CFR 47 FCC PART 15 SUBPART C

TEST REPORT

For

Motion Security light RF LINKING

MODEL NUMBER: 356-9563, E23106RFWHT, SMSC0244A40AW008A

REPORT NUMBER: E04A23080331F01401

ISSUE DATE: November 28, 2023

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Prepared for

Meko Lighting Company Limited

No.2, Songlin East Road, Zeng Tian Village, Xin An District, Chang An Town, Dongguan, China

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

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	November 28, 2023	Initial Issue	Joson

Summary of Test Results			
Clause	Test Items	Rules	Test Results
1	20 dB 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:	Meko Lighting Company Limited
Address:	No.2, Songlin East Road, Zeng Tian Village, Xin An District, Chang An Town, Dongguan, China

Manufacturer Information

Company Name:	Meko Lighting Company Limited
Address:	No.2, Songlin East Road, Zeng Tian Village, Xin An District, Chang An Town, Dongguan, China

Factory Information

Company Name:	MEKO INTELLIGENT (CAMBODIA) CO.,LTD
Address:	(58km, National 3th Highway), VEAS POU VILLAGE KHVAV COMMUNE，SAMRONG DISTRICT, TAKEO PROVINCE

EUT Information

EUT Name:	Motion Security light RF LINKING
Model:	356-9563
Series Model:	E23106RFWHT, SMSC0244A40AW008A
Brand:	MEKO®, Patriot Lighting, Luminex, Vaxcel, Dualux
Sample Received Date:	November 13, 2023
Sample Status:	Normal
Sample ID:	A23080331 014
Date of Tested:	November 14, 2023 to November 28, 2023
Hardware version:	V1.0
Software version:	V1.0

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

Prepared By:

Joson Peng
Project Engineer

Checked By:

Alan He
Manager

Approved By:

Shawn Wen
General Manager

Guangdong Global Testing Technology Co., Ltd. GTG CERTIFICATE

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with KDB 414788 D01 Radiated Test Site v01r01, FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013.

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.

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 Item	Measurement Frequency Range	K	U(dB)
AC Power Line Conducted Emission	0.009 MHz ~ 0.15 MHz	2	4.00
	0.15 MHz ~ 30 MHz	2	3.62
Radiated Band edge and Spurious Emission	9kHz ~ 30MHz	2	2.20
	30 MHz ~ 1 GHz	2	3.16
	1 GHz ~ 18 GHz	2	5.64
	18 GHz ~ 26.5 GHz	2	5.54
Conducted Output Power	/	2	0.73
6dB Bandwidth and 99% Occupied Bandwidth	/	2	9.2ppm
Power Spectral Density	/	2	1.84
Conducted Band edge and spurious emission	9kHz ~ 30MHz	2	0.95
	30 MHz ~ 1 GHz	2	1.49
	1 GHz ~ 18 GHz	2	1.75
	18 GHz ~ 26.5 GHz	2	2.06
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	Motion Security light RF LINKING	
Model	356-9563	
Series Model	E23106RFWHT, SMSC0244A40AW008A	
Model Difference	Their electrical circuit design, layout, components used and internal wiring are identical, only the model name is different. We select “356-9563” as the representative model for compliance test.	
Product Description	Operation Frequency	2408 MHz, 2475 MHz
	Modulation Type	GFSK
Ratings	120Vac, 60Hz	
Power Supply	AC	120Vac, 60Hz
	Battery	/

5.2. MAXIMUM FIELD STRENGTH

Frequency Range (MHz)	Frequency (MHz)	Channel Number	Max Peak field strength (dBµV/m)
2408 MHz, 2475 MHz	2408	0	82.66

5.3. CHANNEL LIST

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2408	/	/	/	/	/	/
1	2475	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/

5.4. DESCRIPTION OF AVAILABLE ANTENNAS

Ant.	Frequency (MHz)	Antenna Type	Antenna Gain (dBi)
1	2408 MHz, 2475 MHz	PCB Antenna	0.994

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

Note: The value of the antenna gain was declared by customer.

5.5. TEST CHANNEL CONFIGURATION

Test Mode	Test Channel	Frequency
GFSK	CH 0, CH 1	2408 MHz, 2475 MHz

5.6. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter under 2408, 2475 Band			
Test Software		/	
Modulation Type	Transmit Antenna Number	Test Channel	
		CH 0	CH 1
GFSK	1	Default	Default

5.7. TEST ENVIRONMENT

Environment Parameter	Selected Values During Tests	
Relative Humidity	55 ~ 65 %	
Atmospheric Pressure:	1025 Pa	
Temperature	TN	22 ~ 28 °C
Voltage:	VL	/
	VN	120VAC 60Hz
	VH	/

Note: VL= Lower Extreme Test Voltage
VN= Nominal Voltage
VH= Upper Extreme Test Voltage
TN= Normal Temperature

5.8. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	P/N
1	/	/	/	/

I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	/	/	/	/	/

ACCESSORY

Item	Equipment	Mfr/Brand	Model/Type No.	Specification	Series No.
1	/	/	/	/	/

TEST SETUP

The EUT have the engineer mode inside.

SETUP DIAGRAM FOR TEST

AC conducted emission :

AC Mains ← **EUT**

Radiated Emission:

AC Mains ← **EUT**

RF conducted:

AC Mains ← **EUT**

5.9. MEASURING INSTRUMENT AND SOFTWARE USED

Test Equipment of Conducted RF					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Due Date**
Spectrum Analyzer	Rohde & Schwarz	FSV40	102257	2023/09/18	2024/09/17
Spectrum Analyzer	KEYSIGHT	N9020A	MY51285127	2023/09/18	2024/09/17
EXG Analog Signal Generator	KEYSIGHT	N5173B	MY61253075	2023/09/18	2024/09/17
Vector Signal Generator	Rohde & Schwarz	SMM100A	101899	2023/09/18	2024/09/17
RF Control box	MWRF-test	MW100-RFCB	MW220926GTG	2023/09/18	2024/09/17
Wideband Radio Communication Tester	Rohde & Schwarz	CMW270	102792	2023/09/18	2024/09/17
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	103235	2023/09/18	2024/09/17
temperature humidity chamber	Espec	SH-241	SH-241-2014	2023/09/18	2024/09/17
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	2023/09/18	2024/09/17
Spectrum Analyzer	KEYSIGHT	N9020A	MY51283932	2023/09/18	2024/09/17
Pre-Amplifier	HzEMC	HPA-9K0130	HYPA21001	2023/09/18	2024/09/17
Biconilog Antenna	Schwarzbeck	VULB 9168	01315	2022/10/10	2025/10/09
Biconilog Antenna	ETS	3142E	00243646	2022/03/23	2025/03/22
Loop Antenna	ETS	6502	243668	2022/03/30	2025/03/29
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	2023/09/18	2024/09/17
Spectrum Analyzer	KEYSIGHT	N9020A	MY51283932	2023/09/18	2024/09/17
Pre-Amplifier	A-INFO	HPA-1G1850	HYPA21003	2023/09/18	2024/09/17

Horn antenna	A-INFO	3117	246069	2022/03/11	2025/03/10
Pre-Amplifier	ZKJC	HPA-184057	HYPA21004	2023/09/18	2024/09/17
Horn antenna	ZKJC	3116C	246265	2022/03/29	2025/03/28
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	2023/09/18	2024/09/17
LISN/AMN	Rohde & Schwarz	ENV216	102843	2023/09/18	2024/09/17
NNLK 8129 RC	Schwarzbeck	NNLK 8129 RC	5046	2023/09/18	2024/09/17
Test Software	Farad	EZ-EMC (Ver. EMC-con-3A1 1+)	N/A	N/A	N/A

6. ANTENNA PORT TEST RESULTS

6.1. ON TIME AND DUTY CYCLE

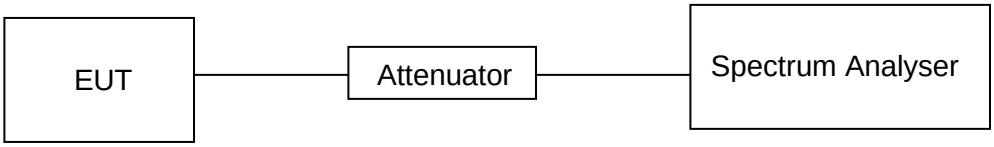
LIMITS

None; for reporting purposes only

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method

TEST SETUP



TEST ENVIRONMENT

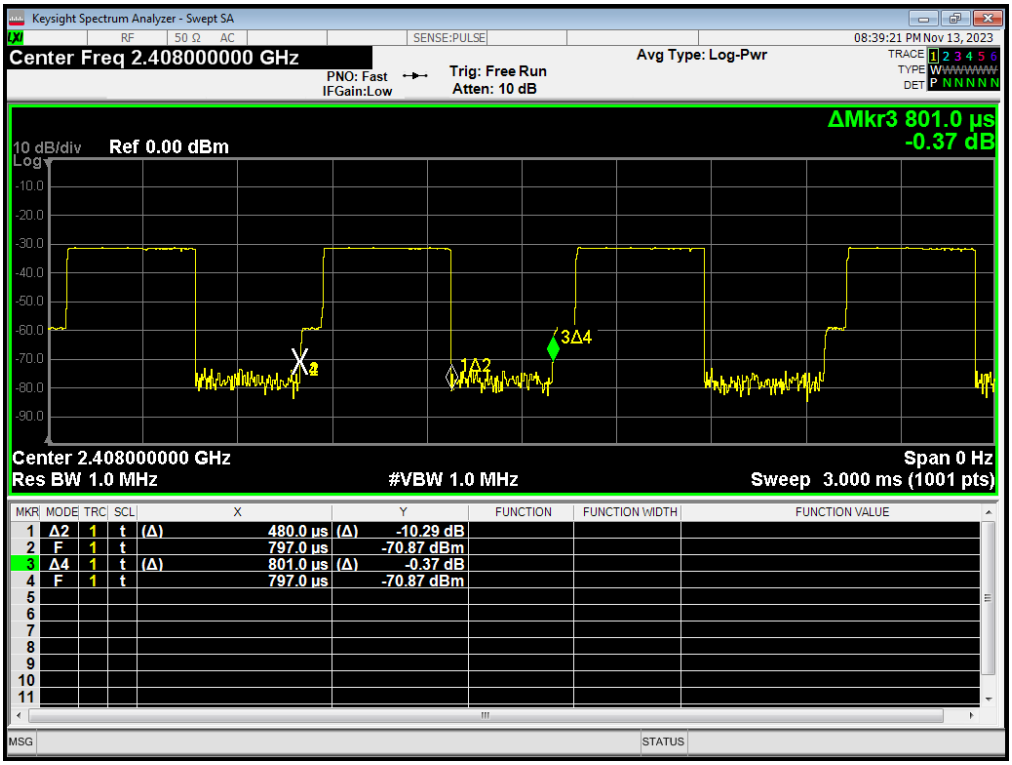
Temperature	22.3 °C	Relative Humidity	53 %
Atmosphere Pressure	101 kPa	Test Voltage	120VAC 60Hz

