



低功率射頻電機測試報告

申請廠商	: 鎮陞科技股份有限公司
地址	: 台中市南區忠明南路 760 號 14 樓
製造廠商 1	: NETTECH TECHNOLOGY(SUZHOU) CO LTD
地址	: 中國江蘇省蘇州市相城經濟開發區春申 湖東路 1 號
製造廠商 2	: 友勁科技股份有限公司
地址	: 台北市內湖區瑞湖街 158 號 5 樓
產品名稱	: 802.11ac 戶外型無線基地台
產品型號	: AT-TQ5403e
廠牌	: Allied Telesis
受理日期	: 107 年 12 月 07 日
完成日期	: 108 年 03 月 26 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





目 錄

證 明 書	5
1. 一般描述	6
1.1. 產品規格	6
1.2. 無線界面規格及頻道對應頻率	6
1.3. 測試模式之描述	7
1.4. 受測裝置之系統說明	7
1.5. 測試場地	8
1.6. 量測不確定度	8
2. 測試儀器	9
3. 天線增益之要求	10
3.1. 天線型式及其增益	10
3.2. 結果判定	10
4. 電源線傳導干擾之量測規定	11
4.1. 適用標準	11
4.2. 測試方法	11
4.3. 傳導干擾之擺設	11
4.4. 傳導干擾之測試結果及數據	12
4.5. 傳導量測之配置照片	14
5. 輻射之量測規定	15
5.1. 適用標準	15
5.2. 測試方法	15
5.3. 輻射場地之擺設	15
5.4. 輻射之測試結果及數據 (30MHz ~ 1GHz)	17
5.5. 輻射之測試結果及數據 (1GHz ~ 25GHz)	19
5.6. 輻射量測之配置照片 (30MHz ~ 1GHz)	43
5.7. 輻射量測之配置照片 (1GHz ~ 25GHz)	44
6. On Time, Duty Cycle and Measurement methods	45
6.1. 適用標準	45
6.2. 測試方法	45
6.3. 測試配置	45
6.4. 測試結果及數據	45
7. 6dB 頻寬之規定	47
7.1. 適用標準	47
7.2. 測試方法	47
7.3. 測試配置	47
7.4. 6dB 頻寬之測試結果及數據	47
7.5. 結果判定	47
8. 峰值輸出功率之規定	52
8.1. 適用標準	52
8.2. 測試方法	52
8.3. 測試配置	52
8.4. 峰值輸出功率之測試結果及數據	52
8.5. 結果判定	53
9. 混附波發射限制之規定	54
9.1. 適用方法	54
9.2. 測試方法	54
9.3. 測試配置	54
9.4. 結果判定	54
10. 功率密度之規定	71
10.1. 適用標準	71
10.2. 測試方法	71
10.3. 測試配置	71



10.4.	功率密度之量測結果及數據	71
10.5.	結果判定	72
11.	電波暴露量之評估	77
11.1.	適用標準	77
11.2.	電波暴露量之評估結果及數據	78
11.3.	結果判定	78
12.	限制使用之頻帶	79
附錄 A:	產品照	A1 ~A30

[illegible]



證 明 書

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產品名稱 : 802.11ac 戶外型無線基地台

產品型號 : AT-TQ5403e

廠牌 : Allied Telesis

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 107 年 1 月 10 日。

發射功率
(電場強度) : 22.54 dBm

茲在此鄭重聲明：

本試驗報告所列之待測設備樣品於民國 108 年 01 月 23 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	量測設備	測試結果	結果判定
1	天線增益之要求	3.10.1.3 節	---	請參閱 2.2 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	3.10.1.5 節	請參閱 2 章	請參閱 5.4 節 及 5.5 節	合格
4	發射頻寬之要求	3.10.1.6 節(2).(A)	請參閱 2 章	請參閱 6.4 節	合格
5	峰值輸出功率之要求	3.10.1.2 節(1)(C)	請參閱 2 章	請參閱 7.4 節	合格
6	混附波發射限制之要求	3.10.1.5 節	請參閱 2 章	請參閱 8.4 節	合格
7	功率密度之要求	3.10.1.6 節(2)(B)	請參閱 2 章	請參閱 9.4 節	合格

報告簽署人：

測試工程師：



1. 一般描述

1.1. 產品規格

Equipment	802.11ac 戶外型無線基地台
Model No.	AT-TQ5403e
Brand Name	Allied Telesis
Product Description	Please refer to User's Manual.
Connecting I/O Port(s)	Please refer to User's Manual.
PoE	48Vdc/0.67A
Memo	A1
Frequency Range	802.11b/g/n: 2400-2483.5MHz 802.11a/n/ac: 5150MHz-5250MHz, 5250MHz-5350MHz, 5470MHz-5725MHz, 5725MHz-5850MHz
Modulation Type	OFDM, DSSS
Data Rate	2.4GHz: 802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS15, HT20/40, VHT20/40 5GHz: 802.11a: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS15, HT20/40 802.11ac: MCS0 – MCS9, VHT20/40/80
Antenna Type	Dipole Antenna
Antenna Gain	2400-2483.5MHz: ANT A: 5.2dBi, ANT B: 5.2dBi 5150-5250MHz: ANT A: 6.91dBi, ANT B: 6.91dBi 5250-5350MHz: ANT A: 6.72dBi, ANT B: 6.72dBi 5470-5725MHz: ANT A: 6.34dBi, ANT B: 6.34dBi 5725-5850MHz: ANT A: 7.08dBi, ANT B: 7.08dBi

1.2. 無線界面規格及頻道對應頻率

802.11b, 802.11g, 802.11n HT20, VHT20 (2412MHz~2462MHz)

Channel	Frequency(MHz)	Channel	Frequency(MHz)
*01	2412	07	2442
02	2417	08	2447
03	2422	09	2452
04	2427	10	2457
05	2432	*11	2462
*06	2437	---	---

*為量測之頻率

802.11n HT40, VHT40 (2422MHz~2452MHz)

Channel	Frequency(MHz)	Channel	Frequency(MHz)
---	---	07	2442
---	---	08	2447
*03	2422	*09	2452
04	2427	---	---
05	2432	---	---
*06	2437	---	---

*為量測之頻率



1.3. 測試模式之描述

- 電源傳導及輻射測試之測試軟體如下:
 1. 將量測系統之全部電源打開。
 2. 於測試進行的同時，待測物執行” qdart_conn.win.1.0_installer_00053.1”傳送及接收訊號。
- 測試模式如下：

Conducted Emissions from the AC mains power ports	
Test Mode	Operating Description
1	802.11b (1Mbps)
2	802.11g (6Mbps)
3	VHT20 (6.5Mbps)
4	VHT40 (13.5Mbps)
caused “Test Mode 1” generated the worst case, it was reported as the final data.	
Radiation Emissions (30MHz ~ 1GHz)	
Test Mode	Operating Description
1	802.11b (1Mbps)
2	802.11g (6Mbps)
3	VHT20 (6.5Mbps)
4	VHT40 (13.5Mbps)
caused “Test Mode 1” generated the worst case, it was reported as the final data.	
Radiation Emissions (1GHz ~ 25GHz)	
Test Mode	Operating Description
1	802.11b (1Mbps)
2	802.11g (6Mbps)
3	VHT20 (6.5Mbps)
4	VHT40 (13.5Mbps)
caused “Test Mode 1~4” generated the worst case, they were reported as the final data.	

Note: Non-Beamforming was worst,used Non-Beamforming mode for the test result.

1.4. 受測裝置之系統說明

Device	Manufacturer	Model No.	Description
Remote workstation			
Notebook	DELL	Vostro 3560	Power Cable, Unshielding, 1.8m
POE	Bluewave	JS-100GT	-



1.5. 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。

1.6. 量測不確定度

Measurement Item	Uncertainty
Radiated Spurious Emission(9KHz~30MHz)	±5.007dB
Radiated Spurious Emission(30MHz~1GHz)	±5.157dB
Radiated Spurious Emission(1GHz~18GHz)	±6.383dB
Radiated Spurious Emission(18GHz~40GHz)	±6.648dB
Conducted Spurious Emission	±1.253dB
6dB Bandwidth	±6.89%
Power Spectral Density	±0.630dB
26 dB Occupied Bandwidth	±6.10%
Frequency Stability	±375KHz
Channel Frequencies Separation	±6.10%
20dB Bandwidth	±6.12%
Dwell Time	±1.34%
Peak Output Power(Conducted Power Meter)	±0.86dB
Temperature	±1.2℃
Humidity	±2.7%
Channel Move Time	±4.53%
Channel Closing Transmission Time	±6.61%
Threshold	±0.631dB
Non occupancy period	±1.17%



2. 測試儀器

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date
Bilog Antenna	Schwarzbeck	VULB9168	275	2018/09/17	2019/09/16
Active Loop Antenna	EMCO	6507	40855	2018/05/22	2019/05/21
Horn Antenna	EMCO	3115	31589	2018/04/02	2019/04/01
Horn Antenna	EMCO	3116	31974	2018/09/07	2019/09/06
EMI Receiver	ROHDE & SCHWARZ	ESCI	101423	2018/06/11	2019/06/10
Spectrum Analyzer	ROHDE & SCHWARZ	FSP 40	100219	2018/07/03	2019/07/02
Preamplifier	EM Electronics corp.	EM330	60660	2019/03/11	2020/03/10
Preamplifier	EMC INSTRUMENTS	EMC051845SE	980333	2018/09/18	2019/09/17
Bluetooth Tester	ROHDE & SCHWARZ	CBT	101133	2018/04/02	2019/04/01
Cable-3in1(30M-1G)	HARBOUR INDUSTRIES	LL142	CCE1315	2018/04/20	2019/04/19
Cable-0.5m(1G-40G)	Rapidtek	40GHZ 50CM	38MS-38MS50314	2018/03/27	2019/03/26
Cable-3m(1G-40G)	Rapidtek	40GHZ 300CM	38MS-38MS300314	2018/03/27	2019/03/26
Cable-8m(1G-40G)	Rapidtek	40GHZ 800CM	38MS-38MS800314	2018/03/27	2019/03/26
E3	AUDIX	v8.2014-8-6	RK-000529	NA	NA
Bluetooth Tester	ROHDE & SCHWARZ	CBT	101133	2018/04/02	2019/04/01
Attenuator	KEYSIGHT	8491B	MY39250705	2018/09/04	2019/09/03
TEMP & HUMIDITY CHAMBER	T-MACHINE	TMJ-9712	T-12-040111	2018/08/30	2019/08/29
EMI Receiver	ROHDE & SCHWARZ	ESCI	100821	2018/09/12	2019/09/11
Line Impedance Stabilization Network	Schwarzbeck	NSLK 8127	8127-740	2018/06/13	2019/06/12
Pulse Limiter	ROHDE & SCHWARZ	ESH3-Z2	101933	2018/09/04	2019/09/03
E3	AUDIX	v8.2014-8-6	RK-000531	NA	NA



