10. 發射電功率密度

10.1. 適用標準

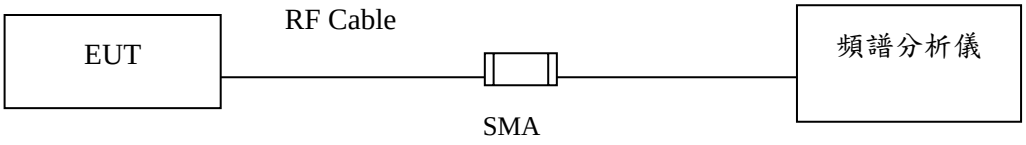
依據國家通訊傳播委員會低功率射頻器材技術規範之第 4.10.1.6 節，在使用頻率範圍之任意 3 千赫(kHz)頻寬內，由發射機傳導至天線之峰值發射電功率密度在任意期間內，皆不得大於 8dBm，且應依 4.10.1.3 之方式降低功率頻譜密度限制值。

10.2. 量測方法

待測物之天線埠經由適當之衰減直接連至頻譜分析儀 RF 輸入端。找出發射峰值並擴展於通帶內，設定頻譜分析儀之解析度頻寬為 3kHz，視訊頻寬大於解析度頻寬，掃瞄時間為頻率掃瞄範圍除以 3kHz。(SWEEP TIME＝SPAN/3kHz)。

待測物應在正常發射狀態下量測。

10.3. 測試架構圖



10.4. 量測不確定度

此項測試之量測不確定度為±1.23dB。

10.5. 功率密度量測結果

待測物名稱：Intel® Wi-Fi 6 AX201
待測物型號：AX201D2W
測試頻道：- -
量測天線：- -
檢測器：峰值
測試日期：107 年 09 月 27 日
測試項目：功率密度
測試模式：Mode 1: SISO A: 發射器 802.11b
測試距離：Conducted
環境溫度：20 ℃
環境濕度：50 %

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	6.130	≦8dBm	Pass
07	2442	7.380	≦8dBm	Pass
11	2462	7.240	≦8dBm	Pass
12	2467	5.250	≦8dBm	Pass
13	2472	4.590	≦8dBm	Pass

Figure Channel 01:

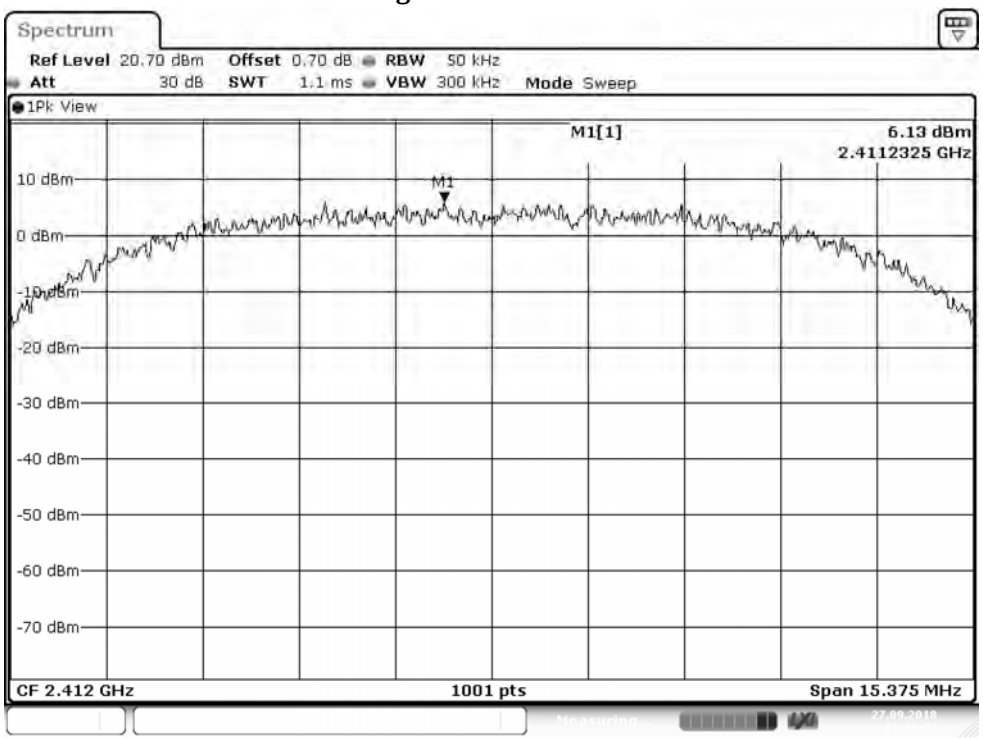


Figure Channel 07:

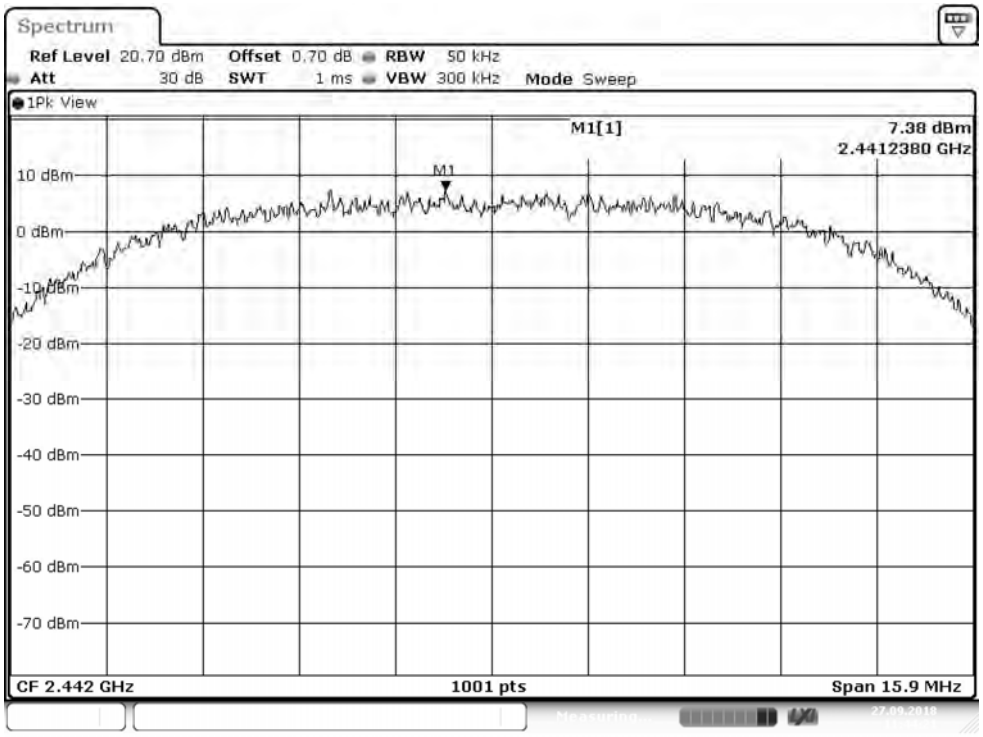


Figure Channel 11:

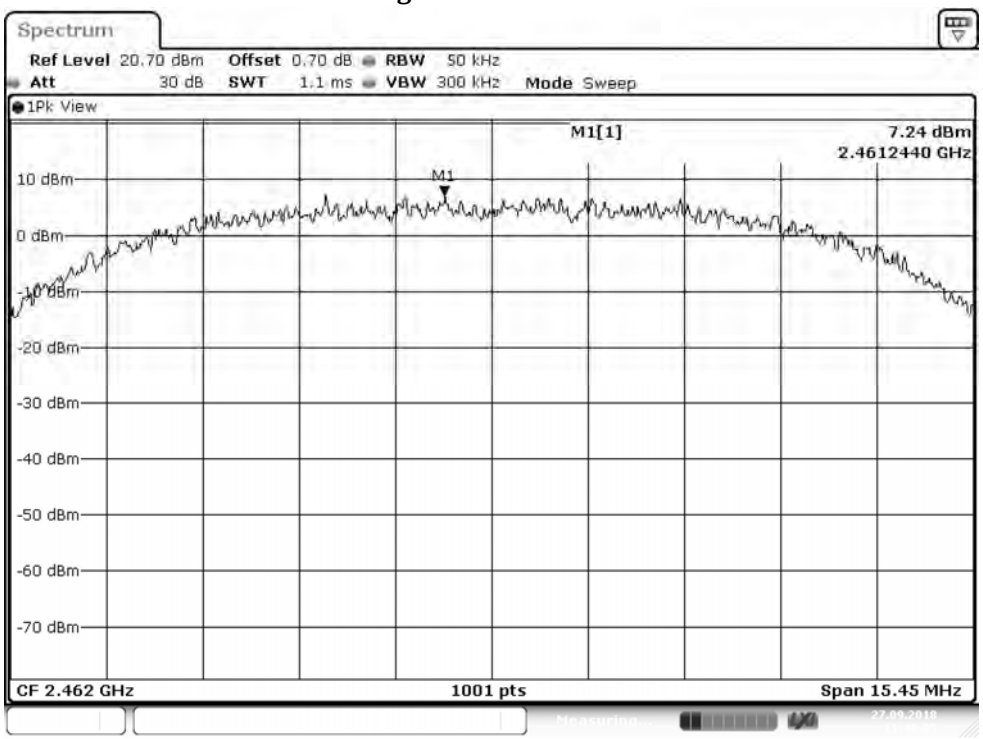


Figure Channel 12:

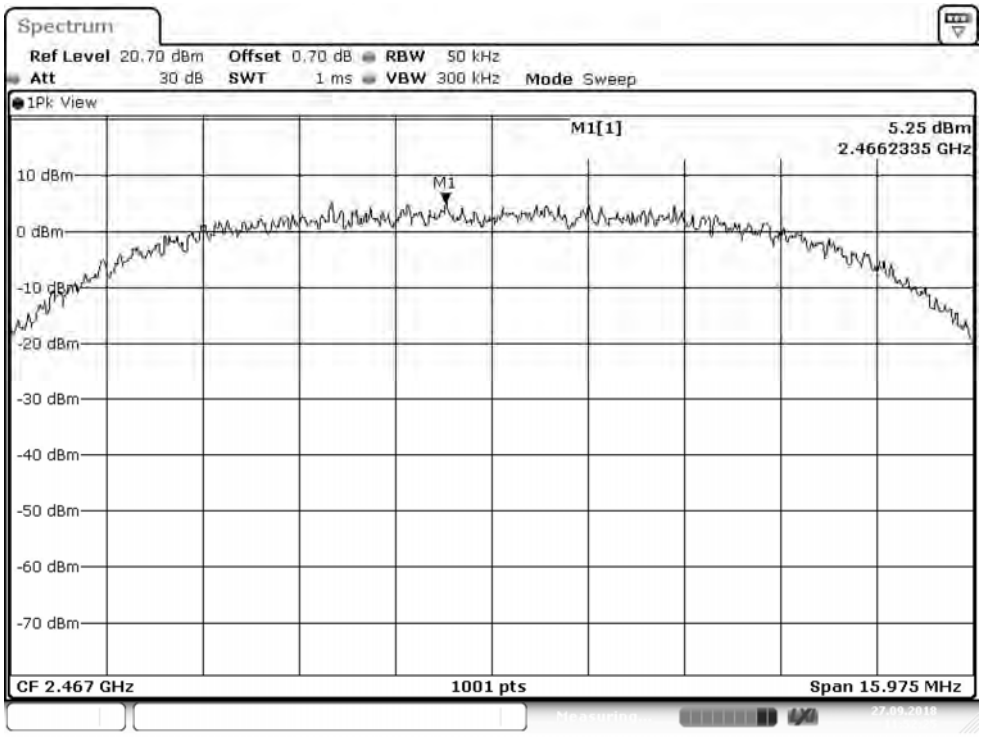
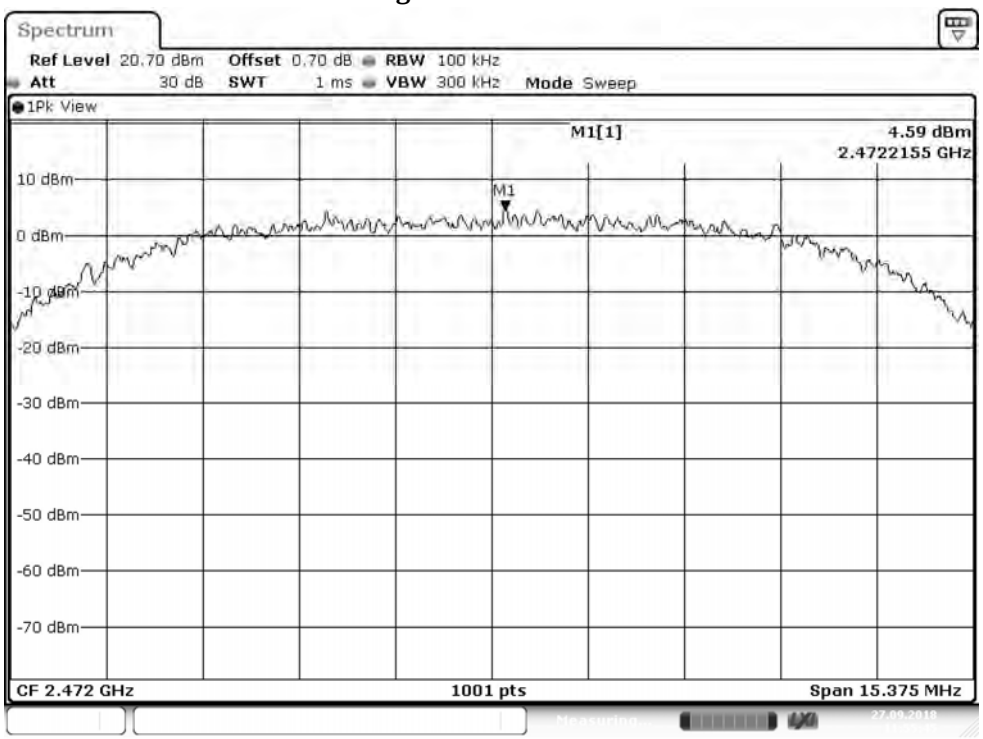


Figure Channel 13:



待測物名稱：Intel® Wi-Fi 6 AX201
待測物型號：AX201D2W　　測試項目：功率密度
測試頻道：- -　　測試模式：Mode 1: SISO A: 發射器 802.11g
量測天線：- -　　測試距離：Conducted
檢測器：峰值　　環境溫度：20 ℃
測試日期：107 年 09 月 27 日　　環境濕度：50 %

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	4.880	≦8dBm	Pass
07	2442	6.580	≦8dBm	Pass
11	2462	5.880	≦8dBm	Pass
12	2467	2.920	≦8dBm	Pass
13	2472	-10.470	≦8dBm	Pass

Figure Channel 01:

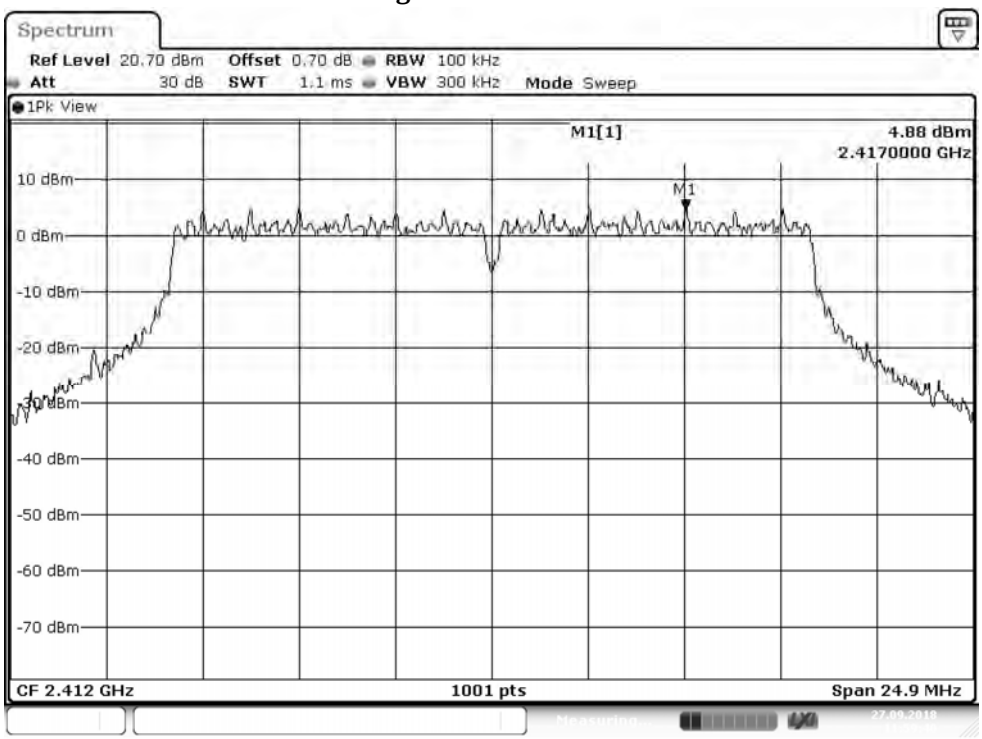


Figure Channel 07:

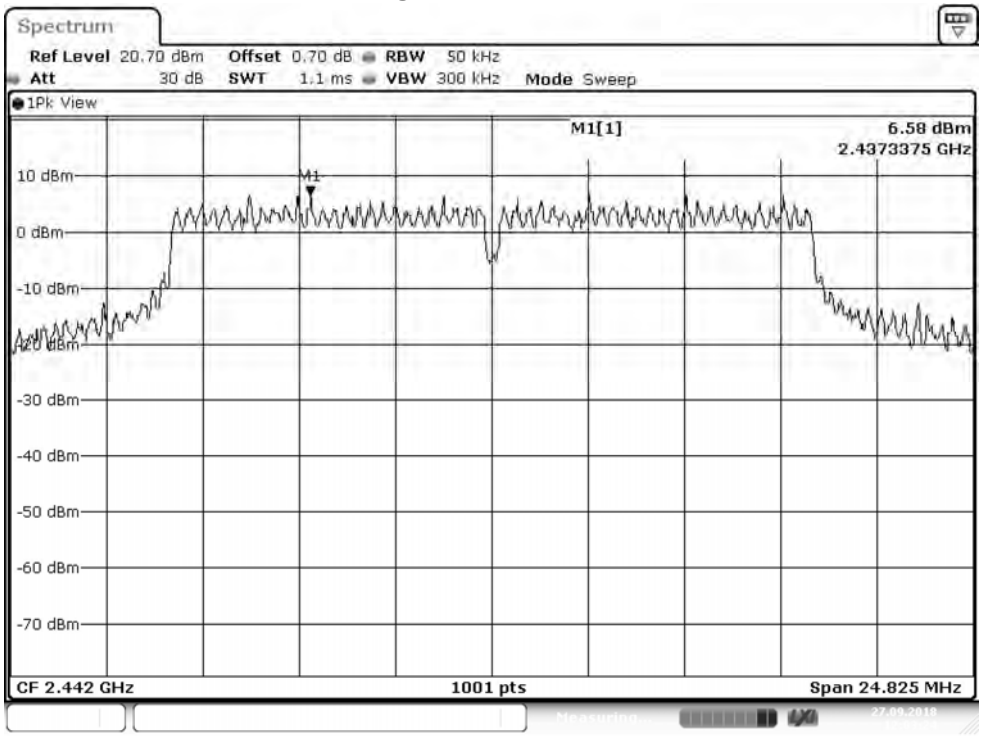


Figure Channel 11:

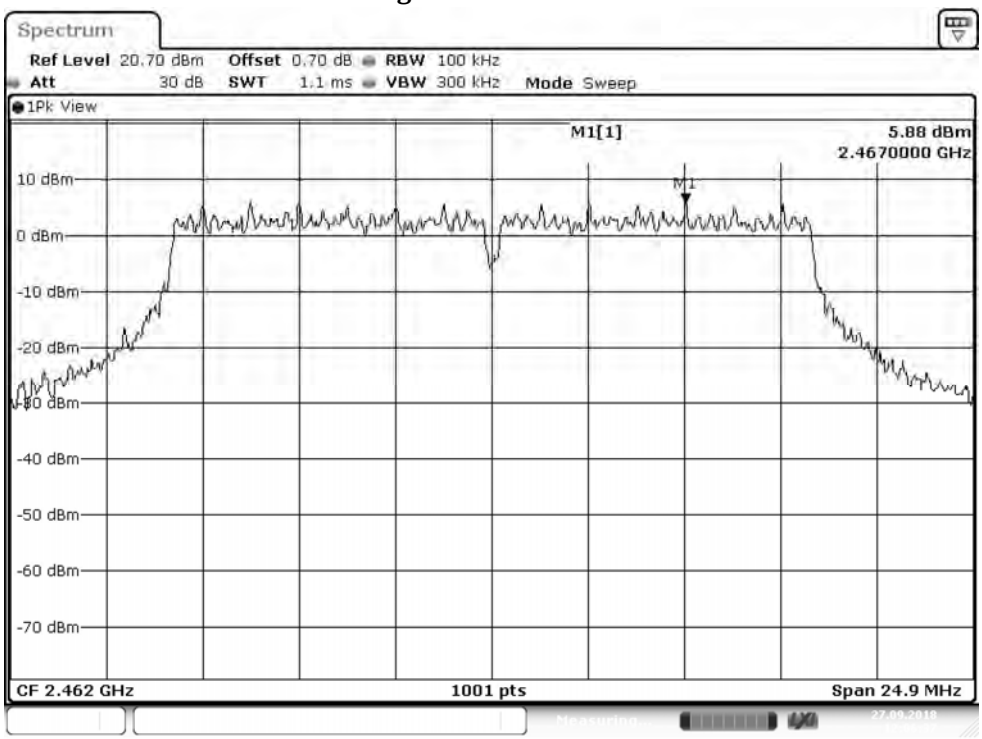


Figure Channel 12:

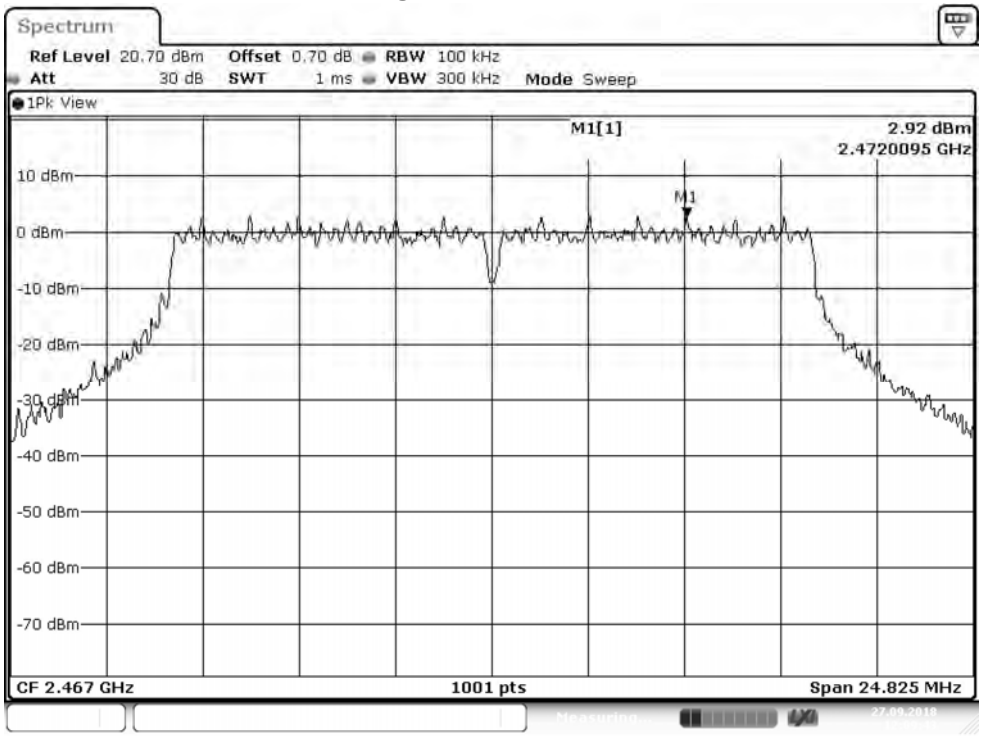
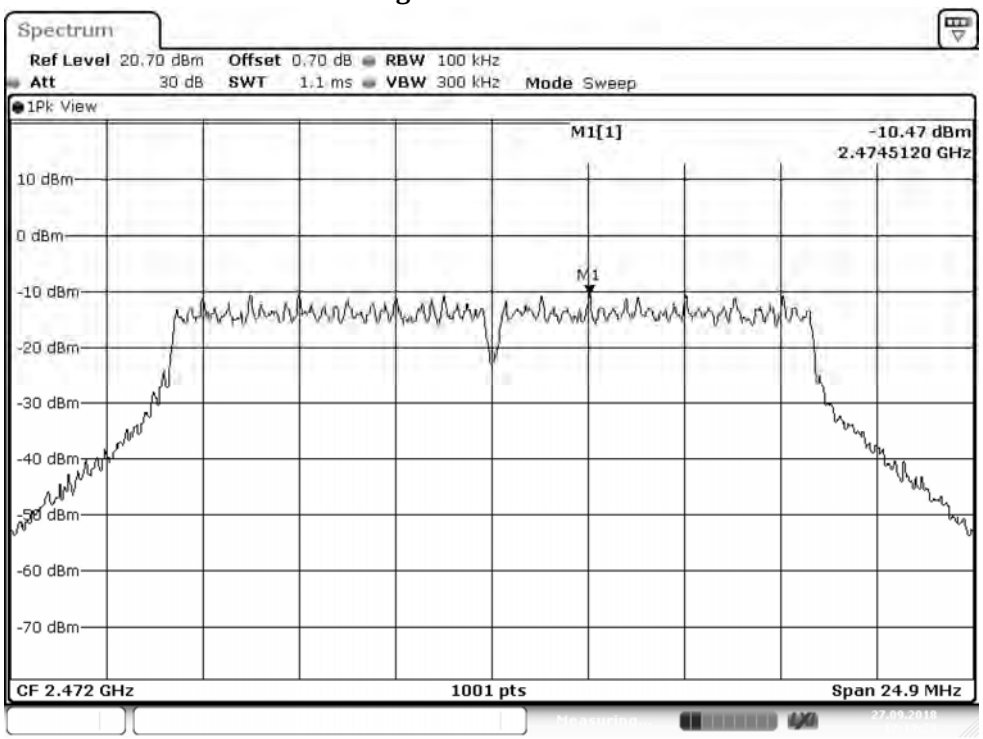


Figure Channel 13:



待測物名稱：Intel® Wi-Fi 6 AX201
待測物型號：AX201D2W　　測試項目：功率密度
測試頻道：- -　　測試模式：Mode 1: SISO A: 發射器 802.11n (20MHz)
量測天線：- -　　測試距離：Conducted
檢測器：峰值　　環境溫度：20 ℃
測試日期：107 年 09 月 27 日　　環境濕度：50 %

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	4.860	≦8dBm	Pass
07	2442	6.410	≦8dBm	Pass
11	2462	5.860	≦8dBm	Pass
12	2467	2.780	≦8dBm	Pass
13	2472	-10.830	≦8dBm	Pass

Figure Channel 01:

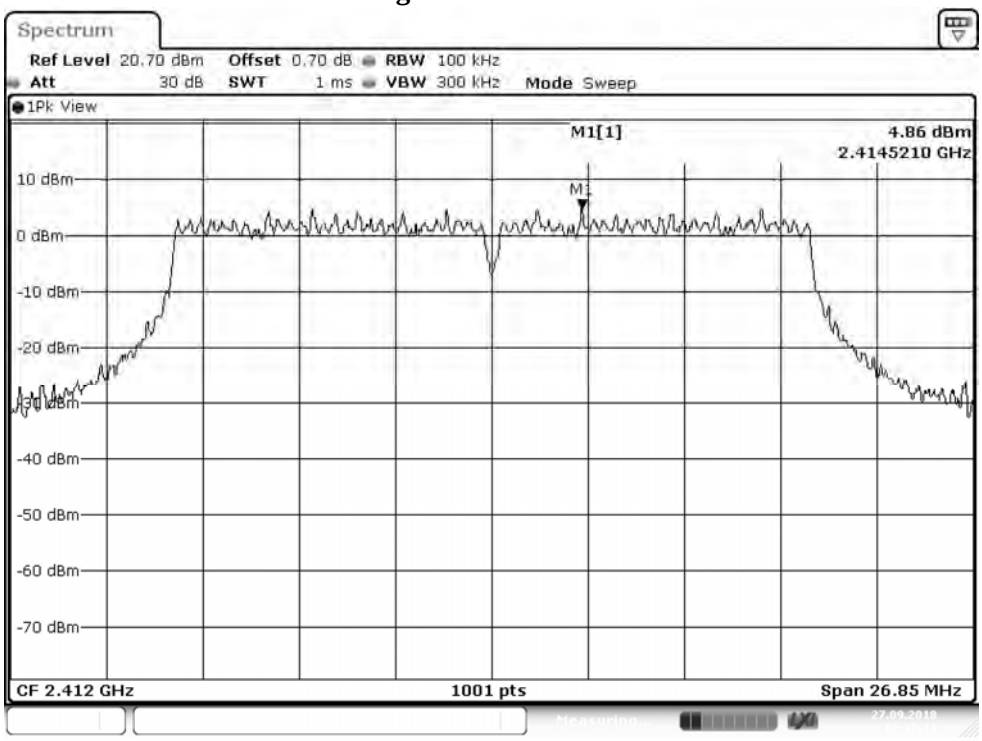


Figure Channel 07:

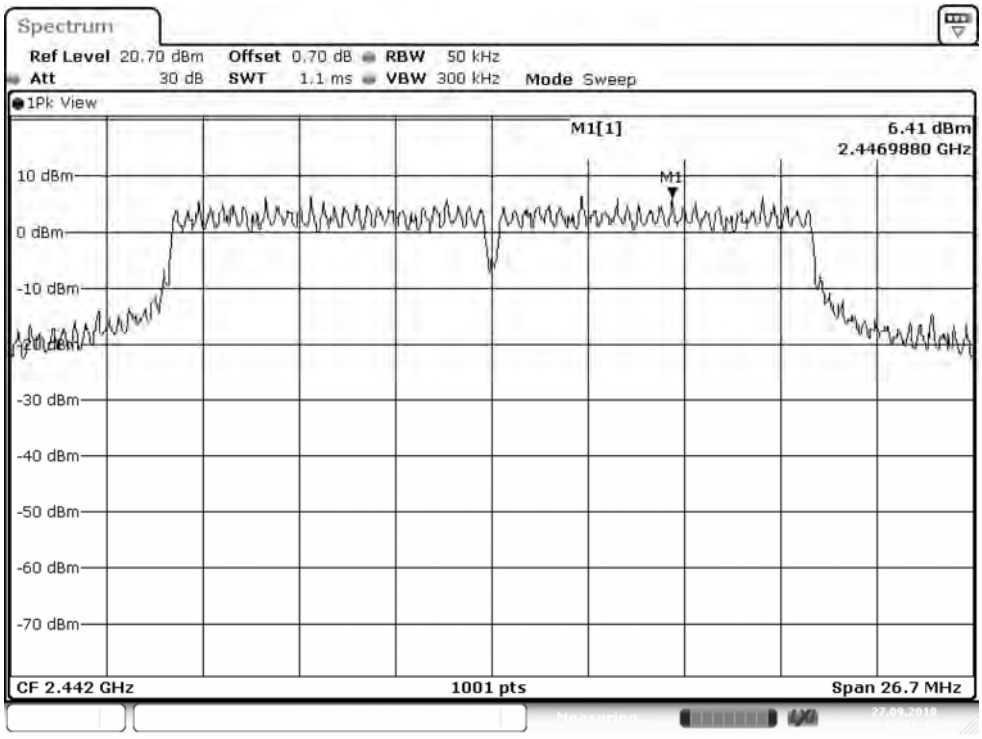


Figure Channel 11:

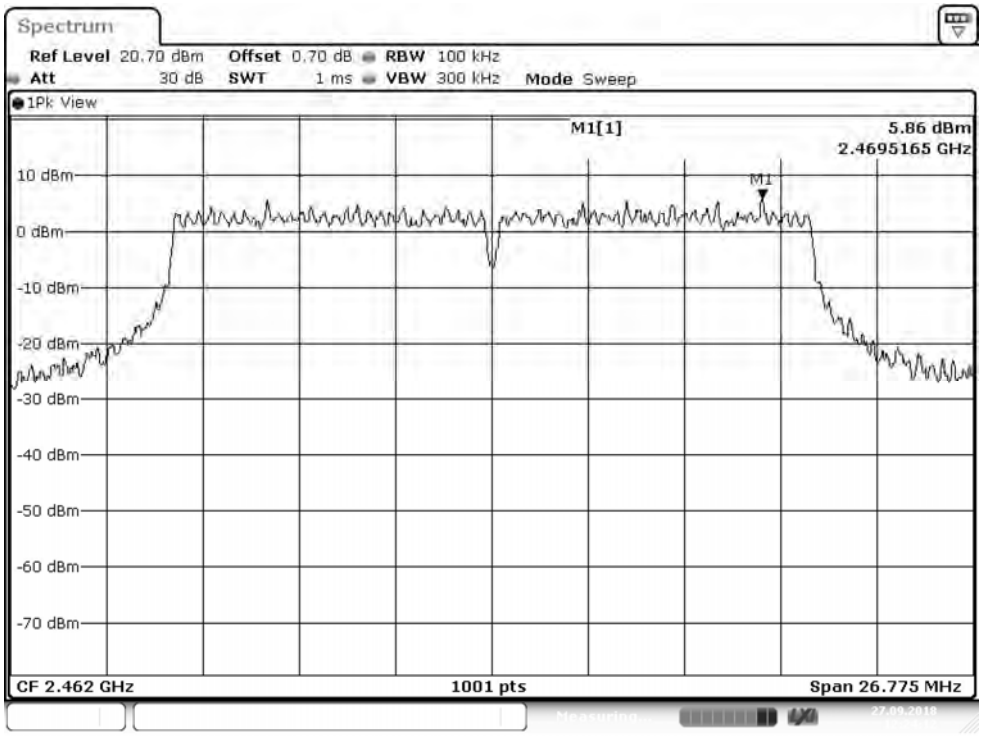


Figure Channel 12:

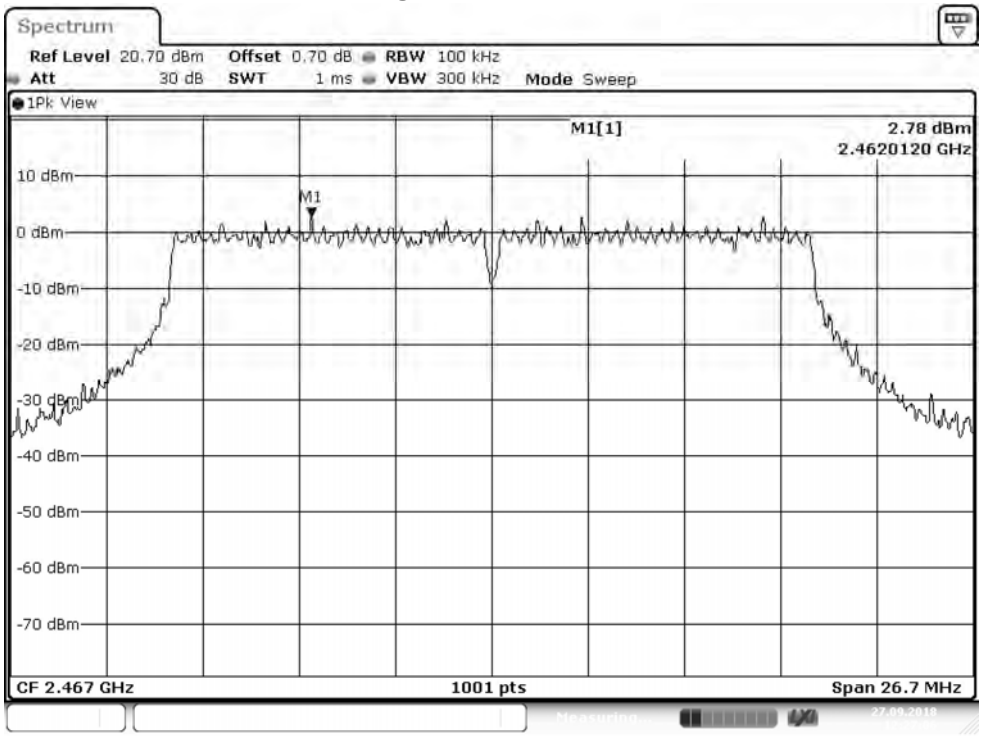
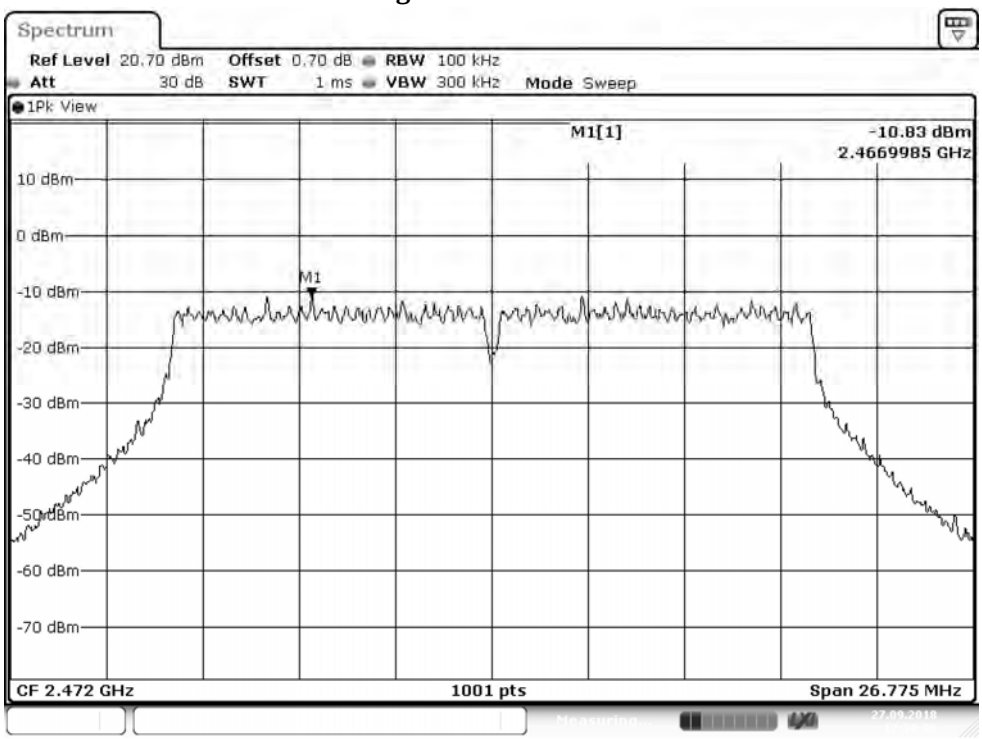


