

附錄一

受測裝置之測試結果

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1. 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)，實驗室先行評估平放、站立、側立三軸，其中平放為最差模式，以低、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。所得讀值資料請見章節 1.1 ~ 1.2：

模式	動作狀態	基本頻率	量測頻率範圍
Normal	Operating	---	30-1000MHz
			1000-25000MHz
BLE	發射	2402MHz	1000-25000MHz
		2440MHz	1000-25000MHz
		2480MHz*	30-1000MHz
			1000-25000MHz
	接收	2480MHz	30-1000MHz
			1000-25000MHz

註：*：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 1.3。

模式	動作狀態	基本頻率	量測頻率範圍
BLE	發射	2402MHz	2310-2430MHz
		2480MHz	2450-2900MHz

測試日期	2019/11/28	環境溫/濕度	24°C/51%
測試電壓	DC 3V (經電池供電)	測試人員	Martin Chen

1.1. 30-1000MHz 頻率範圍，其他不必要發射量測

Mode	Normal	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
30.97	25.03	1.21	6.12	32.36	40.00	7.64	Peak
207.51	16.71	3.51	12.95	33.17	43.50	10.33	Peak
242.43	18.46	3.87	12.35	34.68	46.00	11.32	Peak
345.25	21.02	5.13	9.39	35.54	46.00	10.46	Peak
734.22	25.82	7.55	0.85	34.22	46.00	11.78	Peak
971.87	27.87	8.88	0.98	37.73	54.00	16.27	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
31.94	24.34	1.23	11.98	37.55	40.00	2.45	Peak
94.99	16.45	2.23	12.27	30.95	43.50	12.55	Peak
207.51	16.71	3.51	9.91	30.13	43.50	13.37	Peak
483.96	23.51	6.62	4.94	35.07	46.00	10.93	Peak
829.28	26.75	8.07	1.78	36.60	46.00	9.40	Peak
940.83	27.64	8.70	1.29	37.63	46.00	8.37	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
95.96	16.65	2.24	21.69	40.58	43.50	2.92	Peak
191.99	15.92	3.35	21.76	41.03	43.50	2.47	Peak
240.49	18.38	3.85	21.27	43.50	46.00	2.50	Peak
263.77	19.08	4.08	14.08	37.24	46.00	8.76	Peak
816.67	26.63	8.00	4.63	39.26	46.00	6.74	Peak
883.60	27.19	8.36	5.40	40.95	46.00	5.05	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
95.96	16.65	2.24	16.31	35.20	43.50	8.30	Peak
191.99	15.92	3.35	15.35	34.62	43.50	8.88	Peak
240.49	18.38	3.85	13.29	35.52	46.00	10.48	Peak
482.99	23.49	6.61	5.91	36.01	46.00	9.99	Peak
828.31	26.72	8.06	5.66	40.44	46.00	5.56	Peak
929.19	27.54	8.63	2.08	38.25	46.00	7.75	Peak

Mode	BLE	Frequency	RX 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
95.96	16.65	2.24	21.92	40.81	43.50	2.69	Peak
191.99	15.92	3.35	21.32	40.59	43.50	2.91	Peak
240.49	18.38	3.85	20.34	42.57	46.00	3.43	Peak
816.67	26.63	8.00	3.72	38.35	46.00	7.65	Peak
917.55	27.44	8.56	4.12	40.12	46.00	5.88	Peak
975.75	27.89	8.90	2.06	38.85	54.00	15.15	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
95.96	16.65	2.24	17.22	36.11	43.50	7.39	Peak
191.99	15.92	3.35	14.04	33.31	43.50	10.19	Peak
240.49	18.38	3.85	12.80	35.03	46.00	10.97	Peak
483.96	23.51	6.62	2.94	33.07	46.00	12.93	Peak
830.25	26.75	8.07	5.97	40.79	46.00	5.21	Peak
976.72	27.89	8.91	1.68	38.48	54.00	15.52	Peak

1.2. 1000MHz 以上頻率範圍，其他不必要發射量測

Mode	Normal	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
1998.00	27.40	5.53	13.48	46.41	54.00	7.59	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
1788.00	26.86	5.22	12.94	45.02	54.00	8.98	Peak

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
4805.00	33.31	8.44	6.50	48.25	54.00	5.75	Peak
7205.00	36.21	9.42	4.71	50.34	54.00	3.66	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
4805.00	33.31	8.44	8.31	50.06	54.00	3.94	Peak
7205.00	36.21	9.42	5.73	51.36	54.00	2.64	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	33.52	8.52	6.68	48.72	54.00	5.28	Peak
7320.00	36.64	9.60	4.13	50.37	54.00	3.63	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	33.52	8.52	7.42	49.46	54.00	4.54	Peak
7320.00	36.64	9.60	4.44	50.68	54.00	3.32	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	33.72	8.60	1.53	43.85	54.00	10.15	Peak
7440.00	36.74	9.78	-0.48	46.04	54.00	7.96	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	33.72	8.60	1.72	44.04	54.00	9.96	Peak
7440.00	36.74	9.78	0.81	47.33	54.00	6.67	Peak

Mode	BLE	Frequency	RX 2480MHz
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Antenna at Horizontal Polarization

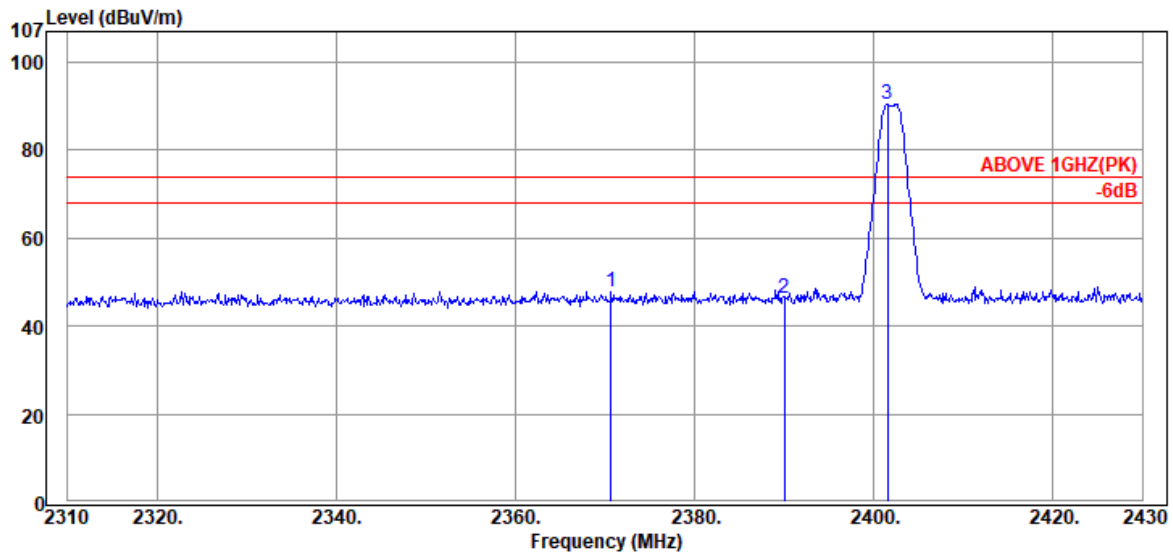
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
1046.00	25.64	3.93	16.61	46.18	54.00	7.82	Peak

