



低功率射頻電機測試報告

申請廠商	: 香港商優比快科技有限公司台灣分公司
地址	: 台北市信義區松仁路 107 號 12 樓
製造廠商	: Ubiquiti Networks, Inc.
地址	: 685 Third Avenue, 27th Floor New York, New York 10017 USA
產品名稱	: 3x3 802.11ac 家用無線路由器
產品型號	: AFi-R
廠牌	: ULABS
受理日期	: 106 年 11 月 23 日
完成日期	: 106 年 12 月 04 日

實驗室名稱：世騰電子科技股份有限公司測試實驗室

實驗室地址：桃園市蘆竹區聯福街 2 巷 10 號

實驗室認可證書有效期限：109 年 07 月 08 日

實驗室認可編號及範圍：1439 (9 kHz to 40 GHz)

實驗室認證資格





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證 明 書

申請廠商	:	香港商優比快科技有限公司台灣分公司
地址	:	台北市信義區松仁路 107 號 12 樓
製造廠商	:	Ubiquiti Networks, Inc.
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產品名稱	:	3x3 802.11ac 家用無線路由器
產品型號	:	AFi-R
廠牌	:	ULABS
該產品樣品試驗 依據之試驗標準	:	國家通訊傳播委員會低功率射頻電機技術規範(LP0002)。 規範修訂日期 105 年 8 月 23 日。 FCC Part 15E, 15.407 LP0002 4.7 章節及 FCC KDB 789033 D02 General UNII Test Procedures New Rules
發射功率 (電場強度)	:	21.88 dBm

茲在此鄭重聲明：

本試驗報告所列之待測設備樣品已於民國 106 年 11 月 25 日在本公司的標準測試場地
完成詳細及完整之量測。本試驗報告所列之量測皆依據低功率射頻電機技術規範及
FCC Part 15E 之規定來執行。並判斷此待測設備樣品確實符合低功率射頻電機技術規
範規定。

備註：本測試報告僅對受測之樣品負責。非經本公司同意，測試報告不得摘錄複印使
用。(全部複製除外)。

項次	測試項目	低功率射頻電 機技術規範	FCC Rule	量測設備	測試結果	結果判定
1	天線增益之要求	4.7.3 節	---	---	請參閱 3.2 節	---
2	電源線傳導干擾之要求	2.3 節	---	請參閱 2 章	請參閱 4.4 節	合格
3	場強輻射之要求	4.7.4 節	---	請參閱 2 章	請參閱 5.4 節 及 5.5 節	合格
4	On Time, Duty Cycle and Measurement methods	---	KDB 789033	請參閱 2 章	請參閱 6.4 節	合格
5	6dB 頻寬之規定	4.7.5 節	FCC 15.407	請參閱 2 章	請參閱 7.4 節	合格
6	26dB 頻寬之規定	4.7.3.2 節	FCC 15.407(a)	請參閱 2 章	請參閱 8.4 節	合格
7	傳導輸出功率	4.7.3 節	KDB 789033	請參閱 2 章	請參閱 9.4 節	合格
8	最大功率頻譜密度	4.7.3 節	FCC 15.407(a)	請參閱 2 章	請參閱 10.4 節	合格

報告簽署人：

測試工程師：



1. 一般描述

1.1. 產品規格

Modulation Type	DSSS, OFDM, FHSS, GFSK (Bluetooth low energy)
Frequency Range	802.11b/g/n: 2400-2483.5MHz 802.11a/an/ac: 5150-5250MHz, 5725-5850MHz Bluetooth: 2400-2483.5MHz
Data Rate	802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: 6.5Mbps to 450Mbps (MCS0 – MCS23, HT20/40) 802.11a: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11ac: 13Mbps to 1300Mbps (MCS0 – MCS9, VHT 20/40/80) Bluetooth: 1MHz
Antenna Type	PIFA Antenna
Antenna Gain	802.11b/g/n/a/an/ac: Antenna 0: 4.0 dBi Antenna 1: 4.0 dBi Antenna 2: 4.0 dBi Bluetooth: 1.0 dBi
Adapter	GP-M015-QC Input: 100-240V~ 50/60Hz MAX. 0.5A Output: 5V / 3A or 9V /1.7A or 12V / 1.25A

1.2. 差異說明

無。



1.3. 無線界面規格及頻道對應頻率

Band: 5150MHz-5250MHz

802.11a, 802.11an HT 20, 802.11ac VHT20

Channel	Frequency(MHz)	Channel	Frequency(MHz)
*36	5180	*44	5220
40	5200	*48	5240

802.11an HT 40, 802.11ac VHT40

Channel	Frequency(MHz)	Channel	Frequency(MHz)
*38	5190	*46	5230

802.11ac VHT80

Channel	Frequency(MHz)
*42	5210

Band: 5725MHz -5850MHz

802.11a, 802.11an HT20, 802.11ac VHT20

Channel	Frequency(MHz)	Channel	Frequency(MHz)
*149	5745	161	5805
153	5765	*165	5825
*157	5785		

802.11an HT 40, 802.11ac VHT40

Channel	Frequency(MHz)	Channel	Frequency(MHz)
*151	5755	*159	5795

802.11ac VHT80

Channel	Frequency(MHz)
*155	5775

*為量測之頻道及頻率



1.4. 測試模式之描述

- 電源傳導及輻射測試之測試模式如下:
 - 1.將量測系統之全部電源打開。
 - 2.於測試進行的同時，在 Windows 7 作業系統下，待測物執行"Art2_ver_4_9_815"傳送及接收訊號。
- 本申請件測試模式如下：

Test Mode	Operating Description
1	802.11a (6Mbps)
2	802.11an HT20 (19.5Mbps)
3	802.11an HT40 (40.5Mbps)
4	802.11ac VHT20 (6.5Mbps)
5	802.11ac VHT40 (13.5Mbps)
6	802.11ac VHT80 (29.3Mbps)
經驗證傳導干擾及輻射干擾以 Test Mode 6 之測試結果為最差，故以此作為發報告之依據。	

1.5. 受測裝置之系統說明

設備	廠牌	型號	檢磁號碼	長度/訊號線類別	長度/電源線類別
遠端工作站					
筆記型電腦	DELL	LatitudeE5450	R33002	N/A	非隔離, 1.8m

訊號線:

Cable	Quantity	Description
RJ45	1	非隔離 / 15.0m



1.6. 測試場地

測試場地：	世騰電子科技股份有限公司測試實驗室 338 桃園市蘆竹區聯福街 2 巷 10 號 223 新北市石碇區十八重溪 68 之 1 號
測試電壓：	AC 110V / 60Hz
適用規範：	本測試報告之所有項目皆依據國家通訊傳播委員會低功率射頻電機技術規範以及參考 ANSI、FCC/47CFR/2.1046、2.1047、2.1049、2.1051、2.1053 及 2.1055 之檢驗法。
測試頻率：	電源傳導：從 150 kHz 到 30 MHz。 場強輻射：從 30 MHz 到 25000 MHz。
測試天線的距離：	場強輻射之測試距離為 3 M。

1.7. 量測不確定度

Measurement Item	Measurement Frequency	Polarization	Uncertainty
Conducted Emission	9 kHz ~ 30 MHz	LINE / NEUTRAL	±2.9076 dB
Radiated Emission	9 kHz ~ 25,000 MHz	Vertical / Horizontal	±0.948 dB
Spurious Emission (Conducted)	-	-	±4.011 dB
Maximum Peak and Average Output Power	-	-	±0.322 dB
Power Spectral Density	-	-	±0.322 dB
Bandwidth	-	-	±74.224Hz



2. 測試儀器

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date
EMI Receiver	R&S	ESCI3	100443	2017/03/07	2018/03/06
LISN	Schwarzbeck	NSLK 8127	8127-568	2017/02/15	2018/02/14
Pulse Limiter	R&S	ESH3-Z2	101934	2017/02/14	2018/02/13
Bilog Antenna	Schwarzbeck	VULB9168	369	2017/03/15	2018/03/14
Active Loop Antenna	EMCO	6507	40855	2017/05/15	2018/05/14
Horn Antenna	EMCO	3115	31589	2017/02/18	2018/02/17
Horn Antenna	EMCO	3116	31970	2017/03/29	2018/03/28
EXA Signal Analyzer	KEYSIGHT	N9010A	MY54200207	2017/03/17	2018/03/16
Preamplifier	EM	EM330	60660	2017/02/25	2018/02/24
Preamplifier	EMC INSTRUMENTS	EMC051845SE	980333	2017/09/20	2018/09/19
Preamplifier	Agilent	8449B	3008A01954	2017/02/09	2018/02/08
Preamplifier	EMC INSTRUMENTS	EMC184045	980065	2017/11/10	2018/11/09
MXG MW Analog Signal Generator	KEYSIGHT	N5183A	MY50142931	2017/03/17	2018/03/16
Spectrum Analyzer	R&S	FSP40	100219	2017/07/01	2018/06/30
BLUETOOTH TESTER	R&S	CBT	101133	2017/03/10	2018/03/09
Attenuator	KEYSIGHT	8491B	MY39250703	2017/03/07	2018/03/06
Rotary Attenuator	Agilent	8495B	MY42146680	2017/03/13	2018/03/12
Temp & Humi chamber	T-MACHINE	TMJ-9712	T-12-040111	2017/09/04	2018/09/03
Series Power Meter	Anritsu	ML2495A	1224005	2017/03/01	2018/02/28
Power Sensor	Anritsu	MA2411B	1207295	2017/03/01	2018/02/28
Cable	HUBER SUHNER	SUCOFLEX 102	28422/2	2017/02/25	2018/02/24
Cable	HUBER SUHNER	SUCOFLEX 102	28418/2	2017/02/25	2018/02/24
Software	Farad	Ez-EMC	ver.ct3a1	N/A	N/A
Software	AUDIX	E3	V8.2014-8-6	N/A	N/A
Software	Keysight	N7607B Signal Studio	v2.0.0.1	N/A	N/A
Software	Keysight	Inservice MonitorUtility	N/A	N/A	N/A



3. 天線增益之要求

天線規格不受國家通訊傳播委員會低功率射頻電機技術規範(2.2)節規定之限制，其發射天線之方向性增益超過 6dBi 時，應依其所超過之 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：

操作於 5.15G-5.25G 頻段者	
☐	供戶外操作使用：使用超過 6dBi 方向增益之發射天線時，應依超過 6dBi 天線方增益的 dBi 總量，等量減少最大傳導輸出功率及最大功率頻譜密度。
☒	供室內操作使用：使用超過 6dBi 方向增益之發射天線時，應依超過 6dBi 天線方增益的 dBi 總量，等量減少最大傳導輸出功率及最大功率頻譜密度。
☐	供固定式點對點操作使用：使用超過 23dBi 方向增益之發射天線時，應依超過 23dBi 天線方增益的 dBi 總量，等量減少最大傳導輸出功率及最大功率頻譜密度。
☐	供用戶端裝置(Client Device)操作使用：使用超過 6dBi 方向增益之發射天線時，應依超過 6dBi 天線方增益的 dBi 總量，等量減少最大傳導輸出功率及最大功率頻譜密度。
操作於 5.25G-5.35G 與 5.470G-5.725G 頻段者	
使用超過 6dBi 方向增益之發射天線時，應依超過 6dBi 天線方增益的 dBi 總量，等量減少最大傳導輸出功率及最大功率頻譜密度。	
操作於 5.725G-5.850G 頻段者	
☒	供固定式點對點操作使用：使用超過 6dBi 方向增益之發射天線時，可不須對應減少發射器之傳導輸出功率限制值。
☒	除(1)外，使用超過 6dBi 方向增益之發射天線時，應依超過 6dBi 天線方增益的 dBi 總量，等量減少最大傳導輸出功率及最大功率頻譜密度。

3.1. 天線型式及其增益

- 1.1 Brand : UBIQUIT
1.2 Model : N/A
1.3 Antenna type : PIFA Antenna
1.4 Frequency Range : 5150-5250MHz, 5725-5825MHz
1.5 Gain(peak) : 4.0 dBi
(參照天線規格資料)

$$\begin{aligned}\text{Directional gain} &= G_{\text{ant}} + 10\log(N) \text{ dBi} \\ &= 4 + 10\log(3) \\ &= 8.77 \text{ (dBi)}\end{aligned}$$

3.2. 結果判定

其發射天線之方向性增益低於 6dBi，因此無需降低峰值輸出功率。

4. 電源線傳導干擾之量測規定

4.1. 適用標準

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

頻率範圍(MHz)	傳導限制值 (dB μ V)	
	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

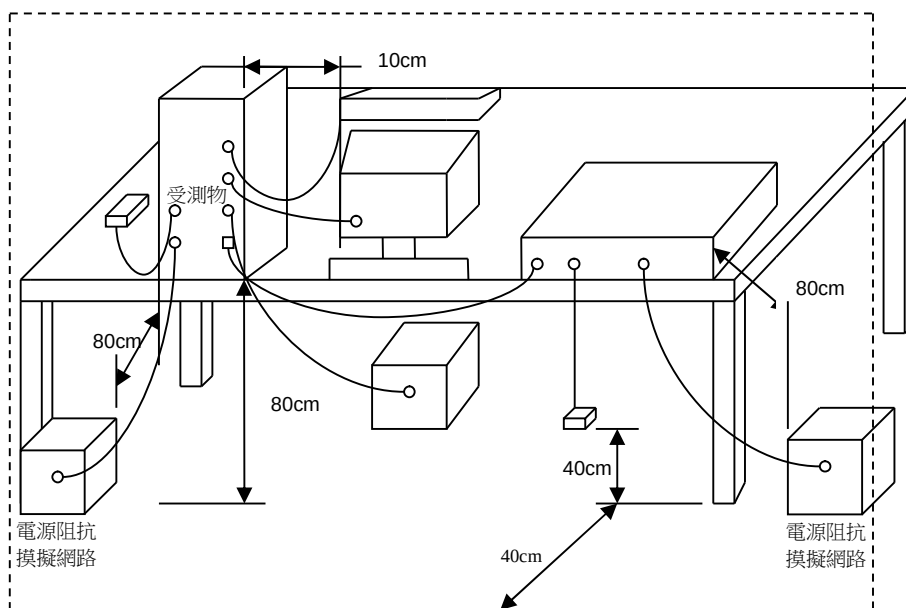
註：隨頻率之對數遞減

4.2. 測試方法

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

備註：此項目之擴充不確定度為 $\pm 2.71\text{dB}$

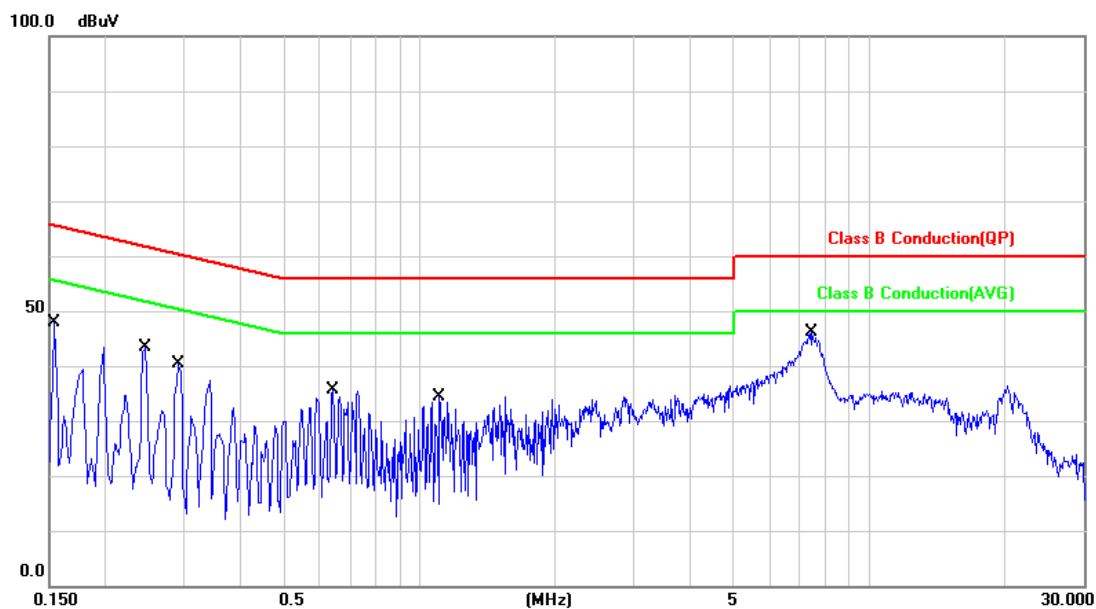
4.3. 傳導干擾之擺設





4.4. 傳導干擾之測試結果及數據

Power	: AC 110V	Pol/Phase	: LINE
Test Mode	: Mode 6, CH42	Temperature	: 21 °C
Test date	: Nov. 23, 2017	Humidity	: 52 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1539	9.99	34.93	44.92	65.78	-20.86	QP	P
2	0.1539	9.99	18.23	28.22	55.78	-27.56	AVG	P
3	0.2460	10.01	31.09	41.10	61.89	-20.79	QP	P
4	0.2460	10.01	16.37	26.38	51.89	-25.51	AVG	P
5	0.2900	10.01	26.85	36.86	60.52	-23.66	QP	P
6	0.2900	10.01	12.60	22.61	50.52	-27.91	AVG	P
7	0.6419	10.04	23.61	33.65	56.00	-22.35	QP	P
8	0.6419	10.04	14.76	24.80	46.00	-21.20	AVG	P
9	1.1100	10.04	21.94	31.98	56.00	-24.02	QP	P
10	1.1100	10.04	14.40	24.44	46.00	-21.56	AVG	P
11	7.4700	10.32	31.54	41.86	60.00	-18.14	QP	P
12	7.4700	10.32	20.67	30.99	50.00	-19.01	AVG	P

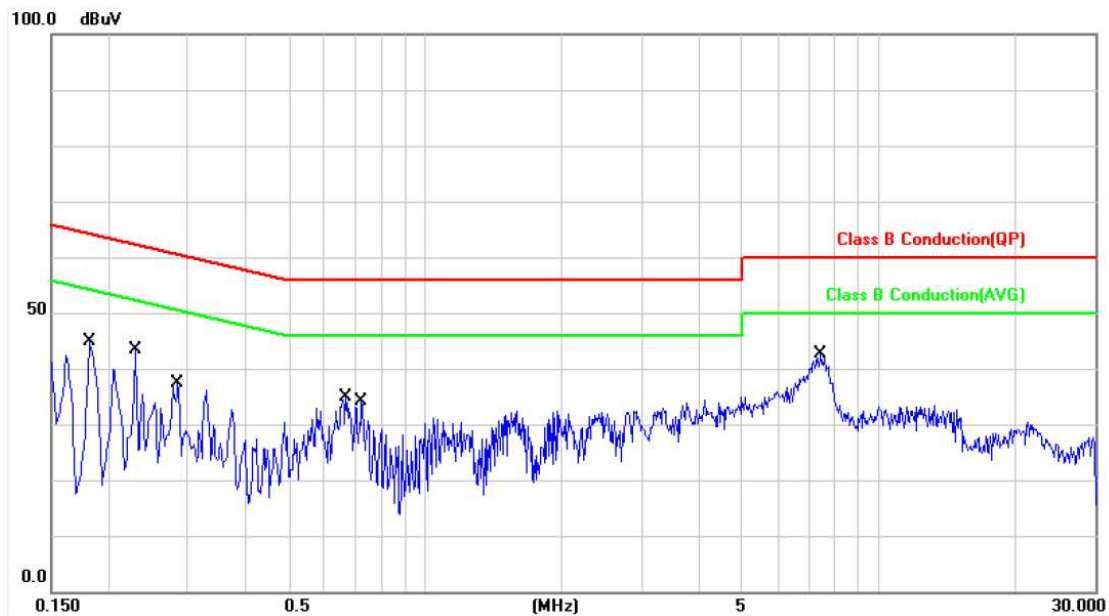
Note: Level = Reading + Factor

Margin = Level – Limit

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



Power	: AC 110V	Pol/Phase	: NEUTRAL
Test Mode	: Mode 6, CH42	Temperature	: 21 °C
Test date	: Nov. 23, 2017	Humidity	: 52 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1819	9.98	34.15	44.13	64.39	-20.26	QP	P
2	0.1819	9.98	19.30	29.28	54.39	-25.11	AVG	P
3	0.2300	9.97	28.10	38.07	62.45	-24.38	QP	P
4	0.2300	9.97	13.03	23.00	52.45	-29.45	AVG	P
5	0.2860	9.97	23.95	33.92	60.64	-26.72	QP	P
6	0.2860	9.97	10.51	20.48	50.64	-30.16	AVG	P
7	0.6700	10.00	19.28	29.28	56.00	-26.72	QP	P
8	0.6700	10.00	14.53	24.53	46.00	-21.47	AVG	P
9	0.7260	10.00	20.88	30.88	56.00	-25.12	QP	P
10	0.7260	10.00	15.74	25.74	46.00	-20.26	AVG	P
11	7.4660	10.35	32.30	42.65	60.00	-17.35	QP	P
12	7.4660	10.35	26.60	36.95	50.00	-13.05	AVG	P

