



低功率射頻電機測試報告

申請廠商	: Novanta Corporation
地址	: 125 Middlesex Turnpike, Bedford, MA 01730, USA
製造廠商	: Novanta Corporation
地址	: Building 8, Gangtian Industrial Square, Gangtian Road, Suzhou Industrial Park, Jiangsu, PRC 215024
產品名稱	: Thing Magic
產品型號	: IZAR
廠牌	: JADAK
受理日期	: 108 年 07 月 15 日
完成日期	: 108 年 08 月 06 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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修訂記錄

報告號碼.	發行日期	描述
TENT1907095	Aug. 06, 2019	Original

報告形式		說明
☒	Original report	NA



證 明 書

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產品名稱	:	Thing Magic
產品型號	:	IZAR
廠牌	:	JADAK
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	:	7.14dBm

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 108 年 08 月 06 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	電源線傳導干擾之要求	2.3 節	請參閱 3.4 節	請參閱 3.5 節	合格
2	峰值輸出功率限制要求	4.8.1.1 節(1)	請參閱 4.8 節	請參閱 4.8 節	合格
3	不必要之發射限制之要求	4.8.1.3 節	請參閱 4.8 節	請參閱 4.8 節	合格
4	其他限制事項要求	4.8.1.4 節	請參閱 4.8 節	請參閱 4.8 節	合格

本報告判定原則，依據本實驗室結果報告及量測不確定評估程序要求進行判定

報告簽署人：

測試工程師：



1. 一般描述

1.1. 產品規格

RFID Protocol Support		EPC Gen 2V2 ISO 18000-63 ISO 18000-6B (optional) IP-X (optional) AEI ATA (optional)
RF Output Power		0 to +31.5 dBm in 0.01 dBsteps
Connectors		RJ45 (10/100 Base-T Ethernet) USB Type B (client console, memory stick, and RNDIS port) USB Type A (host accessory port) 12-Pin, two-row Terminal Block (GPIO Interface) 5 mm x 2.1 mm coaxial Jack (DC Input) Micro SD Card Interface (Future use) Micro HDMI Video port (Future use)
GPIO		4 opto-Isolated Inputs 4 opto-Isolated Outputs 5V Source Isolated and chassis grounds DC input to set output levels
Indicators/Switches		One two-color status LEDs Four antenna status LEDs Two LAN status LEDs Clip-hole reset switch
Networking		DHCP and DNS-based configuration and firmware management TCP/IP networking stack
Power Source		DC 9-30V (AC Adapter Available) POE, POE+
Dimensions (without connectors)		L: 194 mm / 7.6 in. x W: 139 mm / 5.5 in. x H: 33.6 mm / 1.3 in.
Weight		1.51 lbs. (0.7 kg)
RAM		512 MB
Flash Memory		4 GB
AC Adapter 交換式電源供應器	MODEL	ATS050T-P240
	INPUT	100-240V~50-60Hz 1.2A MAX.
	OUTPUT	24V  2.1A



1.2. 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. 於測試進行時，待測物執行 RFID 發射與接收動作。

量測頻道及頻率:

依據 5.12 低功率射頻電機應在其作業頻率範圍內依照下表所規定之頻率數量測，若另有規定亦應說明受測物可操作的每個頻段：

作業頻率範圍	待測頻率數	待測頻率在作業範圍內之位置
小於等於 1 兆赫 (MHz)	1	中間
1 - 10 兆赫 (MHz)	2	一端於頂端，另一近於底端
大於 10 兆赫 (MHz)	3	一端於頂端，一近於底端，另一位於中間

Channel	Frequency(MHz)	Channel	Frequency(MHz)
01	920.25	09	924.25
02	920.75	10	924.75
03	921.25	11	925.25
04	921.75	12	925.75
05	922.25	13	926.25
06	922.75	14	926.75
07	923.25	15	927.25
08	923.75	16	927.75

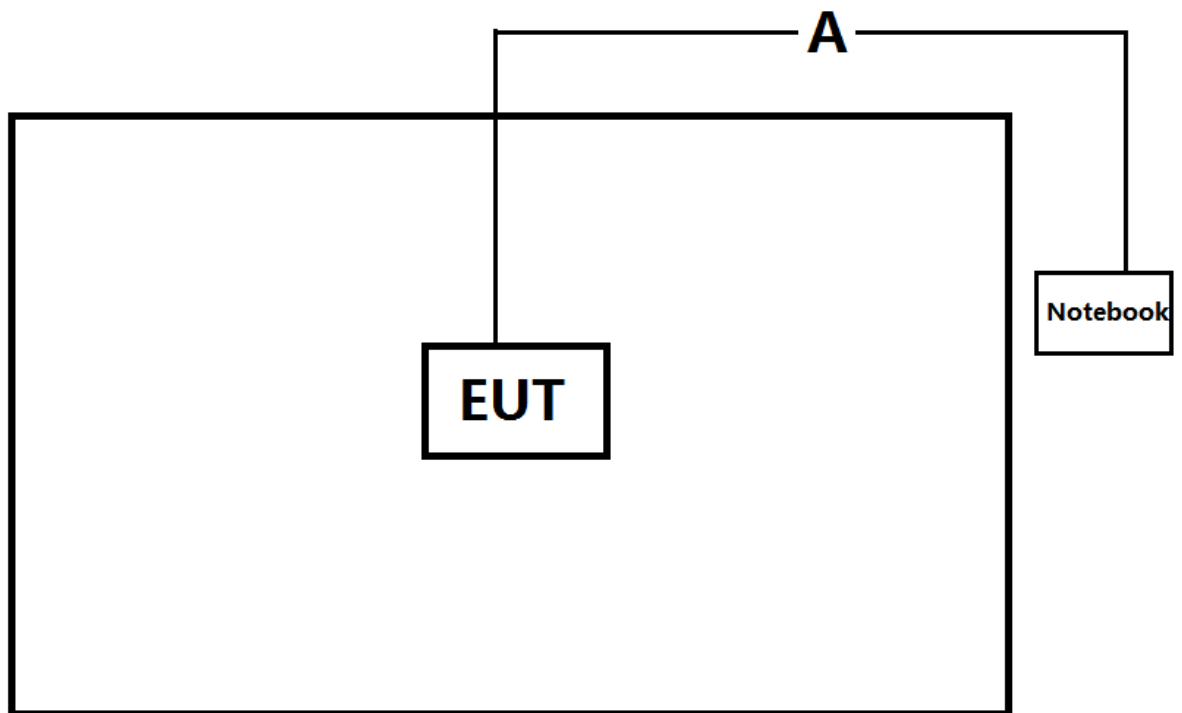
**1.3. 受測裝置之系統說明**

No	Device	Manufacturer	Model No.	Description
1	Notebook	DELL	Inspiron 15	N/A

訊號線:

No.	Cable	Quantity	Description
A	LAN Cable	1	3m 隔離

測試系統組合圖





1.4. 測試場地

測試場地：	世騰電子科技股份有限公司 338 桃園市蘆竹區聯福街 2 巷 10 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 10000 MHz。
測試天線的距離：	場強輻射之測試距離為 3 M。

1.5. 量測不確定度

Measurement Item	Uncertainty
Radiated Spurious Emission(9KHz~30MHz)	$\pm 3.405\text{dB}$
Radiated Spurious Emission(30MHz~1GHz)	$\pm 5.326\text{dB}$
Radiated Spurious Emission(1GHz~18GHz)	$\pm 5.748\text{dB}$
20dB Bandwidth	$\pm 5.493\%$
Occupied Bandwidth	$\pm 4.569\%$
Deactivation Time	$\pm 0.11\%$



2. 測試儀器

Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
EMI Receiver	ROHDE & SCHWARZ	ESCI	100443	2019/03/29	2020/03/28
Line Impedance Stabilization Network	Schwarzbeck	NSLK 8127	8127-568	2019/03/15	2020/03/14
Pulse Limiter	ROHDE & SCHWARZ	ESH3-Z2	101934	2019/03/12	2020/03/11
Cable-6m(9k~300M)	NA	EMC5D-BM-B M-6	130606	2019/03/14	2020/03/13
Bilog Antenna	Schwarzbeck	VULB9168	275	2018/09/17	2019/09/16
Active Loop Antenna	EMCO	6507	40855	2019/05/24	2020/05/23
Horn Antenna	EMCO	3115	31589	2019/04/01	2020/03/31
Horn Antenna	EMCO	3116	31974	2018/09/07	2019/09/06
EMI Receiver	ROHDE & SCHWARZ	ESCI	101423	2019/05/14	2020/05/13
Spectrum Analyzer	ROHDE & SCHWARZ	FSP 40	100047	2019/03/28	2020/03/27
Preamplifier	EM Electronics corp.	EM330	60660	2019/03/11	2020/03/10
Preamplifier	EMC INSTRUMENTS	EMC051845SE	980333	2018/09/18	2019/09/17
Preamplifier	Agilent	8449B	3008A01954	2019/03/11	2020/03/10
Bluetooth Tester	ROHDE & SCHWARZ	CBT	101133	2019/04/07	2020/04/06
Cable-3in1(30M-1G)	HARBOUR INDUSTRIES	LL142	CCE1316	2018/09/12	2019/09/11
Cable-0.5m(1G-40G)	HUBER SUHNER	SUCOFLEX 100	805443/4	2019/05/20	2020/05/19
Cable-3m(1G-40G)	HUBER SUHNER	SUCOFLEX 100	805796/4	2019/05/20	2020/05/19
Cable-8m(1G-40G)	HUBER SUHNER	SUCOFLEX 100	805795/4	2019/05/20	2020/05/19
EXA Signal Analyzer	KEYSIGHT	N9010A	MY54200207	2019/04/12	2020/04/11
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，使用超過 6dBi 方向增益之發射天線時，應依超過 6dBi 天線方向增益的 dBi 總量，等量減少最大傳導輸出功率。

3.1. 天線型式及其增益

Brand :	JIAXING GLEAD ELECTRONICS CO.,LTD.
Antenna Name	PAM915TP5N1_S100MM
Antenna type :	Dielectric Ceramics
Antenna Gain:	2.5dBi

(參照天線規格資料)

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：

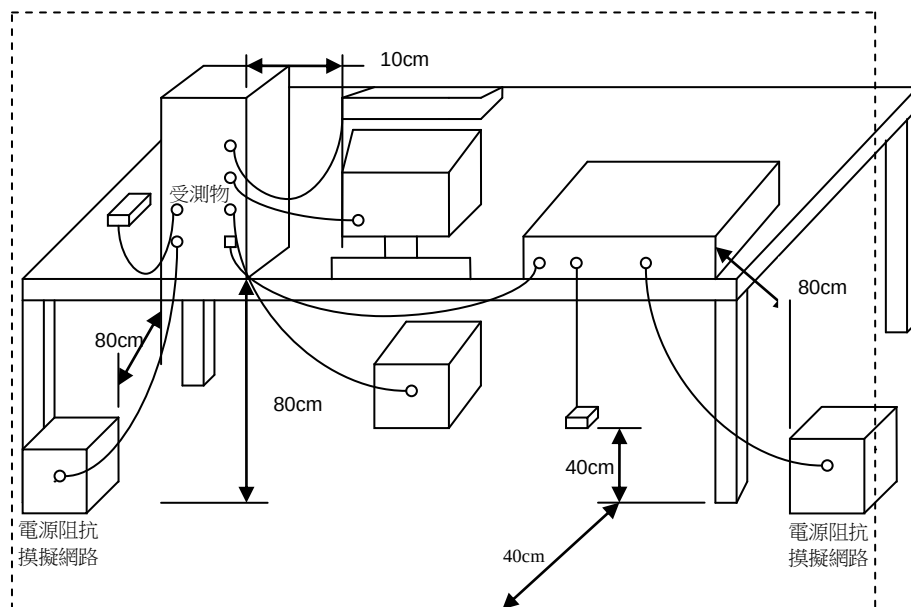
頻率範圍(MHz)	傳導限制值 (dB μ V)	
	準峰值(Quasi-peak)	平均值(Average)
0.15 ~ 0.5	66-56 (註)	56-46 (註)
0.5 ~ 5	56	46
5 ~ 30	60	50

註：隨頻率之對數遞減

4.2. 測試方法

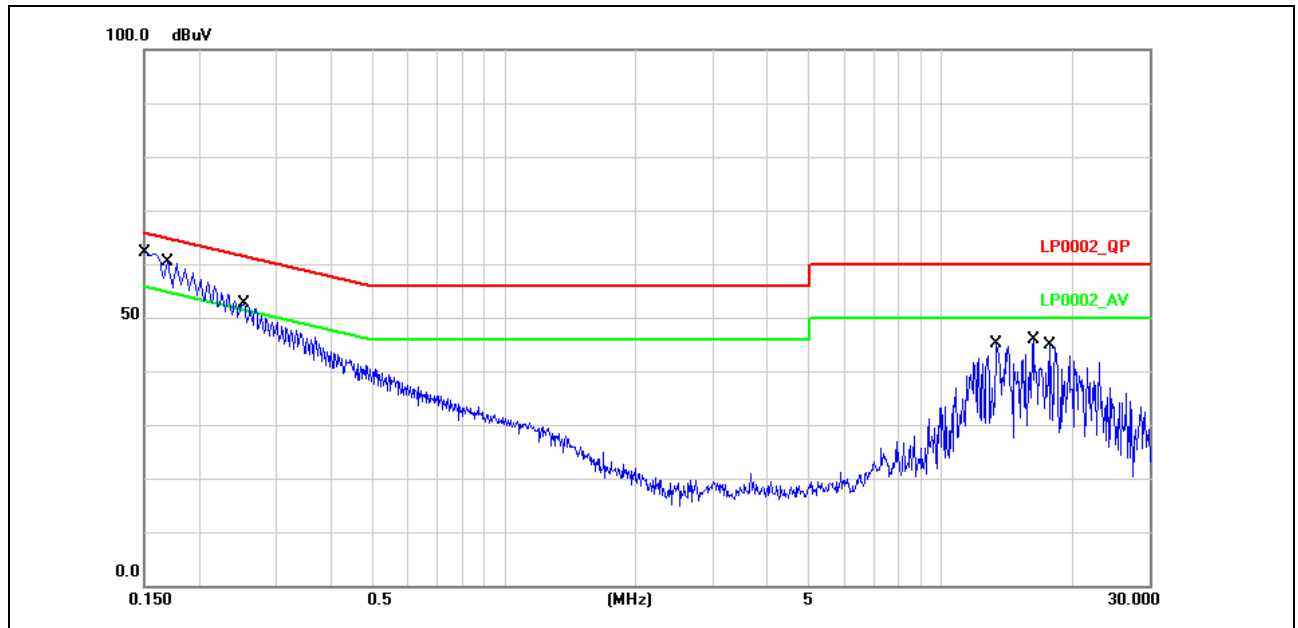
將待測物置於 0.8 米高的非金屬桌面，使其在工作狀態，待測物電源線接至電源線接至電源阻抗穩定網路上，從測試接收機記錄頻率由 0.15MHz 至 30MHz 之間之電源線線導放射強度。

4.3. 傳導干擾之擺設



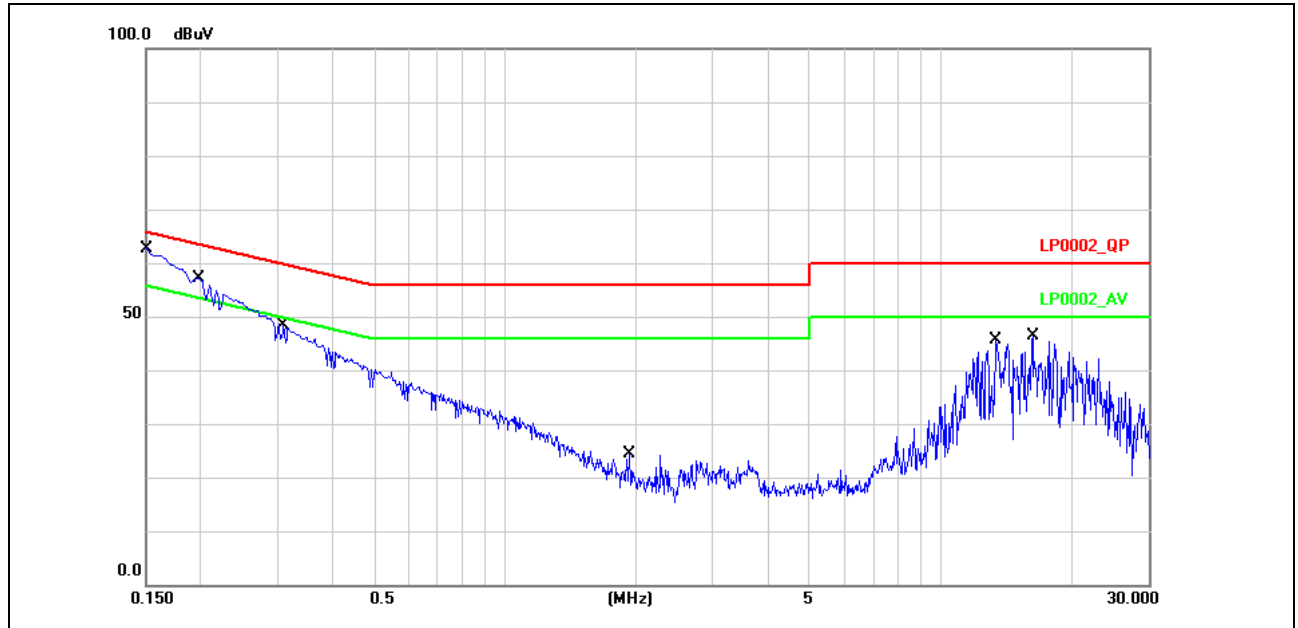


4.4. 傳導干擾之測試結果及數據



Test Standard:	LP0002	Probe:	L1
Test item:	Conduction Emission	Test Time:	2019/7/23 12:14:12
Temperature	: 22°C	Humidity	54%

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1516	10.58	43.89	54.47	65.91	-11.44	QP
2	0.1516	10.58	14.96	25.54	55.91	-30.37	AVG
3	0.1700	10.56	41.37	51.93	64.96	-13.03	QP
4	0.1700	10.56	11.68	22.24	54.96	-32.72	AVG
5	0.2540	10.55	33.25	43.80	61.62	-17.82	QP
6	0.2540	10.55	5.02	15.57	51.62	-36.05	AVG
7	13.3580	10.97	33.09	44.06	60.00	-15.94	QP
8	13.3580	10.97	32.84	43.81	50.00	-6.19	AVG
9	16.2300	11.00	33.87	44.87	60.00	-15.13	QP
10	16.2300	11.00	33.72	44.72	50.00	-5.28	AVG
11	17.6940	11.01	33.06	44.07	60.00	-15.93	QP
12	17.6940	11.01	32.56	43.57	50.00	-6.43	AVG



Test Standard:	LP0002_QP	Probe:	N
Test item:	Conduction Emission	Test Time:	2019/7/23 12:17:12
Temperature	: 22°C	Humidity	54%

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1516	10.58	43.78	54.36	65.91	-11.55	QP
2	0.1516	10.58	14.66	25.24	55.91	-30.67	AVG
3	0.1980	10.49	38.20	48.69	63.69	-15.00	QP
4	0.1980	10.49	8.53	19.02	53.69	-34.67	AVG
5	0.3100	10.45	29.13	39.58	59.97	-20.39	QP
6	0.3100	10.45	3.20	13.65	49.97	-36.32	AVG
7	1.9340	10.69	2.76	13.45	56.00	-42.55	QP
8	1.9340	10.69	-2.68	8.01	46.00	-37.99	AVG
9	13.3580	10.96	33.64	44.60	60.00	-15.40	QP
10	13.3580	10.96	33.37	44.33	50.00	-5.67	AVG
11	16.2300	11.00	34.42	45.42	60.00	-14.58	QP
12	16.2300	11.00	34.22	45.22	50.00	-4.78	AVG

Note: Level = Reading + Factor

Margin = Level – Limit

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



4.5. 傳導量測之配置照片





5. 輻射之量測規定

5.1. 適用標準

不必要之發射落於第 2.7 節禁用頻段之輻射發射，應符合第 2.8 節之規定。

不必要之發射需符合 2.8 節之限制要求：

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

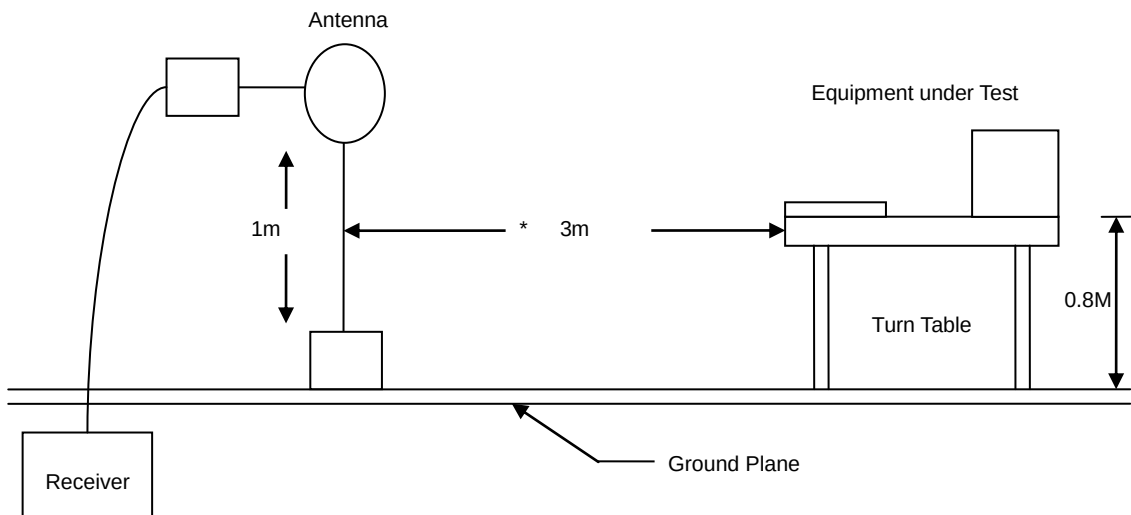
將待測物置於 0.8 米(Below 1G) & 1.5 米(Above 1G)高的非金屬桌面，使其在測試模式狀態，且設定為高、中、低各頻道產生最高峰值輸出功率的傳輸速率，接收天線置於 3 米外，且桌面要 360 度旋轉，另外接收天線也要從 1 米至 4 米升降變化，接收天線置於水平、垂直極向各執行測試一次。待測物若為手持式則分別要以三軸相放置，並分別測試以找出最大輻射電場強度。