Figure Channel 13:



待測物名稱：Intel® Wi-Fi 6 AX201
待測物型號：AX201D2W　　測試項目：功率密度
測試頻道：- -　　測試模式：Mode 1: SISO A: 發射器 802.11n (40MHz)
量測天線：- -　　測試距離：Conducted
檢測器：峰值　　環境溫度：20 ℃
測試日期：107 年 09 月 27 日　　環境濕度：50 %

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
03	2422	1.640	≦8dBm	Pass
07	2442	2.540	≦8dBm	Pass
09	2452	2.000	≦8dBm	Pass
10	2457	-2.590	≦8dBm	Pass
11	2462	-9.960	≦8dBm	Pass

Figure Channel 03:

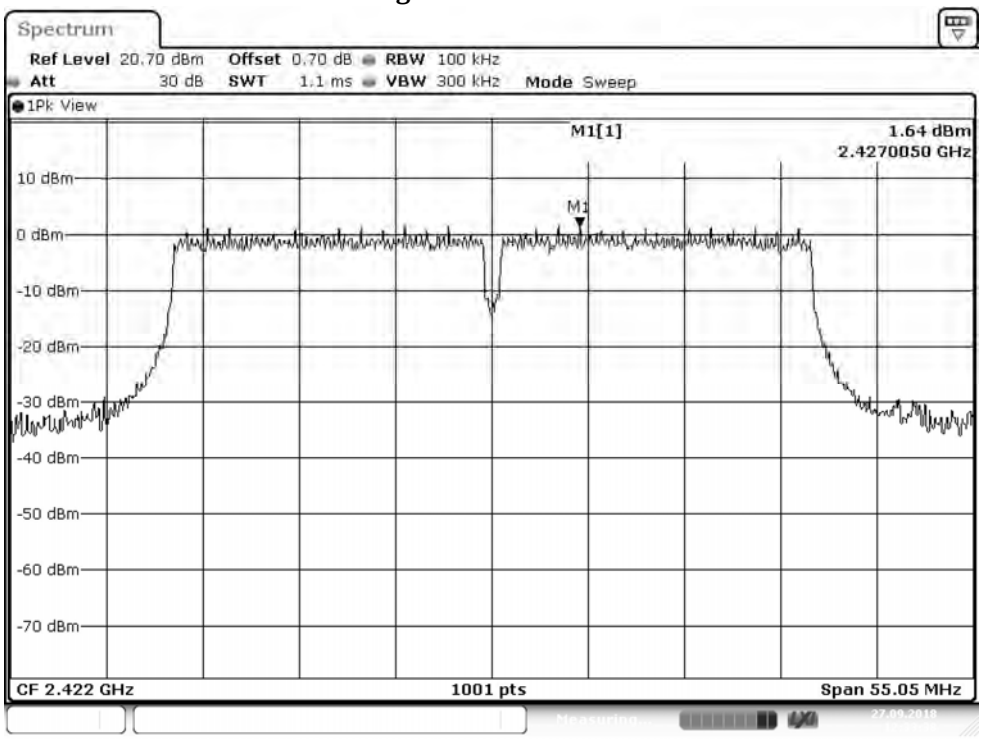


Figure Channel 07:

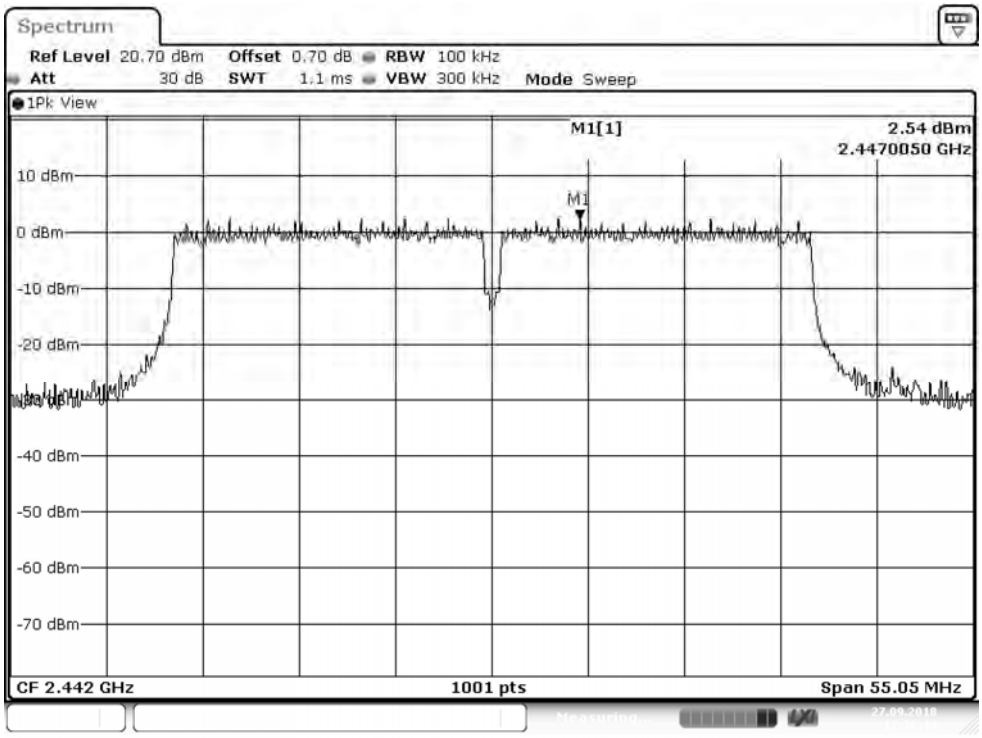


Figure Channel 09:

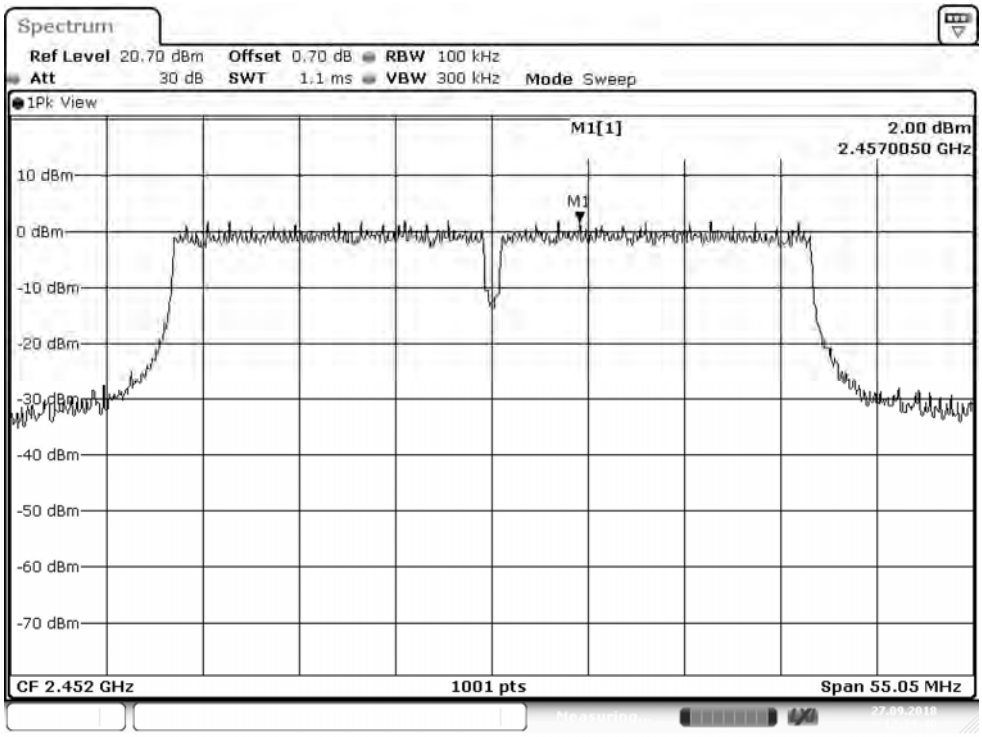


Figure Channel 10:

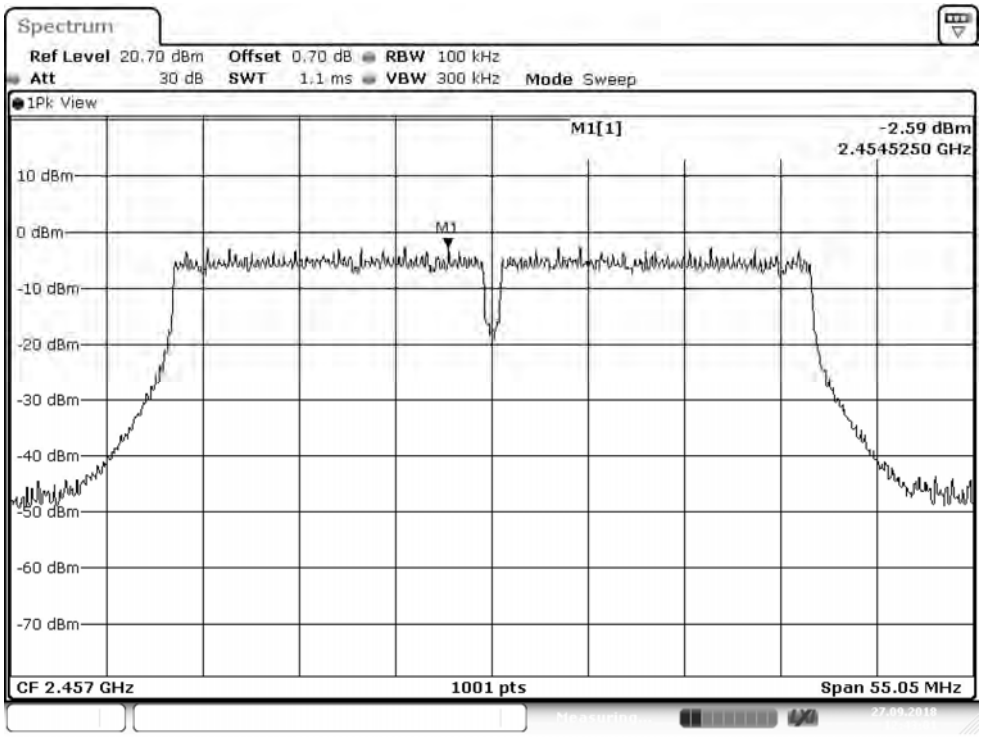
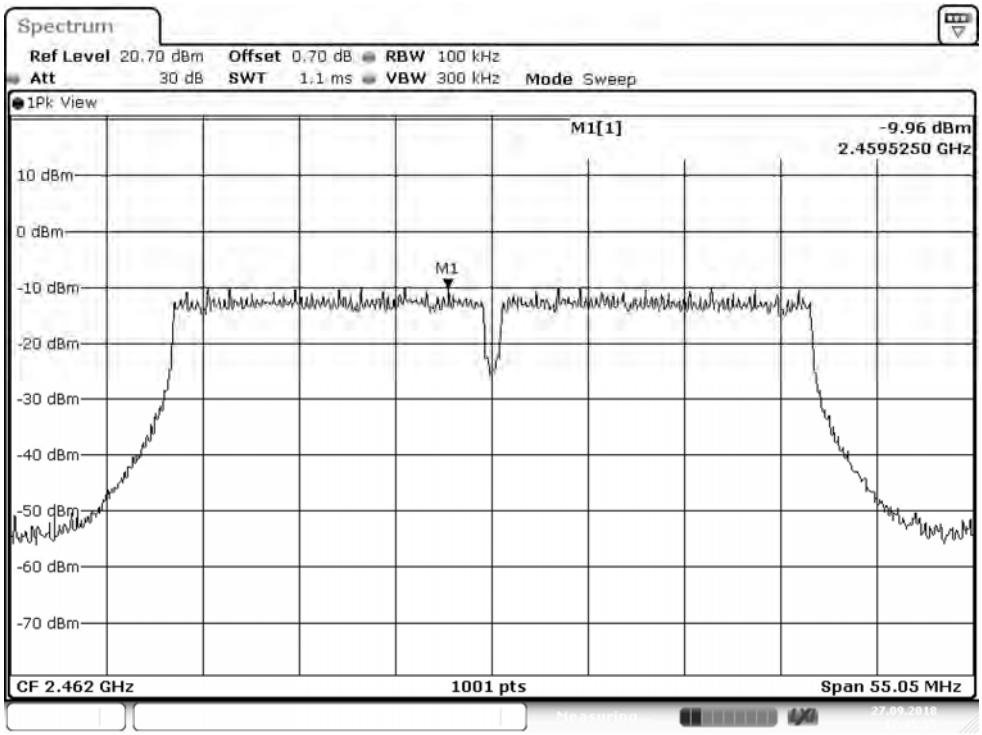


Figure Channel 11:



待測物名稱：Intel® Wi-Fi 6 AX201
待測物型號：AX201D2W
測試項目：功率密度
測試頻道：- -
測試模式：Mode 2: SISO B: 發射器 802.11b
量測天線：- -
測試距離：Conducted
檢測器：峰值
環境溫度：20 ℃
測試日期：107 年 09 月 27 日
環境濕度：50 %

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	6.400	≦8dBm	Pass
07	2442	7.440	≦8dBm	Pass
11	2462	6.280	≦8dBm	Pass
12	2467	5.250	≦8dBm	Pass
13	2472	4.520	≦8dBm	Pass

Figure Channel 01:

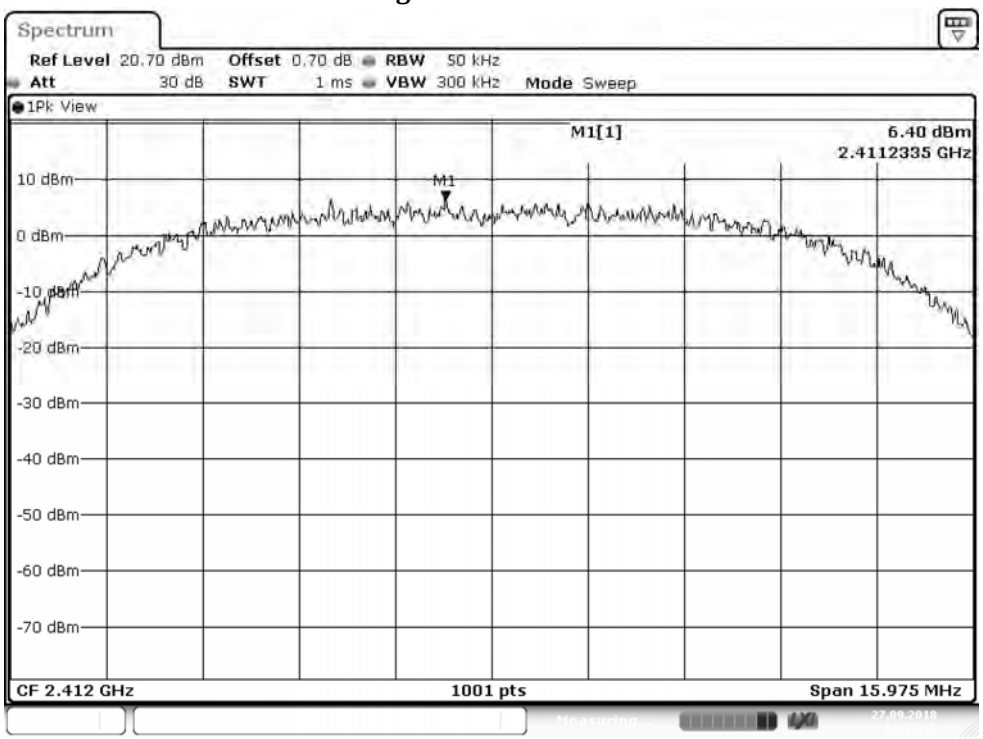


Figure Channel 07:

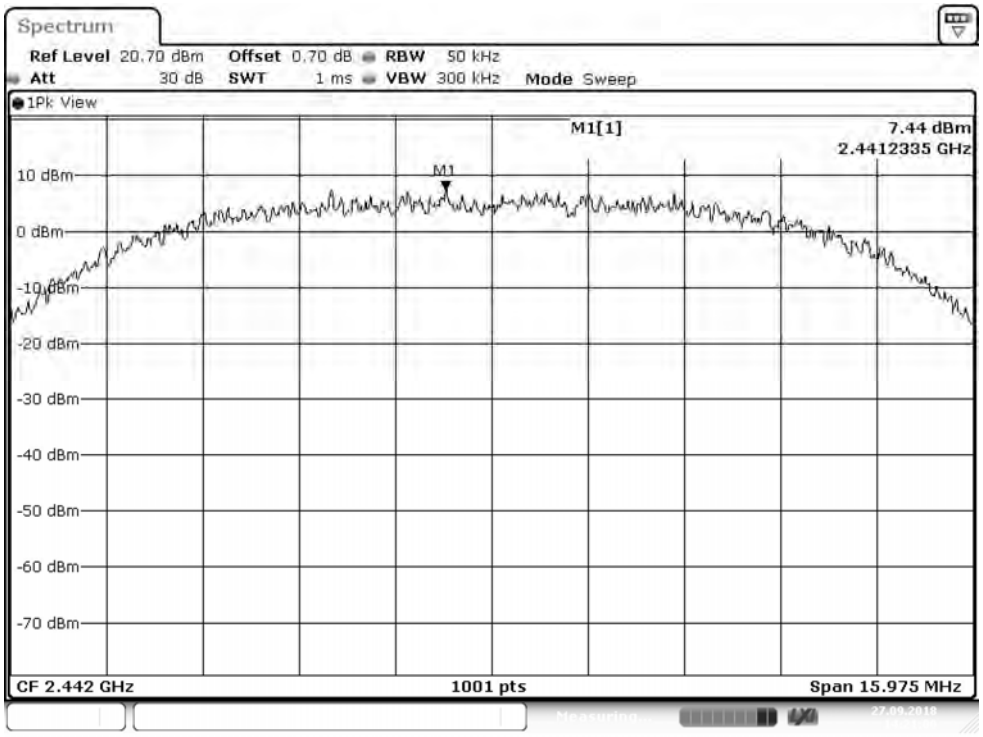


Figure Channel 11:

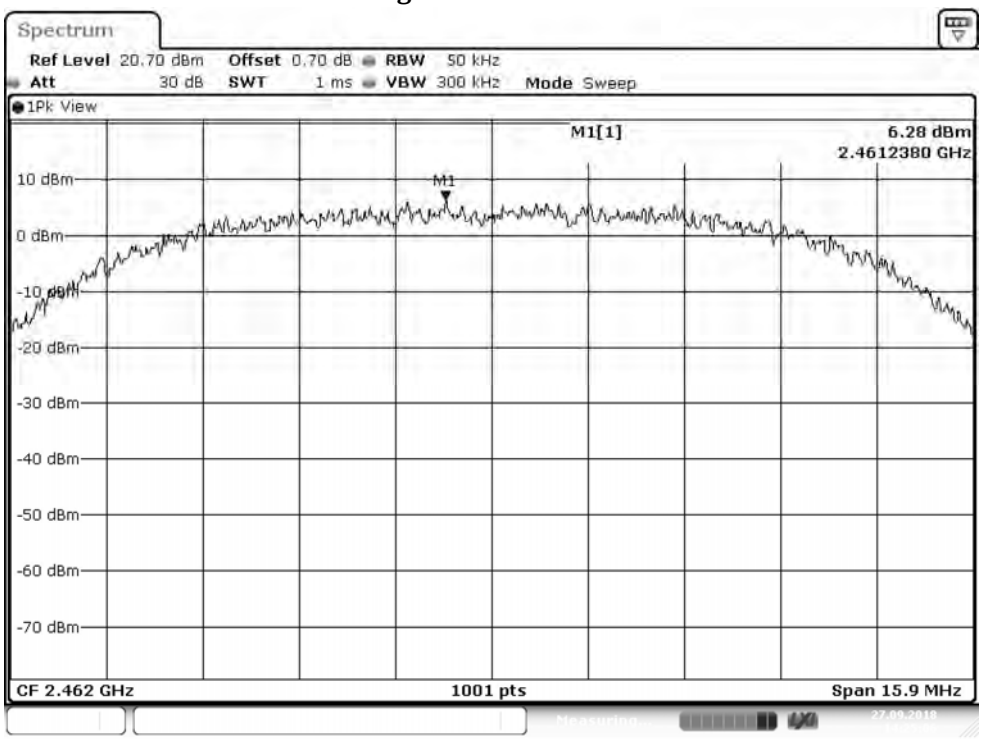


Figure Channel 12:

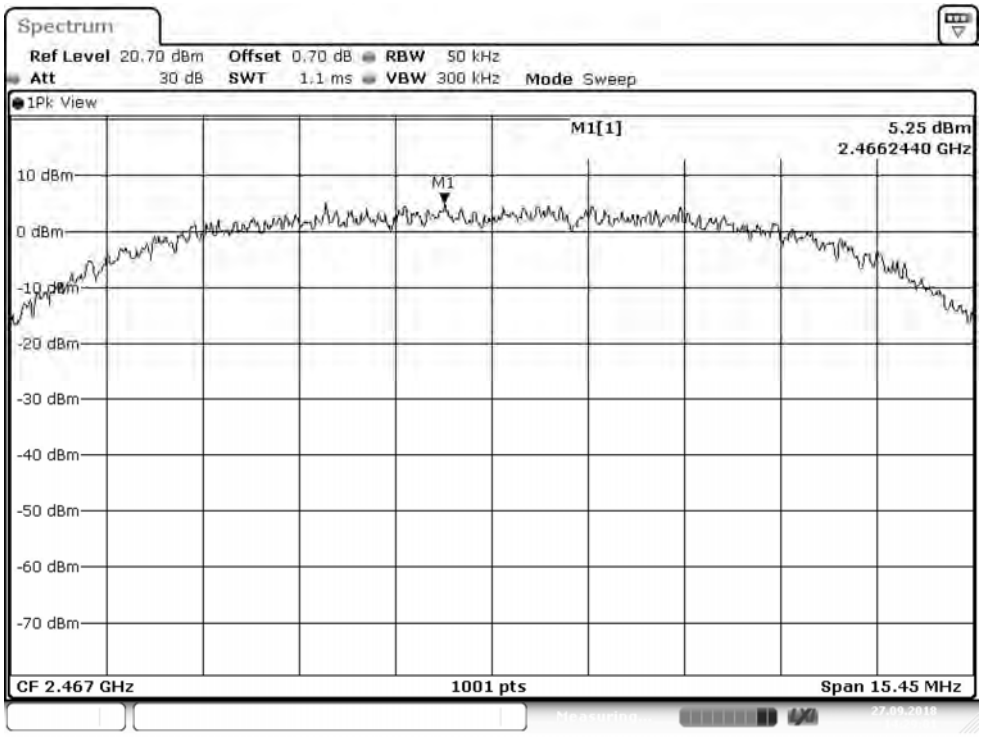
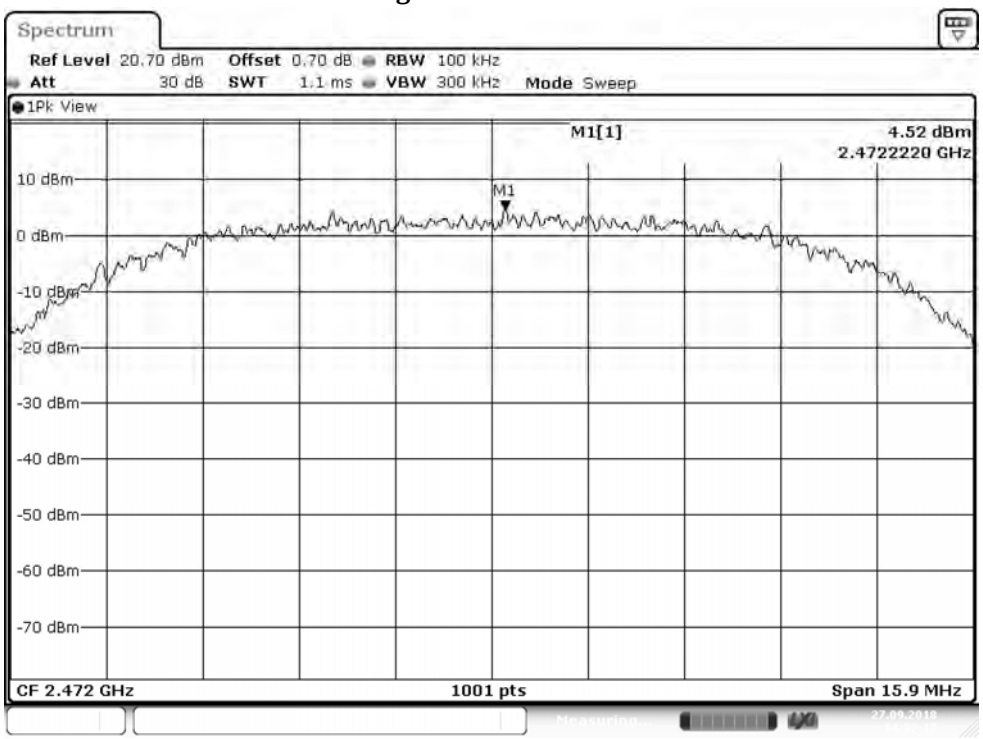


Figure Channel 13:



待測物名稱：Intel® Wi-Fi 6 AX201
待測物型號：AX201D2W
測試頻道：- -
量測天線：- -
檢測器：峰值
測試日期：107 年 09 月 27 日
測試項目：功率密度
測試模式：Mode 2: SISO B: 發射器 802.11g
測試距離：Conducted
環境溫度：20 ℃
環境濕度：50 %

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	5.030	≦8dBm	Pass
07	2442	6.510	≦8dBm	Pass
11	2462	6.140	≦8dBm	Pass
12	2467	3.050	≦8dBm	Pass
13	2472	-10.830	≦8dBm	Pass

Figure Channel 01:

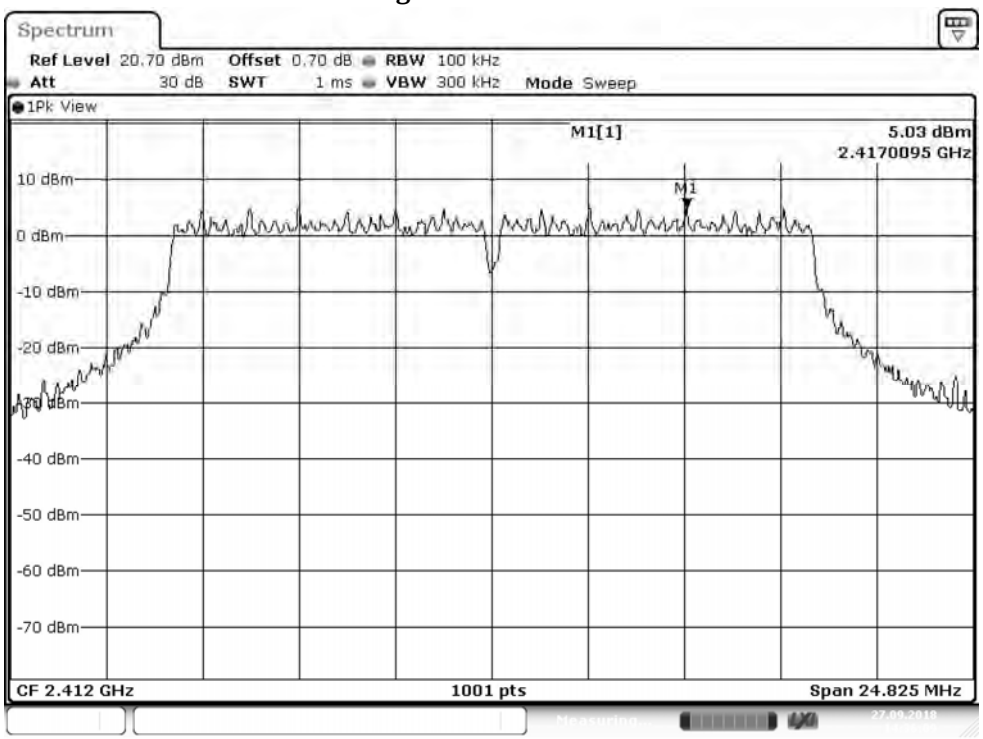


Figure Channel 07:

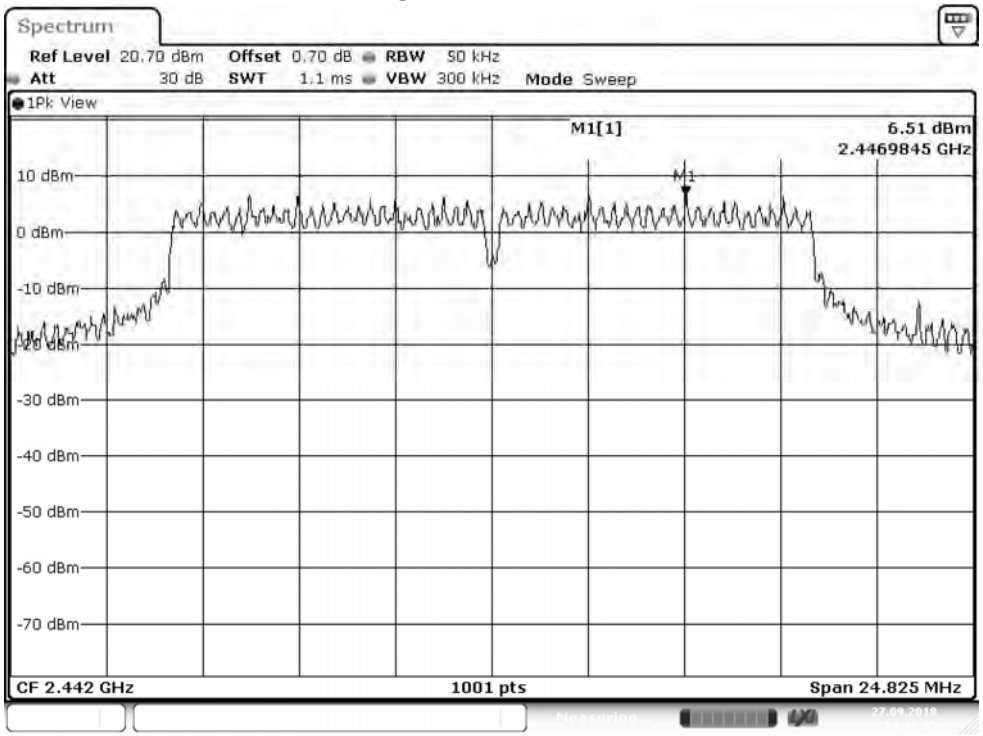


Figure Channel 11:

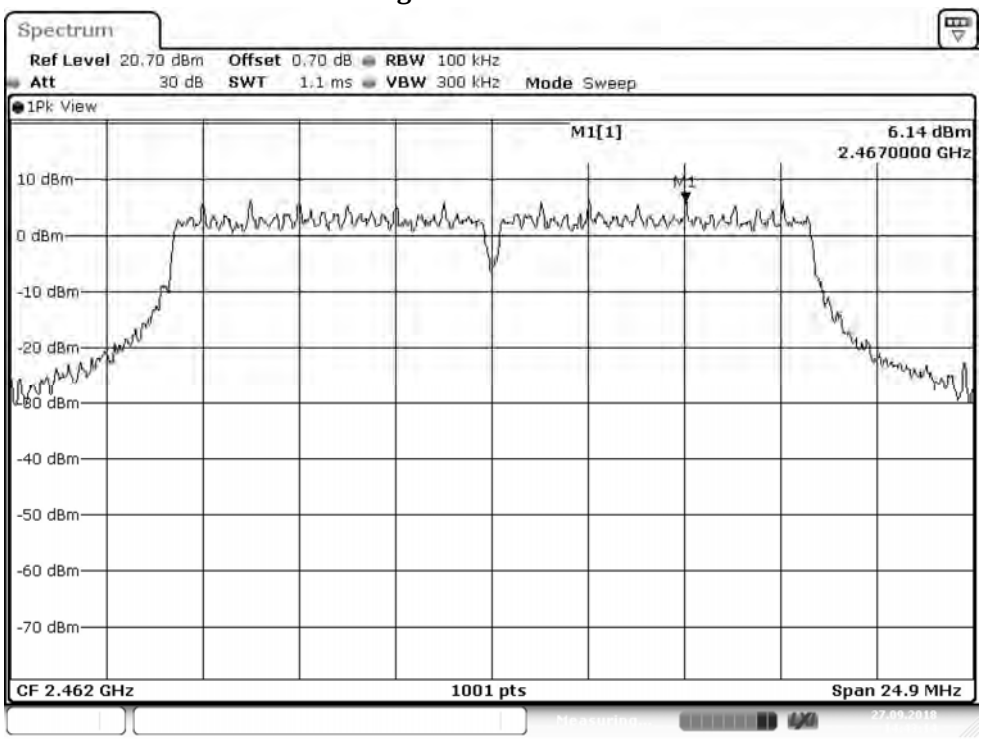


Figure Channel 12:

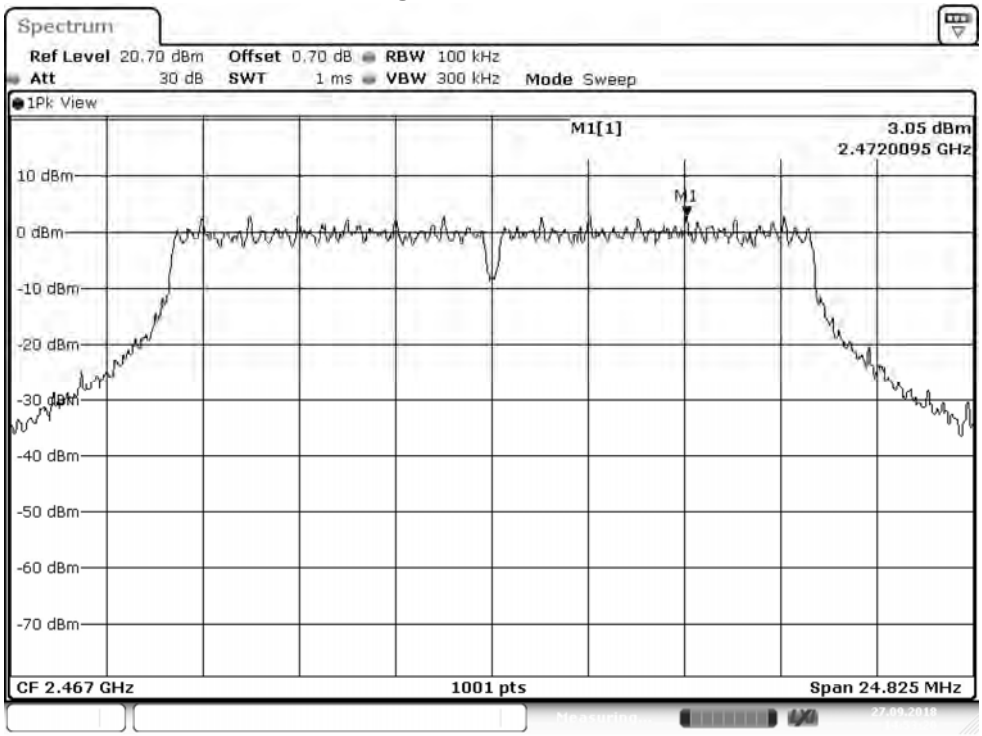
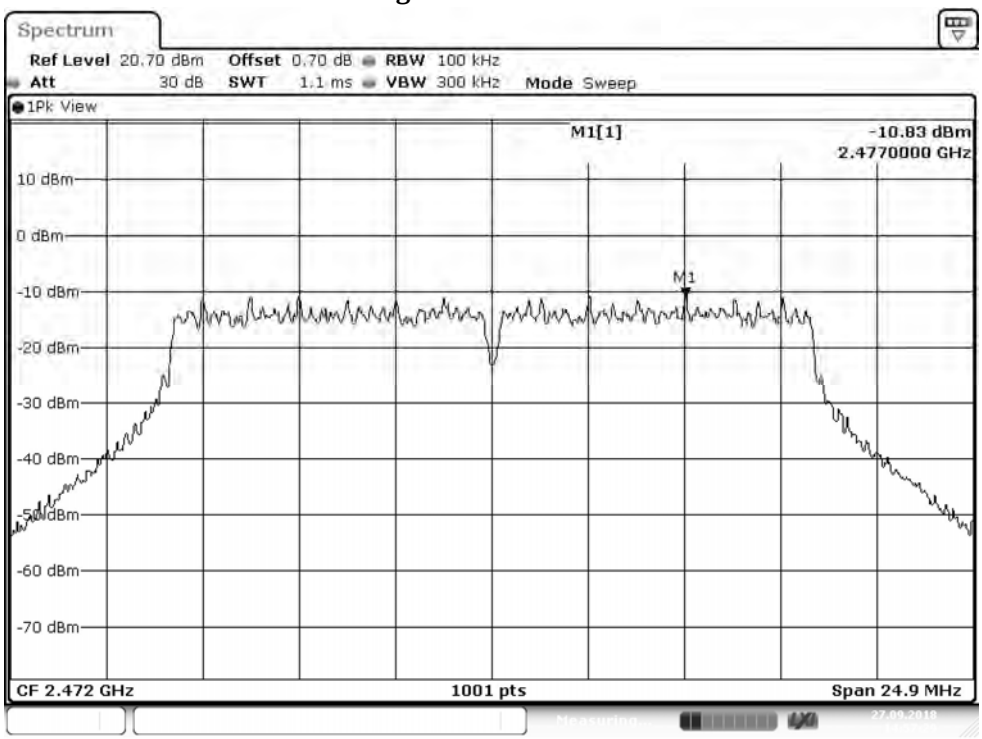