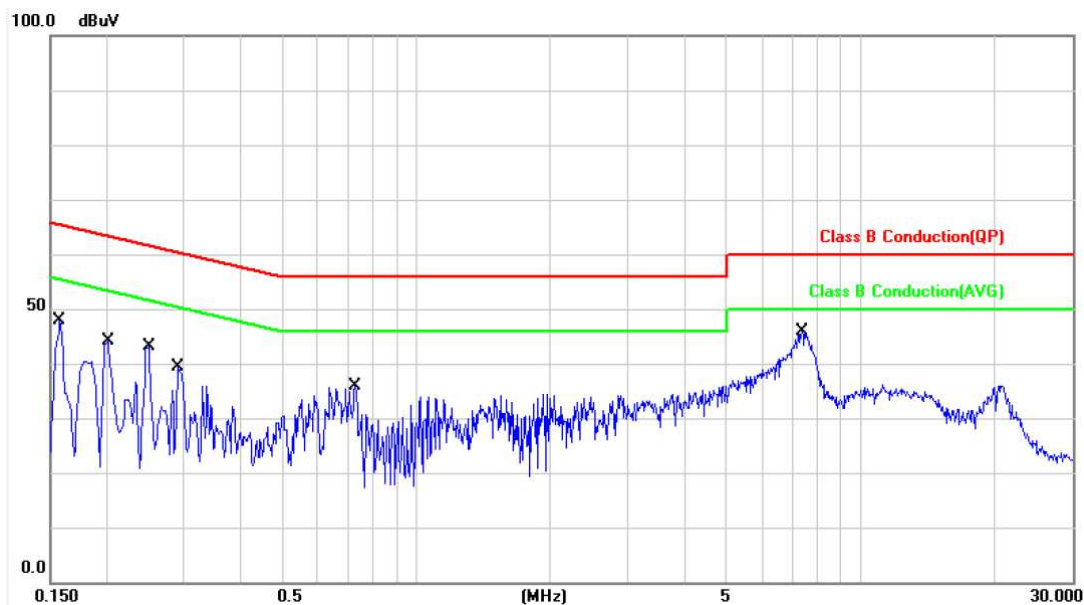
Note: Level = Reading + Factor

Margin = Level – Limit

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



Power	: AC 110V	Pol/Phase	: LINE
Test Mode	: Mode 6, CH155	Temperature	: 21 °C
Test date	: Nov. 23, 2017	Humidity	: 52 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1582	9.99	36.14	46.13	65.55	-19.42	QP	P
2	0.1582	9.99	19.55	29.54	55.55	-26.01	AVG	P
3	0.2020	10.00	32.67	42.67	63.52	-20.85	QP	P
4	0.2020	10.00	17.21	27.21	53.52	-26.31	AVG	P
5	0.2500	10.01	29.54	39.55	61.75	-22.20	QP	P
6	0.2500	10.01	14.44	24.45	51.75	-27.30	AVG	P
7	0.2900	10.01	26.40	36.41	60.52	-24.11	QP	P
8	0.2900	10.01	12.48	22.49	50.52	-28.03	AVG	P
9	0.7300	10.04	23.28	33.32	56.00	-22.68	QP	P
10	0.7300	10.04	16.10	26.14	46.00	-19.86	AVG	P
11	7.3980	10.32	34.02	44.34	60.00	-15.66	QP	P
12	7.3980	10.32	24.21	34.53	50.00	-15.47	AVG	P

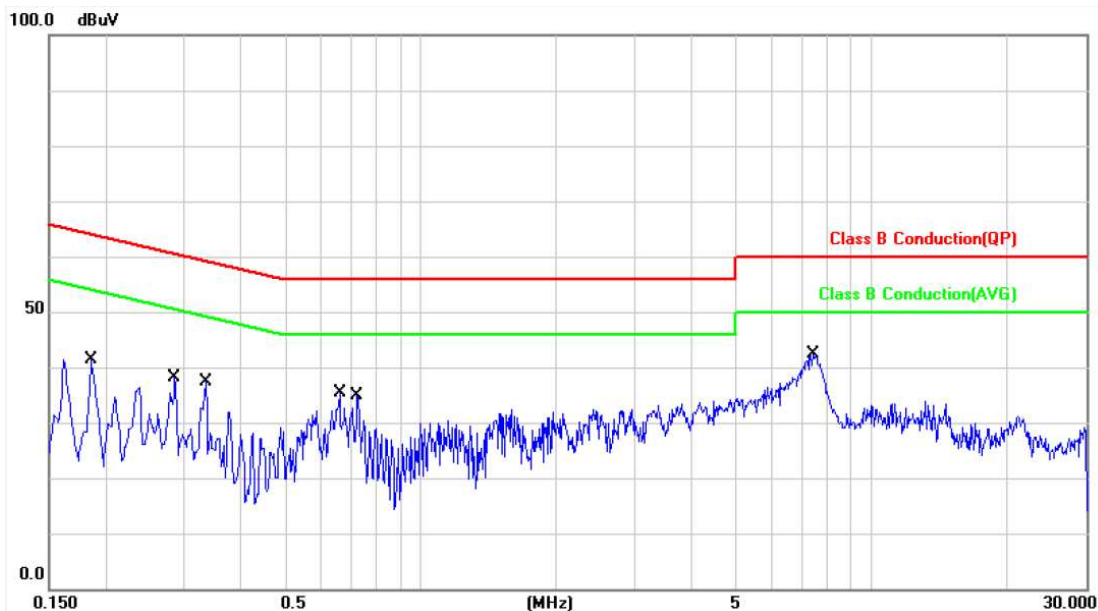
Note: Level = Reading + Factor

Margin = Level – Limit

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



Power	: AC 110V	Pol/Phase	: NEUTRAL
Test Mode	: Mode 6, CH155	Temperature	: 21 °C
Test date	: Nov. 23, 2017	Humidity	: 52 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1860	9.98	27.30	37.28	64.21	-26.93	QP	P
2	0.1860	9.98	11.62	21.60	54.21	-32.61	AVG	P
3	0.2860	9.97	23.56	33.53	60.64	-27.11	QP	P
4	0.2860	9.97	10.49	20.46	50.64	-30.18	AVG	P
5	0.3339	9.98	23.95	33.93	59.35	-25.42	QP	P
6	0.3339	9.98	12.89	22.87	49.35	-26.48	AVG	P
7	0.6620	10.00	24.30	34.30	56.00	-21.70	QP	P
8	0.6620	10.00	20.34	30.34	46.00	-15.66	AVG	P
9	0.7260	10.00	21.21	31.21	56.00	-24.79	QP	P
10	0.7260	10.00	16.04	26.04	46.00	-19.96	AVG	P
11	7.4220	10.34	30.31	40.65	60.00	-19.35	QP	P
12	7.4220	10.34	26.02	36.36	50.00	-13.64	AVG	P

Note: Level = Reading + Factor

Margin = Level – Limit

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

4.5. 傳導量測之配置照片

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5. 輻射之量測規定

5.1. 適用標準

不必要發射之限制值

在 5.15GHz~5.35GHz 及 5.470GHz~5.725GHz 頻段操作的發射器:帶外發射之有效等向輻射功率(EIRP) $\leq$ -27dBm/MHz 在 5.725GHz~5.850GHz 的頻帶操作之發射器:所有頻帶邊緣向外 5MHz 內頻率之發射,有效等向輻射功率(EIRP) $\leq$ 27dBm/MHz~15.6dBm/MHz(以線性法計算對應之限制值);所有頻帶邊緣向外 5MHz~25MHz,有效等向輻射功(EIRP) $\leq$ 15.6dBm/MHz~10dBm/MHz(以線性法計算對應之限制值);所有頻帶邊緣外 25MHz~75MHz,有效等向輻射功(EIRP) $\leq$ 10dBm/MHz~-27dBm/MHz(以線性法計算對應之限制值);所有頻帶邊緣外 $\geq$ 75MHz 的頻率之發射有效等向輻射功(EIRP) $\leq$ -27dBm/MHz

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.4.6 節之要求,落於 2.7 節禁用頻段之輻射干擾需符合 2.8 節之一般限制要求:

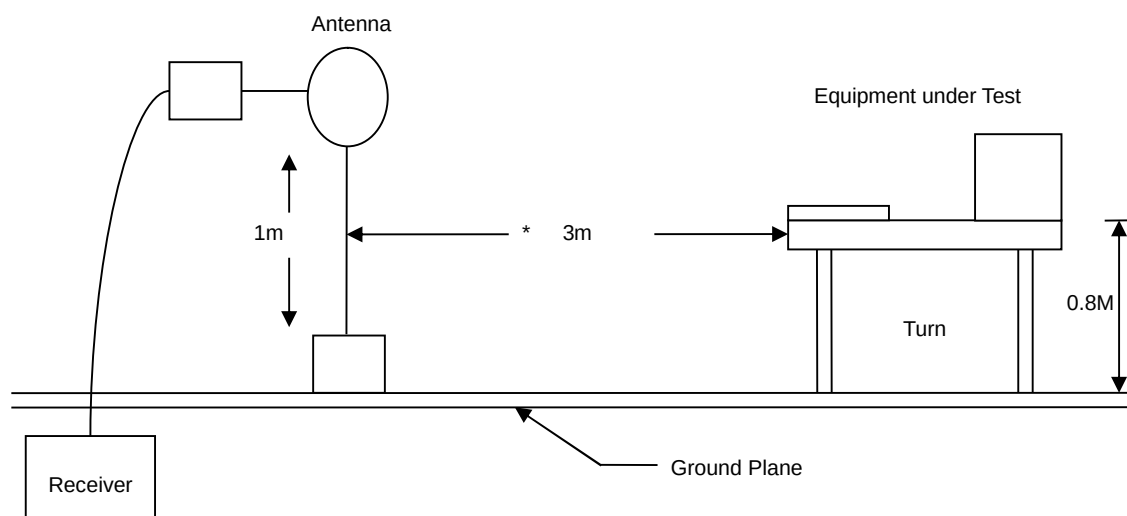
頻率(MHz)	測試距離(m)	限制值(dB μ V)	限制值(μ V/m)
0.009 – 0.490 (含)	300	67.6 / kHz	2400 / kHz
0.490 (不含) – 1.705 (含)	30	87.6 / kHz	24000 / kHz
1.705(不含) – 30(不含)	30	29.5	30
30 (含) – 88 (含)	3	40.0	100
88(不含) – 216 (含)	3	43.5	150
216(不含) – 960 (含)	3	46.0	200
960(不含)以上	3	54.0	500

5.2. 測試方法

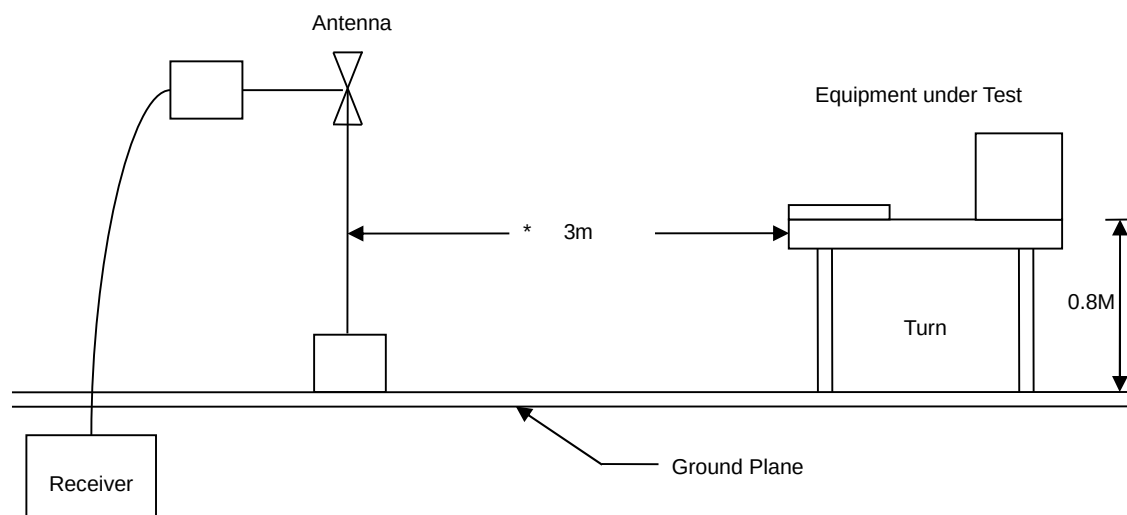
將待測物置於 0.8 米(Below 1G) & 1.5 米(Above 1G)高的非金屬桌面,使其在測試模式狀態,且設定為高、中、低各頻道產生最高峰值輸出功率的傳輸速率,接收天線置於 3 米外,且桌面要 360 度旋轉,另外接收天線也要從 1 米至 4 米升降變化,接收天線置於水平、垂直極向各執行測試一次。待測物若為手持式則分別要以三軸相放置,並分別測試以找出最大輻射電場強度。備註: 此項目之擴充不確定度為 ± 4.11 dB

5.3. 輻射場地之擺設

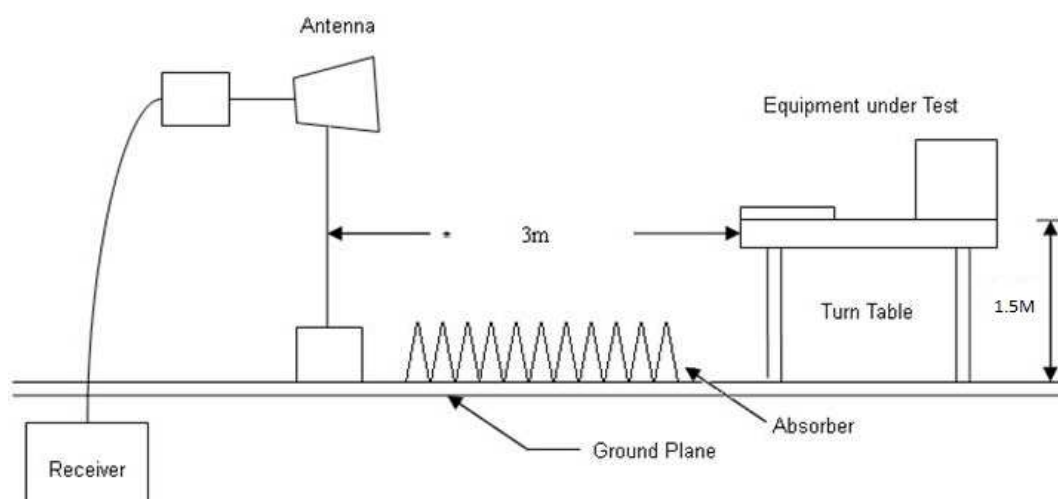
Below 30MHz test setup



30MHz- 1GHz Test Setup



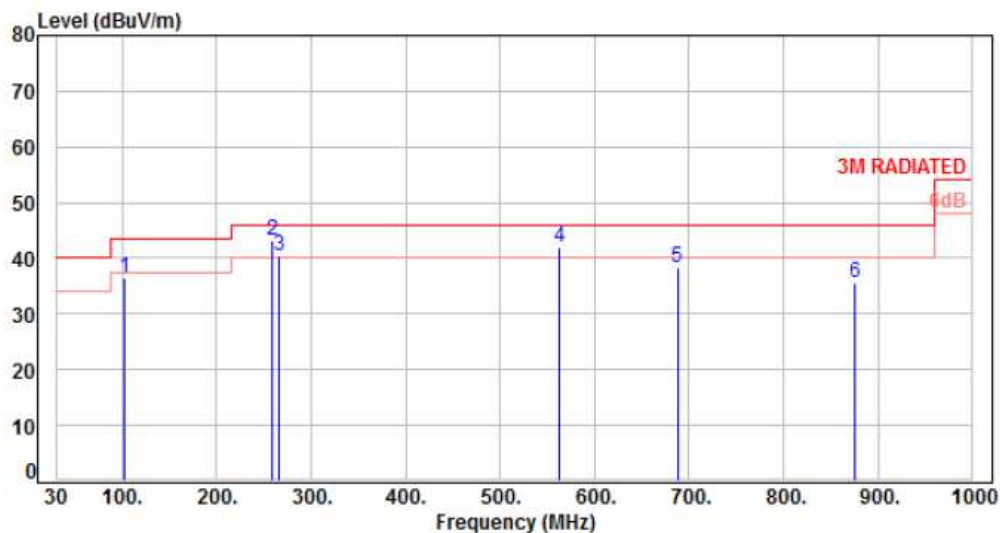
Above 1GHz Test Setup





5.4. 輻射之測試結果及數據 (30MHz ~ 1GHz)

Power	: AC 110V	Pol/Phase	: VERTICAL
Test Mode	: Mode 6, CH42	Temperature	: 24 °C
Test Date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	102.75	-14.28	50.81	36.53	43.50	-6.97	Peak	100	0	P
2	258.92	-10.30	53.59	43.29	46.00	-2.71	QP	100	158	P
3	265.71	-10.02	50.33	40.31	46.00	-5.69	QP	100	168	P
4	562.53	-2.70	44.67	41.97	46.00	-4.03	QP	100	188	P
5	687.66	-0.42	38.60	38.18	46.00	-7.82	Peak	100	0	P
6	875.84	2.54	33.12	35.66	46.00	-10.34	Peak	100	0	P

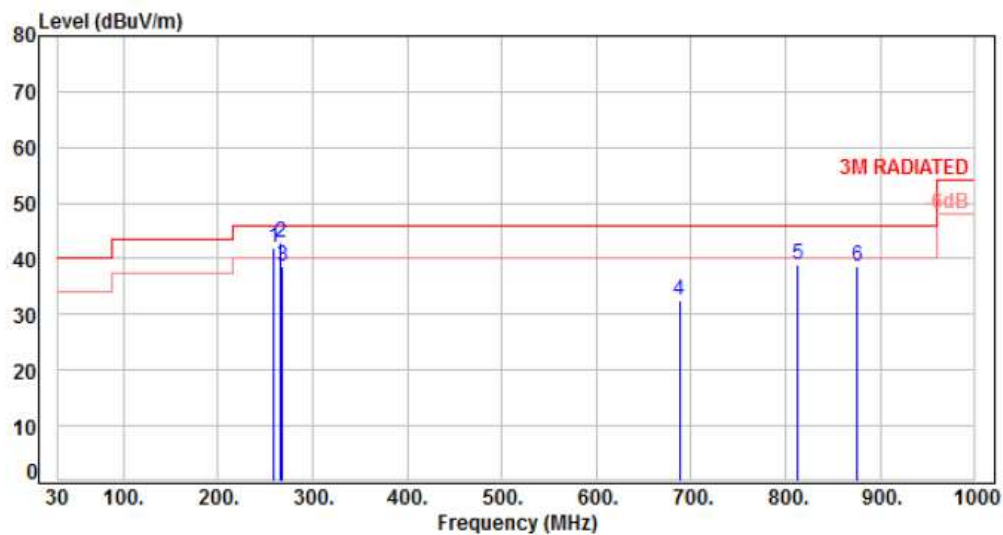
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 6, CH42	Temperature	: 24 °C
Test Date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	258.92	-10.30	52.18	41.88	46.00	-4.12	QP	100	178	P
2	265.71	-10.02	52.99	42.97	46.00	-3.03	QP	100	188	P
3	268.62	-9.90	48.68	38.78	46.00	-7.22	Peak	100	0	P
4	687.66	-0.42	33.11	32.69	46.00	-13.31	Peak	100	0	P
5	812.79	1.58	37.26	38.84	46.00	-7.16	Peak	100	0	P
6	875.84	2.54	36.18	38.72	46.00	-7.28	Peak	100	0	P

