

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)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(站立)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	---	30-1000MHz
			1000-25000MHz
BLE	發射	2402MHz(CH37)	1000-25000MHz
	發射	2440MHz (CH17)*	30-1000MHz
			1000-25000MHz
	發射	2480MHz(CH39)	1000-25000MHz
	接收	2440MHz (CH17)	30-1000MHz
			1000-25000MHz

註：*：經評估後，以最差頻率進行 30-1000MHz 量測。

對受測物裝置落於低功率射頻電機技術規範 LP0002 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 (CH37)	2310-2430MHz
		2480MHz (CH39)	2450-2530MHz

測試日期	2019/09/09	環境溫/濕度	24 ~ 26°C/49 ~ 52%
測試電壓	DC 3V (透過電池供電)		

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	24.63	0.46	1.58	26.67	40.00	13.33	Peak
132.82	17.91	0.99	1.00	19.90	43.50	23.60	Peak
443.22	22.92	1.97	1.36	26.25	46.00	19.75	Peak
724.52	25.79	2.65	2.09	30.53	46.00	15.47	Peak
887.48	27.10	3.00	2.11	32.21	46.00	13.79	Peak
946.65	27.51	3.14	1.70	32.35	46.00	13.65	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	24.03	0.47	6.11	30.61	40.00	9.39	Peak
54.25	13.47	0.61	14.14	28.22	40.00	11.78	Peak
167.74	15.93	1.13	9.70	26.76	43.50	16.74	Peak
638.19	25.07	2.46	2.44	29.97	46.00	16.03	Peak
717.73	25.72	2.63	1.98	30.33	46.00	15.67	Peak
959.26	27.60	3.17	1.26	32.03	46.00	13.97	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
30.97	24.63	0.46	-0.21	24.88	40.00	15.12	Peak
118.27	18.38	0.92	1.12	20.42	43.50	23.08	Peak
466.50	23.23	2.03	1.36	26.62	46.00	19.38	Peak
596.48	24.70	2.37	1.82	28.89	46.00	17.11	Peak
752.65	26.02	2.72	1.26	30.00	46.00	16.00	Peak
951.50	27.56	3.15	1.64	32.35	46.00	13.65	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
37.76	20.71	0.51	8.66	29.88	40.00	10.12	Peak
166.77	15.99	1.12	9.34	26.45	43.50	17.05	Peak
528.58	23.95	2.19	1.74	27.88	46.00	18.12	Peak
864.20	26.91	2.95	1.45	31.31	46.00	14.69	Peak
905.91	27.24	3.03	1.91	32.18	46.00	13.82	Peak
986.42	27.79	3.24	1.44	32.47	54.00	21.53	Peak

Mode	---	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
32.91	23.50	0.47	1.51	25.48	40.00	14.52	Peak
116.33	18.24	0.92	0.97	20.13	43.50	23.37	Peak
412.18	22.50	1.89	1.71	26.10	46.00	19.90	Peak
644.98	25.13	2.47	0.80	28.40	46.00	17.60	Peak
899.12	27.19	3.02	1.63	31.84	46.00	14.16	Peak
954.41	27.58	3.16	1.45	32.19	46.00	13.81	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	24.03	0.47	6.87	31.37	40.00	8.63	Peak
49.40	14.64	0.59	12.29	27.52	40.00	12.48	Peak
167.74	15.93	1.13	4.68	21.74	43.50	21.76	Peak
589.69	24.61	2.35	1.62	28.58	46.00	17.42	Peak
809.88	26.48	2.85	1.76	31.09	46.00	14.91	Peak
952.47	27.56	3.15	1.45	32.16	46.00	13.84	Peak

1.2. 1000MHz 以上頻率範圍，其他不必要發射量測

頻率範圍量測至主波發射的 10 倍諧波，其他未列在報告上乃因訊號太小無法量測。

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
3226.00	33.15	8.87	5.33	47.35	54.00	6.65	Peak
4608.00	34.33	10.14	2.89	47.36	54.00	6.64	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
3226.00	33.15	8.87	5.12	47.14	54.00	6.86	Peak
4608.00	34.33	10.14	6.71	51.18	54.00	2.82	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
4804.00	33.92	10.31	-2.31	41.92	54.00	12.08	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	33.92	10.31	-2.62	41.61	54.00	12.39	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	34.34	10.38	-2.52	42.20	54.00	11.80	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	34.34	10.38	-1.12	43.60	54.00	10.40	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	34.32	10.45	-1.55	43.22	54.00	10.78	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	34.32	10.45	-1.91	42.86	54.00	11.14	Peak

Mode	---	Frequency	RX2440MHz
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Antenna at Horizontal Polarization

