TEST REPORT

ktl 한국산업기술시험원 Korea Testing Laboratory	Report No. : 23-068261-01-1b Page of Pages : (1)/(36)	KOREA TESTING LABORATORY ktl 한국산업기술시험원

1. Client

Name : BASMANtechnology Co.,Ltd

Address : Iteco #660/661, 150, Jojeong-daero, Hanam-si, Gyeonggi-do, Korea

Date of Receipt : 2023. 10. 24.

2. Use of Report : FCC Certification

3. Test Sample

Description : Second Battery

Manufacturer : BASMANtechnology Co.,Ltd

Model Name : BLB-AA1970B

Serial Number : prototype

Remark : -

4. Date of Test : 2023. 11. 01. ~ 2023. 11. 27.

5. Location of Test :

■ KTL Permanent Test Lab (Address : 87, Digital-ro 26-gil, Guro-gu, Seoul, KOREA)

□ On Site Testing

6. Test Standard/Method : CFR47, FCC Part 15 Subpart C, ANSI C63.10_2013

7. Test Results : Refer to the attached test results

Note : 1. This report is limited to samples submitted by the applicant and is prohibited from being used for legal or other reasons of dispute.

2. This document is valid only in its original document, and any reproduced copies and electronic copies are not valid. ("Original" means all the reports provided by the KTL including the security procedures.)

3. You can check the contents of the report by scanning the 2D Barcode below. The identity of original reports can be checked in the "Confirm original report" window of the customer's homepage (customer.ktl.re.kr).

4. This report is not related to KS Q ISO/IEC 17025 & KOLAS Accreditation.

Affirmation	Tested by Name : Kim YoungHyun	(Signature)	Technical Manager Name : CHO SUNG KYU	(Signature)

2023. 11. 28.

Korea Testing Laboratory

87, Digital-ro 26-gil, Guro-gu, Seoul, KOREA Tel.+82-2-860-1417 Fax. +82-2-860-1459

Revision History

Report No.	Description	Revised date
23-068261-01-1	Original release	2023-11-22
23-068261-01-1a	Modify FCC ID	2023-11-23
23-068261-01-1b	Add tested voltage, CAB identifier	2023-11-28

TABLE OF CONTENTS

1. GENERAL INFORMATIONS

1.1 Testing Laboratory

Testing Place	Korea Testing Labortory (KTL) 87, Digital-ro 26-gil, Guro-gu, Seoul , Korea (08389)
FCC registration number	0033369398
CAB identifier	KR0009
Test Engineer	Kim Younghyun
Telephone number	+82 2 860 1417
Facsimile number	+82 2 860 1459
E-mail address	yh21c90@ktl.re.kr

1.2 Applicant (Client)

Name	BASMANtechnology Co.,Ltd
Address	Itech #660/661, 150 , Jojeong-daero, Hanam-si, Gyeonggi-do, Korea, 12930
Manufacturer	BASMANtechnology Co.,Ltd
Manufacturer Address	Itech #660/661, 150 , Jojeong-daero, Hanam-si, Gyeonggi-do, Korea, 12930

1.3 Equipment (EUT)

Name	Second Battery
Model Name	BLB-AA1970B
FCC ID	2BDA8-BLB-AA1970B
IC Number	N/A
Operating Frequency	2 402 MHz ~ 2 480 MHz
Number of channels	40
Type of Modulation	GFSK
Nominal Voltage	3.7 VDC
Tested Voltage	3.3 VDC
Hardware Version	Ver 0.2
Software Version	Ver 0.2
Antenna Designation	Chip Antenna
Antenna Gain	1.0 dBi
Serial No.	Prototype

1.4 Technical specifications

This device contains the following capabilities:
Bluetooth Low Energy, FHSS (GFSK)

Ch.	Frequency (MHz)
01	2 402
02	2 404
03	2 406
04	2 408
05	2 410
06	2 412
07	2 414
08	2 416
09	2 418
10	2 420
11	2 422
12	2 424
13	2 426
14	2 428
15	2 430
16	2 432
17	2 434
18	2 436
19	2 438
20	2 440
21	2 442
22	2 444
23	2 446
24	2 448
25	2 450
26	2 452
27	2 454
28	2 456

29	2 458
30	2 460
31	2 462
32	2 464
33	2 466
34	2 468
35	2 470
36	2 472
37	2 474
38	2 476
39	2 478
40	2 480

2. SUMMARY OF TEST RESULTS

Name of Test	FCC Rules	Test Condition	Test Result
6 dB Bandwidth	15.247(a)(2)	Conducted	PASS
Maximum Peak Output Power	15.247(b)(3)		PASS
Peak Power Spectral Density	15.247(e)		PASS
Conducted Spurious Emission	15.247(d)		PASS
AC Power line Conducted Emissions	15.207		PASS
Radiated Spurious Emissions	15.205, 15.209	Radiated	PASS
Radiated Restricted Band Edge	15.247(d), 15.205, 15.209		PASS

N/A – Not Applicable

Note 1 : The EUT is powered by DC.

Note 2 : All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.

Note 3 : The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest

Note 4 : All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables and attenuators

*** Modifications required for compliance**

No modifications were implemented by KTL.

All results in this report pertain to the un-modified sample provided to KTL.

2.1 Measurement uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10_2013

All measurement uncertainty values are shown with a coverage factor of k=2 to indicated a 95 % level of confidence. The measurement data shown herein meets of exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded uncertainty
Conducted Frequency	1 176.02 Hz
Conducted Occupied Bandwidth	3 465.554 Hz
Conducted RF power	1.26 dB
Radiated spurious emissions, 9 kHz ~ 30 MHz	3.8 dB
Radiated spurious emissions, 30 MHz ~ 1 GHz	3.6 dB (Horizontal), 5.4 dB (Vertical)
Radiated spurious emissions, 1 GHz ~ 18 GHz	4.7 dB (Horizontal), 4.8 dB (Vertical)
Radiated spurious emissions, 18 GHz ~ 26.5 GHz	5.0 dB (Horizontal), 5.0 dB (Vertical)
Radiated spurious emissions, 26.5 GHz ~ 40 GHz	5.6 dB (Horizontal), 5.7 dB (Vertical)
Conducted emissions	3.0 dB

3. TEST RESULTS

3.1 Antenna Requirements

3.1.1 Requirement

EUT must meet the antenna requirement of FCC Rule 15.203

■ EUT uses a permanently attached antenna which is considered sufficient to comply with the provisions of this rule.

□ EUT uses a unique antenna jack or electrical connector which is considered sufficient to comply with the provisions of this rule.

3.1.2 Attestation

The EUT use permanently attached antennas.

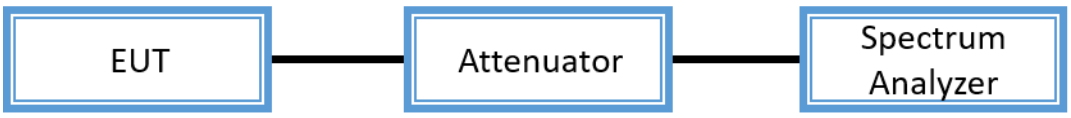
3.2 6 dB Bandwidth

3.2.1 Test Overview and Limit

The bandwidth at 6dB down from the highest in band spectral density is measured a spectrum analyzer connected to the transmitter antenna terminal of the EUT is operating at maximum power and at the appropriate frequencies. All modes of operation were investigated and the worst case configuration results are reported in this section.

The minimum permissible 6dB bandwidth is 500 kHz.

3.2.2 Test Configuration



3.2.3 Test Procedure

ANSI C63.10_2013 – Section 11.8.2
KDB 558074 v05r02 – Section 8.2

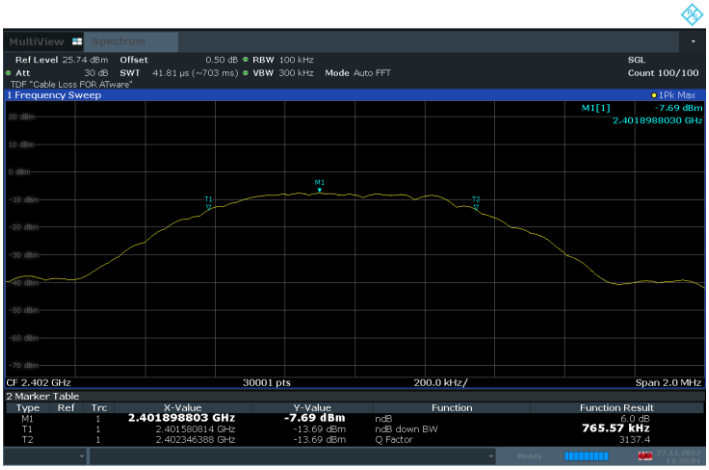
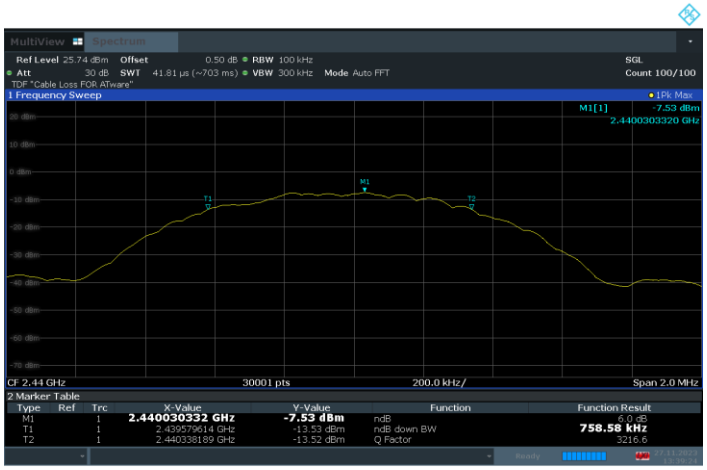
The transmitter output is connected to the Spectrum Analyzer.