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

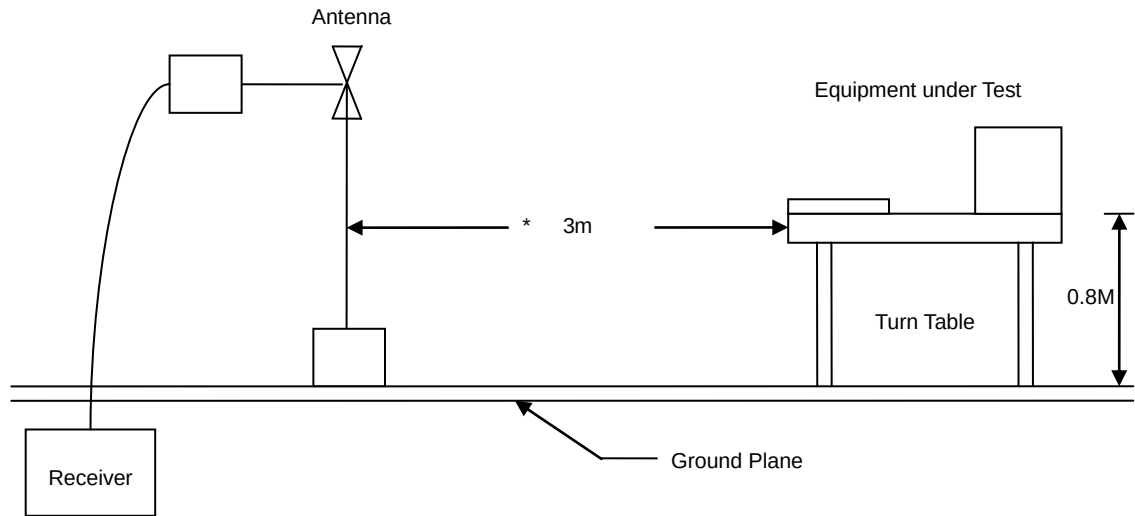
5.3. 輻射場地之擺設

Below 30MHz test setup

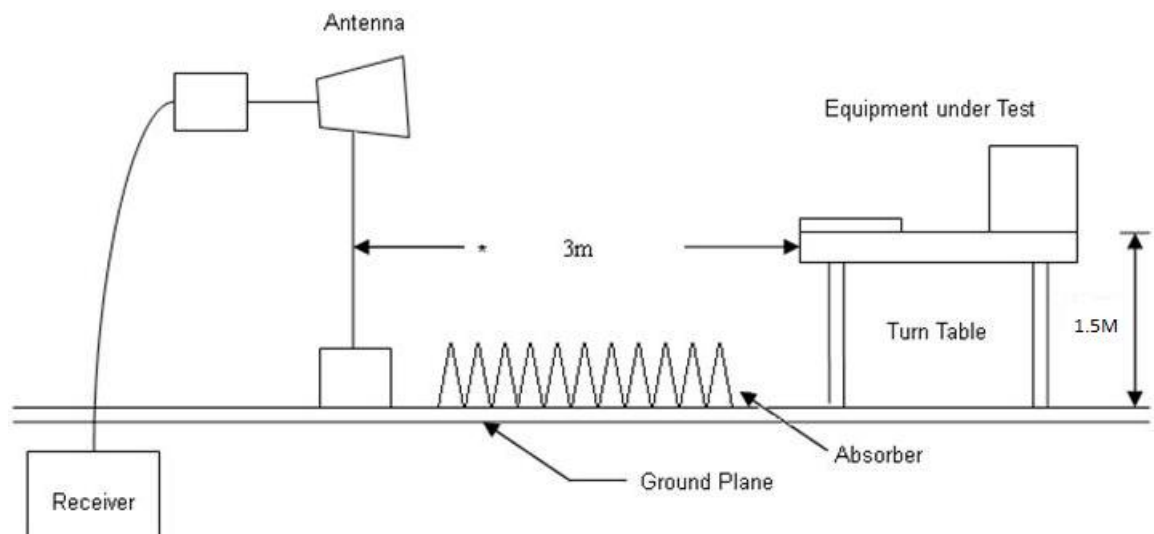




30MHz- 1GHz Test Setup



Above 1GHz Test Setup

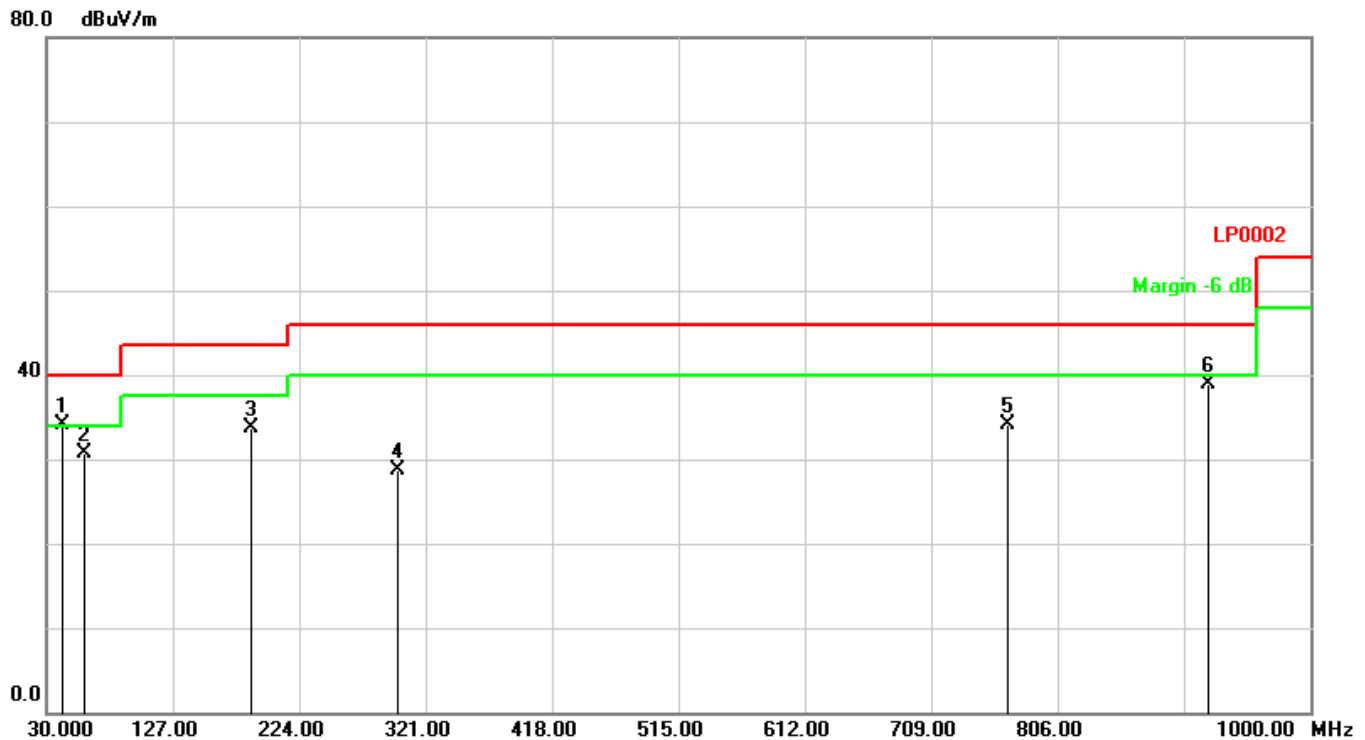




5.4. 輻射之測試結果及數據

The Radiated Emission below 1GHz:

Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 920.250MHz by ant 1	



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	42.6100	-9.70	43.90	34.20	40.00	-5.80	QP
2	59.1000	-14.75	45.38	30.63	40.00	-9.37	QP
3	187.1400	-12.10	45.75	33.65	43.50	-9.85	QP
4	299.6600	-7.85	36.50	28.65	46.00	-17.35	QP
5	768.1700	1.39	32.72	34.11	46.00	-11.89	QP
6	921.4300	2.73	36.22	38.95	46.00	-7.05	QP

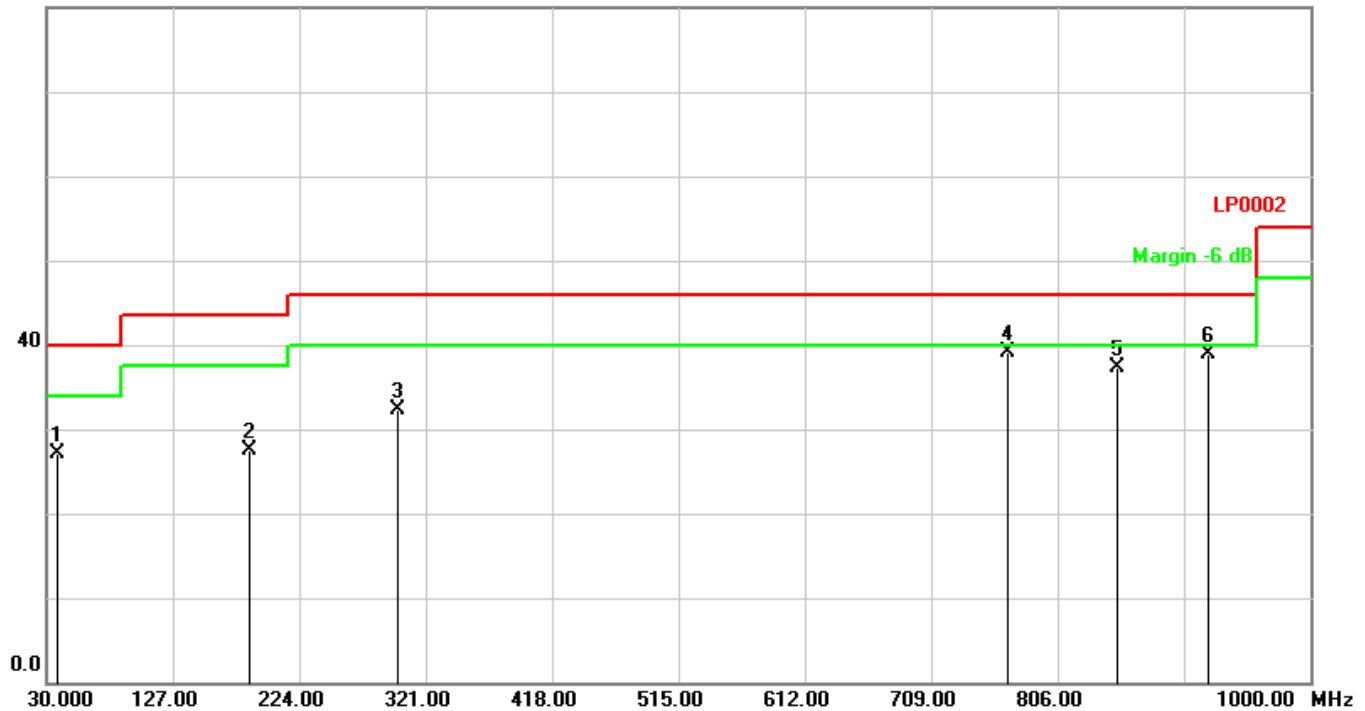
Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor(dB).

Factor (dB)=Cable Loss(dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain(dB)



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 920.250MHz by ant 1	

80.0 dBuV/m



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	38.7299	-8.01	35.20	27.19	40.00	-12.81	QP
2	186.1699	-12.18	39.70	27.52	43.50	-15.98	QP
3	299.6600	-7.85	40.09	32.24	46.00	-13.76	QP
4	768.1699	1.39	37.78	39.17	46.00	-6.83	QP
5	852.5599	2.43	34.84	37.27	46.00	-8.73	QP
6	921.4299	2.73	36.26	38.99	46.00	-7.01	QP

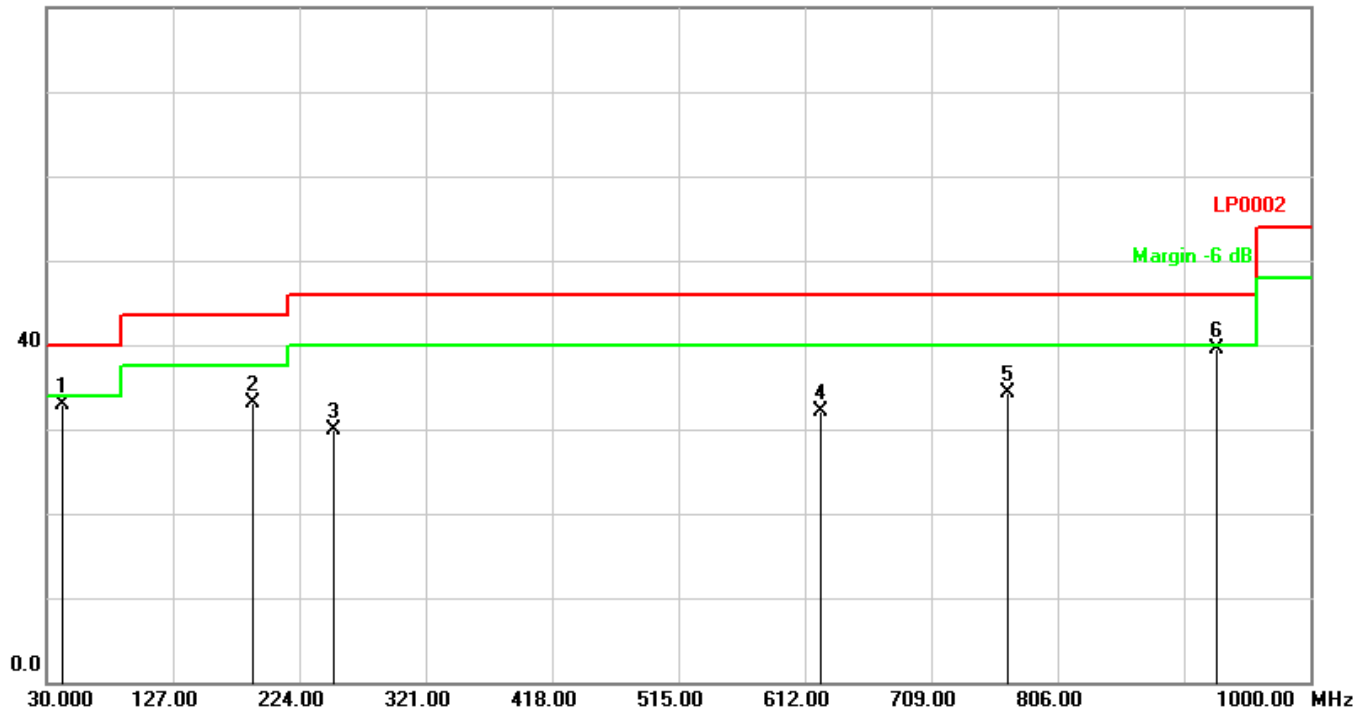
Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor(dB).

Factor (dB)=Cable Loss(dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain(dB)



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 927.750MHz by ant 1	

80.0 dBuV/m



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	42.6100	-9.70	42.70	33.00	40.00	-7.00	QP
2	188.1100	-12.02	45.16	33.14	43.50	-10.36	QP
3	250.1900	-10.26	40.08	29.82	46.00	-16.18	QP
4	624.6100	-3.55	35.56	32.01	46.00	-13.99	QP
5	768.1700	1.39	32.93	34.32	46.00	-11.68	QP
6	928.2200	2.80	36.70	39.50	46.00	-6.50	QP

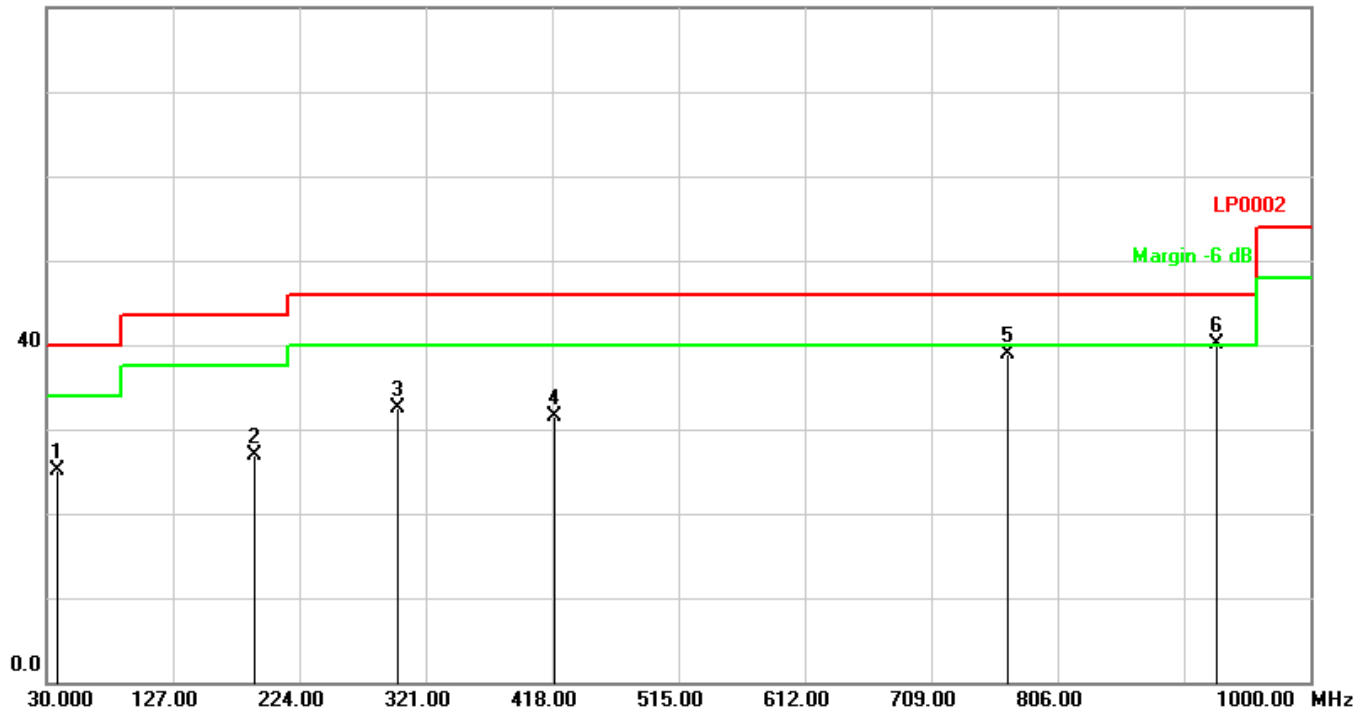
Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor(dB).

Factor (dB)=Cable Loss(dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain(dB)



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 927.750MHz by ant 1	

80.0 dBuV/m



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	38.7299	-8.01	33.06	25.05	40.00	-14.95	QP
2	189.0800	-11.94	38.78	26.84	43.50	-16.66	QP
3	299.6600	-7.85	40.37	32.52	46.00	-13.48	QP
4	419.9399	-6.44	37.98	31.54	46.00	-14.46	QP
5	768.1699	1.39	37.50	38.89	46.00	-7.11	QP
6	928.2200	2.80	37.26	40.06	46.00	-5.94	QP

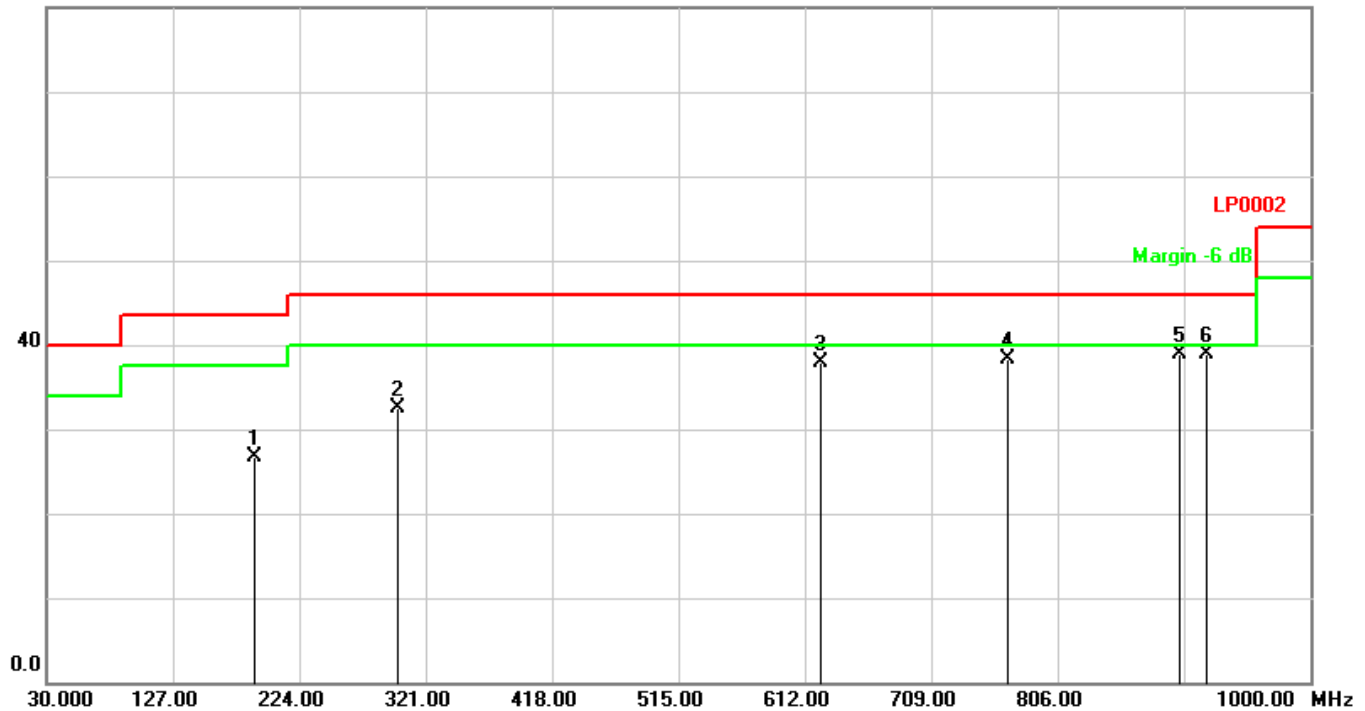
Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor(dB).

Factor (dB)=Cable Loss(dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain(dB)



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 920.250MHz by ant 2	

80.0 dBuV/m



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	189.0800	-11.94	38.72	26.78	43.50	-16.72	QP
2	299.6600	-7.85	40.28	32.43	46.00	-13.57	QP
3	623.6400	-3.56	41.54	37.98	46.00	-8.02	QP
4	768.1700	1.39	36.82	38.21	46.00	-7.79	QP
5	900.0900	2.52	36.33	38.85	46.00	-7.15	QP
6	920.4600	2.72	36.16	38.88	46.00	-7.12	QP

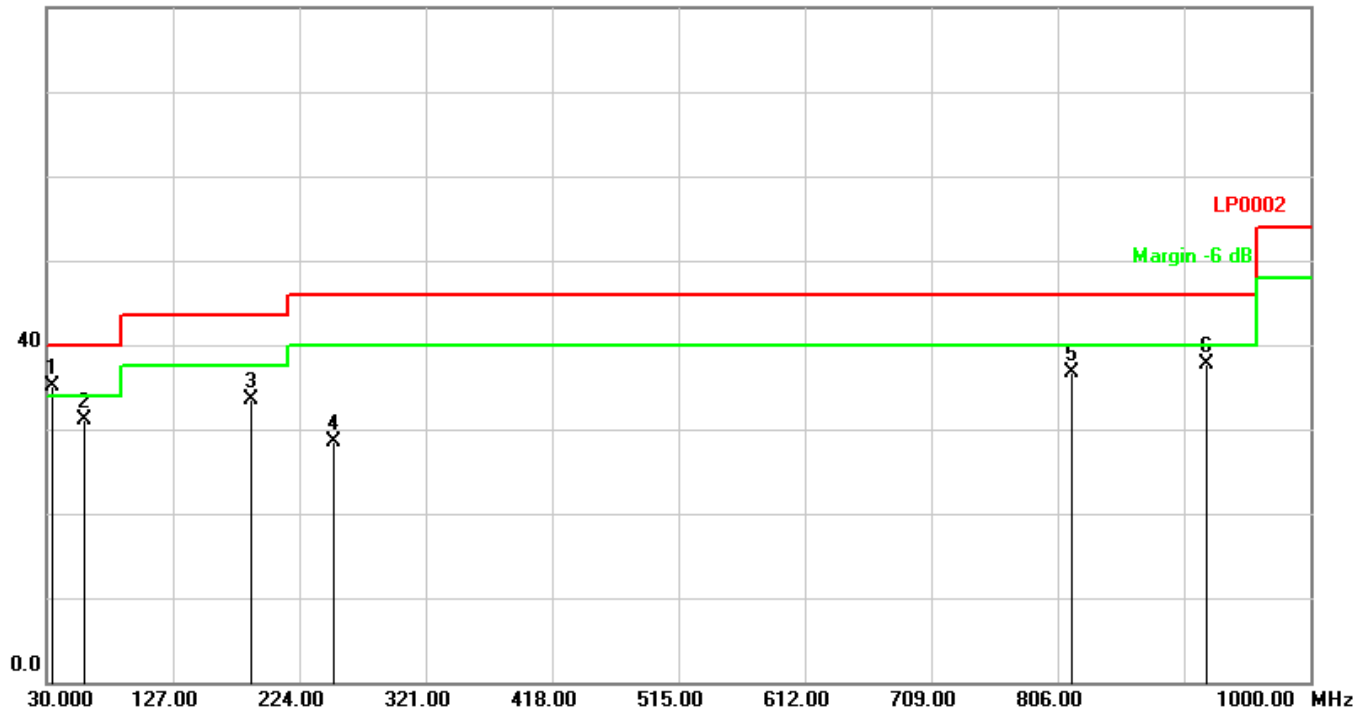
Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor(dB).

Factor (dB)=Cable Loss(dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain(dB)



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 920.250MHz by ant 2	

80.0 dBuV/m



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	34.8500	-6.34	41.44	35.10	40.00	-4.90	QP
2	59.1000	-14.75	45.84	31.09	40.00	-8.91	QP
3	187.1400	-12.10	45.54	33.44	43.50	-10.06	QP
4	250.1900	-10.26	38.82	28.56	46.00	-17.44	QP
5	816.6700	2.02	34.75	36.77	46.00	-9.23	QP
6	920.4600	2.72	35.08	37.80	46.00	-8.20	QP

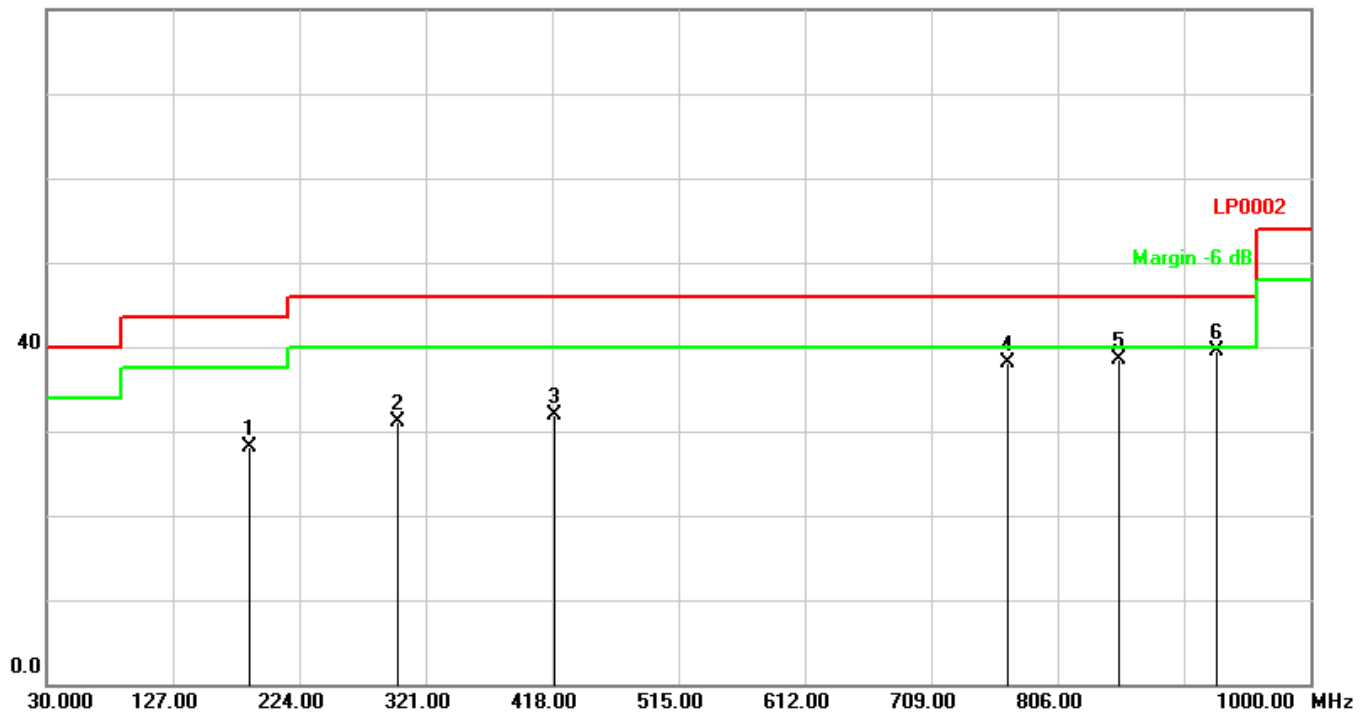
Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor(dB).