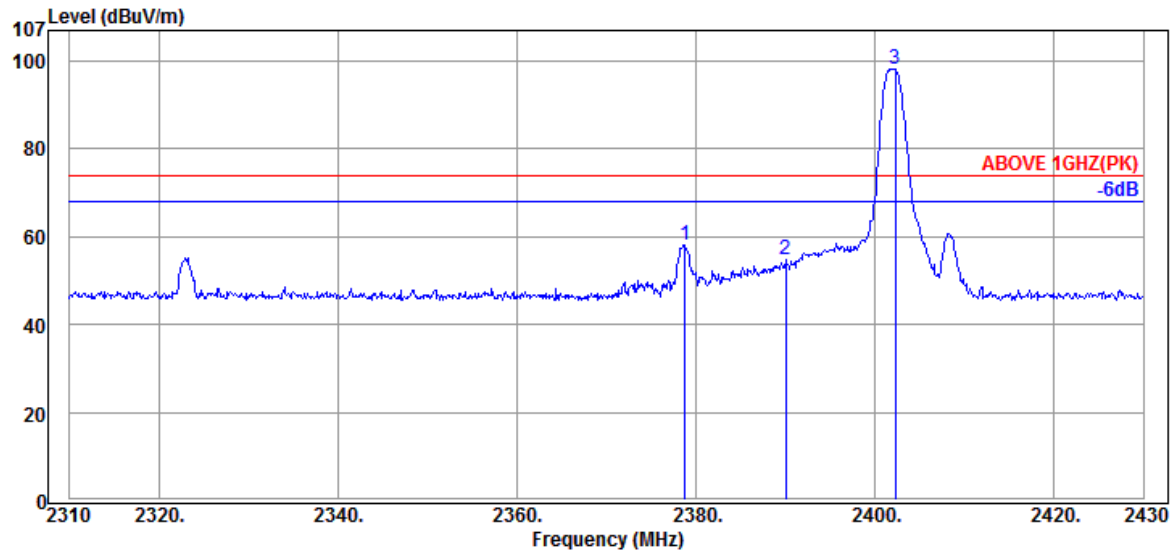
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4880.00	34.34	10.38	-1.75	42.97	54.00	11.03	Peak

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	34.34	10.38	-1.86	42.86	54.00	11.14	Peak

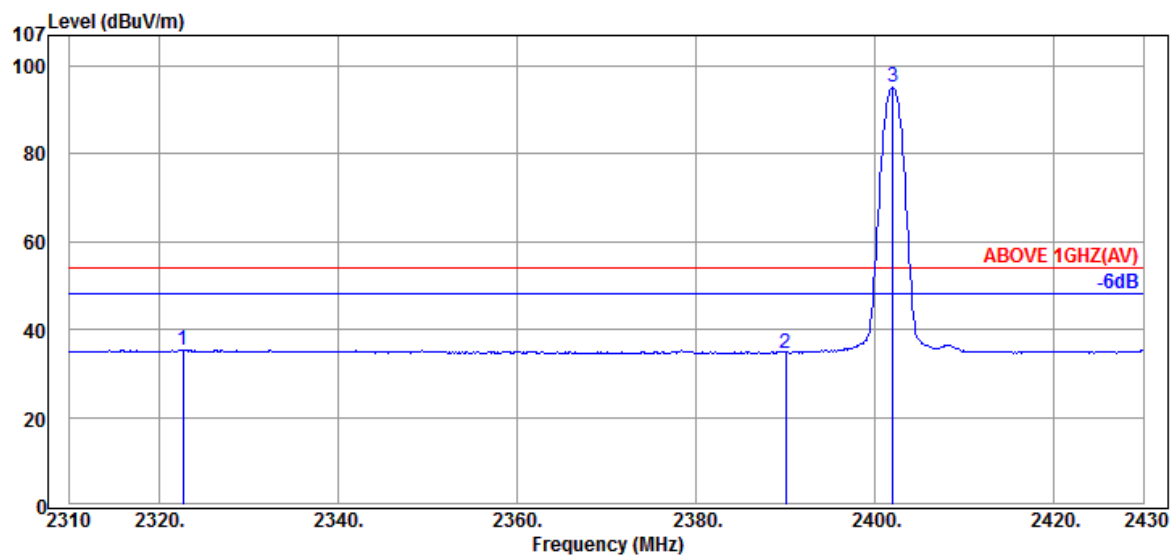
1.3. 禁用頻帶量測結果 (其他不必要發射)

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
2378.76	32.00	8.17	18.07	58.24	74.00	15.76	Peak
2390.04	32.00	8.17	14.51	54.68	74.00	19.32	Peak
@ 2402.28	32.03	8.18	57.84	98.05	---	---	Peak

