

4. 電源線傳導干擾之量測規定

4.1. 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 2.3 節，電源傳導干擾之限制要求如下：

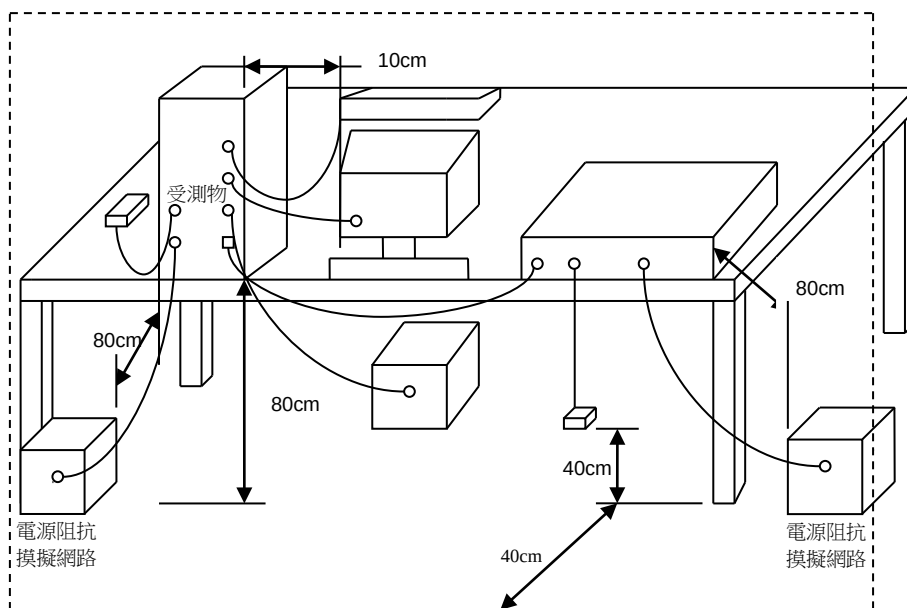
頻率範圍(MHz)	傳導限制值 (dB μ V)	
	準峰值(Quasi-peak)	平均值(Average)
0.15 ~ 0.5	66-56 (註)	56-46 (註)
0.5 ~ 5	56	46
5 ~ 30	60	50

註：隨頻率之對數遞減

4.2. 測試方法

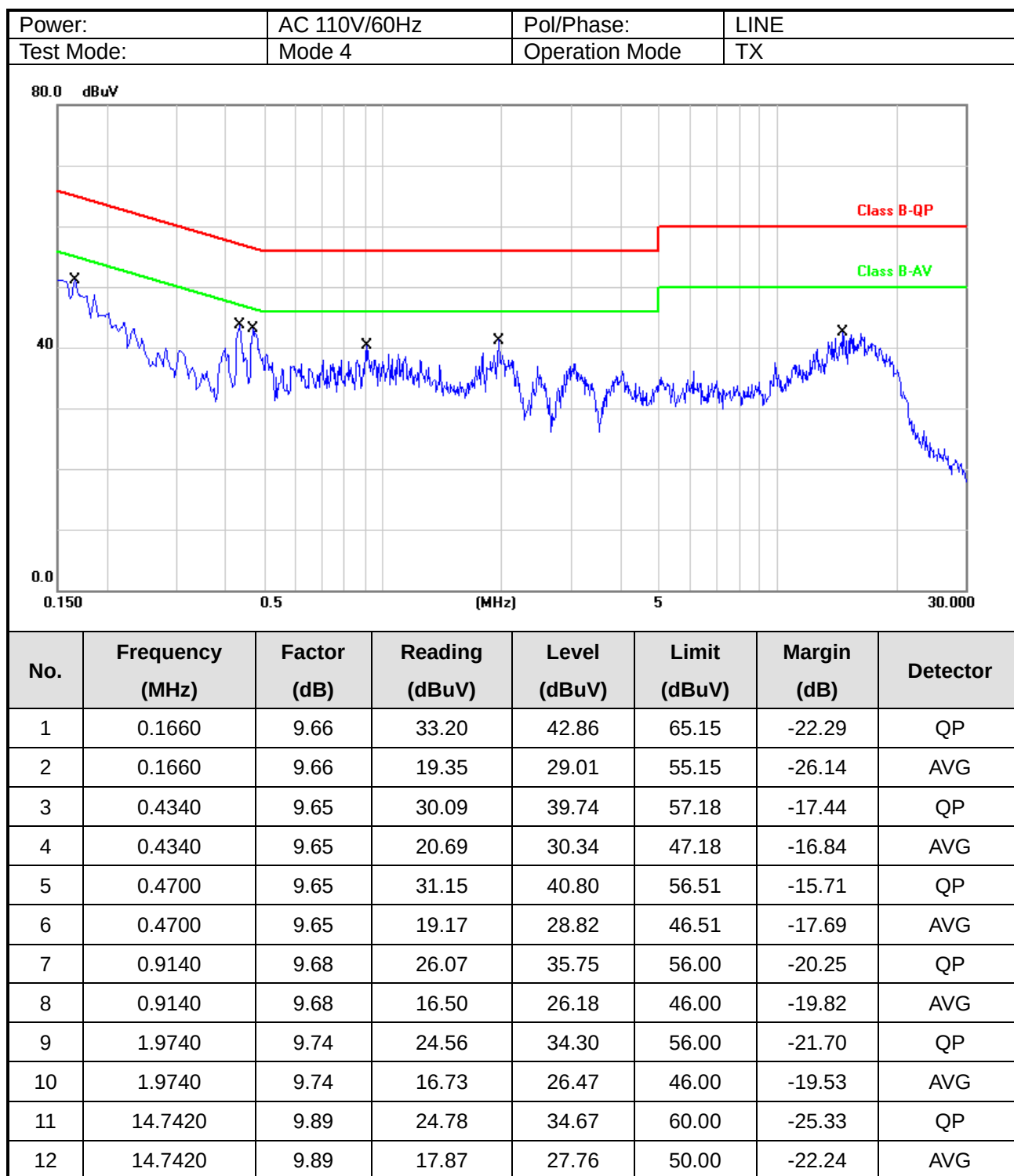
將待測物置於 0.8 米高的非金屬桌面，使其在工作狀態，待測物電源線接至電源線接至電源阻抗穩定網路上，從測試接收機記錄頻率由 0.15MHz 至 30MHz 之間之電源線線導放射強度。

4.3. 傳導干擾之擺設

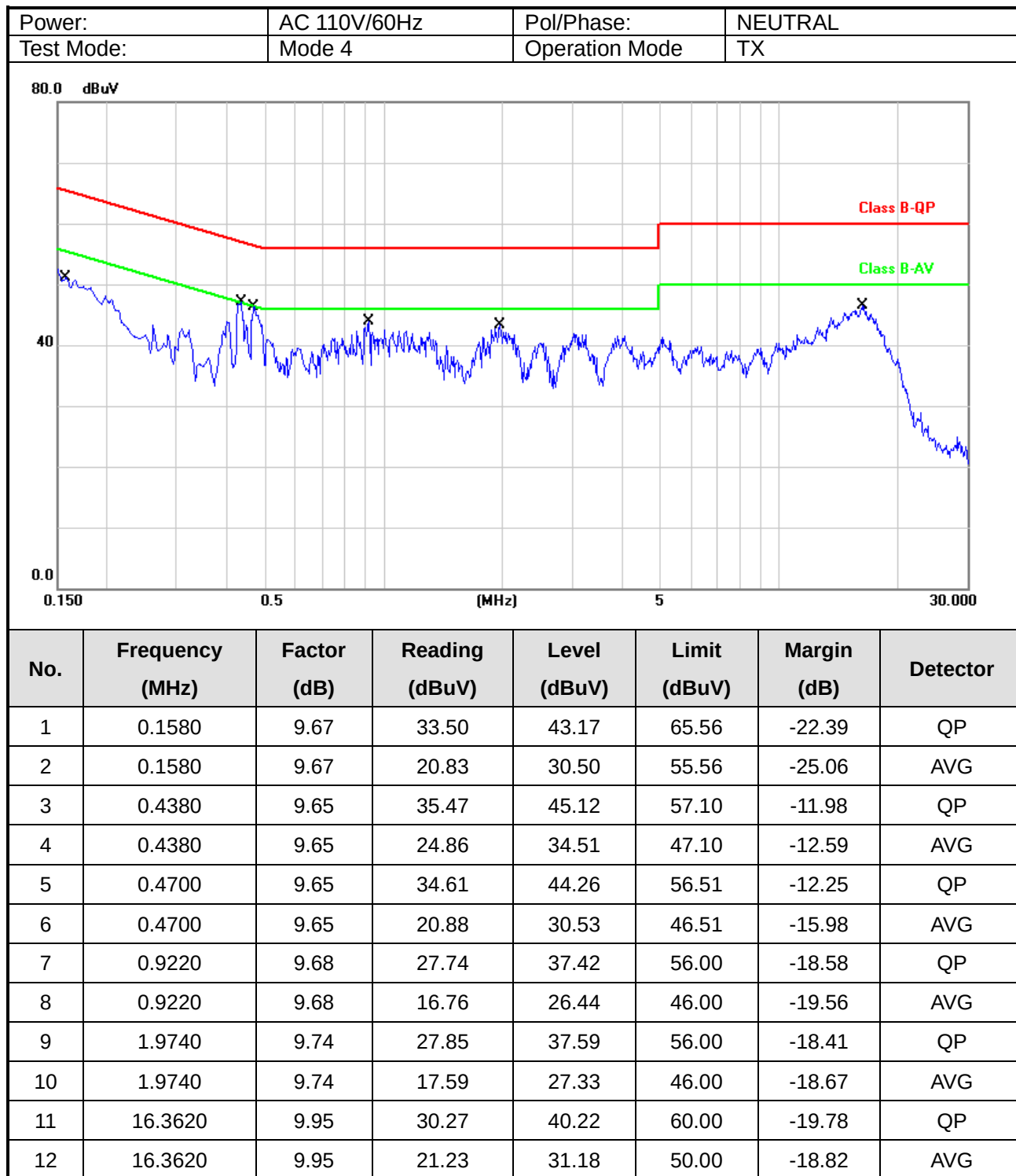




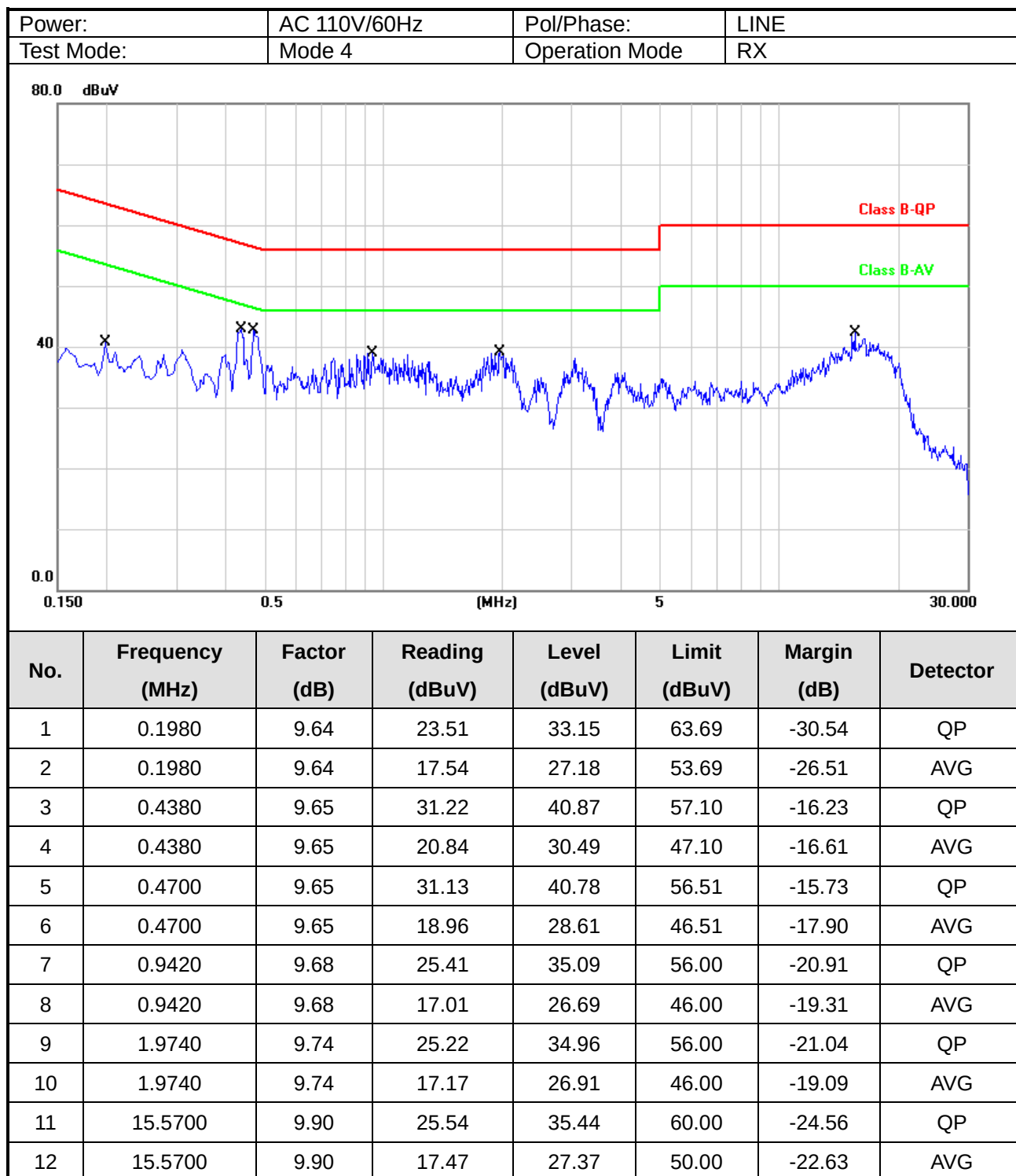
4.4. 傳導干擾之測試結果及數據



Note: Level = Reading + Factor
Margin = Level – Limit

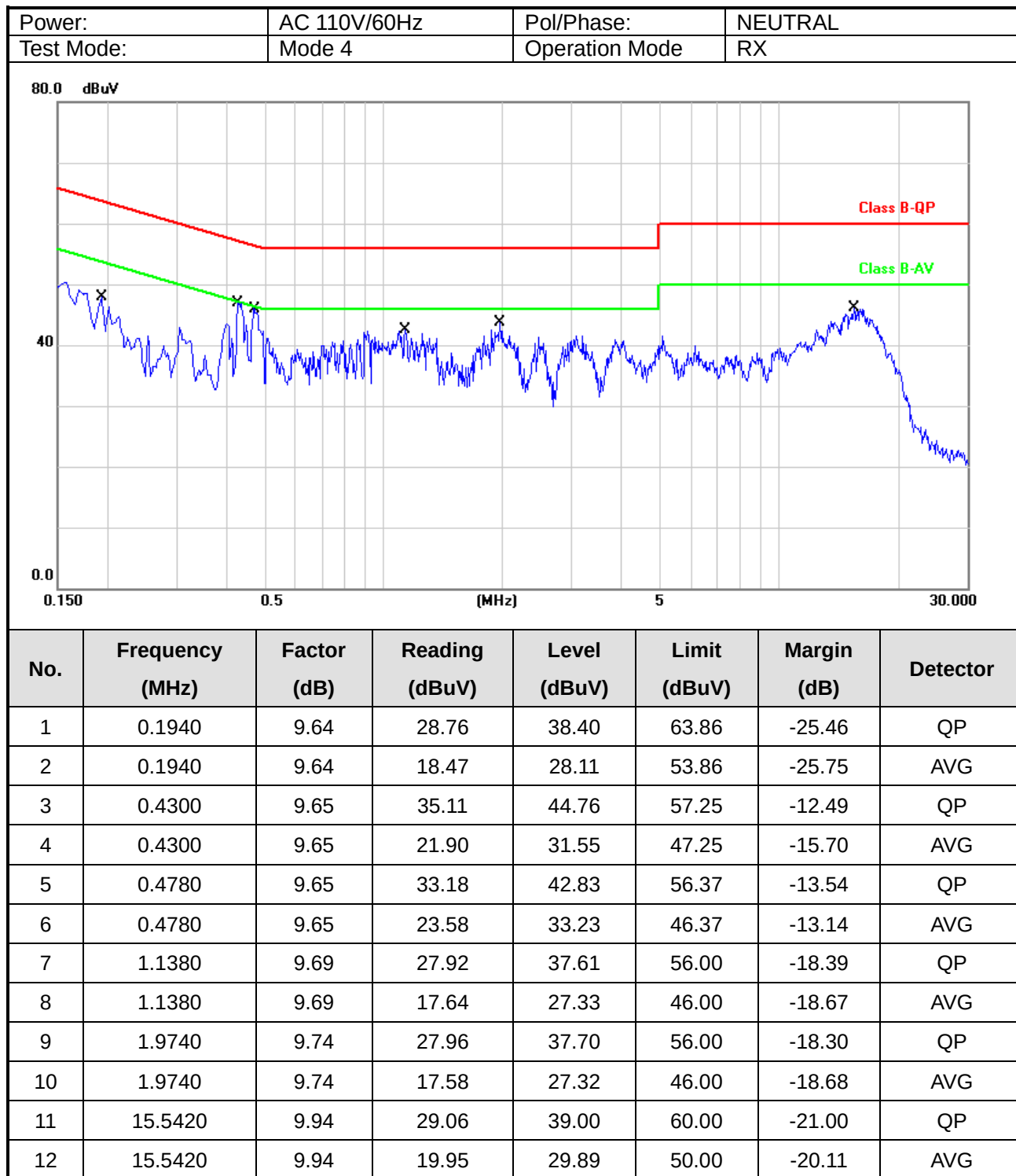


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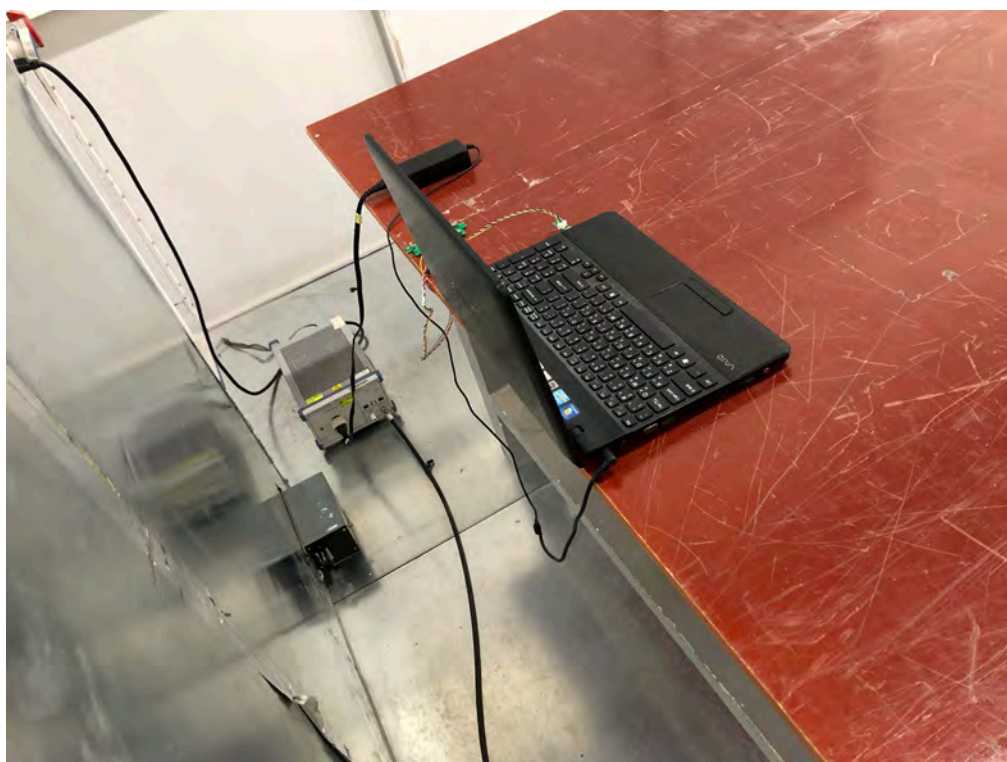


4.5. 傳導量測之配置照片

正面照



側面照





5. 輻射之量測規定

5.1. 適用標準

不必要發射之限制值

在 5.15GHz~5.35GHz 及 5.470GHz~5.725GHz 頻段操作的發射器:帶外發射之有效等向輻射功率(EIRP) $\leq$ -27dBm/MHz 在 5.725GHz~5.850GHz 的頻帶操作之發射器:所有頻帶邊緣向外 5MHz 內頻率之發射,有效等向輻射功率(EIRP) $\leq$ 27dBm/MHz~15.6dBm/MHz(以線性法計算對應之限制值);所有頻帶邊緣向外 5MHz~25MHz,有效等向輻射功(EIRP) $\leq$ 15.6dBm/MHz~10dBm/MHz(以線性法計算對應之限制值);所有頻帶邊緣外 25MHz~75MHz,有效等向輻射功(EIRP) $\leq$ 10dBm/MHz~-27dBm/MHz(以線性法計算對應之限制值);所有頻帶邊緣外 $\geq$ 75MHz 的頻率之發射有效等向輻射功(EIRP) $\leq$ -27dBm/MHz

依據國家通訊傳播委員會低功率射頻器材技術規範 4.7.4.6 節之要求,落於 2.7 節禁用頻段之輻射干擾需符合 2.8 節之一般限制要求:

頻率(MHz)	測試距離(m)	限制值(dB μ V)	限制值(μ V/m)
0.009 – 0.490 (含)	300	67.6 / kHz	2400 / kHz
0.490 (不含) – 1.705 (含)	30	87.6 / kHz	24000 / kHz
1.705(不含) – 30(不含)	30	29.5	30
30 (含) – 88 (含)	3	40.0	100
88(不含) – 216 (含)	3	43.5	150
216(不含) – 960 (含)	3	46.0	200
960(不含)以上	3	54.0	500

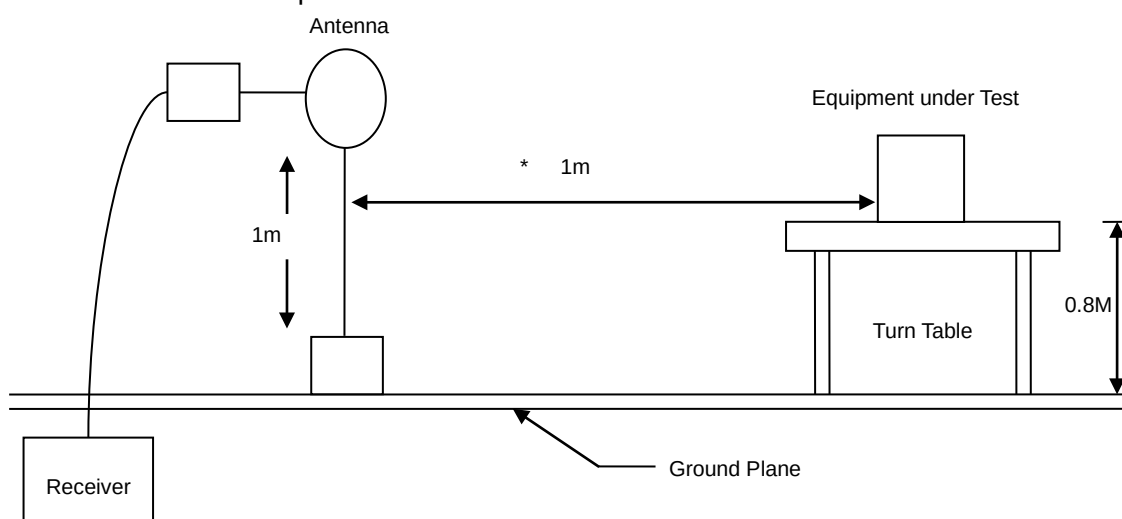
5.2. 測試方法

將待測物置於 0.8 米(Below 1G) & 1.5 米(Above 1G)高的非金屬桌面,使其在測試模式狀態,且設定為高、中、低各頻道產生最高峰值輸出功率的傳輸速率,接收天線置於 3 米外,且桌面要 360 度旋轉,另外接收天線也要從 1 米至 4 米升降變化,接收天線置於水平、垂直極向各執行測試一次。待測物若為手持式則分別要以三軸相放置,並分別測試以找出最大輻射電場強度。備註:

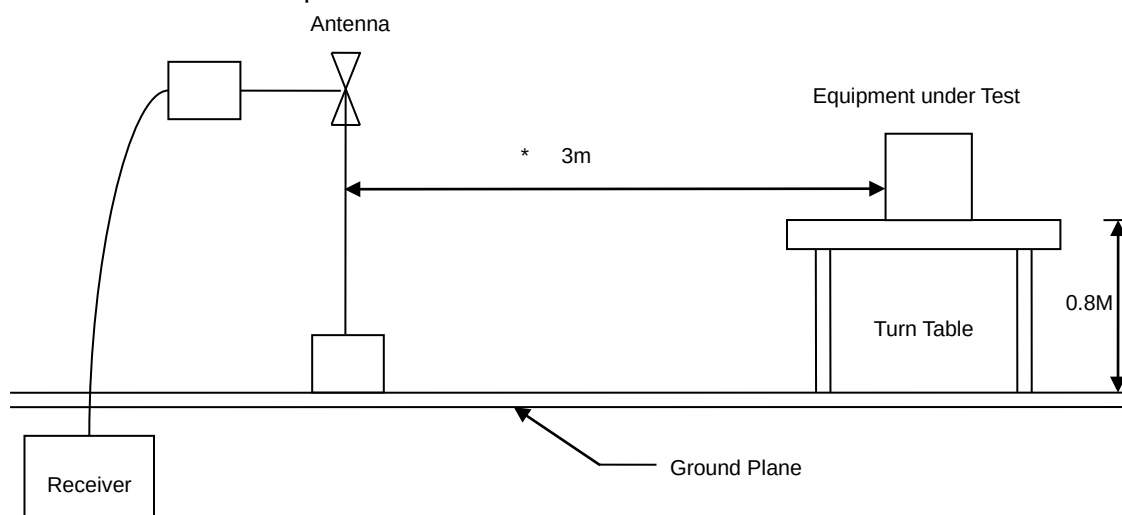
For Below 1G 若待測物之輻射峰值低於限制值 6dB 以上,則將終止測試,並以峰值之讀值作為報告之記錄;反之,若無 6dB 餘裕範圍之輻射,則每一訊號皆以準峰值之測試方法量測,並記錄於報告之中

5.3. 輻射場地之擺設

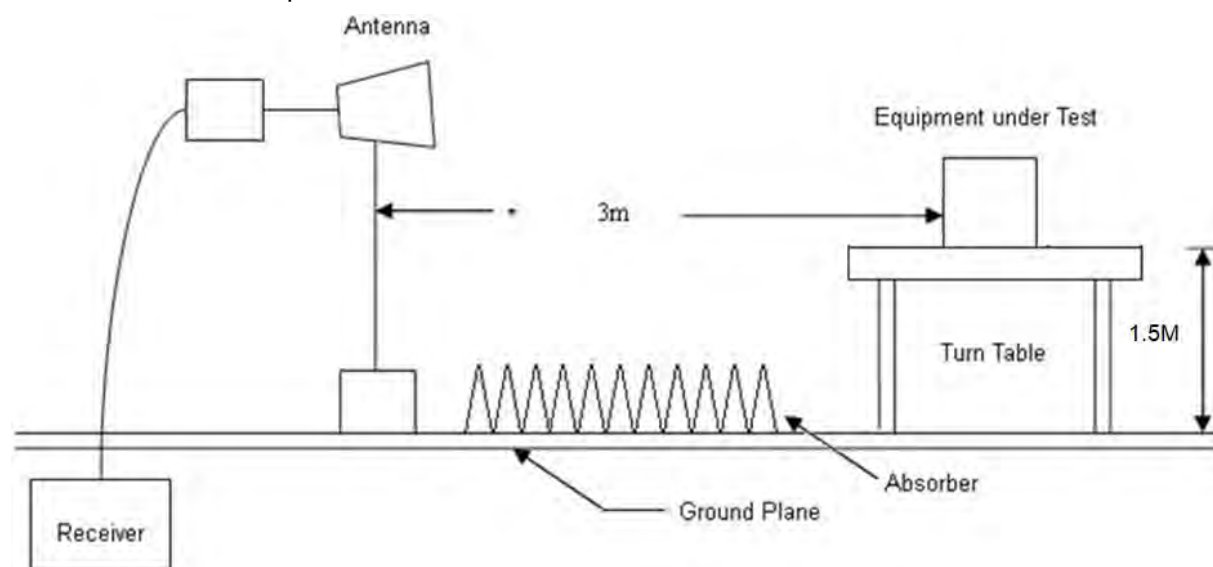
Below 30MHz test setup



30MHz- 1GHz Test Setup

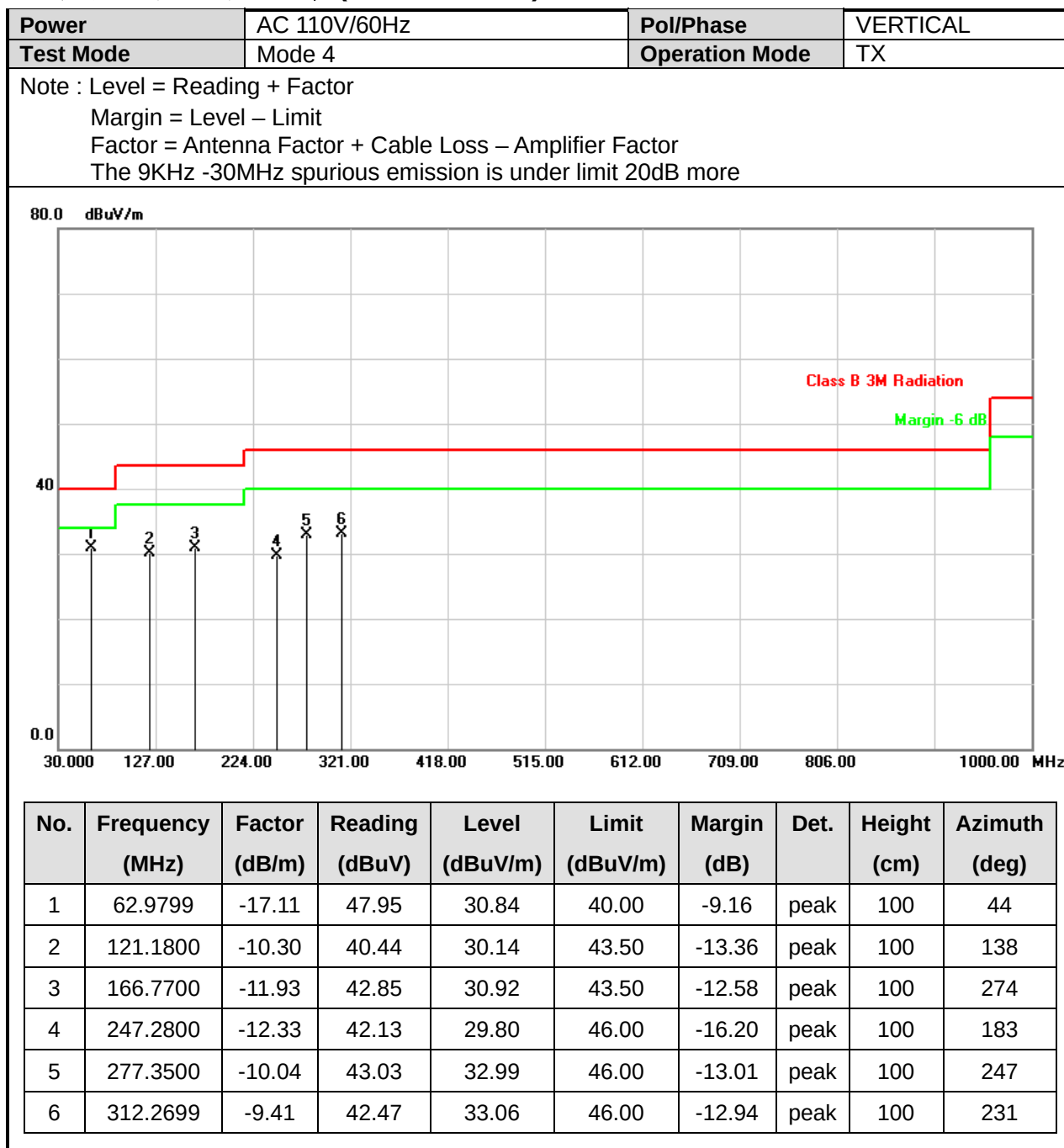


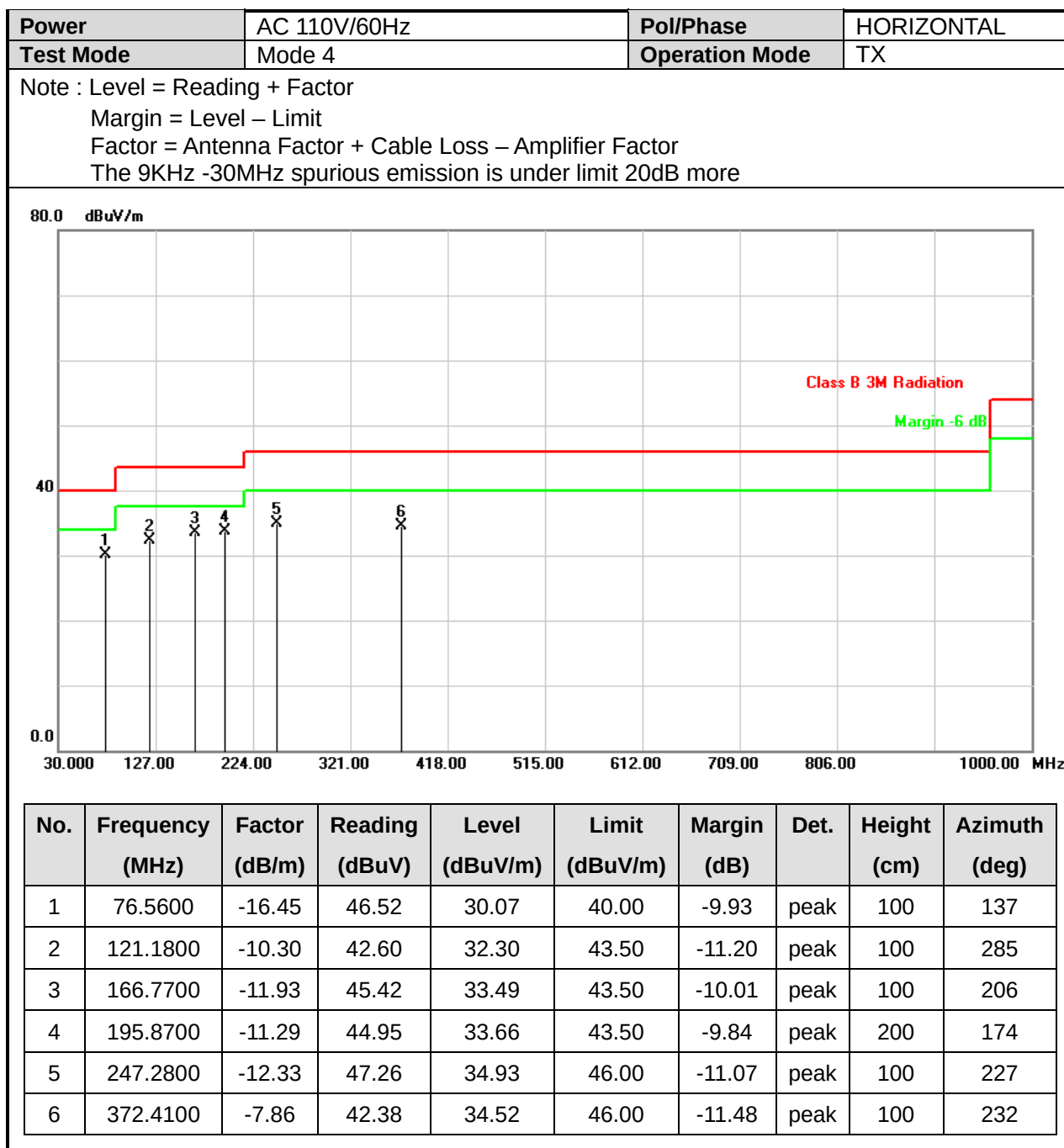
Above 1GHz Test Setup

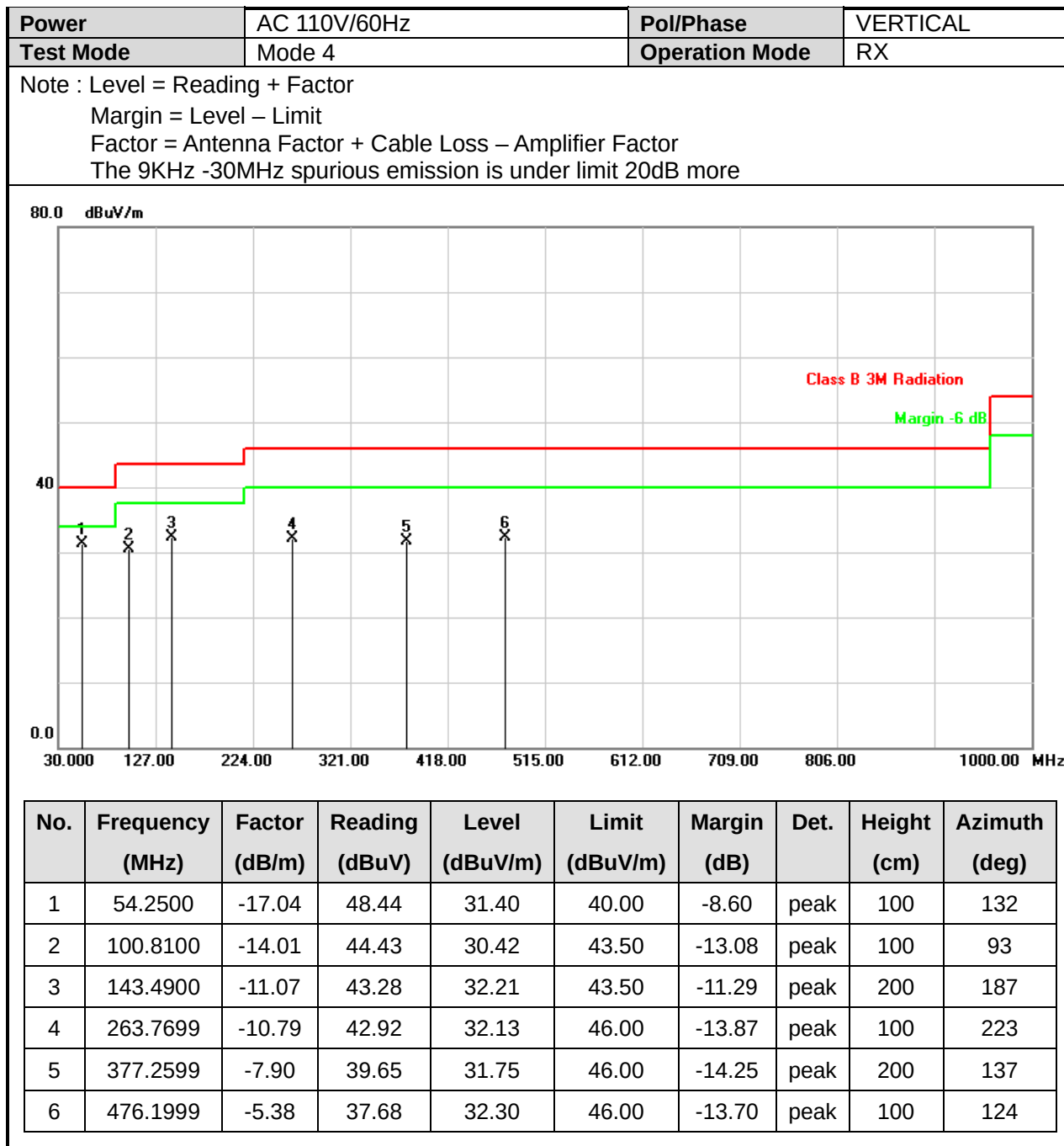


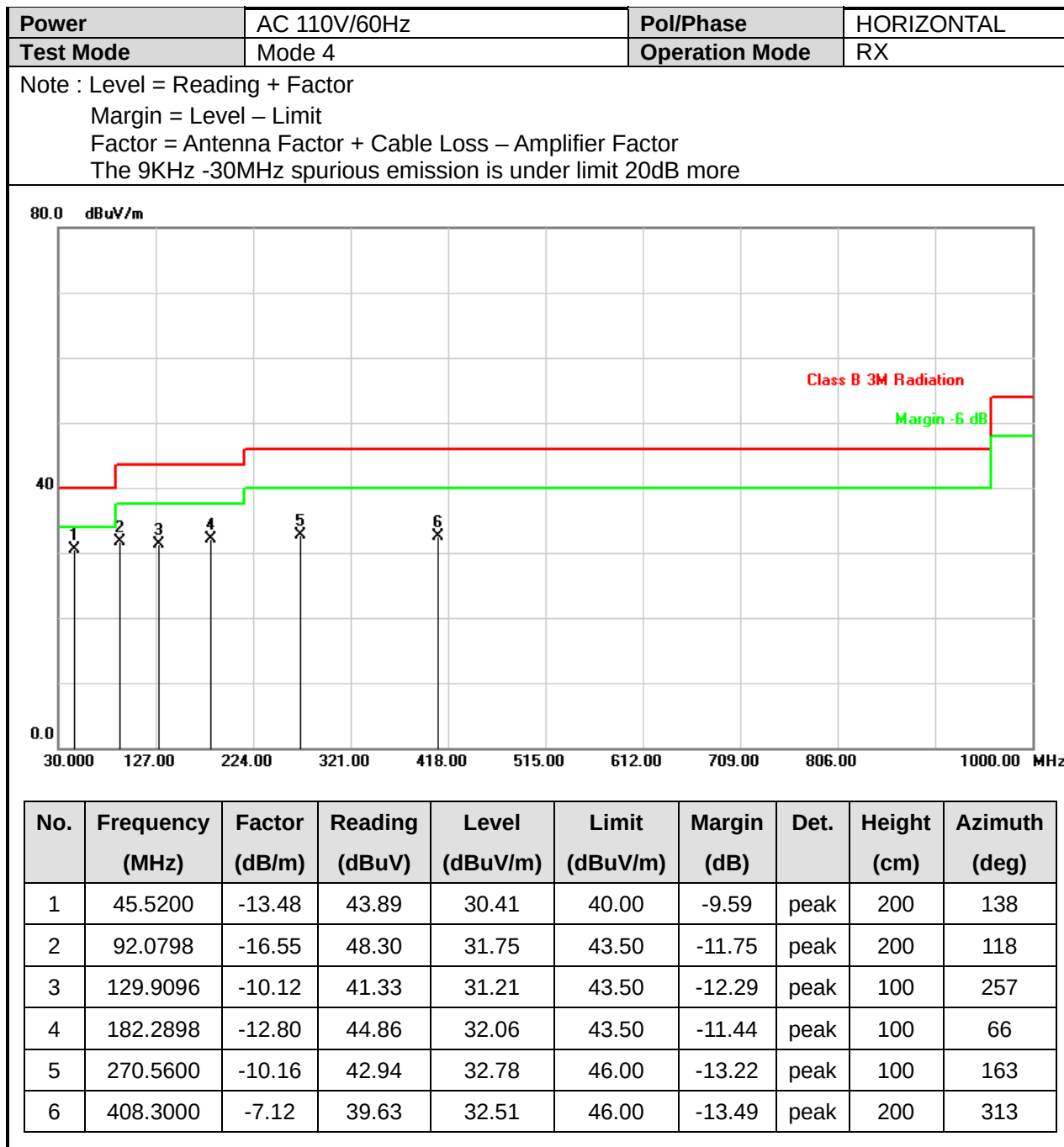


5.4. 輻射之測試結果及數據 (30MHz ~ 1GHz)





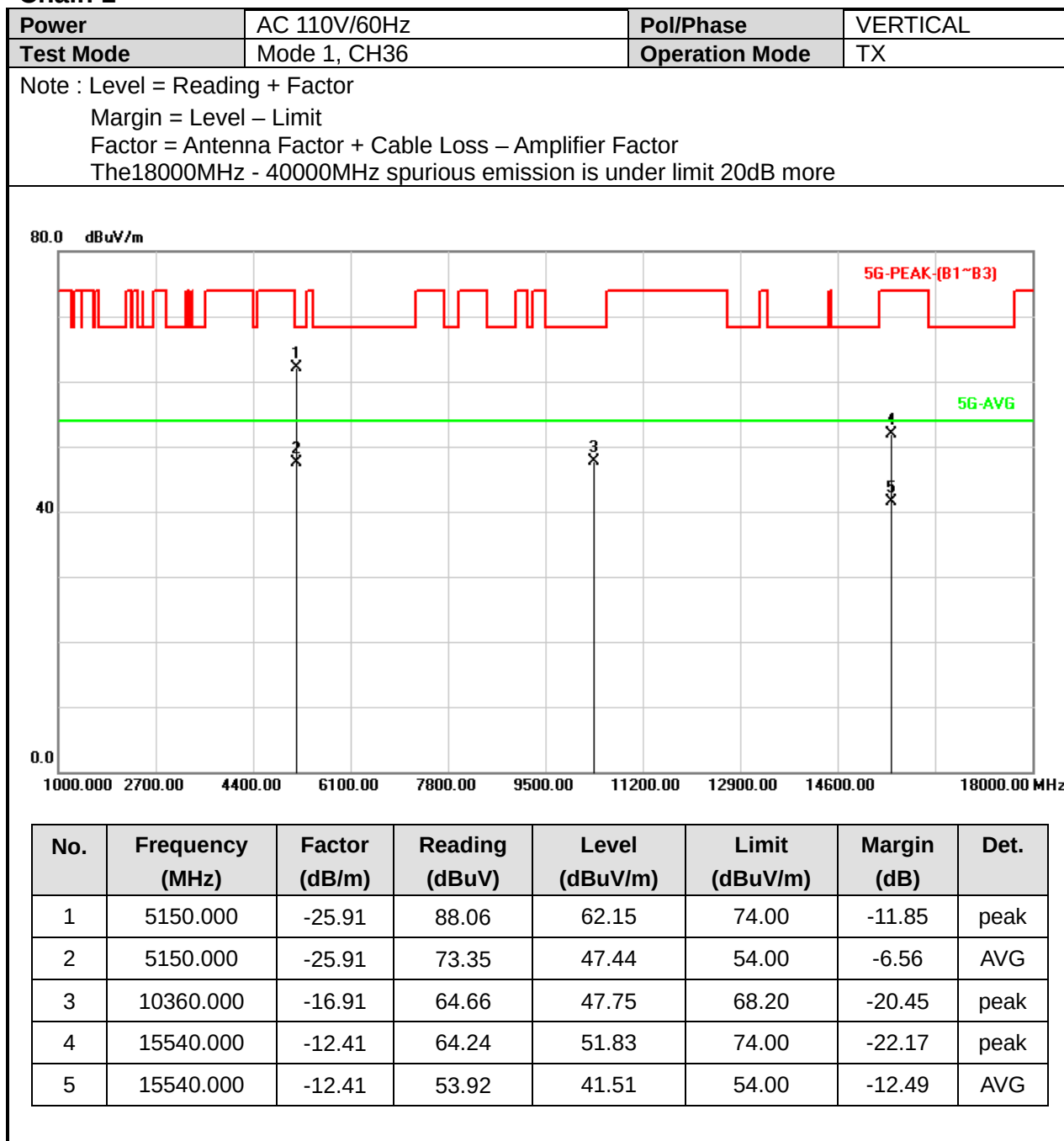


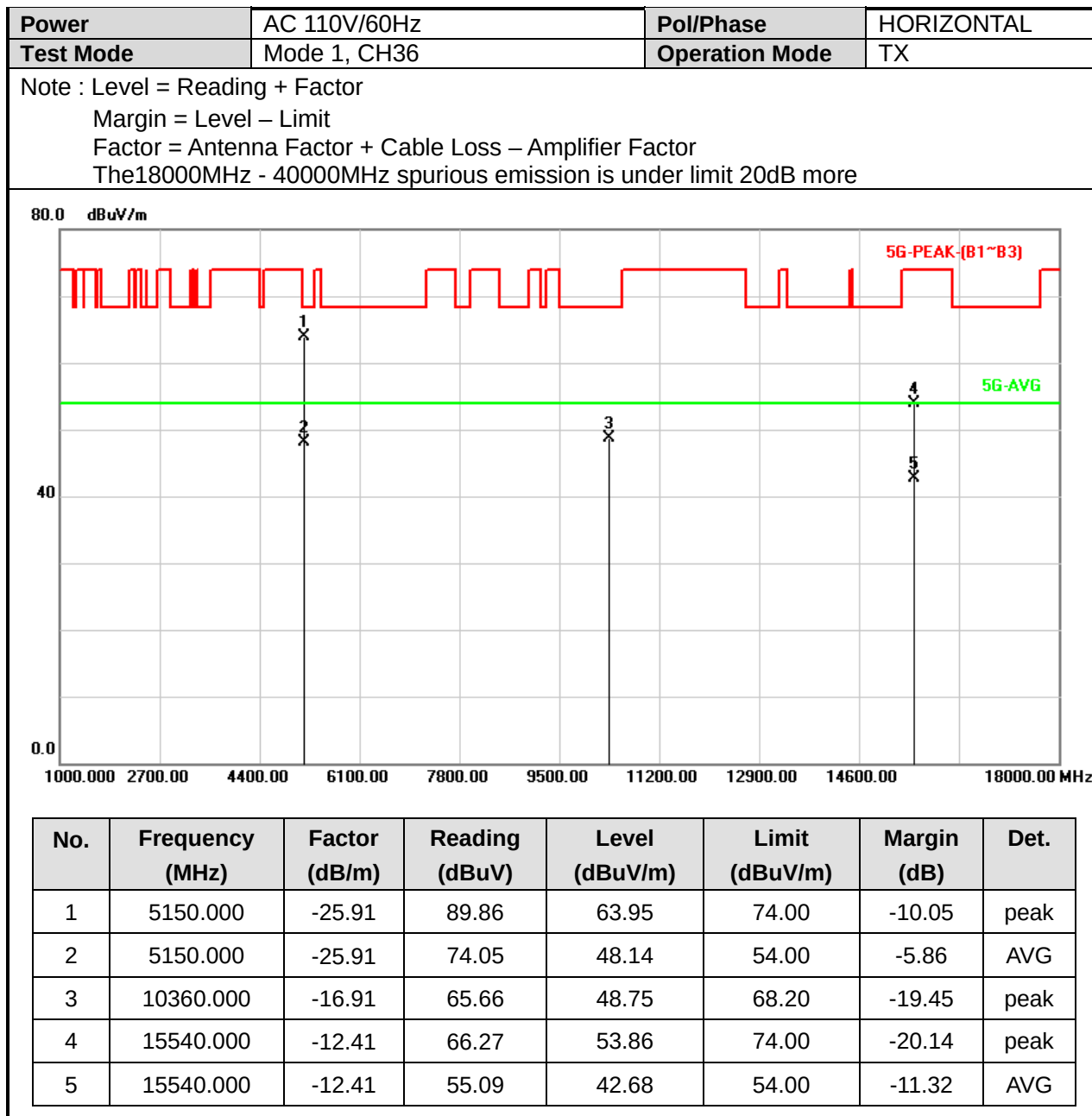


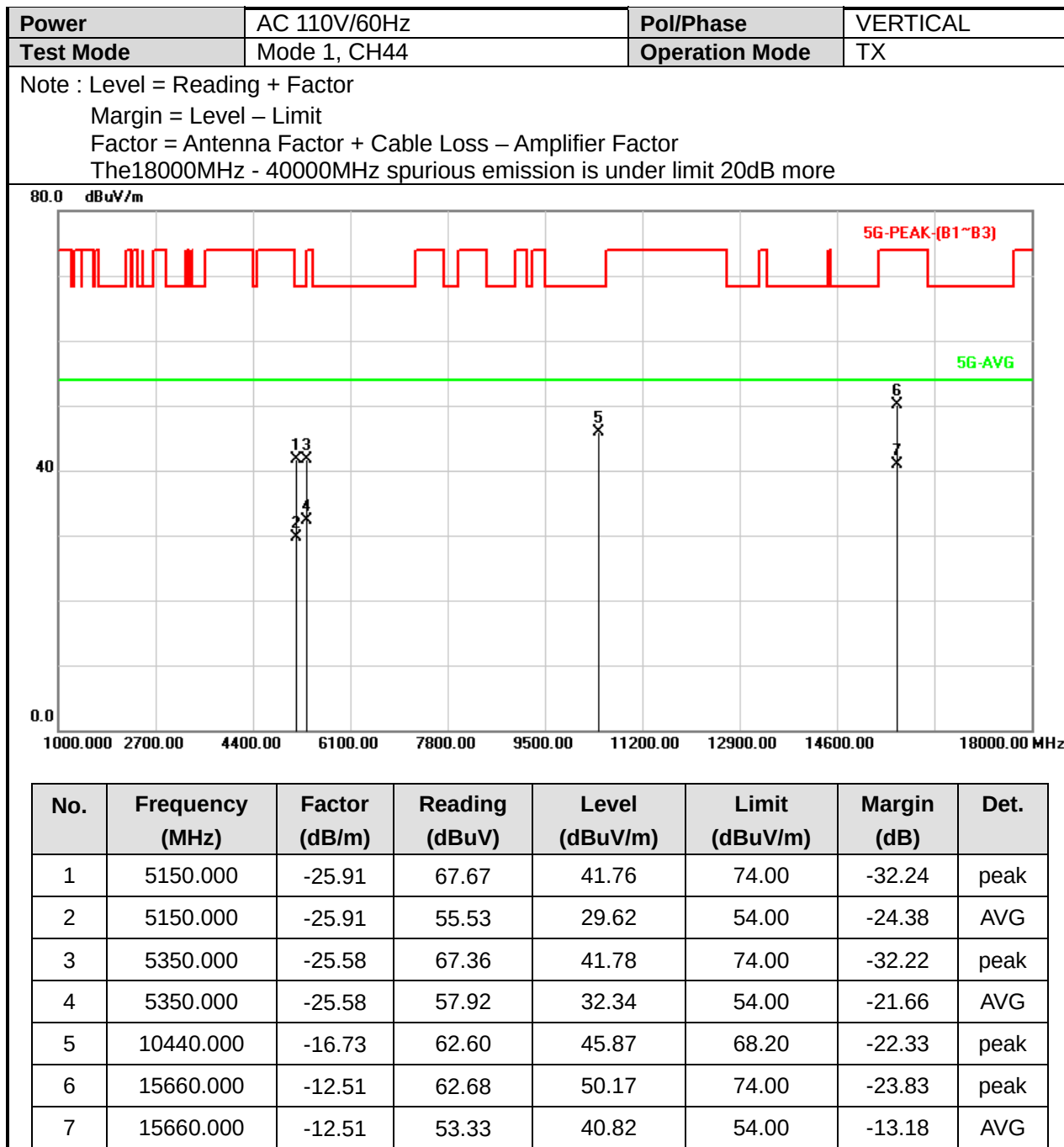


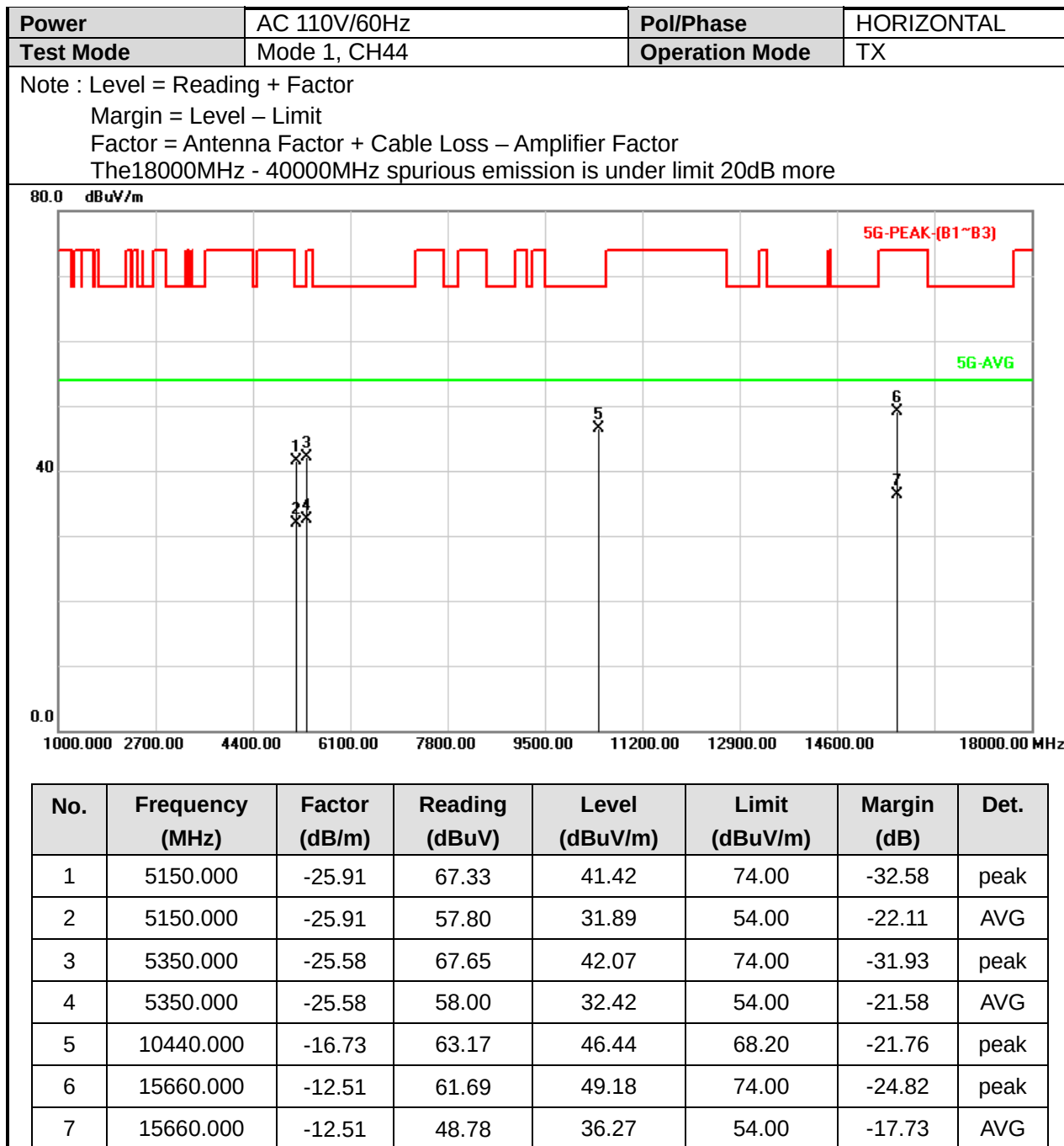
5.5. 輻射之測試結果及數據 (Above 1GHz)