RESULTS

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)
0.48	0.801	0.599	59.9	2.225	2.083	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 MID CH



6.2. 20 dB 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	2408, 2475

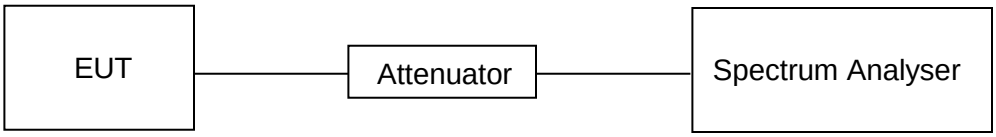
TEST PROCEDURE

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 6 dB / 99 % relative to the maximum level measured in the fundamental emission.

TEST SETUP



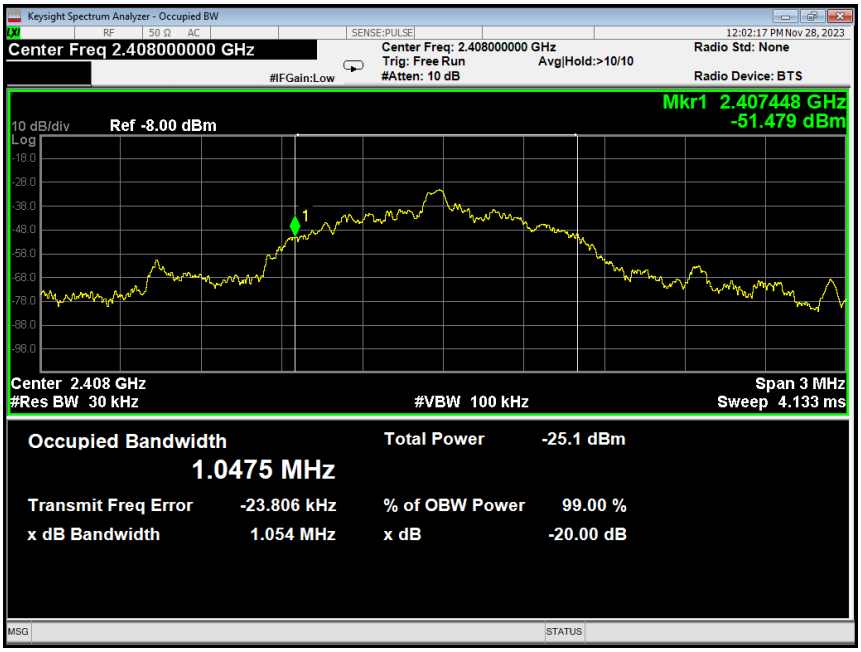
TEST ENVIRONMENT

Temperature	22.3 °C	Relative Humidity	53 %
Atmosphere Pressure	101 kPa	Test Voltage	120VAC 60Hz

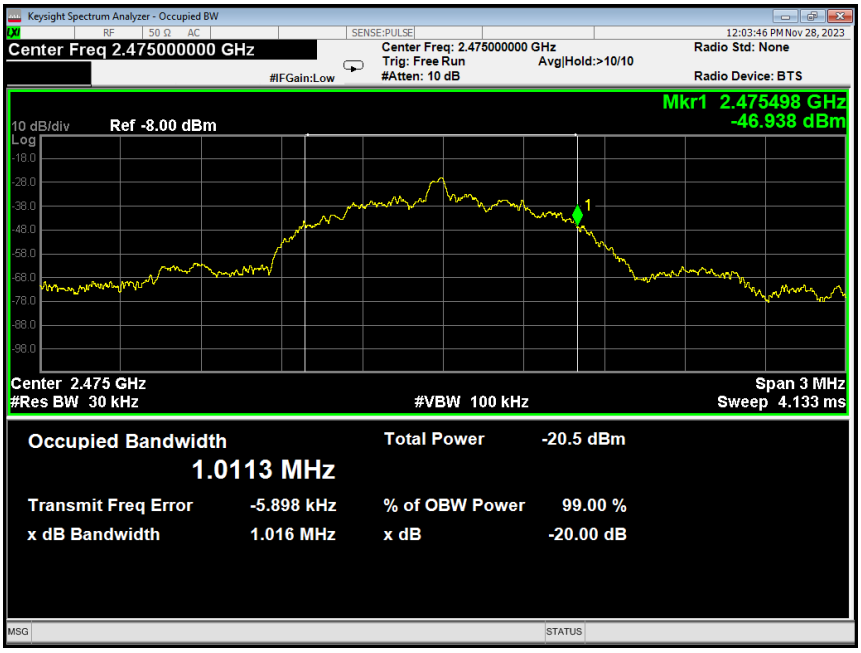
RESULTS

Channel	20dB bandwidth (MHz)	Limit (kHz)	Result
0	1.054	--	Pass
1	1.016	--	Pass

20 dB BANDWIDTH Channel 0



20 dB BANDWIDTH Channel 1



7. RADIATED TEST RESULTS

7.1. LIMITS AND PROCEDURE

LIMITS

CFR 47 FCC §15.205 and §15.209

CFR 47 FCC §15.249 (a)(d)(e)

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

Emissions radiated outside of the specified frequency bands above 30MHz			
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

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

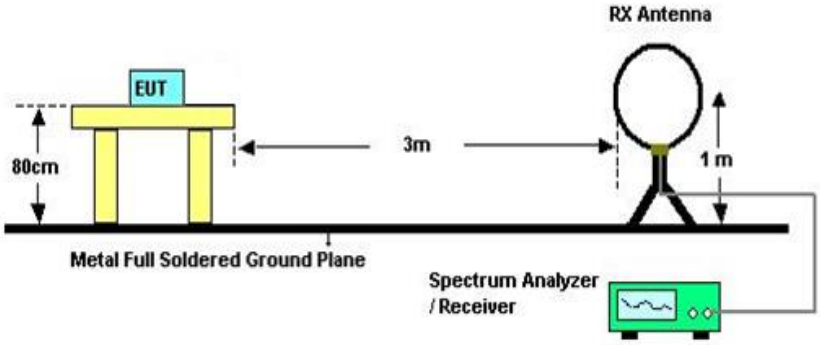
FCC Restricted bands of operation:

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: [1]Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2]Above 38.6c

TEST SETUP AND PROCEDURE

Below 30 MHz



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
Detector	Peak/QP/ Average
Trace	Max hold

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

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 80cm meter above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a 1m height antenna tower.

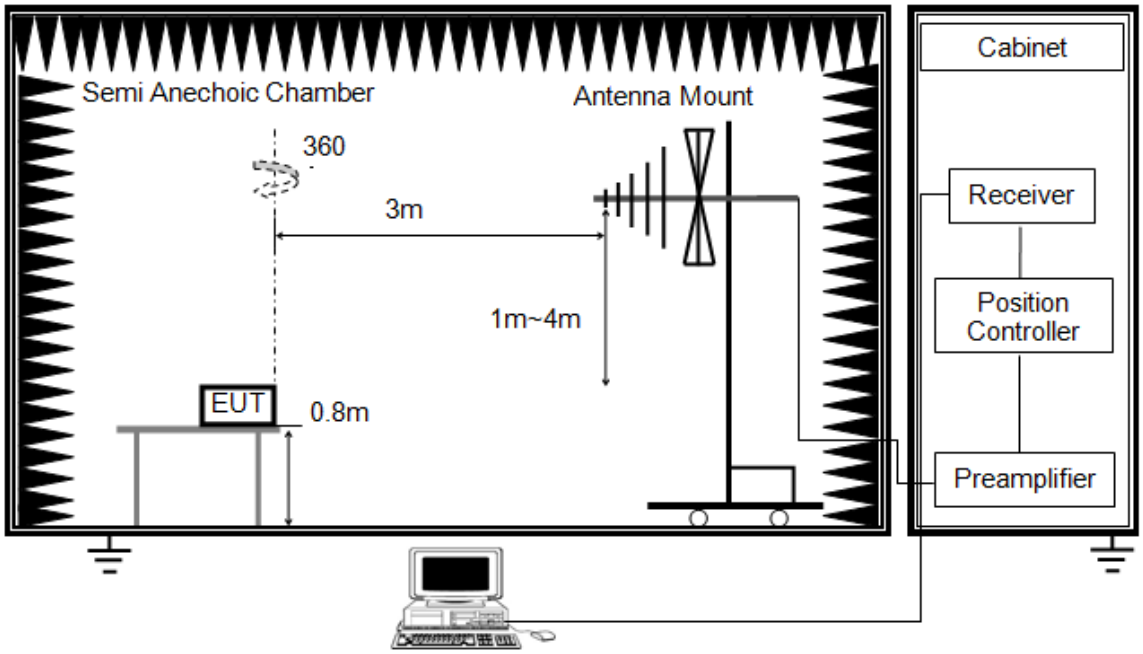
5. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

6. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

7. 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 1000MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

8. Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open field site. Therefore, the sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

Below 1 GHz



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.

