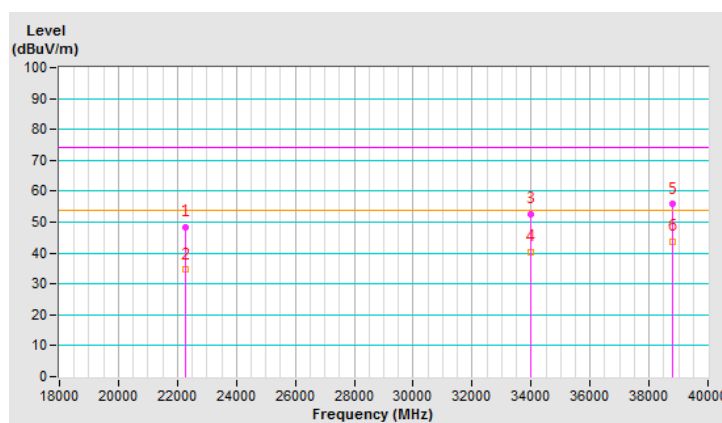


操作模式：	發射	調變技術：	OFDM
基本波頻率：	CH 1 : 58.32 GHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	21°C	量測場地濕度：	66%RH
測試日期：	108 年 3 月 13 日	測試者：	杜維倫

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	22268.00	48.5 PK	74.0	-25.5	1.63 V	139	57.2	-8.7
2	22268.00	34.6 AV	54.0	-19.4	1.63 V	139	43.3	-8.7
3	33972.00	52.5 PK	74.0	-21.5	1.58 V	148	59.6	-7.1
4	33972.00	40.4 AV	54.0	-13.6	1.58 V	148	47.5	-7.1
5	38812.00	55.8 PK	74.0	-18.2	1.53 V	120	57.6	-1.8
6	38812.00	43.8 AV	54.0	-10.2	1.53 V	120	45.6	-1.8

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

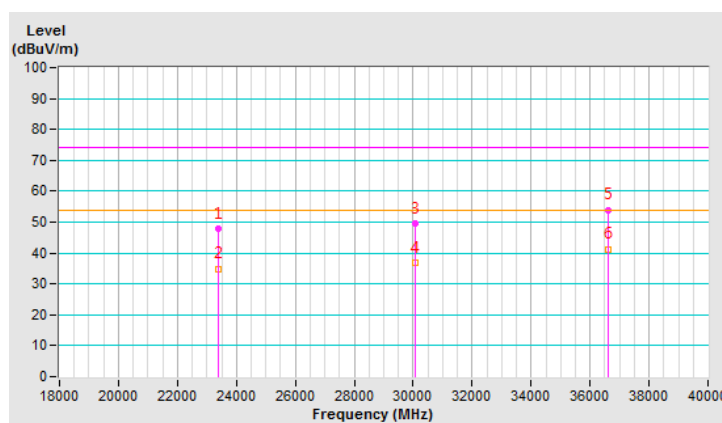


操作模式：	發射	調變技術：	OFDM
基本波頻率：	CH 2 : 60.48 GHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	21°C	量測場地濕度：	66%RH
測試日期：	108 年 3 月 13 日	測試者：	杜維倫

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	23387.25	47.7 PK	74.0	-26.3	1.50 H	141	56.4	-8.7
2	23387.25	34.7 AV	54.0	-19.3	1.50 H	141	43.4	-8.7
3	30067.55	49.4 PK	74.0	-24.6	1.52 H	192	56.9	-7.5
4	30067.55	36.7 AV	54.0	-17.3	1.52 H	192	44.2	-7.5
5	36607.05	53.9 PK	74.0	-20.1	1.56 H	181	59.6	-5.7
6	36607.05	41.2 AV	54.0	-12.8	1.56 H	181	46.9	-5.7

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

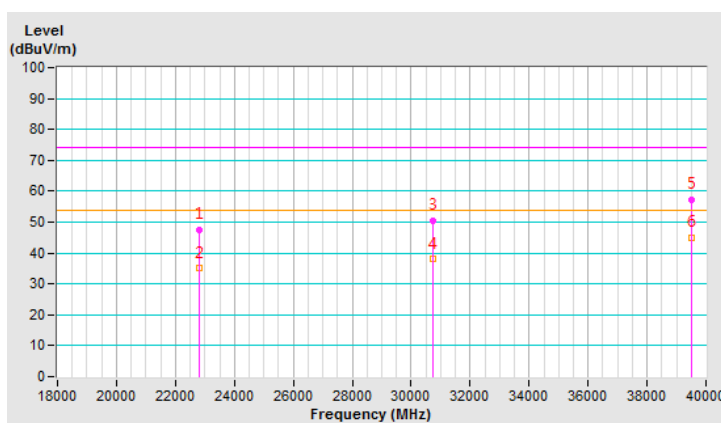


操作模式：	發射	調變技術：	OFDM
基本波頻率：	CH 2 : 60.48 GHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	21°C	量測場地濕度：	66%RH
測試日期：	108 年 3 月 13 日	測試者：	杜維倫

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	22796.00	47.5 PK	74.0	-26.5	1.46 V	131	55.7	-8.2
2	22796.00	35.0 AV	54.0	-19.0	1.46 V	131	43.2	-8.2
3	30716.00	50.3 PK	74.0	-23.7	1.60 V	172	57.0	-6.7
4	30716.00	38.0 AV	54.0	-16.0	1.60 V	172	44.7	-6.7
5	39516.00	57.3 PK	74.0	-16.7	1.63 V	162	57.4	-0.1
6	39516.00	45.0 AV	54.0	-9.0	1.63 V	162	45.1	-0.1

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

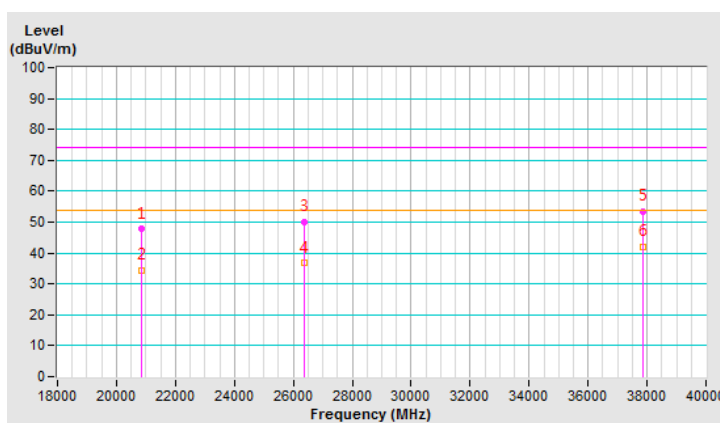


操作模式：	發射	調變技術：	OFDM
基本波頻率：	CH 3 : 62.64 GHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	21°C	量測場地濕度：	66%RH
測試日期：	108 年 3 月 13 日	測試者：	杜維倫