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
1332.00	25.46	4.42	18.10	47.98	54.00	6.02	Peak

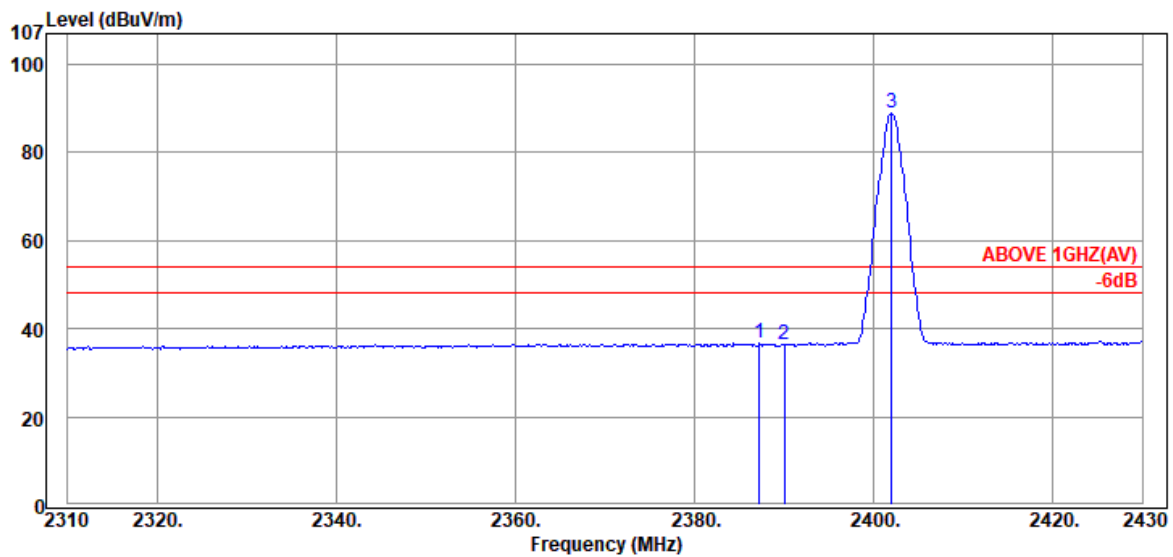
1.3. 禁用頻帶量測結果 (其他不必要發射)

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
2370.72	28.17	6.00	13.73	47.90	74.00	26.10	Peak
2390.04	28.32	6.03	11.84	46.19	74.00	27.81	Peak
@ 2401.56	28.40	6.04	55.93	90.37	---	---	Peak

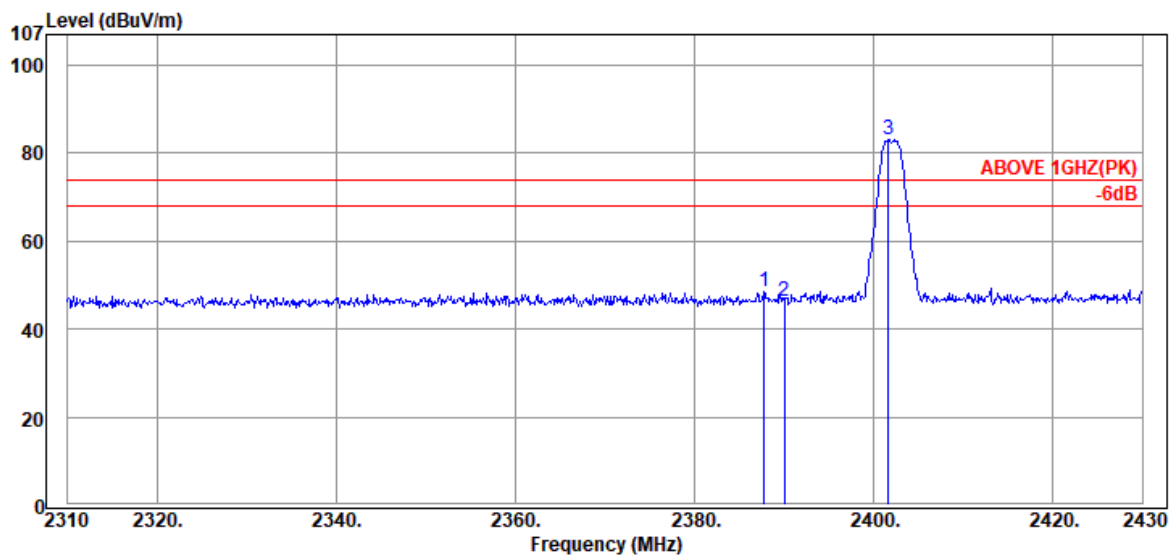


Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2387.28	28.30	6.02	2.35	36.67	54.00	17.33	Average
2390.04	28.32	6.03	2.06	36.41	54.00	17.59	Average
@ 2402.04	28.40	6.04	54.44	88.88	---	---	Average