Figure Channel 13:



待測物名稱：Intel® Wi-Fi 6 AX201
待測物型號：AX201D2W
測試頻道：- -
量測天線：- -
檢測器：峰值
測試日期：107 年 09 月 27 日
測試項目：功率密度
測試模式：Mode 2: SISO B: 發射器 802.11n (20MHz)
測試距離：Conducted
環境溫度：20 ℃
環境濕度：50 %

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	4.870	≦8dBm	Pass
07	2442	6.650	≦8dBm	Pass
11	2462	6.120	≦8dBm	Pass
12	2467	2.790	≦8dBm	Pass
13	2472	-11.010	≦8dBm	Pass

Figure Channel 01:

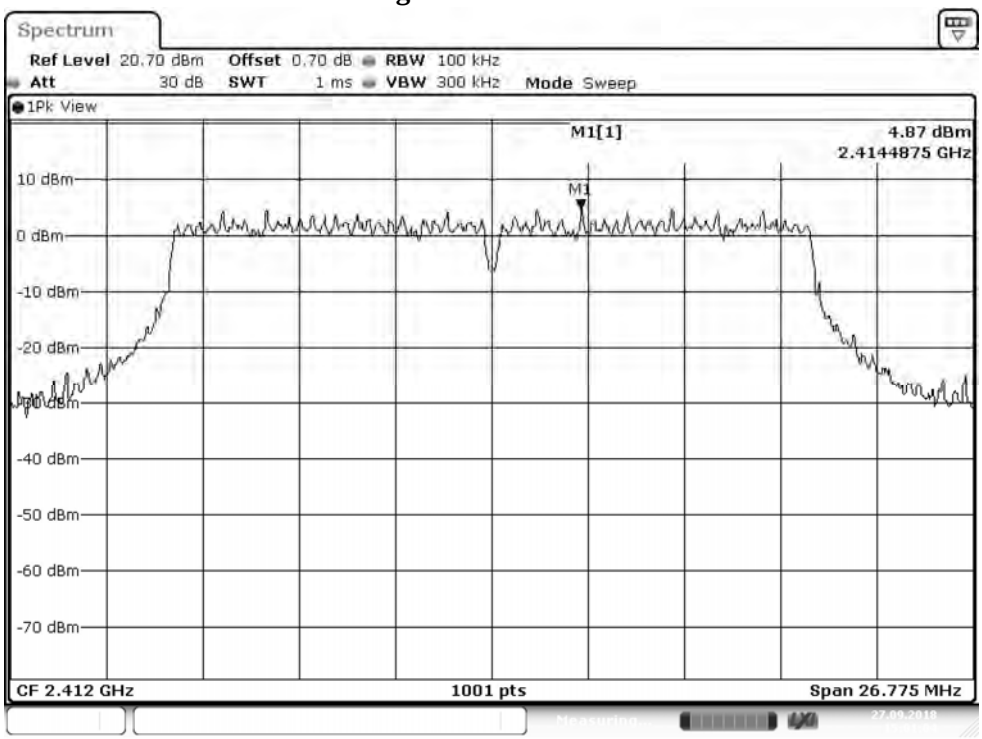


Figure Channel 07:

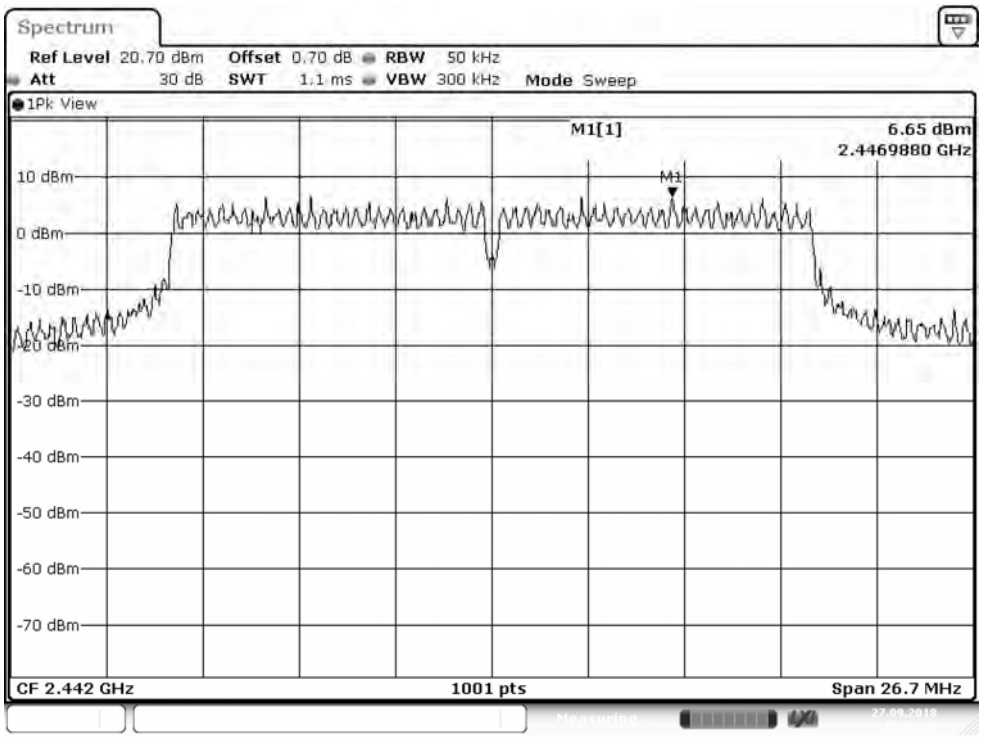


Figure Channel 11:

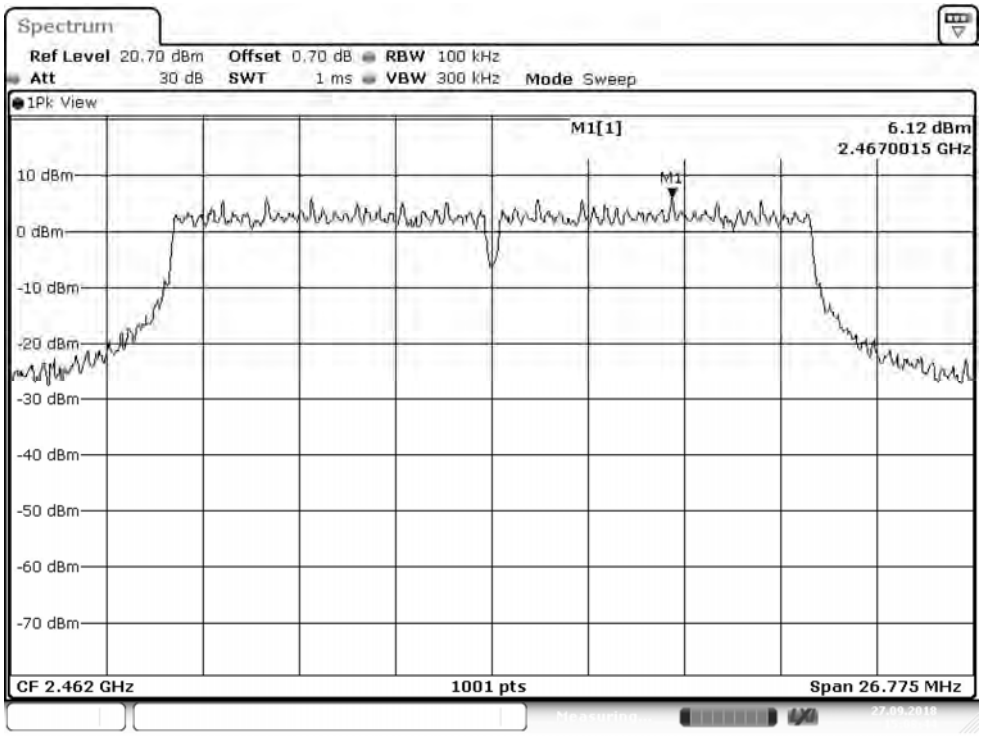


Figure Channel 12:

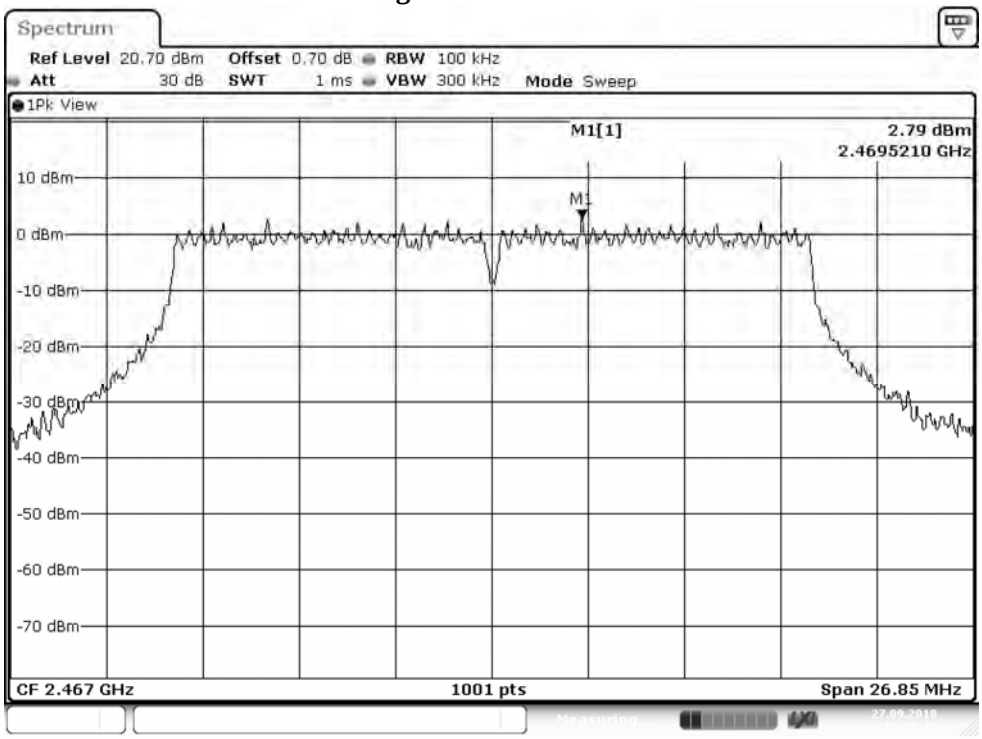
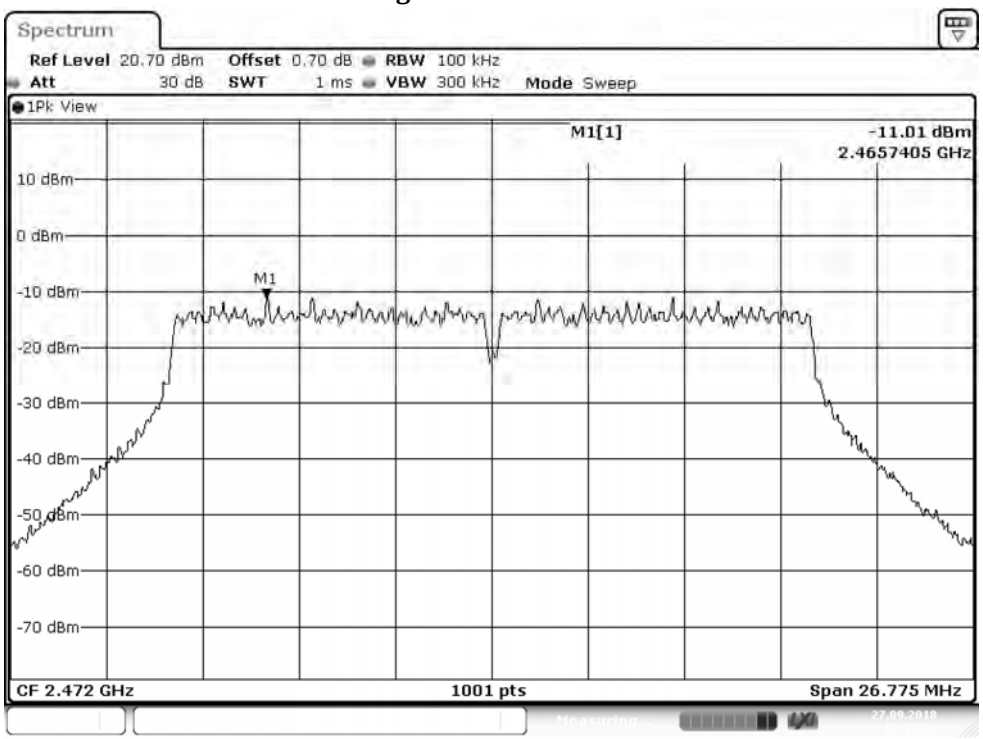


Figure Channel 13:



待測物名稱：Intel® Wi-Fi 6 AX201
待測物型號：AX201D2W　　測試項目：功率密度
測試頻道：- -　　測試模式：Mode 2: SISO B: 發射器 802.11n (40MHz)
量測天線：- -　　測試距離：Conducted
檢測器：峰值　　環境溫度：20 ℃
測試日期：107 年 09 月 27 日　　環境濕度：50 %

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
03	2422	1.680	≦8dBm	Pass
07	2442	2.650	≦8dBm	Pass
09	2452	1.110	≦8dBm	Pass
10	2457	-2.510	≦8dBm	Pass
11	2462	-10.040	≦8dBm	Pass

Figure Channel 03:

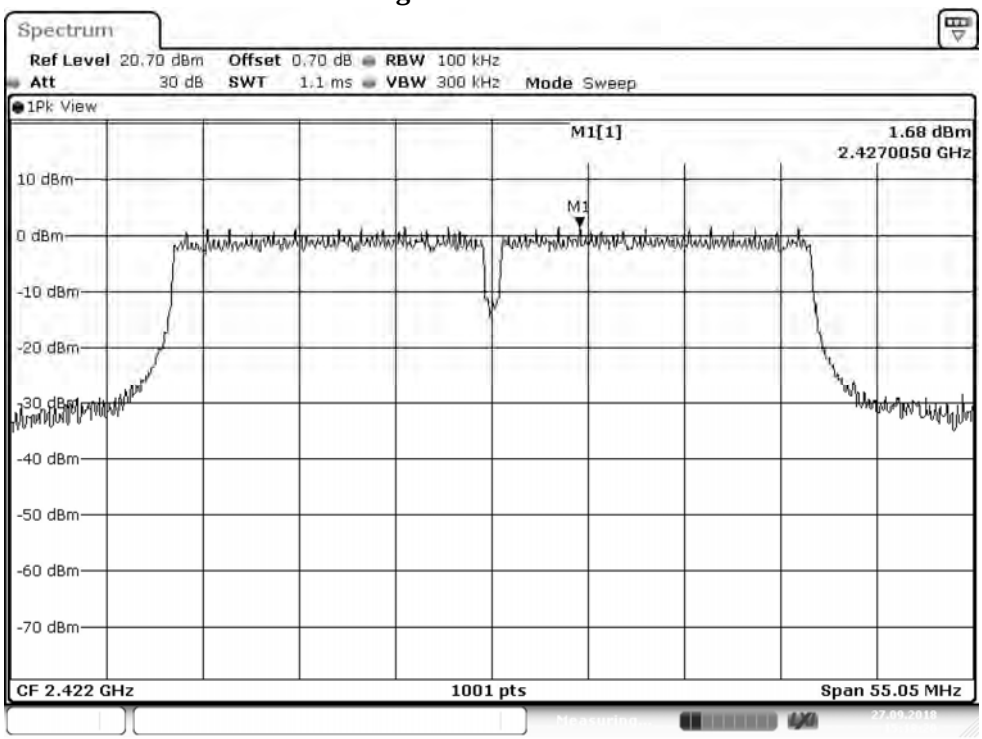


Figure Channel 07:

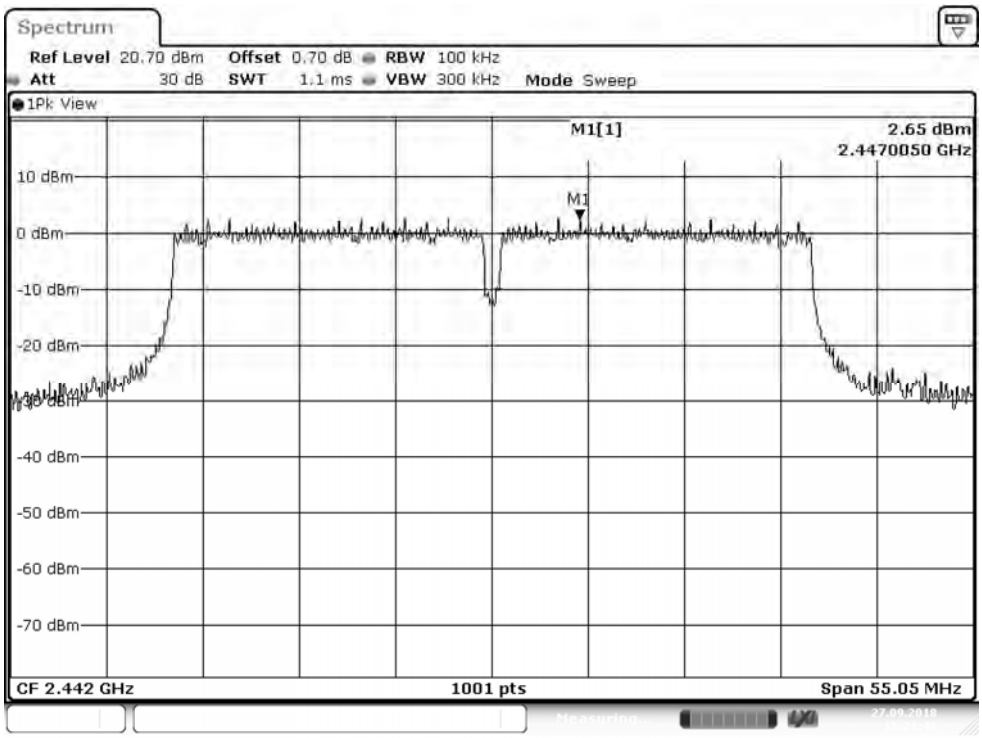


Figure Channel 09:

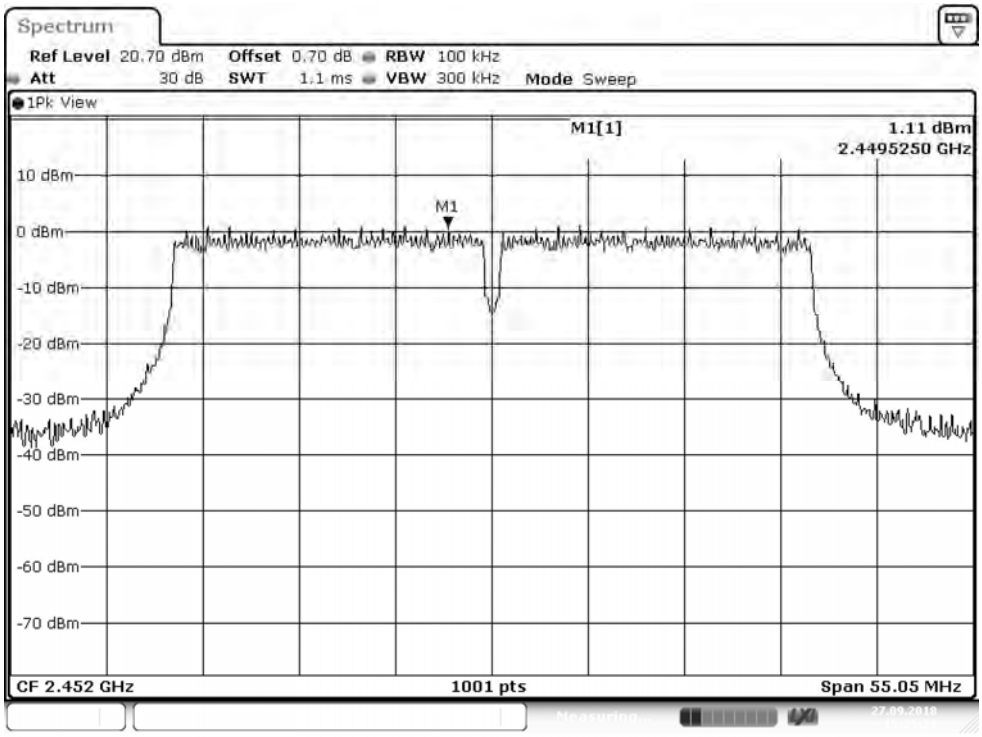


Figure Channel 10:

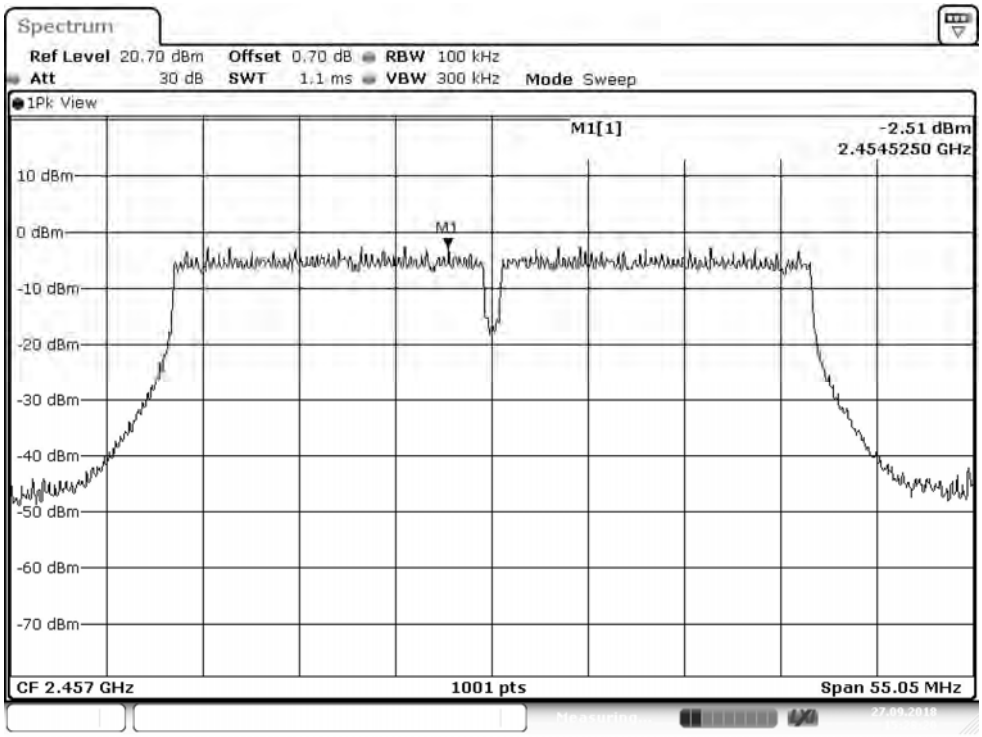
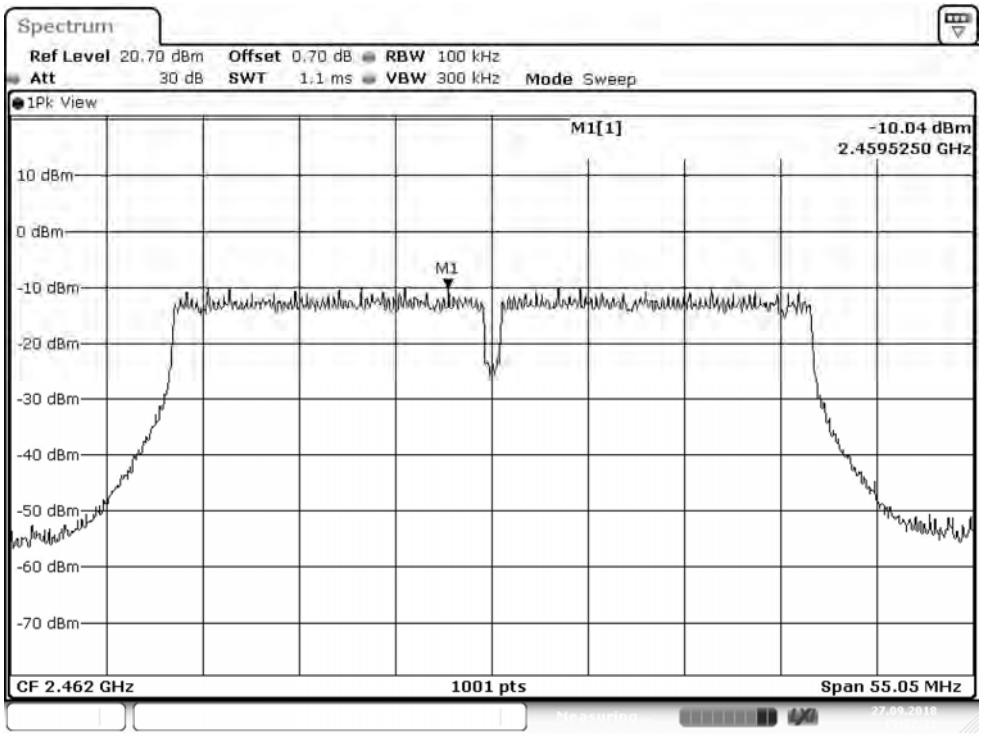


Figure Channel 11:



待測物名稱：Intel® Wi-Fi 6 AX201
待測物型號：AX201D2W　　測試項目：功率密度
測試頻道：- -　　測試模式：Mode 3: MIMO: 發射器 802.11n (20MHz)
量測天線：- -　　測試距離：Conducted
檢測器：峰值　　環境溫度：20 ℃
測試日期：107 年 09 月 27 日　　環境濕度：50 %

Channel No.	Frequency (MHz)	Chain	PPSD/MHz (dBm)	10*log(2) (dB)	Measure Level (dBm)	Limit (dBm)	Result
01	2412.000	A	1.810	3.010	4.820	≦8dBm	Pass
		B	1.630	3.010	4.640	≦8dBm	Pass
07	2442.000	A	3.080	3.010	6.090	≦8dBm	Pass
		B	2.970	3.010	5.980	≦8dBm	Pass
11	2462.000	A	2.990	3.010	6.000	≦8dBm	Pass
		B	2.820	3.010	5.830	≦8dBm	Pass
12	2467.00	A	-0.040	3.010	2.970	≦8dBm	Pass
		B	-0.040	3.010	2.970	≦8dBm	Pass
13	2472.00	A	-13.580	3.010	-10.570	≦8dBm	Pass
		B	-13.210	3.010	-10.200	≦8dBm	Pass

Note:
The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.

Figure Channel 01: (Chain A)

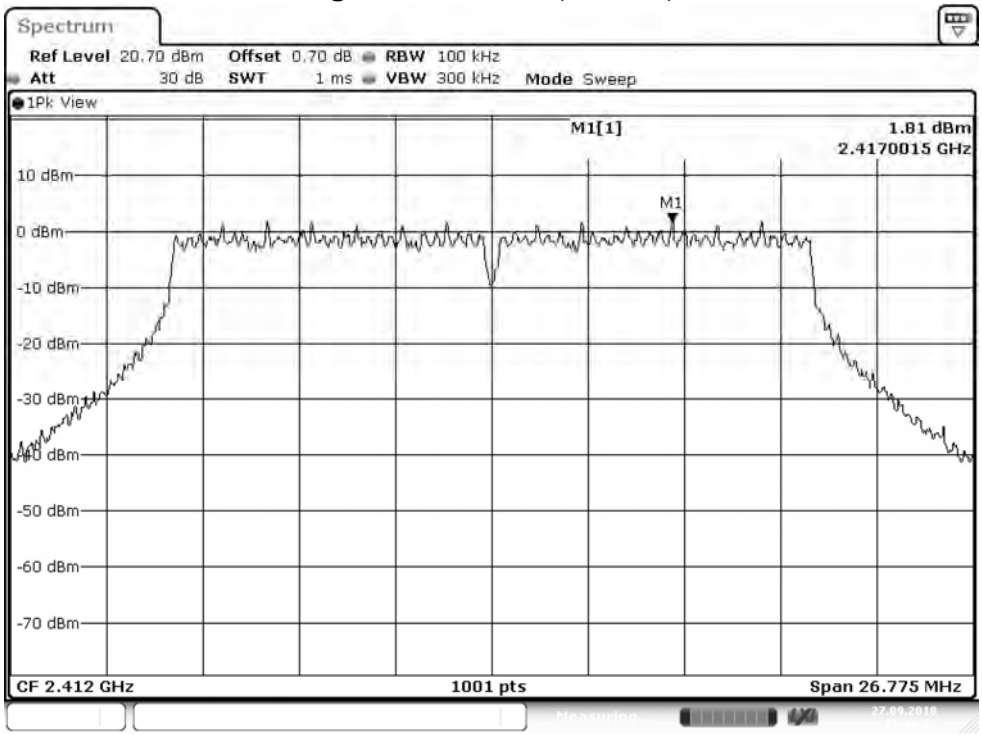
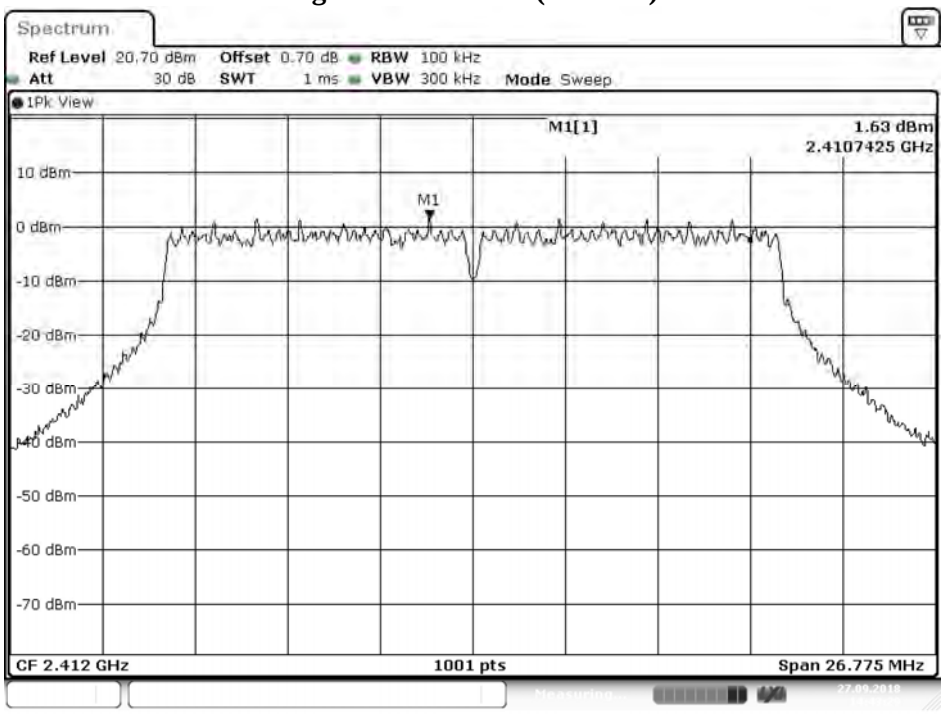


Figure Channel 01: (Chain B)



Date: 27.SEP.2018 14:43:30

Figure Channel 07: (Chain A)

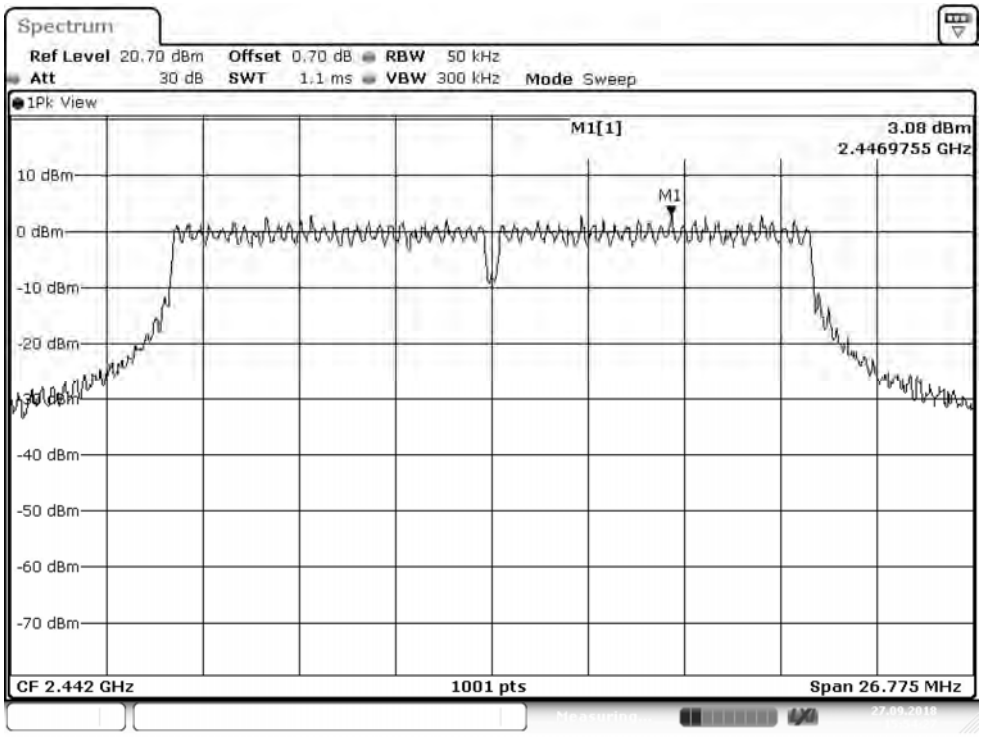
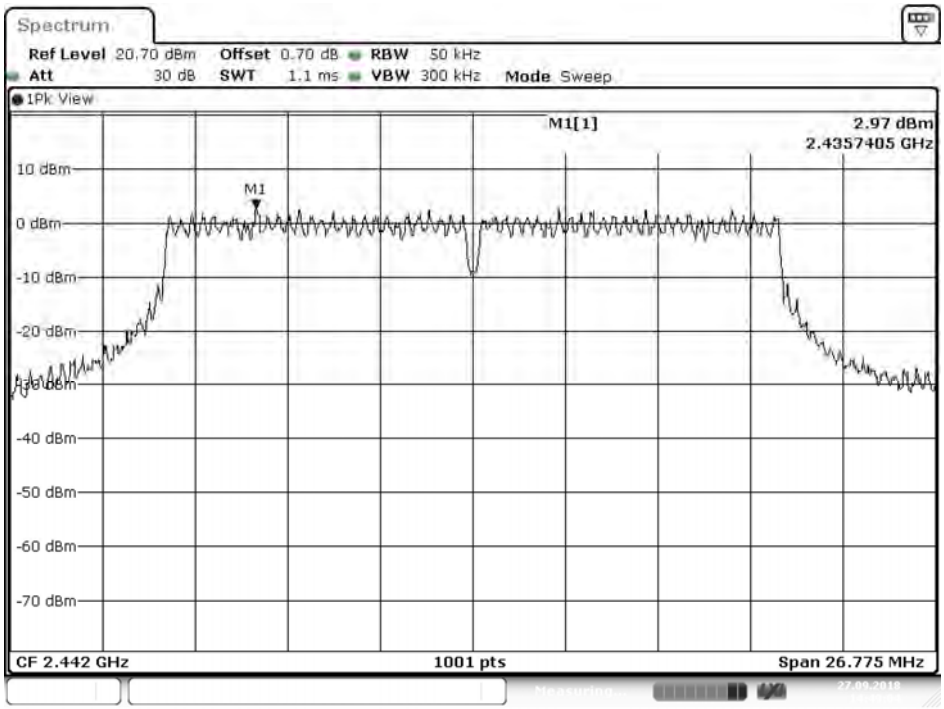


Figure Channel 07: (Chain B)



Date: 27.SEP.2018 14:49:04

Figure Channel 11: (Chain A)

