



CFR 47 FCC PART 15 SUBPART C

TEST REPORT

For

wireless remote control outlet

MODEL NUMBER: SV5430180

REPORT NUMBER: E04A25070171F00301

ISSUE DATE: August 8, 2025

FCC ID: 2BQ2Z-SV5430180A

Prepared for

**Shop-Vac USA, LLC
2323 Reach Road, Williamsport, Pennsylvania, United States, 17701**

Prepared by

Guangdong Global Testing Technology Co., Ltd.

**Room 101-105, 203-210, Building 1, No.2, Keji 8 Road, Songshan Lake Park,
Dongguan city, Guangdong, People's Republic of China, 523808**

This report is based on a single evaluation of the submitted sample(s) of the above mentioned product, it does not imply an assessment of the production of the products.

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	August 8, 2025	Initial Issue	

Summary of Test Results

Summary of Test Results			
Clause	Test Items	Rules	Test Results
1	20 dB Bandwidth 99 % Occupied Bandwidth	CFR 47 FCC §15.215 (c)	Pass
2	Radiated Emission	CFR 47 FCC §15.249 (a)(d)(e) CFR 47 FCC §15.205 and §15.209	Pass
3	Conducted Emission Test for AC Power Port	CFR 47 FCC §15.207	Pass
4	Antenna Requirement	CFR 47 FCC §15.203	Pass
Note 1: This test report is only published to and used by the applicant, and it is not for evidence purpose in China. Note 2: The measurement result for the sample received is <Pass> according to < CFR 47 FCC PART 15 SUBPART C > when <Accuracy Method> decision rule is applied.			

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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: Shop-Vac USA, LLC
Address: 2323 Reach Road, Williamsport, Pennsylvania, United States, 17701

Manufacturer Information

Company Name1: Zhejiang Shop-Vac Electrical Appliances Co., Ltd
Address1: No.7 Building, No.1020-1 Wenhabei Road, Chang'an Town (High-Tech Zone), Haining, Jiaxing, Zhejiang, 314408, China
Company Name2: SHOP-VAC VIETNAM COMPANY LIMITED
Address2: LOT 8, NAM CAU KIEN INDUSTRIAL PARK, HOANG DONG COMMUNE, THUY NGUYEN DISTRICT, HAI PHONG CITY, VIETNAM.

EUT Information

Product Description: wireless remote control outlet
Model: SV5430180
Brand: /
Sample Received Date: July 8, 2025
Sample Status: Normal
Sample ID: A25070171 001
Date of Tested: July 8, 2025 to July 16, 2025

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 FCC PART 15 SUBPART C	Pass

Prepared By:



Jack Wang
Project Engineer

Approved By:



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Checked By:



Alan He
Laboratory Leader

2. TEST METHODOLOGY

All tests were performed in accordance with the standard CFR 47 FCC PART 15 SUBPART C

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	A2LA (Certificate No.: 6947.01) Guangdong Global Testing Technology Co., Ltd. has been assessed and proved to be in compliance with A2LA. FCC (FCC Designation No.: CN1343) Guangdong Global Testing Technology Co., Ltd. has been recognized to perform compliance testing on equipment subject to Supplier's Declaration of Conformity (SDoC) and Certification rules ISED (Company No.: 30714) Guangdong Global Testing Technology Co., Ltd. has been registered and fully described in a report filed with ISED. The Company Number is 30714 and the test lab Conformity Assessment Body Identifier (CABID) is CN0148.
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Note: All tests measurement facilities use to collect the measurement data are located at Room 101-105, 203-210, Building 1, No.2, Keji 8 Road, Songshan Lake Park, Dongguan city, Guangdong, People's Republic of China, 523808

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Items	k	Uncertainty
20dB Emission Bandwidth	1.96	±9.2 PPM
Conducted Output Power	1.96	±1.5 dB
Power Spectral Density Level	1.96	±1.9 dB
Conducted Spurious Emission	1.96	9 kHz-30 MHz: ± 0.95 dB 30 MHz-1 GHz: ± 1.5 dB 1GHz-12.75GHz: ± 1.8 dB 12.75 GHz-26.5 GHz: ± 2.1dB
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.		

Test Item	Measurement Frequency Range	K	U(dB)
Conducted emissions from the AC mains power ports (AMN)	150 kHz ~ 30 MHz	2	3.37
Radiated emissions	9 kHz ~ 30 MHz	2	4.16
Radiated emissions	30 MHz ~ 1 GHz	2	3.79
Radiated emissions	1 GHz ~ 18 GHz	2	5.62
Radiated emissions	18 GHz ~ 40 GHz	2	5.54
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.			

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

EUT Name		wireless remote control outlet
Model		SV5430180
Hardware Version		V1.0
Software Version		V1.0
Ratings		108V~132V AC 50/60Hz
Power Supply	AC	120V/60Hz

Frequency Band:	2400 MHz to 2483.5 MHz
Frequency Range:	2402 MHz to 2478 MHz
Type of Modulation:	GFSK
Number of Channels:	6
Max field strength:	78.5 dB μ V/m
Antenna Type:	Internal antenna
Antenna Gain:	-0.56 dBi
EUT Test software:	/
Note:	The Antenna Gain was provided by customer, and this information may affect the validity of the results, customer should be responsible for this.

5.2. CHANNEL LIST

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2402	3	2422	5	2476	/	/
2	2405	4	2440	6	2478	/	/

5.3. MAXIMUM FIELD STRENGTH

Test Mode	Frequency (MHz)	Channel Number	Max field strength (dB μ V/m)
2.4G	2402 ~ 2478	1-6[6]	78.5

5.4. TEST CHANNEL CONFIGURATION

Test Mode	Test Channel	Frequency
2.4G	CH 1(Low Channel), CH 4(MID Channel), CH 6(High Channel)	2402 MHz, 2440 MHz, 2478 MHz

5.5. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band				
Test Software Version		/		
Modulation Type	Transmit Antenna Number	Test Software setting value		
		CH 1	CH 4	CH 6
GFSK(1Mbps)	1	default	default	default

5.6. DESCRIPTION OF AVAILABLE ANTENNAS

Antenna	Frequency (MHz)	Antenna Type	MAX Antenna Gain (dBi)
1	2402-2478	Internal antenna	-0.56

Test Mode	Transmit and Receive Mode	Description
2.4G	☒ 1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.

5.7. SUPPORT UNITS FOR SYSTEM TEST

No.	Equipment	Manufacturer	Model No.	Serial No.
/	/	/	/	/

5.8. SETUP DIAGRAM

AC conducted emission:

EUT

Radiated Emission:

EUT

RF conducted:

EUT

6. MEASURING EQUIPMENT AND SOFTWARE USED

Test Equipment of Conducted RF					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
Spectrum Analyzer	Rohde & Schwarz	FSV40	102257	2024/09/14	2025/09/13
Spectrum Analyzer	KEYSIGHT	N9020A	MY51285127	2024/09/14	2025/09/13
EXG Analog Signal Generator	KEYSIGHT	N5173B	MY61253075	2024/09/14	2025/09/13
Vector Signal Generator	Rohde & Schwarz	SMM100A	101899	2024/09/14	2025/09/13
RF Control box	MWRF-test	MW100-RFCB	MW220926GTG	2024/09/14	2025/09/13
Wideband Radio Communication Tester	Rohde & Schwarz	CMW270	102792	2024/09/14	2025/09/13
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	103235	2024/09/14	2025/09/13
temperature humidity chamber	Espec	SH-241	SH-241-2014	2024/09/14	2025/09/13
RF Test Software	MWRF-test	MTS8310E (Ver. V2/0)	N/A	N/A	N/A

Test Equipment of Radiated emissions below 1GHz					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
3m Semi-anechoic Chamber	ETS	9m*6m*6m	Q2146	2022/08/30	2025/08/29
EMI Test Receiver	Rohde & Schwarz	ESCI3	101409	2024/09/14	2025/09/13
Spectrum Analyzer	KEYSIGHT	N9020A	MY51283932	2024/09/14	2025/09/13
Pre-Amplifier	HzEMC	HPA-9K0130	HYPA21001	2024/09/14	2025/09/13
Biconilog Antenna	Schwarzbeck	VULB 9168	01315	2022/10/10	2025/10/09
Biconilog Antenna	ETS	3142E	00243651	2025/02/22	2028/02/21
Loop Antenna	ETS	6502	00243668	2025/02/22	2028/02/21
Test Software	Farad	EZ-EMC (Ver.FA-03A2 RE)	N/A	N/A	N/A

Test Equipment of Radiated emissions above 1GHz					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
3m Semi-anechoic Chamber	ETS	9m*6m*6m	Q2149	2022/08/30	2025/08/29
Spectrum Analyzer	Rohde & Schwarz	FSV40	101413	2024/09/14	2025/09/13
Spectrum Analyzer	KEYSIGHT	N9020A	MY51283932	2024/09/14	2025/09/13
Pre-Amplifier	HzEMC	HPA-1G1850	HYPA21003	2024/09/14	2025/09/13
Horn antenna	ETS	3117	00246069	2025/02/22	2028/02/21

Pre-Amplifier	HzEMC	HPA-184057	HYP A21004	2024/09/14	2025/09/13
Horn antenna	ETS	3116C	00246265	2025/02/22	2028/02/21
Test Software	Farad	EZ-EMC (Ver.FA-03A2 RE+)	N/A	N/A	N/A

Test Equipment of Conducted emissions					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
Shielded Room	CHENG YU	8m*5m*4m	N/A	2022/10/29	2025/10/28
EMI Test Receiver	Rohde & Schwarz	ESR3	102647	2024/09/14	2025/09/13
LISN/AMN	Rohde & Schwarz	ENV216	102843	2024/09/14	2025/09/13
NNLK 8129 RC	Schwarzbeck	NNLK 8129 RC	5046	2024/09/14	2025/09/13
Test Software	Farad	EZ-EMC (Ver. EMC-con-3A1 1+)	N/A	N/A	N/A

7. ANTENNA PORT TEST RESULTS

7.1. On Time and Duty Cycle

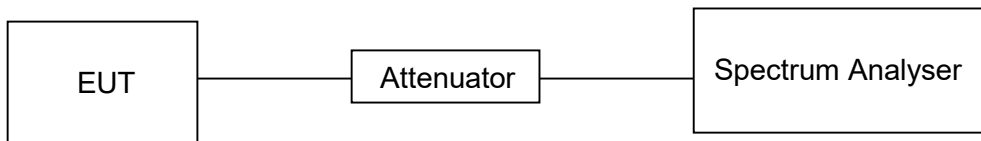
LIMITS

None; for reporting purposes only

TEST PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method

TEST SETUP



TEST ENVIRONMENT

Temperature	22.6°C	Relative Humidity	53%
Atmosphere Pressure	101kPa		

TEST RESULTS

2402MHz

On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (db)	1/T Minimum VBW (kHz)	Final setting For VBW (kHz)
4.8	100	0.048	4.8	13.19	0.21	1

Note:

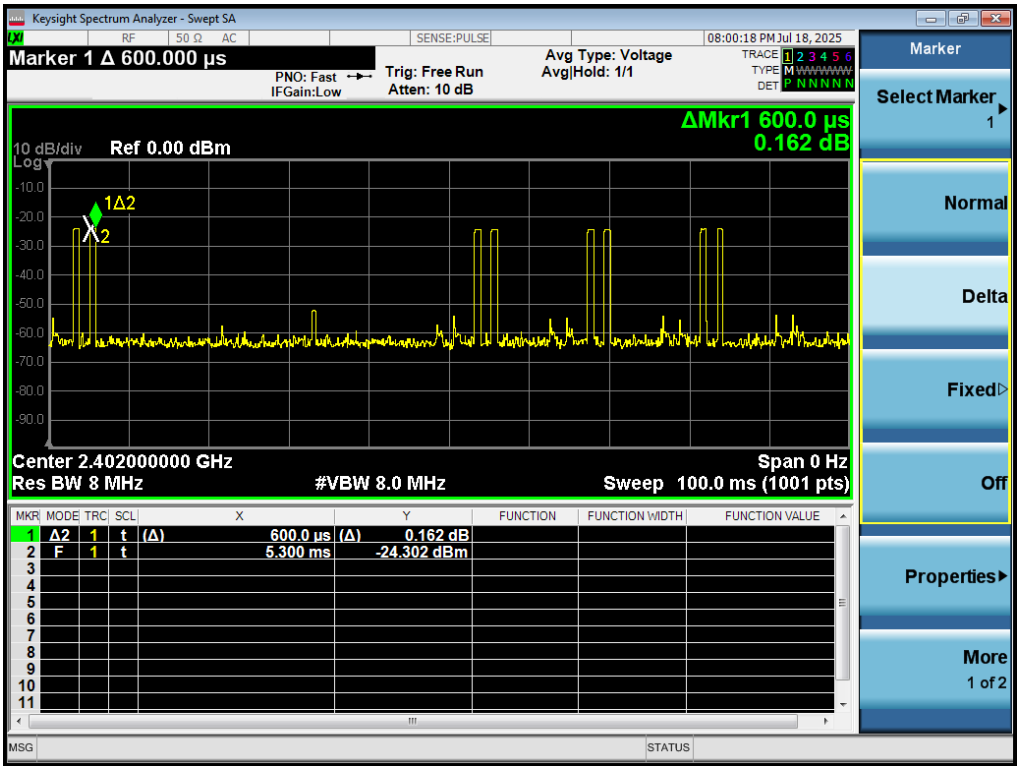
Duty Cycle Correction Factor=10log(1/x).

