



低功率射頻器材測試報告

申請廠商 : 惠州高盛達科技有限公司

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製造廠商 : 惠州高盛達科技有限公司

地址 : 惠州市惠澳大道惠南高新科技產業園金達路 2 號

產品名稱 : WIFI+BT Module

產品型號 : WT54M2001

廠牌 : GSD

受理日期 : 110 年 01 月 22 日

完成日期 : 110 年 03 月 10 日

實驗室名稱：世騰電子科技股份有限公司

實驗室地址：桃園市蘆竹區聯福街 2 巷 10 號

實驗室認可證書有效期限：112 年 07 月 08 日

實驗室認可編號及範圍：1439 (9 kHz to 40 GHz)

實驗室認證資格





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修訂記錄

報告號碼.	發行日期	描述
21010241-TRNCC01	Mar. 12, 2021	Original

報告形式		說明
☒	Original report	NA
☐	Derivative Report	NA



證 明 書

申請廠商 : 惠州高盛達科技有限公司

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產品名稱 : WIFI+BT Module

產品型號 : WT54M2001

廠牌 : GSD

該產品樣品試驗 : 國家通訊傳播委員會低功率射頻器材技術規範(LP0002)。
依據之試驗標準 : 規範修訂日期 109 年 07 月 01 日。
FCC Part 15E, 15.407
LP0002 5.7 章節及 FCC KDB 789033 D02 General UNII Test
Procedures New Rules

發射功率 : 16.19dBm
(電場強度)

茲在此鄭重聲明：

本試驗報告所列之待測設備樣品已於民國 110 年 03 月 05 日在本公司的標準測試場地完成詳細及完整之量測。本試驗報告所列之量測皆依據低功率射頻器材技術規範及 FCC Part 15E 之規定來執行。並判斷此待測設備樣品確實符合低功率射頻器材技術規範規定。

備註：本測試報告僅對受測之樣品負責。非經本公司同意，測試報告不得摘錄複印使用。(全部複製除外)。



項次	測試項目	低功率射頻器材技術規範	FCC Rule	量測設備	測試結果	結果判定
1	天線增益之要求	5.7.3 節	---	請參閱 2 節	請參閱 3.2 節	合格
2	電源線傳導干擾之要求	3.3 節	---	請參閱 2 節	請參閱 4.4 節	合格
3	場強輻射之要求	5.7.4 節	---	請參閱 2 節	請參閱 5.4 節及 5.5 節	合格
4	On Time, Duty Cycle and Measurement methods	---	KDB 789033	請參閱 2 節	請參閱 6.4 節	---
5	6dB 頻寬之規定	5.7.5 節	FCC 15.407(a)	請參閱 2 節	請參閱 7.4 節	合格
6	26dB 頻寬之規定	5.7.3.2 節	FCC 15.407(a)	請參閱 2 節	請參閱 8.4 節	合格
7	傳導輸出功率	5.7.3 節	KDB 789033	請參閱 2 節	請參閱 9.4 節	---
8	最大功率頻譜密度	5.7.3 節	FCC 15.407(a)	請參閱 2 節	請參閱 10.4 節	合格
9	動態頻率選擇	5.7.7.2 節	15.407(h)(2)	請參閱 2 節	請參閱 12.3-12.9 節	合格
10	電波暴露量之評估	6.20 節	2.1091	請參閱 2 節	請參閱 13.3 節	合格

本實驗室已依據合約內的標準，降低儀器、環境、人員等不確定因素。因此測試結果將直接依照標準要求判定之。

報告簽署人：



1. 一般描述

1.1. 產品規格

Main Chip	MT7638BU
Host Interface	USB 2.0
IEEE Standards	IEEE 802.11a/b/g/n+ BT
Operating Frequencies	2.4GHz~2.4835GHz /5.150~5.850GHz
Modulation	BT: GFSK, $\pi/4$ -DQPSK, 8DPSK BLE: GFSK 802.11b: CCK, DQPSK, DBPSK 802.11a/g: 64-QAM, 16-QAM, QPSK, BPSK 802.11n: 64-QAM, 16-QAM, QPSK, BPSK (註: 802.11n 可以支持 1TX, 2TX 兩種模式)
Wireless Data Rate	BT: GFSK: 1Mbps, $\pi/4$ -DQPSK: 2Mbps, 8DPSK: 3Mbps BLE: GFSK: 1Mbps&2Mbps WIFI 2.4G: 802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: HT20 reach up to 144.4Mbps, HT40 reach up to 300Mbps WIFI 5G: 802.11a: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: HT20 reach up to 144.4Mbps, HT40 reach up to 300Mbps
Antenna Type	FPC Antenna
Power Supply	3.3V
Working Temperature	-10°C to +70°C
Storage Temperature	-40°C to +80°C

Note: For more details, please refer to the User's manual of the EUT.

1.2. 差異說明

無。



1.3. 無線界面規格及頻道對應頻率

Band: 5150MHz-5250MHz

802.11a, 802.11n HT 20

Channel	Frequency(MHz)	Channel	Frequency(MHz)
*36	5180	*44	5220
40	5200	*48	5240

802.11n HT 40

Channel	Frequency(MHz)	Channel	Frequency(MHz)
*38	5190	*46	5230

Band: 5250MHz -5350MHz

802.11a, 802.11n HT20

Channel	Frequency(MHz)	Channel	Frequency(MHz)
*52	5260	*60	5300
56	5280	*64	5320

802.11n HT 40

Channel	Frequency(MHz)	Channel	Frequency(MHz)
*54	5270	*62	5310

Band: 5470MHz -5725MHz

802.11a, 802.11n HT20

Channel	Frequency(MHz)	Channel	Frequency(MHz)
*100	5500	*116	5580
104	5520	132	5660
108	5540	136	5680
112	5560	*140	5700

802.11n HT40

Channel	Frequency(MHz)	Channel	Frequency(MHz)
*102	5510	*134	5670
*110	5550		

Band: 5725MHz -5850MHz

802.11a, 802.11n HT20

Channel	Frequency(MHz)	Channel	Frequency(MHz)
*149	5745	161	5805
153	5765	*165	5825
*157	5785		

802.11n HT 40

Channel	Frequency(MHz)	Channel	Frequency(MHz)
*151	5755	*159	5795

*為量測之頻道及頻率



1.4. 測試模式之描述

- 電源傳導及輻射測試之測試模式及測試軟體如下:

1. 將量測系統之全部電源打開。
2. EUT連接治具,治具再連接電腦,電腦於Win 7作業系統下,EUT進入“QATool_Dbg.exe”來發射與接收訊號。

(測試軟體版本: 0.0.1.98.)

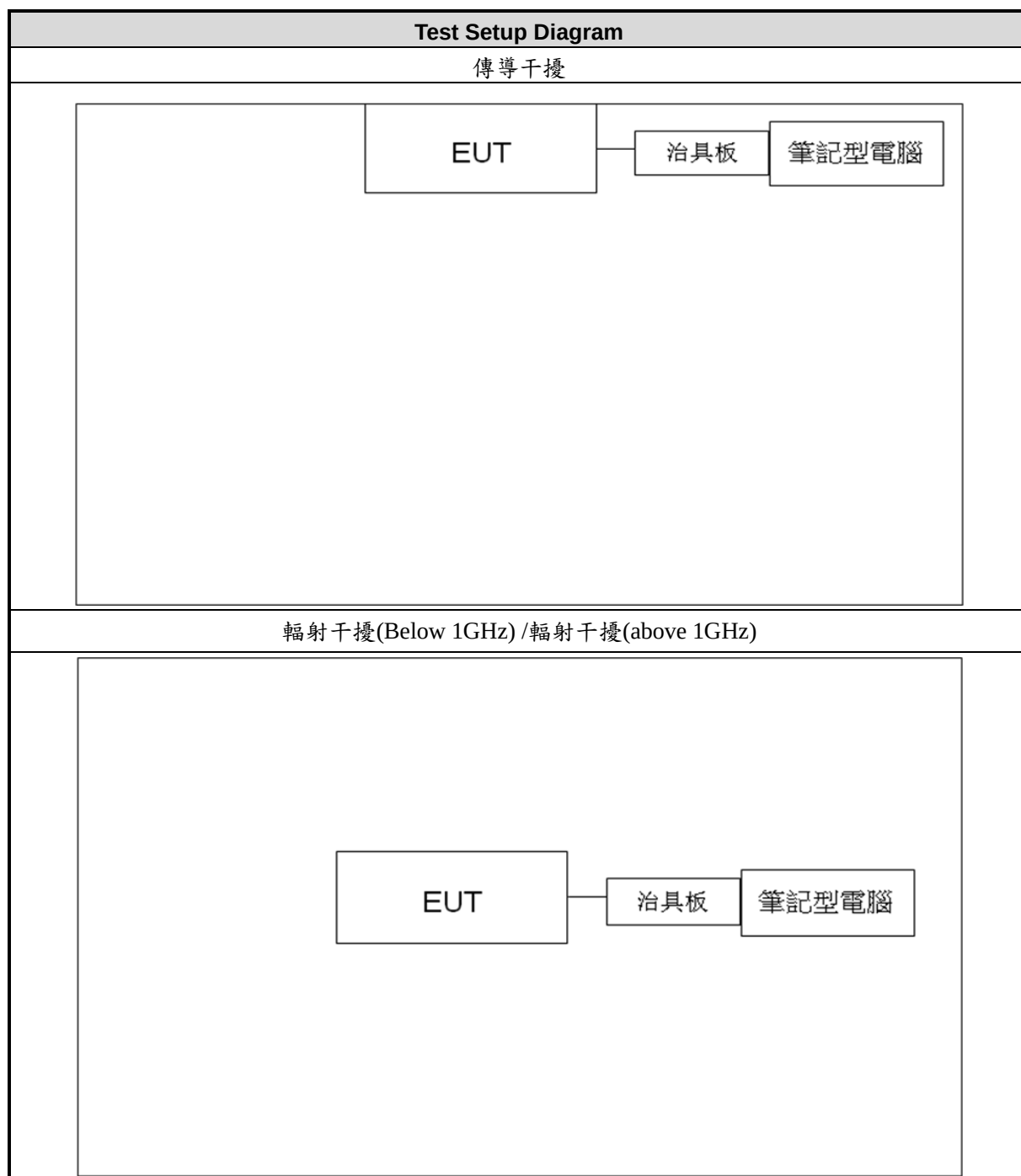
- 執行以下測試模式如下:

傳導干擾, 輻射干擾 (Below 1GHz-TX&RX)	
Test Mode	Operating Description
1	802.11a
2	802.11n HT20
3	802.11n HT40
以 Test Mode 3 之測試結果為最差, 故以此作為發報告之依據	
輻射干擾 (above 1GHz for 1TX)	
Test Mode	Operating Description
1	802.11a (6 Mbps)
2	802.11n HT20 (6.5 Mbps)
3	802.11n HT40 (13.5 Mbps)
以 Test Mode 1~ 3 之測試結果為最差, 故以此作為發報告之依據	
輻射干擾 (above 1GHz for 2TX)	
Test Mode	Operating Description
1	802.11n HT20 (13 Mbps)
2	802.11n HT40 (27 Mbps)
以 Test Mode 1~Mode 2 之測試結果為最差, 故以此作為發報告之依據	
輻射干擾 (above 1GHz for RX)	
Test Mode	Operating Description
1	802.11a
2	802.11n HT20
3	802.11n HT40
以 Test Mode 3 之測試結果為最差, 故以此作為發報告之依據	
直量量測 (For 1TX)	
Test Mode	Operating Description
1	802.11a (6 Mbps)
2	802.11n HT20 (6.5 Mbps)
3	802.11n HT40 (13.5 Mbps)
以 Test Mode 1~3 之測試結果為最差, 故以此作為發報告之依據	
直量量測 (For 2TX)	
Test Mode	Operating Description
1	802.11n HT20 (13 Mbps)
2	802.11n HT40 (27 Mbps)
以 Test Mode 1~2 之測試結果為最差, 故以此作為發報告之依據	

注: 經驗證 1TX 最差數據為 Ant1 測試資料。



1.5. 受測裝置之系統說明



[本案經申請者切結器材不提供隨貨配件，配件由實驗室提供併同檢驗]，及其廠牌型號資訊如下：

1.5. 受測裝置之系統說明

「本案經申請者切結器材不提供隨貨配件，配件由實驗室提供併同檢驗」，及其廠牌型號資訊如下：

傳導干擾&輻射干擾(below 1GHz)& 輻射干擾(above 1GHz) & 直量測試

設備	廠牌	型號	長度/訊號線類別	長度/電源線類別
筆記型電腦	Dell	P86F	N/A	非隔離/1.8m
治具板	GSD	GSD-11	N/A	N/A

頁別



1.6. 測試場地

測試場地：	世騰電子科技股份有限公司 338 桃園市蘆竹區聯福街 2 巷 10 號
測試電壓：	AC 110V/60Hz
適用規範：	本測試報告之所有項目皆依據國家通訊傳播委員會低功率射頻器材技術規範以及參考 ANSI、FCC/47CFR/2.1046、2.1047、2.1049、2.1051、2.1053 及 2.1055 之檢驗法。
測試頻率：	電源傳導：從 150 kHz 到 30 MHz。 場強輻射：從 30 MHz 到 40000 MHz。
測試天線的距離：	場強輻射之測試距離為 3 M。

Test Item	Test Site	Finish Date	Environmental Conditions	Tested By
RF Conducted	RFCON01-NK	2021/01/22~2021/03/05	26°C / 51%	Nick Guan
Radiated Emissions	3M02-NK	2021/01/22~2021/03/05	24°C / 52%	Nick Guan
AC Power Line Conducted Emission	CON01-NK	2021/01/22~2021/03/05	25°C / 50%	Nick Guan

1.7. 量測不確定度

量測項目	不確定度
AC Power Line Conduction(150K~30MHz)	±1.90dB
Radiated Spurious Emission(9KHz~30MHz)	±3.405dB
Radiated Spurious Emission(30MHz~1GHz)	±5.636dB
Radiated Spurious Emission(1GHz~25GHz)	±6.621dB
Conducted Spurious Emission	±2.022dB
6dB Bandwidth	±4.482%
20dB Bandwidth	±4.40%
Occupied Bandwidth	±4.40%
Peak Output Power(Conducted Power Meter)	±1.02dB
Dwell Time	±3.49%
Power Spectral Density	±1.963dB
Duty Cycle	±3.47%



2. 測試儀器

Test Item	Radiated Emissions				
Test Site	Semi Anechoic Room(3M01-NK)				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
Bilog Antenna	Sunol	JB1	A051717	2020/06/10	2021/06/09
Active Loop Antenna	EMCO	6507	40855	2020/05/21	2021/05/20
Horn Antenna	Schwarzbeck	BBHA 9120 D	9120D-1785	2020/10/16	2021/10/15
Horn Antenna	EMCO	3116	31974	2020/03/26	2021/03/25
EMI Receiver	ROHDE & SCHWARZ	ESR 7	101906	2020/05/26	2021/05/25
Spectrum Analyzer	ROHDE & SCHWARZ	FSV 40-N	102151	2020/08/03	2021/08/02
Preamplifier	EM Electronics corp.	EM330	60644	2020/03/16	2021/03/15
Preamplifier	EM Electronics corp.	EM01G18G	60700	2020/08/24	2021/08/23
Preamplifier	EMC INSTRUMENT S	EMC184045	980065	2020/11/06	2021/11/05
Bluetooth Tester	ROHDE & SCHWARZ	CBT	101133	2020/04/07	2021/04/06
Cable-0.5m(1G-40G)	HUBER SUHNER	SF102	MY4569/2	2020/08/25	2021/08/24
Cable-1m(1G-40G)	HUBER SUHNER	SF102	MY5739/2	2020/08/25	2021/08/24
Cable-6m(1G-40G)	HUBER SUHNER	SF102	MY5740/2	2020/08/25	2021/08/24
Cable-0.5m(30M-1G)	HUBER SUHNER	RG-214	Cable-08	2020/03/12	2021/03/11
Cable-1m(30M-1G)	HUBER SUHNER	RG-214	Cable-09	2020/03/12	2021/03/11
Cable-6m(30M-1G)	HUBER SUHNER	RG-214	Cable-10	2020/03/12	2021/03/11
Cable-6m(9k~300M)	NA	EMC5D-BM-BM-6	130606	2020/03/11	2021/03/10
E3	AUDIX	v8.2014-8-6	RK-000533	NA	NA

Test Item	RF Conducted				
Test Site	RFCON01-NK				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
Spectrum Analyzer	ROHDE & SCHWARZ	FSV 40-N	101329	2020/07/07	2021/07/06
Bluetooth Tester	ROHDE & SCHWARZ	CBT	101133	2020/04/07	2021/04/06
CAX Signal Analyzer	KEYSIGHT	N9000B	MY57100339	2020/11/10	2021/11/09
Attenuator	KEYSIGHT	8491B	MY39250703	2020/04/17	2021/04/16
TEMP & HUMIDITY CHAMBER	T-MACHINE	TMJ-9712	T-12-040111	2020/08/25	2021/08/24
Power Meter	Anritsu	ML2495A	1224005	2020/04/17	2021/04/16
Power Sensor	Anritsu	MA2411B	1207295	2020/04/17	2021/04/16



Test Item	AC Power Line Conducted Emission				
Test Site	CON02-NK				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
EMI Receiver	ROHDE & SCHWARZ	ESCI	100443	2020/05/25	2021/05/24
Line Impedance Stabilization Network	Schwarzbeck	NSLK 8127	8127-740	2020/06/05	2021/06/04
TWO-LINE V-NETWORK	ROHDE & SCHWARZ	ENV216	102185	2020/07/30	2021/07/29
Cable-6m(9k~300M)	NA	CFD300-NL	NA	2020/03/11	2021/03/10
E3	AUDIX	v8.2014-8-6	RK-000536	NA	NA



3. 天線增益之要求

天線規格不受國家通訊傳播委員會低功率射頻器材技術規範(3.2)節規定之限制，其發射天線之方向性增益超過 6dBi 時，應依其所超過之 dB 數等量降低峰值輸出功率。如用於固定式點對點操作時，應符合下列情形之一：

操作於 5.15G-5.25G 頻段者	
☐	供戶外操作使用：使用超過 6dBi 方向增益之發射天線時，應依超過 6dBi 天線方增益的 dBi 總量，等量減少最大傳導輸出功率及最大功率頻譜密度。
☐	供室內操作使用：使用超過 6dBi 方向增益之發射天線時，應依超過 6dBi 天線方增益的 dBi 總量，等量減少最大傳導輸出功率及最大功率頻譜密度。
☐	供固定式點對點操作使用：使用超過 23dBi 方向增益之發射天線時，應依超過 23dBi 天線方增益的 dBi 總量，等量減少最大傳導輸出功率及最大功率頻譜密度。
☒	供用戶端裝置(Client Device)操作使用：使用超過 6dBi 方向增益之發射天線時，應依超過 6dBi 天線方增益的 dBi 總量，等量減少最大傳導輸出功率及最大功率頻譜密度。
操作於 5.25G-5.35G 與 5.470G-5.725G 頻段者	
使用超過 6dBi 方向增益之發射天線時，應依超過 6dBi 天線方增益的 dBi 總量，等量減少最大傳導輸出功率及最大功率頻譜密度。	
操作於 5.725G-5.850G 頻段者	
☐	供固定式點對點操作使用：使用超過 6dBi 方向增益之發射天線時，可不須對應減少發射器之傳導輸出功率限制值。
☒	除(1)外，使用超過 6dBi 方向增益之發射天線時，應依超過 6dBi 天線方增益的 dBi 總量，等量減少最大傳導輸出功率及最大功率頻譜密度。

3.1. 天線型式及其增益

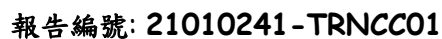
- 1.1 Brand : 惠州高盛達科技有限公司
- 1.2 Model : WCOD-60
- 1.3 Antenna type : PIFA Antenna
- 1.4 Frequency Rang : 5150-5850MHz
- 1.5 Gain(peak) : 2.57dBi (Two antennas have the same gain.)
- (參照天線規格資料)

3.2. 結果判定

其發射天線之方向性增益低於 6dBi，因此無需降低峰值輸出功率。

注：For Power Directional Gain(dBi)：2.57dBi

For PSD Directional Gain(dBi)：2.57dBi

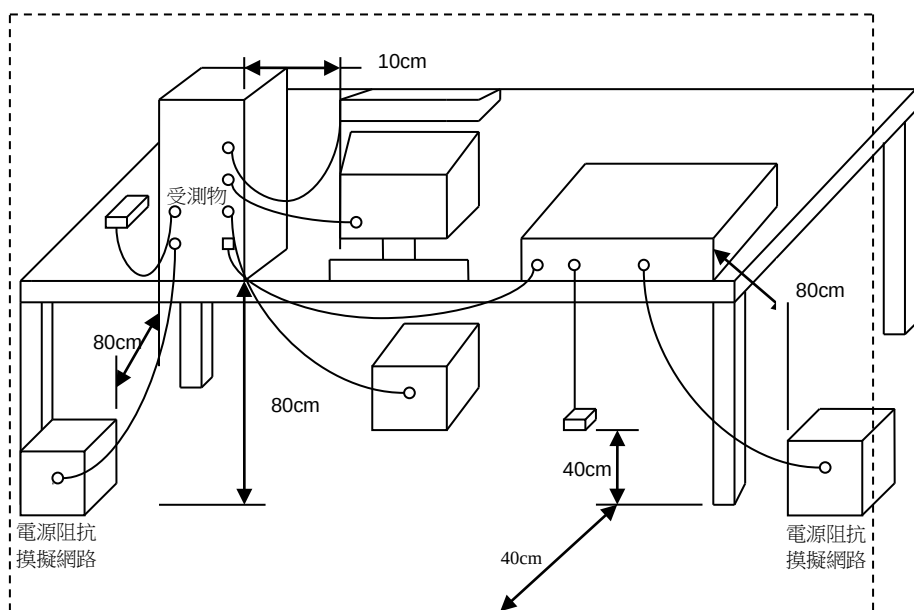


4.1. 適用標準

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

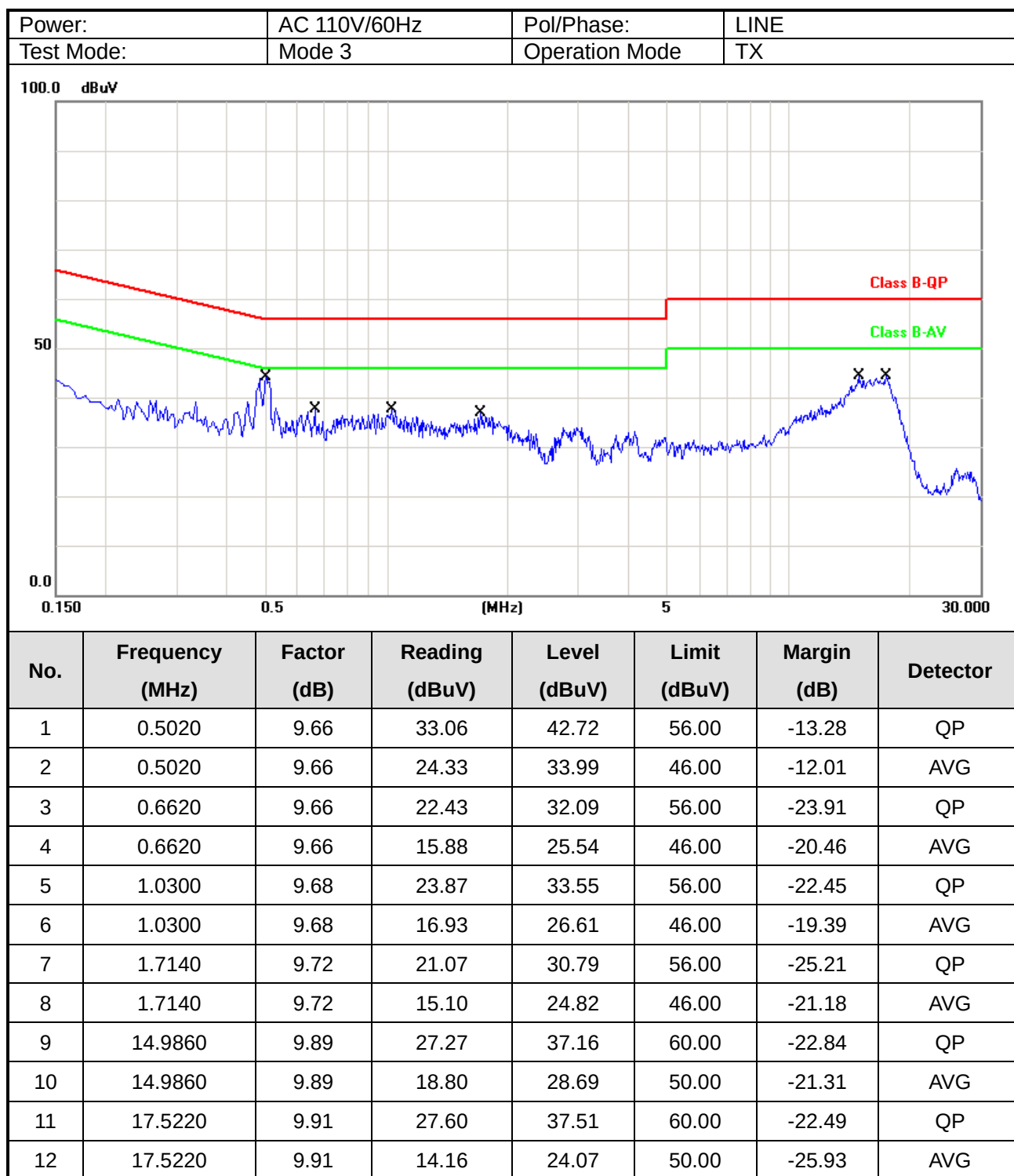
4.2. 測試方法

4.3. 傳導干擾之擺設

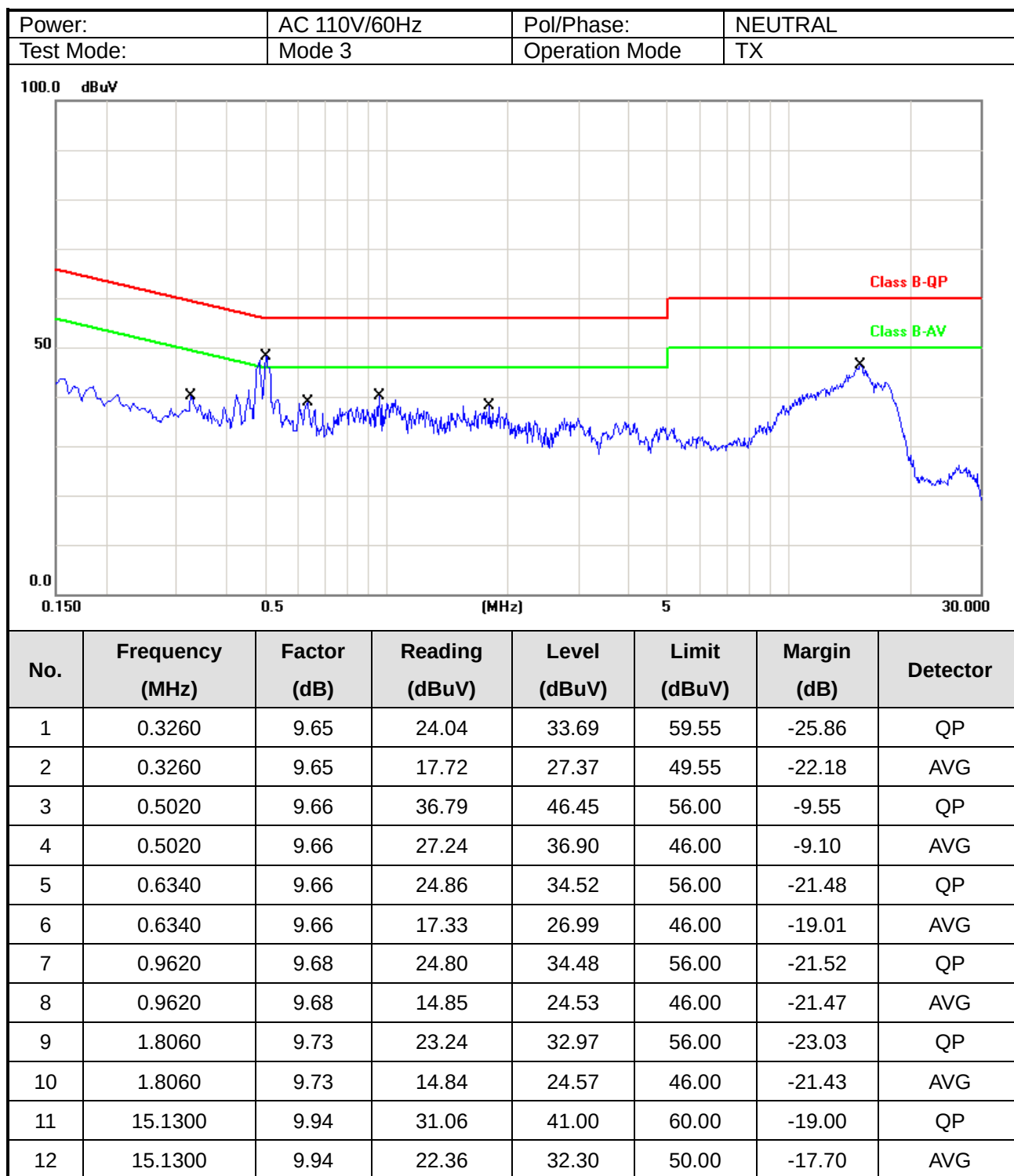




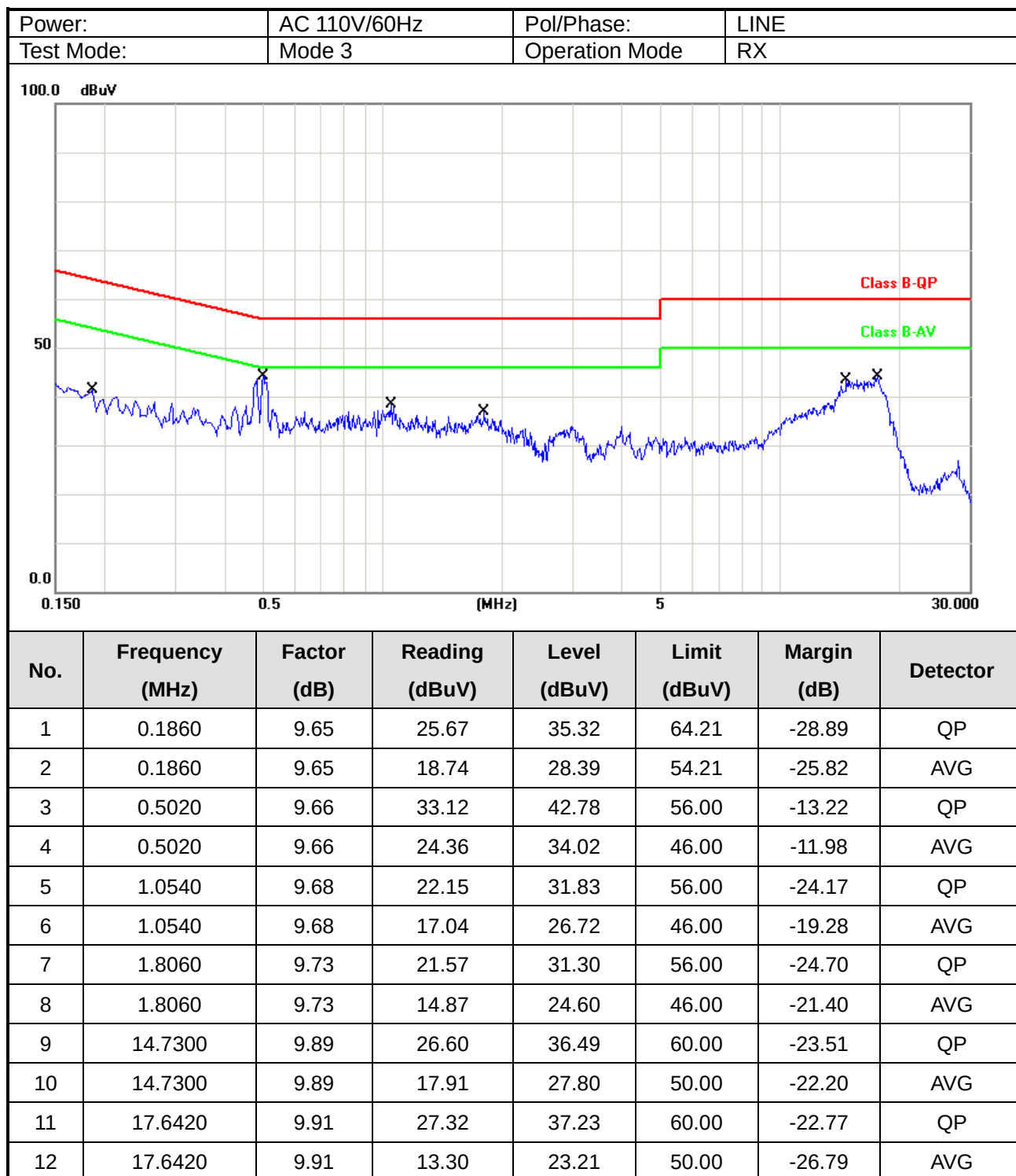
4.4. 傳導干擾之測試結果及數據



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

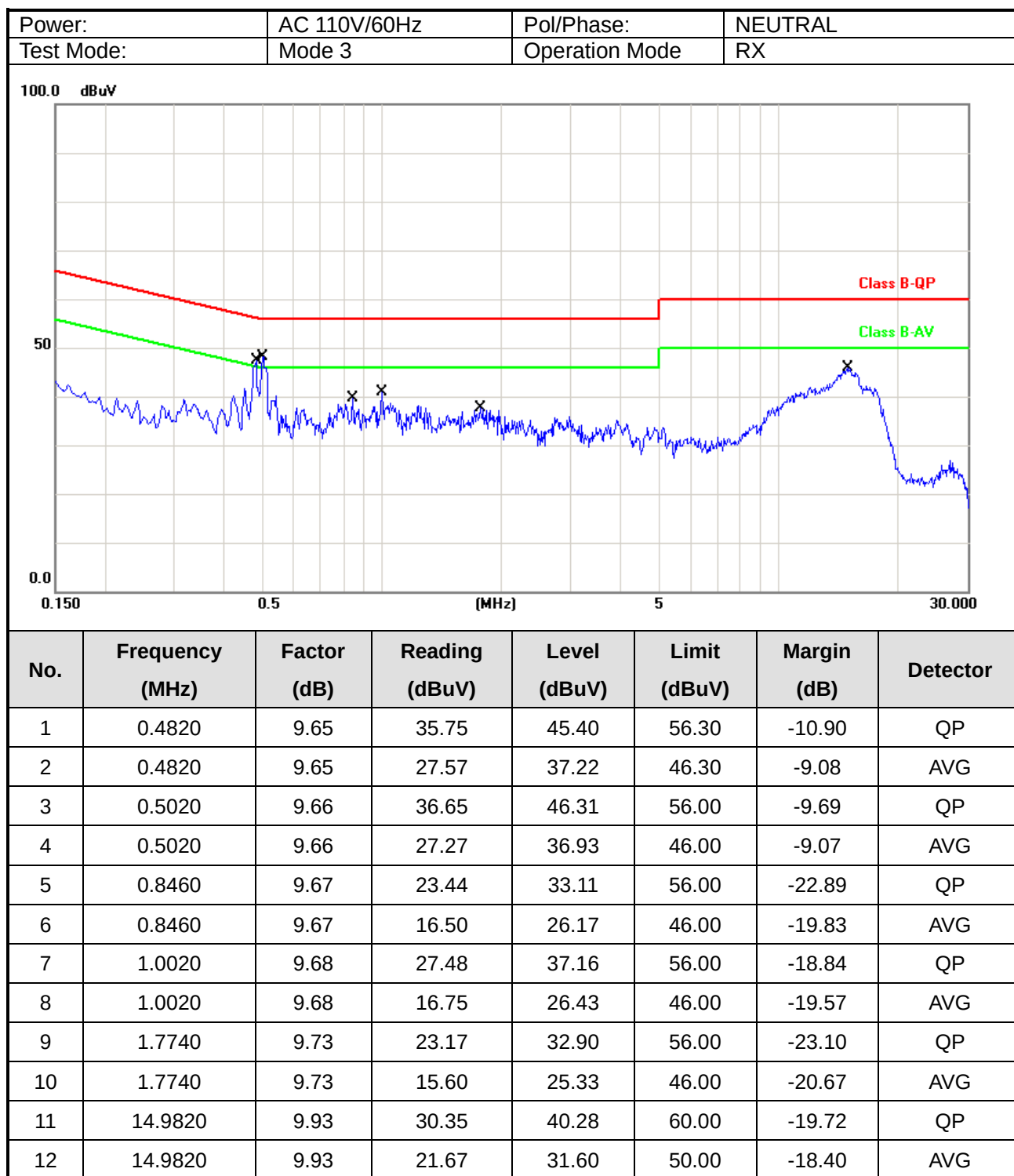


Note: Level = Reading + Factor
Margin = Level – Limit



Note: Level = Reading + Factor

Margin = Level – Limit



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

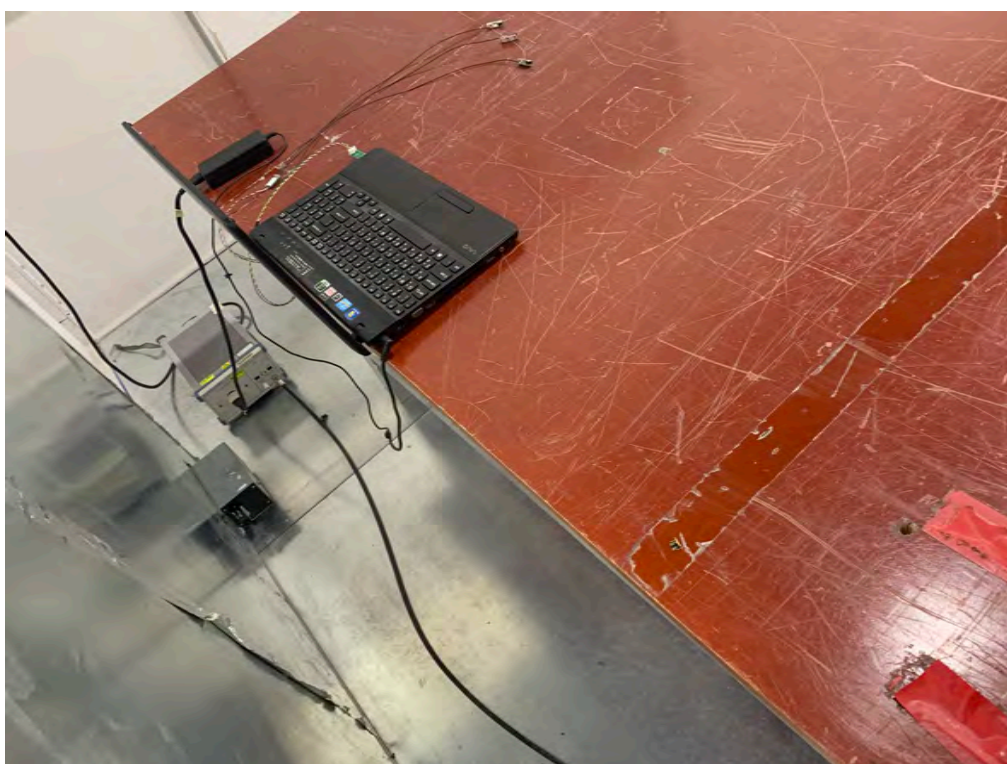


4.5. 傳導量測之配置照片

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 5.7.4.6 節之要求,落於 3.5 節禁用頻段之輻射干擾需符合 3.6 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

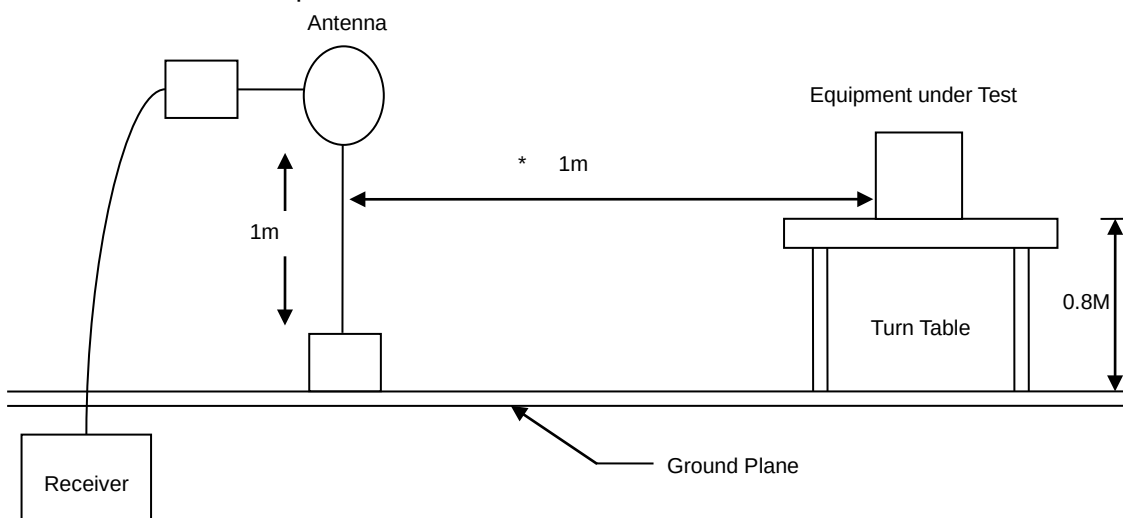
5.2. 測試方法

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:

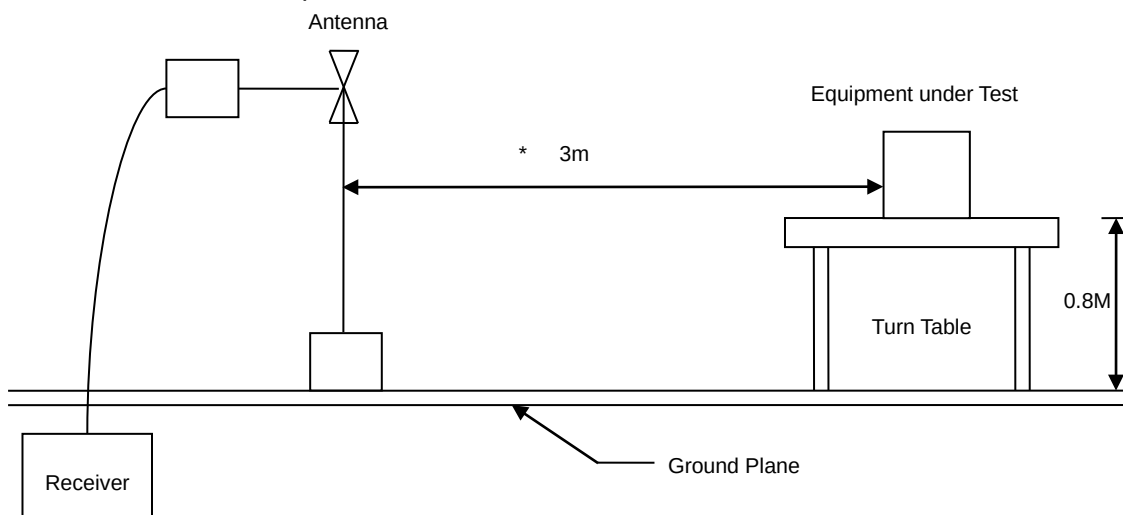
For Below 1G 若待測物之輻射峰值低於限制值 6dB 以上,則將終止測試,並以峰值之讀值作為報告之記錄;反之,若無 6dB 餘裕範圍之輻射,則每一訊號皆以準峰值之測試方法量測,並記錄於報告之中

5.3. 輻射場地之擺設

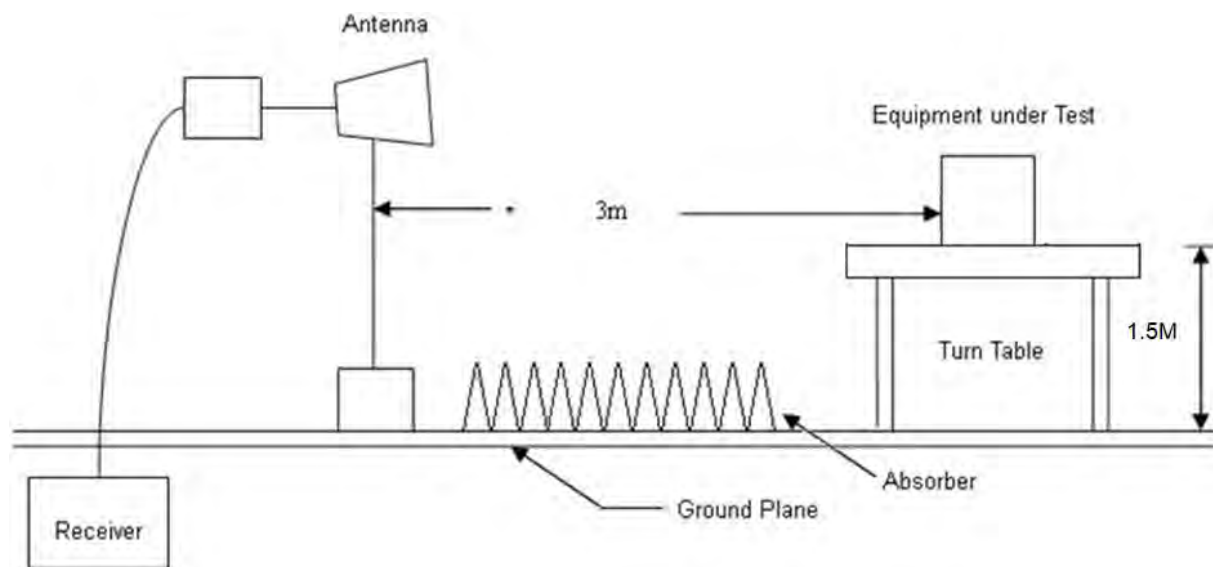
Below 30MHz test setup



30MHz- 1GHz Test Setup

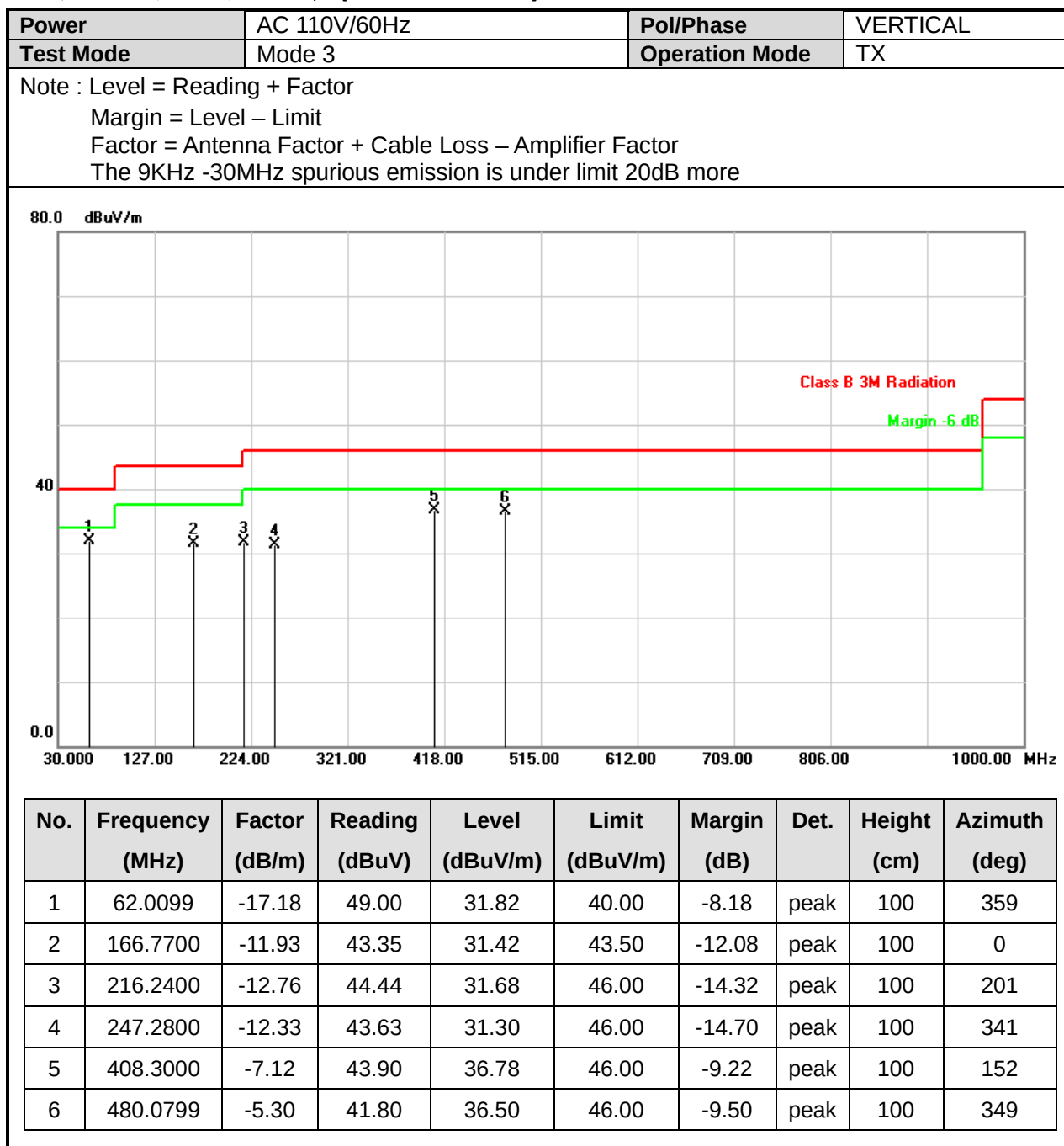


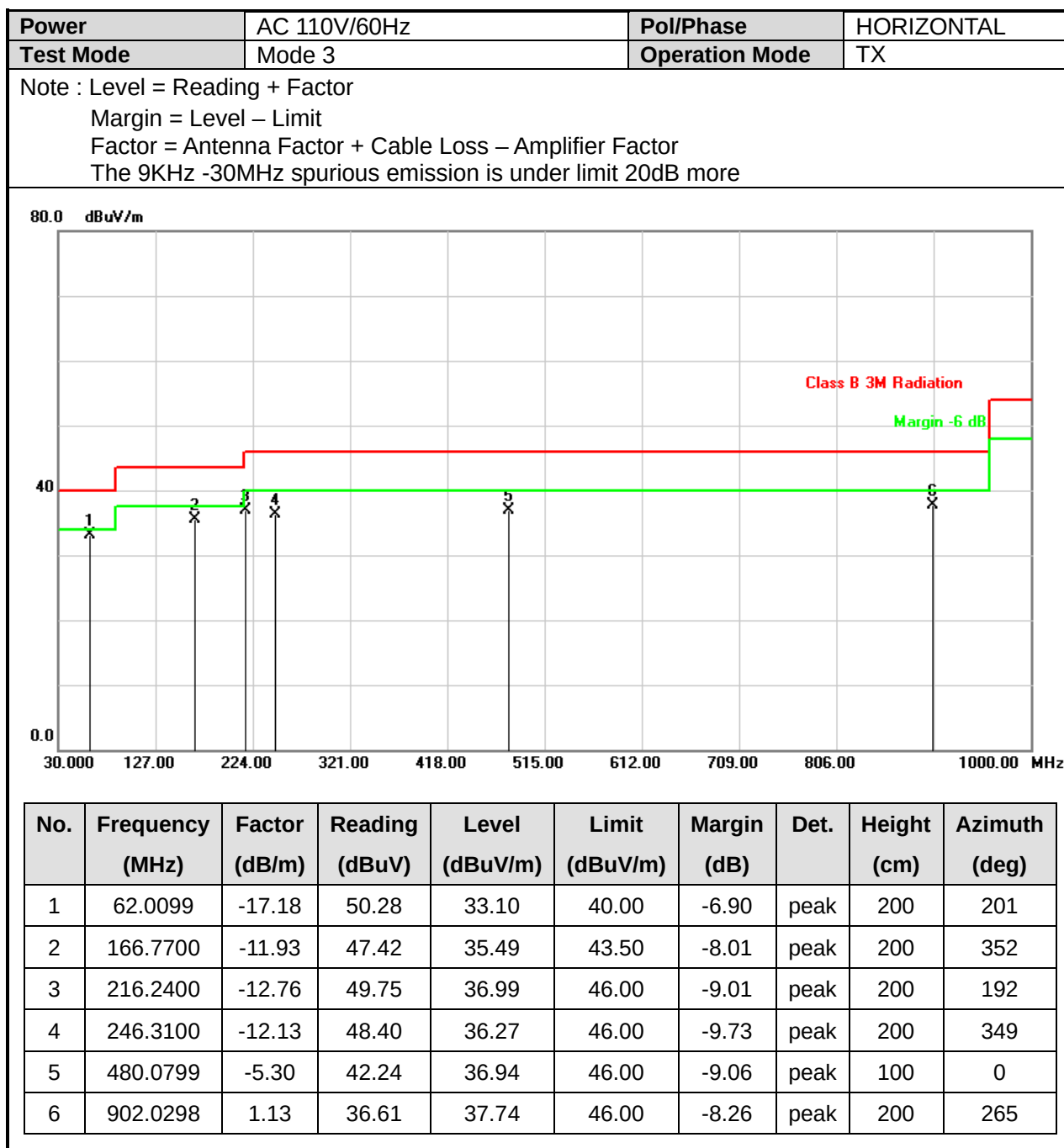
Above 1GHz Test Setup

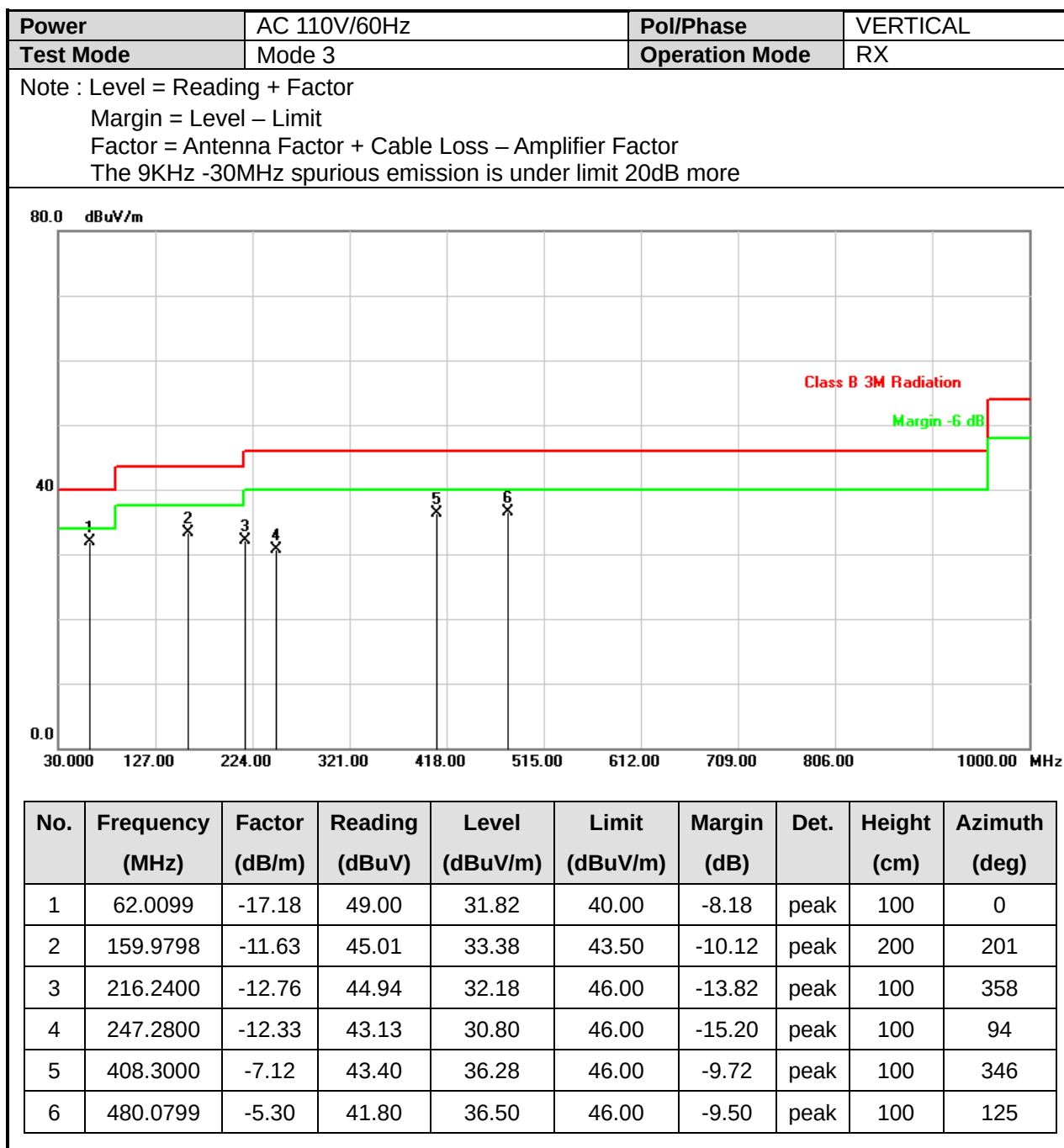


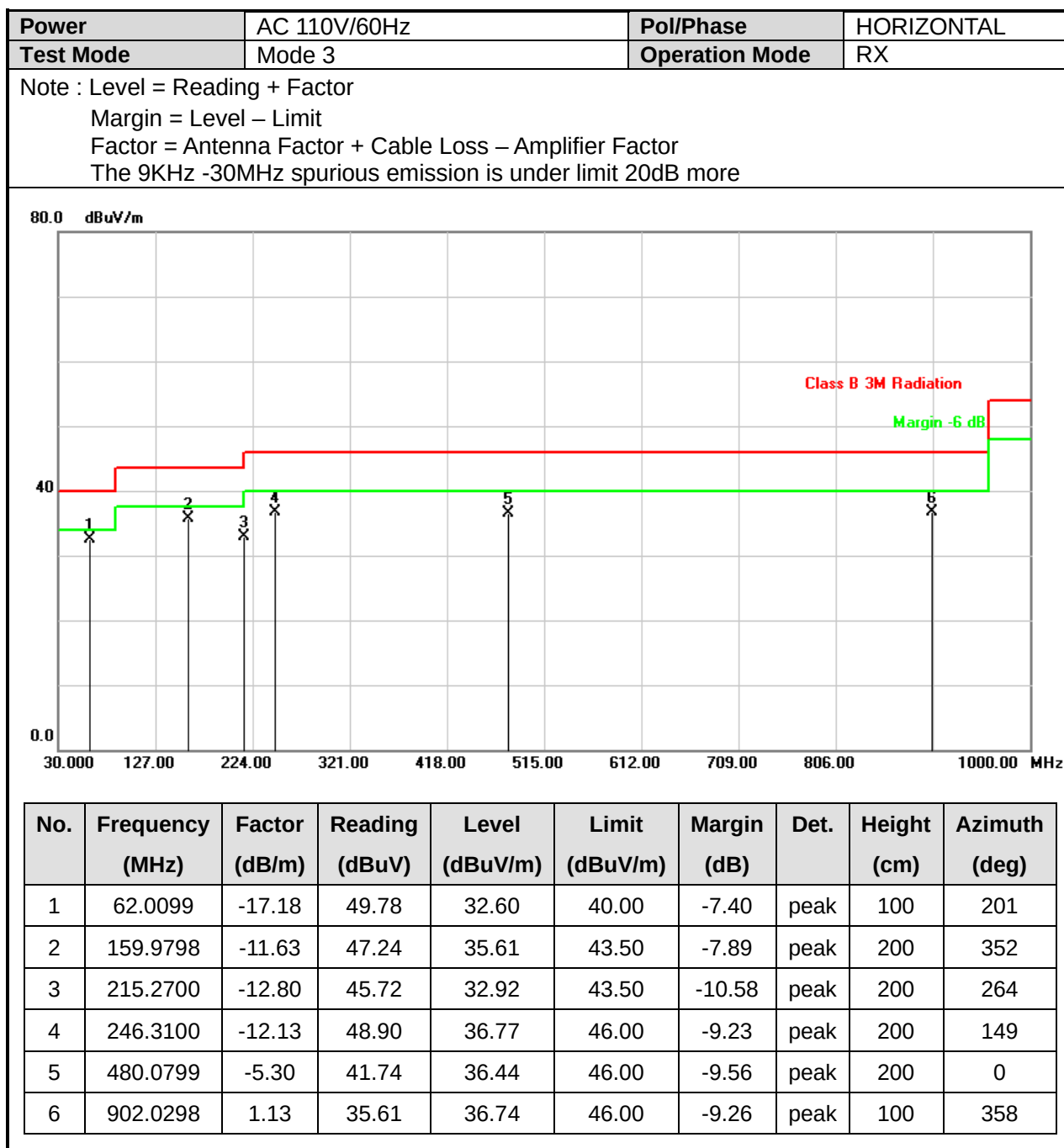


5.4. 輻射之測試結果及數據 (30MHz ~ 1GHz)



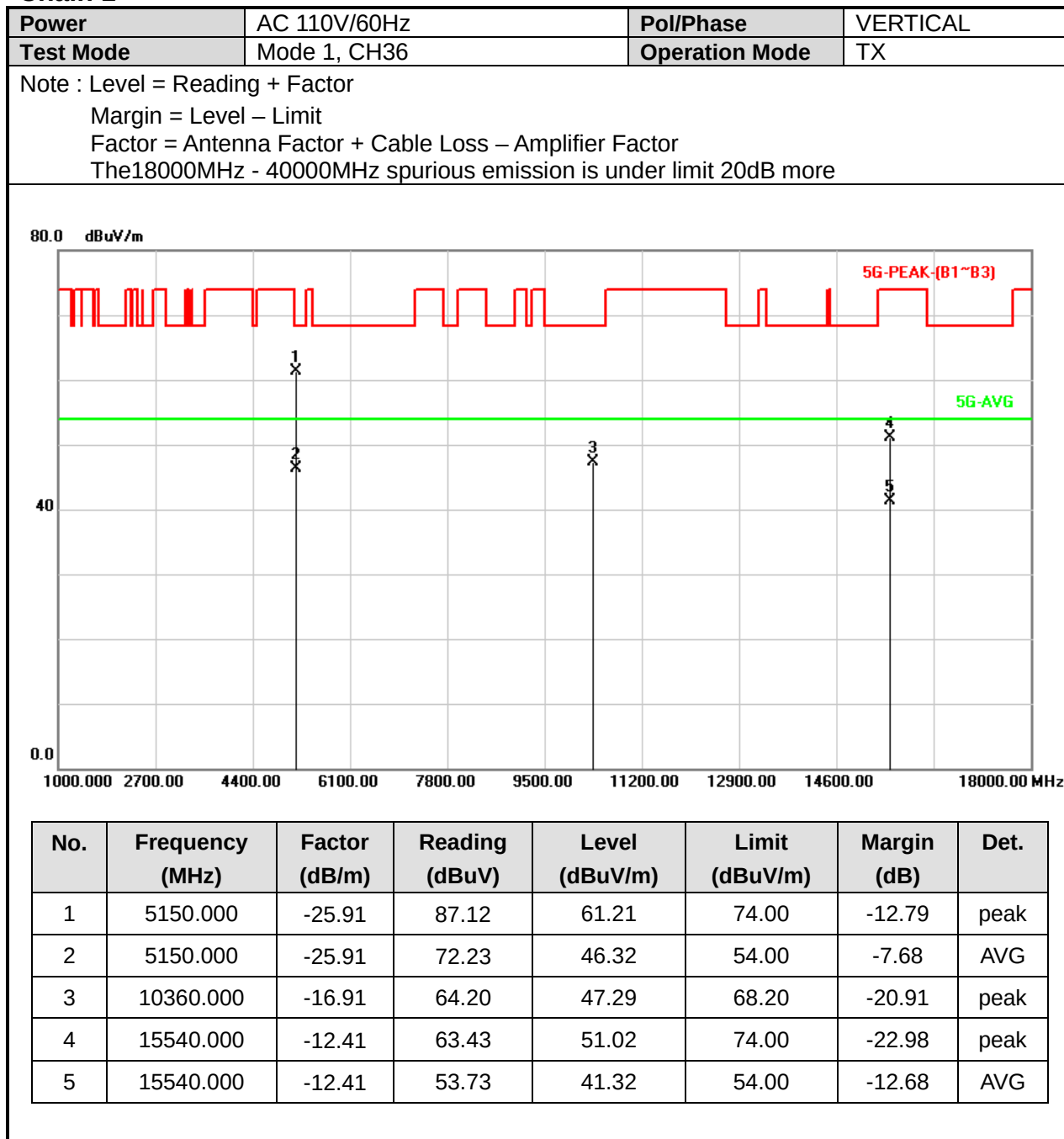


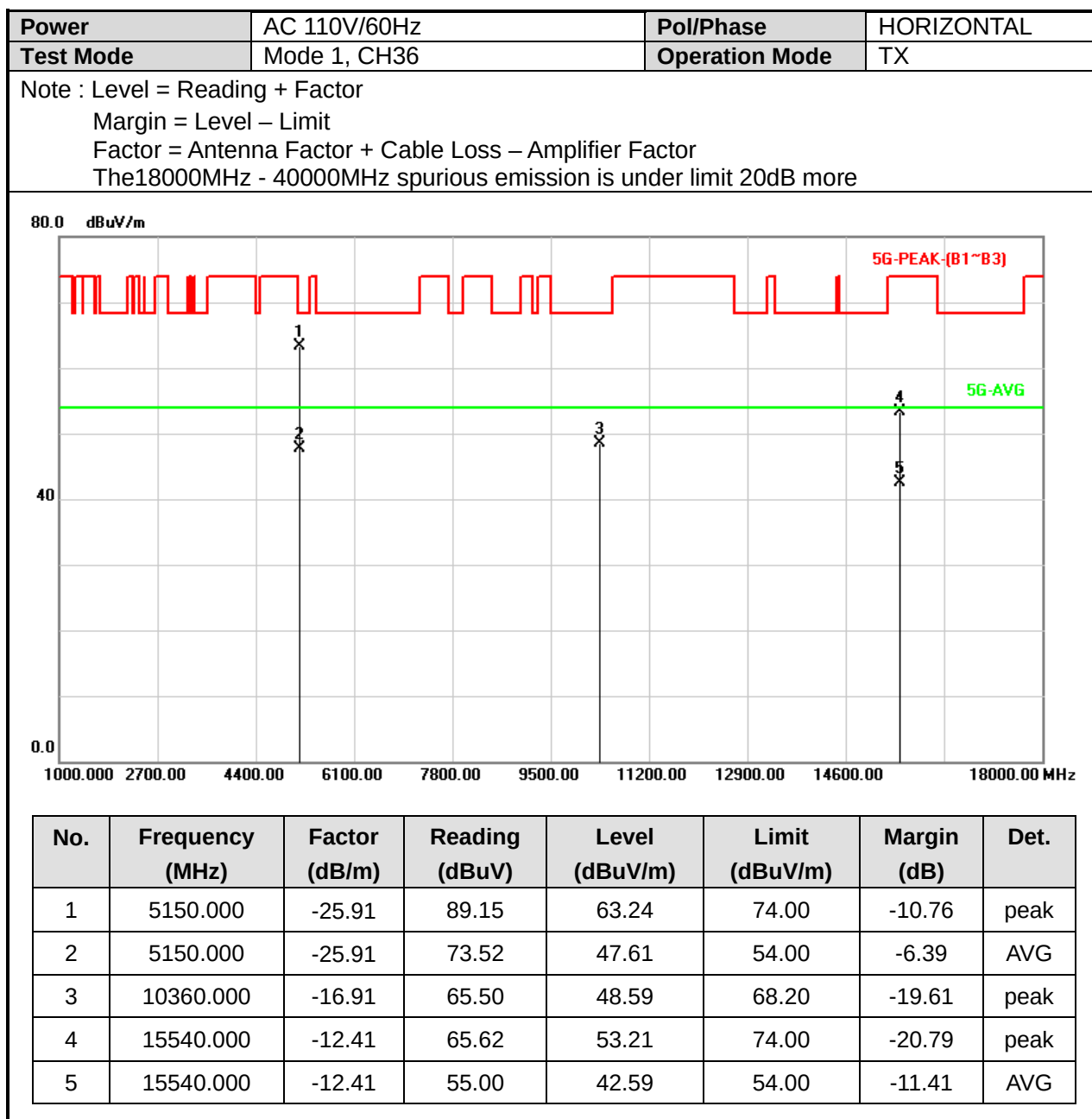


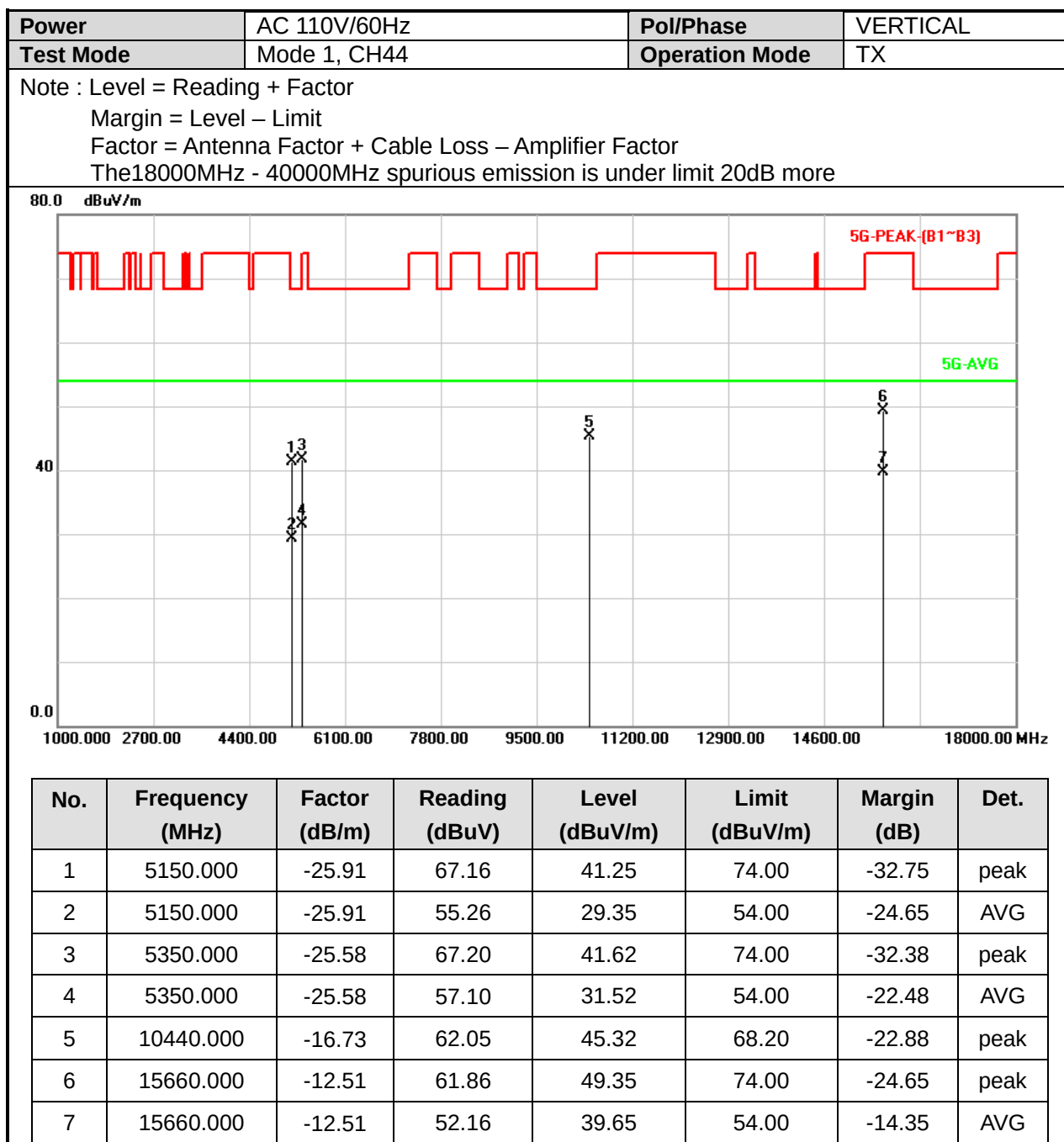


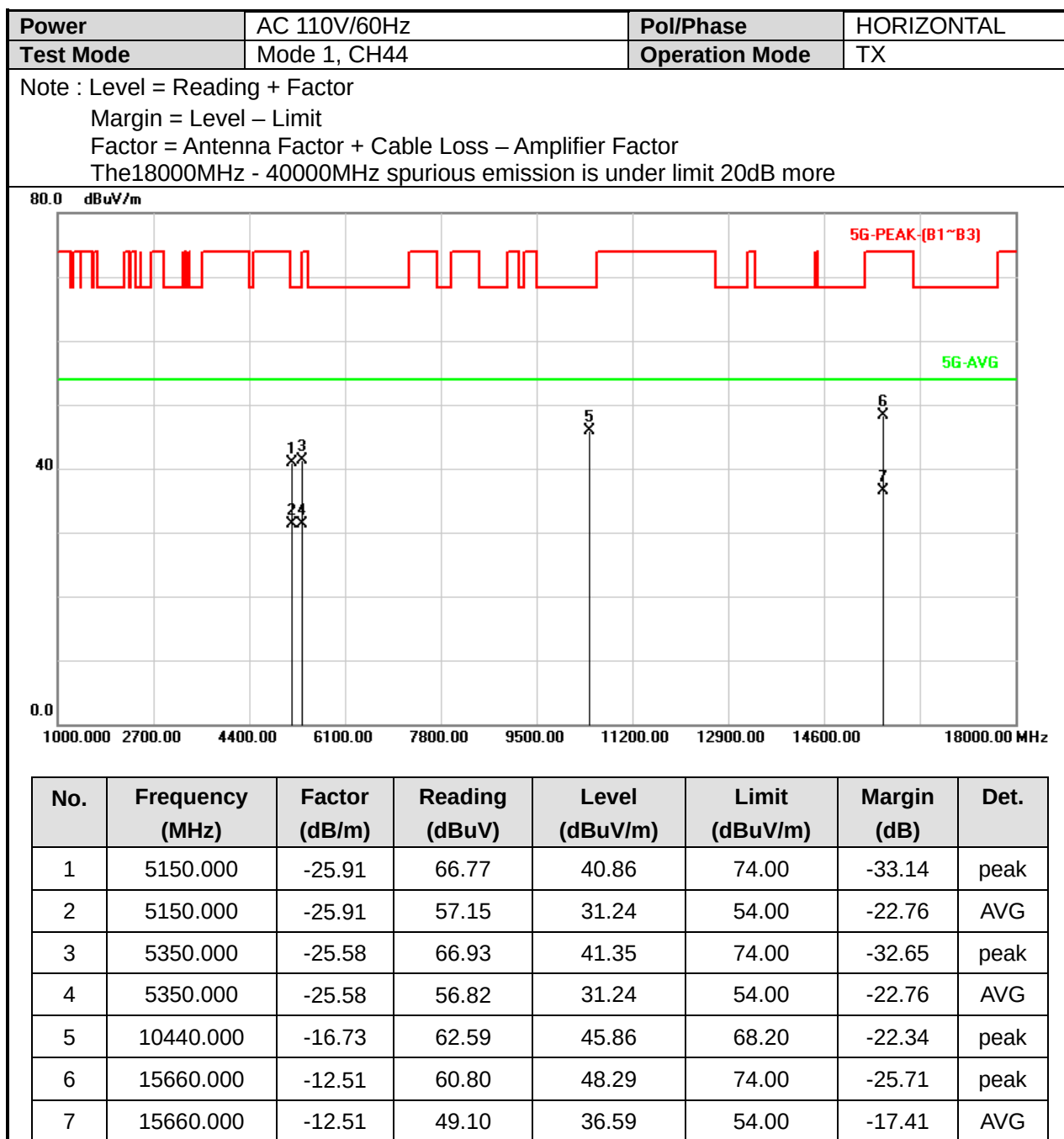


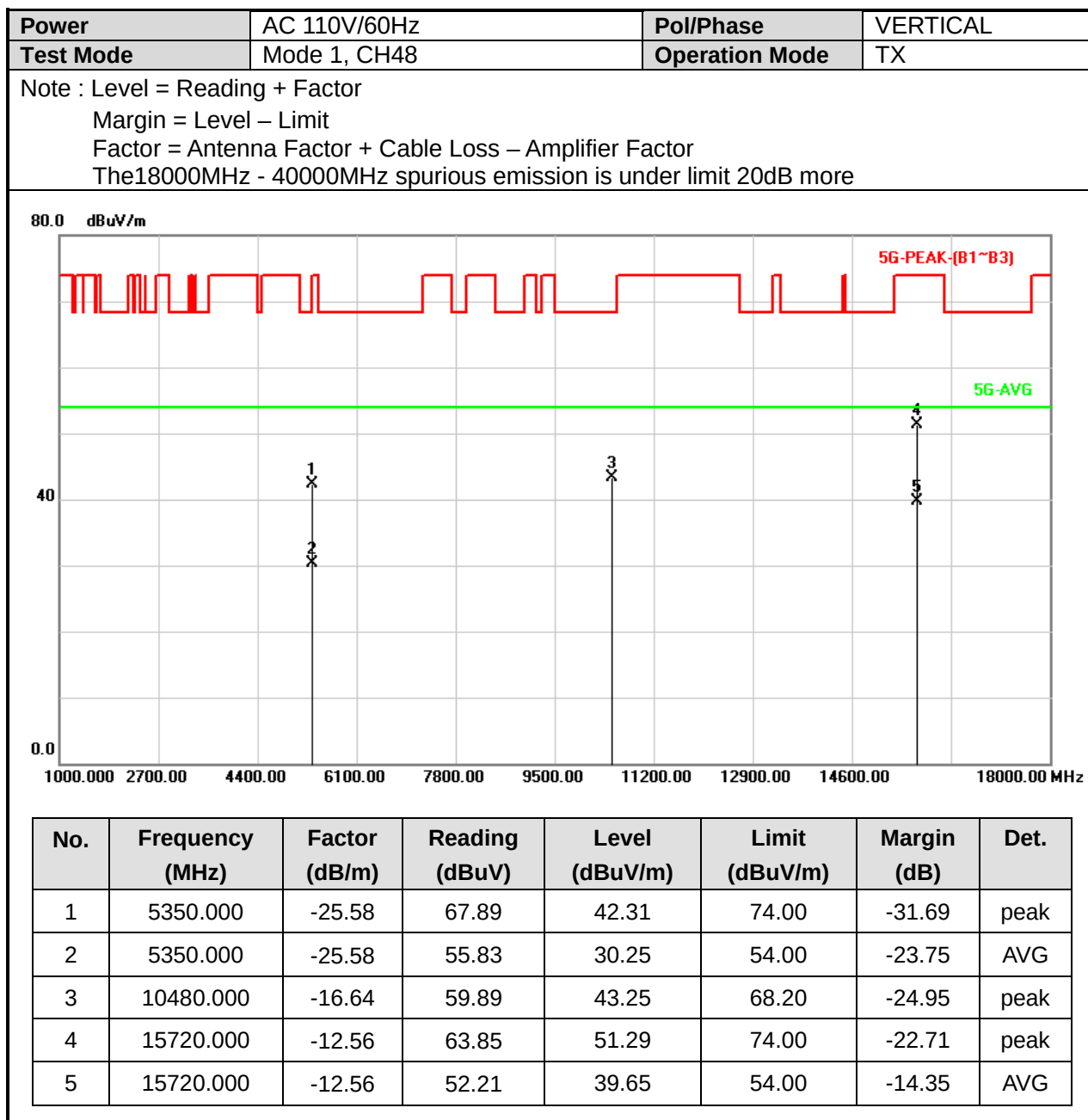
5.5. 輻射之測試結果及數據 (Above 1GHz)

