



FCC RADIO TEST REPORT

Applicant	: Micro-Star Int'l Co., Ltd.
Address	: No.69, Lide St., Zhonghe Dist., New Taipei City 235 Taiwan
Equipment	: Wireless Keyboard
Model No.	: MS-8ZAE
Trade Name	: msi
FCC ID	: I4L-MS-8ZAE

I HEREBY CERTIFY THAT :

The sample was received on Feb. 03, 2026 and the testing was completed on Mar. 23, 2026 at Cerpass Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of Cerpass Technology Corp., the test report shall not be reproduced except in full.

Approved by:

Mark Liao / Supervisor

Laboratory Accreditation:

Cerpass Technology Corporation Test Laboratory





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History of this test report

Report No.	Issued Date	Description
26020011-TRFCC06	Apr. 10, 2026	Original



1. Summary of Test Procedure and Test Results

1.1 Applicable Standards

ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024

FCC Rules and Regulations Part 15 Subpart C §15.247

FCC Rule	Description of Test	Result
15.203	. Antenna Requirement	PASS
15.207	. AC Power Line Conducted Emission	PASS
15.209 15.205	. Radiated Spurious Emission	PASS
15.247(d)	. Conducted Spurious Emission	PASS
15.247(a)(2)	. 6dB Bandwidth	PASS
15.247(b)	. Maximum Output Power	PASS
15.247(e)	. Power Spectral Density	PASS

*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, measurement uncertainty evaluation is not considered.



2. Test Configuration of Equipment under Test

2.1 Feature of Equipment under Test

Operation Frequency Range	2400MHz-2500MHz
Center Frequency Range	BLE: 2402MHz-2480MHz SRD: 2402MHz-2478MHz
Modulation Type	BLE: GFSK SRD: GFSK
Modulation Technology	DTS
Data Rate	BLE: GFSK: 1Mbps GFSK: 2Mbps SRD: GFSK: 1Mbps
Antenna Type	PCB Antenna
Antenna Gain	2.96 dBi
Polymer Lithium-ion Battery	Dongguan Lean Power New Energy Technology Co., Ltd. \ 6060100 \ 3.7V 5000mAh
USB Cable	msi \ STRIKE 700 USB cable

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

2.2 Carrier Frequency of Channels

GFSK(1Mbps), GFSK(2Mbps)

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
*00	2402	14	2430	28	2458
01	2404	15	2432	29	2460
02	2406	16	2434	30	2462
03	2408	17	2436	31	2464
04	2410	18	2438	32	2466
05	2412	*19	2440	33	2468
06	2414	20	2442	34	2470
07	2416	21	2444	35	2472
08	2418	22	2446	36	2474
09	2420	23	2448	37	2476
10	2422	24	2450	38	2478
11	2424	25	2452	*39	2480
12	2426	26	2454	--	--
13	2428	27	2456	--	--

Note: Channels remarked * are selected to perform test.

(For Above 1GHz)

Below test Channel generated the worst case, they were reported as the final data.

Bluetooth	Channel	Frequency (MHz)	Bandedge	1GHz ~ 3GHz	3GHz ~ 18GHz	18GHz ~ 25GHz
BT-LE	0	2402	V	V	V	--
	19	2440	V	V	V	V
	39	2480	V	V	V	--



2.3 Test Mode and Test Software

- During testing, the interface cables and equipment positions were varied according to ANSI C63.10.
- An executive program, "PAN108xToolBox, Ver.: V0.0.017" under Windows 10 system was executed to transmit and receive data via Bluetooth.
- The following test modes were performed for the test:

Conducted Emissions from the AC mains power ports	
Test Mode 1	TX Mode, Power from Adapter (AC 120V/60Hz)
Test Mode 2	TX Mode, Power from Adapter (AC 240V/60Hz)
caused "Test Mode 2" generated the worst case, it was reported as the final data.	
Radiation Emissions (30MHz ~ 1GHz)	
Test Mode 1	TX Mode, Power from Adapter (AC 120V/60Hz)
Radiation Emissions (1GHz ~ 25GHz)	
Test Mode 1	TX Mode, Power from Adapter (AC 120V/60Hz)

Modulation Type	TX CONFIGURATION
GFSK (1Mbps)	1TX
GFSK (2Mbps)	1TX



2.4 Description of Test System

RF Conducted				
Equipment	Brand	Model	Length/Type	Power cord/Length/Type
Notebook	DELL	Latitude 7490	N/A	Adapter / 1.8m / NS
Test Fixture	YD-TECH	MCS-73 LV	N/A	N/A

Radiated Emissions				
Equipment	Brand	Model	Length/Type	Power cord/Length/Type
Notebook	DELL	Latitude 7490	N/A	Adapter / 1.8m / NS
Test Fixture	YD-TECH	MCS-73 LV	N/A	N/A
Adapter	Noratec	NT-K240	N/A	N/A

AC Power Line Conducted Emission				
Equipment	Brand	Model	Length/Type	Power cord/Length/Type
Adapter	Noratec	NT-K240	N/A	N/A
Notebook	AUAS	P2430U	N/A	Adapter / 1.8m / NS
Test Fixture	YD-TECH	MCS-73 LV	N/A	N/A



2.5 General Information of Test

Organization	CerpPASS Technology Corp.		
☒ Test Site	CerpPASS Technology Corporation Test Laboratory Address: No.10, Ln. 2, Lianfu St., Luzhu Dist., Taoyuan City 33848, Taiwan (R.O.C.) Tel: +886-3-3226-888 Fax: +886-3-3226-881		
	FCC	TW1439, TW1079	
	ISED Company Number	4934E	
	ISED CAB identifier	TW1439	
Frequency Range Investigated	Conducted: from 150kHz to 30 MHz Radiation: from 9 kHz to 25,000MHz		
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	RFCON02-NK	2026/03/22	25.3°C / 45%	Leon Huang
RF Conducted	RFCON02-NK	2026/03/23	25.5°C / 46%	Leon Huang
Radiated Emissions	3M02-NK	2026/03/18	21.5°C / 49%	Leon Huang
Radiated Emissions	3M02-NK	2026/03/19	18.5°C / 62%	Leon Huang
AC Power Line Conducted Emission	CON02-NK	2026/03/23	22.4°C / 74%	Leon Huang

2.6 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(150kHz~30MHz)	±3.2dB
Radiated Spurious Emission(9kHz~30MHz)	±3.4dB
Radiated Spurious Emission(30MHz~1GHz)	±5.2dB
Radiated Spurious Emission(1GHz~40GHz)	±5.2dB
Conducted Spurious Emission	±2.1dB
6dB Bandwidth	±4.4%
20dB Bandwidth	±4.5%
Occupied Bandwidth	±4.4%
Peak Output Power(Conducted Power Meter)	±1.1dB
Dwell Time / Deactivation Time	±3.5%
Power Spectral Density	±2.0dB
Duty Cycle	±3.5%



3. Test Equipment and Ancillaries Used for Tests

Test Item	Radiated Emissions				
Test Site	Semi Anechoic Room(3M02-NK)				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
Bilog Antenna	Schwarzbeck	VULB9168	VULB 9168-1947	2026/02/10	2027/02/09
Active Loop Antenna	EMCO	6507	00040855	2025/04/28	2026/04/27
Double Ridged Guide Horn Antenna	RF SPAN	DRH18-E	210309A18-ES	2025/08/22	2026/08/21
Horn Antenna	EMCO	3116	31974	2025/10/07	2026/10/06
EMI Receiver	R&S	ESCI	101423	2025/07/10	2026/07/09
Spectrum Analyzer	R&S	FSV 40-N	102151	2025/08/18	2026/08/17
Preamplifier	EMC INSTRUMENTS	EMC118A45V1S EE	981069	2025/12/18	2026/12/17
Preamplifier	EMC INSTRUMENTS	EMC184045	980065	2025/10/13	2026/10/12
Preamplifier	EM Electronics corp.	EM330	60659	2025/12/18	2026/12/17
Cable-4m (9k-3G)	EMEC	RG-223	18274M	2025/07/02	2026/07/01
Cable-4m (30M-1G)	HUBER SUHNER	RG-214	02953M	2025/07/03	2026/07/02
Cable-1m (30M-1G)	HUBER SUHNER	RG-214	05094M	2025/07/04	2026/07/03
Cable-9m (30M-1G)	HUBER SUHNER	RG-214	00402M	2025/07/05	2026/07/04
Cable-8m (10M-26.5G)	HUBER SUHNER	SF126E	587396/126E	2025/10/15	2026/10/14
Cable-3m (10M-26.5G)	HUBER SUHNER	SF126E	587399/126E	2025/10/15	2026/10/14
Cable-1m (1G-26.5G)	HUBER SUHNER	SF126E	589848/126E	2025/10/15	2026/10/14
Cable-1m (1G-40G)	HUBER SUHNER	SF102E	552450	2025/07/09	2026/07/08
Cable-3m (1G-40G)	HUBER SUHNER	SF102E	552451	2025/07/09	2026/07/08
E3	AUDIX	v8.2014-8-6	RK-000529	NA	NA
High Pass Filter	WOKEN	WFIL-H3000-18000F-03	WR377WC2B1	2025/10/13	2026/10/12
Highpass Filter	WOKEN	WFIL-H7000-18000F-01	WR468FWC2B1	2025/10/03	2026/10/02



Test Item	RF Conducted				
Test Site	RFCON02-NK				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
CAX Signal Analyzer	KEYSIGHT	N9000B	MY57100339	2025/10/23	2026/10/22
Power Meter	Anritsu	ML2495A	1224005	2026/01/27	2027/01/26
Power Sensor	Anritsu	MA2411B	1207295	2026/01/27	2027/01/26
Attenuator	KEYSIGHT	8491B	MY39250703	2026/01/29	2027/01/28

Test Item	AC Power Line Conducted Emission				
Test Site	CON02-NK				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
EMI Receiver	R&S	ESR 7	101906	2025/05/19	2026/05/18
LISN	Schwarzbeck	NSLK 8127	1197	2025/09/22	2026/09/21
Two-Line V-Network	R&S	ENV216	102185	2025/08/28	2026/08/27
Cable-4m (9k-3G)	EMEC	RG-223	18274M	2025/07/02	2026/07/01
E3	AUDIX	v8.2014-8-6	RK-000536	NA	NA



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 15.247 (b), 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

Antenna Type	PCB Antenna
Antenna Gain	2.96 dBi



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 9kHz, according to the methods defined in ANSI C63.10-2020+Cor.1-2023 and ANSI C63.10a-2024. 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

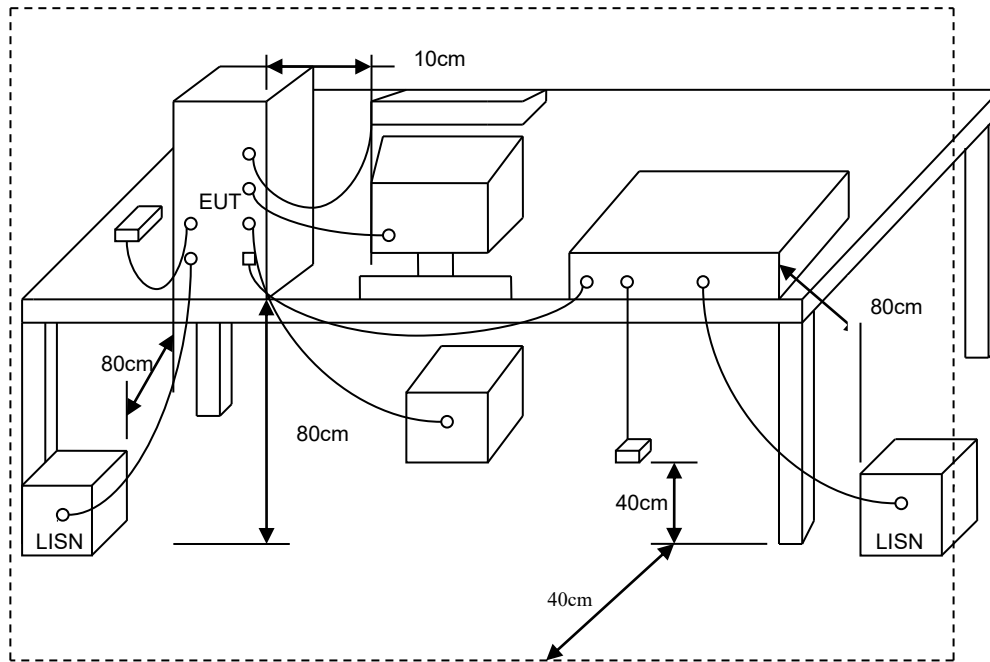
*Decreases with the logarithm of the frequency.

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.

