

NCC

低功率射頻電機型式試驗報告

申請者: Shure Incorporated
地址: 5800 West Touhy Avenue, Niles, IL60714-4608, USA
產品名稱(英文): Digital Handheld Transmitter
型號.: ADX2 G62
廠牌: SHURE
測試標準: LP0002 (107 年版)
結果: Complies
測試日期: December 18, 2017 ~ February 12, 2018

測試工程師 : 
(柯文凱)
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報告簽屬人 : 
(柯承志)



修訂記錄

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1. 一般資訊

申請者	Shure Incorporated
申請者地址	5800 West Touhy Avenue, Niles, IL60714-4608, USA
製造商	Shure Incorporated
製造商地址	5800 West Touhy Avenue, Niles, IL60714-4608, USA
實驗室	台灣曼瑞檢測科技有限公司
實驗室地址	33377 台灣桃園市龜山區復興二路 38 號
實驗室資訊	1. MRT facility is a FCC registered (Reg. No. 291082) test facility with the site description report on file and is designated by the FCC as an Accredited Test Film. 2. MRT facility is an IC registered (MRT Reg. No. 21723-1) test laboratory with the site description on file at Industry Canada. 3. MRT Lab is accredited to ISO 17025 by the Taiwan Accreditation Foundation (TAF Cert. No. 3261) in EMC, Telecommunications and Radio testing for FCC, Industry Taiwan, EU and TELEC Rules.
實驗室測試環境條件	溫度 (°C) : 20-35 / 濕度 (%RH) : 30-65

2. 產品描述

2.1 產品資訊

產品名稱	Digital Handheld Transmitter
產品型號	ADX2 G62
商標	SHURE
頻率範圍	510~ 530MHz
傳導功率等級	2mW & 10mW & 40mW (備註 1)
調製類型	16QAM
通道間隔	25kHz
電池信息 (備註 2)	
可充電鋰電池	Model: SB920 P/N: 95A25763 OUTPUT: 3.6Vdc, 2500mAh,9.0Wh

備註 1: 待測物有三個傳導功率等級(2mW & 10mW & 40mW)，與接收器配對後，可以在接收器螢幕上切換。

備註 2: 待測物使用 Shure SB920 可充電電池來供電。

2.2 操作頻率

通道	頻率
LOW	510.100 MHz
...	...
MID	520.000 MHz
...	...
HIG	529.900 MHz

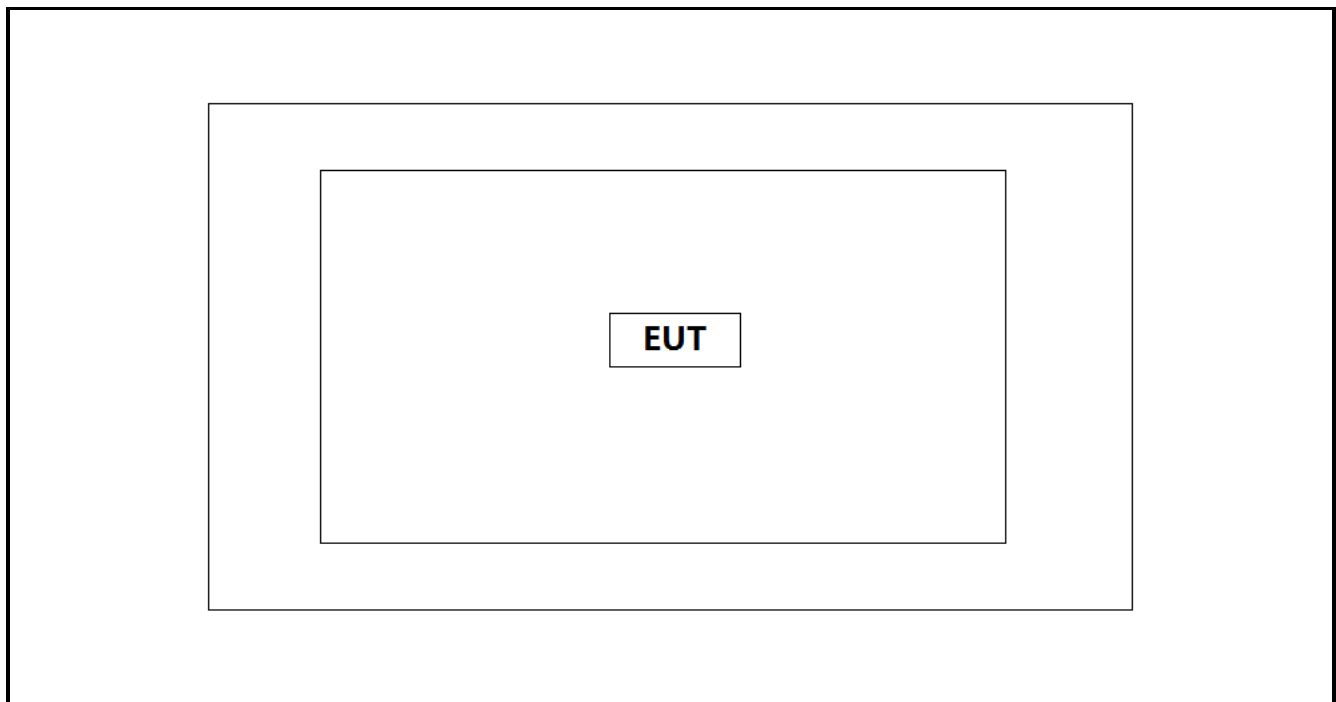
2.3 測試模式

Test Mode
Mode 1: Transmit

2.4 操作程式

The test utility software used during testing was “putty.exe” and choose the related script file to download into the EUT, then start to test.

2.5 測試配置



3. 測試設備明細

Conducted Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTTWA00045	1 year	2018/03/17
Two-Line V-Network	R&S	ENV216	MRTTWA00019	1 year	2018/03/23
Two-Line V-Network	R&S	ENV216	MRTTWA00020	1 year	2018/03/23
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00033	1 year	2018/06/08

Radiated Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Signal Analyzer	R&S	FSV40	MRTTWA00007	1 year	2018/03/02
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2018/03/16
Broadband Preamplifier	SCHWARZBECK	BBV 9718	MRTTWA00005	1 year	2018/04/06
Broadband Amplifier	SCHWARZBECK	BBV 9721	MRTTWA00006	1 year	2018/04/06
Active Loop Antenna	SCHWARZBECK	FMZB 1519B	MRTTWA00002	1 year	2018/04/06
Broadband TRILOG Antenna	SCHWARZBECK	VULB 9162	MRTTWA00001	1 year	2018/04/06
Broadband Horn antenna	SCHWARZBECK	BBHA 9120D	MRTTWA00003	1 year	2018/04/06
Broadband Horn antenna	SCHWARZBECK	BBHA 9170	MRTTWA00004	1 year	2018/04/06
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00033	1 year	2018/06/08

Conducted Test Equipment - SR2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Interval
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2018/07/10
X-Series USB Peak and Average Power Sensor	KEYSIGHT	U2021XA	MRTTWA00014	1 year	2018/03/18
X-Series USB Peak and Average Power Sensor	KEYSIGHT	U2021XA	MRTTWA00015	1 year	2018/03/18
Programmable Temperature & Humidity Chamber	TEN BILLION	TTH-B3UP	MRTTWA00036	1 year	2018/05/11
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00033	1 year	2018/06/08

EMI Test Software

Software	Manufacturer	Version No.
e3	Audix	9.160520a
EMI	Quietek	V3

4. 量測不確定度

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty
Radio Frequency	$< \pm 1 \times 10^{-7}$
Audio Output power	$< \pm 0.5\text{dB}$
Radiated RF power	$< \pm 6\text{dB}$
Conducted RF power variations using a test fixture	$< \pm 0.75\text{dB}$
Maximum frequency deviation:	
-within 300Hz and 6kHz of audio frequency	$< \pm 5\%$
-within 6kHz and 25kHz of audio frequency	$< \pm 3\text{dB}$
Deviation Limitation	$< \pm 5\%$
Radiated emission of transmitter, valid up to 12.75GHz	$< \pm 6\text{dB}$
Radiated emission of receiver, valid up to 12.75GHz	$< \pm 6\text{dB}$

5. 測試摘要

LP0002 章節	量測項目	測試結果	測試數據
2.2 & 4.6.8	天線之要求	符合	第 6 章節
2.3	電源端點干擾測試	符合	第 7 章節
4.6.5	頻率穩定度	符合	第 8 章節
4.6.3	主波發射功率	符合	第 9 章節
4.6.2	必須頻帶寬度	符合	第 10 章節
4.6.6	混附發射	符合	第 11 章節
備註 1: 針對主波發射功率和混附發射, 待測物每個軸向(X, Y, Z)均有評估。報告中呈現最差軸向模式資料。 備註 2: 針對頻率穩定度, 待測物僅評估了最大功率等級。針對其他測試專案, 待測物評估了所有三個不同功率等級。			

6. 電源端點干擾測試

6.1. 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第 2.3 節，以市電為電源之低功率射頻電機，其傳導回電源線上頻率自 150kHz 至 30MHz 之射頻電壓(在電源端子每一電源線對接地點)應小於或等於下表所列之限值。測量時應經過 50 微亨利(μH)及 50 歐姆(Ω)之電源線阻抗模擬網路(LISN)。頻率重疊處，以較低限值為準。

Frequency 頻率範圍 MHz	傳導限制值(dBuV)	
	準尖峰值	平均值
0.15 - 0.50	66 - 56 ^(註)	56 - 46 ^(註)
0.50 - 5.0	56	46
5.0 - 30	60	50

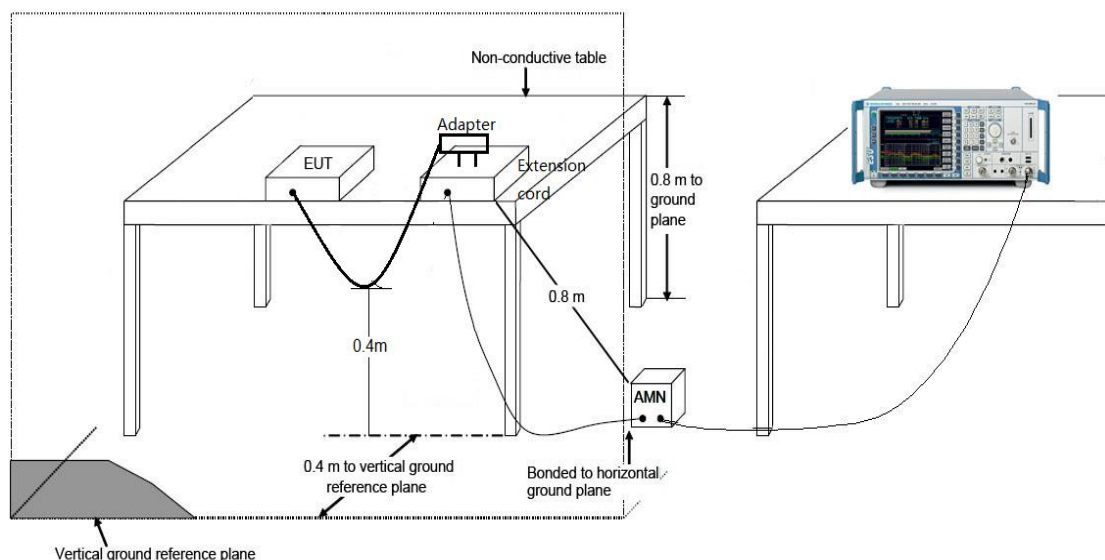
註:隨頻率之對數遞減

6.2. 量測方法

待測物置於高 80 公分之非導體桌面（落地型產品置於地上），將待測物之電源線接至電源阻抗網路器(LISN)，同時保持待測物至 LISN 距 80 公分，並將電源線多餘部份以 30 至 40 公分之八字形捆綁於電源線中央並離地 40cm，於在正常工作狀態下，執行待測物之火線(Line)及地線(neutral)各一次量測。電源端點場強之測量範圍由 0.15MHz –30MHz，所量測之讀值皆為準尖峰值(Quasi-Peak Value)及平均值(Average Value)。場強接收機之解析頻寬為 9kHz。

備 註: 經初測驗證過，電源端點干擾測試對測試頻道數並無差異，因此檢附其中一個測試頻道之測試數。

6.3. 測試架構圖



6.4. 電源端點測試結果

測試樣品為電池供電，所有這個測試項目對它不適用。

7. 天線之要求

7.1. 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第 2.2 節要求：

低功率射頻電機之發射機或收發信機所使用之天線，除本規範章節中另有規定外，應為全固定、半固定式或以獨特之耦合(unique coupling)方式連接機體。

依據國家通訊傳播委員會低功率射頻電機技術規範之第 4.6.8 節要求：

傳輸發射訊號之天線不可與機體分離。

7.2. 天線樣式

天線類型	製造商	型號	最大峰值 (dBi)
Helical	Shure Incorporated	N/A	-0.5

待測物天線為全固定式天線，且天線與機體不可分離，滿足低功率射頻電機技術規範要求。

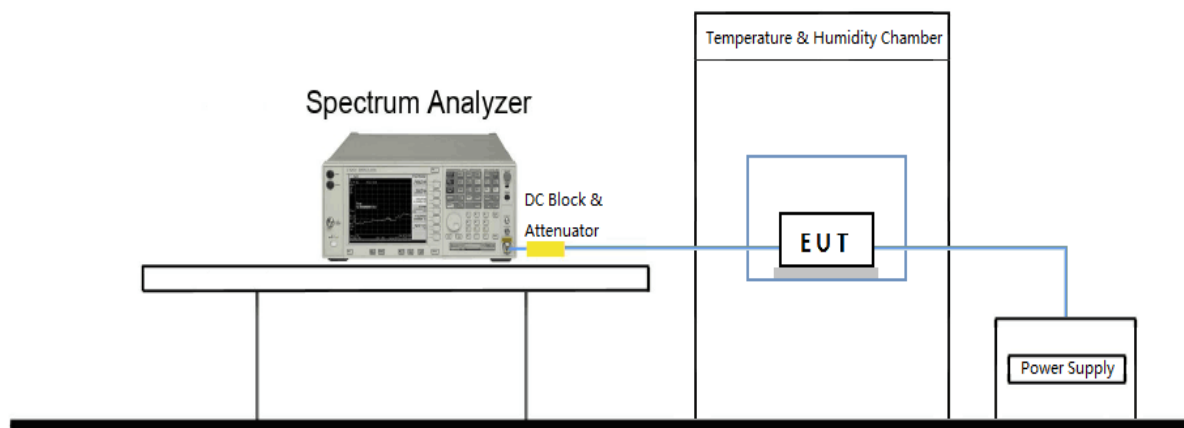
8. 頻率穩定度

8.1. 限值要求

操作頻率小於1 GHz 之系統: 20 ppm。

8.2. 測試架構圖

傳導量測



8.3. 量測步驟

參照法規ETSI EN 300 422-1 V2.1.2 (2017-01) 章節 8.1.2.

