

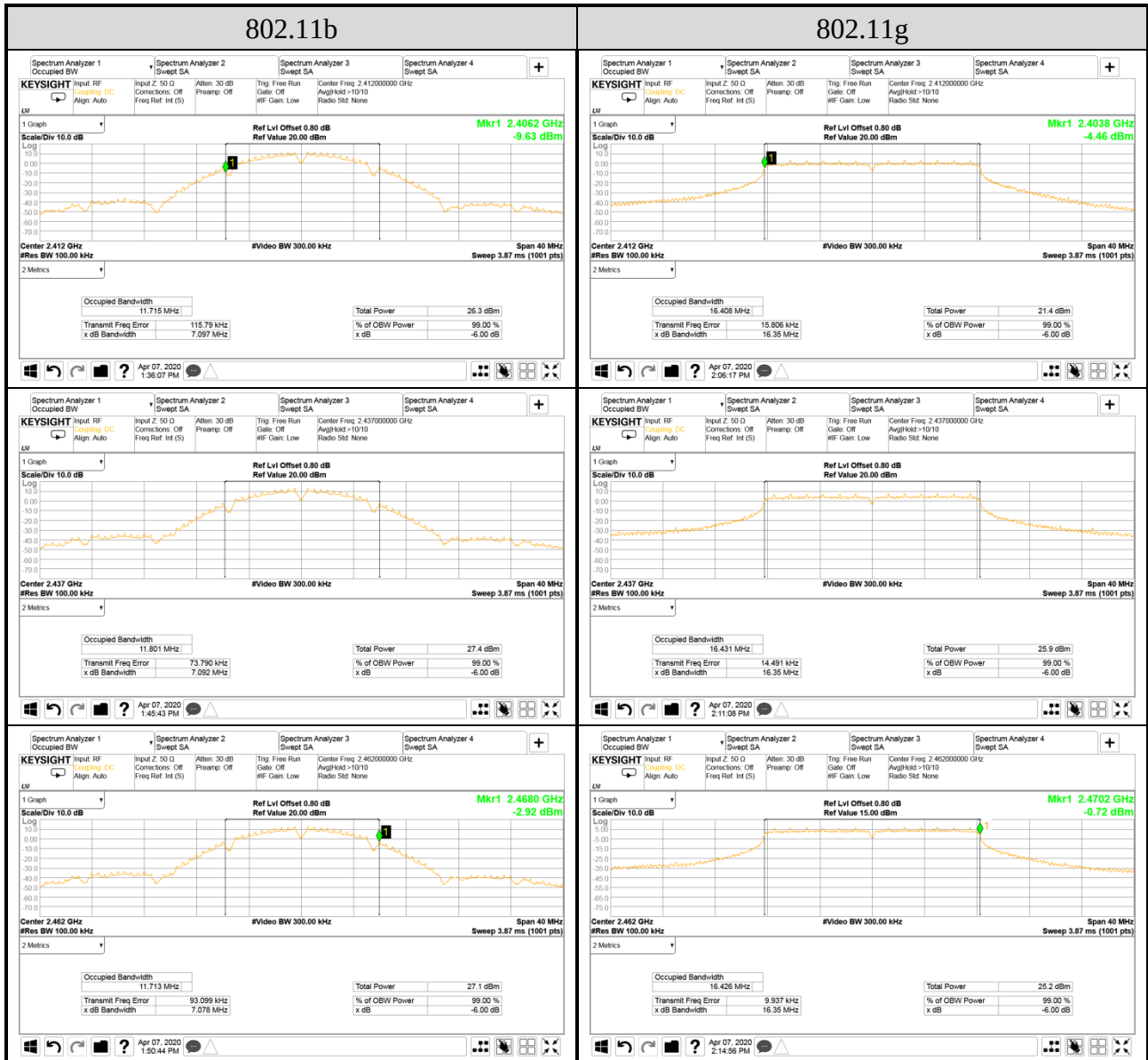
3. 發射頻寬之量測

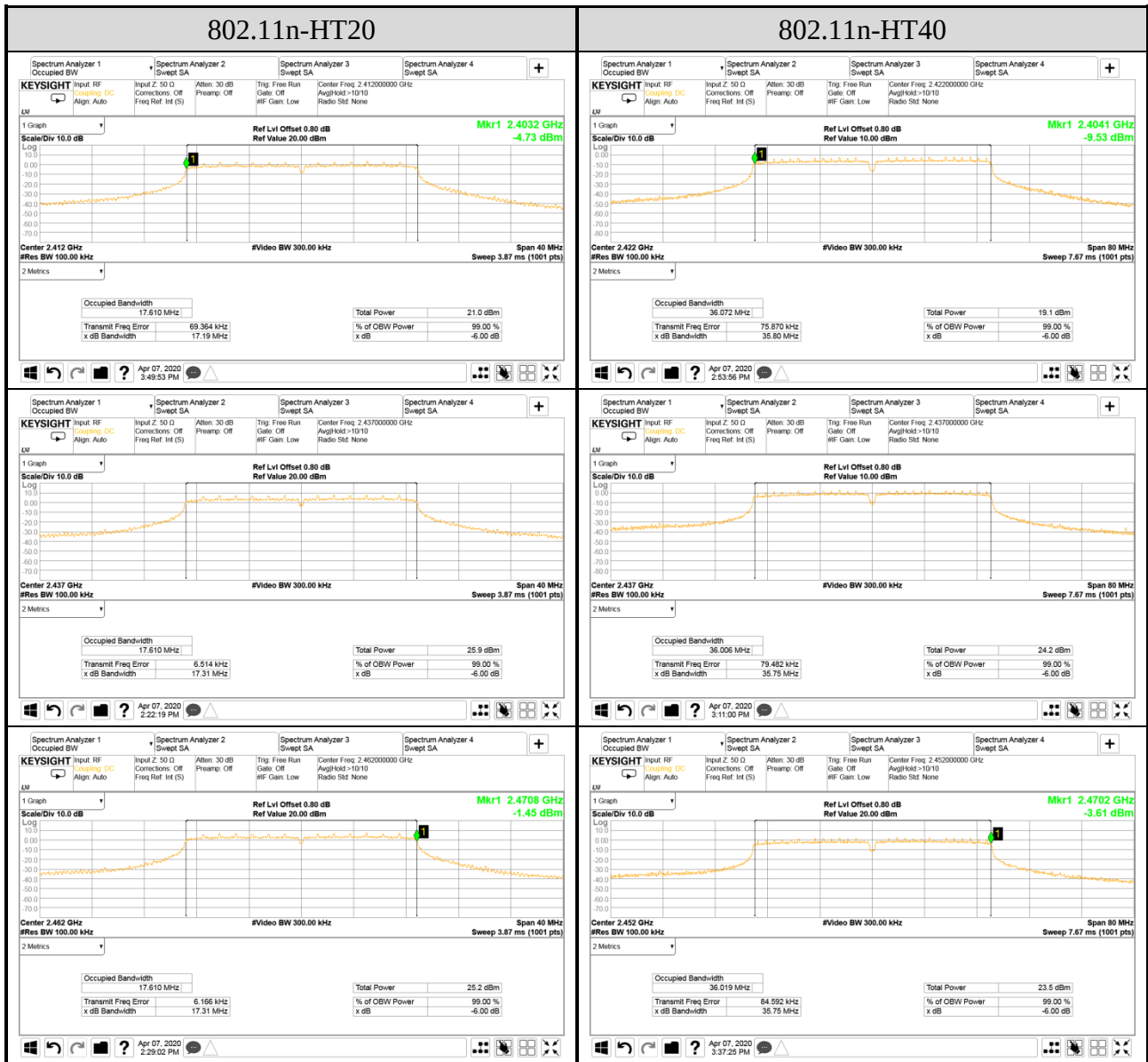
測試日期	2020/04/07	環境溫/濕度	21℃/55%
電纜損失	0.8dB	測試人員	Kuper Hsu
測試電壓	DC 3.3V (經 Jig 供電)		

3.1. 發射頻寬

模式	測試頻率 (MHz)	6dB 頻寬 (MHz)	限制值 (kHz)
802.11b	2412	7.097	>500
	2437	7.092	
	2462	7.078	
802.11g	2412	16.35	
	2437	16.35	
	2462	16.35	
802.11n-HT20	2412	17.19	
	2437	17.31	
	2462	17.31	
802.11n-HT40	2422	35.80	
	2437	35.75	
	2452	35.75	

3.2. 發射頻寬之量測圖





4. 峰值輸出功率之量測

測試日期	2020/04/07	環境溫/濕度	21°C/55%
電纜損失	0.8dB	測試人員	Kuper Hsu
測試電壓	DC 3.3V (經 Jig 供電)	Duty Cycle	802.11b: 0.975 802.11g: 0.967 802.11n-HT20: 0.974 802.11n-HT40: 0.930

4.1. 峰值輸出功率

Mode	Centre Frequency (MHz)	Peak Output Power (dBm)			Max. Peak Output Power		Limit
		Chain 0	Chain 1	Chain 2	(dBm)	(W)	
802.11b	2412	21.78	22.06	21.96	22.06	0.160694	< 30dBm (1W)
	2437	21.92	23.35	23.14	23.35	0.216272	
	2462	21.68	22.29	22.14	22.29	0.169434	

Mode	Centre Frequency (MHz)	Peak Output Power (dBm)			Max. Peak Output Power		Limit
		Chain 0	Chain 1	Chain 2	(dBm)	(W)	
802.11g	2412	20.68	21.12	20.84	21.12	0.129420	< 30dBm (1W)
	2417	22.33	22.62	22.48	22.62	0.182810	
	2437	23.61	24.12	23.71	24.12	0.258226	
	2462	22.61	23.32	23.24	23.32	0.214783	

Mode	Centre Frequency (MHz)	Peak Output Power (dBm)			Total Peak Output Power		Limit
		Chain 0	Chain 1	Chain 2	(dBm)	(W)	
802.11n-HT20	2412	20.41	20.42	20.42	25.19	0.330370	< 30dBm (1W)
	2417	22.47	22.5	22.67	27.32	0.539511	
	2437	23.97	24.12	24.05	28.82	0.762079	
	2462	22.54	23.39	23.37	27.89	0.615177	