1. The signal analyzers' automatic bandwidth measurement capability of the spectrum analyzer was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 6.
The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 100 kHz
3. VBW ≥ 3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize

3.2.4 Test Results

Frequency [MHz]	Channel No.	Measured Bandwidth [kHz]	Limit [kHz]
2 402	0	765.57	>500
2 440	19	758.58	
2 480	39	739.11	

3.2.5 Result Plots

2 402 MHz	2 440 MHz
	
2 480 MHz	
	Blank

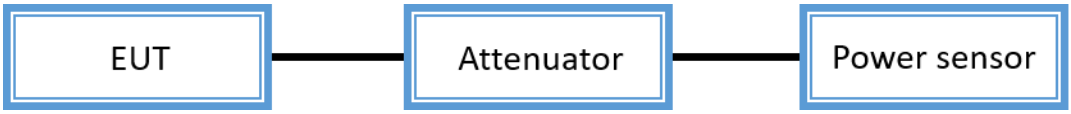
3.3 Output Power

3.3.1 Test Overview and Limit

For systems using digital modulation in the 902-928 MHz, 2 400-2 483.5 MHz, and 5 725-5 850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

The maximum permissible conducted output power is 1 Watt.

3.3.2 Test Configuration



3.3.3 Test Procedure

Peak Power (ANSI 63.10_2013 – Section 11.9.1.3)

Measure the peak power of the transmitter.

Average Power(KDB 558074 v05r02 – Section 8.3.2.3, ANSI 63.10_2013 – Section 11.9.2.3)

1) Mesaure the duty cycle.
2) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the tranmitter.
3) Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

3.3.4 Test Results

Channels	Frequency [MHz]	Channel No.	Peak Conducted Power		Limit
			[dBm]	[mW]	[mW]
Low	2 402	0	-4.2	0.380	1 000
Middle	2 440	19	-4.2	0.380	1 000
High	2 480	39	-4.3	0.372	1 000

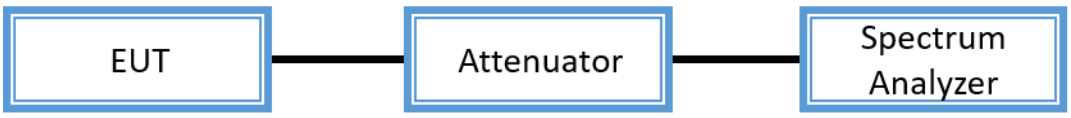
3.4 Power Spectral Density

3.4.1 Test Overview and Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

The maximum permissible power spectral density is 8 dBm in any 3 kHz band.

3.4.2 Test Configuration



3.4.3 Test Procedure

ANSI C63.10_2023 – Section 11.10.2 Method PKPSD (Peak PSD)
KDB 558074 v05r02 – Section 8.4

The following procedure shall be used if maximum peak conducted output power was used to determine compliance, and it is optional if the maximum conducted (average) output power was used to determine compliance

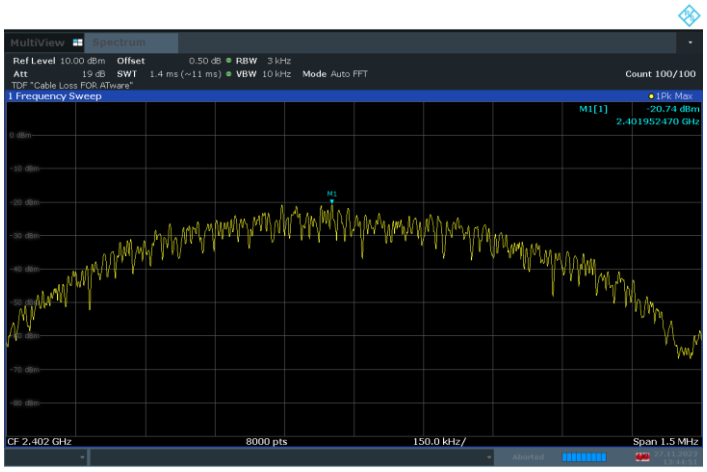
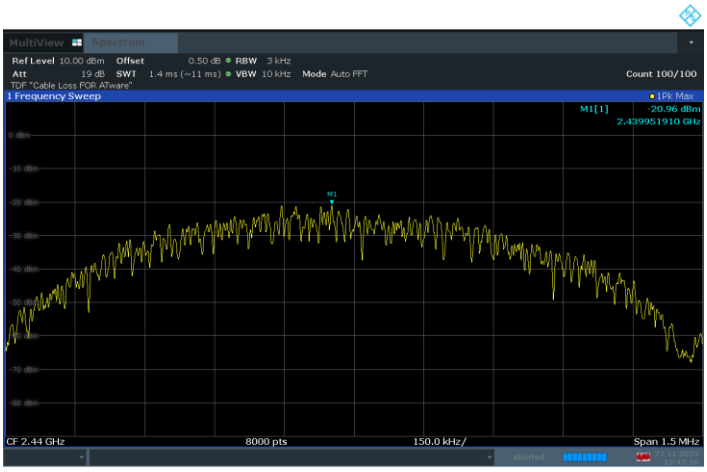
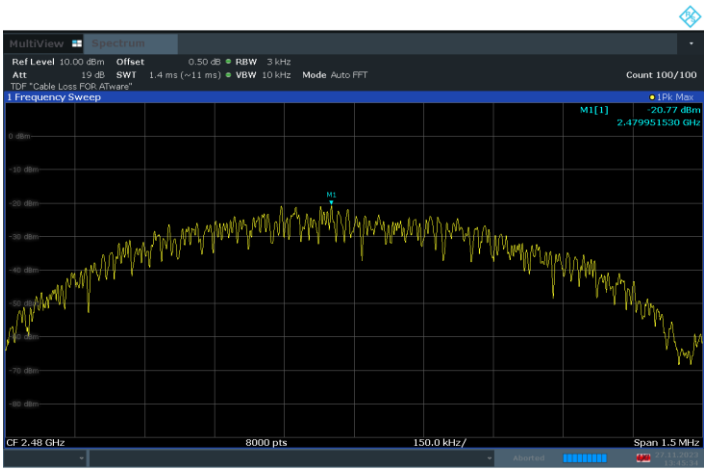
The spectrum analyzer is set to :

1) Set analyzer center frequency to DTS channel center frequency.
2) Set the span to 1.5 times the DTS bandwidth.
3) Set the RBW to 3 kHz ≤ RBW ≤ 100 kHz.
4) Set the VBW ≥ [3 × RBW].
5) Detector = peak.
6) Sweep time = auto couple.
7) Trace mode = max hold.
8) Allow trace to fully stabilize.
9) Use the peak marker function to determine the maximum amplitude level within the RBW.
10) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

3.4.4 Test Results

Channels	Frequency [MHz]	Channel No.	Test Result	
			PSD (dBm/3 kHz)	Limit (dBm/3 kHz)
Low	2 402	0	-20.74	8.0
Middle	2 440	19	-20.96	
High	2 480	39	-20.77	

3.4.5 Result Plots

2 402 MHz	2 440 MHz
	
2 480 MHz	
	Blank

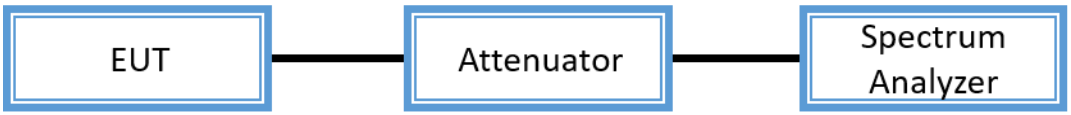
3.5 Conducted Spurious Emissions

3.5.1 Test Overview and Limit

In any 100 kHz 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 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see 15.205(c)).

The limit for out-of-band spurious emissions at the band edge is 20dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100 kHz bandwidth per the procedure in Section 11.1 of KDB 558074 v05r02.

3.5.2 Test Configuration



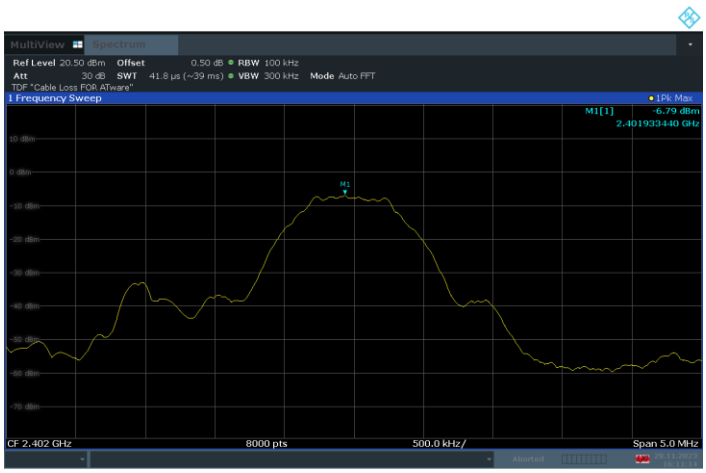
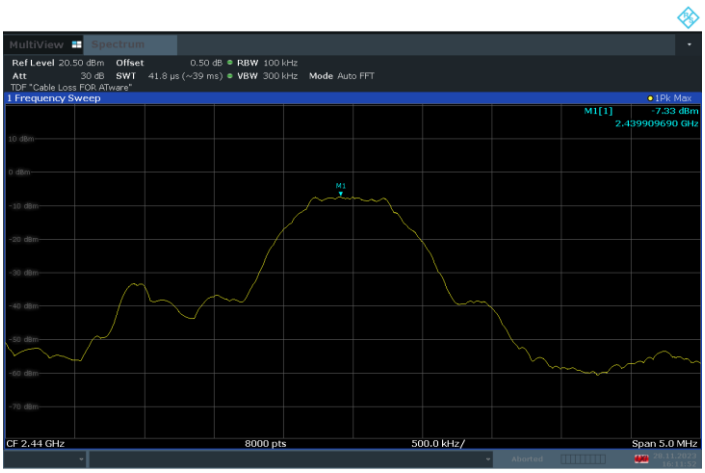
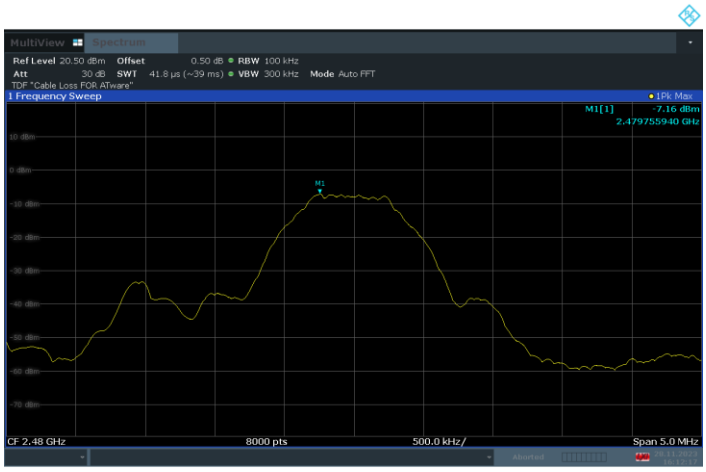
3.5.3 Test Procedure