Where: x is Duty Cycle (Linear)

Where: T is On Time (transmitting duration)

If that calculated VBW is not available on the analyzer then the next higher value should be used.

ON TIME AND DUTY CYCLE



2402MHz

7.2. 20 DB BANDWIDTH AND 99% OCCUPIED BANDWIDTH

LIMITS

CFR 47 FCC Part15 (15.249) Subpart C RSS-Gen Issue 5			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC §15.215 (c)	20 dB Bandwidth	for reporting purposes only	2402-2478
ISED RSS-Gen Clause 6.7	99 % Occupied Bandwidth	For reporting purposes only.	2402-2478

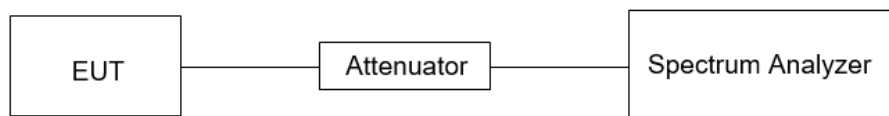
TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	1 % to 5 % of the occupied bandwidth
VBW	approximately 3×RBW
Trace	Max hold
Sweep	Auto couple

Allow the trace to stabilize and measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB / 99 % relative to the maximum level measured in the fundamental emission.

TEST SETUP

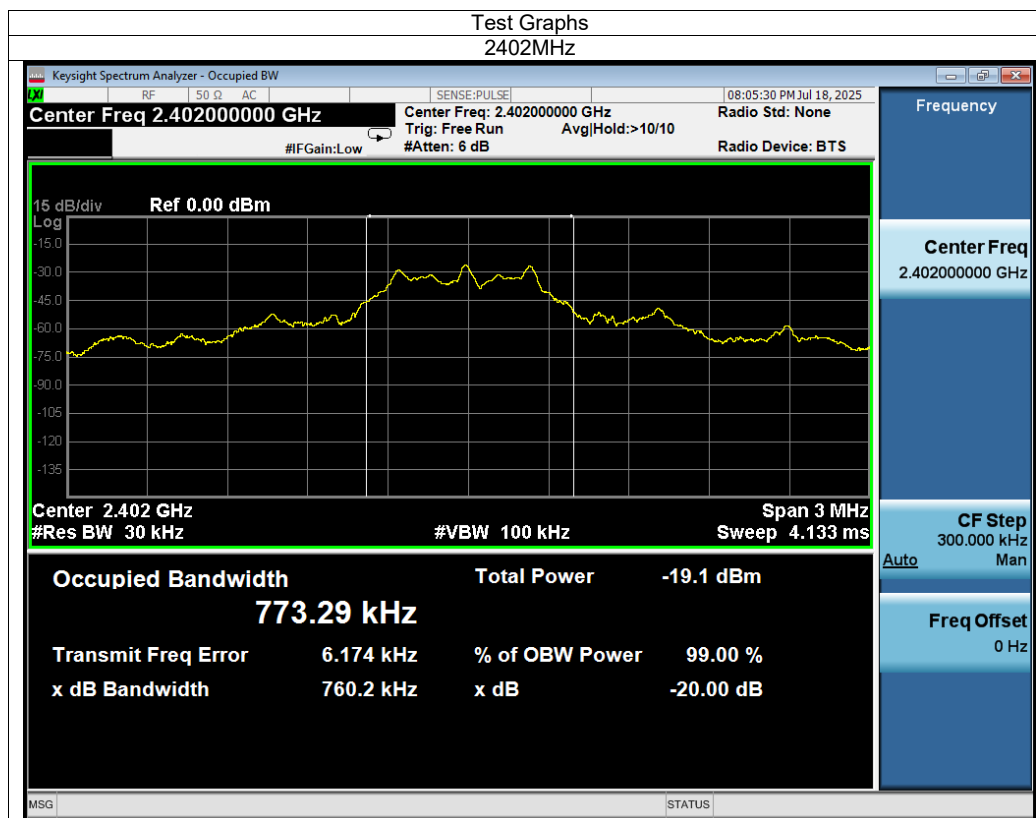


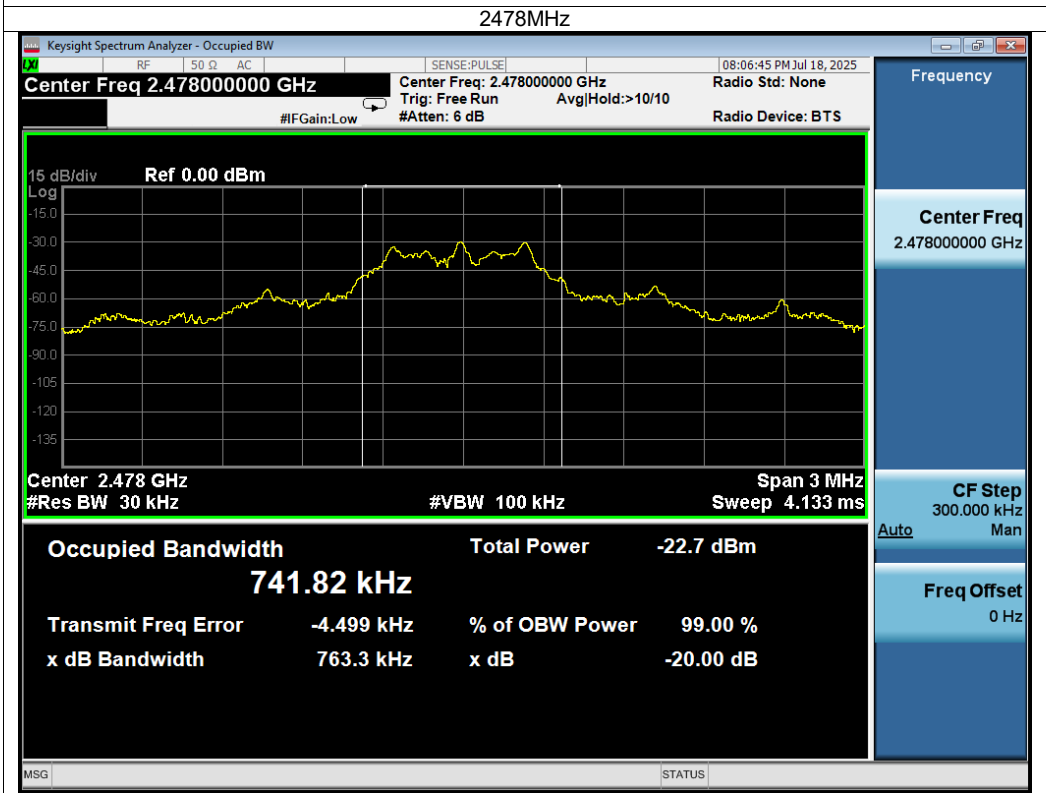
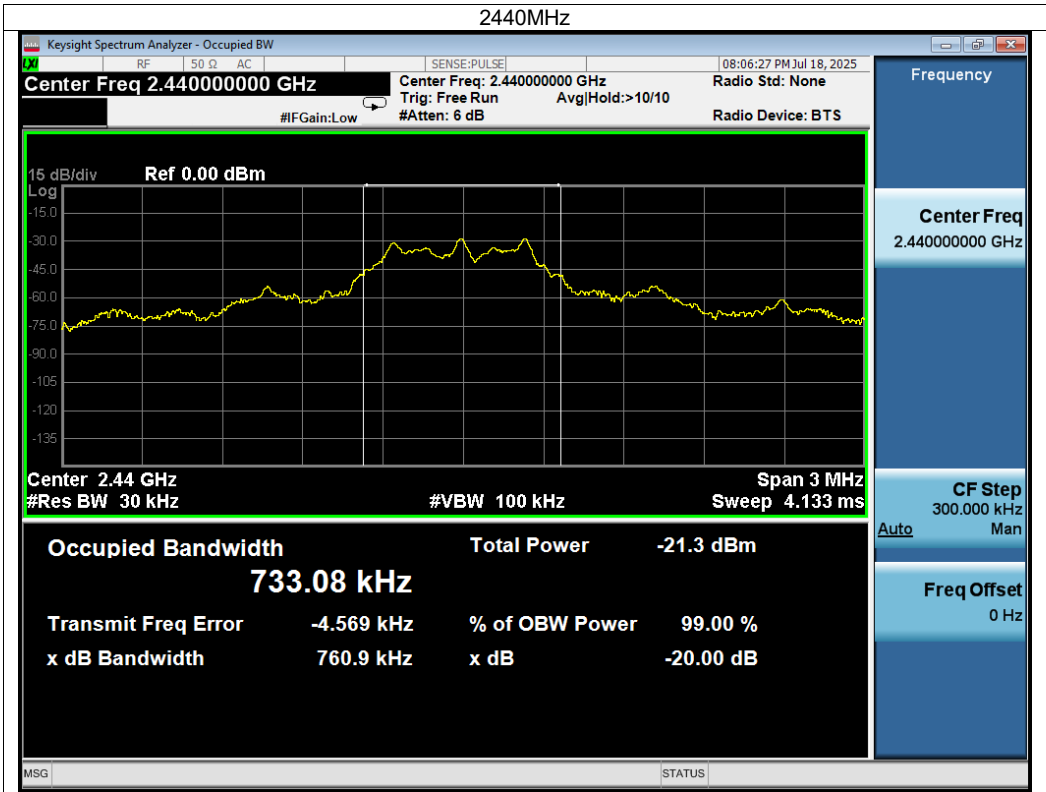
TEST ENVIRONMENT

Temperature	22.6°C	Relative Humidity	53%
Atmosphere Pressure	101kPa		

TEST RESULTS

Frequency(MHz)	20dB bandwidth (kHz)	99 % bandwidth (kHz)	Limit (kHz)	Result
2402	760.2	773.29	--	Pass
2440	760.9	733.08	--	Pass
2478	763.3	741.82	--	Pass





8. RADIATED TEST RESULTS

LIMITS

Please refer to CFR 47 FCC §15.205 and §15.209.

Please refer to CFR 47 FCC §15.249 (a)(d)(e)

Please refer to ISSED RSS-210 Issue 10 Annex B B.10

Please refer to ISSED RSS-GEN Clause 8.9 and Clause 8.10.

The field strength of emissions from intentional radiators operated within these frequency bands			
Frequency (MHz)	Field strength of Fundamental	Field strength of Harmonics	Distance (m)
902 - 928	50 mV/m (94 dBuV/m)	500 uV/m (54 dBuV/m)	3
2400 – 2483.5	50 mV/m (94 dBuV/m)	500 uV/m (54 dBuV/m)	3
5725 – 5875	50 mV/m (94 dBuV/m)	500 uV/m (54 dBuV/m)	3

Radiation Disturbance Test Limit for FCC (Class B) (9 kHz ~ 1 GHz)

Emissions radiated outside of the specified frequency bands above 30 MHz			
Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m	
		Quasi-Peak	
30 - 88	100	40	
88 - 216	150	43.5	
216 - 960	200	46	
Above 960	500	54	
Above 1000	500	Peak	Average
		74	54

FCC Emissions radiated outside of the specified frequency bands below 30 MHz		
Frequency (MHz)	Field strength (microvolts/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

ISED General field strength limits at frequencies below 30 MHz

Table 6 – General field strength limits at frequencies below 30 MHz		
Frequency	Magnetic field strength (H-Field) ($\mu\text{A/m}$)	Measurement distance (m)
9 - 490 kHz ^{Note 1}	6.37/F (F in kHz)	300
490 - 1705 kHz	63.7/F (F in kHz)	30
1.705 - 30 MHz	0.08	30

Note 1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

ISED Restricted bands please refer to ISED RSS-GEN Clause 8.10

MHz	MHz	GHz
0.090 - 0.110	149.9 - 150.05	9.0 - 9.2
0.495 - 0.505	156.52475 - 156.52525	9.3 - 9.5
2.1735 - 2.1905	156.7 - 156.9	10.6 - 12.7
3.020 - 3.026	162.0125 - 167.17	13.25 - 13.4
4.125 - 4.128	167.72 - 173.2	14.47 - 14.5
4.17725 - 4.17775	240 - 285	15.35 - 16.2
4.20725 - 4.20775	322 - 335.4	17.7 - 21.4
5.677 - 5.683	399.9 - 410	22.01 - 23.12
6.215 - 6.218	608 - 614	23.6 - 24.0
6.26775 - 6.26825	960 - 1427	31.2 - 31.8
6.31175 - 6.31225	1435 - 1626.5	36.43 - 36.5
8.291 - 8.294	1645.5 - 1646.5	Above 38.6
8.362 - 8.366	1660 - 1710	
8.37625 - 8.38675	1718.8 - 1722.2	
8.41425 - 8.41475	2200 - 2300	
12.29 - 12.293	2310 - 2390	
12.51975 - 12.52025	2483.5 - 2500	
12.57675 - 12.57725	2655 - 2900	
13.36 - 13.41	3260 - 3267	
16.42 - 16.423	3332 - 3339	
16.69475 - 16.69525	3345.8 - 3358	
16.80425 - 16.80475	3500 - 4400	
25.5 - 25.67	4500 - 5150	
37.5 - 38.25	5350 - 5460	
73 - 74.6	7250 - 7750	
74.8 - 75.2	8025 - 8500	
108 - 138		

Note 1: Certain frequency bands listed in table 7 and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.