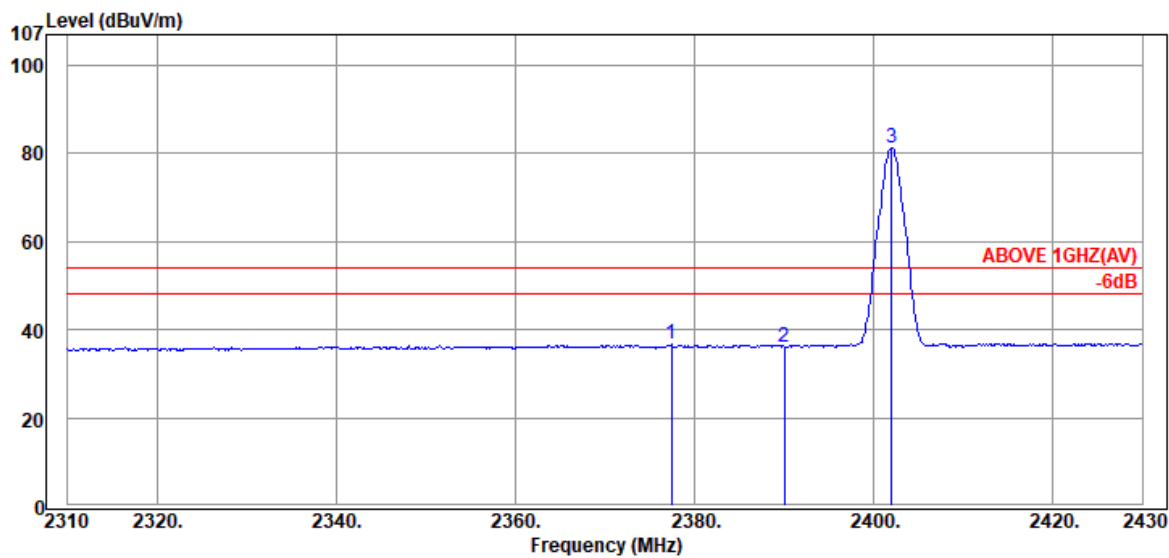
備註：“@”為主波，在此章節是不予以判定。

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
2387.76	28.30	6.02	14.33	48.65	74.00	25.35	Peak
2390.04	28.32	6.03	11.90	46.25	74.00	27.75	Peak
@ 2401.68	28.40	6.04	48.63	83.07	---	---	Peak

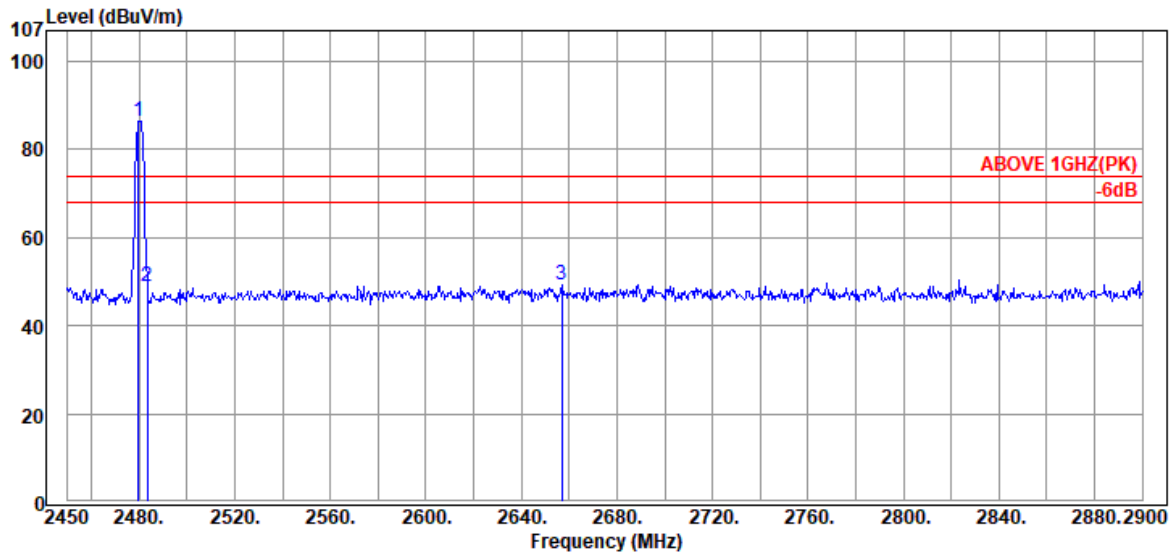


Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2377.44	28.22	6.01	2.36	36.59	54.00	17.41	Average
2390.04	28.32	6.03	1.83	36.18	54.00	17.82	Average
@ 2402.04	28.40	6.04	46.83	81.27	---	---	Average

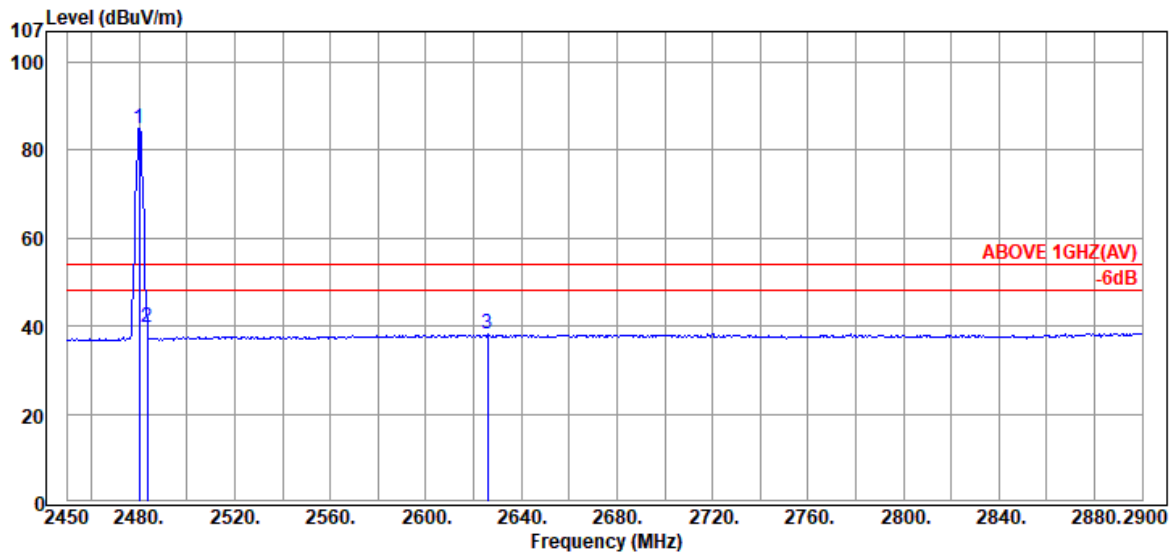
備註：“@”為主波，在此章節是不予以判定。

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
@	2479.70	28.68	6.13	51.75	86.56	---	---	Peak
	2483.30	28.70	6.13	13.98	48.81	74.00	25.19	Peak
	2657.00	28.93	6.35	13.85	49.13	74.00	24.87	Peak