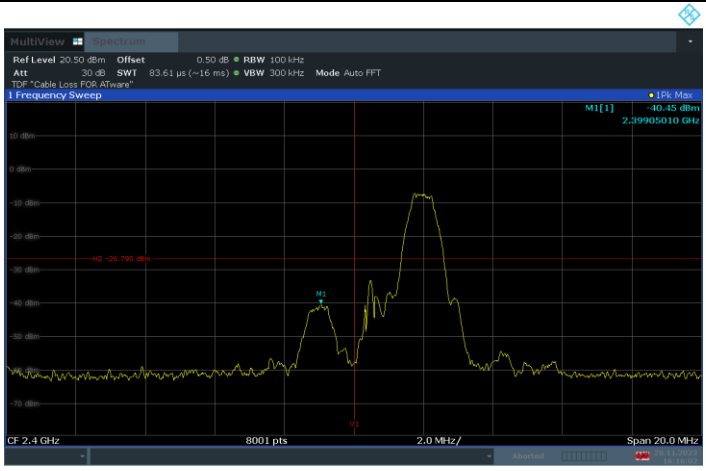
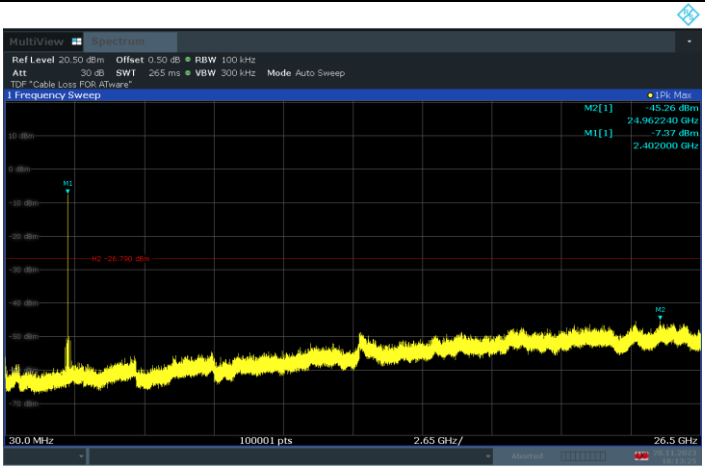
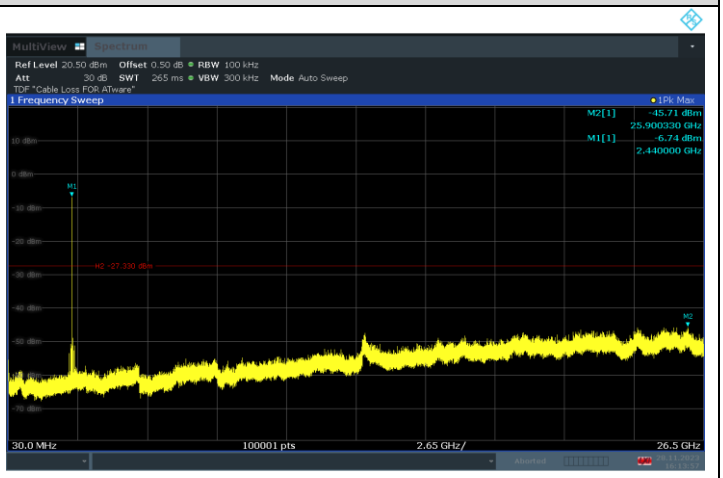
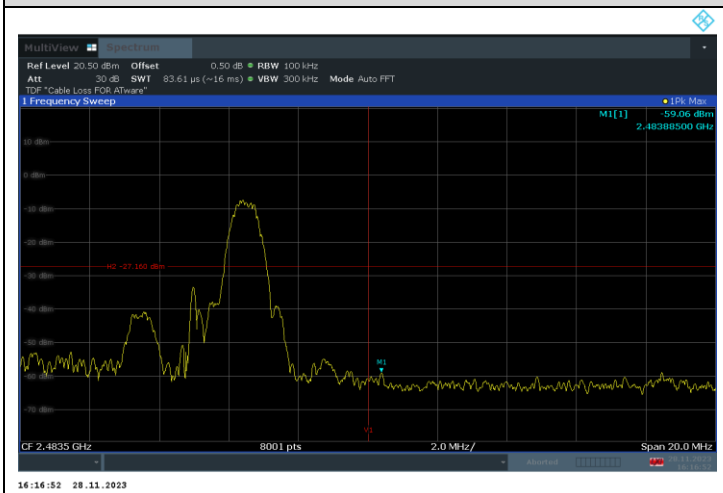
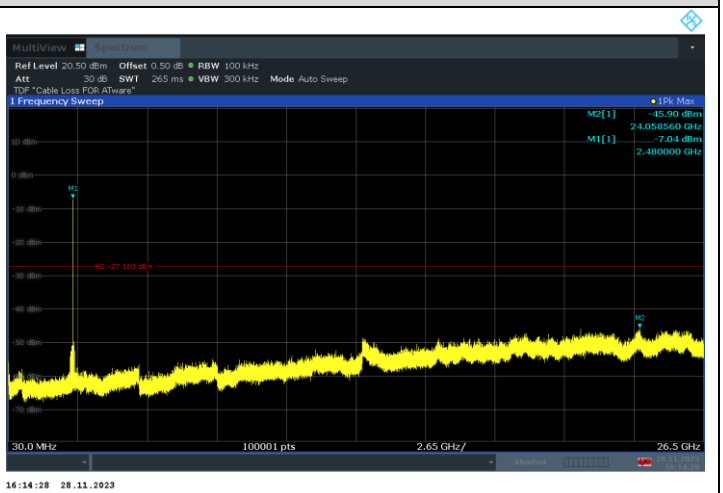
ANSI C63.10_2013 – Section 11.11
KDB 558074 v05r02 – Section 8.5

The transmitter output is connected to the spectrum analyzer :
1) RBW = 100 kHz
2) VBW ≥ 3 x RBW
3) Set span to encompass the spectrum to be examined
4) Detector = Peak
5) Trace Mode = max hold
6) Sweep time = auto couple
7) Ensure that the number of measurement points ≥ Span/RBW
8) Allow trace to fully stabilize.
9) Use peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.

3.5.4 Result Plots

Reference level / 2 402 MHz	Reference level / 2 440 MHz
	
Reference level / 2 480 MHz	
	Blank

Conducted band-edge / 2 402 MHz	Conducted spurious / 2 402 MHz
	
Conducted band-edge / 2 440 MHz	**Conducted spurious / 2 440 MHz**
Blank	
Conducted band-edge / 2 480 MHz	**Conducted spurious / 2 480 MHz**
	

3.6 Radiated Measurement

3.6.1 Radiated Spurious Emissions, Band Edge and Restricted bands

Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 ~ 0.490	2 400/F(kHz)	300
0.490 ~ 1.705	24 000/F(kHz)	30
1.705 ~ 30	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

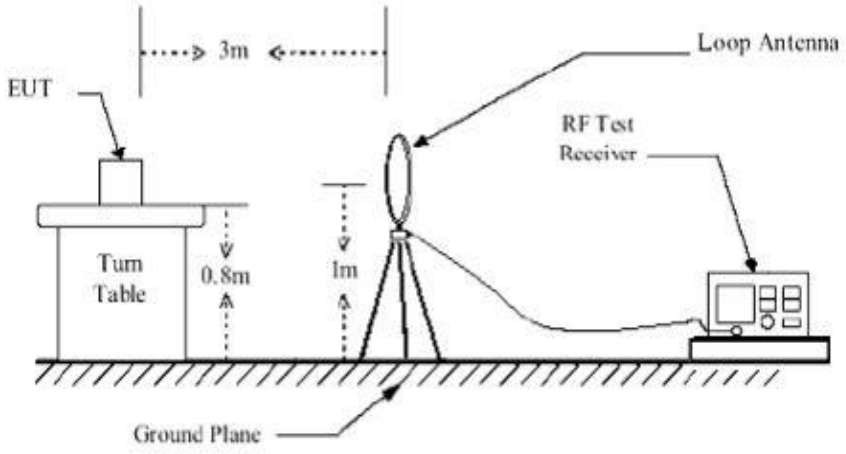
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.

According to section 15.205(a) and (b), only spurious emissions are permitted in any of the frequency bands listed below:

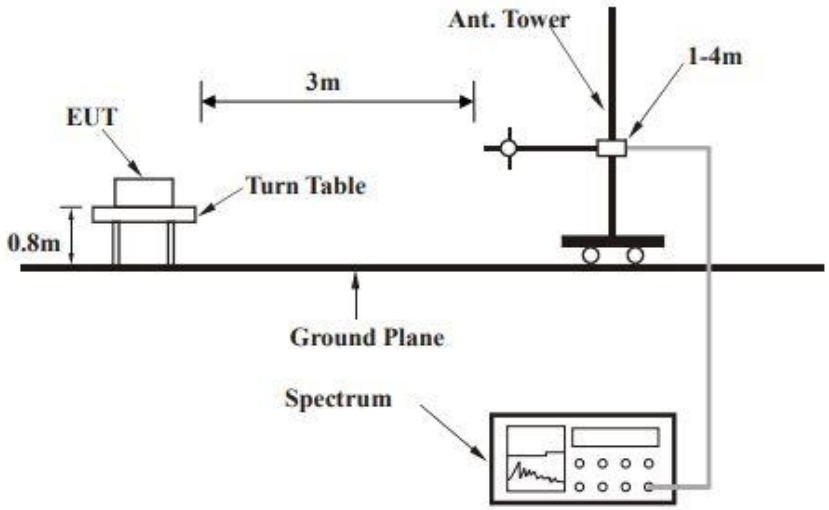
MHz	MHz	MHz	GHz
0.009 – 0.110	16.42 – 16.423	399.9 – 410	4.5 – 5.15
0.495 – 0.505	16.694 75 – 16.695 25	608 – 614	5.35 – 5.46
2.173 5 – 2.190 5	16.804 25 – 16.804 75	960 – 1 240	7.25 – 7.75
4.125 – 4.128	25.5 – 25.67	1 300 – 1 427	8.025 – 8.5
4.177 25 – 4.177 75	37.5 – 38.25	1 435 – 1 626.5	9.0 – 9.2
4.207 25 – 4.207 75	73 – 74.6	1 645.5 – 1 646.5	9.3 – 9.5
6.215 – 6.218	74.8 – 75.2	1 660 – 1 710	10.6 – 12.7
6.311 75 – 6.312 25	108 – 121.94	1 718.8 – 1 722.2	13.25 – 13.4
8.291 – 8.294	123 – 138	2 220 – 2 300	14.47 – 14.5
8.362 – 8.366	149.9 – 150.05	2 310 – 2 390	15.35 – 16.2
8.376 25 – 8.386 75	156.524 75 – 156.525 25	2 483.5 – 2 500	17.7 – 21.4
8.414 25 – 8.414 75	156.7 – 156.9	2 690 - 2 900	22.01 – 23.12
12.29 – 12.293	162.012 5 – 167.17	3 260 – 3 267	23.6 – 24.0
12. 519 75 -12.520 25	167.72 – 173.2	3 332 – 3 339	31.2 – 31.8
12.576 75 – 12.577 25	240 – 285	3 345.8 – 3 358	36.43 – 36.5
13.36 – 13.41	322 – 335.4	3 600 – 4 400	Above 38.6

3.6.2 Test Configuration

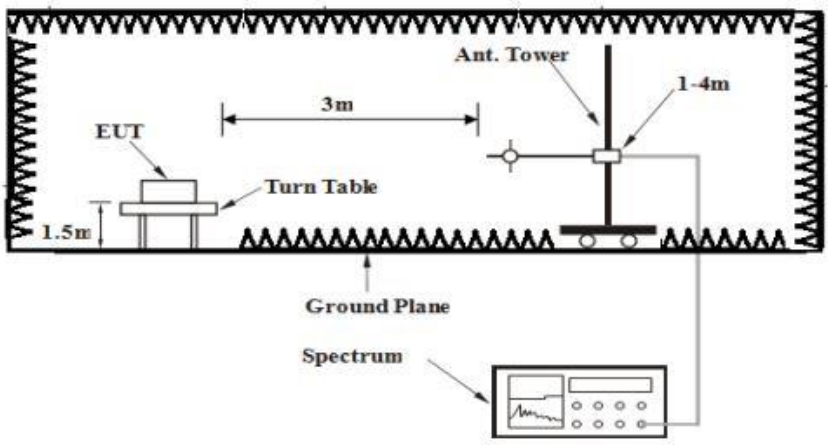
Below 30 MHz



30 MHz ~ 1 GHz



Above 1 GHz



3.6.3 Test Procedure

ANSI C63.10_2013– Section 6.3, 6.4, 6.5, 6.6, 11.12

3.6.3.1 Radiated spurious emissions(Below 30 MHz)

1) The EUT was placed on a non-conducteive table located on semi-anechoic chamber.
2) The loop antenna was placed at a location 3 m from the EUT
3) The EUT is placed on a turntable, which is 0.8 m above ground plane.
4) We have done x,y,z planes in EUT and horizontal and vertical polariztion and Parallel to the ground plane in detecting antenna.
5) The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6) Distance Correction Factor(0.009 MHz ~ 0.490 MHz) = 40log(3 m/300 m) = -80 dB
Mesurement Distance : 3 m
7) Distance Correction Factor(0.490 MHz ~ 30 MHz) = 40log(3 m/30 m) = -40 dB
Measurement Distance : 3 m
8) Spectrum Setting
- Frequency Range = 9 kHz ~ 30 MHz
- Detector = Peak
- Trace = Maxhold
- RBW = 200 Hz (Frequency : 9 kHz ~ 150 kHz), 9 kHz (Frequency : 150 kHz ~ 30 MHz)
- VBW ≥ 3 x RBW
9) Total = Measured Value + Antenna Factor + Cable Loss + Distance Factor
10) Measurement value only up to 6 maximum emissions noted. Or would be lesser if no specific emissions from the EUT are recorded and considered that's already beyond the background noise floor.

3.6.3.2 Radiated spurious emissions(Below 1 GHz)

1) The EUT was placed on a non-conducteive table located on semi-anechoic chamber.
2) The EUT is placed on a turntable, which is 0.8 m above ground plane.
3) The Hybrid antenna was placed at a location 3 m from the EUT, which is varied from 1 m to 4 m to find out the highest emissions.
4) We have done x,y,z planes in EUT and horizontal and vertical polariztion in detecting antenna.
5) The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6) Spectrum Setting
<Peak>
- Frequency Range = 30 MHz ~ 1 GHz
- Detector = Peak
- Trace = Maxhold
- RBW = 100 kHz
- VBW ≥ 3 x RBW
<Quasi-peak>
- Frequency Range = 30 MHz ~ 1 GHz
- Detector = Quasi-Peak
- Trace = Maxhold
- RBW = 120 kHz
7) Total = Measured Value + Antenna Factor + Cable Loss
8) Measurement value only up to 6 maximum emissions noted. Or would be lesser if no specific emissions from the EUT are recorded and considered that's already beyond the background noise floor.

3.6.3.3 Radiated spurious emissions(Above 1 GHz)

1) The EUT is placed on a turntable, which is 1.5 m above ground plane.
2) We have done x,y,z planes in EUT and horizontal and vertical polariztion in detecting antenna.
3) The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4) EUT is set 3 m away from the receiving antenna, which is varied from 1 m to 4 m to find out the highest emissions.
5) Maximum procedure was performed on the six hifhest emissions to ensure EUT compliance.
6) Each emissions was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7) Spectrum Setting

<Peak>

- Frequency Range = 1 GHz ~26.5 GHz
- Detector = Peak
- Trace = Maxhold
- RBW = 1 MHz
- VBW ≥ 3 x RBW

<Average>

- Duty cycle < 98 %, duty cycle variations are less than ±2 %
- Measured Frequency Range : 1 GHz ~ 26.5 GHz
- Detector = RMS
- Aceraging type = power
- RBW = 1 MHz
- VBW ≥ 3 x RBW
- Sweep time = auto
- Trace = average
- Correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle

8) Measurement value only up to 6 maximum emissions noted. Or would be lesser if no specific emissions from the EUT are recorded and considered that's already beyond the background noise floor.

3.6.3.3 Radiated Restricted Band Edge

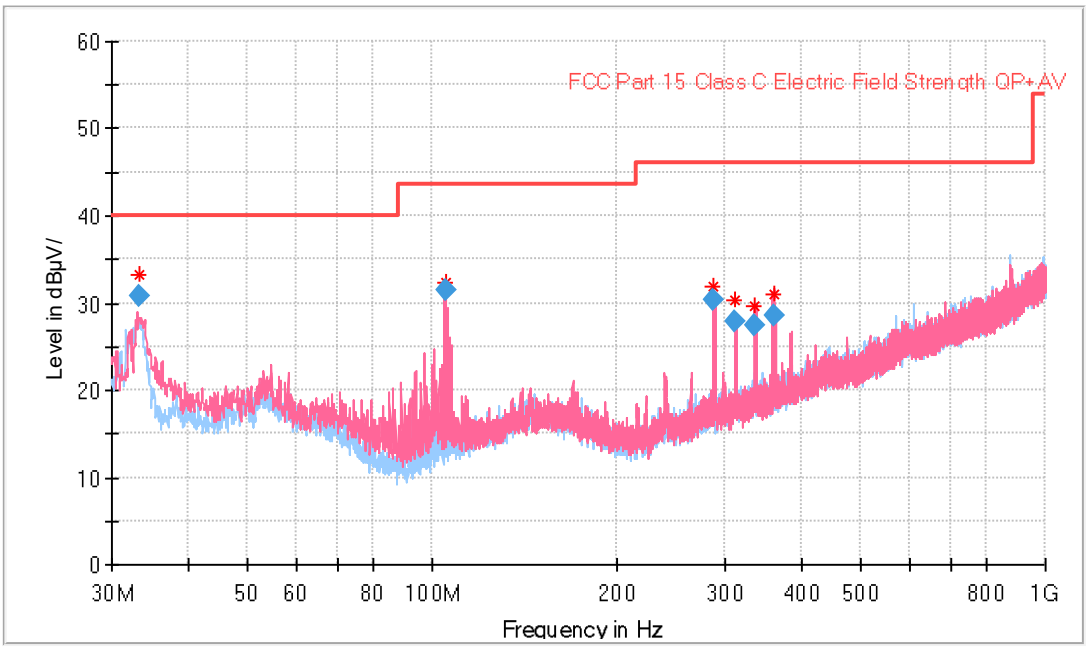
1) The EUT is placed on a turntable, which is 1.5 m above ground plane.
2) We have done x,y,z planes in EUT and horizontal and vertical polariztion in detecting antenna.
3) The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4) EUT is set 3 m away from the receiving antenna, which is varied from 1 m to 4 m to find out the highest emissions.
5) Maximum procedure was performed on the six hifhest emissions to ensure EUT compliance.
6) Each emissions was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7) Spectrum Setting

- RBW = 1 MHz
- VBW ≥ 1 / T
- Detector = peak
- Sweep time = auto
- Trace mode = max hold
- Allow max hold to run for at least [50 (1/D)] traces

3.6.4 Test Results and Plots

Below 1000 MHz

- Low CH (2 402 MHz)