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	20860.55	47.7 PK	74.0	-26.3	1.53 H	126	57.5	-9.8
2	20860.55	34.4 AV	54.0	-19.6	1.53 H	126	44.2	-9.8
3	26357.80	50.1 PK	74.0	-23.9	1.59 H	142	56.6	-6.5
4	26357.80	36.7 AV	54.0	-17.3	1.59 H	142	43.2	-6.5
5	37874.80	53.5 PK	74.0	-20.5	1.48 H	132	58.2	-4.7
6	37874.80	42.0 AV	54.0	-12.0	1.48 H	132	46.7	-4.7

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.



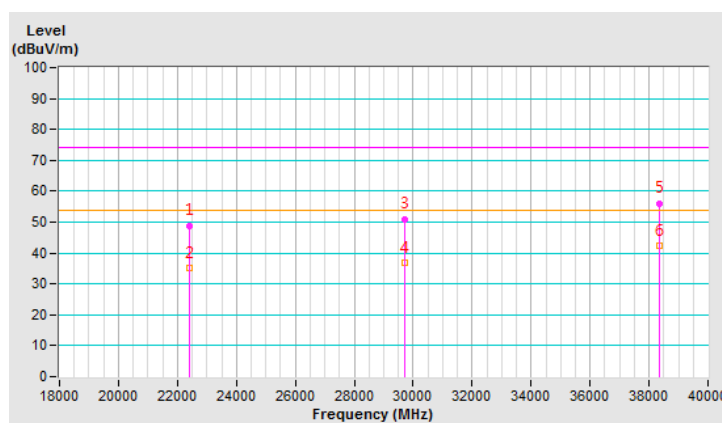
操作模式：	發射	調變技術：	OFDM
基本波頻率：	CH 3 : 62.64 GHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	21°C	量測場地濕度：	66%RH
測試日期：	108 年 3 月 13 日	測試者：	杜維倫

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	22400.00	48.7 PK	74.0	-25.3	1.52 V	136	57.5	-8.8
2	22400.00	35.0 AV	54.0	-19.0	1.52 V	136	43.8	-8.8
3	29704.00	50.8 PK	74.0	-23.2	1.55 V	151	58.5	-7.7
4	29704.00	36.7 AV	54.0	-17.3	1.55 V	151	44.4	-7.7
5	38372.00	56.1 PK	74.0	-17.9	1.56 V	161	59.6	-3.5
6	38372.00	42.2 AV	54.0	-11.8	1.56 V	161	45.7	-3.5

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.



Above 40GHz

操作模式：	發射	調變技術：	OFDM
基本波頻率：	CH 1 : 58.32 GHz	測試儀器：	(PK) RB=1MHz, VB=3MHz
量測場地溫度：	24°C	量測場地濕度：	62%RH
測試日期：	108 年 3 月 15 日	測試者：	羅益瑋

ANTENNA POLARITY: HORIZONTAL						
NO.	Frequency (GHz)	EIRP Level (dBm)	Reading Value (dBm)	Transmit Antenna Gain (dBi)	Power Density (pW/cm ²)	Power Density Limit (pW/cm ²)
1	116.64	-17.0	-67.6	23.2	17.643 PK	90
2	200	-14.0	-69.2	23.3	35.201 PK	90
ANTENNA POLARITY: VERTICAL						
NO.	Frequency (GHz)	EIRP Level (dBm)	Reading Value (dBm)	Transmit Antenna Gain (dBi)	Power Density (pW/cm ²)	Power Density Limit (pW/cm ²)
1	116.64	-19.8	-70.4	23.2	9.259 PK	90
2	200	-16.9	-72.1	23.3	18.053 PK	90

1. The measured power level is converted to EIRP using the equation:

$$\text{EIRP} = \text{Raw Value} - \text{Receiver Antenna Gain} + 20 \cdot \log(4 \cdot 3.1416 \cdot D / \lambda)$$

where:

D is the measurement distance

λ is the wavelength

*Measurements made at 1 meter distance.

2. Power density formula as follows:

$$\text{Power density} = \text{EIRP} / (4 \cdot \pi \cdot r^2)$$

r is the 3m distance.

3. The far-field boundary is given in ANSI 63.10 as:

$$R_{\text{far field}} = (2 \cdot L^2) / \lambda$$

L is the Largest Antenna Dimension, including the reflector

λ is the wavelength

Frequency (GHz)	L (m)	Lambda (m)	R (Far Field) (m)
58.32	0.025	0.00514	0.243

操作模式：	發射	調變技術：	OFDM
基本波頻率：	CH 2 : 60.48 GHz	測試儀器：	(PK) RB=1MHz, VB=3MHz
量測場地溫度：	24°C	量測場地濕度：	62%RH
測試日期：	108 年 3 月 15 日	測試者：	羅益瑋

ANTENNA POLARITY: HORIZONTAL						
NO.	Frequency (GHz)	EIRP Level (dBm)	Reading Value (dBm)	Transmit Antenna Gain (dBi)	Power Density (pW/cm ²)	Power Density Limit (pW/cm ²)
1	120.96	-17.3	-68.1	23.3	16.465 PK	90
2	200	-15.4	-70.6	23.3	25.501 PK	90
ANTENNA POLARITY: VERTICAL						
NO.	Frequency (GHz)	EIRP Level (dBm)	Reading Value (dBm)	Transmit Antenna Gain (dBi)	Power Density (pW/cm ²)	Power Density Limit (pW/cm ²)
1	120.96	-20.4	-71.2	23.3	8.064 PK	90
2	200	-17.6	-72.8	23.3	15.366 PK	90

1. The measured power level is converted to EIRP using the equation:

$$\text{EIRP} = \text{Raw Value} - \text{Receiver Antenna Gain} + 20 \cdot \log(4 \cdot 3.1416 \cdot D / \lambda)$$

where:

D is the measurement distance

λ is the wavelength

*Measurements made at 1 meter distance.