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 2400-2483.5 兆赫(MHz)者，其發射天線之方向性增益超過 6dBi，應於每超過 3dB 降低 1dB 之峰值輸出功率。

操作於 5725-5850 兆赫(MHz)者，其發射天線之方向性增益超過 6dBi，不需降低峰值輸出功率。

3.1. 天線型式及其增益

- 1.1 Antenna type : Dipole Antenna
1.2 Frequency Rang : 2400-2483.5MHz
1.3 Gain(peak) : Antenna A: 5.2dBi
Antenna B: 5.2dBi

(參照天線規格資料)

3.2. 結果判定

(Non-Beamforming)

2412-2462MHz
For Power directional gain= $G_{ant} = 5.20 \text{ dBi}$
For PSD directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / NANT]$ = 8.21 (dBi)

(Beamforming)

2412-2462MHz
For Power directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / NANT] = 8.21 \text{ dBi}$
For PSD directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / NANT] = 8.21 \text{ (dBi)}$

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：

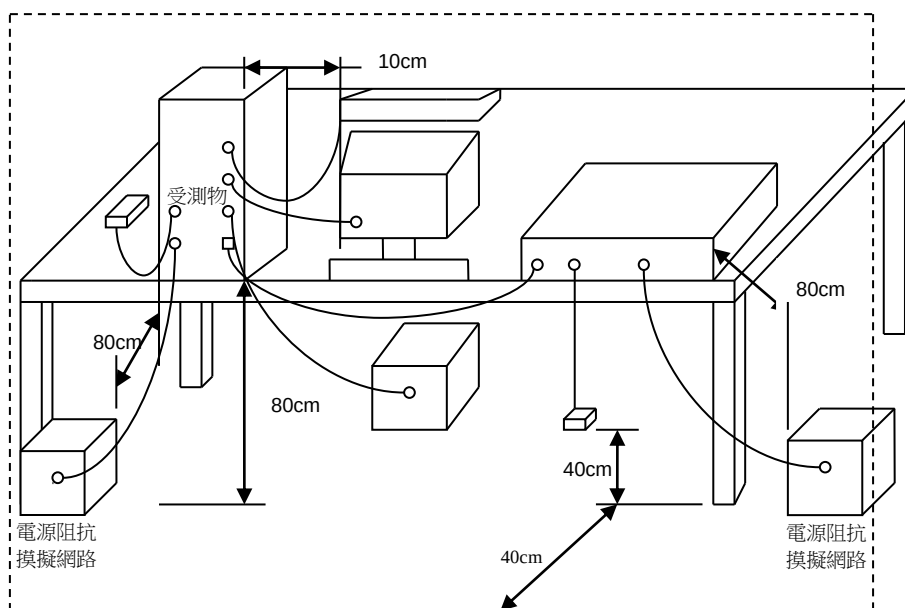
頻率範圍(MHz)	傳導限制值 (dB μ V)	
	準峰值(Quasi-peak)	平均值(Average)
0.15 ~ 0.5	66-56 (註)	56-46 (註)
0.5 ~ 5	56	46
5 ~ 30	60	50

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 之間之電源線導放射強度。

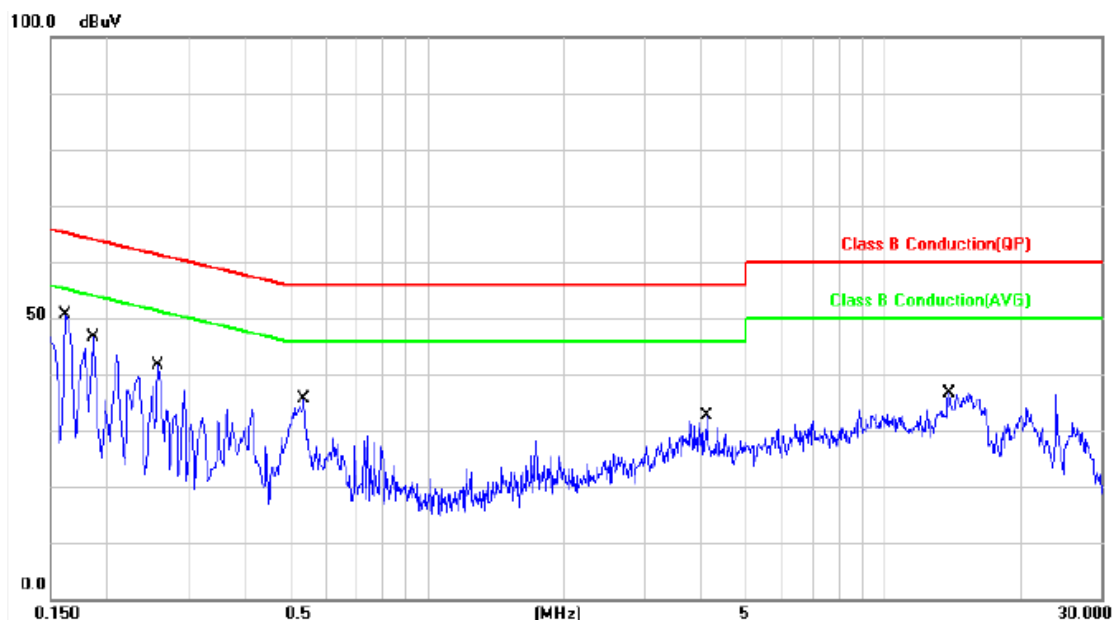
4.3. 傳導干擾之擺設





4.4. 傳導干擾之測試結果及數據

Power	: AC 110V	Pol/Phase	: LINE
Test Mode	: Mode 1	Temperature	: 22°C
Test Date	: Dec. 06, 2018	Humidity	: 63%



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1620	9.98	38.89	48.87	65.36	-16.49	QP	P
2	0.1620	9.98	26.04	36.02	55.36	-19.34	AVG	P
3	0.1860	9.97	35.26	45.23	64.21	-18.98	QP	P
4	0.1860	9.97	23.85	33.82	54.21	-20.39	AVG	P
5	0.2580	9.97	25.08	35.05	61.49	-26.44	QP	P
6	0.2580	9.97	12.85	22.82	51.49	-28.67	AVG	P
7	0.5380	9.98	20.20	30.18	56.00	-25.82	QP	P
8	0.5380	9.98	15.80	25.78	46.00	-20.22	AVG	P
9	4.1140	10.15	14.23	24.38	56.00	-31.62	QP	P
10	4.1140	10.15	7.67	17.82	46.00	-28.18	AVG	P
11	13.9220	10.36	23.16	33.52	60.00	-26.48	QP	P
12	13.9220	10.36	20.16	30.52	50.00	-19.48	AVG	P

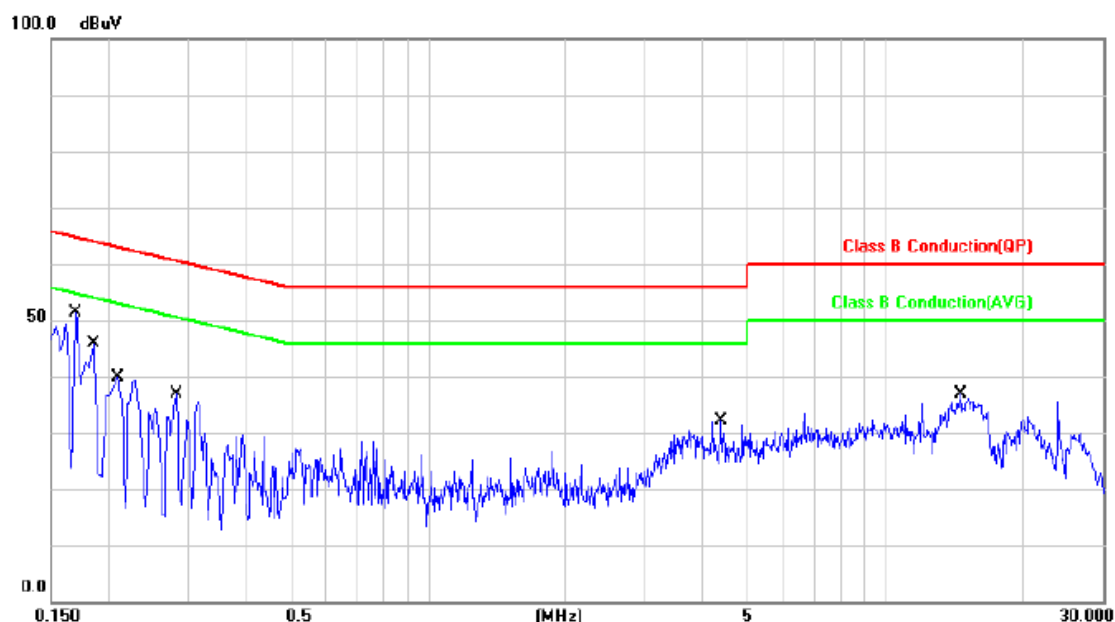
Note: Level = Reading + Factor

Margin = Level – Limit

Factor = (LISN or ISN or PLC or Current Probe) Factor + Cable Loss + Attenuator



Power	: AC 110V	Pol/Phase	: NEUTRAL
Test Mode	: Mode 1	Temperature	: 22°C
Test Date	: Dec. 06, 2018	Humidity	: 63%