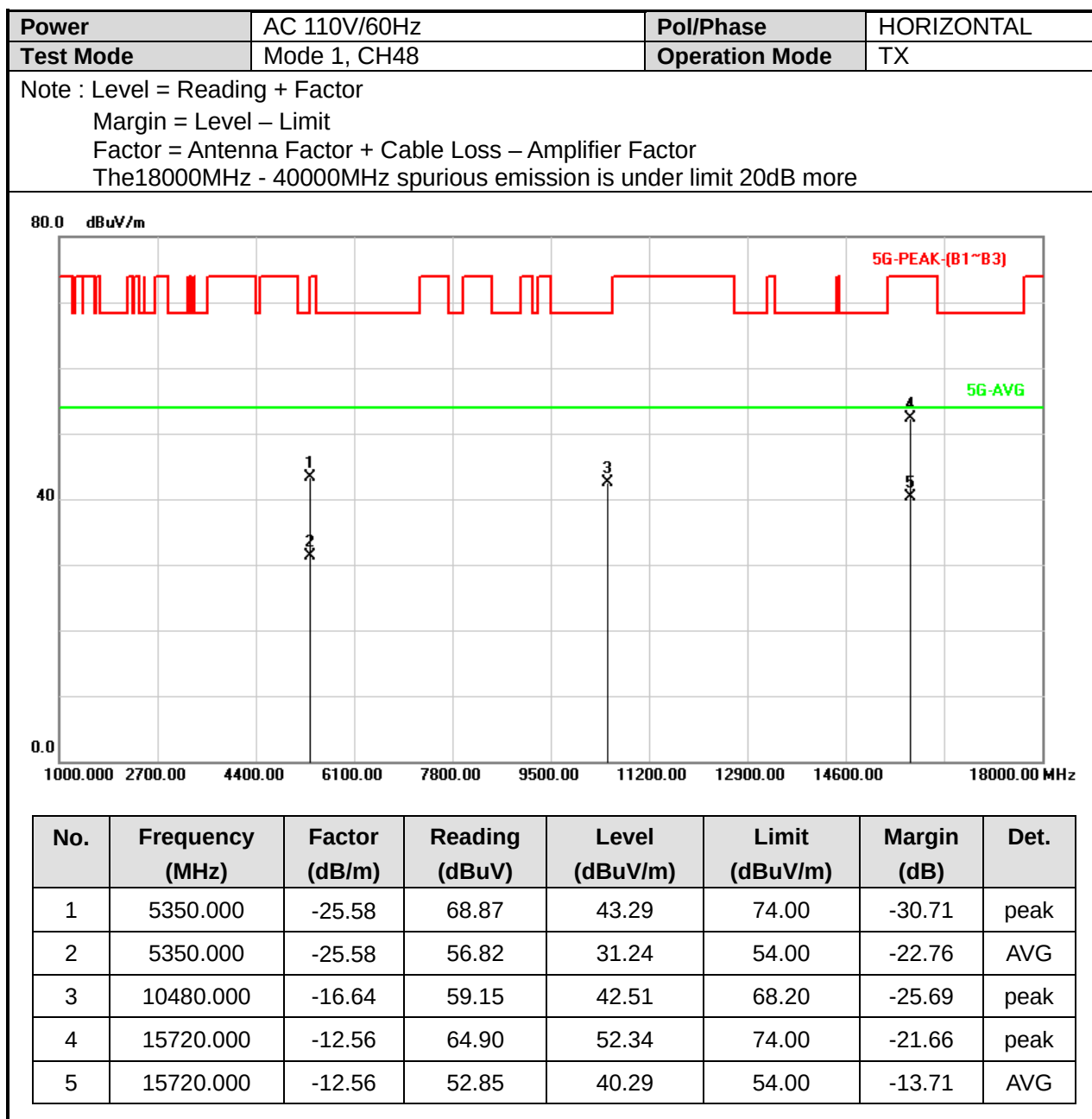
For 1TX
Chain 1

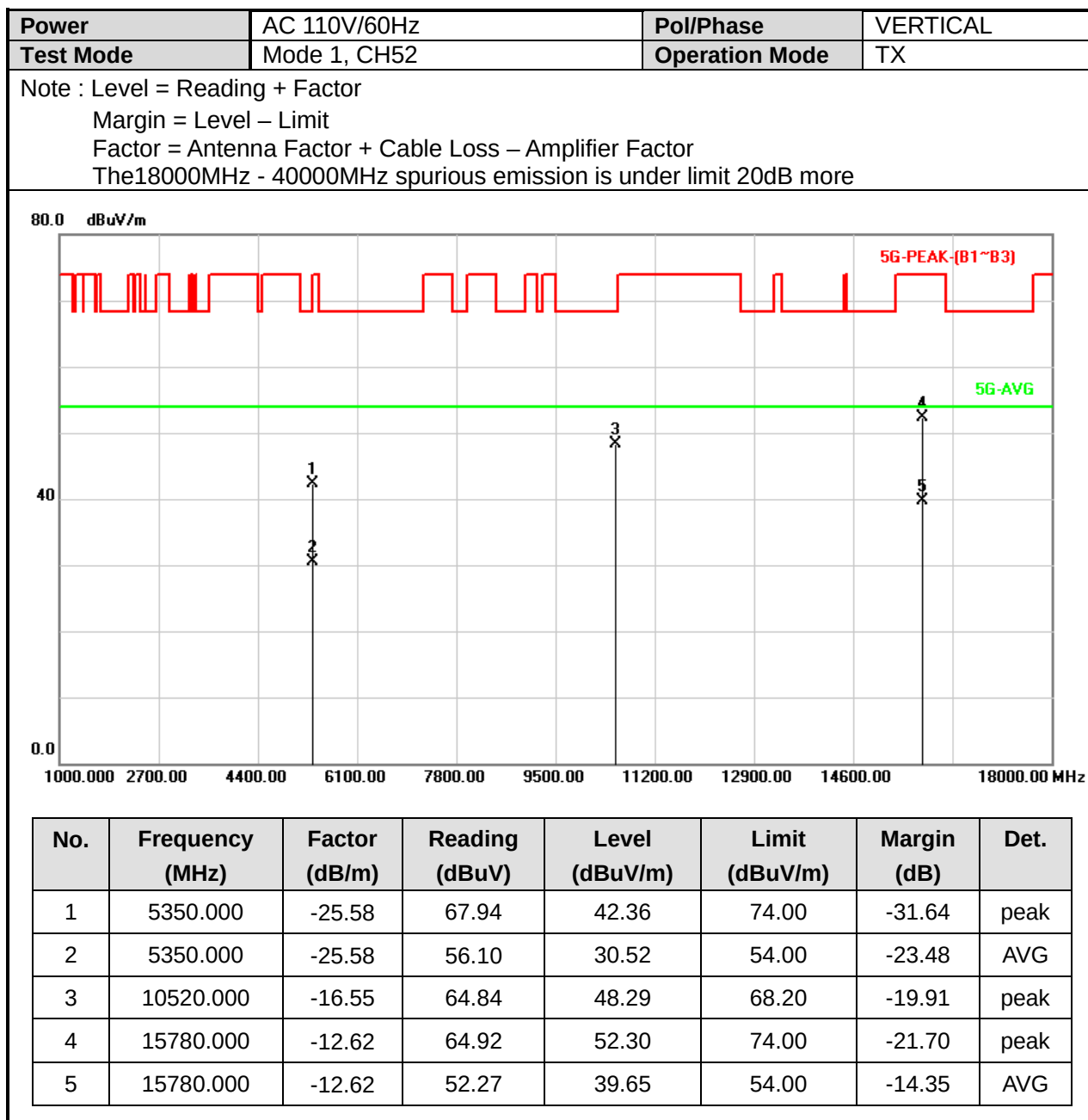


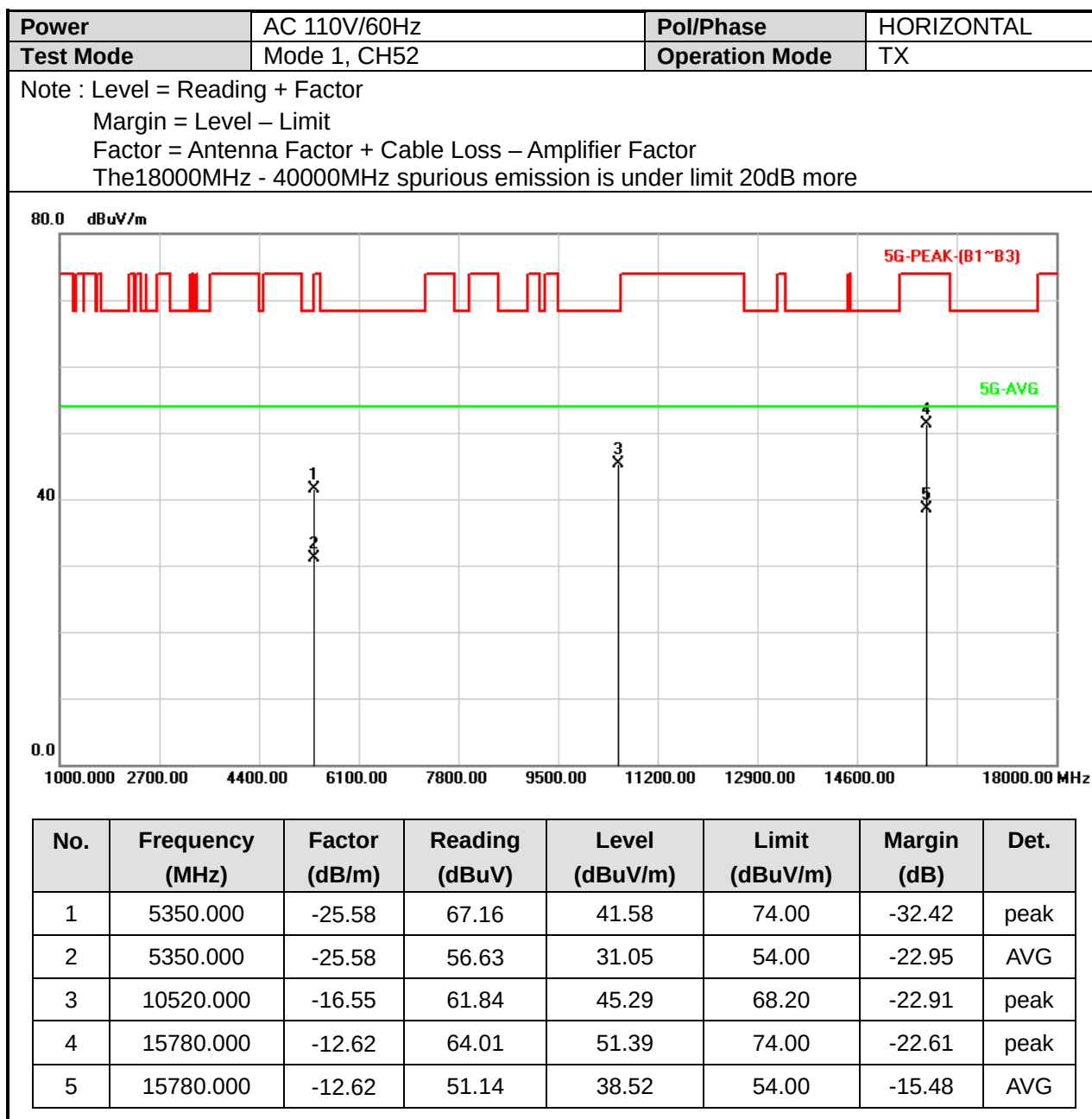


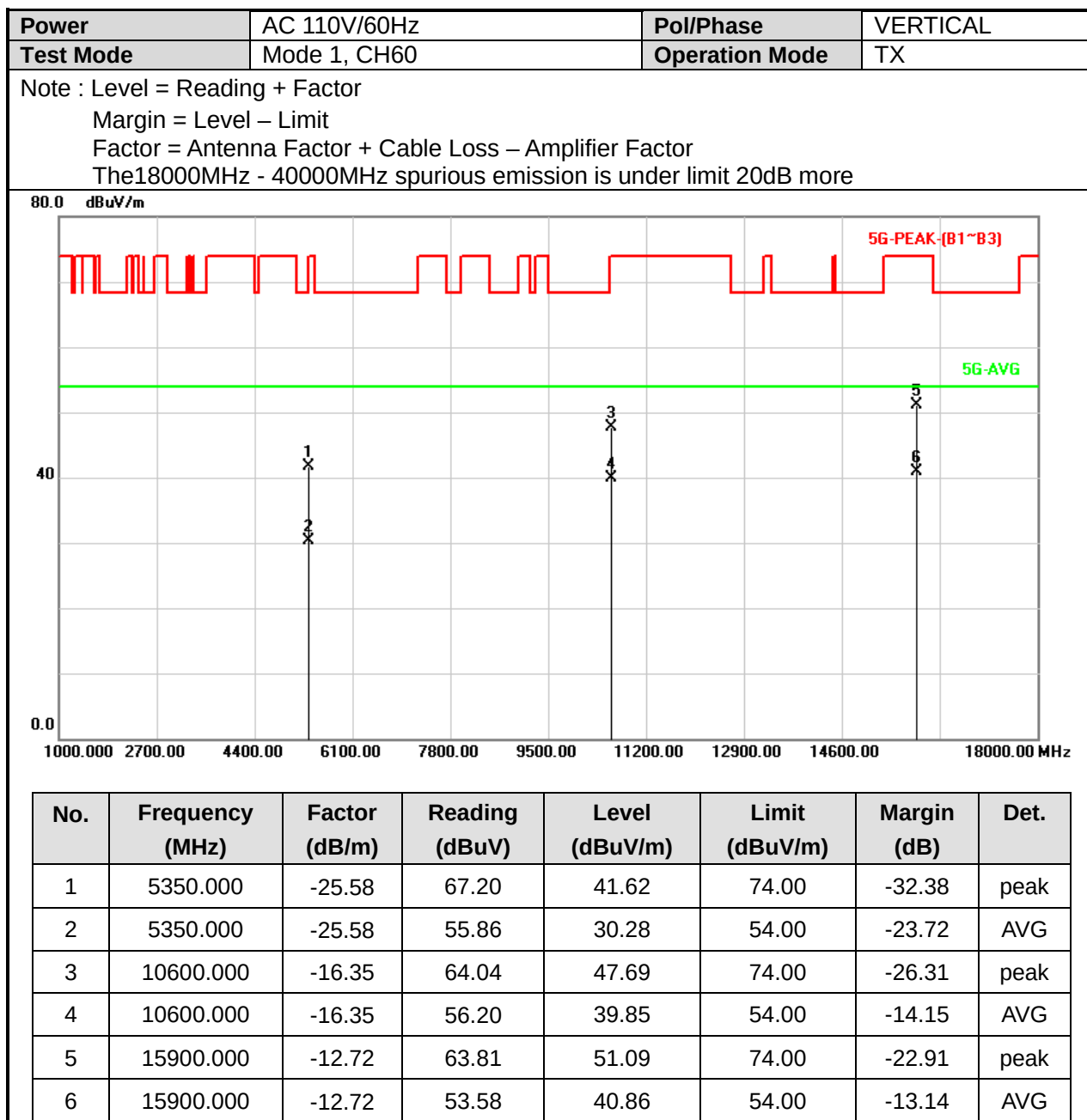


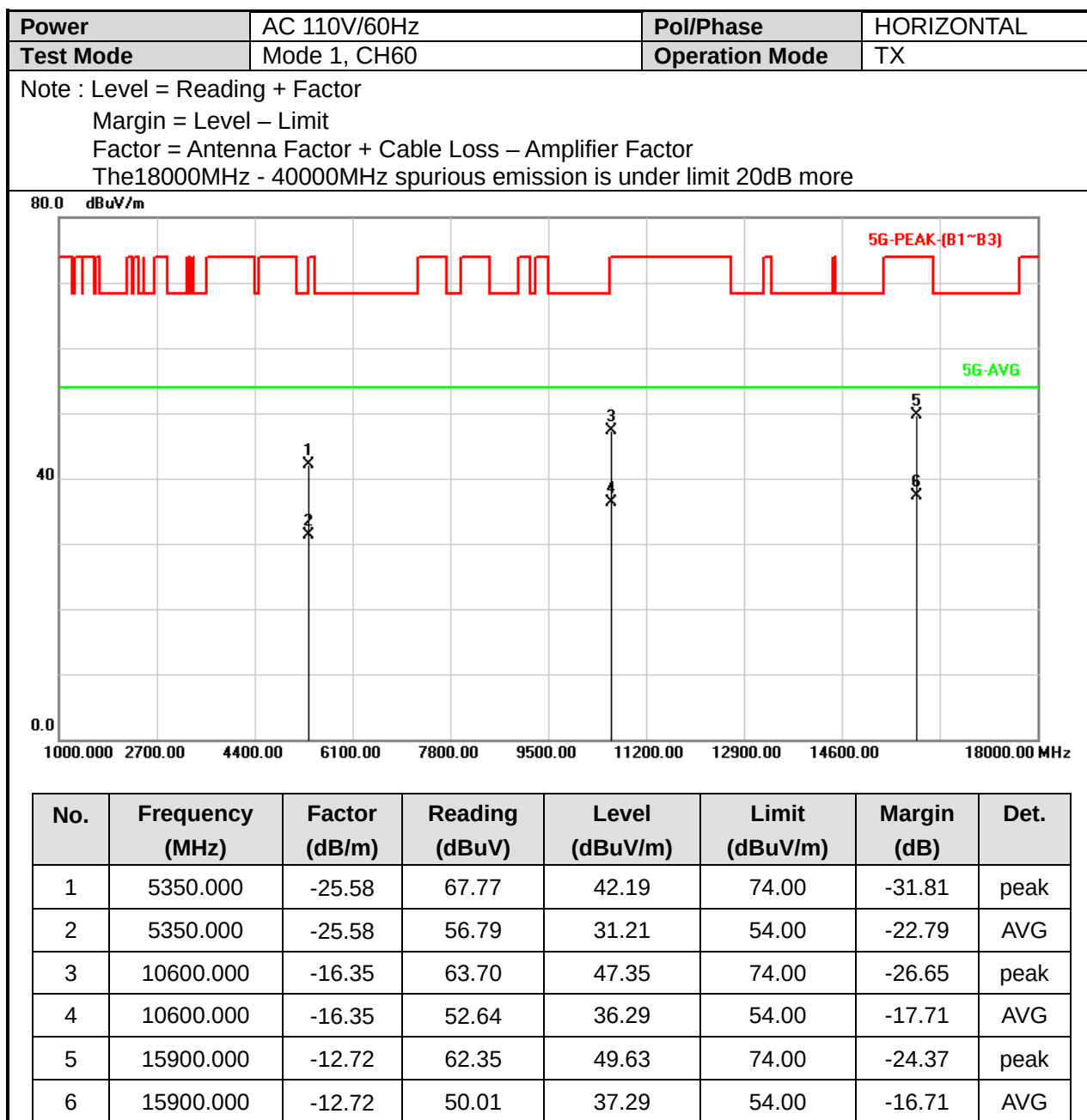


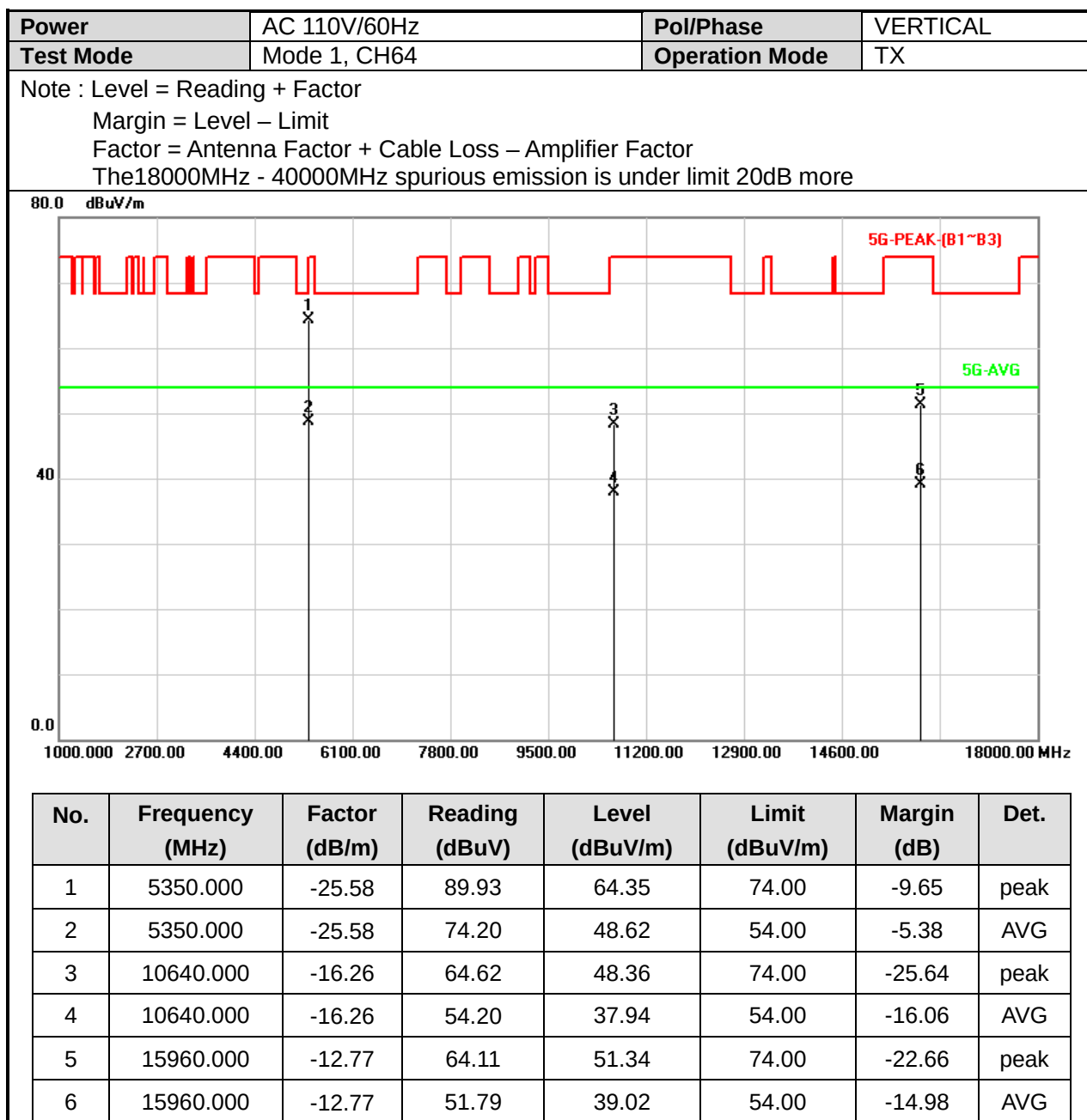


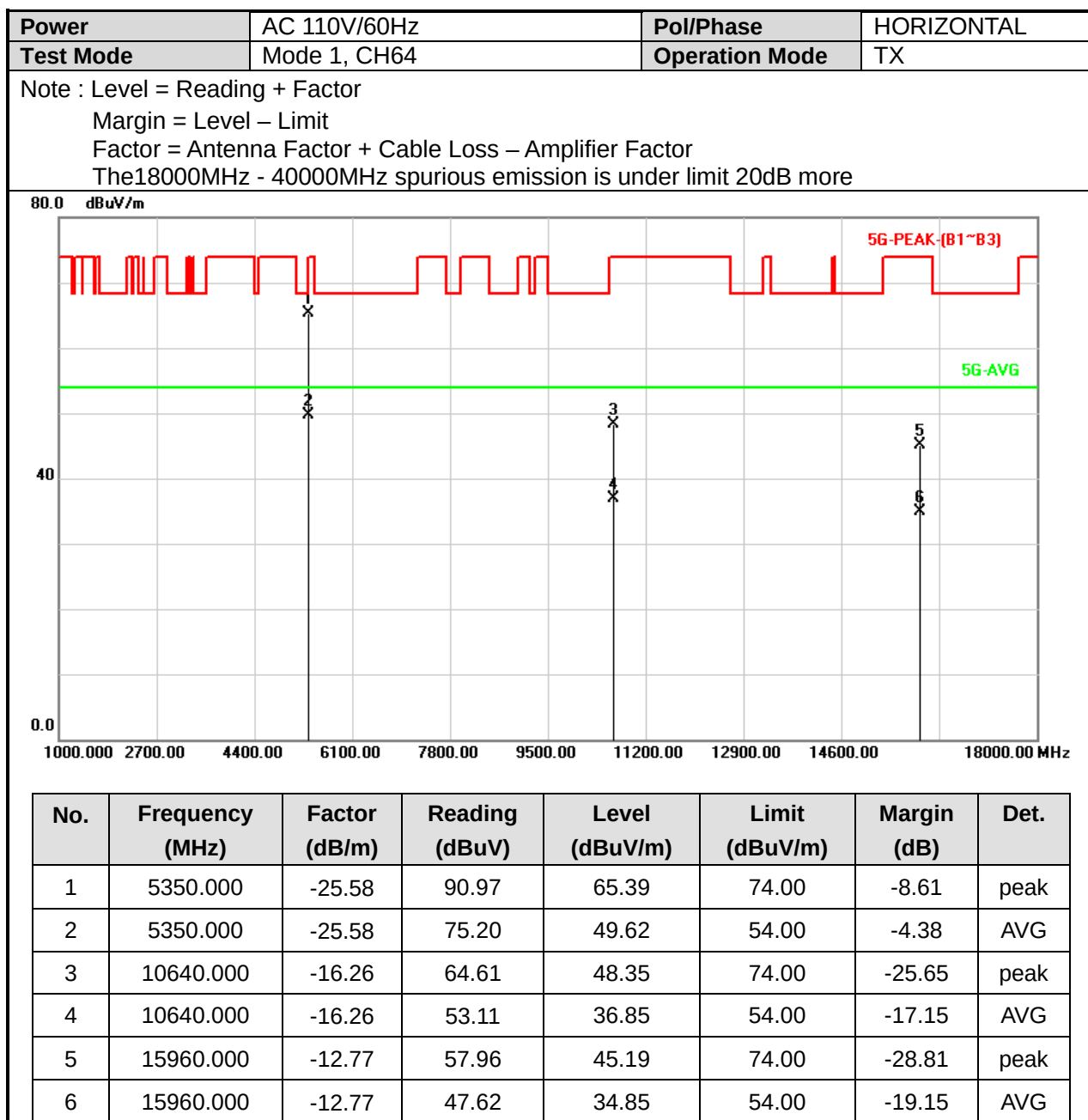


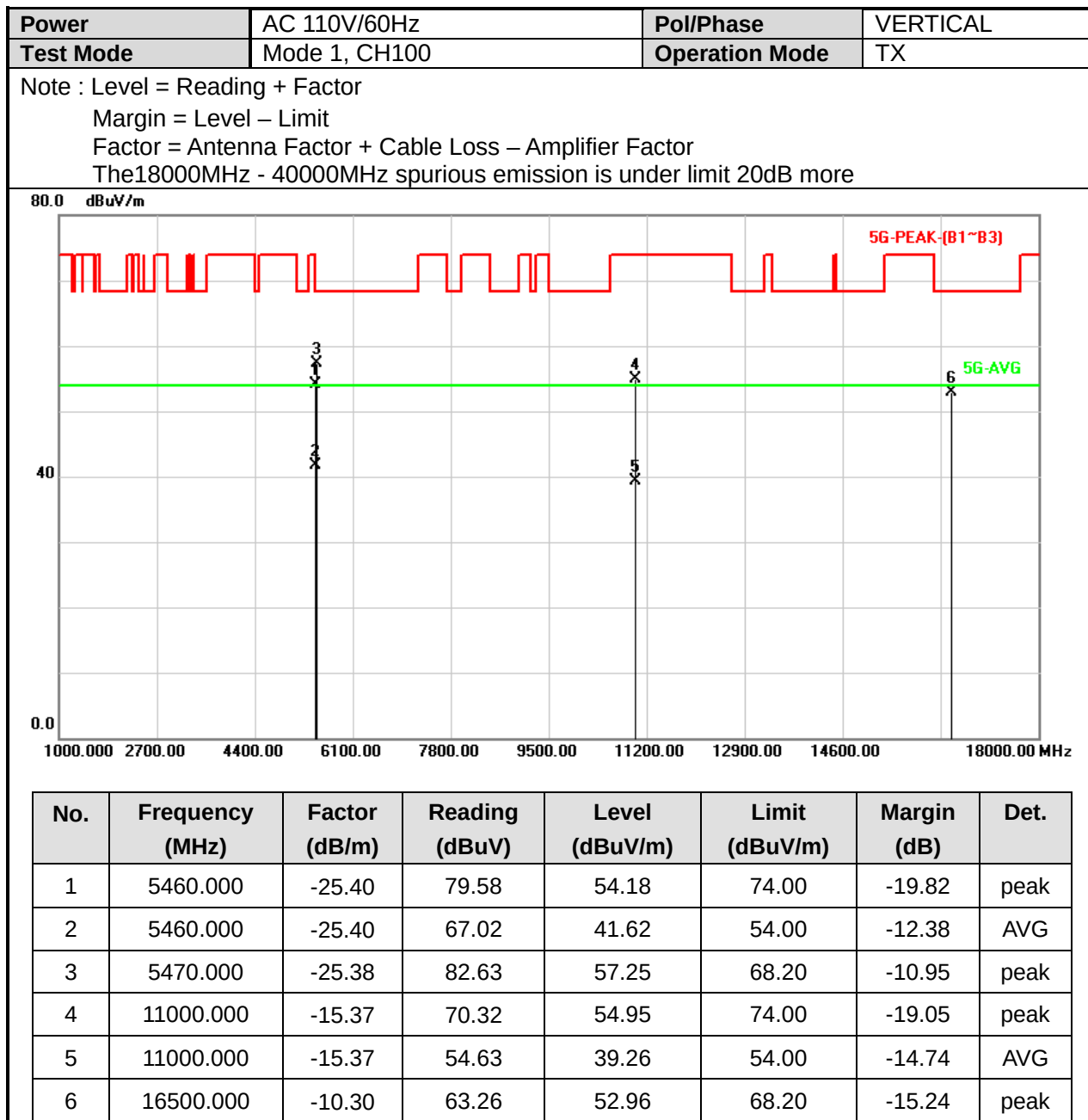


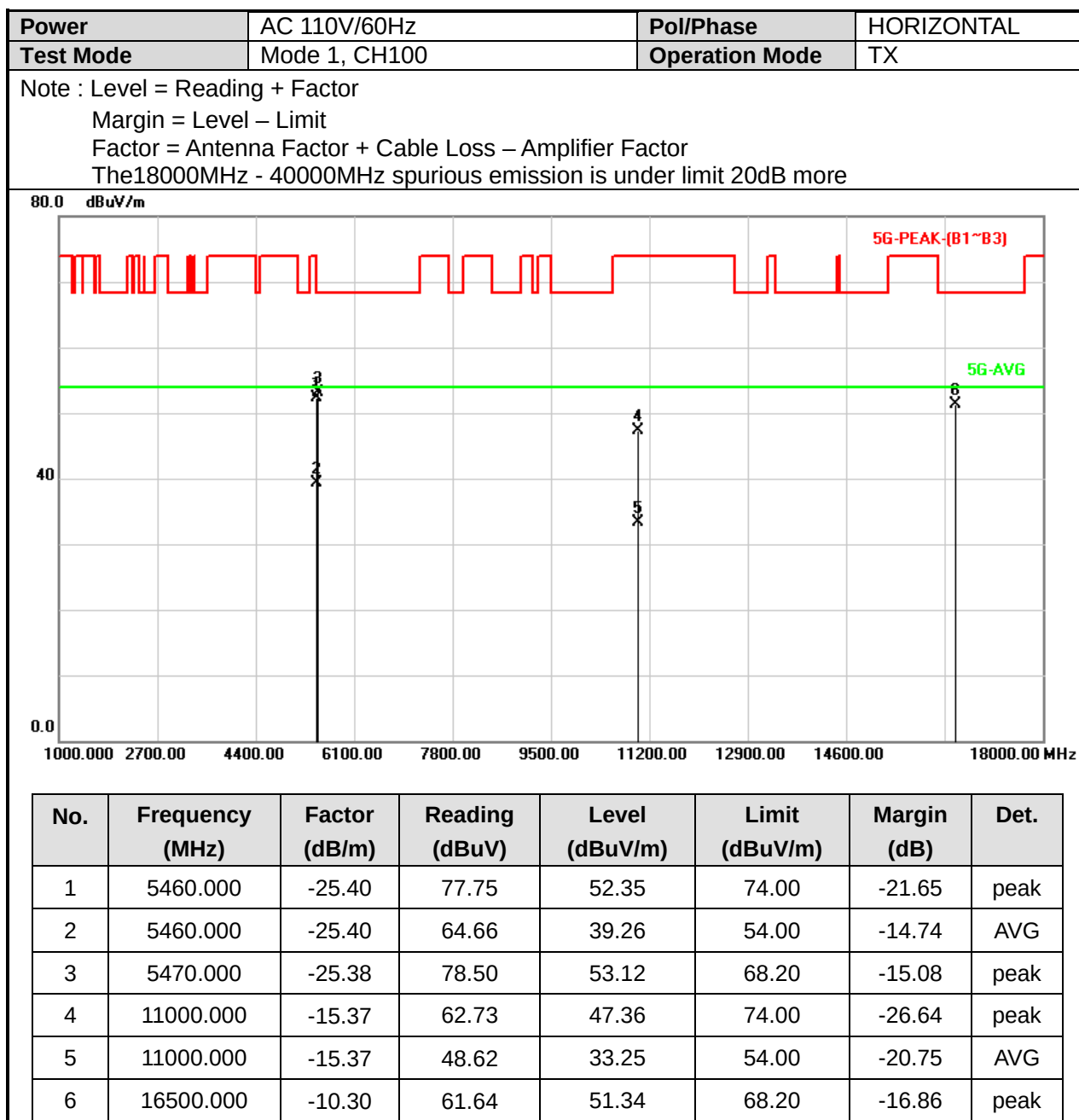


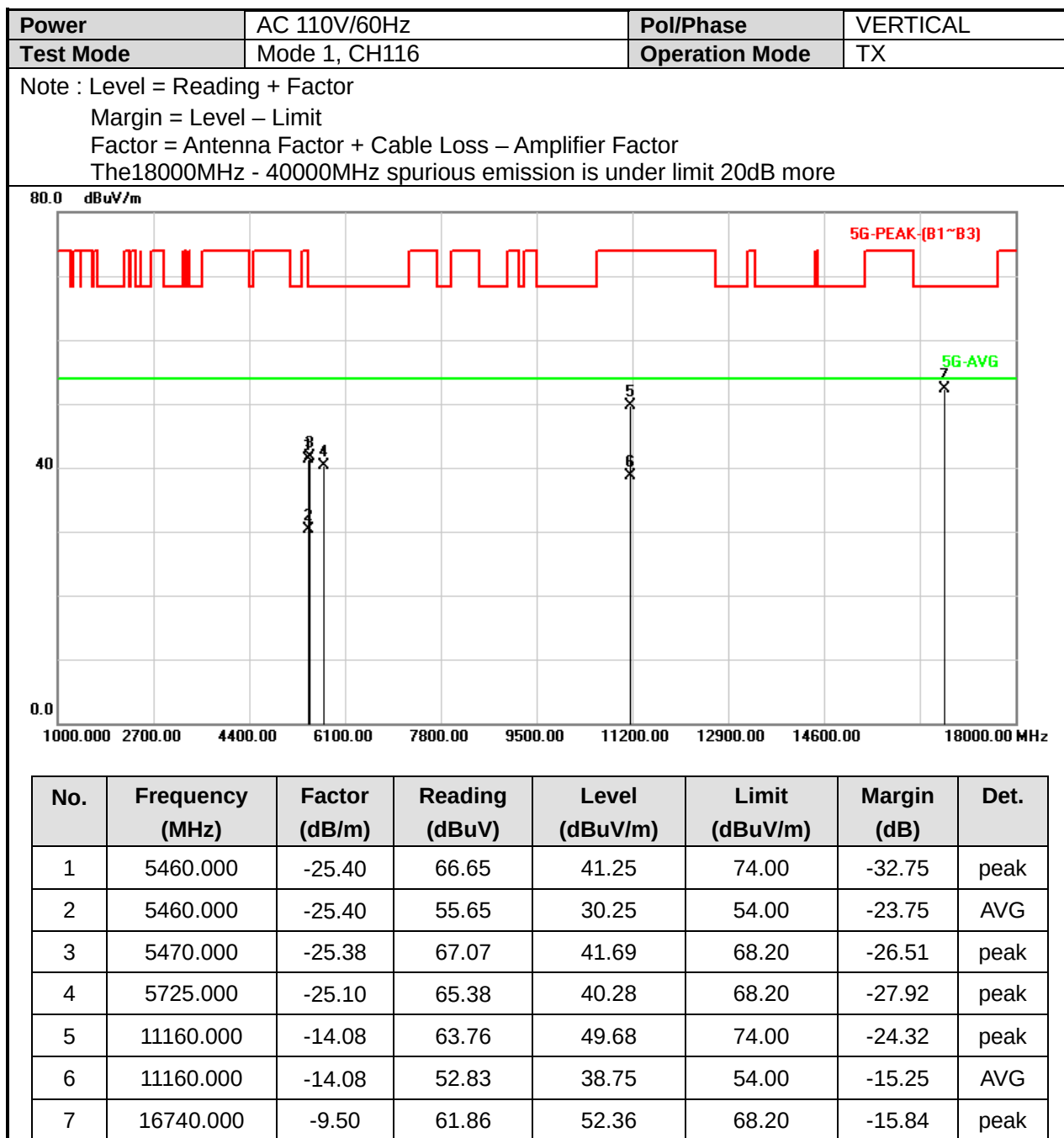


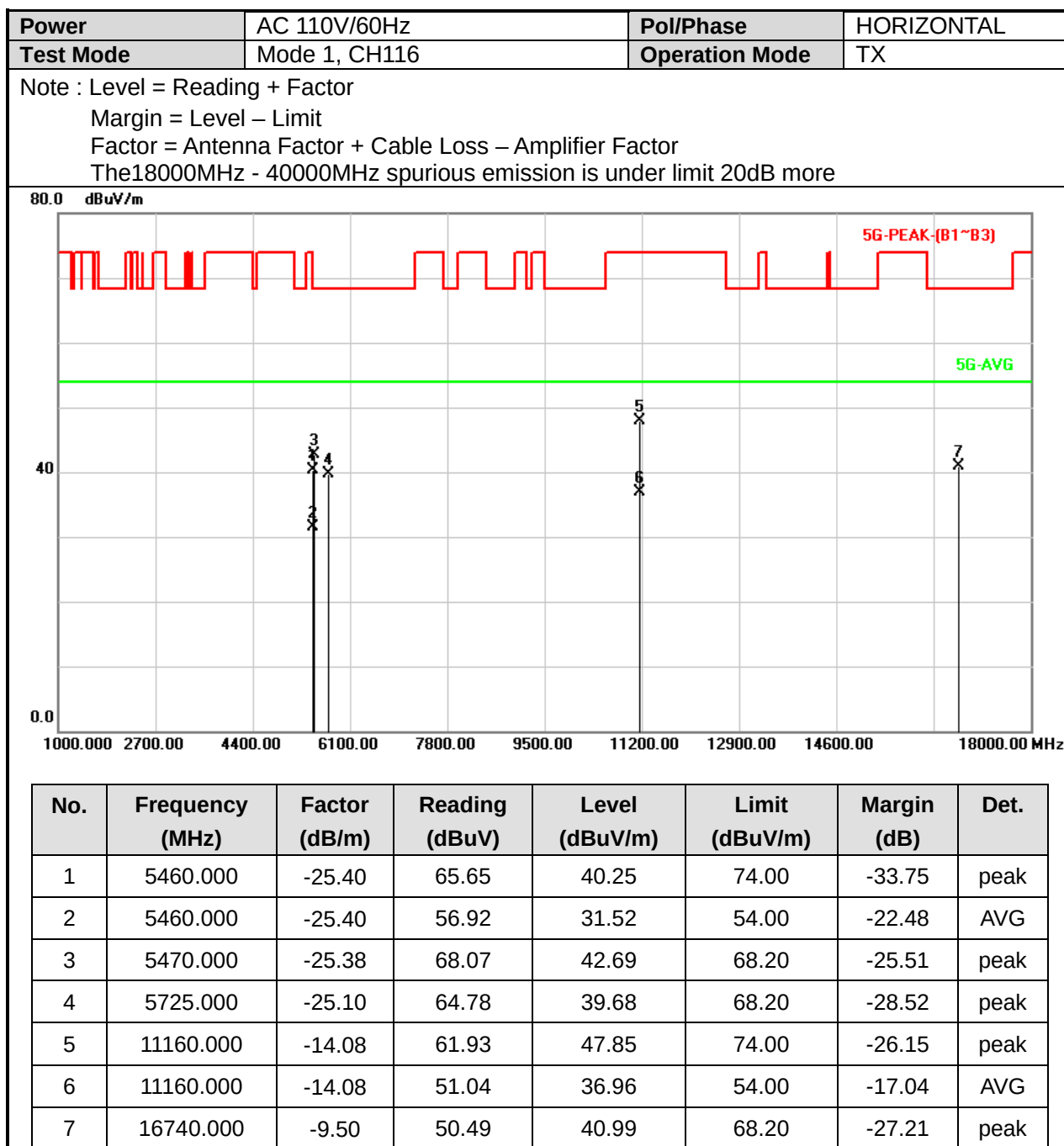


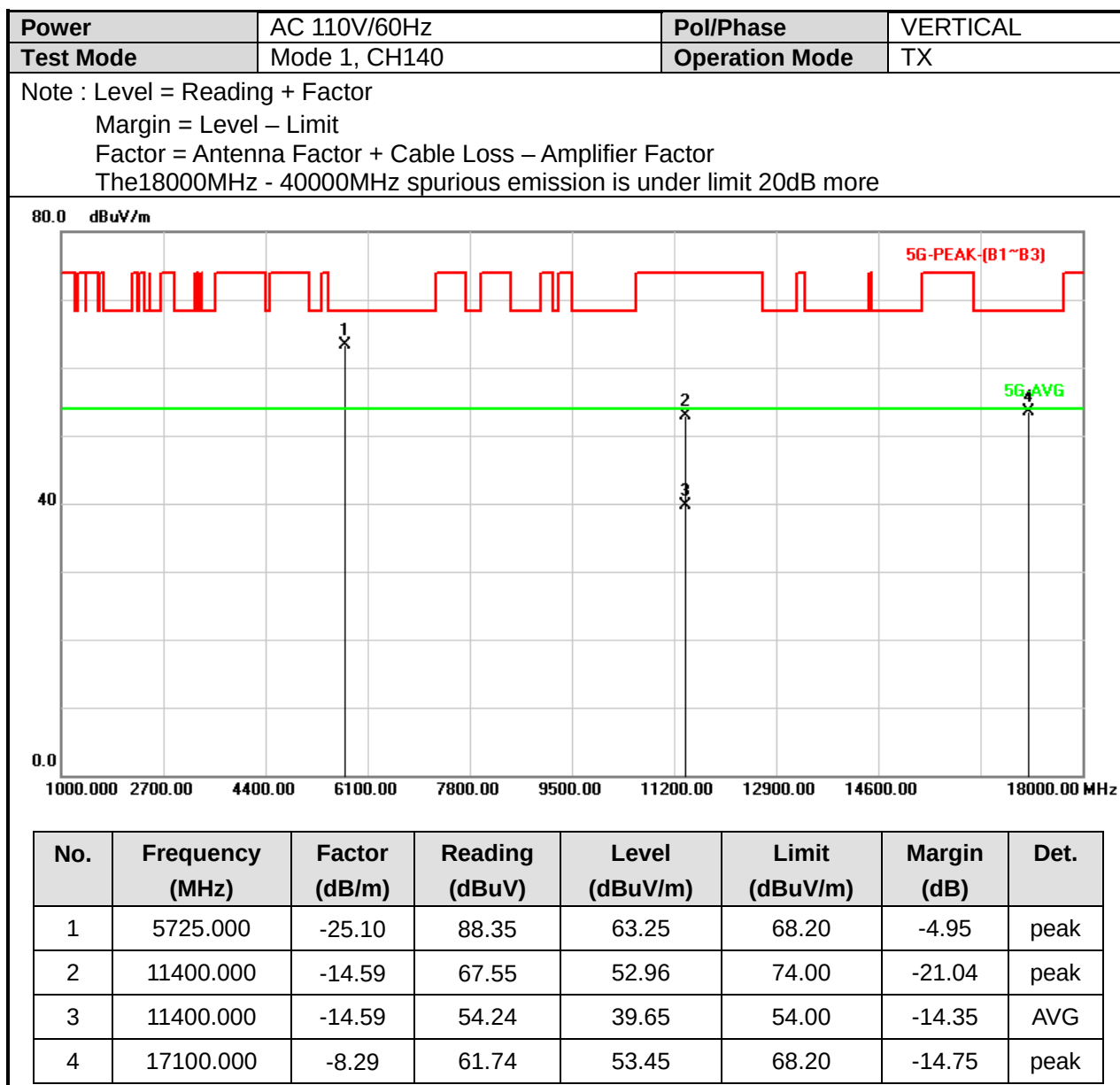


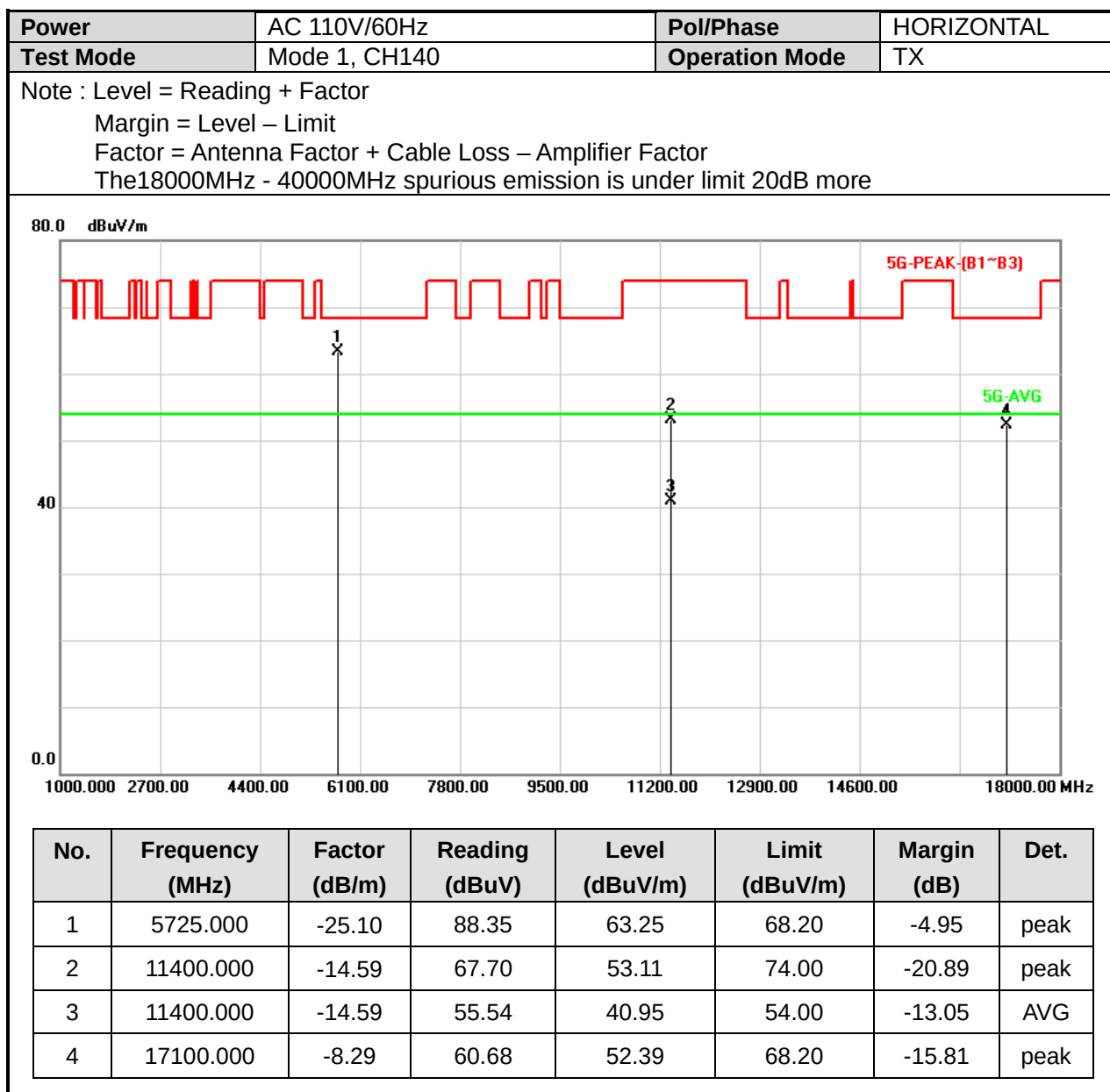


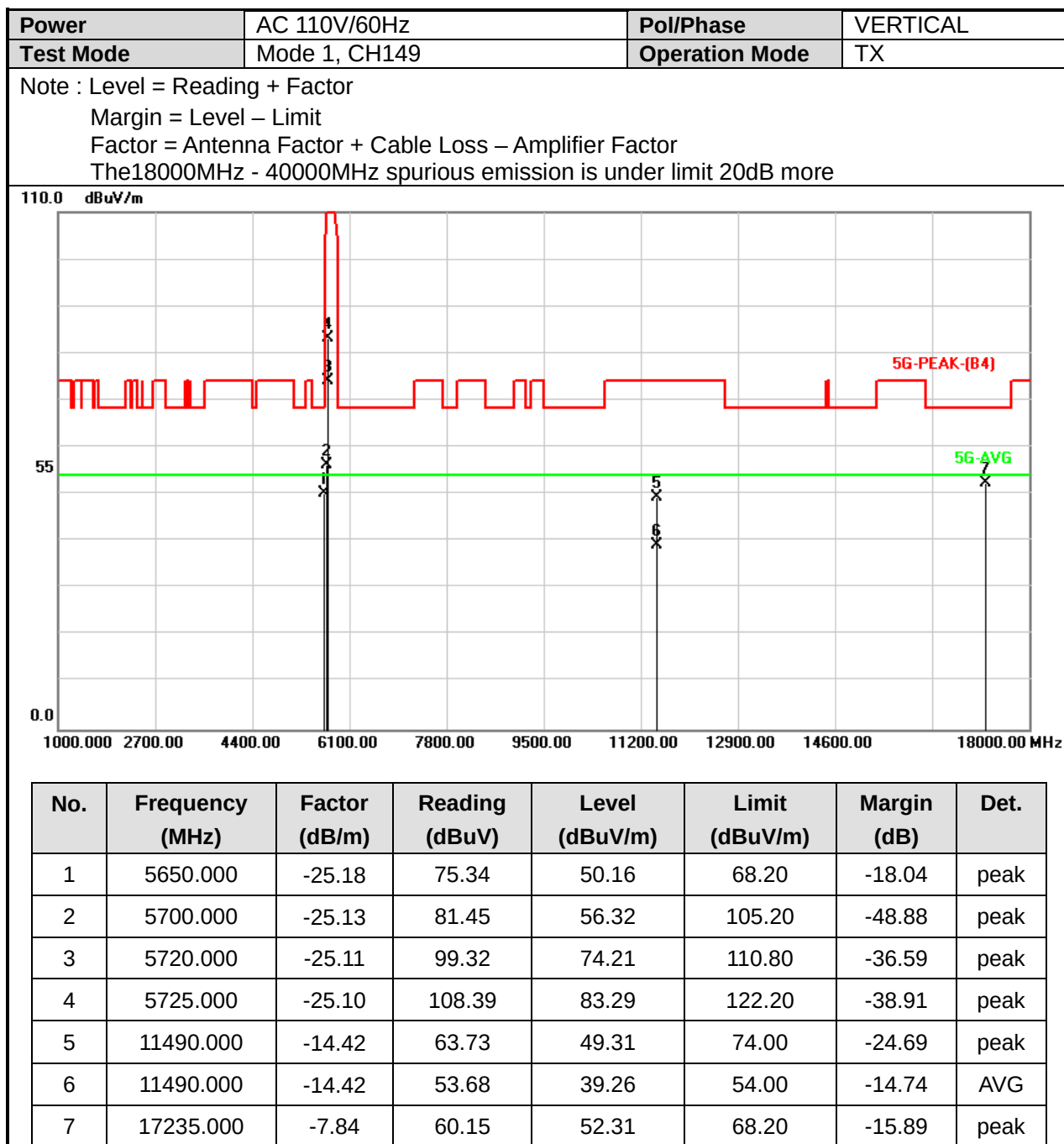


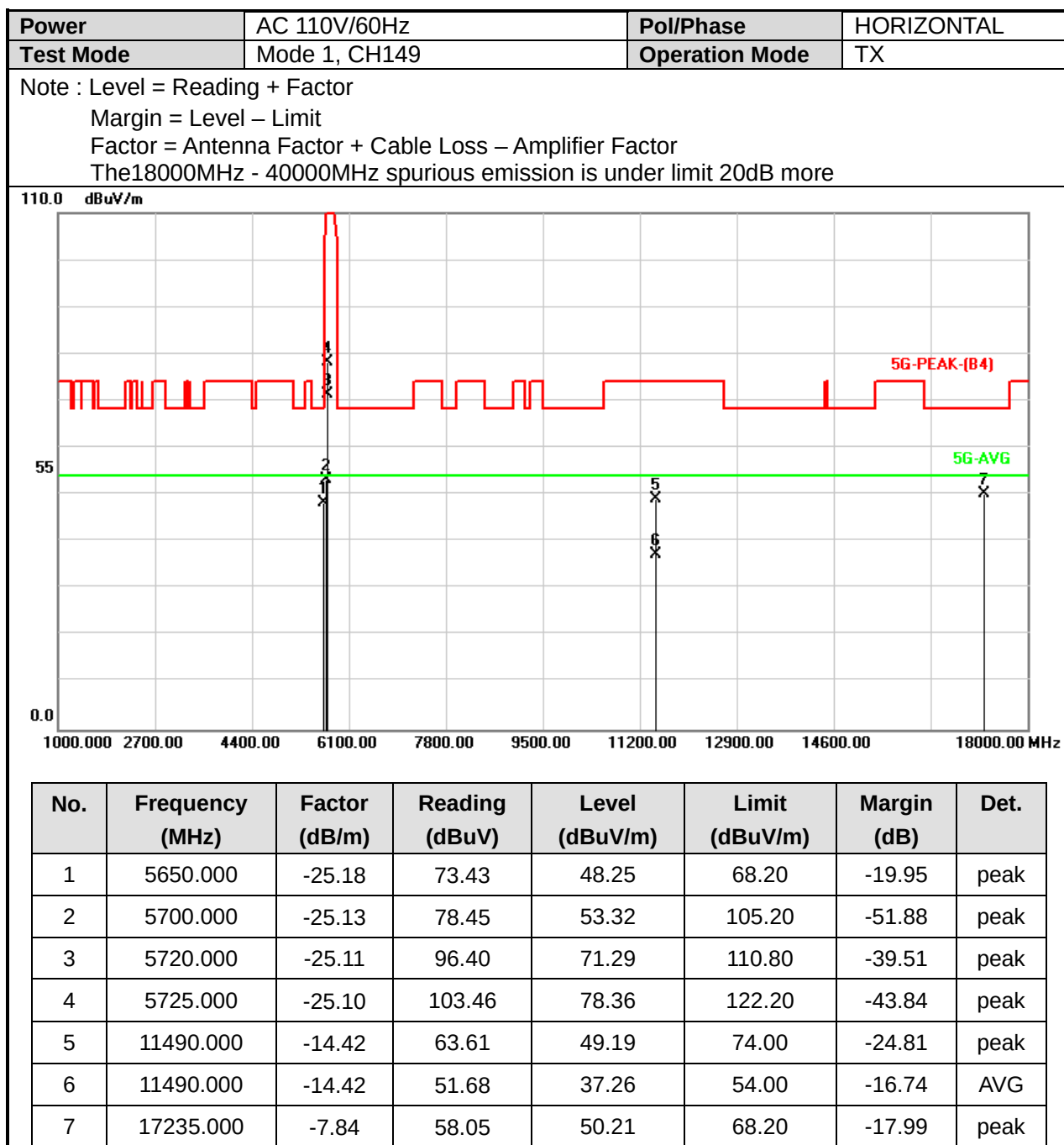


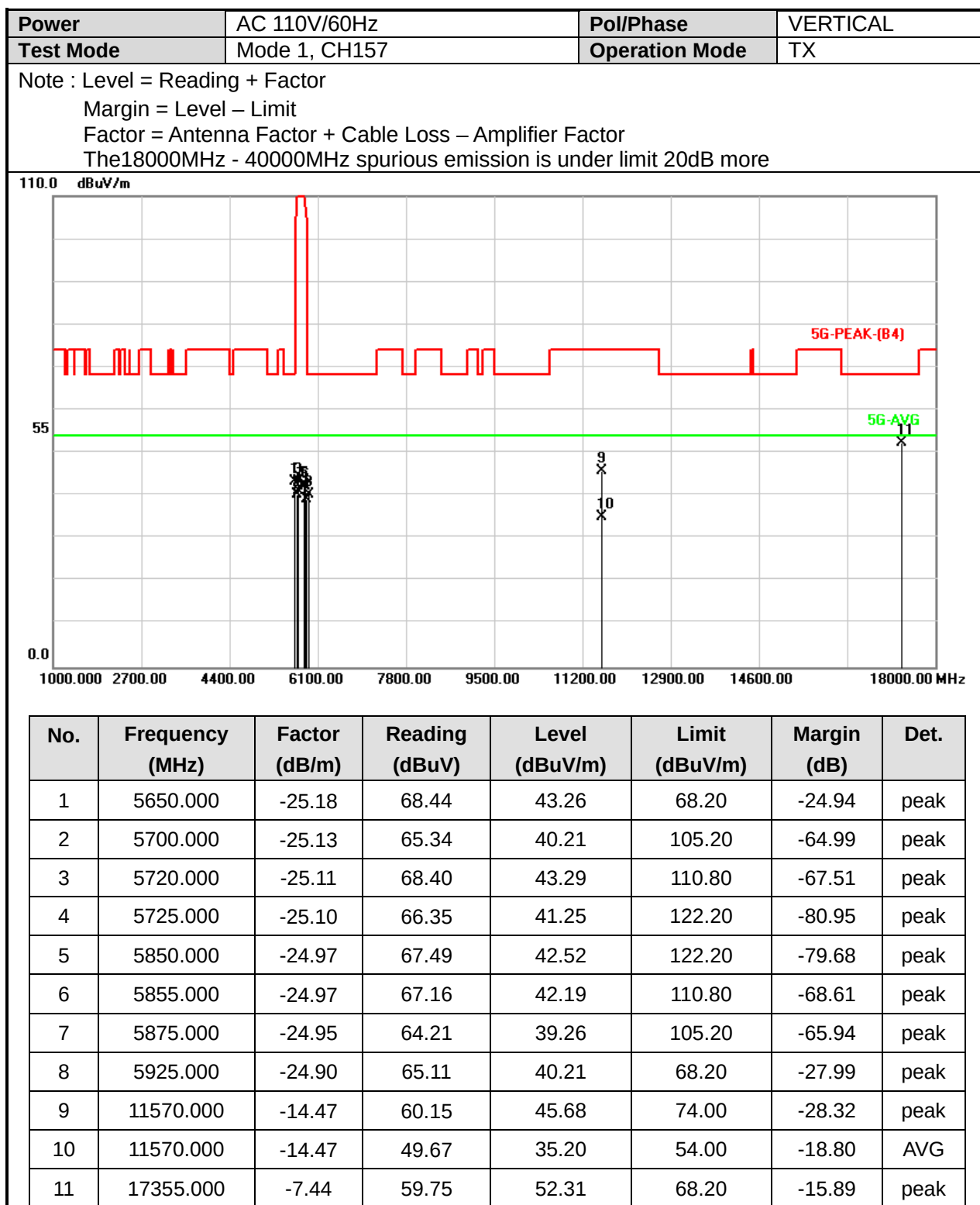


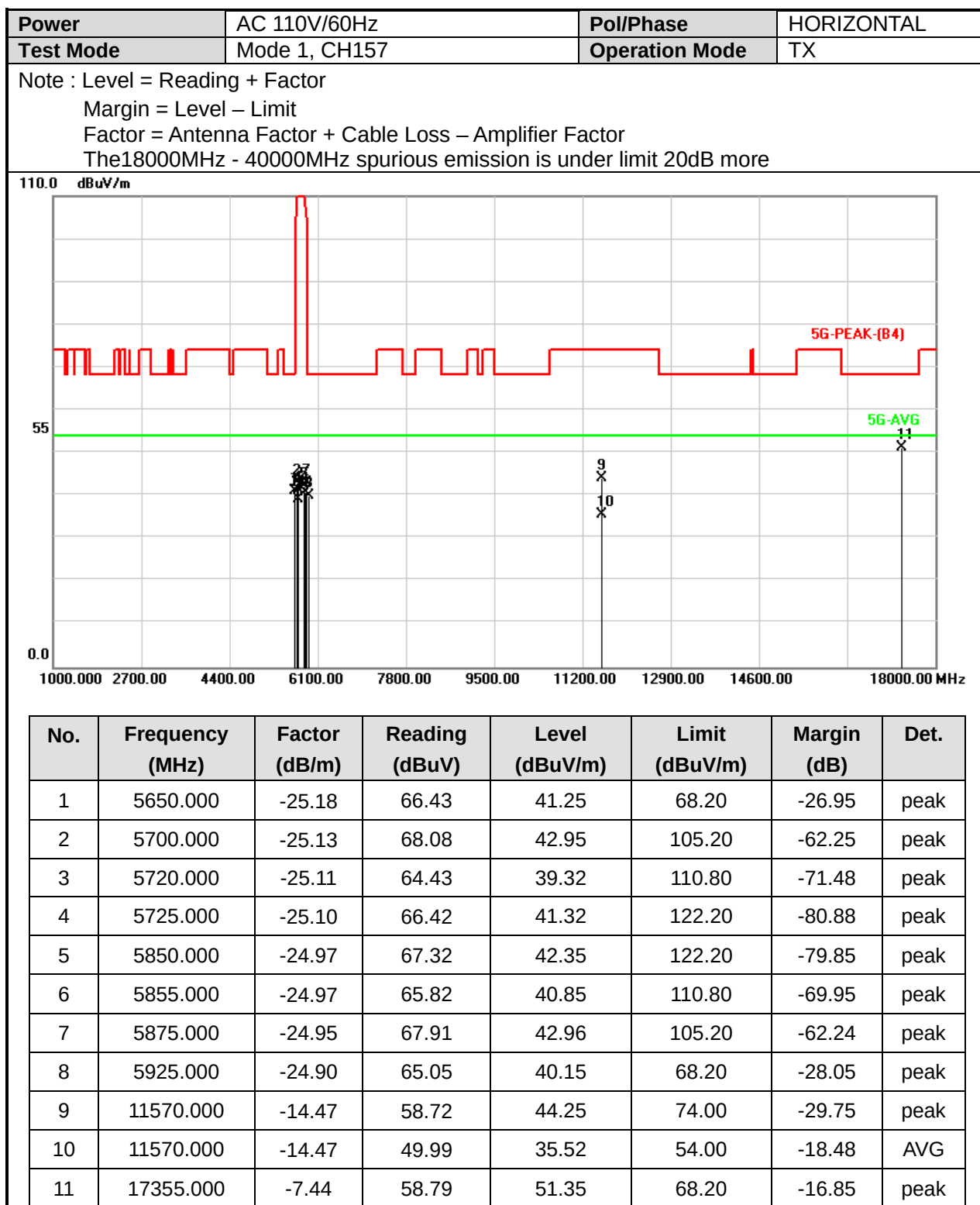


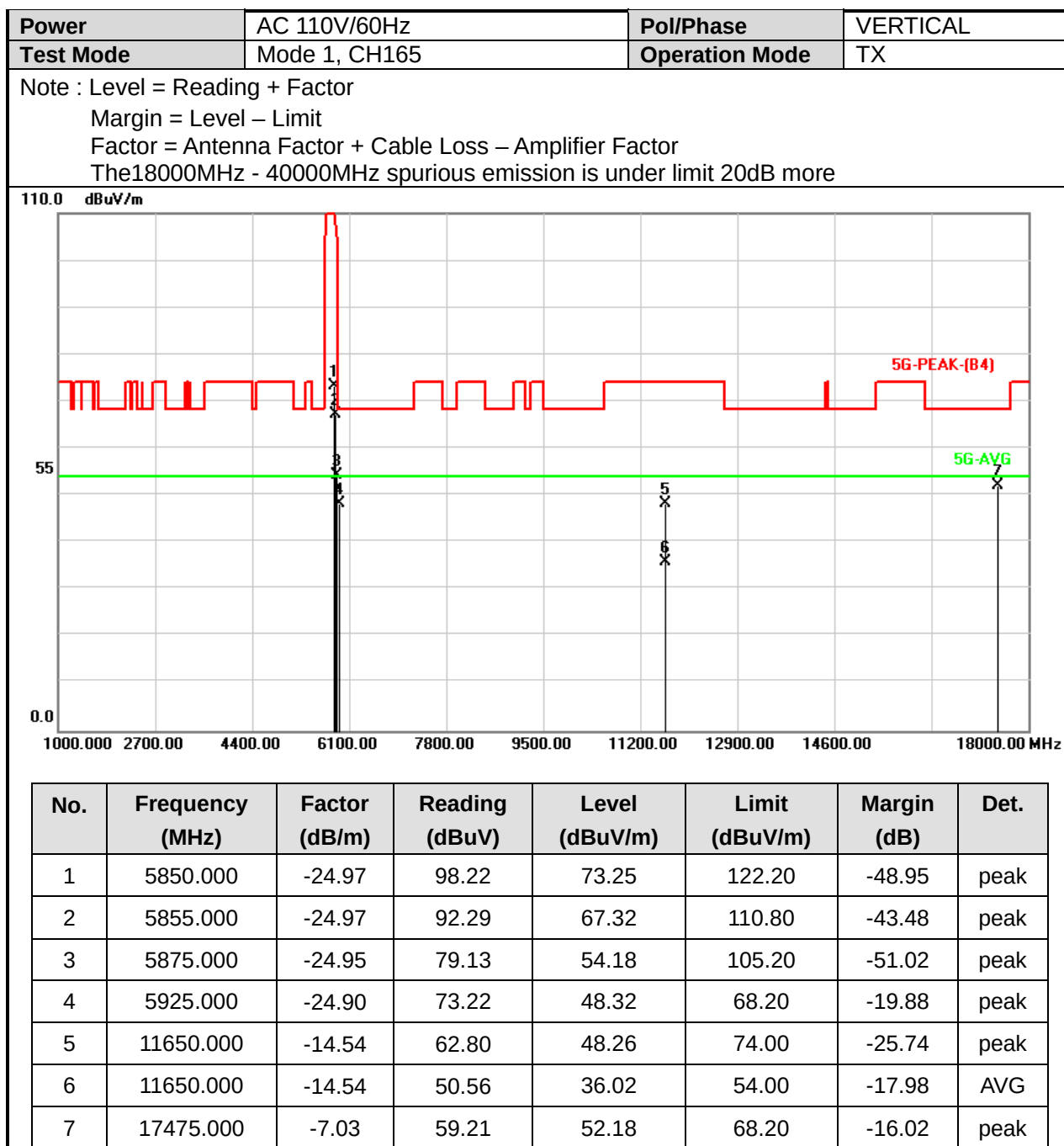


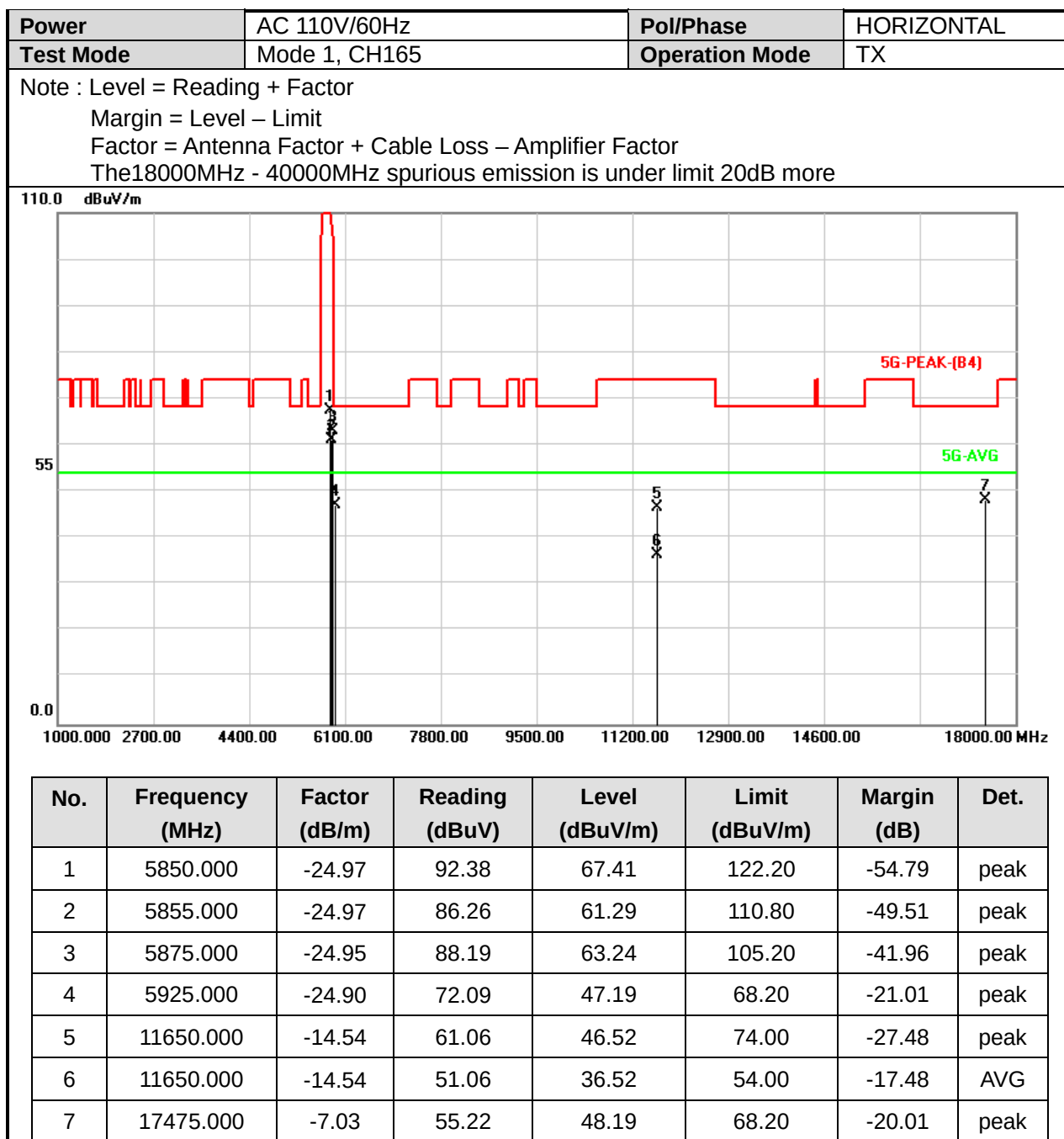


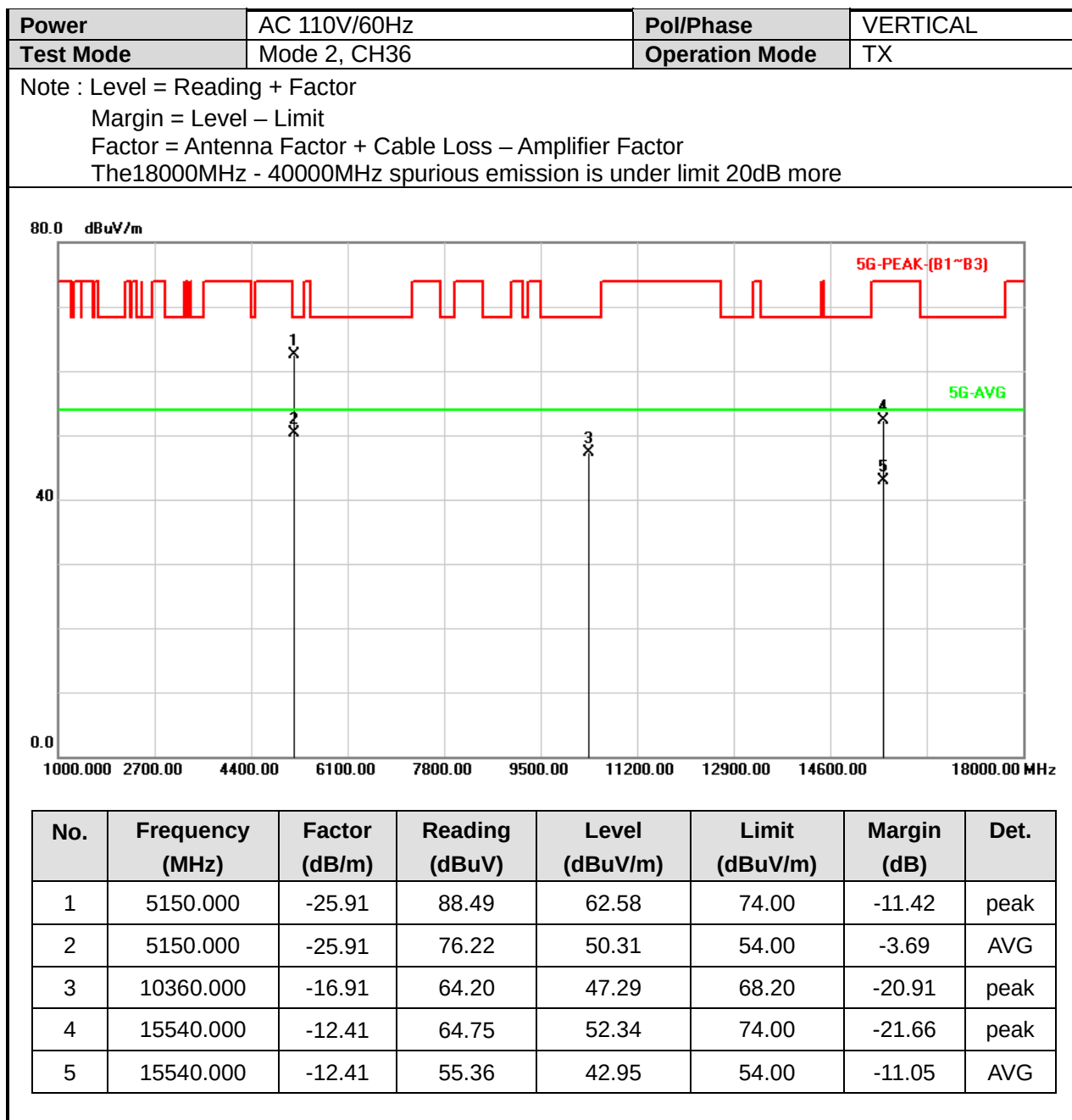


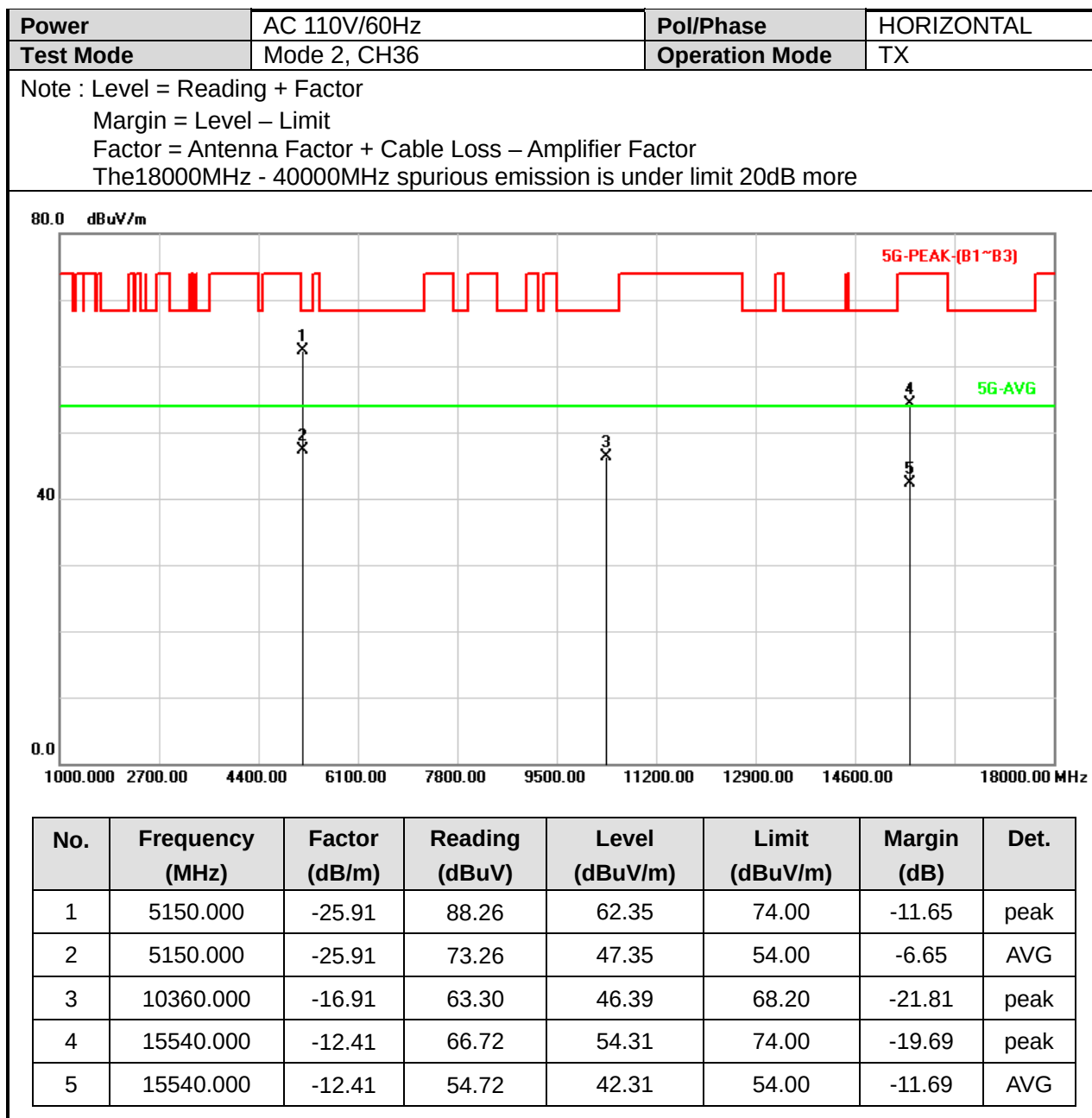


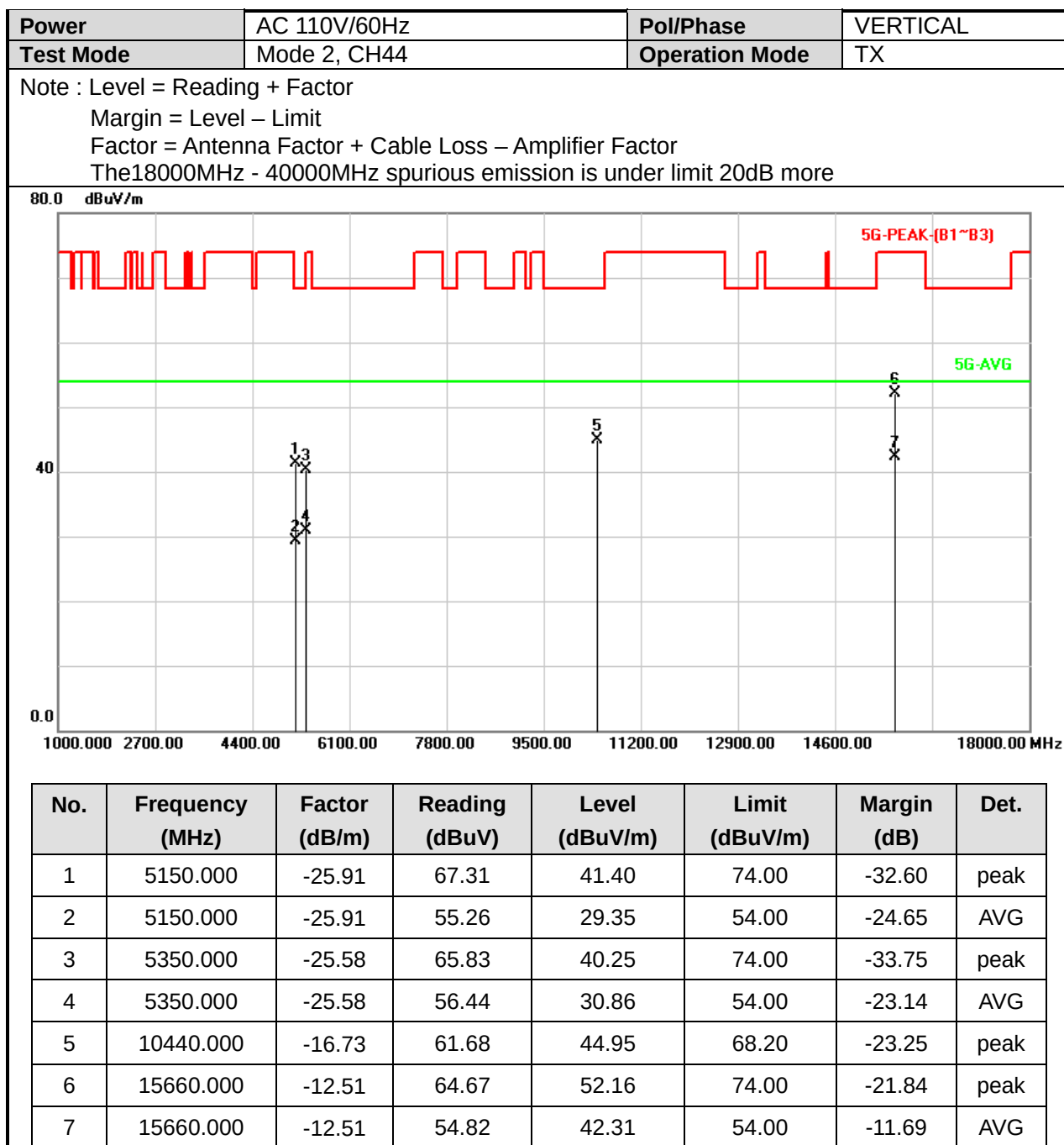


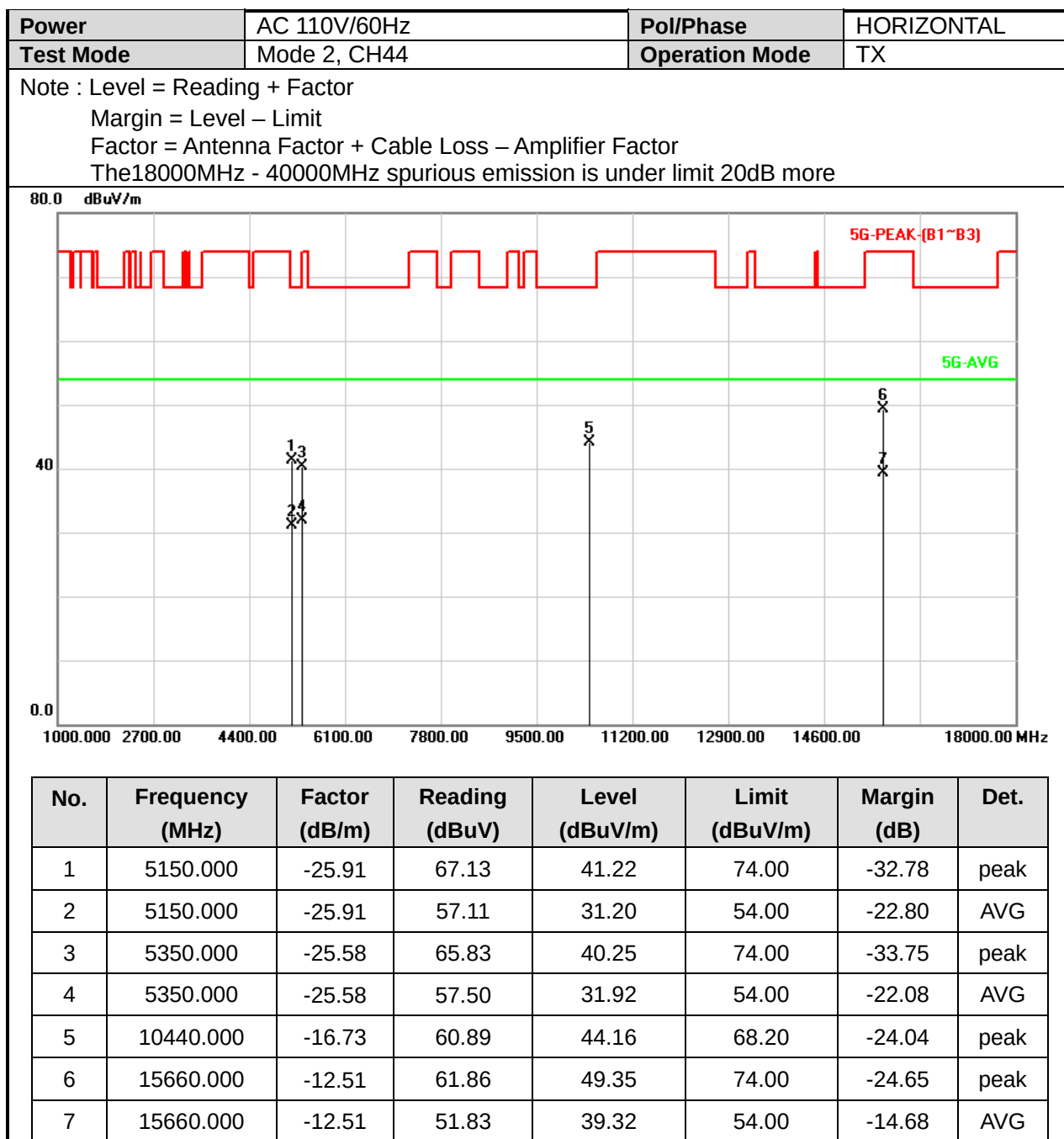


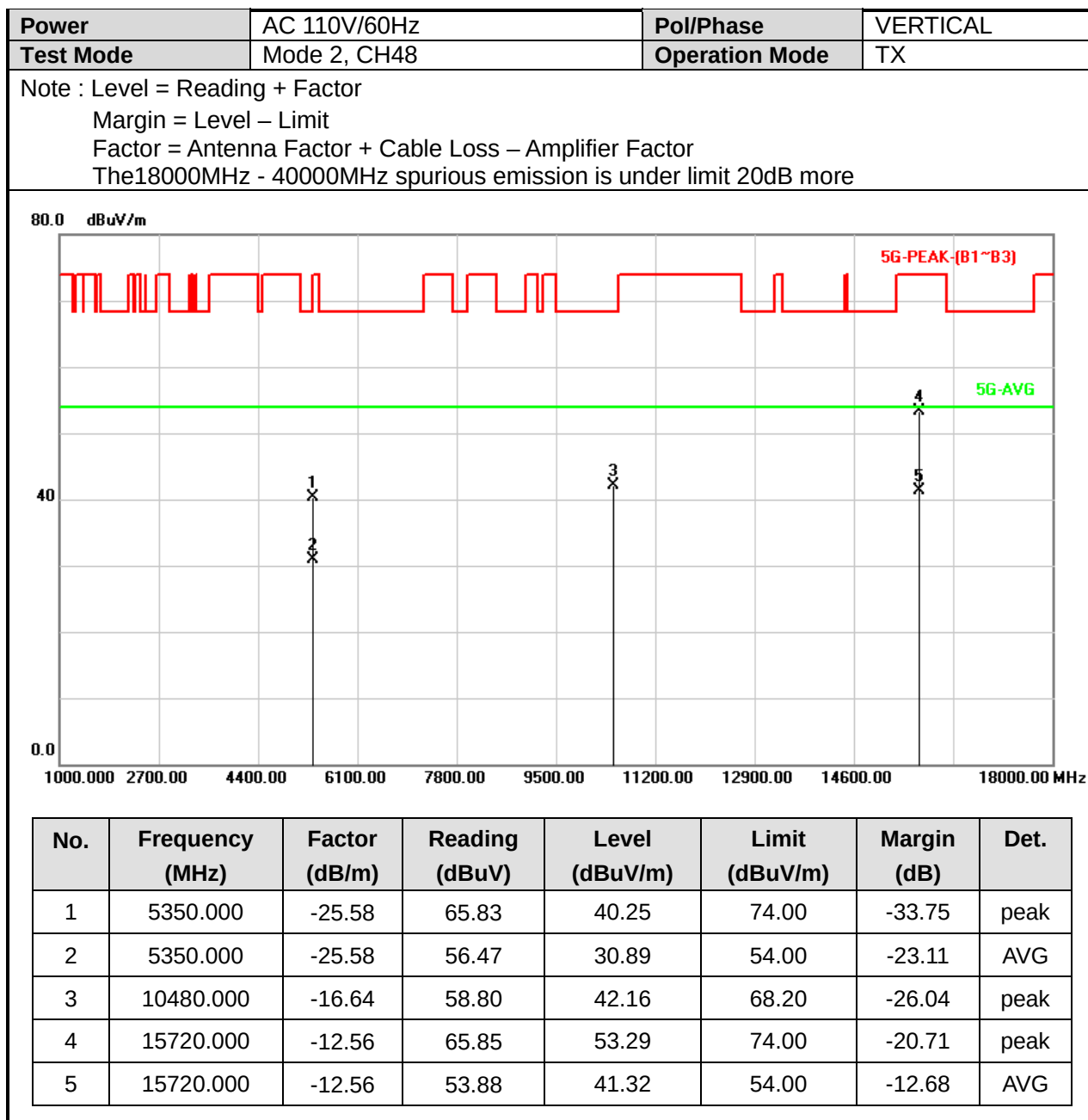


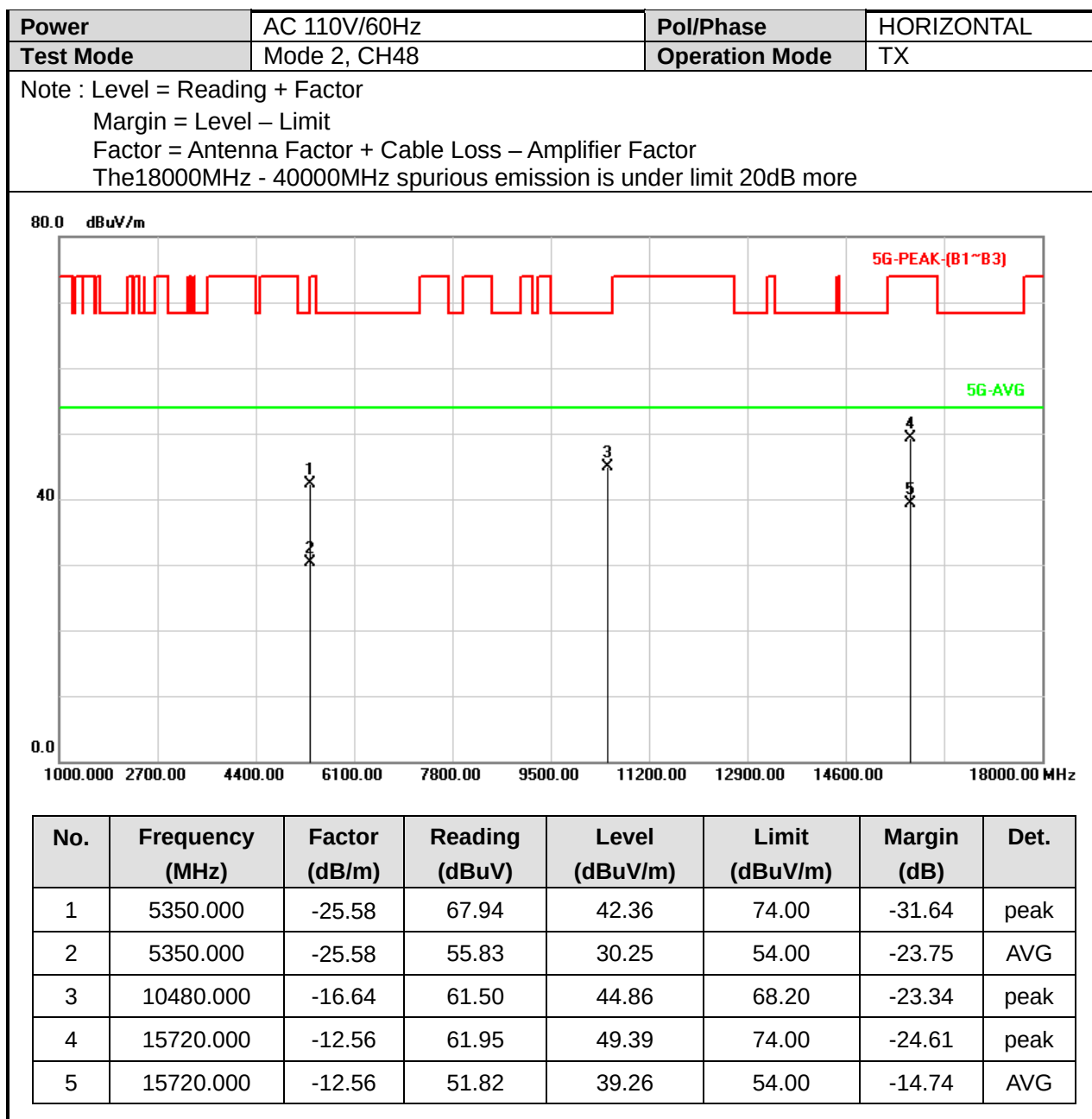


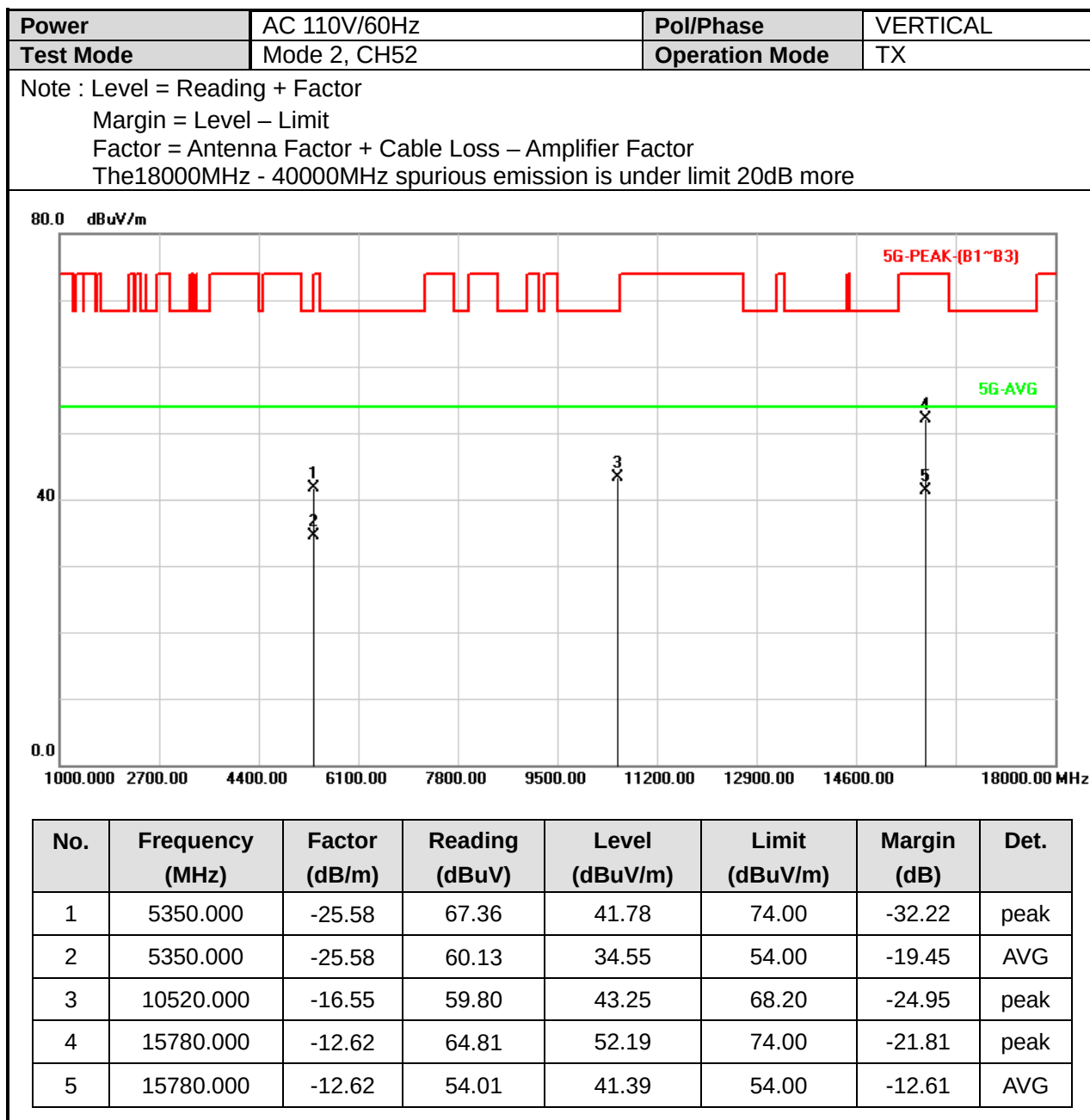