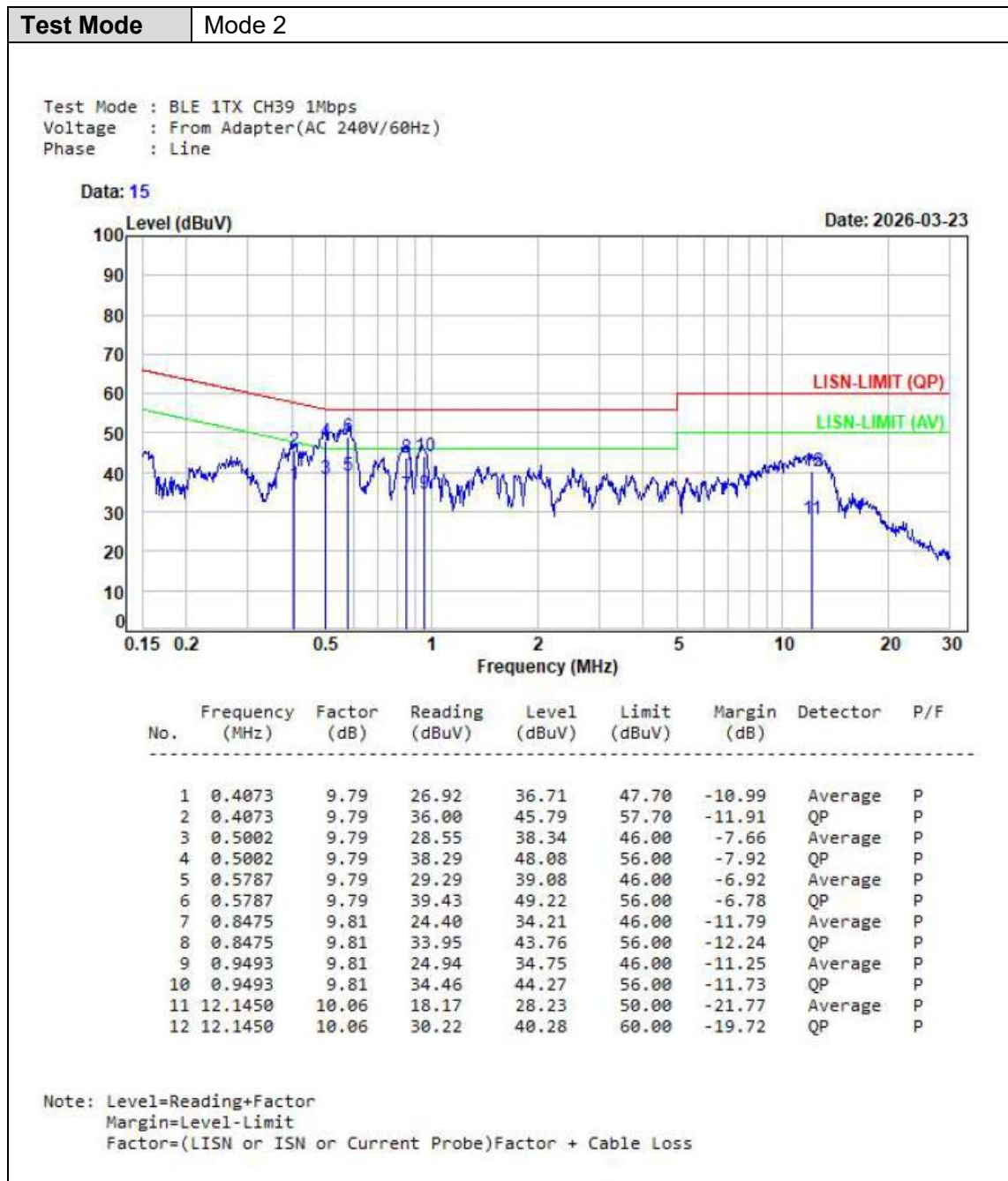


5.3 Typical Test Setup





5.4 Test Result and Data

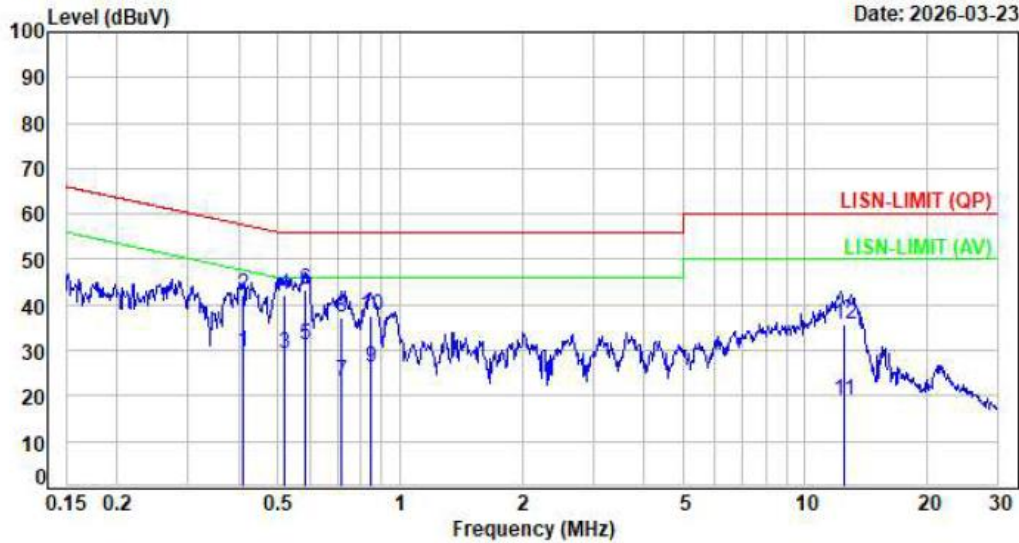


**Test Mode** Mode 2

Test Mode : BLE 1TX CH39 1Mbps
Voltage : From Adapter(AC 240V/60Hz)
Phase : Neutral

Data: 16

Date: 2026-03-23



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.4077	9.80	19.75	29.55	47.69	-18.14	Average	P
2	0.4077	9.80	32.50	42.30	57.69	-15.39	QP	P
3	0.5174	9.80	19.41	29.21	46.00	-16.79	Average	P
4	0.5174	9.80	32.35	42.15	56.00	-13.85	QP	P
5	0.5814	9.80	21.22	31.02	46.00	-14.98	Average	P
6	0.5814	9.80	33.45	43.25	56.00	-12.75	QP	P
7	0.7149	9.80	13.45	23.25	46.00	-22.75	Average	P
8	0.7149	9.80	27.35	37.15	56.00	-18.85	QP	P
9	0.8465	9.81	16.37	26.18	46.00	-19.82	Average	P
10	0.8465	9.81	27.88	37.69	56.00	-18.31	QP	P
11	12.4945	10.08	8.82	18.90	50.00	-31.10	Average	P
12	12.4945	10.08	25.53	35.61	60.00	-24.39	QP	P

Note: Level=Reading+Factor

Margin=Level-Limit

Factor=(LISM or ISN or Current Probe)Factor + Cable Loss



6. Test of Spurious Emission (Radiated)

6.1 Test Limit

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. If the transmitter measurement is based on the maximum conducted output power, the attenuation required under this paragraph shall be 30dB instead of 20dB. In addition, radiated emissions which fall in section 15.205(a) the restricted bands must also comply with the radiated emission limit specified in section 15.209(a).

Frequency (MHz)	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3



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.

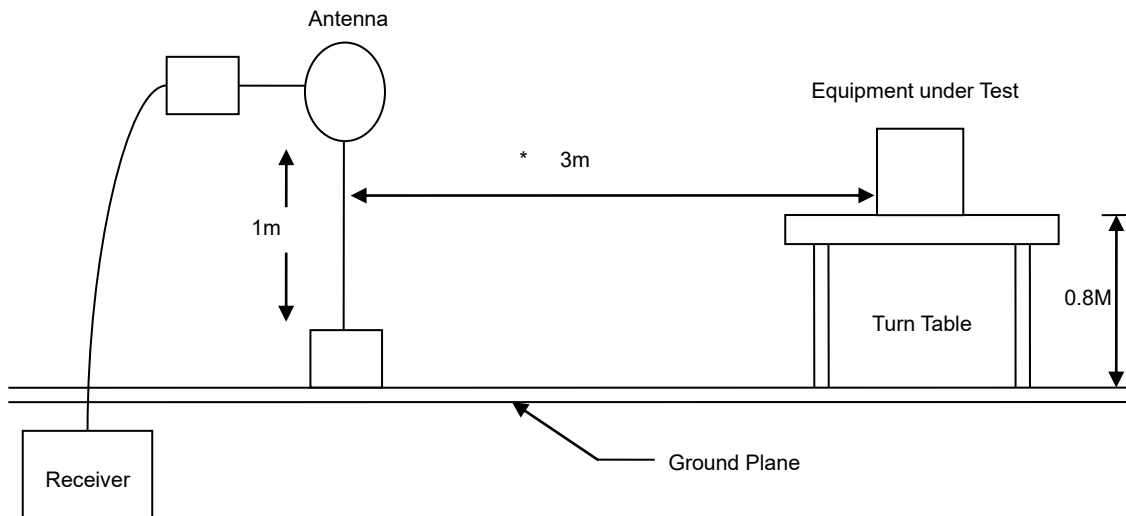
Note:

- 1.The supporting fixture shall permit orientation of the EUT in each of three orthogonal axis positions such that emissions from the EUT are maximized.
- 2.Due to the test software function limit the operation band setting(200dBuV/m).
There's no corresponding limitation in the actual test item.