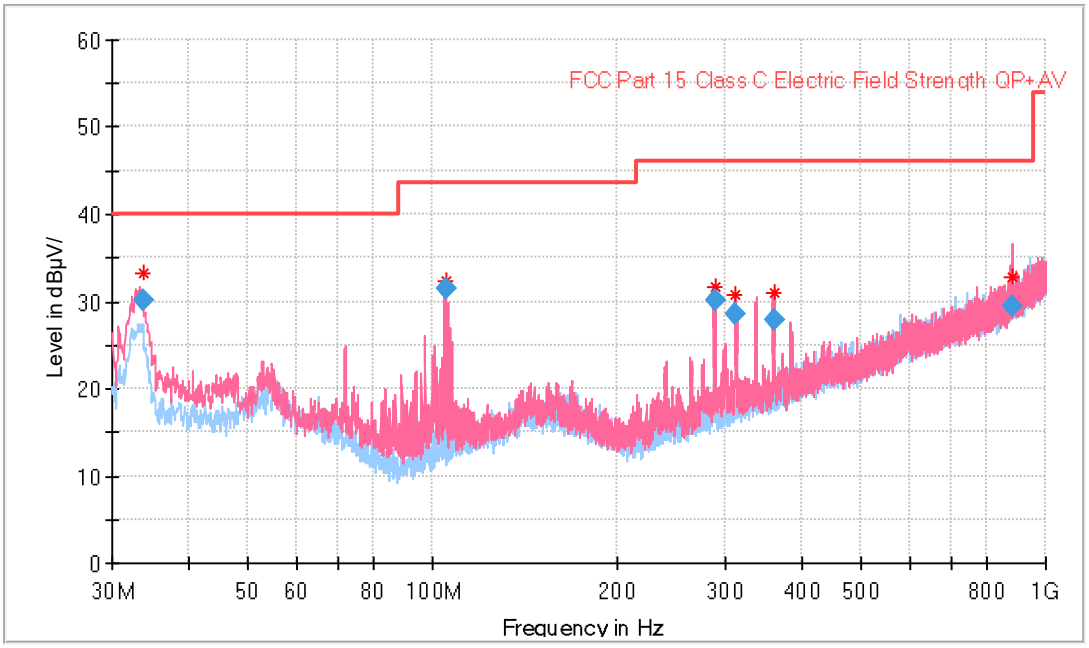


Preview Result 1H-PK+
Preview Result 1V-PK+
Critical_Freqs PK+
FCC Part 15 Class B Electric Field Strength QP+AV
Final_Result QPK
MaxPeak-PK+ (Single)
QuasiPeak-QPK (Single)

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
33.17	30.7	40.0	9.3	15 000.0	120.0	325.0	V	0.0	-13.3
104.91	31.5	43.5	12.0	15 000.0	120.0	280.0	V	52.0	-15.5
288.01	30.3	46.0	15.7	15 000.0	120.0	102.0	V	127.0	-10.8
311.54	27.8	46.0	18.2	15 000.0	120.0	97.0	V	27.0	-10.1
336.36	27.5	46.0	18.5	15 000.0	120.0	174.0	V	235.0	-9.4
359.94	28.5	46.0	17.5	15 000.0	120.0	181.0	V	30.0	-8.9

- Middle CH (2 440 MHz)

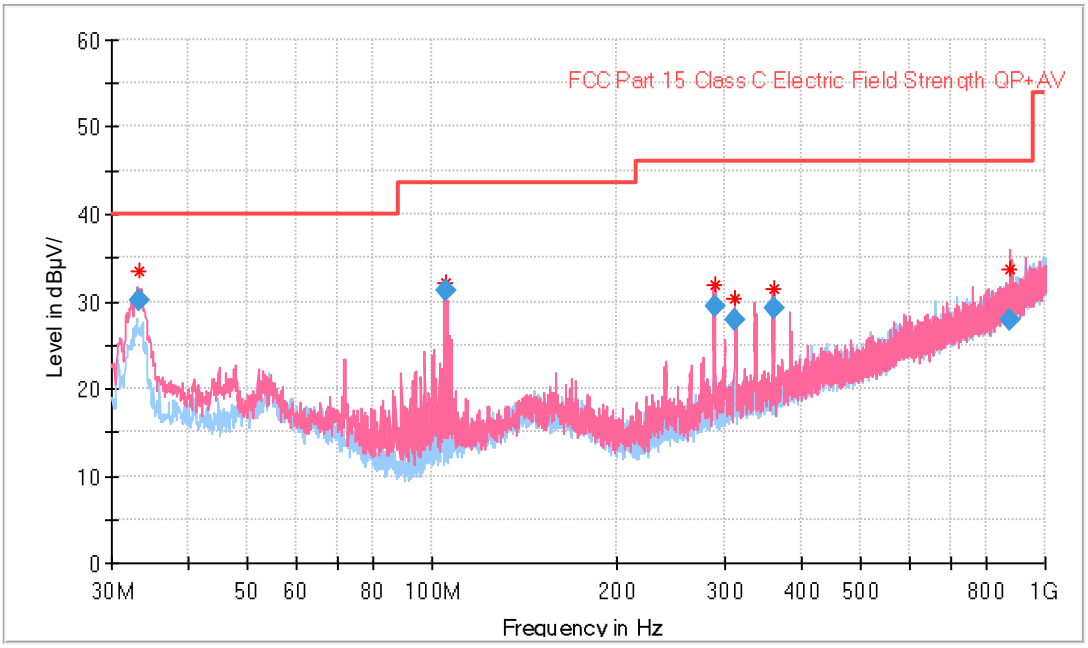


Preview Result 1H-PK+
Preview Result 1V-PK+
Critical_Freqs PK+
FCC Part 15 Class B Electric Field Strength QP+AV
Final_Result QPK
MaxPeak-PK+ (Single)
QuasiPeak-QPK (Single)

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
33.65	30.1	40.0	9.9	15 000.0	120.0	318.0	V	285.0	-13.3
104.89	31.5	43.5	12.0	15 000.0	120.0	225.0	V	2.0	-15.5
288.63	30.2	46.0	15.8	15 000.0	120.0	102.0	V	291.0	-10.8
312.37	28.5	46.0	17.5	15 000.0	120.0	120.0	V	275.0	-10.1
360.94	27.8	46.0	18.2	15 000.0	120.0	125.0	V	228.0	-8.9
882.38	29.5	46.0	16.5	15 000.0	120.0	125.0	V	228.0	2.0

- High CH (2 480 MHz)

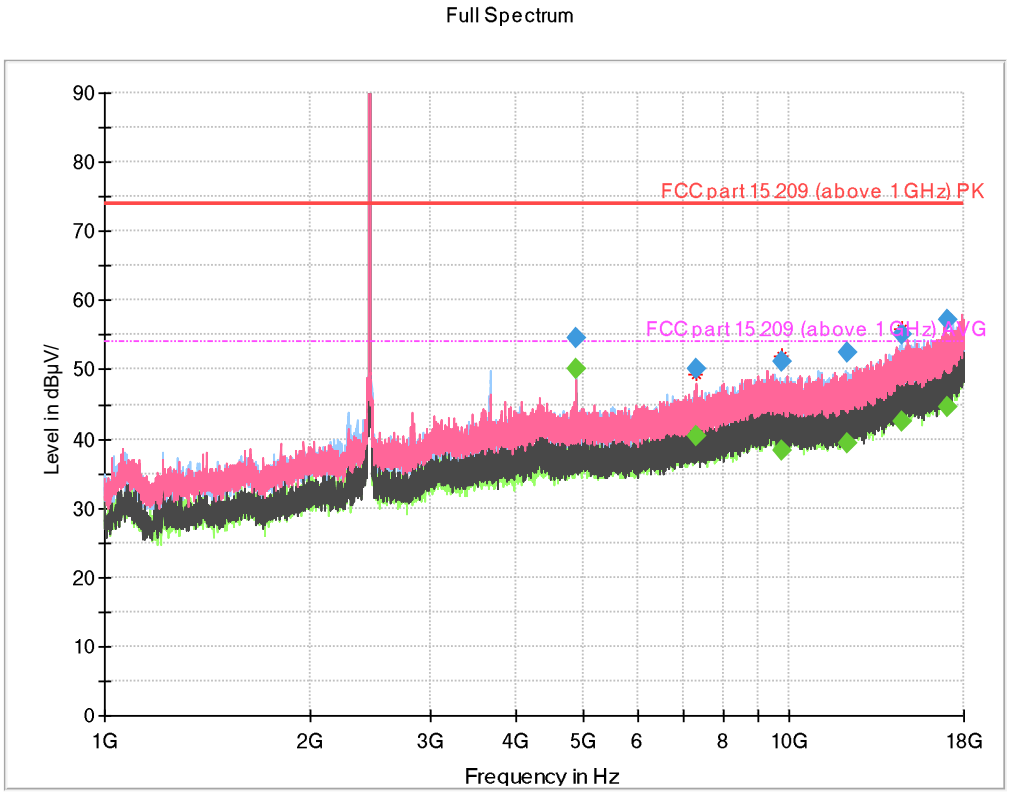


Preview Result 1H-PK+
Preview Result 1V-PK+
Critical_Freqs PK+
FCC Part 15 Class B Electric Field Strength QP+AV
Final_Result QPK
MaxPeak-PK+ (Single)
QuasiPeak-QPK (Single)

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
33.32	30.2	40.0	9.8	15 000.0	120.0	325.0	V	10.0	-13.3
104.90	31.3	43.5	12.2	15 000.0	120.0	225.0	V	10.0	-15.5
288.63	29.4	46.0	16.6	15 000.0	120.0	97.0	V	357.0	-10.8
311.58	27.8	46.0	18.2	15 000.0	120.0	100.0	V	28.0	-10.1
360.57	29.2	46.0	16.8	15 000.0	120.0	125.0	V	96.0	-8.9
875.03	27.9	46.0	18.1	15 000.0	120.0	106.0	V	168.0	1.8