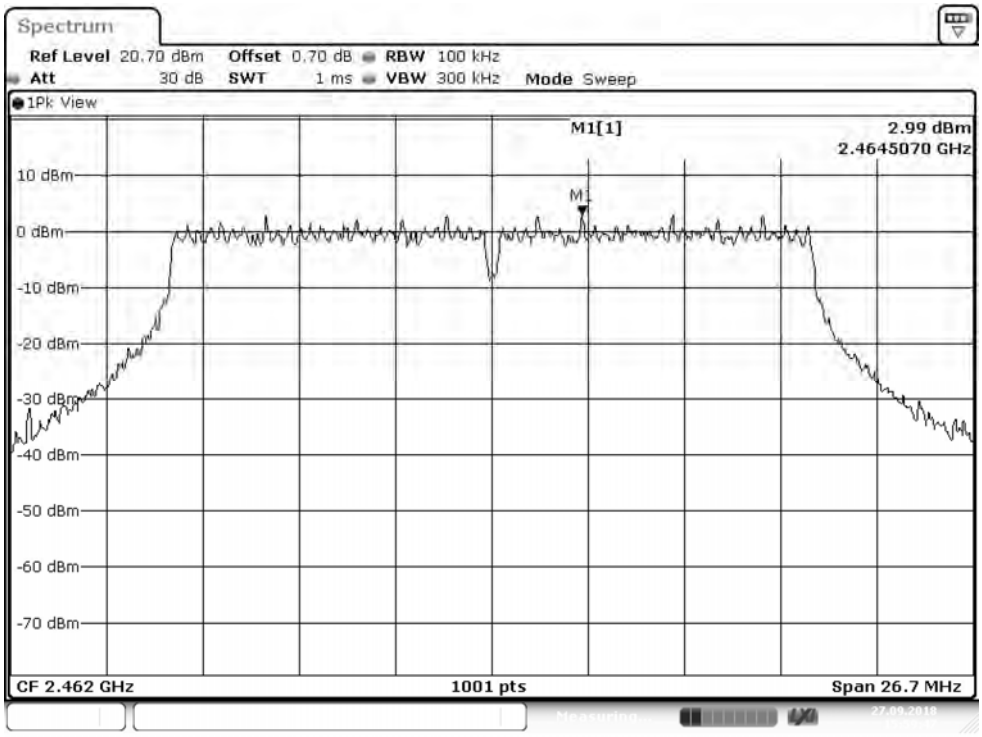
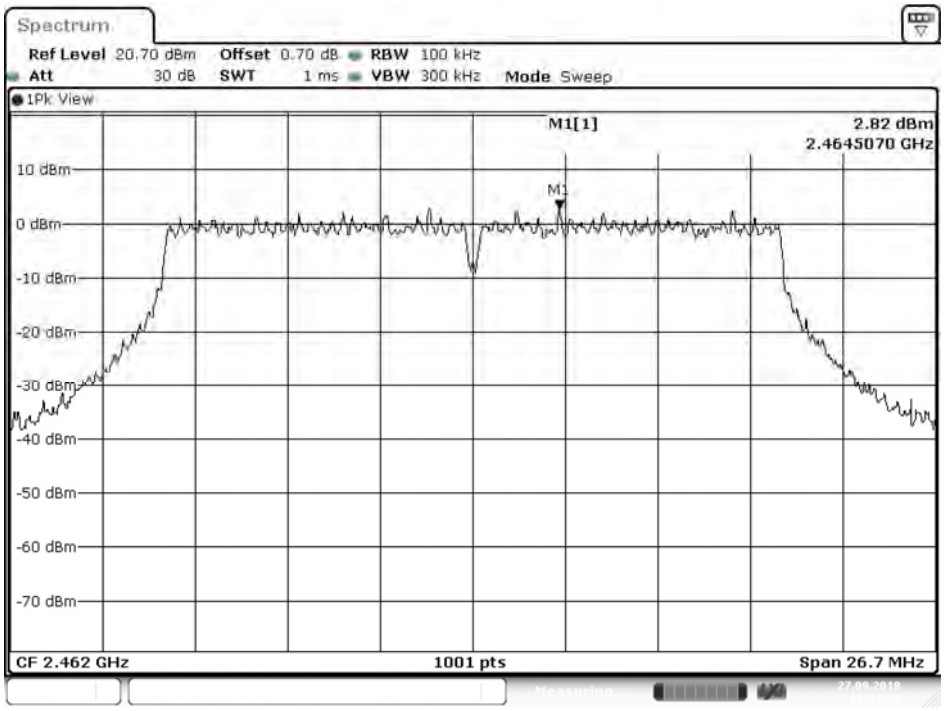


Figure Channel 11: (Chain B)



Date: 27.SEP.2018 14:54:25

Figure Channel 12: (Chain A)

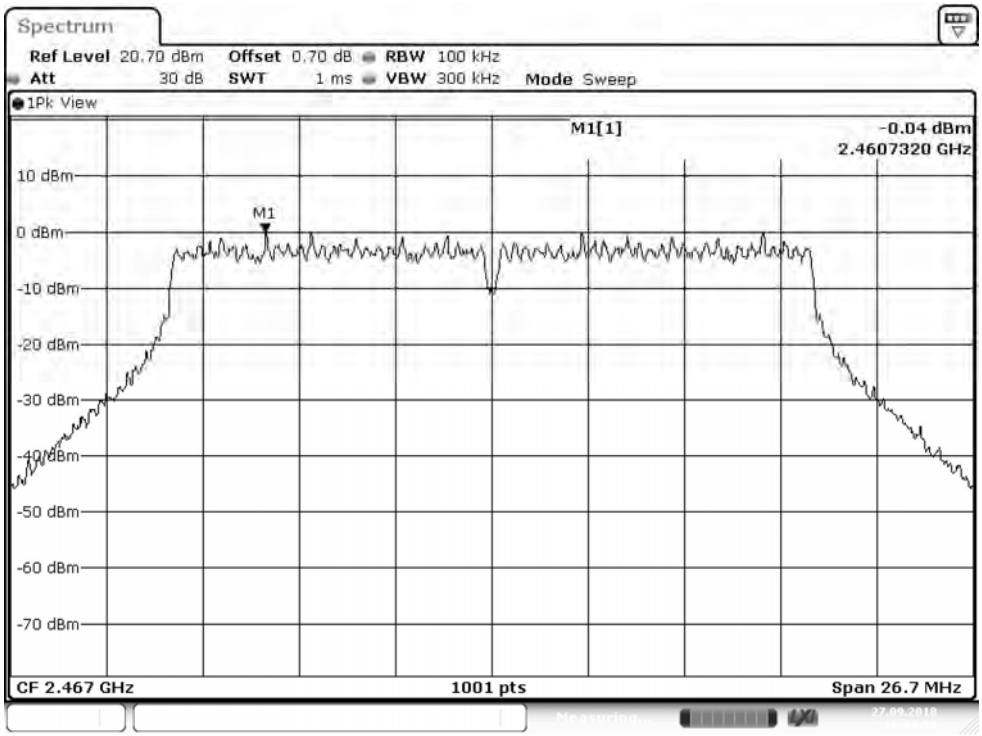
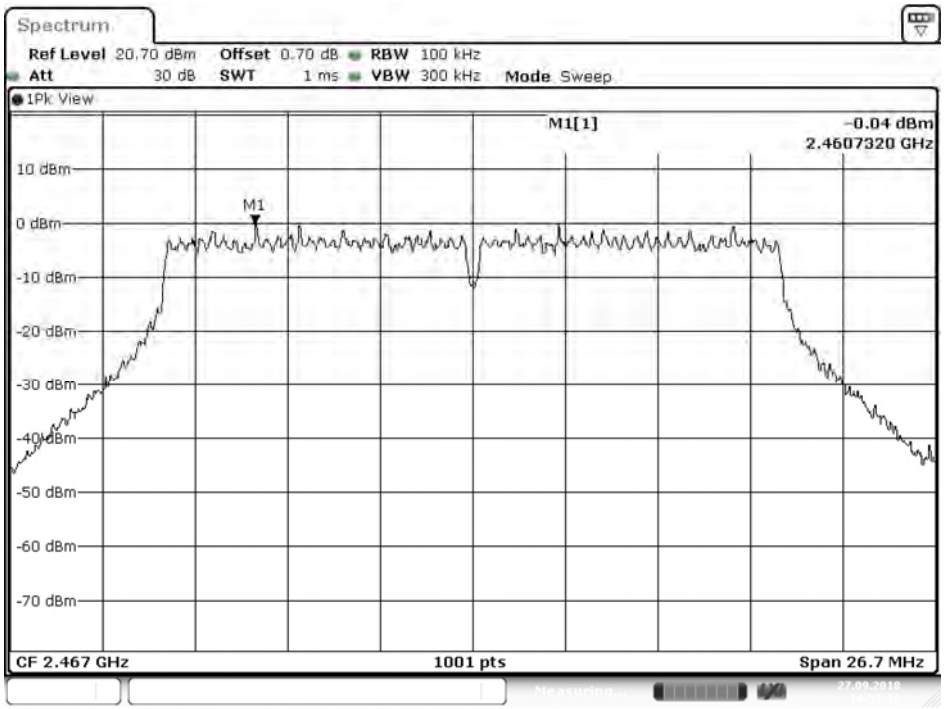


Figure Channel 12: (Chain B)



Date: 27.SEP.2018 14:59:31

Figure Channel 13: (Chain A)

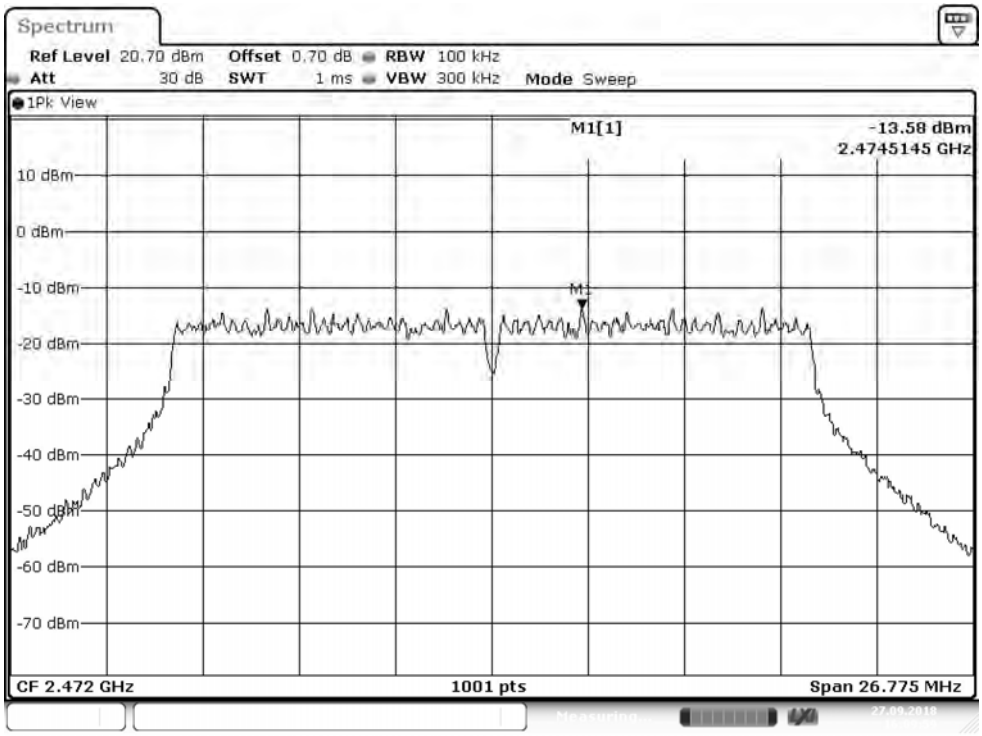
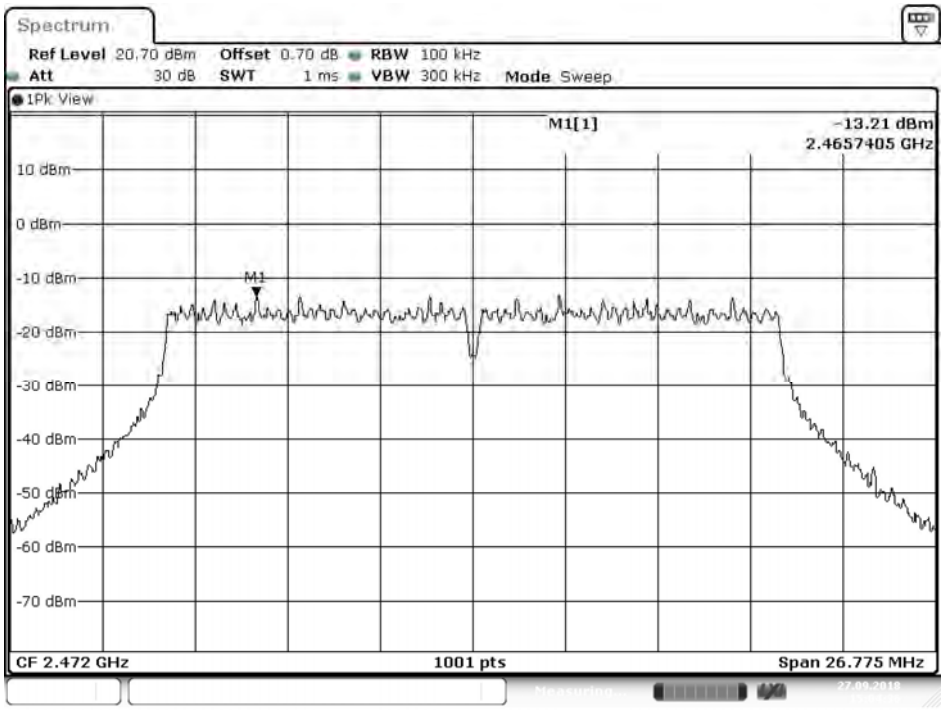


Figure Channel 13: (Chain B)



Date: 27.SEP.2018 15:04:36

待測物名稱：Intel® Wi-Fi 6 AX201
待測物型號：AX201D2W　　測試項目：功率密度
測試頻道：- -　　測試模式：Mode 3: MIMO: 發射器 802.11n (40MHz)
量測天線：- -　　測試距離：Conducted
檢測器：峰值　　環境溫度：20 ℃
測試日期：107 年 09 月 27 日　　環境濕度：50 %

Channel No.	Frequency (MHz)	Chain	PPSD/MHz (dBm)	10*log(2) (dB)	Measure Level (dBm)	Limit (dBm)	Result
03	2422.000	A	-1.350	3.010	1.660	≦8dBm	Pass
		B	-1.450	3.010	1.560	≦8dBm	Pass
07	2442.000	A	-0.230	3.010	2.780	≦8dBm	Pass
		B	-0.280	3.010	2.730	≦8dBm	Pass
09	2452.000	A	-1.830	3.010	1.180	≦8dBm	Pass
		B	-1.830	3.010	1.180	≦8dBm	Pass
10	2457.00	A	-5.240	3.010	-2.230	≦8dBm	Pass
		B	-5.390	3.010	-2.380	≦8dBm	Pass
11	2462.00	A	-12.520	3.010	-9.510	≦8dBm	Pass
		B	-12.770	3.010	-9.760	≦8dBm	Pass

Note:
The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.

Figure Channel 03: (Chain A)

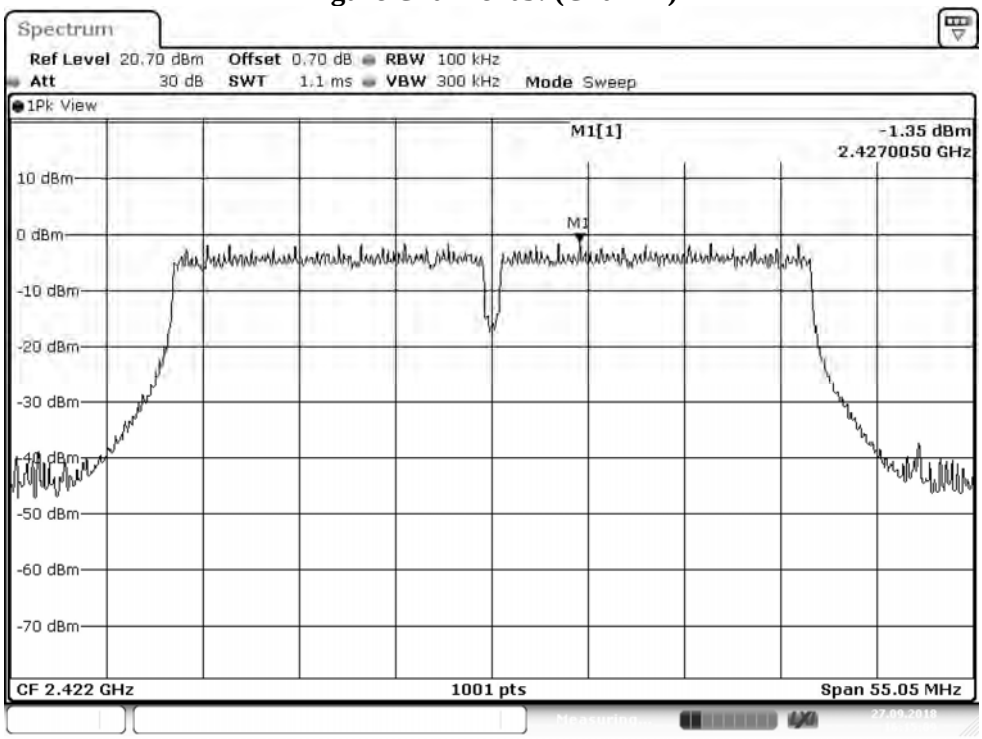
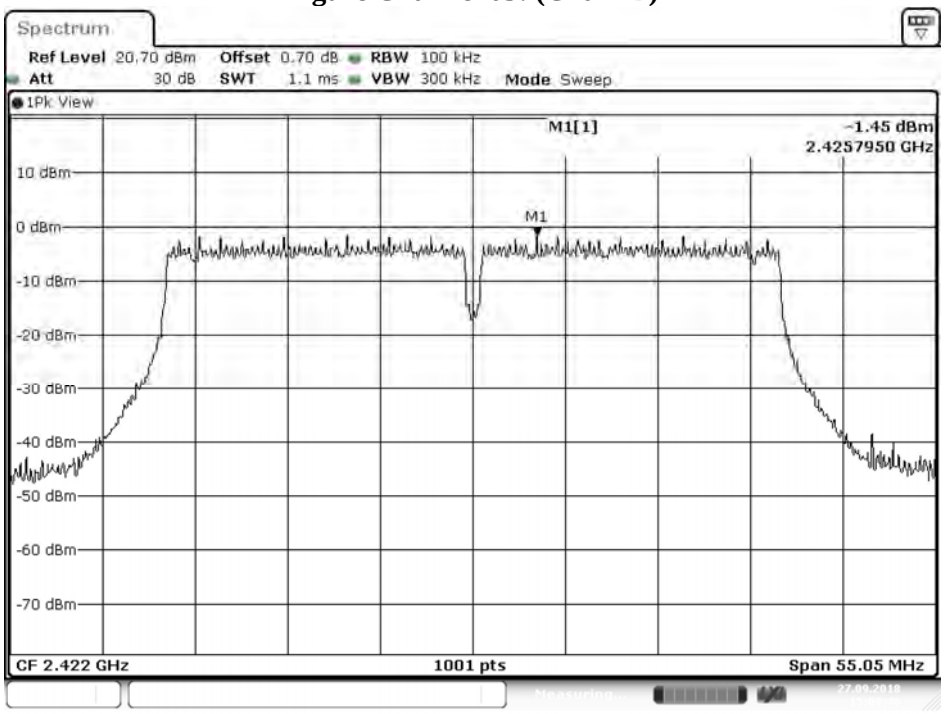


Figure Channel 03: (Chain B)



Date: 27.SEP.2018 15:09:46

Figure Channel 07: (Chain A)

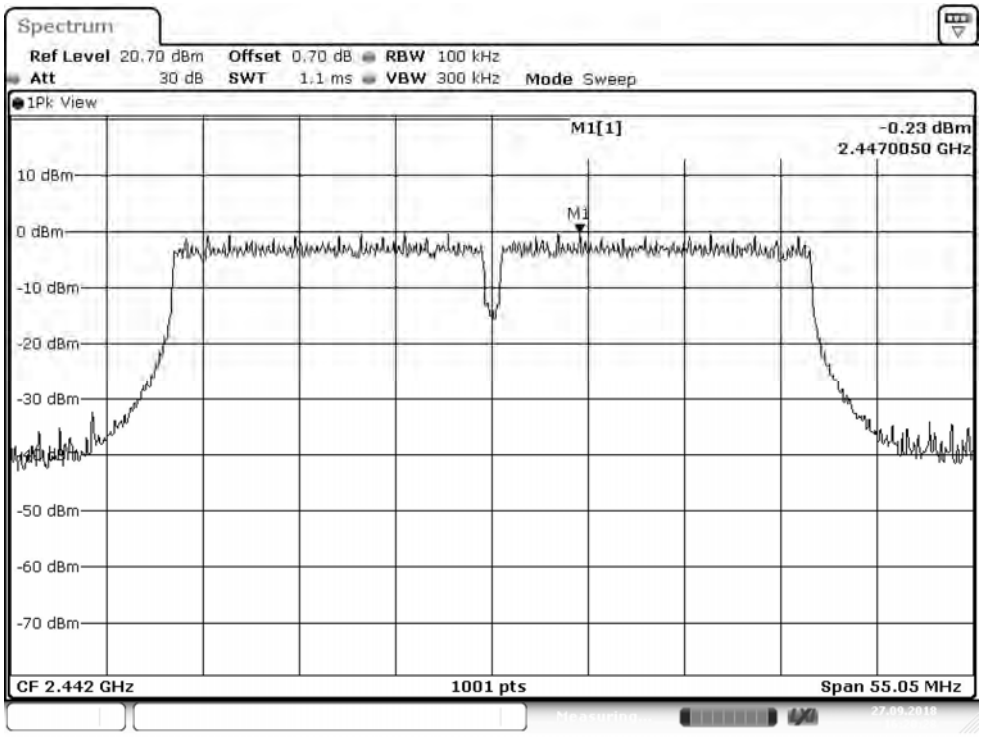
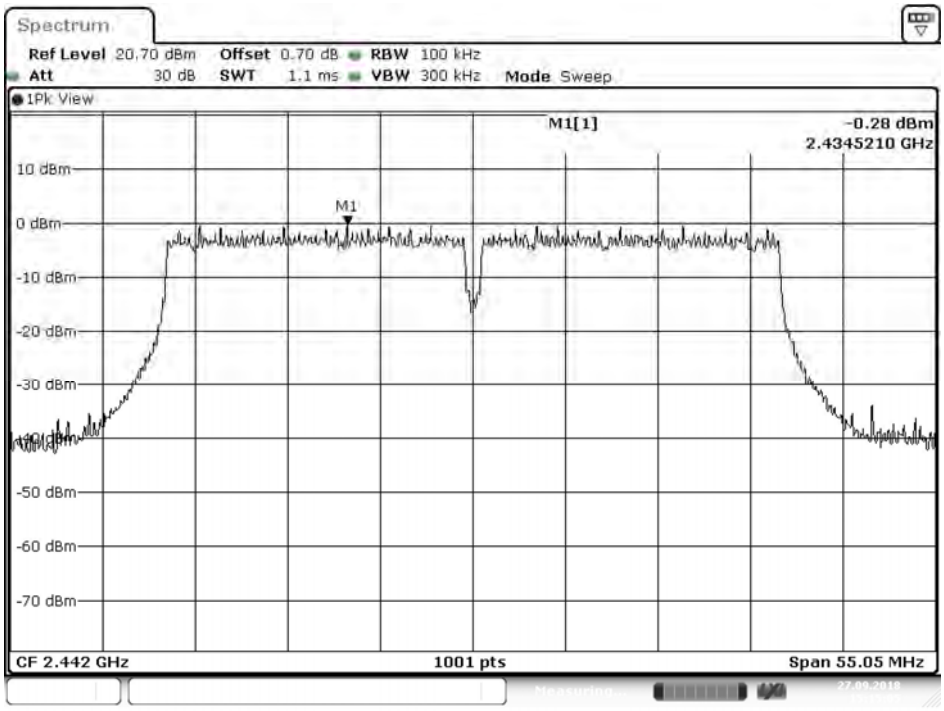


Figure Channel 07: (Chain B)



Date: 27.SEP.2018 15:15:06

Figure Channel 09: (Chain A)

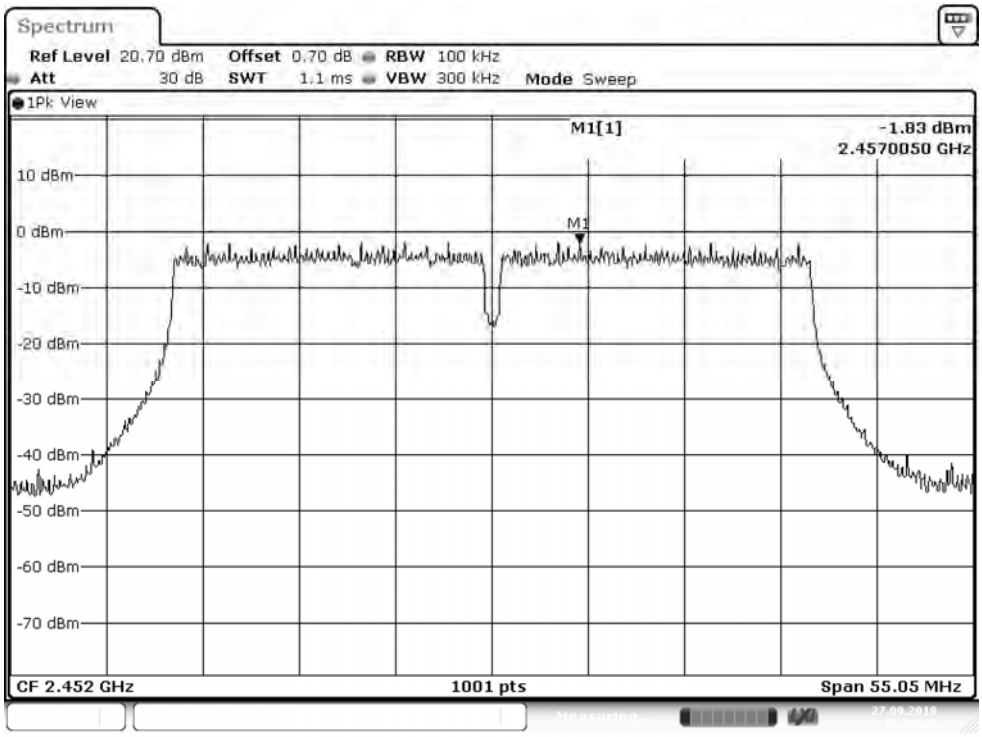
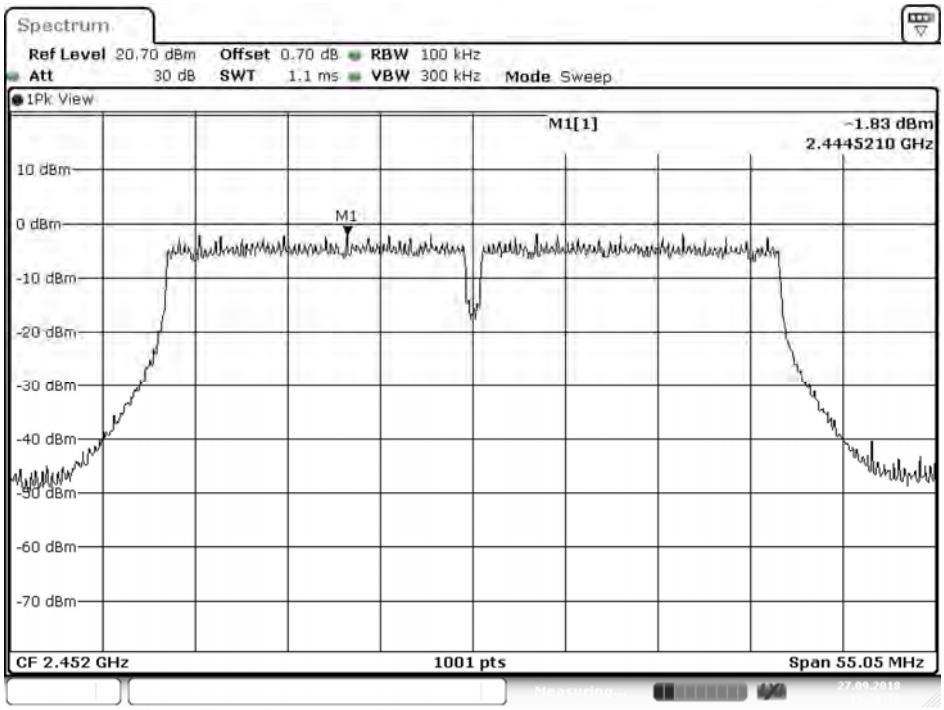


Figure Channel 09: (Chain B)



Date: 27.SEP.2018 15:20:10

Figure Channel 10: (Chain A)

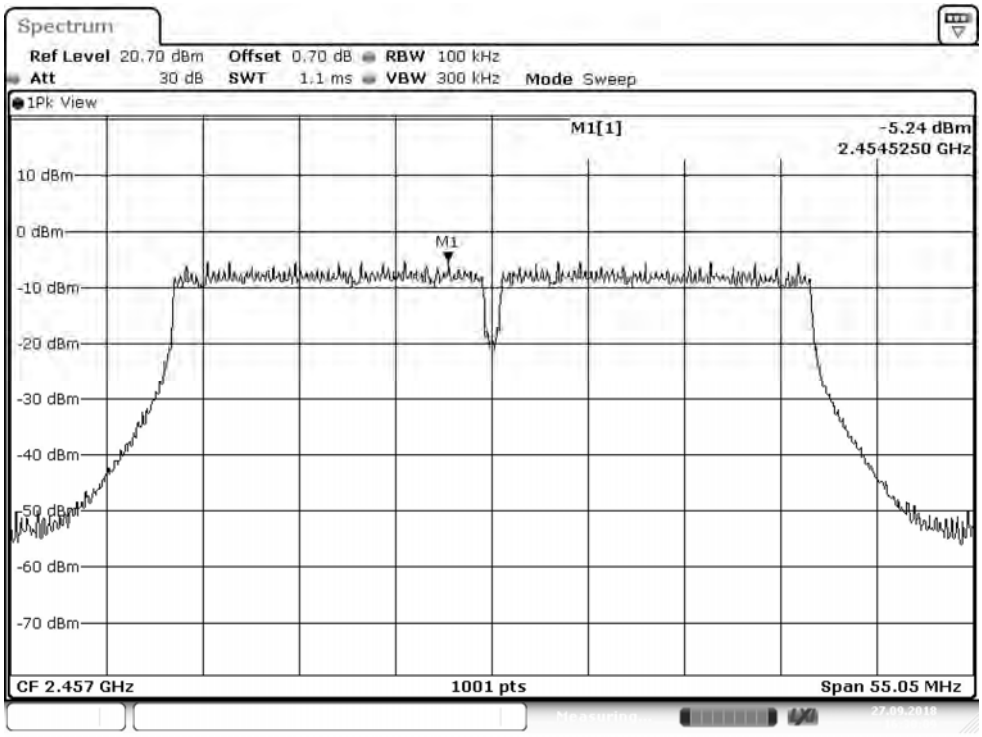
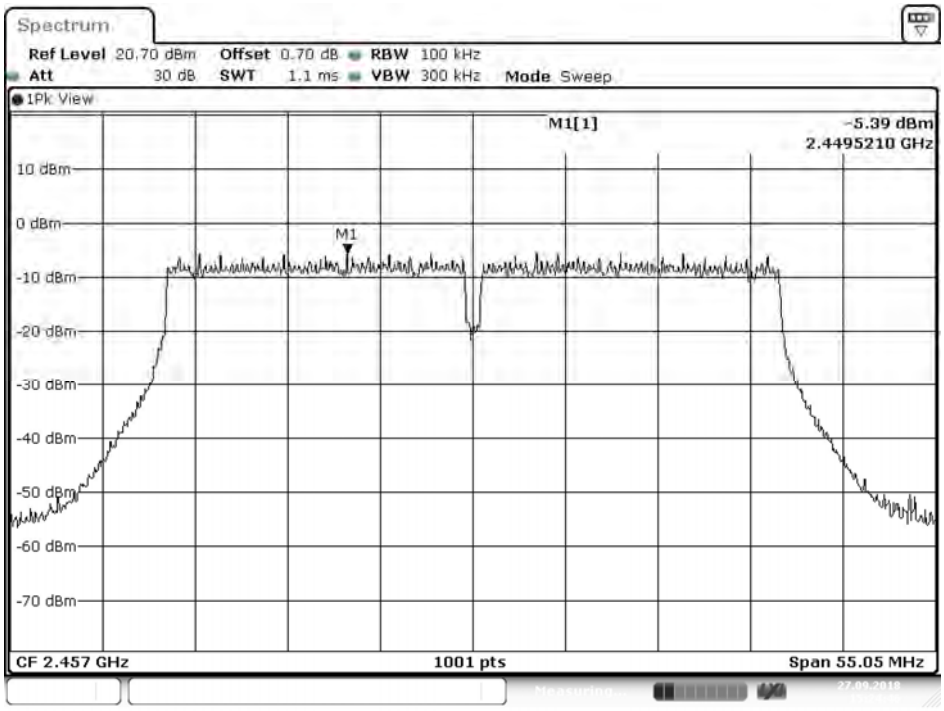


Figure Channel 10: (Chain B)



Date: 27.SEP.2018 15:24:47

Figure Channel 11: (Chain A)

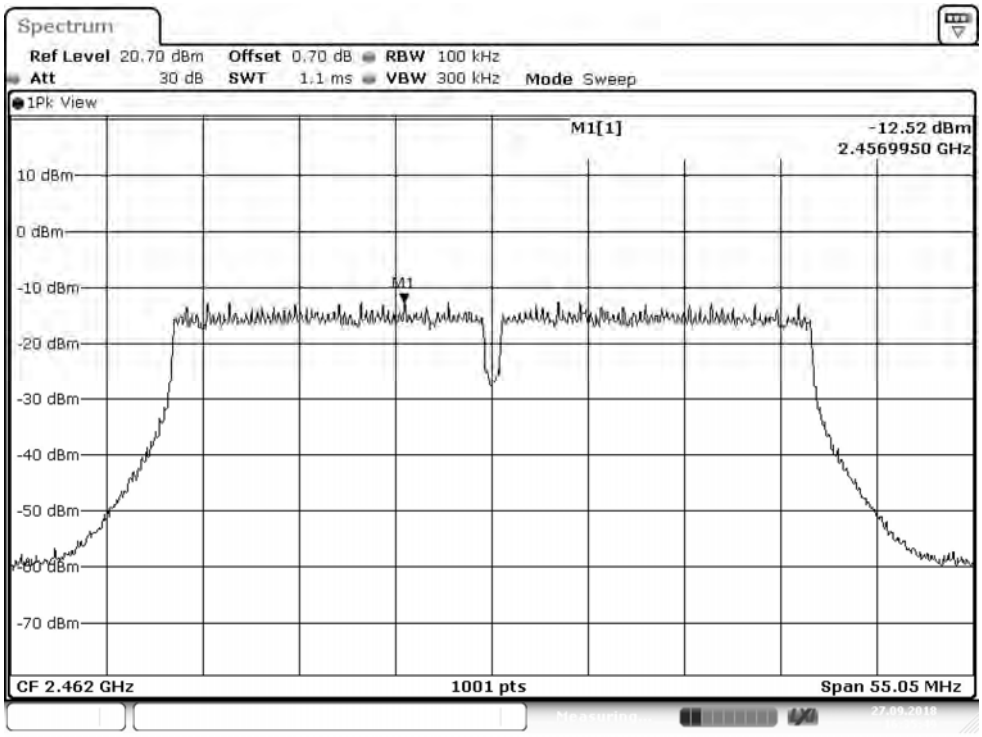
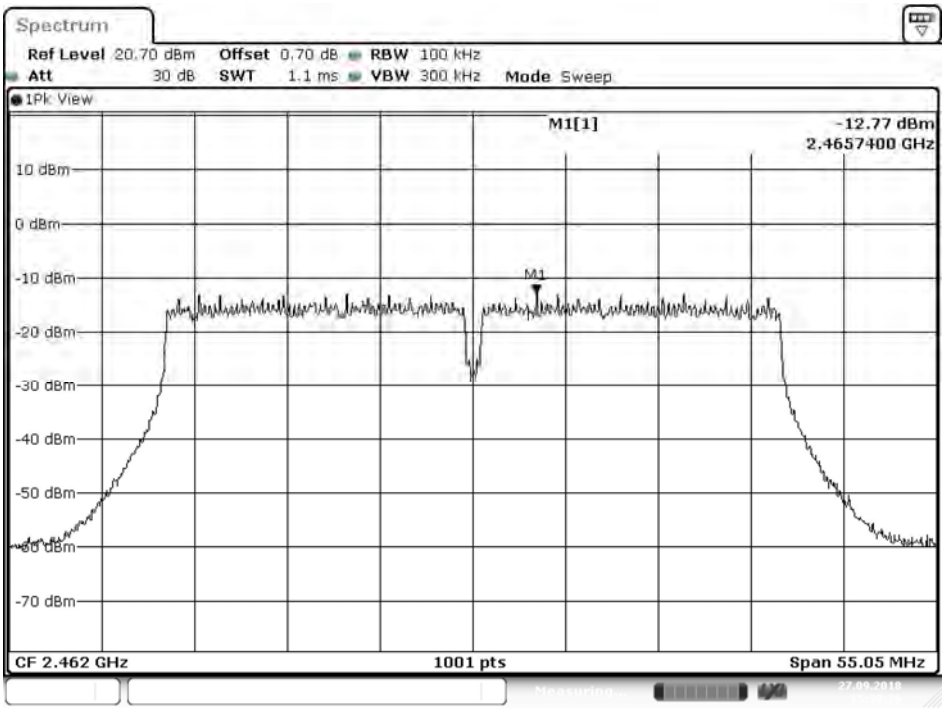


