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NCC

低功率射頻電機型式試驗報告

產品名稱 : 無線遙控
型號 : ANMDVRVCN
廠牌 : ANGELA
商標 : 
申請者 : 鉸全國際有限公司
測試標準 : LP0002 (107 年版)
參考法規 : ANSI C63.10-2013
接收日期 : 2019/11/29
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(柯承志)



本測試報告僅對實驗室所受測之樣品負責
本測試報告非經本公司同意不可局部複製使用

修訂記錄

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1. 一般資訊

申請者	鉸全國際有限公司
申請者地址	桃園市蘆竹區福昌里南福街 186 巷 13 號 3 樓
製造商	深圳德銳光學科技有限公司
製造商地址	深圳市寶安區福園一路天瑞工業園 A1 棟 805
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 Firm. 2. MRT facility is an IC registered (MRT Reg. No. 21723) 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 (Designation Number: TW3261), 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	無線遙控
產品型號	ANMDVRVCN
廠牌	ANGELA
商標	
頻率範圍	2401.7 ~ 2445.7 MHz
調變模式	GFSK
待測物電壓	By Battery (DC 3V)

2.2 測試模式

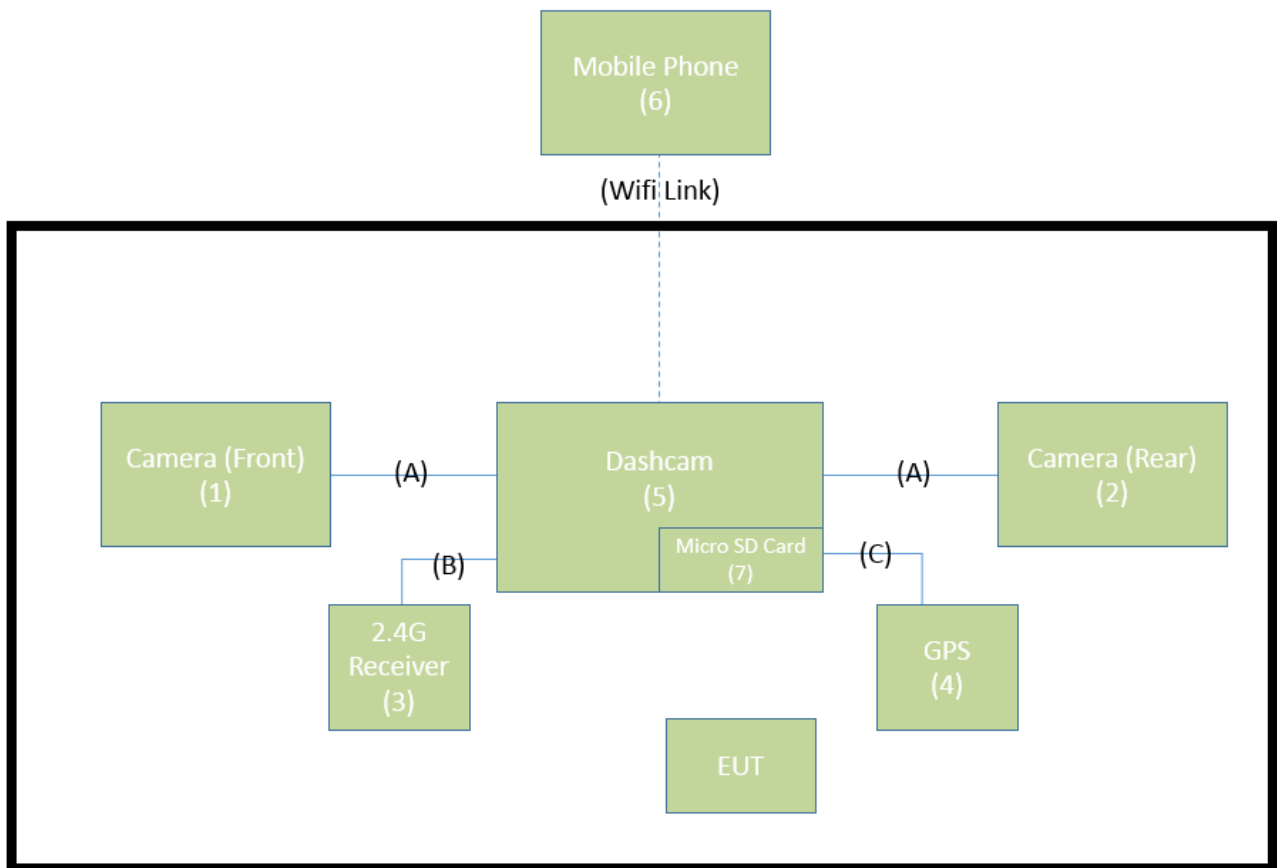
Test Mode	Mode 1: Transmit by 2401.7MHz
	Mode 2: Transmit by 2428MHz
	Mode 3: Transmit by 2445.7MHz
	Mode 4: Receive by 2428MHz
	Mode 5: Normal Mode

2.3 測試配置

待測物測試配置圖 (Mode1~4)



待測物測試配置圖 (Mode5)



Signal Cable Type		Signal Cable Description
A	Camera Cable	Non-Shielded, 3.0m
B	Signal Cable	Non-Shielded, 0.3m
C	GPS Cable	Non-Shielded, 3.0m

2.4 測試周邊

待測裝置測試時，其搭配系統測試時之週邊裝置包括如下：

Mode1~4: N/A

Mode5:

No.	周邊名稱	廠牌	型號	序號	檢磁	電源線
1	Camera (Front)	N/A	1080P	N/A	N/A	N/A
2	Camera (Rear)	N/A	1080P	N/A	N/A	N/A
3	2.4G Receiver	N/A	N/A	N/A	N/A	N/A
4	GPS	N/A	N/A	N/A	N/A	N/A
5	Dashcam	ANGELA	ANGELA 1080P	N/A	N/A	N/A
6	Mobile Phone	htc	D610	352191060349090	N/A	N/A
7	Micro SD Card	SanDisk	SDSDQUAN-016 G-G4A	5161DK6DL	N/A	N/A

2.5 操作程序

1.	待測物電源開啟.
2.	進入工程模式
3.	確認待測物的無線頻道及功率.
4.	開始測試

3. 測試設備明細

輻射干擾 – AC1

儀器名稱	製造商	型號	財產編號	校正日期
Broadband TRILOG Antenna	SCHWARZBECK	VULB 9162	MRTTWA00001	2020/6/4
Broadband Horn antenna	SCHWARZBECK	BBHA 9120D	MRTTWA00003	2020/4/22
Broadband Preamplifier	SCHWARZBECK	BBV 9718	MRTTWA00005	2020/4/24
Signal Analyzer	R&S	FSV40	MRTTWA00007	2021/3/24
EMI Test Receiver	R&S	ESR3	MRTTWA00009	2021/3/25
Antenna Cable	HUBERSUHNER	SF106	MRTTWE00010	2020/4/22

EMI 測試軟體

軟體名稱	製造商	版本
e3	Audix	9.160520a

4. 量測不確定度

輻射干擾量測 (Radiated Spurious Emission)

Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$):

9kHz~30MHz: $\pm 3.92\text{dB}$

30MHz~1GHz: $\pm 4.25\text{dB}$

1GHz~18GHz: $\pm 4.40\text{dB}$

18GHz~40GHz: $\pm 4.45\text{dB}$

5. 測試結果

產品名稱 無線遙控

型號 ANMDVRVCN

法規章節	量測項目	限制值	測試結果	測試數據
3.10.2.2 節	主波發射	$\leq 50\text{mV/m}$	符合	第 5.2 章節
3.10.2.4 節	混附波發射	低功率射頻電機技術規範 2.8 節	符合	第 5.3 章節
3.10.2.4 節	頻帶邊緣	低功率射頻電機技術規範 2.8 節	符合	第 5.4 章節

備註：符合性的判定是基於測試結果符合規範的限制值或客戶的宣告要求，測試結果的判定是不考慮測量不確定度的值。

5.1 天線之要求

5.1.1 限制要求

依據國家通訊傳播委員會低功率射頻電機技術規範之第3.10.1.4節規定，天線之規格可不受下述規定之限制。

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

5.1.2 天線樣式

此無線遙控其天線為 PCB Antenna Type，(檢附天線規格書)

Antenna List

No.	Manufacturer	Part No.	Peak Gain
1	N/A	2.4G-TX	-0.5 dBi

5.2 主波發射測試

5.2.1 量測方法

待測物置於非導體桌面（落地型產品置於地上），受測物使用交流電源時，將其與任何配件設備之電源線連接至位於旋轉桌的交流電源。受測物使用電池時，測試時應裝置新電池或充電完全的電池。受測物與配件設備之電源線無須束綁，桌面上受測設備的所有電源線由桌子的後緣垂下沿旋轉桌表面接至交流插座。落地型設備的交流電源線可以方便的型態走線。桌面可360度旋轉，接收天線置於距待測物3m距離，高度可在1至4公尺間變動，以量測待測物之最大輻射電場強度，接收天線並應於水平及垂直極化方向各量測一次。（待測物擺設方式根據ANSI C63.10-2014版，待測物放置桌中心，1G以下擺設高度為80cm/1G以上擺設高度為150cm）

任一頻率大於1000 MHz 之訊號，使用平均值檢波器測量，當規定之發射限制值為平均值時(含1000 MHz 以下)，受測訊號藉由峰值檢波(RBW:1MHz,VBW:3MHz)所測量之峰值，亦須符合峰值發射限制值。當待測物為握式或身戴式時，其輻射發射初測已包含待測物之三個正交軸，並將最大之輻射模式記錄在報告中。

備註：若為手持式或穿戴式之裝置，需對其三個正交軸的方位評估測試，並記錄最差的數值。

5.2.2 限制要求

其電場強度不得超過下表之限值。

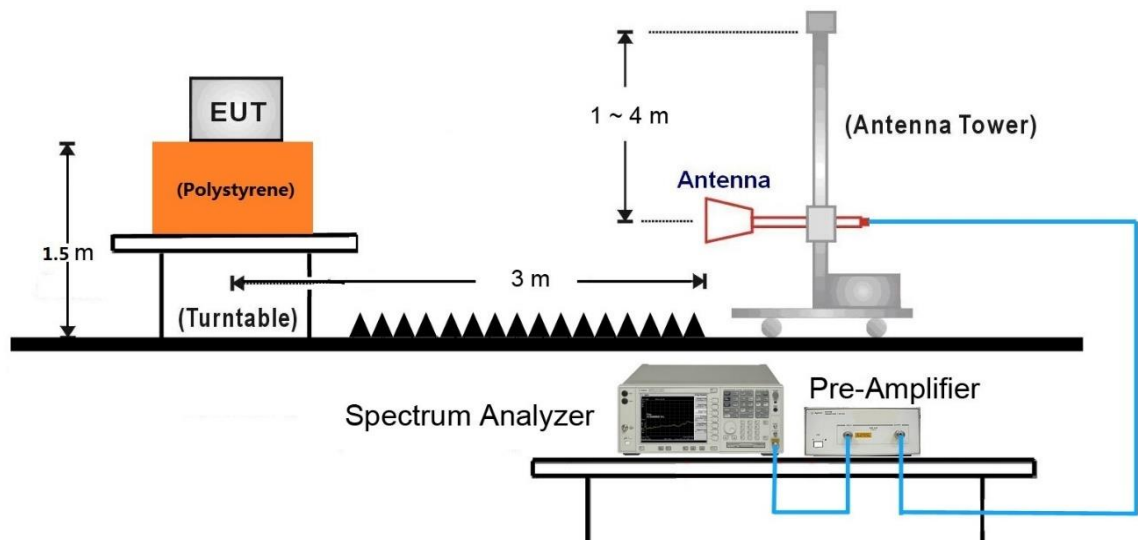
主波頻率(MHz)	主波電場強度(mV/m)
2400 ~ 2483.5	50
5725 ~ 5875	50
24000 ~ 24250	250

備註：

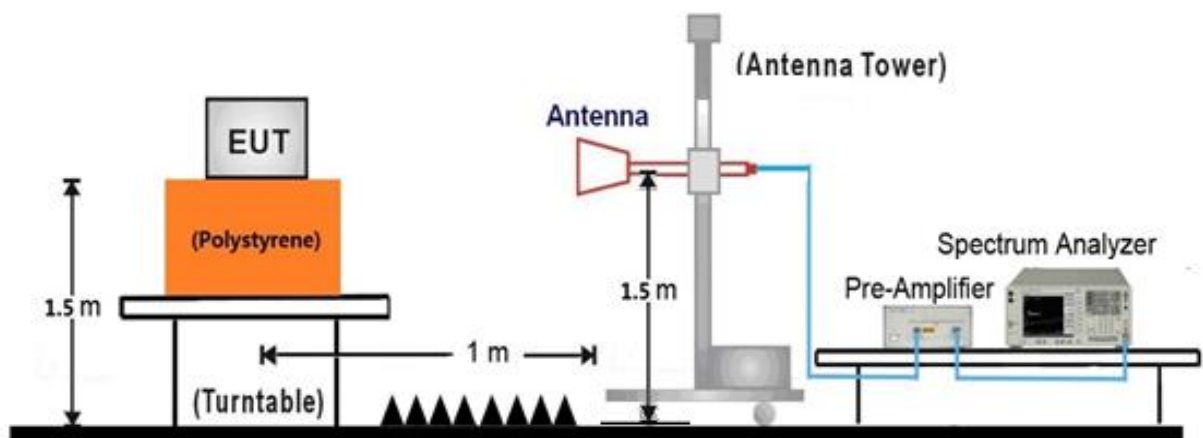
電場強度指距器材3 公尺處所測量之值，且以平均值檢波器測量，同時須符合低功率射頻電機技術規範之第5.15.2節規定。點對點操作之器材沿天線方位角之峰值電場強度應小於或等於2500 mV/m。（主波電場強度單位換算 $\text{mV/m to dBuV/m} = 20 \log (\text{mV/m} \times 1000)$ ）