Mode	Centre Frequency (MHz)	Peak Output Power (dBm)			Total Peak Output Power		Limit
		Chain 0	Chain 1	Chain 2	(dBm)	(W)	
802.11n-HT40	2422	18.24	18.54	18.72	23.28	0.212814	< 30dBm (1W)
	2427	21.68	22.06	22.14	26.74	0.472063	
	2437	21.68	22.29	21.94	26.75	0.473151	
	2452	21.41	21.96	21.94	26.55	0.451856	

註:此受測物是屬 Cyclic Delay Diversity (CDD)裝置，Direction gain= G_{ANT} +Array Gain

依據 FCC KDB 662911，當天線數量小於 4 時，則 Array Gain=0，故此產品的最大 Direction gain=2.961dBi 小於 6dBi。

4.2. 平均輸出功率(參考用)

Mode	Centre Frequency (MHz)	Average Output Power (dBm)			10log(1/X)	Max. Average Output Power		Limit
		Chain 0	Chain 1	Chain 2		(dBm)	(W)	
802.11b	2412	18.97	19.24	19.14	N/A	19.24	0.083946	< 30dBm (1W)
	2437	19.09	19.57	19.89		19.89	0.097499	
	2462	18.48	19.26	19.35		19.35	0.086099	

Mode	Centre Frequency (MHz)	Average Output Power (dBm)			10log(1/X)	Max. Average Output Power		Limit
		Chain 0	Chain 1	Chain 2		(dBm)	(W)	
802.11g	2412	14.77	15.20	15.00	0.15	15.35	0.034277	< 30dBm (1W)
	2417	16.71	16.96	16.91		17.11	0.051404	
	2437	18.46	18.96	18.63		19.11	0.081470	
	2462	16.91	17.72	17.76		17.91	0.061802	

Mode	Centre Frequency (MHz)	Average Output Power (dBm)			10log(1/X)	Total Average Output Power		Limit
		Chain 0	Chain 1	Chain 2		(dBm)	(W)	
802.11n-HT20	2412	14.31	14.46	14.36	0.11	19.26	0.084333	< 30dBm (1W)
	2417	16.76	16.82	17.04		21.76	0.149968	
	2437	18.24	18.62	18.43		23.32	0.214783	
	2462	16.75	17.64	17.67		22.26	0.168267	

Mode	Centre Frequency (MHz)	Average Output Power (dBm)			10log(1/X)	Total Average Output Power		Limit
		Chain 0	Chain 1	Chain 2		(dBm)	(W)	
802.11n-HT40	2422	11.98	12.29	12.52	0.32	17.36	0.054450	< 30dBm (1W)
	2427	15.50	15.98	15.99		20.92	0.123595	
	2437	15.40	16.23	15.85		20.93	0.123880	
	2452	15.15	15.71	15.68		20.61	0.115080	

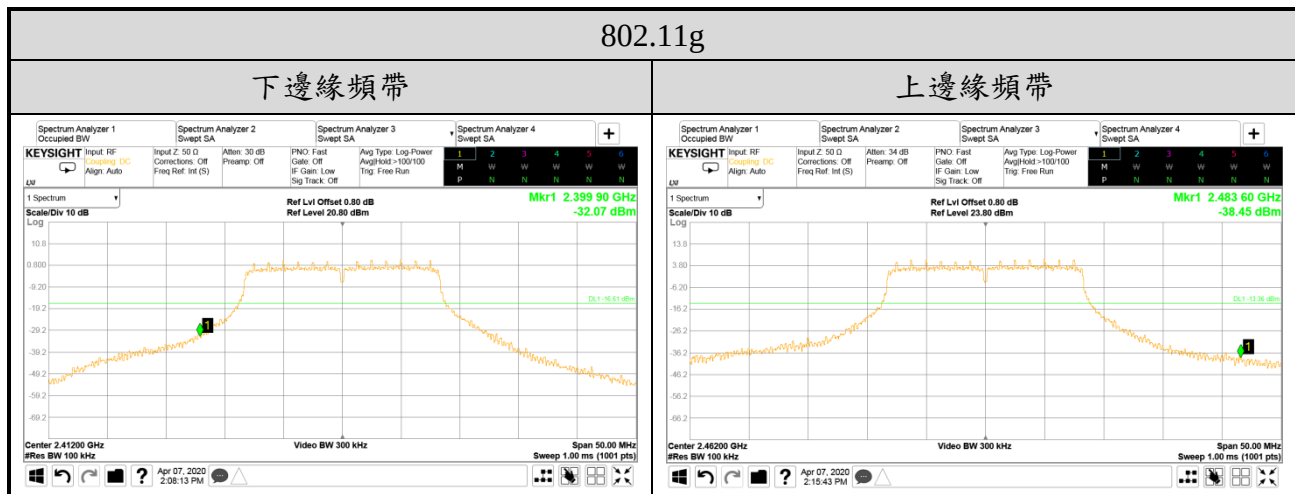
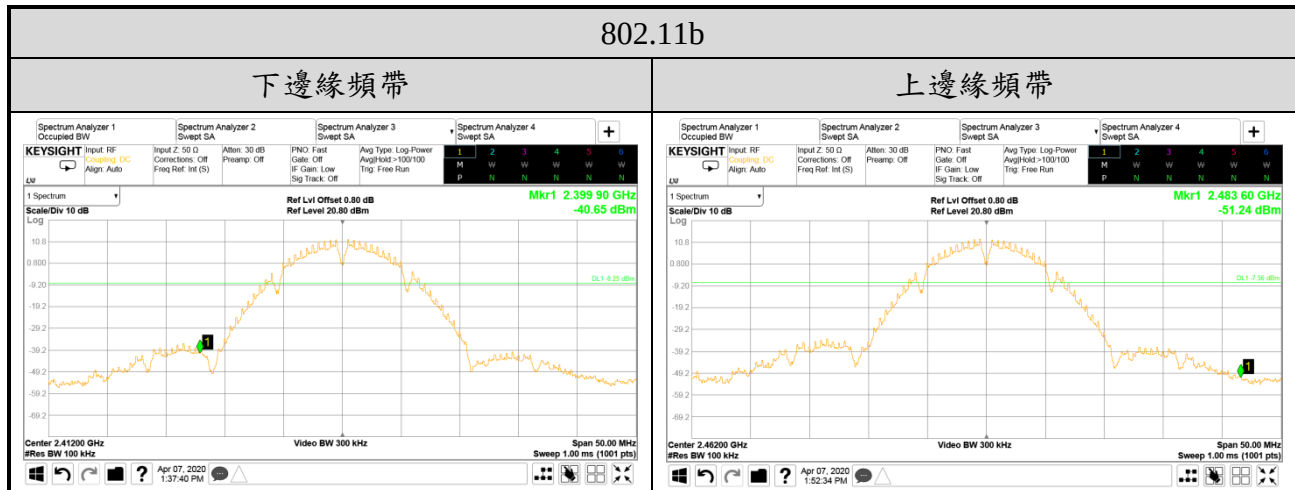
註: 1. 當 Duty cycle<98%, 最大輸出功率必需要加上 duty cycle factor 10log(1/x)。(x=duty cycle)

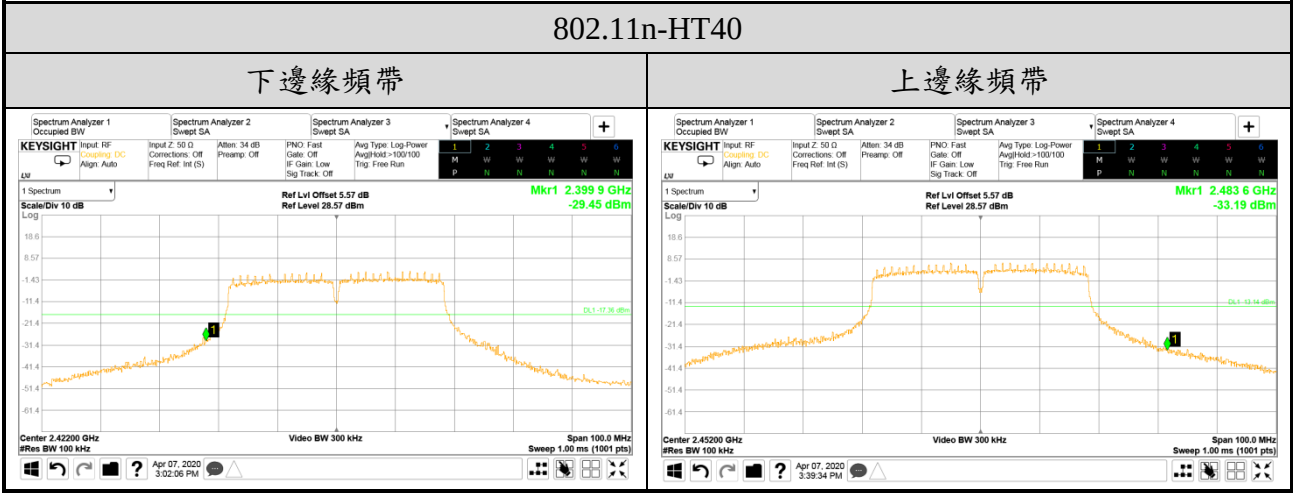
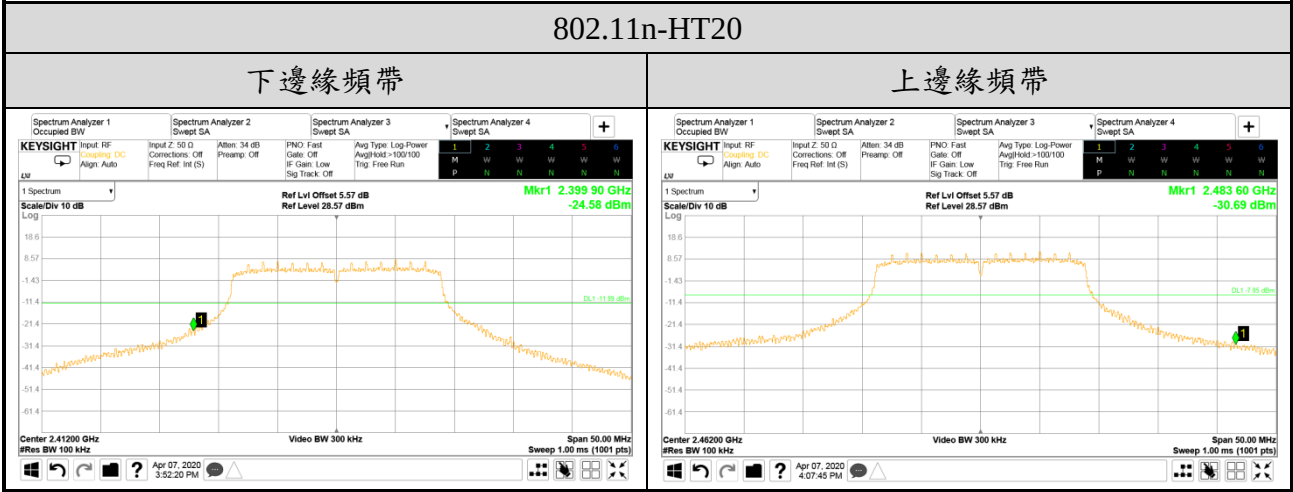
2. 此受測物是屬 Cyclic Delay Diversity (CDD)裝置, Direction gain= $G_{ANT} + \text{Array Gain}$

