



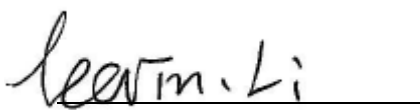
FCC RADIO TEST REPORT

Applicant	: Kaijet Technology International Corporation
Address	: 8F., No. 109, Zhongcheng Road, Tucheng Dist., New Taipei City, Taiwan R.O.C
Equipment	: 4K Wireless Display HDMI Extender
Model No.	: JVAW75 TX
Trade Name	: j5create
FCC ID.	: 2AD37JVAW75TX
Standard	: FCC part 15 Subpart E §15.407

I HEREBY CERTIFY THAT :

The sample was received on Apr. 23, 2023 and the testing was completed on May. 12, 2023 at CerpPASS Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of CerpPASS Technology Corp., the test report shall not be reproduced except in full.

Approved by:


Leevin Li / Supervisor

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History of this test report

■ Original.

□ Additional attachment as following record:

Report No.	Issue Date	Description
DEDG2303143	May. 18, 2023	Initial Issue



1. Summary of Test Procedure and Test Results

1.1. Applicable Standards

ANSI C63.10:2013

FCC Rules and Regulations Part 15 Subpart E §15.407

KDB 789033

FCC Rule	Description of Test	Result
15.203	Antenna Requirement	PASS
15.207(a)	AC Power Line Conducted Emission	PASS
15.407(b) 15.209	Radiated Spurious Emission	PASS
15.407(a)	26 dB & Occupied Bandwidth	PASS
15.407 (a) & (a)(3)	Average Power	PASS
15.407(a)	Power Spectral Density	PASS
15.407(g)	Frequency Stability	PASS
15.407(c)	Automatically Discontinue Transmission	PASS
Note: Deviations Yes ☐ No ☒ *The lab has reduced the uncertainty risk factor from test equipment, environment and staff technicians which according to the standard on contract. Therefore, the test result will only be determined by standard requirement.		



2. Test Configuration of Equipment under Test

2.1. Feature of Equipment and Model Description

Equipment	4K Wireless Display HDMI Extender
Model Name	JVAW75 TX
Model Discrepancy	N/A
Chipset	RTL8821CU
Frequency Range	WIFI 2.4G: 2400MHz-2483.5MHz WIFI 5G: 5150MHz-5250MHz, 5725MHz -5850MHz
Modulation Type	2.4GHz 802.11b: CCK, DQPSK, DBPSK 802.11g/n: BPSK, QPSK, 16QAM, 64QAM 5GHz 802.11a/n: BPSK, QPSK, 16QAM, 64QAM 802.11ac: BPSK, QPSK, 16QAM, 64QAM, 256QAM
Data Rate	WIFI 2.4GHz: 802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: HT20 reach up to 72.2Mbps, HT40 reach up to 150Mbps WIFI 5GHz: 802.11a: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: HT20 reach up to 72.2Mbps, HT40 reach up to 150Mbps 802.11ac: VHT20 reach up to 86.7Mbps, VHT40 reach up to 200Mbps, VHT80 reach up to 433.3Mbps
Antenna Type	Dual Frequency Antenna
Working Temperature	0°C to +35°C
Operating Voltage	DC 5V/1A

Note: For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.



2.2. Carrier Frequency of Channels

Band : 5150MHz-5250MHz

802.11a, 802.11n HT 20, 802.11ac VHT20,

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

802.11n HT 40, 802.11ac VHT40

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

802.11ac VHT80

Channel	Frequency(MHz)
*42	5210

Band : 5725MHz -5850MHz

802.11a, 802.11n HT 20, 802.11ac VHT20

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

802.11n HT 40, 802.11ac VHT40

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

802.11ac VHT80

Channel	Frequency(MHz)
*155	5775

Note: Channels remarked * are selected to perform test.



2.3. Test Mode and Test Software

- During testing, the interface cables and equipment positions were varied according to ANSI C63.10.
- The complete test system included Notebook, adapter and EUT for RF test.
- An executive program, "MP819xVC.exe (Ver.: 1.0.0.8)" under Windows 10 system was executed to transmit and receive data via WLAN.
- The following test modes were performed for the test:

Conducted Emissions from the AC mains power ports	
Test Mode	Operating Description
1	802.11a (6Mbps) for AC120V
2	802.11n HT20 (6.5Mbps) for AC120V
3	802.11n HT40 (13.5Mbps) for AC120V
4	802.11ac VHT20 (6.5Mbps) for AC120V
5	802.11ac VHT40 (13.5Mbps) for AC120V
6	802.11ac VHT80 (29.3Mbps) for AC120V
7	802.11ac VHT40 (13.5Mbps) for AC240V
caused "Test Mode 5 at CH46:5230MHz" generated the worst case, it was reported as the final data.	
Radiation Emissions (Below 1GHz)	
Test Mode	Operating Description
1	802.11a (6Mbps)
2	802.11n HT20 (6.5Mbps)
3	802.11n HT40 (13.5Mbps)
4	802.11ac VHT20 (6.5Mbps)
5	802.11ac VHT40 (13.5Mbps)
6	802.11ac VHT80 (29.3Mbps)
caused "Test Mode 5 at CH46:5230MHz" generated the worst case, it was reported as the final data.	
Radiation Emissions (1GHz ~ 40GHz)	
Test Mode	Operating Description
1	802.11a (6Mbps)
2	802.11n HT20 (6.5Mbps)
3	802.11n HT40 (13.5Mbps)
4	802.11ac VHT20 (6.5Mbps)
5	802.11ac VHT40 (13.5Mbps)
6	802.11ac VHT80 (29.3Mbps)
caused "Test Mode 1,4~6" generated the worst case, it was reported as the final data.	

Modulation Type	TX CONFIGURATION
802.11a	1TX
802.11n HT20	1TX
802.11n HT40	1TX
802.11ac VHT20	1TX
802.11ac VHT40	1TX
802.11ac VHT80	1TX
* VHT20/VHT40 covers HT20/HT40, due to same modulation. 802.11ac mode is the worst case for final tests except RF output power test after pretesting all modulation type.	



2.4. Power Parameter Value of the test software

Band: 5150MHz-5250MHz					
Mode	Frequency (MHz)	Setting level			
		Ant 1	Ant 2	Ant 1+2	
				Ant 1	Ant 2
802.11a	5180	43	N/A	N/A	N/A
	5220	43	N/A	N/A	N/A
	5240	43	N/A	N/A	N/A
802.11n HT20	5180	41	N/A	N/A	N/A
	5220	41	N/A	N/A	N/A
	5240	41	N/A	N/A	N/A
802.11n HT40	5190	40	N/A	N/A	N/A
	5230	40	N/A	N/A	N/A
802.11ac VHT20	5180	41	N/A	N/A	N/A
	5220	41	N/A	N/A	N/A
	5240	41	N/A	N/A	N/A
802.11ac VHT40	5190	40	N/A	N/A	N/A
	5230	40	N/A	N/A	N/A
802.11ac VHT80	5210	38	N/A	N/A	N/A

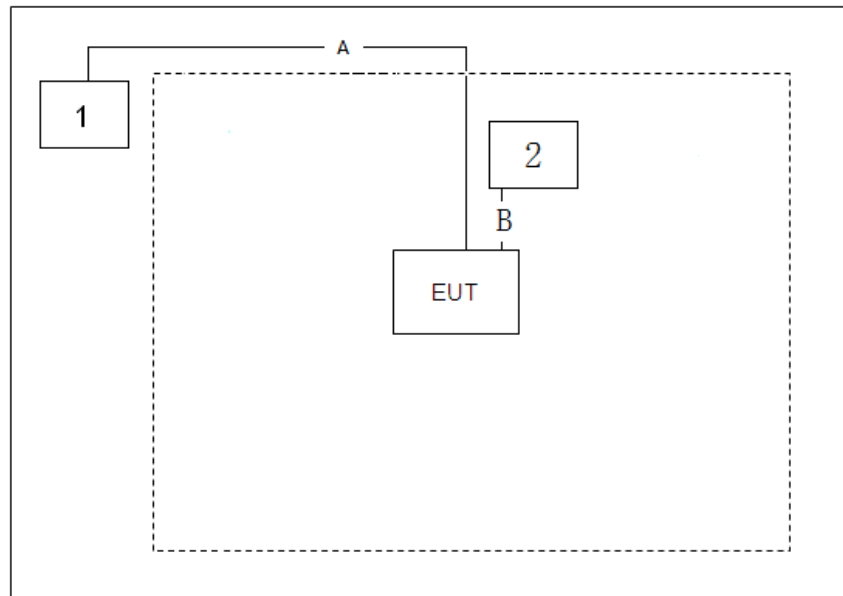
Band: 5725MHz -5850MHz					
Mode	Frequency (MHz)	Setting level			
		Ant 1	Ant 2	Ant 1+2	
				Ant 1	Ant 2
802.11a	5745	43	N/A	N/A	N/A
	5785	43	N/A	N/A	N/A
	5825	43	N/A	N/A	N/A
802.11n HT20	5745	41	N/A	N/A	N/A
	5785	41	N/A	N/A	N/A
	5825	41	N/A	N/A	N/A
802.11n HT40	5755	40	N/A	N/A	N/A
	5795	40	N/A	N/A	N/A
802.11ac VHT20	5745	41	N/A	N/A	N/A
	5785	41	N/A	N/A	N/A
	5825	41	N/A	N/A	N/A
802.11ac VHT40	5755	40	N/A	N/A	N/A
	5795	40	N/A	N/A	N/A
802.11ac VHT80	5775	38	N/A	N/A	N/A



2.5. Description of Test System

Product	Manufacturer	Model No.	Power Cord
1 Notebook	SONY	PCG-71811P	Non-Shielded, 1.8m
2 Adapter	MI	MDY-12-ES	N/A

Connection Diagram



Signal Cable Type	Quantity	Signal cable Description
A USB Cable	1	5.0m Shielding
B Type-c Cable	1	1.0m Shielding



2.6. General Information of Test

Test Site	CerpPASS Technology Corporation(CerpPASS Laboratory) Address: Room 102, No. 5, Xing'an Road, Chang'an Town, Dongguan City, Guangdong Province Tel: +86-769-8547-1212 Fax: +86-769-8547-1912
FCC Designation No.:	CN1288
Frequency Range Investigated:	Conducted: from 150kHz to 30 MHz Radiation: from 30 MHz to 40,000MHz
Test Distance:	The test distance of radiated emission from antenna to EUT is 3 M.

Test Item	Test Site	Test period	Environmental Conditions	Tested By
RF Conducted	RFCON01-DG	2023/05/12	24℃ / 53%	Amos Zhang
Radiated Emissions	3M01-DG	2023/05/10~2023/05/12	22~24℃ / 52~57%	Amos Zhang
AC Power Line Conducted Emission	CON01-DG	2023/05/12	24℃ / 57%	Amos Zhang

2.7. Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

Measurement Item	Uncertainty
AC Power Line Conduction(150K~30MHz)	±2.60dB
Radiated Spurious Emission(9KHz~30MHz)	±4.99dB
Radiated Spurious Emission(30MHz~1GHz)	±4.39dB
Radiated Spurious Emission(1GHz~18GHz)	±5.36dB
Radiated Spurious Emission(18GHz~40GHz)	±5.43dB
6dB Bandwidth&26dB Bandwidth	±4.8%
Occupied Bandwidth	±4.5%
Peak Output Power(Conducted Power Meter)	±0.94dB
Power Spectral Density	±1.01dB
Frequency Stability	±99.743Hz



3. Test Equipment and Ancillaries Used for Tests

AC Power Line Conducted Emission					
Test Site	CON01-DG				
Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
Test Receiver	R&S	ESCI	100564	2023.01.06	2024.01.05
LISN	SCHWARZBECK	NSLK 8127	8127748	2023.01.06	2024.01.05
LISN	R&S	ENV216	100024	2023.01.06	2024.01.05
ISN	TESEQ	ISN T800	42809	2023.05.06	2024.05.05
Pulse Limiter with 10dB Attenuation	SCHWARZBECK	VTSD 9561-F	9561-F106	2023.01.06	2024.01.05
Temperature/ Humidity Meter	GEMLEAD	STH200A	N/A	2022.08.05	2023.08.04

Radiated Emissions					
Test Site	3M01-DG				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date
EMI Test Receiver	R&S	ESCI	100565	2023.05.06	2024.05.05
Amplifier	EMCI	EMC330	980082	2023.05.06	2024.05.05
Loop Antenna	R&S	HFH2-Z2	100150	2022.05.11	2024.05.10
Bilog Antenna	Sunol Science	JB6	A111218	2023.01.12	2025.01.11
Preamplifier	Agilent	8449B	3008A02342	2023.01.06	2024.01.05
Preamplifier	COM-POWER	PA-840	711885	2023.05.06	2024.05.05
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120 D	9120D-619	2022.05.22	2024.05.21
Standard Gain Horn Antenna	TRC	HA-2640	18050	2022.05.09	2024.05.08
Standard Gain Horn Antenna	TRC	HA-1726	18051	2022.05.09	2024.05.08
FSQ Signal Analyzer	R&S	FSQ40	200012	2023.05.06	2024.05.05
Temperature/ Humidity Meter	GEMLEAD	STH200A	N/A	2022.08.05	2023.08.04

RF Conducted					
Test Site	RFCON01-DG				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date
MXA Signal Analyzer	KEYSIGHT	N9020A	US46220290	2023.05.06	2024.05.05
EXA Signal Analyzer	KEYSIGHT	N9010A	MY53400169	2023.05.06	2024.05.05
ESG VECTOR SIGNAL GENERATOR	Agilent	E4438C	MY45092582	2023.05.06	2024.05.05
MXG VECTOR SIGNAL GENERATOR	Agilent	N5182B	MY53050127	2023.05.06	2024.05.05
USB Wideband Power Sensor	Boonton	55006	9778	2023.01.06	2024.01.05
Temperature/ Humidity Meter	mingle	ETH529	N/A	2023.01.06	2024.01.05



4. Antenna Requirements

4.1. Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.407 (a), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.2. Antenna Construction and Directional Gain

WIFI 5G:

Antenna Type	Dual Frequency Antenna
Antenna Gain	5150MHz - 5250MHz: 1.27dBi 5725MHz - 5850MHz: 0.54dBi

(Non-Beamforming)



5. Test of AC Power Line Conducted Emission

5.1. Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz, according to the methods defined in ANSI C63.4-2014. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

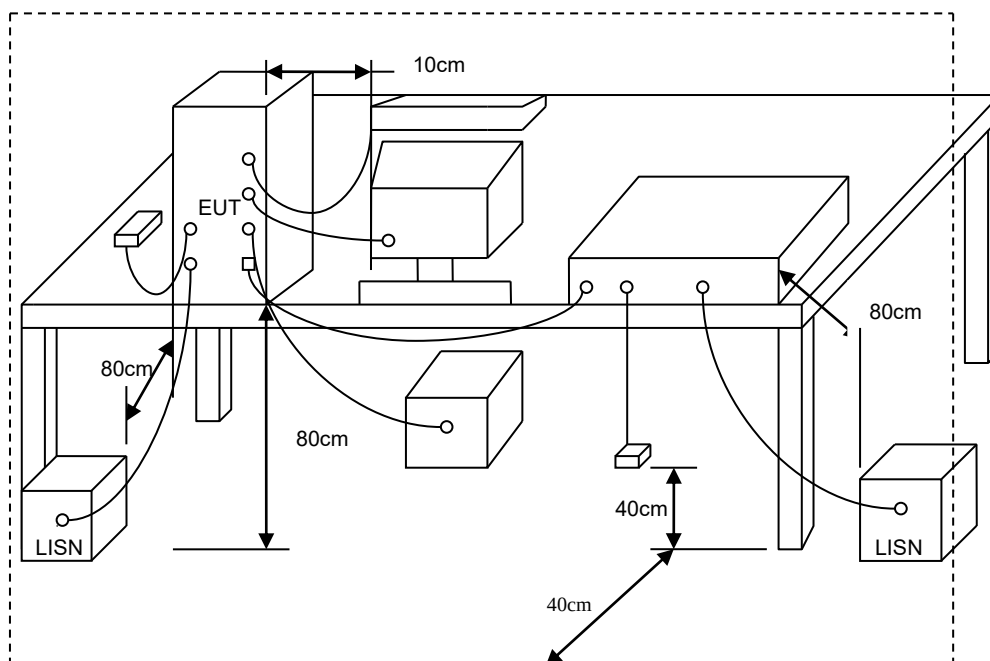
Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

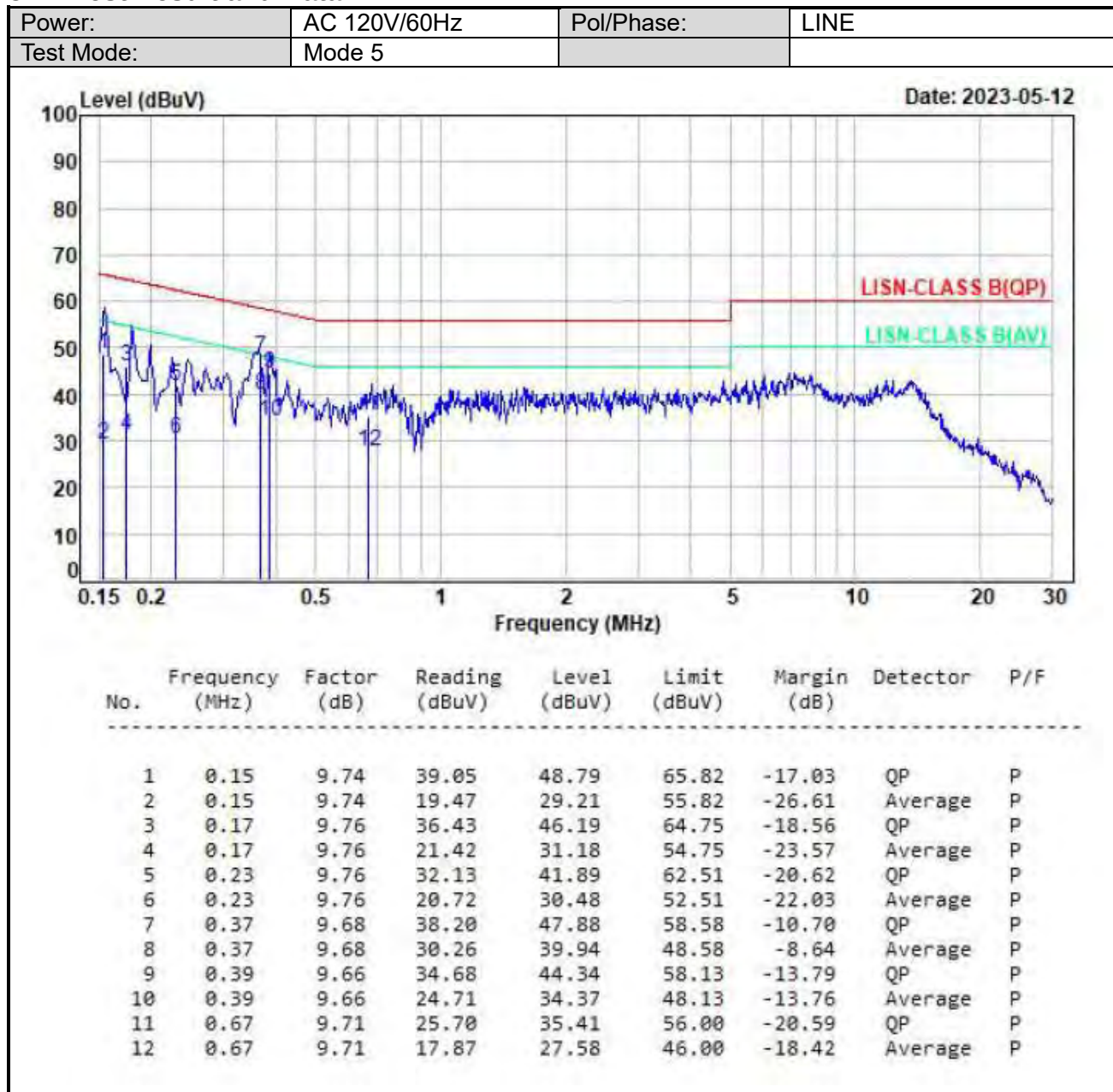
*Decreases with the logarithm of the frequency.

5.2. Test Procedures

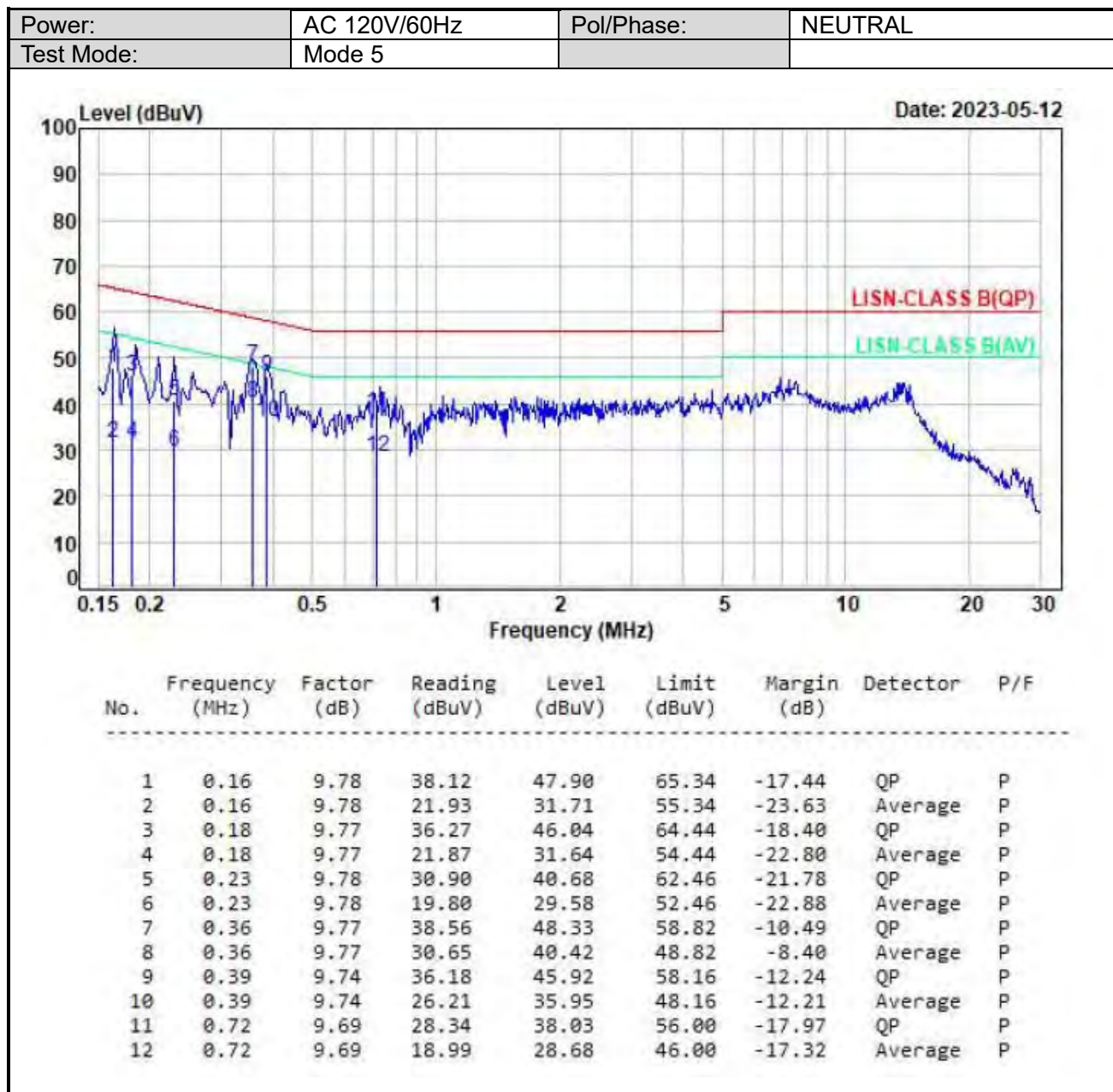
- The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- Connect EUT to the power mains through a line impedance stabilization network (LISN).
- All the support units are connecting to the other LISN.
- The LISN provides 50 ohm coupling impedance for the measuring instrument.
- The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
- Both sides of AC line were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched.
- Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

5.3. Typical Test Setup



**5.4. Test Result and Data**

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



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



6. Test of Spurious Emission (Radiated)

6.1. Test Limit

Undesirable emission limits. Except as shown in paragraph 15.407(b)(9)(10) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- (1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (4) For transmitters operating in the 5.725-5.85 GHz band:
All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27dBm/MHz at the band edge.
- (5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
- (6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.
- (7) The provisions of §15.205 apply to intentional radiators operating under this section.
- (8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.

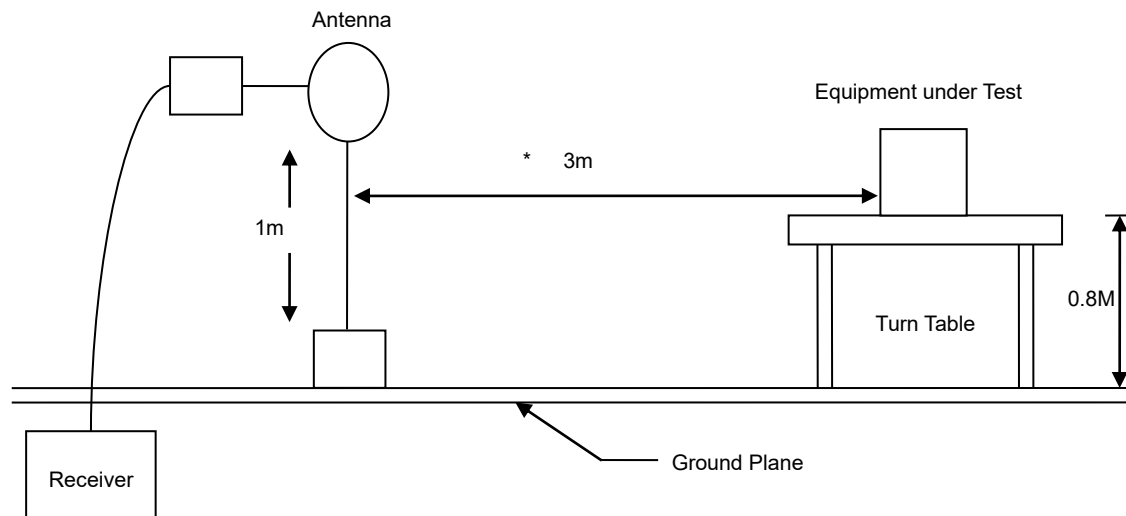
6.2. Test Procedures

- a. The EUT was placed on a rotatable table top 0.8 meter above ground.
- b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- f. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
- h. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- i. "Cone of radiation" has been considered to be 3dB bandwidth of the measurement antenna.
Note: The supporting fixture shall permit orientation of the EUT in each of three orthogonal axis positions sch that emissions from the EUT are maximized.(X-AXIS is the worst.)

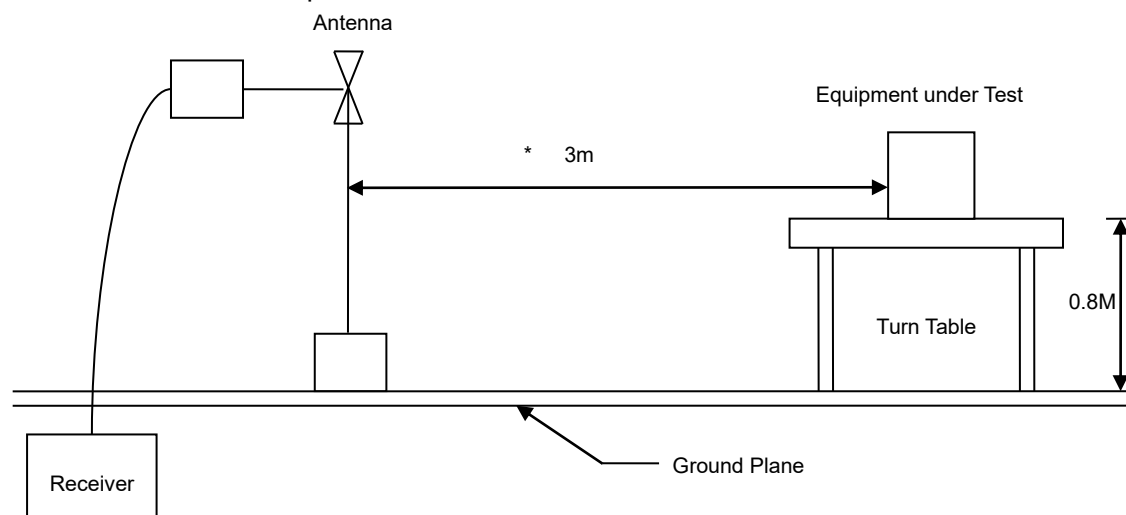


6.3. Typical Test Setup

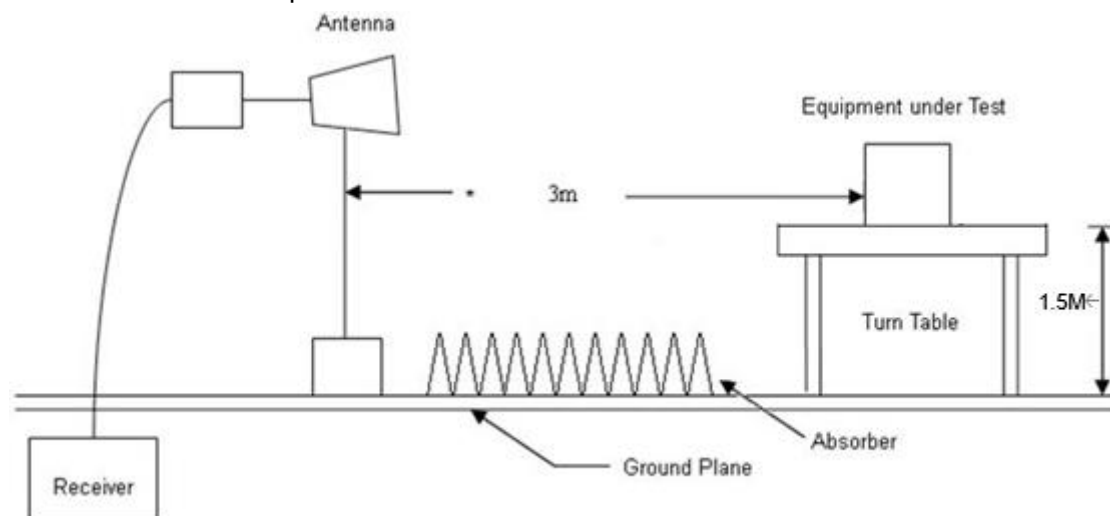
Below 30MHz test setup



30MHz- 1GHz Test Setup



Above 1GHz Test Setup

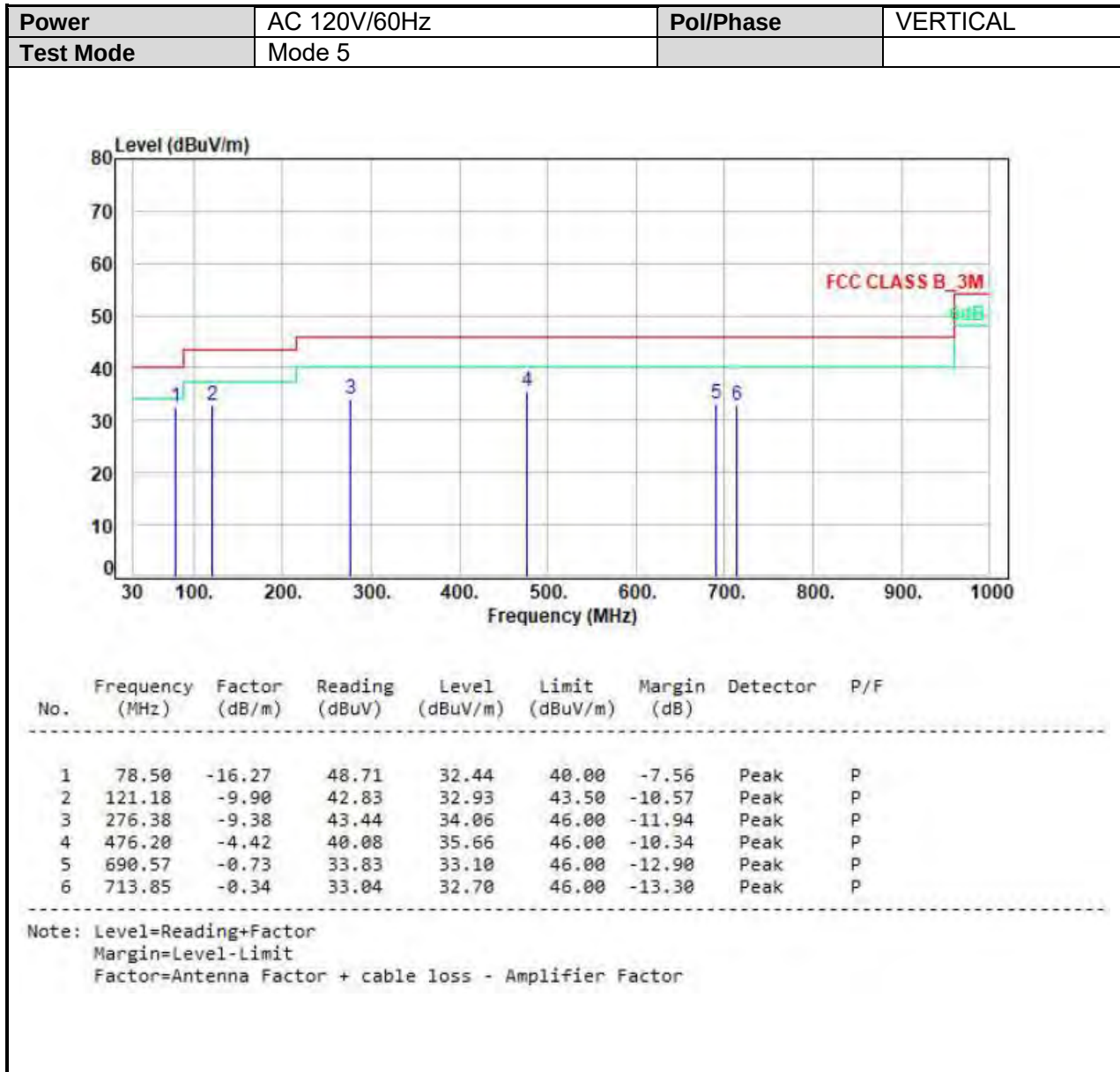


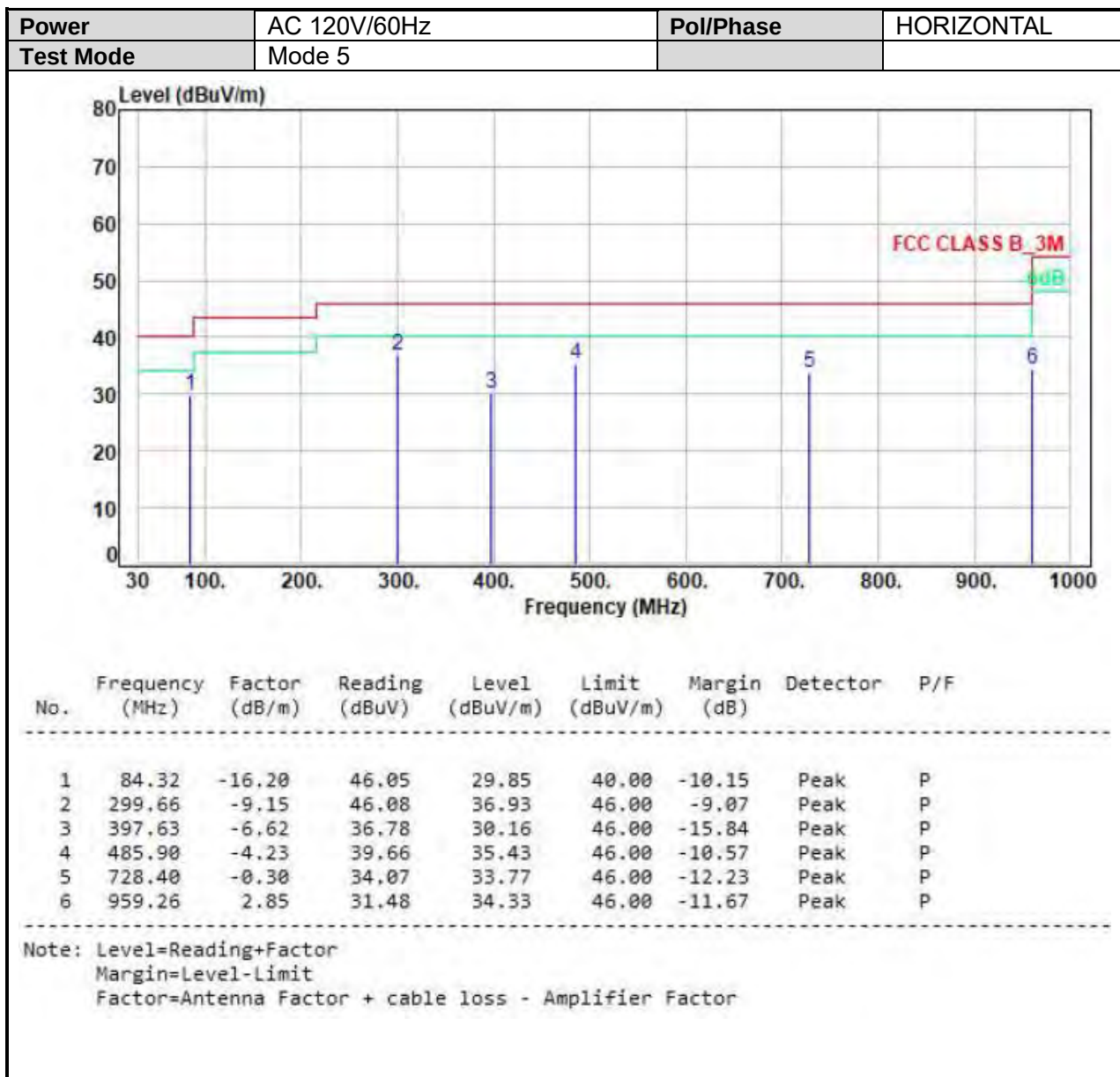


6.4. Test Result and Data (9kHz ~ 30MHz)

The 9kHz - 30MHz spurious emission is under limit 20dB more.

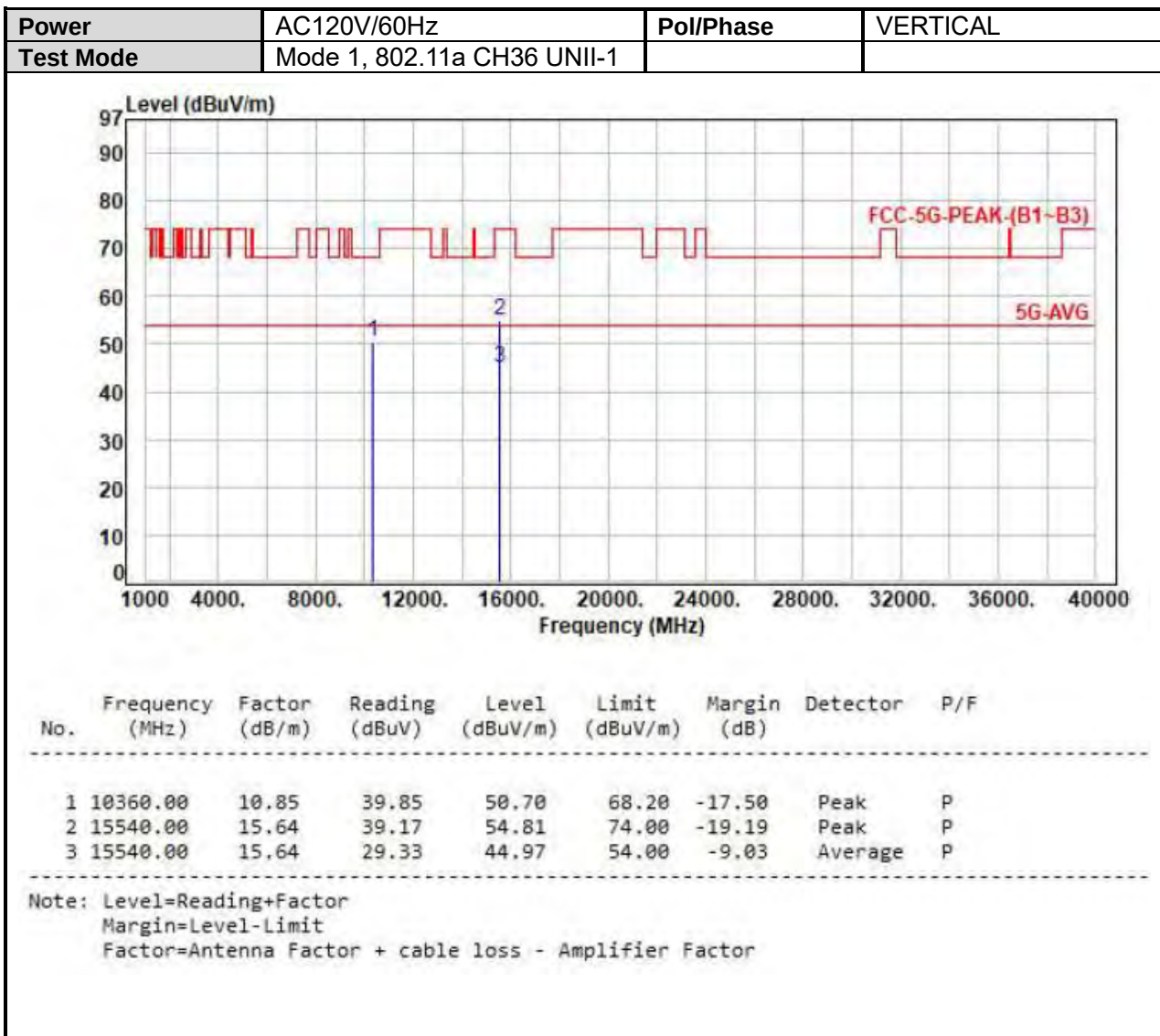
6.5. Test Result and Data (30MHz ~ 1GHz)