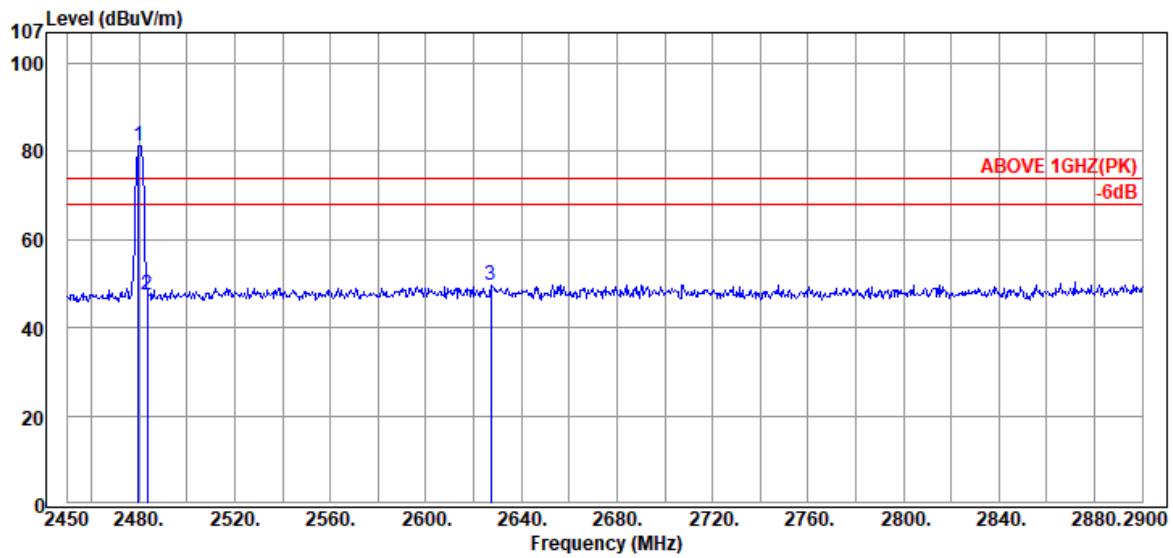


Antenna at Horizontal Polarization

	Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
@	2480.15	28.68	6.13	50.27	85.08	---	---	Average
	2483.30	28.70	6.13	4.85	39.68	54.00	14.32	Average
	2625.95	29.00	6.31	2.76	38.07	54.00	15.93	Average

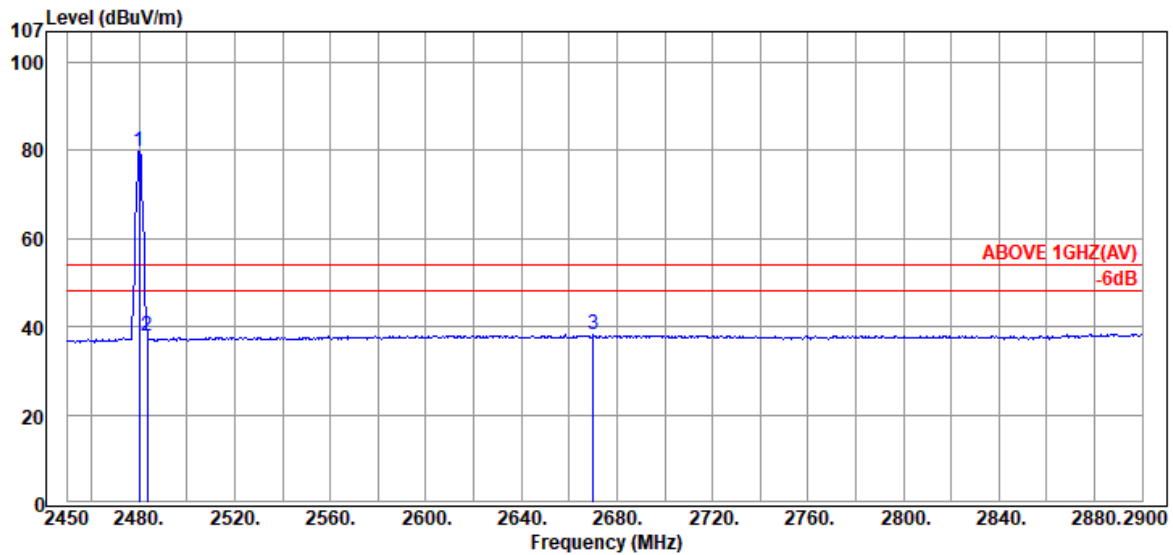
備註：“@”為主波，在此章節是不予以判定。

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
@	2479.70	28.68	6.13	46.63	81.44	---	---	Peak
	2483.30	28.70	6.13	12.74	47.57	74.00	26.43	Peak
	2627.30	28.99	6.32	14.45	49.76	74.00	24.24	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
@	2480.15	28.68	6.13	45.04	79.85	---	---	Average
	2483.30	28.70	6.13	3.13	37.96	54.00	16.04	Average
	2670.05	28.98	6.37	2.75	38.10	54.00	15.90	Average