依據 FCC KDB 662911, 當天線數量小於 4 時, 則 Array Gain=0, 故此產品的最大 Direction gain=2.961dBi 小於 6dBi。

5. 頻帶邊緣之 RF 傳導發射之量測

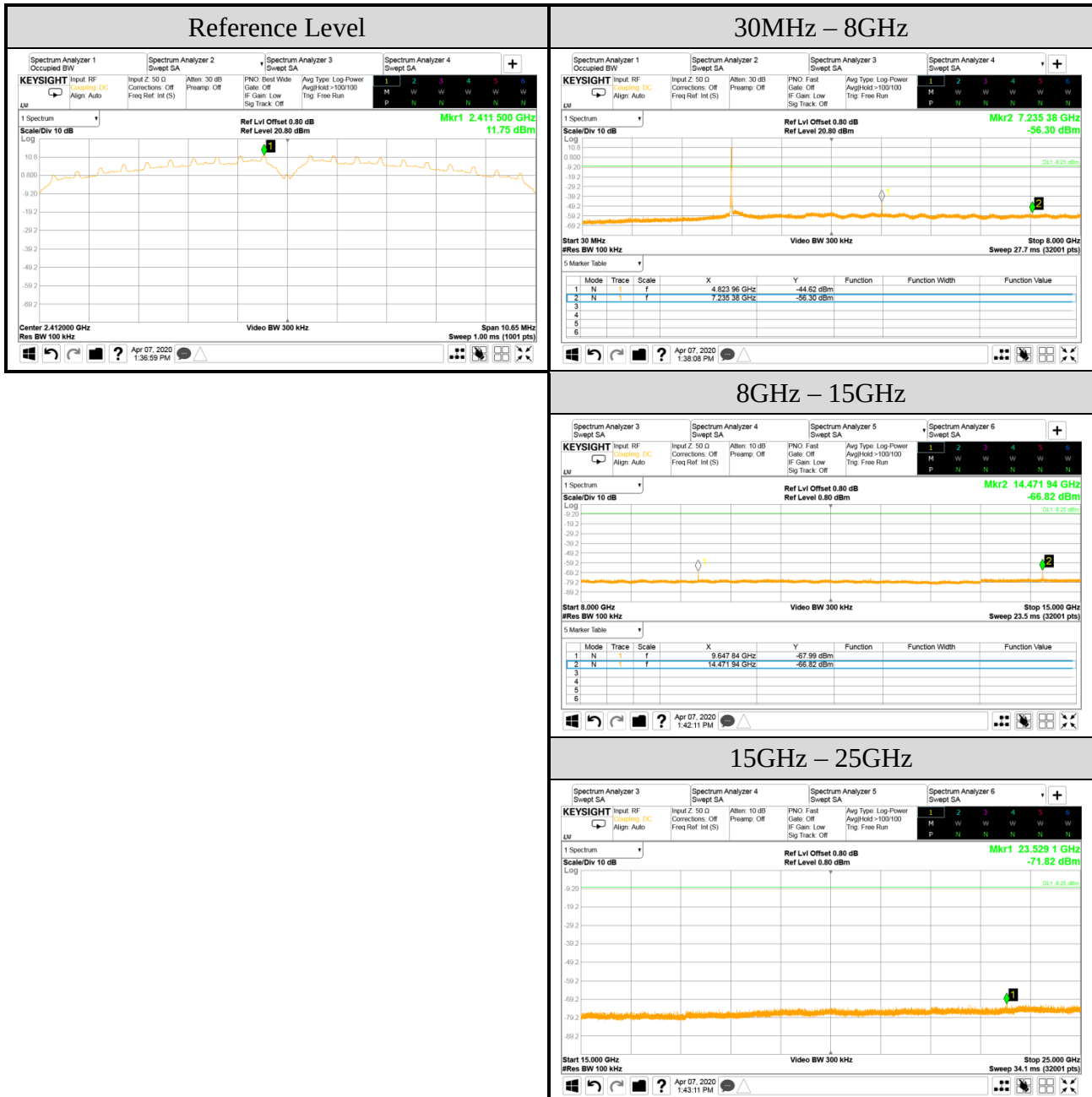
測試日期	2020/04/07	環境溫/濕度	21°C/55%
電纜損失	0.8dB	測試人員	Kuper Hsu
測試電壓	DC 3.3V (經 Jig 供電)		
Simultaneous Factor10 log(n) (Note: “n” is antenna number)			802.11b/g: 0, 802.11n: 4.77



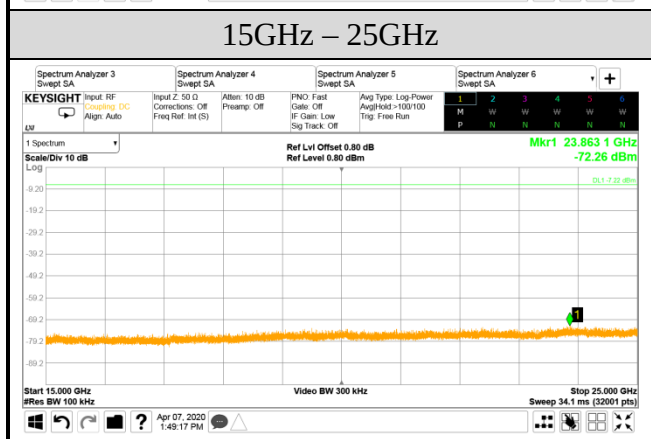
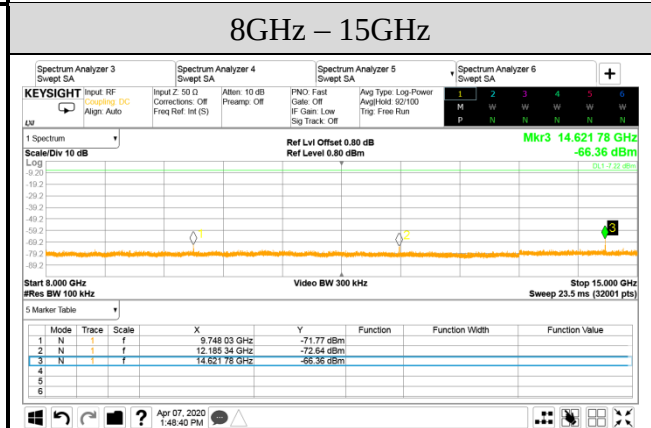
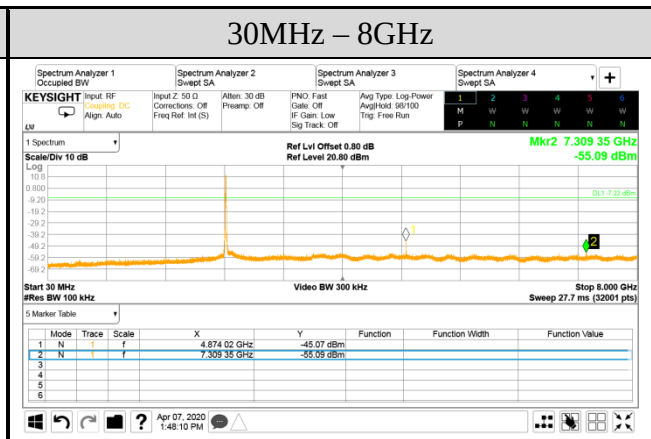
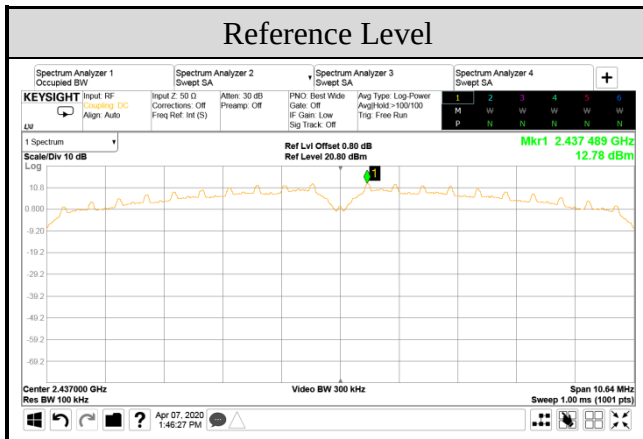