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.

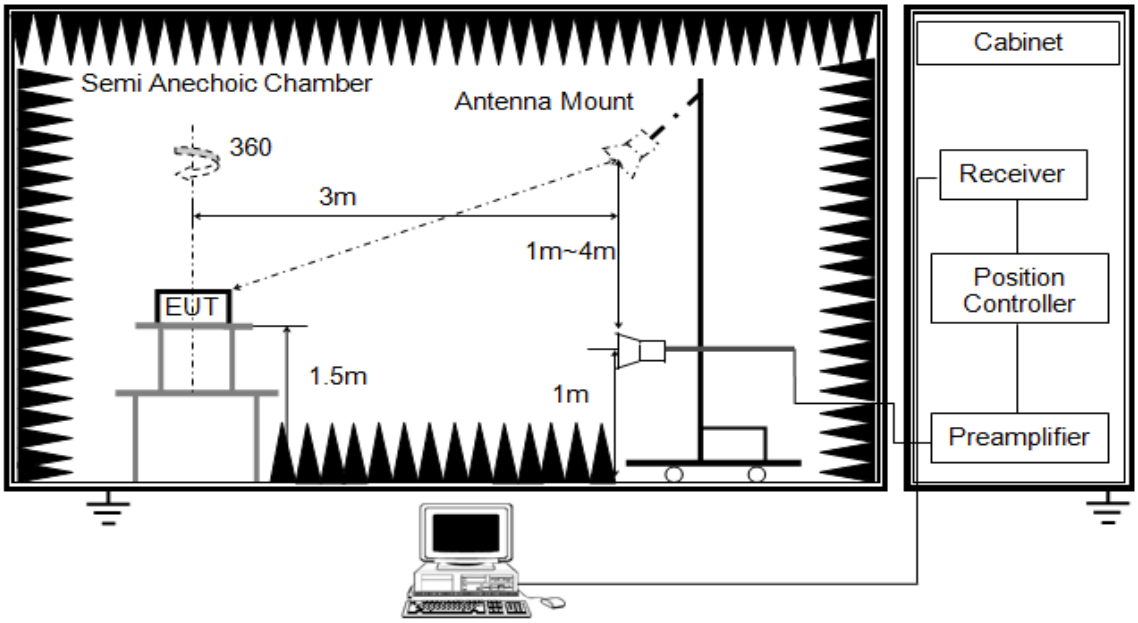
4. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

5. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

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

7. 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.

Above 1 GHz



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.

2. The EUT was arranged to its worst case and then tune the antenna tower (1.5 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter or band reject 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 80cm above ground.

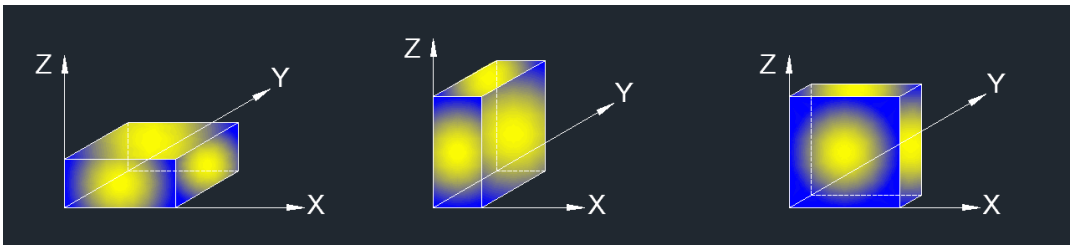
4. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

5. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

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

7. 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 6.1. 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 for horizontal and Y axis for vertical) data recorded in the report.

TEST ENVIRONMENT

Temperature	22.3 °C	Relative Humidity	53 %
Atmosphere Pressure	101 kPa	Test Voltage	120VAC 60Hz

7.2. RESTRICTED BANDEDGE AND FIELD STRENGTH OF INTENTIONAL EMISSIONS

RESTRICTED BANDEDGE AND FIELD STRENGTH OF INTENTIONAL EMISSIONS (2408MHz, HORIZONTAL)

No.	Freq. (MHz)	Reading (dBµV)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dBµV/m)	Det.	Pol.	Corr. (dB)
1	2386.384	62.47	44.47	74.00	29.53	PK+	H	-18
2	2388.400	63.69	45.70	74.00	28.30	PK+	H	-17.99
3	2390.080	63.06	45.07	74.00	28.93	PK+	H	-17.99
4	2399.936	71.44	53.46	74.00	20.54	PK+	H	-17.98

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 emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

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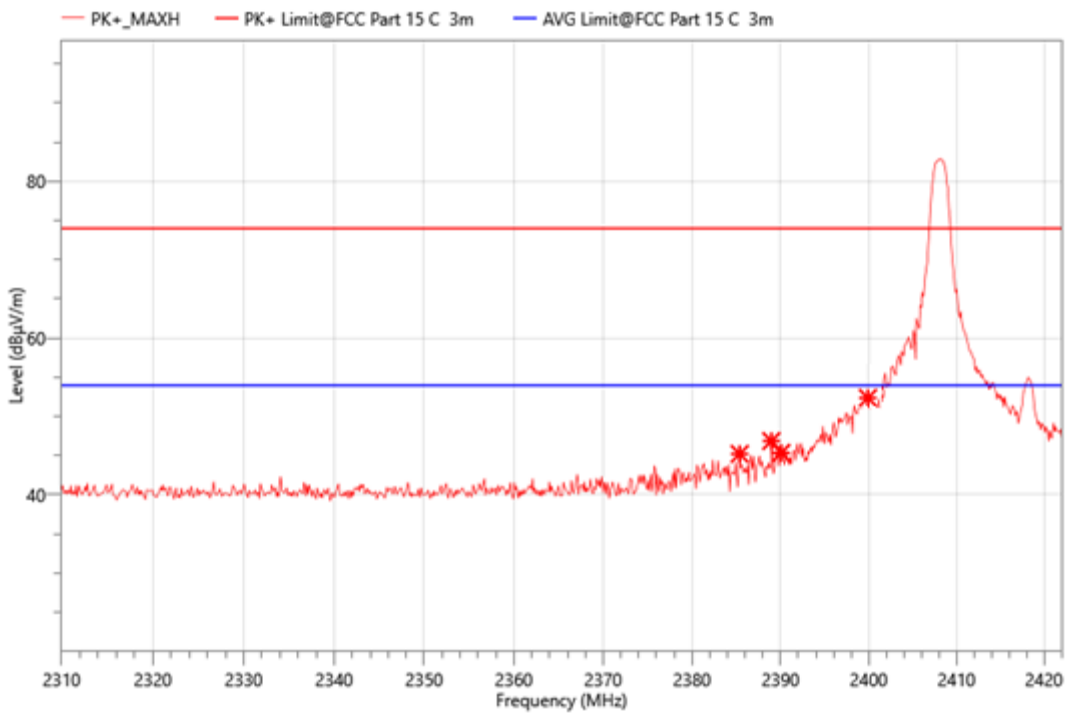
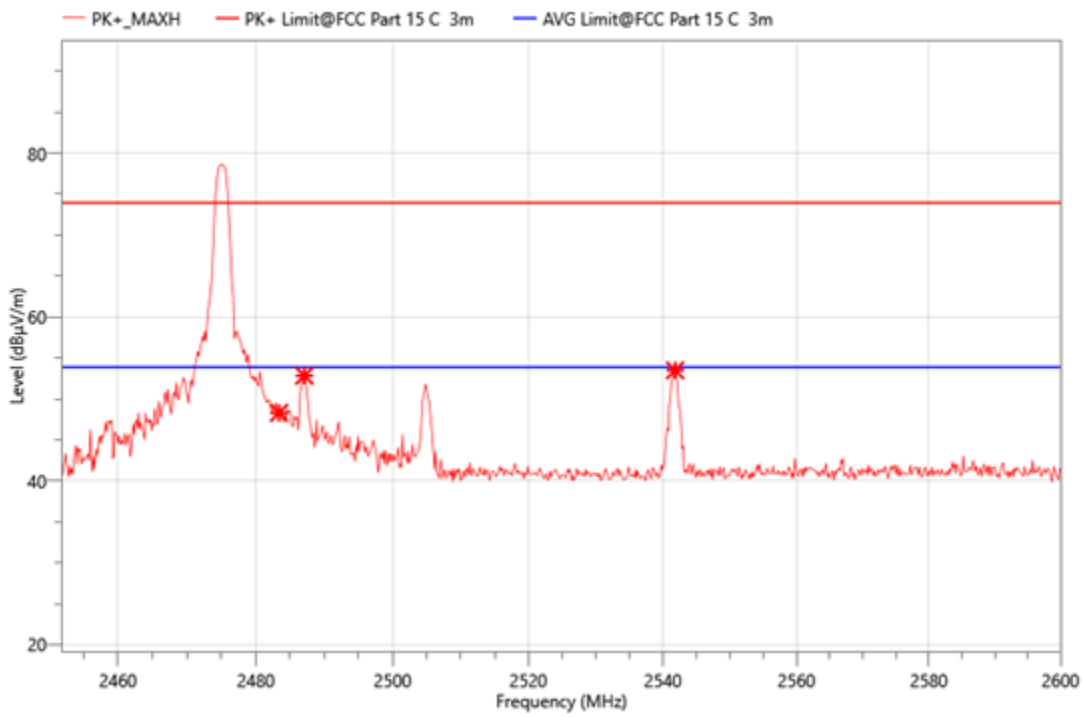
RESTRICTED BANDEDGE AND FIELD STRENGTH OF INTENTIONAL EMISSIONS (2408MHz, VERTICAL)