5.2.3 測試架構圖

1GHz ~18GHz Test Setup:

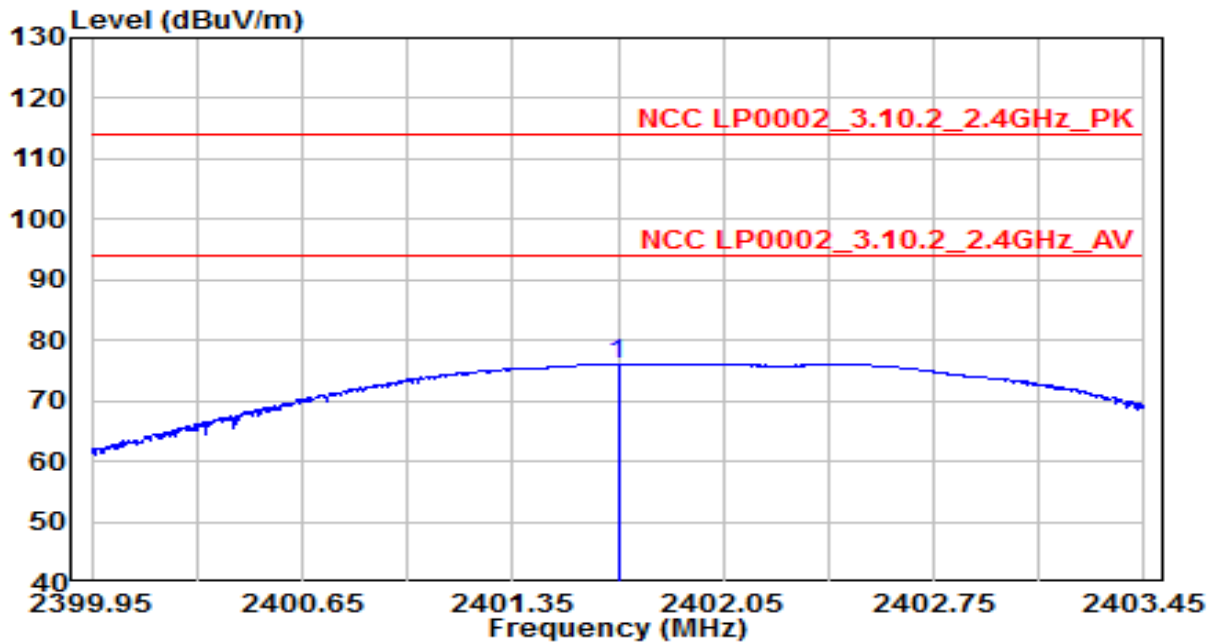


18GHz ~25GHz Test Setup:



5.2.4 主波發射測試結果

EUT	無線遙控	Date of Test	2019-12-31
Factor	BBHA 9120D	Temp. / Humidity	23°C / 59%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2401.7MHz	Test Voltage	By Battery

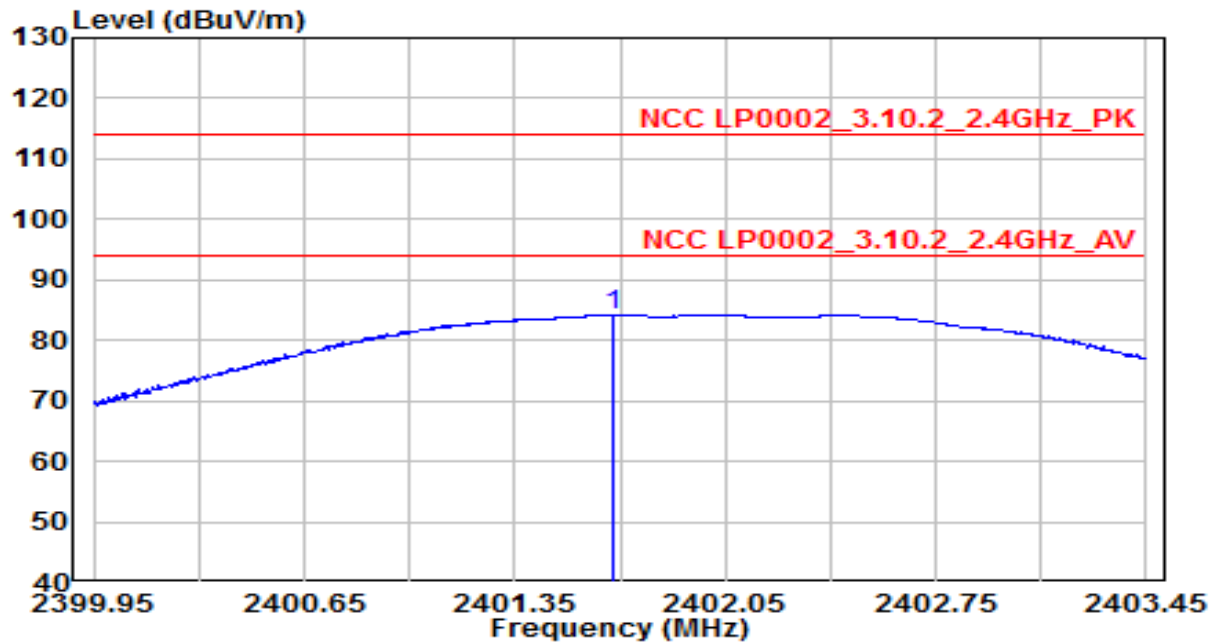


No		Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	2401.700	78.68	-2.67	76.01	-37.99	114.00	190	370	Peak

Note:

1. " * ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB) + Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	無線遙控	Date of Test	2019-12-31
Factor	BBHA 9120D	Temp. / Humidity	23°C /59%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2401.7MHz	Test Voltage	By Battery

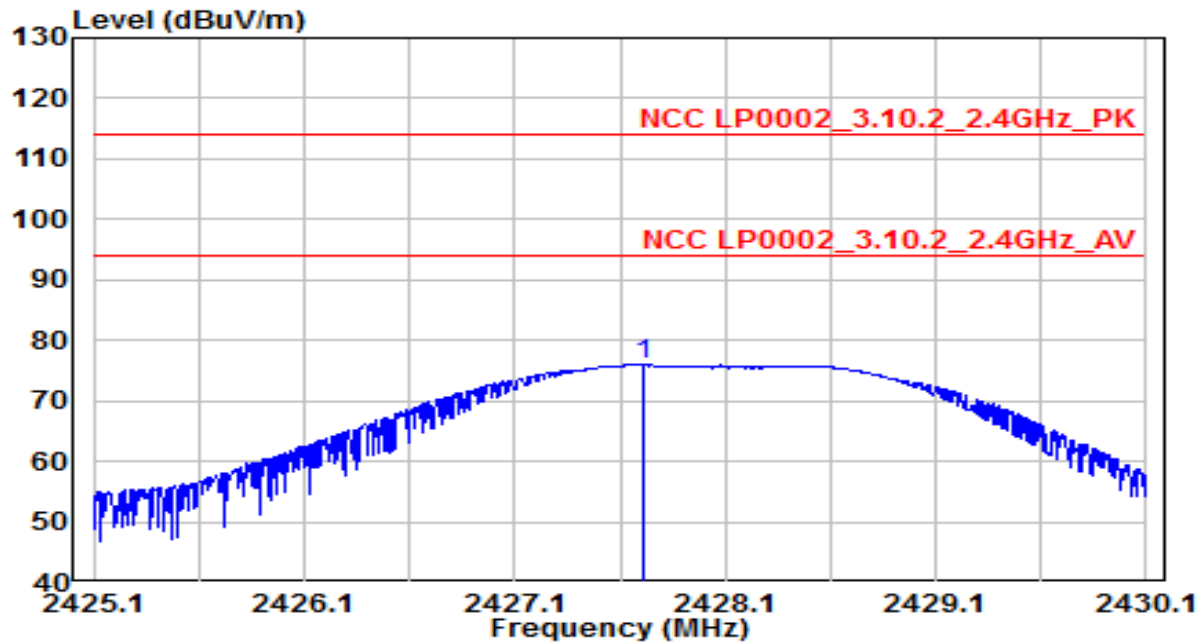


No		Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	2401.679	86.76	-2.67	84.09	-29.91	114.00	100	245	Peak

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	無線遙控	Date of Test	2019-12-31
Factor	BBHA 9120D	Temp. / Humidity	23°C /59%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2428MHz	Test Voltage	By Battery

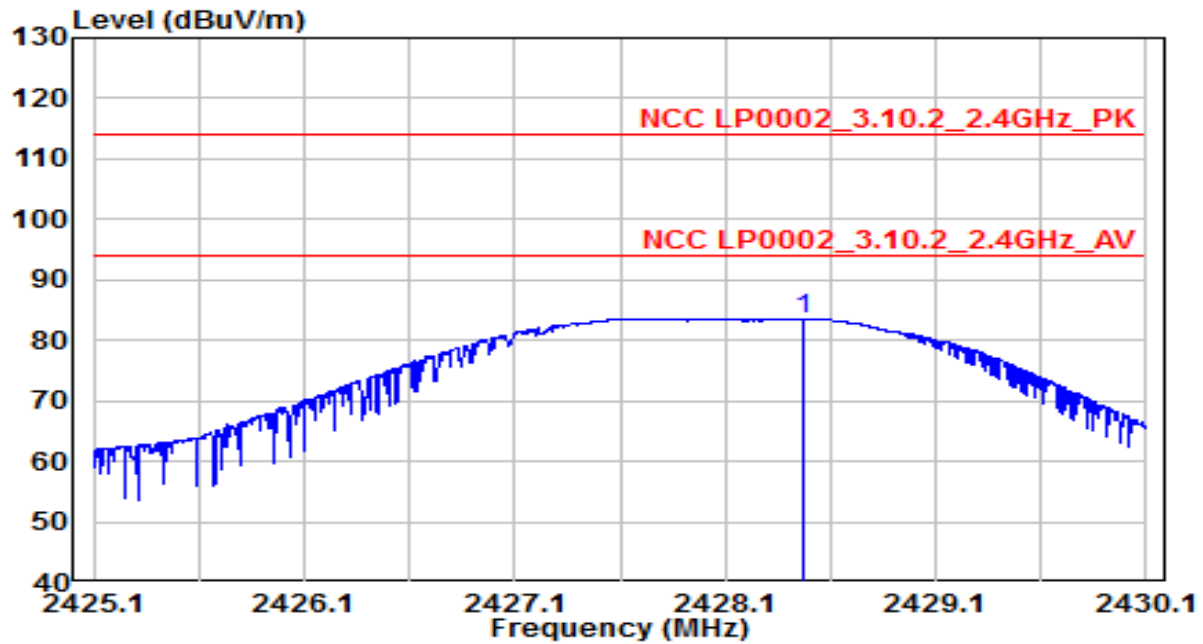


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	* 2427.715	78.45	-2.55	75.90	-38.10	114.00	100	175	Peak

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	無線遙控	Date of Test	2019-12-31
Factor	BBHA 9120D	Temp. / Humidity	23°C /59%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2428MHz	Test Voltage	By Battery

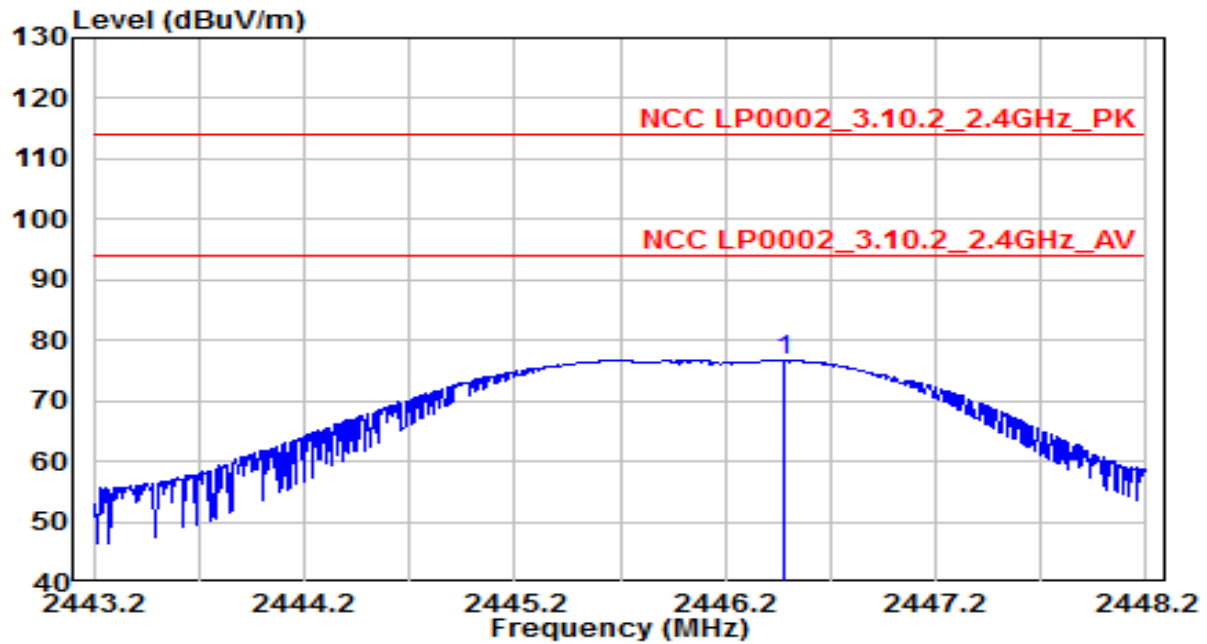


No		Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	2428.475	86.11	-2.55	83.56	-30.44	114.00	145	275	Peak

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	無線遙控	Date of Test	2019-12-31
Factor	BBHA 9120D	Temp. / Humidity	23°C /59%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2445.7MHz	Test Voltage	By Battery