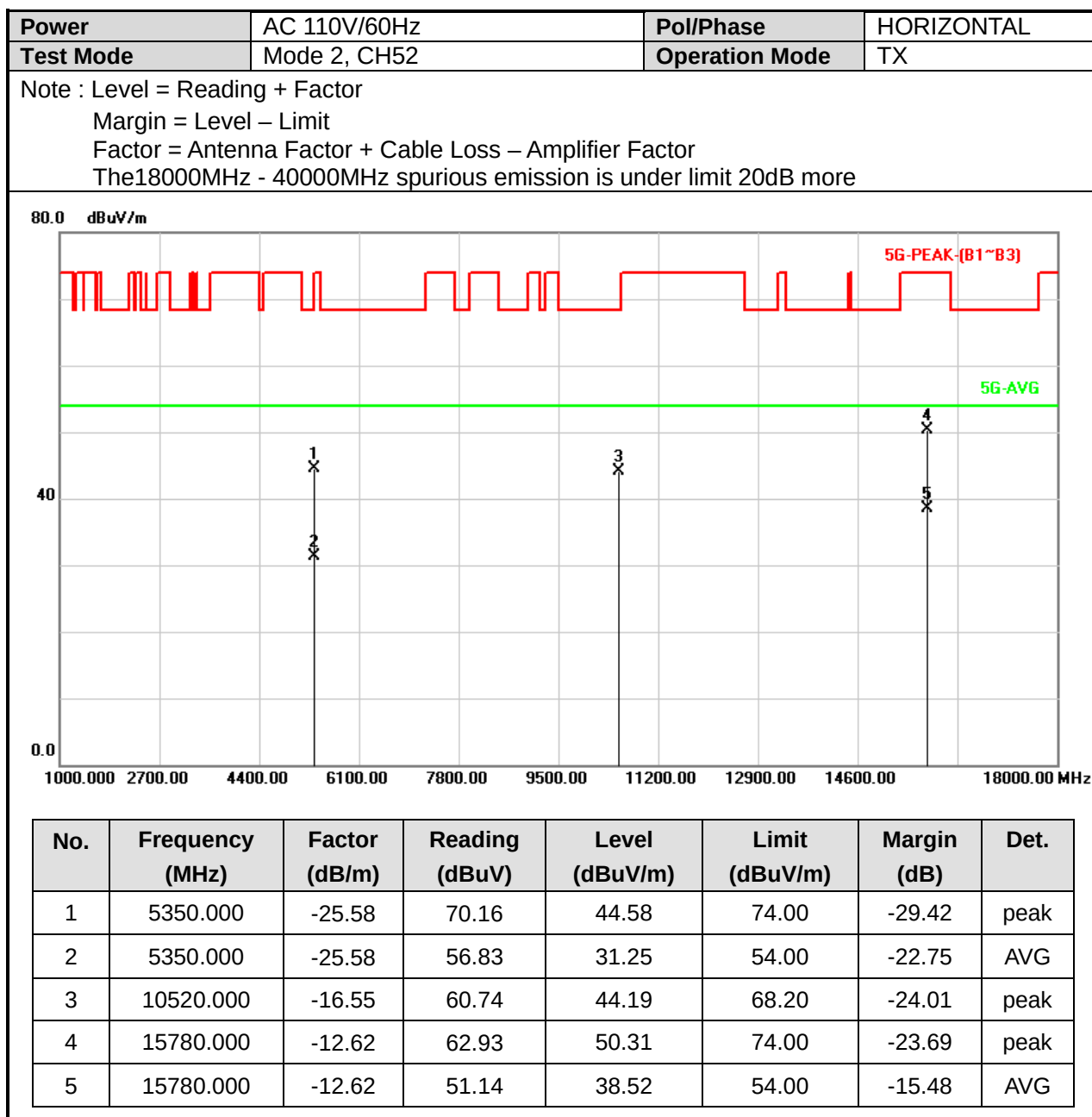


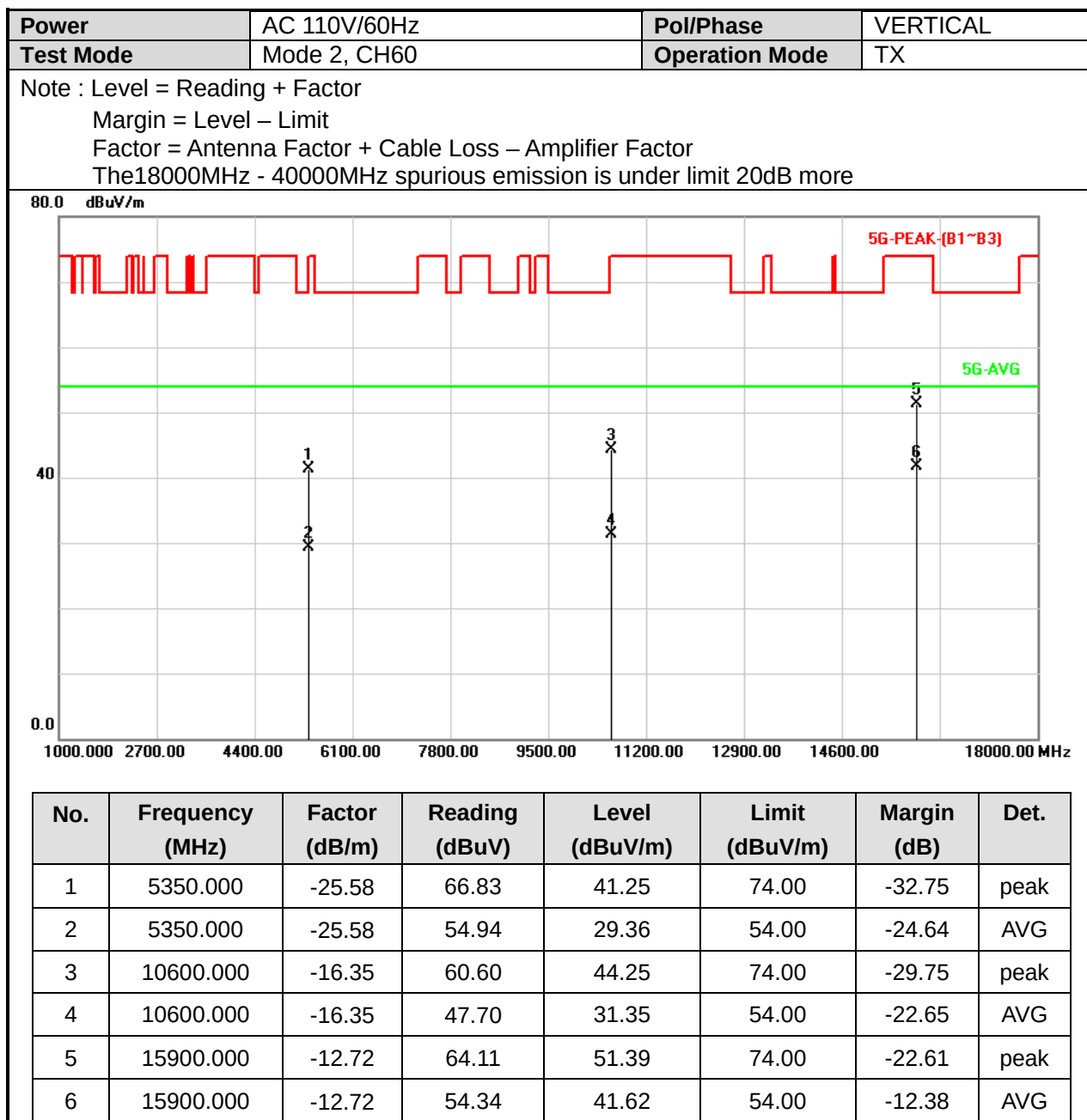


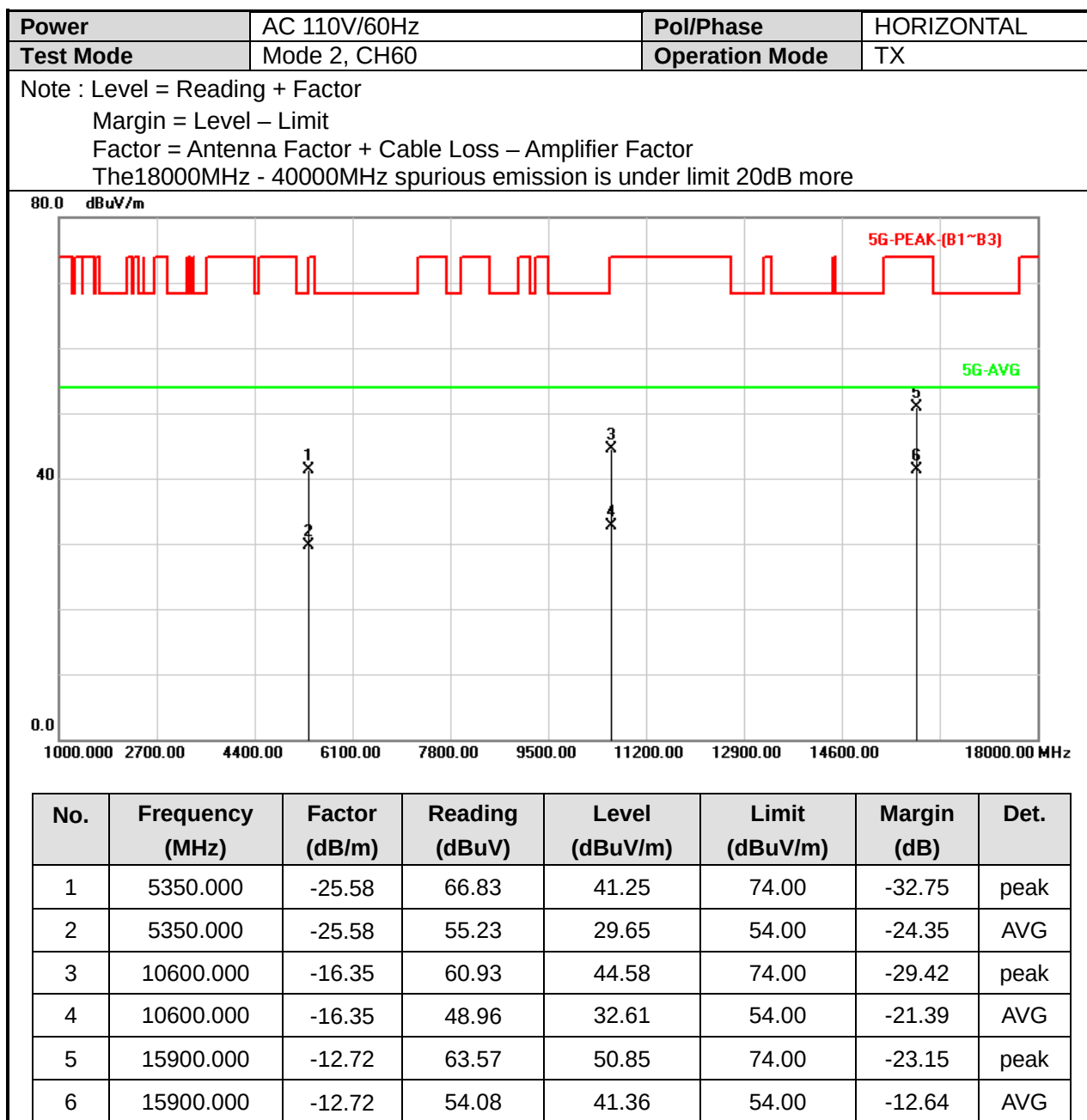


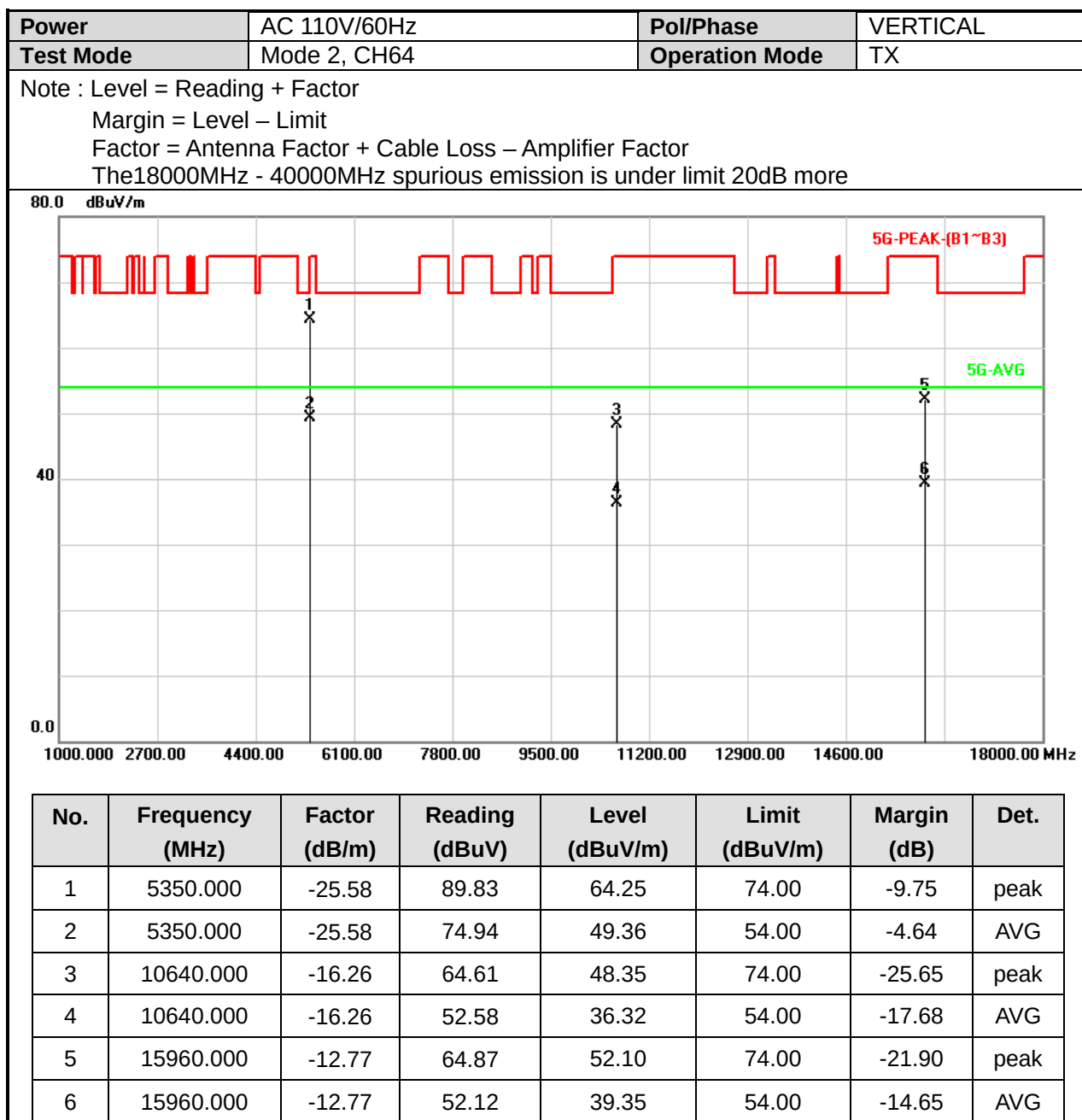


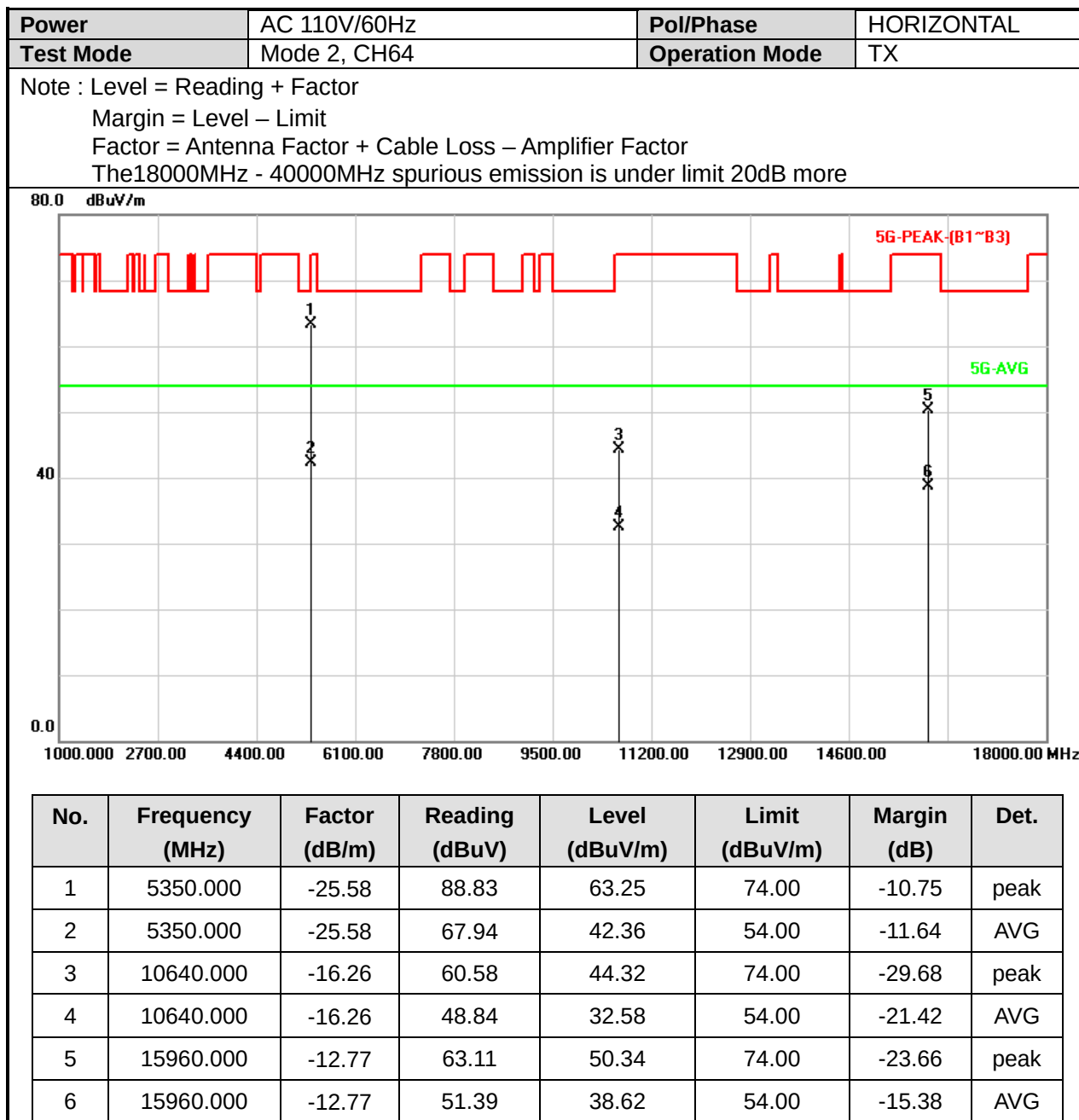


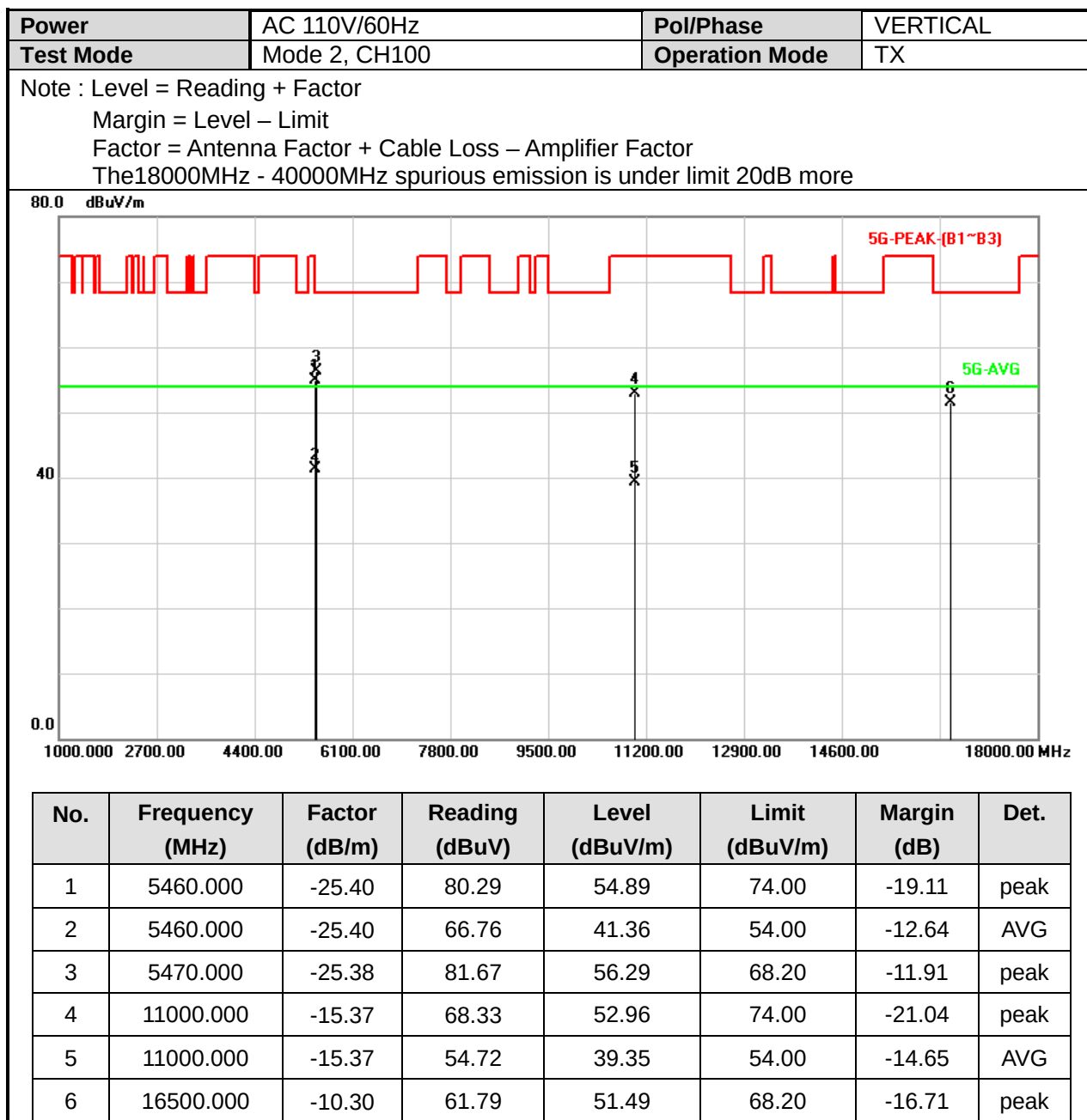


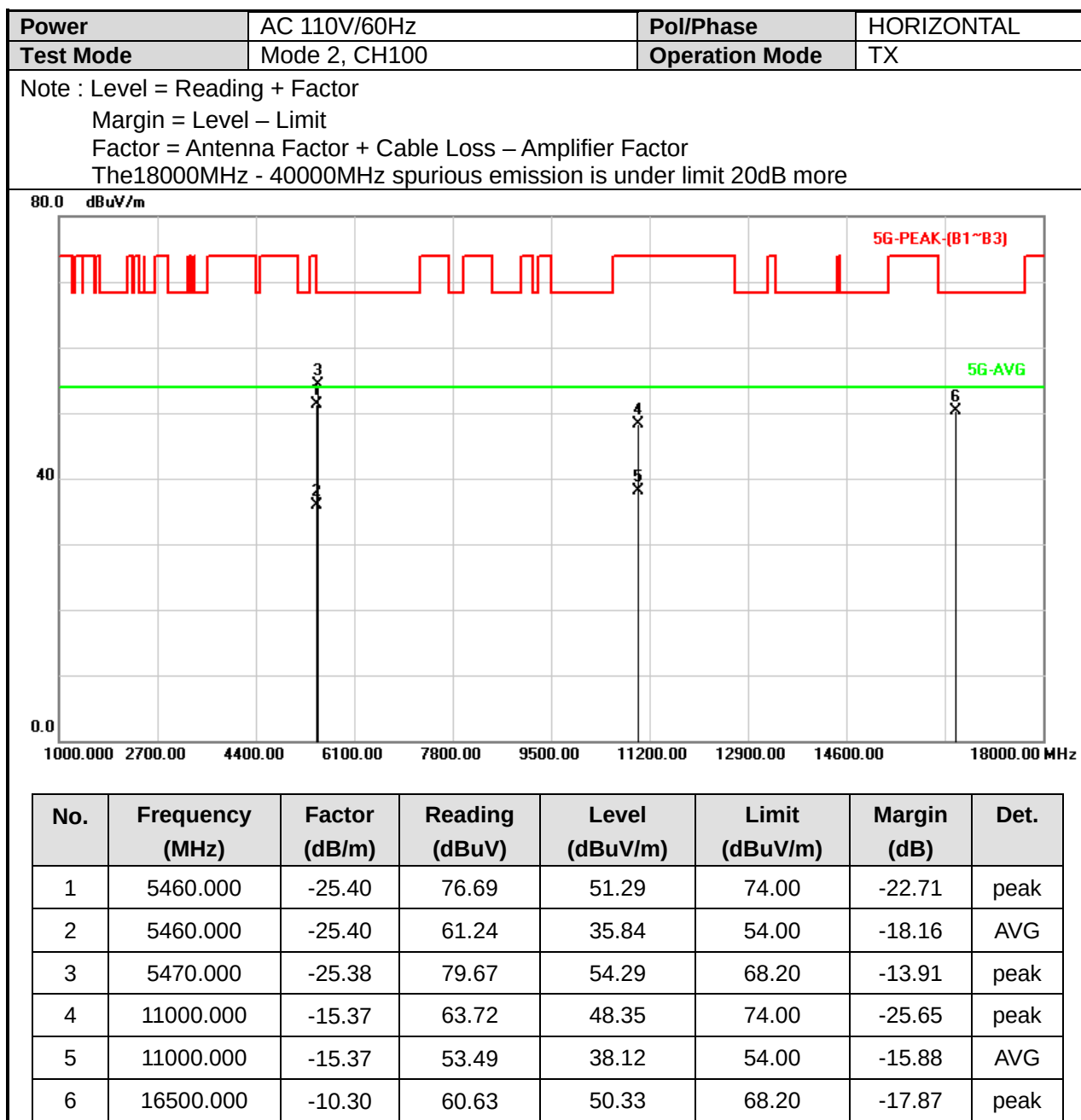


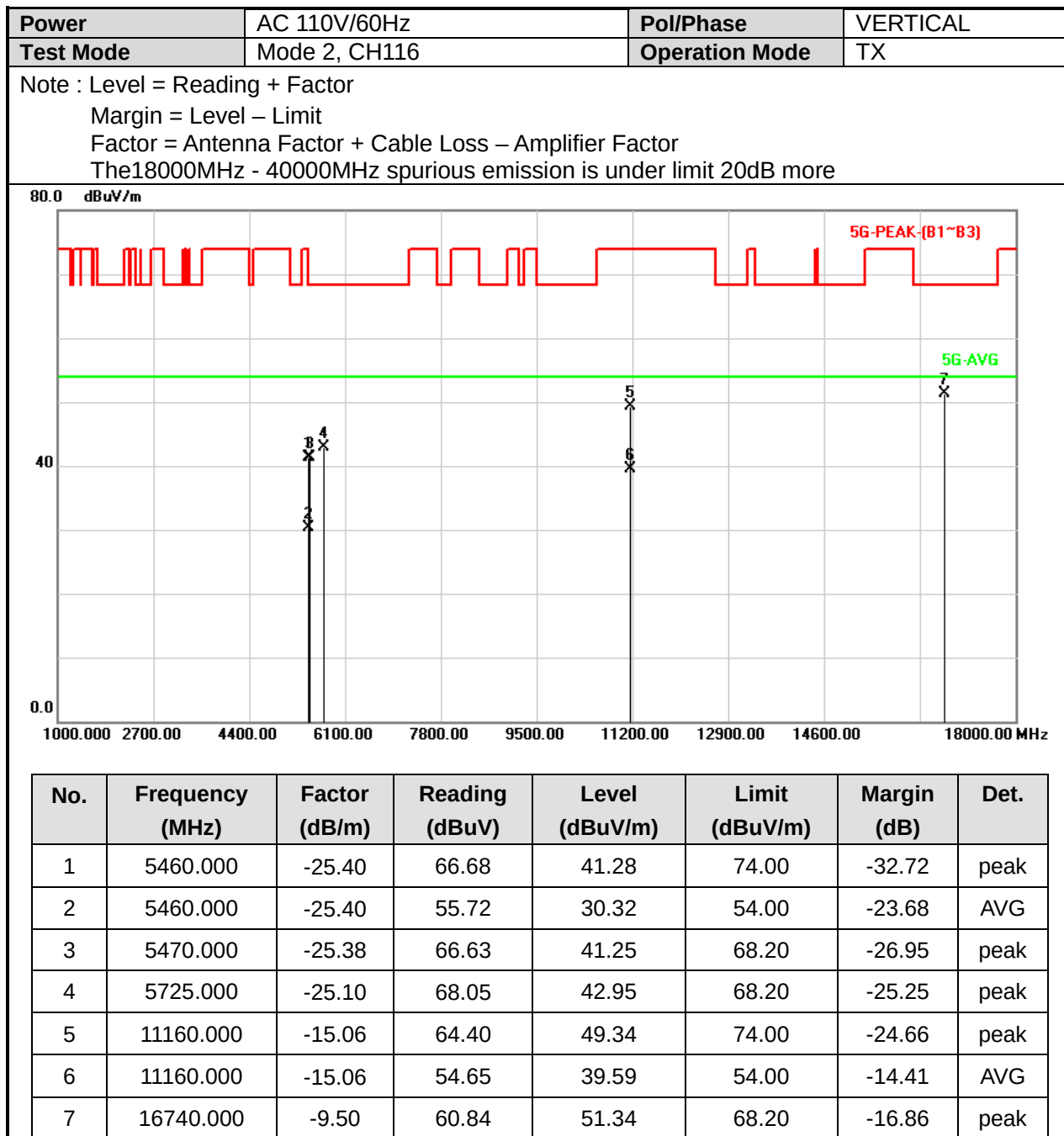


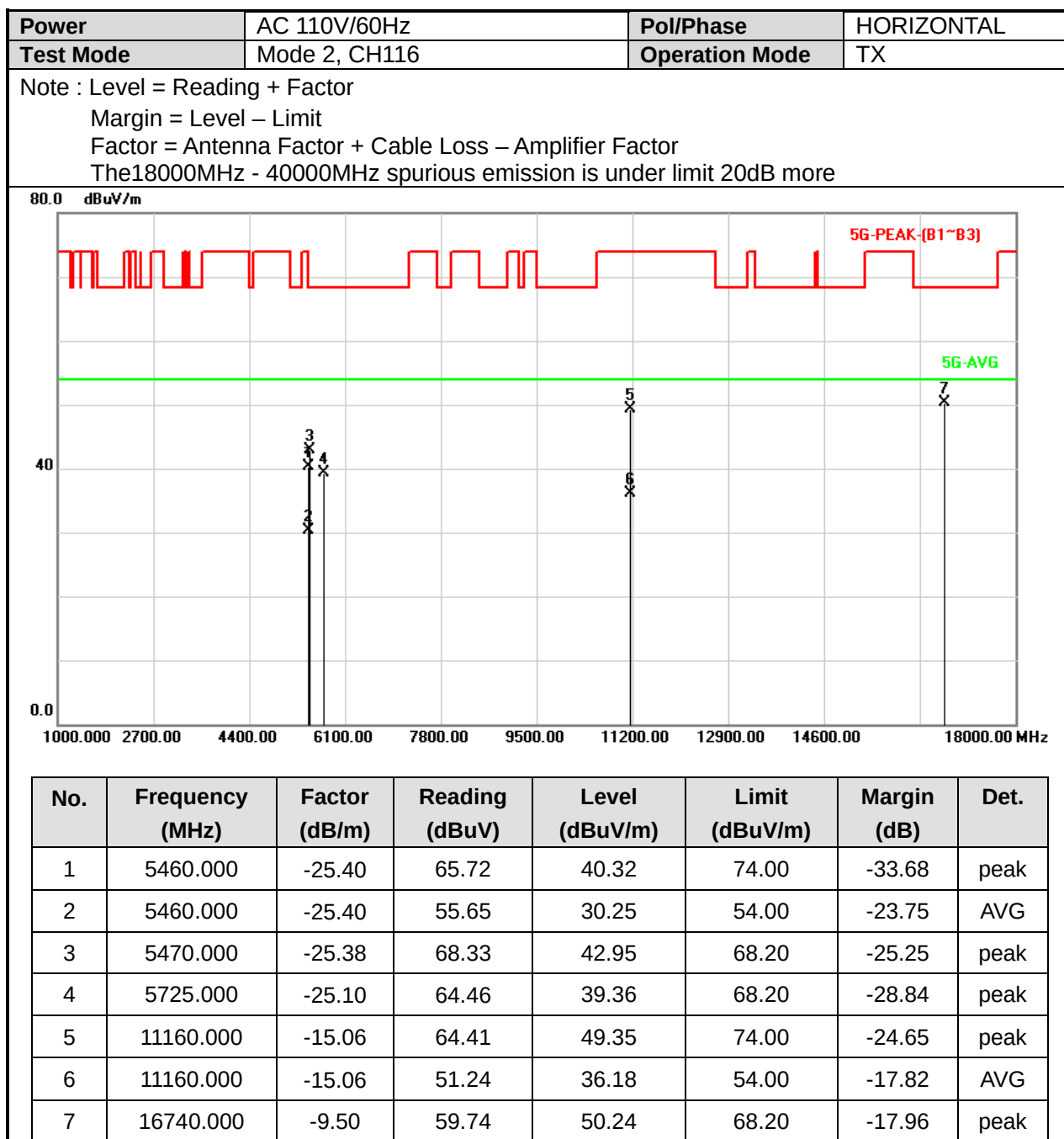


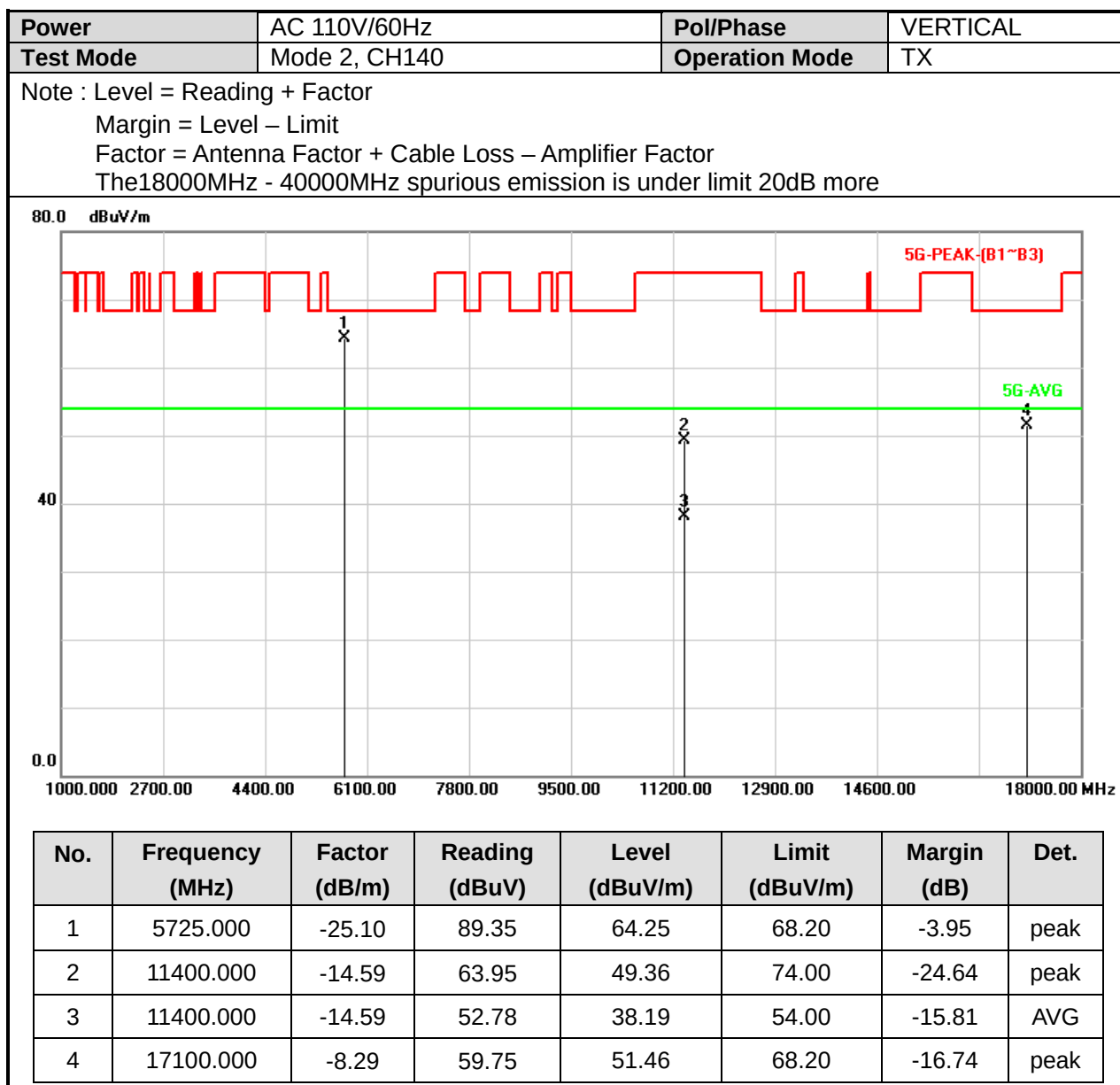


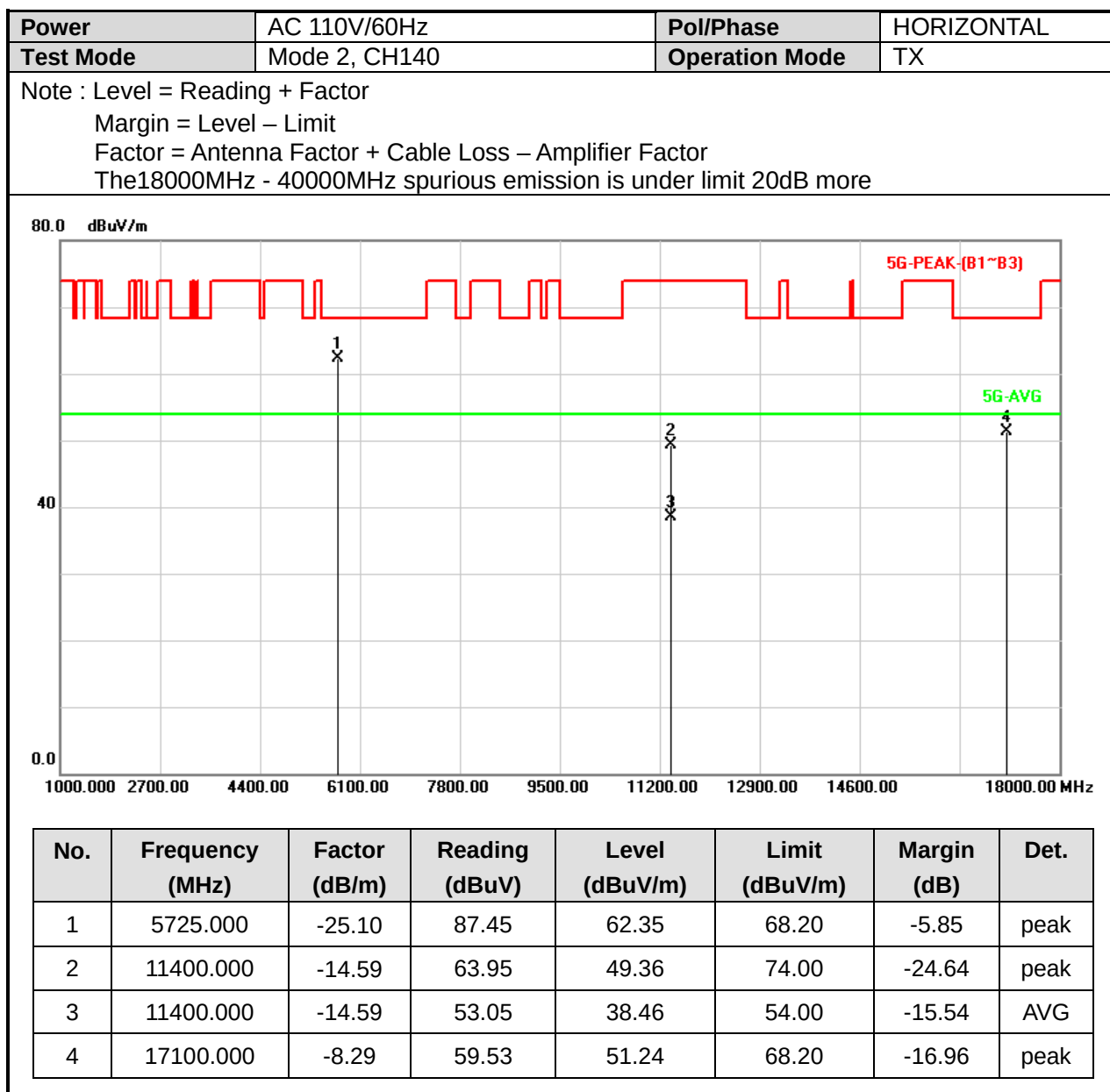


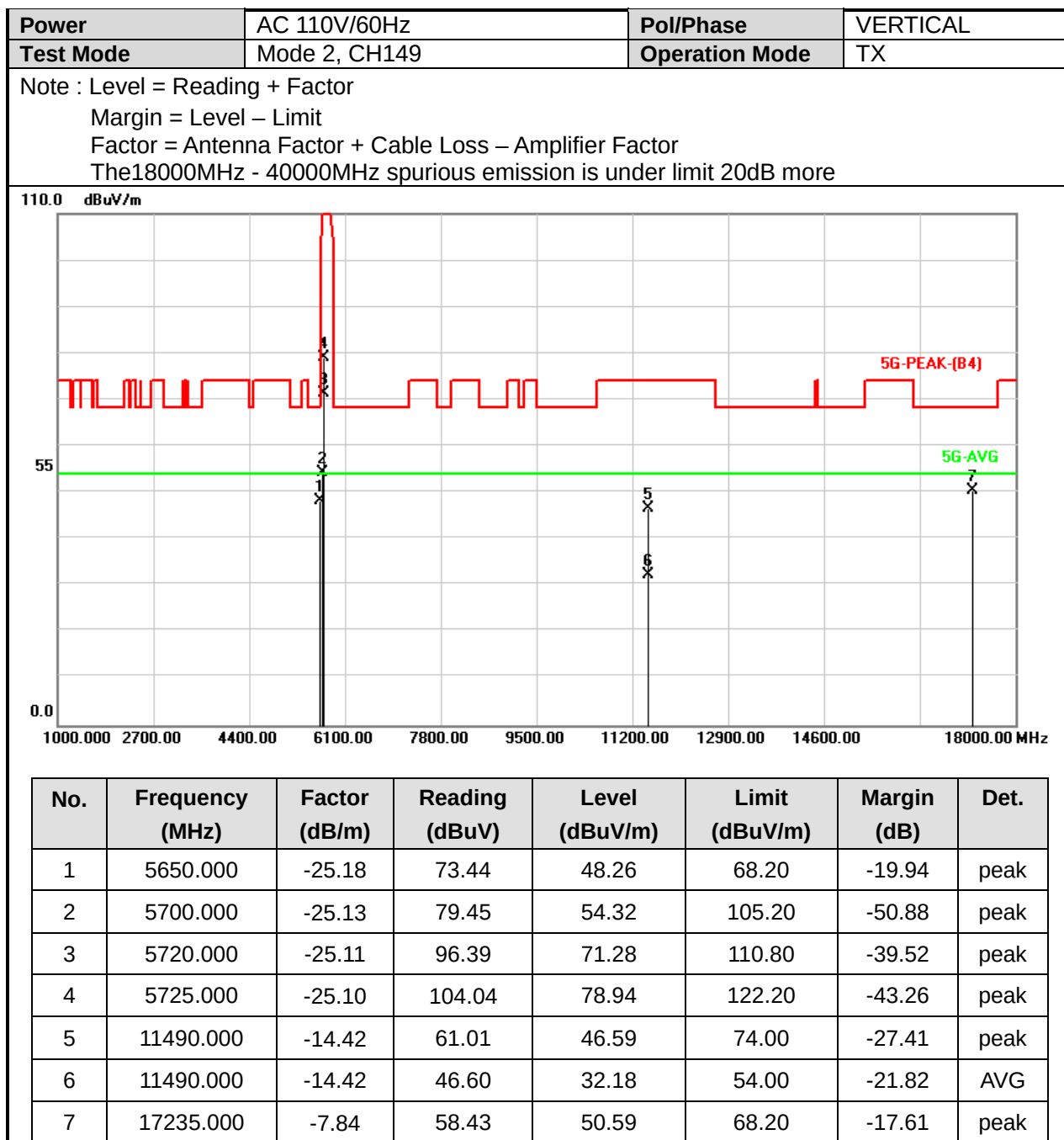


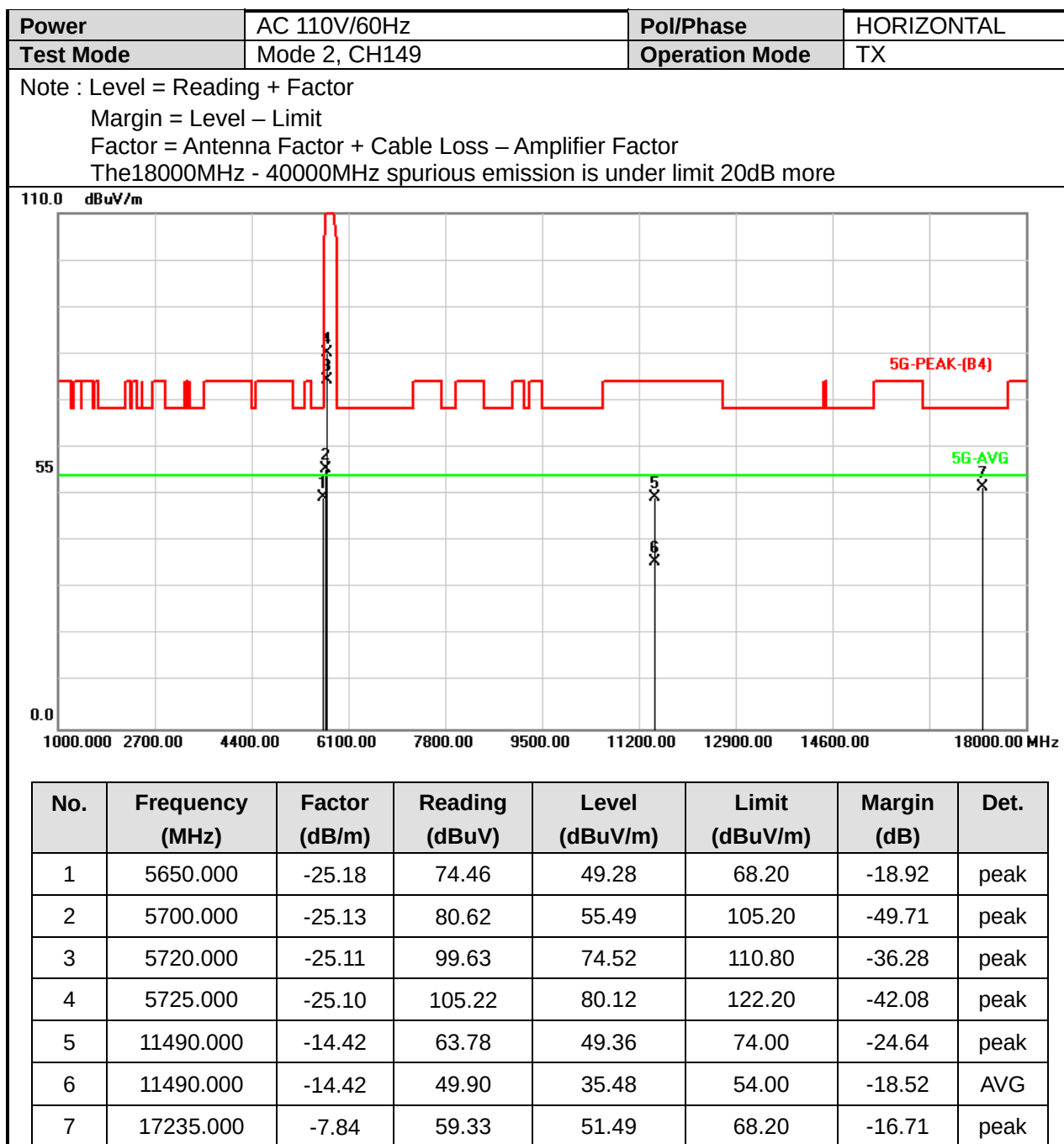


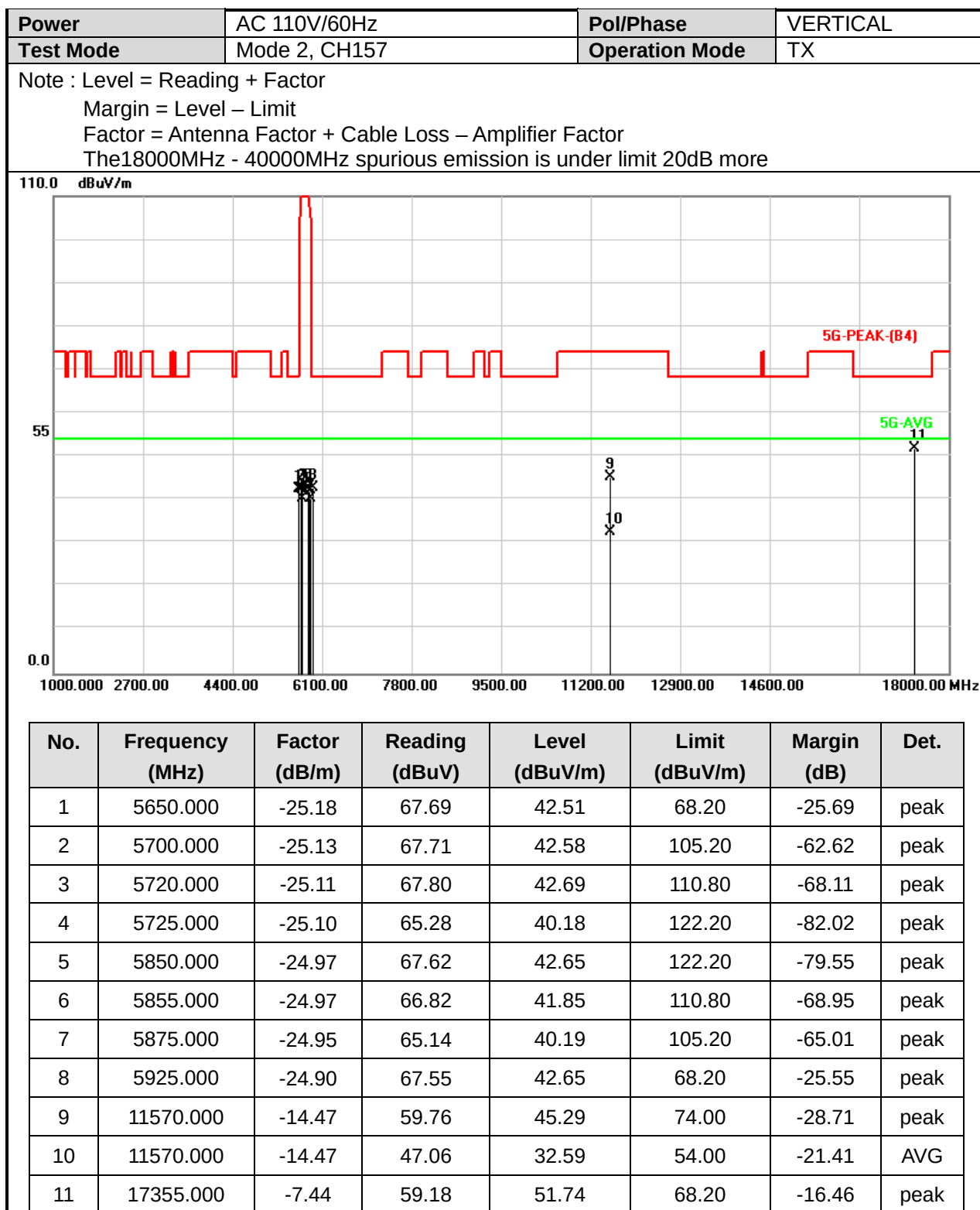


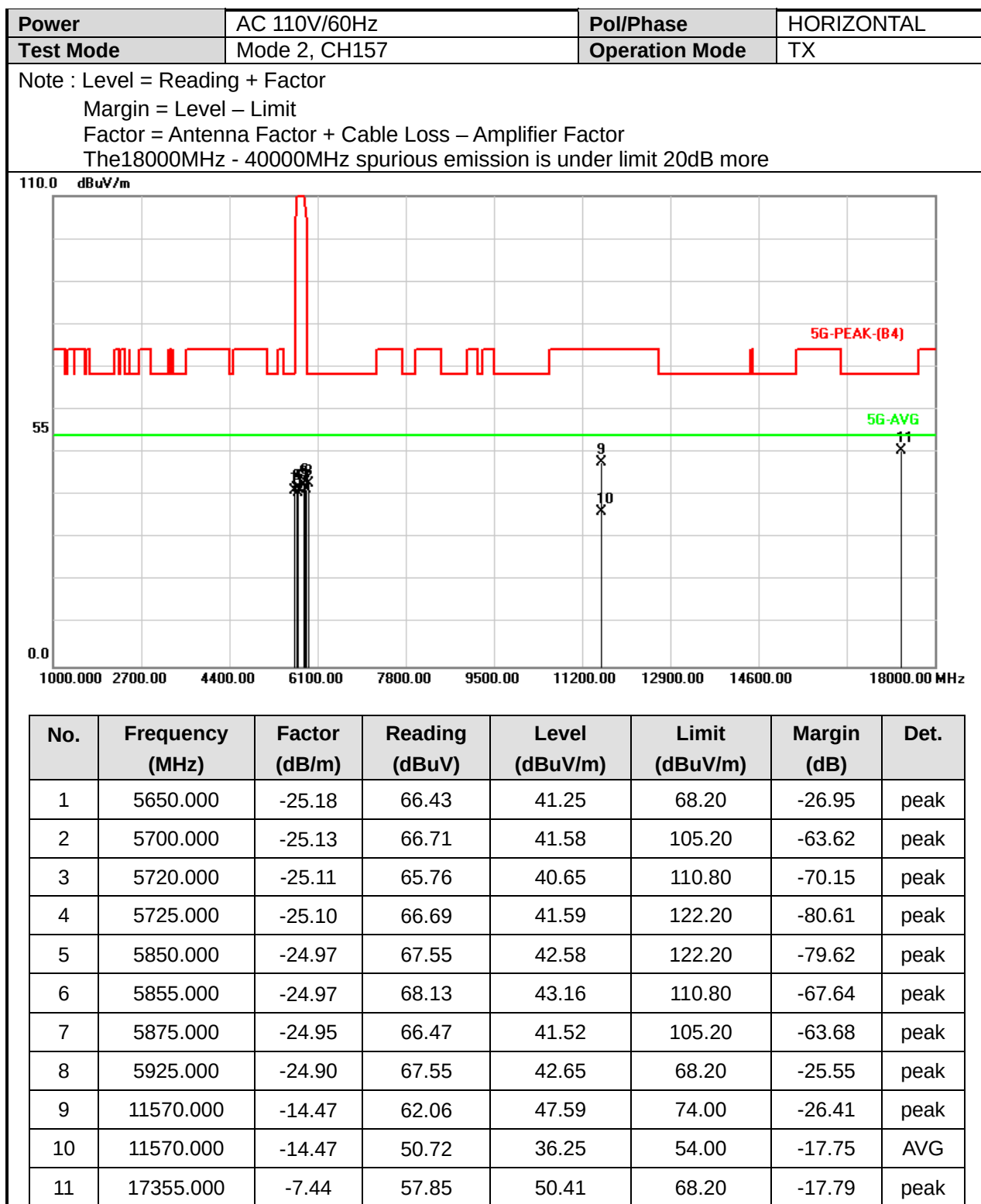


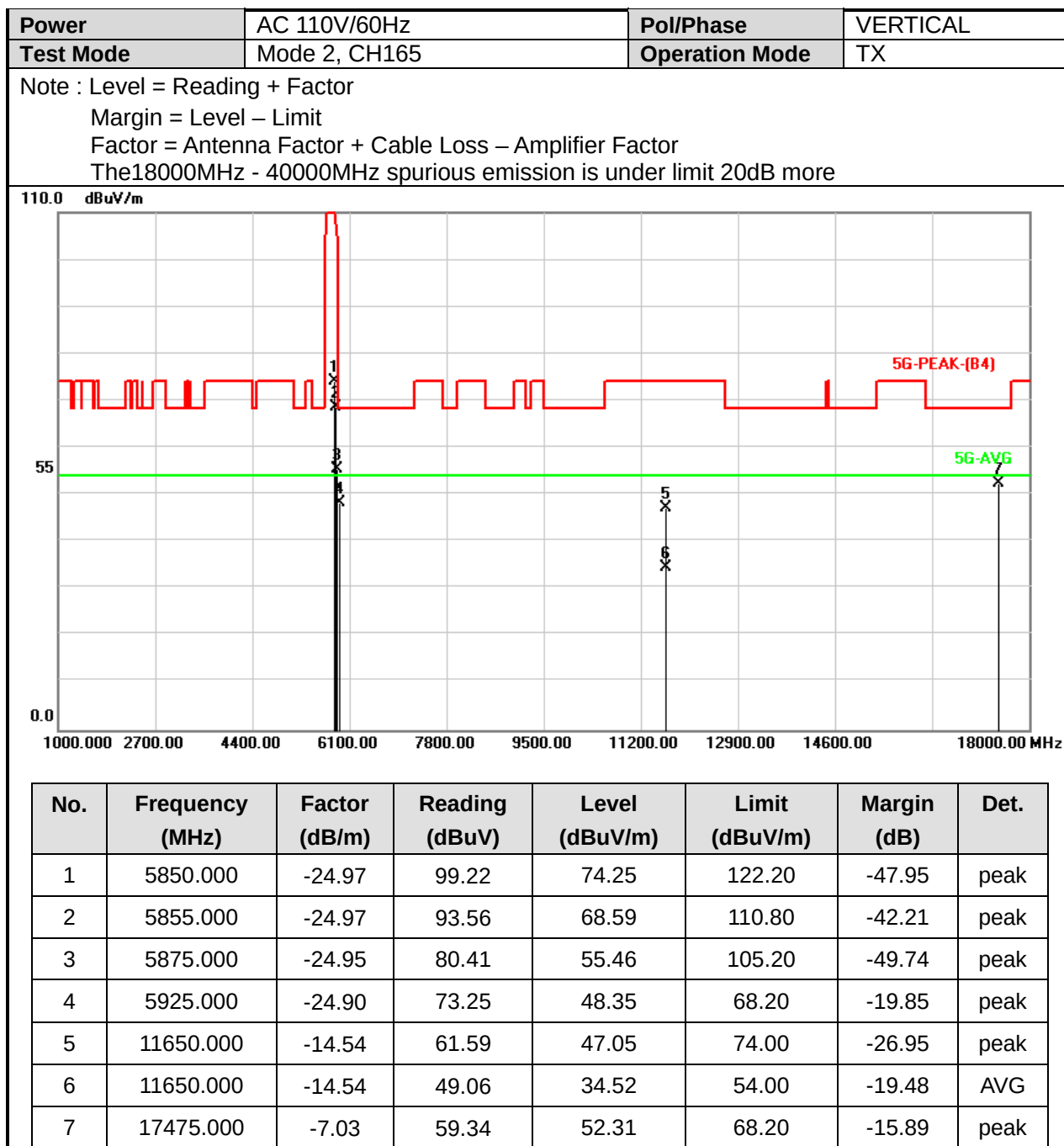


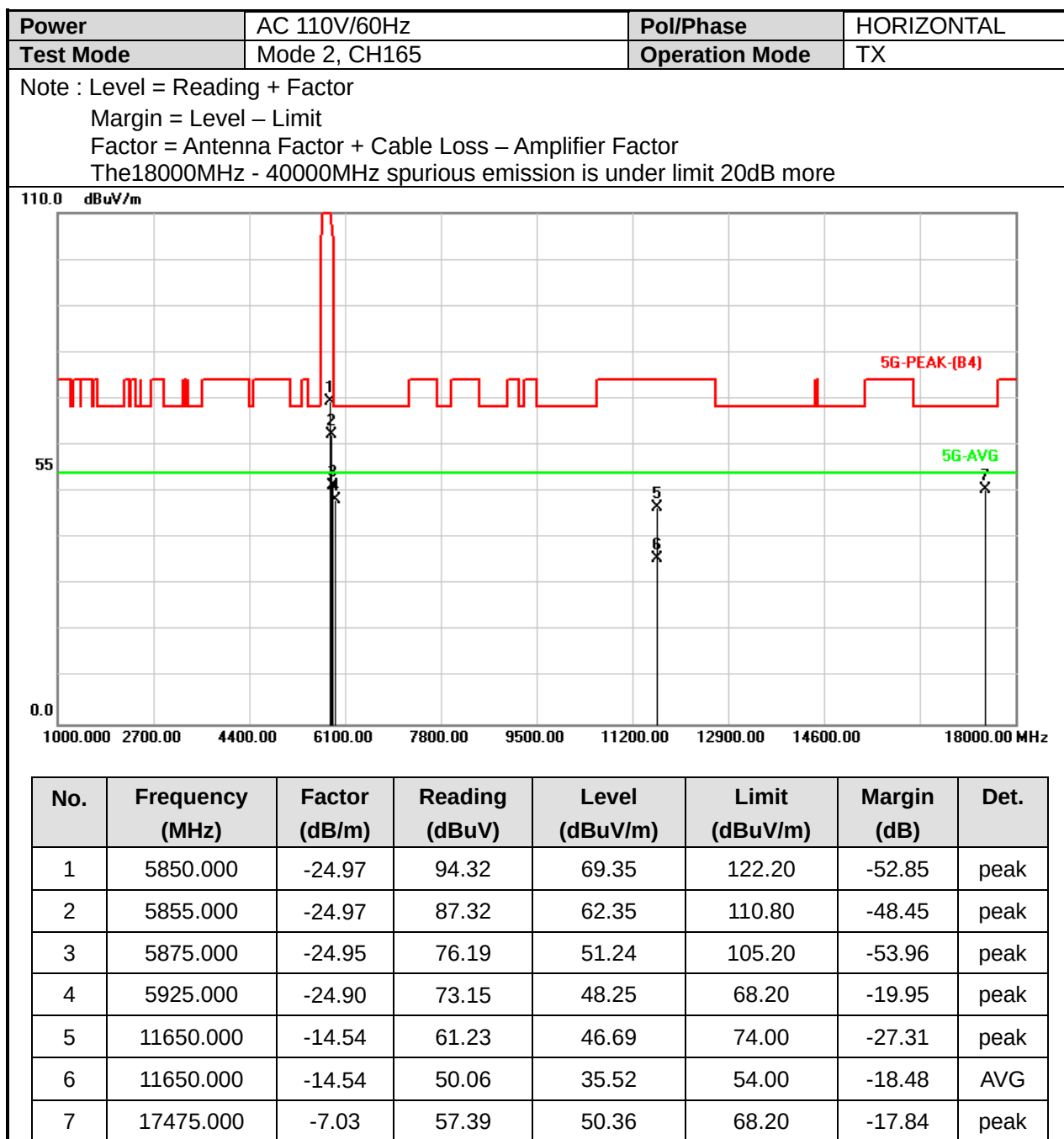


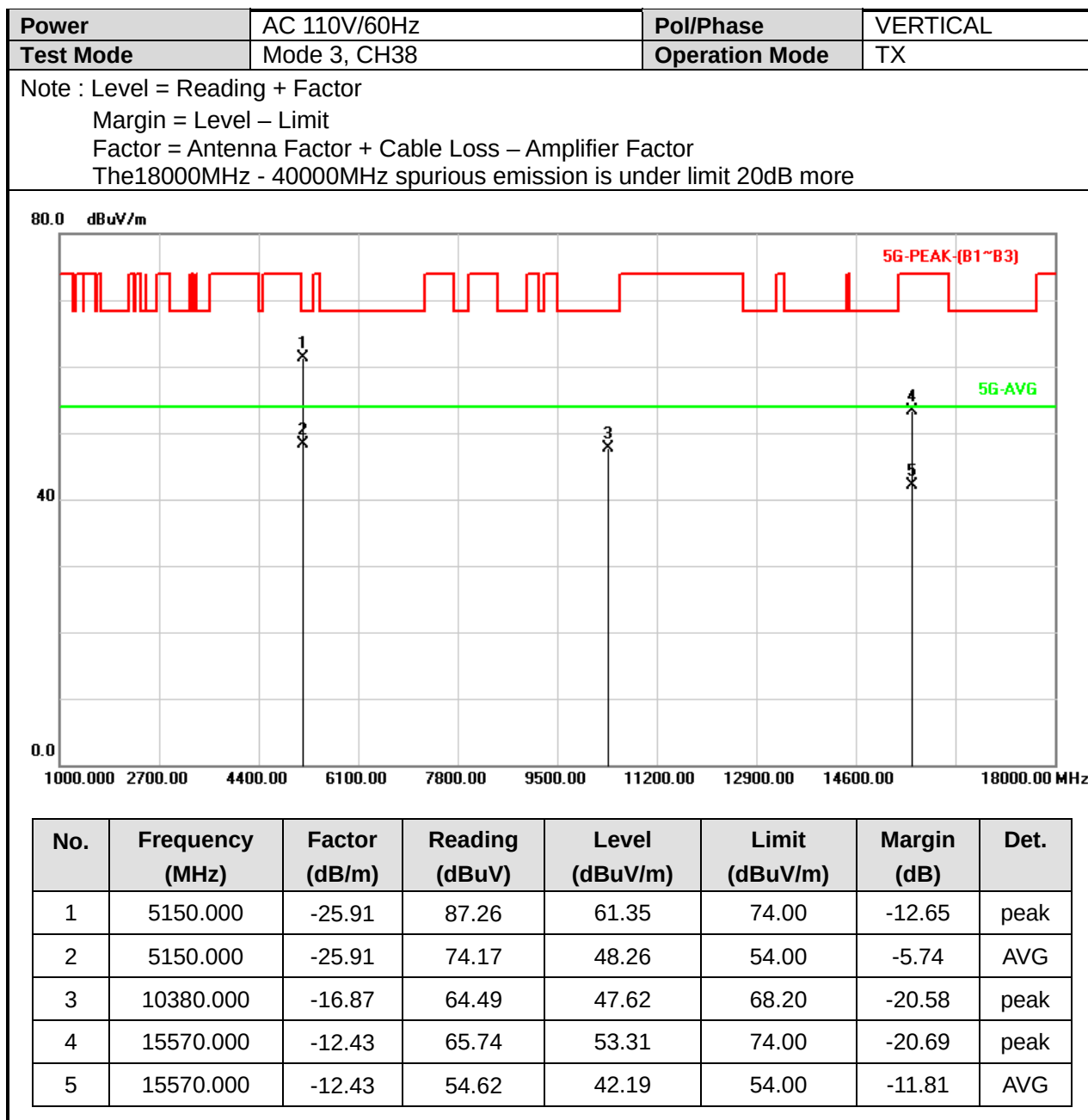


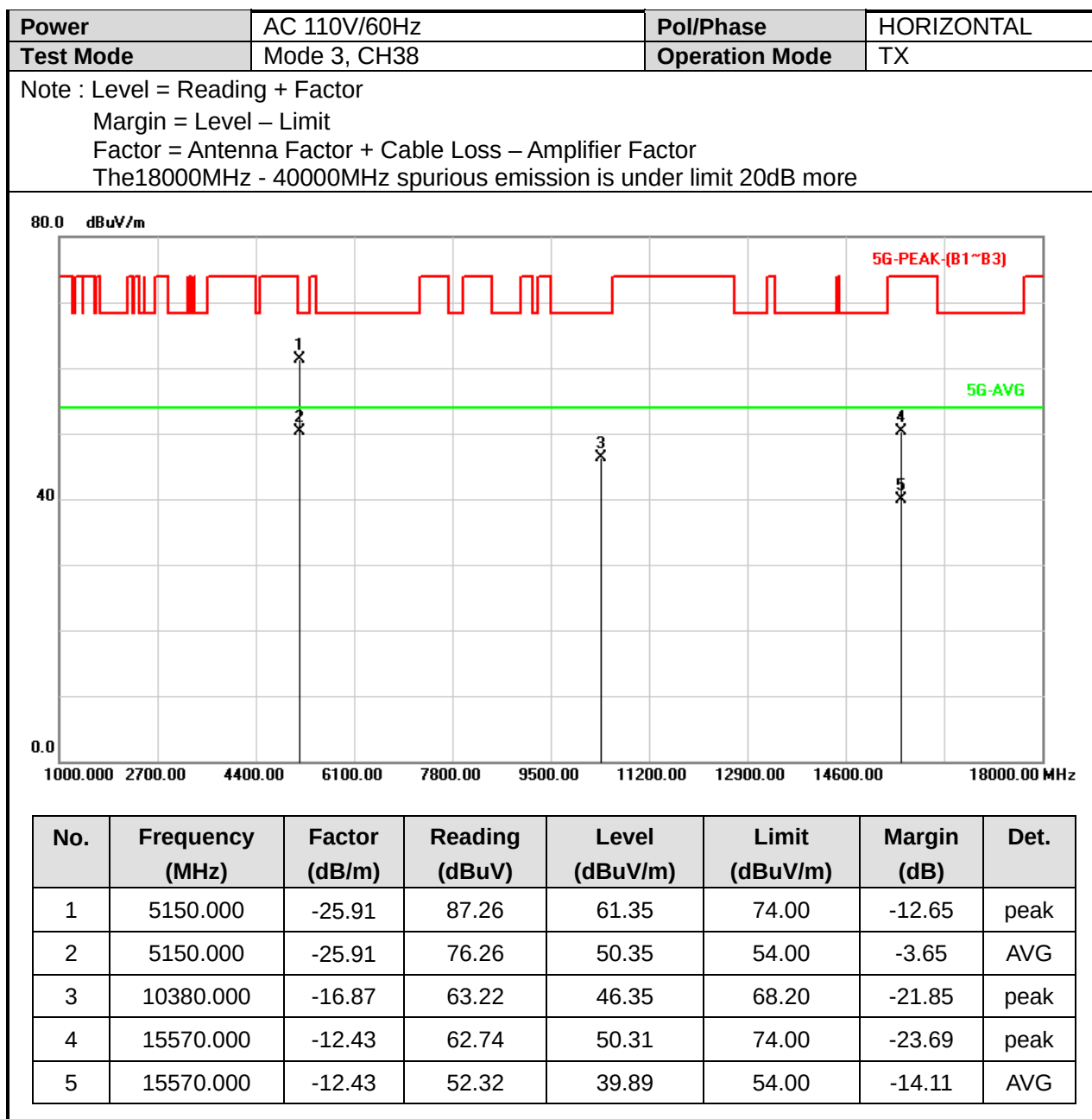


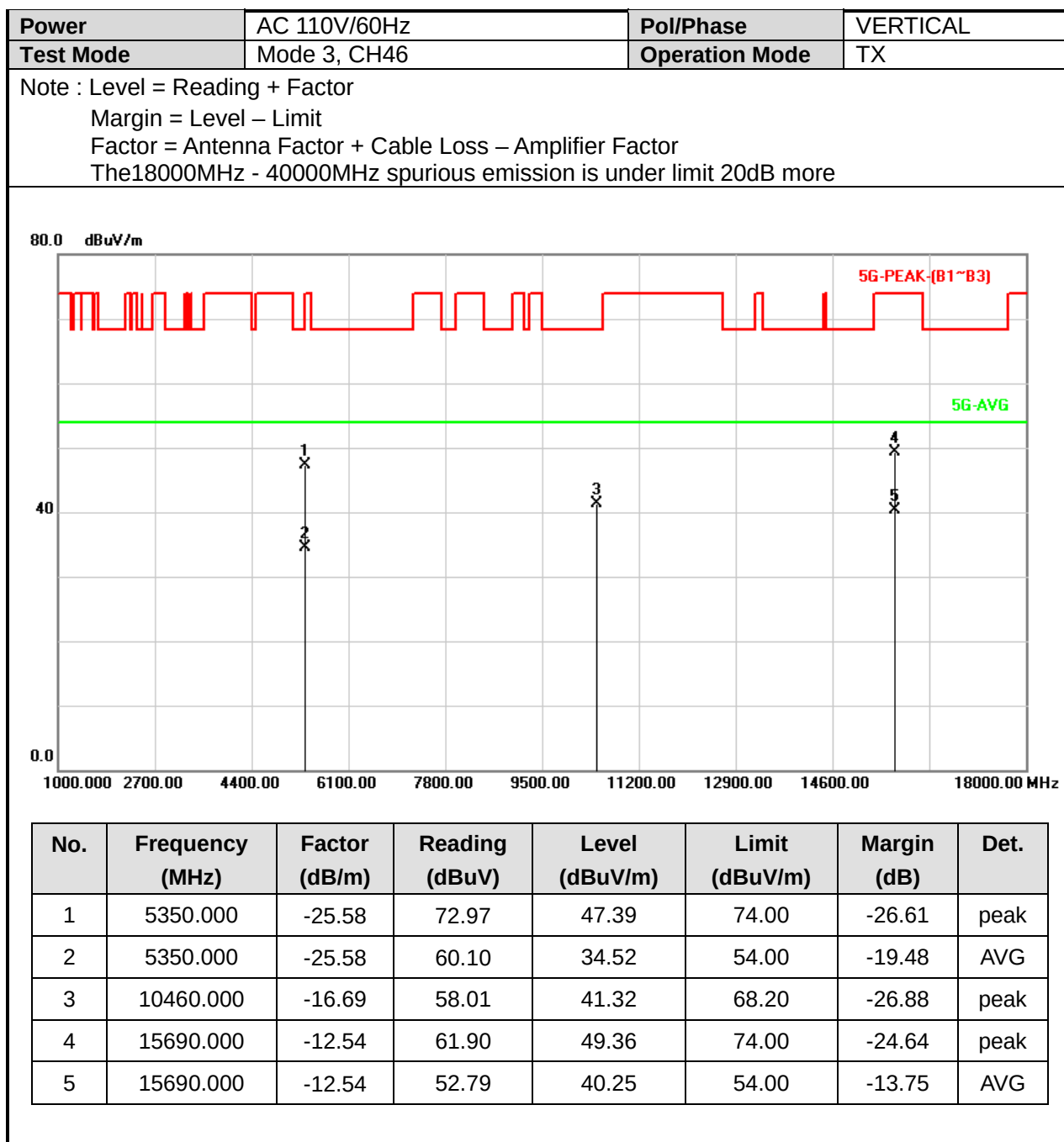


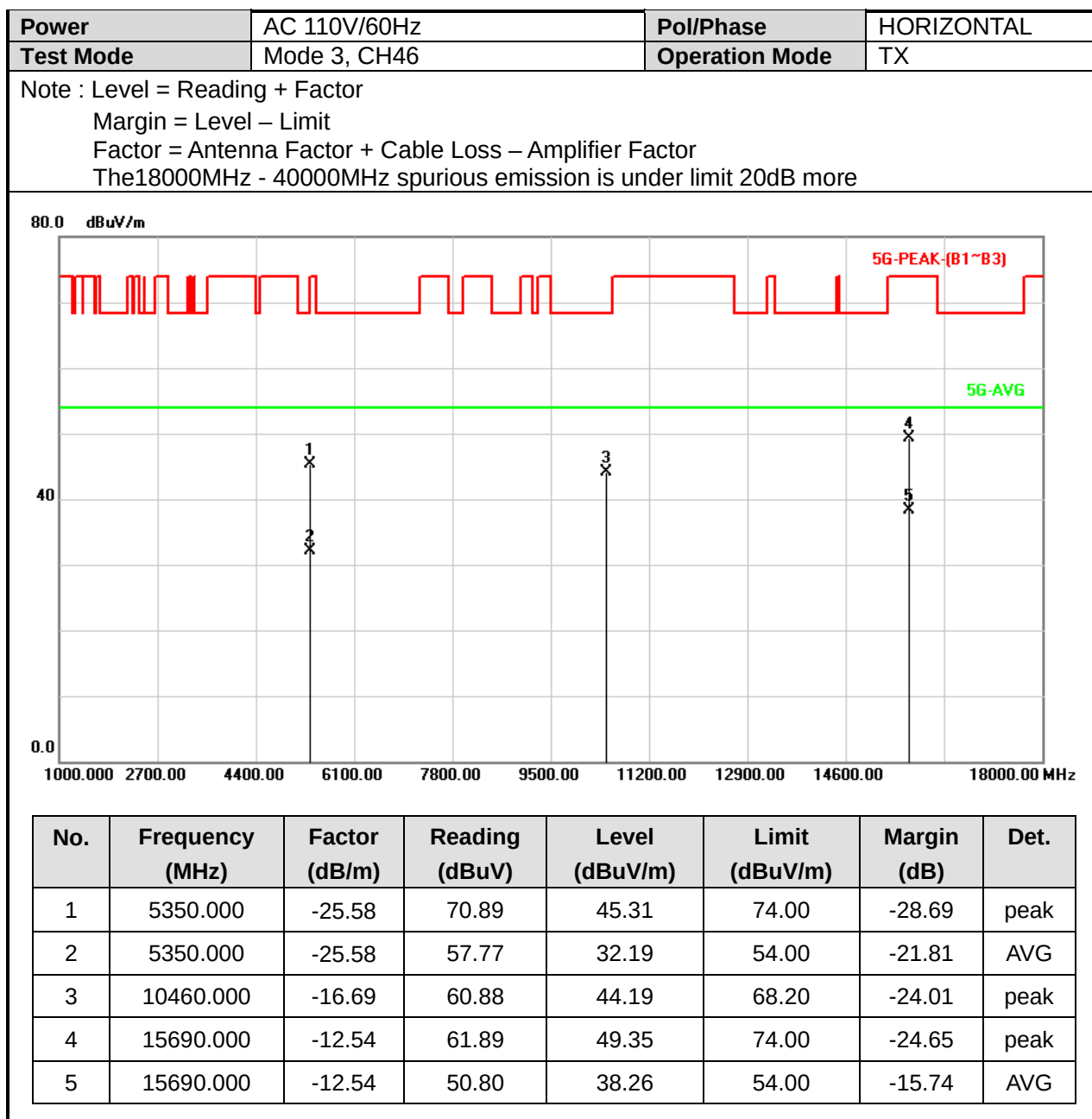


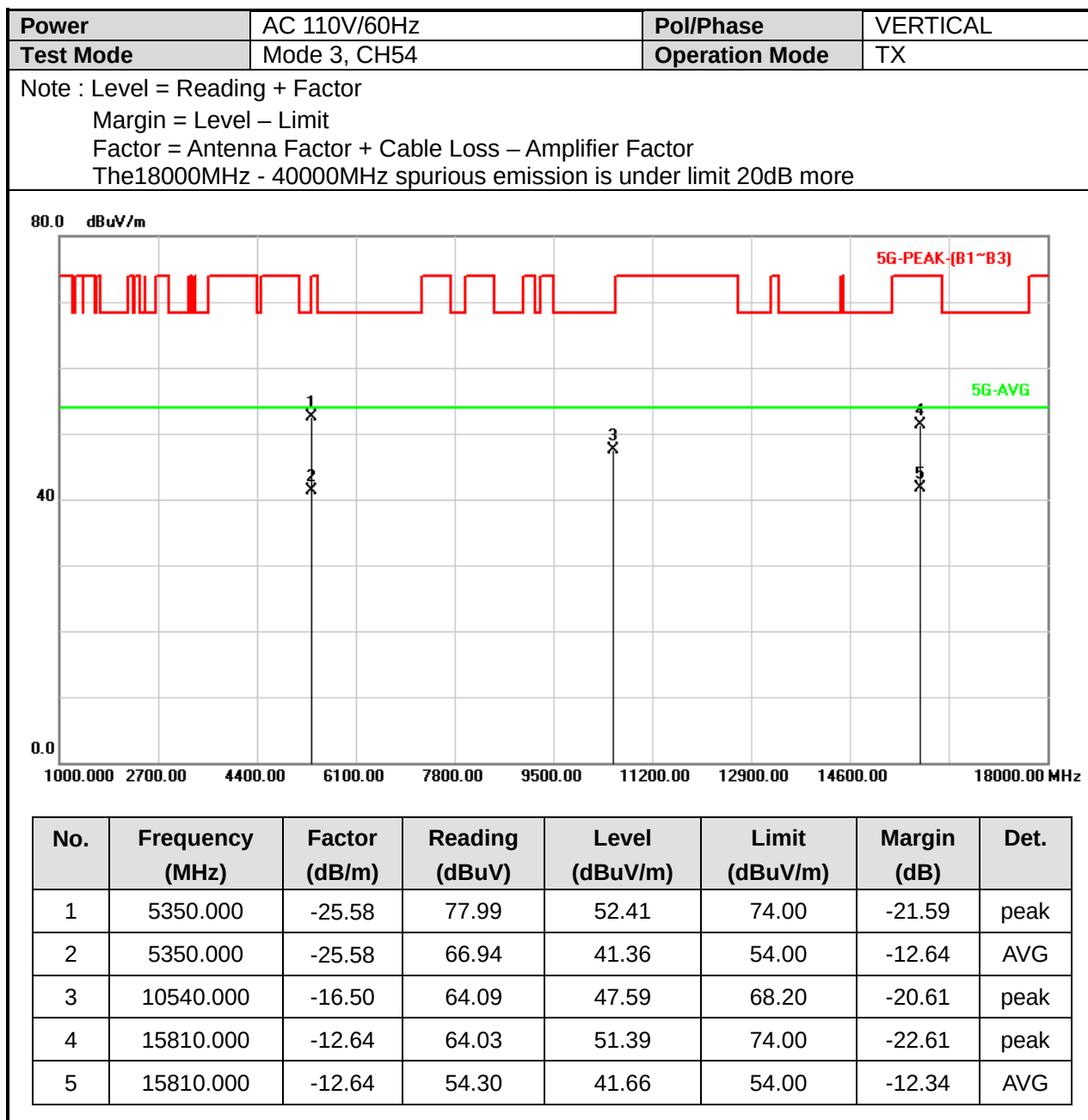


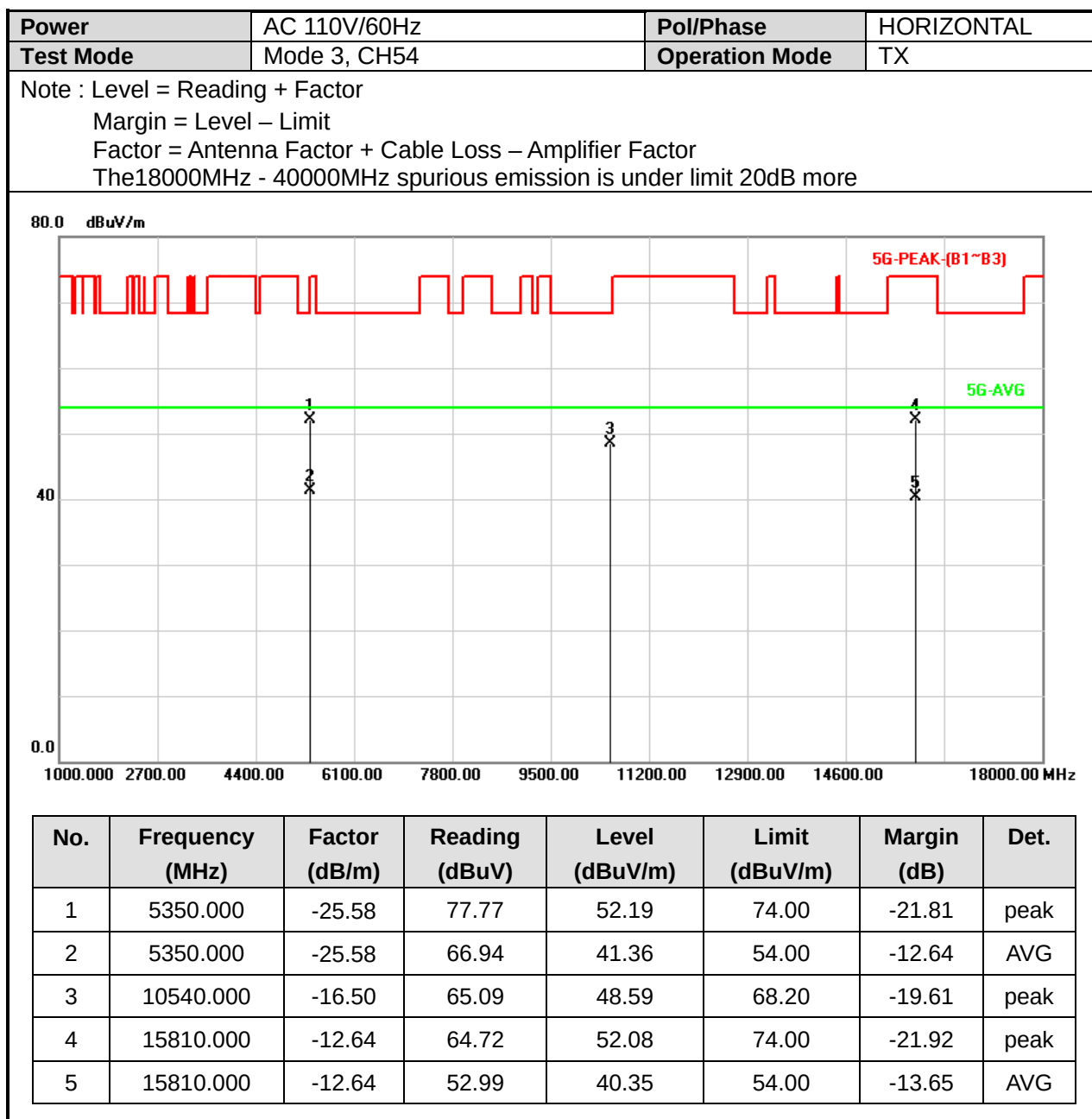


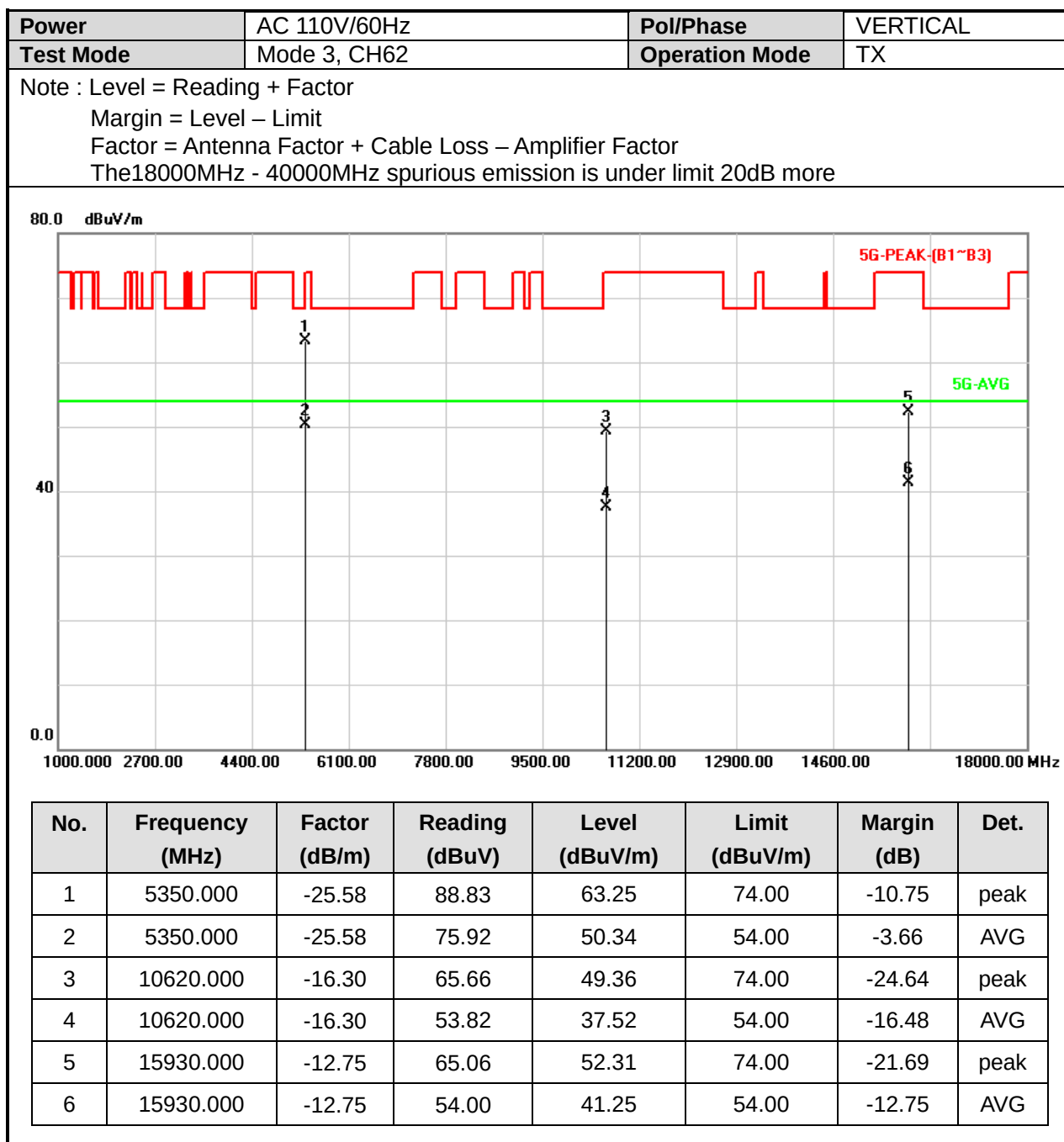


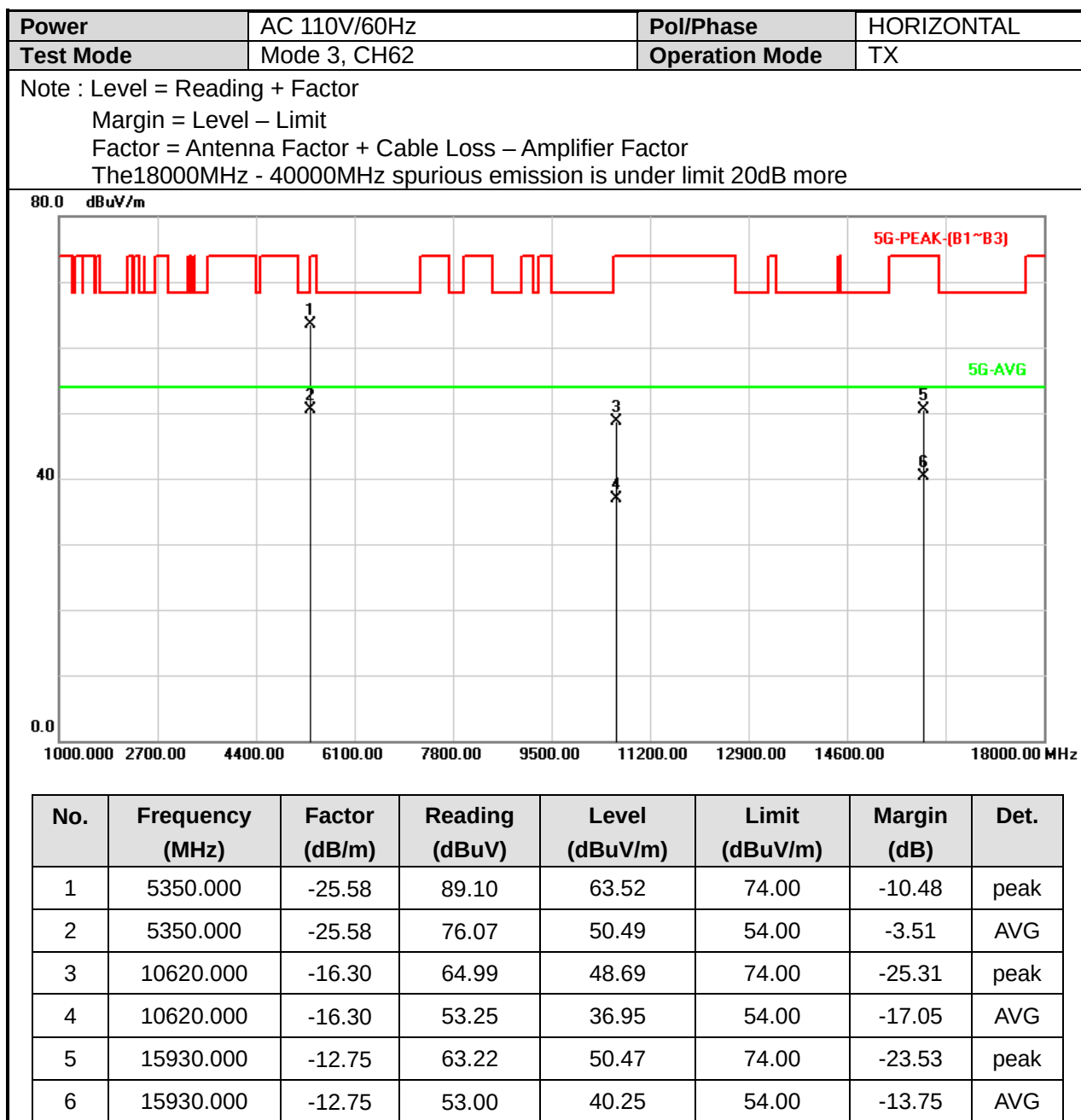


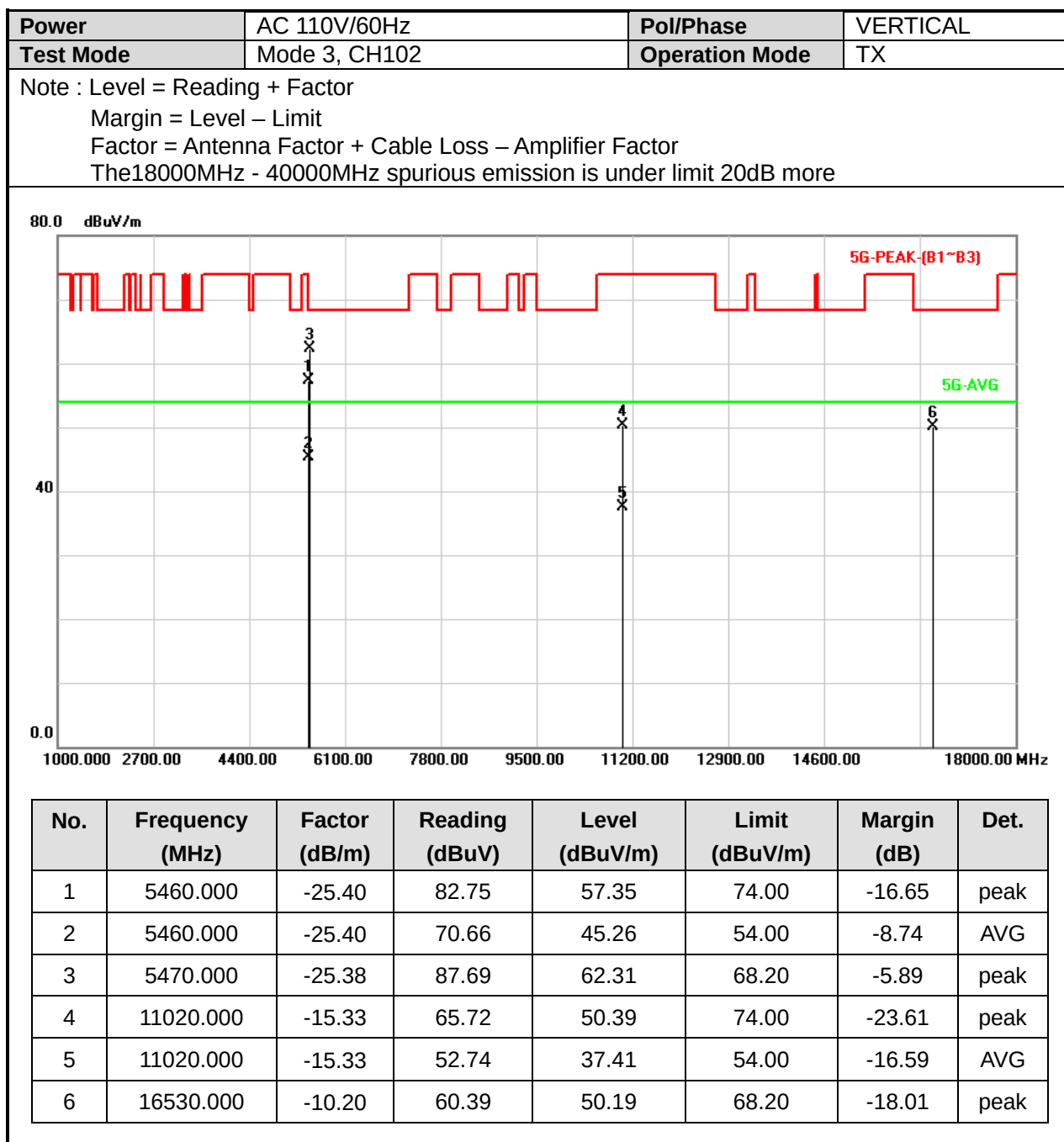


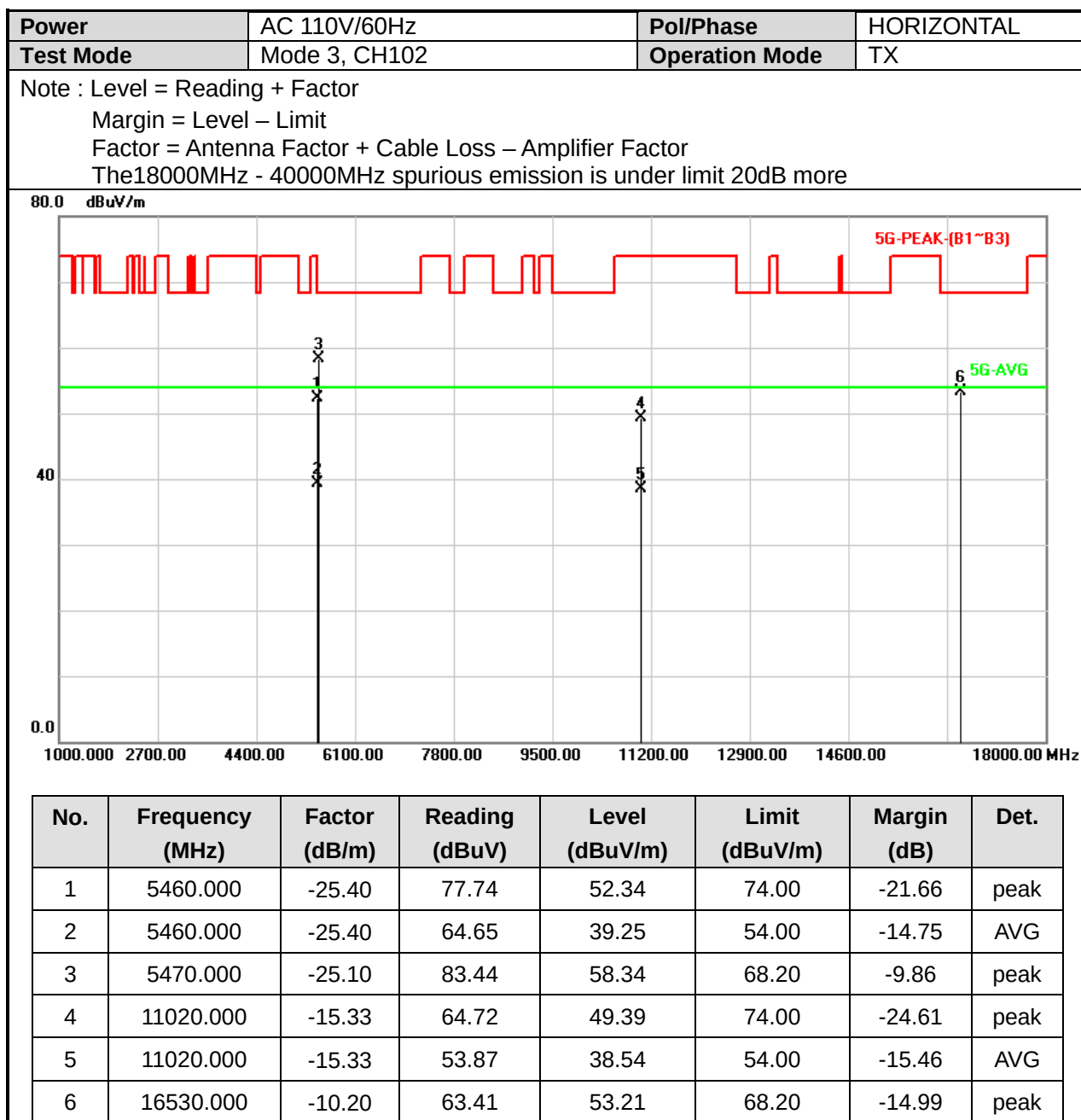