No.	Freq. (MHz)	Reading (dBµV)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dBµV/m)	Det.	Pol.	Corr. (dB)
1	2385.376	63.22	45.22	74.00	28.78	PK+	V	-18
2	2388.960	64.85	46.86	74.00	27.14	PK+	V	-17.99
3	2390.080	63.34	45.35	74.00	28.65	PK+	V	-17.99
4	2399.936	70.35	52.37	74.00	21.63	PK+	V	-17.98

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 emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

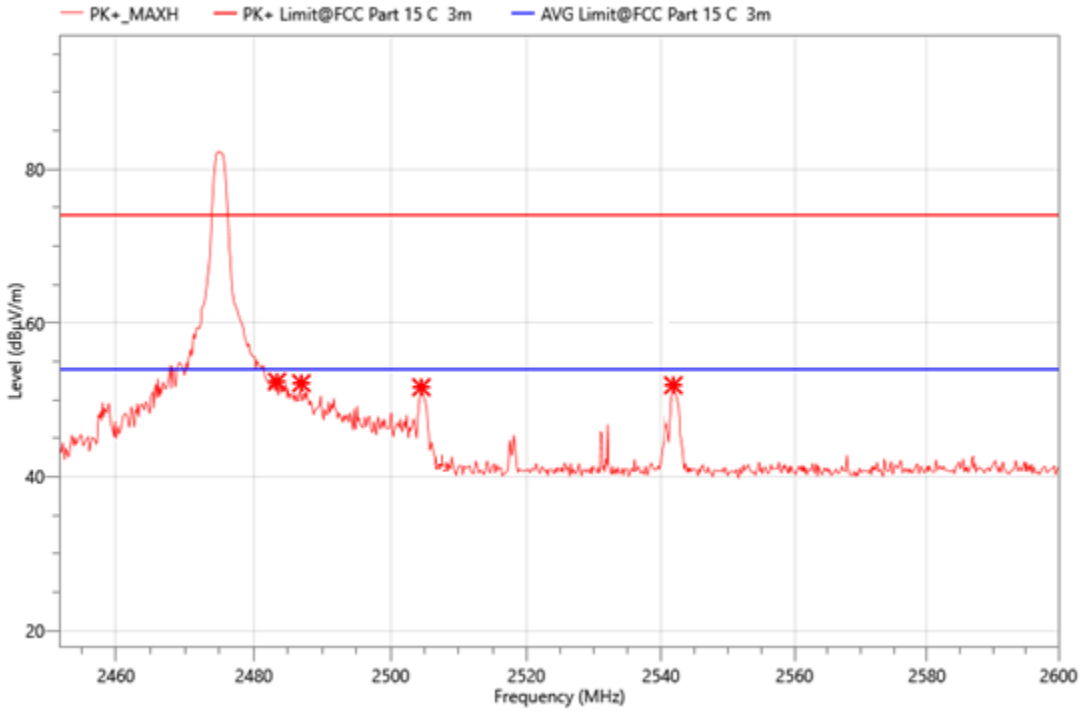
FIELD STRENGTH OF INTENTIONAL EMISSIONS (2475MHz, HORIZONTAL)



No.	Freq. (MHz)	Reading (dBµV)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dBµV/m)	Det.	Pol.	Corr. (dB)
1	2483.376	66.01	48.30	74.00	25.70	PK+	H	-17.71
2	2487.076	70.53	52.83	74.00	21.17	PK+	H	-17.7
3	2541.836	70.99	53.49	74.00	20.51	PK+	H	-17.5

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 emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

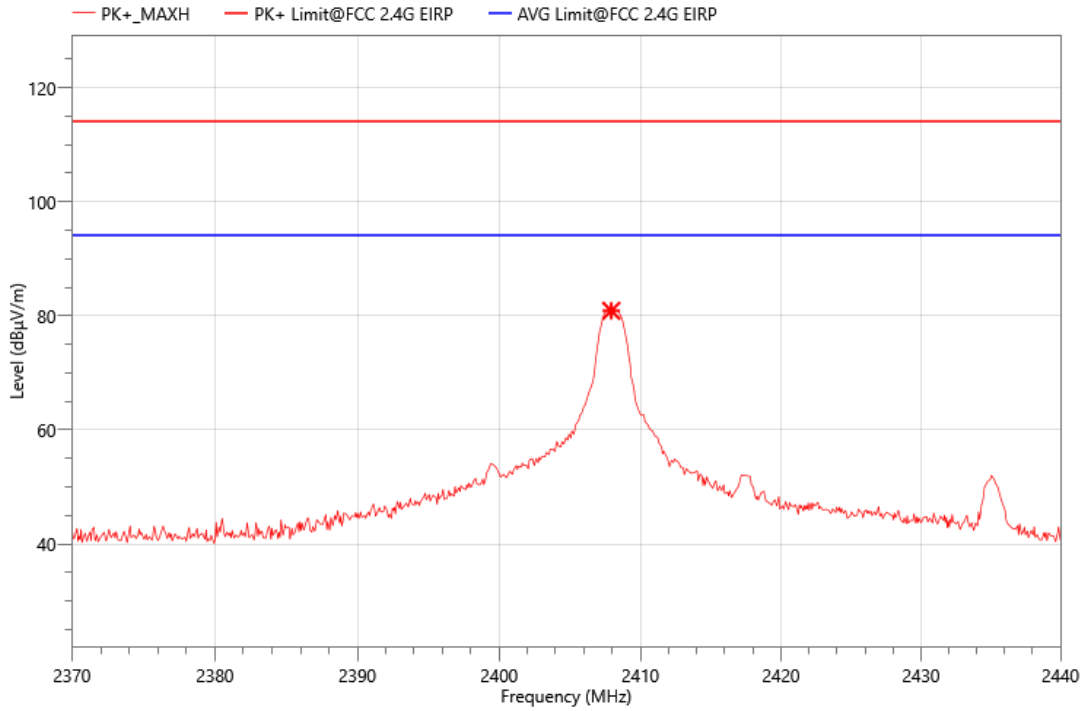
FIELD STRENGTH OF INTENTIONAL EMISSIONS (2475MHz, VERTICAL)



No.	Freq. (MHz)	Reading (dBµV)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dBµV/m)	Det.	Pol.	Corr. (dB)
1	2483.376	70.09	52.38	74.00	21.62	PK+	V	-17.71
2	2486.928	69.77	52.07	74.00	21.93	PK+	V	-17.7
3	2504.984	69.65	51.98	74.00	22.02	PK+	V	-17.67
4	2541.688	69.53	52.03	74.00	21.97	PK+	V	-17.5

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 emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

RESTRICTED BANDEDGE AND FIELD STRENGTH OF INTENTIONAL EMISSIONS (2408MHz, HORIZONTAL)



No.	Freq. (MHz)	Reading (dBµV)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dBµV/m)	Det.	Pol.	Corr. (dB)
1	2407.940	98.76	80.87	114.00	33.13	PK+	H	-17.89

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 emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

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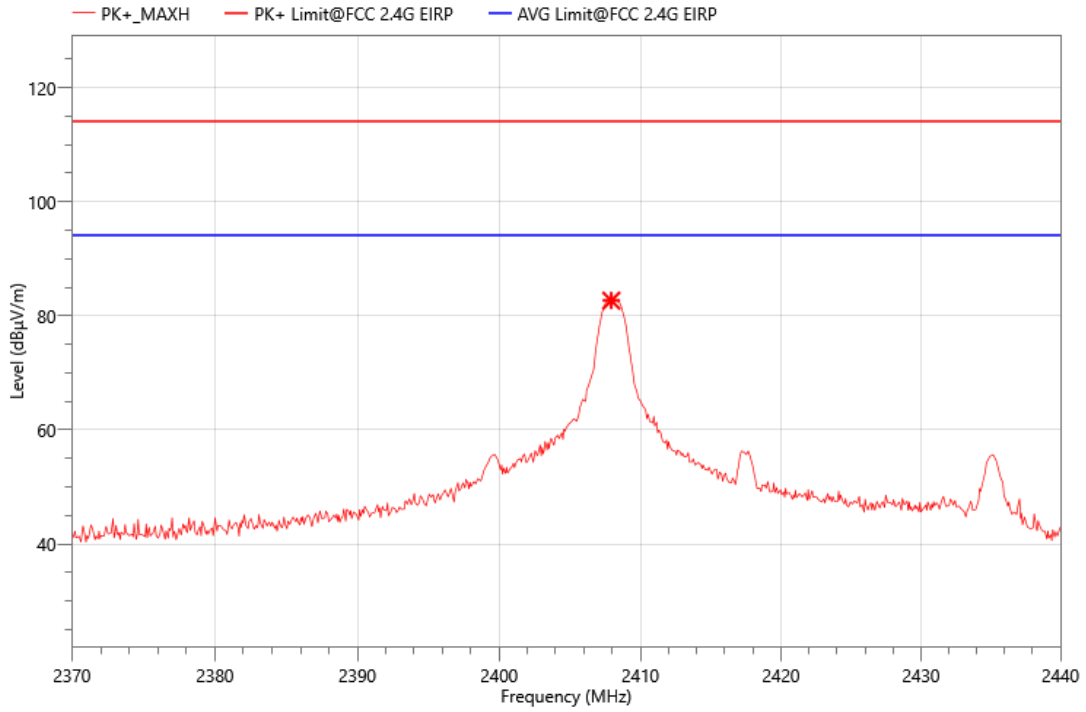
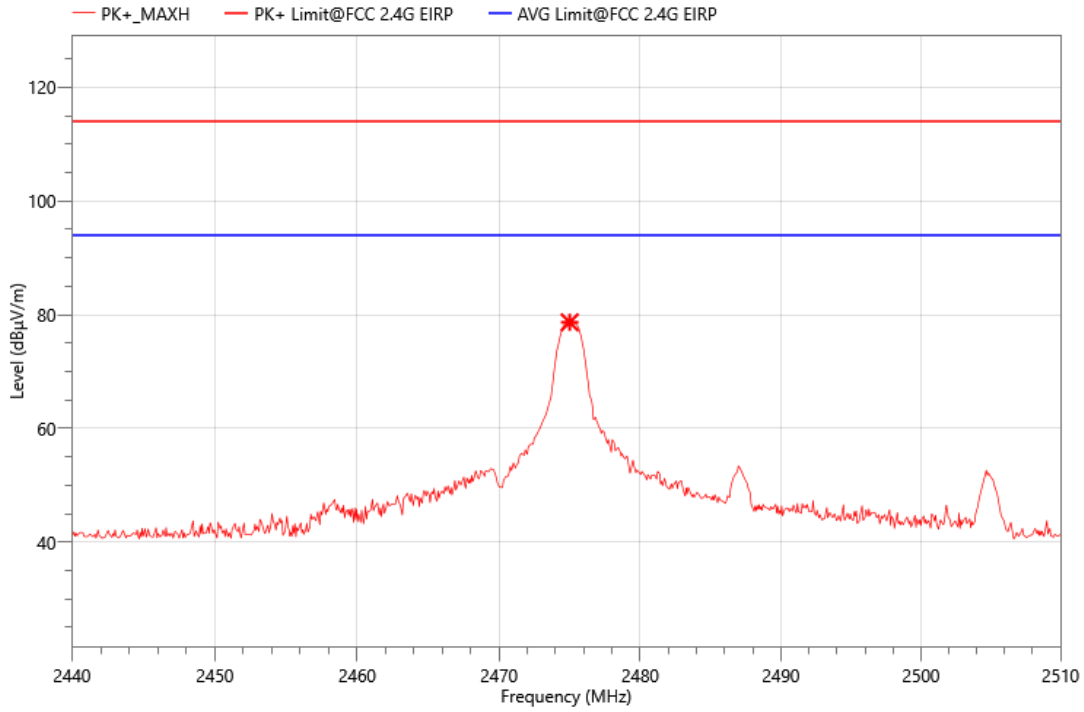
RESTRICTED BANDEDGE AND FIELD STRENGTH OF INTENTIONAL EMISSIONS (2408MHz, VERTICAL)