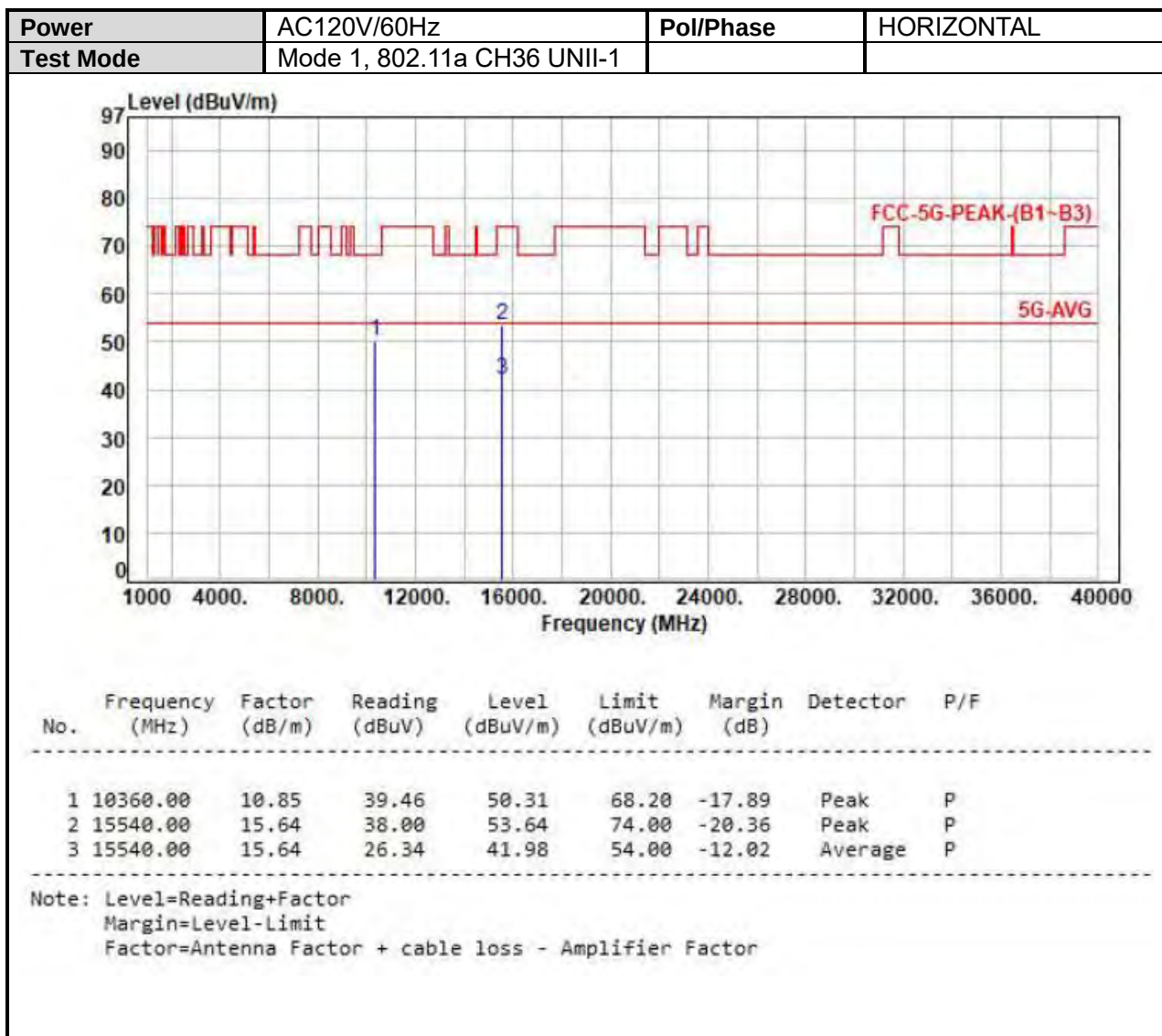


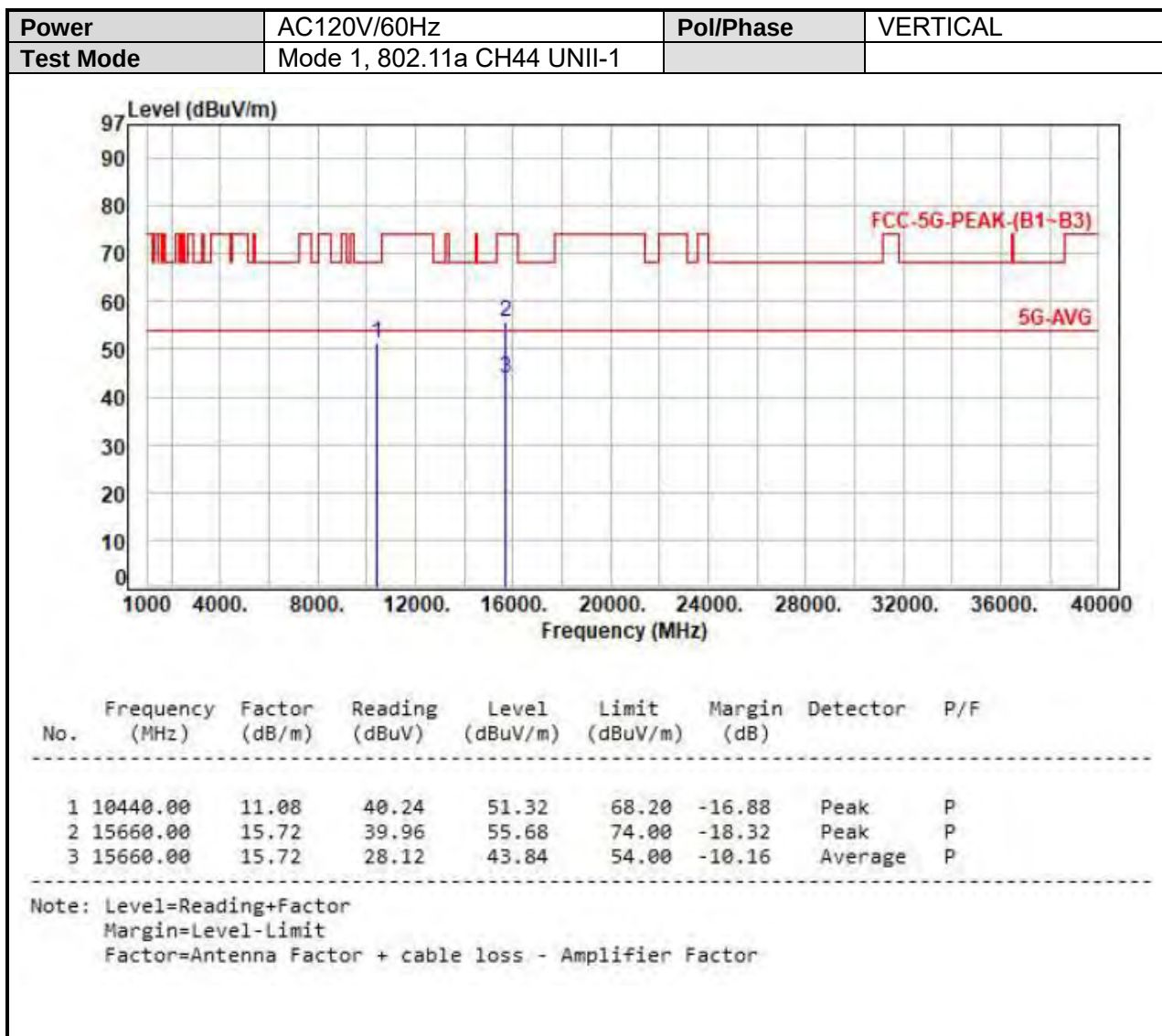


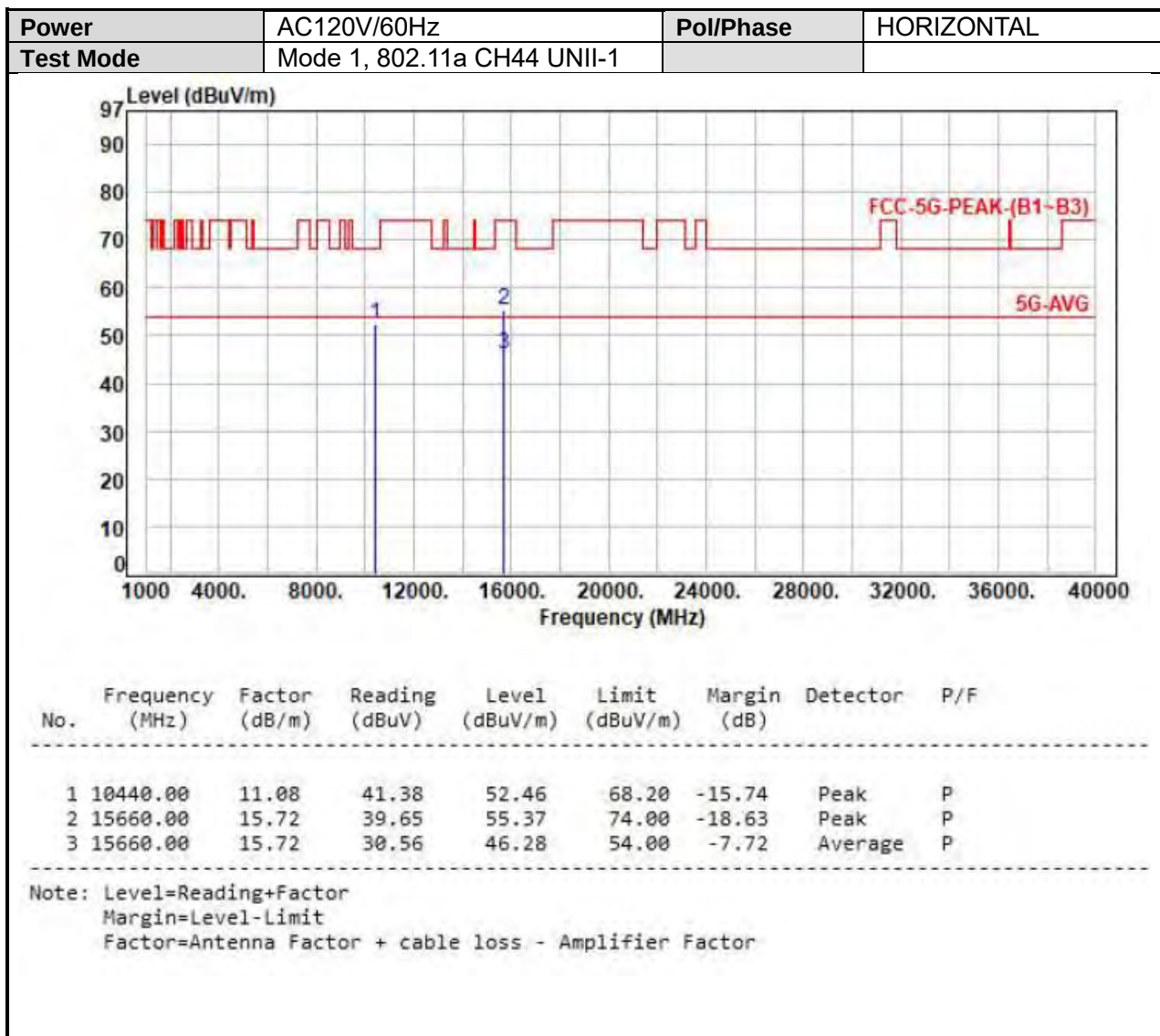


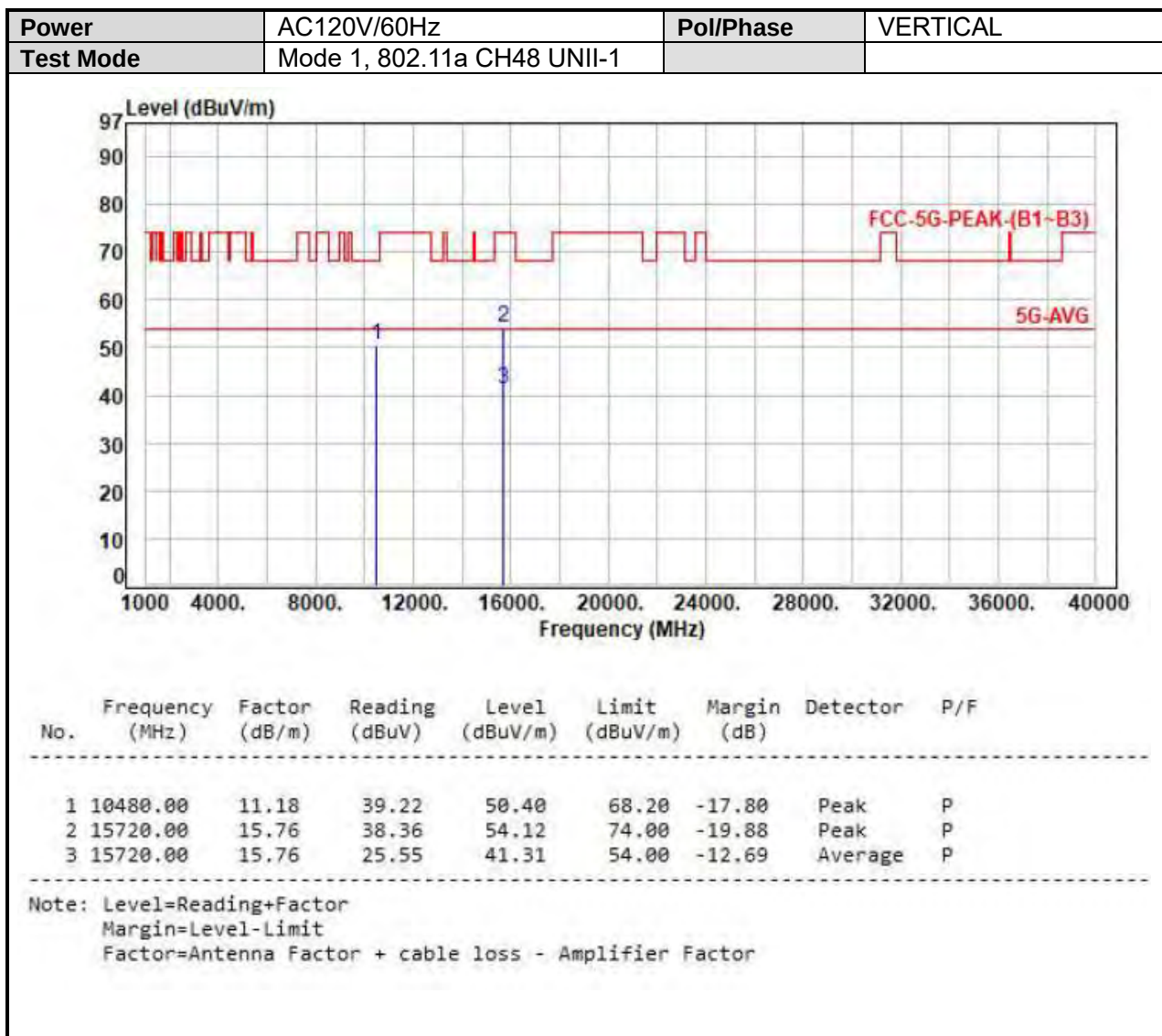
6.6. Test Result and Data (1GHz ~ 40GHz)