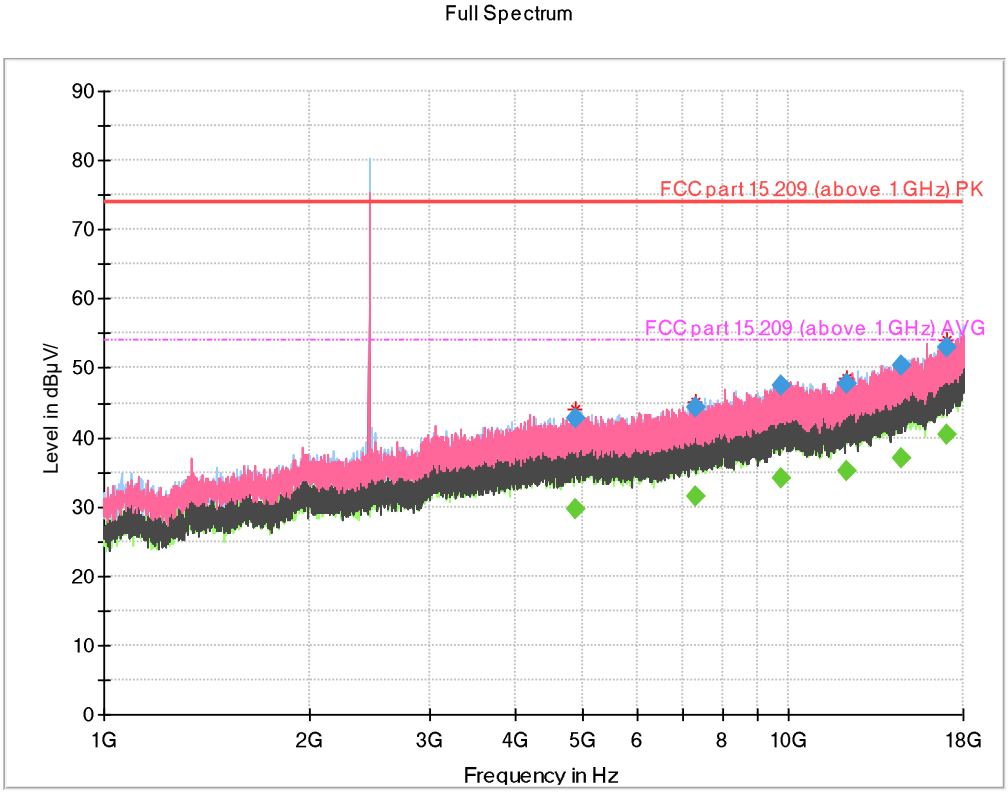
1 GHz ~ 18 GHz
- Low CH (2 402 MHz)



Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Corr. (dB/m)	Height (cm)
4804.00	---	29.63	54.0	24.4	15 000	1 000.0	H	212.0	5.9	142.0
4804.00	42.98	---	74.0	31.0	15 000	1 000.0	H	212.0	5.9	143.0
7206.00	---	31.38	54.0	22.6	15 000	1 000.0	V	94.0	8.1	142.0
7206.00	44.58	---	74.0	29.4	15 000	1 000.0	V	94.0	8.1	157.0
9608.00	---	34.34	54.0	19.7	15 000	1 000.0	V	189.0	11.2	142.0
9608.00	47.45	---	74.0	26.6	15 000	1 000.0	V	188.0	11.2	158.0
12010.00	48.05	---	74.0	25.9	15 000	1 000.0	V	358.0	11.2	158.0
12010.00	---	34.99	54.0	19.0	15 000	1 000.0	V	358.0	11.2	142.0
14412.00	50.04	---	74.0	24.0	15 000	1 000.0	H	183.0	14.2	146.0
14412.00	---	37.10	54.0	16.9	15 000	1 000.0	H	183.0	14.2	142.0
16814.00	---	39.41	54.0	14.6	15 000	1 000.0	V	0.0	16.1	142.0
16814.00	52.28	---	74.0	21.7	15 000	1 000.0	V	0.0	16.1	146.0

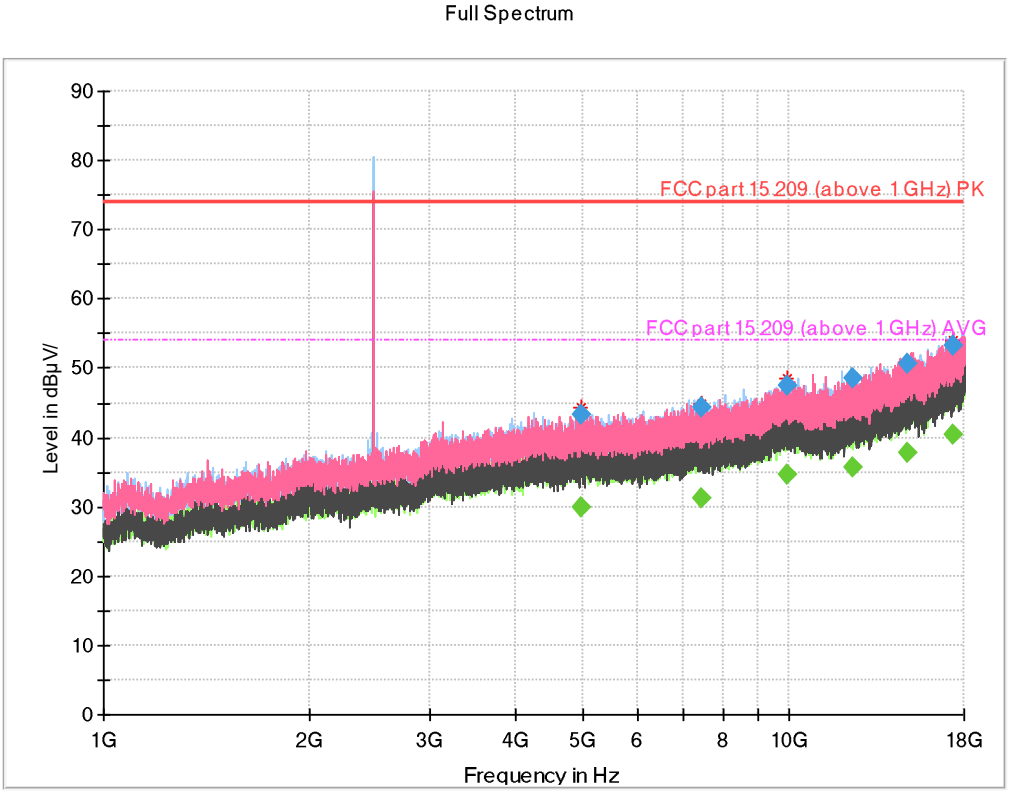
- Middle CH (2 440 MHz)



Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Corr. (dB/m)	Height (cm)
4880.00	---	29.78	54.0	24.2	15 000	1000.0	V	207.0	6.2	142.0
4880.00	42.67	---	74.0	31.3	15 000	1000.0	V	208.0	6.2	142.0
7320.00	---	31.55	54.0	22.4	15 000	1000.0	H	329.0	8.2	142.0
7320.00	44.42	---	74.0	29.6	15 000	1000.0	H	329.0	8.2	144.0
9760.00	---	34.20	54.0	19.8	15 000	1000.0	H	311.0	11.3	142.0
9760.00	47.42	---	74.0	26.6	15 000	1000.0	V	193.0	11.3	158.0
12200.00	47.85	---	74.0	26.2	15 000	1000.0	V	357.0	11.4	152.0
12200.00	---	35.12	54.0	18.9	15 000	1000.0	V	357.0	11.4	142.0
14640.00	50.25	---	74.0	23.7	15 000	1000.0	H	206.0	14.4	145.0
14640.00	---	36.94	54.0	17.1	15 000	1000.0	V	151.0	14.4	142.0
17080.00	---	40.31	54.0	13.7	15 000	1000.0	V	277.0	16.5	142.0
17080.00	53.12	---	74.0	20.9	15 000	1000.0	V	277.0	16.5	148.0

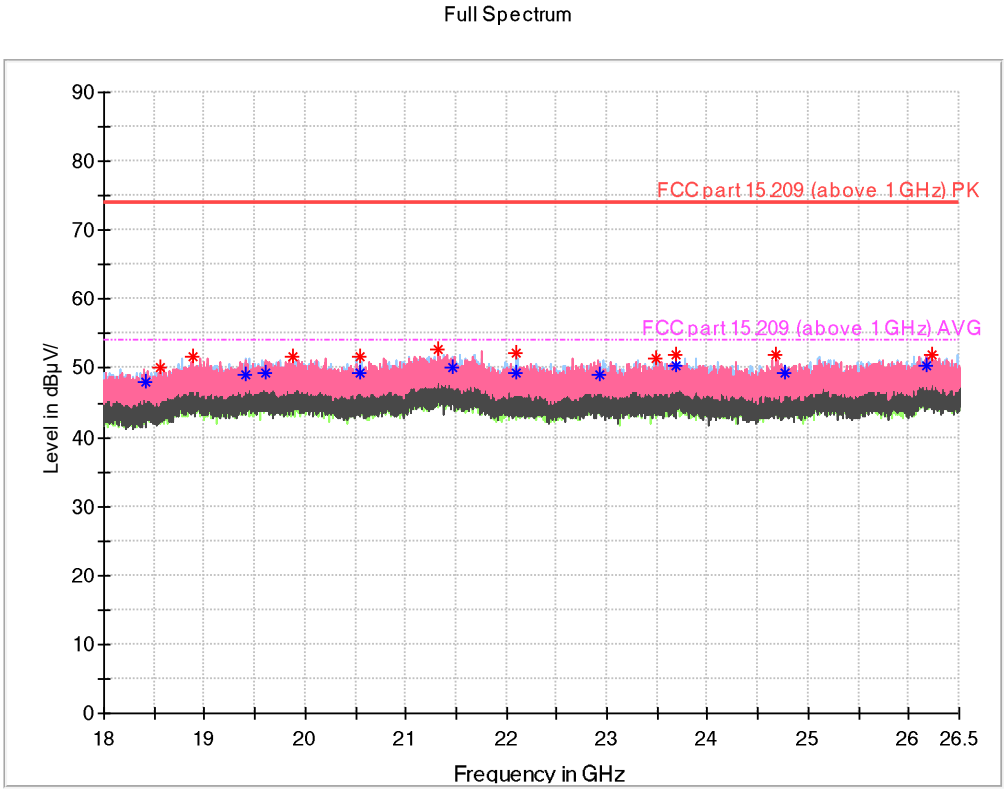
- High CH (2 480 MHz)