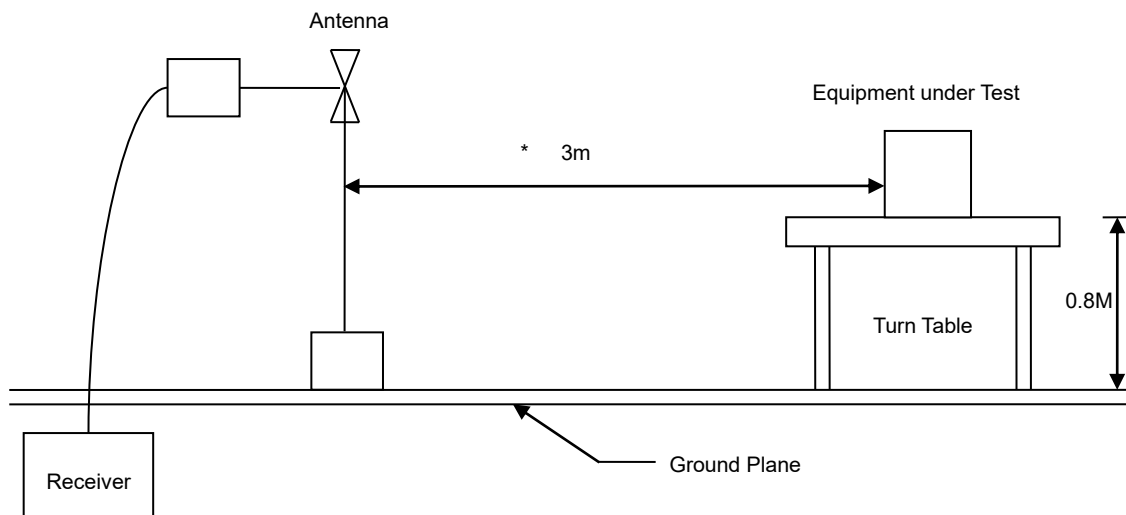


6.3 Typical Test Setup

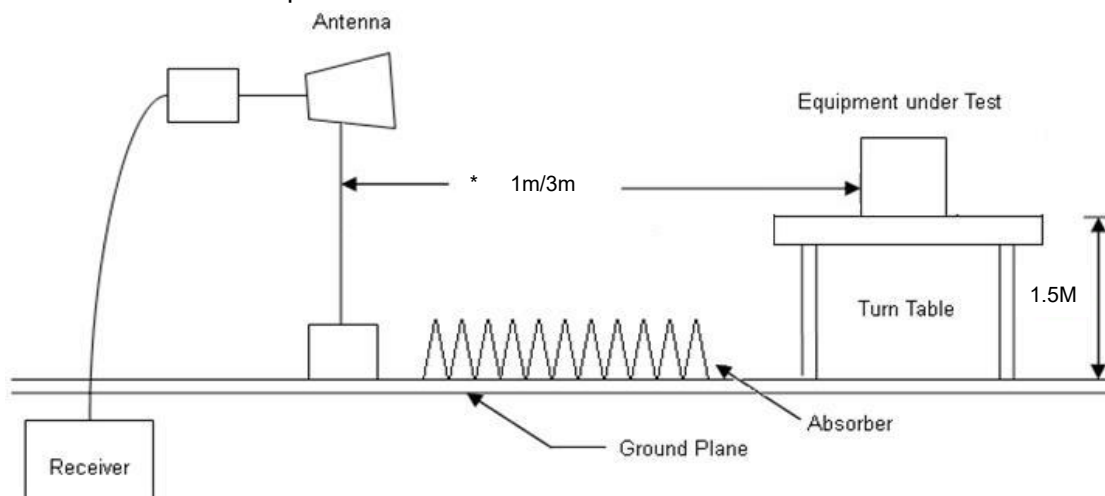
Below 30MHz test setup



30MHz- 1GHz Test Setup



Above 1GHz Test Setup

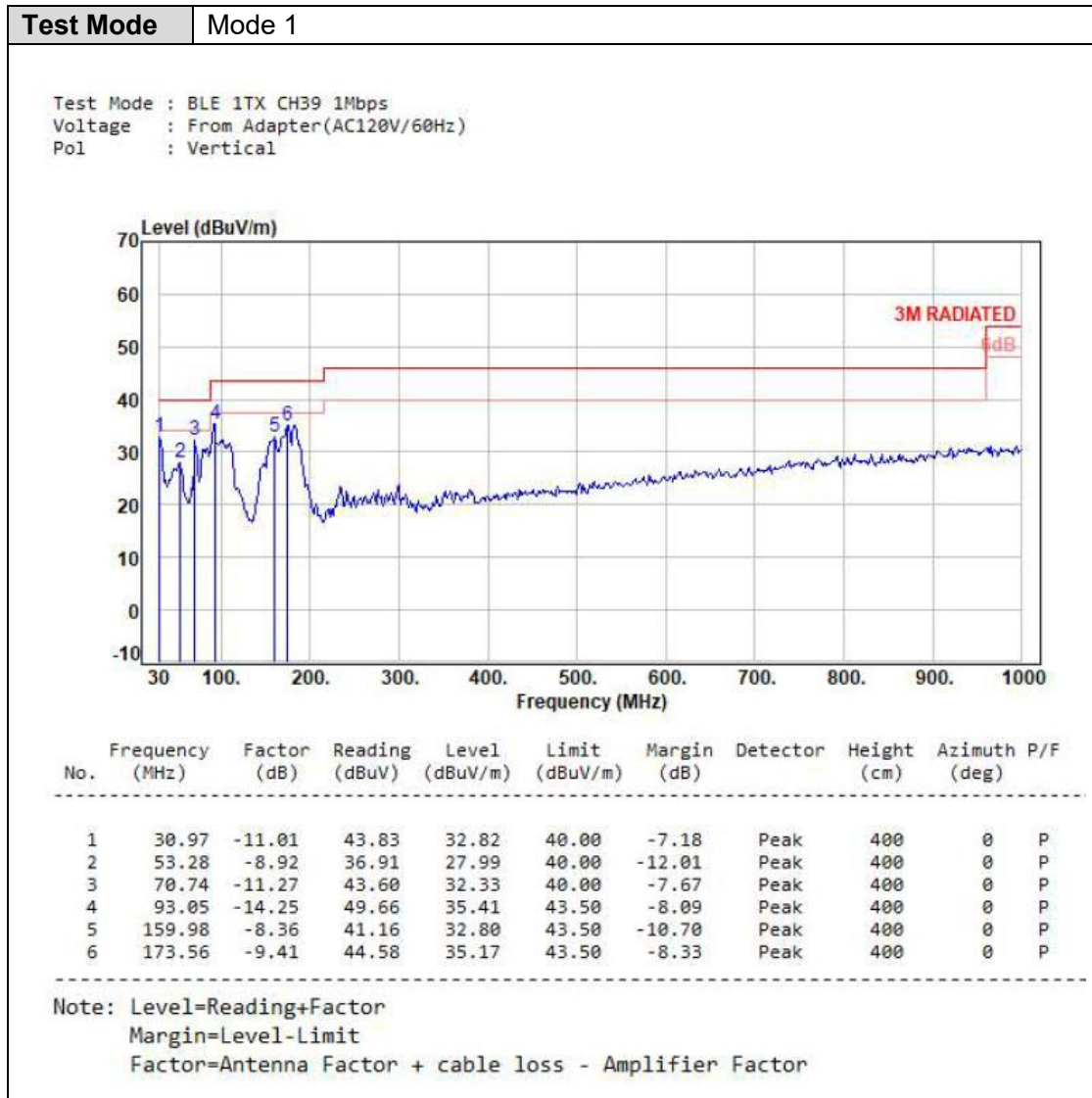


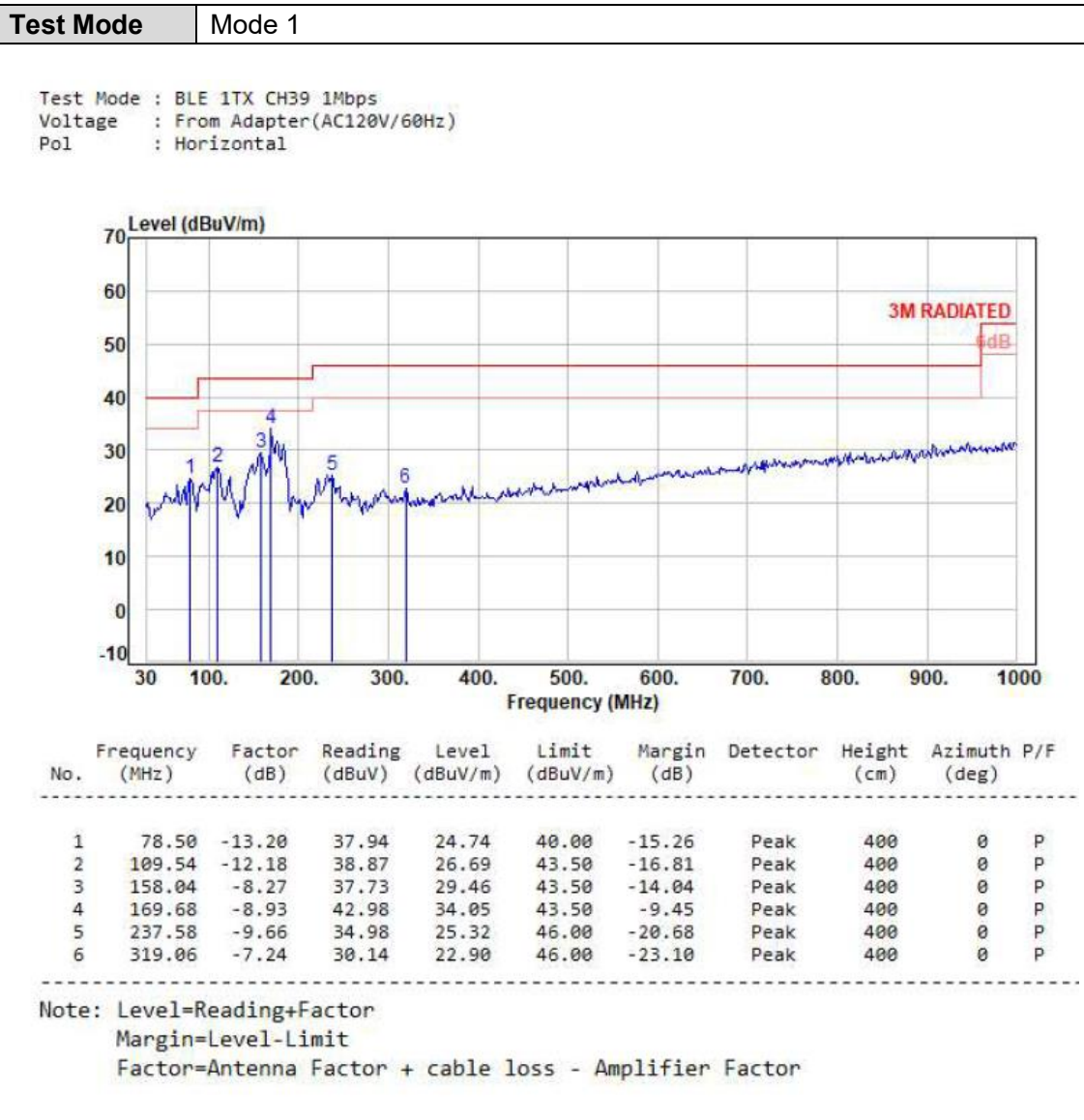


6.4 Test Result and Data (9kHz ~ 30MHz)

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

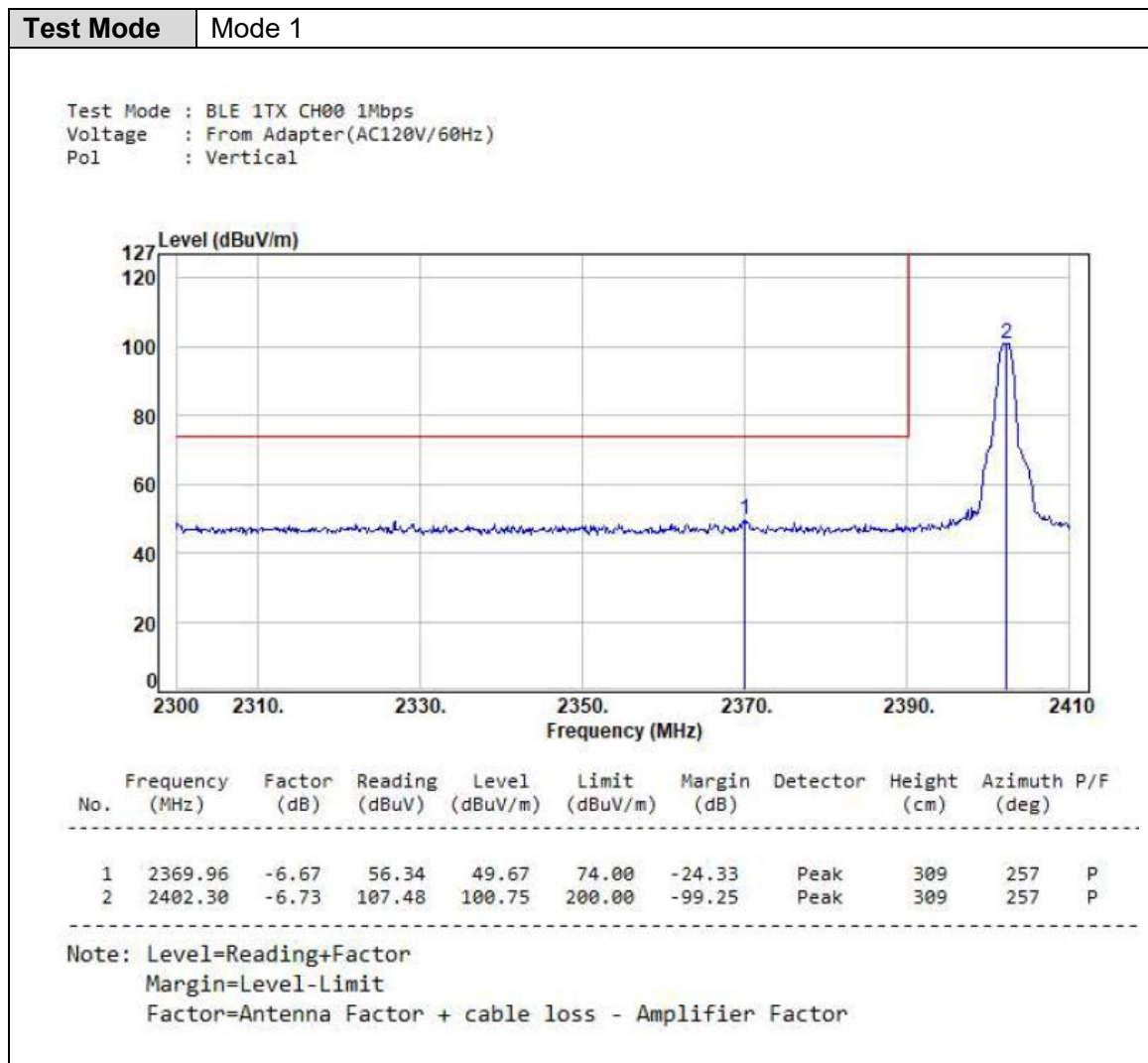
6.5 Test Result and Data (30MHz ~ 1GHz)