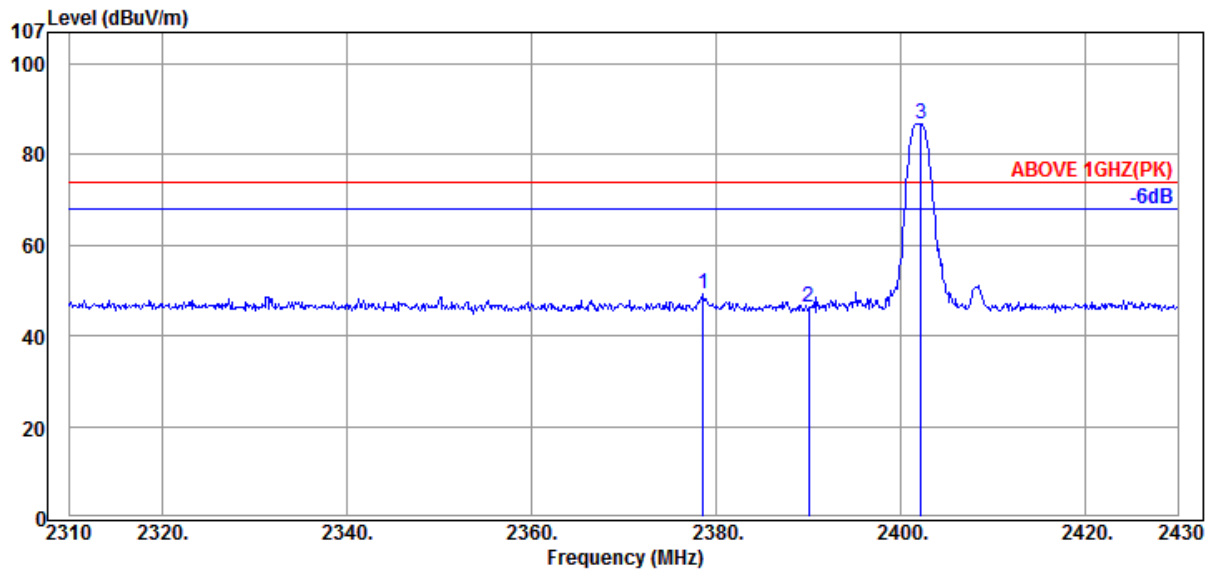


Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2322.72	32.00	8.15	-4.82	35.33	54.00	18.67	Average
2390.04	32.00	8.17	-5.49	34.68	54.00	19.32	Average
@ 2402.04	32.03	8.18	54.98	95.19	---	---	Average

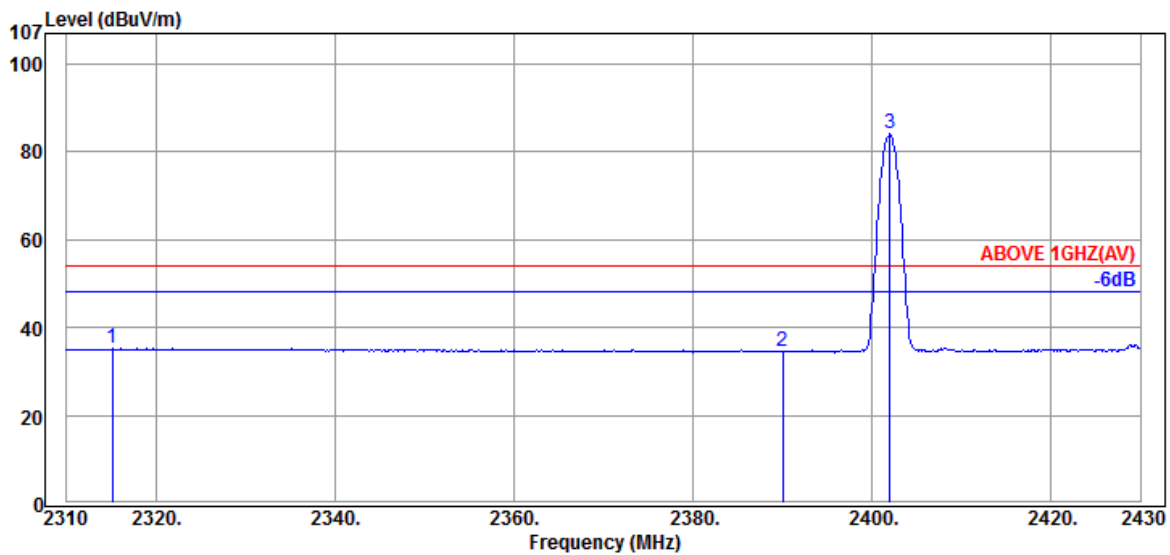
備註：“@”為主波，在此章節是不予以判定。

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
2378.64	32.00	8.17	9.20	49.37	74.00	24.63	Peak
2390.04	32.00	8.17	6.15	46.32	74.00	27.68	Peak
@ 2402.16	32.03	8.18	46.59	86.80	---	---	Peak