2. Power density formula as follows:

$$\text{Power density} = \text{EIRP} / (4 \cdot \pi \cdot r^2)$$

r is the 3m distance.

3. The far-field boundary is given in ANSI 63.10 as:

$$R_{\text{far field}} = (2 \cdot L^2) / \lambda$$

L is the Largest Antenna Dimension, including the reflector

λ is the wavelength

Frequency (GHz)	L (m)	Lambda (m)	R (Far Field) (m)
60.48	0.025	0.00496	0.252

操作模式：	發射	調變技術：	OFDM
基本波頻率：	CH 3 : 62.64 GHz	測試儀器：	(PK) RB=1MHz, VB=3MHz
量測場地溫度：	24°C	量測場地濕度：	62%RH
測試日期：	108 年 3 月 15 日	測試者：	羅益瑋

ANTENNA POLARITY: HORIZONTAL						
NO.	Frequency (GHz)	EIRP Level (dBm)	Reading Value (dBm)	Transmit Antenna Gain (dBi)	Power Density (pW/cm ²)	Power Density Limit (pW/cm ²)
1	125.28	-17.1	-68.2	23.3	17.241 PK	90
2	200	-15.9	-71.1	23.3	22.728 PK	90
ANTENNA POLARITY: VERTICAL						
NO.	Frequency (GHz)	EIRP Level (dBm)	Reading Value (dBm)	Transmit Antenna Gain (dBi)	Power Density (pW/cm ²)	Power Density Limit (pW/cm ²)
1	125.28	-20.3	-71.4	23.3	8.252 PK	90
2	200	-18.0	-73.2	23.3	14.014 PK	90

1. The measured power level is converted to EIRP using the equation:

$$\text{EIRP} = \text{Raw Value} - \text{Receiver Antenna Gain} + 20 \cdot \log(4 \cdot 3.1416 \cdot D / \lambda)$$

where:

D is the measurement distance

λ is the wavelength

*Measurements made at 1 meter distance.

2. Power density formula as follows:

$$\text{Power density} = \text{EIRP} / (4 \cdot \pi \cdot r^2)$$

r is the 3m distance.

3. The far-field boundary is given in ANSI 63.10 as:

$$R_{\text{far field}} = (2 \cdot L^2) / \lambda$$

L is the Largest Antenna Dimension, including the reflector

λ is the wavelength

Frequency (GHz)	L (m)	Lambda (m)	R (Far Field) (m)
62.64	0.025	0.00479	0.261

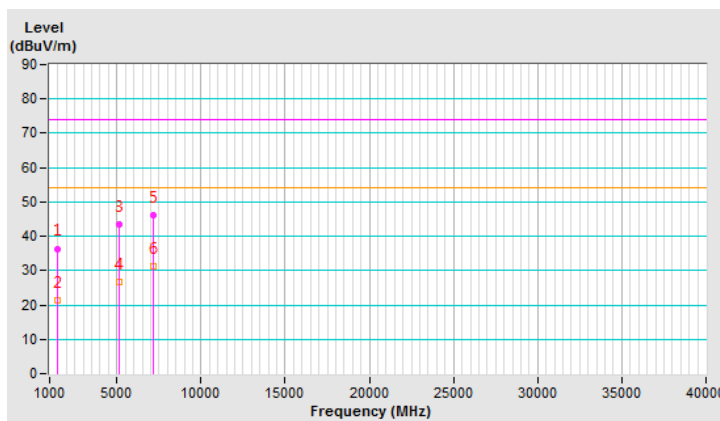
4.6.2 諧波接收

操作模式：	接收		
基本波頻率：	CH 1 : 58.32 GHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22°C	量測場地濕度：	68%RH
測試日期：	108 年 3 月 15 日	測試者：	何欣儒

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	1458.01	36.4 PK	74.0	-37.6	1.63 H	274	41.3	-4.9
2	1458.01	21.3 AV	54.0	-32.7	1.63 H	274	26.2	-4.9
3	5136.98	43.5 PK	74.0	-30.5	1.56 H	279	40.6	2.9
4	5136.98	26.7 AV	54.0	-27.3	1.56 H	279	23.8	2.9
5	7180.01	46.2 PK	74.0	-27.8	1.14 H	302	38.2	8.0
6	7180.01	31.2 AV	54.0	-22.8	1.14 H	302	23.2	8.0

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

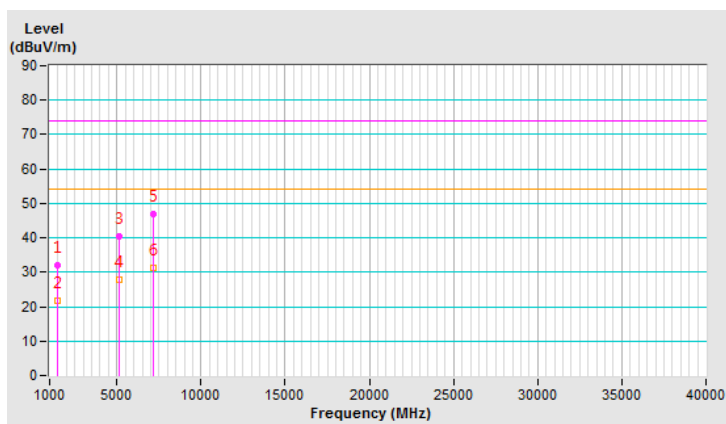


操作模式：	接收		
基本波頻率：	CH 1 : 58.32 GHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22°C	量測場地濕度：	68%RH
測試日期：	108 年 3 月 15 日	測試者：	何欣儒

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	1438.00	32.1 PK	74.0	-41.9	1.56 V	224	36.9	-4.8
2	1438.00	21.7 AV	54.0	-32.3	1.56 V	224	26.5	-4.8
3	5143.00	40.4 PK	74.0	-33.6	1.49 V	281	37.5	2.9
4	5143.00	27.9 AV	54.0	-26.1	1.49 V	281	25.0	2.9
5	7180.00	46.8 PK	74.0	-27.2	1.71 V	239	38.8	8.0
6	7180.00	31.3 AV	54.0	-22.7	1.71 V	239	23.3	8.0