Figure Channel 11: (Chain B)



Date: 27.SEP.2018 15:30:27

待測物名稱：Intel® Wi-Fi 6 AX201
待測物型號：AX201D2W　　測 試 項 目 ：功率密度
測 試 頻 道 ：- -　　測 試 模 式 ：Mode 1: SISO A: 發射器 802.11ax (20MHz)
量 測 天 線 ：- -　　測 試 距 離 ：Conducted
檢 測 器 ：峰值　　環 境 溫 度 ：20 ℃
測 試 日 期 ：107 年 09 月 27 日　　環 境 濕 度 ：50 %

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	4.700	≦8dBm	Pass
07	2442	6.140	≦8dBm	Pass
11	2462	5.650	≦8dBm	Pass
12	2467	2.590	≦8dBm	Pass
13	2472	-11.200	≦8dBm	Pass

Figure Channel 01:

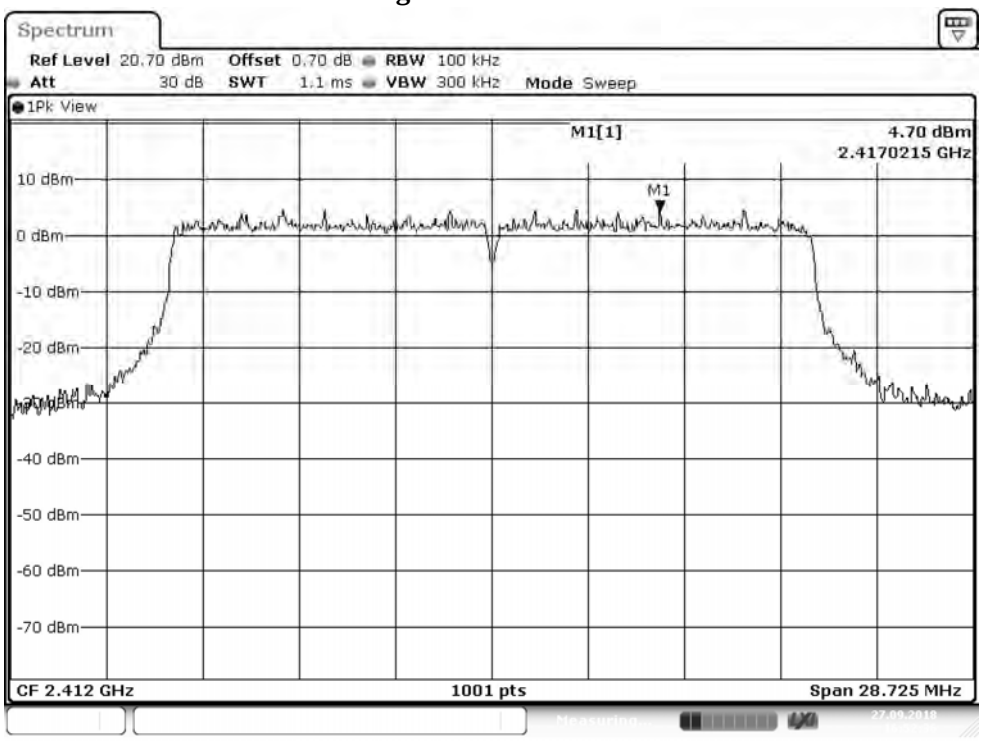


Figure Channel 07:

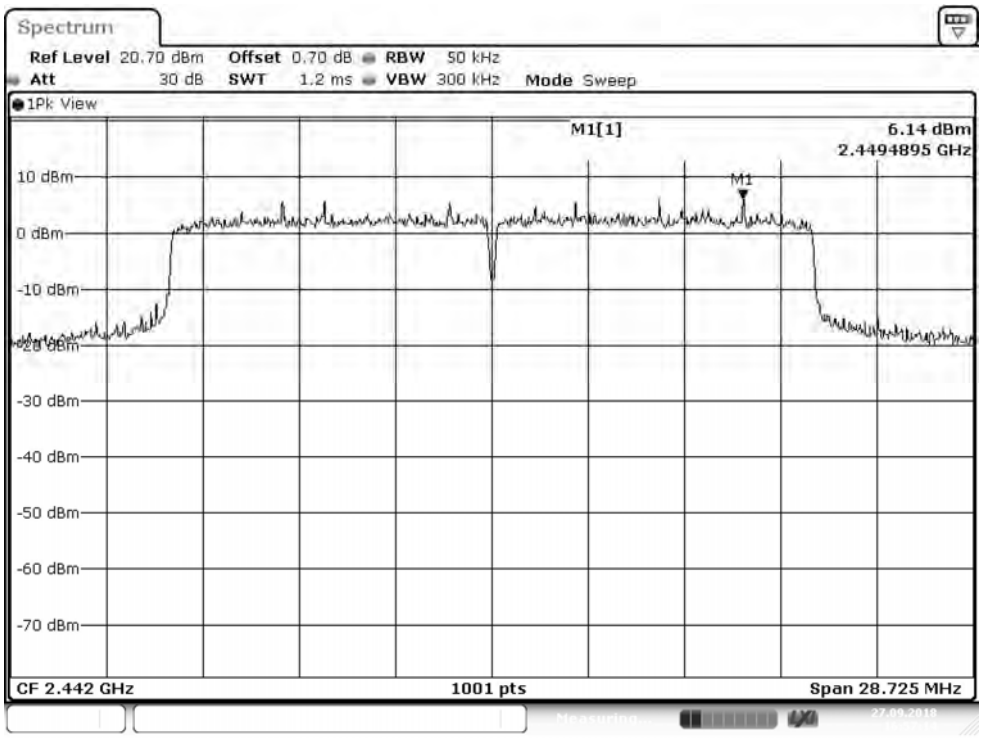


Figure Channel 11:

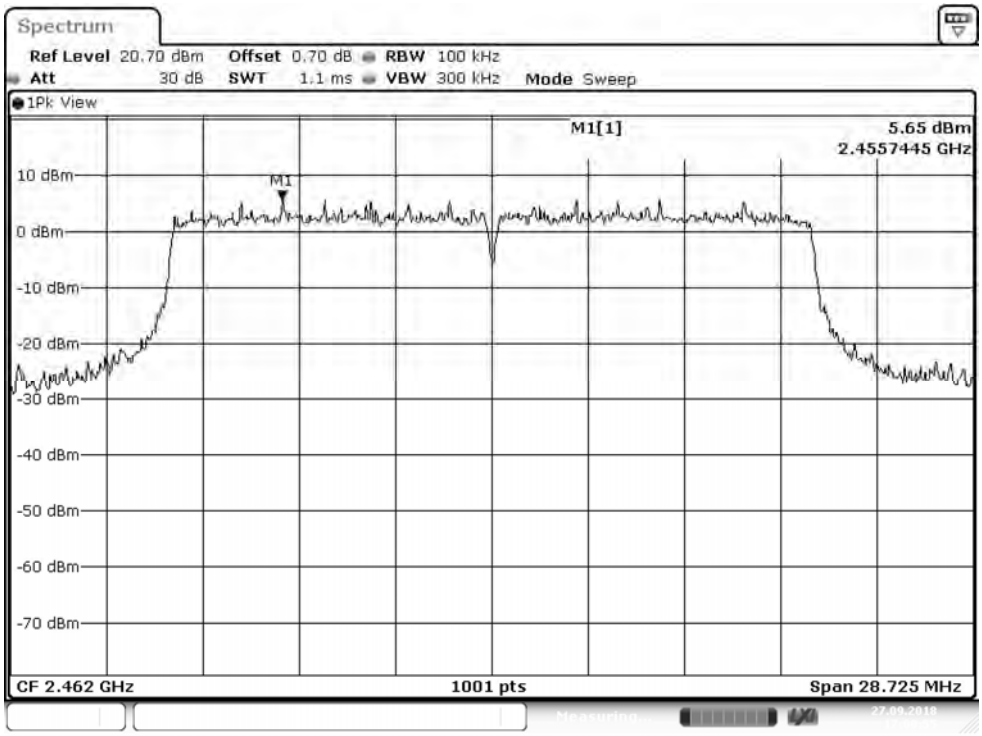


Figure Channel 12:

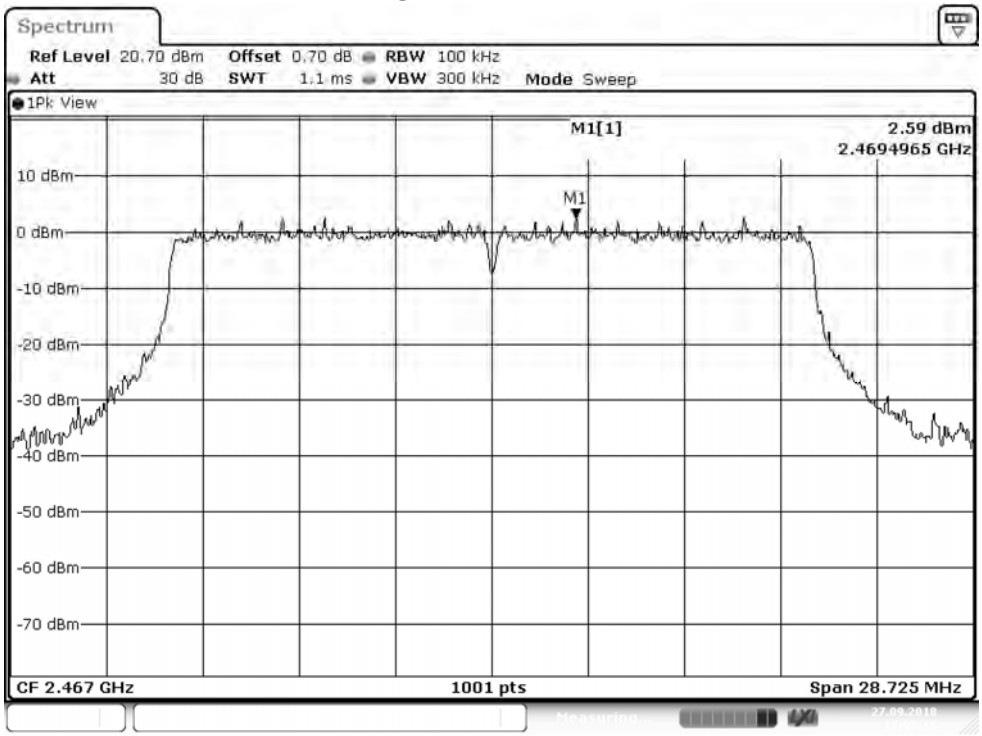
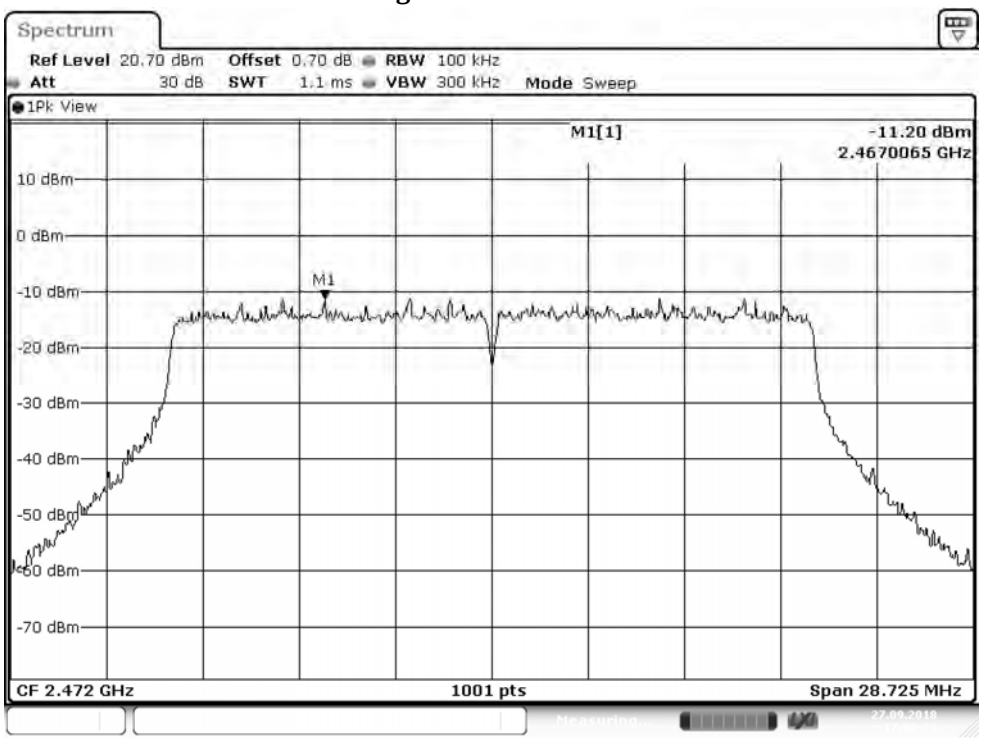


Figure Channel 13:



待測物名稱：Intel® Wi-Fi 6 AX201
待測物型號：AX201D2W　　測試項目：功率密度
測試頻道：- -　　測試模式：Mode 1: SISO A: 發射器 802.11ax (40MHz)
量測天線：- -　　測試距離：Conducted
檢測器：峰值　　環境溫度：20 ℃
測試日期：107 年 09 月 27 日　　環境濕度：50 %

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
03	2422	1.470	≦8dBm	Pass
07	2442	2.450	≦8dBm	Pass
09	2452	1.950	≦8dBm	Pass
10	2457	-2.650	≦8dBm	Pass
11	2462	-10.140	≦8dBm	Pass

Figure Channel 03:

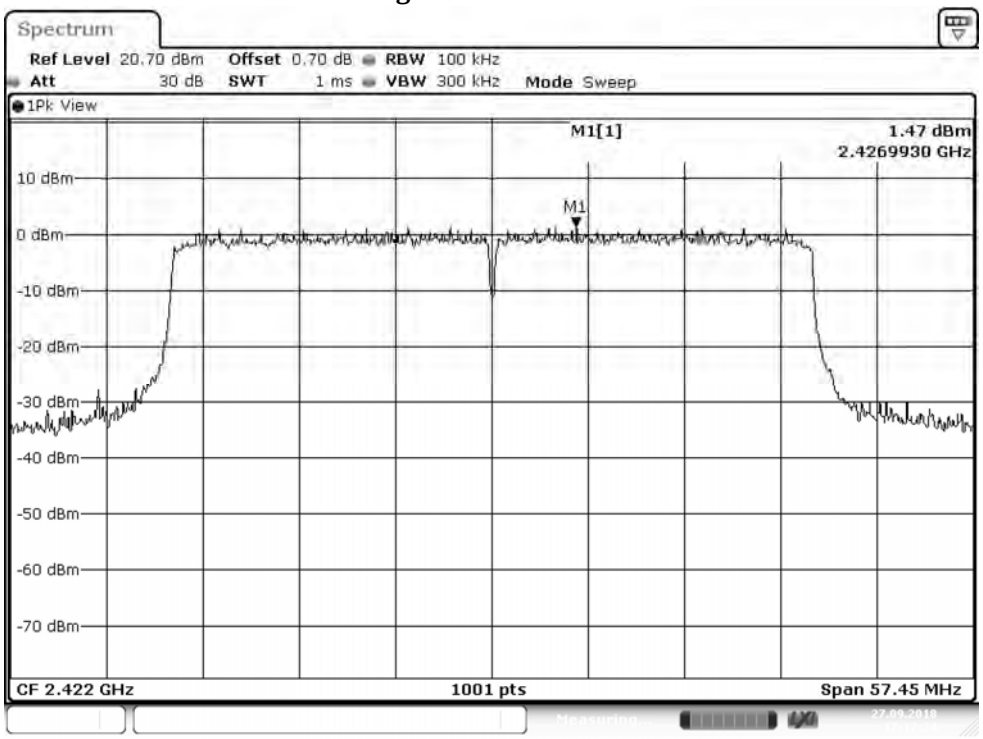


Figure Channel 07:

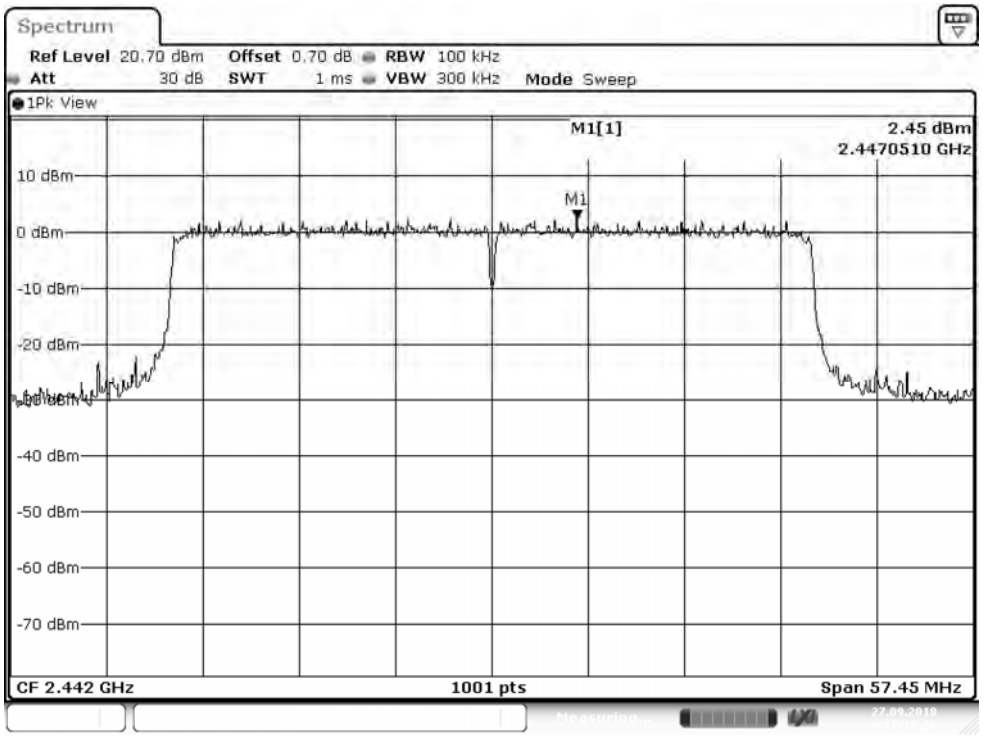


Figure Channel 09:

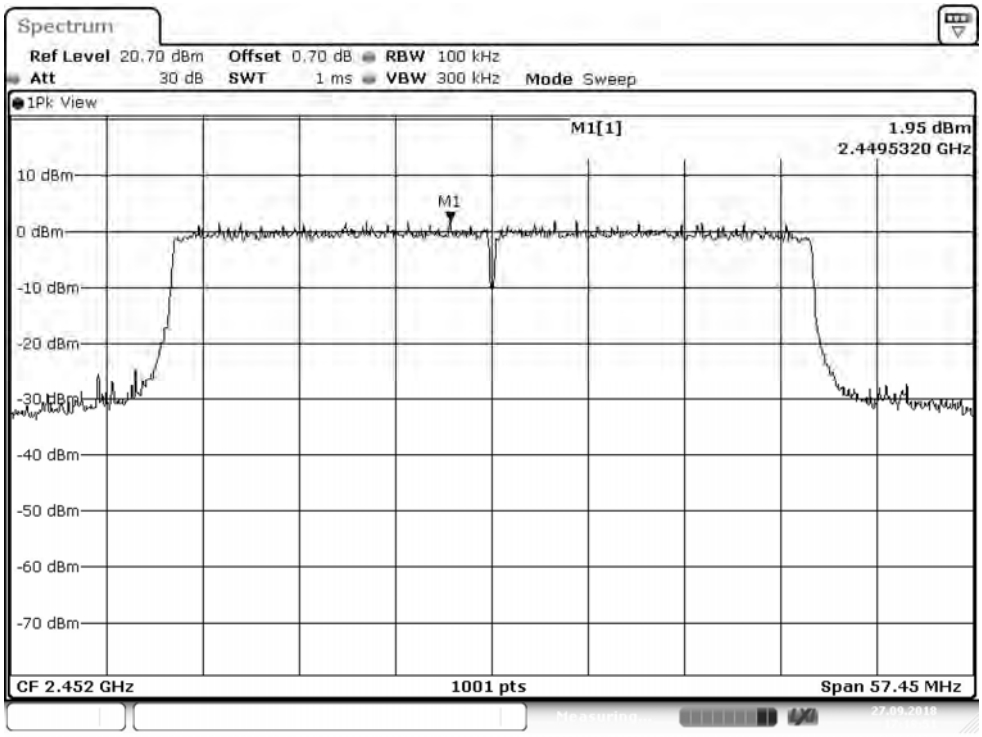


Figure Channel 10:

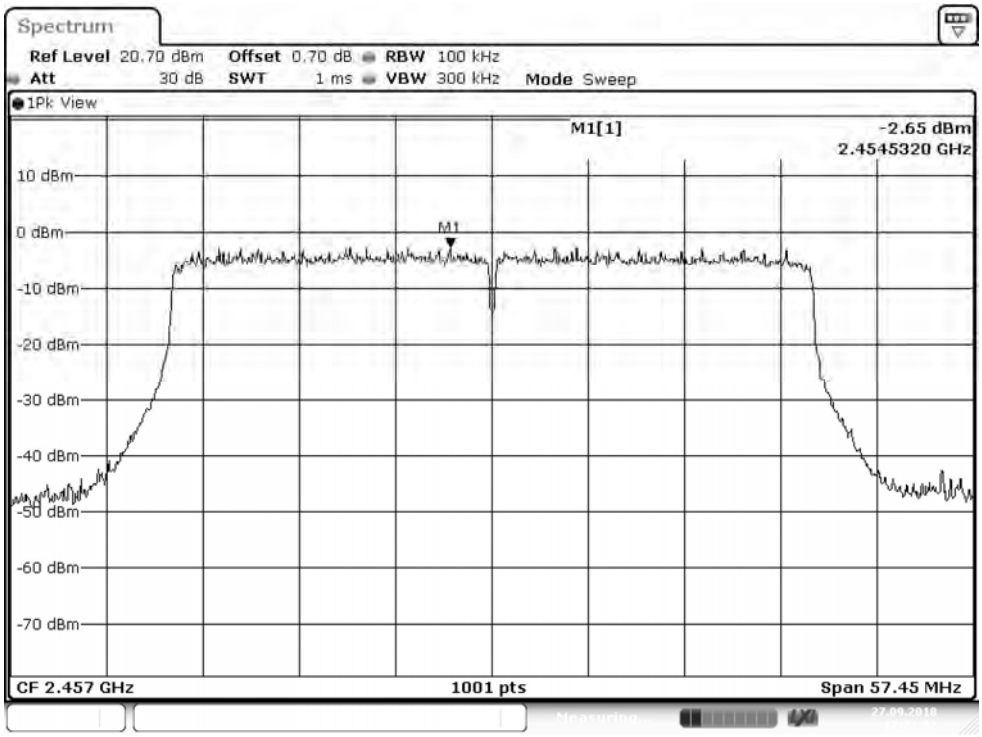
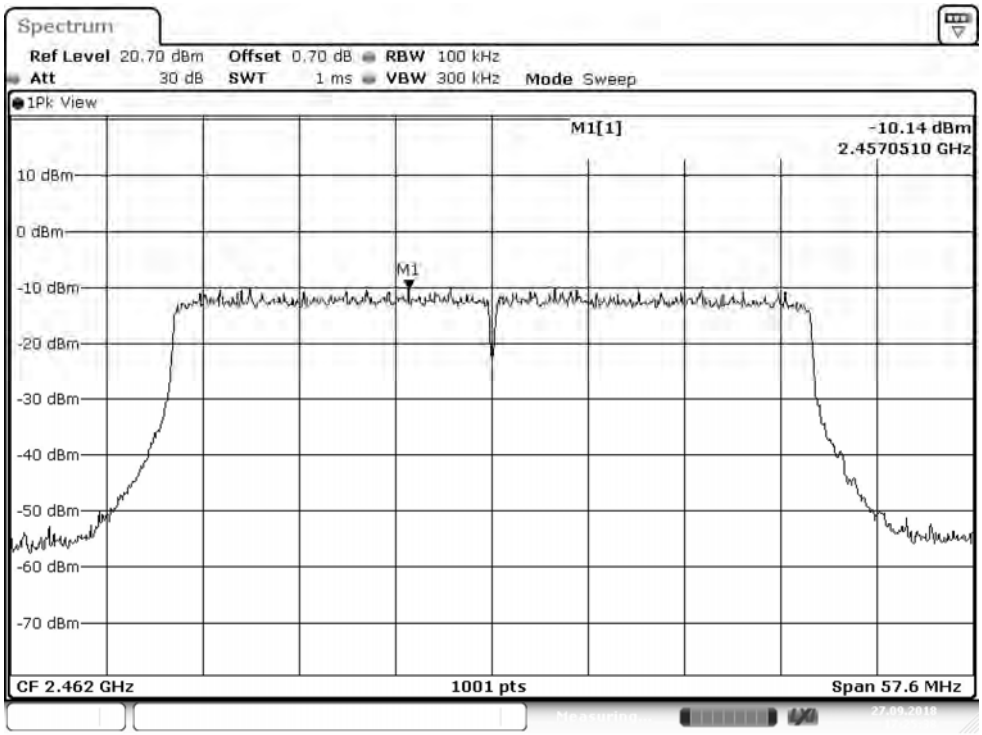


Figure Channel 11:



待測物名稱：Intel® Wi-Fi 6 AX201
待測物型號：AX201D2W　　測試項目：功率密度
測試頻道：- -　　測試模式：Mode 2: SISO B: 發射器 802.11ax (20MHz)
量測天線：- -　　測試距離：Conducted
檢測器：峰值　　環境溫度：20 ℃
測試日期：107 年 09 月 27 日　　環境濕度：50 %

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	4.660	≦8dBm	Pass
07	2442	6.430	≦8dBm	Pass
11	2462	5.740	≦8dBm	Pass
12	2467	2.360	≦8dBm	Pass
13	2472	-11.290	≦8dBm	Pass

Figure Channel 01:

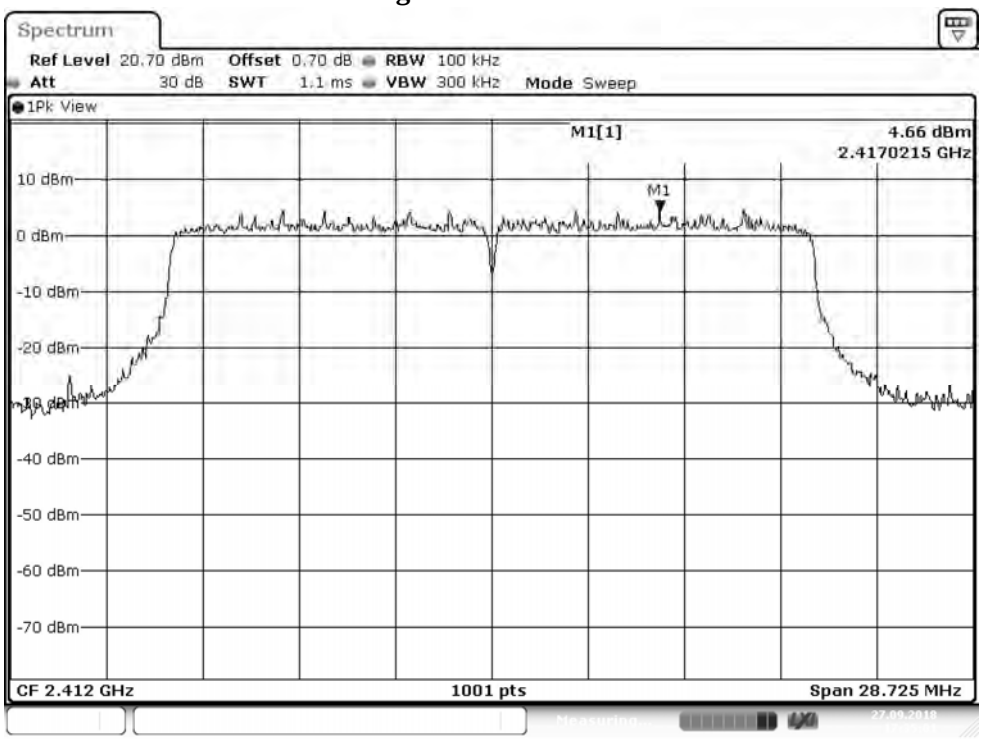


Figure Channel 07:

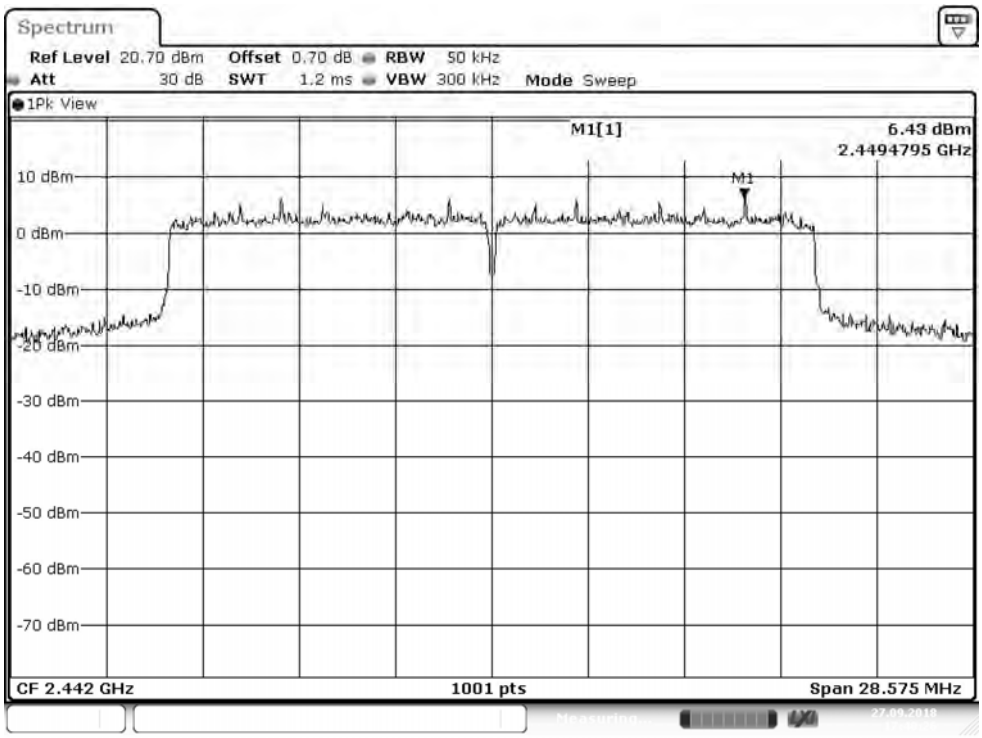


Figure Channel 11:

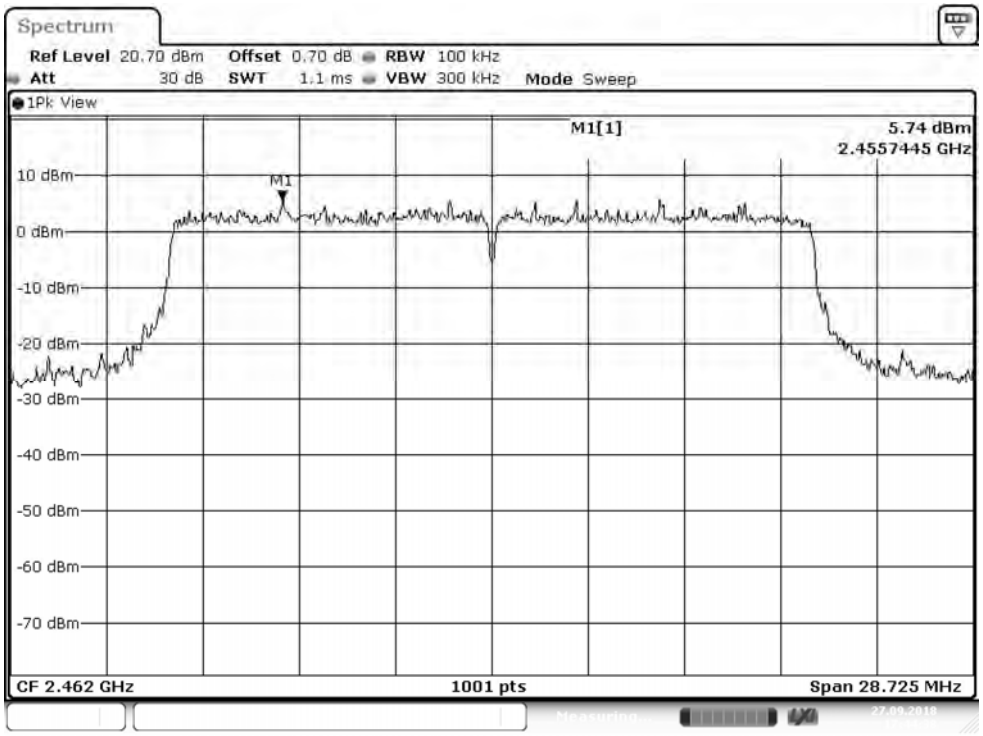


Figure Channel 12:

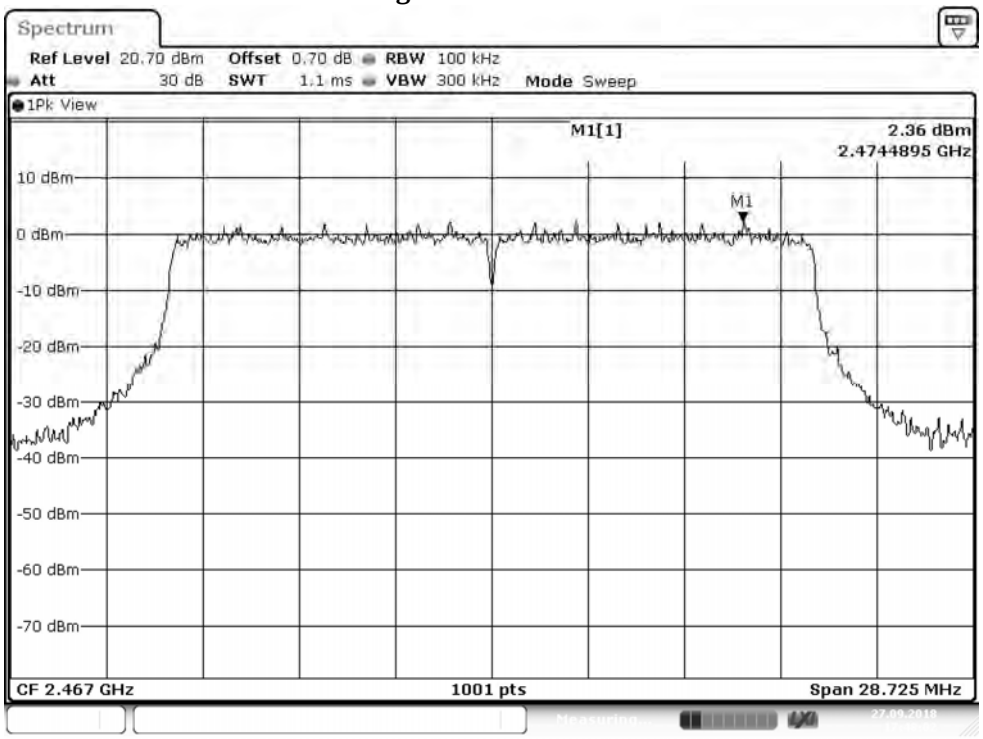
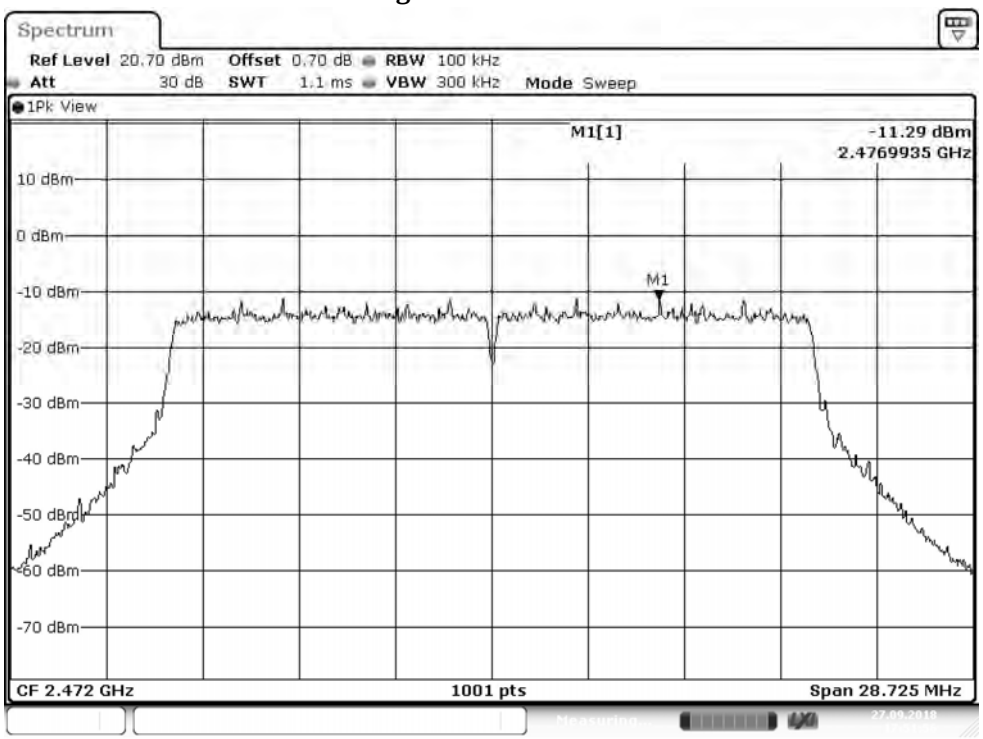