FCC Restricted bands of operation refer to FCC §15.205 (a):

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(²)
13.36-13.41			

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

²Above 38.6c

TEST PROCEDURE

Below 30 MHz

TRF No.: 04-E001-0B

Global Testing , Great Quality.

The setting of the spectrum analyser

RBW	200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz)
VBW	200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz)
Sweep	Auto

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.4.
2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both Horizontal, Face-on and Face-off polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 80 cm above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a 1 m height antenna tower.
5. The radiated emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz Radiated emission limits in these three bands are based on measurements employing an average detector.
6. For measurement below 1 GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak and average detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak and average detector and reported.
7. Although these tests were performed other than open field site, adequate comparison measurements were confirmed against 30m open field site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field site based on KDB 414788.
8. The limits in CFR 47, Part 15, Subpart C, paragraph 15.209 (a), are identical to those in RSS-GEN Section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377Ω. For example, the measurement frequency X KHz resulted in a level of Y dBuV/m, which is equivalent to $Y-51.5 = Z$ dBuA/m, which has the same margin, W dB, to the corresponding RSS-GEN Table 6 limit as it has to be 15.209(a) limit.

Below 1 GHz and above 30 MHz

The setting of the spectrum analyser

RBW	120 kHz
VBW	300 kHz
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.5.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high

pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 80 cm above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement below 1 GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

Above 1G

The setting of the spectrum analyser

RBW	1 MHz
VBW	PEAK: 3 MHz AVG: see note 6
Sweep	Auto
Detector	Peak
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.6.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

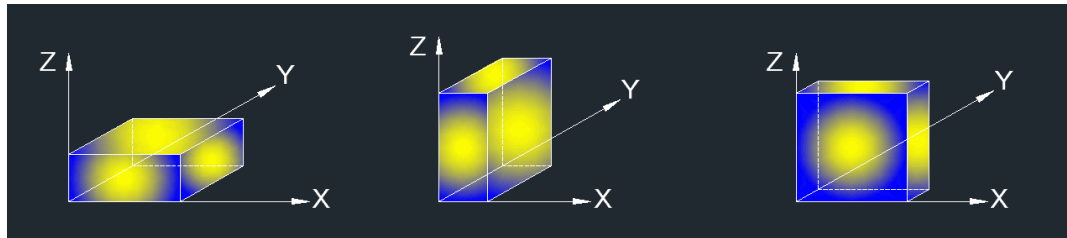
3. The EUT was placed on a turntable with 1.5 m above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement above 1 GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.

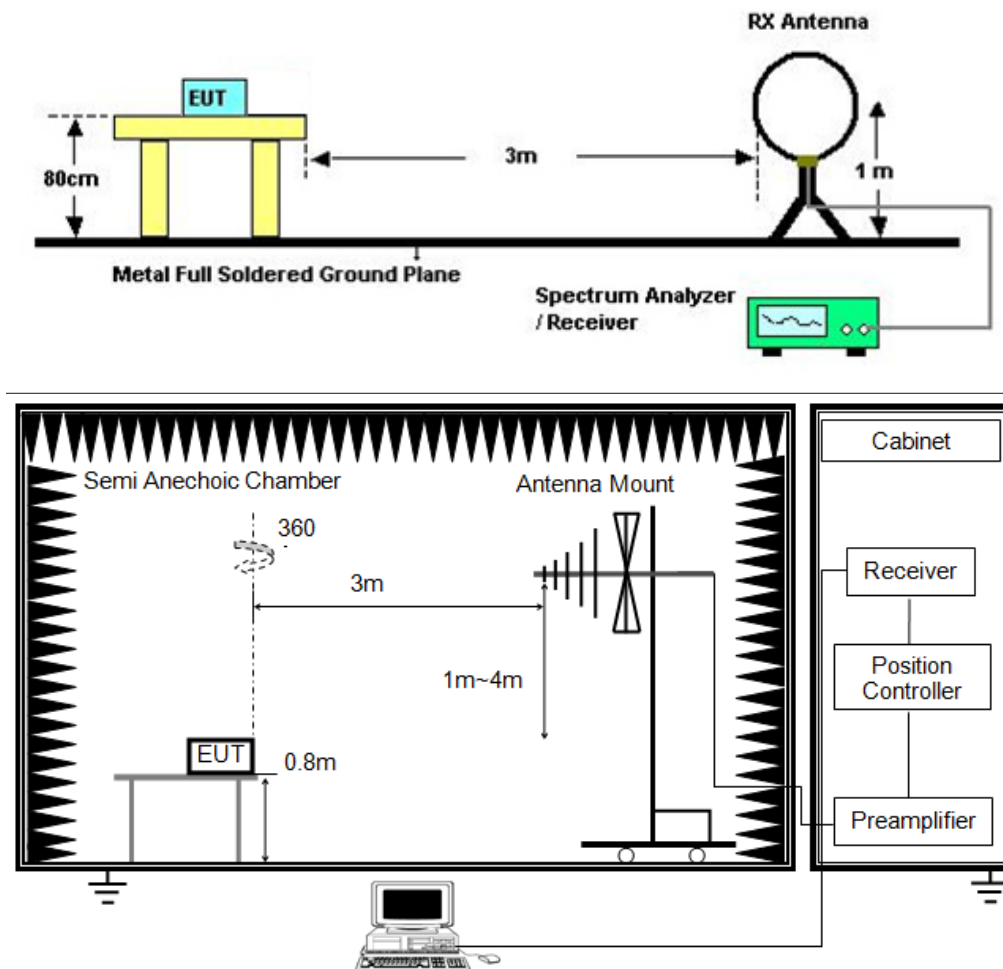
6. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements. For the Duty Cycle please refer to clause 7.1.ON TIME AND DUTY CYCLE.

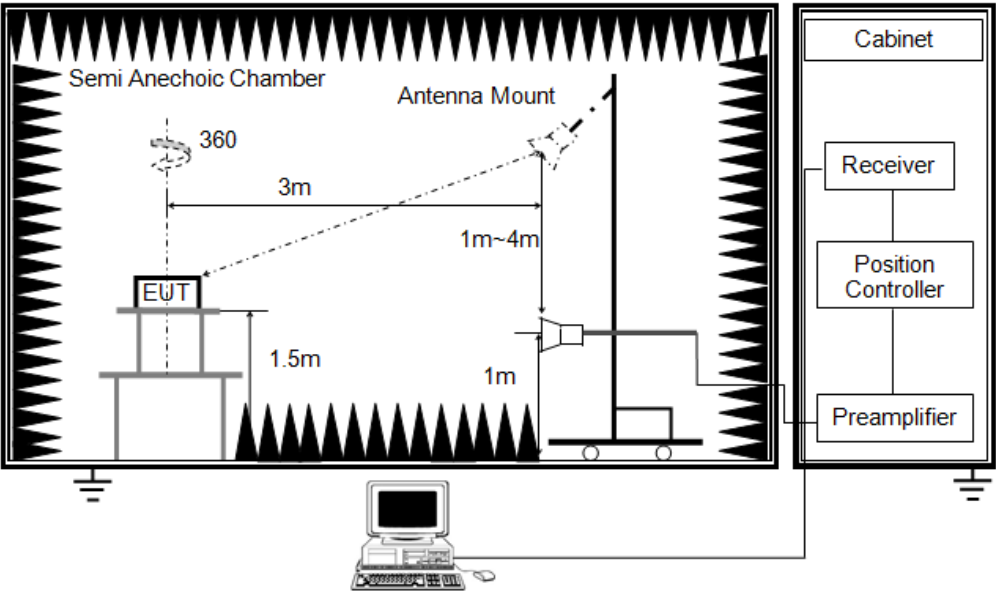
X axis, Y axis, Z axis positions:



Note 1: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

TEST SETUP





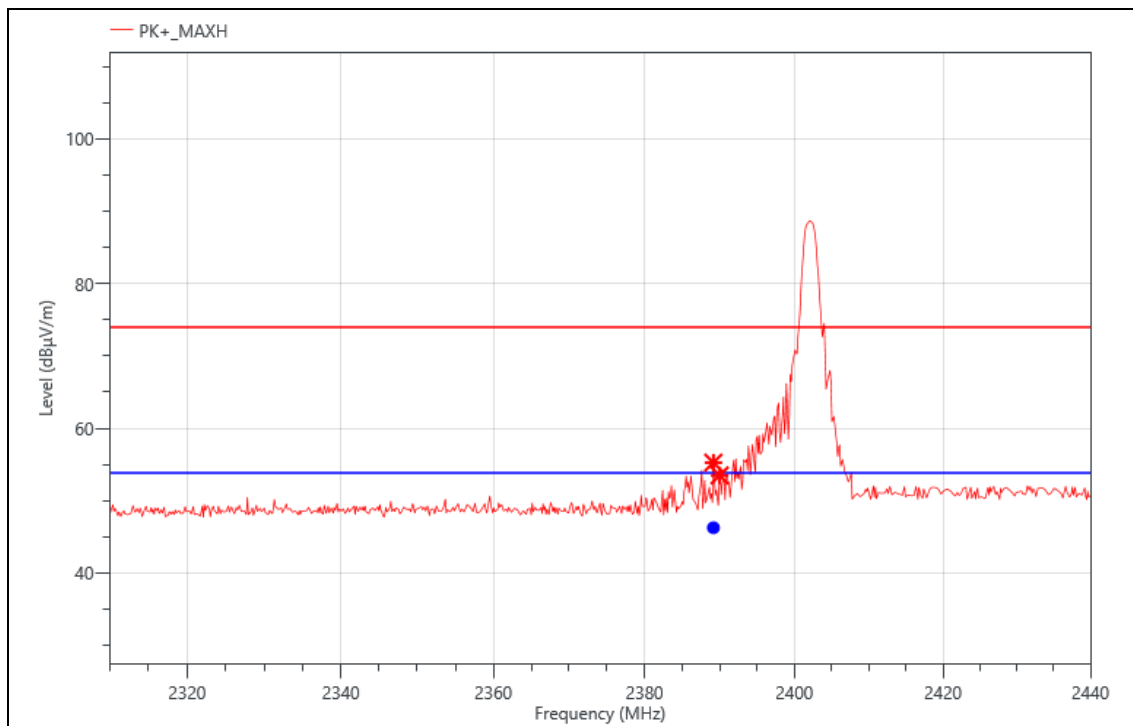
TEST ENVIRONMENT

Temperature	22.2℃	Relative Humidity	53%
Atmosphere Pressure	101kPa		

TEST RESULTS

8.1. Restricted Bandedge and Field Strength of Intentional Emissions

Mode:	2402
Power:	AC 120V/60Hz
TE:	Berny
Date	2025/7/17
T/A/P	22.2°C/53%/101Kpa



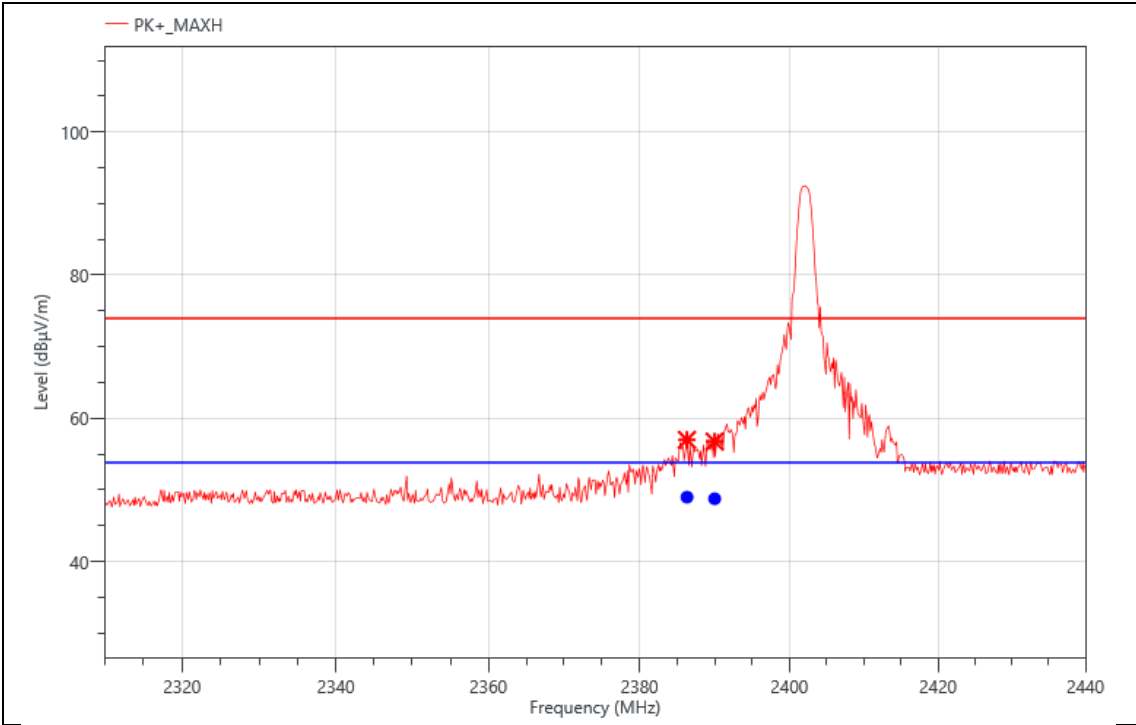
Critical_Freqs

No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Pol.
1	2389.170	32.56	22.7	55.26	74.00	18.74	PK+	V
2	2390.000	30.77	22.72	53.49	74.00	20.51	PK+	V

Final_Result

No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Pol.	Verdict
1	2389.170	23.56	22.7	46.26	53.90	7.64	AVG	V	PASS

Mode:	2402
Power:	AC 120V/60Hz
TE:	Berny
Date	2025/7/18
T/A/P	22.2°C/53%/101Kpa



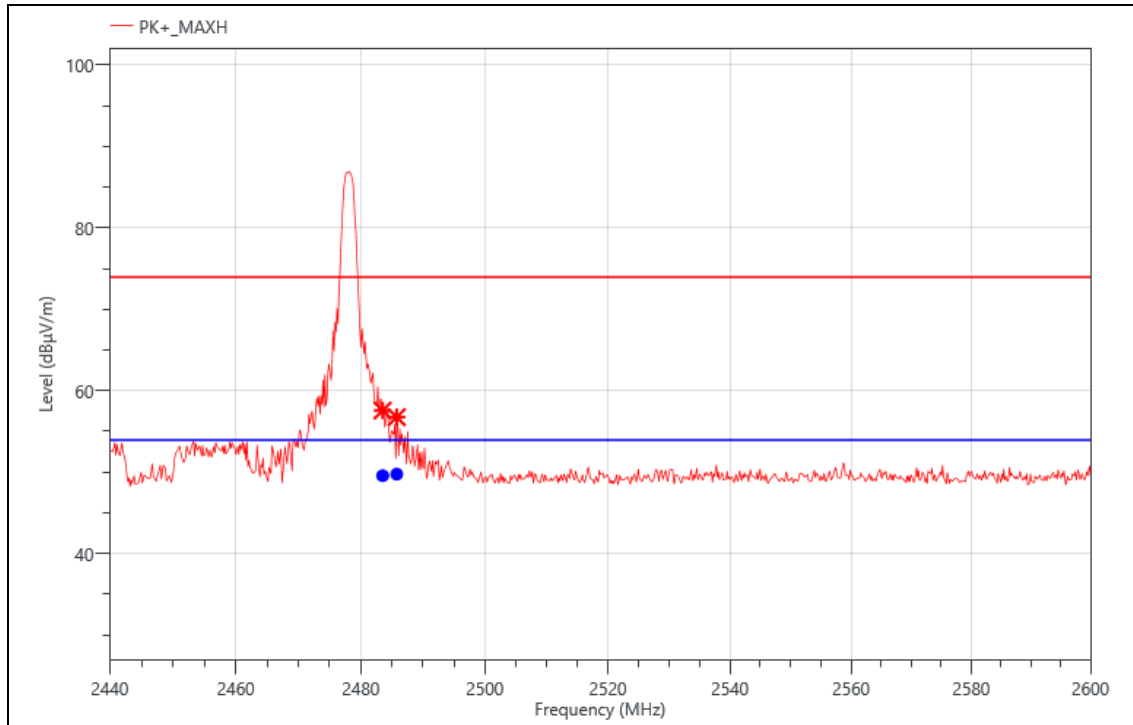
Critical_Freqs

No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Pol.
1	2386.310	34.34	22.65	56.99	74.00	17.01	PK+	H
2	2390.000	34.05	22.72	56.77	74.00	17.23	PK+	H

Final_Result

No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Pol.	Verdict
1	2386.310	26.34	22.65	48.99	53.90	4.91	AVG	H	PASS
2	2390.000	26.05	22.72	48.77	53.90	5.13	AVG	H	PASS

Mode:	2478
Power:	AC 120V/60Hz
TE:	Berny
Date	2025/7/18
T/A/P	22.2°C/53%/101Kpa



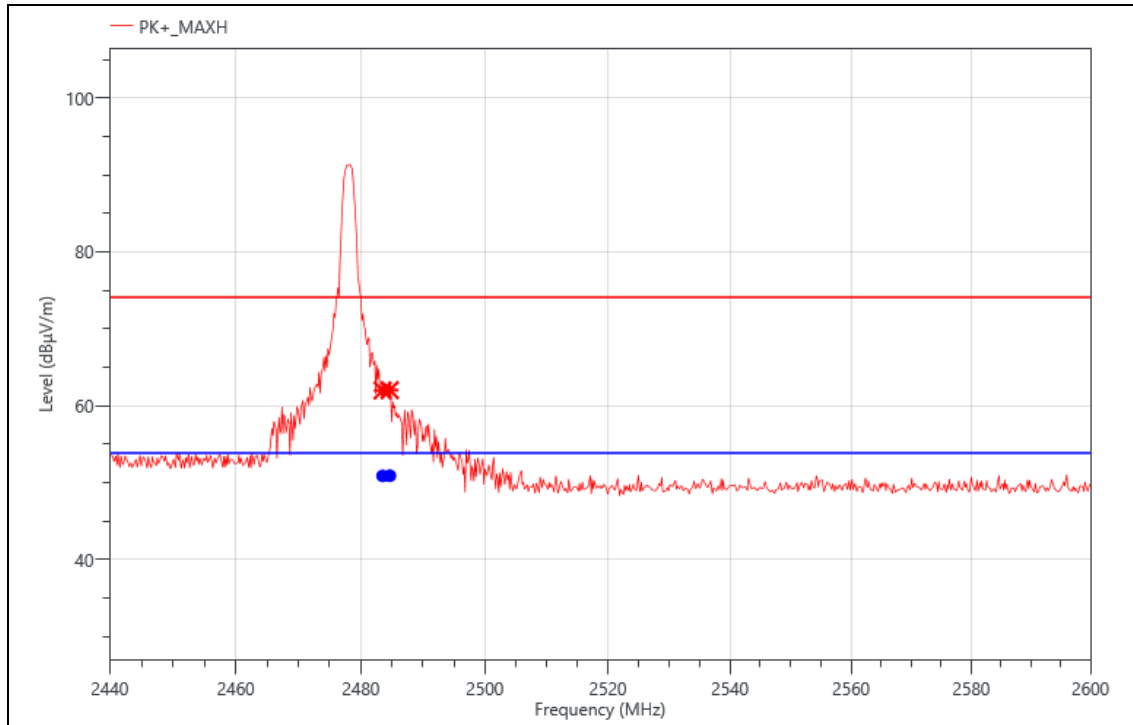
Critical_Freqs

No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Pol.
1	2483.500	34.41	23.15	57.56	74.00	16.44	PK+	V
2	2485.760	33.61	23.14	56.75	74.00	17.25	PK+	V

Final_Result

No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Pol.	Verdict
1	2483.500	26.41	23.15	49.56	53.90	4.34	AVG	V	PASS
2	2485.760	26.61	23.14	49.75	53.90	4.15	AVG	V	PASS

Mode:	2478
Power:	AC 120V/60Hz
TE:	Berny
Date	2025/7/18
T/A/P	22.2°C/53%/101Kpa



Critical_Freqs

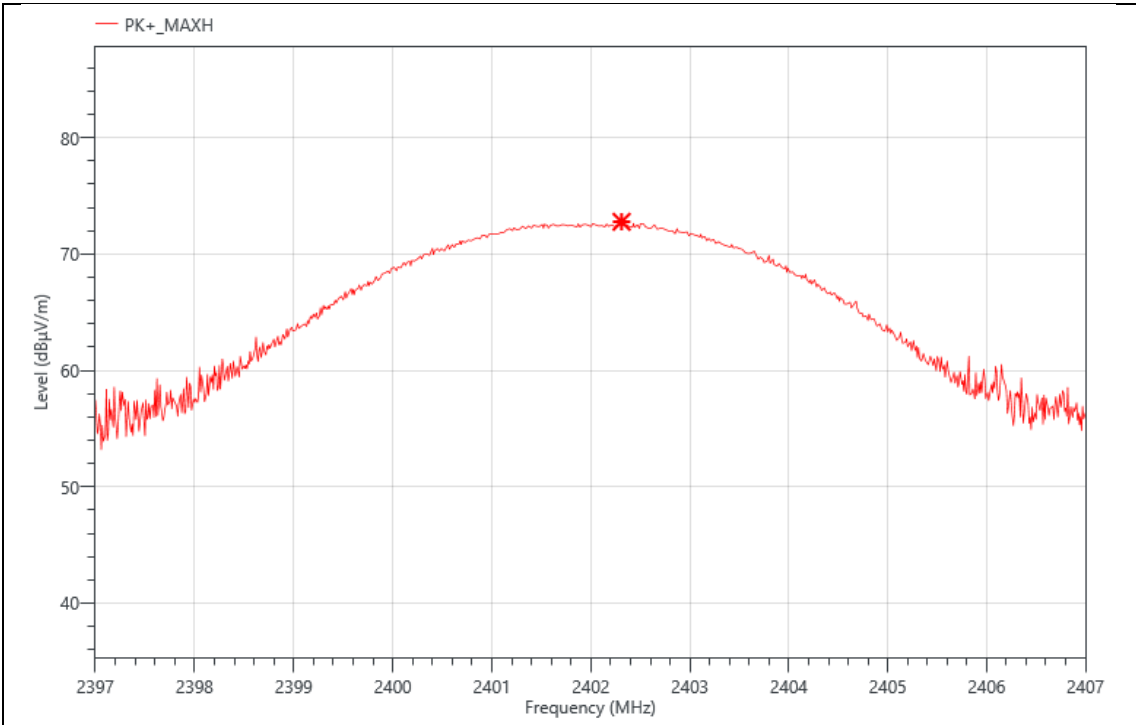
No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Pol.
1	2483.500	38.82	23.15	61.97	74.00	12.03	PK+	H
2	2484.640	38.87	23.15	62.02	74.00	11.98	PK+	H

Final_Result

No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Pol.	Verdict
1	2483.500	27.72	23.15	50.87	53.90	3.03	AVG	H	PASS
2	2484.640	27.74	23.15	50.89	53.90	3.01	AVG	H	PASS

- Note: 1. Measurement = Reading Level + Correct Factor.
 2. Peak: Peak detector.
 3. Only the worst emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.
 4. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