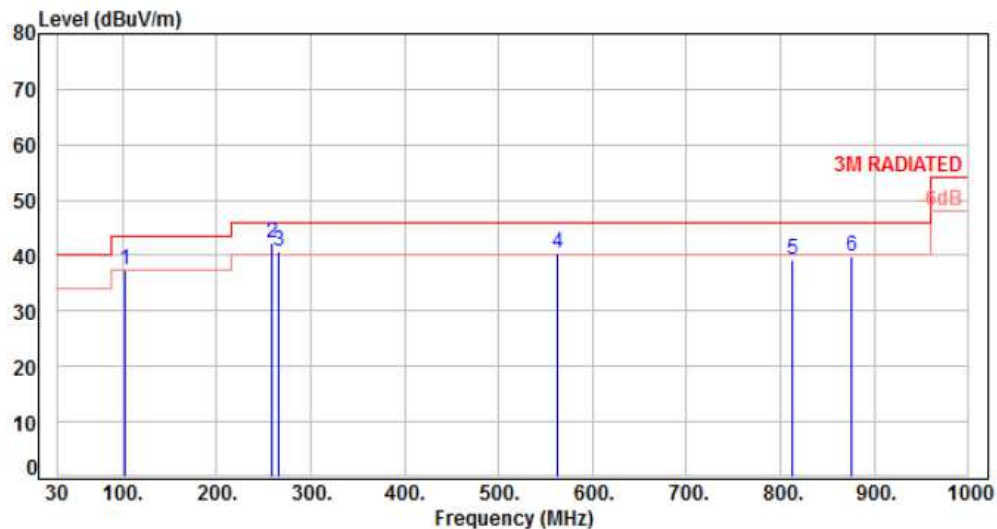
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: VERTICAL
Test Mode	: Mode 6, CH155	Temperature	: 24 °C
Test Date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	102.75	-14.28	51.83	37.55	43.50	-5.95	QP	100	114	P
2	258.92	-10.30	52.63	42.33	46.00	-3.67	QP	100	186	P
3	265.71	-10.02	50.90	40.88	46.00	-5.12	QP	100	166	P
4	562.53	-2.70	43.02	40.32	46.00	-5.68	QP	100	178	P
5	812.79	1.58	37.67	39.25	46.00	-6.75	Peak	100	0	P
6	875.84	2.54	37.16	39.70	46.00	-6.30	Peak	100	0	P

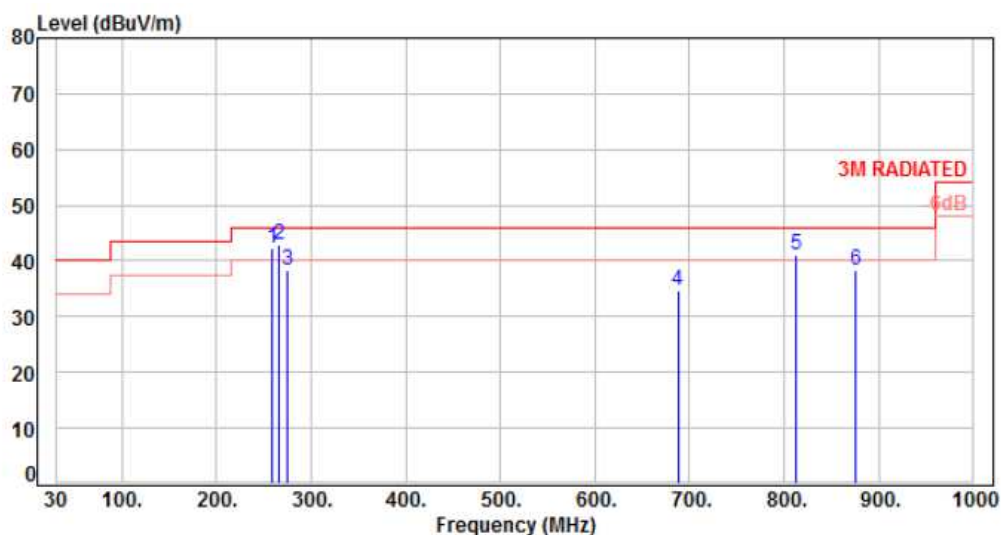
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 6, CH155	Temperature	: 24 °C
Test Date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	258.92	-10.30	52.73	42.43	46.00	-3.57	QP	100	162	P
2	265.71	-10.02	52.89	42.87	46.00	-3.13	QP	100	155	P
3	274.44	-9.64	47.98	38.34	46.00	-7.66	QP	100	178	P
4	687.66	-0.42	35.12	34.70	46.00	-11.30	Peak	100	0	P
5	812.79	1.58	39.36	40.94	46.00	-5.06	Peak	100	0	P
6	875.84	2.54	35.69	38.23	46.00	-7.77	Peak	100	0	P

Note: Level=Reading+Factor

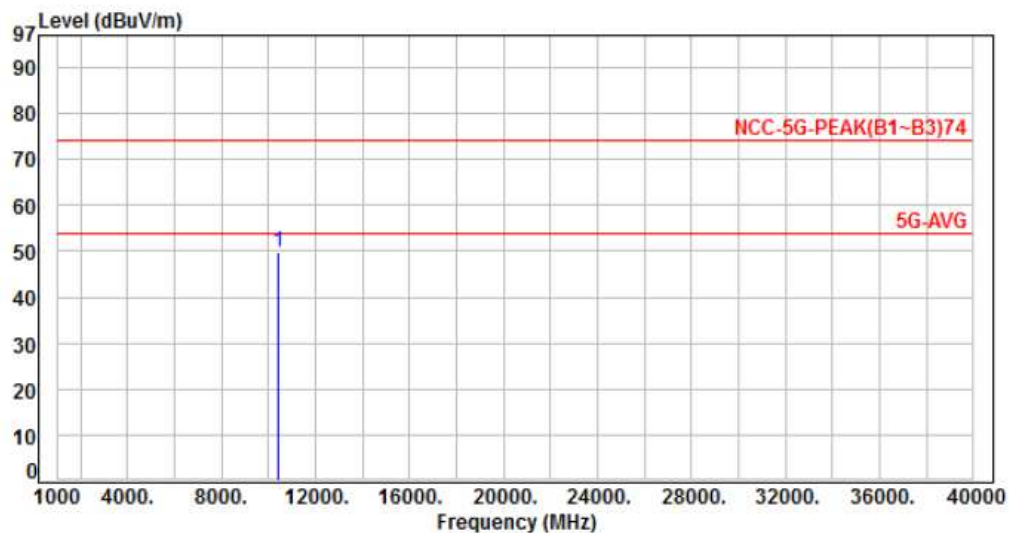
Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



5.5. 輻射之測試結果及數據 (1GHz ~ 40GHz)

Power	: AC 110V	Pol/Phase	: VERTICAL
Test Mode	: Mode 6, CH42	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	10420.00	-7.47	57.30	49.83	74.00	-24.17	Peak	100	0	P

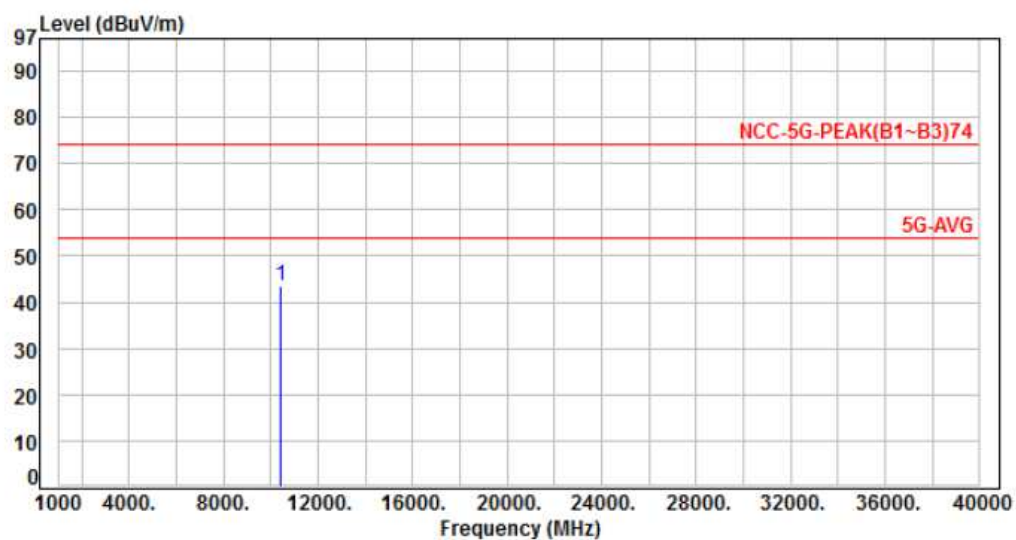
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 6, CH42	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	10420.00	-7.47	50.99	43.52	74.00	-30.48	Peak	100	0	P

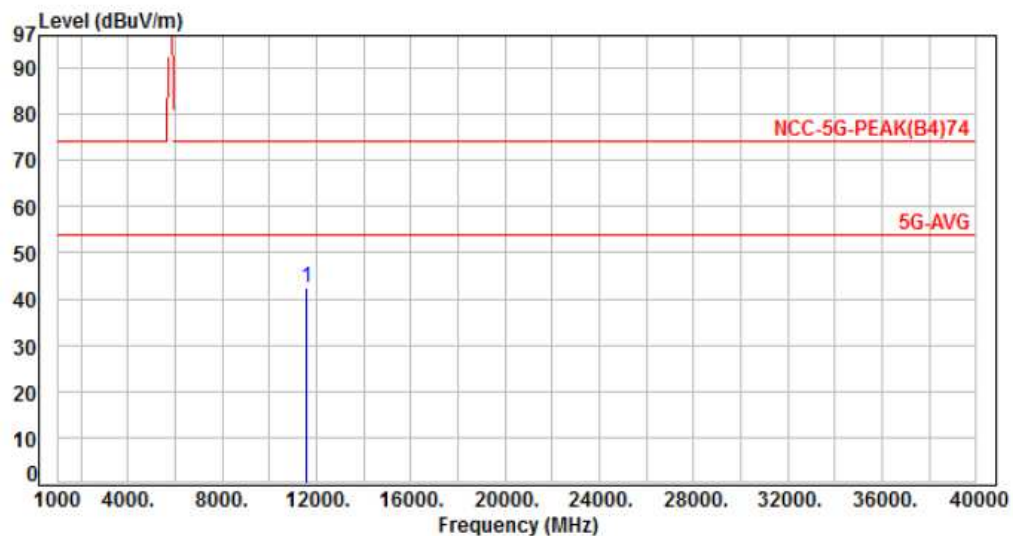
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: VERTICAL
Test Mode	: Mode 6, CH155	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	11550.00	-6.14	48.52	42.38	74.00	-31.62	Peak	100	0	P

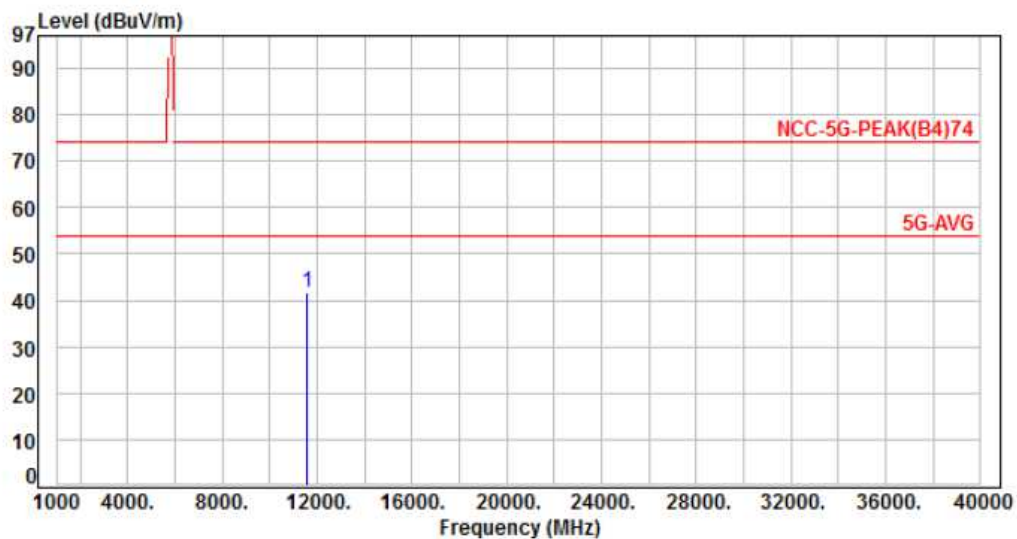
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 6, CH155	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	11550.00	-6.14	47.70	41.56	74.00	-32.44	Peak	100	0	P

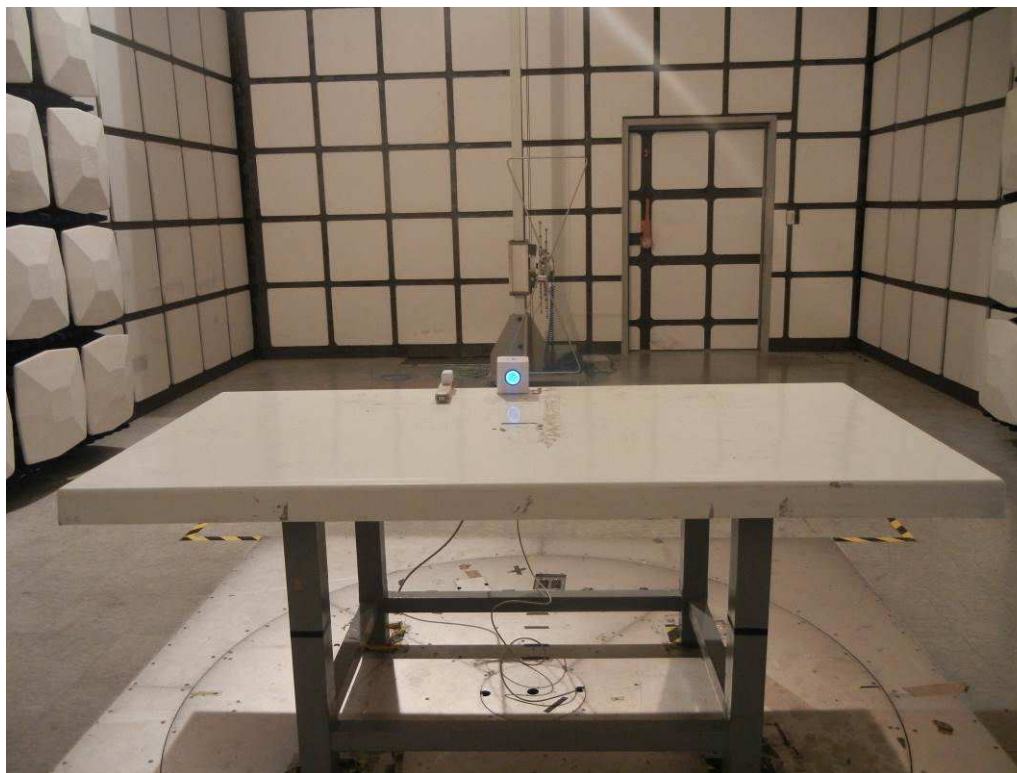
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor

5.6. 輻射量測之配置照片 (30MHz ~ 1GHz)

正面照

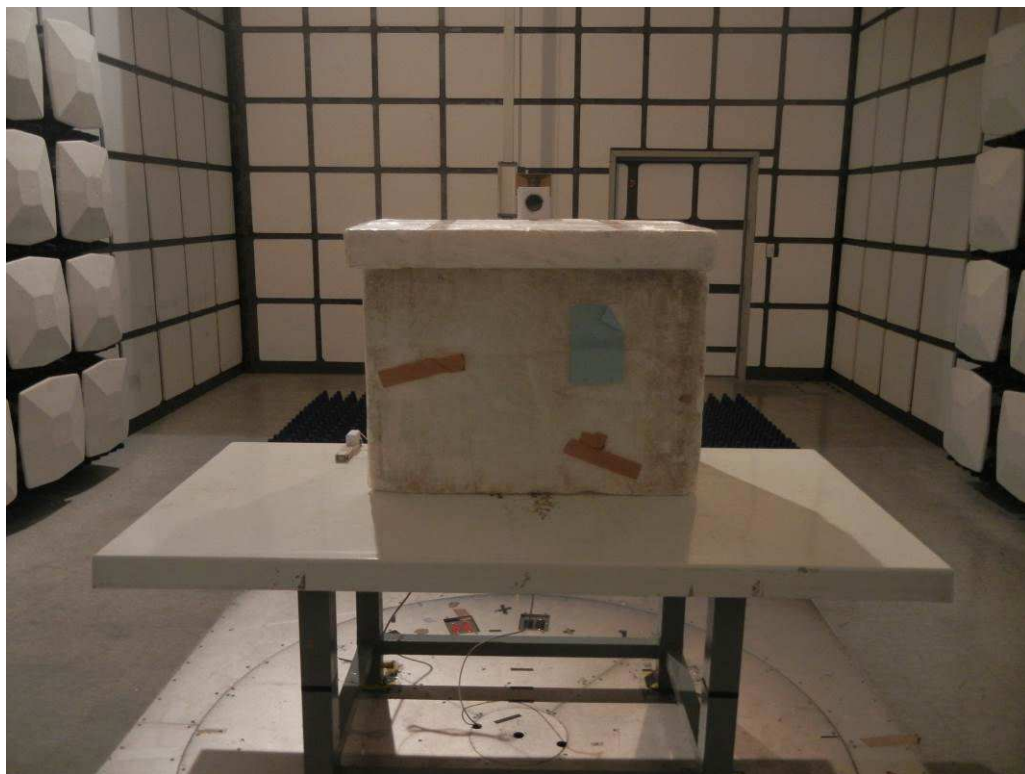


背面照



5.7. 輻射量測之配置照片 (1GHz ~ 40GHz)

正面照



背面照





6. 混附波發射限制之規定

6.1. 適用方法

依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1 節(5)之規定，使用頻帶範圍外之任意 100 千赫(kHz)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 100 千赫(kHz)內的射頻功率，須衰減 30 分貝(dB)，以射頻傳導或輻射方式測量。

此外，落於第 2.7 節禁用頻段之輻射發射，應符合第 2.8 節之規定。

依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1 節(5)之要求，落於 2.7 節禁用頻段之輻射干擾需符合 2.8 節之一般限制要求：

頻率(MHz)	測試距離(m)	限制值(dB μ V)	限制值(μ V/m)
0.009 – 0.490 (含)	300	67.6 / kHz	2400 / kHz
0.490 (不含) – 1.705 (含)	30	87.6 / kHz	24000 / kHz
1.705(不含) – 30(不含)	30	29.5	30
30 (含) – 88 (含)	3	40.0	100
88(不含) – 216 (含)	3	43.5	150
216(不含) – 960 (含)	3	46.0	200
960(不含)以上	3	54.0	500