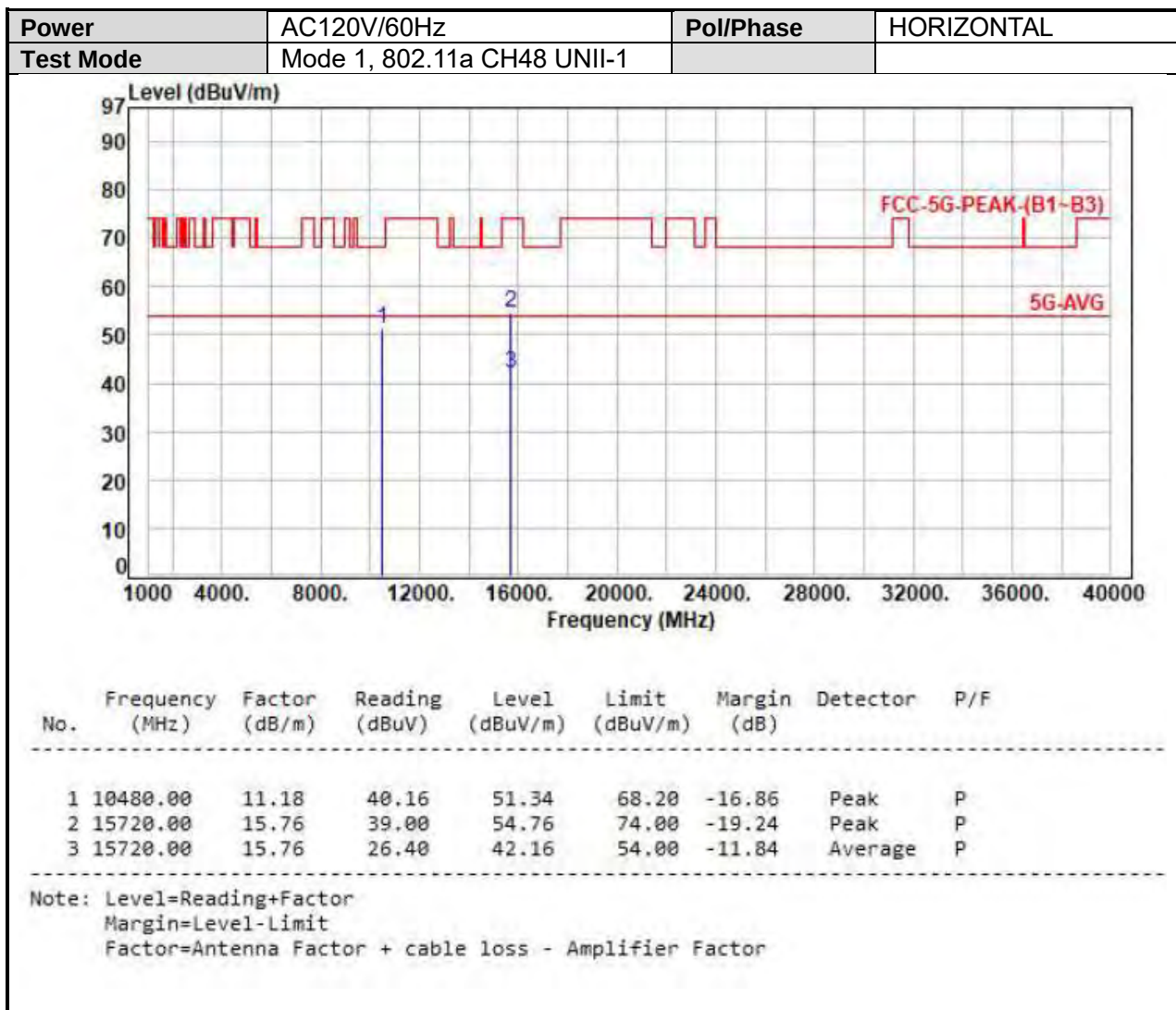


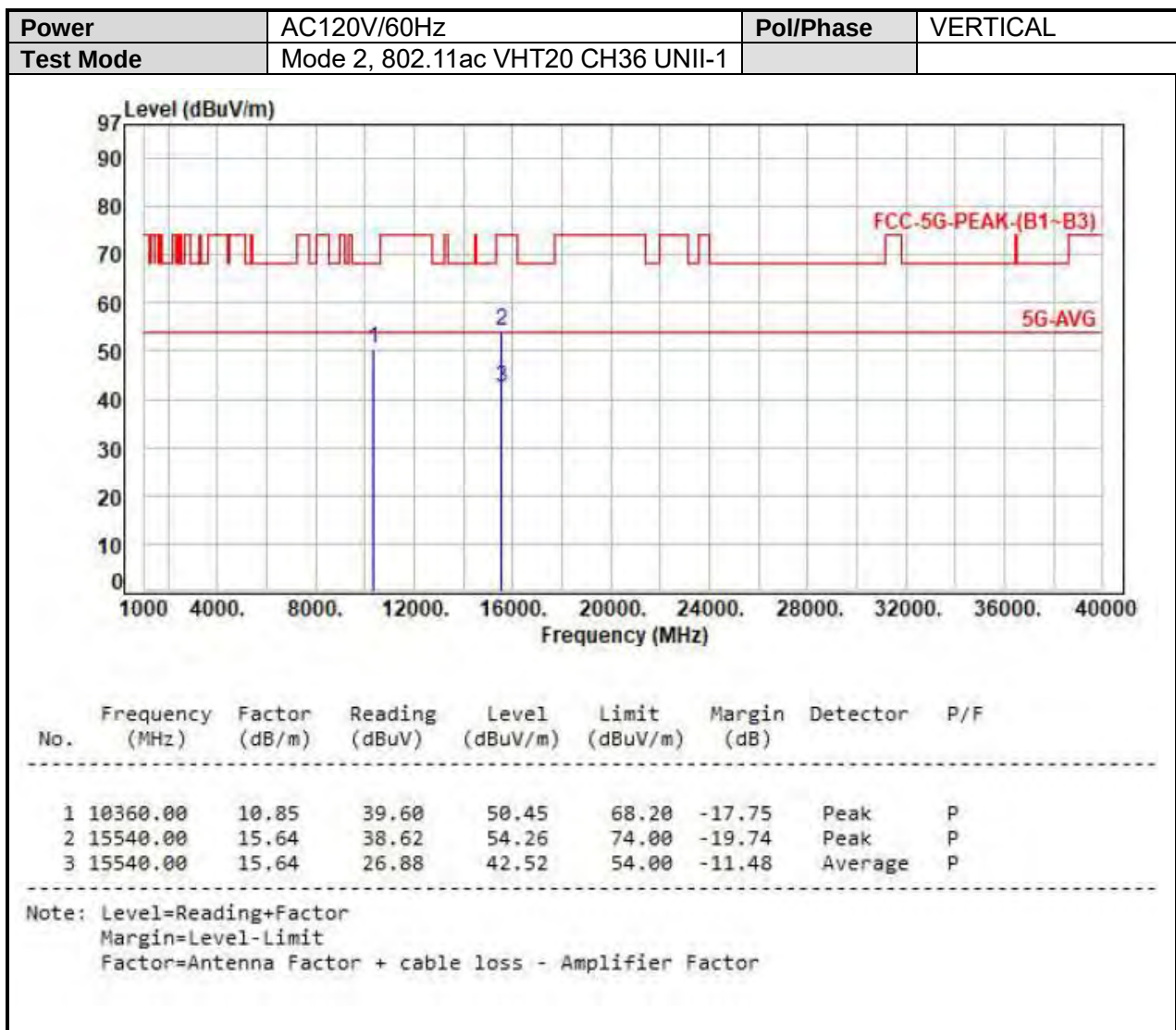


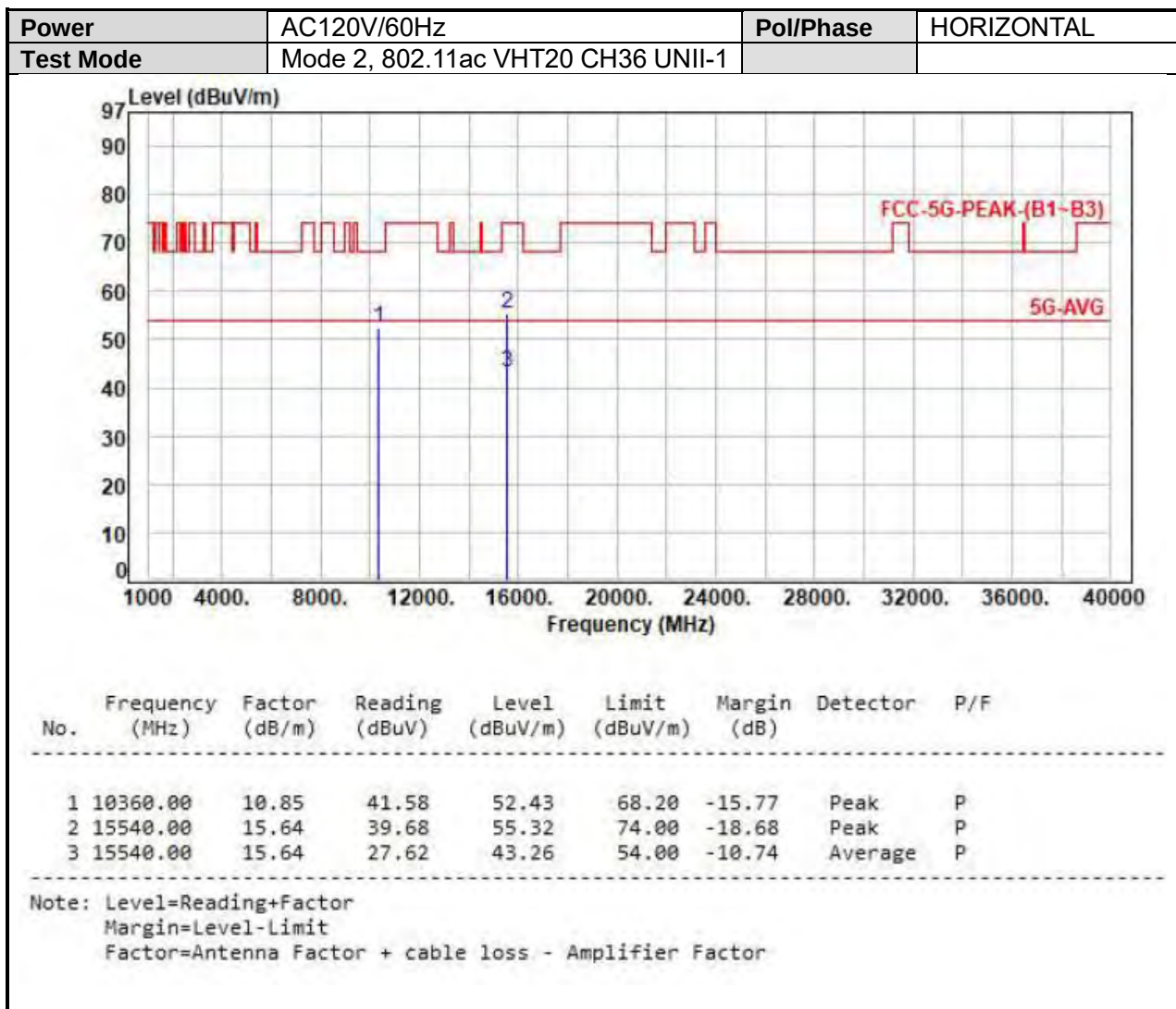


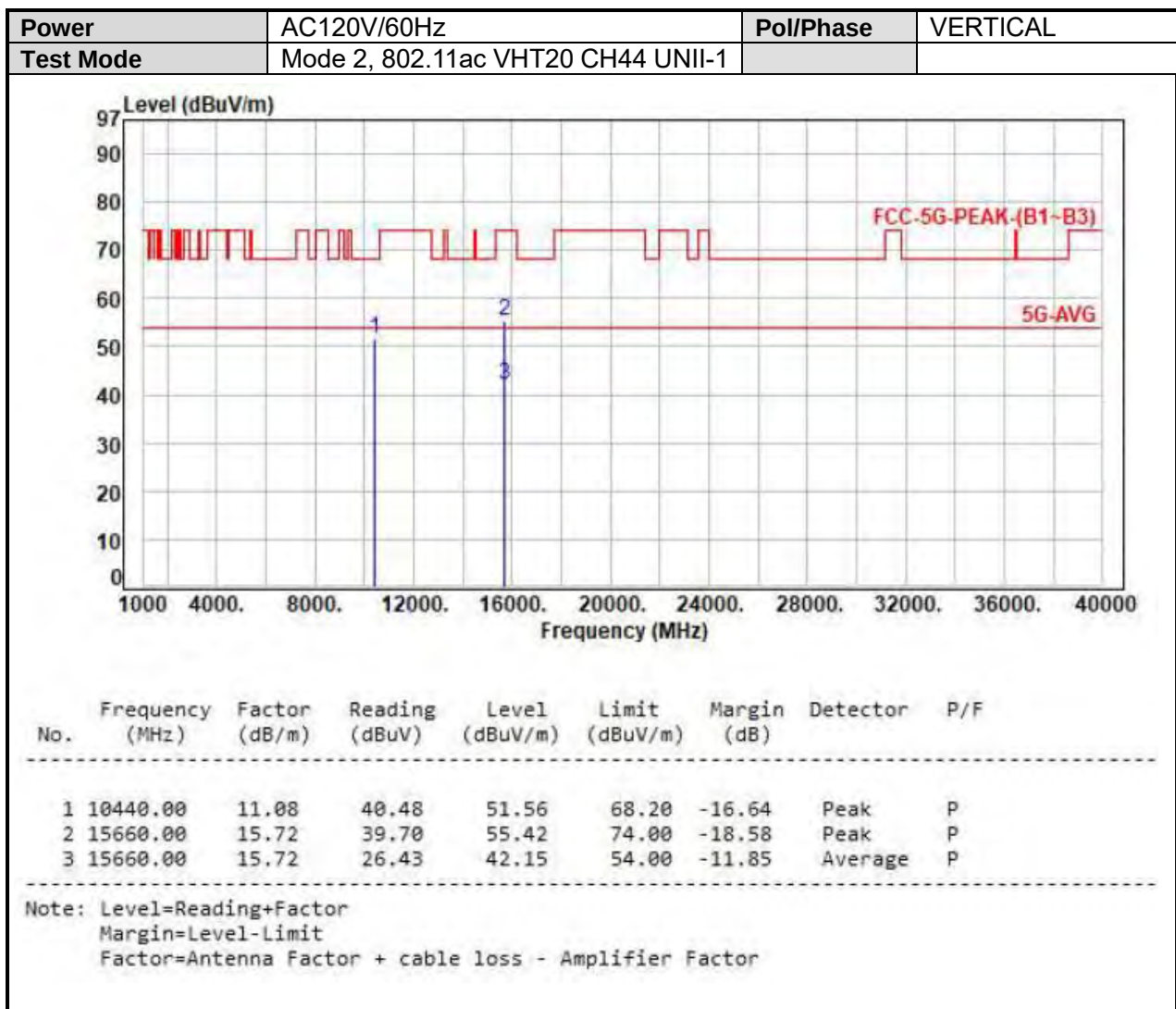


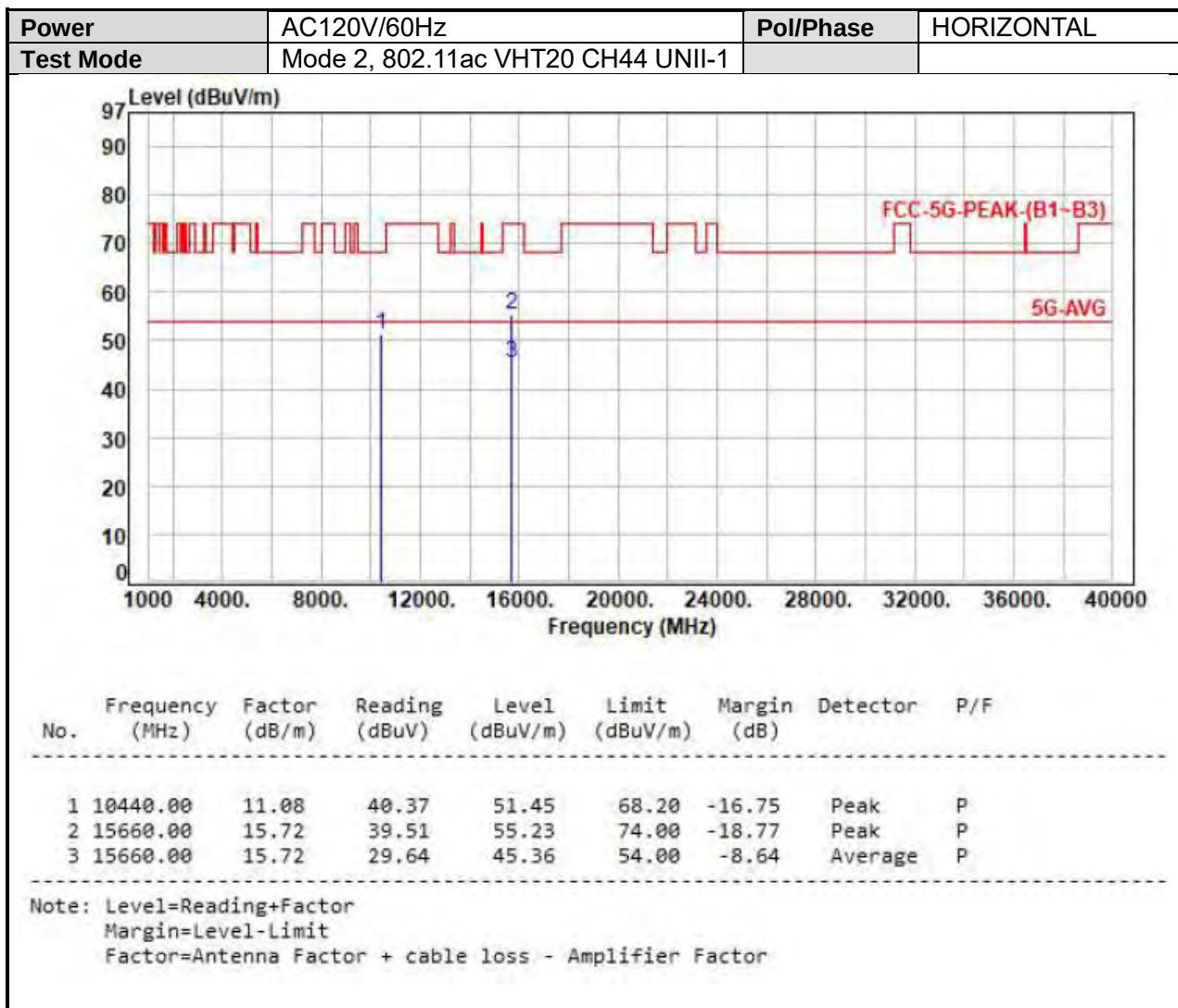


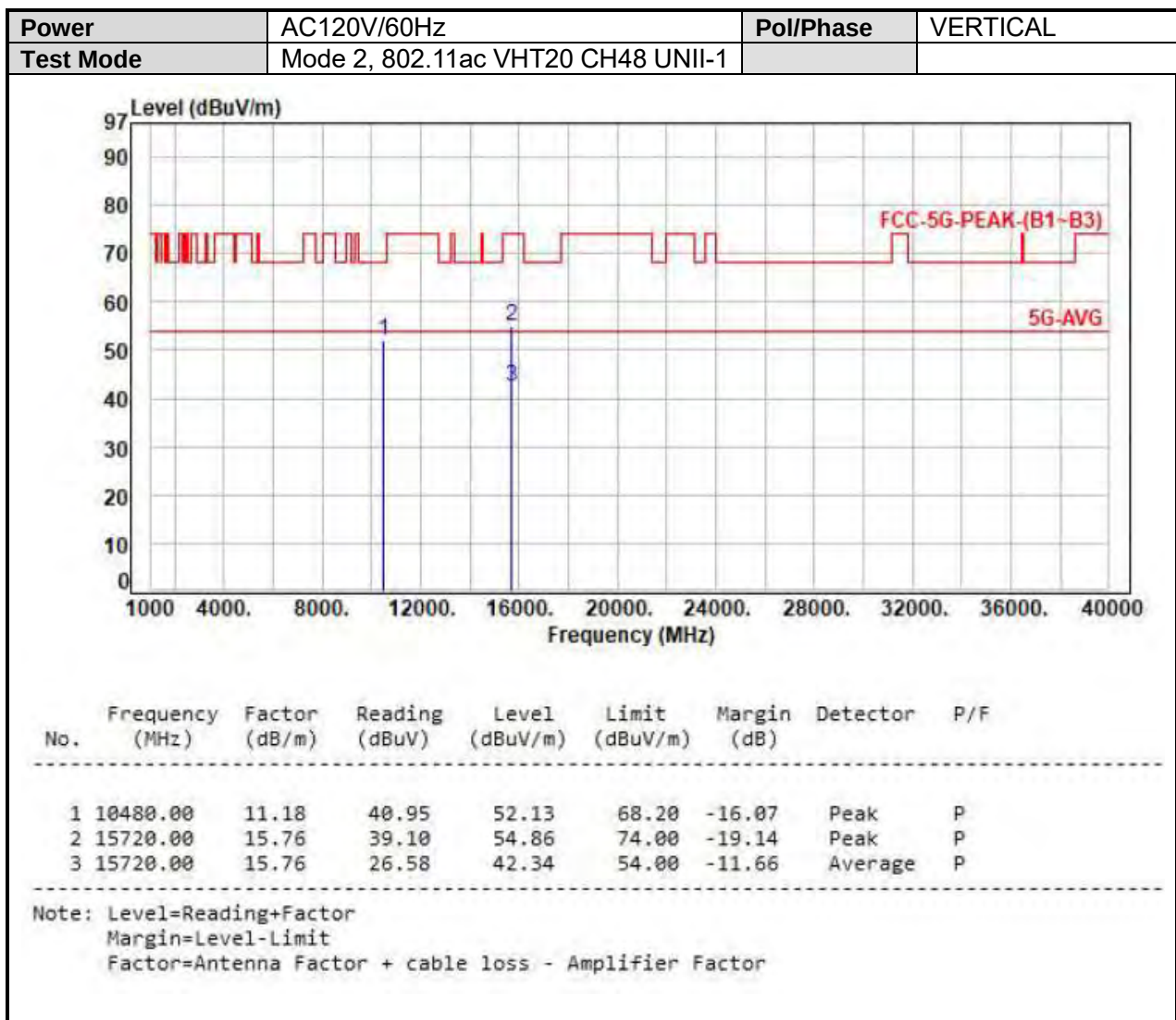


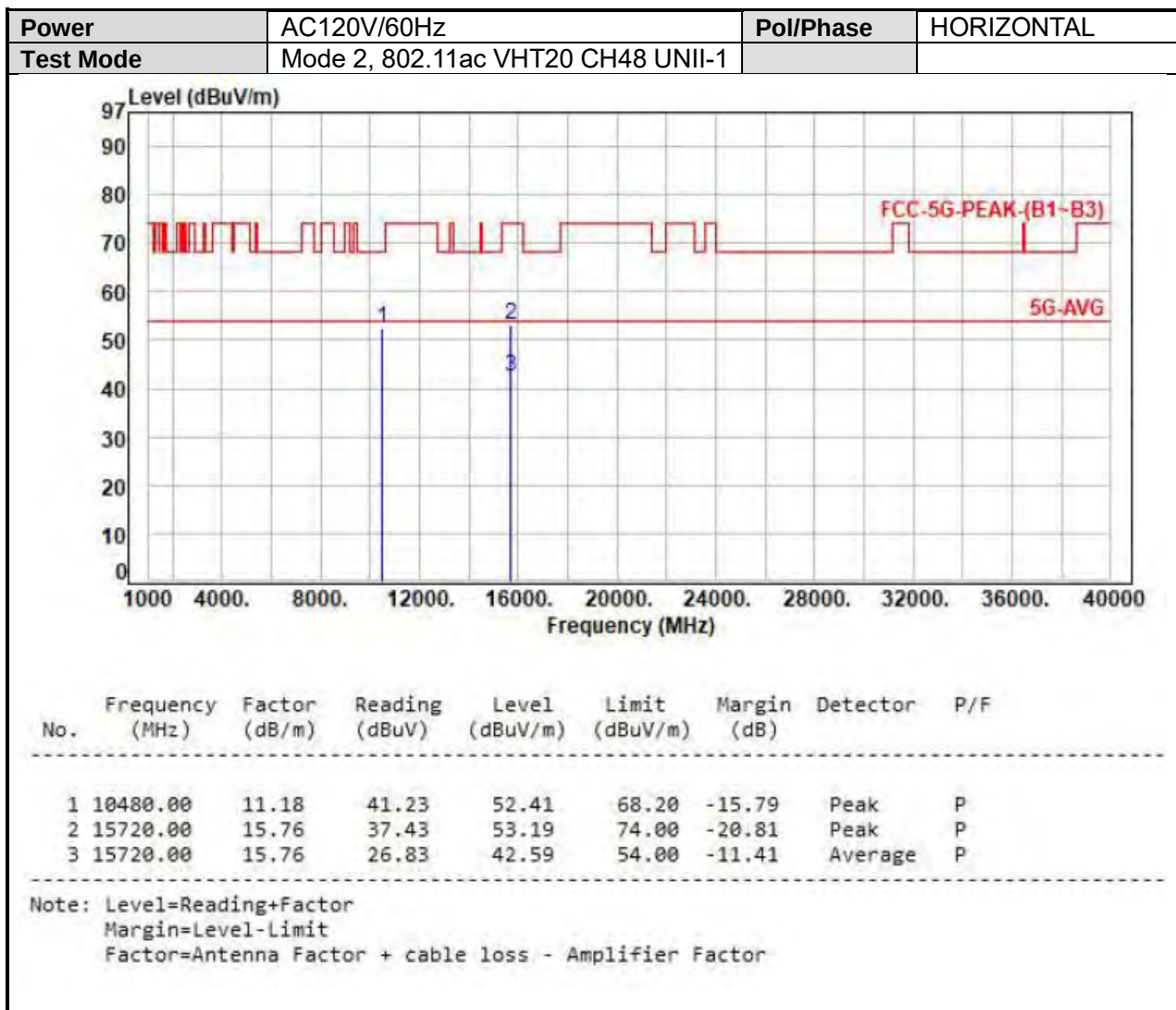


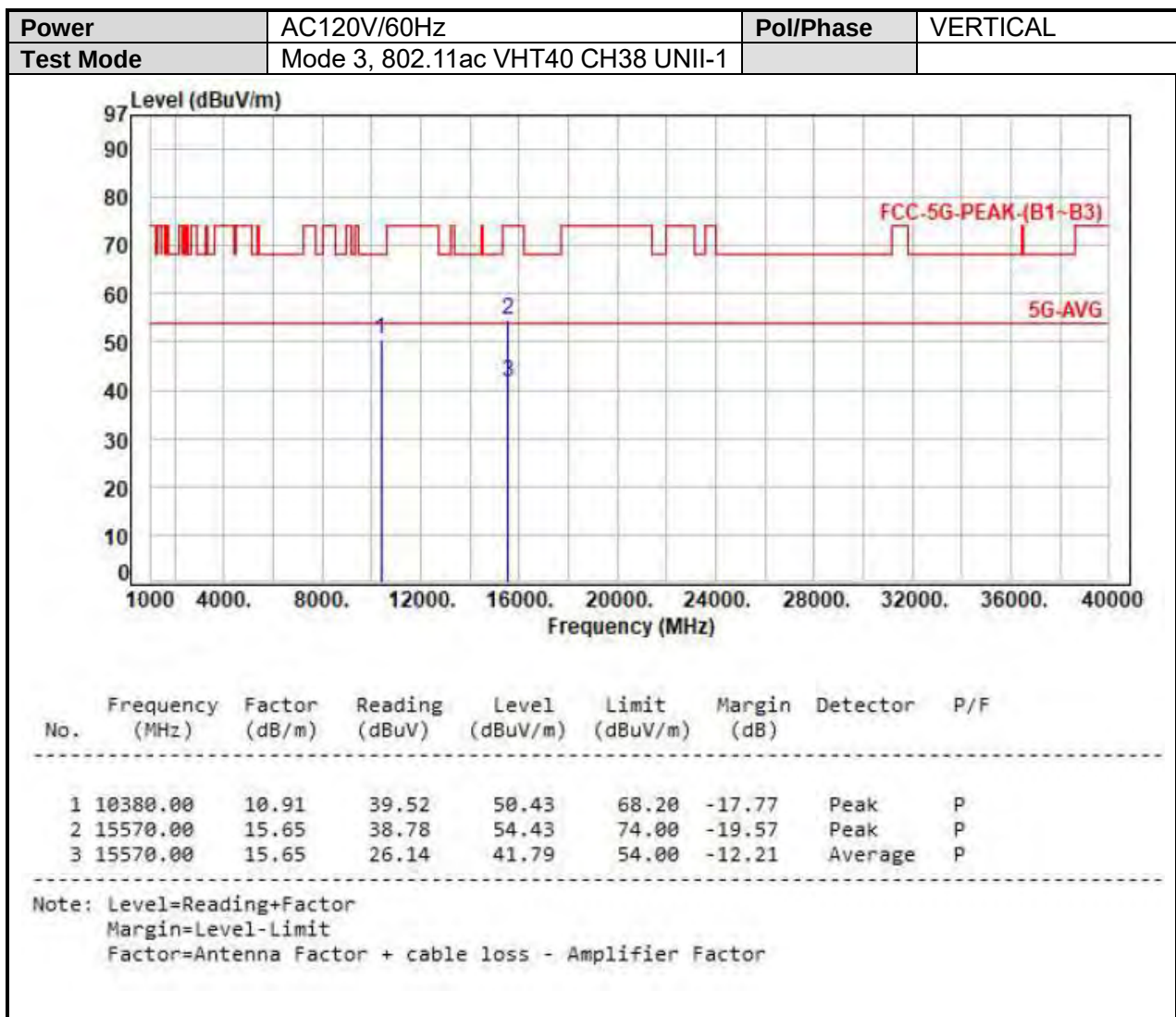


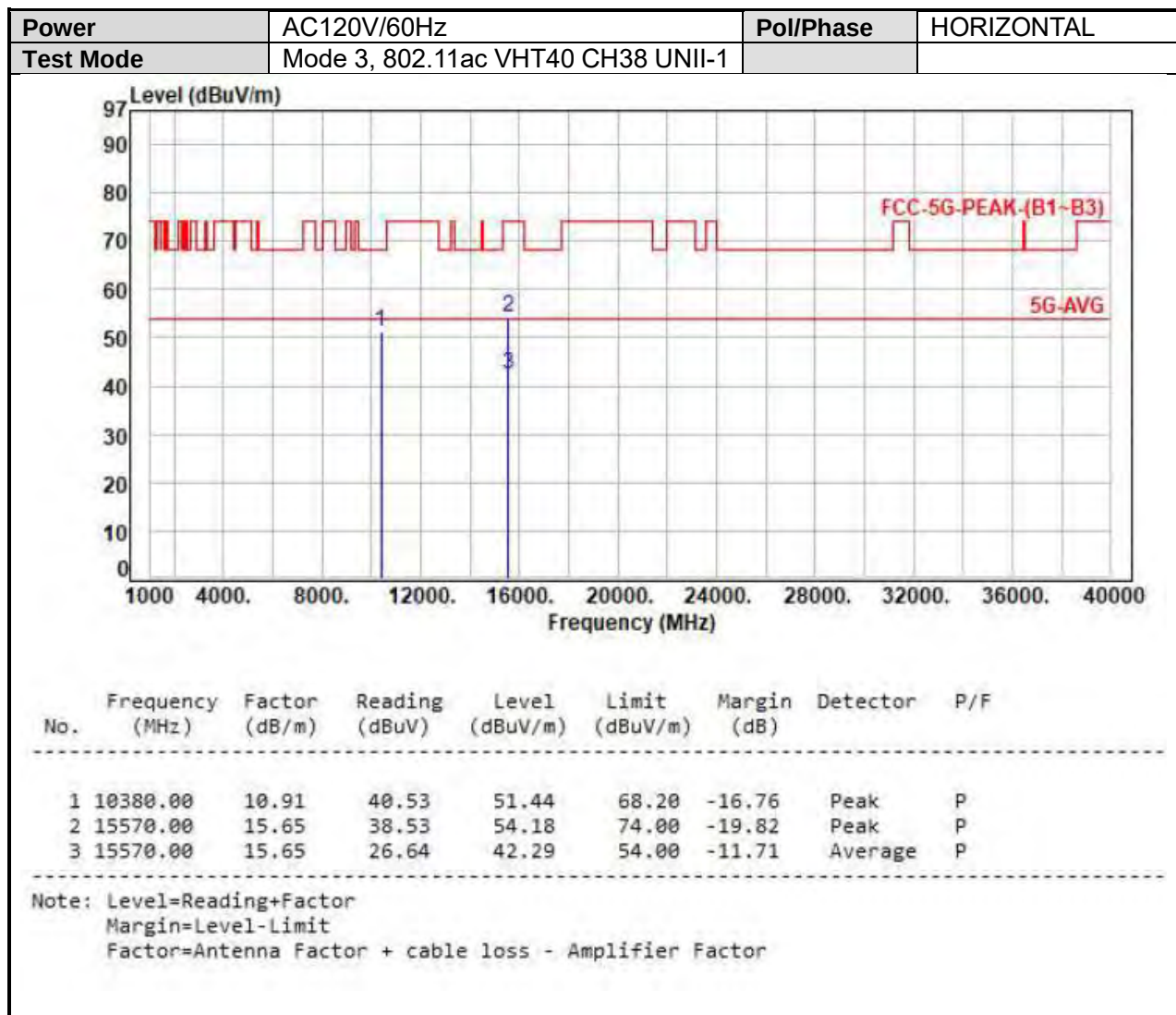


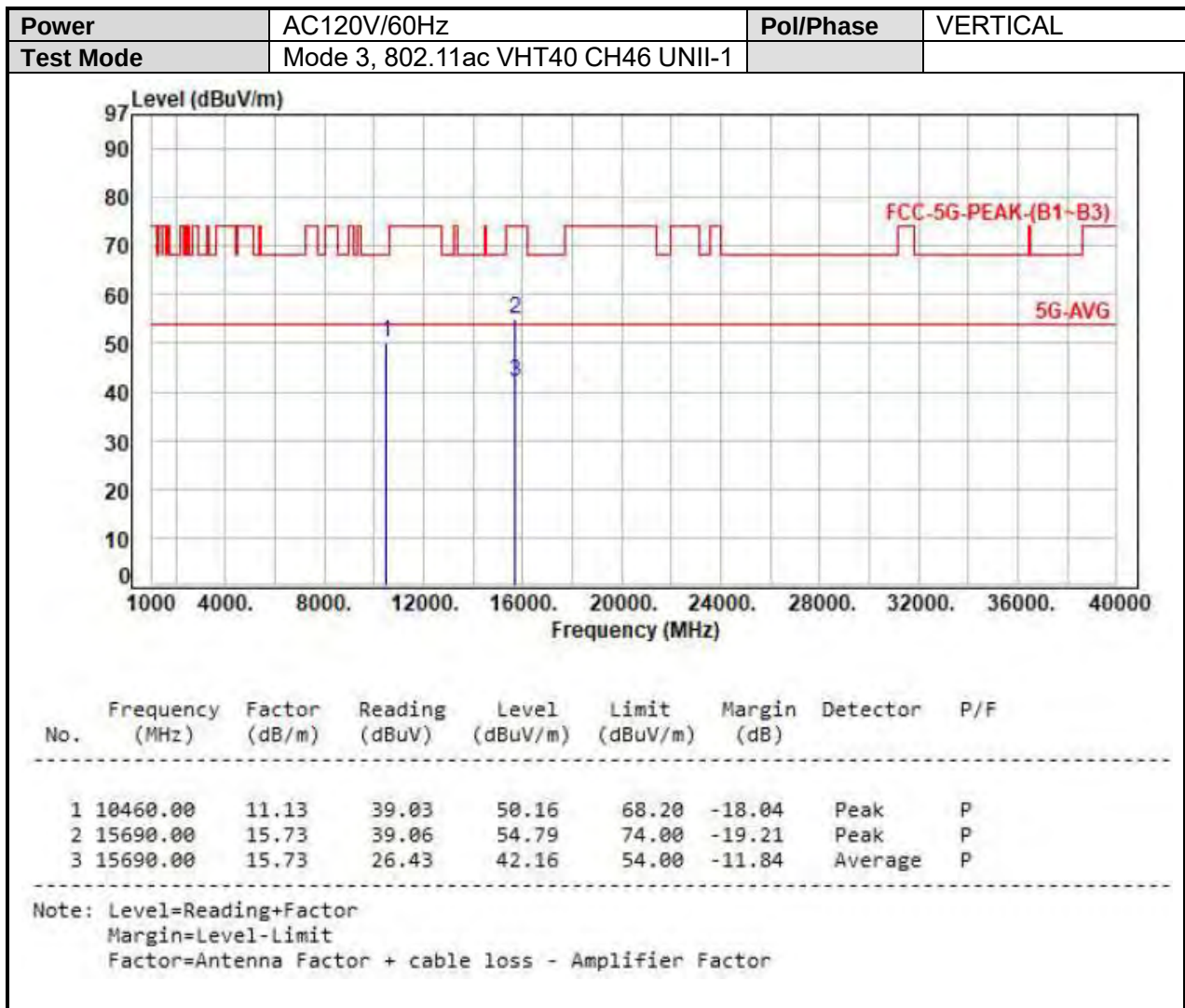


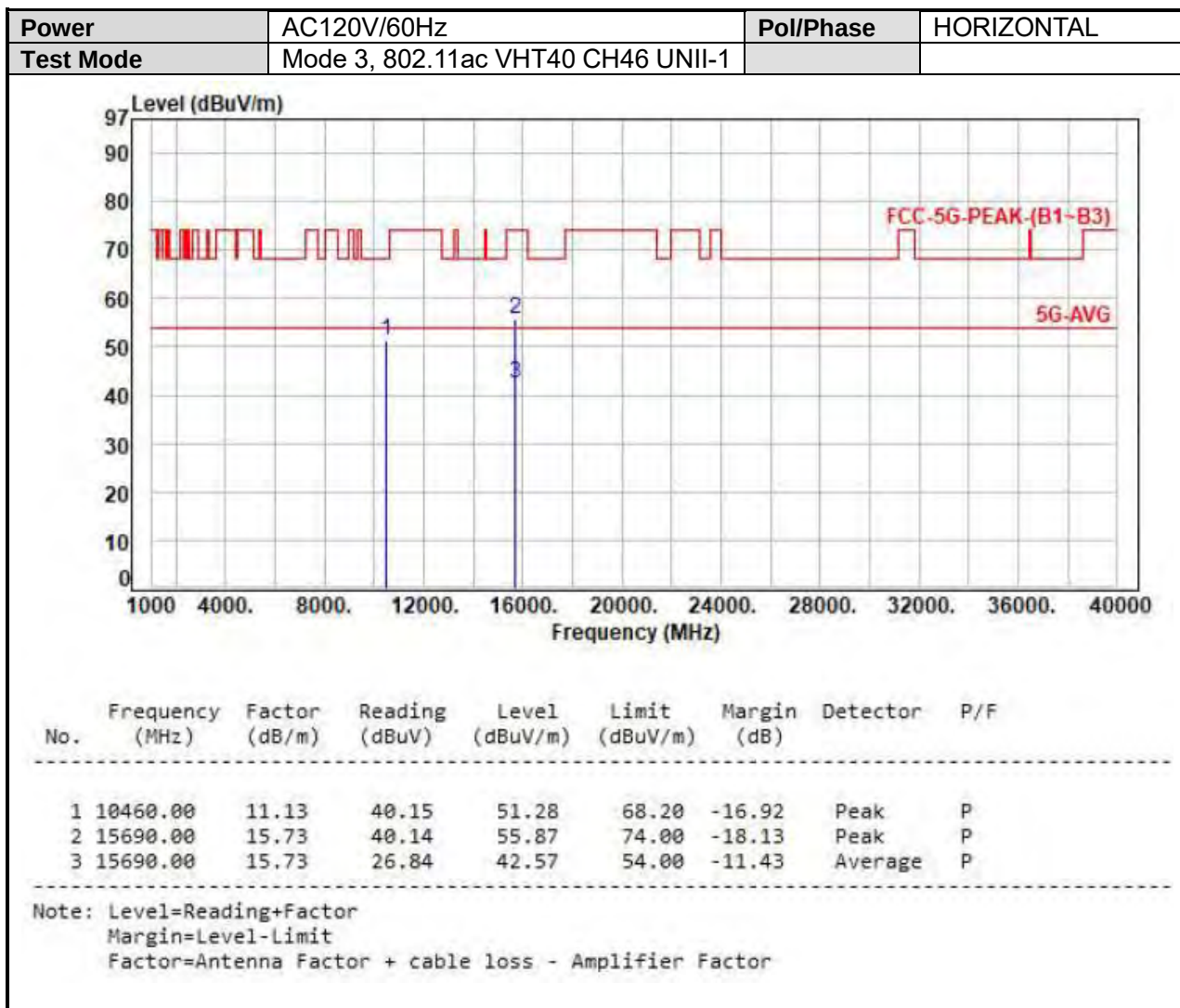


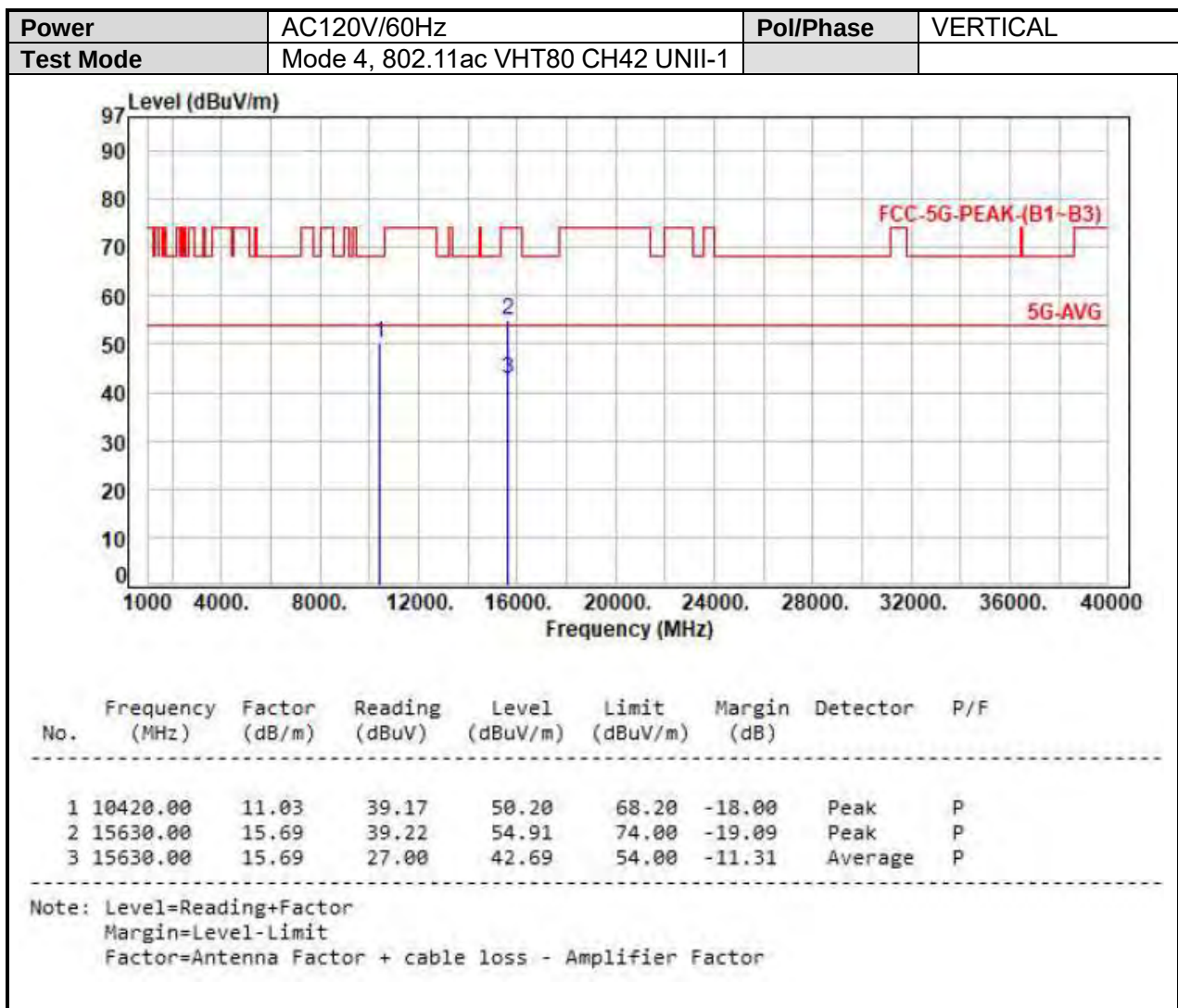


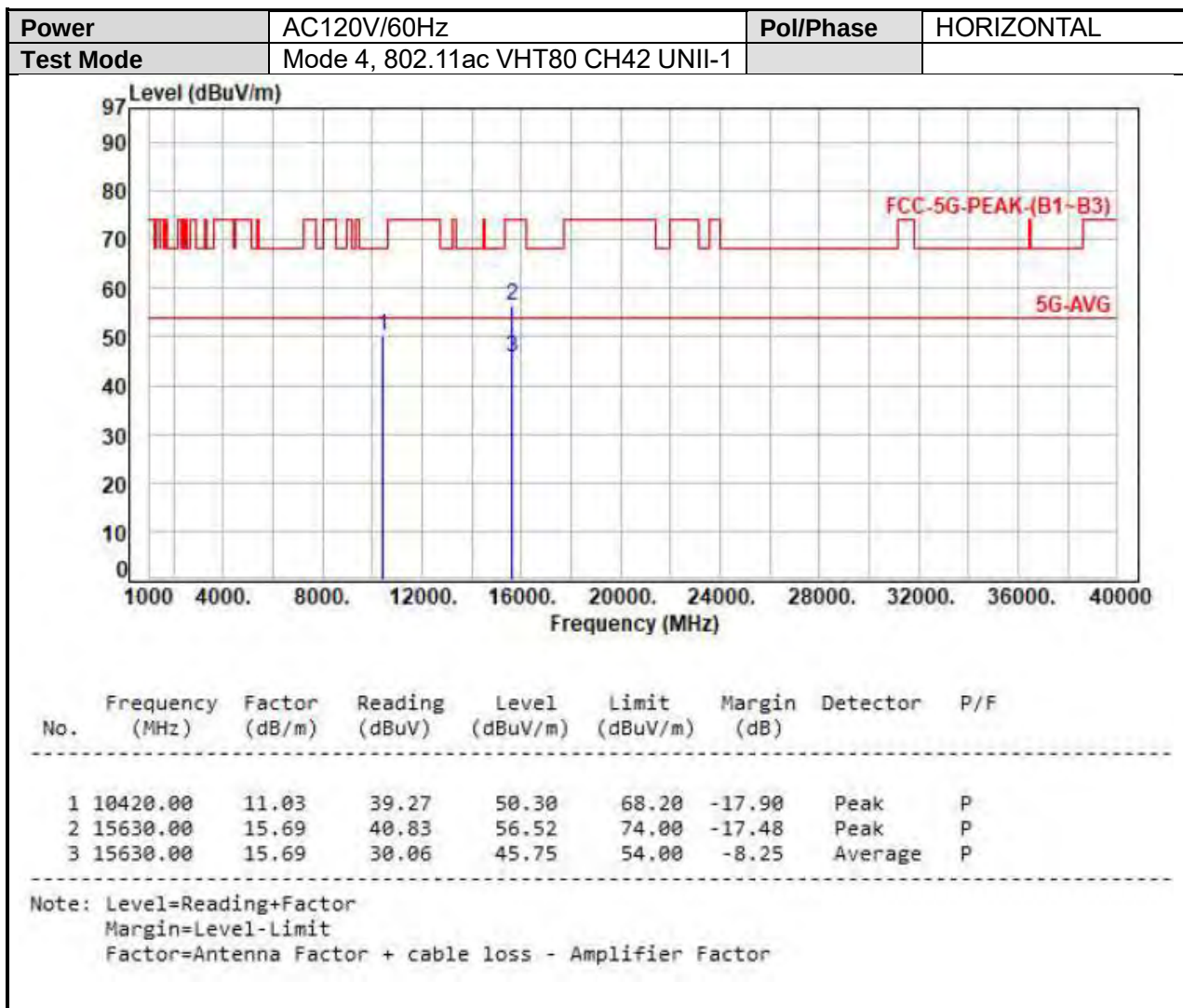


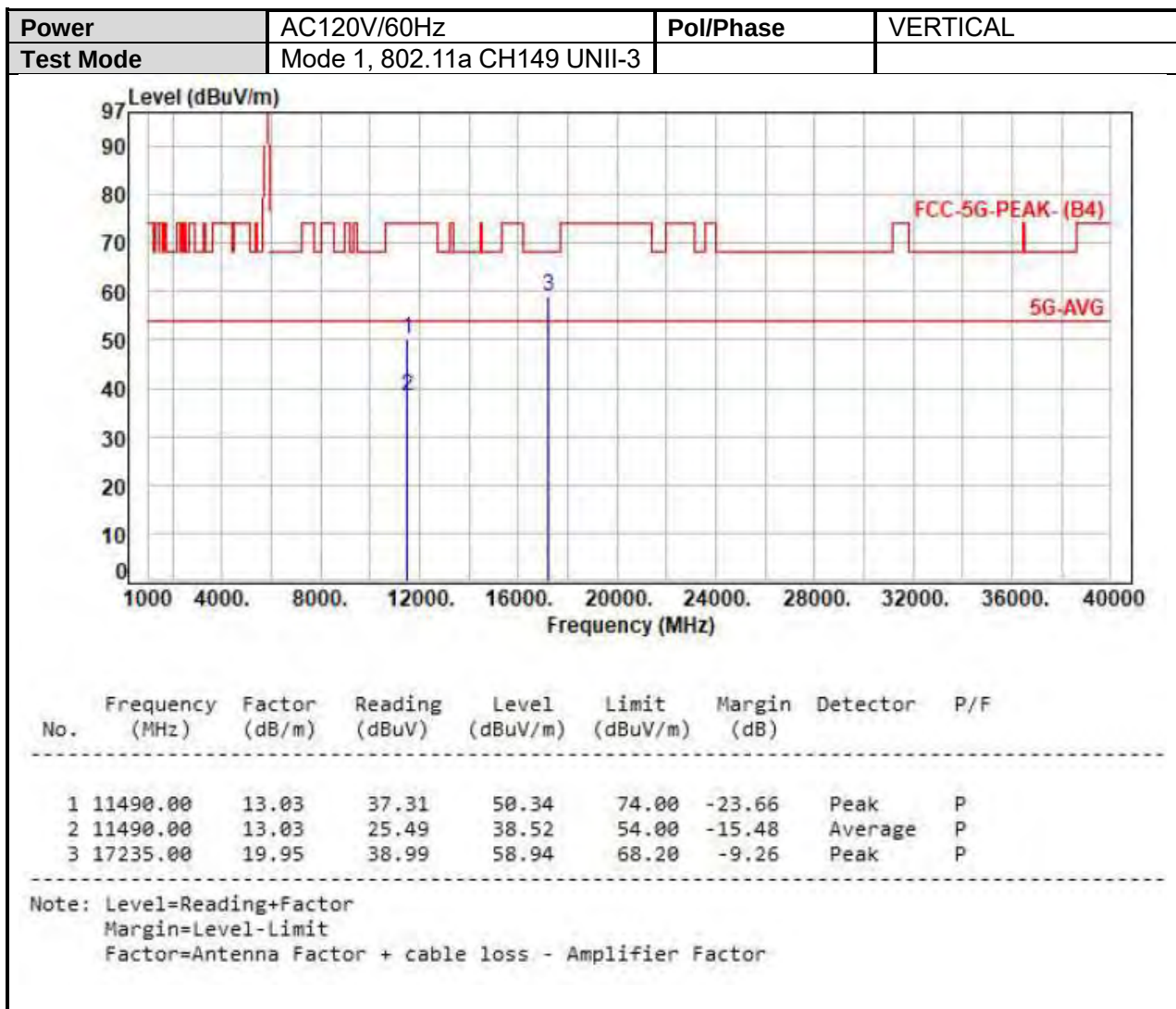


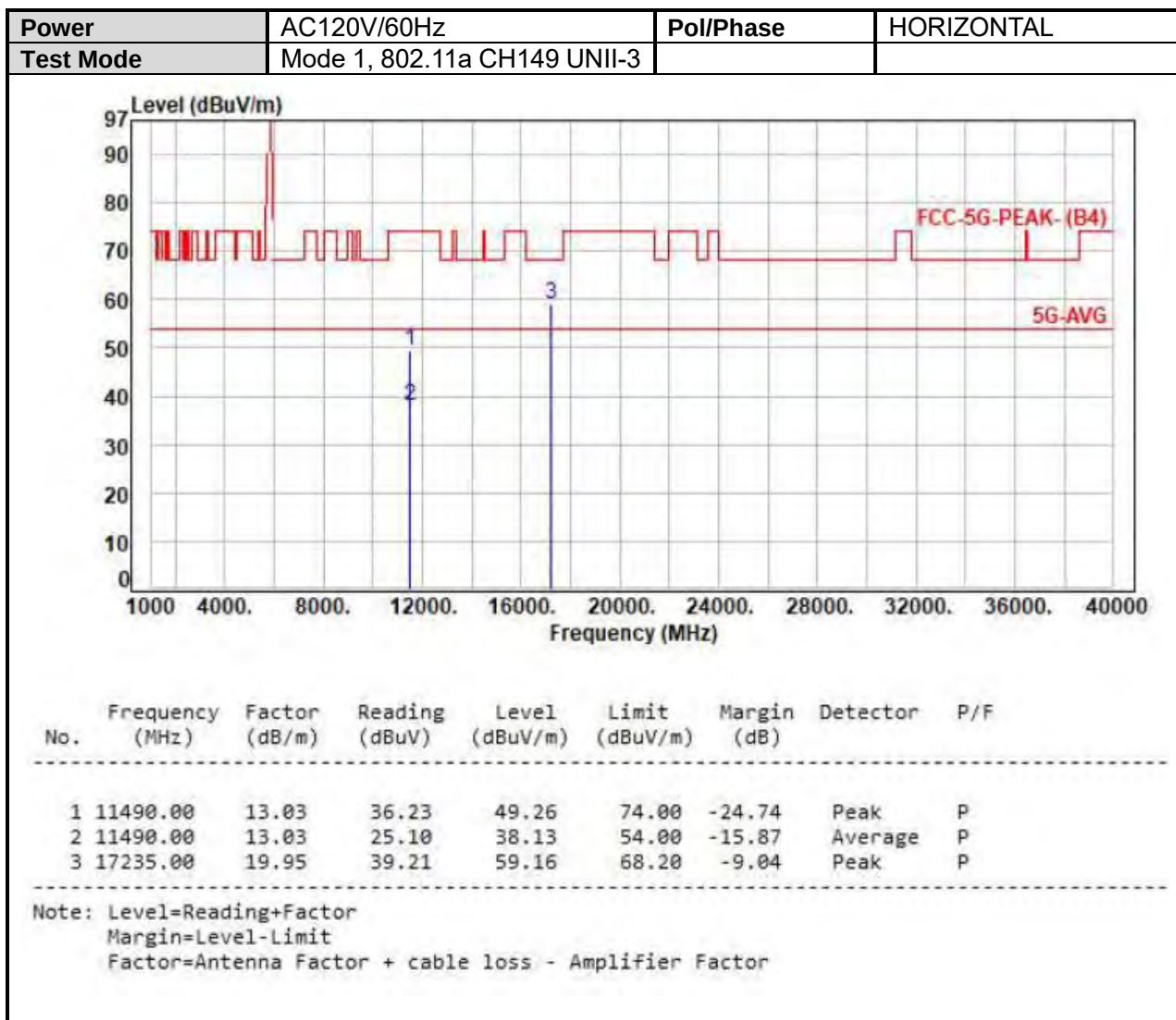


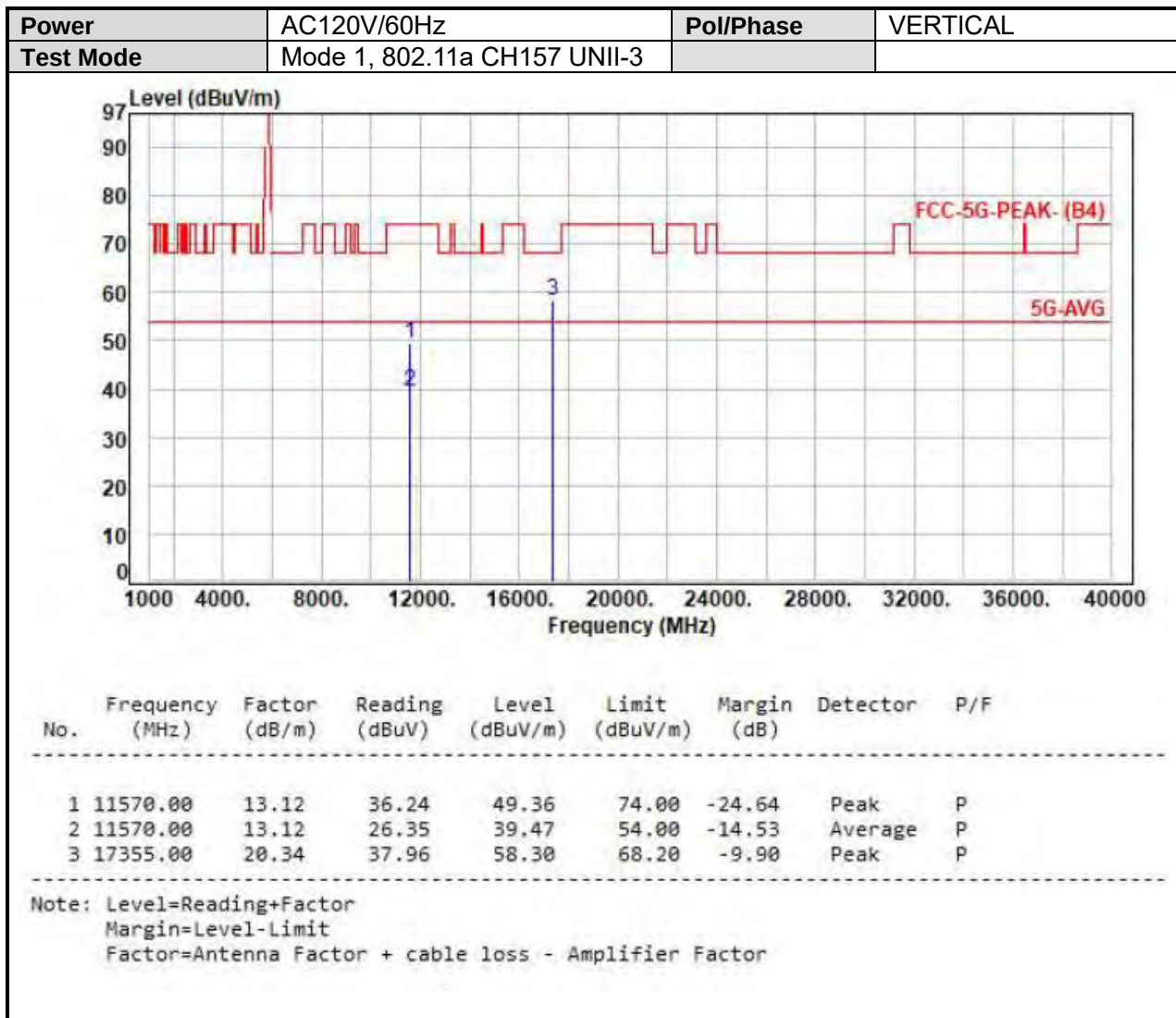


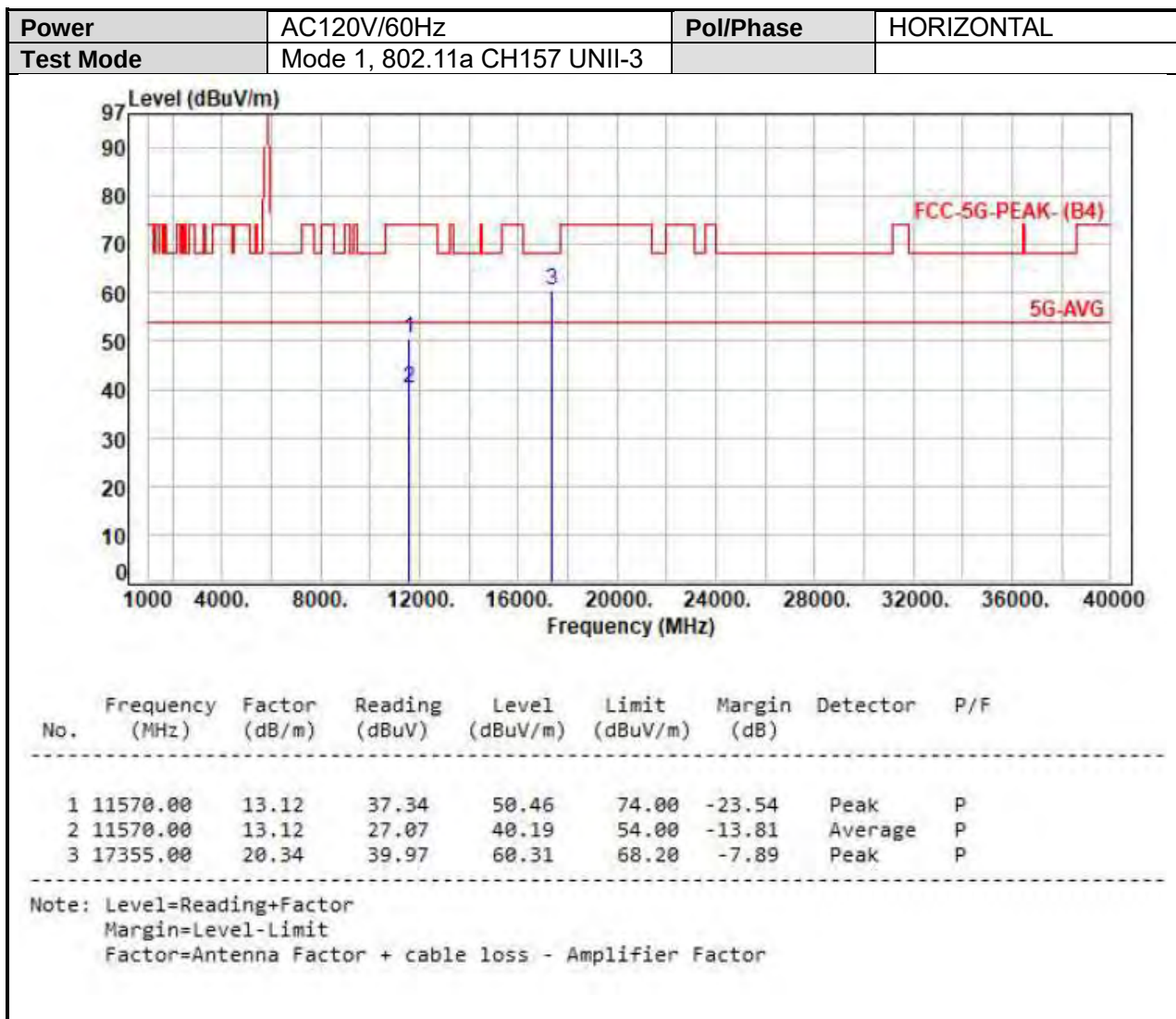


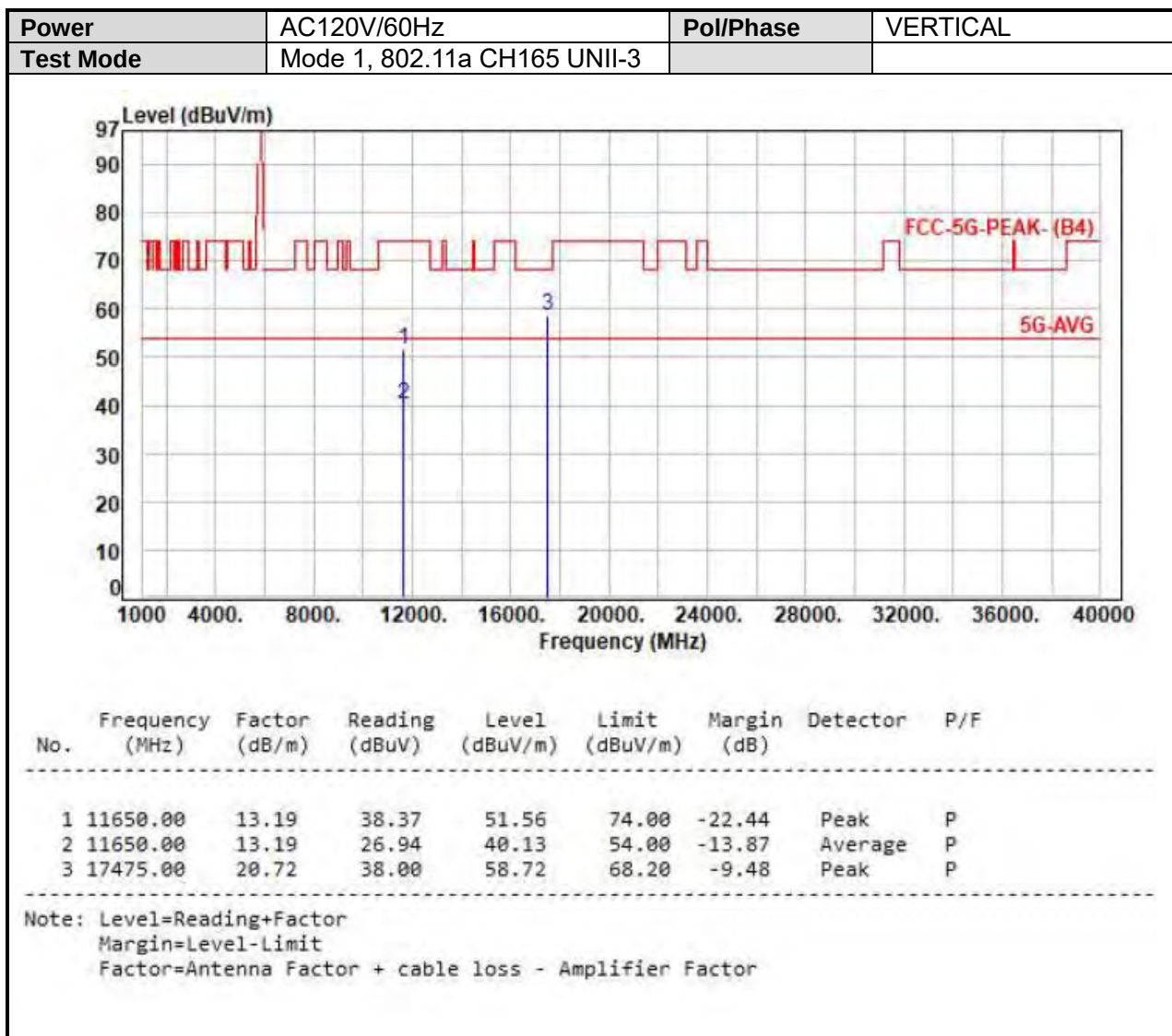


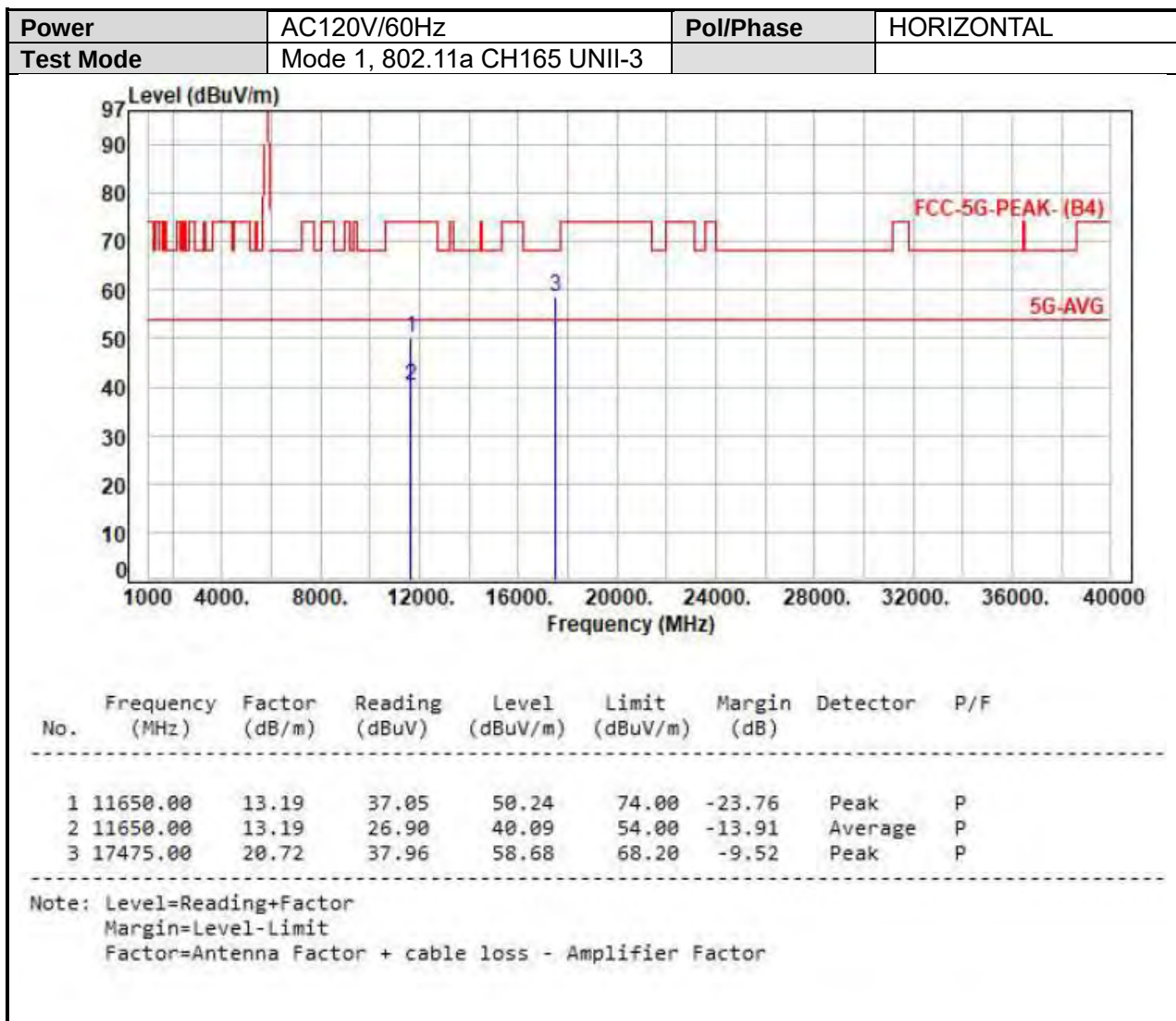


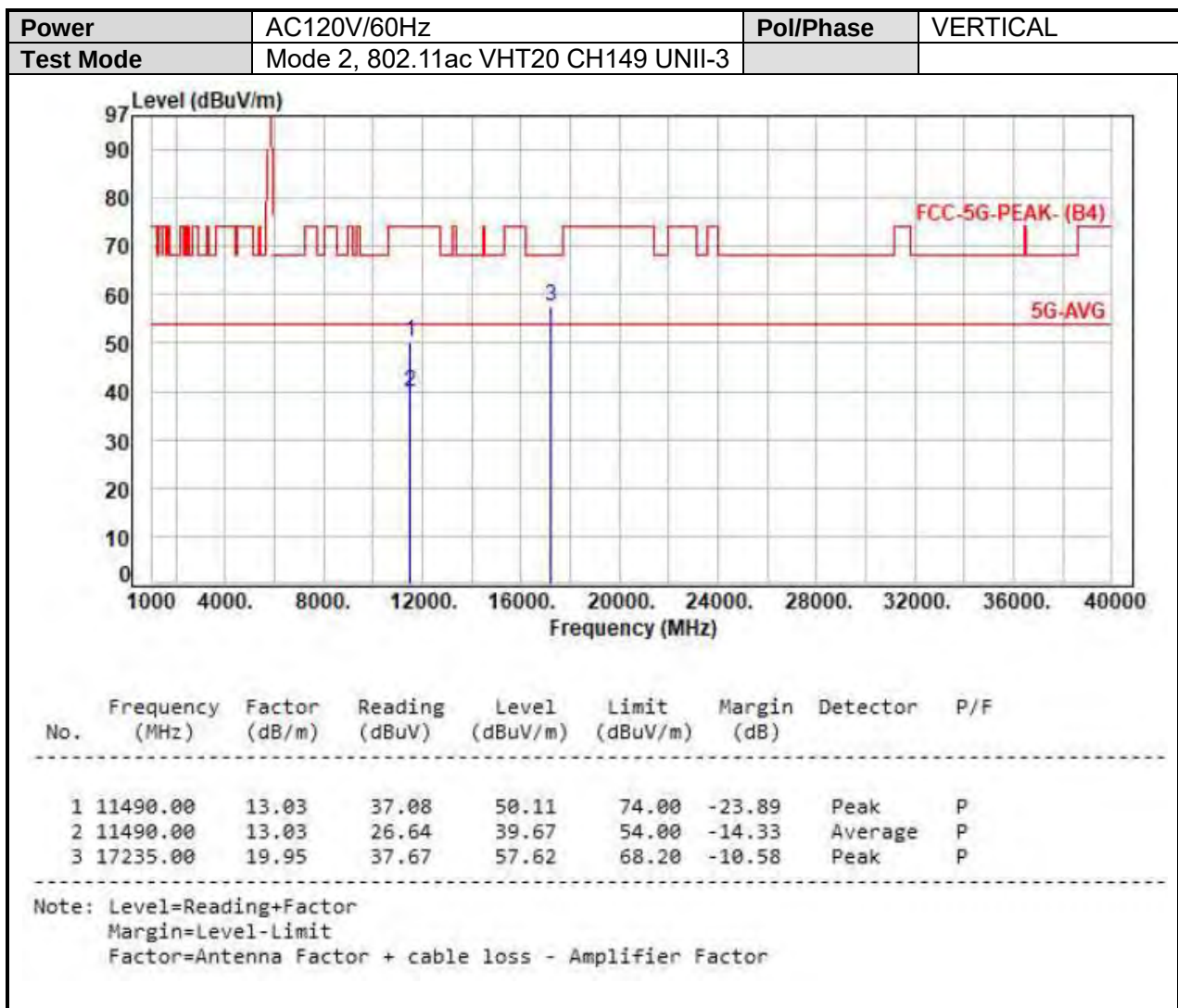


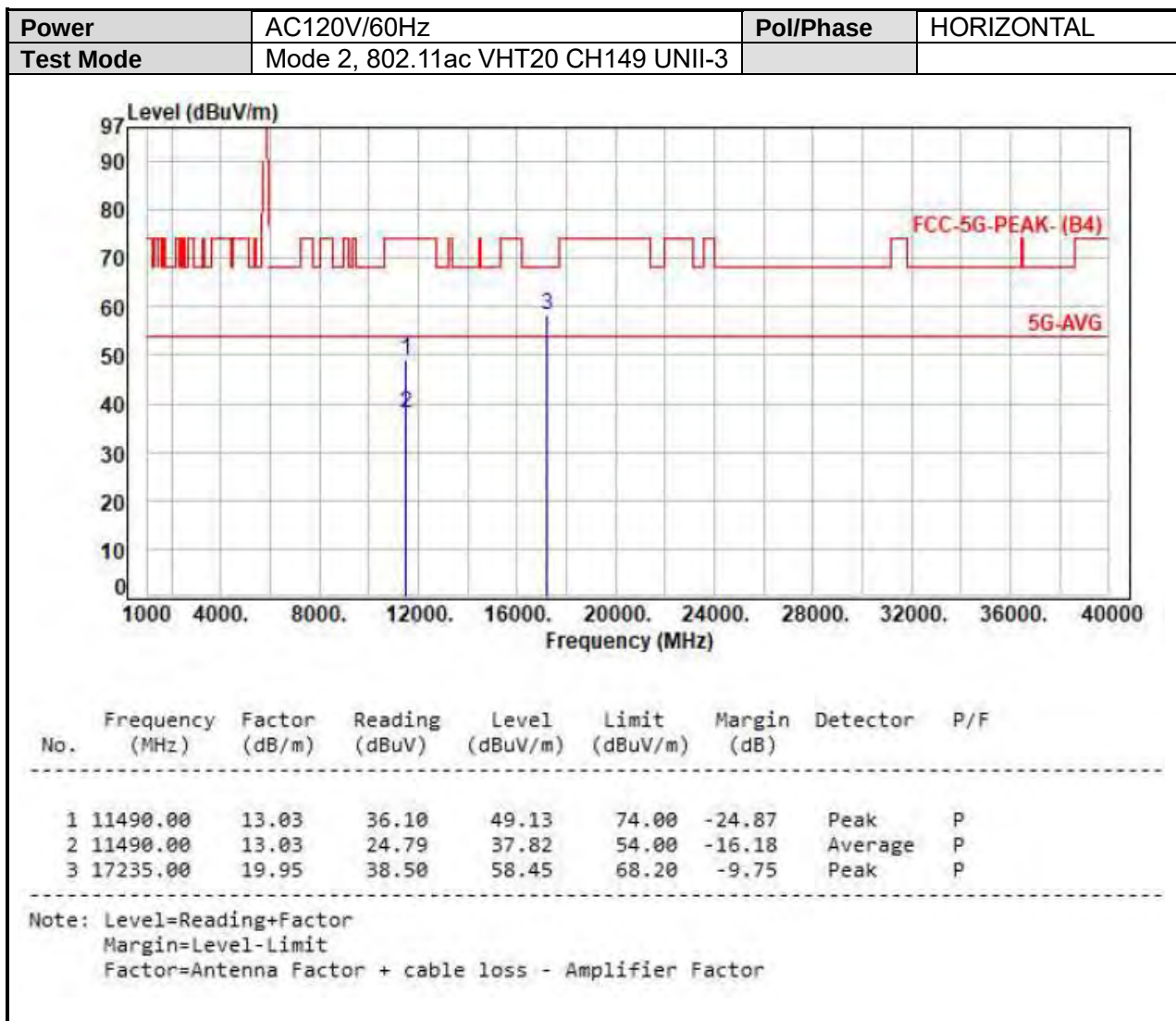


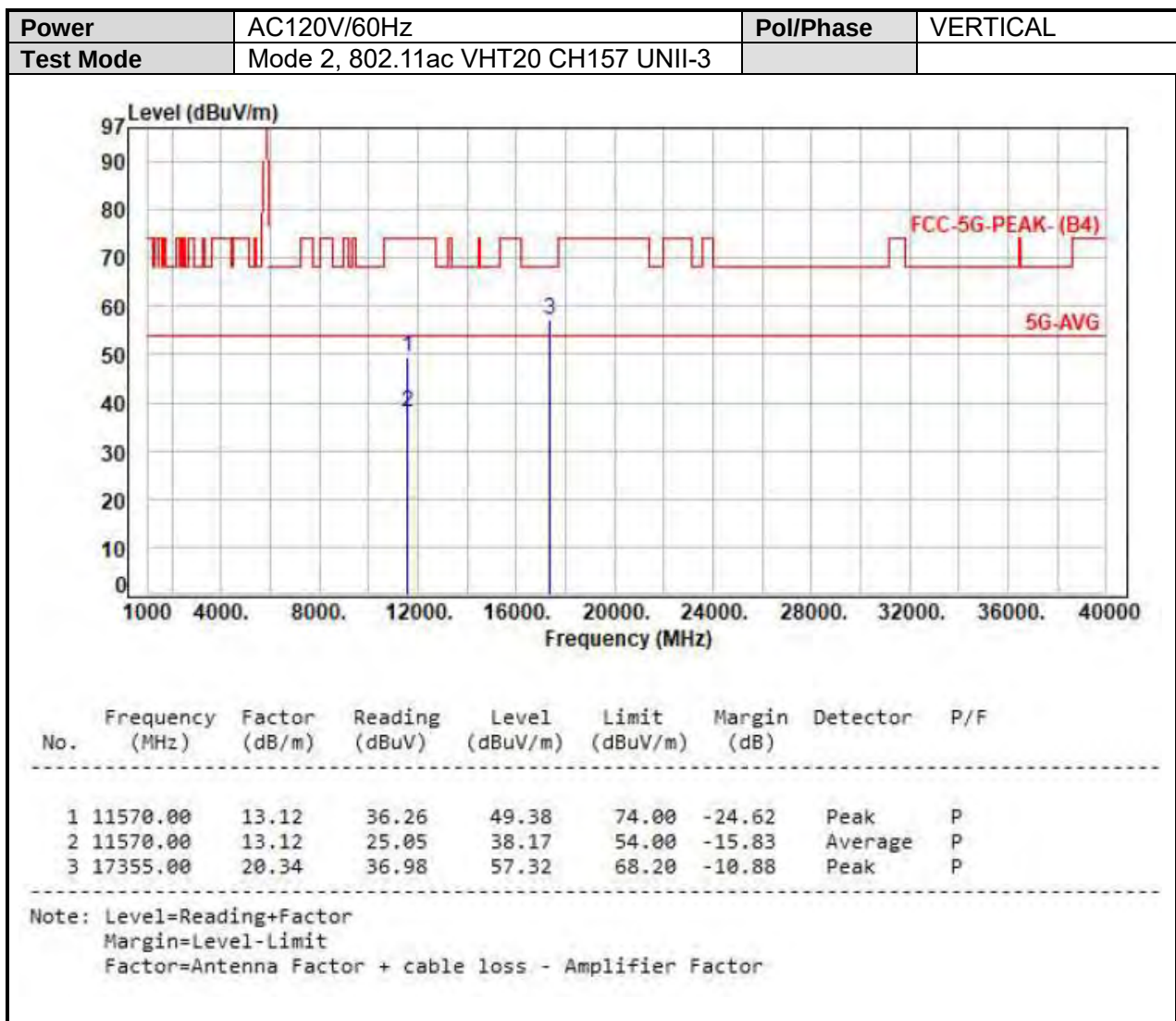


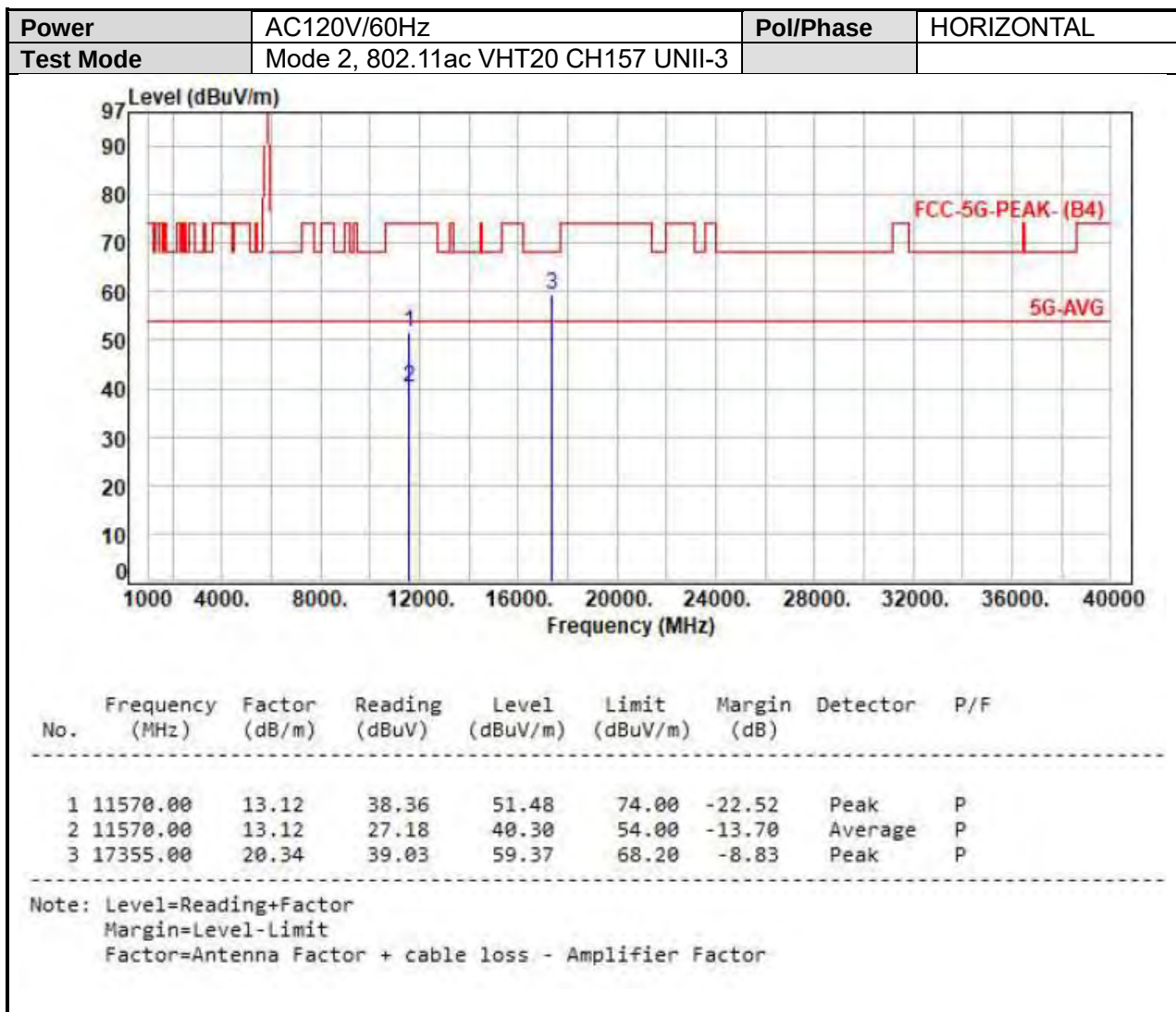


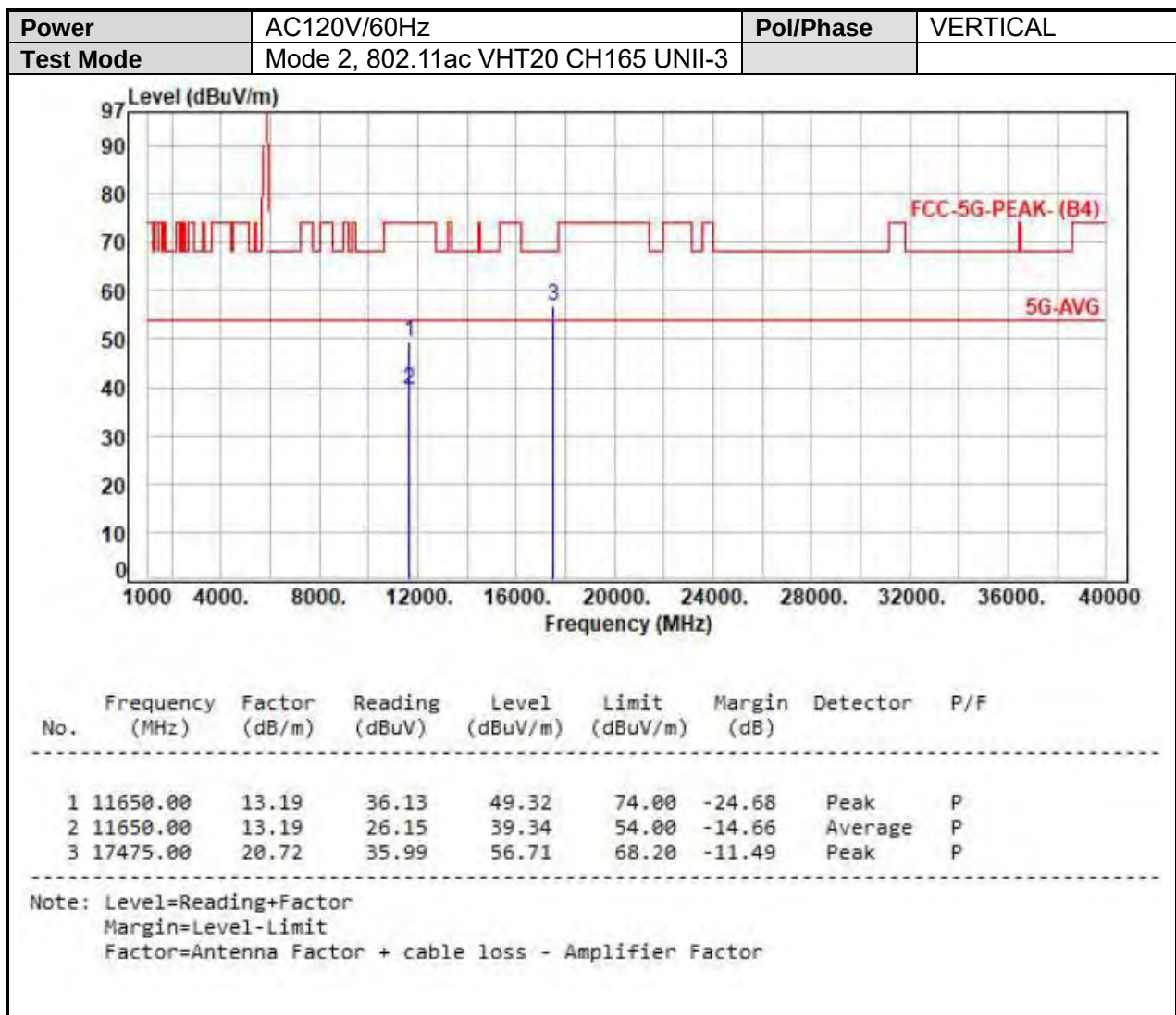


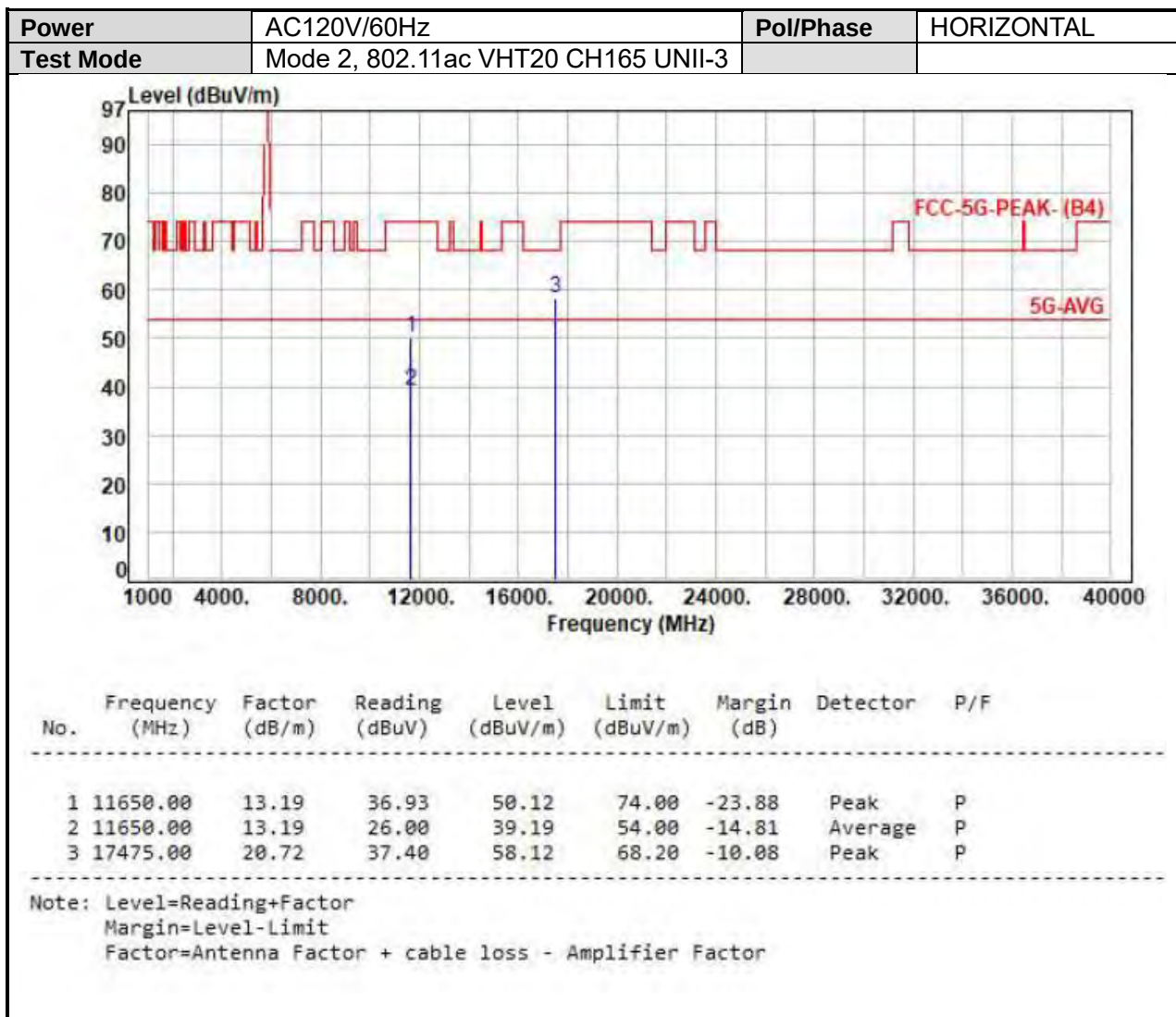


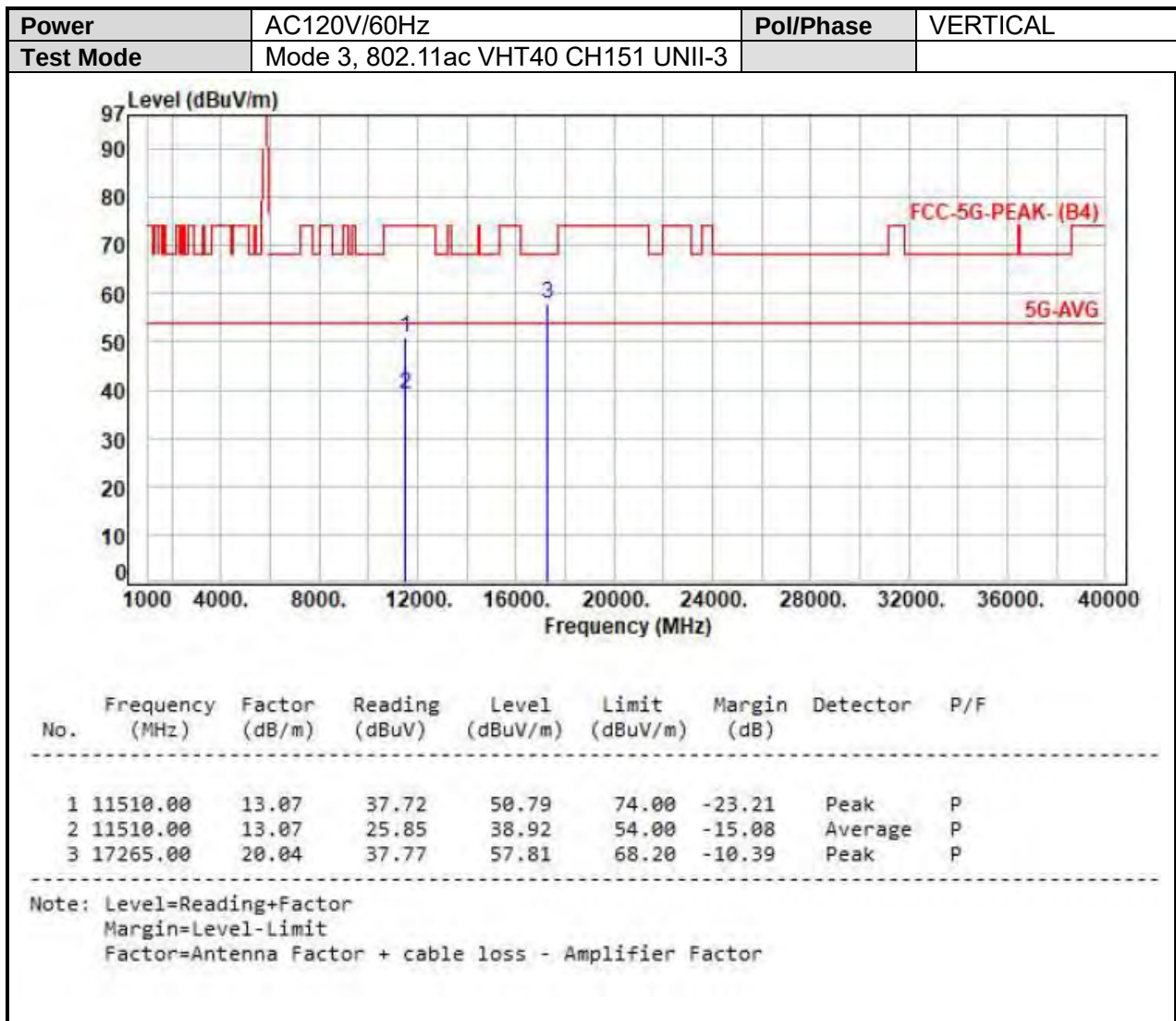


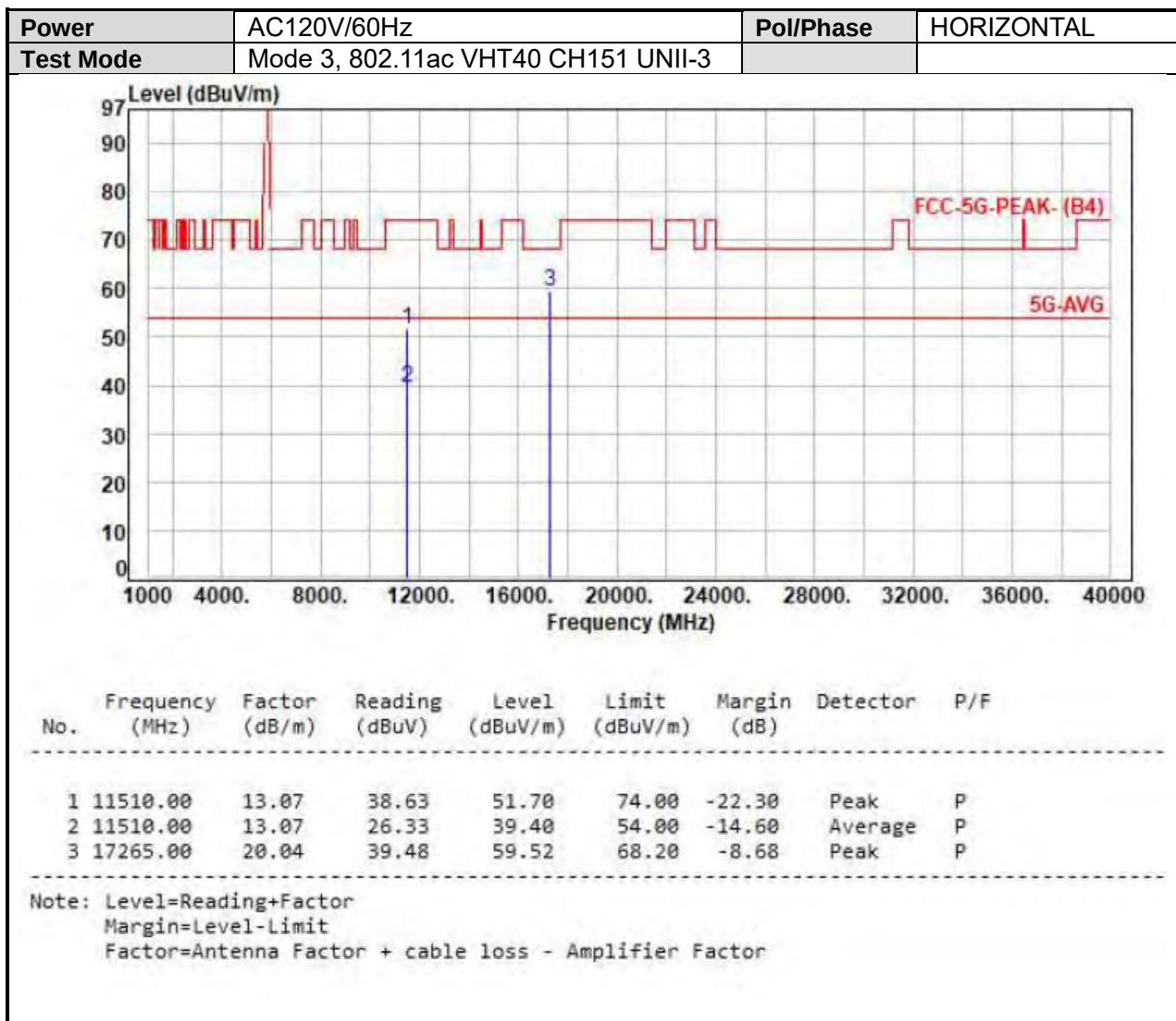


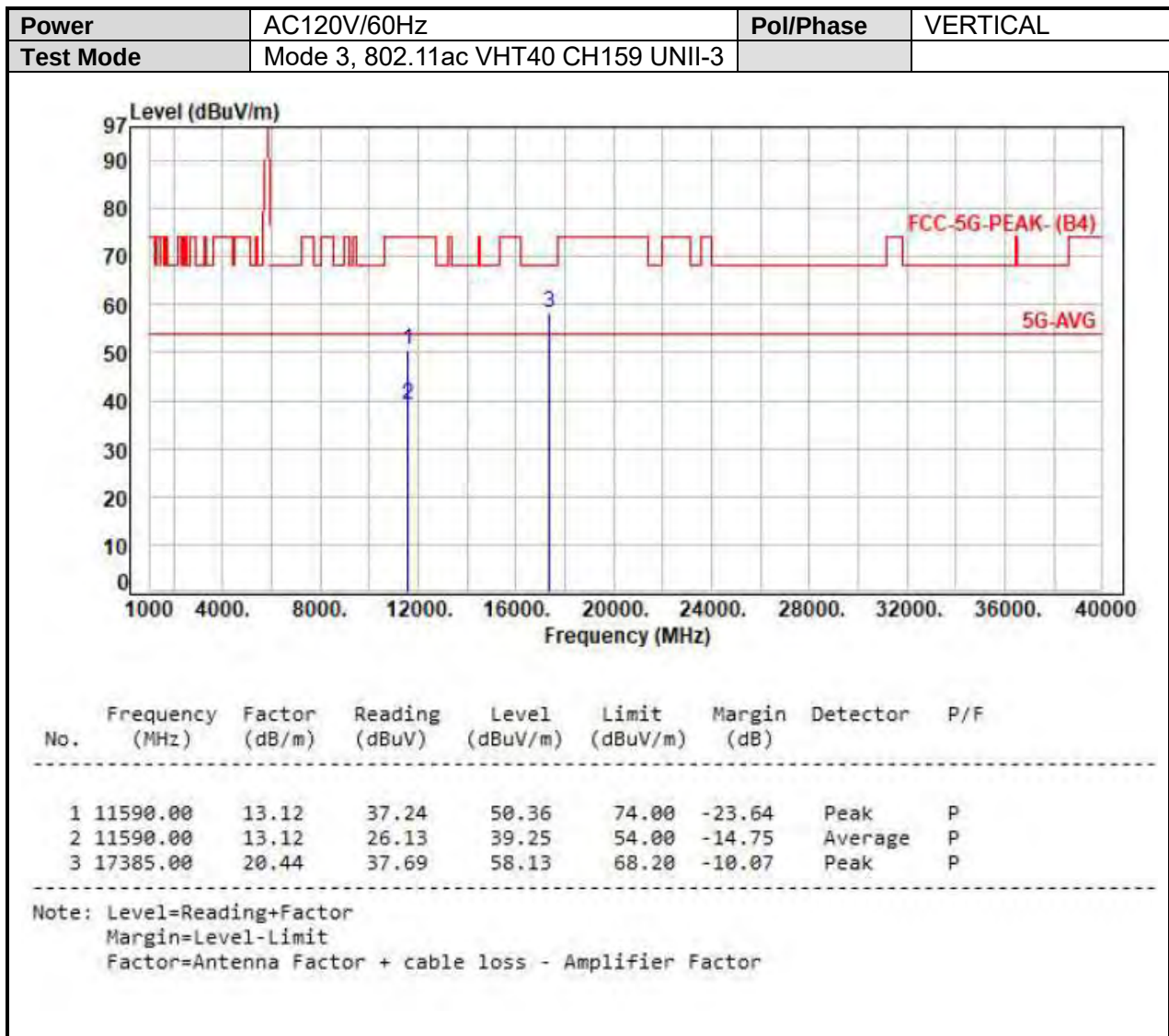


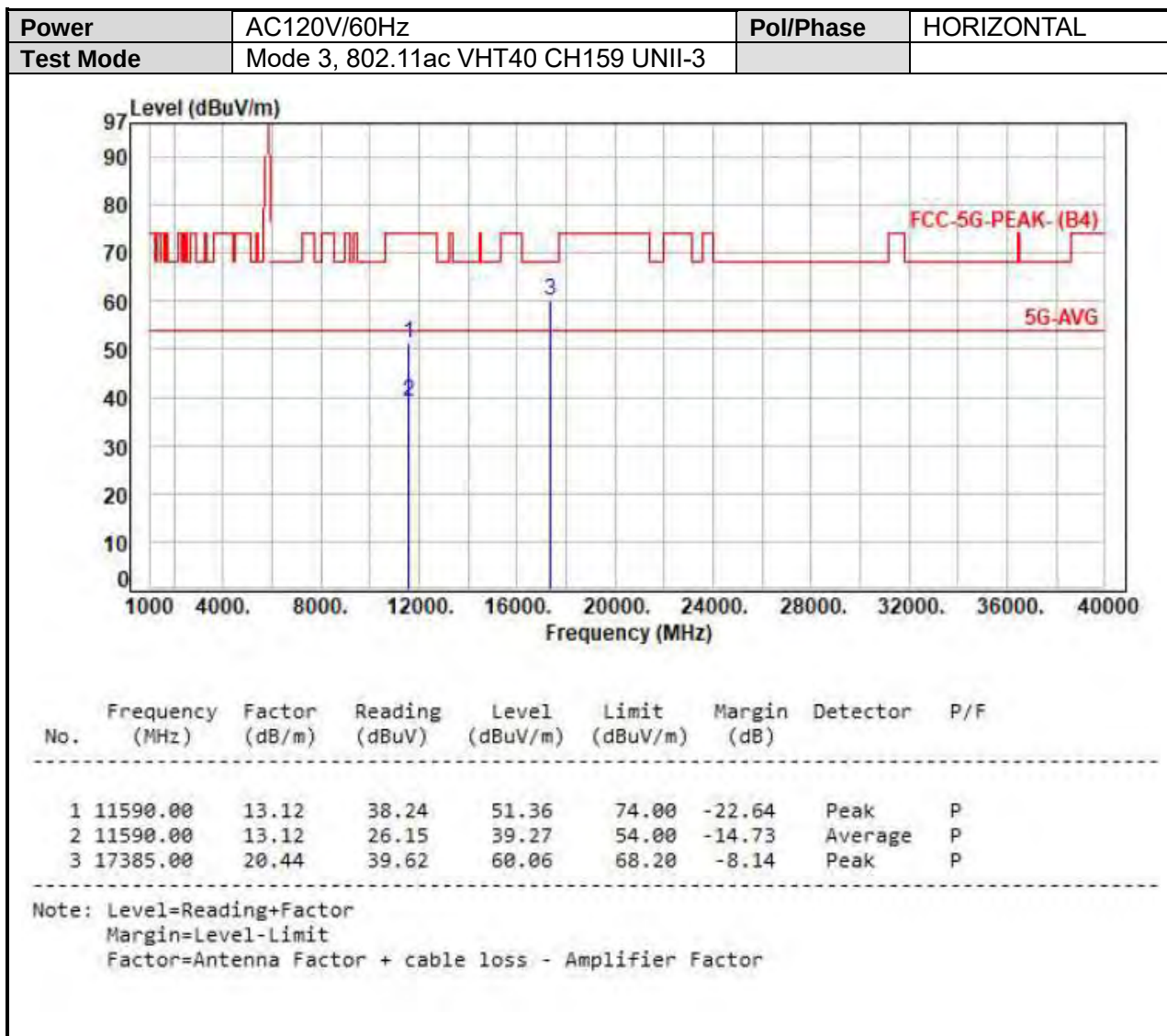


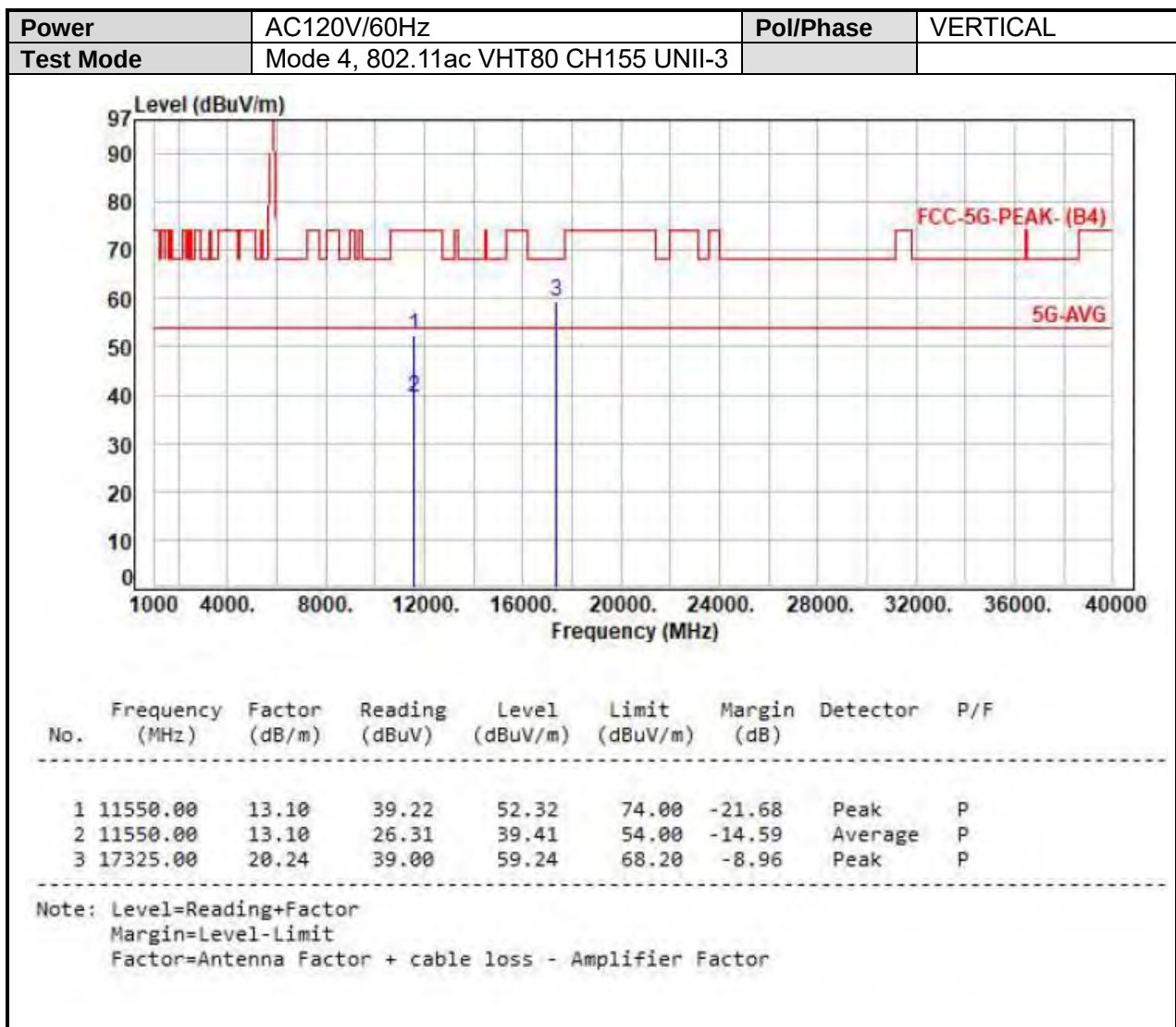


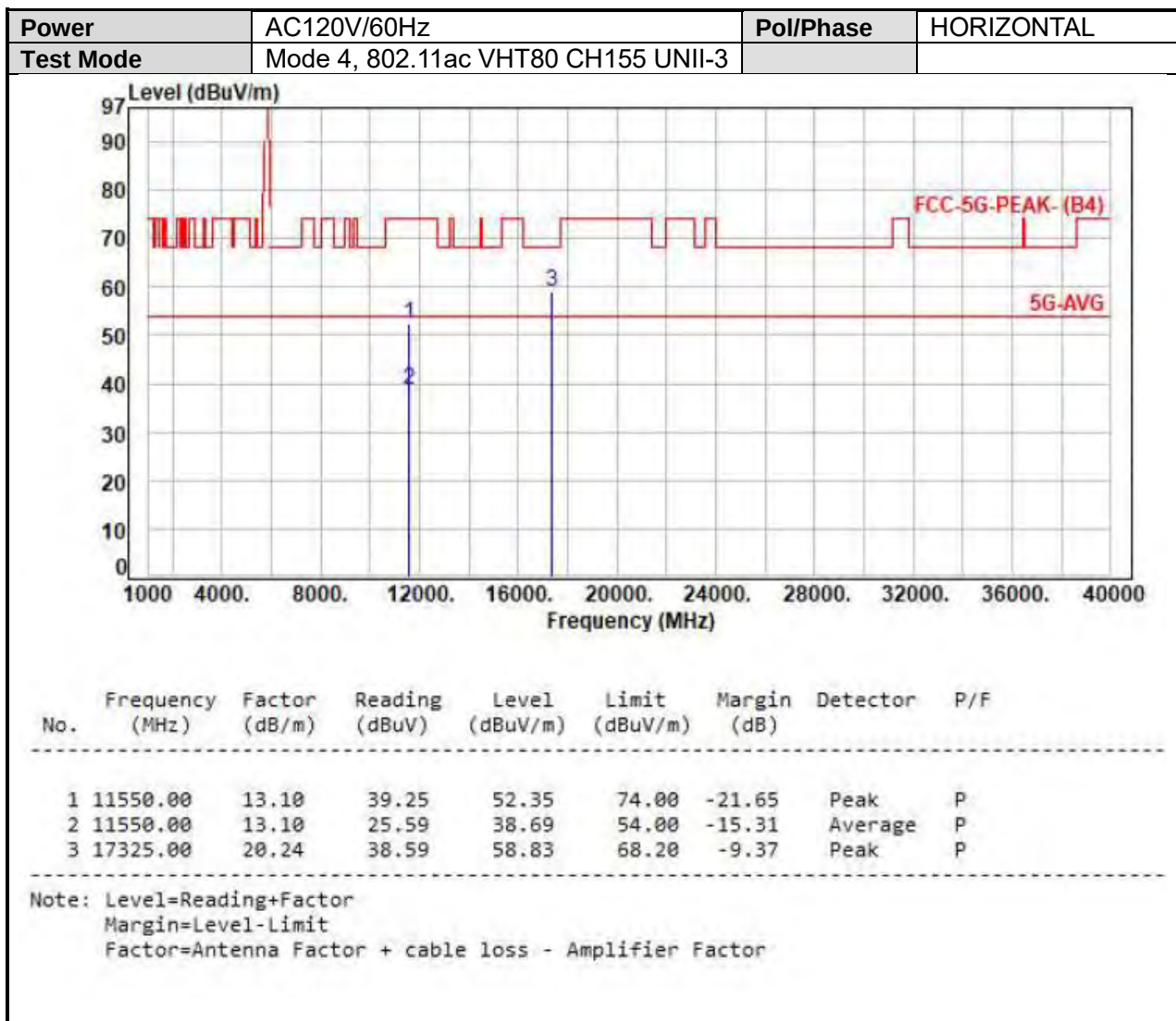