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

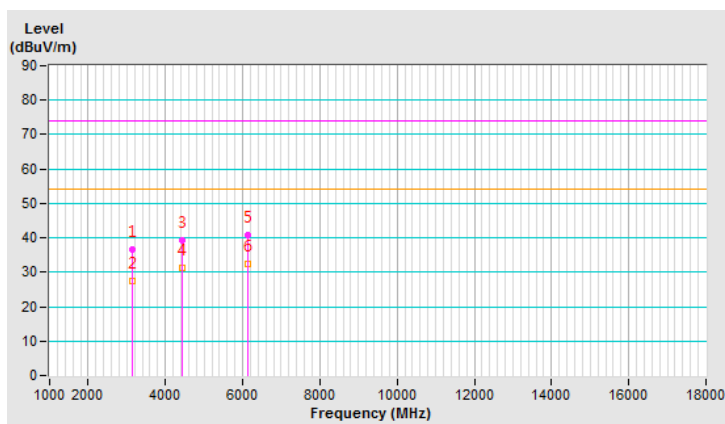


操作模式：	接收		
基本波頻率：	CH 2 : 60.48 GHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22°C	量測場地濕度：	67%RH
測試日期：	108 年 3 月 15 日	測試者：	何欣儒

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	3127.12	36.6 PK	74.0	-37.4	1.49 H	223	37.2	-0.6
2	3127.12	27.4 AV	54.0	-26.6	1.49 H	223	28.0	-0.6
3	4448.45	39.3 PK	74.0	-34.7	1.65 H	281	37.9	1.4
4	4448.45	31.2 AV	54.0	-22.8	1.65 H	281	29.8	1.4
5	6125.93	40.7 PK	74.0	-33.3	1.47 H	265	36.5	4.2
6	6125.93	32.4 AV	54.0	-21.6	1.47 H	265	28.2	4.2

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

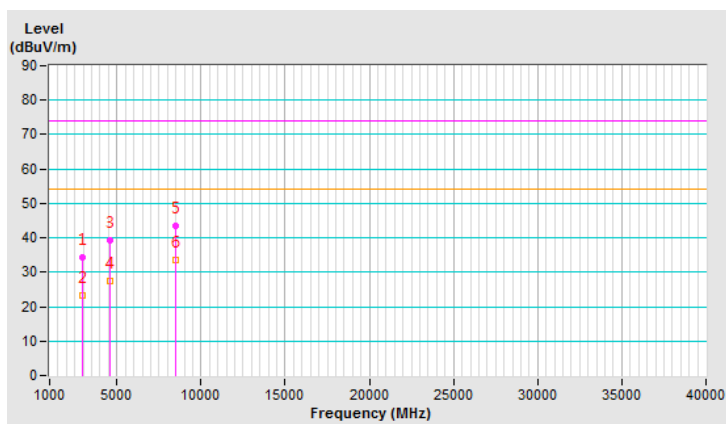


操作模式：	接收		
基本波頻率：	CH 2：60.48 GHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22°C	量測場地濕度：	67%RH
測試日期：	108 年 3 月 15 日	測試者：	何欣儒

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2920.15	34.4 PK	74.0	-39.6	1.43 V	112	35.5	-1.1
2	2920.15	23.3 AV	54.0	-30.7	1.43 V	112	24.4	-1.1
3	4609.95	39.3 PK	74.0	-34.7	1.64 V	301	37.4	1.9
4	4609.95	27.5 AV	54.0	-26.5	1.64 V	301	25.6	1.9
5	8486.37	43.5 PK	74.0	-30.5	1.31 V	297	34.2	9.3
6	8486.37	33.4 AV	54.0	-20.6	1.31 V	297	24.1	9.3

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

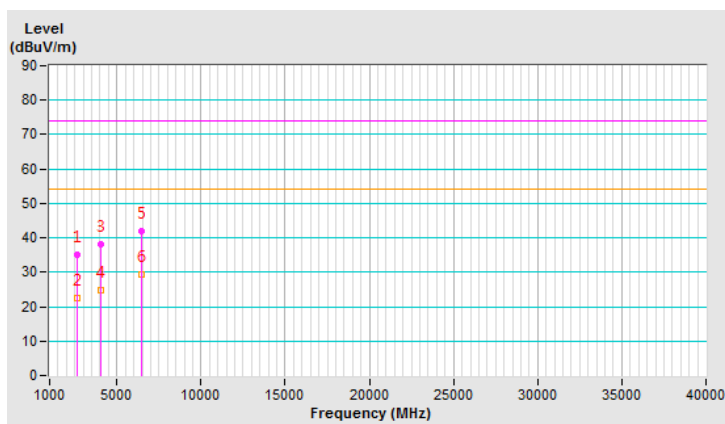


操作模式：	接收		
基本波頻率：	CH 3 : 62.64 GHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22°C	量測場地濕度：	67%RH
測試日期：	108 年 3 月 15 日	測試者：	何欣儒

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2669.81	35.0 PK	74.0	-39.0	1.73 H	239	36.6	-1.6
2	2669.81	22.4 AV	54.0	-31.6	1.73 H	239	24.0	-1.6
3	4068.51	38.2 PK	74.0	-35.8	1.45 H	106	37.4	0.8
4	4068.51	24.8 AV	54.0	-29.2	1.45 H	106	24.0	0.8
5	6423.84	41.9 PK	74.0	-32.1	2.02 H	198	36.3	5.6
6	6423.84	29.5 AV	54.0	-24.5	2.02 H	198	23.9	5.6

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

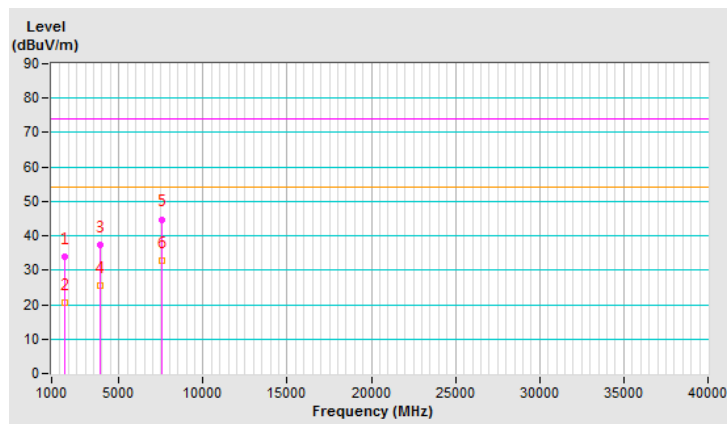


操作模式：	接收		
基本波頻率：	CH 3：62.64 GHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22°C	量測場地濕度：	67%RH
測試日期：	108 年 3 月 15 日	測試者：	何欣儒