6.2. 測試方法

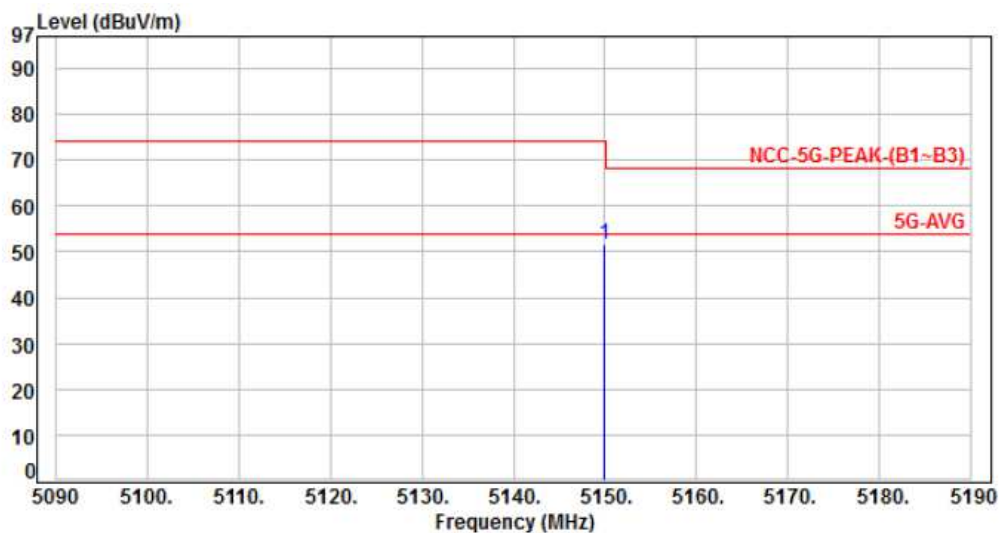
將待測物置於 0.8 米高的非金屬桌面，使其在測試模式狀態，且設定為高、中、低各頻道產生最高峰值輸出功率的傳輸速率，接收天線置於 3 米外，且桌面要 360 度旋轉，另外接收天線也要從 1 米至 4 米升降變化，接收天線置於水平、垂直極向各執行測試一次。待測物若為手持式則分別要以三軸相放置，並分別測試以找出最大輻射電場強度。

備註：此項目之擴充不確定度為 $\pm 4.11\text{dB}$



6.3. 禁用頻段內輻射場強之量測結果及數據

Power	: AC 110V	Pol/Phase	: VERTICAL
Test Mode	: Mode 1, CH36	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5150.00	-12.60	64.09	51.49	74.00	-22.51	Peak	151	178	P

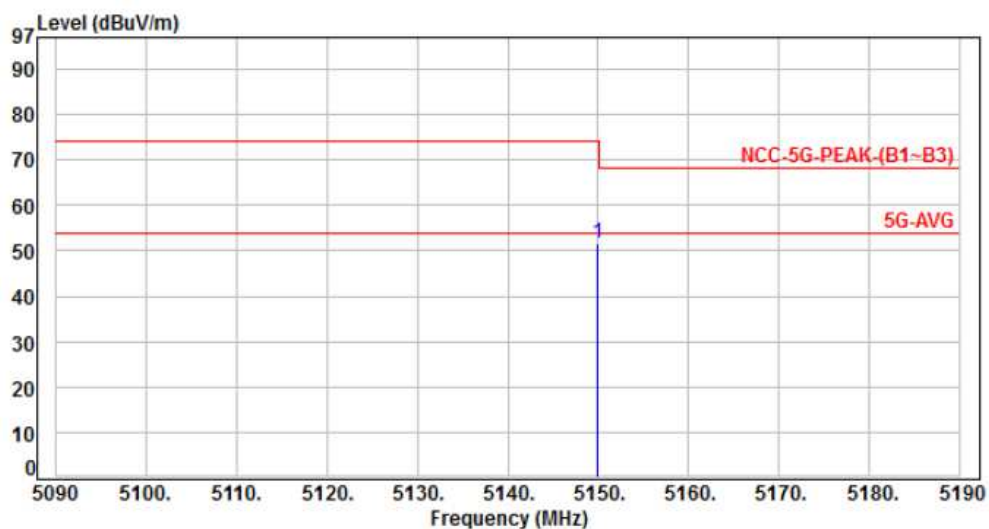
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1, CH36	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5150.00	-12.60	64.12	51.52	74.00	-22.48	Peak	171	213	P

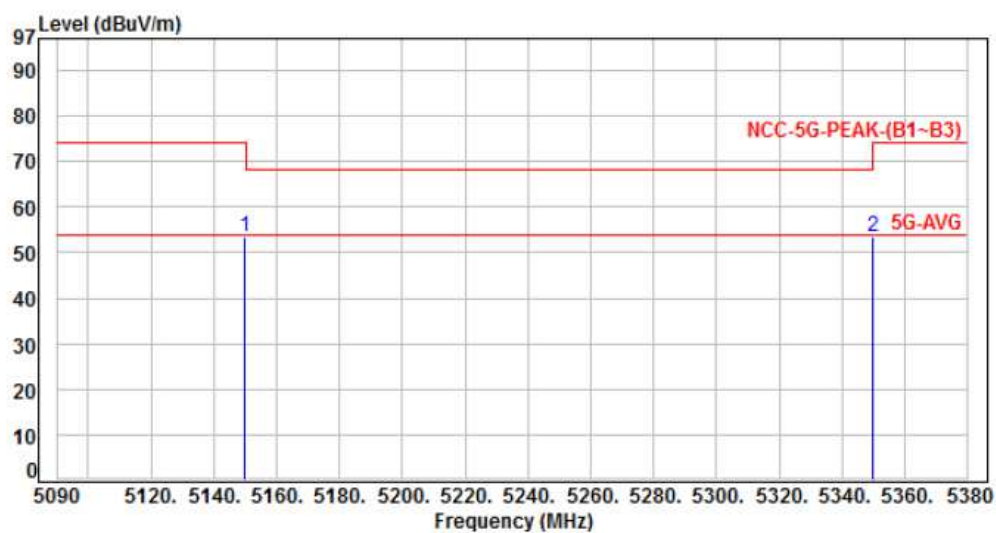
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: VERTICAL
Test Mode	: Mode 1, CH44	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5150.00	-12.60	66.23	53.63	74.00	-20.37	Peak	208	169	P
2	5350.00	-12.33	65.80	53.47	74.00	-20.53	Peak	208	169	P

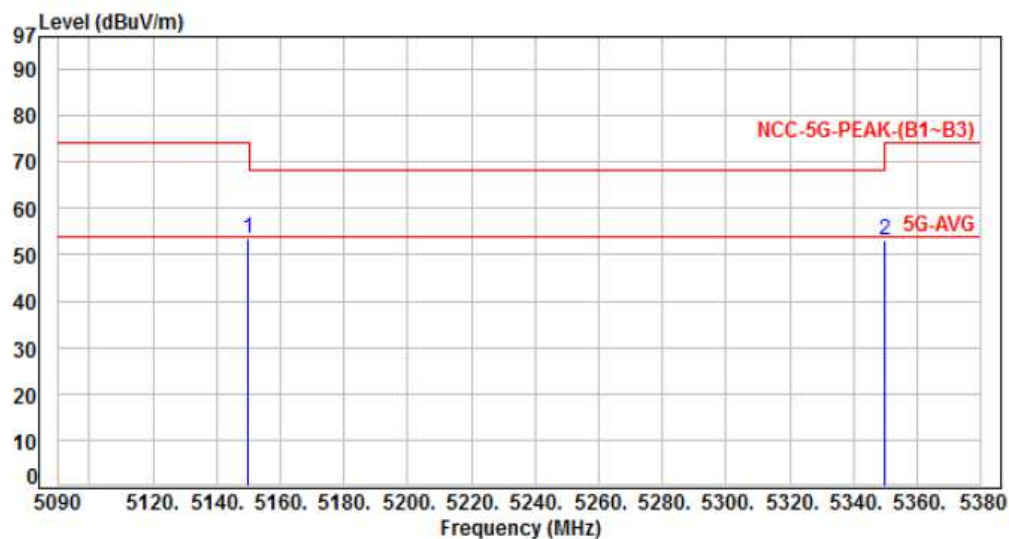
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1, CH44	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5150.00	-12.60	65.98	53.38	74.00	-20.62	Peak	312	298	P
2	5350.00	-12.33	65.46	53.13	74.00	-20.87	Peak	312	298	P

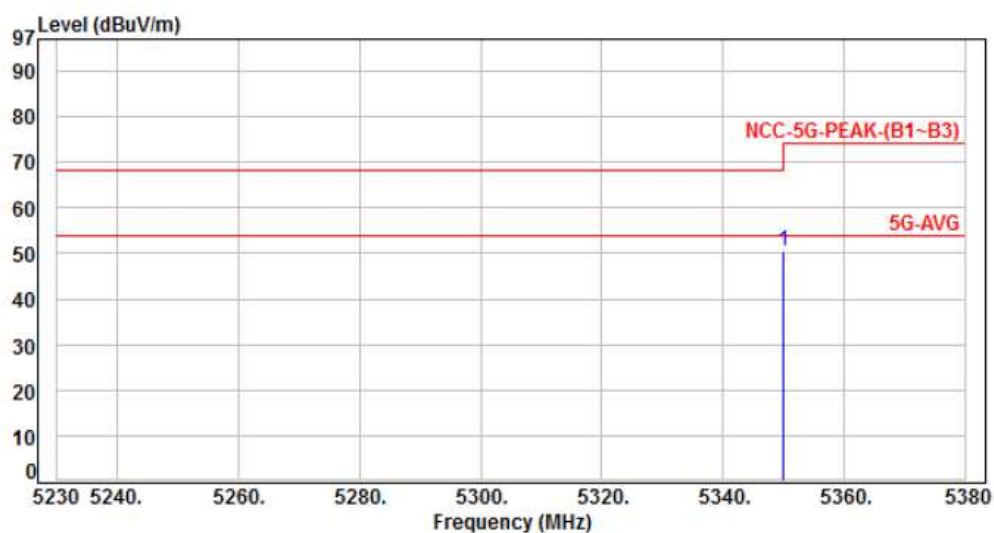
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: VERTICAL
Test Mode	: Mode 1, CH48	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %

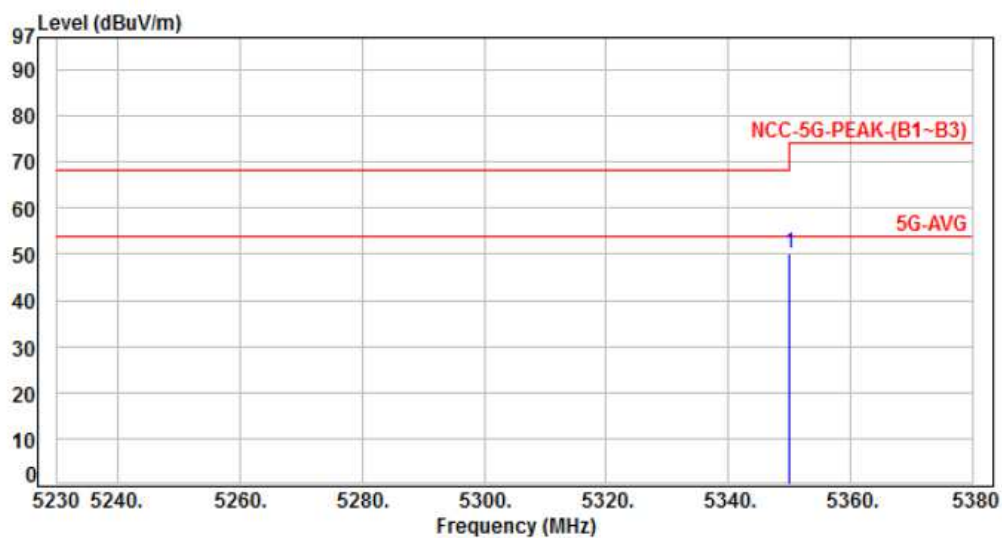


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5350.00	-12.33	62.89	50.56	74.00	-23.44	Peak	192	178	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1, CH48	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5350.00	-12.33	62.56	50.23	74.00	-23.77	Peak	186	213	P

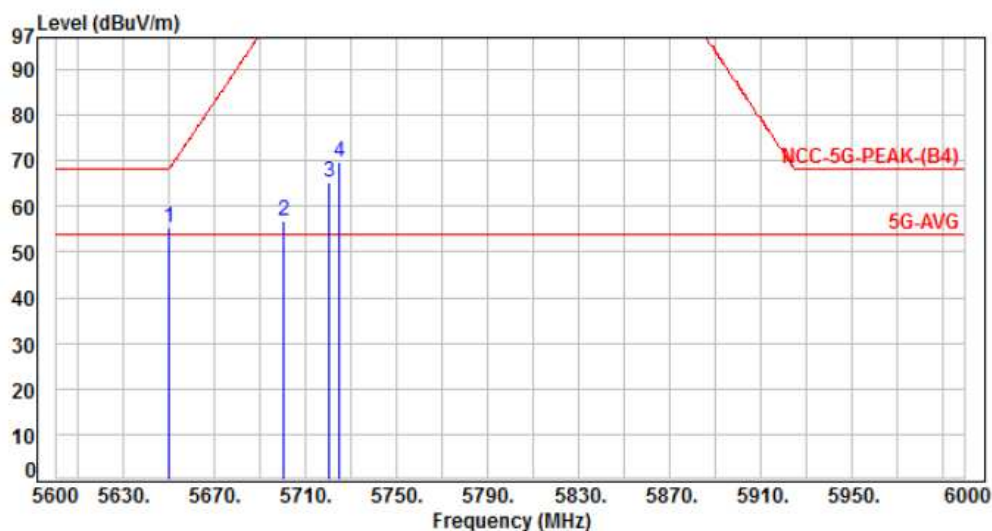
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: VERTICAL
Test Mode	: Mode 1, CH149	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5650.00	-12.16	67.54	55.38	68.20	-12.82	Peak	400	329	P
2	5700.00	-12.17	68.80	56.63	105.20	-48.57	Peak	400	329	P
3	5720.00	-12.18	77.42	65.24	110.80	-45.56	Peak	400	329	P
4	5725.00	-12.18	81.93	69.75	122.20	-52.45	Peak	400	329	P

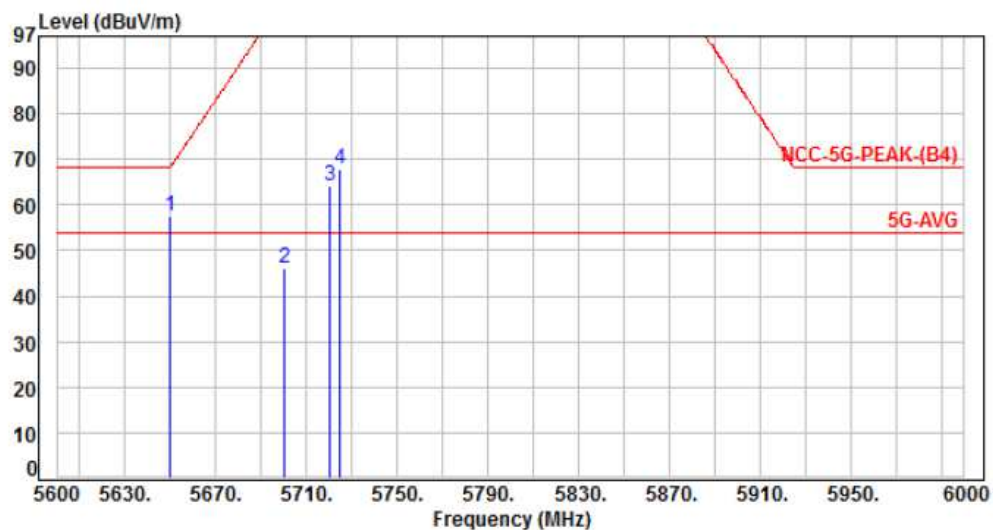
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1, CH149	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5650.00	-12.16	69.77	57.61	68.20	-10.59	Peak	400	62	P
2	5700.00	-12.17	58.44	46.27	105.20	-58.93	Peak	400	62	P
3	5720.00	-12.18	76.30	64.12	110.80	-46.68	Peak	400	62	P
4	5725.00	-12.18	80.07	67.89	122.20	-54.31	Peak	400	62	P

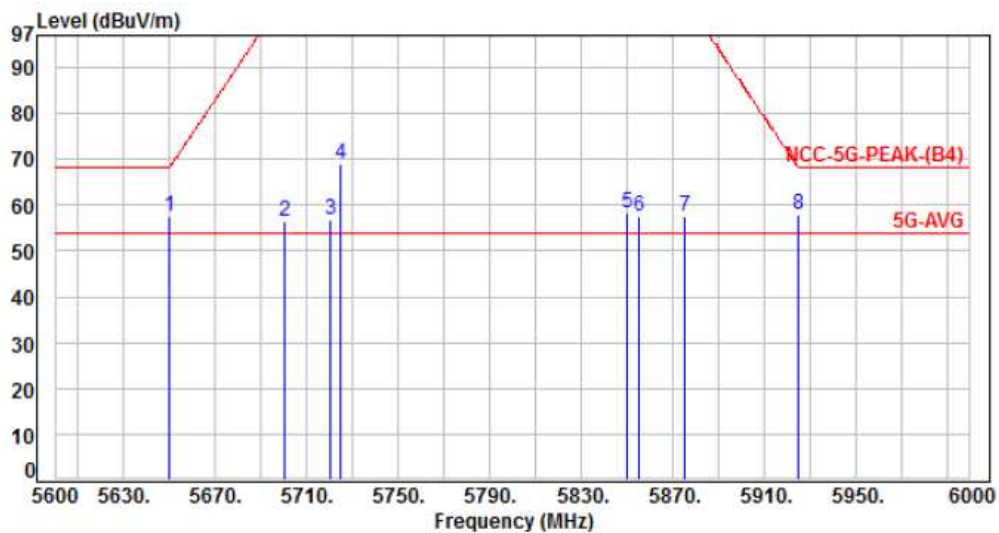
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: VERTICAL
Test Mode	: Mode 1, CH157	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5650.00	-12.16	69.52	57.36	68.20	-10.84	Peak	349	51	P
2	5700.00	-12.17	68.62	56.45	105.20	-48.75	Peak	349	51	P
3	5720.00	-12.18	68.89	56.71	110.80	-54.09	Peak	349	51	P
4	5725.00	-12.18	81.31	69.13	122.20	-53.07	Peak	349	51	P
5	5850.00	-12.19	70.31	58.12	122.20	-64.08	Peak	349	51	P
6	5855.00	-12.19	69.58	57.39	110.80	-53.41	Peak	349	51	P
7	5875.00	-12.20	69.86	57.66	105.20	-47.54	Peak	349	51	P
8	5925.00	-12.20	69.98	57.78	68.20	-10.42	Peak	349	51	P