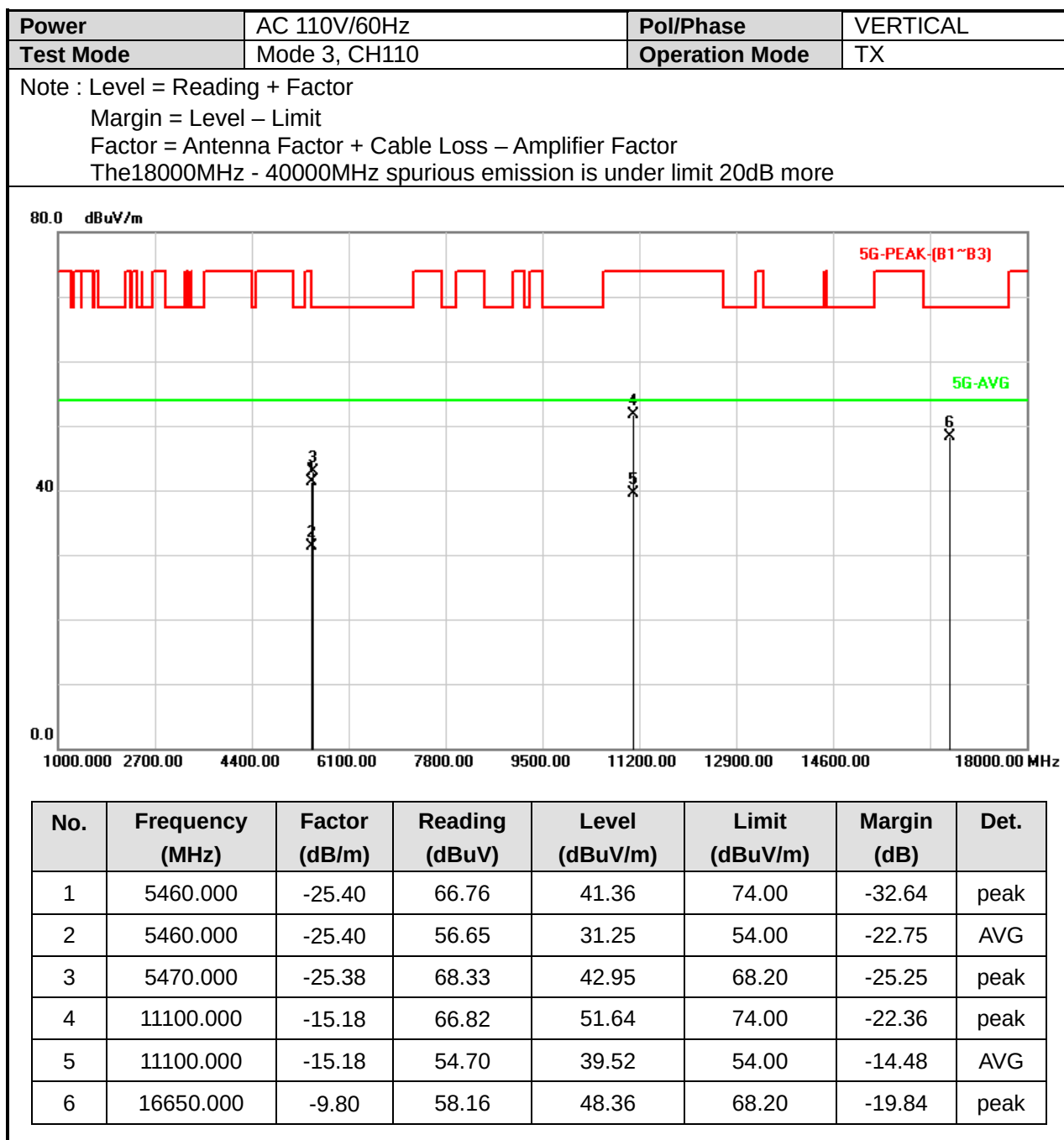


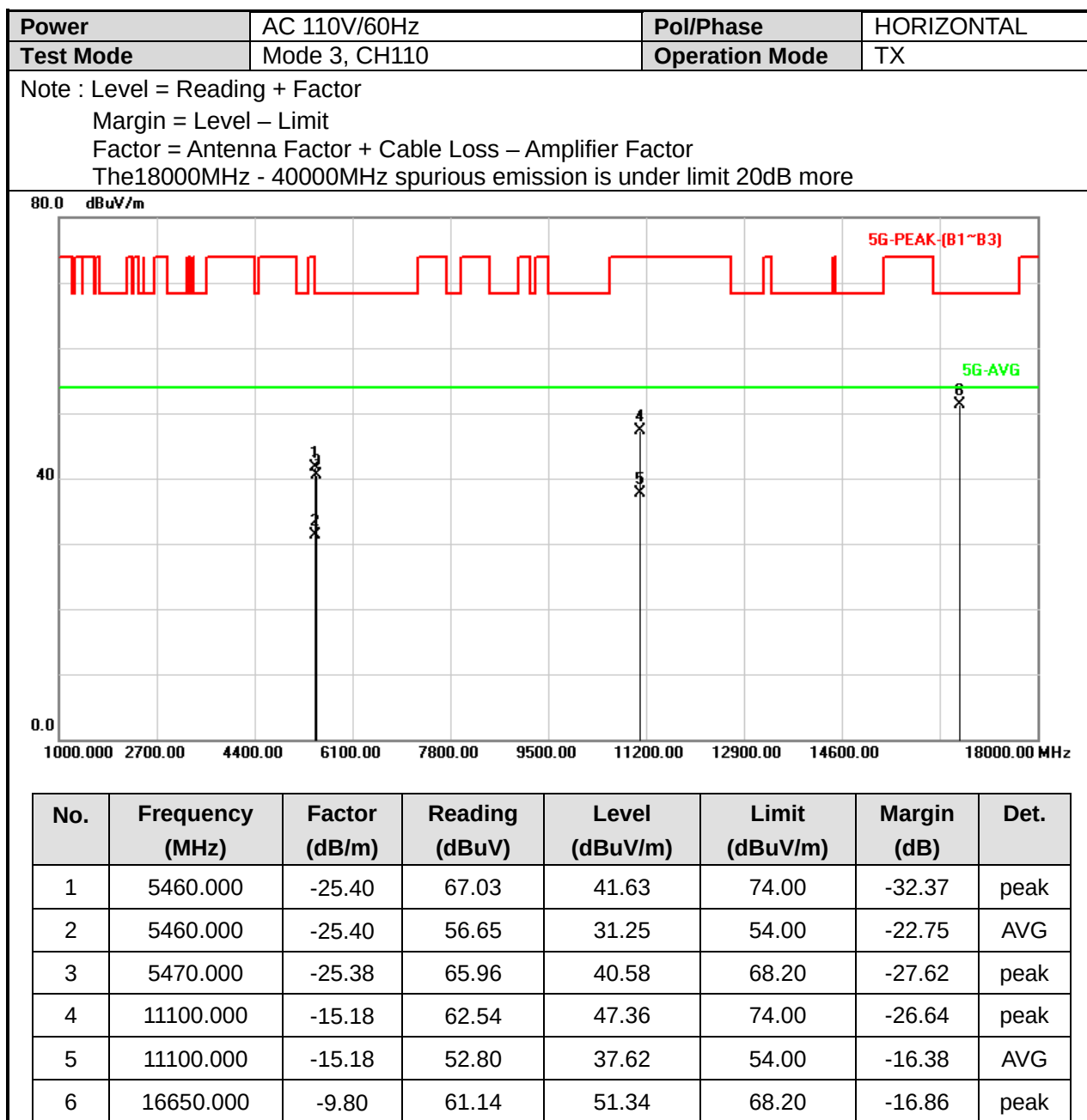


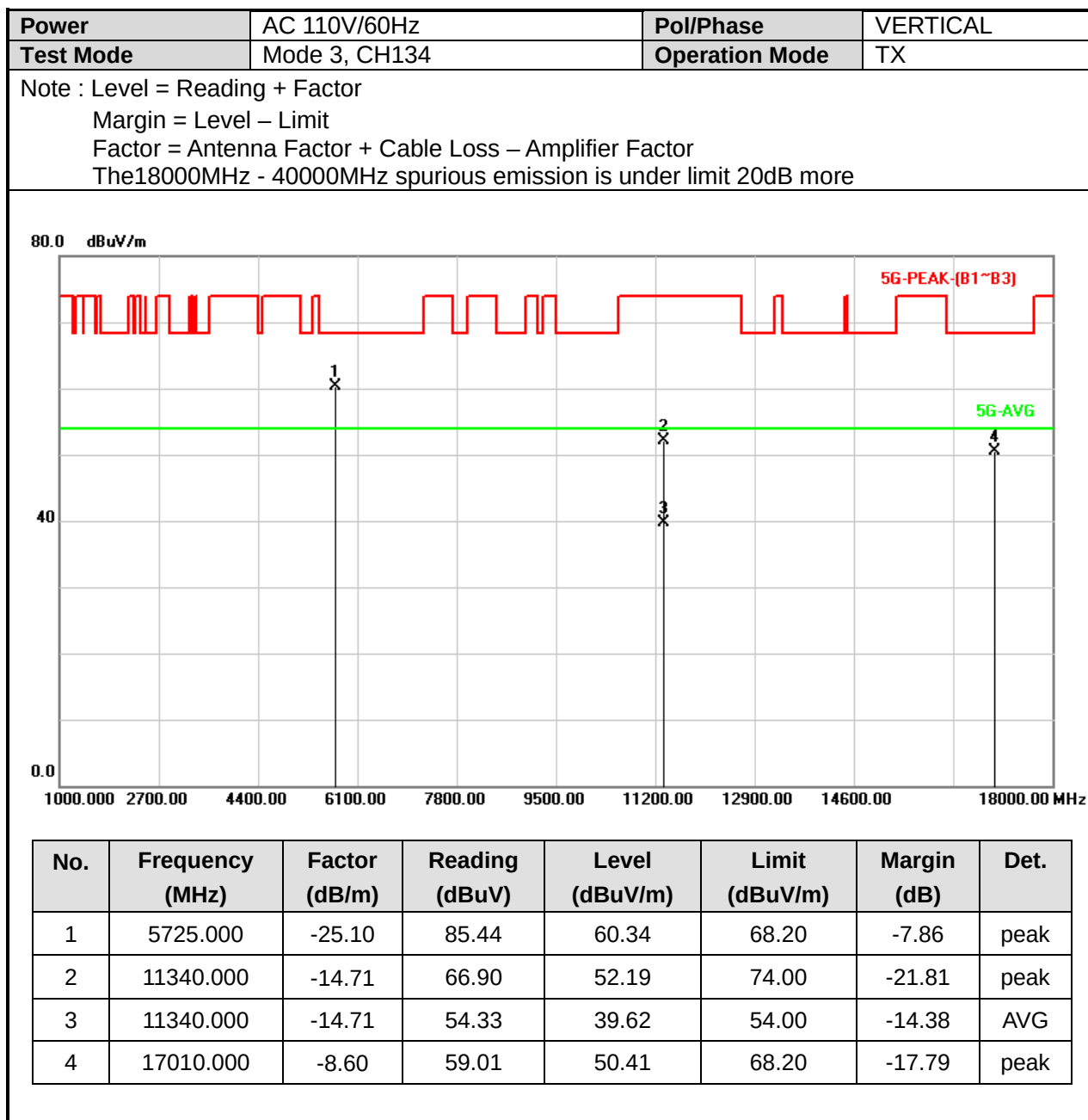


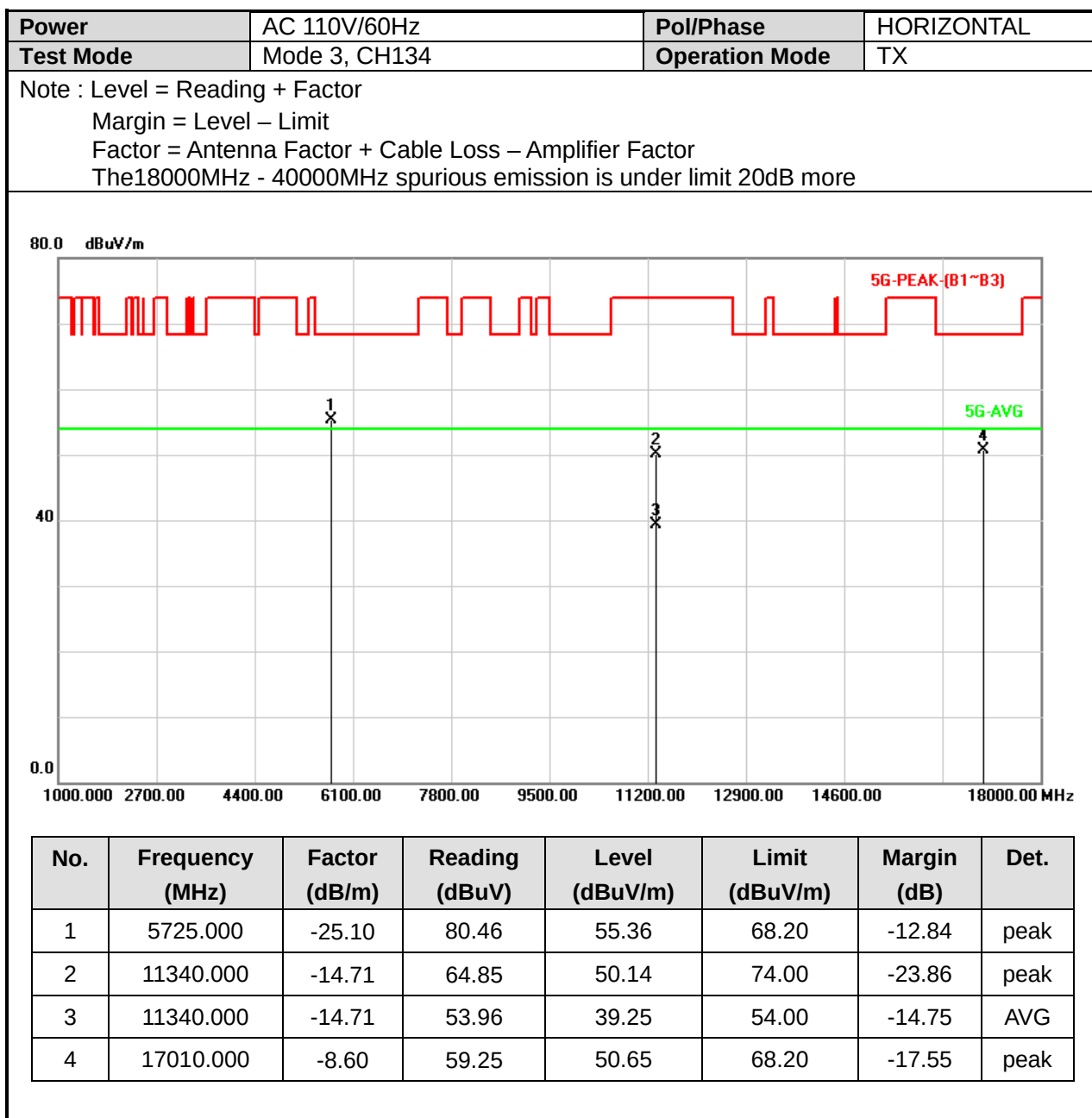


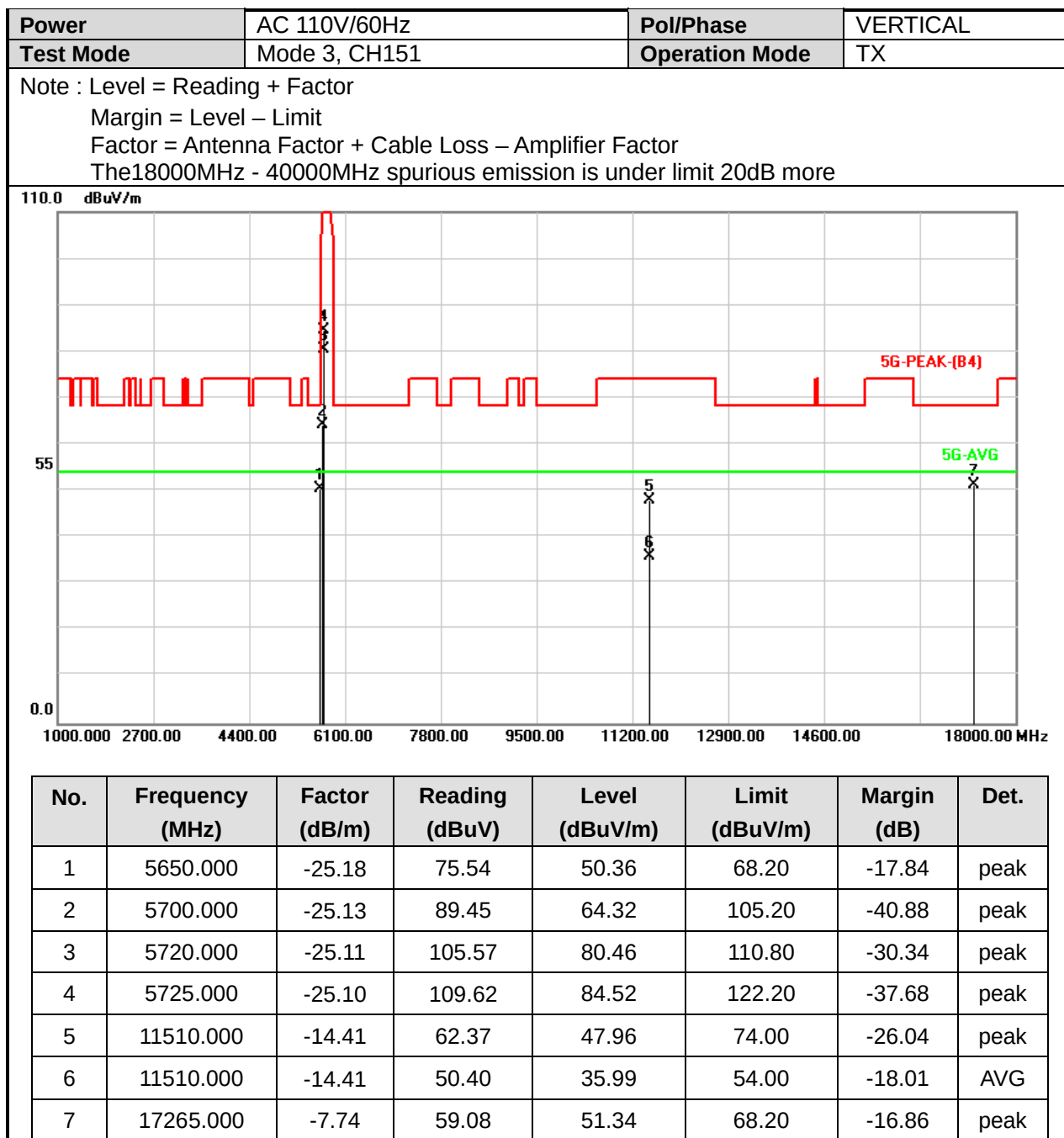


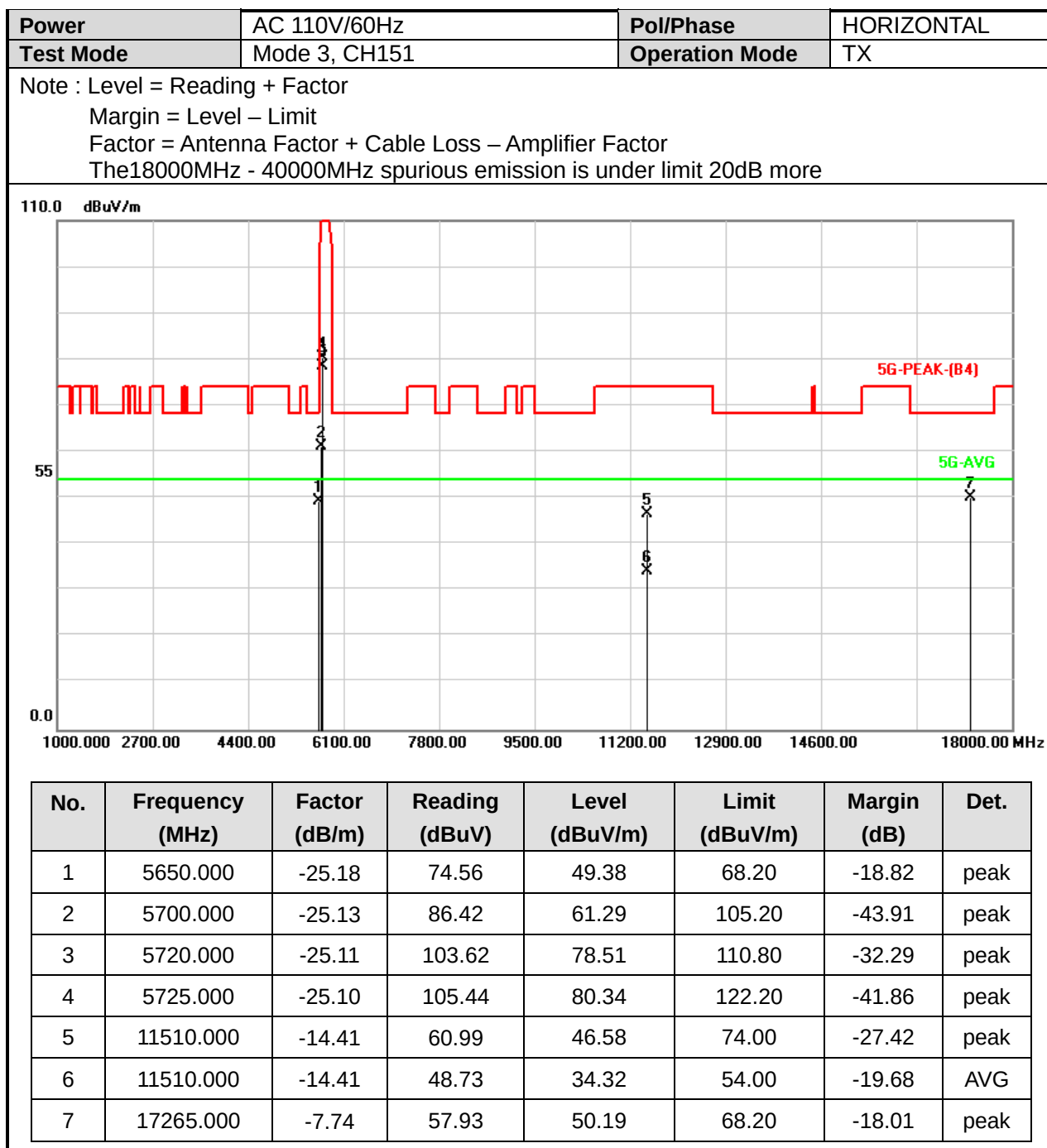


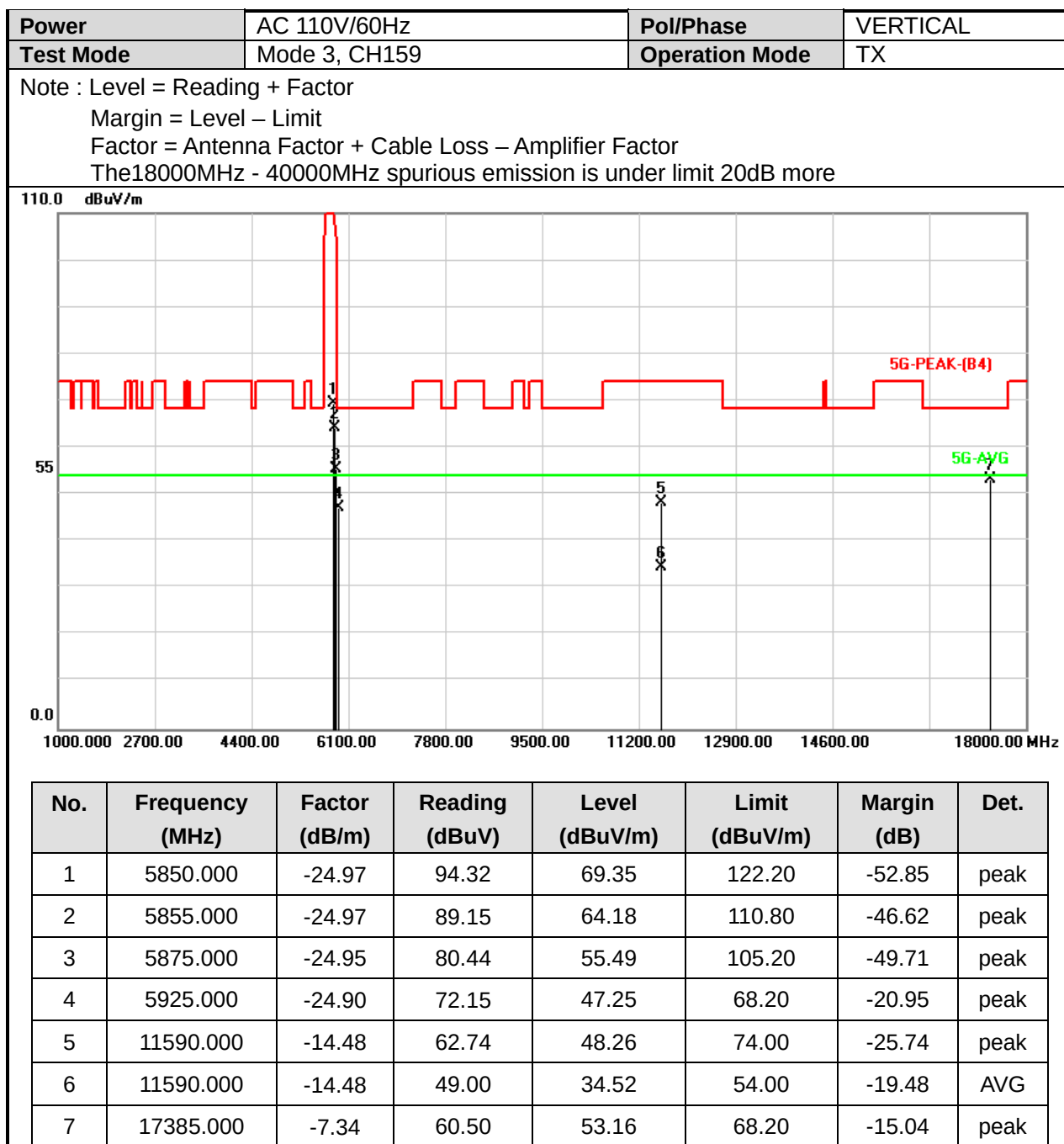


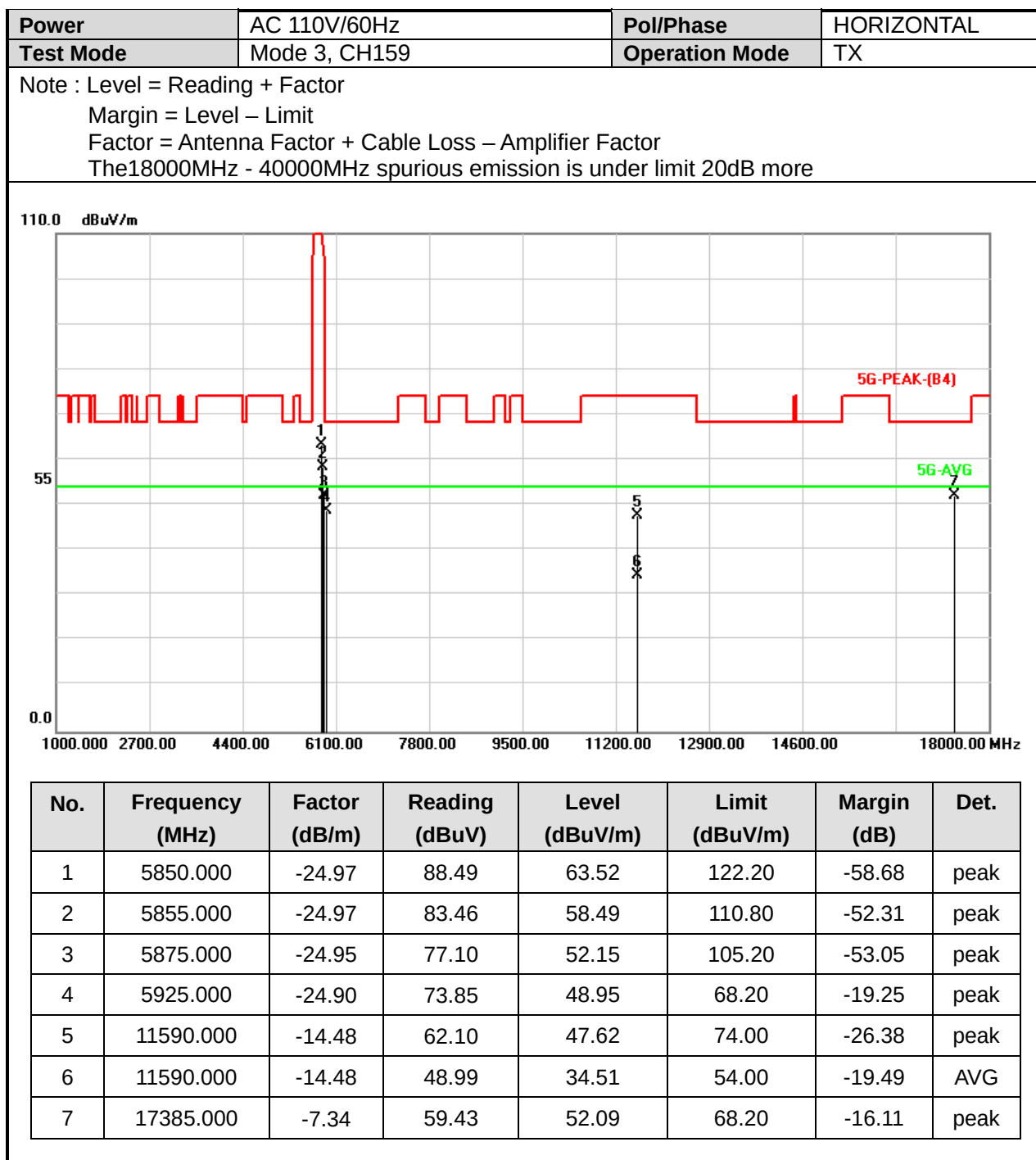














For 2TX

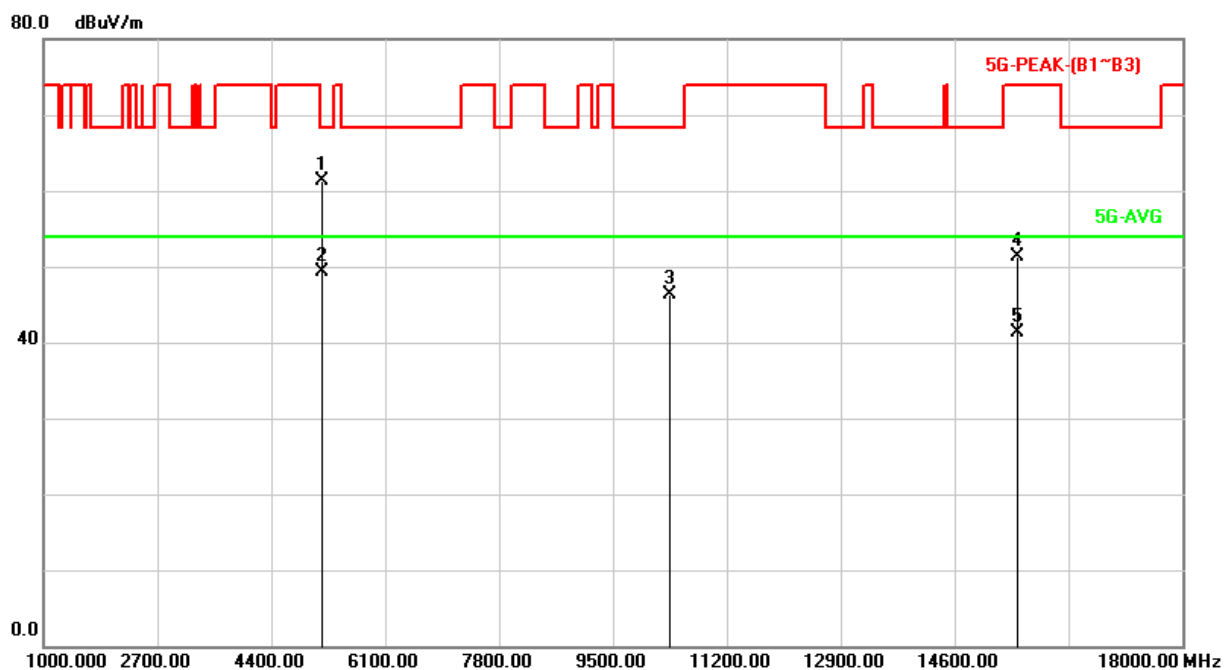
Power	AC 110V/60Hz	Pol/Phase	VERTICAL
Test Mode	Mode 1, CH36	Operation Mode	TX

Note : Level = Reading + Factor

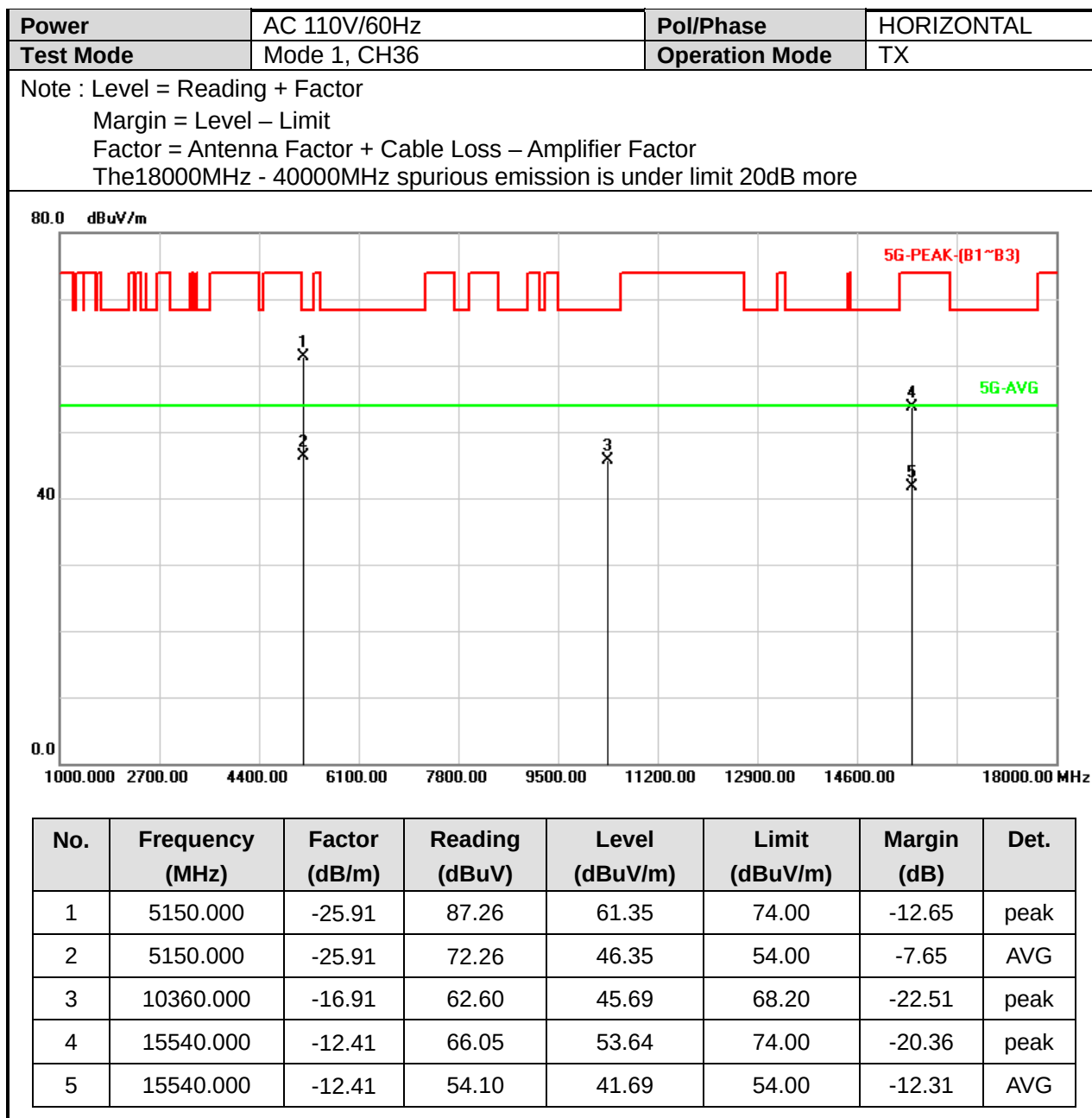
Margin = Level – Limit

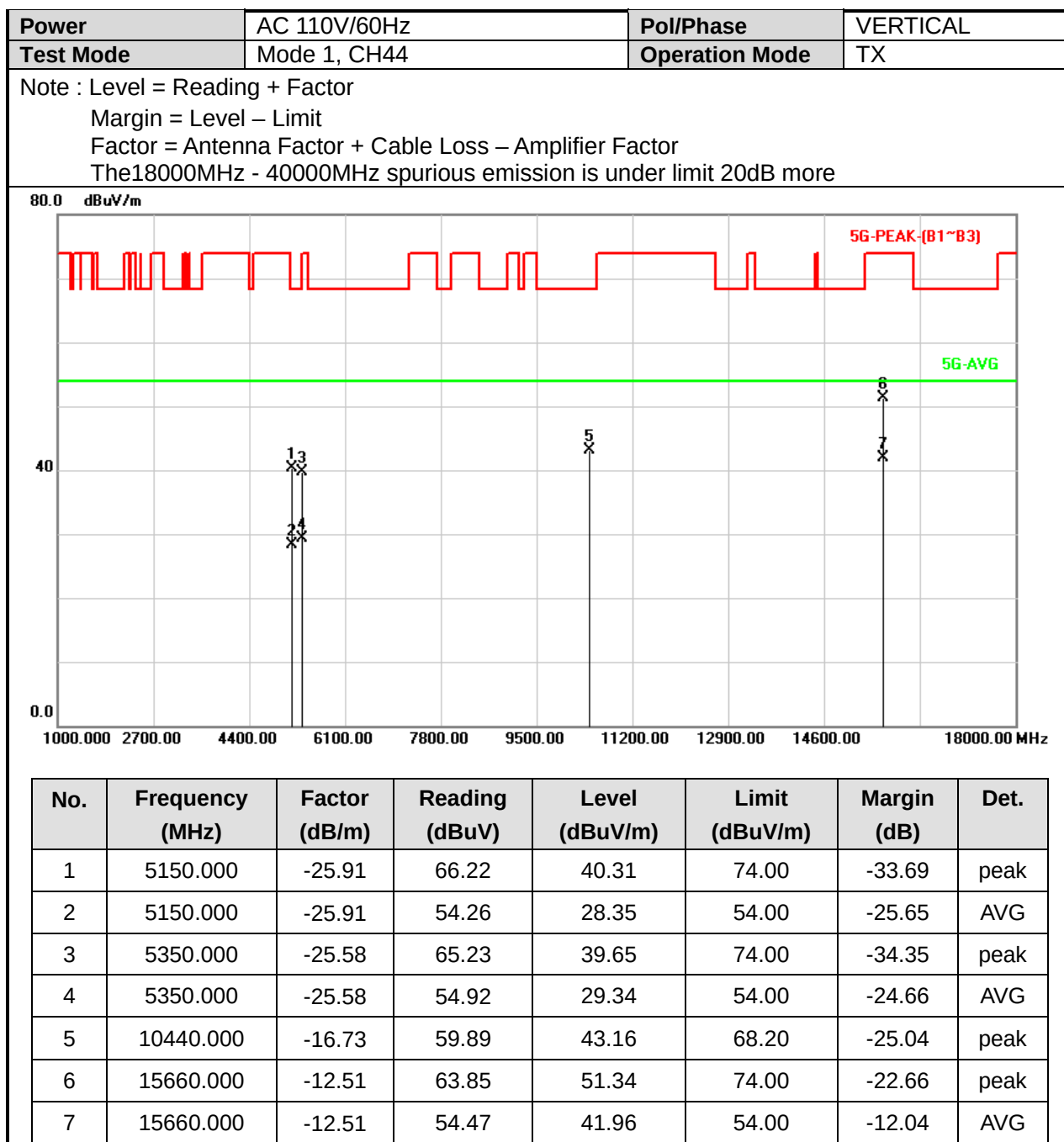
Factor = Antenna Factor + Cable Loss – Amplifier Factor

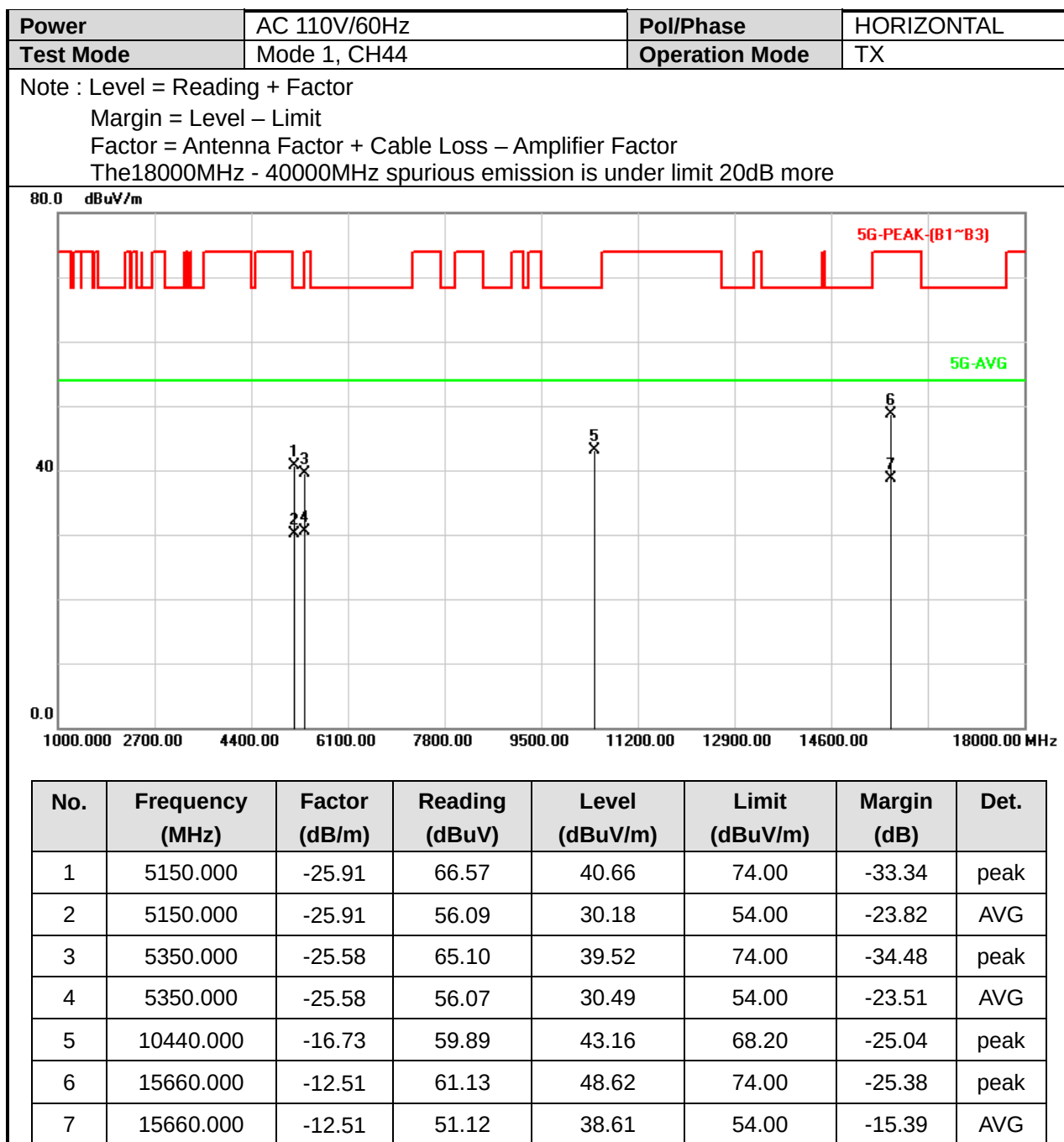
The 18000MHz - 40000MHz spurious emission is under limit 20dB more

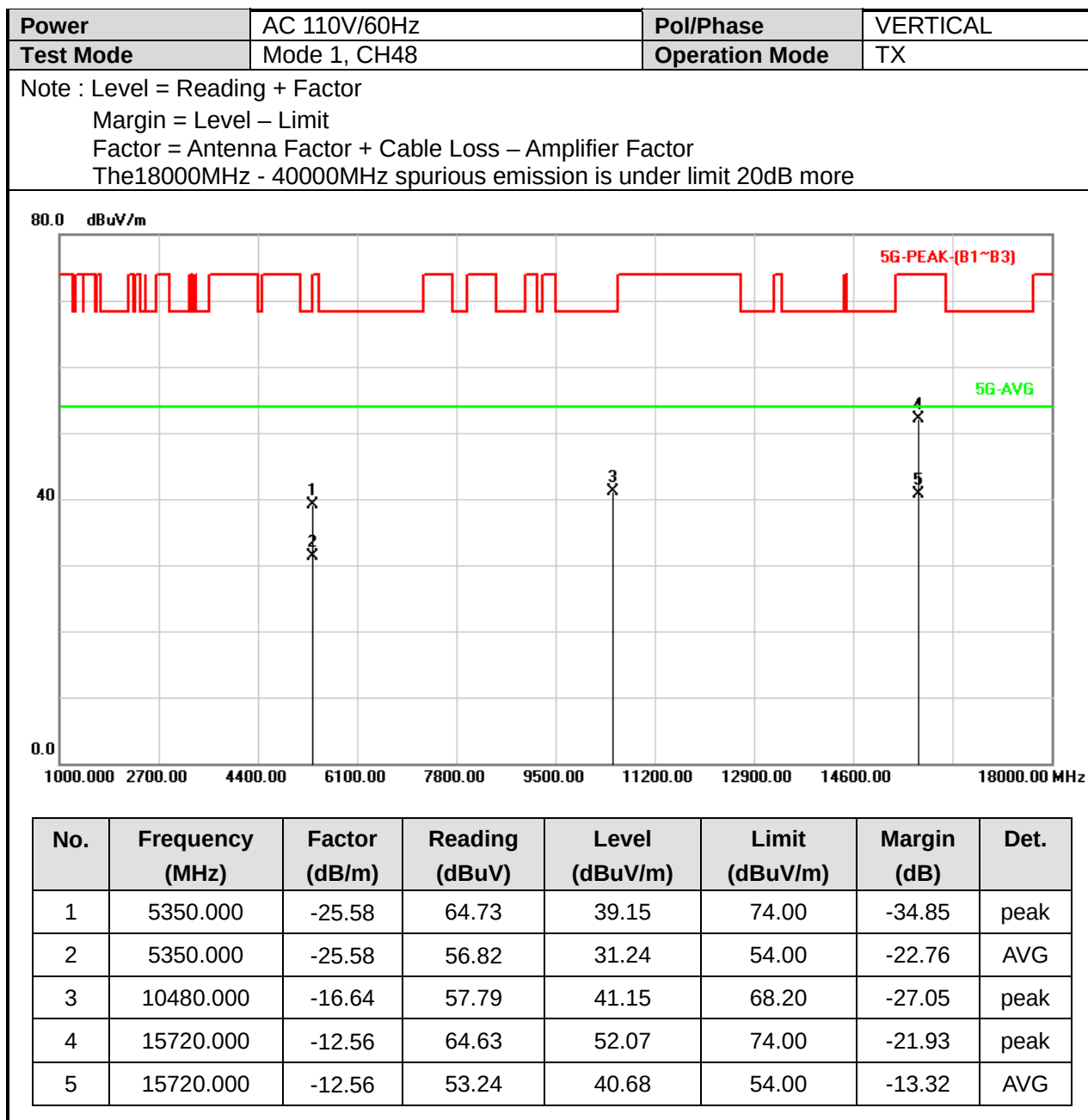


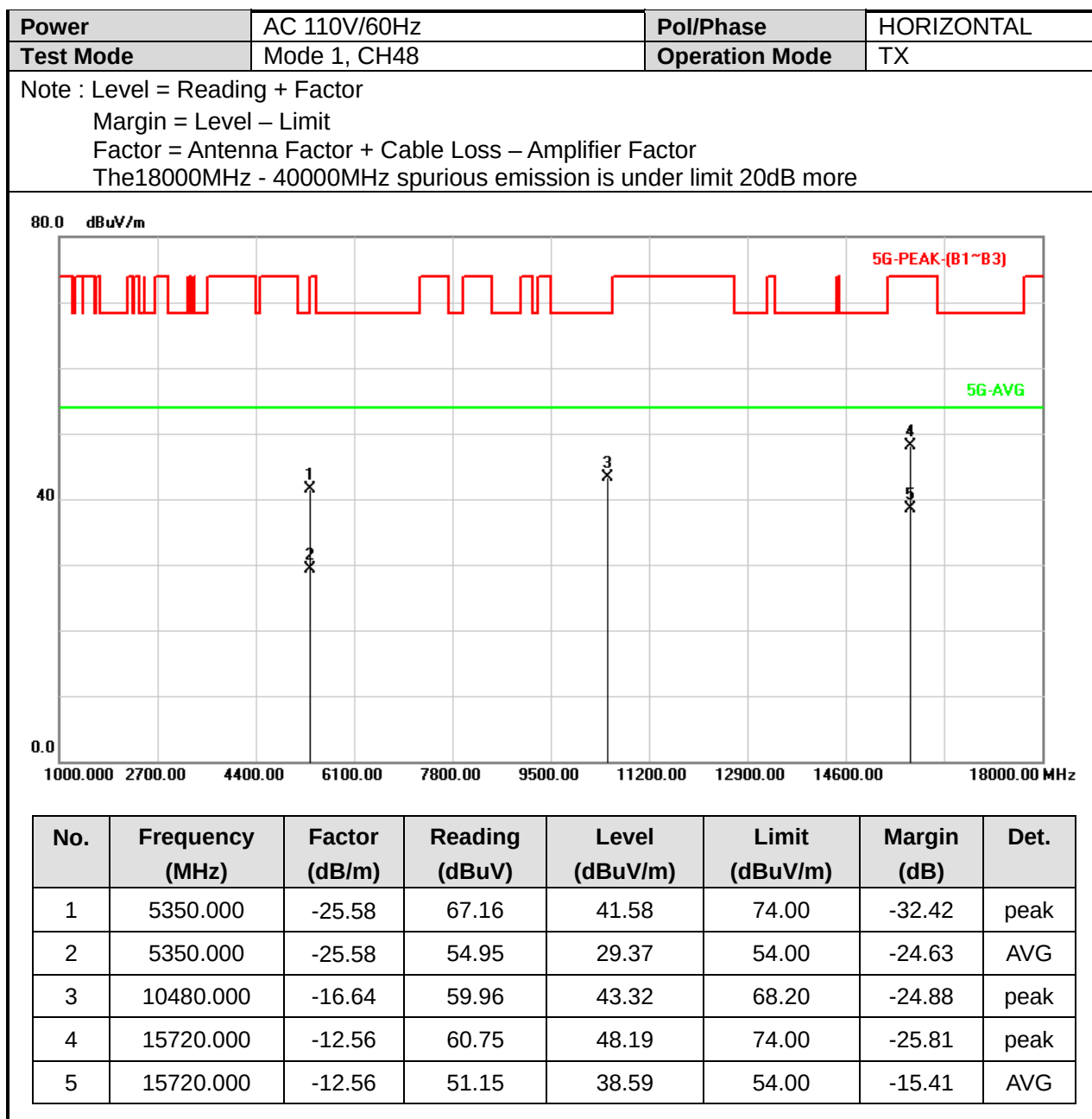
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	5150.000	-25.91	87.16	61.25	74.00	-12.75	peak
2	5150.000	-25.91	75.26	49.35	54.00	-4.65	AVG
3	10360.000	-16.91	63.26	46.35	68.20	-21.85	peak
4	15540.000	-12.41	63.75	51.34	74.00	-22.66	peak
5	15540.000	-12.41	53.77	41.36	54.00	-12.64	AVG