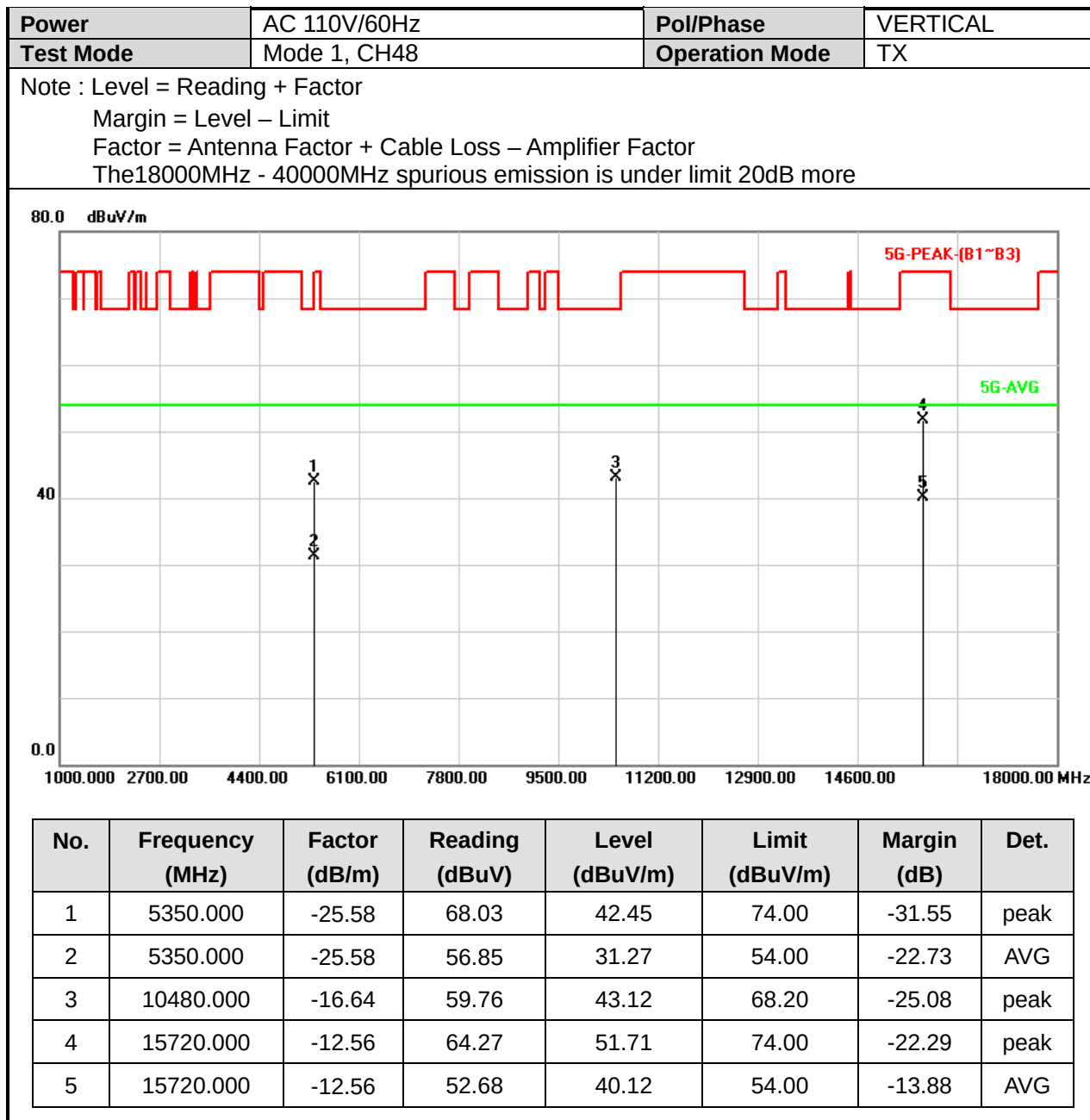
For 1TX
Chain 1

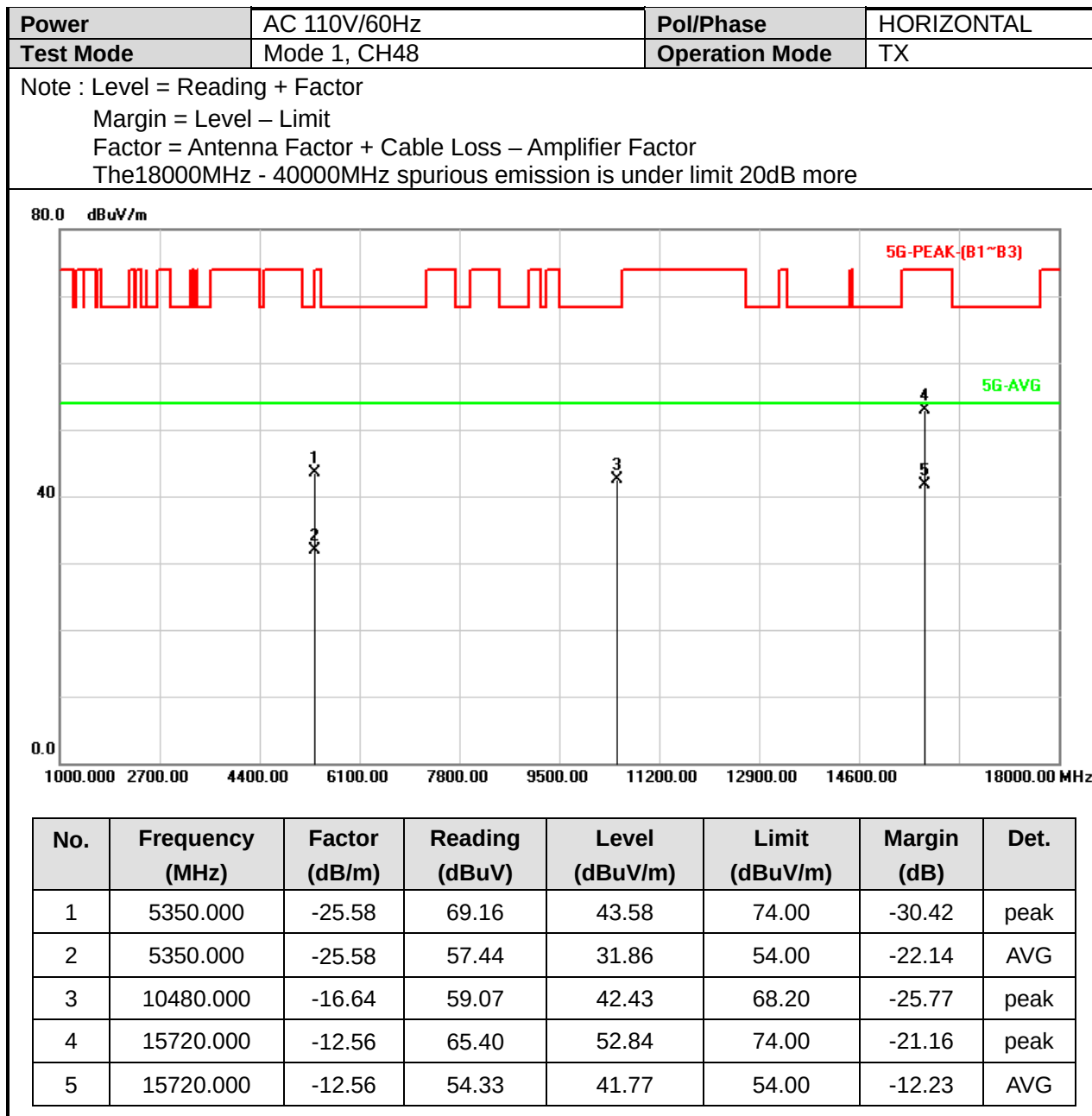


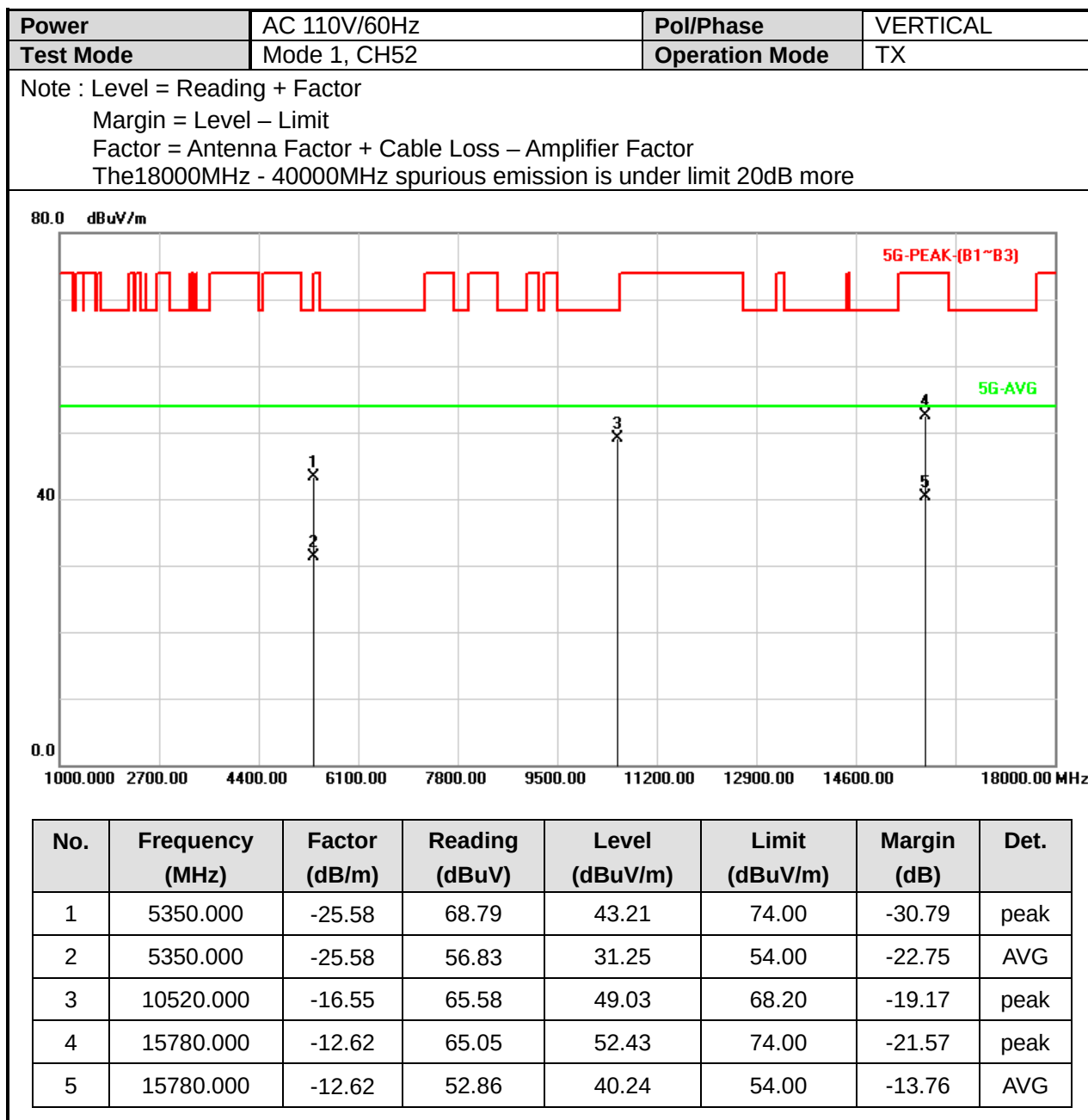


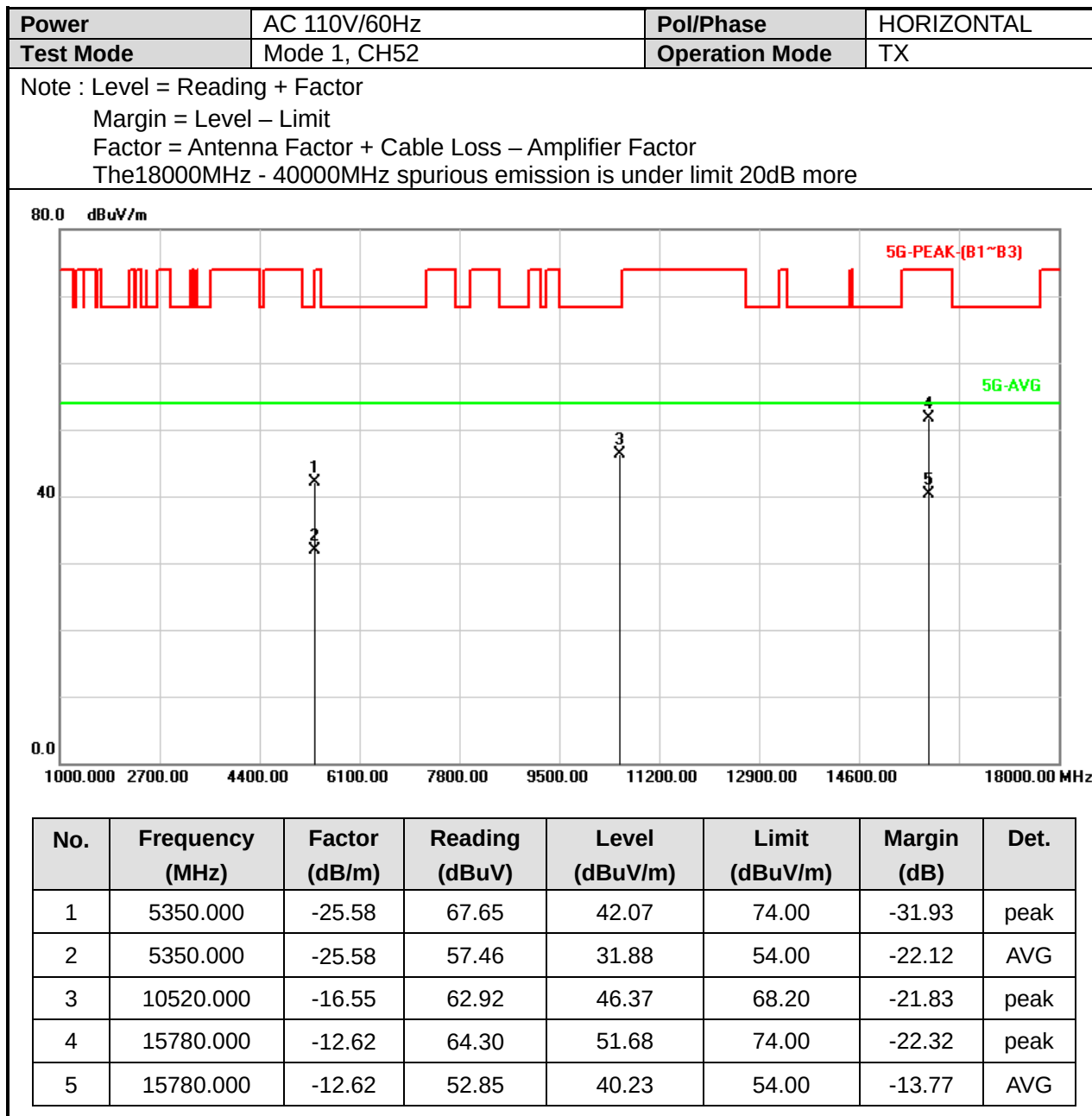


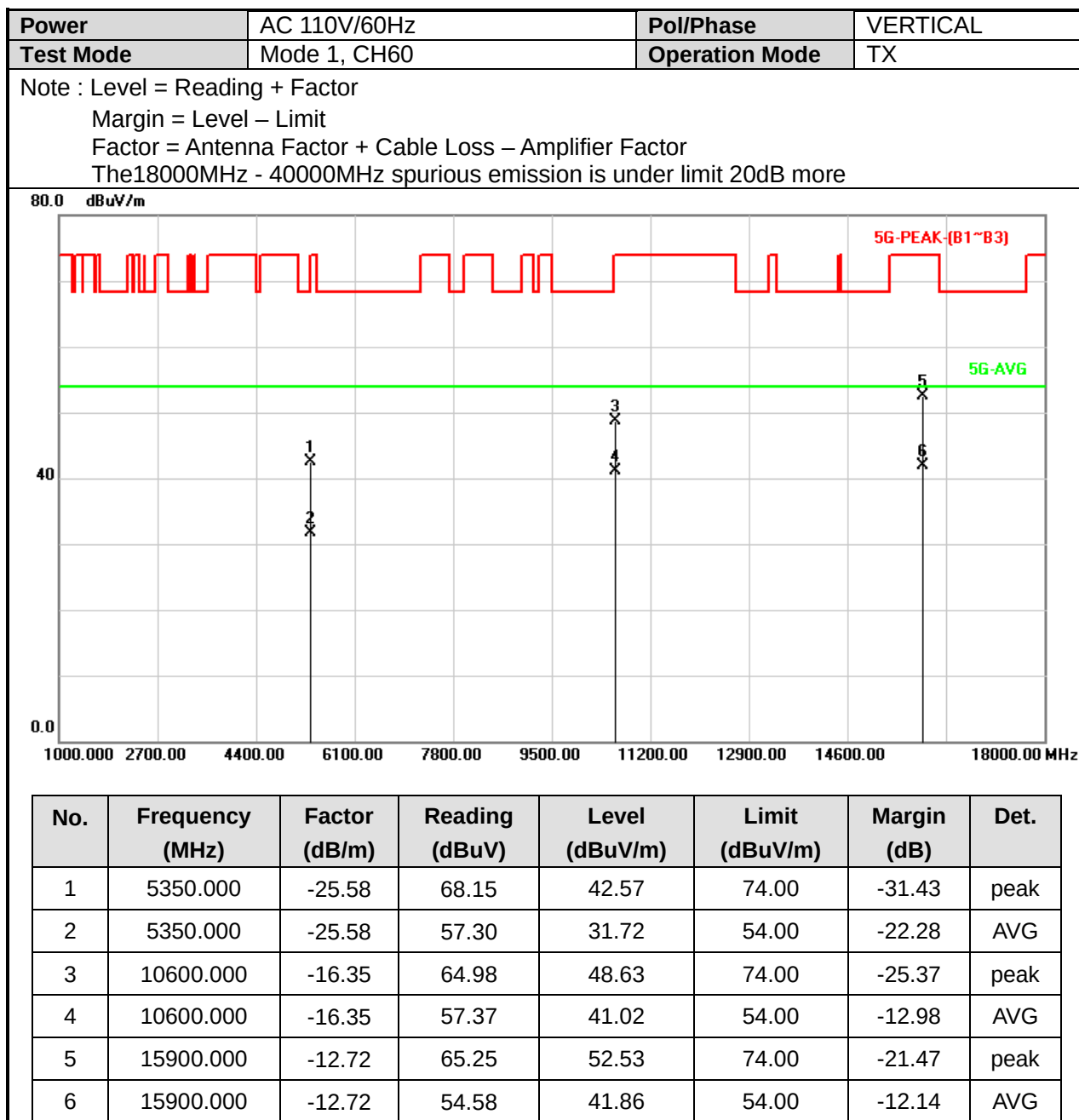


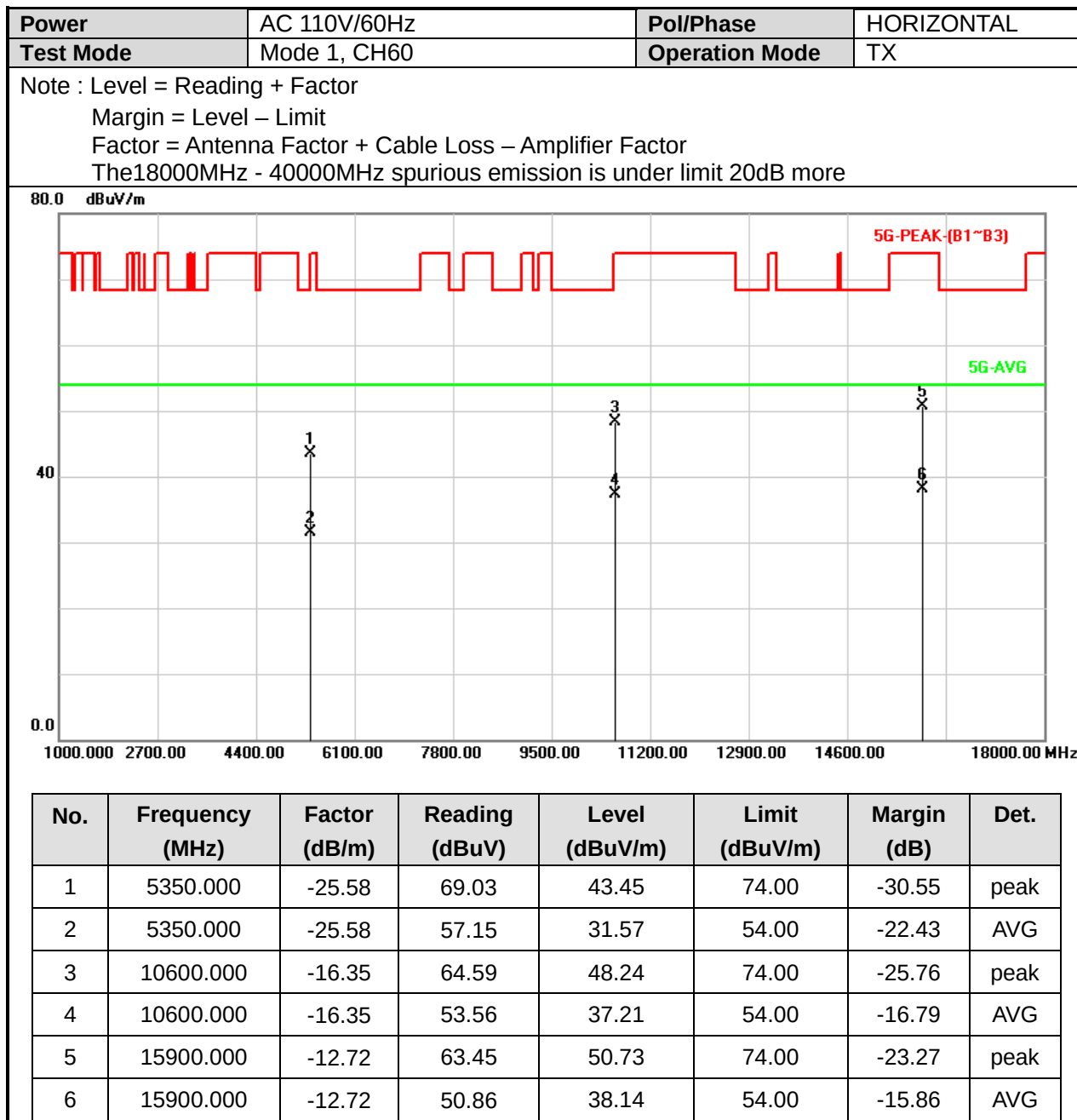


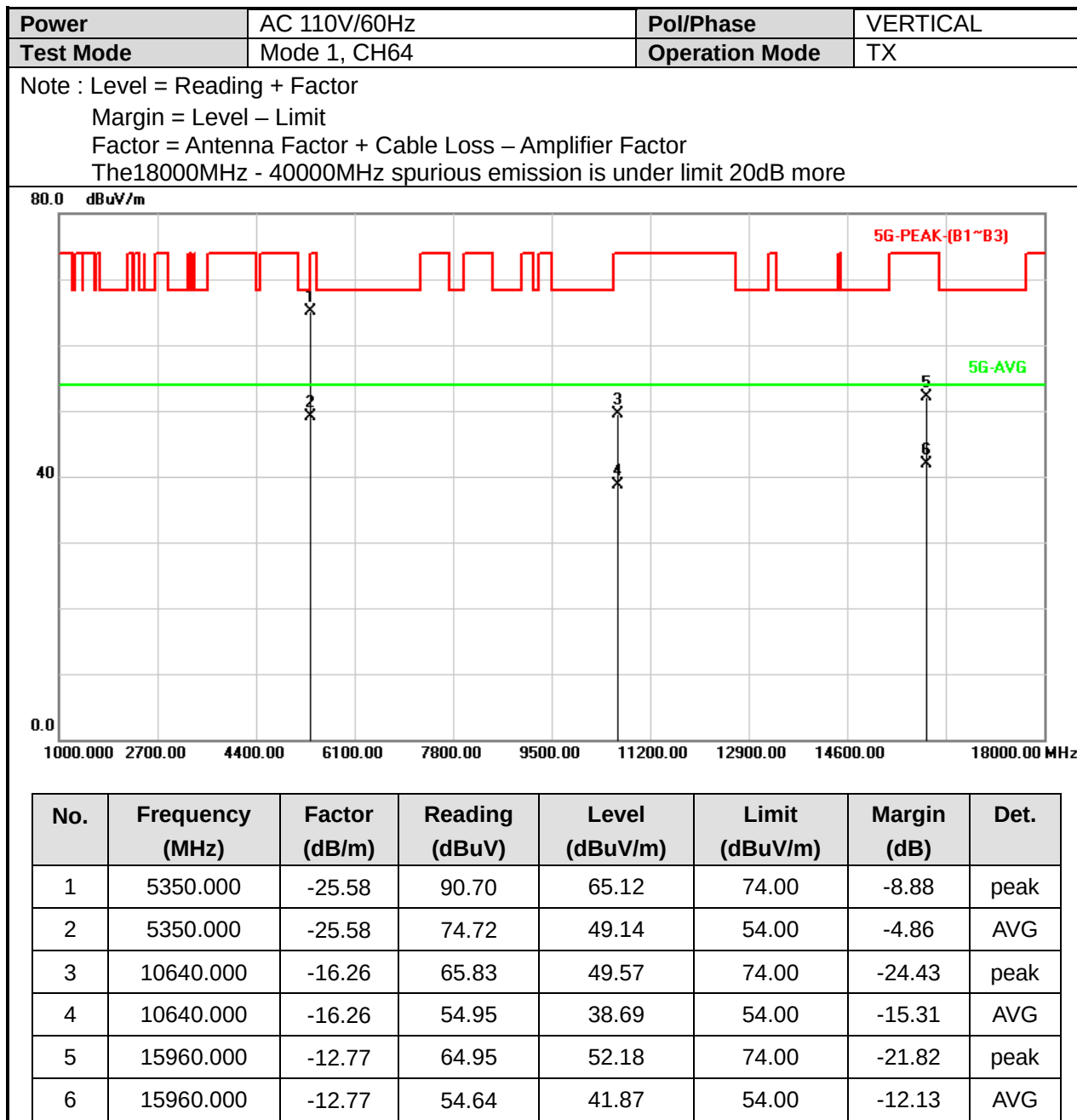


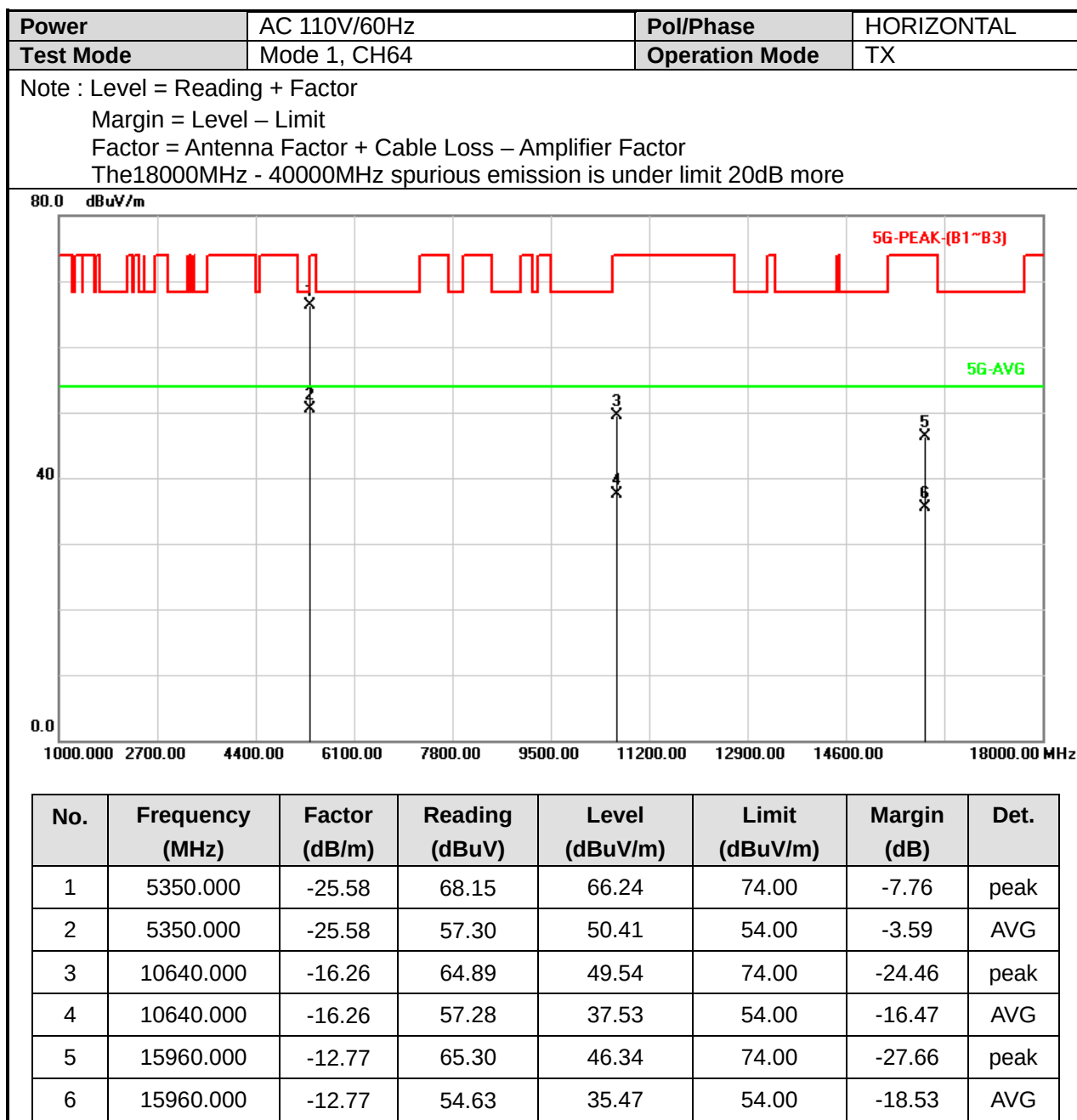


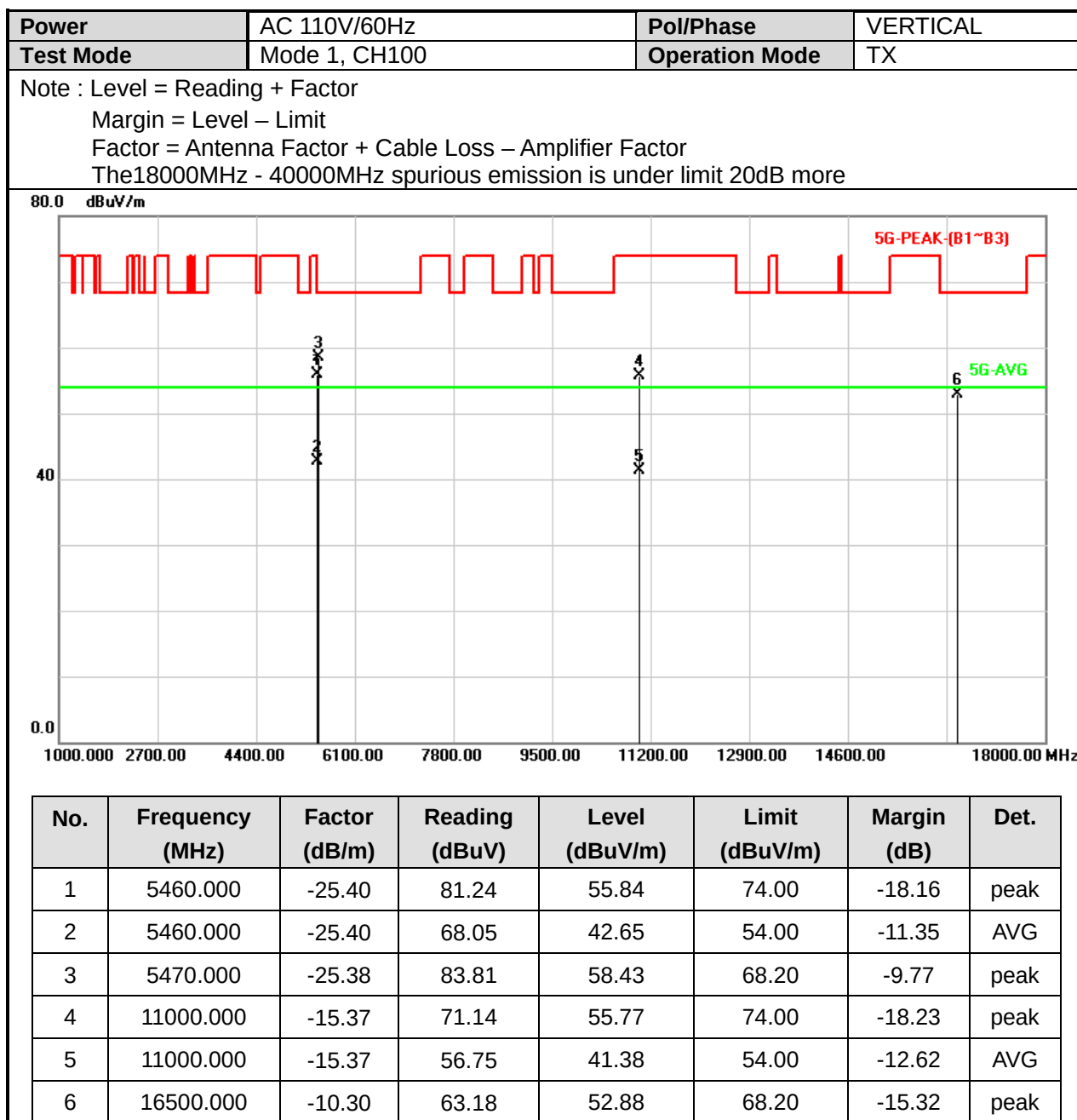


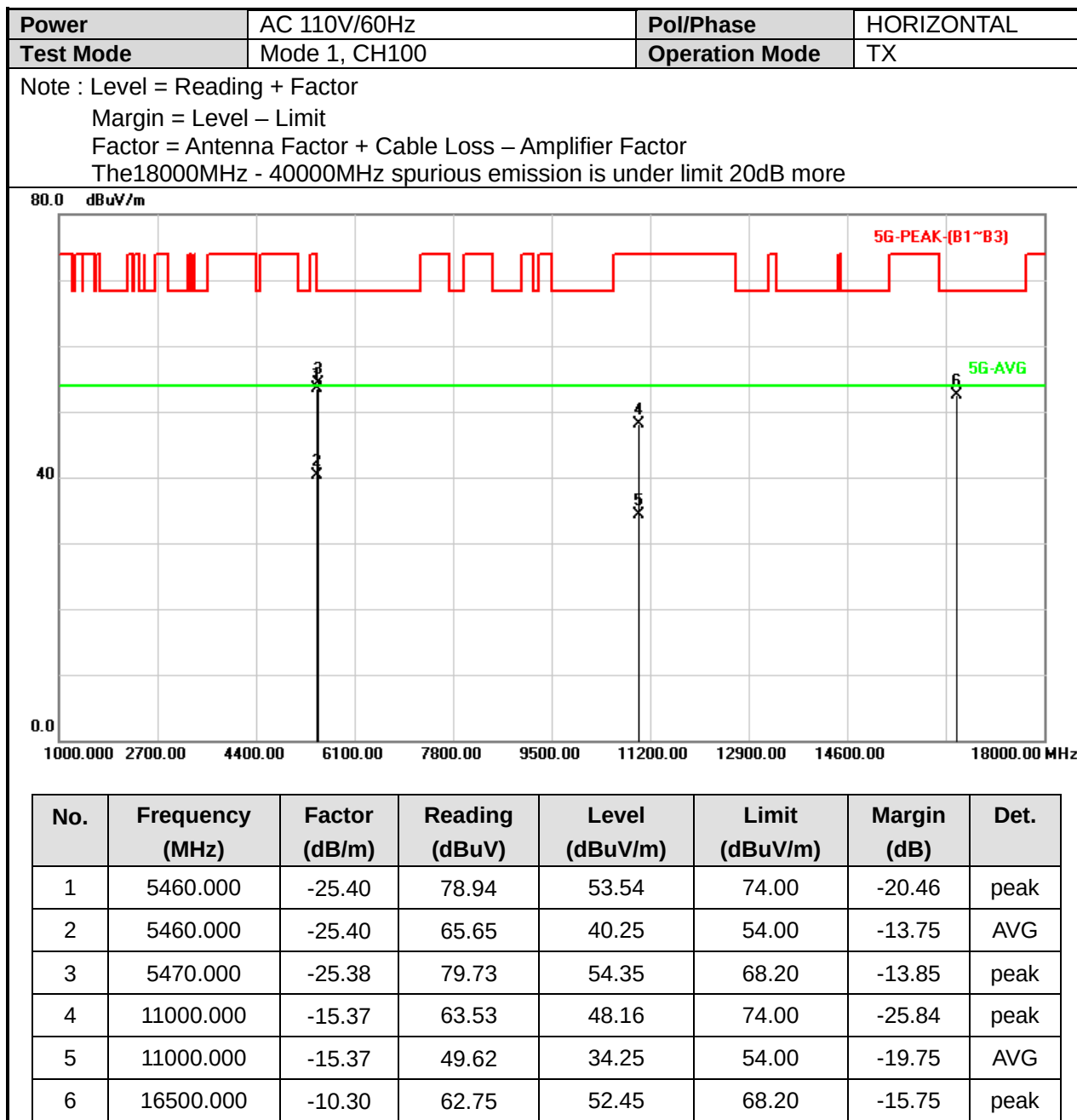


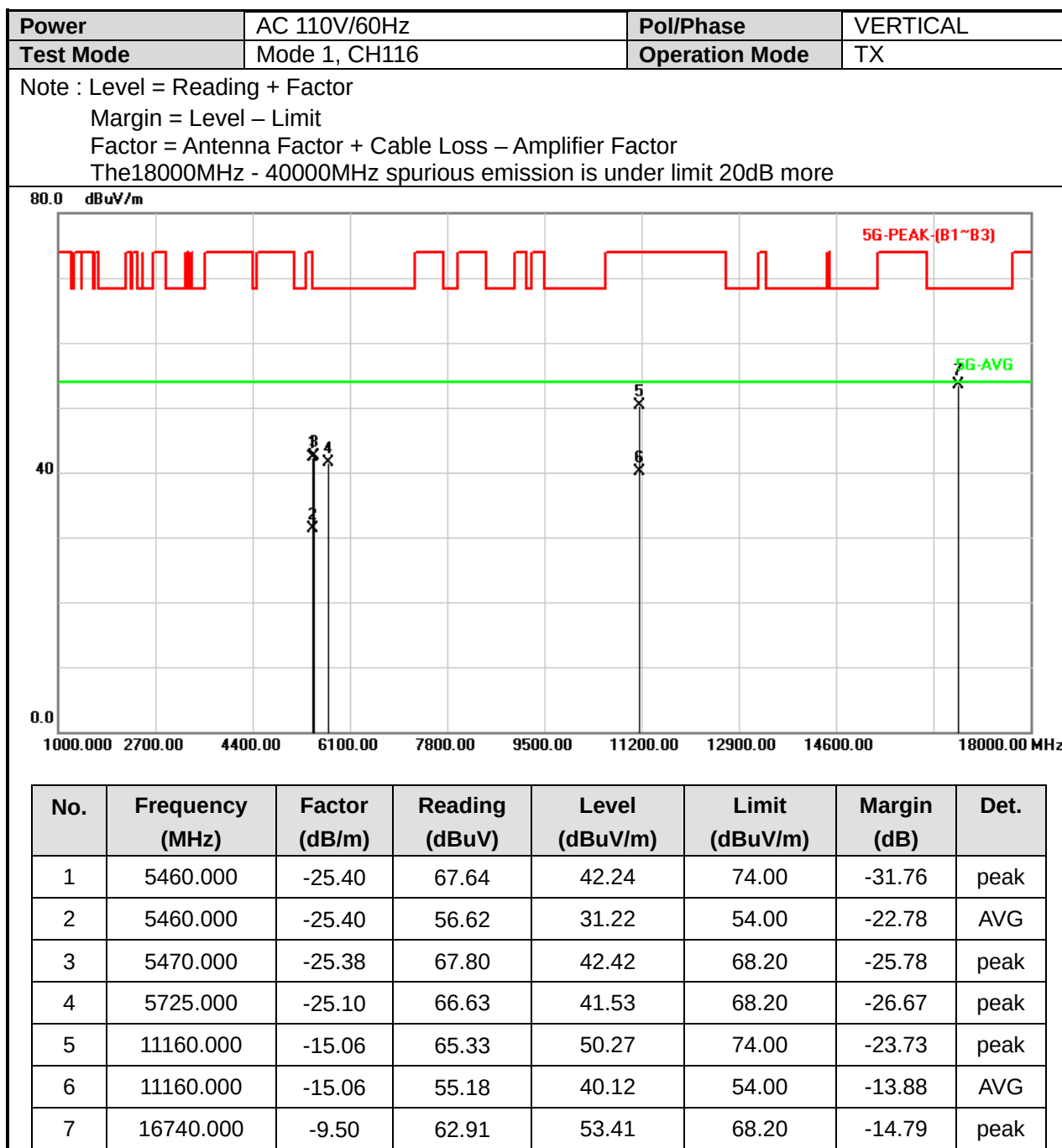


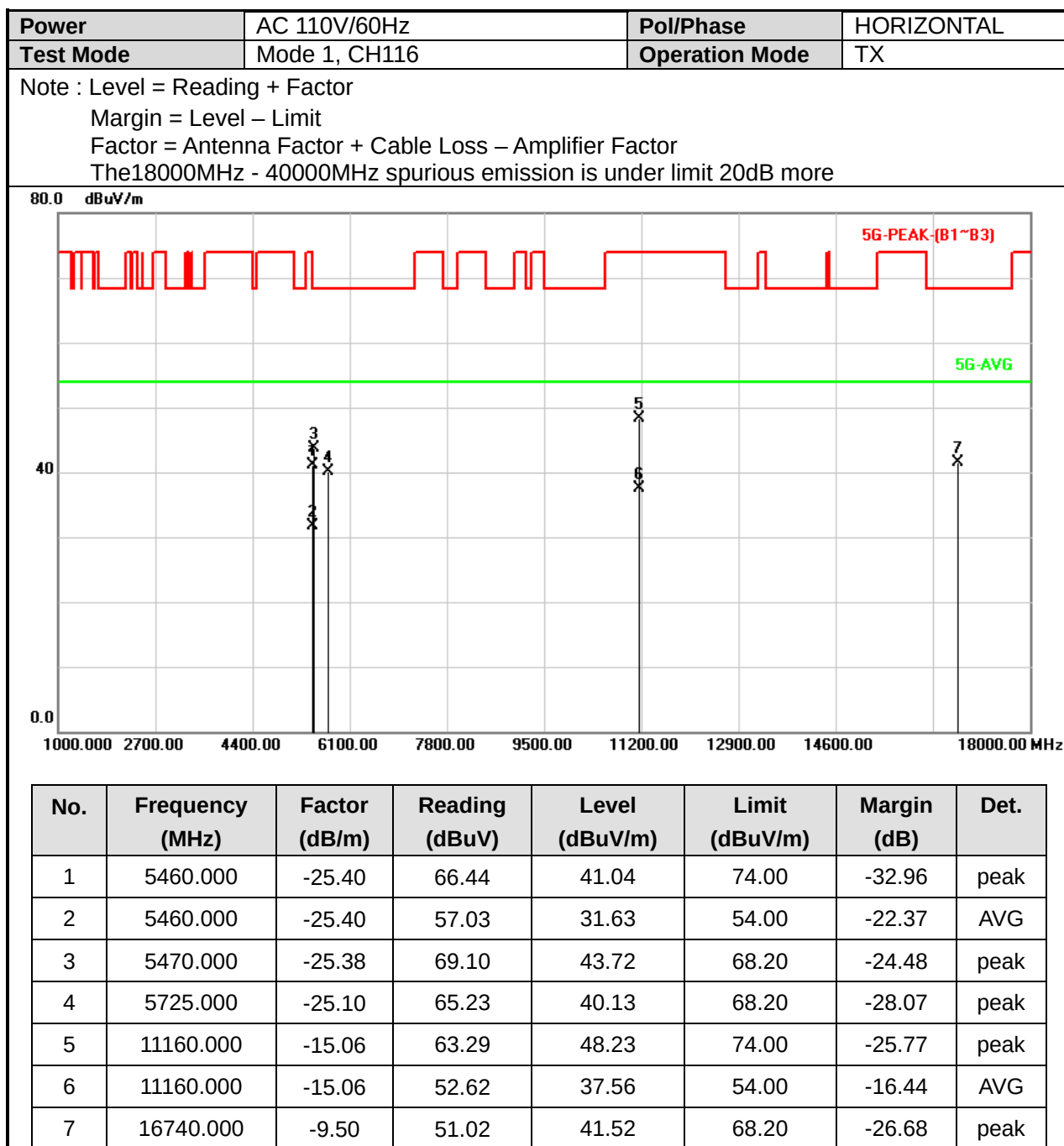


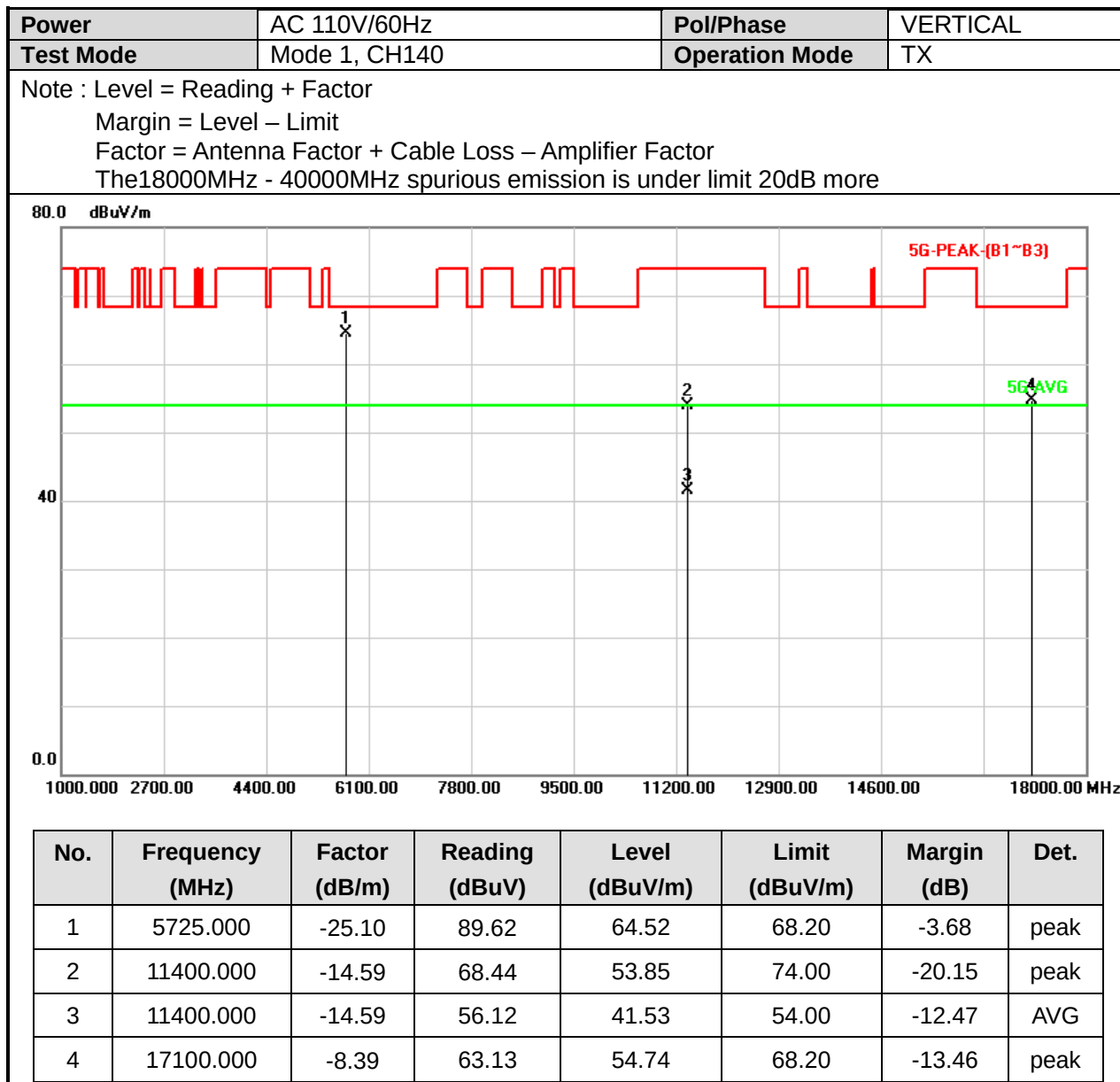


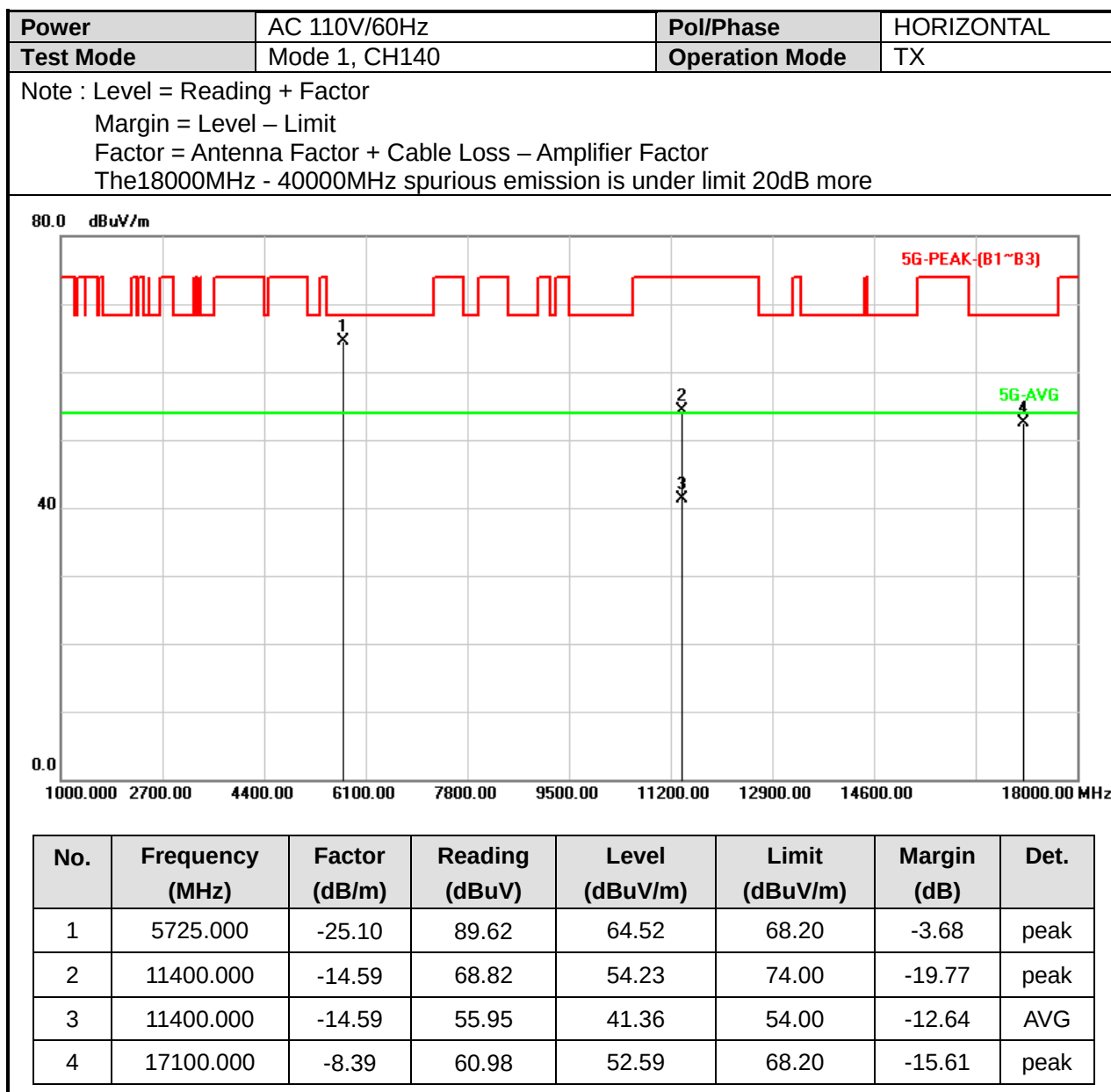


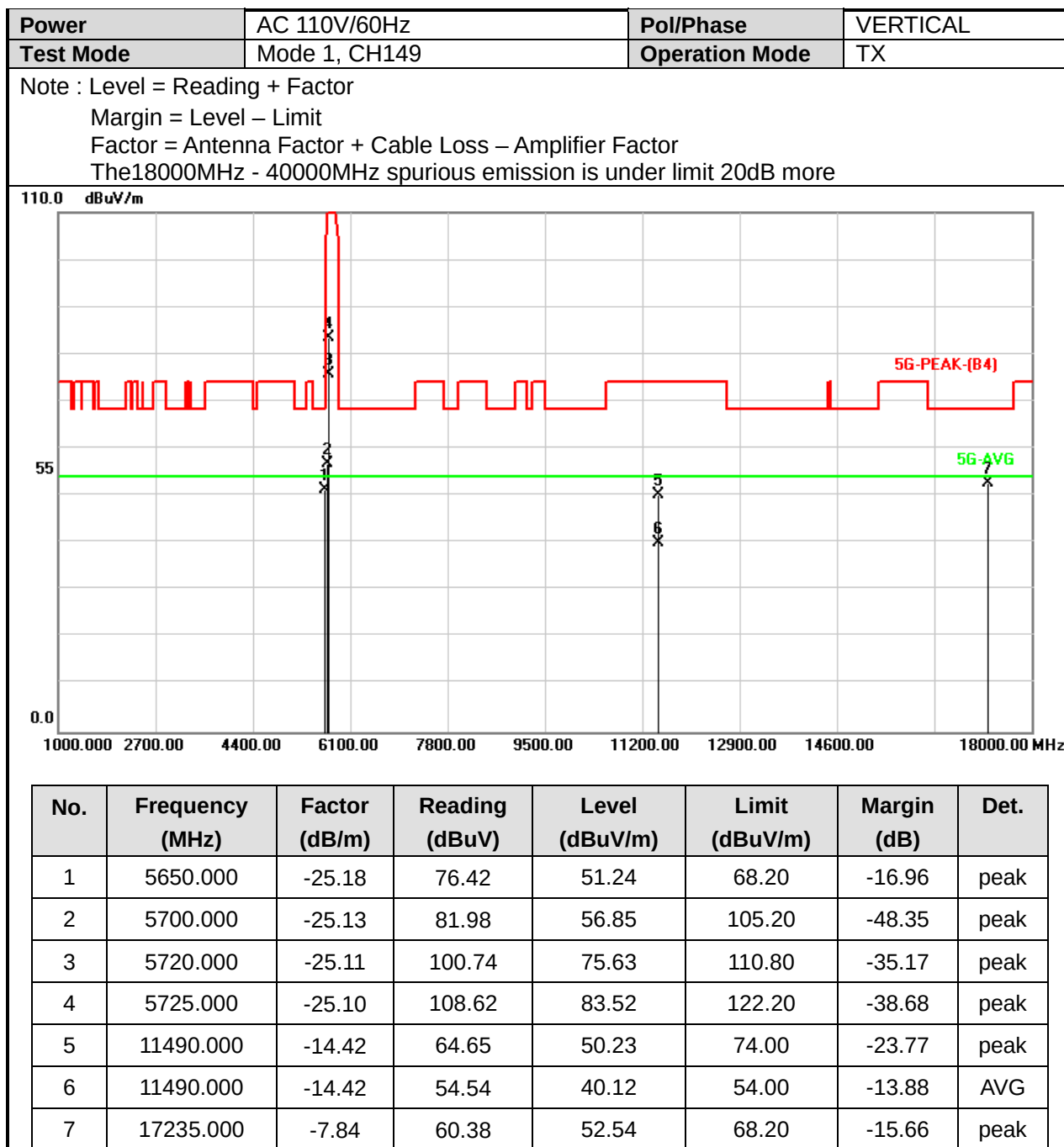


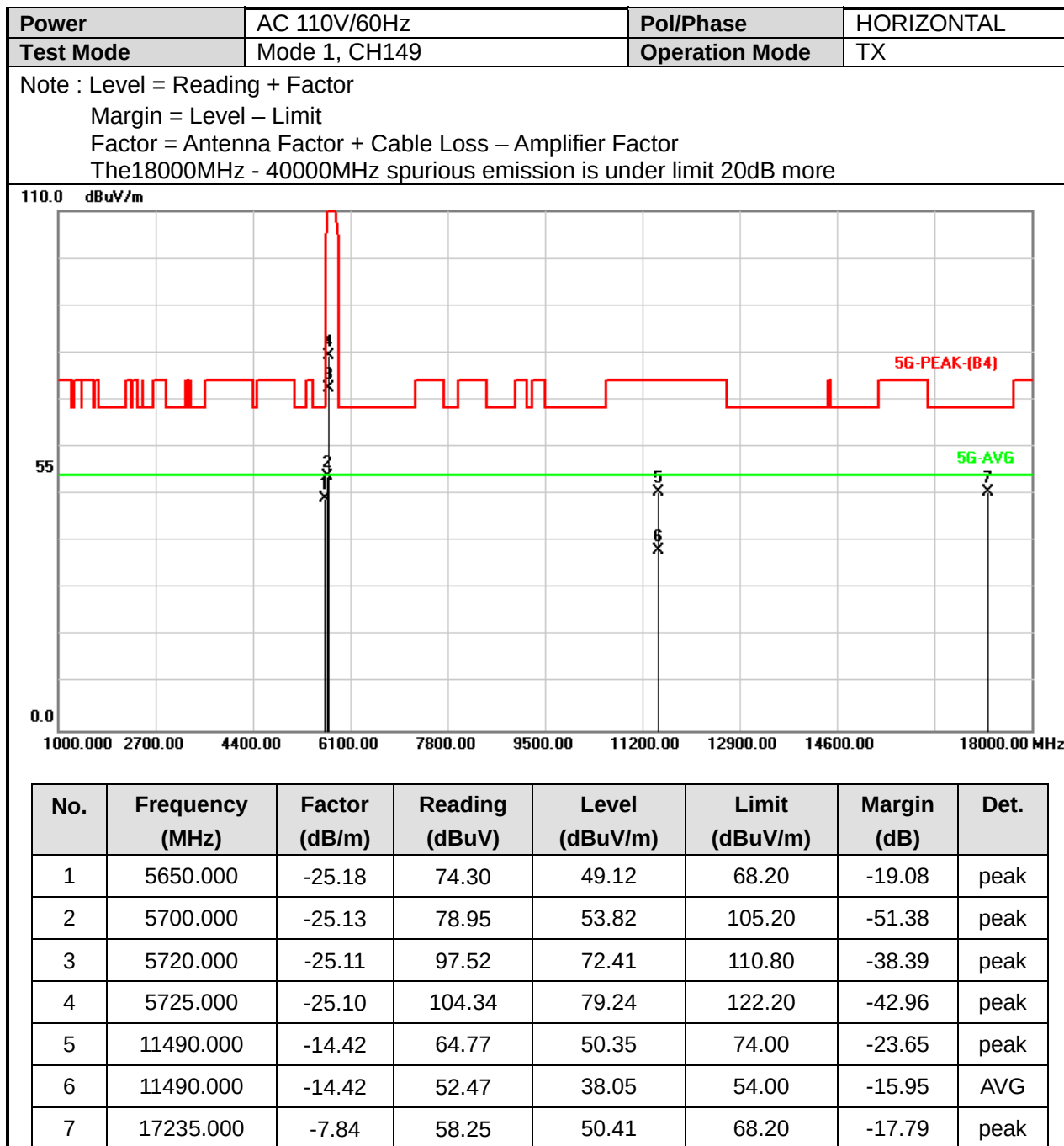


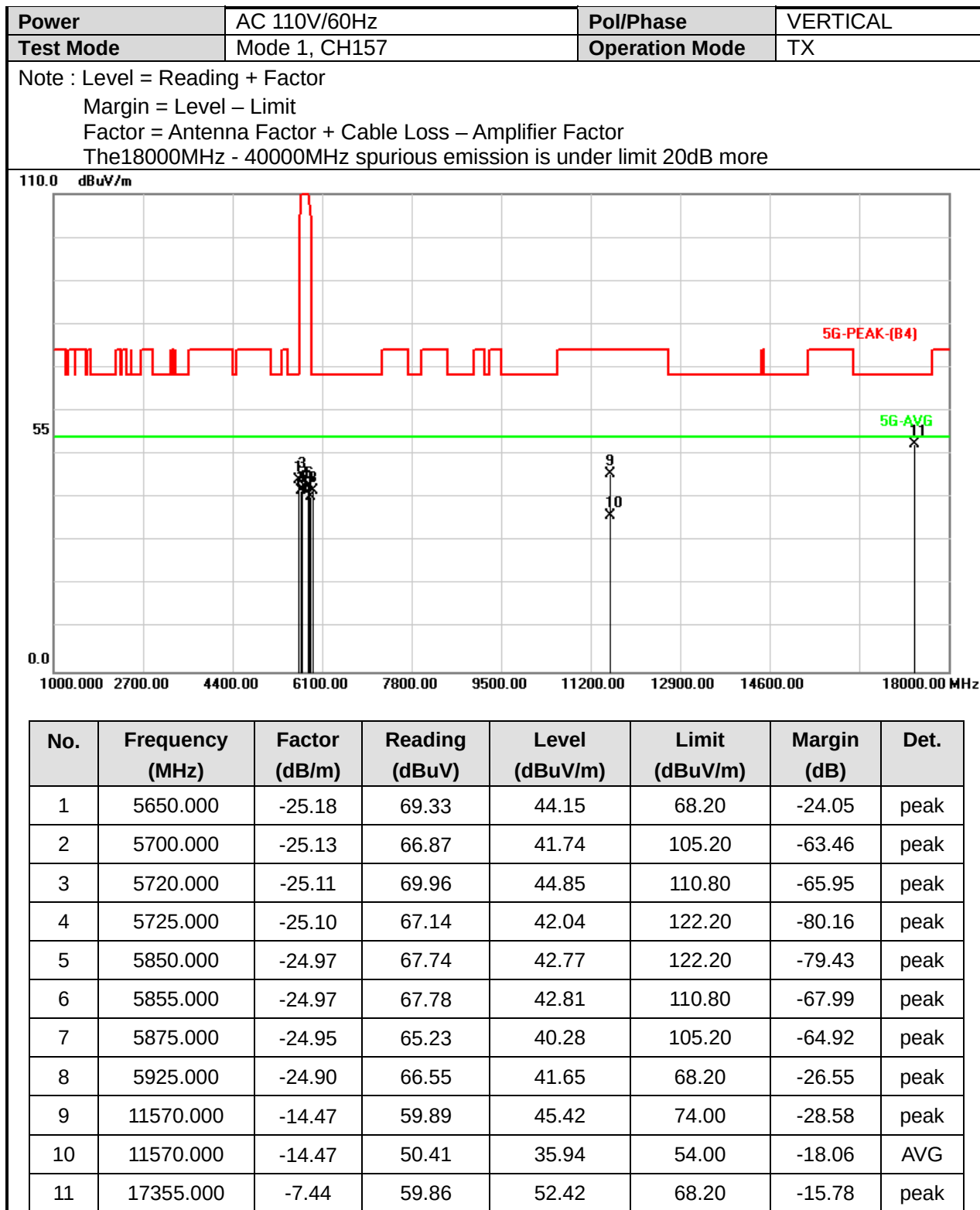


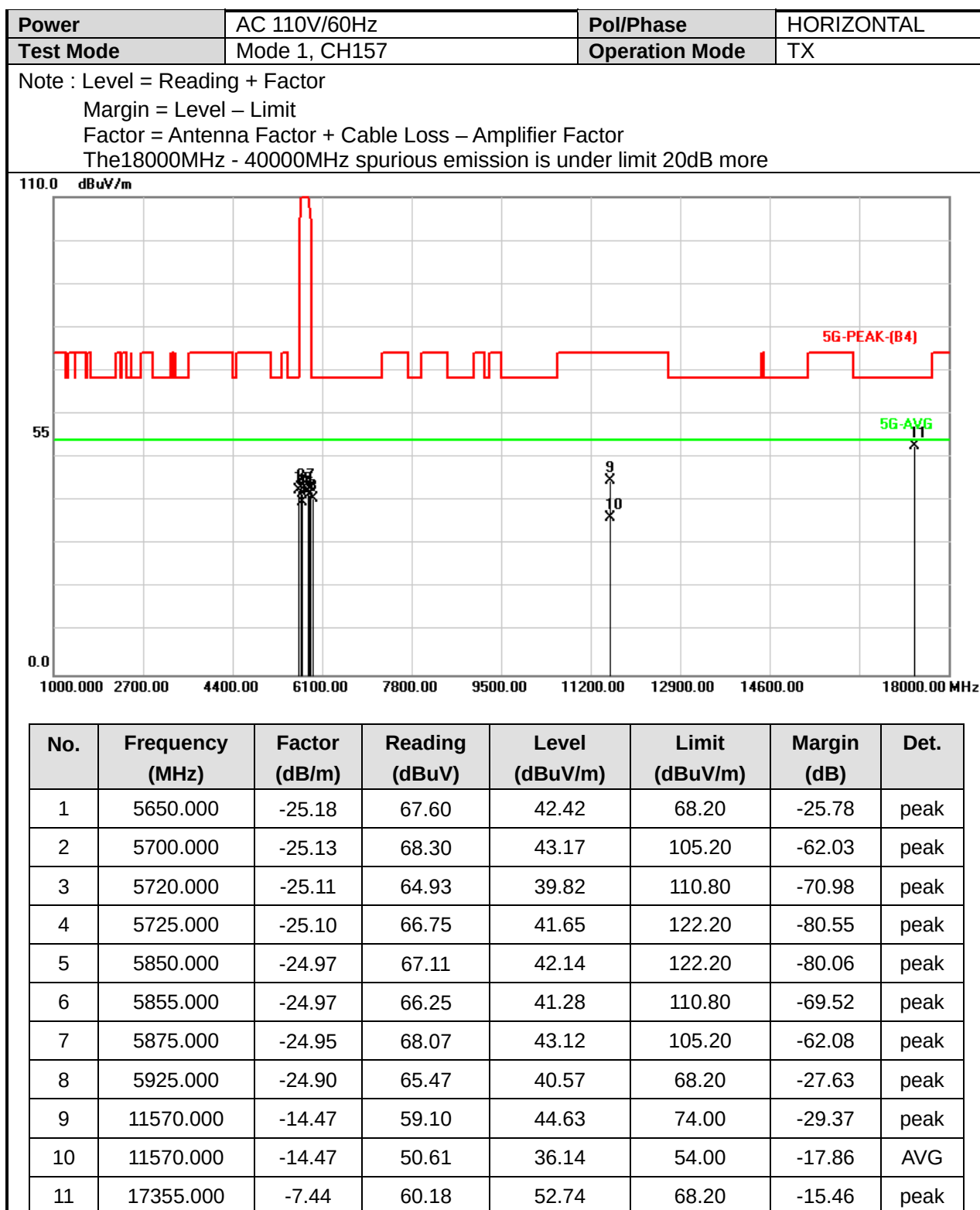


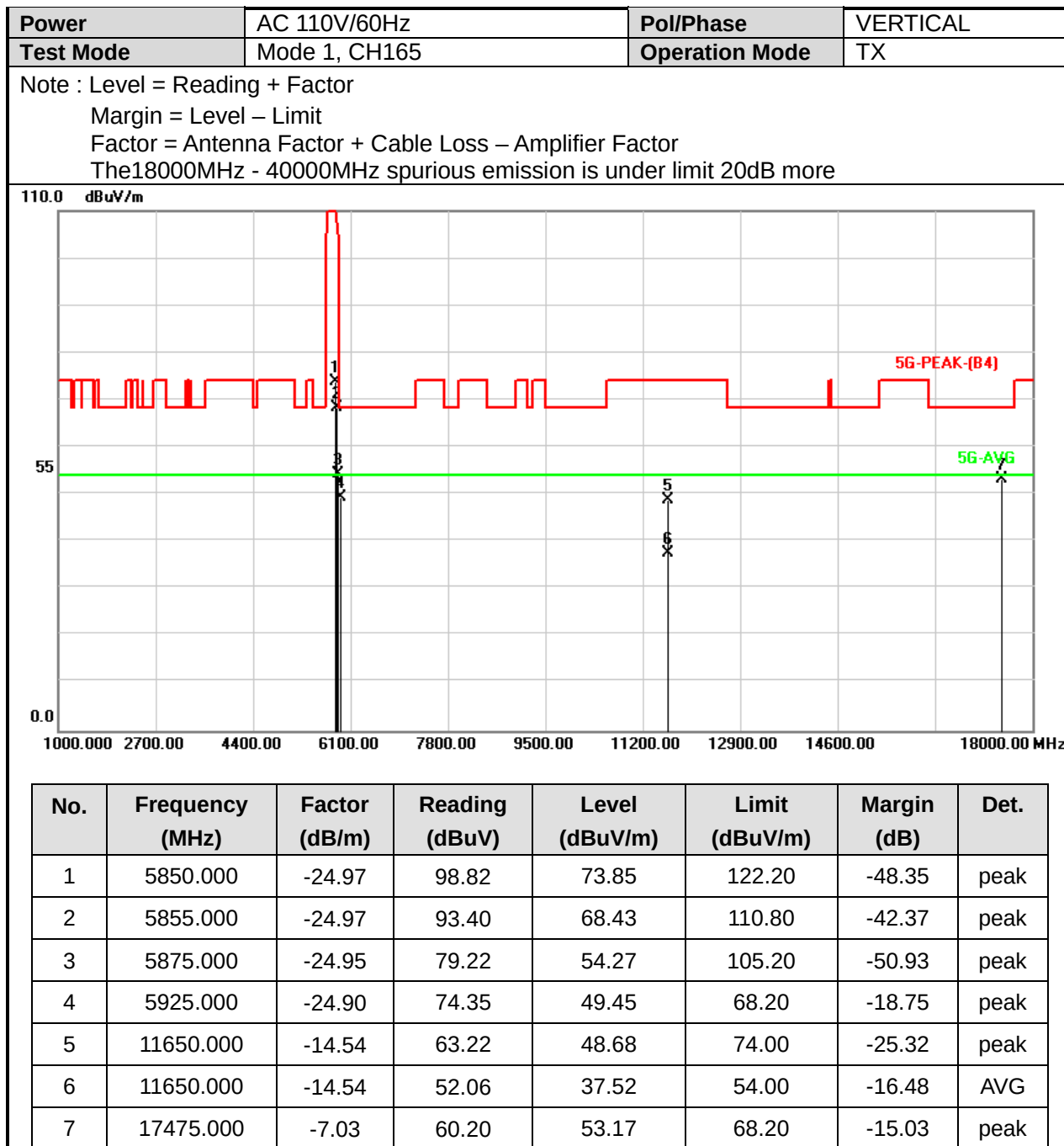


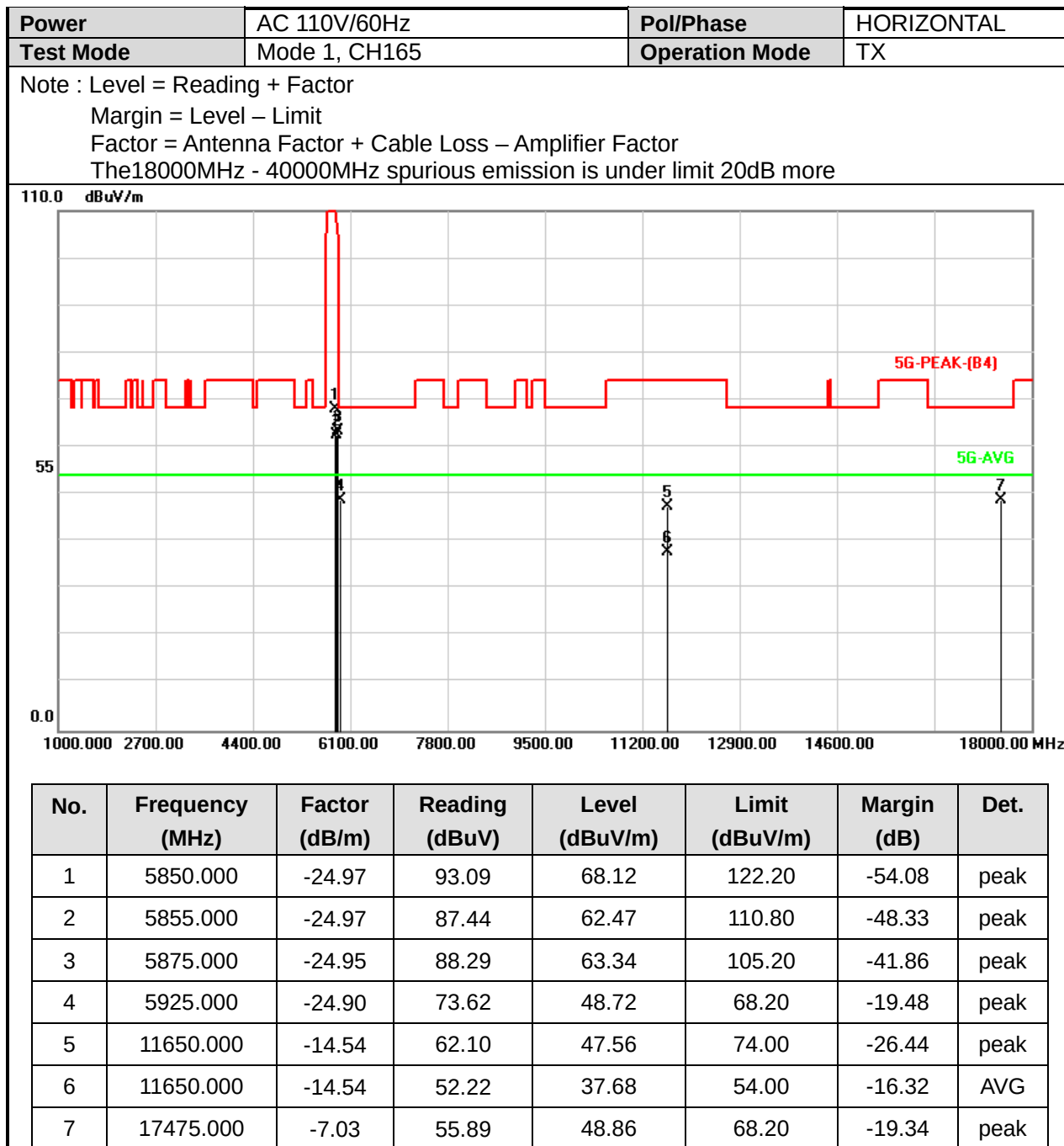


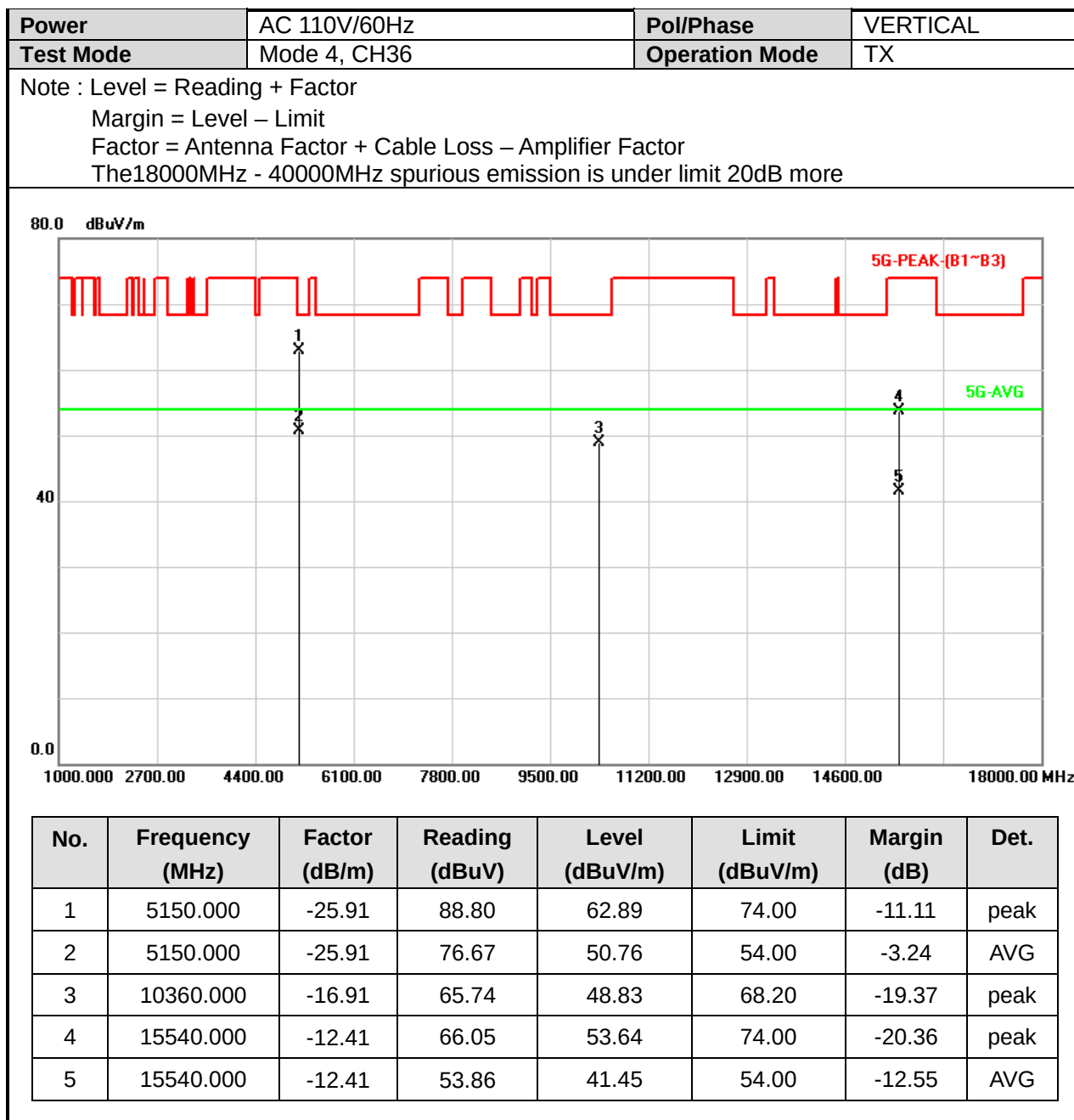


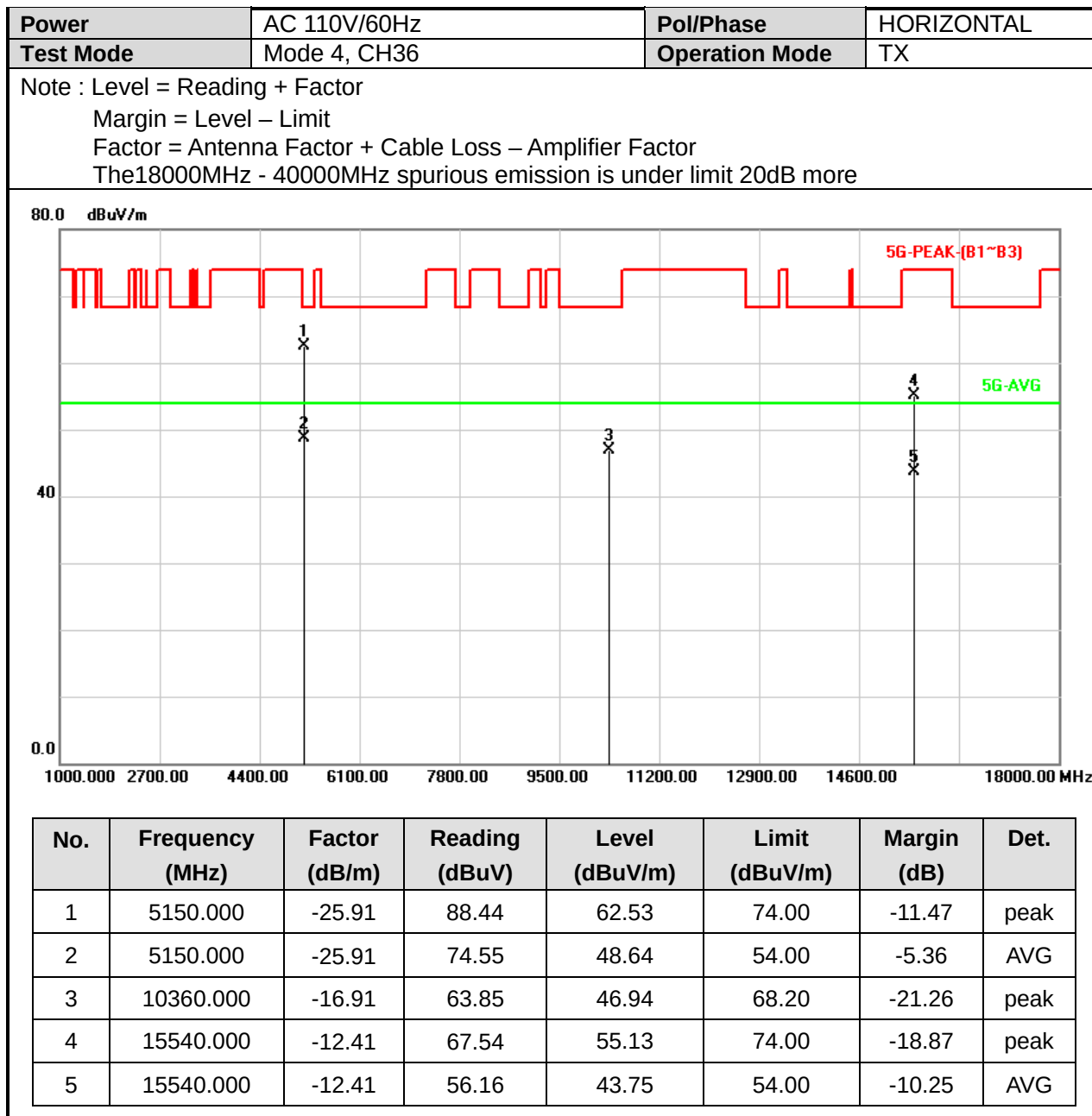


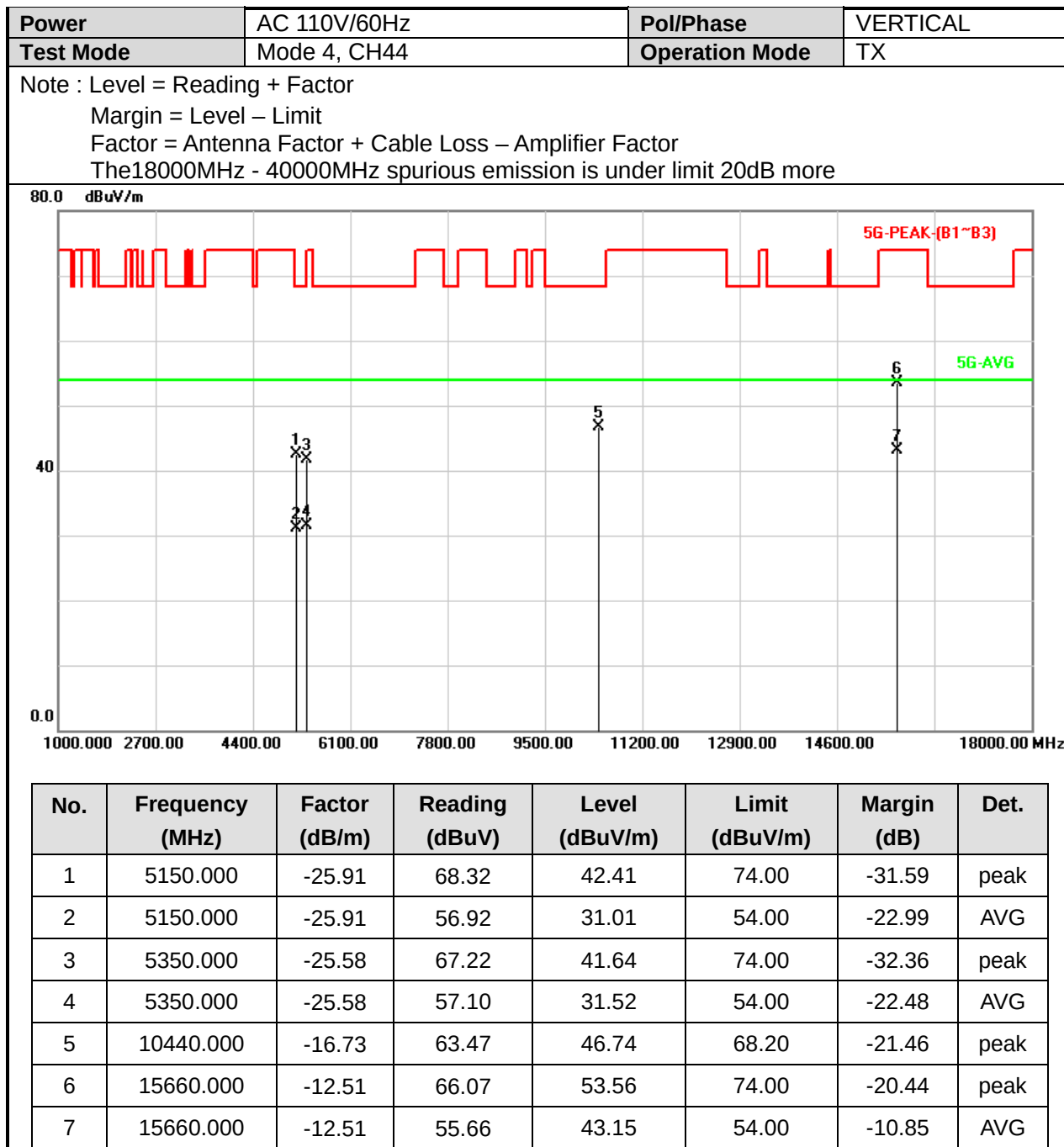


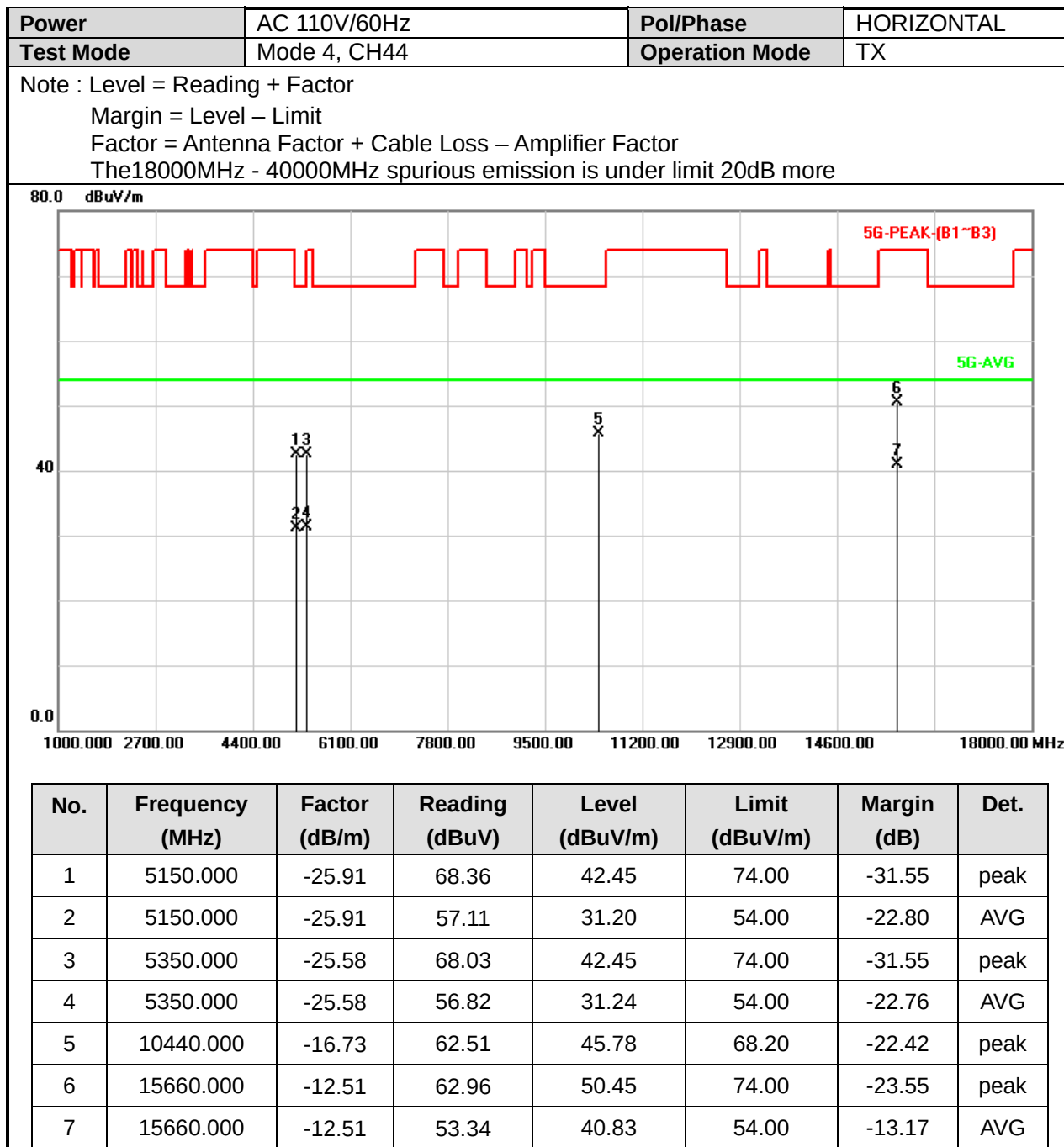


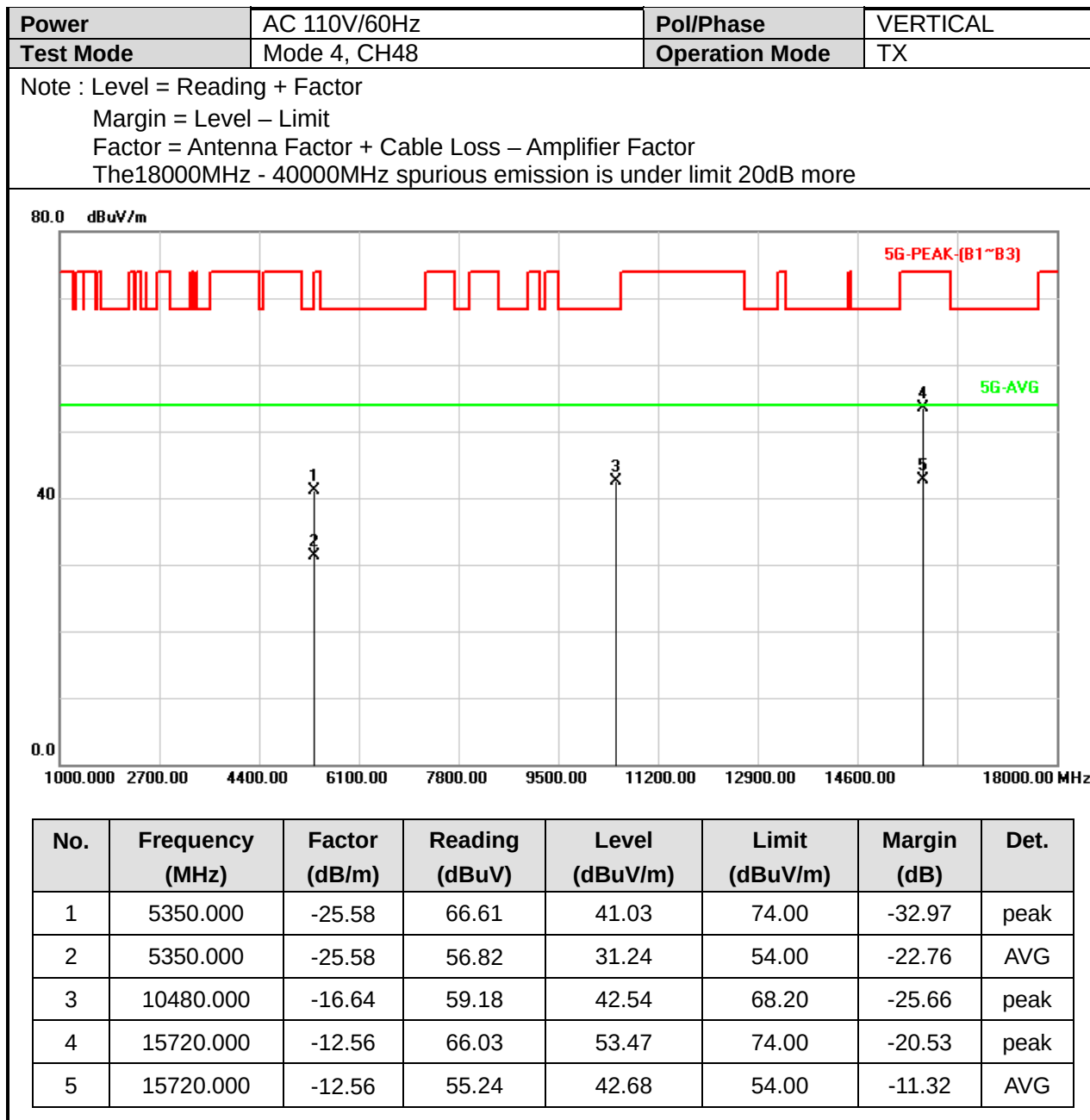


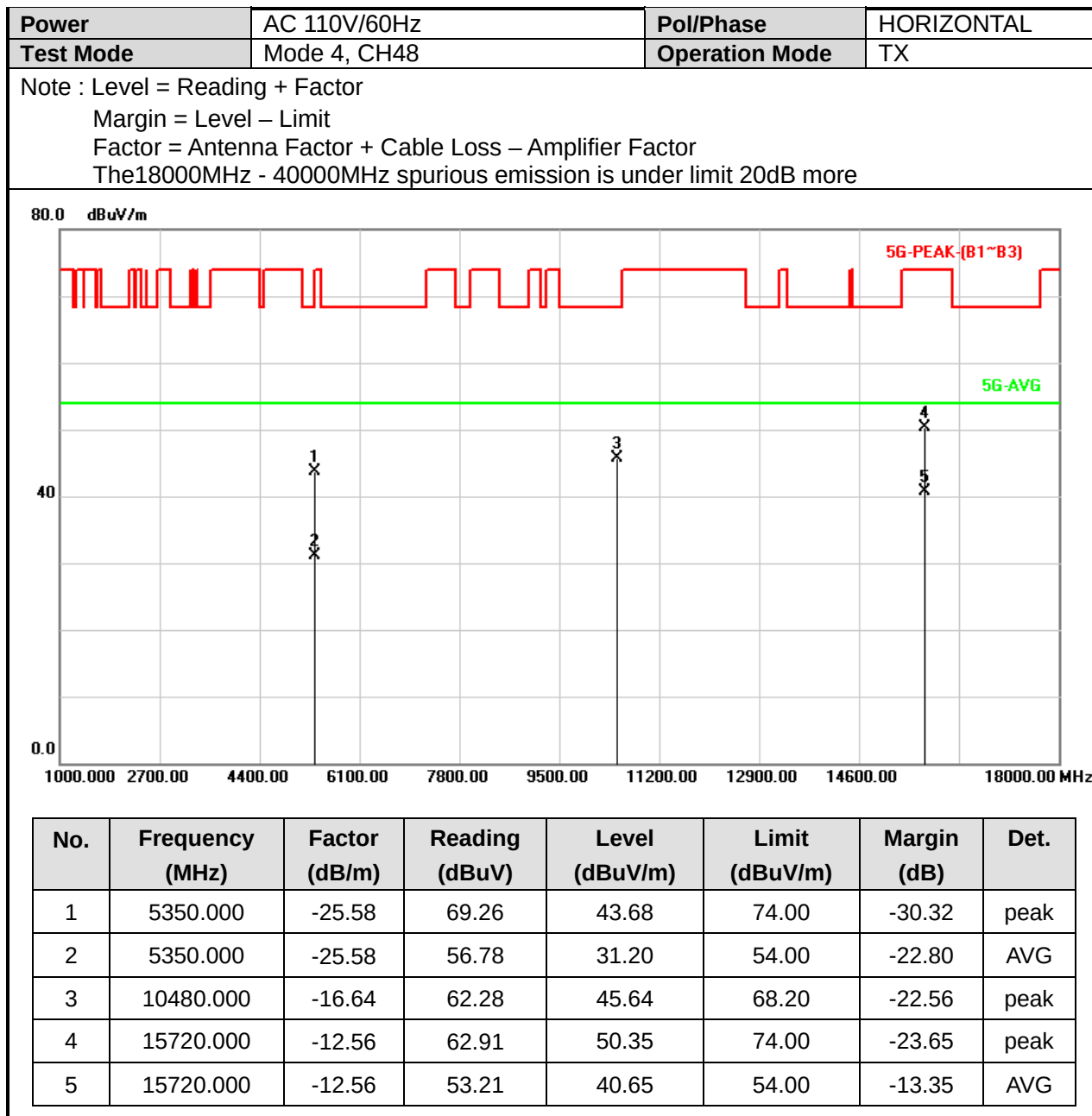


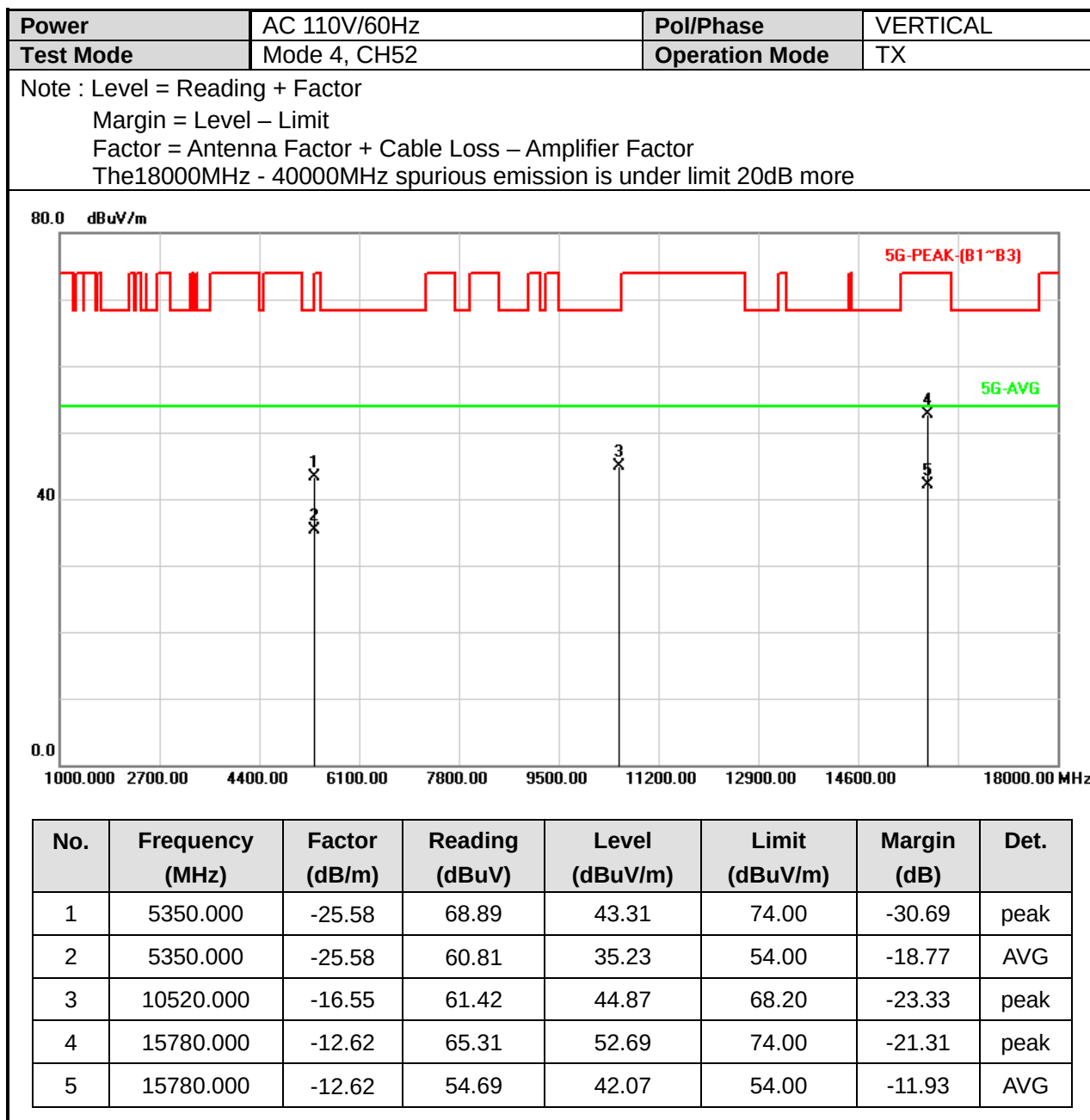


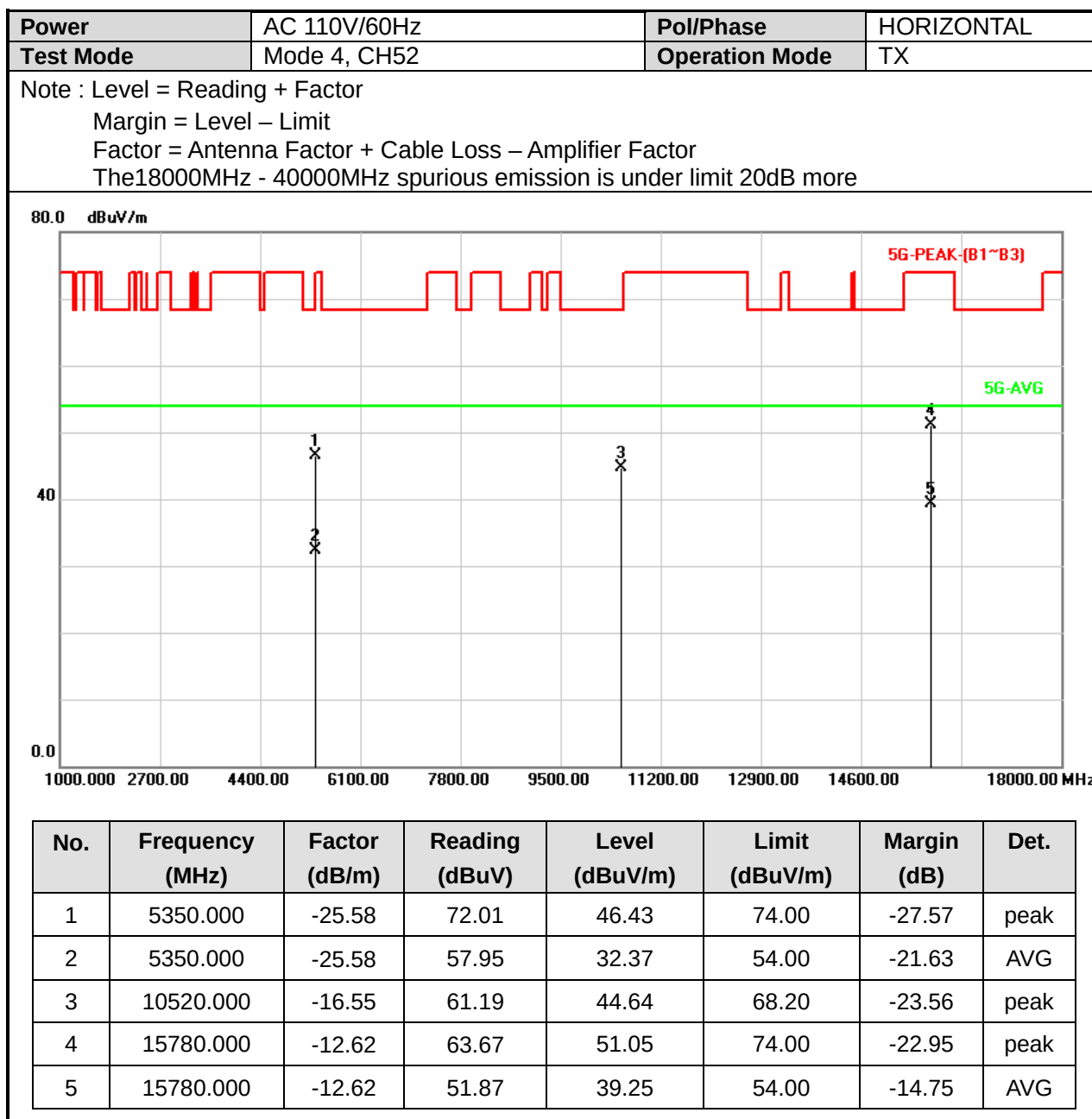


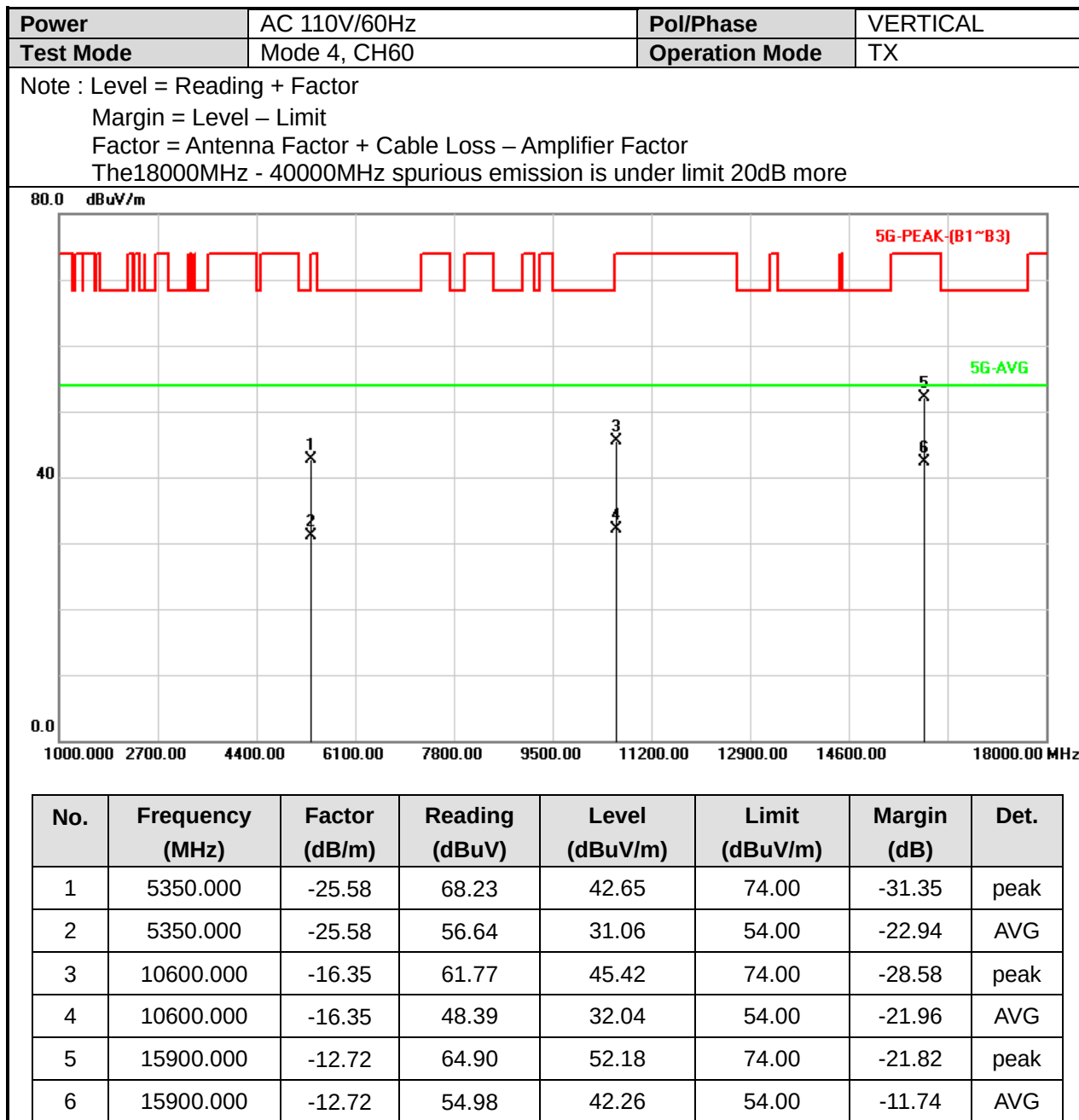


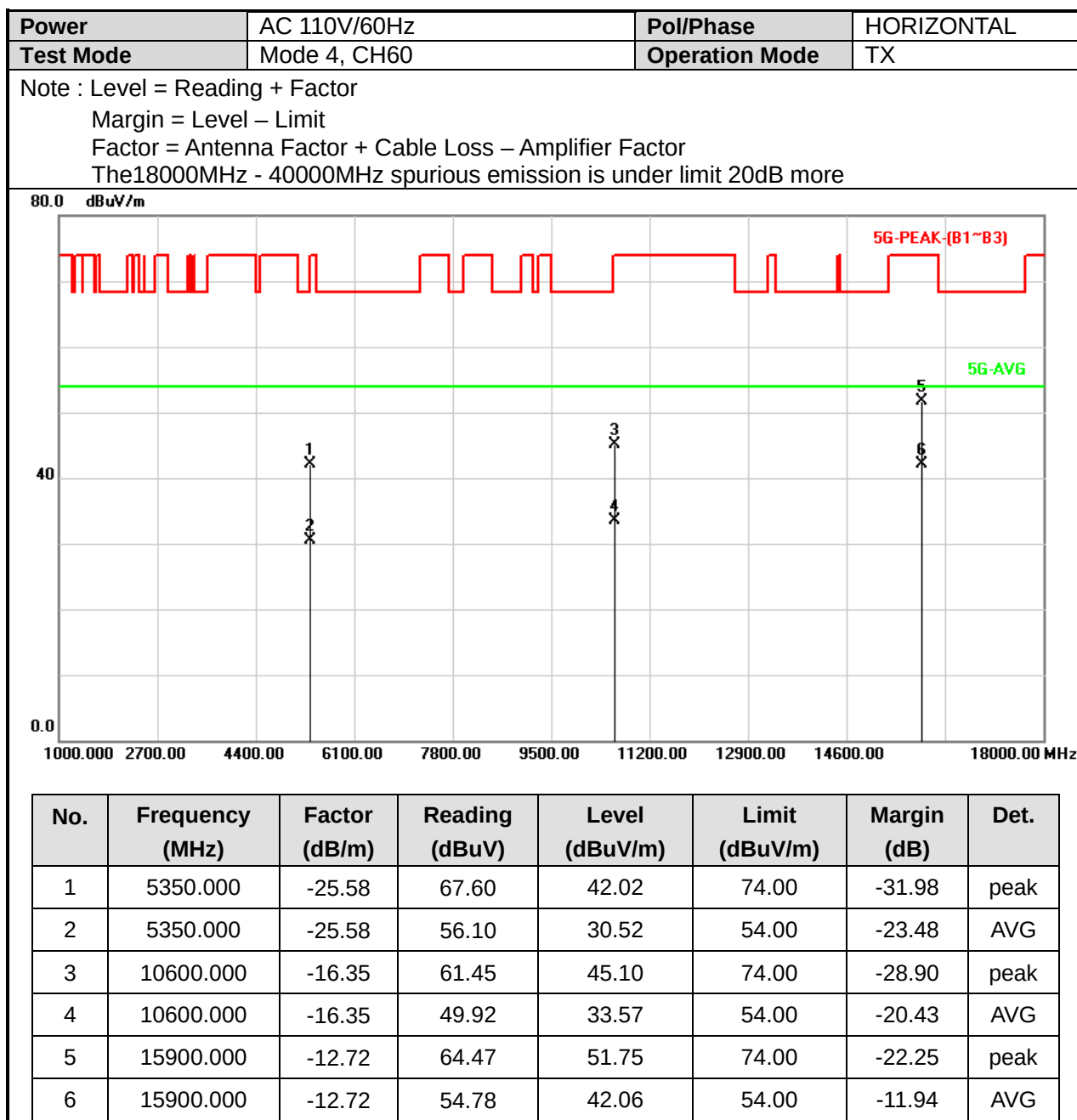


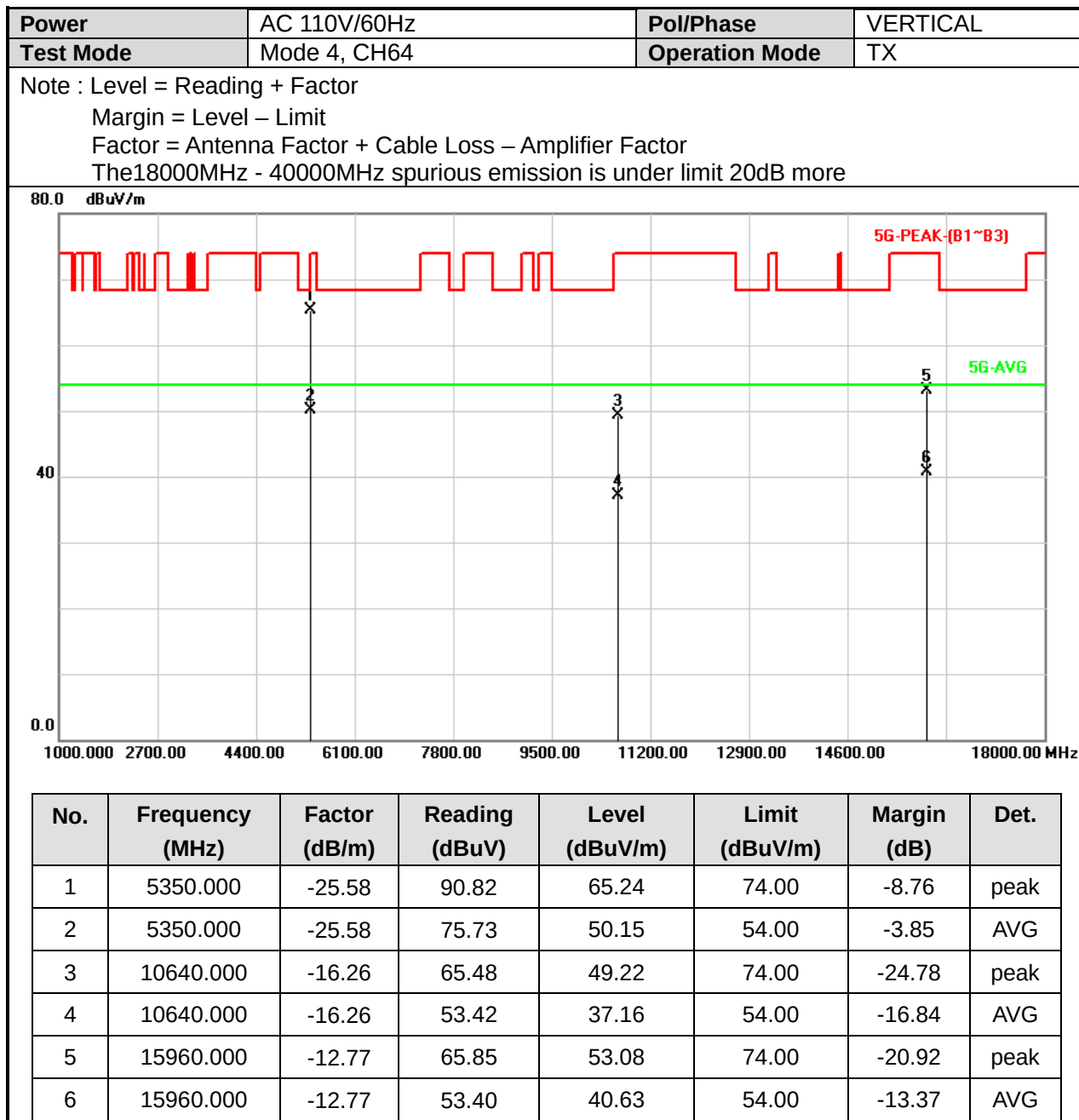


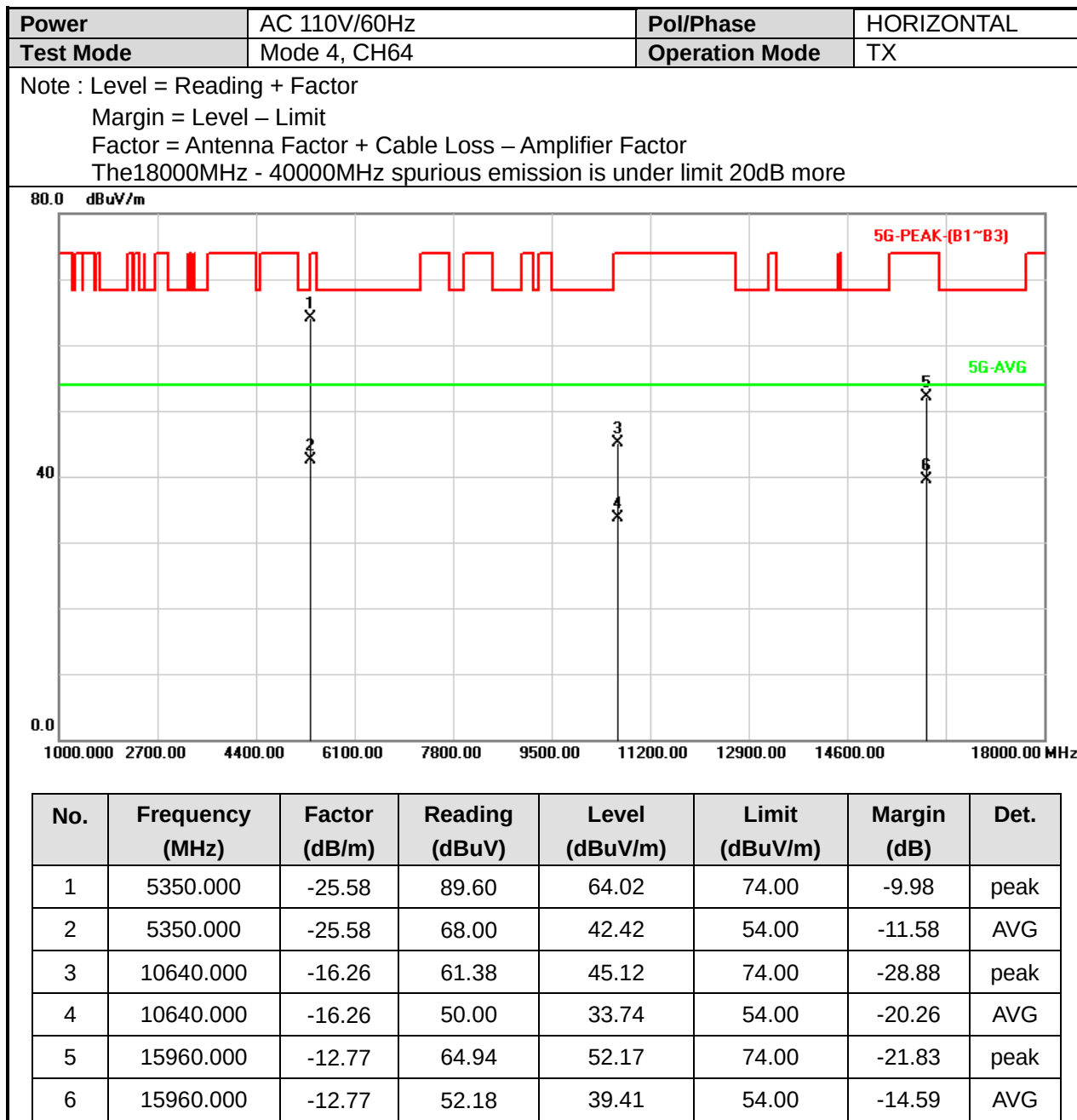