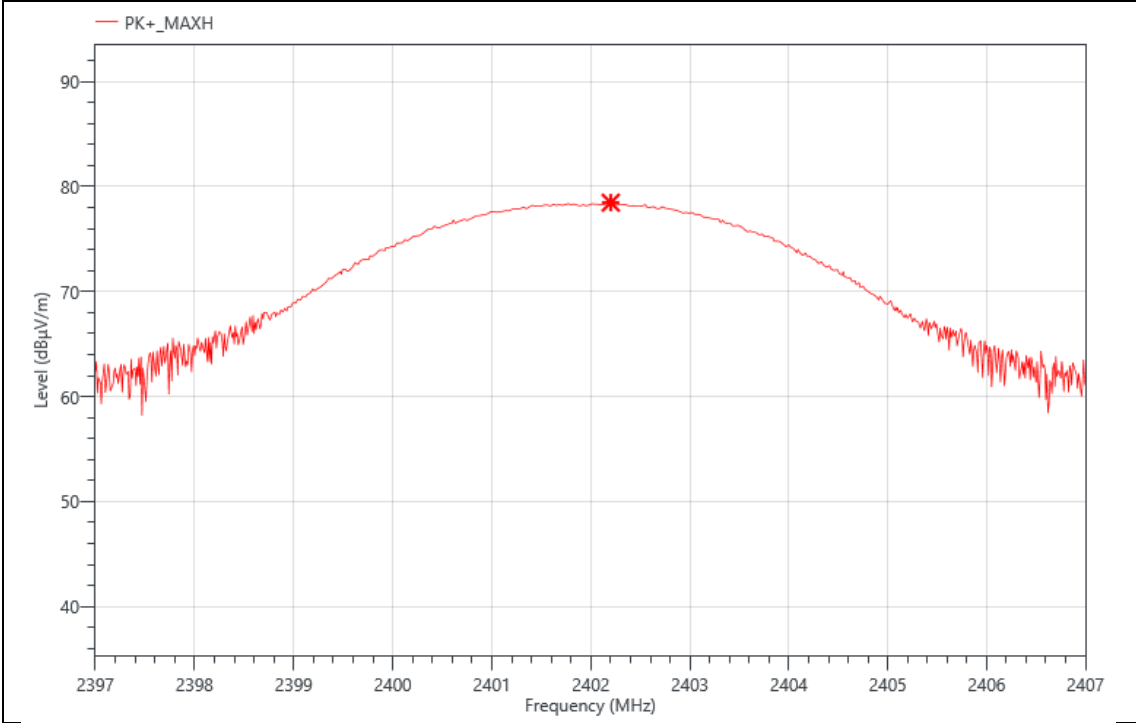
Mode:	2402
Power:	AC 120V/60Hz
TE:	Berny
Date	2025/7/15
T/A/P	22.2°C/53%/101Kpa



Critical_Freqs

No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Pol.
1	2402.310	49.82	22.95	72.77	114	41.23	PK+	V

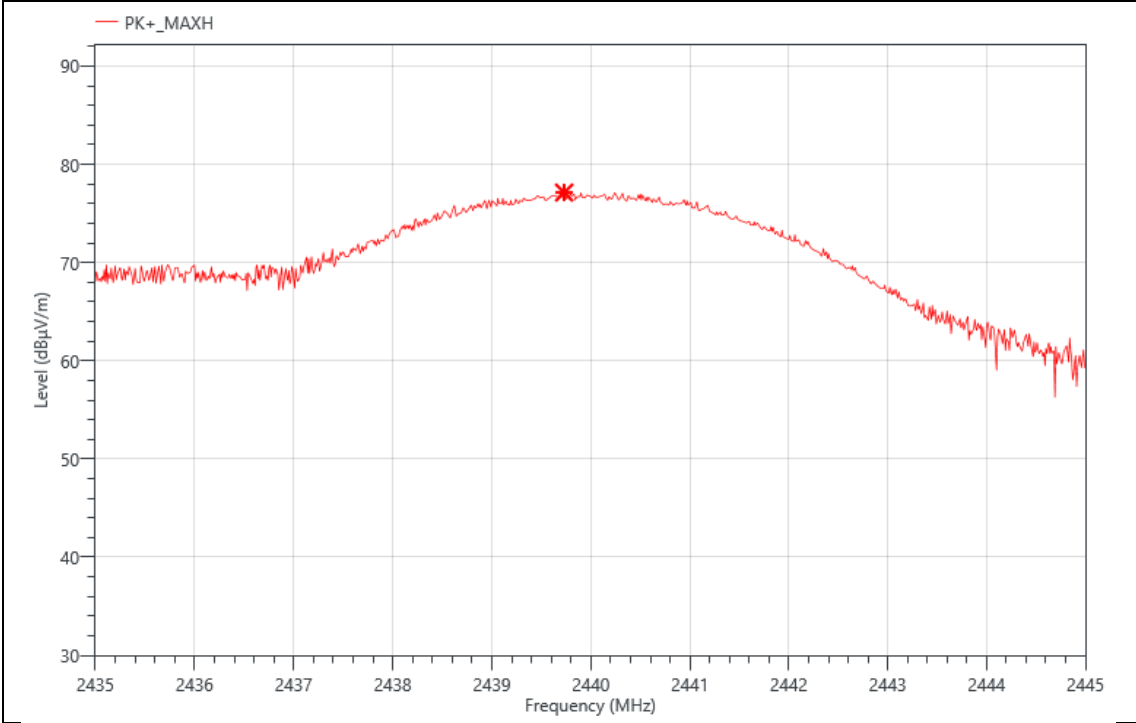
Mode:	2402
Power:	AC 120V/60Hz
TE:	Berny
Date	2025/7/15
T/A/P	22.2°C/53%/101Kpa



Critical_Freqs

No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Pol.
1	2402.200	55.52	22.95	78.47	114	35.53	PK+	H

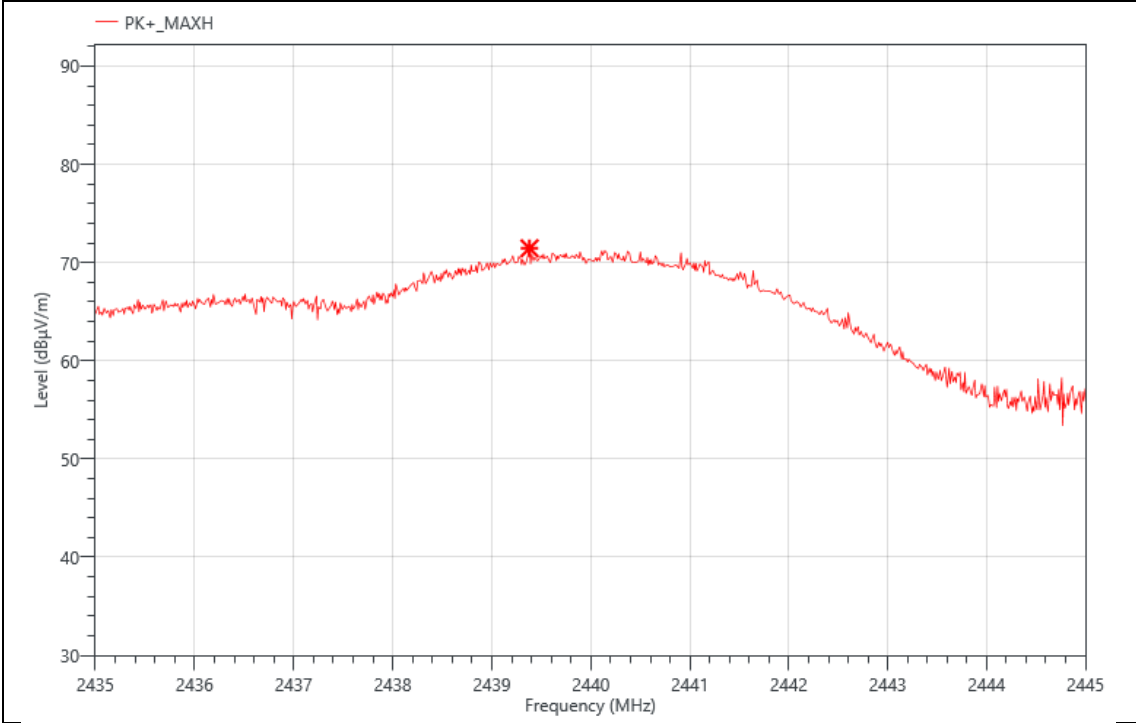
Mode:	2440
Power:	AC 120V/60Hz
TE:	Berny
Date	2025/7/15
T/A/P	22.2°C/53%/101Kpa



Critical_Freqs

No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Pol.
1	2439.730	54.05	23.09	77.14	114	36.86	PK+	H

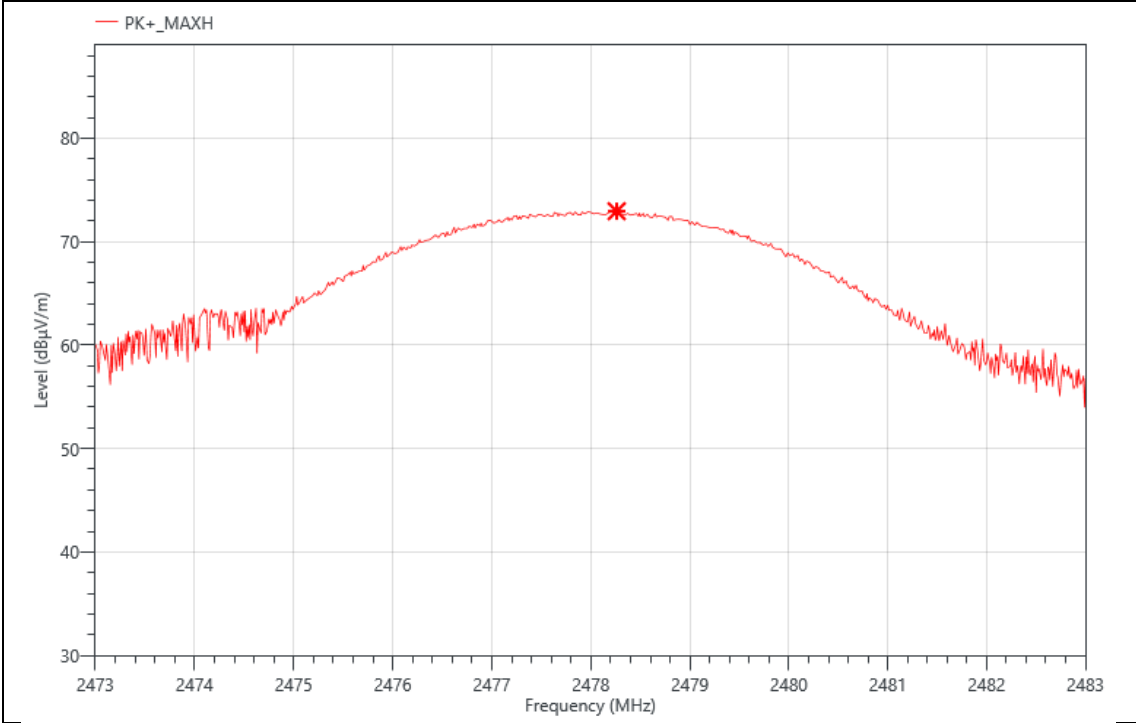
Mode:	2440
Power:	AC 120V/60Hz
TE:	Berny
Date	2025/7/15
T/A/P	22.2°C/53%/101Kpa



Critical_Freqs

No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Pol.
1	2439.380	48.37	23.09	71.46	114	42.54	PK+	V

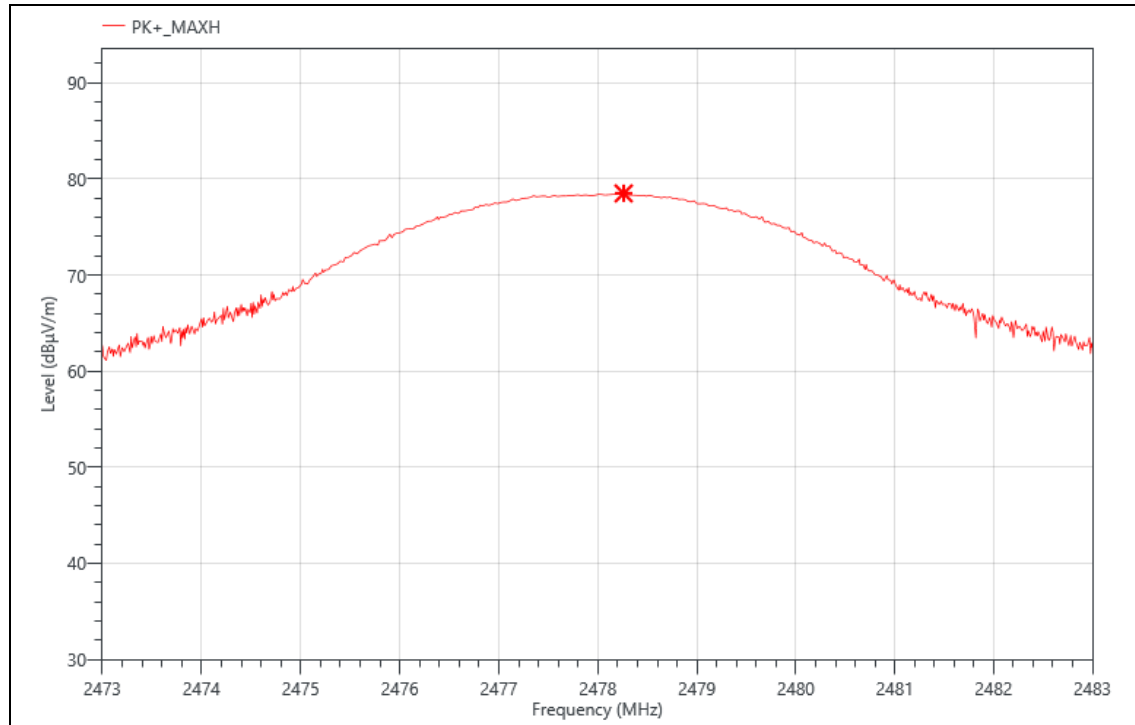
Mode:	2478
Power:	AC 120V/60Hz
TE:	Berny
Date	2025/7/15
T/A/P	22.2°C/53%/101Kpa