6. 混附發射之 RF 傳導發射之量測

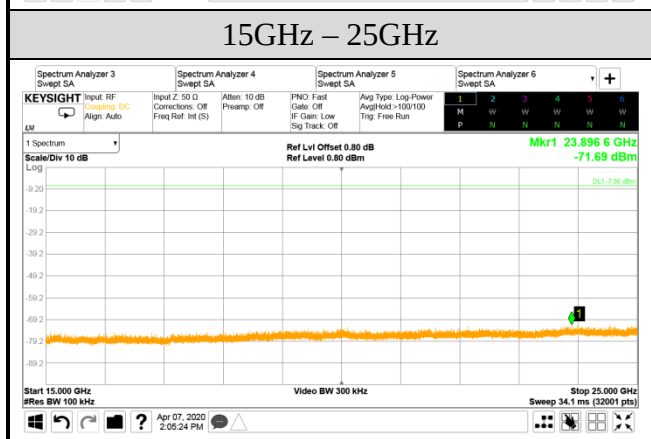
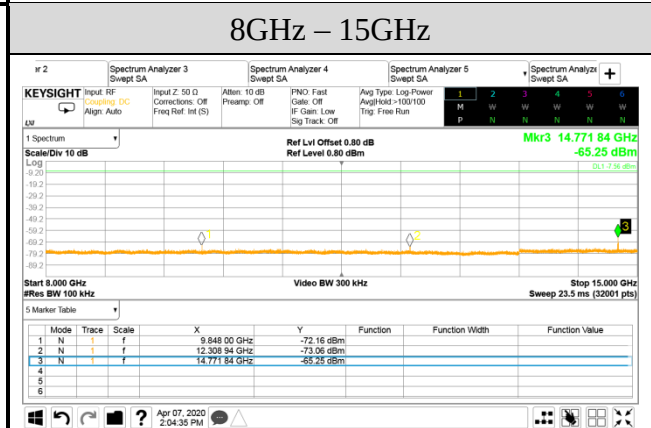
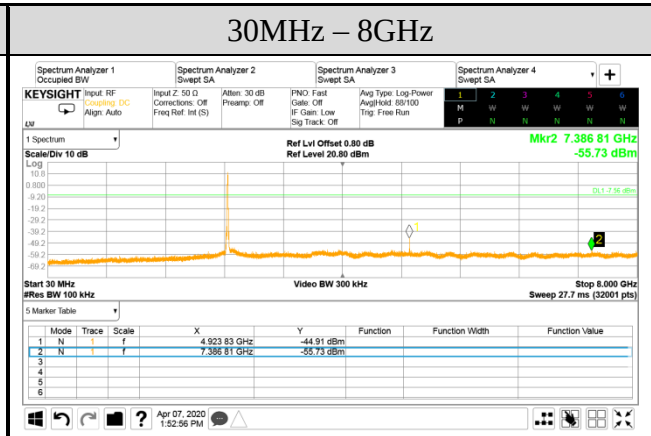
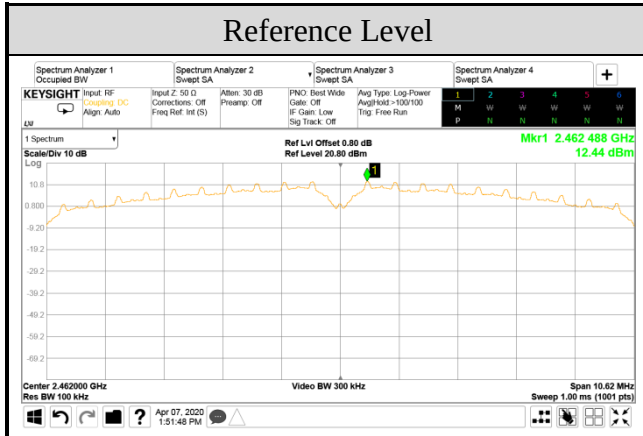
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電纜損失	0.8dB	模式	802.11b
		測試頻率	2412MHz
測試電壓	DC 3.3V (經 Jig 供電)	測試人員	Kuper Hsu
Simultaneous Factor10 log(n) (Note: "n" is antenna number)			0



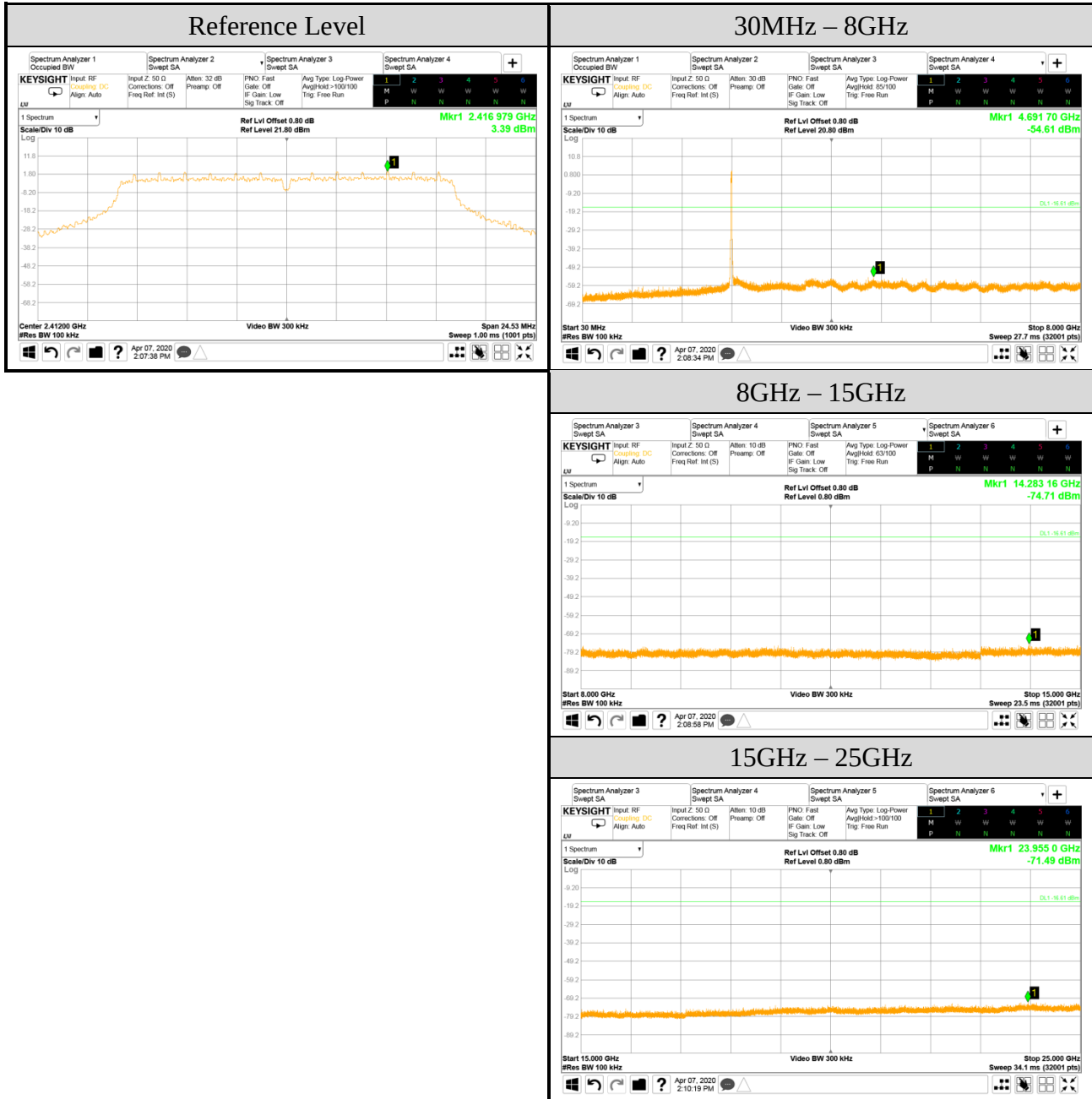
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電纜損失	0.8dB	模式	802.11b
		測試頻率	2437MHz
測試電壓	DC 3.3V (經 Jig 供電)	測試人員	Kuper Hsu
Simultaneous Factor10 log(n) (Note: “n” is antenna number)			0



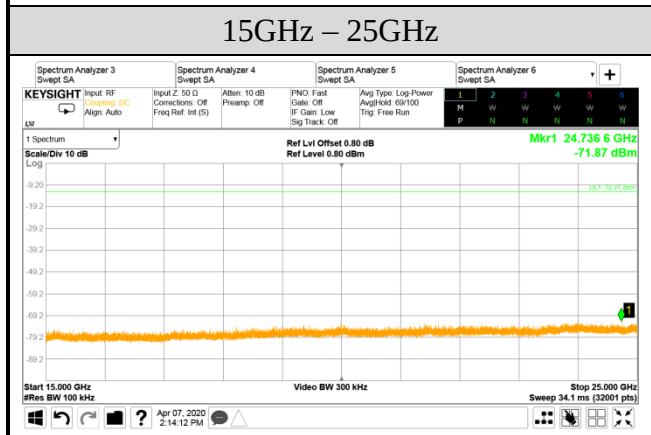
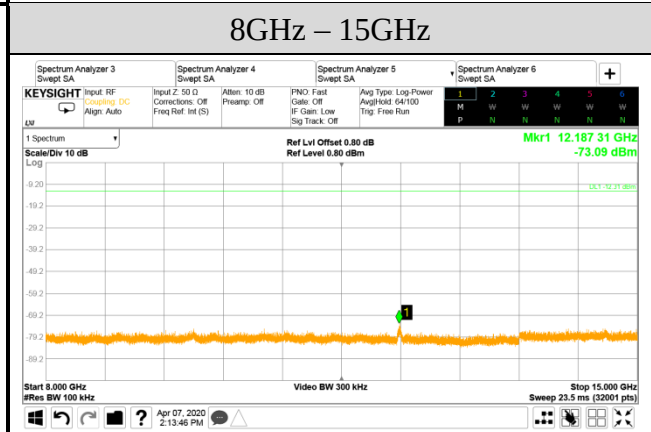
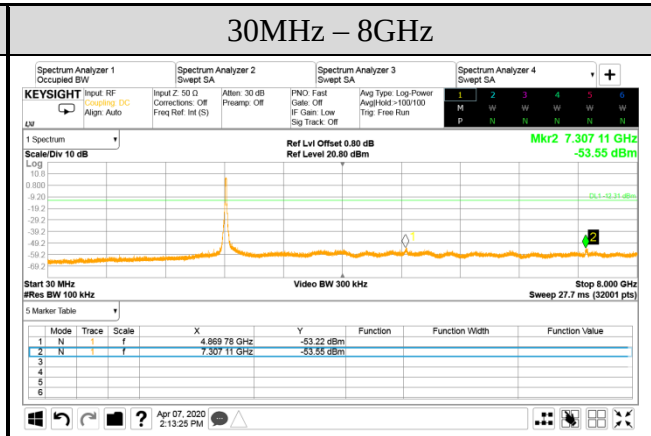
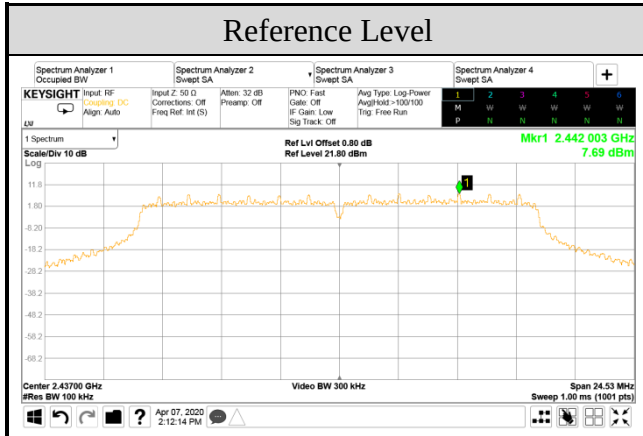
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電纜損失	0.8dB	模式	802.11b
		測試頻率	2462MHz
測試電壓	DC 3.3V (經 Jig 供電)	測試人員	Kuper Hsu
Simultaneous Factor10 log(n) (Note: “n” is antenna number)			0