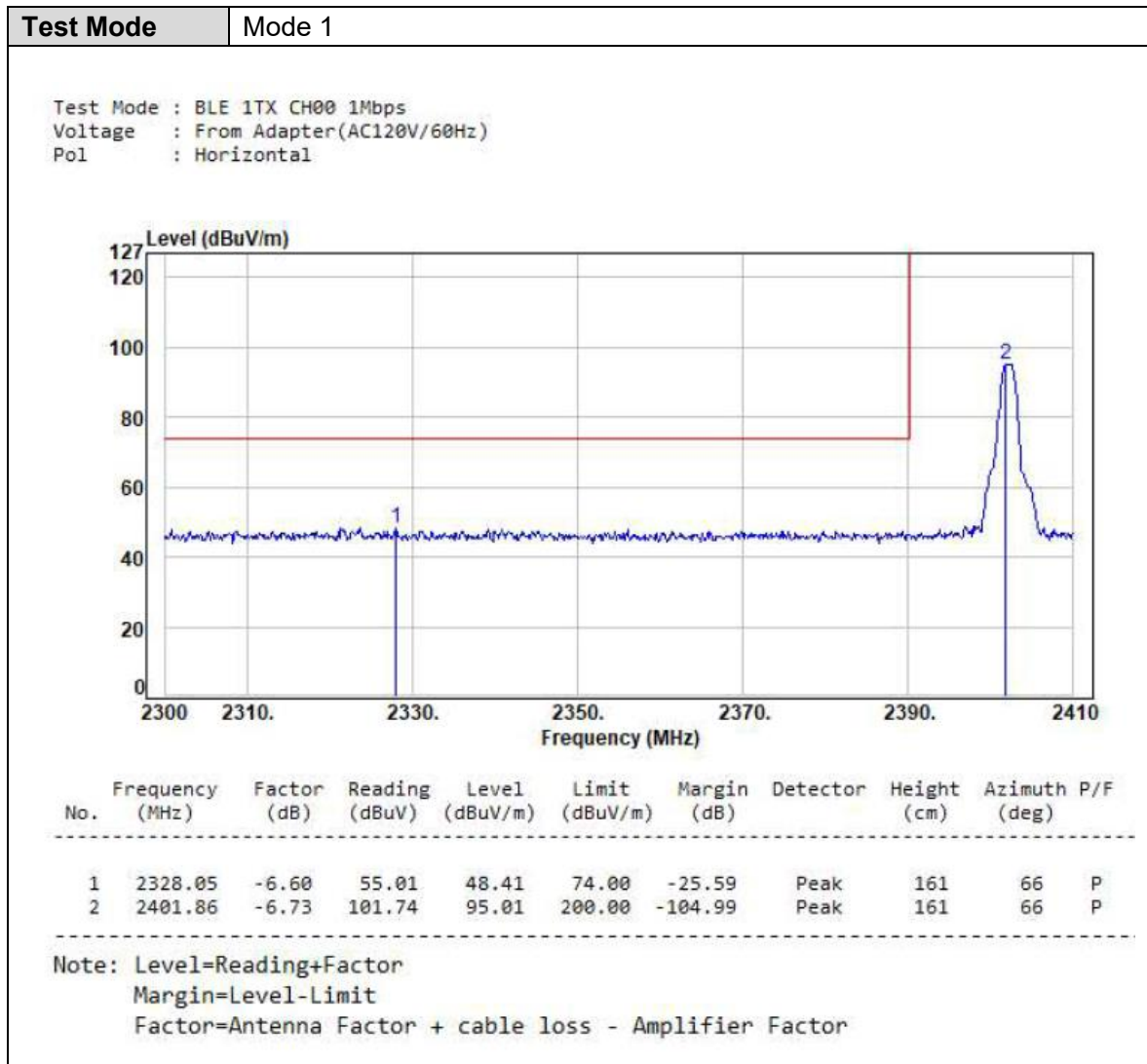


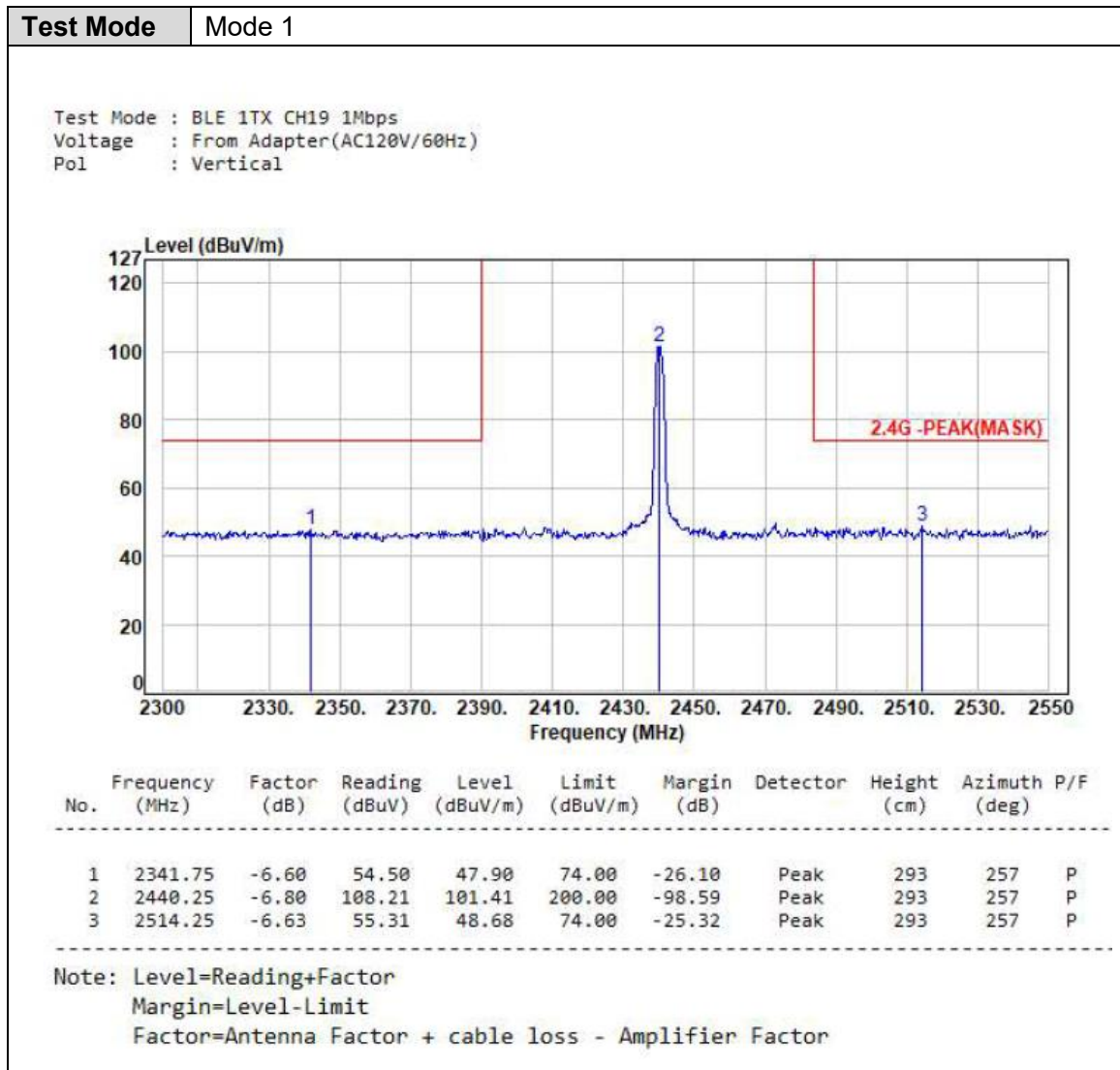


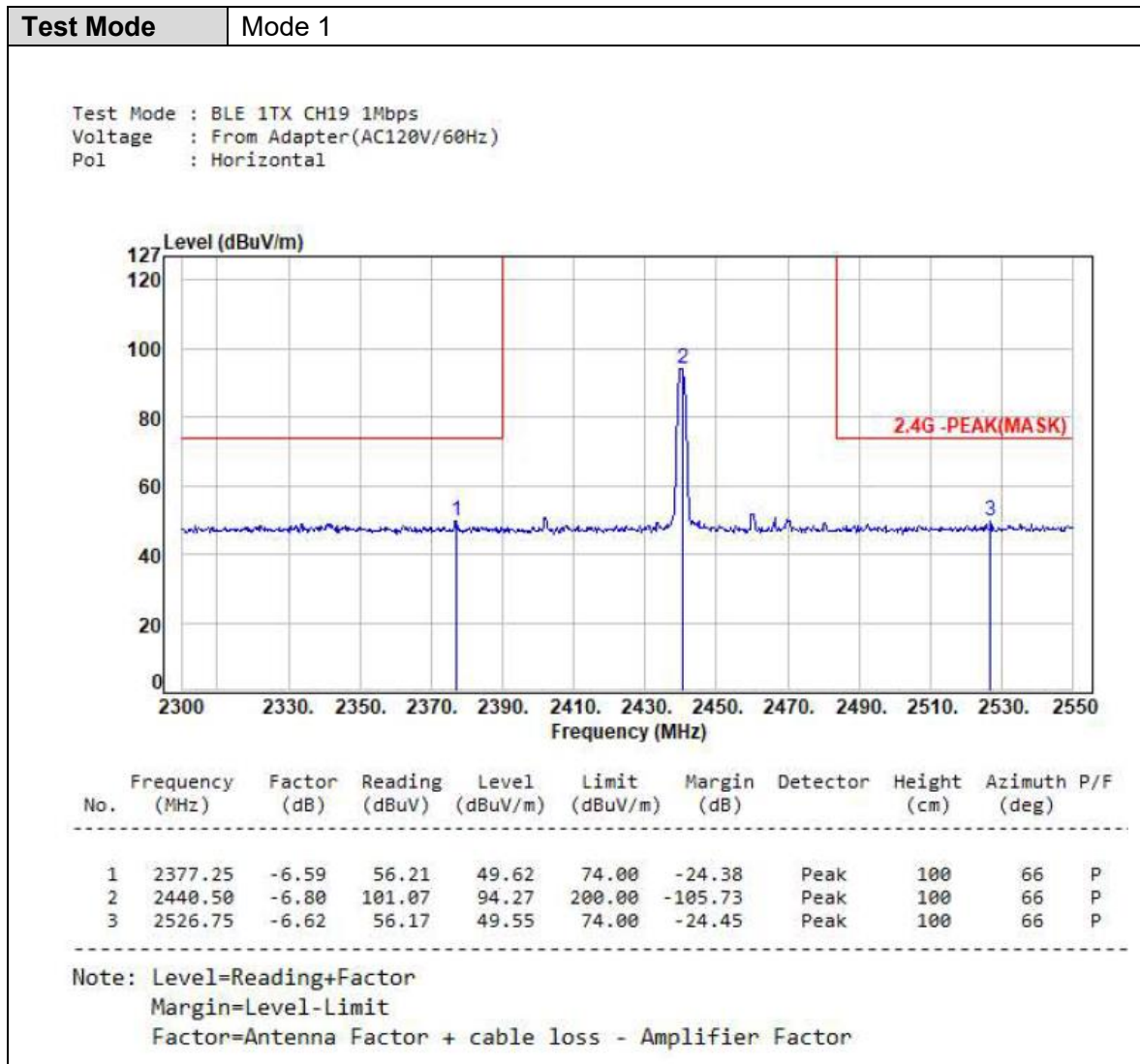


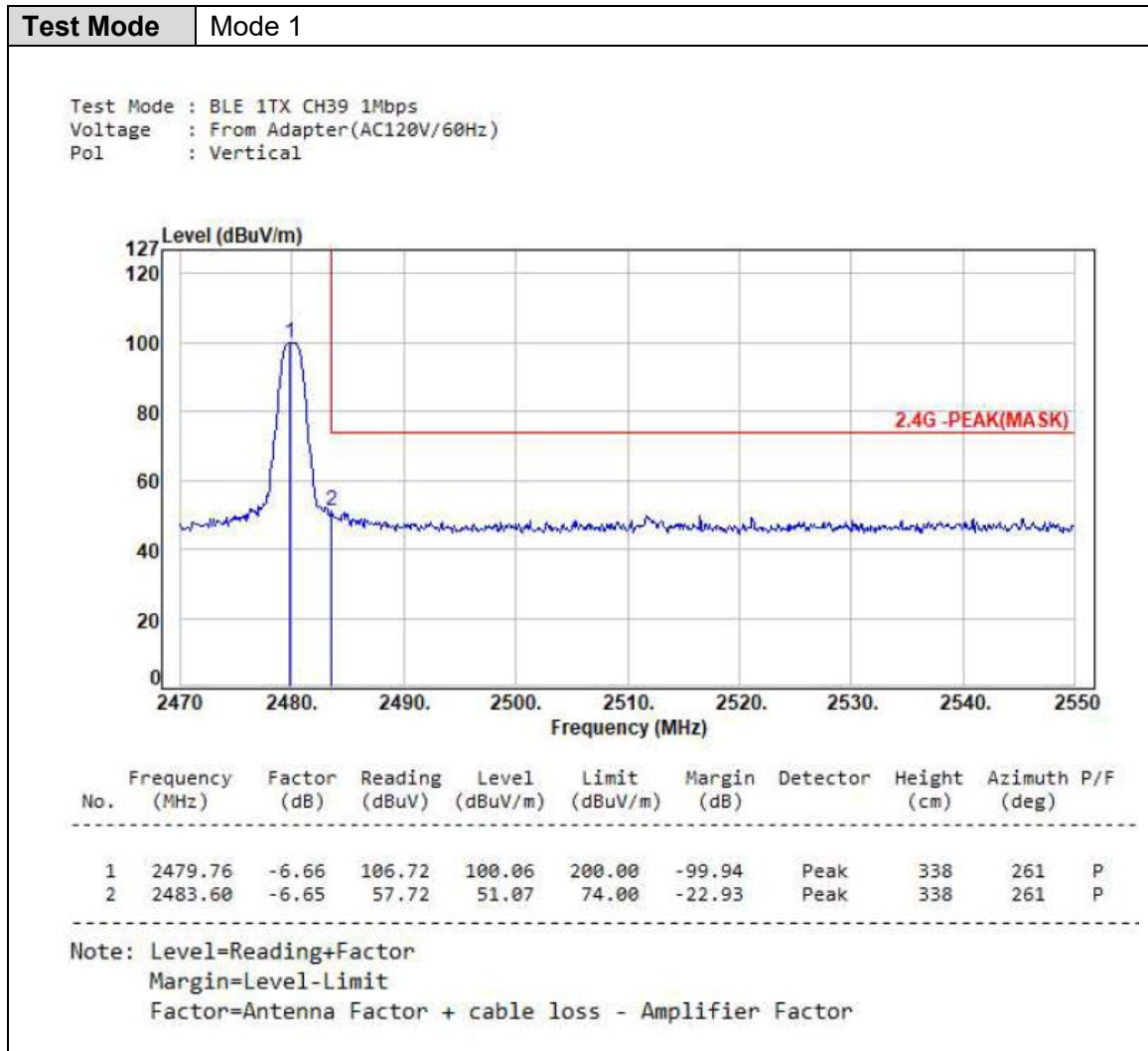
6.6 Test Result and Data (Bandedge)