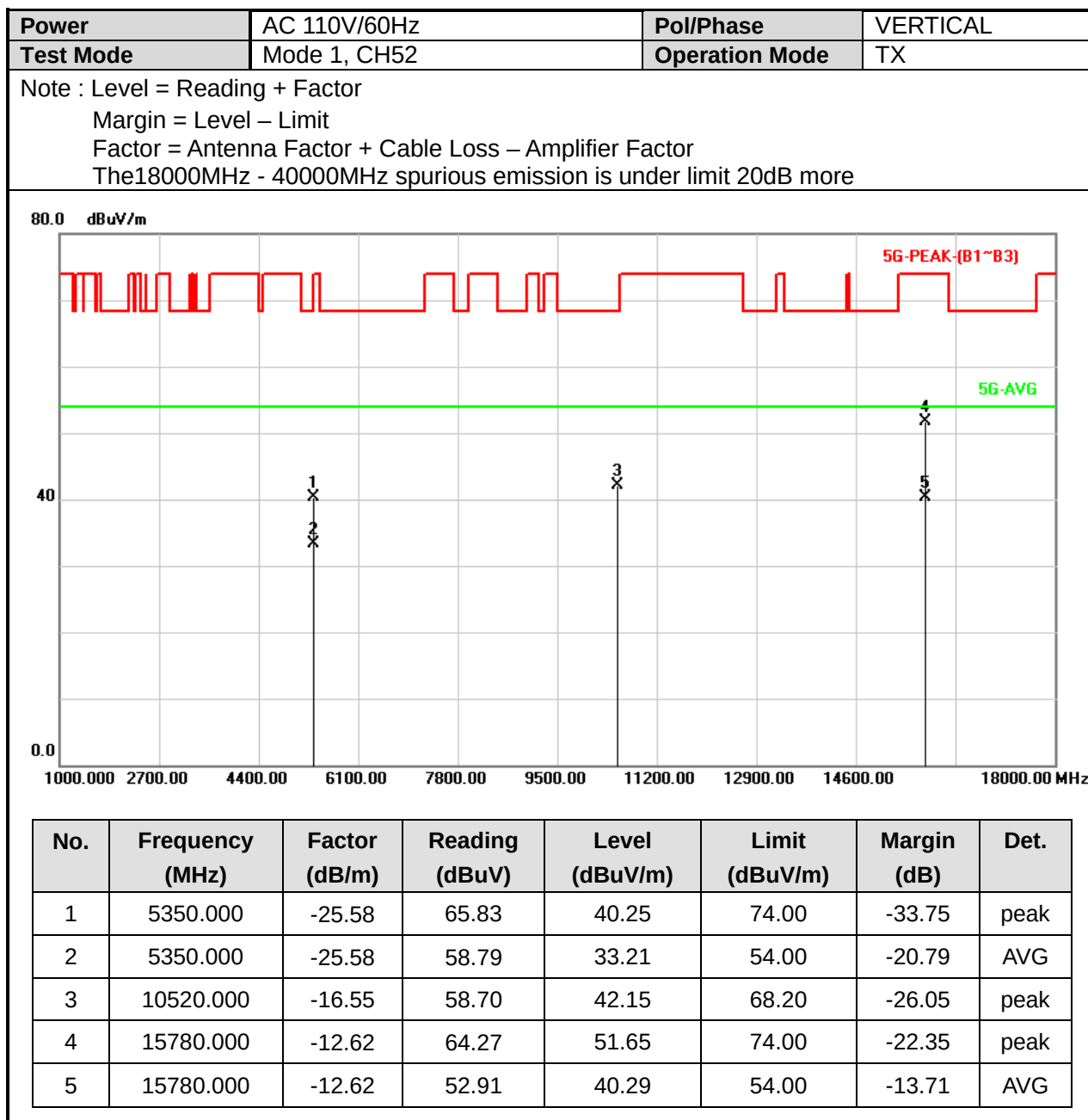


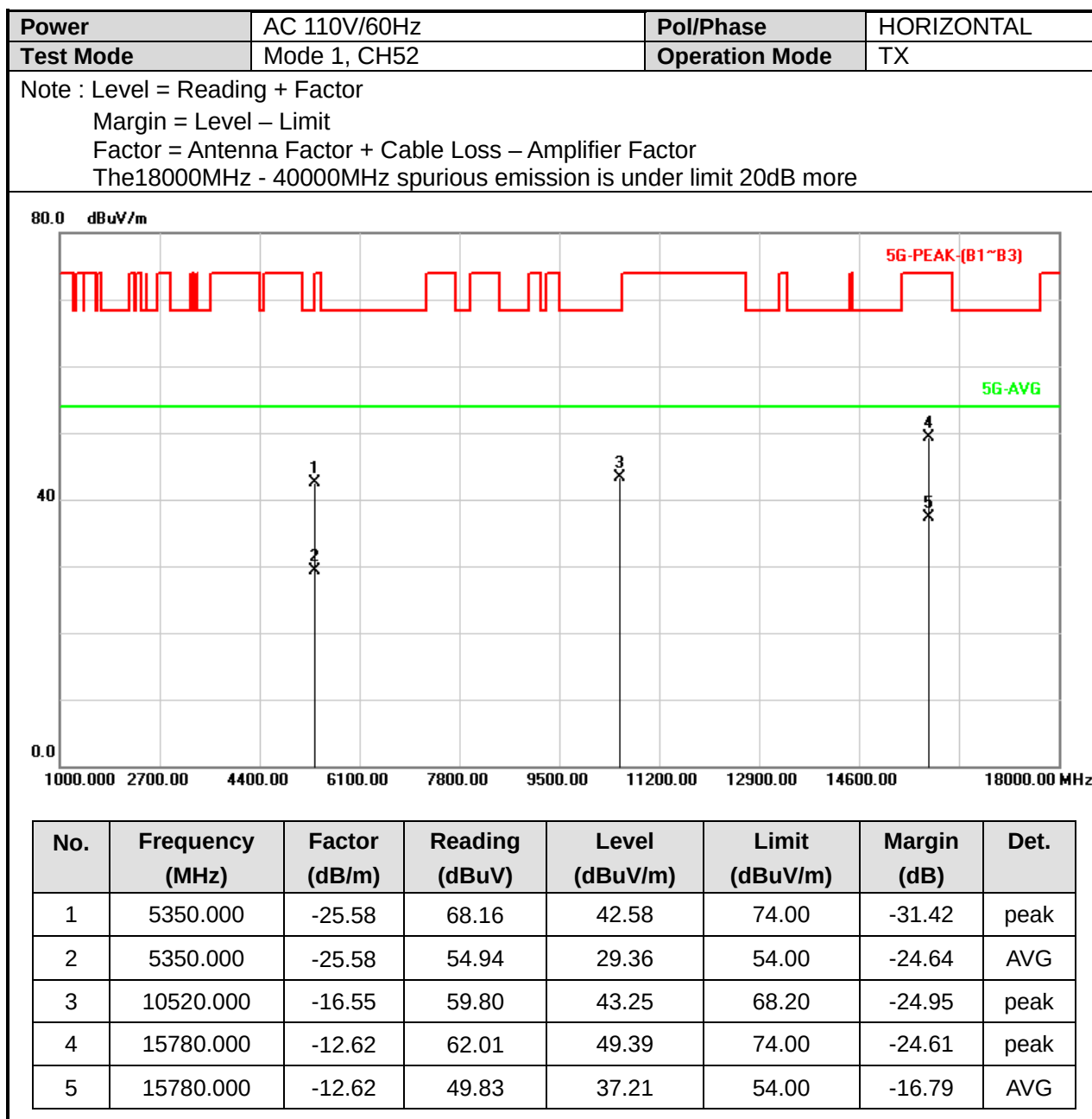


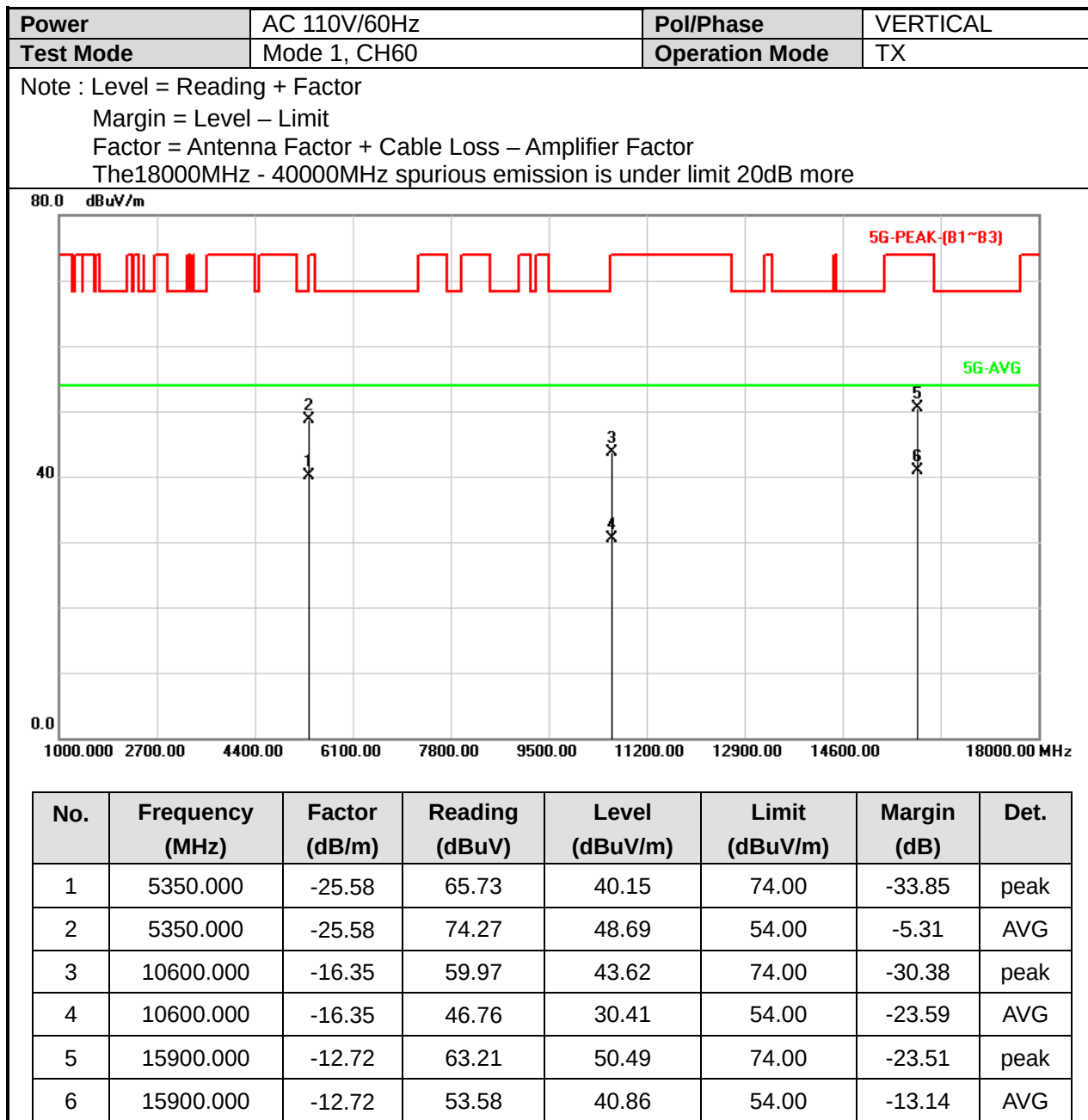


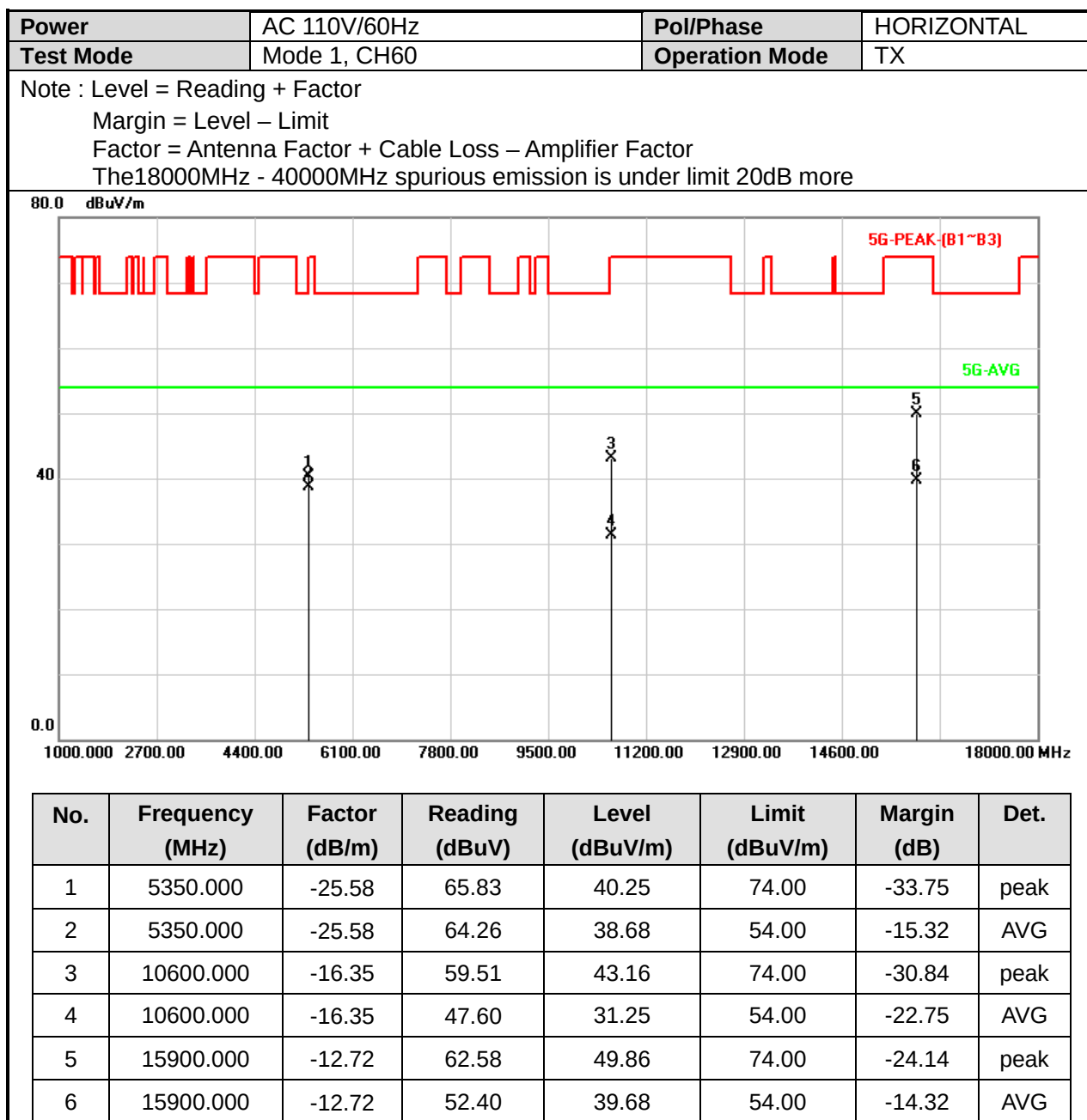


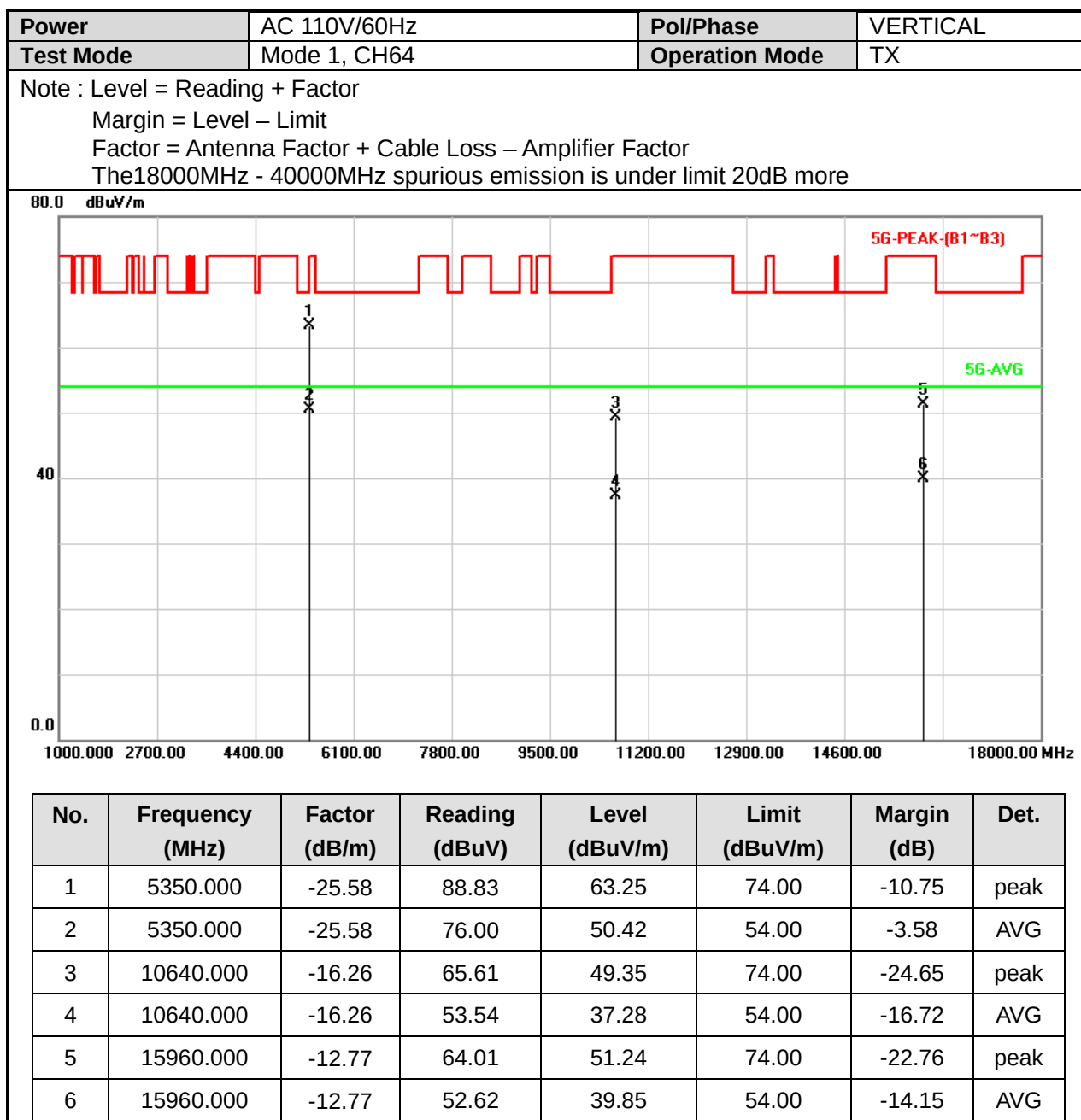


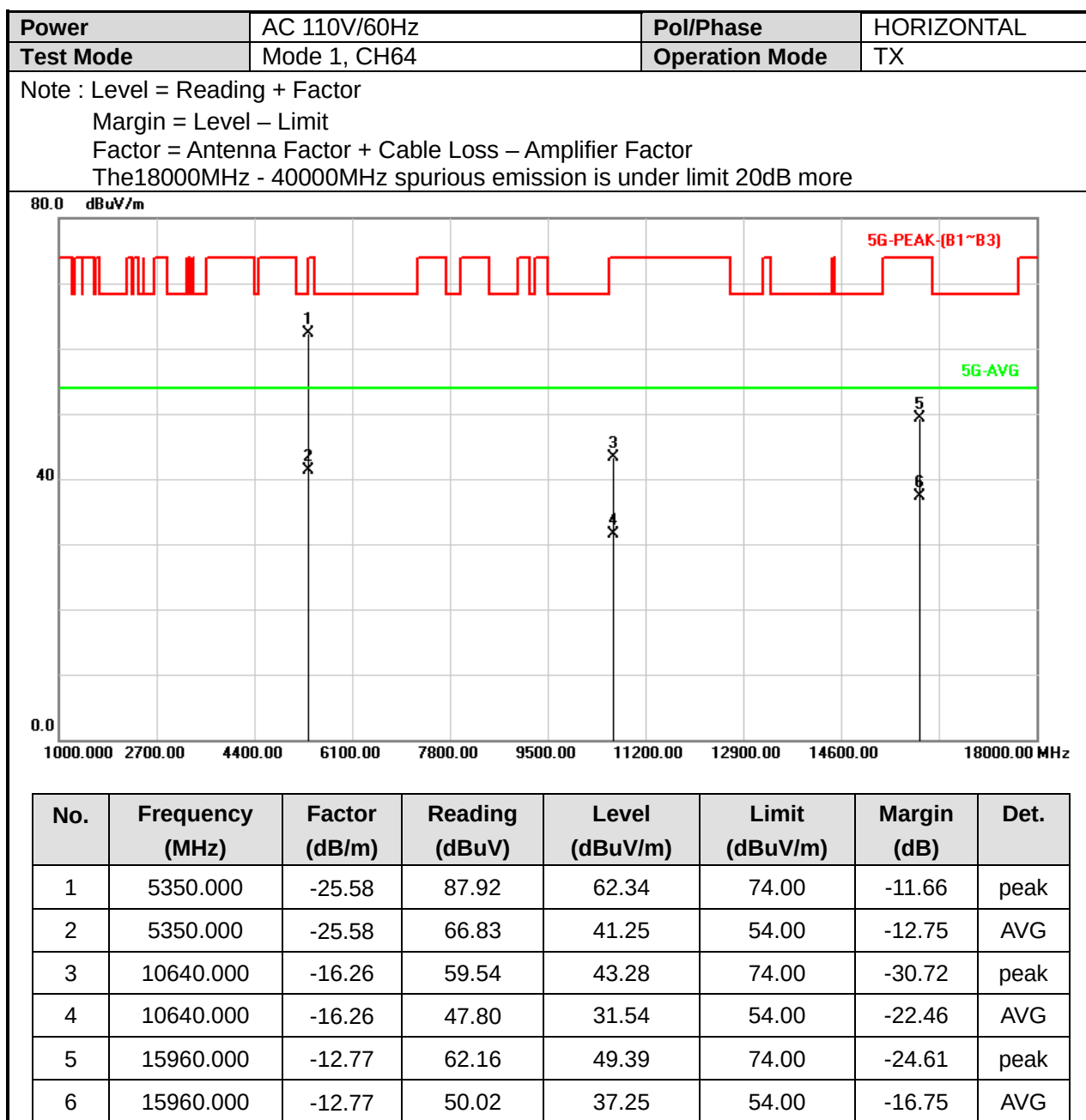


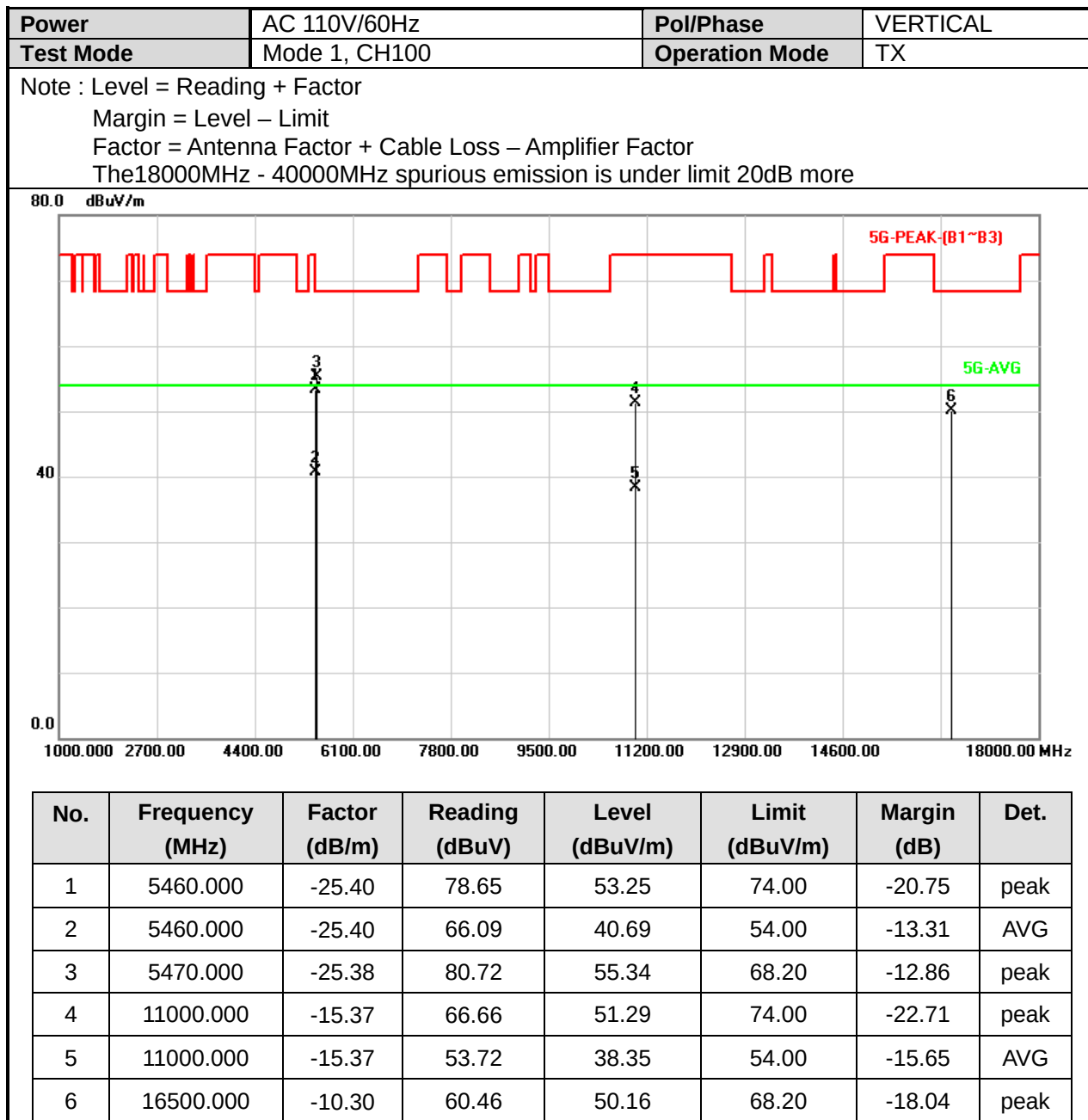


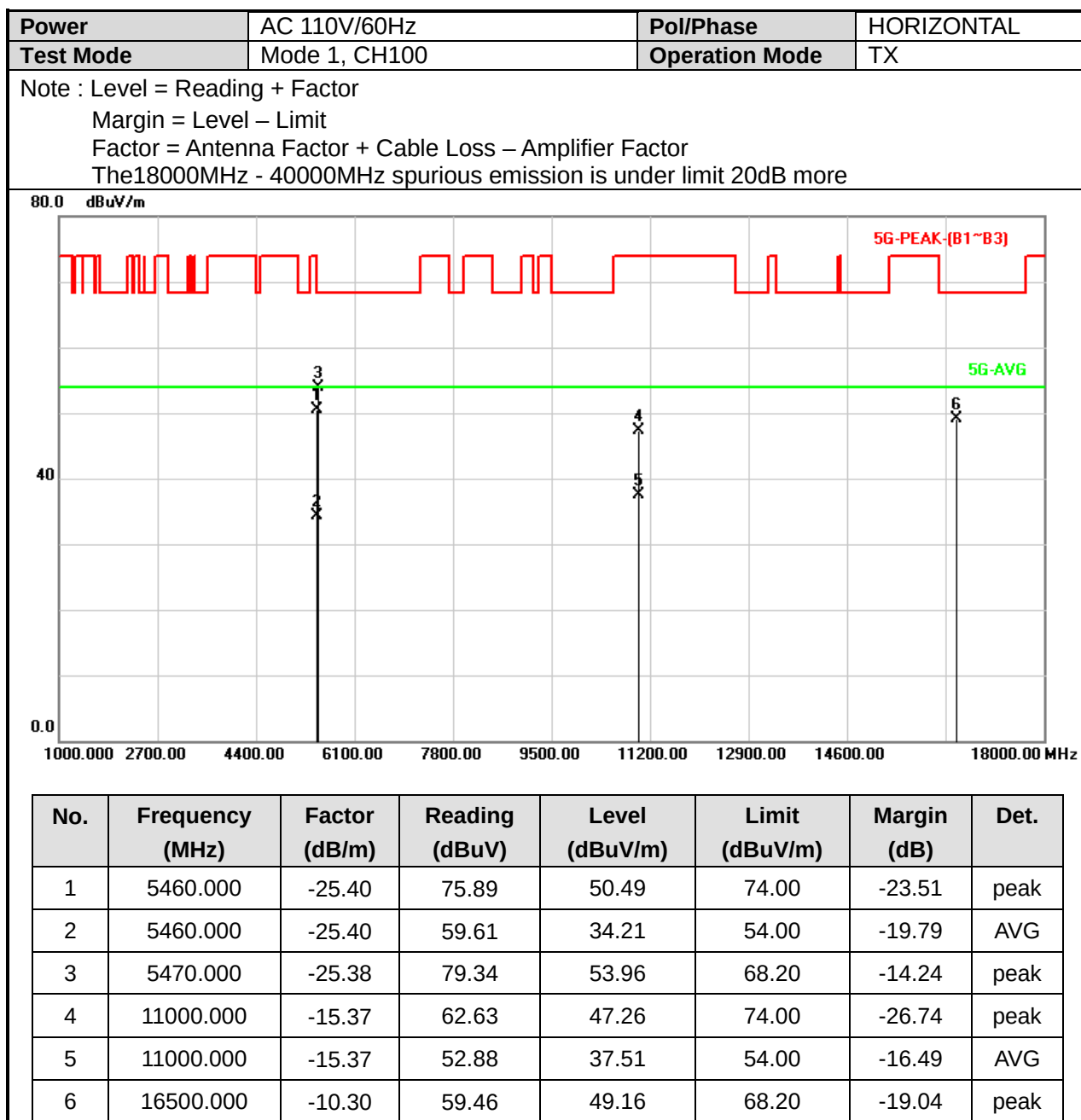


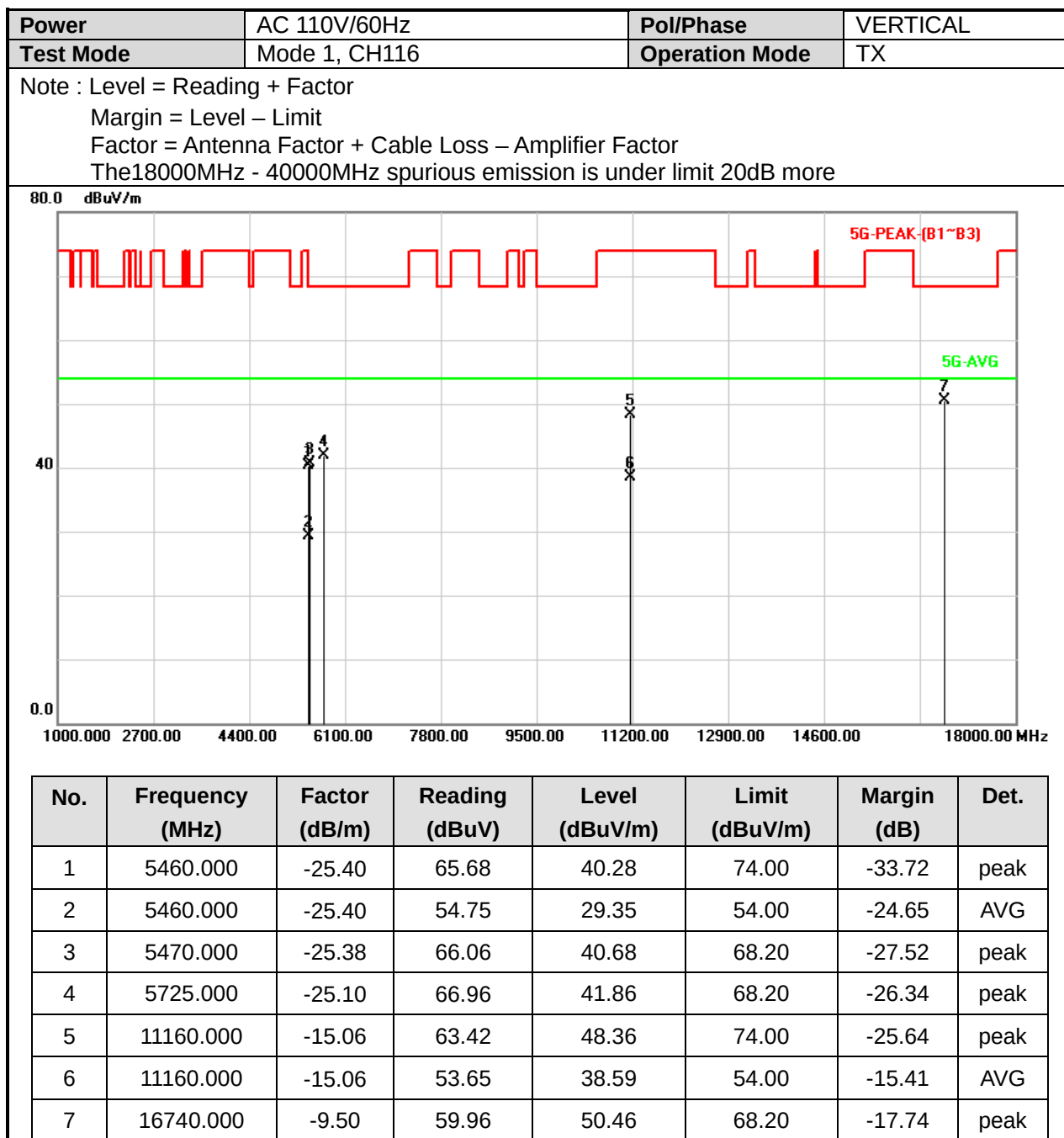


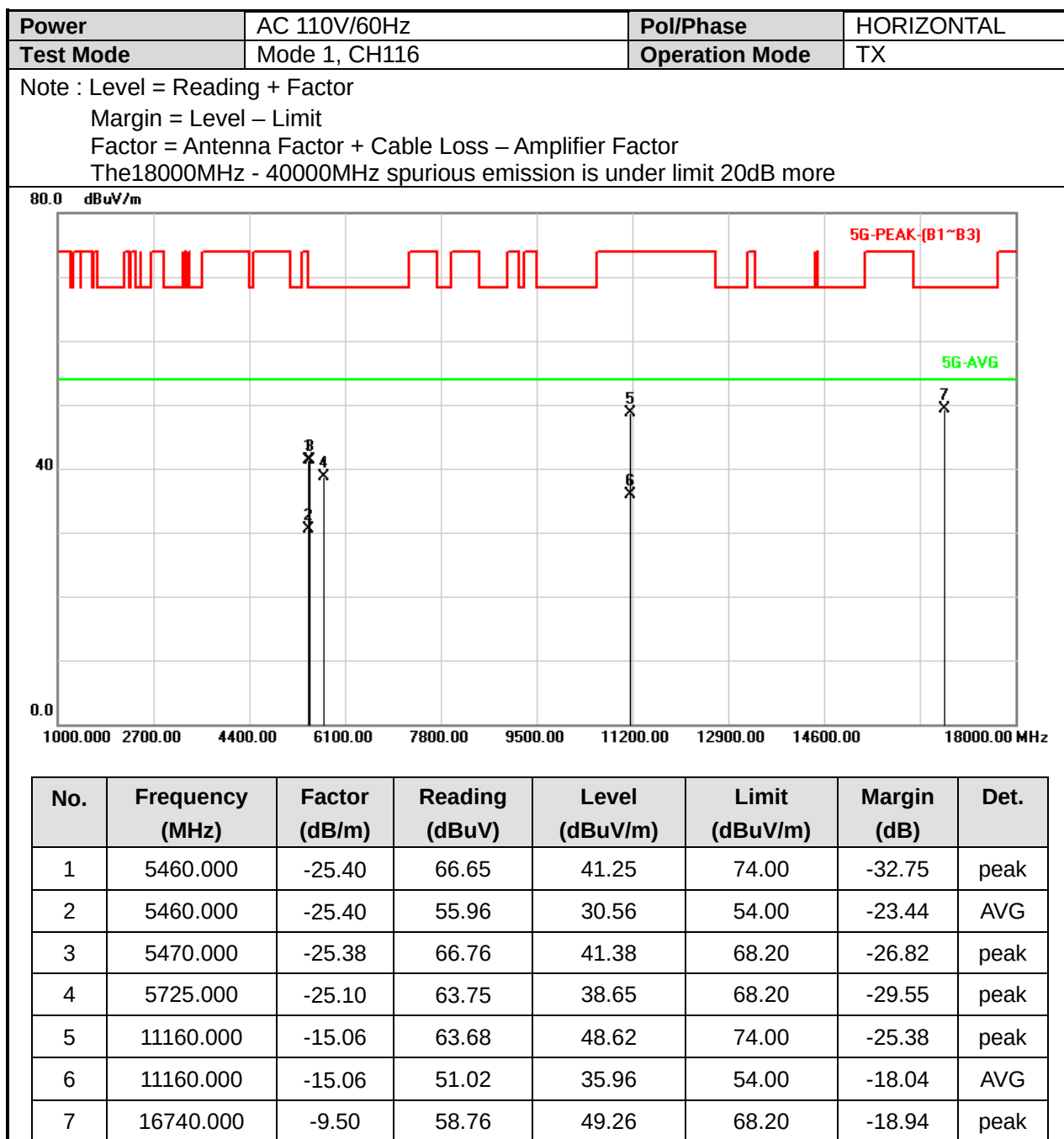




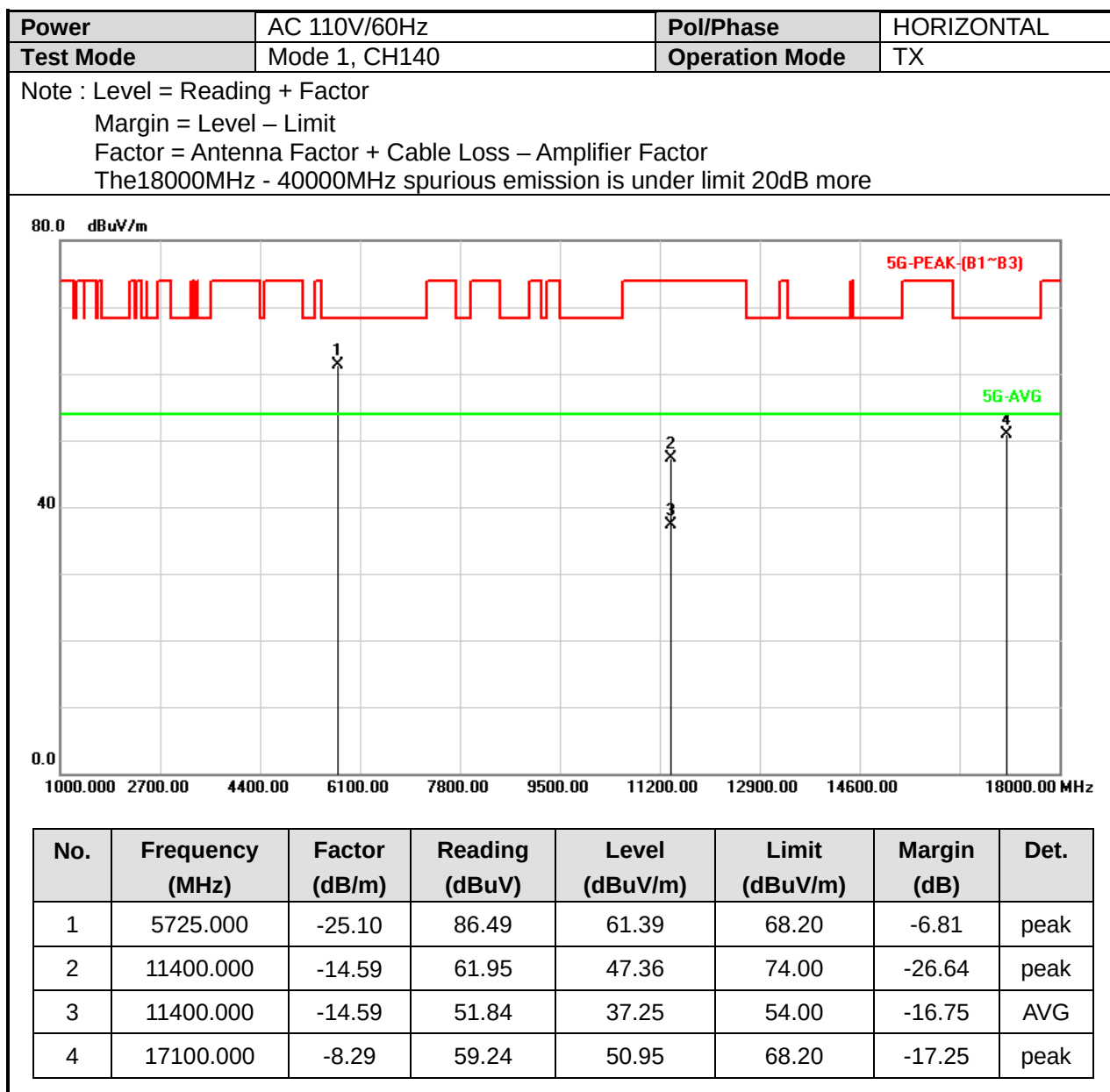


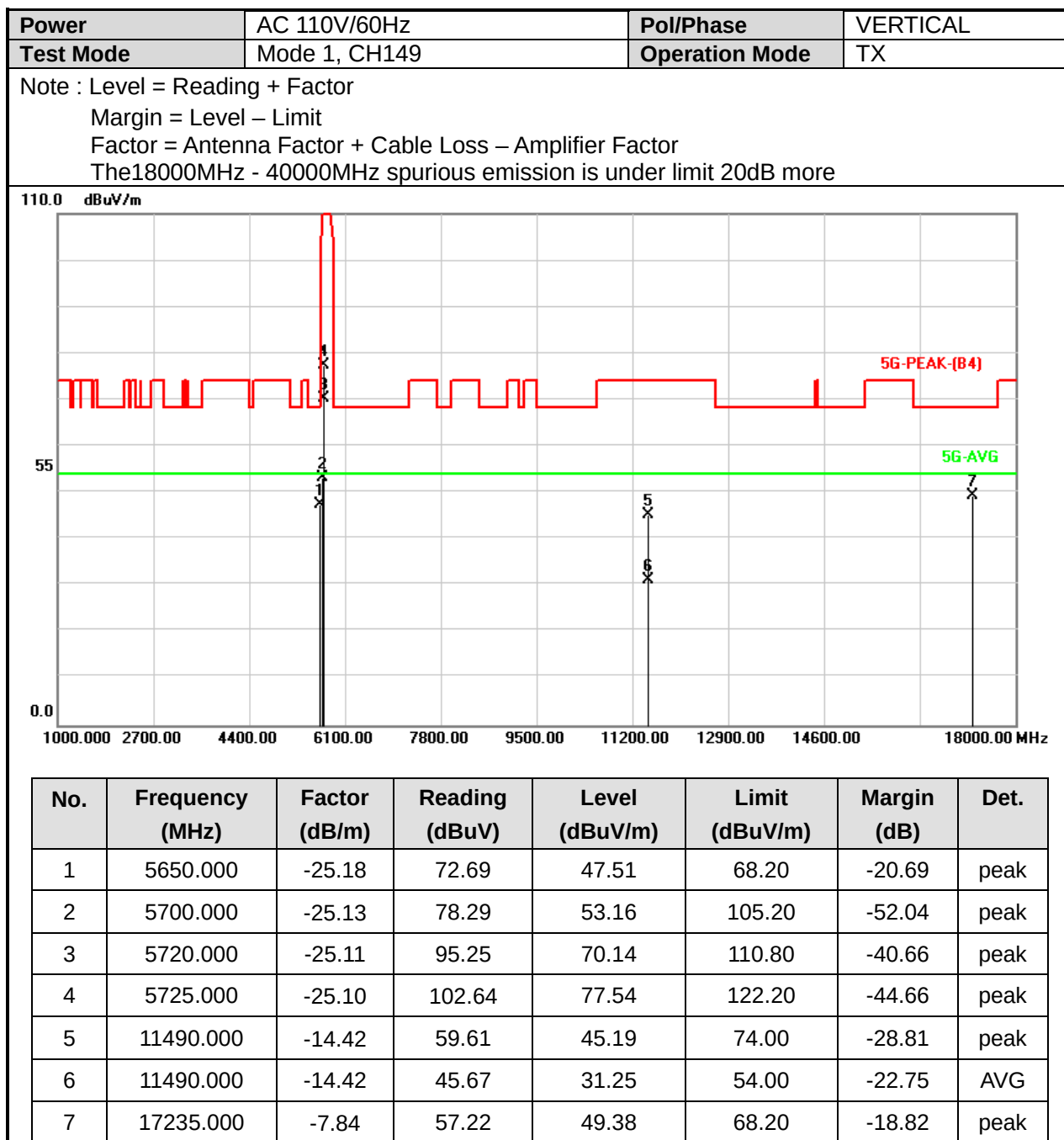


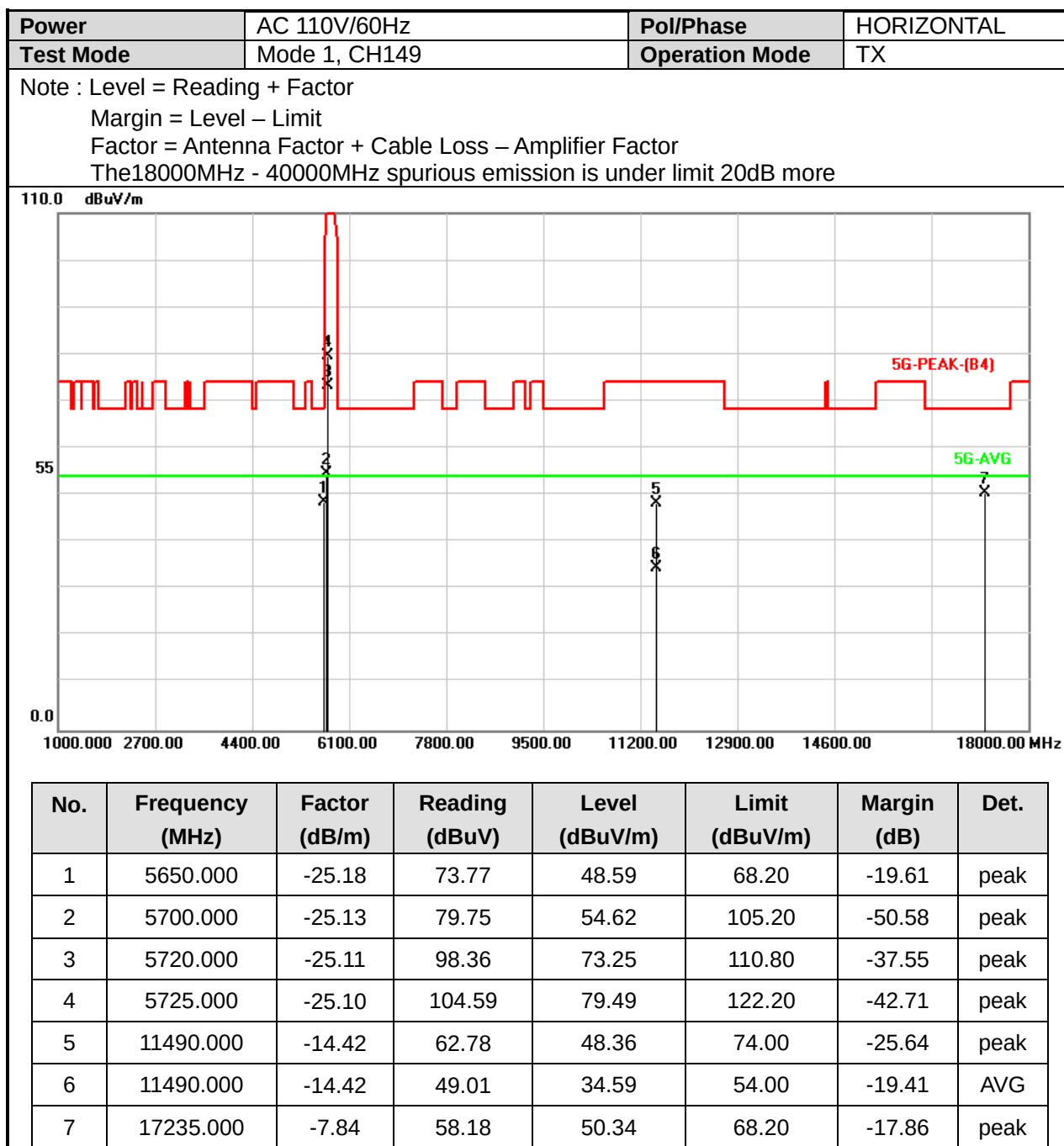


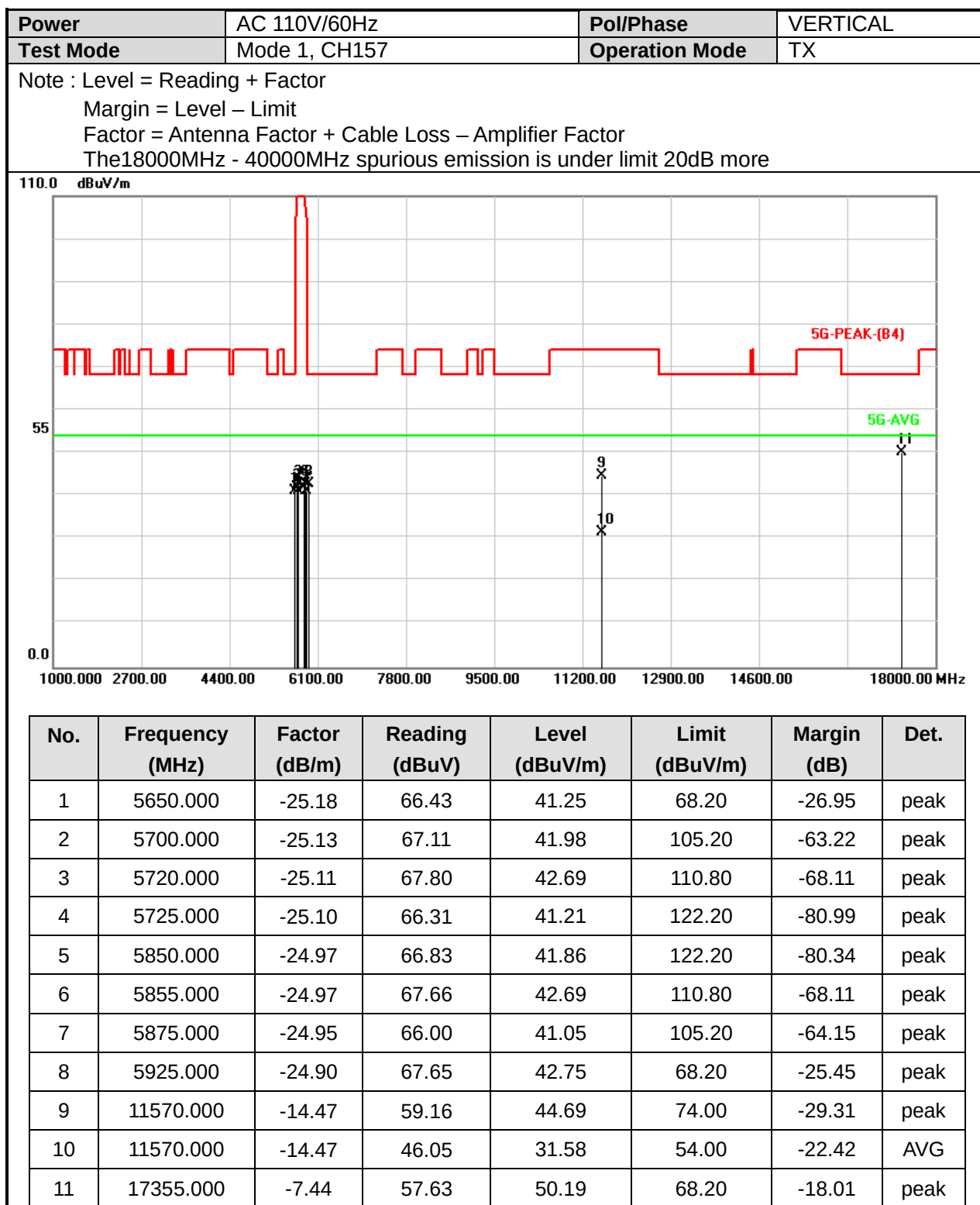


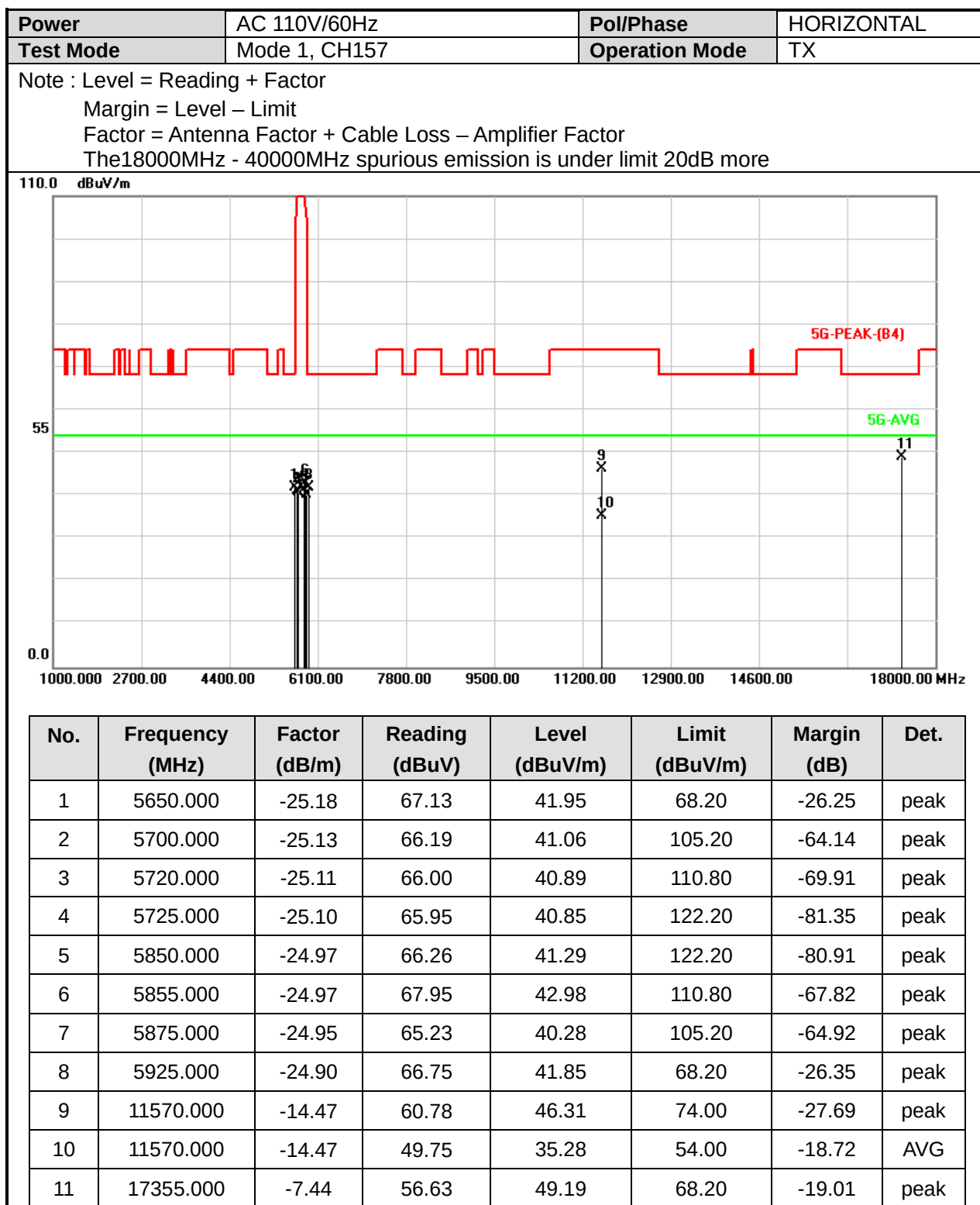


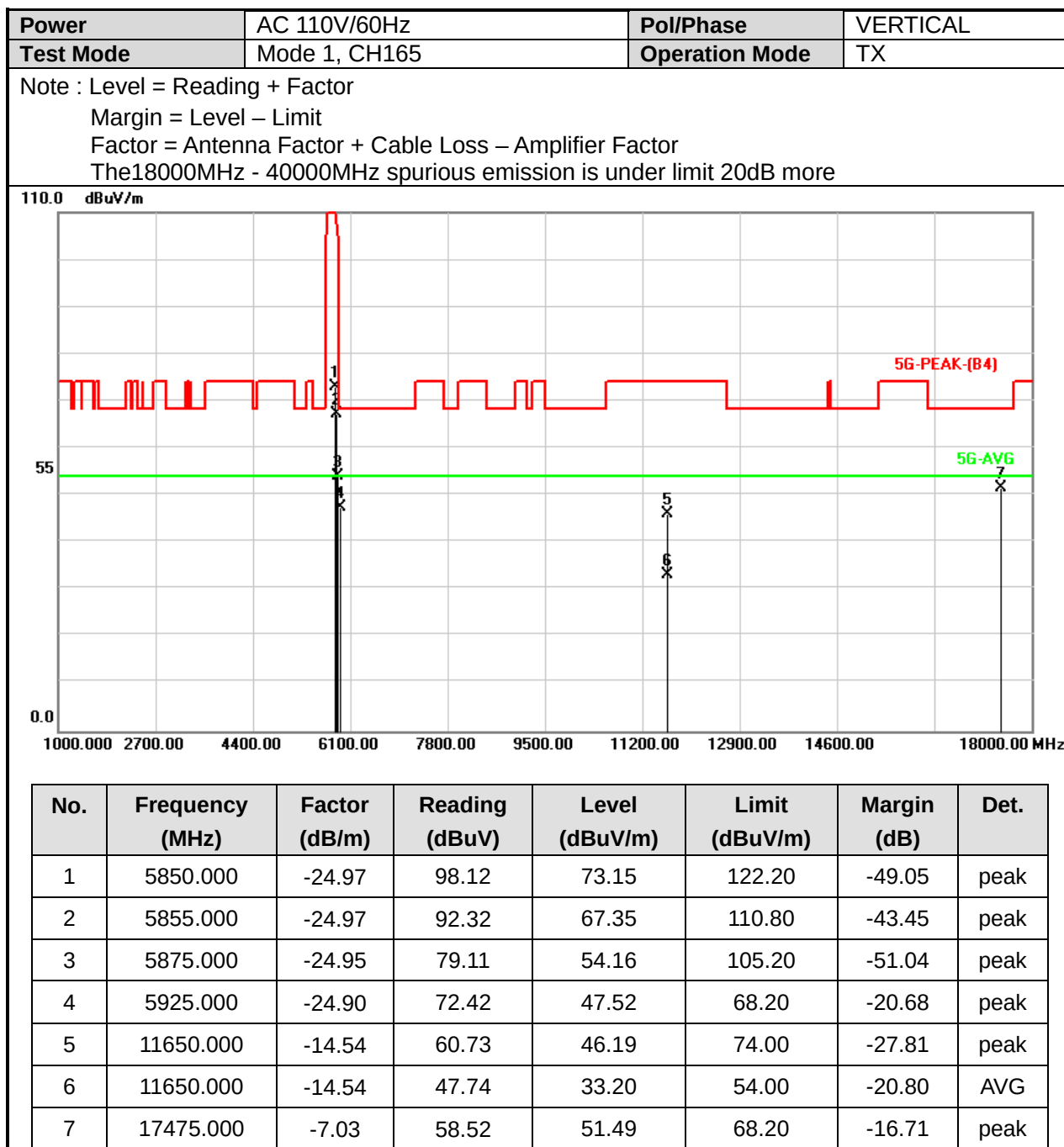


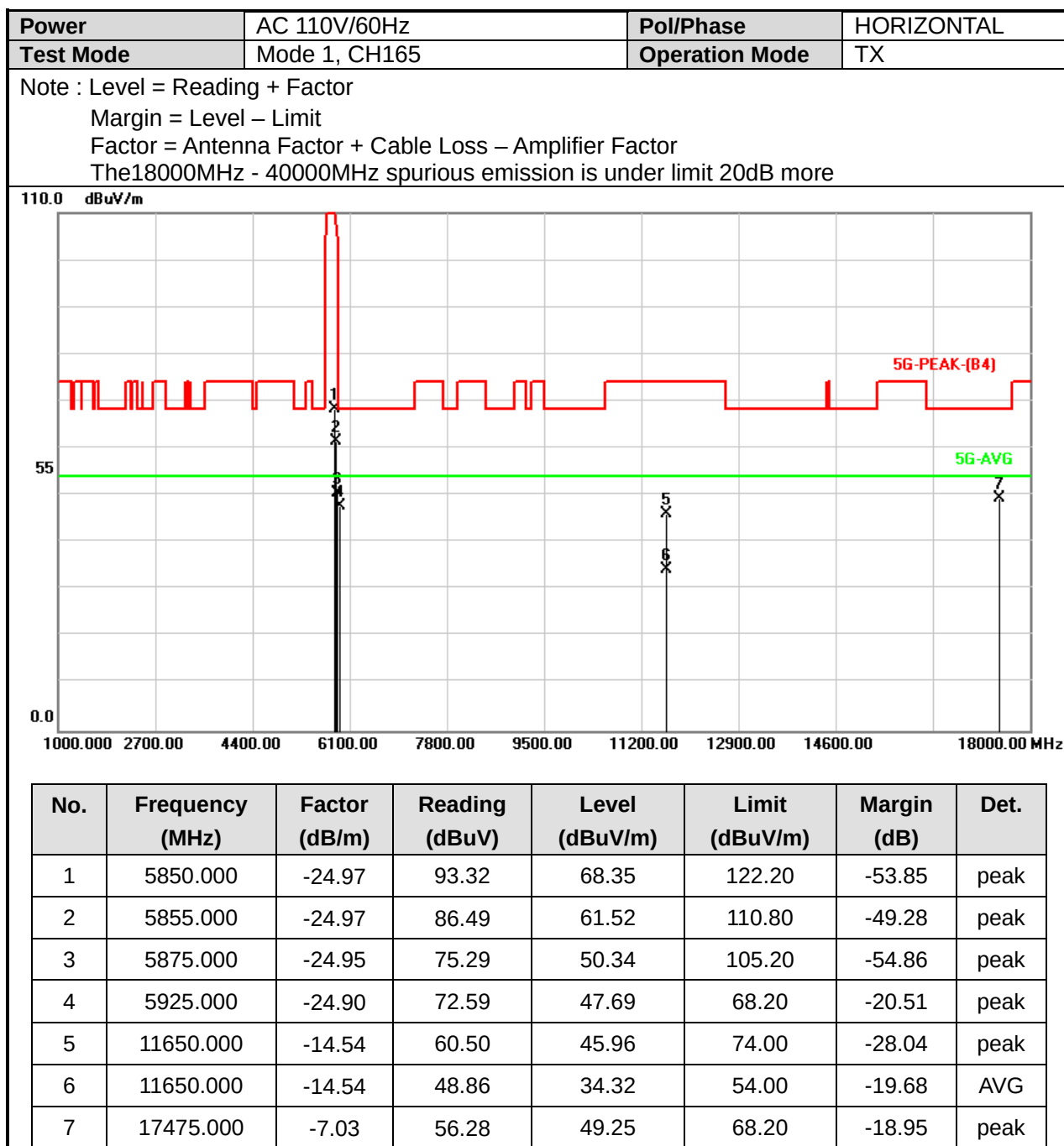


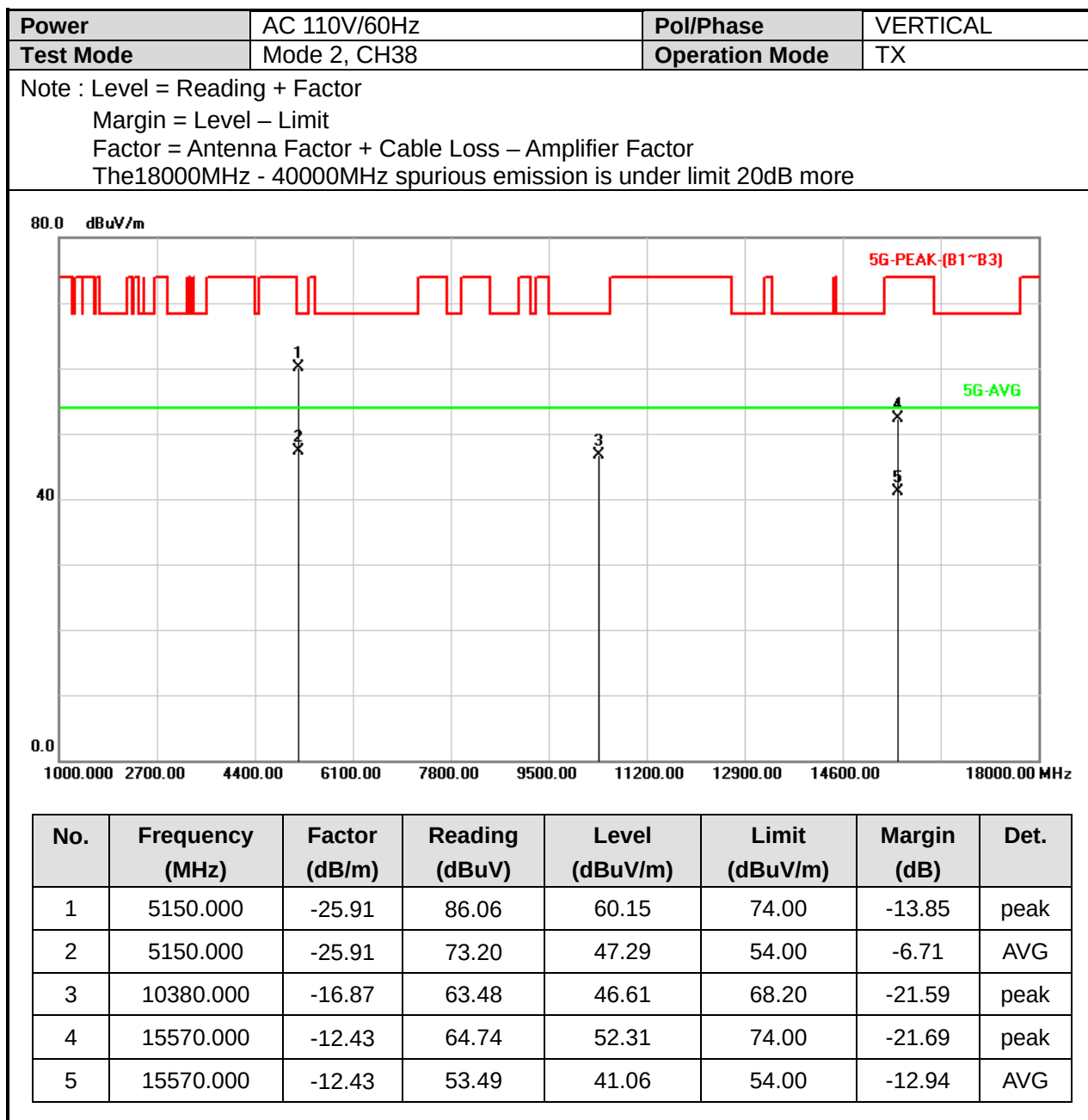


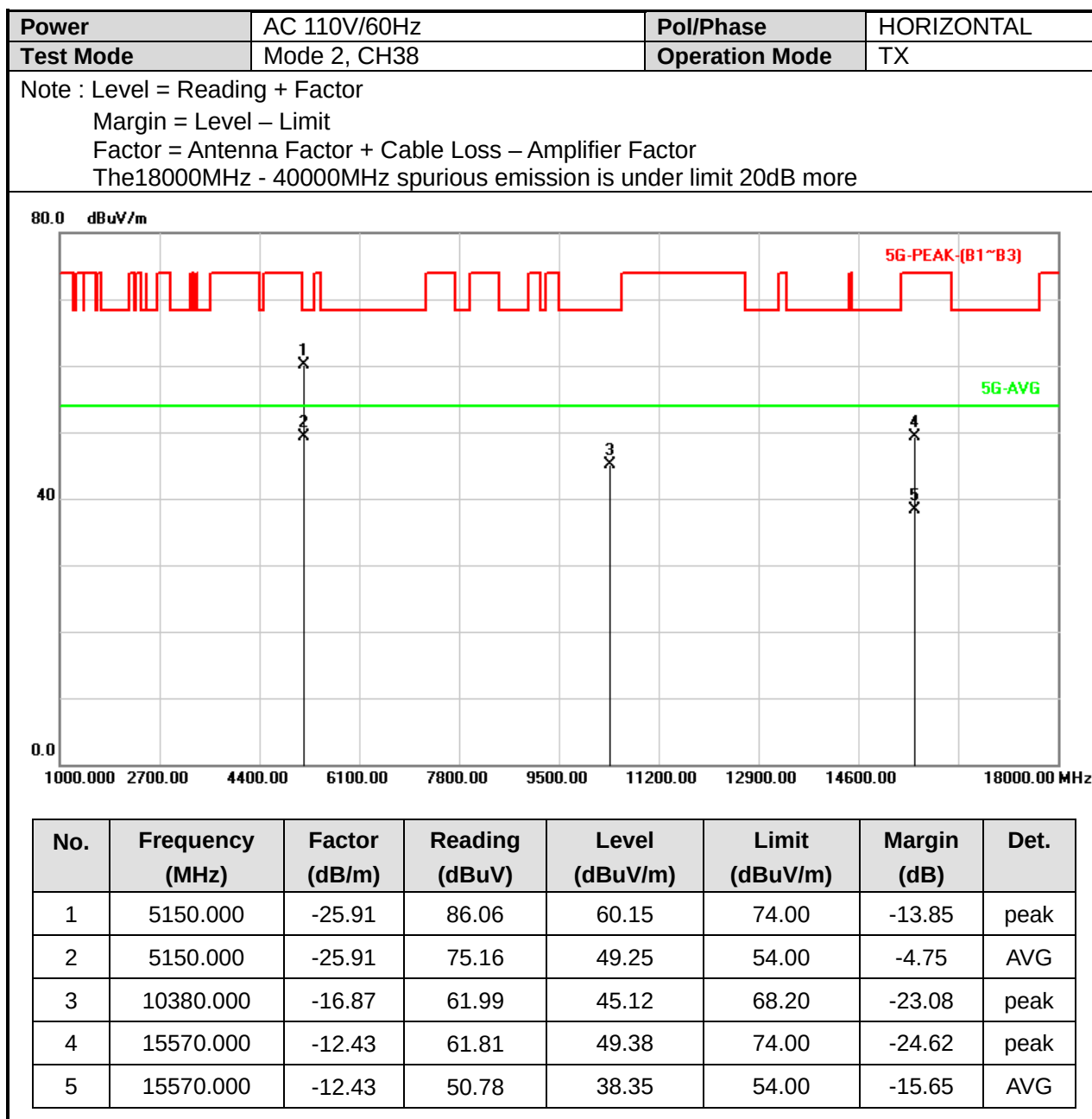


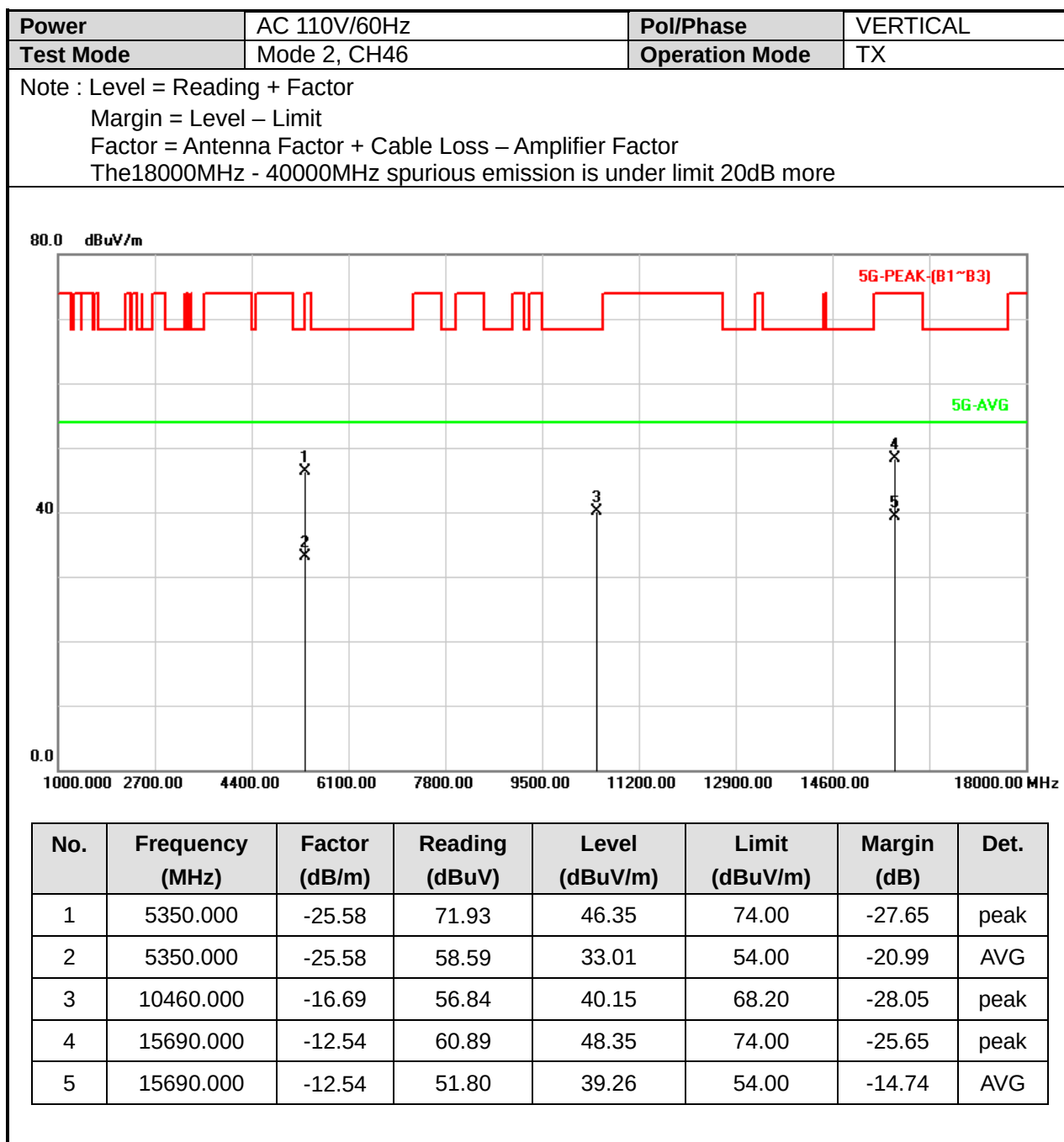


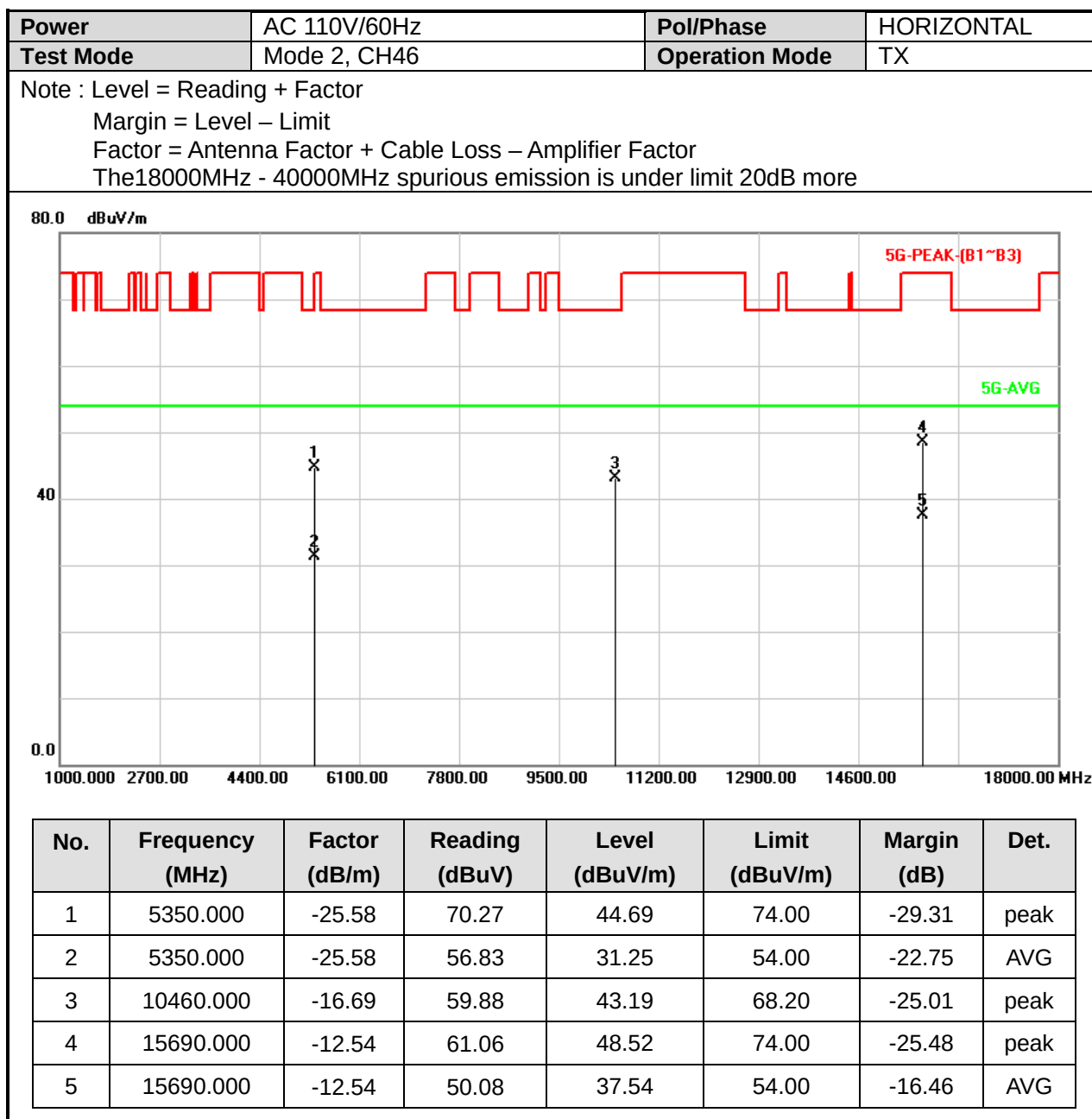


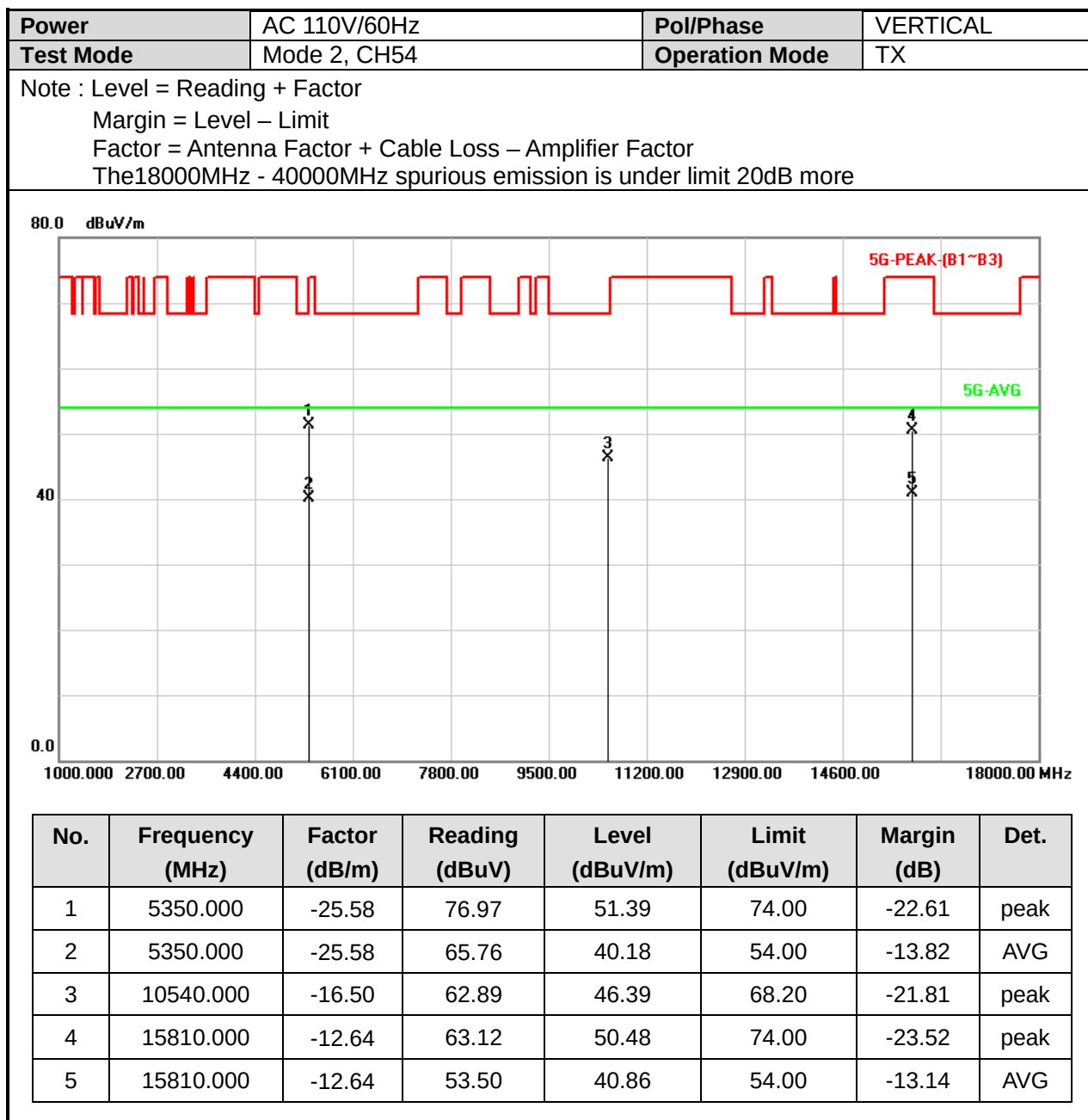


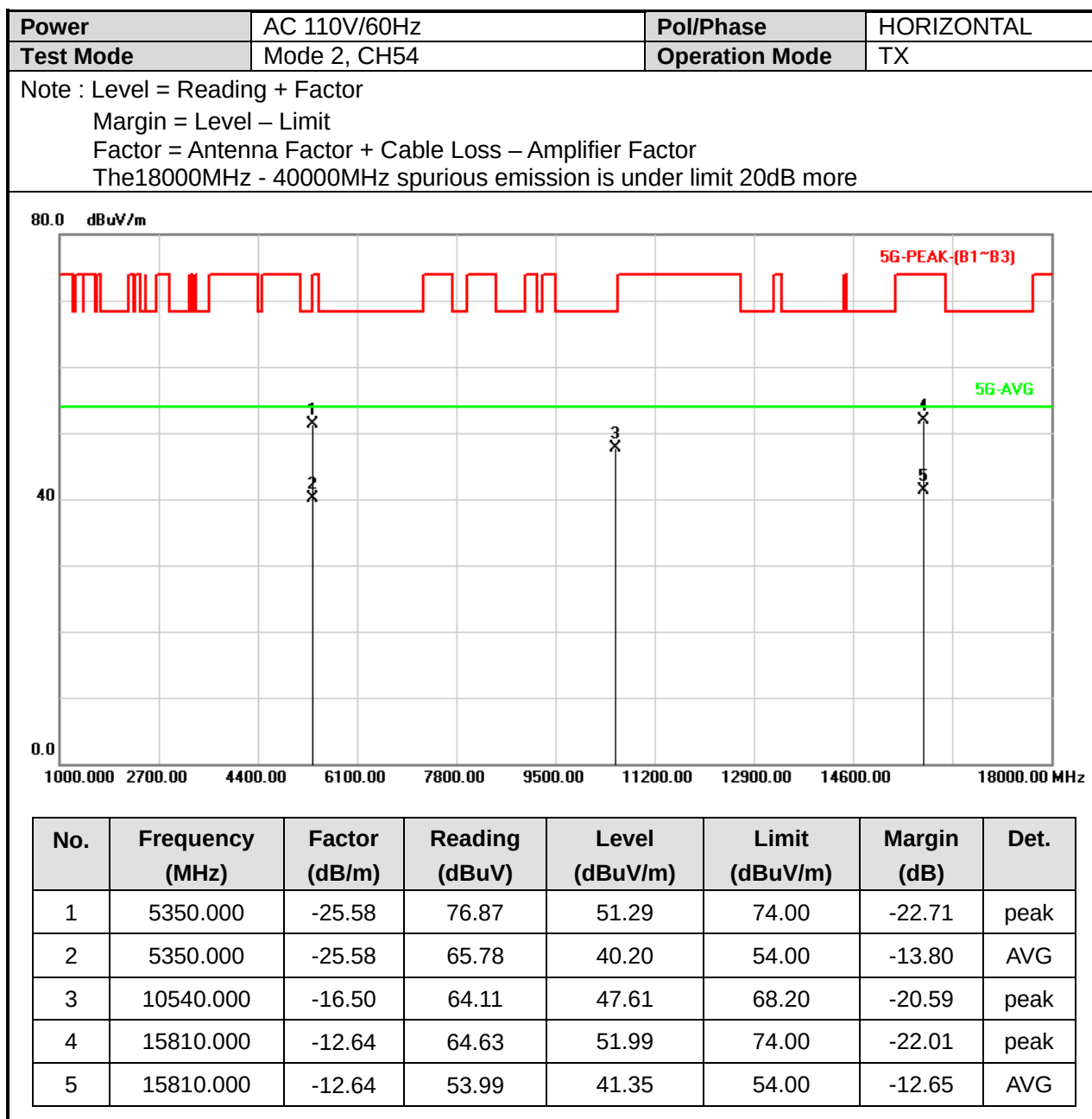


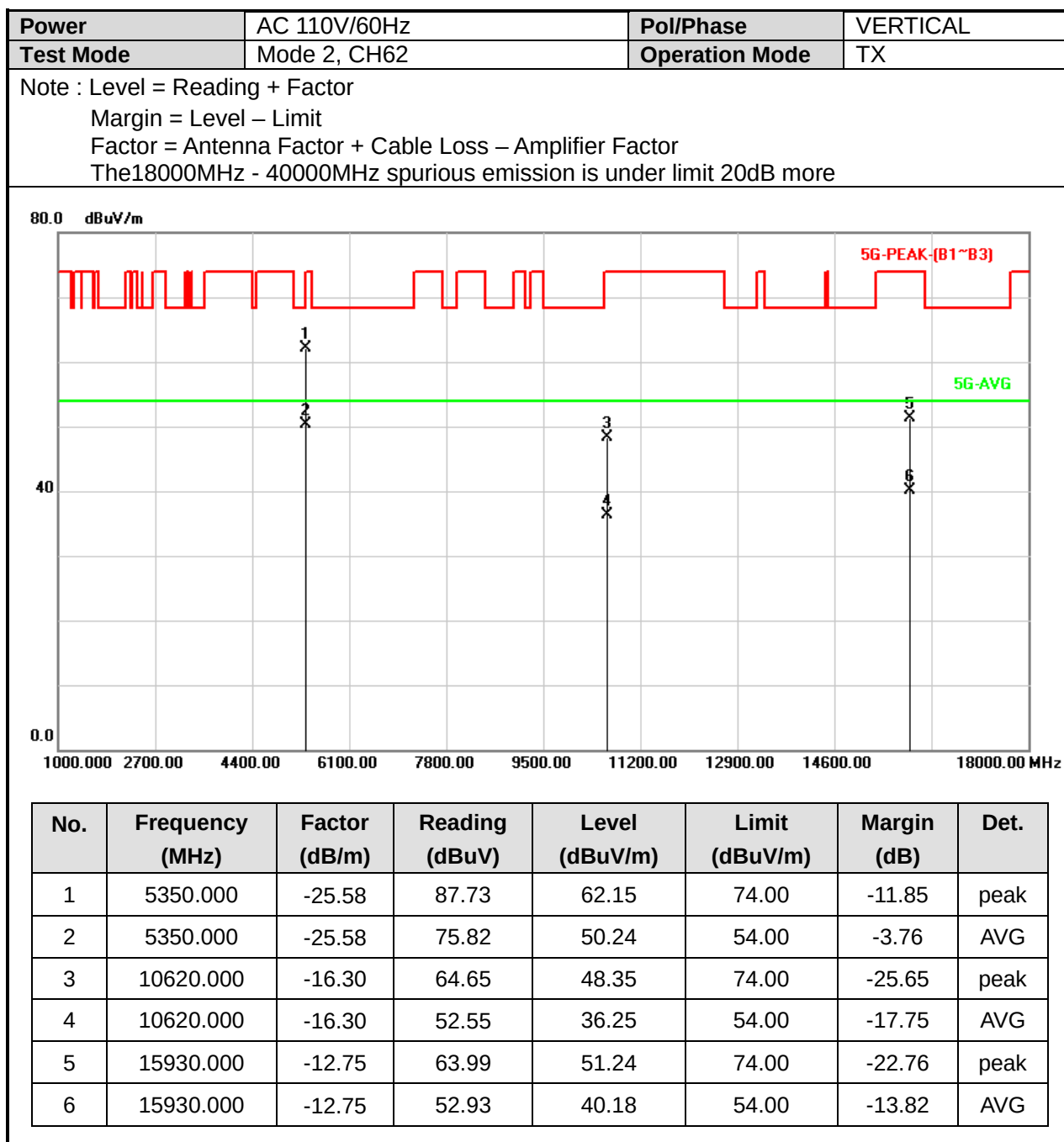


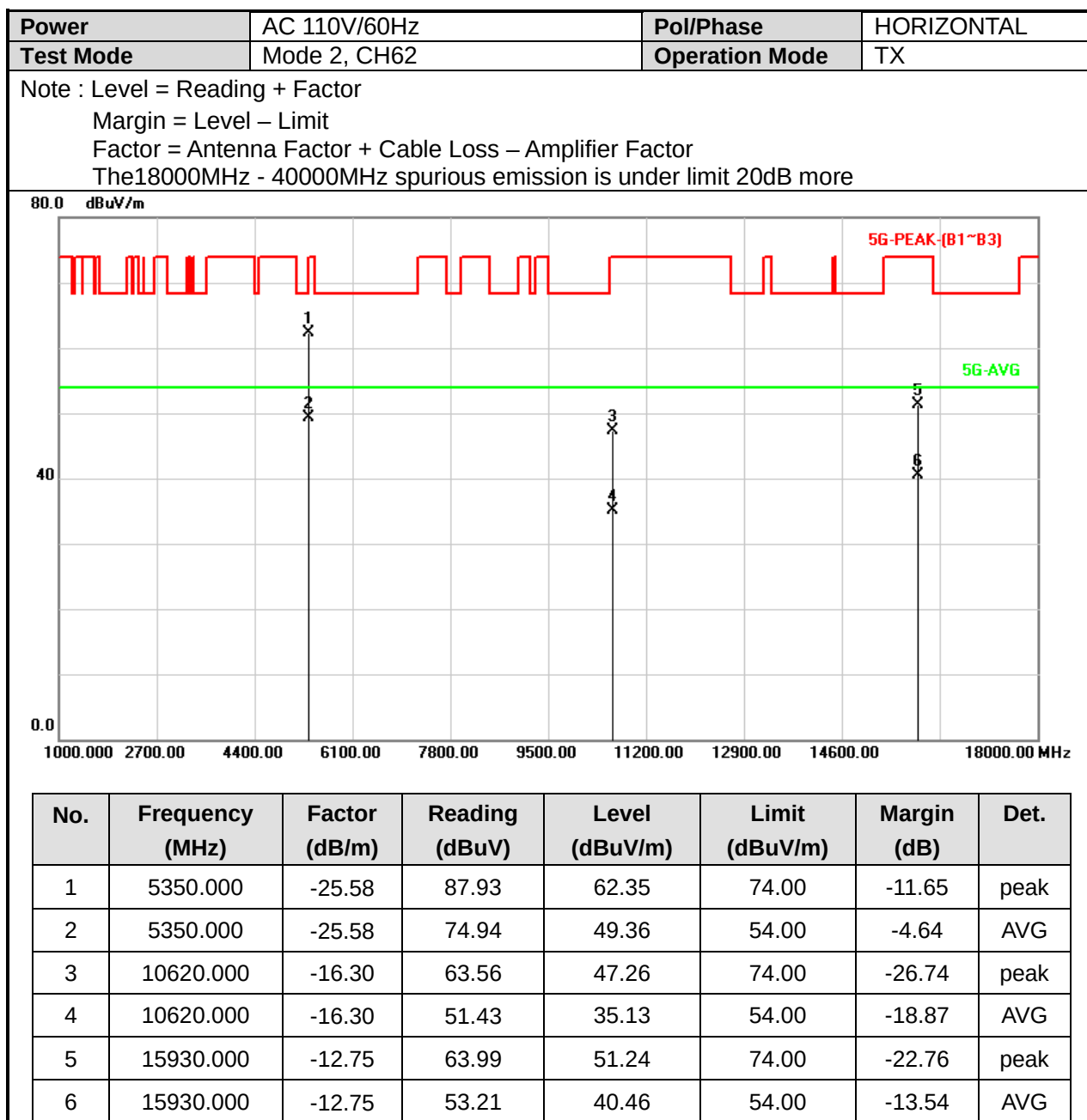


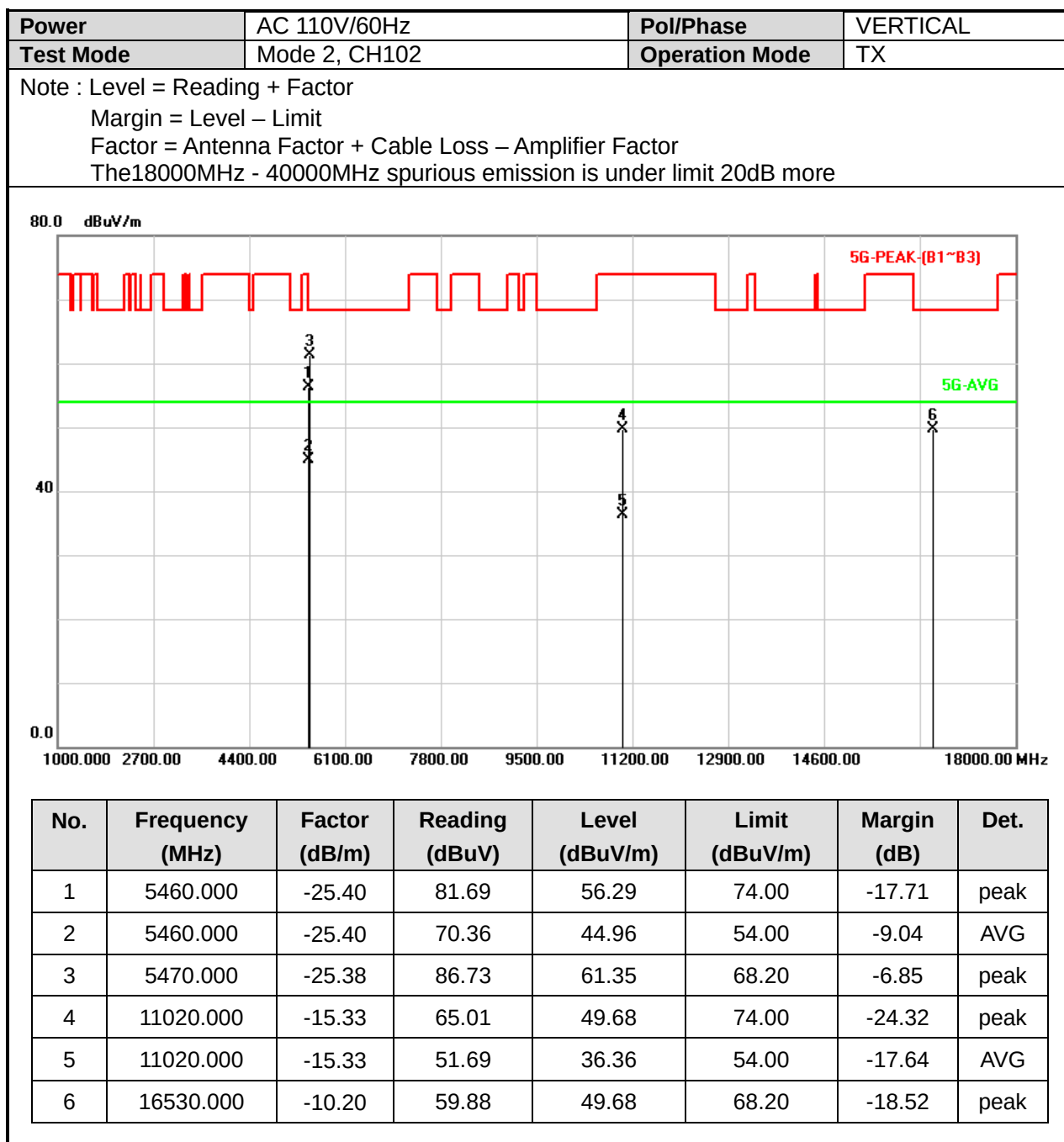


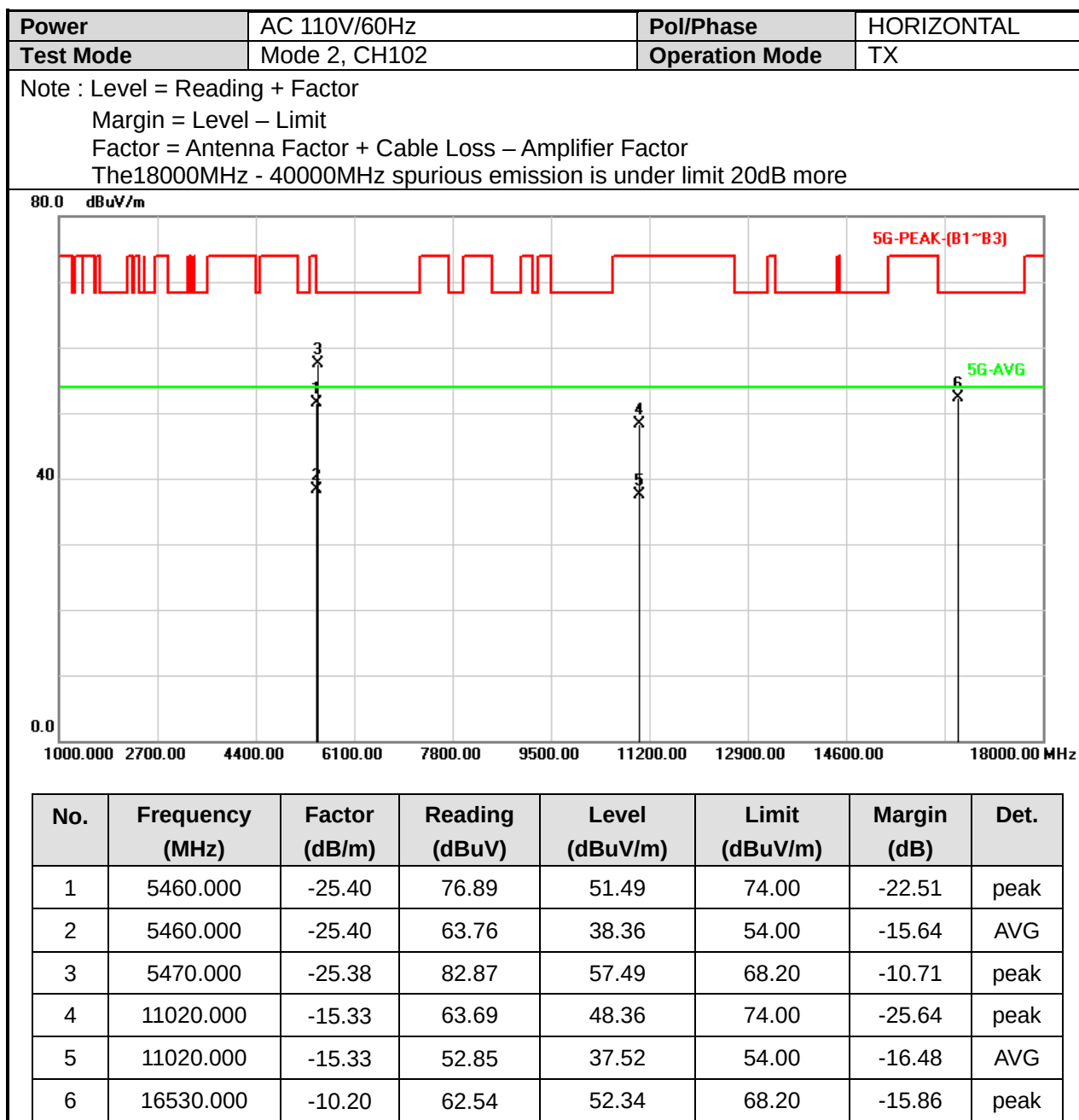


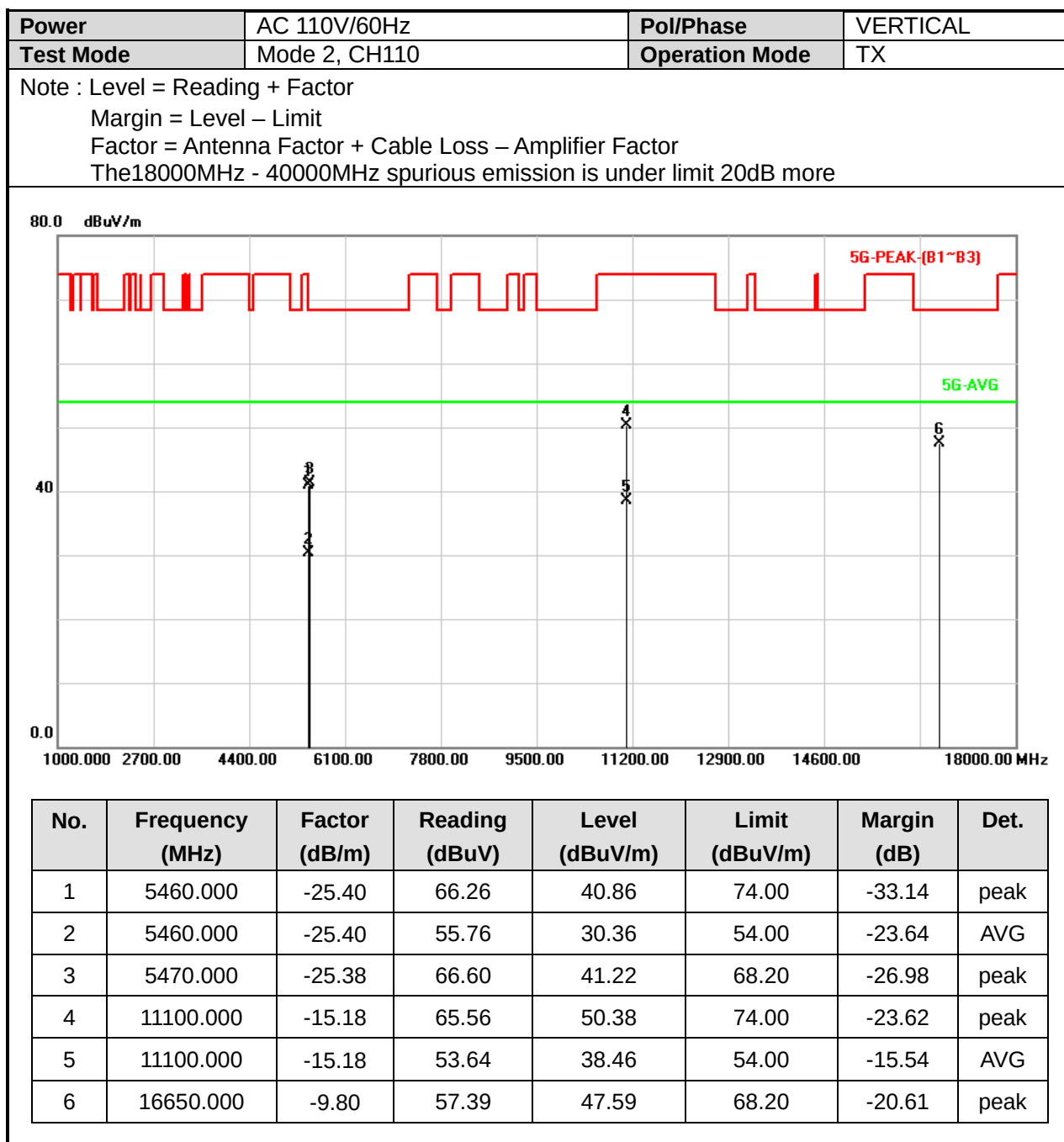


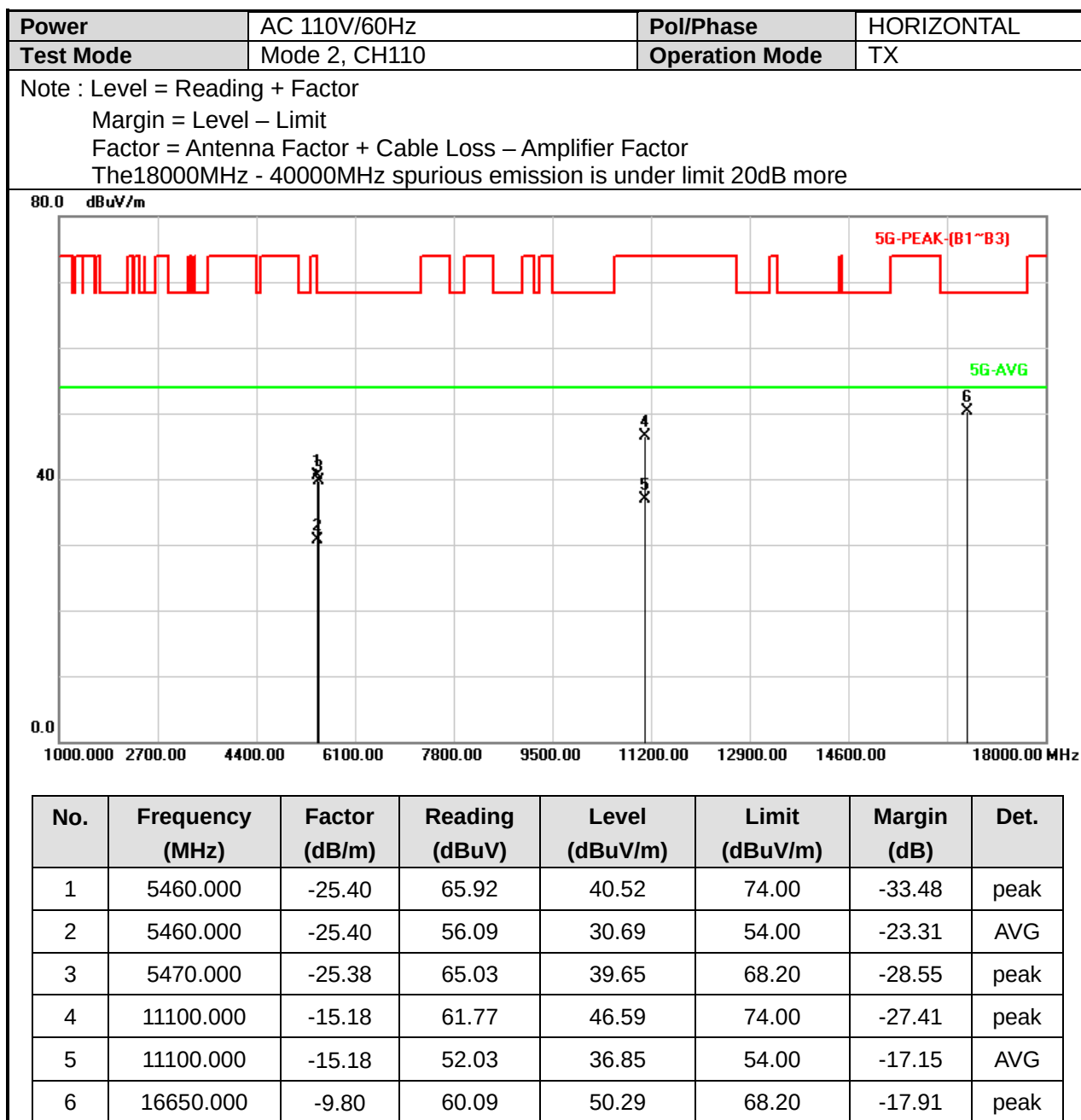


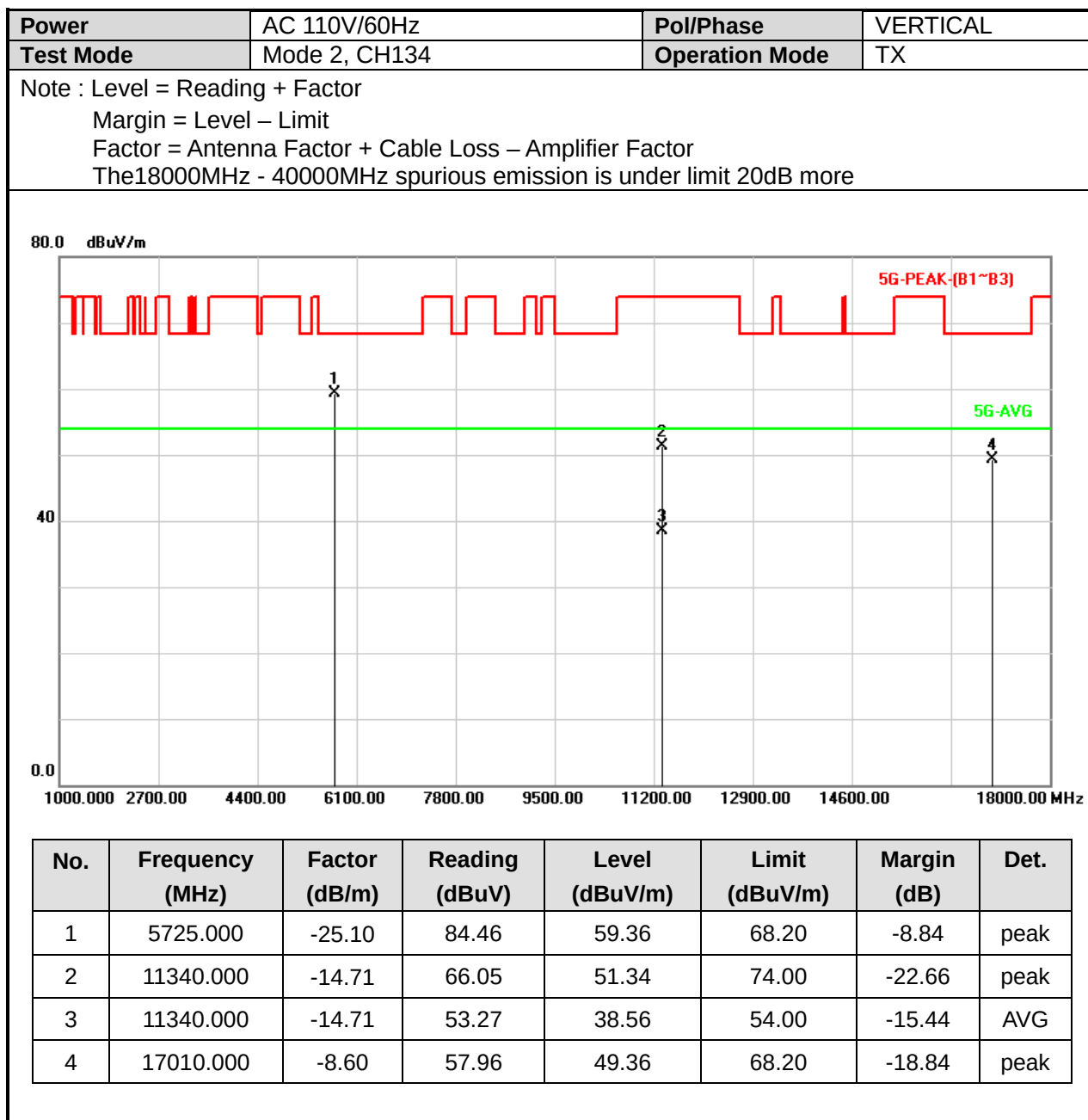


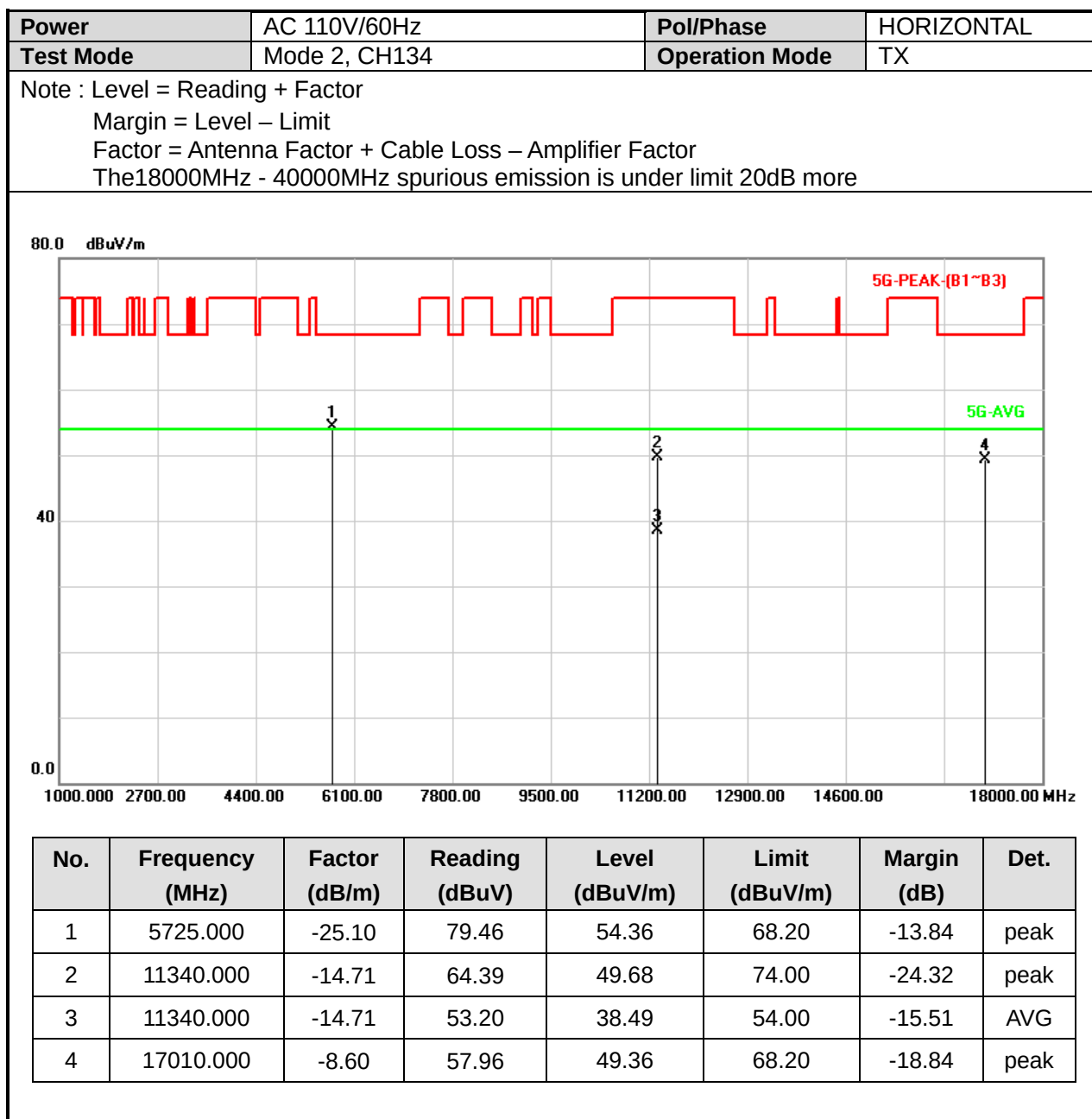


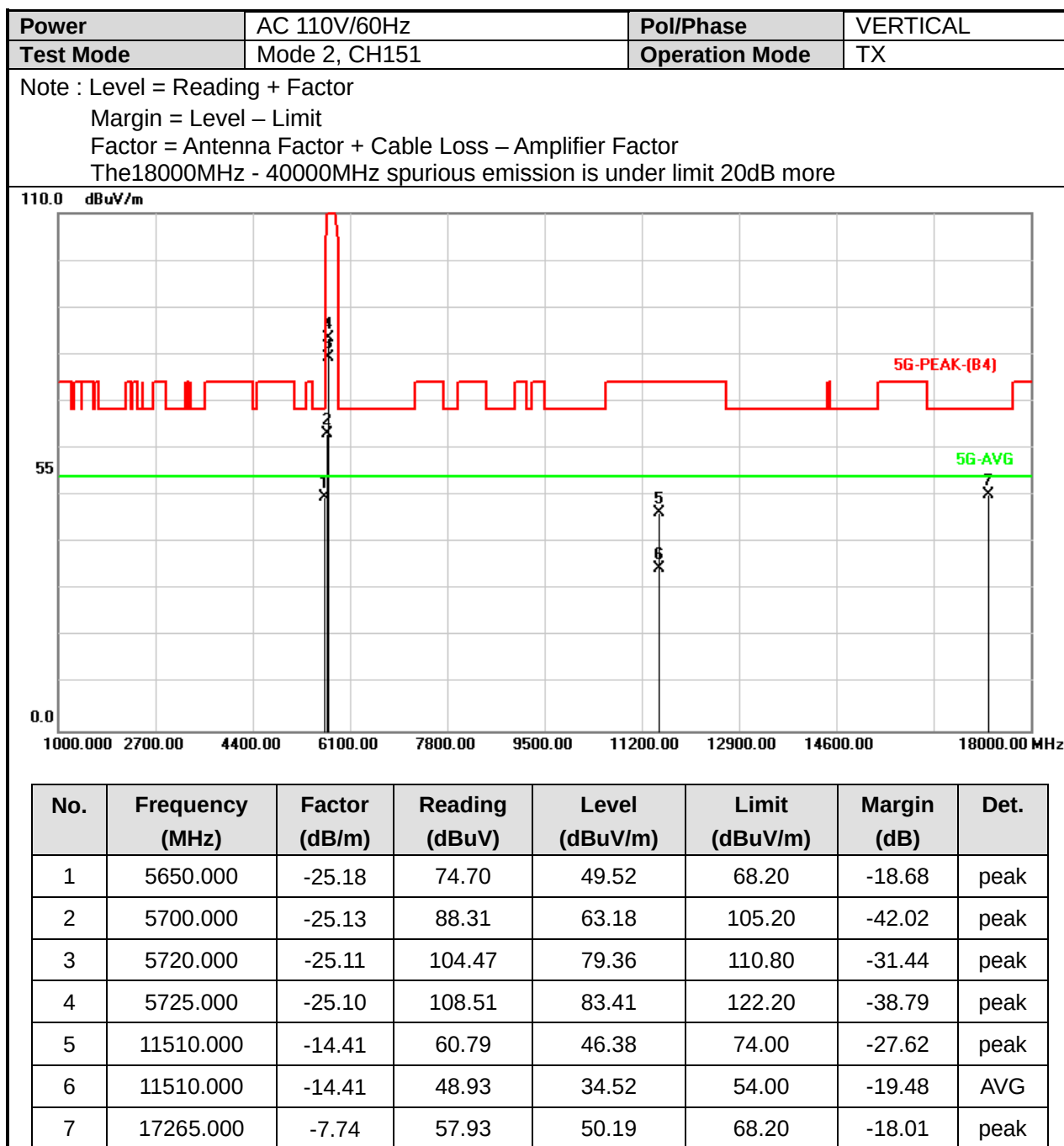


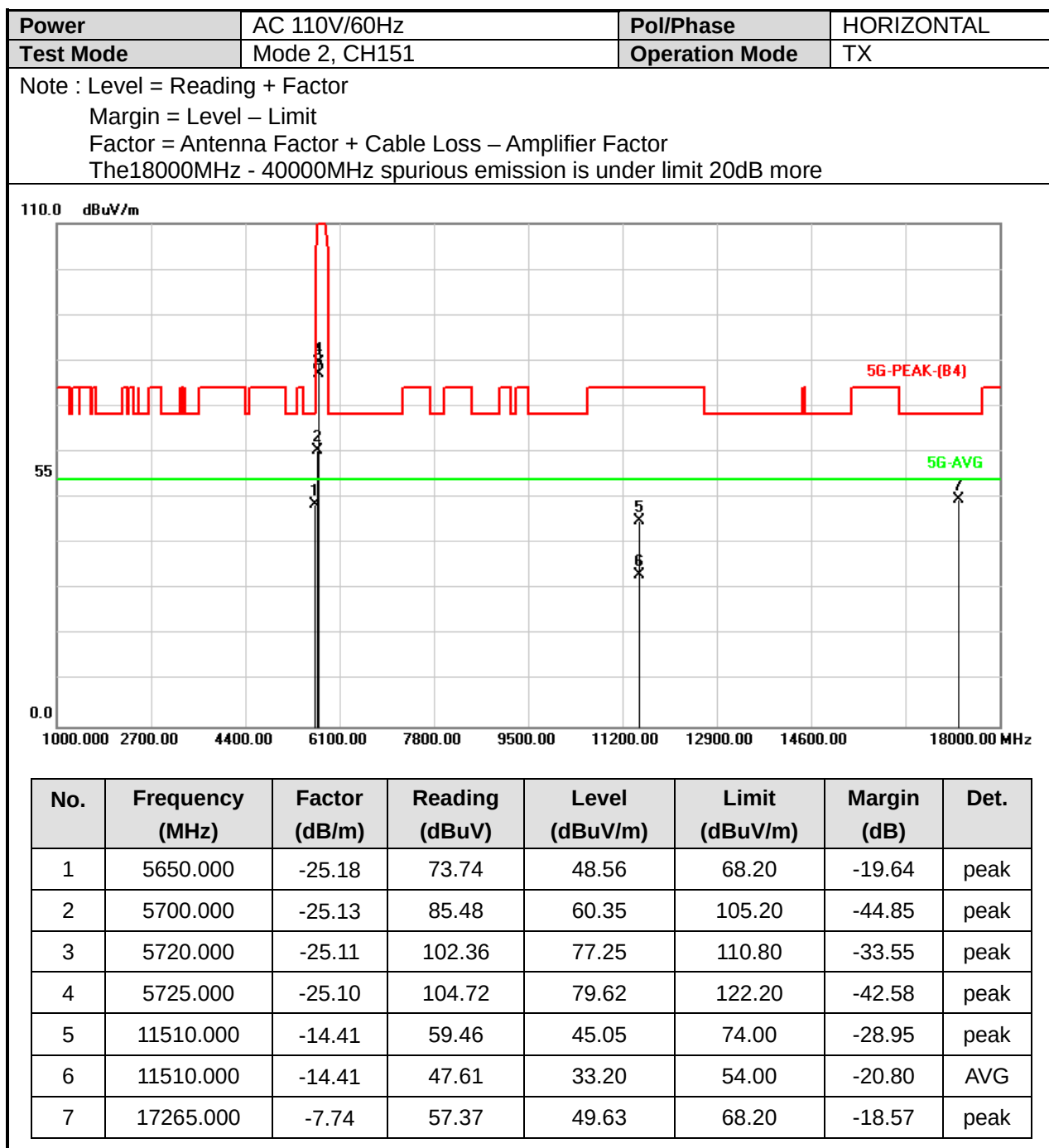


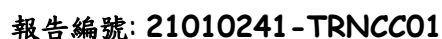




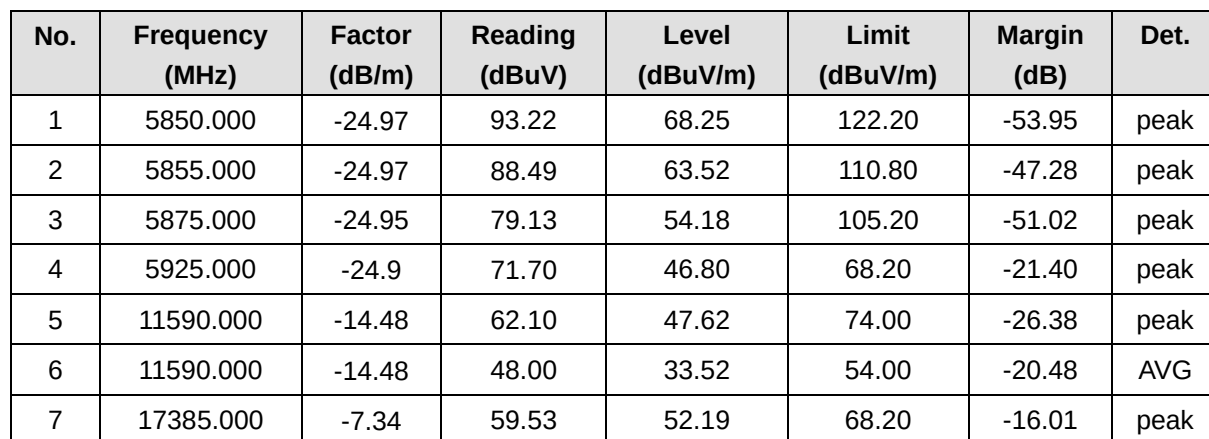


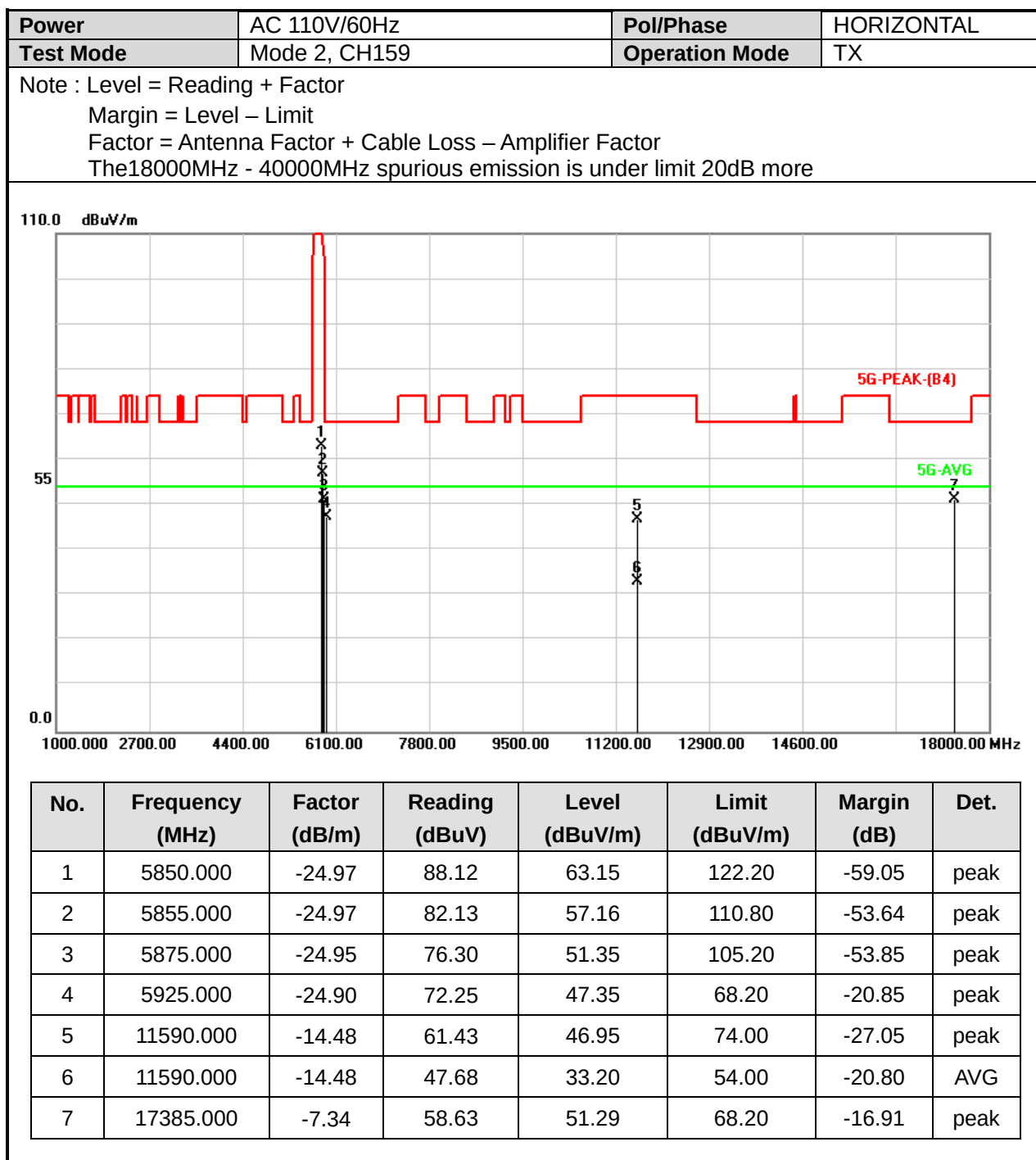






Note : Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss – Amplifier Factor
The 18000MHz - 40000MHz spurious emission is under limit 20dB more