8.4. 頻率穩定度測試結果

待測物	Digital Handheld Transmitter	測試溫度	-10 ~ 45°C
測試工程師	Kevin Kerr	測試濕度	64%
測試場地	AC1	測試日期	2017/12/25
測試模式	Mode 1 (Carrier Mode)		

測試條件		操作中心頻率 (MHz)	量測頻率 (MHz)	結果 (ppm)	限值要求 (ppm)
T(45°C)	DC 3.6V	510.100	510.099642	-0.70	±20
		520.000	519.998956	-2.01	±20
		529.900	529.898794	-2.28	±20
T(35°C)	DC 3.6V	510.100	510.099053	-1.86	±20
		520.000	519.998793	-2.32	±20
		529.900	529.898963	-1.96	±20
T(20°C)	DC 3.6V	510.100	510.099938	-0.12	±20
		520.000	519.999910	-0.17	±20
		529.900	529.899933	-0.13	±20
	DC 3.2V	510.100	510.099122	-1.72	±20
		520.000	519.999036	-1.85	±20
		529.900	529.899131	-1.64	±20
	DC 4.2V	510.100	510.099275	-1.42	±20
		520.000	519.999430	-1.10	±20
		529.900	529.899284	-1.35	±20
T(10°C)	DC 3.6V	510.100	510.099334	-1.31	±20
		520.000	519.999446	-1.07	±20
		529.900	529.899248	-1.42	±20
T(0°C)	DC 3.6V	510.100	510.099283	-1.41	±20
		520.000	519.999331	-1.29	±20
		529.900	529.899663	-0.64	±20
T(-10°C)	DC 3.6V	510.100	510.099552	-0.88	±20
		520.000	519.999341	-1.27	±20
		529.900	529.899263	-1.39	±20

備註 1: 結果(ppm) = [量測頻率 - 操作中心頻率] / 操作中心頻率 * 10⁶ 。

備註 2: DC 電壓由製造者所宣告。

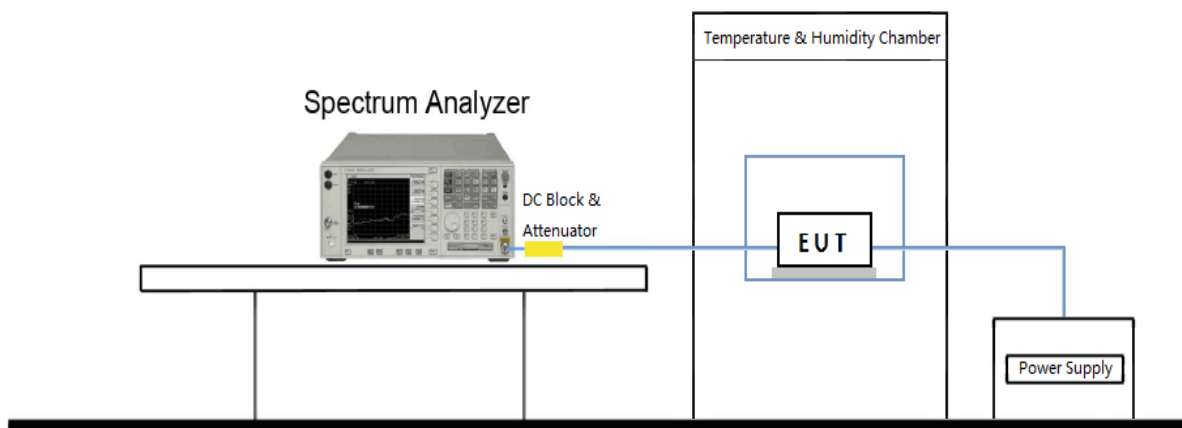
9. 主波發射功率

9.1. 限值要求

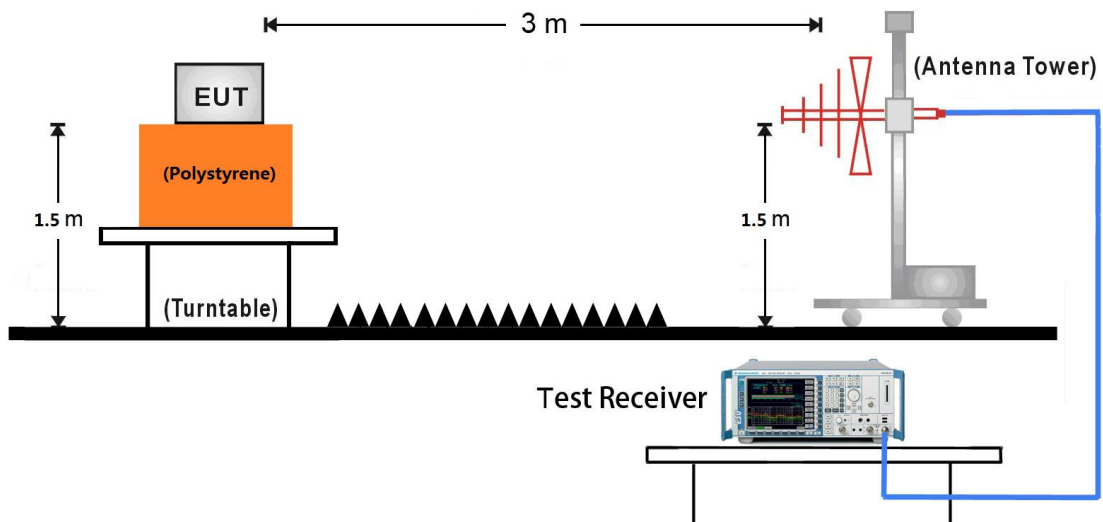
操作於 510.0 MHz~530.0 MHz 者：50 mW 以下。

9.2. 測試架構圖

傳導量測



輻射量測



9.3. 量測步驟

參照法規 ETSI EN 300 422-1 V2.1.2 (2017-01) 章節 8.2.2.

9.4. 主波發射功率測試結果

待測物	Digital Handheld Transmitter	測試溫度	24°C
測試工程師	Kevin Ker	測試濕度	52%
測試場地	AC1/SR1	測試日期	2017/12/18
測試模式	Mode 1		

功率等級 (mW)	操作頻率 (MHz)	主波量測值 (dBm)	主波量測值 (mW)	限值要求 (mW)	結果
2	510.100	1.22	1.32	50	符合
	520.000	2.75	1.88	50	符合
	529.900	3.12	2.05	50	符合
10	510.100	7.32	5.40	50	符合
	520.000	9.54	8.99	50	符合
	529.900	9.49	8.89	50	符合
40	510.100	13.55	22.65	50	符合
	520.000	15.89	38.82	50	符合
	529.900	15.81	38.11	50	符合

備註 1: 主波發射功率輻射量測時, 表格中體現的是每個極性/每個軸向中的最大值。

備註 2: 量測功率值 (mW) = $10^{(\text{量測功率值 (dBm)} / 10)}$

極限測試條件

極限條件		功率等級 (mW)	操作頻率 (MHz)	量測功率值 (dBm)	量測功率值 (mW)	限值要求 (mW)	結果
溫度 (°C)	電壓 (V)						
高溫 (50°C)	高壓 (DC 4.2V)	2	510.100	1.18	1.31	50	符合
			520.000	2.72	1.87	50	符合
			529.900	3.11	2.05	50	符合
		10	510.100	7.31	5.38	50	符合
			520.000	9.5	8.91	50	符合
			529.900	9.46	8.83	50	符合
		40	510.100	13.51	22.44	50	符合
			520.000	15.88	38.73	50	符合
			529.900	15.8	38.02	50	符合
高溫 (50°C)	低壓 (DC 3.2V)	2	510.100	1.2	1.32	50	符合
			520.000	2.72	1.87	50	符合
			529.900	3.09	2.04	50	符合
		10	510.100	7.31	5.38	50	符合
			520.000	9.52	8.95	50	符合
			529.900	9.47	8.85	50	符合
		40	510.100	13.53	22.54	50	符合
			520.000	15.87	38.64	50	符合
			529.900	15.79	37.93	50	符合
低溫 (-18°C)	高壓 (DC 4.2V)	2	510.100	1.26	1.34	50	符合
			520.000	2.77	1.89	50	符合
			529.900	3.13	2.06	50	符合
		10	510.100	7.35	5.43	50	符合
			520.000	9.56	9.04	50	符合
			529.900	9.52	8.95	50	符合
		40	510.100	13.57	22.75	50	符合
			520.000	15.92	39.08	50	符合
			529.900	15.84	38.37	50	符合

備註:量測功率值 (mW) = $10^{(\text{量測功率值 (dBm)} / 10)}$

極限條件		功率等級 (mW)	操作頻率 (MHz)	量測功率值 (dBm)	量測功率值 (mW)	限值要求 (mW)	結果 溫度 (°C)
溫度 (°C)	電壓 (V)						
低溫(-18°C)	低壓 (DC 3.2V)	2	510.100	1.24	1.33	50	符合
			520.000	2.76	1.89	50	符合
			529.900	3.15	2.07	50	符合
		10	510.100	7.33	5.41	50	符合
			520.000	9.58	9.08	50	符合
			529.900	9.51	8.93	50	符合
		40	510.100	13.56	22.70	50	符合
			520.000	15.92	39.08	50	符合
			529.900	15.85	38.46	50	符合

備註:量測功率值 (mW) = $10^{(\text{量測功率值 (dBm)} / 10)}$

10. 必須頻帶寬度

10.1. 限值要求

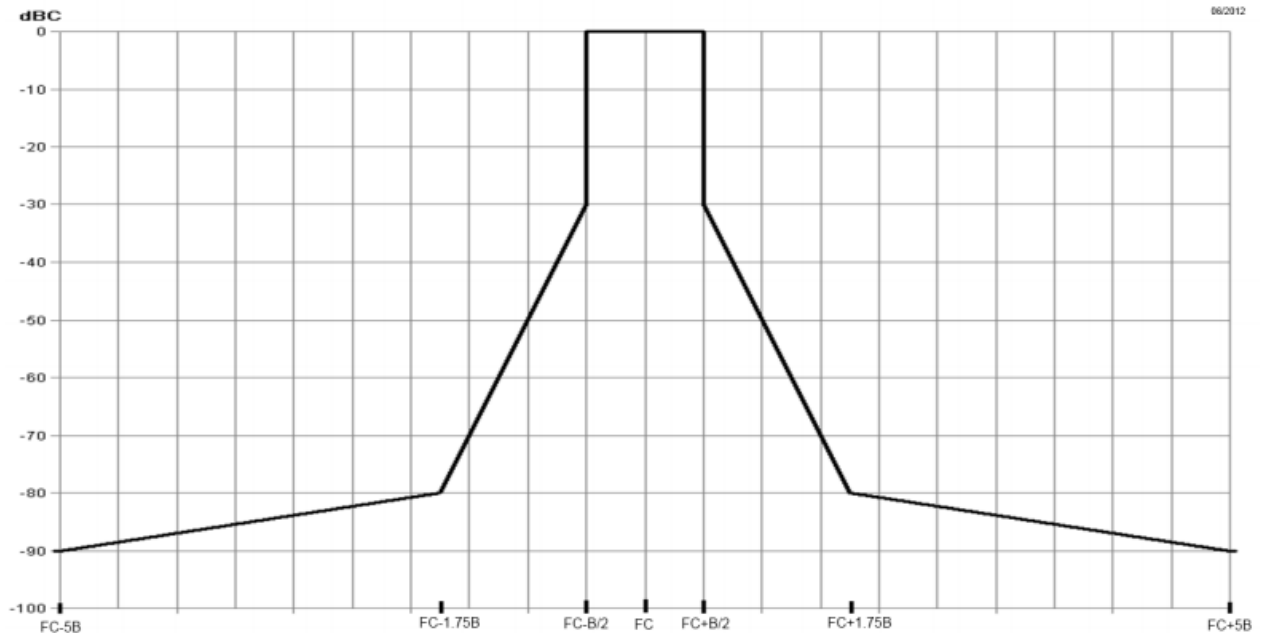
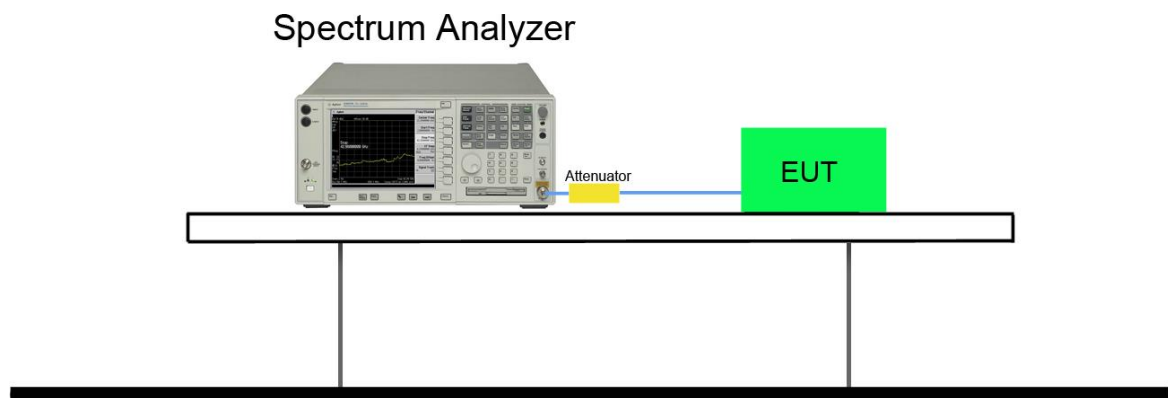


Figure 4: Spectrum mask for digital systems below 2 GHz

10.2. 測試架構圖



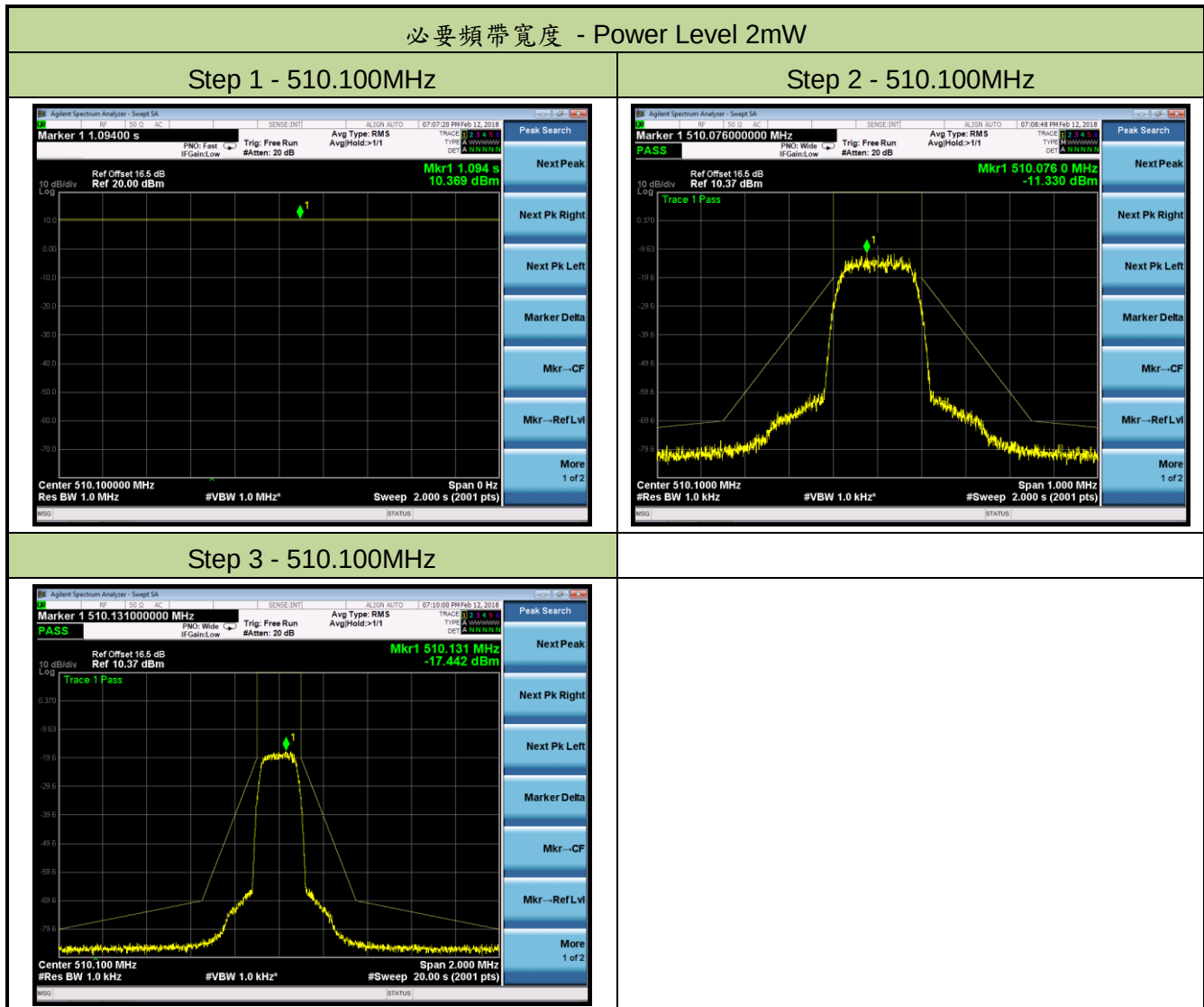
10.3. 量測步驟

參照法規 ETSI EN 300 422-1 V2.1.2 (2017-01) 章節 8.3.2.