Factor (dB)=Cable Loss(dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain(dB)



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 927.750MHz by ant 2	

80.0 dBuV/m



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	185.2000	-12.26	40.33	28.07	43.50	-15.43	QP
2	299.6600	-7.85	39.00	31.15	46.00	-14.85	QP
3	419.9400	-6.44	38.35	31.91	46.00	-14.09	QP
4	768.1700	1.39	36.78	38.17	46.00	-7.83	QP
5	852.5600	2.43	36.06	38.49	46.00	-7.51	QP
6	928.2200	2.80	36.74	39.54	46.00	-6.46	QP

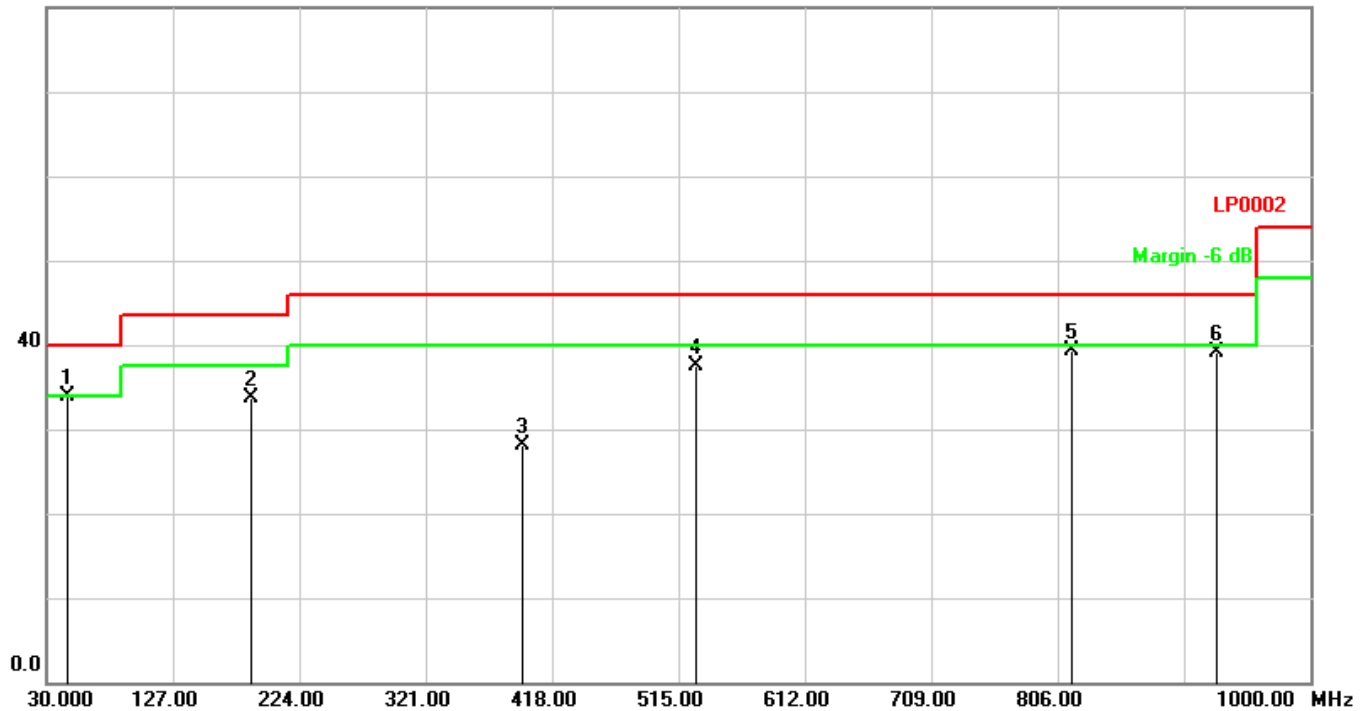
Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor(dB).

Factor (dB)=Cable Loss(dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain(dB)



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 927.750MHz by ant 2	

80.0 dBuV/m



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	46.4900	-11.39	45.31	33.92	40.00	-6.08	QP
2	187.1400	-12.10	45.78	33.68	43.50	-9.82	QP
3	395.6900	-7.13	35.27	28.14	46.00	-17.86	QP
4	528.5800	-4.65	42.12	37.47	46.00	-8.53	QP
5	816.6700	2.02	37.21	39.23	46.00	-6.77	QP
6	928.2200	2.80	36.25	39.05	46.00	-6.95	QP

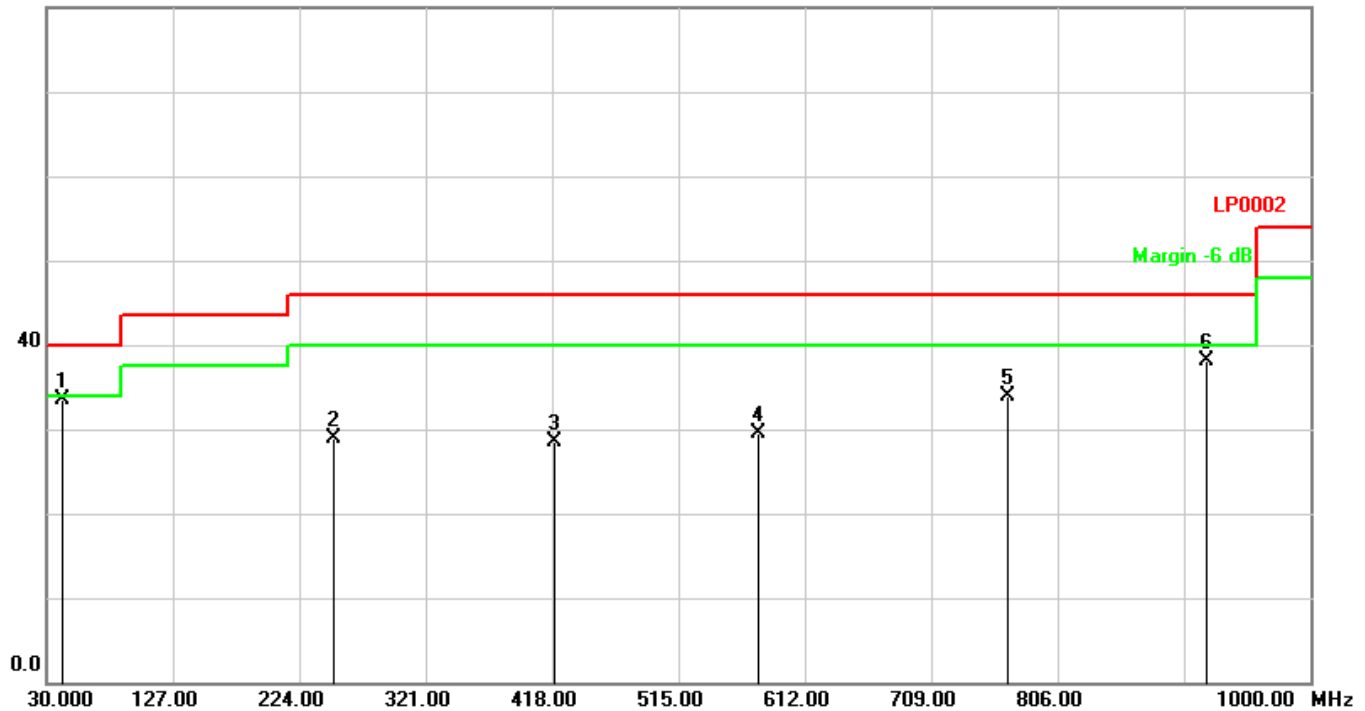
Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor(dB).

Factor (dB)=Cable Loss(dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain(dB)



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 920.250MHz by ant 3	

80.0 dBuV/m



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	42.6100	-9.70	43.16	33.46	40.00	-6.54	QP
2	250.1900	-10.26	39.09	28.83	46.00	-17.17	QP
3	419.9400	-6.44	34.98	28.54	46.00	-17.46	QP
4	576.1100	-3.86	33.32	29.46	46.00	-16.54	QP
5	768.1700	1.39	32.61	34.00	46.00	-12.00	QP
6	920.4600	2.72	35.42	38.14	46.00	-7.86	QP

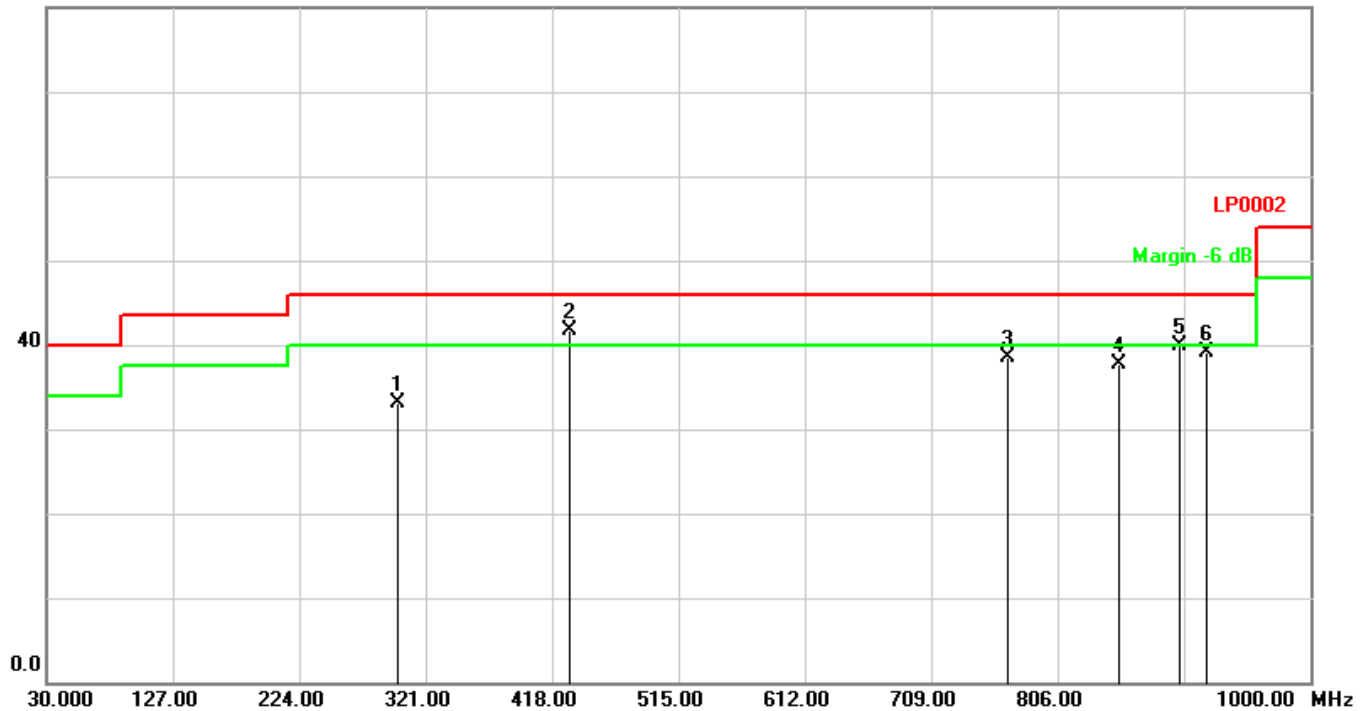
Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor(dB).

Factor (dB)=Cable Loss(dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain(dB)



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 920.250MHz by ant 3	

80.0 dBuV/m



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	299.6600	-7.85	41.00	33.15	46.00	-12.85	QP
2	431.5800	-6.08	47.84	41.76	46.00	-4.24	QP
3	768.1700	1.39	37.11	38.50	46.00	-7.50	QP
4	852.5600	2.43	35.36	37.79	46.00	-8.21	QP
5	900.0900	2.52	37.31	39.83	46.00	-6.17	QP
6	920.4600	2.72	36.33	39.05	46.00	-6.95	QP

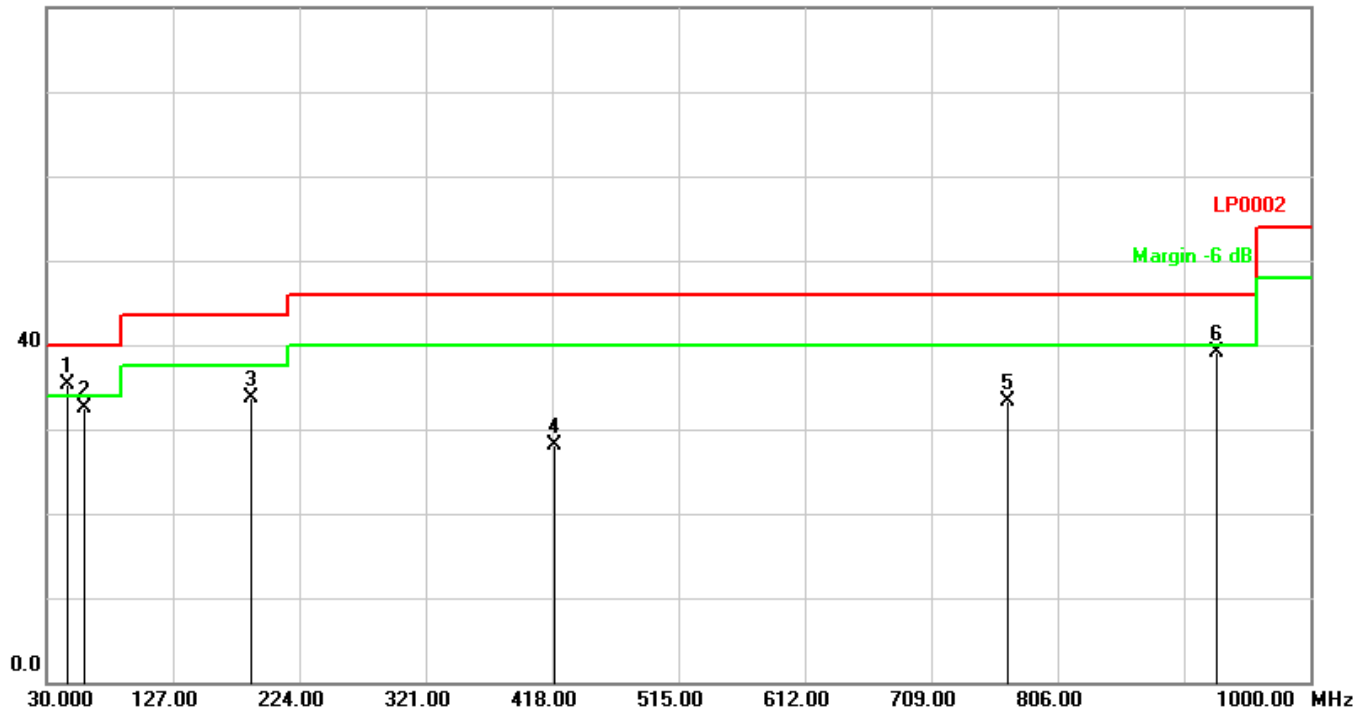
Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor(dB).

Factor (dB)=Cable Loss(dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain(dB)



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 927.750MHz by ant 3	

80.0 dBuV/m



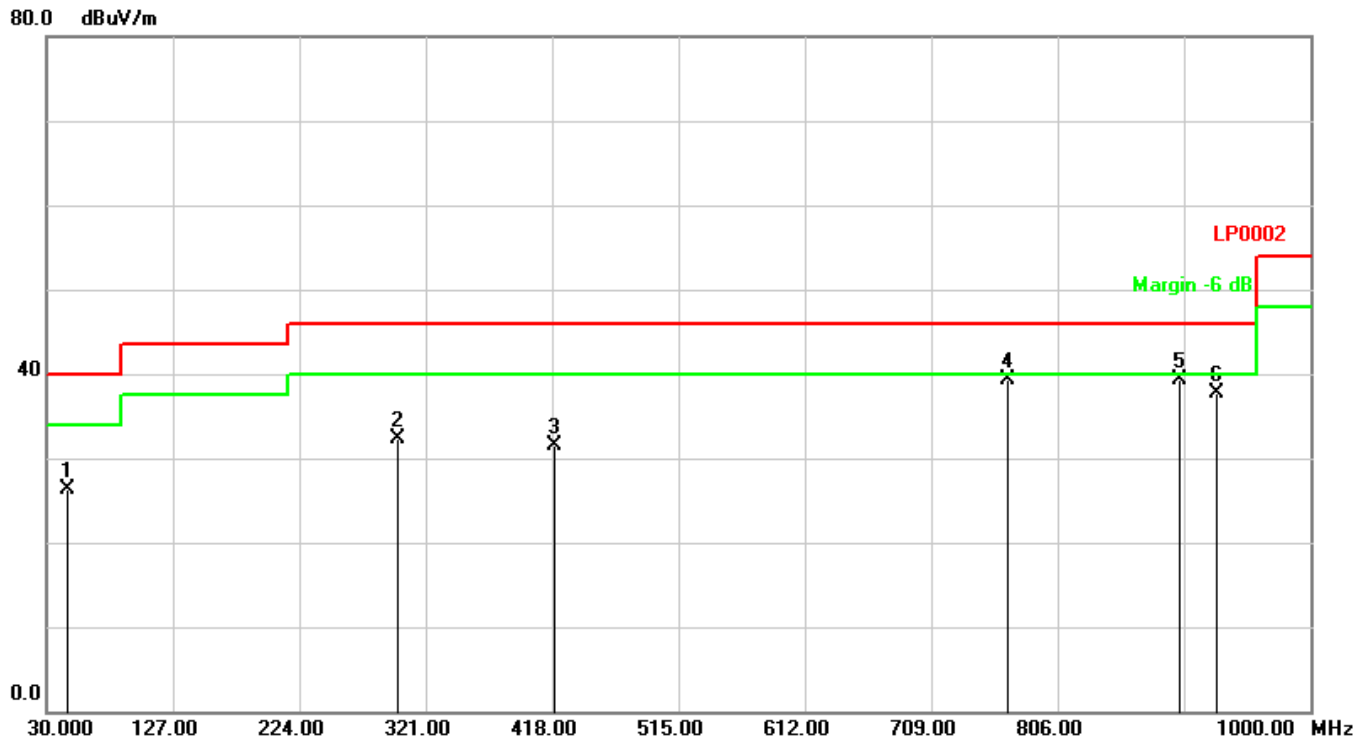
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	46.4900	-11.39	46.61	35.22	40.00	-4.78	QP
2	59.1000	-14.75	47.35	32.60	40.00	-7.40	QP
3	187.1400	-12.10	45.77	33.67	43.50	-9.83	QP
4	419.9400	-6.44	34.60	28.16	46.00	-17.84	QP
5	768.1700	1.39	31.88	33.27	46.00	-12.73	QP
6	928.2200	2.80	36.21	39.01	46.00	-6.99	QP

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor(dB).

Factor (dB)=Cable Loss(dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain(dB)



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 927.750MHz by ant 3	



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	46.4900	-11.39	37.66	26.27	40.00	-13.73	QP
2	299.6600	-7.85	40.11	32.26	46.00	-13.74	QP
3	419.9400	-6.44	37.90	31.46	46.00	-14.54	QP
4	768.1700	1.39	37.82	39.21	46.00	-6.79	QP
5	900.0900	2.52	36.78	39.30	46.00	-6.70	QP
6	928.2200	2.80	34.90	37.70	46.00	-8.30	QP

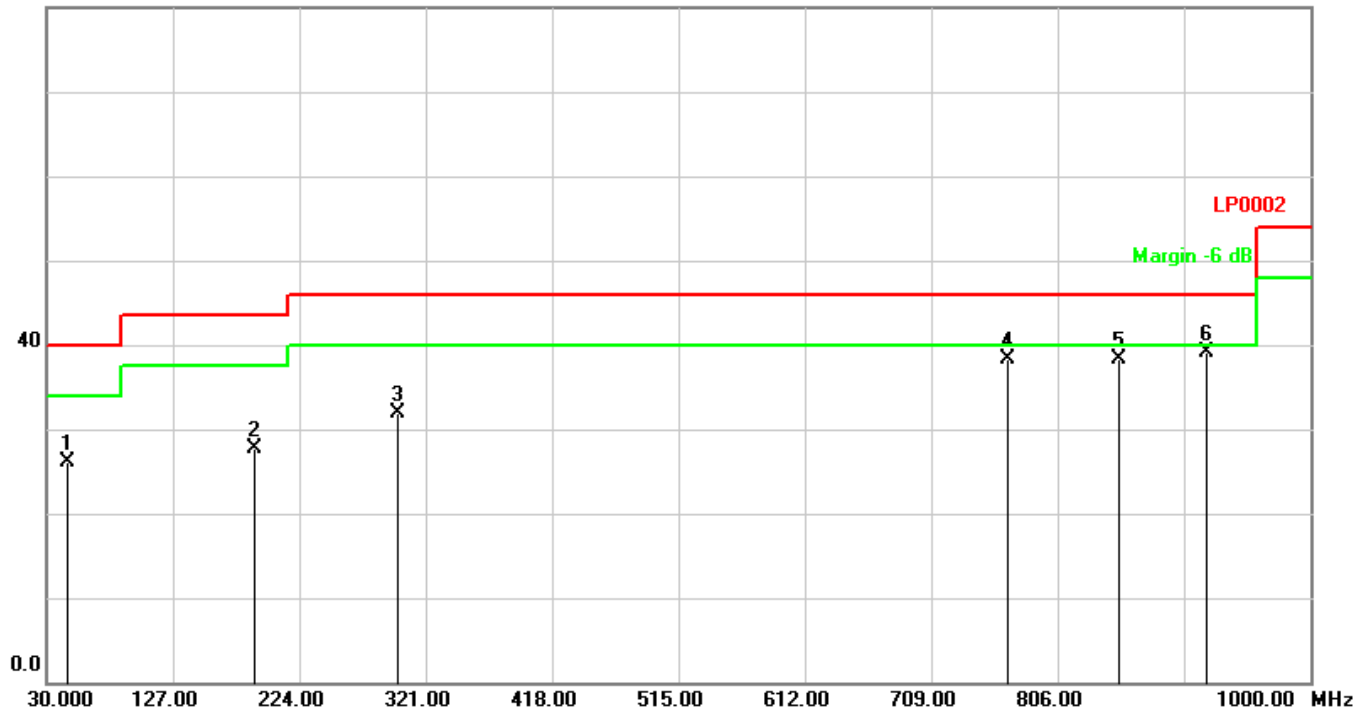
Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor(dB).

Factor (dB)=Cable Loss(dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain(dB)



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 920.250MHz by ant 4	

80.0 dBuV/m



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	46.4900	-11.39	37.40	26.01	40.00	-13.99	QP
2	189.0800	-11.94	39.71	27.77	43.50	-15.73	QP
3	299.6600	-7.85	39.68	31.83	46.00	-14.17	QP
4	768.1700	1.39	36.86	38.25	46.00	-7.75	QP
5	852.5600	2.43	35.96	38.39	46.00	-7.61	QP
6	920.4600	2.72	36.33	39.05	46.00	-6.95	QP

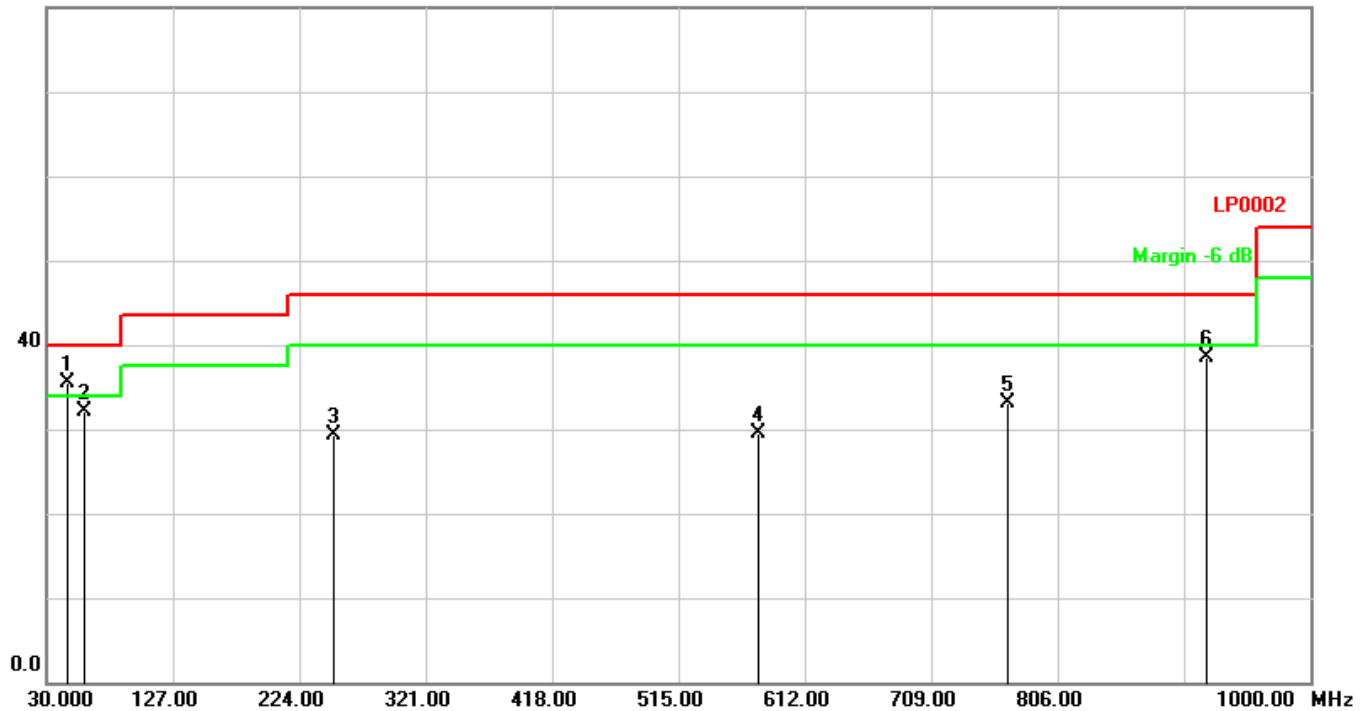
Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor(dB).