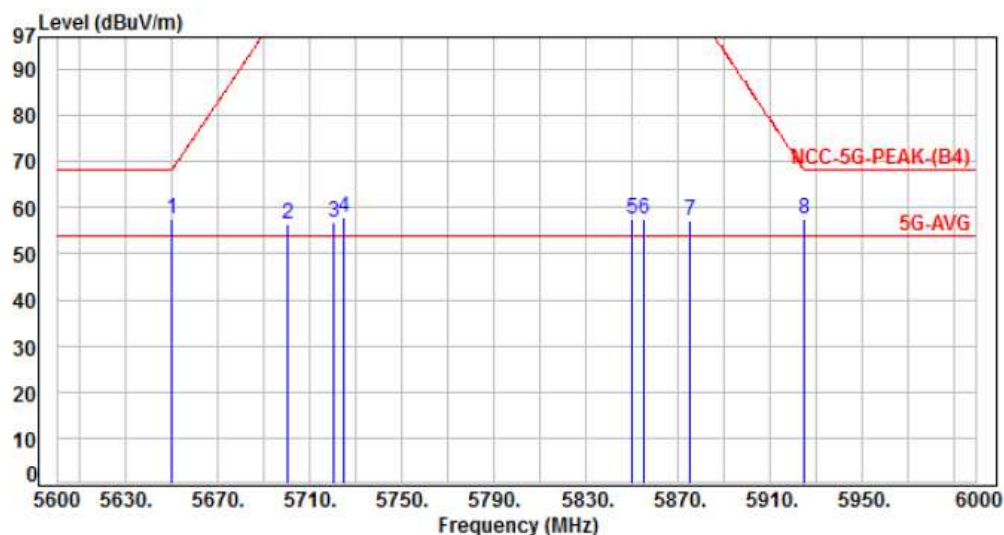
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1, CH157	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5650.00	-12.16	69.64	57.48	68.20	-10.72	Peak	334	320	P
2	5700.00	-12.17	68.70	56.53	105.20	-48.67	Peak	334	320	P
3	5720.00	-12.18	68.96	56.78	110.80	-54.02	Peak	334	320	P
4	5725.00	-12.18	70.00	57.82	122.20	-64.38	Peak	334	320	P
5	5850.00	-12.19	69.58	57.39	122.20	-64.81	Peak	334	320	P
6	5855.00	-12.19	69.62	57.43	110.80	-53.37	Peak	334	320	P
7	5875.00	-12.20	69.43	57.23	105.20	-47.97	Peak	334	320	P
8	5925.00	-12.20	69.82	57.62	68.20	-10.58	Peak	334	320	P

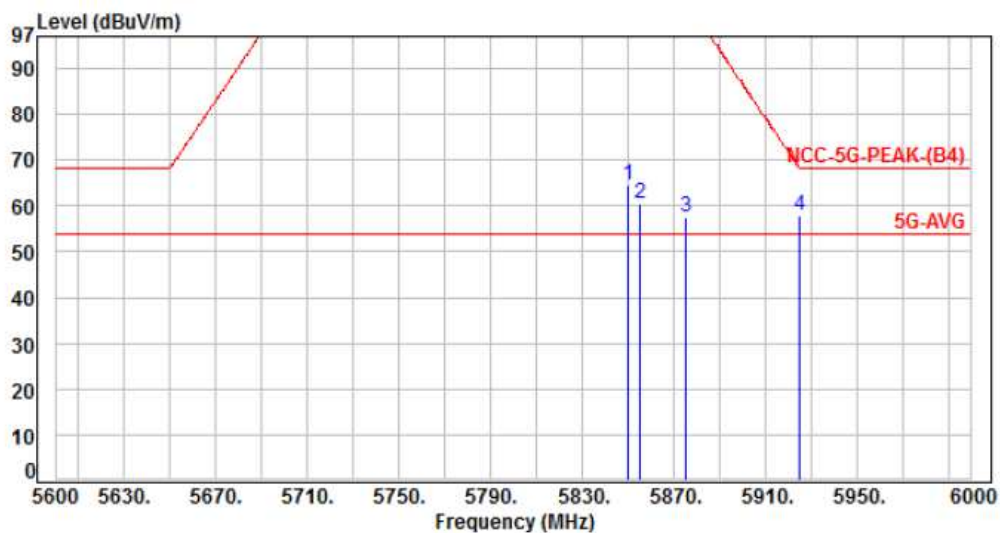
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: VERTICAL
Test Mode	: Mode 1, CH165	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5850.00	-12.19	76.81	64.62	122.20	-57.58	Peak	383	56	P
2	5855.00	-12.19	72.54	60.35	110.80	-50.45	Peak	383	56	P
3	5875.00	-12.20	69.69	57.49	105.20	-47.71	Peak	383	56	P
4	5925.00	-12.20	70.07	57.87	68.20	-10.33	Peak	383	56	P

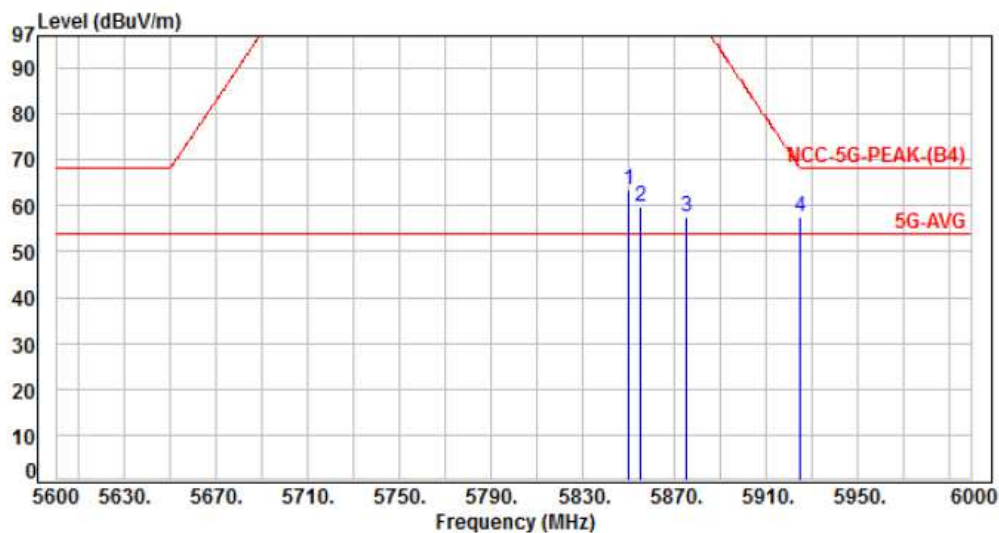
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1, CH165	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5850.00	-12.19	75.81	63.62	122.20	-58.58	Peak	387	324	P
2	5855.00	-12.19	72.12	59.93	110.80	-50.87	Peak	387	324	P
3	5875.00	-12.20	69.87	57.67	105.20	-47.53	Peak	387	324	P
4	5925.00	-12.20	69.79	57.59	68.20	-10.61	Peak	387	324	P

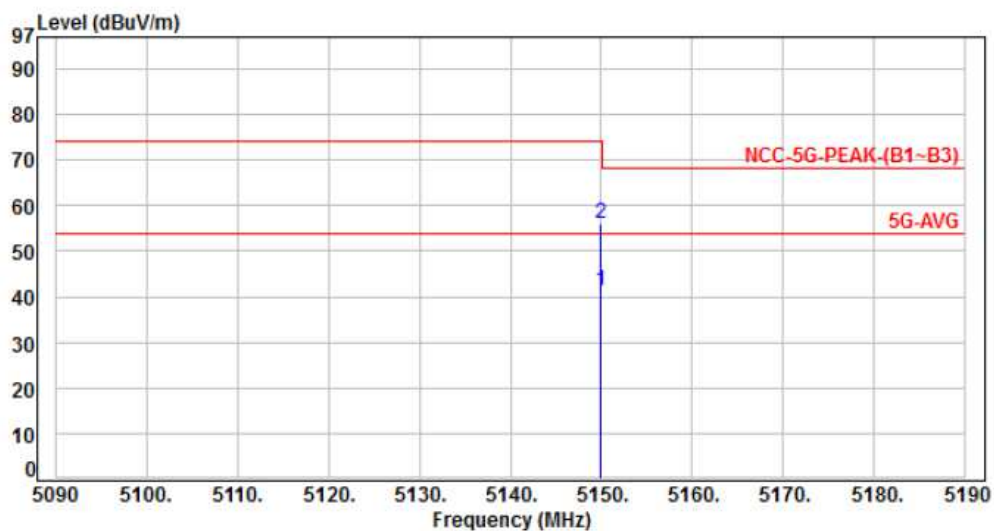
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: VERTICAL
Test Mode	: Mode 4, CH36	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %

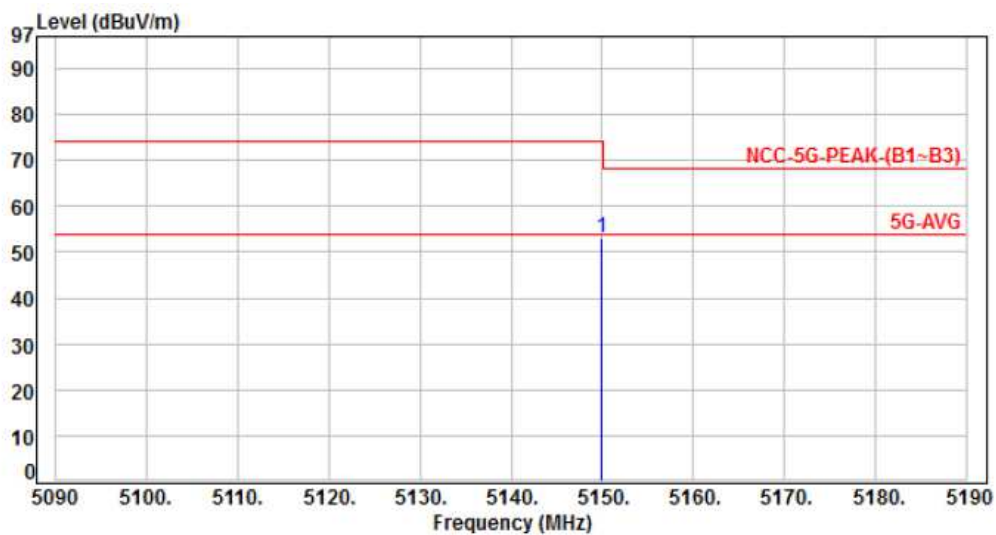


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5150.00	-12.60	53.92	41.32	54.00	-12.68	Average	157	226	P
2	5150.00	-12.60	68.49	55.89	74.00	-18.11	Peak	157	226	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 4, CH36	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %

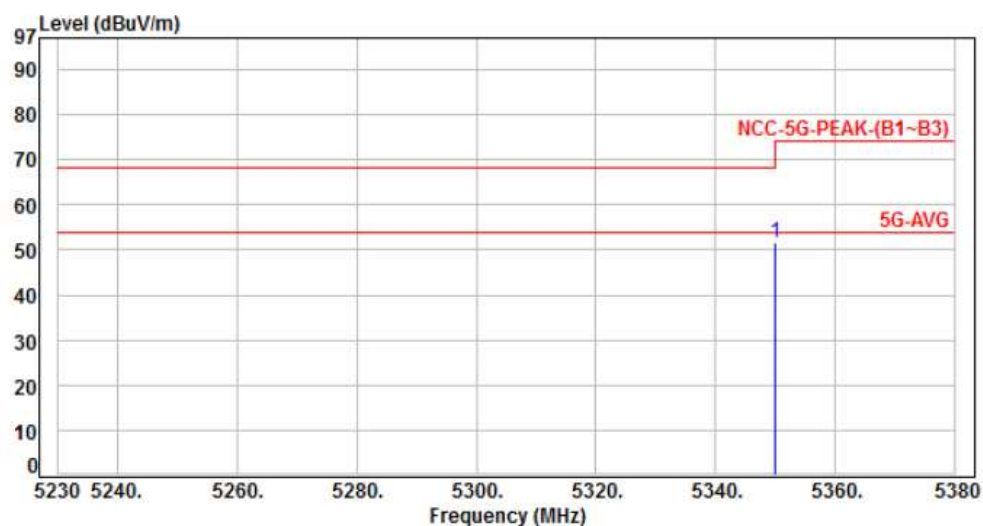


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5150.00	-12.60	65.57	52.97	74.00	-21.03	Peak	155	212	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: VERTICAL
Test Mode	: Mode 4, CH48	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %

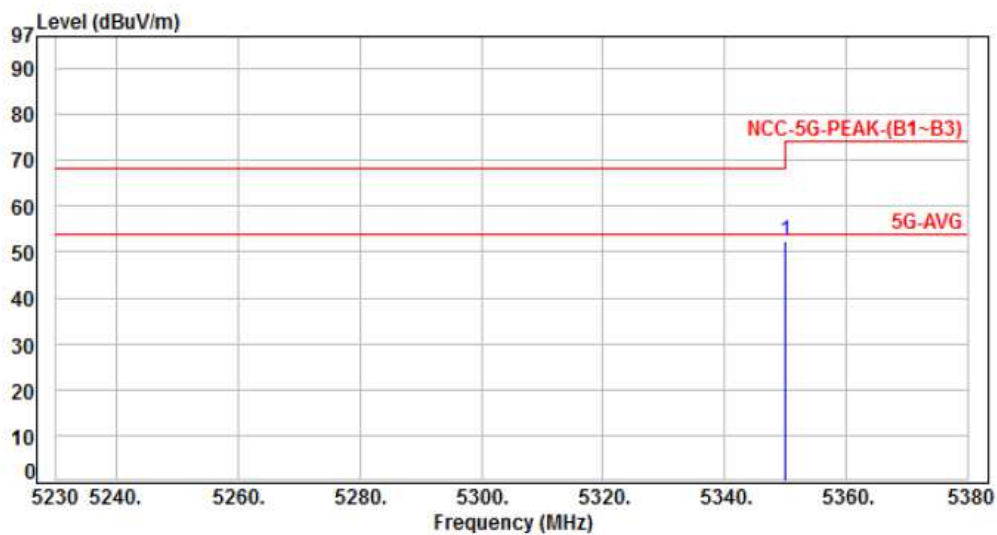


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5350.00	-12.33	64.09	51.76	74.00	-22.24	Peak	156	135	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 4, CH48	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %

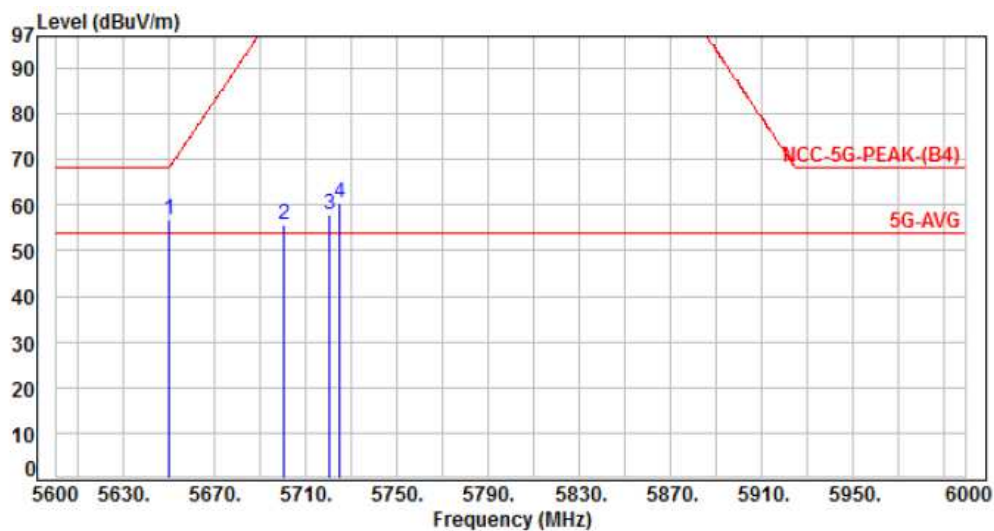


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5350.00	-12.33	64.72	52.39	74.00	-21.61	Peak	179	198	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: VERTICAL
Test Mode	: Mode 4, CH149	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5650.00	-12.16	69.08	56.92	68.20	-11.28	Peak	400	58	P
2	5700.00	-12.17	68.01	55.84	105.20	-49.36	Peak	400	58	P
3	5720.00	-12.18	70.14	57.96	110.80	-52.84	Peak	400	58	P
4	5725.00	-12.18	72.70	60.52	122.20	-61.68	Peak	400	58	P

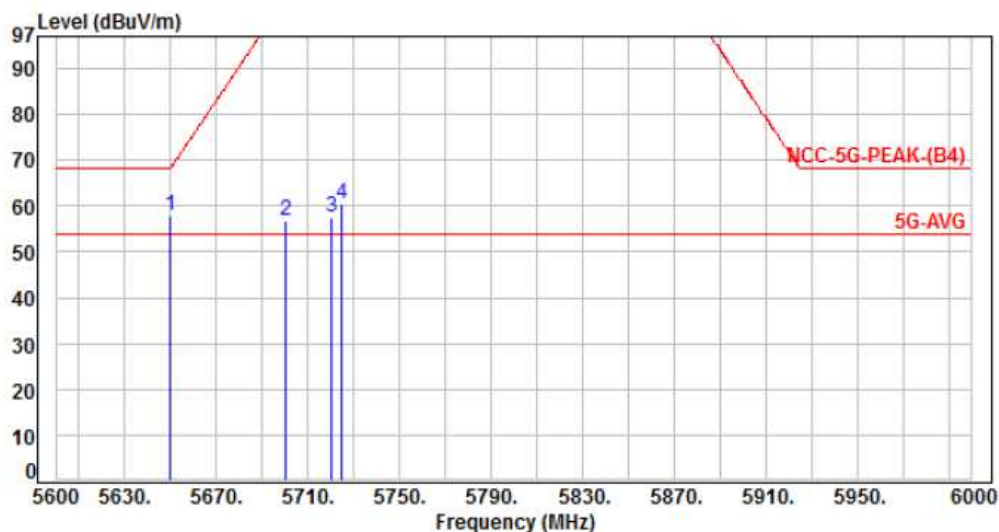
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 4, CH149	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5650.00	-12.16	70.04	57.88	68.20	-10.32	Peak	371	333	P
2	5700.00	-12.17	69.02	56.85	105.20	-48.35	Peak	371	333	P
3	5720.00	-12.18	69.63	57.45	110.80	-53.35	Peak	371	333	P
4	5725.00	-12.18	72.85	60.67	122.20	-61.53	Peak	371	333	P

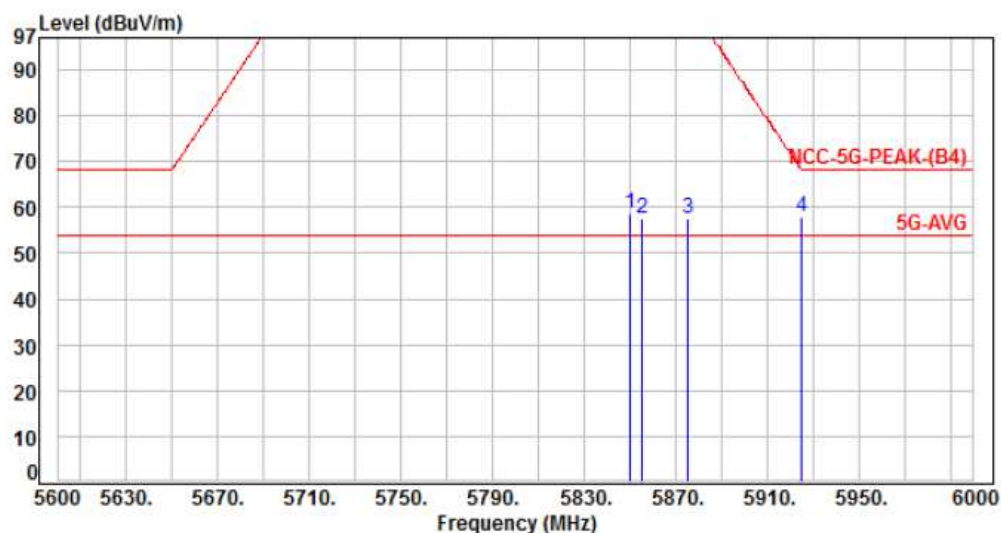
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: VERTICAL
Test Mode	: Mode 4, CH165	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5850.00	-12.19	70.88	58.69	122.20	-63.51	Peak	342	56	P
2	5855.00	-12.19	69.57	57.38	110.80	-53.42	Peak	342	56	P
3	5875.00	-12.20	69.76	57.56	105.20	-47.64	Peak	342	56	P
4	5925.00	-12.20	69.98	57.78	68.20	-10.42	Peak	342	56	P