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	1757.78	33.8 PK	74.0	-40.2	1.47 V	221	38.5	-4.7
2	1757.78	20.6 AV	54.0	-33.4	1.47 V	221	25.3	-4.7
3	3902.32	37.5 PK	74.0	-36.5	1.63 V	297	37.0	0.5
4	3902.32	25.6 AV	54.0	-28.4	1.63 V	297	25.1	0.5
5	7522.05	44.8 PK	74.0	-29.2	1.54 V	289	36.3	8.5
6	7522.05	32.9 AV	54.0	-21.1	1.54 V	289	24.4	8.5

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.



4.7 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

4.8 配置照片

請參照 Test Setup Photos

5 電源線傳導干擾之量測

5.1 適用標準

請見本報告 3.1 節第(1)項的規定。

5.2 量測方法

將待測物置於 0.8 米高的非金屬桌面，使其操作在工作狀態，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。

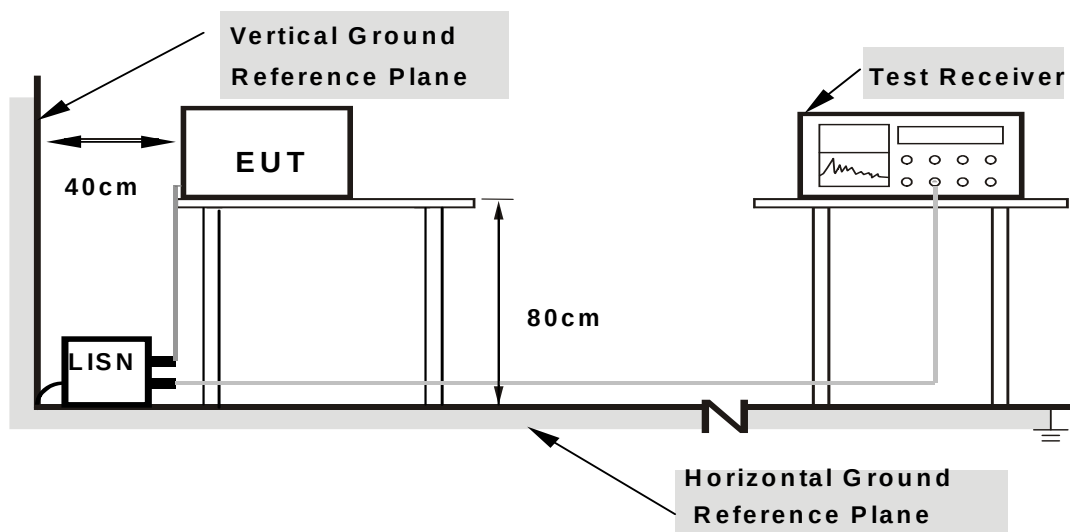
5.3 量測儀器

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Oct. 24, 2018	Oct. 23, 2019
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 22, 2018	Oct. 21, 2019
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 04, 2018	June 03, 2019
50 ohms Terminator	N/A	3	Oct. 22, 2018	Oct. 21, 2019
RF Cable	5D-FB	COCCAB-001	Sep. 28, 2018	Sep. 27, 2019
Fixed attenuator EMCI	STI02-2200-10	003	Mar. 16, 2018	Mar. 15, 2019
Software BVADT	BVADT_Conf_ V7.3.7.4	NA	NA	NA

Note:

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Conduction 1.
3. The measurement uncertainty is 2.98 dB, which is calculated as per the document CISPR 16-4-2 This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

5.4 測試配置



Note: 1.Support units were connected to second LISN.

5.5 干擾值之計算

餘裕度 Margin(dB)= 結果值 Emission level (dBuV)-限制值 Limit value (dBuV)

電源傳導干擾電壓之計算公式如下

結果值 Emission level (dBuV)=校正因子 Correction Factor (dB)+儀器讀值 Reading value (dBuV)

其中校正因子 Correction Factor (dB)為：

饋線損失+電源阻抗模擬網路損失

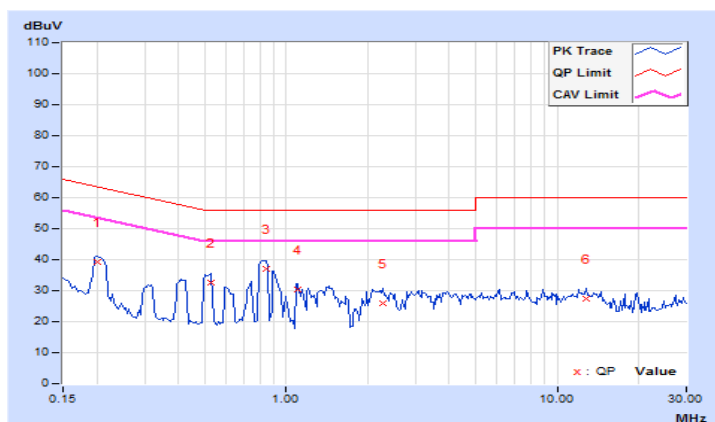
5.6 量測結果

操作模式	發射/ 接收	測試日期	108 年 3 月 04 日
基本波頻率	CH 1: 58.32GHz	量測場地溫度	25°C
調變技術	OFDM	量測場地濕度	57%RH
測試者	何欣儒		

		6 dB Bandwidth: 9kHz				PHASE: LINE (L)			
輻射頻率	校正因子	儀器讀值		結果值		限制值		餘裕度	
[MHz]	[dB]	[dB (uV)]		[dB (uV)]		[dB (uV)]		[dB]	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.20078	10.04	29.08	12.39	39.12	22.43	63.58	53.58	-24.46	-31.15
0.52500	10.08	22.67	12.10	32.75	22.18	56.00	46.00	-23.25	-23.82
0.84531	10.10	26.90	13.90	37.00	24.00	56.00	46.00	-19.00	-22.00
1.09766	10.11	20.40	5.09	30.51	15.20	56.00	46.00	-25.49	-30.80
2.28125	10.17	15.93	1.70	26.10	11.87	56.00	46.00	-29.90	-34.13
12.79297	10.68	16.90	6.02	27.58	16.70	60.00	50.00	-32.42	-33.30