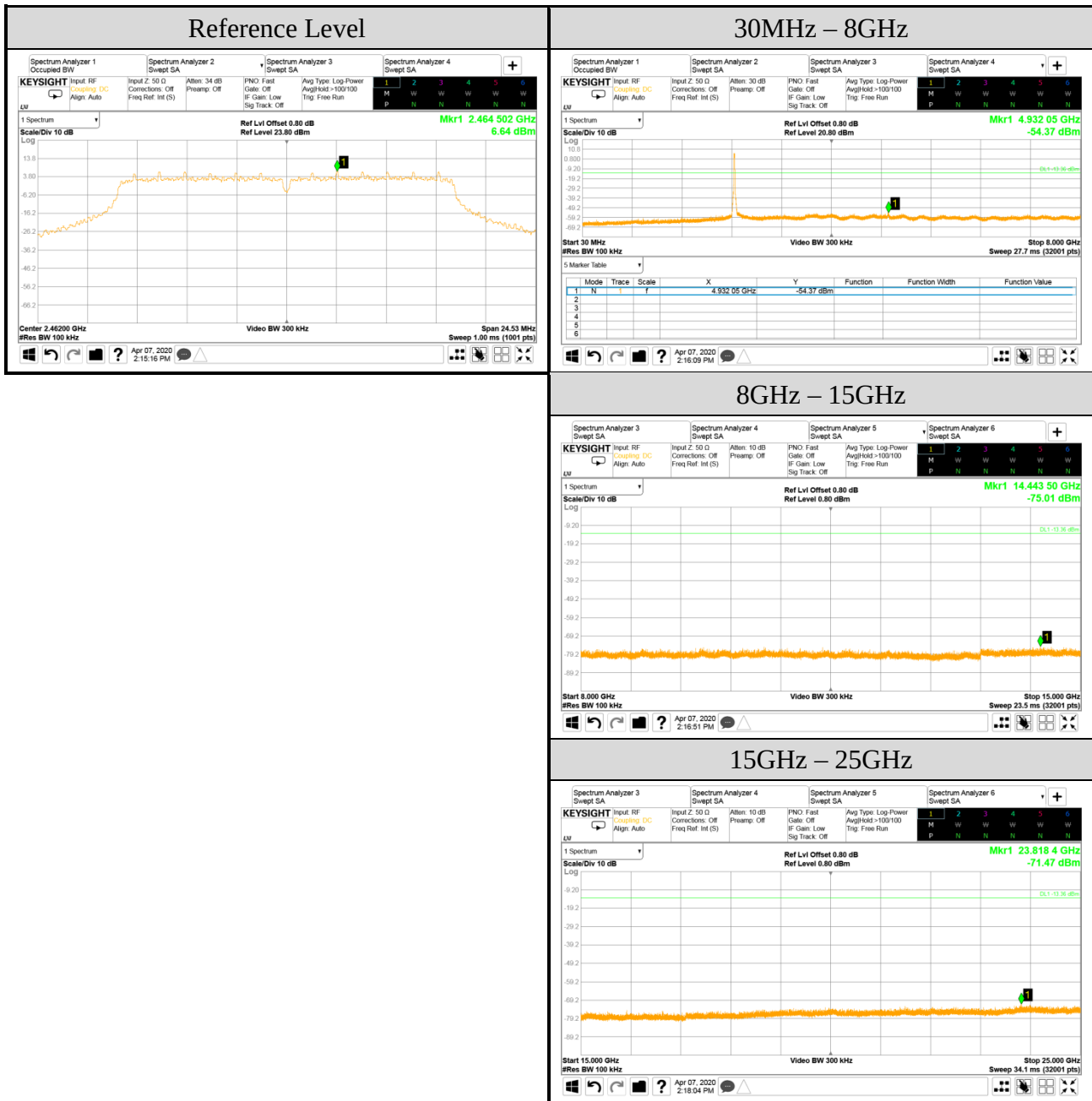
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電纜損失	0.8dB	模式	802.11g
		測試頻率	2412MHz
測試電壓	DC 3.3V (經 Jig 供電)	測試人員	Kuper Hsu
Simultaneous Factor10 log(n) (Note: “n” is antenna number)			0



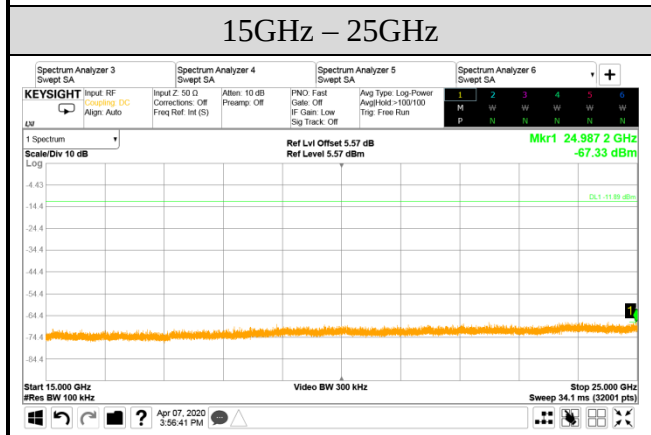
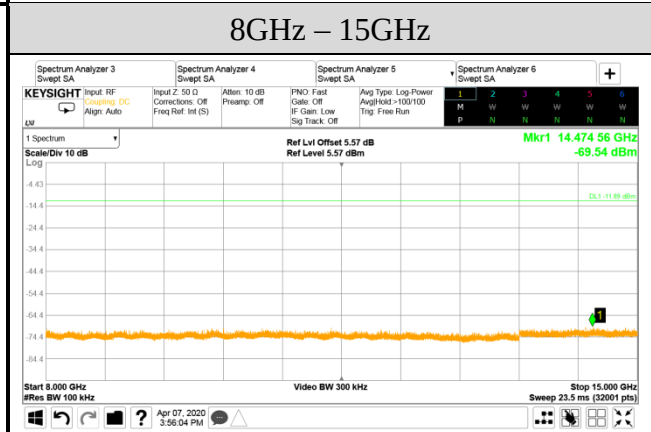
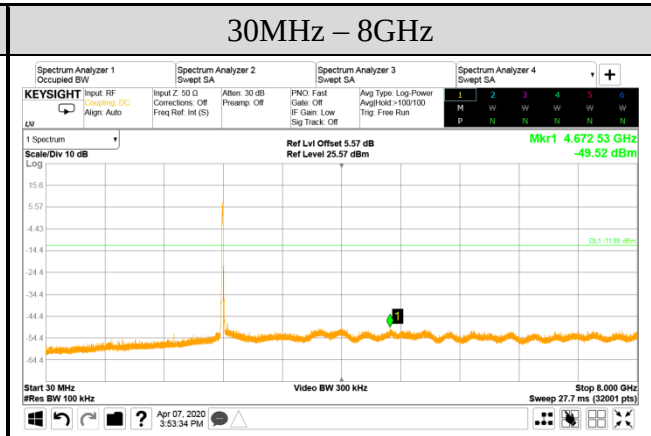
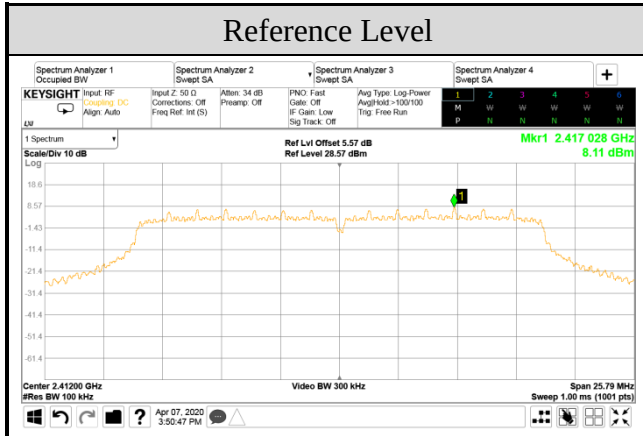
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電纜損失	0.8dB	模式	802.11g
		測試頻率	2437MHz
測試電壓	DC 3.3V (經 Jig 供電)	測試人員	Kuper Hsu
Simultaneous Factor10 log(n) (Note: “n” is antenna number)			0