6.7. Restricted Bands of Operation

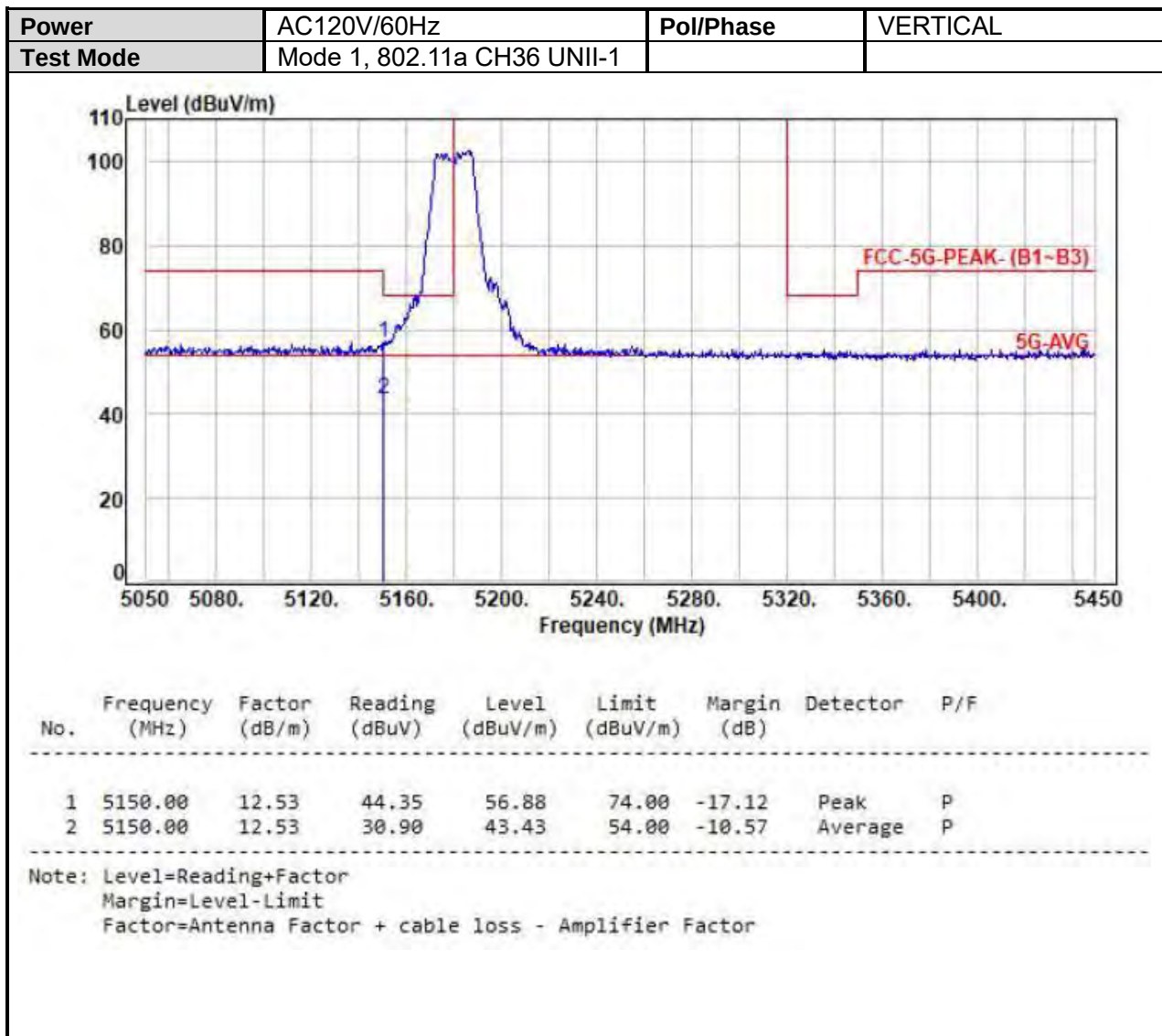
Only spurious emissions are permitted in any of the frequency bands listed below:

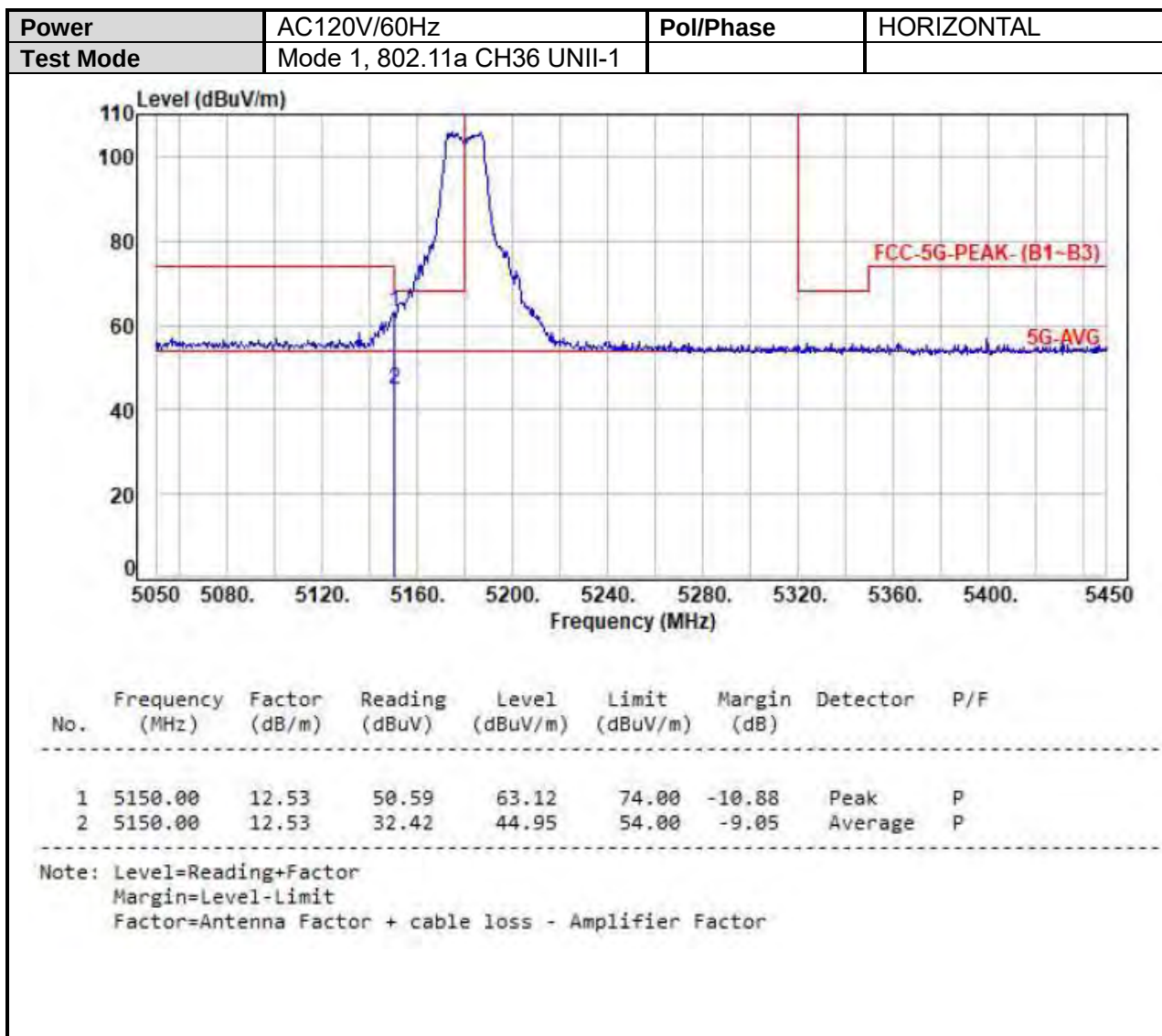
MHz	MHz	MHz	GHz
0.09000 – 0.11000	16.42000 – 16.42300	399.9 – 410.0	4.500 – 5.150
0.49500 – 0.505**	16.69475 – 16.69525	608.0 – 614.0	5.350 – 5.460
2.17350 – 2.19050	16.80425 – 16.80475	960.0 – 1240.0	7.250 – 7.750
4.12500 – 4.12800	25.50000 – 25.67000	1300.0 – 1427.0	8.025 – 8.500
4.17725 – 4.17775	37.50000 – 38.25000	1435.0 – 1626.5	9.000 – 9.200
4.20725 – 4.20775	73.00000 – 74.60000	1645.5 – 1646.5	9.300 – 9.500
6.21500 – 6.21800	74.80000 – 75.20000	1660.0 – 1710.0	10.600 – 12.700
6.26775 – 6.26825	108.00000 – 121.94000	1718.8 – 1722.2	13.250 – 13.400
6.31175 – 6.31225	123.00000 – 138.00000	2200.0 – 2300.0	14.470 – 14.500
8.29100 – 8.29400	149.90000 – 150.05000	2310.0 – 2390.0	15.350 – 16.200
8.36200 – 8.36600	156.52475 – 156.52525	2483.5 – 2500.0	17.700 – 21.400
8.37625 – 8.38675	156.70000 – 156.90000	2655.0 – 2900.0	22.010 – 23.120
8.41425 – 8.41475	162.01250 – 167.17000	3260.0 – 3267.0	23.600 – 24.000
12.29000 – 12.29300	167.72000 – 173.20000	3332.0 – 3339.0	31.200 – 31.800
12.51975 – 12.52025	240.00000 – 285.00000	3345.8 – 3358.0	36.430 – 36.500
12.57675 – 12.57725	322.00000 – 335.40000	3600.0 – 4400.0	Above 38.6
13.36000 – 13.41000			