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1700	9.98	32.58	42.56	64.96	-22.40	QP	P
2	0.1700	9.98	17.42	27.40	54.96	-27.56	AVG	P
3	0.1860	9.98	35.21	45.19	64.21	-19.02	QP	P
4	0.1860	9.98	21.16	31.14	54.21	-23.07	AVG	P
5	0.2100	9.98	30.66	40.64	63.20	-22.56	QP	P
6	0.2100	9.98	17.02	27.00	53.20	-26.20	AVG	P
7	0.2819	9.96	20.10	30.06	60.76	-30.70	QP	P
8	0.2819	9.96	6.86	16.82	50.76	-33.94	AVG	P
9	4.3940	10.17	12.36	22.53	56.00	-33.47	QP	P
10	4.3940	10.17	6.23	16.40	46.00	-29.60	AVG	P
11	14.6820	10.45	22.95	33.40	60.00	-26.60	QP	P
12	14.6820	10.45	19.94	30.39	50.00	-19.61	AVG	P

Note: Level = Reading + Factor

Margin = Level – Limit

Factor = (LISN or ISN or PLC or Current Probe) Factor + Cable Loss + Attenuator



5. 輻射之量測規定

5.1. 適用標準

依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1.5 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 / f(kHz)	2400 / f(kHz)
0.490 (不含) – 1.705 (含)	30	87.6 / f(kHz)	24000 / f(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

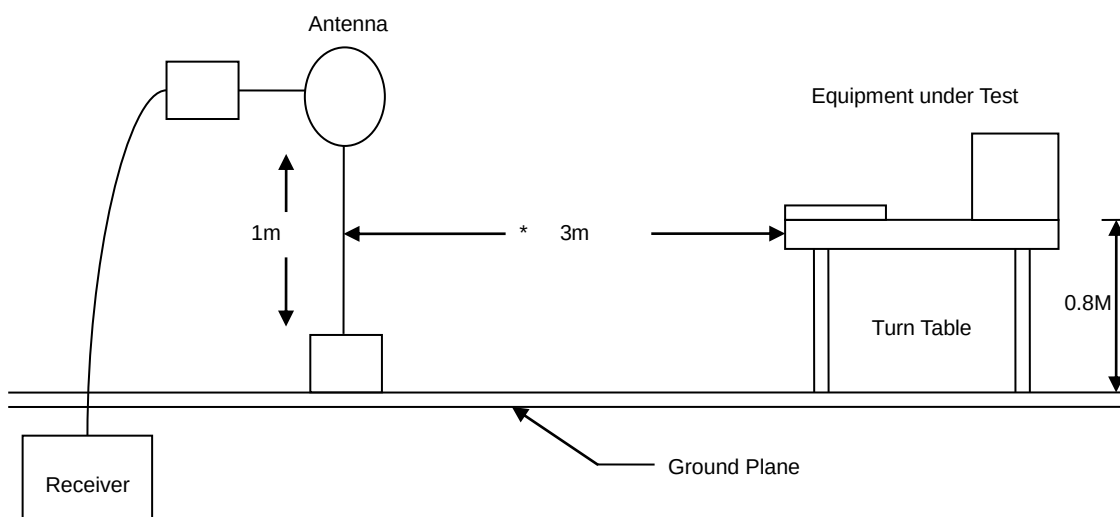
將待測物置於 0.8 米(Below 1G) & 1.5 米(Above 1G)高的非金屬桌面，使其在測試模式狀態，且設定為高、中、低各頻道產生最高峰值輸出功率的傳輸速率，接收天線置於 3 米外，且桌面要 360 度旋轉，另外接收天線也要從 1 米至 4 米升降變化，接收天線置於水平、垂直極向各執行測試一次。待測物若為手持式則分別要以三軸相放置，並分別測試以找出最大輻射電場強度。

備註：

For Below 1G 若待測物之輻射峰值低於限制值 6dB 以上，則將終止測試，並以峰值之讀值作為報告之記錄；反之，若無 6dB 餘裕範圍之輻射，則每一訊號皆以準峰值之測試方法量測，並記錄於報告之中

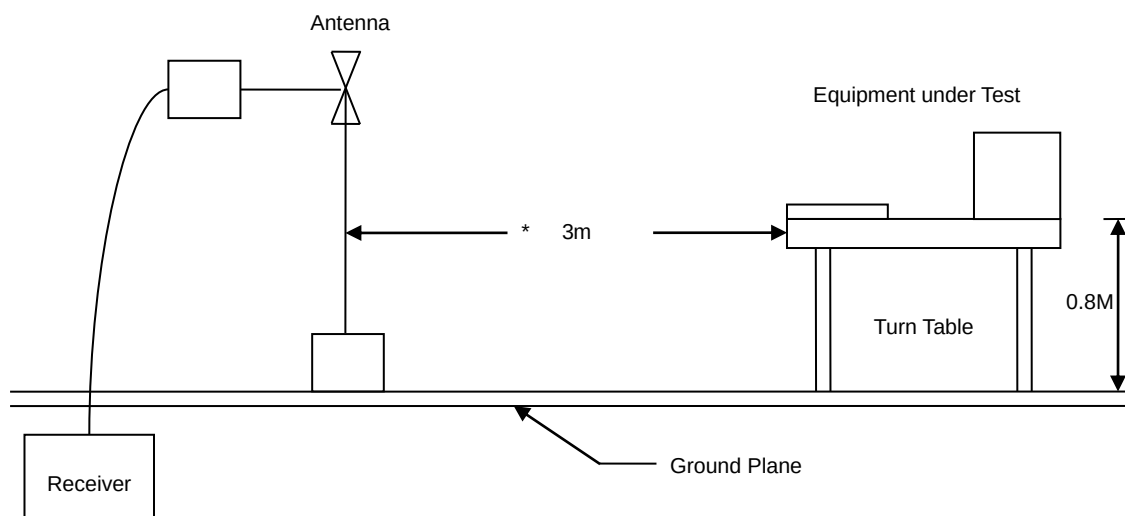
5.3. 輻射場地之擺設

Below 30MHz test setup

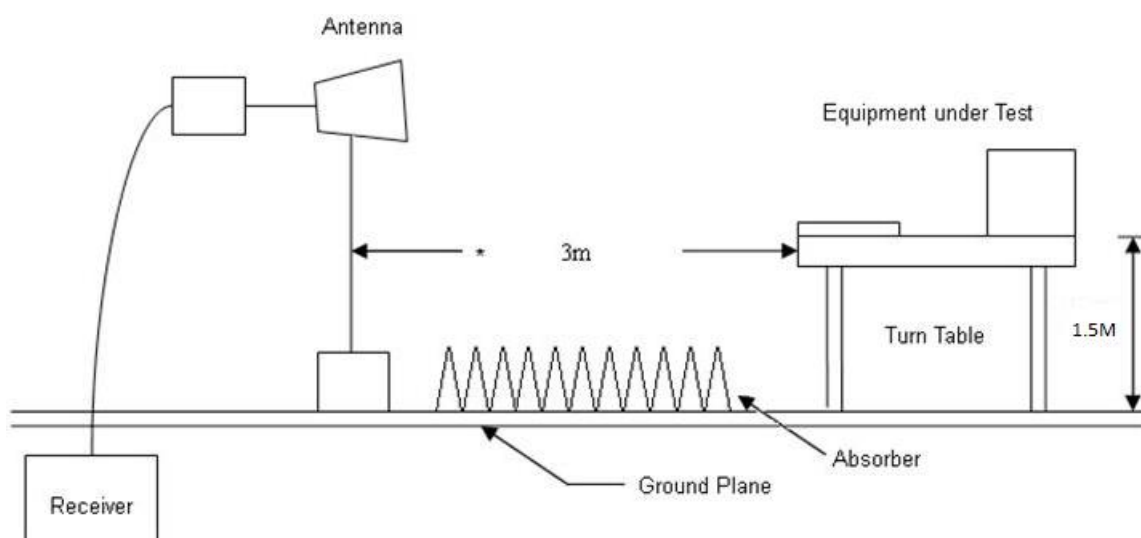




30MHz- 1GHz Test Setup



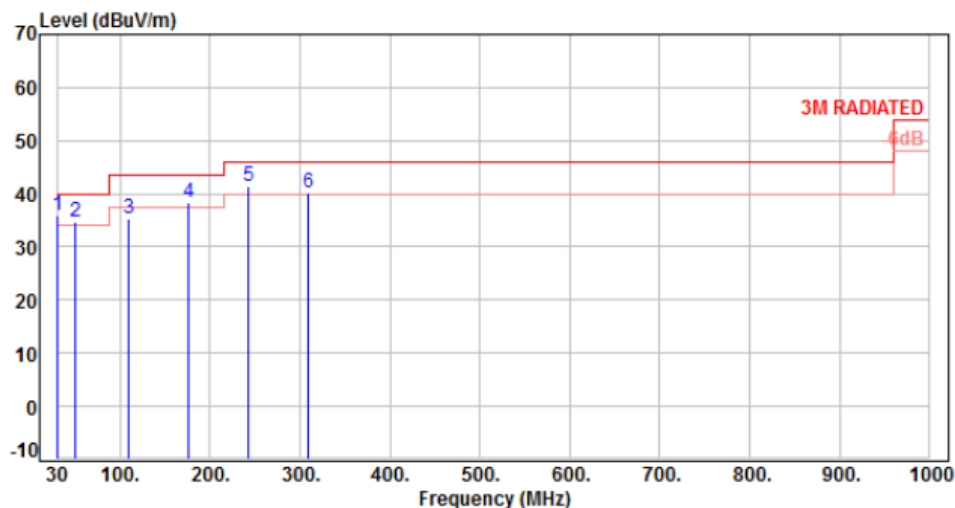
Above 1GHz Test Setup





5.4. 輻射之測試結果及數據 (30MHz ~ 1GHz)

Power	: From PoE	Pol/Phase	: VERTICAL
Test Mode	: Mode 1	Temperature	: 22°C
Test Date	: Dec. 06, 2018	Humidity	: 63%



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	30.97	-10.58	46.66	36.08	40.00	-3.92	QP	100	173	P
2	50.37	-9.45	44.20	34.75	40.00	-5.25	QP	100	241	P
3	109.54	-12.84	48.07	35.23	43.50	-8.27	Peak	400	0	P
4	175.50	-10.26	48.52	38.26	43.50	-5.24	Peak	400	0	P
5	243.40	-10.40	51.87	41.47	46.00	-4.53	Peak	400	0	P
6	309.36	-8.40	48.71	40.31	46.00	-5.69	Peak	400	0	P