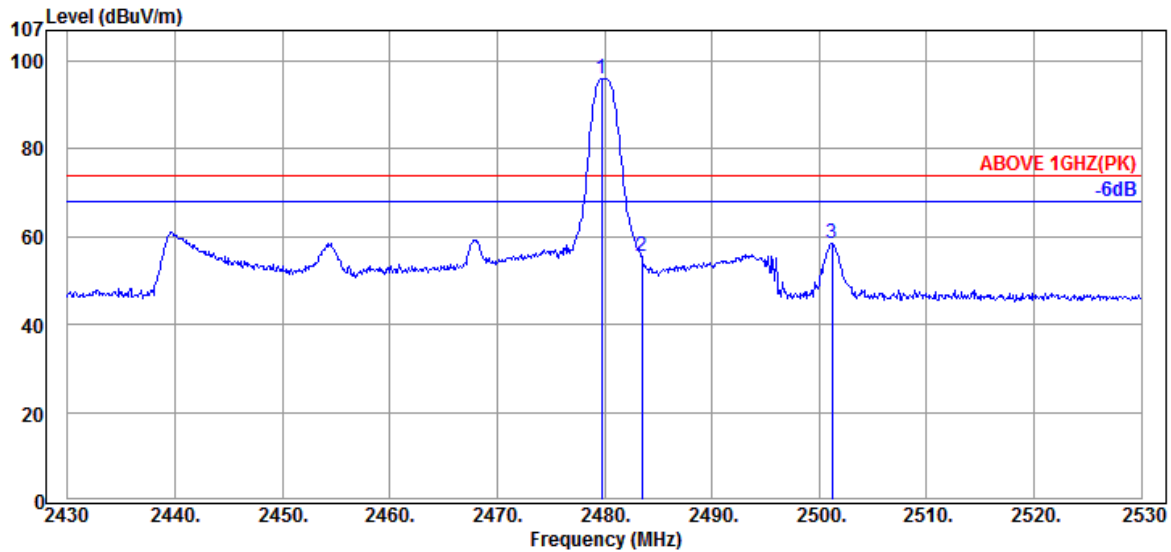


Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2315.16	32.00	8.15	-4.93	35.22	54.00	18.78	Average
2390.04	32.00	8.17	-5.66	34.51	54.00	19.49	Average
@ 2402.04	32.03	8.18	43.86	84.07	---	---	Average

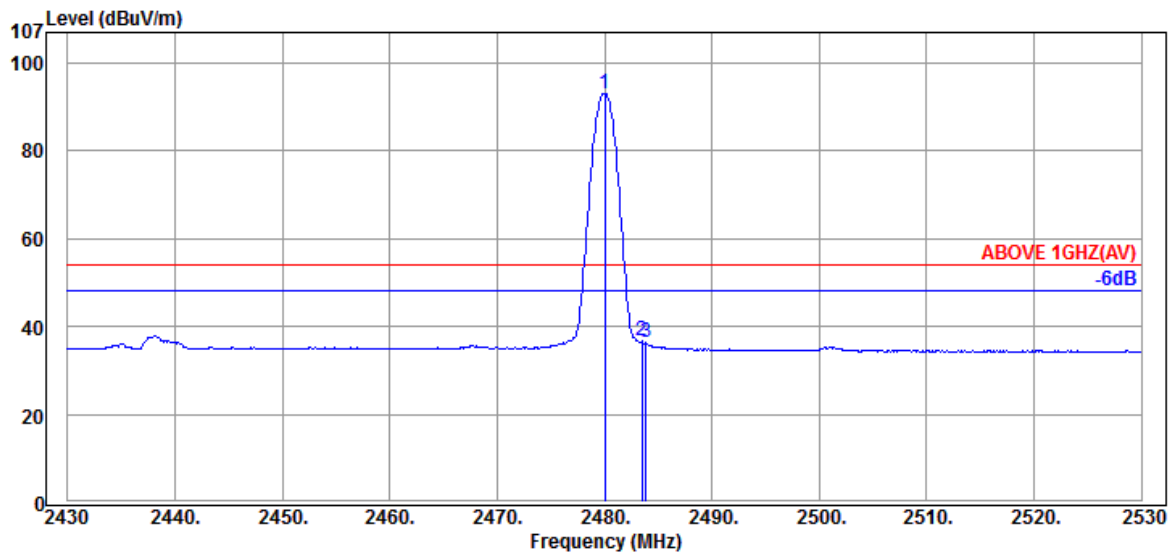
備註：“@”為主波，在此章節是不予以判定。

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 (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Detector
@	2479.70	32.58	8.20	55.11	95.89	---	---	Peak
	2483.50	32.57	8.20	14.67	55.44	74.00	18.56	Peak
	2501.20	32.49	8.21	17.72	58.42	74.00	15.58	Peak

