Test Report

FCC ID: 2ATXX-M1XTCBLE123

Date of issue: Sept. 19, 2019

Report Number:	MTi190731E037
Sample Description:	Gateway
Model(s):	1.0
Applicant:	Christie Lites Enterprises USA
Address:	6990 Lake Ellenor Drive, Orlando, Florida 32809, United States
Date of Test:	Apr. 04, 2019 to Sept. 19, 2019

Shenzhen Microtest Co., Ltd.
http://www.mtitest.com

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Tel:(86-755)88850135 Fax: (86-755) 88850136 Web: http://www.mtitest.com E-mail: mti@51mti.com
Address: No.102A & 302A, East Block, Hengfang Industrial Park, Xingye Road, Xixiang, Bao'an District, Shenzhen, Guangdong, China

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Test Result Certification

Applicant's name:	Christie Lites Enterprises USA
Address:	6990 Lake Ellenor Drive, Orlando, Florida 32809, United States
Manufacture's Name:	Christie Lites Enterprises USA
Address:	6990 Lake Ellenor Drive, Orlando, Florida 32809, United States
Product name:	Gateway
Trademark:	Christie Lites Enterprises
Model name:	1.0
Standards:	FCC Part 15.249
Test Procedure:	ANSI C63.10-2013

This device described above has been tested by Shenzhen Microtest Co., Ltd. and the test results show that the equipment under test (EUT) compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

Tested by:	Demi Mu	Sept. 19, 2019
Reviewed by:	Blue Zheng	Sept. 19, 2019
Approved by:	Smith Chen	Sept. 19, 2019

1 General description

1.1 Feature of equipment under test (EUT)

Equipment:	Gateway
Trade Name:	Christie Lites Enterprises
Model Name:	1.0
Serial Model:	N/A
Model Difference:	N/A
Operation Frequency:	2405-2480MHz
Modulation Type:	GFSK
Antenna Type:	Ceramic Patch antenna
Antenna Gain:	1dBi
Max. Field Strength:	95.02dBuV/m@3m
Power Source:	DC 48V from POE
Hardware Version:	1.03
Software Version:	1.01t

1.2 Operation channel list

Channel	Frequency(MHz)	Channel	Frequency(MHz)	Channel	Frequency(MHz)
0	2405	6	2435	12	2465
1	2410	7	2440	13	2480
2	2415	8	2445	14	2475
3	2420	9	2450	15	2480
4	2425	10	2455		
5	2430	11	2460		

1.3 Test Frequency Channel

Channel	Frequency(MHz)
Low	2405
Middle	2440
High	2480

1.4 EUT operation mode

During testing, RF test program provided by the manufacture to control the Tx operation followed the test requirement.

1.5 Ancillary equipment list

Equipment	Model	S/N	Manufacturer
/	/	/	/
/	/	/	/

2 Summary of Test Result

Test procedures according to the technical standards:

Item	FCC Part No.	Description of Test	Result
1	FCC Part15.203	Antenna Requirement	Pass
2	FCC Part15.207	AC power line conducted emission	Pass
3	FCC Part15.249(a)	Field strength of fundamental and harmonic emissions	Pass
4	FCC Part 15.215	20dB Bandwidth	Pass
5	FCC Part15.249(d)	Radiated spurious emission	Pass

3 Test Facilities and Accreditations

3.1 Test laboratory

Test Laboratory	Shenzhen Microtest Co., Ltd
Location	No.102A & 302A, East Block, Hengfang Industrial Park, Xingye Road, Xixiang, Bao'an District, Shenzhen, Guangdong, China
FCC Registration No.	448573

3.2 Environmental conditions

Temperature:	15ºC~35ºC
Humidity	20%~75%
Atmospheric pressure	98kPa~101kPa

3.3 Measurement uncertainty

The reported uncertainty of measurement y ± U，where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2，providing a level of confidence of approximately 95 %

RF frequency	1 x 10-7
RF power, conducted	± 1 dB
Conducted emission(150kHz~30MHz)	± 2.5 dB
Radiated emission(30MHz~1GHz)	± 4.2 dB
Radiated emission (above 1GHz)	± 4.3 dB
Temperature	±1 degree
Humidity	± 5 %

3.4 Test software

Software Name	Manufacturer	Model	Version
Bluetooth and WiFi Test System	Shenzhen JS tonscend co,.ltd	JS1120-3	2.5.77.0418