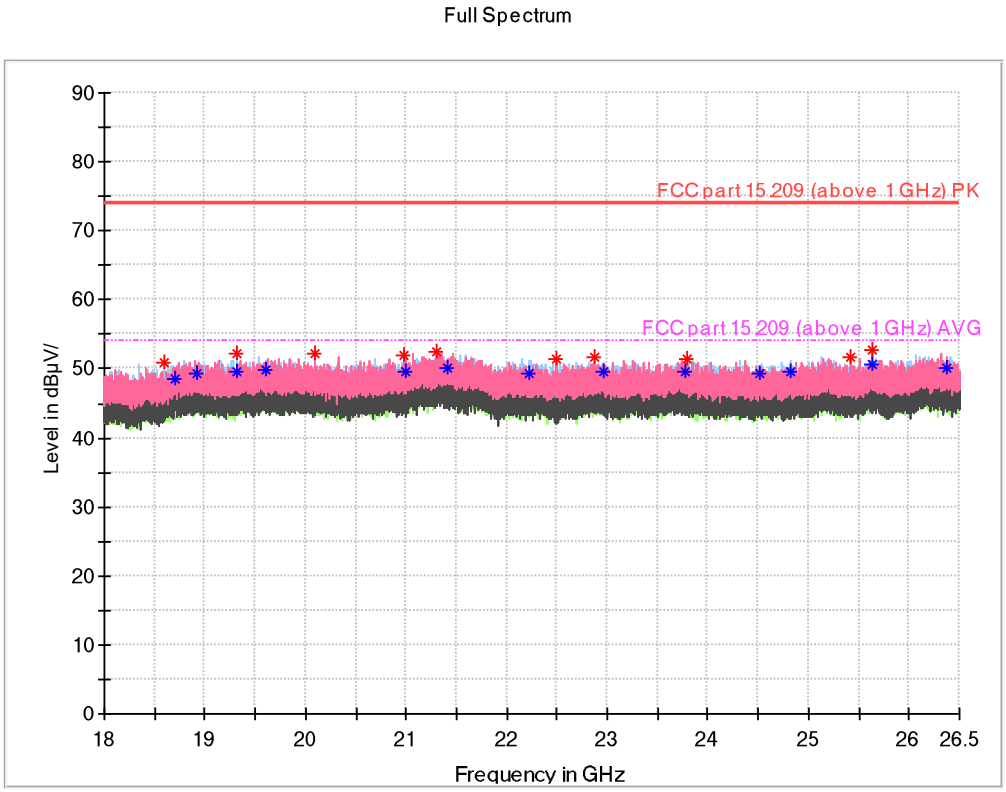
Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Corr. (dB/m)	Height (cm)
4960.00	---	29.97	54.0	24.0	15 000	1000.0	V	282.0	6.5	143.0
4960.00	43.38	---	74.0	30.6	15 000	1000.0	V	283.0	6.5	143.0
7440.00	---	31.25	54.0	22.7	15 000	1000.0	V	268.0	8.1	143.0
7440.00	44.40	---	74.0	29.6	15 000	1000.0	V	268.0	8.1	157.0
9920.00	---	34.60	54.0	19.4	15 000	1000.0	V	312.0	11.4	157.0
9920.00	47.46	---	74.0	26.5	15 000	1000.0	V	311.0	11.4	158.0
12400.00	48.66	---	74.0	25.3	15 000	1000.0	V	0.0	11.3	157.0
12400.00	---	35.60	54.0	18.4	15 000	1000.0	V	1.0	11.3	158.0
14880.00	50.63	---	74.0	23.4	15 000	1000.0	V	64.0	14.7	154.0
14880.00	---	37.79	54.0	16.2	15 000	1000.0	V	65.0	14.7	142.0
17360.00	---	40.35	54.0	13.6	15 000	1000.0	V	339.0	17.1	142.0
17360.00	53.15	---	74.0	20.9	15 000	1000.0	V	339.0	17.1	146.0

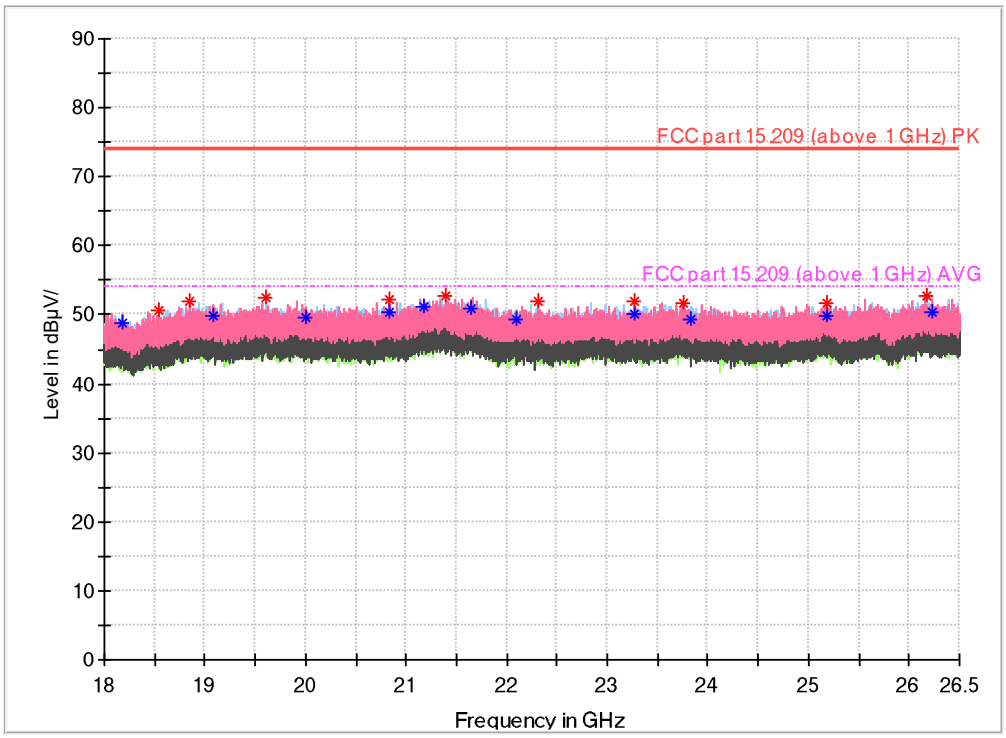
18 GHz ~ 26.5 GHz
- Low CH (2 402 MHz)



- Middle CH (2 440 MHz)



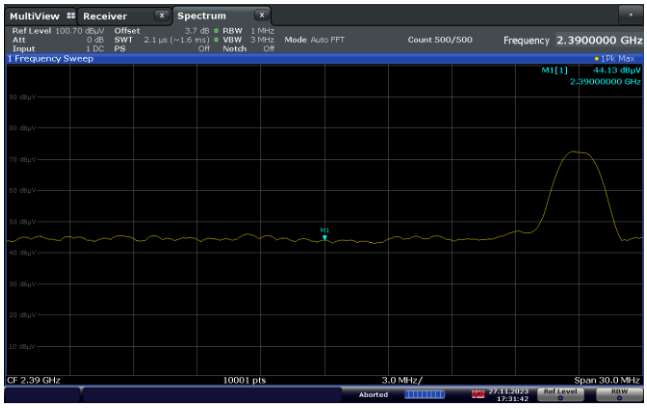
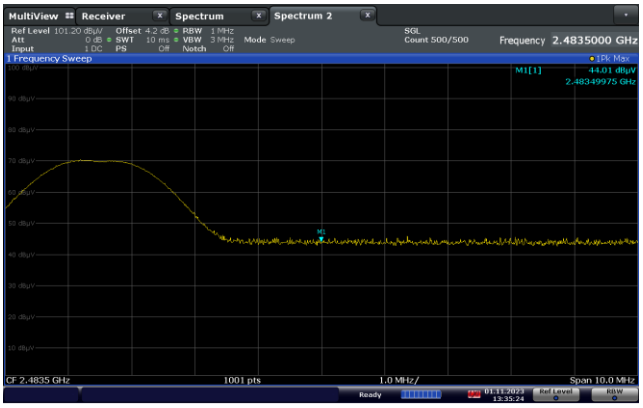
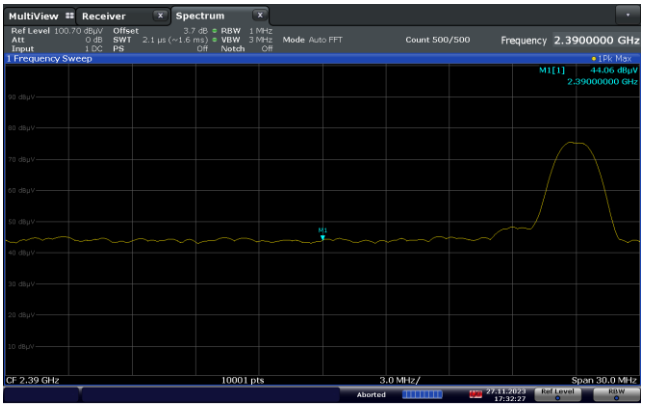
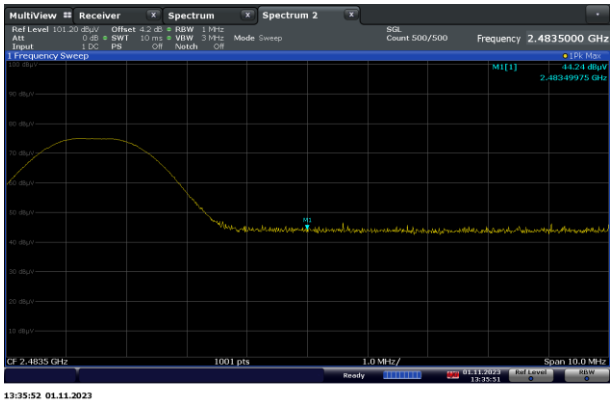
- High CH (2 480 MHz)