Factor (dB)=Cable Loss(dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain(dB)



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 920.250MHz by ant 4	

80.0 dBuV/m



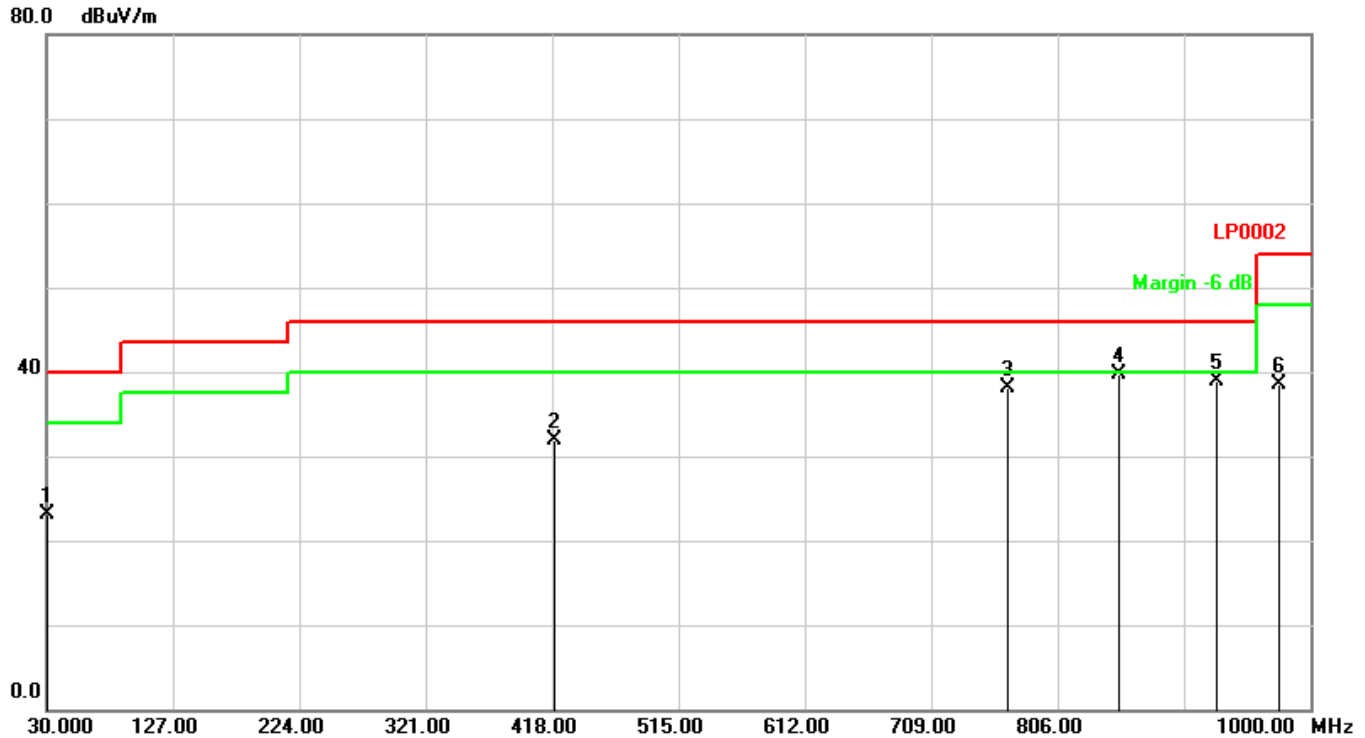
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	46.4900	-11.39	46.87	35.48	40.00	-4.52	QP
2	59.1000	-14.75	46.84	32.09	40.00	-7.91	QP
3	250.1899	-10.26	39.55	29.29	46.00	-16.71	QP
4	576.1100	-3.86	33.31	29.45	46.00	-16.55	QP
5	768.1699	1.39	31.67	33.06	46.00	-12.94	QP
6	920.4600	2.72	35.71	38.43	46.00	-7.57	QP

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor(dB).

Factor (dB)=Cable Loss(dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain(dB)



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 927.750MHz by ant 4	



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	30.0000	-4.25	27.26	23.01	40.00	-16.99	QP
2	419.9400	-6.44	38.39	31.95	46.00	-14.05	QP
3	768.1700	1.39	36.79	38.18	46.00	-7.82	QP
4	852.5600	2.43	37.37	39.80	46.00	-6.20	QP
5	928.2200	2.80	36.18	38.98	46.00	-7.02	QP
6	975.7500	3.53	35.03	38.56	54.00	-15.44	QP

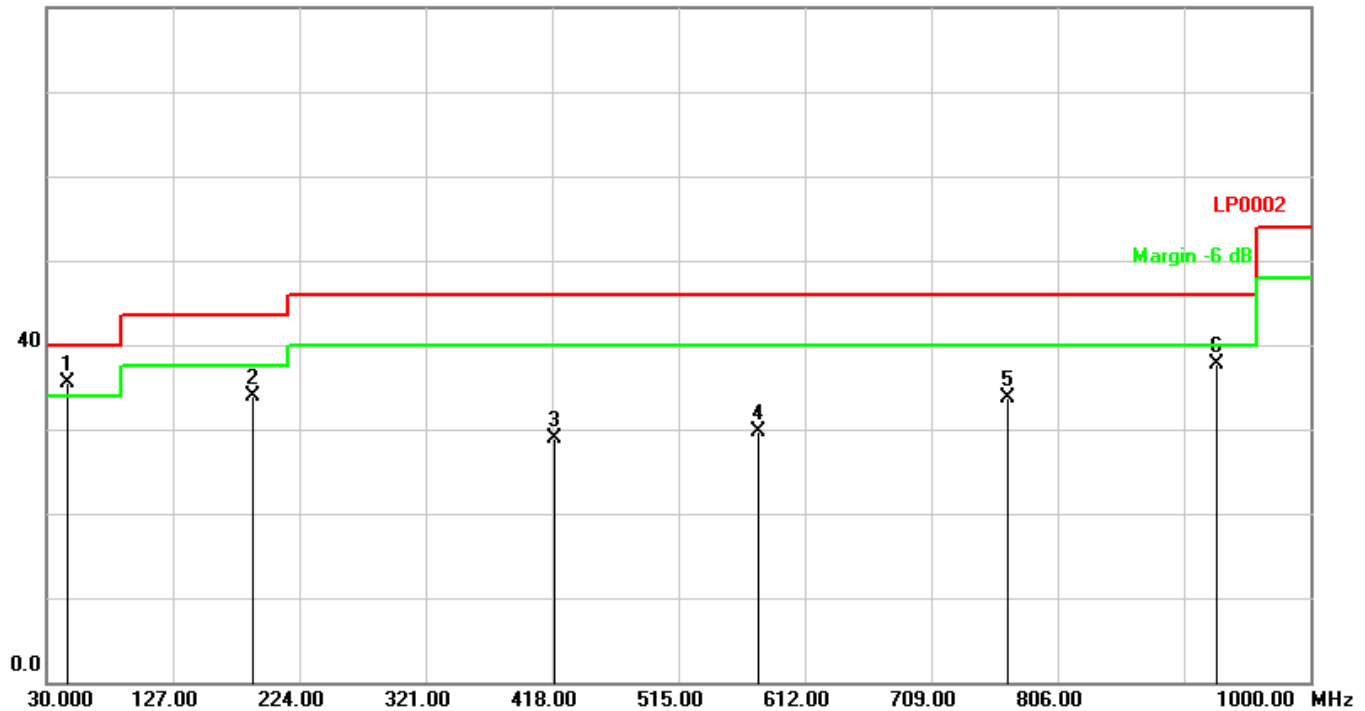
Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor(dB).

Factor (dB)=Cable Loss(dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain(dB)



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 927.750MHz by ant 4	

80.0 dBuV/m



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	46.4900	-11.39	46.80	35.41	40.00	-4.59	QP
2	188.1100	-12.02	45.99	33.97	43.50	-9.53	QP
3	419.9400	-6.44	35.41	28.97	46.00	-17.03	QP
4	576.1100	-3.86	33.54	29.68	46.00	-16.32	QP
5	768.1700	1.39	32.31	33.70	46.00	-12.30	QP
6	928.2200	2.80	34.93	37.73	46.00	-8.27	QP

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor(dB).

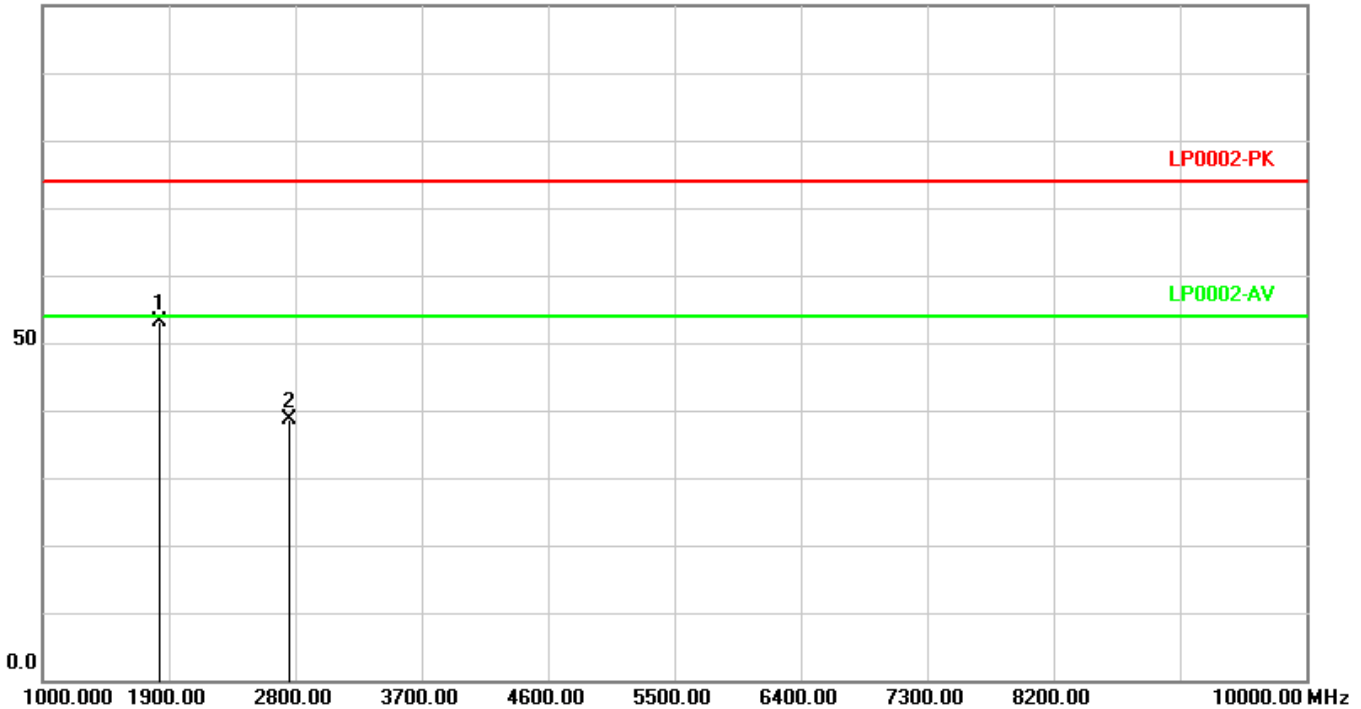
Factor (dB)=Cable Loss(dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain(dB)



The Radiated Emission 1~18GHz:

Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 920.250MHz by ant 1	

100.0 dBuV/m



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1837.000	-4.37	57.49	53.12	74.00	-20.88	peak
2	2760.750	-1.51	40.23	38.72	74.00	-35.28	peak

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or AVG measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor
3. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz), therefore no data appear in the report.



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 920.250MHz by ant 1	

100.0 dBuV/m



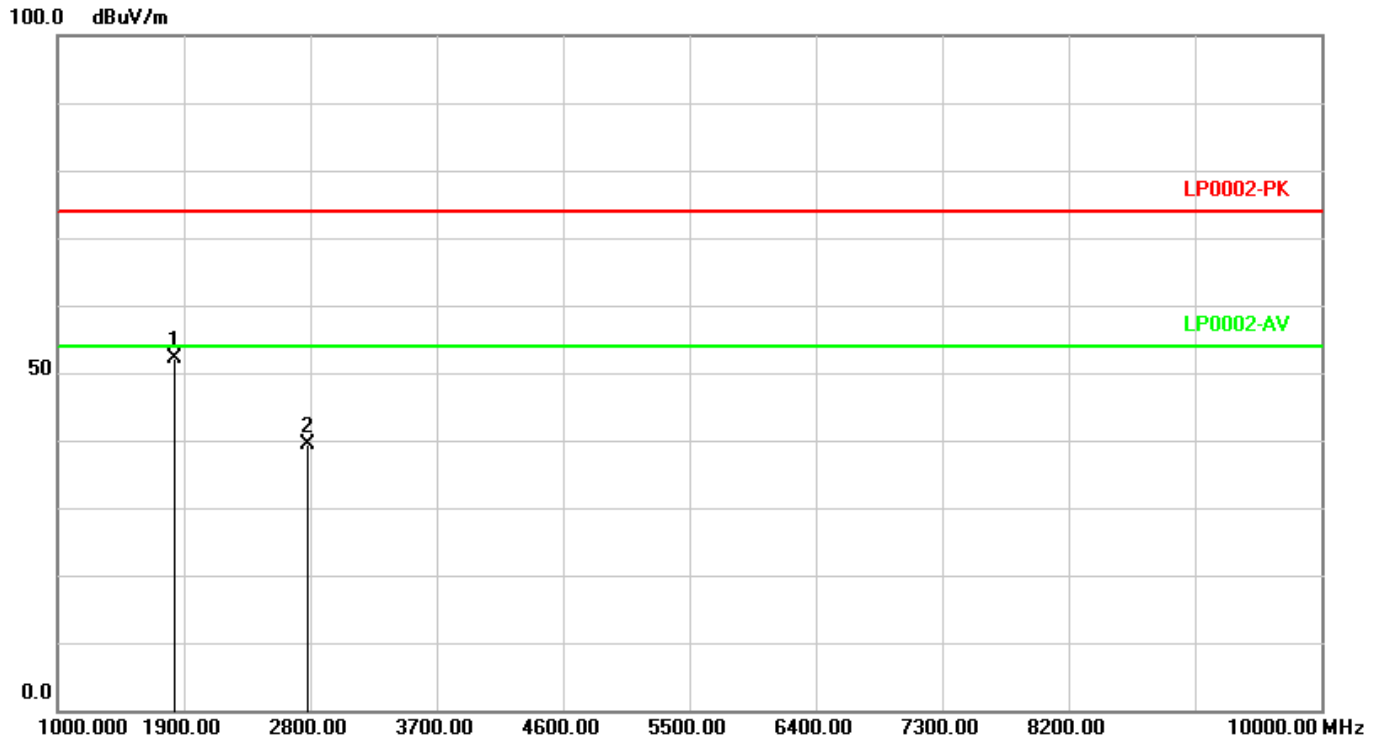
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1837.000	-4.37	59.27	54.90	74.00	-19.10	peak
2	1837.000	-4.37	55.13	50.76	54.00	-3.24	AVG
3	2783.250	-1.48	40.17	38.69	74.00	-35.31	peak

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or AVG measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor
3. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz), therefore no data appear in the report.



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 920.250MHz by ant 2	



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1837.000	-4.37	56.43	52.06	74.00	-21.94	peak
2	2783.250	-1.48	40.92	39.44	74.00	-34.56	peak

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or AVG measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor
3. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz), therefore no data appear in the report.



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 920.250MHz by ant 2	

100.0 dBuV/m



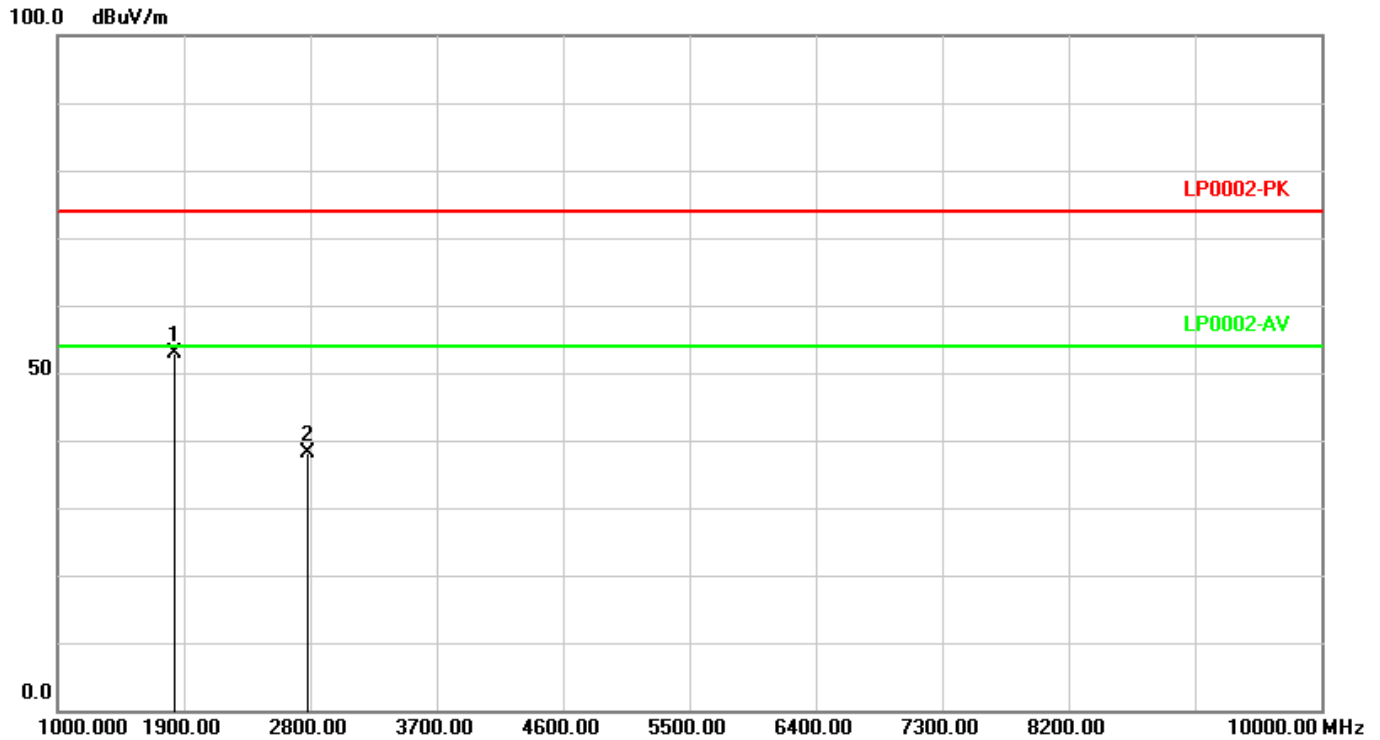
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1837.000	-4.37	57.21	52.84	74.00	-21.16	peak
2	2760.750	-1.51	40.68	39.17	74.00	-34.83	peak

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or AVG measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor
3. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz), therefore no data appear in the report.



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 920.250MHz by ant 3	



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1837.000	-4.37	57.33	52.96	74.00	-21.04	peak
2	2783.250	-1.48	39.59	38.11	74.00	-35.89	peak

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or AVG measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor
3. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz), therefore no data appear in the report.



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 920.250MHz by ant 3	

100.0 dBuV/m



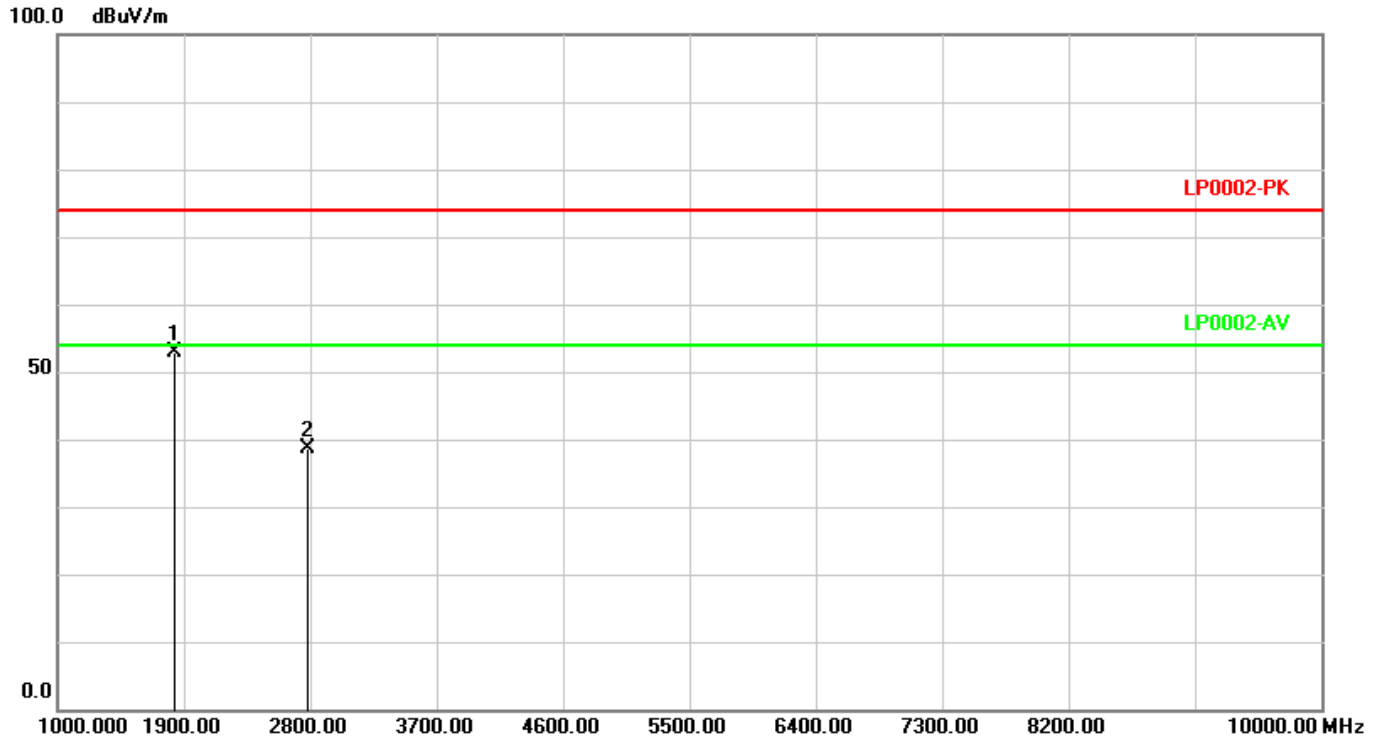
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1837.000	-4.37	59.26	54.89	74.00	-19.11	peak
2	1837.000	-4.37	54.74	50.37	54.00	-3.63	AVG
3	2760.750	-1.51	41.71	40.20	74.00	-33.80	peak

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or AVG measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor
3. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz), therefore no data appear in the report.



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 920.250MHz by ant 4	



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1837.000	-4.37	57.34	52.97	74.00	-21.03	peak
2	2783.250	-1.48	40.00	38.52	74.00	-35.48	peak

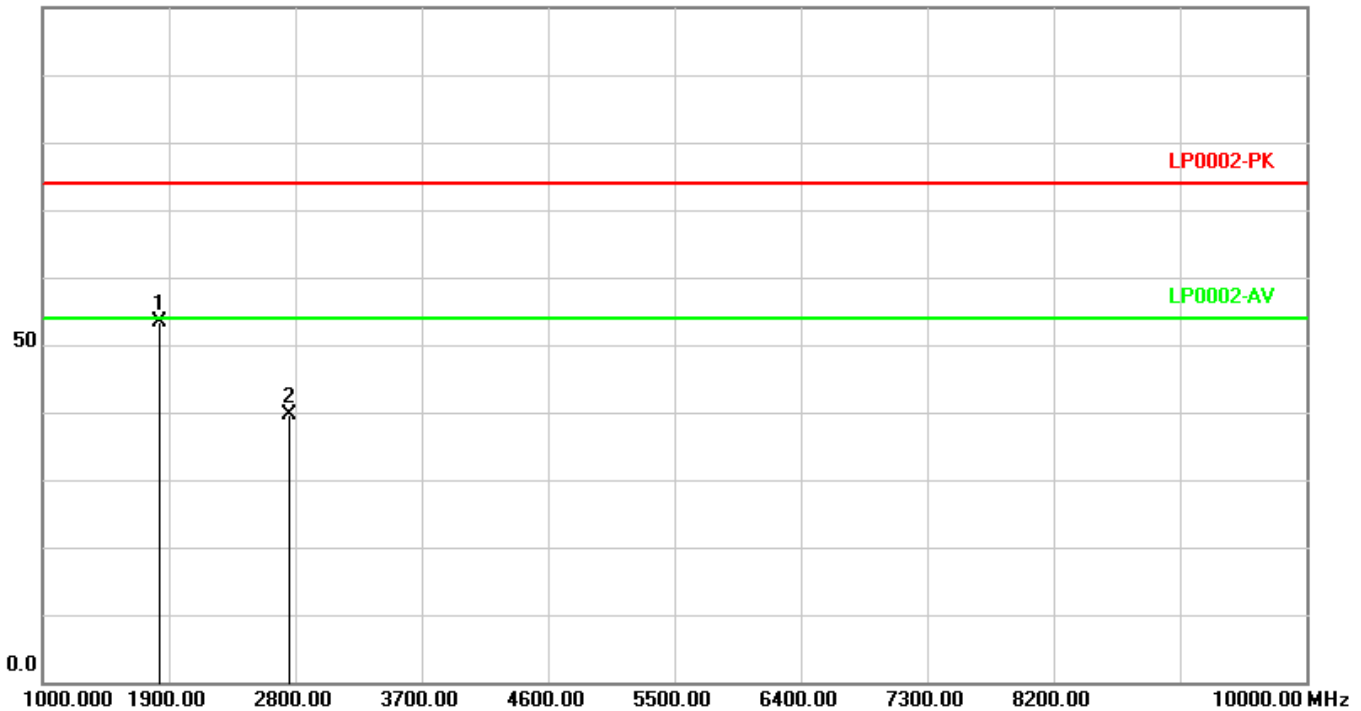
Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or AVG measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor
3. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz), therefore no data appear in the report.