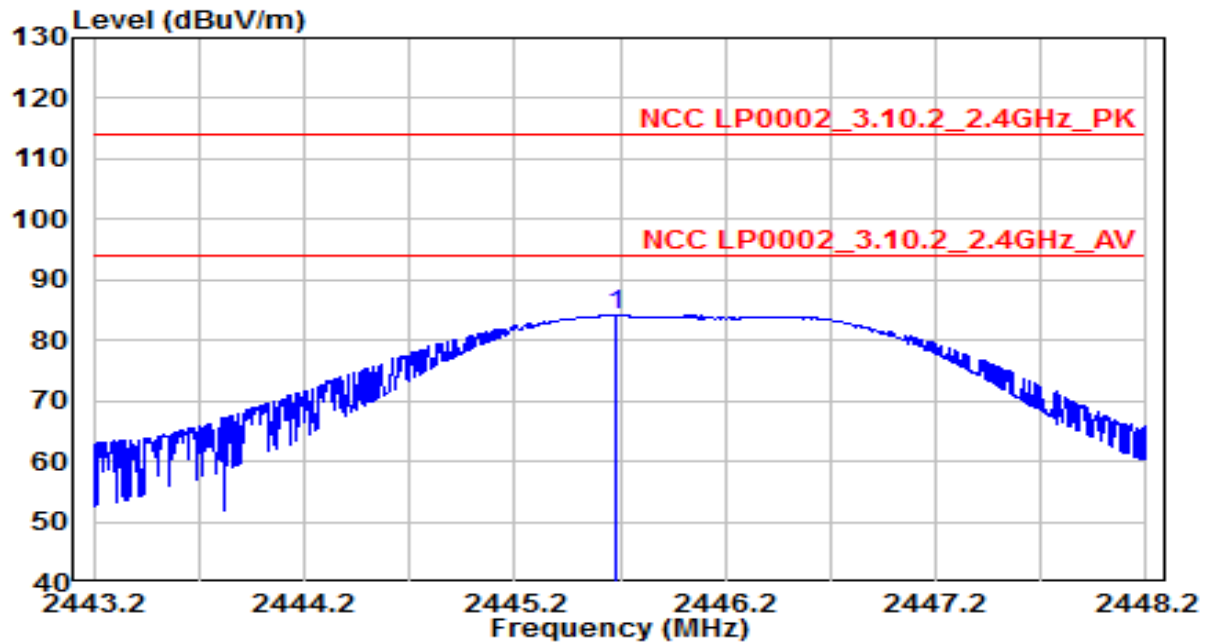


No		Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	2446.475	79.12	-2.47	76.66	-37.34	114.00	205	355	Peak

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	無線遙控	Date of Test	2019-12-31
Factor	BBHA 9120D	Temp. / Humidity	23°C /59%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2445.7MHz	Test Voltage	By Battery



No	Frequency (MHz)	Reading (dBUV)	C.F (dB)	Measurement (dBUV/m)	Margin (dB)	Limit (dBUV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	* 2445.680	86.51	-2.47	84.04	-29.96	114.00	140	265	Peak

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBUV/m) = Reading(dBUV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

5.3. 混附波發射測試

5.3.1 量測方法

待測物置於非導體桌面（落地型產品置於地上），受測物使用交流電源時，將其與任何配件設備之電源線連接至位於旋轉桌的交流電源。受測物使用電池時，測試時應裝置新電池或充電完全的電池。受測物與配件設備之電源線無須束綁，桌面上受測設備的所有電源線由桌子的後緣垂下沿旋轉桌表面接至交流插座。落地型設備的交流電源線可以方便的型態走線。桌面可360度旋轉，接收天線置於距待測物3m距離，高度可在1至4公尺間變動，以量測待測物之最大輻射電場強度，接收天線並應於水平及垂直極化方向各量測一次。（待測物擺設方式根據ANSI C63.10-2014版，待測物放置桌中心，1G以下擺設高度為80cm/1G以上擺設高度為150cm）

- (1) 任一頻率小於或等於1000 MHz 之訊號,使用CISPR準峰值檢波器
- (2) 任一頻率大於1000 MHz 之訊號,使用平均值檢波器測量,當規定之發射限制值為平均值時(含1000 MHz 以下),受測訊號藉由峰值檢波器(RBW:1MHz,VBW:3MHz)所測量之峰值,亦須符合峰值發射限制值,其峰值發射限制值為最大容許平均值加20 dB。

備註: 若為手持式或穿戴式之裝置,需對其三個正交軸的方位評估測試,並記錄最差的數值。

5.3.2 限制要求

其電場強度不得超過下表之限值,且其不必要之發射皆不得大於主波發射強度。各頻段重疊處,以較嚴格之限制值為準。

頻率(MHz)	電場強度(uV/m)	測距(m)
0.009 - 0.490(含)	2,400/f(KHz)	300
0.490 (不含) – 1.705 (含)	24,000/f(KHz)	30
1.705(不含) – 30 (不含)	30	30
30 (含) – 88 (含)	100	3
88 (不含)- 216 (含)	150	3
216 (不含)- 960 (含)	200	3
960 (不含)以上	500	3

上表規定之電場強度,頻率在9-90kHz千赫(kHz)、110-490千赫(kHz)以及1000兆赫(MHz)以上之發射,其量測以平均值檢波器為基準,且須符合低功率射頻電機技術規範第5.14節之規定;其他頻率之發射,應以CISPR準峰值(quasi-peak) 檢波器測量;非以上表所指定之距離測量時須符合低功率射頻電機技術規範第5.5節之規定,而輻射發射之量測頻率範圍須符合低功率射頻電機技術規範5.12節之規定。

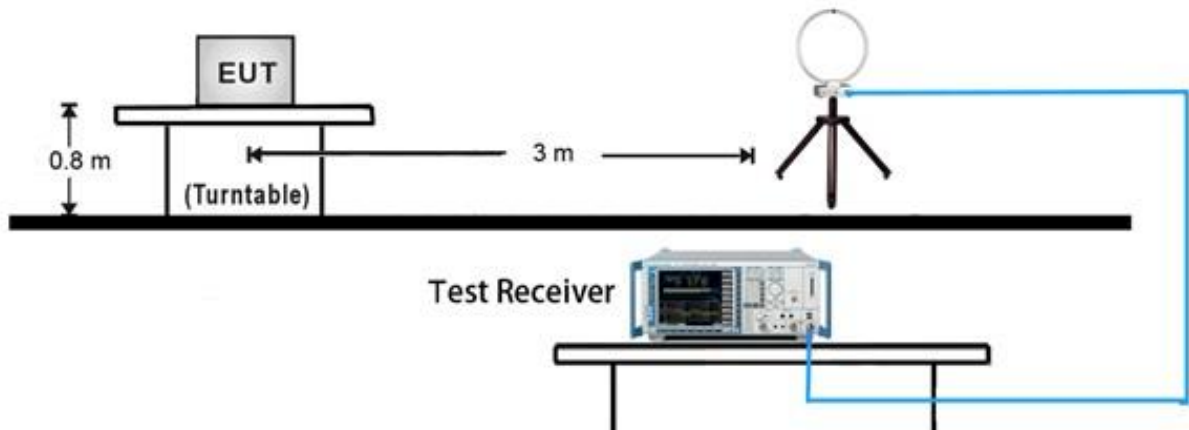
主波頻率(MHz)	諧波電場強度(mV/m)
2400 ~ 2483.5	500
5725 ~ 5875	500
24000 ~ 24250	2500

除諧波外，指定頻帶外之發射應比主波低50 dB以上或依低功率射頻電機技術規範第2.8節 之發射限制，兩者取其較鬆者。

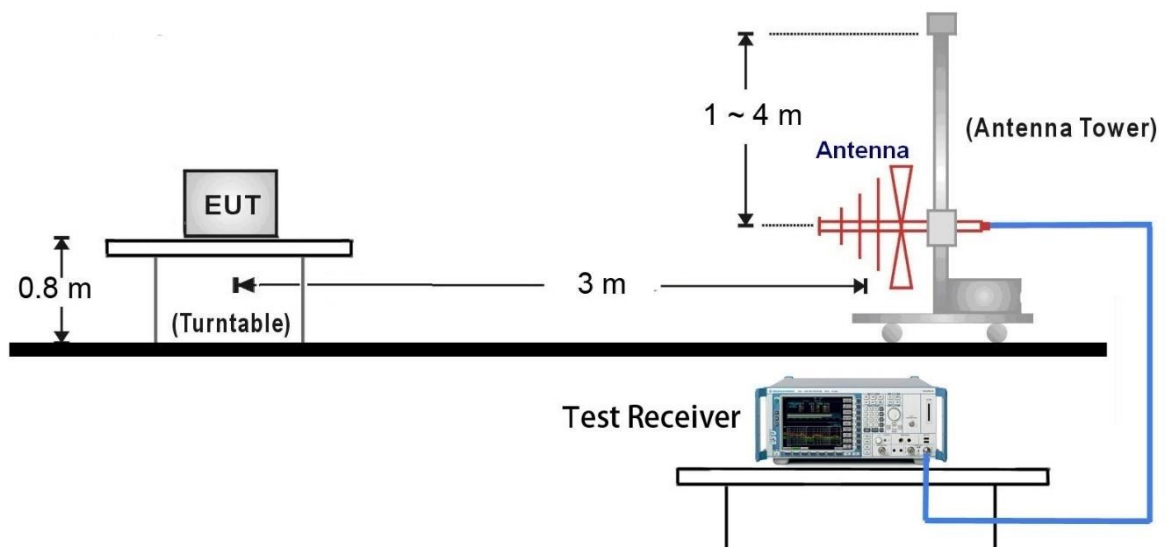
電場強度指距器材3 公尺處所測量之值，且以平均值檢波器測量，同時須符合低功率射頻電機技術規範之第5.15.2節規定。點對點操作之器材沿天線方位角之峰值電場強度應小於或等於2500 mV/m。(諧波電場強度單位換算 $\text{mV/m to dBuV/m} = 20 \log (\text{mV/m} \times 1000)$)

5.3.3 測試架構圖

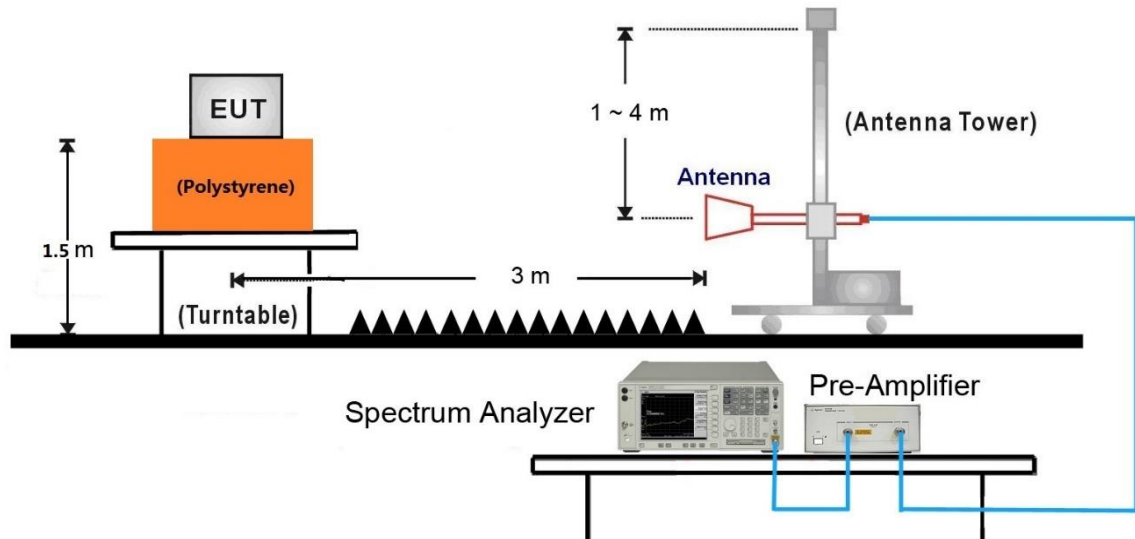
Under 30MHz Test Setup



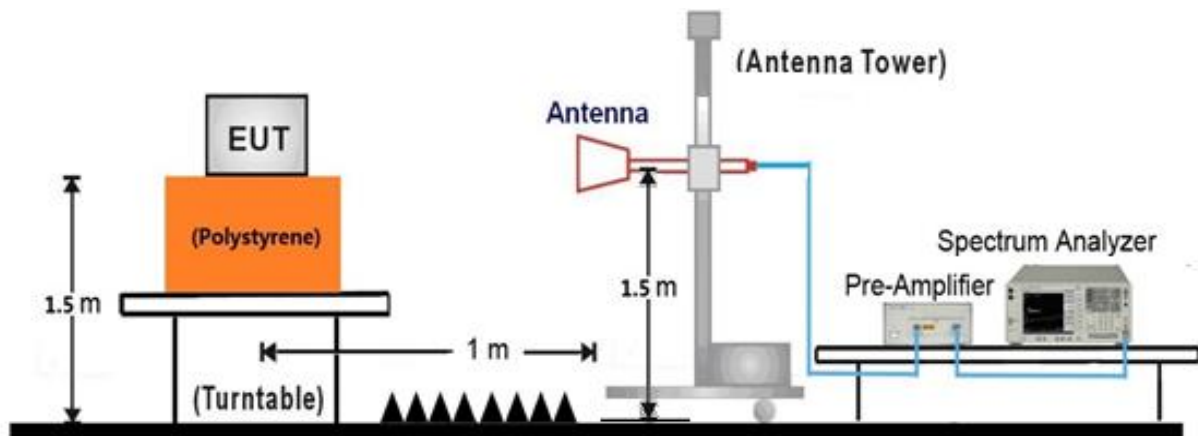
Under 1GHz Test Setup:



1GHz ~ 18GHz Test Setup:

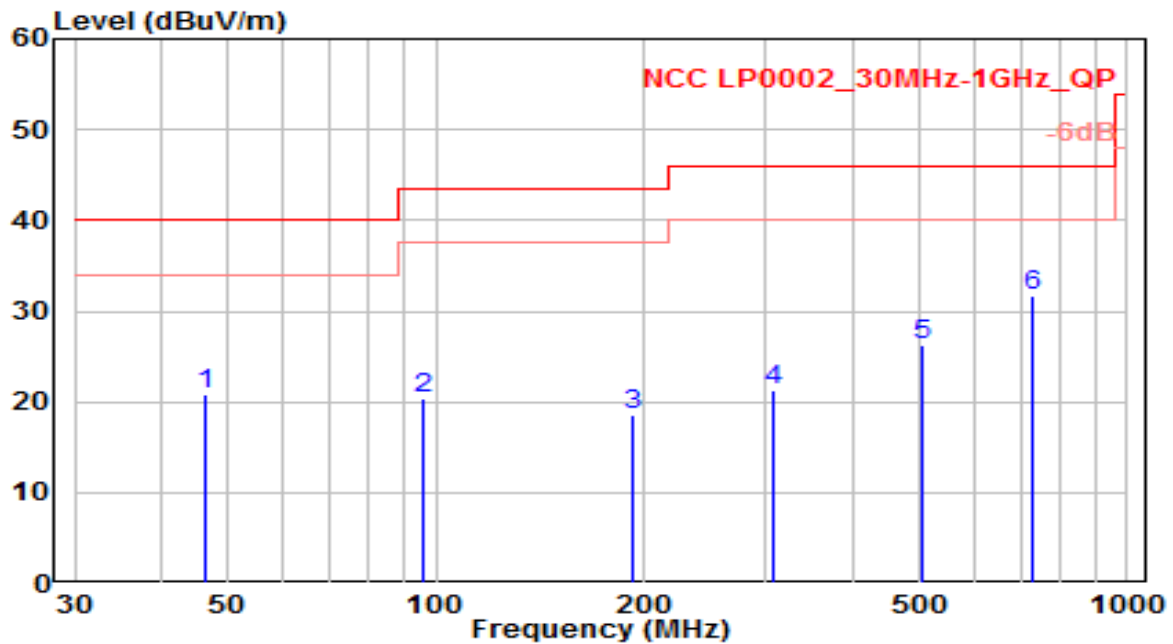


18GHz ~25GHz Test Setup:



5.3.4 混附波發射測試結果

EUT	無線遙控	Date of Test	2019-12-31
Factor	VULB 9162	Temp. / Humidity	23°C /59%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2428MHz	Test Voltage	By Battery

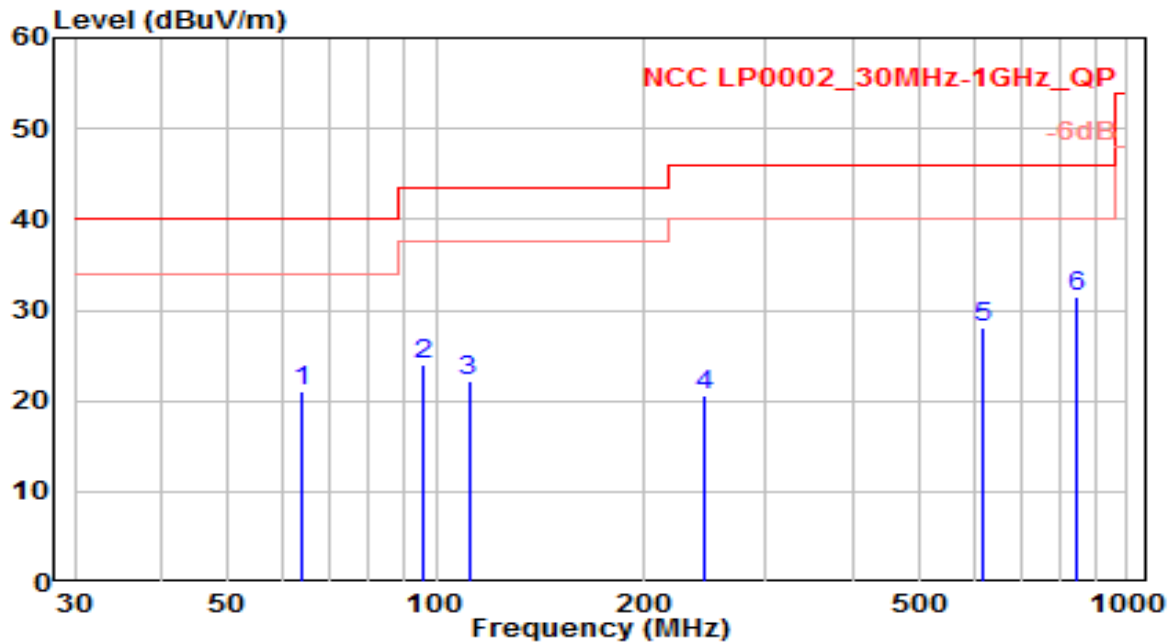


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	46.490	-0.60	21.48	20.88	-19.12	40.00	105	200	QP
2	95.960	1.79	18.59	20.39	-23.11	43.50	120	150	QP
3	192.960	-0.33	18.78	18.46	-25.04	43.50	175	35	QP
4	306.450	-0.37	21.66	21.29	-24.71	46.00	200	65	QP
5	505.300	0.32	25.90	26.23	-19.77	46.00	190	300	QP
6	* 729.370	2.15	29.57	31.72	-14.28	46.00	180	400	QP

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	無線遙控	Date of Test	2019-12-31
Factor	VULB 9162	Temp. / Humidity	23°C /59%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2428MHz	Test Voltage	By Battery

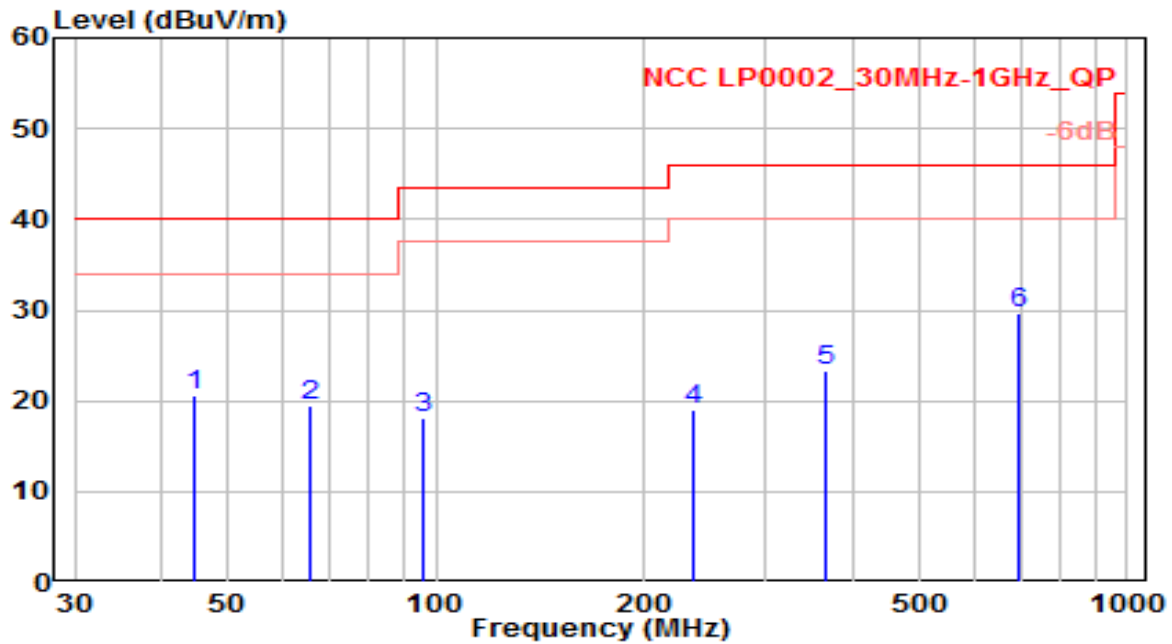


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	63.950	2.33	18.67	21.00	-19.00	40.00	200	255	QP
2	95.960	5.39	18.59	23.98	-19.52	43.50	105	110	QP
3	111.480	3.85	18.45	22.29	-21.21	43.50	135	115	QP
4	245.340	0.13	20.38	20.51	-25.49	46.00	170	65	QP
5	618.790	0.28	27.80	28.08	-17.92	46.00	120	100	QP
6	* 844.800	0.36	31.18	31.54	-14.46	46.00	100	150	QP

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	無線遙控	Date of Test	2019-12-31
Factor	VULB 9162	Temp. / Humidity	23°C /59%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	RX_2428MHz	Test Voltage	By Battery

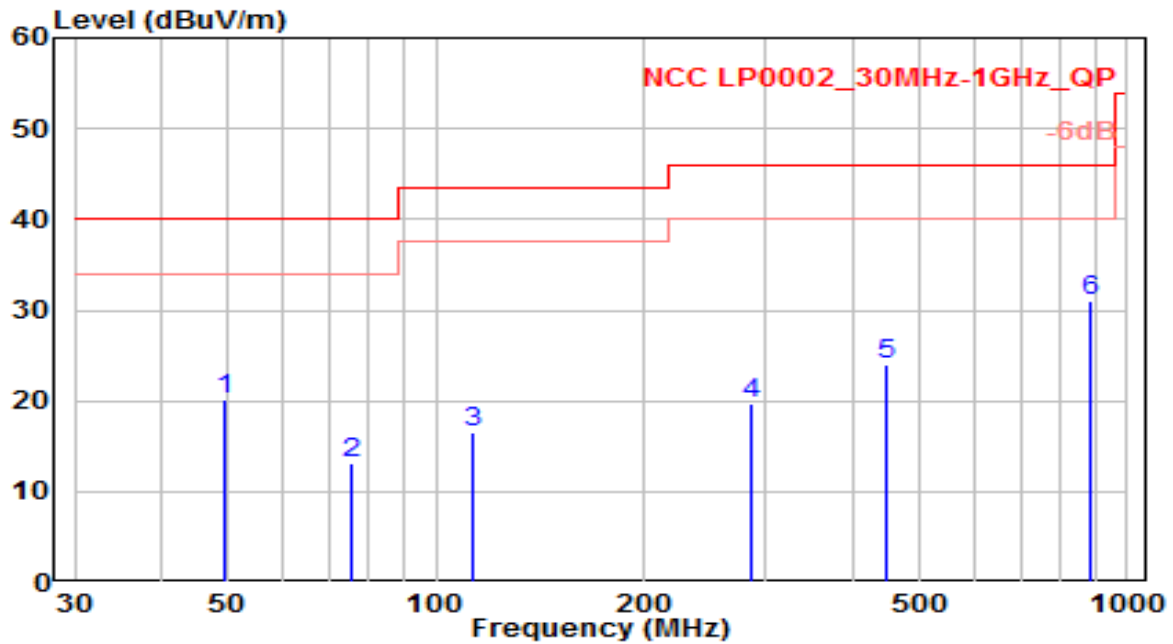


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	44.550	-0.69	21.34	20.65	-19.35	40.00	110	180	QP
2	65.890	1.44	17.97	19.41	-20.59	40.00	175	400	QP
3	95.960	-0.49	18.59	18.10	-25.40	43.50	105	325	QP
4	235.640	-0.97	20.05	19.09	-26.91	46.00	120	150	QP
5	367.560	-0.34	23.69	23.34	-22.66	46.00	100	100	QP
6	* 697.360	0.55	29.17	29.72	-16.28	46.00	180	150	QP

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	無線遙控	Date of Test	2019-12-31
Factor	VULB 9162	Temp. / Humidity	23°C /59%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	RX_2428MHz	Test Voltage	By Battery

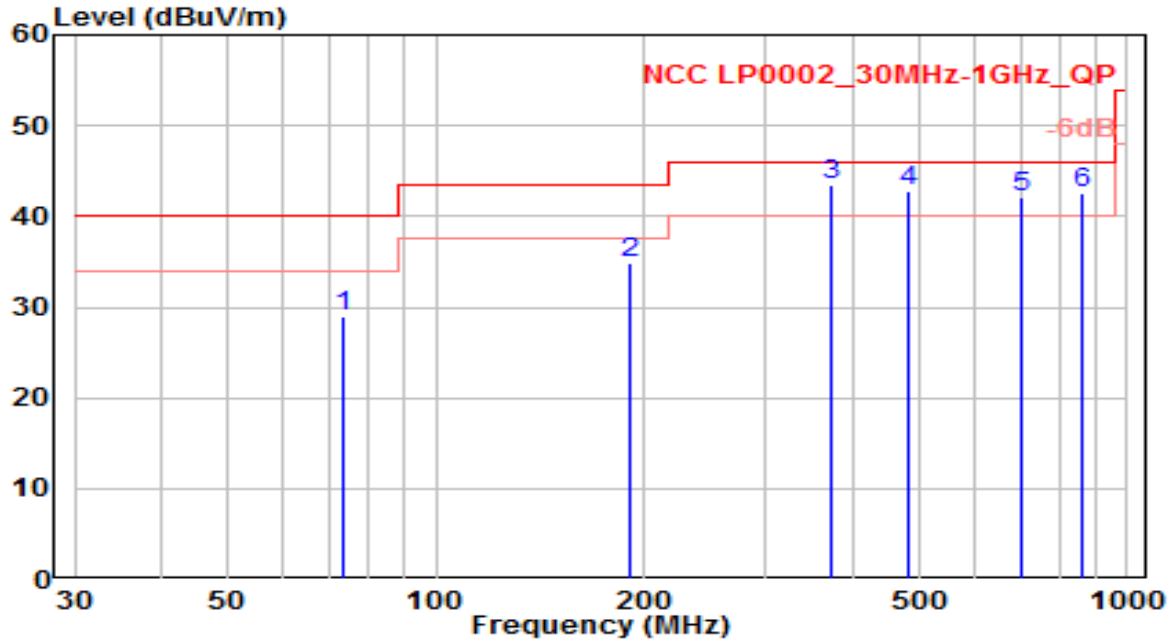


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	49.400	-1.55	21.62	20.07	-19.93	40.00	200	-40	QP
2	75.590	-2.00	15.12	13.11	-26.89	40.00	150	165	QP
3	113.420	-1.63	18.10	16.48	-27.02	43.50	155	-5	QP
4	287.050	-1.43	21.20	19.77	-26.23	46.00	210	180	QP
5	449.040	-0.90	24.88	23.97	-22.03	46.00	105	400	QP
6	* 885.540	-0.47	31.42	30.94	-15.06	46.00	110	350	QP