Figure Channel 13:



待測物名稱：Intel® Wi-Fi 6 AX201
待測物型號：AX201D2W　　測試項目：功率密度
測試頻道：- -　　測試模式：Mode 2: SISO B: 發射器 802.11ax (40MHz)
量測天線：- -　　測試距離：Conducted
檢測器：峰值　　環境溫度：20 ℃
測試日期：107 年 09 月 27 日　　環境濕度：50 %

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
03	2422	1.440	≦8dBm	Pass
07	2442	2.370	≦8dBm	Pass
09	2452	0.810	≦8dBm	Pass
10	2457	-2.830	≦8dBm	Pass
11	2462	-10.190	≦8dBm	Pass

Figure Channel 03:

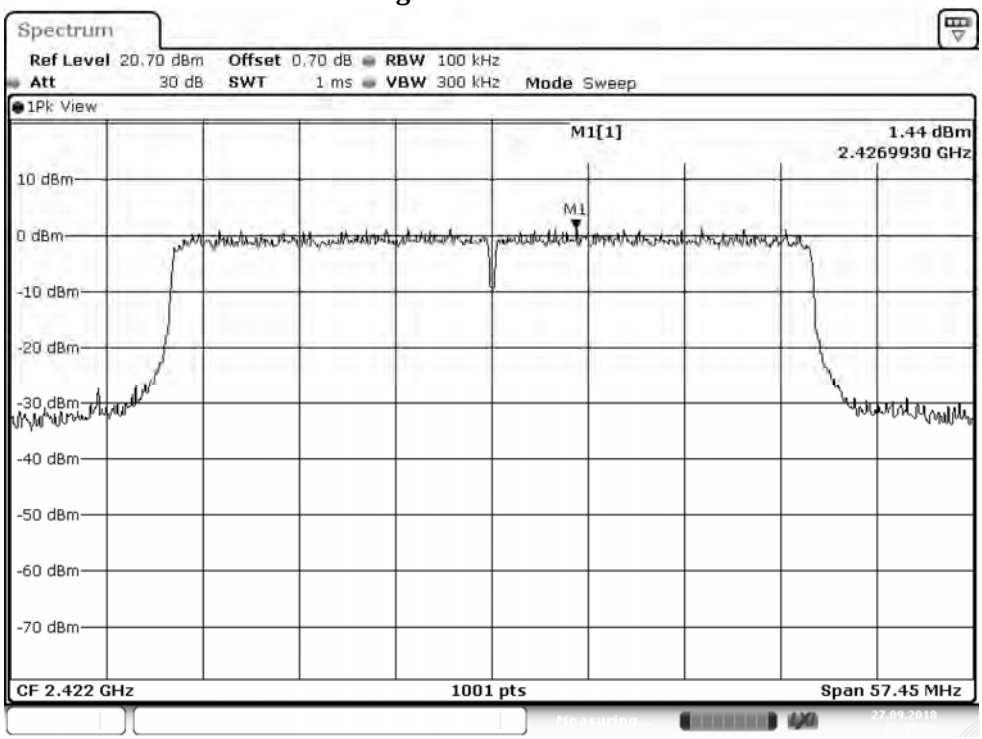


Figure Channel 07:

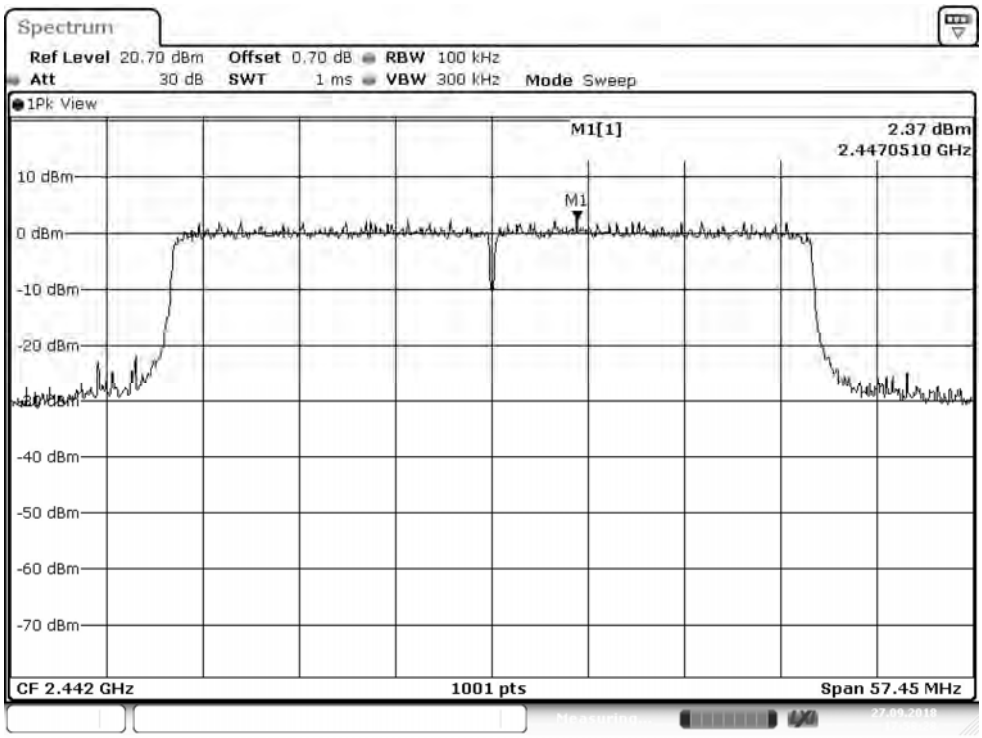


Figure Channel 09:

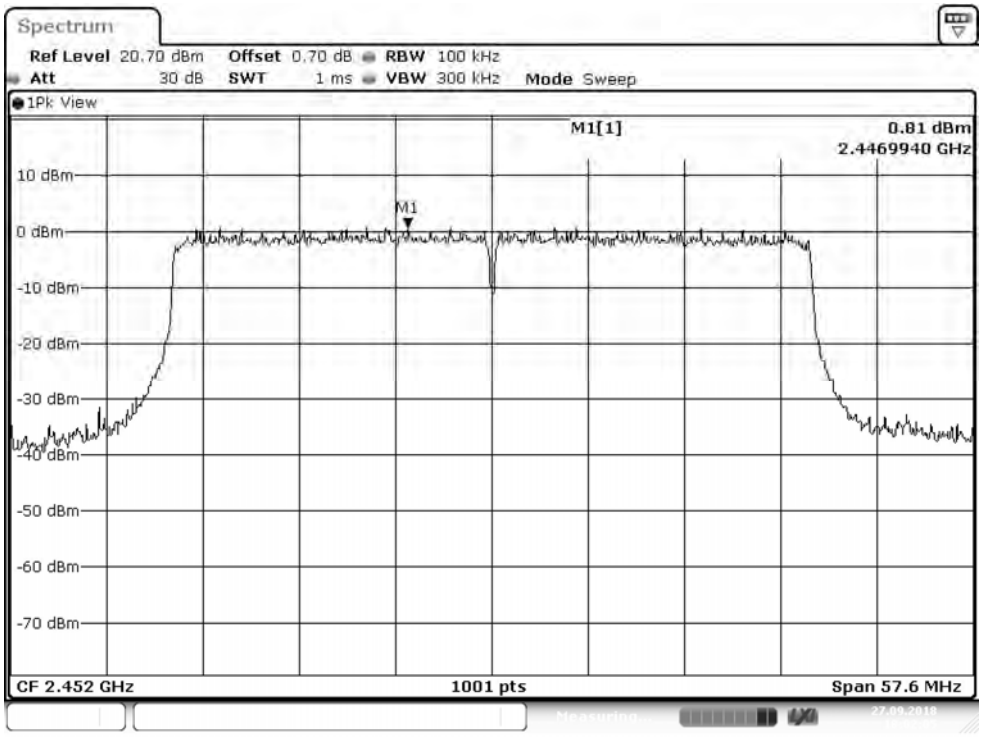


Figure Channel 10:

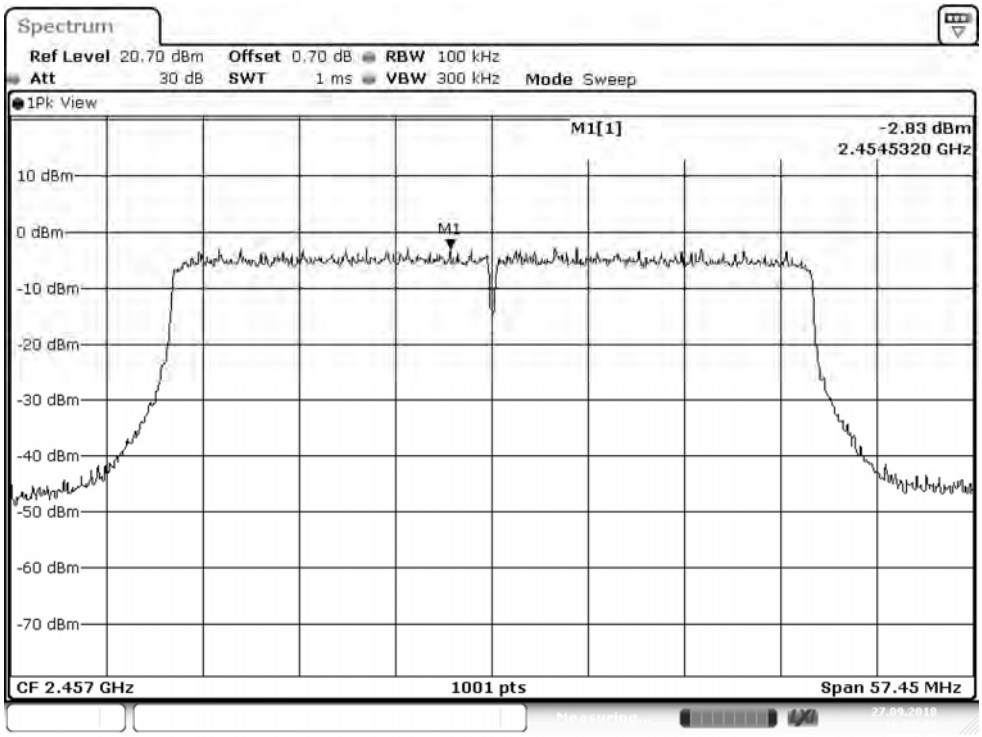
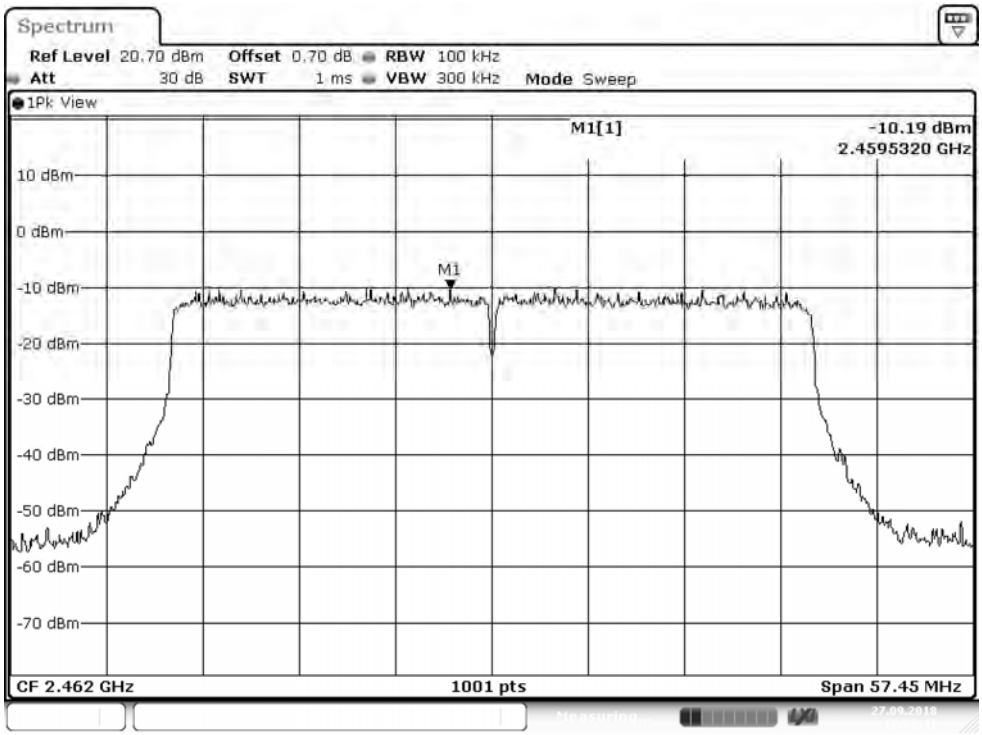


Figure Channel 11:



待測物名稱：Intel® Wi-Fi 6 AX201
待測物型號：AX201D2W　　測試項目：功率密度
測試頻道：--　　測試模式：Mode 3: MIMO: 發射器 802.11ax (20MHz)
量測天線：--　　測試距離：Conducted
檢測器：峰值　　環境溫度：20 ℃
測試日期：107 年 09 月 27 日　　環境濕度：50 %

Channel No.	Frequency (MHz)	Chain	PPSD/MHz (dBm)	10*log(2) (dB)	Measure Level (dBm)	Limit (dBm)	Result
01	2412.000	A	1.660	3.010	4.670	≦8dBm	Pass
		B	1.650	3.010	4.660	≦8dBm	Pass
07	2442.000	A	2.720	3.010	5.730	≦8dBm	Pass
		B	2.920	3.010	5.930	≦8dBm	Pass
11	2462.000	A	2.510	3.010	5.520	≦8dBm	Pass
		B	2.540	3.010	5.550	≦8dBm	Pass
12	2467.00	A	-0.400	3.010	2.610	≦8dBm	Pass
		B	-0.400	3.010	2.610	≦8dBm	Pass
13	2472.00	A	-13.810	3.010	-10.800	≦8dBm	Pass
		B	-13.510	3.010	-10.500	≦8dBm	Pass

Note:
The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.

Figure Channel 01: (Chain A)

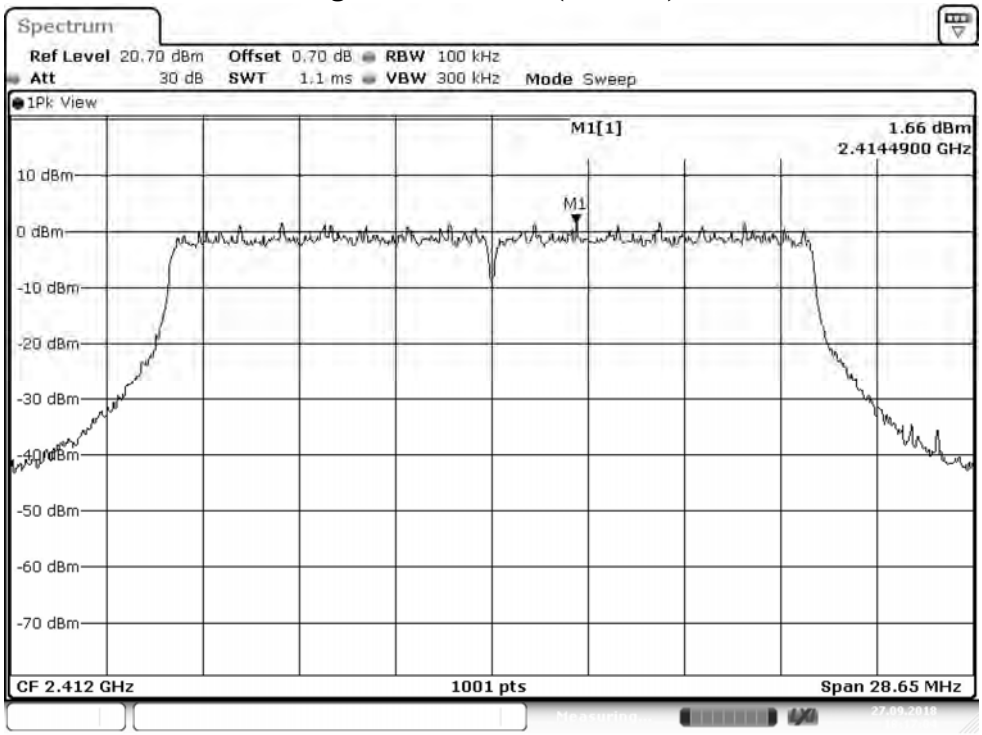
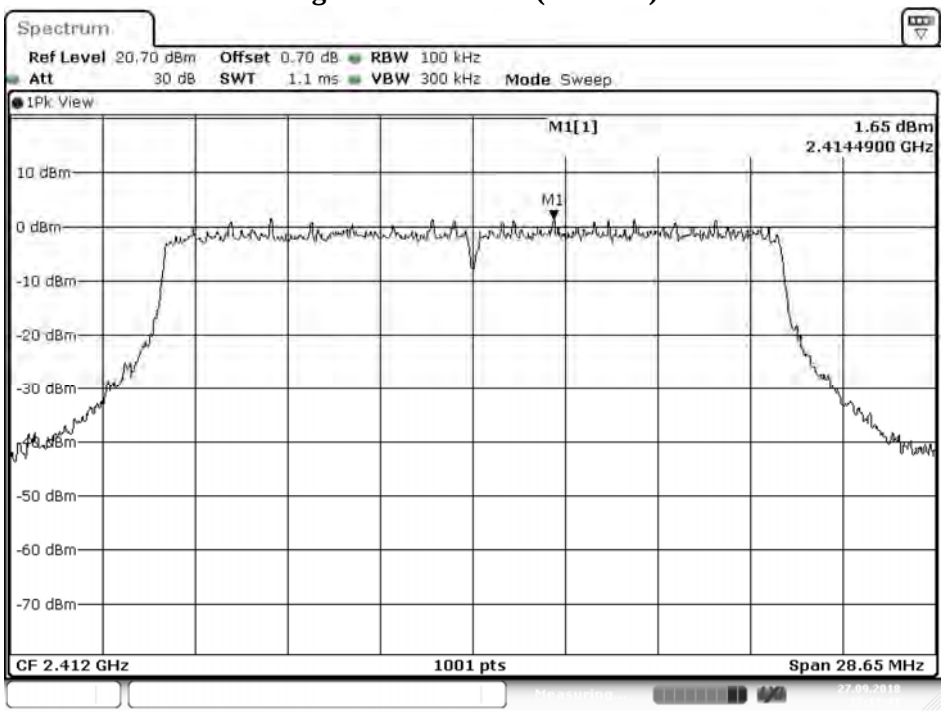


Figure Channel 01: (Chain B)



Date: 27.SEP.2018 17:11:41

Figure Channel 07: (Chain A)

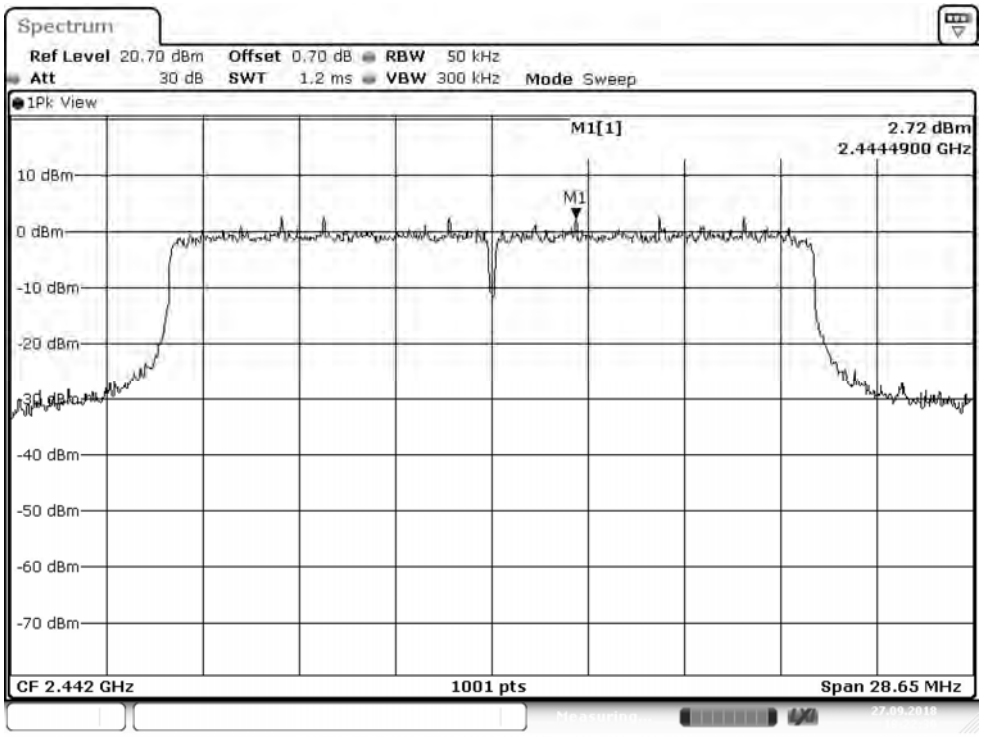
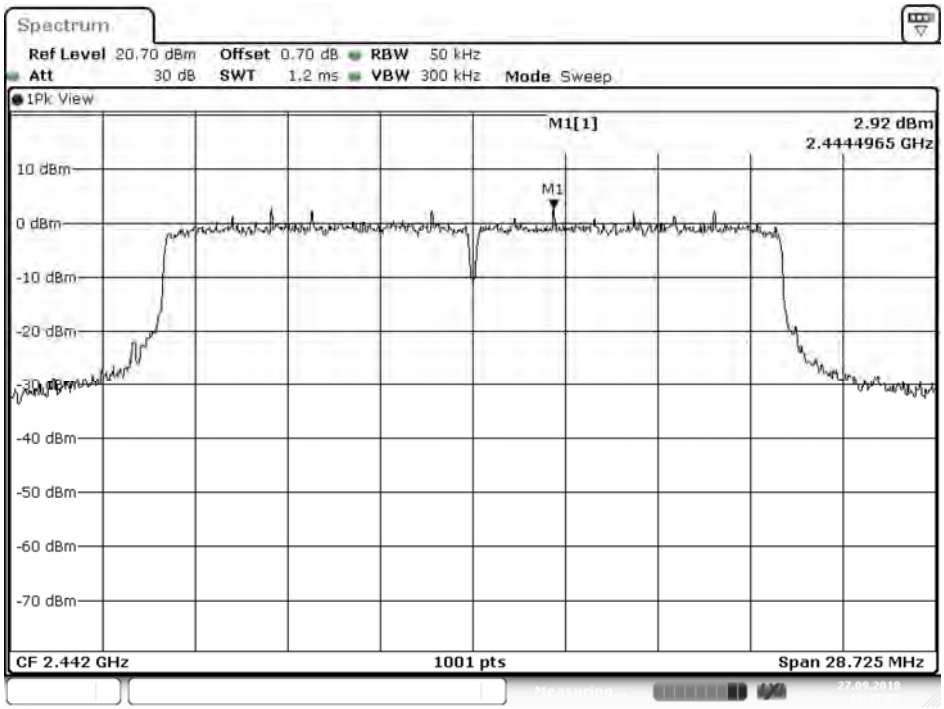


Figure Channel 07: (Chain B)



Date: 27.SEP.2018 17:17:06

Figure Channel 11: (Chain A)

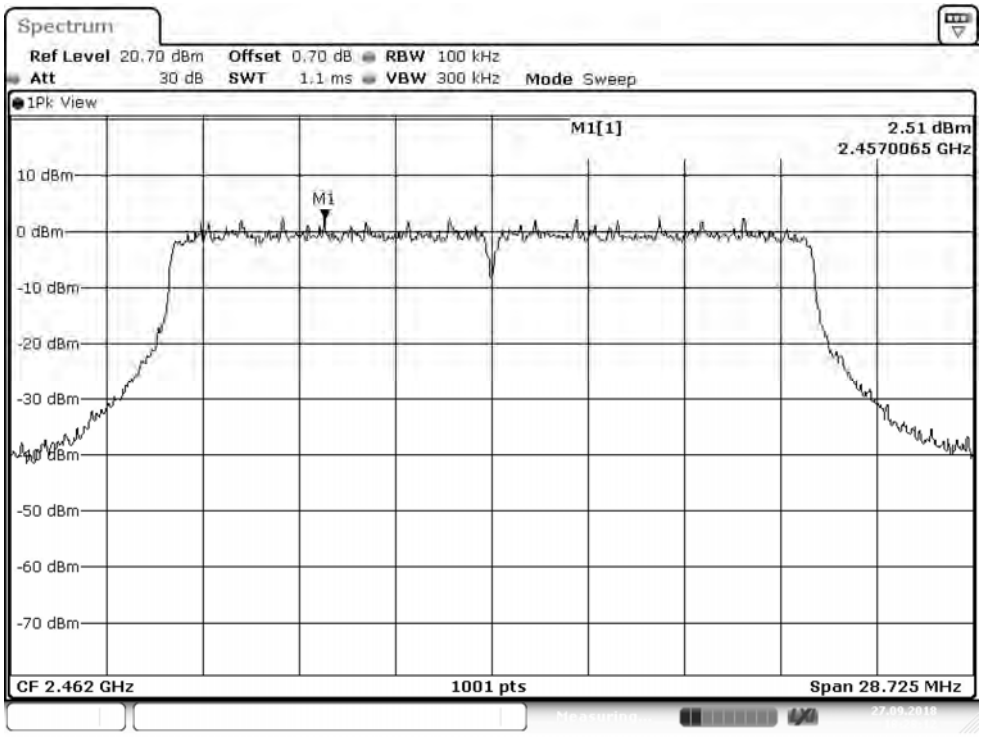
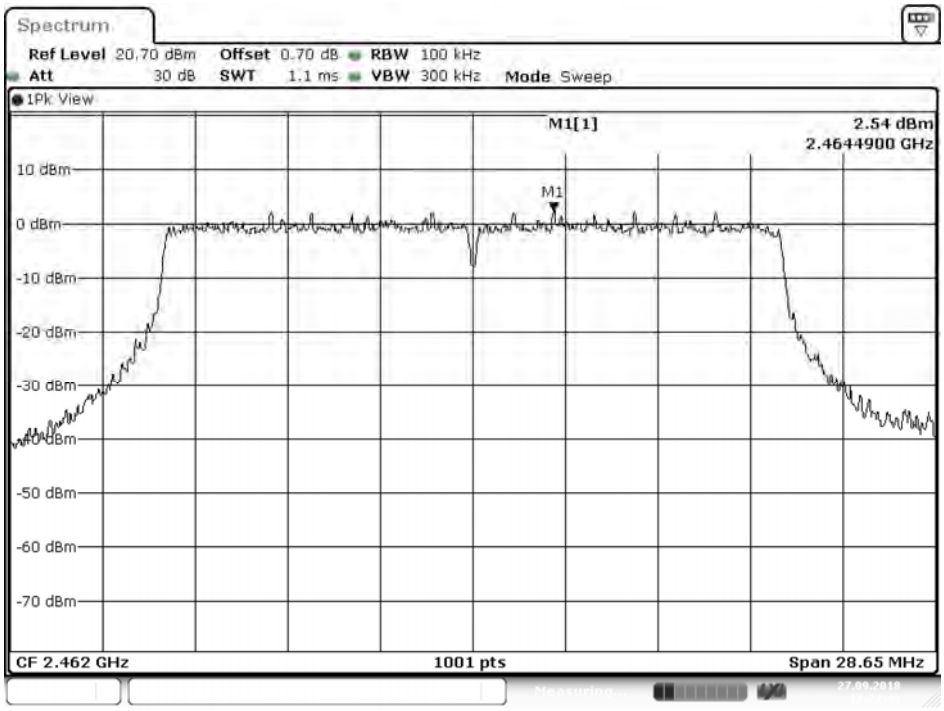


Figure Channel 11: (Chain B)



Date: 27.SEP.2018 17:22:49

Figure Channel 12: (Chain A)

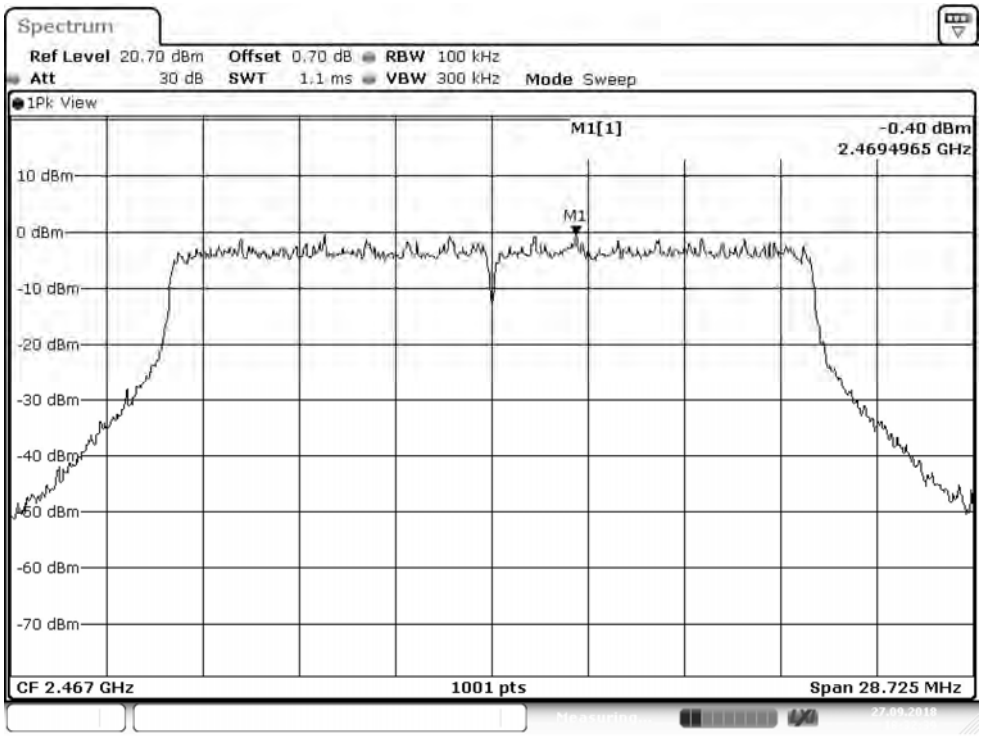
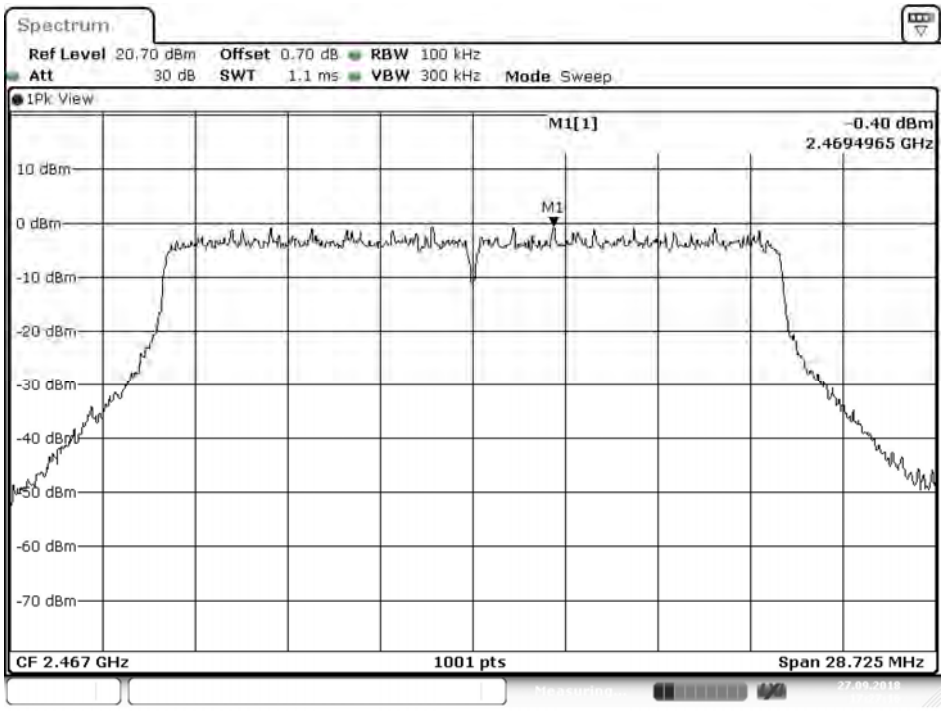


Figure Channel 12: (Chain B)



Date: 27.SEP.2018 17:27:16

Figure Channel 13: (Chain A)

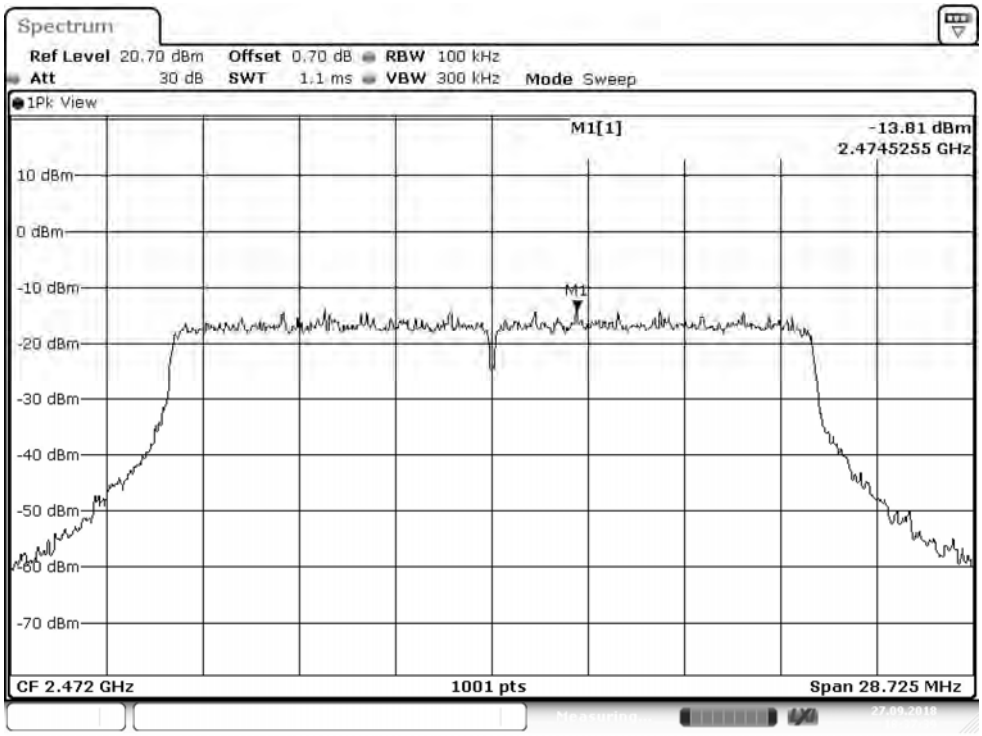
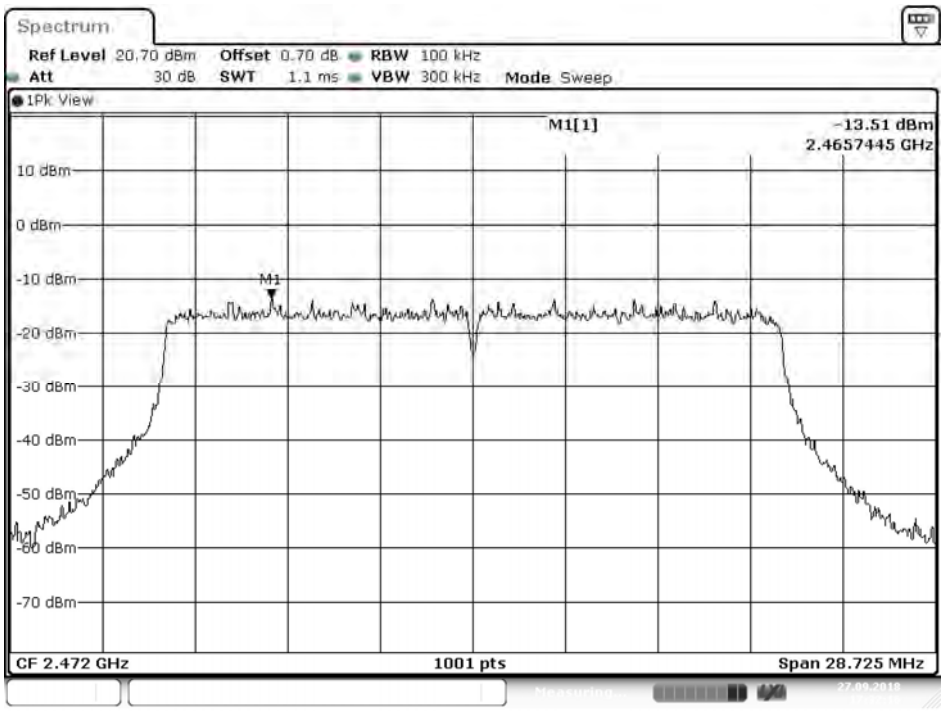


Figure Channel 13: (Chain B)



Date: 27.SEP.2018 17:32:16

待測物名稱：Intel® Wi-Fi 6 AX201
待測物型號：AX201D2W　　測試項目：功率密度
測試頻道：--　　測試模式：Mode 3: MIMO: 發射器 802.11ax (40MHz)
量測天線：--　　測試距離：Conducted
檢測器：峰值　　環境溫度：20 ℃
測試日期：107 年 09 月 27 日　　環境濕度：50 %

Channel No.	Frequency (MHz)	Chain	PPSD/MHz (dBm)	10*log(2) (dB)	Measure Level (dBm)	Limit (dBm)	Result
03	2422.000	A	-1.540	3.010	1.470	≦8dBm	Pass
		B	-1.630	3.010	1.380	≦8dBm	Pass
07	2442.000	A	-0.750	3.010	2.260	≦8dBm	Pass
		B	-0.710	3.010	2.300	≦8dBm	Pass
09	2452.000	A	-1.990	3.010	1.020	≦8dBm	Pass
		B	-2.160	3.010	0.850	≦8dBm	Pass
10	2457.00	A	-5.600	3.010	-2.590	≦8dBm	Pass
		B	-5.680	3.010	-2.670	≦8dBm	Pass
11	2462.00	A	-12.610	3.010	-9.600	≦8dBm	Pass
		B	-13.110	3.010	-10.100	≦8dBm	Pass

Note:
The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.