備註：“@”為主波，在此章節是不予以判定。

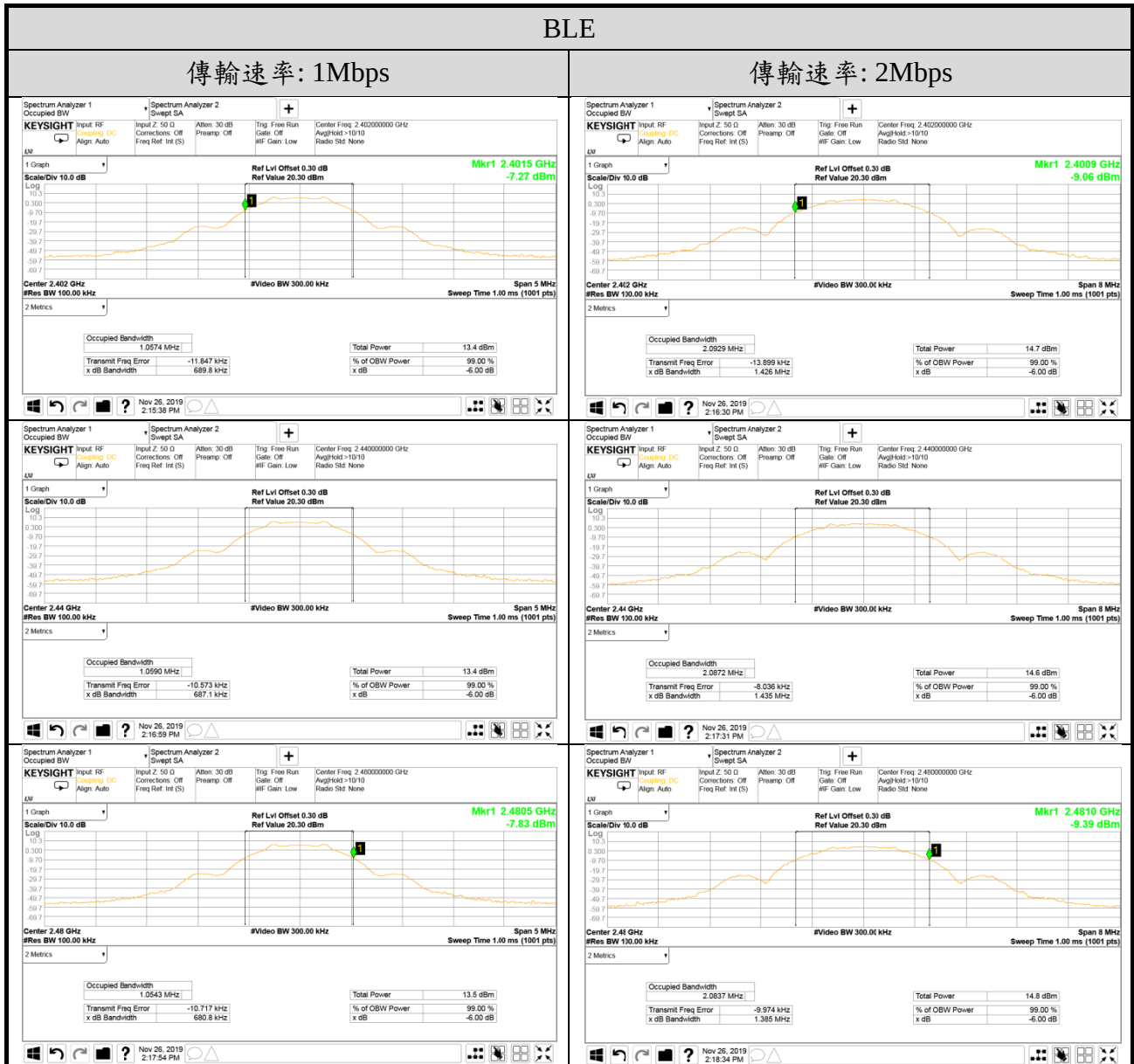
2. 發射頻寬之量測

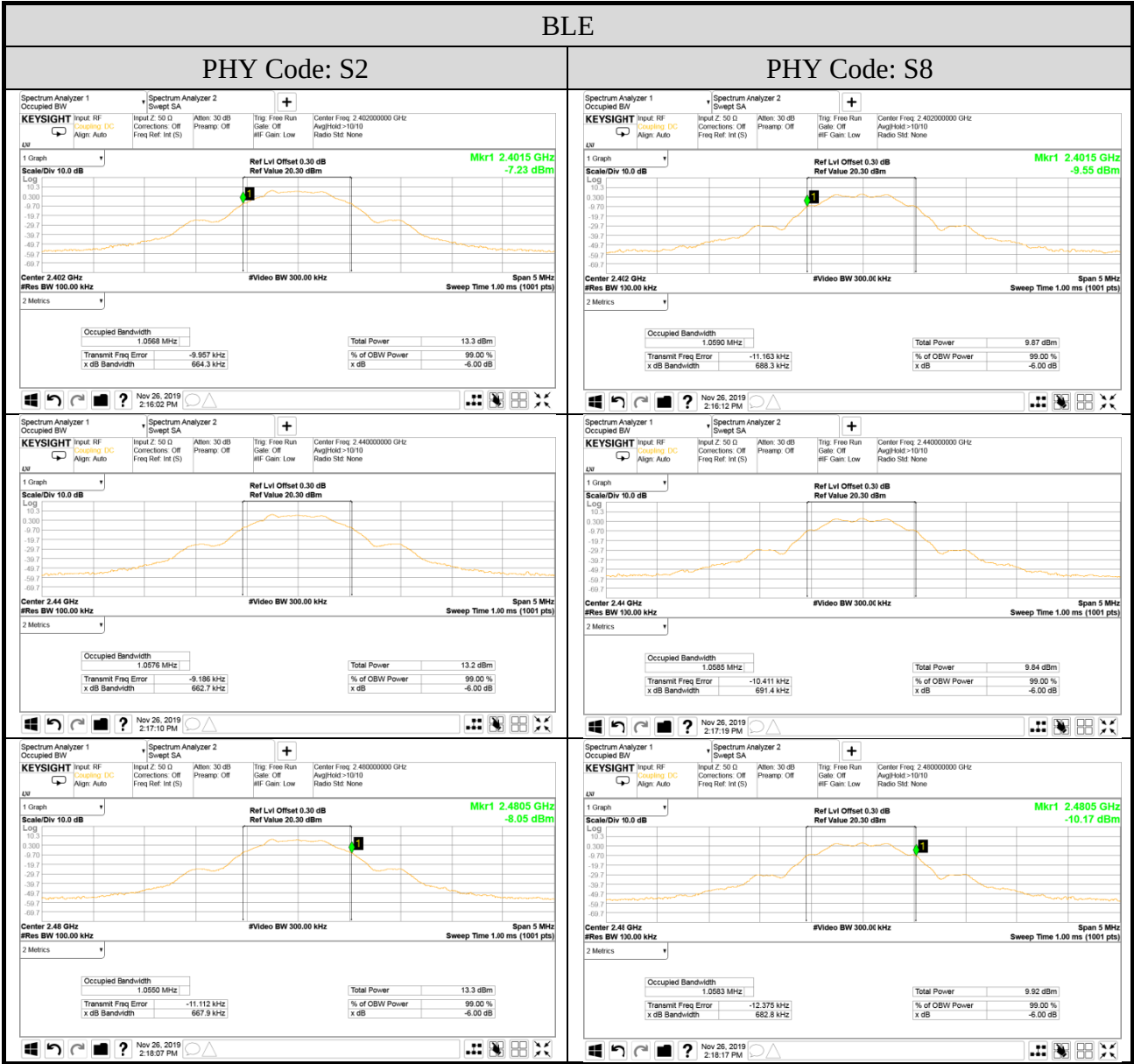
測試日期	2019/11/26	環境溫/濕度	23°C/66%
電纜損失	0.3dB	測試人員	Martin Chen
測試電壓	DC 3V (經電池供電)		

2.1. 發射頻寬

模式(Mode)	傳輸速率	PHY Coded	測試頻率(MHz)	6dB 頻寬(MHz)	限制值(kHz)
BLE	1Mbps	---	2402	0.6898	>500
			2440	0.6871	
			2480	0.6808	
	2Mbps	---	2402	1.426	
			2440	1.435	
			2480	1.385	
	---	S2	2402	0.6643	
			2440	0.6627	
			2480	0.6679	
	---	S8	2402	0.6883	
			2440	0.6914	
			2480	0.6828	