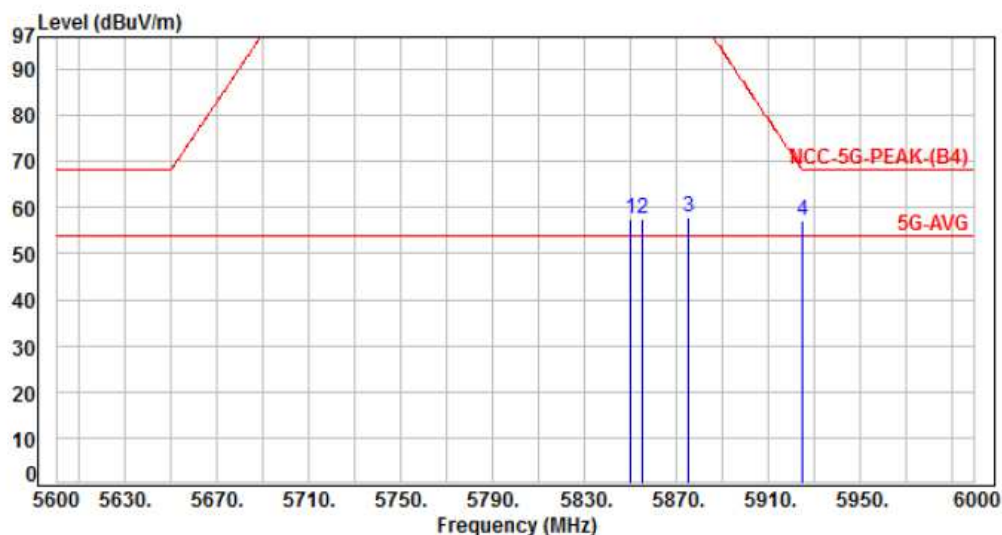
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 4, CH165	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5850.00	-12.19	69.61	57.42	122.20	-64.78	Peak	369	311	P
2	5855.00	-12.19	69.61	57.42	110.80	-53.38	Peak	369	311	P
3	5875.00	-12.20	69.98	57.78	105.20	-47.42	Peak	369	311	P
4	5925.00	-12.20	69.53	57.33	68.20	-10.87	Peak	369	311	P

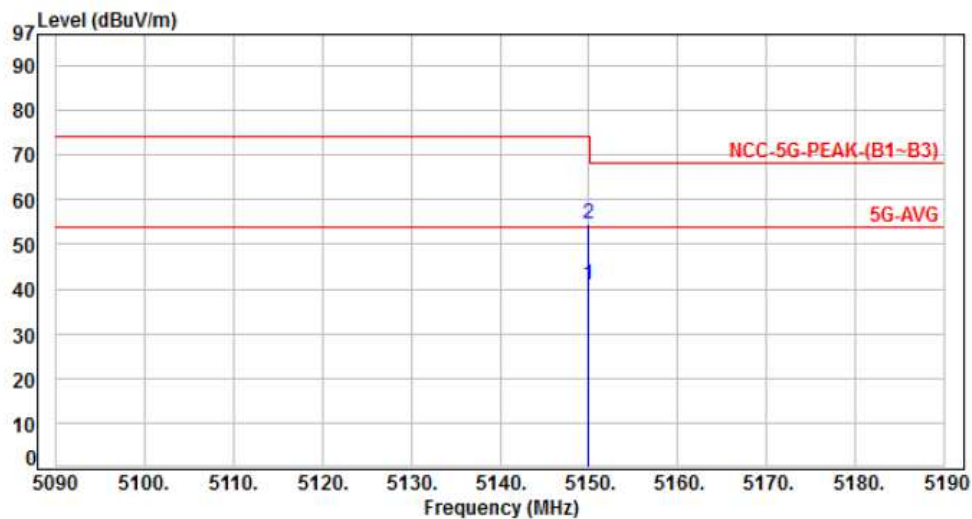
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: VERTICAL
Test Mode	: Mode 5, CH38	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5150.00	-12.60	53.72	41.12	54.00	-12.88	Average	205	234	P
2	5150.00	-12.60	67.22	54.62	74.00	-19.38	Peak	205	234	P

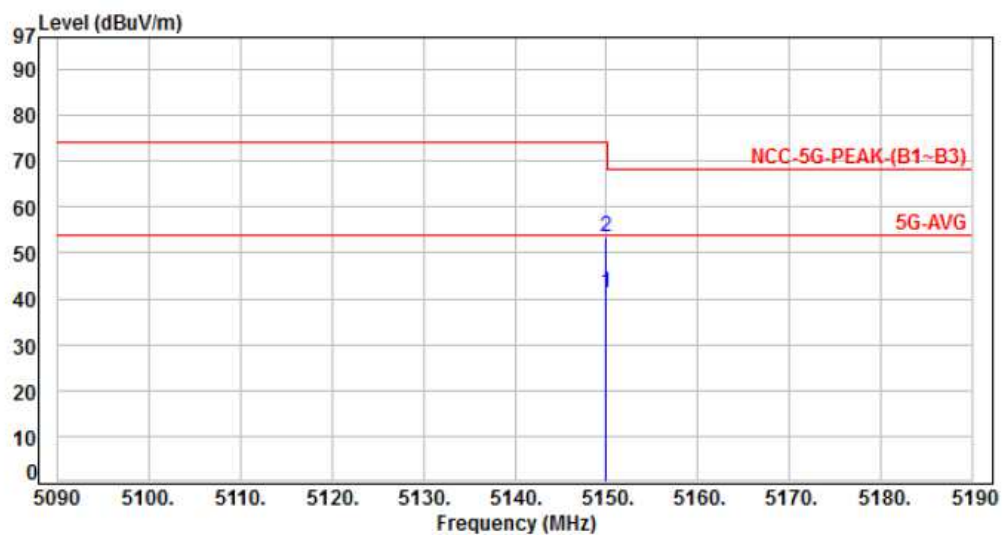
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 5, CH38	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %

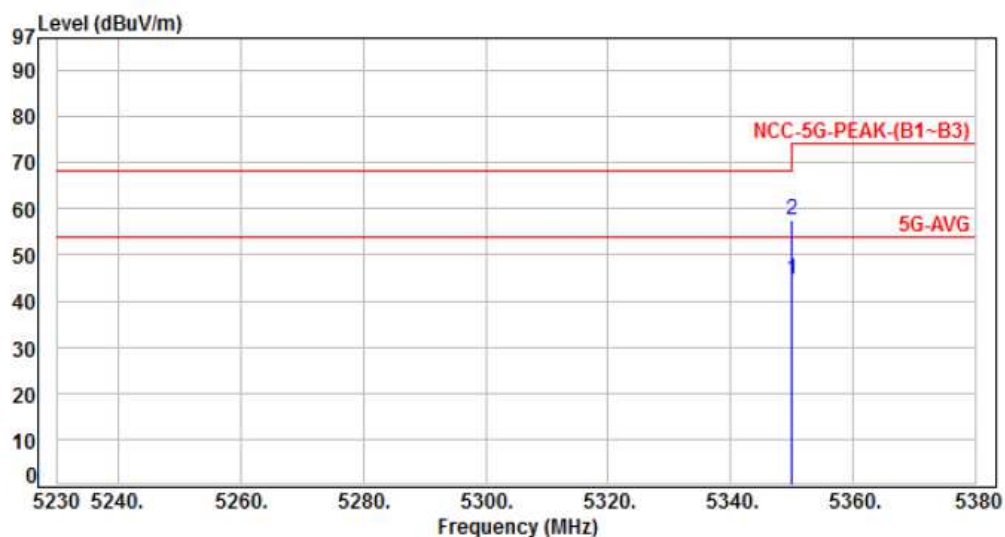


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5150.00	-12.60	54.02	41.42	54.00	-12.58	Average	178	172	P
2	5150.00	-12.60	66.14	53.54	74.00	-20.46	Peak	178	172	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: VERTICAL
Test Mode	: Mode 5, CH46	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5350.00	-12.33	56.96	44.63	54.00	-9.37	Average	196	201	P
2	5350.00	-12.33	69.77	57.44	74.00	-16.56	Peak	196	201	P

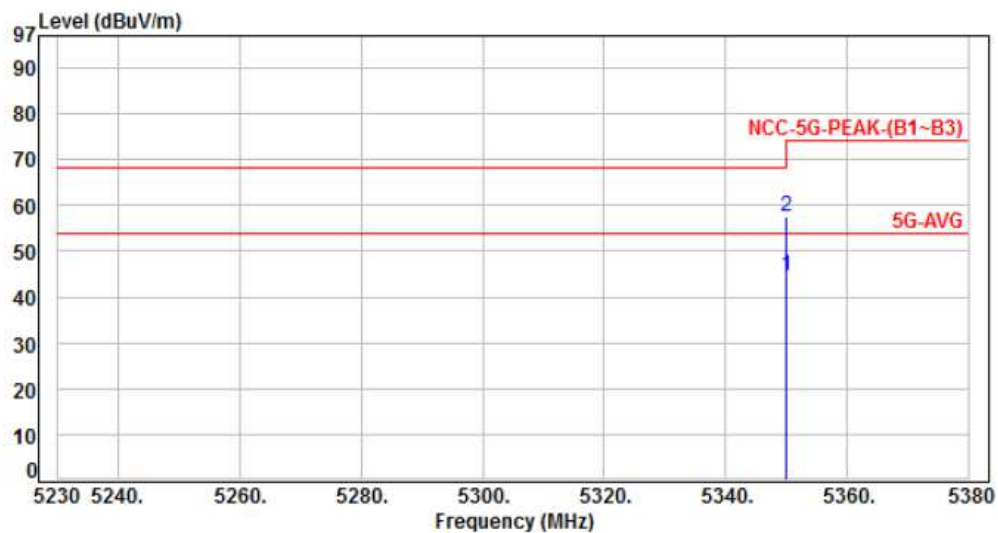
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 5, CH46	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %

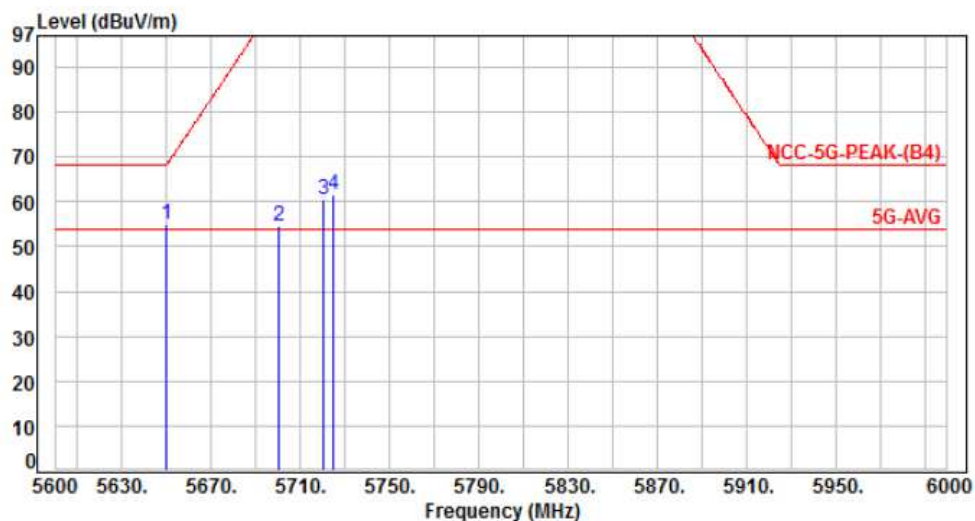


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5350.00	-12.33	56.96	44.63	54.00	-9.37	Average	204	158	P
2	5350.00	-12.33	69.70	57.37	74.00	-16.63	Peak	204	158	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: VERTICAL
Test Mode	: Mode 5, CH151	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5650.00	-12.16	66.97	54.81	68.20	-13.39	Peak	398	64	P
2	5700.00	-12.17	66.68	54.51	105.20	-50.69	Peak	398	64	P
3	5720.00	-12.18	72.67	60.49	110.80	-50.31	Peak	398	64	P
4	5725.00	-12.18	73.85	61.67	122.20	-60.53	Peak	398	64	P

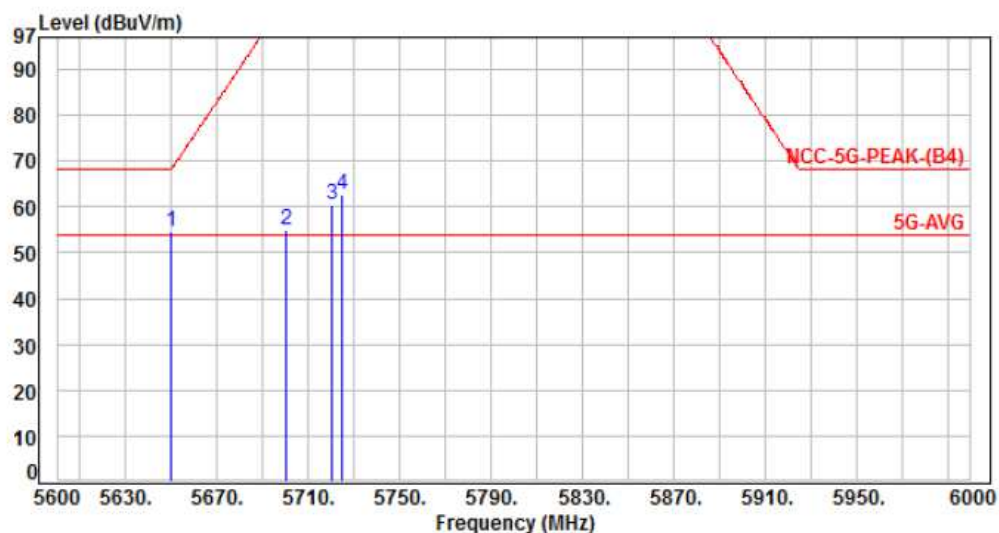
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 5, CH151	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5650.00	-12.16	66.62	54.46	68.20	-13.74	Peak	392	320	P
2	5700.00	-12.17	67.04	54.87	105.20	-50.33	Peak	392	320	P
3	5720.00	-12.18	72.77	60.59	110.80	-50.21	Peak	392	320	P
4	5725.00	-12.18	74.89	62.71	122.20	-59.49	Peak	392	320	P

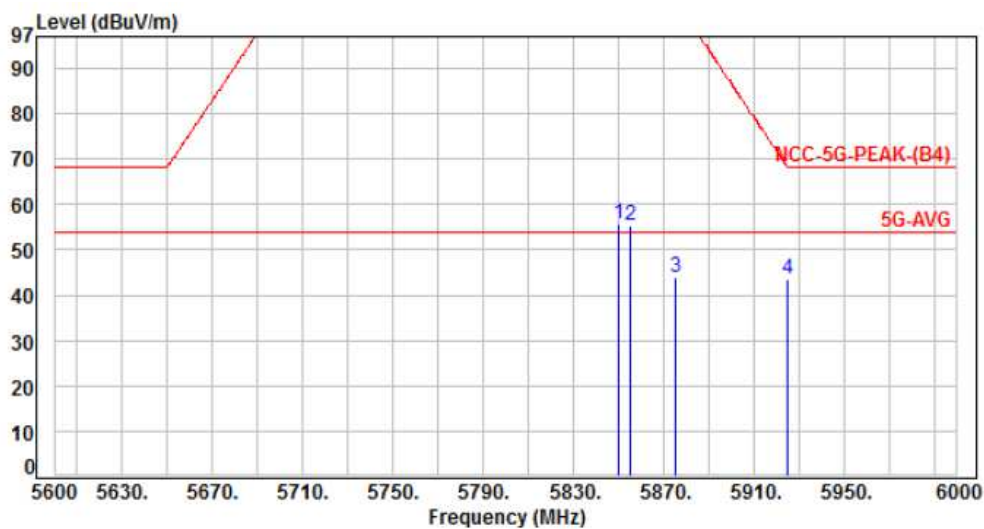
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: VERTICAL
Test Mode	: Mode 5, CH159	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5850.00	-12.19	67.97	55.78	122.20	-66.42	Peak	400	57	P
2	5855.00	-12.19	67.53	55.34	110.80	-55.46	Peak	400	57	P
3	5875.00	-12.20	55.95	43.75	105.20	-61.45	Peak	400	57	P
4	5925.00	-12.20	55.60	43.40	68.20	-24.80	Peak	400	57	P

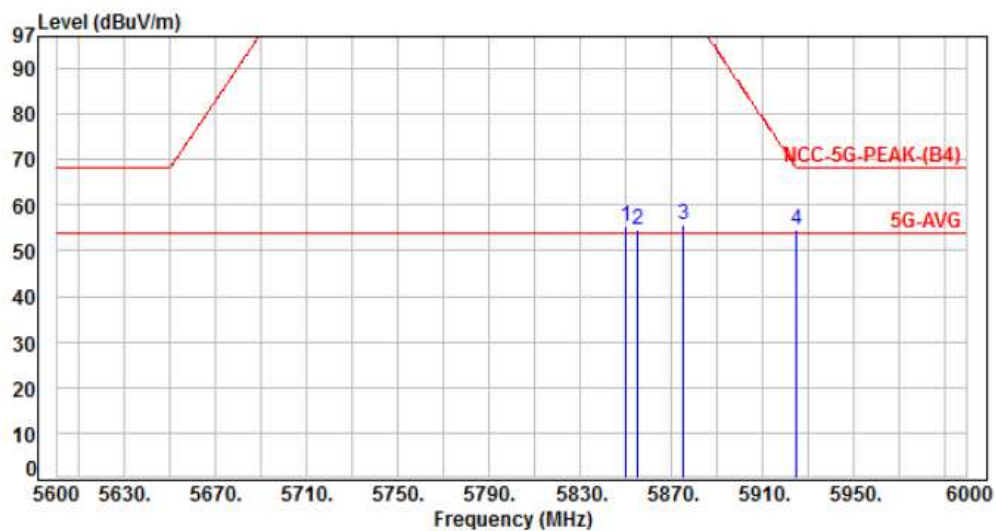
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 5, CH159	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %

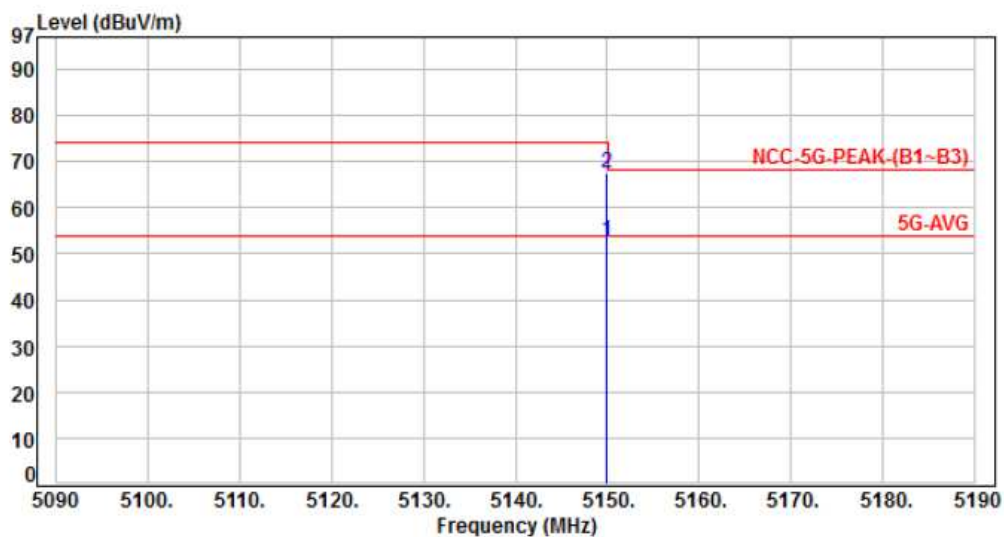


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5850.00	-12.19	67.63	55.44	122.20	-66.76	Peak	376	321	P
2	5855.00	-12.19	66.79	54.60	110.80	-56.20	Peak	376	321	P
3	5875.00	-12.20	67.78	55.58	105.20	-49.62	Peak	376	321	P
4	5925.00	-12.20	66.73	54.53	68.20	-13.67	Peak	376	321	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: VERTICAL
Test Mode	: Mode 6, CH42	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5150.00	-12.60	65.33	52.73	54.00	-1.27	Average	204	225	P
2	5150.00	-12.60	80.01	67.41	74.00	-6.59	Peak	204	225	P