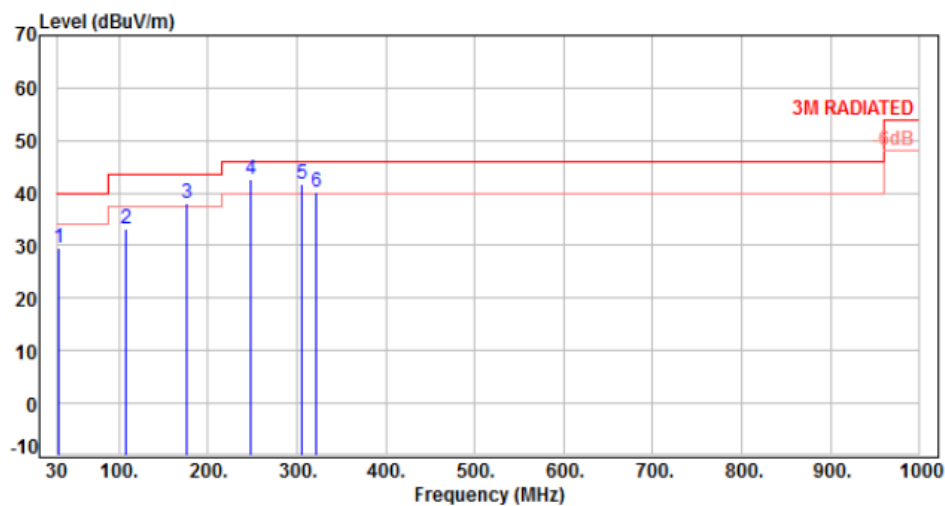
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: From PoE	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1	Temperature	: 22°C
Test Date	: Dec. 06, 2018	Humidity	: 63%



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	32.91	-10.63	40.15	29.52	40.00	-10.48	Peak	100	0	P
2	108.57	-12.99	46.16	33.17	43.50	-10.33	Peak	100	0	P
3	176.47	-10.40	48.50	38.10	43.50	-5.40	QP	100	133	P
4	247.28	-10.30	53.04	42.74	46.00	-3.26	Peak	100	0	P
5	305.48	-8.50	50.10	41.60	46.00	-4.40	QP	100	77	P
6	321.00	-8.07	48.30	40.23	46.00	-5.77	QP	100	86	P

Note: Level=Reading+Factor

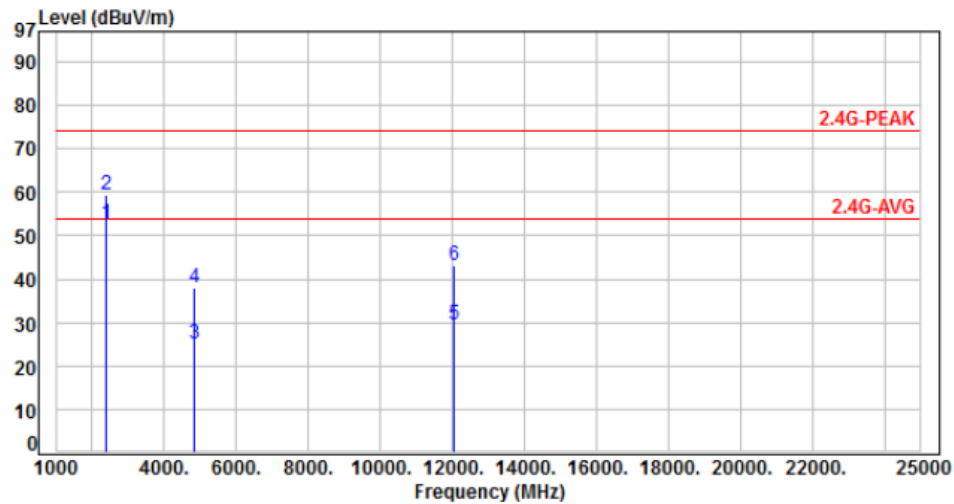
Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



5.5. 輻射之測試結果及數據 (1GHz ~ 25GHz)

Power	: From PoE	Pol/Phase	: VERTICAL
Test Mode	: Mode 1, CH01	Temperature	: 22°C
Test Date	: Nov. 12, 2018	Humidity	: 63%



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2387.00	-15.69	68.50	52.81	54.00	-1.19	Average	245	335	P
2	2387.00	-15.69	75.20	59.51	74.00	-14.49	Peak	245	335	P
3	4824.00	-8.47	33.52	25.05	54.00	-28.95	Average	100	85	P
4	4824.00	-8.47	46.30	37.83	74.00	-36.17	Peak	100	85	P
5	12060.00	1.79	27.66	29.45	54.00	-24.55	Average	100	115	P
6	12060.00	1.79	41.32	43.11	74.00	-30.89	Peak	100	115	P

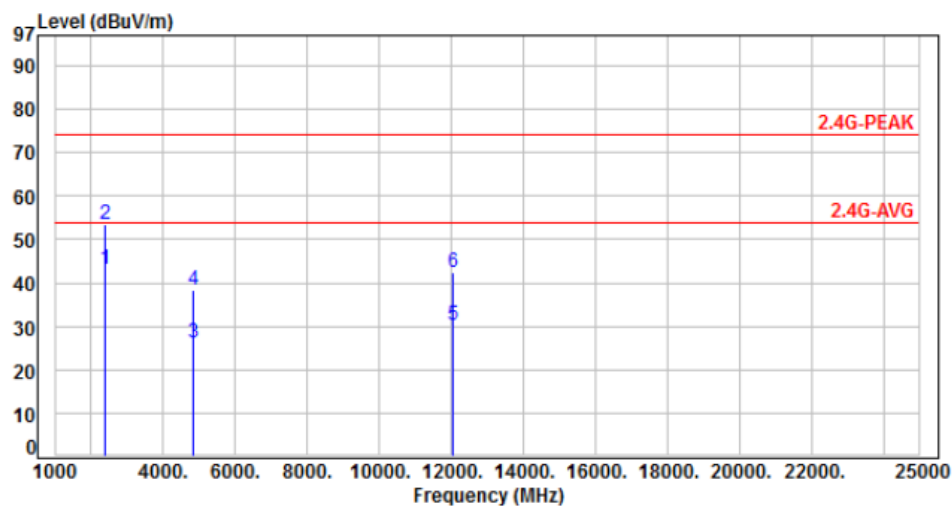
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	:	From PoE	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 1, CH01	Temperature	:	22°C
Test Date	:	Nov. 12, 2018	Humidity	:	63%



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2387.00	-15.69	58.90	43.21	54.00	-10.79	Average	300	270	P
2	2387.00	-15.69	69.10	53.41	74.00	-20.59	Peak	300	270	P
3	4824.00	-8.47	34.55	26.08	54.00	-27.92	Average	100	301	P
4	4824.00	-8.47	46.80	38.33	74.00	-35.67	Peak	100	301	P
5	12060.00	1.79	28.32	30.11	54.00	-23.89	Average	102	334	P
6	12060.00	1.79	40.51	42.30	74.00	-31.70	Peak	102	334	P

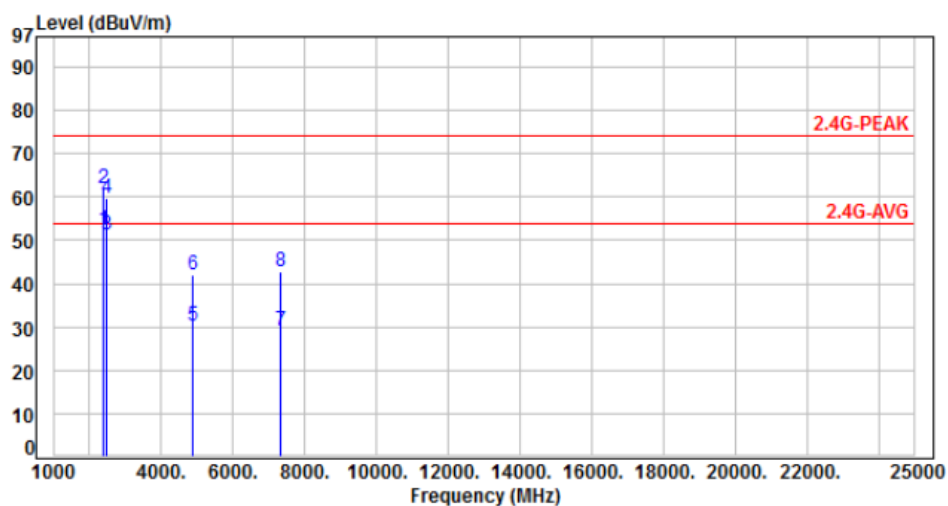
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: From PoE	Pol/Phase	: VERTICAL
Test Mode	: Mode 1, CH06	Temperature	: 22°C
Test Date	: Nov. 12, 2018	Humidity	: 63%



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2388.00	-15.69	68.21	52.52	54.00	-1.48	Average	221	340	P
2	2388.00	-15.69	77.51	61.82	74.00	-12.18	Peak	221	340	P
3	2483.50	-15.36	66.60	51.24	54.00	-2.76	Average	221	340	P
4	2483.50	-15.36	75.10	59.74	74.00	-14.26	Peak	221	340	P
5	4874.00	-8.33	38.63	30.30	54.00	-23.70	Average	100	132	P
6	4874.00	-8.33	50.20	41.87	74.00	-32.13	Peak	100	132	P
7	7311.00	-3.86	32.86	29.00	54.00	-25.00	Average	100	84	P
8	7311.00	-3.86	46.65	42.79	74.00	-31.21	Peak	100	84	P

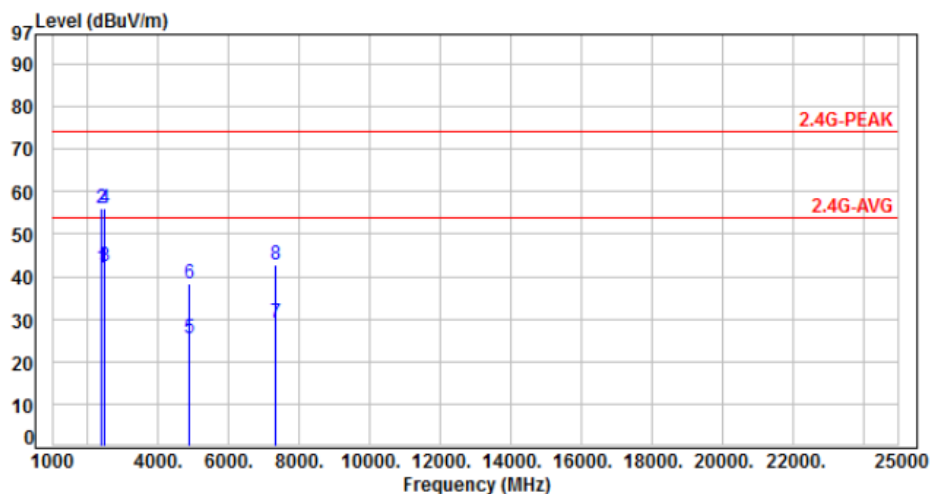
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	:	From PoE	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 1, CH06	Temperature	:	22°C
Test Date	:	Nov. 12, 2018	Humidity	:	63%