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	無線遙控	Date of Test	2019-12-19
Factor	VULB 9162	Temp. / Humidity	24°C /57%
Polarity	Horizontal	Site / Test Engineer	AC1 / Kaunaz
Test Mode	MODE5	Test Voltage	By Battery

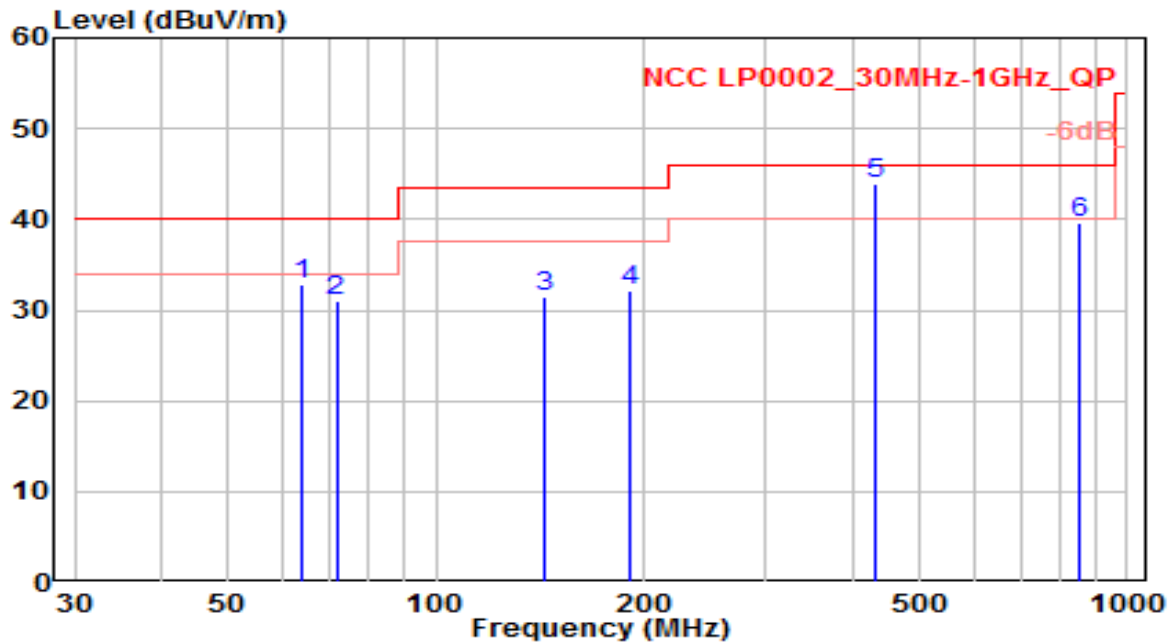


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	73.650	13.45	15.59	29.04	-10.96	40.00	200	125	QP
2	190.050	16.11	18.72	34.83	-8.67	43.50	150	350	QP
3 *	371.440	19.70	23.74	43.44	-2.56	46.00	100	250	QP
4	482.990	17.20	25.50	42.70	-3.30	46.00	100	200	QP
5	705.120	12.80	29.28	42.08	-3.92	46.00	100	70	QP
6	864.200	11.20	31.34	42.54	-3.46	46.00	100	50	QP

Note:

- "*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	無線遙控	Date of Test	2019-12-19
Factor	VULB 9162	Temp. / Humidity	24°C /57%
Polarity	Vertical	Site / Test Engineer	AC1 / Kaunaz
Test Mode	MODE5	Test Voltage	By Battery

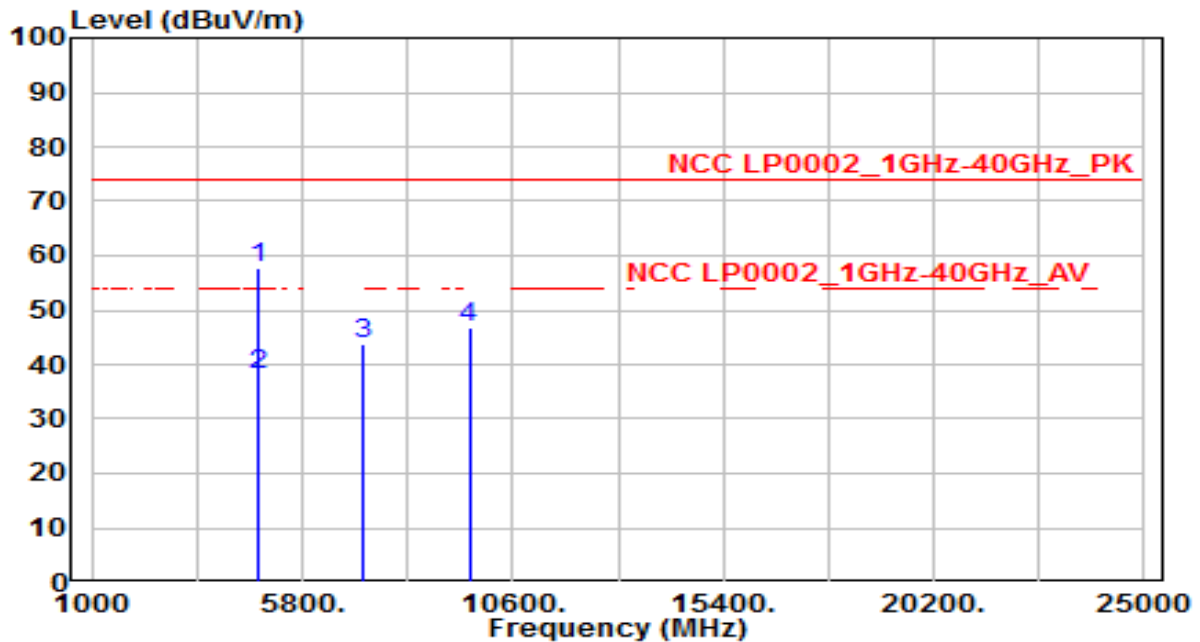


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	63.950	14.26	18.67	32.93	-7.07	40.00	360	110	QP
2	71.710	14.90	16.06	30.96	-9.04	40.00	100	-30	QP
3	143.490	15.84	15.55	31.39	-12.11	43.50	200	80	QP
4	190.050	13.38	18.72	32.09	-11.41	43.50	150	240	QP
5	* 431.580	19.40	24.62	44.02	-1.98	46.00	100	-20	QP
6	854.500	8.37	31.30	39.67	-6.33	46.00	100	-30	QP

Note:

- "*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	無線遙控	Date of Test	2019-12-31
Factor	BBHA 9120D & BBHA 9170	Temp. / Humidity	23°C /59%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2401.7MHz	Test Voltage	By Battery

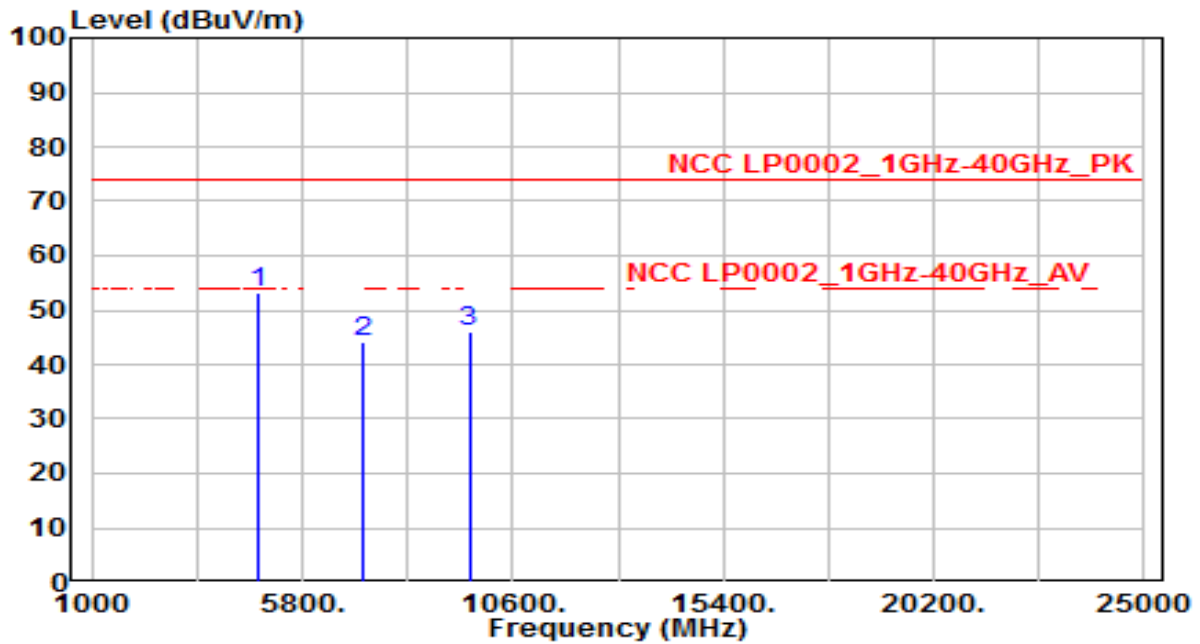


No		Frequency (MHz)	Reading (dBUV)	C.F (dB)	Measurement (dBUV/m)	Margin (dB)	Limit (dBUV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	4803.400	54.63	3.16	57.79	-16.21	74.00	150	220	Peak
2	*	4803.400	34.85	3.16	38.01	-15.99	54.00	150	220	Average
3		7205.100	32.62	11.06	43.68	-30.32	74.00	150	400	Peak
4		9606.800	32.99	13.97	46.96	-27.04	74.00	150	400	Peak

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBUV/m) = Reading(dBUV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	無線遙控	Date of Test	2019-12-31
Factor	BBHA 9120D & BBHA 9170	Temp. / Humidity	23°C /59%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2401.7MHz	Test Voltage	By Battery

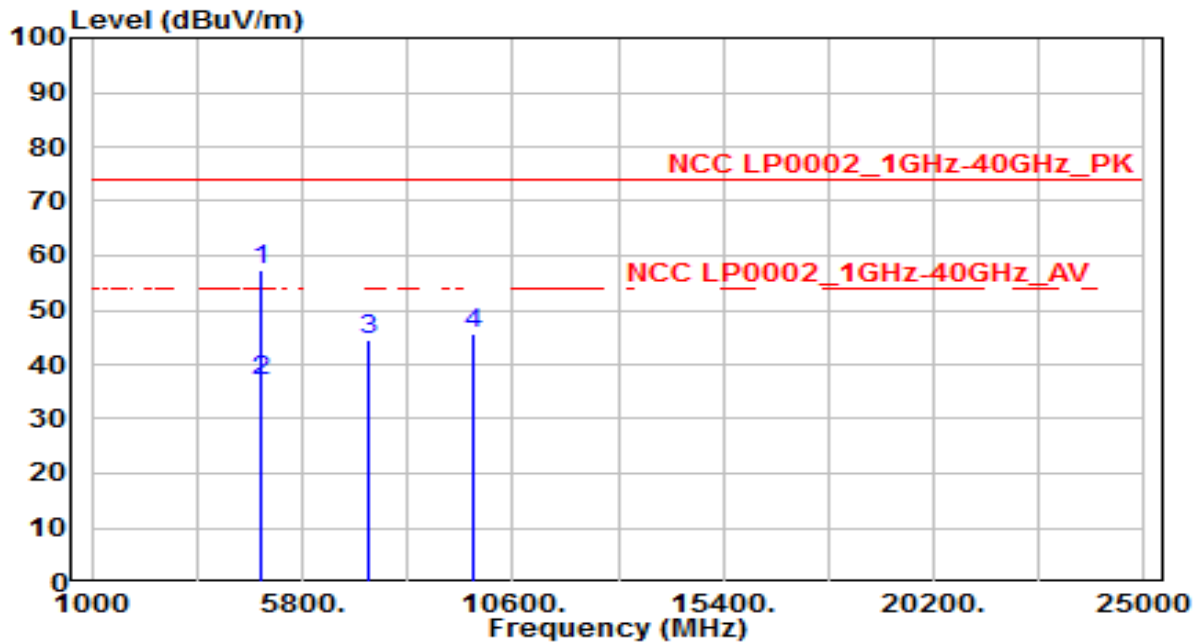


No		Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	4803.400	50.05	3.16	53.21	-20.79	74.00	150	400	Peak
2		7205.100	32.98	11.06	44.04	-29.96	74.00	150	400	Peak
3		9606.800	32.09	13.97	46.06	-27.94	74.00	150	400	Peak

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	無線遙控	Date of Test	2019-12-31
Factor	BBHA 9120D & BBHA 9170	Temp. / Humidity	23°C /59%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2428MHz	Test Voltage	By Battery