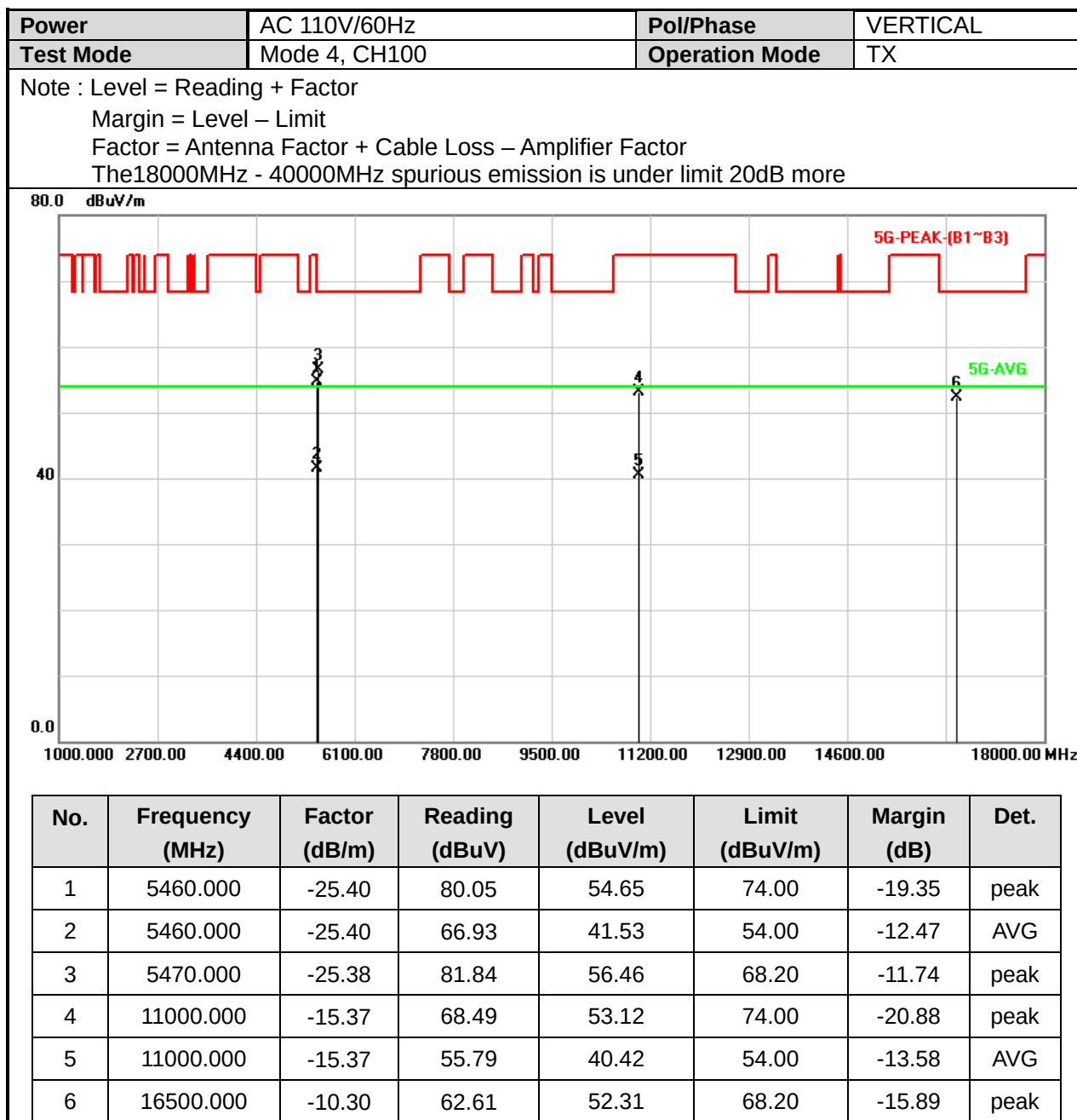


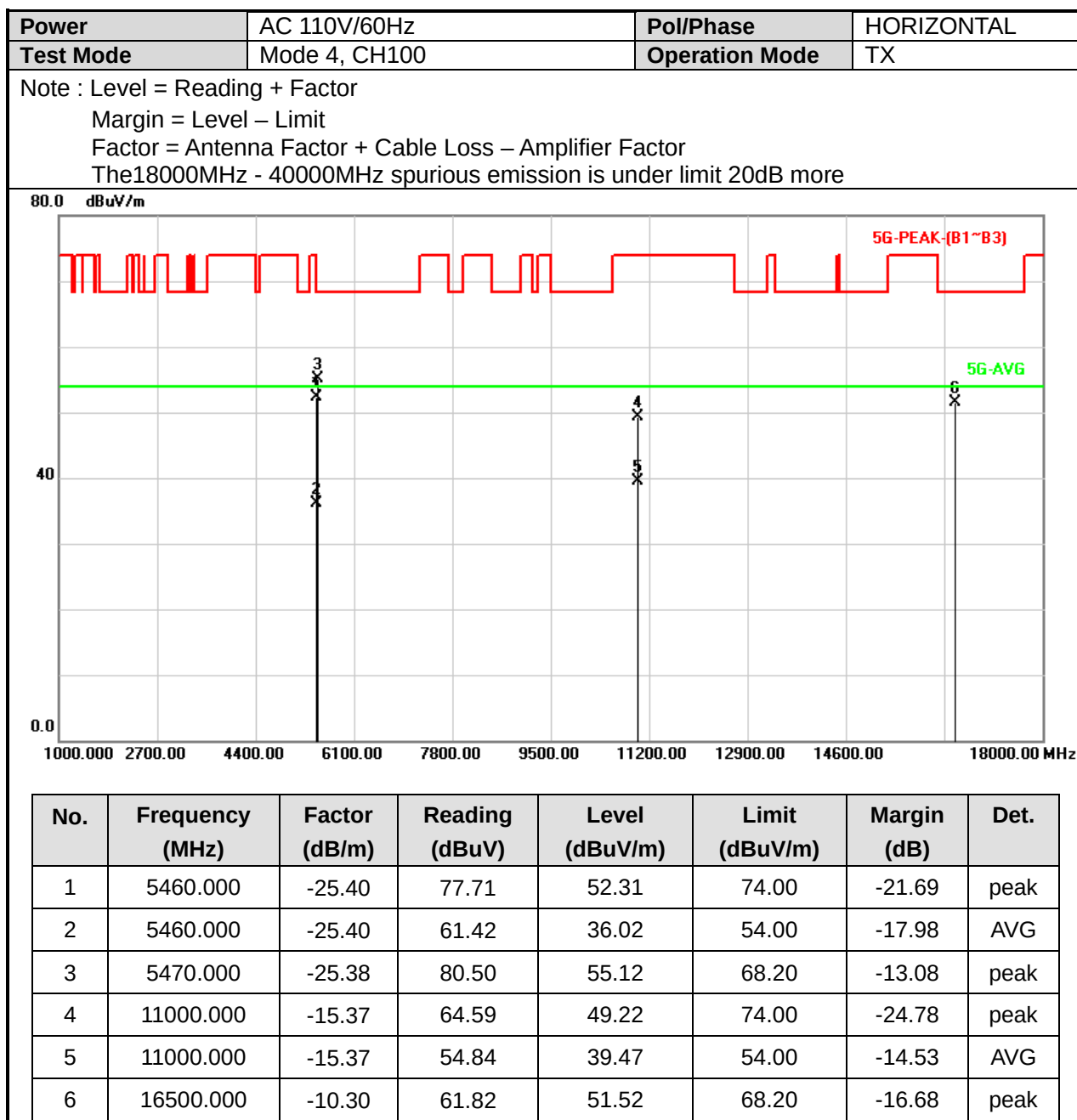


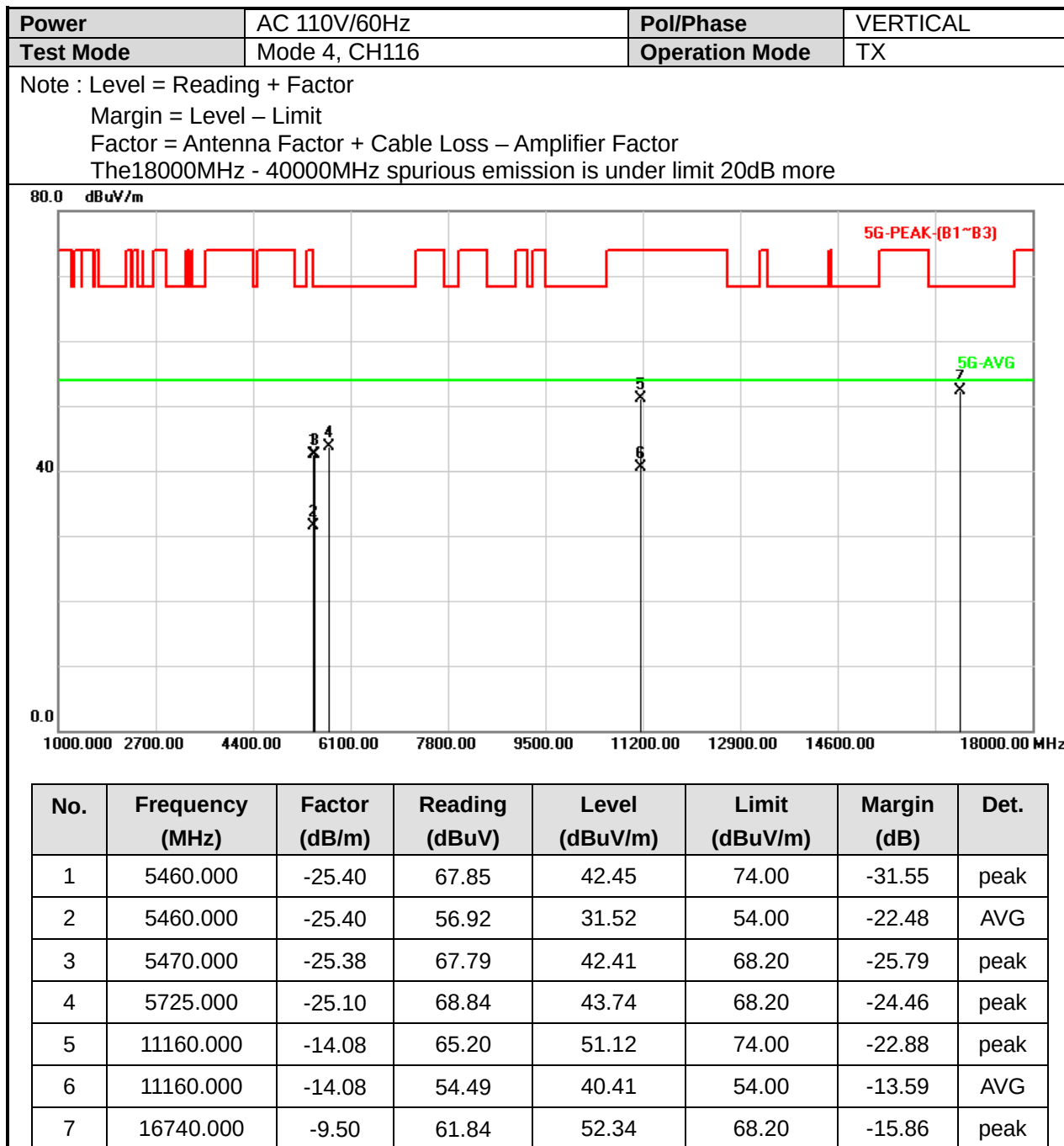


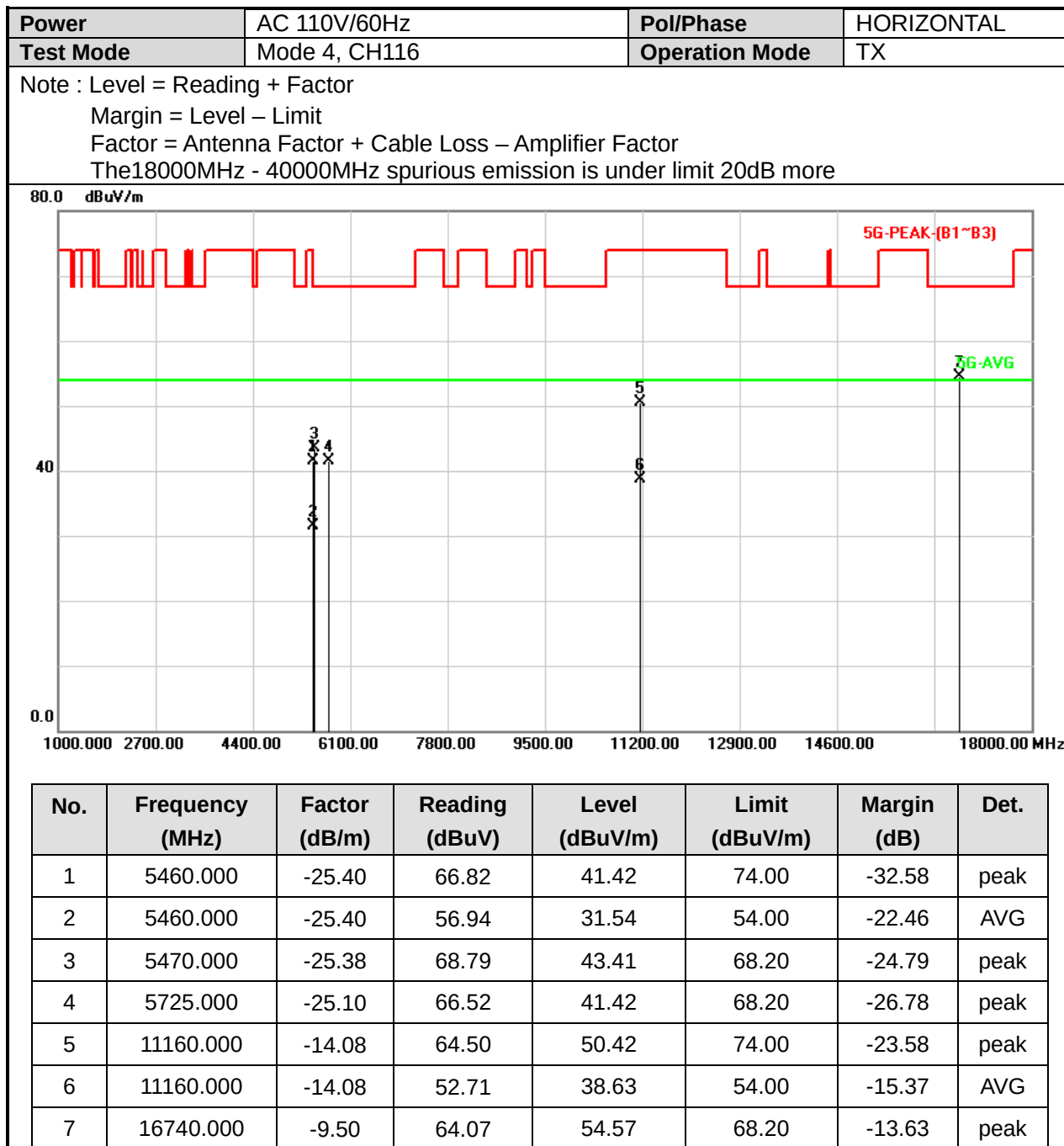


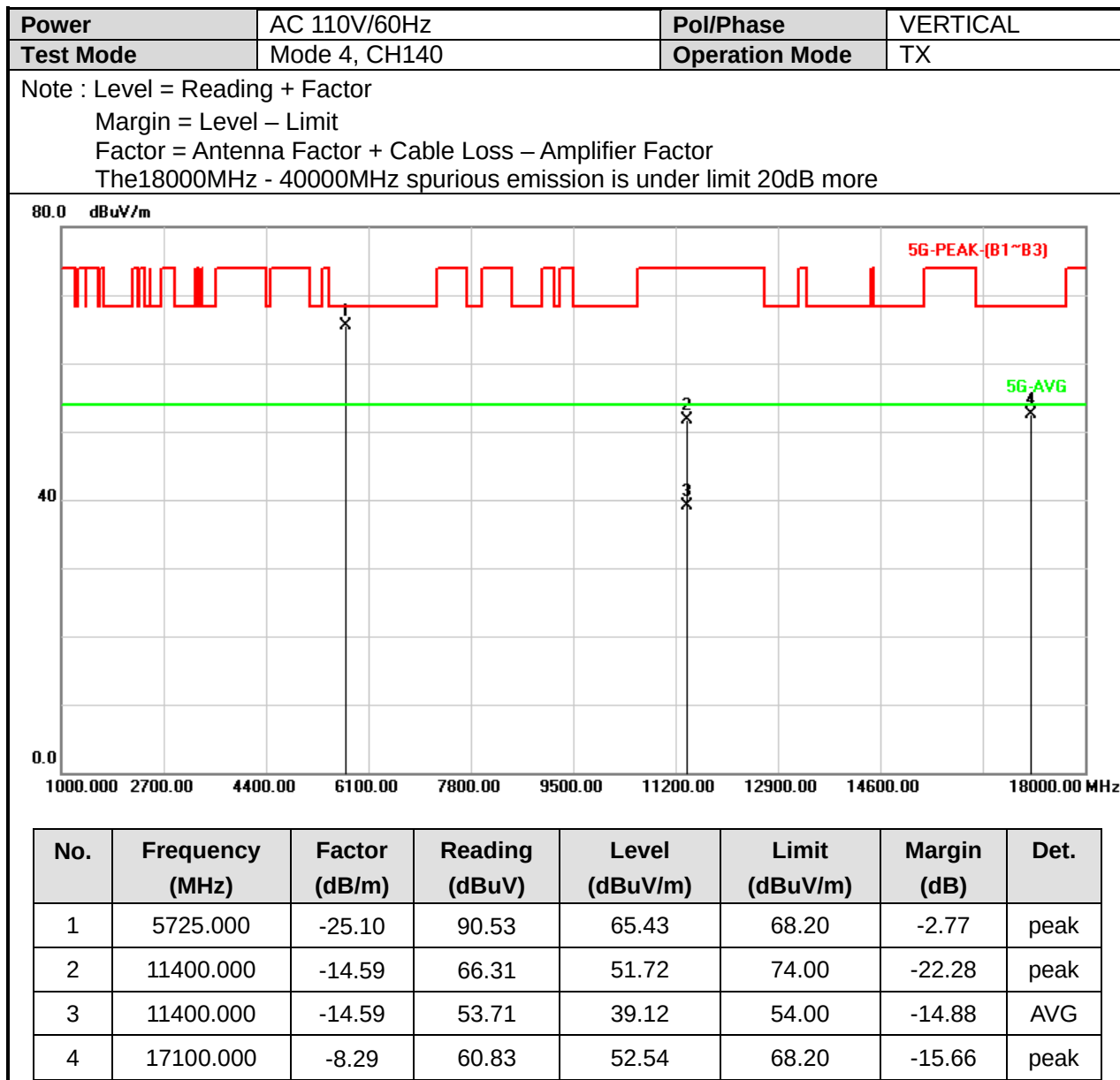


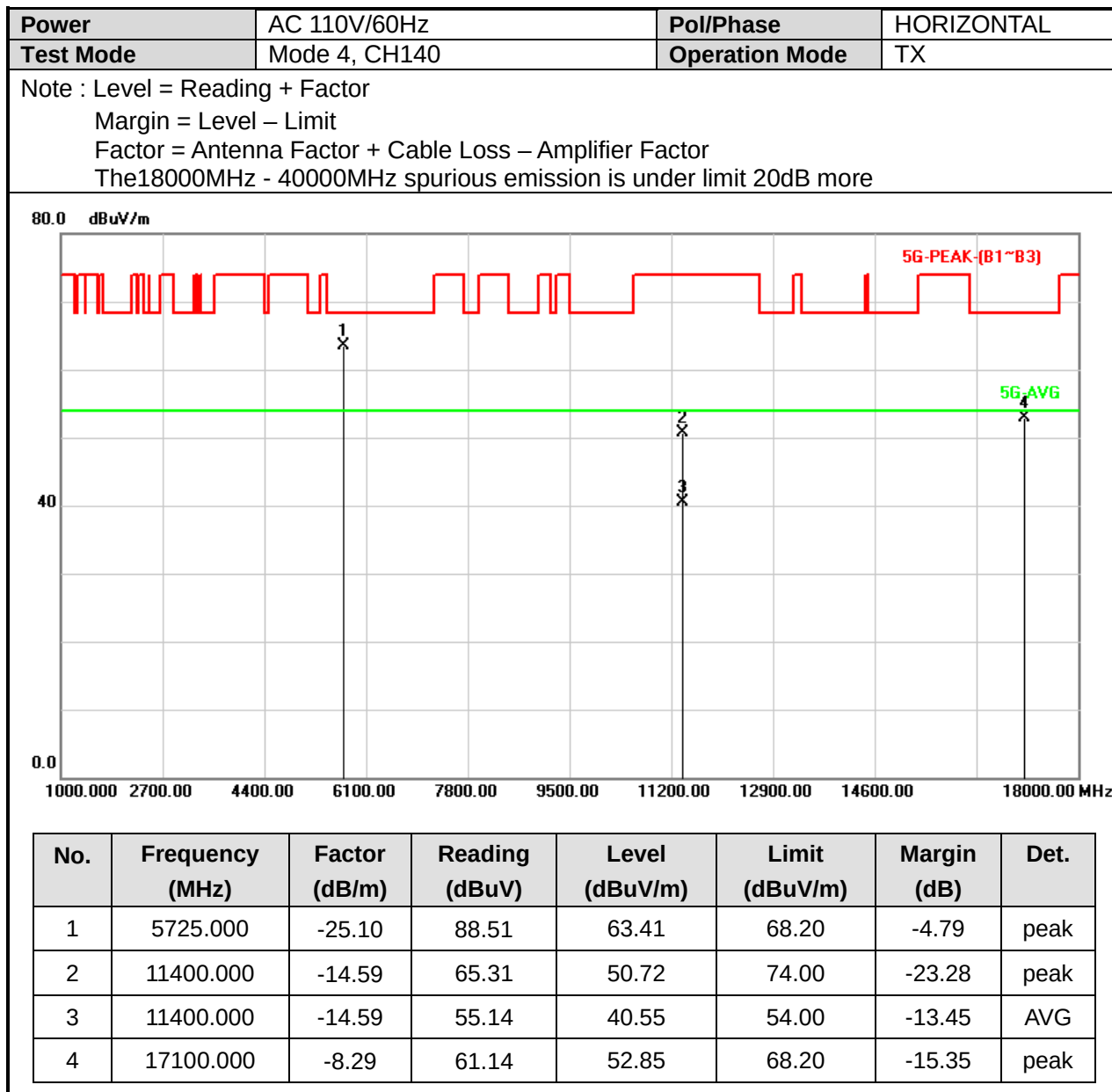


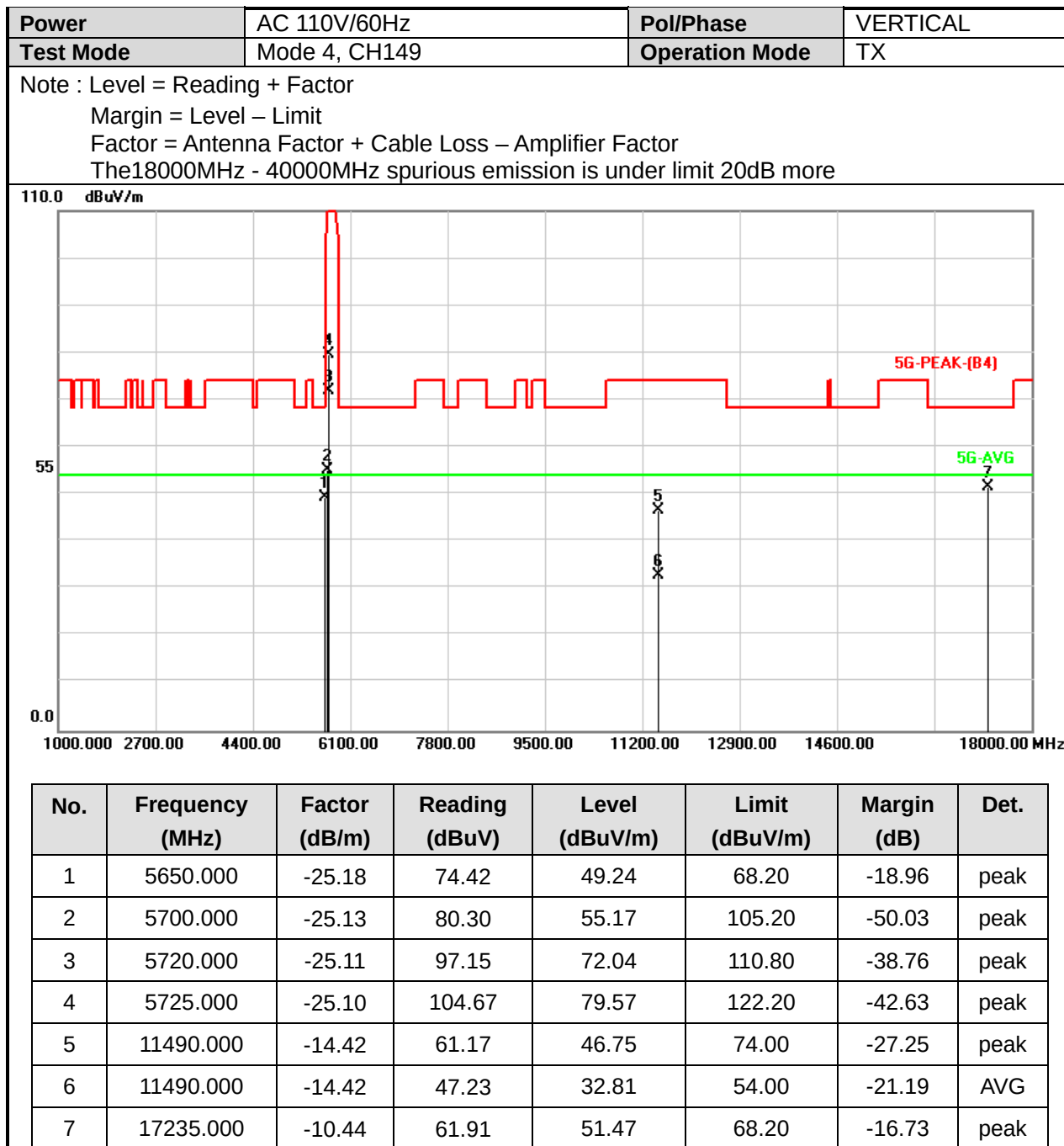


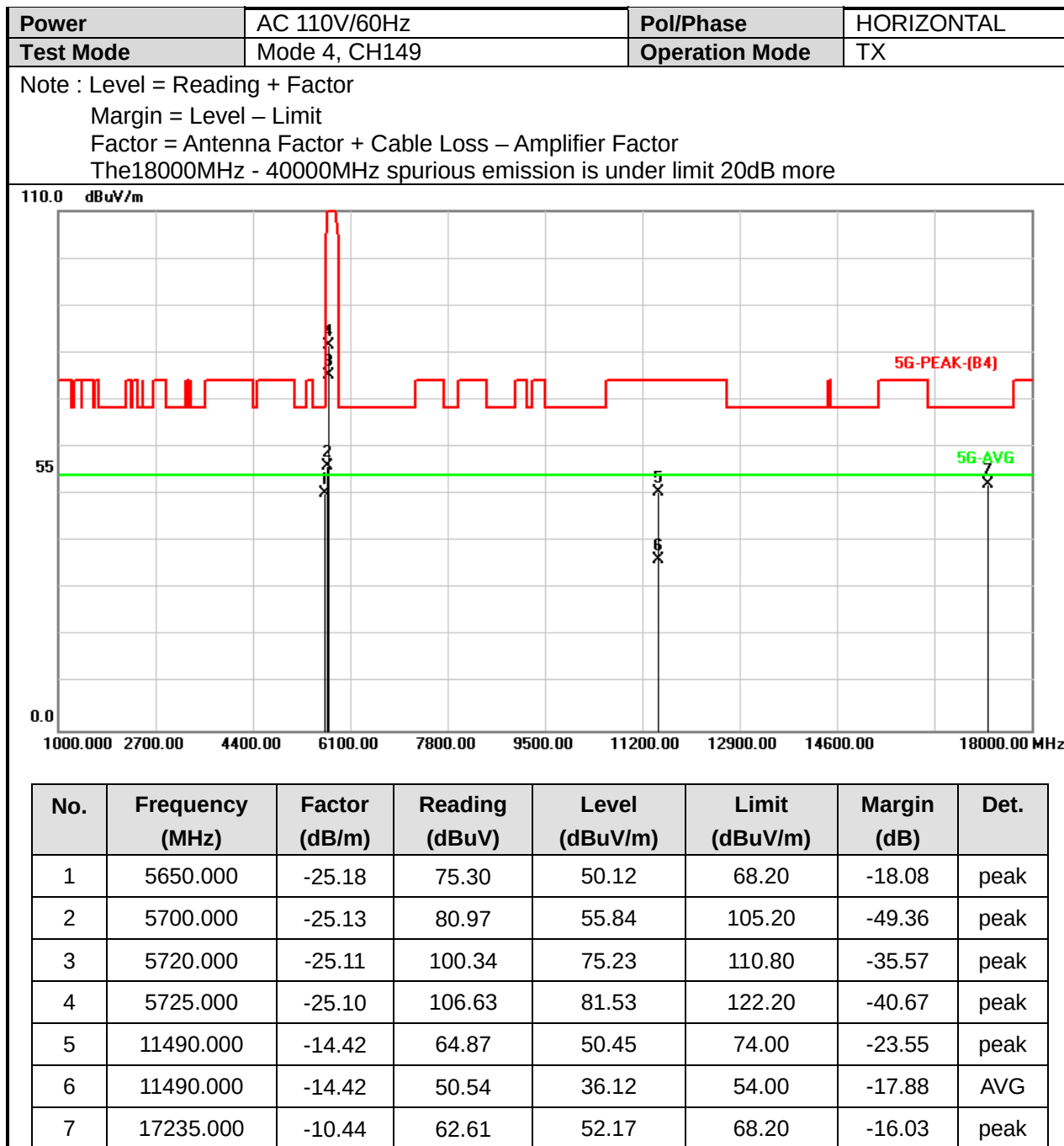


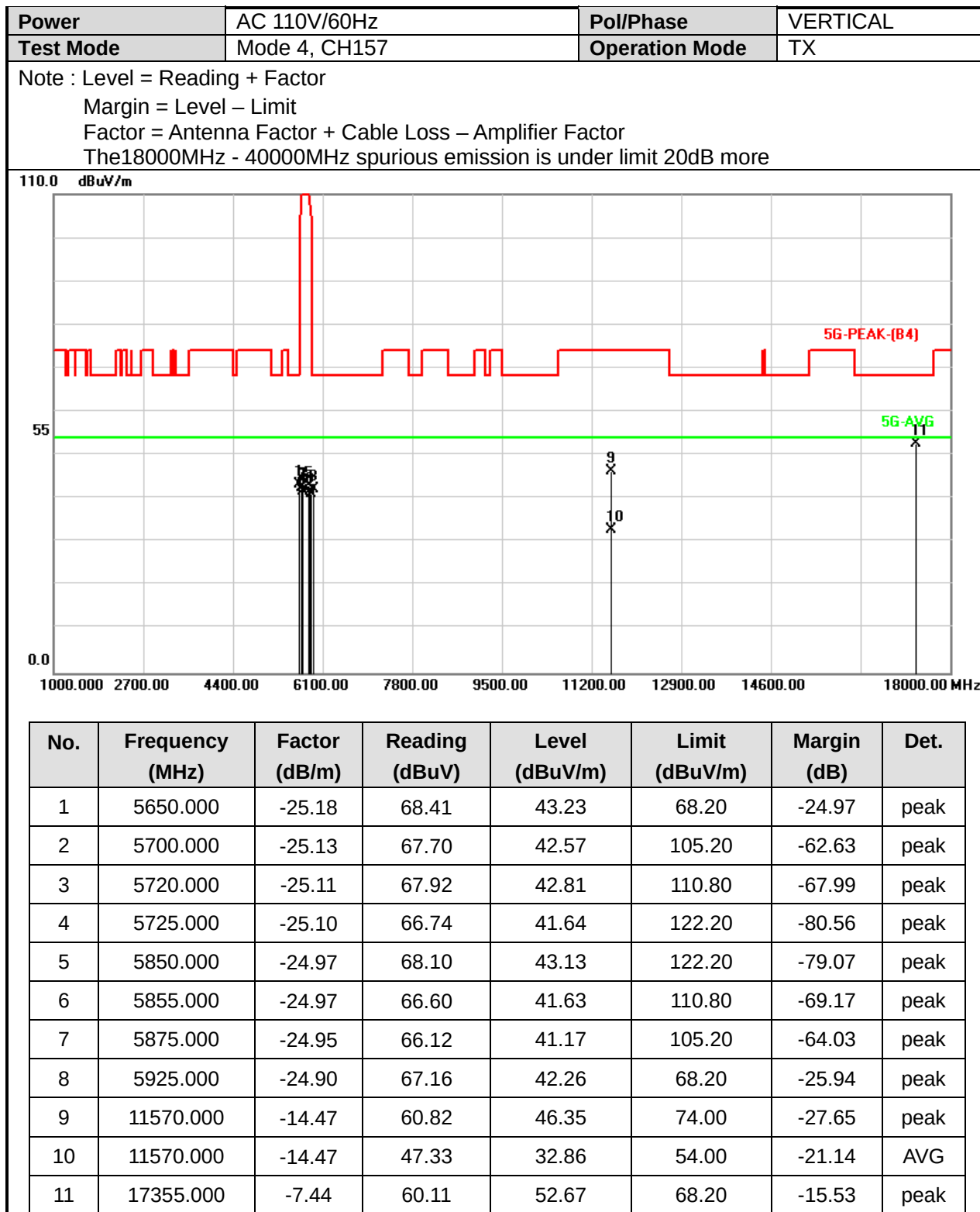


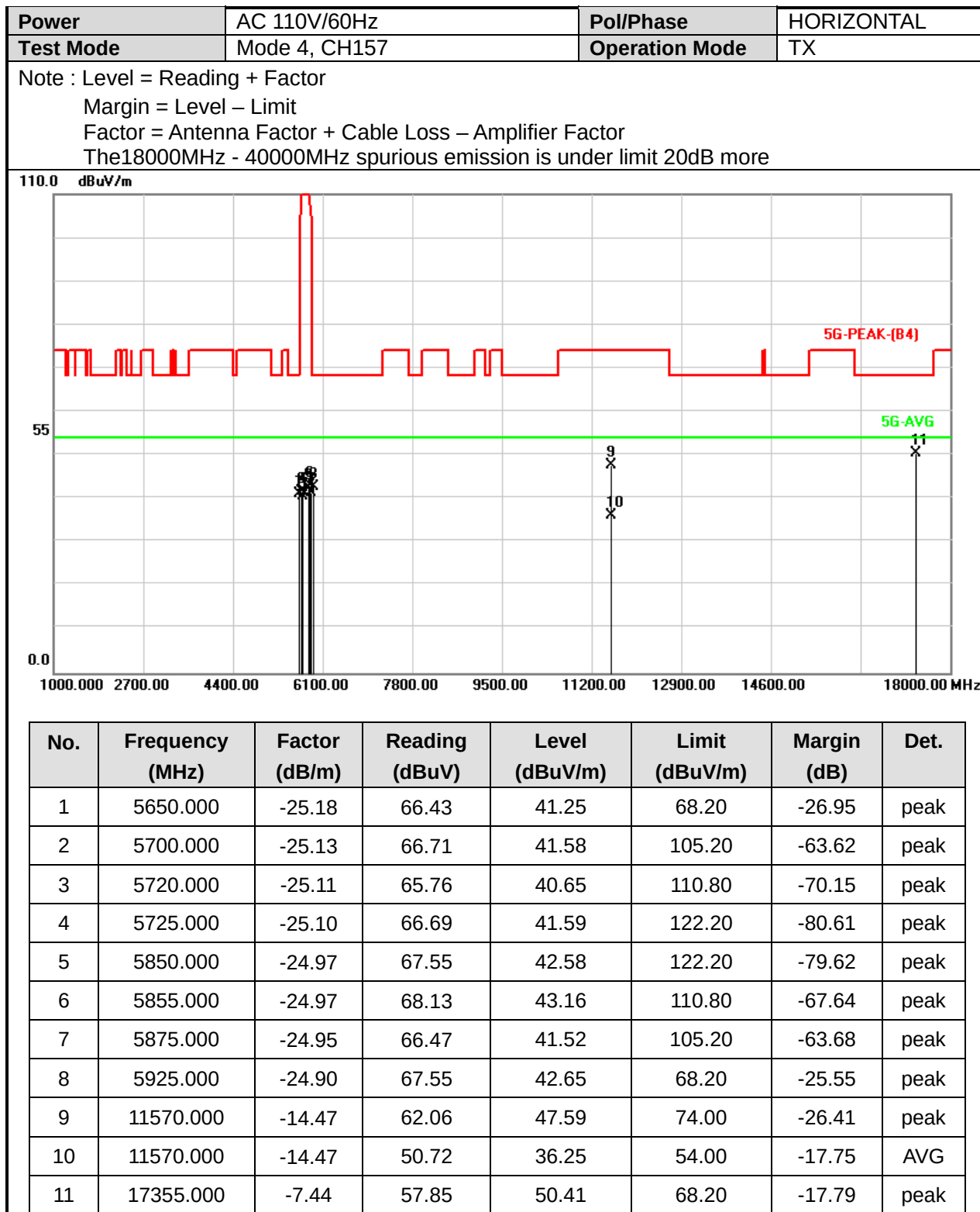


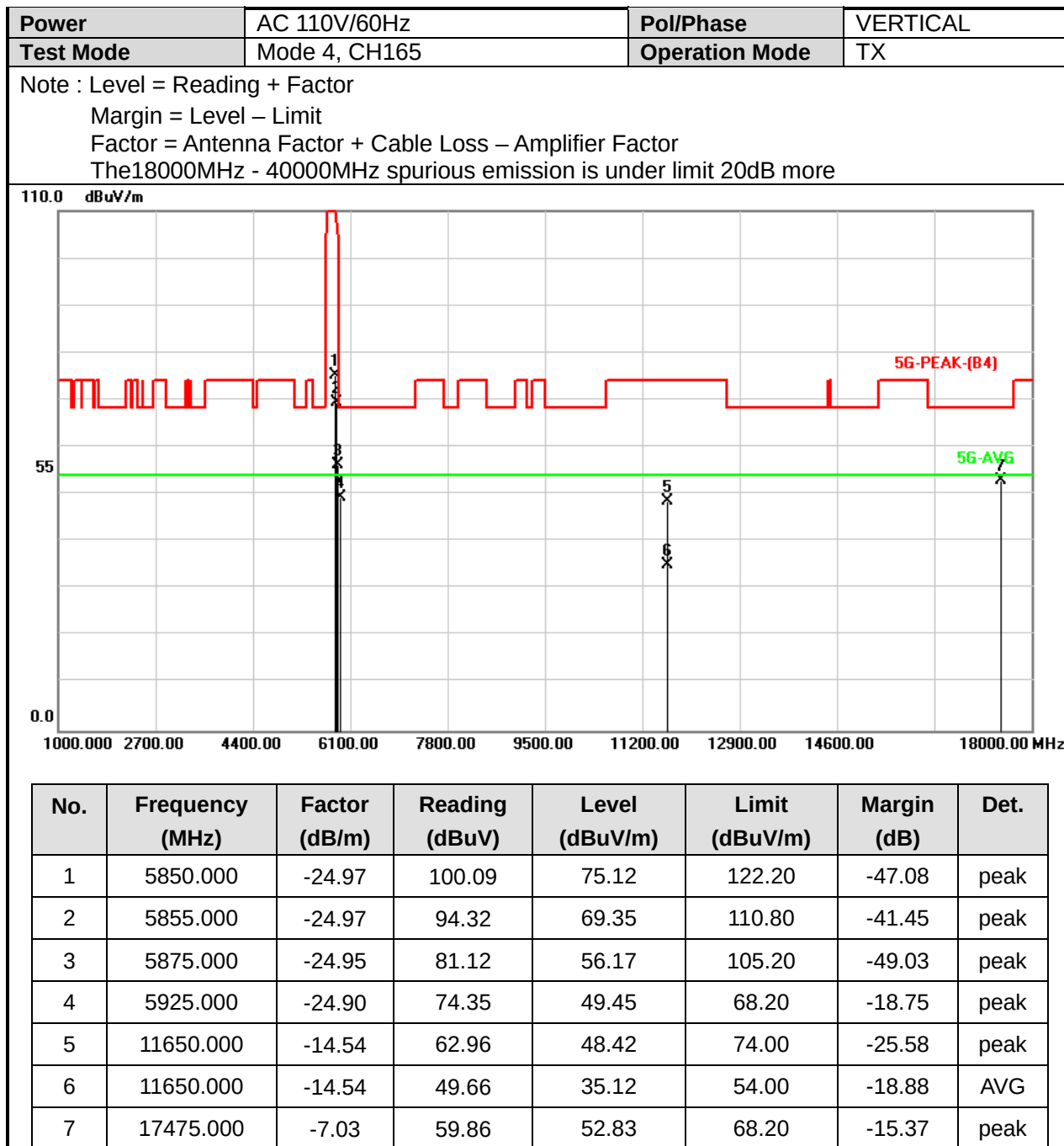


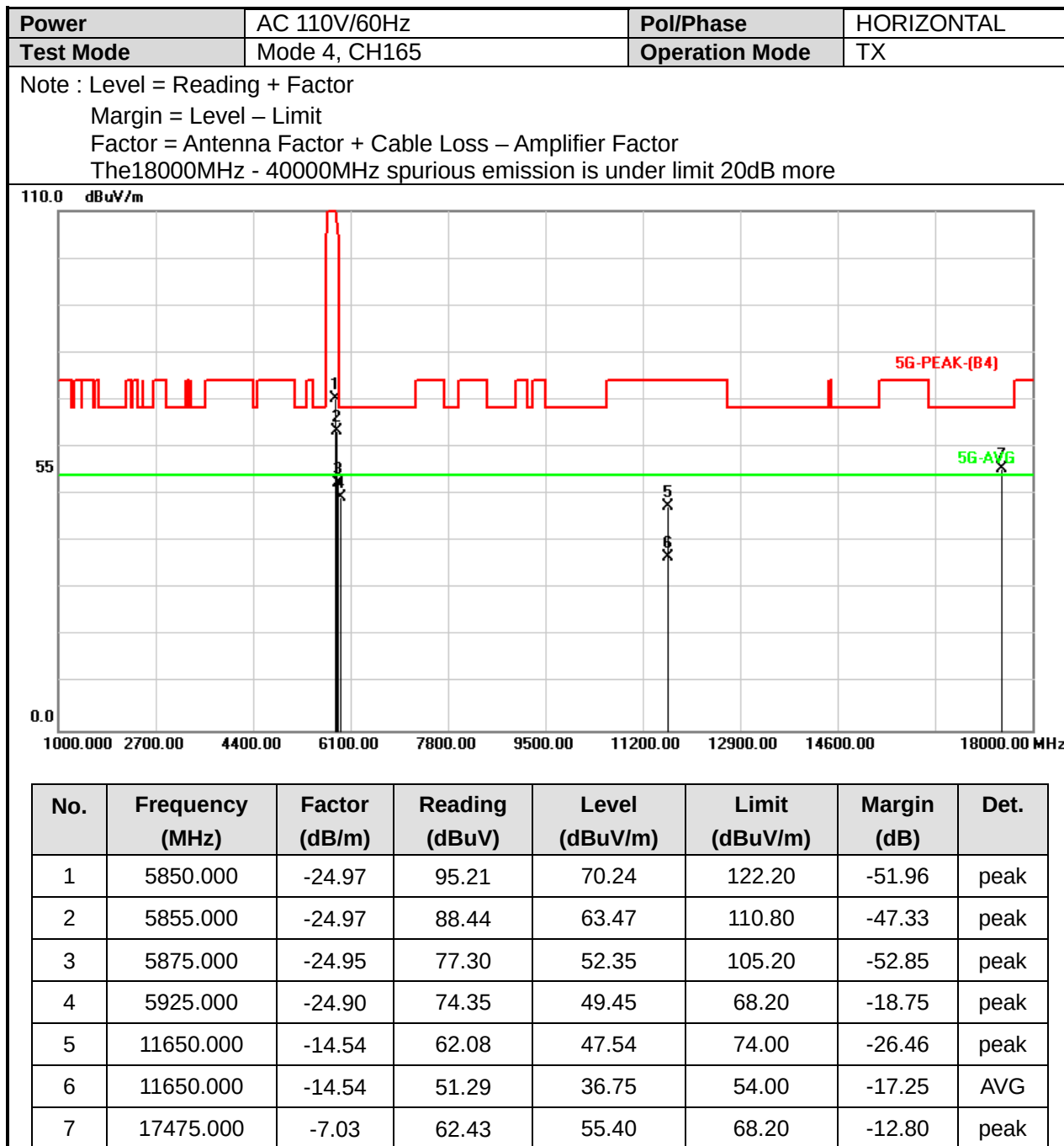


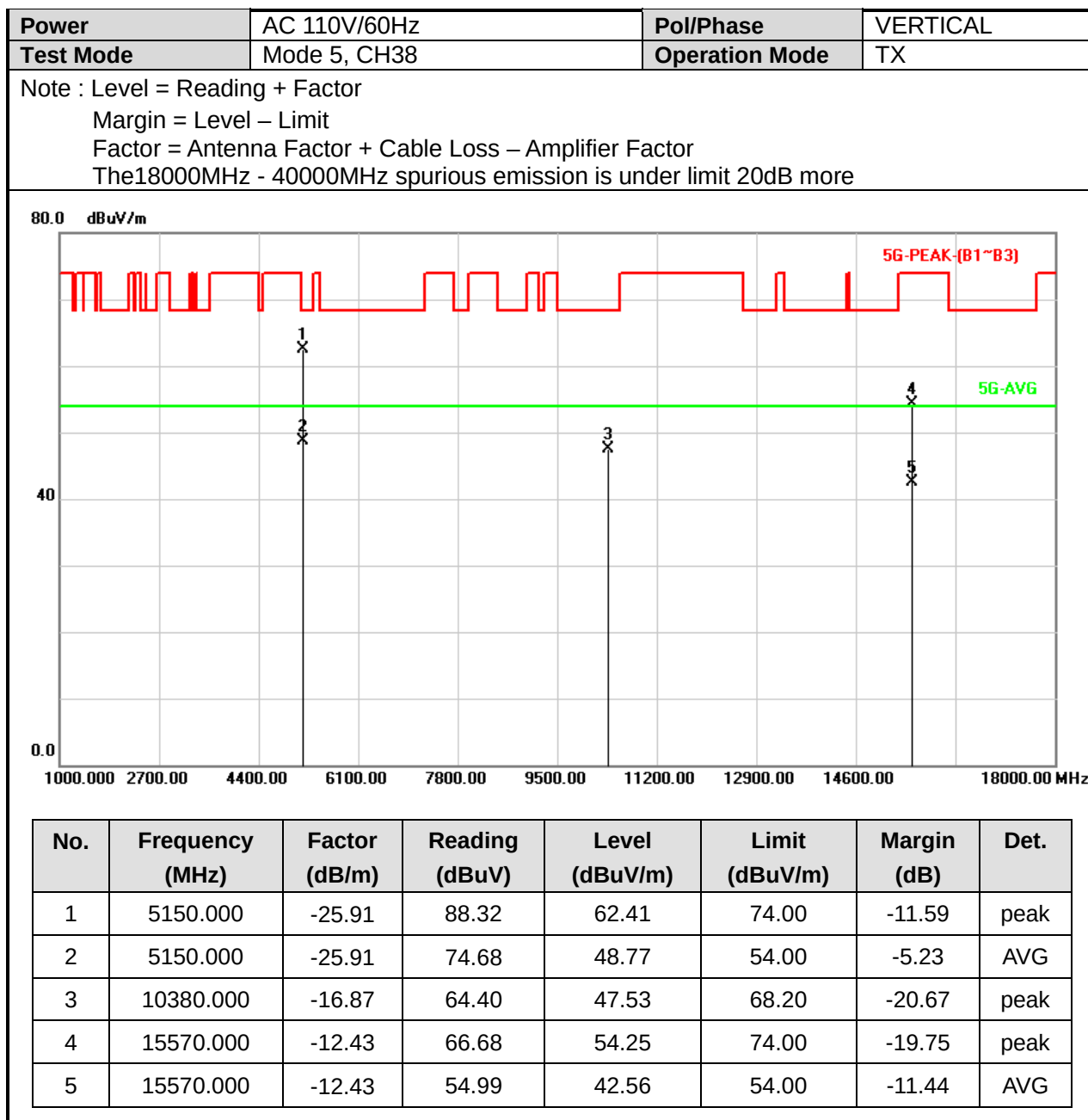


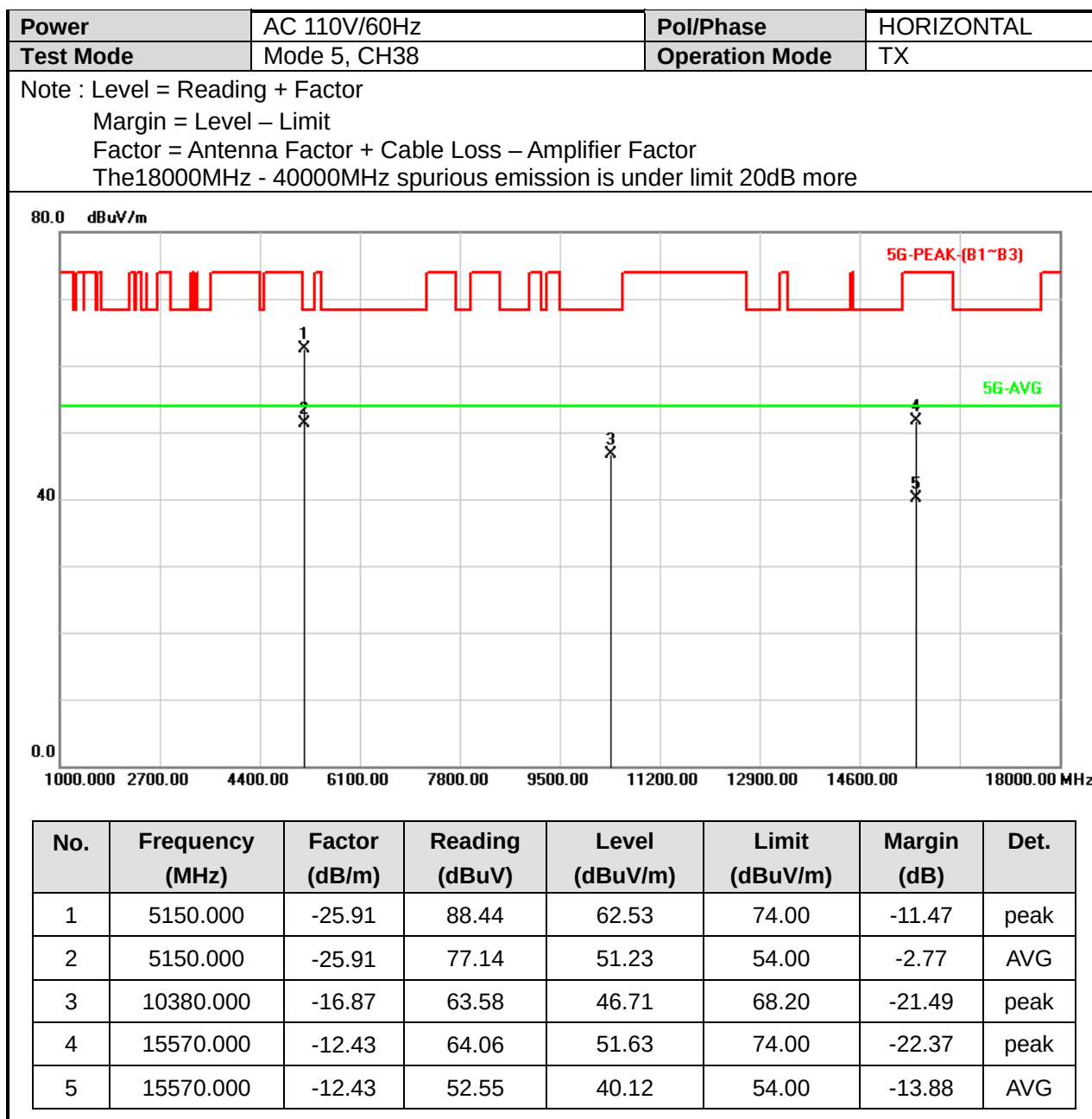


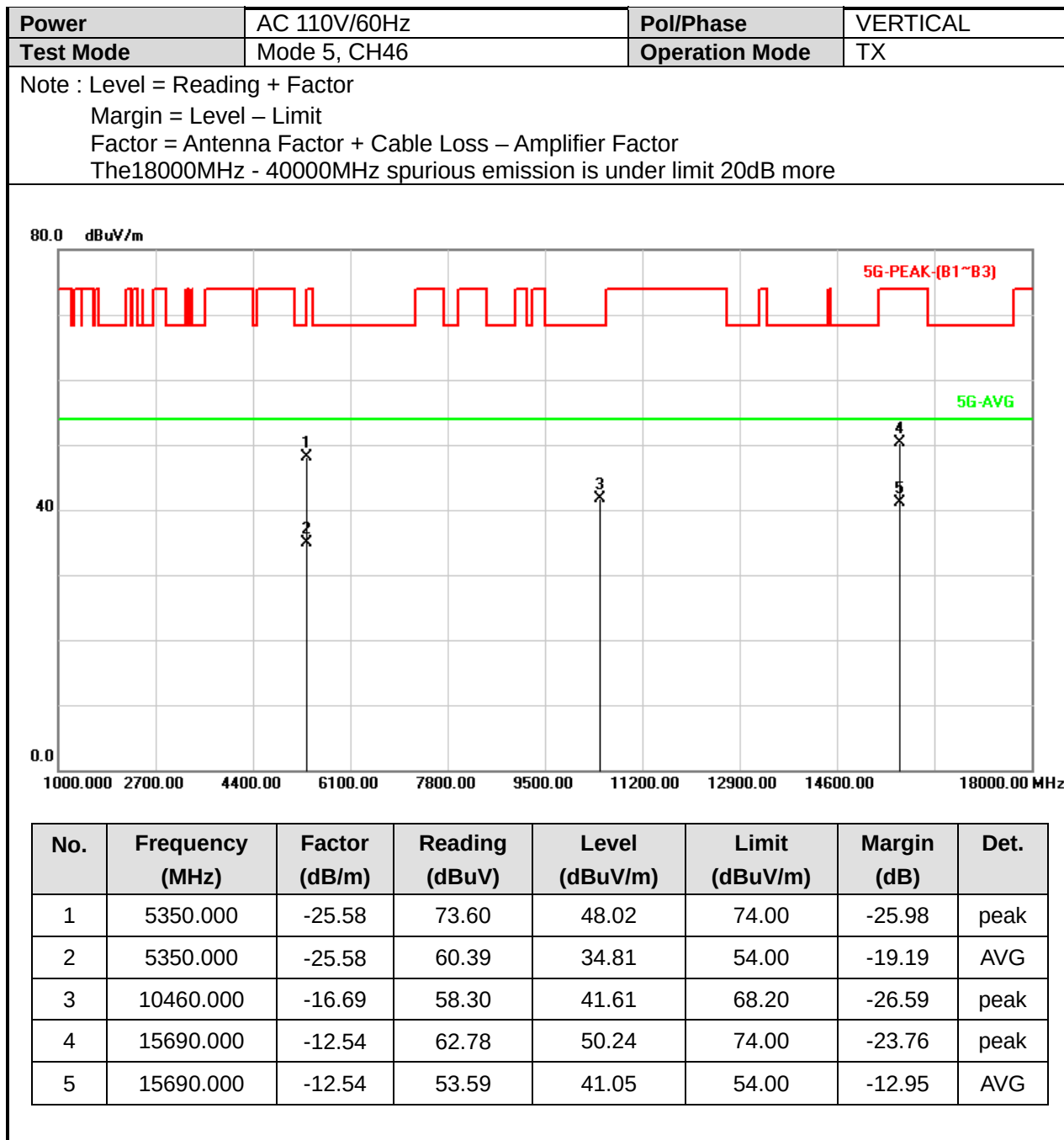


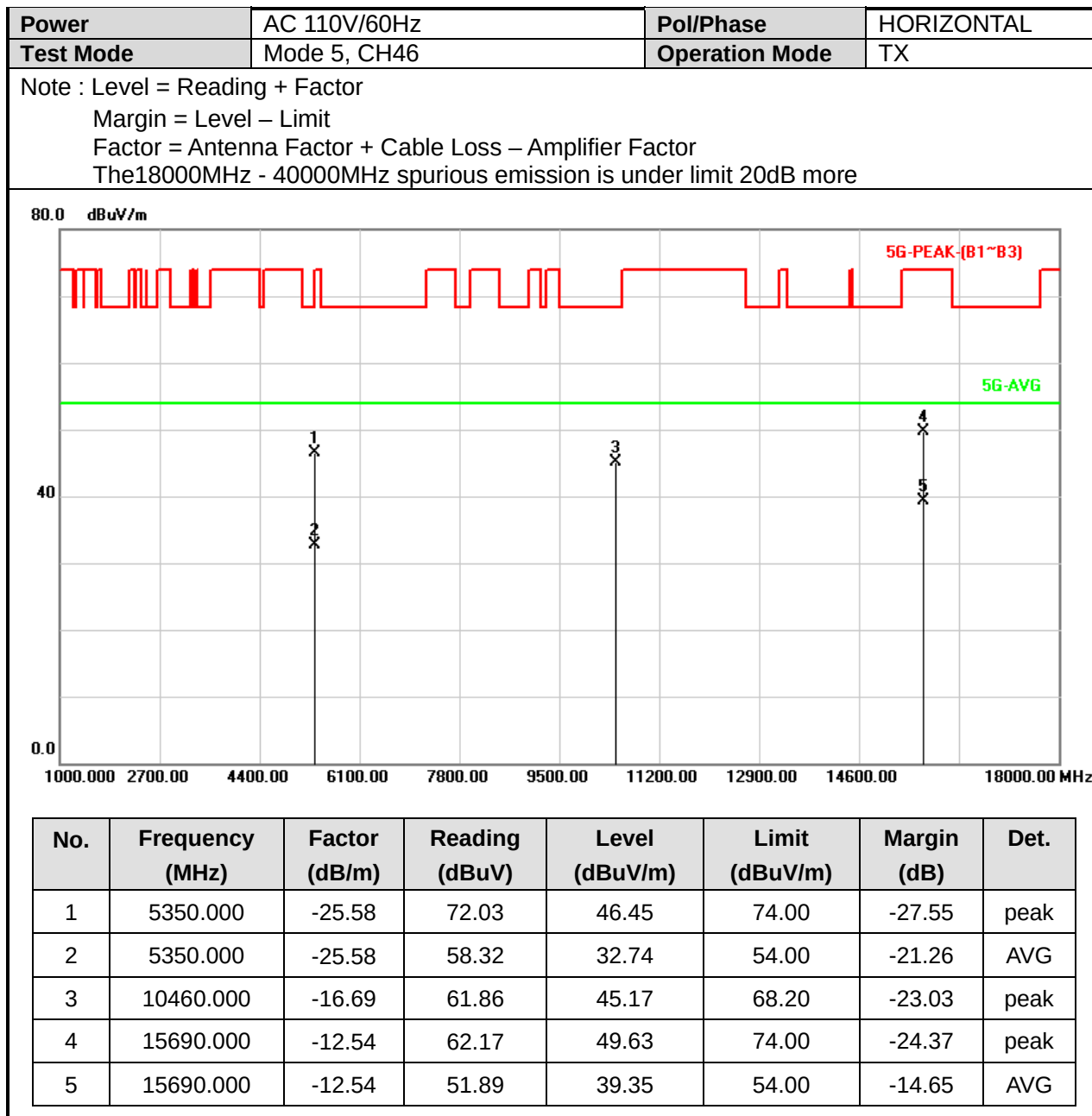


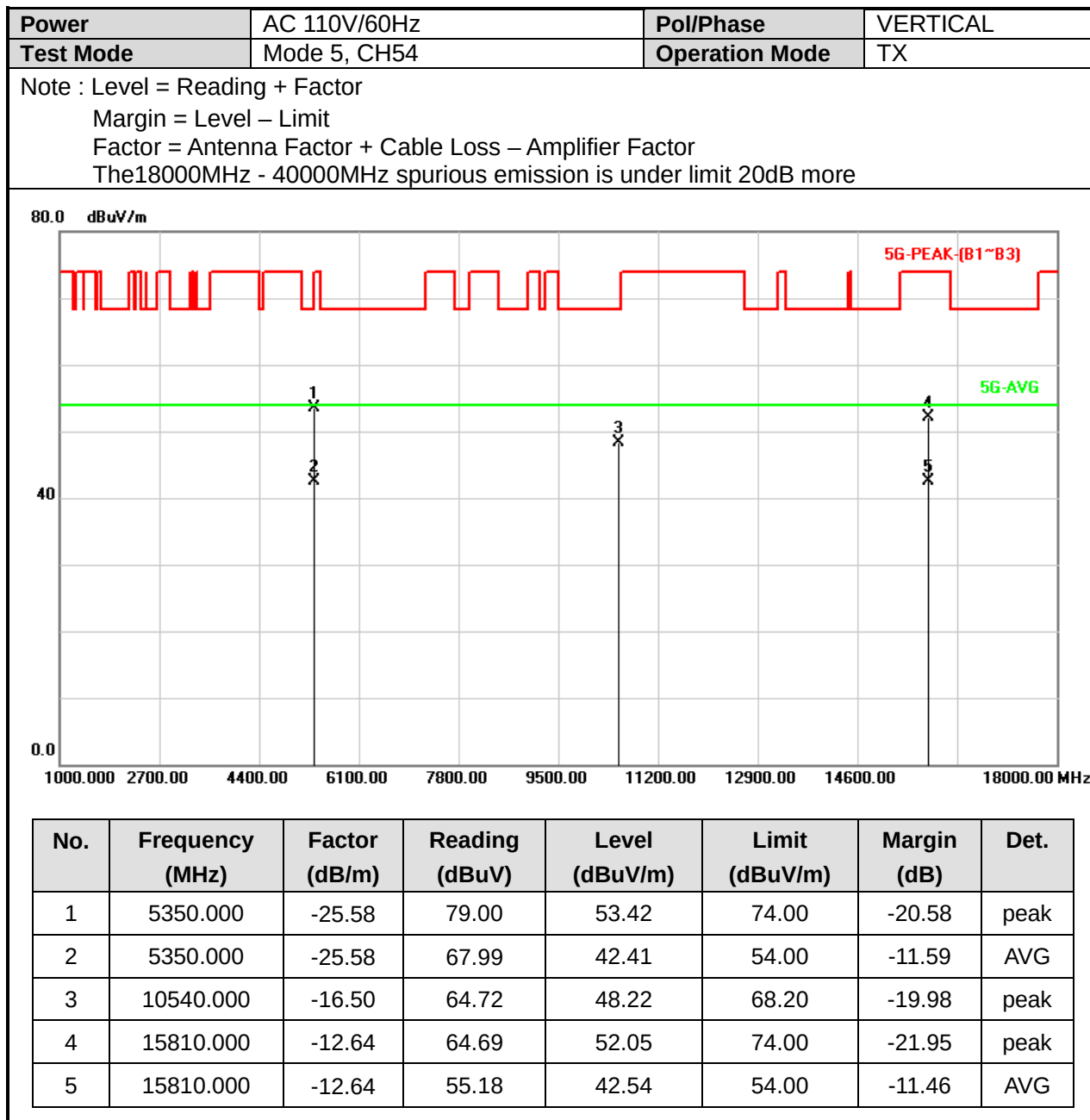


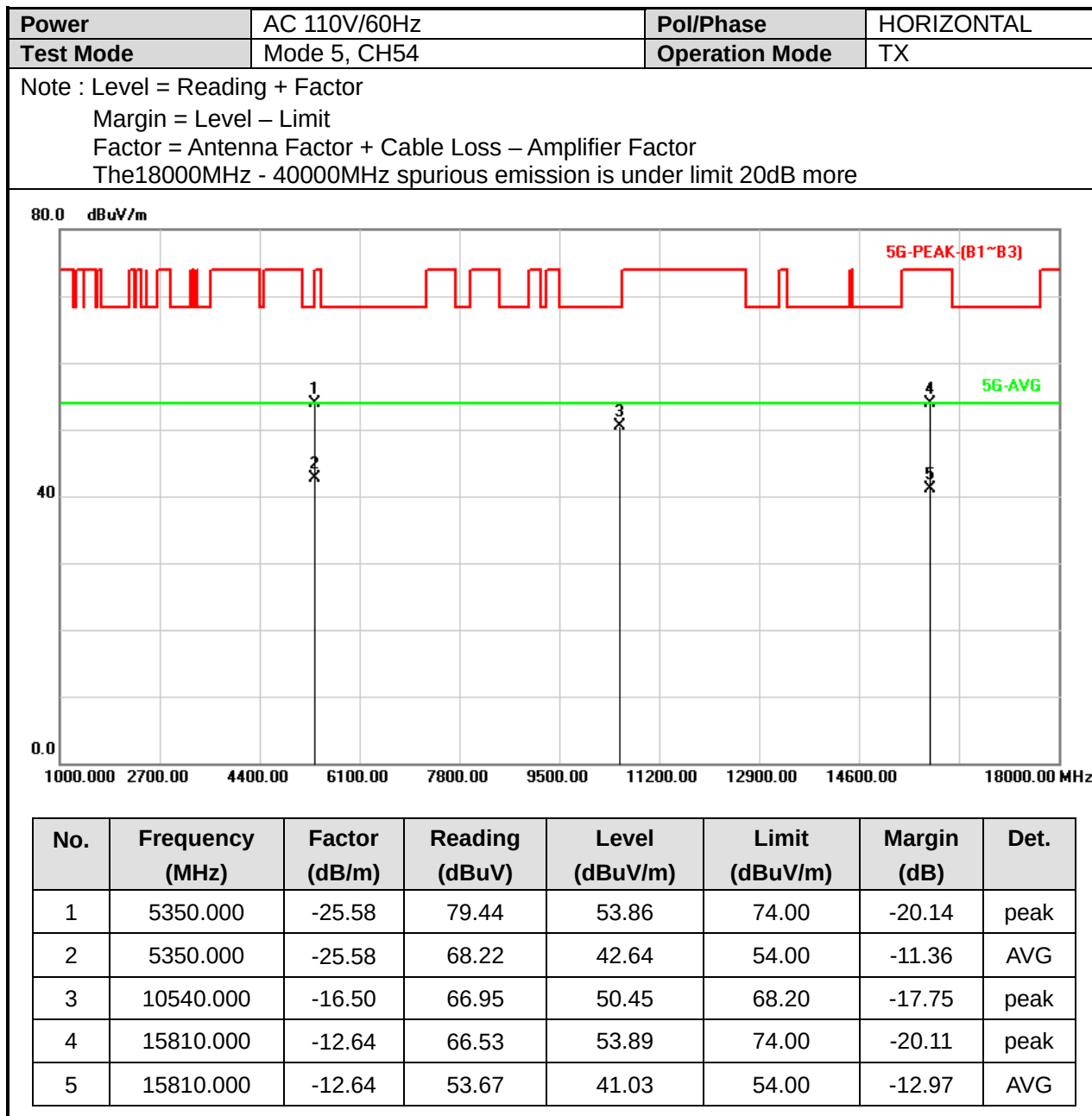


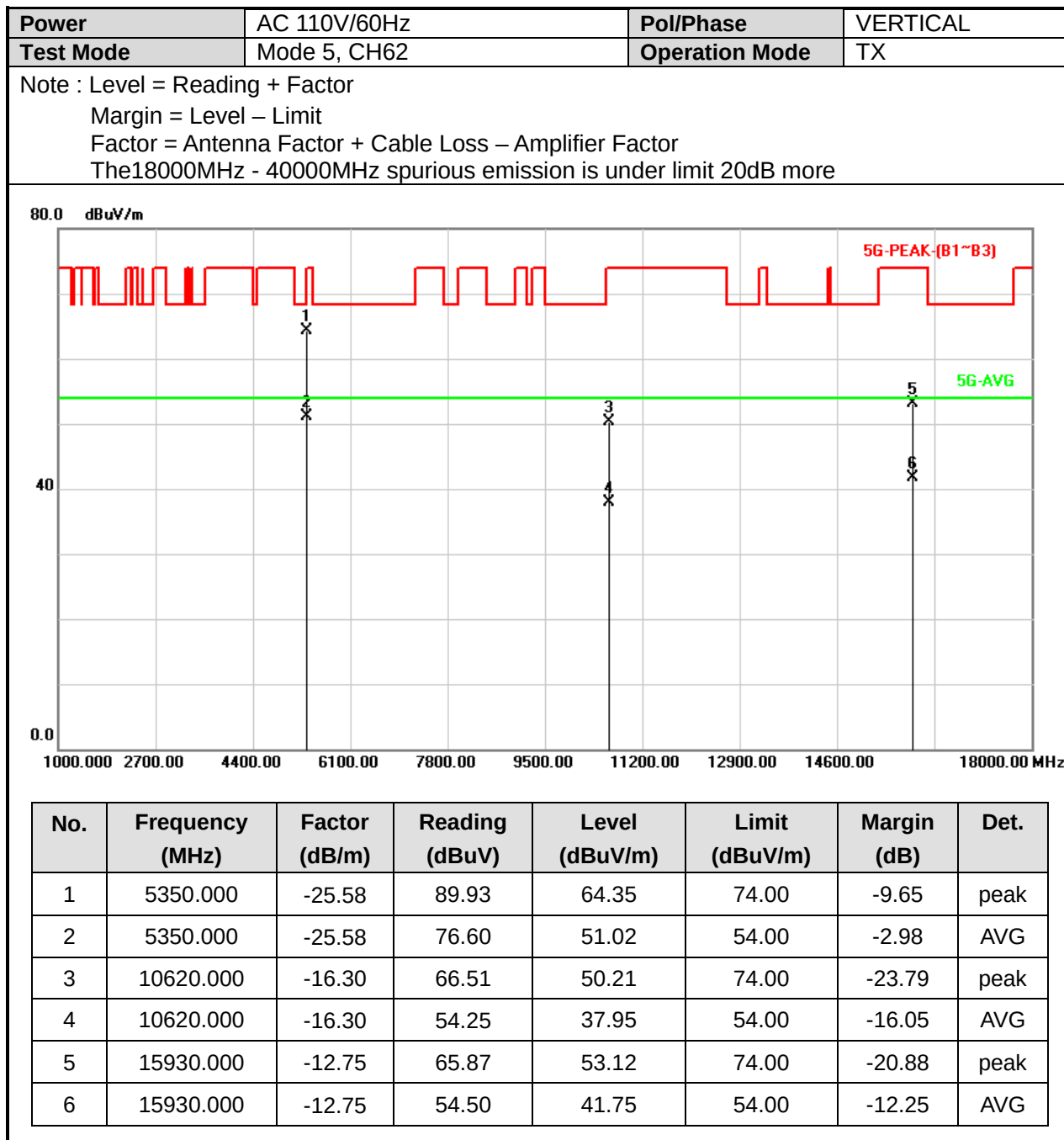


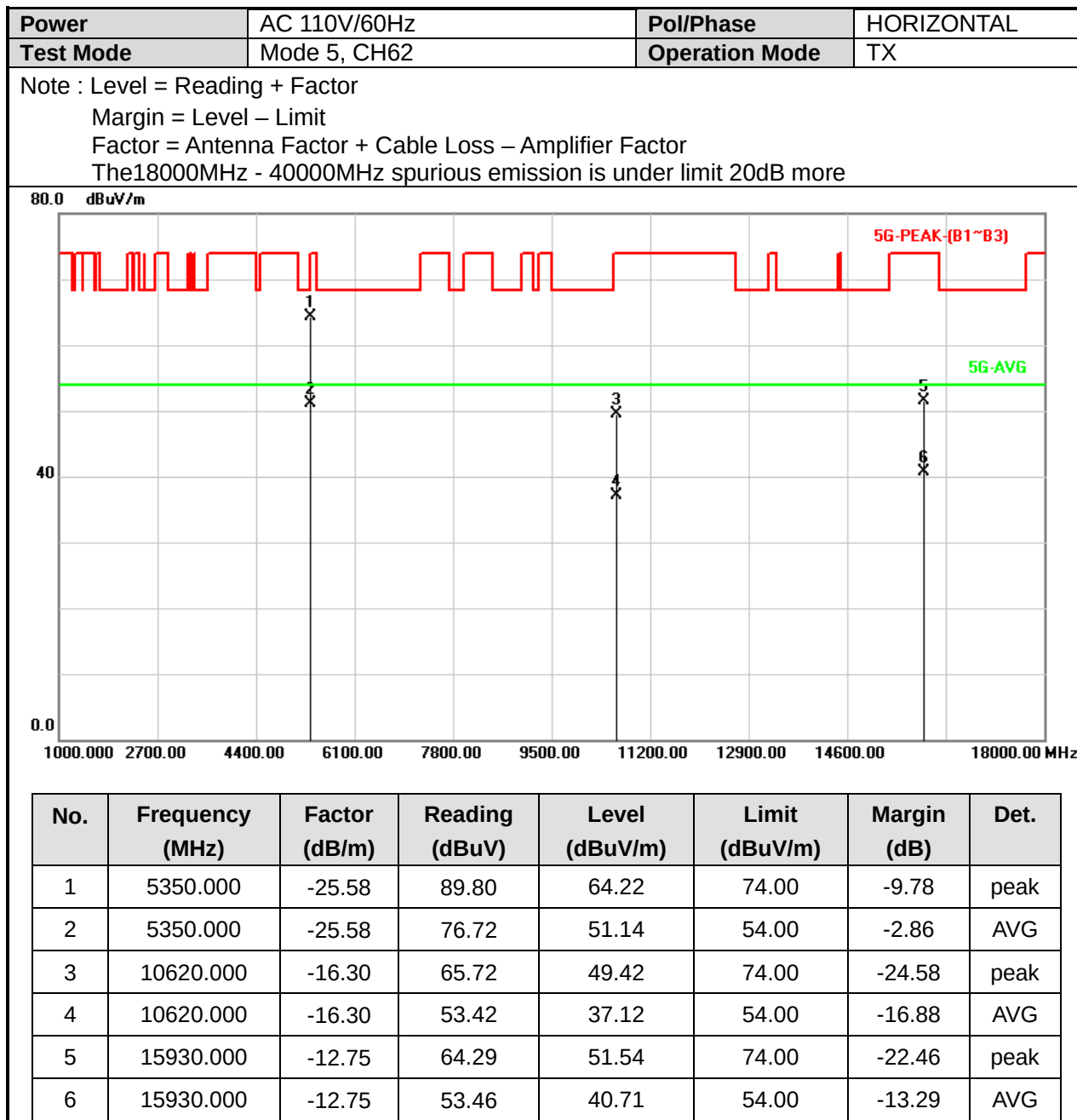


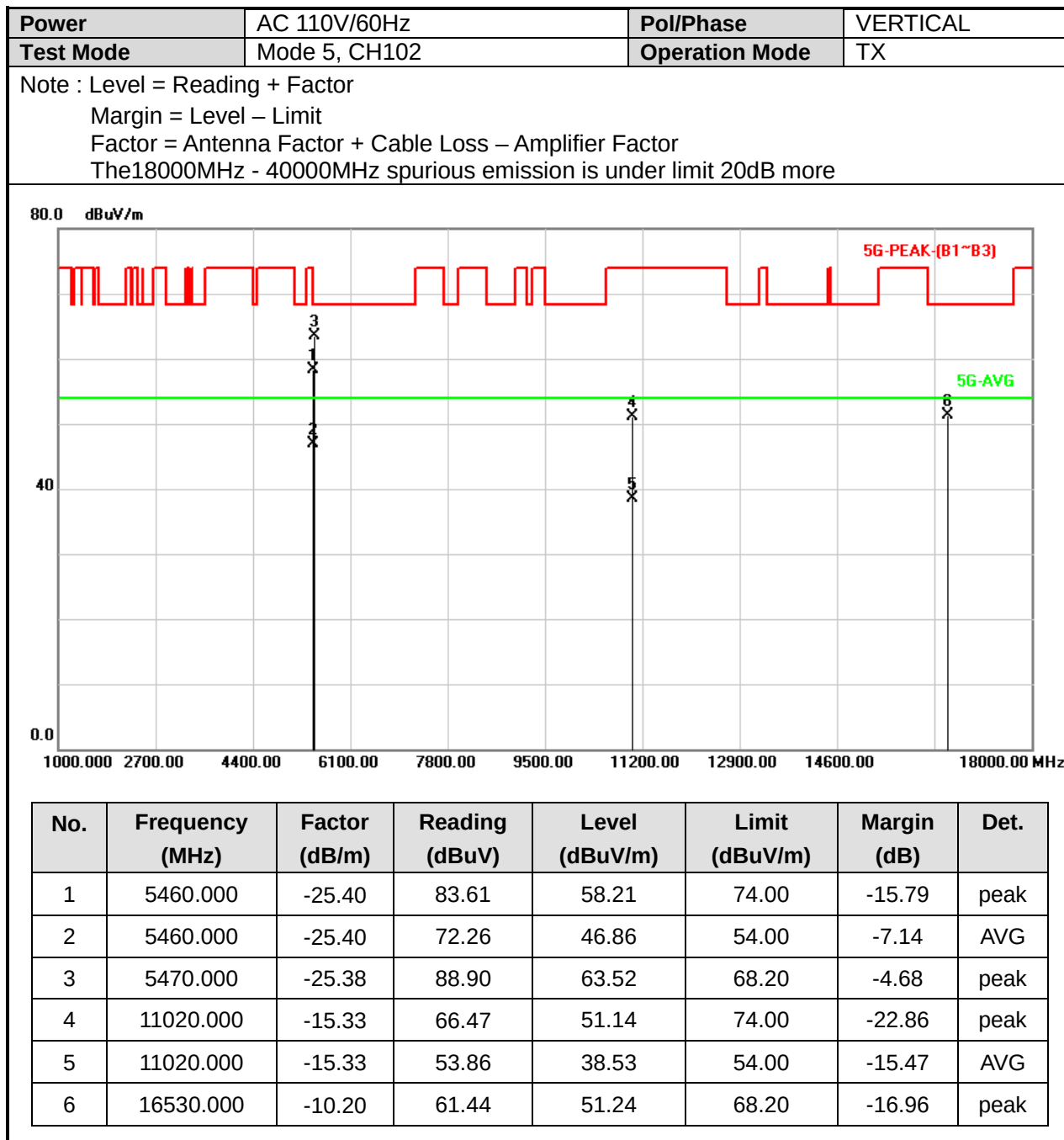


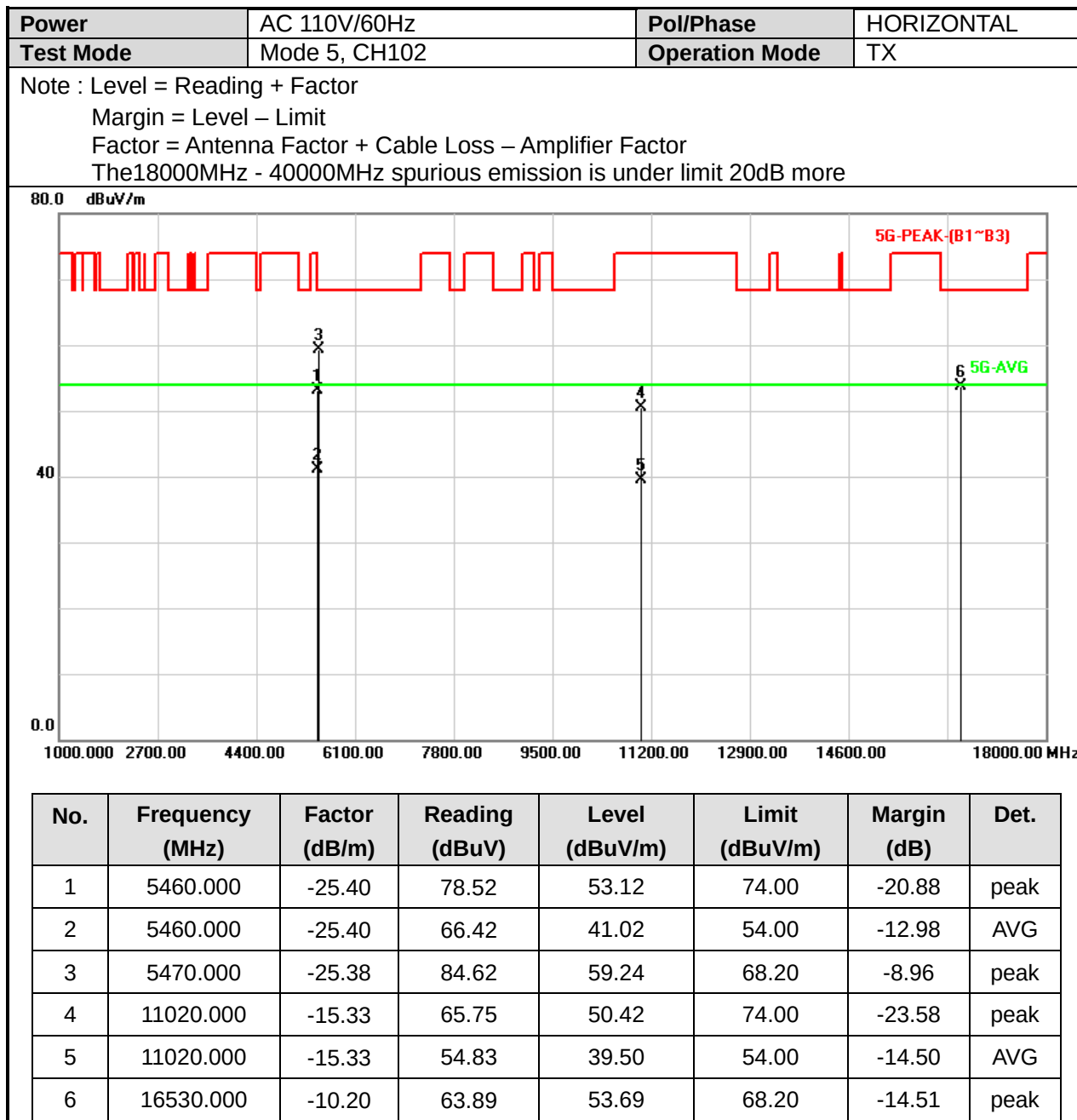


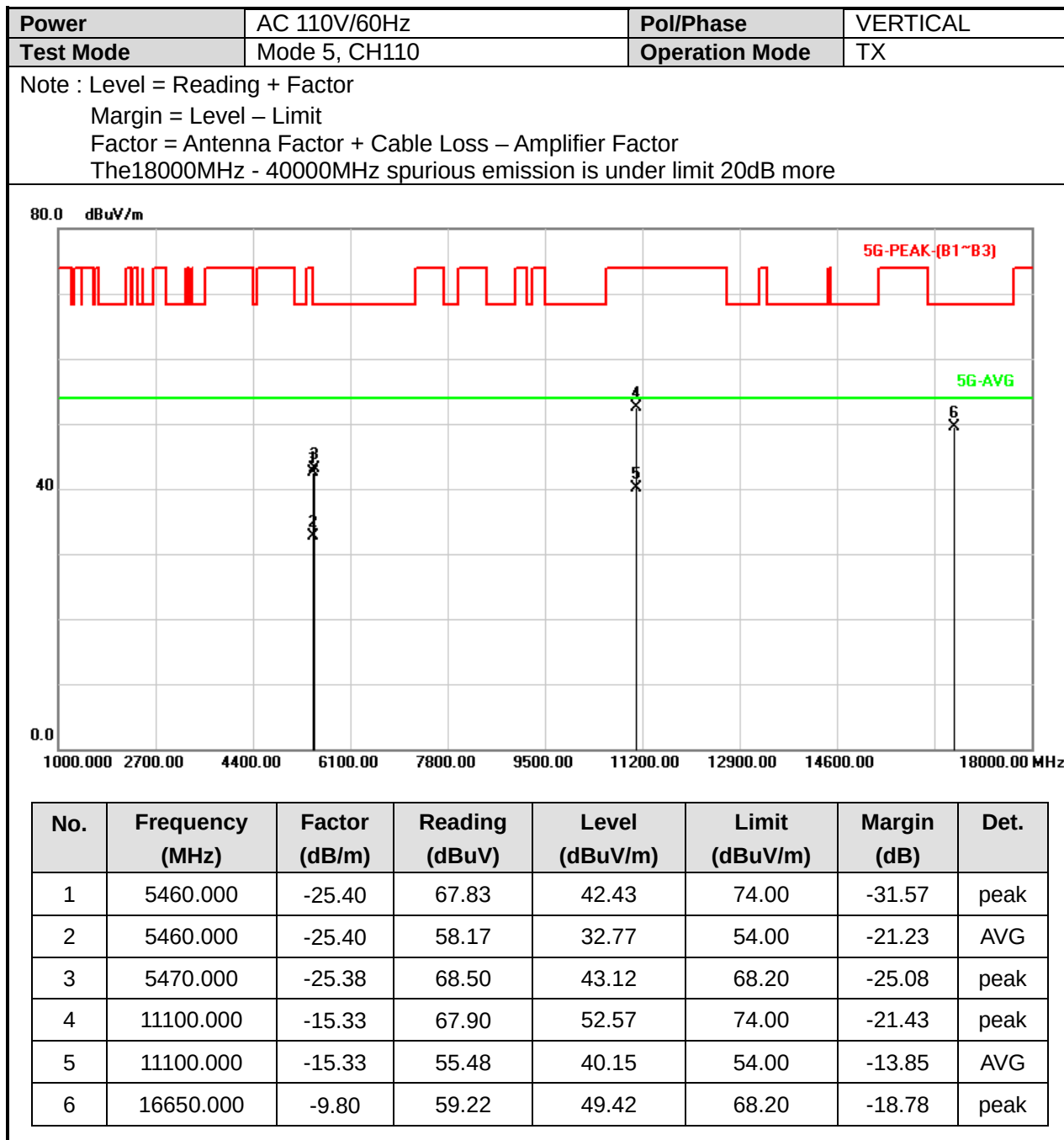


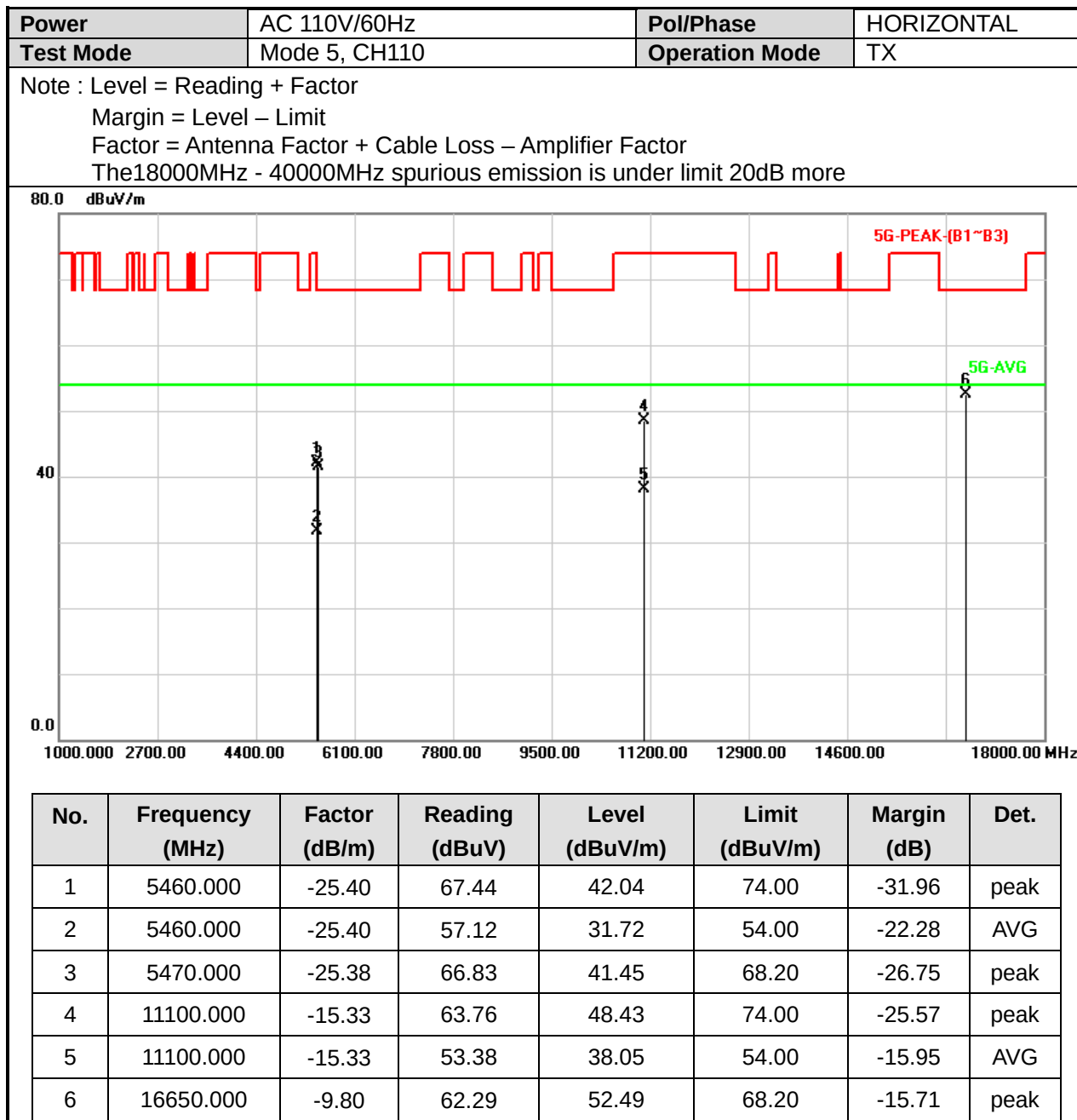


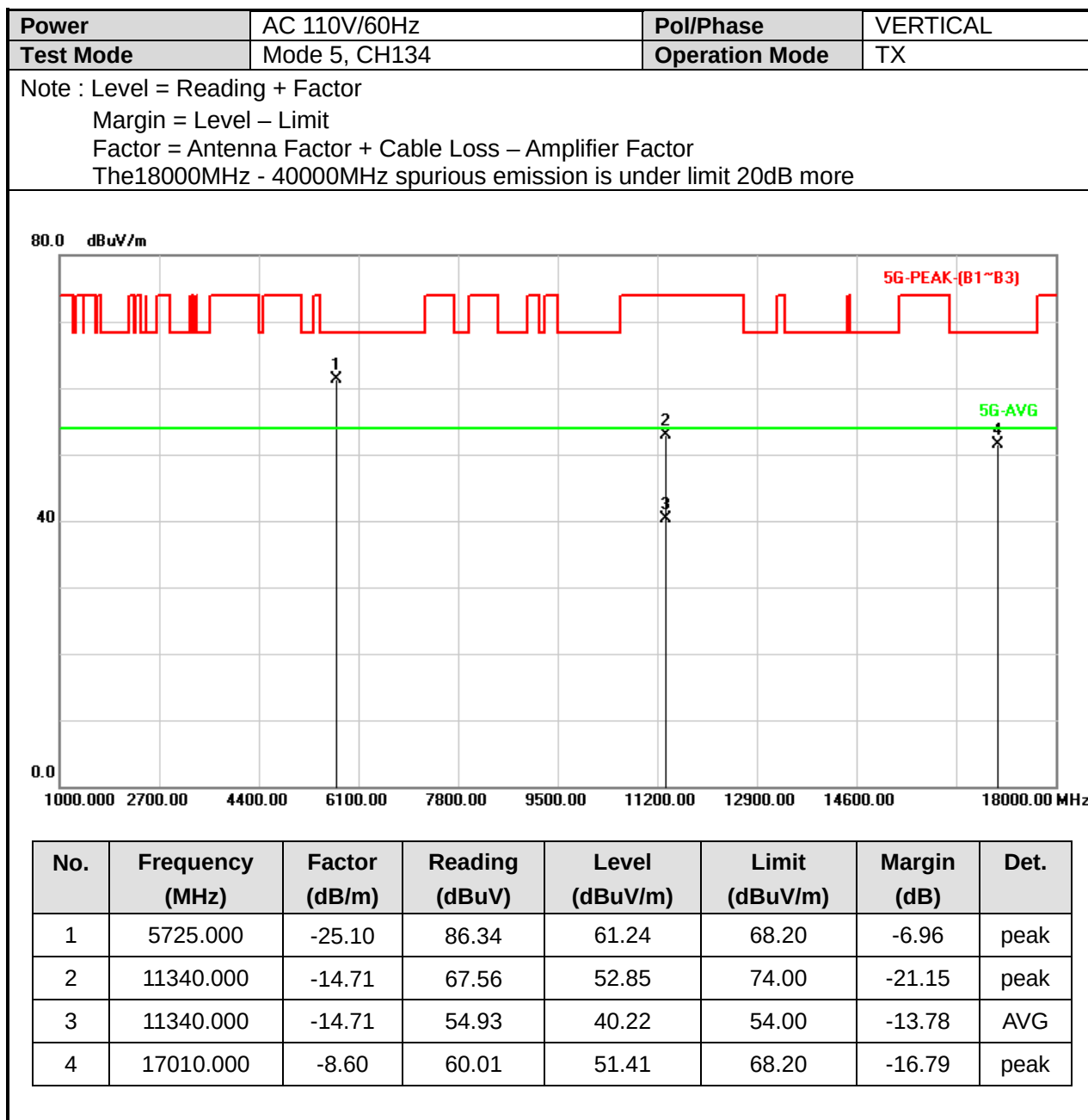


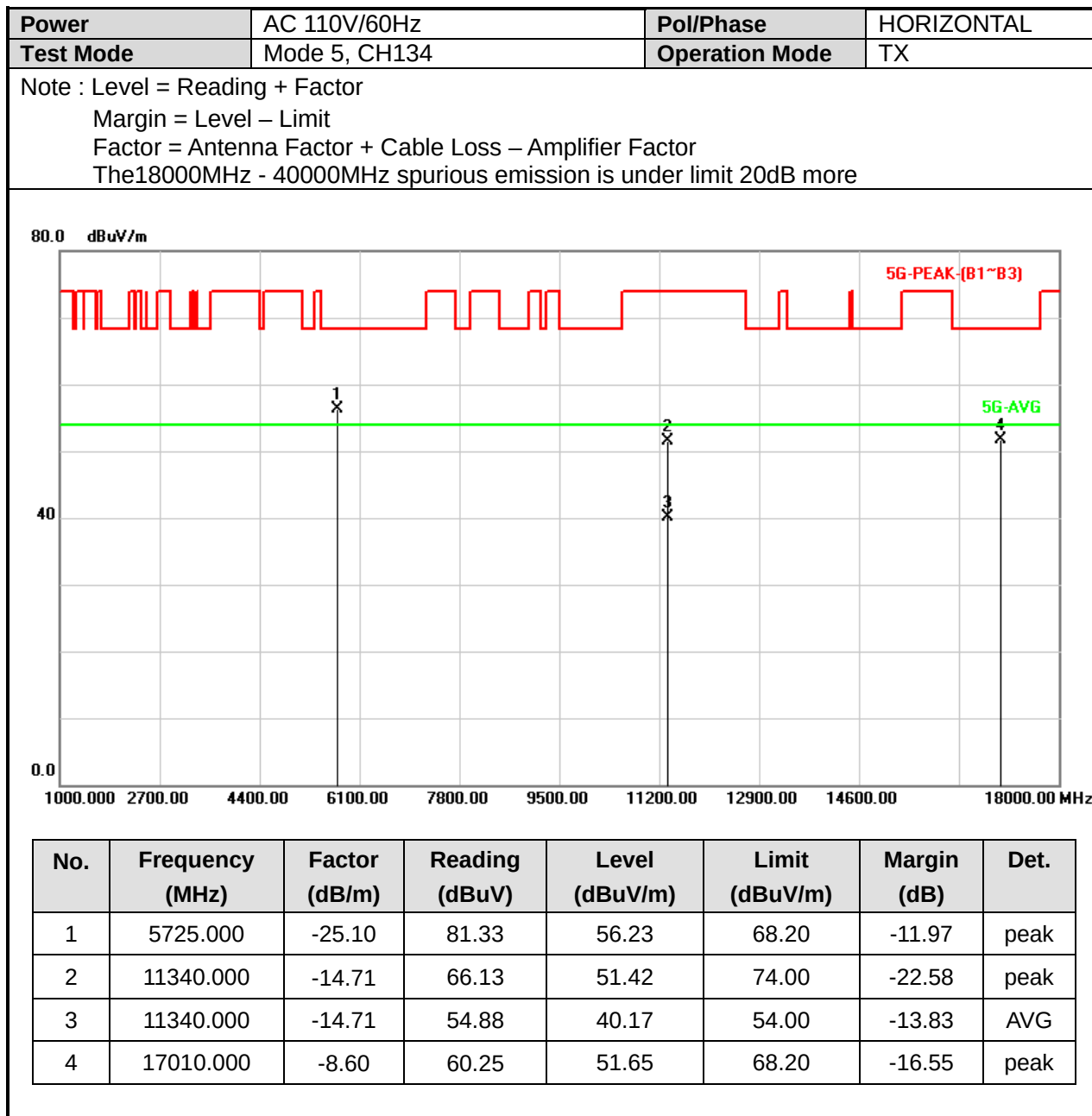


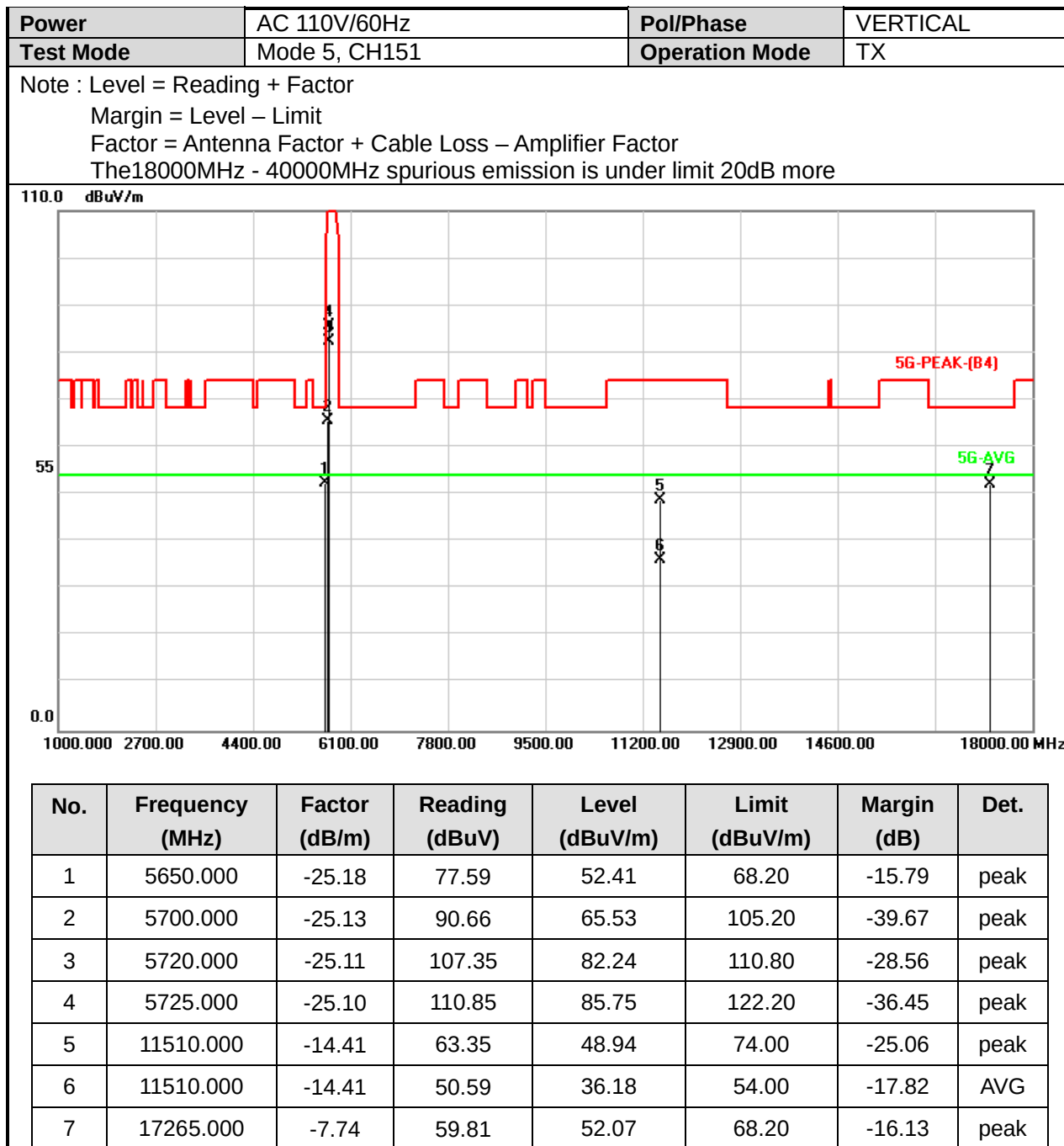


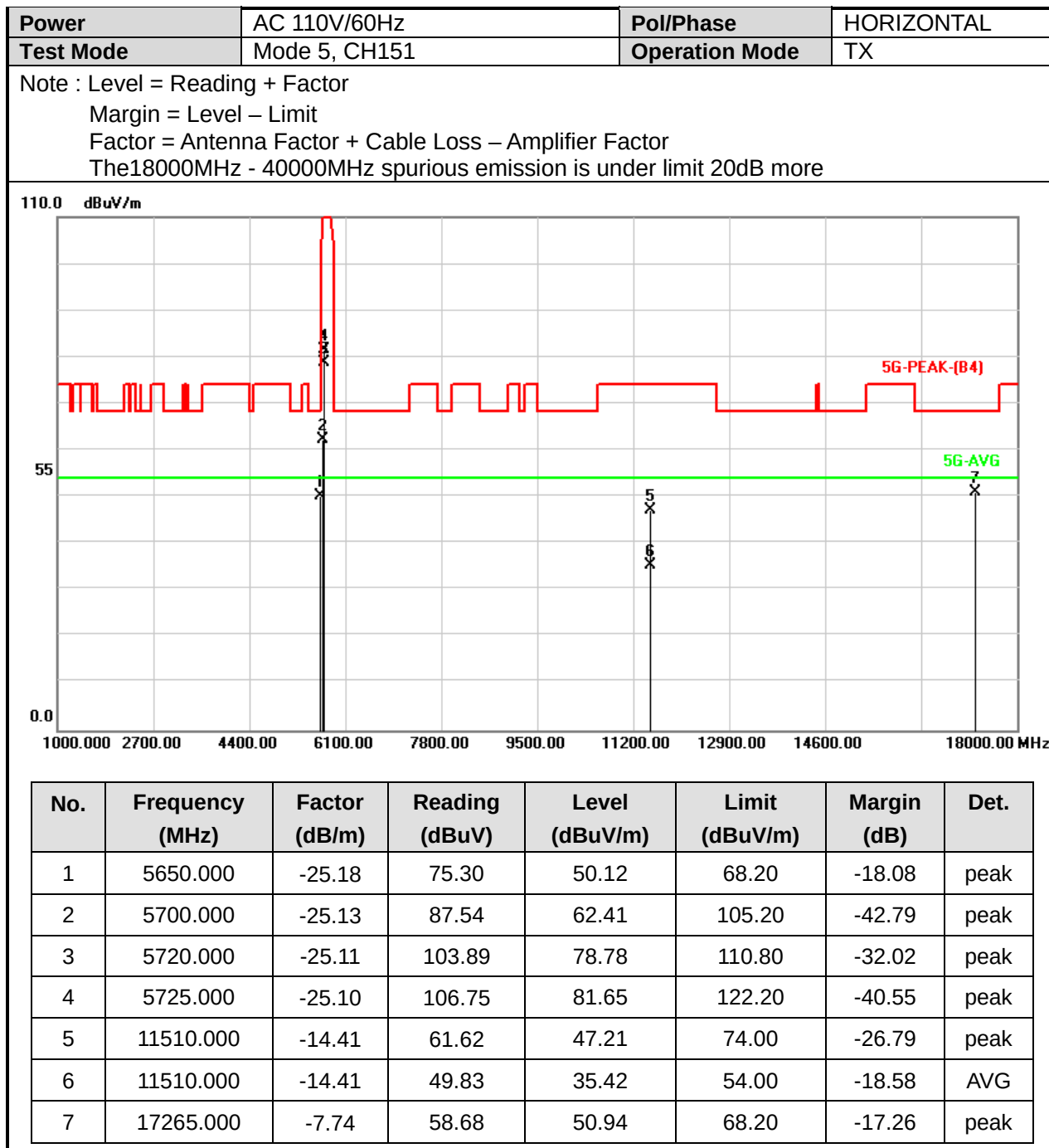


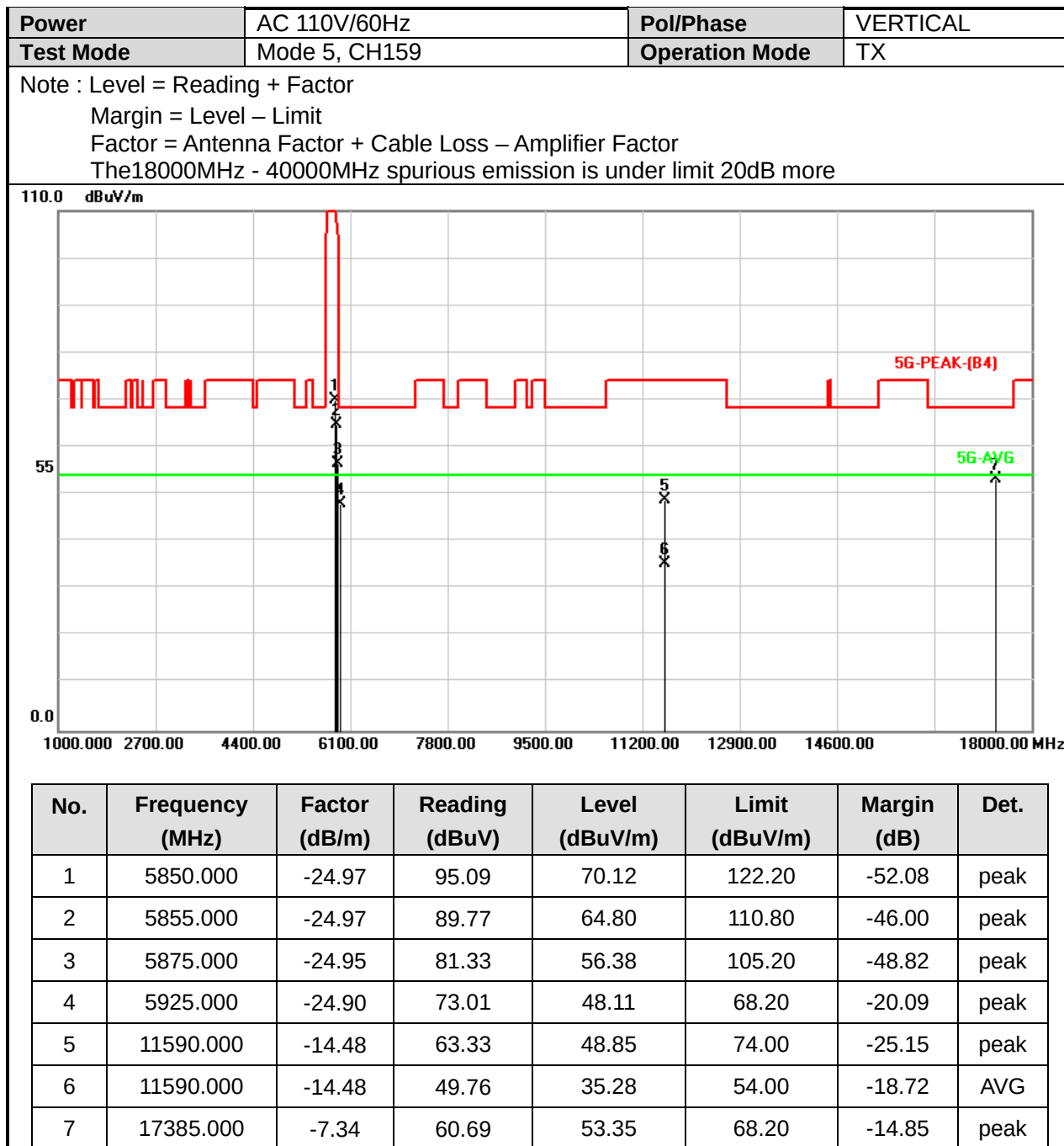


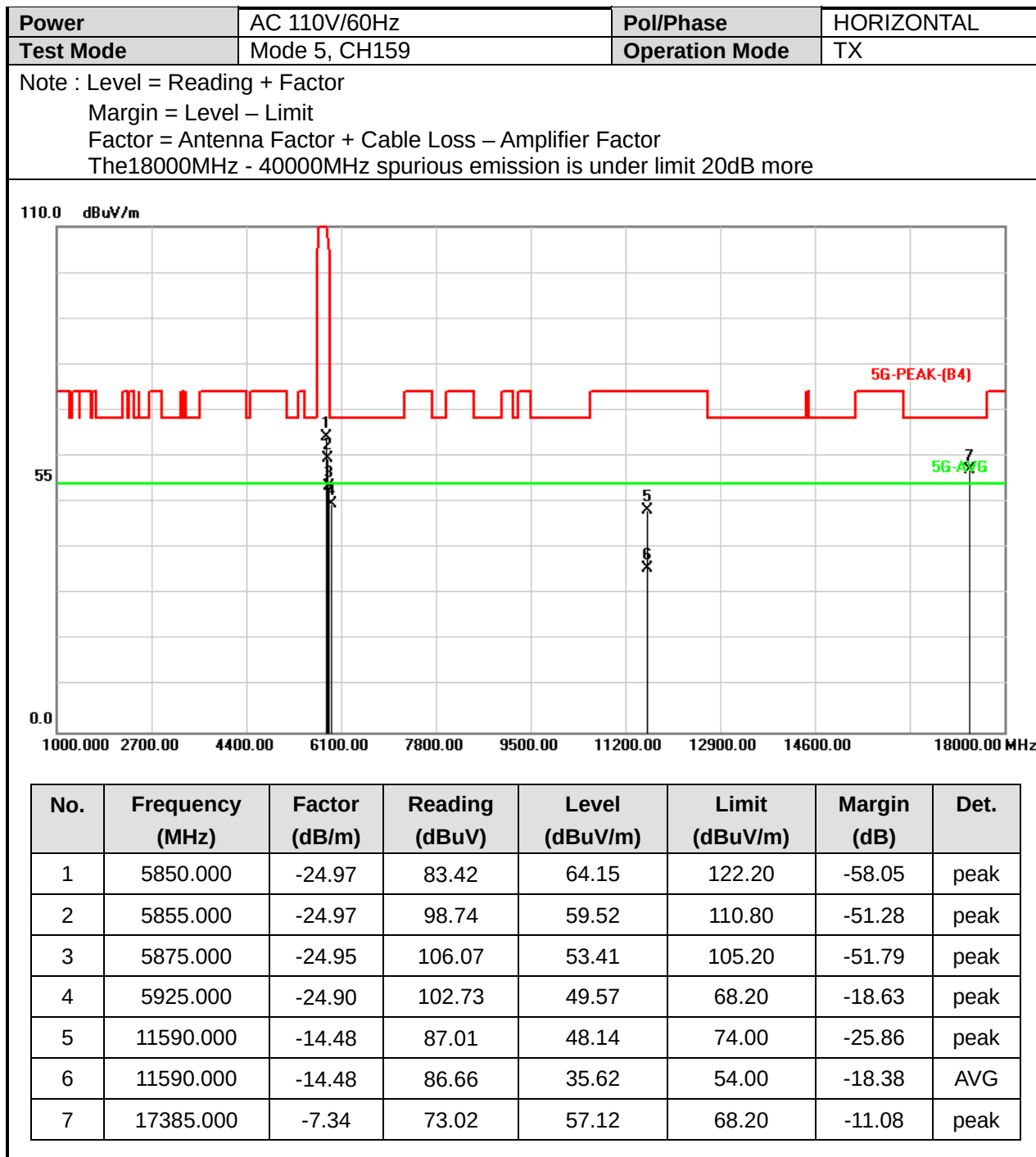














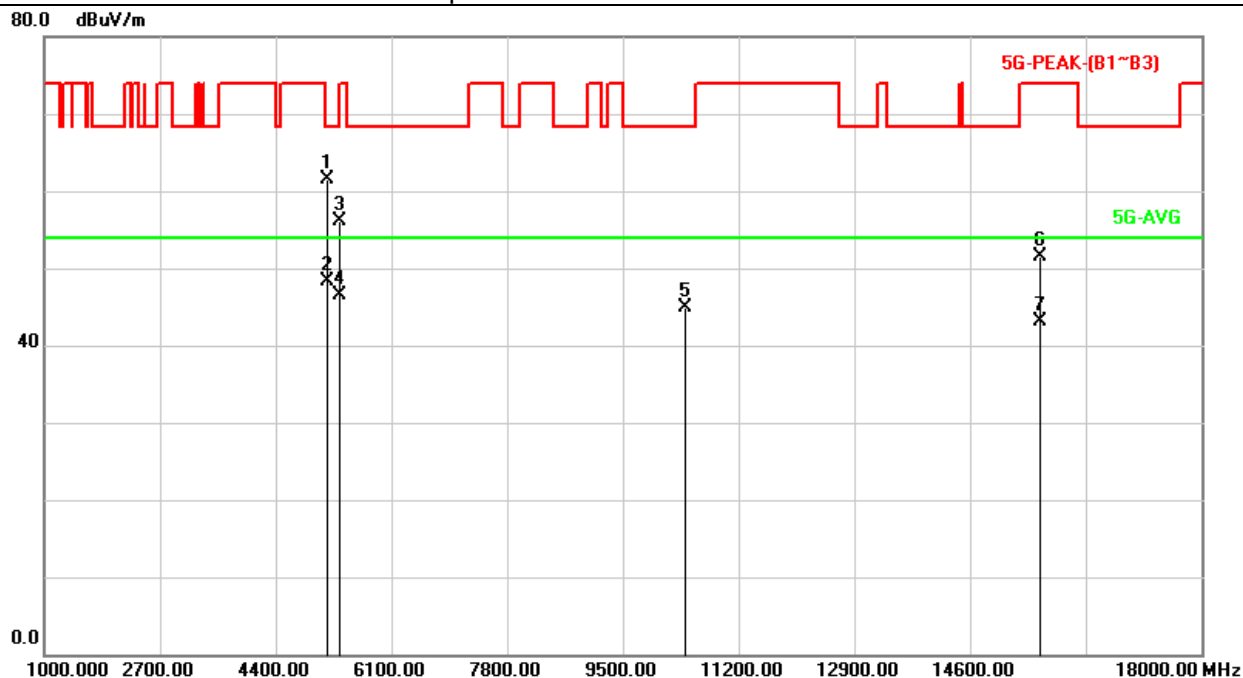
Power	AC 110V/60Hz	Pol/Phase	VERTICAL
Test Mode	Mode 6, CH42	Operation Mode	TX