2.2. 發射頻寬之量測圖





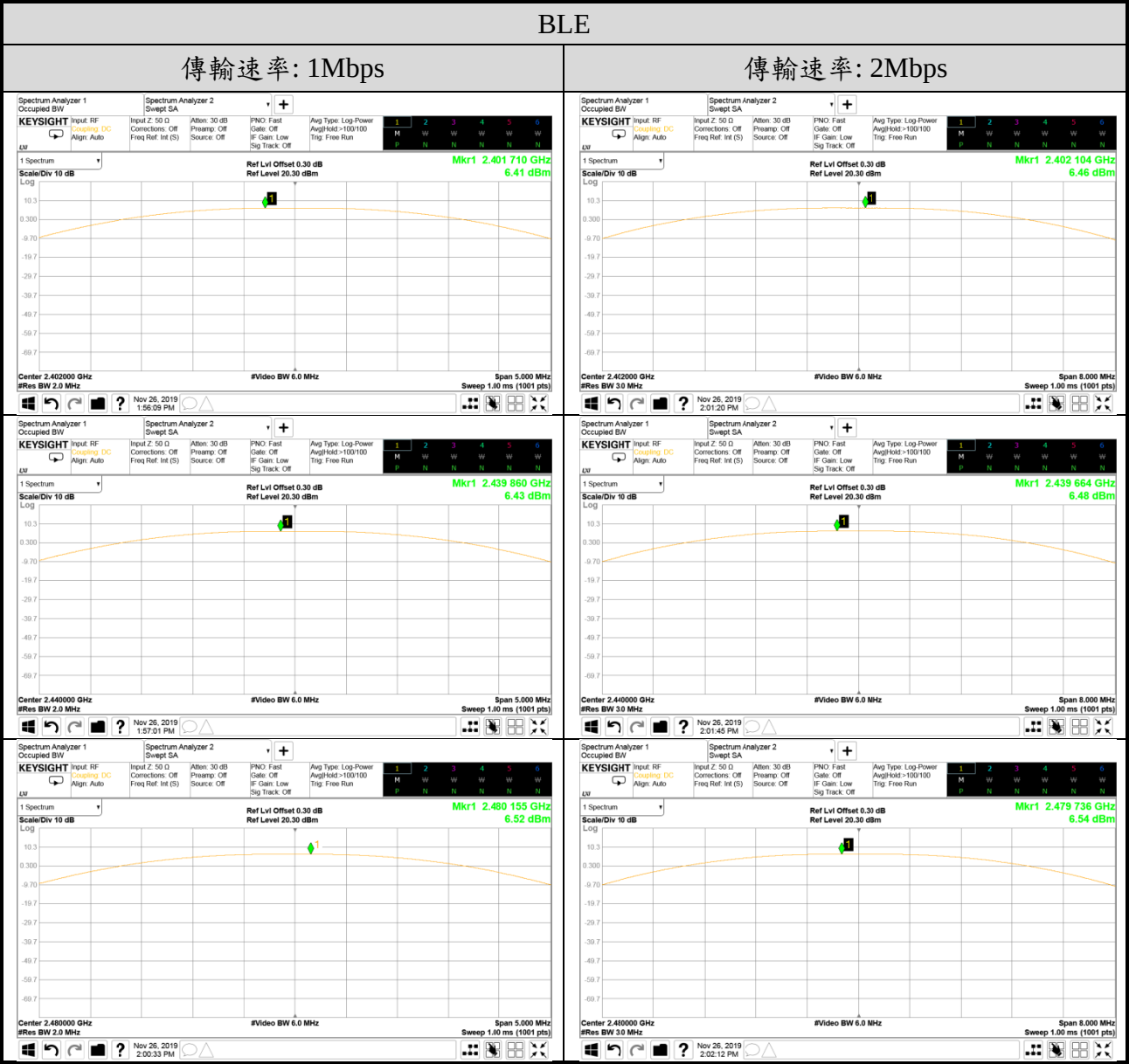
3. 峰值輸出功率之量測

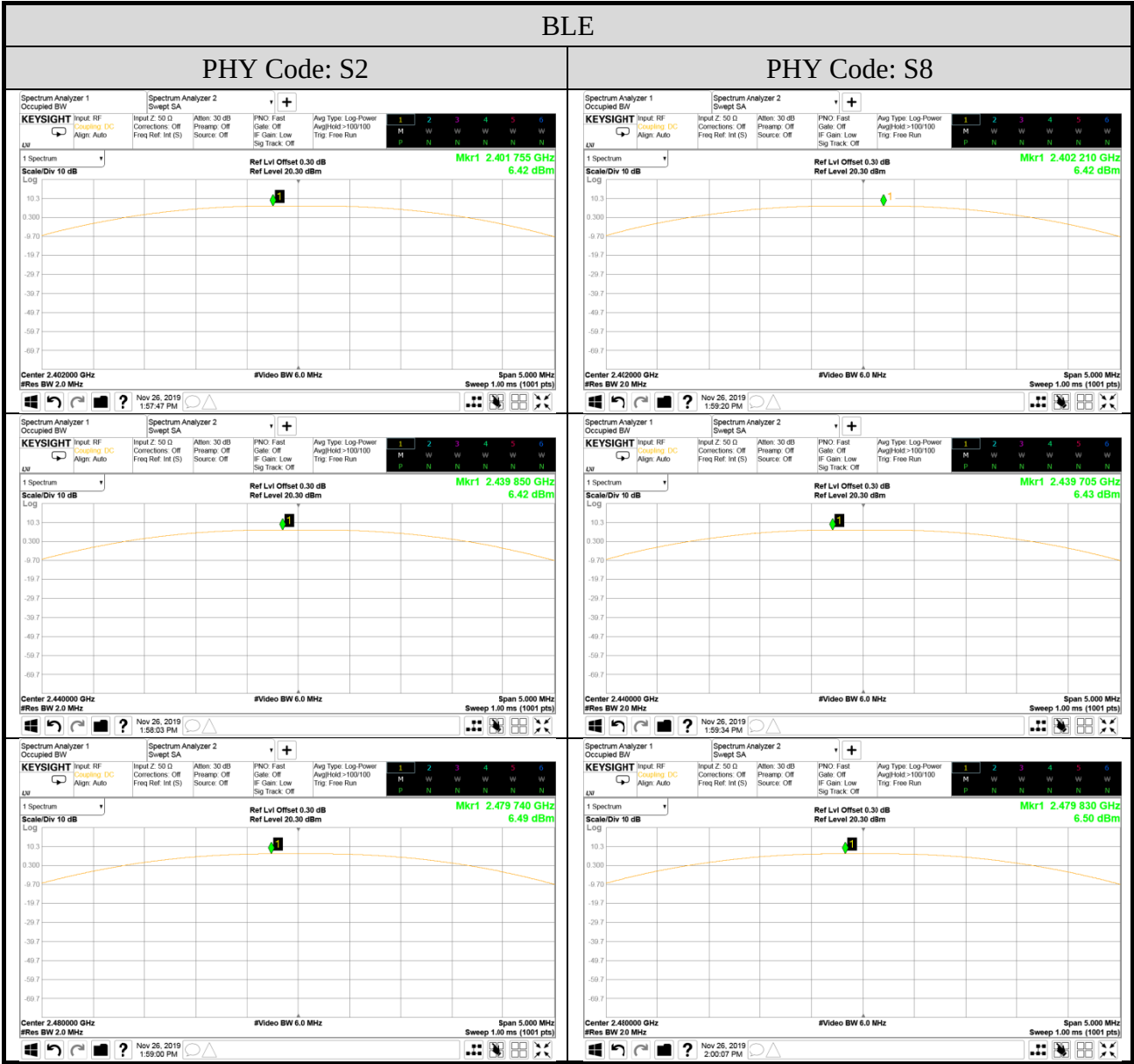
測試日期	2019/11/26	環境溫/濕度	23°C/66%
電纜損失	0.3dB	測試人員	Martin Chen
測試電壓	DC 3V (經電池供電)		