Figure Channel 03: (Chain A)

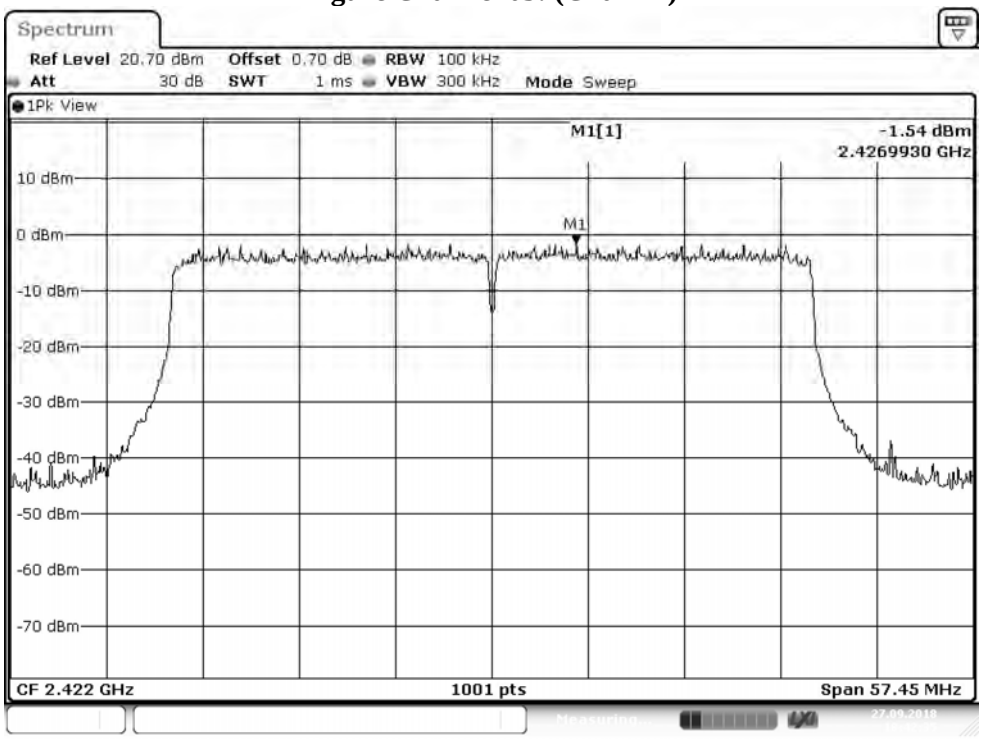
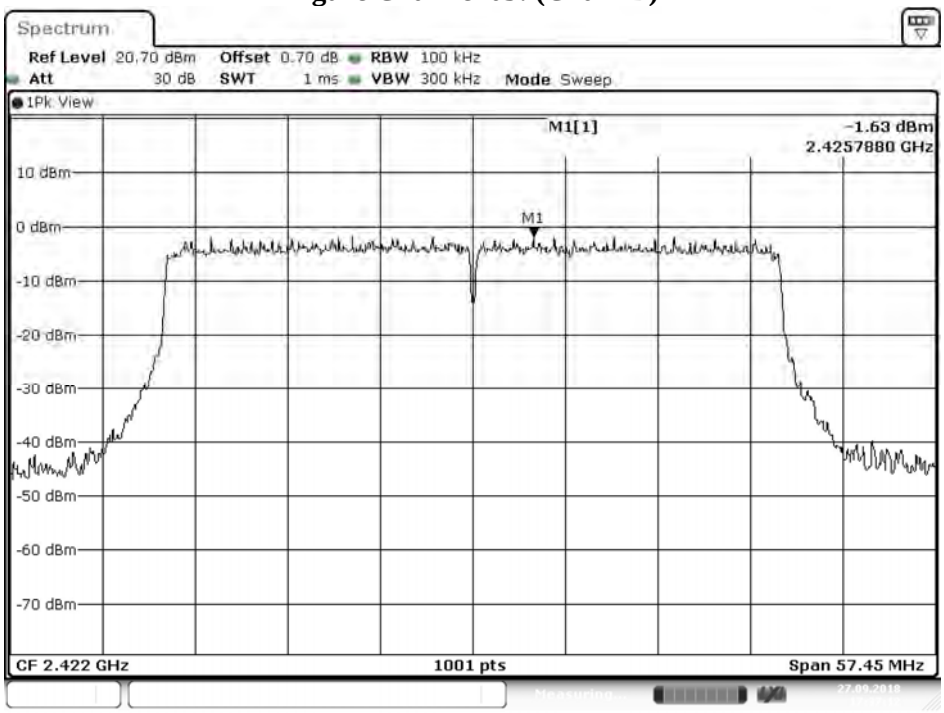


Figure Channel 03: (Chain B)



Date: 27.SEP.2018 17:37:12

Figure Channel 07: (Chain A)

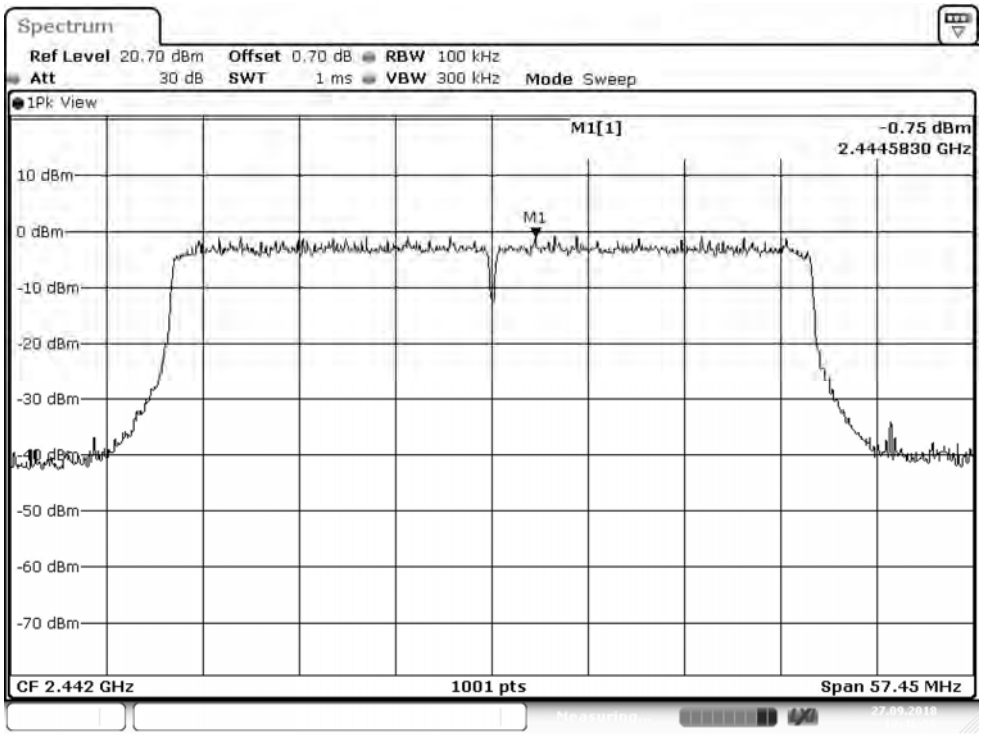
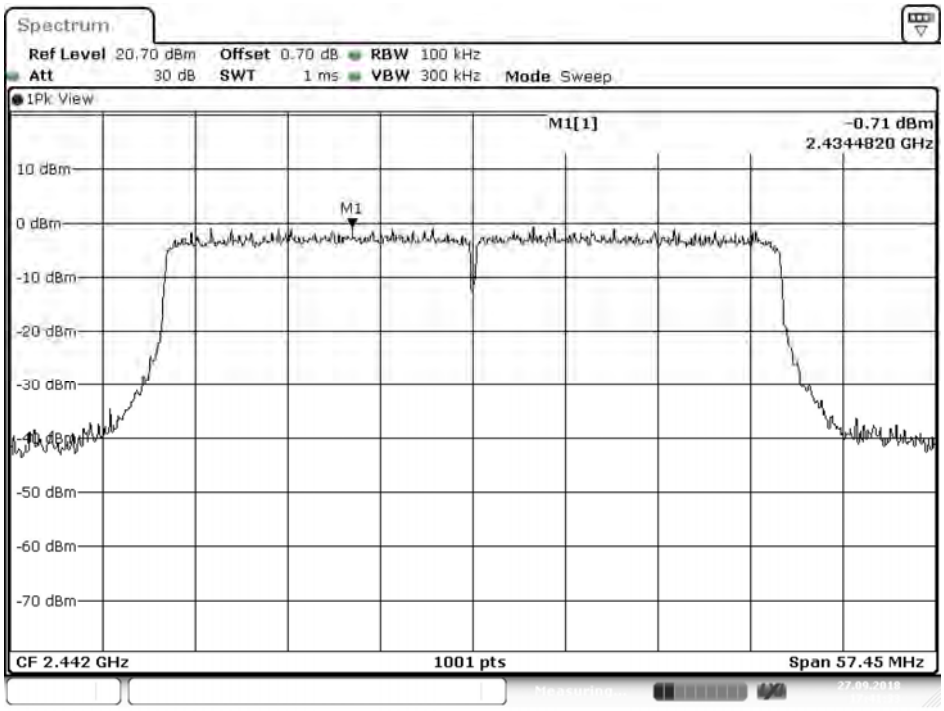


Figure Channel 07: (Chain B)



Date: 27.SEP.2018 17:41:33

Figure Channel 09: (Chain A)

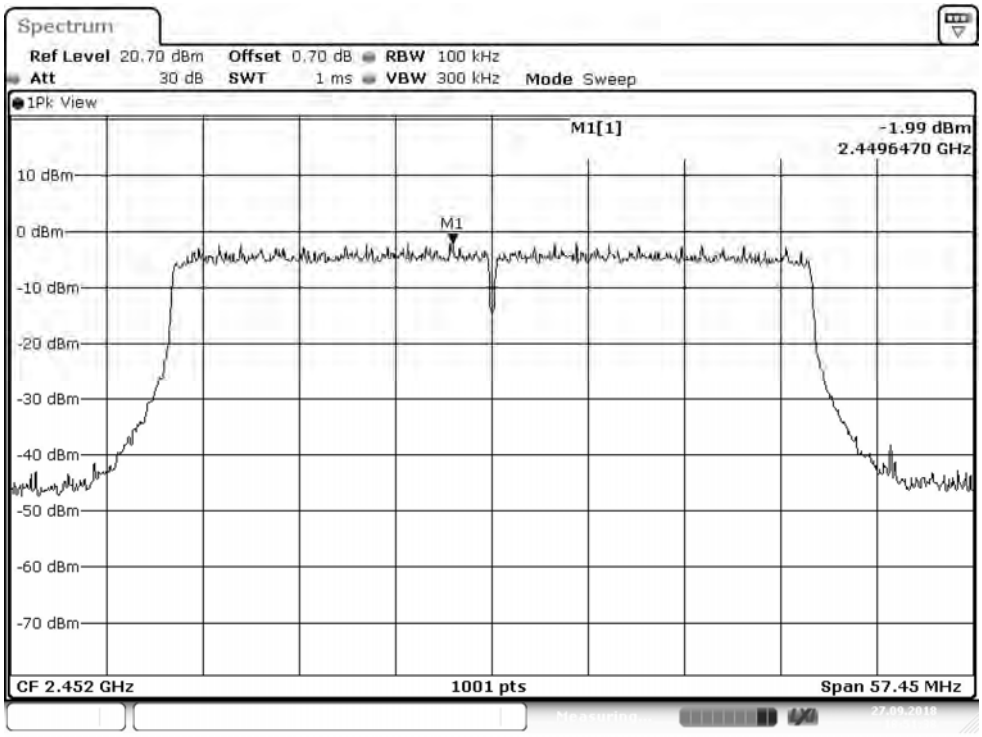
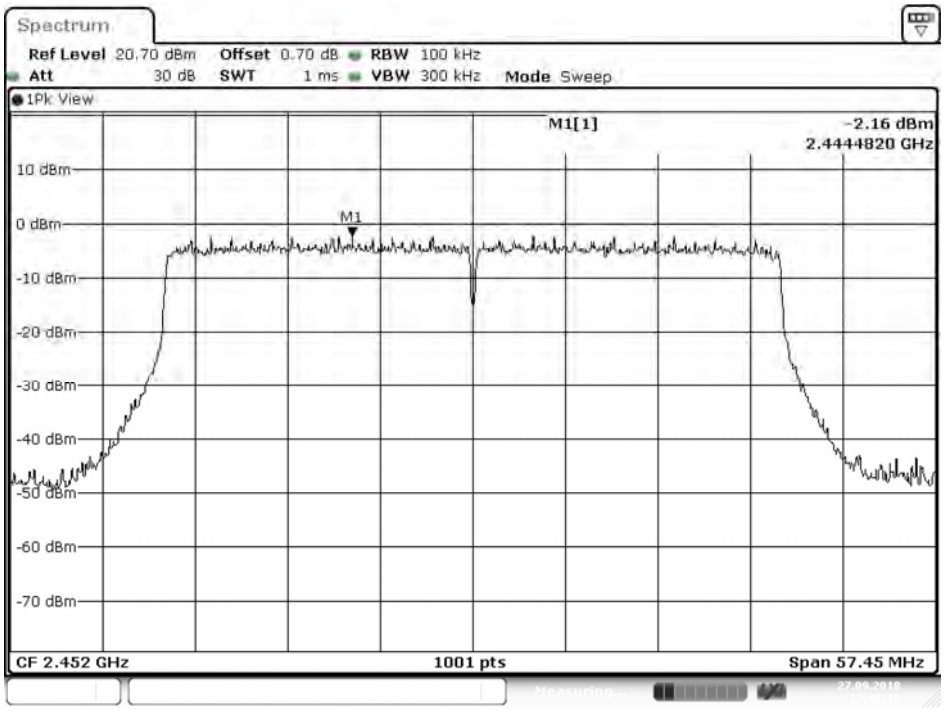


Figure Channel 09: (Chain B)



Date: 27.SEP.2018 17:46:15

Figure Channel 10: (Chain A)

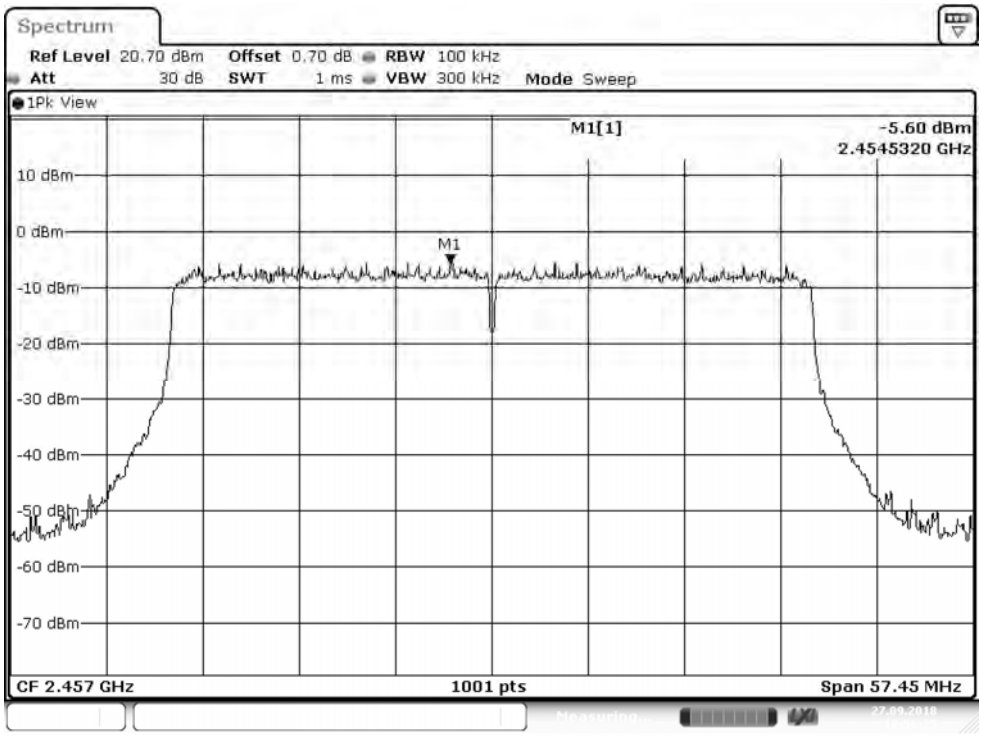
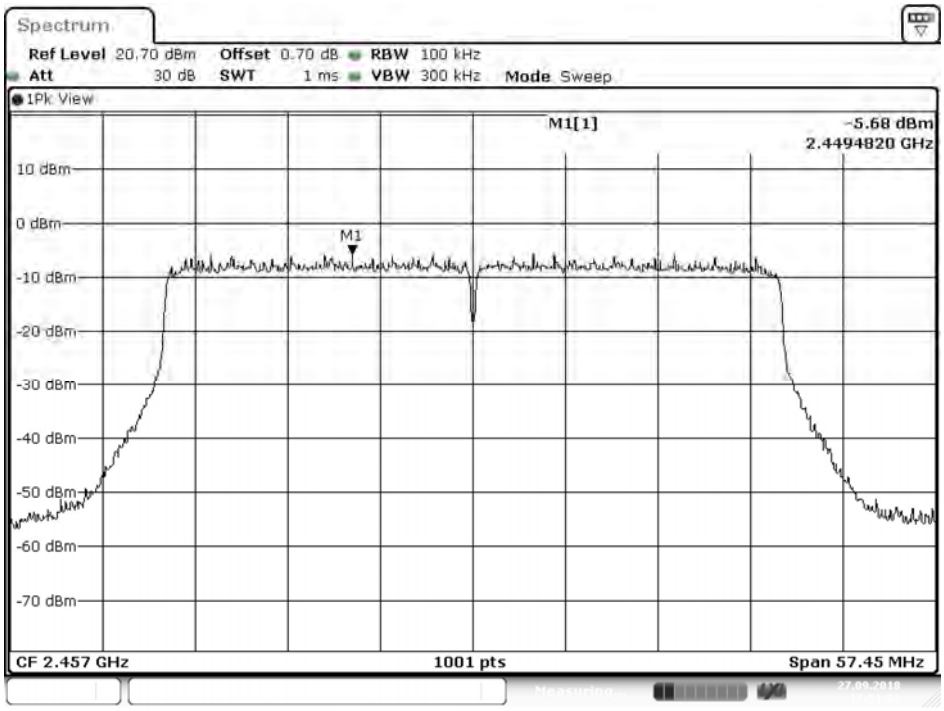


Figure Channel 10: (Chain B)



Date: 27.SEP.2018 17:51:02

Figure Channel 11: (Chain A)

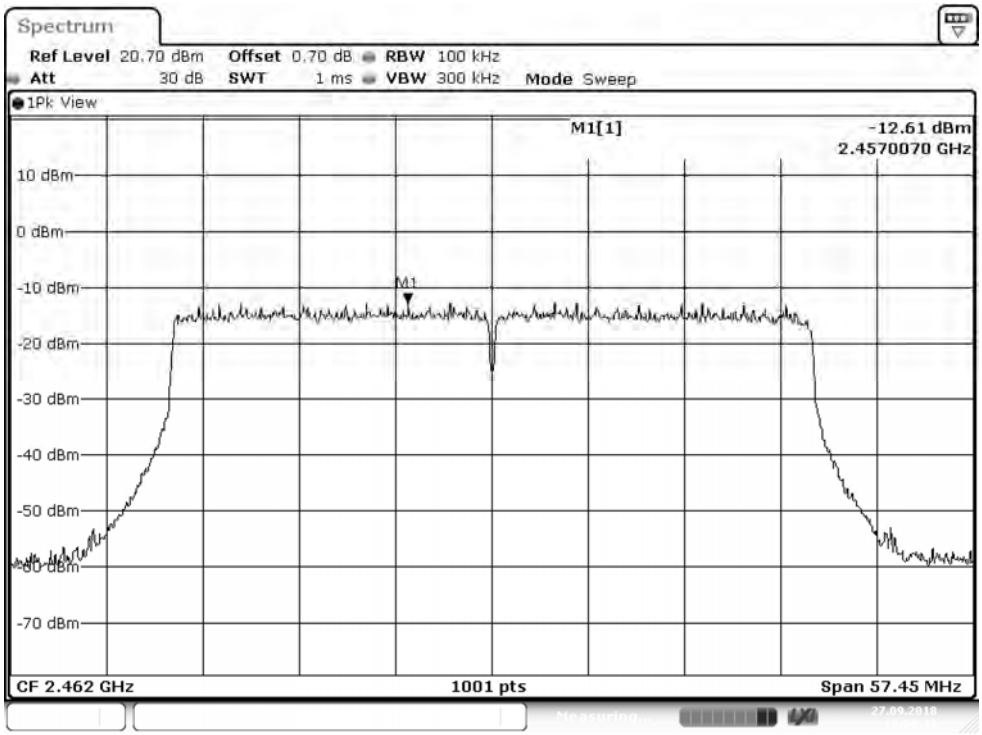
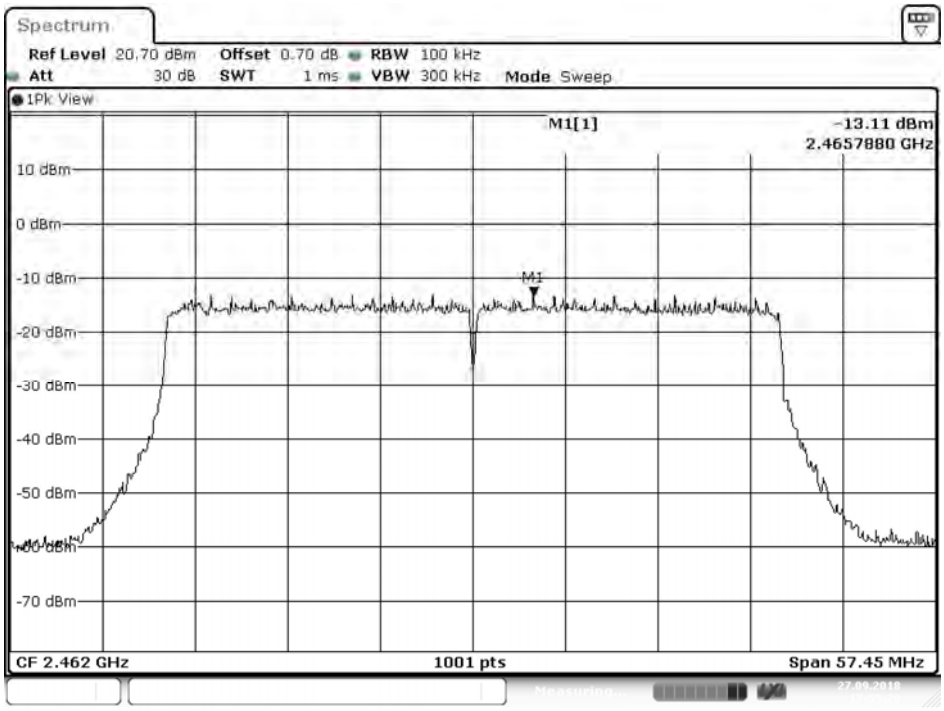


Figure Channel 11: (Chain B)



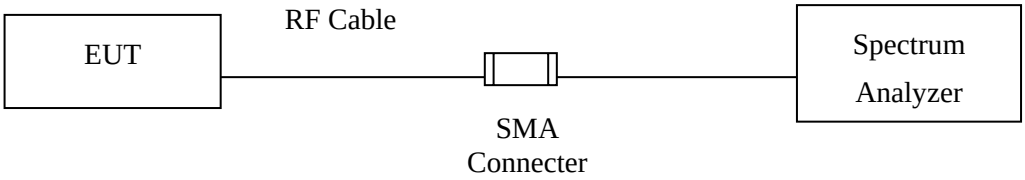
功率密度測試結果:	**PASS**

11. Duty Cycle

11.1. 量測方法

待測物之天線埠經由適當之衰減直接連至頻譜分析儀RF輸入端，
待測物應在正常發射狀態下量測。

11.2. 測試架構圖



11.3. 量測不確定度

此項測試之量測不確定度為± 2.31msec

11.4. Duty Cycle 測試結果

待測物名稱：Intel® Wi-Fi 6 AX201
待測物型號：AX201D2W
測試項目：Duty Cycle
測試頻道：--
測試模式：--
量測天線：--
測試距離：Conducted
檢測器：峰值
環境溫度：20 ℃
測試日期：107 年 10 月 19 日
環境濕度：50 %

Duty Cycle Formula:
Duty Cycle = Ton / (Ton + Toff)
Duty Factor = 10 Log (1/Duty Cycle)
Results:

SISO A

2.4GHz band	Ton (ms)	Ton + Toff (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11b	8.4000	8.6200	97.45	0.11
802.11g	2.1100	2.3400	90.17	0.45
802.11n20	24.9100	25.0200	99.56	0.02
802.11n40	18.0100	18.1200	99.39	0.03
802.11ax20	24.9100	25.0200	99.56	0.02
802.11ax40	18.7800	18.9300	99.21	0.03

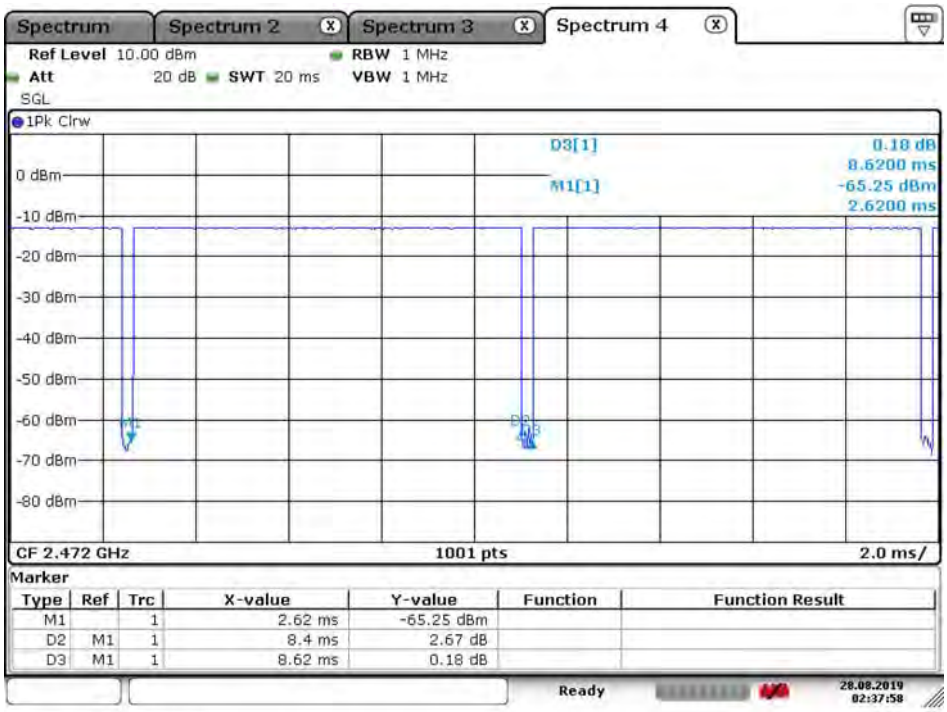
SISO B

2.4GHz band	Ton (ms)	Ton + Toff (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11b	8.4200	8.6400	97.45	0.11
802.11g	2.1100	2.3400	90.17	0.45
802.11n20	25.0100	25.0400	99.88	0.01
802.11n40	17.9100	18.0900	99.00	0.04
802.11ax20	24.9100	24.9900	99.68	0.01
802.11ax40	18.7600	18.9400	99.05	0.04

MIMO

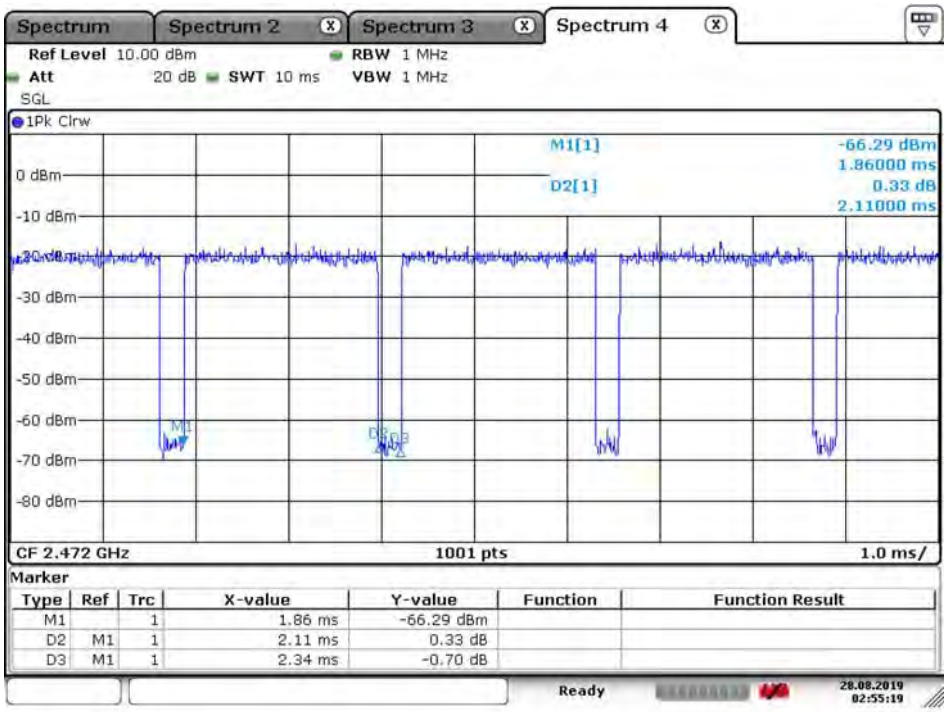
2.4GHz band	Ton (ms)	Ton + Toff (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11n20	18.6100	18.7900	99.04	0.04
802.11n40	9.1000	9.2500	98.38	0.07
802.11ax20	18.8000	19.0000	98.95	0.05
802.11ax40	9.4800	9.6300	98.44	0.07

802.11b (SISO A)



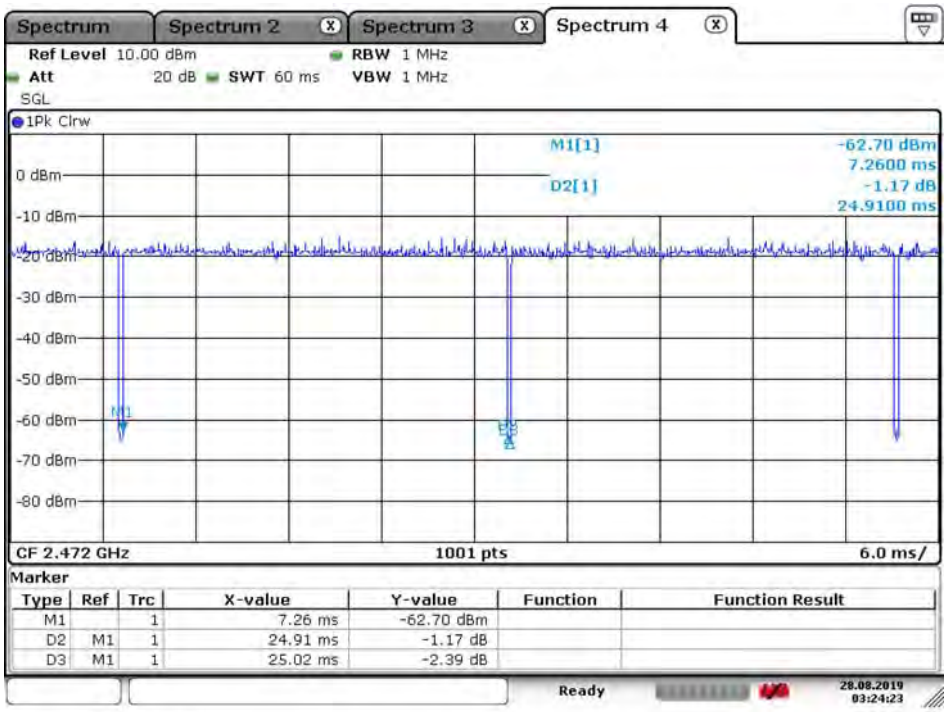
Date: 28.AUG.2019 02:37:59

802.11g (SISO A)



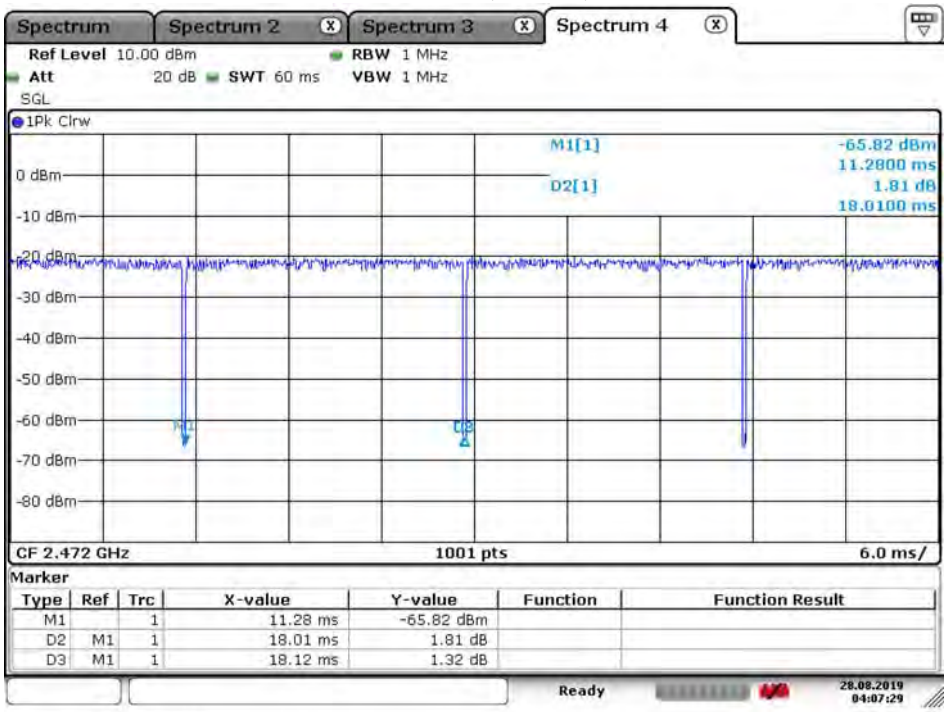
Date: 28.AUG.2019 02:55:20

802.11n20 (SISO A)



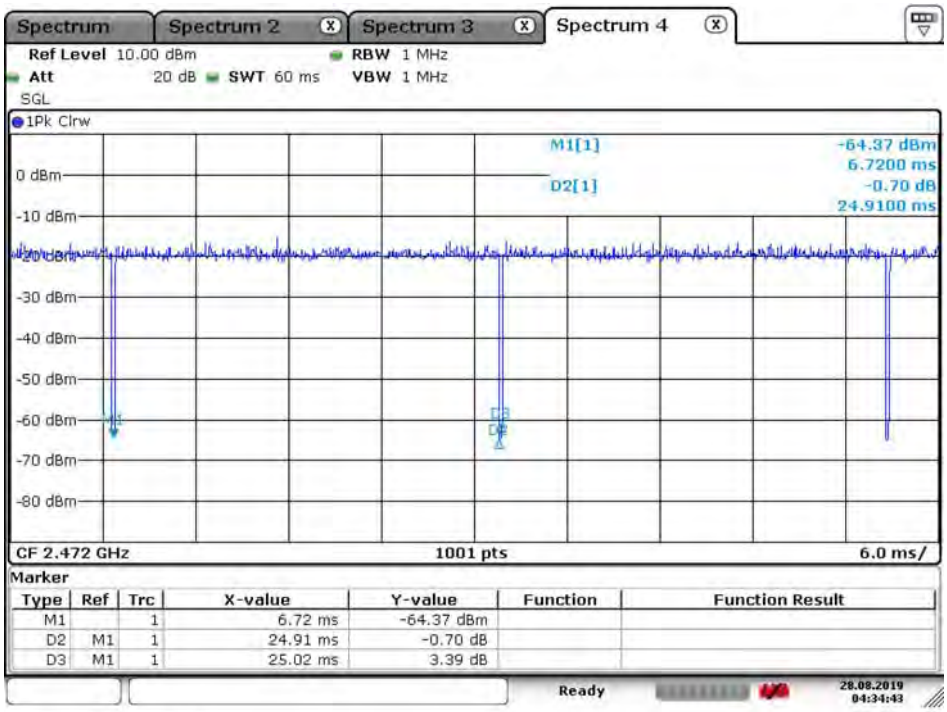
Date: 28.AUG.2019 03:24:24

802.11n40 (SISO A)