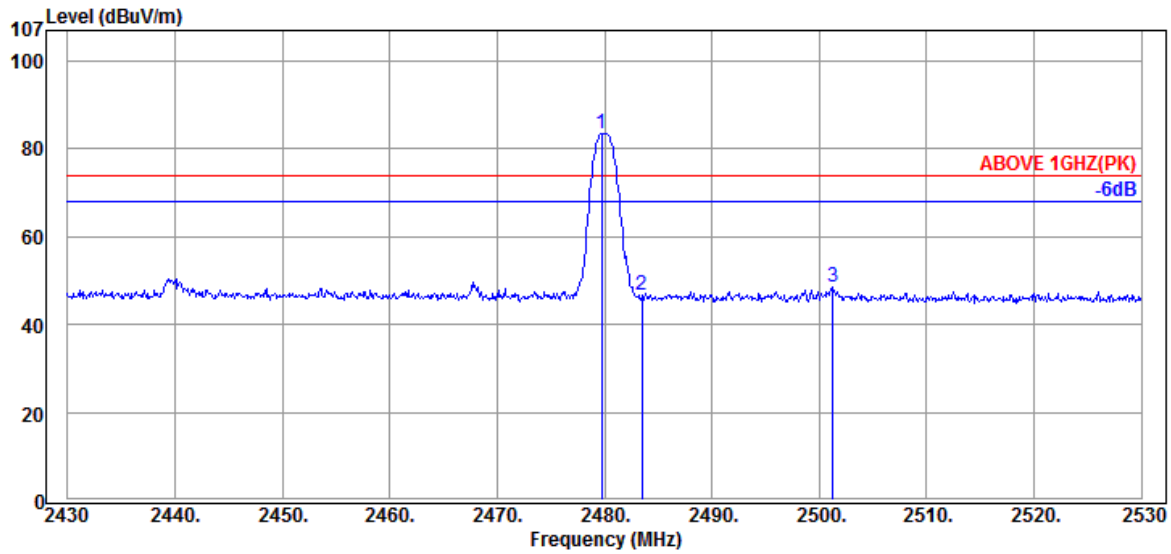


Antenna at Horizontal Polarization

	Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Detector
@	2480.00	32.58	8.20	52.35	93.13	---	---	Average
	2483.50	32.57	8.20	-4.18	36.59	54.00	17.41	Average
	2483.90	32.56	8.20	-4.48	36.28	54.00	17.72	Average

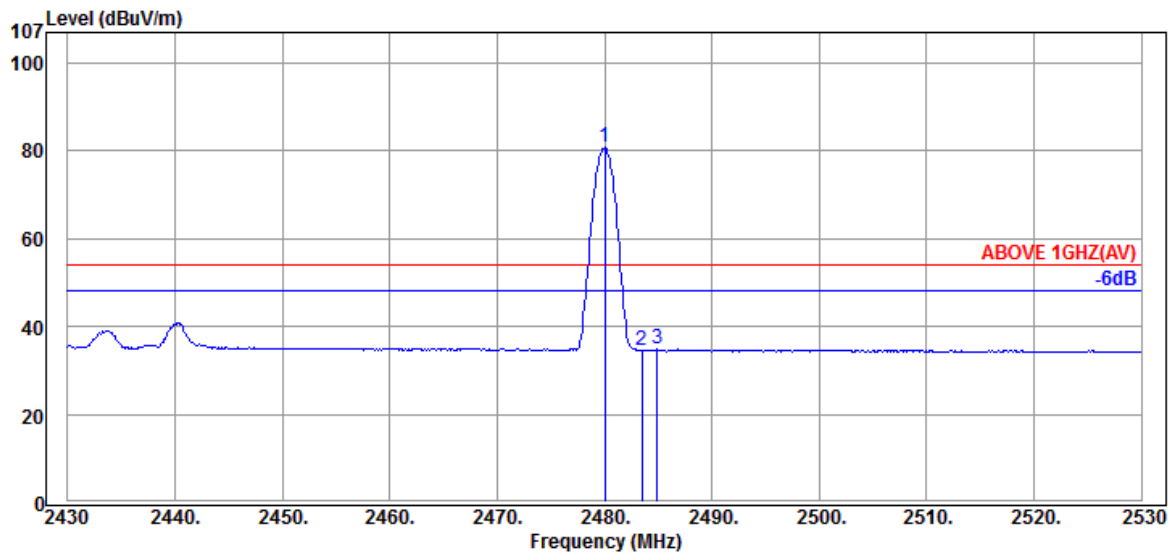
備註：“@”為主波，在此章節是不予以判定。

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	32.58	8.20	42.58	83.36	---	---	Peak
	2483.50	32.57	8.20	5.98	46.75	74.00	27.25	Peak
	2501.30	32.48	8.21	7.98	48.67	74.00	25.33	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	32.58	8.20	40.05	80.83	---	---	Average
	2483.50	32.57	8.20	-6.21	34.56	54.00	19.44	Average
	2484.90	32.56	8.20	-5.76	35.00	54.00	19.00	Average

