

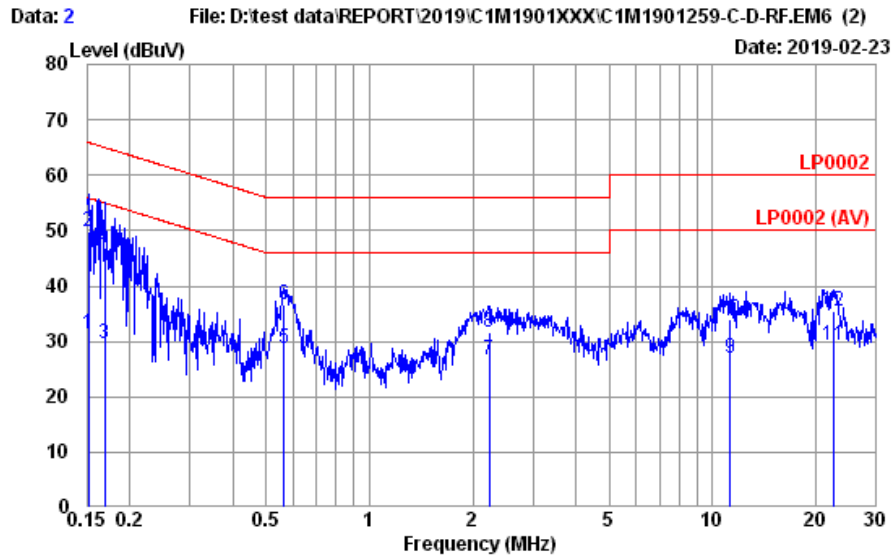
附錄一

受測裝置之測試結果

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1. 電源線傳導干擾之量測

測試日期	2019/02/23	環境溫/濕度	22°C/63%
測試電壓	DC 5V (經筆記型電腦供電)		



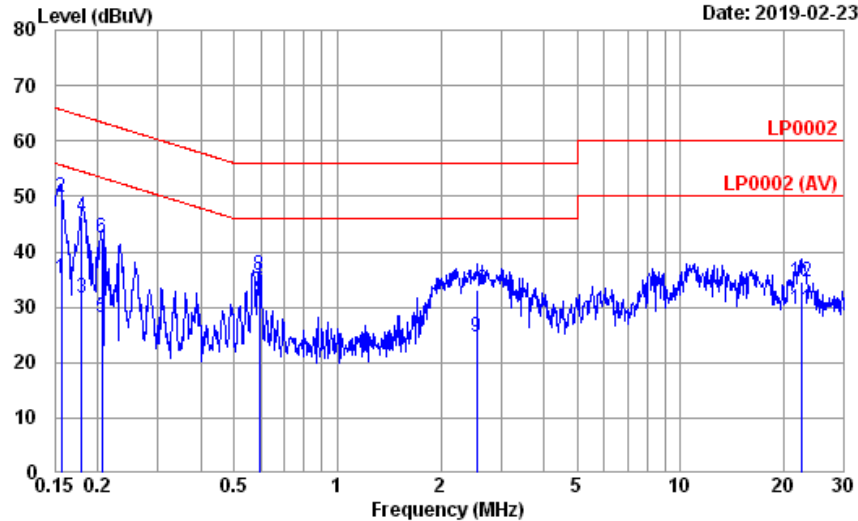
Site no. : No.8 Shielded Room Data no. : 2
Condition : ENV4200 100169 LISN Phase : NEUTRAL
Limit : LP0002
Env. / Ins. : 22°C / 63% ESR3 (1774) Engineer : Ken Yang
EUT : WH-XB900N
Power Rating : DC 5V(Via USB)
Test Mode : Charging

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.152	10.70	0.03	9.86	10.76	31.35	55.91	24.56	Average
2	0.152	10.70	0.03	9.86	29.14	49.73	65.91	16.18	QP
3	0.169	10.67	0.03	9.86	9.04	29.60	54.99	25.39	Average
4	0.169	10.67	0.03	9.86	26.23	46.79	64.99	18.20	QP
5	0.564	10.48	0.05	9.86	8.20	28.59	46.00	17.41	Average
6	0.564	10.48	0.05	9.86	16.15	36.54	56.00	19.46	QP
7	2.237	10.53	0.08	9.86	6.26	26.73	46.00	19.27	Average
8	2.237	10.53	0.08	9.86	11.20	31.67	56.00	24.33	QP
9	11.257	11.74	0.20	9.90	5.12	26.96	50.00	23.04	Average
10	11.257	11.74	0.20	9.90	12.19	34.03	60.00	25.97	QP
11	22.535	14.36	0.29	9.97	4.74	29.36	50.00	20.64	Average
12	22.535	14.36	0.29	9.97	10.90	35.52	60.00	24.48	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.

測試日期	2019/02/23	環境溫/濕度	22°C/63%
測試電壓	DC 5V (經筆記型電腦供電)		

Data: 1 File: D:\test data\REPORT\2019\C1M1901XXX\C1M1901259-C-D-RF-EM6 (2) Date: 2019-02-23



Site no. : No.8 Shielded Room Data no. : 1
Condition : ENV4200 100169 LISN Phase : LINE
Limit : LP0002
Env. / Ins. : 22°C / 63% ESR3 (1774) Engineer : Ken Yang
EUT : WH-XB900N
Power Rating : DC 5V(Via USB)
Test Mode : Charging

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.156	10.61	0.03	9.86	14.68	35.18	55.65	20.47	Average
2	0.156	10.61	0.03	9.86	29.34	49.84	65.65	15.81	QP
3	0.180	10.57	0.03	9.86	11.11	31.57	54.50	22.93	Average
4	0.180	10.57	0.03	9.86	25.80	46.26	64.50	18.24	QP
5	0.206	10.54	0.03	9.86	7.56	27.99	53.36	25.37	Average
6	0.206	10.54	0.03	9.86	22.00	42.43	63.36	20.93	QP
7	0.592	10.44	0.05	9.86	12.44	32.79	46.00	13.21	Average
8	0.592	10.44	0.05	9.86	15.49	35.84	56.00	20.16	QP
9	2.540	10.48	0.09	9.87	4.25	24.69	46.00	21.31	Average
10	2.540	10.48	0.09	9.87	12.71	33.15	56.00	22.85	QP
11	22.416	13.87	0.29	9.97	5.42	29.55	50.00	20.45	Average
12	22.416	13.87	0.29	9.97	10.41	34.54	60.00	25.46	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.

2. 場強輻射之量測

本裝置有兩種電源供應模式分別為：電池(DC 3.7V)、USB 充電(DC 5V)，對受測物裝置之其他不必要之發射(測至本地振盪頻率之 10 次諧波)，依下列測試模式分別於電波暗室內進行量測，選擇低、中、高頻率來進行量測，並將下列測試模式之測試數據隨案件所附。另搭配筆記型電腦 USB (DC 5V)執行充電模式，經評估充電模式不影響 1GHz 以上訊號結果，此模式僅呈現 30MHz-1GHz 測試結果於此份報告。所得讀值資料請見章節 2.1 ~ 2.2：

模式	動作狀態	基本頻率	量測頻率範圍
1	充電	---	30-1000MHz
2	發射	2402MHz	1000-25000MHz
3		2440MHz	1000-25000MHz
4		2480MHz *	30-1000MHz
5			1000-25000MHz
6	接收	2440MHz	30-1000MHz
7			1000-25000MHz

註：1. 以上所有模式之掃頻圖是檢附於附錄中。

2.*: 經評估後，以最差頻率進行 30-1000MHz 量測。

對受測物裝置落於技術規範第 2.7 章節的禁用頻率之混附發射以下列測試模式依規定分別進行量測，所得量測資料請見章節 2.3。

模式	動作狀態	基本頻率	量測頻率範圍
1	發射	2402MHz	2310-2430MHz
2		2480MHz	2450-2530MHz

測試日期	2019/02/23	環境溫/濕度	24°C/42%
測試電壓	(1)充電模式：DC 5V (經筆記型電腦供電) (2)發射模式：DC 3.7V (由內建鋰電池供電)		

2.1. 30-1000MHz 頻率範圍，其他不必要發射量測

Mode	充電	Frequency	---
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Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
84.32	14.56	2.32	11.50	28.38	40.00	11.62	Peak
166.77	16.13	3.49	10.28	29.90	43.50	13.60	Peak
207.51	16.53	3.71	13.37	33.61	43.50	9.89	Peak
224.97	17.78	3.82	13.92	35.52	46.00	10.48	Peak
238.55	18.64	3.91	14.50	37.05	46.00	8.95	Peak
331.67	20.73	4.82	9.76	35.31	46.00	10.69	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
84.32	14.56	2.32	11.09	27.97	40.00	12.03	Peak
112.45	18.36	2.87	13.73	34.96	43.50	8.54	Peak
159.98	16.45	3.41	10.46	30.32	43.50	13.18	Peak
249.22	19.35	3.97	8.50	31.82	46.00	14.18	Peak
332.64	20.77	4.84	15.84	41.45	46.00	4.55	Peak
666.32	25.17	6.89	5.92	37.98	46.00	8.02	Peak

Mode	BLE	Frequency	TX 2480MHz
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Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
83.35	14.32	2.30	13.63	30.25	40.00	9.75	Peak
116.33	18.59	2.92	3.45	24.96	43.50	18.54	Peak
166.77	16.13	3.49	11.91	31.53	43.50	11.97	Peak
240.49	18.81	3.92	13.73	36.46	46.00	9.54	Peak
332.64	20.77	4.84	11.14	36.75	46.00	9.25	Peak
447.10	23.07	5.91	5.66	34.64	46.00	11.36	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
86.26	14.91	2.36	11.17	28.44	40.00	11.56	Peak
112.45	18.36	2.87	13.16	34.39	43.50	9.11	Peak
169.68	16.00	3.52	10.70	30.22	43.50	13.28	Peak
251.16	19.41	3.99	8.78	32.18	46.00	13.82	Peak
321.00	20.45	4.67	7.04	32.16	46.00	13.84	Peak
440.31	22.99	5.90	7.85	36.74	46.00	9.26	Peak

Mode	BLE	Frequency	RX 2440MHz
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Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
82.38	14.14	2.28	11.87	28.29	40.00	11.71	Peak
166.77	16.13	3.49	8.66	28.28	43.50	15.22	Peak
216.24	17.13	3.76	14.50	35.39	46.00	10.61	Peak
287.05	19.73	4.26	12.36	36.35	46.00	9.65	Peak
333.61	20.80	4.85	11.23	36.88	46.00	9.12	Peak
399.57	22.43	5.79	8.41	36.63	46.00	9.37	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
113.42	18.41	2.88	10.43	31.72	43.50	11.78	Peak
160.95	16.40	3.42	9.35	29.17	43.50	14.33	Peak
247.28	19.24	3.96	8.74	31.94	46.00	14.06	Peak
329.73	20.70	4.79	5.67	31.16	46.00	14.84	Peak
438.37	22.97	5.89	3.65	32.51	46.00	13.49	Peak
592.60	24.89	6.47	3.32	34.68	46.00	11.32	Peak

2.2. 1000MHz 以上頻率範圍，其他不必要發射量測

Mode	BLE	Frequency	TX 2402MHz
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Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4804.00	34.22	11.42	-1.52	44.12	54.00	9.88	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4804.00	34.22	11.42	-1.41	44.23	54.00	9.77	Peak

Mode	BLE	Frequency	TX 2440MHz
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Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4882.00	34.25	13.00	-0.78	46.47	54.00	7.53	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4882.00	34.25	13.00	-0.17	47.08	54.00	6.92	Peak

Mode	BLE	Frequency	TX 2480MHz
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Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4960.00	34.29	13.21	-1.52	45.98	54.00	8.02	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4960.00	34.29	13.21	-1.51	45.99	54.00	8.01	Peak

Mode	BLE	Frequency	RX 2440MHz
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Antenna at Horizontal Polarization

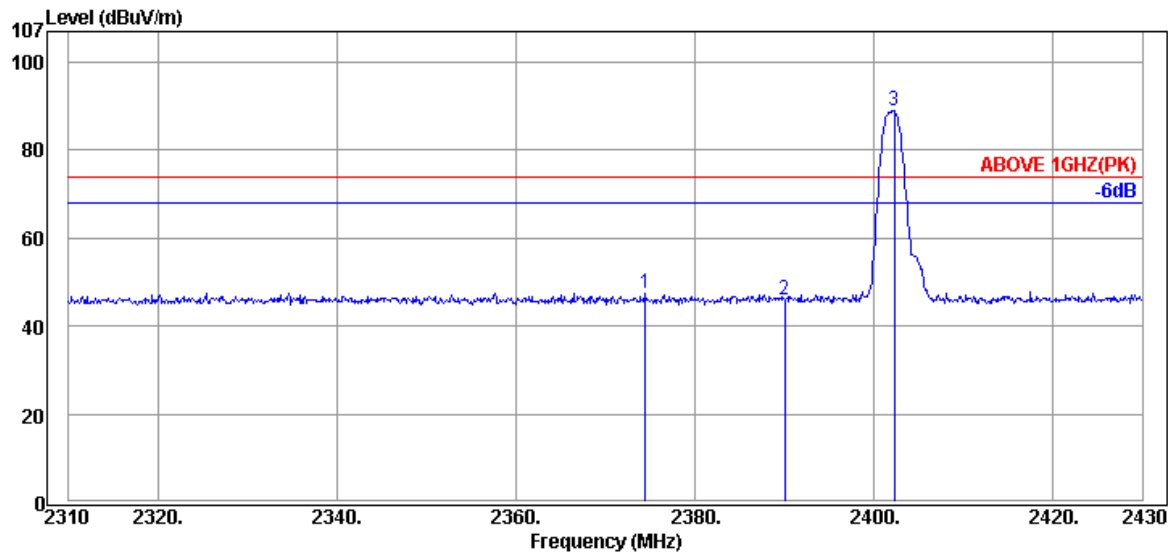
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4384.00	33.91	12.56	0.26	46.73	54.00	7.27	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4410.00	33.97	12.60	0.56	47.13	54.00	6.87	Peak

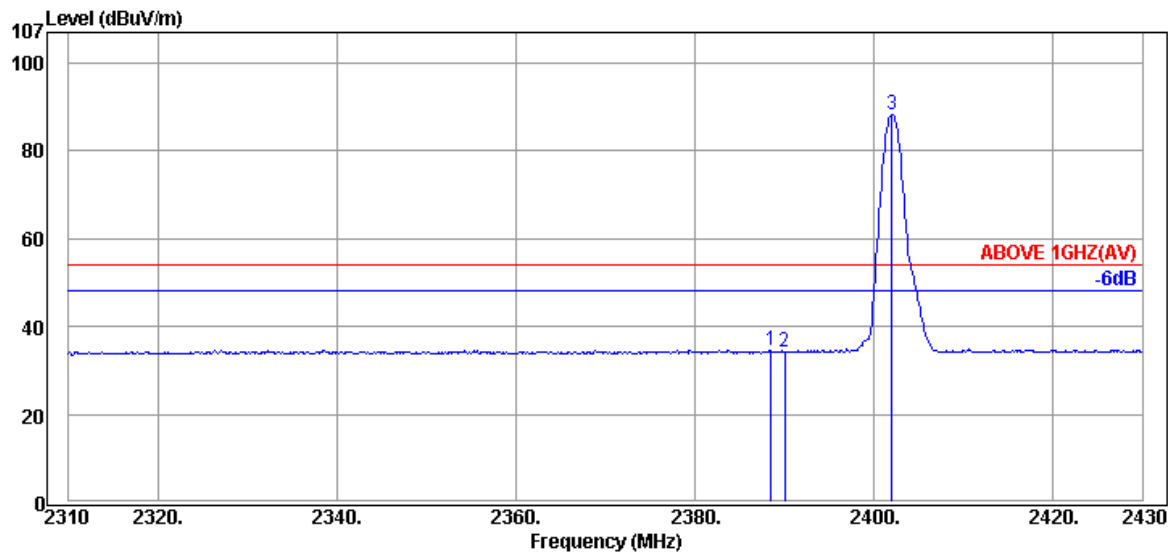
2.3. 禁用頻帶量測結果 (其他不必要發射)

Mode	BLE	Frequency	TX 2402MHz
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Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Detector
2374.44	32.13	7.89	7.53	47.55	74.00	26.45	Peak
2390.04	32.16	7.92	6.00	46.08	74.00	27.92	Peak
@ 2402.28	32.16	7.92	48.92	89.00	---	---	Peak

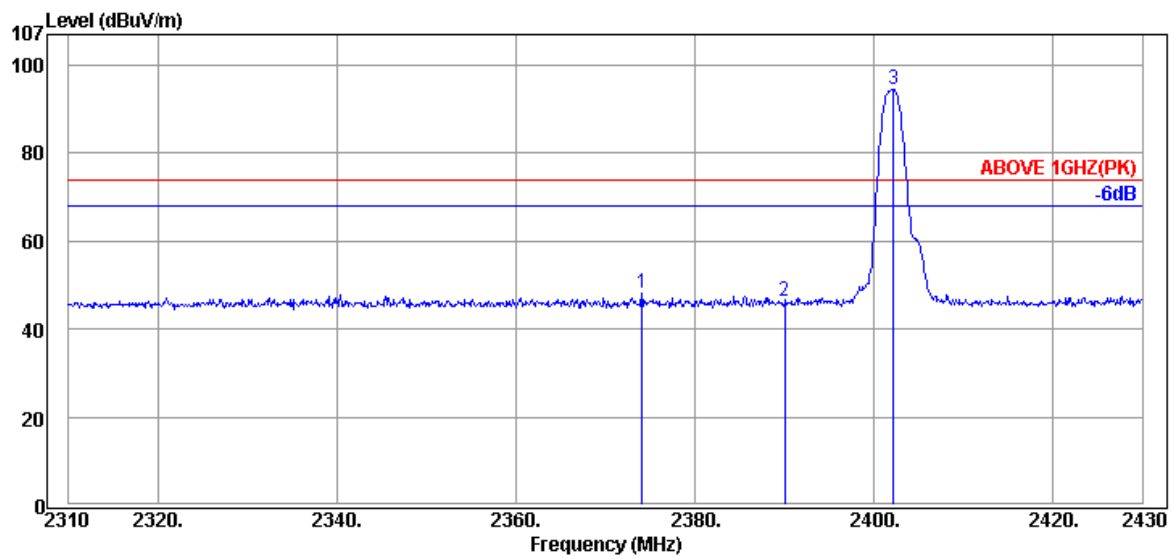


Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Detector
2388.48	32.16	7.92	-5.42	34.66	54.00	19.34	Average
2390.04	32.16	7.92	-5.89	34.19	54.00	19.81	Average
@ 2402.04	32.16	7.92	48.25	88.33	---	---	Average

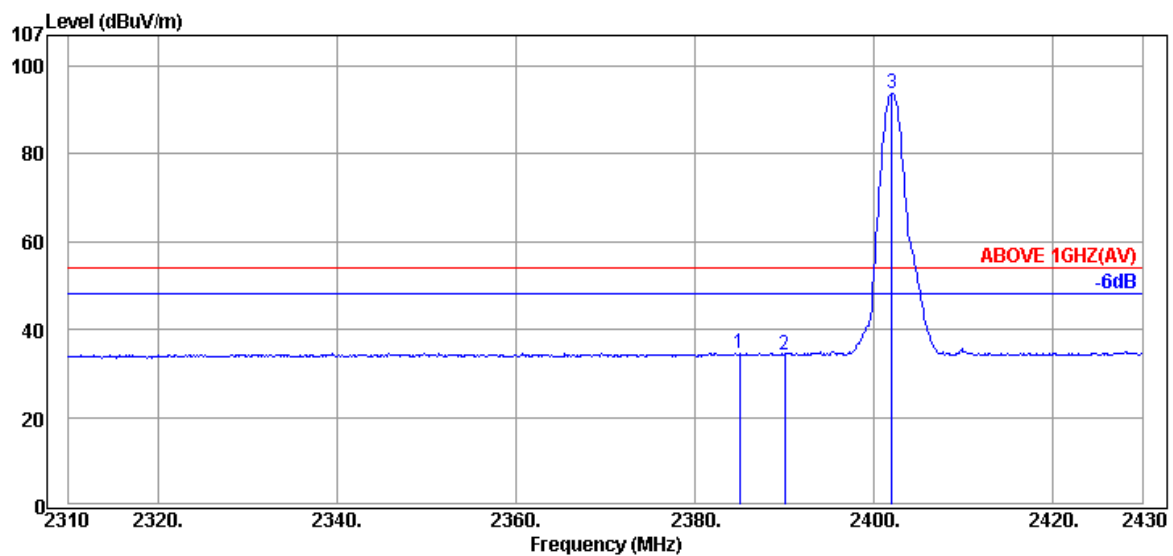
備註：“@”為主波，在此章節是不予以判定。

Mode	BLE	Frequency	TX 2402MHz
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Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2374.08	32.13	7.89	7.98	48.00	74.00	26.00	Peak
2390.04	32.16	7.92	6.13	46.21	74.00	27.79	Peak
@ 2402.16	32.16	7.92	54.44	94.52	---	---	Peak

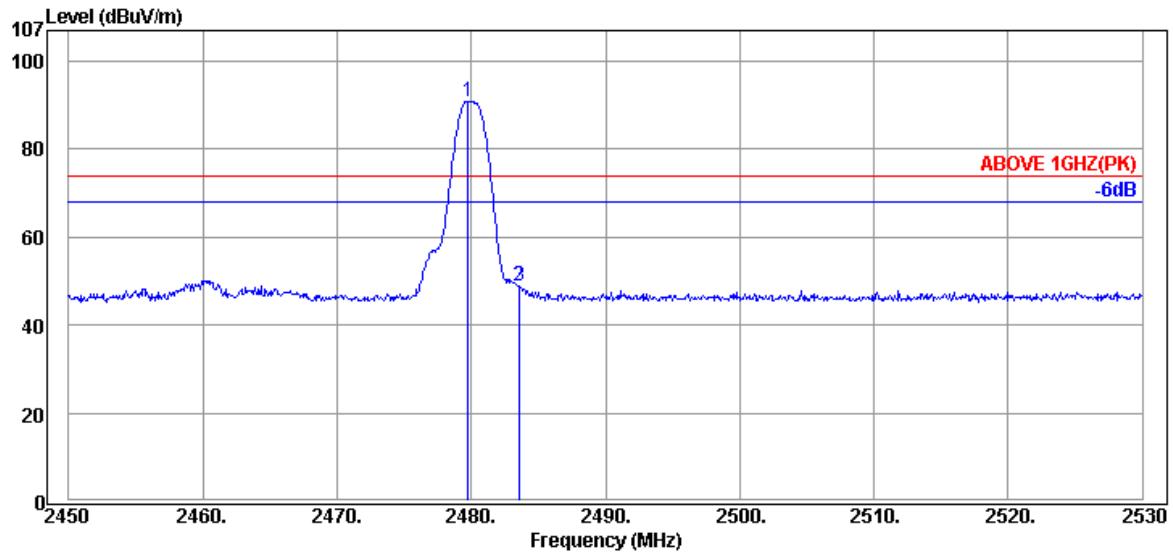


Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2385.00	32.13	7.89	-5.44	34.58	54.00	19.42	Average
2390.04	32.16	7.92	-5.89	34.19	54.00	19.81	Average
@ 2402.04	32.16	7.92	53.73	93.81	---	---	Average

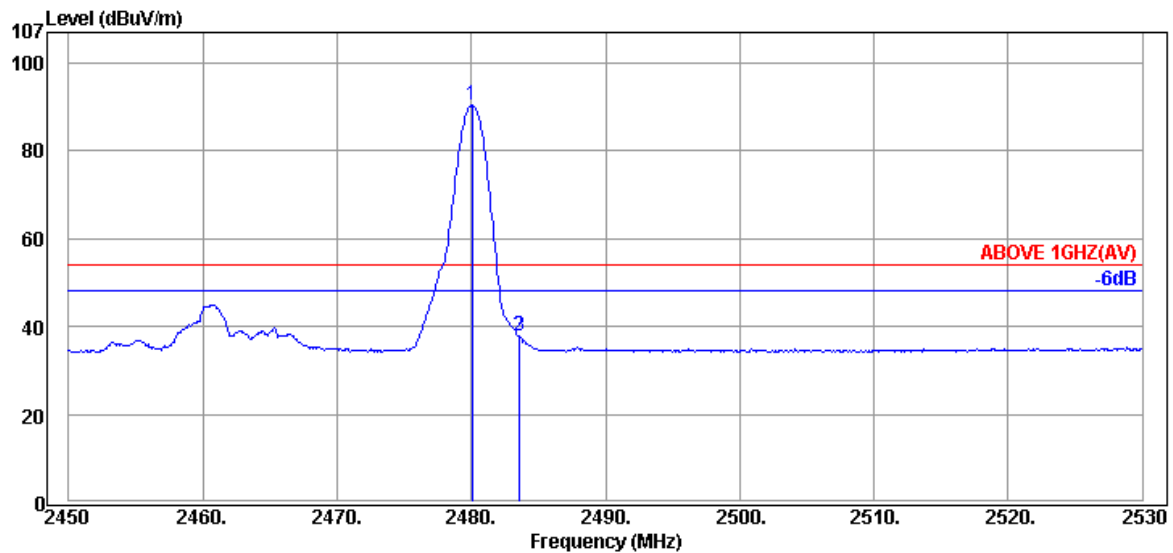
備註：“@”為主波，在此章節是不予以判定。

Mode	BLE	Frequency	TX 2480MHz
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Antenna at Horizontal Polarization

	Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
@	2479.76	32.28	7.90	50.82	91.00	---	---	Peak
	2483.52	32.28	7.90	8.67	48.85	74.00	25.15	Peak
	2483.60	32.28	7.90	8.91	49.09	74.00	24.91	Peak

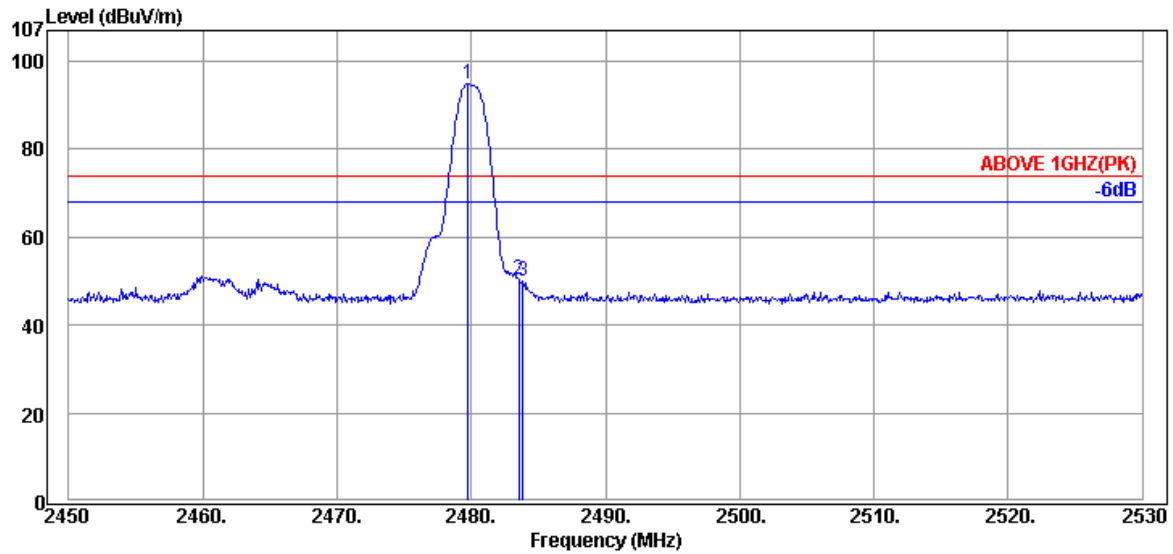


Antenna at Horizontal Polarization

	Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
@	2480.08	32.28	7.90	50.10	90.28	---	---	Average
	2483.52	32.28	7.90	-2.30	37.88	54.00	16.12	Average
	2483.60	32.28	7.90	-2.40	37.78	54.00	16.22	Average

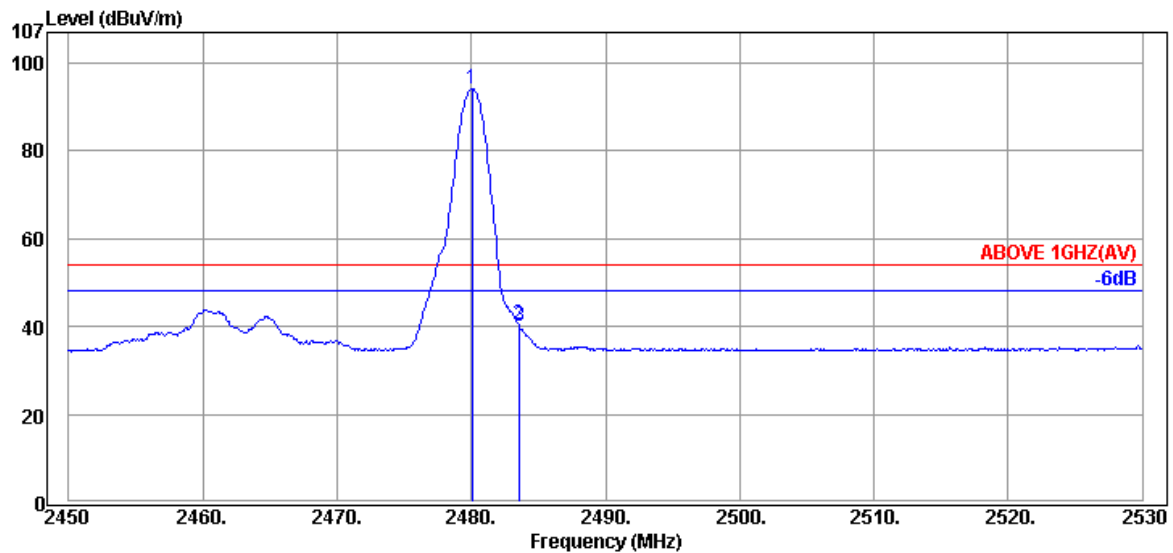
備註：“@”為主波，在此章節是不予以判定。

Mode	BLE	Frequency	TX 2480MHz
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Antenna at Vertical Polarization

	Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
@	2479.76	32.28	7.90	54.59	94.77	---	---	Peak
	2483.52	32.28	7.90	10.36	50.54	74.00	23.46	Peak
	2483.84	32.28	7.90	9.94	50.12	74.00	23.88	Peak



Antenna at Vertical Polarization

	Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
@	2480.08	32.28	7.90	53.88	94.06	---	---	Average
	2483.52	32.28	7.90	0.17	40.35	54.00	13.65	Average
	2483.60	32.28	7.90	-0.25	39.93	54.00	14.07	Average

備註：“@”為主波，在此章節是不予以判定。

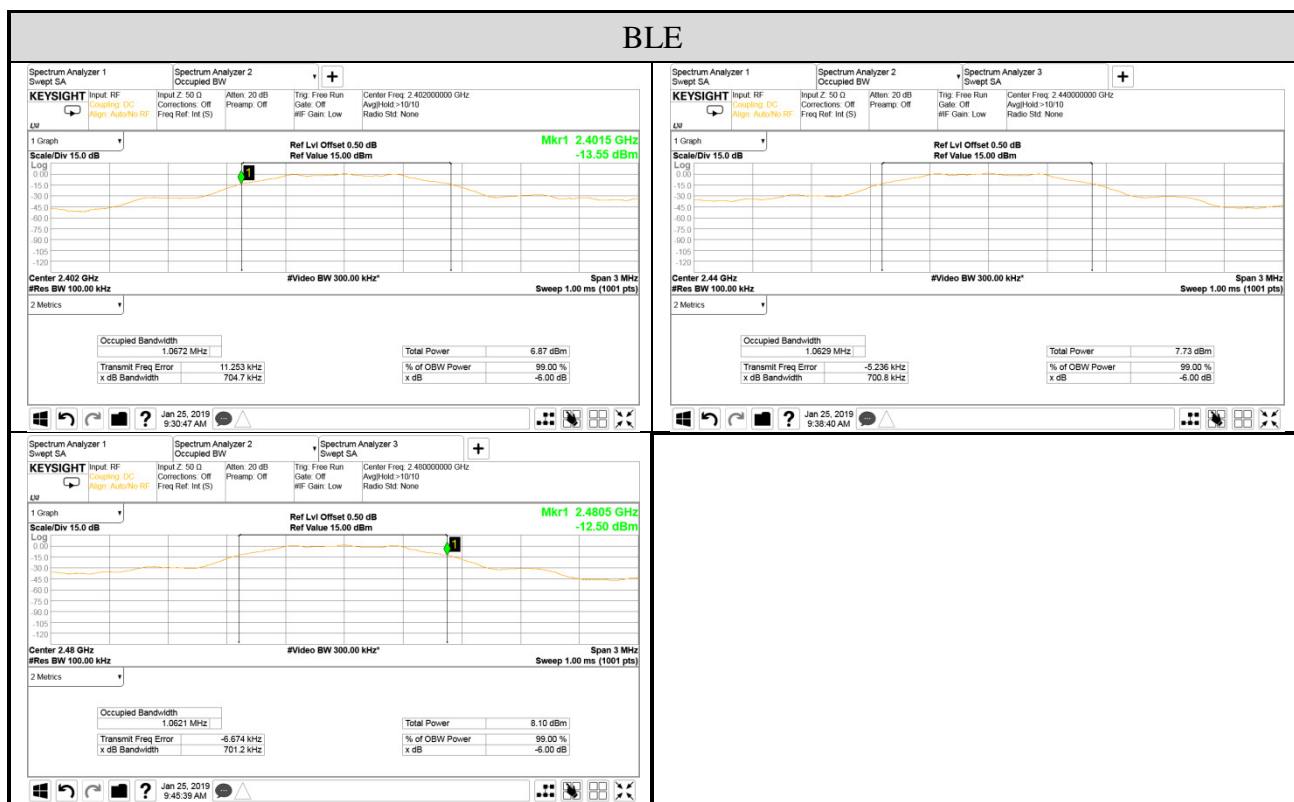
3. 發射頻寬之量測

測試日期	2019/01/25	環境溫/濕度	23°C/53%
測試電壓	DC 3.7V (由內建鋰電池供電)		

3.1. 發射頻寬

模式 (Mode)	測試頻率 (MHz)	6dB 頻寬 (MHz)	限制值 (kHz)
BLE	2402	0.7047	>500
	2440	0.7008	
	2480	0.7012	

3.2. 發射頻寬之量測圖



測試日期	2019/01/25	環境溫/濕度	23°C/53%
測試電壓	DC 3.7V (由內建鋰電池供電)		

模式 (Mode)	測試頻率 (MHz)	最大輸出功率(dBm)	限制值 (dBm)
BLE	2402	0.81	30
	2440	1.57	
	2480	1.90	

BLE

Spectrum Analyzer 1

Sweep SA

KEYSIGHT

Input: RF
Coupling: DC
Align: Auto/No RF

Input 2: 50 D
Corrections: Off
Freq Ref: Int (S)

Attibn: 20 dB
Preamp: Off

PNO: Fast
Gate: Off
IF Gain: Low
Sig Track: Off

Avg Type: Log-Power
Avehold: >100/100
Trig: Free Run

1

2

3

4

5

6

M

W

W

W

W

W

P

N

N

N

N

N

1 Spectrum

Scale/Div 10 dB

Log

Ref Lvl Offset 0.50 dB

Ref Level 10.50 dBm

Mkr1 2.402 255 GHz

0.81 dBm

Center 2.402000 GHz

#Res BW 2.0 MHz

#Video BW 3.0 MHz

Span 5.000 MHz

Sweep 1.00 ms (1001 pts)

Jan 25, 2019 9:28:40 AM

Spectrum Analyzer 2

Occupied BW

KEYSIGHT

Input: RF
Coupling: DC
Align: Auto/No RF

Input 2: 50 D
Corrections: Off
Freq Ref: Int (S)

Attibn: 20 dB
Preamp: Off

PNO: Fast
Gate: Off
IF Gain: Low
Sig Track: Off

Avg Type: Log-Power
Avehold: >100/100
Trig: Free Run

1

2

3

4

5

6

M

W

W

W

W

W

P

N

N

N

N

N

1 Spectrum

Scale/Div 10 dB

Log

Ref Lvl Offset 0.50 dB

Ref Level 10.50 dBm

Mkr1 2.439 695 GHz

1.57 dBm

Center 2.440000 GHz

#Res BW 2.0 MHz

#Video BW 3.0 MHz

Span 5.000 MHz

Sweep 1.00 ms (1001 pts)

Jan 25, 2019 9:38:00 AM

Spectrum Analyzer 1

Sweep SA

KEYSIGHT

Input: RF
Coupling: DC
Align: Auto/No RF

Input 2: 50 D
Corrections: Off
Freq Ref: Int (S)

Attibn: 20 dB
Preamp: Off

PNO: Fast
Gate: Off
IF Gain: Low
Sig Track: Off

Avg Type: Log-Power
Avehold: >100/100
Trig: Free Run

1

2

3

4

5

6

M

W

W

W

W

W

P

N

N

N

N

N

1 Spectrum

Scale/Div 10 dB

Log

Ref Lvl Offset 0.50 dB

Ref Level 10.50 dBm

Mkr1 2.479 680 GHz

1.90 dBm

Center 2.480000 GHz

#Res BW 2.0 MHz

#Video BW 3.0 MHz

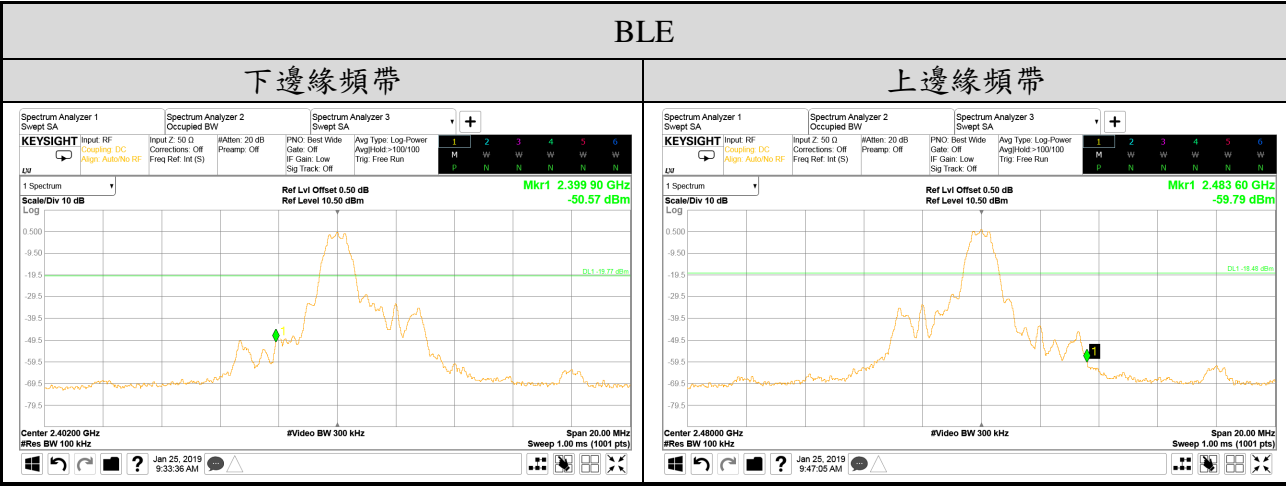
Span 5.000 MHz

Sweep 1.00 ms (1001 pts)

Jan 25, 2019 9:40:05 AM

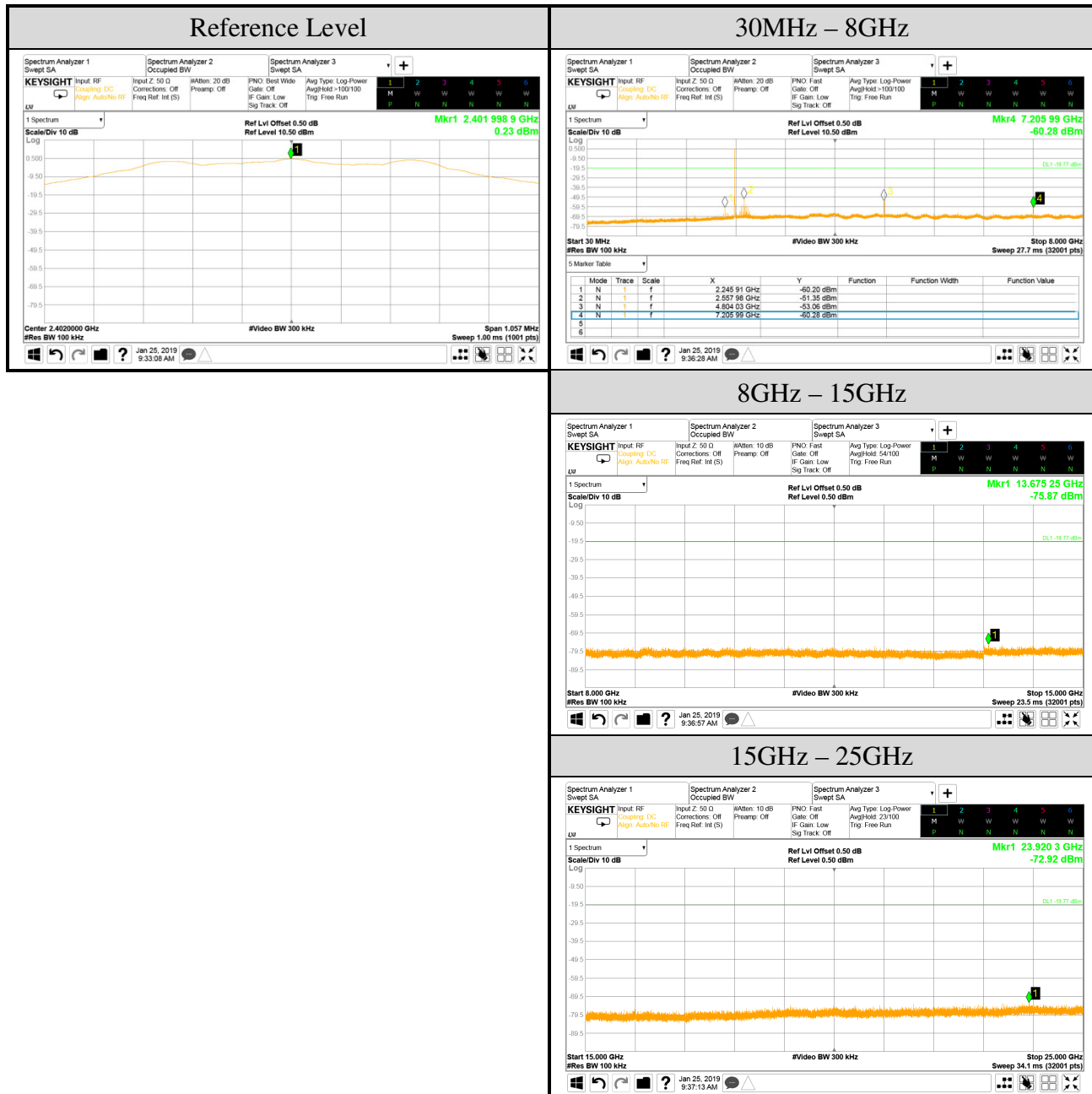
5. 頻帶邊緣之 RF 傳導發射之量測

測試日期	2019/01/25	環境溫/濕度	23°C/53%
測試電壓	DC 3.7V (由內建鋰電池供電)		

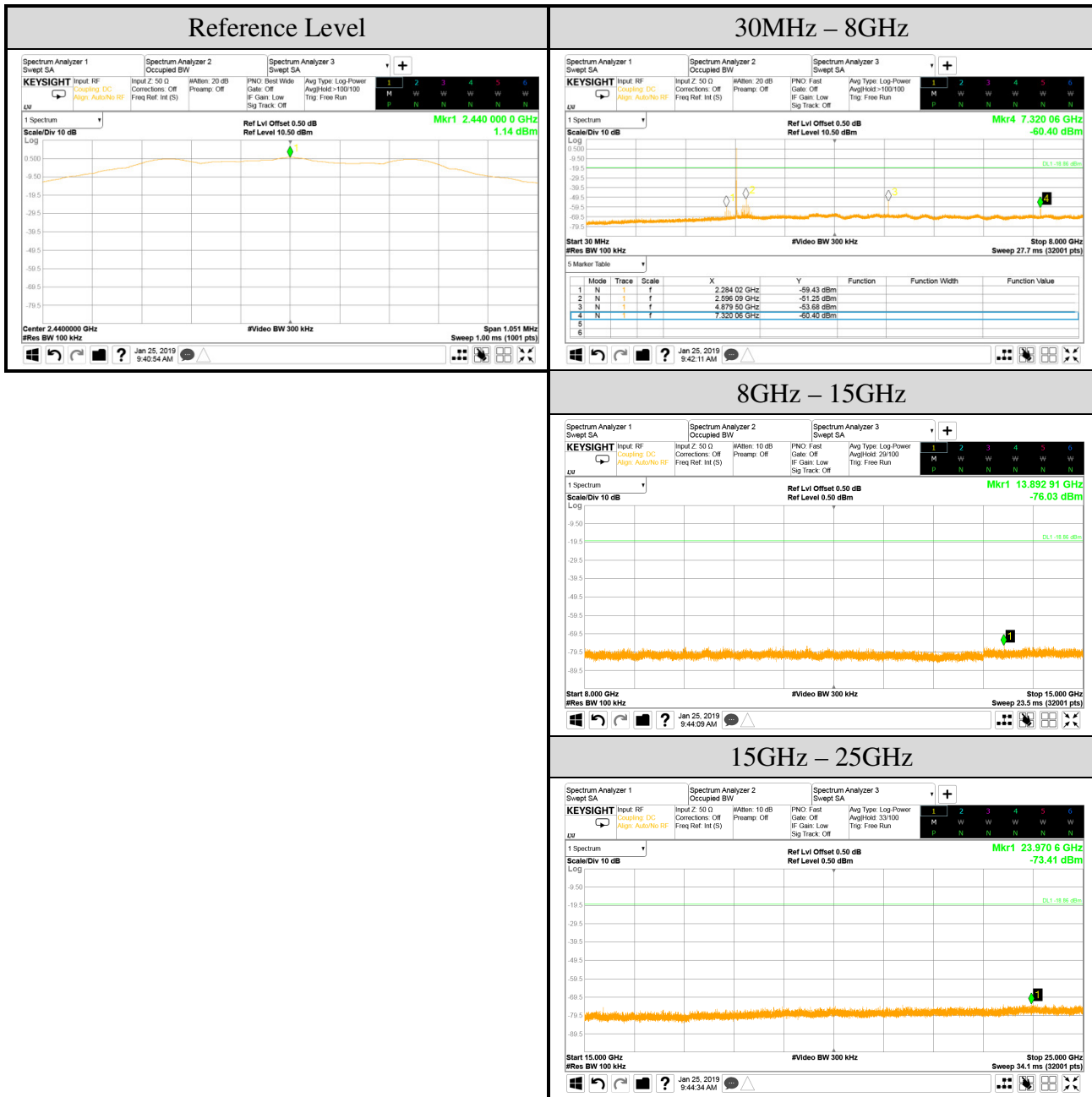


6. 混附發射之 RF 傳導發射之量測

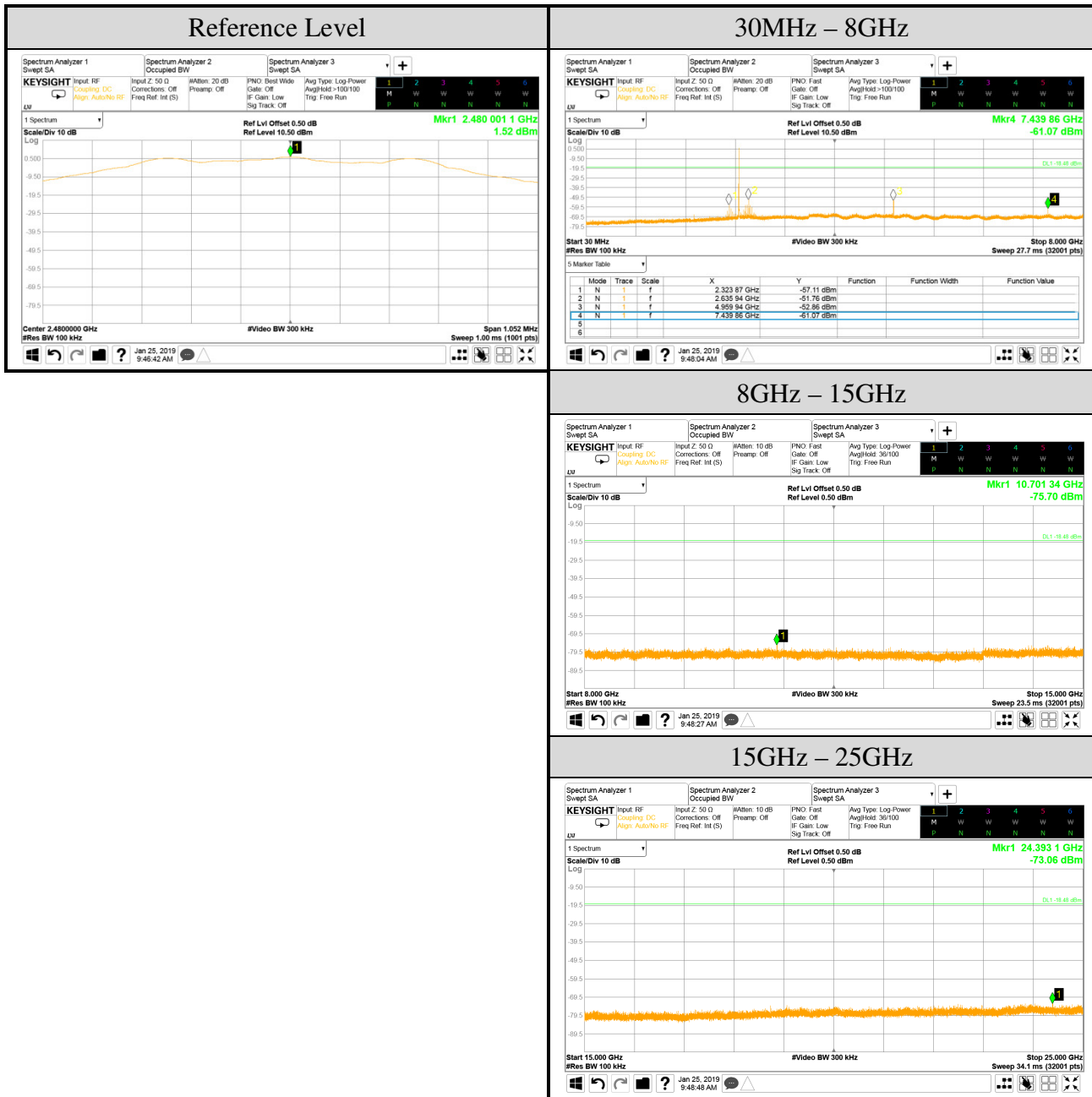
測試日期	2019/01/25	環境溫/濕度	23°C/53%
測試電壓	DC 3.7V (由內建鋰電池供電)	模式	BLE
		測試頻率	2402MHz



測試日期	2019/01/25	環境溫/濕度	23°C/53%
測試電壓	DC 3.7V (由內建鋰電池供電)	模式	BLE
		測試頻率	2440MHz



測試日期	2019/01/25	環境溫/濕度	23°C/53%
測試電壓	DC 3.7V (由內建鋰電池供電)	模式	BLE
		測試頻率	2480MHz



7. 功率密度之量測

測試日期	2019/01/25	環境溫/濕度	23°C/53%
測試電壓	DC 5V (經筆記型電腦供電)		

7.1. 功率密度

模式 (Mode)	測試頻率 (MHz)	功率密度(dBm)	限制值 (dBm)
BLE	2402	0.23	8
	2440	1.14	
	2480	1.52	

註：測試結果係依照 FCC 公告之 KDB558074 D01V04，且解析頻寬以 100kHz 量測其測試結果較 3kHz 嚴格

7.2. 功率密度之量測圖