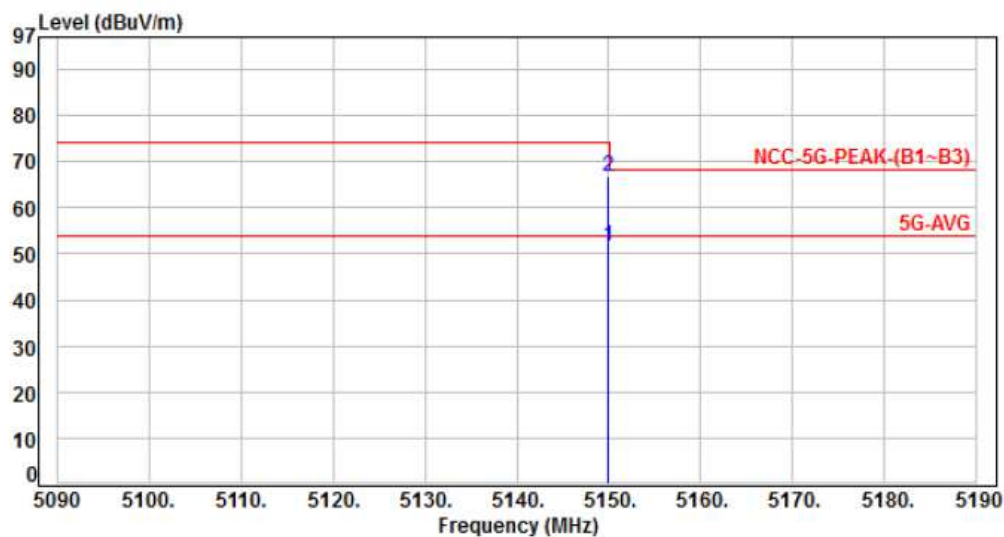
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 6, CH42	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5150.00	-12.60	64.33	51.73	54.00	-2.27	Average	212	158	P
2	5150.00	-12.60	79.51	66.91	74.00	-7.09	Peak	212	158	P

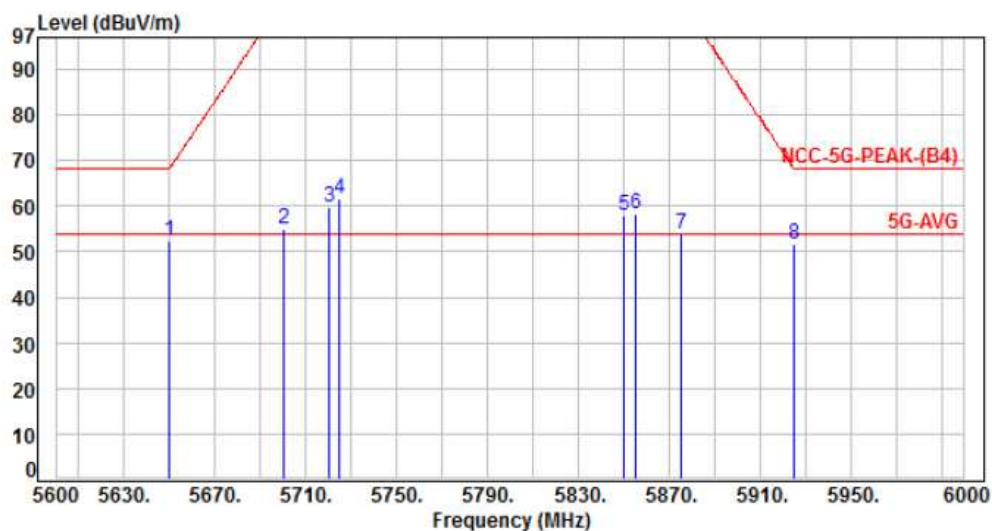
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: VERTICAL
Test Mode	: Mode 6, CH155	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %

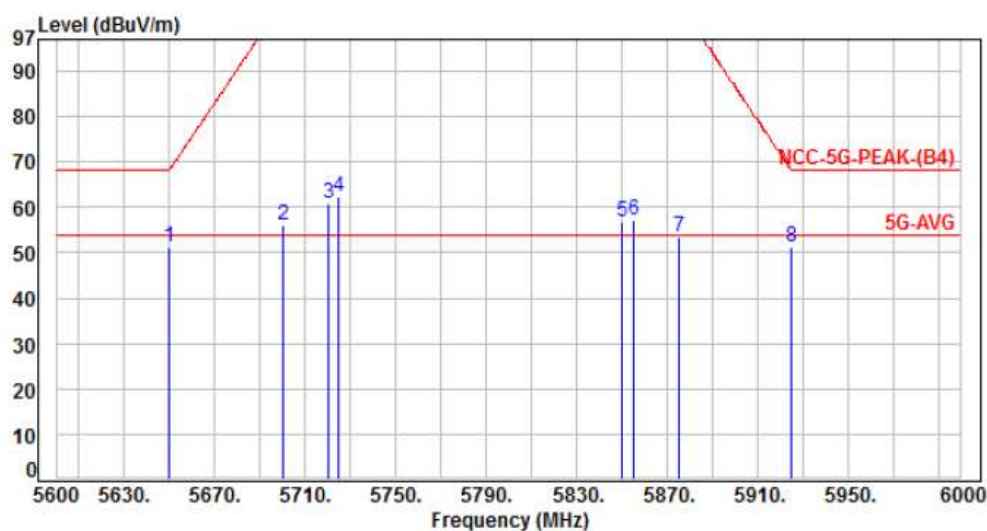


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5650.00	-12.16	64.44	52.28	68.20	-15.92	Peak	372	65	P
2	5700.00	-12.17	67.14	54.97	105.20	-50.23	Peak	372	65	P
3	5720.00	-12.18	71.89	59.71	110.80	-51.09	Peak	372	65	P
4	5725.00	-12.18	73.61	61.43	122.20	-60.77	Peak	372	65	P
5	5850.00	-12.19	70.13	57.94	122.20	-64.26	Peak	372	65	P
6	5855.00	-12.19	70.51	58.32	110.80	-52.48	Peak	372	65	P
7	5875.00	-12.20	66.05	53.85	105.20	-51.35	Peak	372	65	P
8	5925.00	-12.20	63.80	51.60	68.20	-16.60	Peak	372	65	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 6, CH155	Temperature	: 24 °C
Test date	: Nov. 25, 2017	Humidity	: 68 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5650.00	-12.16	63.28	51.12	68.20	-17.08	Peak	396	326	P
2	5700.00	-12.17	68.20	56.03	105.20	-49.17	Peak	396	326	P
3	5720.00	-12.18	73.01	60.83	110.80	-49.97	Peak	396	326	P
4	5725.00	-12.18	74.69	62.51	122.20	-59.69	Peak	396	326	P
5	5850.00	-12.19	69.10	56.91	122.20	-65.29	Peak	396	326	P
6	5855.00	-12.19	69.40	57.21	110.80	-53.59	Peak	396	326	P
7	5875.00	-12.20	65.72	53.52	105.20	-51.68	Peak	396	326	P
8	5925.00	-12.20	63.62	51.42	68.20	-16.78	Peak	396	326	P

Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



7. On Time, Duty Cycle and Measurement methods

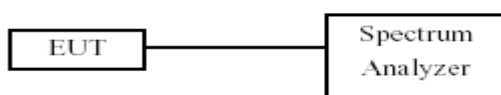
7.1. 適用標準

None; for reporting purposes only.

7.2. 測試方法

KDB 789033 Zero-Span Spectrum Analyzer Method.

7.3. 測試配置



7.4. 測試結果及數據

Test Result : PASS Temperature : 21°C
Test Date : Nov. 24, 2017 Humidity : 55%

Modulation Type	On Time (msec)	Period Time (msec)	Duty Cycle (%)	1/T Minimum VBW(Hz)	Duty Cycle correction Factor (dB)
802.11a	1.368	1.424	0.9607	96.07%	1.04
802.11a HT20	0.466	0.524	0.8893	88.93%	1.12
802.11a HT40	0.253	0.318	0.7956	79.56%	1.26
802.11ac VHT20	1.292	1.348	0.9585	95.85%	1.04
802.11ac VHT40	0.64	0.7	0.9143	91.43%	1.09
802.11ac VHT80	0.3225	0.3825	0.8431	84.31%	1.19

7.5. Measurement Methods

26 dB and 6dB Emission BW	KDB 789033 D02 New Rules v01r03, Section C
99% Occupied BW	KDB 789033 D02 New Rules v01r03, Section D
Conducted Output Power	KDB 789033 D02 New Rules v01r03, E.3.b (Method PM-G)
Power Spectral Density	KDB 789033 D02 New Rules v01r03, Section F
Unwanted Emission Measurement	KDB 789033 D02 New Rules v01r03, Sections G



8. 6dB 頻寬之規定

8.1. 適用標準

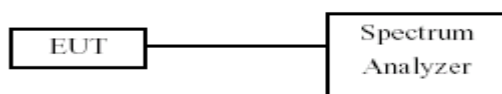
FCC §15.407

The minimum 6 dB bandwidth shall be at least 500 kHz.

8.2. 測試方法

Reference to 789033 D02 General UNII Test Procedures New Rules v01: The transmitter output is connected to a spectrum analyzer with the RBW set to 100KHz, the VBW $\geq 3 \times$ RBW, peak detector and max hold.

8.3. 測試配置



8.4. 測試結果及數據

Test Result : PASS

Temperature : 21°C

Test Date : Nov. 24, 2017

Humidity : 55%

802.11a mode in the 5.8G Band

Channel	Frequency (MHz)	Ant. 0 6dB Bandwidth (MHz)	Ant. 1 6dB Bandwidth (MHz)	Ant. 2 6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5745	16.48	16.44	16.47	0.5
Middle	5785	16.40	16.70	16.50	0.5
High	5825	16.44	16.46	16.40	0.5
Worst		16.48	16.70	16.50	

802.11n HT20 mode in the 5.8G Band

Channel	Frequency (MHz)	Ant. 0 6dB Bandwidth (MHz)	Ant. 1 6dB Bandwidth (MHz)	Ant. 2 6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5745	17.28	17.05	17.40	0.5
Middle	5785	17.70	17.70	17.50	0.5
High	5825	17.04	16.99	17.73	0.5
Worst		17.28	17.7	17.73	

**802.11n HT40 mode in the 5.8G Band**

Channel	Frequency (MHz)	Ant. 0 6dB Bandwidth (MHz)	Ant. 1 6dB Bandwidth (MHz)	Ant. 2 6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5755	36.18	36.20	36.35	0.5
High	5795	35.35	36.25	35.95	0.5
Worst		36.18	36.25	36.35	

802.11ac VHT20 mode in the 5.8G Band

Channel	Frequency (MHz)	Ant. 0 6dB Bandwidth (MHz)	Ant. 1 6dB Bandwidth (MHz)	Ant. 2 6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5745	14.87	15.43	15.23	0.5
Middle	5785	17.70	17.50	17.50	0.5
High	5825	17.80	17.76	17.81	0.5
Worst		17.80	17.76	17.81	

802.11ac VHT40 mode in the 5.8G Band

Channel	Frequency (MHz)	Ant. 0 6dB Bandwidth (MHz)	Ant. 1 6dB Bandwidth (MHz)	Ant. 2 6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5755	33.23	34.32	34.69	0.5
High	5795	30.73	36.13	36.27	0.5
Worst		33.23	36.13	36.27	

802.11ac VHT80 mode in the 5.8G Band

Channel	Frequency (MHz)	Ant. 0 6dB Bandwidth (MHz)	Ant. 1 6dB Bandwidth (MHz)	Ant. 2 6dB Bandwidth (MHz)	Minimum Limit (MHz)
Middle	5775	75.06	72.77	74.53	0.5
Worst		75.06	72.77	74.53	

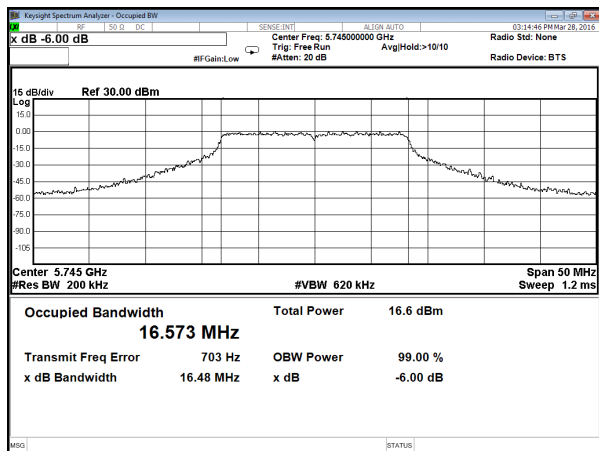
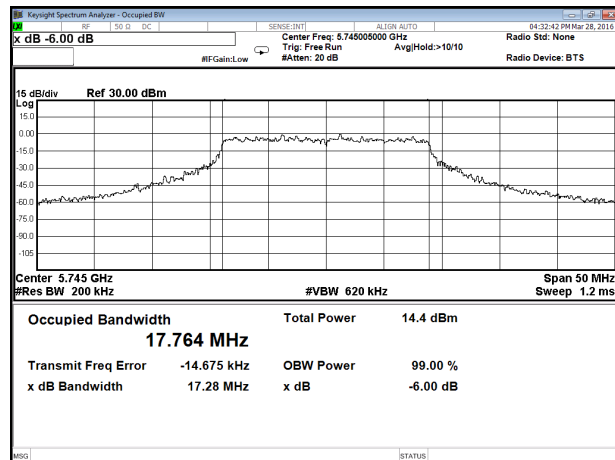
備註：繪圖資料請參考下頁。

8.5. 結果判定

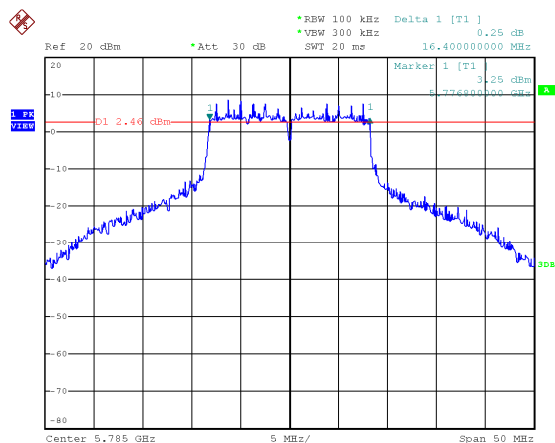
高、中、低頻段的 6dB 頻寬皆大於 500 KHz，合乎標準規定。



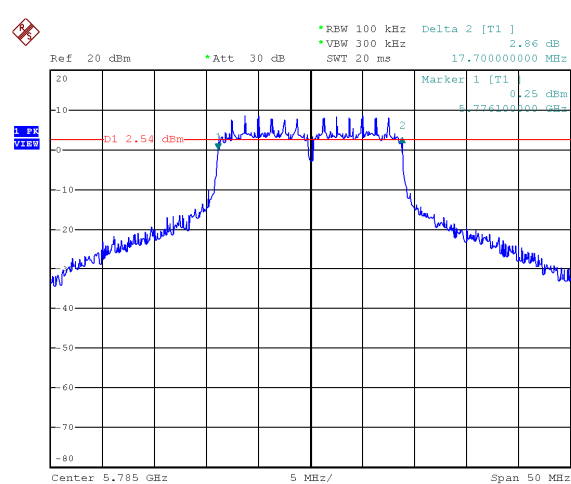
Antenna 0

Modulation Standard: 802.11a (6Mbps)
CH149Modulation Standard: 802.11an, HT20 (19.5Mbps)
CH149

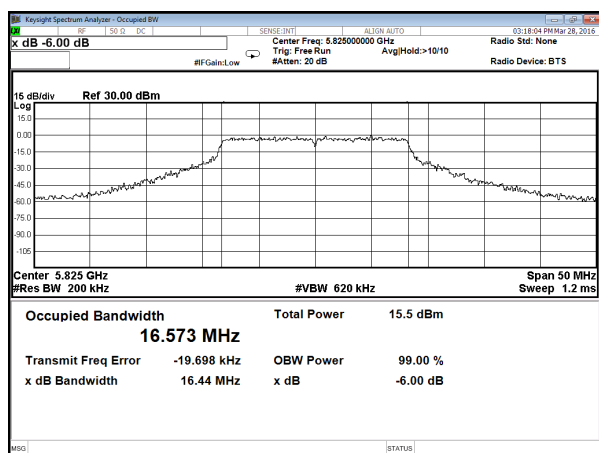
CH157



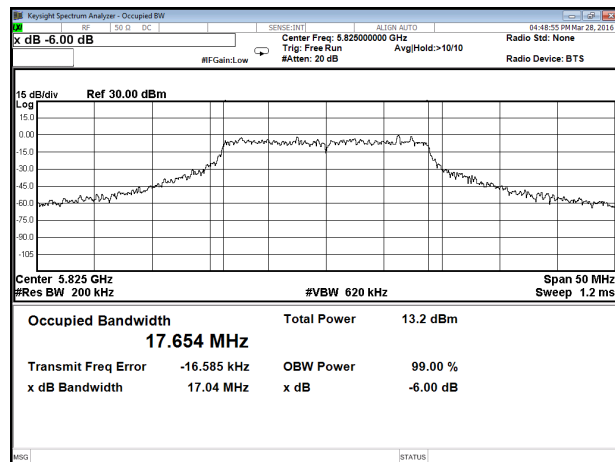
CH157

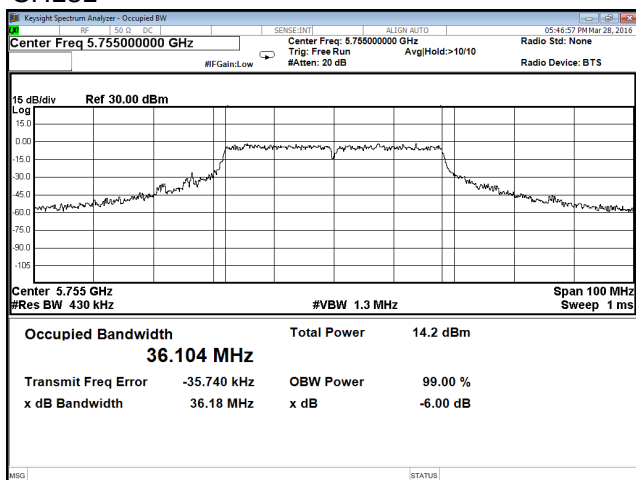
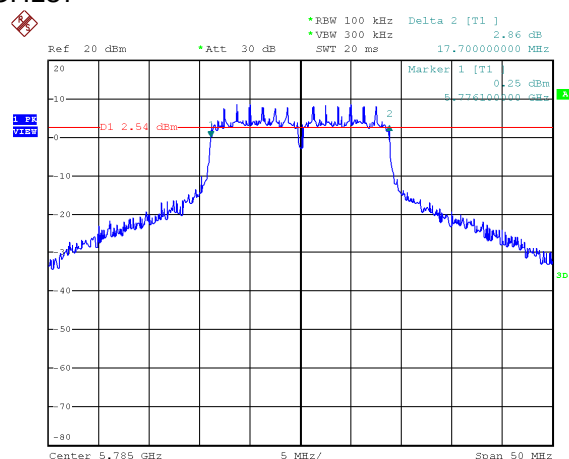