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

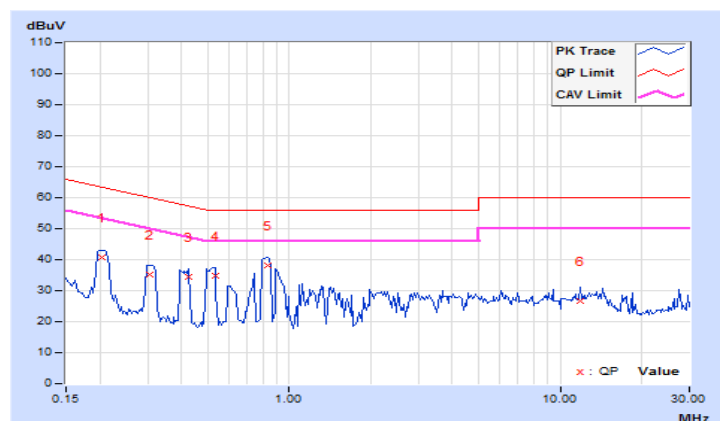


操作模式	發射/ 接收	測試日期	108 年 3 月 04 日
基本波頻率	CH 1: 58.32GHz	量測場地溫度	25°C
調變技術	OFDM	量測場地濕度	57%RH
測試者	何欣儒		

		6 dB Bandwidth: 9kHz				PHASE: NEUTRAL (N)			
輻射頻率	校正因子	儀器讀值		結果值		限制值		餘裕度	
[MHz]	[dB]	[dB (uV)]		[dB (uV)]		[dB (uV)]		[dB]	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.20469	9.94	30.91	19.06	40.85	29.00	63.42	53.42	-22.57	-24.42
0.30625	9.95	25.42	15.72	35.37	25.67	60.07	50.07	-24.70	-24.40
0.42344	9.96	24.38	13.31	34.34	23.27	57.38	47.38	-23.04	-24.11
0.53281	9.97	24.81	10.12	34.78	20.09	56.00	46.00	-21.22	-25.91
0.82969	9.98	28.33	14.31	38.31	24.29	56.00	46.00	-17.69	-21.71
11.90234	10.47	16.37	6.30	26.84	16.77	60.00	50.00	-33.16	-33.23

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



5.7 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

5.8 配置照片

請參照 Test Setup Photos

6 發射頻寬之要求

6.1 適用標準

請見本報告 3.1 節第(6)項的規定。

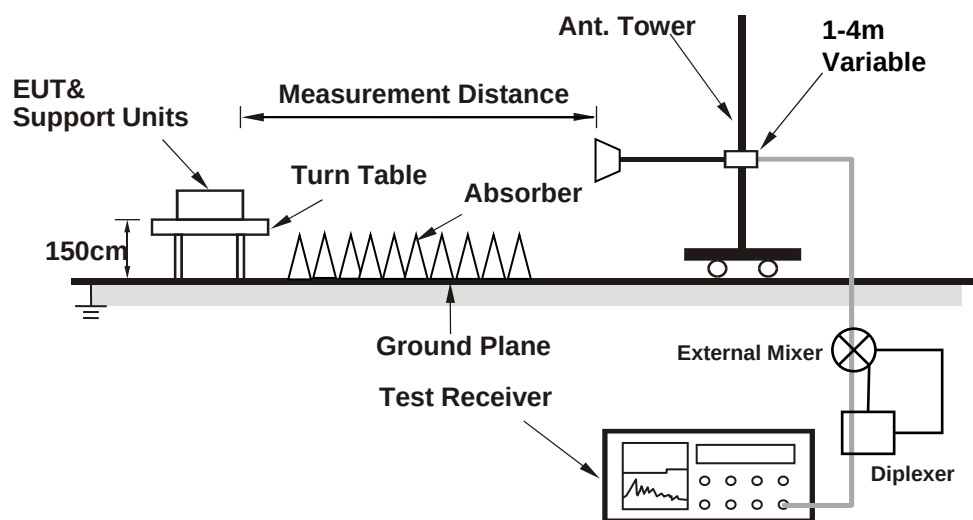
6.2 量測方法

The spectrum analyzer and external mixer are set up to measure the radiated output of the transmitter.