For RX

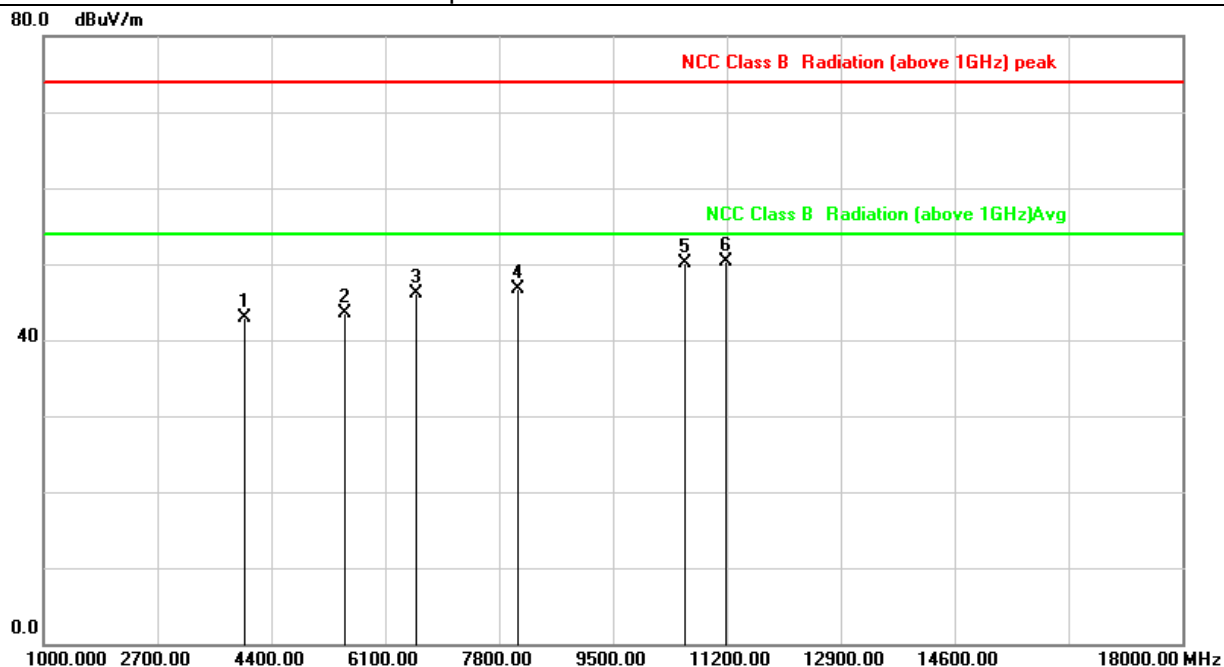
Power	AC 110V/60Hz	Pol/Phase	VERTICAL
Test Mode	Mode 3, CH38	Operation Mode	RX

Note : Level = Reading + Factor

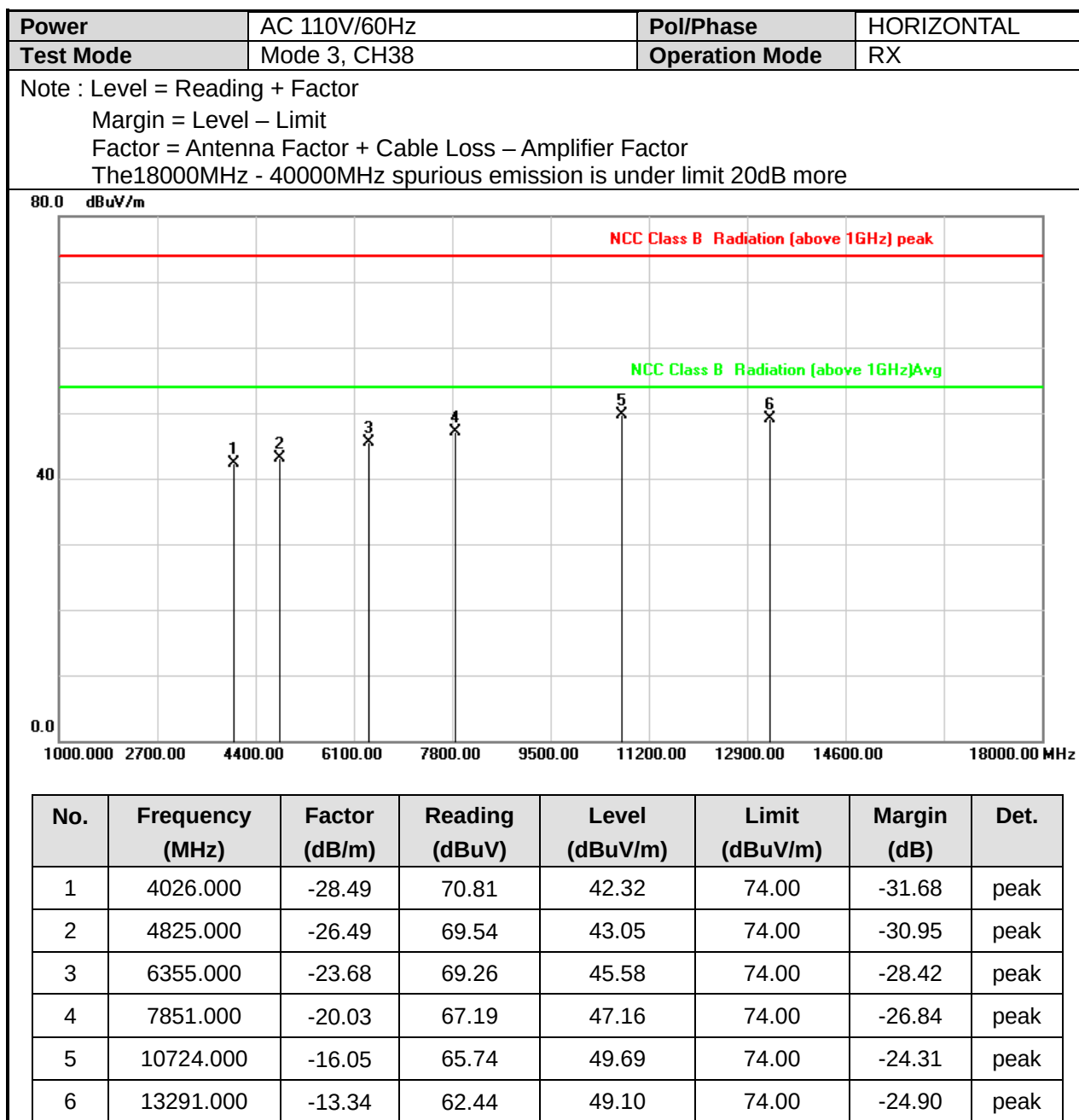
Margin = Level – Limit

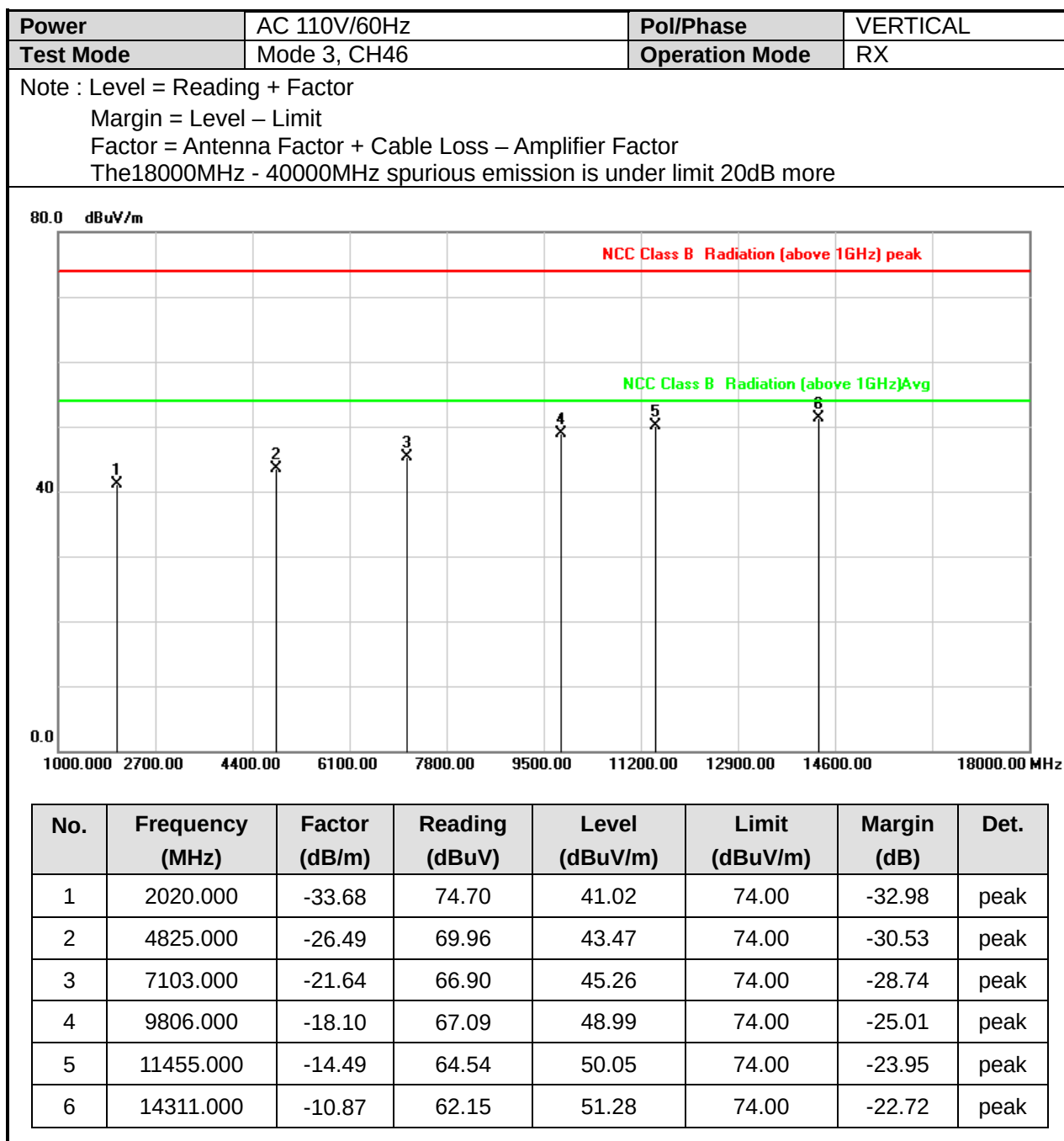
Factor = Antenna Factor + Cable Loss – Amplifier Factor

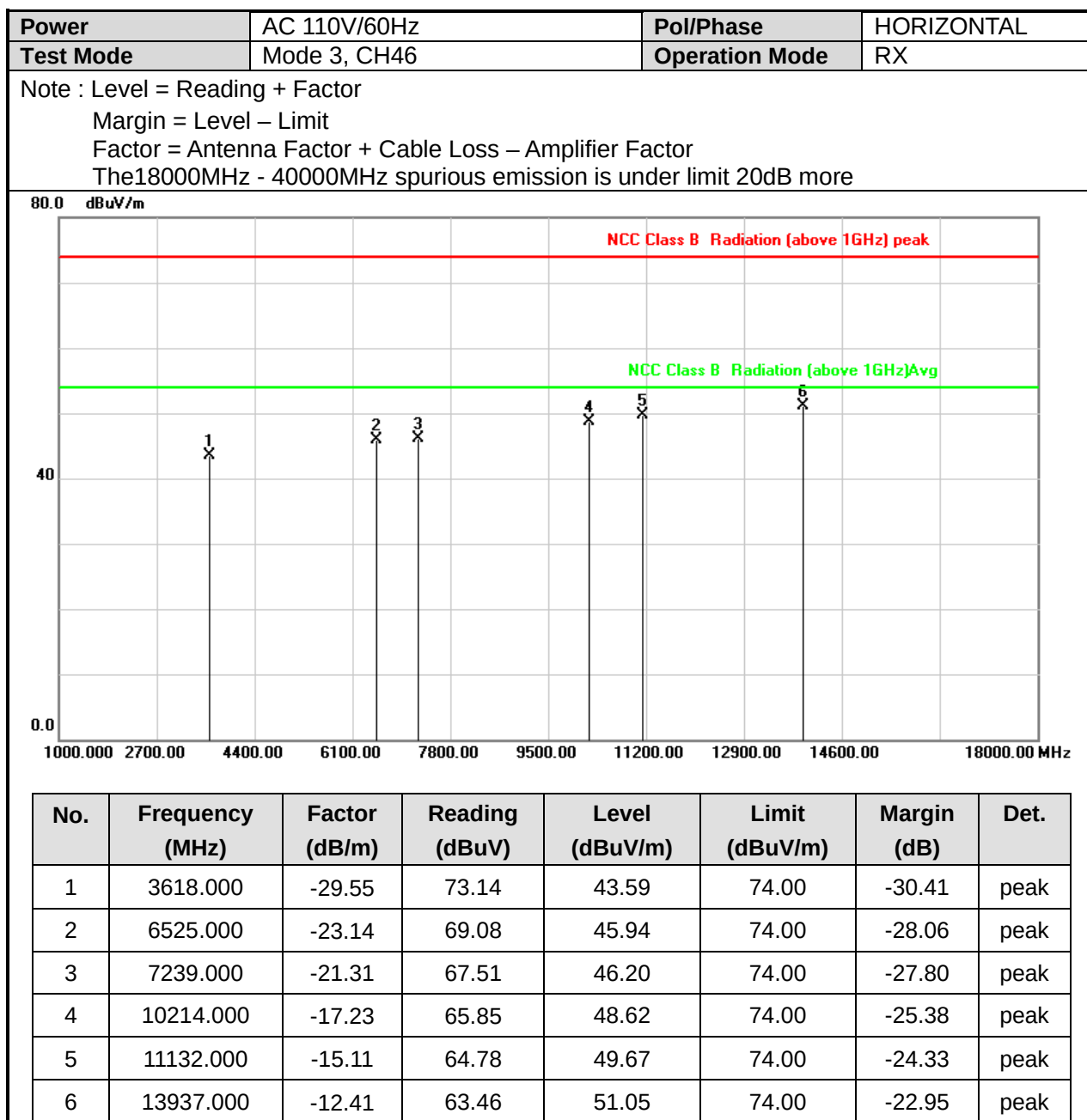
The 18000MHz - 40000MHz spurious emission is under limit 20dB more

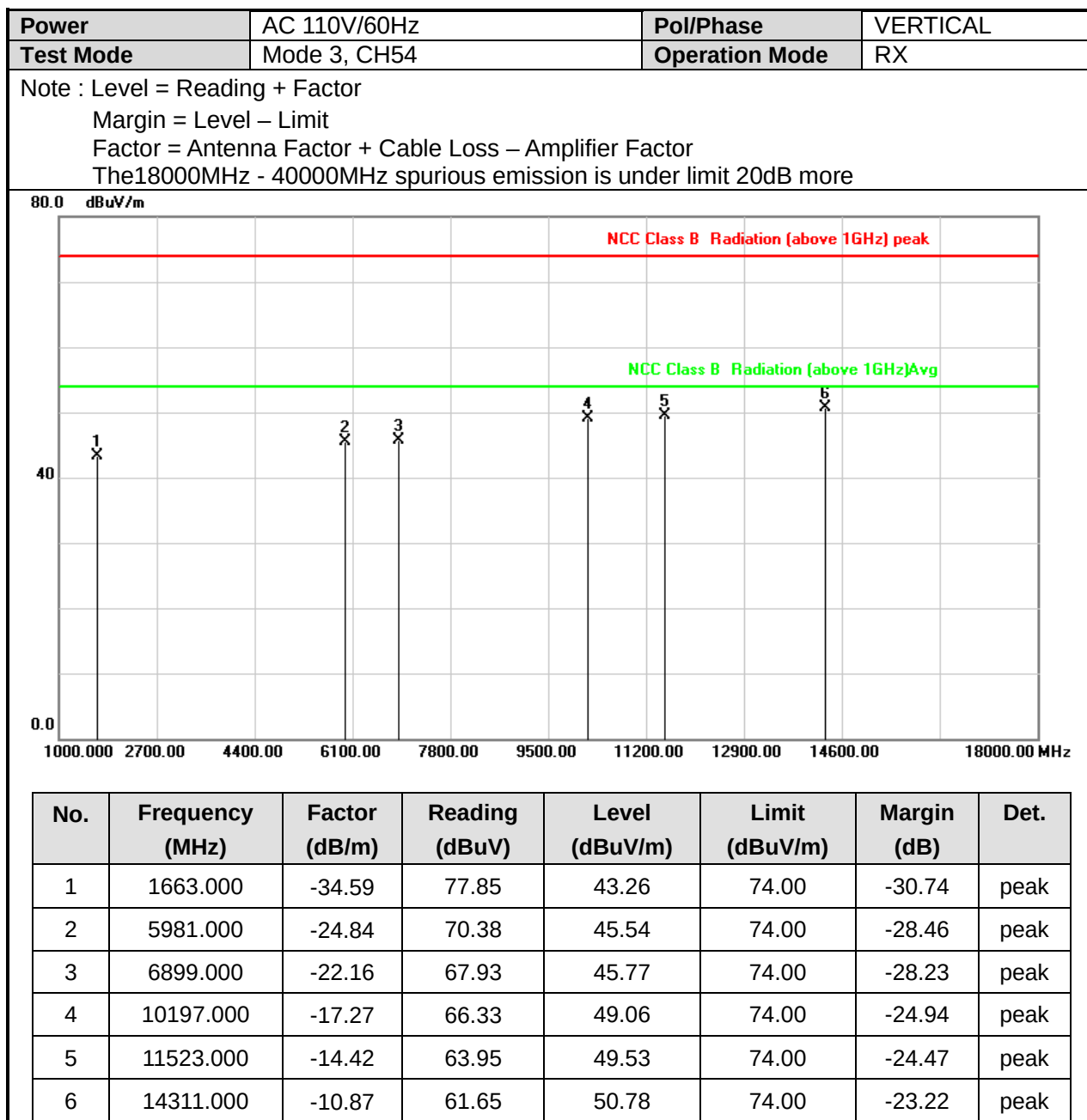


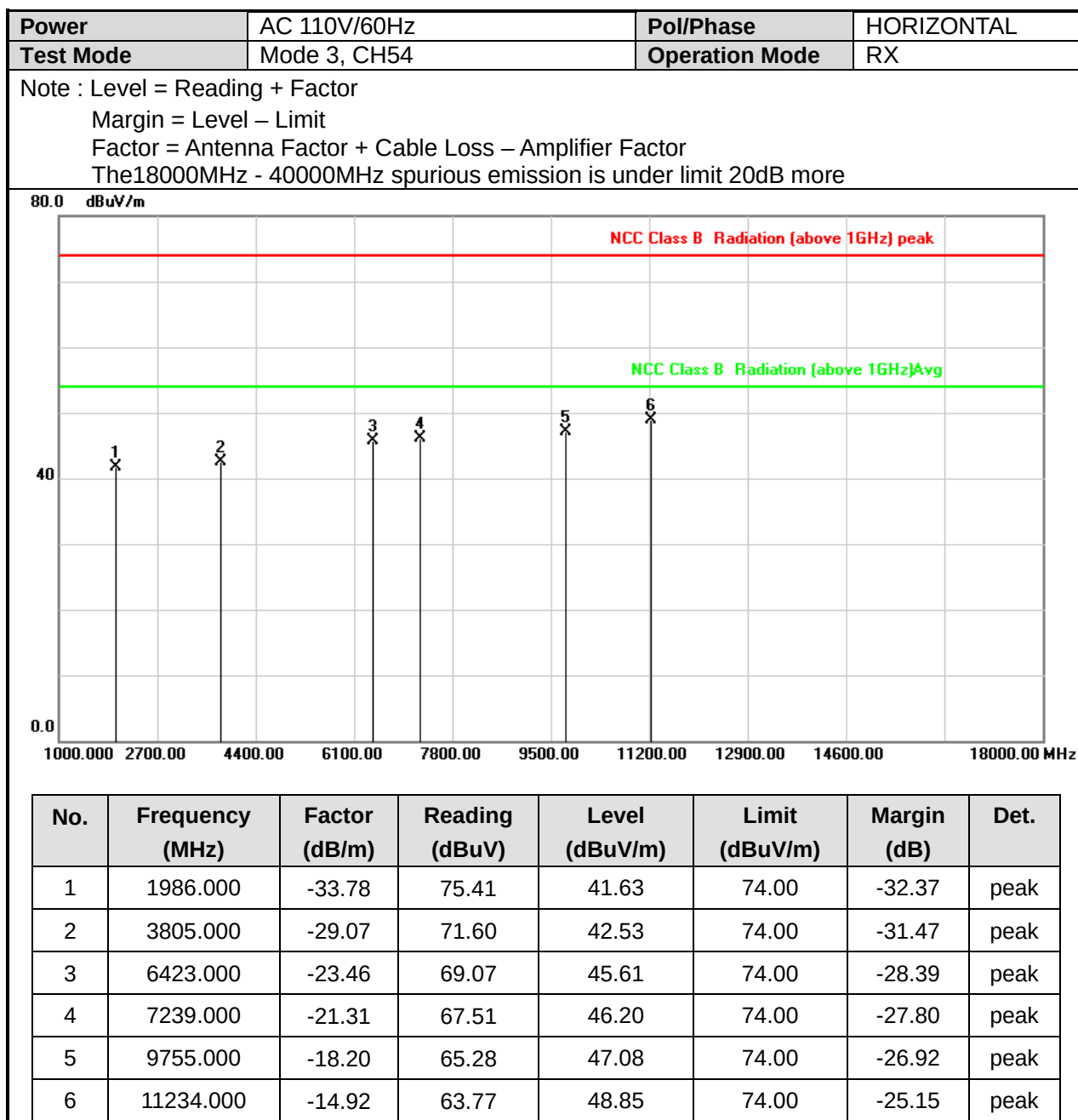
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	4009.000	-28.54	72.13	42.89	74.00	-31.11	peak
2	5488.000	-25.35	71.29	43.45	74.00	-30.55	peak
3	6559.000	-23.05	69.25	46.16	74.00	-27.84	peak
4	8072.000	-19.87	68.49	46.62	74.00	-27.38	peak
5	10571.000	-16.43	66.10	50.04	74.00	-23.96	peak
6	11183.000	-15.01	66.06	50.34	74.00	-23.66	peak

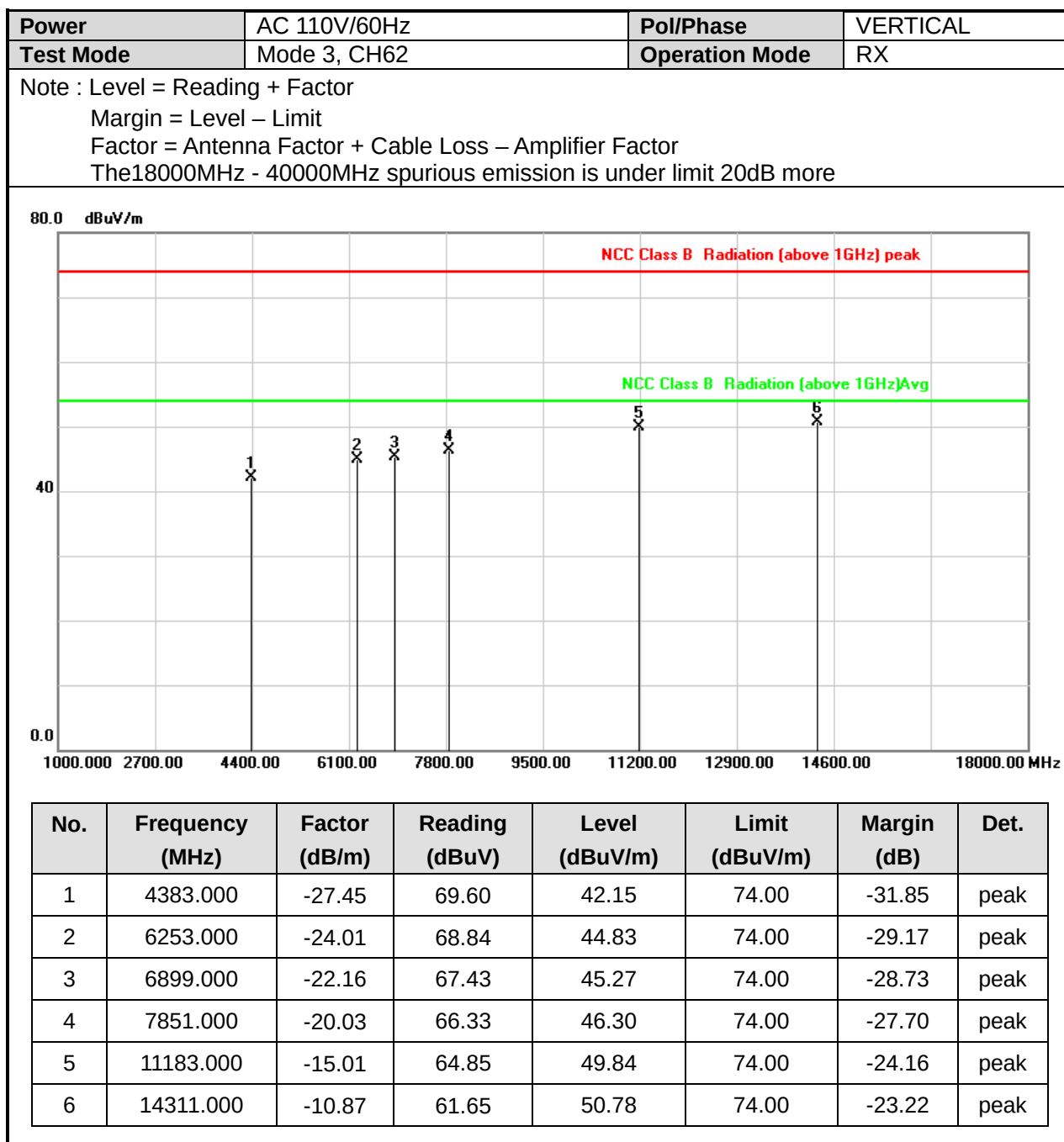


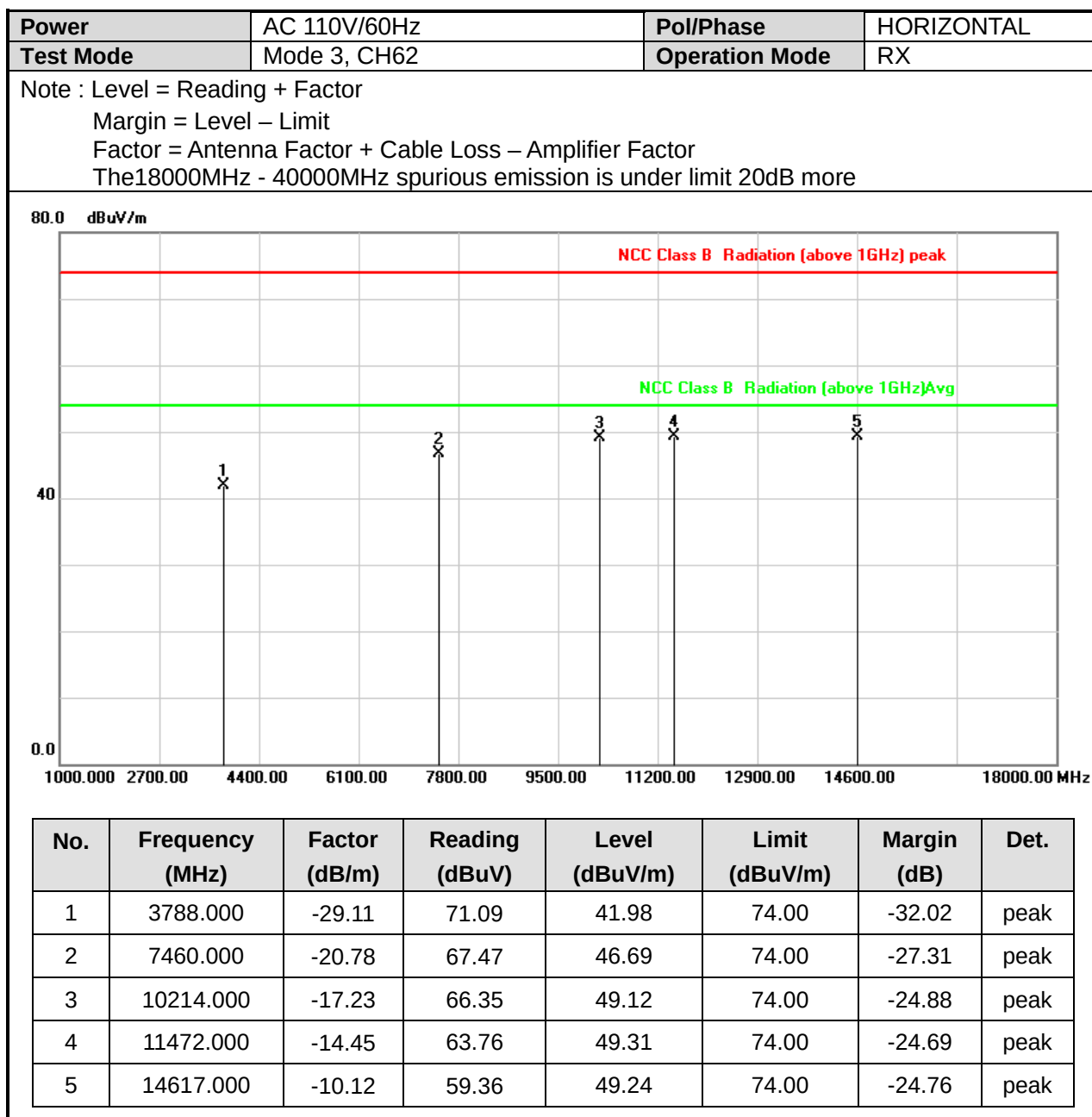


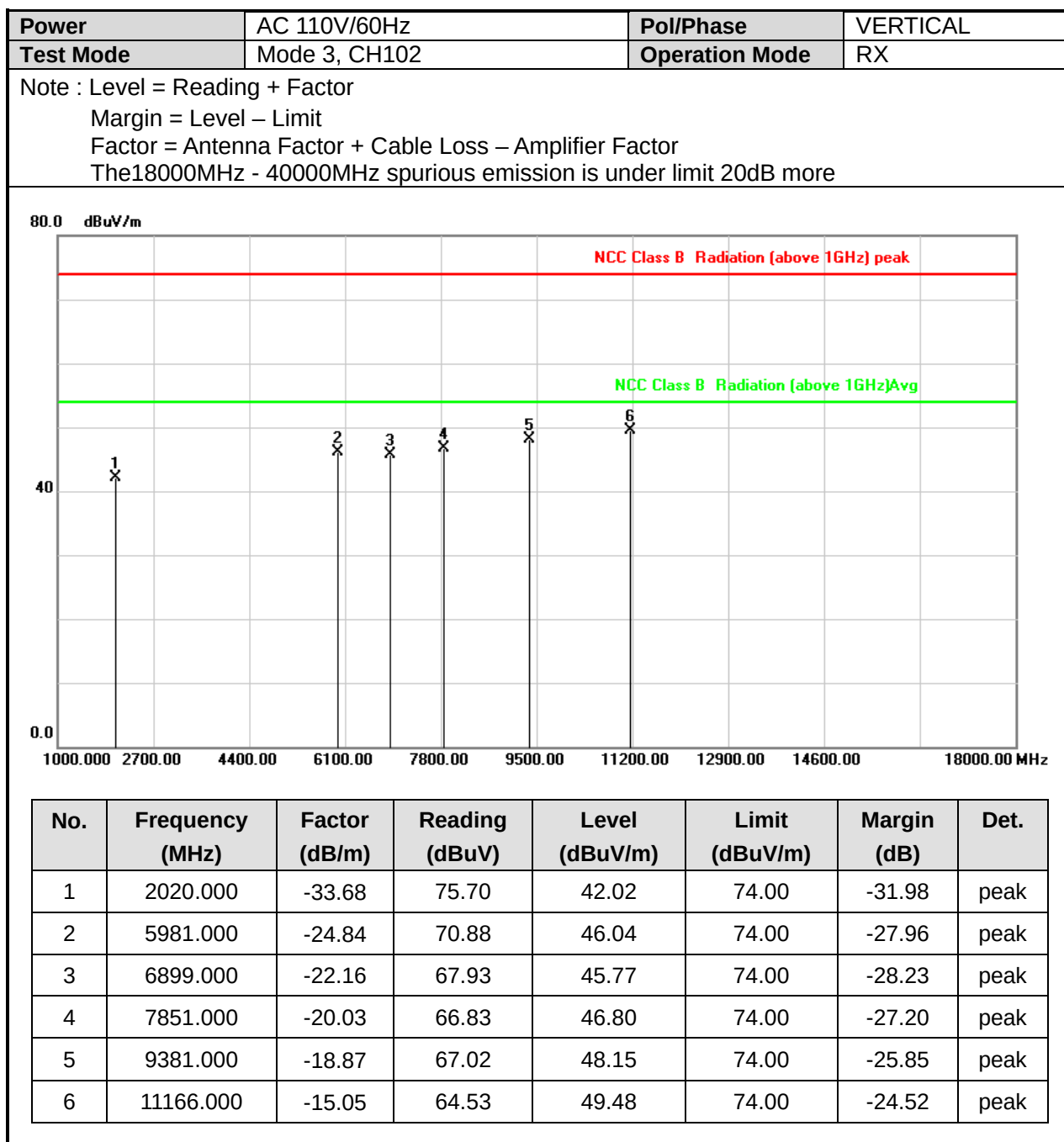


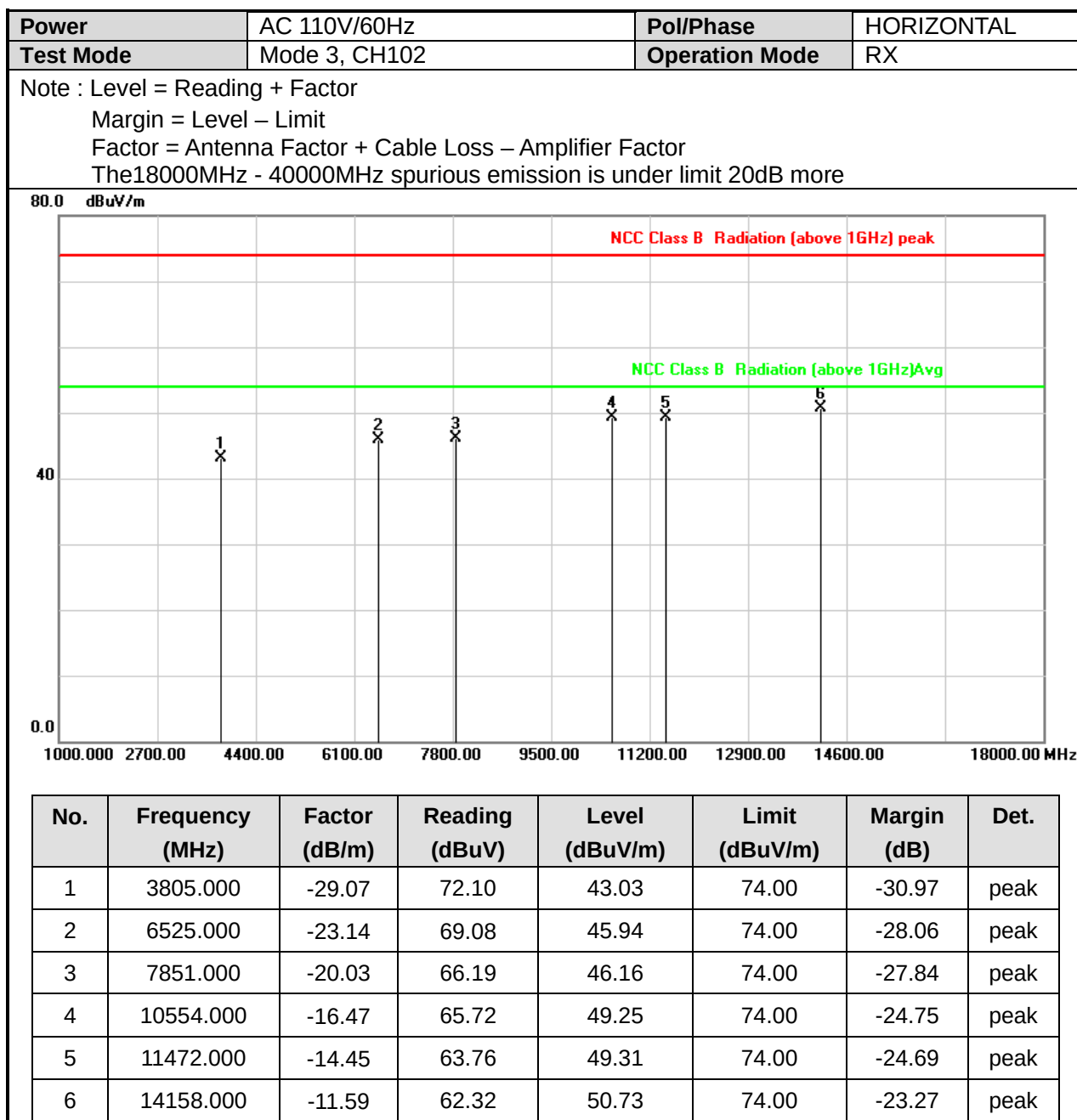


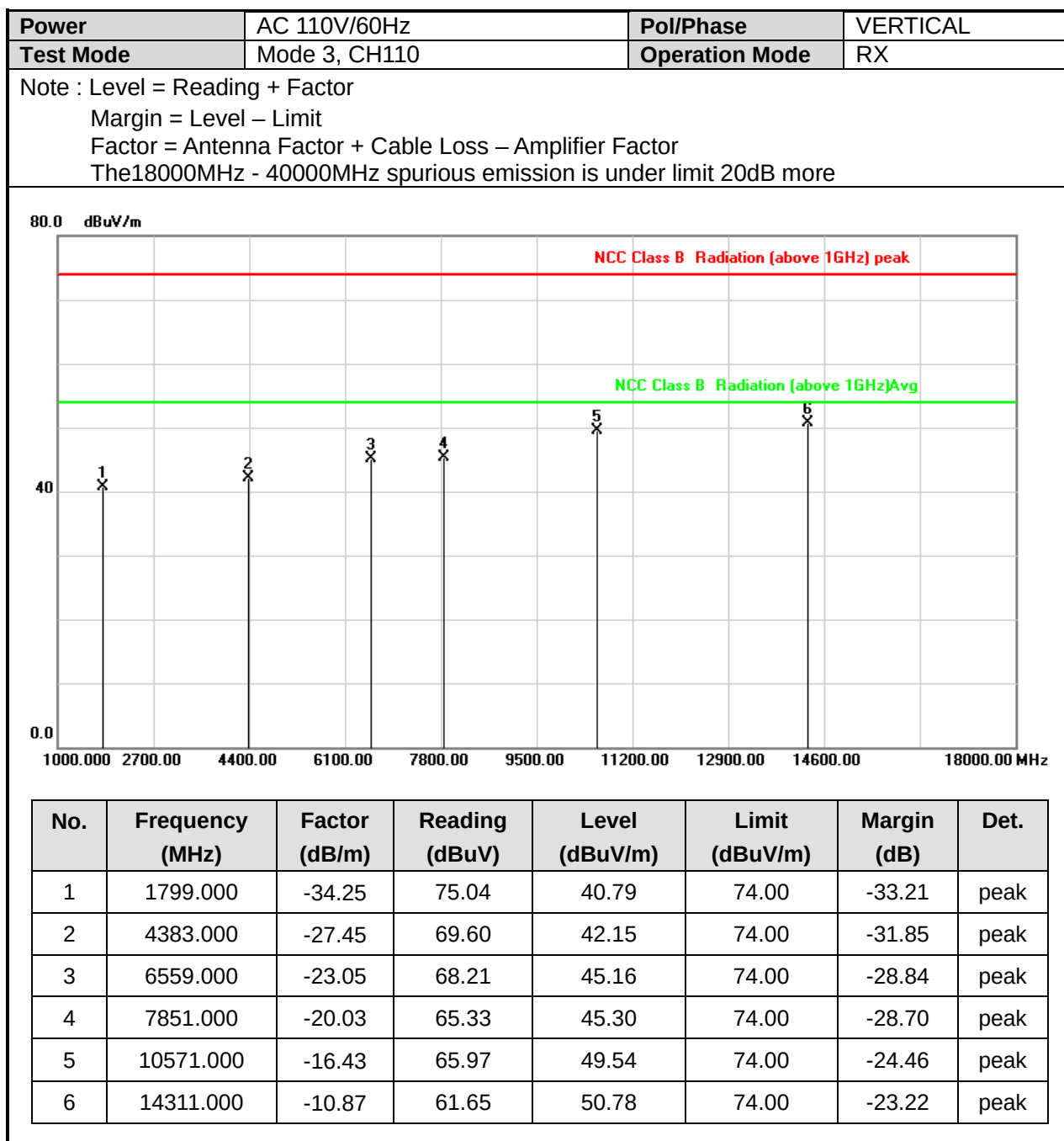


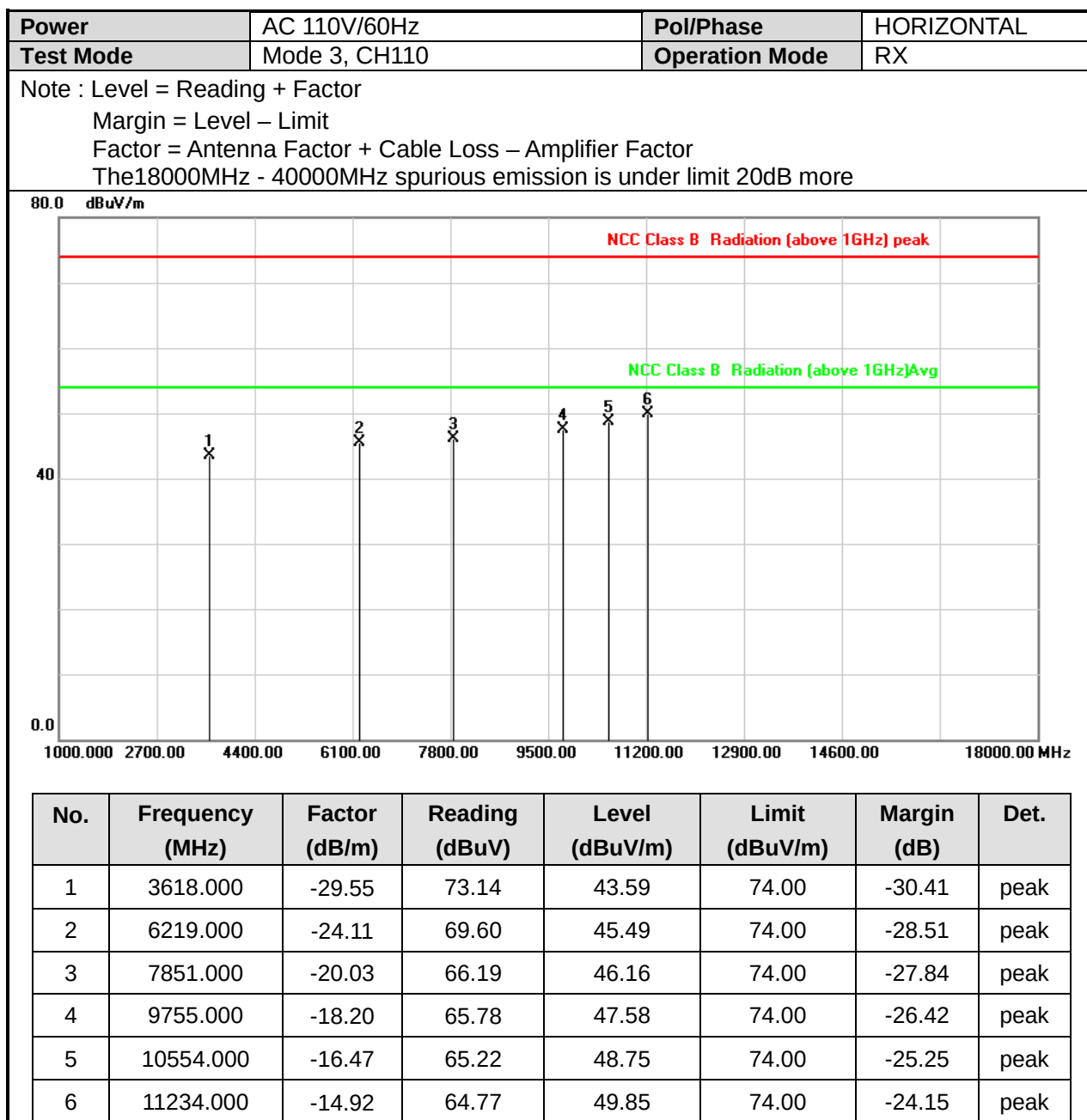


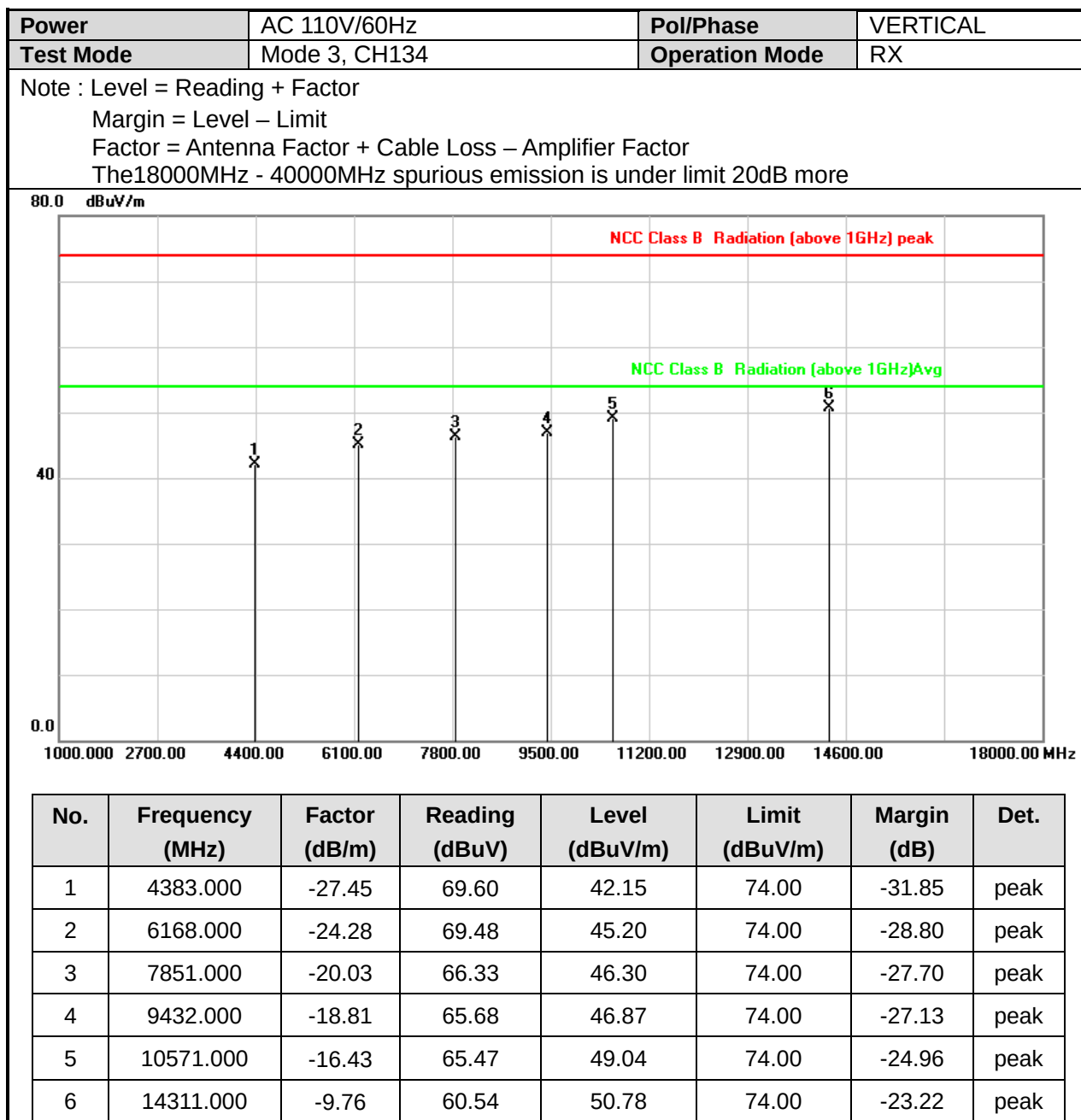


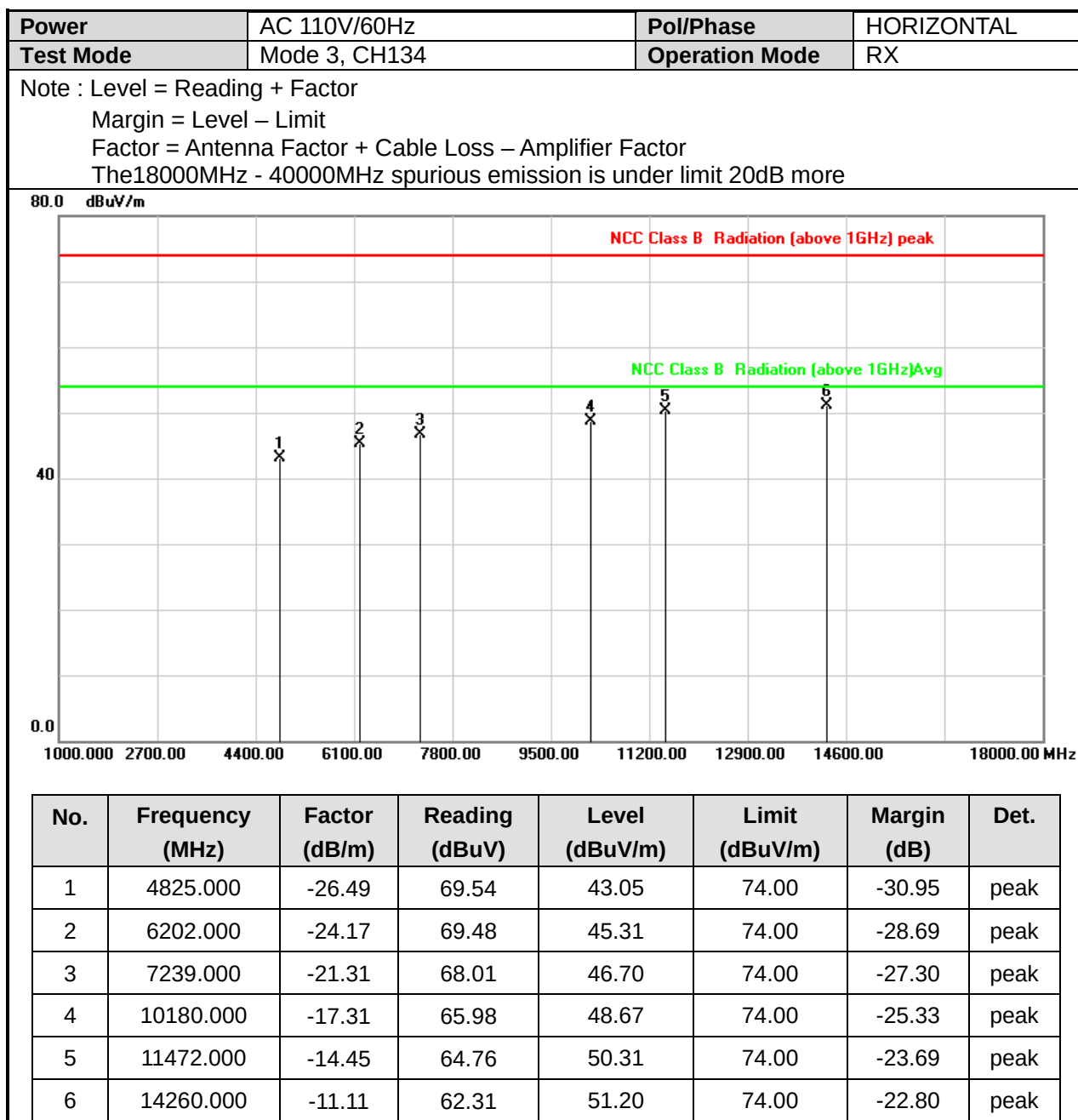


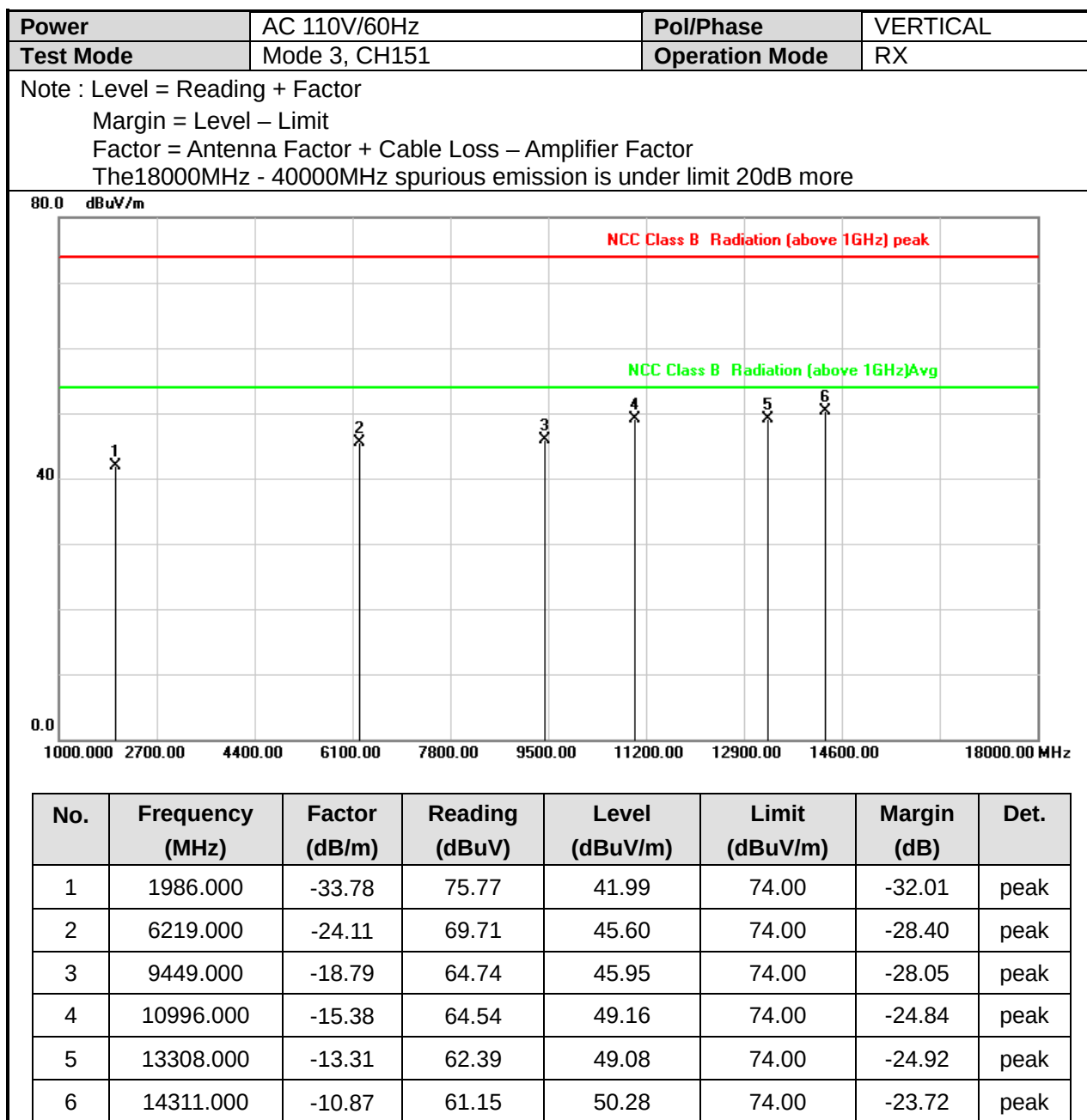














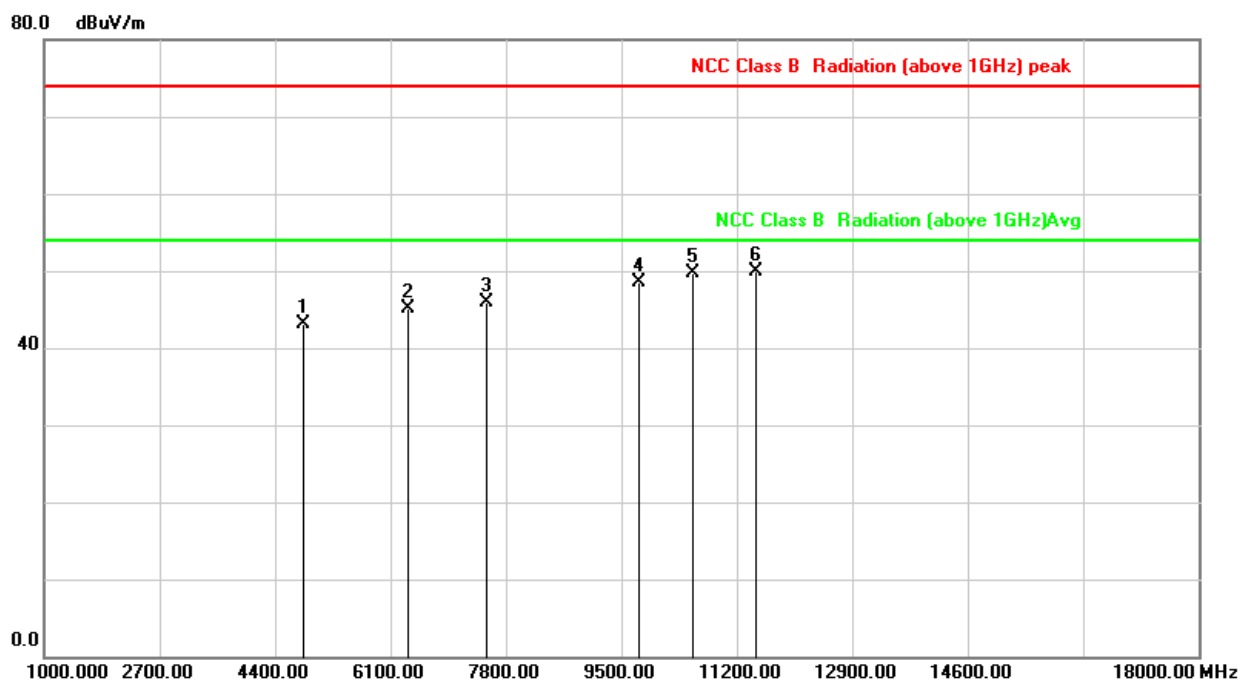
Power	AC 110V/60Hz	Pol/Phase	HORIZONTAL
Test Mode	Mode 3, CH151	Operation Mode	RX

Note : Level = Reading + Factor

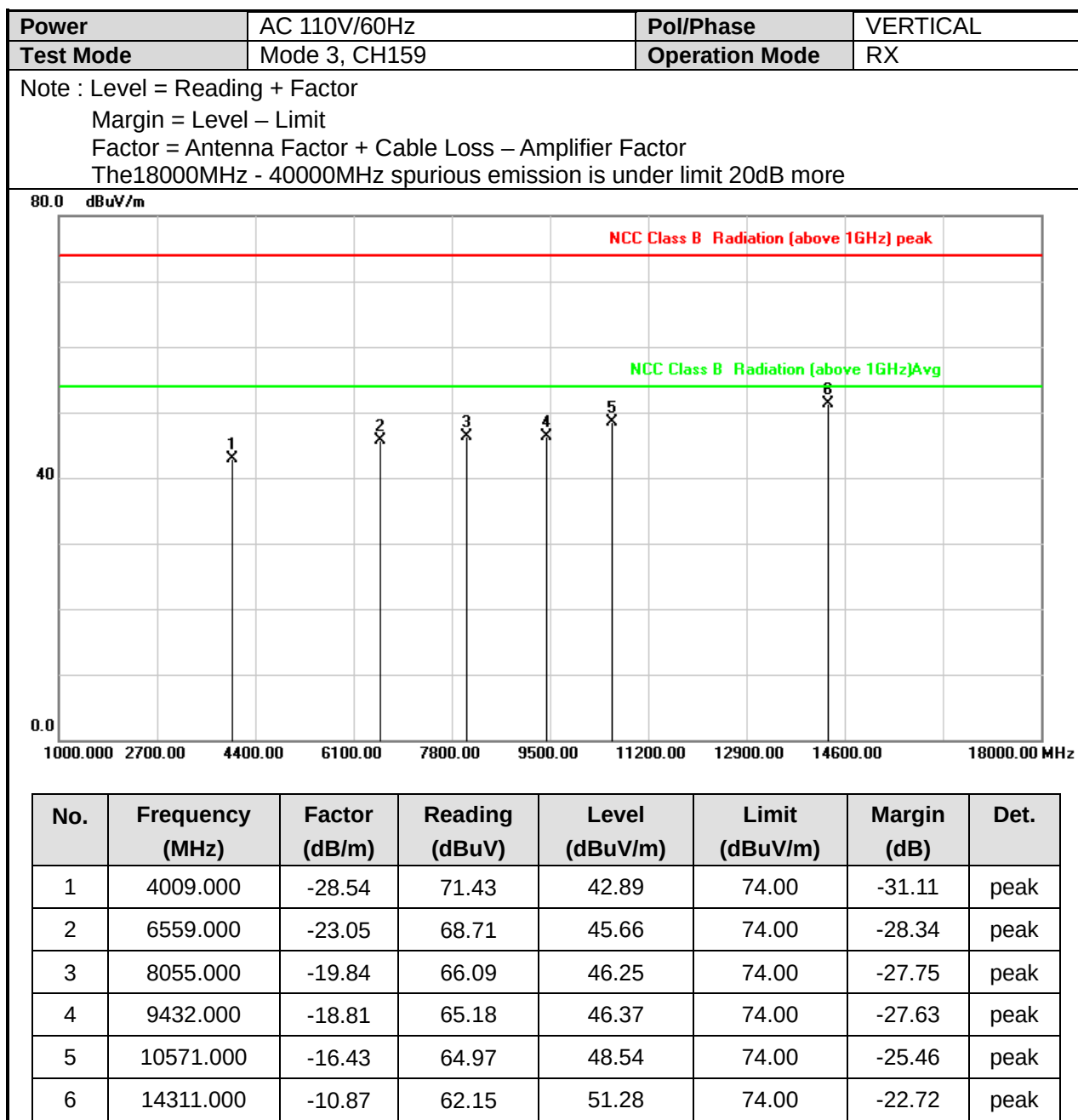
Margin = Level – Limit

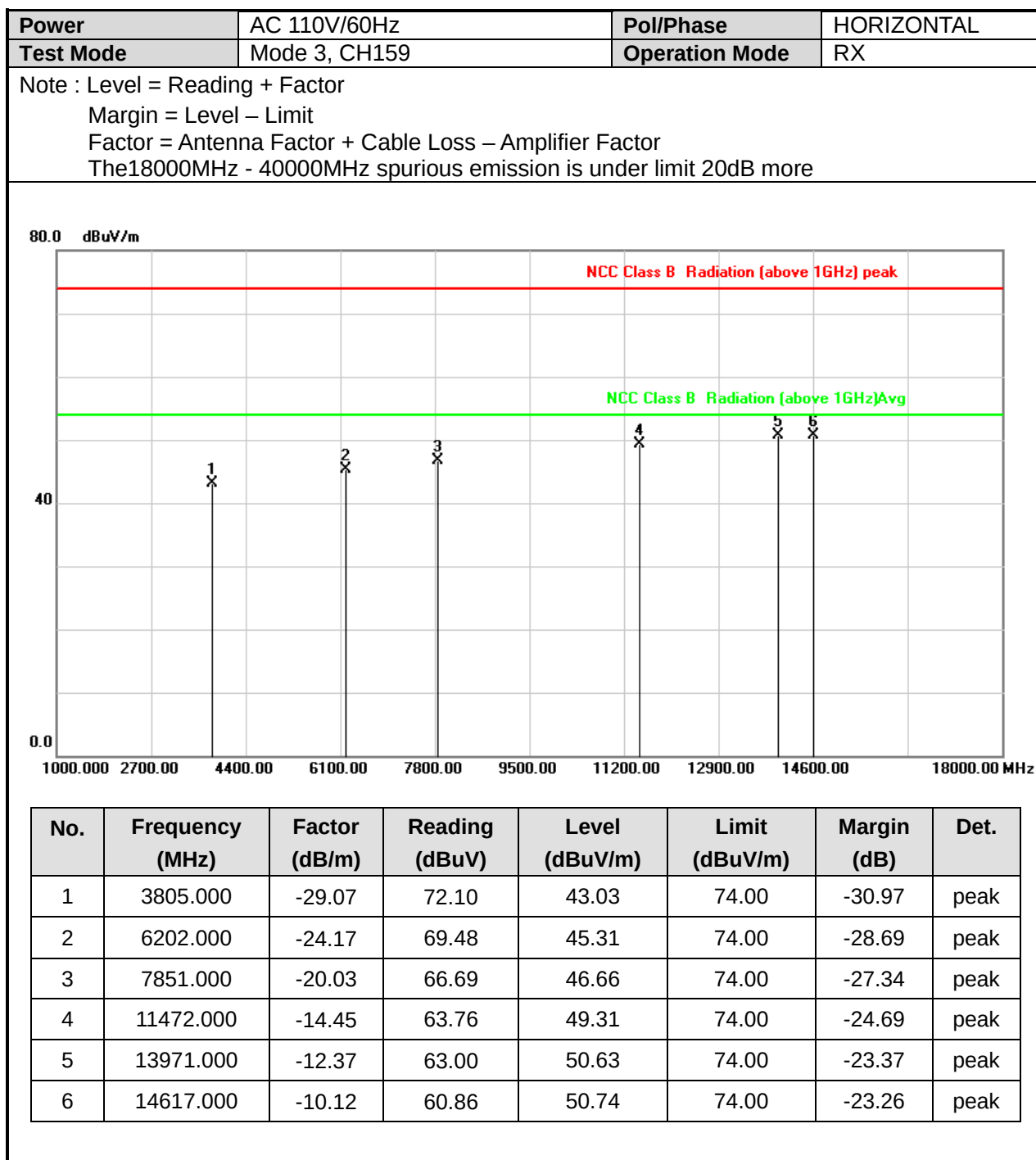
Factor = Antenna Factor + Cable Loss – Amplifier Factor

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	4825.000	-26.49	69.54	43.05	74.00	-30.95	peak
2	6355.000	-23.68	68.76	45.08	74.00	-28.92	peak
3	7511.000	-20.56	66.45	45.89	74.00	-28.11	peak
4	9755.000	-18.20	66.78	48.58	74.00	-25.42	peak
5	10554.000	-16.47	66.22	49.75	74.00	-24.25	peak
6	11472.000	-14.45	64.26	49.81	74.00	-24.19	peak

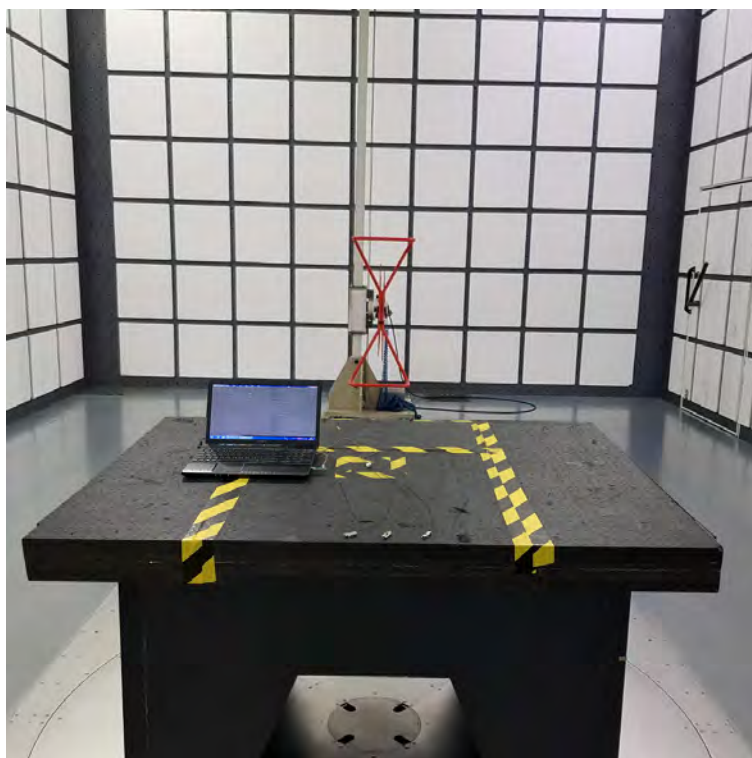






5.6. 輻射量測之配置照片(30MHz ~ 1GHz)

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

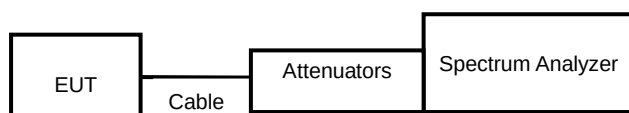
6.1. 適用標準

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%
802.11n HT20	100.00	100.00	100.00%
802.11n HT40	100.00	100.00	100.00%

For 2TX

Modulation Type	On Time (msec)	Period Time (msec)	Duty Cycle (%)
802.11n HT20	100.00	100.00	100.00%
802.11n HT40	100.00	100.00	100.00%

備註：繪圖資料請參考下頁。

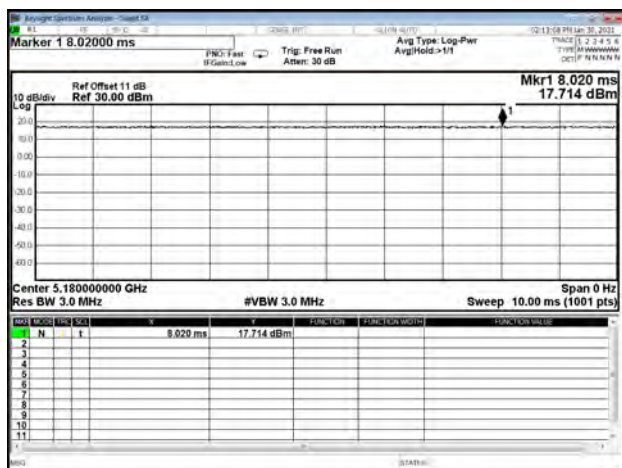
6.5. Measurement Methods

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

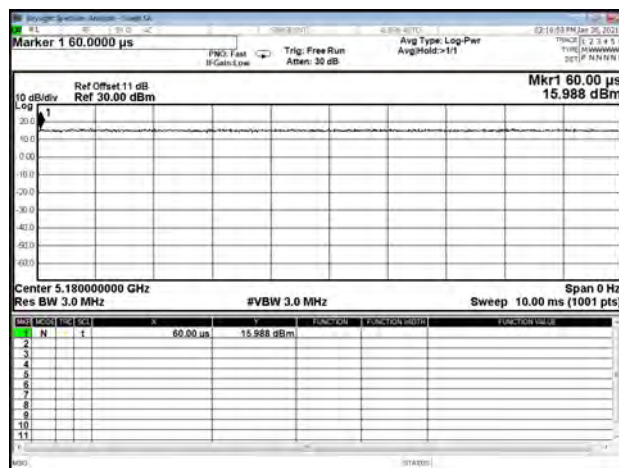


For 1TX

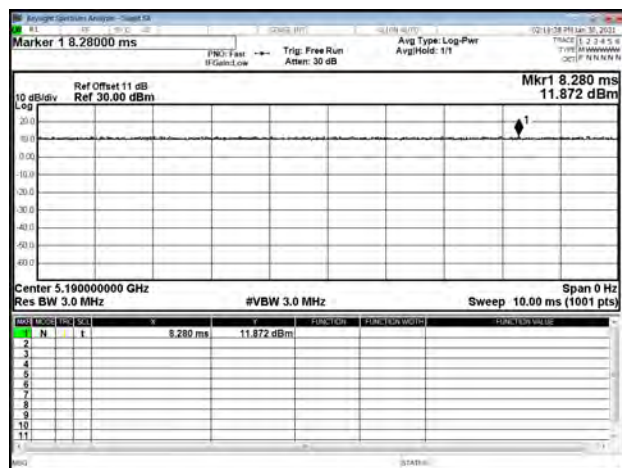
Modulation Standard: 802.11a



Modulation Standard: 802.11n HT20

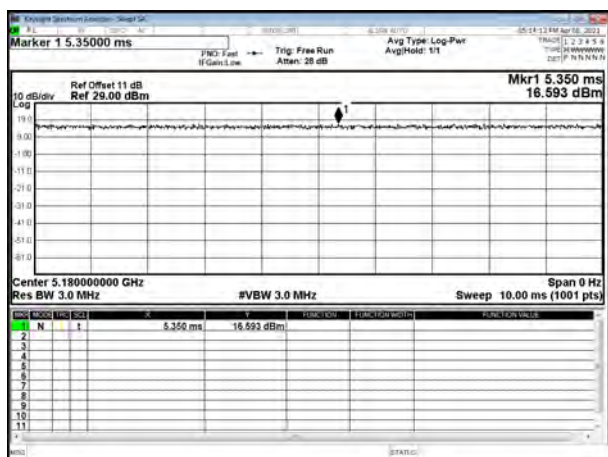


802.11n HT40

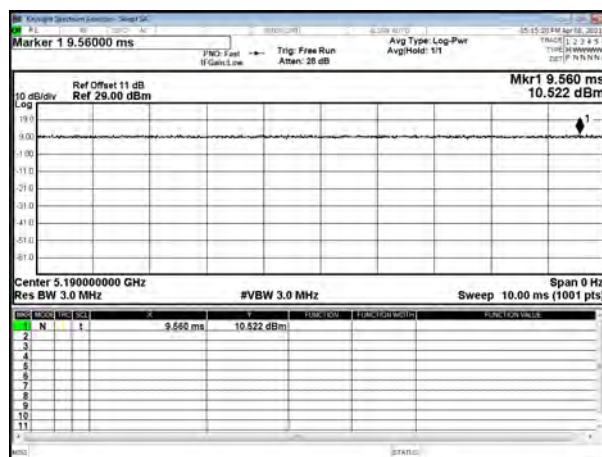


For 2TX

Modulation Standard: 8802.11n HT20



Modulation Standard: 802.11n HT40





7. 6dB & 99% Occupied 頻寬之規定

7.1. 適用標準

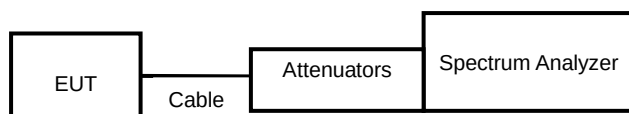
FCC §15.407

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	16.38	0.50
	157	5785	16.35	0.50
	165	5825	16.32	0.50
802.11n HT20	149	5745	16.72	0.50
	157	5785	16.94	0.50
	165	5825	17.60	0.50
802.11n HT40	151	5755	36.41	0.50
	159	5795	36.37	0.50

For 2TX

Modulation Type	Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)
			Chain 1	Chain 2	
802.11n HT20	149	5745	17.60	17.59	0.50
	157	5785	17.59	17.55	0.50
	165	5825	17.64	17.63	0.50
802.11n HT40	151	5755	36.41	36.43	0.50
	159	5795	36.40	36.40	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	16.46
	157	5785	16.45
	165	5825	16.45
802.11n HT20	149	5745	17.64
	157	5785	17.61
	165	5825	17.61
802.11n HT40	151	5755	36.23
	159	5795	36.34

For 2TX

Modulation Type	Channel	Frequency (MHz)	99% Bandwidth(MHz)	
			Chain 1	Chain 2
802.11n HT20	149	5745	17.62	17.69
	157	5785	17.65	17.65
	165	5825	17.65	17.65
802.11n HT40	151	5755	36.14	36.18
	159	5795	36.19	36.19

備註：繪圖資料請參考下頁。

7.6. 結果判定

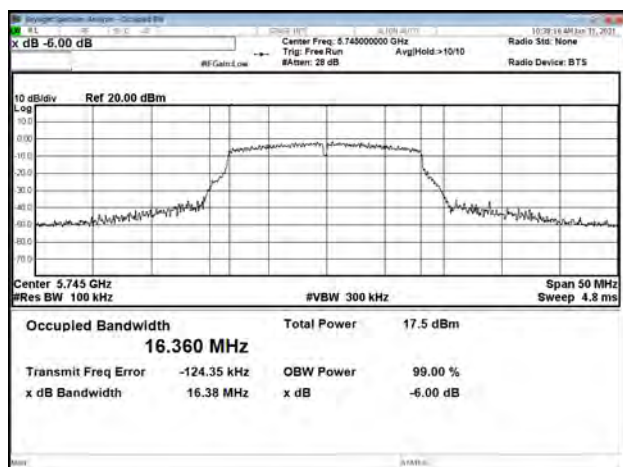
高、中、低頻段的 6dB 頻寬皆大於 500 KHz，合乎標準規定。



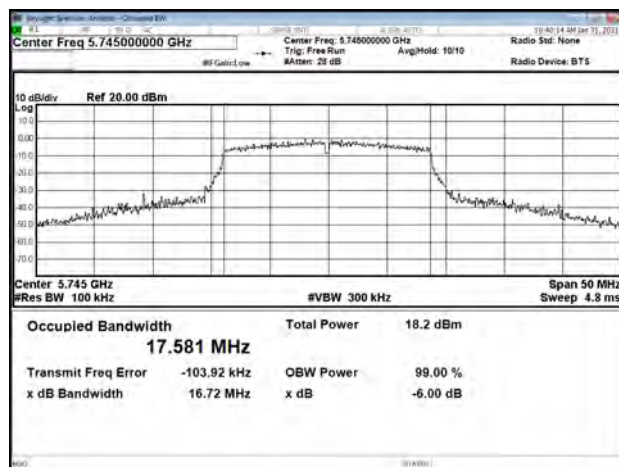
6dB Bandwidth

For 1TX
Chain 1

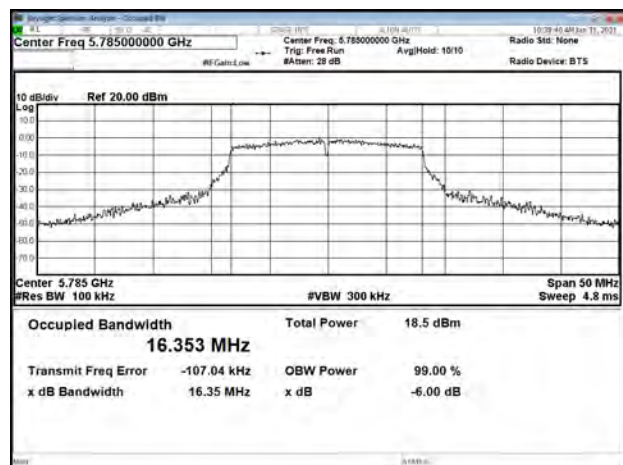
Modulation Standard: 802.11a (6Mbps)
CH149



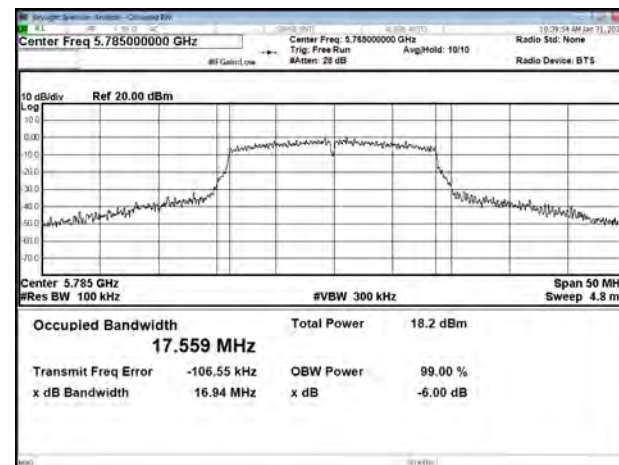
Modulation Standard: 802.11n HT20 (6.5Mbps)
CH149



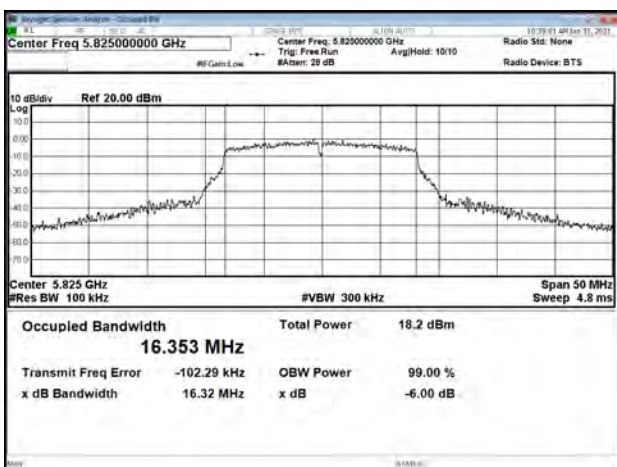
CH157



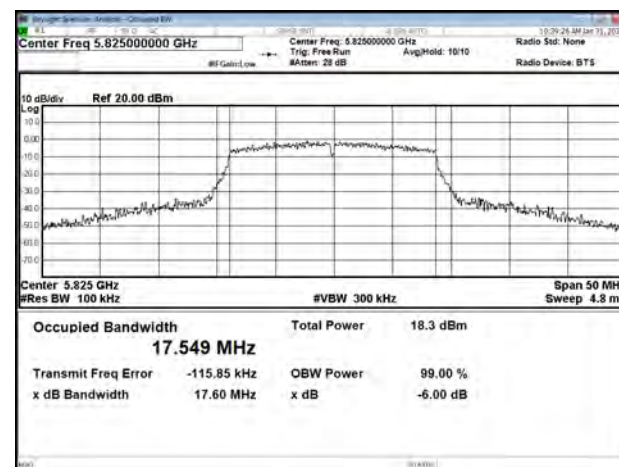
CH157



CH165



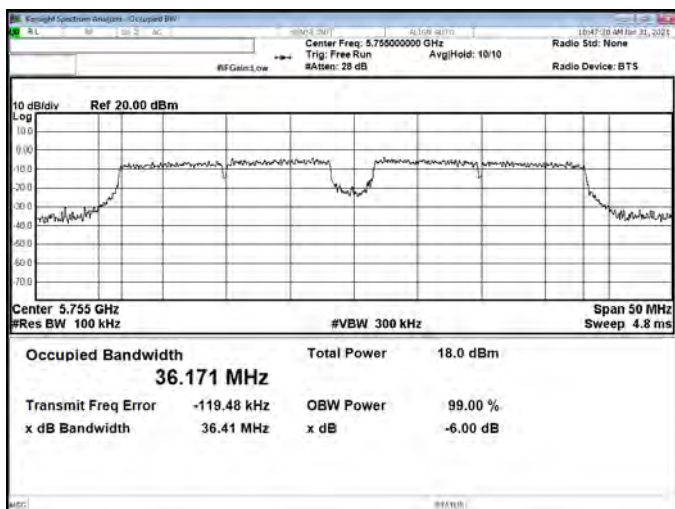
CH165



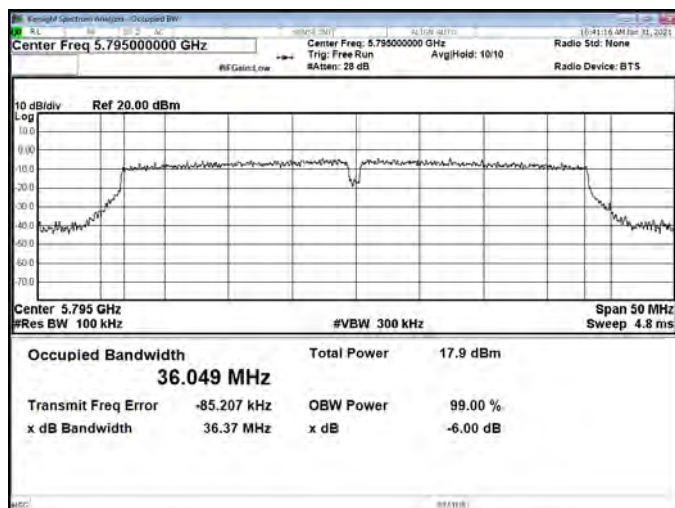


Modulation Standard: 802.11n HT40 (13.5Mbps)

CH151

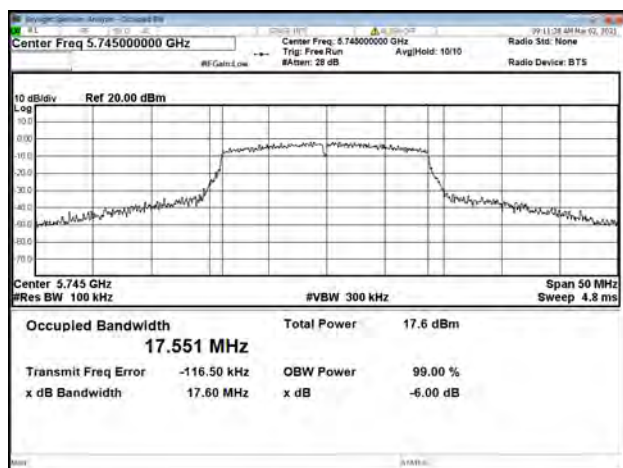


CH159



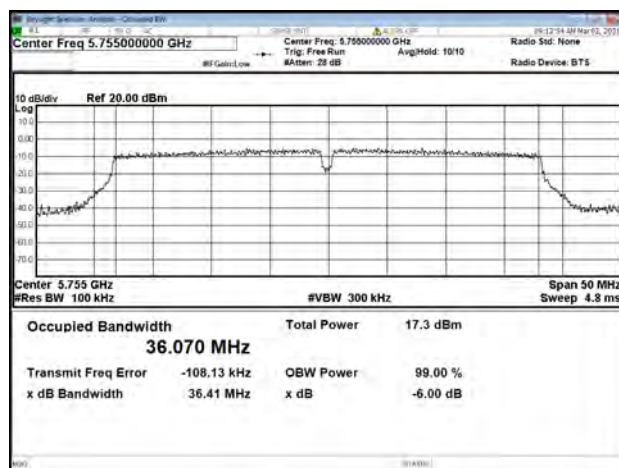


For 2TX
Chain 1
Modulation Standard: 802.11n HT20
(6.5Mbps)
CH149

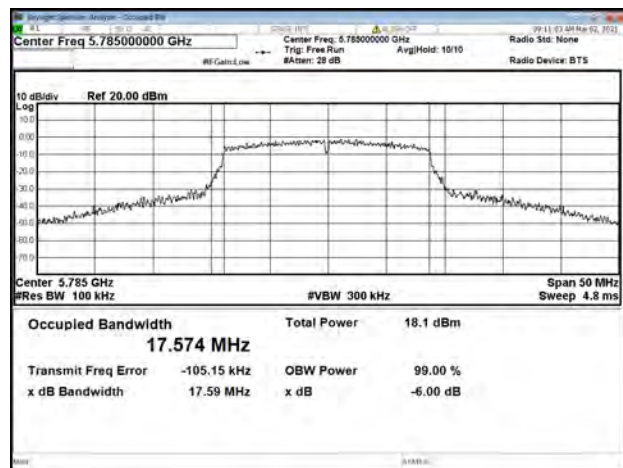


Modulation Standard: 802.11n HT40 (13.5Mbps)