10.4. 必要頻帶寬度測試結果

待測物	Digital Handheld Transmitter	測試溫度	23°C
測試工程師	Kevin Ker	測試濕度	49%
測試場地	SR1	測試日期	2018/02/12
測試模式	Mode 1		

備註：B - 廠商宣稱頻帶寬度為 200kHz;

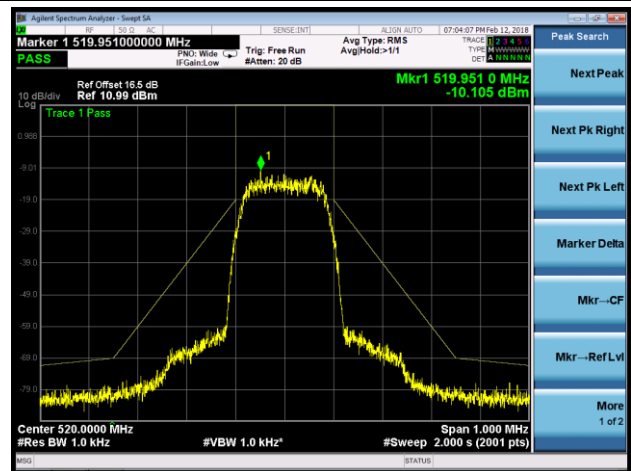


必要頻帯宽度 - Power Level 2mW

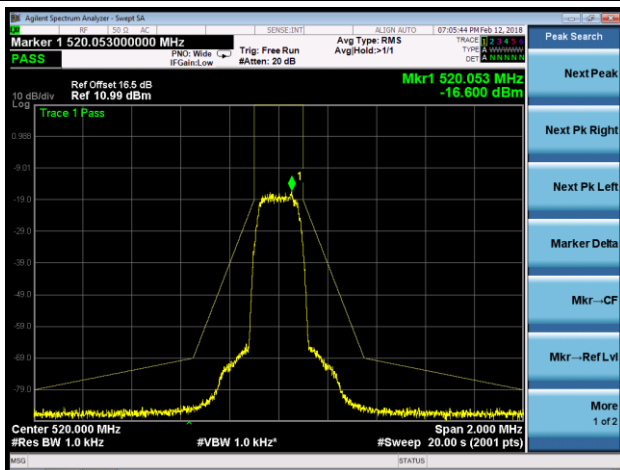
Step 1 - 520.000MHz



Step 2 - 520.000MHz



Step 3 - 520.000MHz

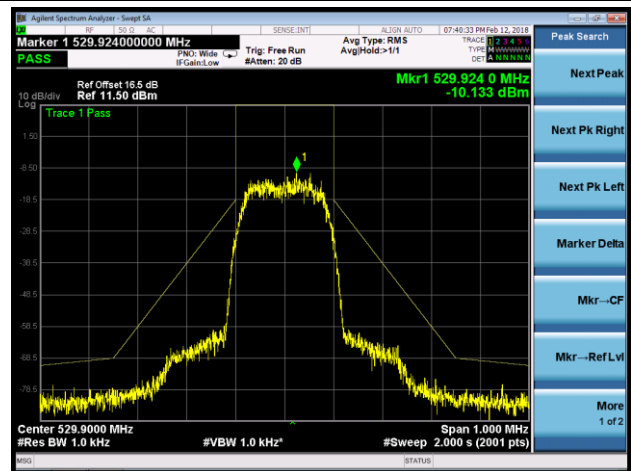


必要頻帯宽度 - Power Level 2mW

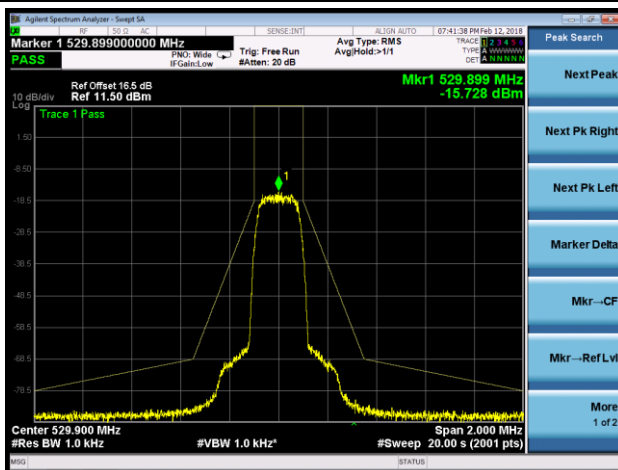
Step 1 - 529.900MHz



Step 2 - 529.900MHz

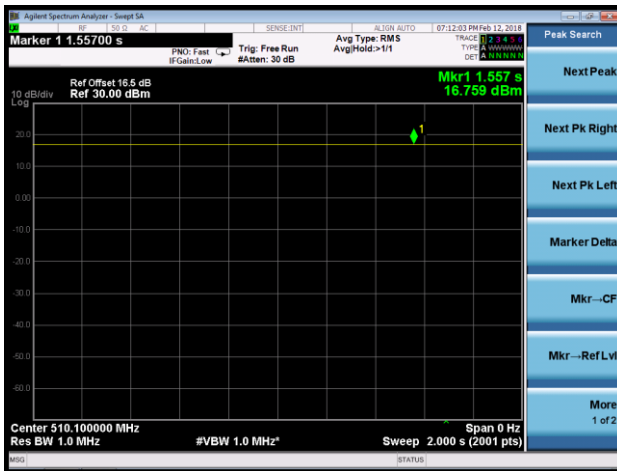


Step 3 - 529.900MHz

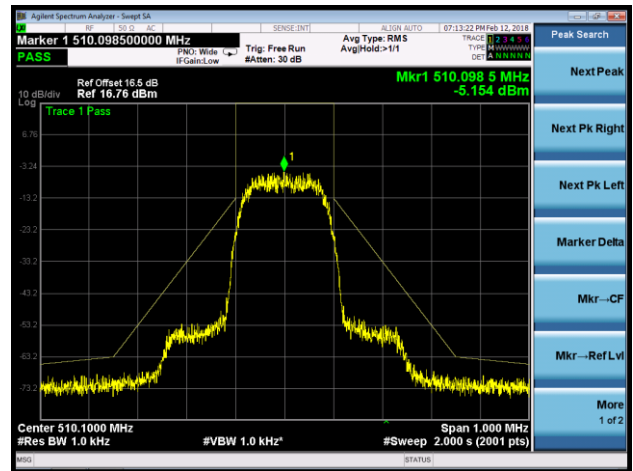


必要頻帶寬度 - Power Level 10mW

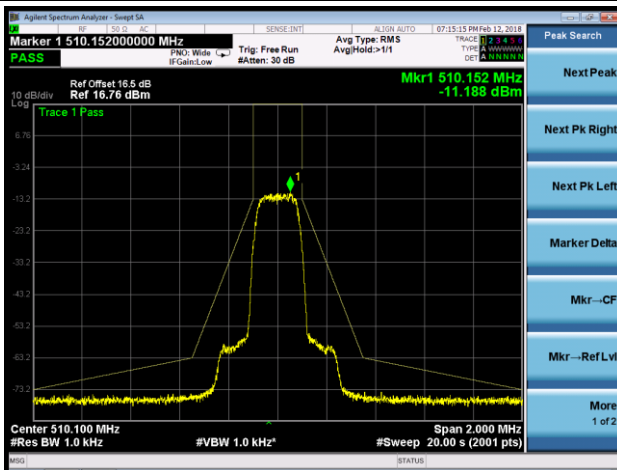
Step 1 - 510.100MHz



Step 2 - 510.100MHz

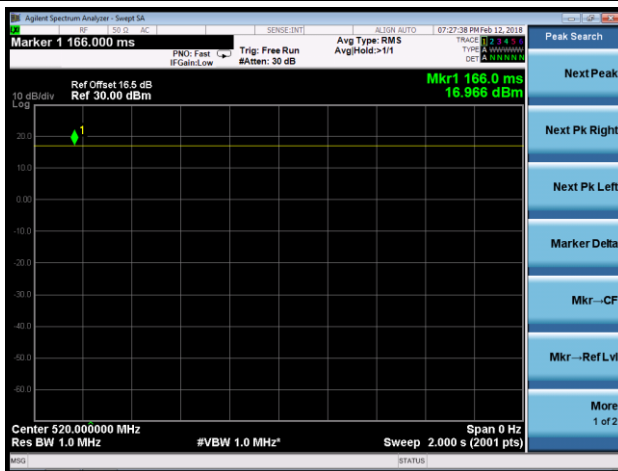


Step 3 - 510.100MHz

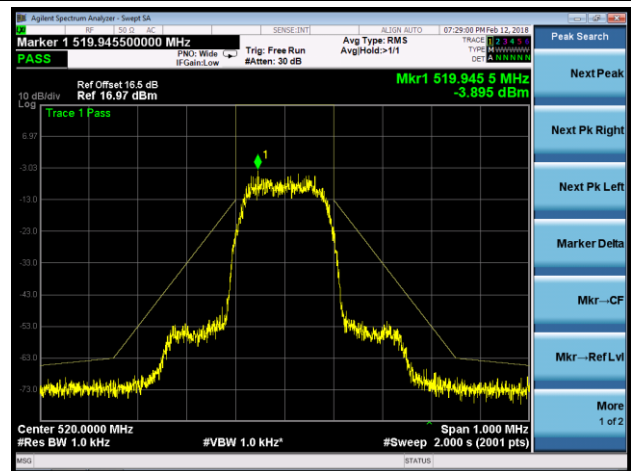


必要頻帶寬度 - Power Level 10mW

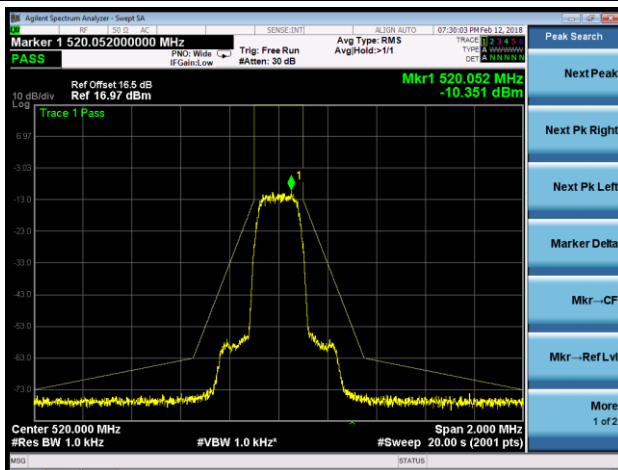
Step 1 - 520.000MHz



Step 2 - 520.000MHz



Step 3 - 520.000MHz

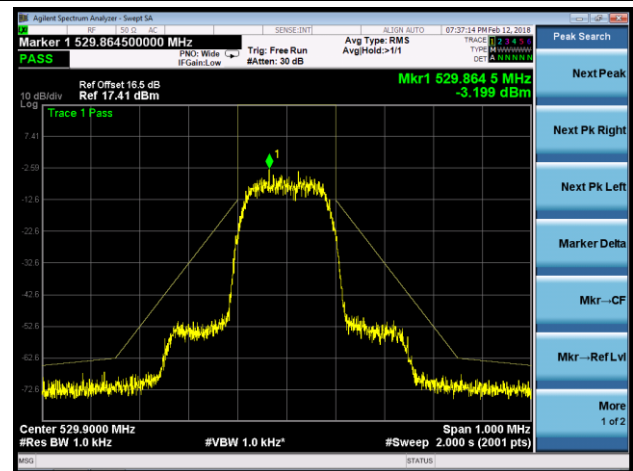


必要頻帯寬度 - Power Level 10mW

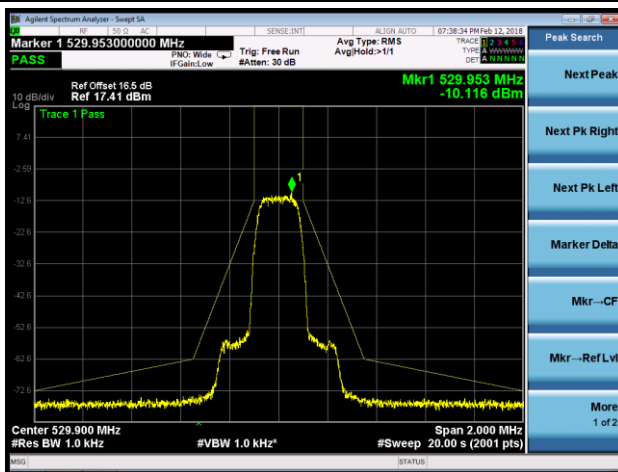
Step 1 - 529.900MHz



Step 2 - 529.900MHz

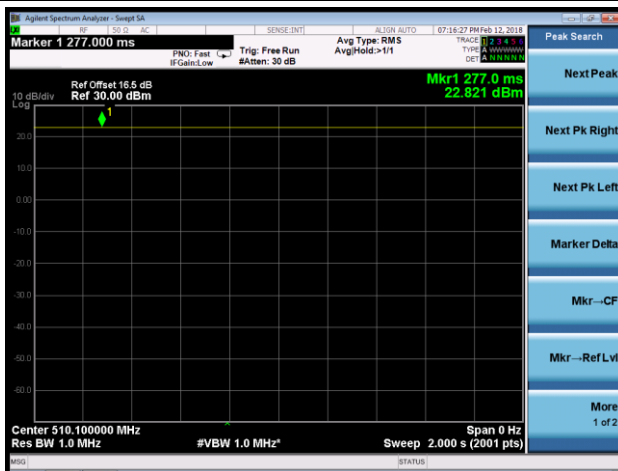


Step 3 - 529.900MHz

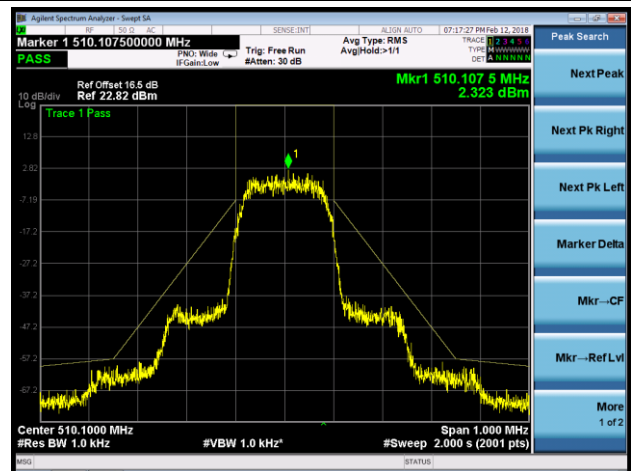


必要頻帶寬度 - Power Level 40mW

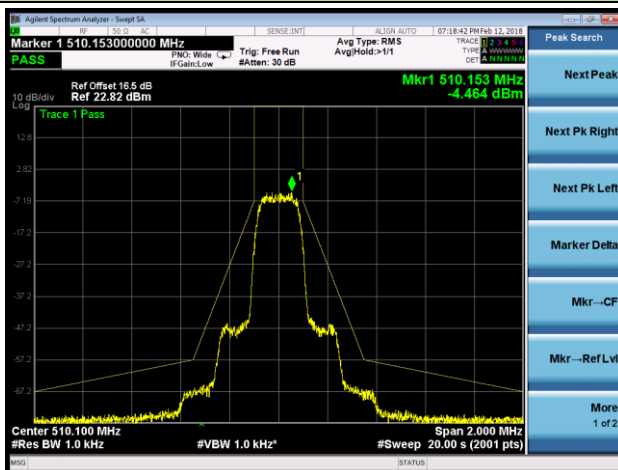
Step 1 - 510.100MHz



Step 2 - 510.100MHz

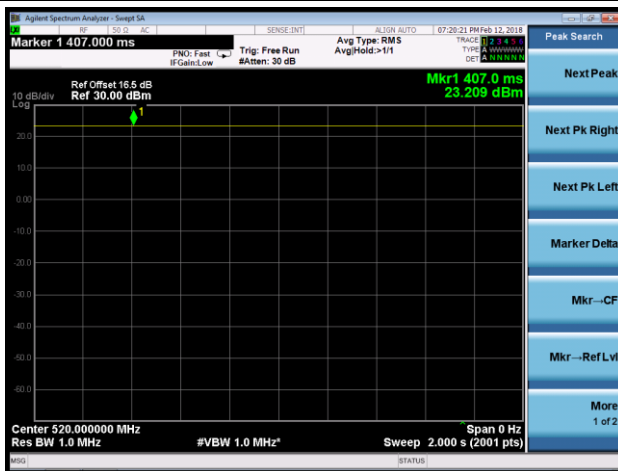


Step 3 - 510.100MHz

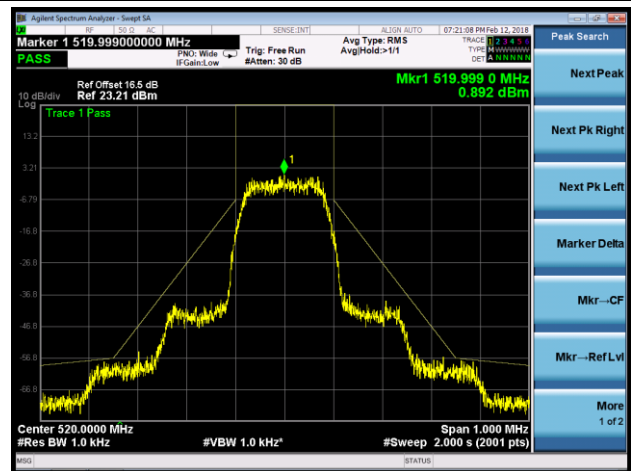


必要頻帶寬度 - Power Level 40mW

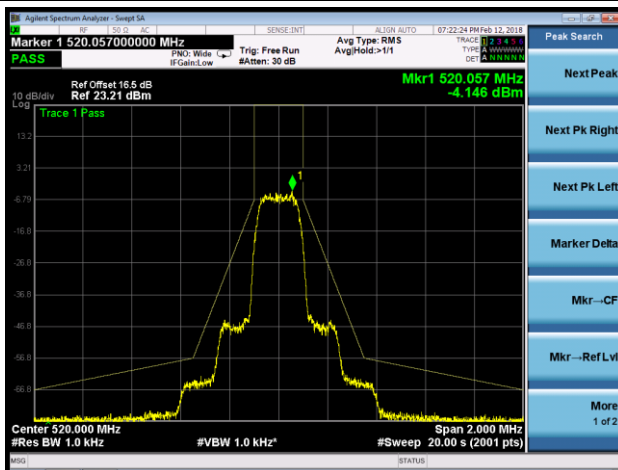
Step 1 - 520.000MHz



Step 2 - 520.000MHz

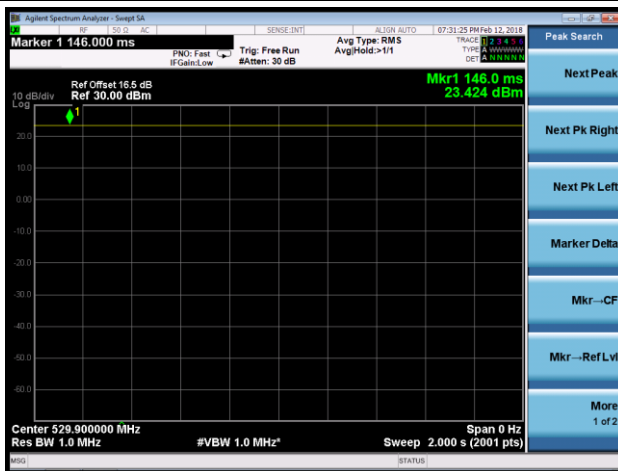


Step 3 - 520.000MHz

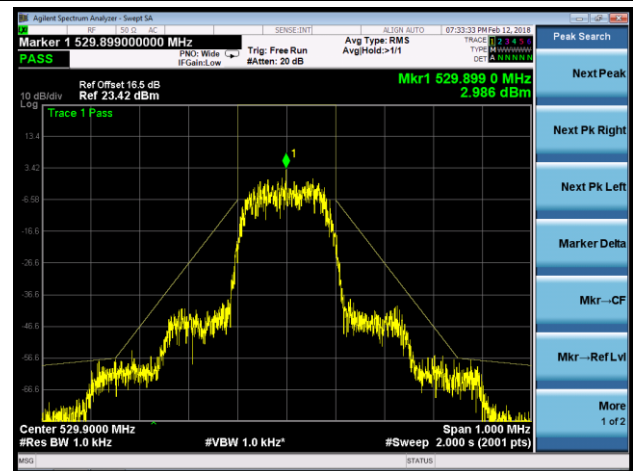


必要頻帶寬度 - Power Level 40mW

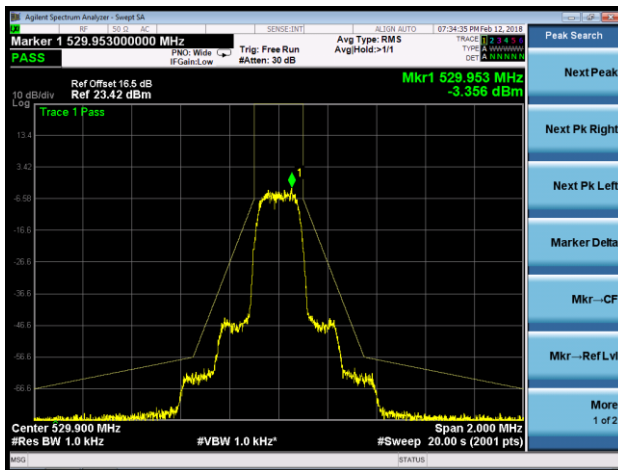
Step 1 - 529.900MHz



Step 2 - 529.900MHz



Step 3 - 529.900MHz



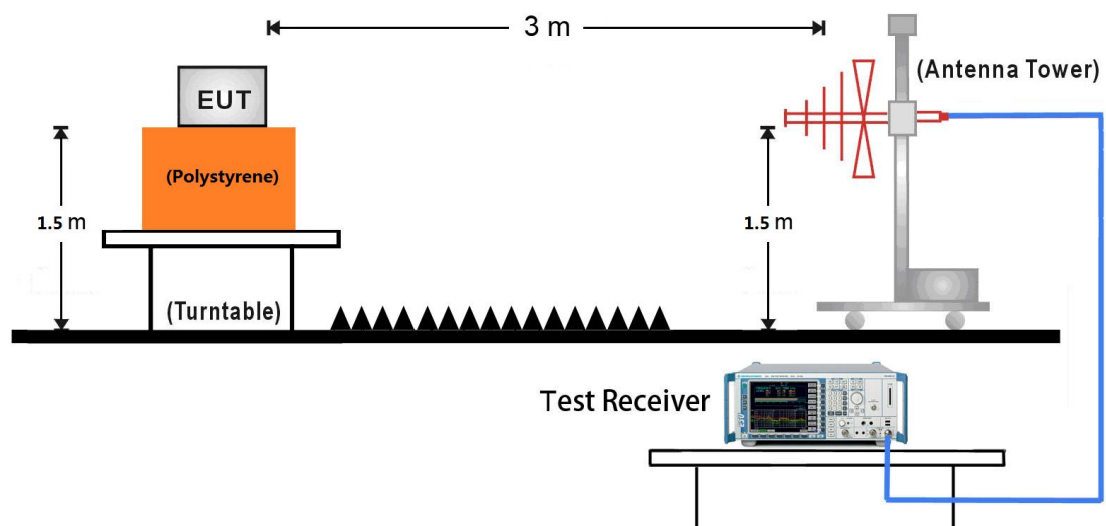
11. 混附發射

11.1. 限值要求

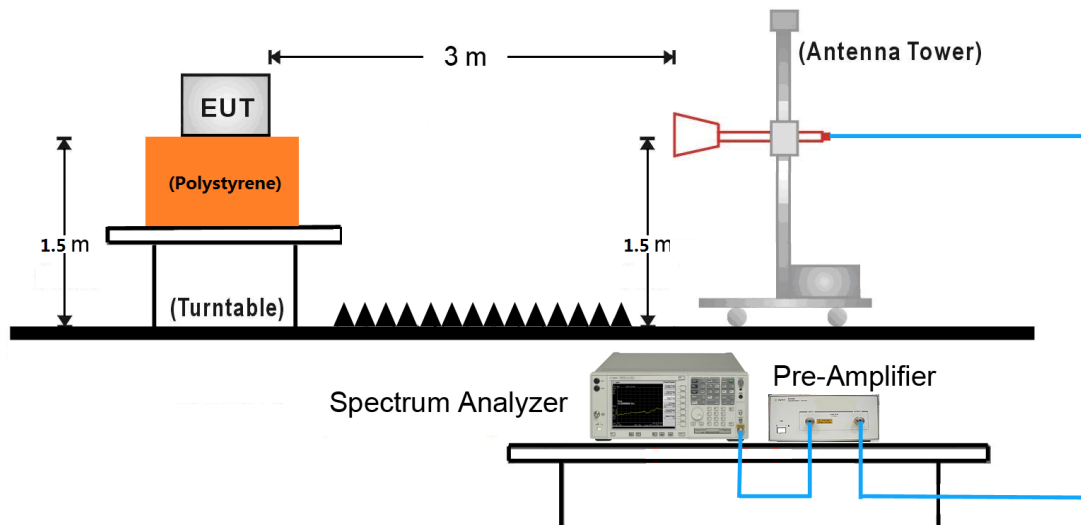
State	Frequency		
	47MHz to 74MHz 87.5MHz to 118MHz 174MHz to 230MHz 470MHz to 862MHz	Other Frequencies below 1000MHz	Frequencies above 1000MHz
Operation	4nW	250nW	1uW
Standby	2nW	2nW	20nW

11.2. 測試架構圖

30MHz ~ 1GHz 測試架構圖：



1GHz ~ 6GHz 測試架構圖:



11.3. 量測步驟

參照法規ETSI EN 300 422-1 V2.1.2 (2017-01) 章節8.4.2.

11.4. 混附發射測試結果

待測物	Digital Handheld Transmitter	測試溫度	25°C
測試工程師	Kevin Kerr	測試濕度	54%
測試模式	Mode 1	測試場地	AC1

Power Level (mW)	Test Channel (MHz)	Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
2	510.100	255.0	-105.6	25.9	-79.7	-36.0	-43.7	Peak	Horizontal
		552.8	-93.5	31.0	-62.5	-54.0	-8.5	Peak	Horizontal
		101.8	-104.6	37.0	-67.6	-54.0	-13.6	Peak	Vertical
		255.0	-106.3	24.2	-82.1	-36.0	-46.1	Peak	Vertical
		1020.0	-65.2	6.6	-58.6	-30.0	-28.6	Peak	Horizontal