6.3 量測儀器

同 4.3 節

6.4 測試配置

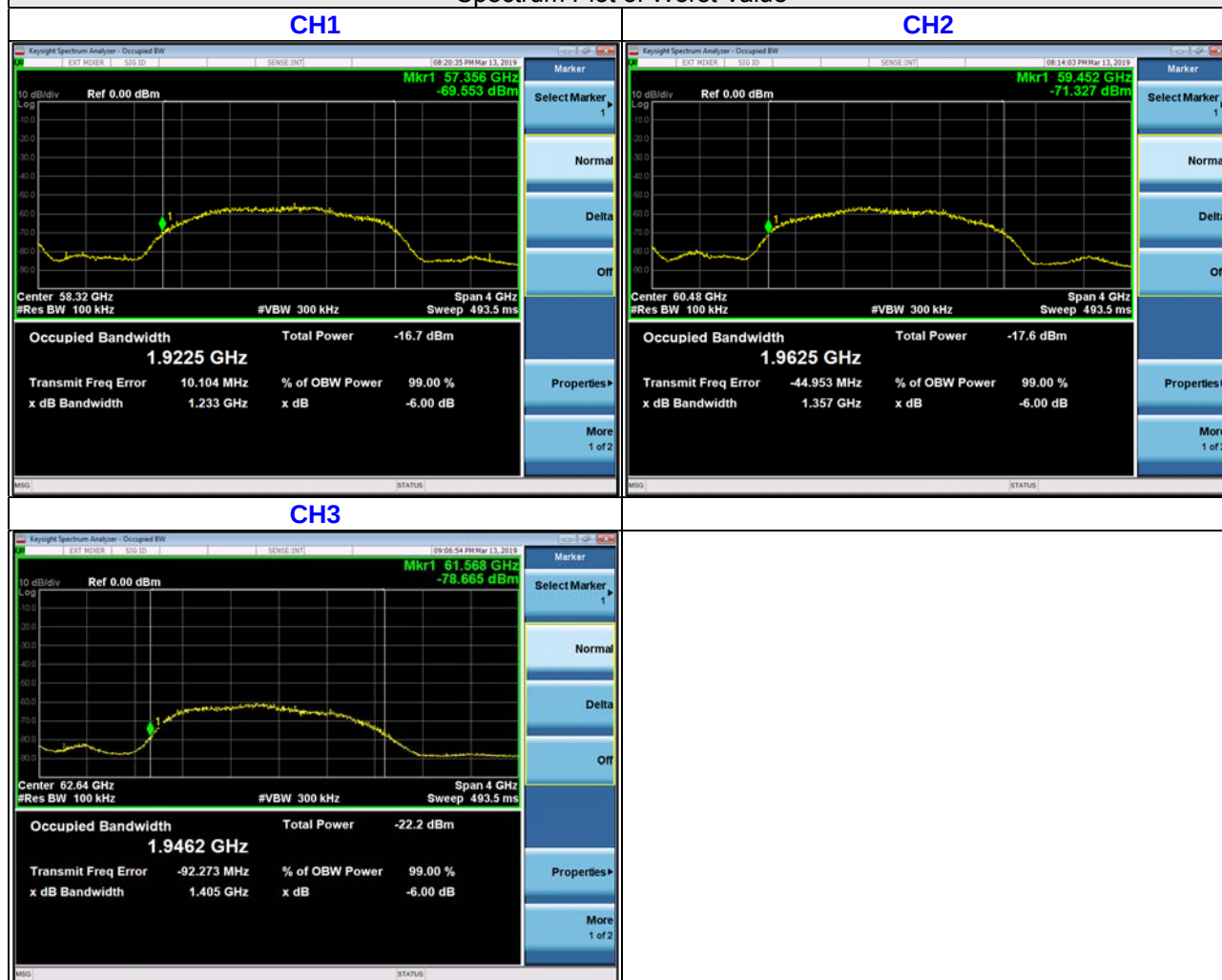


6.5 量測結果

操作模式	發射	測試日期	108 年 3 月 15 日
量測場地溫度	24°C	量測場地濕度	62%RH
測試者	羅益瑋		

Channel	Frequency (GHz)	6dB Bandwidth (GHz)
1	58.32	1.233
2	60.48	1.357
3	62.64	1.405

Spectrum Plot of Worst Value



6.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

7 有效等向輻射功率與峰值傳導輸出功率之量測

7.1 適用標準

請見本報告 3.1 節第(4) & (6)項的規定。

7.2 量測方法

- Place the EUT in a continuous transmission mode.
- For radiated emission measurements, attach a test receive antenna for the fundamental frequency band to the RF input of an RF detector or a downconverter with an RF detector at the output.
- Connect the video output of the detector to the 50 ohm input of the DSO.
- Place the test receive antenna in the main beam of the EUT at a distance which will provide a signal within the operating range of the RF detector.
- Set the sampling rate of the DSO to the required value. Adjust the memory depth, the triggering and the sweep speed to obtain a display which is representative of the signal considering the type of modulation.
- For radiated emission measurements, calculate the distance to the far field boundary of the fundamental emission using following equation

The far-field boundary is given in ANSI 63.10 as:

$$R_{\text{far field}} = (2 * L^2) / \lambda$$

L is the Largest Antenna Dimension, including the reflector

λ is the wavelength

Frequency (GHz)	L (m)	Lambda (m)	R (Far Field) (m)
58.32	0.025	0.00514	0.243

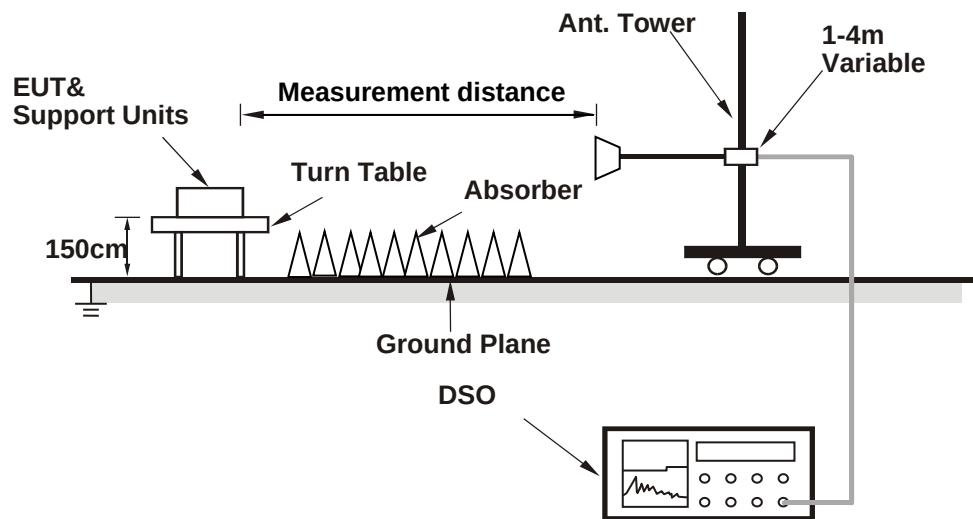
- Perform radiated emission measurements to keep maximize the received signal from the EUT in the far field.
- Record the average and peak from the DSO and the measurement distance.
- Disconnect the EUT from the RF input port of the instrumentation system.
- Connect a mm-wave source to the RF input port of the instrumentation system via a waveguide variable attenuator. The mm-wave source is unmodulated.
- Using substitution measurement.
- Measure and note the power.
- For conducted power measurements, calculate the conducted power using following equation

$$P_{\text{cond}} = \text{EIRP} - G_{\text{dBi}}$$

7.3 量測儀器

同 4.3 節

7.4 測試配置



7.5 量測結果

操作模式	發射	測試日期	108 年 3 月 15 日
量測場地溫度	24°C	量測場地濕度	62%RH
測試者	羅益瑋		

For Peak Power

Channel	Frequency (GHz)	Transmitt Antenna	S.G Output Value (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Pass /Fail
1	58.32	21.4	12.5	33.9	43	Pass
2	60.48	21.4	11.5	32.9	43	Pass
3	62.64	21.4	10.6	32.0	43	Pass