Note : Level = Reading + Factor

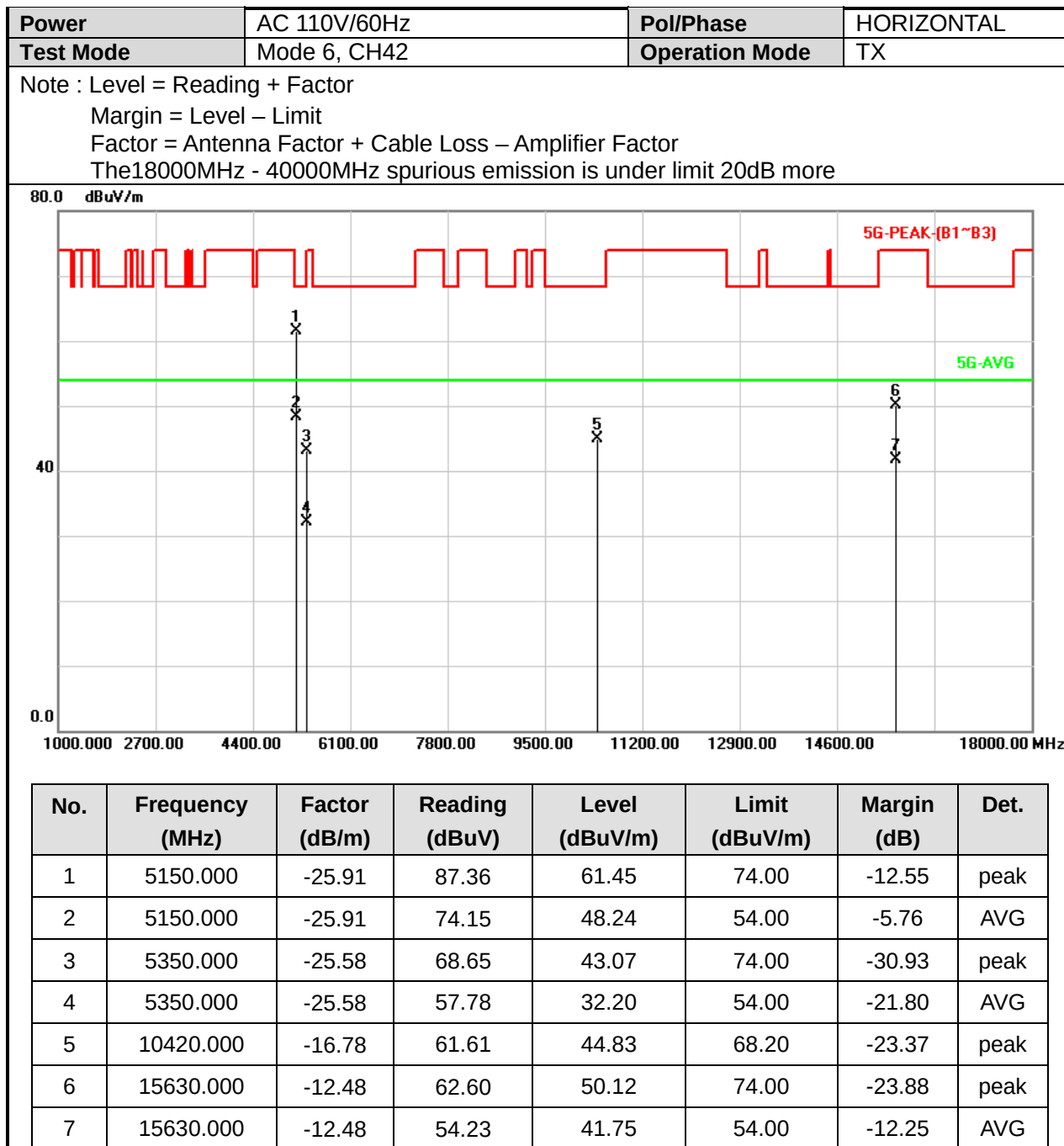
Margin = Level – Limit

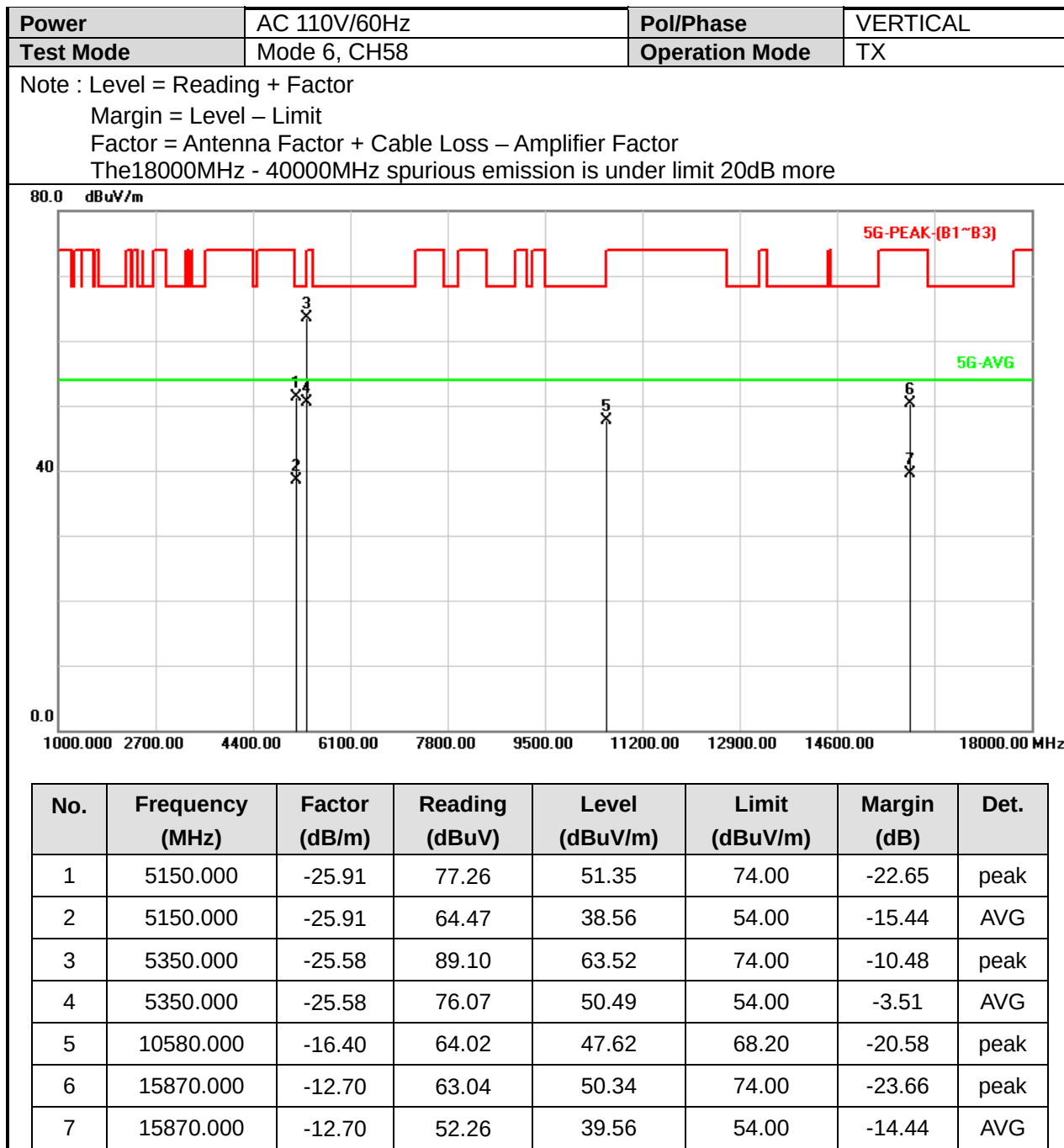
Factor = Antenna Factor + Cable Loss – Amplifier Factor

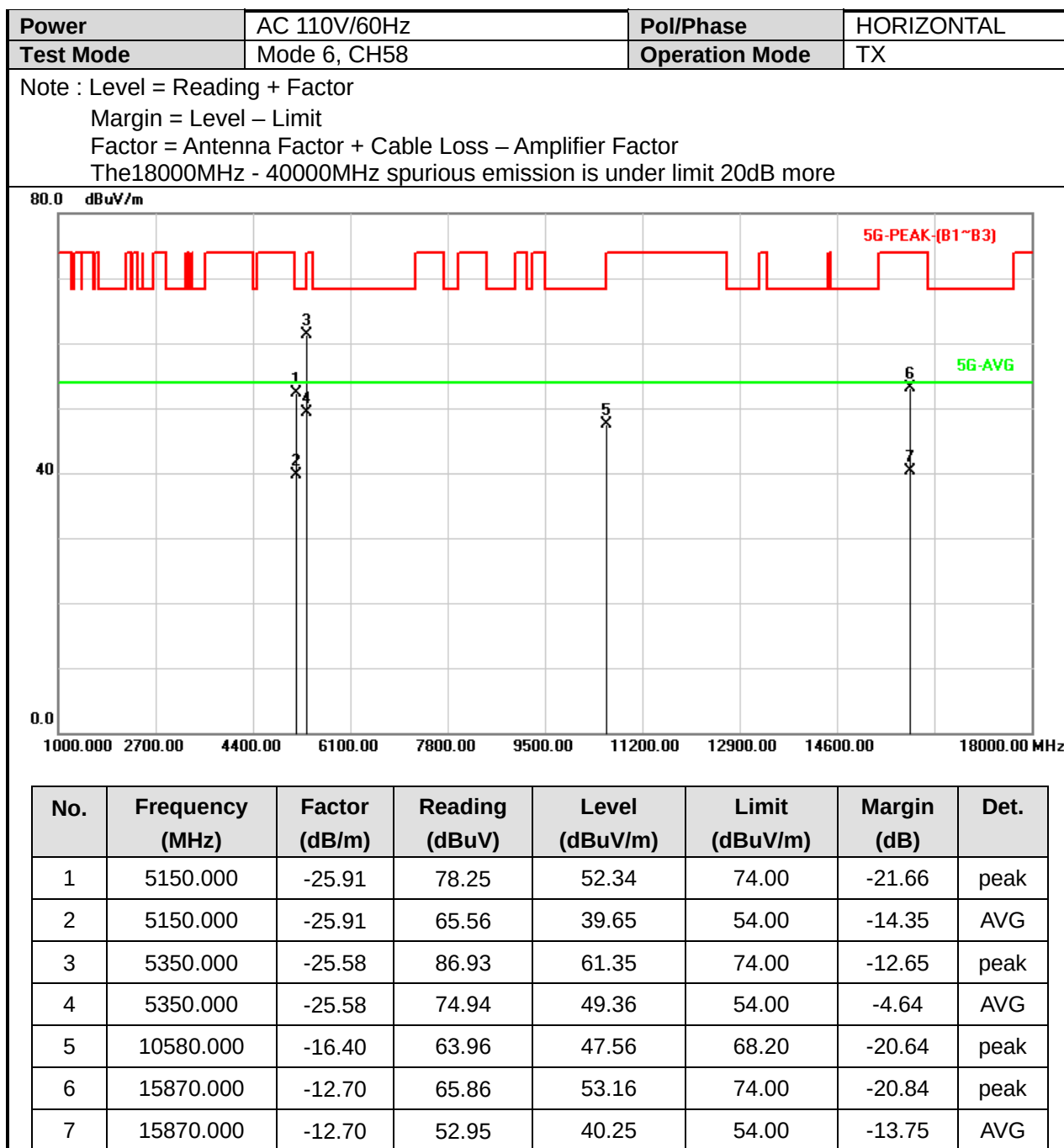
The 18000MHz - 40000MHz spurious emission is under limit 20dB more

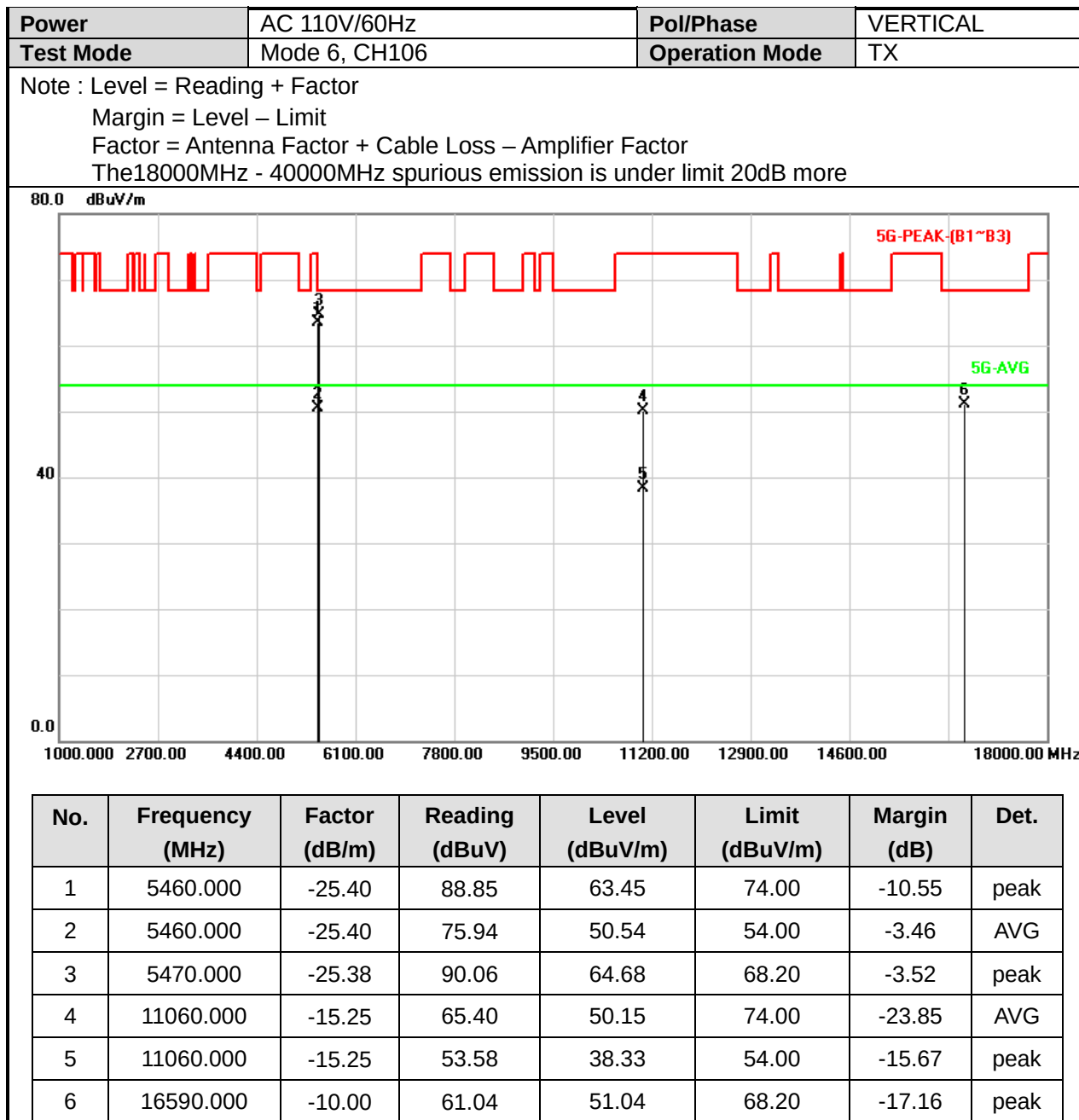


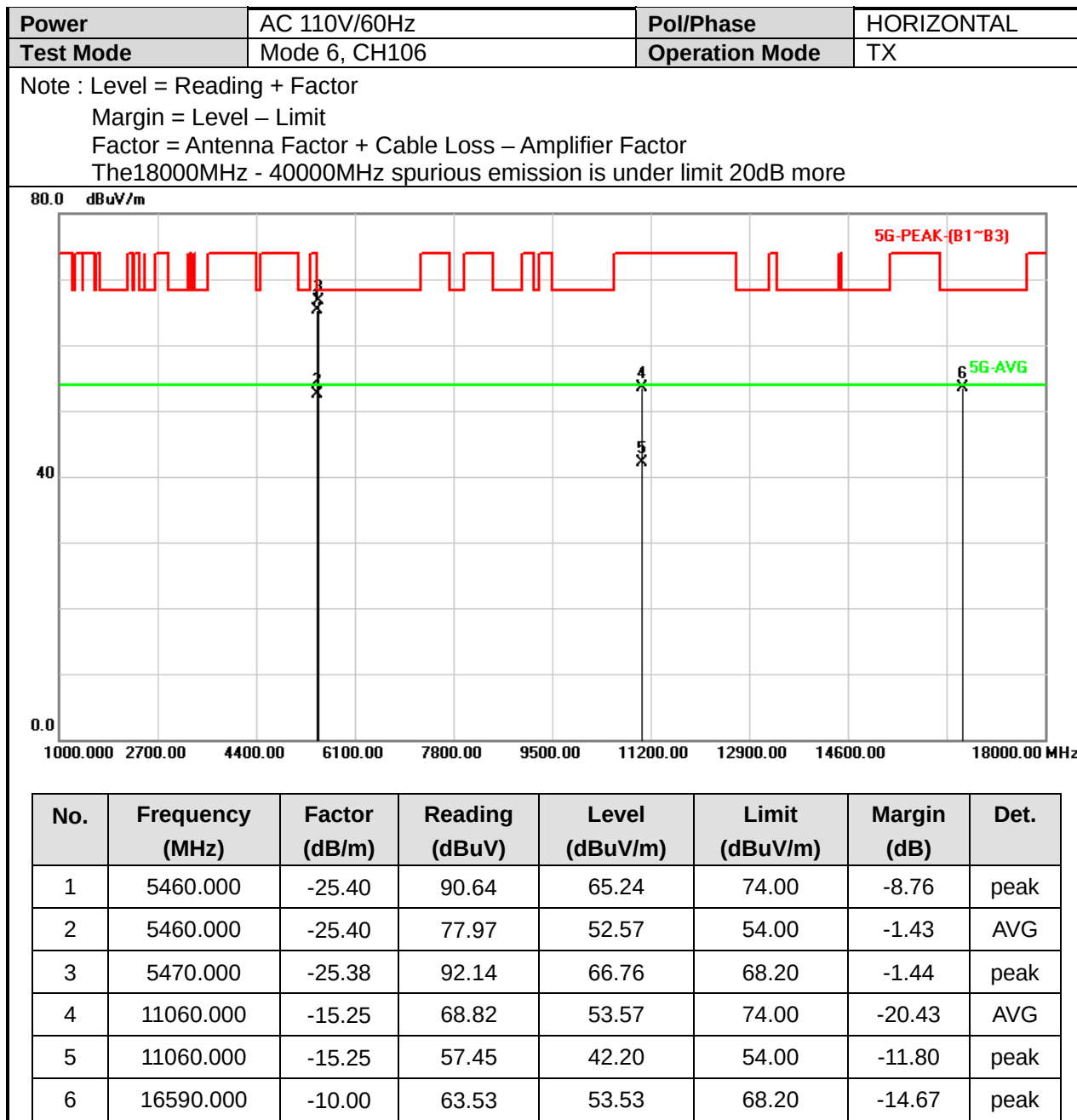
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	5150.000	-25.91	87.33	61.42	74.00	-12.58	peak
2	5150.000	-25.91	74.24	48.33	54.00	-5.67	AVG
3	5350.000	-25.58	81.70	56.12	74.00	-17.88	peak
4	5350.000	-25.58	72.12	46.54	54.00	-7.46	AVG
5	10420.000	-16.78	61.59	44.81	68.20	-23.39	peak
6	15630.000	-12.48	63.94	51.46	74.00	-22.54	peak
7	15630.000	-12.48	55.65	43.17	54.00	-10.83	AVG

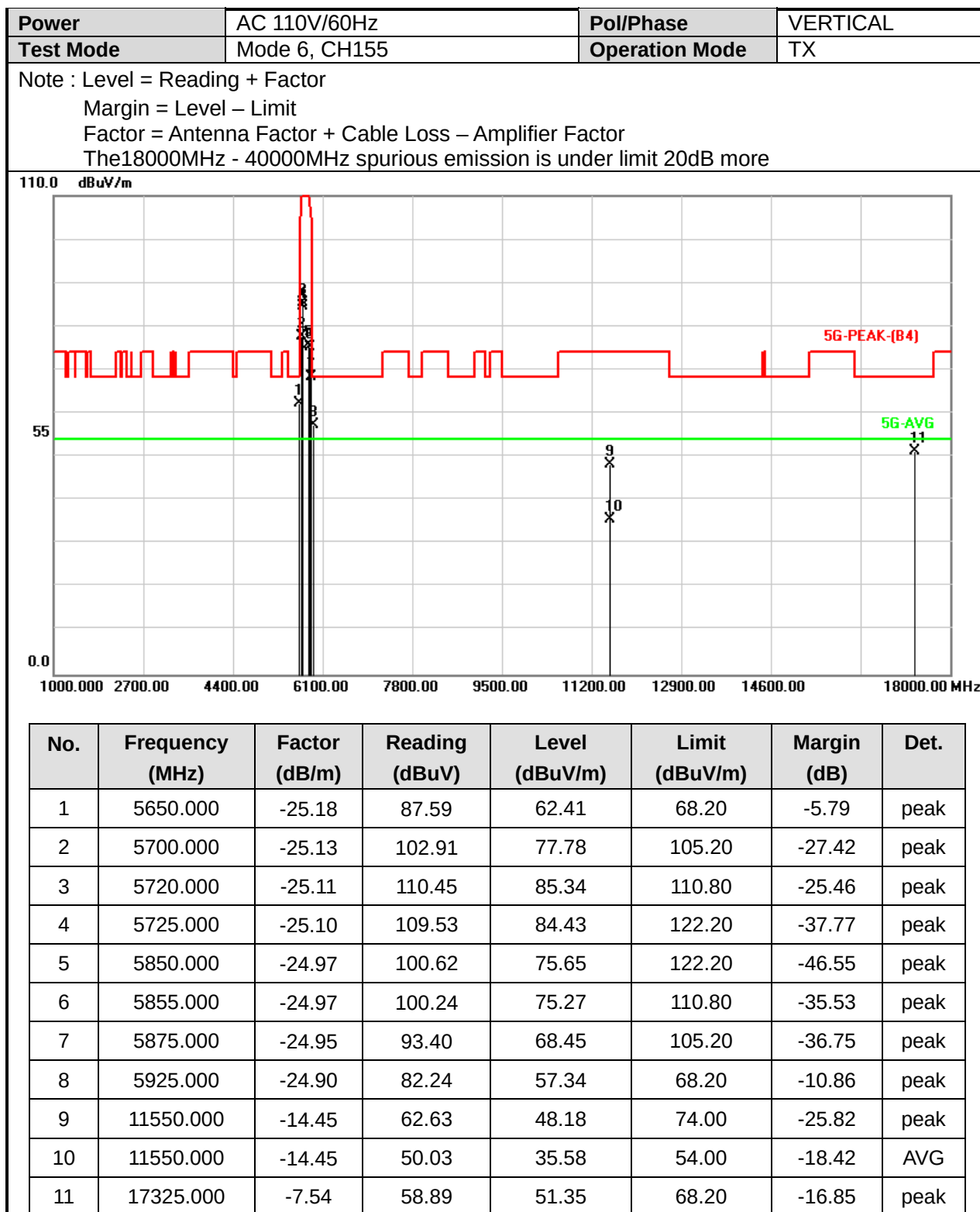


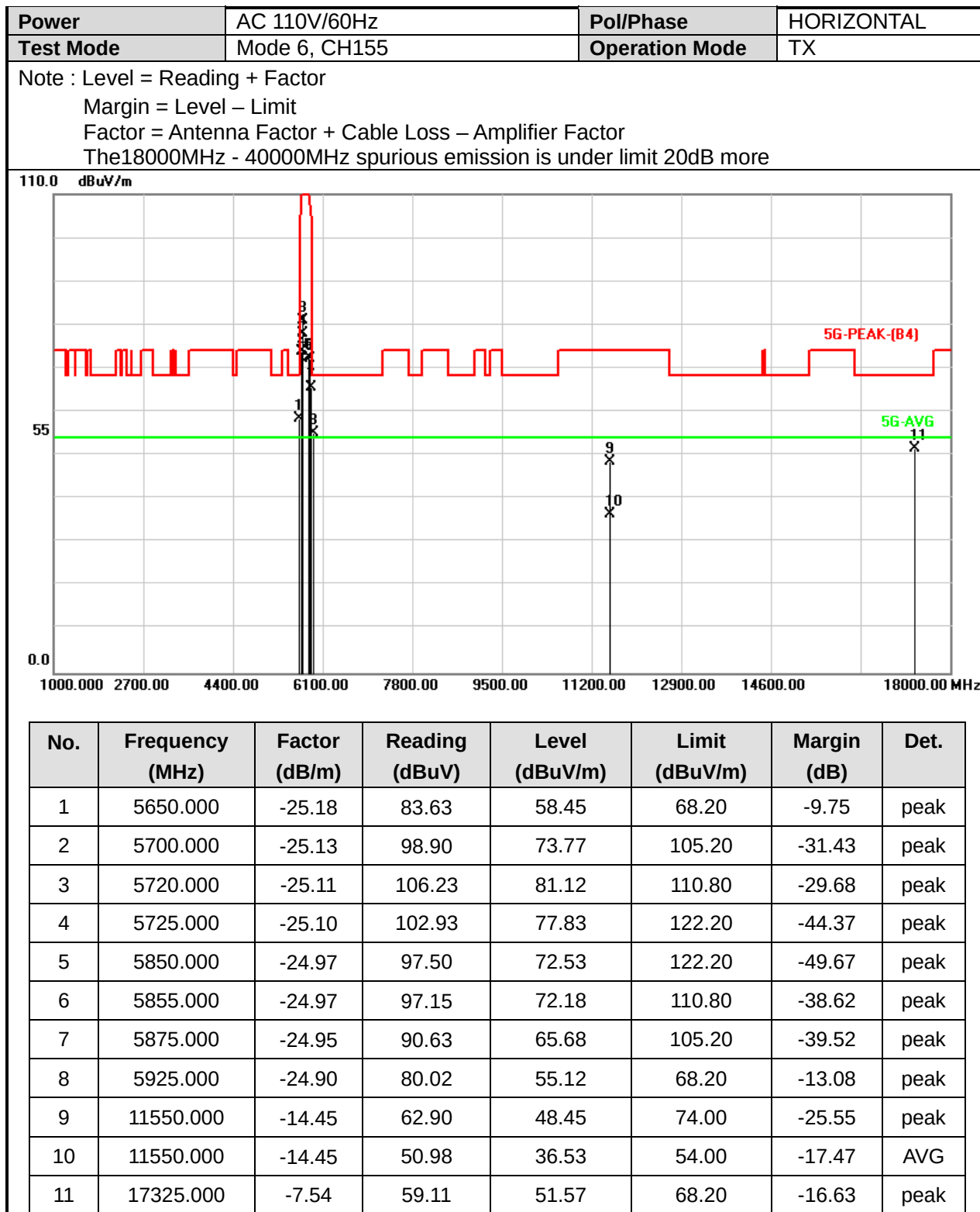














For 2TX

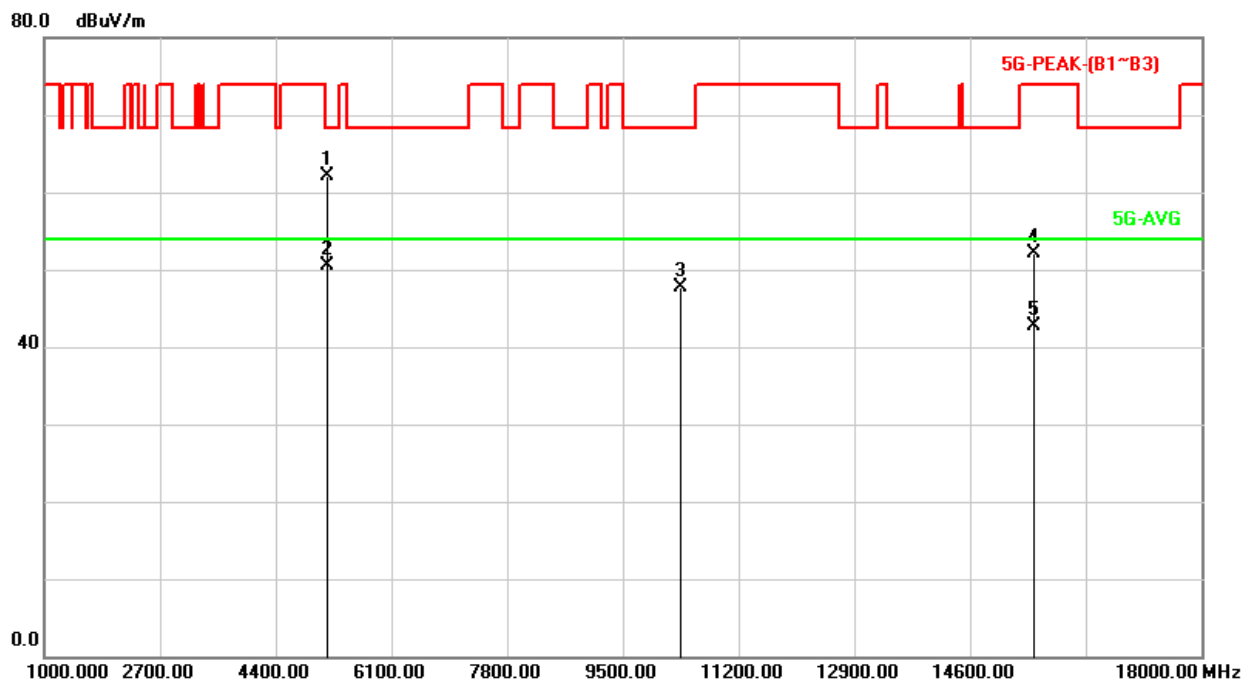
Power	AC 110V/60Hz	Pol/Phase	VERTICAL
Test Mode	Mode 3, CH36	Operation Mode	TX

Note : Level = Reading + Factor

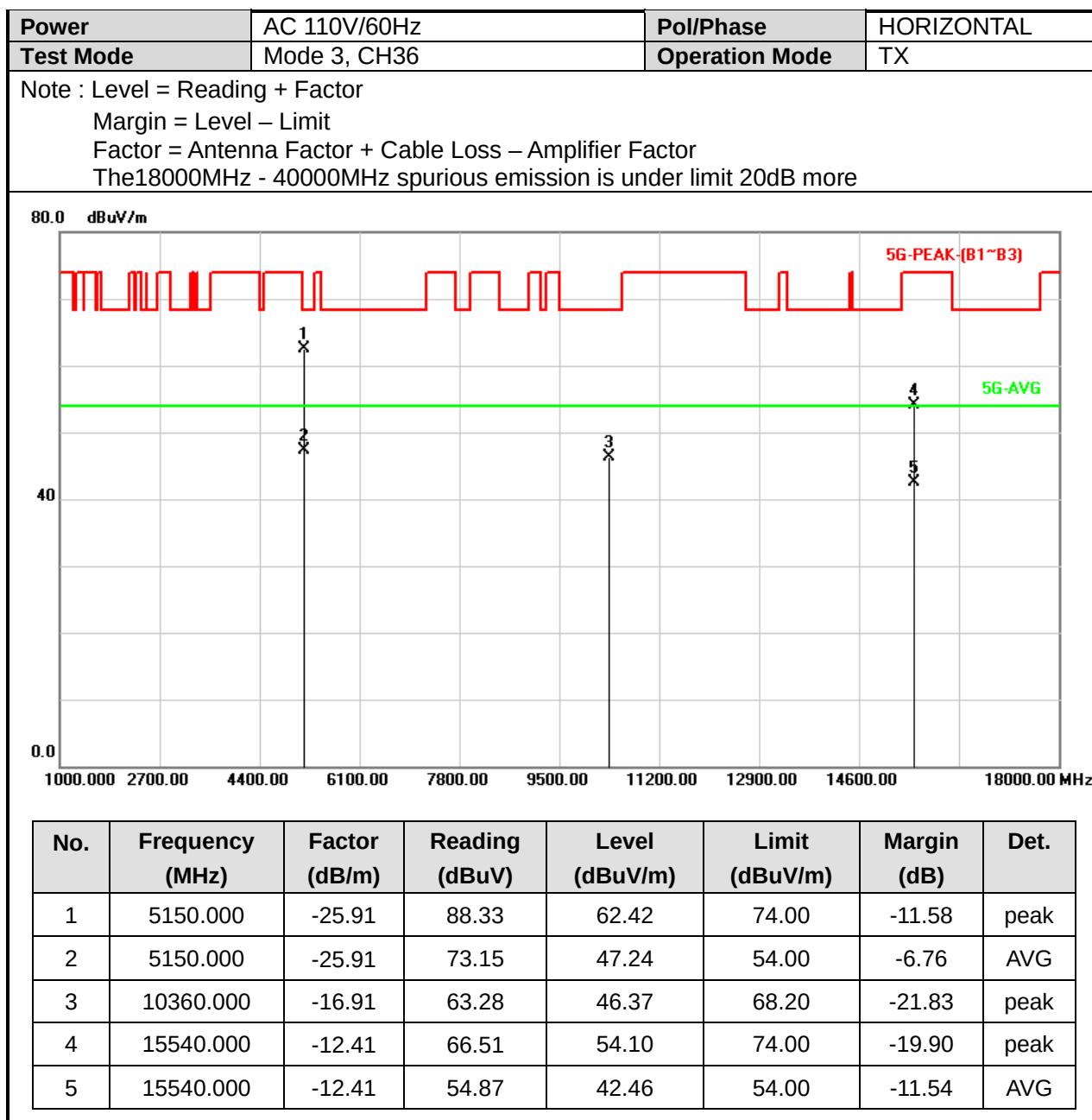
Margin = Level – Limit

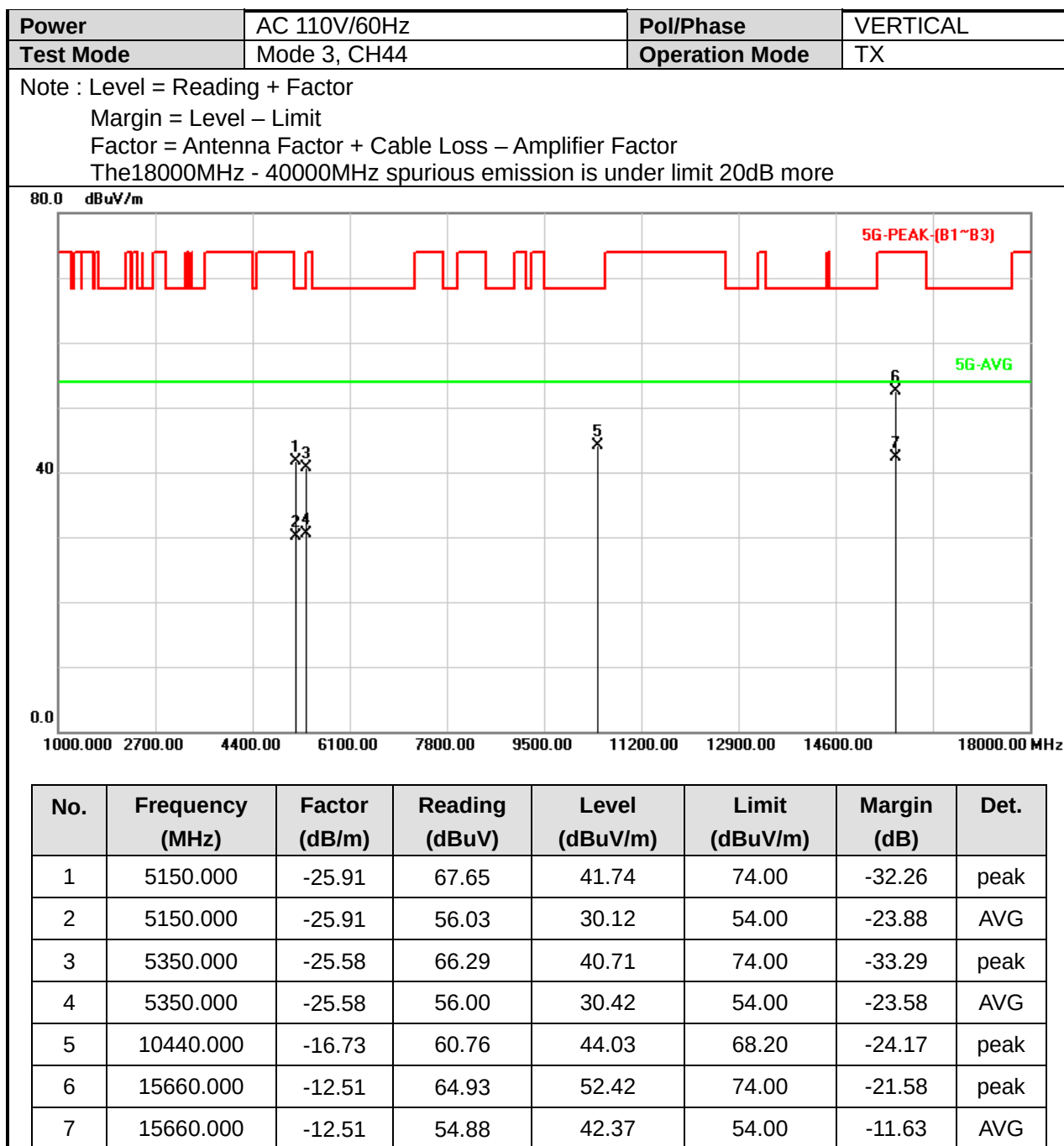
Factor = Antenna Factor + Cable Loss – Amplifier Factor

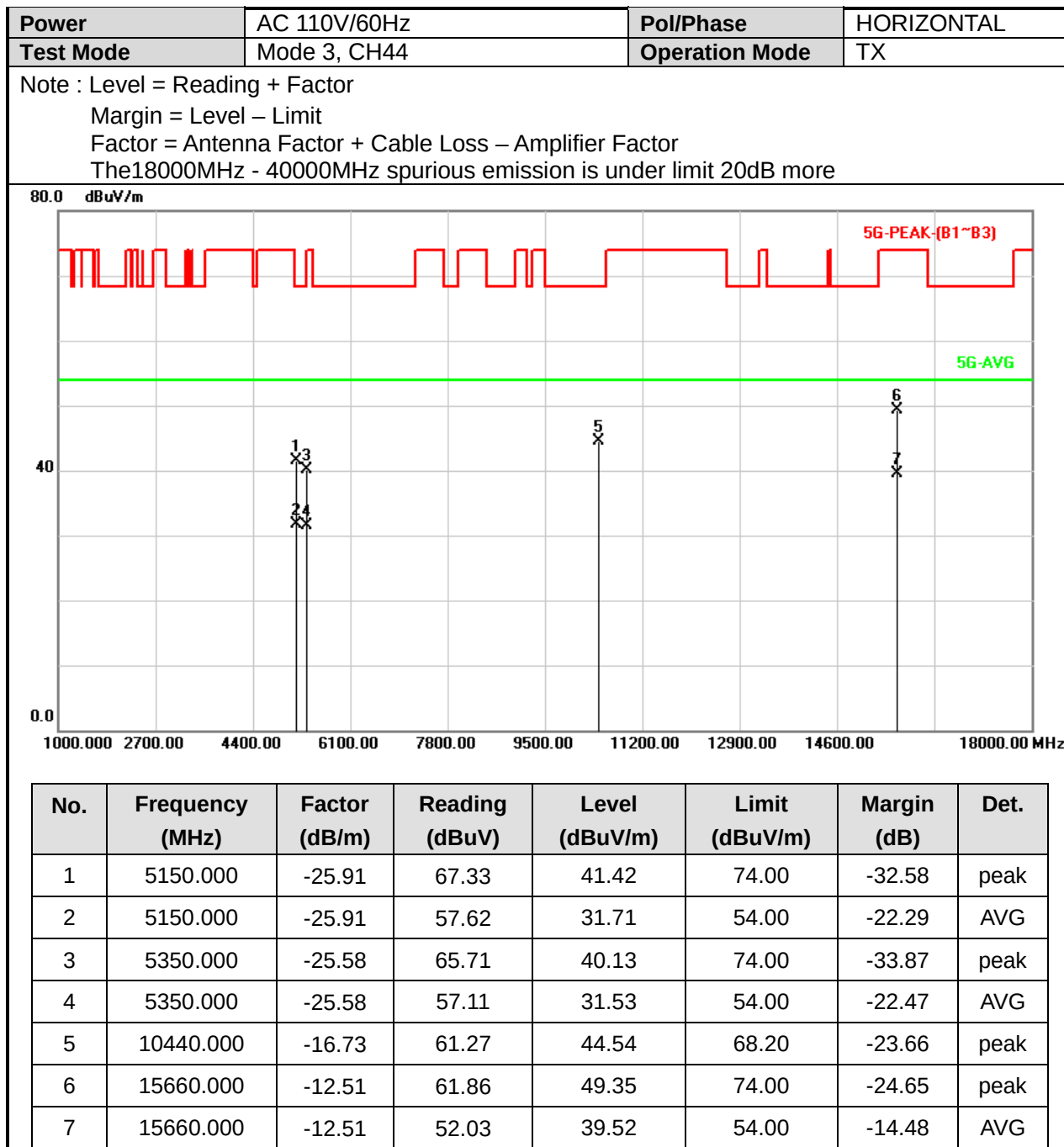
The 18000MHz - 40000MHz spurious emission is under limit 20dB more

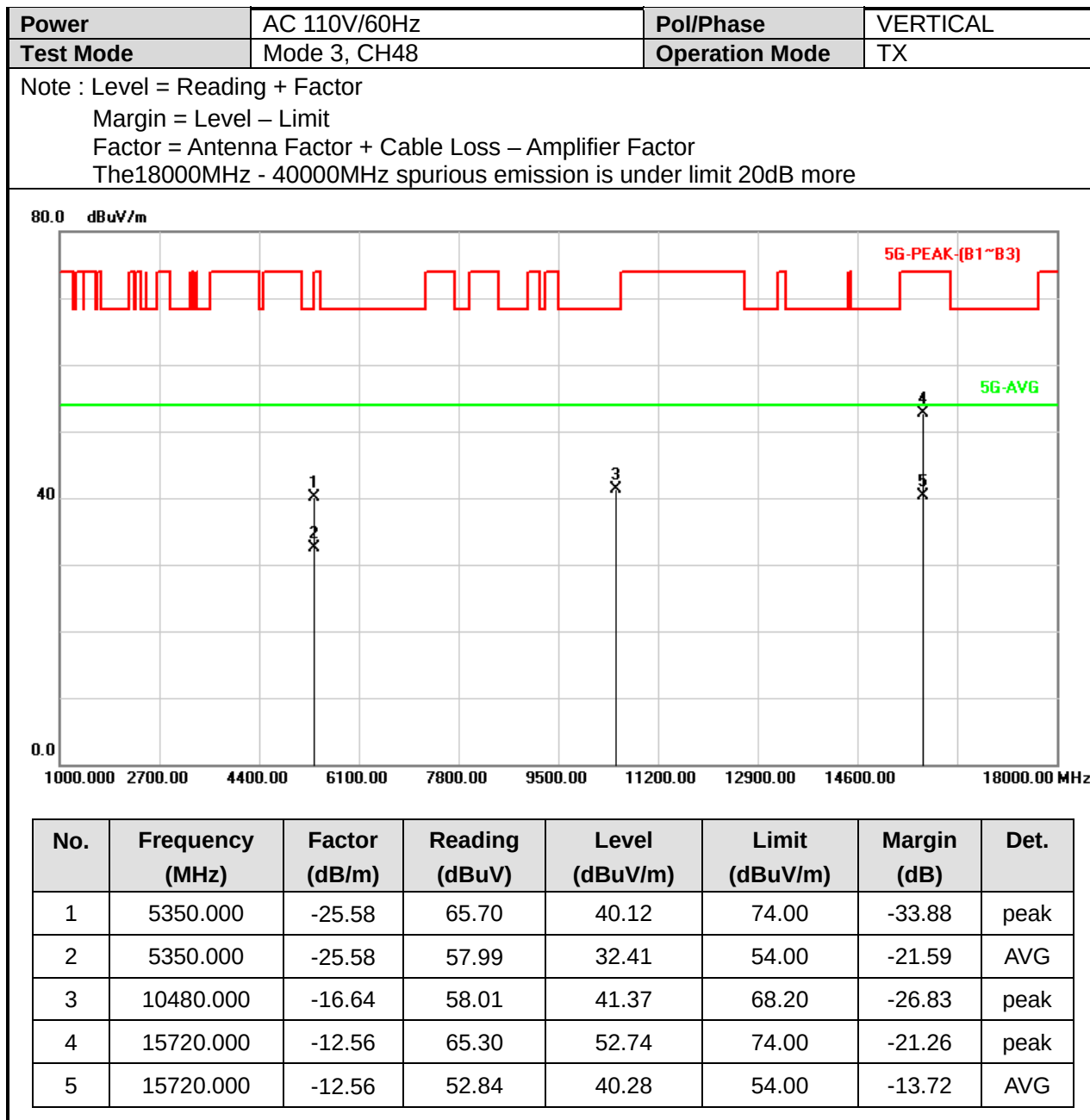


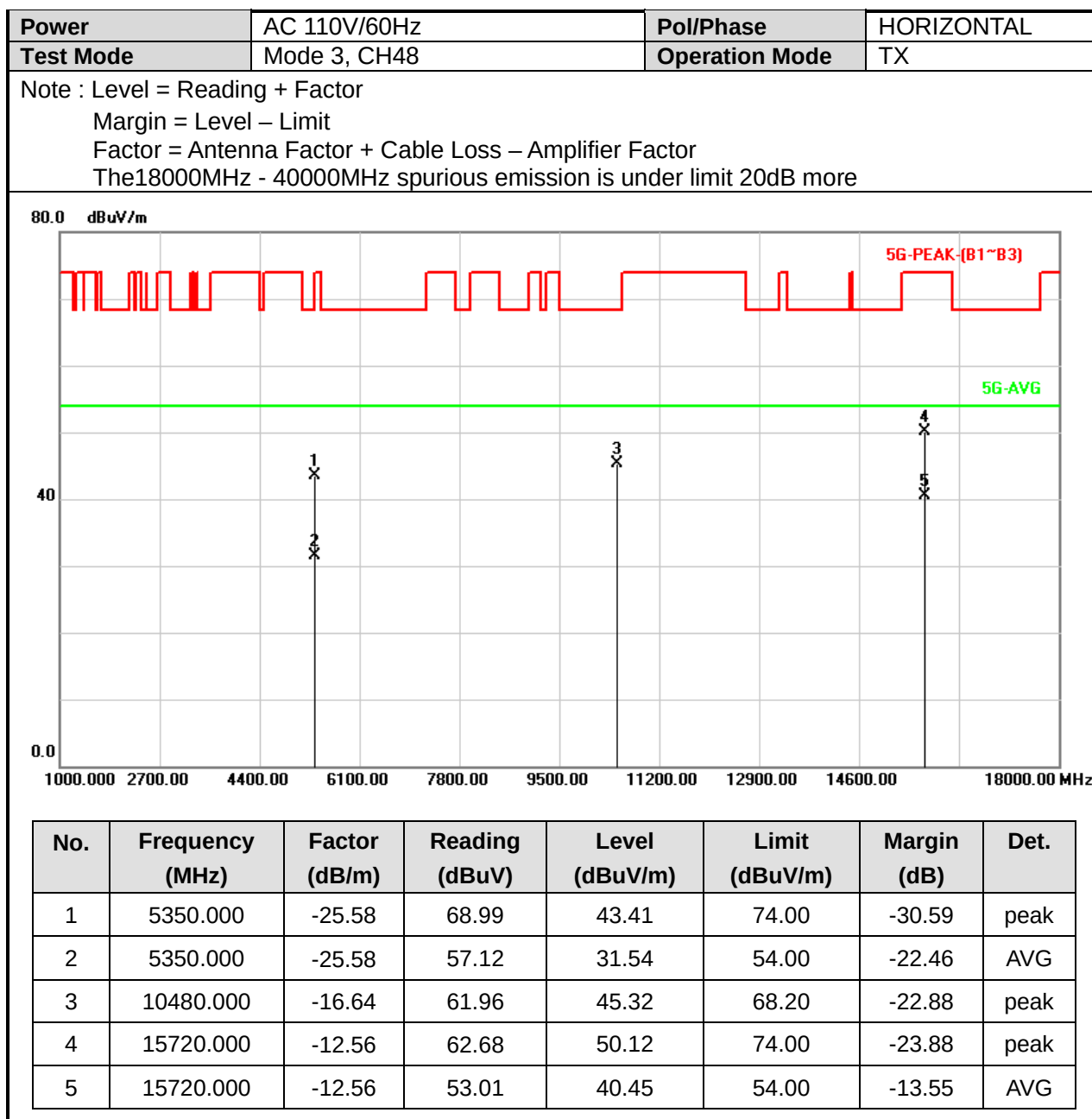
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	5150.000	-25.91	88.33	62.12	74.00	-11.88	peak
2	5150.000	-25.91	73.15	50.43	54.00	-3.57	AVG
3	10360.000	-16.91	63.28	47.62	68.20	-20.58	peak
4	15540.000	-12.41	66.51	52.07	74.00	-21.93	peak
5	15540.000	-12.41	54.87	42.75	54.00	-11.25	AVG

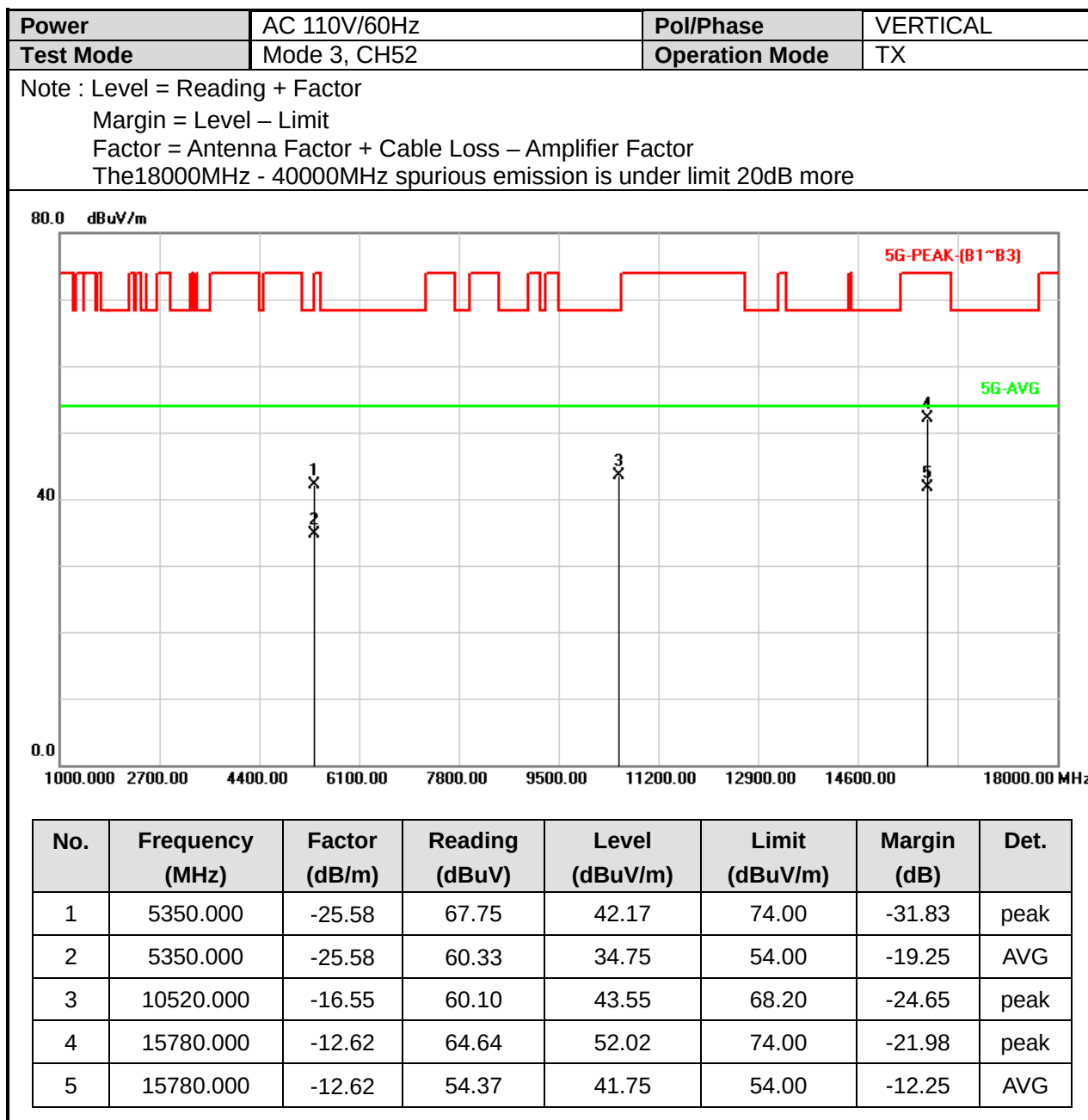


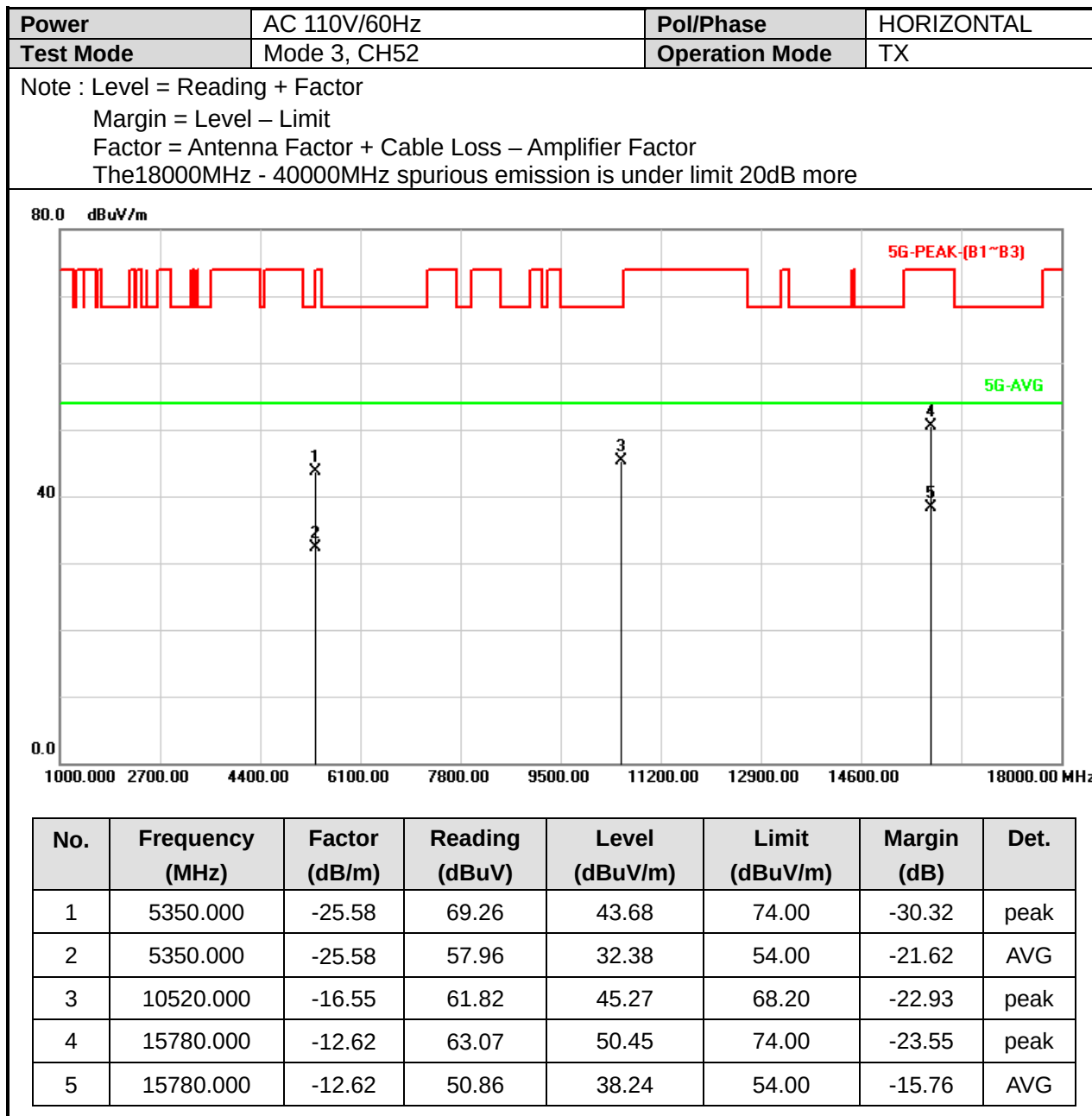


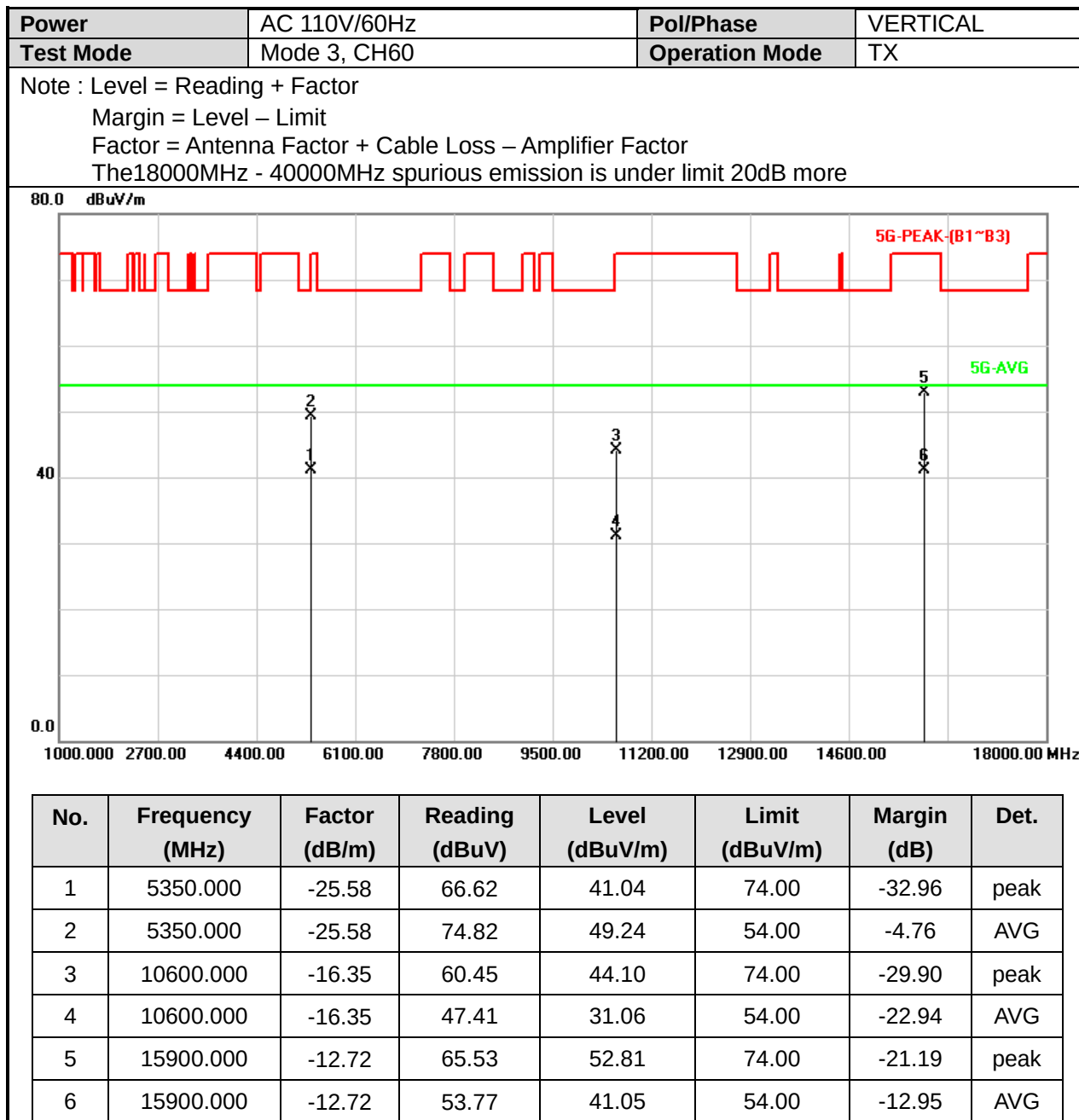


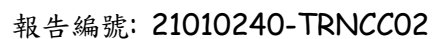






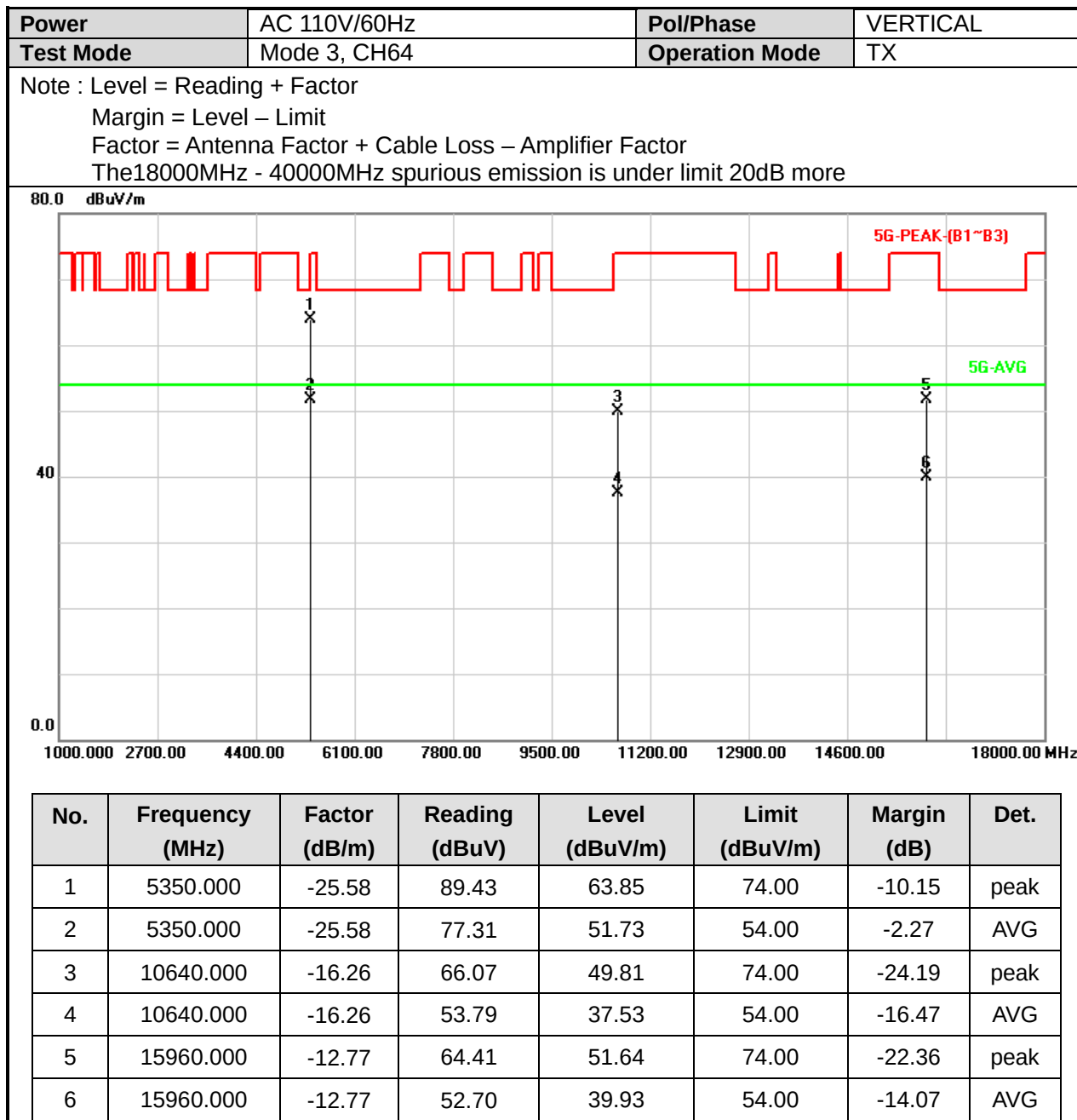


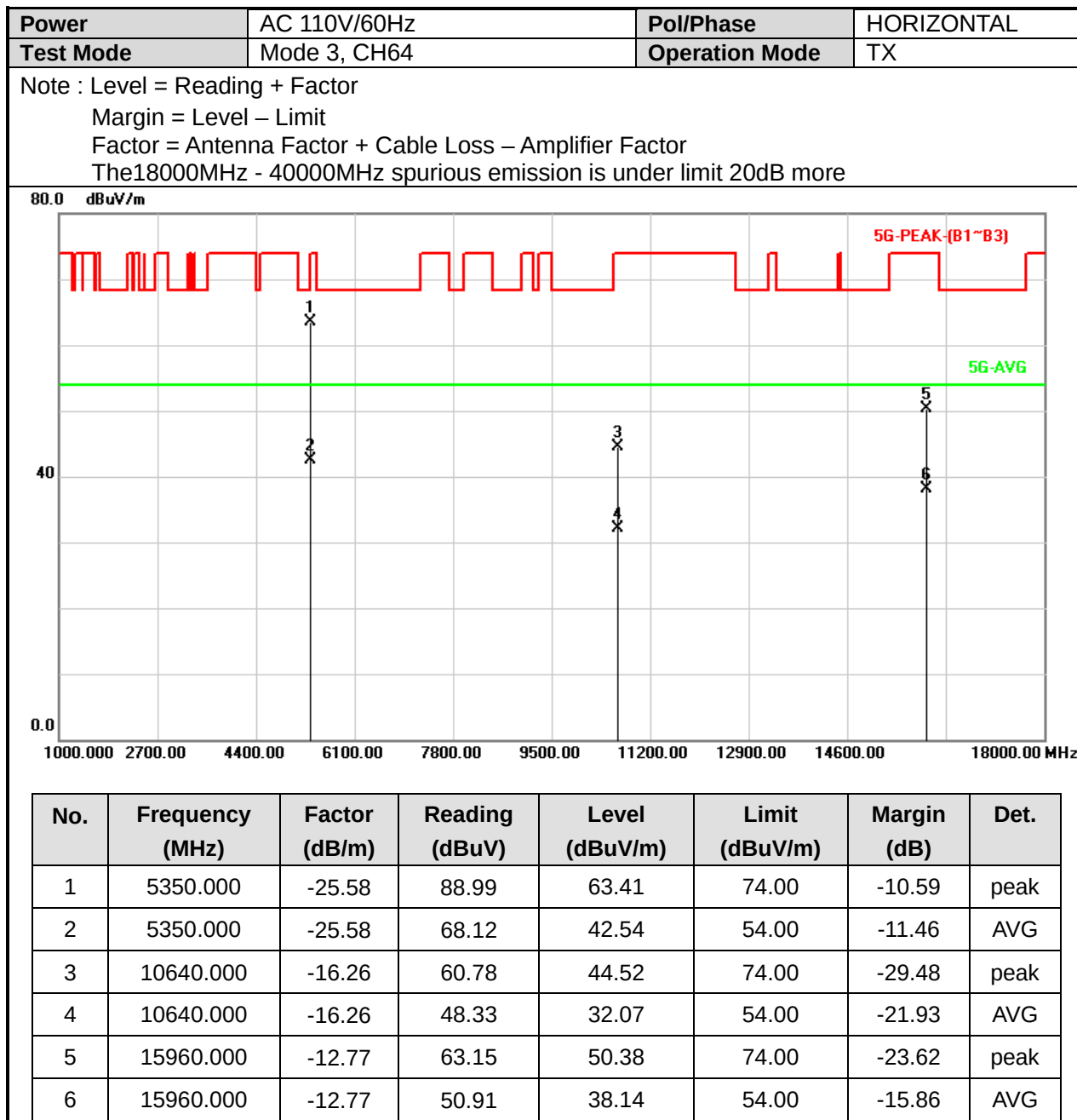


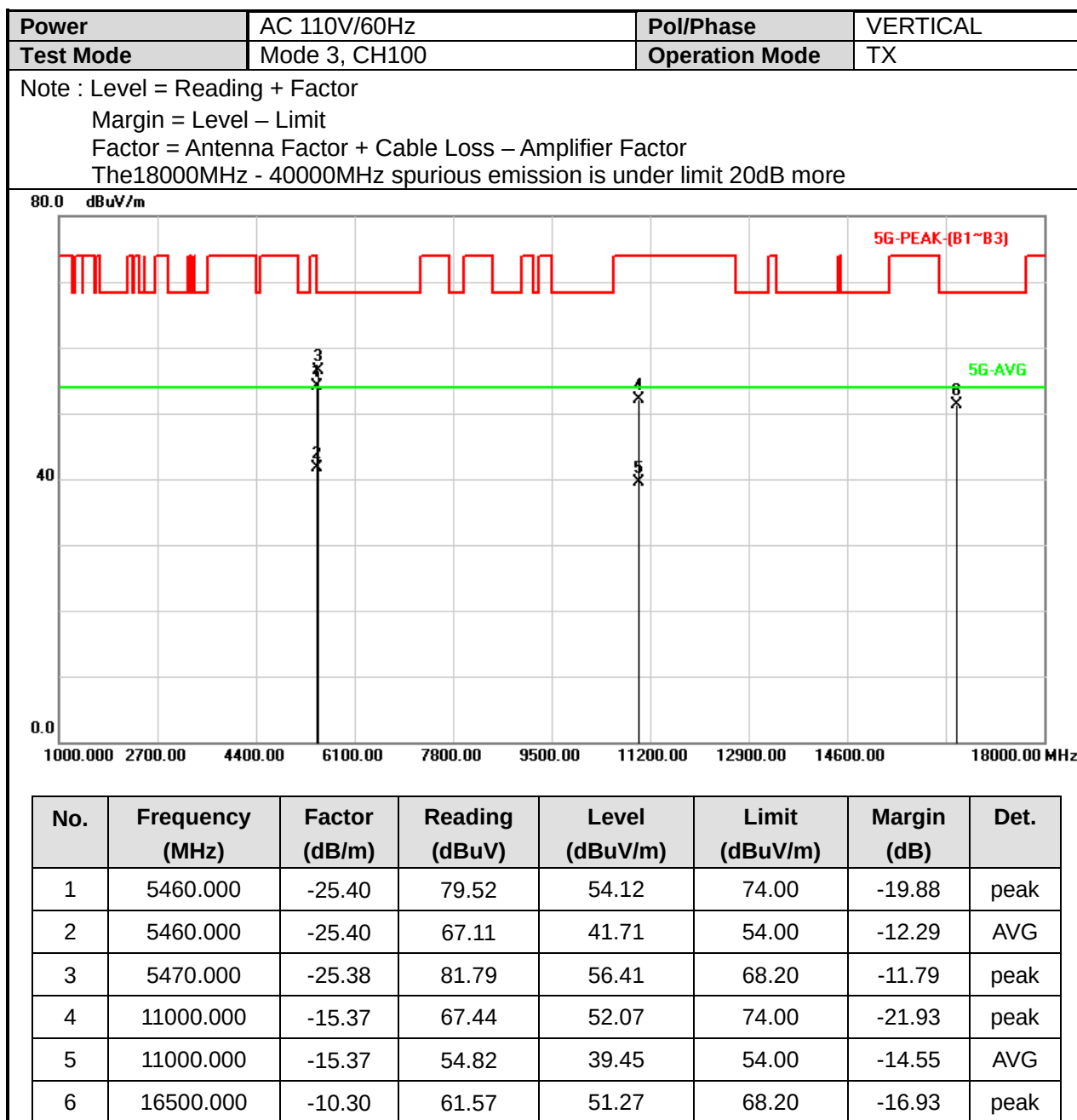


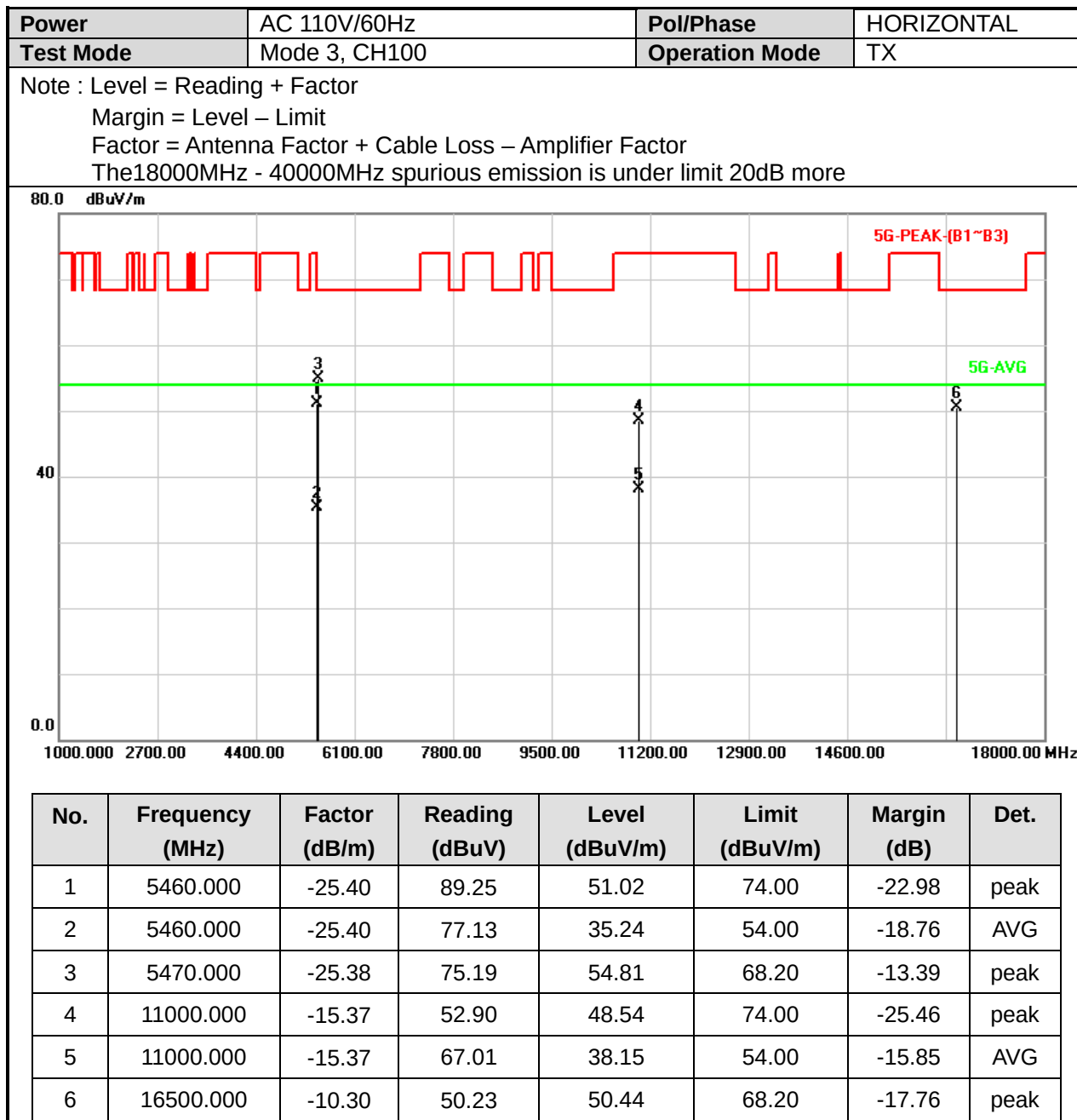
Note : Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss – Amplifier Factor
The 18000MHz - 40000MHz spurious emission is under limit 20dB more

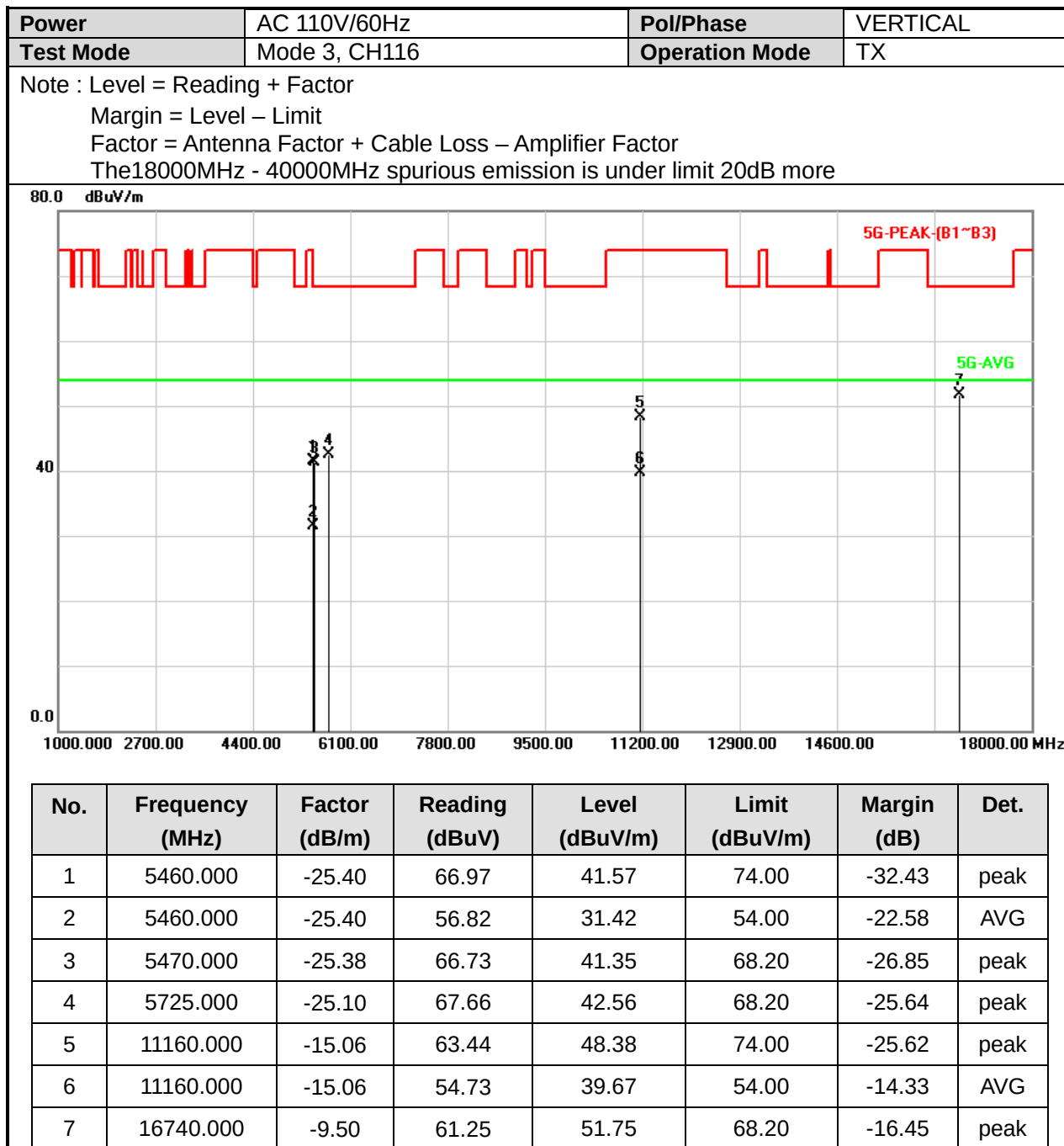


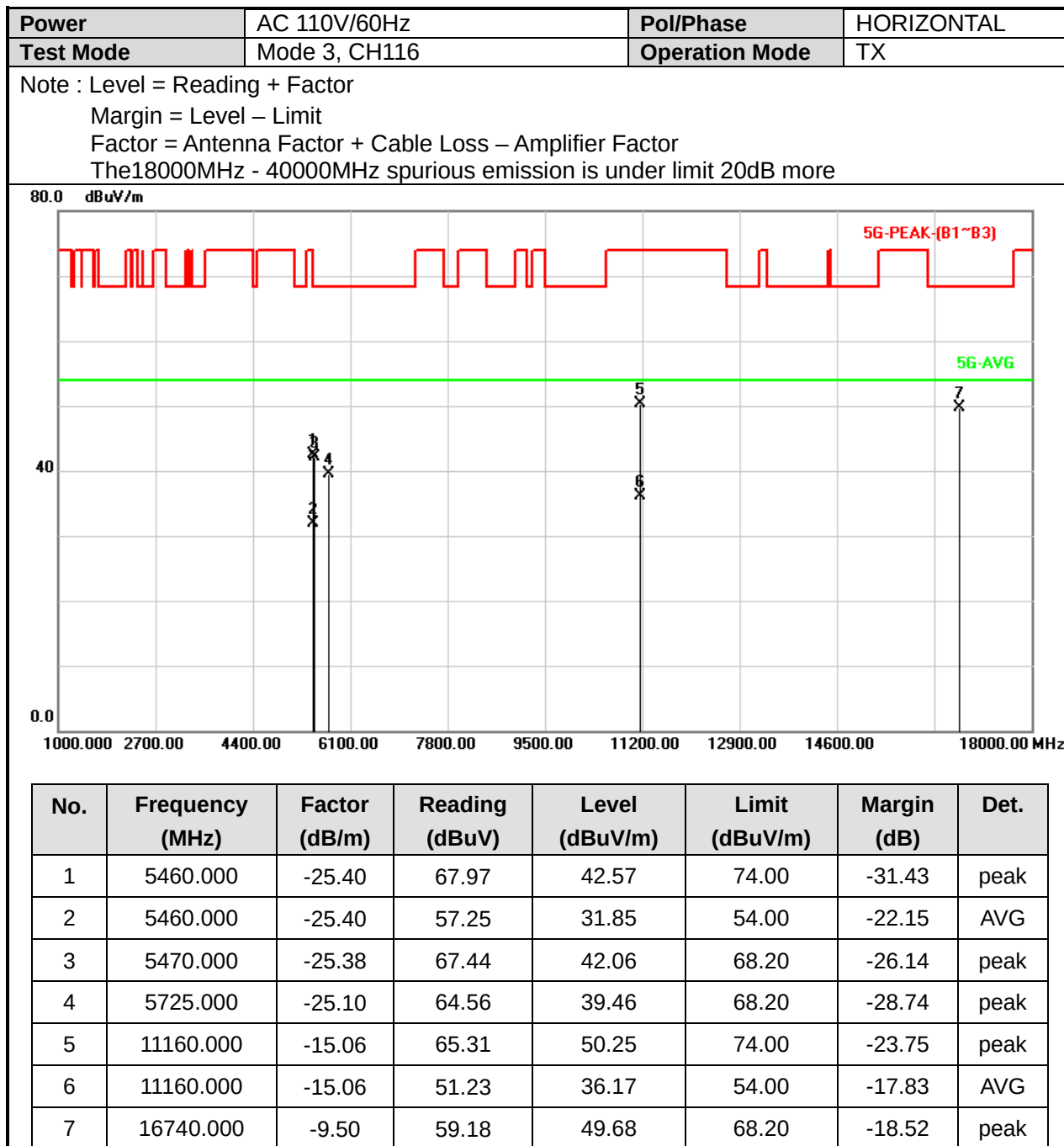


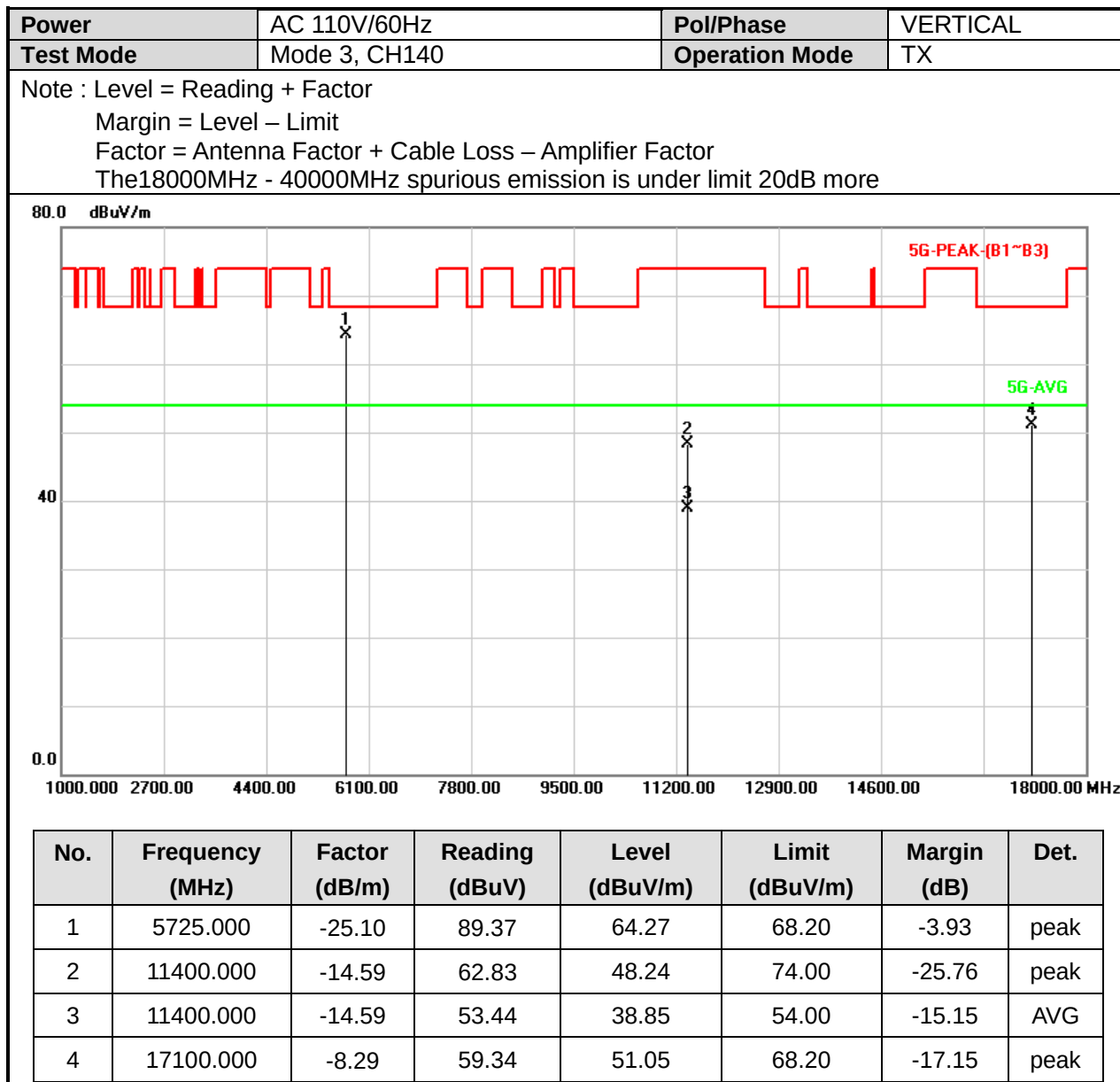


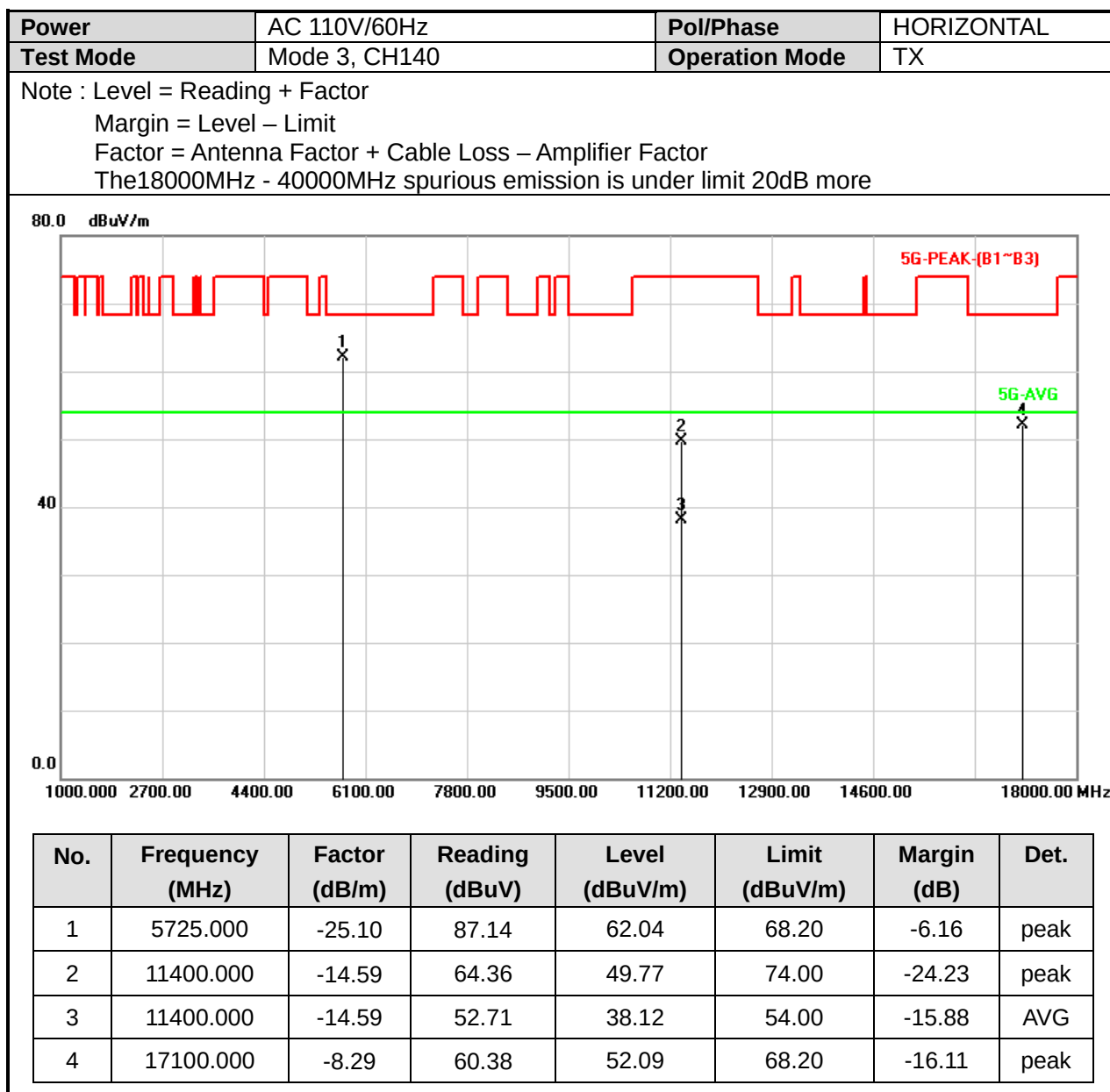


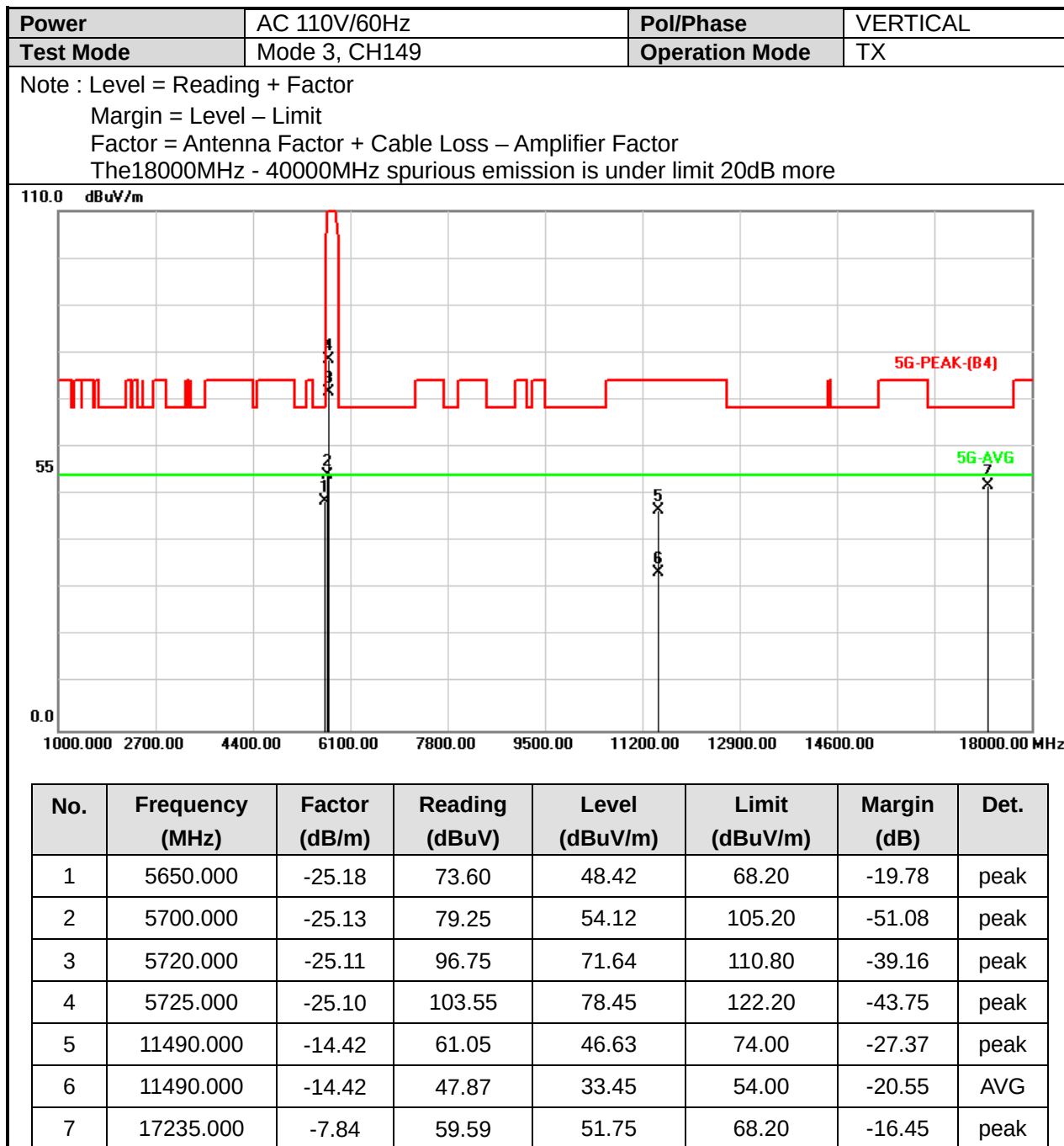


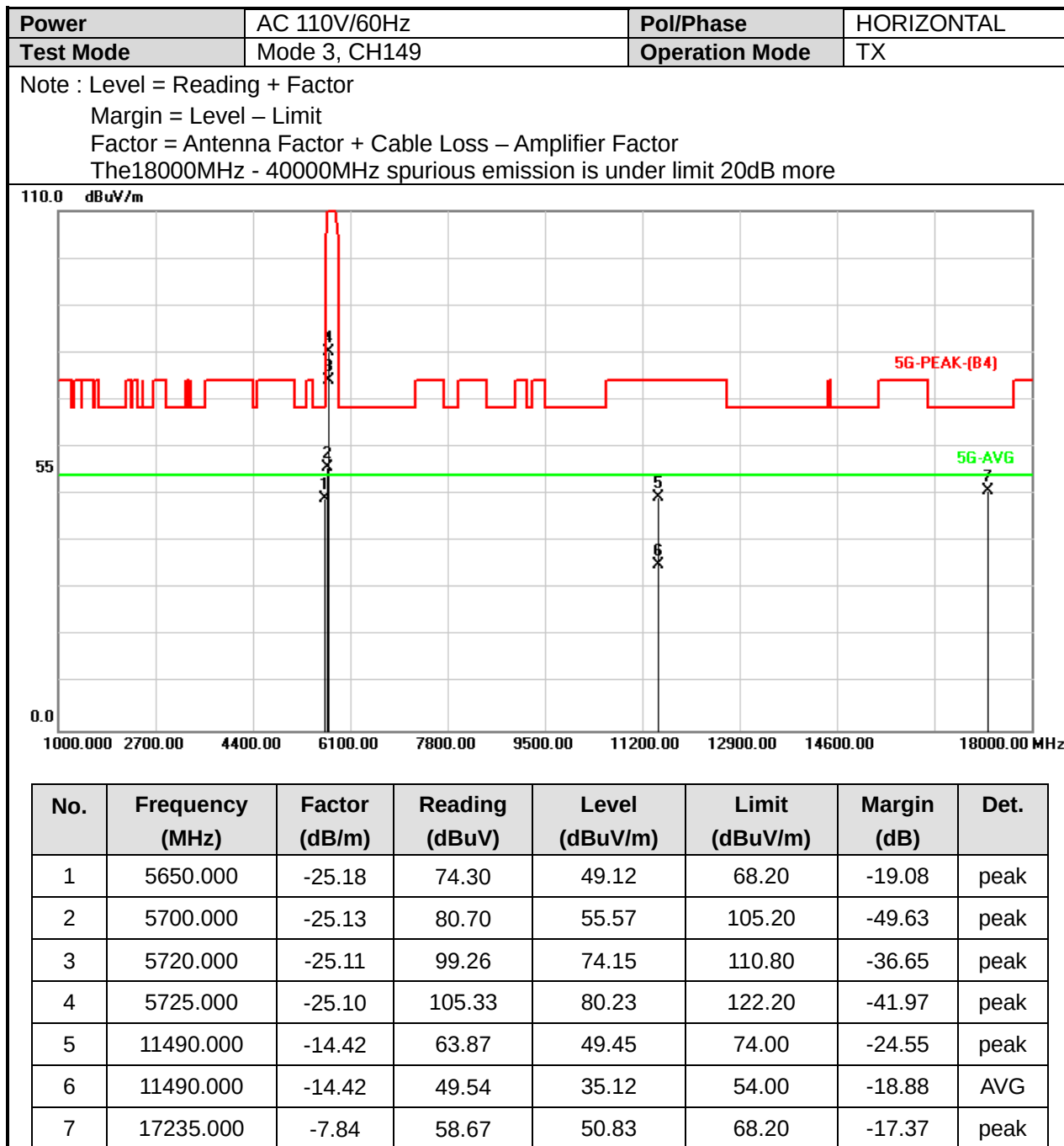


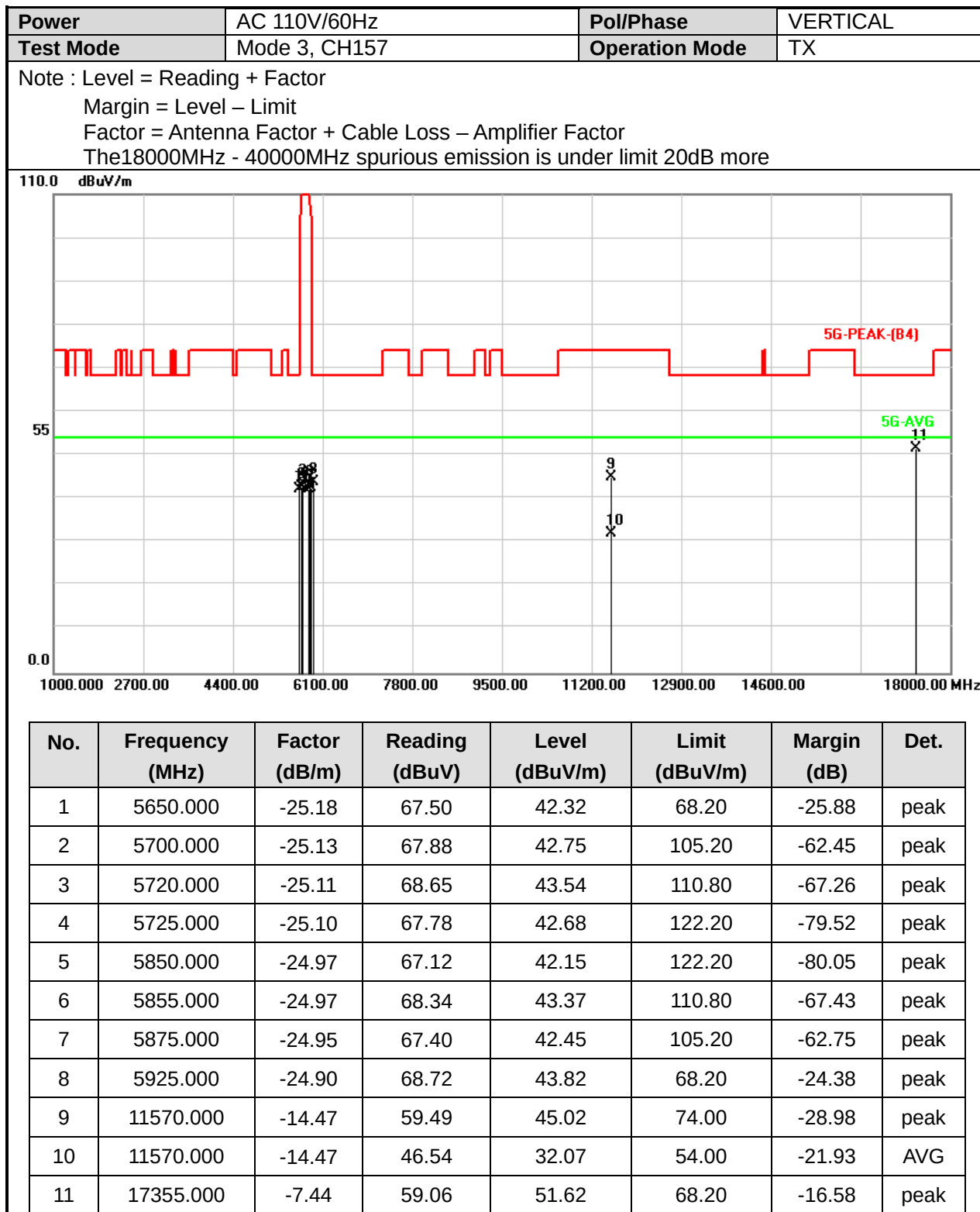


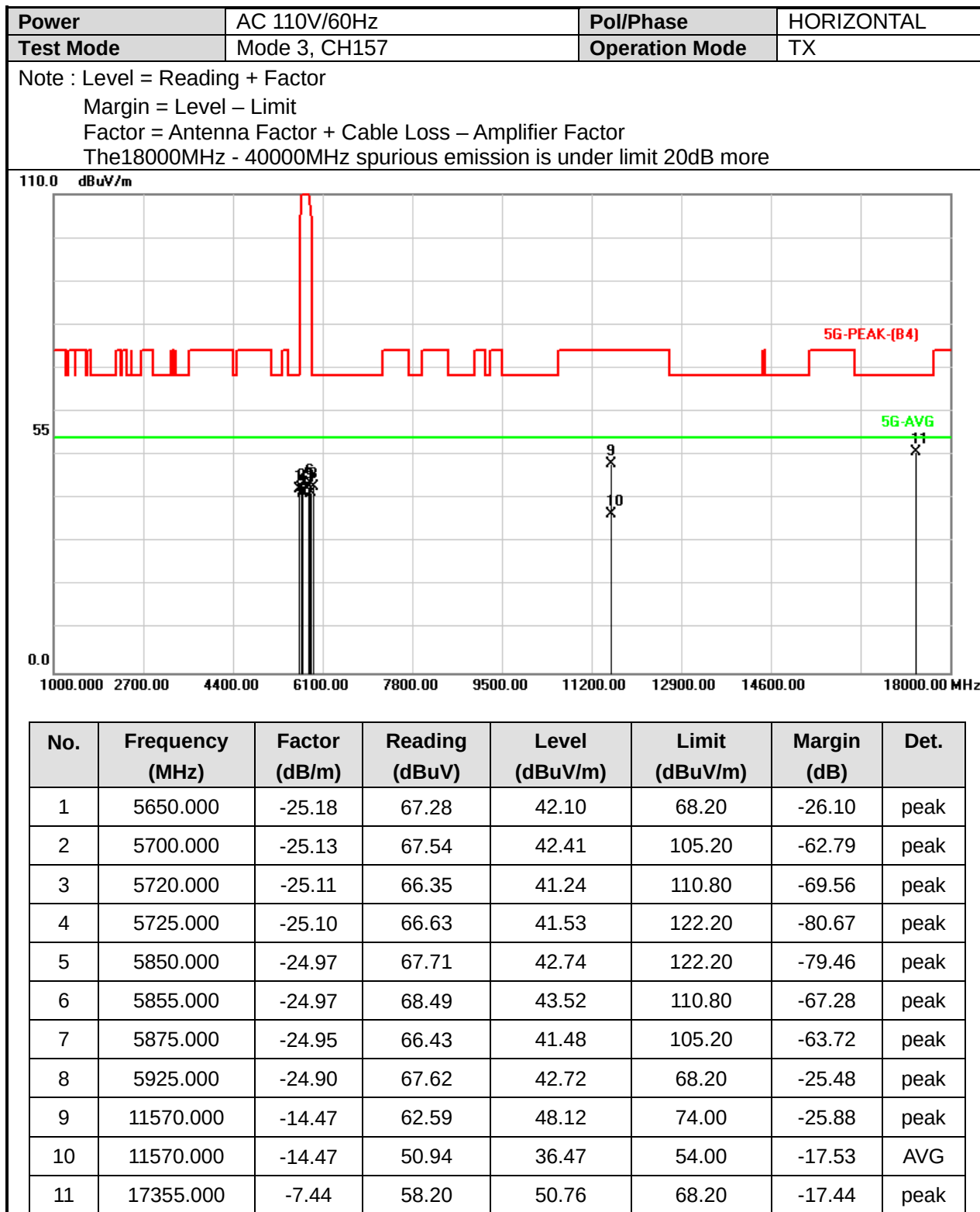














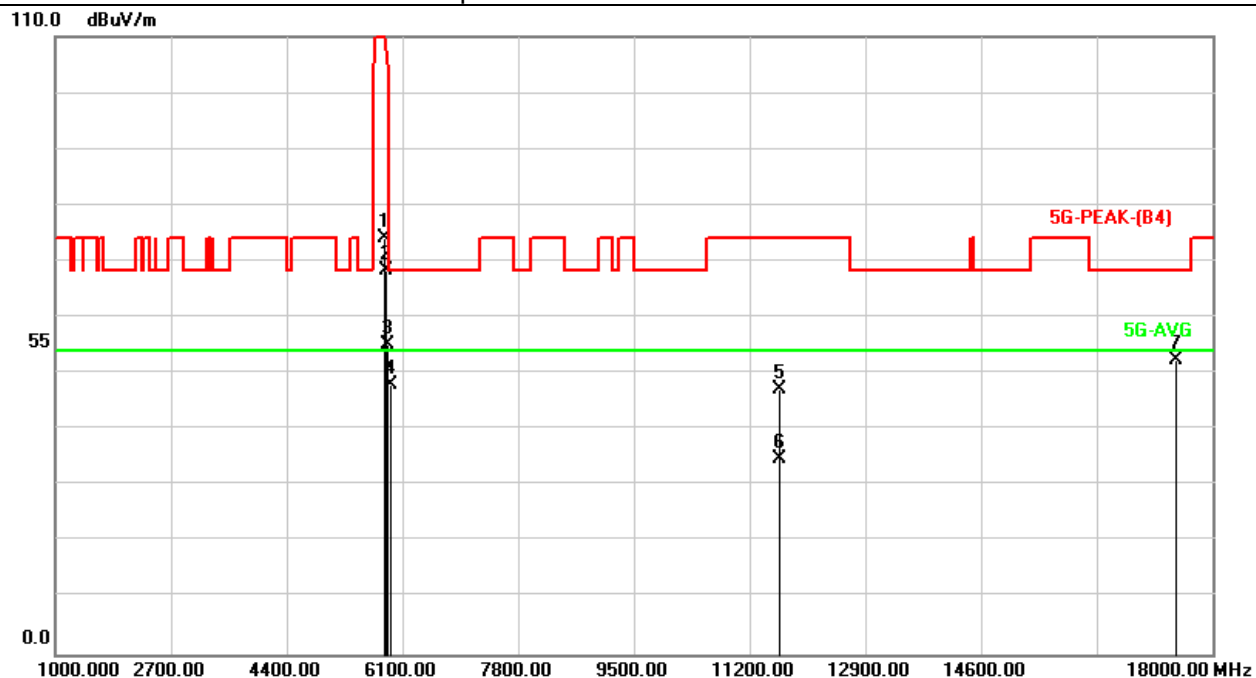
Power	AC 110V/60Hz	Pol/Phase	VERTICAL
Test Mode	Mode 3, CH165	Operation Mode	TX