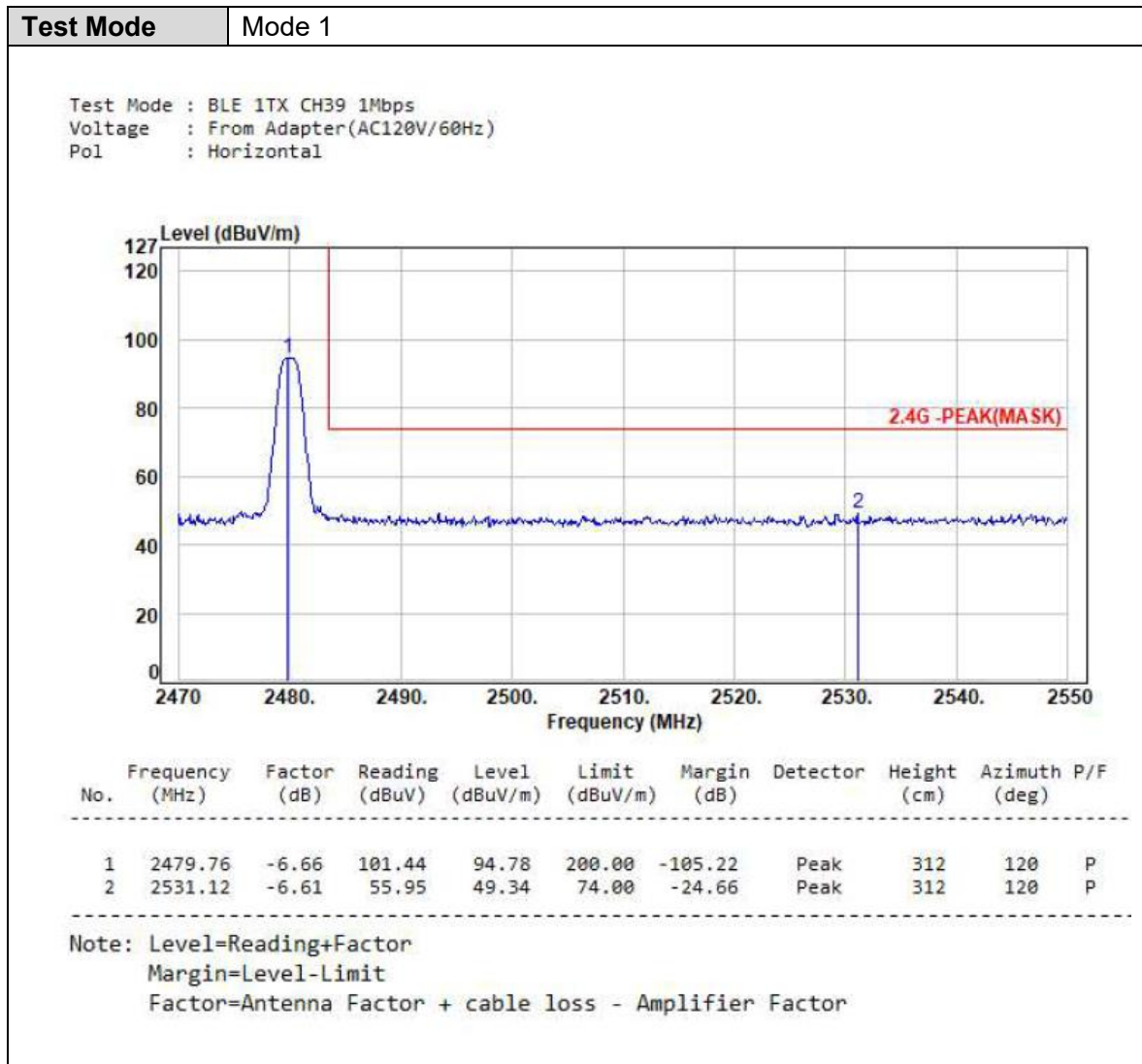


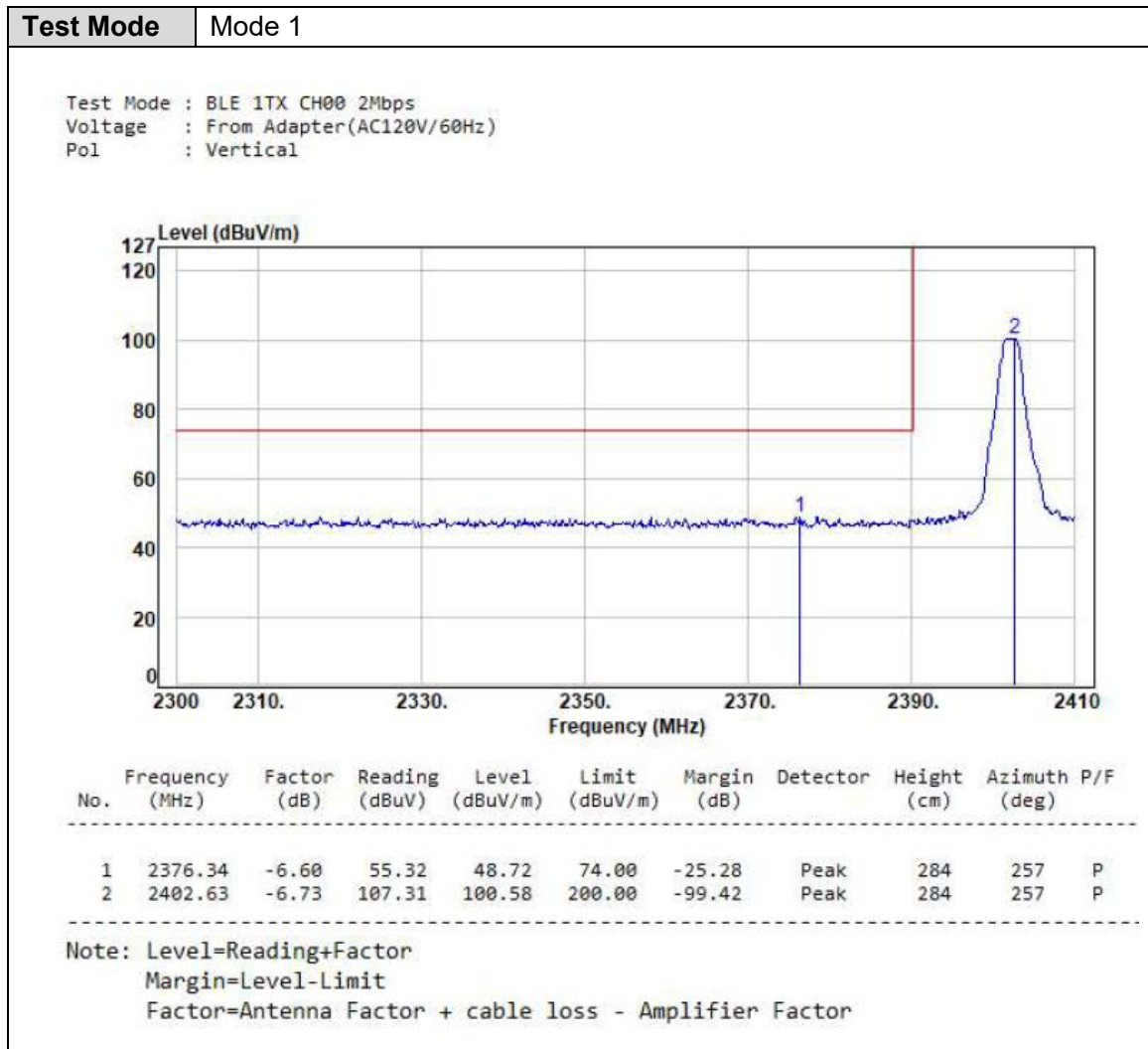


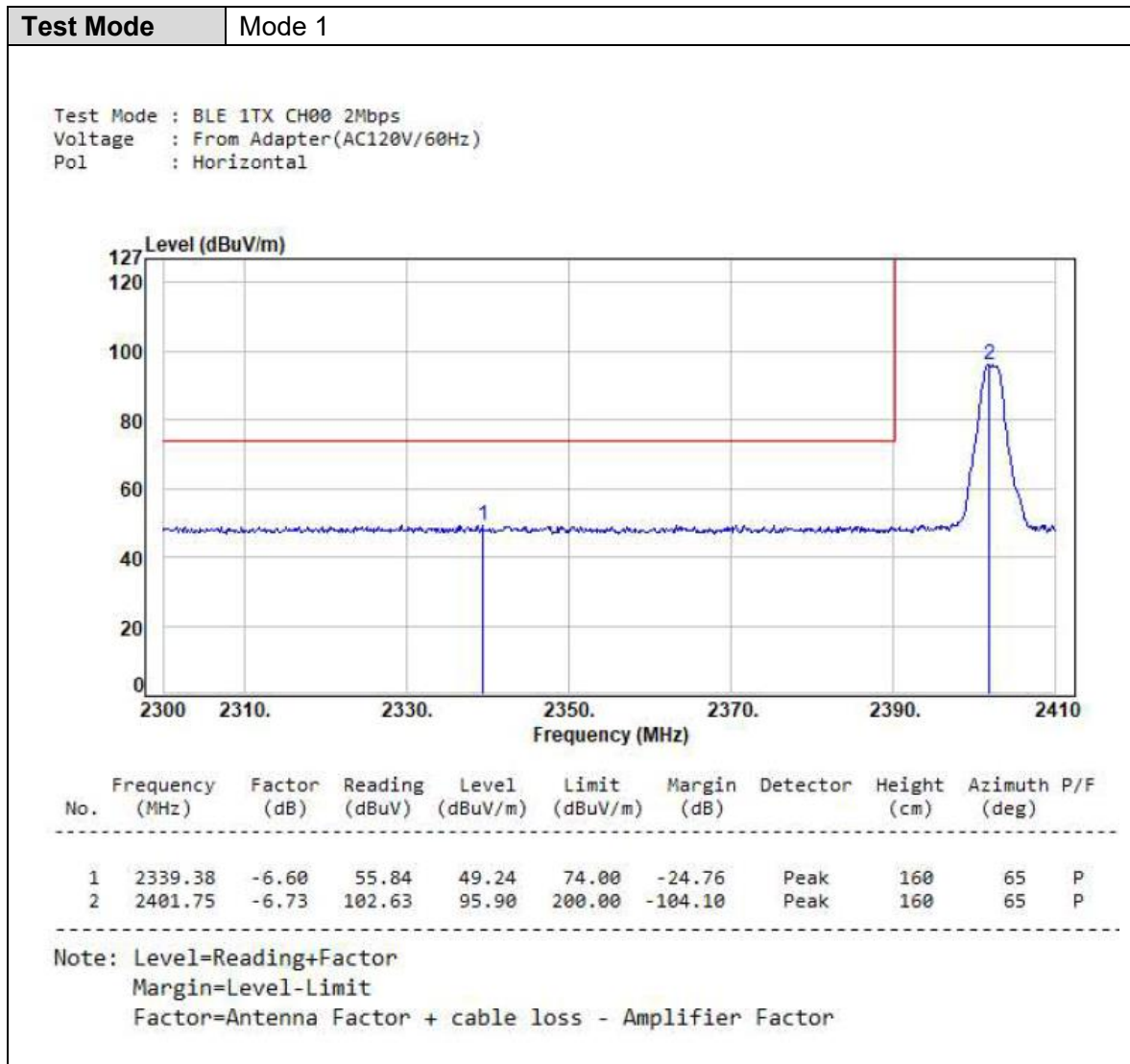


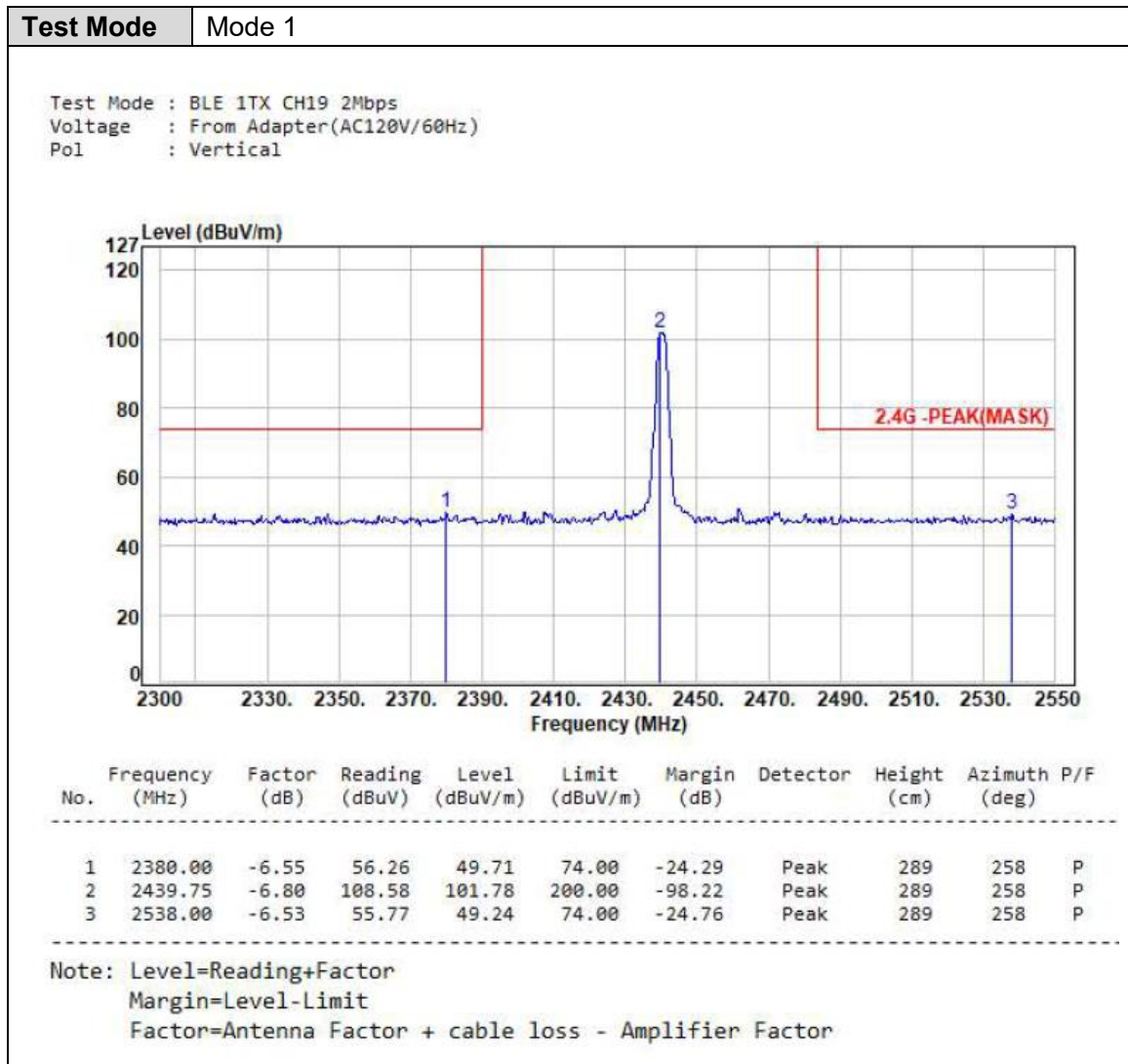