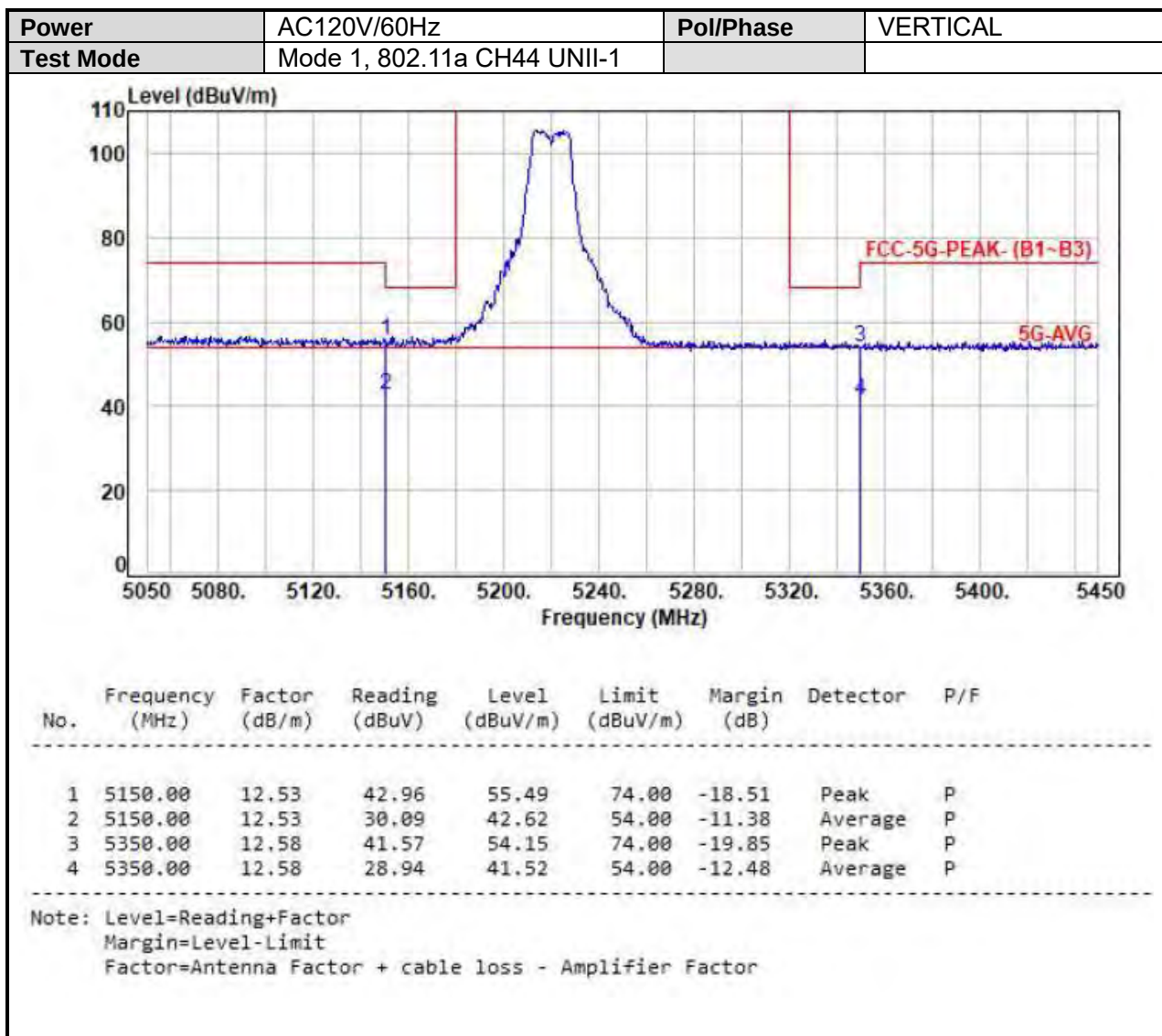
** : Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

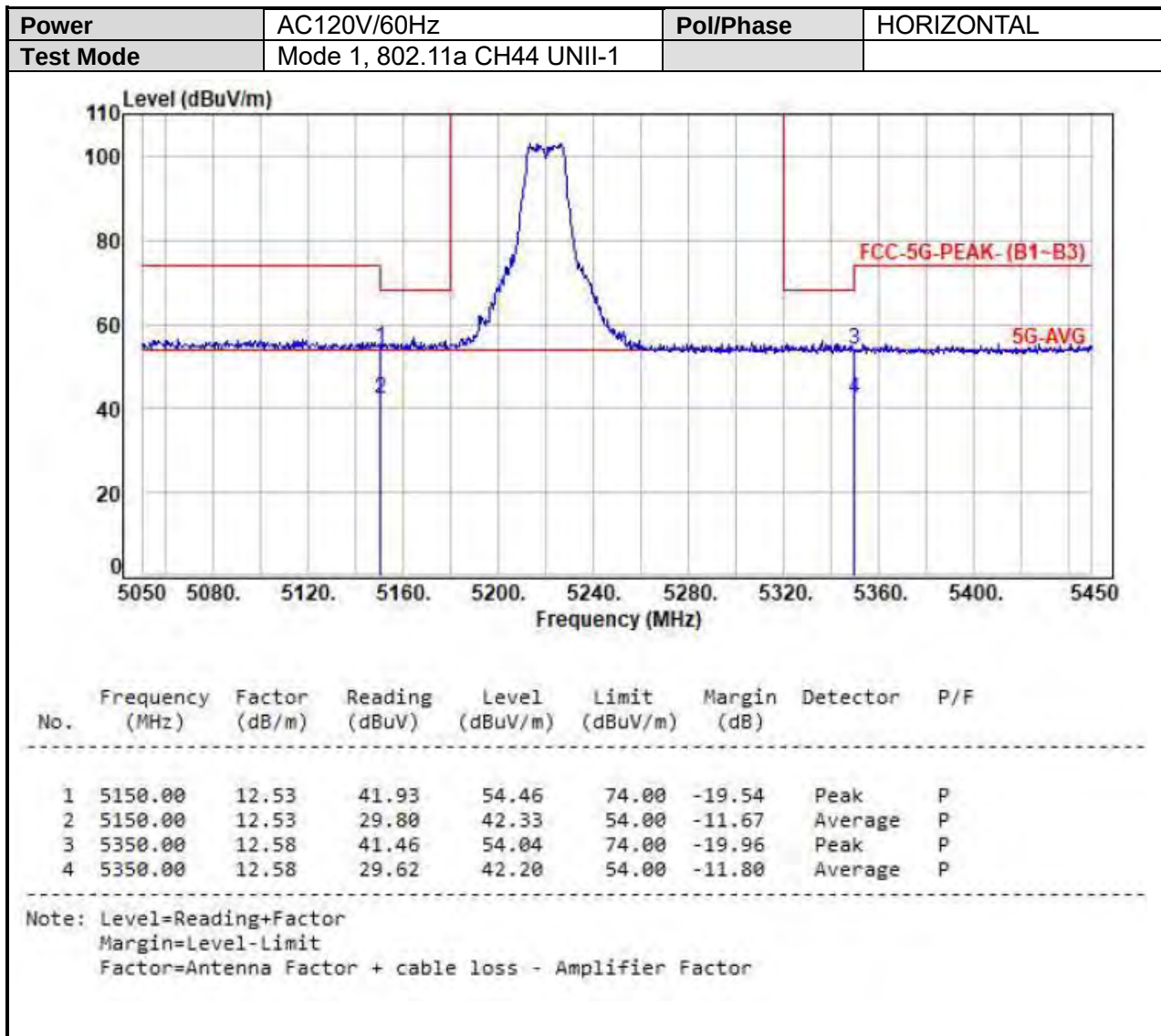


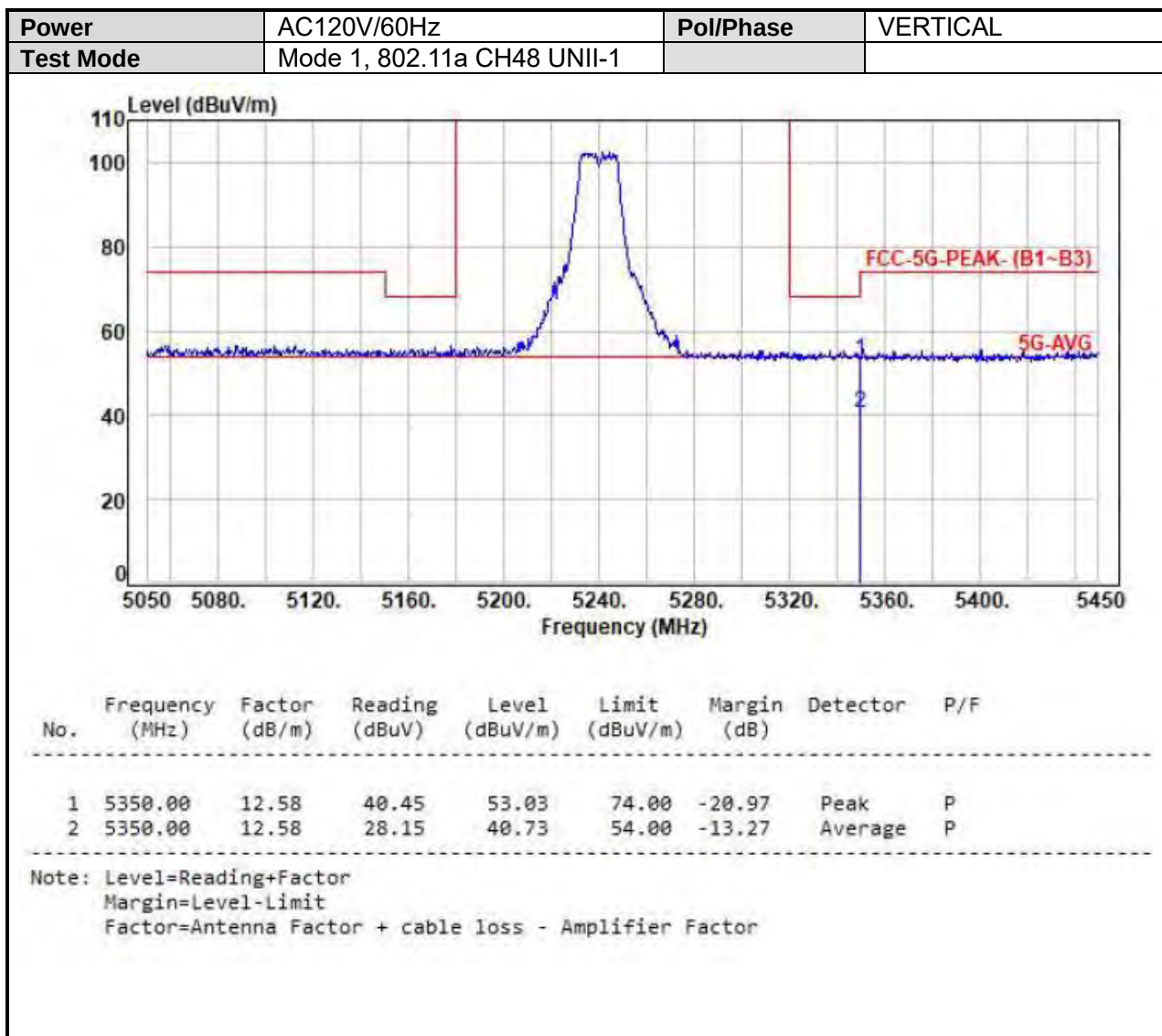
6.8. Restrict Band Emission Measurement Data