備註：“@”為主波，在此章節是不予以判定。

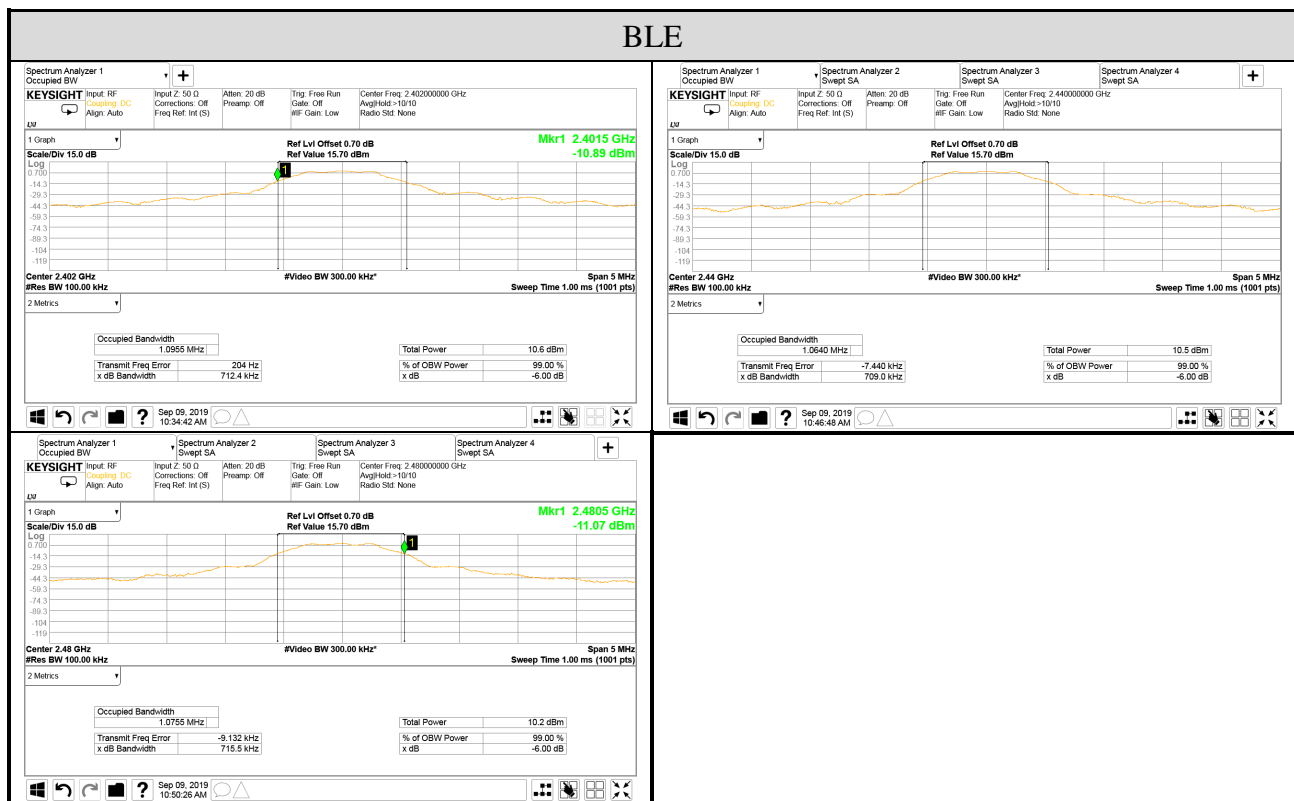
2. 發射頻寬之量測

測試日期	2019/09/09	環境溫/濕度	26°C/56%
電纜損失	0.70dB	測試電壓	DC 3V (透過電池供電)

2.1. 發射頻寬

模式 (Mode)	測試頻率 (MHz)	6dB 頻寬 (MHz)	限制值 (kHz)
BLE	2402	0.7124	>500
	2440	0.7090	
	2480	0.7155	