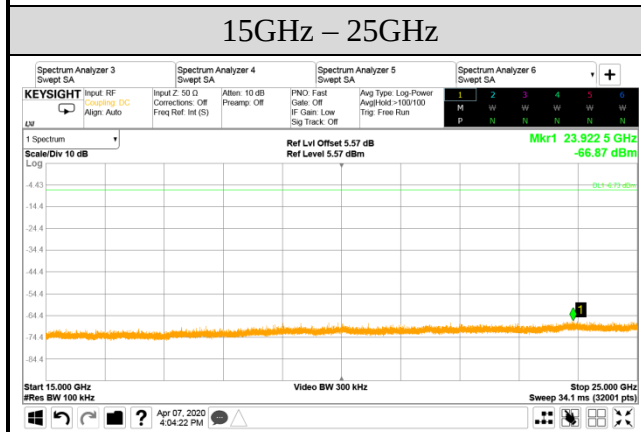
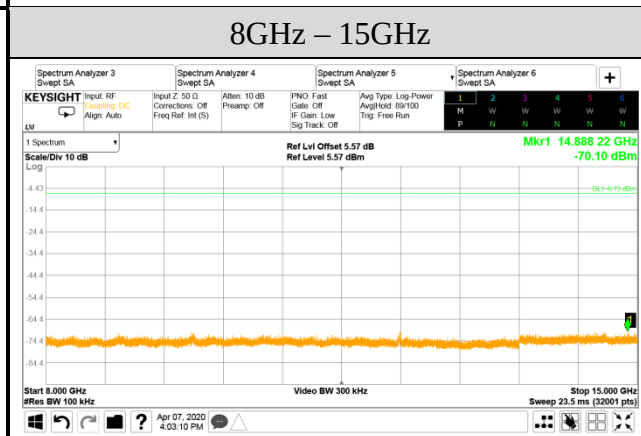
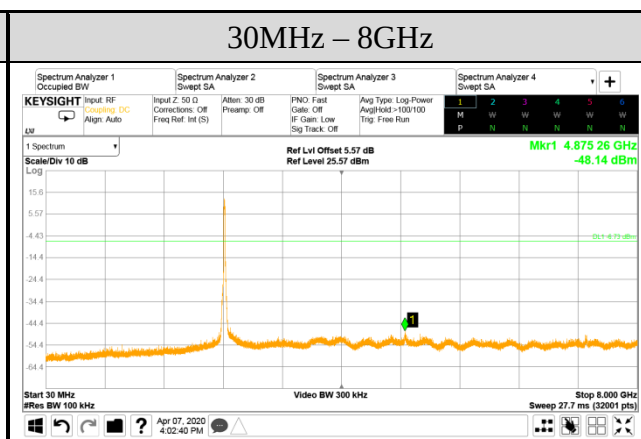
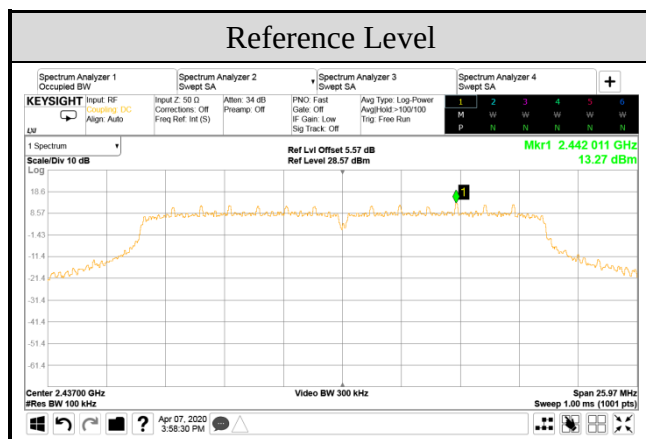
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電纜損失	0.8dB	模式	802.11g
		測試頻率	2462MHz
測試電壓	DC 3.3V (經 Jig 供電)	測試人員	Kuper Hsu
Simultaneous Factor10 log(n) (Note: “n” is antenna number)			0



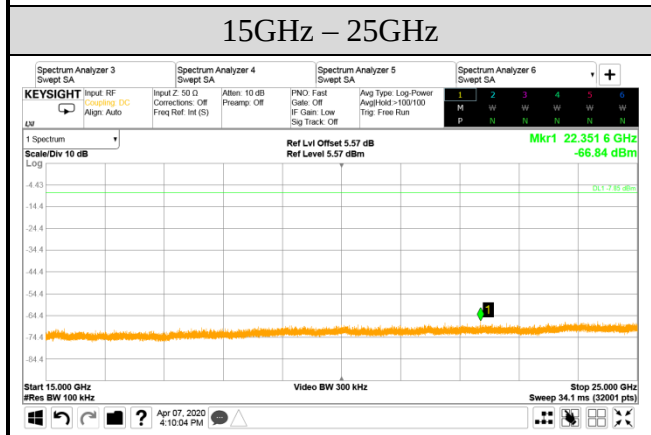
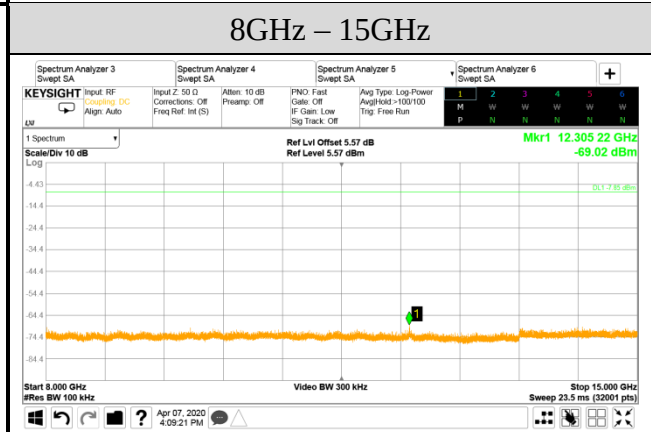
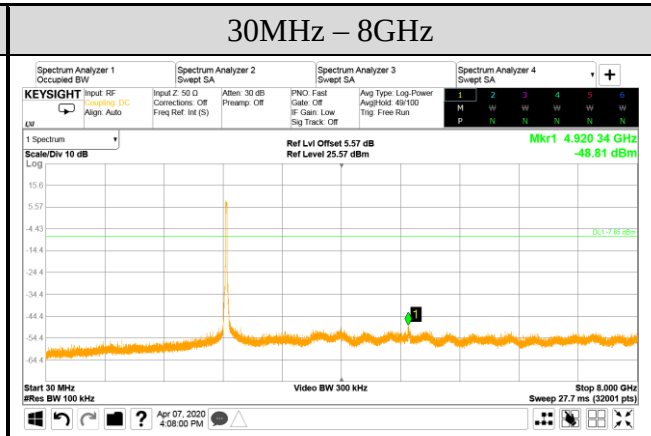
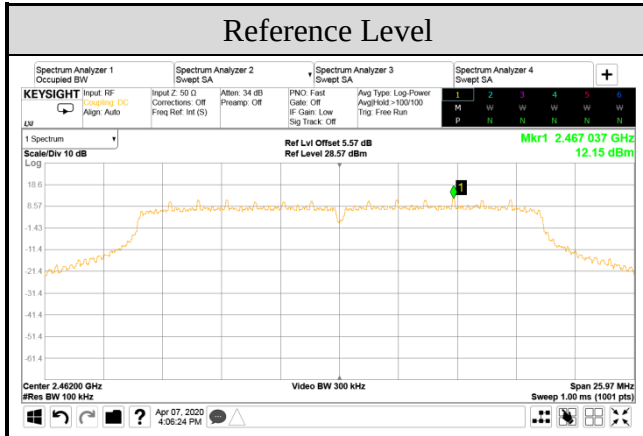
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電纜損失	0.8dB	模式	802.11n-HT20
		測試頻率	2412MHz
測試電壓	DC 3.3V (經 Jig 供電)	測試人員	Kuper Hsu
Simultaneous Factor10 log(n) (Note: “n” is antenna number)			4.77



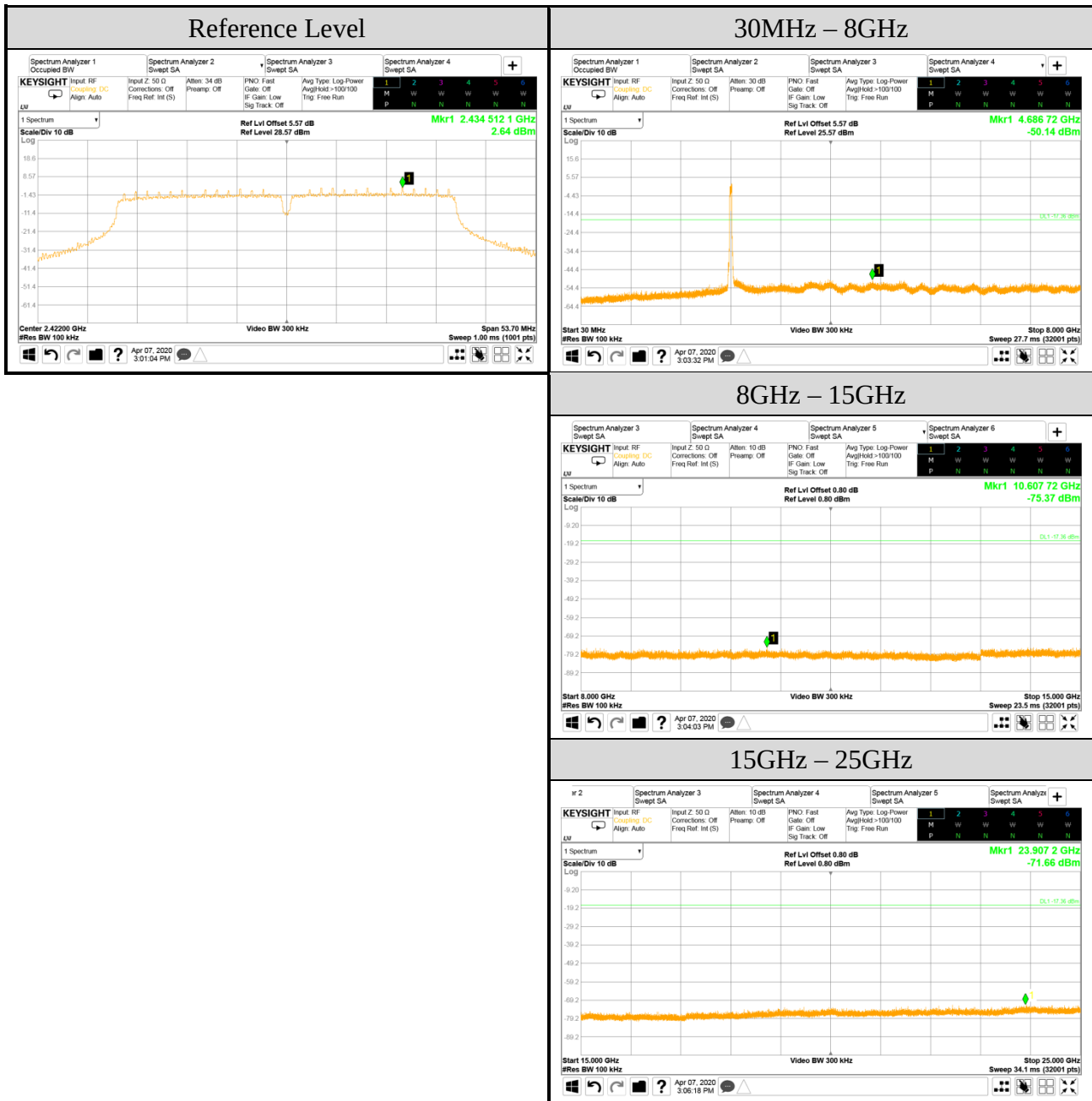
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電纜損失	0.8dB	模式	802.11n-HT20
		測試頻率	2437MHz
測試電壓	DC 3.3V (經 Jig 供電)	測試人員	Kuper Hsu
Simultaneous Factor10 log(n) (Note: “n” is antenna number)			4.77