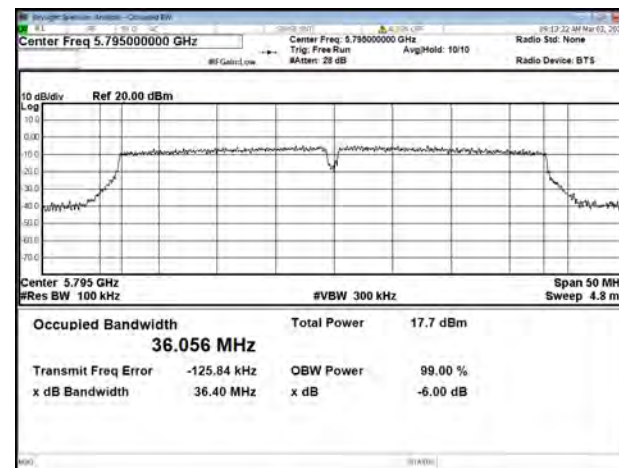
CH151



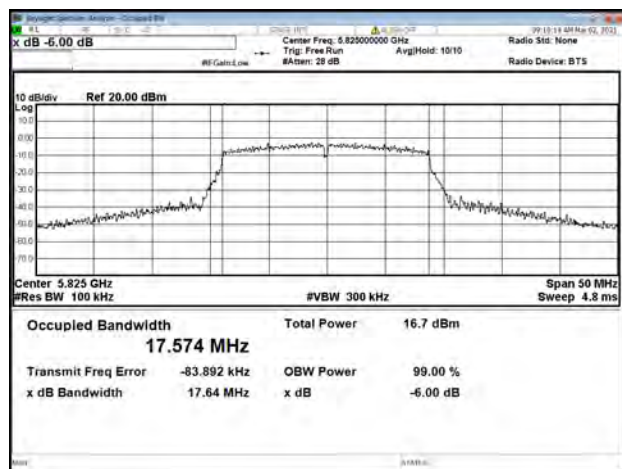
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CH159

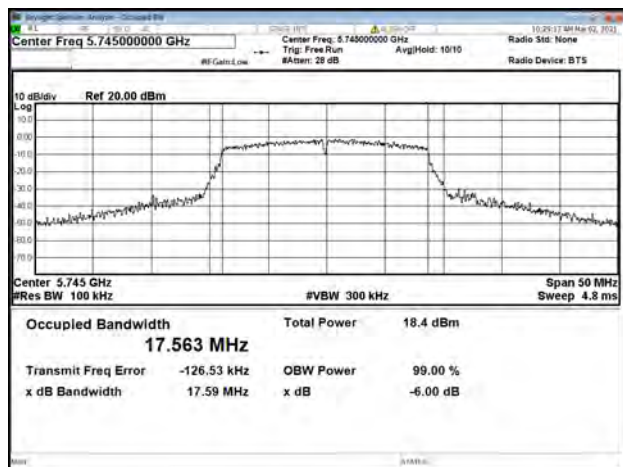


CH165



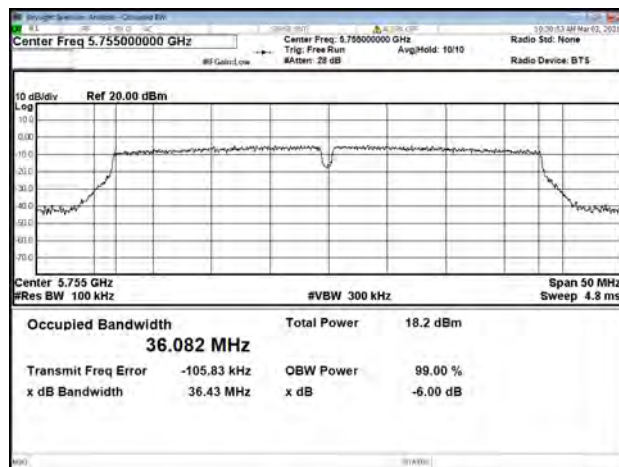


Chain 2
Modulation Standard: 802.11n HT20
(6.5Mbps)
CH149

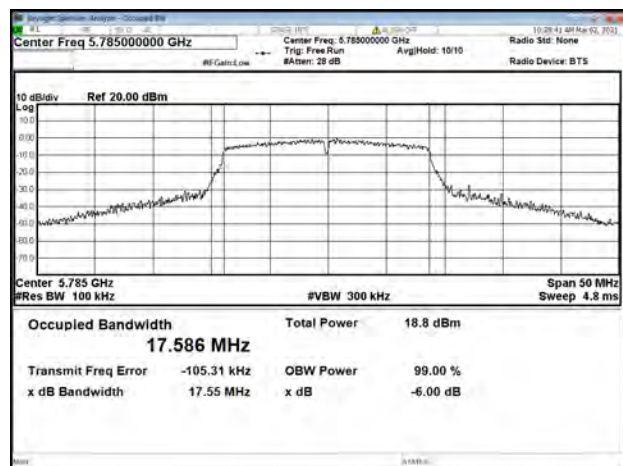


Modulation Standard: 802.11n HT40 (13.5Mbps)

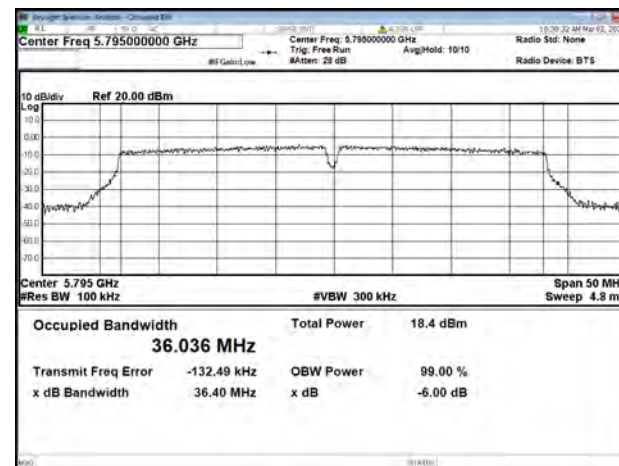
CH151



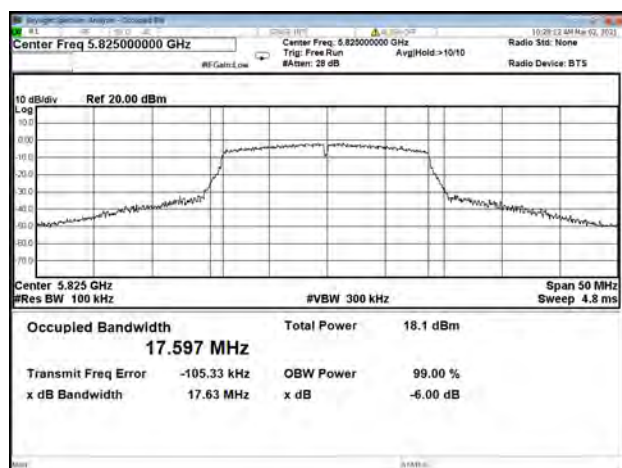
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CH159



CH165

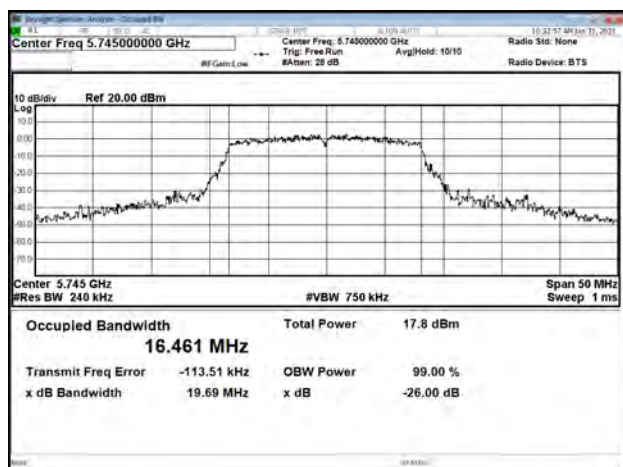




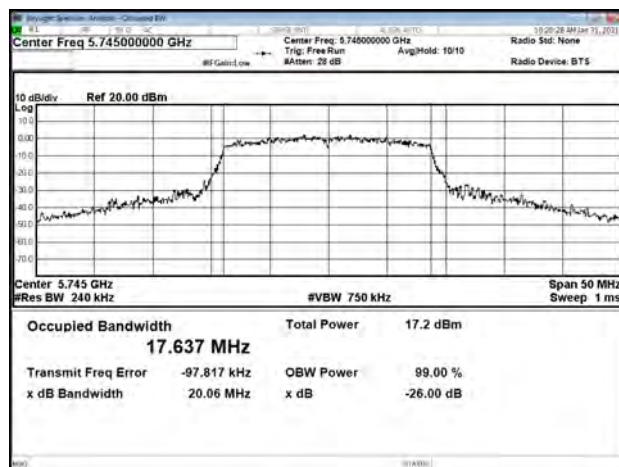
99% Occupied Bandwidth

For 1TX
Chain 1

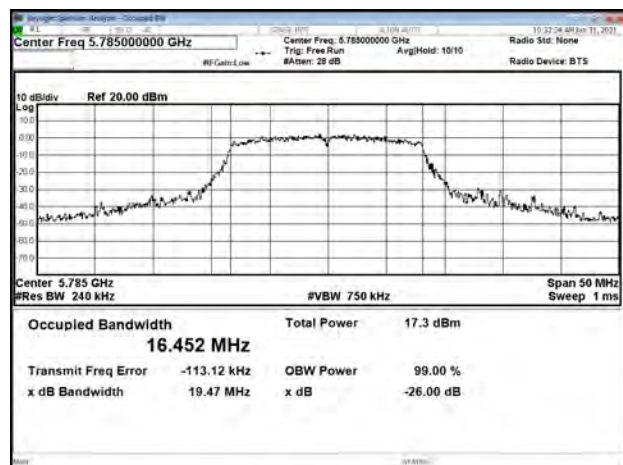
Modulation Standard: 802.11a (6Mbps)
CH149



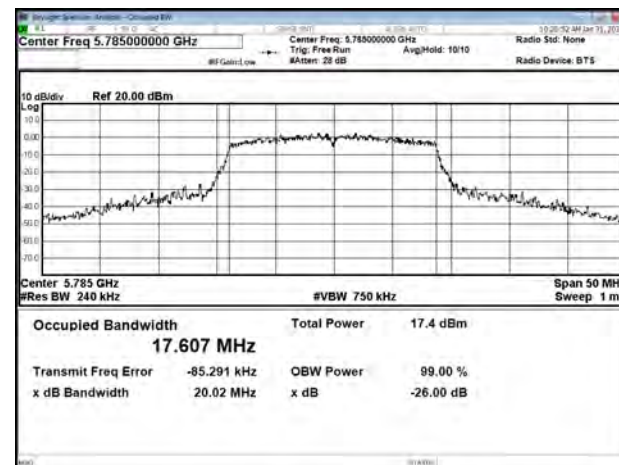
Modulation Standard: 802.11n HT20 (6.5Mbps)
CH149



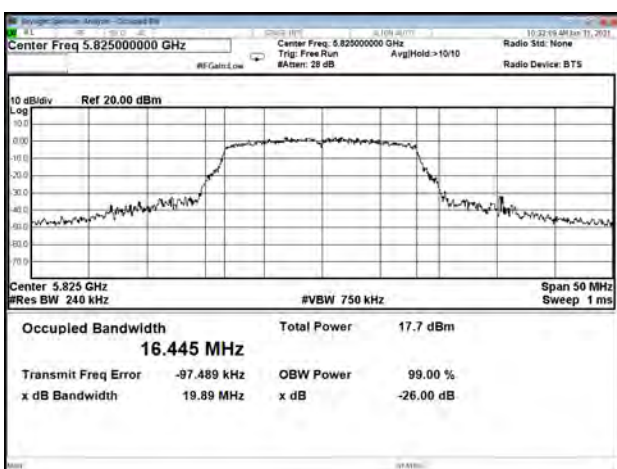
CH157



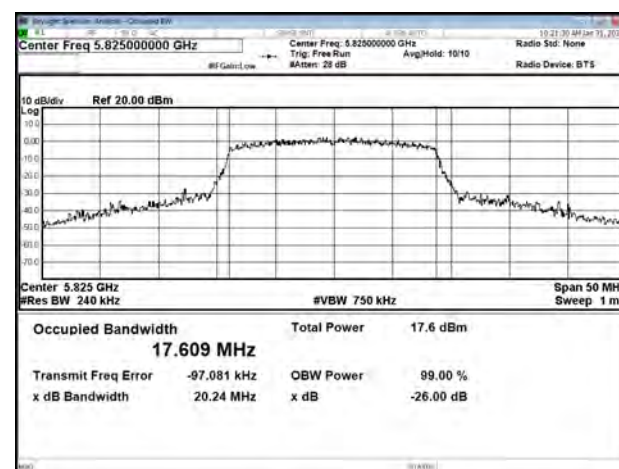
CH157



CH165



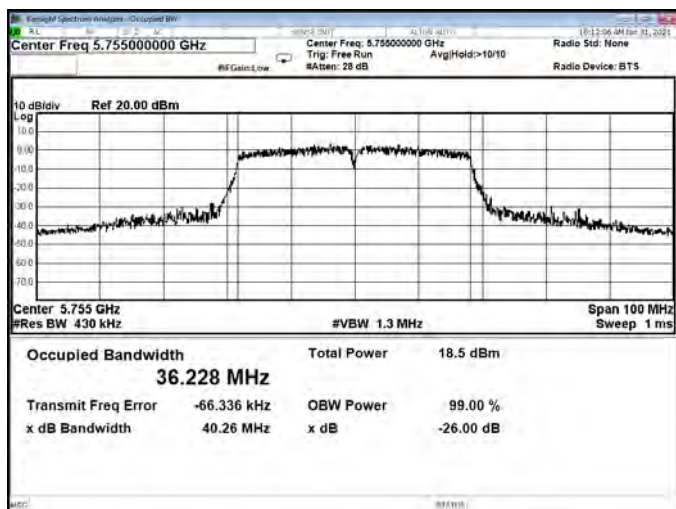
CH165



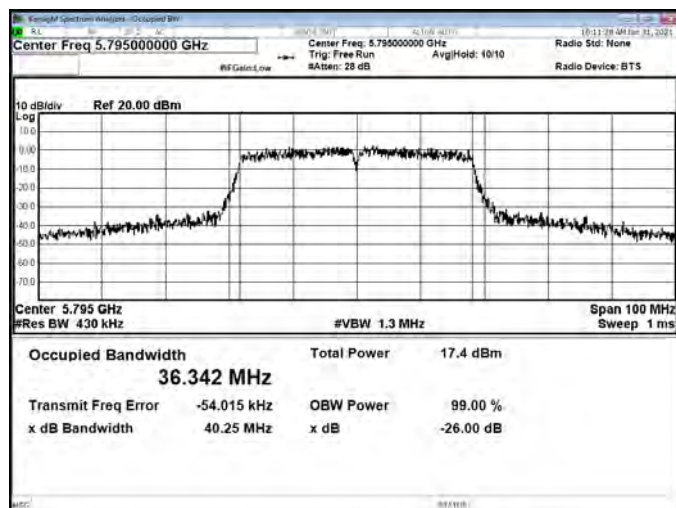


Modulation Standard: 802.11n HT40 (13.5Mbps)

CH151

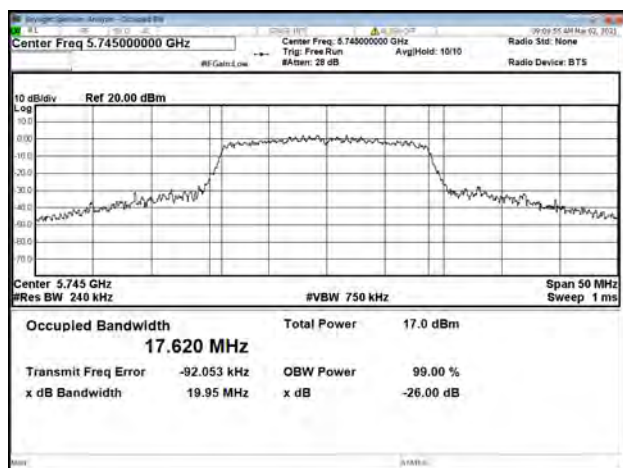


CH159

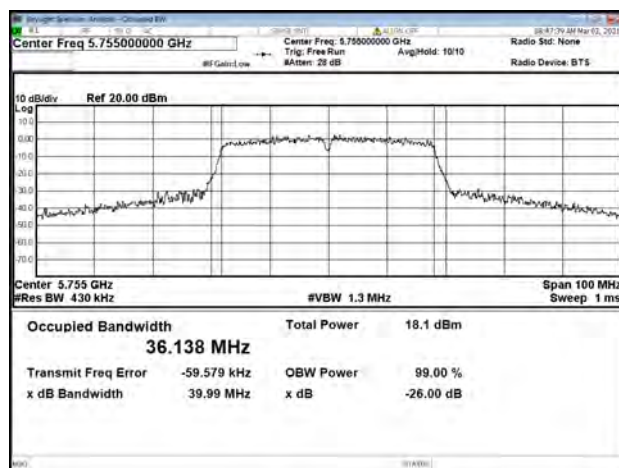




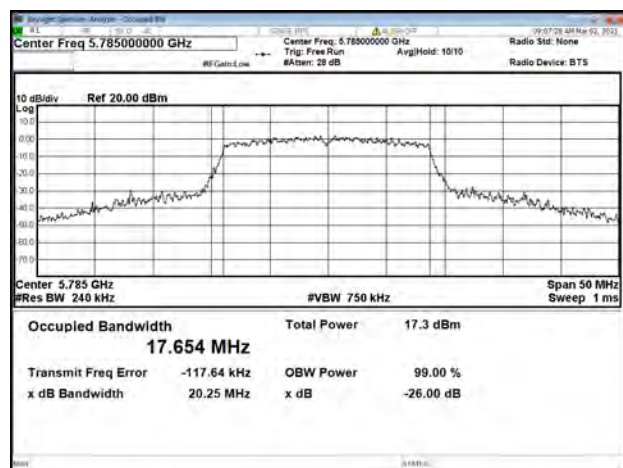
For 2TX
Chain 1
Modulation Standard: 802.11n HT20
(13Mbps)
CH149



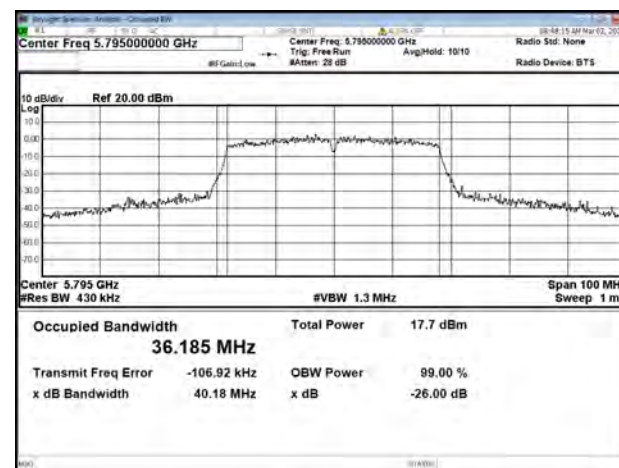
Modulation Standard: 802.11n HT40
(27Mbps)
CH151



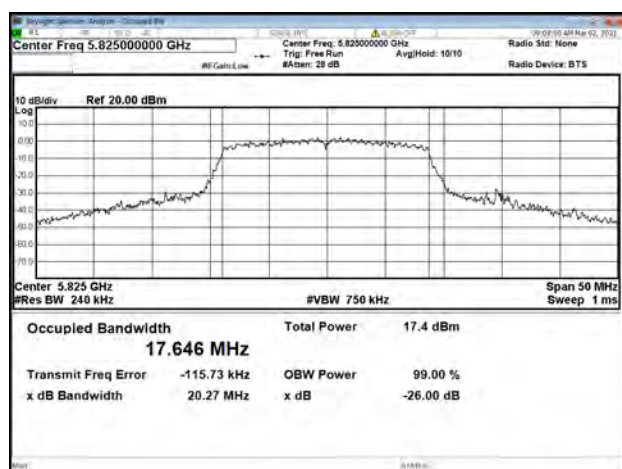
CH157



CH159

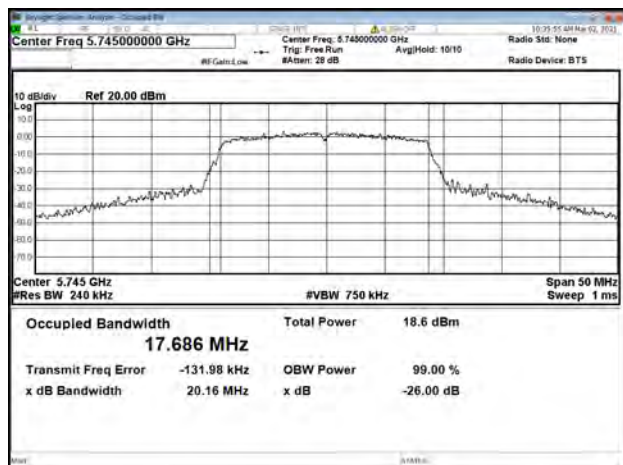


CH165

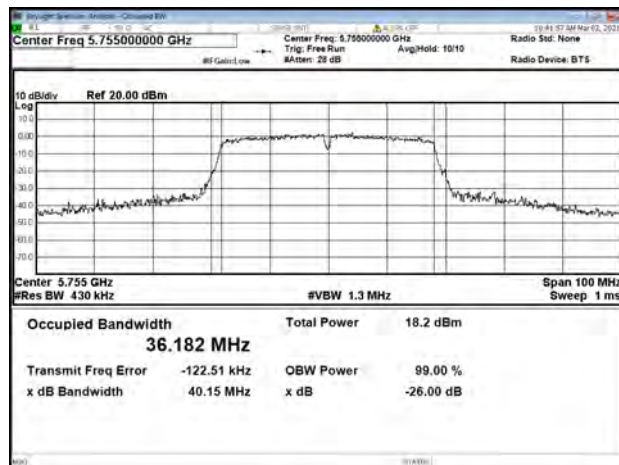




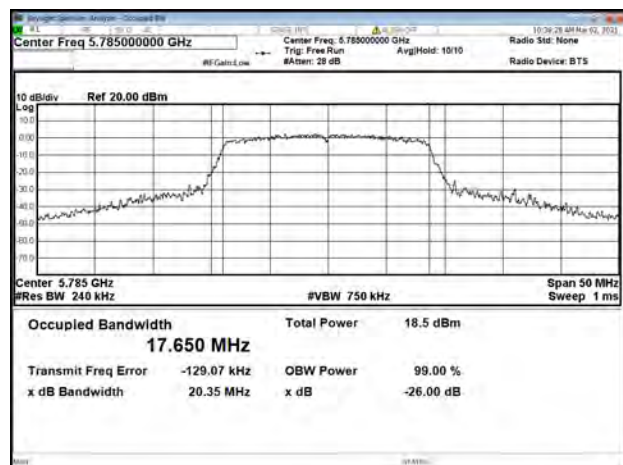
Chain 2
Modulation Standard: 802.11n HT20
(13Mbps)
CH149



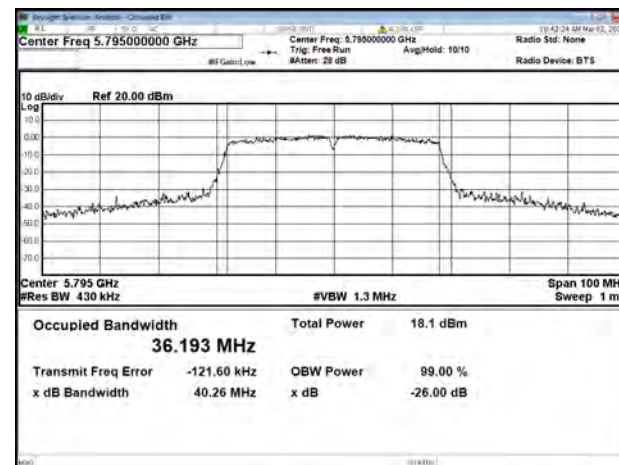
Modulation Standard: 802.11n HT40
(27Mbps)
CH151



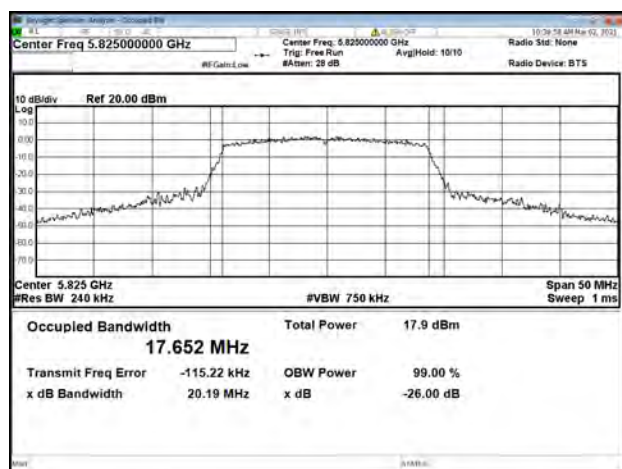
CH157



CH159



CH165





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.

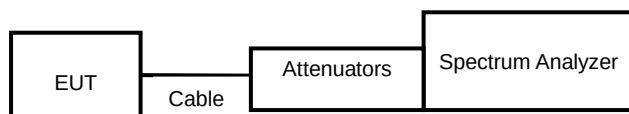
Emission Bandwidth

- 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	19.65	16.46
	44	5220	19.85	16.44
	48	5240	19.46	16.43
802.11n HT20	36	5180	20.11	17.67
	44	5220	19.91	17.61
	48	5240	20.15	17.61
802.11n HT40	38	5190	40.30	36.25
	46	5230	40.30	36.30

For 2TX

Modulation Type	Channel	Frequency (MHz)	26dB Bandwidth (MHz)		99% Occupied Bandwidth (MHz)	
			Chain 1	Chain 2	Chain 1	Chain 2
802.11n HT20	36	5180	20.07	20.22	17.604	17.650
	44	5220	20.01	20.09	17.603	17.641
	48	5240	20.23	20.25	17.596	17.623
802.11n HT40	38	5190	40.10	40.49	36.195	36.271
	46	5230	40.07	40.51	36.171	36.249

**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	19.50	16.440
	60	5300	19.92	16.428
	64	5320	19.55	16.445
802.11n HT20	52	5260	20.08	17.608
	60	5300	20.07	17.601
	64	5320	20.14	17.609
802.11n HT40	54	5270	40.05	36.181
	62	5310	40.08	36.191

For 2TX

Modulation Type	Channel	Frequency (MHz)	26dB Bandwidth (MHz)		99% Occupied Bandwidth (MHz)	
			Chain 1	Chain 2	Chain 1	Chain 2
802.11n HT20	52	5260	19.95	20.17	17.573	17.615
	60	5300	20.01	20.31	17.599	17.626
	64	5320	20.07	20.42	17.598	17.640
802.11n HT40	54	5270	40.02	40.83	36.196	36.198
	62	5310	40.17	40.35	36.080	36.182

**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	19.81	16.425
	116	5580	19.52	16.422
	140	5700	19.41	16.443
802.11n HT20	100	5500	20.08	17.620
	116	5580	19.95	17.579
	140	5700	19.96	17.613
802.11n HT40	102	5510	39.86	36.219
	110	5550	39.32	36.191
	134	5670	40.13	36.214

For 2TX

Modulation Type	Channel	Frequency (MHz)	26dB Bandwidth (MHz)		99% Occupied Bandwidth (MHz)	
			Chain 1	Chain 2	Chain 1	Chain 2
802.11n HT20	100	5500	20.12	20.63	17.593	17.716
	116	5580	20.06	20.21	17.579	17.722
	140	5700	20.06	20.25	17.591	17.671
802.11n HT40	102	5510	39.64	40.76	36.177	36.268
	110	5550	40.02	40.70	36.189	36.280
	134	5670	40.59	40.44	36.166	36.170

備註：繪圖資料請參考下頁。

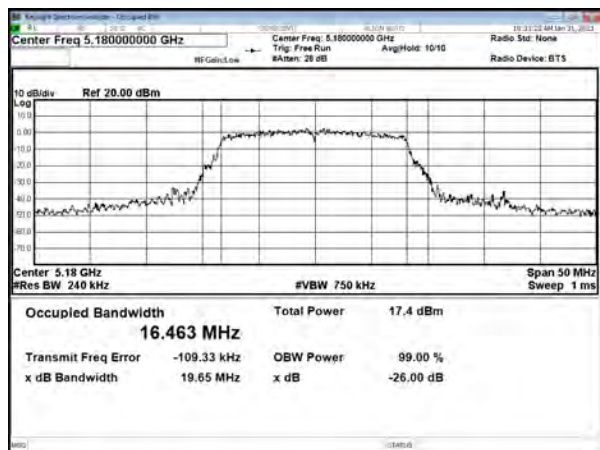


In the 5.2G Band

For 1TX

Chain 1

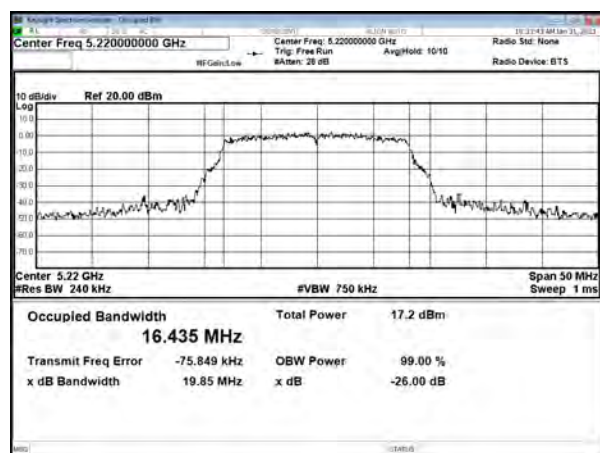
Modulation Standard: 802.11a
(6 Mbps)
CH36



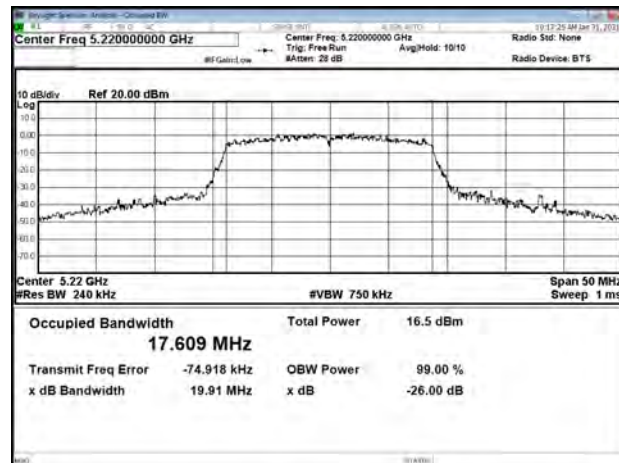
Modulation Standard: 802.11n HT20
(6.5 Mbps)
CH36



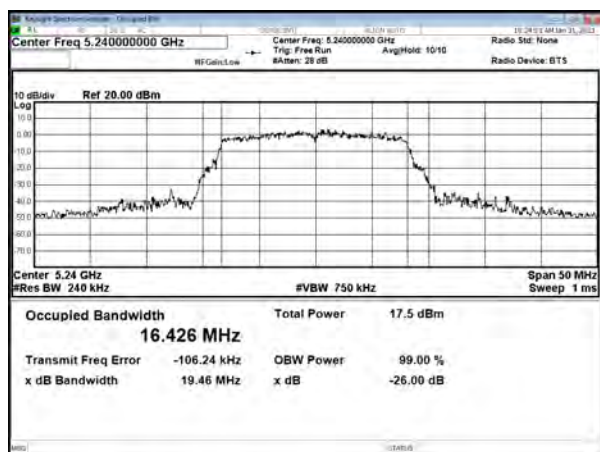
CH44



CH44



CH48

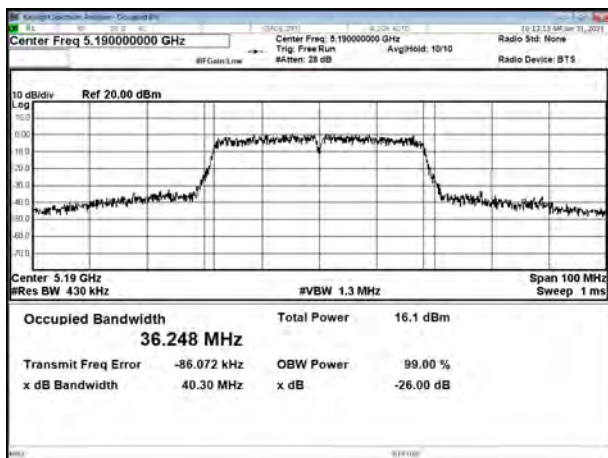


CH48

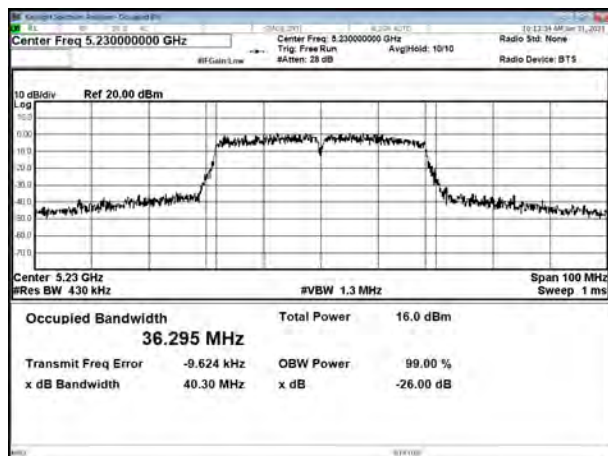




Modulation Standard: 802.11n HT40
(13.5 Mbps)
CH38



CH46





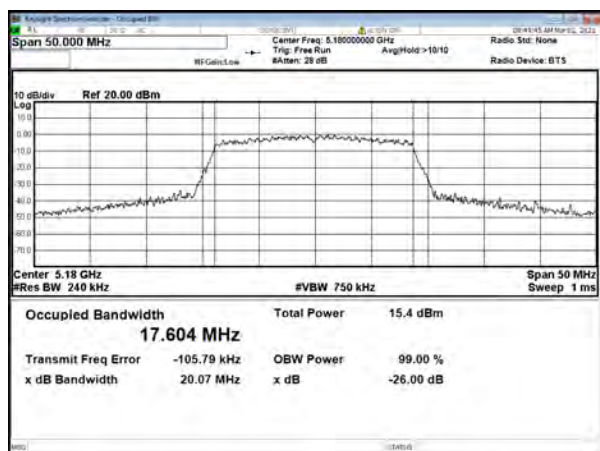
For 2TX

Chain 1

Modulation Standard: 802.11n HT20

(13 Mbps)

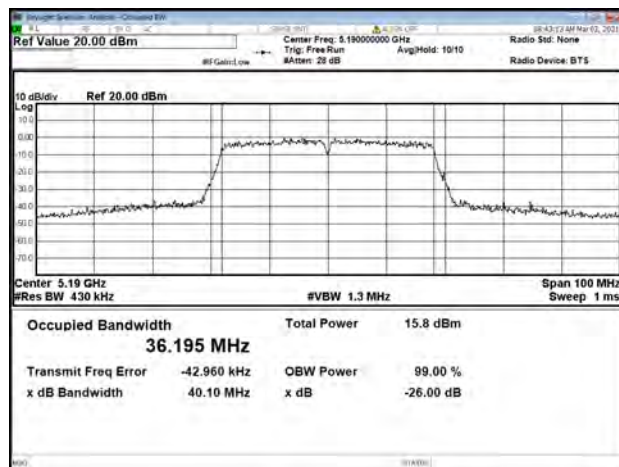
CH36



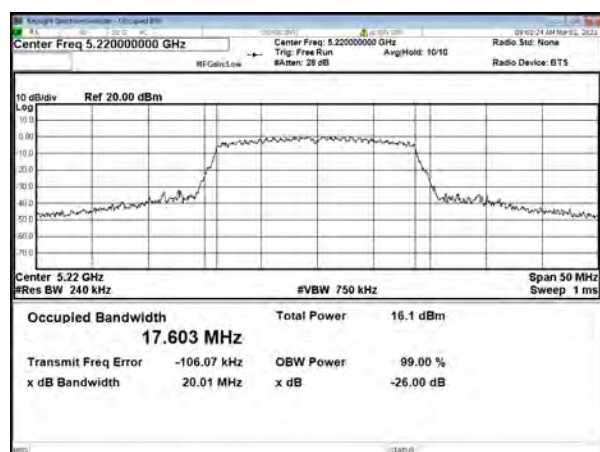
Modulation Standard: 802.11n HT40

(27 Mbps)

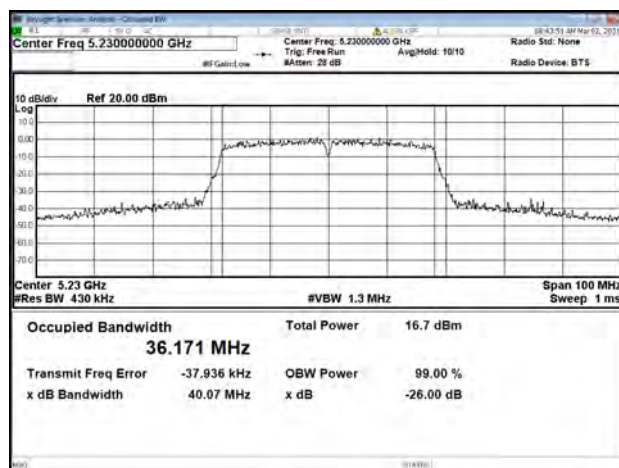
CH38



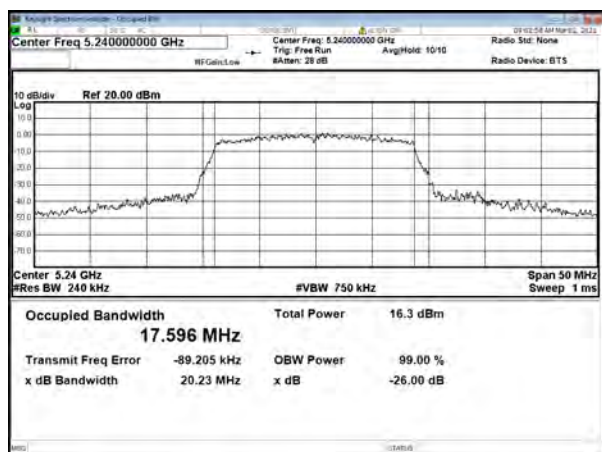
CH44



CH46

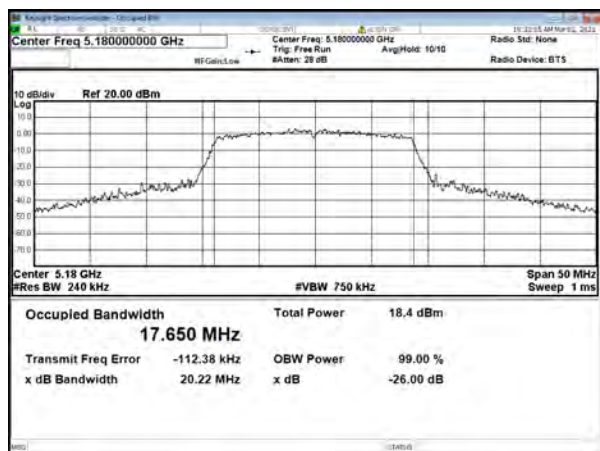


CH48

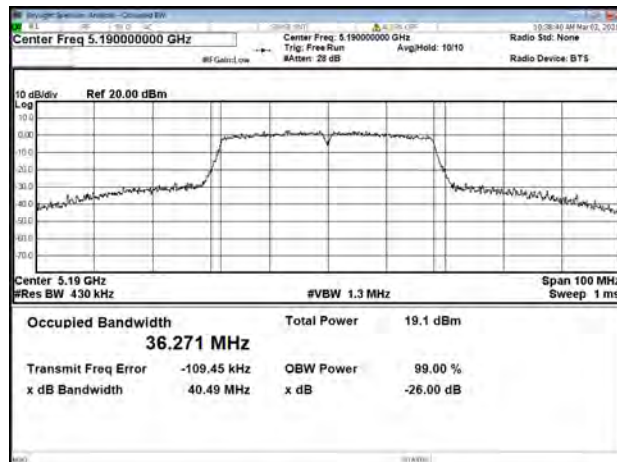




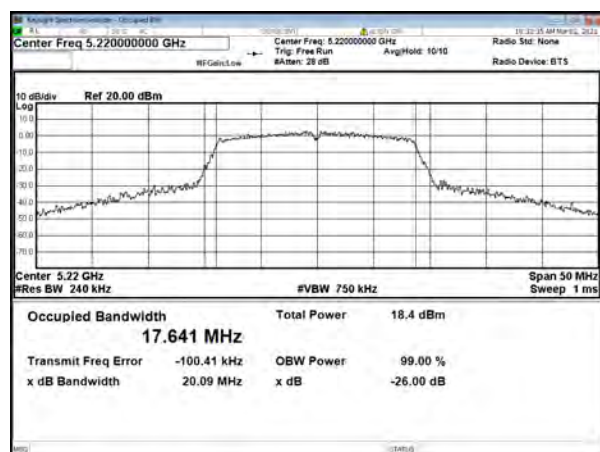
Chain 2
Modulation Standard: 802.11n HT20
(13 Mbps)
CH36



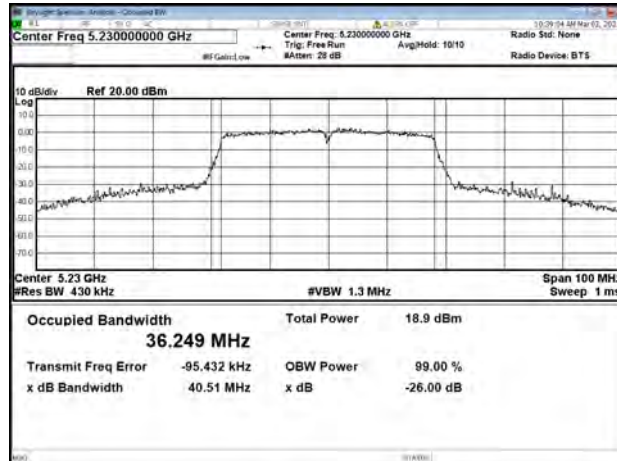
Modulation Standard: 802.11n HT40
(27 Mbps)
CH38



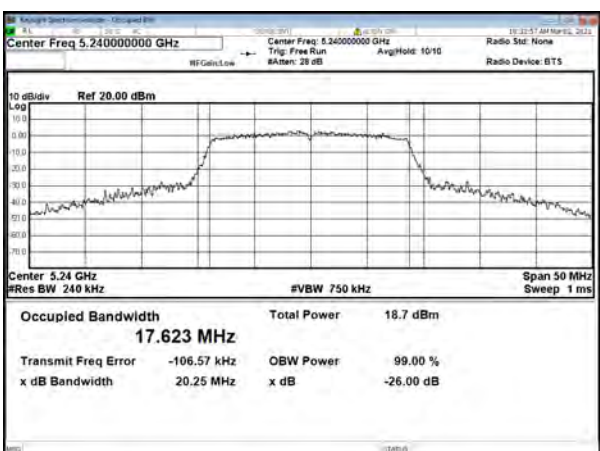
CH44



CH46



CH48



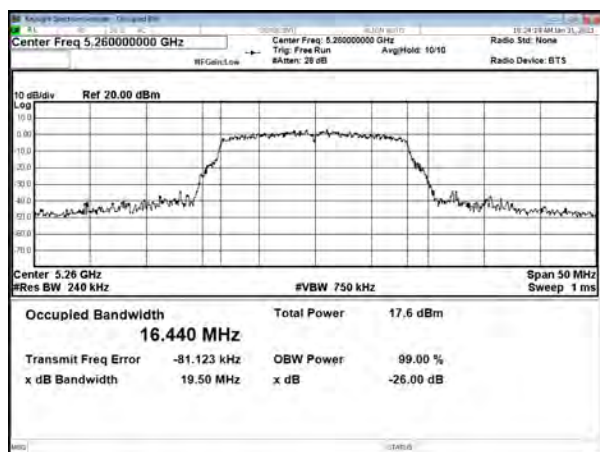


In the 5.3G Band

For 1TX

Chain 1

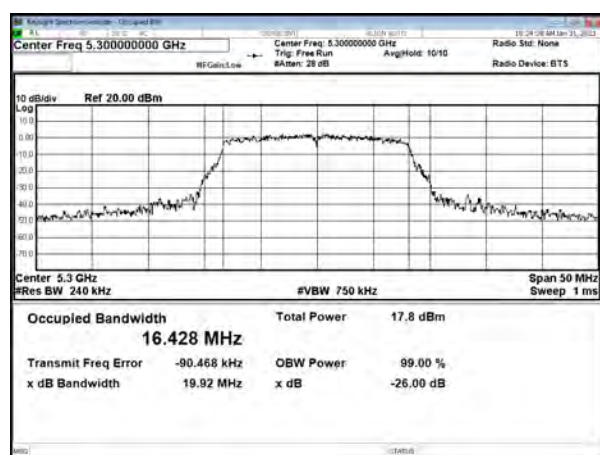
Modulation Standard: 802.11a
(6 Mbps)
CH52



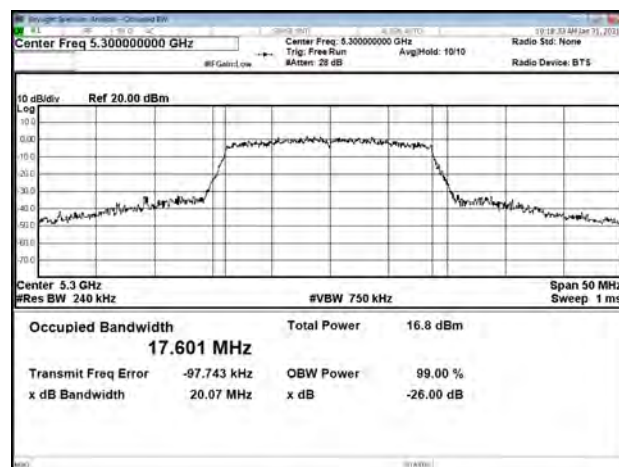
Modulation Standard: 802.11n HT20
(6.5 Mbps)
CH52



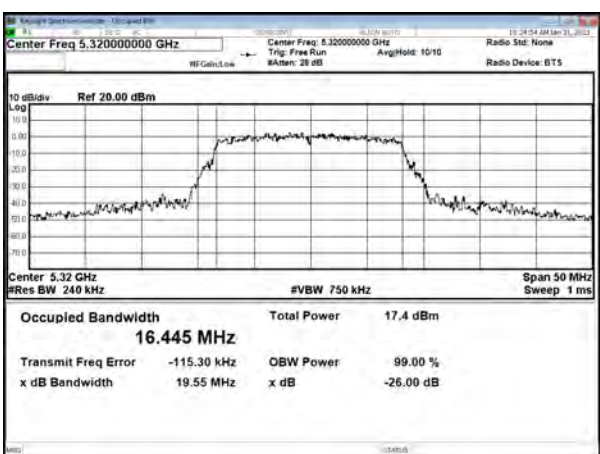
CH60



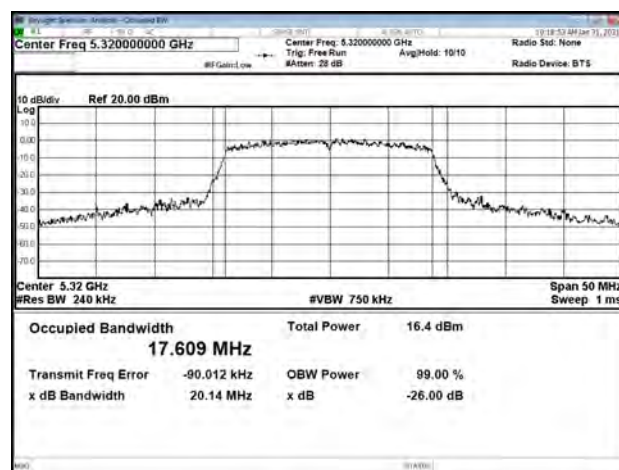
CH60



CH64

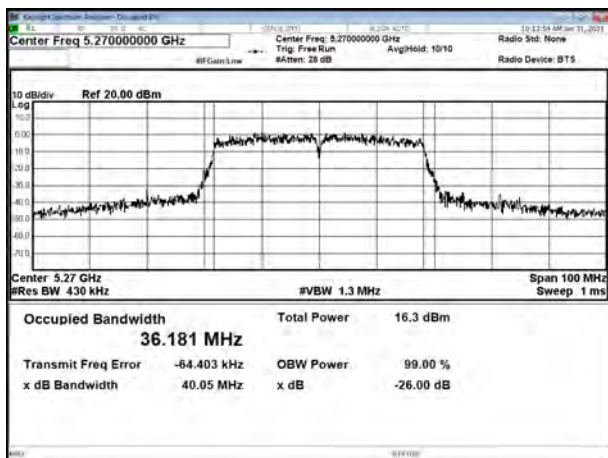


CH64

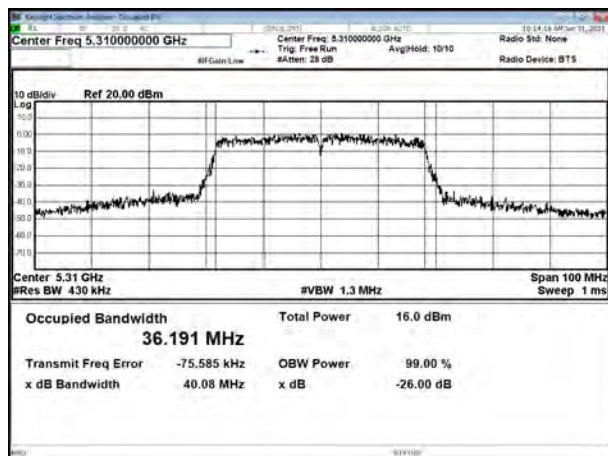




Modulation Standard: 802.11n HT40
(13.5 Mbps)
CH54



CH62





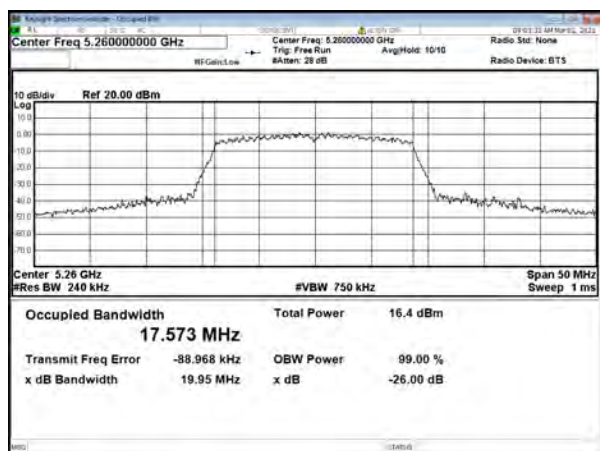
For 2TX

Chain 1

Modulation Standard: 802.11n HT20

(13 Mbps)

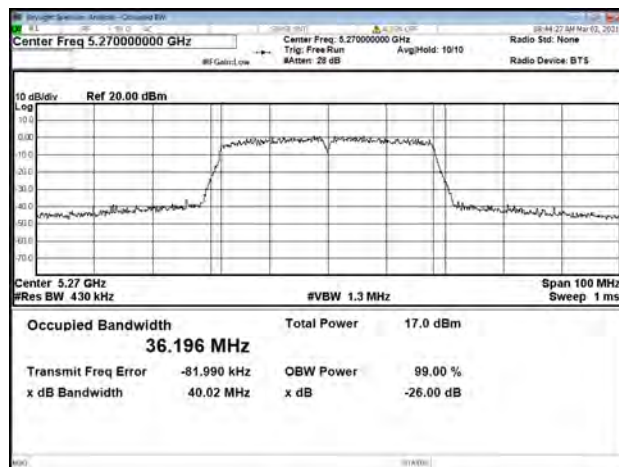
CH52



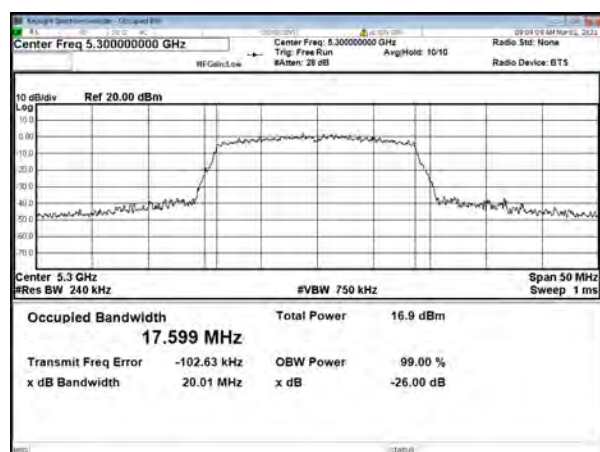
Modulation Standard: 802.11n HT40

(27 Mbps)

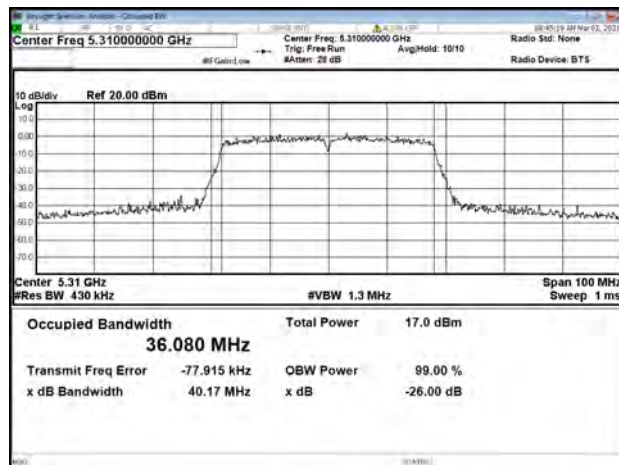
CH54



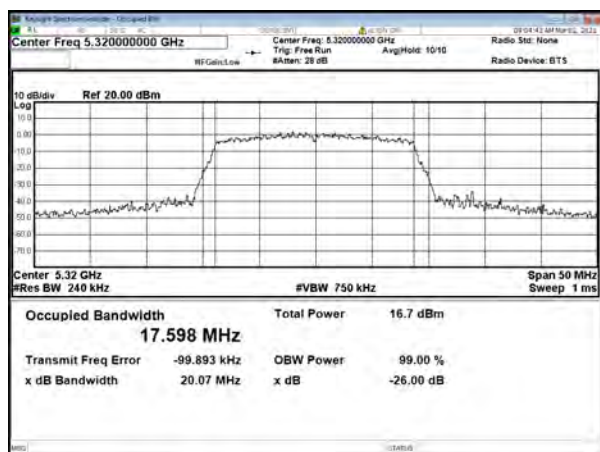
CH60



CH62

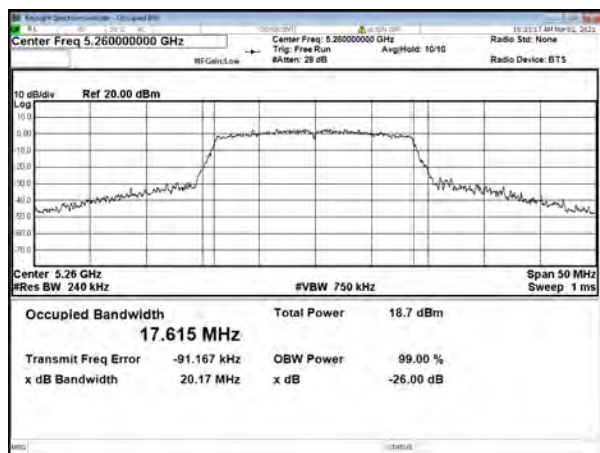


CH64

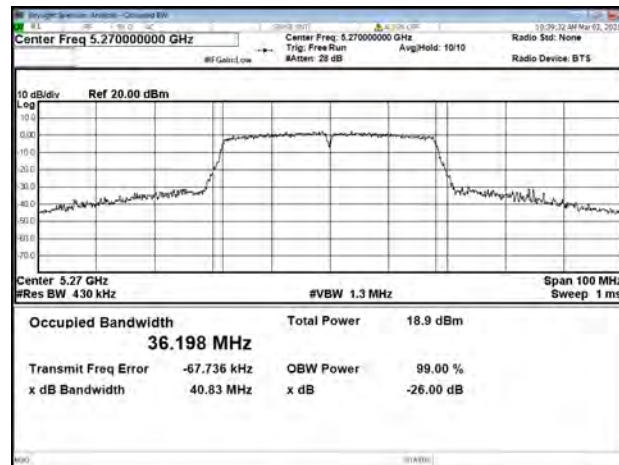




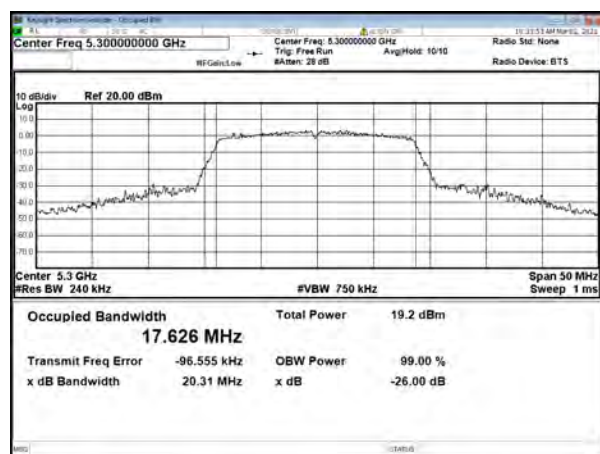
Chain 2
Modulation Standard: 802.11n HT20
(13 Mbps)
CH52



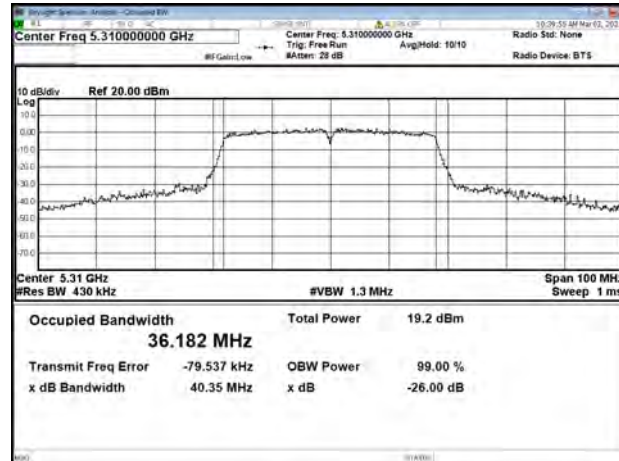
Modulation Standard: 802.11n HT40
(27 Mbps)
CH54



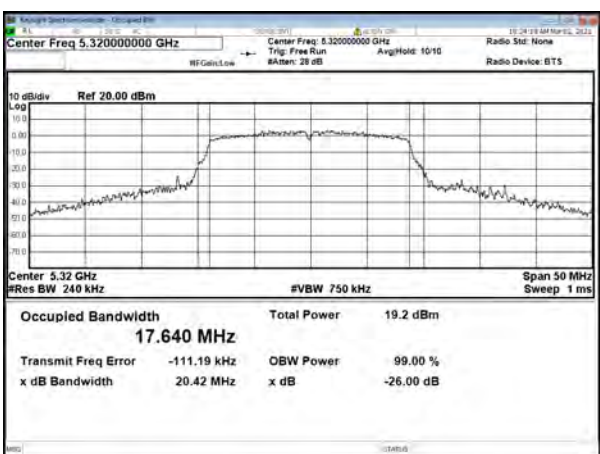
CH60



CH62



CH64



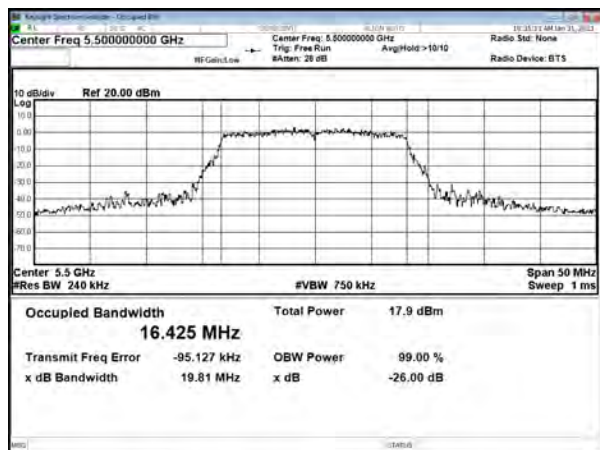


In the 5.5G Band

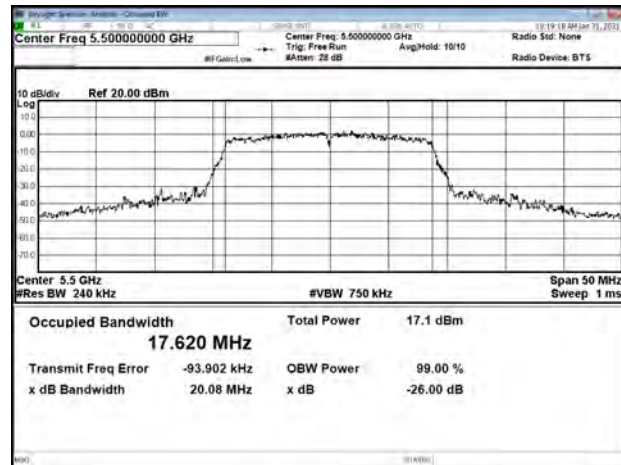
For 1TX

Chain 1

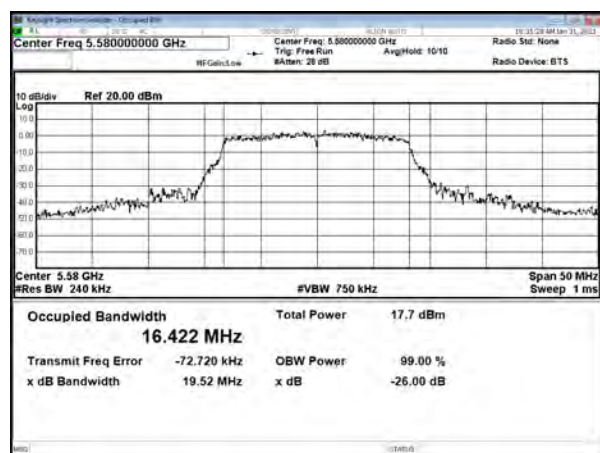
Modulation Standard: 802.11a
(6 Mbps)
CH100



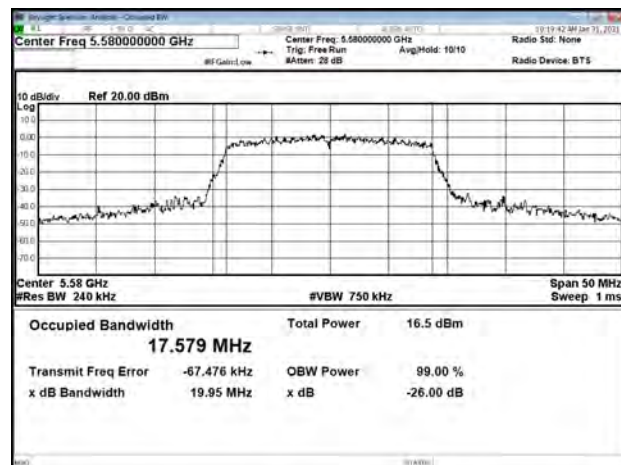
Modulation Standard: 802.11n HT20
(6.5 Mbps)
CH100



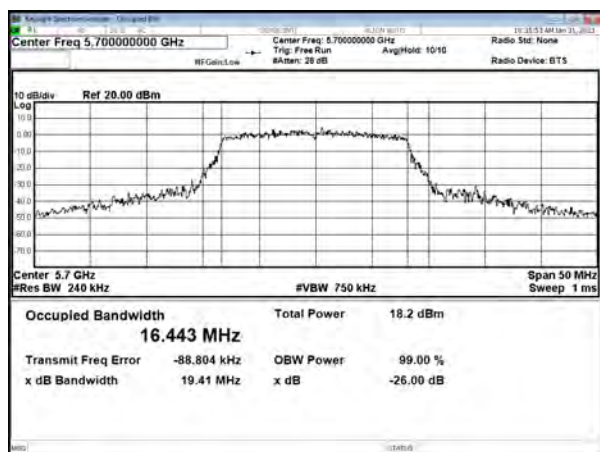
CH116



CH116



CH140

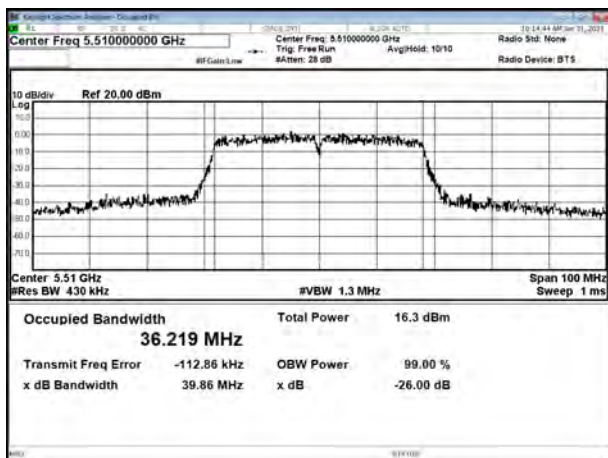


CH140

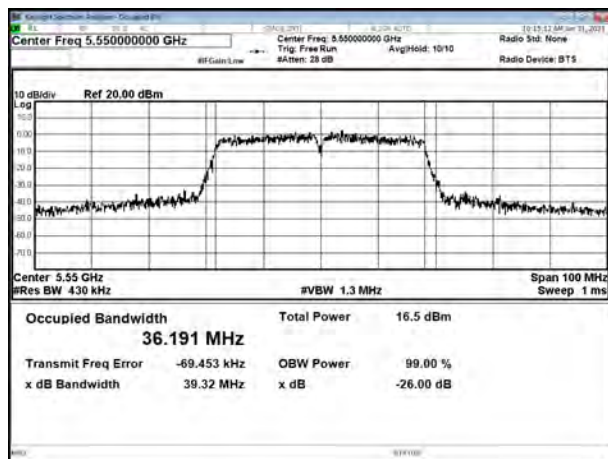




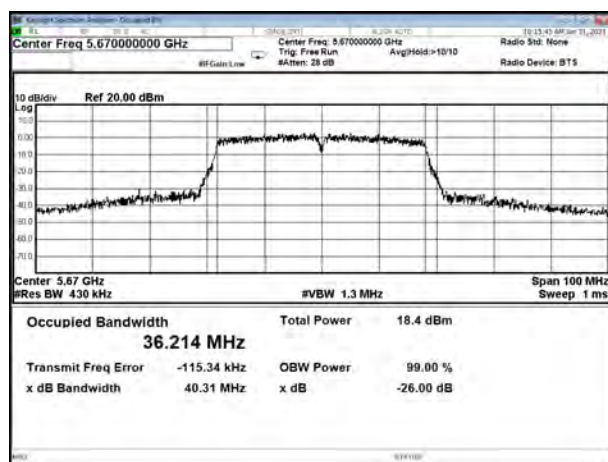
Modulation Standard: 802.11n HT40
(13.5 Mbps)
CH102



CH110



CH134





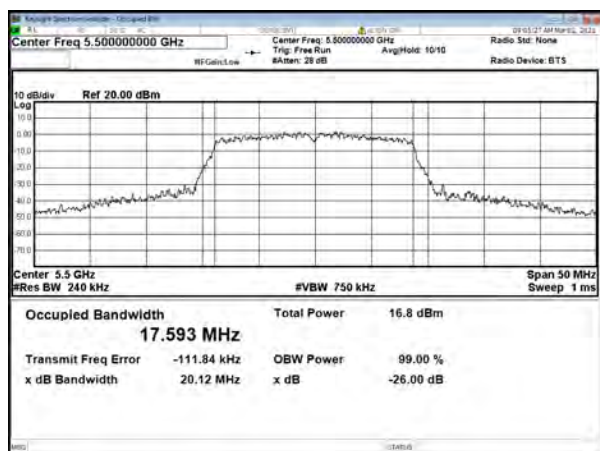
For 2TX

Chain 1

Modulation Standard: 802.11n HT20

(13 Mbps)

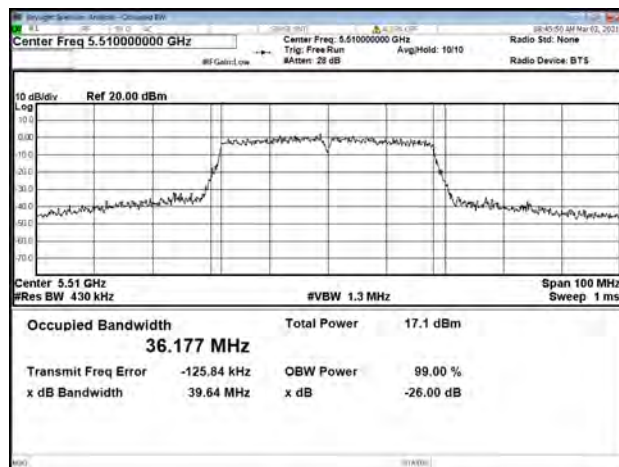
CH100



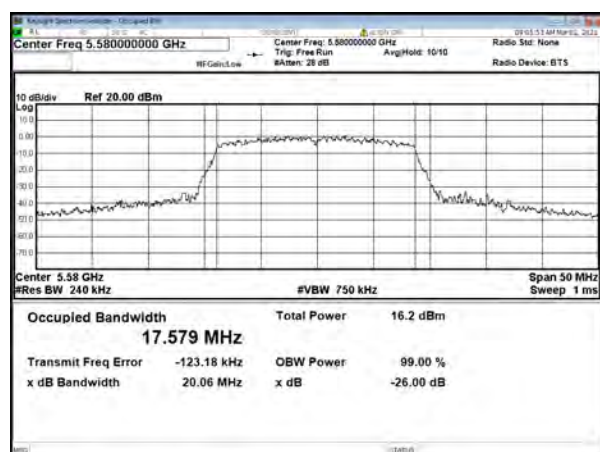
Modulation Standard: 802.11n HT40

(27 Mbps)

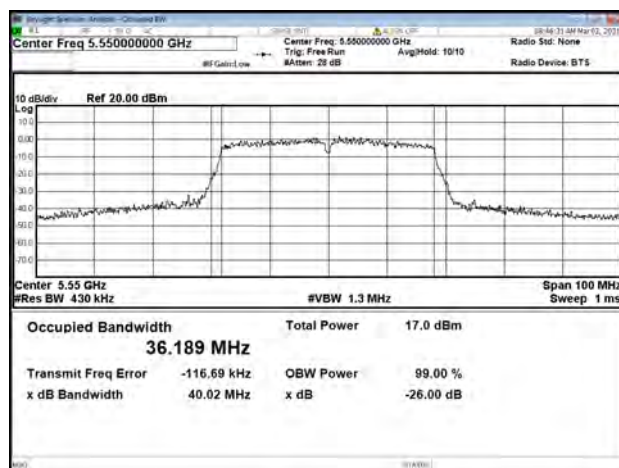
CH102



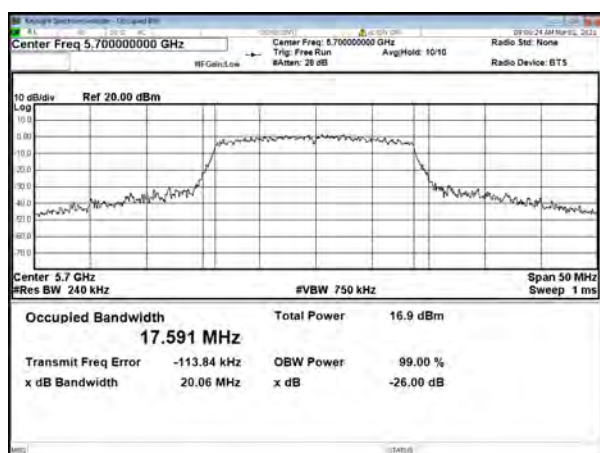
CH116



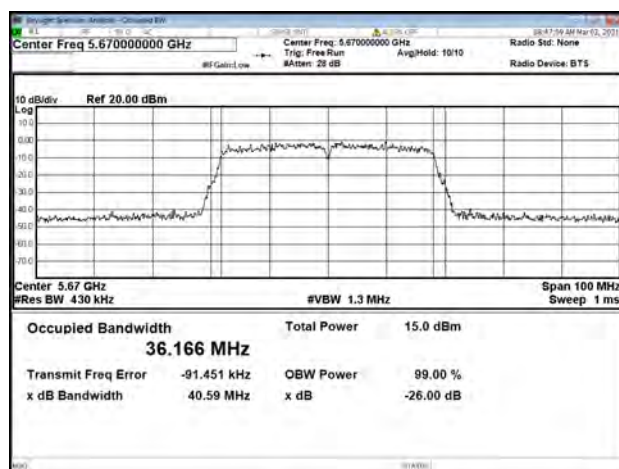
CH110



CH140

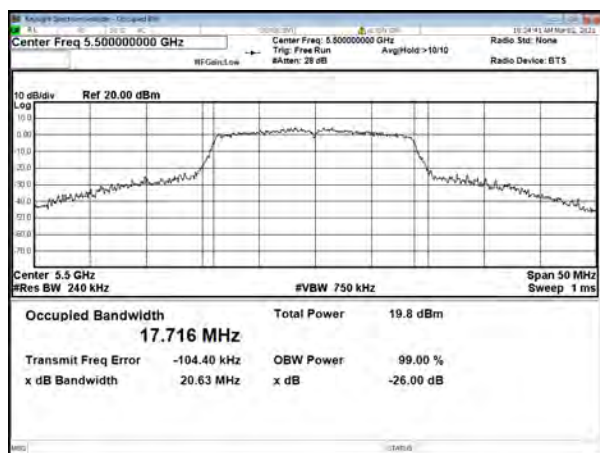


CH134

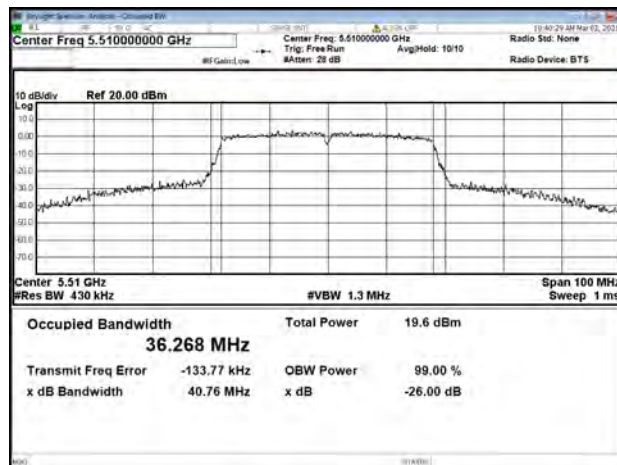




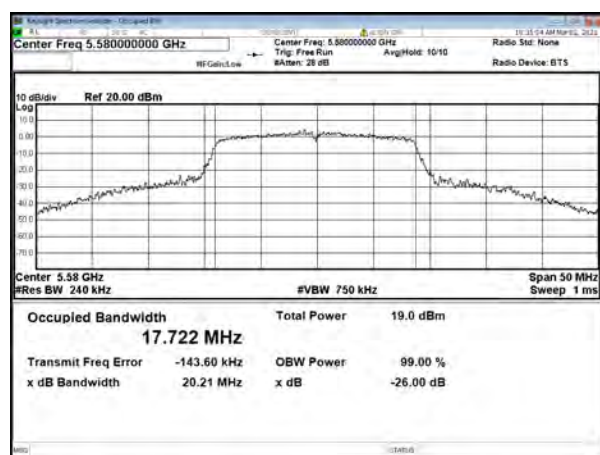
Chain 2
802.11n HT20
(13 Mbps)
CH100



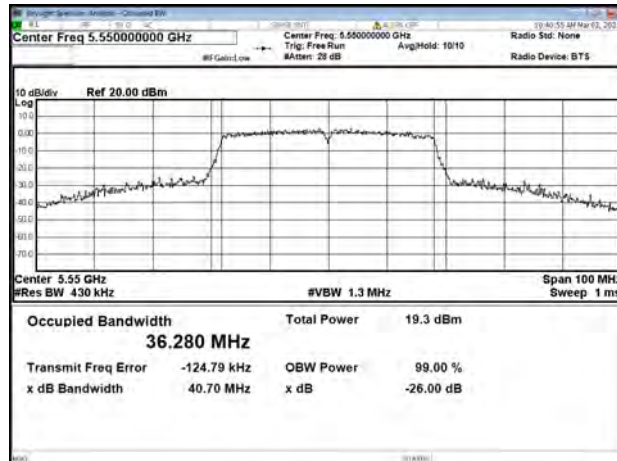
Modulation Standard: 802.11n HT40
(27 Mbps)
CH102



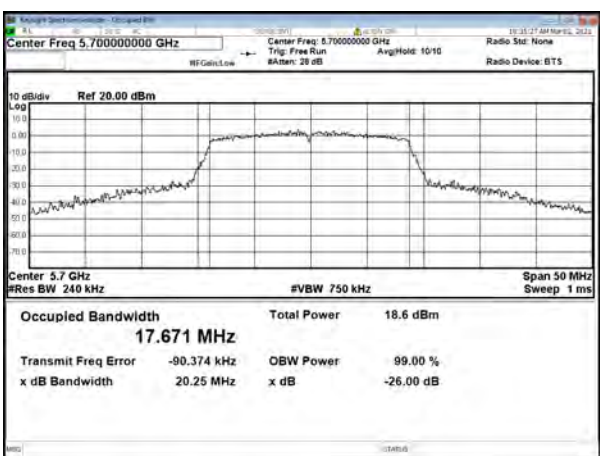
CH116



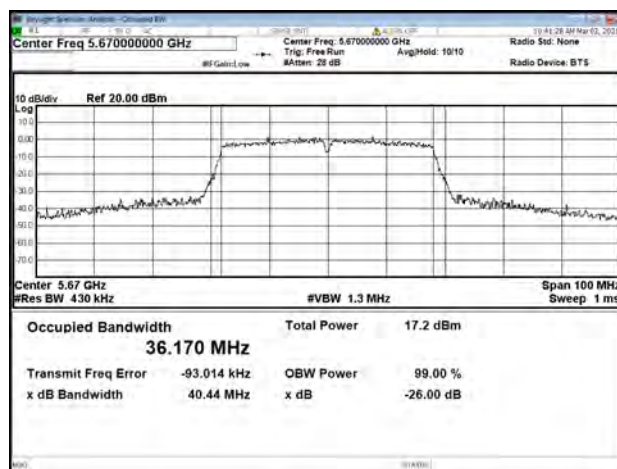
CH110



CH140



CH134





9. 傳導輸出功率

9.1. 適用標準

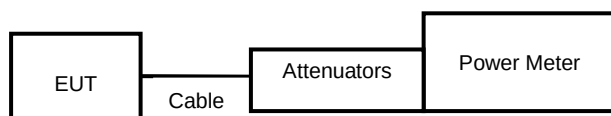
操作於 5.15G-5.25G 頻段者	
☐	供戶外操作使用：最大傳導輸出功率應小於 1W。
☐	供室內操作使用：最大傳導輸出功率應小於 1W。
☐	供固定式點對點操作使用：最大傳導輸出功率應小於 1W。
☒	供用戶端裝置(Client Device)操作使用：最大傳導輸出功率應小於 250mW。
操作於 5.25G-5.35G 與 5.470G-5.725G 頻段者 最大傳導輸出功率應小於 250mW 或 $11\text{dBm} + 10\log B$ (B 是 26dB 發射頻寬，單位 MHz) 之較小者。	
操作於 5.725G-5.850G 頻段者 最大傳導輸出功率應小於 1W。	

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	15.45	14.29	35.075	26.853	24.00
	44	5220	15.35	14.32	34.277	27.040	24.00
	48	5240	15.26	14.29	33.574	26.853	24.00
802.11n HT20	36	5180	14.86	13.95	30.620	24.831	24.00
	44	5220	14.62	13.65	28.973	23.174	24.00
	48	5240	14.86	13.91	30.620	24.604	24.00
802.11n HT40	38	5190	14.48	13.51	28.054	22.439	24.00
	46	5230	14.57	13.52	28.642	22.491	24.00

For 2TX

Modulation Type	Channel	Frequency (MHz)	Avg Power Output (dBm)		Total Power (dBm)	Total Power (mW)	Power Limit (dBm)
			Chain 1	Chain2			
802.11n HT20	36	5180	13.21	12.04	15.67	36.937	24.00
	44	5220	13.06	12.17	15.65	36.712	24.00
	48	5240	13.25	12.29	15.81	38.078	24.00
802.11n HT40	38	5190	12.96	11.56	15.33	34.092	24.00
	46	5230	13.04	11.97	15.55	35.877	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	15.89	14.92	38.815	31.046	24.00
	60	5300	15.69	14.73	37.068	29.717	24.00
	64	5320	15.72	14.76	37.325	29.923	24.00
802.11n HT20	52	5260	14.96	14.02	31.333	25.235	24.00
	60	5300	14.85	13.94	30.549	24.774	24.00
	64	5320	14.66	13.71	29.242	23.496	24.00
802.11n HT40	54	5270	14.02	13.19	25.235	20.845	24.00
	62	5310	14.42	13.50	27.669	22.387	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	13.74	12.12	16.02	39.952	24.00
	60	5300	13.75	12.20	16.05	40.310	24.00
	64	5320	13.56	11.96	15.84	38.402	24.00
802.11n HT40	54	5270	12.74	11.89	15.35	34.246	24.00
	62	5310	13.24	11.74	15.56	36.014	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	15.23	14.33	33.343	27.102	24.00
	116	5580	15.32	14.38	34.041	27.416	24.00
	140	5700	14.63	13.72	29.040	23.550	24.00
802.11n HT20	100	5500	14.96	14.05	31.333	25.410	24.00
	116	5580	14.85	13.96	30.549	24.889	24.00
	140	5700	14.75	13.82	29.854	24.099	24.00
802.11n HT40	102	5510	14.33	13.37	27.102	21.727	24.00
	110	5550	13.96	13.10	24.889	20.417	24.00
	134	5670	14.12	13.28	25.823	21.281	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	12.56	11.74	15.18	32.958	24.00
	116	5580	13.72	12.56	16.19	41.581	24.00
	140	5700	12.63	12.48	15.57	36.024	24.00
802.11n HT40	102	5510	12.56	11.74	15.18	32.958	24.00
	110	5550	13.12	12.45	15.81	38.091	24.00
	134	5670	13.24	12.52	15.91	38.951	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	14.59	13.66	28.774	23.227	24.00
	157	5785	14.32	13.50	27.040	22.387	24.00
	165	5825	14.27	13.39	26.730	21.827	24.00
802.11n HT20	149	5745	13.89	13.12	24.491	20.512	24.00
	157	5785	13.88	12.95	24.434	19.724	24.00
	165	5825	13.42	12.57	21.979	18.072	24.00
802.11n HT40	151	5755	13.69	12.85	23.388	19.275	24.00
	159	5795	13.87	13.17	24.378	20.749	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			
802.11an HT20	149	5745	12.70	11.74	15.26	33.549	30.00
	157	5785	12.81	12.39	15.62	36.437	30.00
	165	5825	12.48	12.35	15.43	34.880	30.00
802.11an HT40	151	5755	12.32	11.54	14.96	31.317	30.00
	159	5795	12.42	12.41	15.43	34.876	30.00



10. 最大功率頻譜密度

10.1. 適用標準

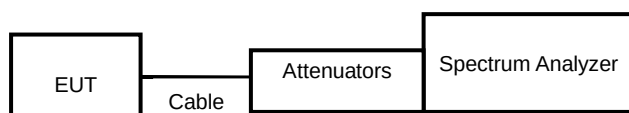
操作於 5.15G-5.25G 頻段者	
☐	供戶外操作使用：在任何 1MHz 頻帶中最大功率頻譜密度應小於或等於 17dBm。
☐	供室內操作使用：在任何 1MHz 頻帶中最大功率頻譜密度應小於或等於 17dBm。
☐	供固定式點對點操作使用：在任何 1MHz 頻帶中最大功率頻譜密度應小於或等 17dBm。
☒	供用戶端裝置(Client Device)操作使用：在任何 1MHz 頻帶中最大功率頻譜密度應小於或等於 11dBm。
操作於 5.25G-5.35G 與 5.470G-5.725G 頻段者 在任何 1MHz 頻帶中最大功率頻譜密度應小於或等於 11Bm。	
操作於 5.725G-5.850G 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 PPSSD (dBm/MHz)	Sum chain (dBm)	Duty Cycle CF(dB)	Total Corr'd PPSSD (dBm/MHz)	PPSSD Limit (dBm/MHz)
			Chain 1				
802.11a	36	5180	-0.098	-0.098	0.00	-0.098	11.00
	44	5220	1.682	1.682	0.00	1.682	11.00
	48	5240	2.393	2.393	0.00	2.393	11.00
802.11n HT20	36	5180	-0.214	-0.214	0.00	-0.214	11.00
	44	5220	0.165	0.165	0.00	0.165	11.00
	48	5240	0.337	0.337	0.00	0.337	11.00
802.11n HT40	38	5190	-3.967	-3.967	0.00	-3.967	11.00
	46	5230	-3.502	-3.502	0.00	-3.502	11.00

For 2TX

Modulation Type	CH	Freq. (MHz)	Meas PPSSD (dBm/MHz)		Sum chain (dBm)	Duty Cycle CF(dB)	Total Corr'd PPSSD (dBm/MHz)	PPSSD Limit (dBm/MHz)
			Chain 1	Chain 2				
802.11n HT20	36	5180	0.956	-0.746	3.20	0.00	3.20	11.00
	44	5220	1.903	-0.593	3.84	0.00	3.84	11.00
	48	5240	2.273	-0.12	4.25	0.00	4.25	11.00
802.11n HT40	38	5190	-1.831	-4.647	0.00	0.00	0.00	11.00
	46	5230	-1.273	-3.865	0.63	0.00	0.63	11.00

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

Modulation Type	CH	Freq. (MHz)	Meas PPSSD (dBm/MHz)	Sum chain (dBm)	Duty Cycle CF(dB)	Total Corr'd PPSSD (dBm/MHz)	PPSSD Limit (dBm/MHz)
			Chain 1				
802.11a	52	5260	2.174	2.174	0.00	2.174	11.00
	60	5300	2.164	2.164	0.00	2.164	11.00
	64	5320	2.057	2.057	0.00	2.057	11.00
802.11n HT20	52	5260	0.603	0.603	0.00	0.603	11.00
	60	5300	-0.016	-0.016	0.00	-0.016	11.00
	64	5320	0.273	0.273	0.00	0.273	11.00
802.11n HT40	54	5270	-3.122	-3.122	0.00	-3.122	11.00
	62	5310	-3.225	-3.225	0.00	-3.225	11.00

For 2TX

Modulation Type	CH	Freq. (MHz)	Meas PPSSD (dBm/MHz)		Sum chain (dBm)	Duty Cycle CF(dB)	Total Corr'd PPSSD (dBm/MHz)	PPSSD Limit (dBm/MHz)
			Chain 1	Chain 2				
802.11n HT20	52	5260	2.11	-0.701	3.94	0.00	3.94	11.00
	60	5300	2.698	0.333	4.68	0.00	4.68	11.00
	64	5320	2.612	0.628	4.74	0.00	4.74	11.00
802.11n HT40	54	5270	-1.372	-3.837	0.58	0.00	0.58	11.00
	62	5310	-1.024	-3.086	1.08	0.00	1.08	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	1.612	1.612	0.00	1.612	11.00
	116	5580	1.852	1.852	0.00	1.852	11.00
	140	5700	2.738	2.738	0.00	2.738	11.00
802.11n HT20	100	5500	0.656	0.656	0.00	0.656	11.00
	116	5580	-0.033	-0.033	0.00	-0.033	11.00
	140	5700	2.065	2.065	0.00	2.065	11.00
802.11n HT40	102	5510	-3.198	-3.198	0.00	-3.198	11.00
	110	5550	-3.389	-3.389	0.00	-3.389	11.00
	134	5670	-2.656	-2.656	0.00	-2.656	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				
802.11n HT20	100	5500	3.064	0.689	5.05	0.00	5.05	11.00
	116	5580	2.464	-0.447	4.94	0.00	4.94	11.00
	140	5700	2.118	0.342	4.33	0.00	4.33	11.00
802.11n HT40	102	5510	-0.618	-3.301	1.25	0.00	1.25	11.00
	110	5550	-0.898	-3.676	0.94	0.00	0.94	11.00
	134	5670	-3.851	-5.094	-1.42	0.00	-1.42	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	2.134	2.134	0.00	-3.01	-0.876	30.00
	157	5785	2.665	2.665	0.00	-3.01	-0.345	30.00
	165	5825	2.511	2.511	0.00	-3.01	-0.499	30.00
802.11n HT20	149	5745	1.31	1.31	0.00	-3.01	-1.700	30.00
	157	5785	1.65	1.65	0.00	-3.01	-1.360	30.00
	165	5825	5.829	5.829	0.00	-3.01	2.819	30.00
802.11n HT40	151	5755	-3.421	-3.421	0.00	-3.01	-6.431	30.00
	159	5795	-2.065	-2.065	0.00	-3.01	-5.075	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					
802.11n HT20	149	5745	2.274	0.772	4.60	0.00	-3.01	1.59	30.00
	157	5785	1.713	0.802	4.29	0.00	-3.01	1.28	30.00
	165	5825	1.365	0.795	4.10	0.00	-3.01	1.09	30.00
802.11n HT40	151	5755	-1.498	-2.847	0.89	0.00	-3.01	-2.12	30.00
	159	5795	-1.288	-2.638	1.10	0.00	-3.01	-1.91	30.00