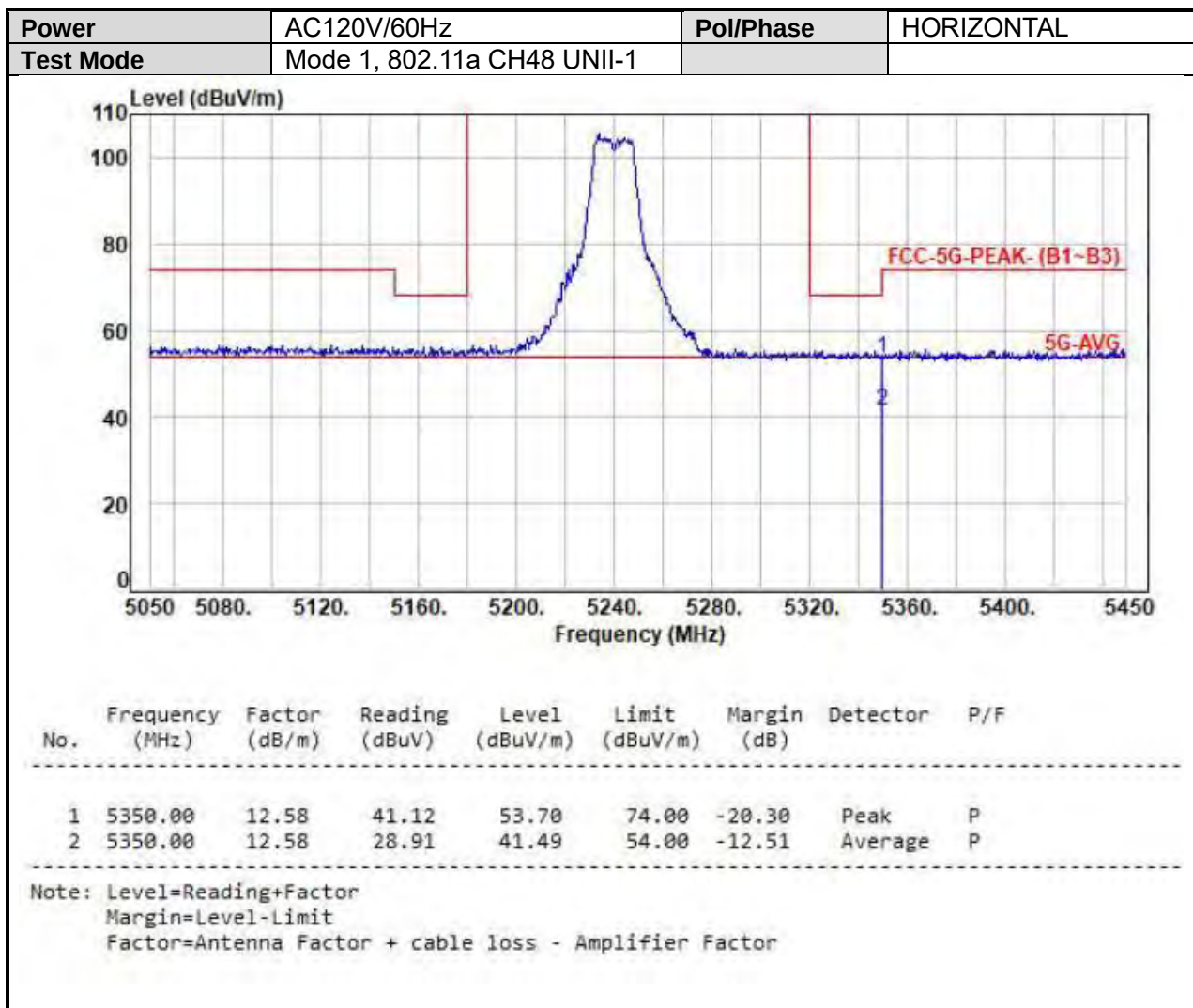


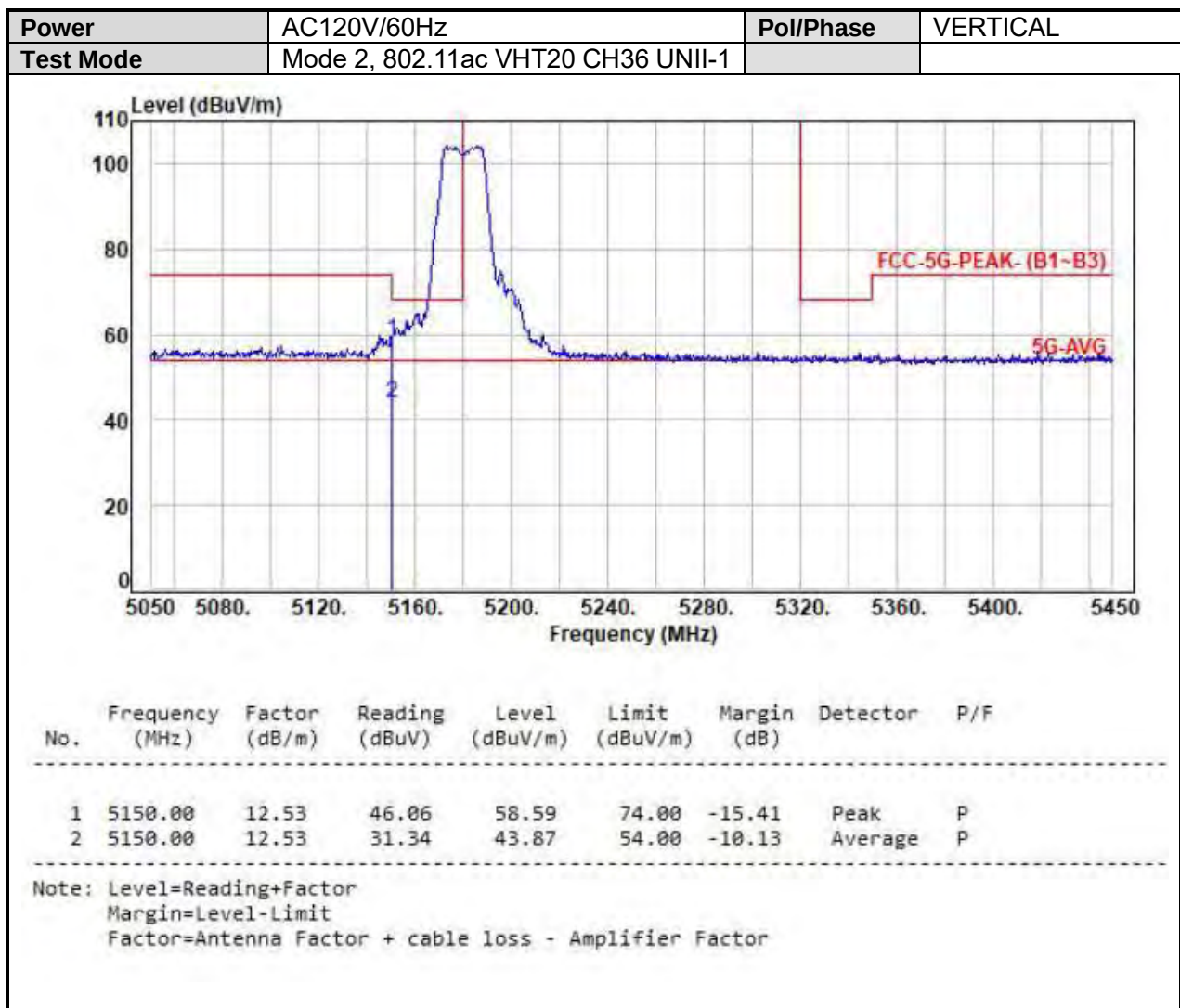


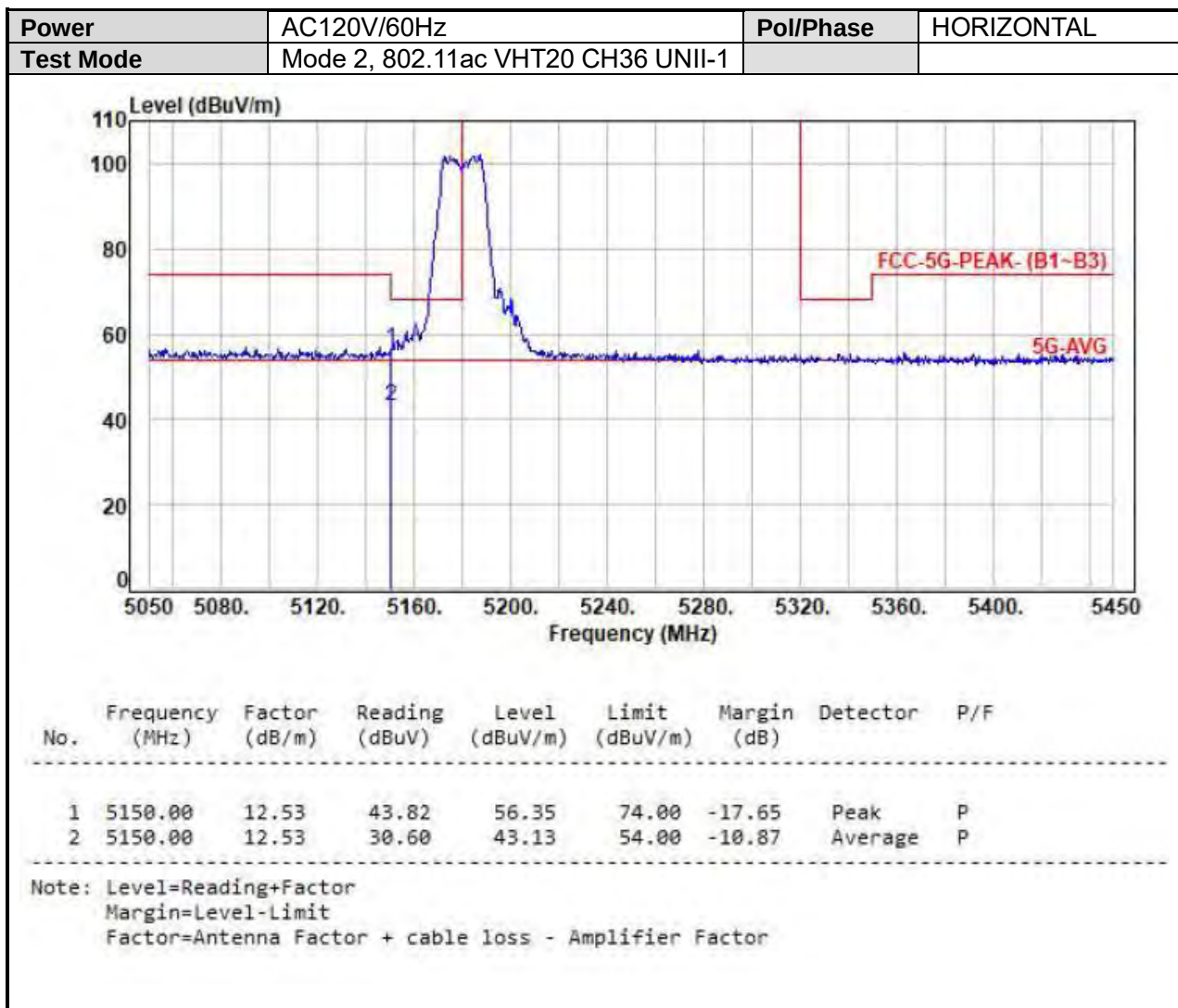


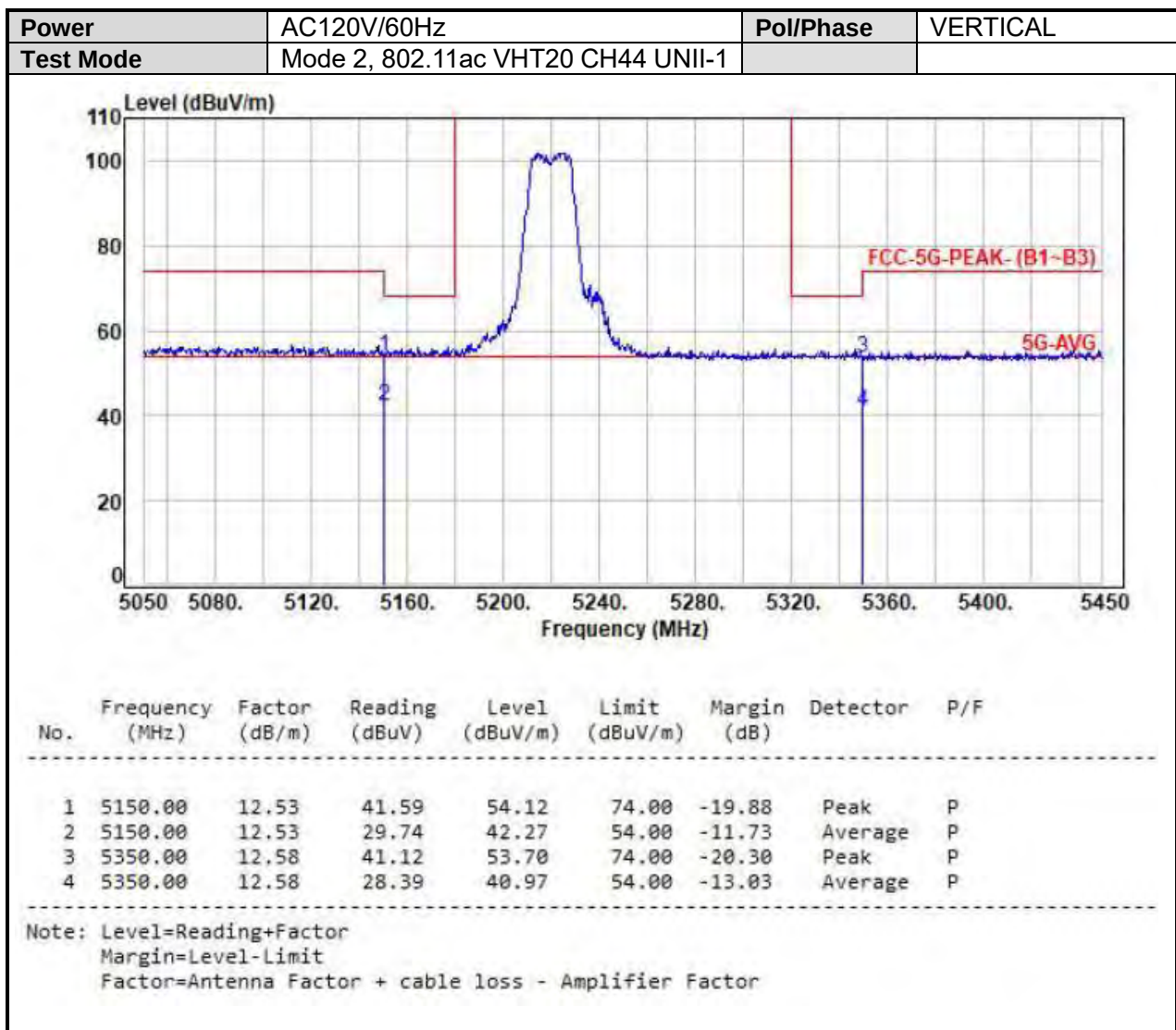


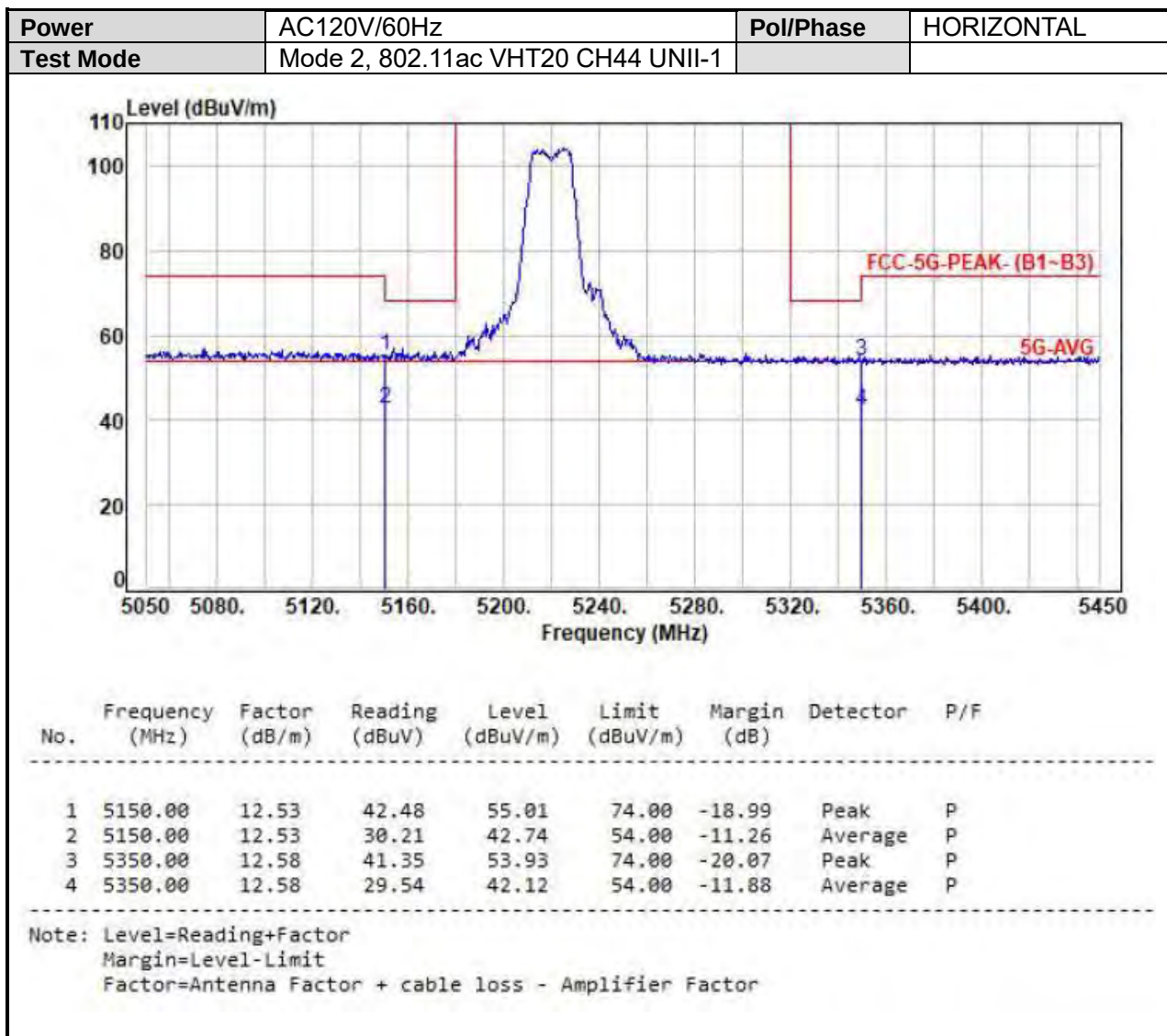


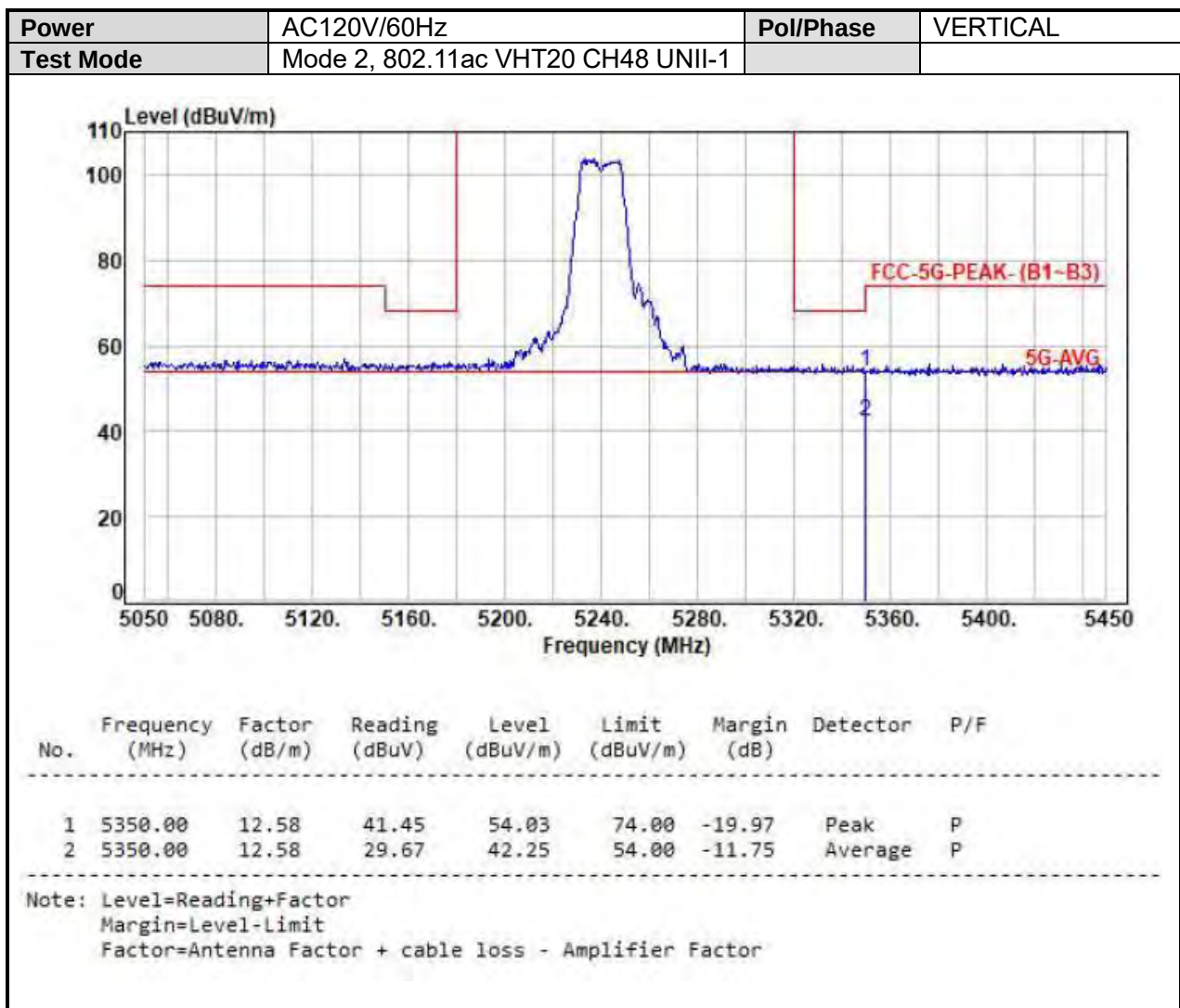


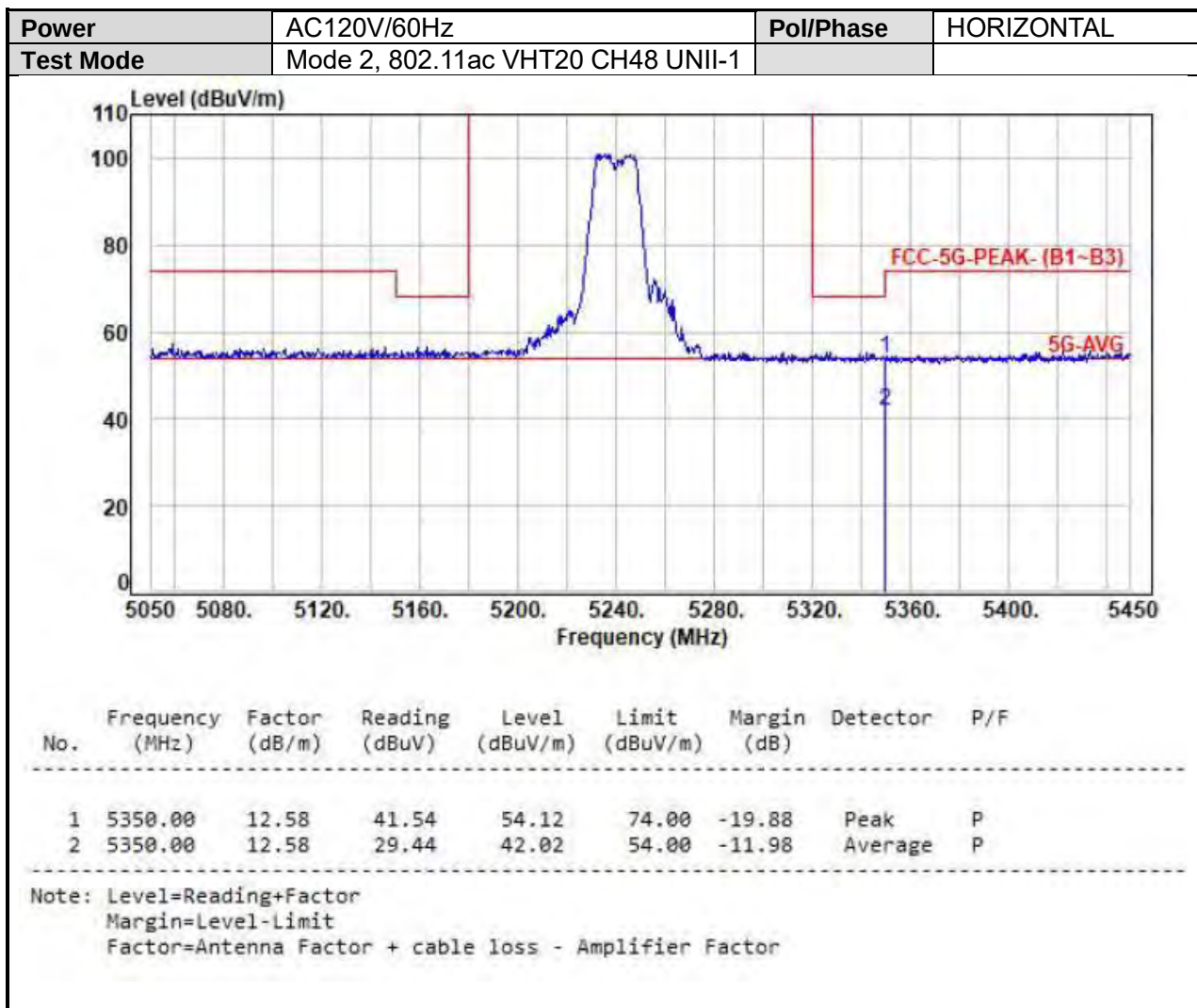


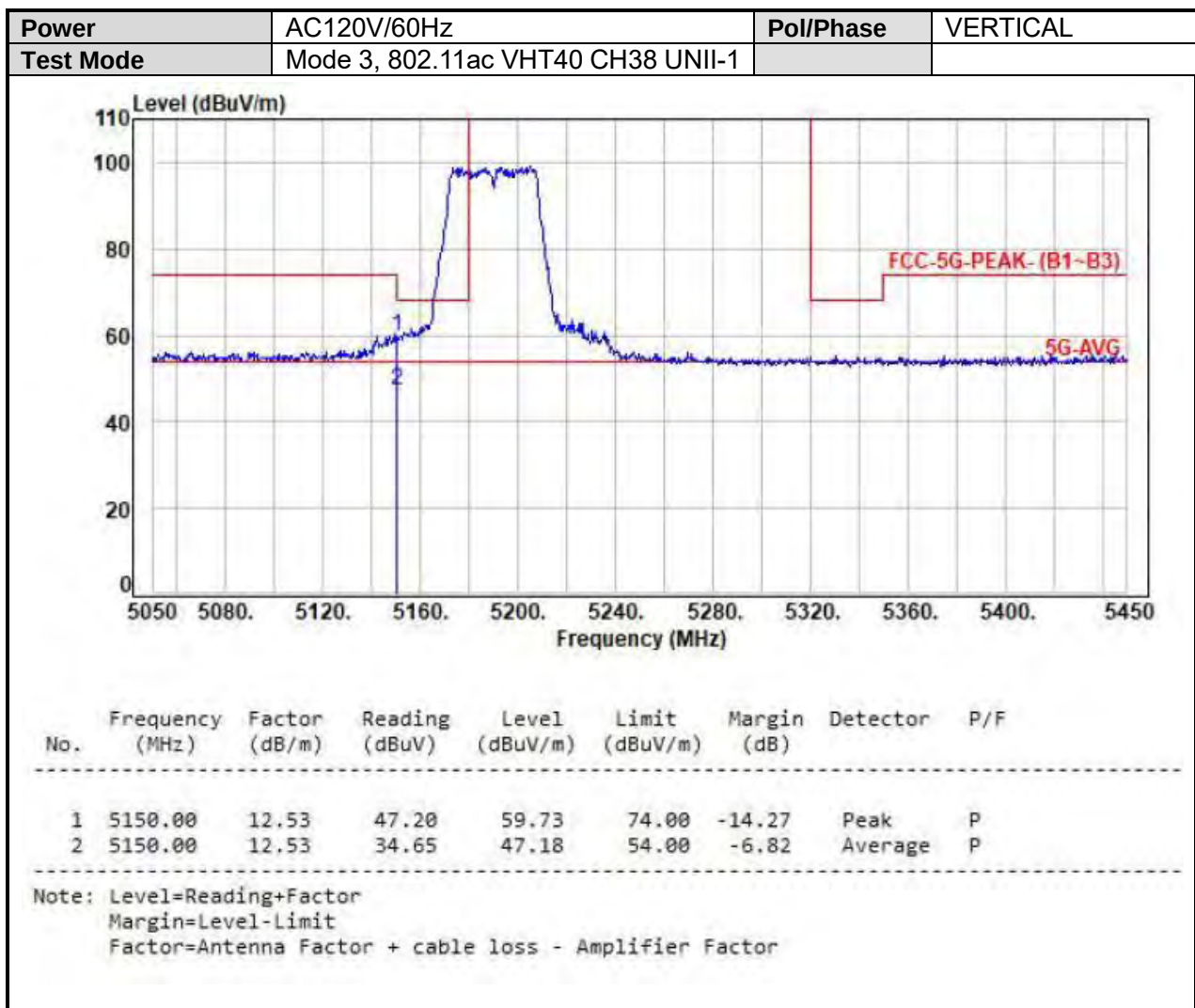


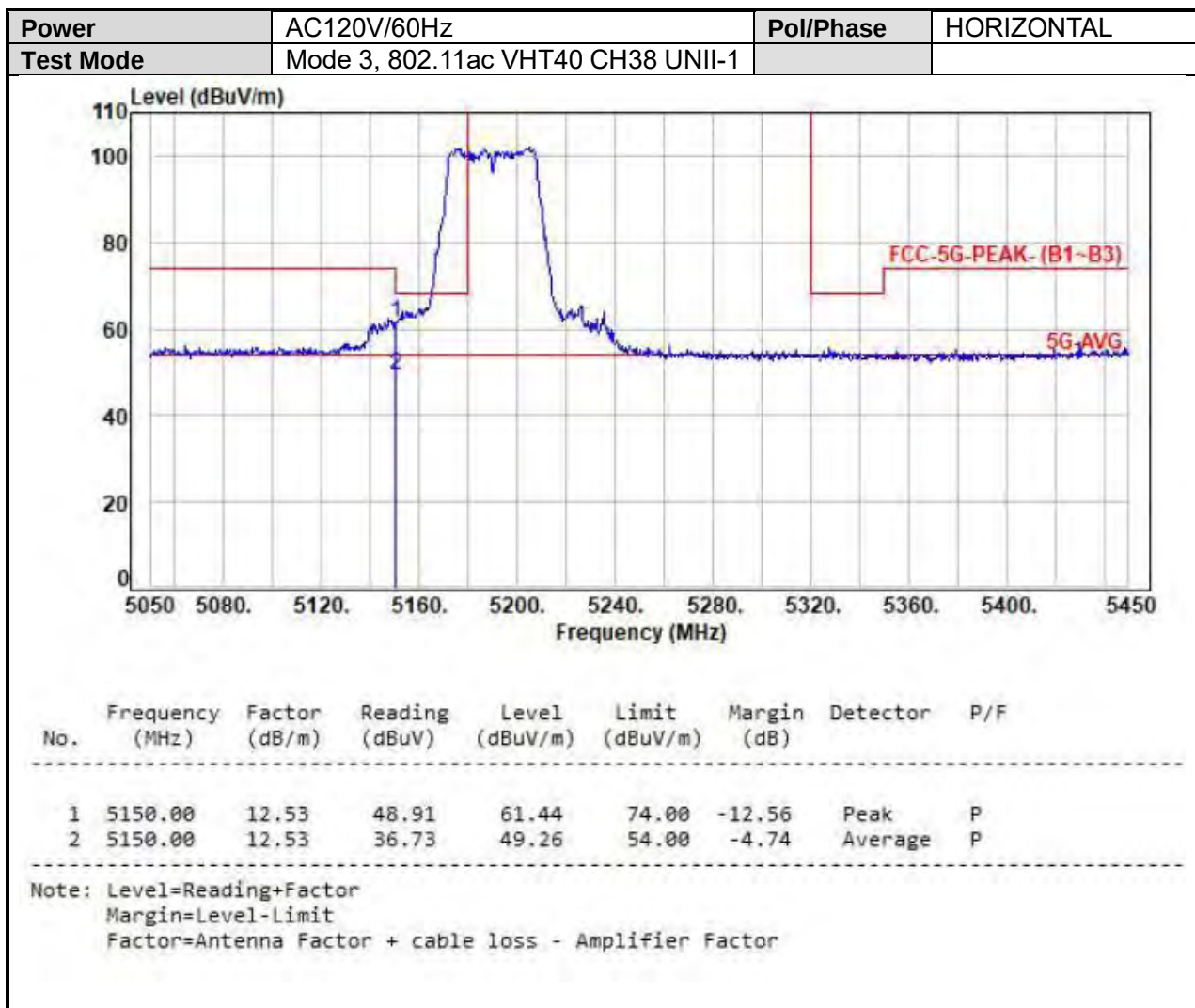


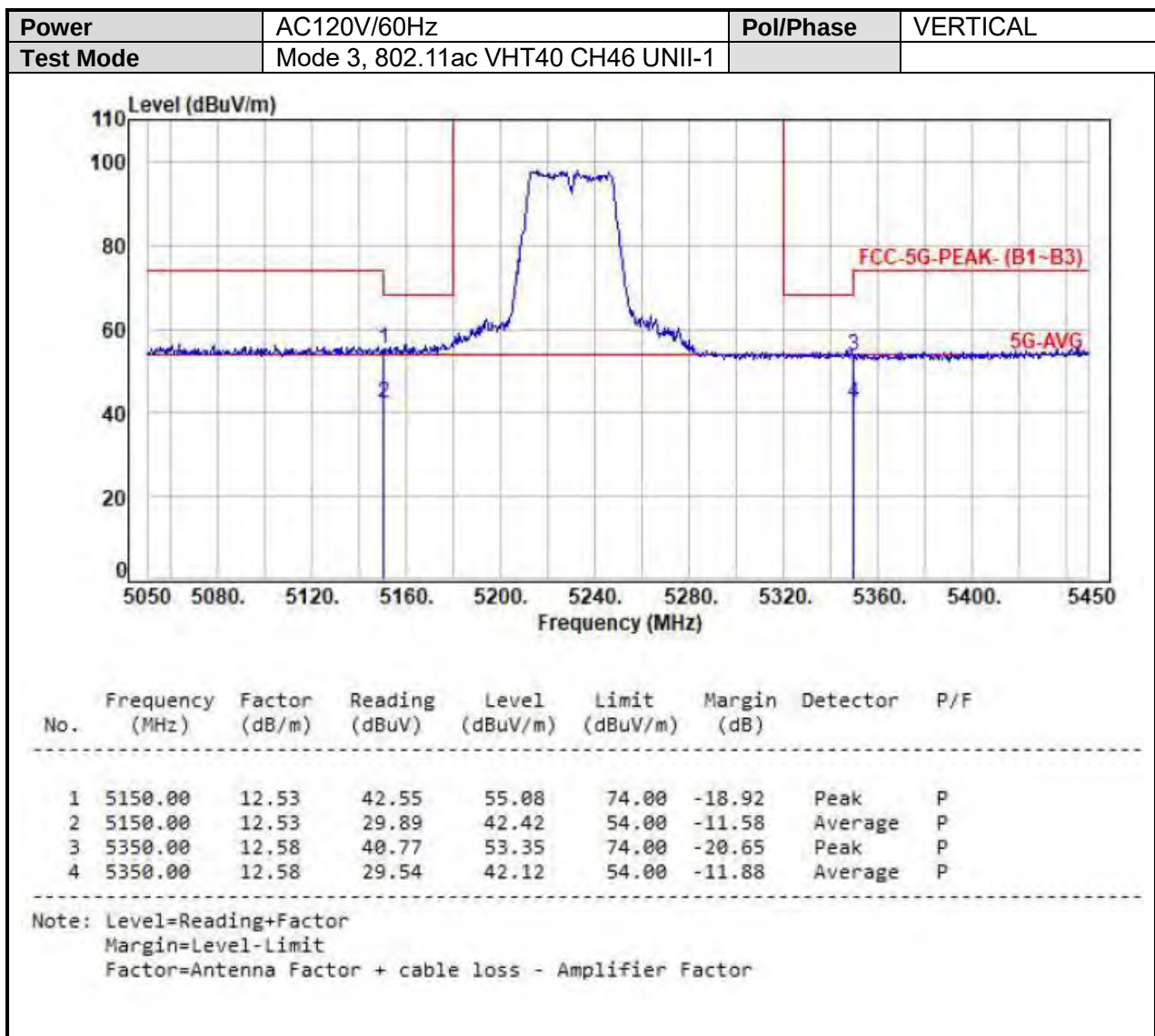


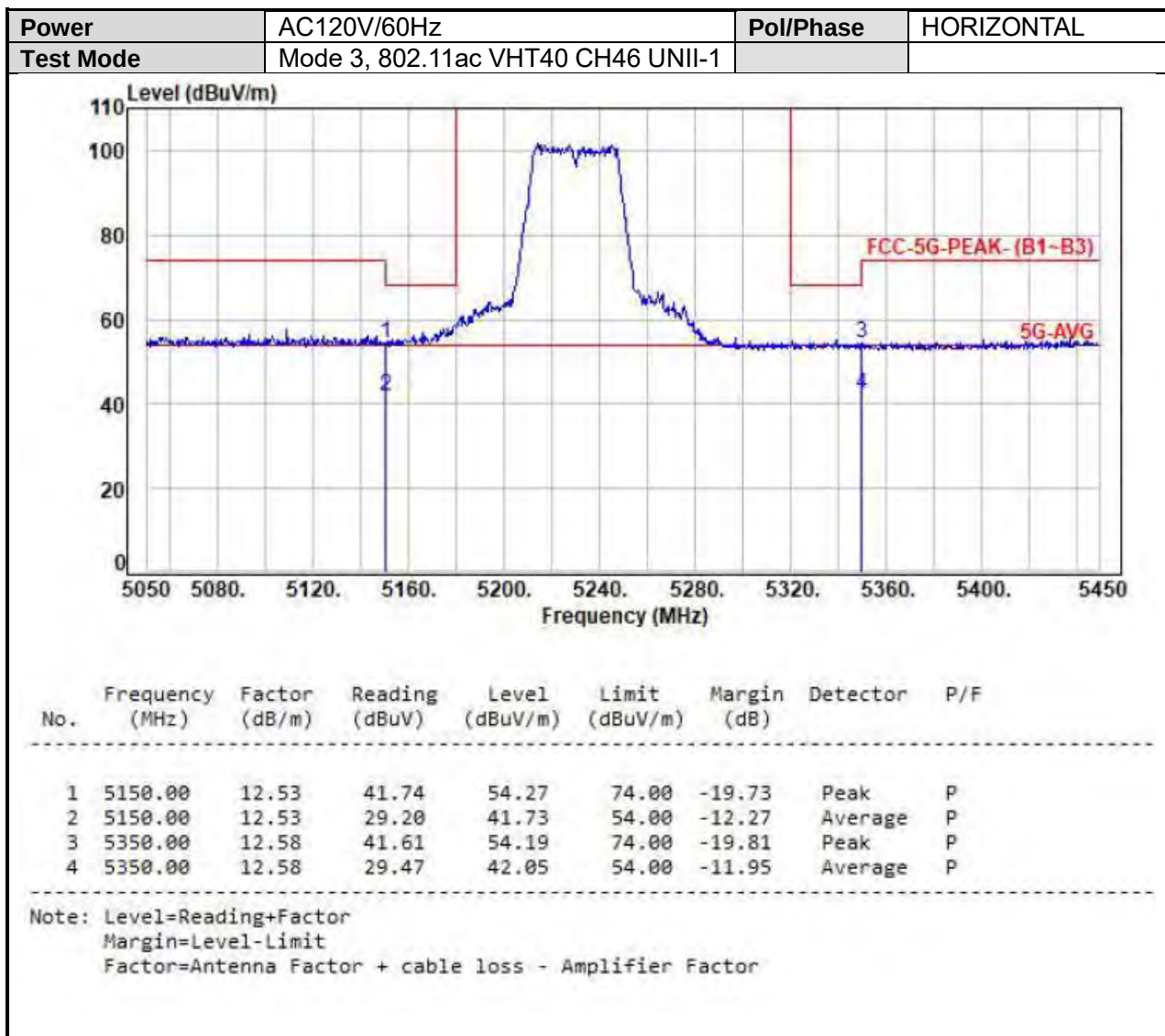


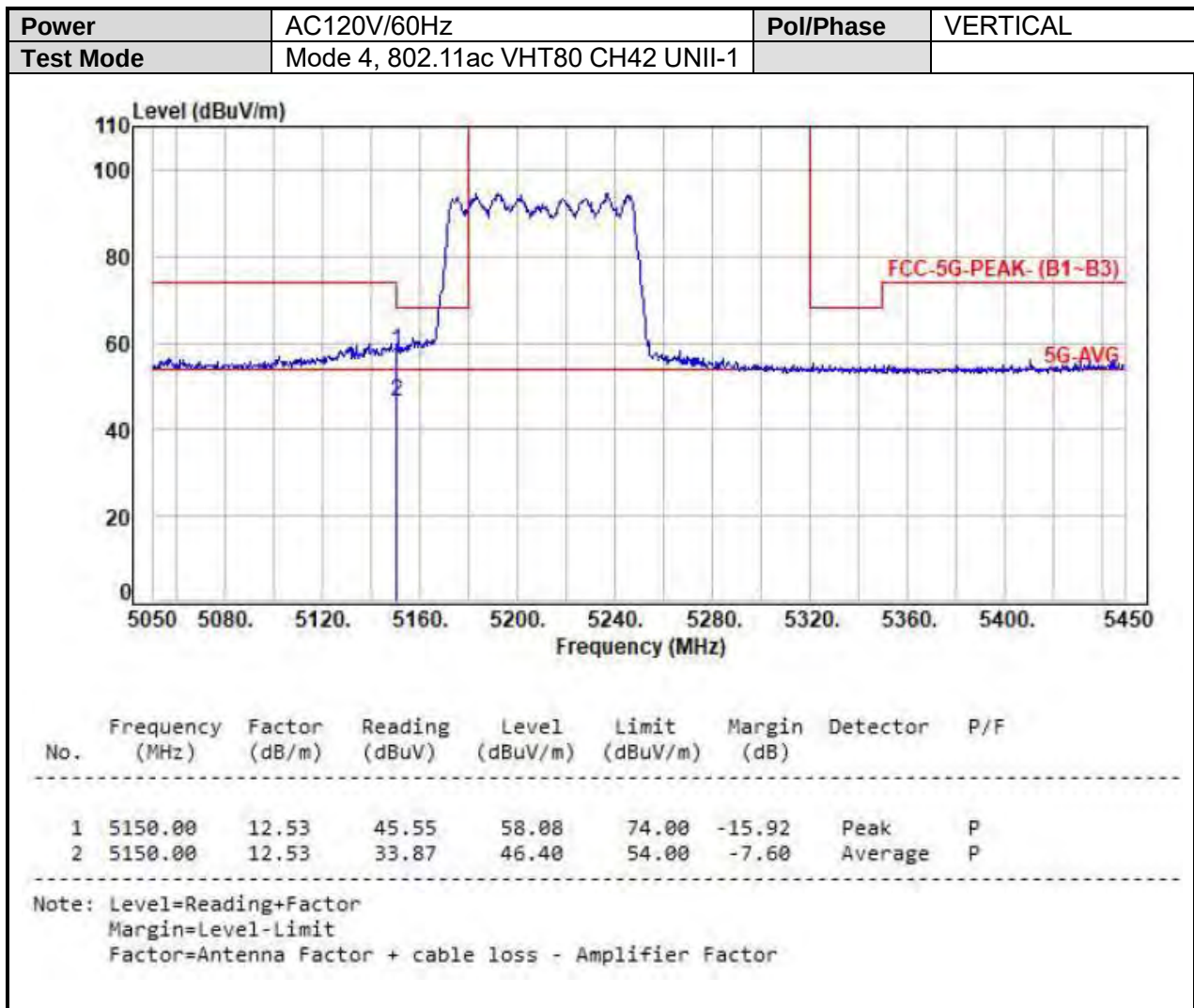


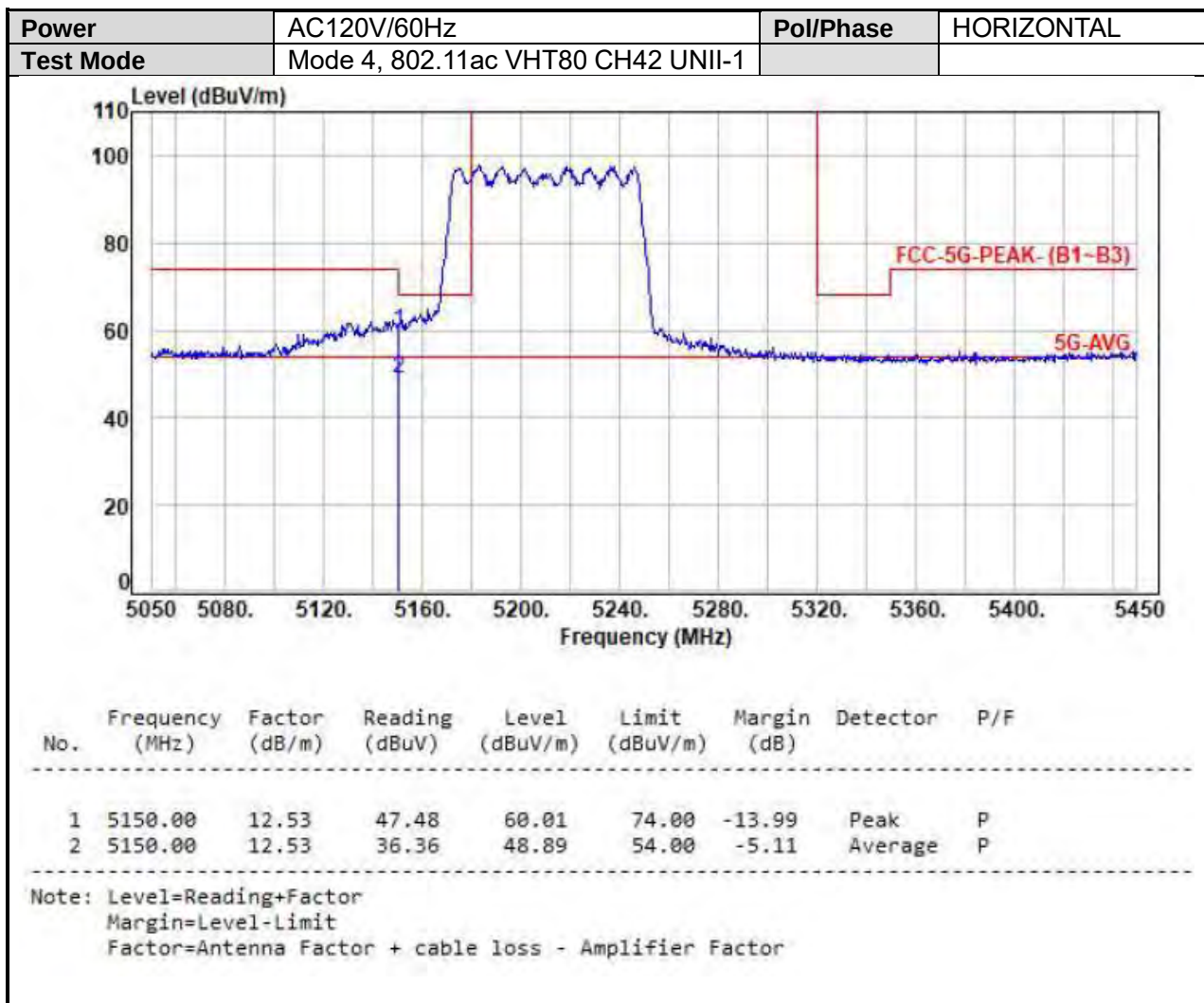


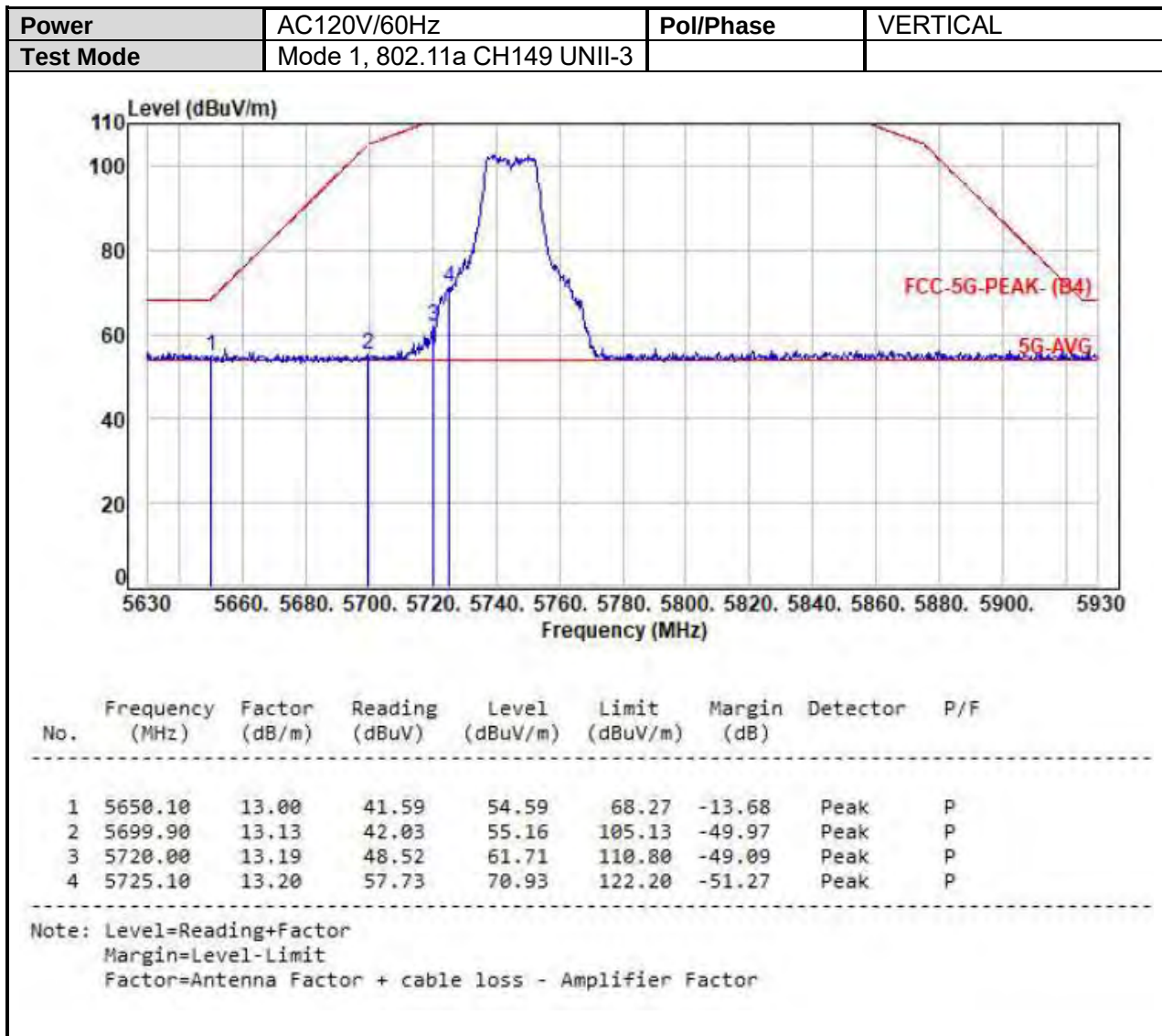


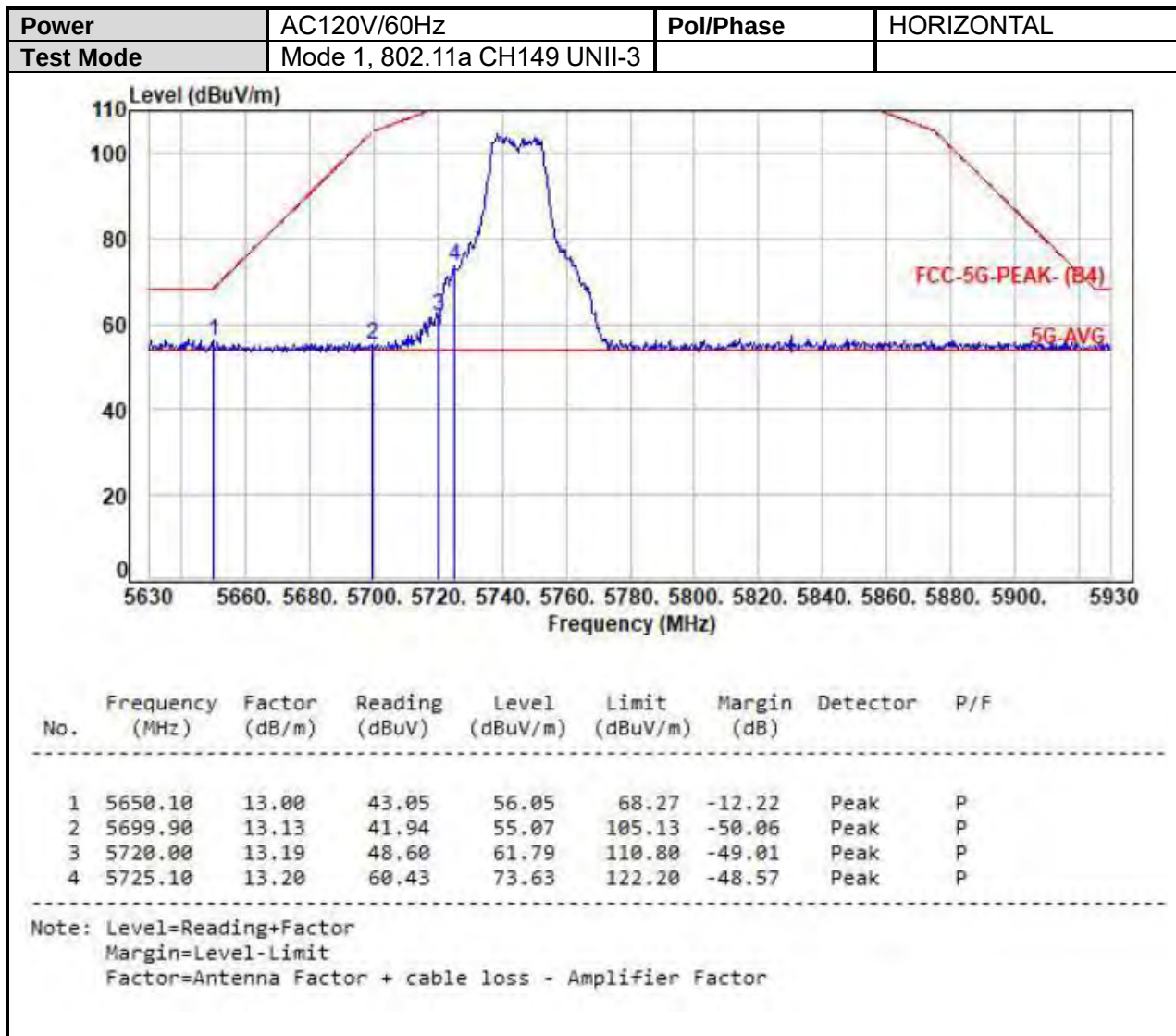


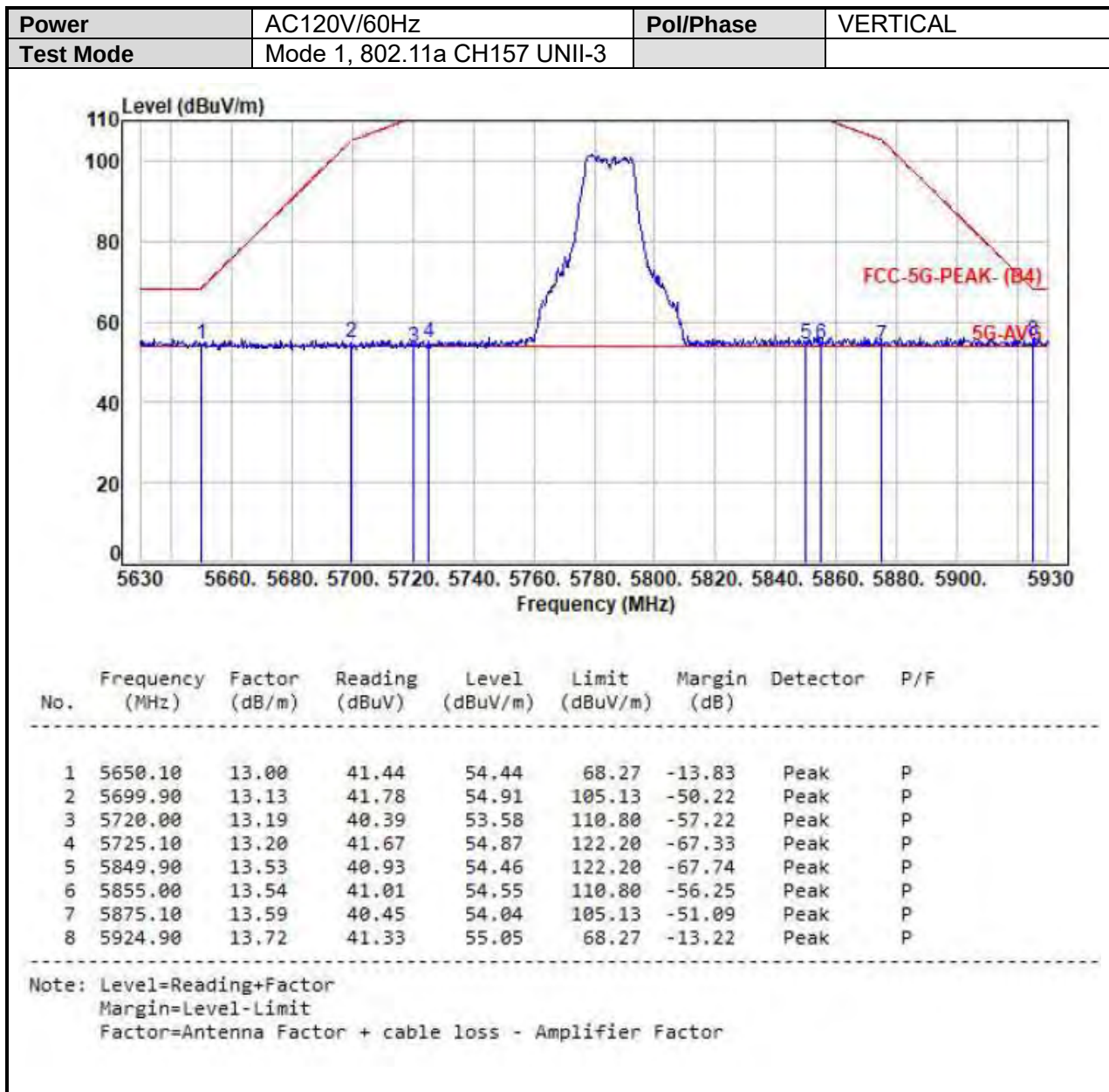


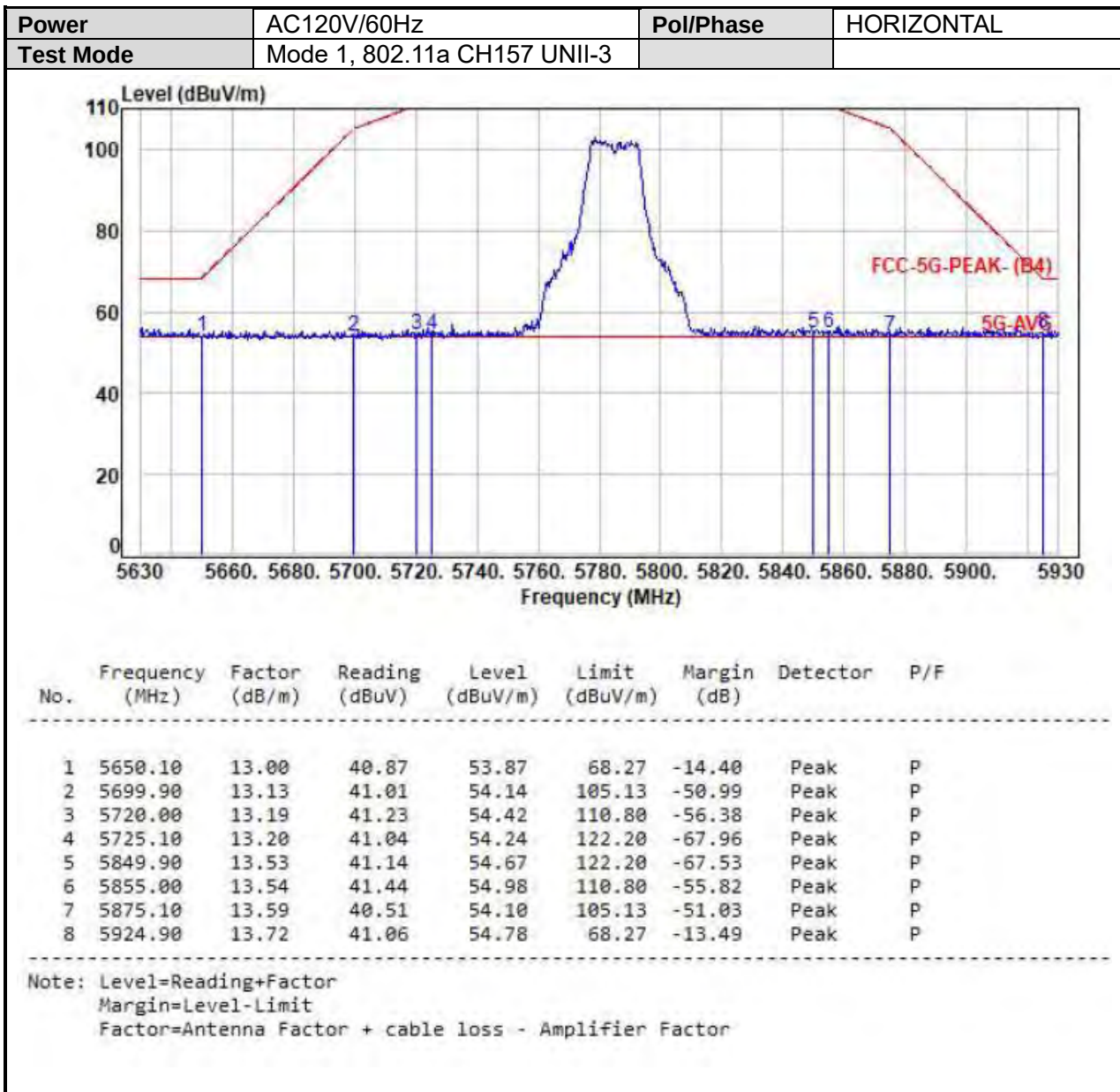


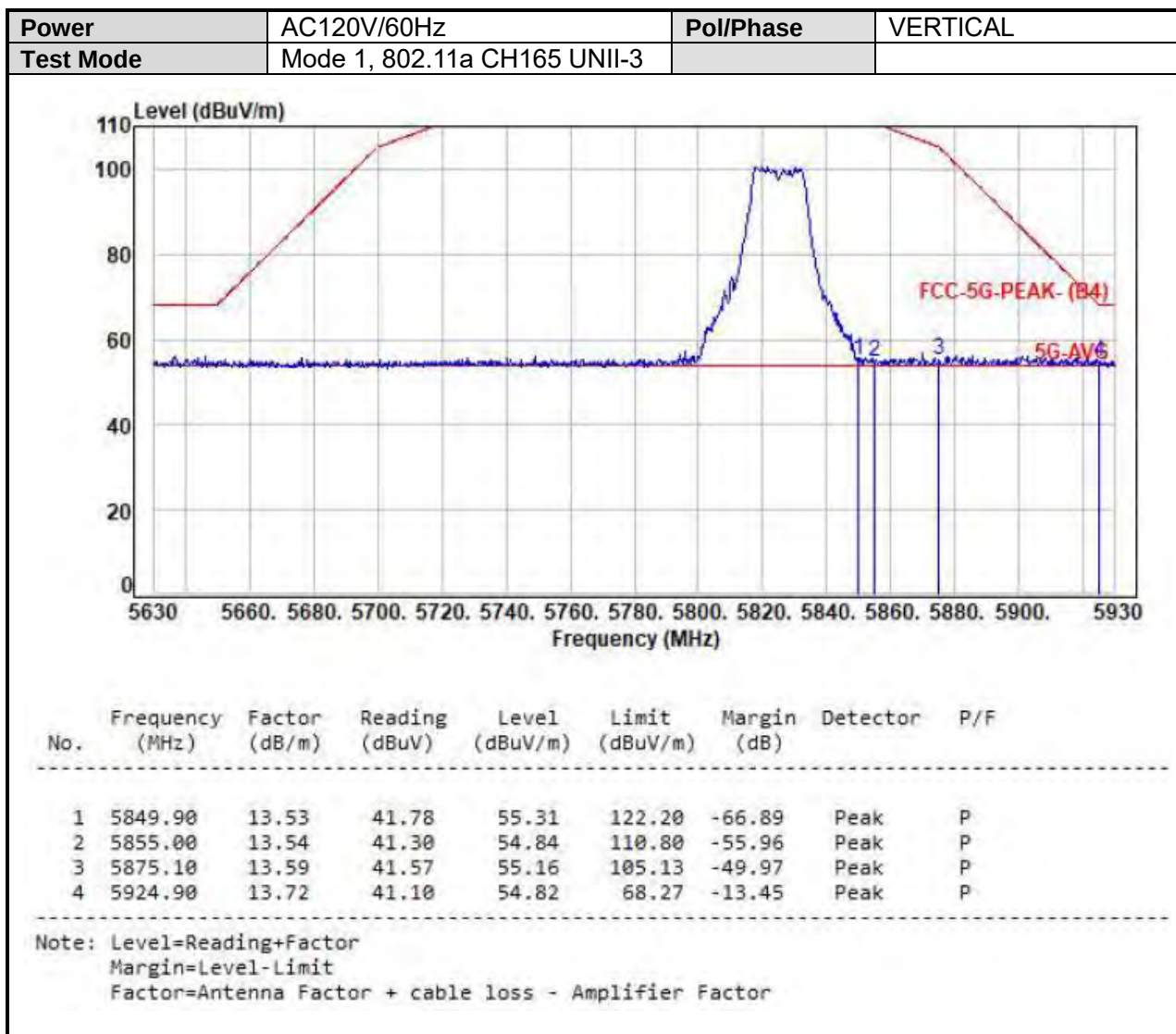


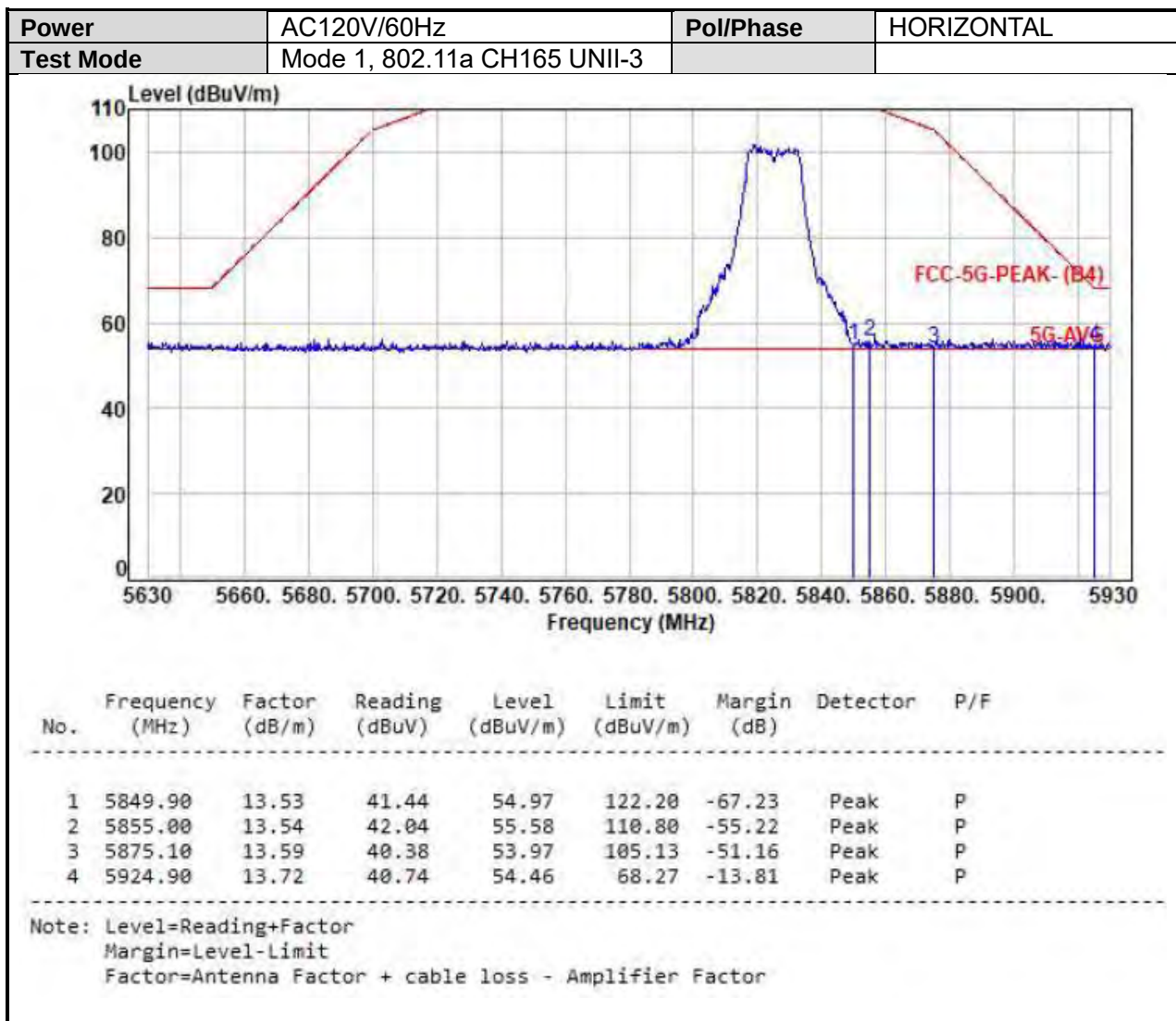


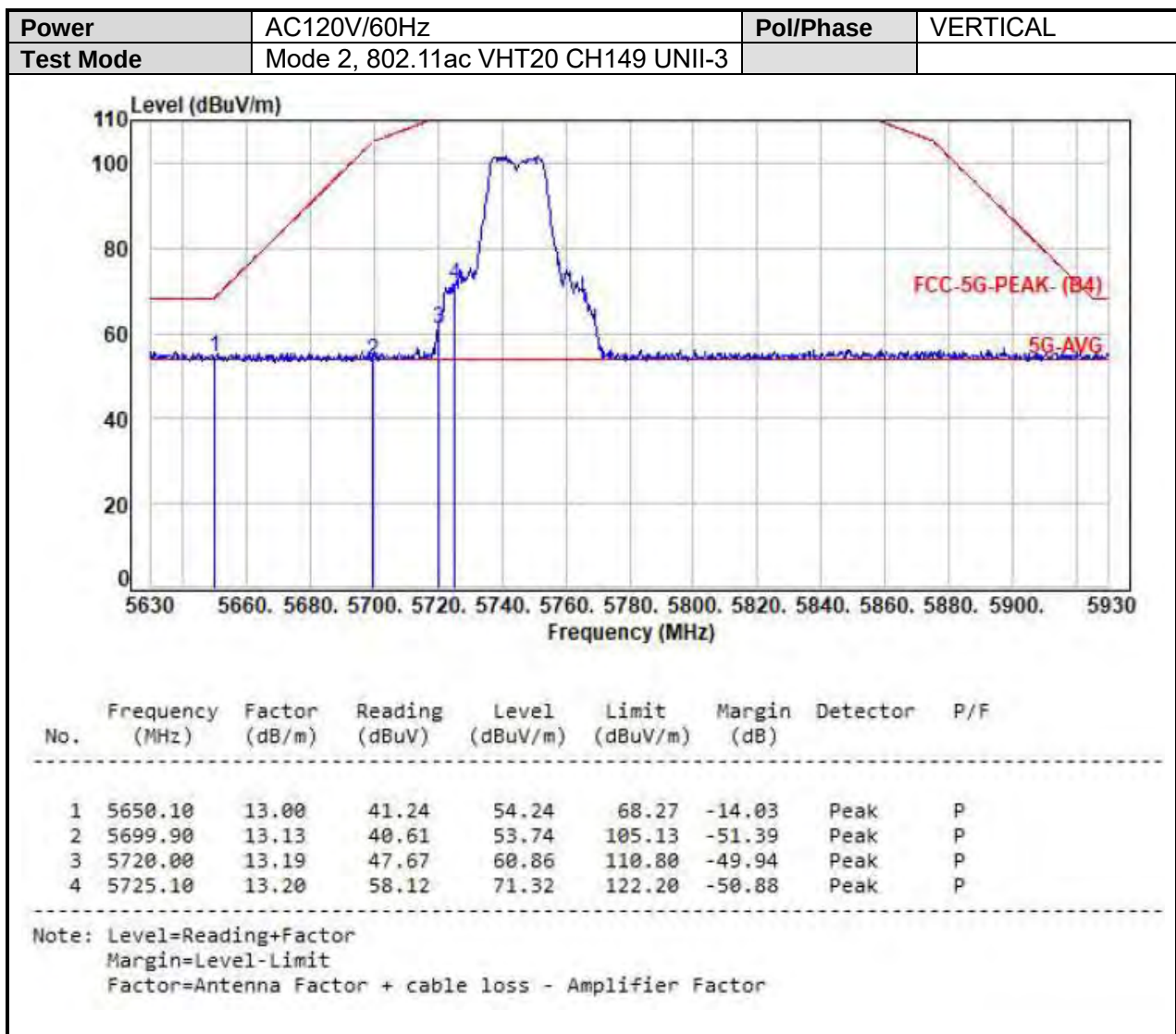


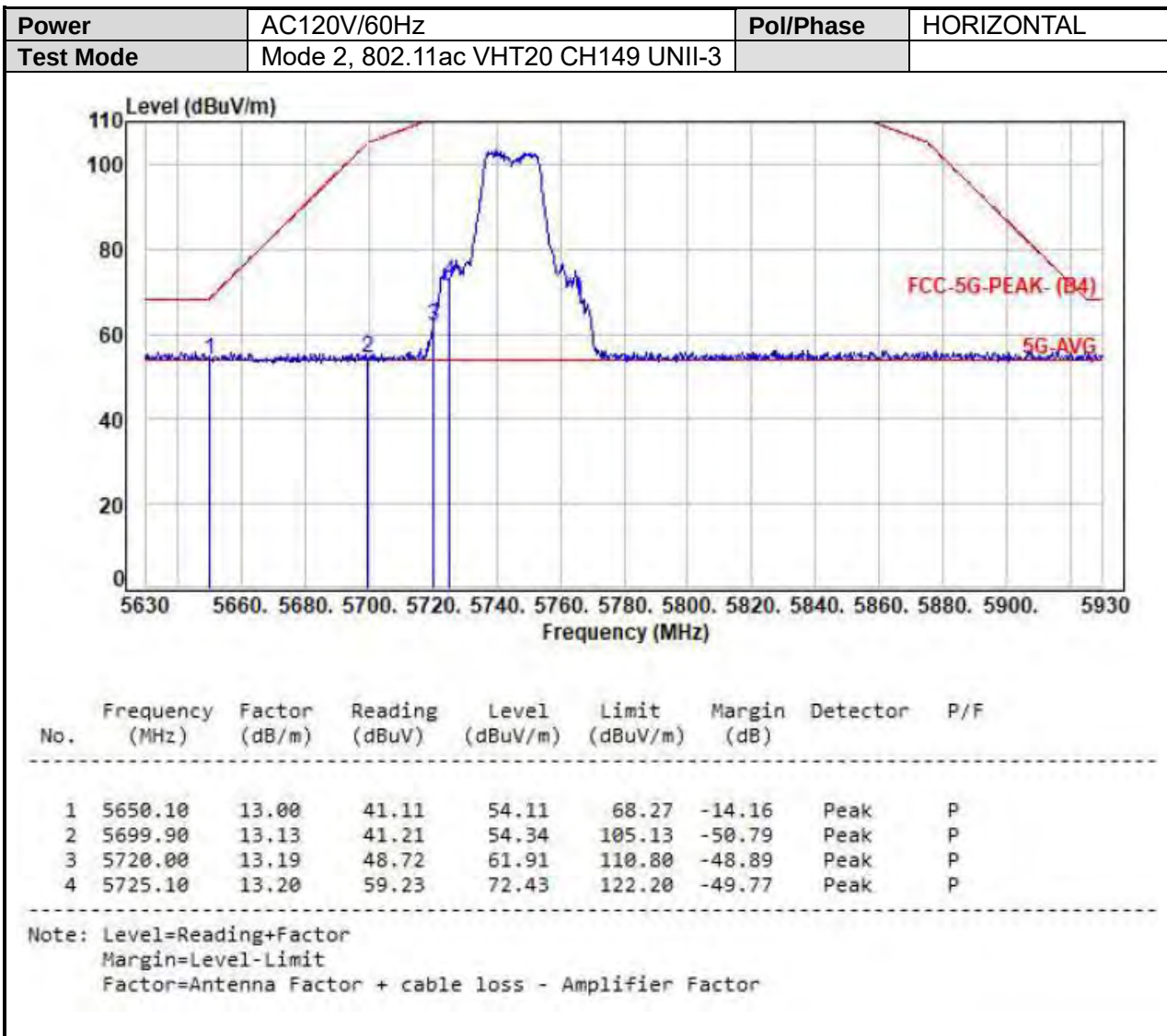


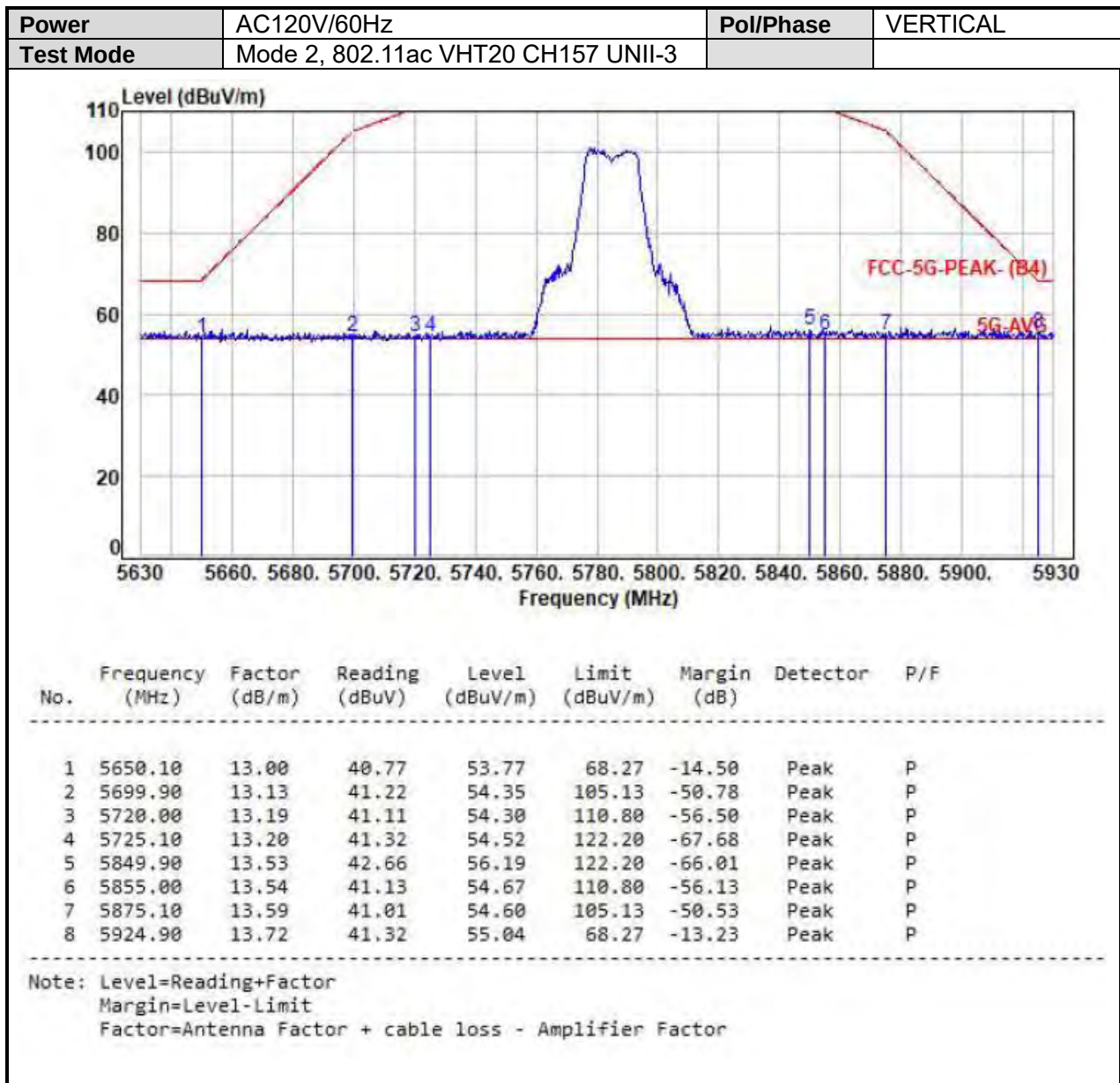


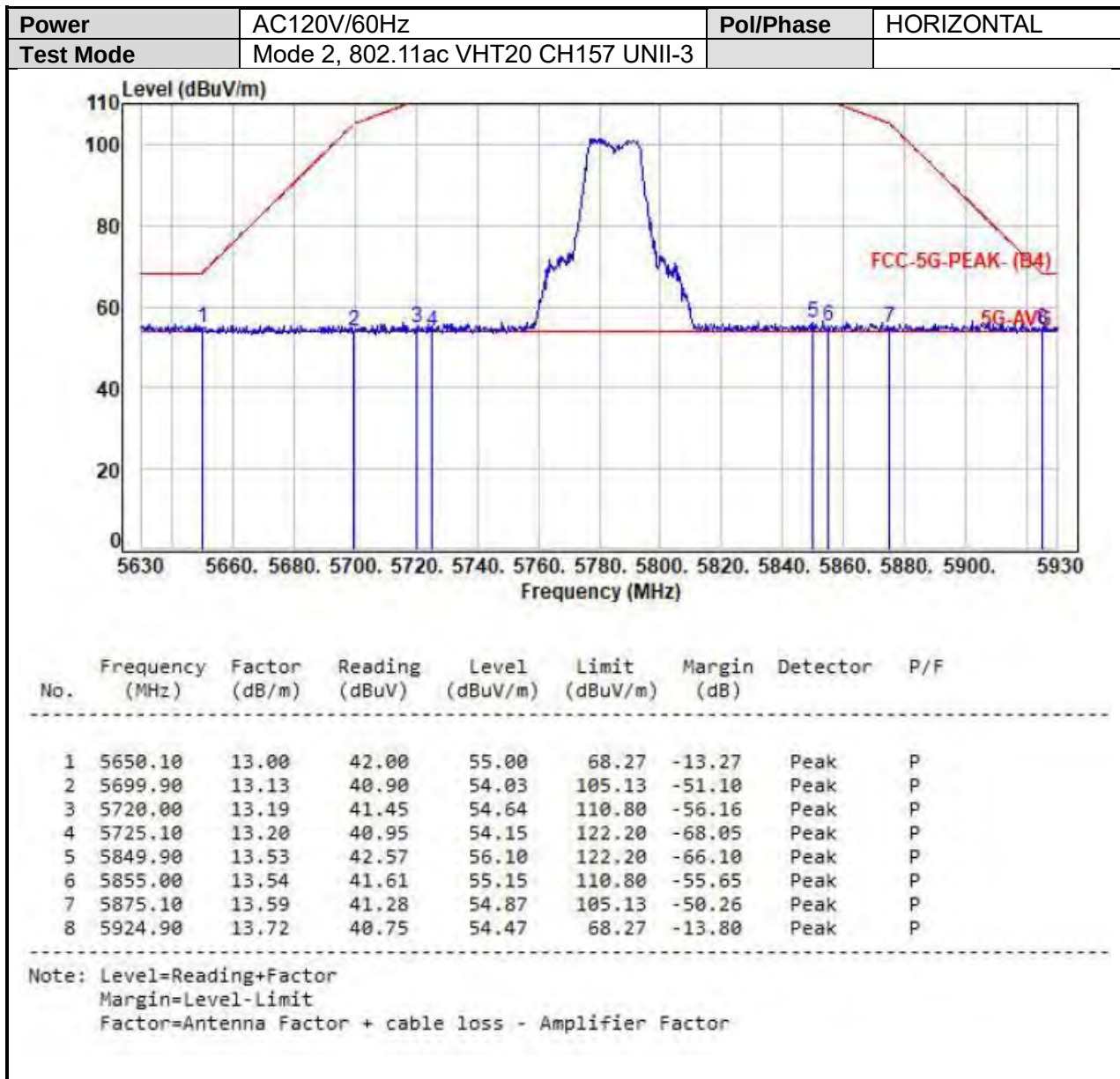


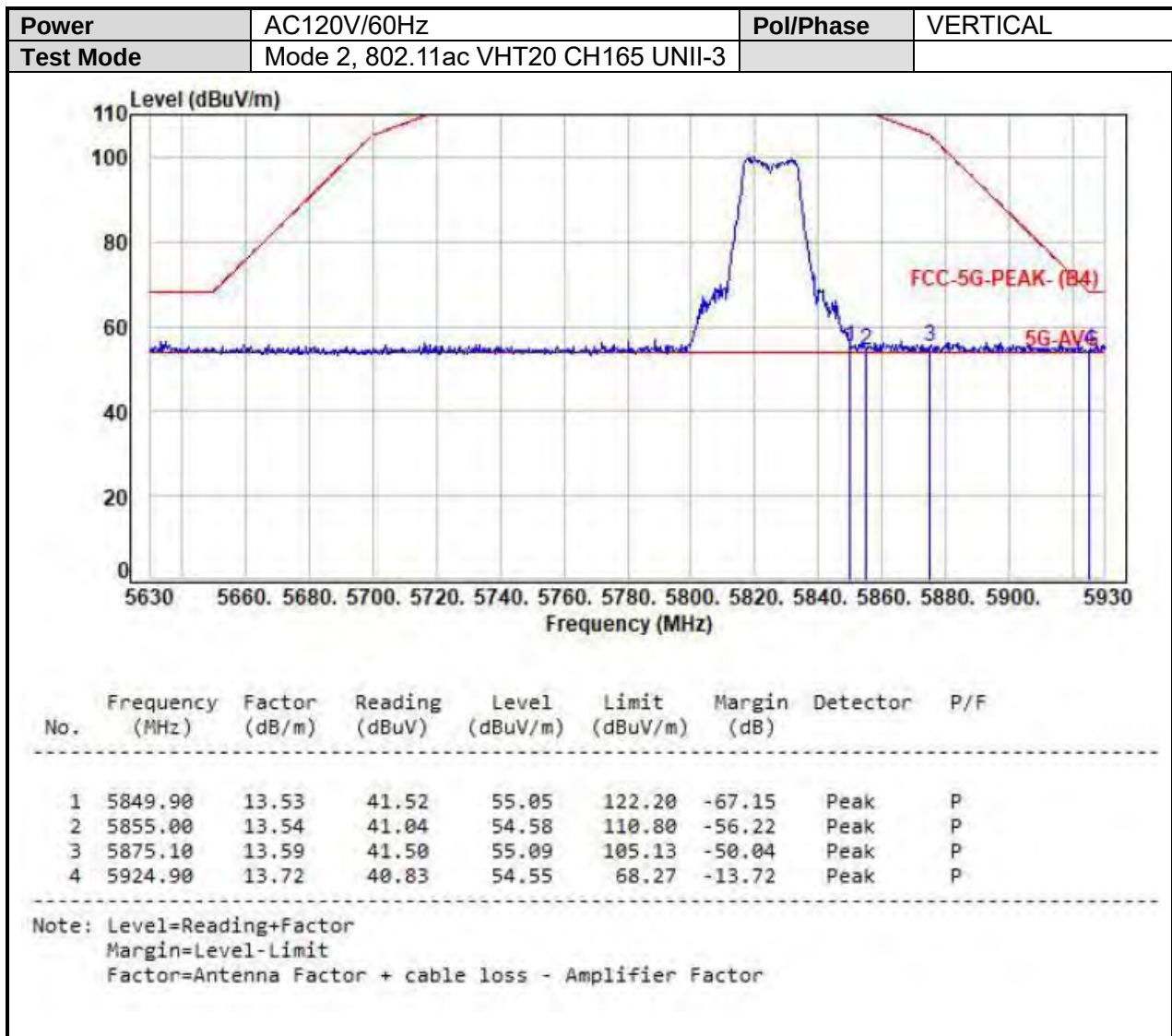


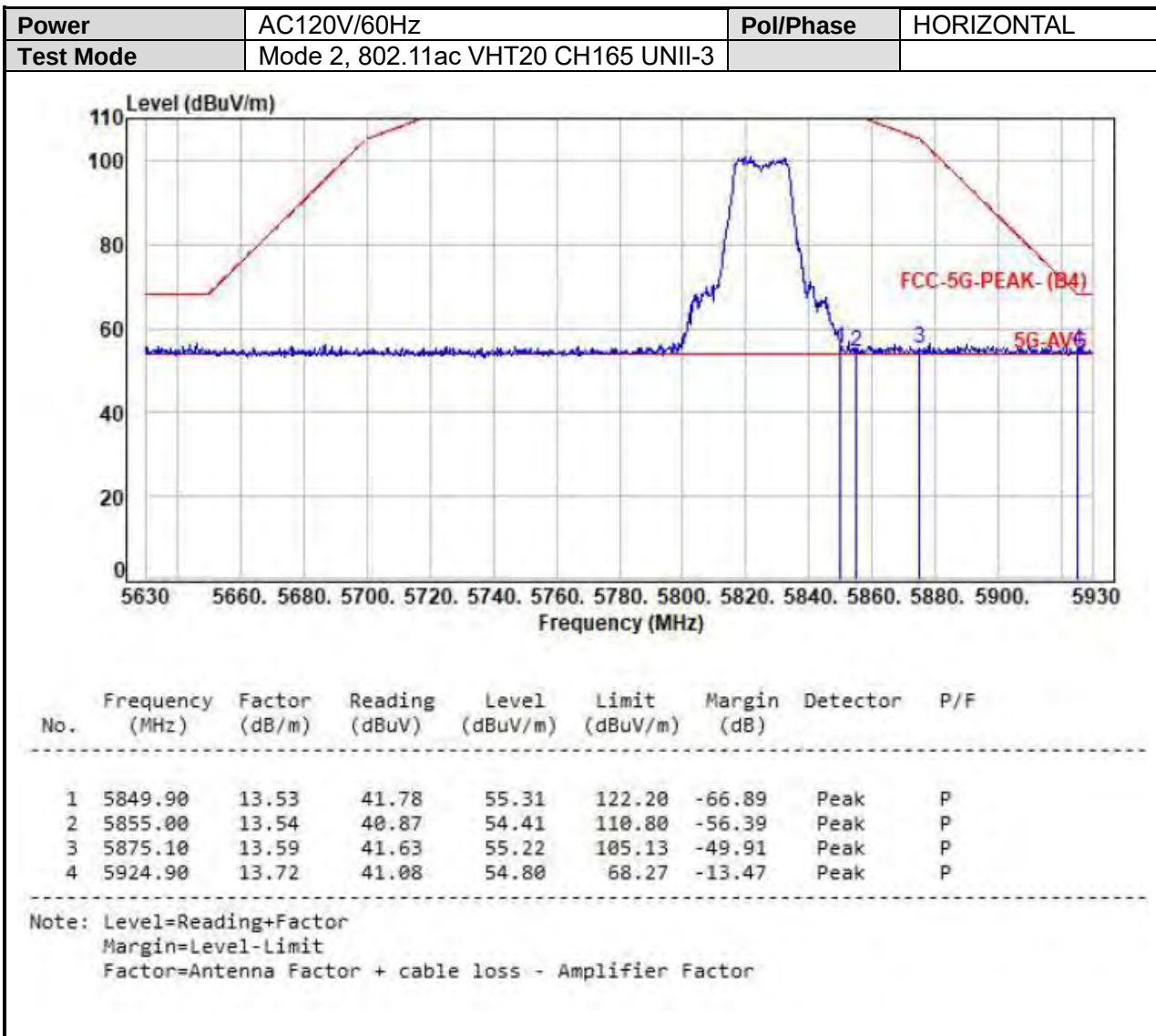






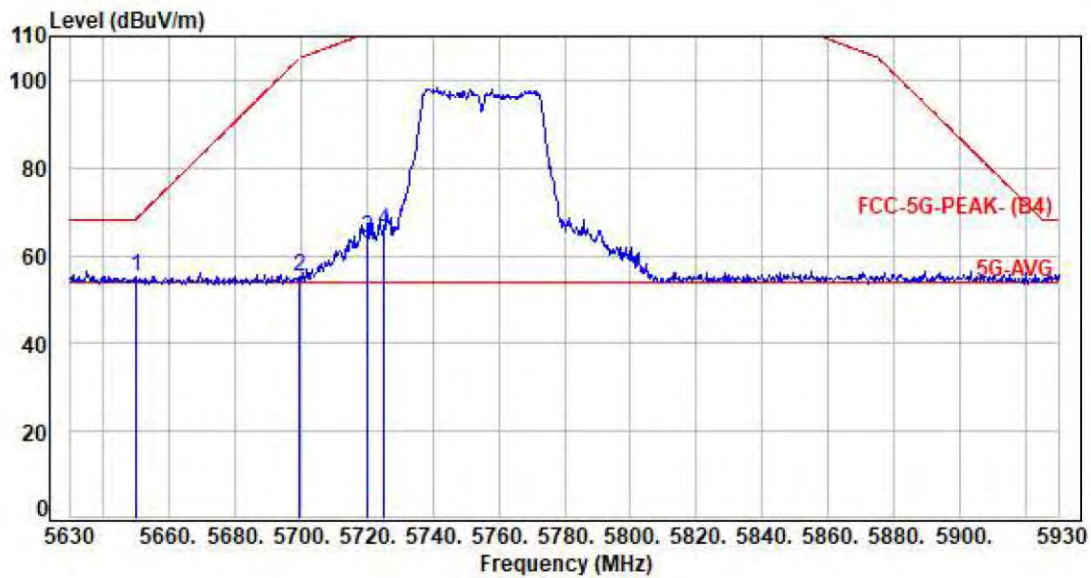








Power	AC120V/60Hz	Pol/Phase	VERTICAL
Test Mode	Mode 3, 802.11ac VHT40 CH151 UNII-3		

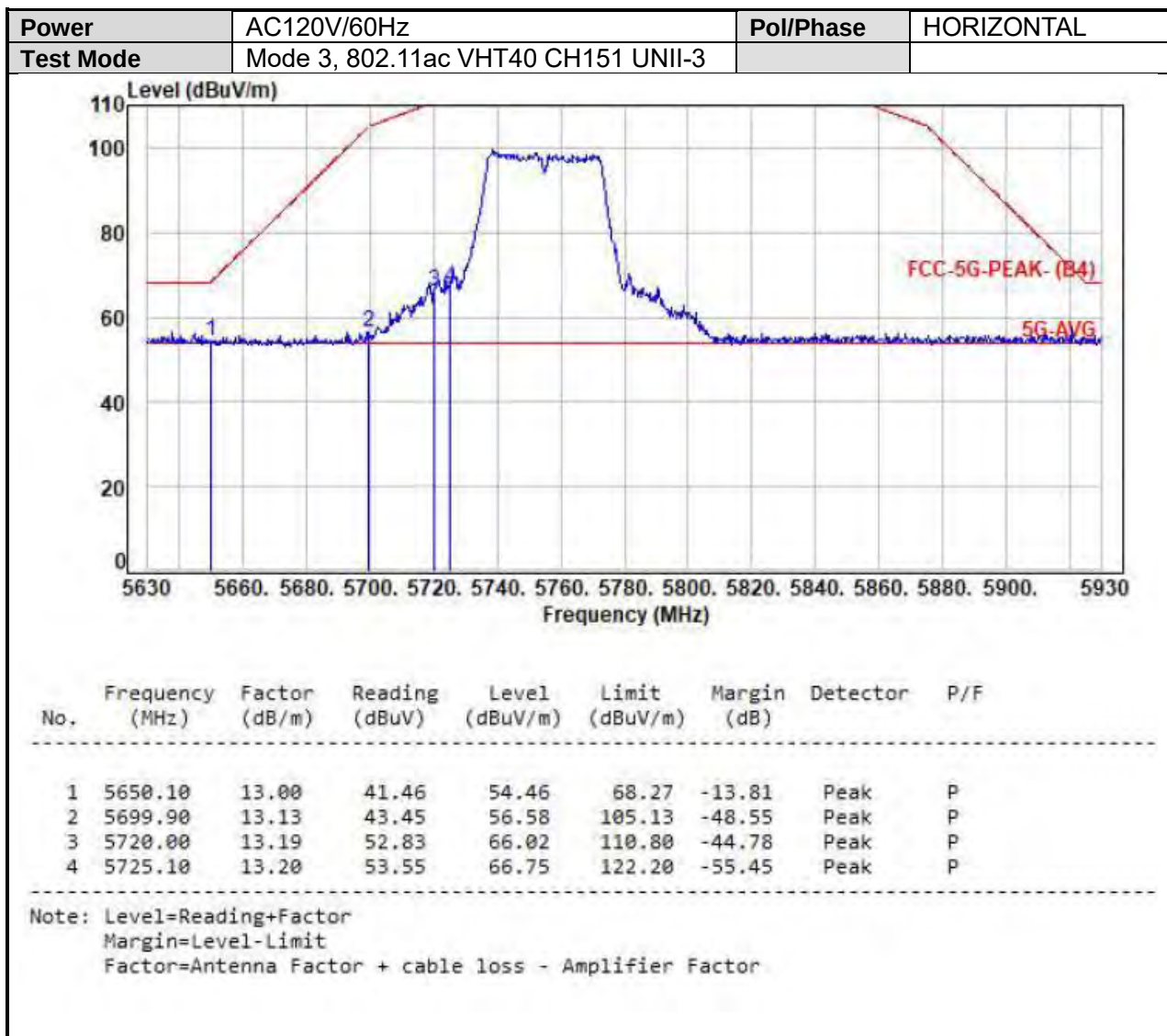


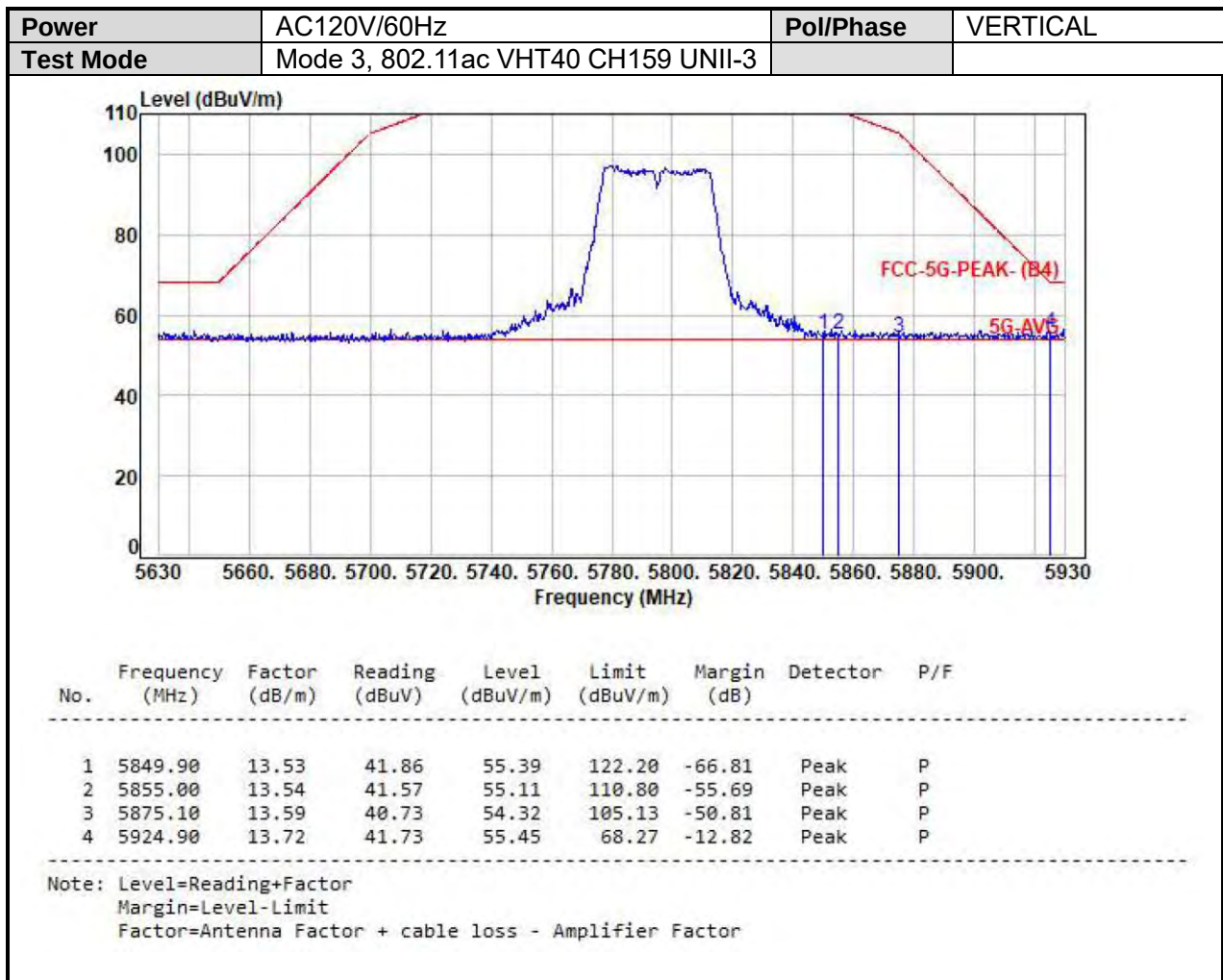
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	5650.10	13.00	42.01	55.01	68.27	-13.26	Peak	P
2	5699.90	13.13	41.92	55.05	105.13	-50.08	Peak	P
3	5720.00	13.19	50.90	64.09	110.80	-46.71	Peak	P
4	5725.10	13.20	52.65	65.85	122.20	-56.35	Peak	P

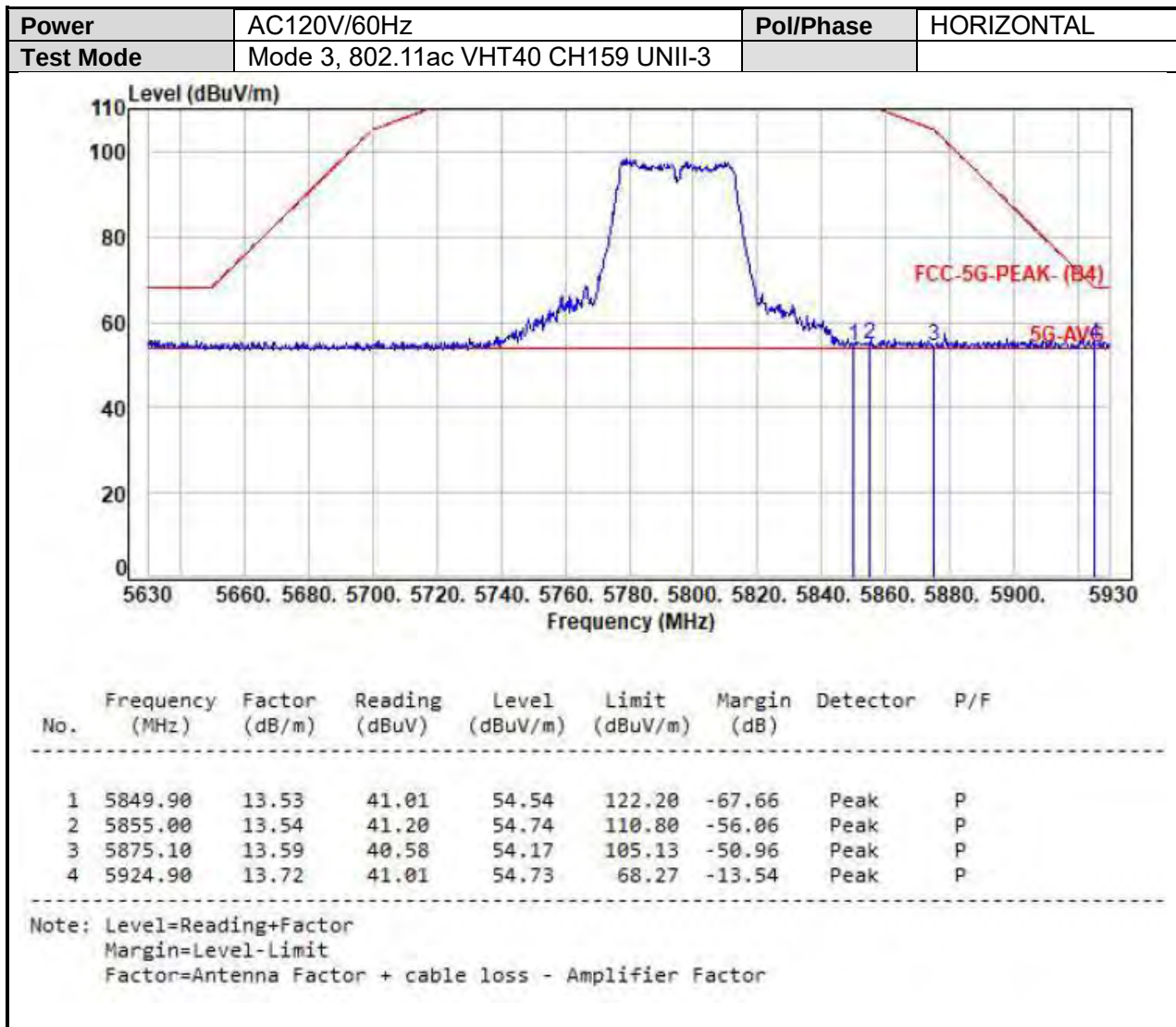
Note: Level=Reading+Factor

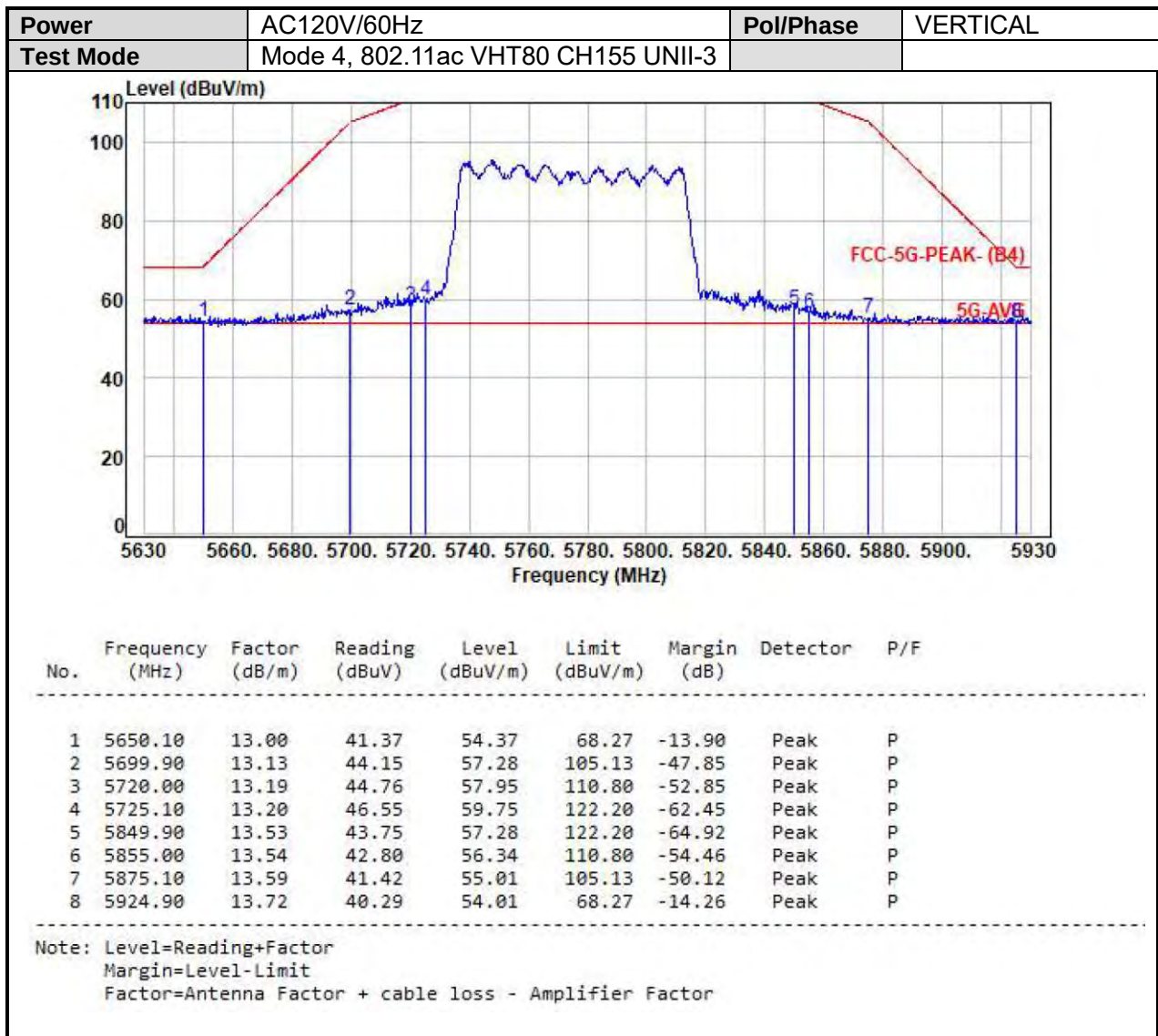