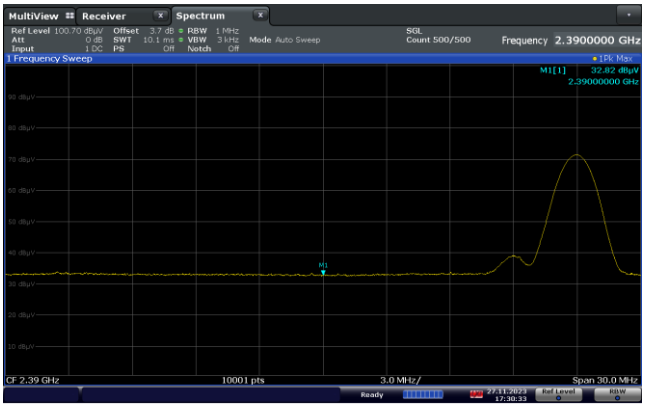
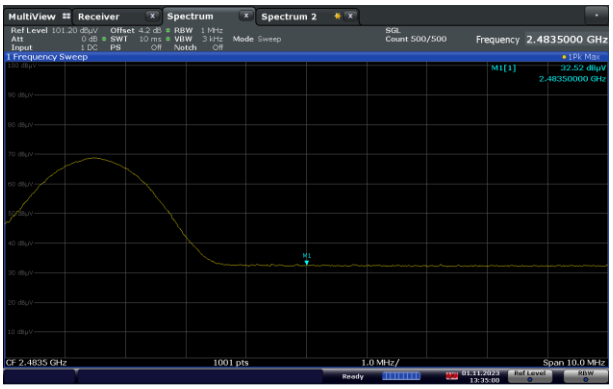
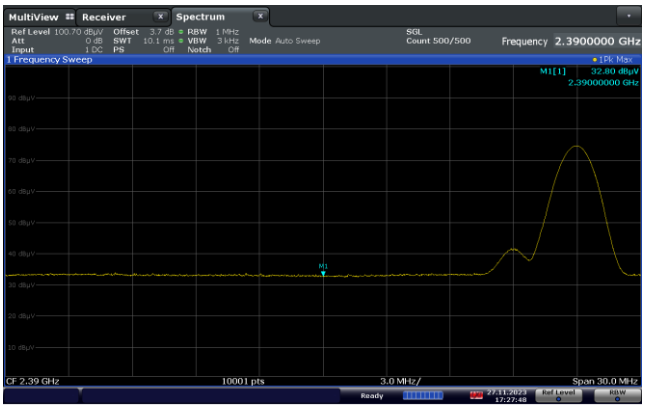
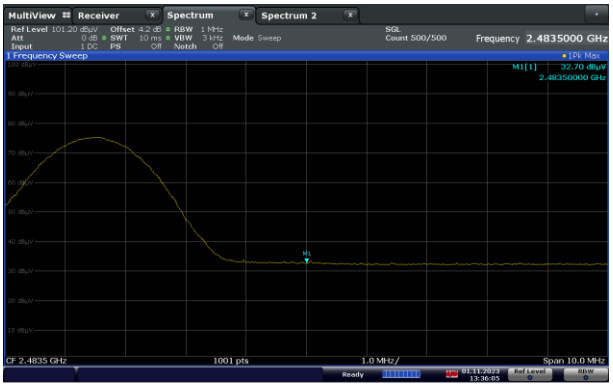
Band-edge and Restricted band

Frequency (MHz)	Reading (dBµV/m)	Corr. (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Detector
2 390.0	40.43	3.7	44.13	74.0	29.87	H	Peak
2 390.0	29.12	3.7	32.82	54.0	21.18	H	Average
2 390.0	40.36	3.7	44.06	74.0	29.94	V	Peak
2 390.0	29.10	3.7	32.80	54.0	21.20	V	Average
2 483.5	39.81	4.2	44.01	74.0	29.99	H	Peak
2 483.5	28.32	4.2	32.52	54.0	21.48	H	Average
2 483.5	40.04	4.2	44.24	74.0	29.76	V	Peak
2 483.5	28.50	4.2	32.70	54.0	21.30	V	Average

Peak Plots

	2 390 MHz	2 483.5 MHz
H		
V		

Average Plots

	2 390 MHz	2 483.5 MHz
H		
V		

3.7 AC Power line Conducted Emissions

3.7.1 Test Limit

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN)

Frequency Range [MHz]	Limits[dBµV]	
	Quasi-peak[(a)]	Average[(a)]
0.15 to 0.50	66 to 56[(a)]	56 to 46[(a)]
0.50 to 5	56	46
5 to 30	60	50

(a) Decreases with the logarithm of the frequency

Compliance with this provision shall be based on the measurement of the radio frequency Voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

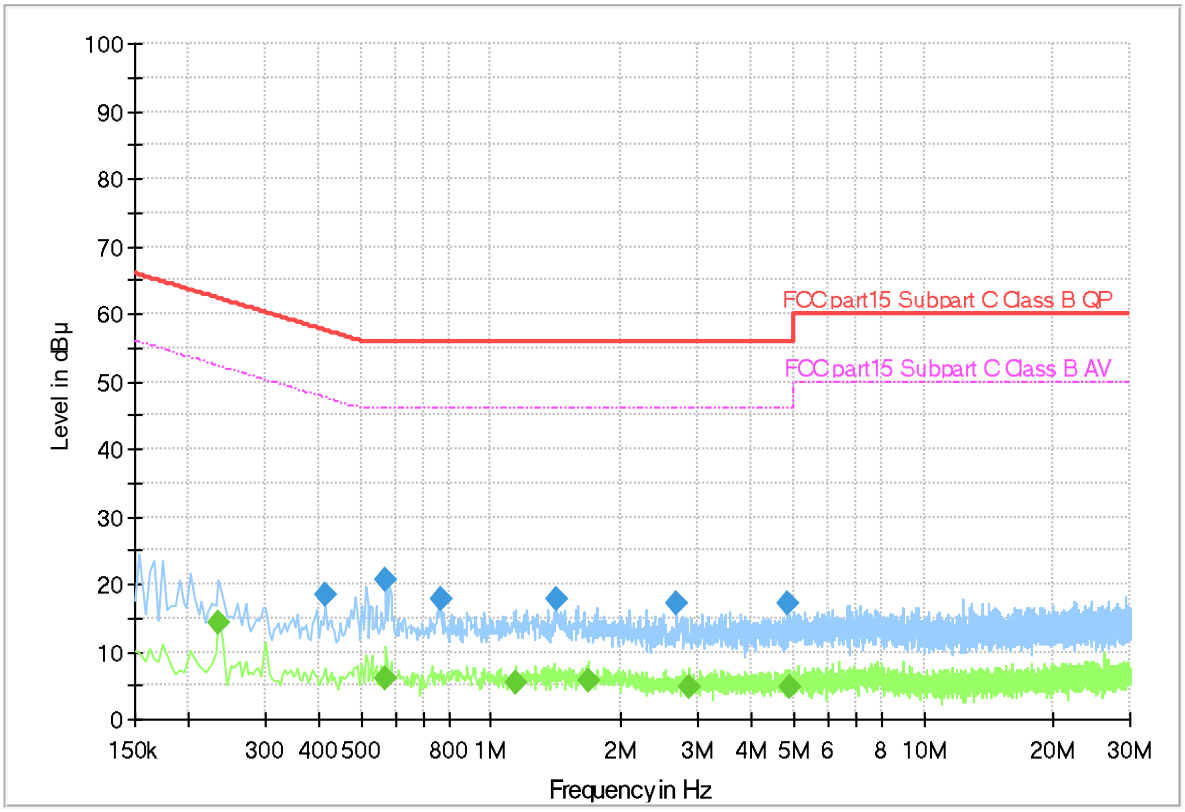
3.7.2 Test Configuration

See test photographs attached in Annex A for the actual connections between EUT and support equipment.

3.7.3 Test Procedure

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below.
4. Detectors : Quasi Peak and Average Detector.

3.7.4 Test Results and Plots



Preview Result 2-AVG
FCC part15 Subpart B Class B QP
Final_Result PK+
Preview Result 1-PK+
FCC part15 Subpart B Class B AV
Final_Result AVG

Final_Result

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.23	---	14.4	52.3	37.9	3000.0	9.0	L1	9.8
0.41	18.3	---	57.6	39.2	3000.0	9.0	L1	9.9
0.57	20.5	---	56.0	35.5	3000.0	9.0	N	10.0
0.57	---	5.9	46.0	40.1	3000.0	9.0	N	10.0
0.76	17.9	---	56.0	38.1	3000.0	9.0	N	10.0
1.14	---	5.5	46.0	40.5	3000.0	9.0	L1	10.2
1.41	17.7	---	56.0	38.3	3000.0	9.0	L1	10.2
1.68	---	5.6	46.0	40.4	3000.0	9.0	L1	10.3
2.67	17.2	---	56.0	38.8	3000.0	9.0	L1	10.5
2.88	---	4.8	46.0	41.2	3000.0	9.0	L1	10.5
4.82	17.2	---	56.0	38.8	3000.0	9.0	N	10.3
4.90	---	4.7	46.0	41.3	3000.0	9.0	N	10.3

4. TEST EQUIPMENT

Equipment	Manufacturer	Model	S/N	Cal Date	Due Date
Spectrum Analyzer	Rohde&Schwarz	FSW43	104368	2023-01-20	2024-01-20
Spectrum Analyzer	Rohde&Schwarz	FSW85	101350	2023-01-20	2024-01-20
EMI Test Receiver	Rohde&Schwarz	ESW26	101387	2023-01-27	2024-01-27
Broadband Antenna	Schwarzbeck	VULB9168	01359	2023-01-12	2024-01-12
Horn Antenna	Rohde&Schwarz	HF907	103033	2023-01-17	2024-01-17
DOUBLE RIDGED HORN ANTENNA	ETS-Lindgren	3116	2664	2023-01-05	2024-01-05
RF Amplifier	SONOMA	310N	186358	2023-01-20	2024-01-20
Amplifier	Keysight	83017A	MY57280133	2023-01-20	2024-01-20
Pre Amplifier	INSJOY	BLNA-1826	27886	2023-03-20	2024-03-20
Antenna Mast	INNCO	MA4640-XP-ET	MA4640/648/43220 418/P	Not required	Not required
Antenna Controller	INNCO	CO3000	103033	Not required	Not required
Software	Rohde&Schwarz	EMC32	-	Not required	Not required
POWER METER	AGILENT	GB41290751	E4417A	2023-01-11	2024-01-11
POWER SENSOR	AGILENT	E9323A	US40410259	2023-01-11	2024-01-11
DC POWER SUPPLY	AGILENT	E3645A	MY40000853	2023-01-20	2024-01-20
TWO-LINE V-NETWORK	Rohde&Schwarz	ENV216	101557	2023-01-20	2024-01-20
Pulse Limiter	Rohde&Schwarz	ESH3-Z2	101185	2023-01-20	2024-01-20
EMI Test Receiver	Rohde&Schwarz	ESCI	100273	2023-01-20	2024-01-20
Active Loop Antenna	Schwarzbeck	FMZB 1519 B	00118	2023-02-04	2024-02-04

- End of Test Report-