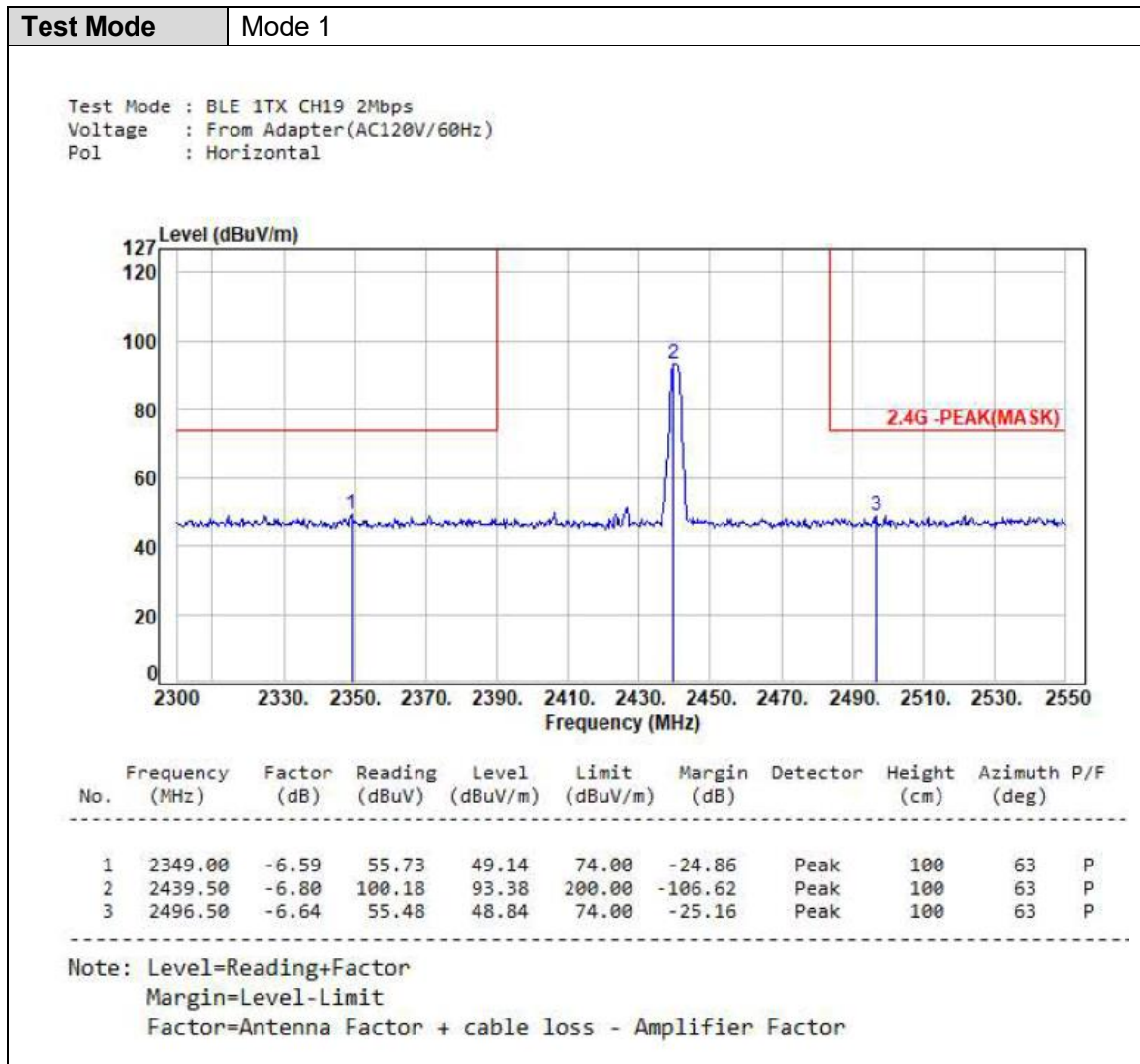


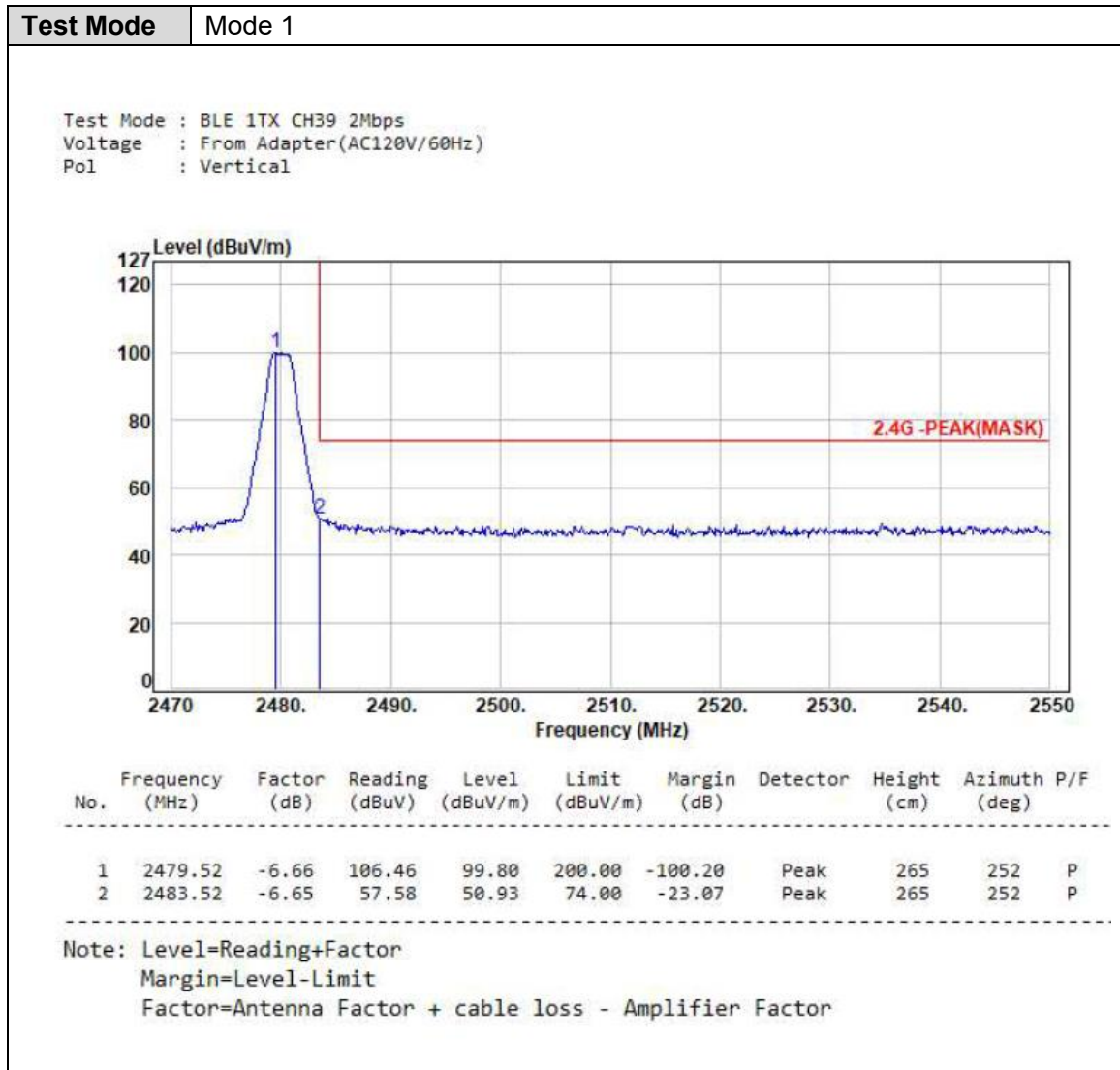


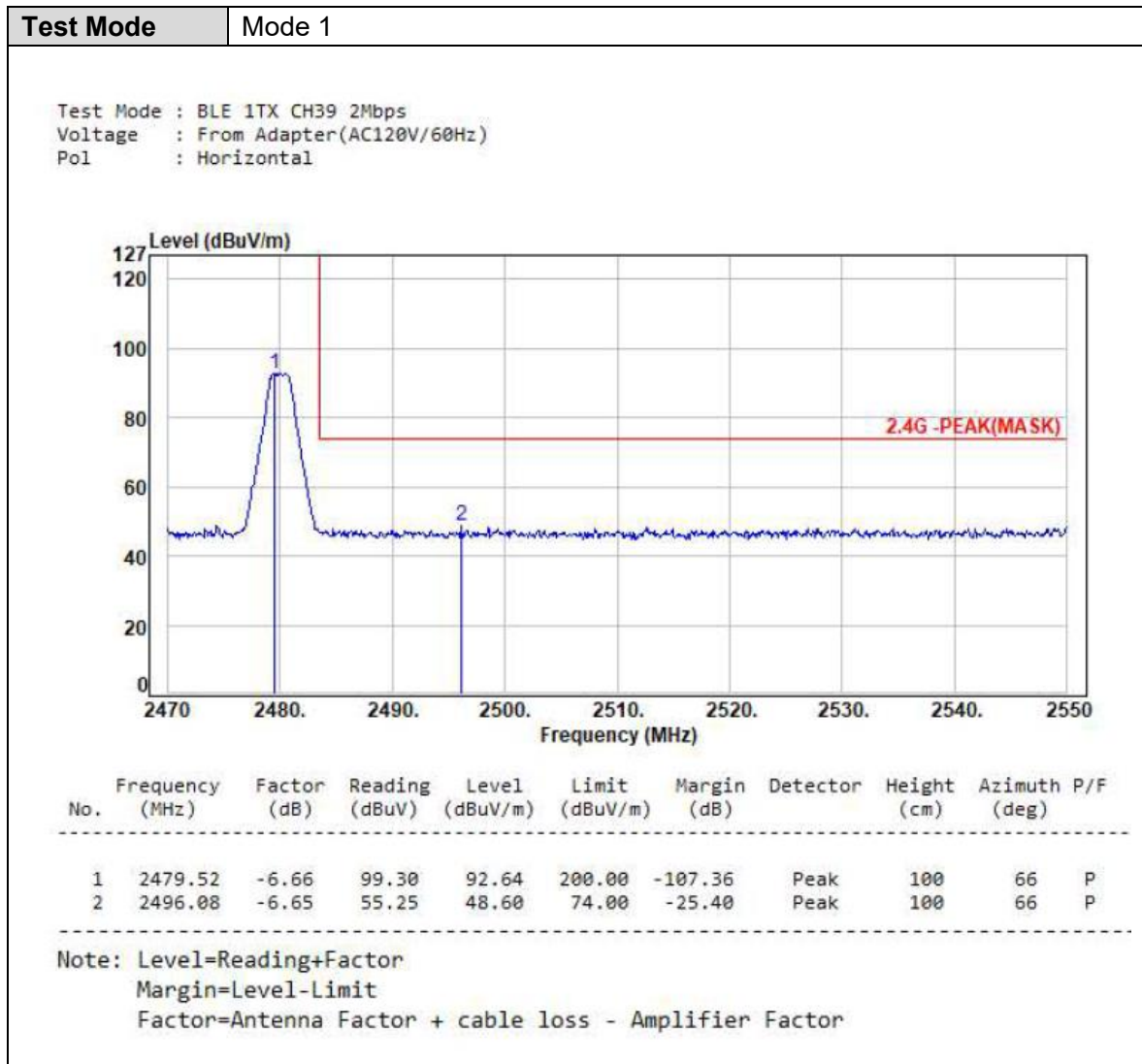






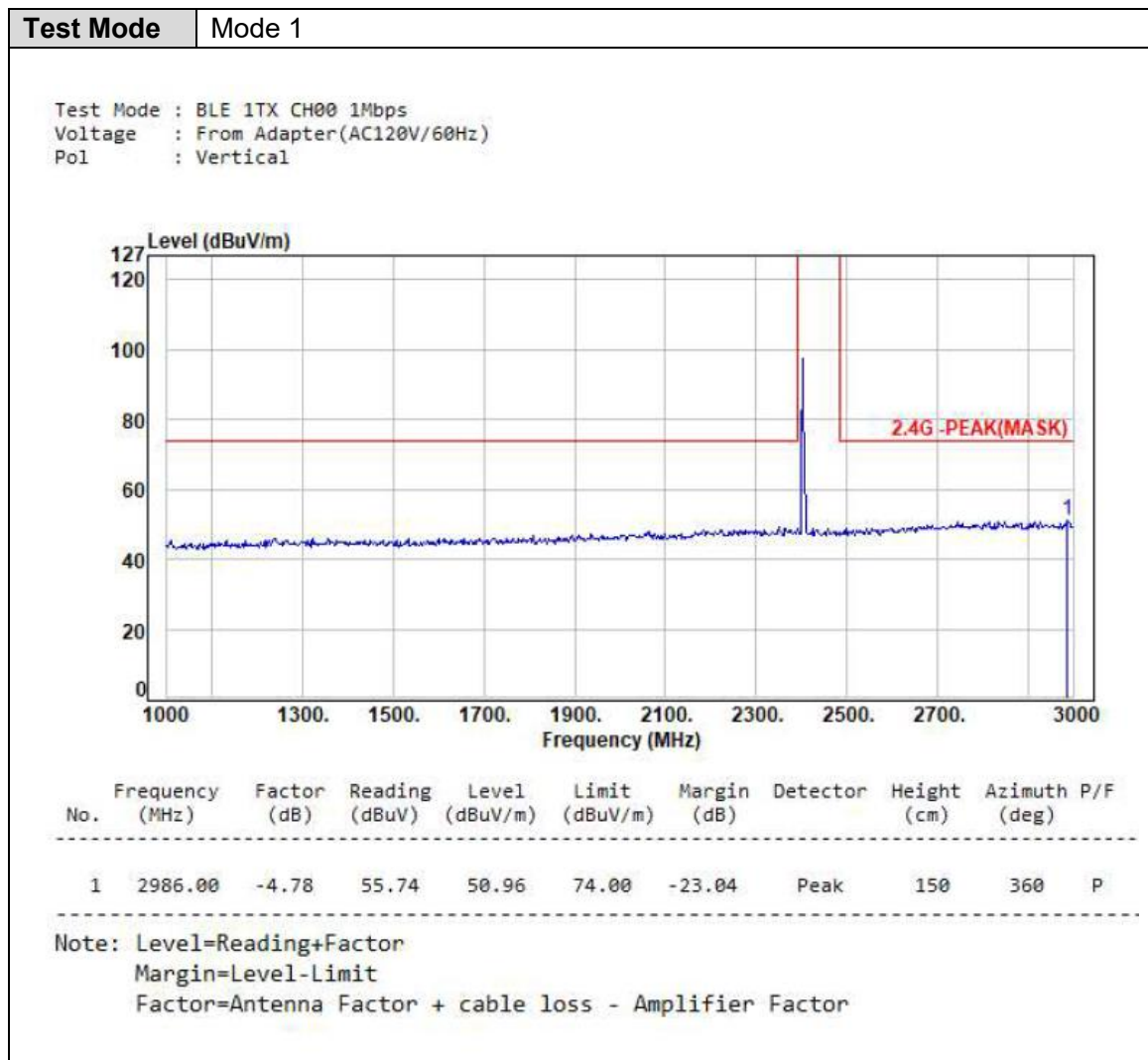


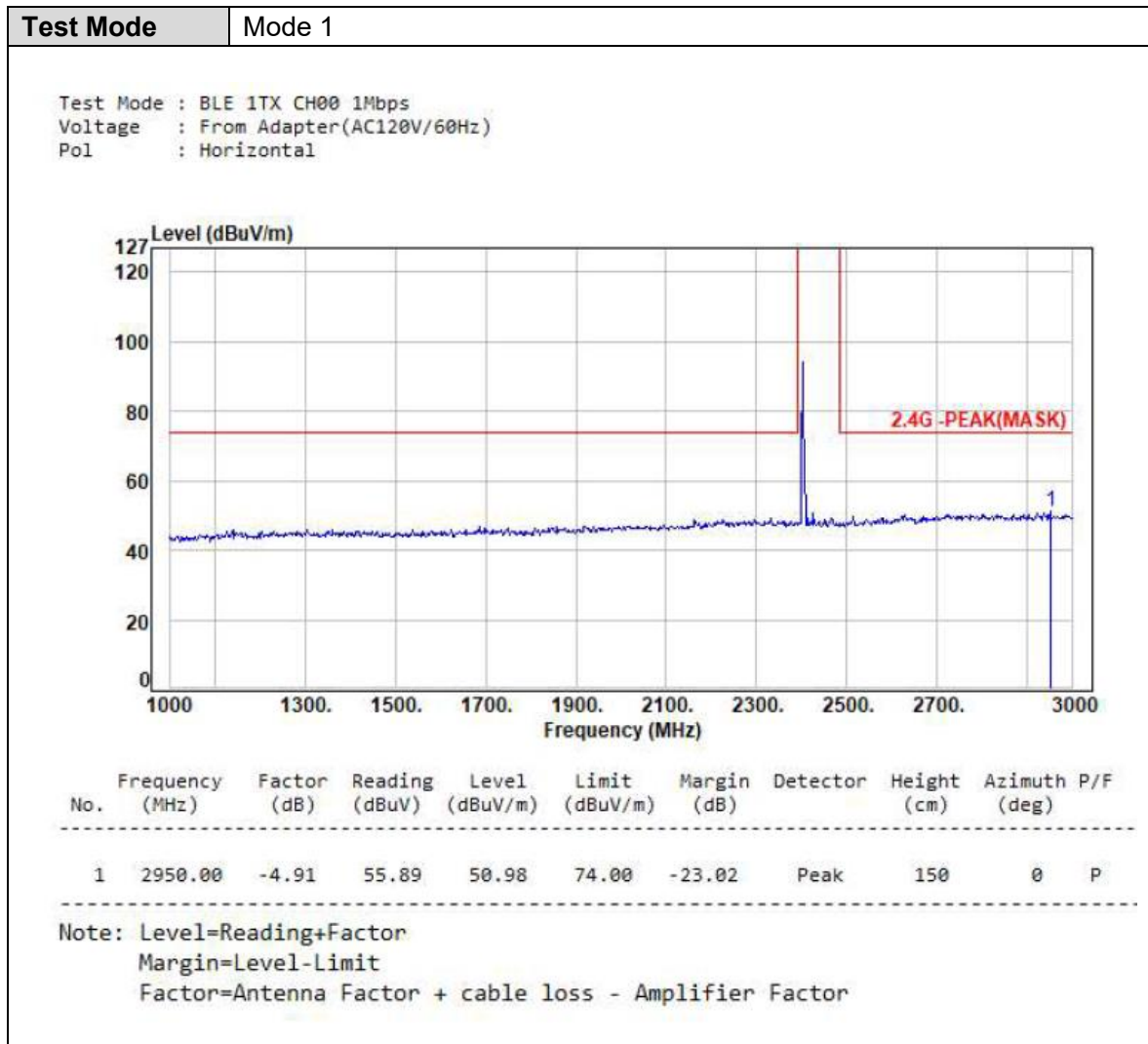