3.1. 峰值輸出功率

模式(Mode)	傳輸速率	PHY Coded	測試頻率(MHz)	最大輸出功率(dBm)	限制值(dBm)
BLE	1Mbps	---	2402	6.41	30
			2440	6.43	
			2480	6.52	
	2Mbps	---	2402	6.46	
			2440	6.48	
			2480	6.54	
	---	S2	2402	6.42	
			2440	6.42	
			2480	6.49	
	---	S8	2402	6.42	
			2440	6.43	
			2480	6.50	

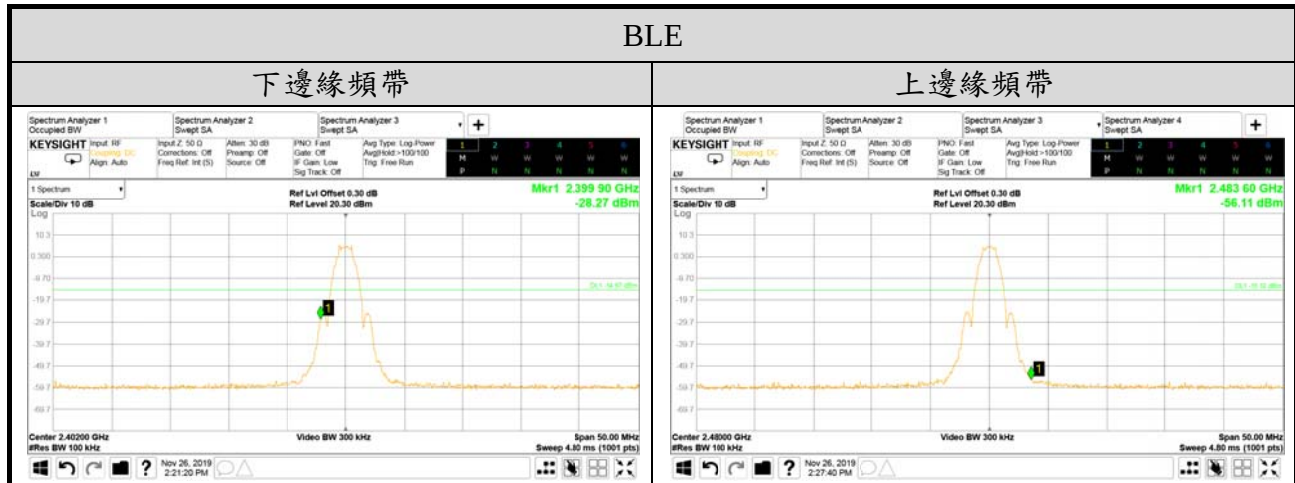
3.2. 峰值輸出功率之量測圖





4. 頻帶邊緣之 RF 傳導發射之量測

測試日期	2019/11/26	環境溫/濕度	23°C/66%
電纜損失	0.3dB	測試人員	Martin Chen
測試電壓	DC 3V (經電池供電)		