Channel	Frequency (GHz)	EIRP (dBm)	Max. Array Gain (dBi)	Conducted Output Power (dBm)	Conducted Output Power (mW)	Conducted Output Power limit (mW)	Pass /Fail
1	58.32	33.9	19	14.9	30.9	500	Pass
2	60.48	32.9	19	13.9	24.5	500	Pass
3	62.64	32.0	19	13.0	20.0	500	Pass

Note:

1. The EIRP was evaluated on vertical and horizontal polarization, the worst case is Horizontal polarization.

For Average Power

Channel	Frequency (GHz)	Transmitt Antenna	S.G Output Value (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Pass /Fail
1	58.32	21.4	10.5	31.9	40	Pass
2	60.48	21.4	10.9	32.3	40	Pass
3	62.64	21.4	9.6	31.0	40	Pass

Note: The EIRP was evaluated on vertical and horizontal polarization, the worst case is Horizontal polarization.

7.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

8 天線之要求

8.1 適用標準

請見本報告 3.1 節第(3)項的規定。

8.2 天線之規定

此待測設備使用 PCB，無使用天線接頭。

8.3 結果判定

符合低功率射頻電機技術規範之要求，請參照附件之天線規格。

9 頻率穩定度之量測

9.1 適用標準

請見本報告 3.1 節第(7)項的規定。

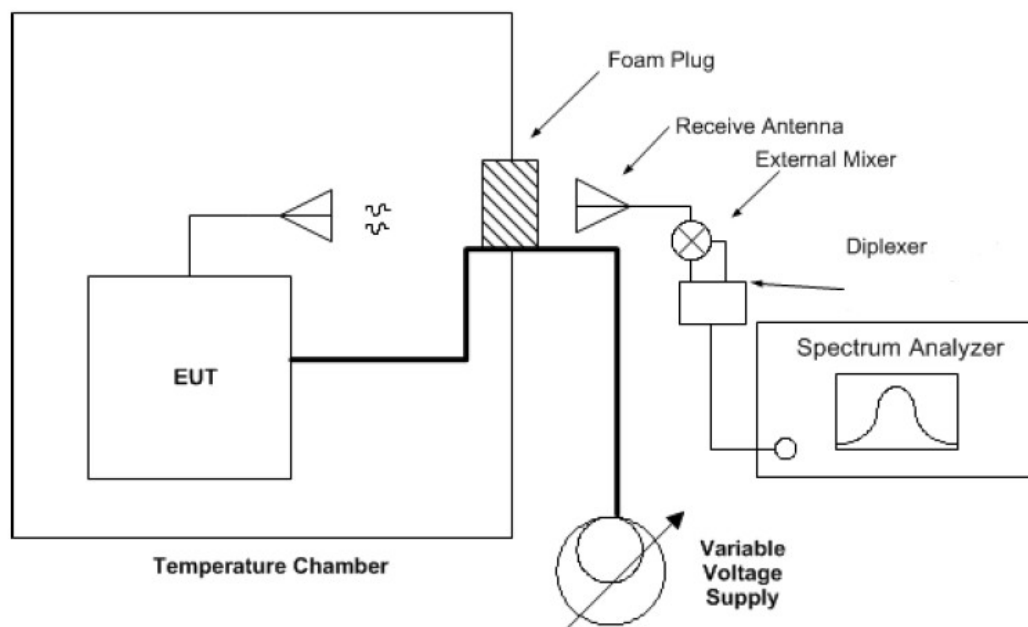
9.2 量測方法

- Arrange EUT and test equipment as above setup configuration.
- With the EUT at ambient temperature and voltage source set to the EUT nominal operating voltage (100%), record the spectrum mask of the EUT emission on the spectrum analyzer.
- Vary EUT power supply between 85% and 115% of nominal, and record the frequency excursion of the EUT emission mask.
- Set the power supply to 100% nominal setting, and raise EUT operating temperature to 50 °C. Record the frequency excursion of the EUT emission mask.
- Repeat step d at each 10 °C increment down to -20 °C

9.3 量測儀器

同 4.3 節

9.4 頻率穩定度之測試配置



9.5 量測結果

操作模式	發射	測試日期	108 年 3 月 15 日
量測場地溫度	24℃	量測場地濕度	62%RH
測試者	羅益瑋		

Frequency Stability Versus Temp.									
Operating Frequency: 58320 MHz									
TEMP. (°C)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
50	110	58320.0951	Pass	58320.0968	Pass	58320.0649	Pass	58320.1201	Pass
40	110	58319.9646	Pass	58319.9541	Pass	58319.9577	Pass	58319.9247	Pass
30	110	58319.9041	Pass	58319.9019	Pass	58319.8909	Pass	58319.8858	Pass
20	110	58319.7008	Pass	58319.7348	Pass	58319.729	Pass	58319.7314	Pass
10	110	58319.9207	Pass	58319.939	Pass	58319.9392	Pass	58319.8868	Pass
0	110	58320.0929	Pass	58320.0455	Pass	58320.0675	Pass	58320.0811	Pass
-10	110	58319.8764	Pass	58319.9186	Pass	58319.9303	Pass	58319.9145	Pass
-20	110	58319.845	Pass	58319.819	Pass	58319.8164	Pass	58319.8142	Pass

Frequency Stability Versus Voltage									
Operating Frequency: 58320 MHz									
TEMP. (°C)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	126.5	58319.6984	Pass	58319.7235	Pass	58319.7223	Pass	58319.7289	Pass
	110	58319.7008	Pass	58319.7348	Pass	58319.729	Pass	58319.7314	Pass
	93.5	58319.7118	Pass	58319.7415	Pass	58319.7266	Pass	58319.7422	Pass

9.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

10 檢測實驗室基本資料

立德國際商品試驗有限公司桃園分公司提供產業界最佳的檢測以及諮詢服務。
本公司為 ISO/IEC 17025 認可實驗室。

如您有任何問題或建議，請與下列實驗室聯絡：

林口 EMC / RF 實驗室：

Tel: 886-2-26052180

Fax: 886-2-26051924

新竹 EMC / RF 及通訊實驗室：

Tel: 886-3-6668565

Fax: 886-3-6668323

華亞 EMC / RF / Safety 實驗室：

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

您也可以在我们的网站內找到各實驗室的地圖。

---END---