Margin=Level-Limit

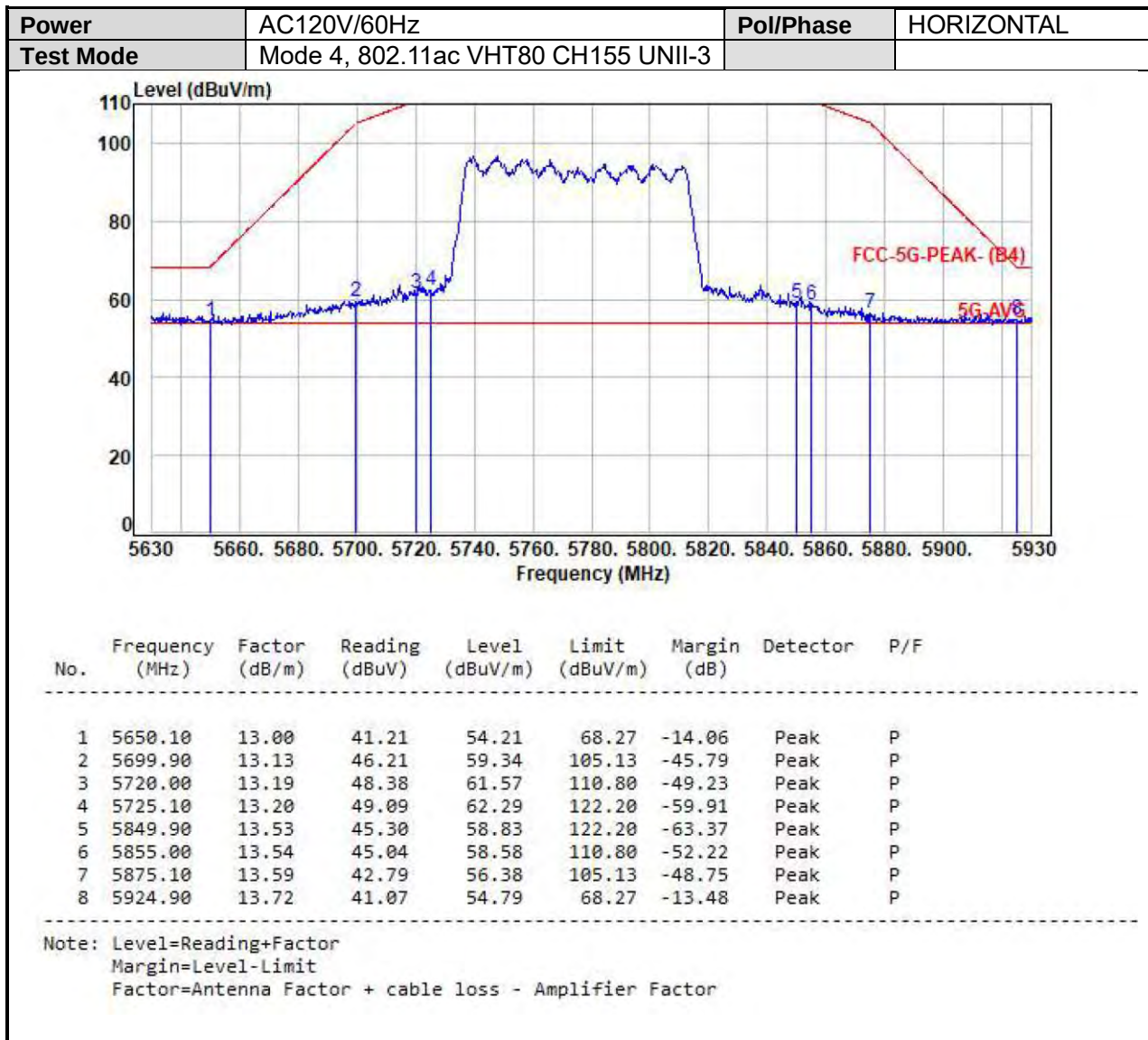
Factor=Antenna Factor + cable loss - Amplifier Factor













7. On Time, Duty Cycle and Measurement methods

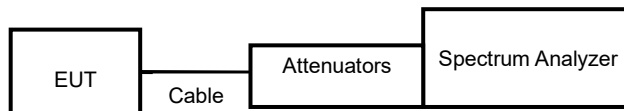
7.1. Test Limit

None; for reporting purposes only.

7.2. Test Procedure

KDB 789033 Zero-Span Spectrum Analyzer Method.

7.3. Test Setup Layout



7.4. Test Result and Data

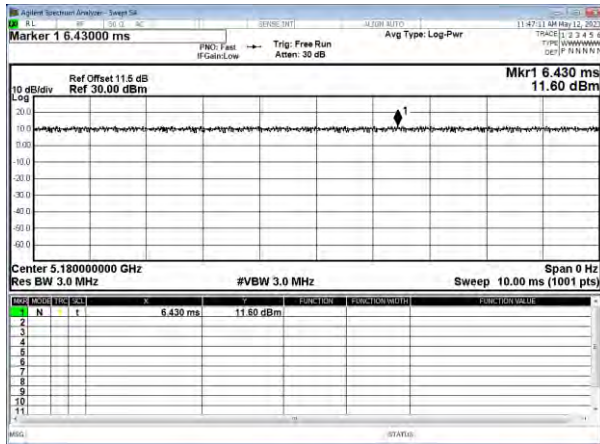
Modulation Mode	On Time (msec)	Period Time (msec)	Duty Cycle (%)
802.11a	100.00	100.00	100.00%
802.11ac VHT20	100.00	100.00	100.00%
802.11ac VHT40	100.00	100.00	100.00%
802.11ac VHT80	100.00	100.00	100.00%

**7.5. Measurement Methods**

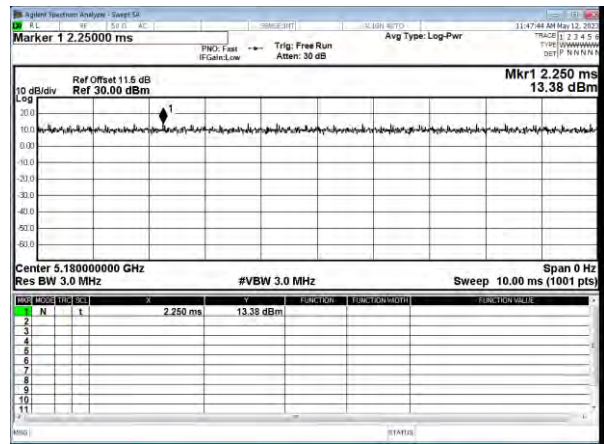
26 dB and 6dB Emission BW	KDB 789033 v02r01, Section C
99% Occupied BW	KDB 789033 v02r01, Section D
Conducted Output Power	KDB 789033 v02r01, Section E.2.d and E.3.b (Method PM-G)
Power Spectral Density	KDB 789033 v02r01, Section F
Unwanted emissions in restricted bands	KDB 789033 v02r01, Sections G and H
Unwanted emissions in non-restricted bands	KDB 789033 v02r01, Sections G and H



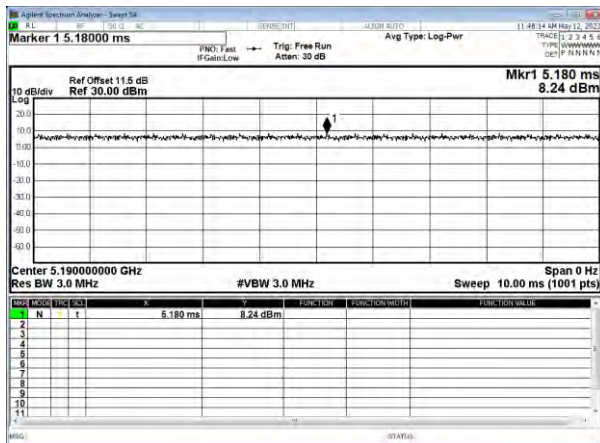
Modulation Type: 802.11a (6Mbps)



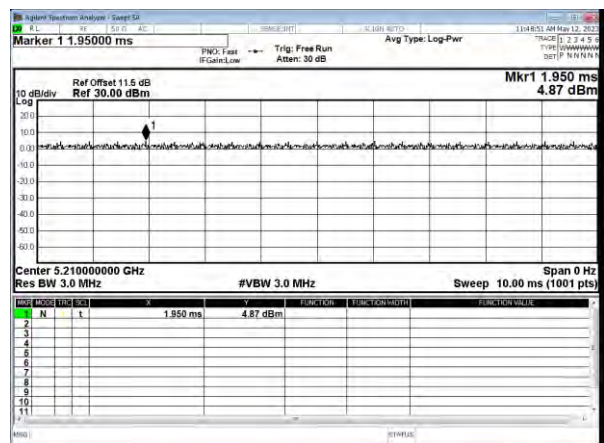
Modulation Type: 802.11ac VHT20 (6.5Mbps)



Modulation Type: 802.11ac VHT40 (13.5Mbps)



Modulation Type: 802.11ac VHT80 (29.3Mbps)





8. 6dB Bandwidth & 99% Occupied Bandwidth

8.1. Test Limit

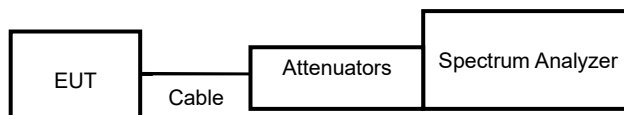
FCC §15.407

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

8.2. Test Procedure

Reference to 789033 v02r01 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.