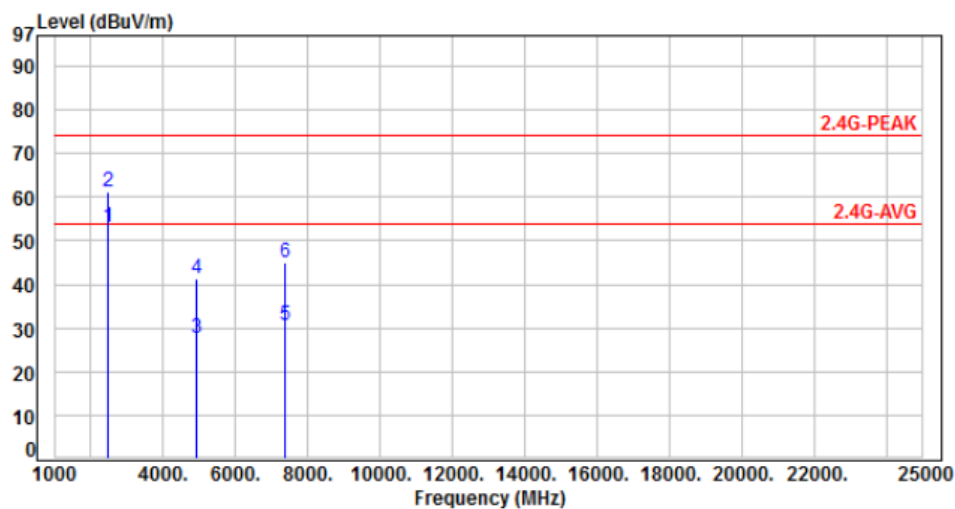


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2388.00	-15.69	57.91	42.22	54.00	-11.78	Average	210	335	P
2	2388.00	-15.69	71.61	55.92	74.00	-18.08	Peak	210	335	P
3	2483.50	-15.36	57.85	42.49	54.00	-11.51	Average	210	335	P
4	2483.50	-15.36	71.50	56.14	74.00	-17.86	Peak	210	335	P
5	4874.00	-8.33	33.85	25.52	54.00	-28.48	Average	100	162	P
6	4874.00	-8.33	46.80	38.47	74.00	-35.53	Peak	100	162	P
7	7311.00	-3.86	32.84	28.98	54.00	-25.02	Average	100	322	P
8	7311.00	-3.86	46.82	42.96	74.00	-31.04	Peak	100	322	P

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



Power	: From PoE	Pol/Phase	: VERTICAL
Test Mode	: Mode 1, CH11	Temperature	: 22°C
Test Date	: Nov. 12, 2018	Humidity	: 63%



No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2487.00	-15.35	68.31	52.96	54.00	-1.04	Average	223	338	P
2	2487.00	-15.35	76.51	61.16	74.00	-12.84	Peak	223	338	P
3	4924.00	-8.18	36.00	27.82	54.00	-26.18	Average	100	170	P
4	4924.00	-8.18	49.50	41.32	74.00	-32.68	Peak	100	170	P
5	7386.00	-3.67	34.12	30.45	54.00	-23.55	Average	102	112	P
6	7386.00	-3.67	48.52	44.85	74.00	-29.15	Peak	102	112	P

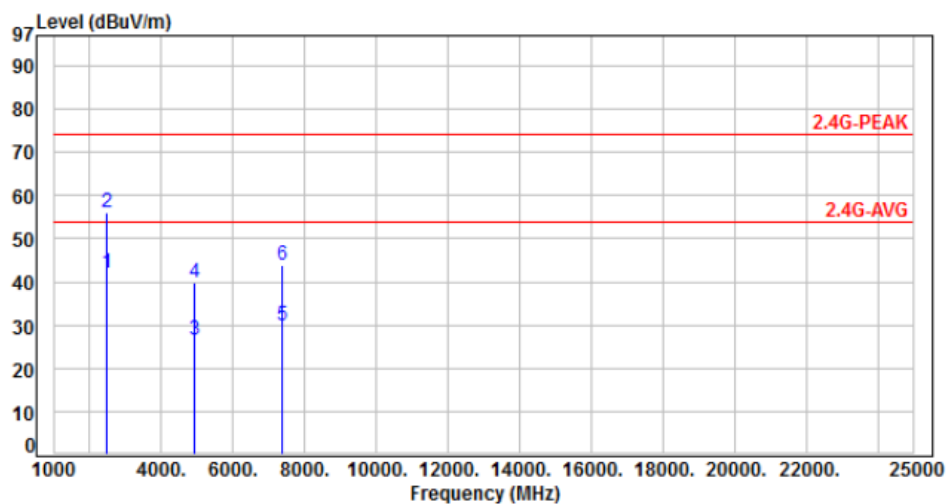
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	:	From PoE	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 1, CH11	Temperature	:	22°C
Test Date	:	Nov. 12, 2018	Humidity	:	63%



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2487.00	-15.35	57.31	41.96	54.00	-12.04	Average	290	262	P
2	2487.00	-15.35	71.49	56.14	74.00	-17.86	Peak	290	262	P
3	4924.00	-8.18	34.88	26.70	54.00	-27.30	Average	100	296	P
4	4924.00	-8.18	47.87	39.69	74.00	-34.31	Peak	100	296	P
5	7386.00	-3.67	33.65	29.98	54.00	-24.02	Average	100	305	P
6	7386.00	-3.67	47.70	44.03	74.00	-29.97	Peak	100	305	P

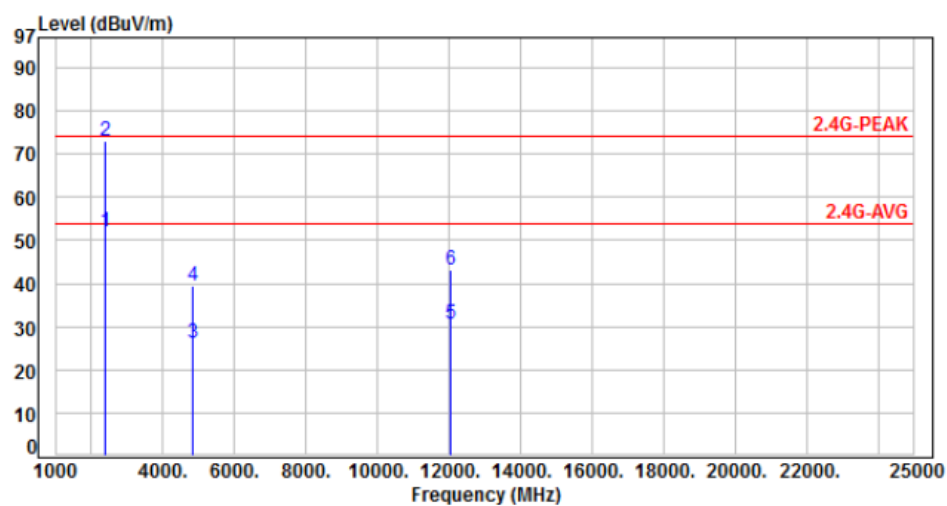
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: From PoE	Pol/Phase	: VERTICAL
Test Mode	: Mode 2, CH01	Temperature	: 22°C
Test Date	: Nov. 12, 2018	Humidity	: 63%

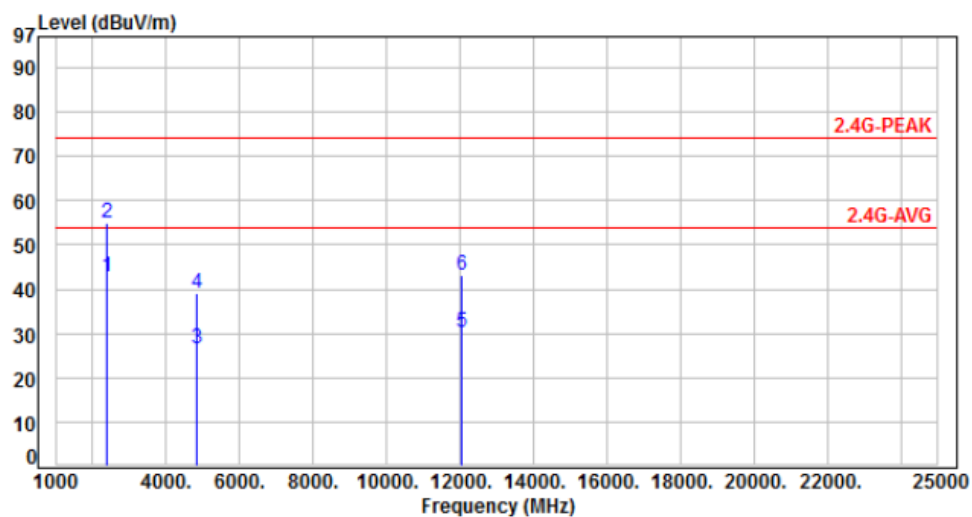


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.68	67.86	52.18	54.00	-1.82	Average	245	300	P
2	2390.00	-15.68	88.60	72.92	74.00	-1.08	Peak	245	300	P
3	4824.00	-8.47	34.55	26.08	54.00	-27.92	Average	100	113	P
4	4824.00	-8.47	47.80	39.33	74.00	-34.67	Peak	100	113	P
5	12060.00	1.79	28.65	30.44	54.00	-23.56	Average	100	92	P
6	12060.00	1.79	41.33	43.12	74.00	-30.88	Peak	100	92	P

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



Power	: From PoE	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 2, CH01	Temperature	: 22°C
Test Date	: Nov. 12, 2018	Humidity	: 63%