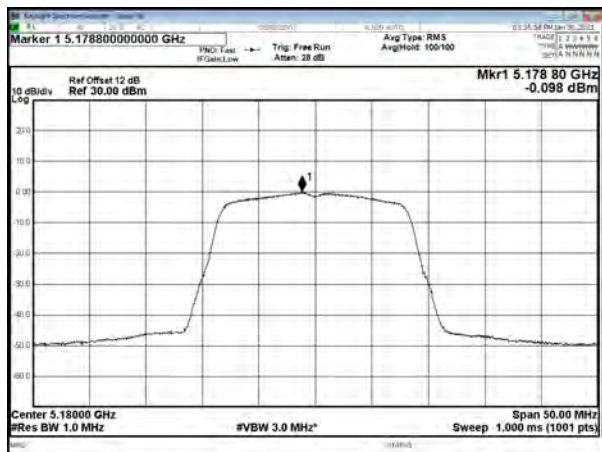
備註：繪圖資料請參考下頁。

10.5. 結果判定

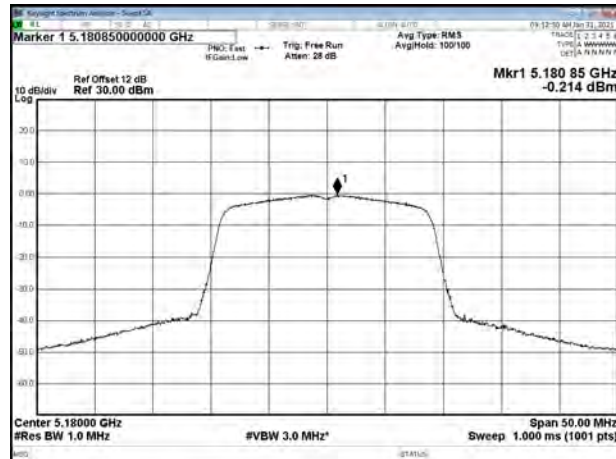
高、中、低頻段的數值皆低於限制值要求，合乎標準規定。



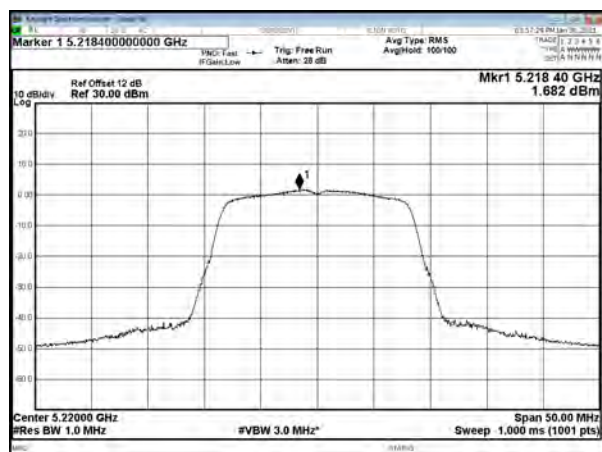
For 1TX
In the 5.2G Band
Chain 1
Modulation Standard: 802.11a
(6 Mbps)
CH36



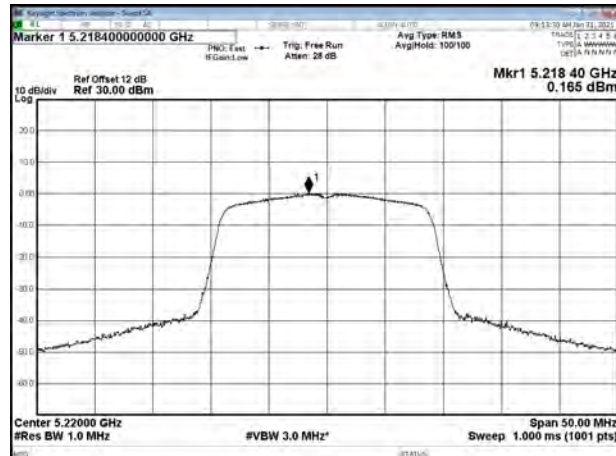
Modulation Standard: 802.11n HT20
(6.5 Mbps)
CH36



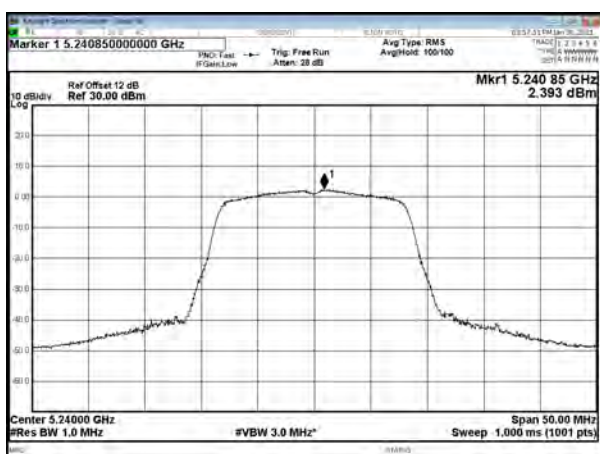
CH44



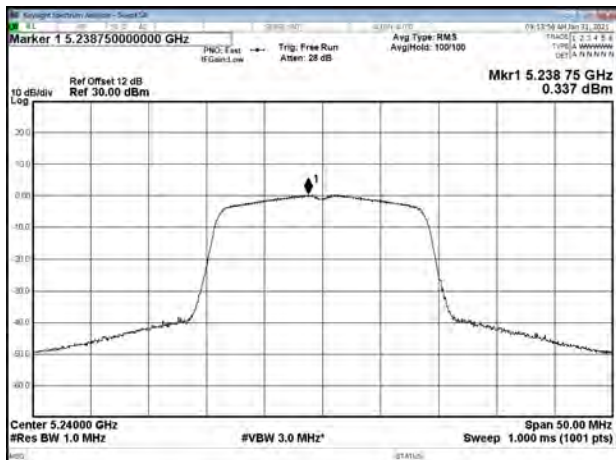
CH44



CH48

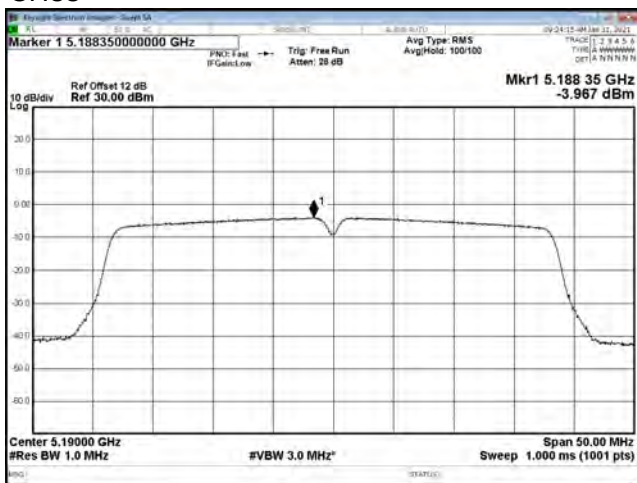


CH48

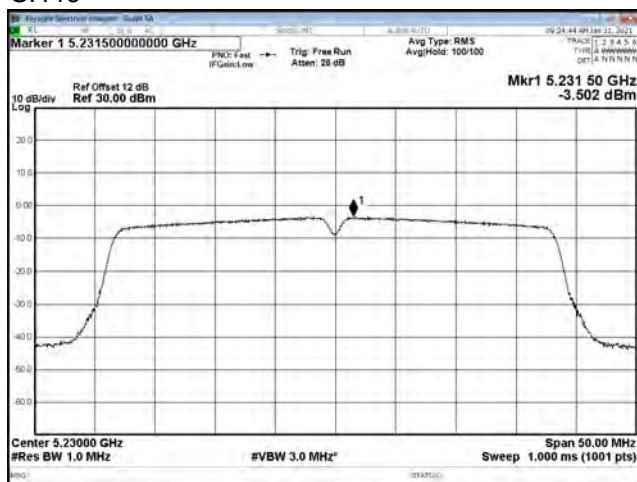




Modulation Standard: 802.11n HT40
(13.5 Mbps)
CH38

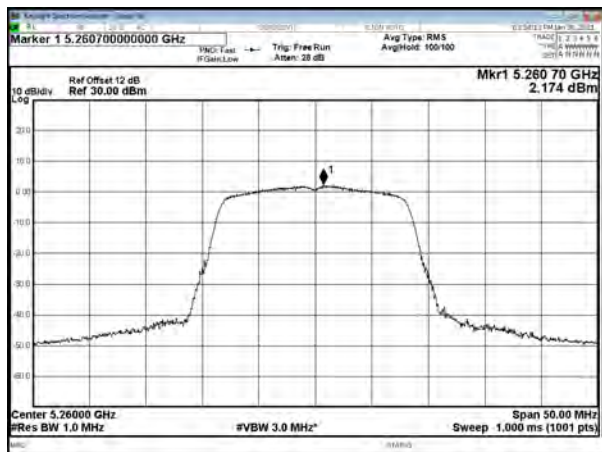


CH46

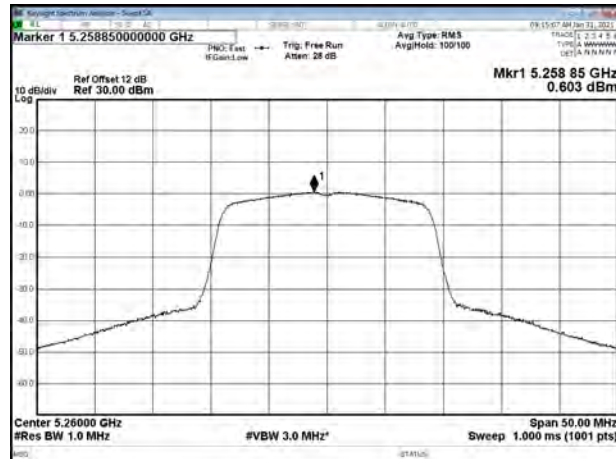




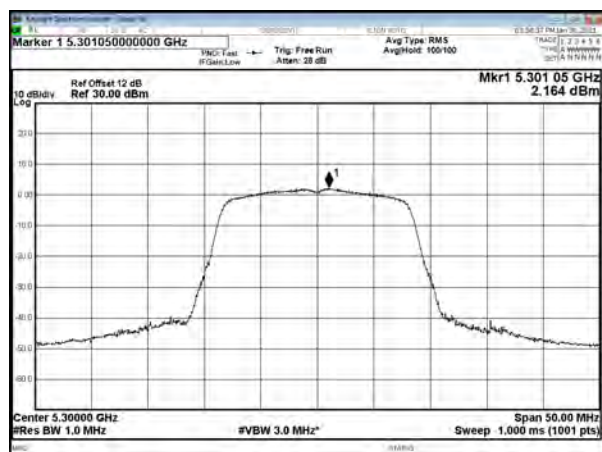
For 1TX
In the 5.3G Band
Chain 1
Modulation Standard: 802.11a
(6 Mbps)
CH52



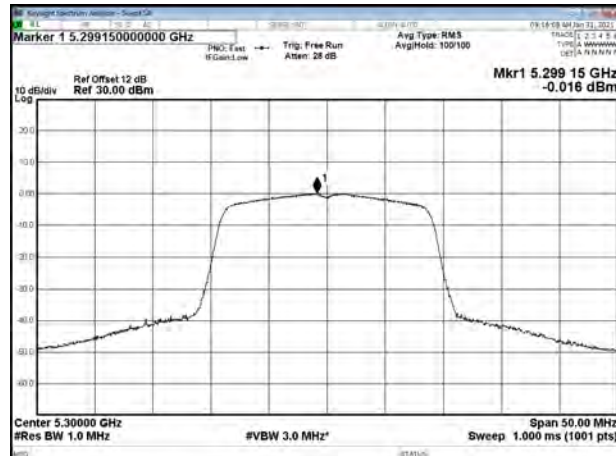
Modulation Standard: 802.11n HT20
(6.5 Mbps)
CH32



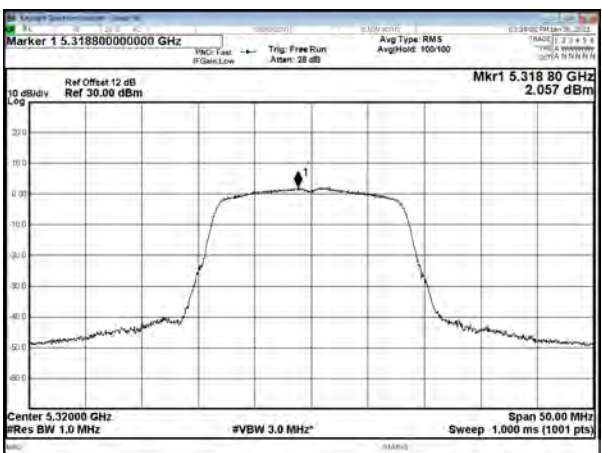
CH60



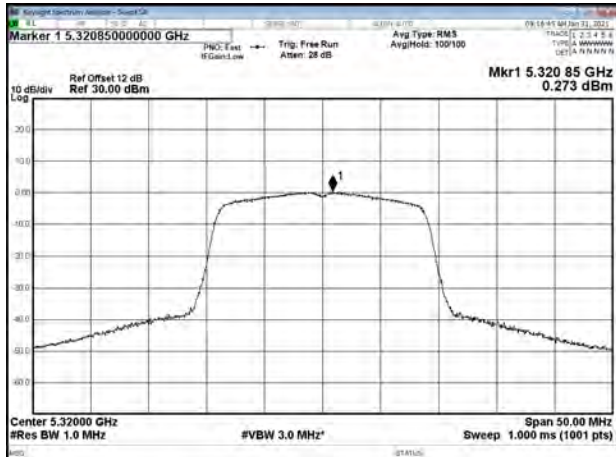
CH60



CH64

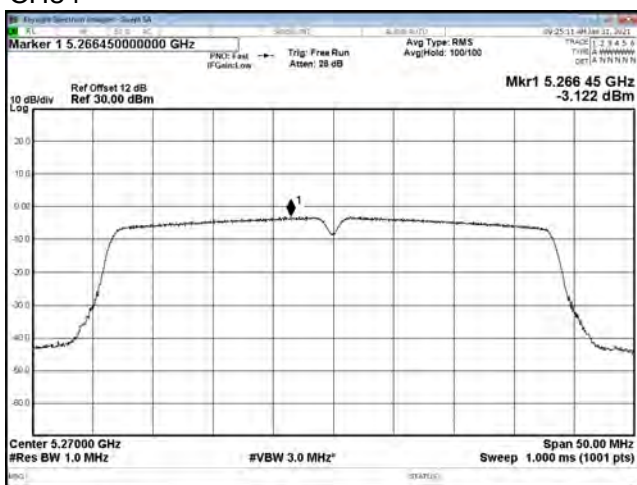


CH64

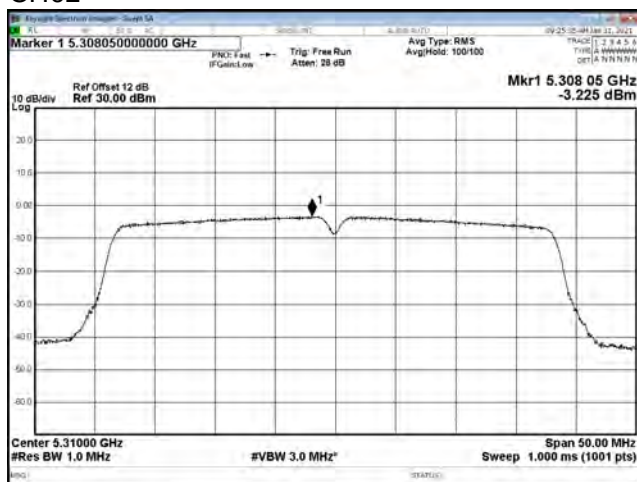




Modulation Standard: 802.11n HT40
(13.5 Mbps)
CH54

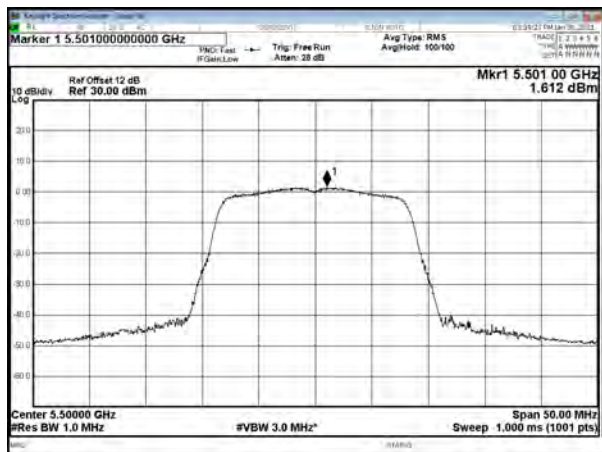


CH62

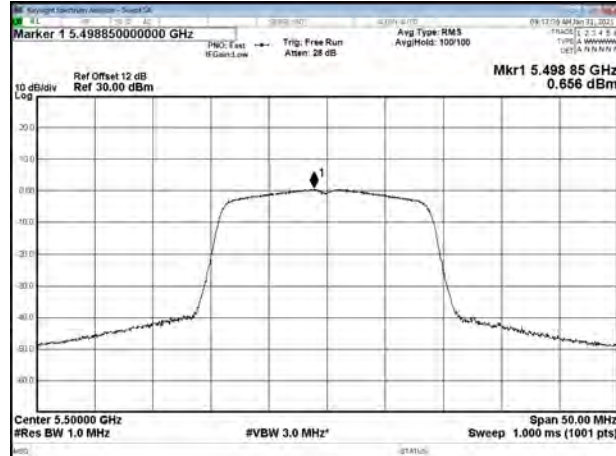




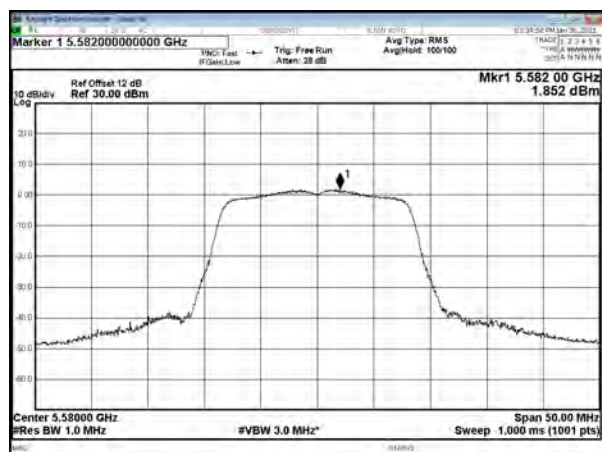
For 1TX
In the 5.5G Band
Chain 1
Modulation Standard: 802.11a
(6 Mbps)
CH100



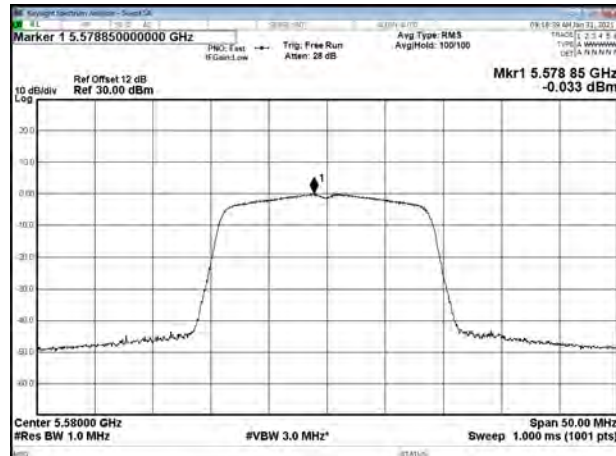
Modulation Standard: 802.11n HT20
(6.5 Mbps)
CH100



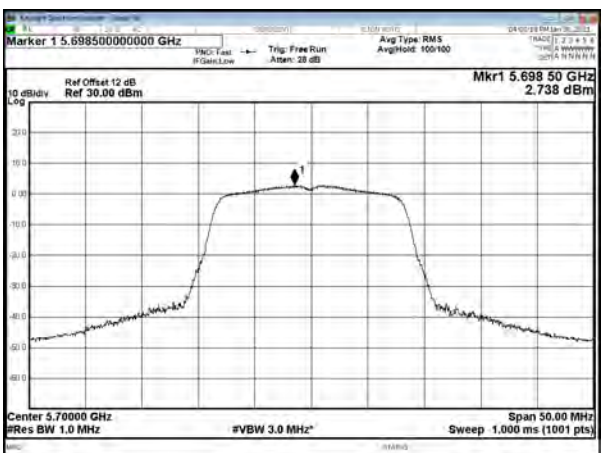
CH116



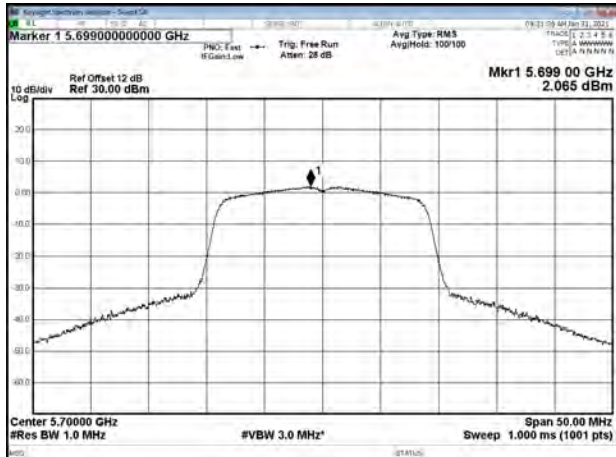
CH116



CH140

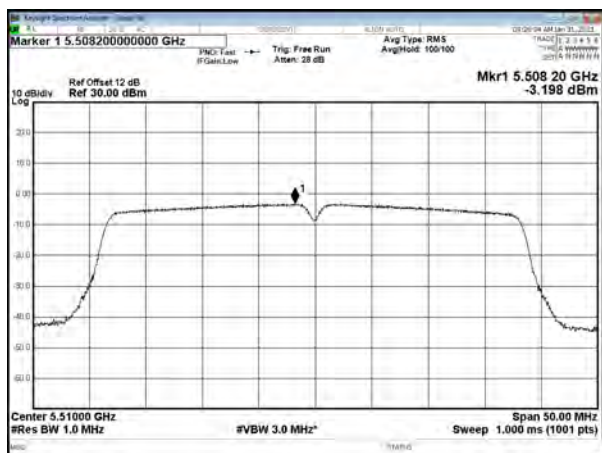


CH140

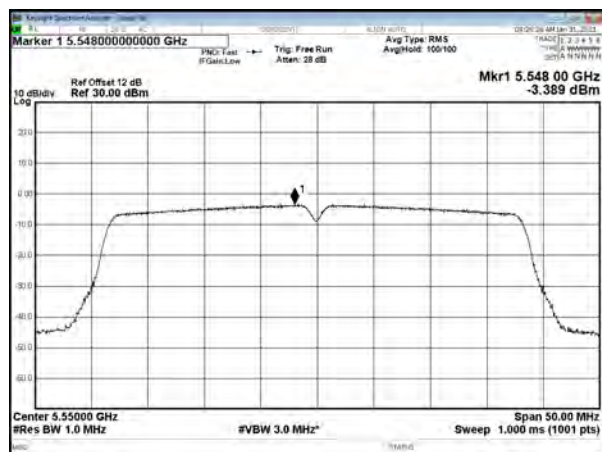




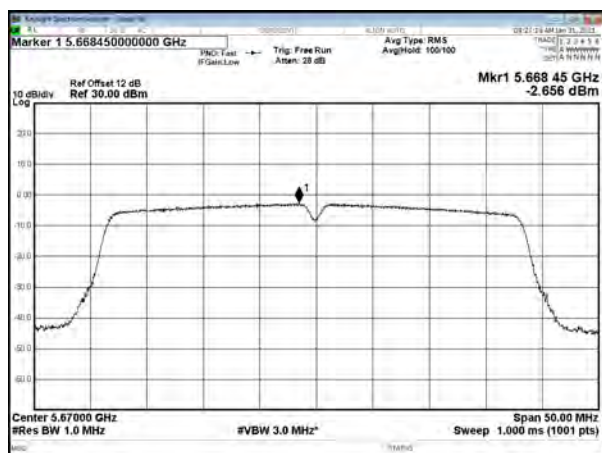
Modulation Standard: 802.11n HT40
(13.5 Mbps)
CH102



CH110

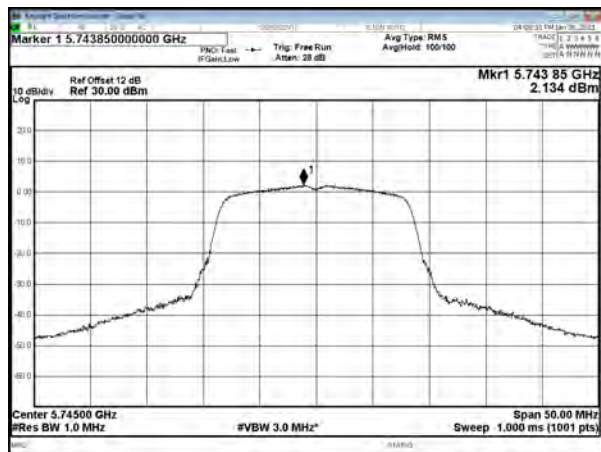


CH134

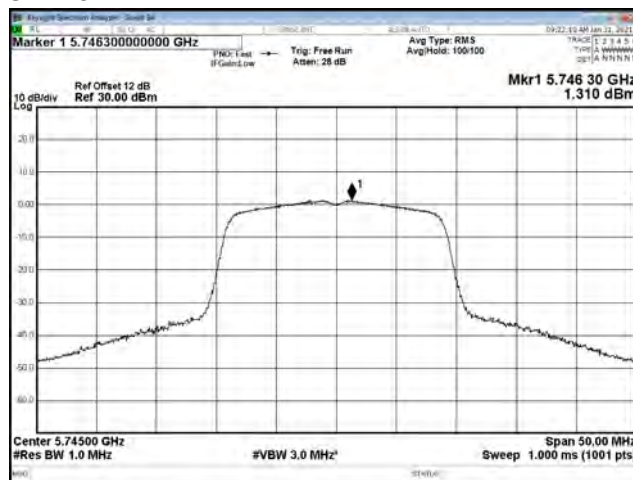




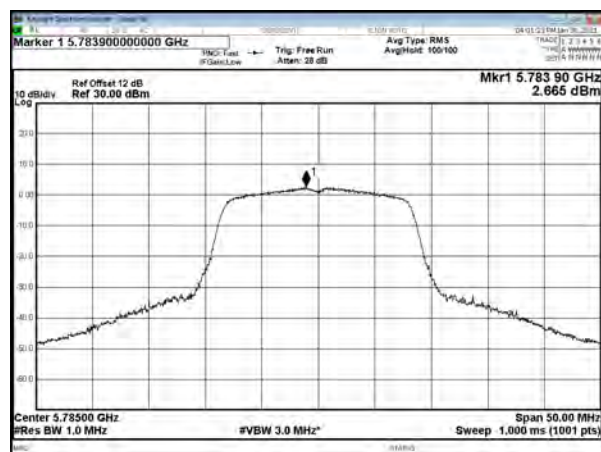
For 1TX
In the 5.8G Band
Chain 1
Modulation Standard: 802.11a
(6 Mbps)
CH149



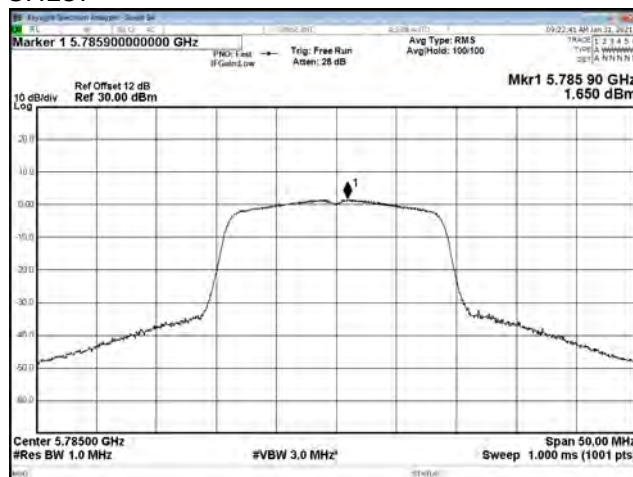
Modulation Standard: 802.11n HT20
(6.5 Mbps)
CH149



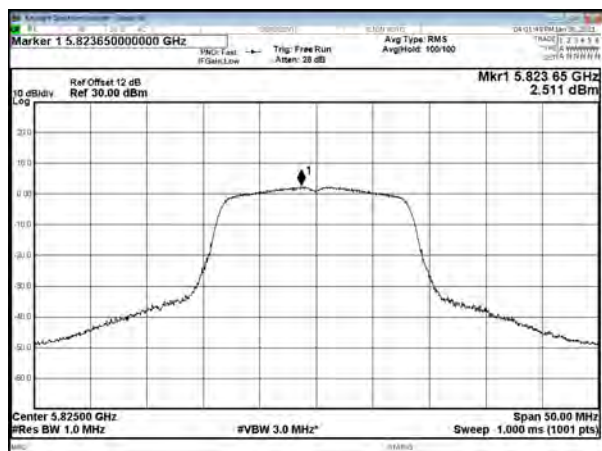
CH157



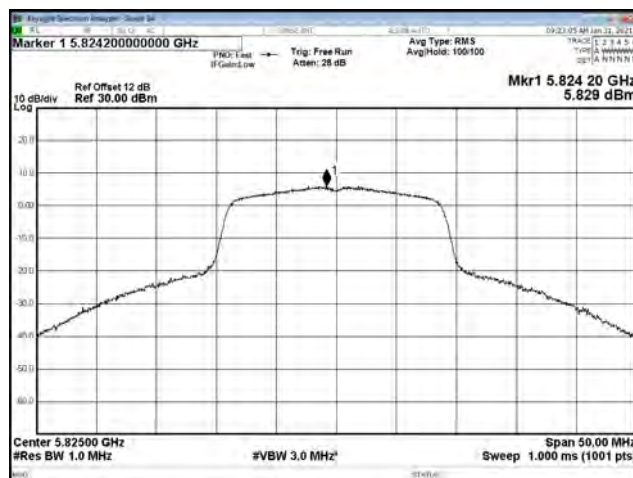
CH157



CH165

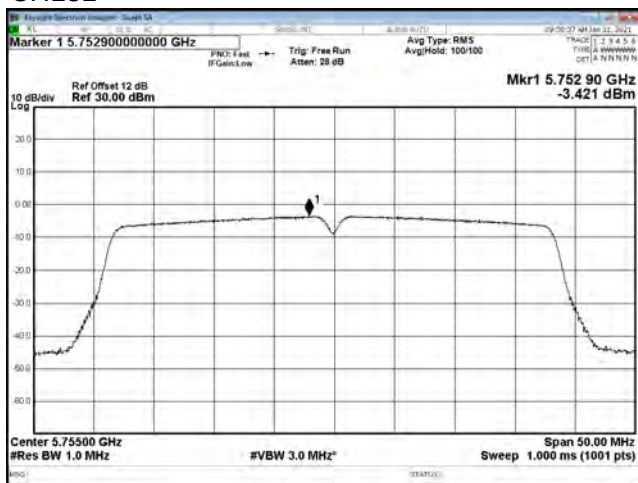


CH165

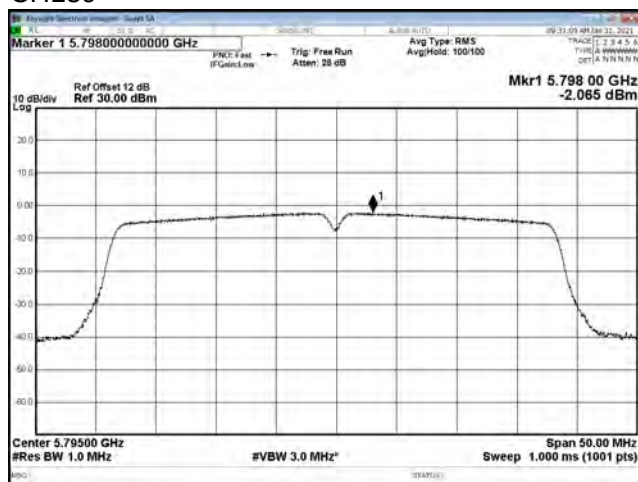




Modulation Standard: 802.11n HT40
(13.5 Mbps)
CH151

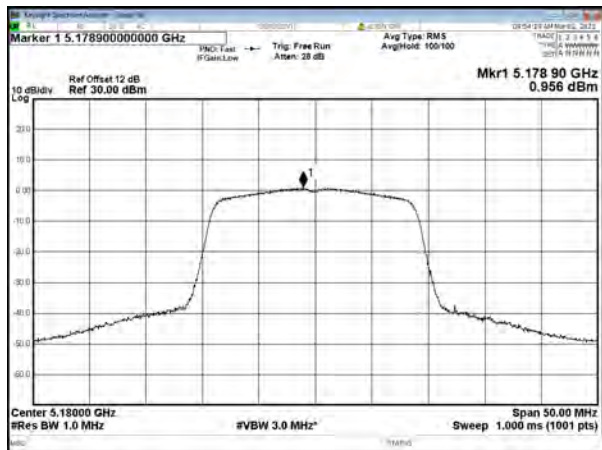


CH159

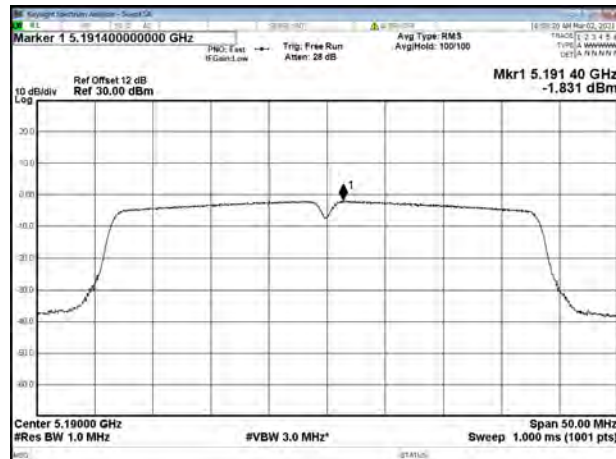




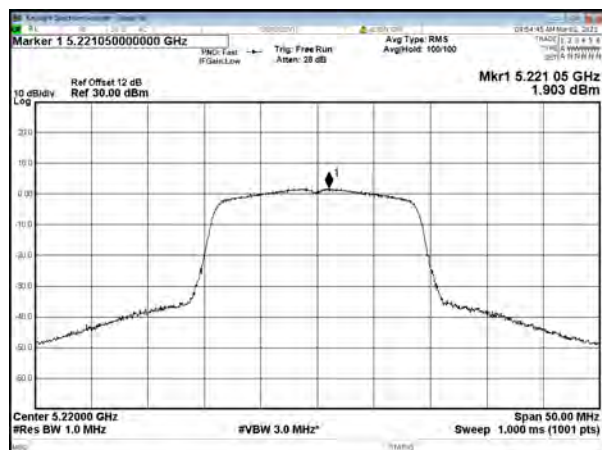
For 2TX
In the 5.2G Band
Chain 1
Modulation Standard: 802.11n HT20
(13 Mbps)
CH36



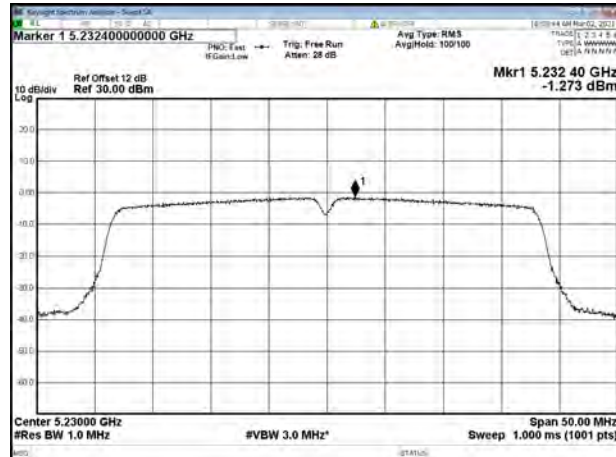
Modulation Standard: 802.11n HT40
(27 Mbps)
CH38



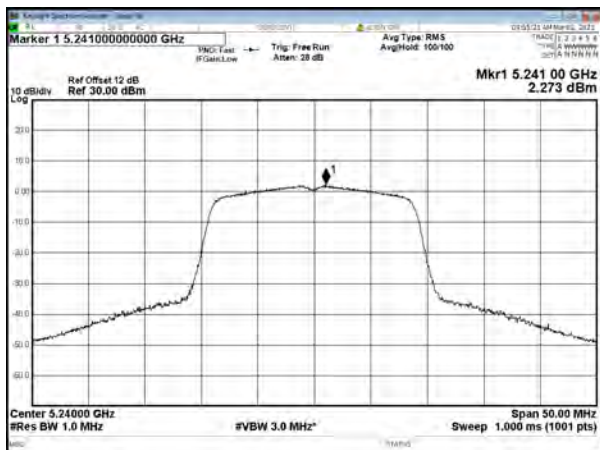
CH44



CH46

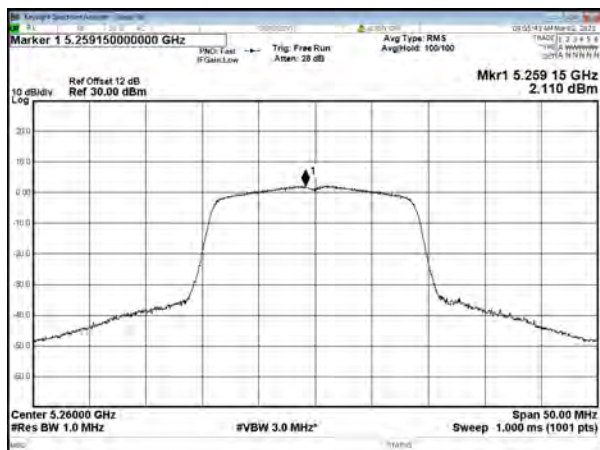


CH48

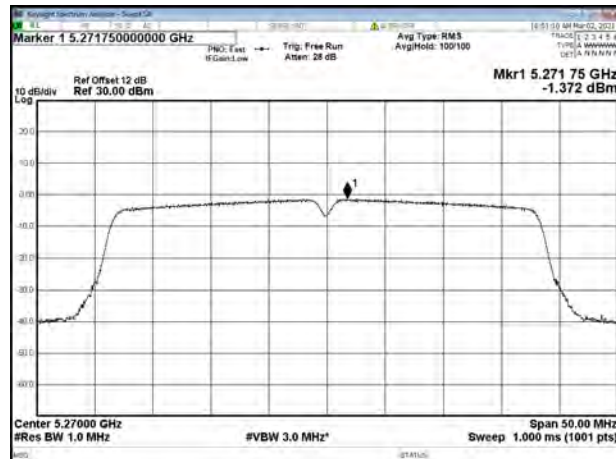




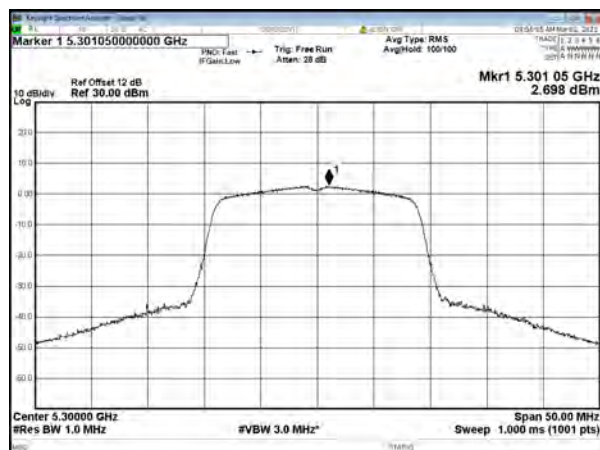
For 2TX
In the 5.3G Band
Chain 1
Modulation Standard: 802.11n HT20
(13 Mbps)
CH52



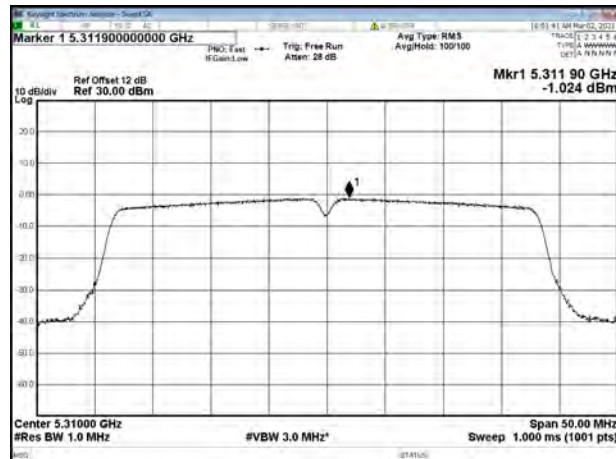
Modulation Standard: 802.11n HT40
(27 Mbps)
CH54



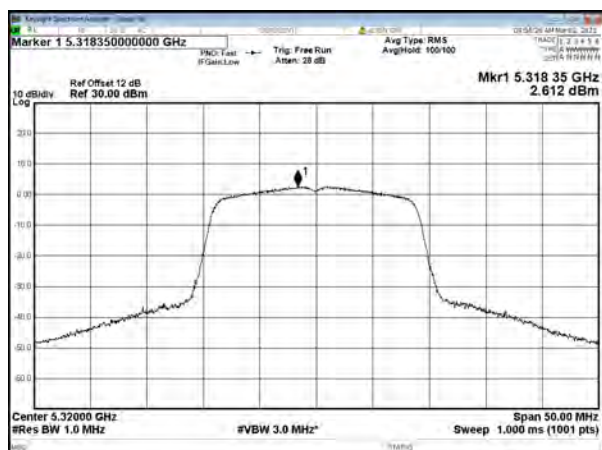
CH60



CH62

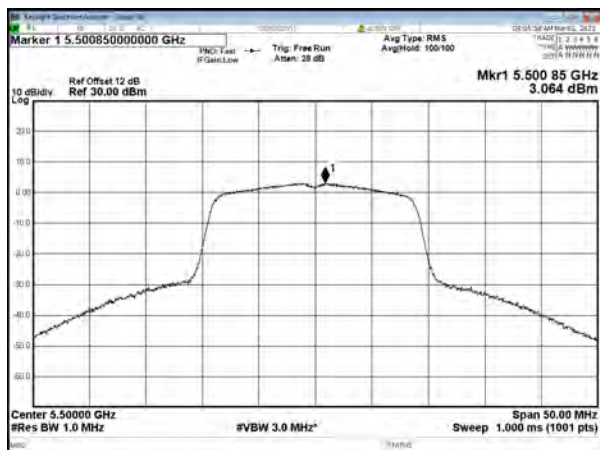


CH64

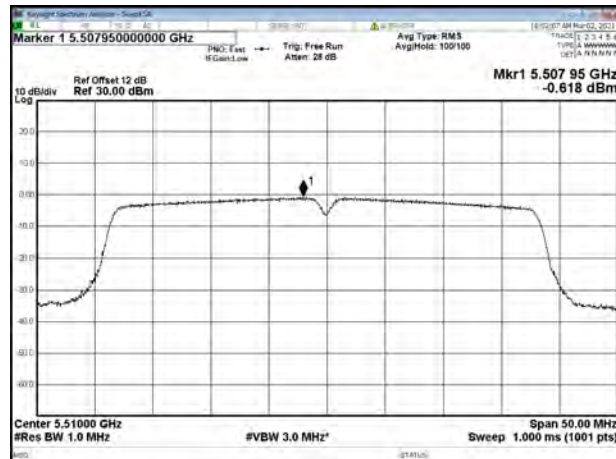




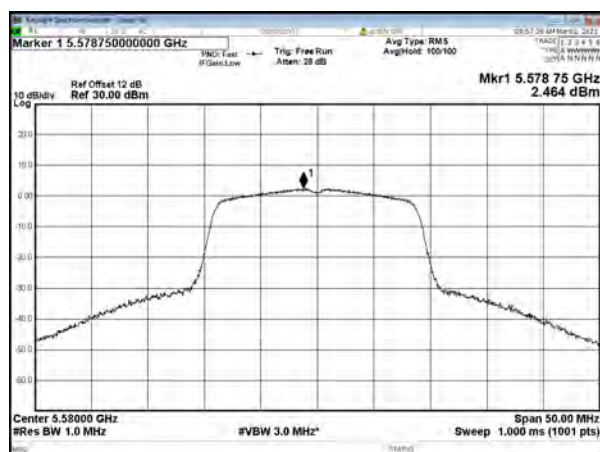
For 2TX
In the 5.5G Band
Chain 1
Modulation Standard: 802.11n HT20
(13 Mbps)
CH100



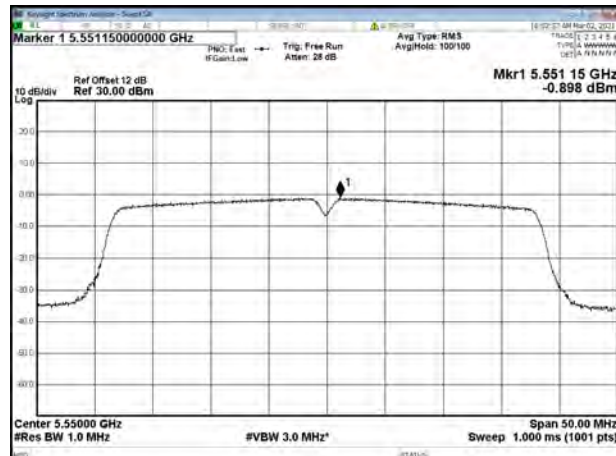
Modulation Standard: 802.11n HT40
(27 Mbps)
CH102



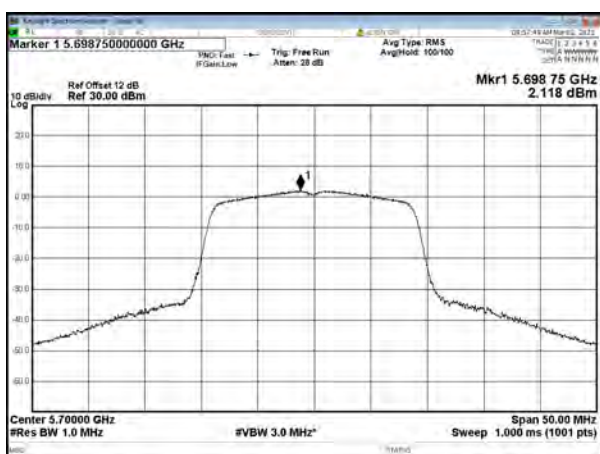
CH116



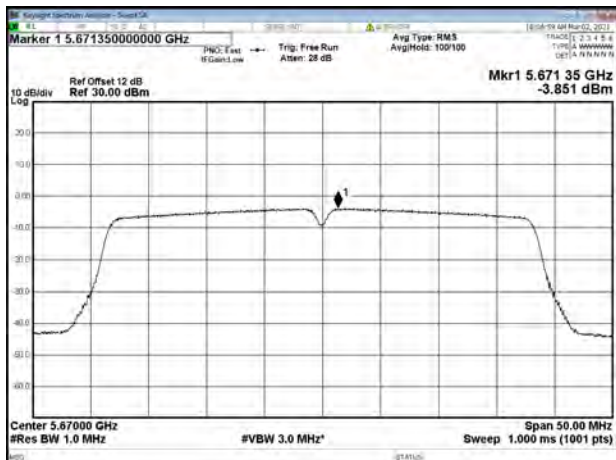
CH110



CH140

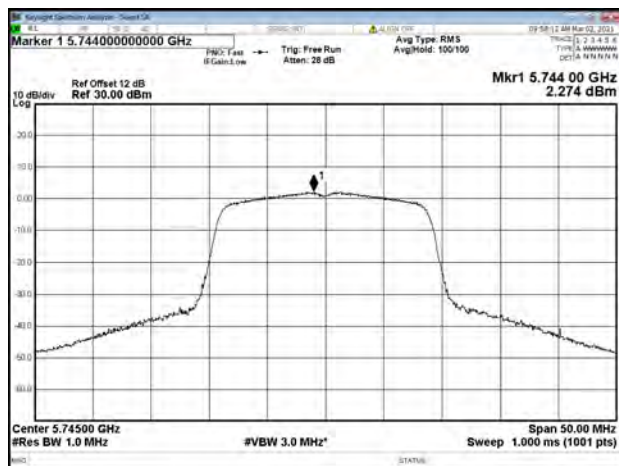


CH134

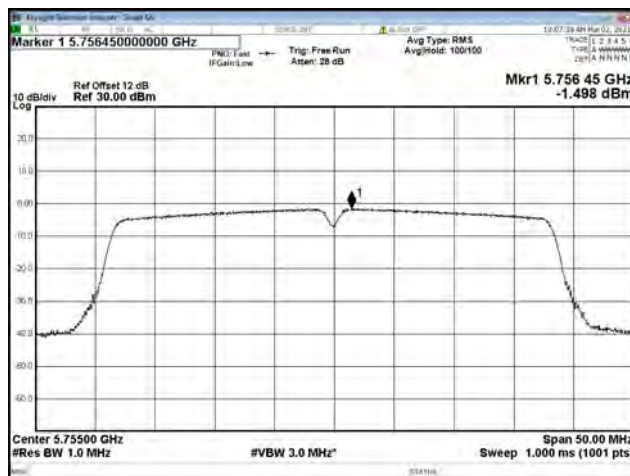




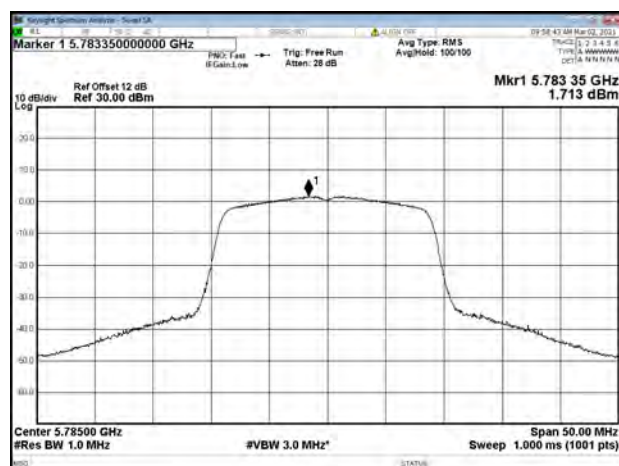
For 2TX
In the 5.8G Band
Chain 1
Modulation Standard: 802.11n HT20
(13 Mbps)
CH149



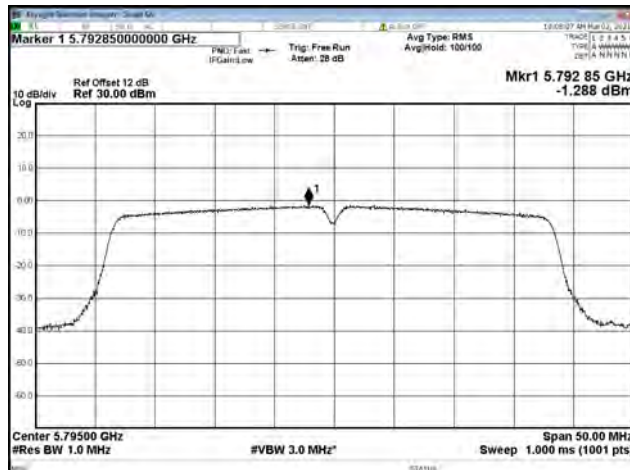
Modulation Standard: 802.11n HT40
(27 Mbps)
CH151



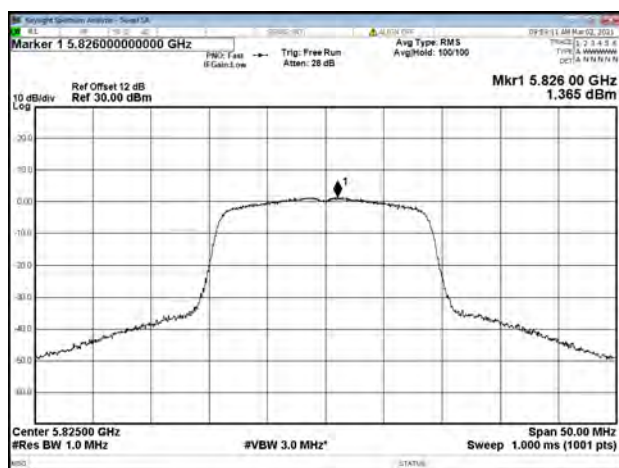
CH157



CH159

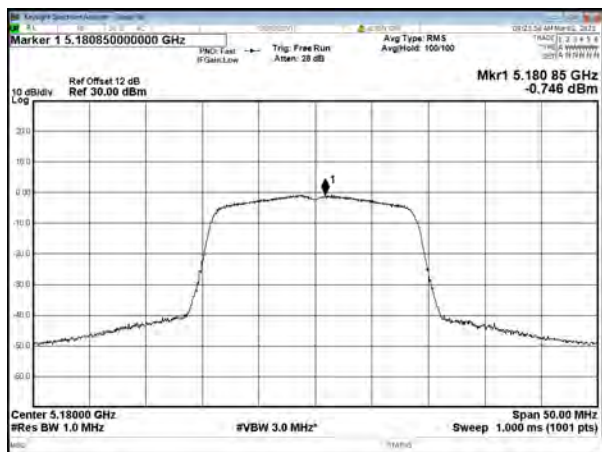


CH165

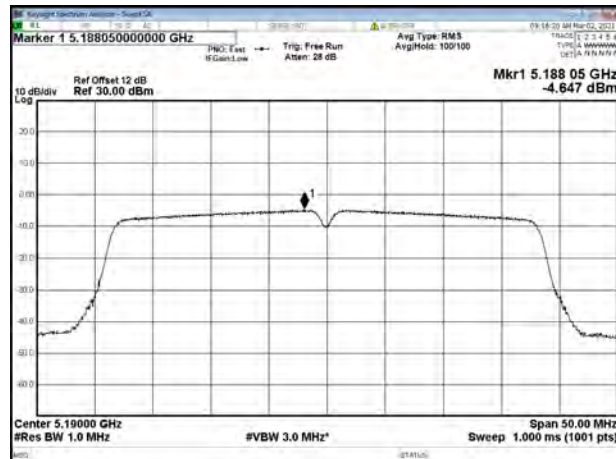




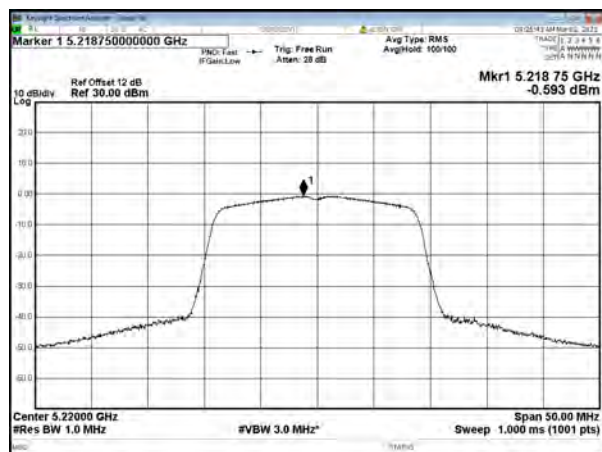
For 2TX
In the 5.2G Band
Chain 2
Modulation Standard: 802.11n HT20
(13 Mbps)
CH36



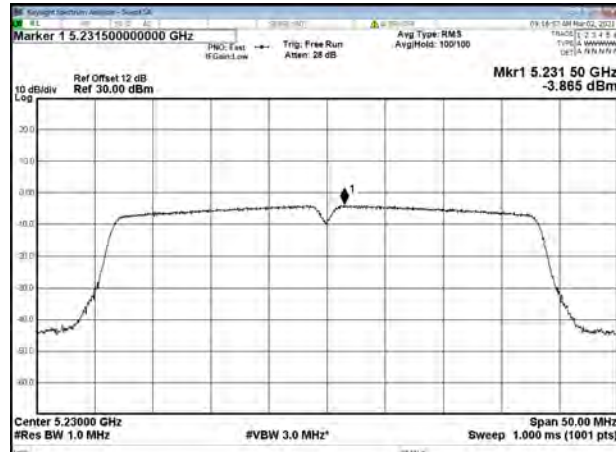
Modulation Standard: 802.11n HT40
(27 Mbps)
CH38



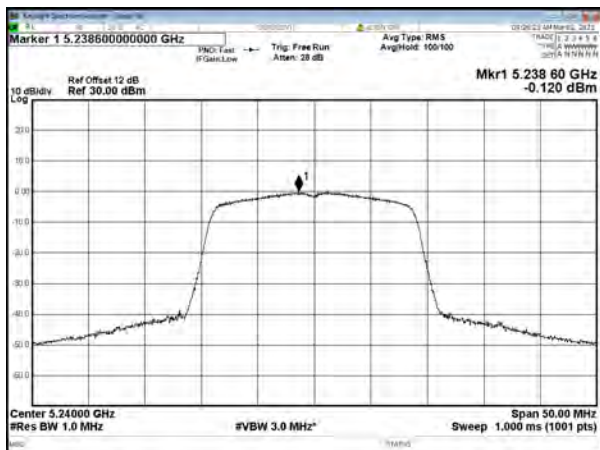
CH44



CH46

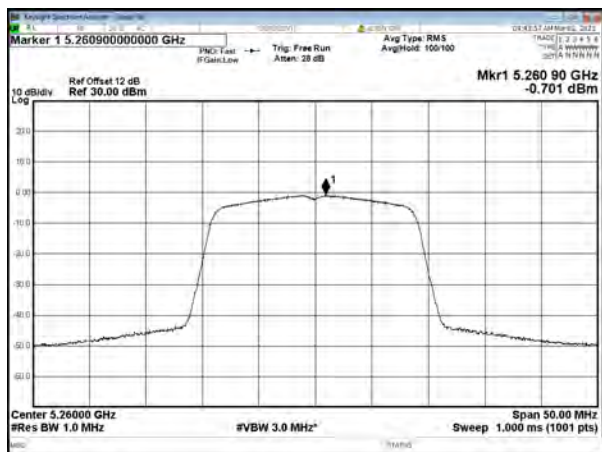


CH48

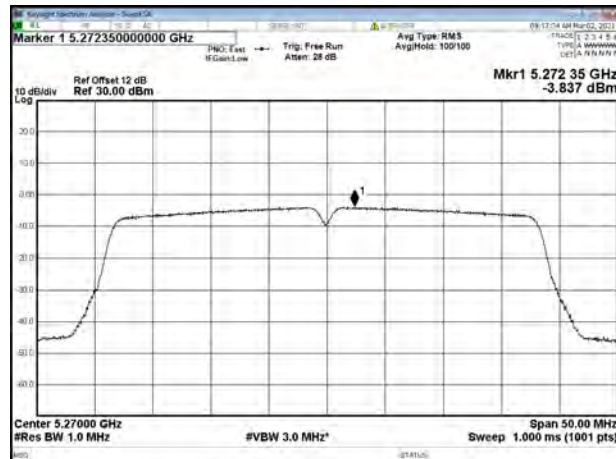




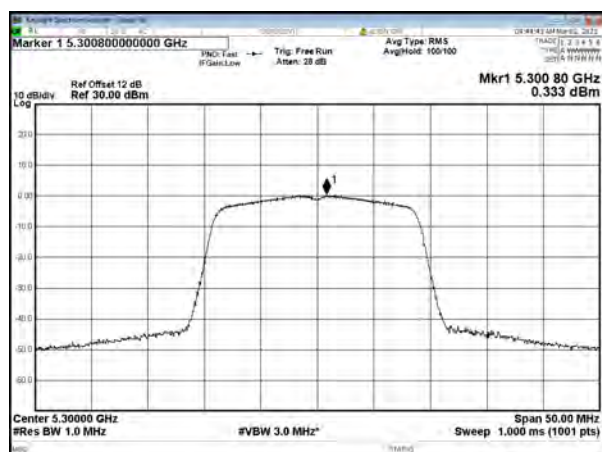
For 2TX
In the 5.3G Band
Chain 2
Modulation Standard: 802.11n HT20
(13 Mbps)
CH50



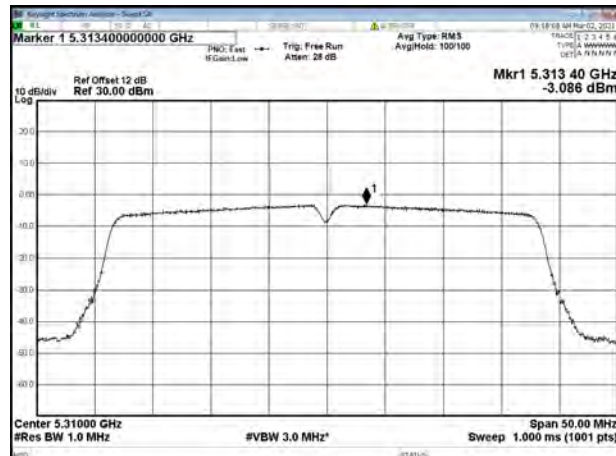
Modulation Standard: 802.11n HT40
(27 Mbps)
CH54



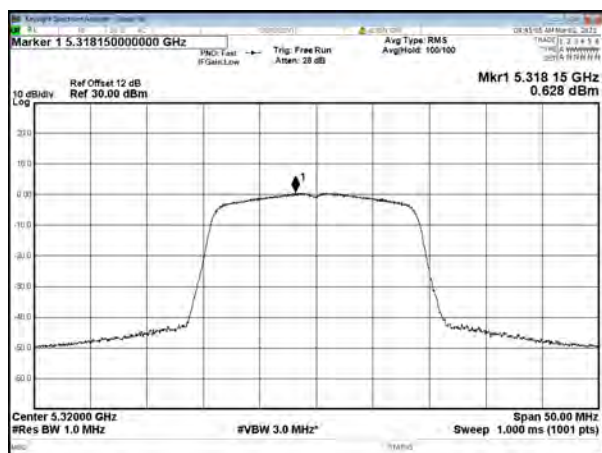
CH60



CH62

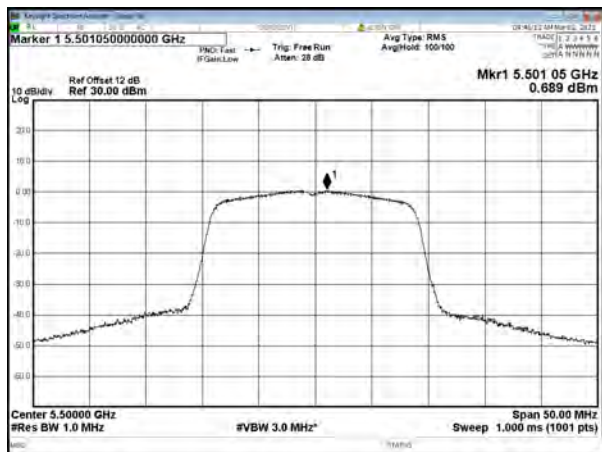


CH64





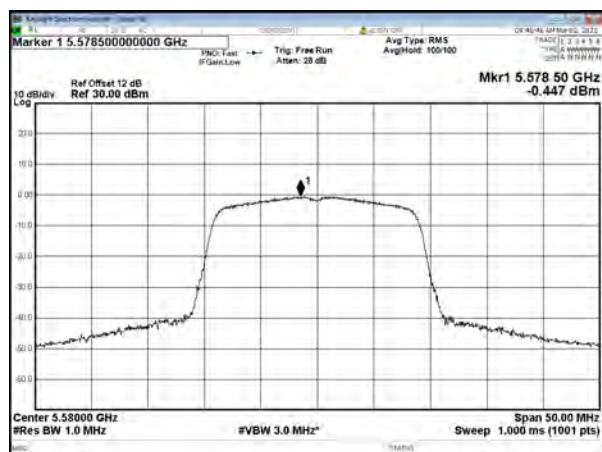
For 2TX
In the 5.5G Band
Chain 2
Modulation Standard: 802.11n HT20
(13 Mbps)
CH100



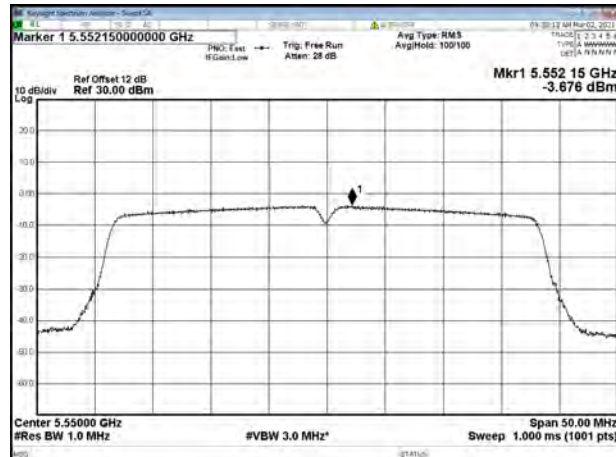
Modulation Standard: 802.11n HT40
(27 Mbps)
CH102



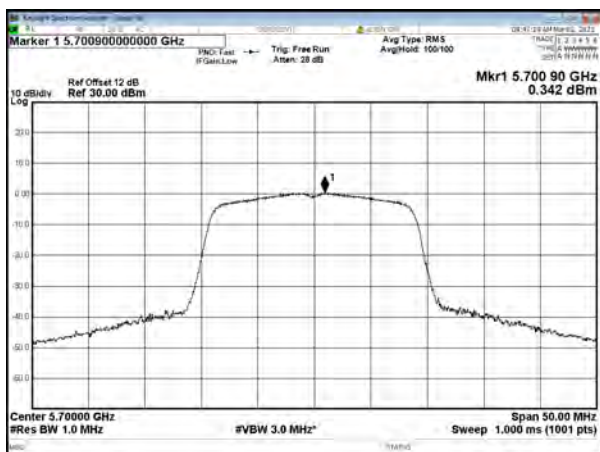
CH116



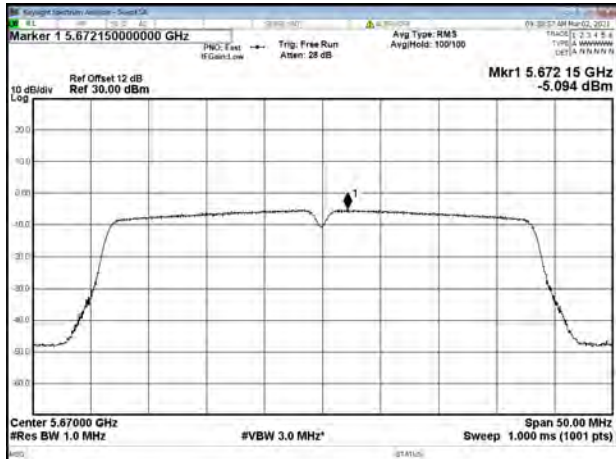
CH110



CH140

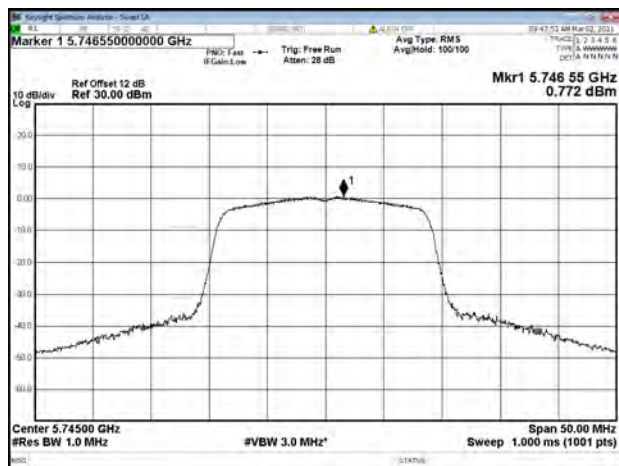


CH134

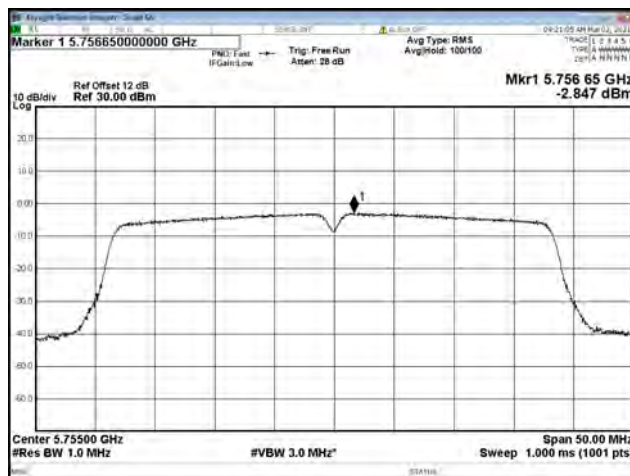




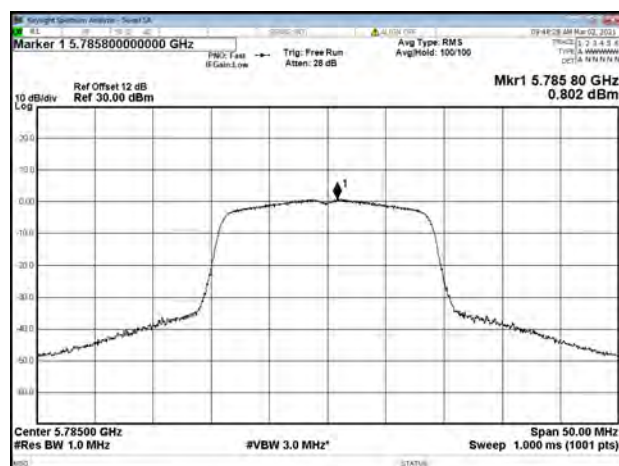
For 2TX
In the 5.8G Band
Chain 2
Modulation Standard: 802.11n HT20
(13 Mbps)
CH149



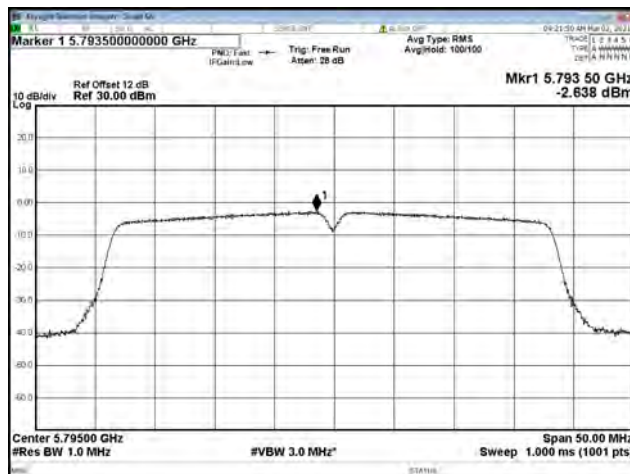
Modulation Standard: 802.11n HT40
(27 Mbps)
CH151



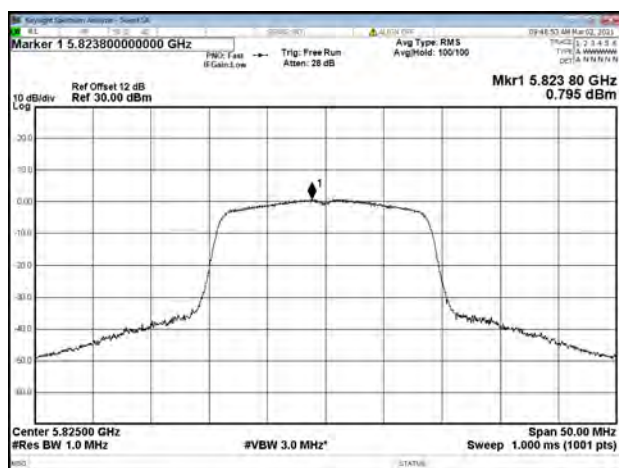
CH157



CH159



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 6.18 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。

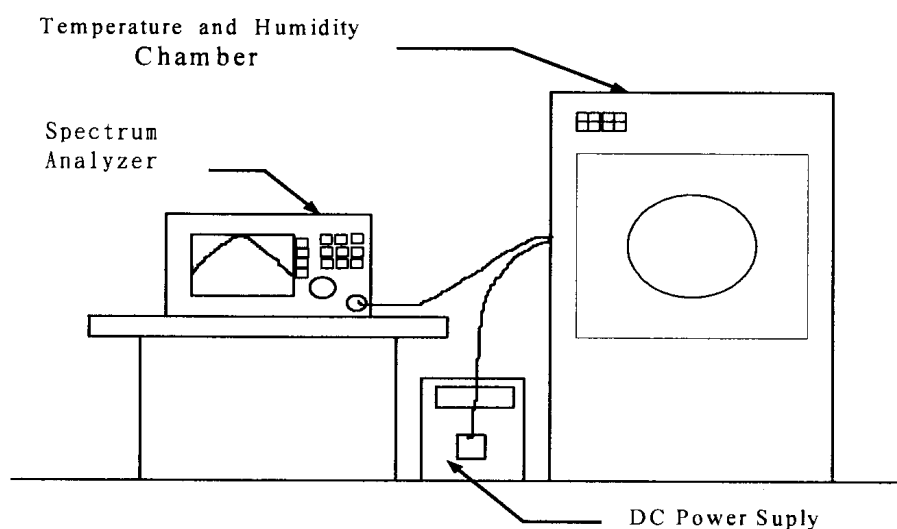
關閉 EUT 並將可控制溫度和濕度設備室設置為指定的最高溫度。

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)	(%)
70	3.6	5179.9427	-0.001106	5179.9435	-0.001091	5179.9465	-0.010328
	3.3	5179.9433	-0.001095	5179.9438	-0.001085	5179.9467	-0.010290
	3.0	5179.9542	-0.000884	5179.9440	-0.001081	5179.9463	-0.010367
60	3.6	5179.9472	-0.001019	5179.9522	-0.000923	5179.9531	-0.009054
	3.3	5179.9474	-0.001015	5179.9537	-0.000894	5179.9535	-0.008977
	3.0	5179.9464	-0.001035	5179.9536	-0.000896	5179.9538	-0.008919
50	3.6	5179.9582	-0.000807	5179.9559	-0.000880	5179.9552	-0.000749
	3.3	5179.9575	-0.000820	5179.9562	-0.000853	5179.9557	-0.008649
	3.0	5179.9573	-0.000824	5179.9564	-0.000846	5179.9552	-0.008552
40	3.6	5179.9565	-0.000840	5179.9578	-0.000851	5179.9588	-0.008649
	3.3	5179.9568	-0.000834	5179.9574	-0.000846	5179.9582	-0.007954
	3.0	5179.9570	-0.000830	5179.9576	-0.000842	5179.9583	-0.008069
30	3.6	5179.9615	-0.000743	5179.9620	-0.000815	5179.9628	-0.008050
	3.3	5179.9619	-0.000736	5179.9622	-0.000822	5179.9635	-0.007181
	3.0	5179.9618	-0.000737	5179.9616	-0.000819	5179.9629	-0.007046
20	3.6	5179.9610	-0.000753	5179.9616	-0.000734	5179.9624	-0.007162
	3.3	5179.9614	-0.000745	5179.9618	-0.000730	5179.9629	-0.007259
	3.0	5179.9611	-0.000751	5179.9614	-0.000741	5179.9625	-0.007162
10	3.6	5179.9632	-0.000710	5179.9638	-0.000741	5179.9658	-0.007239
	3.3	5179.9633	-0.000708	5179.9640	-0.000737	5179.9662	-0.006602
	3.0	5179.9637	-0.000701	5179.9642	-0.000745	5179.9660	-0.006525
0	3.6	5179.9652	-0.000672	5179.9666	-0.000699	5179.9667	-0.006564
	3.3	5179.9656	-0.000664	5179.9663	-0.000695	5179.9672	-0.006429
	3.0	5179.9655	-0.000666	5179.9670	-0.000691	5179.9678	-0.006332
-10	3.6	5179.9672	-0.000633	5179.9680	-0.000645	5179.9689	-0.006216
	3.3	5179.9674	-0.000629	5179.9682	-0.000651	5179.9692	-0.006004
	3.0	5179.9679	-0.000620	5179.9688	-0.000637	5179.9694	-0.005946



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
<p>Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.</p> <p>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.</p> <p>Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911</p>	

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
<p>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.</p>			



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

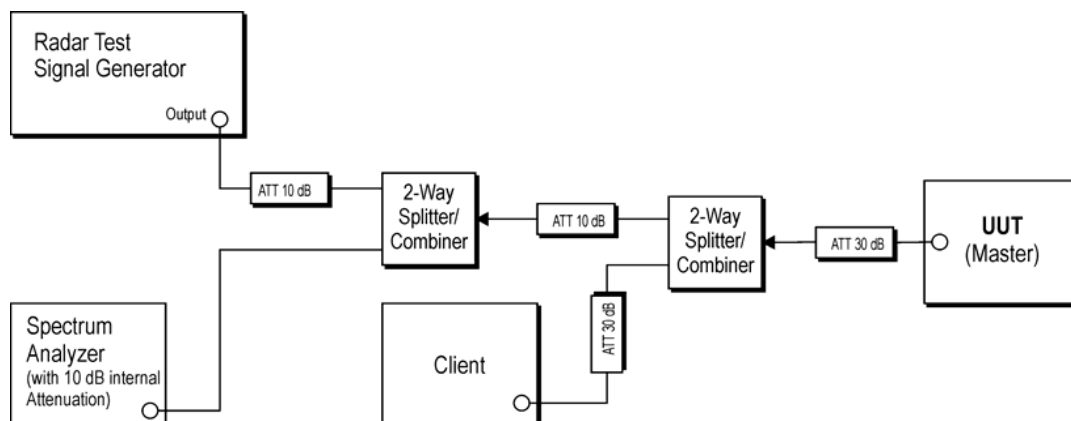


Figure 1: Example Conducted Setup where UUT is a Master and Radar Test Waveforms are injected into the Master

Setup for Client with injection at the Master

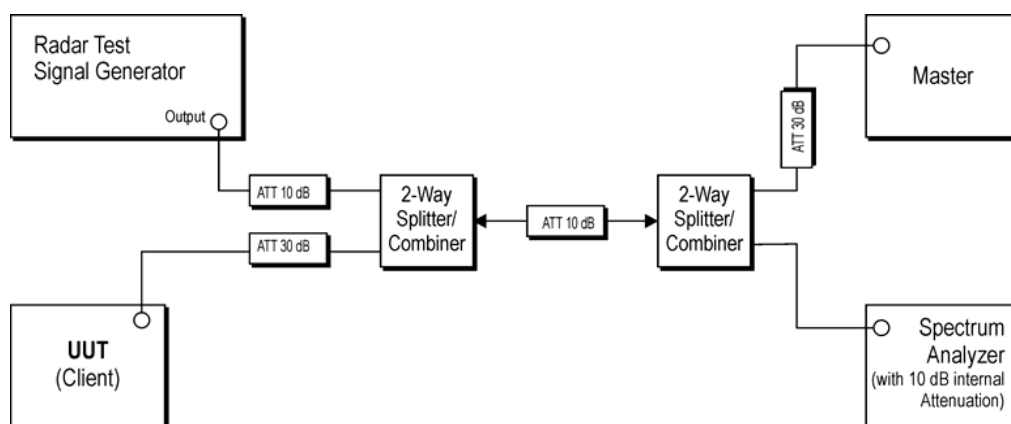


Figure 2: Example Conducted Setup where UUT is a Client and Radar Test Waveforms are injected into the Master



Setup for Client with injection at the Client

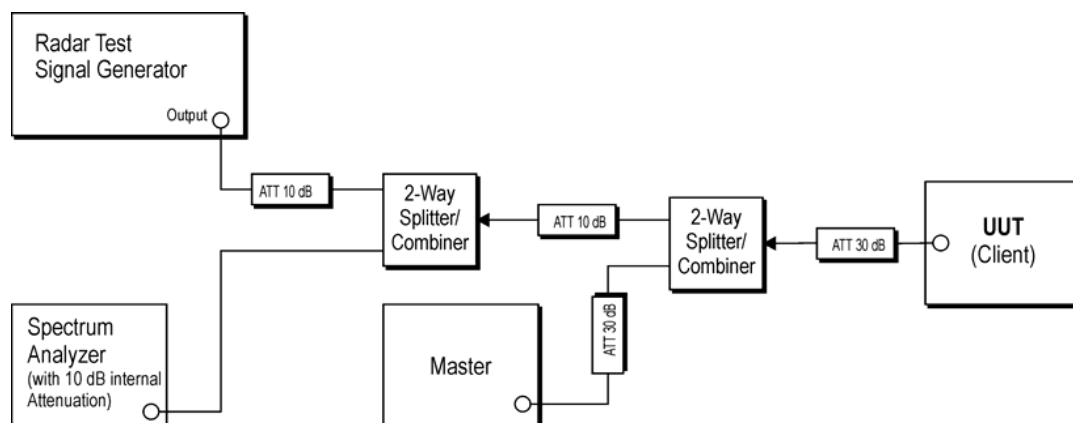


Figure 3: Example Conducted Setup where UUT is a Client and Radar Test Waveforms are injected into the Client



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

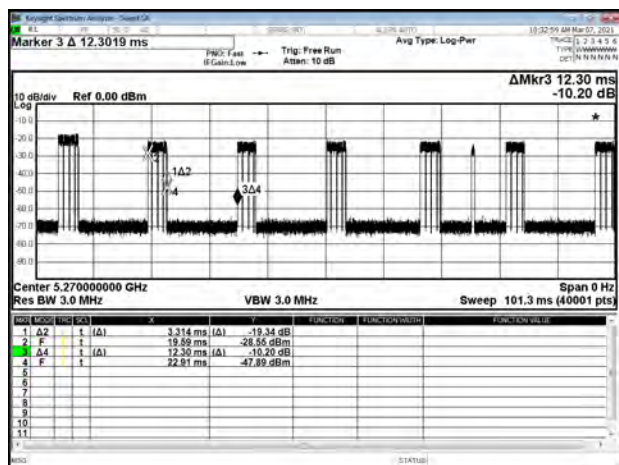
Radar Test Signal	Master (min)	Client (min)
0	> 30	> 30

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: 802.11n HT40

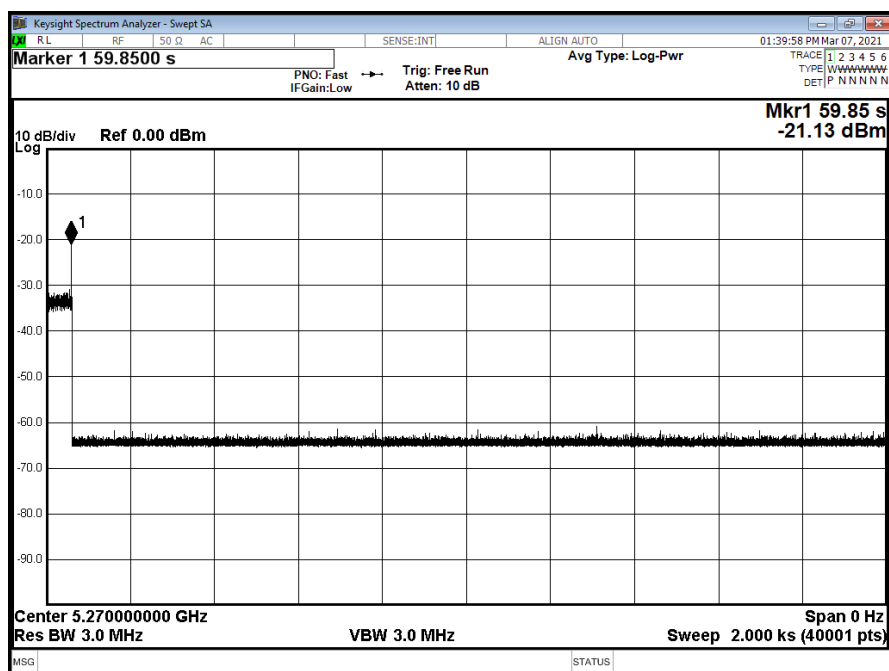
Time On/ (Time On + Off Time) = 3.314ms/15.614ms=21.22%



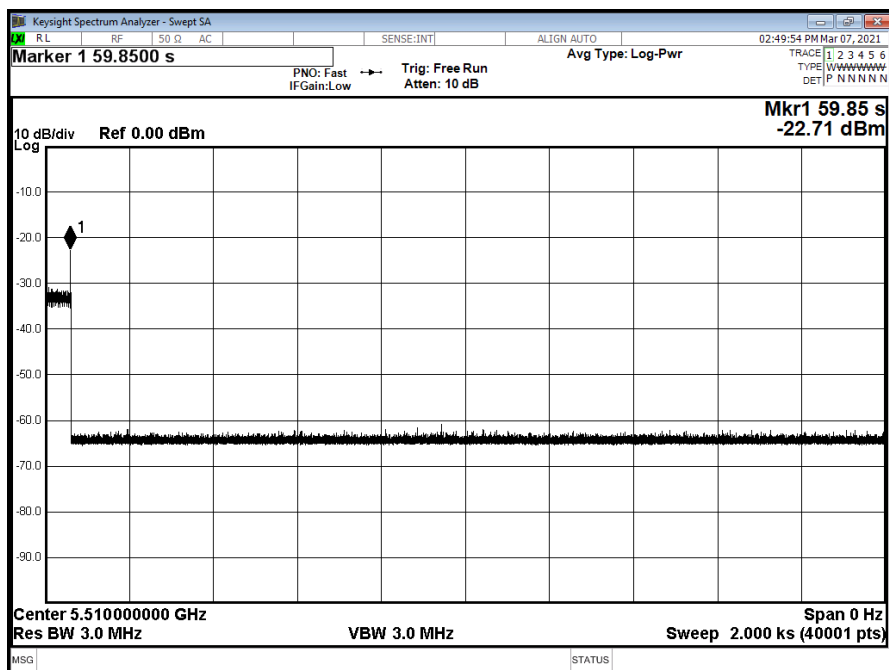


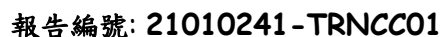
12.3.3. Test Result of Non-Occupancy Period

Modulation Standard: 802.11n HT40,5270MHz



Modulation Standard: 802.11 n HT40,5510MHz





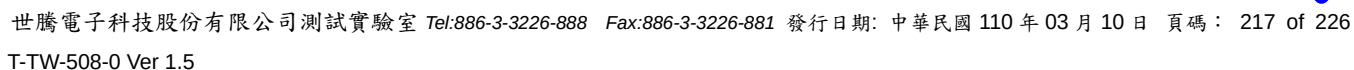
DFS Detection Threshold is the level used by the DFS mechanism to detect radar interference.

Limits Clause 4.7.2.1.2

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

Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911

EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz, Radar 0 VALUE
-62.64dBm





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.

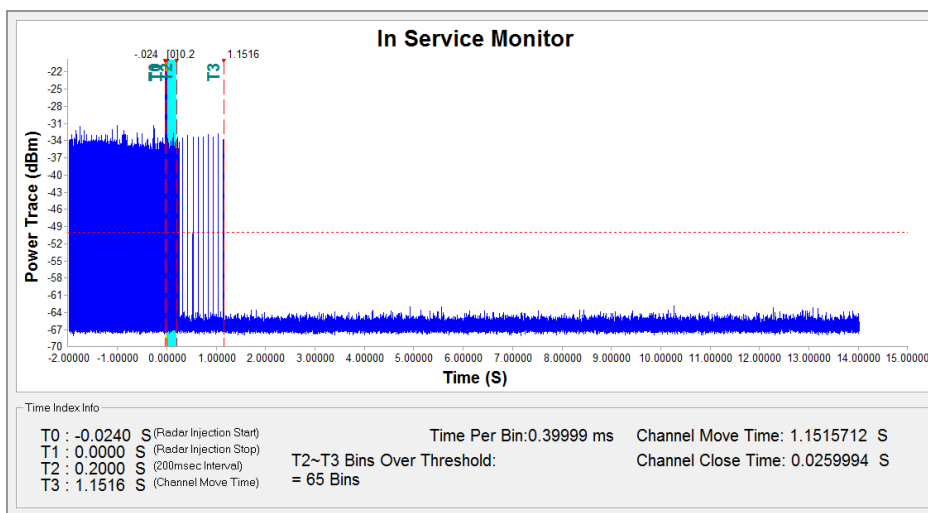
The In-Service-Monitoring shall start immediately after the RLAN has started transmissions on an Operating Channel.



12.8.2. Test Result of In-Service Monitoring

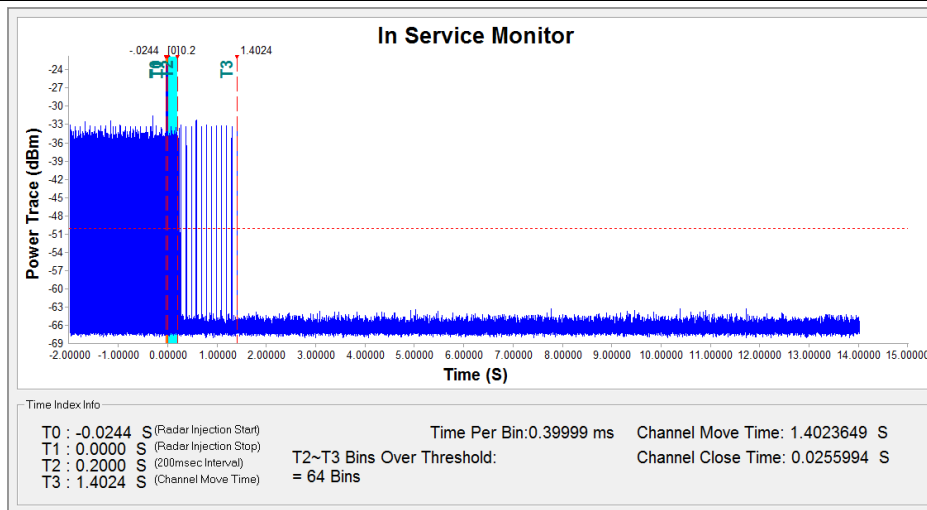
Signal 0 at 5270MHz, 802.11n HT40

	Value	Limit
Channel Move Time	1.152s	<10 s
Channel Closing Transmission Time	25.999ms	<60ms



Signal 0 at 5510MHz, 802.11n HT40

	Value	Limit
Channel Move Time	1.402s	<10 s
Channel Closing Transmission Time	25.599ms	<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 6.20 節之(6.20.2)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

For 1TX

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	15.45	15.45±1	16.45	44.15704474	1.8	20	0.015817053	1
5250-5350	15.89	15.89±1	16.89	48.86523593	1.8	20	0.017503528	1
5470-5725	15.32	15.32±1	16.32	42.85485204	1.8	20	0.015350608	1
5725-5850	14.59	14.59±1	15.59	36.22429984	1.8	20	0.012975544	1

For 2TX

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	15.81	15.81±1	16.81	47.97334486	1.8	20	0.017184052	1
5250-5350	16.05	16.05±1	17.05	50.69907083	1.8	20	0.018160407	1
5470-5725	16.19	16.19±1	17.19	52.36004366	1.8	20	0.018755368	1
5725-5850	15.62	15.62±1	16.62	45.91980128	1.8	20	0.016448473	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	