Critical_Freqs

No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Pol.
1	2478.260	49.81	23.14	72.95	114	41.05	PK+	V

Mode:	2478
Power:	AC 120V/60Hz
TE:	Berny
Date	2025/7/15
T/A/P	22.2°C/53%/101Kpa



Critical_Freqs

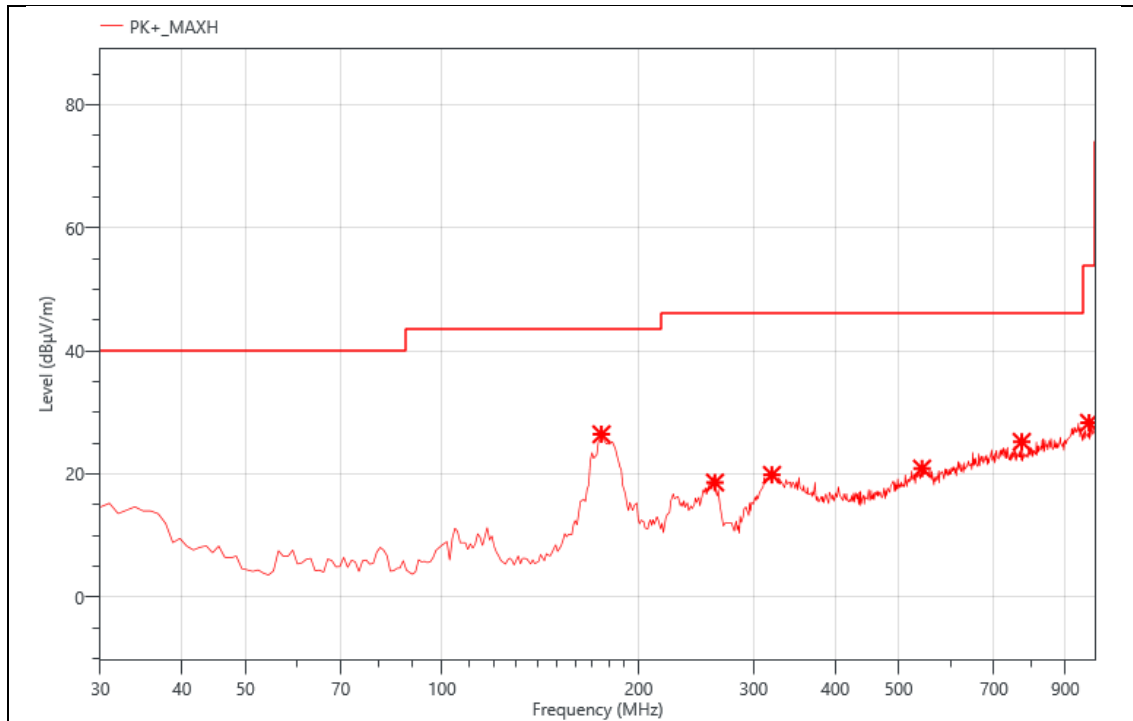
No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Pol.
1	2478.260	55.36	23.14	78.50	114	35.5	PK+	H

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

8.2. RADIATED SPURIOUS EMISSION

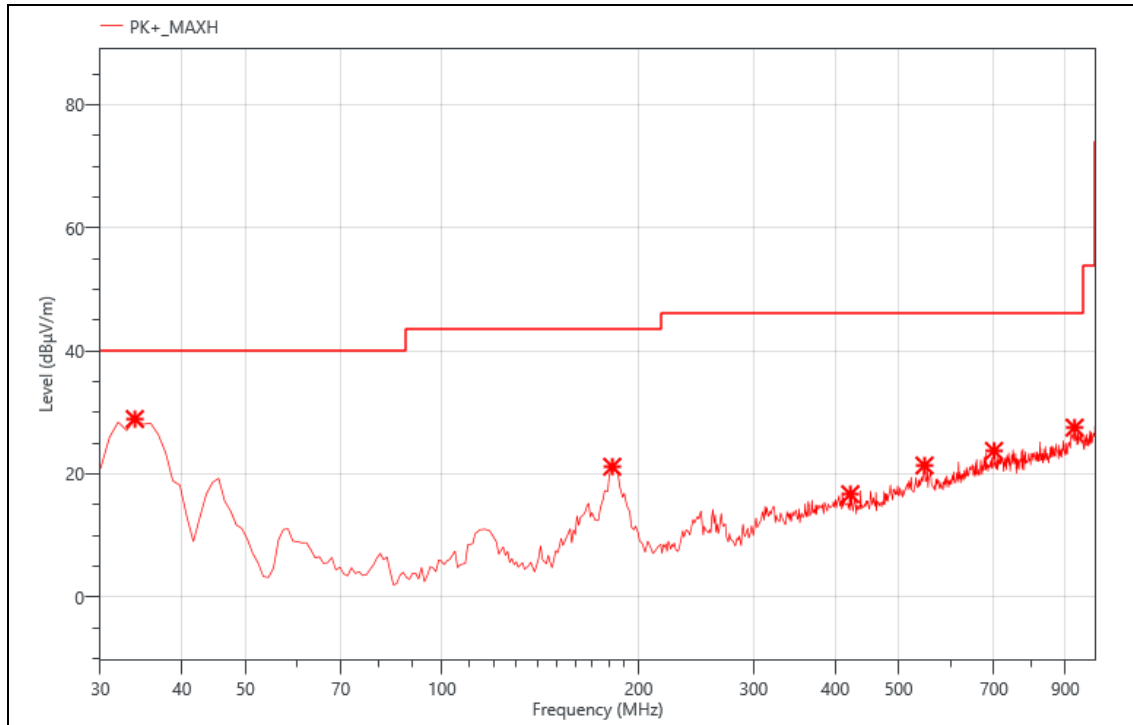
Mode:	2402
Power:	AC 120V/60Hz
TE:	Berny
Date	2025/7/17
T/A/P	22.2°C/53%/101Kpa



Critical_Freqs

No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Pol.
1	175.500	48.43	-22.01	26.42	43.50	17.08	PK+	H
2	261.830	36.84	-18.26	18.58	46.00	27.42	PK+	H
3	320.030	37.35	-17.53	19.82	46.00	26.18	PK+	H
4	543.130	30.69	-9.84	20.85	46.00	25.15	PK+	H
5	772.050	31.72	-6.53	25.19	46.00	20.81	PK+	H
6	978.660	30.95	-2.66	28.29	53.90	25.61	PK+	H

Mode:	2402
Power:	AC 120V/60Hz
TE:	Berny
Date	2025/7/17
T/A/P	22.2°C/53%/101Kpa



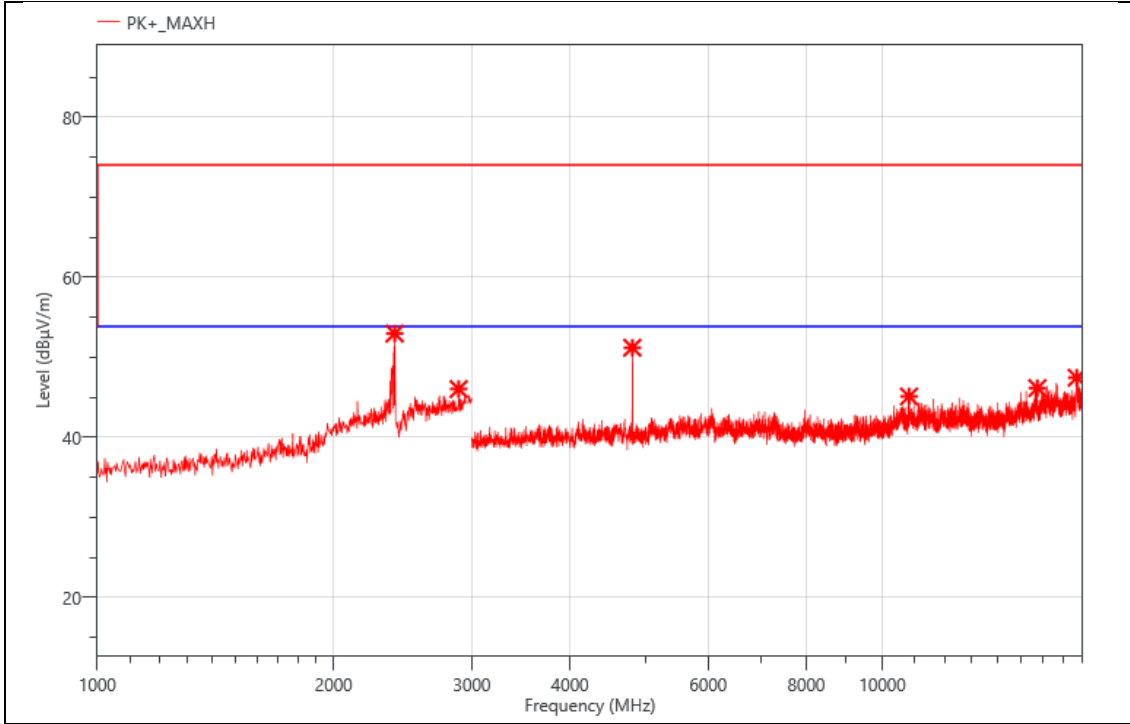
Critical_Freqs

No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Pol.
1	33.880	45.52	-16.63	28.89	40.00	11.11	PK+	V
2	182.290	43.34	-22.19	21.15	43.50	22.35	PK+	V
3	421.880	30.40	-13.72	16.68	46.00	29.32	PK+	V
4	547.980	30.93	-9.58	21.35	46.00	24.65	PK+	V
5	700.270	30.77	-7.04	23.73	46.00	22.27	PK+	V
6	930.160	29.60	-2.1	27.50	46.00	18.50	PK+	V

Note:

1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Peak: Peak detector.
4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

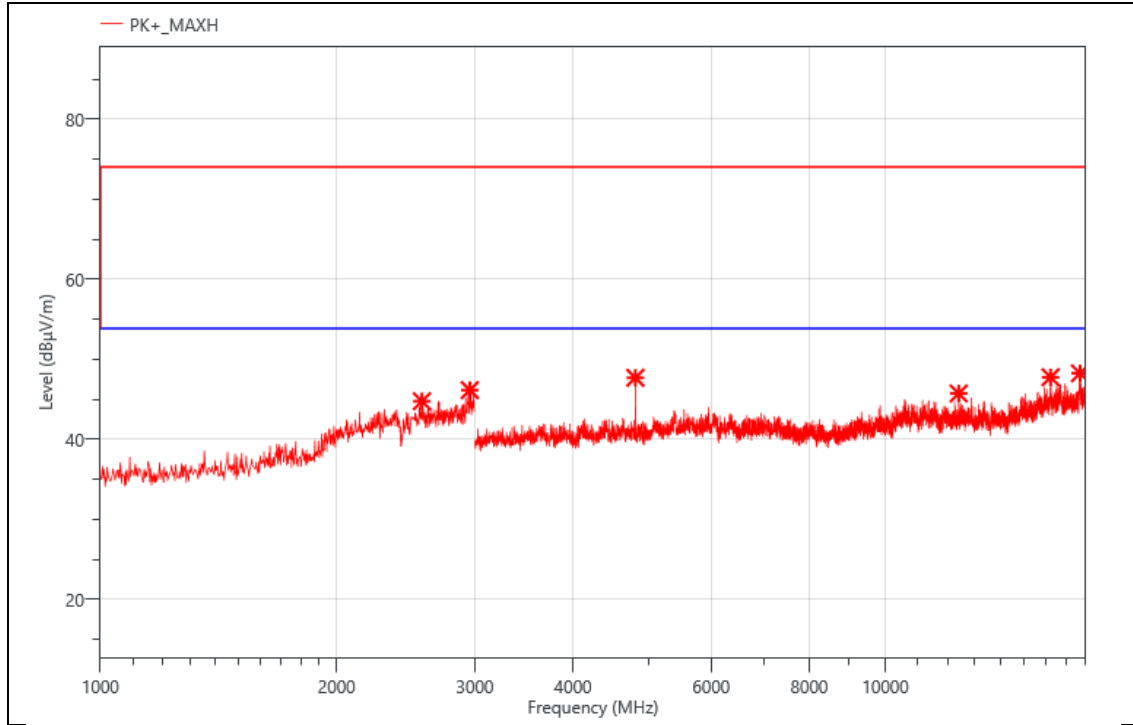
Mode:	2402
Power:	AC 120V/60Hz
TE:	Berny
Date	2025/7/18
T/A/P	22.2°C/53%/101Kpa