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.68	58.60	42.92	54.00	-11.08	Average	295	166	P
2	2390.00	-15.68	70.70	55.02	74.00	-18.98	Peak	295	166	P
3	4824.00	-8.47	34.88	26.41	54.00	-27.59	Average	100	308	P
4	4824.00	-8.47	47.52	39.05	74.00	-34.95	Peak	100	308	P
5	12060.00	1.79	28.51	30.30	54.00	-23.70	Average	112	299	P
6	12060.00	1.79	41.32	43.11	74.00	-30.89	Peak	112	299	P

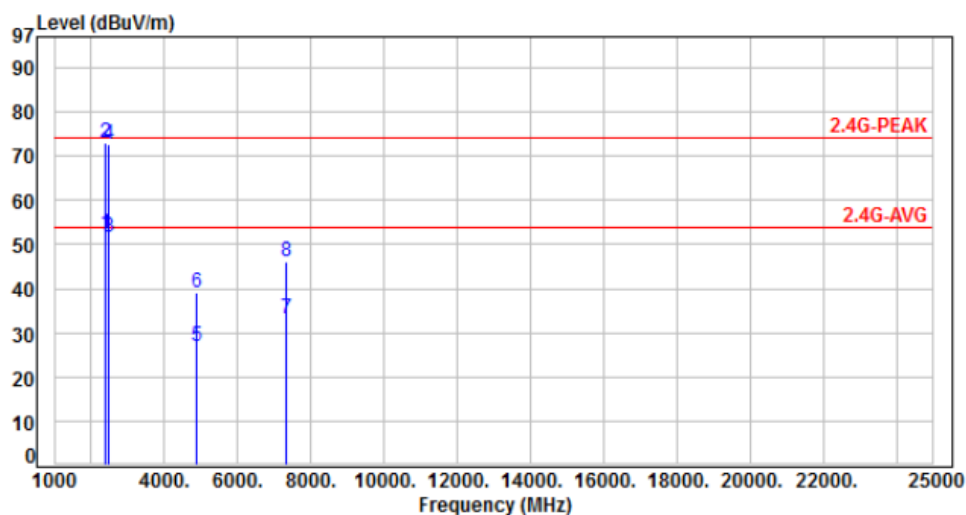
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	:	From PoE	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 2, CH06	Temperature	:	22°C
Test Date	:	Nov. 12, 2018	Humidity	:	63%



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.68	67.92	52.24	54.00	-1.76	Average	263	205	P
2	2390.00	-15.68	88.60	72.92	74.00	-1.08	Peak	263	205	P
3	2483.50	-15.36	66.81	51.45	54.00	-2.55	Average	263	205	P
4	2483.50	-15.36	88.12	72.76	74.00	-1.24	Peak	263	205	P
5	4874.00	-8.33	35.33	27.00	54.00	-27.00	Average	100	86	P
6	4874.00	-8.33	47.52	39.19	74.00	-34.81	Peak	100	86	P
7	7311.00	-3.86	36.90	33.04	54.00	-20.96	Average	100	350	P
8	7311.00	-3.86	49.80	45.94	74.00	-28.06	Peak	100	350	P

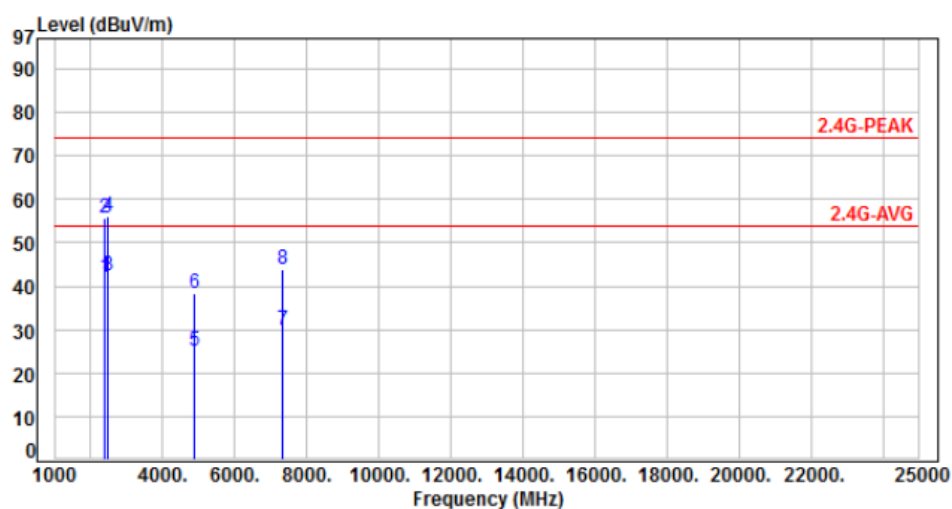
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: From PoE	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 2, CH06	Temperature	: 22°C
Test Date	: Nov. 12, 2018	Humidity	: 63%



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.68	57.60	41.92	54.00	-12.08	Average	281	329	P
2	2390.00	-15.68	71.40	55.72	74.00	-18.28	Peak	281	329	P
3	2483.50	-15.36	57.86	42.50	54.00	-11.50	Average	281	329	P
4	2483.50	-15.36	71.52	56.16	74.00	-17.84	Peak	281	329	P
5	4874.00	-8.33	33.56	25.23	54.00	-28.77	Average	100	352	P
6	4874.00	-8.33	46.70	38.37	74.00	-35.63	Peak	100	352	P
7	7311.00	-3.86	33.90	30.04	54.00	-23.96	Average	100	300	P
8	7311.00	-3.86	47.88	44.02	74.00	-29.98	Peak	100	300	P

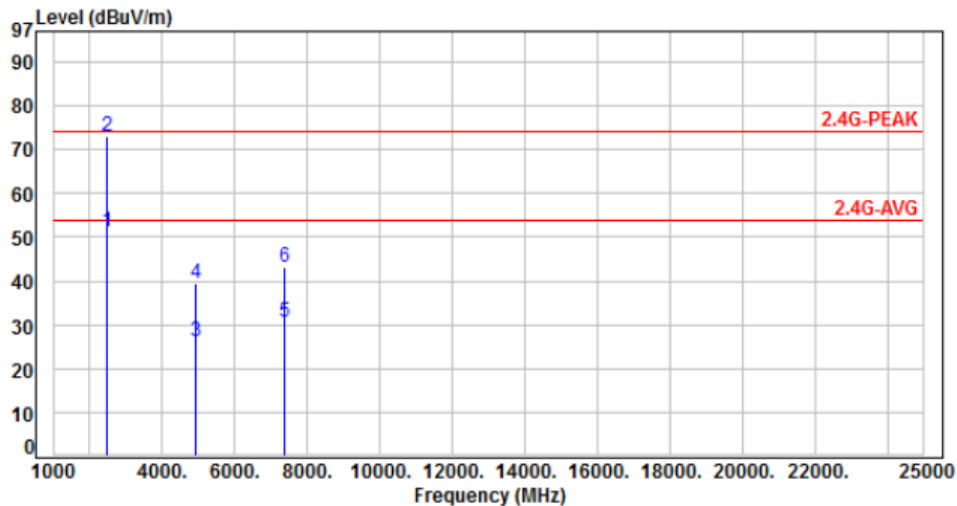
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: From PoE	Pol/Phase	: VERTICAL
Test Mode	: Mode 2, CH11	Temperature	: 22°C
Test Date	: Nov. 12, 2018	Humidity	: 63%



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.36	66.76	51.40	54.00	-2.60	Average	232	315	P
2	2483.50	-15.36	88.24	72.88	74.00	-1.12	Peak	232	315	P
3	4924.00	-8.18	34.52	26.34	54.00	-27.66	Average	100	103	P
4	4924.00	-8.18	47.56	39.38	74.00	-34.62	Peak	100	103	P
5	7386.00	-3.67	34.36	30.69	54.00	-23.31	Average	114	78	P
6	7386.00	-3.67	46.83	43.16	74.00	-30.84	Peak	114	78	P

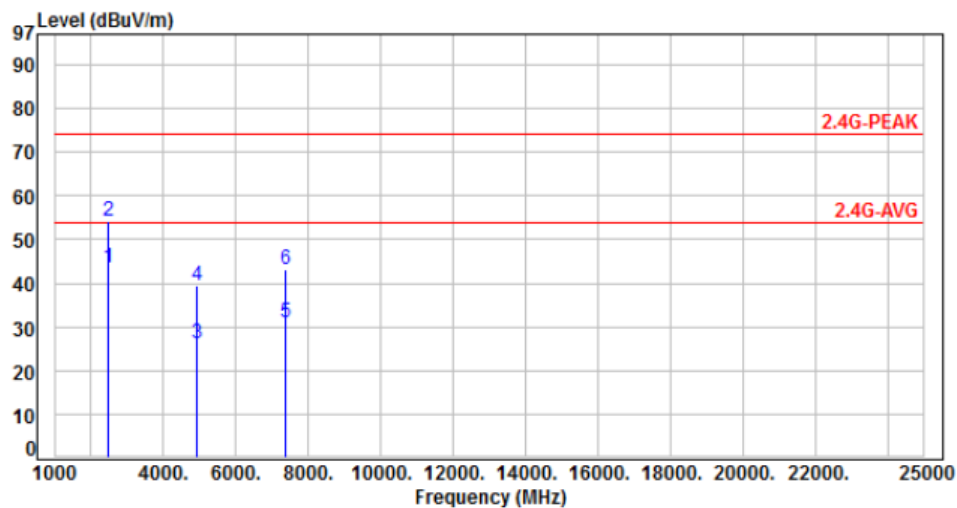
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	:	From PoE	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 2, CH11	Temperature	:	22°C
Test Date	:	Nov. 12, 2018	Humidity	:	63%



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.36	58.80	43.44	54.00	-10.56	Average	288	226	P
2	2483.50	-15.36	69.50	54.14	74.00	-19.86	Peak	288	226	P
3	4924.00	-8.18	34.55	26.37	54.00	-27.63	Average	100	335	P
4	4924.00	-8.18	47.58	39.40	74.00	-34.60	Peak	100	335	P
5	7386.00	-3.67	34.53	30.86	54.00	-23.14	Average	100	301	P
6	7386.00	-3.67	46.81	43.14	74.00	-30.86	Peak	100	301	P