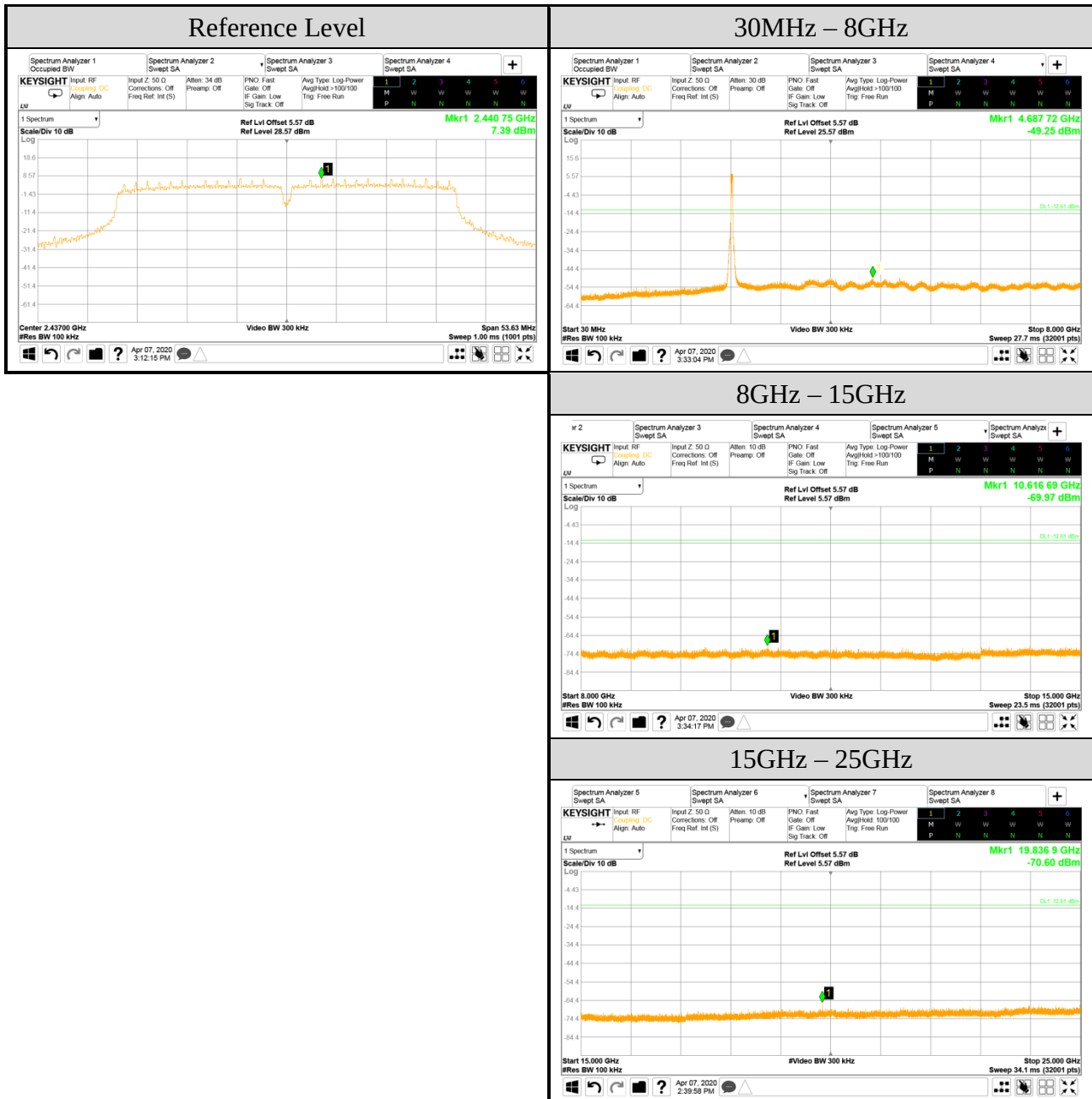
測試日期	2020/04/07	環境溫/濕度	21°C/55%
電纜損失	0.8dB	模式	802.11n-HT20
		測試頻率	2462MHz
測試電壓	DC 3.3V (經 Jig 供電)	測試人員	Kuper Hsu
Simultaneous Factor10 log(n) (Note: “n” is antenna number)			4.77



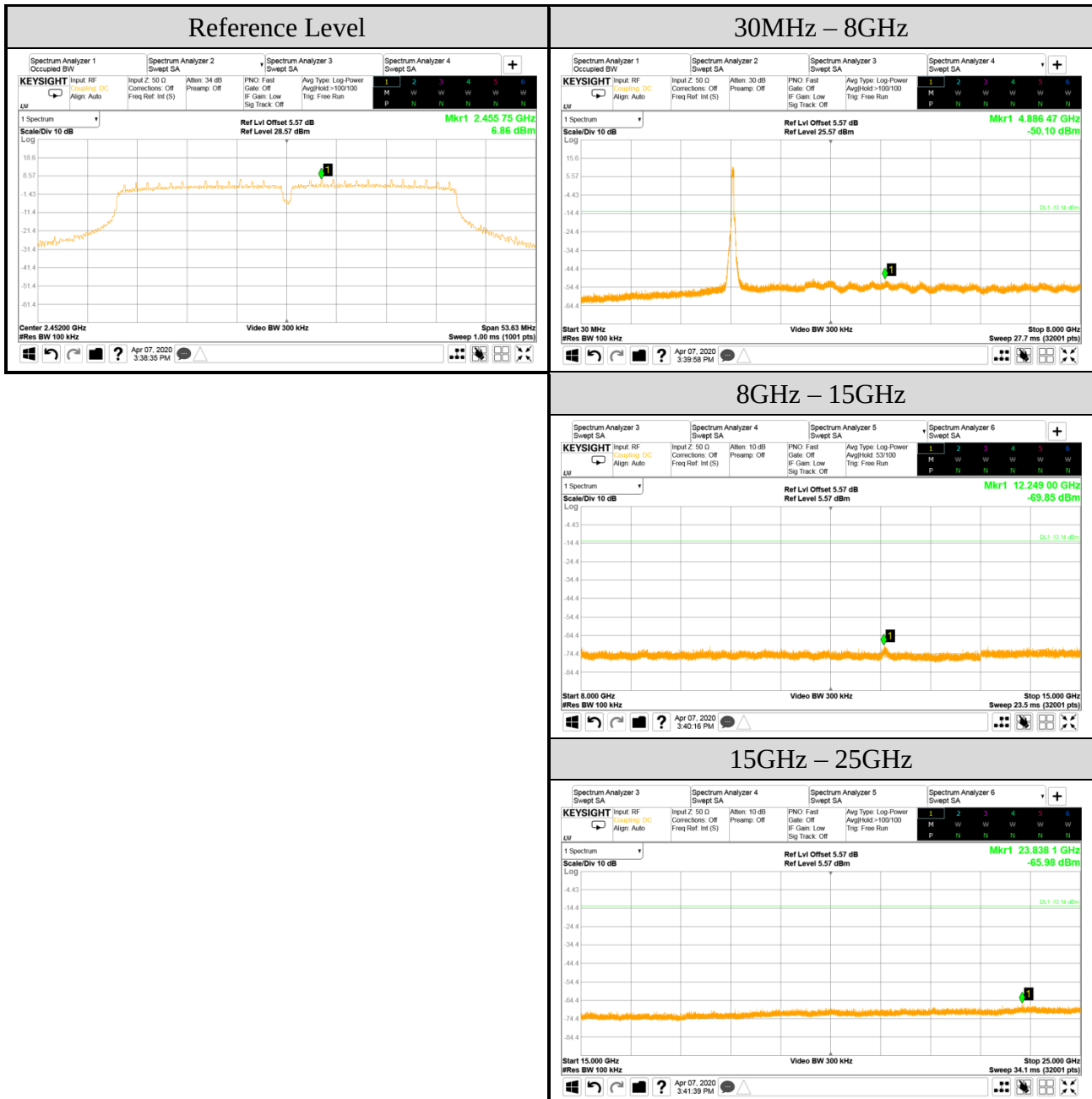
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電纜損失	0.8dB	模式	802.11n-HT40
		測試頻率	2422MHz
測試電壓	DC 3.3V (經 Jig 供電)	測試人員	Kuper Hsu
Simultaneous Factor10 log(n) (Note: “n” is antenna number)			4.77