No.	Freq. (MHz)	Reading (dBµV)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dBµV/m)	Det.	Pol.	Corr. (dB)
1	2407.940	100.55	82.66	114.00	31.34	PK+	V	-17.89

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 emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

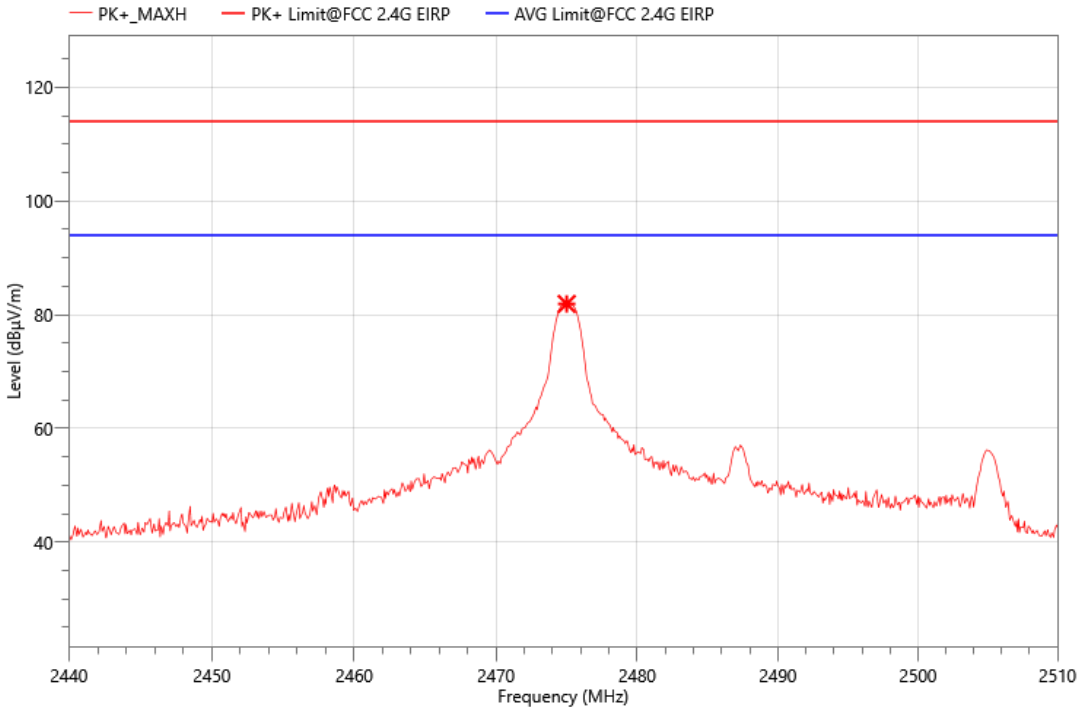
FIELD STRENGTH OF INTENTIONAL EMISSIONS (2475MHz, HORIZONTAL)



No.	Freq. (MHz)	Reading (dBµV)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dBµV/m)	Det.	Pol.	Corr. (dB)
1	2475.000	96.39	78.67	114.00	35.33	PK+	H	-17.72

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 emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

FIELD STRENGTH OF INTENTIONAL EMISSIONS (2475MHz, VERTICAL)

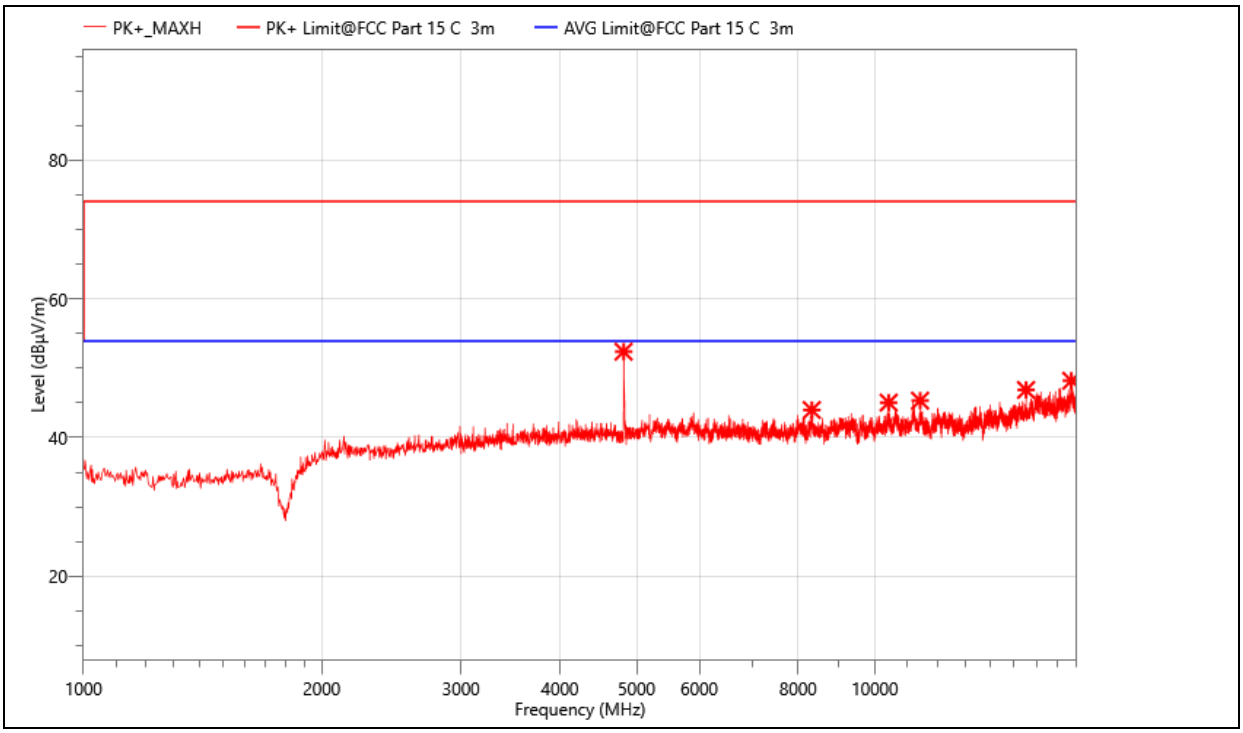


No.	Freq. (MHz)	Reading (dBµV)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dBµV/m)	Det.	Pol.	Corr. (dB)
1	2475.000	99.63	81.91	114.00	32.09	PK+	V	-17.72

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 emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