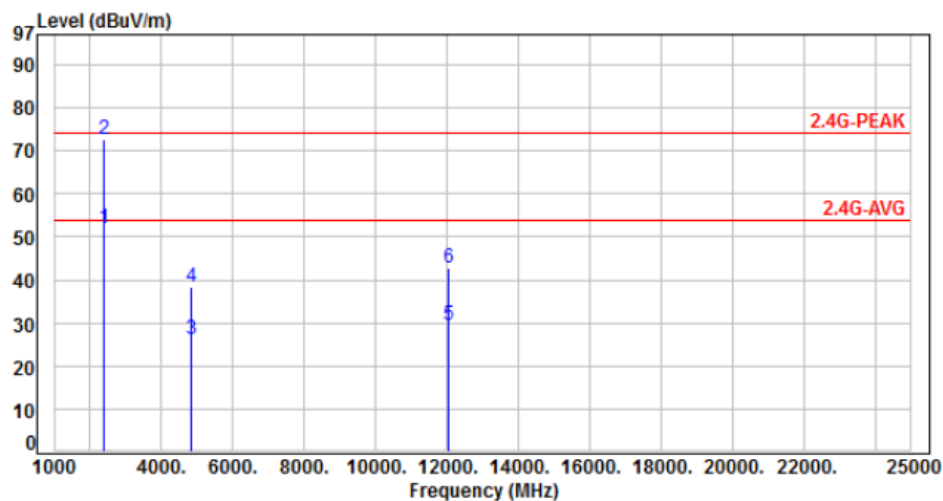
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: From PoE	Pol/Phase	: VERTICAL
Test Mode	: Mode 3, CH01	Temperature	: 22°C
Test Date	: Nov. 12, 2018	Humidity	: 63%



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.68	67.70	52.02	54.00	-1.98	Average	246	300	P
2	2390.00	-15.68	88.50	72.82	74.00	-1.18	Peak	246	300	P
3	4824.00	-8.47	34.68	26.21	54.00	-27.79	Average	100	116	P
4	4824.00	-8.47	46.80	38.33	74.00	-35.67	Peak	100	116	P
5	12060.00	1.79	27.59	29.38	54.00	-24.62	Average	100	84	P
6	12060.00	1.79	40.88	42.67	74.00	-31.33	Peak	100	84	P

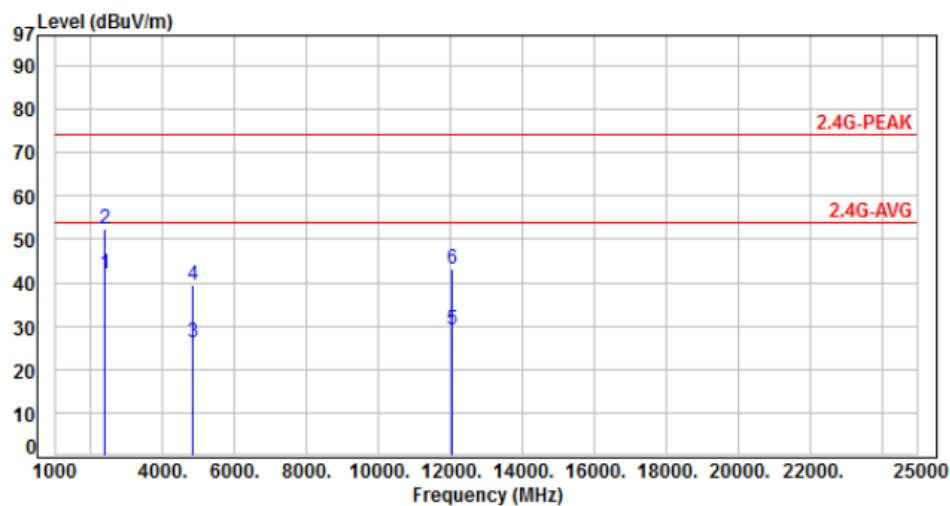
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: From PoE	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 3, CH01	Temperature	: 22°C
Test Date	: Nov. 12, 2018	Humidity	: 63%



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.68	57.66	41.98	54.00	-12.02	Average	302	107	P
2	2390.00	-15.68	68.20	52.52	74.00	-21.48	Peak	302	107	P
3	4824.00	-8.47	34.55	26.08	54.00	-27.92	Average	100	351	P
4	4824.00	-8.47	47.82	39.35	74.00	-34.65	Peak	100	351	P
5	12060.00	1.79	27.35	29.14	54.00	-24.86	Average	100	302	P
6	12060.00	1.79	41.33	43.12	74.00	-30.88	Peak	100	302	P

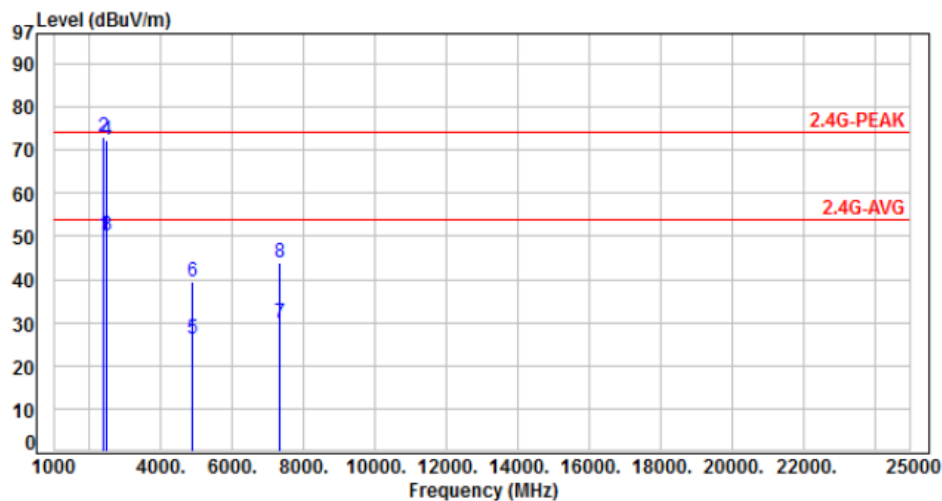
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	:	From PoE	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 3, CH06	Temperature	:	22°C
Test Date	:	Nov. 12, 2018	Humidity	:	63%



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.68	65.90	50.22	54.00	-3.78	Average	270	307	P
2	2390.00	-15.68	88.60	72.92	74.00	-1.08	Peak	270	307	P
3	2483.50	-15.36	65.60	50.24	54.00	-3.76	Average	270	307	P
4	2483.50	-15.36	87.80	72.44	74.00	-1.56	Peak	270	307	P
5	4874.00	-8.33	34.58	26.25	54.00	-27.75	Average	100	155	P
6	4874.00	-8.33	47.61	39.28	74.00	-34.72	Peak	100	155	P
7	7311.00	-3.86	33.58	29.72	54.00	-24.28	Average	100	94	P
8	7311.00	-3.86	47.66	43.80	74.00	-30.20	Peak	100	94	P

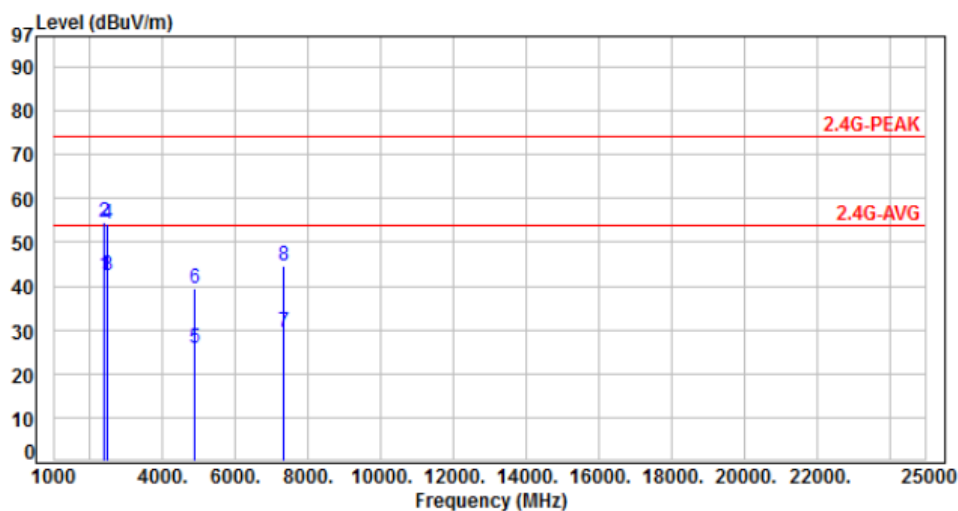
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	:	From PoE	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 3, CH06	Temperature	:	22°C
Test Date	:	Nov. 12, 2018	Humidity	:	63%



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.68	58.00	42.32	54.00	-11.68	Average	306	345	P
2	2390.00	-15.68	70.20	54.52	74.00	-19.48	Peak	306	345	P
3	2483.50	-15.36	57.70	42.34	54.00	-11.66	Average	306	345	P
4	2483.50	-15.36	69.60	54.24	74.00	-19.76	Peak	306	345	P
5	4874.00	-8.33	34.22	25.89	54.00	-28.11	Average	105	301	P
6	4874.00	-8.33	47.80	39.47	74.00	-34.53	Peak	105	301	P
7	7311.00	-3.86	33.51	29.65	54.00	-24.35	Average	100	327	P
8	7311.00	-3.86	48.55	44.69	74.00	-29.31	Peak	100	327	P

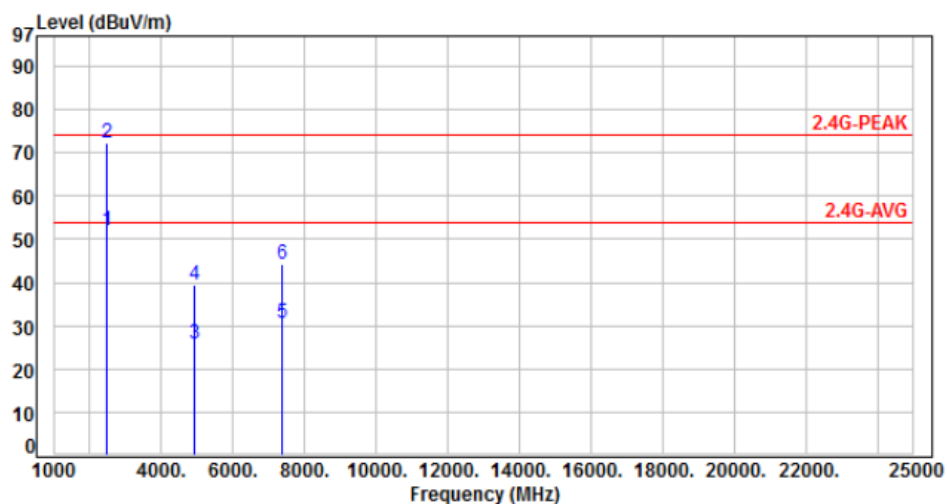
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	:	From PoE	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 3, CH11	Temperature	:	22°C
Test Date	:	Nov. 12, 2018	Humidity	:	63%