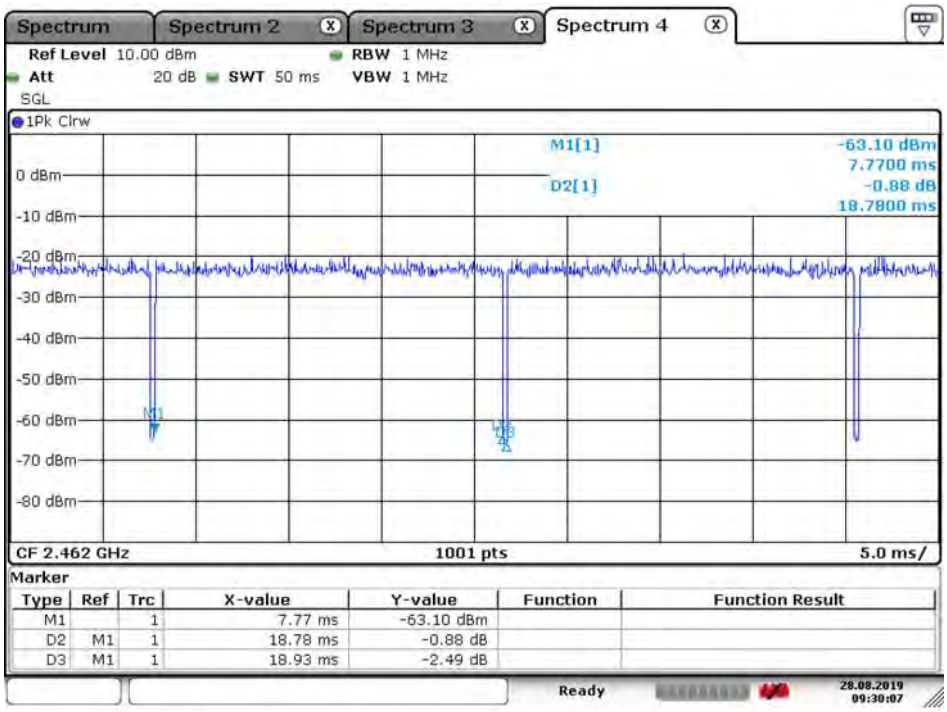
Date: 28.AUG.2019 04:07:30

802.11ax20 (SISO A)



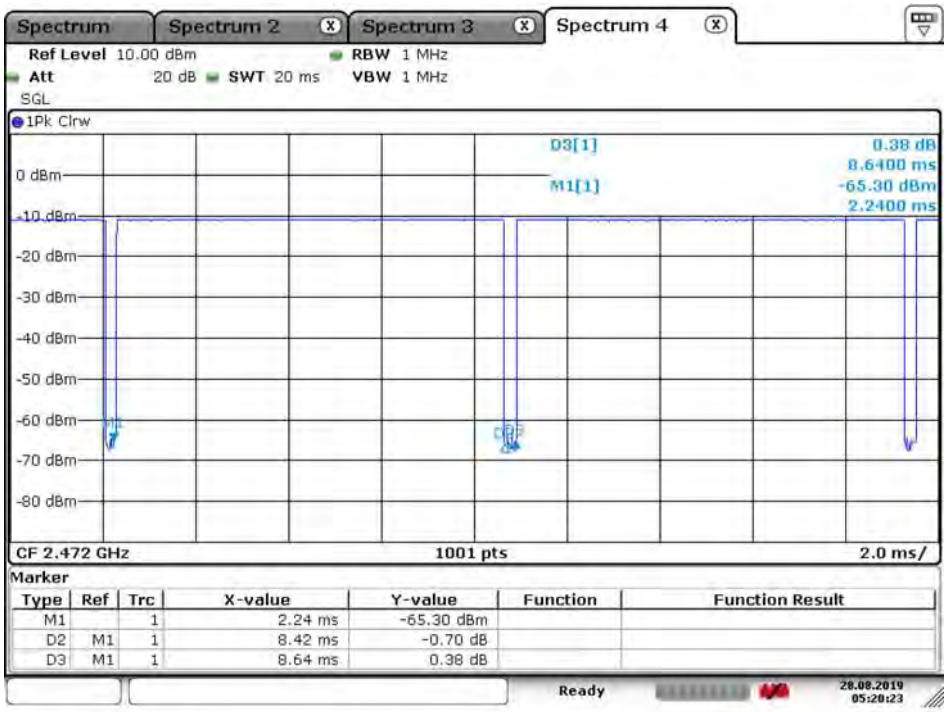
Date: 28.AUG.2019 04:34:43

802.11ax40 (SISO A)



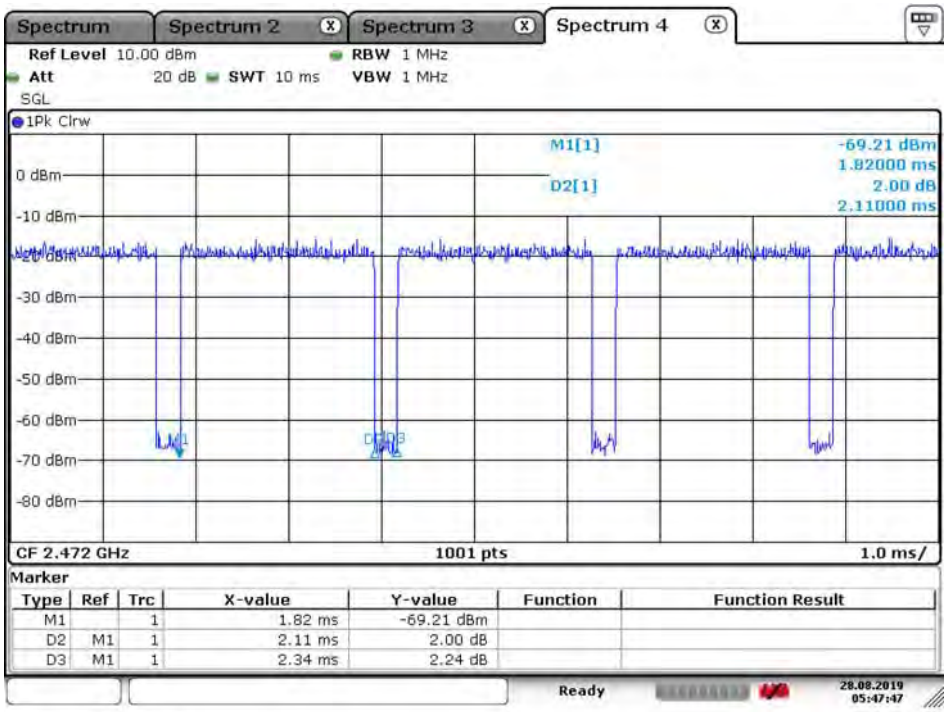
Date: 28.AUG.2019 09:30:07

802.11b (SISO B)



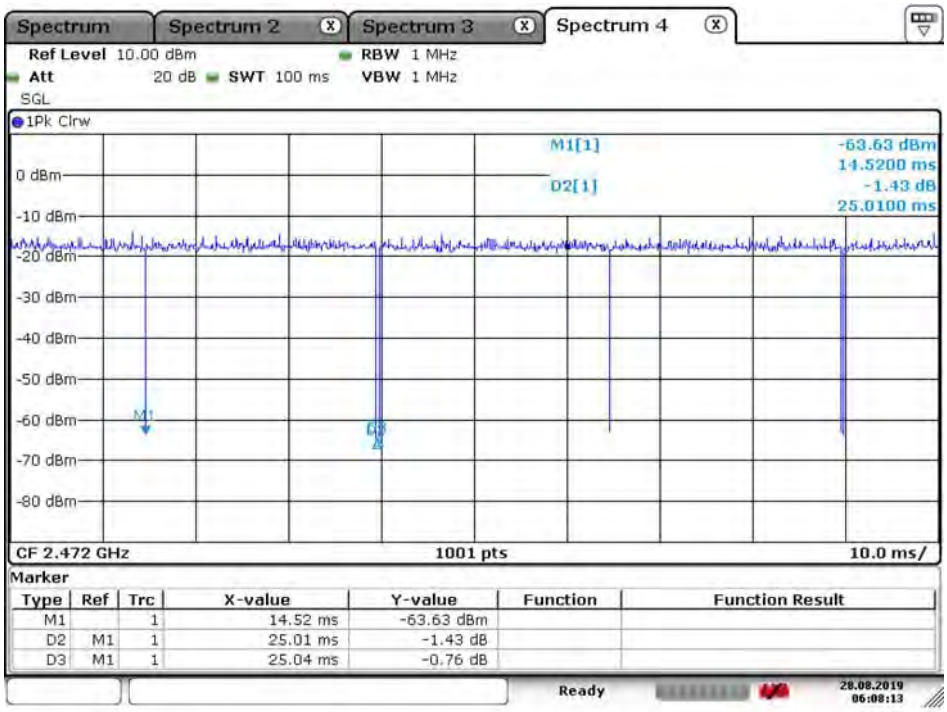
Date: 28.AUG.2019 05:20:23

802.11g (SISO B)



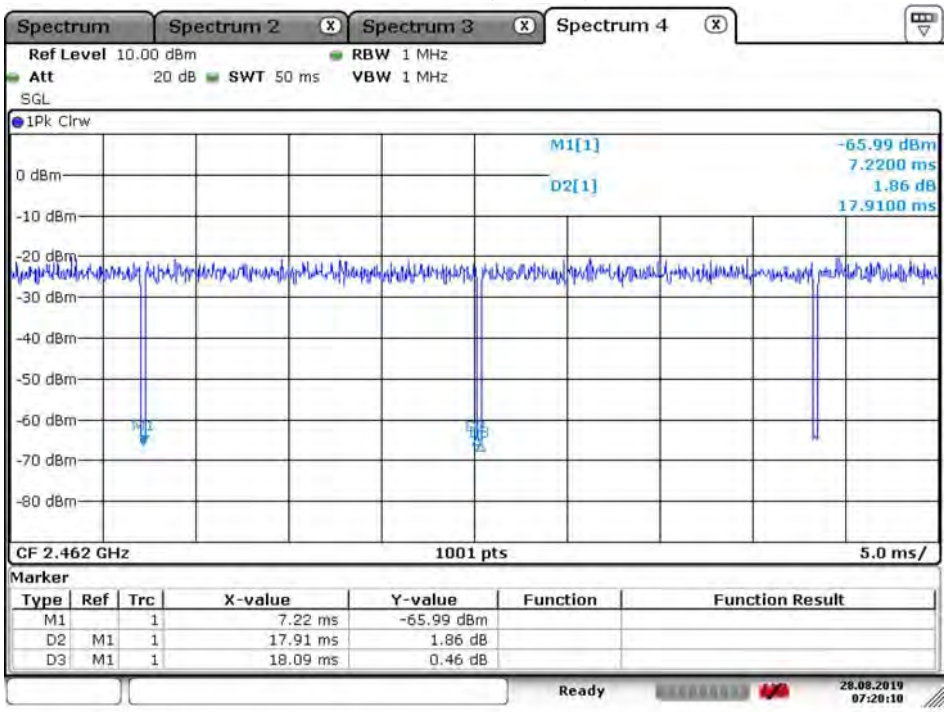
Date: 28.AUG.2019 05:47:48

802.11n20 (SISO B)



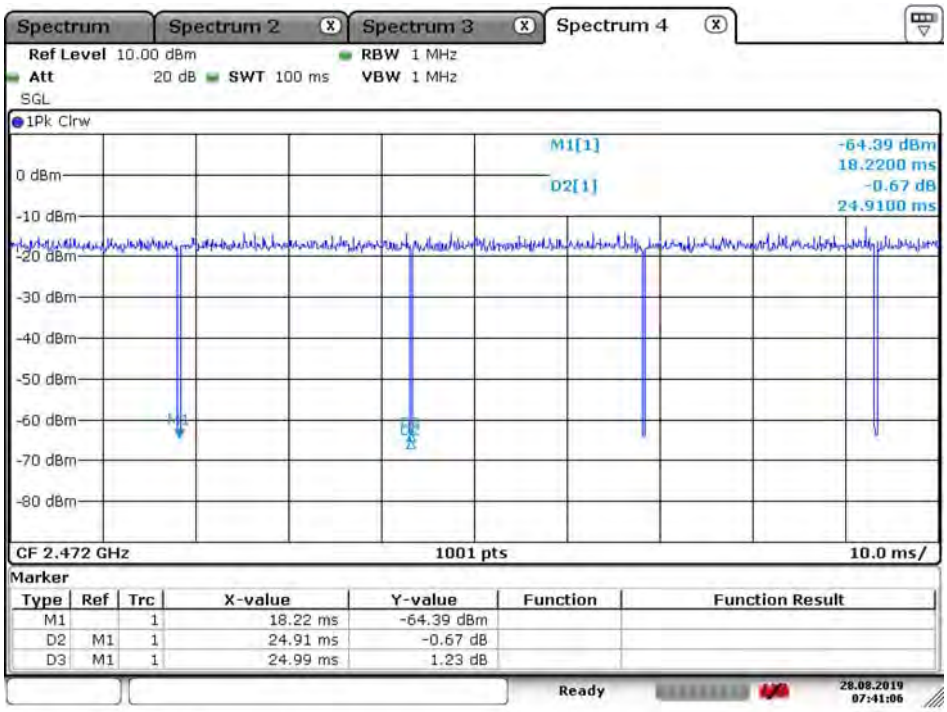
Date: 28.AUG.2019 06:08:14

802.11n40 (SISO B)



Date: 28.AUG.2019 07:20:11

802.11ax20 (SISO B)



Date: 28.AUG.2019 07:41:07

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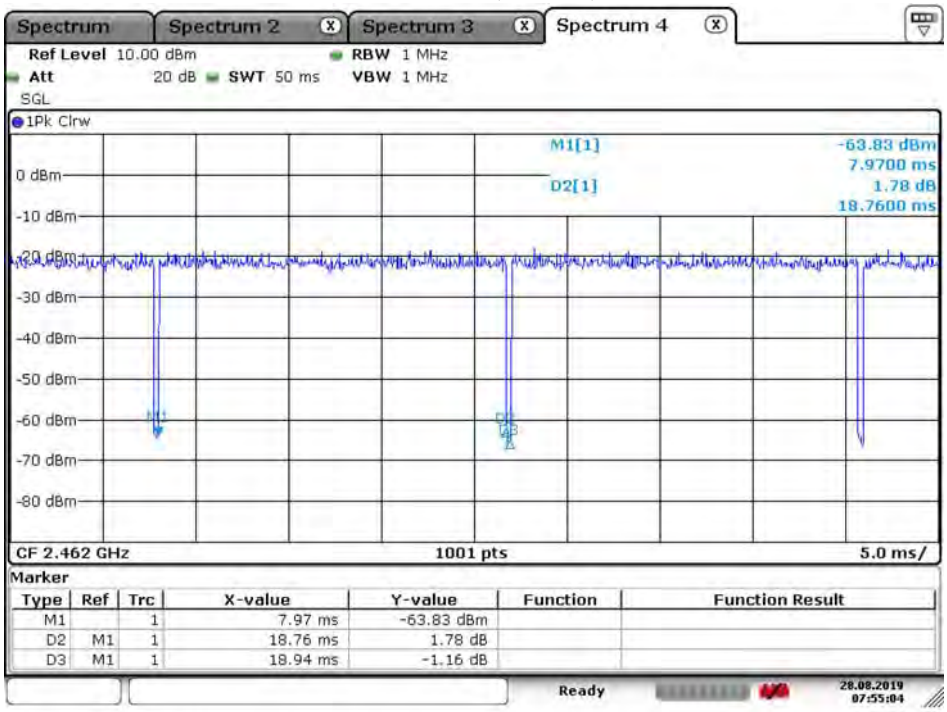
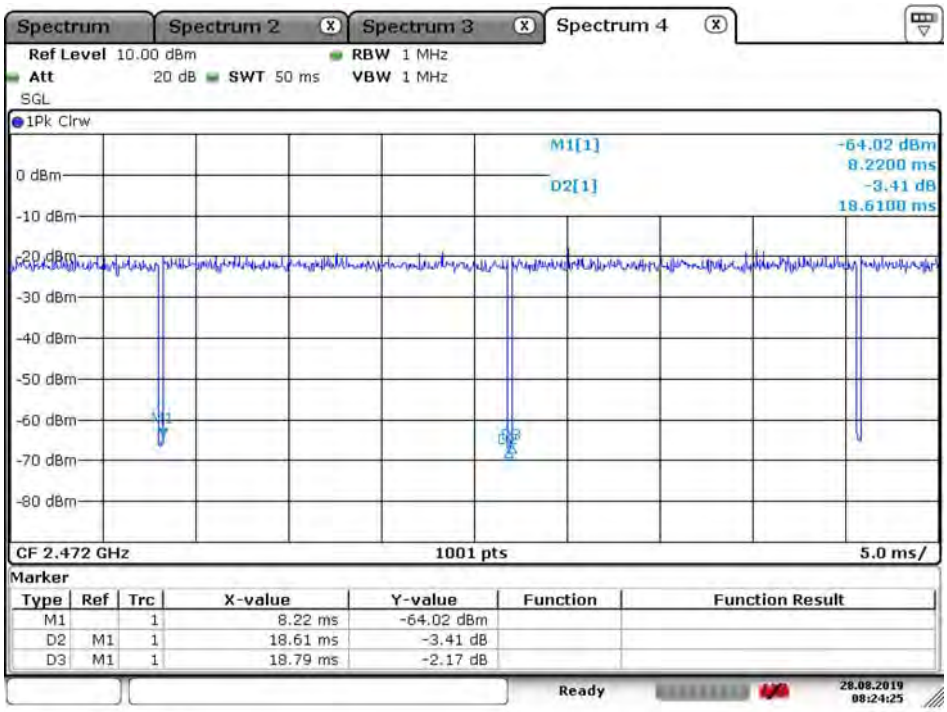


Date: 28.AUG.2019 07:55:04

802.11n20 (MIMO)



Date: 28.AUG.2019 08:24:26

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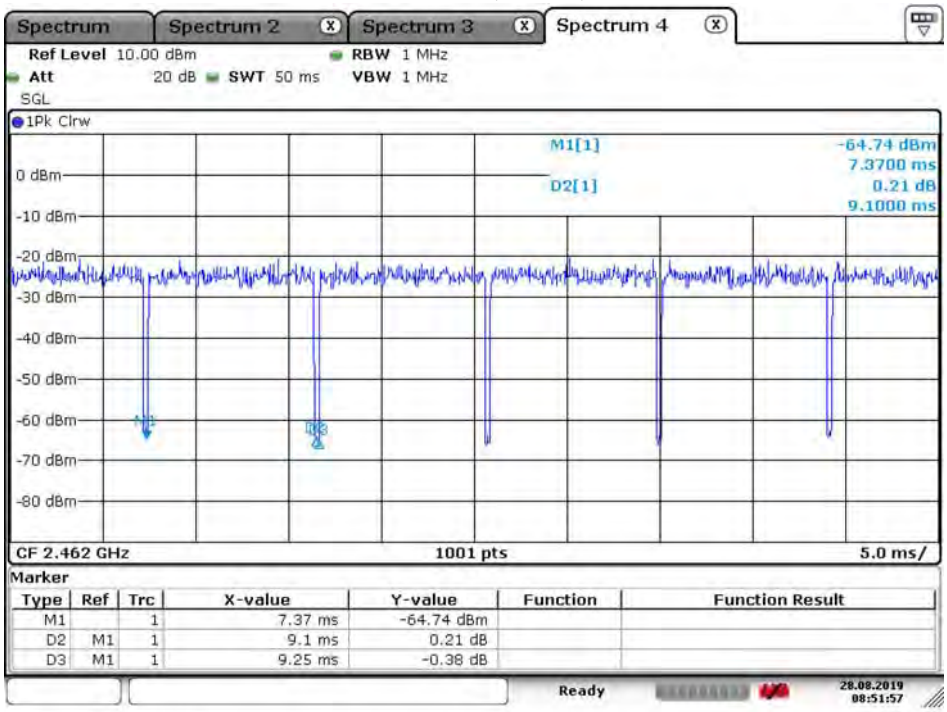

Date: 28.AUG.2019 08:51:57

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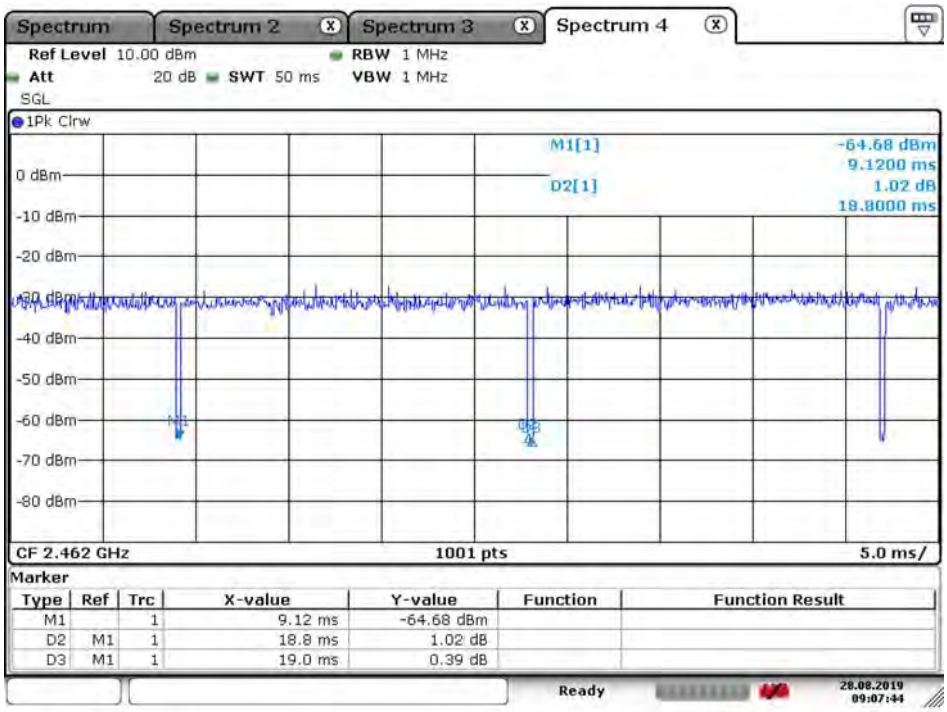

Date: 28.AUG.2019 09:07:45

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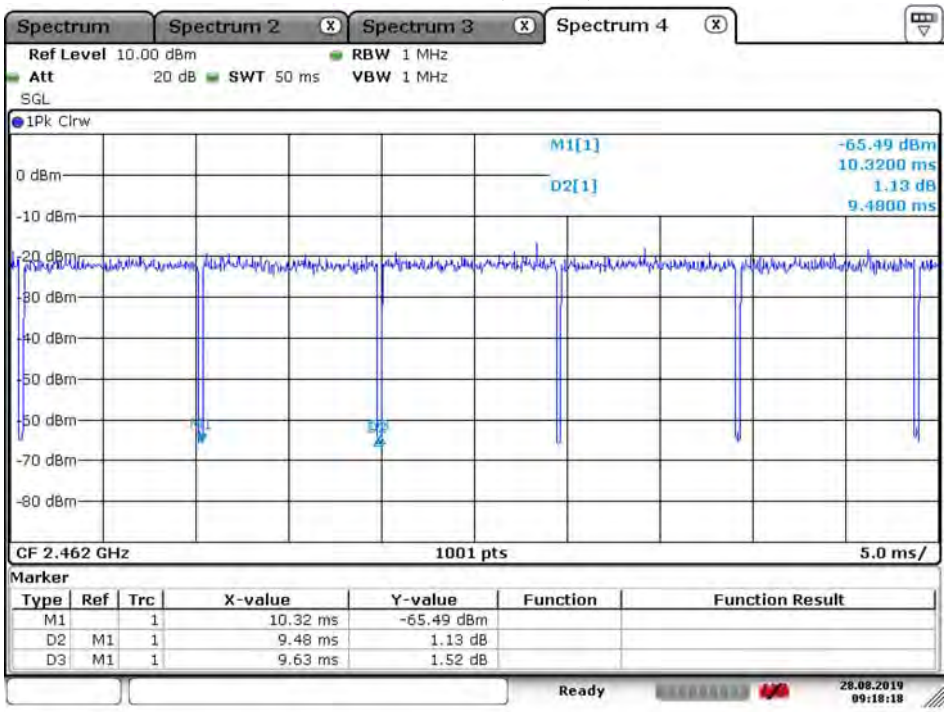
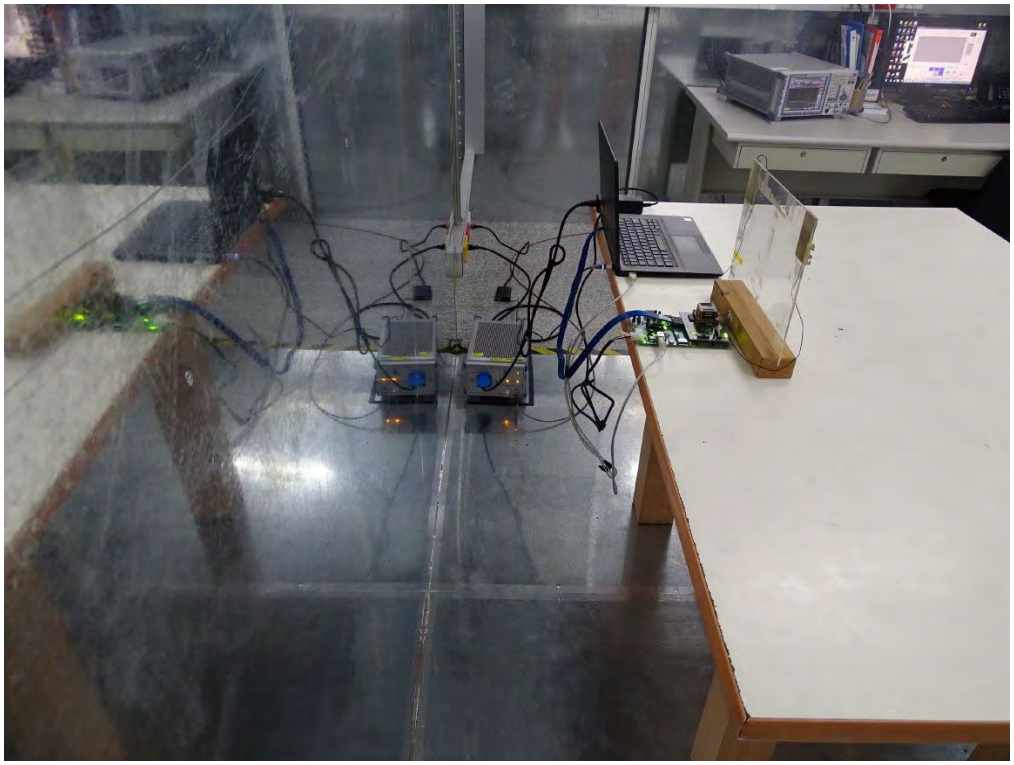


Date: 28.AUG.2019 09:18:18

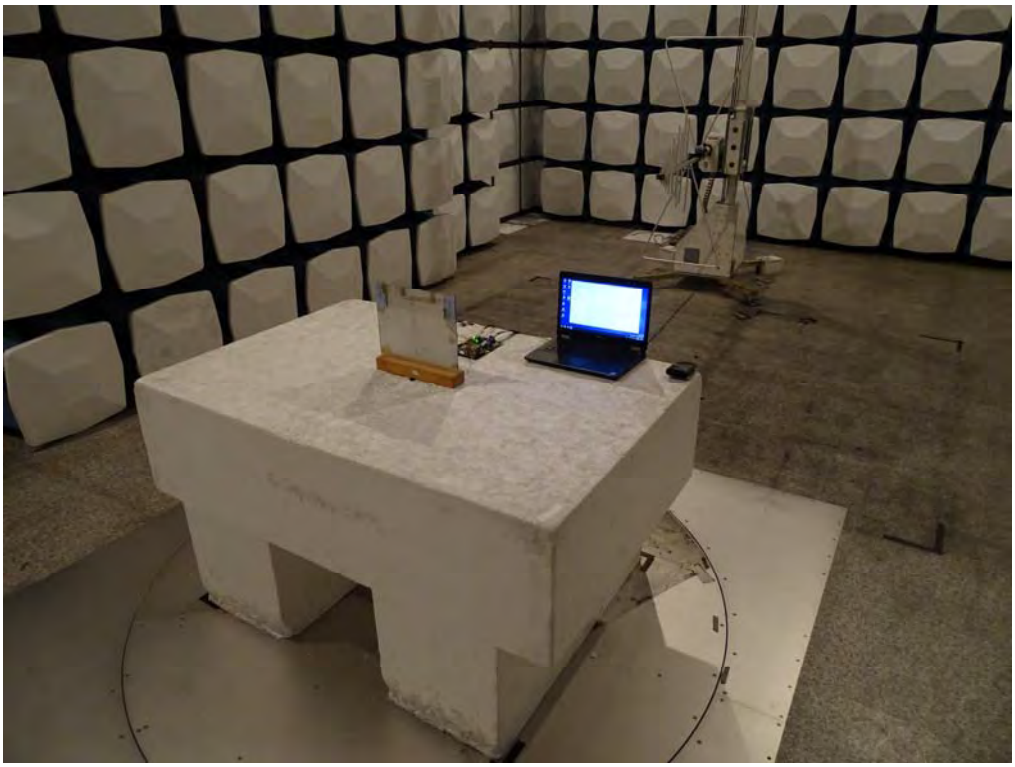
附件 1: 待測物測試擺設相片

測試相片 ： 電源端點測試 正面相片

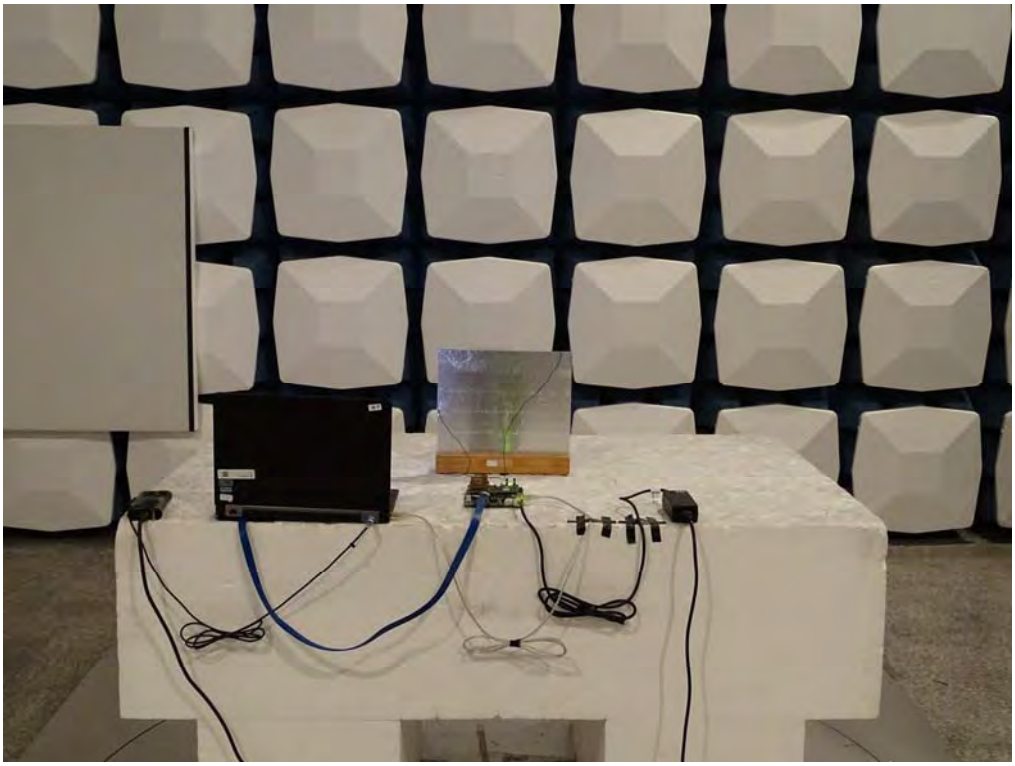
測試相片 ： 電源端點測試 背面相片



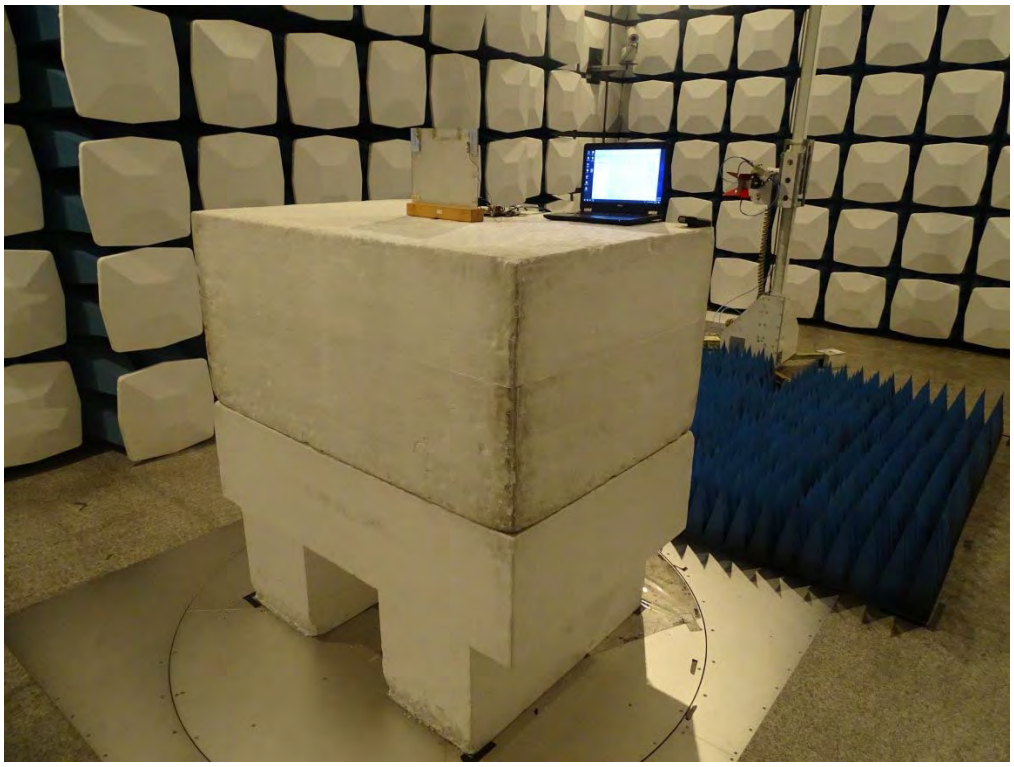
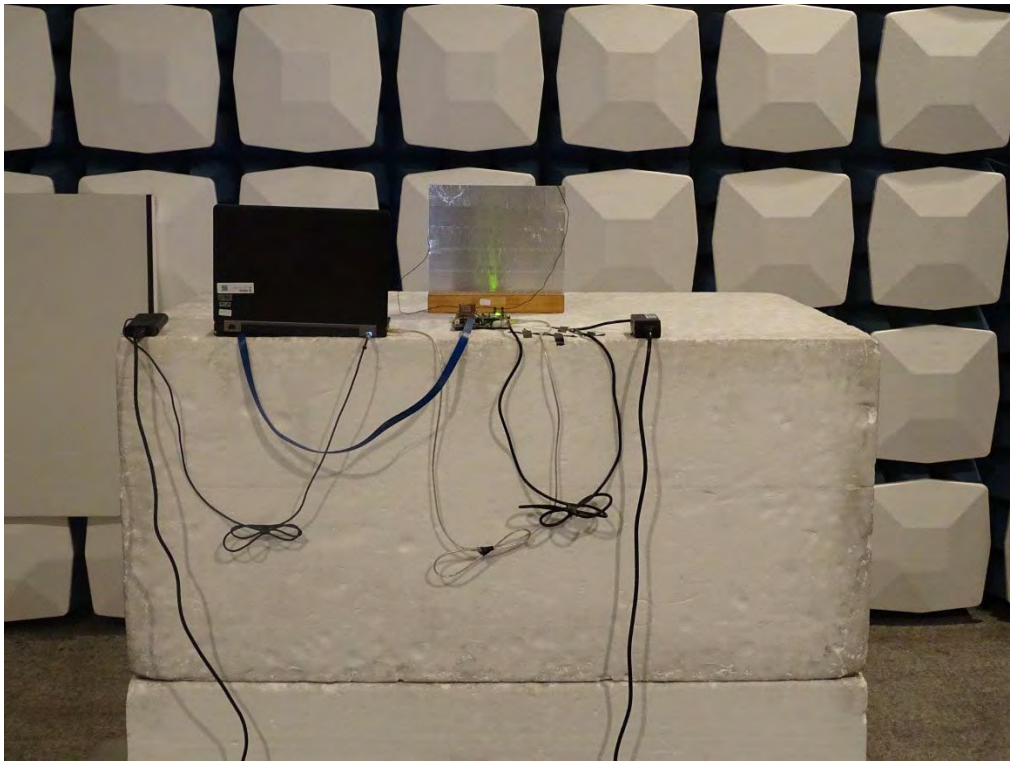
測試相片 ：輻射測試 正面相片



測試相片 ：輻射測試 背面相片



測試相片 ： 輻射測試 正面相片(Horn)



測試相片 ： 輻射測試 背面相片(Horn)