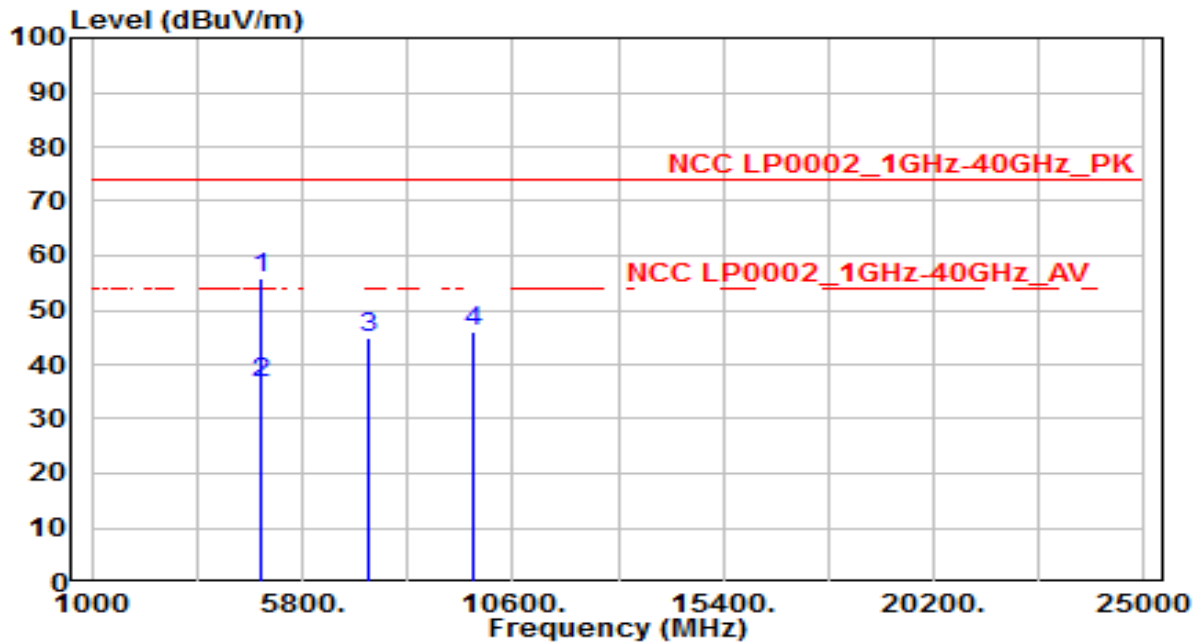


No		Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	4855.200	53.93	3.26	57.19	-16.81	74.00	150	220	Peak
2	*	4855.200	33.82	3.26	37.08	-16.92	54.00	150	220	Average
3		7282.800	33.22	11.23	44.45	-29.55	74.00	150	400	Peak
4		9710.400	31.32	14.31	45.63	-28.37	74.00	150	400	Peak

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	無線遙控	Date of Test	2019-12-31
Factor	BBHA 9120D & BBHA 9170	Temp. / Humidity	23°C /59%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2428MHz	Test Voltage	By Battery

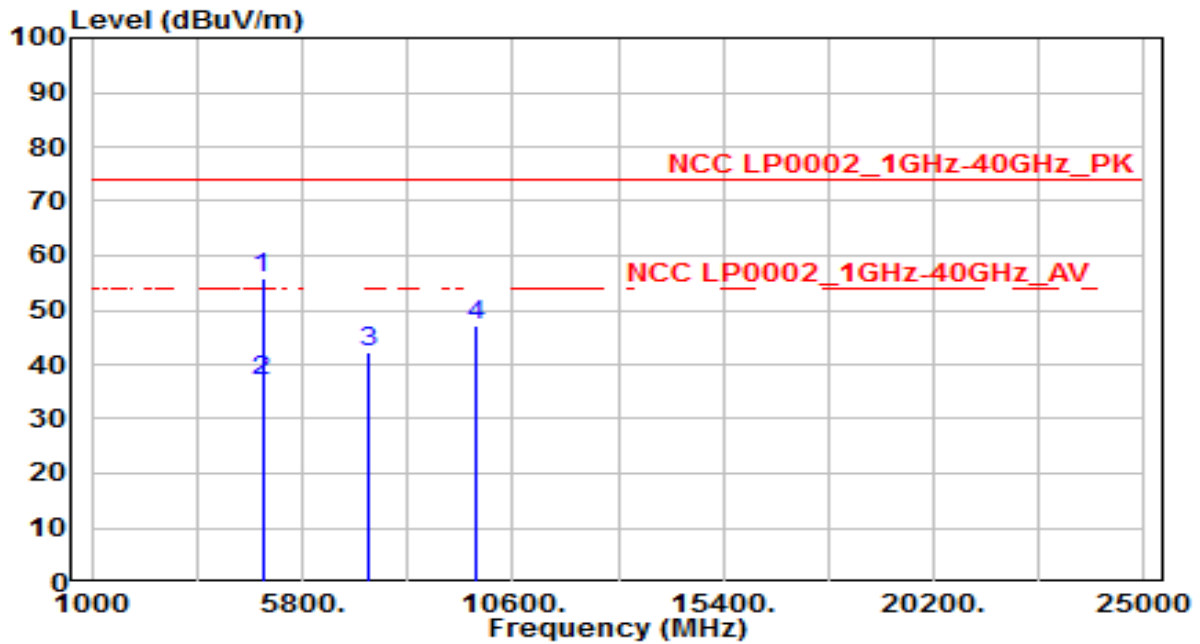


No		Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	4855.200	52.75	3.26	56.01	-17.99	74.00	150	75	Peak
2	*	4855.200	33.28	3.26	36.54	-17.46	54.00	150	75	Average
3		7282.800	33.57	11.23	44.80	-29.20	74.00	150	400	Peak
4		9710.400	31.78	14.31	46.09	-27.91	74.00	150	400	Peak

Note:

1. " * ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	無線遙控	Date of Test	2019-12-31
Factor	BBHA 9120D & BBHA 9170	Temp. / Humidity	23°C /59%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2445.7MHz	Test Voltage	By Battery

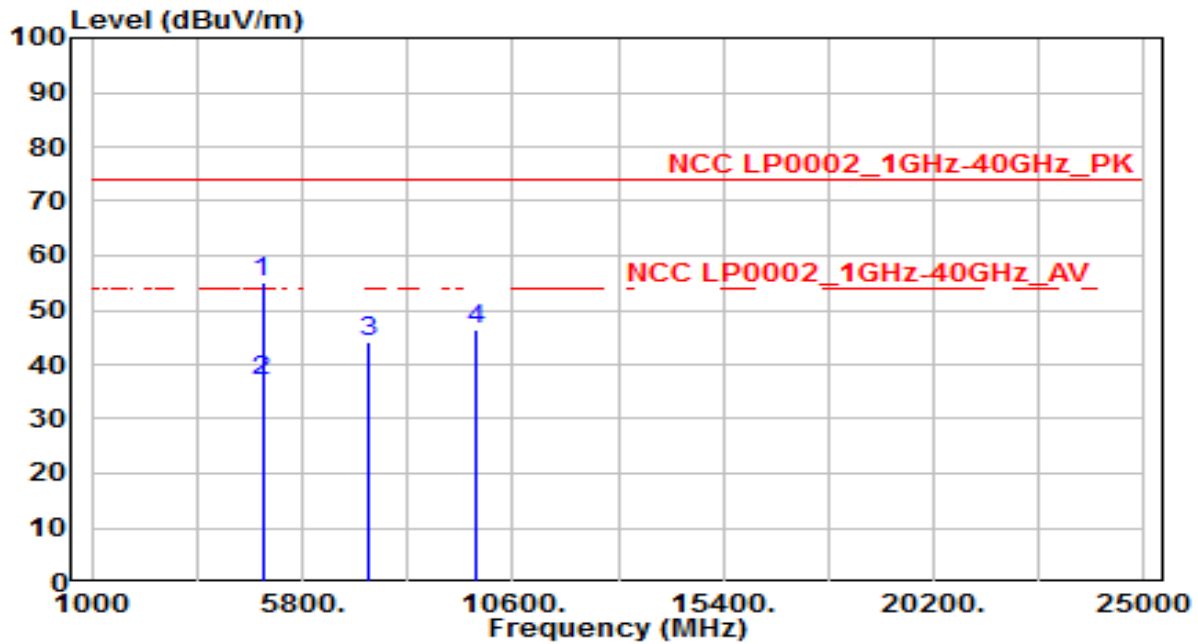


No		Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	4891.400	52.49	3.33	55.82	-18.18	74.00	150	220	Peak
2	*	4891.400	33.78	3.33	37.11	-16.89	54.00	150	220	Average
3		7337.100	31.06	11.35	42.41	-31.59	74.00	150	400	Peak
4		9782.800	32.53	14.55	47.08	-26.92	74.00	150	400	Peak

Note:

- "*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	無線遙控	Date of Test	2019-12-31
Factor	BBHA 9120D & BBHA 9170	Temp. / Humidity	23°C /59%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2445.7MHz	Test Voltage	By Battery

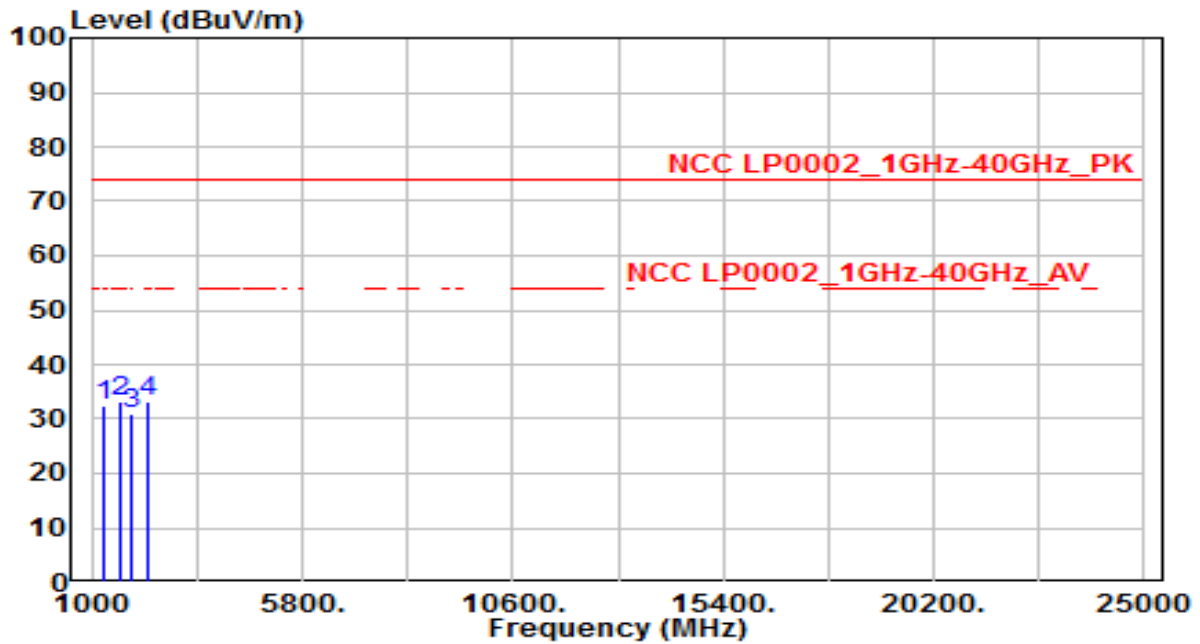


No		Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	4891.400	51.88	3.33	55.21	-18.79	74.00	150	75	Peak
2	*	4891.400	33.56	3.33	36.89	-17.11	54.00	150	75	Average
3		7337.100	32.63	11.35	43.99	-30.01	74.00	150	400	Peak
4		9782.800	31.83	14.55	46.38	-27.62	74.00	150	400	Peak

Note:

- "*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	無線遙控	Date of Test	2019-12-31
Factor	BBHA 9120D & BBHA 9170	Temp. / Humidity	23°C /59%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	RX_2428MHz	Test Voltage	By Battery

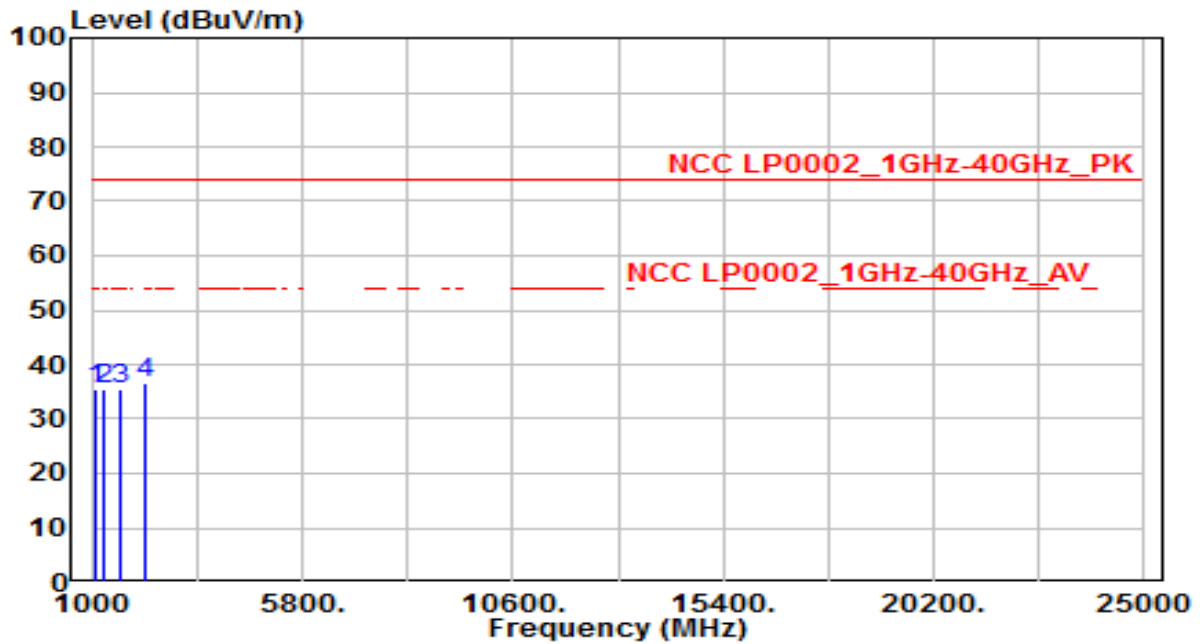


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1283.156	39.01	-6.48	32.53	-41.47	74.00	150	400	Peak
2	* 1681.594	38.69	-5.29	33.40	-40.60	74.00	150	400	Peak
3	1930.750	35.54	-4.69	30.86	-43.14	74.00	150	400	Peak
4	2262.781	36.65	-3.31	33.34	-40.66	74.00	150	400	Peak

Note:

- "*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	無線遙控	Date of Test	2019-12-31
Factor	BBHA 9120D & BBHA 9170	Temp. / Humidity	23°C /59%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	RX_2428MHz	Test Voltage	By Battery