Critical_Freqs

No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Pol.
1	2392.000	61.49	-8.53	52.96	74.00	21.04	PK+	H
2	2886.000	54.21	-8.19	46.02	74.00	27.98	PK+	H
3	4803.000	62.53	-11.34	51.19	74.00	22.81	PK+	H
4	10813.500	50.23	-5.13	45.10	74.00	28.90	PK+	H
5	15757.500	48.43	-2.29	46.14	74.00	27.86	PK+	H
6	17688.000	47.19	0.25	47.44	74.00	26.56	PK+	H

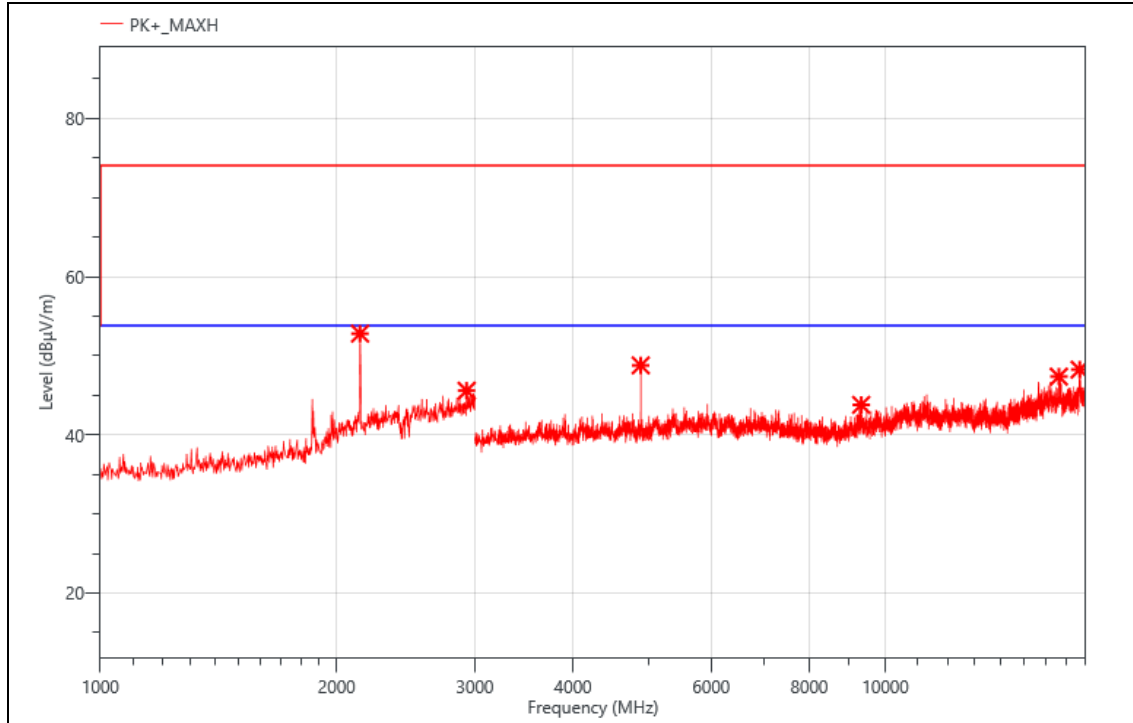
Mode:	2402
Power:	AC 120V/60Hz
TE:	Berny
Date	2025/7/18
T/A/P	22.2°C/53%/101Kpa



Critical_Freqs

No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Pol.
1	2568.000	52.79	-8.04	44.75	74.00	29.25	PK+	V
2	2956.000	53.53	-7.39	46.14	74.00	27.86	PK+	V
3	4803.000	59.02	-11.34	47.68	74.00	26.32	PK+	V
4	12400.500	50.40	-4.68	45.72	74.00	28.28	PK+	V
5	16236.000	48.58	-0.83	47.75	74.00	26.25	PK+	V
6	17701.500	48.10	0.14	48.24	74.00	25.76	PK+	V

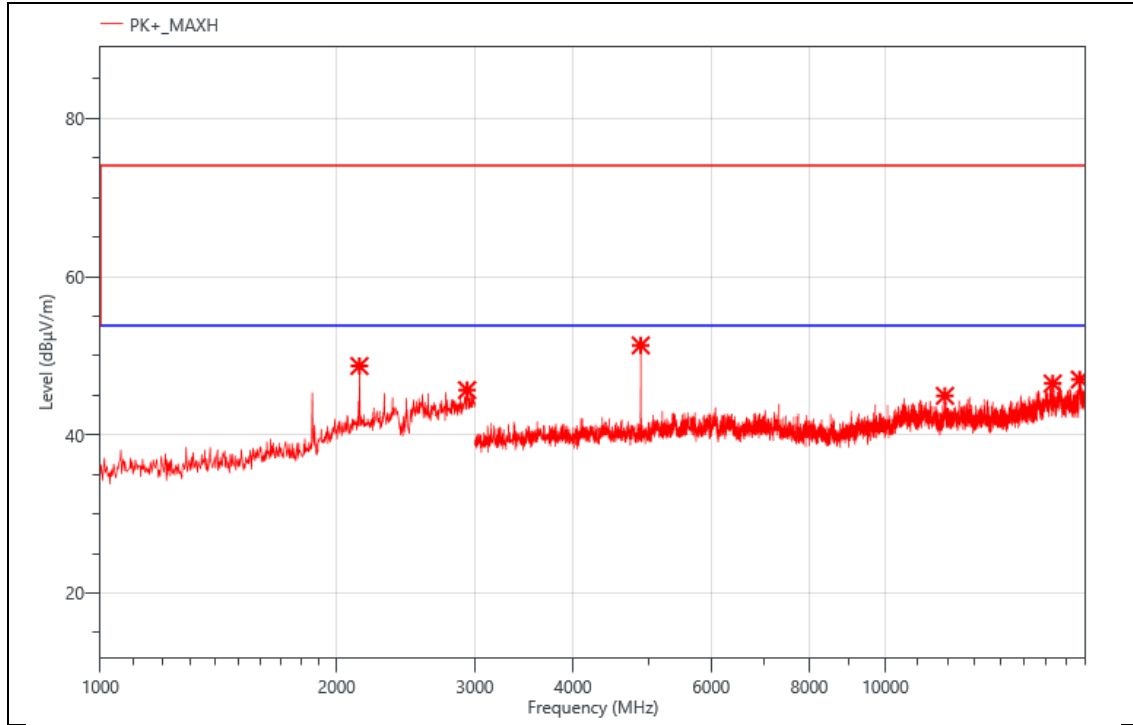
Mode:	2440
Power:	AC 120V/60Hz
TE:	Berny
Date	2025/7/18
T/A/P	22.2°C/53%/101Kpa



Critical_Freqs

No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Pol.
1	2142.000	61.85	-9.05	52.80	74.00	21.20	PK+	V
2	2928.000	53.14	-7.55	45.59	74.00	28.41	PK+	V
3	4879.500	59.93	-11.14	48.79	74.00	25.21	PK+	V
4	9316.500	51.01	-7.21	43.80	74.00	30.20	PK+	V
5	16635.000	48.57	-1.2	47.37	74.00	26.63	PK+	V
6	17682.000	47.97	0.28	48.25	74.00	25.75	PK+	V

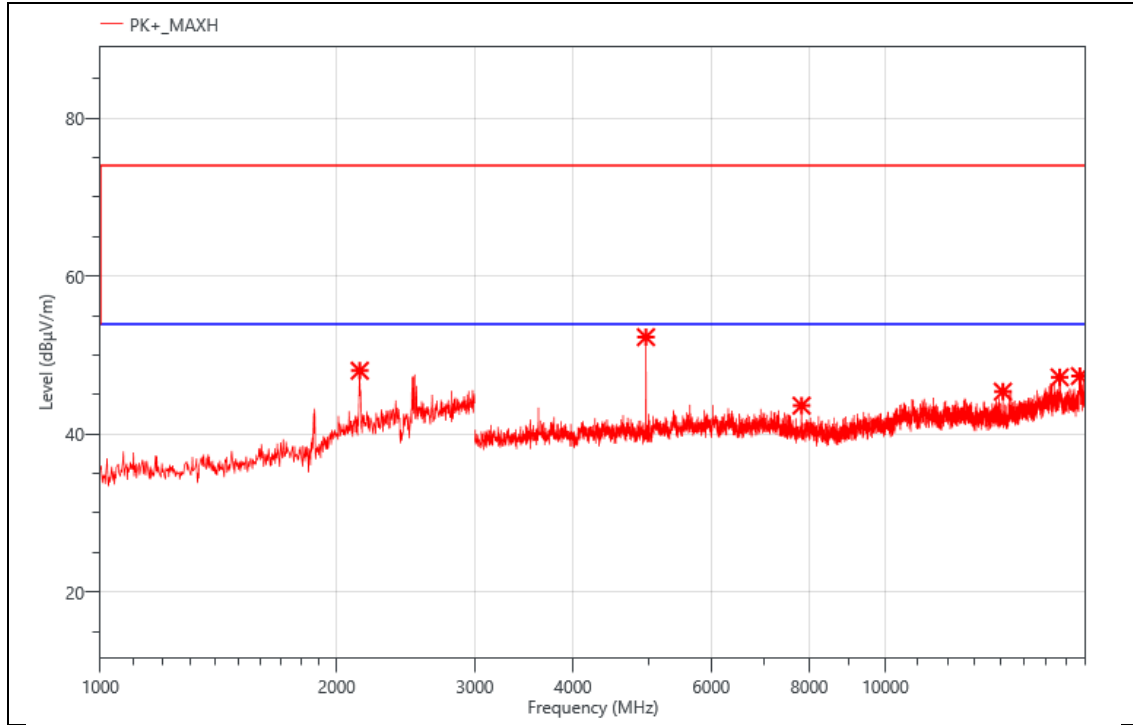
Mode:	2440
Power:	AC 120V/60Hz
TE:	Berny
Date	2025/7/18
T/A/P	22.2°C/53%/101Kpa



Critical_Freqs

No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Pol.
1	2138.000	57.76	-9.05	48.71	74.00	25.29	PK+	H
2	2932.000	53.19	-7.52	45.67	74.00	28.33	PK+	H
3	4879.500	62.46	-11.14	51.32	74.00	22.68	PK+	H
4	11910.000	49.39	-4.45	44.94	74.00	29.06	PK+	H
5	16341.000	48.29	-1.79	46.50	74.00	27.50	PK+	H
6	17689.500	46.76	0.24	47.00	74.00	27.00	PK+	H

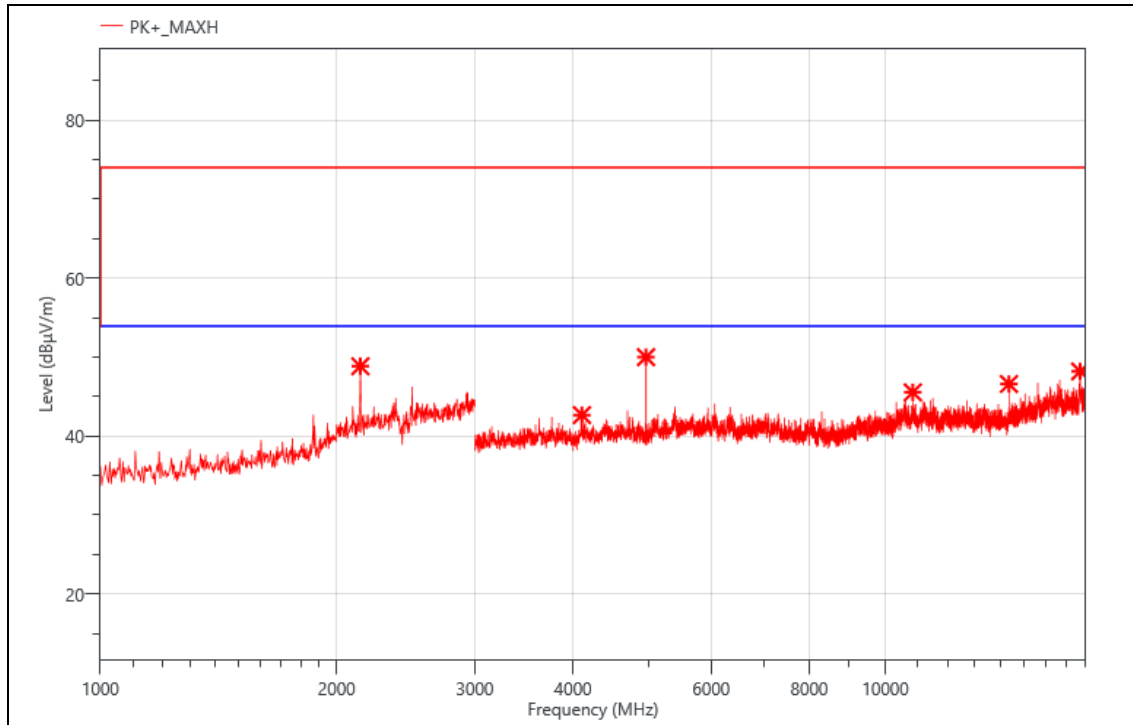
Mode:	2478
Power:	AC 120V/60Hz
TE:	Berny
Date	2025/7/18
T/A/P	22.2°C/53%/101Kpa