7.3. SPURIOUS EMISSIONS (Above 1000MHz~10th Harmonics)

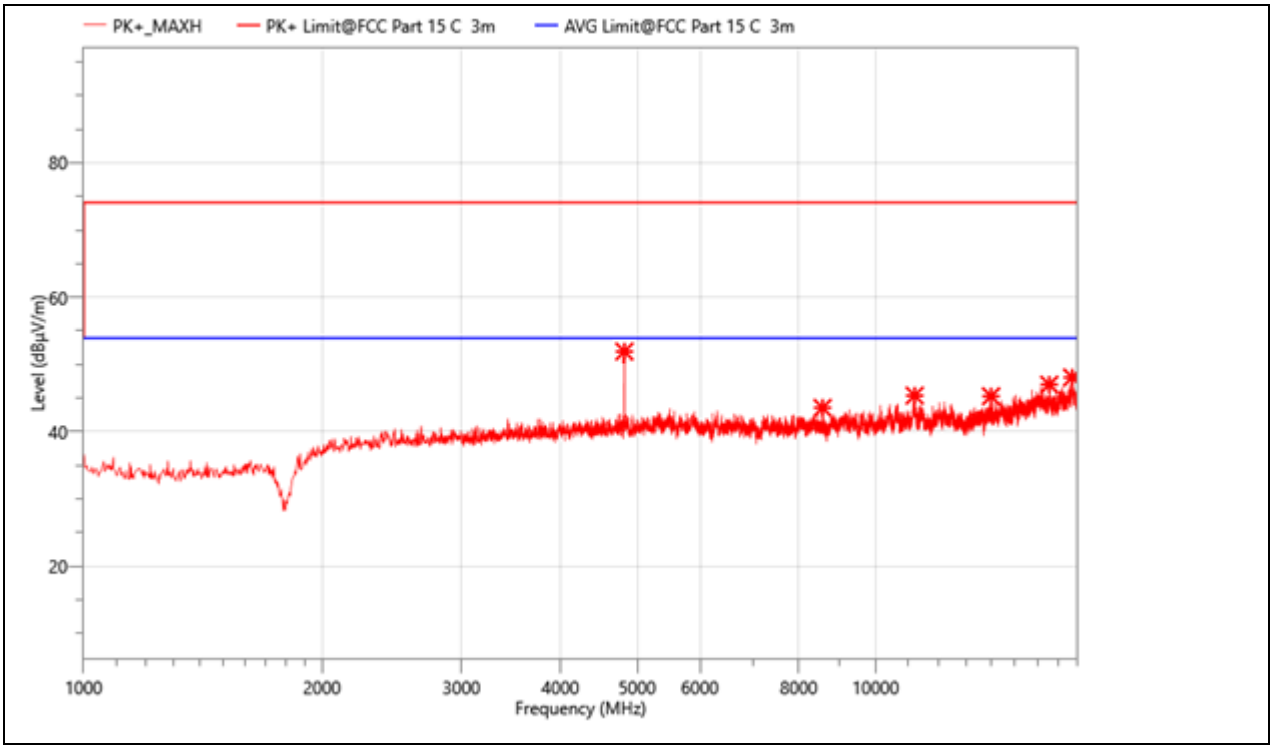
HARMONICS AND SPURIOUS EMISSIONS (2408MHz, HORIZONTAL)



No.	Freq. (MHz)	Reading (dBµV)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dBµV/m)	Det.	Pol.	Corr. (dB)
1	4815.000	63.78	52.39	74.00	21.61	PK+	H	-11.39
2	8325.000	51.62	43.98	74.00	30.02	PK+	H	-7.64
3	10413.000	50.63	45.05	74.00	28.95	PK+	H	-5.58
4	11410.500	49.39	45.33	74.00	28.67	PK+	H	-4.06
5	15531.000	49.55	46.87	74.00	27.13	PK+	H	-2.68
6	17719.500	47.79	48.20	74.00	25.80	PK+	H	0.41

Note: 1. Peak Result = 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. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for BRF losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

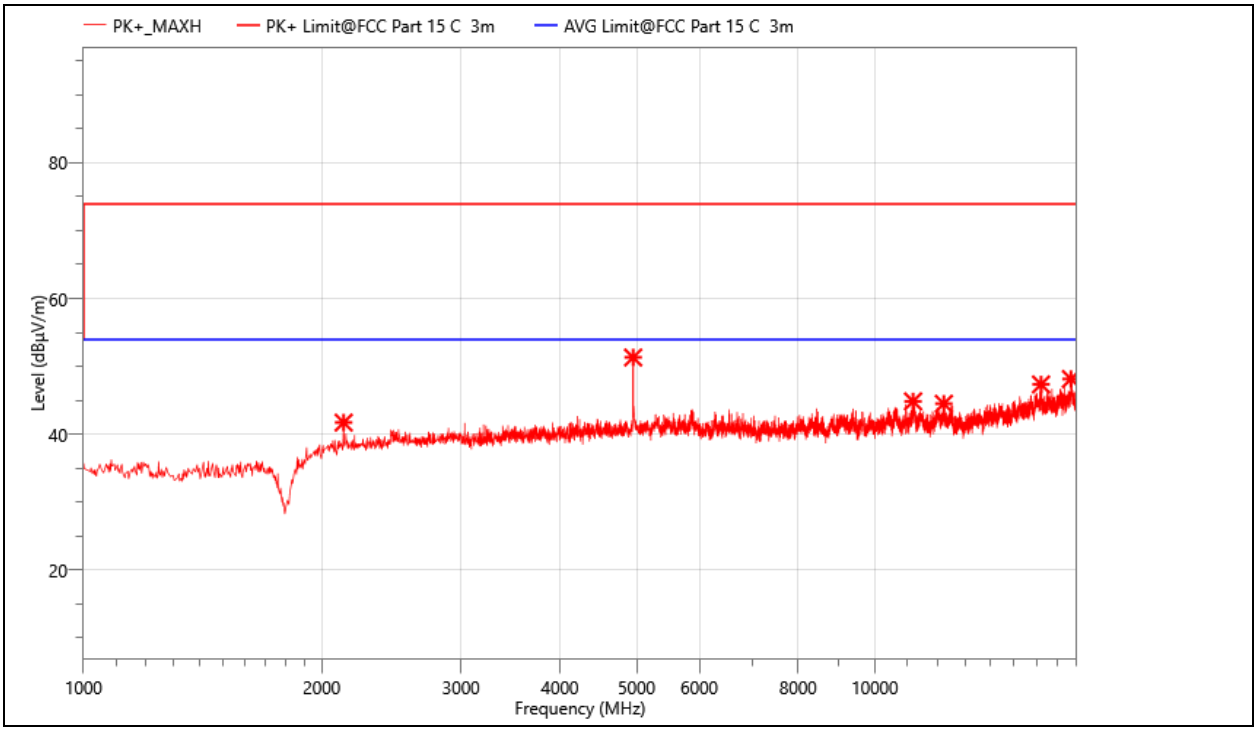
HARMONICS AND SPURIOUS EMISSIONS (2408MHz, VERTICAL)



No.	Freq. (MHz)	Reading (dBµV)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dBµV/m)	Det.	Pol.	Corr. (dB)
1	4815.000	66.51	52.23	74.00	21.77	PK+	V	-11.39
2	8572.500	51.41	43.55	74.00	30.45	PK+	V	-7.86
3	11206.500	49.08	45.38	74.00	28.62	PK+	V	-3.7
4	13992.000	48.45	45.28	74.00	28.72	PK+	V	-3.17
5	16569.000	48.29	47.01	74.00	26.99	PK+	V	-1.28
6	17713.500	47.77	48.07	74.00	25.93	PK+	V	0.3

Note: 1. Peak Result = 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. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for BRF losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

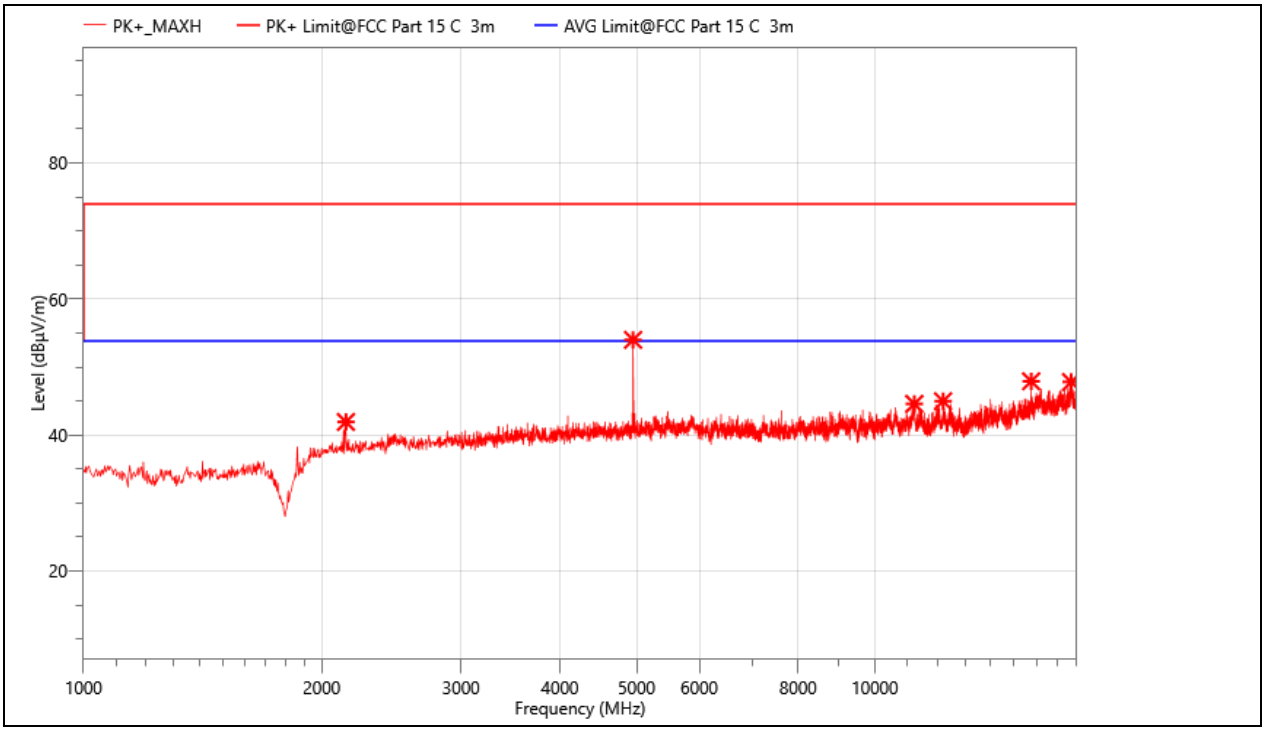
HARMONICS AND SPURIOUS EMISSIONS (2475MHz, HORIZONTAL)