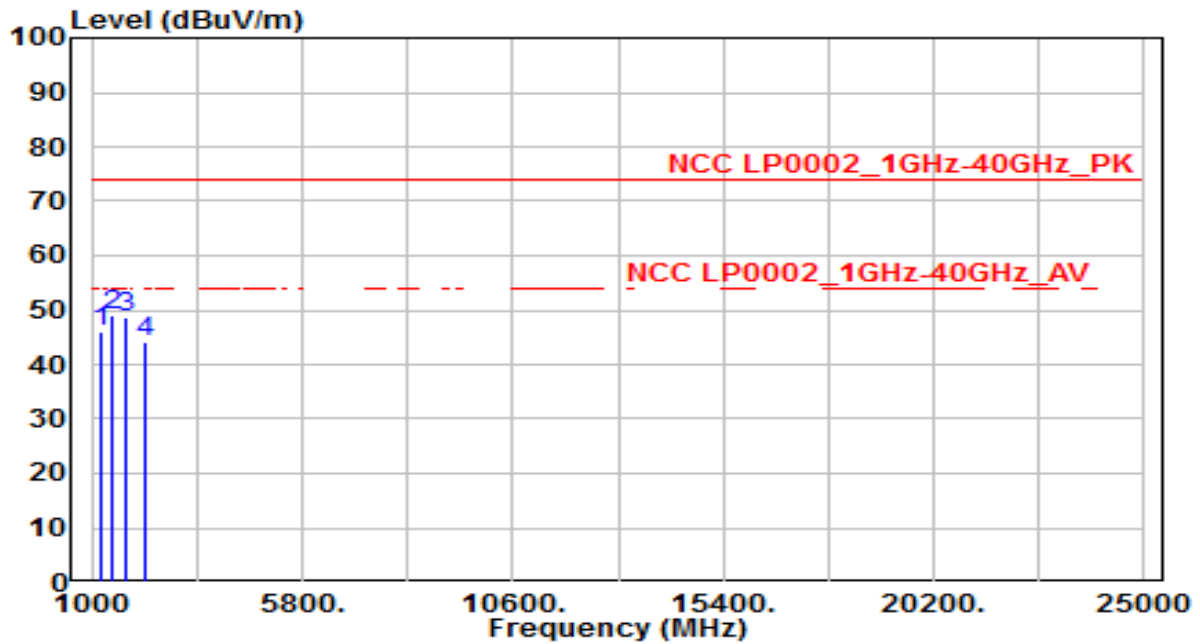


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1077.031	42.71	-7.19	35.53	-38.47	74.00	150	400	Peak
2	1304.406	41.88	-6.40	35.48	-38.52	74.00	150	400	Peak
3	1665.656	40.71	-5.33	35.38	-38.62	74.00	150	400	Peak
4	* 2194.250	40.26	-3.63	36.63	-37.37	74.00	150	400	Peak

Note:

- "*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	無線遙控	Date of Test	2019-12-30
Factor	BBHA 9120D & BBHA 9170	Temp. / Humidity	23°C /59%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	MODE5	Test Voltage	By Battery

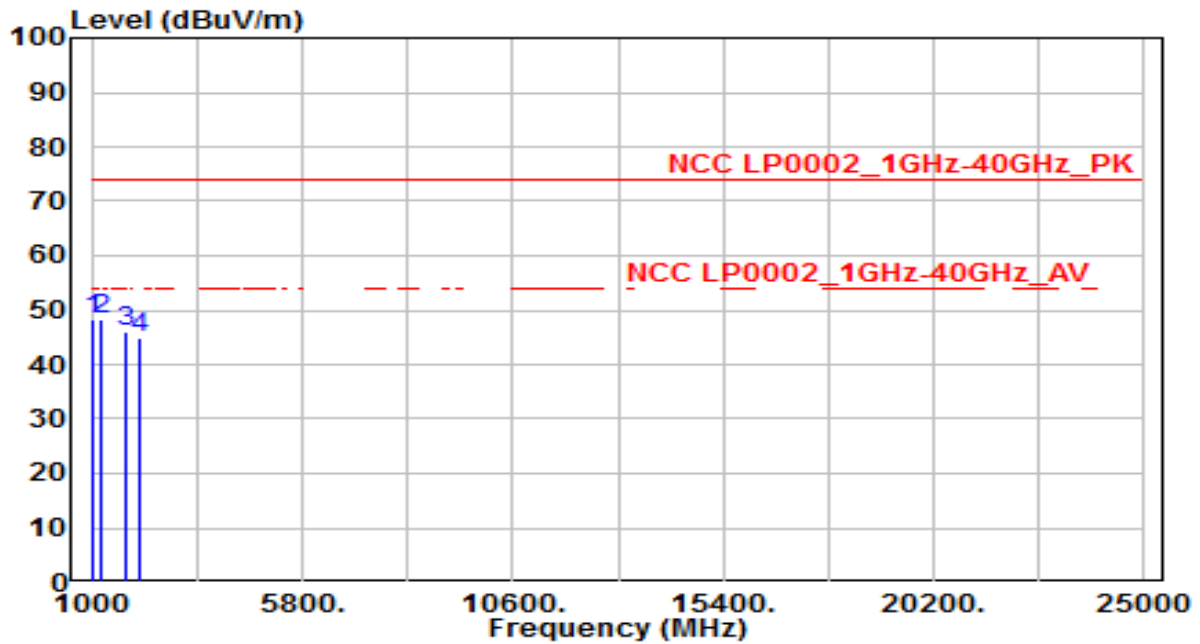


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1188.063	52.69	-6.80	45.88	-28.12	74.00	150	400	Peak
2	* 1485.031	54.72	-5.78	48.93	-25.07	74.00	150	400	Peak
3	1782.000	53.77	-5.05	48.72	-25.28	74.00	150	400	Peak
4	2227.719	47.79	-3.47	44.31	-29.69	74.00	150	400	Peak

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	無線遙控	Date of Test	2019-12-30
Factor	BBHA 9120D & BBHA 9170	Temp. / Humidity	23°C /59%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	MODE5	Test Voltage	By Battery



No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1039.313	55.52	-7.31	48.20	-25.80	74.00	150	400	Peak
2	* 1199.750	55.00	-6.76	48.24	-25.76	74.00	150	400	Peak
3	1782.000	51.09	-5.05	46.05	-27.95	74.00	150	400	Peak
4	2078.969	48.98	-4.16	44.82	-29.18	74.00	150	400	Peak

Note:

- "*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.

5.4 頻帶邊緣測試

5.4.1 量測方法

待測物置於非導體桌面（落地型產品置於地上），受測物使用交流電源時，將其與任何配件設備之電源線連接至位於旋轉桌的交流電源。受測物使用電池時，測試時應裝置新電池或充電完全的電池。受測物與配件設備之電源線無須束綁，桌面上受測設備的所有電源線由桌子的後緣垂下沿旋轉桌表面接至交流插座。落地型設備的交流電源線可以方便的型態走線。桌面可360度旋轉，接收天線置於距待測物3m距離，高度可在1至4公尺間變動，以量測待測物之最大輻射電場強度，接收天線並應於水平及垂直極化方向各量測一次。（待測物擺設方式根據ANSI C63.10-2014版，待測物放置桌中心，1G以下擺設高度為80cm/1G以上擺設高度為150cm）

(1) 任一頻率小於或等於1000 MHz 之訊號,使用CISPR準峰值檢波器

(2) 任一頻率大於1000 MHz 之訊號，使用平均值檢波器測量，當規定之發射限制值為平均值時(含1000 MHz 以下)，受測訊號藉由峰值檢波器(RBW:1MHz,VBW:3MHz)所測量之峰值，亦須符合峰值發射限制值，其峰值發射限制值為最大容許平均值加20 dB。

備註: 若為手持式或穿戴式之裝置，需對其三個正交軸的方位評估測試，並記錄最差的數值。

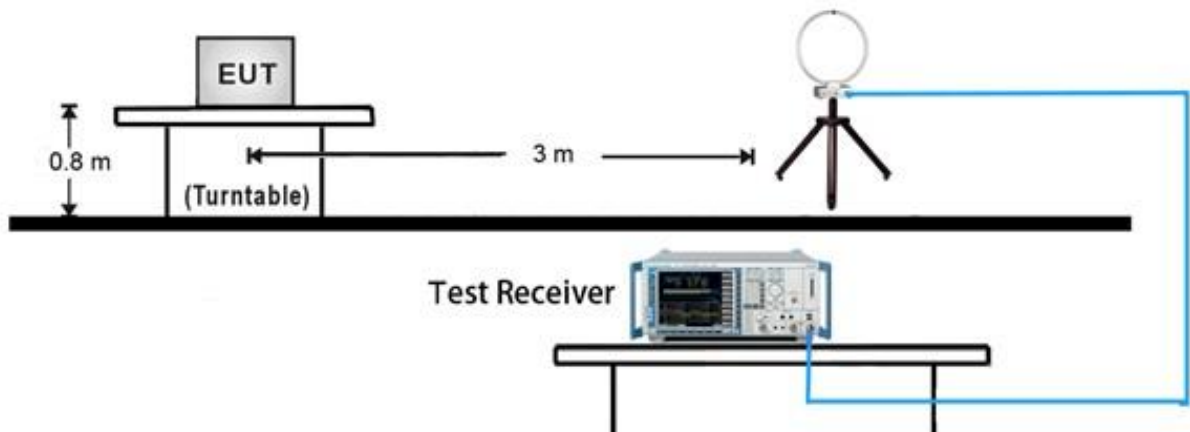
5.4.2 限制要求

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

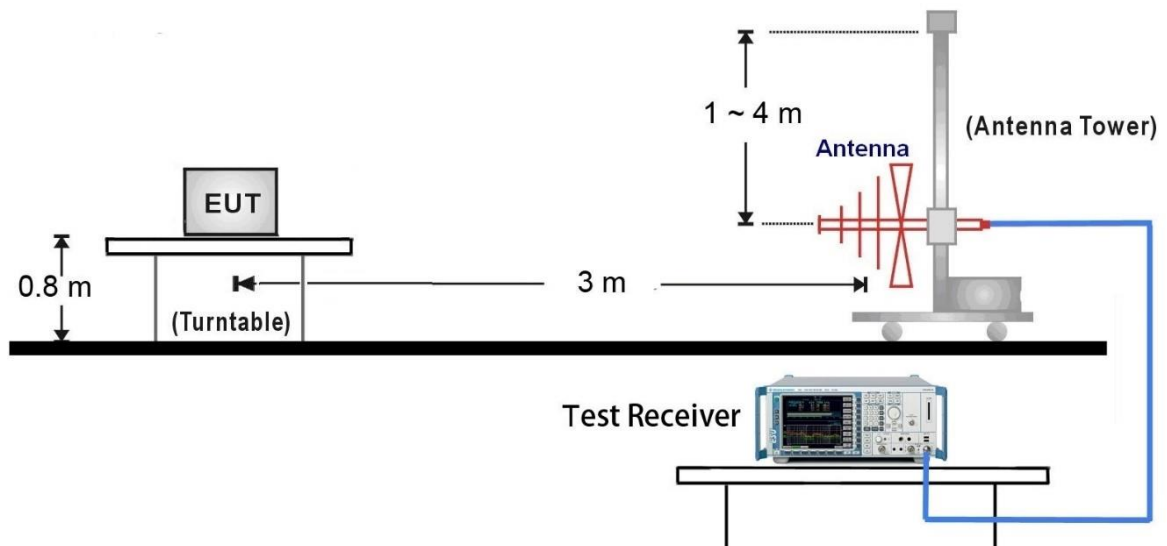
頻 率 (MHz)	頻 率 (MHz)	頻 率 (MHz)	頻 率 (MHz)	頻 率 (MHz)
0.090~0.110	25.500~25.700	703.00~748.00	2310.0~2390.0	13250~13400
0.490~0.510	37.475~38.275	758.00~803.00	2483.5~2900.0	14470~14500
2.172~2.198	73.500~75.400	825.00~915.00	3260.0~3267.0	15350~16200
3.013~3.033	108.00~138.00	930.00~1240.0	3332.0~3339.0	17700~21400
4.115~4.198	149.90~150.05	1300.0~1427.0	3345.8~3358.0	22010~23120
5.670~5.690	156.70~156.90	1435.0~1626.5	3500.0~4400.0	23600~24000
6.200~6.300	162.01~167.17	1660.0~1785.0	4500.0~5250.0	31200~31800
8.230~8.400	167.72~173.20	1805.0~1880.0	5350.0~5460.0	36430~36500
12.265~12.600	240.00~285.00	1885.0~1900.0	7250.0~7750.0	38600 以上
13.340~13.430	322.00~335.40	1905.0~1985.0	8025.0~8500.0	
14.965~15.020	399.90~410.00	2010.0~2025.0	9000.0~9200.0	
16.700~16.755	485.00~510.00	2110.0~2170.0	9300.0~9500.0	
19.965~20.020	608.00~614.00	2200.0~2300.0	10600~12700	

5.4.3 測試架構圖

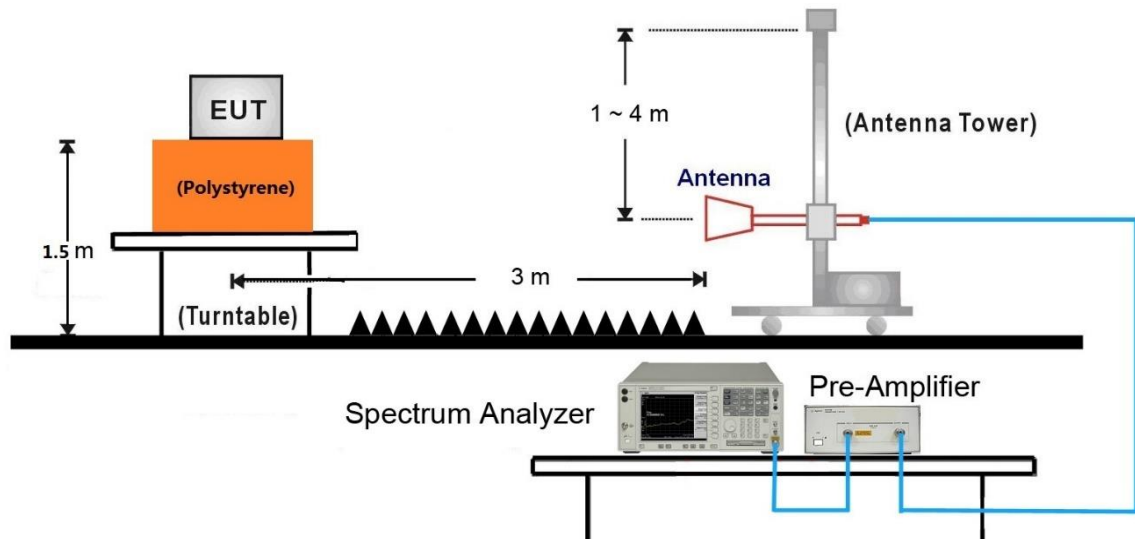
Under 30MHz Test Setup



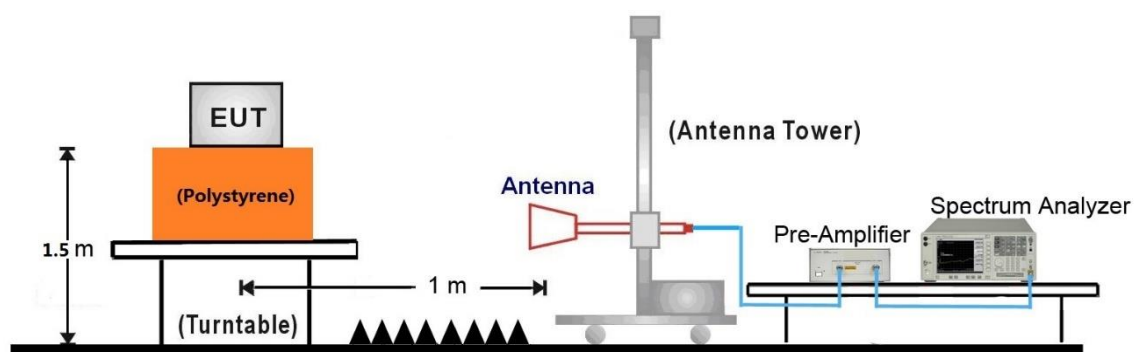
Under 1GHz Test Setup:



1GHz ~ 18GHz Test Setup:

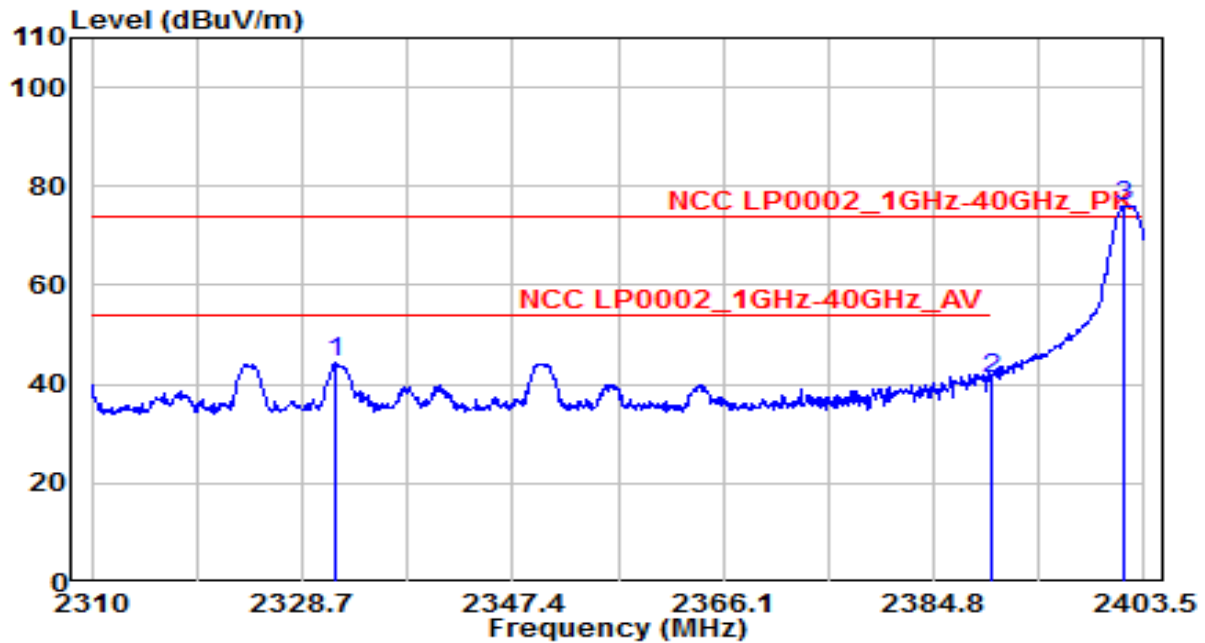


18GHz ~25GHz Test Setup:



5.4.4 頻帶邊緣測試結果

EUT	無線遙控	Date of Test	2019-12-31
Factor	BBHA 9120D	Temp. / Humidity	23°C /59%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2401.7MHz	Test Voltage	By Battery

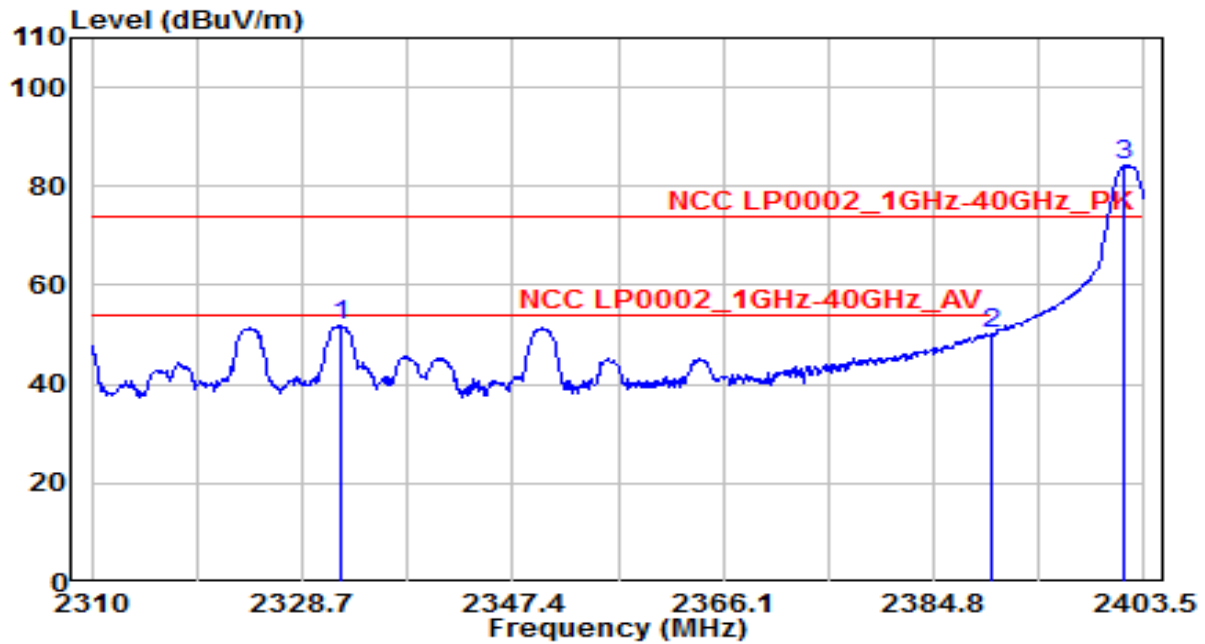


No		Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	2331.692	47.25	-2.99	44.26	-29.74	74.00	190	370	Peak
2		2390.000	43.62	-2.73	40.89	-33.11	74.00	190	370	Peak
3		2401.723	78.70	-2.67	76.03	N/A	N/A	190	370	Peak

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	無線遙控	Date of Test	2019-12-31
Factor	BBHA 9120D	Temp. / Humidity	23°C /59%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2401.7MHz	Test Voltage	By Battery

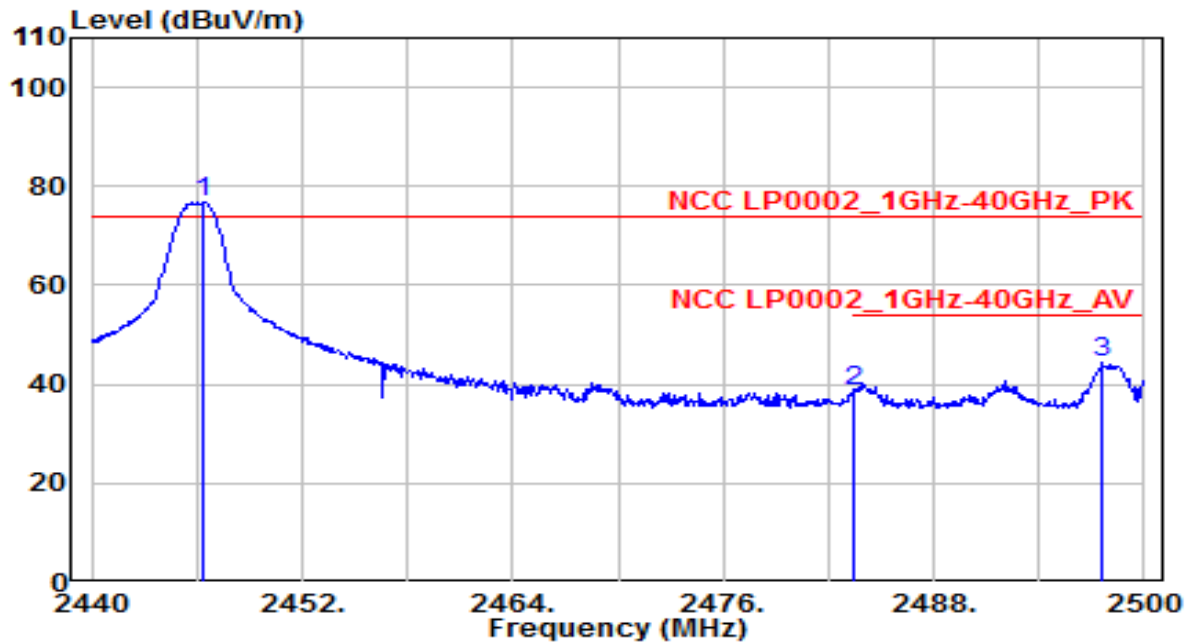


No		Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	2332.066	55.00	-2.99	52.01	-21.99	74.00	100	245	Peak
2		2390.000	53.01	-2.73	50.28	-23.72	74.00	100	245	Peak
3		2401.723	86.79	-2.67	84.12	N/A	N/A	100	245	Peak

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	無線遙控	Date of Test	2019-12-31
Factor	BBHA 9120D	Temp. / Humidity	23°C /59%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2445.7MHz	Test Voltage	By Battery

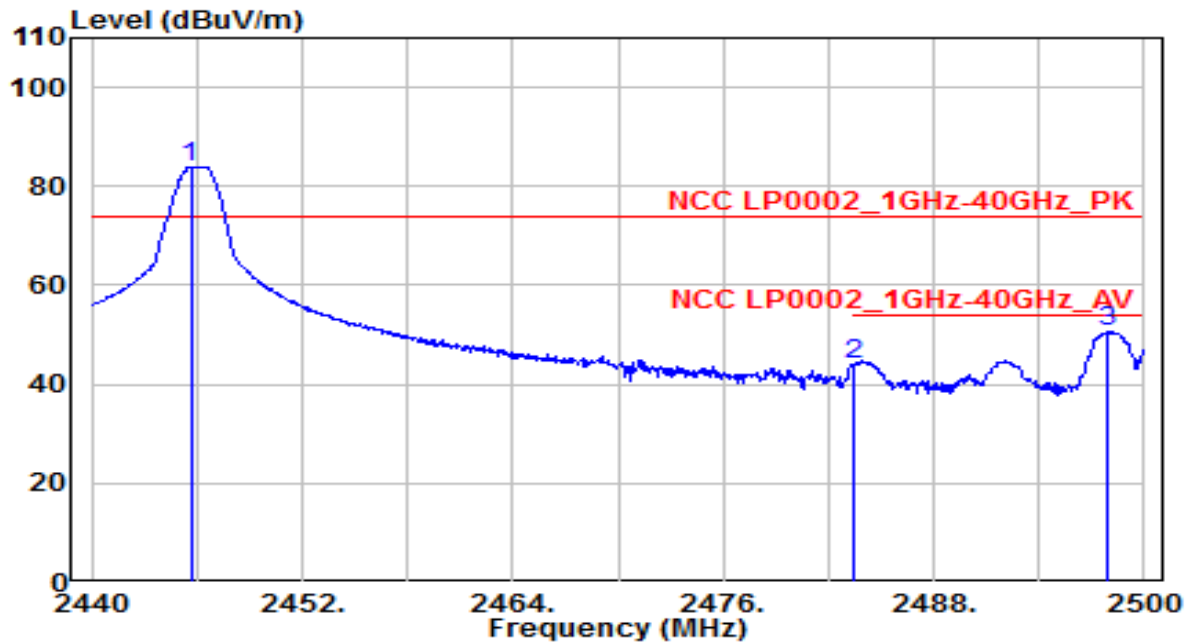


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	2446.420	79.13	-2.47	76.66	N/A	N/A	205	355	Peak
2	2483.500	40.98	-2.30	38.69	-35.31	74.00	205	355	Peak
3	* 2497.660	46.50	-2.23	44.27	-29.73	74.00	205	355	Peak

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	無線遙控	Date of Test	2019-12-31
Factor	BBHA 9120D	Temp. / Humidity	23°C /59%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2445.7MHz	Test Voltage	By Battery



No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	2445.640	86.52	-2.47	84.05	N/A	N/A	140	265	Peak
2	2483.500	46.26	-2.30	43.97	-30.03	74.00	140	265	Peak
3	* 2497.960	52.94	-2.23	50.71	-23.29	74.00	140	265	Peak

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

_____ The End _____