2.2. 發射頻寬之量測圖



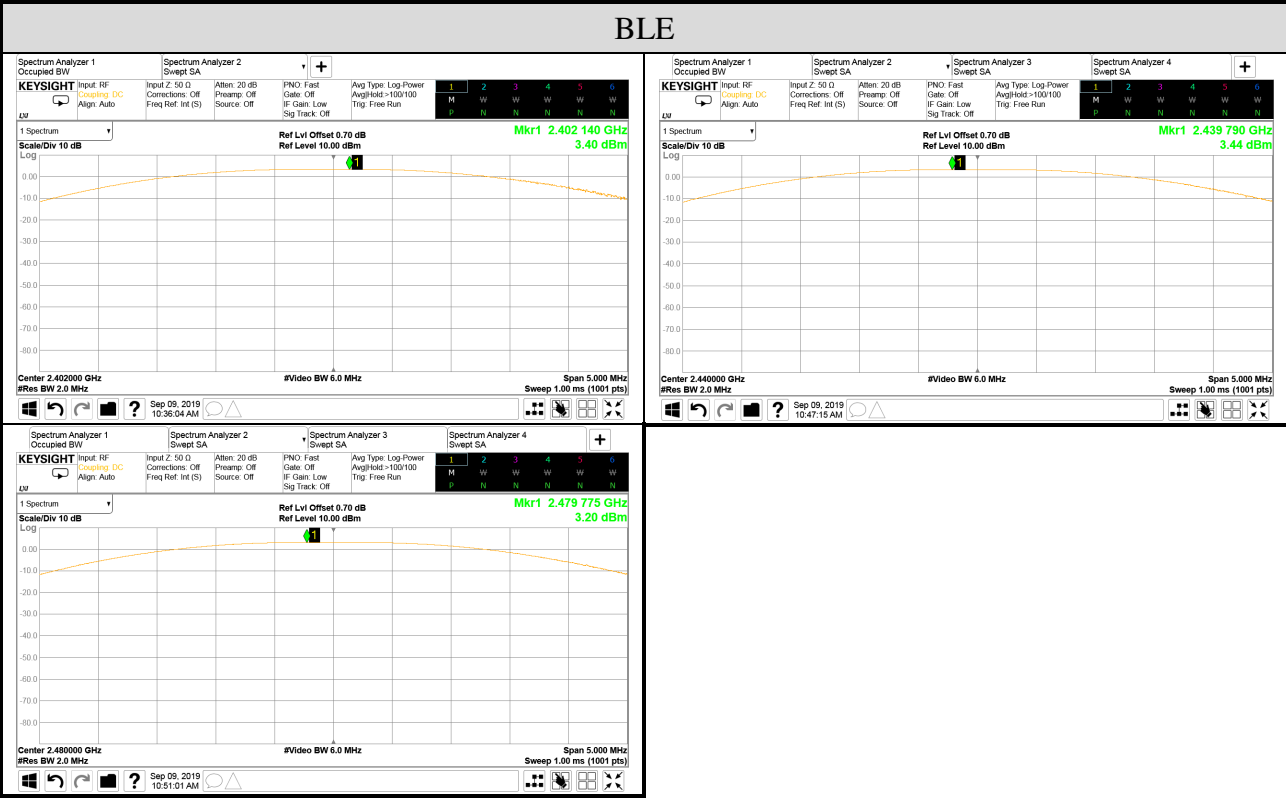
3. 峰值輸出功率之量測

測試日期	2019/09/09	環境溫/濕度	26°C/56%
電纜損失	0.70dB	測試電壓	DC 3V (透過電池供電)

3.1. 峰值輸出功率

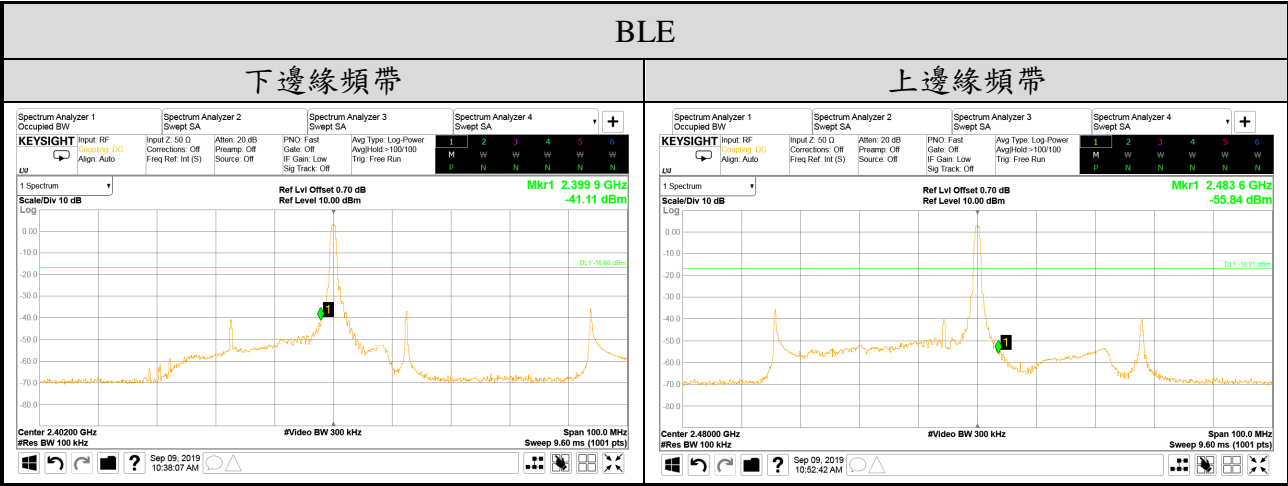
模式 (Mode)	測試頻率 (MHz)	最大輸出功率 (dBm)	限制值 (dBm)
BLE	2402	3.40	30
	2440	3.44	
	2480	3.20	