		1530.0	-65.9	9.3	-56.6	-30.0	-26.6	Peak	Horizontal
		1020.0	-64.2	5.4	-58.8	-30.0	-28.8	Peak	Vertical
		1530.0	-68.0	9.3	-58.7	-30.0	-28.7	Peak	Vertical
	520.000	260.0	-104.4	26.1	-78.3	-36.0	-42.3	Peak	Horizontal
		548.0	-93.4	30.8	-62.6	-54.0	-8.6	Peak	Horizontal
		100.8	-104.3	37.7	-66.6	-54.0	-12.6	Peak	Vertical
		260.0	-104.7	24.5	-80.2	-36.0	-44.2	Peak	Vertical
		1040.0	-66.4	7.5	-58.9	-30.0	-28.9	Peak	Horizontal
		1560.0	-68.6	7.9	-60.7	-30.0	-30.7	Peak	Horizontal
		1040.0	-67.4	6.5	-60.9	-30.0	-30.9	Peak	Vertical
		1560.0	-68.5	8.6	-59.9	-30.0	-29.9	Peak	Vertical
	529.900	265.0	-105.5	25.8	-79.7	-36.0	-43.7	Peak	Horizontal
		543.6	-93.4	30.8	-62.6	-54.0	-8.6	Peak	Horizontal
		101.3	-104.7	37.5	-67.2	-54.0	-13.2	Peak	Vertical
		265.0	-106.2	24.7	-81.5	-36.0	-45.5	Peak	Vertical
		1060.0	-65.6	8.4	-57.2	-30.0	-27.2	Peak	Horizontal
		1590.0	-68.2	8.9	-59.3	-30.0	-29.3	Peak	Horizontal
		1060.0	-66.8	8.4	-58.4	-30.0	-28.4	Peak	Vertical
		1590.0	-68.9	9.5	-59.4	-30.0	-29.4	Peak	Vertical

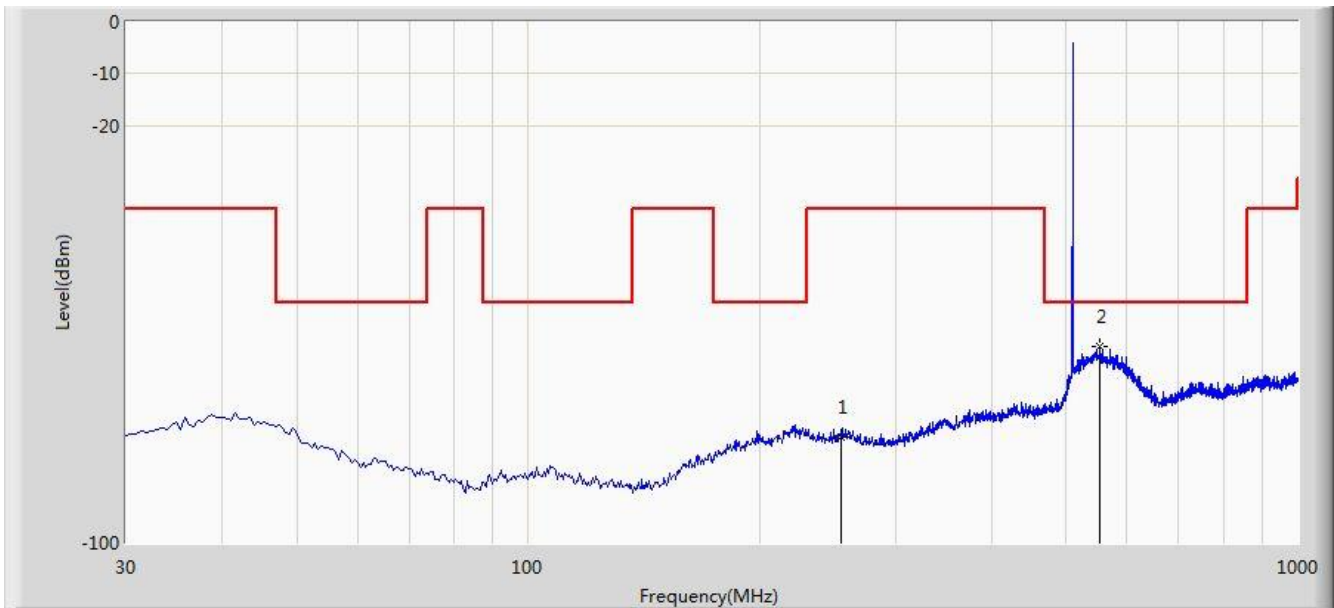
Note1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Power Level (mW)	Test Channel (MHz)	Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
10	510.100	255.0	-105.7	25.9	-79.8	-36.0	-43.8	Peak	Horizontal
		553.3	-87.0	31.1	-55.9	-54.0	-1.9	Peak	Horizontal
		100.3	-104.7	37.5	-67.2	-54.0	-13.2	Peak	Vertical
		255.0	-104.4	24.2	-80.2	-36.0	-44.2	Peak	Vertical
		1020.0	-65.6	6.6	-59.0	-30.0	-29.0	Peak	Horizontal
		1530.0	-66.3	9.3	-57.0	-30.0	-27.0	Peak	Horizontal
		1020.0	-65.5	5.4	-60.1	-30.0	-30.1	Peak	Vertical
		1530.0	-67.6	9.3	-58.3	-30.0	-28.3	Peak	Vertical
	520.000	260.0	-104.9	26.1	-78.8	-36.0	-42.8	Peak	Horizontal
		567.4	-87.3	31.4	-55.9	-54.0	-1.9	Peak	Horizontal
		101.8	-104.5	37.0	-67.5	-54.0	-13.5	Peak	Vertical
		260.0	-105.6	24.5	-81.1	-36.0	-45.1	Peak	Vertical
		1040.0	-66.1	7.5	-58.6	-30.0	-28.6	Peak	Horizontal
		1560.0	-69.0	7.9	-61.1	-30.0	-31.1	Peak	Horizontal
		1040.0	-68.3	6.5	-61.8	-30.0	-31.8	Peak	Vertical
		1560.0	-69.1	8.6	-60.5	-30.0	-30.5	Peak	Vertical
	529.900	265.0	-104.7	25.8	-78.9	-36.0	-42.9	Peak	Horizontal
		585.8	-86.9	31.4	-55.5	-54.0	-1.5	Peak	Horizontal
		101.3	-104.9	37.5	-67.4	-54.0	-13.4	Peak	Vertical
		265.0	-105.4	24.7	-80.7	-36.0	-44.7	Peak	Vertical
		1060.0	-60.5	8.4	-52.1	-30.0	-22.1	Peak	Horizontal
		1590.0	-68.7	8.9	-59.8	-30.0	-29.8	Peak	Horizontal
		1060.0	-67.0	8.4	-58.6	-30.0	-28.6	Peak	Vertical
		1590.0	-69.1	9.5	-59.6	-30.0	-29.6	Peak	Vertical
Note1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)									
Note2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre Amplifier Gain (dB)									