Note : Level = Reading + Factor

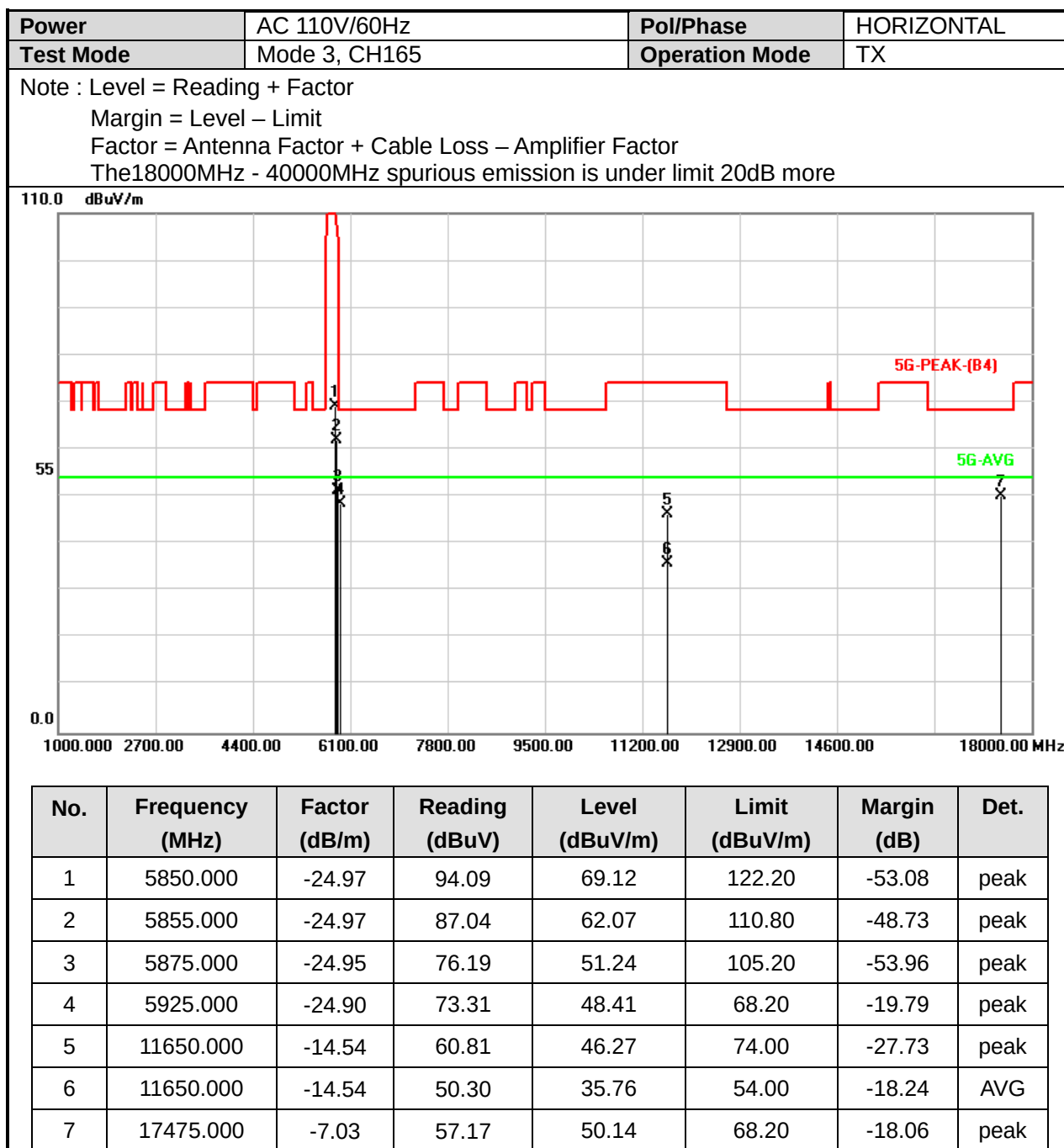
Margin = Level – Limit

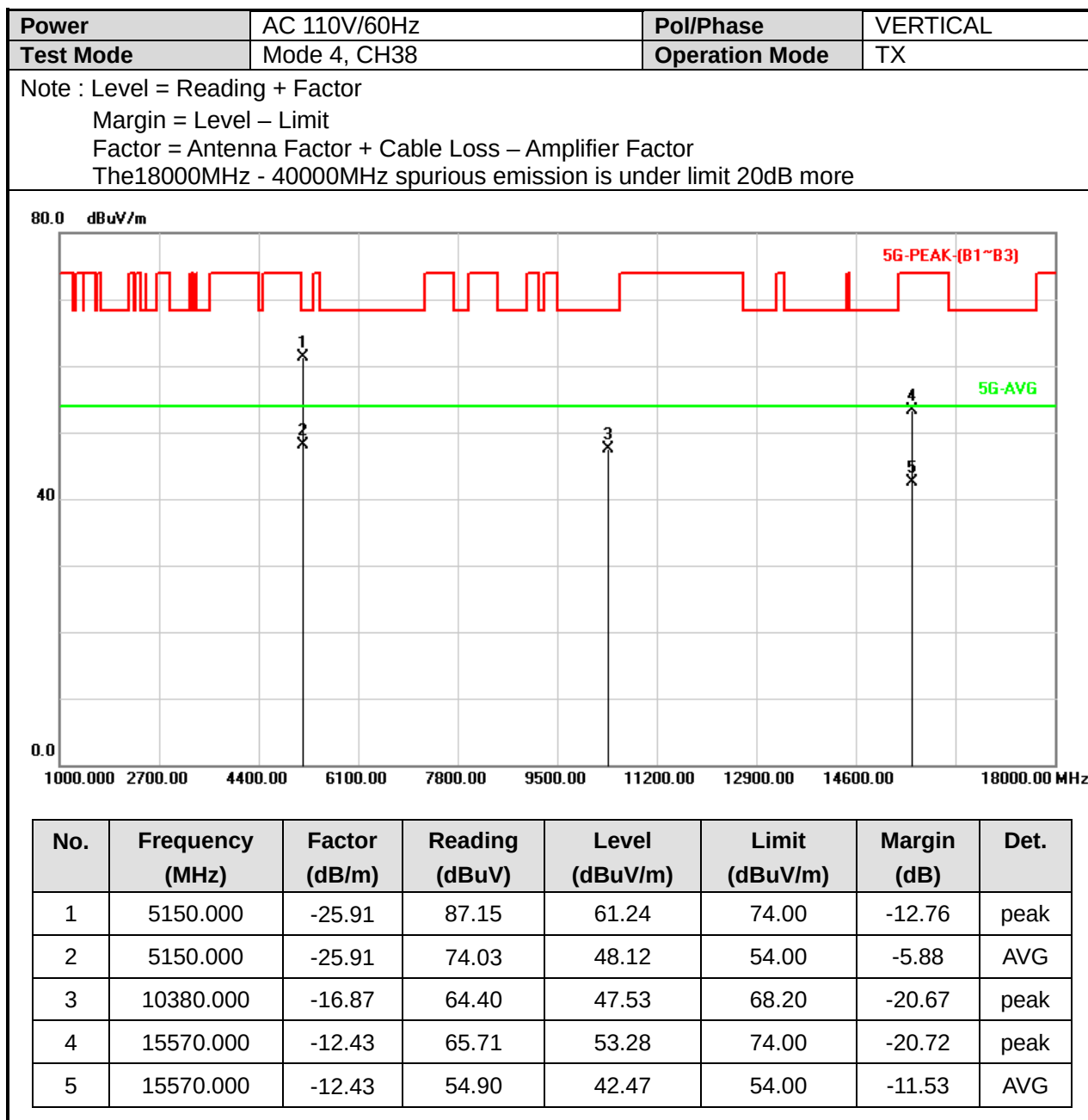
Factor = Antenna Factor + Cable Loss – Amplifier Factor

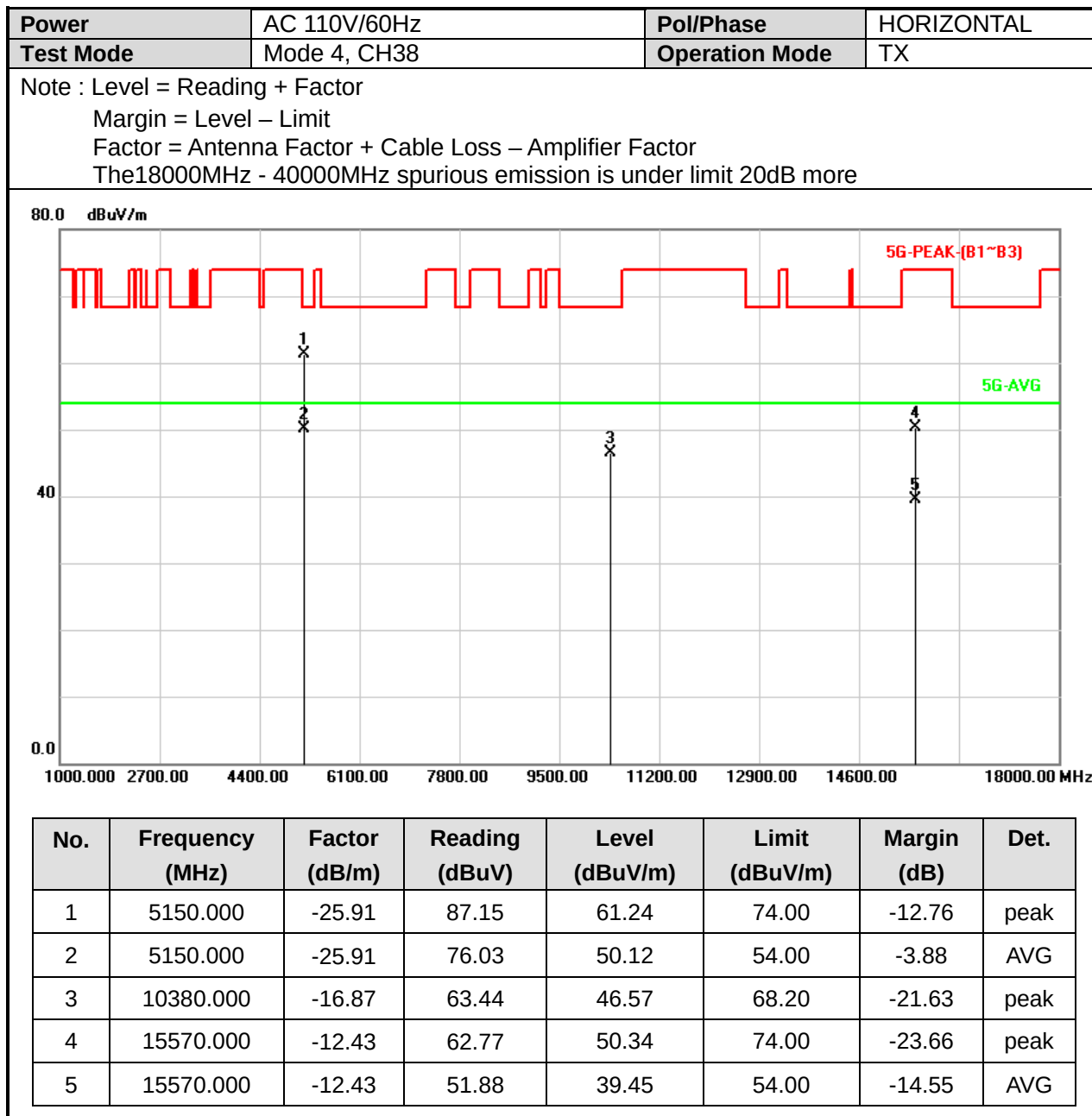
The 18000MHz - 40000MHz spurious emission is under limit 20dB more

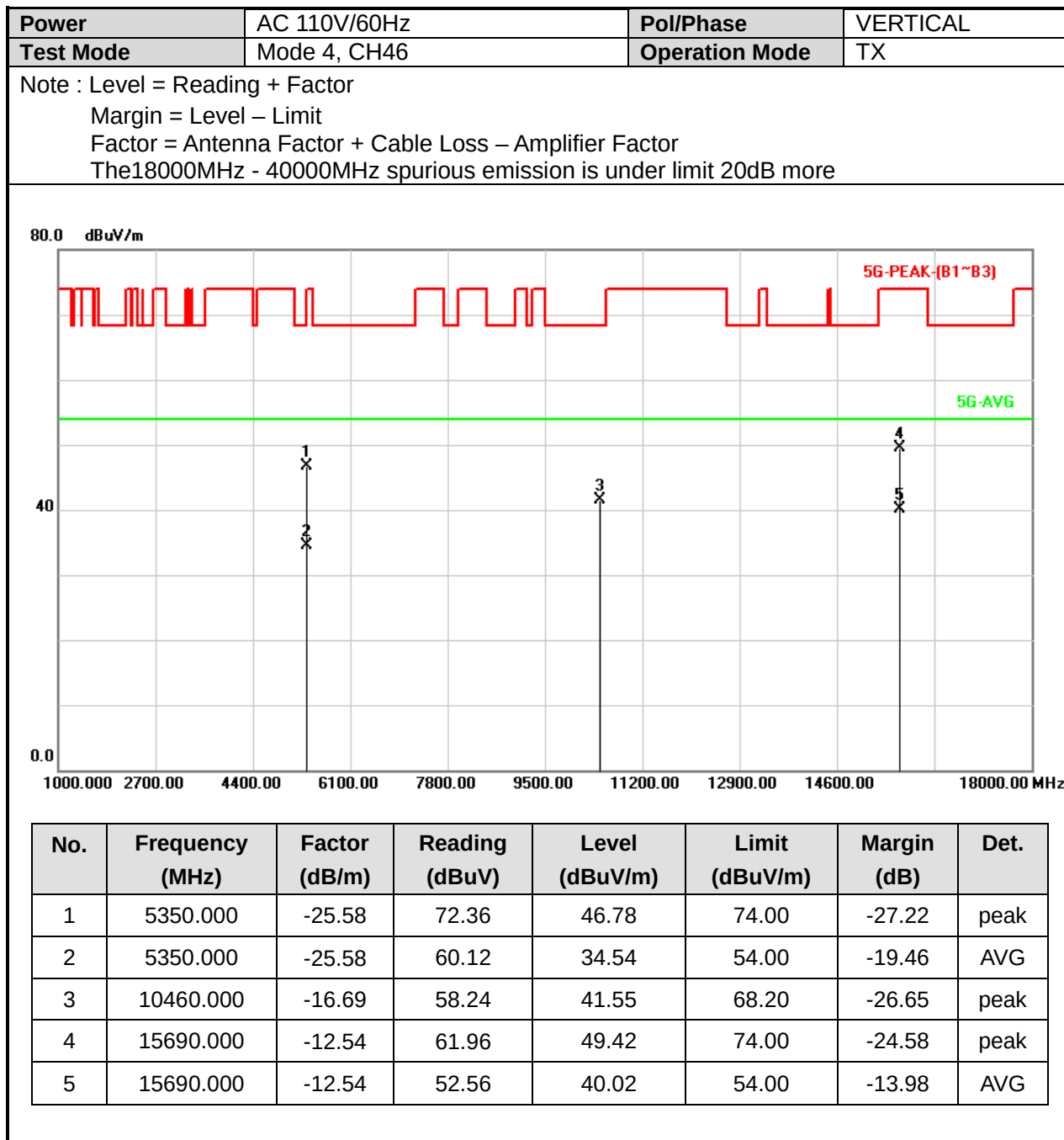


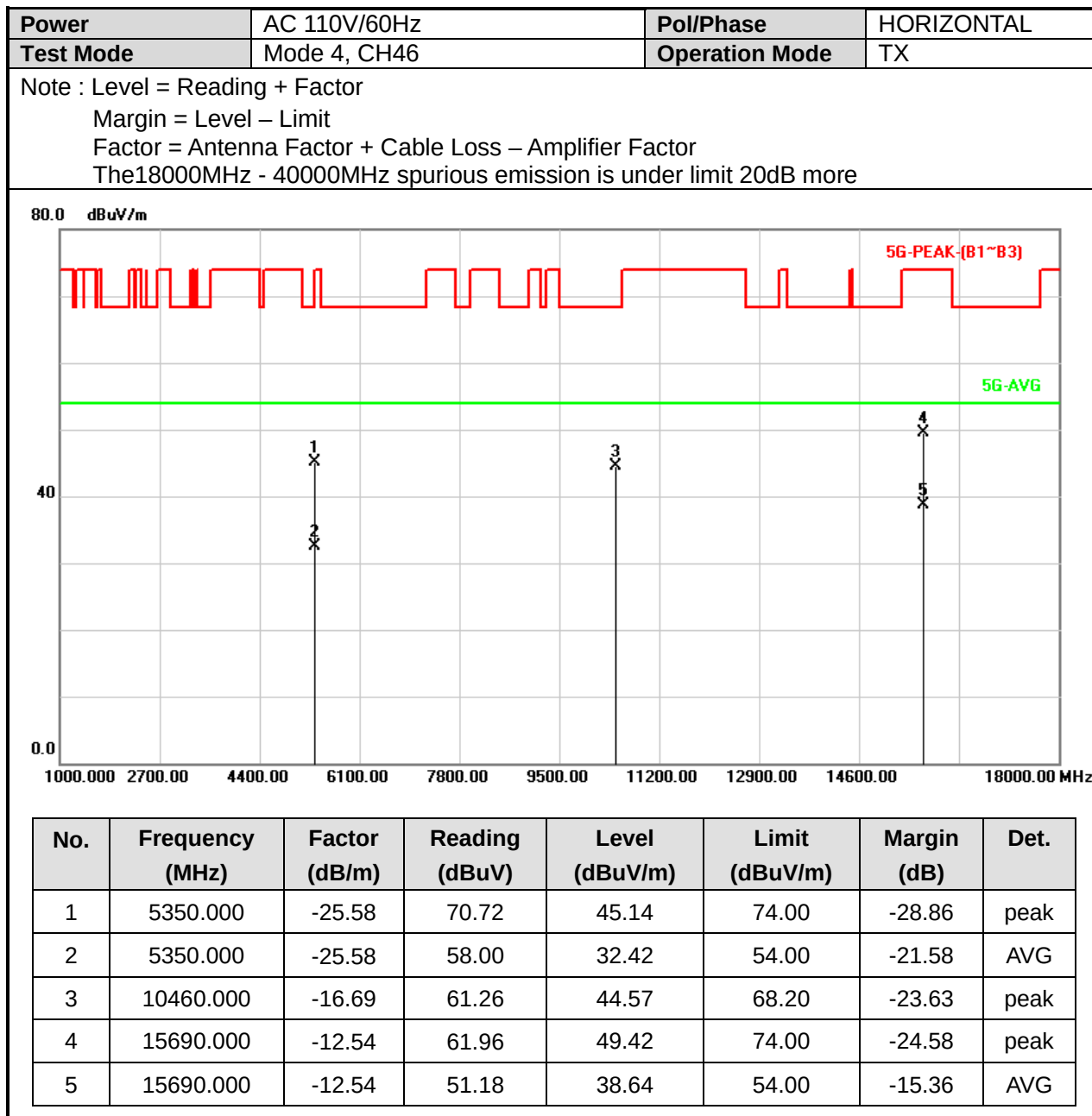
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	5850.000	-24.97	99.12	74.15	122.20	-48.05	peak
2	5855.000	-24.97	93.21	68.24	110.80	-42.56	peak
3	5875.000	-24.95	80.07	55.12	105.20	-50.08	peak
4	5925.000	-24.90	72.94	48.04	68.20	-20.16	peak
5	11650.000	-14.54	61.72	47.18	74.00	-26.82	peak
6	11650.000	-14.54	49.36	34.82	54.00	-19.18	AVG
7	17475.000	-7.03	59.50	52.47	68.20	-15.73	peak