8.3. Test Setup Layout



8.4. Test Result and Data (6dB Bandwidth)

In the 5.8GHz Band

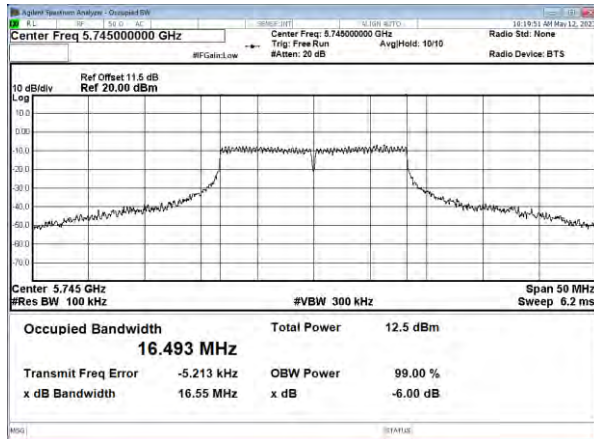
Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
802.11a	149	5745	16.55	0.50
	157	5785	16.56	0.50
	165	5825	16.55	0.50
802.11ac VHT20	149	5745	17.80	0.50
	157	5785	17.79	0.50
	165	5825	17.78	0.50
802.11ac VHT40	151	5755	36.53	0.50
	159	5795	36.51	0.50
802.11ac VHT80	155	5775	76.46	0.50

**8.5. Test Result and Data (99% Occupied Bandwidth)****In the 5.8GHz Band**

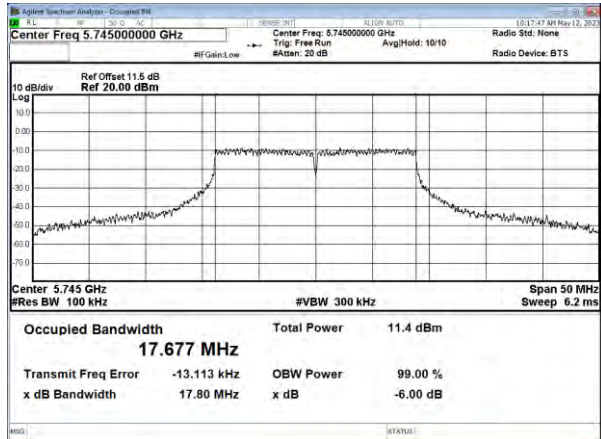
Mode	Channel	Frequency (MHz)	99% Bandwidth (MHz)
802.11a	149	5745	16.55
	157	5785	16.55
	165	5825	16.56
802.11ac VHT20	149	5745	17.74
	157	5785	17.75
	165	5825	17.74
802.11ac VHT40	151	5755	36.37
	159	5795	36.33
802.11ac VHT80	155	5775	75.79



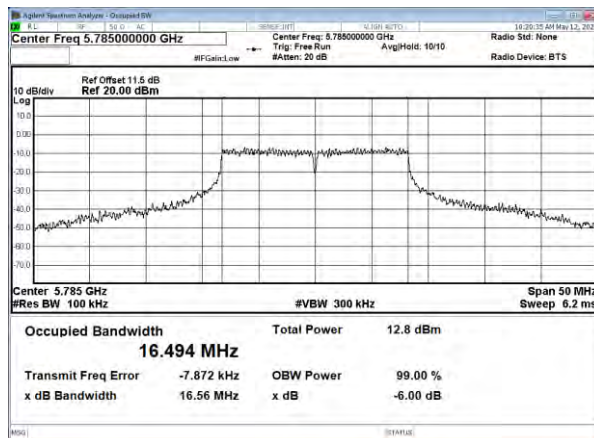
6dB Bandwidth
Modulation Type: 802.11a (6Mbps)
CH149



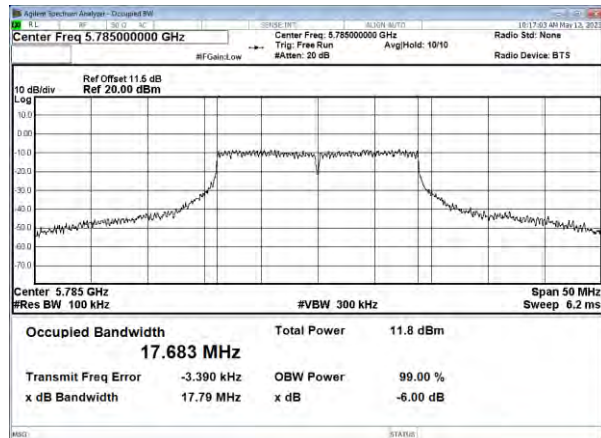
Modulation Type: 802.11ac, VHT20 (6.5Mbps)
CH149



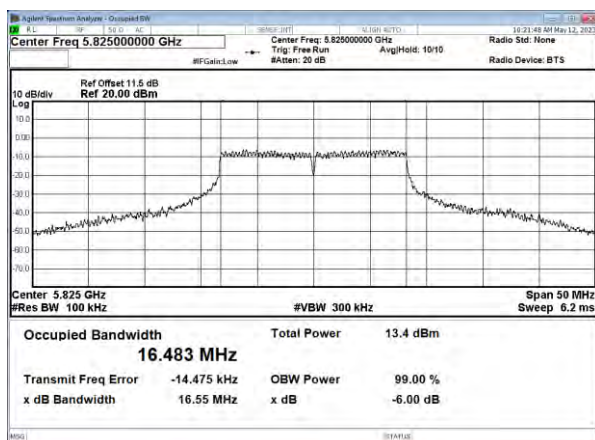
CH157



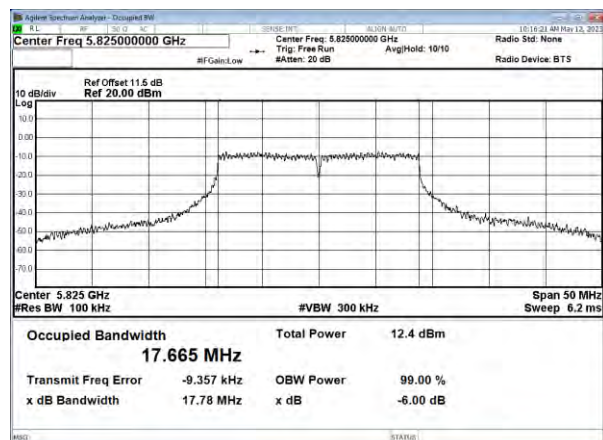
CH157



CH165

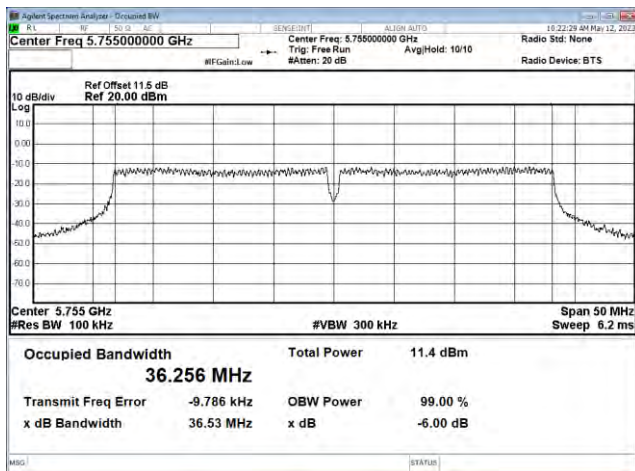


CH165

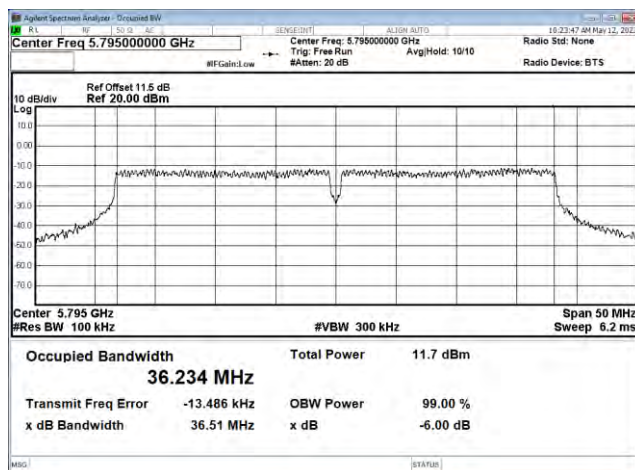




6dB Bandwidth

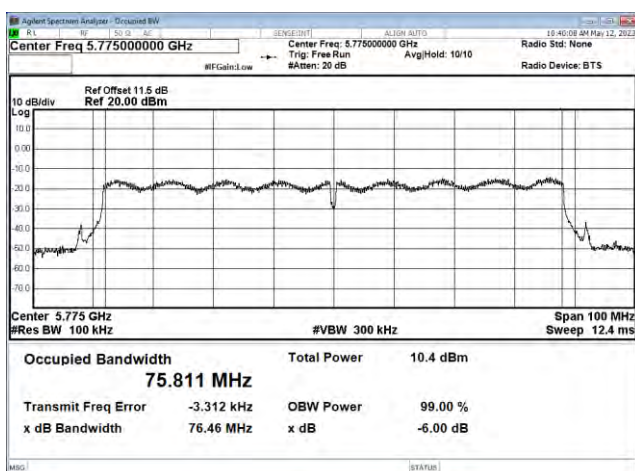
Modulation Type: 802.11ac, VHT40 (13.5Mbps)
CH151

CH159



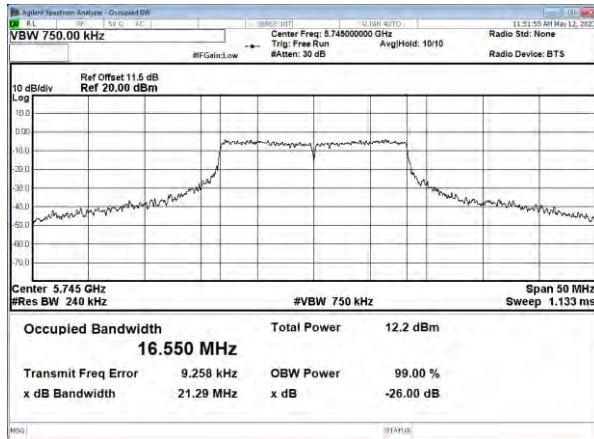
Modulation Type: 802.11ac, VHT80 (29.3Mbps)

CH155

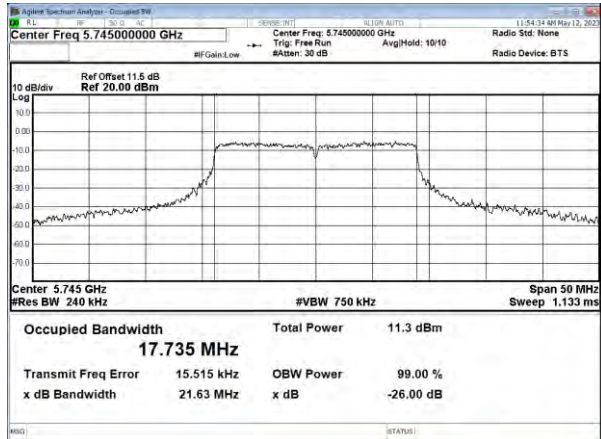




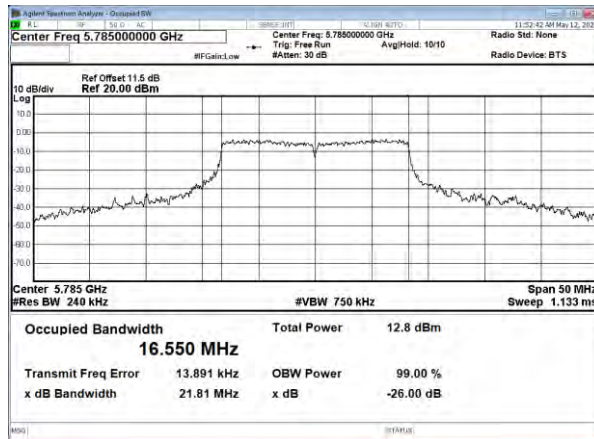
99% Occupied Bandwidth
Modulation Type: 802.11a (6Mbps)
CH149



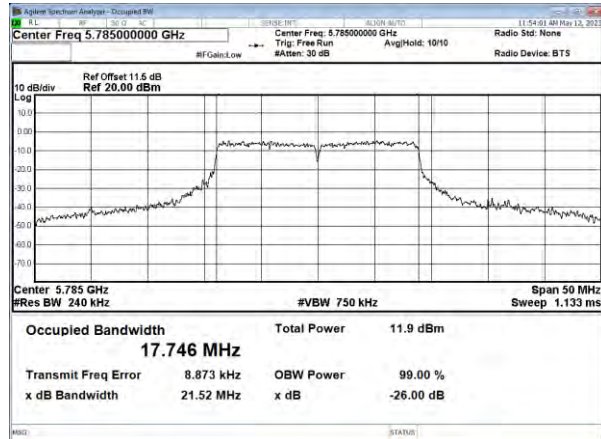
Modulation Type: 802.11ac, VHT20 (6.5Mbps)
CH149



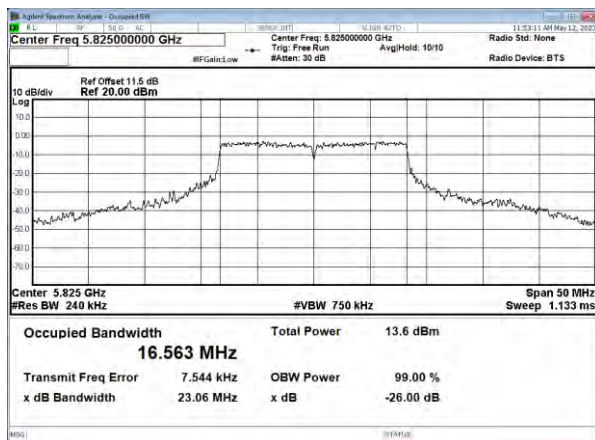
CH157



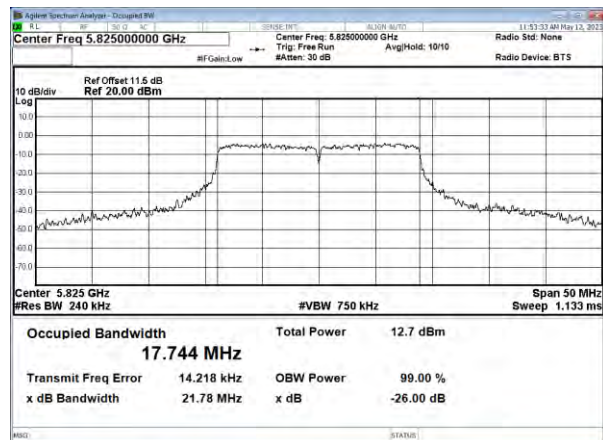
CH157



CH165

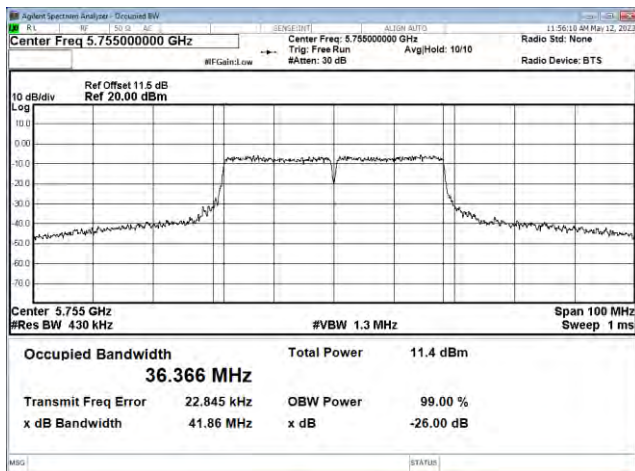


CH165

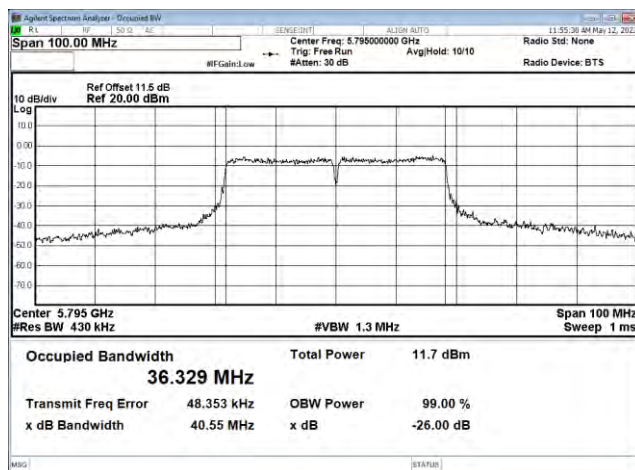




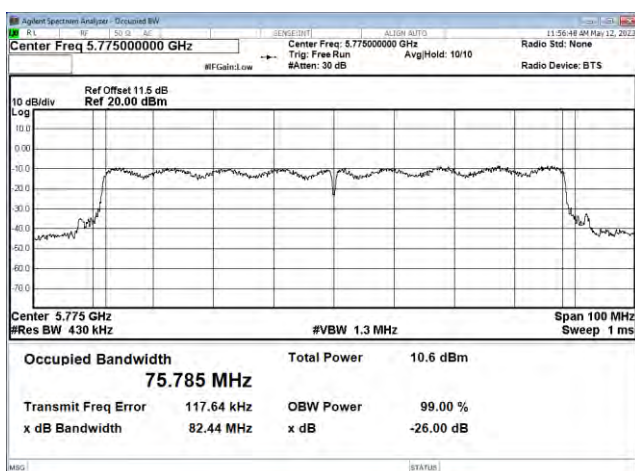
99% Occupied Bandwidth
Modulation Type: 802.11ac, VHT40 (13.5Mbps)
CH151



CH159



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





9. 26dB Bandwidth & 99% Occupied Bandwidth

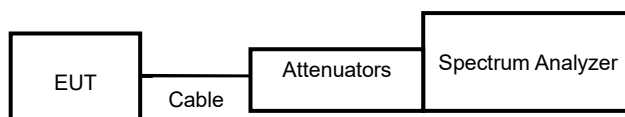
9.1. Test Limit

None; for reporting purposes only.

9.2. Test Procedure

Reference to 789033 v02r01 General UNII Test Procedures New Rules v01: The transmitter output is connected to a spectrum analyzer with the RBW = approximately 1% of the emission bandwidth, the VBW $\geq 3 \times$ RBW, peak detector and max hold.

9.3. Test Setup Layout



**9.4. Test Result and Data (26dB Bandwidth)****In the 5.2G Band**

Mode	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
802.11a	36	5180	20.04
	44	5220	20.29
	48	5240	21.44
802.11ac VHT20	36	5180	21.38
	44	5220	21.60
	48	5240	21.08
802.11ac VHT40	38	5190	40.89
	46	5230	40.89
802.11ac VHT80	42	5210	84.18

**9.5. Test Result and Data (99% Occupied Bandwidth)****In the 5.2G Band**

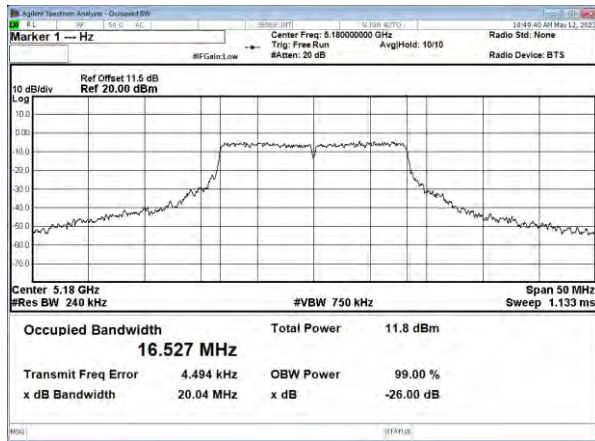
Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
802.11a	36	5180	16.527
	44	5220	16.522
	48	5240	16.536
802.11ac VHT20	36	5180	17.706
	44	5220	17.734
	48	5240	17.723
802.11ac VHT40	38	5190	36.325
	46	5230	36.299
802.11ac VHT80	42	5210	75.796



26dB Bandwidth & 99% Occupied Bandwidth, UNII-1

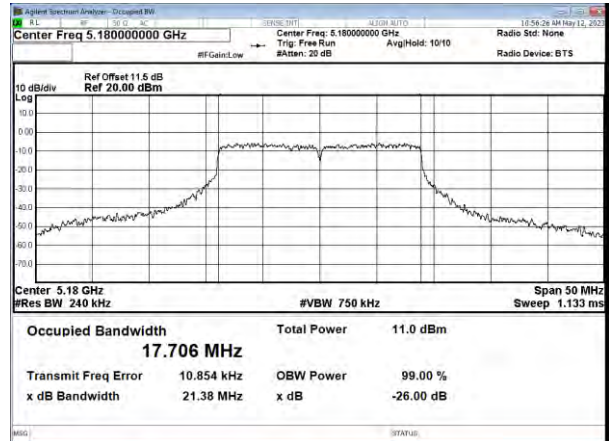
Modulation Standard: 802.11a (6Mbps)

CH36

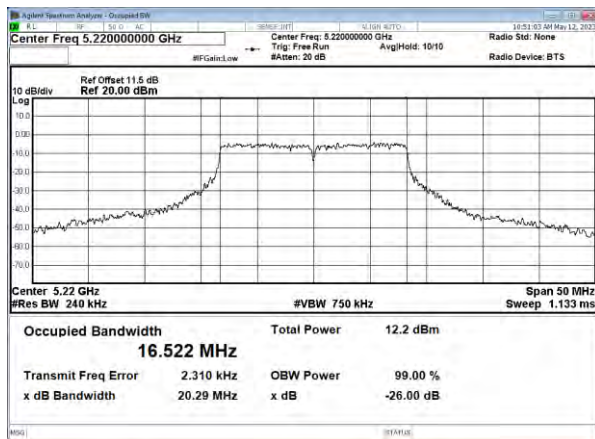


Modulation Standard: 802.11ac VHT20 (6.5Mbps)

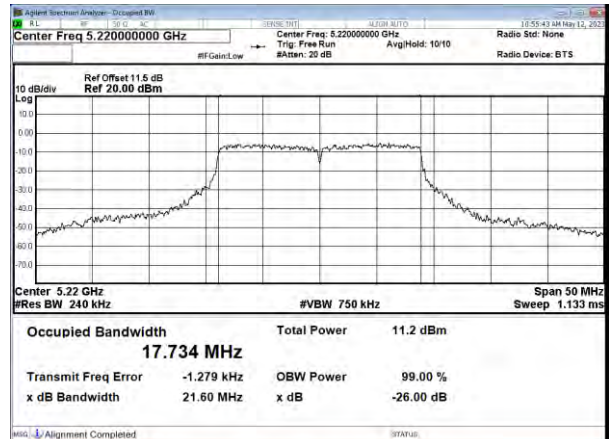
CH36



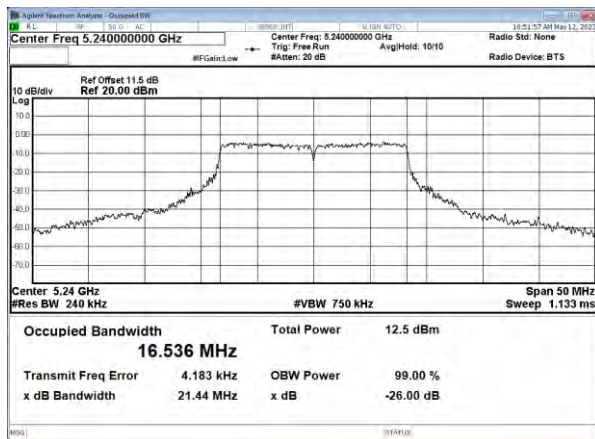
CH44



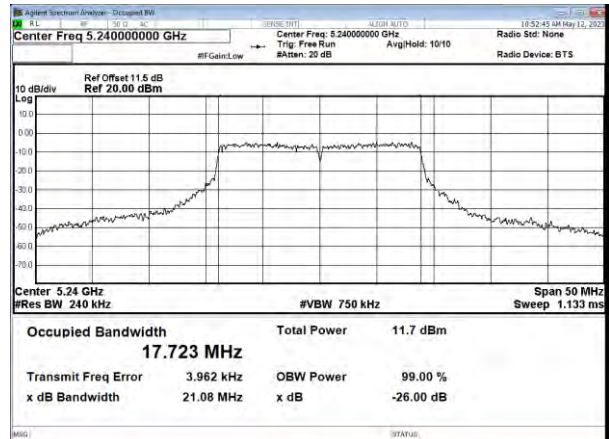
CH44



CH48



CH48

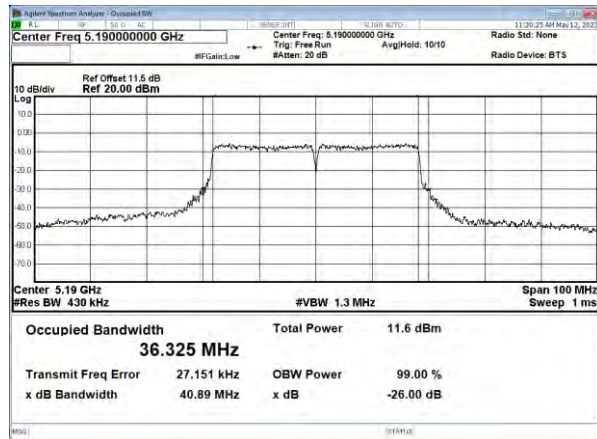




26dB Bandwidth & 99% Occupied Bandwidth, UNII-1

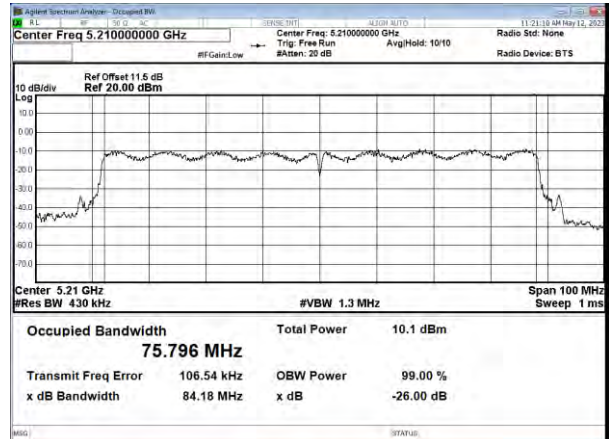
Modulation Standard: 802.11ac VHT40 (13.5Mbps)

CH38

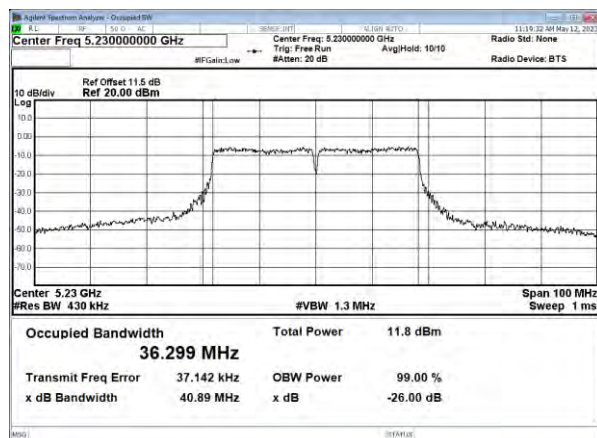


Modulation Standard: 802.11ac VHT80 (29.3Mbps)

CH42



CH46





10. Average Power

10.1. Test Limit

Output Power:

Frequency Band		Limit
☒	5.15~5.25GHz	
	Operating Mode	
☐	Outdoor access point	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm) provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30degrees as measured from the horizon must not exceed 125 mW (21 dBm).
☐	Indoor access point	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm) provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
☐	Fixed point-to-point access points	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm). Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi.
☒	client devices	The maximum conducted output power over the frequency band of operation shall not exceed 250 mW (24dBm) provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.



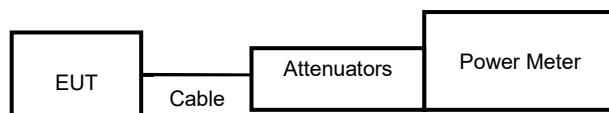
Frequency Band		Limit
☐	5.25-5.35 GHz	The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW (24dBm) or 11 dBm 10 log B, where B is the 26 dB emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
☐	5.470-5.725 GHz	
☒	5.725~5.85 GHz	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm). If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power.

10.2. Test Procedure

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11 dB (including 10 dB pad and 1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

10.3. Test Setup Layout



**10.4. Test Result and Data****In the 5.2G Band**

Modulation Type	Data Rate	Setting	Channel	Frequency (MHz)	Avg Power Output (dBm)	Total Power (dBm)	Total Power (mW)	Power Limit (dBm)
11a	6 Mbps	43	36	5180	10.430	10.430	11.041	24.00
11a	6 Mbps	43	44	5220	11.200	11.200	13.183	24.00
11a	6 Mbps	43	48	5240	11.500	11.500	14.125	24.00
11n HT20	MCS 0	41	36	5180	9.230	9.230	8.375	24.00
11n HT20	MCS 0	41	44	5220	10.120	10.120	10.280	24.00
11n HT20	MCS 0	41	48	5240	10.690	10.690	11.722	24.00
11n HT40	MCS 0	40	38	5190	10.140	10.140	10.328	24.00
11n HT40	MCS 0	40	46	5230	11.760	11.760	14.997	24.00
11ac VHT20	NSS1-MCS0	41	36	5180	9.610	9.610	9.141	24.00
11ac VHT20	NSS1-MCS0	41	44	5220	10.130	10.130	10.304	24.00
11ac VHT20	NSS1-MCS0	41	48	5240	10.760	10.760	11.912	24.00
11ac VHT40	NSS1-MCS0	40	38	5190	10.260	10.260	10.617	24.00
11ac VHT40	NSS1-MCS0	40	46	5230	11.990	11.990	15.812	24.00
11ac VHT80	NSS1-MCS0	38	42	5210	8.570	8.570	7.194	24.00

In the 5.8G Band

Modulation Type	Data Rate	Setting	Channel	Frequency (MHz)	Avg Power Output (dBm)	Total Power (dBm)	Total Power (mW)	Power Limit (dBm)
11a	6 Mbps	43	149	5745	10.270	10.270	10.641	30.00
11a	6 Mbps	43	157	5785	10.910	10.910	12.331	30.00
11a	6 Mbps	43	165	5825	11.350	11.350	13.646	30.00
11n HT20	MCS 0	41	149	5745	9.370	9.370	8.650	30.00
11n HT20	MCS 0	41	157	5785	9.780	9.780	9.506	30.00
11n HT20	MCS 0	41	165	5825	9.640	9.640	9.204	30.00
11n HT40	MCS 0	40	151	5755	9.020	9.020	7.980	30.00
11n HT40	MCS 0	40	159	5795	9.870	9.870	9.705	30.00
11ac VHT20	NSS1-MCS0	41	149	5745	9.410	9.410	8.730	30.00
11ac VHT20	NSS1-MCS0	41	157	5785	9.920	9.920	9.817	30.00
11ac VHT20	NSS1-MCS0	41	165	5825	9.720	9.720	9.376	30.00
11ac VHT40	NSS1-MCS0	40	151	5755	9.140	9.140	8.204	30.00
11ac VHT40	NSS1-MCS0	40	159	5795	9.930	9.930	9.840	30.00
11ac VHT80	NSS1-MCS0	38	155	5775	8.500	8.500	7.079	30.00



11. Maximum Power Spectral Density

11.1. Test Limit

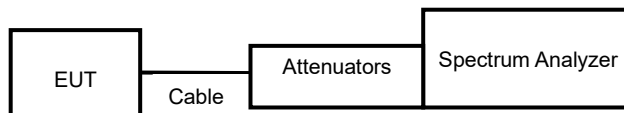
PSD:

Frequency Band		Limit
☒	5.15~5.25GHz	
	Operating Mode	
☐	Outdoor access point	17 dBm/MHz
☐	Indoor access point	17 dBm/MHz
☐	Fixed point-to-point access points	17 dBm/MHz
☒	client devices	11 dBm/MHz
☐	5.250~5.350 GHz	11 dBm/MHz
☐	5.470~5.725 GHz	11 dBm/MHz
☒	5.725~5.85 GHz	30 dBm/500kHz

11.2. Test Procedure

Reference to KDB789033 v02r01 General UNII Test Procedures New Rules.

11.3. Test Setup Layout

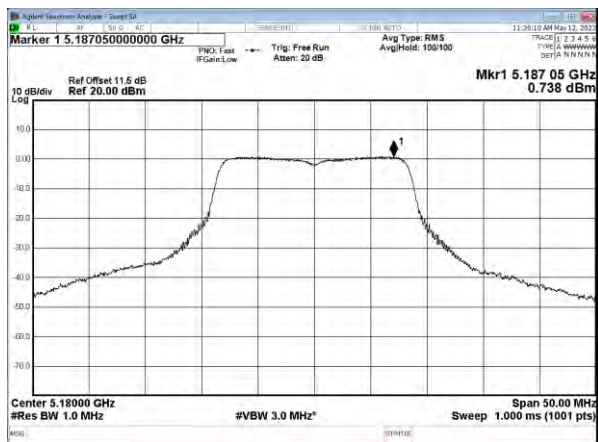
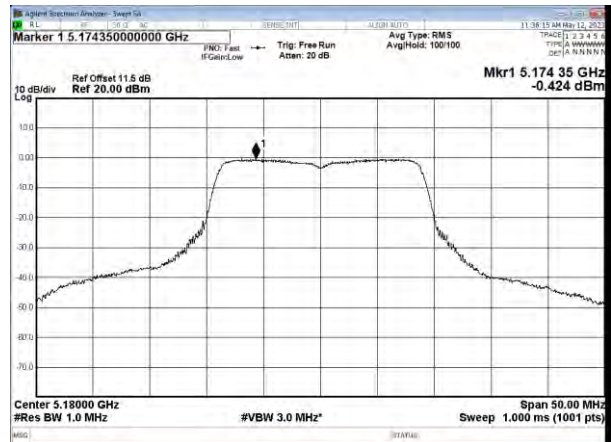
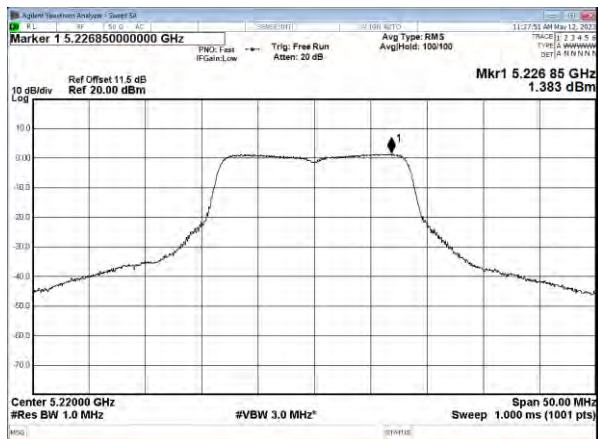
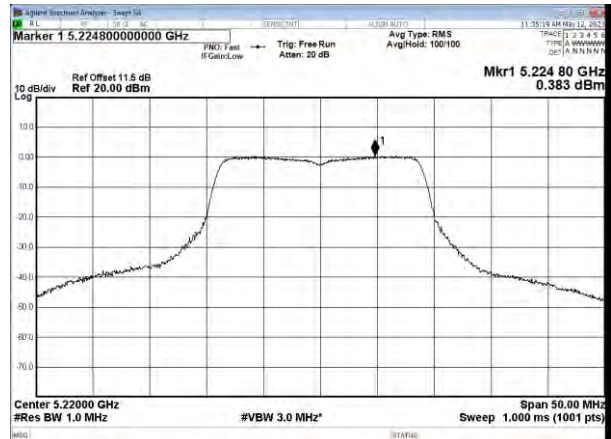
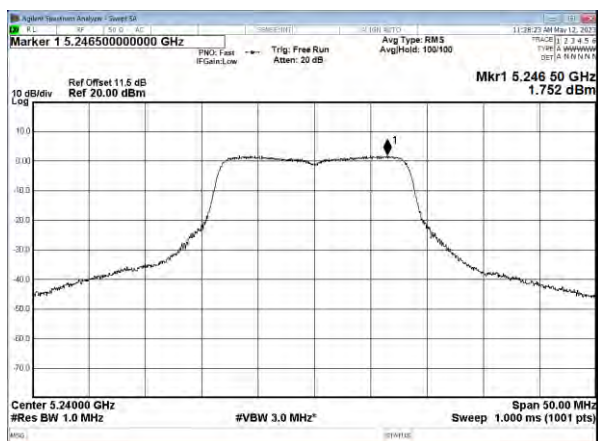
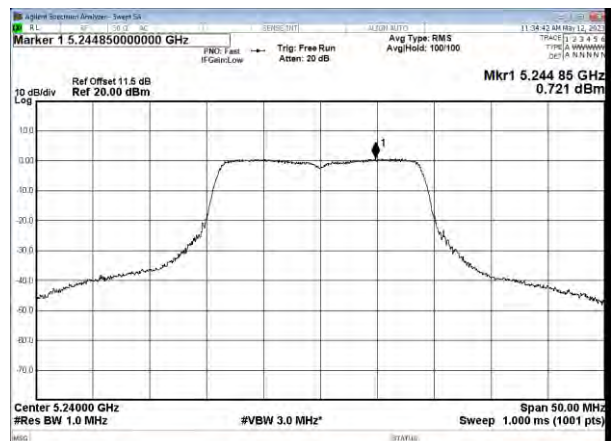


**11.4. Test Result and Data****In the 5.2G Band**

Modulation Type	CH	Freq. (MHz)	Meas PPSP (dBm/MHz)	Sum chain (dBm)	Duty Cycle CF(dB)	Total Corr'd PPSP (dBm/MHz)	PPSP Limit (dBm/MHz)
11a	36	5180	0.738	0.74	0.00	0.74	11.00
11a	44	5220	1.383	1.38	0.00	1.38	11.00
11a	48	5240	1.752	1.75	0.00	1.75	11.00
11ac VHT20	36	5180	-0.424	-0.42	0.00	-0.42	11.00
11ac VHT20	44	5220	0.383	0.38	0.00	0.38	11.00
11ac VHT20	48	5240	0.721	0.72	0.00	0.72	11.00
11ac VHT40	38	5190	-2.488	-2.49	0.00	-2.49	11.00
11ac VHT40	46	5230	-2.388	-2.39	0.00	-2.39	11.00
11ac VHT80	42	5210	-6.105	-6.11	0.00	-6.11	11.00

In the 5.8G Band

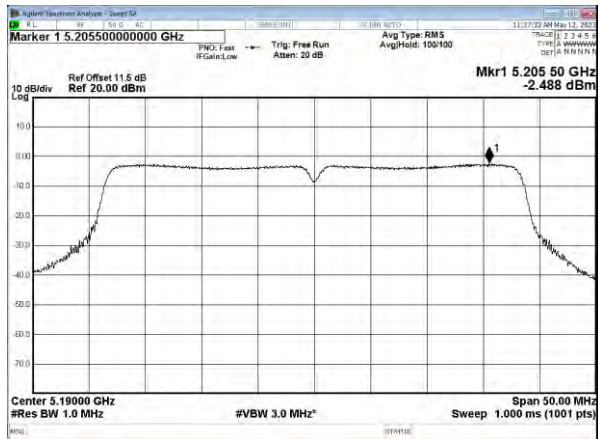
Modulation Type	CH	Freq. (MHz)	Meas PPSP (dBm/MHz)	Sum chain (dBm)	Duty Cycle CF(dB)	10log(500K Hz/RBW) CF (dB)	Total Corr'd PPSP (dBm/500kHz)	PPSP Limit (dBm/500kHz)
11a	149	5745	1.442	-1.57	0.00	-3.01	-1.57	30.00
11a	157	5785	1.796	-1.21	0.00	-3.01	-1.21	30.00
11a	165	5825	2.441	-0.57	0.00	-3.01	-0.57	30.00
11ac VHT20	149	5745	0.173	-2.84	0.00	-3.01	-2.84	30.00
11ac VHT20	157	5785	0.757	-2.25	0.00	-3.01	-2.25	30.00
11ac VHT20	165	5825	1.147	-1.86	0.00	-3.01	-1.86	30.00
11ac VHT40	151	5755	-2.764	-5.77	0.00	-3.01	-5.77	30.00
11ac VHT40	159	5795	-2.326	-5.34	0.00	-3.01	-5.34	30.00
11ac VHT80	155	5775	-5.483	-8.49	0.00	-3.01	-8.49	30.00

**5.2G, UNII-1**Modulation Standard: 802.11a (6Mbps)
CH36Modulation Standard: 802.11ac VHT20 (6.5Mbps)
CH36**CH44****CH44****CH48****CH48**



Modulation Standard: 802.11ac VHT40 (13.5Mbps)

CH38

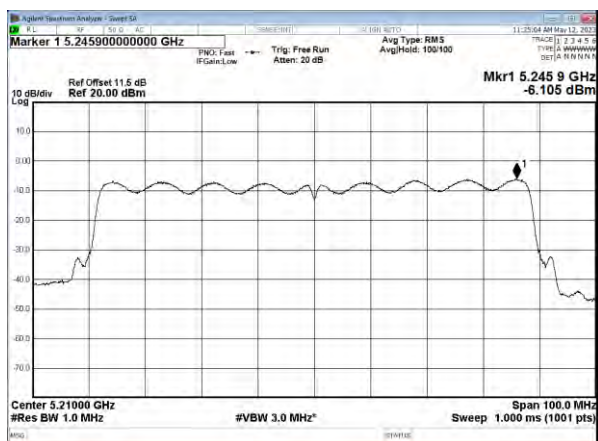


CH46



Modulation Standard: 802.11ac VHT80 (29.3Mbps)

CH42

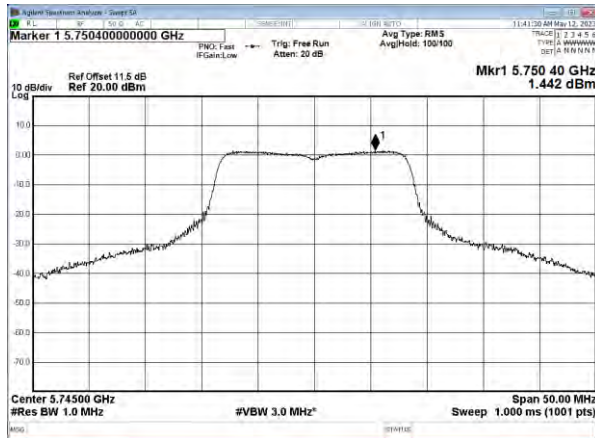




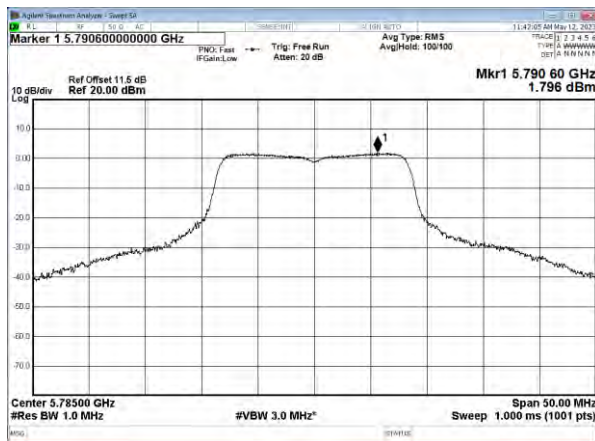
5.8G, UNII-3

Modulation Standard: 802.11a (6Mbps)

CH149



CH157



CH165

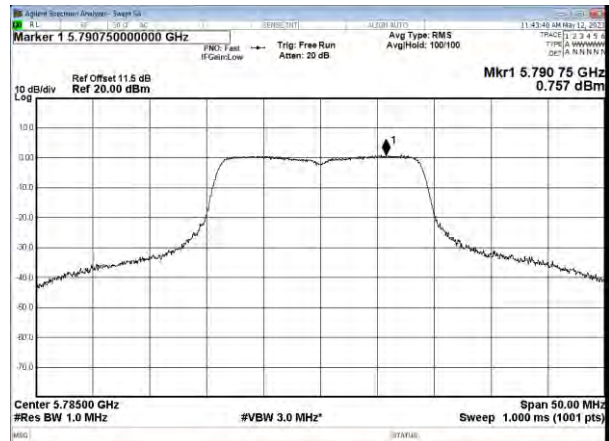


Modulation Standard: 802.11ac VHT20 (6.5Mbps)

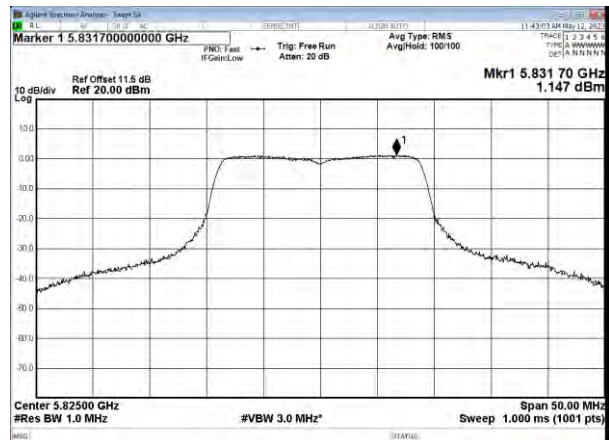
CH149



CH157



CH165

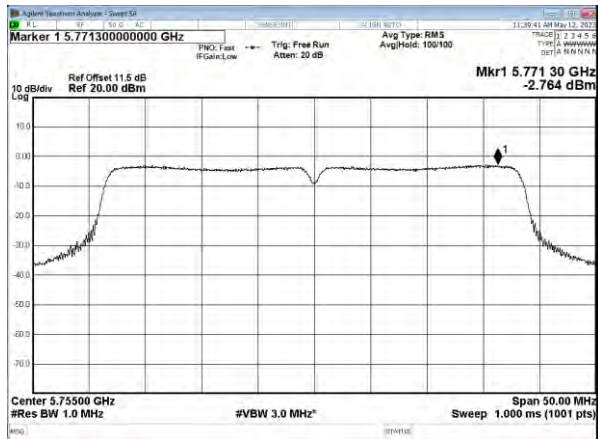




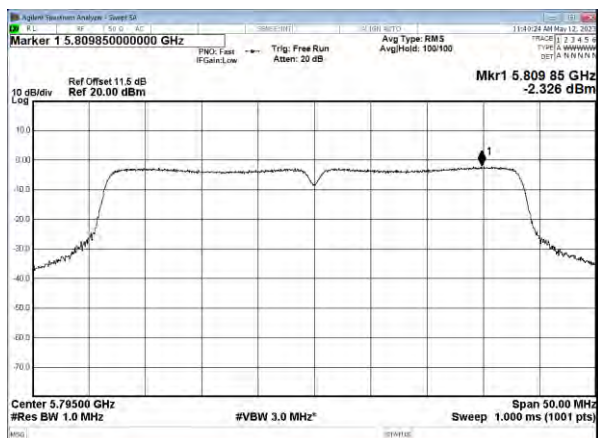
Modulation Standard: 802.11ac VHT40 (13.5Mbps)

Modulation Type: 802.1111ax HE20 (7.3Mbps)

CH151

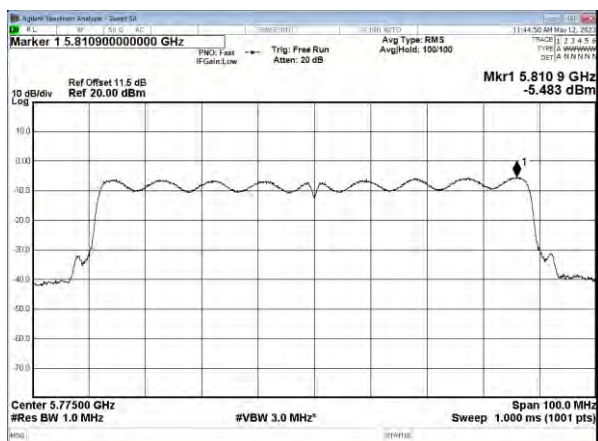


CH159



Modulation Standard: 802.11ac VHT80 (29.3Mbps)

CH155



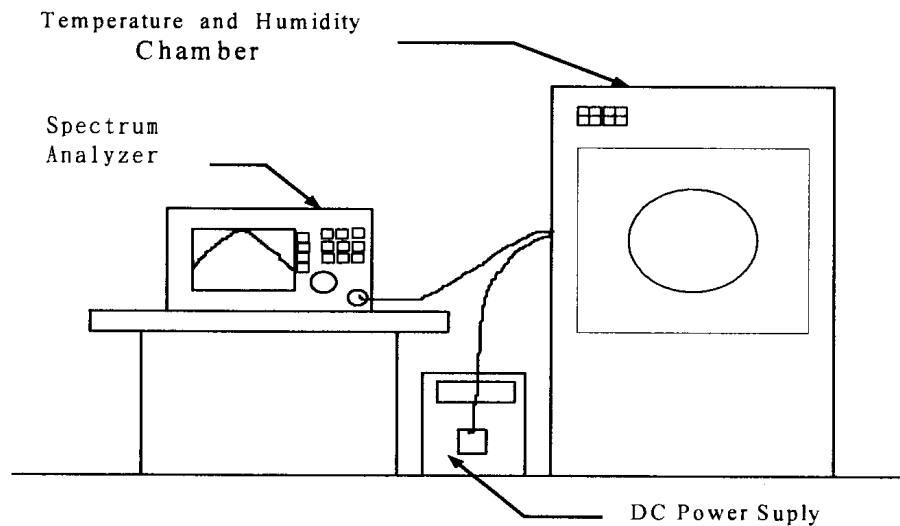


12. Frequency Stability

12.1. Test Procedure

1. The EUT was placed inside the Temperature and Humidity chamber.
2. The transmitter output was connected to spectrum analyzer.
3. Turn the EUT on and couple its output to a spectrum analyzer.
4. Turn the EUT off and set the chamber to the highest temperature specified.
5. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
6. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
7. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

12.2. Test Setup Layout



**12.3. Test Result and Data**

Operating frequency: 5180 MHz							
Temp	Power supply	2 minute		5 minute		10 minute	
(°C)	(V)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
35	132	5179.9946	-0.000104	5179.9657	-0.000662	5179.9654	-0.000668
	120	5179.9913	-0.000168	5179.9658	-0.000660	5179.9656	-0.000664
	108	5179.9842	-0.000305	5179.966	-0.000656	5179.9659	-0.000658
20	132	5179.9918	-0.000158	5179.9663	-0.000651	5179.9661	-0.000654
	120	5179.9976	-0.000046	5179.9667	-0.000643	5179.9664	-0.000649
	108	5179.9963	-0.000071	5179.9668	-0.000641	5179.9665	-0.000647
10	132	5179.981	-0.000367	5179.9668	-0.000641	5179.9666	-0.000645
	120	5179.9884	-0.000224	5179.967	-0.000637	5179.9668	-0.000641
	108	5179.9853	-0.000284	5179.9669	-0.000639	5179.9667	-0.000643
0	132	5179.9943	-0.000110	5179.9672	-0.000633	5179.967	-0.000637
	120	5179.9846	-0.000297	5179.9674	-0.000629	5179.9671	-0.000635
	108	5179.9716	-0.000548	5179.9676	-0.000625	5179.9675	-0.000627

Limit:

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

-----End of the report -----