Power Level (mW)	Test Channel (MHz)	Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
40	510.100	255.0	-102.5	25.9	-76.6	-36.0	-40.6	Peak	Horizontal
		549.0	-85.9	30.9	-55.0	-54.0	-1.0	Peak	Horizontal
		100.8	-105.9	37.7	-68.2	-54.0	-14.2	Peak	Vertical
		255.0	-105.8	24.2	-81.6	-36.0	-45.6	Peak	Vertical
		1020.0	-64.1	6.6	-57.5	-30.0	-27.5	Peak	Horizontal
		1530.0	-57.0	9.3	-47.7	-30.0	-17.7	Peak	Horizontal
		1020.0	-64.4	5.4	-59.0	-30.0	-29.0	Peak	Vertical
		1530.0	-67.3	9.3	-58.0	-30.0	-28.0	Peak	Vertical
	520.000	260.0	-101.9	26.1	-75.8	-36.0	-39.8	Peak	Horizontal
		556.7	-86.2	31.2	-55.0	-54.0	-1.0	Peak	Horizontal
		99.8	-103.9	37.1	-66.8	-54.0	-12.8	Peak	Vertical
		260.0	-105.3	24.5	-80.8	-36.0	-44.8	Peak	Vertical
		1040.0	-59.1	7.5	-51.6	-30.0	-21.6	Peak	Horizontal
		1560.0	-60.0	7.9	-52.1	-30.0	-22.1	Peak	Horizontal
		1040.0	-68.2	6.5	-61.7	-30.0	-31.7	Peak	Vertical
		1560.0	-67.8	8.6	-59.2	-30.0	-29.2	Peak	Vertical
	529.900	265.0	-101.9	25.8	-76.1	-36.0	-40.1	Peak	Horizontal
		583.4	-86.0	31.4	-54.6	-54.0	-0.6	Peak	Horizontal
		88.2	-98.0	34.2	-63.8	-54.0	-9.8	Peak	Vertical
		265.0	-105.0	24.7	-80.3	-36.0	-44.3	Peak	Vertical
		1060.0	-51.9	8.4	-43.5	-30.0	-13.5	Peak	Horizontal
		1590.0	-65.7	8.9	-56.8	-30.0	-26.8	Peak	Horizontal
		1060.0	-65.0	8.4	-56.6	-30.0	-26.6	Peak	Vertical
		1590.0	-68.3	9.5	-58.8	-30.0	-28.8	Peak	Vertical
Note1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)									
Note2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)									

Site: AC1	Time: 2017/12/28 - 23:34
Limit: ETSI_EN300422_RSE(3m)_Tx(Operating)	Engineer: Kevin Kerr
Probe: AC2 RF_Substitution_25-1000MHz	Polarity: Horizontal
EUT: Digital Handheld Transmitter	Power: By Battery
Test Mode: Transmit by 510.1MHz, Power Level = 2mW	

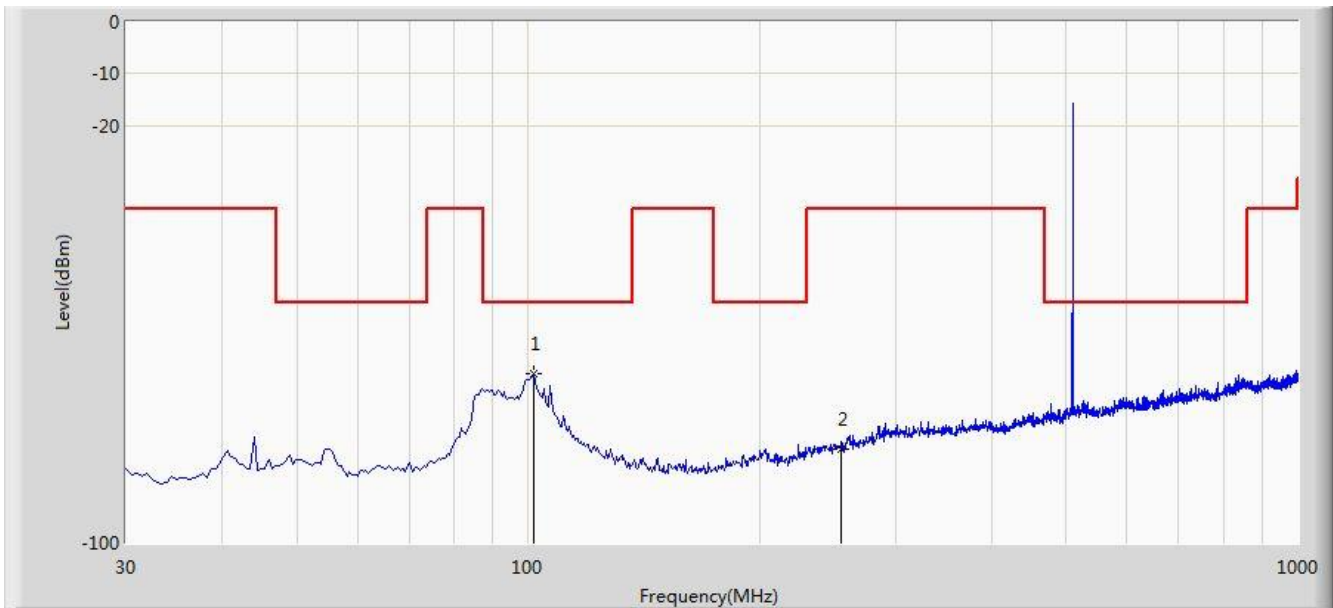


No	Flag	Mark	Frequency (MHz)	Measure Level (dBm)	Reading Level (dBm)	Over Limit (dB)	Limit (dBm)	Factor (dB)	Type
1			255.000	-79.644	-105.570	-43.644	-36.000	25.926	PK
2		*	552.830	-62.459	-93.500	-8.459	-54.000	31.041	PK

Note1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2017/12/28 - 23:36
Limit: ETSI_EN300422_RSE(3m)_Tx(Operating)	Engineer: Kevin Kerr
Probe: AC2 RF_Substitution_25-1000MHz	Polarity: Vertical
EUT: Digital Handheld Transmitter	Power: By Battery
Test Mode: Transmit by 510.1MHz, Power Level = 2mW	

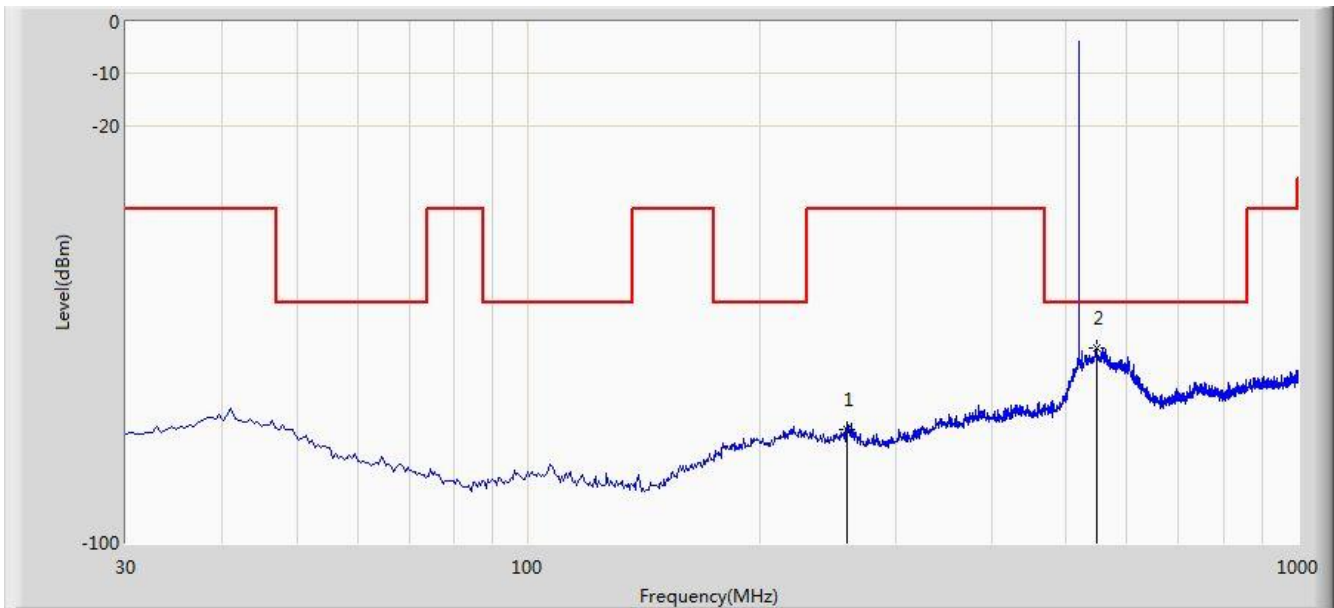


No	Flag	Mark	Frequency (MHz)	Measure Level (dBm)	Reading Level (dBm)	Over Limit (dB)	Limit (dBm)	Factor (dB)	Type
1		*	101.780	-67.607	-104.579	-13.607	-54.000	36.972	PK
2			255.000	-82.141	-106.299	-46.141	-36.000	24.158	PK

Note1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2017/12/28 - 23:28
Limit: ETSI_EN300422_RSE(3m)_Tx(Operating)	Engineer: Kevin Kerr
Probe: AC2 RF_Substitution_25-1000MHz	Polarity: Horizontal
EUT: Digital Handheld Transmitter	Power: By Battery
Test Mode: Transmit by 520.0MHz, Power Level = 2mW	

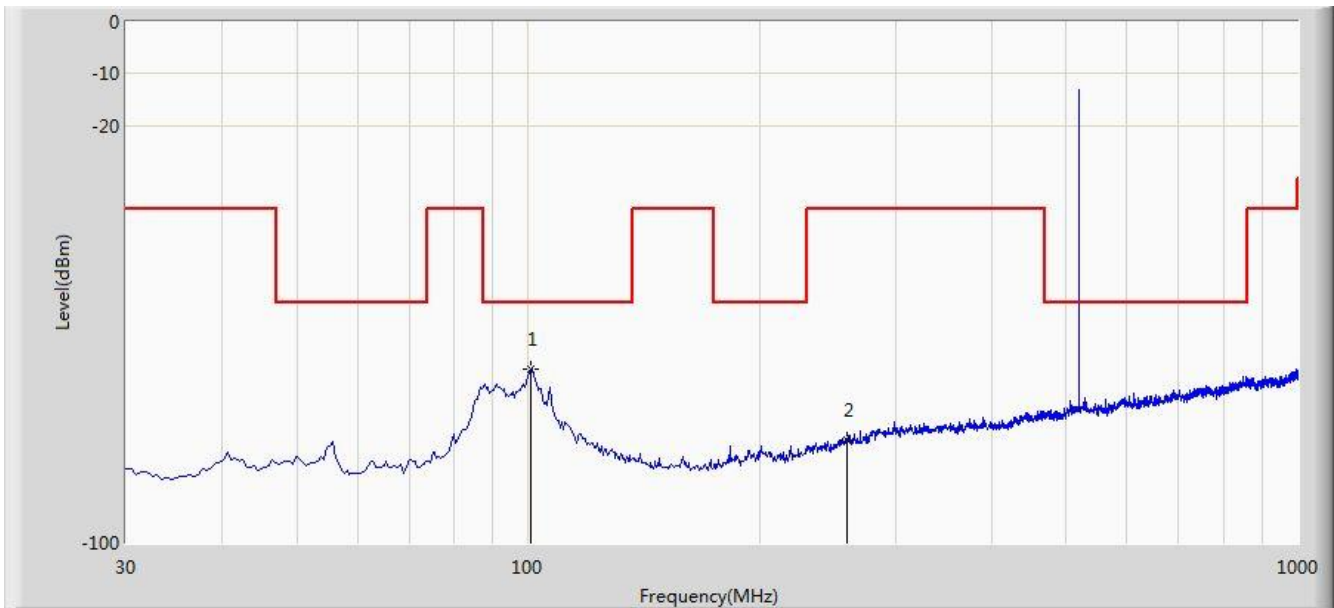


No	Flag	Mark	Frequency (MHz)	Measure Level (dBm)	Reading Level (dBm)	Over Limit (dB)	Limit (dBm)	Factor (dB)	Type
1			260.000	-78.292	-104.406	-42.292	-36.000	26.114	PK
2		*	547.980	-62.544	-93.370	-8.544	-54.000	30.826	PK

Note1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2017/12/28 - 23:31
Limit: ETSI_EN300422_RSE(3m)_Tx(Operating)	Engineer: Kevin Kerr
Probe: AC2 RF_Substitution_25-1000MHz	Polarity: Vertical
EUT: Digital Handheld Transmitter	Power: By Battery
Test Mode: Transmit by 520.0MHz, Power Level = 2mW	

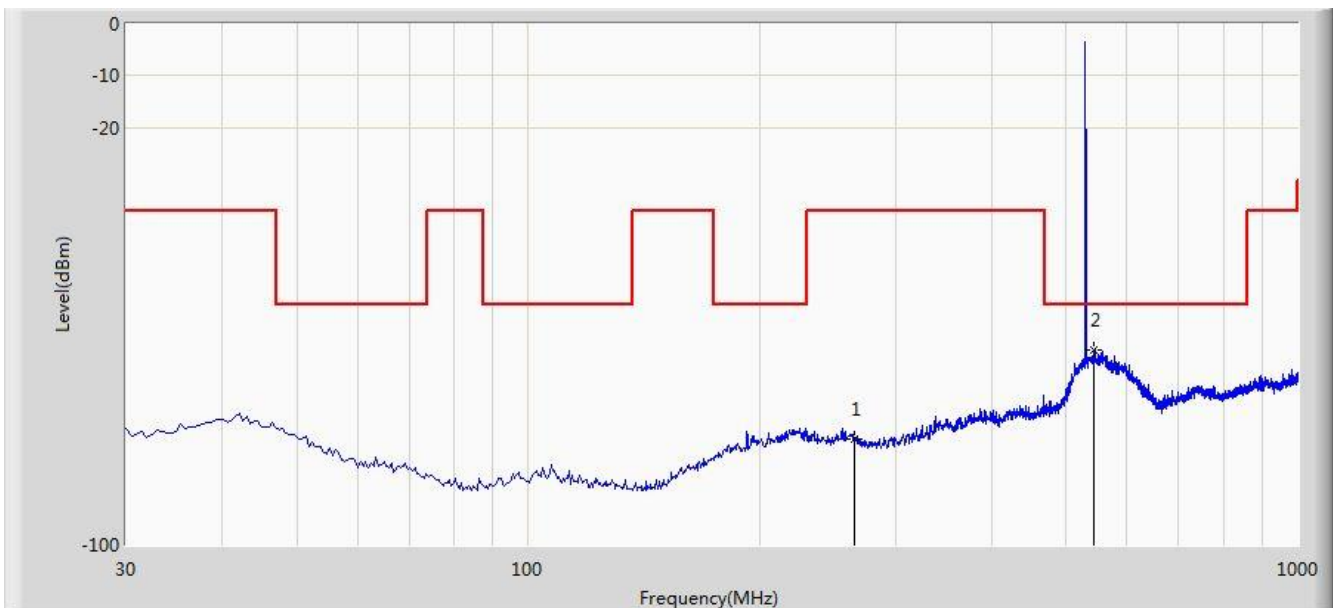


No	Flag	Mark	Frequency (MHz)	Measure Level (dBm)	Reading Level (dBm)	Over Limit (dB)	Limit (dBm)	Factor (dB)	Type
1		*	100.810	-66.604	-104.273	-12.604	-54.000	37.669	PK
2			260.000	-80.189	-104.736	-44.189	-36.000	24.547	PK