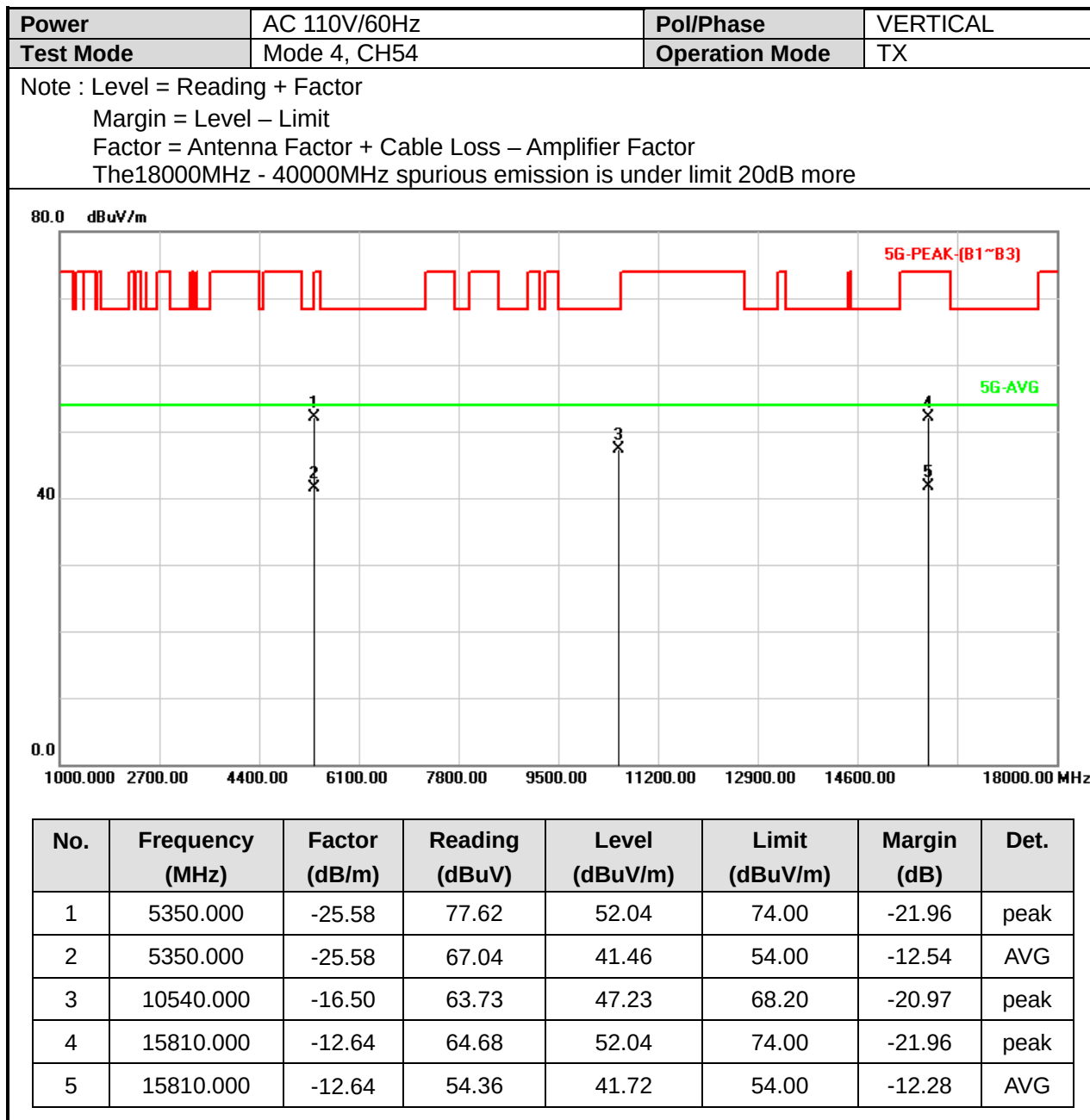


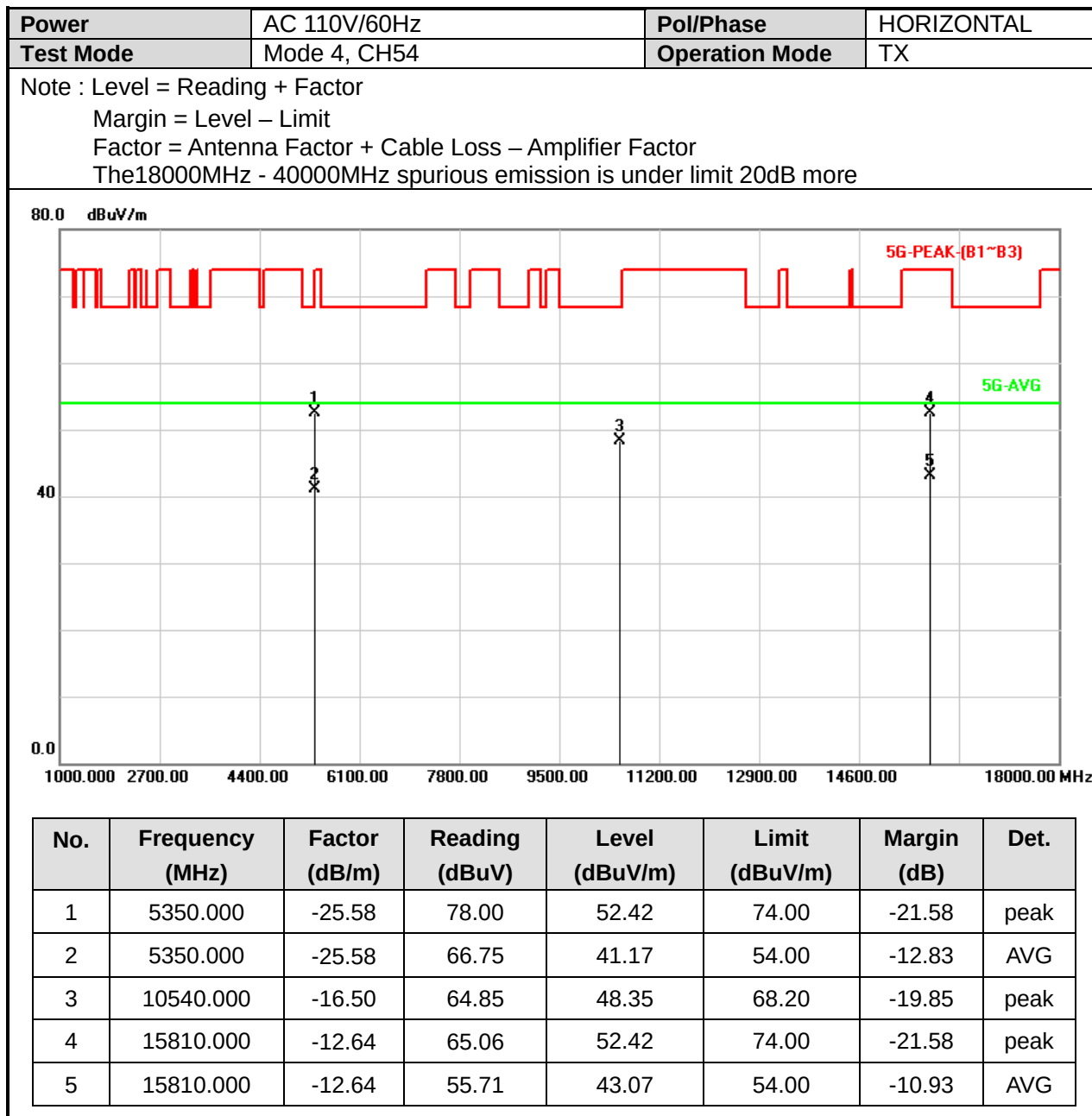


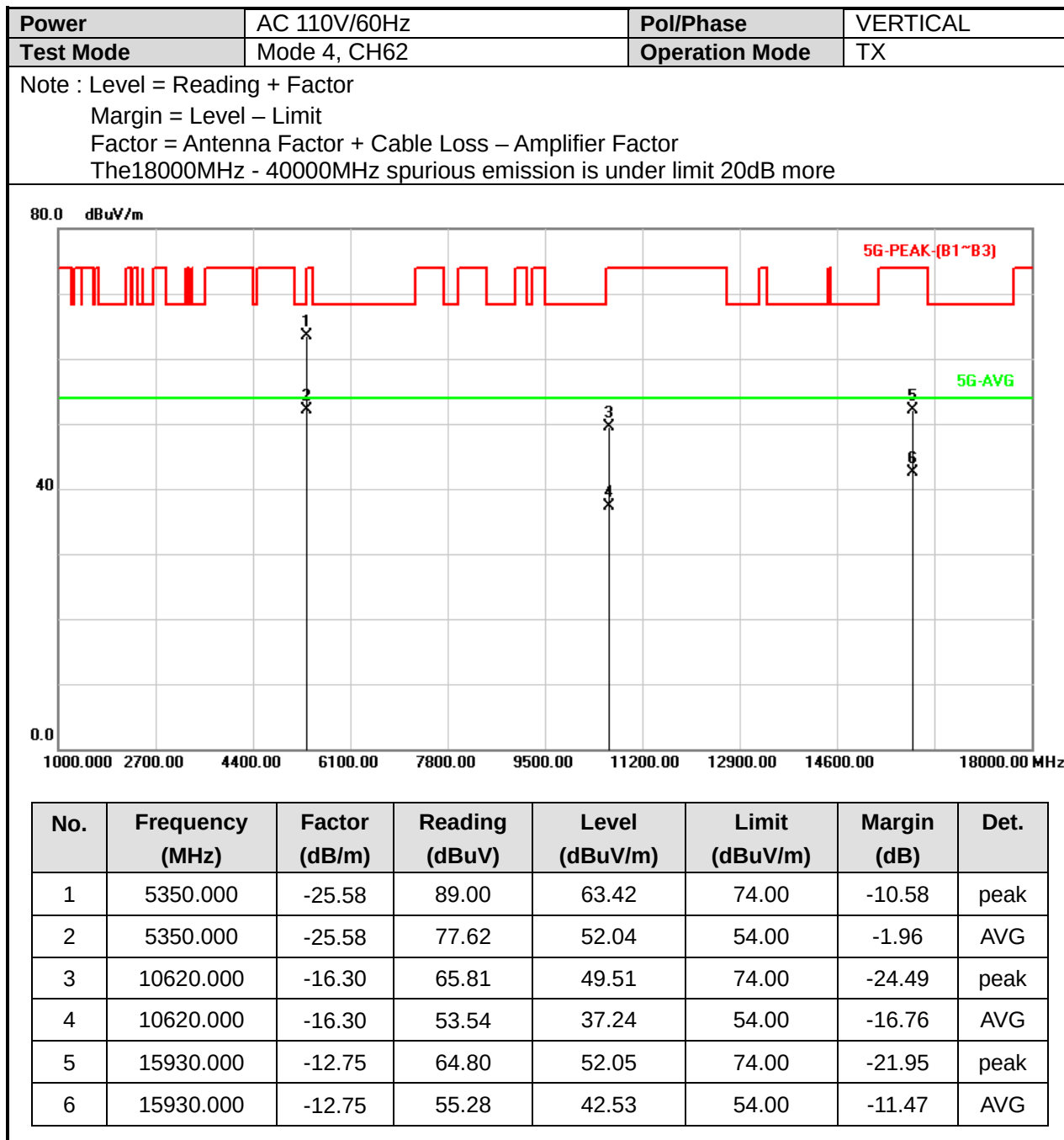


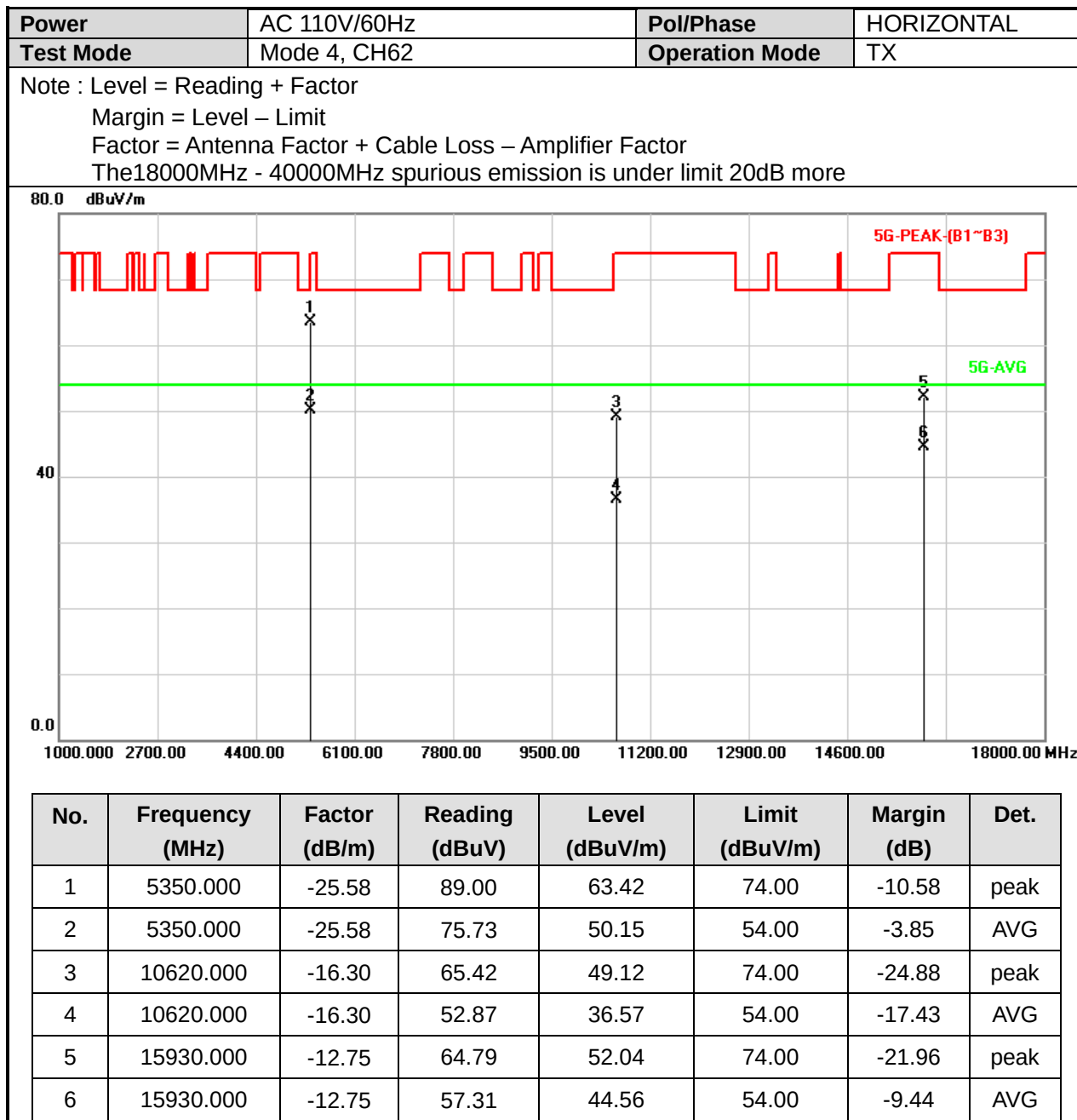


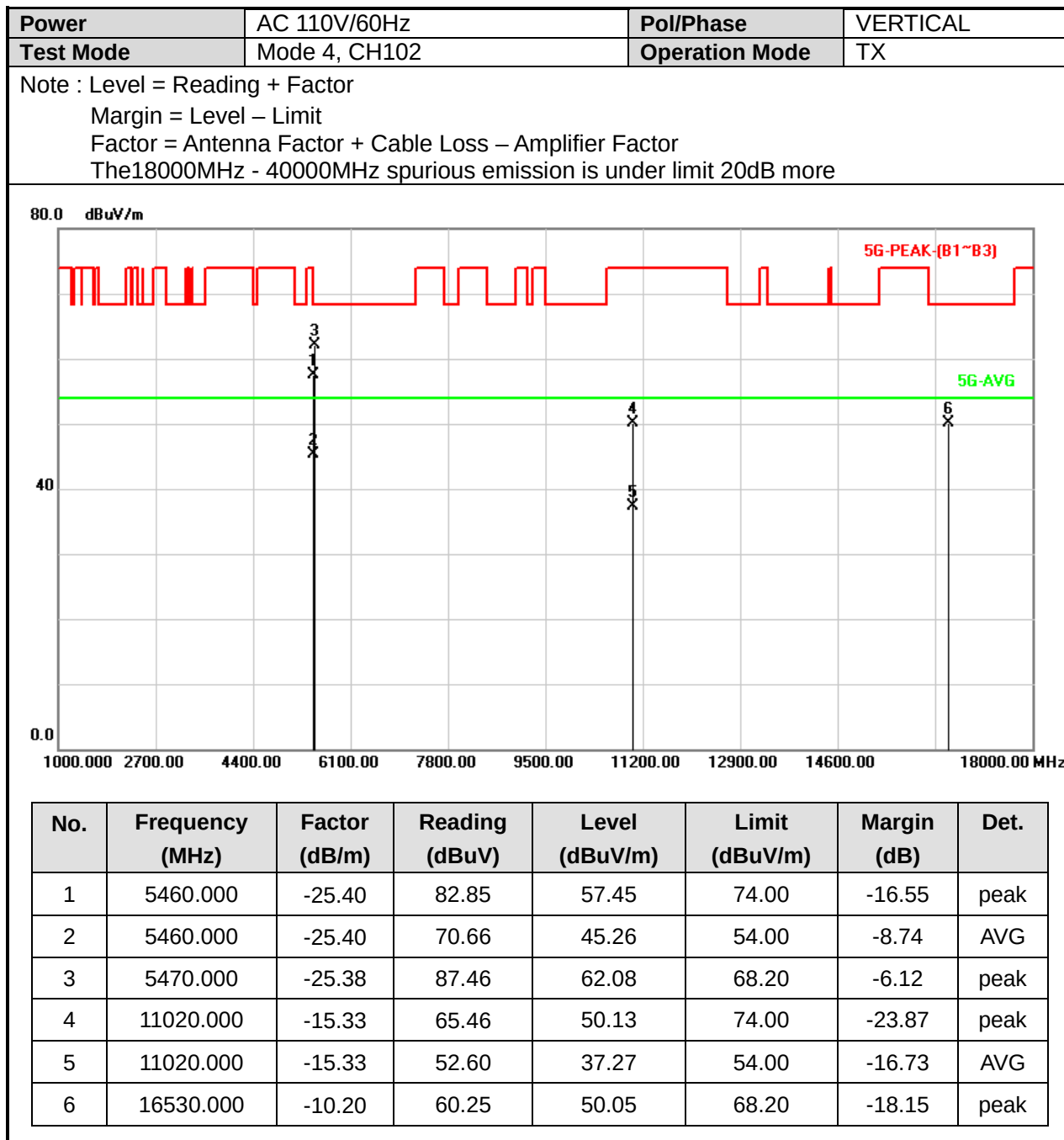


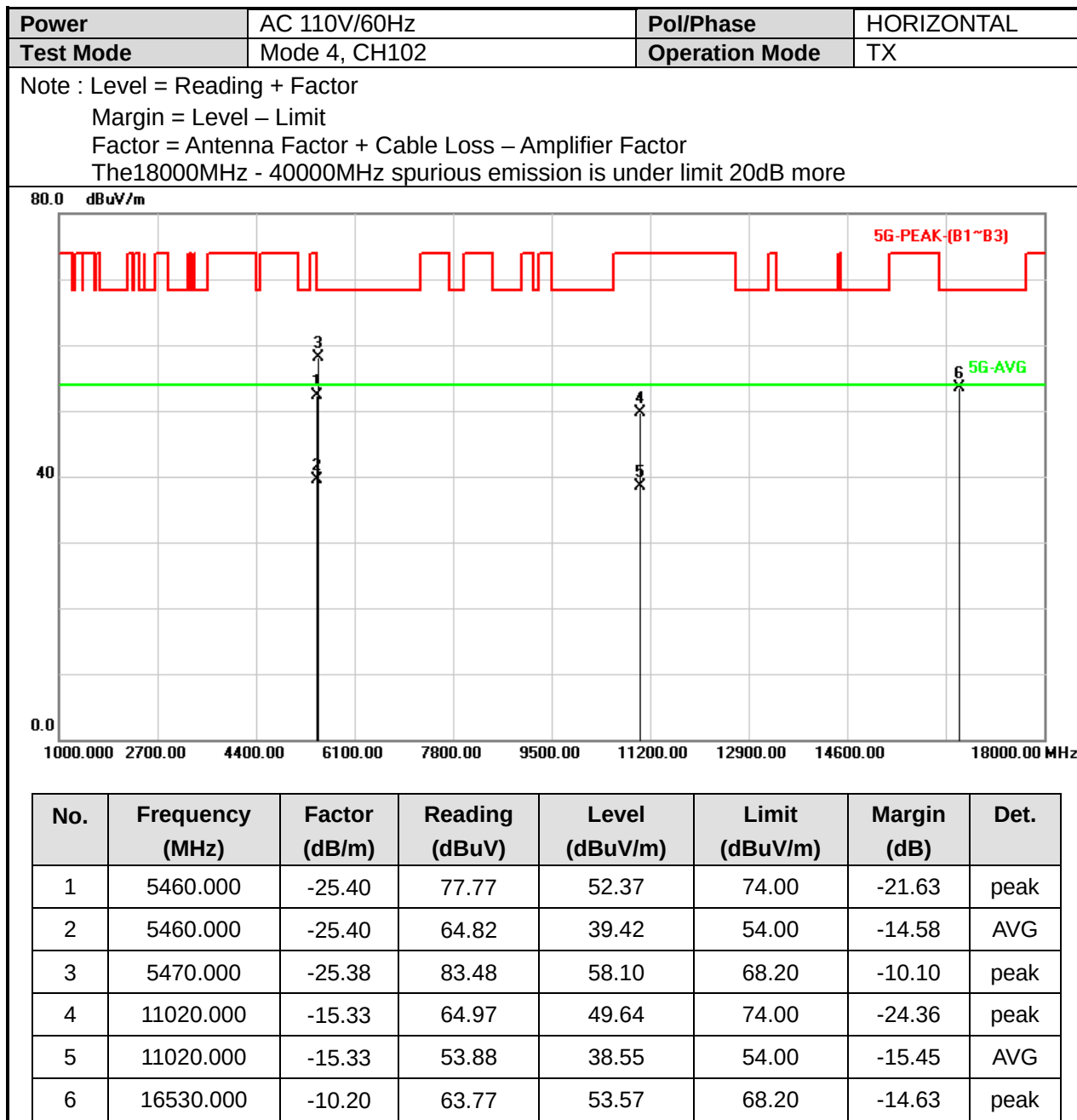


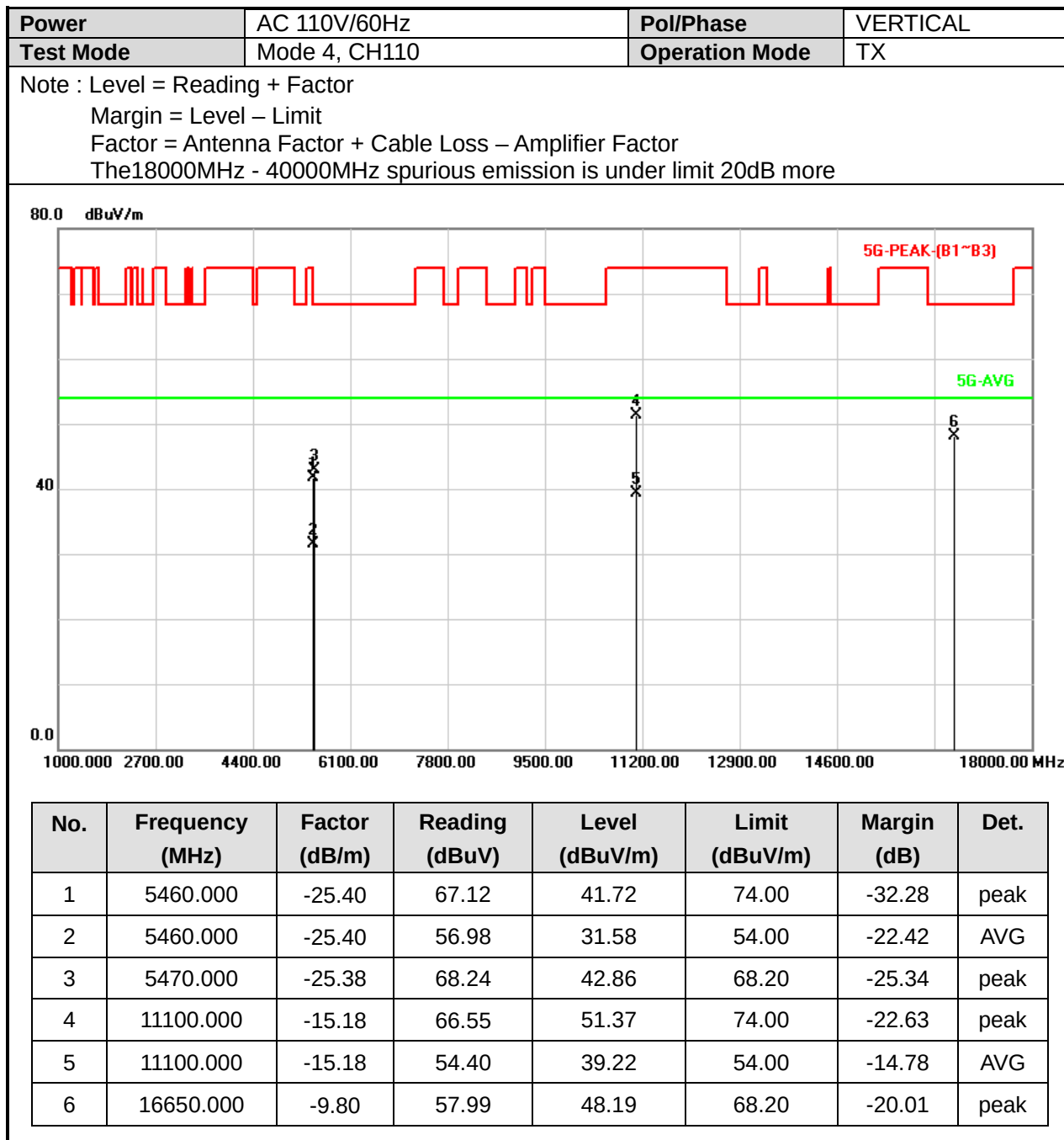


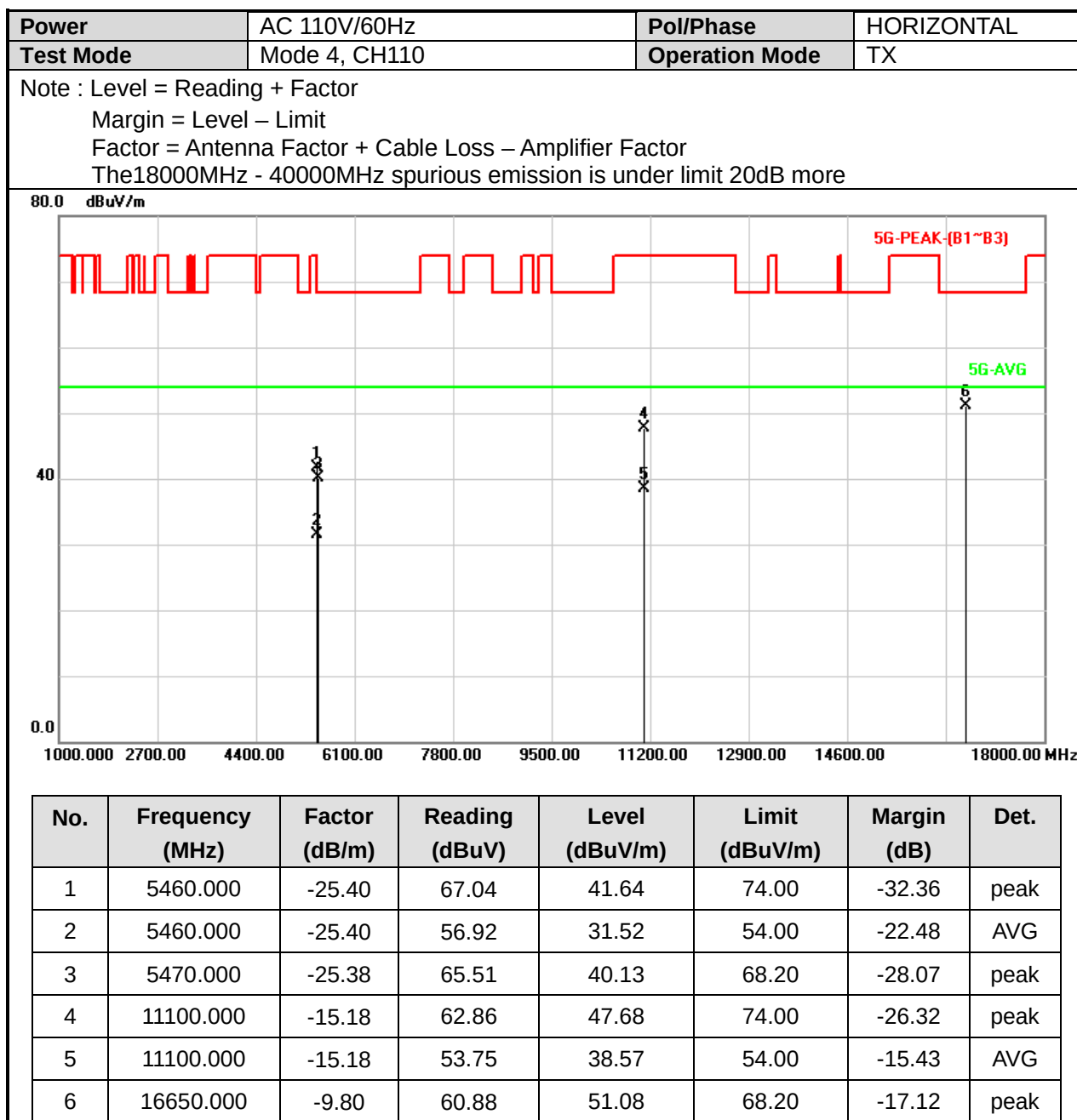


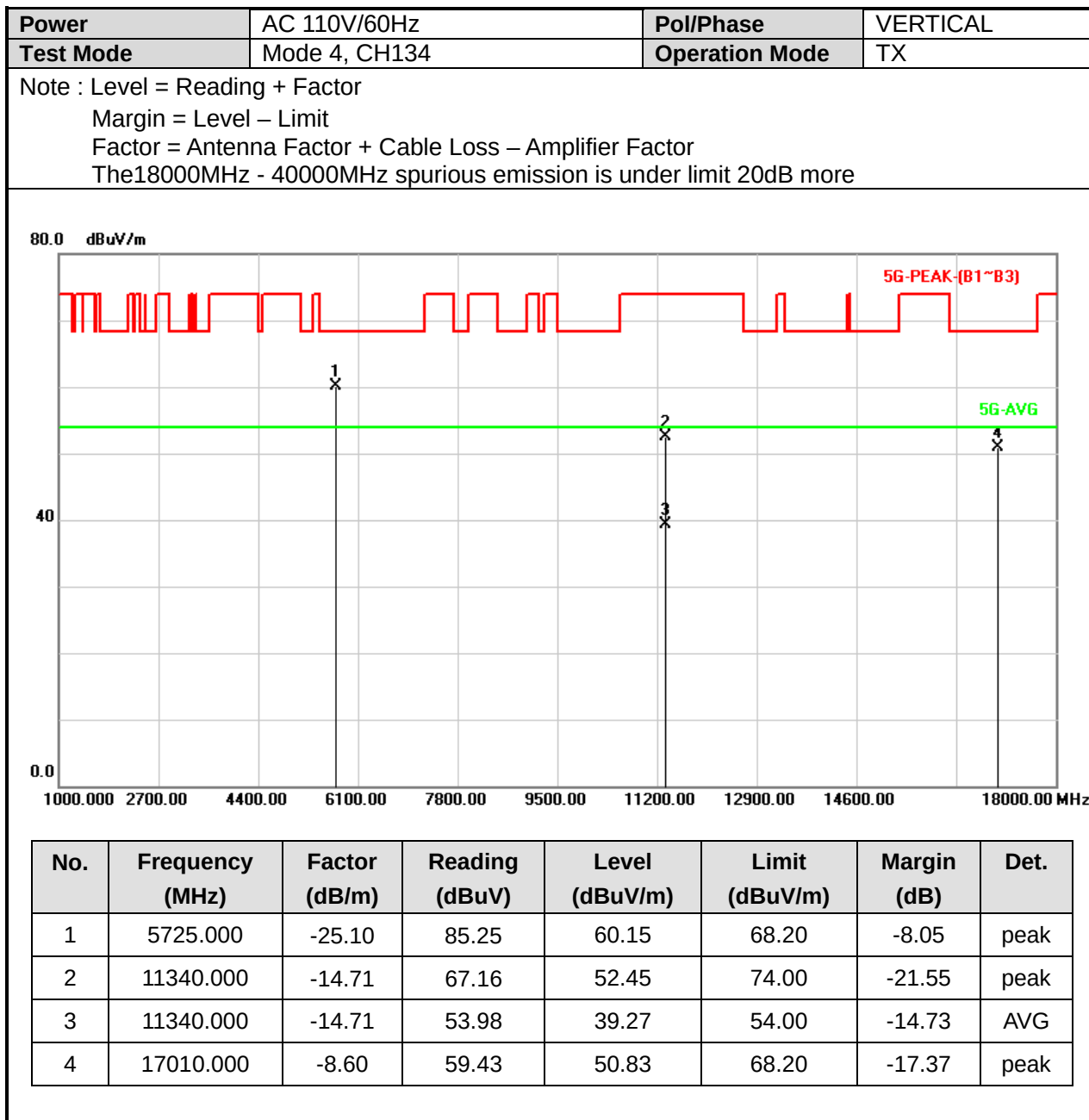


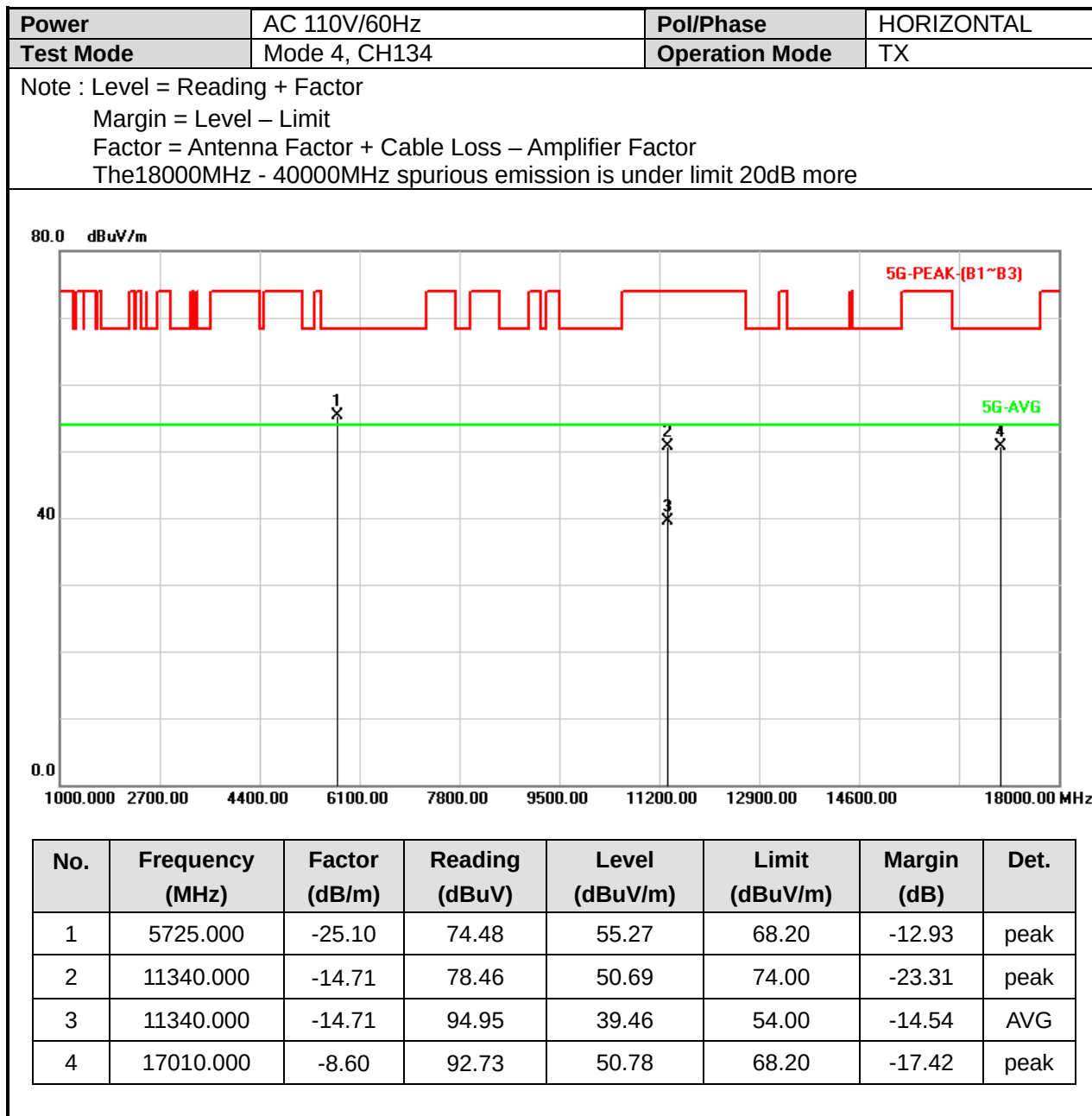


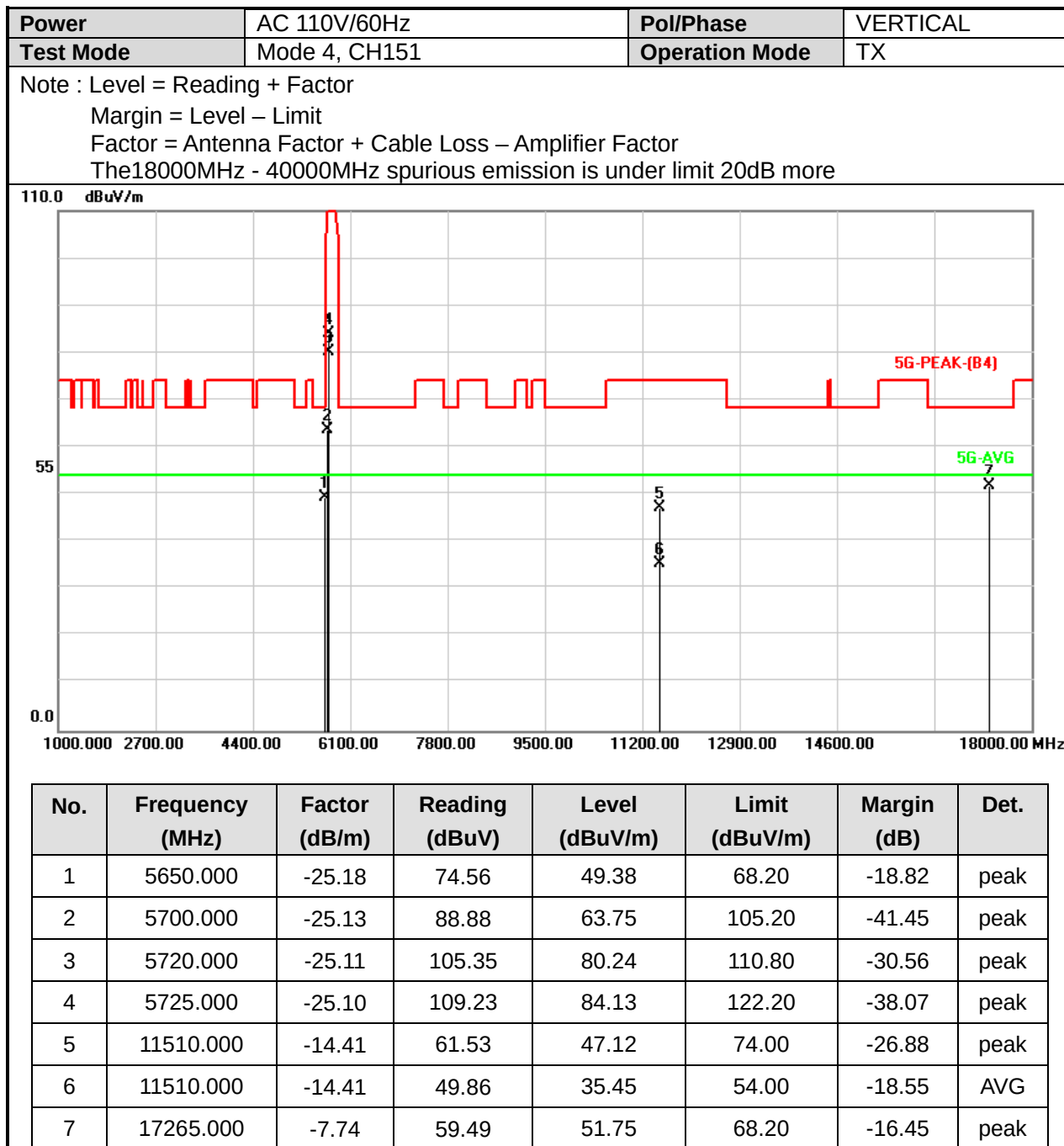


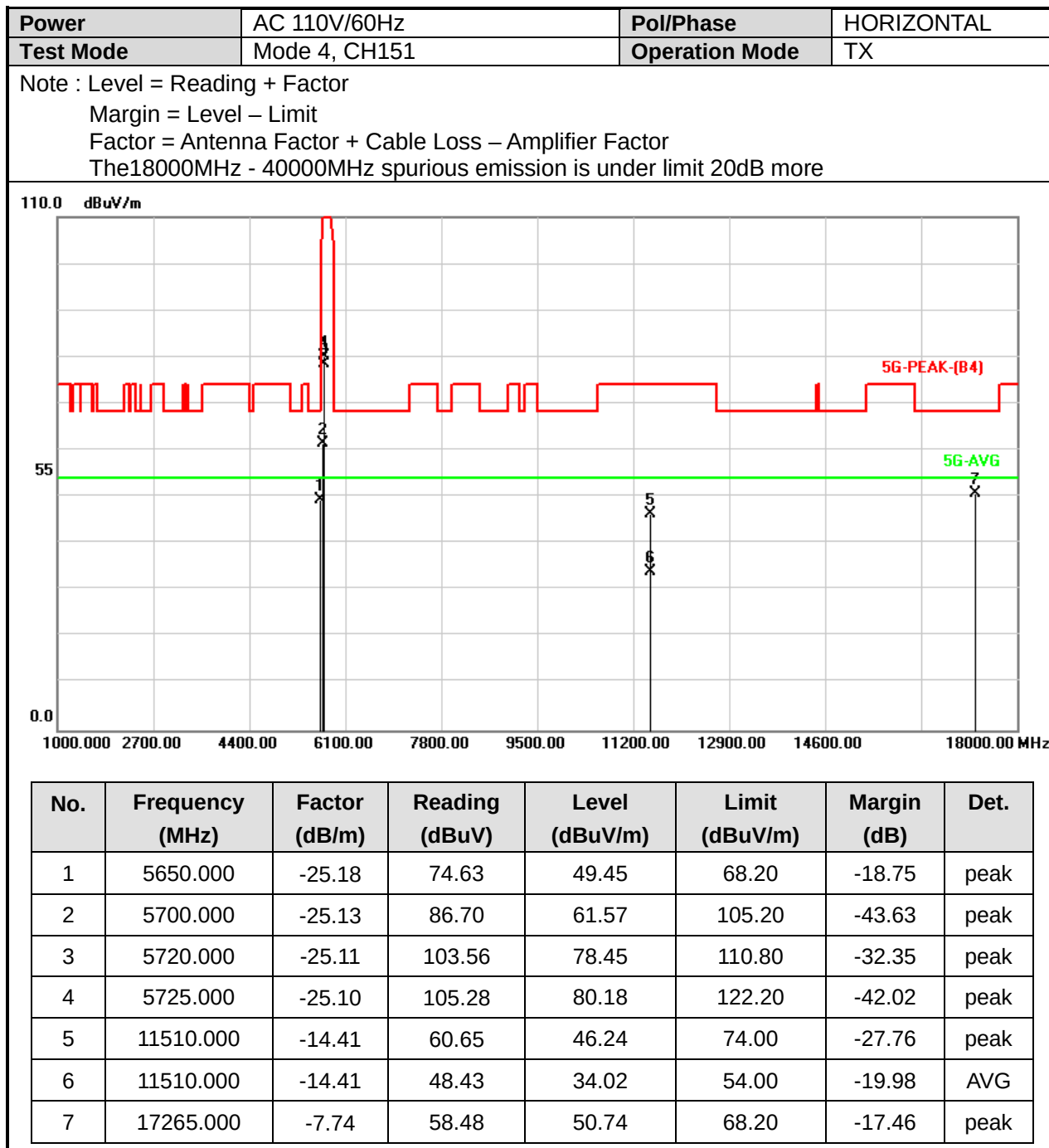


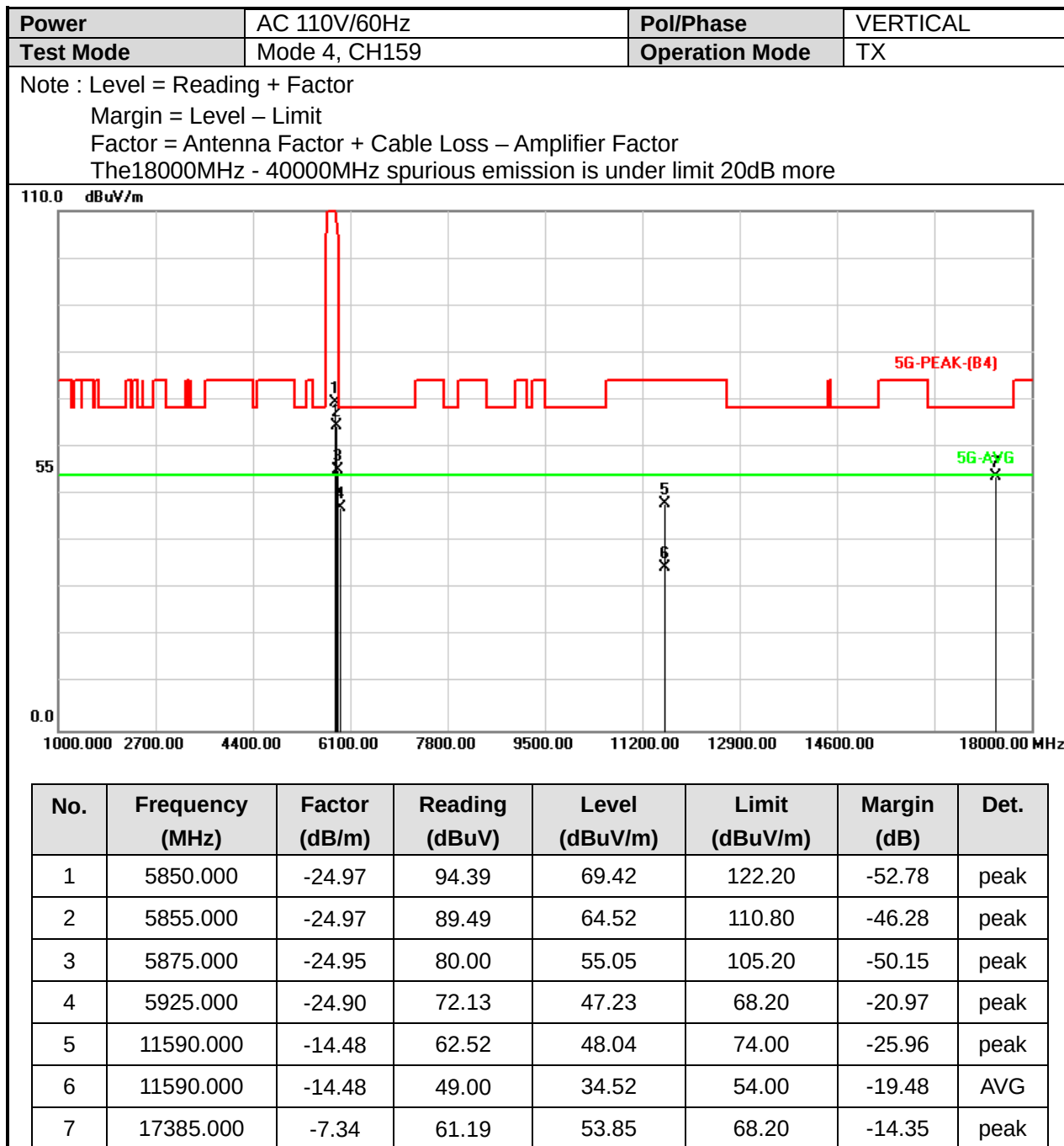


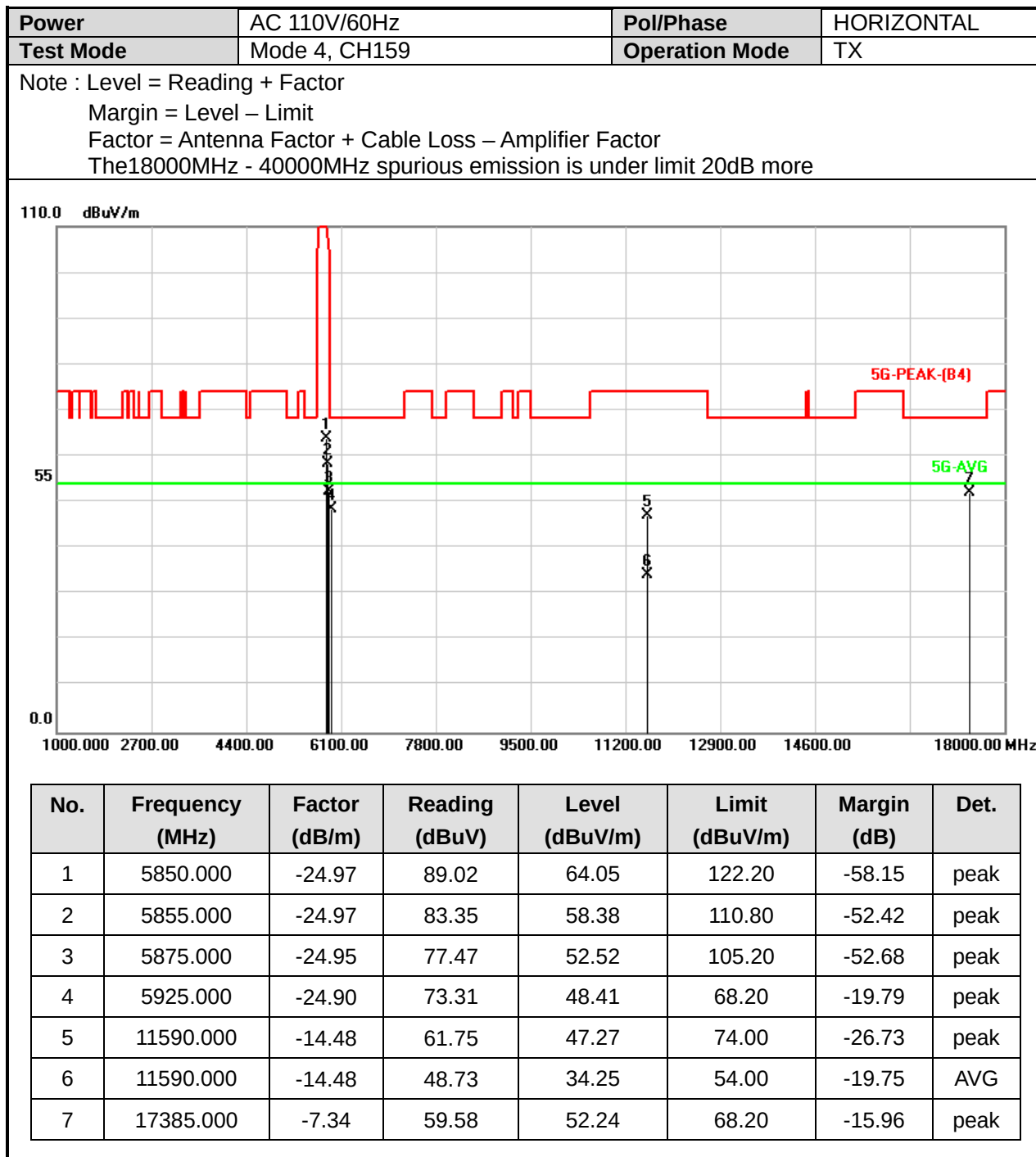


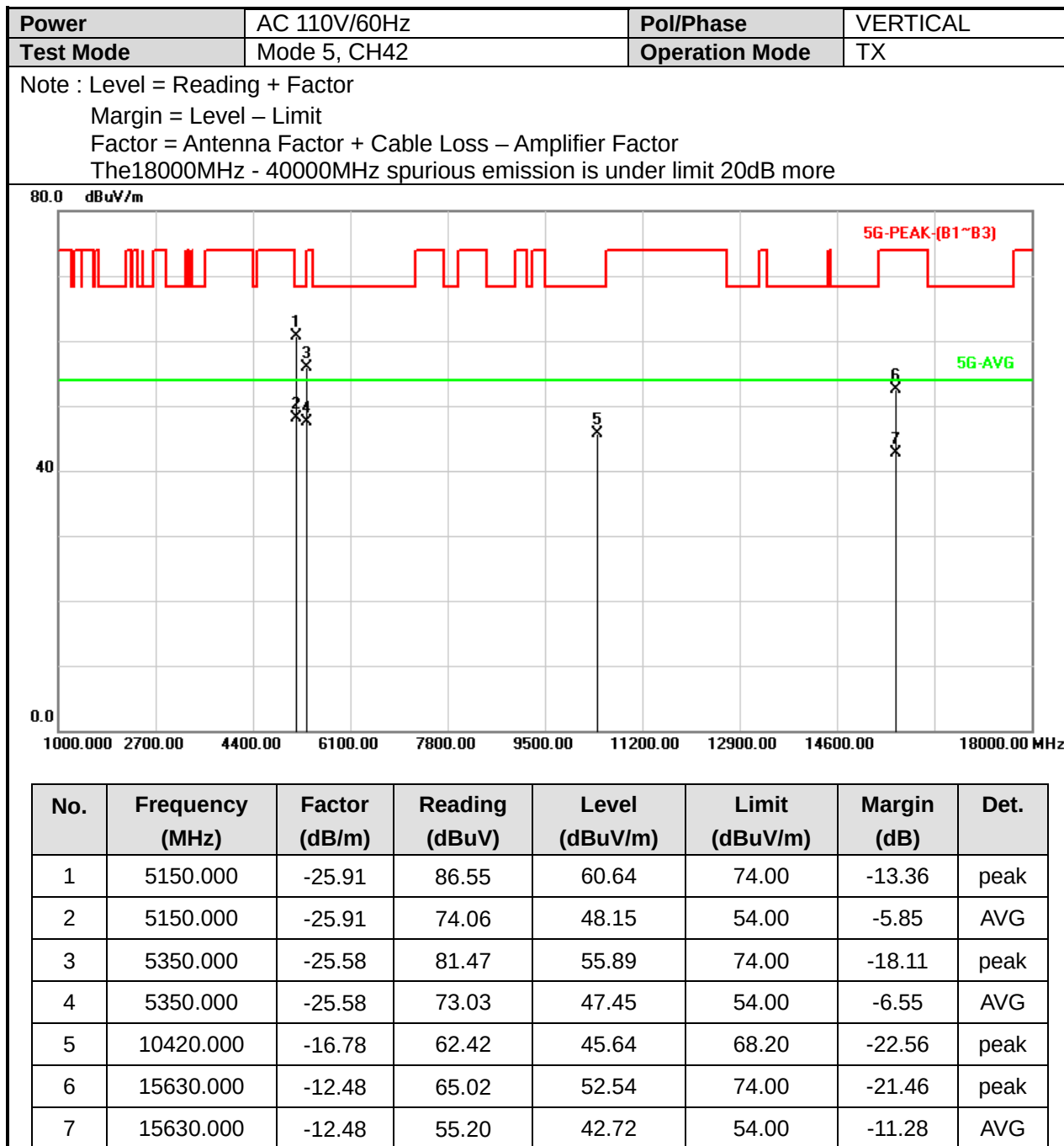


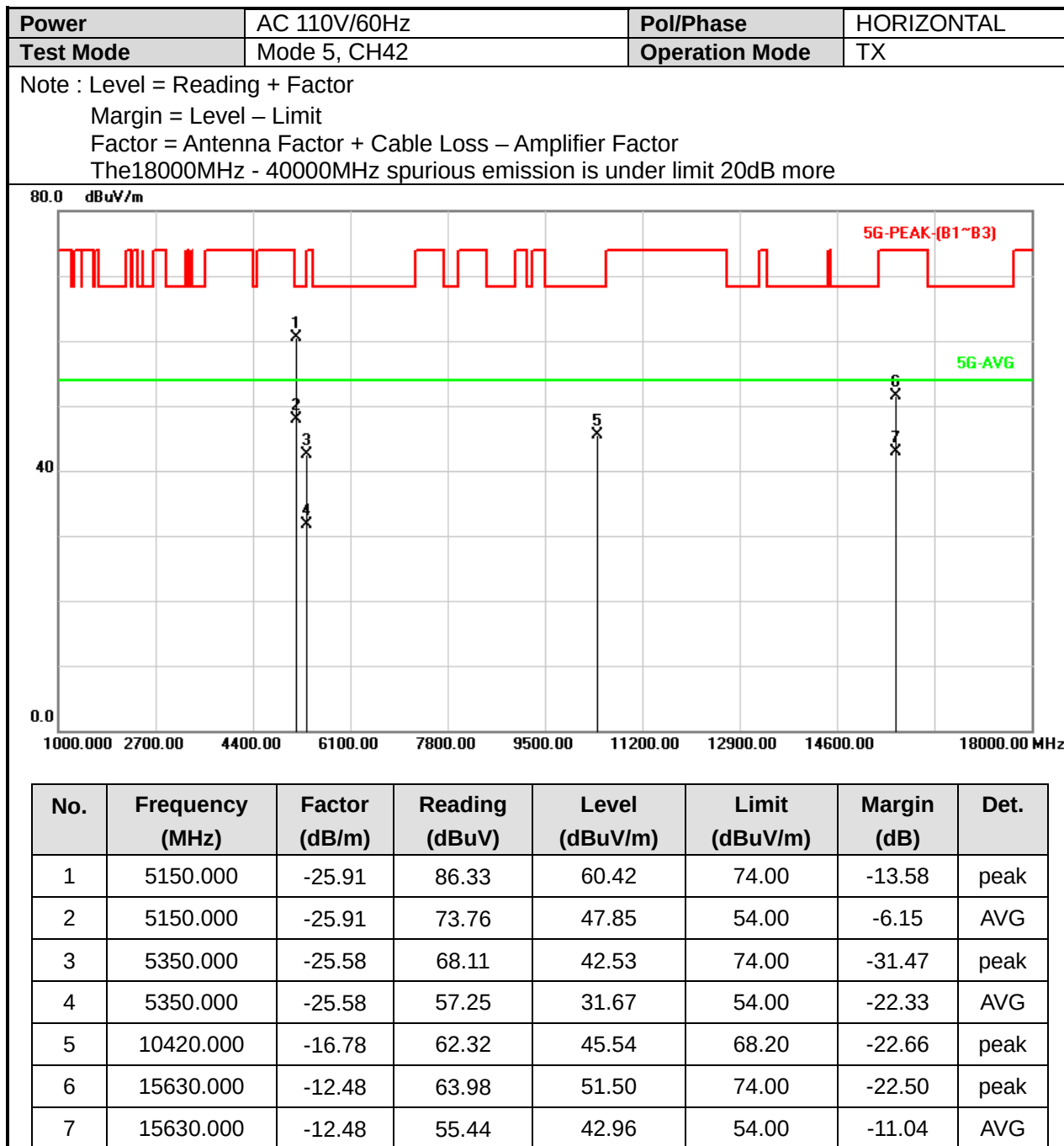


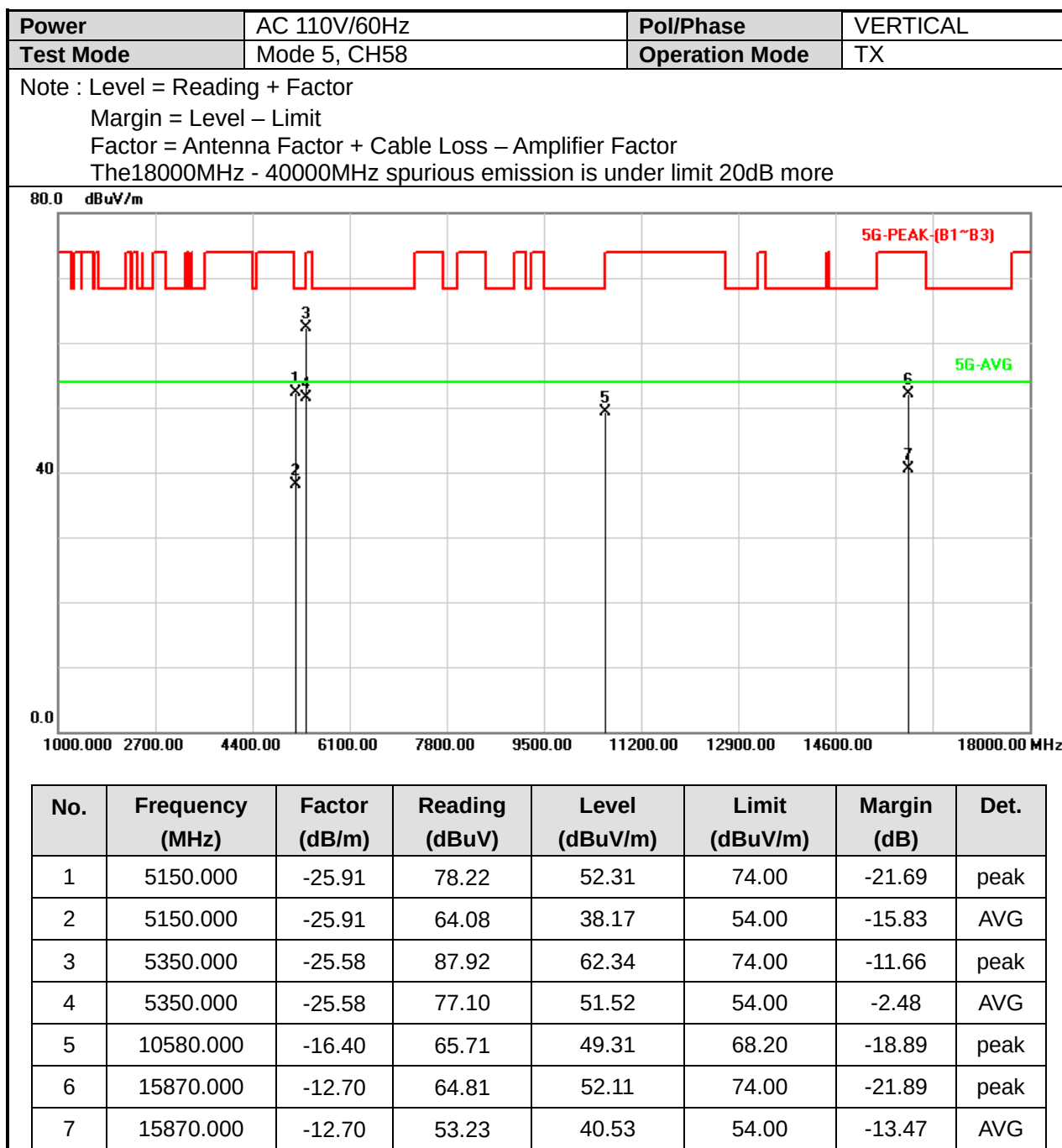


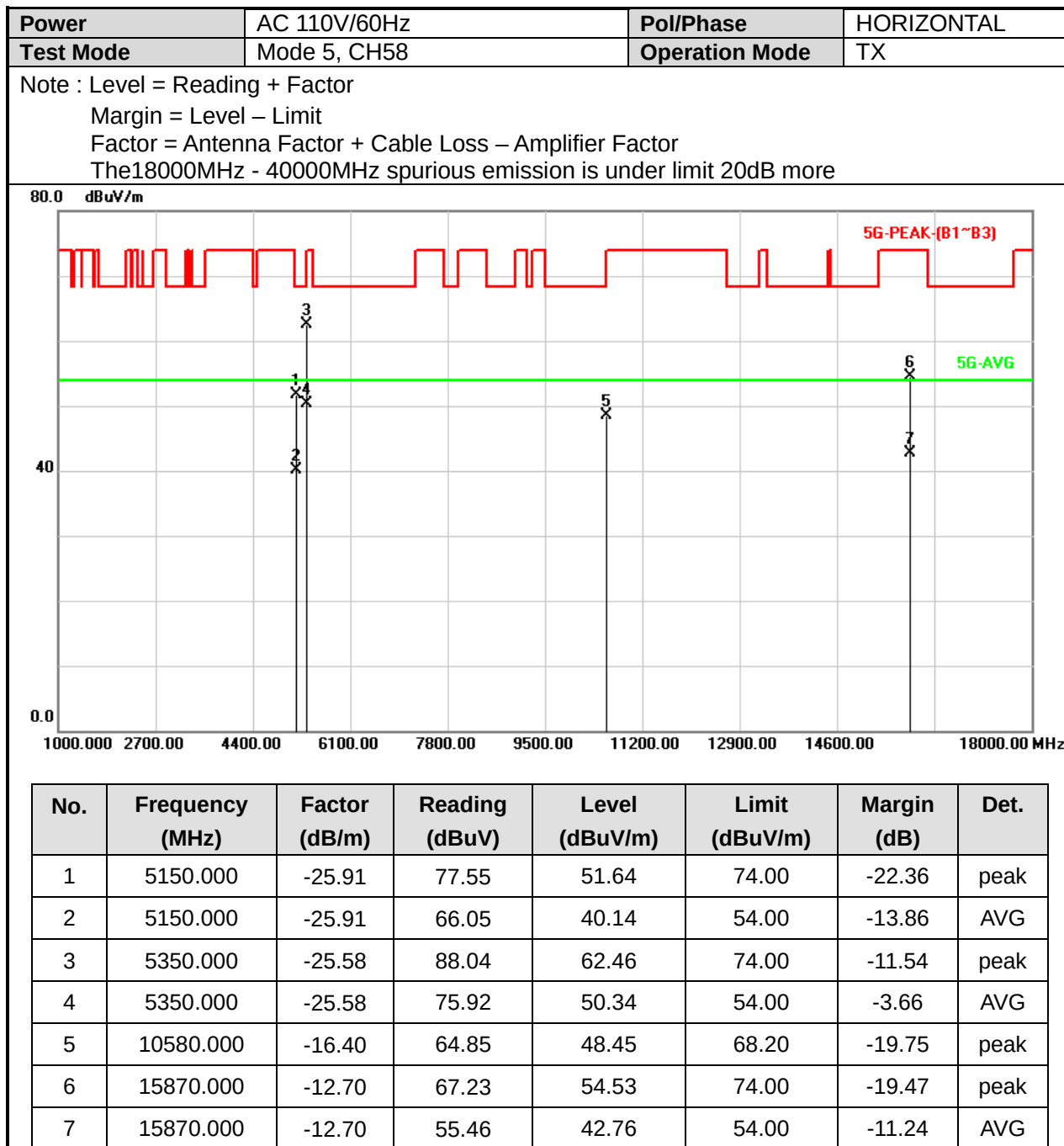


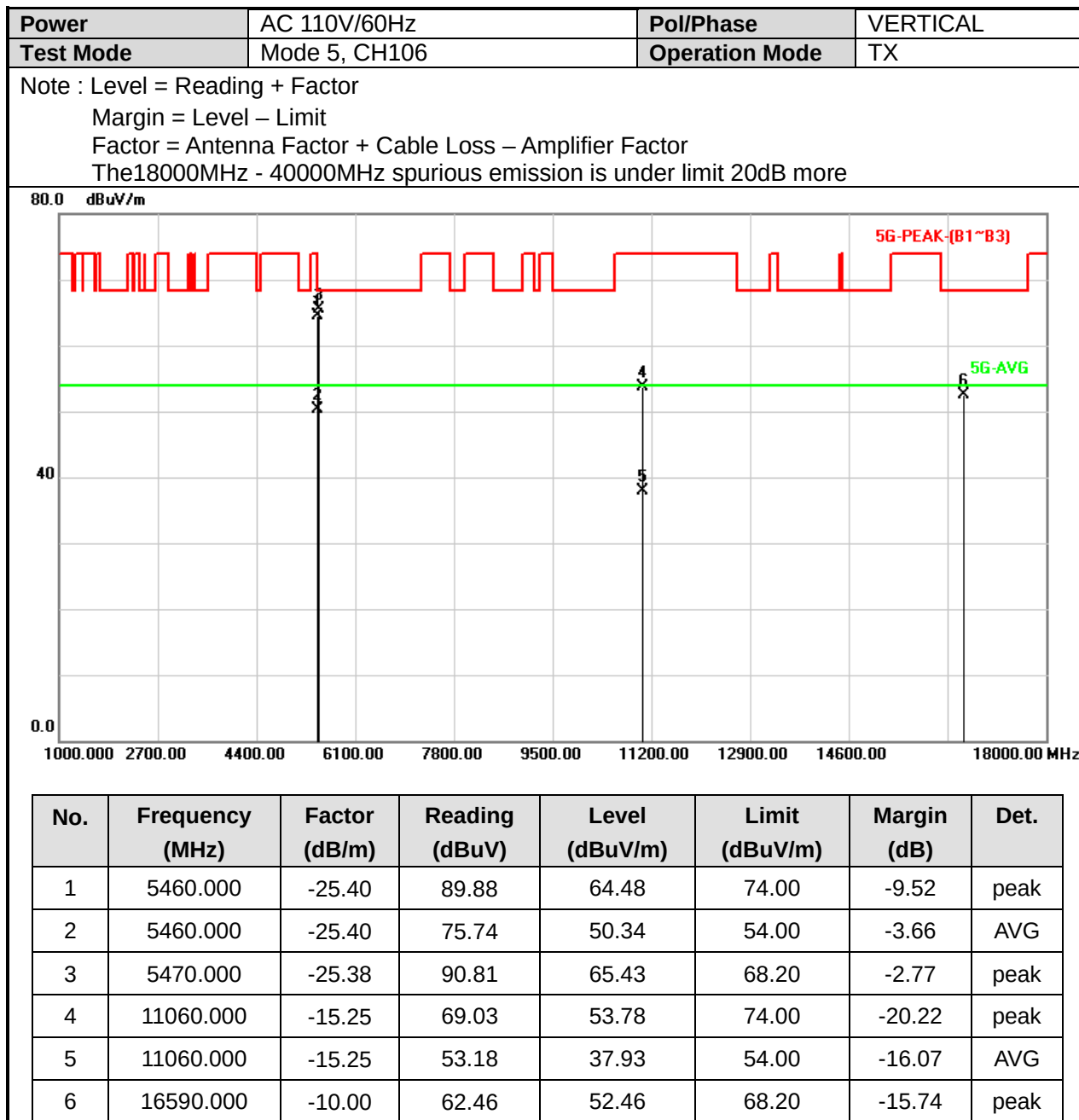


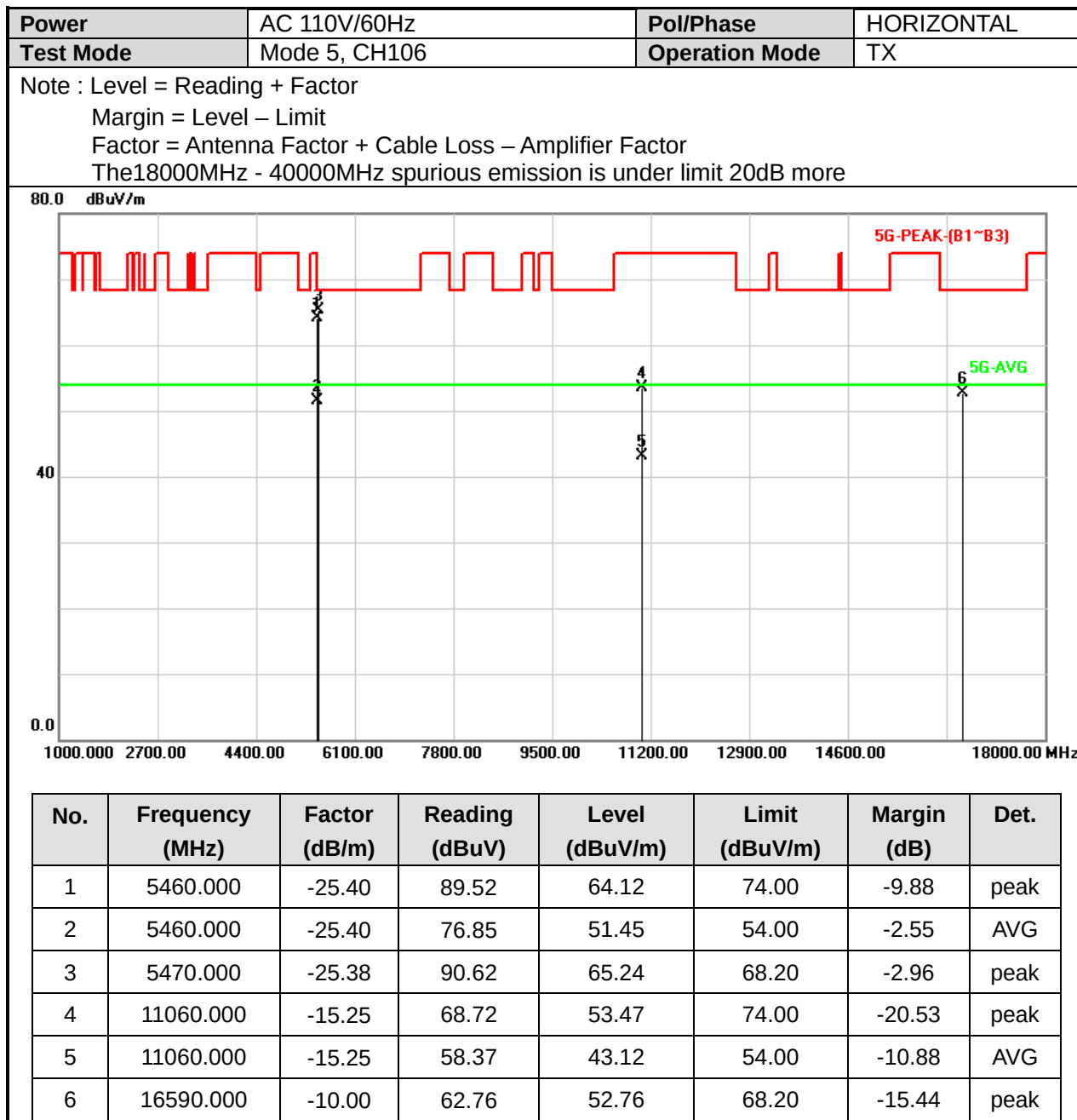


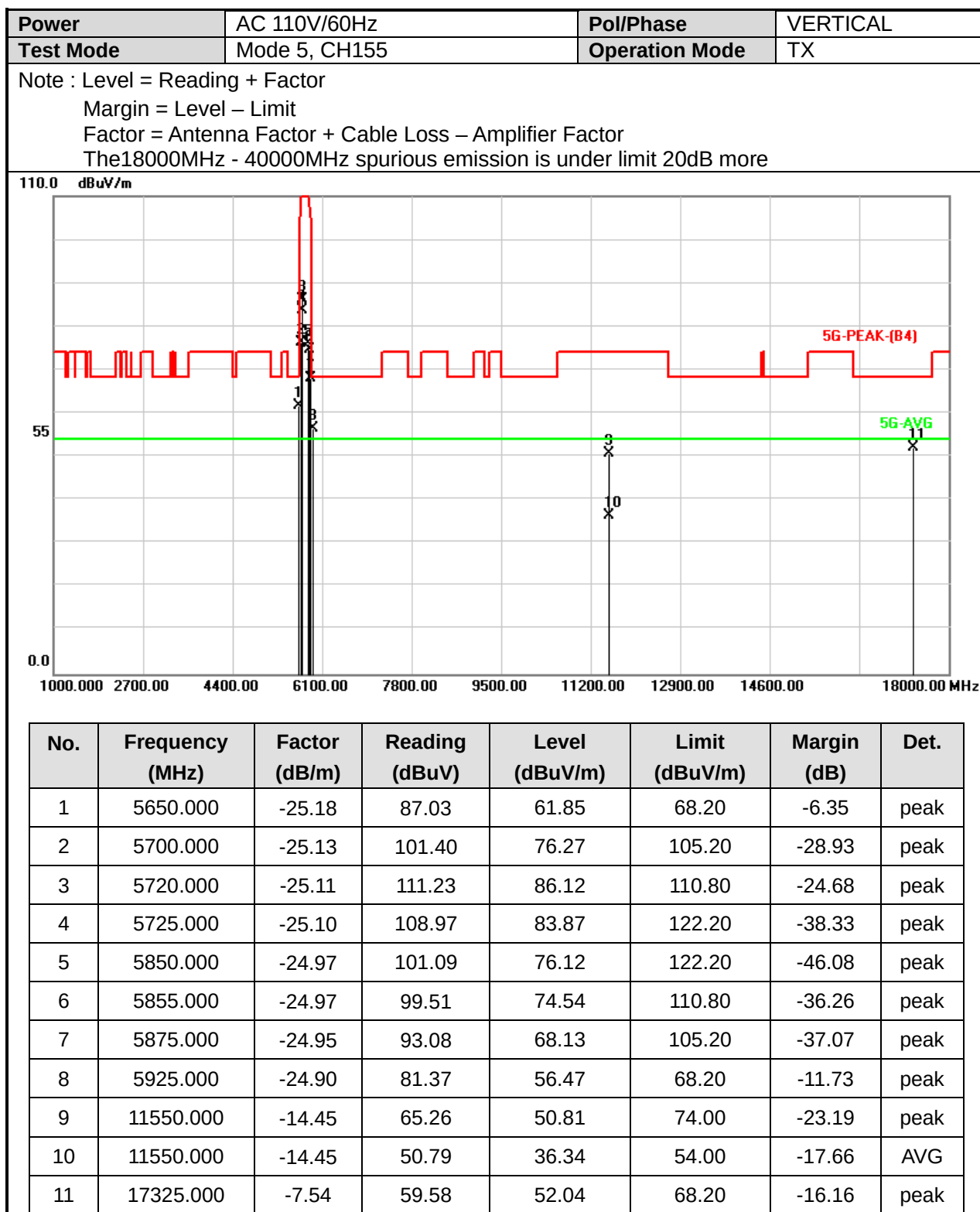


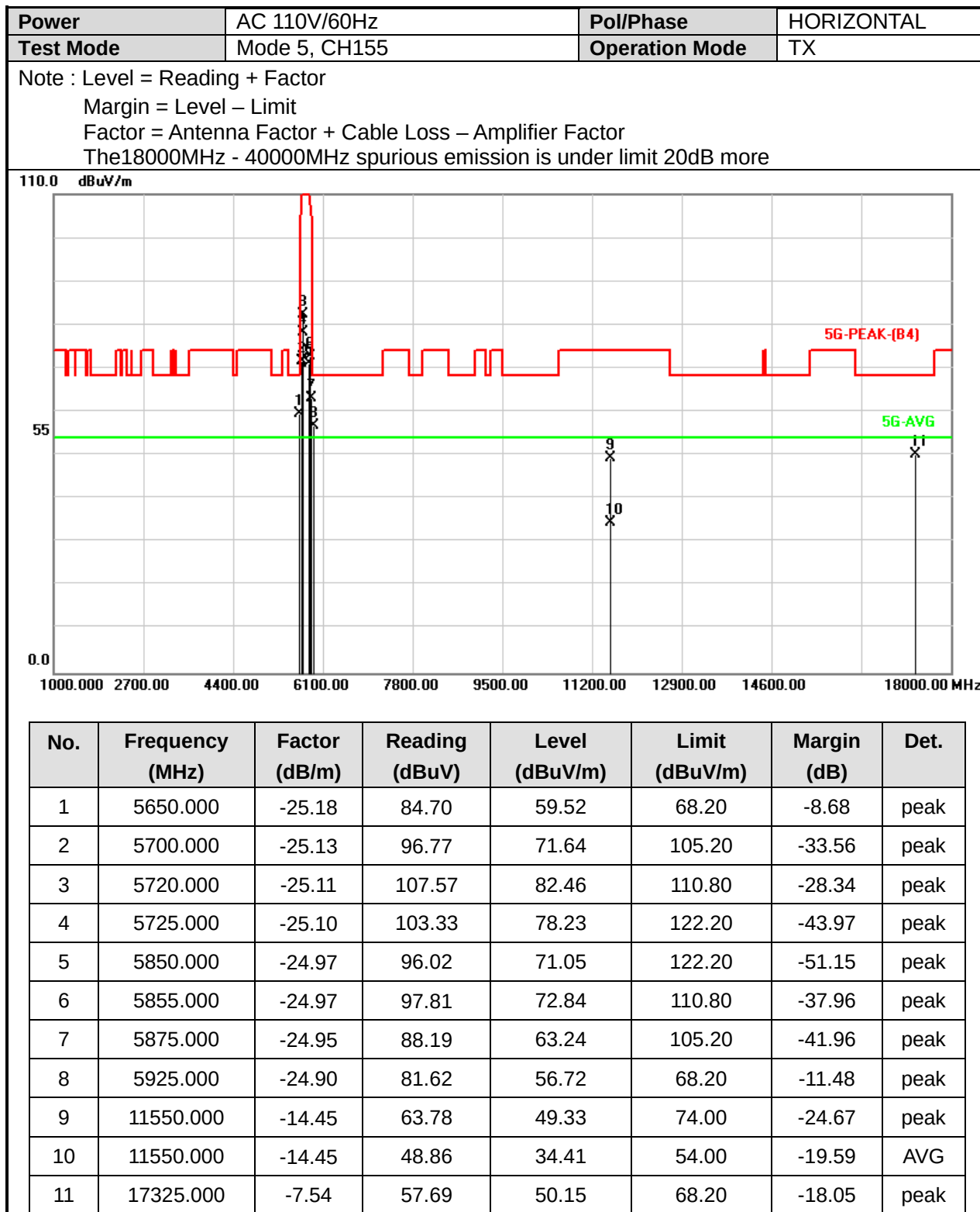






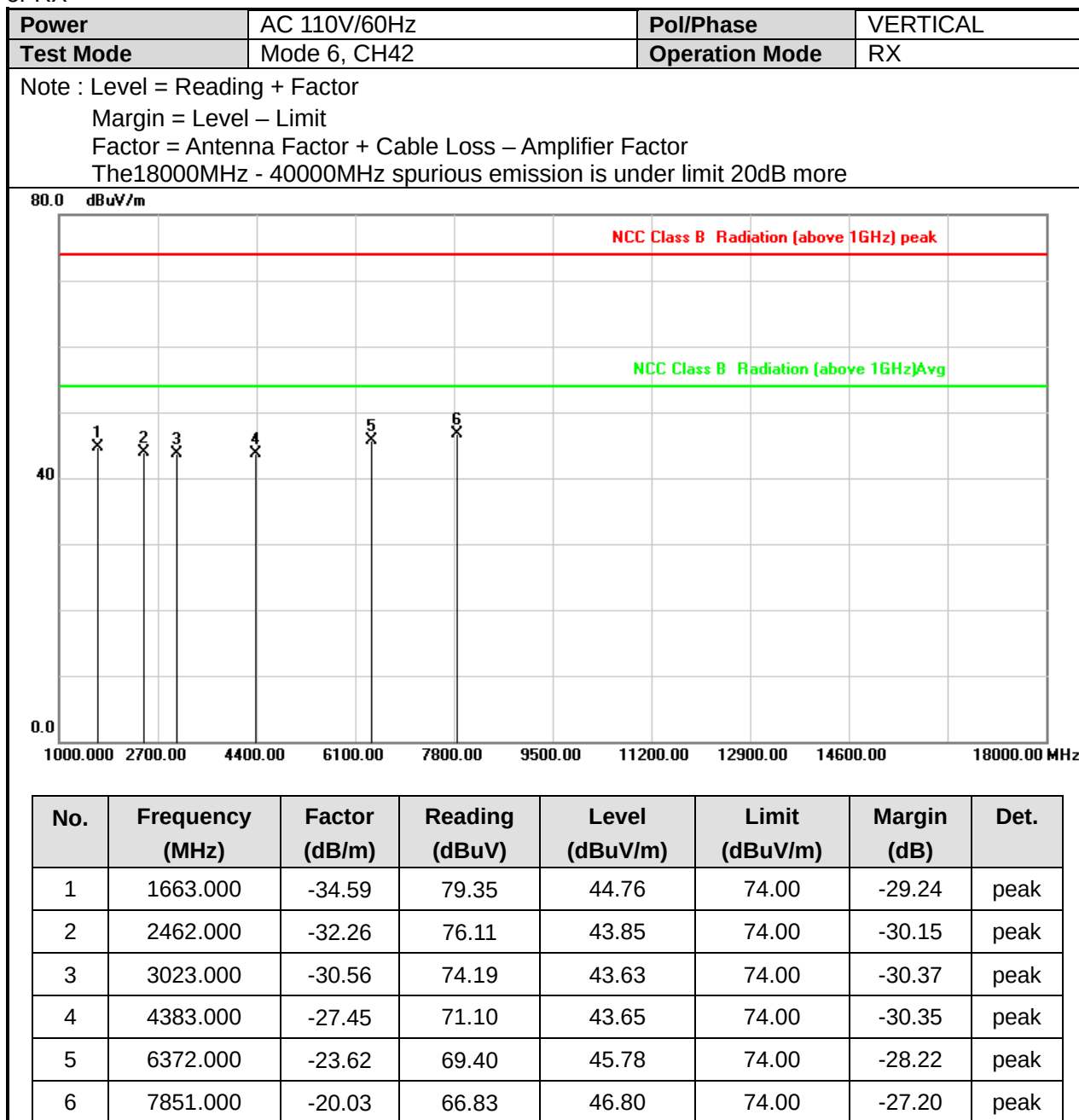


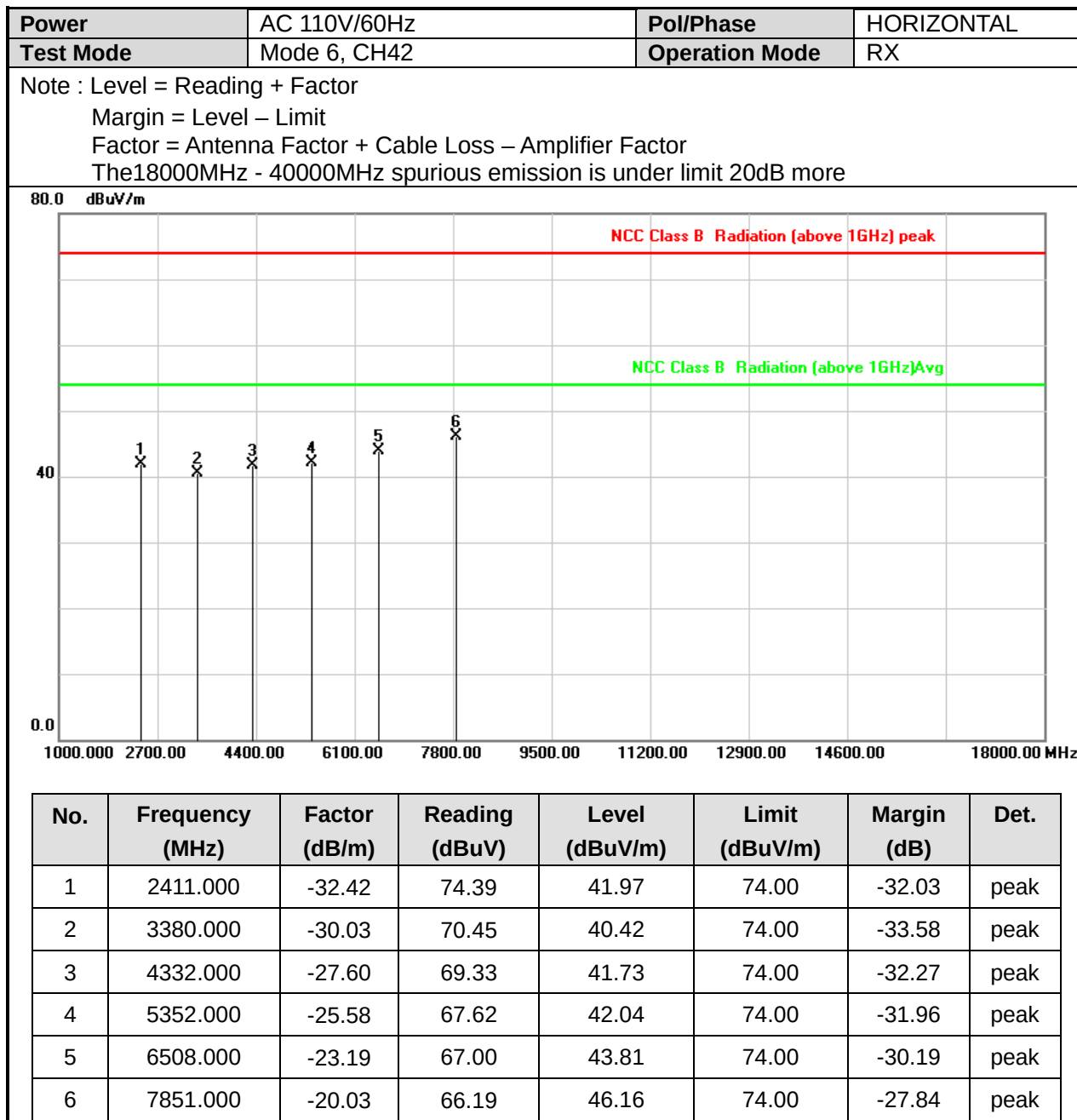


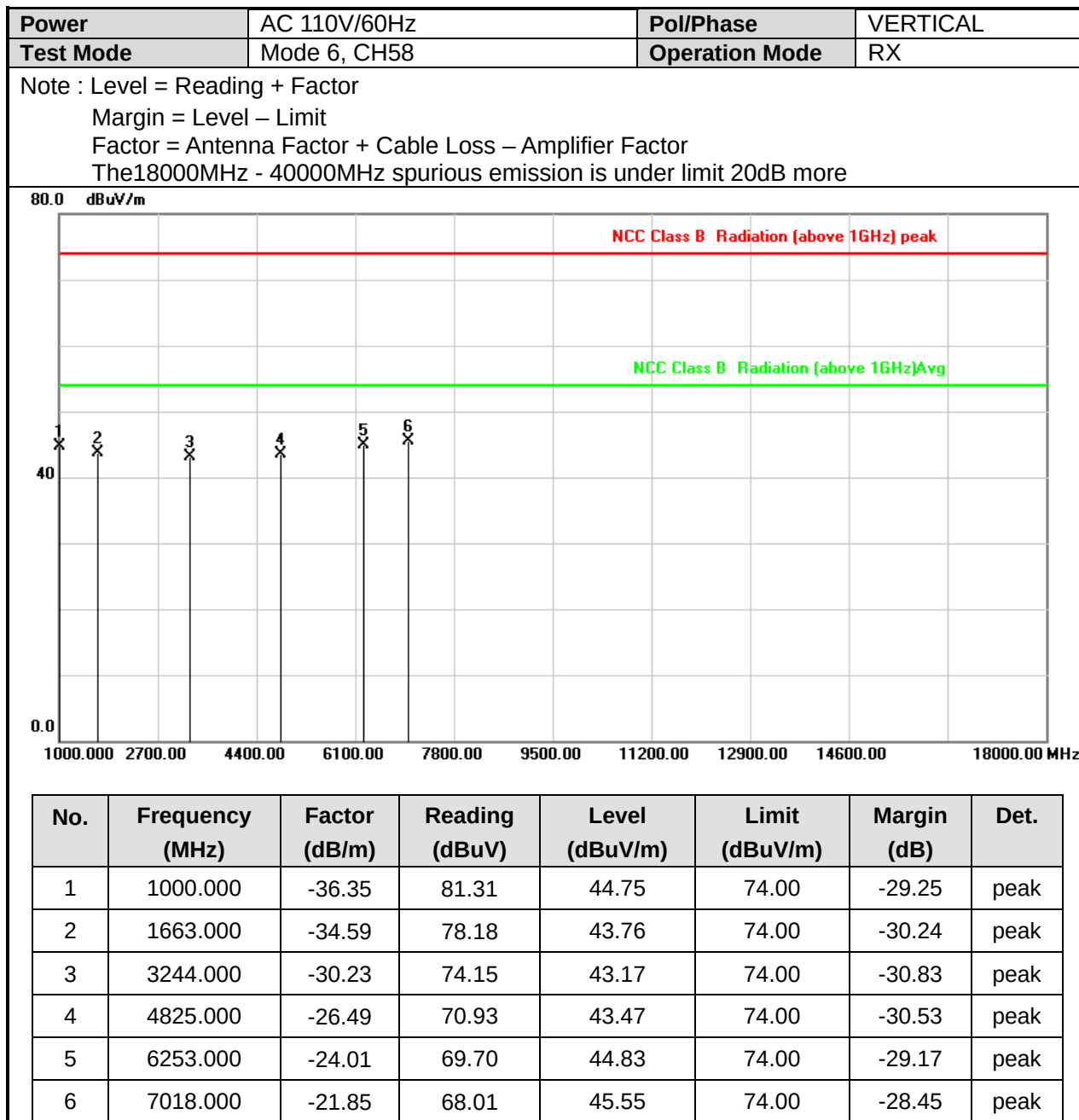


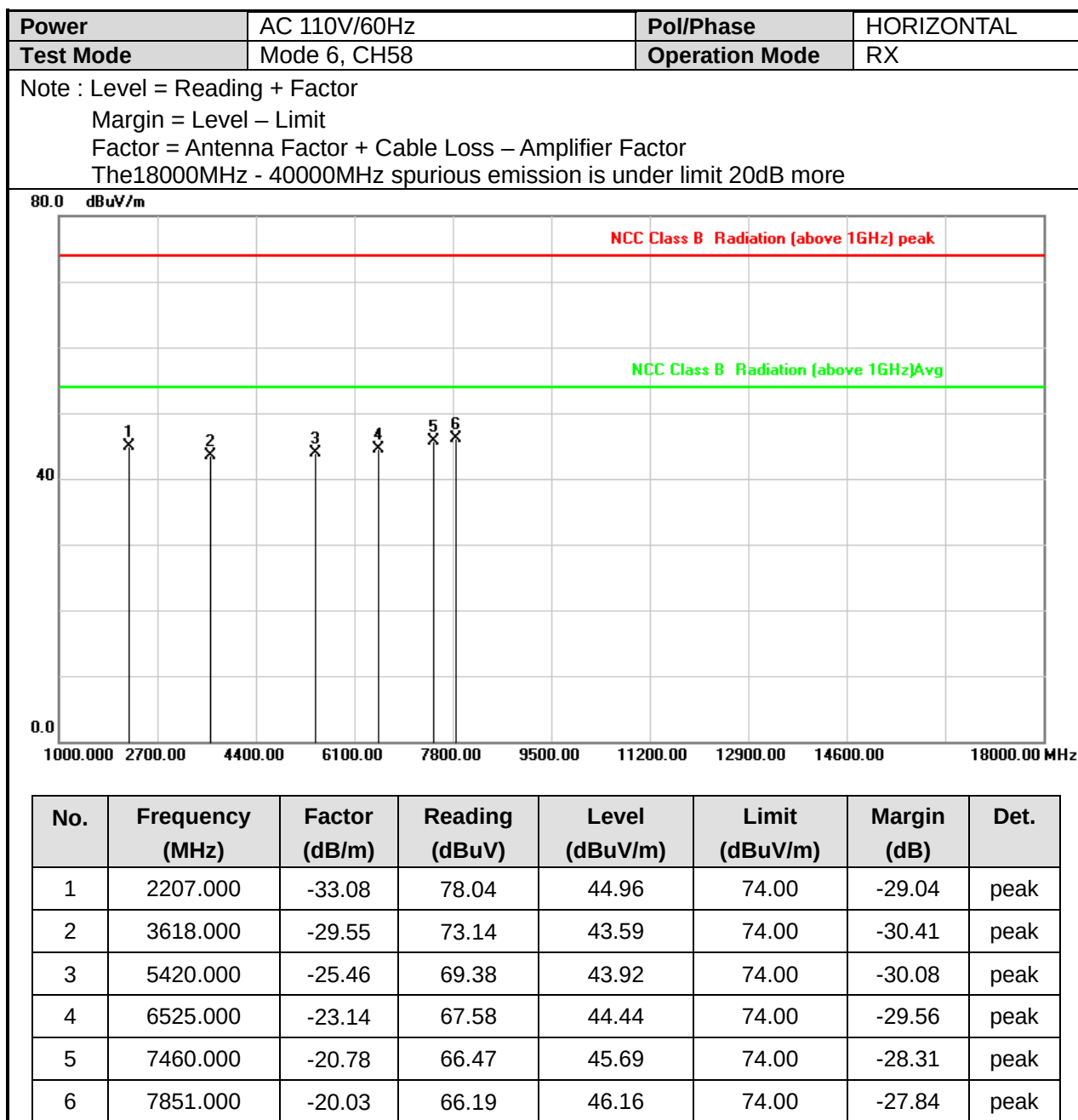


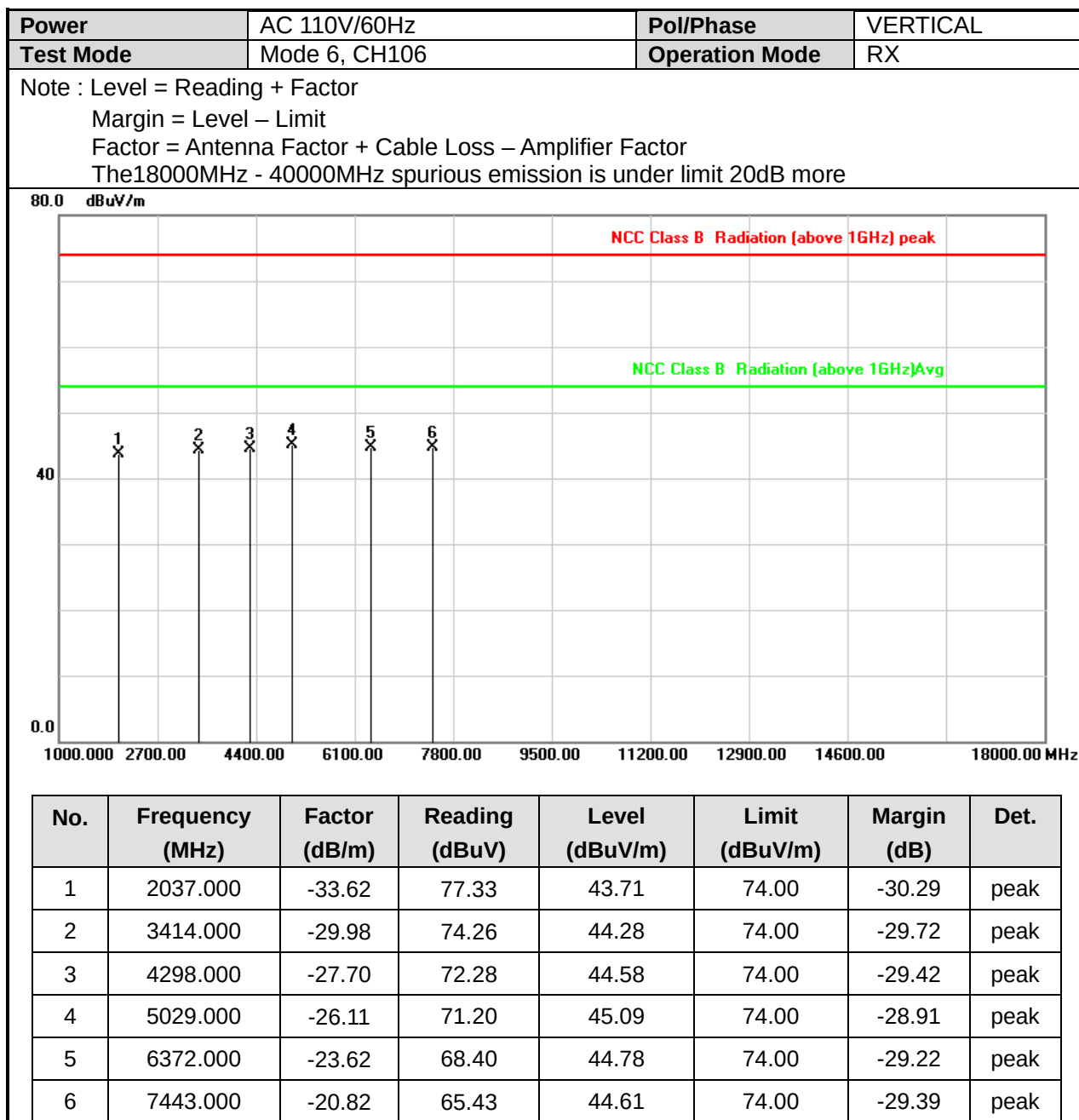
For RX

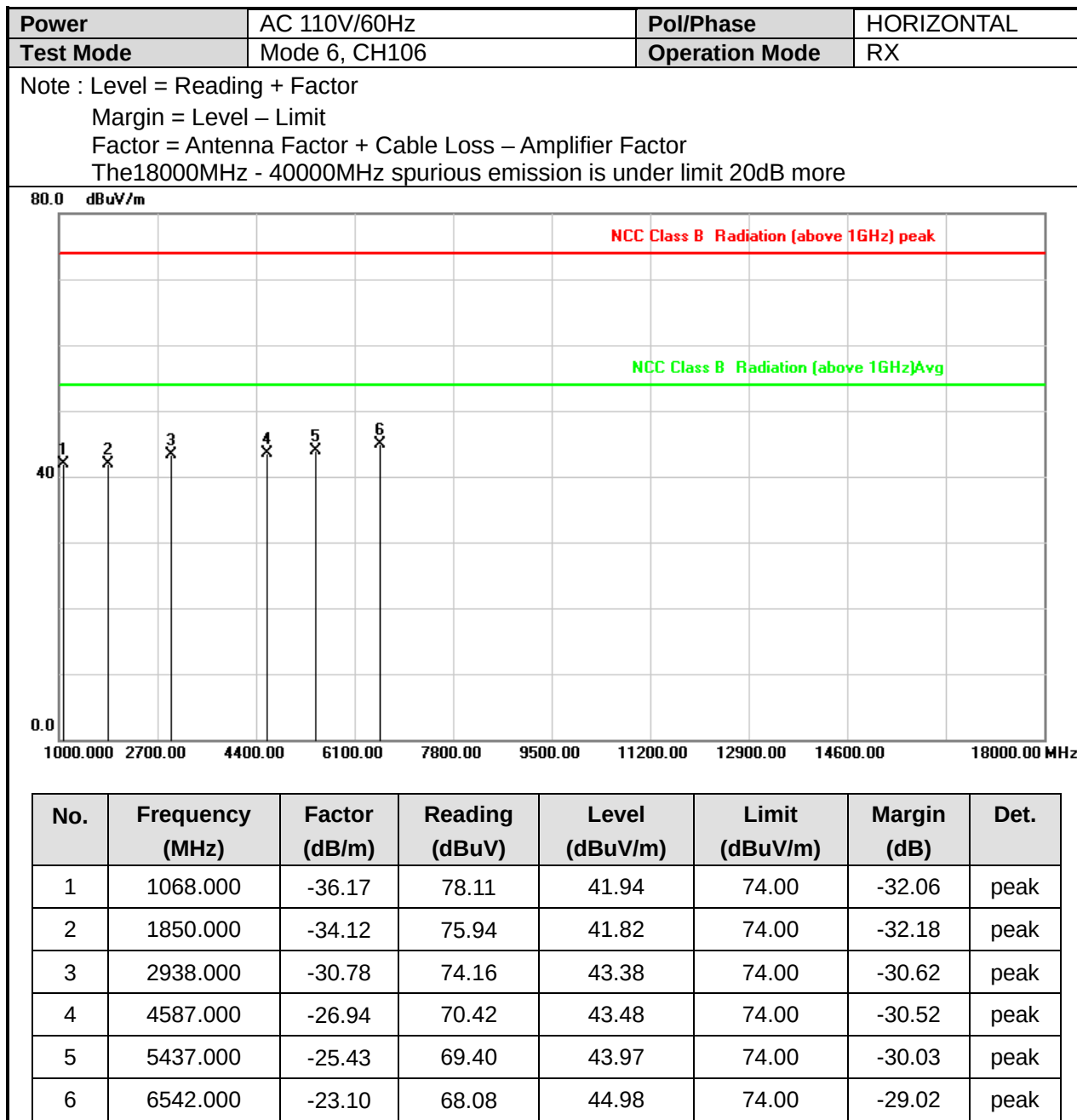


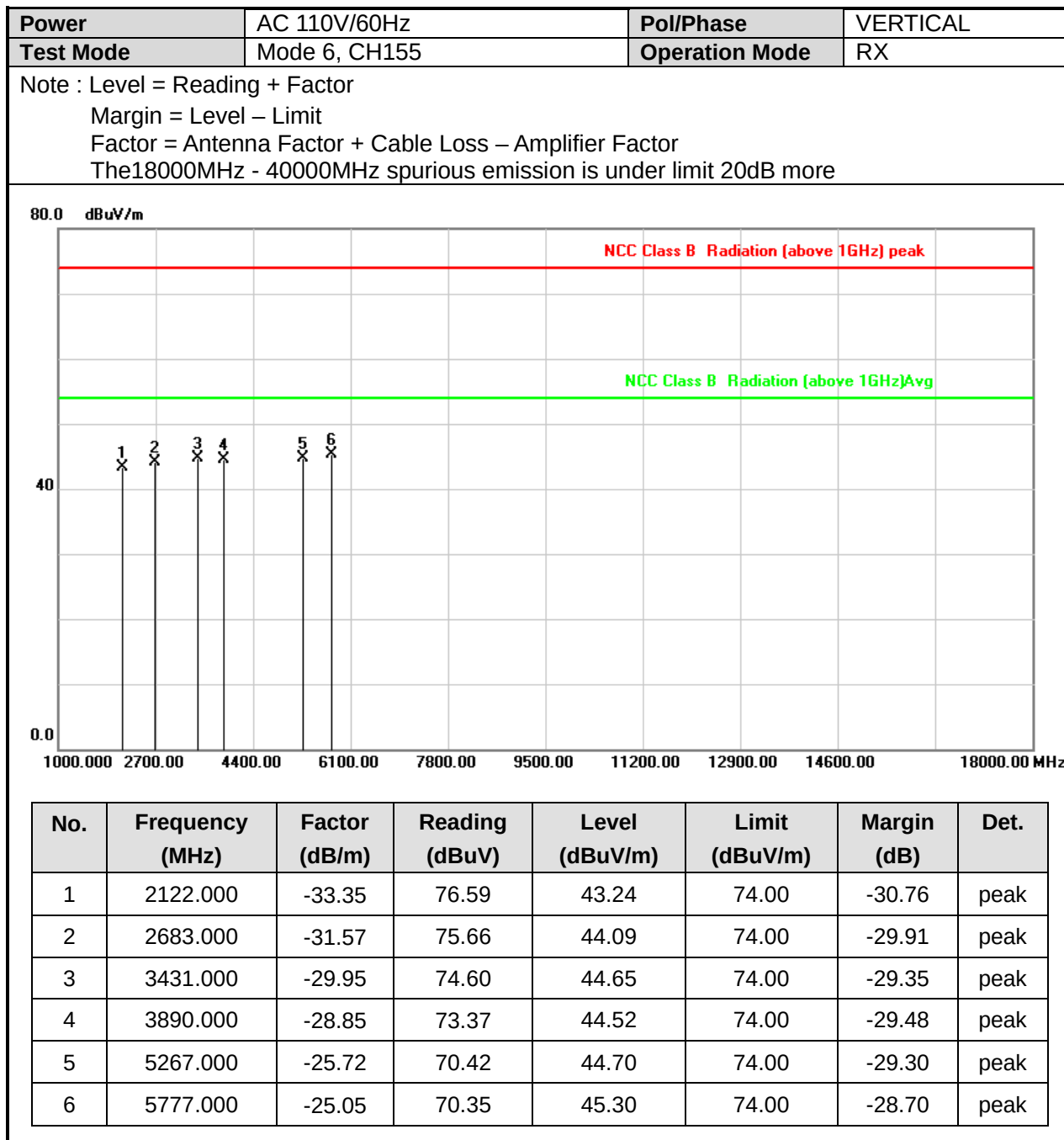


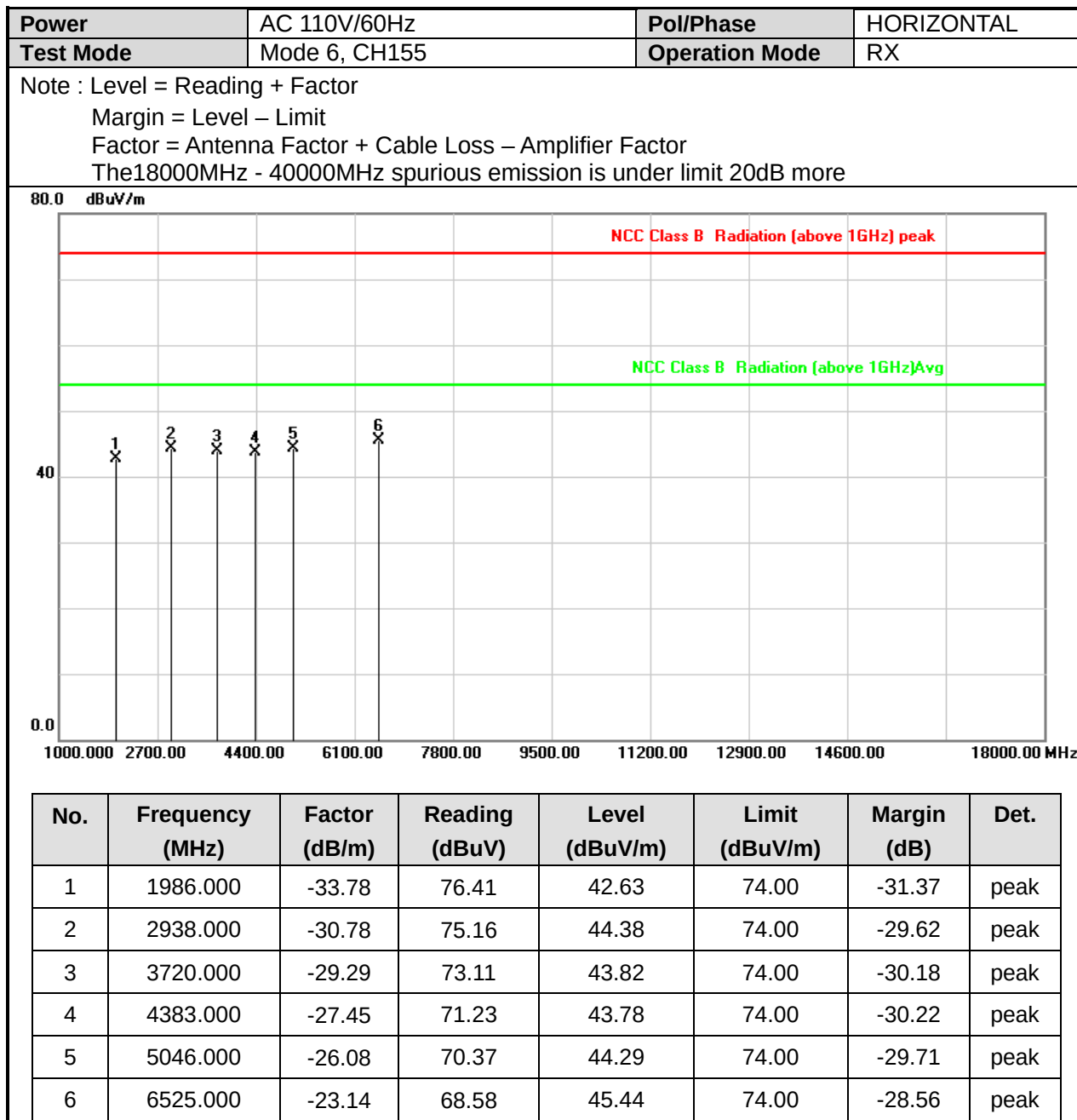








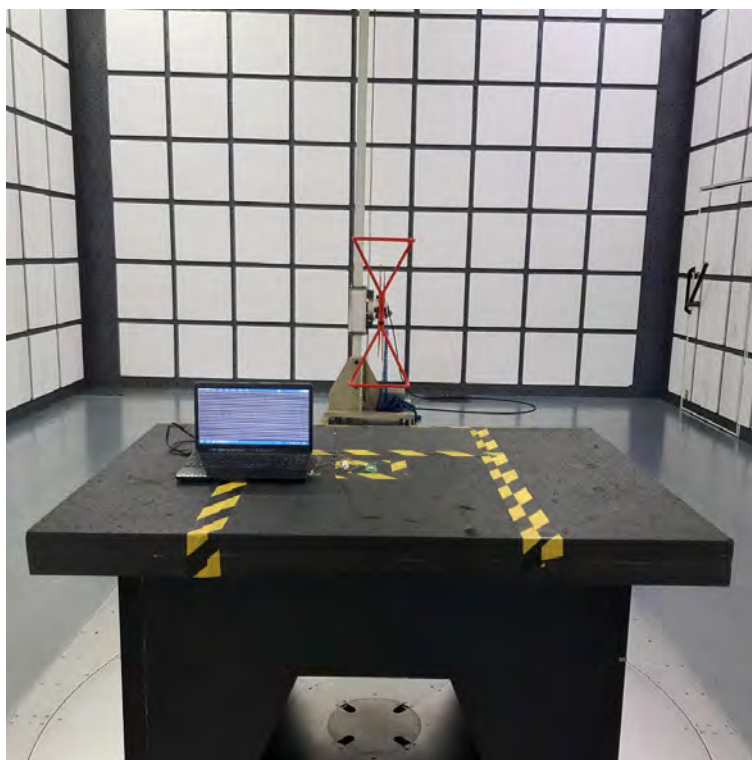






5.6. 輻射量測之配置照片(30MHz ~ 1GHz)

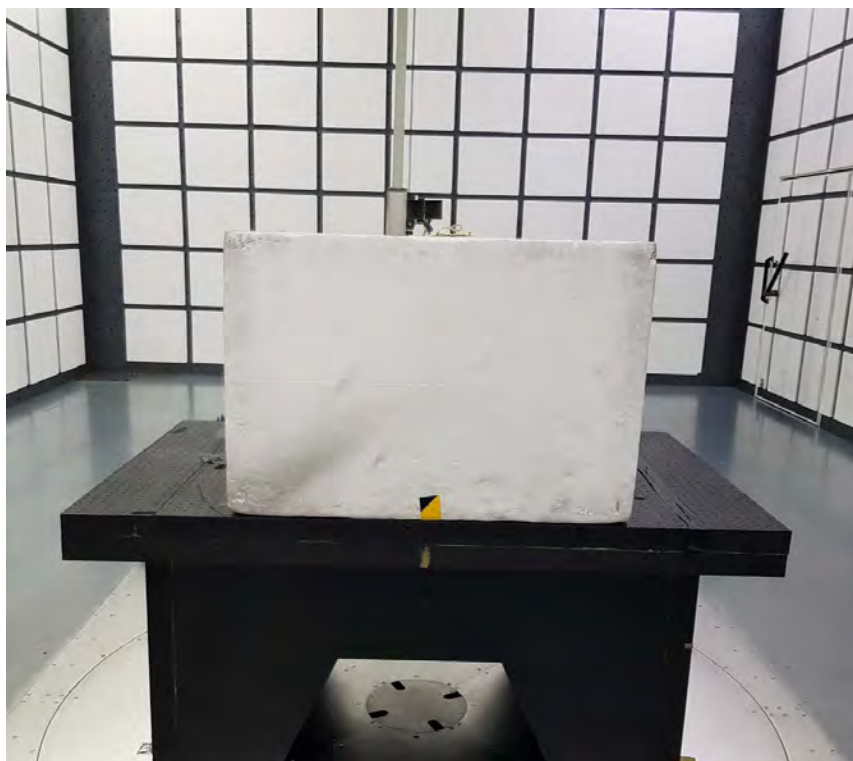
正面照





5.7. 輻射量測之配置照片 (Above 1GHz)

正面照





6. On Time, Duty Cycle and Measurement methods

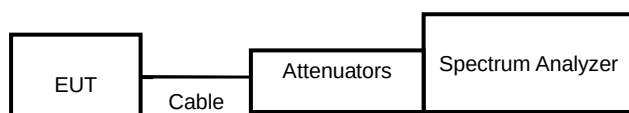
6.1. 適用標準

None; for reporting purposes only.

6.2. 測試方法

KDB 789033 Zero-Span Spectrum Analyzer Method.

6.3. 測試配置



6.4. 測試結果及數據

For 1TX

Modulation Type	On Time (msec)	Period Time (msec)	Duty Cycle (%)
802.11a	100.00	100.00	100.00%
802.11ac VHT20	100.00	100.00	100.00%
802.11ac VHT40	100.00	100.00	100.00%
802.11ac VHT80	100.00	100.00	100.00%

For 2TX

Modulation Type	On Time (msec)	Period Time (msec)	Duty Cycle (%)
802.11ac VHT20	100.00	100.00	100.00%
802.11ac VHT40	100.00	100.00	100.00%
802.11ac VHT80	100.00	100.00	100.00%

備註：繪圖資料請參考下頁。

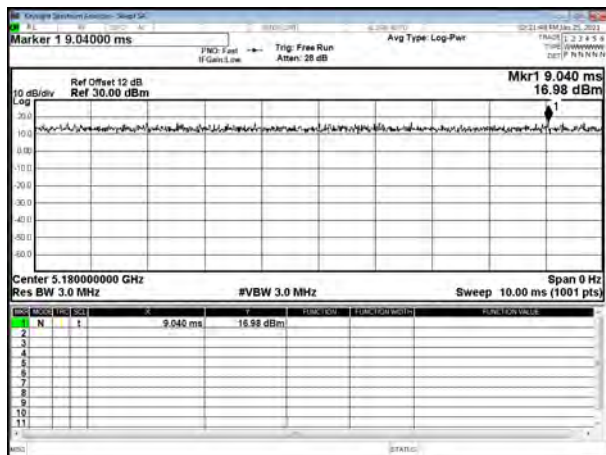
6.5. Measurement Methods

26 dB and 6dB Emission BW	KDB 789033 D02 New Rules v02r01, Section C
99% Occupied BW	KDB 789033 D02 New Rules v02r01, Section D
Conducted Output Power	KDB 789033 D02 New Rules v02r01, E.3.b (Method PM-G)
Power Spectral Density	KDB 789033 D02 New Rules v02r01, Section F
Unwanted Emission Measurement	KDB 789033 D02 New Rules v02r01, Sections G

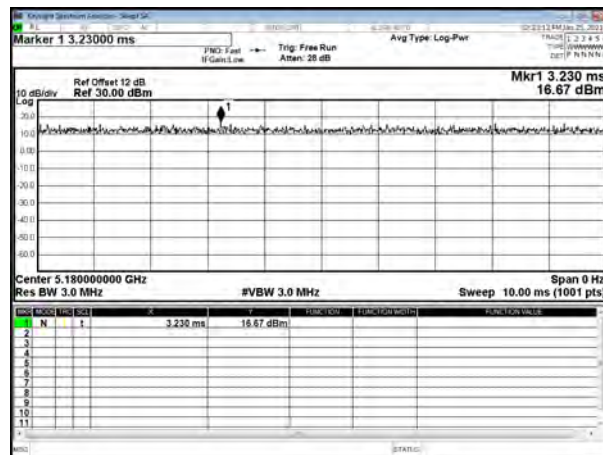


For 1TX

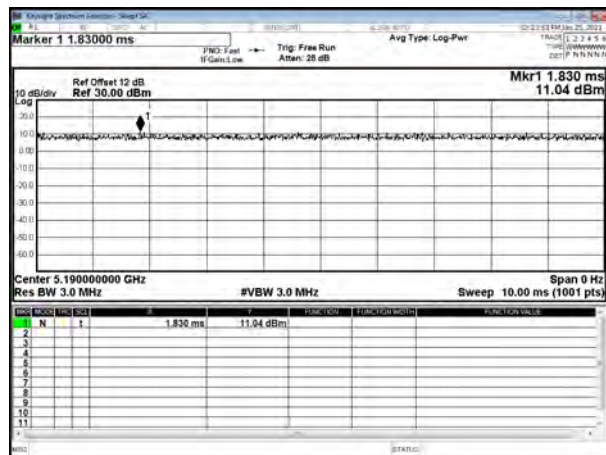
Modulation Standard: 802.11a



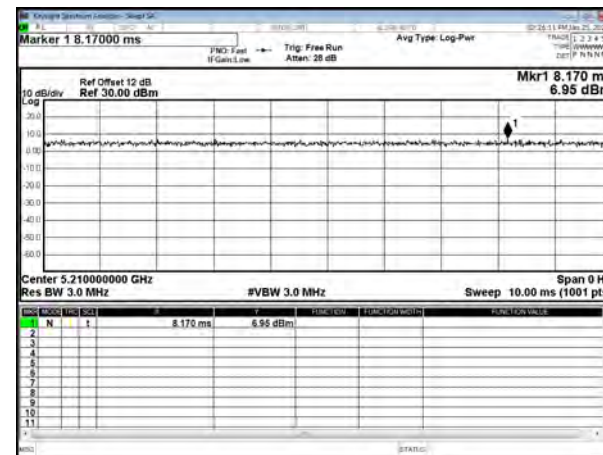
Modulation Standard: 802.11ac VHT20



Modulation Standard: 802.11ac VHT40

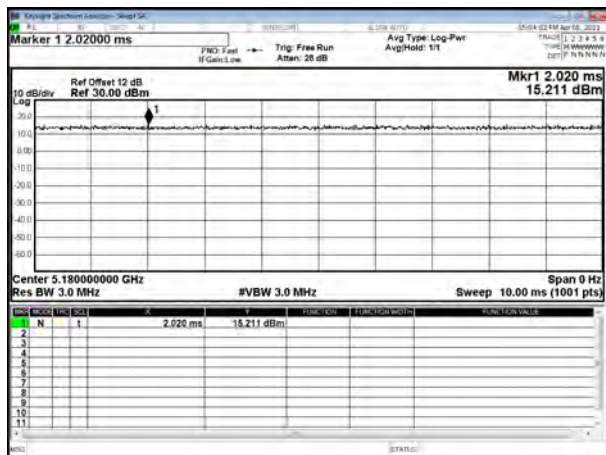


Modulation Standard: 802.11ac VHT80

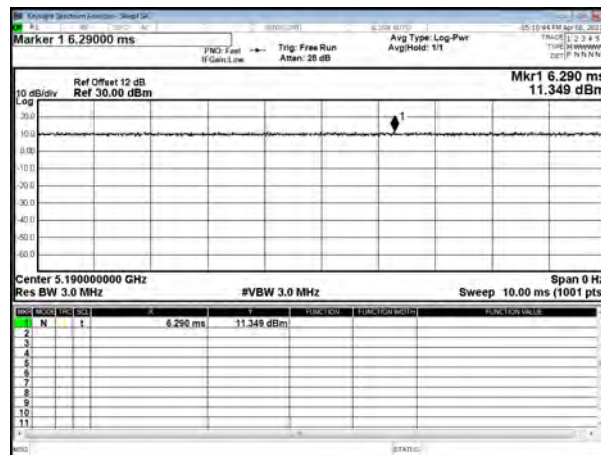




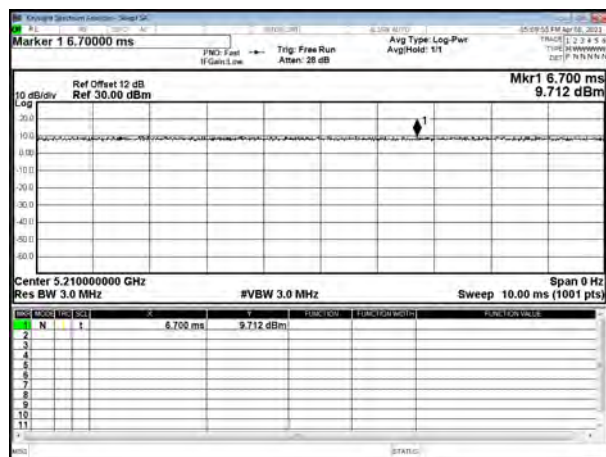
For 2TX
Modulation Standard: 802.11ac VHT20



Modulation Standard: 802.11ac VHT40



Modulation Standard: 802.11ac VHT80





7. 6dB & 99% Occupied 頻寬之規定

7.1. 適用標準

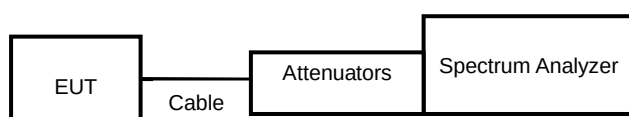
FCC §15.407

The minimum 6 dB bandwidth shall be at least 500 kHz.

7.2. 測試方法

Reference to 789033 D02 General UNII Test Procedures New Rules v01: The transmitter output is connected to a spectrum analyzer with the RBW set to 100KHz, the VBW $\geq 3 \times$ RBW, peak detector and max hold.

7.3. 測試配置



7.4. 測試結果及數據(6dB Bandwidth)

For 1TX

Modulation Type	Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
			Chain 1	
802.11a	149	5745	16.41	0.50
	157	5785	16.35	0.50
	165	5825	16.35	0.50
802.11ac VHT20	149	5745	17.61	0.50
	157	5785	17.55	0.50
	165	5825	17.31	0.50
802.11ac VHT40	155	5755	36.43	0.50
	159	5795	36.43	0.50
802.11ac VHT80	155	5775	76.41	0.50

For 2TX

Modulation Type	Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)
			Chain 1	Chain 2	
802.11ac VHT20	149	5745	17.65	17.62	0.50
	157	5785	17.67	17.59	0.50
	165	5825	17.16	17.54	0.50
802.11ac VHT40	155	5755	36.38	36.40	0.50
	159	5795	36.39	36.40	0.50
802.11ac VHT80	155	5775	76.48	75.41	0.50

備註：繪圖資料請參考下頁。



7.5. 測試結果及數據(99% Occupied Bandwidth)

For 1TX

Modulation Type	Channel	Frequency (MHz)	99% Bandwidth(MHz)
			Chain 1
802.11a	149	5745	16.37
	157	5785	16.35
	165	5825	16.34
802.11ac VHT20	149	5745	17.54
	157	5785	17.55
	165	5825	17.53
802.11ac VHT40	151	5755	36.06
	159	5795	36.11
802.11ac VHT80	155	5775	75.93

For 2TX

Modulation Type	Channel	Frequency (MHz)	99% Bandwidth(MHz)	
			Chain 1	Chain 2
802.11ac VHT20	149	5745	17.60	17.66
	157	5785	17.62	17.64
	165	5825	17.62	17.63
802.11ac VHT40	151	5755	36.22	36.18
	159	5795	36.20	36.21
802.11ac VHT80	155	5775	76.13	76.14

備註：繪圖資料請參考下頁。

7.6. 結果判定

高、中、低頻段的 6dB 頻寬皆大於 500 KHz，合乎標準規定。

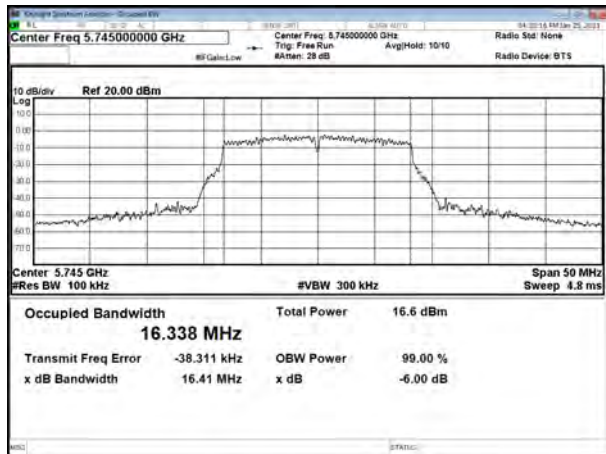


6dB Bandwidth

For 1TX
Chain 1

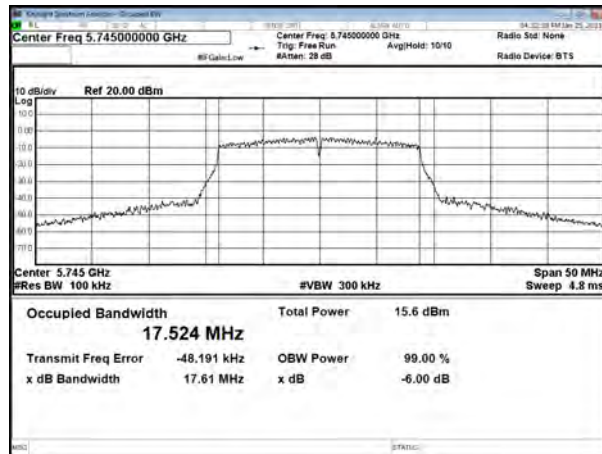
Modulation Standard: 802.11a (6Mbps)

CH149

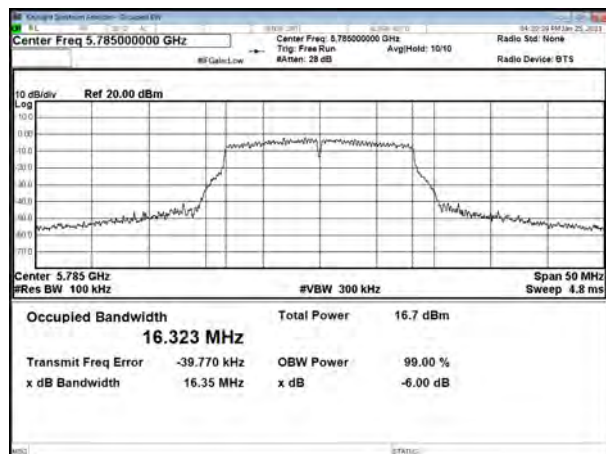


Modulation Standard: 802.11ac, VHT20
(6.5Mbps)

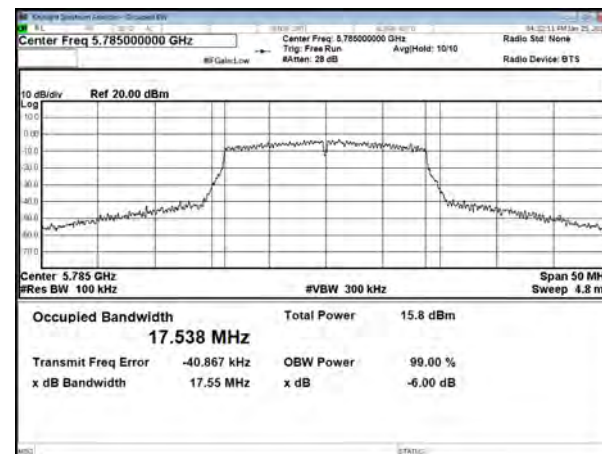
CH149



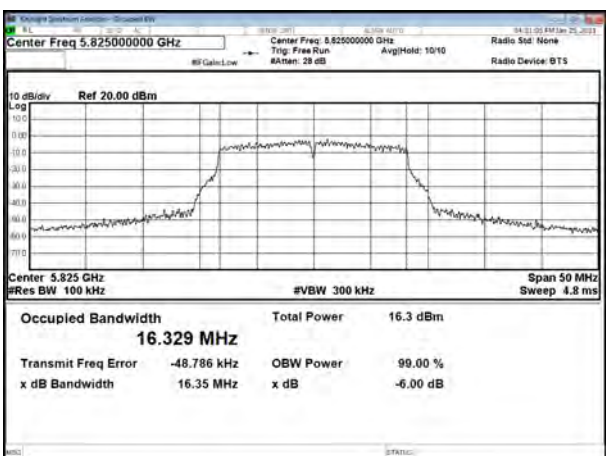
CH157



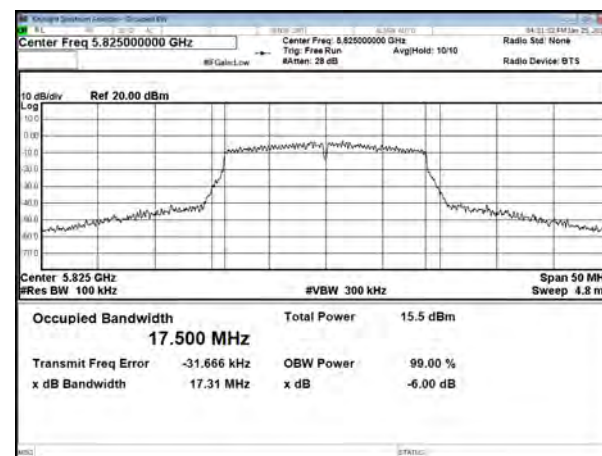
CH157



CH165

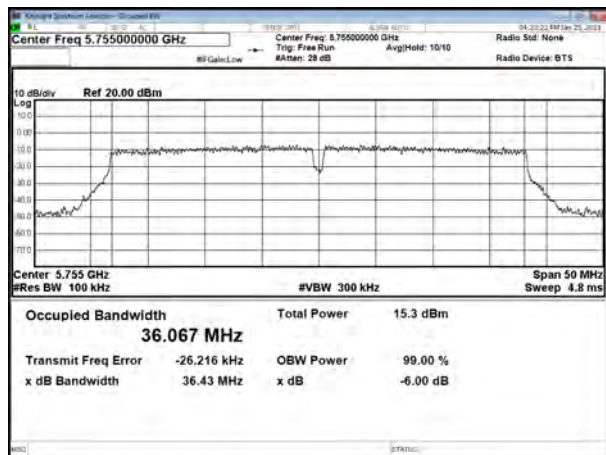


CH165

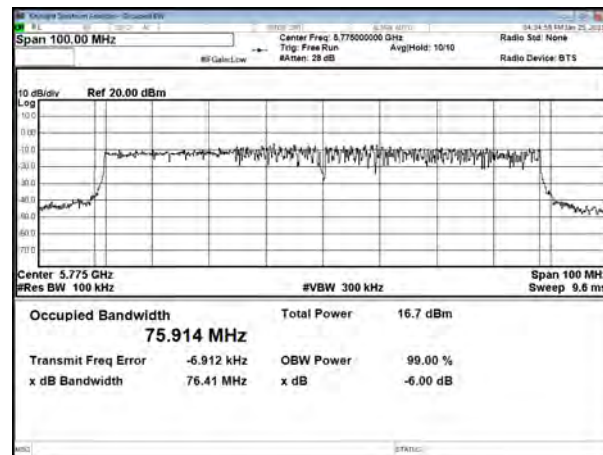




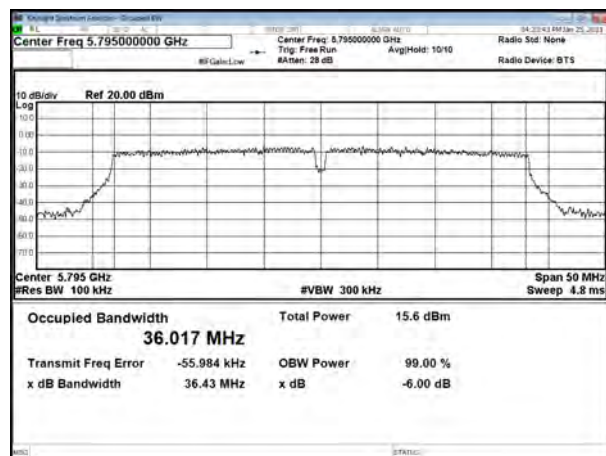
Modulation Standard: 802.11ac, VHT40 (13.5Mbps)
CH151



Modulation Standard: 802.11ac, VHT80 (29.3Mbps)
CH155

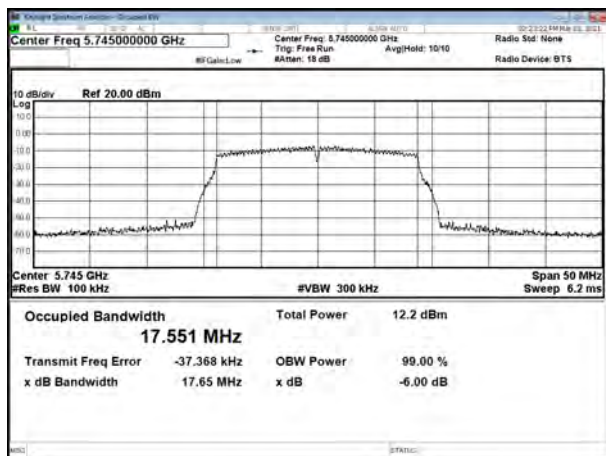


CH159

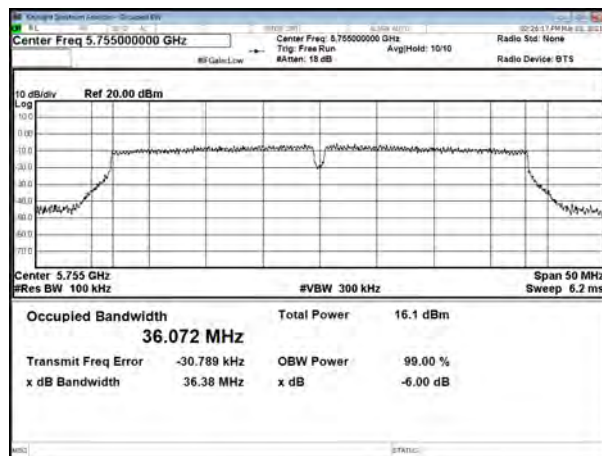




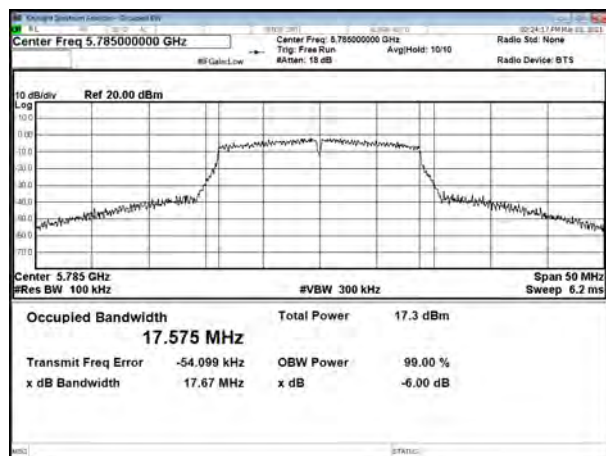
For 2TX
Chain 1
Modulation Standard: 802.11ac, VHT20
(6.5Mbps)
CH149



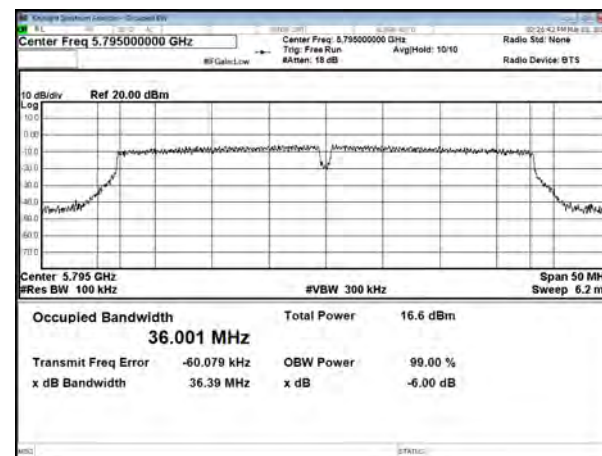
Modulation Standard: 802.11ac, VHT40
(13.5Mbps)
CH151



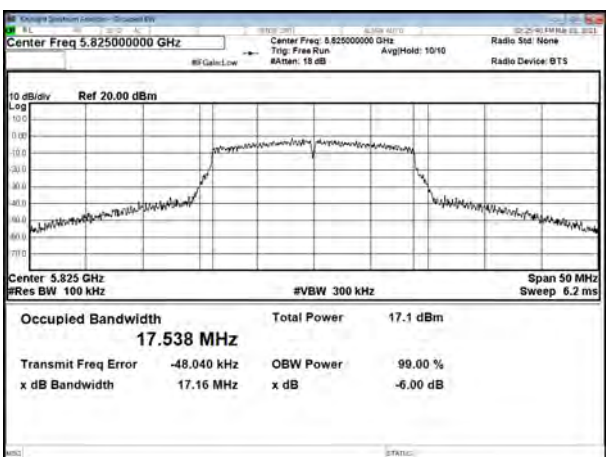
CH157



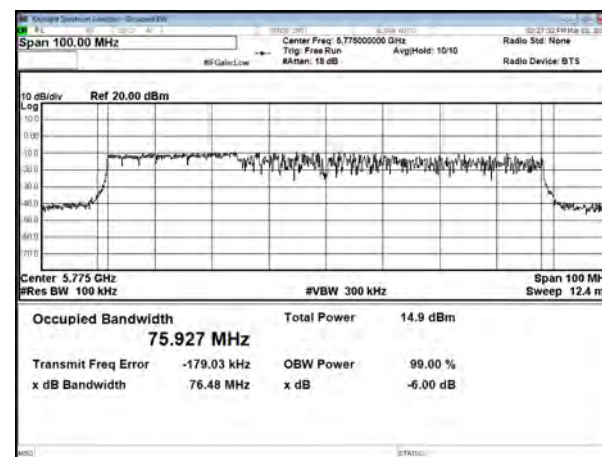
CH159



CH165

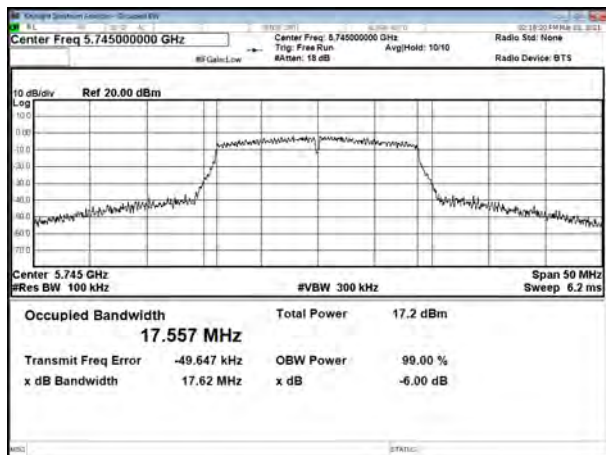


Modulation Standard: 802.11ac, VHT80
(29.3Mbps)
CH155

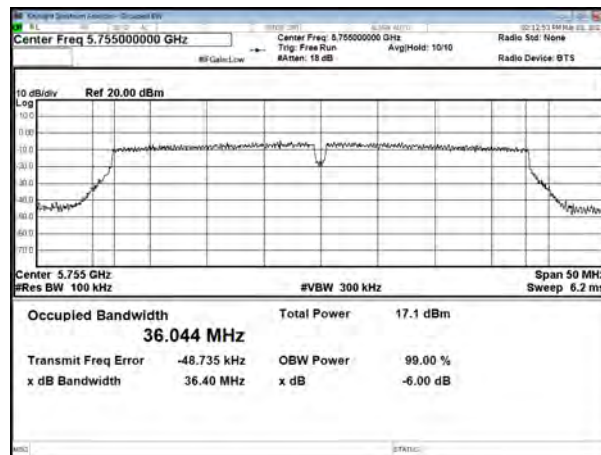




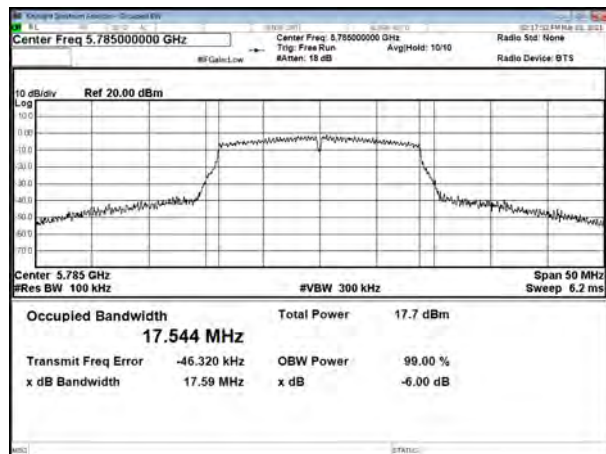
Chain 2
Modulation Standard: 802.11ac, VHT20
(6.5Mbps)
CH149



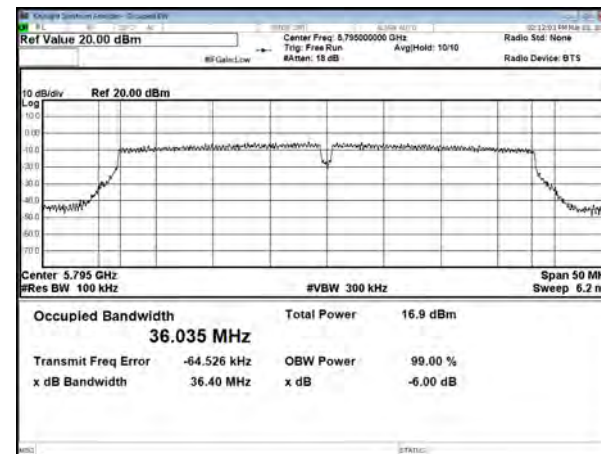
Modulation Standard: 802.11ac, VHT40
(13.5Mbps)
CH151



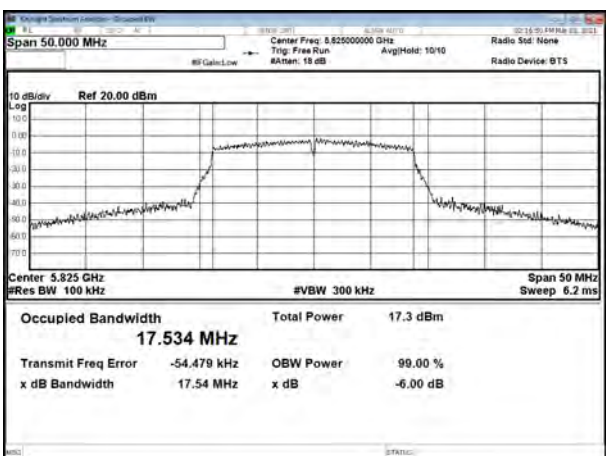
CH157



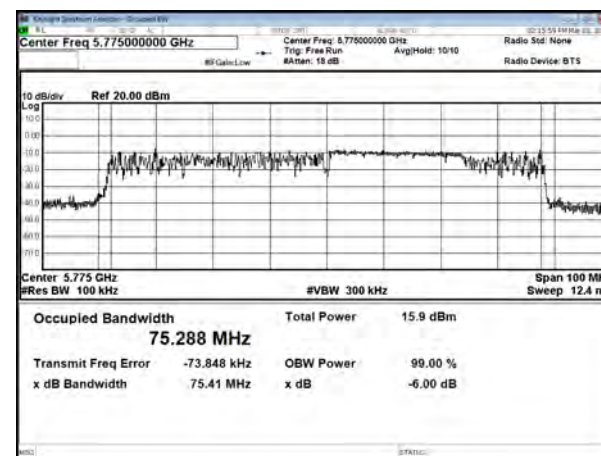
CH159



CH165



Modulation Standard: 802.11ac, VHT80
(29.3Mbps)
CH155



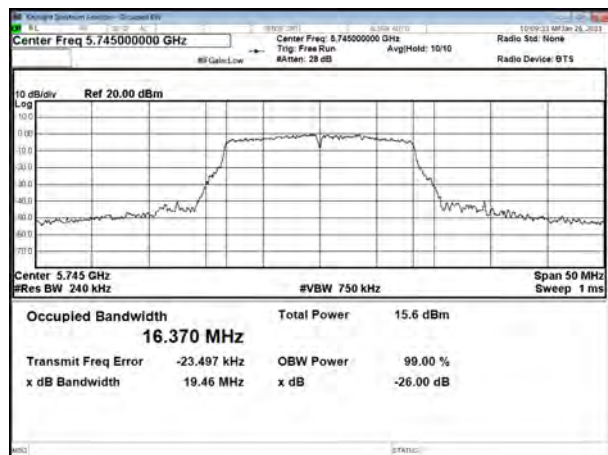


99% Occupied Bandwidth

For 1TX
Chain 1

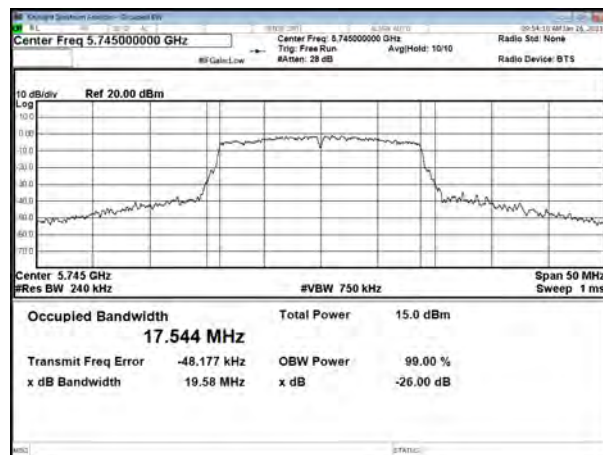
Modulation Standard: 802.11a (6Mbps)

CH149

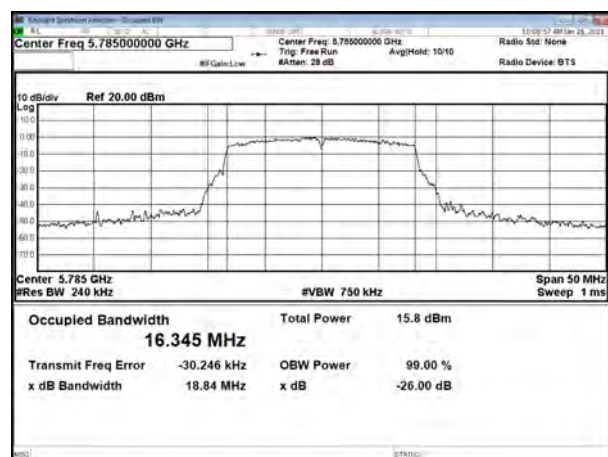


Modulation Standard: 802.11ac, VHT20
(6.5Mbps)

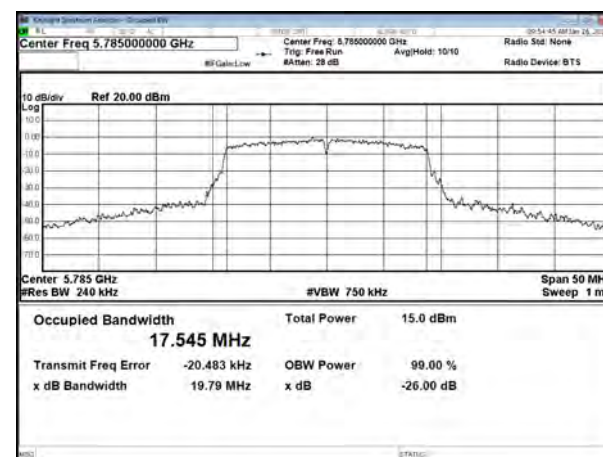
CH149



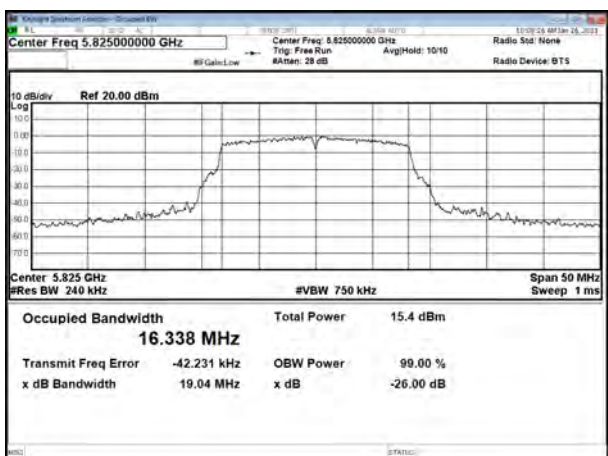
CH157



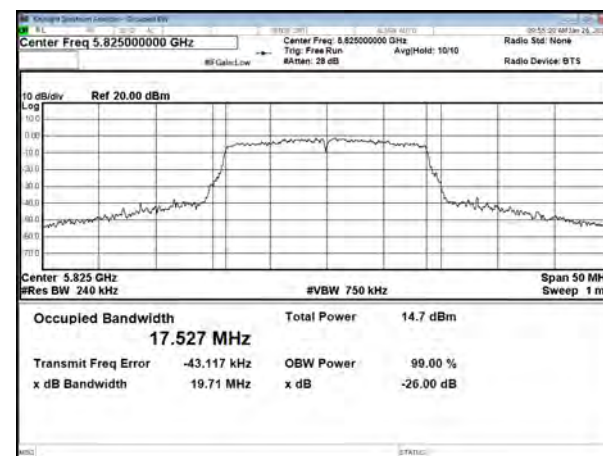
CH157



CH165

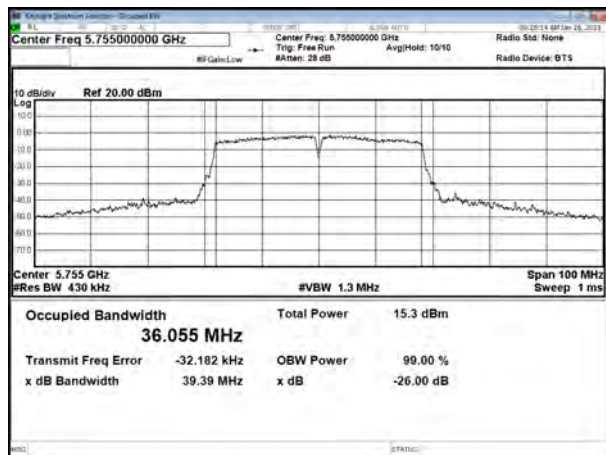


CH165

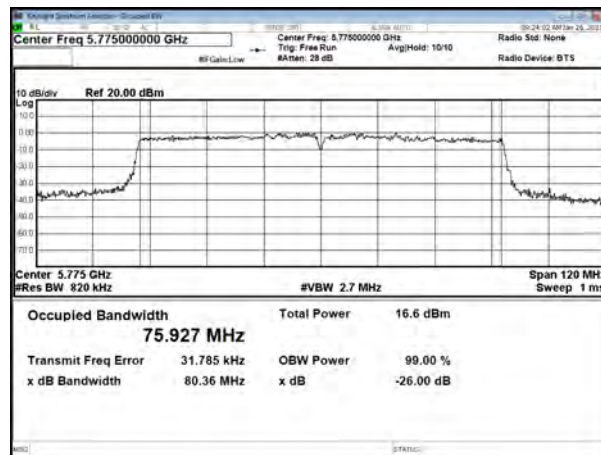




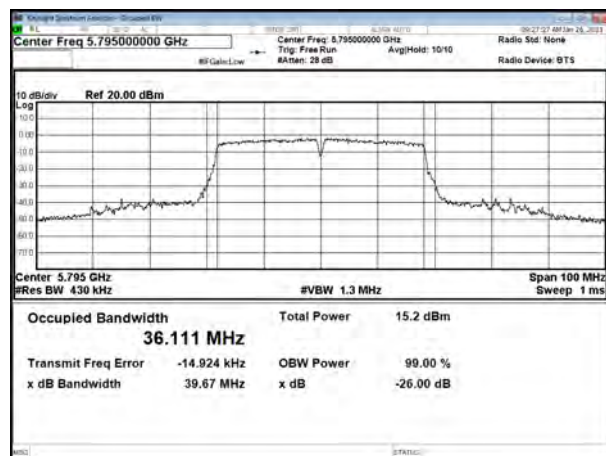
Modulation Standard: 802.11ac, VHT40 (13.5Mbps)
CH151



Modulation Standard: 802.11ac, VHT80 (29.3Mbps)
CH155



CH159

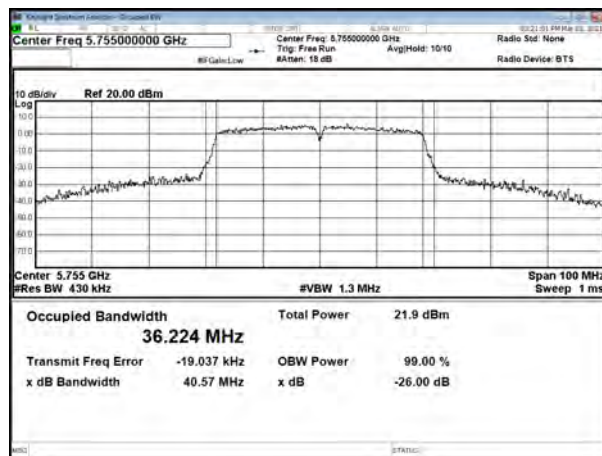




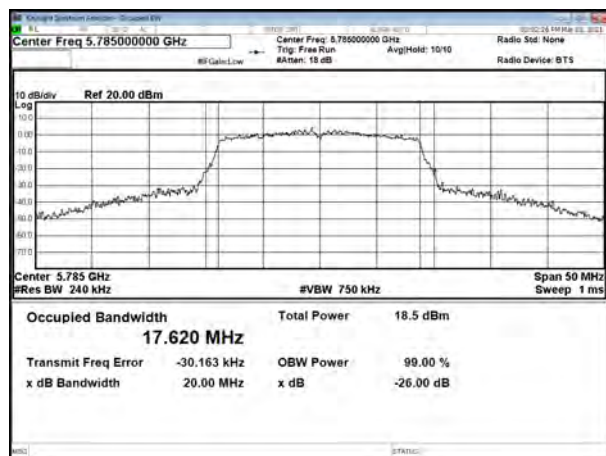
For 2TX
Chain 1
Modulation Standard: 802.11ac, VHT20
(13Mbps)
CH149



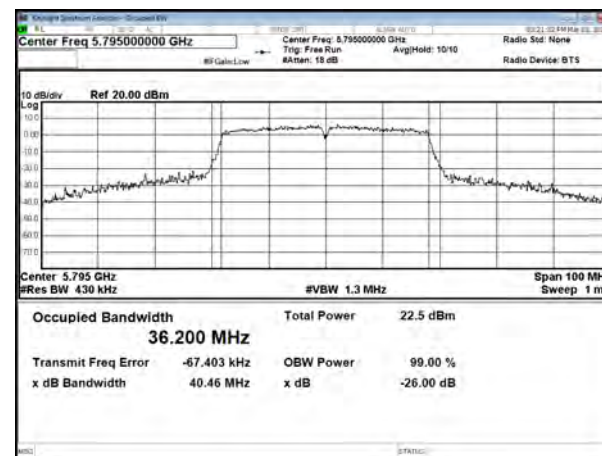
Modulation Standard: 802.11ac, VHT40
(27Mbps)
CH151



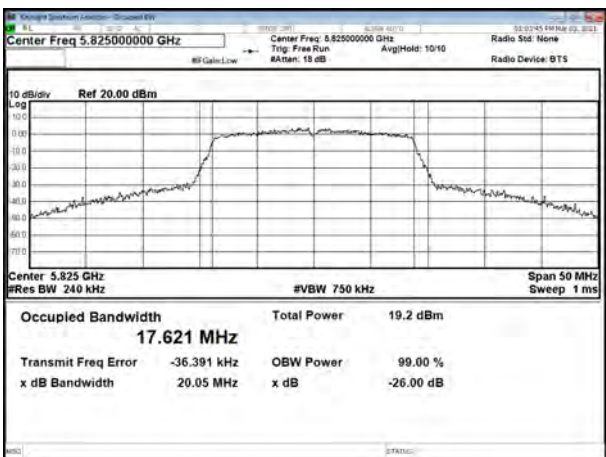
CH157



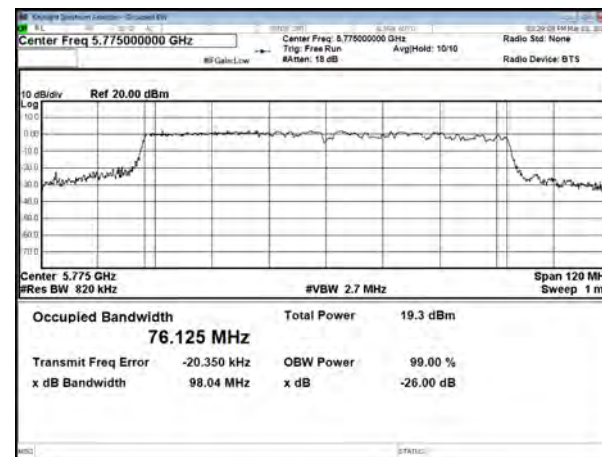
CH159



CH165

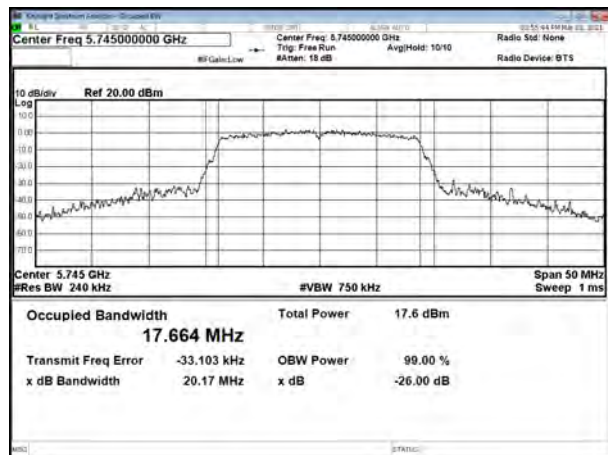


Modulation Standard: 802.11ac, VHT80
(58.5Mbps)
CH155

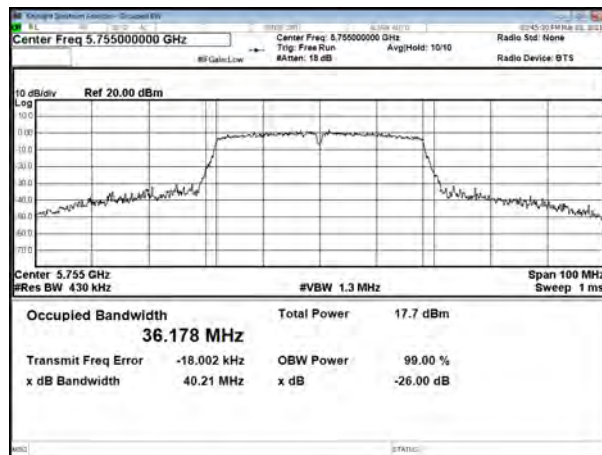




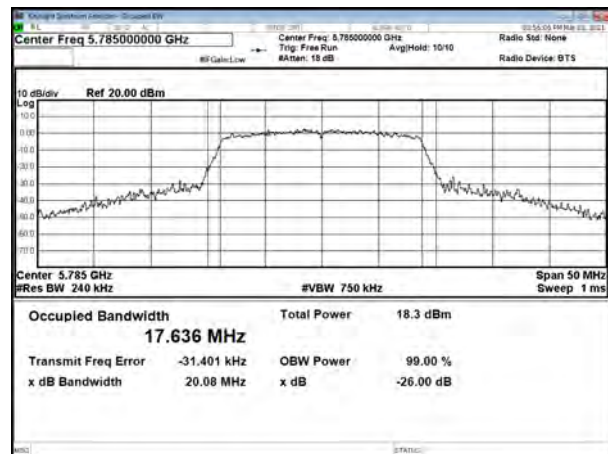
Chain 2
Modulation Standard: 802.11ac, VHT20
(13Mbps)
CH149



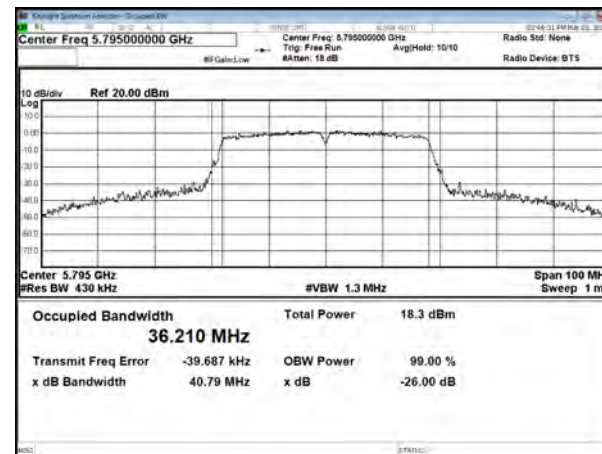
Modulation Standard: 802.11ac, VHT40
(27Mbps)
CH151



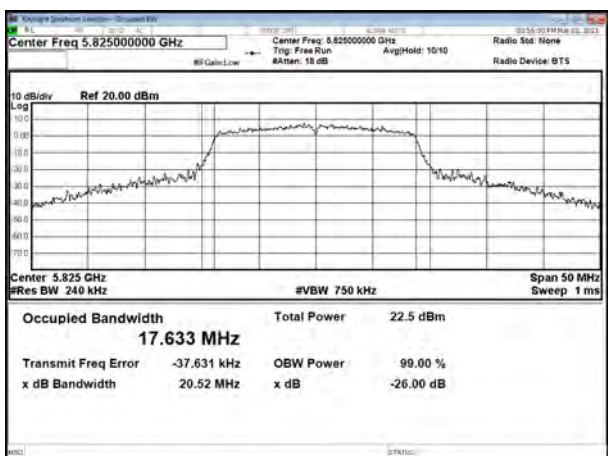
CH157



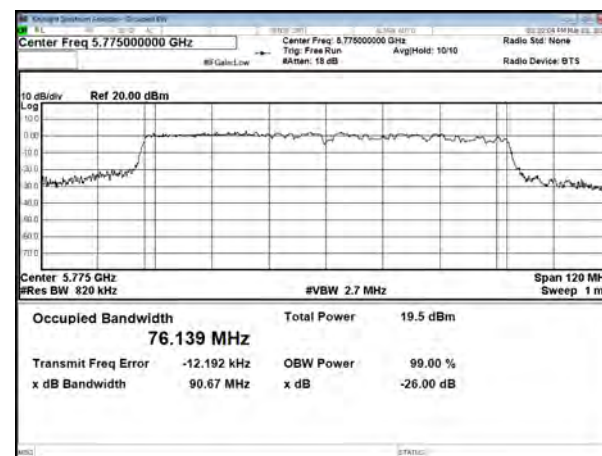
CH159



CH165



Modulation Standard: 802.11ac, VHT80
(58.5Mbps)
CH155





8. 26dB & 99% Occupied 頻寬之規定

8.1. 適用標準

None; for reporting purposes only.