CH165

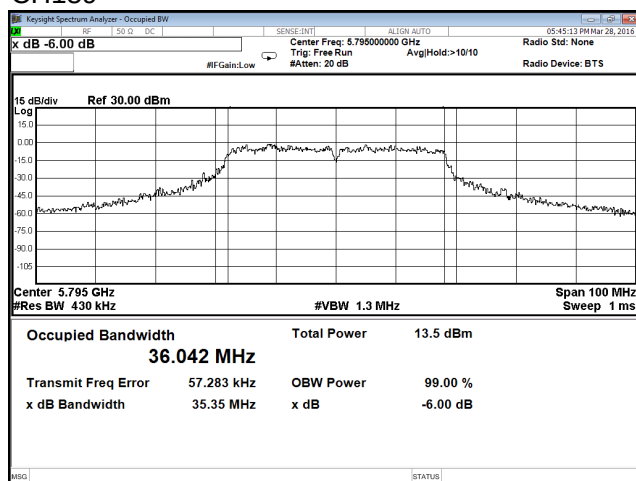


CH165

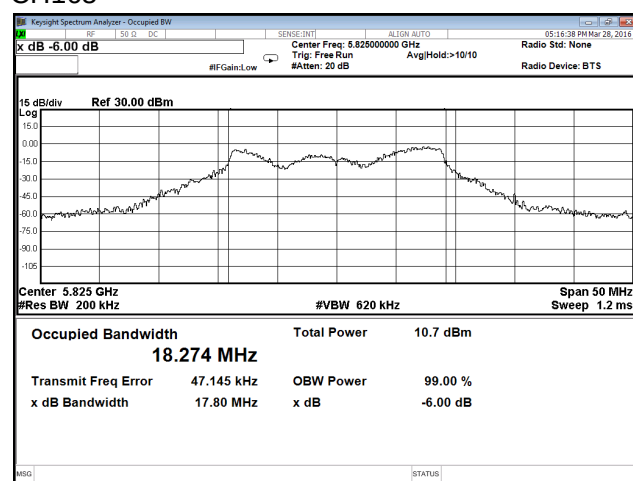
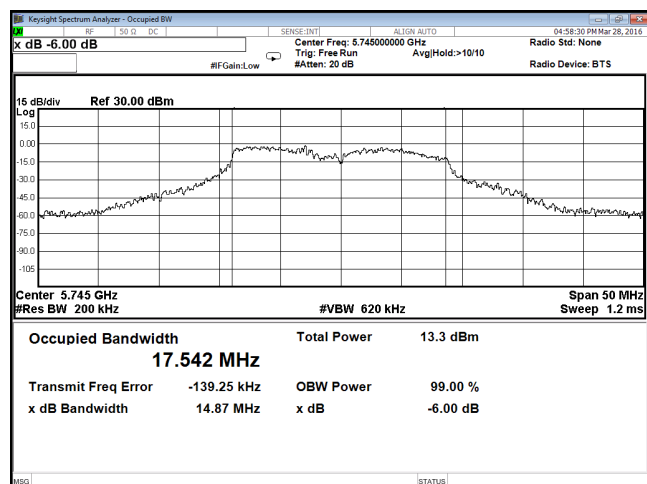
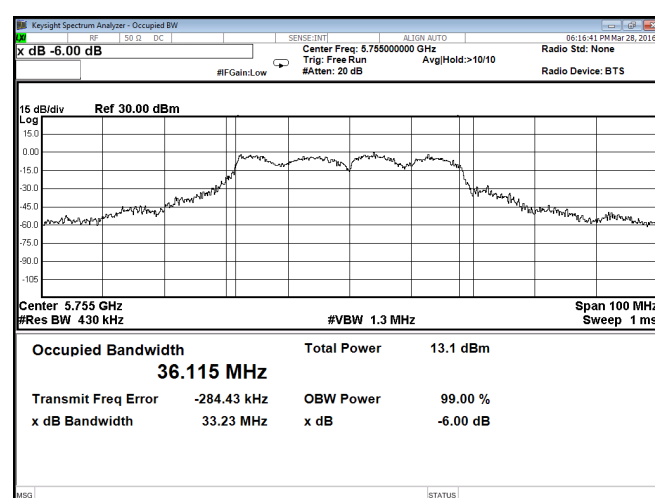


Modulation Standard: 802.11an, HT40 (40.5Mbps)
CH151Modulation Standard: 802.11ac, VHT20 (6.5Mbps)
CH157

CH159

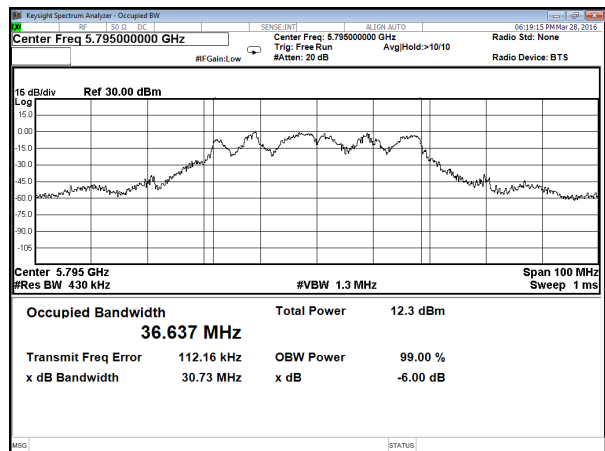


CH165

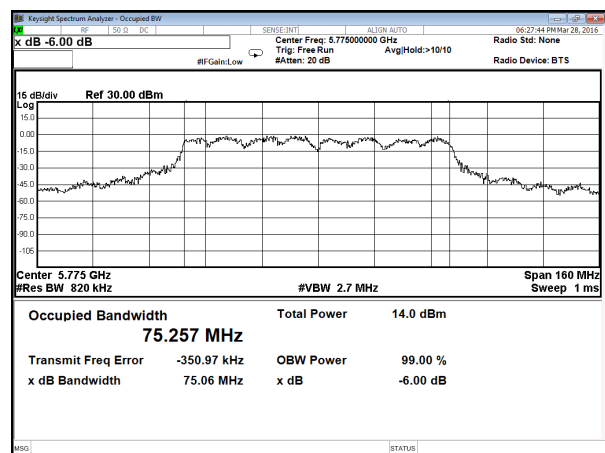
Modulation Standard: 802.11ac, VHT20 (65Mbps)
CH149Modulation Standard: 802.11ac, VHT40 (13.5Mbps)
CH151



Modulation Standard: 802.11ac, VHT40 (13.5Mbps)
CH159

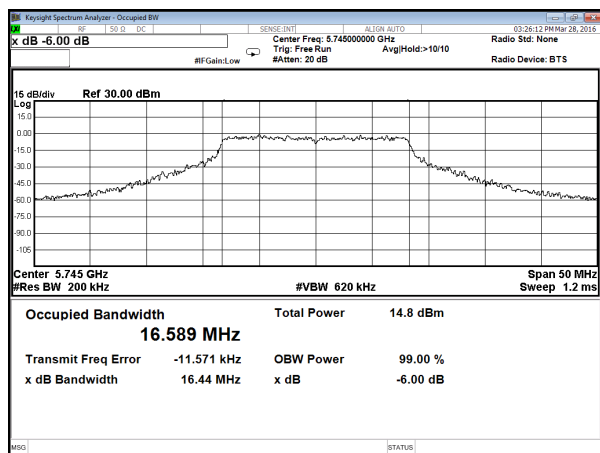
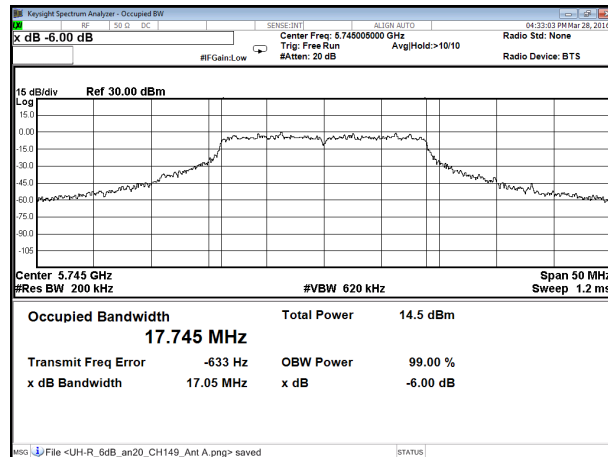


Modulation Standard: 802.11ac, VHT80 (29.3Mbps)
CH155

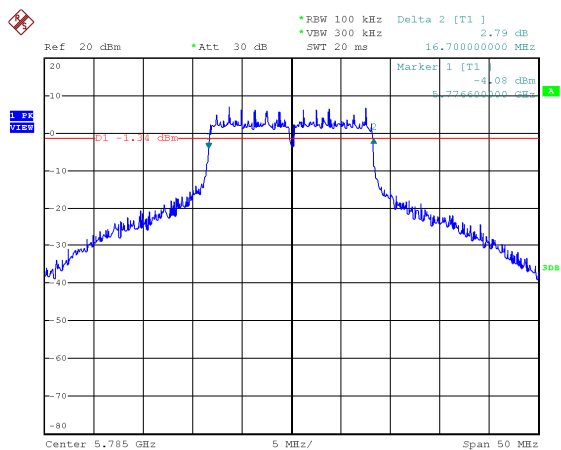




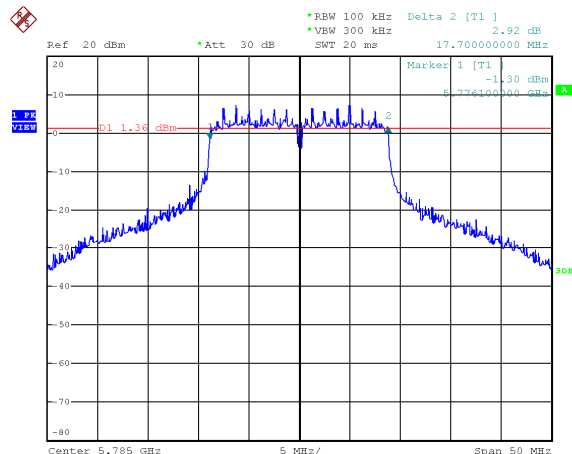
Antenna 1

Modulation Standard: 802.11a (6Mbps)
CH149Modulation Standard: 802.11an, HT20 (19.5Mbps)
CH149

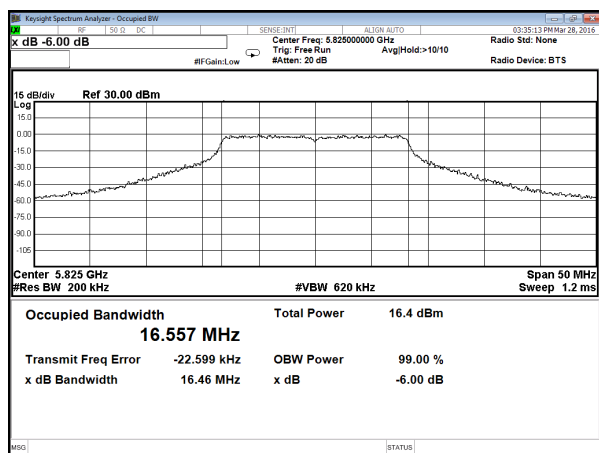
CH157



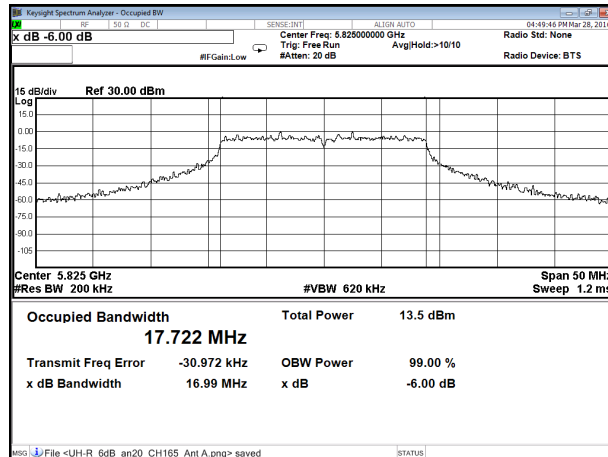
CH157

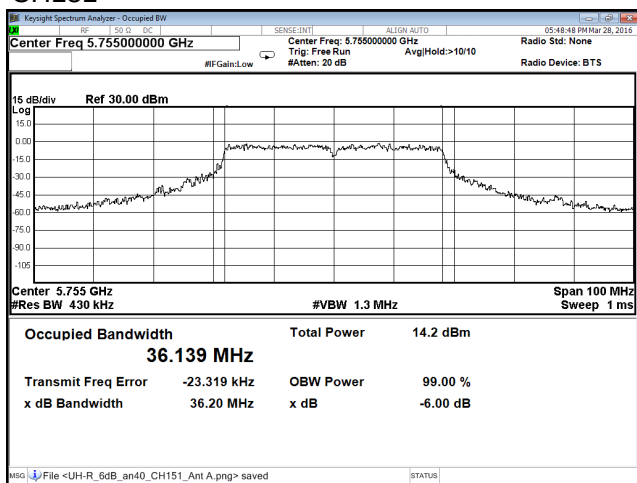
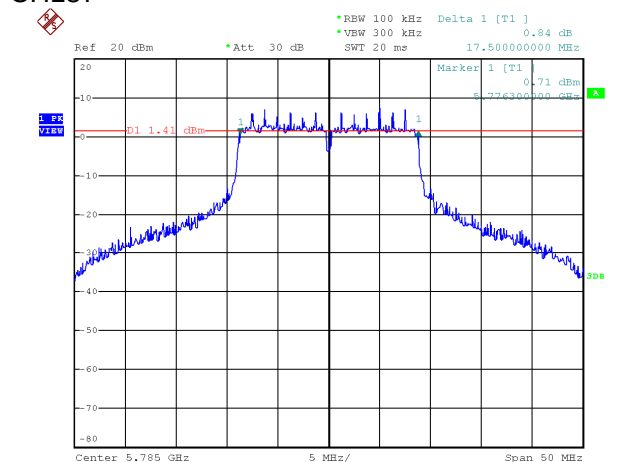


CH165

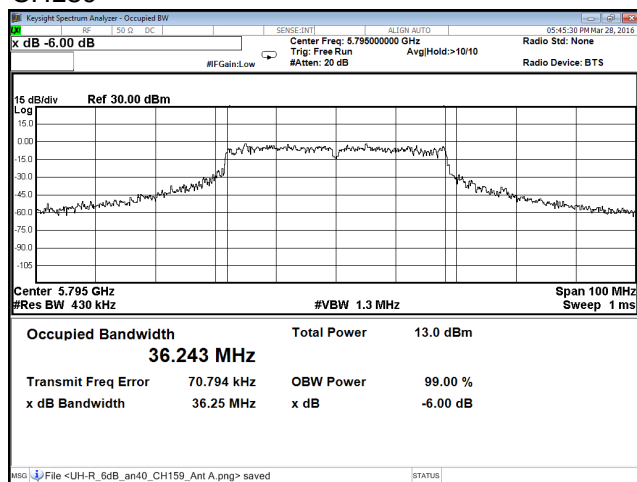


CH165

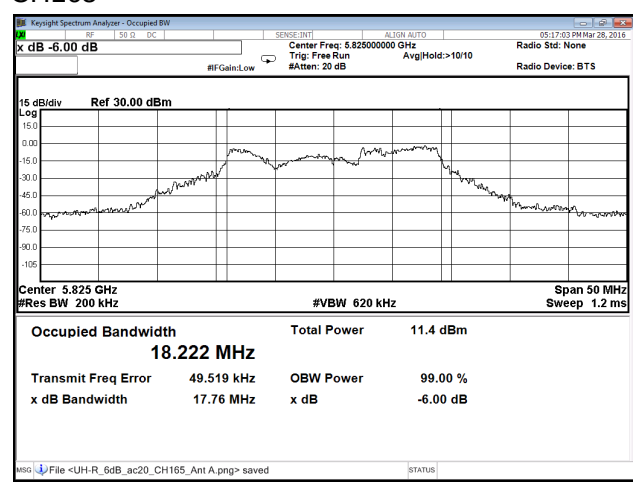
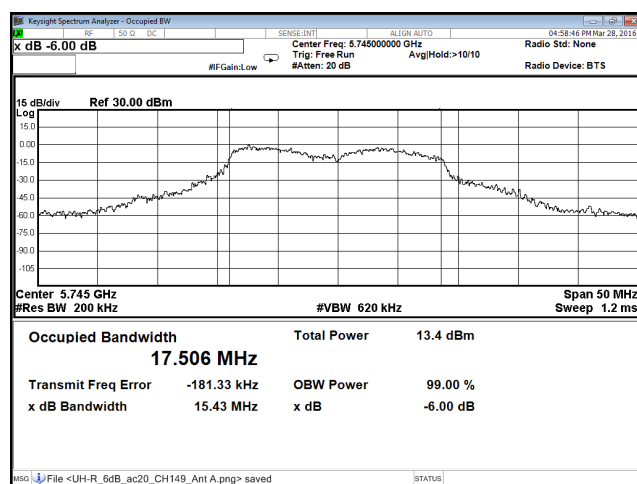
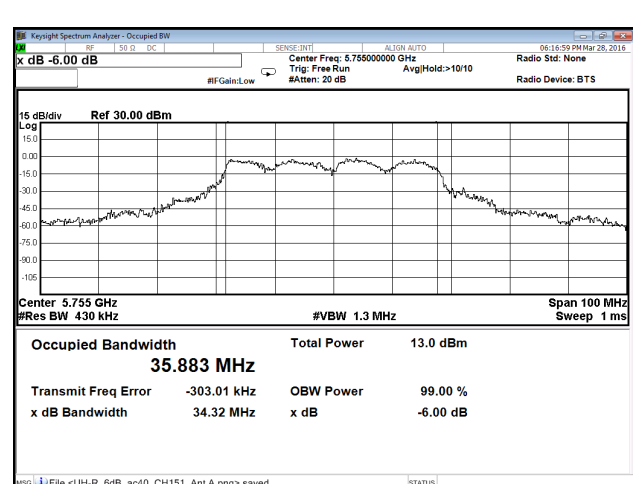


Modulation Standard: 802.11an, HT40 (40.5Mbps)
CH151Modulation Standard: 802.11ac, VHT20 (6.5Mbps)
CH157

CH159

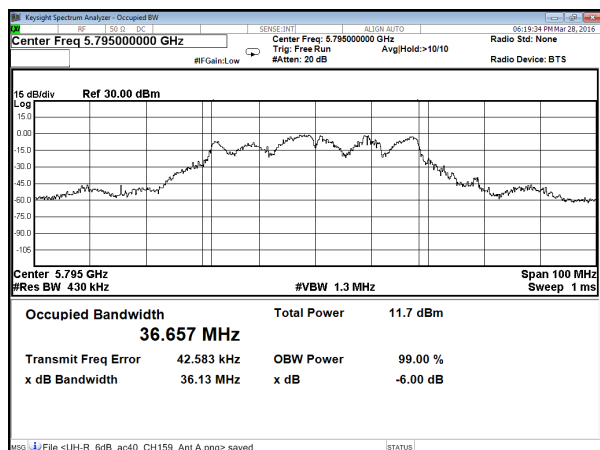


CH165

Modulation Standard: 802.11ac, VHT20 (65Mbps)
CH149Modulation Standard: 802.11ac, VHT40 (13.5Mbps)
CH151



Modulation Standard: 802.11ac, VHT40 (13.5Mbps)
CH159



Modulation Standard: 802.11ac, VHT80 (29.3Mbps)
CH155