Note1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2017/12/28 - 23:09
Limit: ETSI_EN300422_RSE(3m)_Tx(Operating)	Engineer: Kevin Kerr
Probe: AC2 RF_Substitution_25-1000MHz	Polarity: Horizontal
EUT: Digital Handheld Transmitter	Power: By Battery
Test Mode: Transmit by 529.9MHz, Power Level = 2mW	

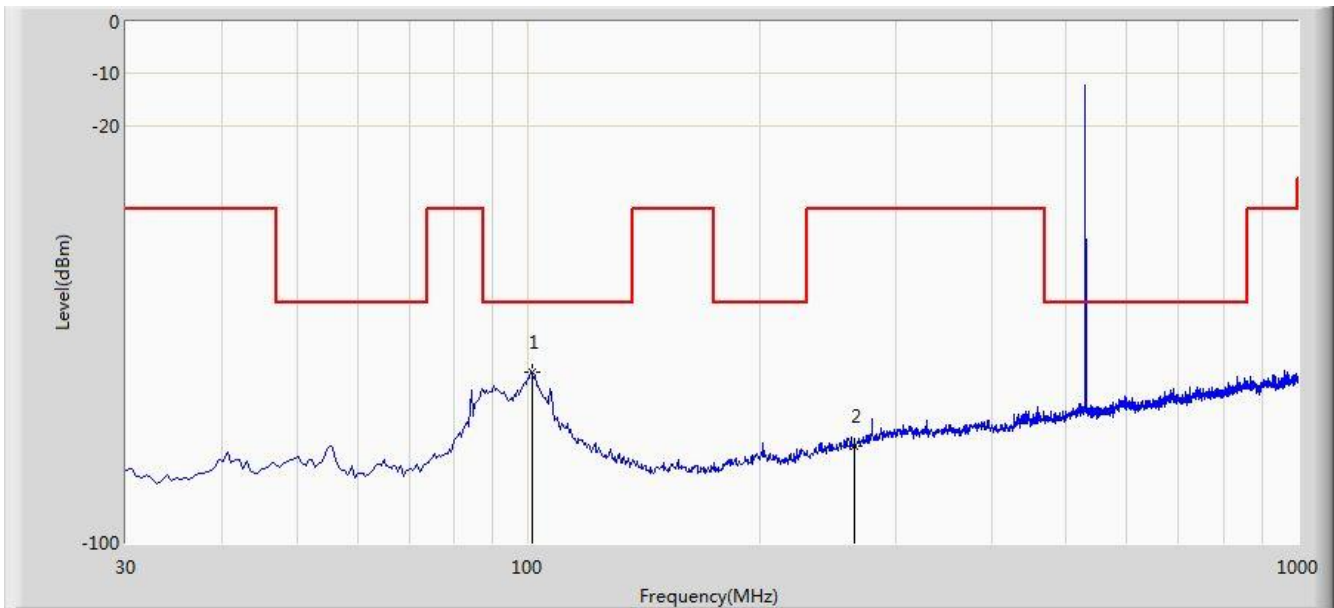


No	Flag	Mark	Frequency (MHz)	Measure Level (dBm)	Reading Level (dBm)	Over Limit (dB)	Limit (dBm)	Factor (dB)	Type
1			265.000	-79.731	-105.540	-43.731	-36.000	25.809	PK
2		*	543.615	-62.503	-93.350	-8.503	-54.000	30.847	PK

Note1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2017/12/28 - 23:13
Limit: ETSI_EN300422_RSE(3m)_Tx(Operating)	Engineer: Kevin Kerr
Probe: AC2 RF_Substitution_25-1000MHz	Polarity: Vertical
EUT: Digital Handheld Transmitter	Power: By Battery
Test Mode: Transmit by 529.9MHz, Power Level = 2mW	

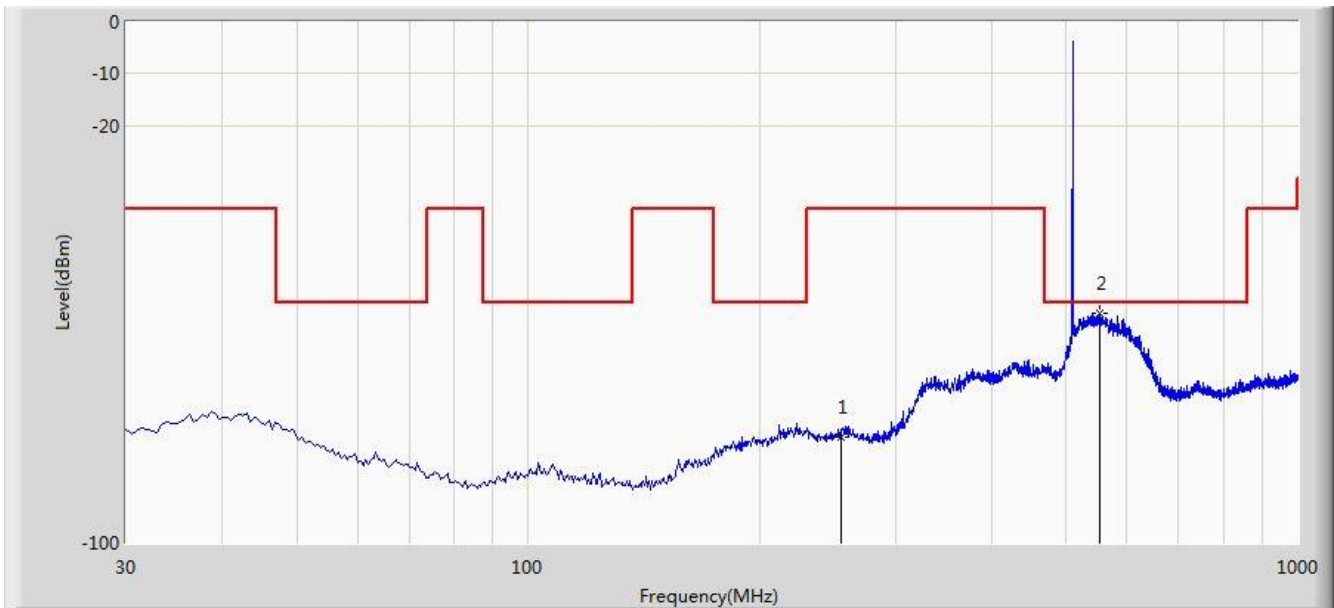


No	Flag	Mark	Frequency (MHz)	Measure Level (dBm)	Reading Level (dBm)	Over Limit (dB)	Limit (dBm)	Factor (dB)	Type
1		*	101.295	-67.230	-104.733	-13.230	-54.000	37.503	PK
2			265.000	-81.429	-106.166	-45.429	-36.000	24.737	PK

Note1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2017/12/28 - 23:37
Limit: ETSI_EN300422_RSE(3m)_Tx(Operating)	Engineer: Kevin Kerr
Probe: AC2 RF_Substitution_25-1000MHz	Polarity: Horizontal
EUT: Digital Handheld Transmitter	Power: By Battery
Test Mode: Transmit by 510.1MHz, Power Level = 10mW	

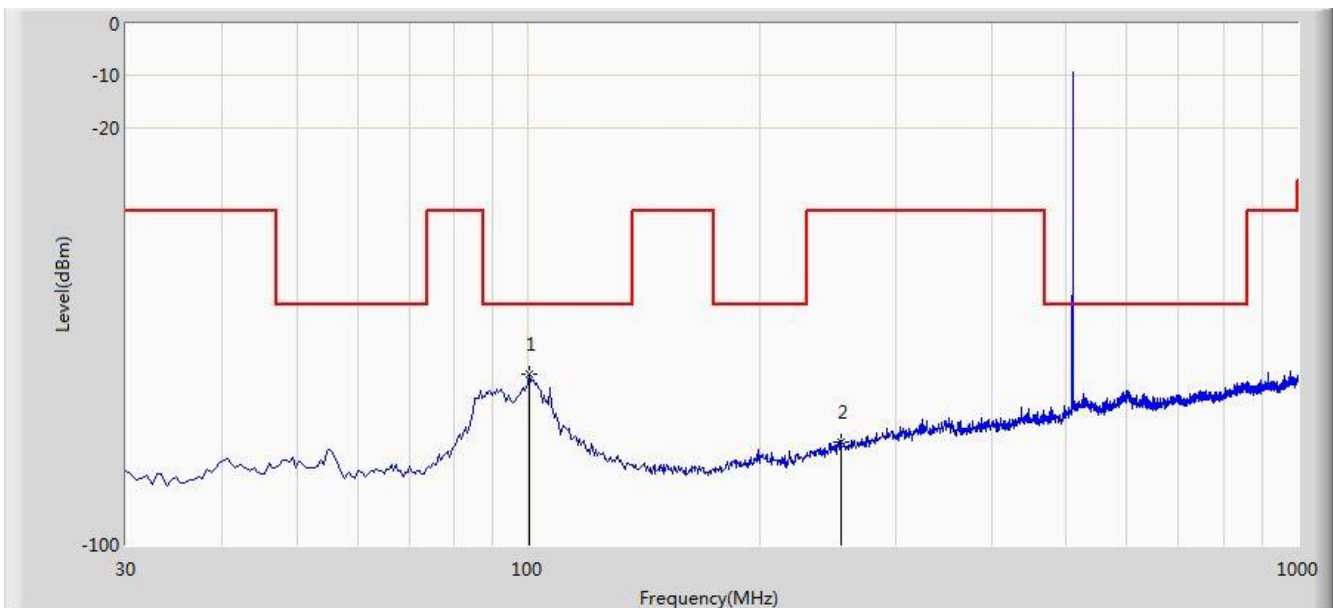


No	Flag	Mark	Frequency (MHz)	Measure Level (dBm)	Reading Level (dBm)	Over Limit (dB)	Limit (dBm)	Factor (dB)	Type
1			255.000	-79.793	-105.719	-43.793	-36.000	25.926	PK
2		*	553.315	-55.940	-87.004	-1.940	-54.000	31.064	PK

Note1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2017/12/28 - 23:39
Limit: ETSI_EN300422_RSE(3m)_Tx(Operating)	Engineer: Kevin Kerr
Probe: AC2 RF_Substitution_25-1000MHz	Polarity: Vertical
EUT: Digital Handheld Transmitter	Power: By Battery
Test Mode: Transmit by 510.1MHz, Power Level = 10mW	

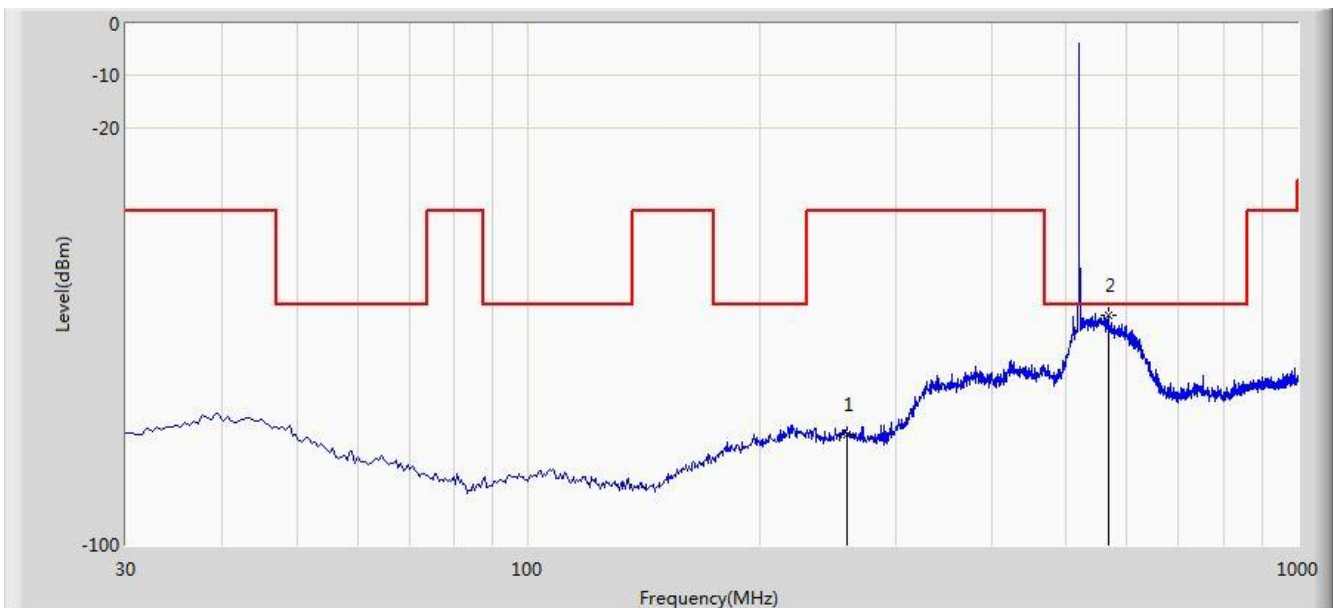


No	Flag	Mark	Frequency (MHz)	Measure Level (dBm)	Reading Level (dBm)	Over Limit (dB)	Limit (dBm)	Factor (dB)	Type
1		*	100.325	-67.268	-104.730	-13.268	-54.000	37.462	PK
2			255.000	-80.192	-104.350	-44.192	-36.000	24.158	PK

Note1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2017/12/28 - 23:25
Limit: ETSI_EN300422_RSE(3m)_Tx(Operating)	Engineer: Kevin Kerr
Probe: AC2 RF_Substitution_25-1000MHz	Polarity: Horizontal
EUT: Digital Handheld Transmitter	Power: By Battery
Test Mode: Transmit by 520.0MHz, Power Level = 10mW	