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 920.250MHz by ant 4	

100.0 dBuV/m



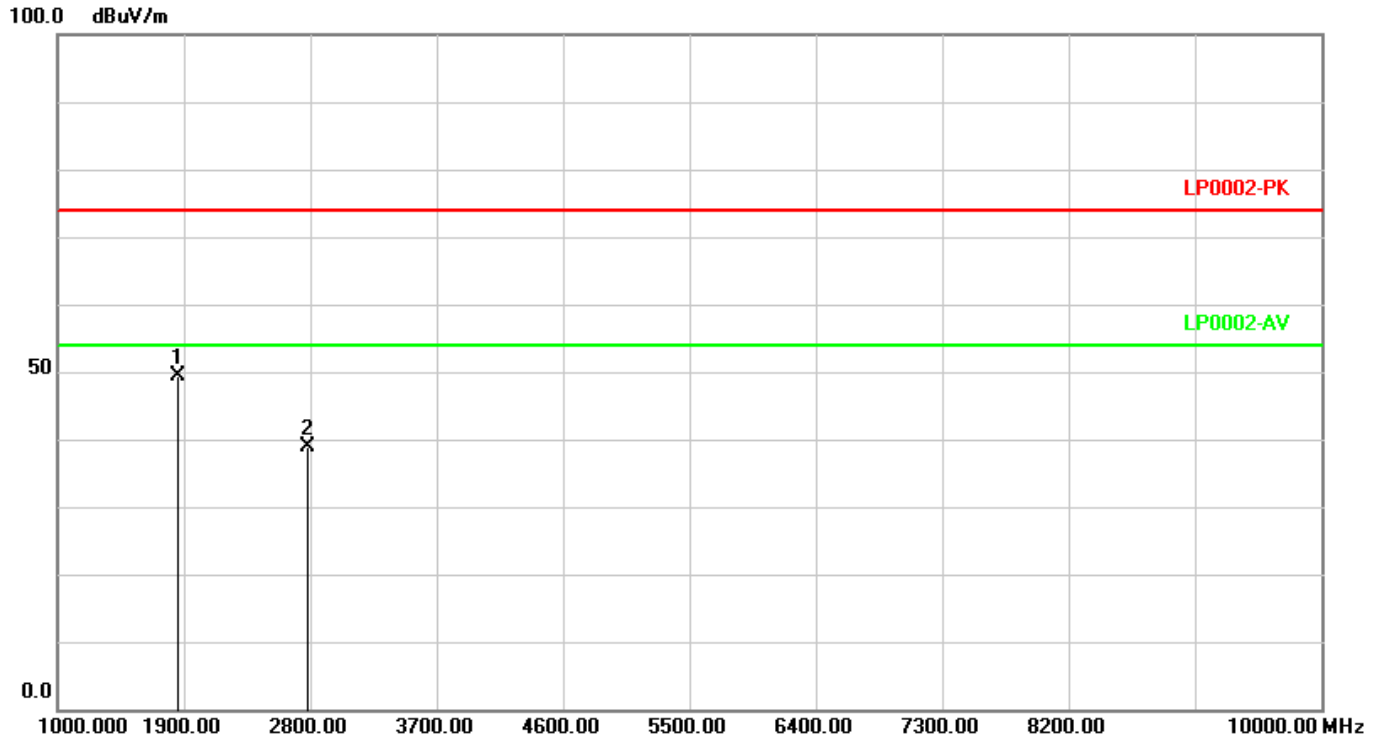
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1837.000	-4.37	57.66	53.29	74.00	-20.71	peak
2	2760.750	-1.51	41.22	39.71	74.00	-34.29	peak

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or AVG measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor
3. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz), therefore no data appear in the report.



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 927.750MHz by ant 1	



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1855.000	-4.30	53.61	49.31	74.00	-24.69	peak
2	2783.250	-1.48	40.44	38.96	74.00	-35.04	peak

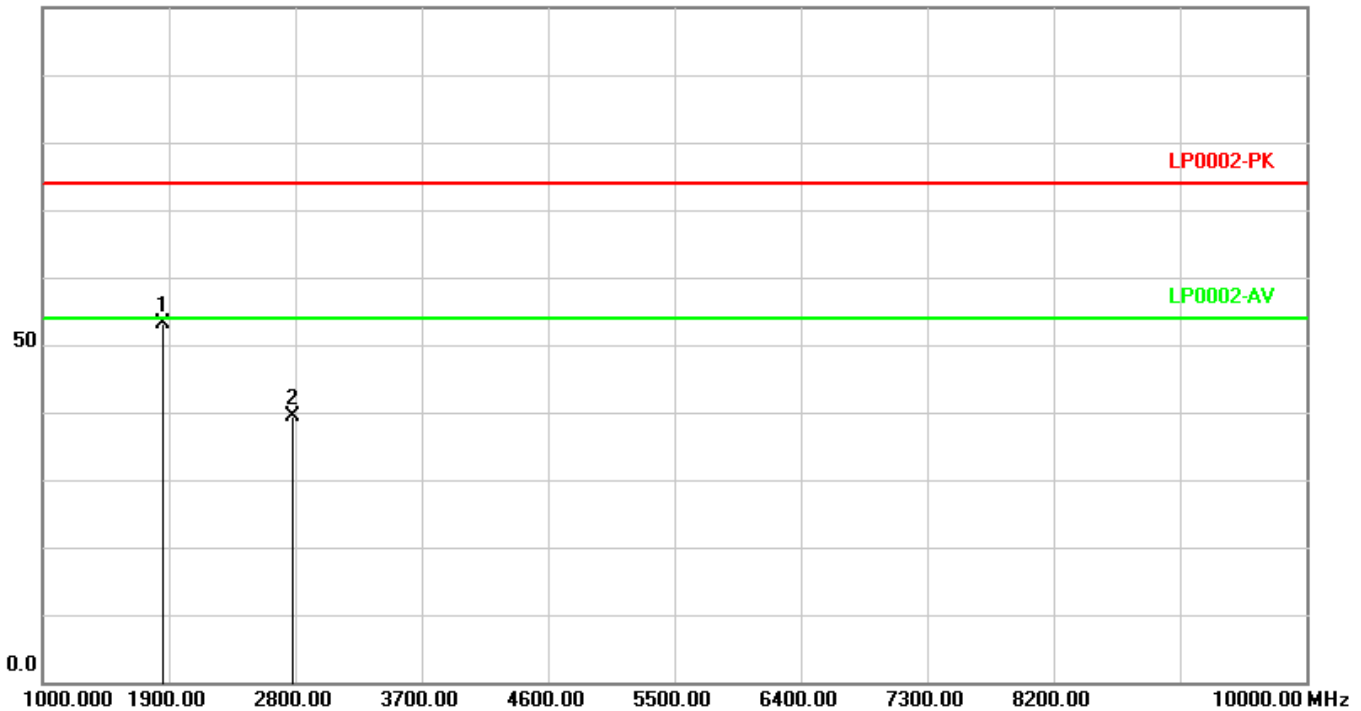
Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or AVG measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor
3. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz), therefore no data appear in the report.



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 927.750MHz by ant 1	

100.0 dBuV/m



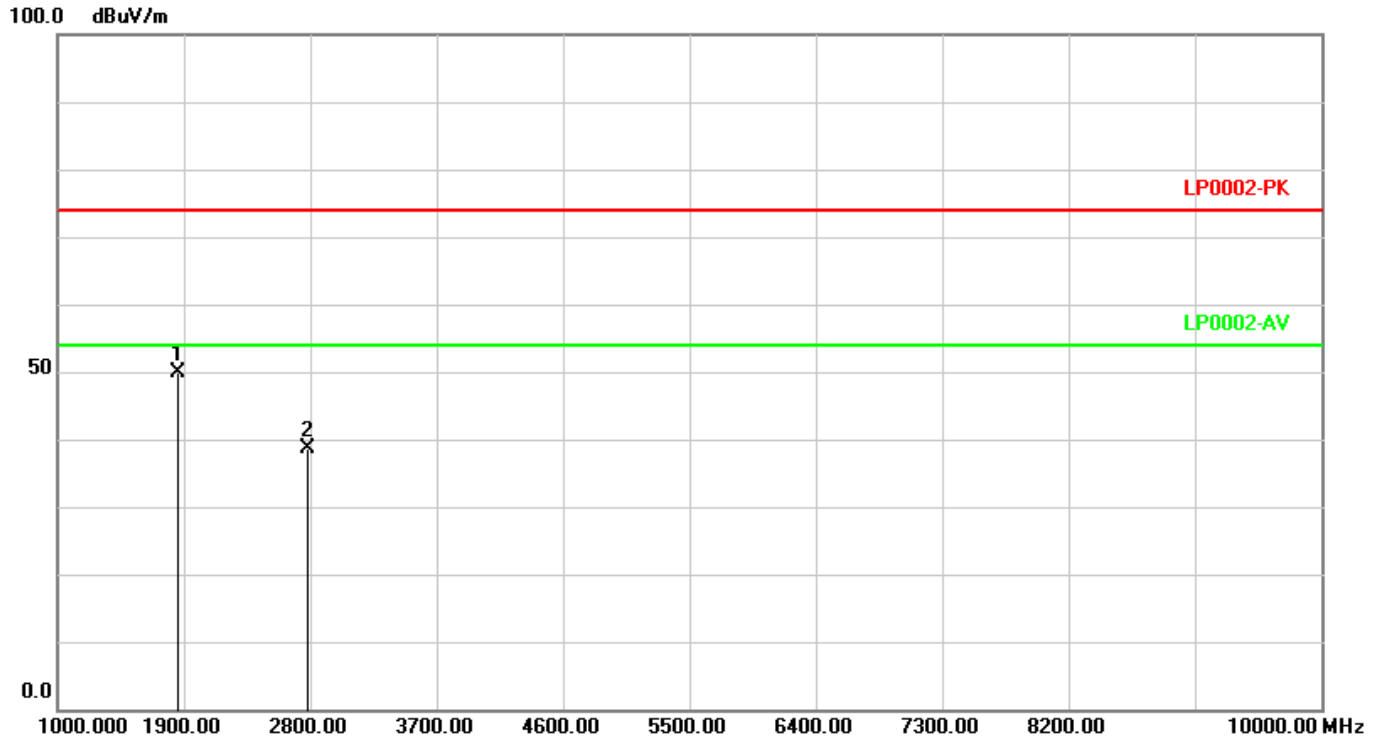
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1855.000	-4.30	57.33	53.03	74.00	-20.97	peak
2	2783.250	-1.48	40.90	39.42	74.00	-34.58	peak

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or AVG measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor
3. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz), therefore no data appear in the report.



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 927.750MHz by ant 2	



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1855.000	-4.30	54.18	49.88	74.00	-24.12	peak
2	2783.250	-1.48	40.07	38.59	74.00	-35.41	peak

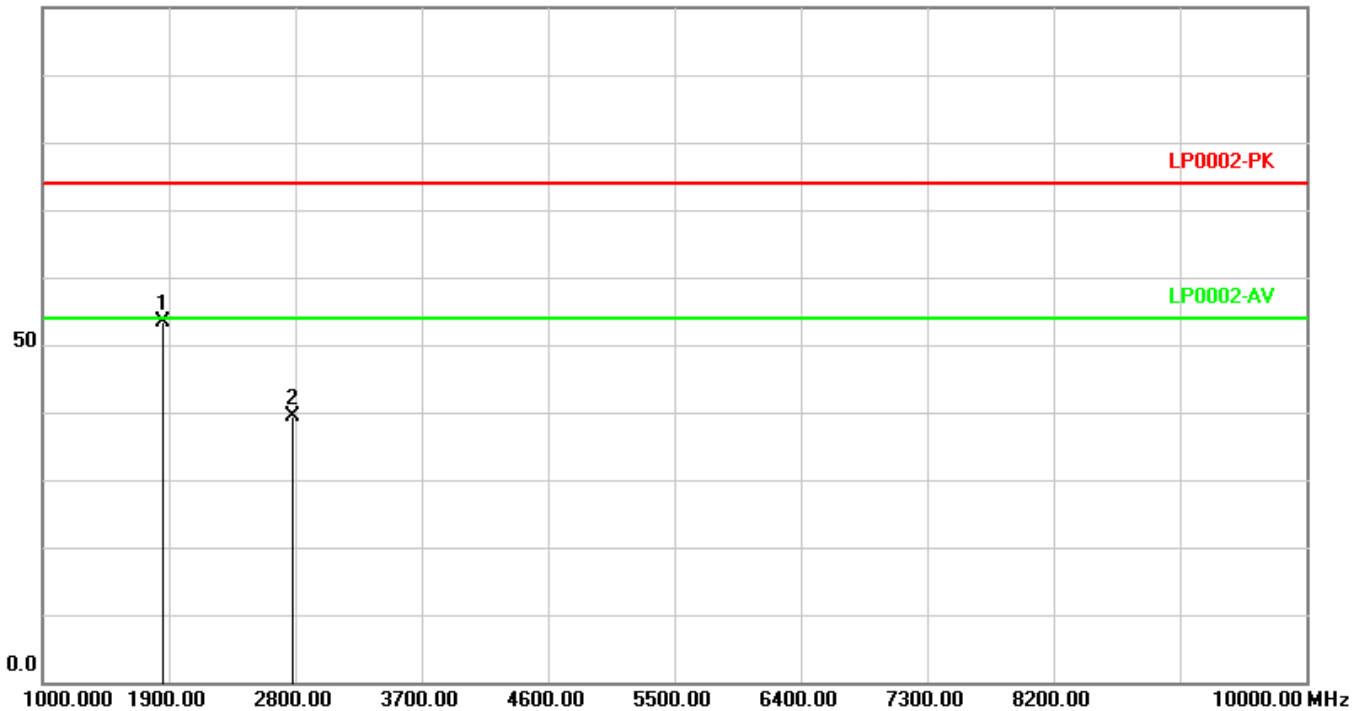
Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or AVG measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor
3. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz), therefore no data appear in the report.



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 927.750MHz by ant 2	

100.0 dBuV/m



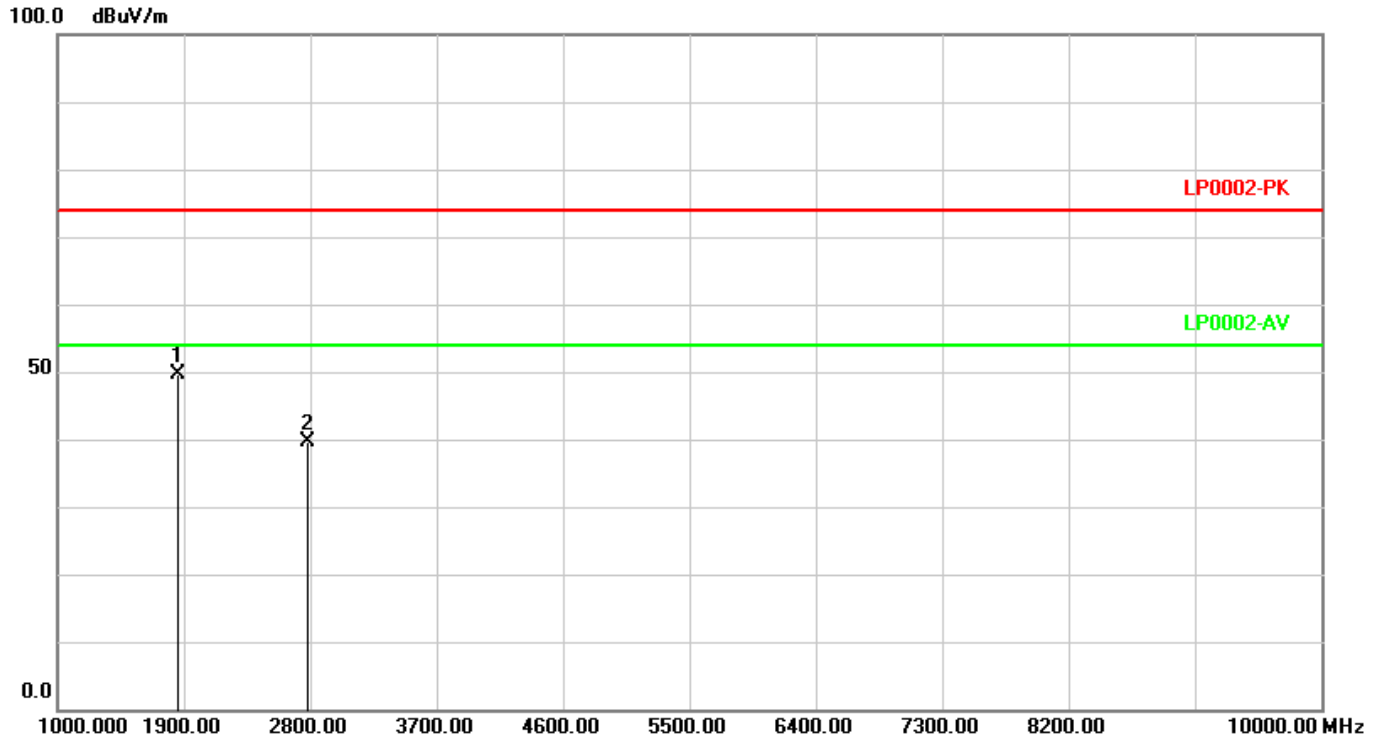
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1855.000	-4.30	57.64	53.34	74.00	-20.66	peak
2	2783.250	-1.48	40.86	39.38	74.00	-34.62	peak

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or AVG measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor
3. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz), therefore no data appear in the report.



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 927.750MHz by ant 3	



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1855.000	-4.30	54.03	49.73	74.00	-24.27	peak
2	2783.250	-1.48	41.21	39.73	74.00	-34.27	peak

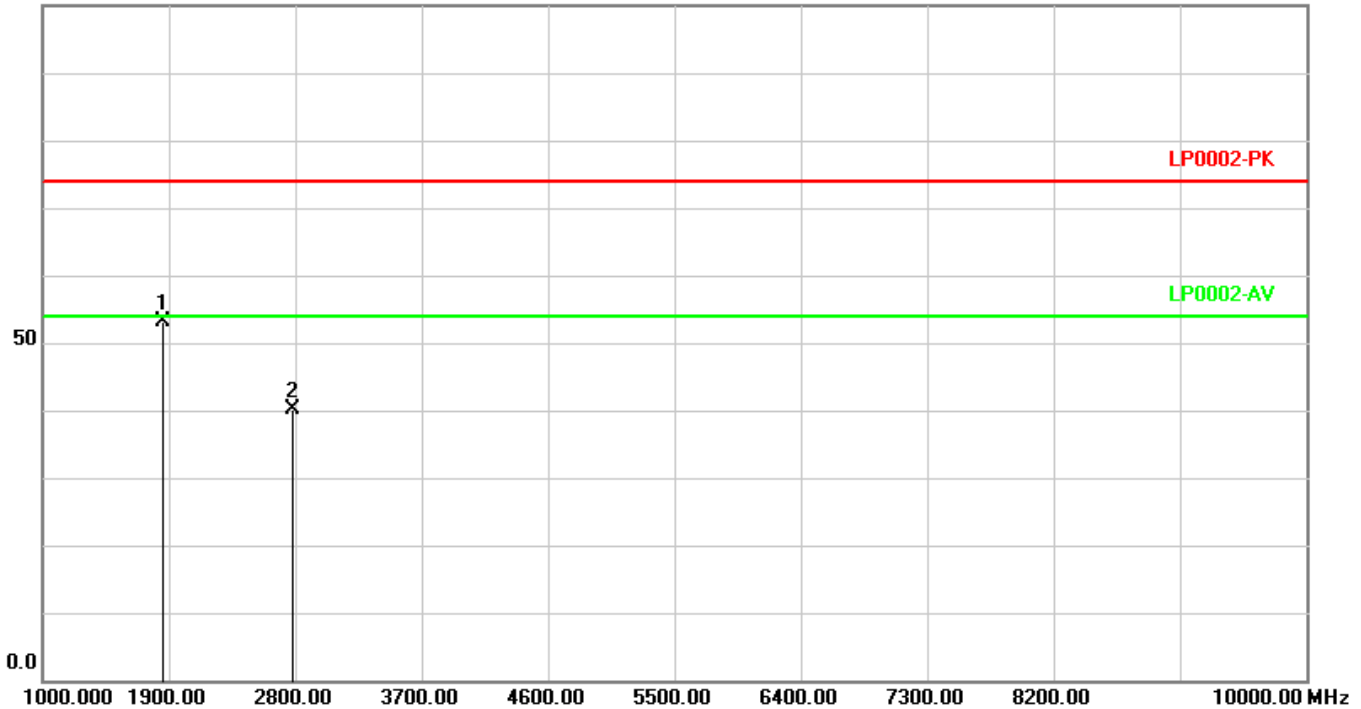
Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or AVG measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor
3. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz), therefore no data appear in the report.



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 927.750MHz by ant 3	

100.0 dBuV/m



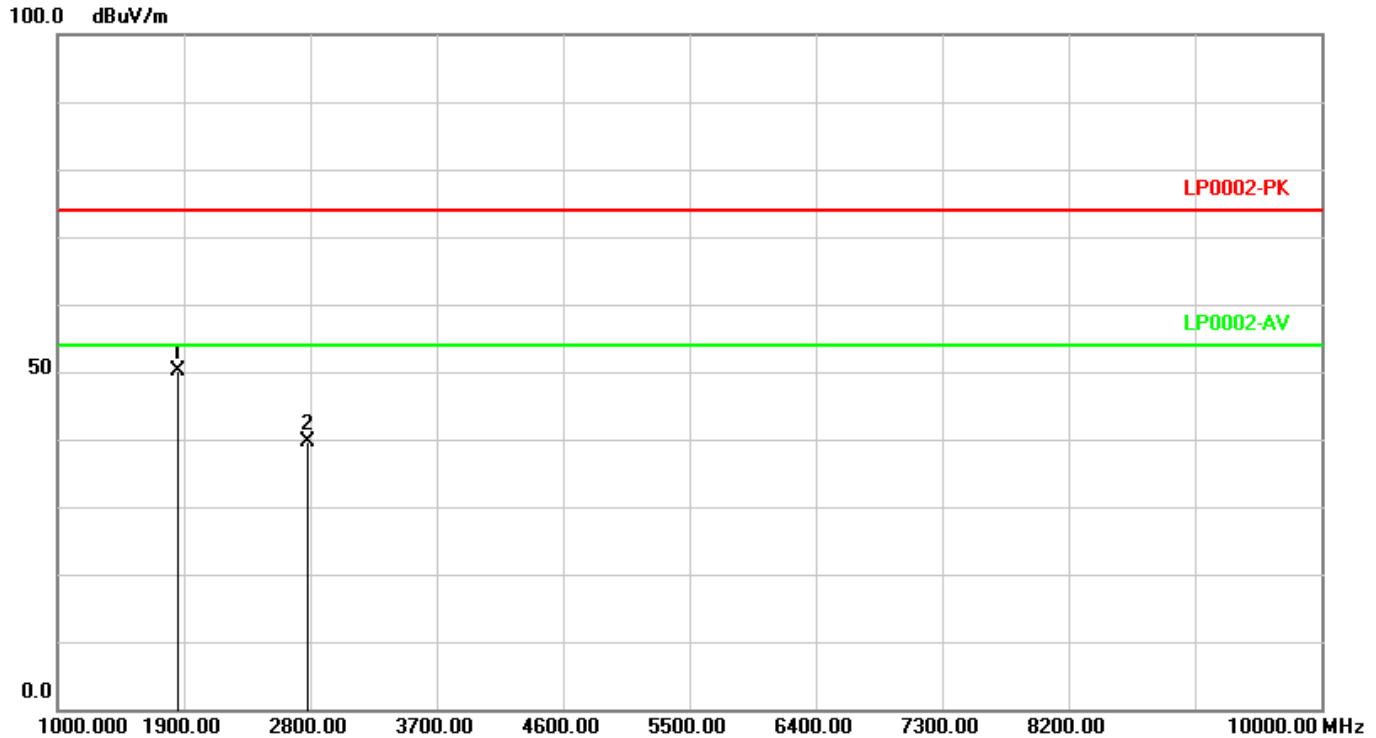
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1855.000	-4.30	57.49	53.19	74.00	-20.81	peak
2	2783.250	-1.48	41.60	40.12	74.00	-33.88	peak

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or AVG measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor
3. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz), therefore no data appear in the report.