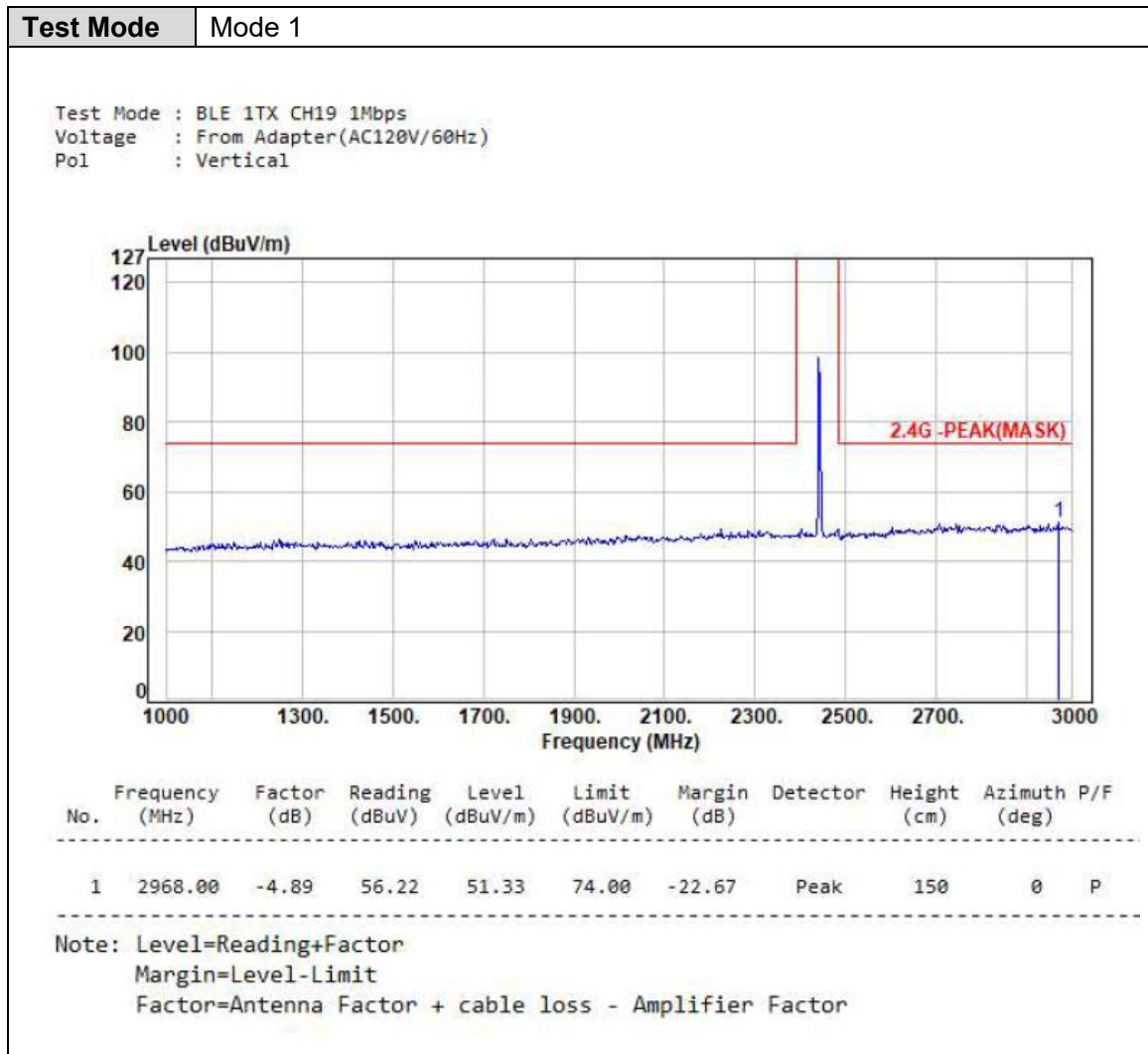


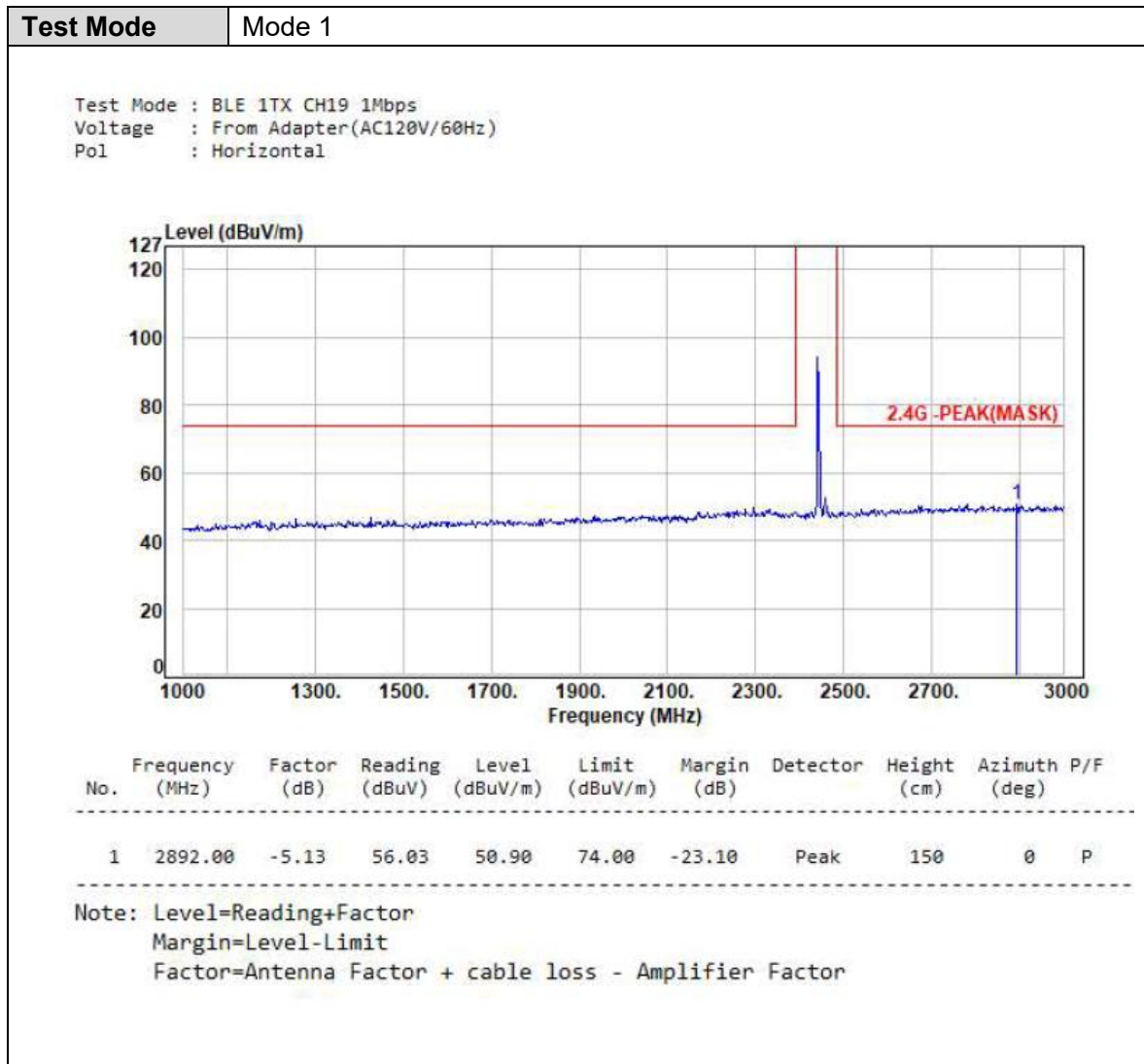


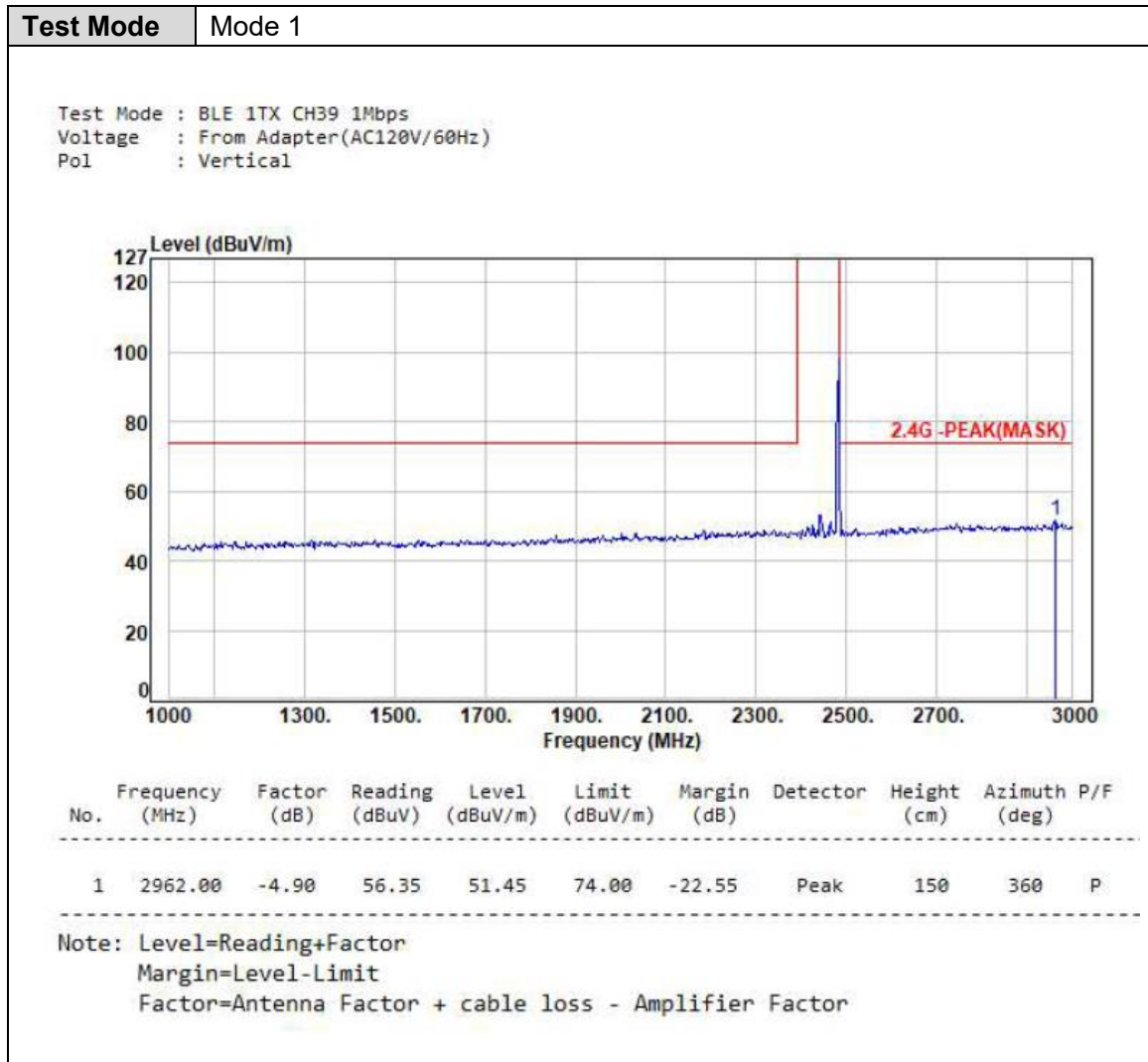
6.7 Test Result and Data (1GHz ~ 3GHz)