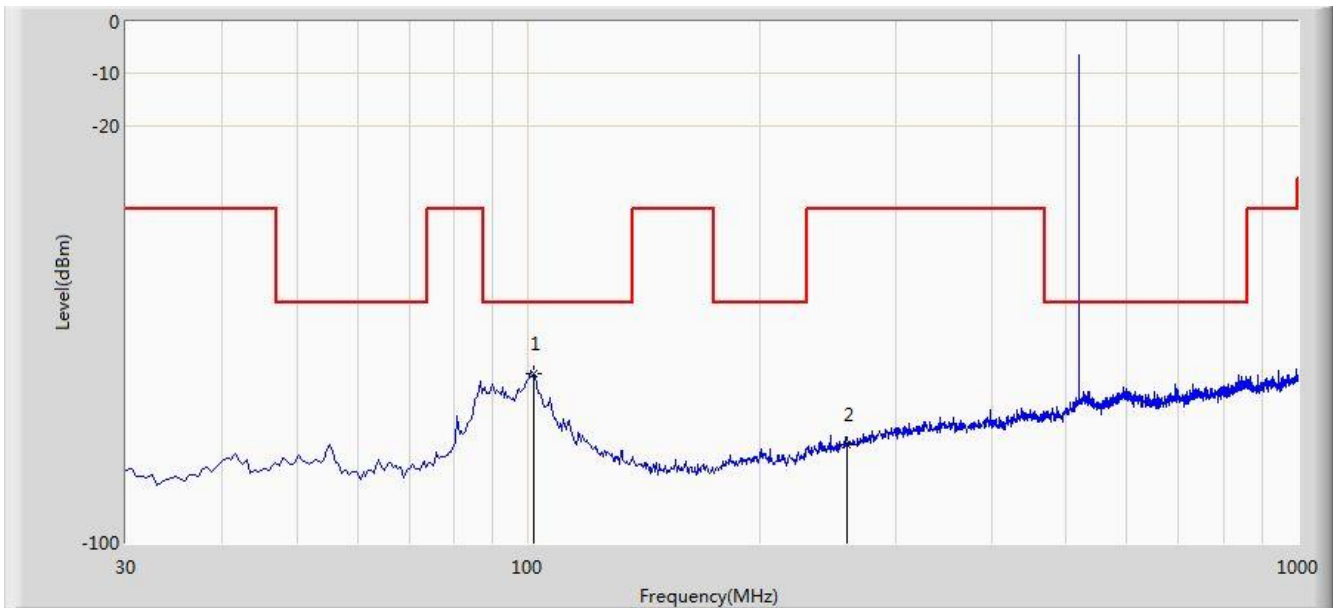


No	Flag	Mark	Frequency (MHz)	Measure Level (dBm)	Reading Level (dBm)	Over Limit (dB)	Limit (dBm)	Factor (dB)	Type
1			260.000	-78.755	-104.869	-42.755	-36.000	26.114	PK
2		*	567.380	-55.860	-87.293	-1.860	-54.000	31.433	PK

Note1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2017/12/28 - 23:27
Limit: ETSI_EN300422_RSE(3m)_Tx(Operating)	Engineer: Kevin Kerr
Probe: AC2 RF_Substitution_25-1000MHz	Polarity: Vertical
EUT: Digital Handheld Transmitter	Power: By Battery
Test Mode: Transmit by 520.0MHz, Power Level = 10mW	

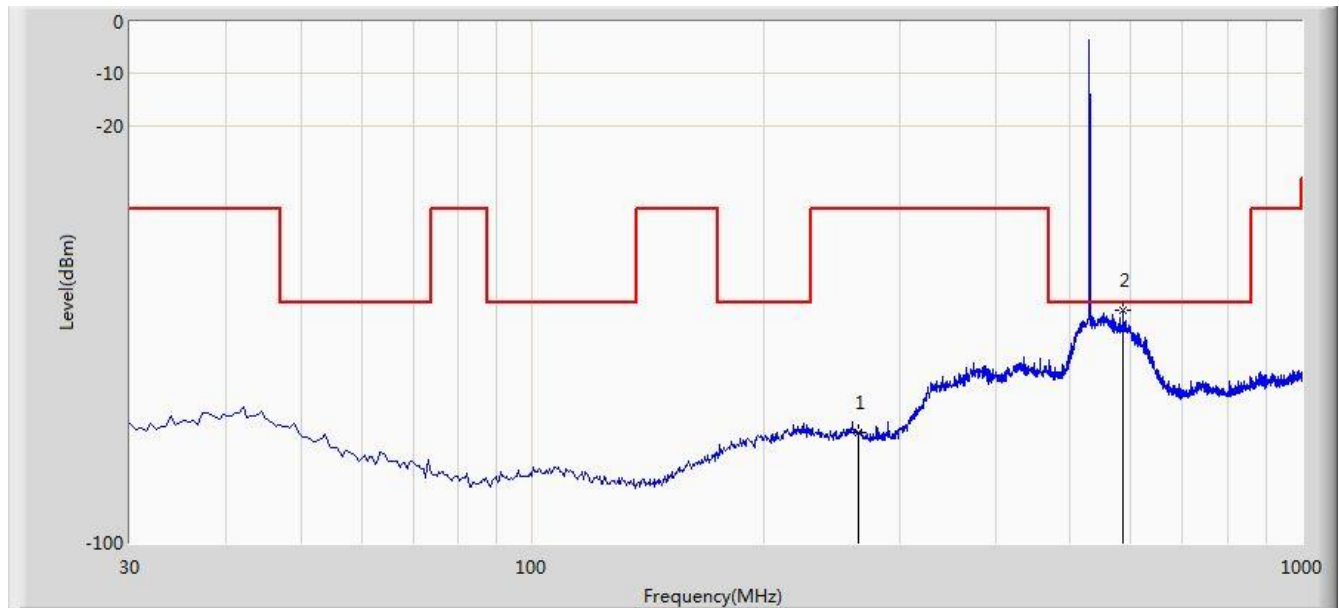


No	Flag	Mark	Frequency (MHz)	Measure Level (dBm)	Reading Level (dBm)	Over Limit (dB)	Limit (dBm)	Factor (dB)	Type
1		*	101.780	-67.562	-104.534	-13.562	-54.000	36.972	PK
2			260.000	-81.084	-105.631	-45.084	-36.000	24.547	PK

Note1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2017/12/28 - 23:14
Limit: ETSI_EN300422_RSE(3m)_Tx(Operating)	Engineer: Kevin Kerr
Probe: AC2 RF_Substitution_25-1000MHz	Polarity: Horizontal
EUT: Digital Handheld Transmitter	Power: By Battery
Test Mode: Transmit by 529.9MHz, Power Level = 10mW	

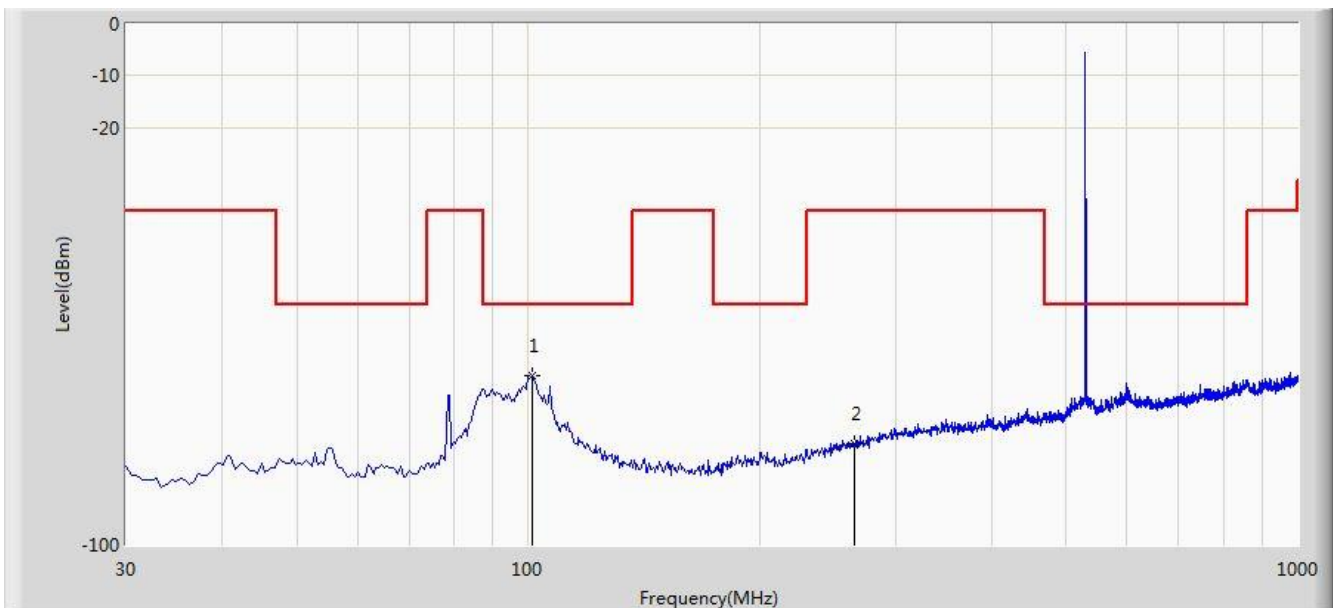


No	Flag	Mark	Frequency (MHz)	Measure Level (dBm)	Reading Level (dBm)	Over Limit (dB)	Limit (dBm)	Factor (dB)	Type
1			265.000	-78.920	-104.729	-42.920	-36.000	25.809	PK
2		*	585.810	-55.490	-86.885	-1.490	-54.000	31.395	PK

Note1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2017/12/28 - 23:17
Limit: ETSI_EN300422_RSE(3m)_Tx(Operating)	Engineer: Kevin Kerr
Probe: AC2 RF_Substitution_25-1000MHz	Polarity: Vertical
EUT: Digital Handheld Transmitter	Power: By Battery
Test Mode: Transmit by 529.9MHz, Power Level = 10mW	

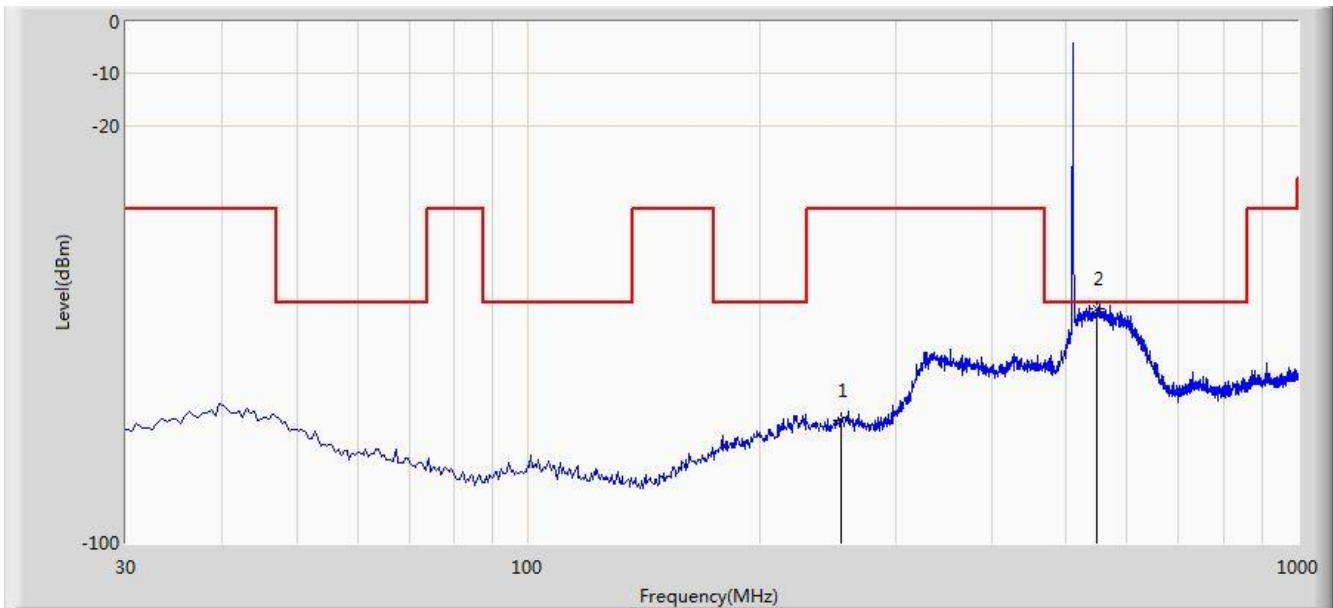


No	Flag	Mark	Frequency (MHz)	Measure Level (dBm)	Reading Level (dBm)	Over Limit (dB)	Limit (dBm)	Factor (dB)	Type
1		*	101.295	-67.398	-104.901	-13.398	-54.000	37.503	PK
2			265.000	-80.689	-105.426	-44.689	-36.000	24.737	PK

Note1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2017/12/28 - 23:40
Limit: ETSI_EN300422_RSE(3m)_Tx(Operating)	Engineer: Kevin Kerr
Probe: AC2 RF_Substitution_25-1000MHz	Polarity: Horizontal
EUT: Digital Handheld Transmitter	Power: By Battery
Test Mode: Transmit by 510.1MHz, Power Level = 40mW	

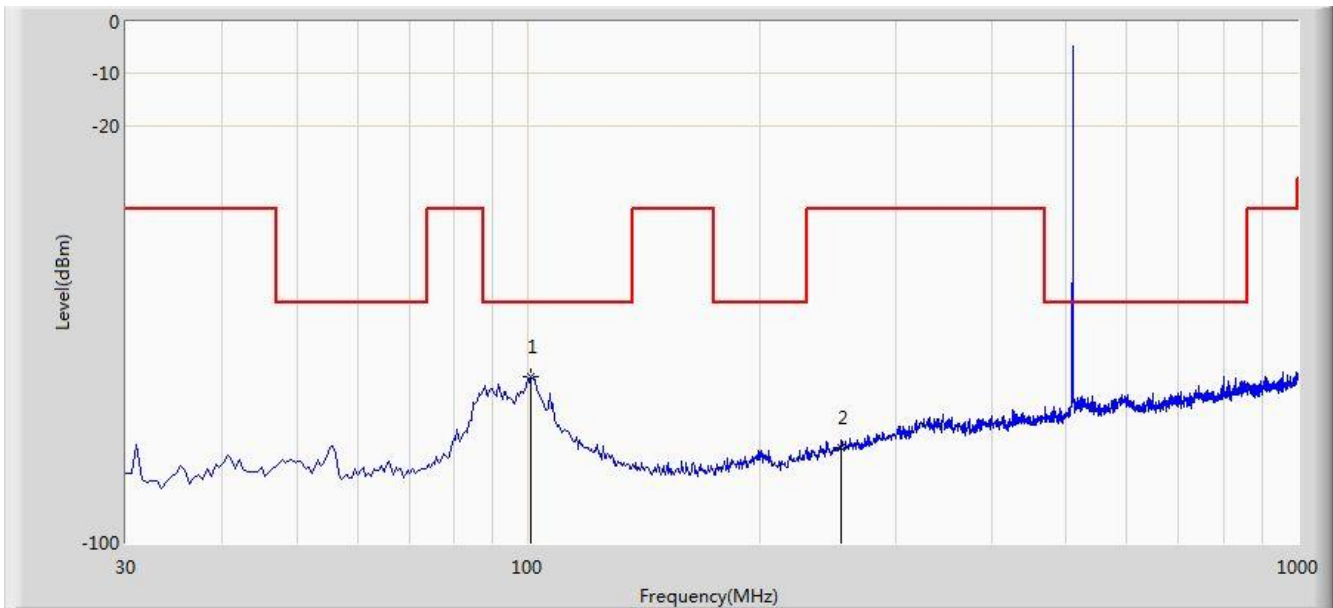


No	Flag	Mark	Frequency (MHz)	Measure Level (dBm)	Reading Level (dBm)	Over Limit (dB)	Limit (dBm)	Factor (dB)	Type
1			255.000	-76.548	-102.474	-40.548	-36.000	25.926	PK
2		*	548.950	-55.071	-85.921	-1.071	-54.000	30.850	PK

Note1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2017/12/28 - 23:42
Limit: ETSI_EN300422_RSE(3m)_Tx(Operating)	Engineer: Kevin Kerr
Probe: AC2 RF_Substitution_25-1000MHz	Polarity: Vertical
EUT: Digital Handheld Transmitter	Power: By Battery
Test Mode: Transmit by 510.1MHz, Power Level = 40mW	