4 List of test equipment

Equipment No.	Equipment Name	Manufacturer	Model	Serial No.	Calibration date	Due date
MTI-E001	Spectrum Analyzer	Agilent	E4407B	MY41441082	2019/03/06	2020/03/07
MTI-E004	EMI Test Receiver	Rohde&schwarz	ESPI	1000314	2018/10/ 9	2019/10/08
MTI-E006	Broadband antenna	schwarabeck	VULB9163	872	2018/10/15	2019/10/14
MTI-E007	Horn antenna	schwarabeck	BBHA9120D	1201	2018/10/15	2019/10/14
MTI-E014	amplifier	America	8447D	3113A06150	2018/10/09	2019/10/ 8
MTI-E015	Conduction Immunity Signal Generator	Schloder	CDG6000	126A1343/2015	2018/10/09	2019/10/08
MTI-E016	Coupled decoupling network	Schloder	CND M2/M3	A2210332/2015	2018/10/09	2019/10/08
MTI-E034	amplifier	Agilent	8449B	3008A02400	2018/10/09	2019/10/08
MTI-E040	Spectrum analyzer	Agilent	N9020A	MY49100060	2019/03/06	2020/03/07
MTI-E041	Signal generator	Agilent	N5182A	MY49060455	2019/03/06	2020/03/07
MTI-E042	Analog signal generator	Agilent	E4421B	GB40051240	2018/10/09	2019/10/08
MTI-E043	Power probe	Dare Instruments	RPR3006W	16I00054SNO16	2018/10/09	2019/10/08
MTI-E047	10dB attenuator	Mini-Circuits	UNAT-10+	15542	2018/10/09	2019/10/08
MTI-E049	spectrum analyzer	Rohde&schwarz	FSP-38	100019	2018/10/09	2019/10/08
MTI-E050	PSG Signal generator	Agilent	E8257D	MY46520873	2018/10/09	2019/10/08
MTI-E061	Active Loop Antenna 9kHz - 30MHz	Schwarzbeek	FMZB 1519 B	00044	2018/10/09	2019/10/08
MTI-E052	18-40GHz amplifier	Chengdu step Micro Technology	ZLNA-18-40G-21	1608001	2018/10/09	2019/10/08
MTI-E053	15-40G Antenna	Schwarzbeek	BBHA9170	BBHA9170582	2018/10/09	2019/10/08
Note: the calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).						

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5 Test Result

5.1 Antenna requirement

5.1.1 Standard requirement

FCC PART 15.203 and 15.247(b);

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.

This requirement does not apply to carrier current devices or to devices operated under the provisions of §§15.211, 15.213, 15.217, 15.219, 15.221, or §15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

5.1.2 EUT Antenna

The antenna is a Ceramic Patch antenna, which was permanently affixed to the device and un-replaced, complies with 15.203. In addition, the maximum antenna gain is 1dBi.

5.2 AC power line conducted emission

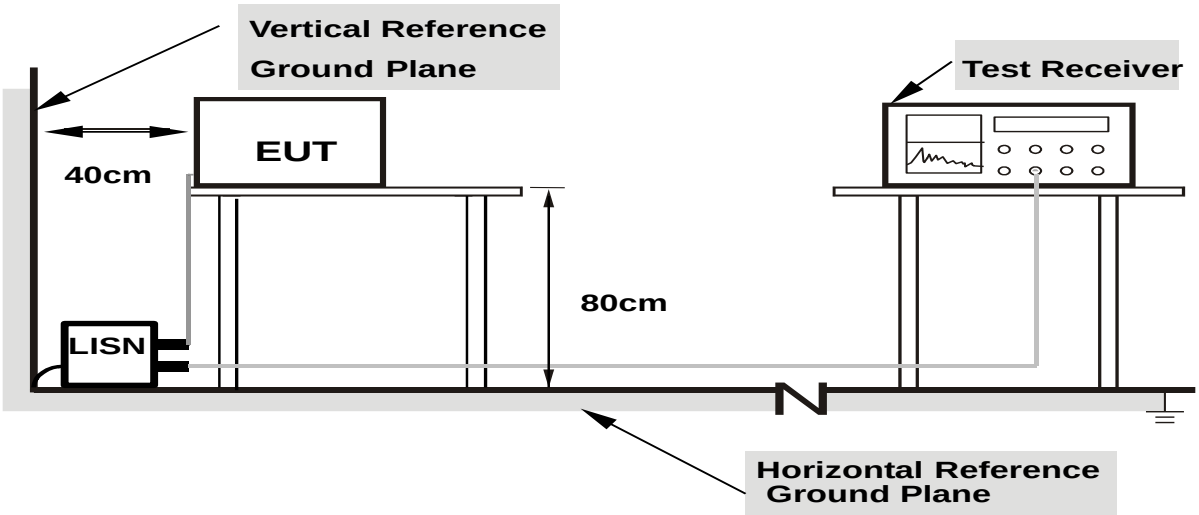
5.2.1 Limits

FCC §15.207;

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 within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

Frequency (MHz)	Quasi-peak	Average
0.15 -0.5	66 - 56 note2	56 - 46 note2
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00
Note1: The tighter limit applies at the band edges. Note2: The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.		