測試日期	2020/04/07	環境溫/濕度	21°C/55%
電纜損失	0.8dB	模式	802.11n-HT40
		測試頻率	2437MHz
測試電壓	DC 3.3V (經 Jig 供電)	測試人員	Kuper Hsu
Simultaneous Factor10 log(n) (Note: “n” is antenna number)			4.77



測試日期	2020/04/07	環境溫/濕度	21°C/55%
電纜損失	0.8dB	模式	802.11n-HT40
		測試頻率	2452MHz
測試電壓	DC 3.3V (經 Jig 供電)	測試人員	Kuper Hsu
Simultaneous Factor10 log(n) (Note: “n” is antenna number)			4.77



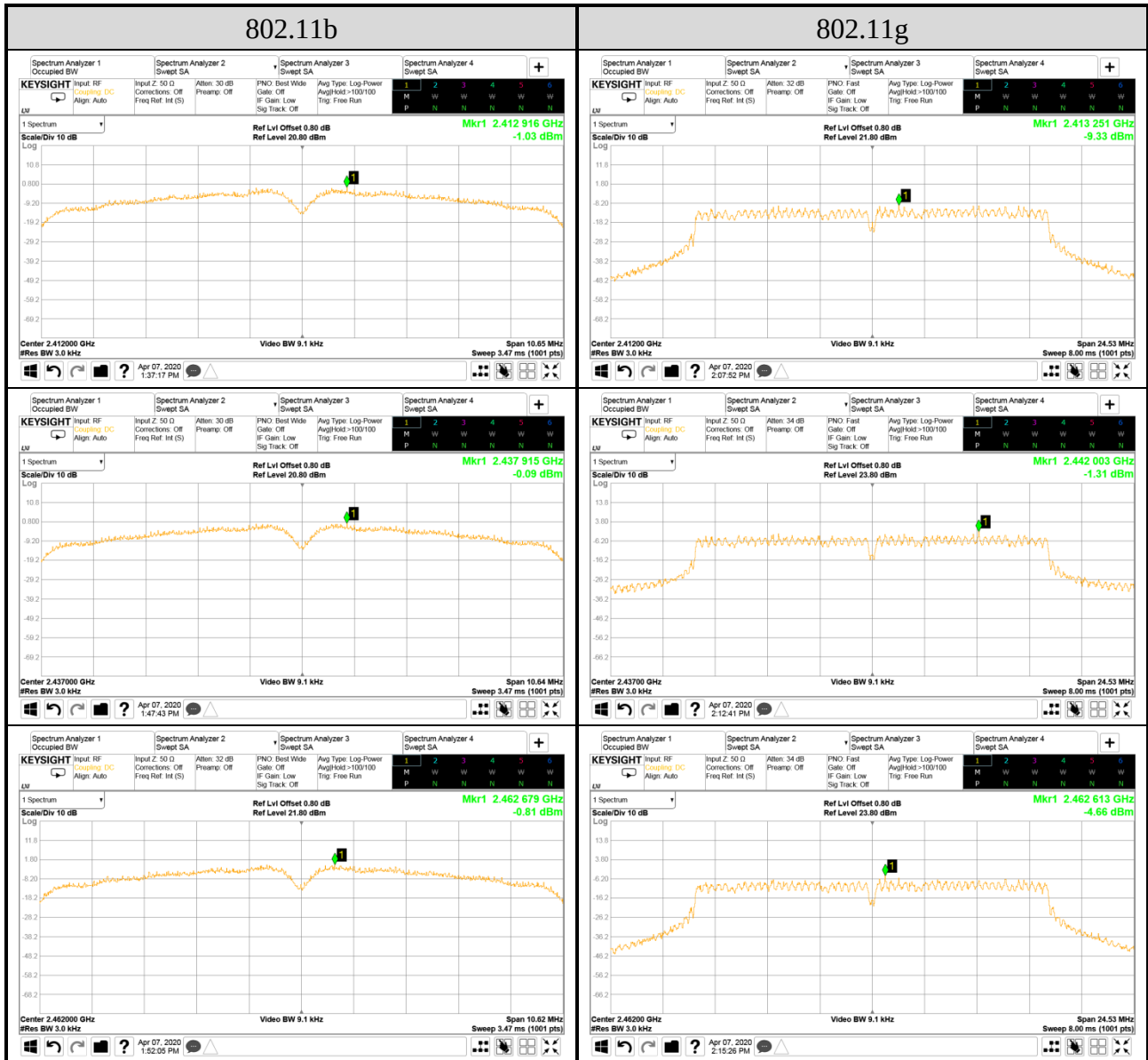
7. 功率密度之量測

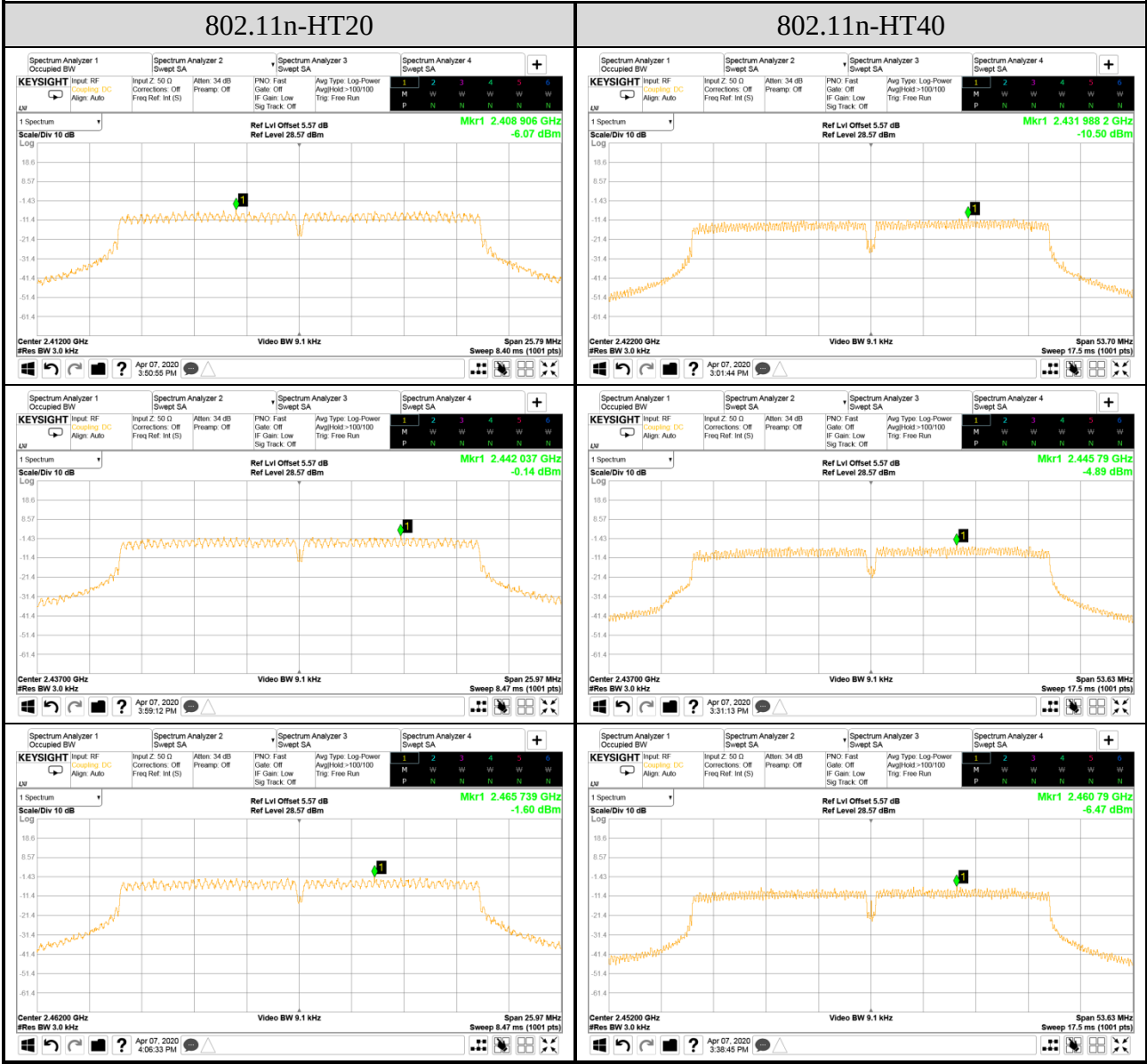
測試日期	2020/04/07	環境溫/濕度	21°C/55%
電纜損失	0.8dB	測試人員	Kuper Hsu
測試電壓	DC 3.3V (經 Jig 供電)		
Simultaneous Factor10 log(n) (Note: "n" is antenna number)			4.77

7.1. 功率密度

模式	測試頻率 (MHz)	功率密度 (dBm)	限制值 (dBm)
802.11b	2412	-1.03	8
	2437	-0.09	
	2462	-0.81	
802.11g	2412	-9.33	
	2437	-1.31	
	2462	-4.66	
802.11n-HT20	2412	-6.07	
	2437	-0.14	
	2462	-1.60	
802.11n-HT40	2422	-10.50	
	2437	-4.89	
	2452	-6.47	

7.2. 功率密度之量測圖





8. 電波暴露量之量測

測試日期	2020/04/07	環境溫/濕度	21°C/55%
電纜損失	0.8dB	測試人員	Kuper Hsu
測試電壓	DC 3.3V (經 Jig 供電)		

距離人體(r):	20	cm	
最大發射功率(P):	28.82	dBm	= 762.079 mW
最大天線增益(G):	2.961	dB	= 1.977 Numerical
MPE (S) = (P*G) / (4* π *r ²) =	0.2997		mW/cm ²
註：1. 最大發射功率係指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：0.2997 mW/cm ²			

註:此受測物是屬 Cyclic Delay Diversity (CDD)裝置，Direction gain=G_{ANT}+Array Gain
 依據 FCC KDB 662911，當天線數量小於 4 時，則 Array Gain=0，故此產品的最大 Direction gain=2.961dB 小於 6dB。