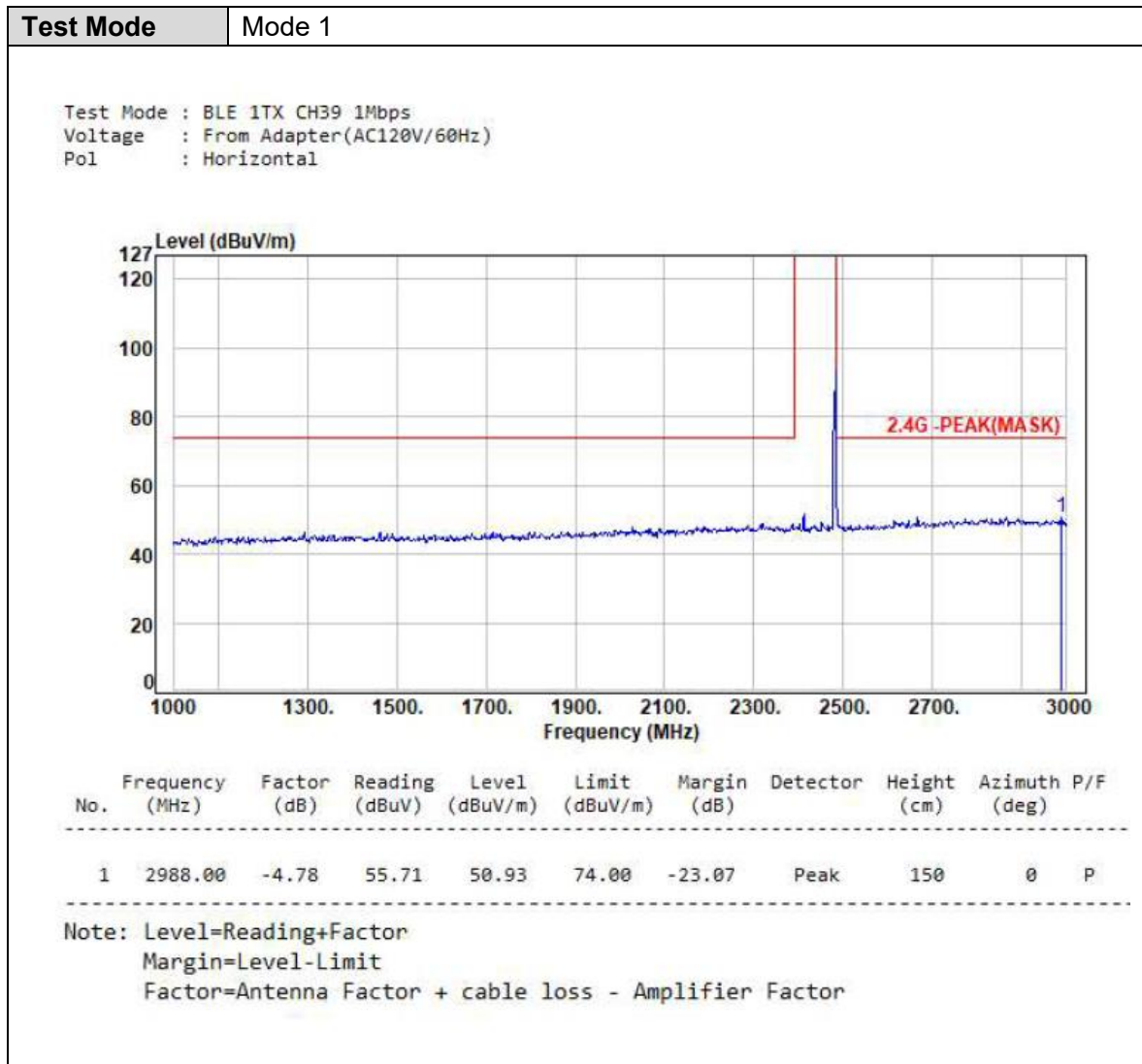


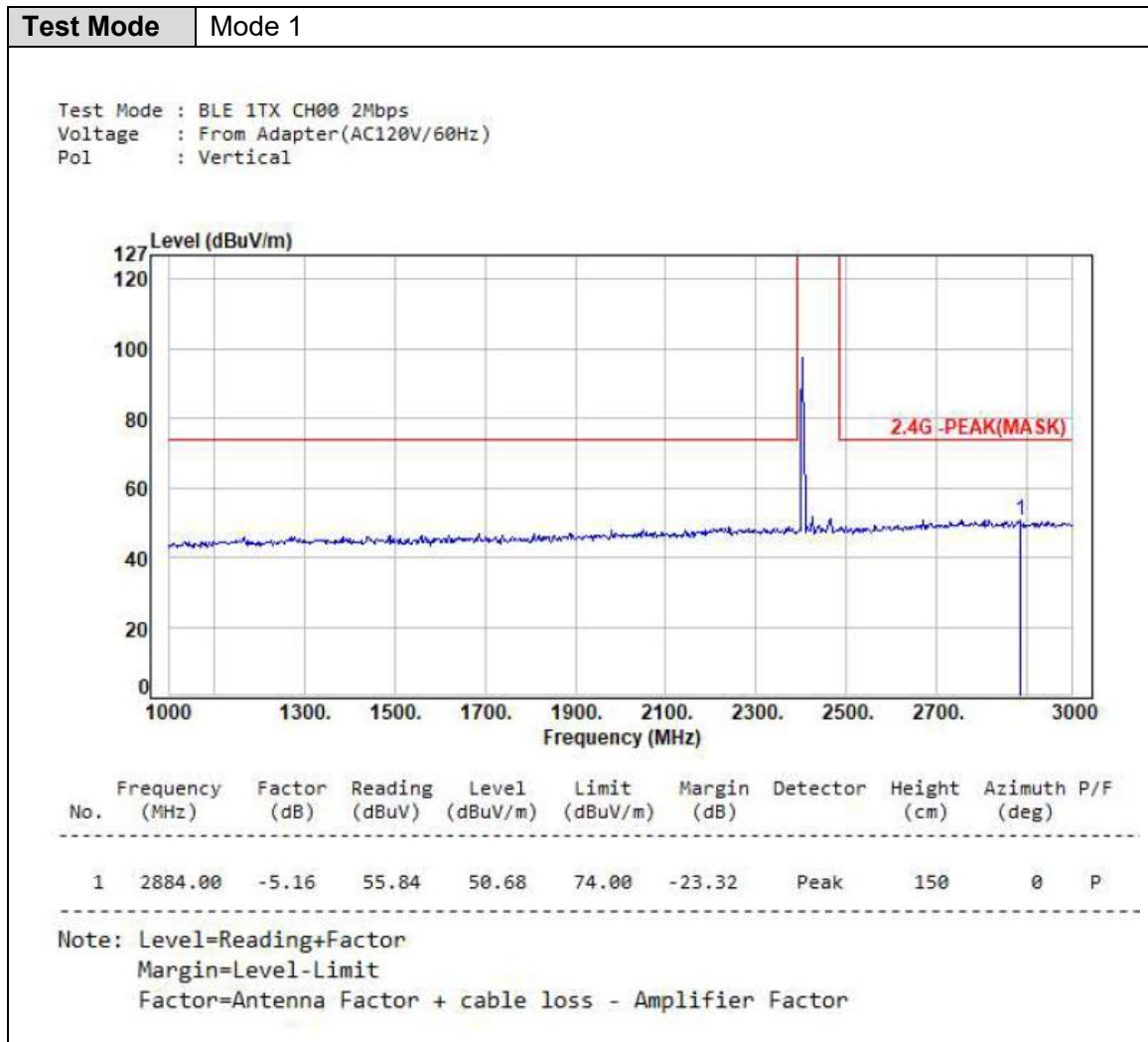


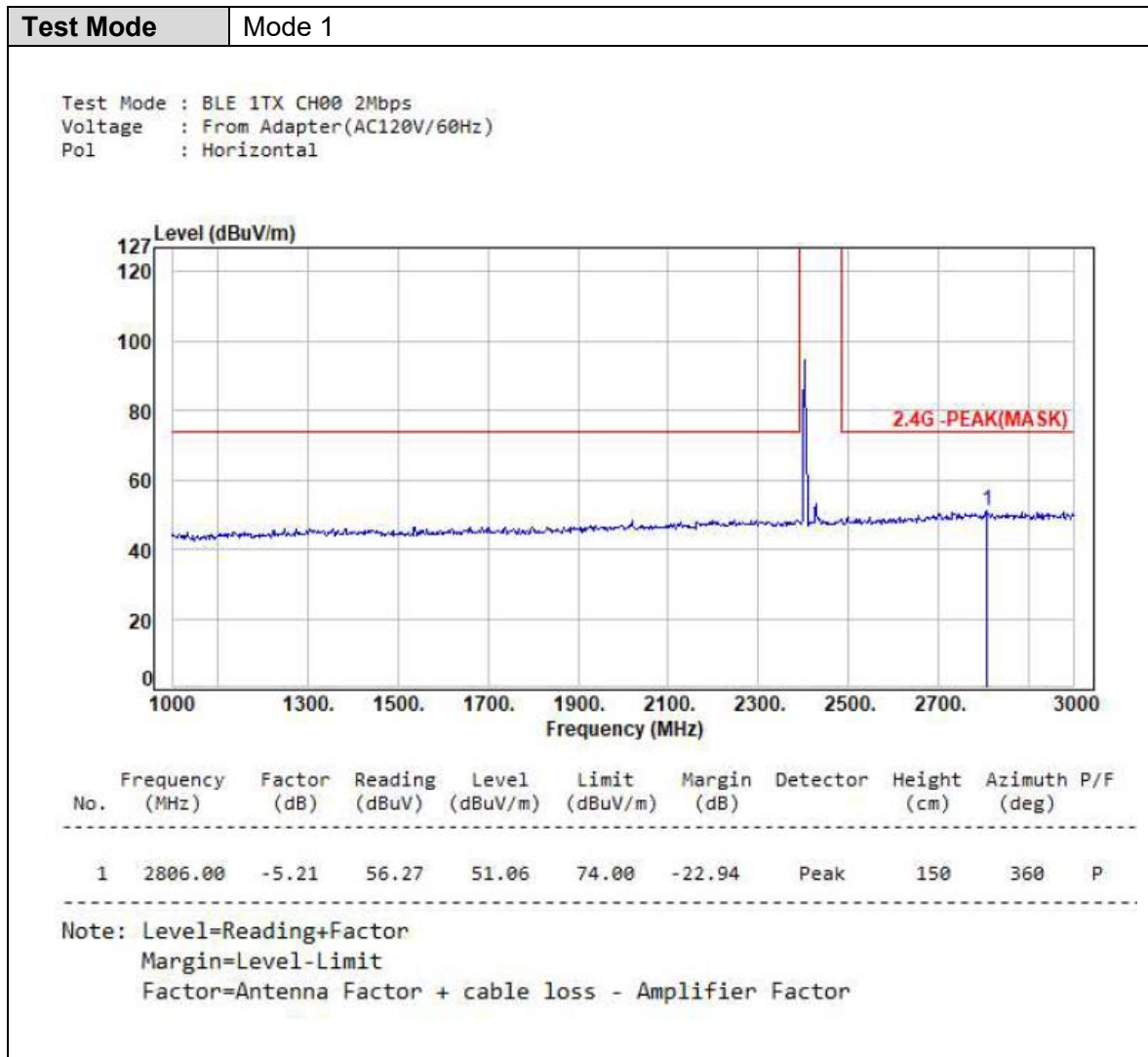


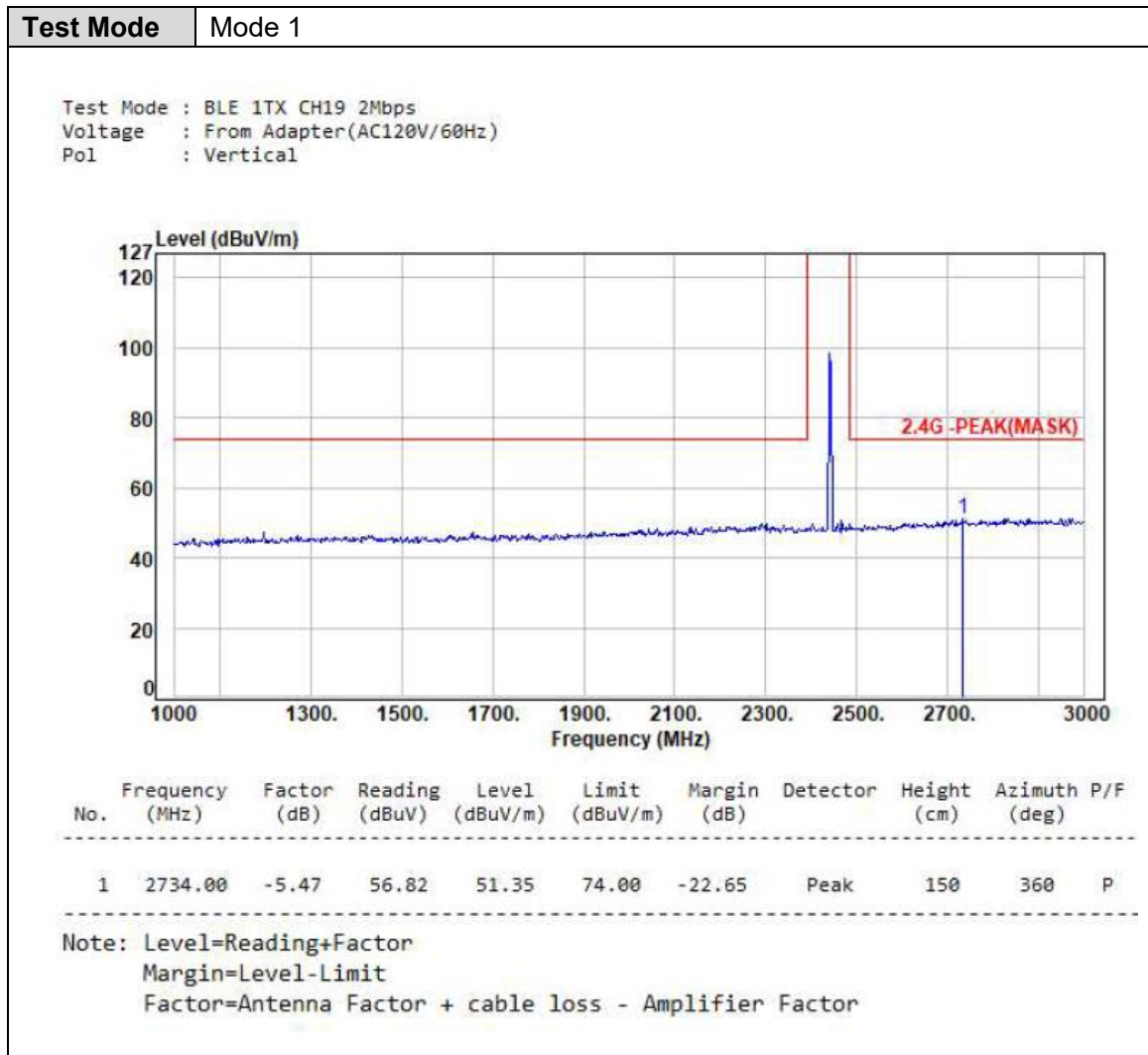


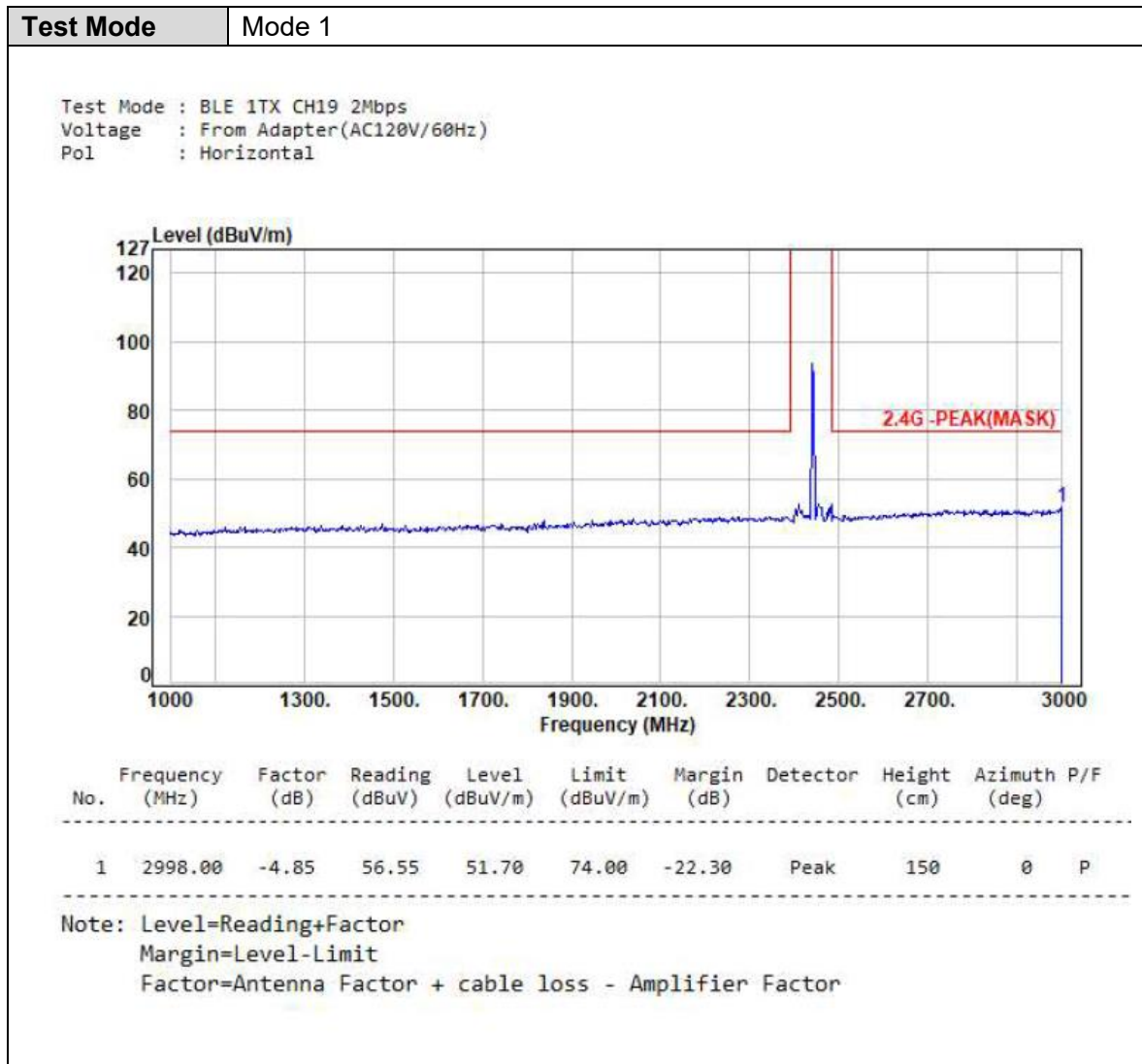


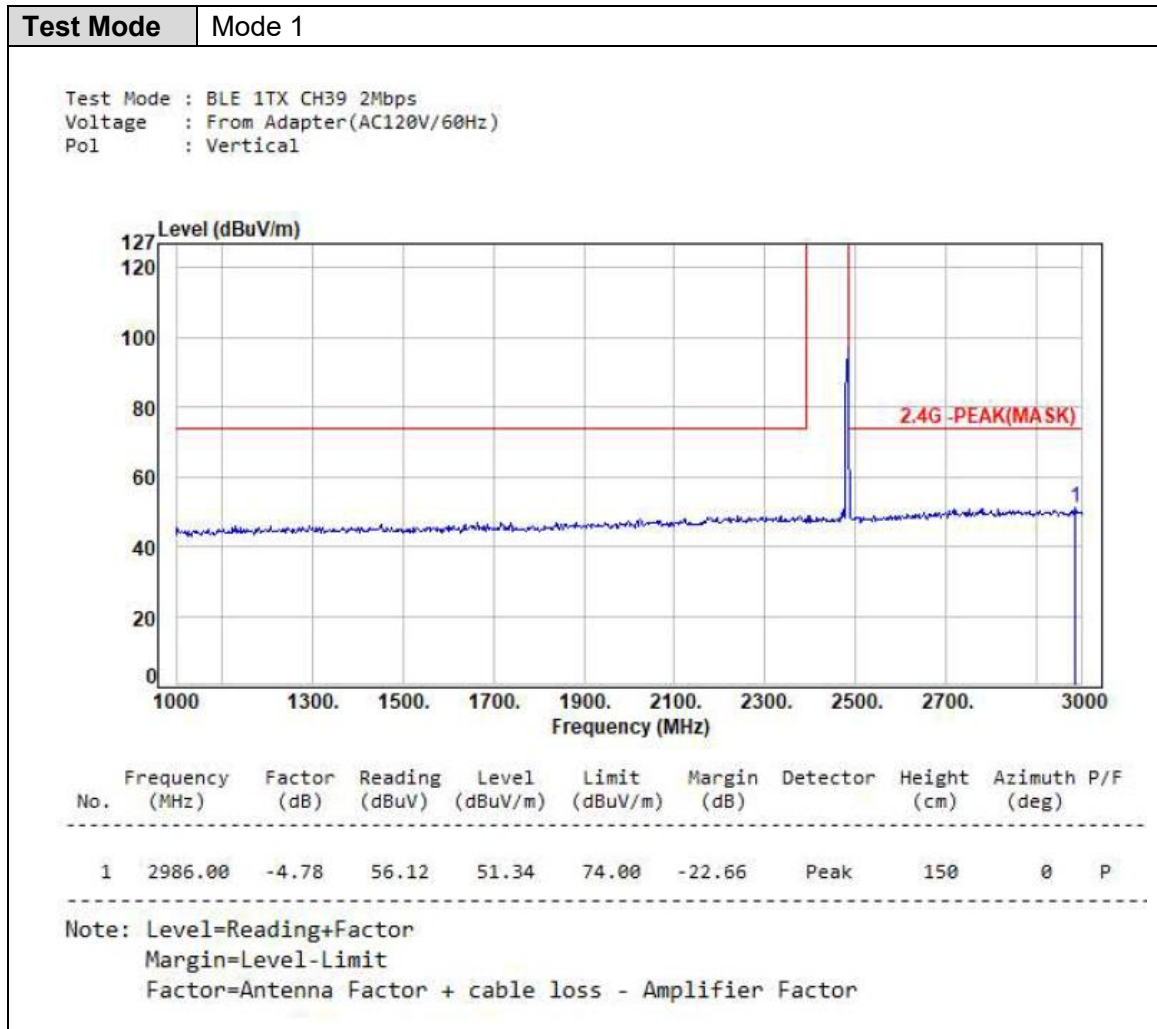


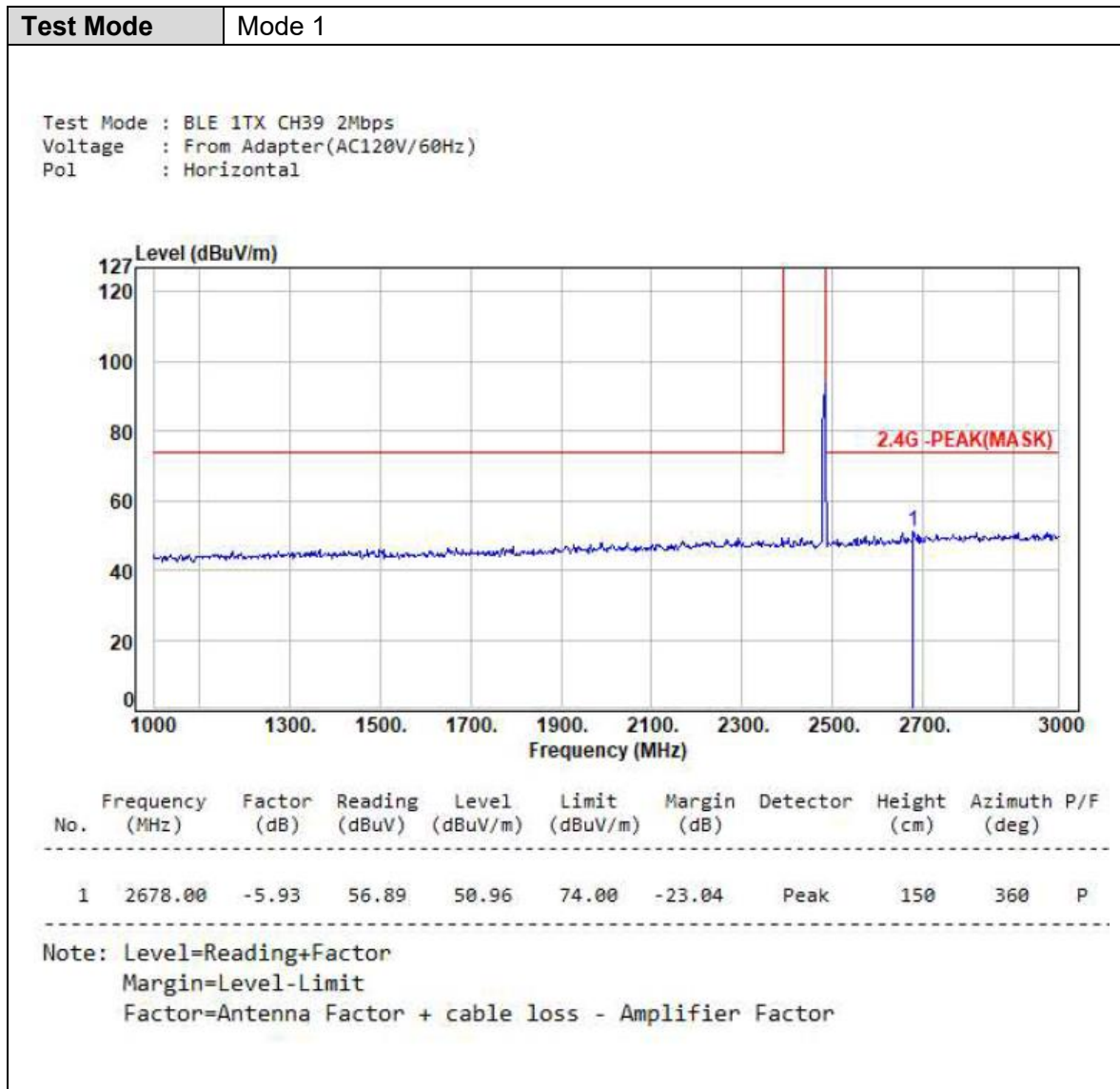














6.8 Test Result and Data (3GHz ~ 18GHz)