8.2. 測試方法

The EUT was tested according to KDB 789033 for compliance to FCC 47CFR 15.407 requirements.

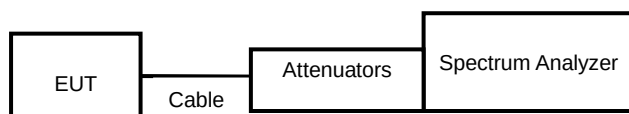
Emission Bandwidth

- Use a RBW = approximately 1% of the emission bandwidth.
- Set the VBW > RBW
- Detector = Peak.
- Trace mode = max hold.
- Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

99% Occupied Bandwidth

- Set center frequency to the nominal EUT channel center frequency.
- Set span = 1.5 times to 5.0 times the OBW.
- Set RBW = 1 % to 5 % of the OBW.
- Set VBW $\geq 3 \cdot$ RBW.
- Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- Use the 99 % power bandwidth function of the instrument (if available).
- If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

8.3. 測試配置





8.4. 測試結果及數據

In the 5.2G Band

For 1TX

Modulation Type	Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
			Chain 1	Chain 1
802.11a	36	5180	19.22	16.358
	44	5220	19.22	16.372
	48	5240	18.82	16.379
802.11ac VHT20	36	5180	19.65	17.562
	44	5220	19.81	17.552
	48	5240	19.66	17.536
802.11ac VHT40	38	5190	39.56	36.074
	46	5230	39.66	36.066
802.11ac VHT80	42	5210	80.22	75.921

For 2TX

Modulation Type	Channel	Frequency (MHz)	26dB Bandwidth (MHz)		99% Occupied Bandwidth (MHz)	
			Chain 1	Chain 2	Chain 1	Chain 2
802.11ac VHT20	36	5180	20.16	20.15	17.615	17.606
	44	5220	20.04	20.14	17.604	17.642
	48	5240	20.16	20.22	17.598	17.590
802.11ac VHT40	38	5190	40.52	40.67	36.126	36.172
	46	5230	40.53	40.35	36.211	36.144
802.11ac VHT80	42	5210	87.38	90.17	76.024	76.012

**In the 5.3G Band**

For 1TX

Modulation Type	Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
			Chain 1	Chain 1
802.11a	52	5260	19.08	16.352
	60	5300	18.83	16.342
	64	5320	19.10	16.375
802.11ac VHT20	52	5260	19.67	17.566
	60	5300	19.72	17.560
	64	5320	19.76	17.553
802.11ac VHT40	54	5270	39.38	36.027
	62	5310	39.55	36.012
802.11ac VHT80	58	5290	80.66	75.918

For 2TX

Modulation Type	Channel	Frequency (MHz)	26dB Bandwidth (MHz)		99% Occupied Bandwidth (MHz)	
			Chain 1	Chain 2	Chain 1	Chain 2
802.11ac VHT20	52	5260	20.18	20.18	17.632	17.590
	60	5300	20.16	20.15	17.629	17.677
	64	5320	20.17	20.19	17.635	17.641
802.11ac VHT40	54	5270	40.31	40.73	36.219	36.156
	62	5310	40.54	40.67	36.273	36.213
802.11ac VHT80	58	5290	90.04	94.55	76.088	76.123

**In the 5.5G Band**

For 1TX

Modulation Type	Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
			Chain 1	Chain 1
802.11a	100	5500	18.95	16.373
	116	5580	19.08	16.341
	140	5700	19.35	16.342
802.11ac VHT20	100	5500	19.49	17.538
	116	5580	19.53	17.576
	140	5700	19.78	17.547
802.11ac VHT40	102	5510	39.23	36.096
	110	5550	39.62	36.099
	134	5670	39.39	36.033
802.11ac VHT80	106	5530	80.34	75.967

For 2TX

Modulation Type	Channel	Frequency (MHz)	26dB Bandwidth (MHz)		99% Occupied Bandwidth (MHz)	
			Chain 1	Chain 2	Chain 1	Chain 2
802.11ac VHT20	100	5500	20.16	20.30	17.591	17.601
	116	5580	20.12	20.15	17.648	17.607
	140	5700	20.00	20.16	17.621	17.623
802.11ac VHT40	102	5510	40.56	40.30	36.098	36.217
	110	5550	40.63	40.14	36.156	36.177
	134	5670	40.51	40.45	36.175	36.209
802.11ac VHT80	106	5530	82.15	81.85	75.932	75.942

備註：繪圖資料請參考下頁。

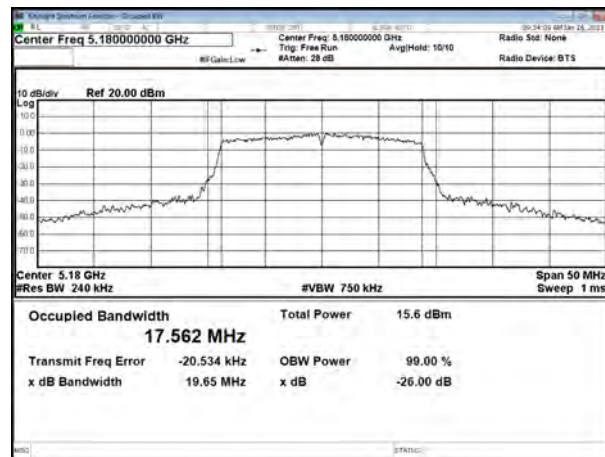
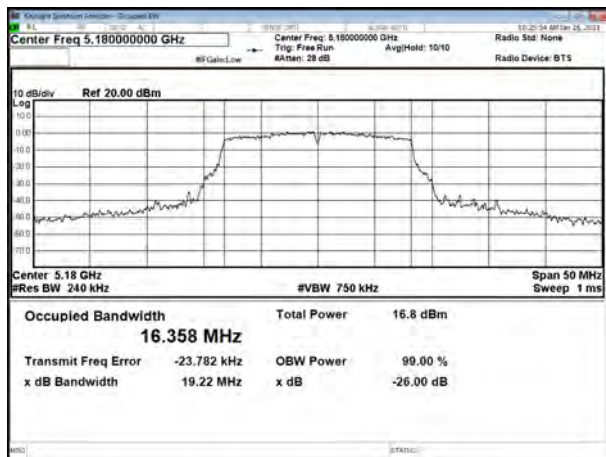
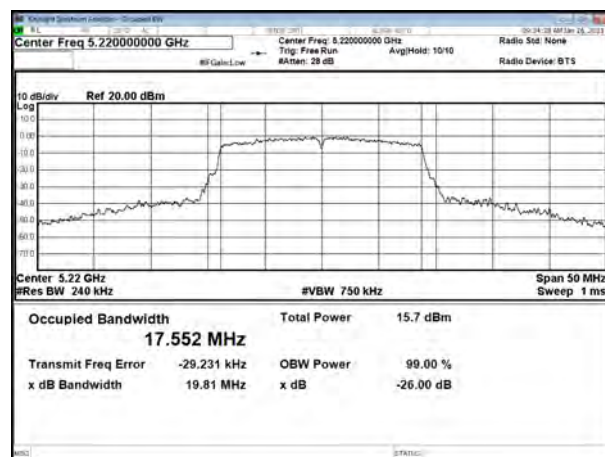
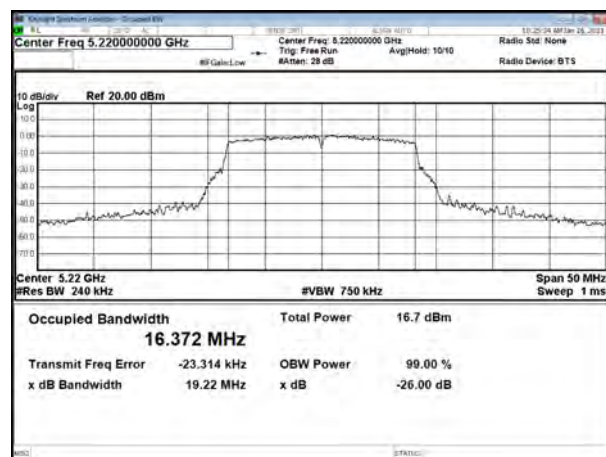
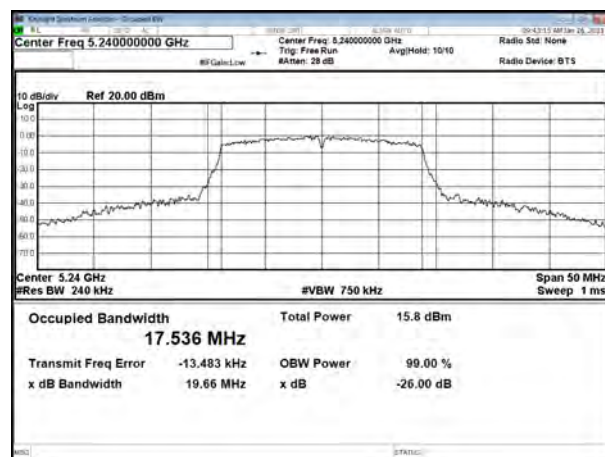
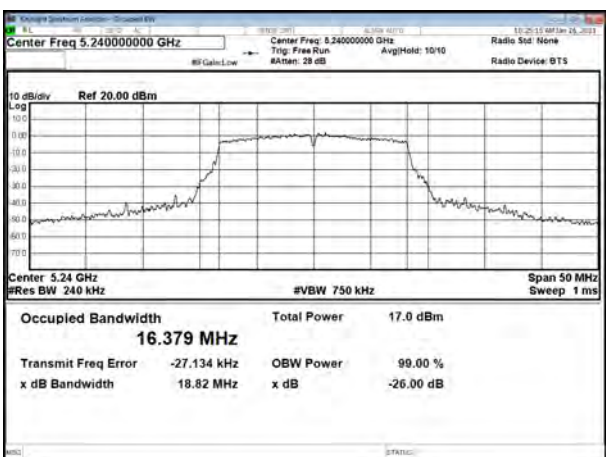
**In the 5.2G Band**

For 1TX

Chain 1

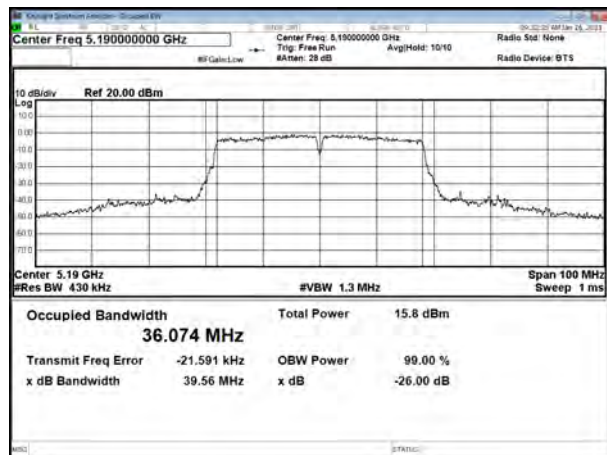
Modulation Standard: 802.11a
(6 Mbps)
CH36

Modulation Standard: 802.11ac VHT20
(6.5 Mbps)
CH36

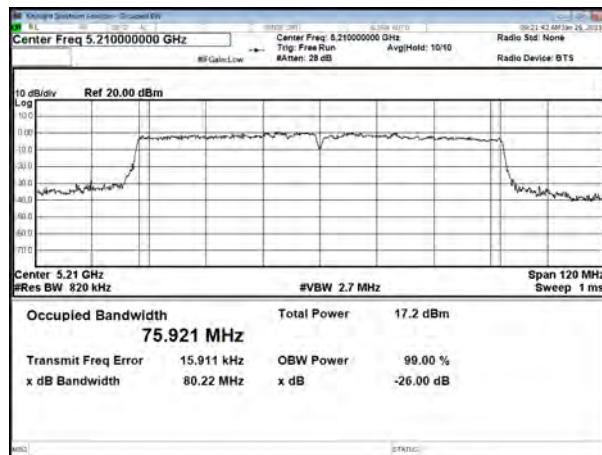
**CH44****CH44****CH48****CH48**



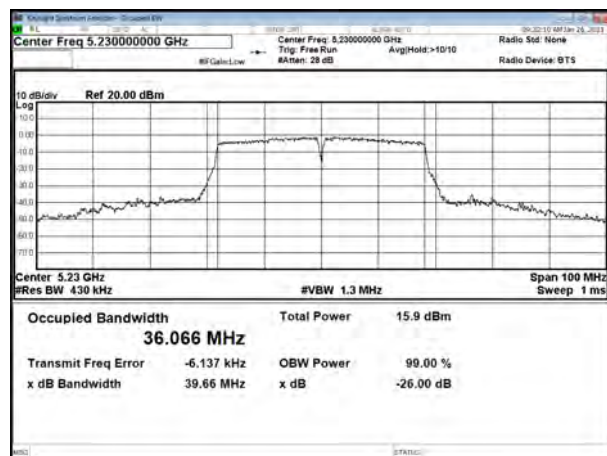
Modulation Standard: 802.11ac VHT40
(13.5 Mbps)
CH38



Modulation Standard: 802.11ac VHT80
(29.3 Mbps)
CH42



CH46





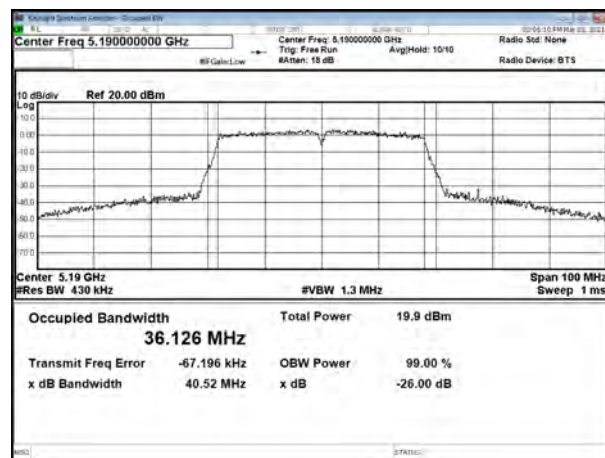
For 2TX

Chain 1

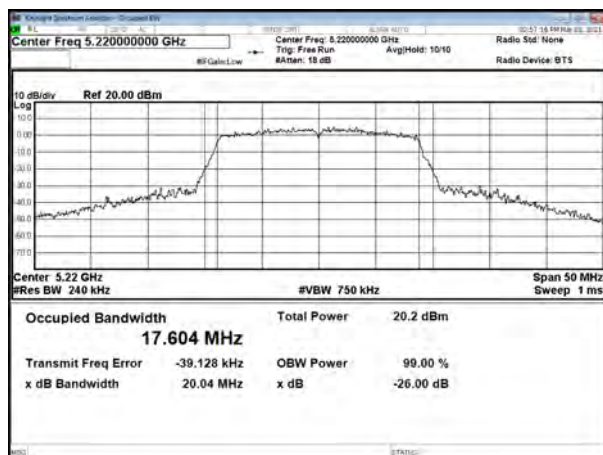
Modulation Standard: 802.11ac VHT20
(13 Mbps)
CH36



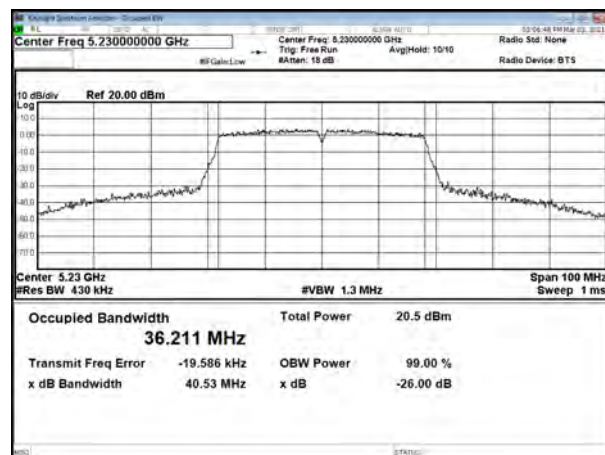
Modulation Standard: 802.11ac VHT40
(27 Mbps)
CH38



CH44

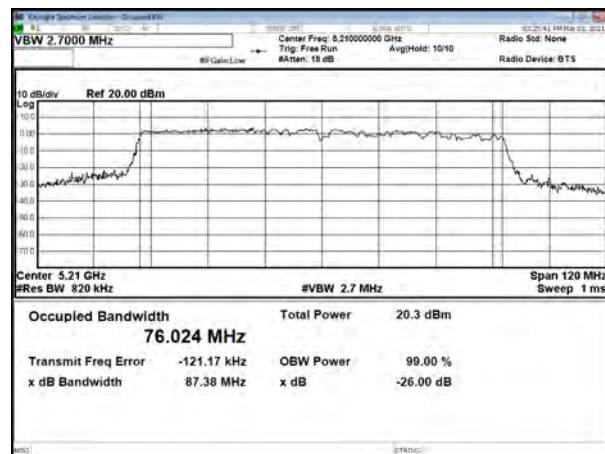
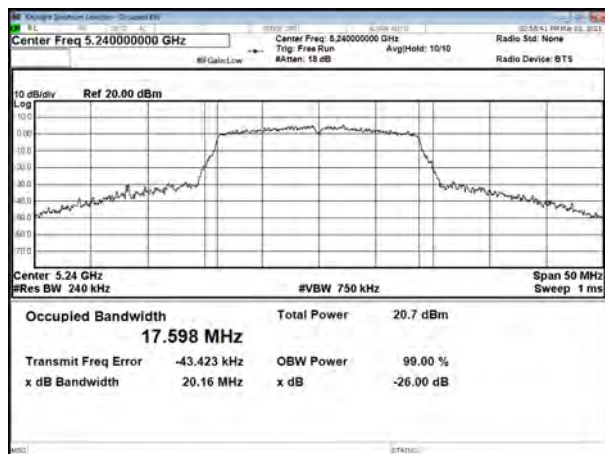


CH46



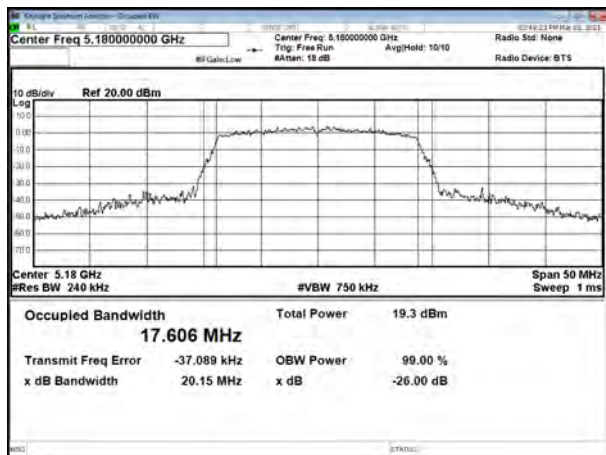
Modulation Standard: 802.11ac VHT80
(58.5 Mbps)
CH48

CH48

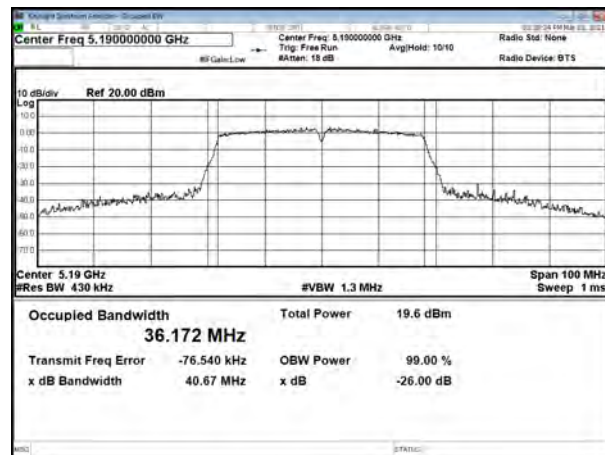




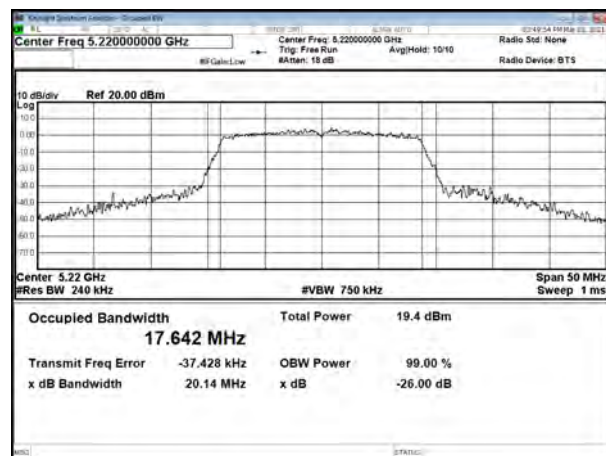
Chain 2
Modulation Standard: 802.11ac VHT20
(13 Mbps)
CH36



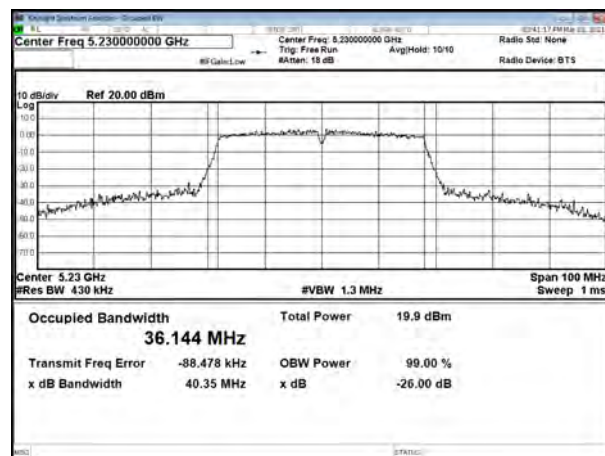
Modulation Standard: 802.11ac VHT40
(27 Mbps)
CH38



CH44

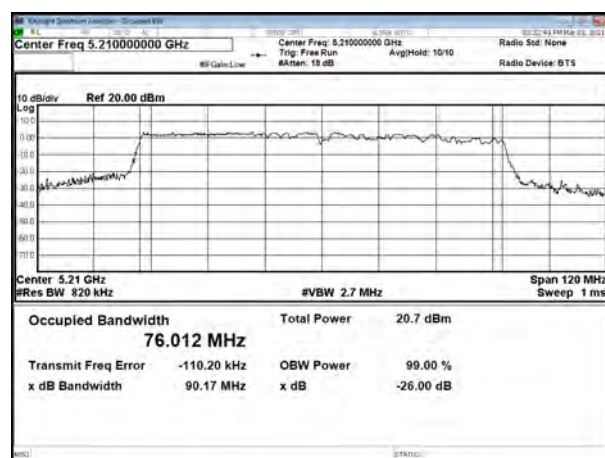
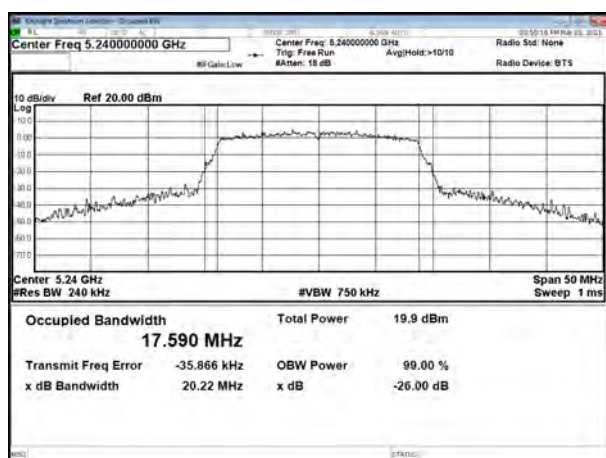


CH46



Modulation Standard: 802.11ac VHT80
(58.5 Mbps)
CH42

CH48



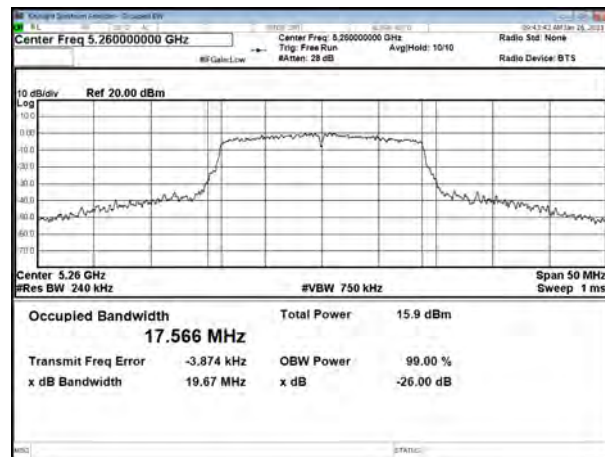
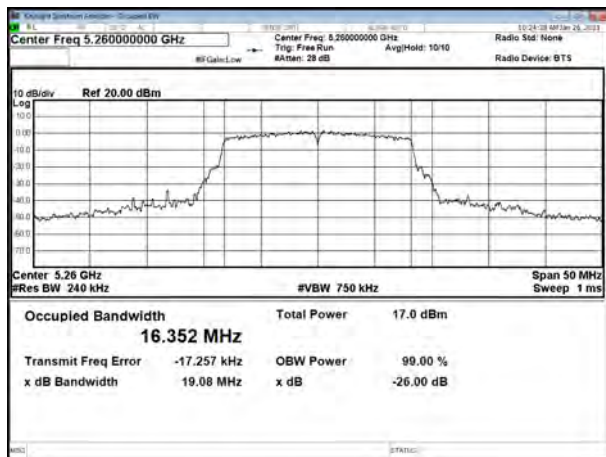
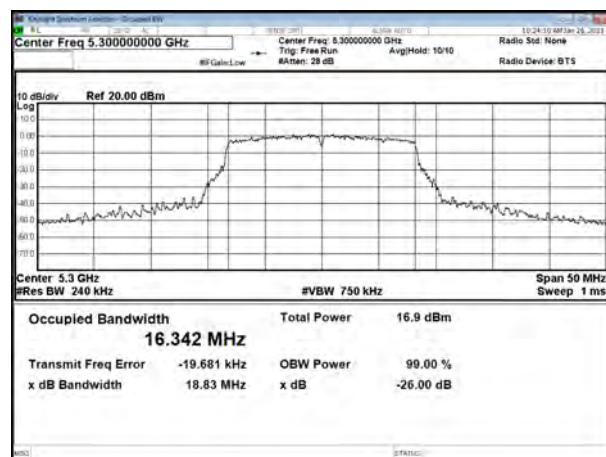
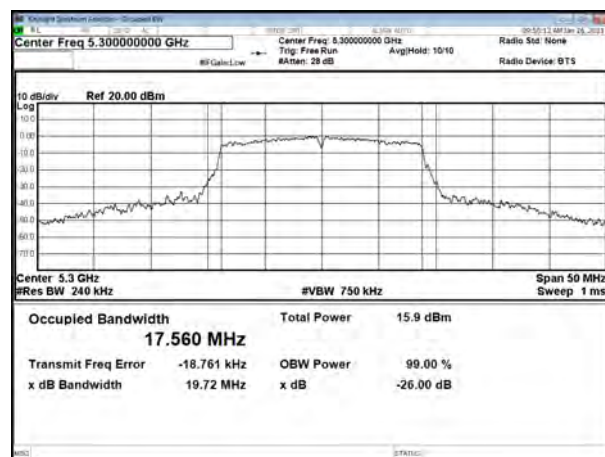
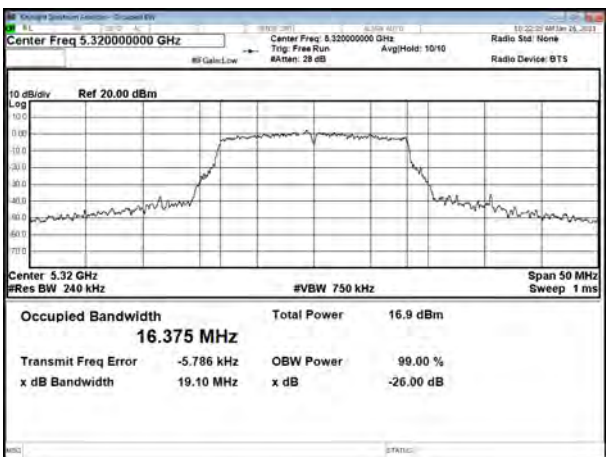
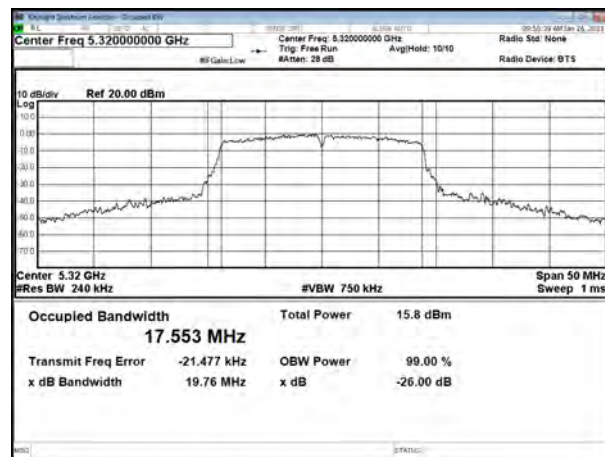
**In the 5.3G Band**

For 1TX

Chain 1

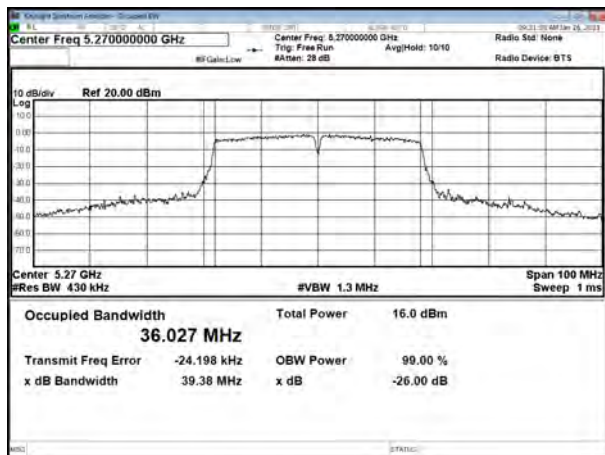
Modulation Standard: 802.11a
(6 Mbps)
CH52

Modulation Standard: 802.11ac VHT20
(6.5 Mbps)
CH52

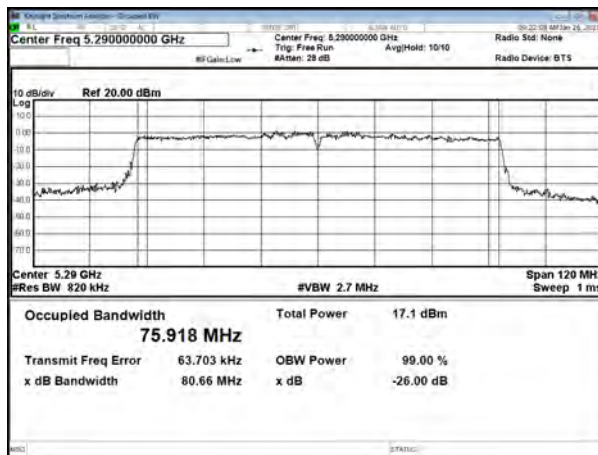
**CH60****CH60****CH64****CH64**



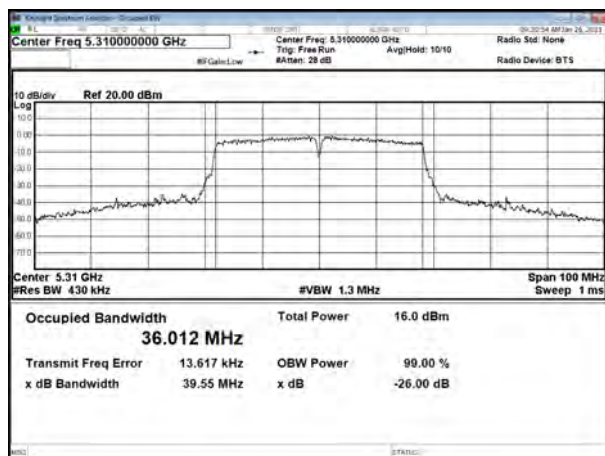
Modulation Standard: 802.11ac VHT40
(13.5 Mbps)
CH54



Modulation Standard: 802.11ac VHT80
(29.3 Mbps)
CH58



CH62





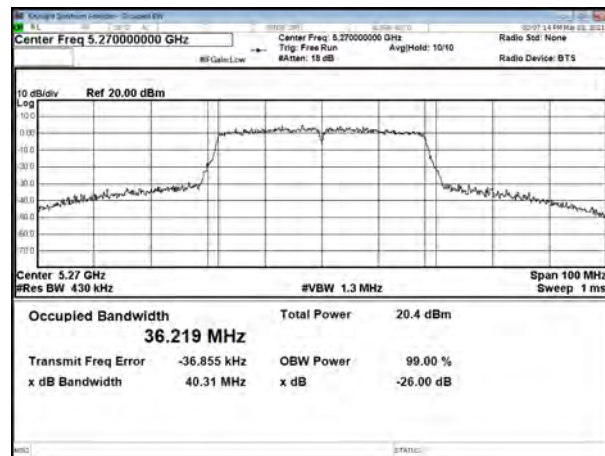
For 2TX

Chain 1

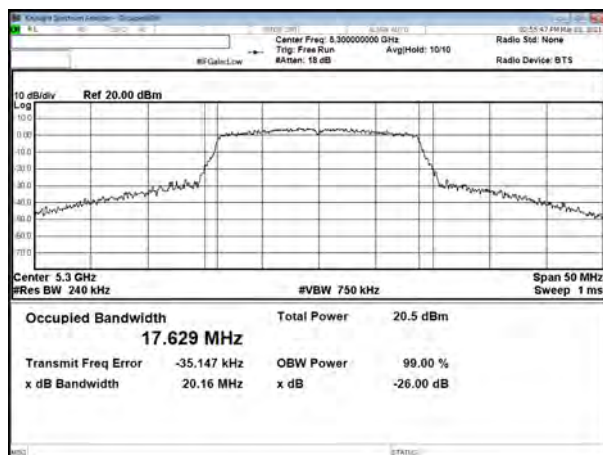
Modulation Standard: 802.11ac VHT20
(13 Mbps)
CH52



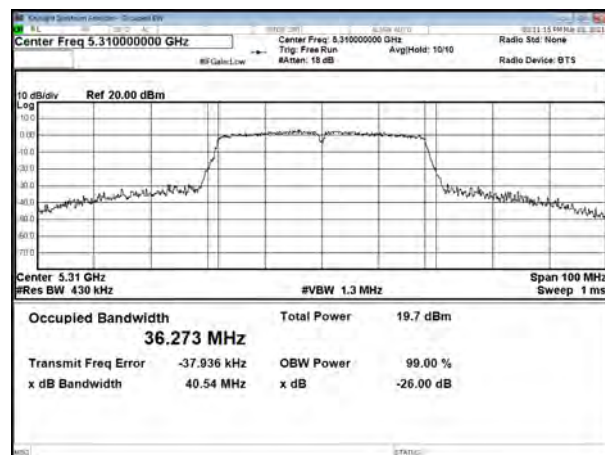
Modulation Standard: 802.11ac VHT40
(27 Mbps)
CH54



CH60

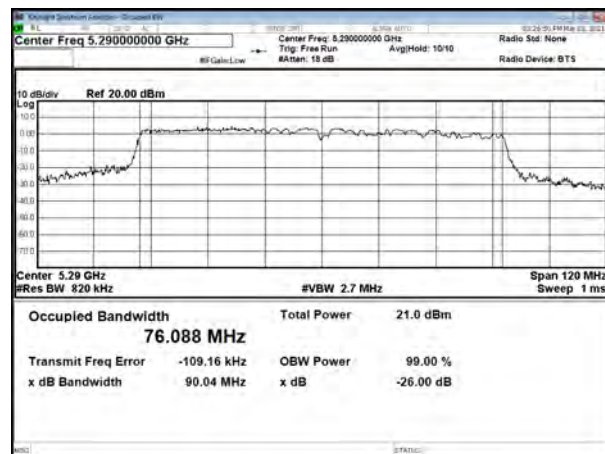


CH62



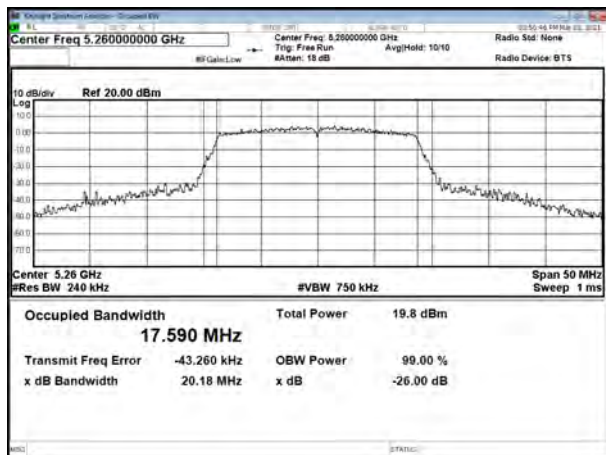
Modulation Standard: 802.11ac VHT80
(58.5 Mbps)
CH58

CH64

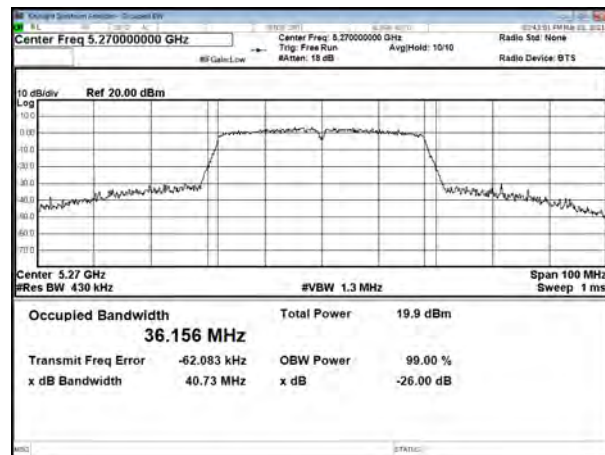




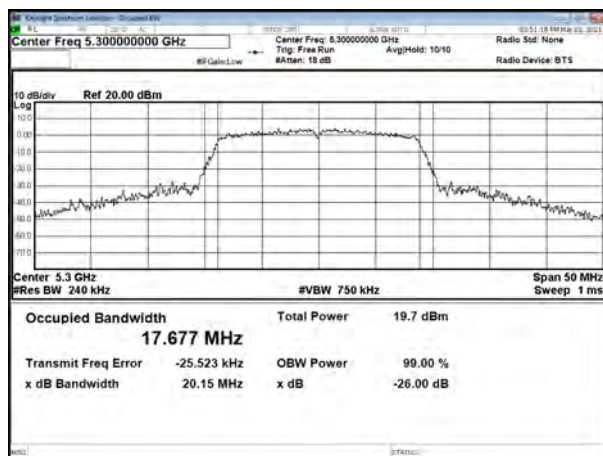
Chain 2
Modulation Standard: 802.11ac VHT20
(13 Mbps)
CH52



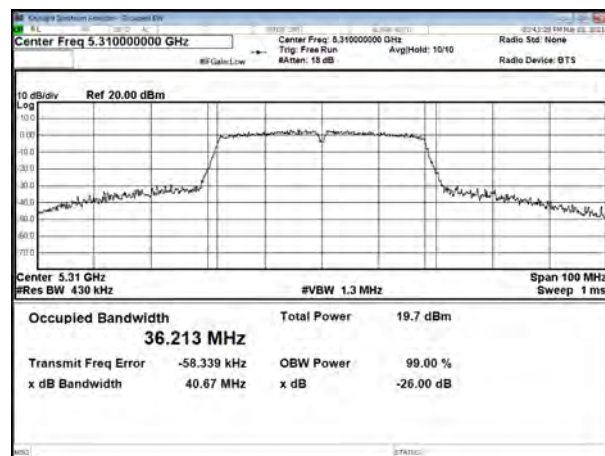
Modulation Standard: 802.11ac VHT40
(27 Mbps)
CH54



CH60

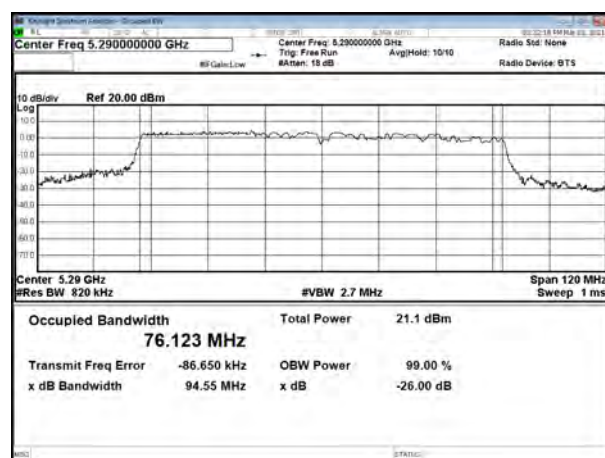
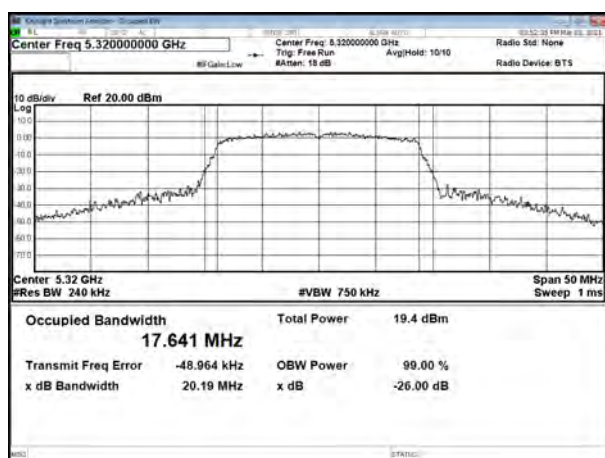


CH62



Modulation Standard: 802.11ac VHT80
(58.5 Mbps)
CH58

CH64

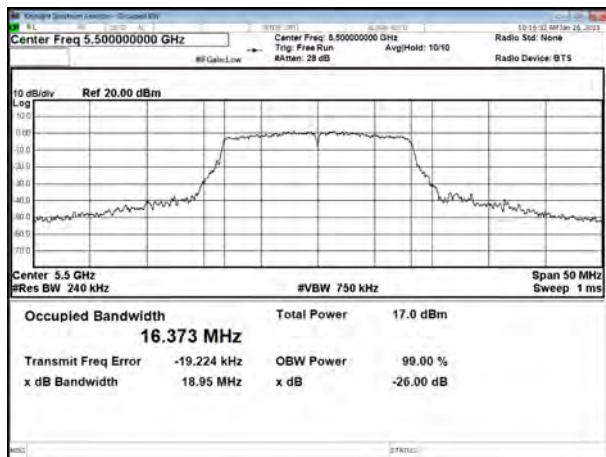


**In the 5.5G Band**

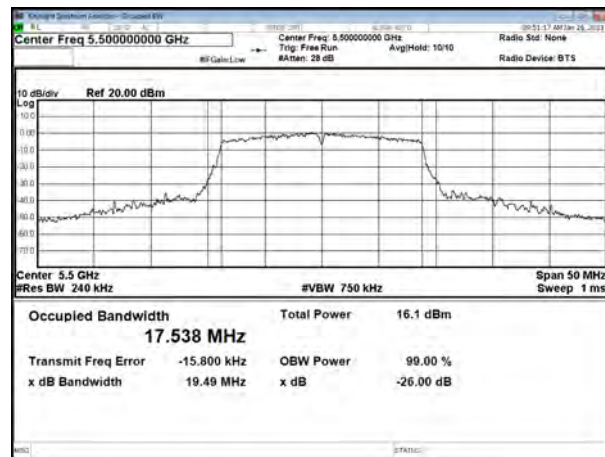
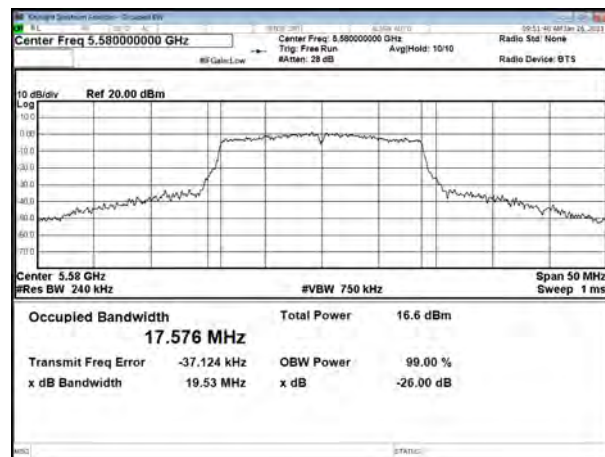
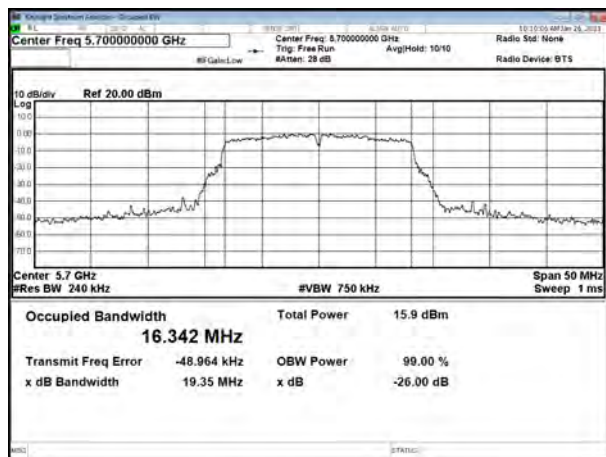
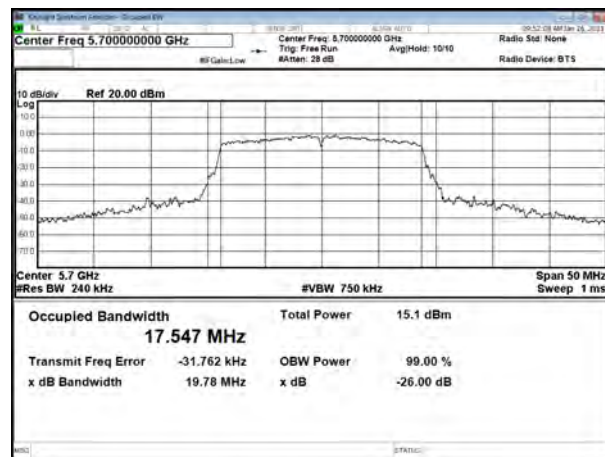
For 1TX

Chain 1

Modulation Standard: 802.11a
(6 Mbps)
CH100

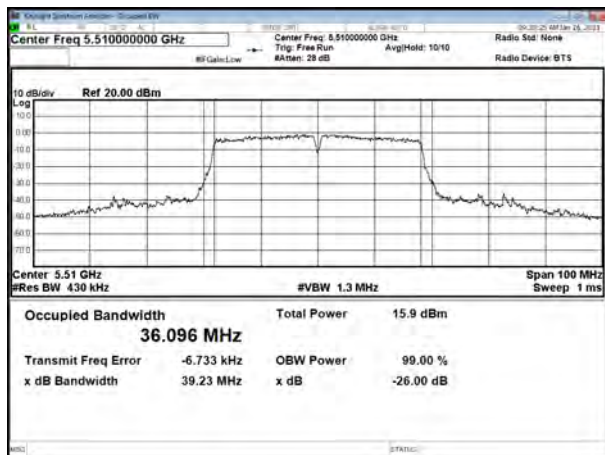


Modulation Standard: 802.11ac VHT20
(6.5 Mbps)
CH100

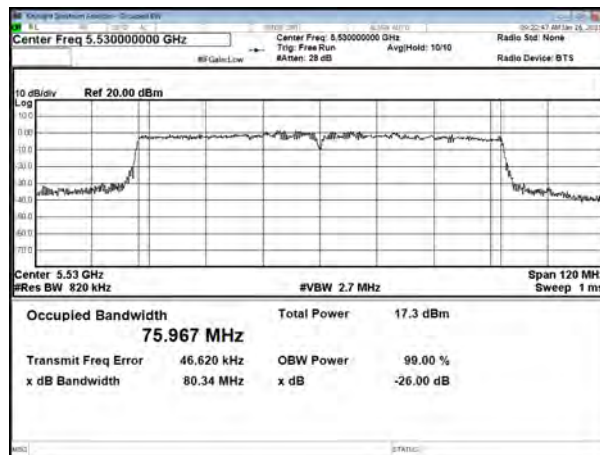
**CH116****CH116****CH140****CH140**



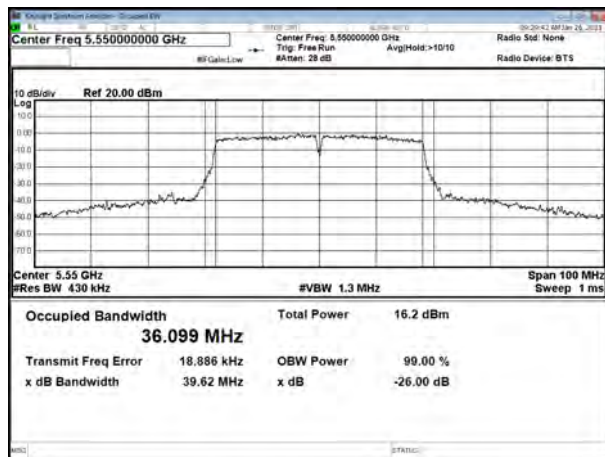
Modulation Standard: 802.11ac VHT40
(13.5 Mbps)
CH102



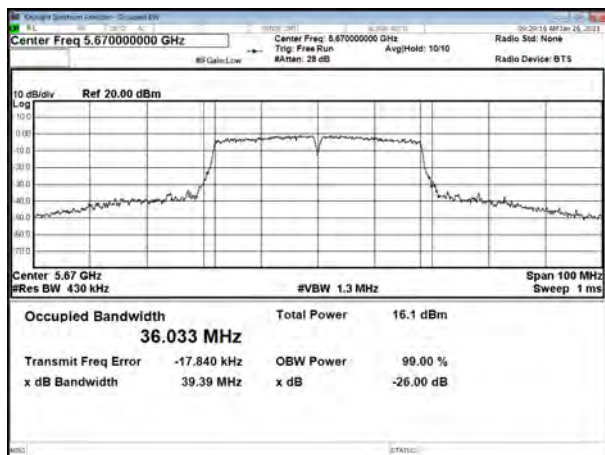
Modulation Standard: 802.11ac VHT80
(29.3 Mbps)
CH106



CH110



CH134

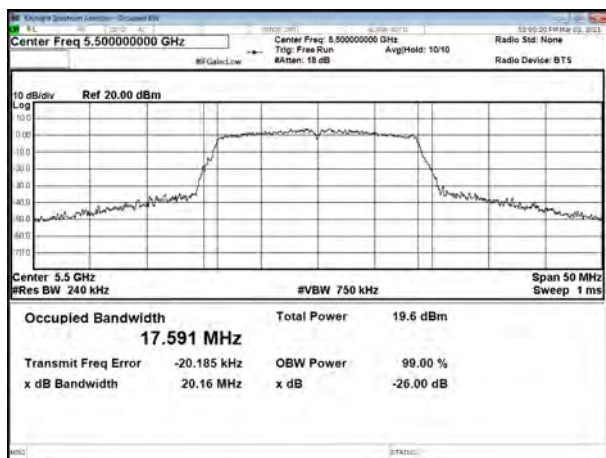




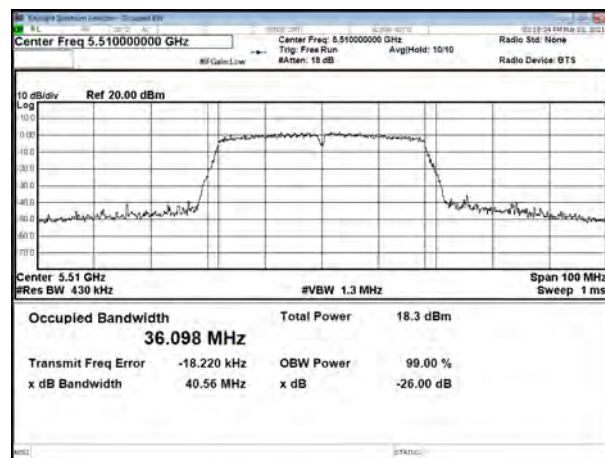
For 2TX

Chain 1

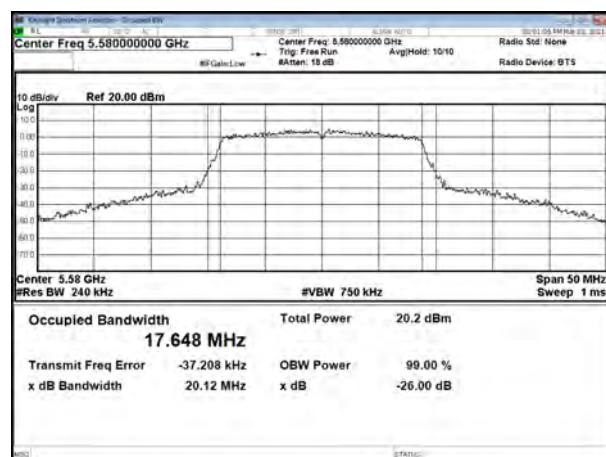
Modulation Standard: 802.11ac VHT20
(13 Mbps)
CH100



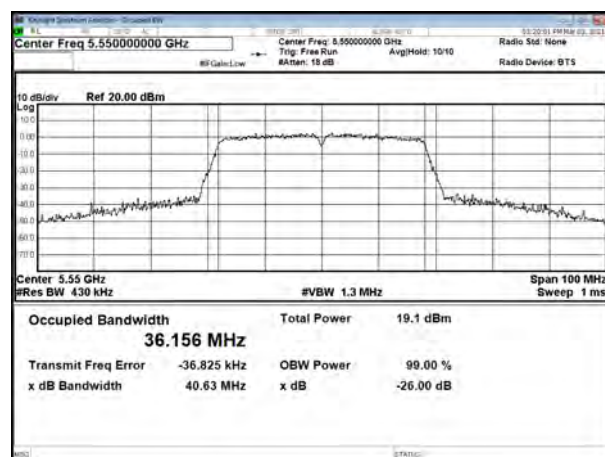
Modulation Standard: 802.11ac VHT40
(27 Mbps)
CH102



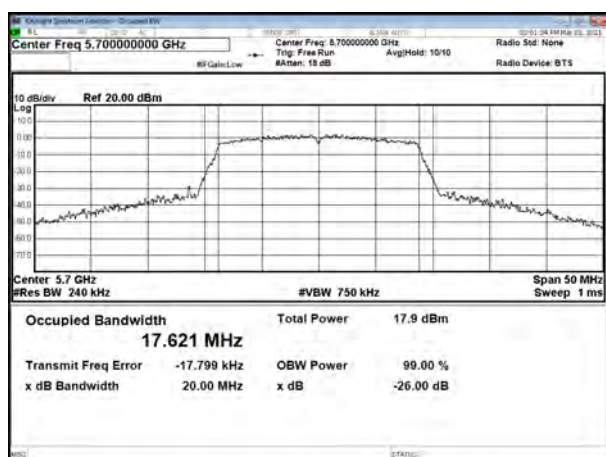
CH116



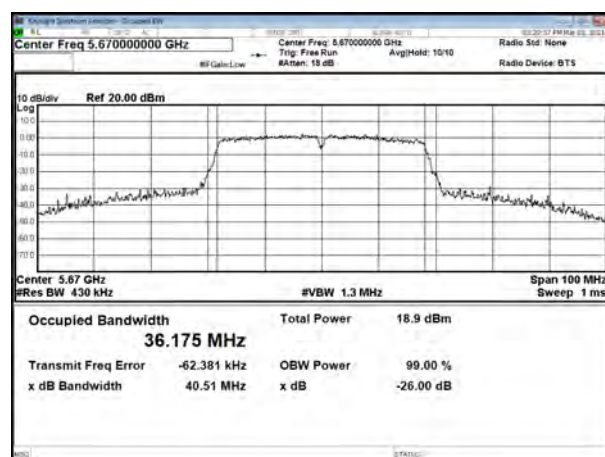
CH110



CH140

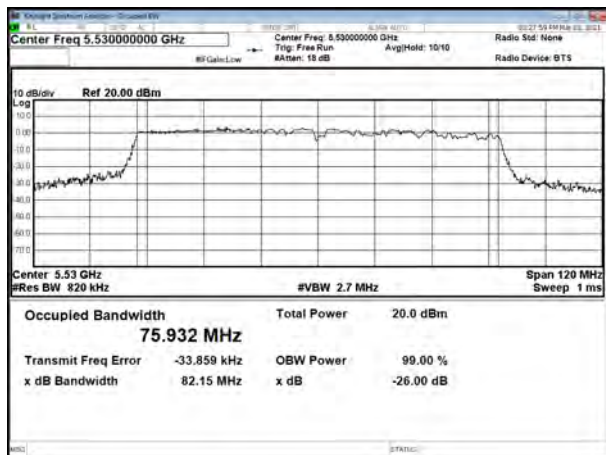


CH134





Modulation Standard:802.11ac VHT80
(58.5 Mbps)
CH116

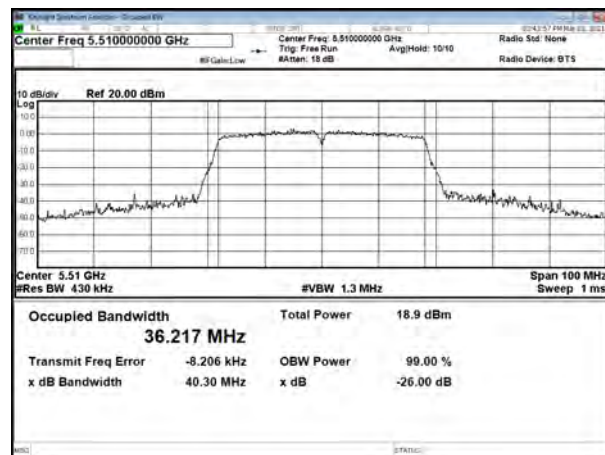




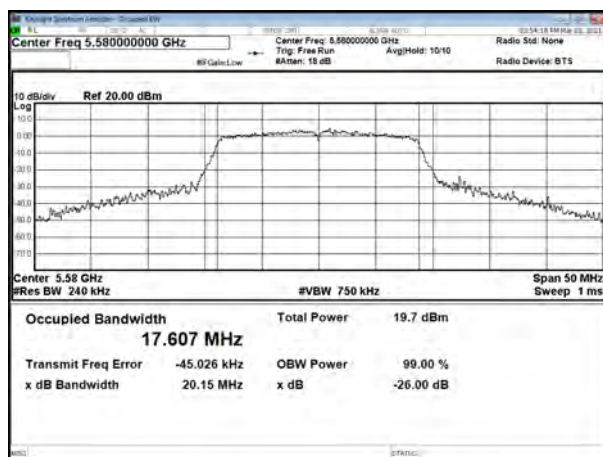
Chain 2
802.11ac VHT20
(13 Mbps)
CH100



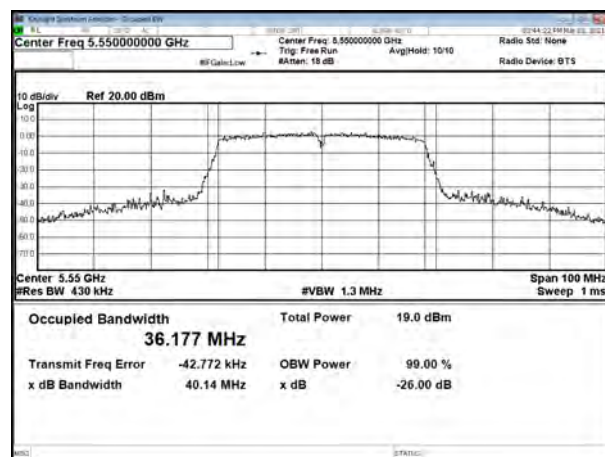
Modulation Standard: 802.11ac VHT40
(27 Mbps)
CH102



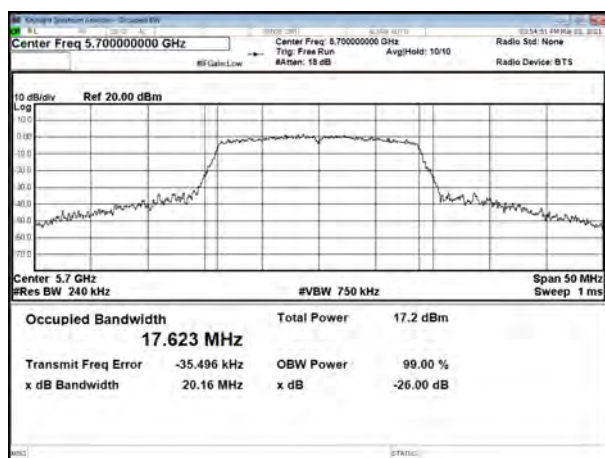
CH116



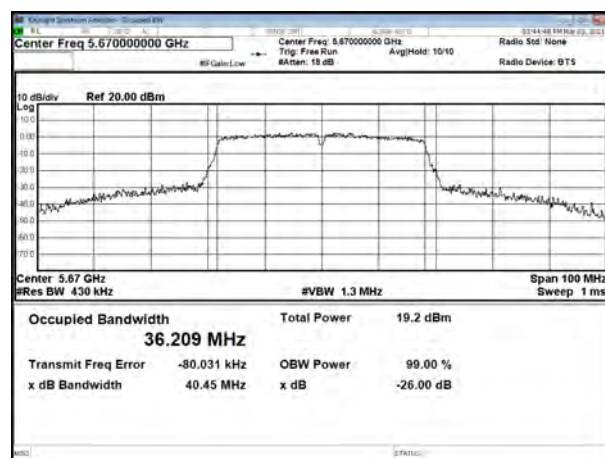
CH110



CH140

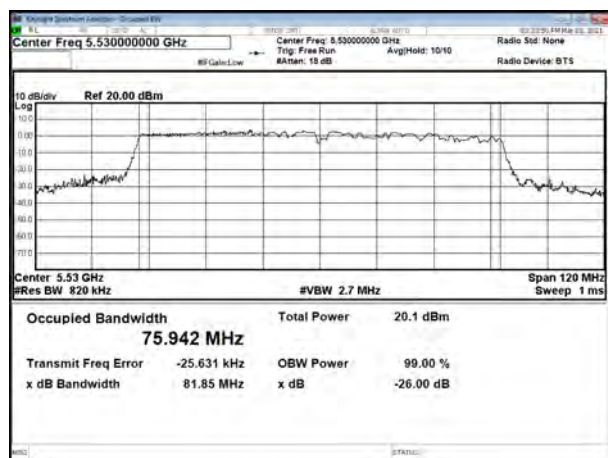


CH134





Modulation Standard:802.11ac VHT80
(58.5 Mbps)
CH106





9. 傳導輸出功率

9.1. 適用標準

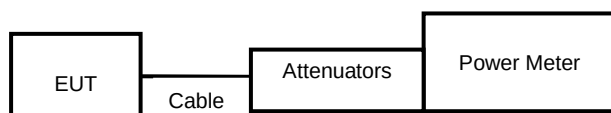
操作於 5.15G-5.25G 頻段者	
☐	供戶外操作使用：最大傳導輸出功率應小於 1W。
☐	供室內操作使用：最大傳導輸出功率應小於 1W。
☐	供固定式點對點操作使用：最大傳導輸出功率應小於 1W。
☒	供用戶端裝置(Client Device)操作使用：最大傳導輸出功率應小於 250mW。
操作於 5.25G-5.35G 與 5.470G-5.725G 頻段者 最大傳導輸出功率應小於 250mW 或 $11\text{dBm} + 10\log B$ (B 是 26dB 發射頻寬，單位 MHz) 之較小者。	
操作於 5.725G-5.850G 頻段者 最大傳導輸出功率應小於 1W。	

9.2. 測試方法

The transmitter output is connected to a power meter.

Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

9.3. 測試配置



**9.4. 測試結果及數據****In the 5.2G Band****For 1TX**

Modulation Type	Channel	Frequency (MHz)	Avg Power Output (dBm)		Power (mW)		Power Limit (dBm)
			Chain 1	Chain 2	Chain 1	Chain 2	
802.11a	36	5180	15.36	13.78	34.356	23.878	24.00
	44	5220	15.42	13.89	34.834	24.491	24.00
	48	5240	15.68	14.05	36.983	25.410	24.00
802.11n HT20	36	5180	14.35	13.26	27.227	21.184	24.00
	44	5220	14.33	13.12	27.102	20.512	24.00
	48	5240	14.40	13.24	27.542	21.086	24.00
802.11n HT40	38	5190	13.95	12.73	24.831	18.750	24.00
	46	5230	14.06	12.72	25.468	18.707	24.00
802.11ac VHT20	36	5180	14.36	13.57	27.290	22.751	24.00
	44	5220	14.40	13.62	27.542	23.014	24.00
	48	5240	14.42	13.63	27.669	23.067	24.00
802.11ac VHT40	38	5190	13.99	13.12	25.061	20.512	24.00
	46	5230	14.13	13.26	25.882	21.184	24.00
802.11ac VHT80	42	5210	14.61	13.54	28.907	22.594	24.00

For 2TX

Modulation Type	Channel	Frequency (MHz)	Avg Power Output (dBm)		Total Power (dBm)	Total Power (mW)	Power Limit (dBm)
			Chain 1	Chain 2			
802.11n HT20	36	5180	13.54	12.05	15.87	38.627	24.00
	44	5220	13.30	12.66	16.00	39.830	24.00
	48	5240	14.04	12.81	16.48	44.450	24.00
802.11n HT40	38	5190	13.03	11.64	15.40	34.679	24.00
	46	5230	13.19	12.13	15.70	37.175	24.00
802.11ac VHT20	36	5180	11.99	12.09	15.05	31.993	24.00
	44	5220	13.32	12.72	16.04	40.185	24.00
	48	5240	14.09	12.88	16.54	45.054	24.00
802.11ac VHT40	38	5190	13.07	11.69	15.44	35.034	24.00
	46	5230	13.27	12.20	15.78	37.828	24.00
802.11ac VHT80	42	5210	14.19	13.59	16.91	49.098	24.00

**In the 5.3G Band****For 1TX**

Modulation Type	Channel	Frequency (MHz)	Avg Power Output (dBm)		Power (mW)		Power Limit (dBm)
			Chain 1	Chain 2	Chain 1	Chain 2	
802.11a	52	5260	15.67	14.12	36.898	25.823	24.00
	60	5300	15.73	14.21	37.411	26.363	24.00
	64	5320	15.65	14.13	36.728	25.882	24.00
802.11n HT20	52	5260	14.33	13.16	27.102	20.701	24.00
	60	5300	14.39	13.19	27.479	20.845	24.00
	64	5320	14.40	13.21	27.542	20.941	24.00
802.11n HT40	54	5270	14.18	12.89	26.182	19.454	24.00
	62	5310	14.13	12.84	25.882	19.231	24.00
802.11ac VHT20	52	5260	14.41	13.20	27.606	20.893	24.00
	60	5300	14.42	13.23	27.669	21.038	24.00
	64	5320	14.46	13.24	27.925	21.086	24.00
802.11ac VHT40	54	5270	14.19	12.95	26.242	19.724	24.00
	62	5310	14.15	12.93	26.002	19.634	24.00
802.11ac VHT80	58	5290	14.73	13.26	29.717	21.184	24.00

For 2TX

Modulation Type	Channel	Frequency (MHz)	Avg Power Output (dBm)		Total Power (dBm)	Total Power (mW)	Power Limit (dBm)
			Chain 1	Chain 2			
802.11n HT20	52	5260	13.95	12.49	16.29	42.573	24.00
	60	5300	14.14	12.36	16.35	43.160	24.00
	64	5320	13.75	12.21	16.06	40.348	24.00
802.11n HT40	54	5270	12.89	12.29	15.61	36.397	24.00
	62	5310	13.51	11.94	15.81	38.070	24.00
802.11ac VHT20	52	5260	14.03	12.61	16.39	43.532	24.00
	60	5300	14.20	12.41	16.41	43.721	24.00
	64	5320	13.82	12.25	16.12	40.887	24.00
802.11ac VHT40	54	5270	13.01	12.31	15.68	37.020	24.00
	62	5310	13.56	11.99	15.86	38.511	24.00
802.11ac VHT80	58	5290	14.64	13.04	16.92	49.244	24.00

**In the 5.5G Band****For 1TX**

Modulation Type	Channel	Frequency (MHz)	Avg Power Output (dBm)		Power (mW)		Power Limit (dBm)
			Chain 1	Chain 2	Chain 1	Chain 2	
802.11a	100	5500	15.68	14.23	54.725	26.485	24.00
	116	5580	16.27	14.55	59.583	28.510	24.00
	140	5700	14.46	13.10	44.560	20.417	24.00
802.11n HT20	100	5500	14.44	13.17	44.741	20.749	24.00
	116	5580	15.02	13.85	47.400	24.266	24.00
	140	5700	13.61	12.67	41.200	18.493	24.00
802.11n HT40	102	5510	14.32	13.12	44.458	20.512	24.00
	110	5550	14.59	13.29	45.562	21.330	24.00
	134	5670	14.30	13.08	43.937	20.324	24.00
802.11ac VHT20	100	5500	14.48	13.26	43.867	21.184	24.00
	116	5580	15.10	13.89	52.497	24.491	24.00
	140	5700	13.66	12.72	23.227	18.707	24.00
802.11ac VHT40	102	5510	14.38	13.19	27.416	20.845	24.00
	110	5550	14.64	13.32	29.107	21.478	24.00
	134	5670	14.34	13.14	27.164	20.606	24.00
802.11ac VHT80	106	5530	14.88	13.74	54.725	26.485	24.00

For 2TX

Modulation Type	Channel	Frequency (MHz)	Avg Power Output (dBm)		Total Power (dBm)	Total Power (mW)	Power Limit (dBm)
			Chain 1	Chain 2			
802.11n HT20	100	5500	13.12	11.89	15.56	35.964	24.00
	116	5580	13.81	12.95	16.41	43.768	24.00
	140	5700	11.42	12.52	15.02	31.732	24.00
802.11n HT40	102	5510	12.64	11.54	15.14	32.621	24.00
	110	5550	13.40	12.53	16.00	39.784	24.00
	134	5670	13.36	12.79	16.09	40.688	24.00
802.11ac VHT20	100	5500	13.15	12.01	15.63	36.539	24.00
	116	5580	13.85	13.04	16.47	44.403	24.00
	140	5700	11.44	12.58	15.06	32.045	24.00
802.11ac VHT40	102	5510	12.68	11.57	15.17	32.890	24.00
	110	5550	13.44	12.58	16.04	40.193	24.00
	134	5670	13.39	13.02	16.22	41.872	24.00
802.11ac VHT80	106	5530	13.67	12.94	16.33	42.960	24.00

**In the 5.8G Band****For 1TX**

Modulation Type	Channel	Frequency (MHz)	Avg Power Output (dBm)		Power (mW)		Power Limit (dBm)
			Chain 1	Chain 2	Chain 1	Chain 2	
802.11a	149	5745	14.41	13.15	43.058	20.654	30.00
	157	5785	14.60	13.45	48.565	22.131	30.00
	165	5825	14.10	12.86	43.569	19.320	30.00
802.11n HT20	149	5745	13.67	12.52	37.537	17.865	30.00
	157	5785	13.65	12.48	41.080	17.701	30.00
	165	5825	13.40	12.33	40.888	17.100	30.00
802.11n HT40	151	5755	13.39	13.12	37.713	20.512	30.00
	159	5795	13.44	13.20	42.217	20.893	30.00
802.11ac VHT20	149	5745	13.71	12.54	41.610	17.947	30.00
	157	5785	13.68	12.52	37.689	17.865	30.00
	165	5825	13.44	12.10	40.193	16.218	30.00
802.11ac VHT40	151	5755	13.44	13.16	42.125	20.701	30.00
	159	5795	13.47	13.24	41.912	21.086	30.00
802.11ac VHT80	155	5775	14.12	12.77	25.823	18.923	30.00

For 2TX

Modulation Type	Channel	Frequency (MHz)	Avg Power Output (dBm)		Total Power (dBm)	Total Power (mW)	Power Limit (dBm)
			Chain 1	Chain 2			
802.11an HT20	149	5745	11.82	12.79	15.34	34.216	30.00
	157	5785	12.41	12.85	15.65	36.693	30.00
	165	5825	12.39	12.52	15.47	35.203	30.00
802.11an HT40	151	5755	11.57	12.41	15.02	31.773	30.00
	159	5795	12.44	12.56	15.51	35.569	30.00
802.11ac VHT20	149	5745	11.87	12.83	15.39	34.568	30.00
	157	5785	12.44	12.92	15.70	37.127	30.00
	165	5825	12.43	12.59	15.52	35.654	30.00
802.11ac VHT40	151	5755	11.63	12.45	15.07	32.134	30.00
	159	5795	12.50	12.61	15.57	36.022	30.00
802.11ac VHT80	155	5775	12.98	11.38	15.26	33.601	30.00



10. 最大功率頻譜密度

10.1. 適用標準

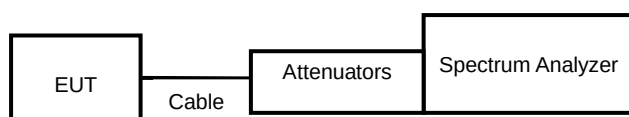
操作於 5.15G-5.25G 頻段者	
☐	供戶外操作使用：在任何 1MHz 頻帶中最大功率頻譜密度應小於或等於 17dBm。
☐	供室內操作使用：在任何 1MHz 頻帶中最大功率頻譜密度應小於或等於 17dBm。
☐	供固定式點對點操作使用：在任何 1MHz 頻帶中最大功率頻譜密度應小於或等 17dBm。
☒	供用戶端裝置(Client Device)操作使用：在任何 1MHz 頻帶中最大功率頻譜密度應小於或等於 11dBm。
操作於 5.25G-5.35G 與 5.470G-5.725G 頻段者 在任何 1MHz 頻帶中最大功率頻譜密度應小於或等於 11Bm。	
操作於 5.725G-5.850G 頻段者 在任何 500KHz 頻帶中最大功率頻譜密度應小於或等於 30Bm。	



10.2. 測試方法

For 5150~5250 MHz, 5250~5350 MHz, 5470~5725 MHz	
☒	Method SA-1 1. Set RBW = 1 MHz, VBW = 3 MHz, Sweep time = auto, Detector = RMS. 2. Trace average 100 traces. 3. Use the peak marker function to determine the maximum amplitude level.
☐	Method SA-2 Alternative 1. Set RBW = 1 MHz, VBW = 3 MHz, Detector = RMS. 2. Set sweep time $\geq 10 * (\text{number of points in sweep}) * (\text{total on/off period of the transmitted signal})$. 3. Perform a single sweep. 4. Use the peak marker function to determine the maximum amplitude level. 5. Add $10 \log(1/x)$, where x is the duty cycle.
For 5725~5850 MHz	
☒	Method SA-1 1. Set RBW = 1 MHz, VBW = 3 MHz, Sweep time = auto, Detector = RMS. 2. Trace average 100 traces. 3. Use the peak marker function to determine the maximum amplitude level. 4. Add $10 \log(500\text{KHz}/1000\text{KHz})$
☐	Method SA-2 Alternative 1. Set RBW = 1 MHz, VBW = 3 MHz, Detector = RMS. 2. Set sweep time $\geq 10 * (\text{number of points in sweep}) * (\text{total on/off period of the transmitted signal})$. 3. Perform a single sweep. 4. Use the peak marker function to determine the maximum amplitude level. 5. Add $10 \log(1/x)$, where x is the duty cycle 6. Add $10 \log(500\text{KHz}/1000\text{KHz})$

10.3. 測試配置



**10.4. 測試結果及數據****In the 5.2G Band****For 1TX**

Modulation Type	CH	Freq. (MHz)	Meas PPSD (dBm/MHz)	Sum chain (dBm)	Duty Cycle CF(dB)	Total Corr'd PPSD (dBm/MHz)	PPSD Limit (dBm/MHz)
			Chain 1				
802.11a	36	5180	5.352	5.352	0.00	5.352	11.00
	44	5220	5.490	5.490	0.00	5.490	11.00
	48	5240	5.551	5.551	0.00	5.551	11.00
802.11ac VHT20	36	5180	4.016	4.016	0.00	4.016	11.00
	44	5220	3.996	3.996	0.00	3.996	11.00
	48	5240	4.340	4.340	0.00	4.340	11.00
802.11ac VHT40	38	5190	0.261	0.261	0.00	0.261	11.00
	46	5230	0.387	0.387	0.00	0.387	11.00
802.11ac VHT80	42	5210	-1.582	-1.582	0.00	-1.582	11.00

For 2TX

Modulation Type	CH	Freq. (MHz)	Meas PPSD (dBm/MHz)		Sum chain (dBm)	Duty Cycle CF(dB)	Total Corr'd PPSD (dBm/MHz)	PPSD Limit (dBm/MHz)
			Chain 1	Chain 2				
802.11ac VHT20	36	5180	2.938	1.736	5.39	0.00	5.39	11.00
	44	5220	2.724	1.893	5.34	0.00	5.34	11.00
	48	5240	3.048	1.888	5.52	0.00	5.52	11.00
802.11ac VHT40	38	5190	-0.912	-2.734	1.28	0.00	1.28	11.00
	46	5230	-0.634	-1.950	1.77	0.00	1.77	11.00
802.11ac VHT80	42	5210	-2.241	-2.562	0.61	0.00	0.61	11.00

**In the 5.3G Band****For 1TX**

Modulation Type	CH	Freq. (MHz)	Meas PPSD (dBm/MHz)	Sum chain (dBm)	Duty Cycle CF(dB)	Total Corr'd PPSD (dBm/MHz)	PPSD Limit (dBm/MHz)
			Chain 1				
802.11a	52	5260	5.339	5.339	0.00	5.339	11.00
	60	5300	5.402	5.402	0.00	5.402	11.00
	64	5320	5.307	5.307	0.00	5.307	11.00
802.11ac VHT20	52	5260	4.206	4.206	0.00	4.206	11.00
	60	5300	3.977	3.977	0.00	3.977	11.00
	64	5320	4.153	4.153	0.00	4.153	11.00
802.11ac VHT40	54	5270	0.520	0.520	0.00	0.520	11.00
	62	5310	0.521	0.521	0.00	0.521	11.00
802.11ac VHT80	58	5290	-1.275	-1.275	0.00	-1.275	11.00

For 2TX

Modulation Type	CH	Freq. (MHz)	Meas PPSD (dBm/MHz)		Sum chain (dBm)	Duty Cycle CF(dB)	Total Corr'd PPSD (dBm/MHz)	PPSD Limit (dBm/MHz)
			Chain 1	Chain 2				
802.11ac VHT20	52	5260	3.136	1.687	5.48	0.00	5.48	11.00
	60	5300	3.229	1.864	5.61	0.00	5.61	11.00
	64	5320	2.761	1.454	5.17	0.00	5.17	11.00
802.11ac VHT40	54	5270	-0.488	-2.018	1.82	0.00	1.82	11.00
	62	5310	-0.603	-2.304	1.64	0.00	1.64	11.00
802.11ac VHT80	58	5290	-1.918	-2.780	0.68	0.00	0.68	11.00

**In the 5.5G Band****For 1TX**

Modulation Type	CH	Freq. (MHz)	Meas PPSD (dBm/MHz)	Sum chain (dBm)	Duty Cycle CF(dB)	Total Corr'd PPSD (dBm/MHz)	PPSD Limit (dBm/MHz)
			Chain 1				
802.11a	100	5500	5.624	5.624	0.00	5.624	11.00
	116	5580	6.180	6.180	0.00	6.180	11.00
	140	5700	4.451	4.451	0.00	4.451	11.00
802.11ac VHT20	100	5500	4.104	4.104	0.00	4.104	11.00
	116	5580	4.992	4.992	0.00	4.992	11.00
	140	5700	3.320	3.320	0.00	3.320	11.00
802.11ac VHT40	102	5510	0.670	0.670	0.00	0.670	11.00
	110	5550	0.872	0.872	0.00	0.872	11.00
	134	5670	0.603	0.603	0.00	0.603	11.00
802.11ac VHT80	106	5530	-0.934	-0.934	0.00	-0.934	11.00

For 2TX

Modulation Type	CH	Freq. (MHz)	Meas PPSD (dBm/MHz)		Sum chain (dBm)	Duty Cycle CF(dB)	Total Corr'd PPSD (dBm/MHz)	PPSD Limit (dBm/MHz)
			Chain 1	Chain 2				
802.11ac VHT20	100	5500	2.051	0.912	4.53	0.00	4.53	11.00
	116	5580	2.934	2.117	5.55	0.00	5.55	11.00
	140	5700	0.604	1.735	4.22	0.00	4.22	11.00
802.11ac VHT40	102	5510	-1.347	-2.922	0.95	0.00	0.95	11.00
	110	5550	-0.607	-0.823	2.30	0.00	2.30	11.00
	134	5670	-0.758	1.401	3.46	0.00	3.46	11.00
802.11ac VHT80	106	5530	-2.461	-3.367	4.53	0.00	4.53	11.00



In the 5.8G Band For 1TX

Modulation Type	CH	Freq. (MHz)	Meas PPSD (dBm/MHz)	Sum chain (dBm)	Duty Cycle CF(dB)	10log(500K Hz/RBW) CF (dB)	Total Corr'd PPSD (dBm/500kHz)	PPSD Limit (dBm/500kHz)
			Chain 1					
802.11a	149	5745	4.434	4.434	0.00	-3.01	1.424	30.00
	157	5785	4.388	4.388	0.00	-3.01	1.378	30.00
	165	5825	4.149	4.149	0.00	-3.01	1.139	30.00
802.11ac VHT20	149	5745	3.370	3.370	0.00	-3.01	0.360	30.00
	157	5785	3.334	3.334	0.00	-3.01	0.324	30.00
	165	5825	3.146	3.146	0.00	-3.01	0.136	30.00
802.11ac VHT40	151	5755	-0.412	-0.412	0.00	-3.01	-3.422	30.00
	159	5795	-0.406	-0.406	0.00	-3.01	-3.416	30.00
802.11ac VHT80	155	5775	-2.271	-2.271	0.00	-3.01	-5.281	30.00

For 2TX

Modulation Type	CH	Freq. (MHz)	Meas PPSD (dBm/MHz)		Sum chain (dBm)	Duty Cycle CF(dB)	10log(500 KHz/RBW) CF (dB)	Total Corr'd PPSD (dBm/500kHz)	PPSD Limit (dBm/500kHz)
			Chain 1	Chain 2					
802.11ac VHT20	149	5745	0.856	1.778	4.35	0.00	-3.01	1.34	30.00
	157	5785	1.979	2.282	5.14	0.00	-3.01	2.13	30.00
	165	5825	1.903	1.848	4.89	0.00	-3.01	1.88	30.00
802.11ac VHT40	151	5755	-1.636	-2.264	1.07	0.00	-3.01	-1.94	30.00
	159	5795	-1.978	-1.757	1.14	0.00	-3.01	-1.87	30.00
802.11ac VHT80	155	5775	-3.535	-4.598	-1.02	0.00	-3.01	-4.03	30.00

備註：繪圖資料請參考下頁。

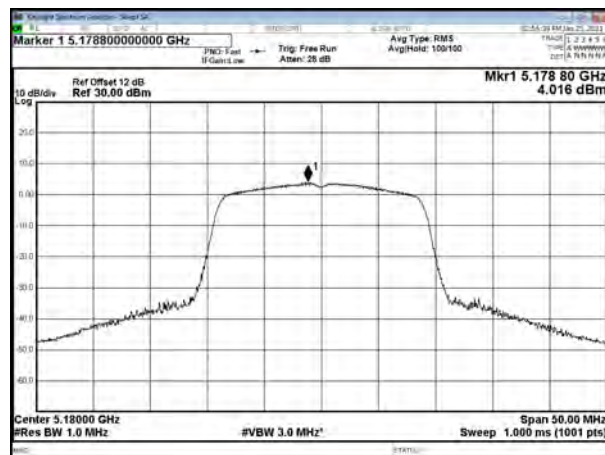
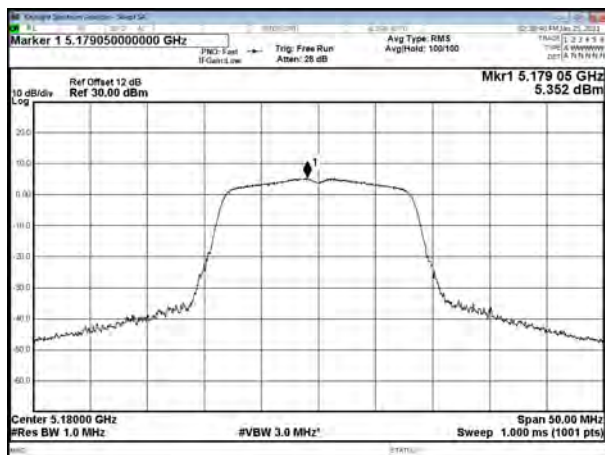
10.5. 結果判定

高、中、低頻段的數值皆低於限制值要求，合乎標準規定。



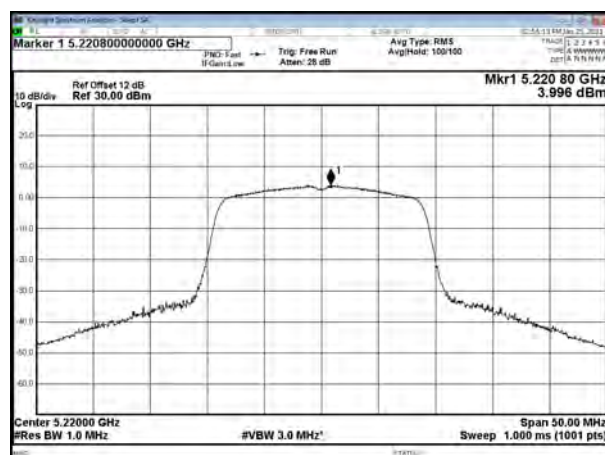
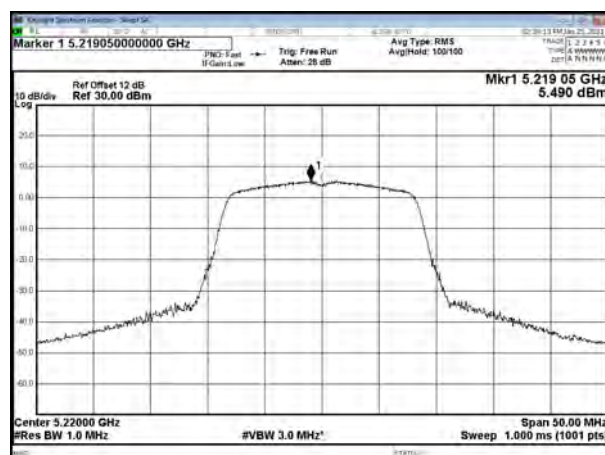
For 1TX
In the 5.2G Band
Chain 1
Modulation Standard: 802.11a
(6 Mbps)
CH36

Modulation Standard: 802.11ac VHT20
(6.5 Mbps)
CH36



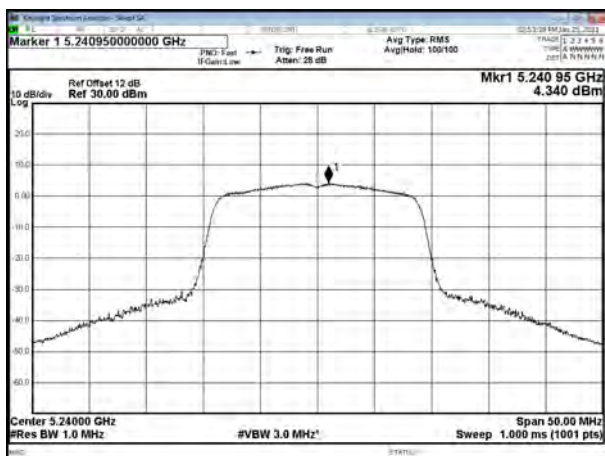
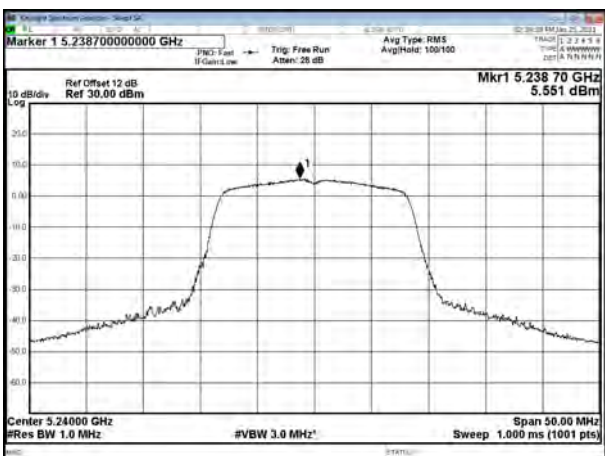
CH44

CH44



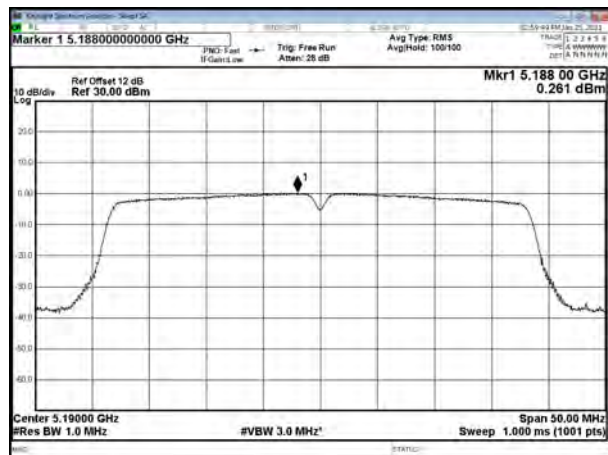
CH48

CH48

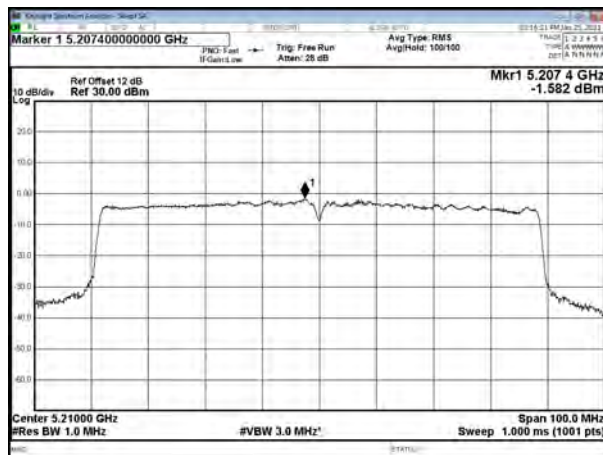




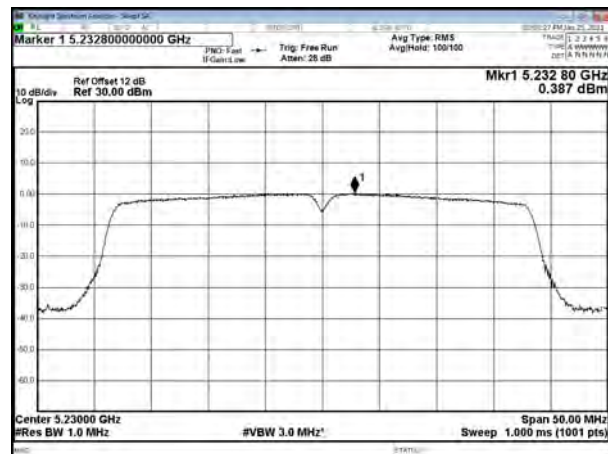
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(13.5 Mbps)
CH38



Modulation Standard: 802.11ac VHT80
(29.3 Mbps)
CH42



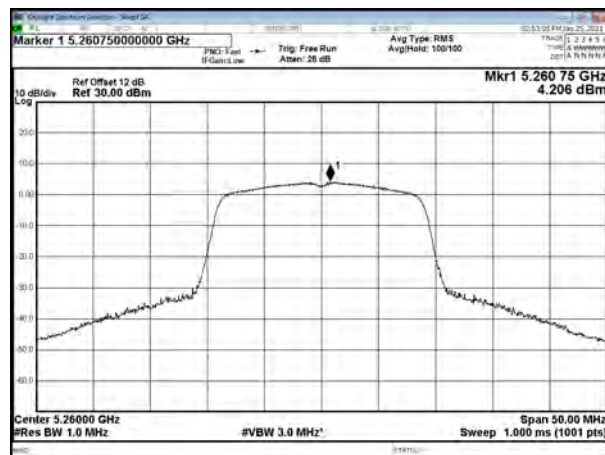
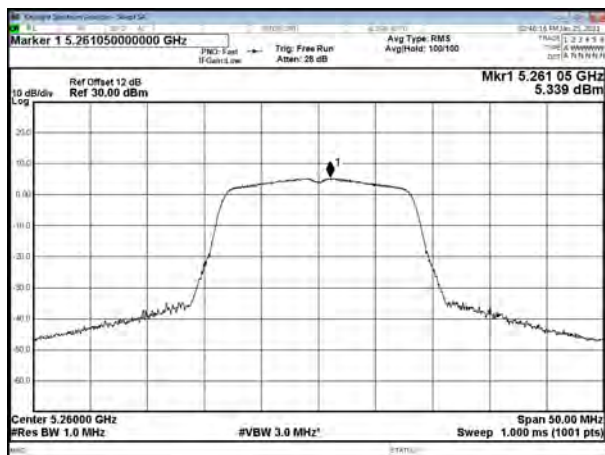
CH46





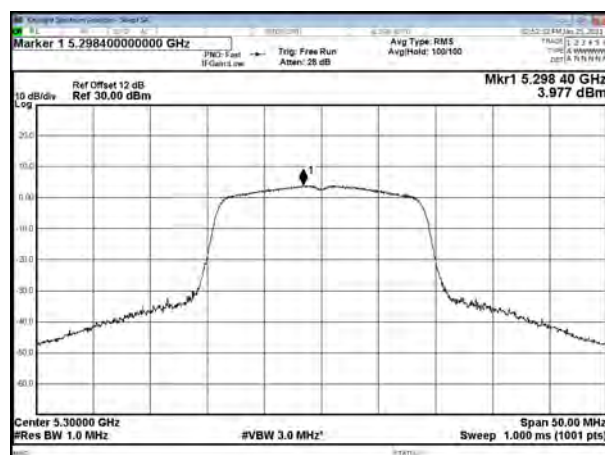
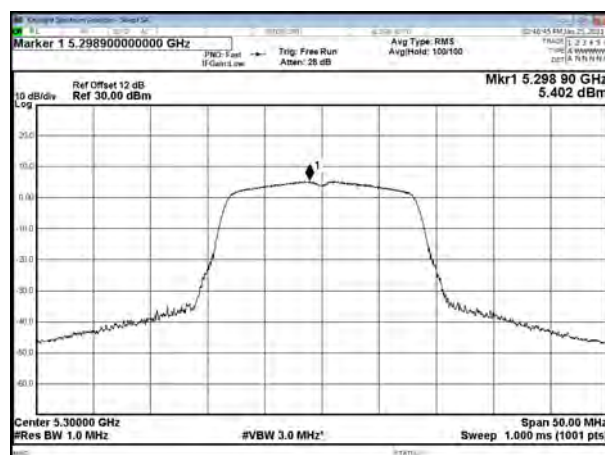
For 1TX
In the 5.3G Band
Chain 1
Modulation Standard: 802.11a
(6 Mbps)
CH52

Modulation Standard: 802.11ac VHT20
(6.5 Mbps)
CH32



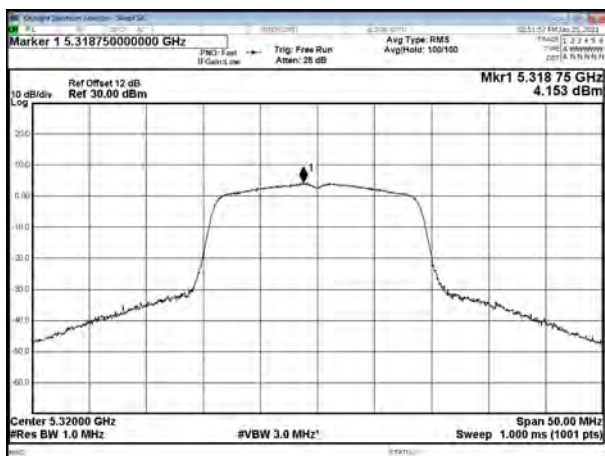
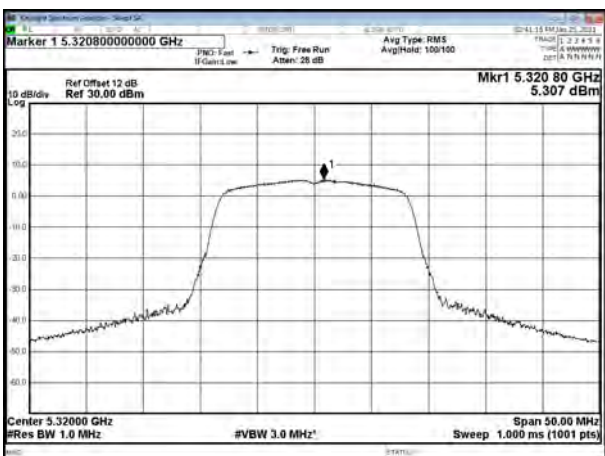
CH60