5.2.2 Test setup



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

5.2.3 Test procedure

a. EUT Operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

b. 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

c. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment's powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

d. 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.

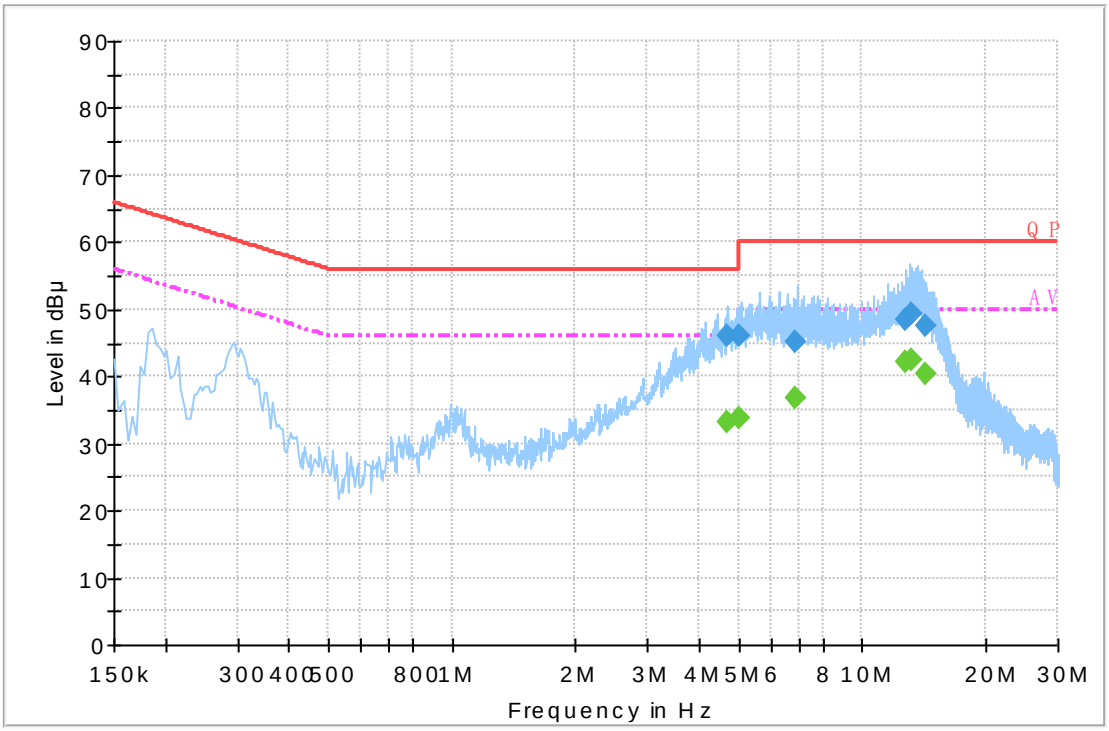
e. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

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

For the actual test configuration, please refer to the related Item –EUT Test Photos.

5.2.4 Test results

EUT：	Gateway	Model Name. ：	1.0
Pressure：	1010hPa	Phase :	L
Test Voltage ：	DC 48V from POE	Test Mode：	TX



Final Result 1

Frequency (MHz)	QuasiPeak (dB µ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
4.711290	46.0	9.000	L1	19.9	10.0	56.0
4.999150	46.1	9.000	L1	19.9	9.9	56.0
6.842110	45.1	9.000	L1	19.9	14.9	60.0
12.730270	48.3	9.000	L1	20.0	11.7	60.0
13.133710	49.4	9.000	L1	20.0	10.6	60.0
14.302630	47.5	9.000	L1	20.0	12.5	60.0

Final Result 2

Frequency (MHz)	QuasiPeak (dB µ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
4.711290	33.3	9.000	L1	19.9	12.7	46.0
4.999150	33.8	9.000	L1	19.9	12.2	46.0
6.842110	36.9	9.000	L1	19.9	13.1	50.0
12.730270	42.2	9.000	L1	20.0	7.8	50.0
13.133710	42.6	9.000	L1	20.0	7.4	50.0
14.302630	40.3	9.000	L1	20.0	9.7	50.0