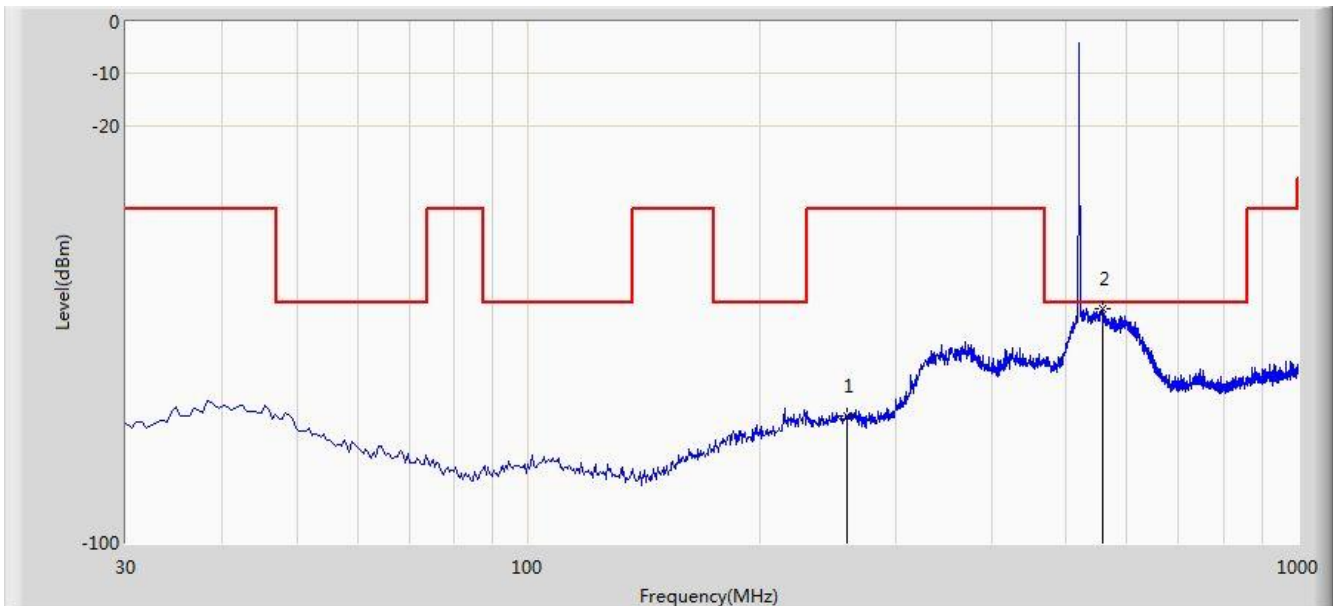


No	Flag	Mark	Frequency (MHz)	Measure Level (dBm)	Reading Level (dBm)	Over Limit (dB)	Limit (dBm)	Factor (dB)	Type
1		*	100.810	-68.191	-105.860	-14.191	-54.000	37.669	PK
2			255.000	-81.625	-105.783	-45.625	-36.000	24.158	PK

Note1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2018/02/11 - 11:24
Limit: ETSI_EN300422_RSE(3m)_Tx(Operating)	Engineer: Kevin Kerr
Probe: AC2 RF_Substitution_25-1000MHz	Polarity: Horizontal
EUT: Digital Handheld Transmitter	Power: By Battery
Test Mode: Transmit by 520.0MHz, Power Level = 40mW	

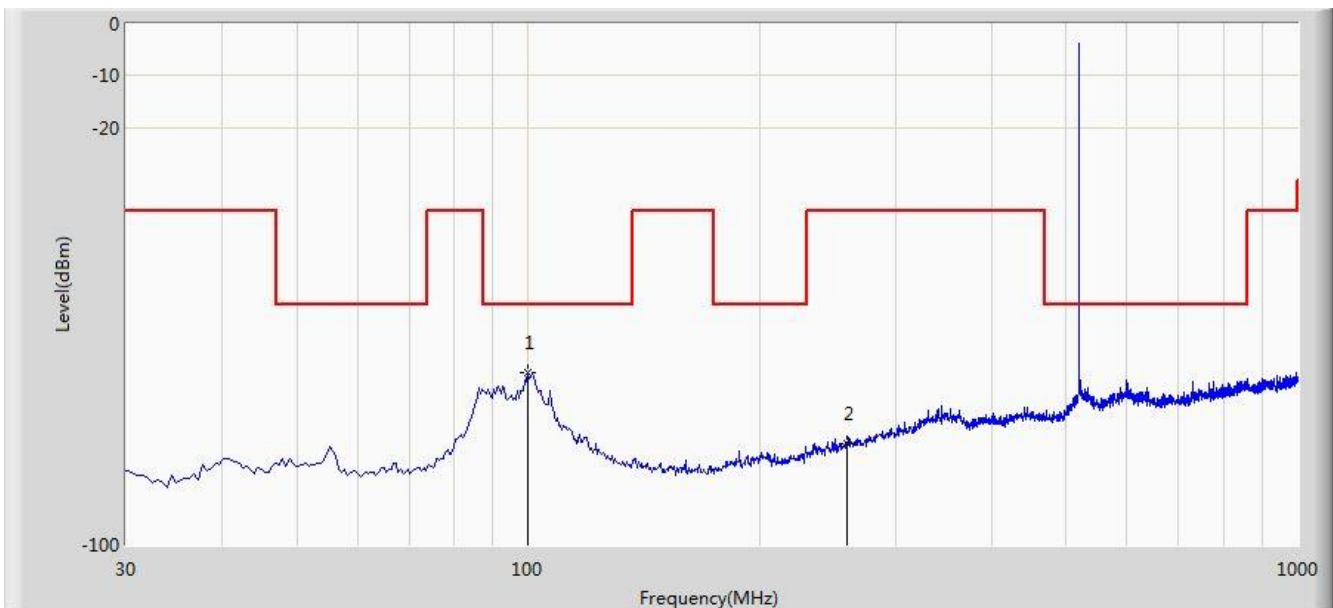


No	Flag	Mark	Frequency (MHz)	Measure Level (dBm)	Reading Level (dBm)	Over Limit (dB)	Limit (dBm)	Factor (dB)	Type
1			260.000	-75.769	-101.883	-39.769	-36.000	26.114	PK
2		*	556.710	-54.981	-86.209	-0.981	-54.000	31.228	PK

Note1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2017/12/28 - 23:24
Limit: ETSI_EN300422_RSE(3m)_Tx(Operating)	Engineer: Kevin Kerr
Probe: AC2 RF_Substitution_25-1000MHz	Polarity: Vertical
EUT: Digital Handheld Transmitter	Power: By Battery
Test Mode: Transmit by 520.0MHz, Power Level = 40mW	

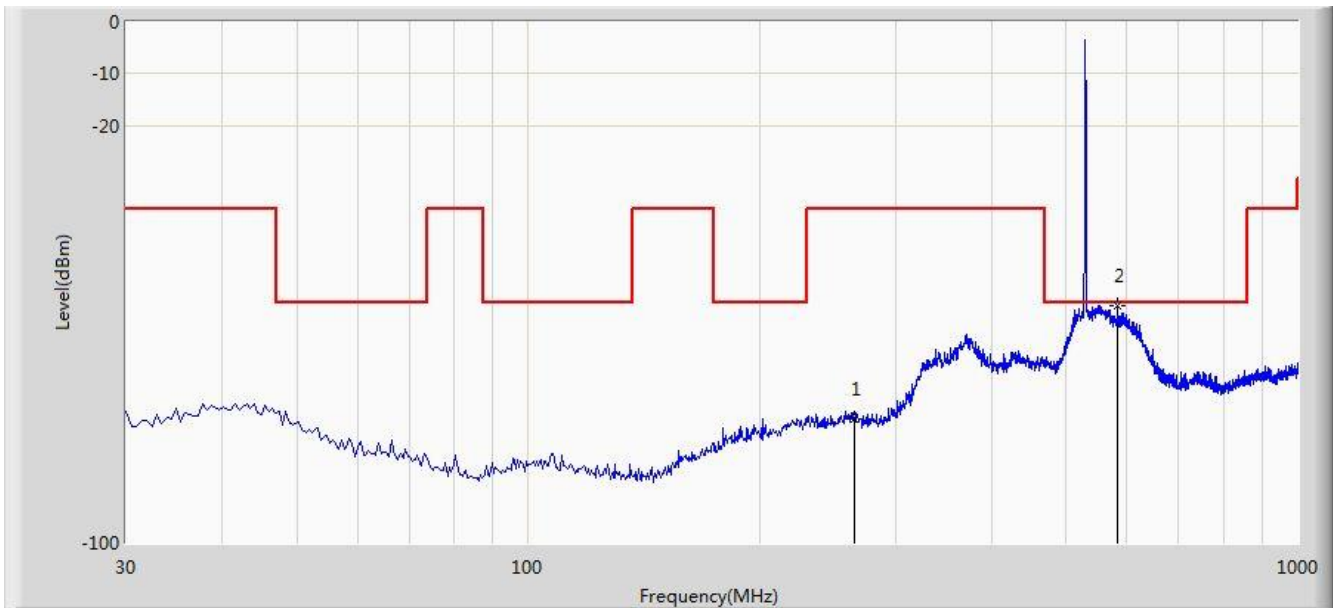


No	Flag	Mark	Frequency (MHz)	Measure Level (dBm)	Reading Level (dBm)	Over Limit (dB)	Limit (dBm)	Factor (dB)	Type
1		*	99.840	-66.895	-103.948	-12.895	-54.000	37.053	PK
2			260.000	-80.705	-105.252	-44.705	-36.000	24.547	PK

Note1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2017/12/28 - 23:18
Limit: ETSI_EN300422_RSE(3m)_Tx(Operating)	Engineer: Kevin Kerr
Probe: AC2 RF_Substitution_25-1000MHz	Polarity: Horizontal
EUT: Digital Handheld Transmitter	Power: By Battery
Test Mode: Transmit by 529.9MHz, Power Level = 40mW	

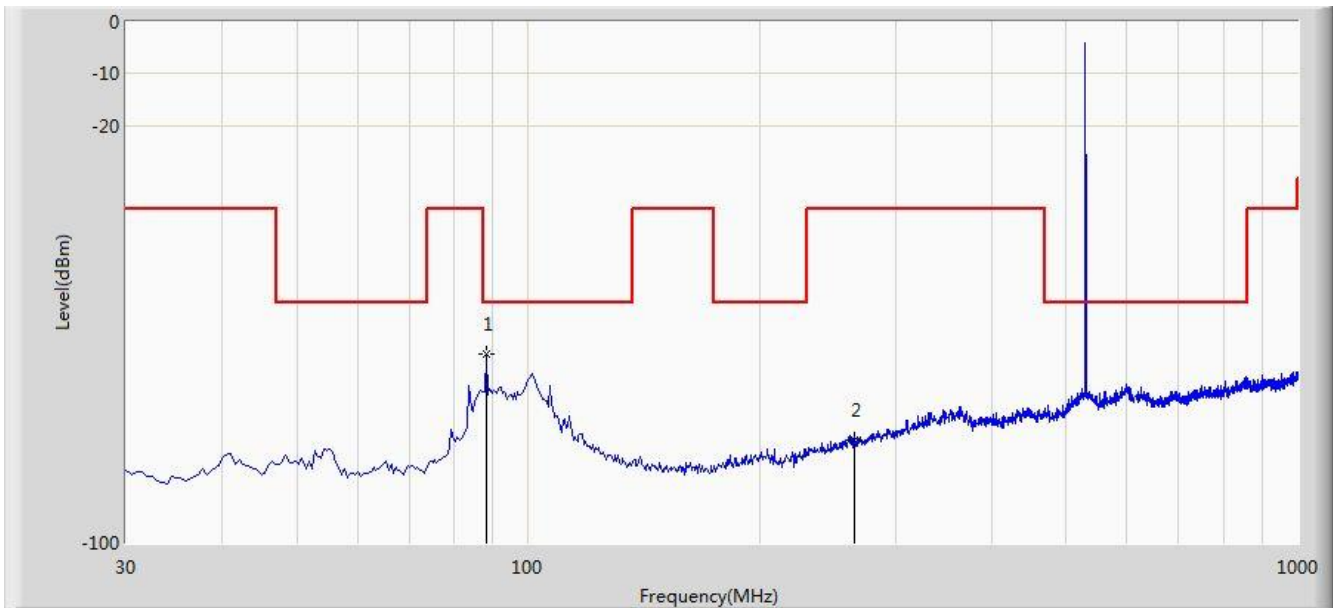


No	Flag	Mark	Frequency (MHz)	Measure Level (dBm)	Reading Level (dBm)	Over Limit (dB)	Limit (dBm)	Factor (dB)	Type
1			265.000	-76.088	-101.897	-40.088	-36.000	25.809	PK
2		*	583.385	-54.630	-86.028	-0.630	-54.000	31.398	PK

Note1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2017/12/28 - 23:19
Limit: ETSI_EN300422_RSE(3m)_Tx(Operating)	Engineer: Kevin Kerr
Probe: AC2 RF_Substitution_25-1000MHz	Polarity: Vertical
EUT: Digital Handheld Transmitter	Power: By Battery
Test Mode: Transmit by 529.9MHz, Power Level = 40mW	

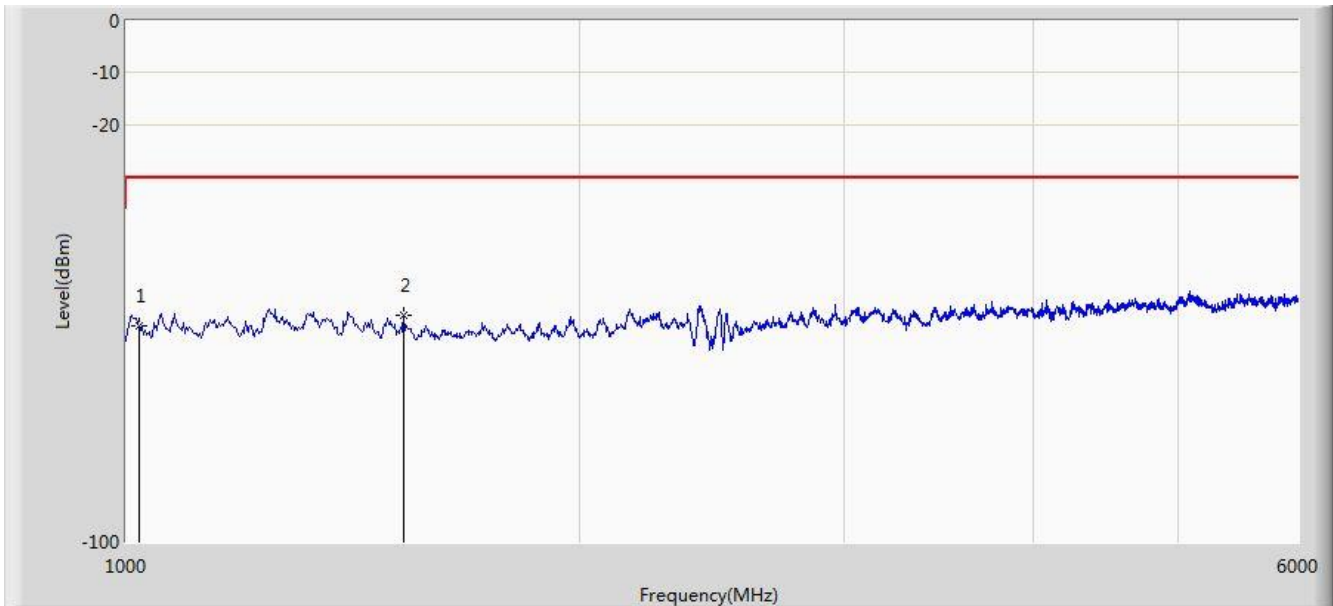


No	Flag	Mark	Frequency (MHz)	Measure Level (dBm)	Reading Level (dBm)	Over Limit (dB)	Limit (dBm)	Factor (dB)	Type
1		*	88.200	-63.748	-97.973	-9.748	-54.000	34.225	PK
2			265.000	-80.304	-105.041	-44.304	-36.000	24.737	PK

Note1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2018/02/11 - 13:28
Limit: ETSI_EN300422_RSE(3m)_Tx(Operating)	Engineer: Kevin Kerr
Probe: AC2 RF_Substitution_1-18GHz	Polarity: Horizontal
EUT: Digital Handheld Transmitter	Power: By Battery
Test Mode: Transmit by 510.1MHz, Power Level = 2mW	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBm)	Reading Level (dBm)	Over Limit (dB)	Limit (dBm)	Factor (dB)	Type
1			1020.000	-58.600	-65.164	-28.600	-30.000	6.564	PK
2		*	1530.000	-56.651	-65.914	-26.651	-30.000	9.263	PK

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)