註：以較差之模式-傳輸速率 2Mbps 進行量測。

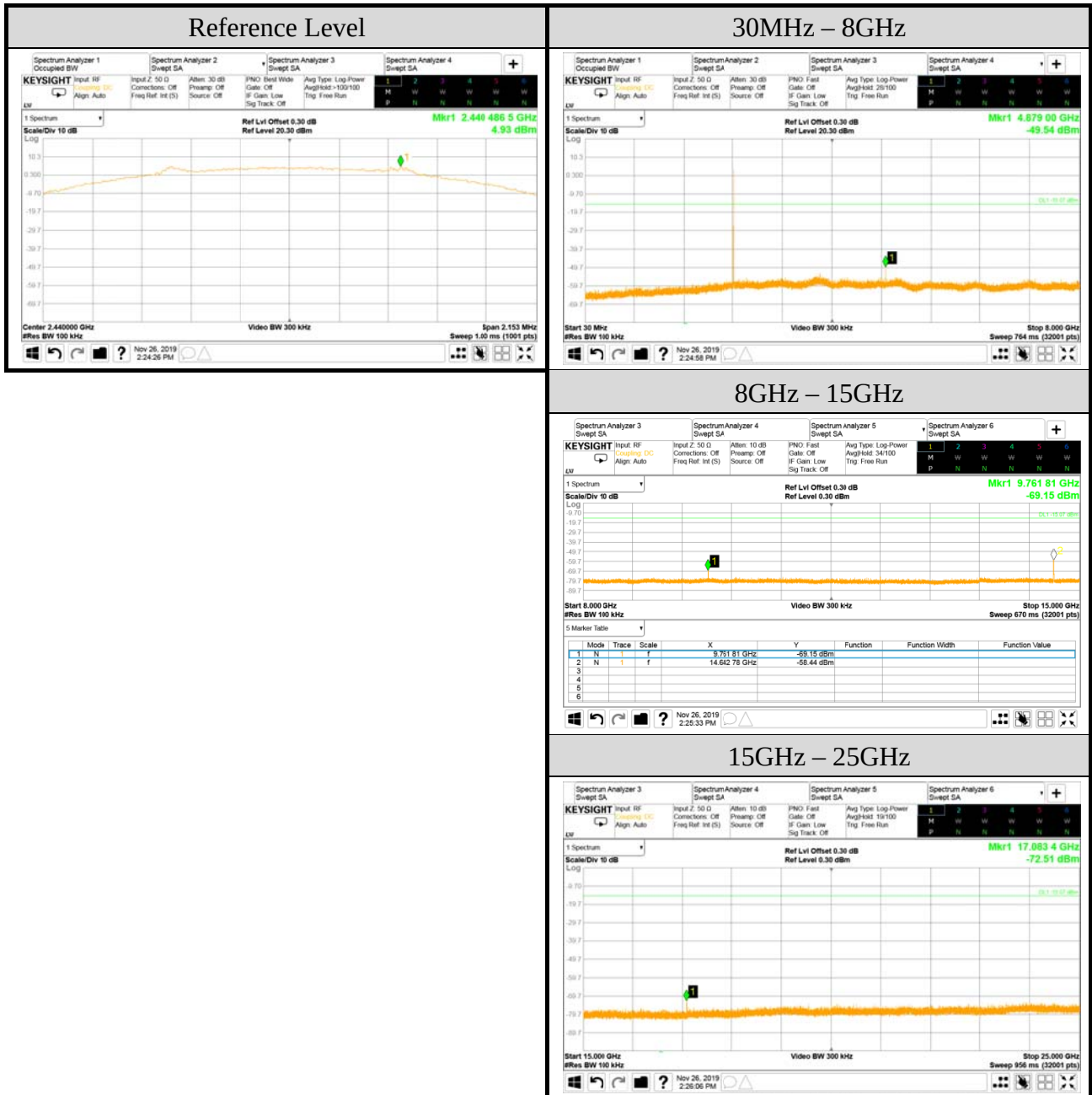
5. 混附發射之 RF 傳導發射之量測

測試日期	2019/11/26	環境溫/濕度	23°C/66%
電纜損失	0.3dB	模式	BLE
測試電壓	DC 3V (經電池供電)	測試頻率	2402MHz
		測試人員	Martin Chen



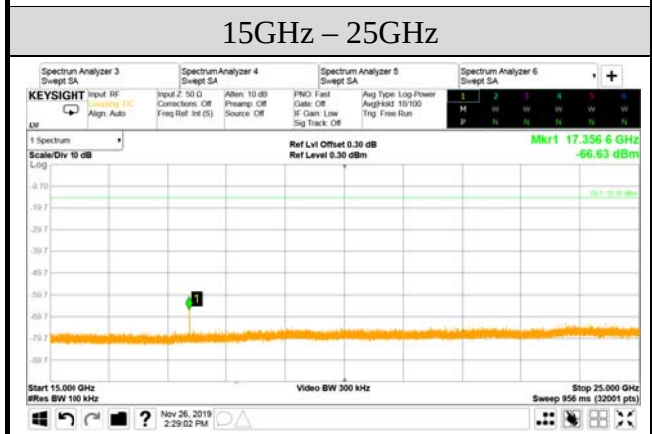
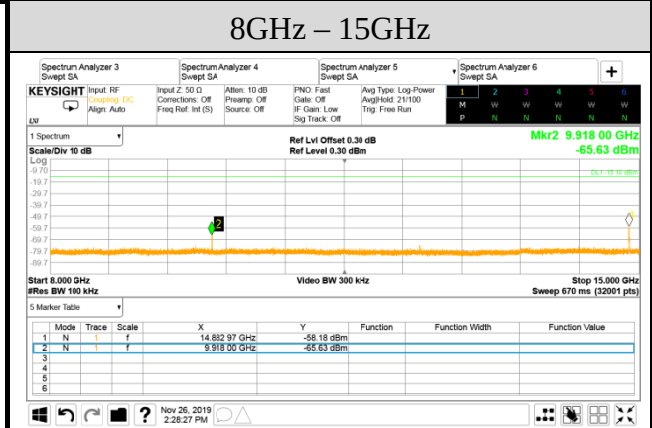
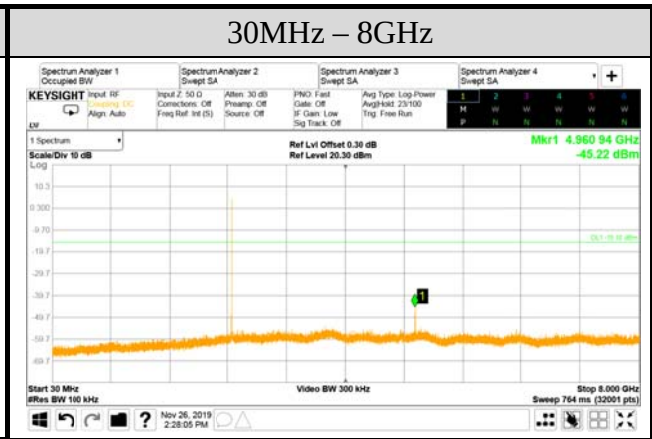
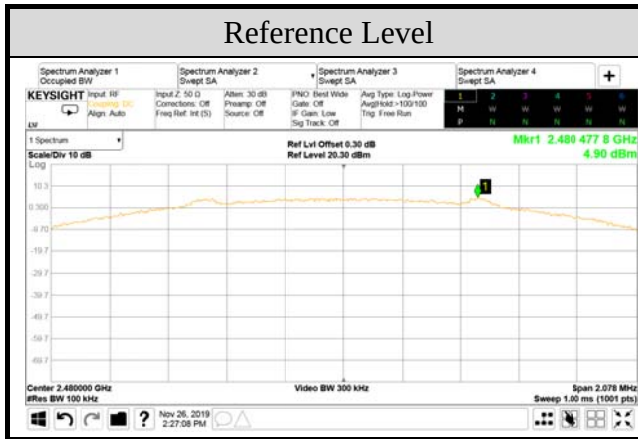
註：以較差之模式-傳輸速率 2Mbps 進行量測。

測試日期	2019/11/26	環境溫/濕度	23°C/66%
電纜損失	0.3dB	模式	BLE
測試電壓	DC 3V (經電池供電)	測試頻率	2440MHz
		測試人員	Martin Chen



註：以較差之模式-傳輸速率 2Mbps 進行量測。

測試日期	2019/11/26	環境溫/濕度	23°C/66%
電纜損失	0.3dB	模式	BLE
測試電壓	DC 3V (經電池供電)	測試頻率	2480MHz
		測試人員	Martin Chen



註：以較差之模式-傳輸速率 2Mbps 進行量測。

6. 功率密度之量測

測試日期	2019/11/26	環境溫/濕度	23°C/66%
電纜損失	0.3dB	測試人員	Martin Chen
測試電壓	DC 3V (經電池供電)		

6.1. 功率密度

模式 (Mode)	測試頻率 (MHz)	功率密度(dBm)	限制值 (dBm)
BLE	2402	5.03	8
	2440	4.93	
	2480	4.90	

註：1. 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。

2. 以較差之模式-傳輸速率 2Mbps 進行量測。

6.2. 功率密度之量測圖