No.	Freq. (MHz)	Reading (dBµV)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dBµV/m)	Det.	Pol.	Corr. (dB)
1	2132.000	59.77	41.74	74.00	32.26	PK+	H	-18.03
2	4950.000	62.71	51.32	74.00	22.68	PK+	H	-11.39
3	11178.000	49.05	44.86	74.00	29.14	PK+	H	-4.19
4	12225.000	48.78	44.51	74.00	29.49	PK+	H	-4.27
5	16224.000	47.78	47.35	74.00	26.65	PK+	H	-0.43
6	17697.000	48.17	48.15	74.00	25.85	PK+	H	-0.02

Note: 1. Peak Result = 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. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for BRF losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

HARMONICS AND SPURIOUS EMISSIONS (2475MHz, VERTICAL)

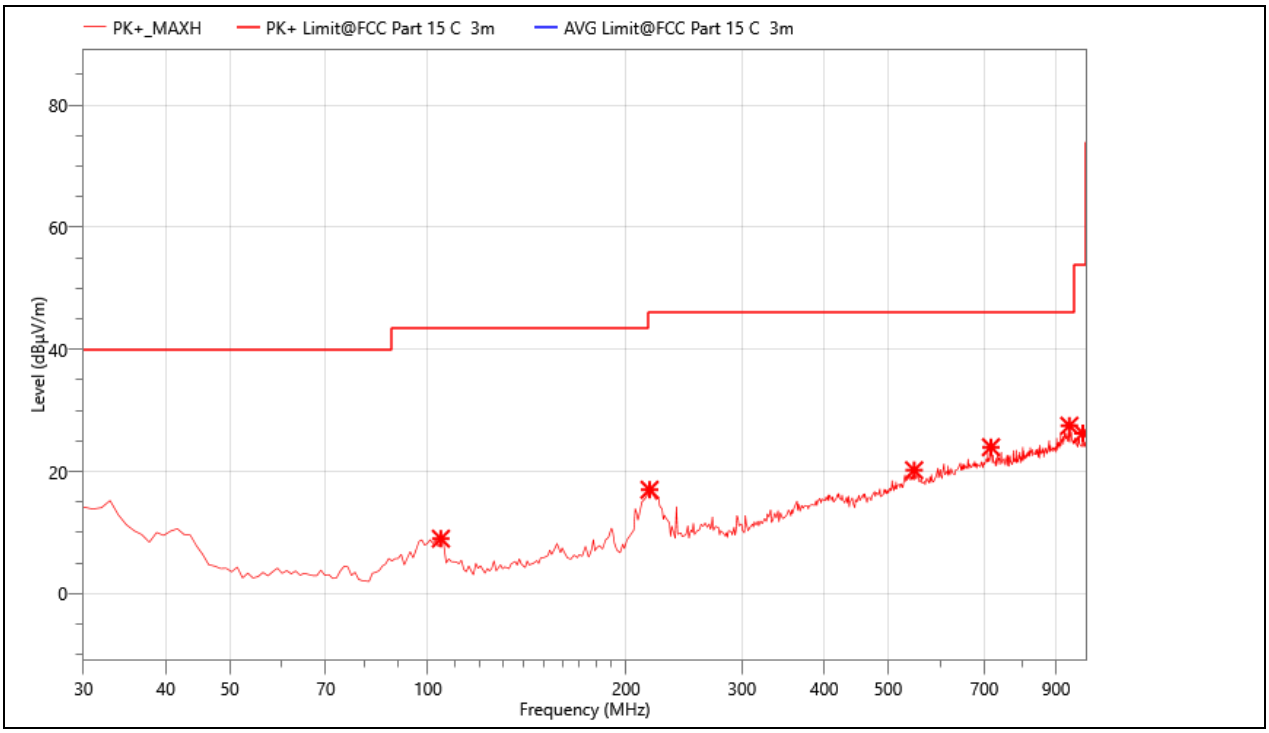


No.	Freq. (MHz)	Reading (dBµV)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dBµV/m)	Det.	Pol.	Corr. (dB)
1	2146.000	59.92	41.93	74.00	32.07	PK+	V	-17.99
2	4948.500	65.36	53.99	74.00	20.01	PK+	V	-11.37
3	11220.000	48.12	44.59	74.00	29.41	PK+	V	-3.53
4	12199.500	49.34	44.98	74.00	29.02	PK+	V	-4.36
5	15763.500	49.89	47.90	74.00	26.10	PK+	V	-1.99
6	17707.500	47.62	47.80	74.00	26.20	PK+	V	0.18

Note: 1. Peak Result = 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. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for BRF losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

7.4. SPURIOUS EMISSIONS BELOW 1 GHz AND ABOVE 30 MHz

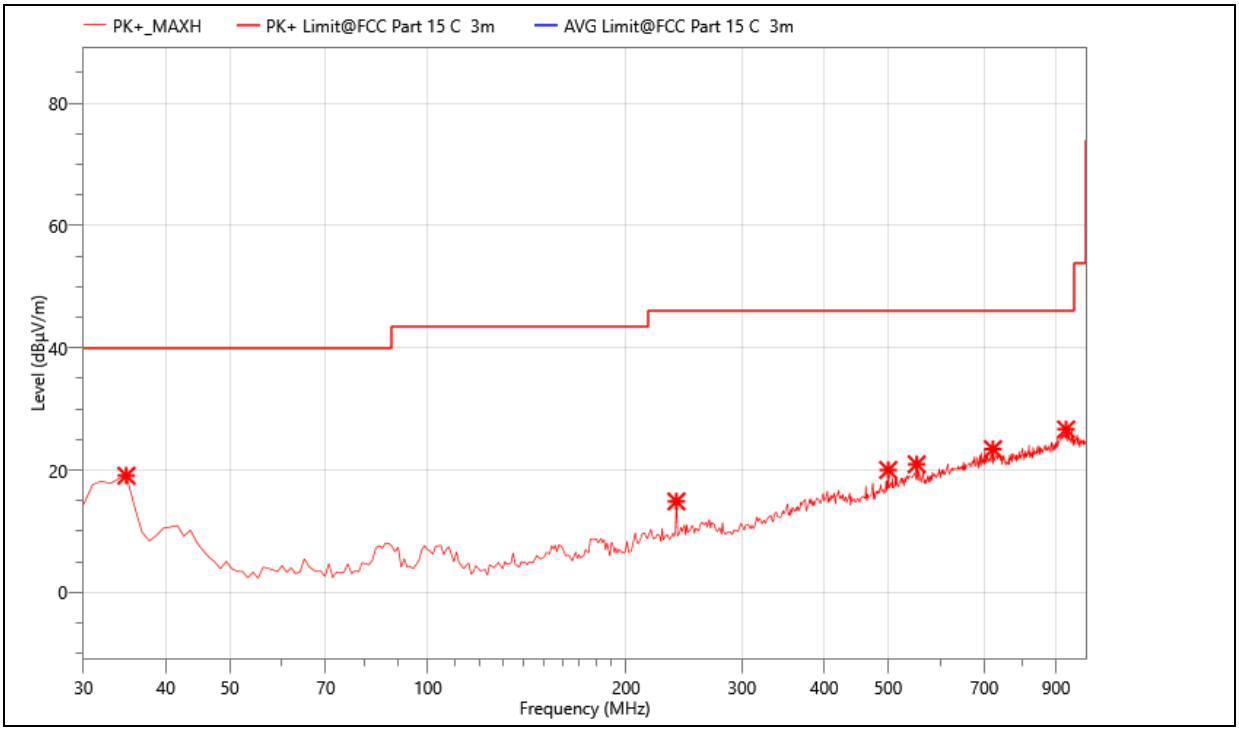
SPURIOUS EMISSIONS (2408MHz, WORST-CASE CONFIGURATION, HORIZONTAL)



No.	Freq. (MHz)	Reading (dBµV)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dBµV/m)	Det.	Pol.	Corr. (dB)
1	104.690	32.60	9.00	43.50	34.50	PK+	H	-23.6
2	217.210	37.92	17.01	46.00	28.99	PK+	H	-20.91
3	547.980	30.04	20.22	46.00	25.78	PK+	H	-9.82
4	716.760	30.95	23.98	46.00	22.02	PK+	H	-6.97
5	942.770	30.76	27.51	46.00	18.49	PK+	H	-3.25
6	988.360	30.01	26.27	53.90	27.63	PK+	H	-3.74

Note: 1. Result Level = Read Level + Correct Factor.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

SPURIOUS EMISSIONS (2408MHz,WORST-CASE CONFIGURATION, VERTICAL)



No.	Freq. (MHz)	Reading (dBµV)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dBµV/m)	Det.	Pol.	Corr. (dB)
1	34.850	36.24	19.10	40.00	20.90	PK+	V	-17.14
2	238.550	34.62	14.90	46.00	31.10	PK+	V	-19.72
3	500.450	32.14	20.03	46.00	25.97	PK+	V	-12.11
4	552.830	30.87	20.96	46.00	25.04	PK+	V	-9.91
5	721.610	30.40	23.44	46.00	22.56	PK+	V	-6.96
6	932.100	29.68	26.67	46.00	19.33	PK+	V	-3.01

Note: 1. Result Level = Read Level + Correct Factor.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

Note: All test modes had been tested, only the worst data record in the report.

8. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

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

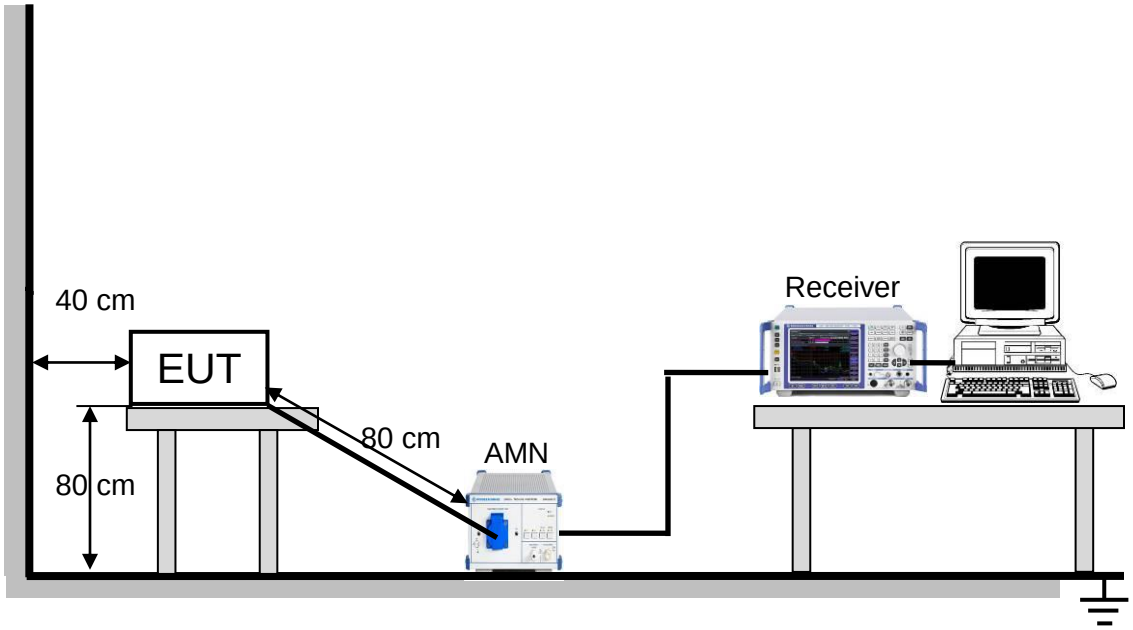
FREQUENCY (MHz)	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

TEST SETUP AND PROCEDURE



The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

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

2. The EUT was placed on the top of a rotating table 0.8 meters above the horizontal ground plane and being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 ohm/ 50 uH of coupling impedance for the measuring instrument.

3. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

4. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

5. LISN at least 80 cm from nearest part of EUT chassis.

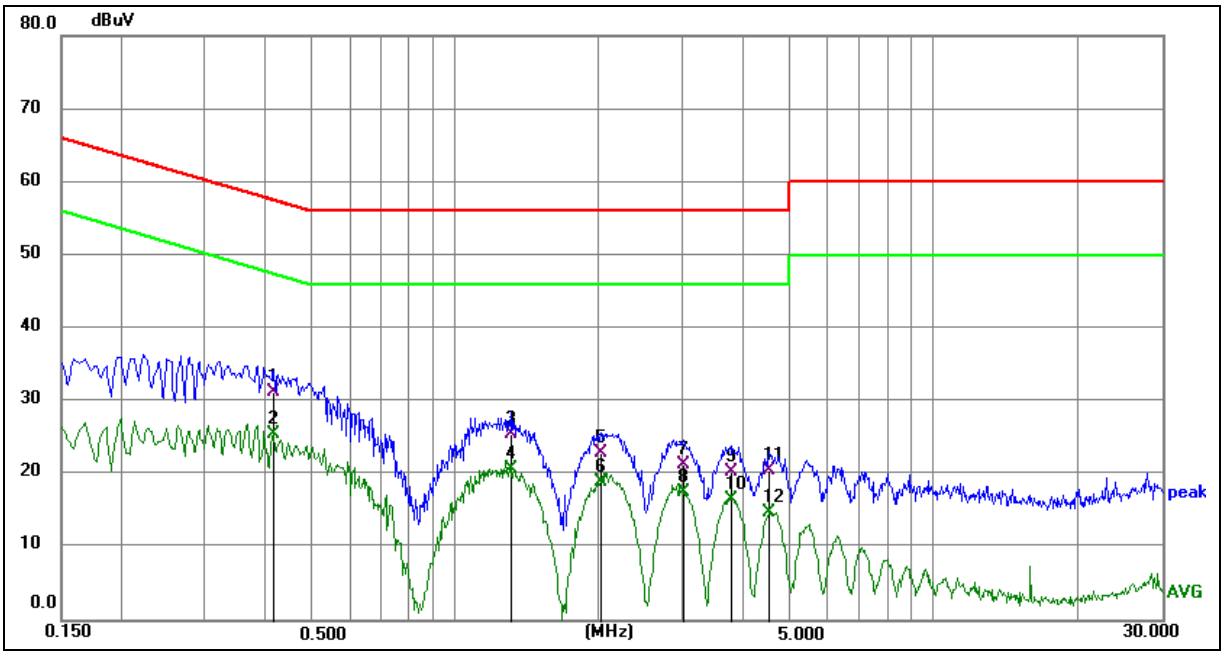
6. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode.

7. 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 ENVIRONMENT

Temperature	25 °C	Relative Humidity	52 %
Atmosphere Pressure	101 kPa	Test Voltage	120VAC 60Hz

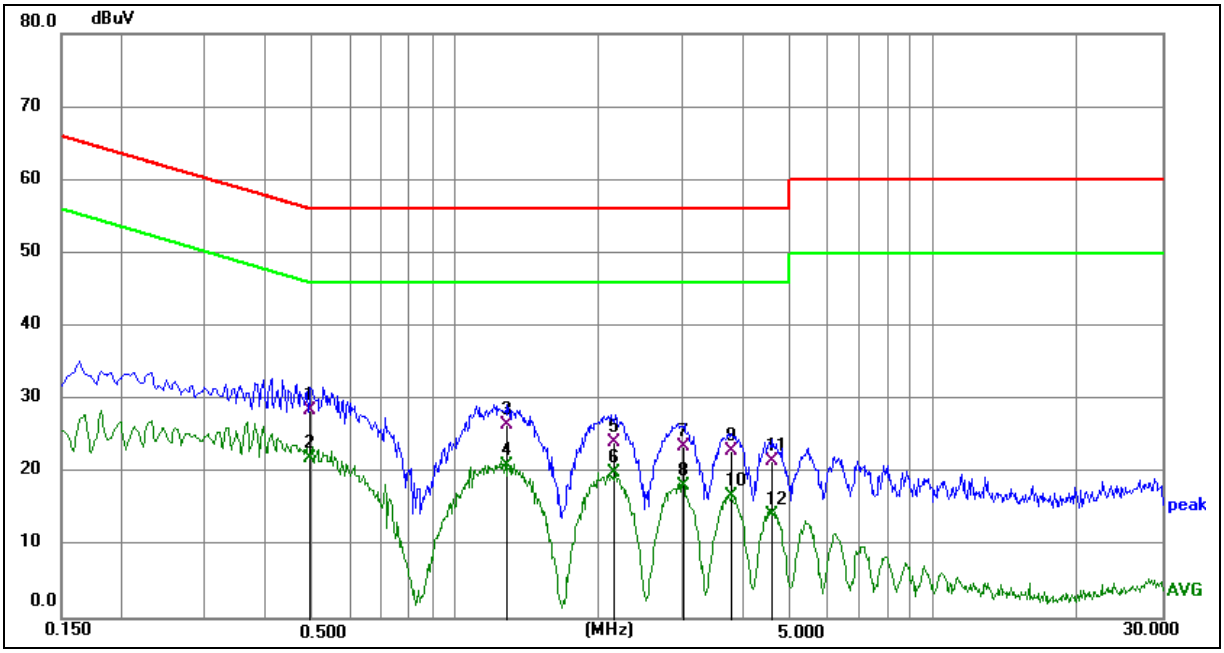
LINE N RESULTS (2408MHz, WORST-CASE CONFIGURATION)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.4155	21.44	9.82	31.26	57.54	-26.28	QP
2	0.4155	15.62	9.82	25.44	47.54	-22.10	AVG
3	1.3110	15.28	10.13	25.41	56.00	-30.59	QP
4	1.3110	10.63	10.13	20.76	46.00	-25.24	AVG
5	2.0175	12.80	10.18	22.98	56.00	-33.02	QP
6	2.0175	8.85	10.18	19.03	46.00	-26.97	AVG
7	3.0075	11.29	10.06	21.35	56.00	-34.65	QP
8	3.0075	7.51	10.06	17.57	46.00	-28.43	AVG
9	3.7770	10.17	10.18	20.35	56.00	-35.65	QP
10	3.7770	6.42	10.18	16.60	46.00	-29.40	AVG
11	4.5285	10.25	10.23	20.48	56.00	-35.52	QP
12	4.5285	4.58	10.23	14.81	46.00	-31.19	AVG

Note: 1. Result = Reading +Correct Factor.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

LINE L RESULTS (2408MHz, WORST-CASE CONFIGURATION)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.4965	18.44	9.98	28.42	56.06	-27.64	QP
2	0.4965	11.99	9.98	21.97	46.06	-24.09	AVG
3	1.2839	16.37	10.15	26.52	56.00	-29.48	QP
4	1.2839	10.87	10.15	21.02	46.00	-24.98	AVG
5	2.1614	14.00	10.16	24.16	56.00	-31.84	QP
6	2.1614	9.82	10.16	19.98	46.00	-26.02	AVG
7	3.0164	13.36	10.20	23.56	56.00	-32.44	QP
8	3.0164	7.87	10.20	18.07	46.00	-27.93	AVG
9	3.7725	12.72	10.26	22.98	56.00	-33.02	QP
10	3.7725	6.44	10.26	16.70	46.00	-29.30	AVG
11	4.6050	11.26	10.27	21.53	56.00	-34.47	QP
12	4.6050	3.98	10.27	14.25	46.00	-31.75	AVG

Note: 1. Result = Reading +Correct Factor.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

Note: All test modes had been tested, only the worst data record in the report.

9. ANTENNA REQUIREMENTS

APPLICABLE REQUIREMENTS

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.

Please refer to FCC §15.247(b)(4)
The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

RESULTS

Complies

END OF REPORT