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 927.750MHz by ant 4	



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1855.000	-4.30	54.39	50.09	74.00	-23.91	peak
2	2783.250	-1.48	41.12	39.64	74.00	-34.36	peak

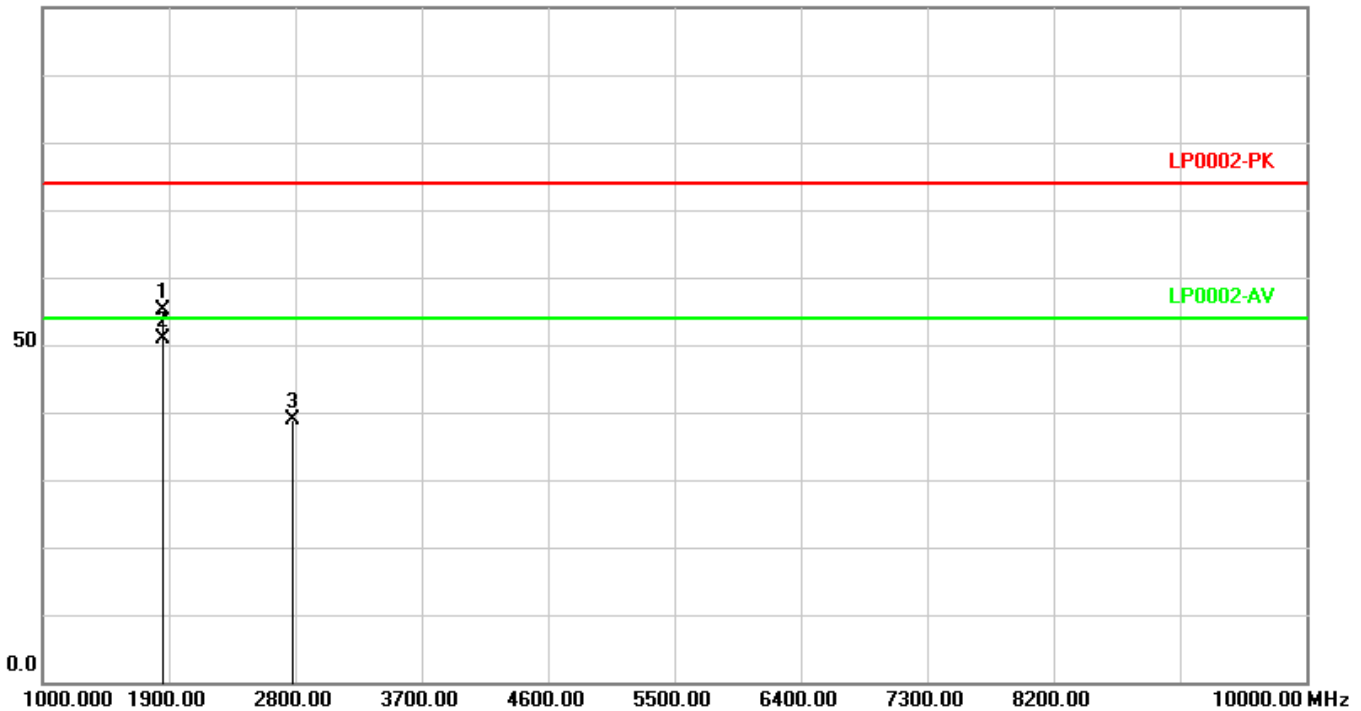
Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or AVG measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor
3. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz), therefore no data appear in the report.



Test Engineer: Nick	Temp.(C)/Hum.(%): 26(°C)/60%
Limit: LP0002	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: Thing Magic	Power: AC 110V/60Hz
Mode: Transmit at channel 927.750MHz by ant 4	

100.0 dBuV/m



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1855.000	-4.30	59.52	55.22	74.00	-18.78	peak
2	1855.560	-4.30	55.22	50.92	54.00	-3.08	AVG
3	2783.250	-1.48	40.28	38.80	74.00	-35.20	peak

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or AVG measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor
3. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz), therefore no data appear in the report.

5.5. 輻射量測之配置照片

30MHz ~ 1000MHz



1GHz~10GHz





6. 傳導之量測規定

6.1. 適用標準

☒	跳頻系統	(a) 跳頻系統之載波頻率頻道間隔應至少 25kHz 或跳頻頻道之 20dB 頻寬，兩者取較寬者。系統之跳頻頻道應依虛擬亂數排列，在各頻率之跳頻頻道上跳躍。每一發射機必須均等的使用每一頻率。 (b) 跳頻頻道之 20 dB 頻寬及使用頻道數：當跳頻頻道之 20 dB 頻寬小於或等於 250kHz 者，須至少使用 X 個(含)跳頻頻道。當跳頻頻道之 20 dB 頻寬大於 250 kHz 者，須至少使用 X/2 個(含)跳頻頻道。跳頻頻道之 20 dB 頻寬最大不得超過 500 kHz。 $X = \text{使用頻帶 (MHz)} / 26 * 50$，並採無條件進位法至整數，且 $X \geq 10$ (c) 操作於跳頻頻道系統，其每一載波頻率在週期(跳頻頻道數乘以 0.4 秒)內，任一頻率每次出現佔用之平均時間不得超過 0.4 秒。
☐	數位調變技術系統	(a) 6dB 頻寬至少應有 500kHz。 (b) 在使用頻帶範圍之任意 3kHz 頻寬內，由發射機傳導至天線之峰值發射電功率密度在任意期間內，皆不得大於 8dBm
☐	跳頻與數位調變技術之複合系統	複合系統之跳頻作業，關閉直接序列或數位調變作業時，其每一載波頻率在週期 (跳頻頻道數乘以 0.4 秒)內，每次出現所佔用之平均時間不得超過 0.4 秒。 (b) 關閉跳頻作業之複合系統以數位調變技術作業時，應符合本節 4.8.1.4 其他限制事項(2)數位調變技術系統(B)項之發射電功率密度規定。



測試方法

20 dB 頻寬：

頻譜分析儀設定如下：

1. 頻率掃描範圍約為 20dB 頻寬之 2 到 3 倍，中心頻率為跳頻頻道。
2. 解析頻寬不小於 20dB 頻寬的 1%，視訊頻寬不小於解析頻寬。
3. 掃描時間為自動，檢波功能為峰值，訊號軌跡為最大保留(Max Hold)。
4. 受測物必須以最大資料傳輸率發射，利用記號至波峰(Mark to Peak)功能以標記波峰。
5. 利用差值記號功能以測量發射之 20dB 頻寬。若該值會因不同操作模式而異，對不同模式重複此測試。

載波頻率間隔：

(一) 啟動受測物之跳頻功能。

(二) 頻譜分析儀設定如下：

1. 頻率掃描範圍寬度足以測得兩鄰近頻道之波峰。
2. 解析頻寬不小於 1%的頻率掃描範圍，視訊頻寬不小於解析頻寬。
3. 掃描時間為自動，檢波功能為峰值，訊號軌跡為最大保留(Max Hold)。
4. 利用差值記號功能以決定兩鄰近頻道波峰之間隔

跳頻頻率數目：

(一) 啟動受測物之跳頻功能。

(二) 頻譜分析儀設定如下：

1. 頻率掃描範圍為受測物之操作頻帶。
2. 解析頻寬不小於 1%的頻率掃描範圍，視訊頻寬不小於解析頻寬。
3. 掃描時間為自動，檢波功能為峰值，訊號軌跡為最大保留(Max Hold)。

佔用時間（停留時間）：

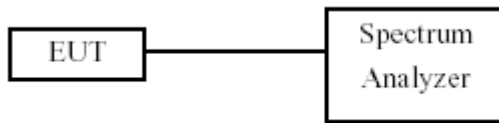
(一) 啟動受測物之跳頻功能。

(二) 頻譜分析儀設定如下：

1. 頻率掃描範圍為零，中心頻率為跳頻頻道，解析頻寬為 1MHz，視訊頻寬不小於解析頻寬。
2. 掃描時間為足以測得每一個跳頻頻道之所有停留時間。
3. 檢波功能為峰值，訊號軌跡為最大保留(Max Hold)。
4. 利用差值記號功能以決定停留時間。若該值會因不同操作模式而異，對不同模式重複此測試。



6.2. 測試配置

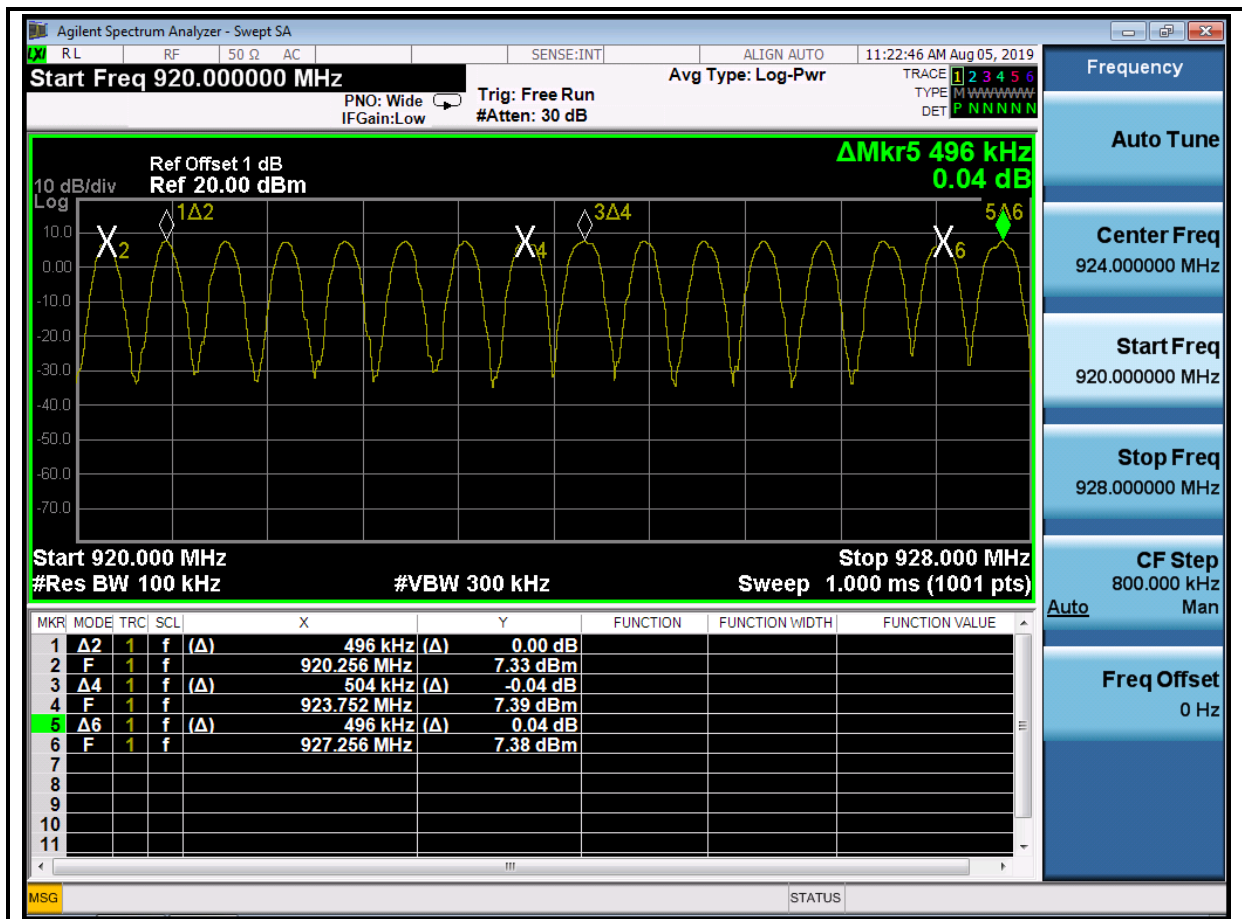




6.3. 載波頻率頻道間隔應

Test Item	:	Channel Carrier Frequency Separation
Test Mode	:	Mode 1: Ant 1

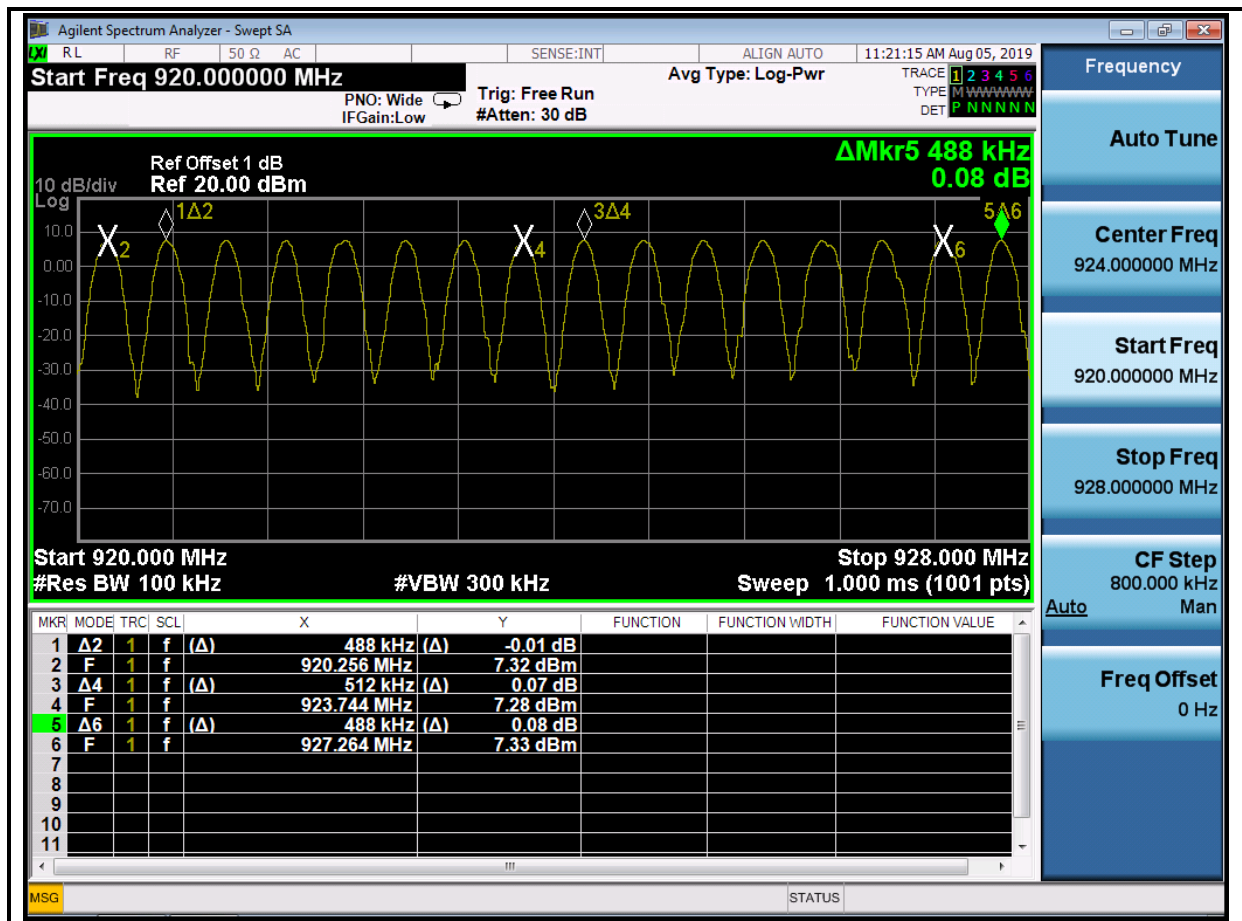
Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
01	920.250	496	>25 kHz or 20 dB BW	Pass
09	924.250	504	>25 kHz or 20 dB BW	Pass
16	927.750	496	>25 kHz or 20 dB BW	Pass





Test Item	:	Channel Carrier Frequency Separation
Test Mode	:	Mode 1: Ant 2

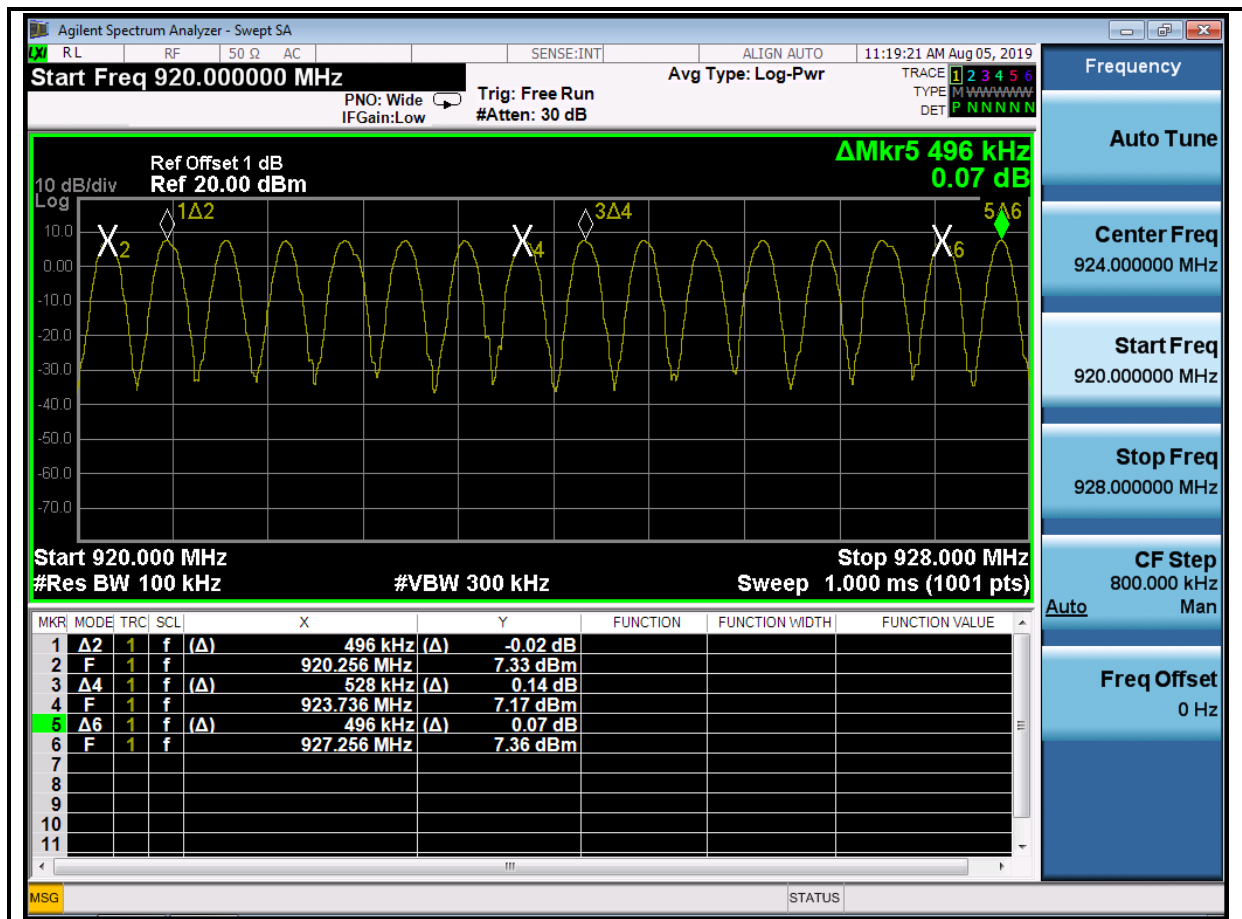
Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
01	920.250	488	>25 kHz or 20 dB BW	Pass
09	924.250	512	>25 kHz or 20 dB BW	Pass
16	927.750	488	>25 kHz or 20 dB BW	Pass





Test Item	:	Channel Carrier Frequency Separation
Test Mode	:	Mode 1: Ant 3

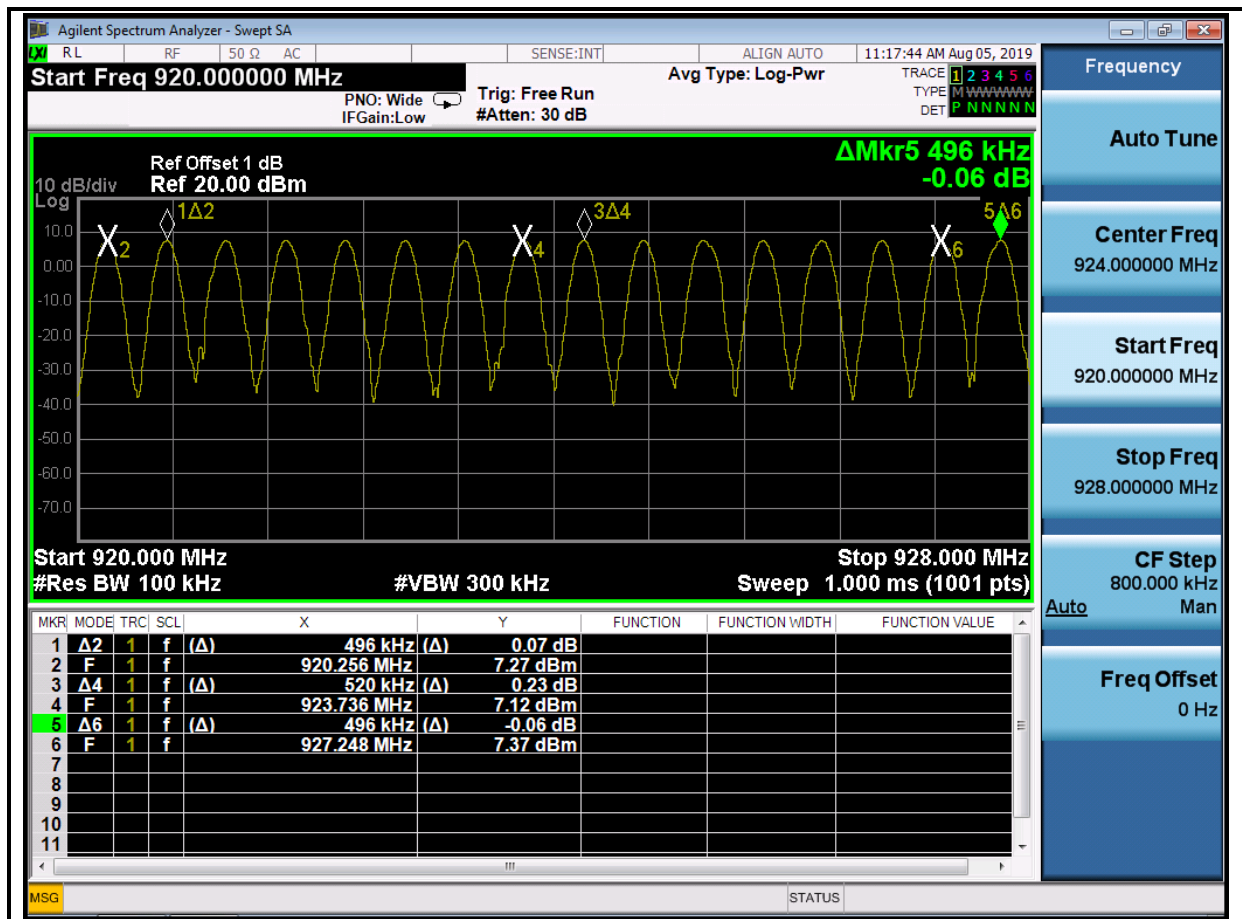
Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
01	920.250	496	>25 kHz or 20 dB BW	Pass
09	924.250	528	>25 kHz or 20 dB BW	Pass
16	927.750	496	>25 kHz or 20 dB BW	Pass





Test Item	:	Channel Carrier Frequency Separation
Test Mode	:	Mode 1: Ant 4

Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
01	920.250	496	>25 kHz or 20 dB BW	Pass
09	924.250	520	>25 kHz or 20 dB BW	Pass
16	927.750	496	>25 kHz or 20 dB BW	Pass

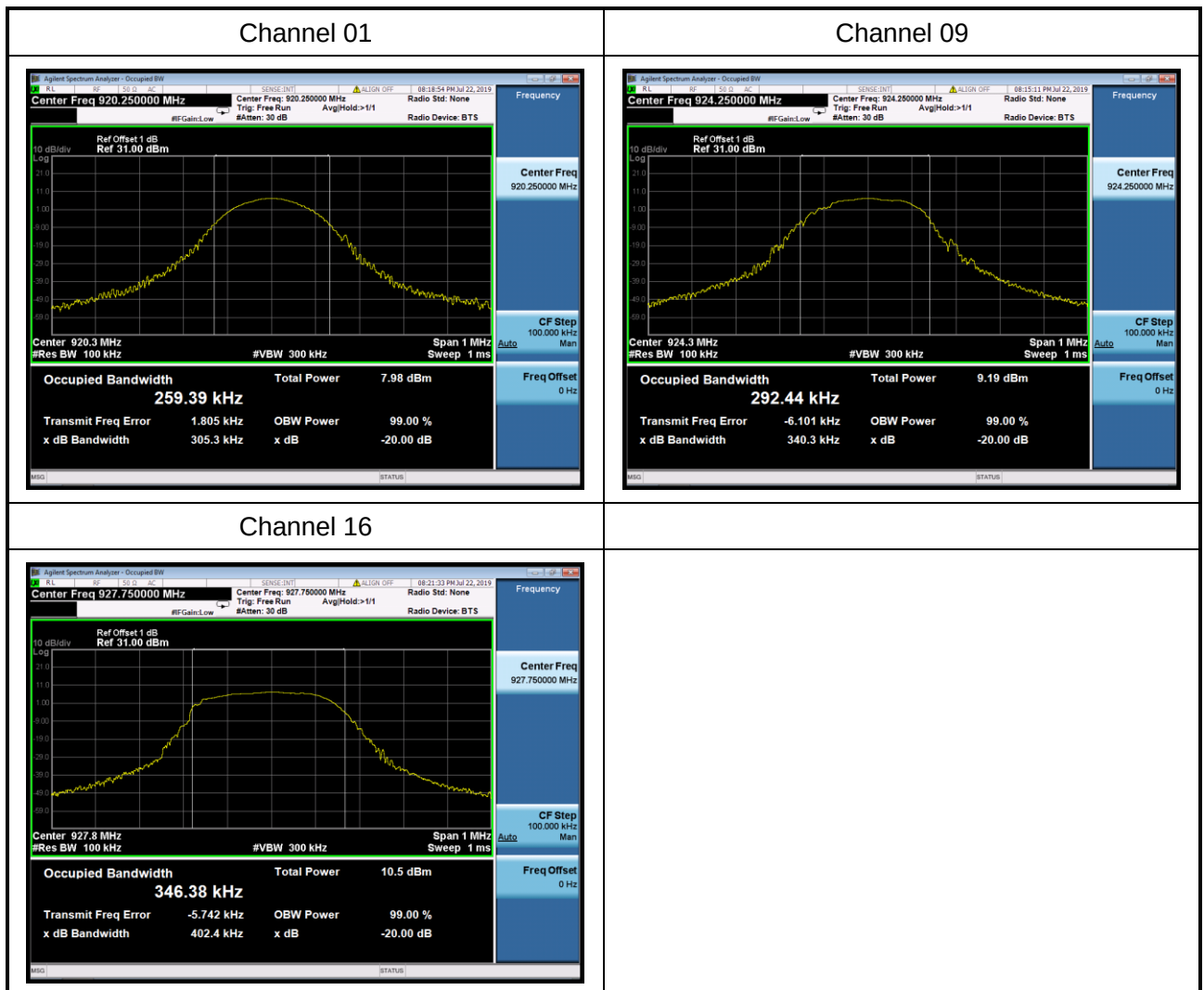




6.4. 20dB 頻寬之測試結果及數據

Test Item	20dB 頻寬
Test Antenna	Ant 1
Test Date	2017-07-22

Channel No.	Frequency (MHz)	Measurement Level (KHz)	Result
01	920.250	305.3	Pass
09	924.250	340.3	Pass
16	927.750	402.4	Pass