Critical_Freqs

No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Pol.
1	2140.000	57.08	-9.05	48.03	74.00	25.97	PK+	H
2	4954.500	63.64	-11.36	52.28	74.00	21.72	PK+	H
3	7821.000	51.93	-8.32	43.61	74.00	30.39	PK+	H
4	14115.000	48.66	-3.28	45.38	74.00	28.62	PK+	H
5	16677.000	47.68	-0.49	47.19	74.00	26.81	PK+	H
6	17695.500	47.14	0.21	47.35	74.00	26.65	PK+	H

Mode:	2478
Power:	AC 120V/60Hz
TE:	Berny
Date	2025/7/18
T/A/P	22.2°C/53%/101Kpa



Critical_Freqs

No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Pol.
1	2144.000	57.90	-9.05	48.85	74.00	25.15	PK+	V
2	4107.000	55.17	-12.51	42.66	74.00	31.34	PK+	V
3	4956.000	61.37	-11.37	50.00	74.00	24.00	PK+	V
4	10839.000	50.67	-5.12	45.55	74.00	28.45	PK+	V
5	14371.500	49.62	-3.02	46.60	74.00	27.40	PK+	V
6	17709.000	48.22	-0.02	48.20	74.00	25.80	PK+	V

Note:

1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

9. AC POWER LINE CONDUCTED EMISSION

LIMITS

Please refer to CFR 47 FCC §15.207 (a) and ISED RSS-Gen Clause 8.8.

FREQUENCY (MHz)	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

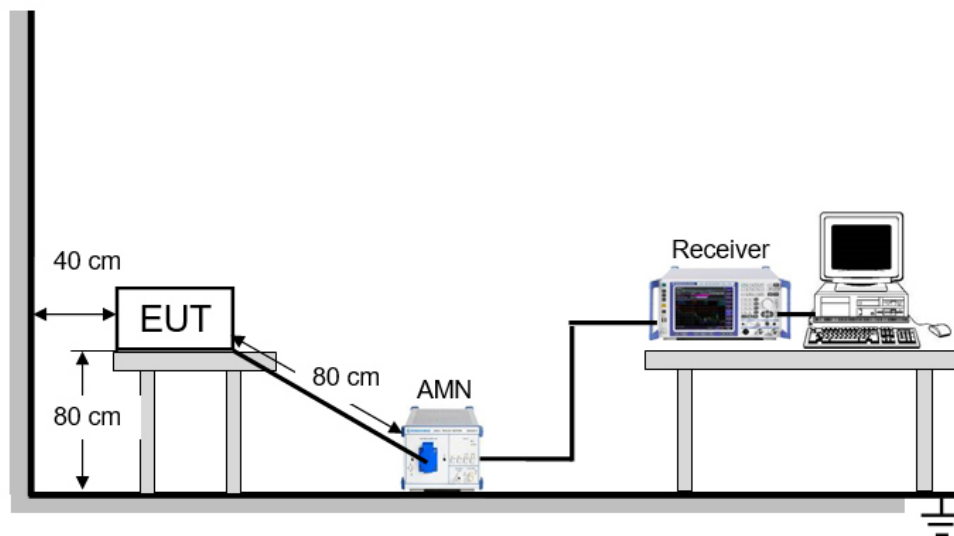
TEST PROCEDURE

Refer to ANSI C63.10-2013 clause 6.2.

The EUT is put on a table of non-conducting material that is 80 cm high. The vertical conducting wall of shielding is located 40 cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI Measurement Receiver is used to test the emissions from the AC line. According to the requirements in Section 6.2 of ANSI C63.10-2013. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode. The bandwidth of EMI test receiver is set at 9 kHz.

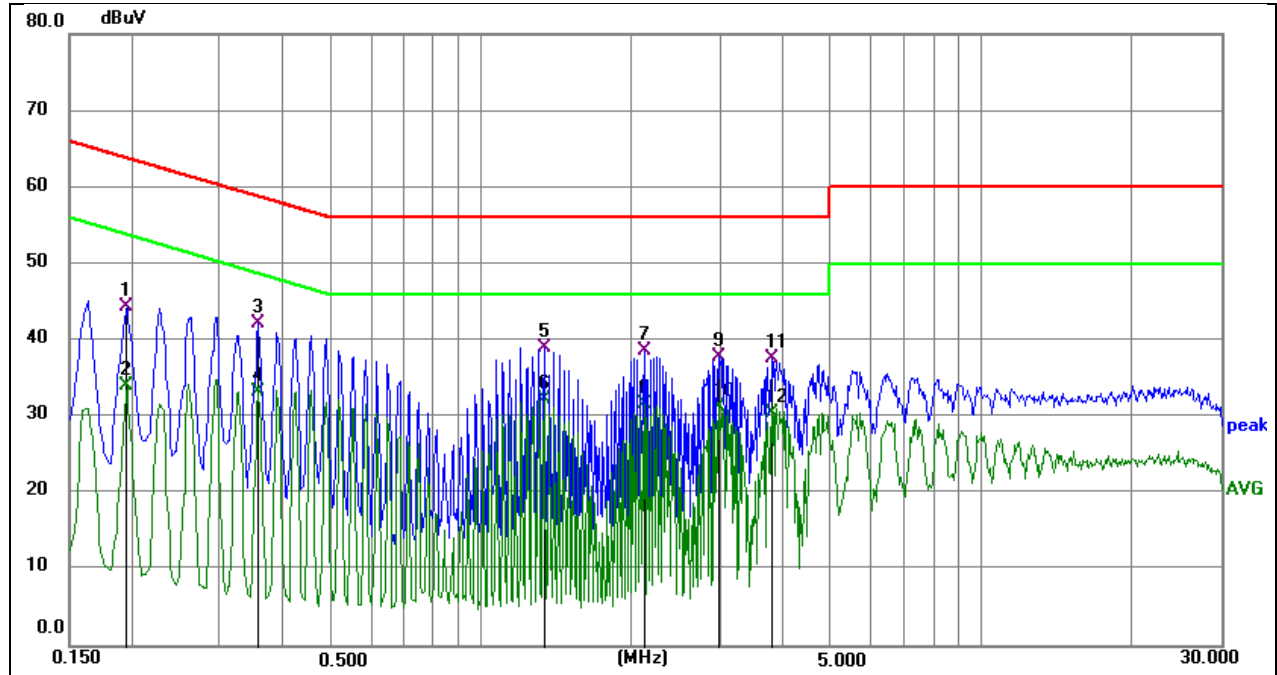
The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application.

TEST SETUP



TEST ENVIRONMENT

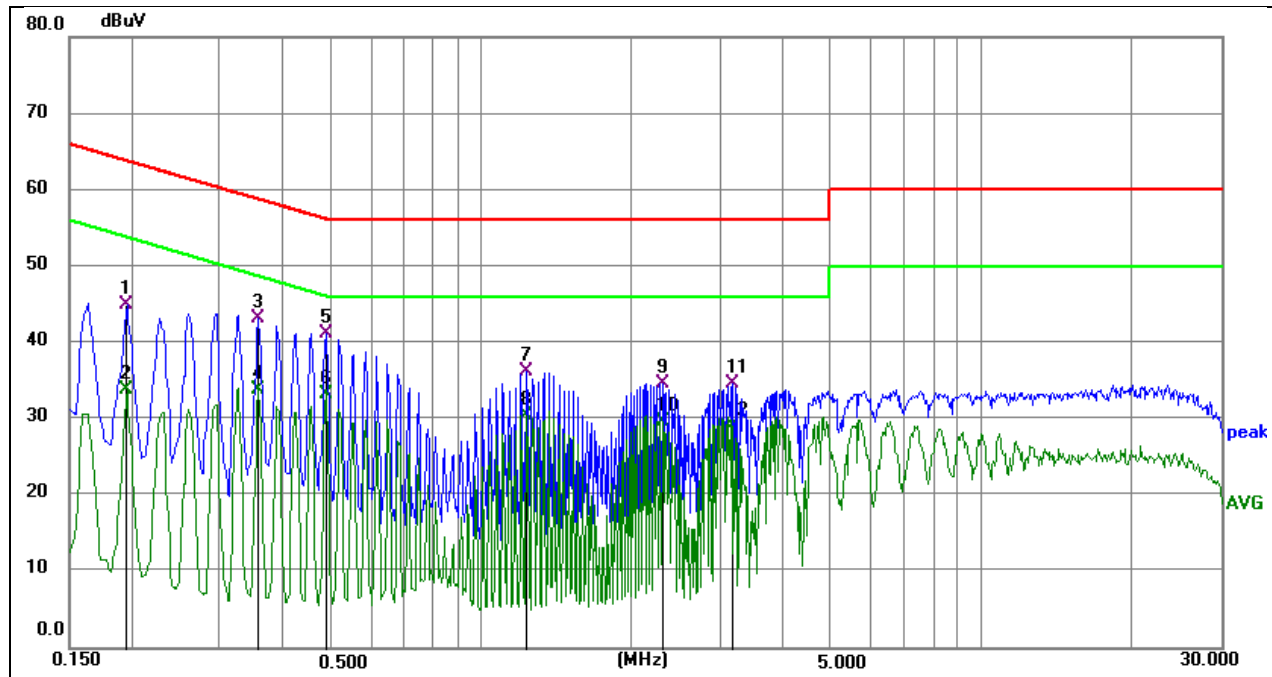
Temperature	23.4°C	Relative Humidity	54%
Atmosphere Pressure	101kPa		

TEST RESULTS

Phase: N

Mode: 2402MHz

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1949	34.63	9.82	44.45	63.83	-19.38	QP
2	0.1949	24.15	9.82	33.97	53.83	-19.86	AVG
3	0.3570	32.47	9.77	42.24	58.80	-16.56	QP
4	0.3570	23.42	9.77	33.19	48.80	-15.61	AVG
5	1.3335	29.23	9.81	39.04	56.00	-16.96	QP
6	1.3335	22.50	9.81	32.31	46.00	-13.69	AVG
7	2.1120	28.95	9.75	38.70	56.00	-17.30	QP
8	2.1120	21.95	9.75	31.70	46.00	-14.30	AVG
9	2.9895	28.07	9.80	37.87	56.00	-18.13	QP
10	2.9895	21.48	9.80	31.28	46.00	-14.72	AVG
11	3.7995	27.70	9.84	37.54	56.00	-18.46	QP
12	3.7995	20.71	9.84	30.55	46.00	-15.45	AVG



Phase: L1

Mode: 2402MHz

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1949	35.21	9.71	44.92	63.83	-18.91	QP
2	0.1949	24.21	9.71	33.92	53.83	-19.91	AVG
3	0.3570	33.31	9.77	43.08	58.80	-15.72	QP
4	0.3570	24.11	9.77	33.88	48.80	-14.92	AVG
5	0.4875	31.45	9.82	41.27	56.21	-14.94	QP
6	0.4875	23.47	9.82	33.29	46.21	-12.92	AVG
7	1.2345	26.38	9.79	36.17	56.00	-19.83	QP
8	1.2345	20.60	9.79	30.39	46.00	-15.61	AVG
9	2.3055	24.73	9.92	34.65	56.00	-21.35	QP
10	2.3055	19.67	9.92	29.59	46.00	-16.41	AVG
11	3.1829	24.83	9.89	34.72	56.00	-21.28	QP
12	3.1829	19.22	9.89	29.11	46.00	-16.89	AVG

Note: 1. Result = Reading + Correct Factor.

2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200 Hz (9 kHz ~ 150 kHz), 9 kHz (150 kHz ~ 30 MHz).

4. Step size: 80 Hz (0.009 MHz ~ 0.15 MHz), 4 kHz (0.15 MHz ~ 30 MHz), Scan time: auto.

10. ANTENNA REQUIREMENT

REQUIREMENT

Please refer to FCC §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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

DESCRIPTION

Pass

END OF REPORT