CH60



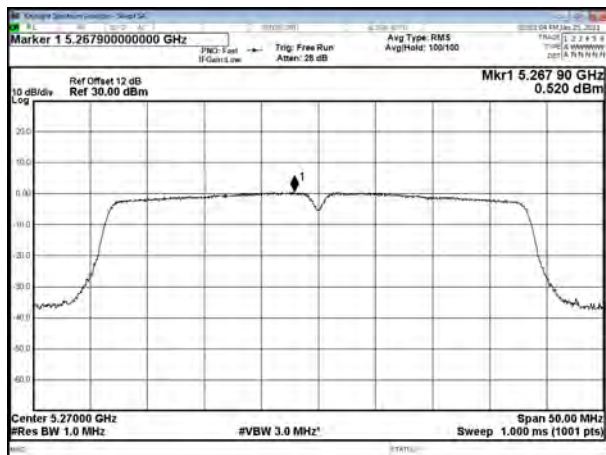
CH64

CH64

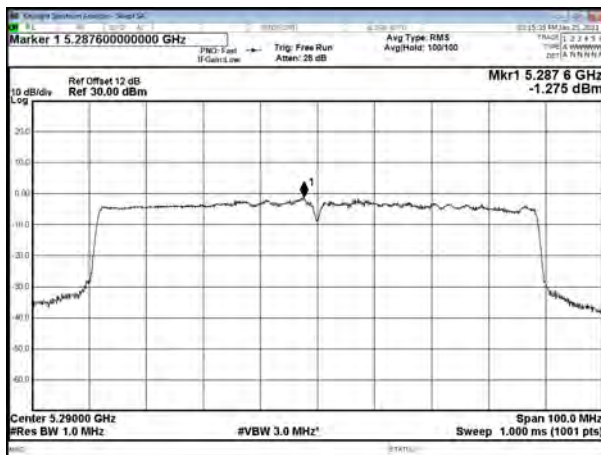




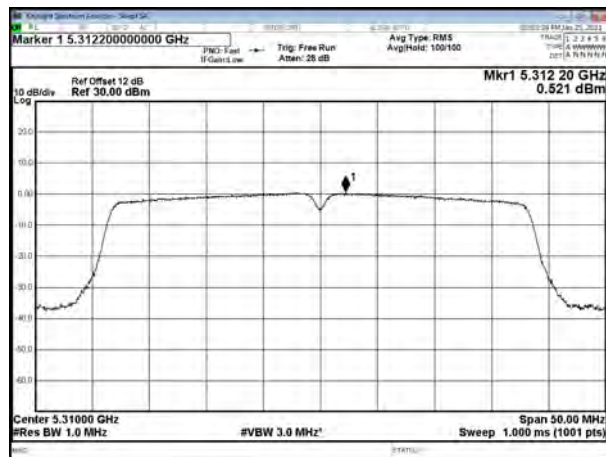
Modulation Standard: 802.11ac VHT40
(13.5 Mbps)
CH54



Modulation Standard: 802.11ac VHT80
(29.3 Mbps)
CH58

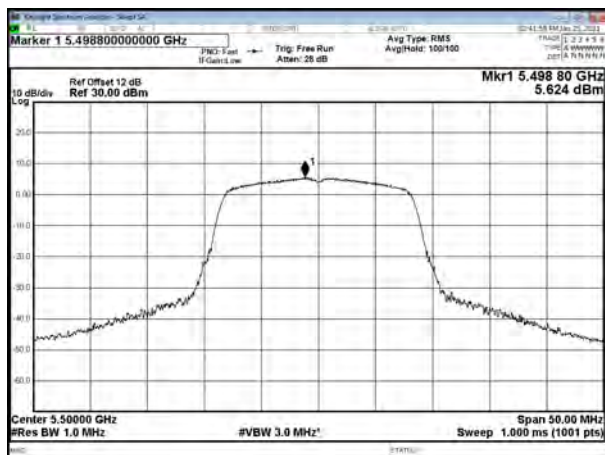


CH62

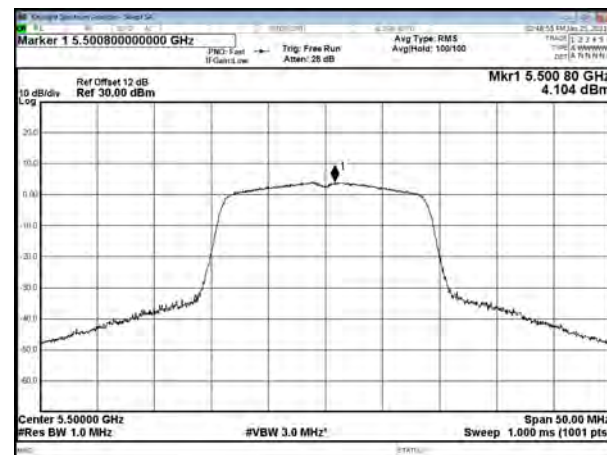




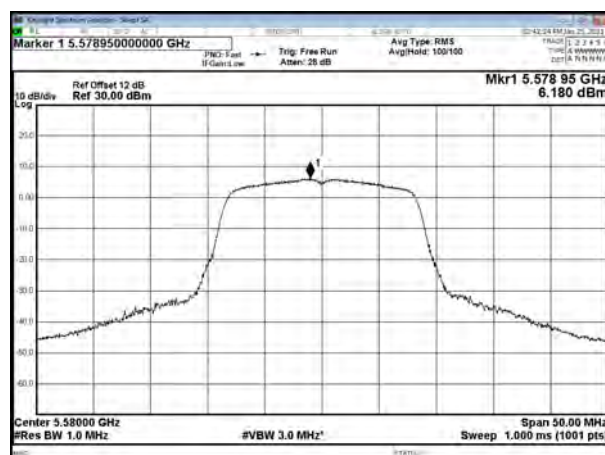
For 1TX
In the 5.5G Band
Chain 1
Modulation Standard: 802.11a
(6 Mbps)
CH100



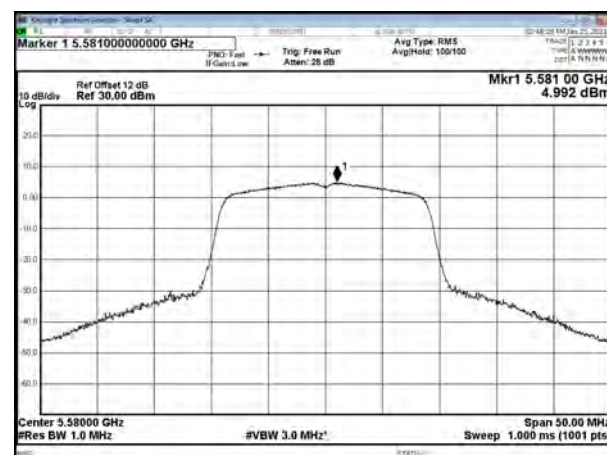
Modulation Standard: 802.11ac VHT20
(6.5 Mbps)
CH100



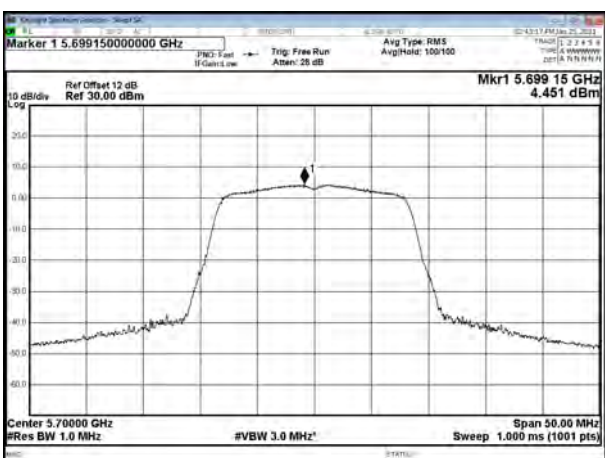
CH116



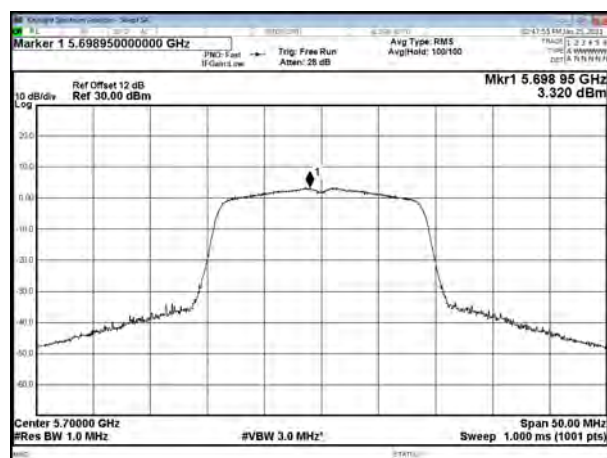
CH116



CH140

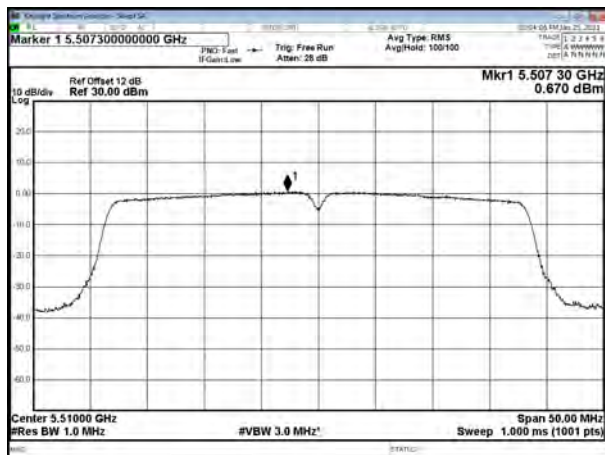


CH140

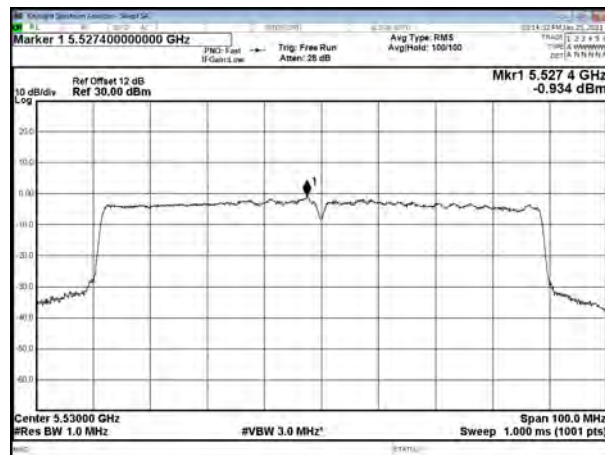




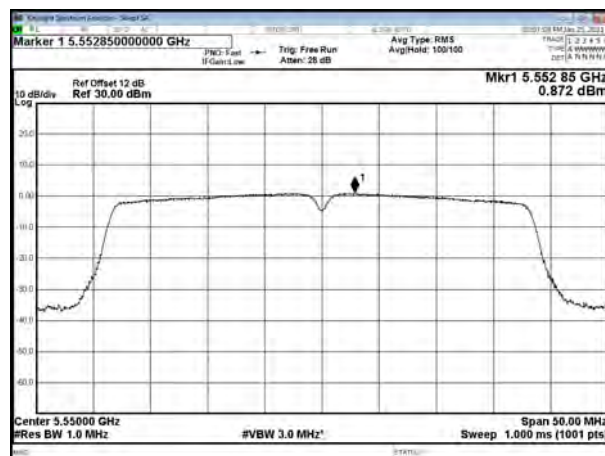
Modulation Standard: 802.11ac VHT40
(13.5 Mbps)
CH102



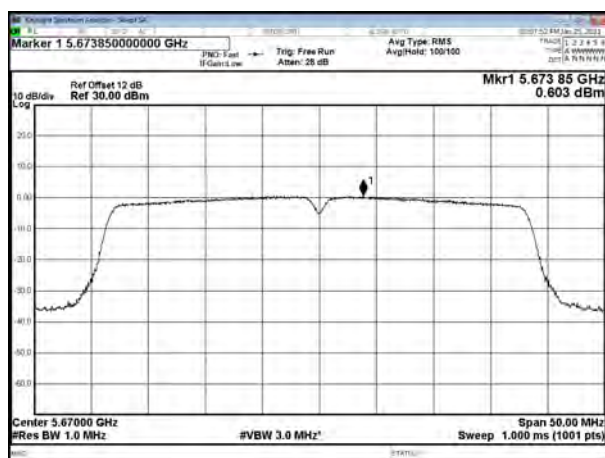
Modulation Standard: 802.11ac VHT80
(29.3 Mbps)
CH106



CH110



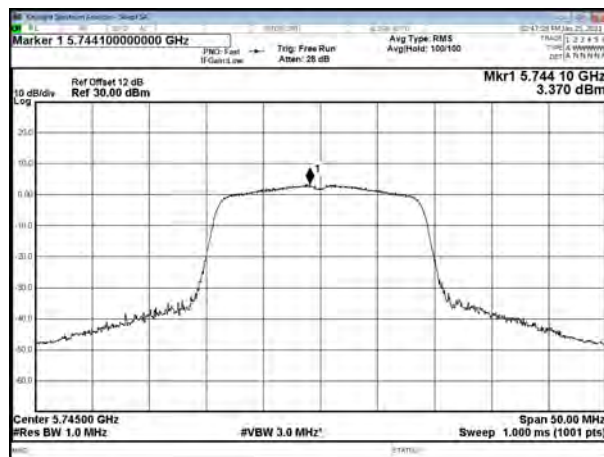
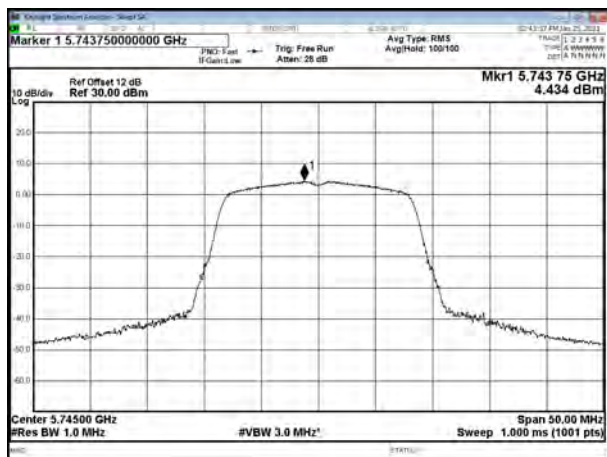
CH134





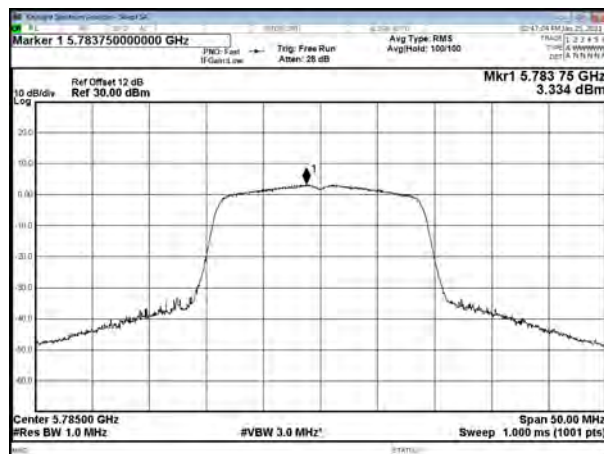
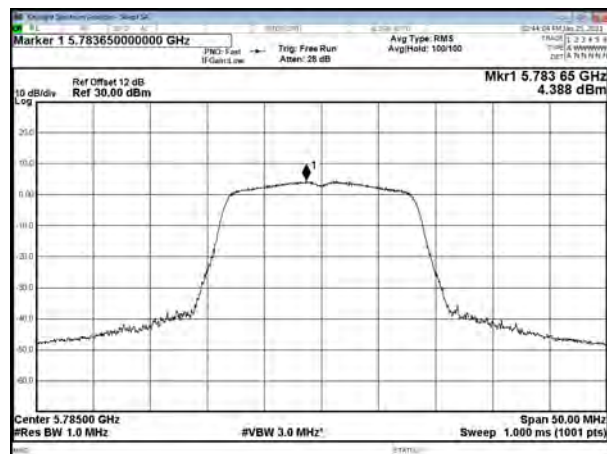
For 1TX
In the 5.8G Band
Chain 1
Modulation Standard: 802.11a
(6 Mbps)
CH149

Modulation Standard: 802.11ac VHT20
(6.5 Mbps)
CH149



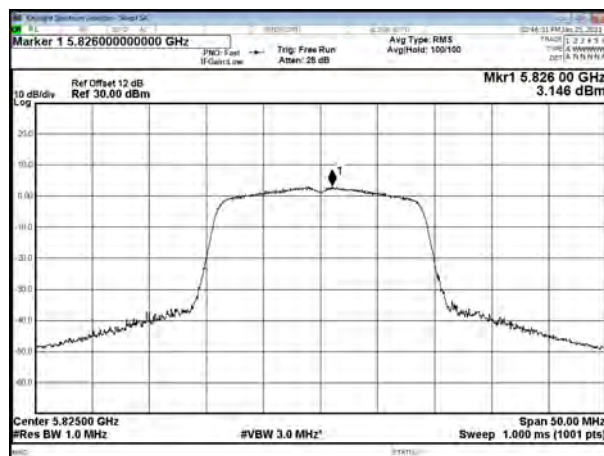
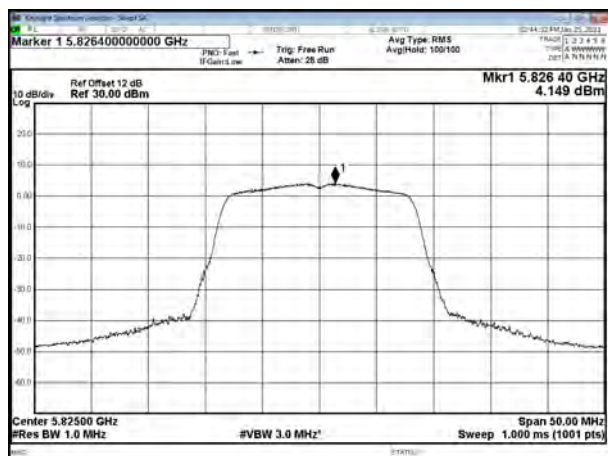
CH157

CH157



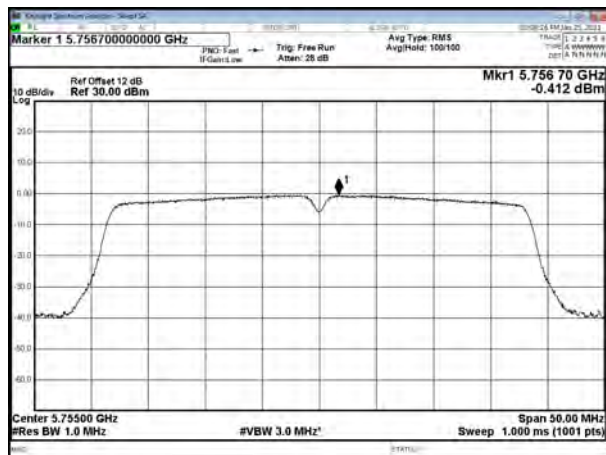
CH165

CH165

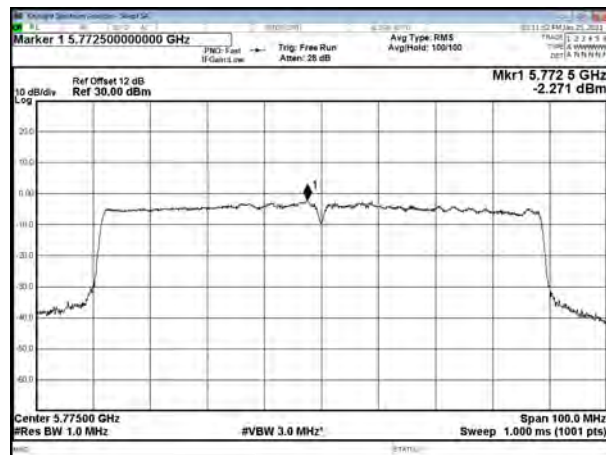




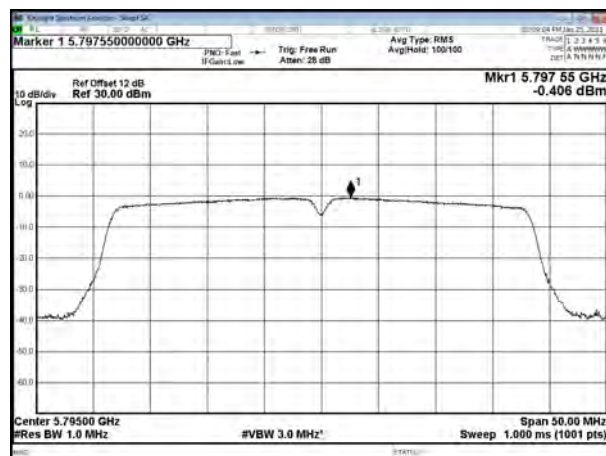
Modulation Standard: 802.11ac VHT40
(13.5 Mbps)
CH151



Modulation Standard: 802.11ac VHT80
(29.3 Mbps)
CH155

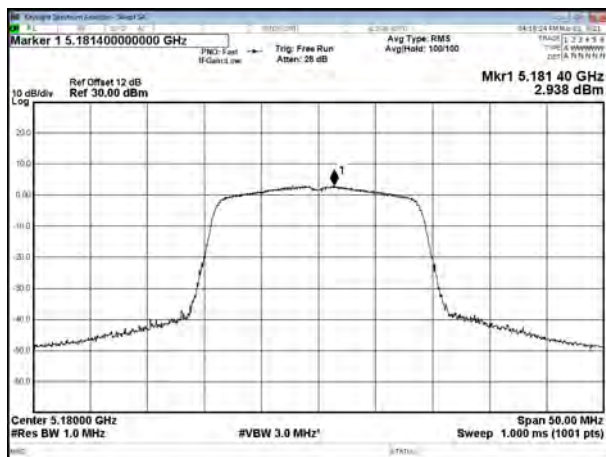


CH159

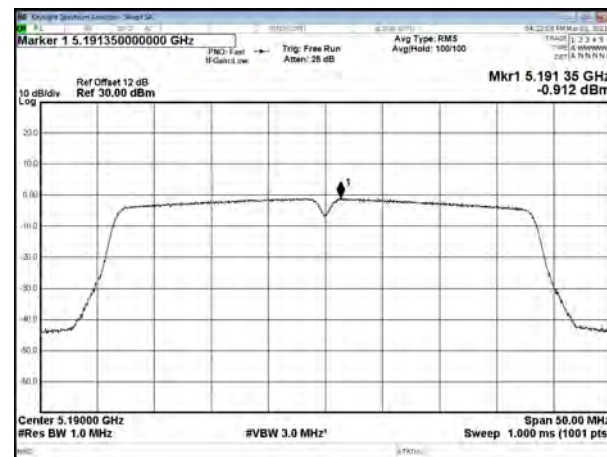




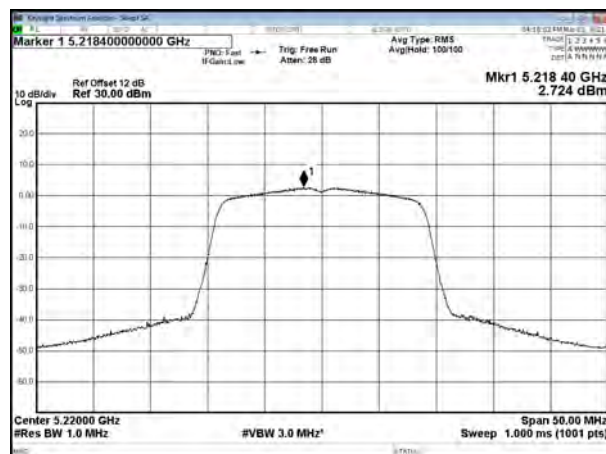
For 2TX
In the 5.2G Band
Chain 1
Modulation Standard: 802.11ac VHT20
(13 Mbps)
CH36



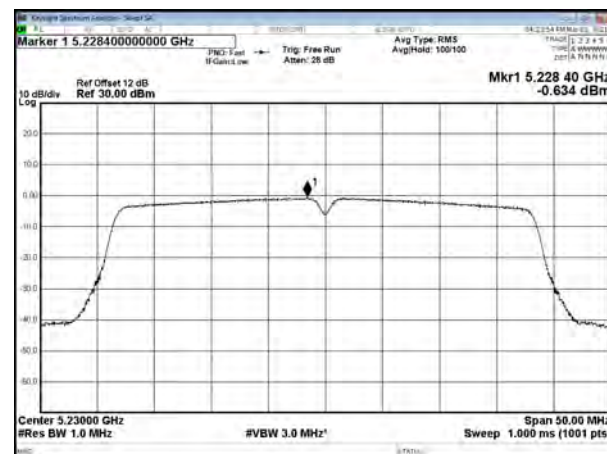
Modulation Standard: 802.11ac VHT40
(27 Mbps)
CH38



CH44

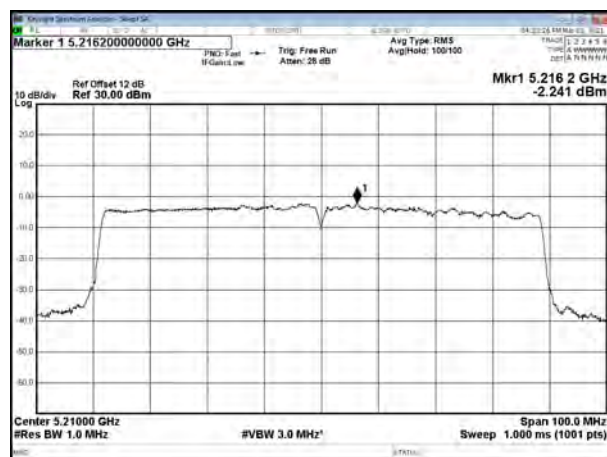
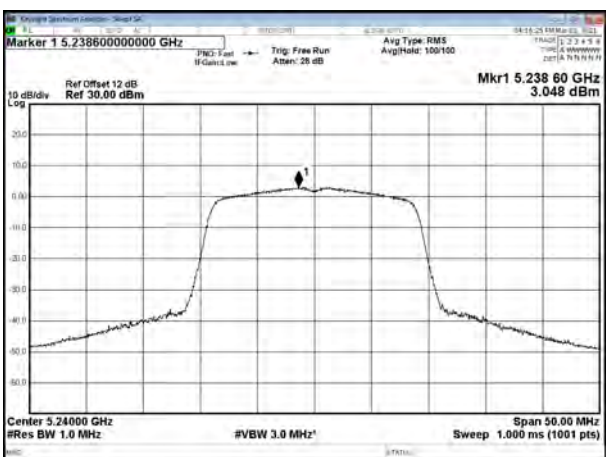


CH46



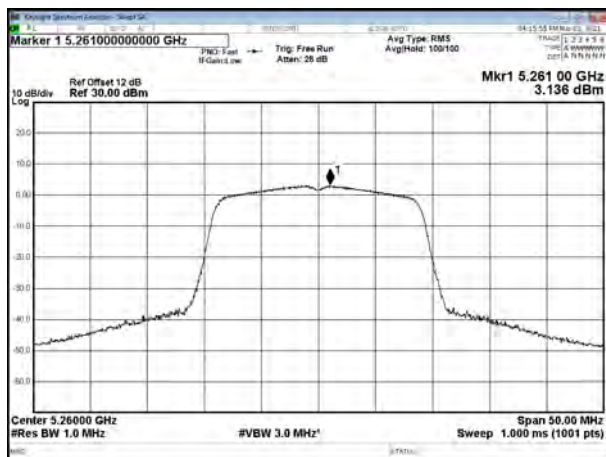
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(58.5 Mbps)
CH42

CH48

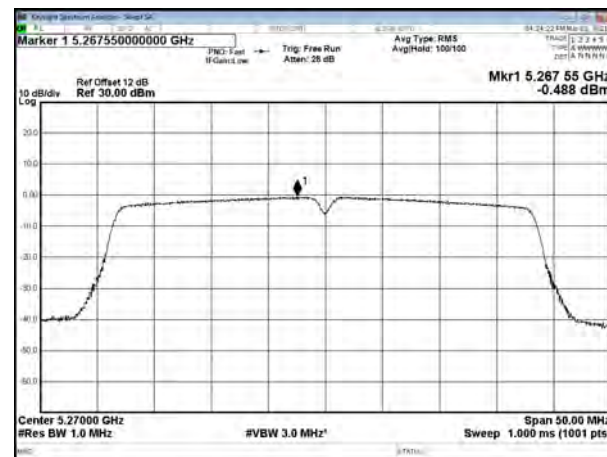




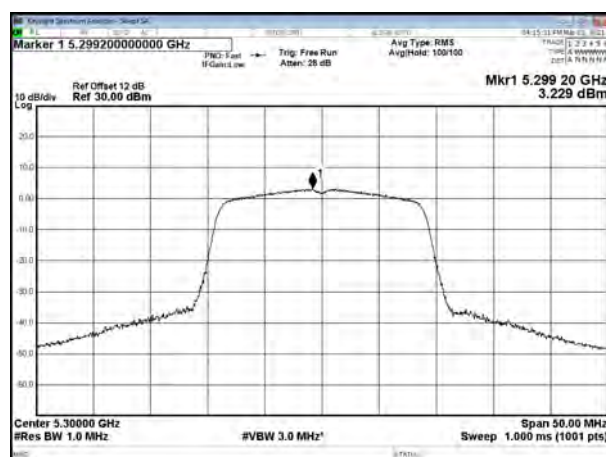
For 2TX
In the 5.3G Band
Chain 1
Modulation Standard: 802.11ac VHT20
(13 Mbps)
CH50



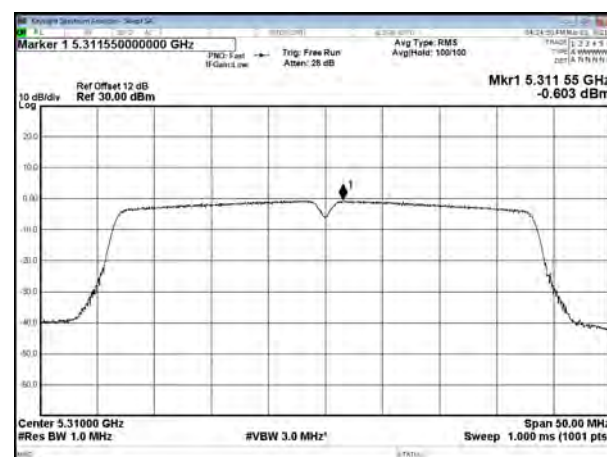
Modulation Standard: 802.11ac VHT40
(27 Mbps)
CH54



CH60

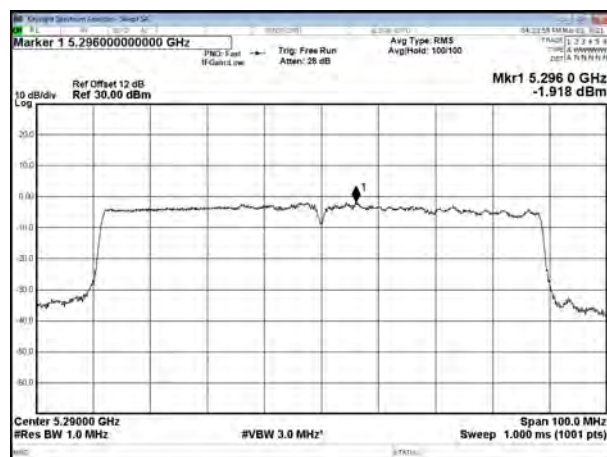
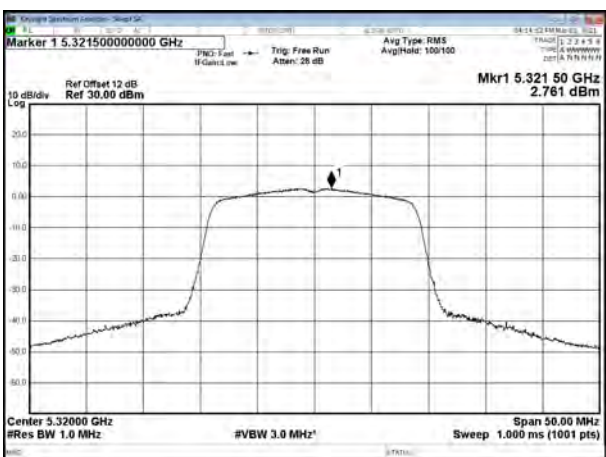


CH62



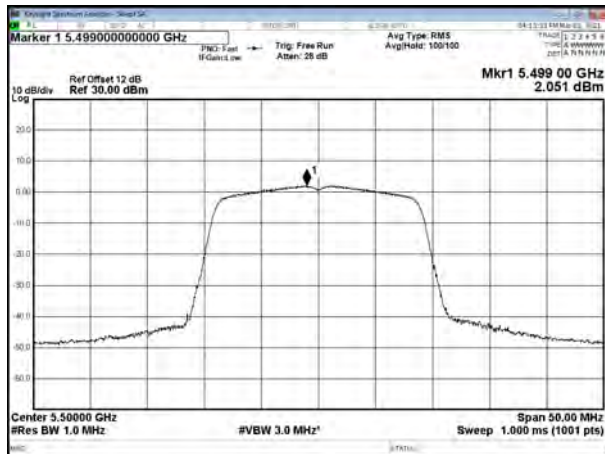
Modulation Standard: 802.11ac VHT80
(58.5 Mbps)
CH58

CH64

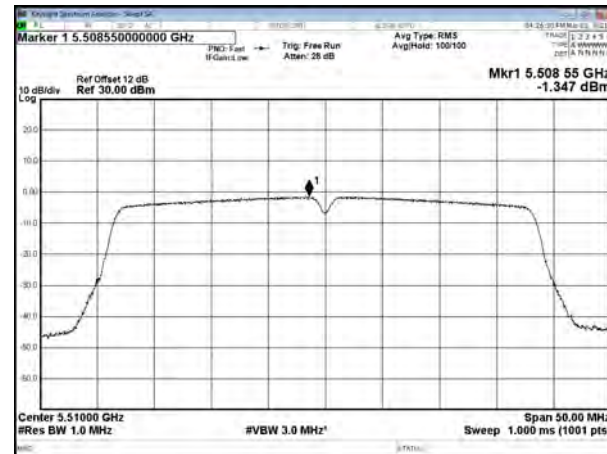




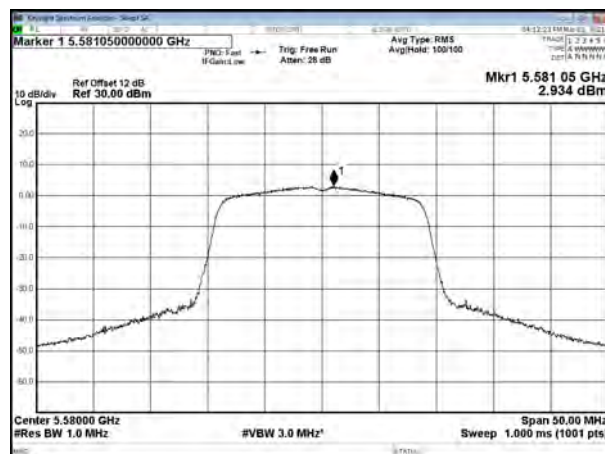
For 2TX
In the 5.5G Band
Chain 1
Modulation Standard: 802.11ac VHT20
(13 Mbps)
CH100



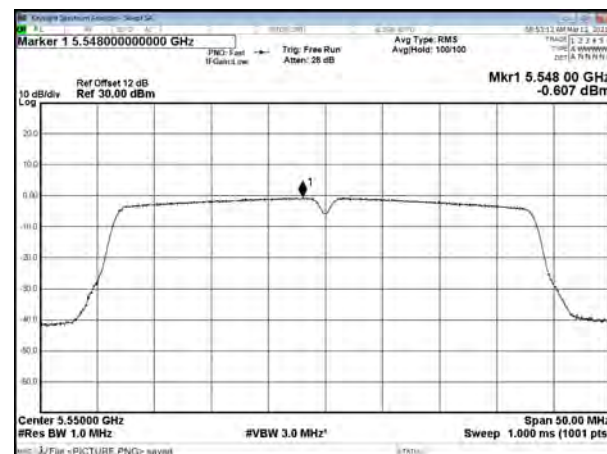
Modulation Standard: 802.11ac VHT40
(27 Mbps)
CH102



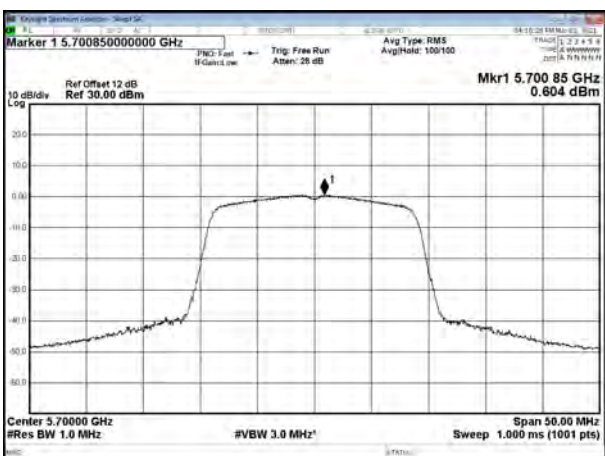
CH116



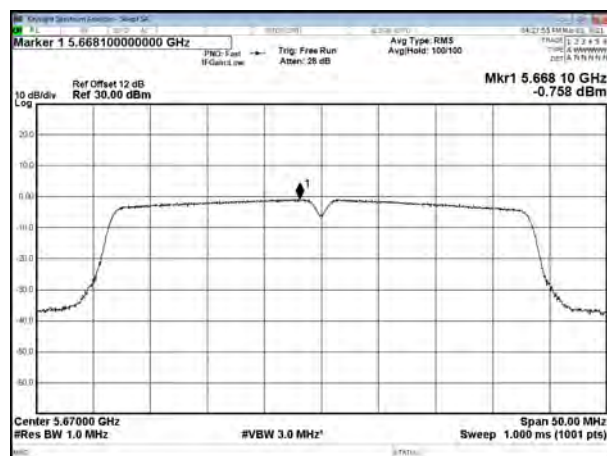
CH110



CH140

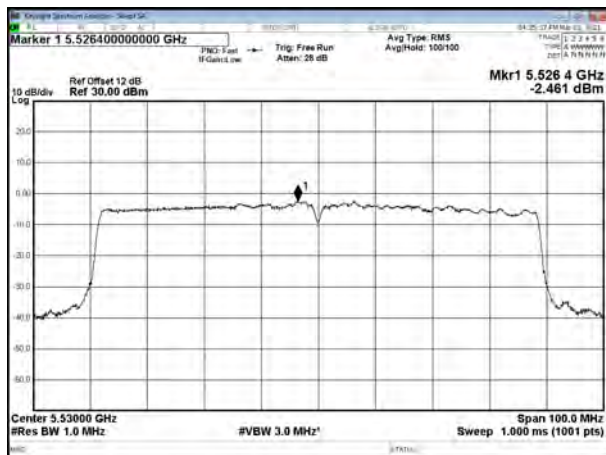


CH134



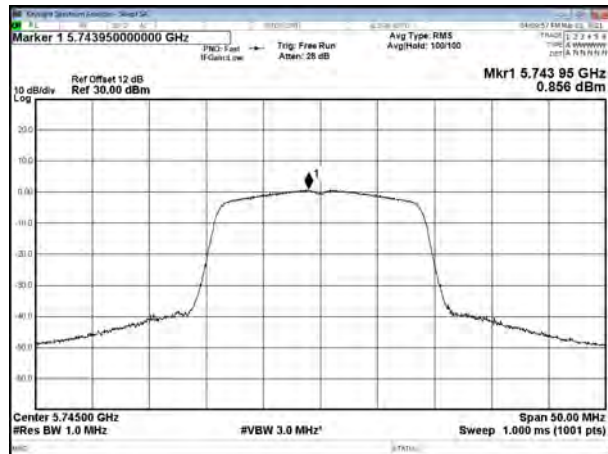


Modulation Standard: 802.11ac VHT80
(58.5 Mbps)
CH106

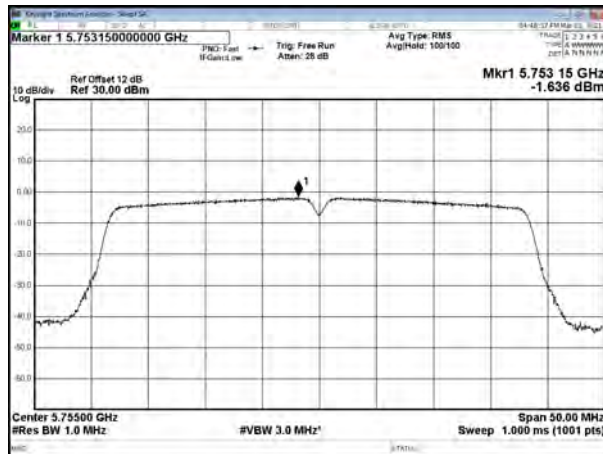




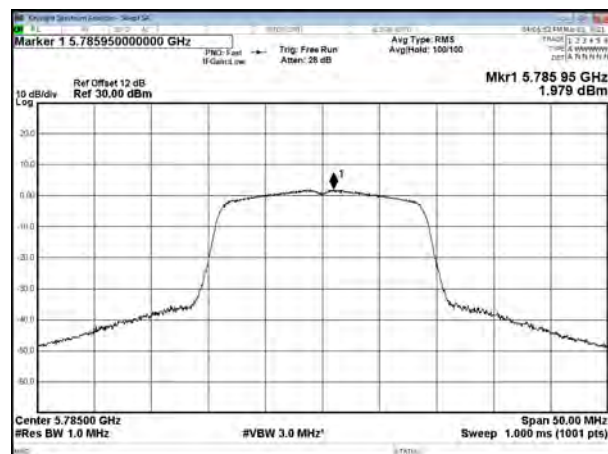
For 2TX
In the 5.8G Band
Chain 1
Modulation Standard: 802.11ac VHT20
(13 Mbps)
CH149



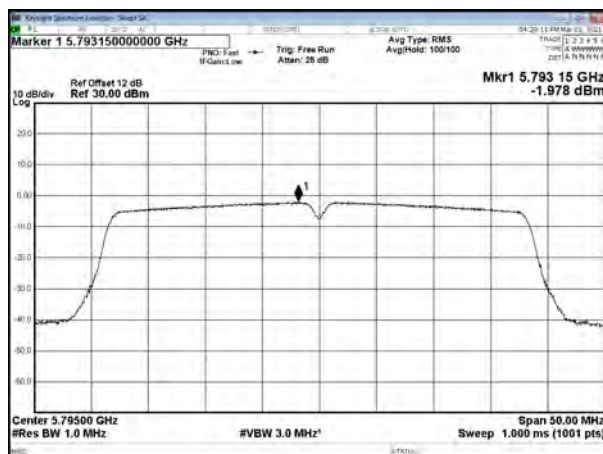
Modulation Standard: 802.11ac VHT40
(27 Mbps)
CH151



CH157

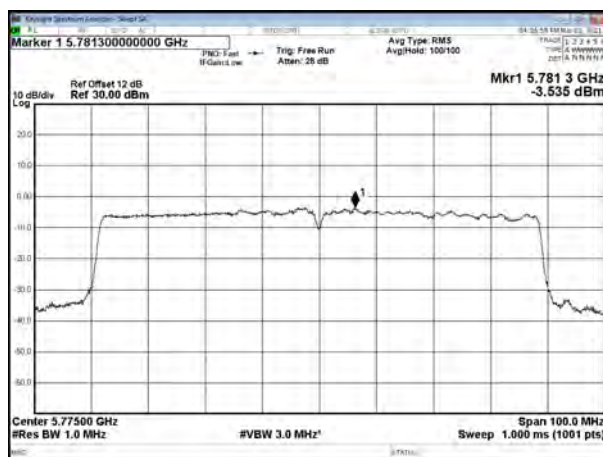
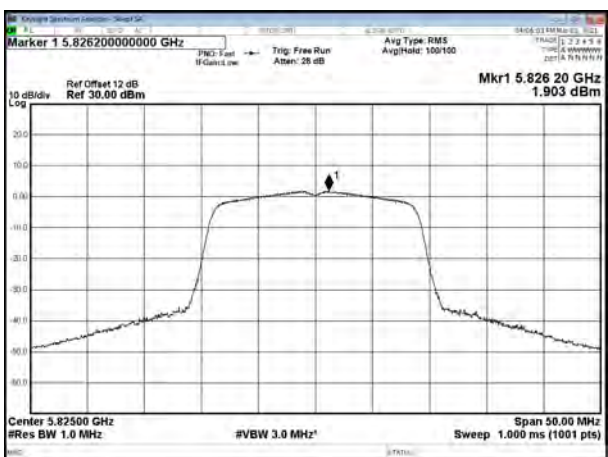


CH159



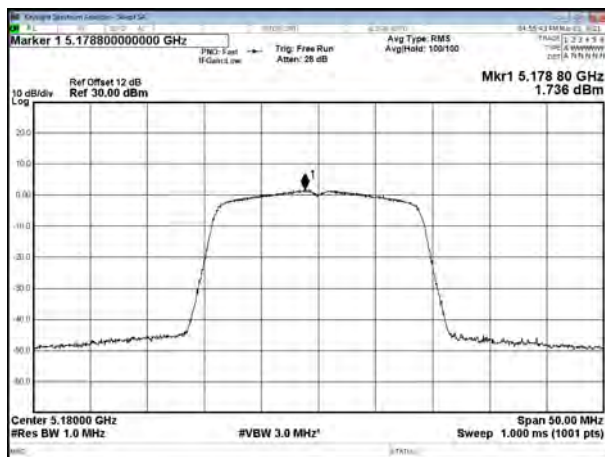
Modulation Standard: 802.11ac VHT80
(58.5 Mbps)
CH155

CH165

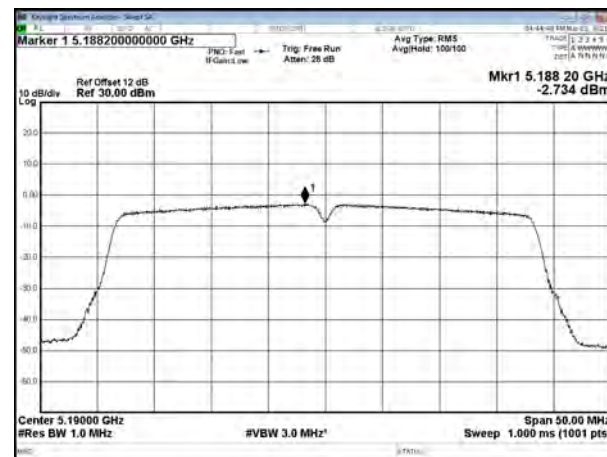




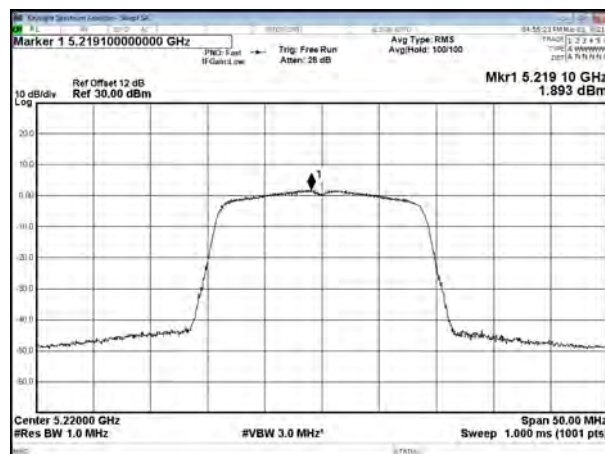
For 2TX
In the 5.2G Band
Chain 2
Modulation Standard: 802.11ac VHT20
(13 Mbps)
CH36



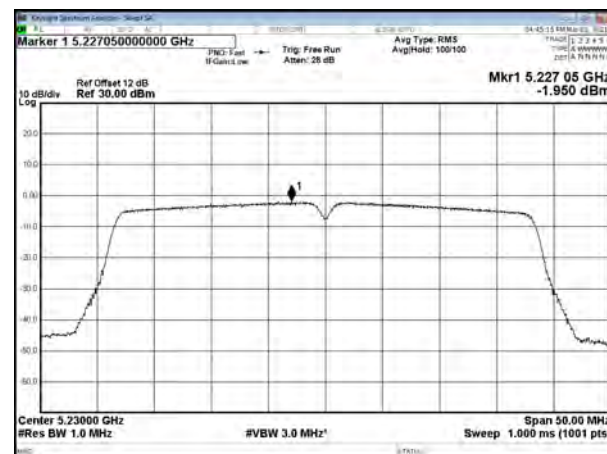
Modulation Standard: 802.11ac VHT40
(27 Mbps)
CH38



CH44

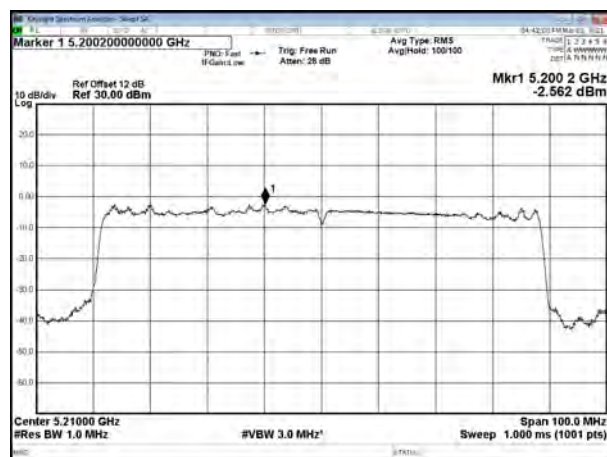
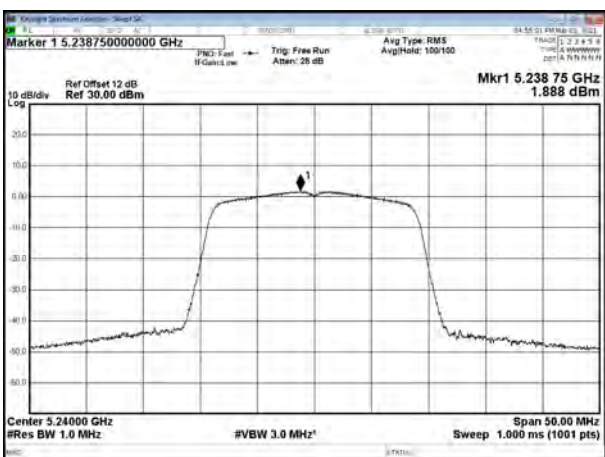


CH46



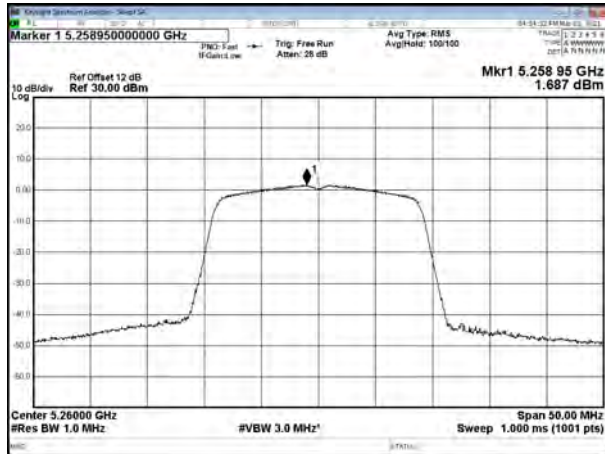
Modulation Standard: 802.11ac VHT80
(58.5 Mbps)
CH42

CH48

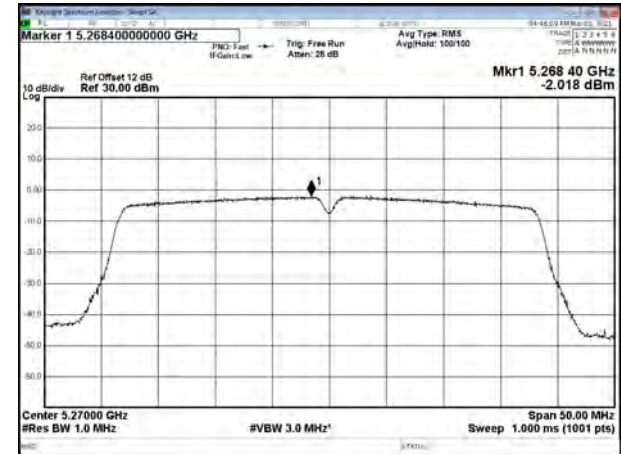




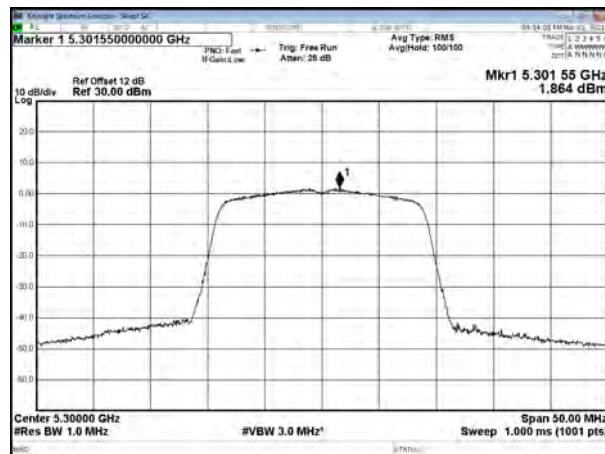
For 2TX
In the 5.3G Band
Chain 2
Modulation Standard: 802.11ac VHT20
(13 Mbps)
CH52



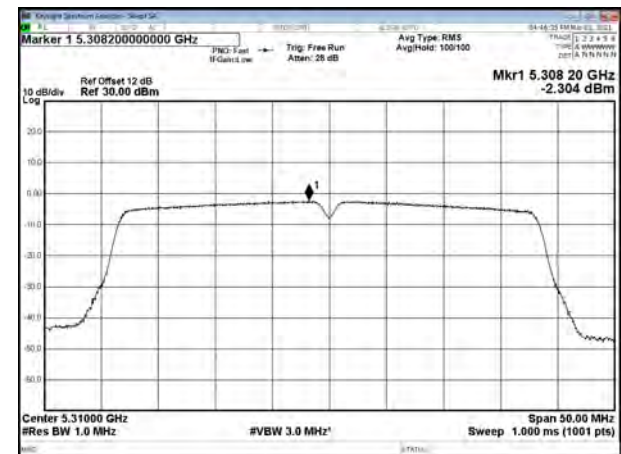
Modulation Standard: 802.11ac VHT40
(27 Mbps)
CH54



CH60

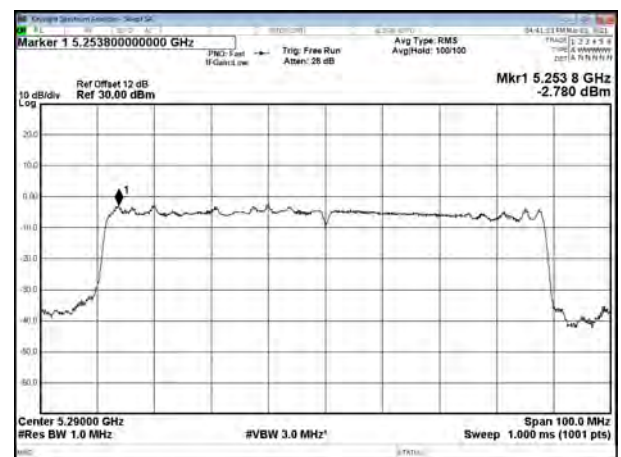
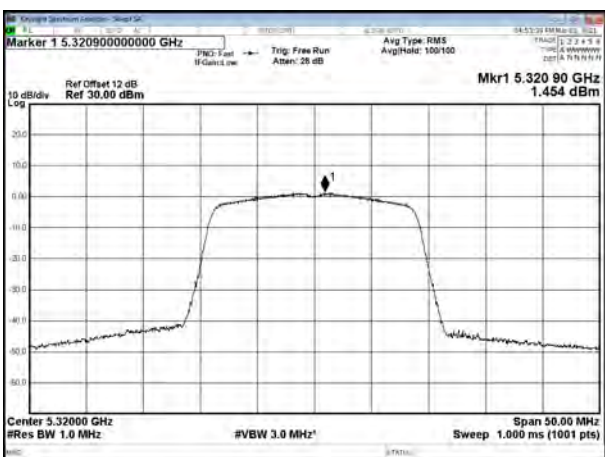


CH62



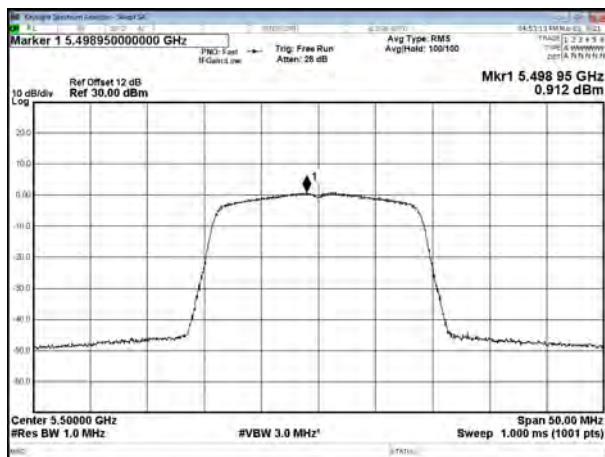
Modulation Standard: 802.11ac VHT80
(58.5 Mbps)
CH58

CH64

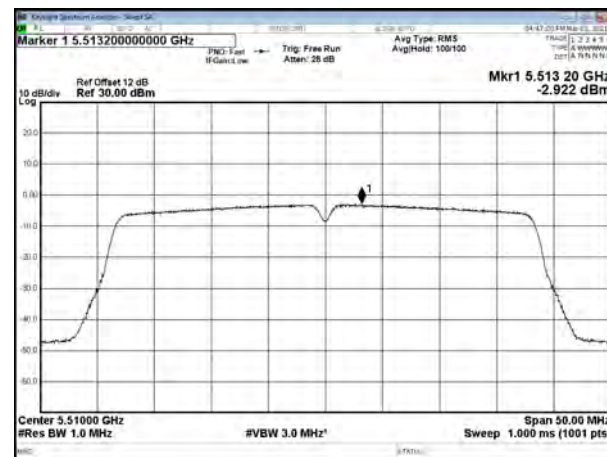




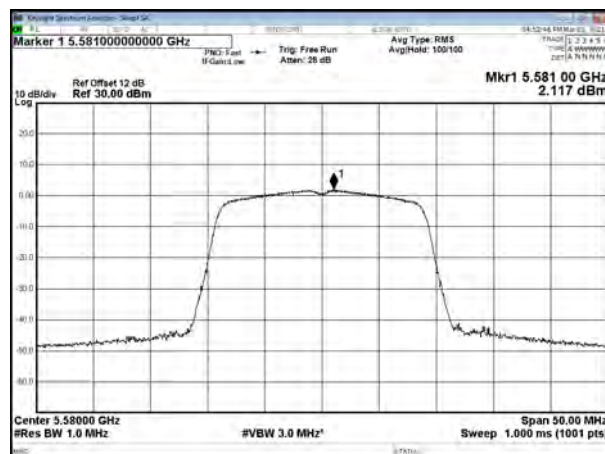
For 2TX
In the 5.5G Band
Chain 2
Modulation Standard: 802.11ac VHT20
(13 Mbps)
CH100



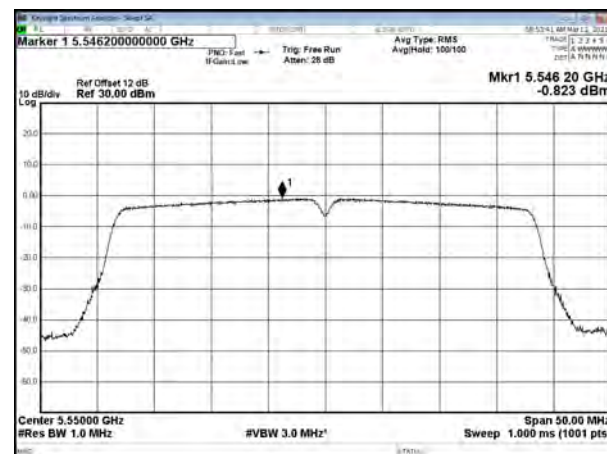
Modulation Standard: 802.11ac VHT40
(27 Mbps)
CH102



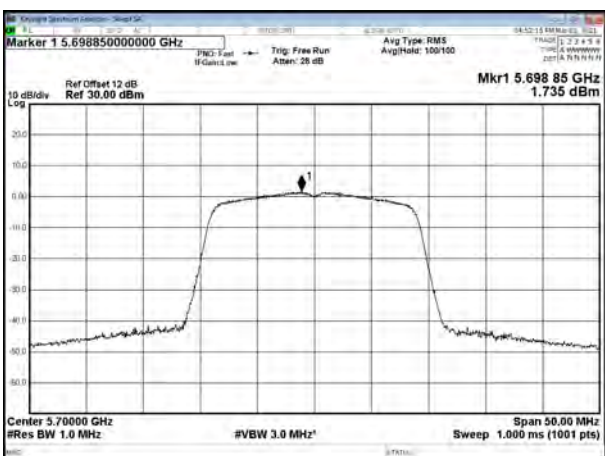
CH116



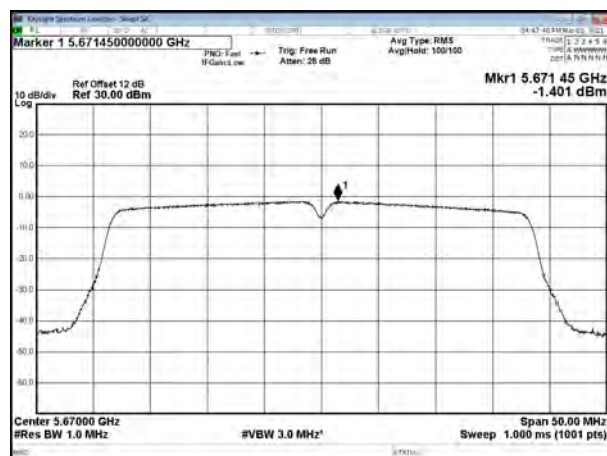
CH110



CH140

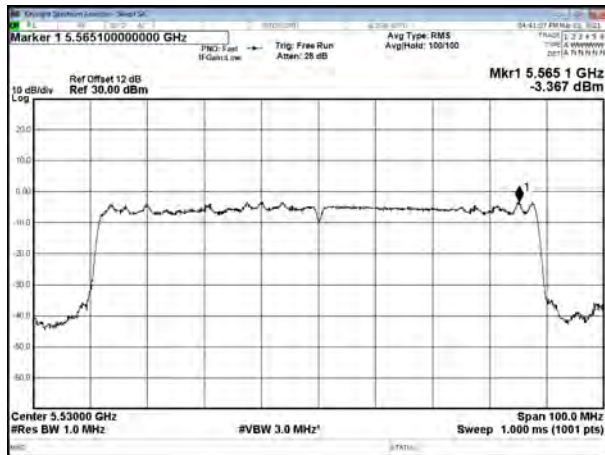


CH134



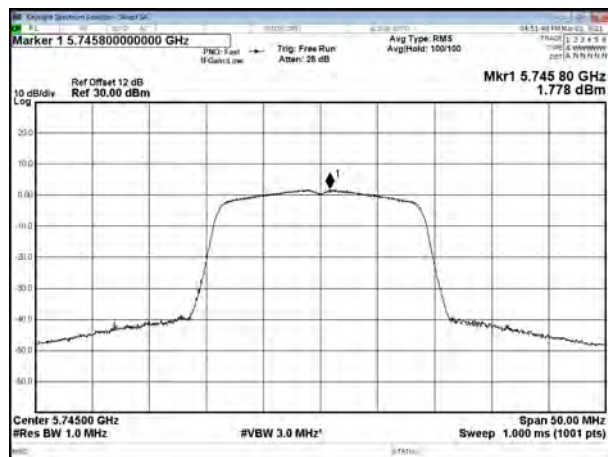


Modulation Standard: 802.11ac VHT80
(58.5 Mbps)
CH106

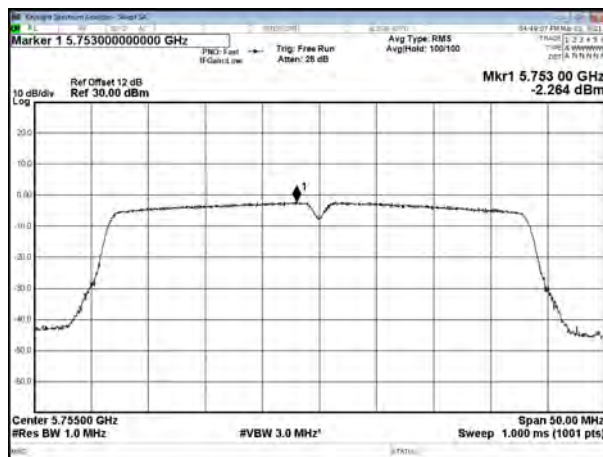




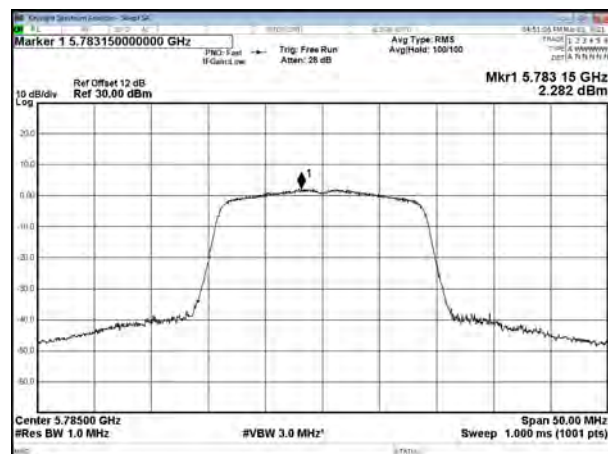
For 2TX
In the 5.8G Band
Chain 2
Modulation Standard: 802.11ac VHT20
(13 Mbps)
CH149



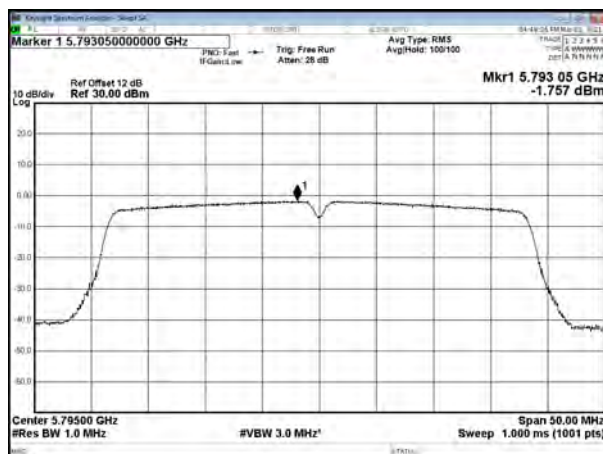
Modulation Standard: 802.11ac VHT40
(27 Mbps)
CH151



CH157

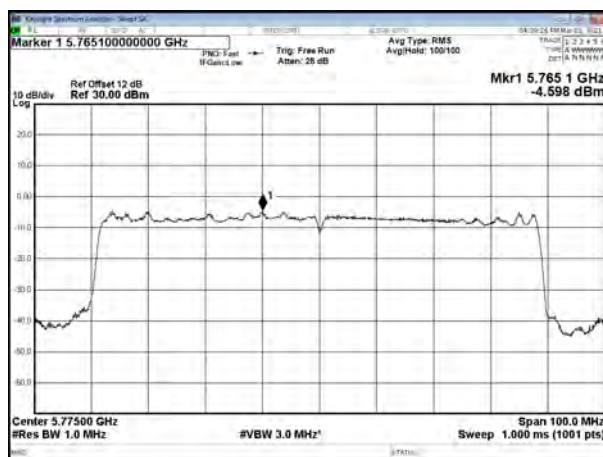
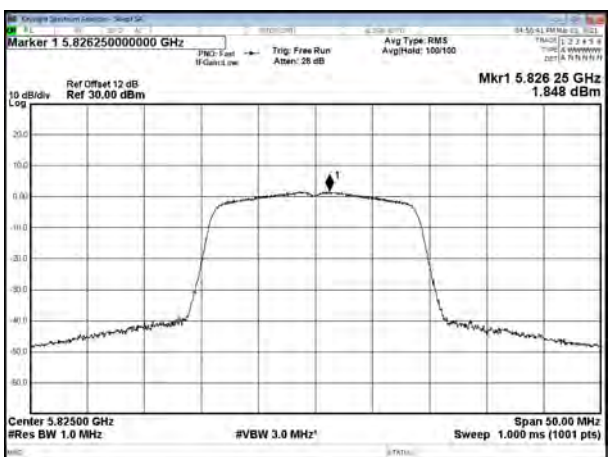


CH159



Modulation Standard: 802.11ac VHT80
(58.5 Mbps)
CH155

CH165





11. 頻率容許差度

11.1. 適用標準

應維持在主波頻率之 $\pm 0.01\%$ 以內。在正常供應電壓下，溫度在攝氏 -20°C 至 50°C 間變化；及在 20°C 下，供應電壓在額定值之 $\pm 15\%$ 內變化時。以電池作業者，應以新電池測試，須符合第 5.18 節之規定。

11.2. 測試方法

將 EUT 放置在可控制溫度和濕度設備室中。

發射機輸出連接到頻譜分析儀。

打開 EUT 並將其輸出耦合到頻譜分析儀。

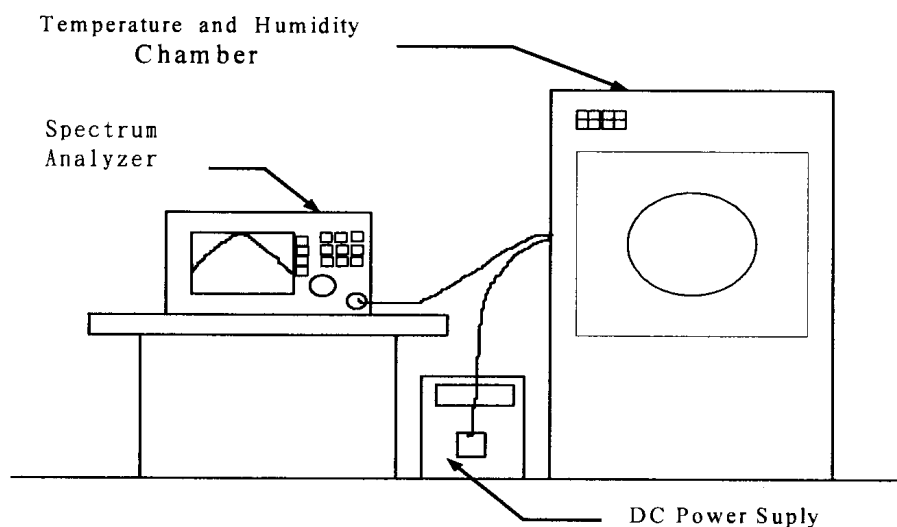
關閉 EUT 並將可控制溫度和濕度設備室設置為指定的最高溫度。

等待足夠的時間（約 30 分鐘）使可控制溫度和濕度設備室的溫度穩定，打開 EUT 並在 2 分鐘，5 分鐘和 10 分鐘後測量操作頻率。

重複步驟 2 和 3，將可控制溫度和濕度設備室設置為最低溫度。

使可控制溫度和濕度設備室在 $+20^{\circ}\text{C}$ 下穩定至少 30 分鐘。然後在 EUT 上將電源電壓從 85% 調節到 115% 並記錄頻率

11.3. 測試架構



**11.4. 測試結果及數據**

Operating frequency: 5180 MHz							
Temp	Power supply	2 minute		5 minute		10 minute	
(°C)	(V)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
60	3.6	5179.9426	-0.001108	5179.9453	-0.001056	5179.9489	-0.009865
	3.3	5179.9428	-0.001104	5179.9456	-0.001050	5179.9485	-0.009942
	3.0	5179.9430	-0.001100	5179.9466	-0.001031	5179.9492	-0.009807
50	3.6	5179.9538	-0.000892	5179.9544	-0.000880	5179.9612	-0.000749
	3.3	5179.9547	-0.000875	5179.9558	-0.000853	5179.9624	-0.000726
	3.0	5179.9556	-0.000857	5179.9562	-0.000846	5179.9605	-0.000763
40	3.6	5179.9723	-0.000535	5179.9682	-0.000614	5179.9717	-0.005463
	3.3	5179.9688	-0.000602	5179.9677	-0.000624	5179.9703	-0.005734
	3.0	5179.9679	-0.000620	5179.9673	-0.000631	5179.9690	-0.005985
30	3.6	5179.9667	-0.000643	5179.9660	-0.000656	5179.9688	-0.006023
	3.3	5179.9650	-0.000676	5179.9653	-0.000670	5179.9682	-0.006139
	3.0	5179.9645	-0.000685	5179.9648	-0.000680	5179.9679	-0.006197
20	3.6	5179.9633	-0.000708	5179.9642	-0.000691	5179.9672	-0.006332
	3.3	5179.9625	-0.000724	5179.9635	-0.000705	5179.9668	-0.006409
	3.0	5179.9613	-0.000747	5179.9633	-0.000708	5179.9661	-0.006544
10	3.6	5179.9596	-0.000780	5179.9631	-0.000712	5179.9653	-0.006699
	3.3	5179.9586	-0.000799	5179.9628	-0.000718	5179.9647	-0.006815
	3.0	5179.9577	-0.000817	5179.9617	-0.000739	5179.9635	-0.007046
0	3.6	5179.9572	-0.000826	5179.9605	-0.000763	5179.9627	-0.007201
	3.3	5179.9563	-0.000844	5179.9586	-0.000799	5179.9613	-0.007471
	3.0	5179.9558	-0.000853	5179.9573	-0.000824	5179.9608	-0.007568



12. 動態頻率選擇

12.1.List of Measurement and Examinations

EUT Applicability of DFS requirements and Frequency Range

Operation Mode		Operating Frequency Range	
		5250-5350MHz	5470-5725MHz (5600MHz-5650MHz will be disable)
Master	--	--	--
Client without radar detection	√	√	√
Client with radar detection	--	--	--

DEVICES WITH RADAR DETECTION

MAXIMUM TRANSMIT POWER	VALUE (SEE Note 1 and 2)
≥ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna. Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response. Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911	

Table1: Applicability of DFS requirements prior to use of a channel

REQUIREMENT RADAR	OPERATIONAL MODE		
	MASTER	CLIENT WITHOUT RADAR DETECTION	CLIENT WITH RADAR DETECTION
Non-Occupancy Period	V	V _{Note}	V
DFS Detection Threshold	V	Not required	V
Channel Availability Check Time	V	Not required	Not required
U-NII Detection Bandwidth	V	Not required	V
Note: Regarding KDB 905462 D03 Client Without DFS New Rules section (b)(5/6), If the client moves with the master, the device is considered compliant if nothing appears in the client non-occupancy period test. For devices that shut down (rather than moving channels), no beacons should appear. An analyzer plot that contains a single 30-minute sweep on the original channel.			

**Table2: Applicability of DFS requirements during normal operation**

REQUIREMENT RADAR	OPERATIONAL MODE		
	MASTER	CLIENT WITHOUT RADAR DETECTION	CLIENT WITH RADAR DETECTION
DFS Detection Threshold	V	Not required	V
Channel Closing Transmission Time	V	V	V
Channel Move Time	V	V	V
U-NII Detection Bandwidth	V	Not required	V

Additional requirements for devices with multiple bandwidth modes	Master or Client with radar detection	Client without radar detection
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other	Any single BW mode	Not required
Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.		

12.2. Test Setup

Setup for Master with injection at the Master

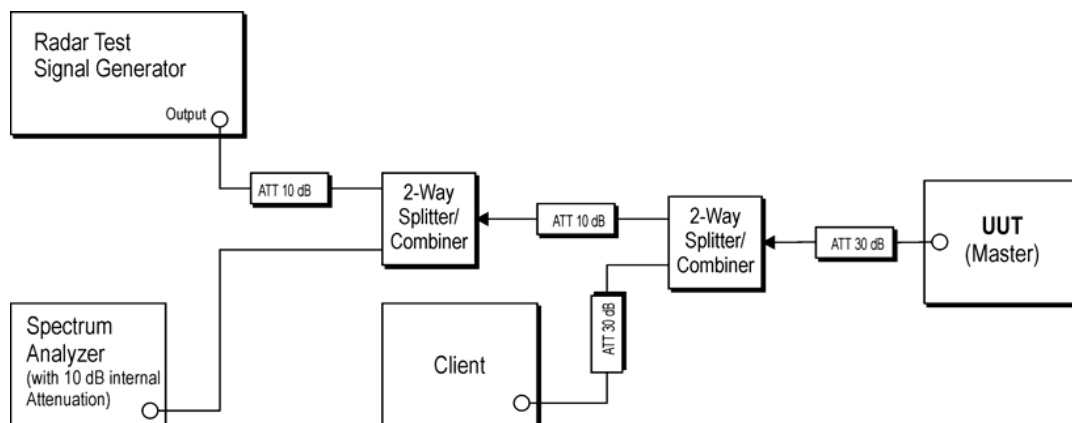


Figure 1: Example Conducted Setup where UUT is a Master and Radar Test Waveforms are injected into the Master

Setup for Client with injection at the Master

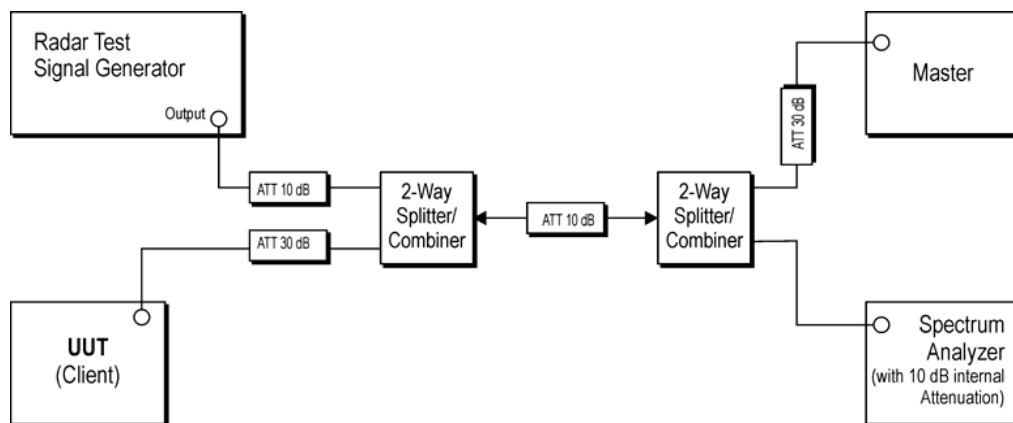


Figure 2: Example Conducted Setup where UUT is a Client and Radar Test Waveforms are injected into the Master



Setup for Client with injection at the Client

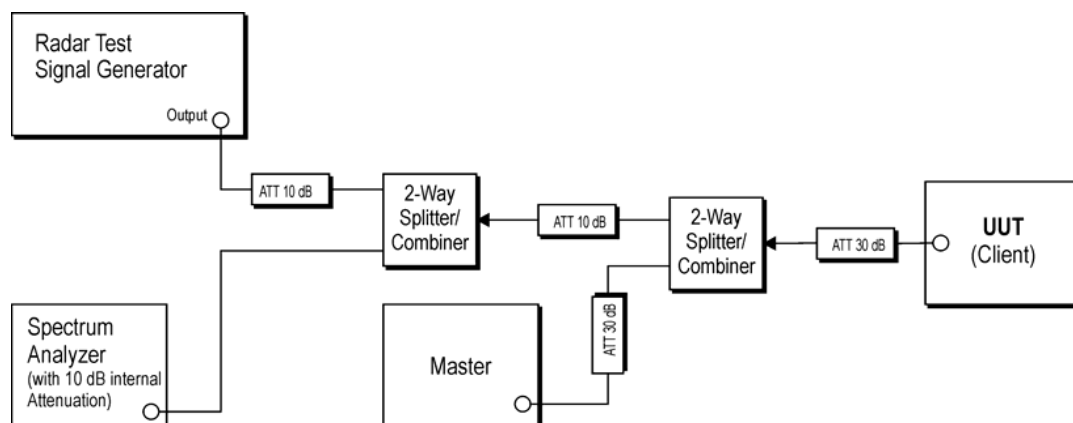


Figure 3: Example Conducted Setup where UUT is a Client and Radar Test Waveforms are injected into the Client



12.3.Non-Occupancy Period

The Channel Shutdown is defined as the process initiated by the RLAN device immediately after a radar signal has been detected on an Operating Channel.

The master device shall instruct all associated slave devices to stop transmitting on this channel, which they shall do within the Channel Move Time.

Slave devices with a Radar Interference Detection function, shall stop their own transmissions within the Channel Move Time.

The aggregate duration of all transmissions of the RLAN device on this channel during the Channel Move Time shall be limited to the Channel Closing Transmission Time. The aggregate duration of all transmissions shall not include quiet periods in between transmissions.

12.3.1. Test Limit

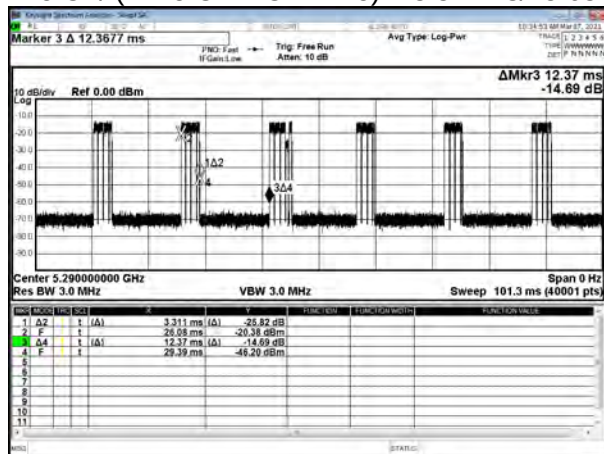
Radar Test Signal	Master (min)	Client (min)
0	> 30	> 30

12.3.2. Channel Loading

Timing plots are required with calculations demonstrating a minimum channel loading of approximately 17% or greater. For example, channel loading can be estimated by setting the spectrum analyzer for zero span and approximate the Time On/ (Time On + Off Time). This can be done with any appropriate channel BW and modulation type

Modulation Standard: 802.11ac VHT80

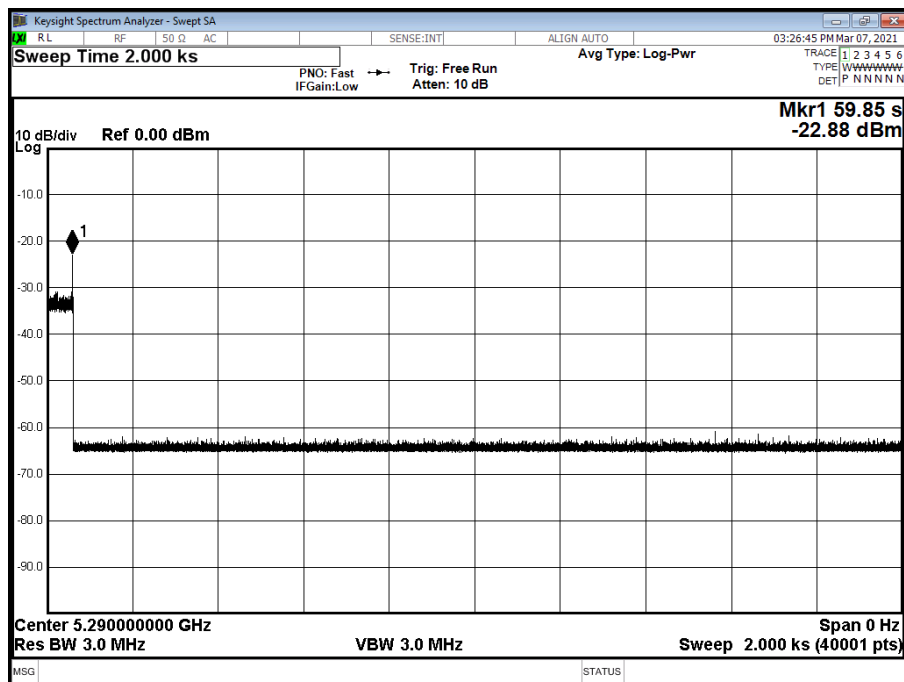
Time On/ (Time On + Off Time) = 3.311ms/15.681ms=21.11%



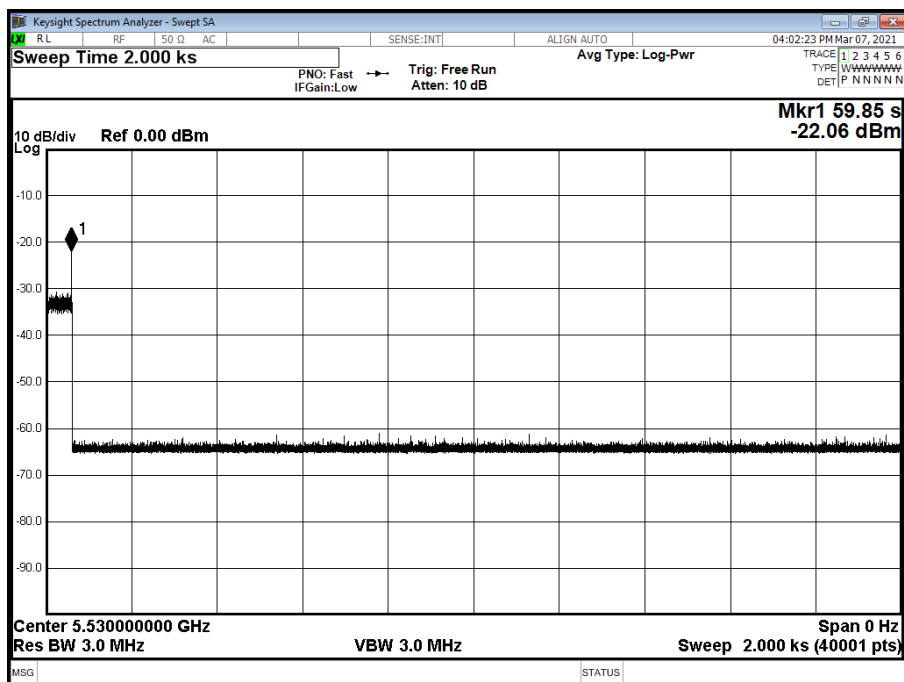


12.3.3. Test Result of Non-Occupancy Period

Modulation Standard: 802.11ac VHT80,5290MHz



Modulation Standard: 802.11 ac VHT80,5530MHz





12.4. DFS Detection Threshold

DFS Detection Threshold is the level used by the DFS mechanism to detect radar interference.

12.4.1. Test Limit

Limits Clause 4.7.2.1.2

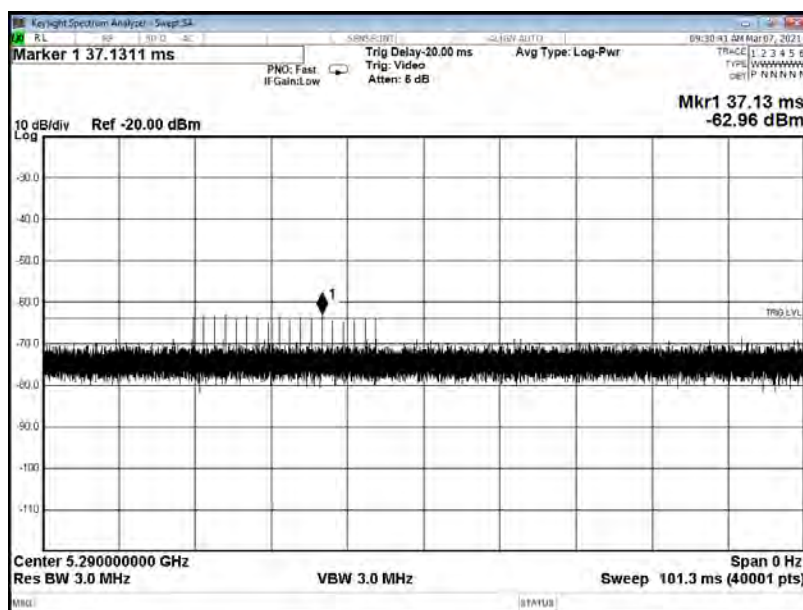
DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection

MAXIMUM TRANSMIT POWER	VALUE (SEE Note 1 and 2)
≥ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.
Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.
Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911

12.4.2. Test Result of DFS Detection Threshold

EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz, Radar 0 VALUE
-62.96dBm





12.5.Channel Availability Check

The Channel Availability Check is defined as the mechanism by which an RLAN device checks a channel for the presence of radar signals.

There shall be no transmissions by the device within the channel being checked during this process.

If no radars have been detected, the channel becomes an Available Channel valid for a period of time.

The RLAN shall only start transmissions on Available Channels.

At power-up, the RLAN is assumed to have no Available Channels.

12.5.1. Test Limit

Limits Clause 4.7.2.1.2

Table D.2: DFS requirement values

Parameter	Value
Channel Availability Check	> 60s

12.5.2. Test Result of Channel Availability Check

Not required



12.6.U-NII Detection Bandwidth

12.6.1. Test Limit

Limits Clause 4.7.2.1.2 Table D.2: DFS requirement values

Parameter	Value
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission
Note : During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.	

12.6.2. Test Result of U-NII Detection Bandwidth

Not required



12.7. Uniform Spreading

The UUT will select channel by random mode and remember this channel when detect radar signal, so that will select unused channel by random mode.

12.7.1. Test Result of Uniform Spreading

Not required



12.8. In-Service Monitoring

The In-Service Monitoring is defined as the process by which an RLAN monitors the Operating Channel for the presence of radar signals.

12.8.1. Test Limit

Parameter	Value
Channel Move Time	< 10 s (See Note 1)
Channel Closing Transmission Time	< 200 ms+ an aggregate of 60 milliseconds over remaining 10 second period. (See Notes 1 and Notes 2.)
Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.	
Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.	

Limits Clause 4.7.2.2.2

The In-Service Monitoring shall be used to continuously monitor an Operating Channel.

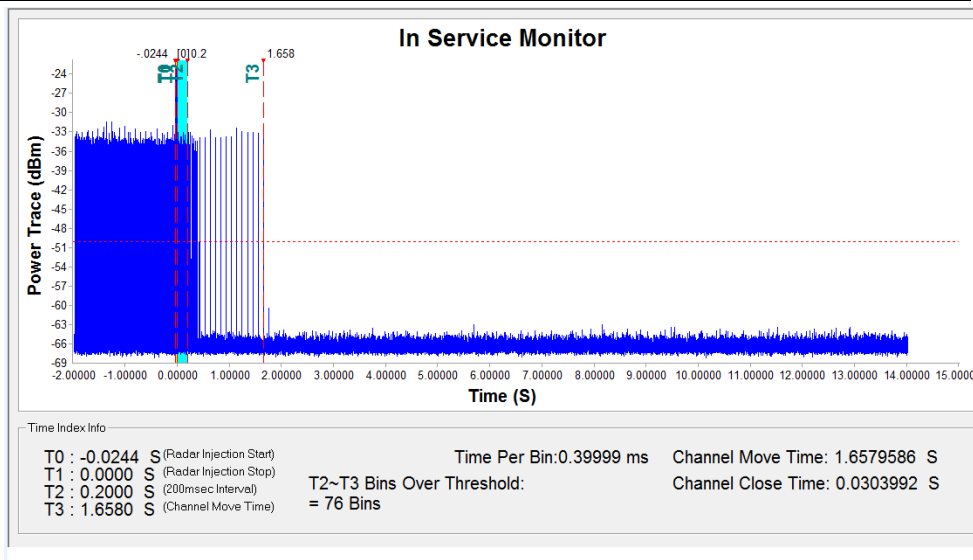
The In-Service-Monitoring shall start immediately after the RLAN has started transmissions on an Operating Channel.



12.8.2. Test Result of In-Service Monitoring

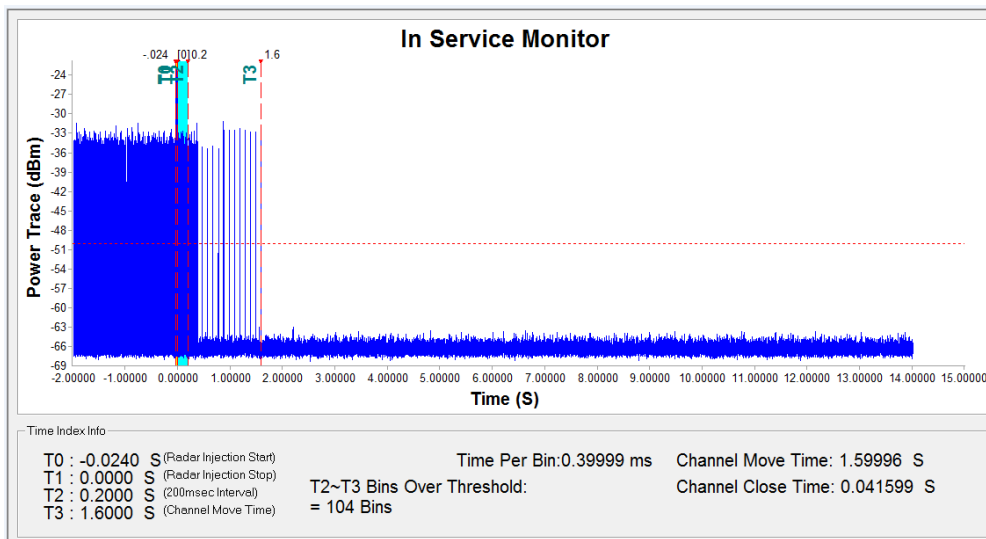
Signal 0 at 5290MHz, 802.11ac VHT80

	Value	Limit
Channel Move Time	1.658s	<10 s
Channel Closing Transmission Time	30.399ms	<60ms



Signal 0 at 5530MHz, 802.11ac VHT80

	Value	Limit
Channel Move Time	1.600s	<10 s
Channel Closing Transmission Time	41.599ms	<60ms





12.9. Statistical Performance Check

Not required



13. 電波暴露量之評估

13.1. 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 5.20 節之(5.20.2)規定，若受測物於正常操作模式下，其發射機距離人體 20 公分以上者，可測試最大暴露允許值(Maximum Permissible Exposure, MPE)以證明其符電波暴露量之要求。限制值如下：

(1) 職業性/可控制之暴露

頻率範圍 (MHz)	電場強度 (V/m)	磁場強度 (A/m)	功率密度 (mW/cm ²)	平均時間 (minutes)
0.3-3.0	614	1.63	*100	6
3-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1,500	-----	-----	f/300	6
1,500-100,000	-----	-----	5.0	6

註 1：標記*表平面波等效功率密度。

註 2：f 表測試頻率，單位：百萬赫(MHz)。

(2) 一般人/不可控制之暴露

頻率範圍 (MHz)	電場強度 (V/m)	磁場強度 (A/m)	功率密度 (mW/cm ²)	平均時間 (minutes)
0.3-3.0	614	1.63	*100	30
3-30	1842/f	4.89/f	*180/f ²	30
30-300	27.5	0.073	1.0	30
300-1,500	-----	-----	f/1500	30
1,500-100,000	-----	-----	1.0	30

註 1：標記*表平面波等效功率密度。

註 2：f 表測試頻率，單位：百萬赫(MHz)。



13.2. 電波暴露量之評估結果及數據

Frequency band (MHz)	Peak output power(dBm)	Tune-up power(dBm)	MaxTune-up power(dBm)	MaxTune-up power(mW)	Antenna gain (Numeric)	Distance (cm)	Power density (mW/cm ²)	Limit (mW/cm ²)
5150-5250	16.91	16.91±1	17.91	61.80164001	2.49	20	0.030623331	1
5250-5350	16.92	16.92±1	17.92	61.94410751	2.49	20	0.030693925	1
5470-5725	16.47	16.47±1	17.47	55.84701947	2.49	20	0.027672757	1
5725-5850	15.7	15.70±1	16.7	46.77351413	2.49	20	0.023176744	1

13.3. 結果判定

高、中、低頻段的電波暴露量皆低於限制值，合乎標準規定。



14. 限制使用之頻帶

Only spurious emissions are permitted in any of the frequency bands listed below:

頻率(兆赫)	頻率(兆赫)	頻率(兆赫)
0.090 - 0.110	167.72 - 173.20	3260.0 - 3267.0
0.490 - 0.510	240.00 - 285.00	3332.0 - 3339.0
2.172 - 2.198	322.00 - 335.40	3345.8 - 3358.0
3.013 - 3.033	399.90 - 410.00	3500.0 - 4400.0
4.115 - 4.198	485.00 - 510.00	4500.0 - 5250.0
5.670 - 5.690	608.00 - 614.00	5350.0 - 5460.0
6.200 - 6.300	703.00 - 748.00	7250.0 - 7750.0
8.230 - 8.400	758.00 - 803.00	8025.0 - 8500.0
12.265 - 12.600	825.00 - 915.00	9000.0 - 9200.0
13.340 - 13.430	930.00 - 1240.0	9300.0 - 9500.0
14.965 - 15.020	1300.0 - 1427.0	10600- 12700
16.700 - 16.755	1435.0 - 1626.5	13250- 13400
19.965 - 20.020	1660.0 - 1785.0	14470- 14500
25.500 - 25.700	1805.0 - 1880.0	15350- 16200
37.475 - 38.275	1885.0 - 1900.0	17700- 21400
73.500 - 75.400	1905.0 - 1985.0	22010- 23120
108.00 - 138.00	2010.0 - 2025.0	23600- 24000
149.90 - 150.05	2110.0 - 2170.0	31200- 31800
156.70 - 156.90	2200.0 - 2300.0	36430- 36500
162.01 - 167.17	2310.0 - 2390.0	38600 以上
162.01 - 167.17	2483.5 - 2900.0	