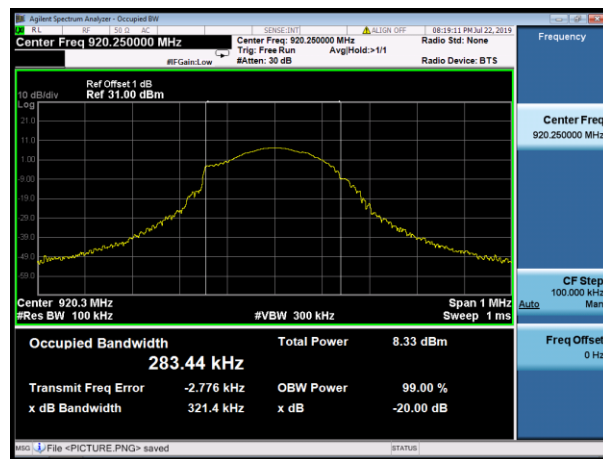




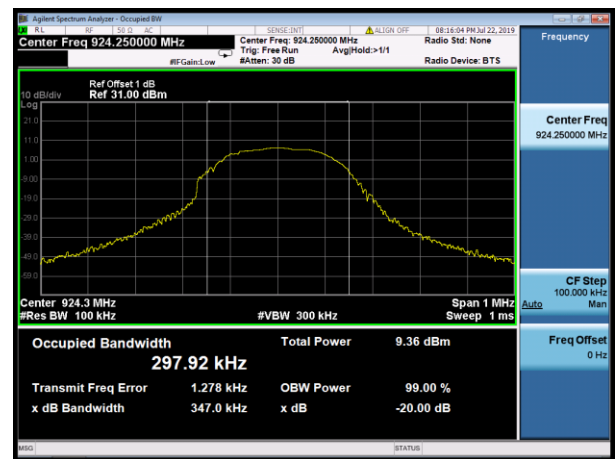
Test Item	20dB 頻寬
Test Antenna	Ant 2
Test Date	2017-07-22

Channel No.	Frequency (MHz)	Measurement Level (KHz)	Result
01	920.250	321.4	Pass
09	924.250	347.0	Pass
16	927.750	400.3	Pass

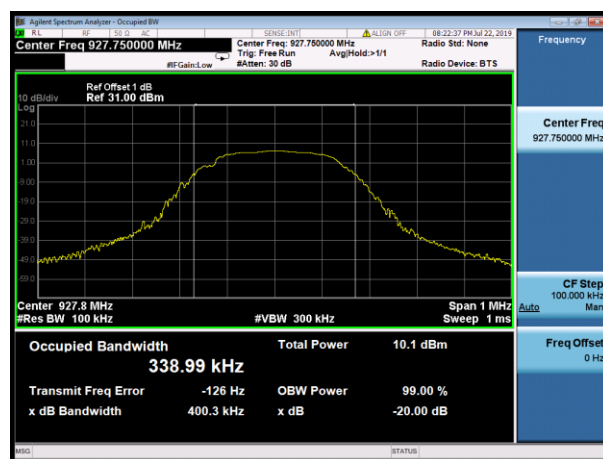
Channel 01



Channel 09



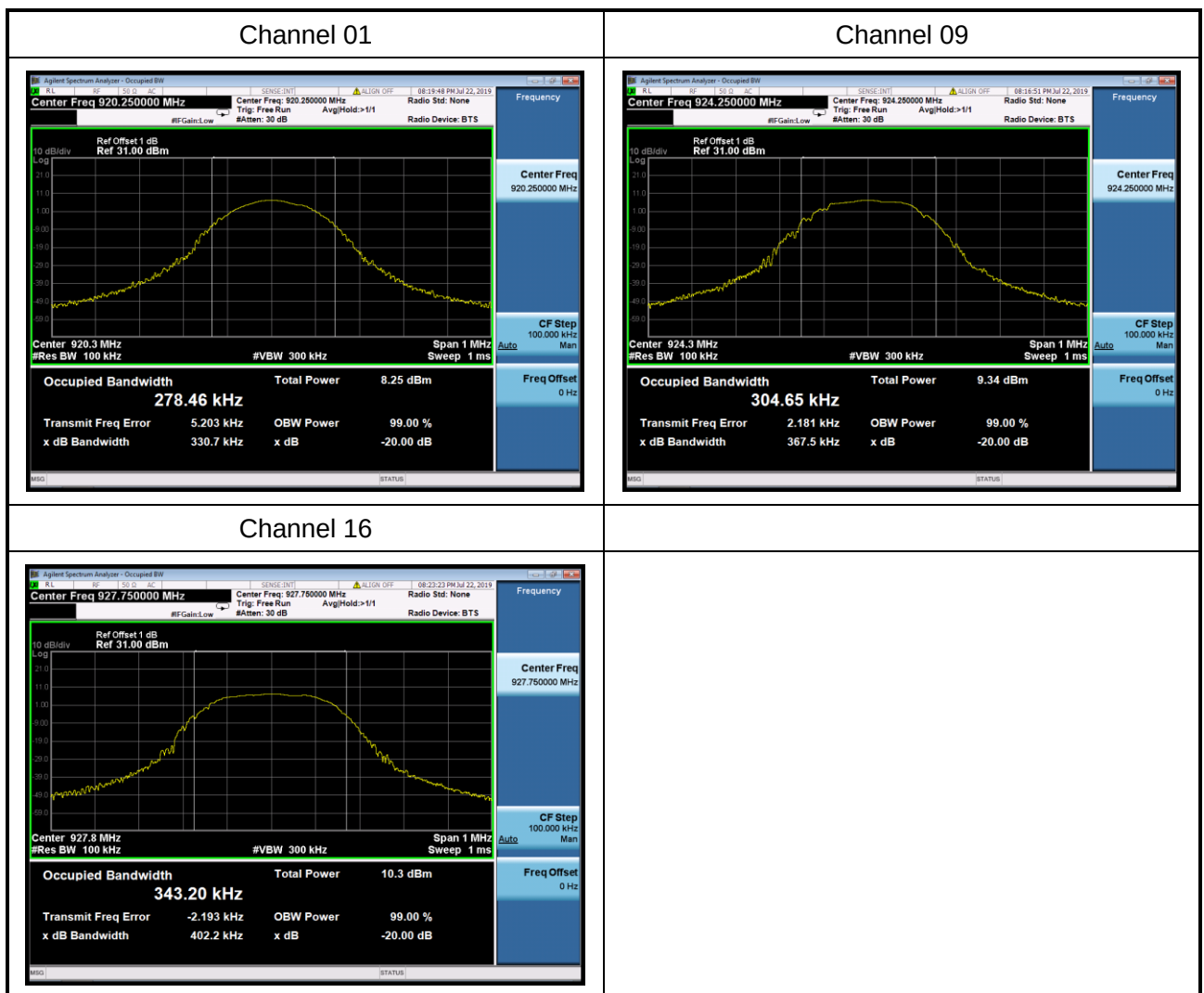
Channel 16





Test Item	20dB 頻寬
Test Antenna	Ant 3
Test Date	2017-07-22

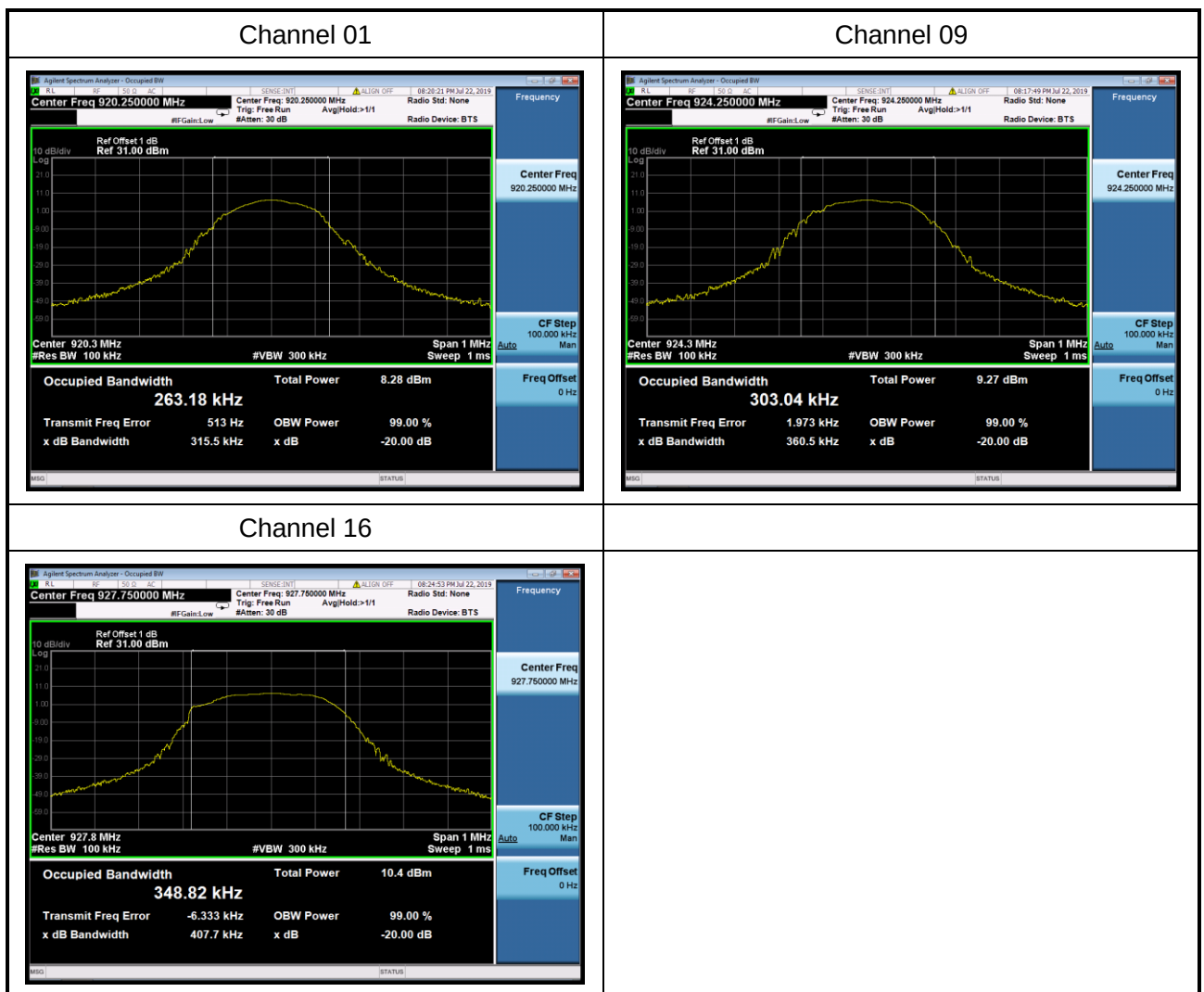
Channel No.	Frequency (MHz)	Measurement Level (KHz)	Result
01	920.250	330.7	Pass
09	924.250	367.5	Pass
16	927.750	402.2	Pass





Test Item	20dB 頻寬
Test Antenna	Ant 4
Test Date	2017-07-22

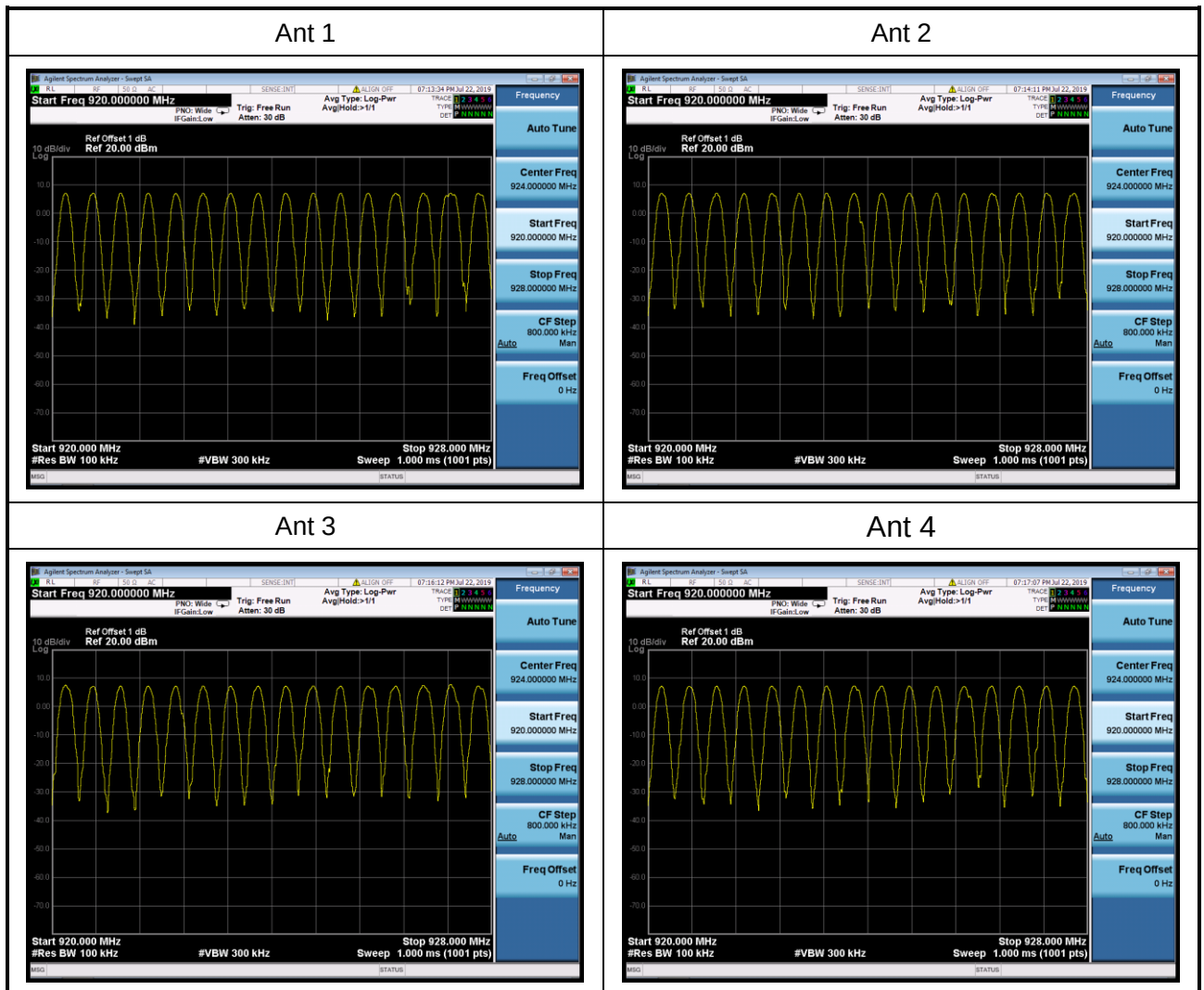
Channel No.	Frequency (MHz)	Measurement Level (KHz)	Result
01	920.250	315.5	Pass
09	924.250	360.5	Pass
16	927.750	407.7	Pass





6.5. 跳頻頻道數之測試結果及數據

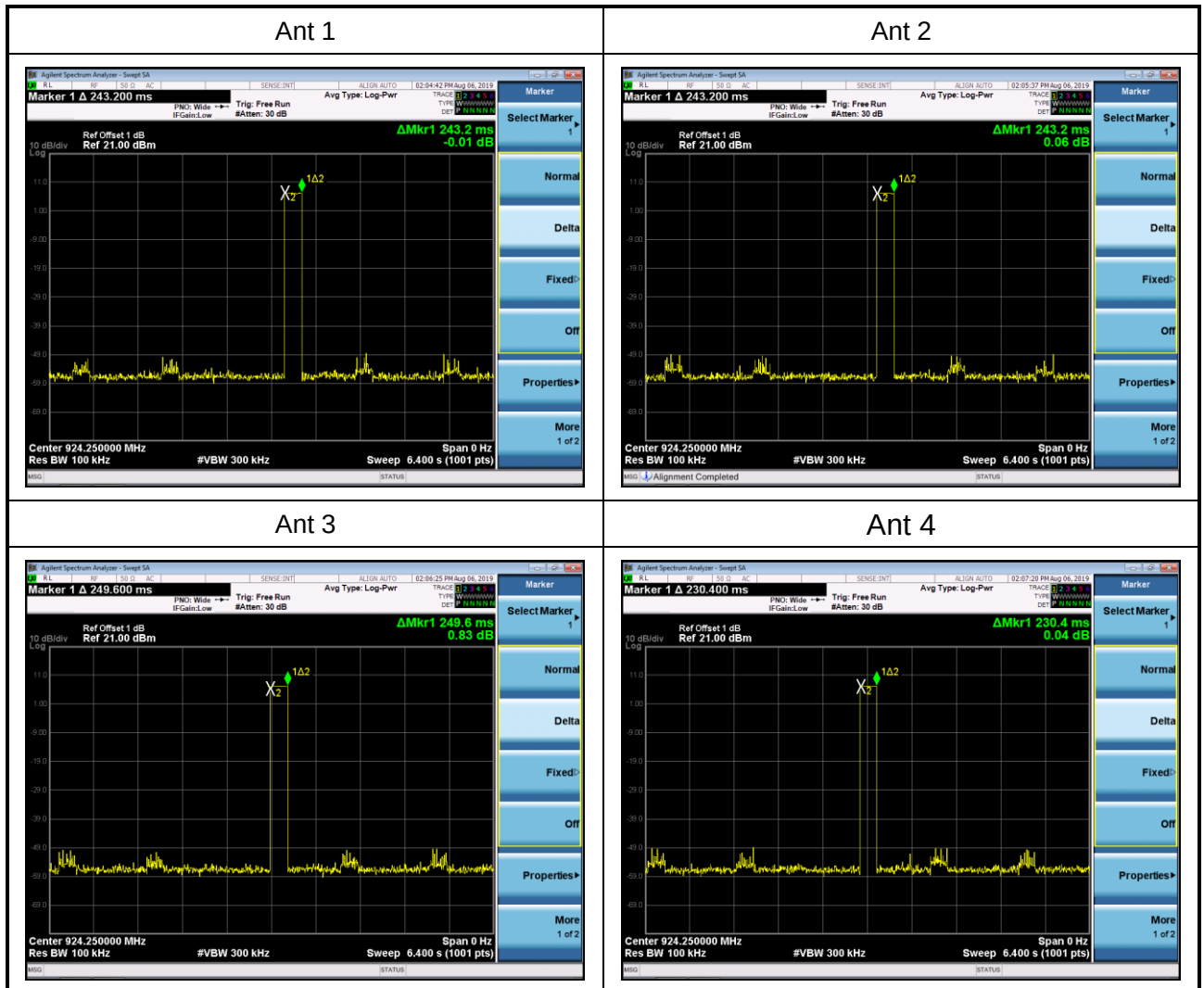
Frequency Range (MHz)	Test Antenna	Channel Number	Channel Number Limit	Pass/Fail
920-928	Ant 1	16	8	PASS
920-928	Ant 2	16	8	PASS
920-928	Ant 3	16	8	PASS
920-928	Ant 4	16	8	PASS





6.6. 暫留時間之測試結果及數據

Frequency (MHz)	Test Antenna	Test Result (ms)	Limit (ms)	Pass/Fail
924.25	Ant 1	243.2	400.0	PASS
924.25	Ant 2	243.2	400.0	PASS
924.25	Ant 3	249.6	400.0	PASS
924.25	Ant 4	230.4	400.0	PASS

Test Time Period: $0.4 \times 16 = 6.4 \text{ sec}$ 



7. 頻帶邊緣與混附發射之 RF 傳導發射量測規定

7.1. 適用標準

使用頻帶範圍外之任意 100KHz 內，發射器所產生的射頻功率相較於使用頻帶範圍中包含最高所需功率之 100KHz 內的射頻功率，以射頻傳導或輻射方式量測峰值須衰減 20dB 以上，量測均方根值須衰減 30dB 以上。此外，落於 LP0002 2.7 禁用頻帶之輻射發射，應符合 LP0002 2.8 之規定

主發射波：距器材 3 公尺處之主波電場強度及其諧波電場強度限制值如下表，指定頻段外之發射除諧波外應比主波低 50 dB 以上或依 LP0002 2.8 之發射限制，兩者可擇一適用之。

主波電場強度 (mV/m)	諧波電場強度 (uV/m)
50	500

7.2. 測試方法

頻帶邊緣之 RF 傳導發射：

(一) 頻譜分析儀設定如下：

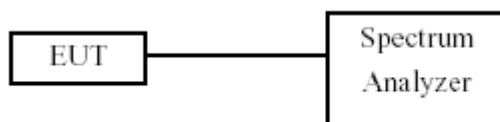
1. 頻率掃描範圍足以涵蓋操作在最靠近頻帶邊緣之頻道的發射波峰位準以及任何落於許可頻帶外之調變產物。
2. 解析頻寬大於 1% 頻率掃描範圍寬度，視訊頻寬不小於解析頻寬。
3. 掃描時間為自動，檢波功能為峰值，訊號軌跡為最大保留(Max Hold)。
4. 將標記設定於在頻帶邊緣上的發射，或將標記設定於最大之頻帶外調變產物上若其位準大於頻帶邊緣上的發射。
5. 啟動標記差值之功能，利用標記至波峰功能(Marker to Peak)功能以標記頻帶內發射之波峰，所顯示之標記差值必須符合指定之限制值。
6. 利用相同的儀器設定，使受測物操作於跳頻功能。
7. 以上述相同的步驟決定由跳頻功能所產生的任何混附波是否亦符合規定之限制值。

混附發射之 RF 傳導發射：

(一) 頻譜分析儀設定如下：

1. 頻率掃描範圍足以檢測頻帶內的發射波峰位準以及由受測物產生之最低頻率到第 10 次諧波的所有混附發射，通常需要分幾段以涵蓋全部頻率範圍。
2. 解析頻寬為 100kHz，視訊頻寬不小於解析頻寬。
3. 掃描時間為自動，檢波功能為峰值，訊號軌跡為最大保留(Max Hold)。
4. 將標記設定於任何欲紀錄之波峰上，所顯示之位準值必須符合指定之限制值。