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.36	67.31	51.95	54.00	-2.05	Average	240	314	P
2	2483.50	-15.36	87.70	72.34	74.00	-1.66	Peak	240	314	P
3	4924.00	-8.18	33.84	25.66	54.00	-28.34	Average	100	78	P
4	4924.00	-8.18	47.64	39.46	74.00	-34.54	Peak	100	78	P
5	7386.00	-3.67	34.23	30.56	54.00	-23.44	Average	105	117	P
6	7386.00	-3.67	47.86	44.19	74.00	-29.81	Peak	105	117	P

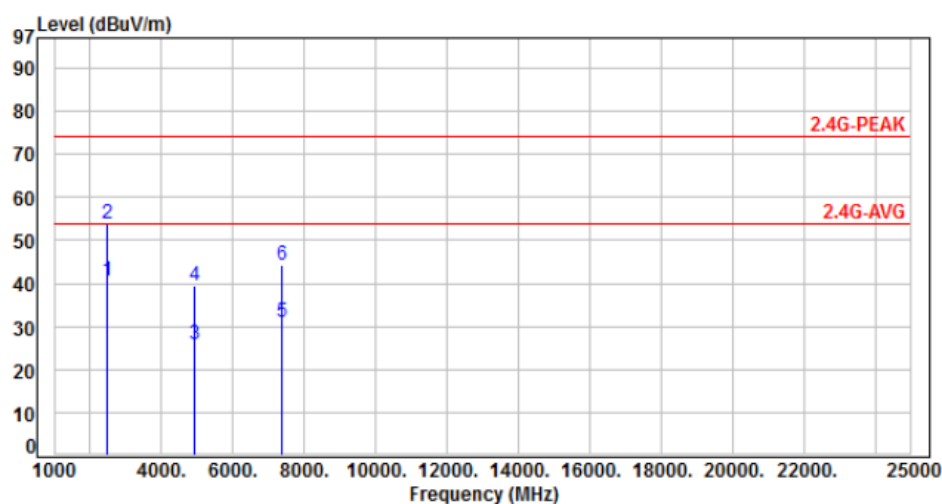
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	:	From PoE	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 3, CH11	Temperature	:	22°C
Test Date	:	Nov. 12, 2018	Humidity	:	63%



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.36	56.10	40.74	54.00	-13.26	Average	130	106	P
2	2483.50	-15.36	69.20	53.84	74.00	-20.16	Peak	130	106	P
3	4924.00	-8.18	33.85	25.67	54.00	-28.33	Average	100	299	P
4	4924.00	-8.18	47.80	39.62	74.00	-34.38	Peak	100	299	P
5	7386.00	-3.67	34.66	30.99	54.00	-23.01	Average	100	327	P
6	7386.00	-3.67	47.89	44.22	74.00	-29.78	Peak	100	327	P

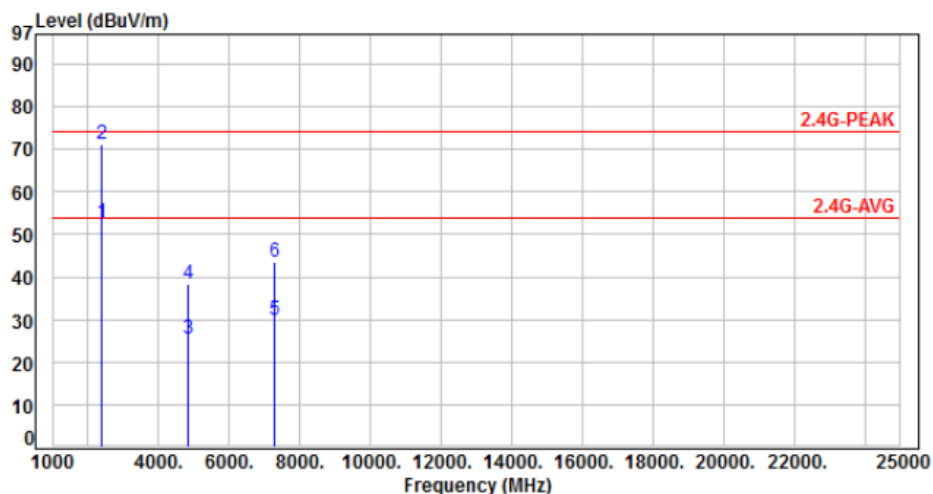
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: From PoE	Pol/Phase	: VERTICAL
Test Mode	: Mode 4, CH03	Temperature	: 22°C
Test Date	: Nov. 12, 2018	Humidity	: 63%



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.68	68.50	52.82	54.00	-1.18	Average	290	310	P
2	2390.00	-15.68	86.70	71.02	74.00	-2.98	Peak	290	310	P
3	4844.00	-8.41	33.86	25.45	54.00	-28.55	Average	100	116	P
4	4844.00	-8.41	46.92	38.51	74.00	-35.49	Peak	100	116	P
5	7266.00	-3.99	33.91	29.92	54.00	-24.08	Average	100	55	P
6	7266.00	-3.99	47.66	43.67	74.00	-30.33	Peak	100	55	P

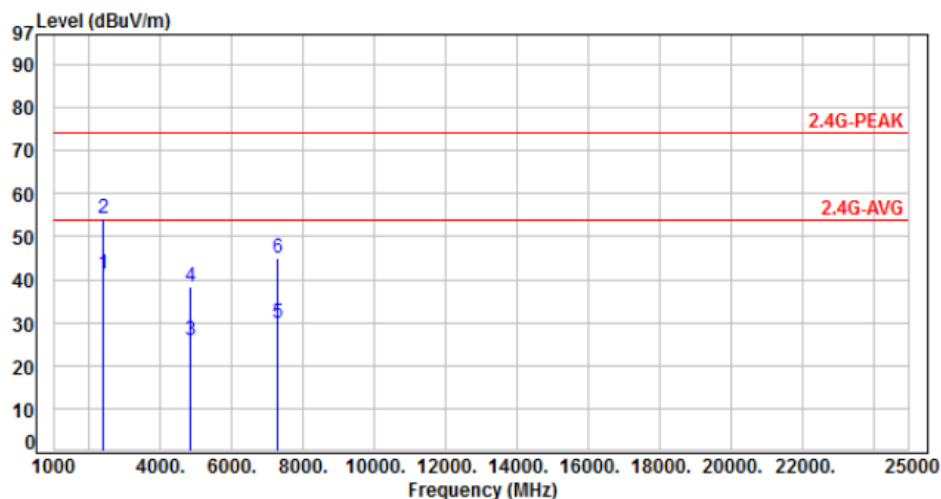
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: From PoE	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 4, CH03	Temperature	: 22°C
Test Date	: Nov. 12, 2018	Humidity	: 63%



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.68	56.88	41.20	54.00	-12.80	Average	100	100	P
2	2390.00	-15.68	69.80	54.12	74.00	-19.88	Peak	100	100	P
3	4844.00	-8.41	34.21	25.80	54.00	-28.20	Average	100	351	P
4	4844.00	-8.41	46.60	38.19	74.00	-35.81	Peak	100	351	P
5	7266.00	-3.99	33.86	29.87	54.00	-24.13	Average	100	295	P
6	7266.00	-3.99	48.91	44.92	74.00	-29.08	Peak	100	295	P

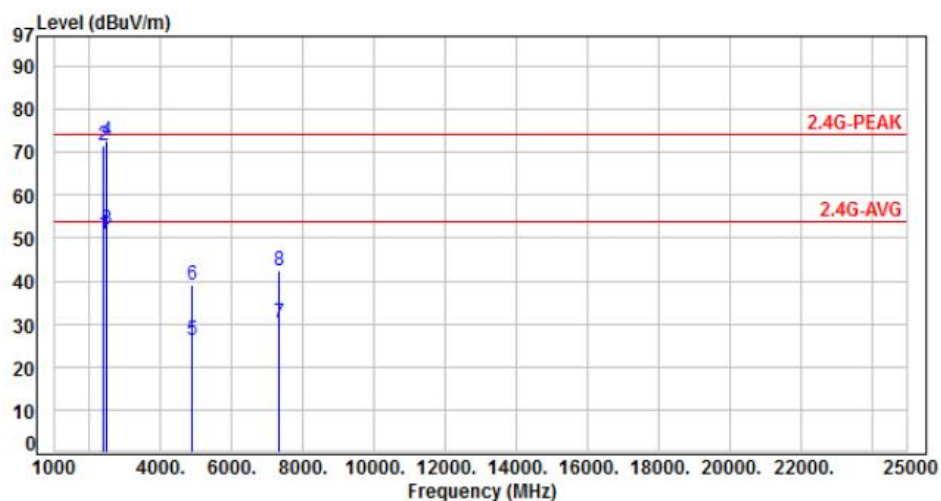
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	:	From PoE	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 4, CH06	Temperature	:	22°C
Test Date	:	Nov. 12, 2018	Humidity	:	63%



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.68	66.40	50.72	54.00	-3.28	Average	290	345	P
2	2390.00	-15.68	87.30	71.62	74.00	-2.38	Peak	290	345	P
3	2483.50	-15.36	67.35	51.99	54.00	-2.01	Average	290	345	P
4	2483.50	-15.36	88.10	72.74	74.00	-1.26	Peak	290	345	P
5	4874.00	-8.33	34.35	26.02	54.00	-27.98	Average	100	98	P
6	4874.00	-8.33	47.33	39.00	74.00	-35.00	Peak	100	98	P
7	7311.00	-3.86	33.98	30.12	54.00	-23.88	Average	100	152	P
8	7311.00	-3.86	46.45	42.59	74.00	-31.41	Peak	100	152	P

Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor