

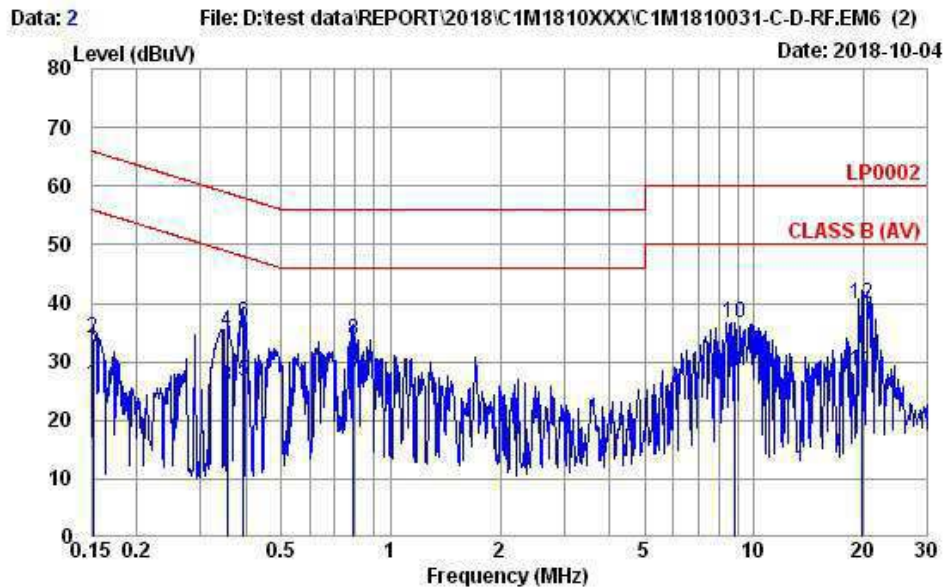
附錄 一

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	2018/10/04	環境溫/濕度	23°C/55%
測試電壓	AC 110V, 60Hz (經電源供應器供電)		

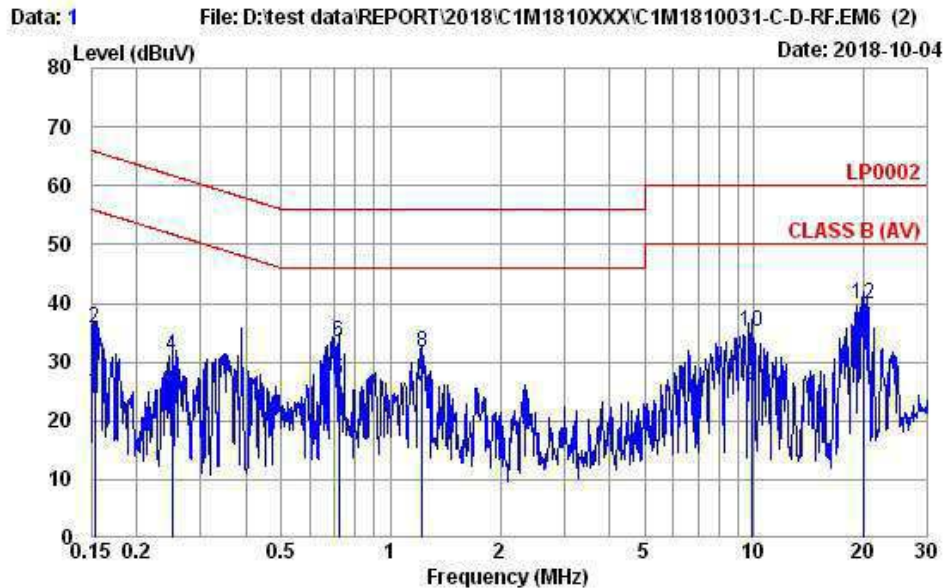


Site no. : No.8 Shielded Room Data no. : 2
Condition : ENV4200 100169 LISN Phase : NEUTRAL
Limit : LP0002
Env. / Ins. : 23°C / 55% ESR3(1774) Engineer : Nick Du
EUT : LCB-001
Power Rating : 110Vac/60Hz
Test Mode : Operating

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.152	10.57	0.03	9.98	5.39	25.97	55.91	29.94	Average
2	0.152	10.57	0.03	9.98	13.49	34.07	65.91	31.84	QP
3	0.354	10.45	0.04	9.98	5.46	25.93	48.87	22.94	Average
4	0.354	10.45	0.04	9.98	14.81	35.28	58.87	23.59	QP
5	0.393	10.43	0.04	9.98	6.26	26.71	47.99	21.28	Average
6	0.393	10.43	0.04	9.98	16.29	36.74	57.99	21.25	QP
7	0.788	10.42	0.05	9.99	5.91	26.37	46.00	19.63	Average
8	0.788	10.42	0.05	9.99	13.11	33.57	56.00	22.43	QP
9	8.869	11.21	0.18	10.02	6.96	28.37	50.00	21.63	Average
10	8.869	11.21	0.18	10.02	15.09	36.50	60.00	23.50	QP
11	19.740	13.47	0.27	10.07	4.57	28.38	50.00	21.62	Average
12	19.740	13.47	0.27	10.07	16.13	39.94	60.00	20.06	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.
2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

測試日期	2018/10/04	環境溫/濕度	23°C/55%
測試電壓	AC 110V, 60Hz (經電源供應器供電)		



Site no. : No.8 Shielded Room Data no. : 1
Condition : ENV4200 100169 LISN Phase : LINE
Limit : LP0002
Env. / Ins. : 23°C / 55% ESR3(1774) Engineer : Nick Du
EUT : LCB-001
Power Rating : 110Vac/60Hz
Test Mode : Operating

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.153	10.62	0.03	9.98	4.37	25.00	55.82	30.82	Average
2	0.153	10.62	0.03	9.98	15.07	35.70	65.82	30.12	QP
3	0.251	10.52	0.03	9.98	3.93	24.46	51.73	27.27	Average
4	0.251	10.52	0.03	9.98	10.48	31.01	61.73	30.72	QP
5	0.720	10.44	0.05	9.99	6.50	26.98	46.00	19.02	Average
6	0.720	10.44	0.05	9.99	12.87	33.35	56.00	22.65	QP
7	1.223	10.45	0.06	9.99	5.15	25.65	46.00	20.35	Average
8	1.223	10.45	0.06	9.99	11.13	31.63	56.00	24.37	QP
9	9.809	11.28	0.19	10.02	4.57	26.06	50.00	23.94	Average
10	9.809	11.28	0.19	10.02	13.72	35.21	60.00	24.79	QP
11	20.056	13.59	0.27	10.07	5.97	29.90	50.00	20.10	Average
12	20.056	13.59	0.27	10.07	15.80	39.73	60.00	20.27	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.
2. If the average limit is met when using a quasi-peak detector,
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

2. 場強輻射之量測

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，實驗室先將發射機分別以三種不同的擺設方式(站立、平放、側立)進行量試評估，最後選取最大場強值的擺設方式(平放)以低、中、高頻率來進行量測，並將所有模式之掃頻圖檢附於附錄中。最後，選擇較差模式進行讀值之測量，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	發射	2402MHz* (CH37)	30-1000MHz
2			1000-3000MHz
3			3000-8000MHz
4			8000-18000MHz
5			18000-25000MHz
6		2440MHz (CH17)	1000-3000MHz
7			3000-8000MHz
8			8000-18000MHz
9			18000-25000MHz
10		2480MHz (CH39)	1000-3000MHz
11			3000-8000MHz
12			8000-18000MHz
13			18000-25000MHz
14	接收	2440MHz (CH17)	30-1000MHz
15			1000-3000MHz
16			3000-8000MHz
17			8000-18000MHz
18			18000-25000MHz

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 (CH37)	2310-2430MHz
2		2480MHz (CH39)	2450-2530MHz

測試日期	2018/10/04	環境溫/濕度	22°C/53%
測試電壓	DC 3.3V (經電源供應器供電)		

2.1. 30-1000MHz 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
30.97	24.27	1.22	2.73	28.22	40.00	11.78	Peak
167.74	15.98	3.01	9.24	28.23	43.50	15.27	Peak
263.77	19.26	3.95	11.24	34.45	46.00	11.55	Peak
474.26	22.89	6.22	4.77	33.88	46.00	12.12	Peak
749.74	25.42	7.35	4.65	37.42	46.00	8.58	Peak
856.44	26.44	7.94	3.12	37.50	46.00	8.50	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
32.91	23.32	1.26	8.56	33.14	40.00	6.86	Peak
116.33	18.59	2.46	7.81	28.86	43.50	14.64	Peak
328.76	20.31	4.71	8.82	33.84	46.00	12.16	Peak
533.43	23.69	6.54	6.03	36.26	46.00	9.74	Peak
818.61	26.10	7.72	3.31	37.13	46.00	8.87	Peak
979.63	27.63	8.70	2.77	39.10	54.00	14.90	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
31.94	23.76	1.25	2.73	27.74	40.00	12.26	Peak
118.27	18.72	2.48	8.93	30.13	43.50	13.37	Peak
263.77	19.26	3.95	12.18	35.39	46.00	10.61	Peak
369.50	21.35	5.21	10.42	36.98	46.00	9.02	Peak
806.97	25.99	7.65	5.75	39.39	46.00	6.61	Peak
983.51	27.66	8.72	3.36	39.74	54.00	14.26	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
31.94	23.76	1.25	8.75	33.76	40.00	6.24	Peak
115.36	18.53	2.45	8.23	29.21	43.50	14.29	Peak
326.82	20.25	4.68	8.44	33.37	46.00	12.63	Peak
532.46	23.66	6.53	7.79	37.98	46.00	8.02	Peak
870.02	26.55	8.00	2.86	37.41	46.00	8.59	Peak
969.93	27.52	8.63	2.66	38.81	54.00	15.19	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	9.54	3.49	47.25	54.00	6.75	Peak
7205.00	35.80	11.80	1.90	49.50	54.00	4.50	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	9.54	-1.39	42.37	54.00	11.63	Peak
7205.00	35.80	11.80	0.10	47.70	54.00	6.30	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
4880.00	34.25	9.56	1.15	44.96	54.00	9.04	Peak
7322.00	35.80	11.92	4.27	51.99	54.00	2.01	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
4880.00	34.25	9.56	-1.16	42.65	54.00	11.35	Peak
7322.00	35.80	11.92	1.61	49.33	54.00	4.67	Peak

Mode	BLE	Frequency	TX 2480MHz
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Antenna at Horizontal Polarization

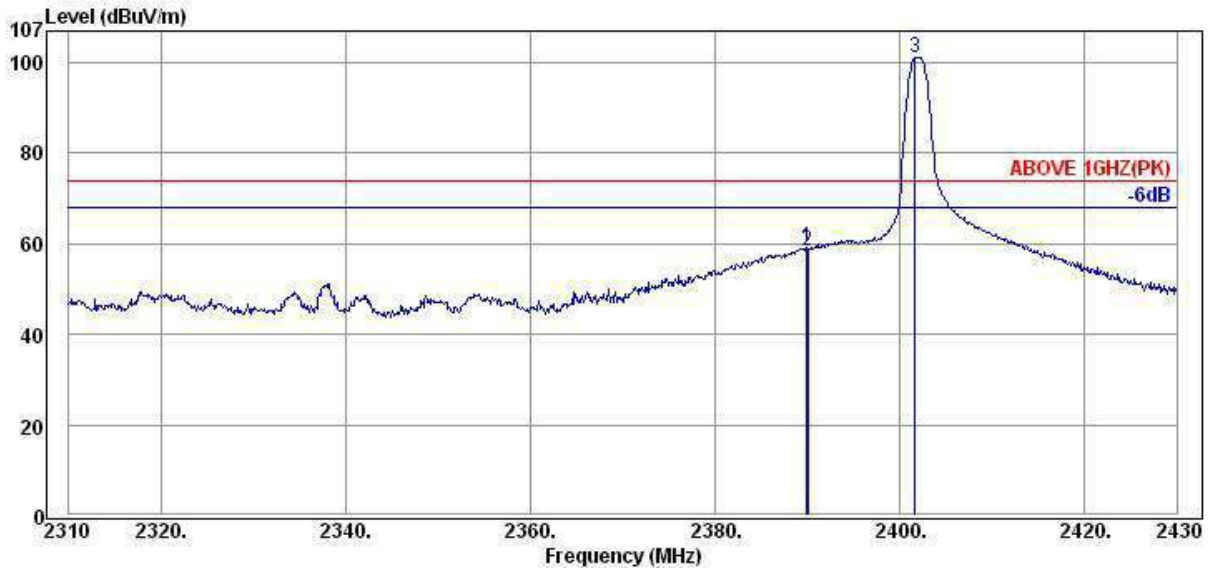
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
4960.00	34.29	9.60	-1.89	42.00	54.00	12.00	Peak
7439.00	35.80	12.04	5.30	53.14	54.00	0.86	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
4960.00	34.29	9.60	-2.16	41.73	54.00	12.27	Peak
7442.00	35.80	12.04	3.73	51.57	54.00	2.43	Peak

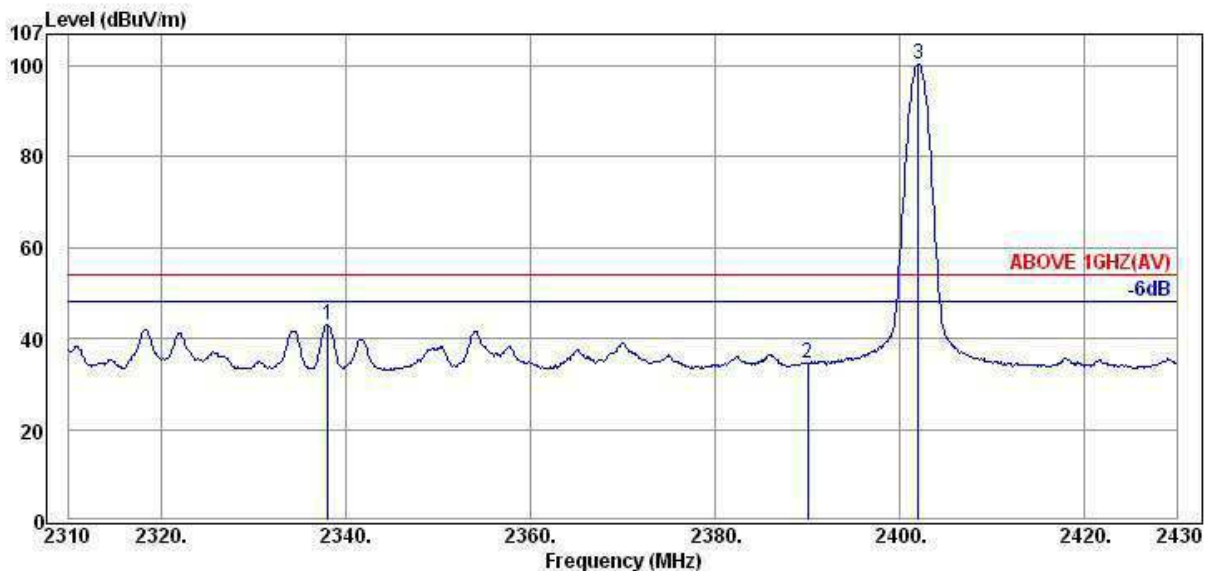
2.3. 禁用頻帶量測結果 (其他不必要發射)

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 (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2389.92	32.16	6.57	20.43	59.16	74.00	14.84	Peak
2390.04	32.16	6.57	19.66	58.39	74.00	15.61	Peak
@ 2401.68	32.16	6.57	62.34	101.07	---	---	Peak

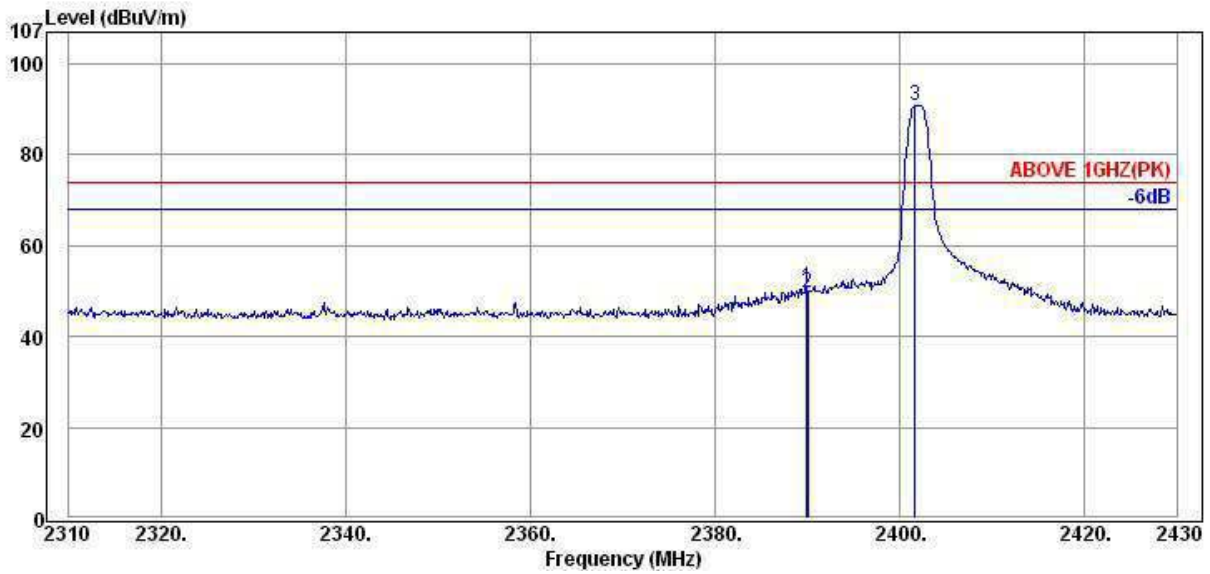


Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2338.08	32.08	6.51	4.52	43.11	54.00	10.89	Average
2390.04	32.16	6.57	-4.22	34.51	54.00	19.49	Average
@ 2402.04	32.16	6.57	61.57	100.30	---	---	Average

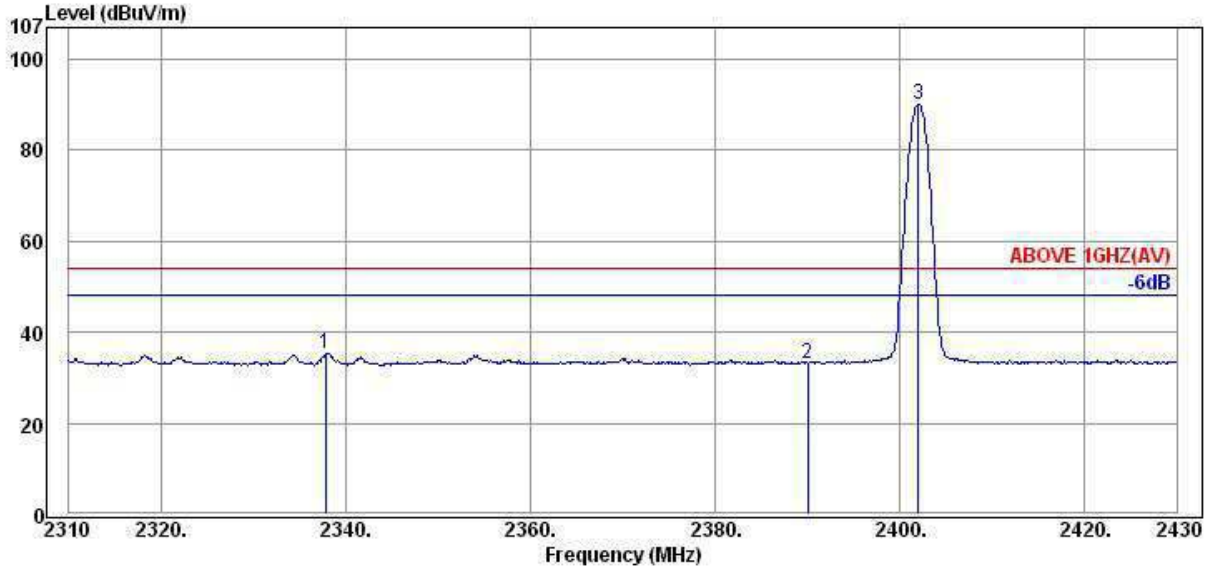
備註：“@”為主波，在此章節是不予以判定。

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 (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Detector
2389.92	32.16	6.57	11.99	50.72	74.00	23.28	Peak
2390.04	32.16	6.57	11.02	49.75	74.00	24.25	Peak
@ 2401.68	32.16	6.57	52.26	90.99	---	---	Peak

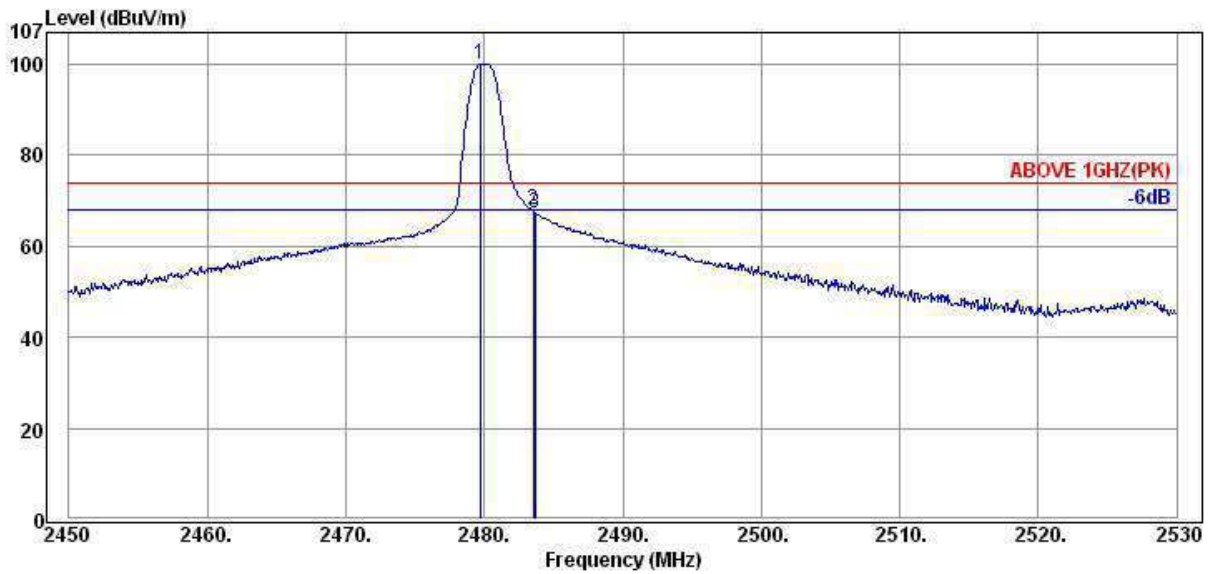


Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Detector
2337.84	32.08	6.51	-3.41	35.18	54.00	18.82	Average
2390.04	32.16	6.57	-5.60	33.13	54.00	20.87	Average
@ 2402.04	32.16	6.57	51.48	90.21	---	---	Average

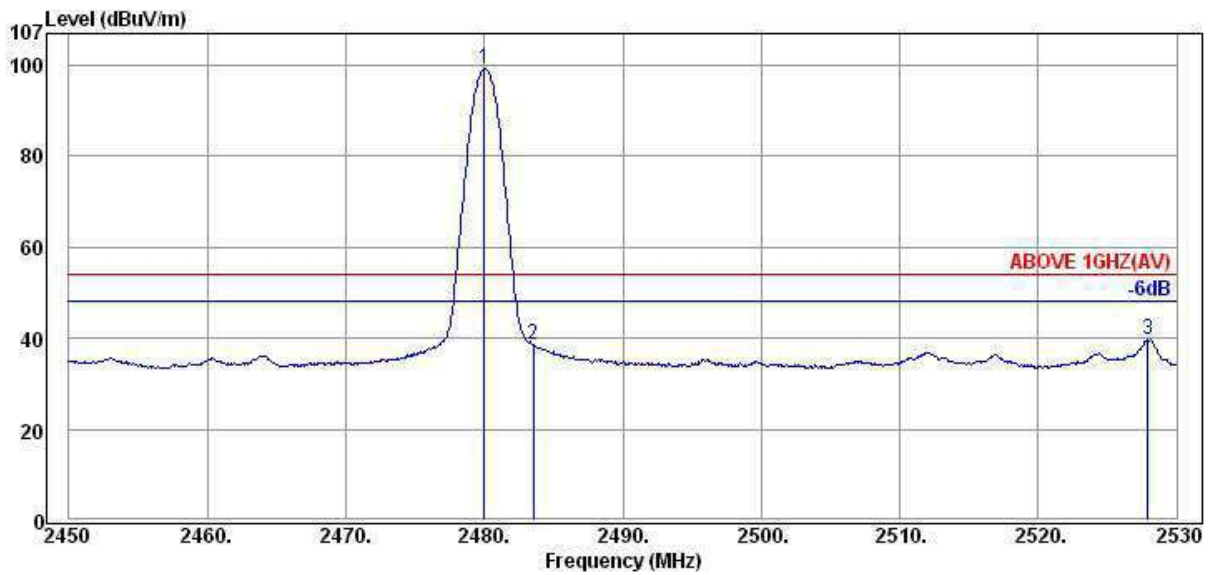
備註：“@”為主波，在此章節是不予以判定。

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
@ 2479.68	32.28	6.67	61.02	99.97	---	---	Peak
2483.52	32.28	6.67	28.90	67.85	74.00	6.15	Peak
2483.68	32.28	6.67	28.34	67.29	74.00	6.71	Peak

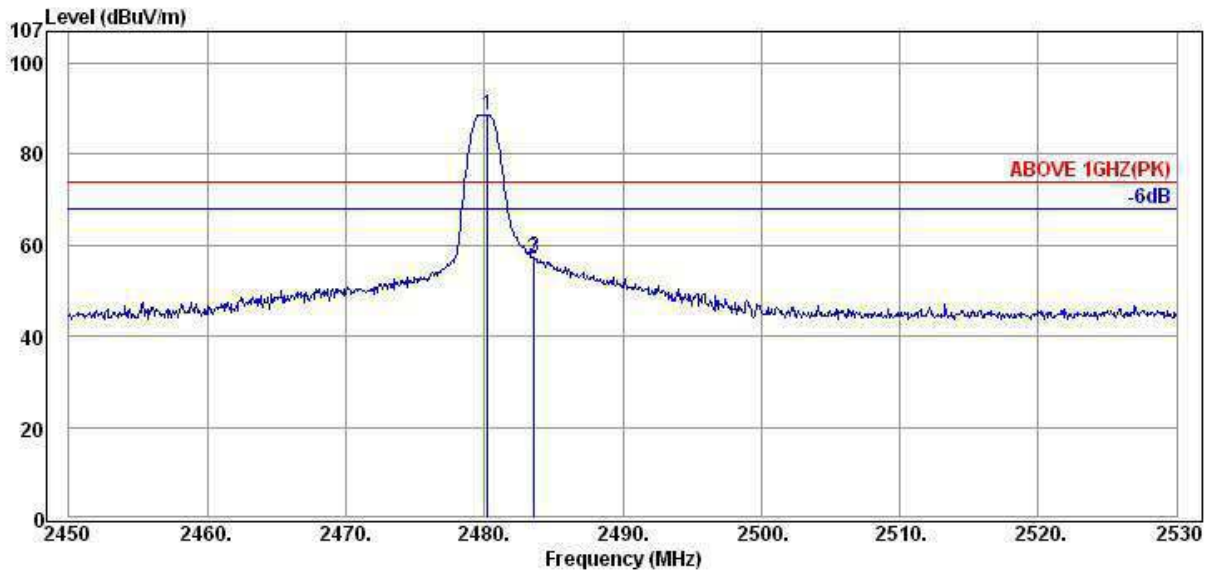


Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
@ 2480.00	32.28	6.67	60.18	99.13	---	---	Average
2483.52	32.28	6.67	-0.35	38.60	54.00	15.40	Average
2527.92	32.34	6.74	0.75	39.83	54.00	14.17	Average

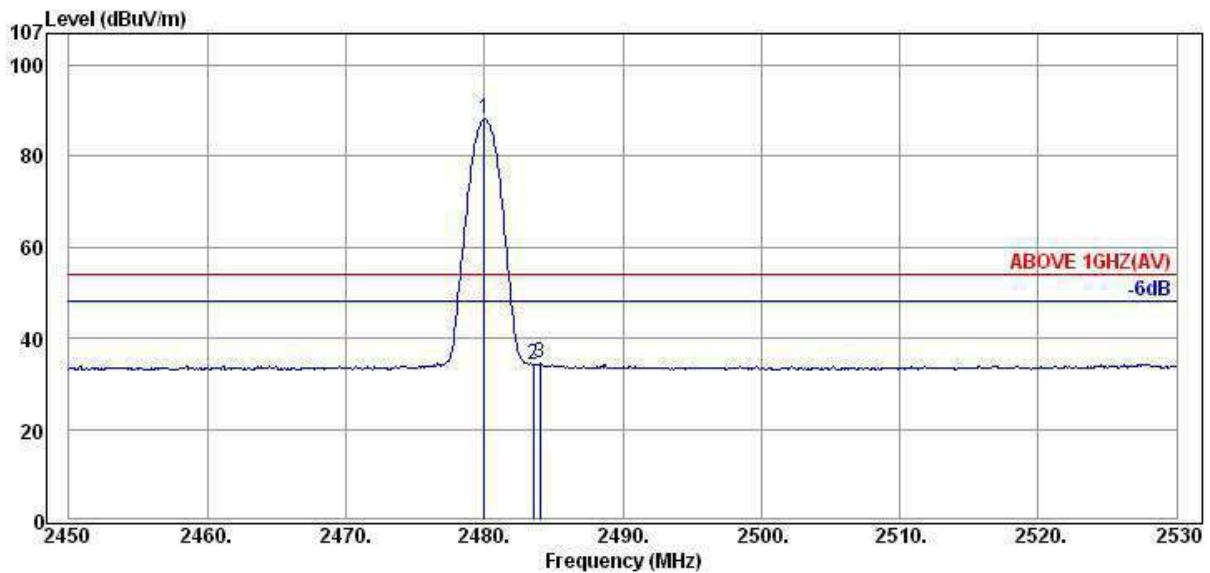
備註：“@”為主波，在此章節是不予以判定。

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
@	2480.24	32.28	6.67	49.83	88.78	---	---	Peak
	2483.52	32.28	6.67	17.97	56.92	74.00	17.08	Peak
	2483.60	32.28	6.67	18.50	57.45	74.00	16.55	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
@	2480.00	32.28	6.67	49.14	88.09	---	---	Average
	2483.52	32.28	6.67	-4.81	34.14	54.00	19.86	Average
	2484.00	32.28	6.67	-4.48	34.47	54.00	19.53	Average

備註：“@”為主波，在此章節是不予以判定。

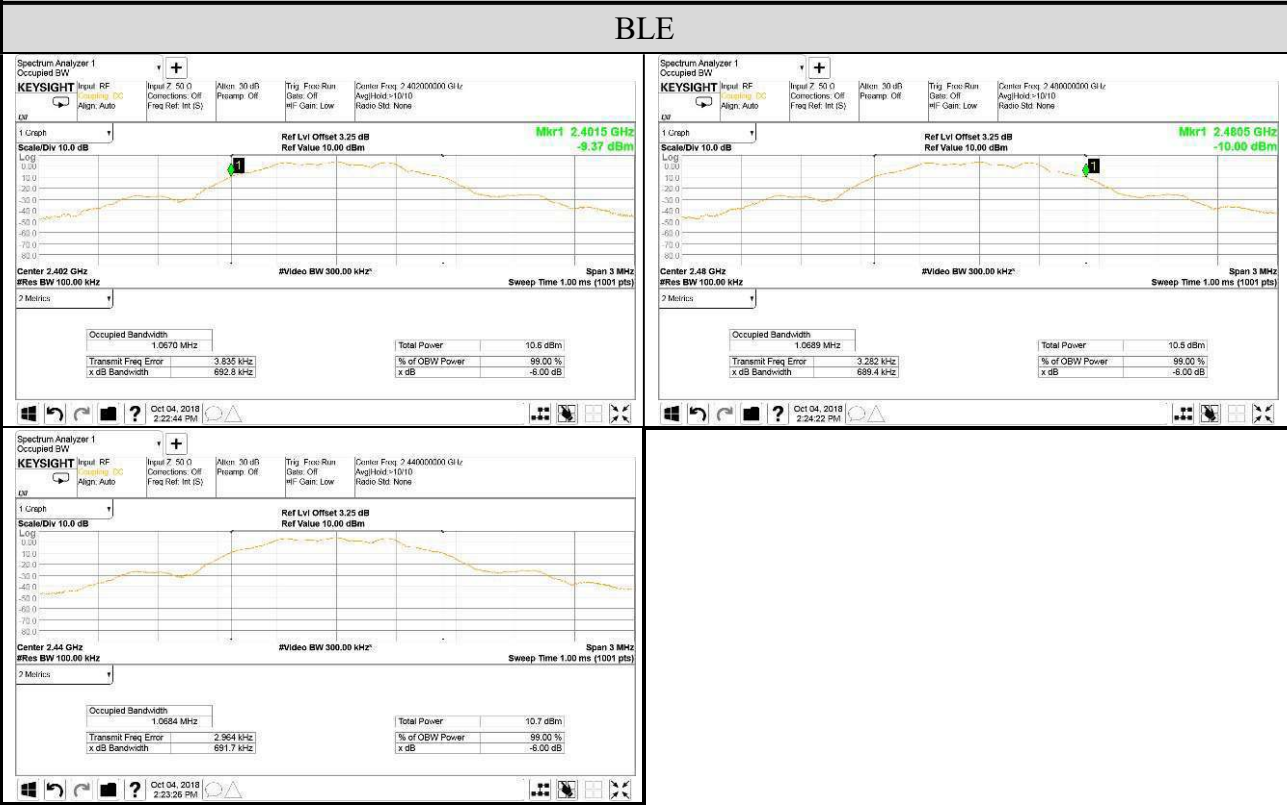
3. 發射頻寬之量測

測試日期	2018/10/04	環境溫/濕度	22°C/53%
測試電壓	DC 3.3V (經電源供應器供電)		

3.1. 發射頻寬

模式 (Mode)	測試頻率 (MHz)	6dB 頻寬 (MHz)	限制值 (kHz)
BLE	2402	0.6928	>500
	2440	0.6917	
	2480	0.6894	

3.2. 發射頻寬之量測圖



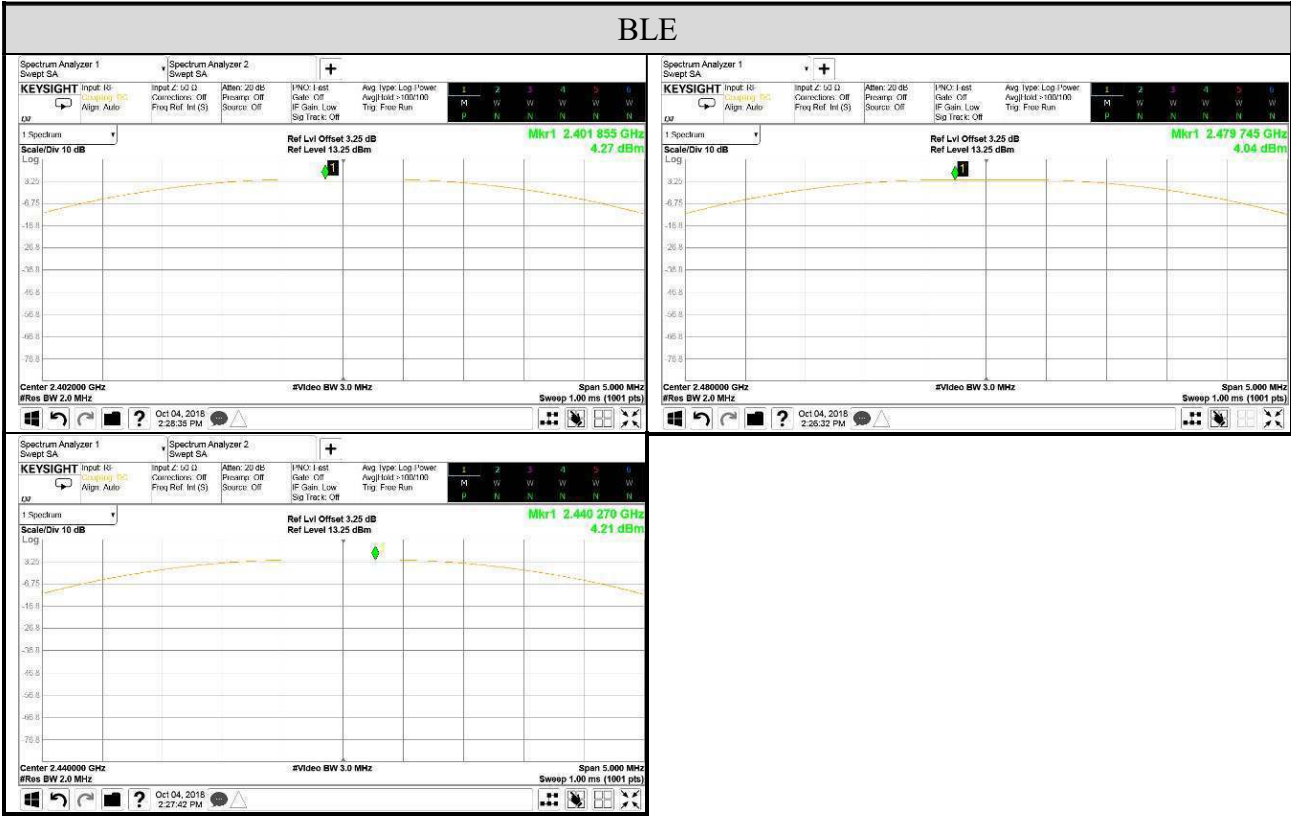
4. 峰值輸出功率之量測

測試日期	2018/10/04	環境溫/濕度	22°C/53%
測試電壓	DC 3.3V (經電源供應器供電)		

4.1. 峰值輸出功率

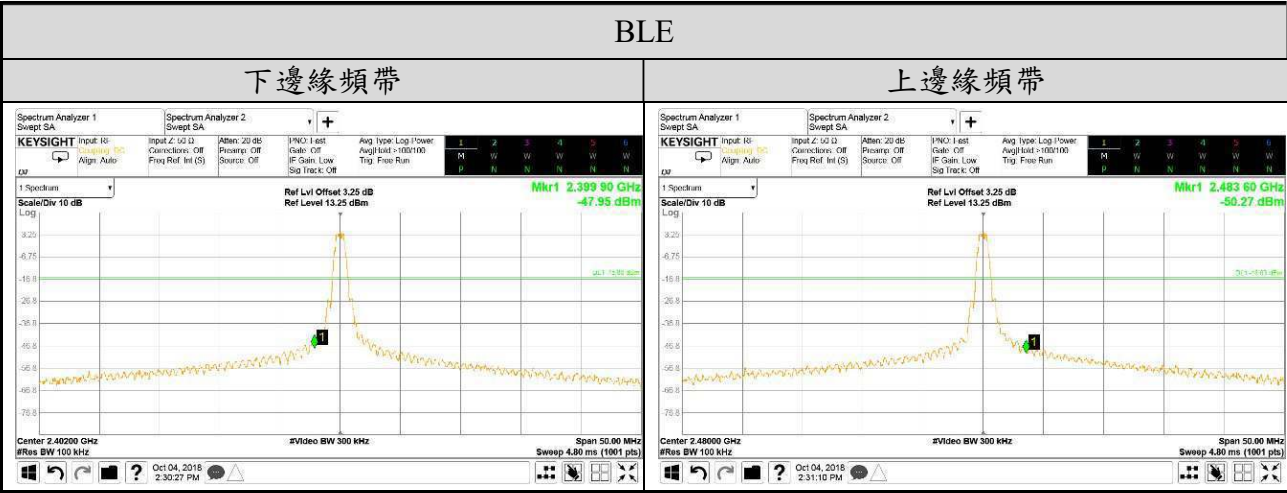
模式 (Mode)	測試頻率 (MHz)	最大輸出功率 (dBm)	限制值 (dBm)
BLE	2402	4.27	30
	2440	4.21	
	2480	4.04	

4.2. 峰值輸出功率之量測圖



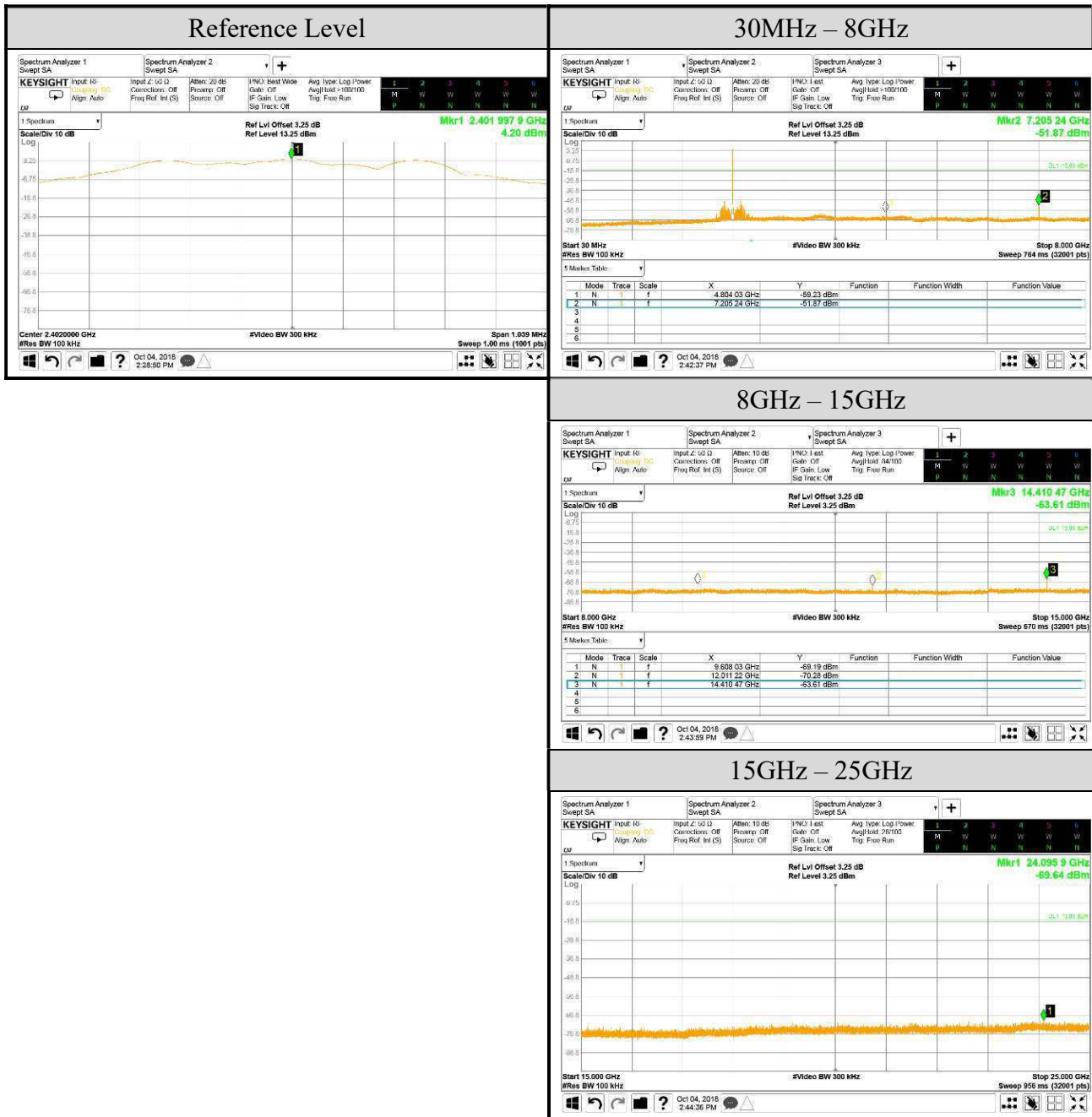
5. 頻帶邊緣之 RF 傳導發射之量測

測試日期	2018/10/04	環境溫/濕度	22°C/53%
測試電壓	DC 3.3V (經電源供應器供電)		



6. 混附發射之 RF 傳導發射之量測

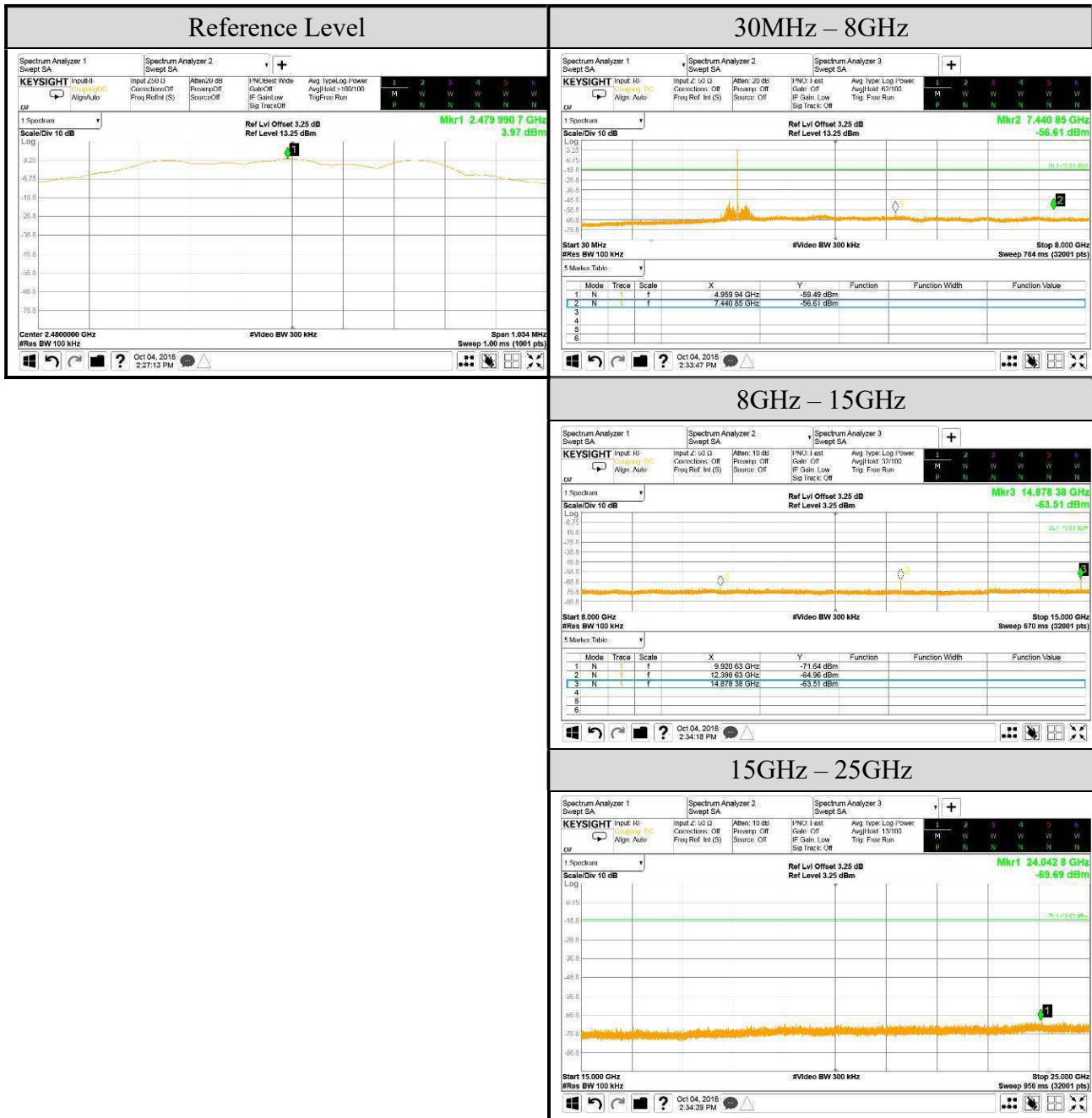
測試日期	2018/10/04	環境溫/濕度	22°C/53%
測試電壓	DC 3.3V (經電源供應器供電)	模式	BLE
		測試頻率	2402MHz



測試日期	2018/10/04	環境溫/濕度	22°C/53%
測試電壓	DC 3.3V (經電源供應器供電)	模式	BLE
		測試頻率	2440MHz



測試日期	2018/10/04	環境溫/濕度	22°C/53%
測試電壓	DC 3.3V (經電源供應器供電)	模式	BLE
		測試頻率	2480MHz



7. 功率密度之量測

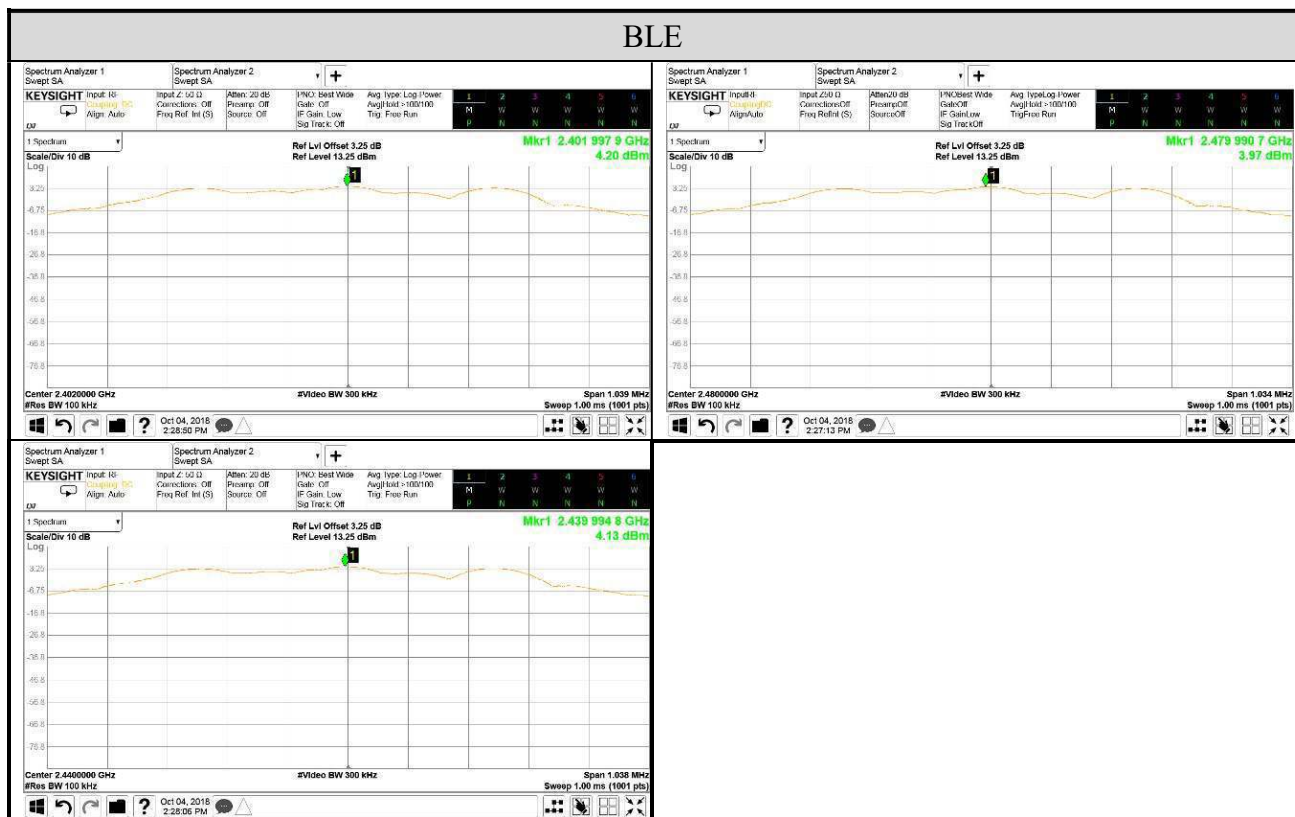
測試日期	2018/10/04	環境溫/濕度	22°C/53%
測試電壓	DC 3.3V (經電源供應器供電)		

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	4.20	8
	2440	4.13	
	2480	3.97	

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



8. 電波暴露量之量測

測試日期	2018/10/04	環境溫/濕度	22°C/53%
測試電壓	DC 3.3V (經電源供應器供電)		

距離人體(r):	20	cm		
最大發射功率(P):	4.27	dBm	=	2.673 mW
最大天線增益(G):	1.80	dB	=	1.514 Numerical
MPE (S) = (P*G) / (4*π*r ²) =	0.0008 mW/cm ²			
註：1. 最大發射功率系指2.4GHz各模式/頻道中最大之發射功率功率。				
2. 電磁波曝露量MPE標準值1mW/cm ² ，送測產品實測值為：0.0008 mW/cm ²				