7.3. 測試配置

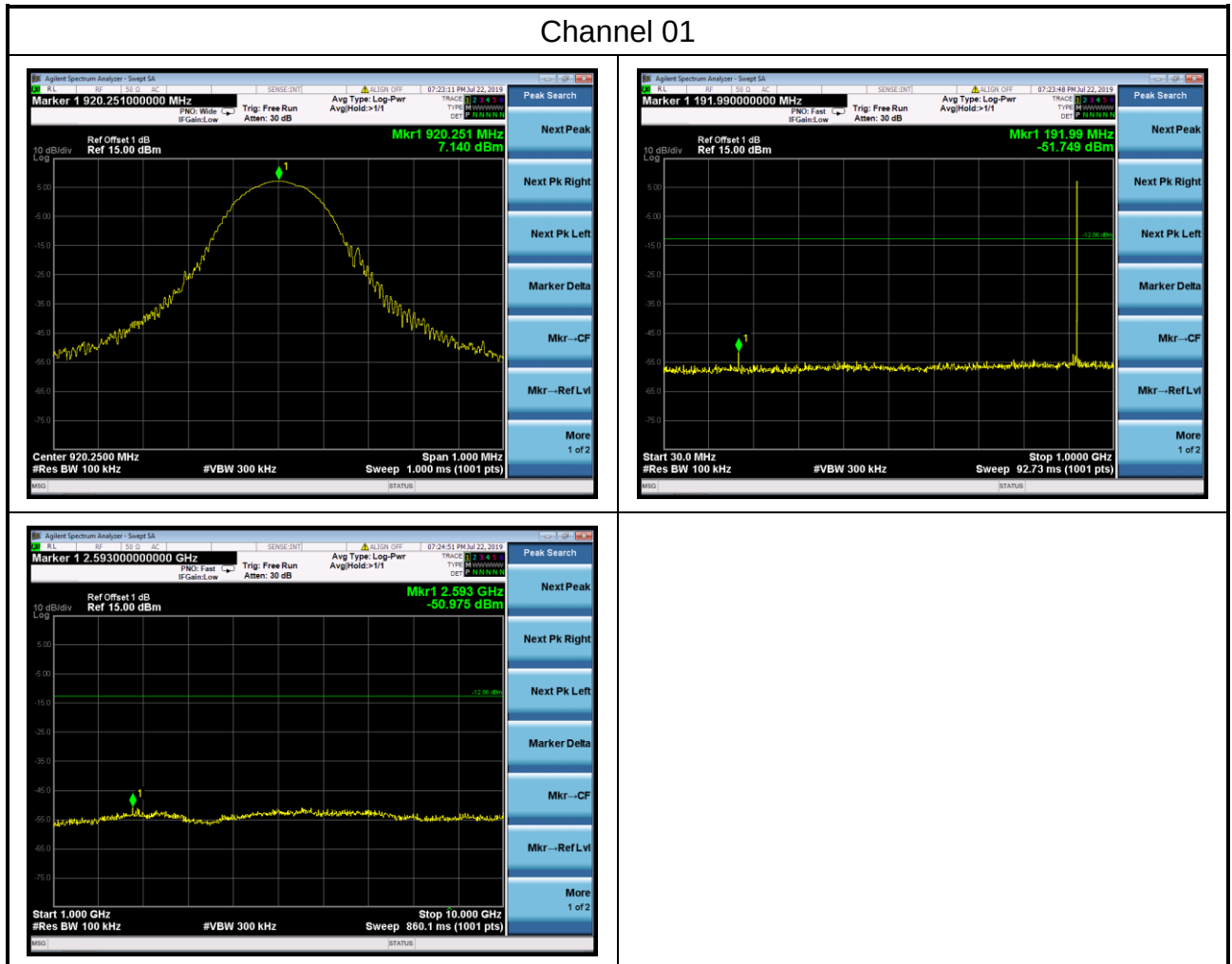




7.4. 頻帶邊緣與混附發射之測試結果及數據

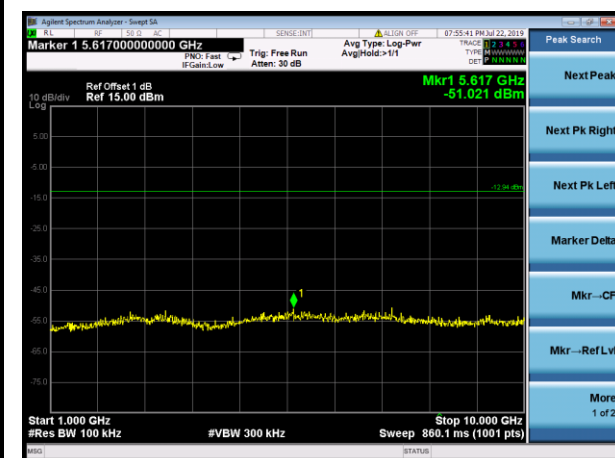
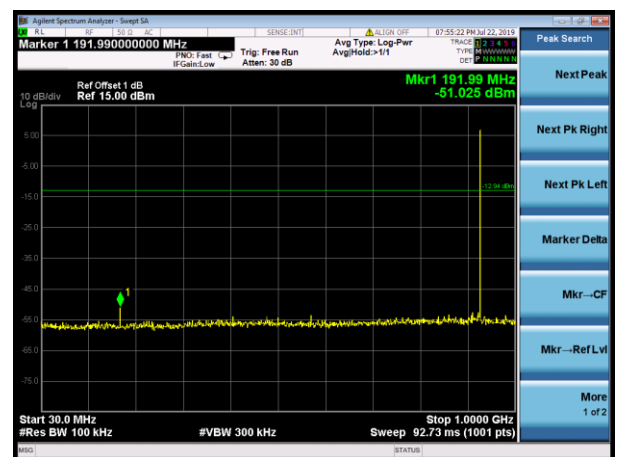
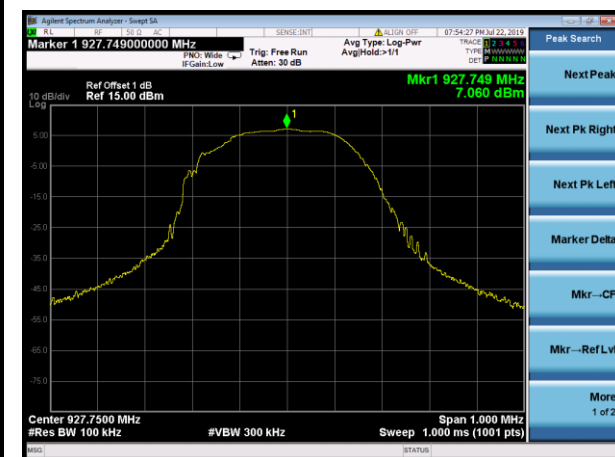
Test Item	RF 傳導發射量測
Test Antenna	Ant 1
Test Date	2017-07-22

Channel 01





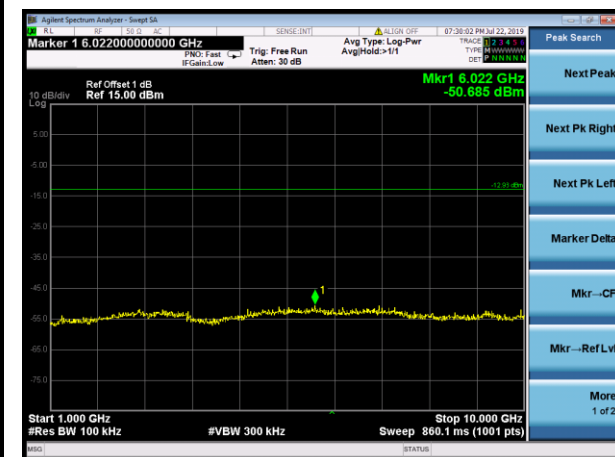
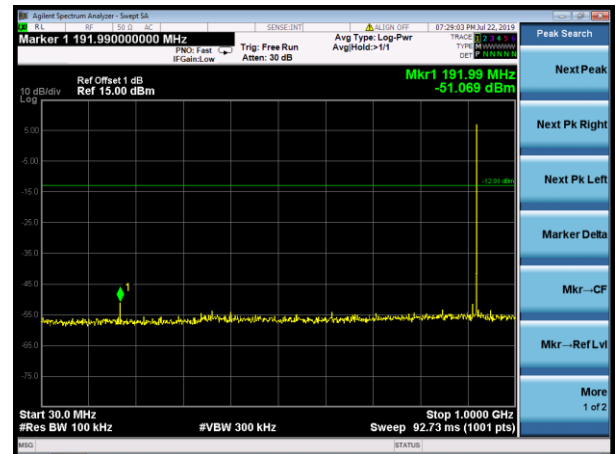
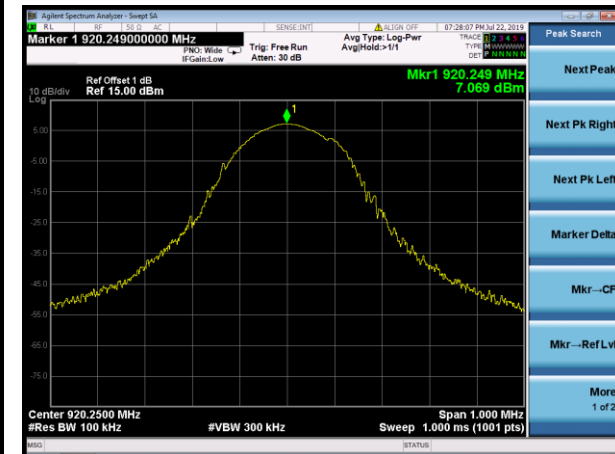
Channel 16





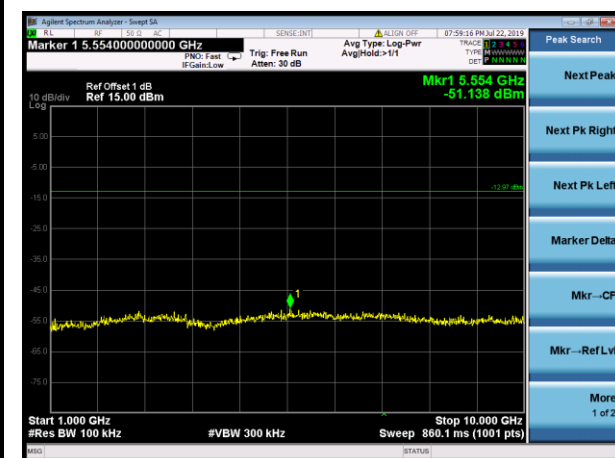
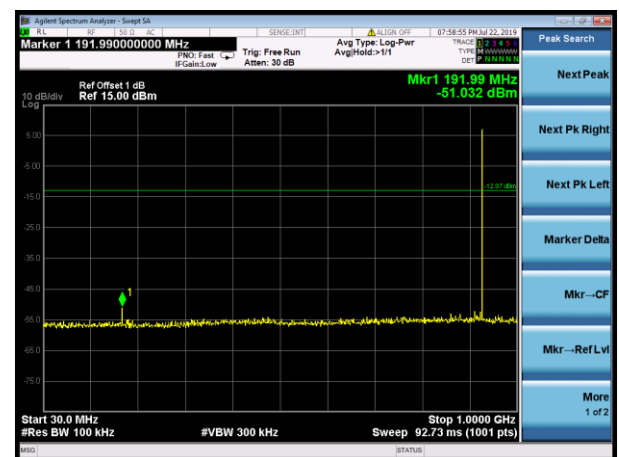
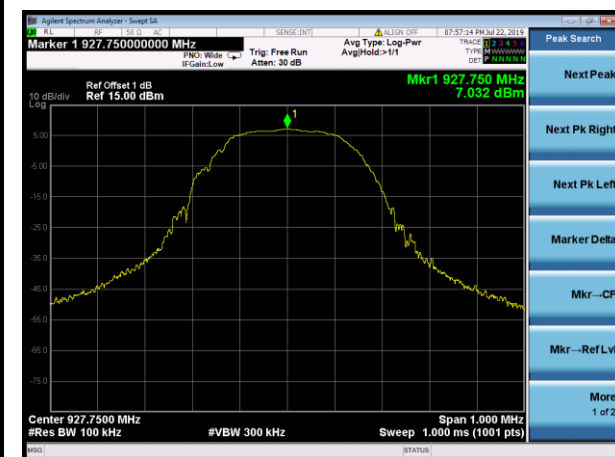
Test Item	RF 傳導發射量測
Test Antenna	Ant 2
Test Date	2017-07-22

Channel 01





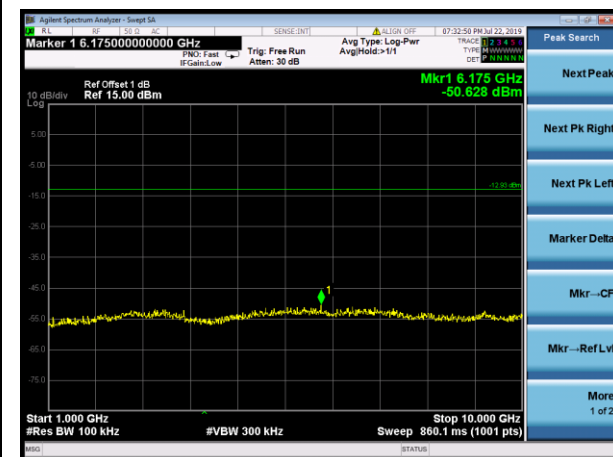
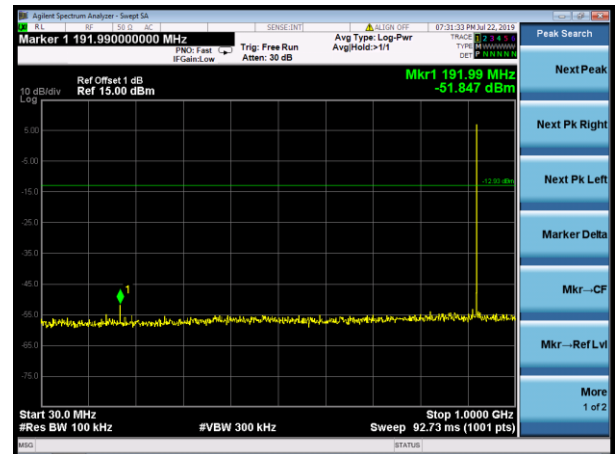
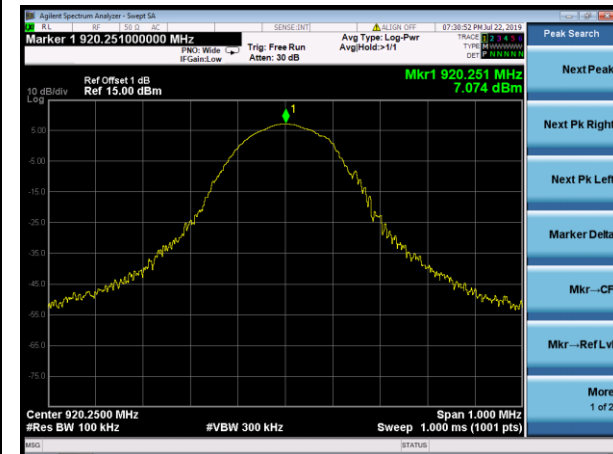
Channel 16





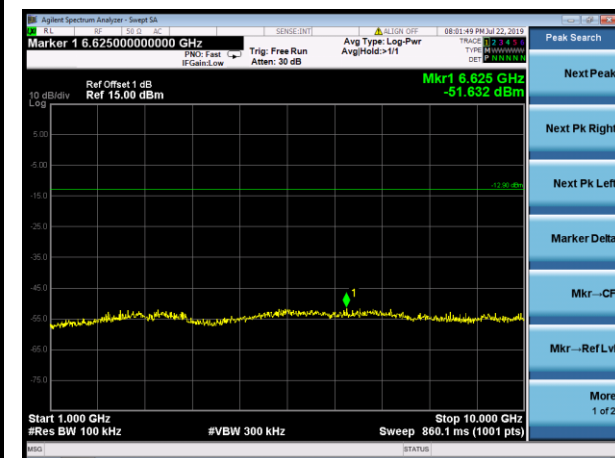
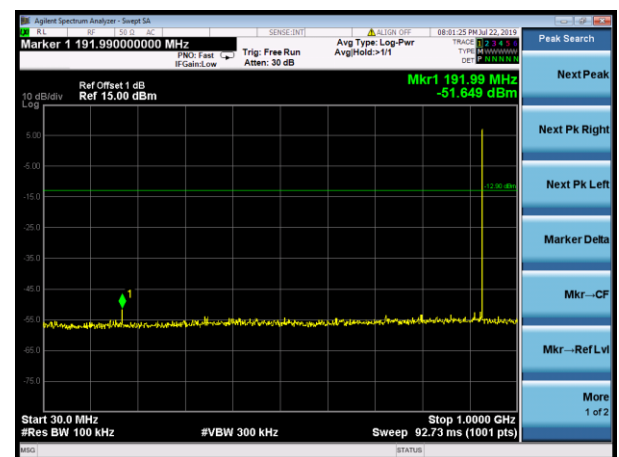
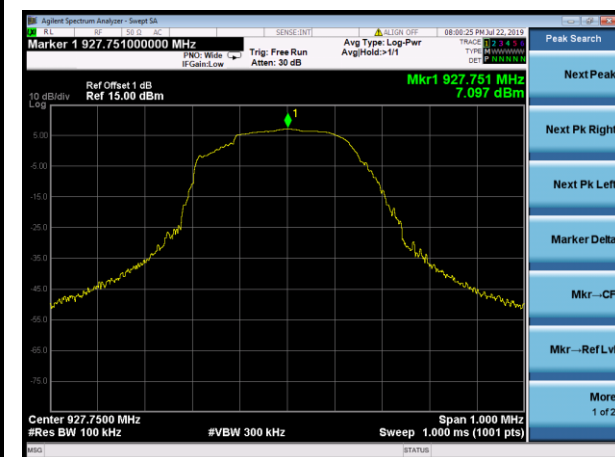
Test Item	RF 傳導發射量測
Test Antenna	Ant 3
Test Date	2017-07-22

Channel 01





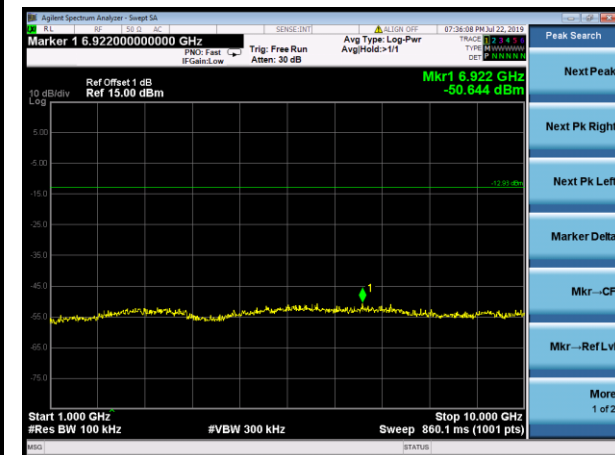
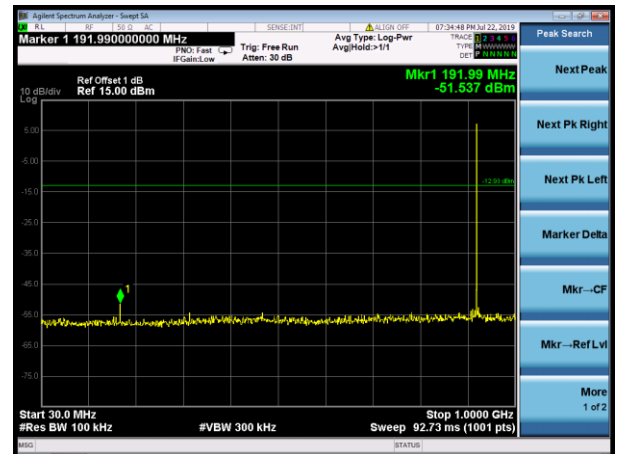
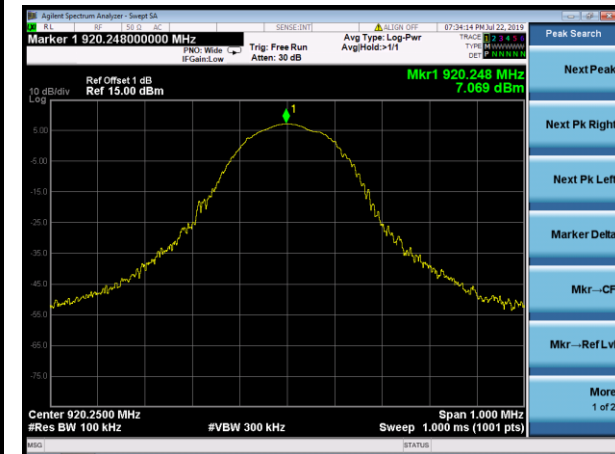
Channel 16





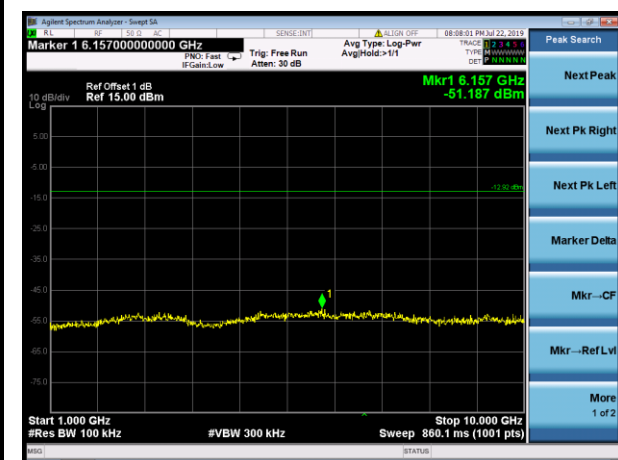
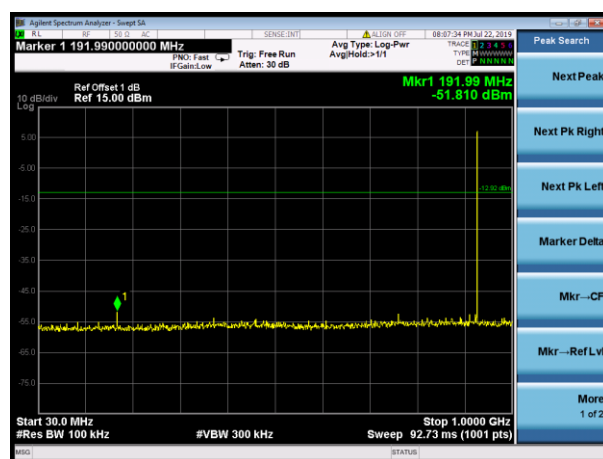
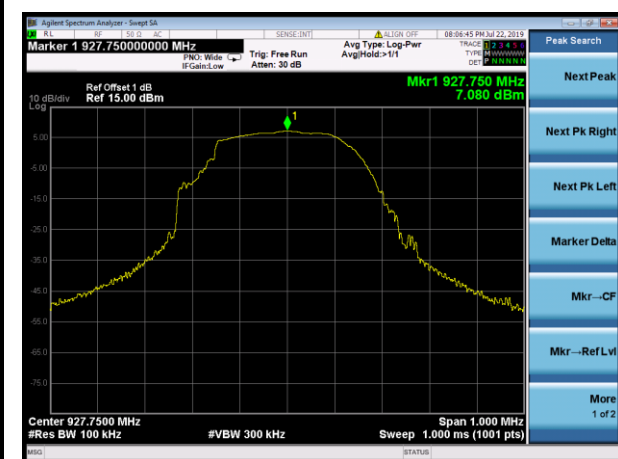
Test Item	RF 傳導發射量測
Test Antenna	Ant 4
Test Date	2017-07-22

Channel 01





Channel 16





8. 峰值輸出功率量測規定

8.1. 適用標準

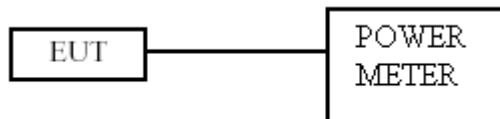
功率限制：

1. 器材設置場所及其峰值輸出功率限制值：
 - (a) 設置於室內或特殊場所者：最大峰值輸出功率 1 瓦（含）以下。
 - (b) 設置於室外者：最大峰值輸出功率 0.5 瓦（含）以下。
 - (c) 前揭（a）所稱特殊場所係指於某特定、封閉且管制人員進出之專屬區域（不限室內或室外）場所。
2. 若其發射天線之方向性增益超過 6dBi，應依所超過之 dB 數等量降低峰值輸出功率。

8.2. 測試方法

- a. 將待測物和儀器相連接。
- b. 量測輸出功率並記錄於報告中。

8.3. 測試配置





8.4. 峰值輸出功率之測試結果及數據

Test Ant	Power Index	Test Channel	Measured Power (dBm)	Power Limit (dBm)	Pass/Fail
Ant 1	6	01	7.14	26.99	PASS
	6	09	7.09	26.99	PASS
	6	16	7.06	26.99	PASS
Ant 2	6	01	7.07	26.99	PASS
	6	09	7.08	26.99	PASS
	6	16	7.03	26.99	PASS
Ant 3	6	01	7.07	26.99	PASS
	6	09	7.11	26.99	PASS
	6	16	7.10	26.99	PASS
Ant 4	6	01	7.07	26.99	PASS
	6	09	7.06	26.99	PASS
	6	16	7.08	26.99	PASS



9. 電波暴露量之評估

9.1. 適用標準

依據國家通訊傳播委員會低功率射頻電機技術規範 5.20 節之(5.20.2)規定，若受測物於正常操作模式下，其發射機距離人體 20 公分以上者，可測試最大暴露允許值(Maximum Permissible Exposure, MPE)以證明其符電波暴露量之要求。限制值如下：

(1) 職業性/可控制之暴露

頻率範圍 (MHz)	電場強度 (V/m)	磁場強度 (A/m)	功率密度 (mW/cm ²)	平均時間 (minutes)
0.3-3.0	614	1.63	*100	6
3-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1,500	-----	-----	f/300	6
1,500-100,000	-----	-----	5.0	6

註 1：標記*表平面波等效功率密度。

註 2：f 表測試頻率，單位：百萬赫(MHz)。

(2) 一般人/不可控制之暴露

頻率範圍 (MHz)	電場強度 (V/m)	磁場強度 (A/m)	功率密度 (mW/cm ²)	平均時間 (minutes)
0.3-3.0	614	1.63	*100	30
3-30	1842/f	4.89/f	*180/f ²	30
30-300	27.5	0.073	1.0	30
300-1,500	-----	-----	f/1500	30
1,500-100,000	-----	-----	1.0	30

註 1：標記*表平面波等效功率密度。

註 2：f 表測試頻率，單位：百萬赫(MHz)。



9.2. 電波暴露量之評估結果及數據

Product	Thing Magic
Test Mode	Transmit
Test Condition	RF Exposure Evaluation

Test Antenna	Frequency band (MHz)	Max. Conducted output power(dBm)	Ant Gain(dBi)	Distance (cm)	Power density (mW/cm ²)	Limit (mW/cm ²)
Ant 1	920~928	7.14	2.5	20	0.0018	0.6
Ant 2	920~928	7.08	2.5	20	0.0018	0.6
Ant 3	920~928	7.11	2.5	20	0.0018	0.6
Ant 4	920~928	7.08	2.5	20	0.0018	0.6

9.3. 結果判定

高、中、低頻段的電波暴露量皆低於限制值，合乎標準規定。



10. 限制使用之頻帶

Only spurious emissions are permitted in any of the frequency bands listed below:

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 - 1770.0	14470 - 14500
19.965 - 20.020	1805.0 - 1865.0	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	2015.0 - 2025.0	23600 - 24000
108.00 - 138.00	2125.0 - 2165.0	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	