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	2019/09/09	環境溫/濕度	26°C/56%
電纜損失	0.70dB	測試電壓	DC 3V (透過電池供電)



5. 混附發射之 RF 傳導發射之量測

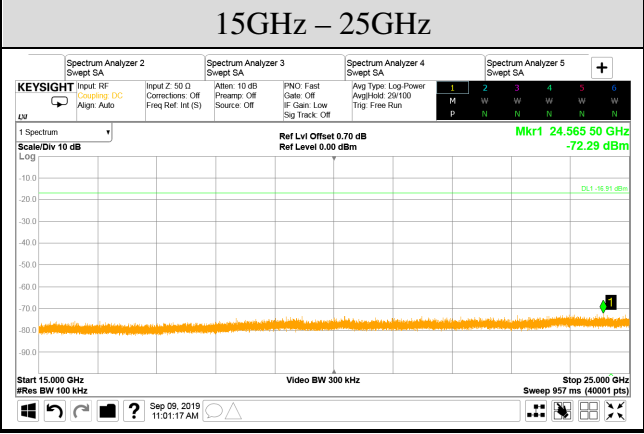
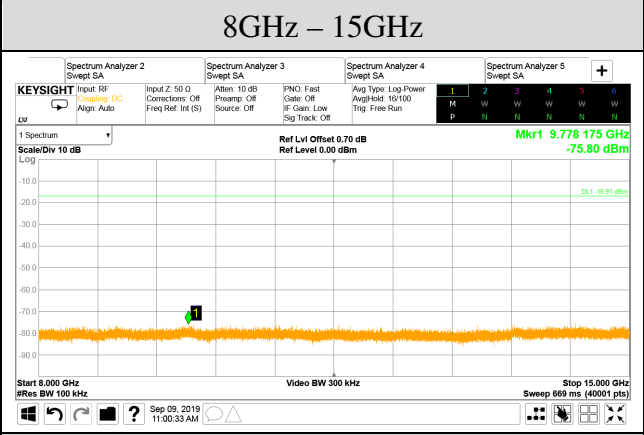
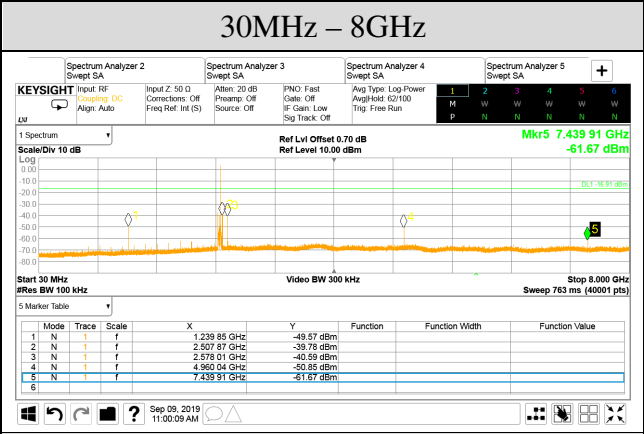
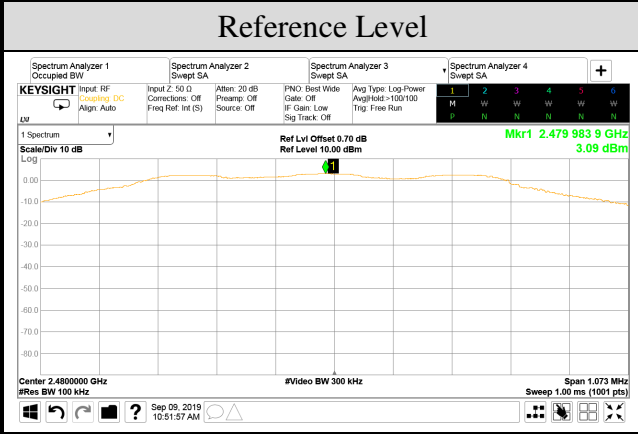
測試日期	2019/09/09	環境溫/濕度	26°C/56%
電纜損失	0.70dB	模式	BLE
測試電壓	DC 3V (透過電池供電)	測試頻率	2402MHz



測試日期	2019/09/09	環境溫/濕度	26°C/56%
電纜損失	0.70dB	模式	BLE
測試電壓	DC 3V (透過電池供電)	測試頻率	2440MHz



測試日期	2019/09/09	環境溫/濕度	26°C/56%
電纜損失	0.70dB	模式	BLE
測試電壓	DC 3V (透過電池供電)	測試頻率	2480MHz



6. 功率密度之量測

測試日期	2019/09/09	環境溫/濕度	26°C/56%
電纜損失	0.70dB	測試電壓	DC 3V (透過電池供電)

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	3.32	8
	2440	3.36	
	2480	3.09	

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

6.2. 功率密度之量測圖