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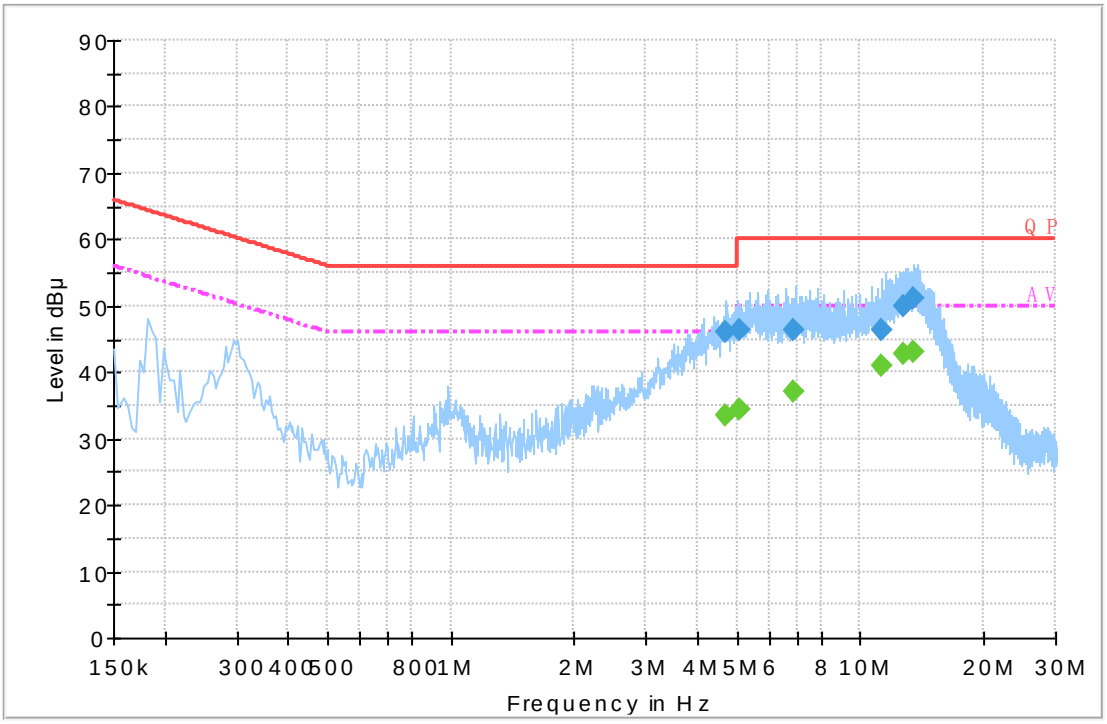
EUT：	Gateway	Model Name. ：	1.0
Pressure：	1010hPa	Phase :	N
Test Voltage ：	AC 120V 60Hz	Test Mode：	TX



Final Result 1

Frequency (MHz)	QuasiPeak (dB µ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
4.711290	46.0	9.000	N	19.9	10.0	56.0
5.068910	46.3	9.000	N	19.9	13.7	60.0
6.858050	46.3	9.000	N	19.9	13.7	60.0
11.284710	46.4	9.000	N	20.0	13.6	60.0
12.786150	50.1	9.000	N	19.9	9.9	60.0
13.424490	51.2	9.000	N	19.9	8.8	60.0

Final Result 2

Frequency (MHz)	QuasiPeak (dB µ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
4.711290	33.6	9.000	N	19.9	12.4	46.0
5.068910	34.3	9.000	N	19.9	15.7	50.0
6.858050	37.0	9.000	N	19.9	13.0	50.0
11.284710	40.9	9.000	N	20.0	9.1	50.0
12.786150	42.7	9.000	N	19.9	7.3	50.0
13.424490	43.1	9.000	N	19.9	6.9	50.0

5.3 Field strength of fundamental and harmonic emissions

5.3.1 Limits

FCC §15.249(a);

The field strength of fundamental and harmonic emissions, measured at 3 m, shall not

exceed 50 mV/m and 0.5 mV/m respectively.

The field strength limits shall be measured using an average detector, except for the fundamental emission in the frequency band 902-928 MHz, which is based on measurements using an International Special Committee on Radio Interference (CISPR) quasi-peak detector

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24.0-24.25 GHz	250	2500

Frequency	Field Strength(dBuv/m)	Detector
Fundamental	114	PK
Fundamental	94	AV
Harmonic emissions	74	PK
Harmonic emissions	54	AV

Note: 50mV/m=50000uv/m

20*log(50000uV/m)=94dBuv/m

PK limit reference 15.249(e)

5.3.2 Test Method

1. The EUT is placed on a turntable, which is 0.8m above ground plane for test frequency range below 1GHz, and 1.5m above ground plane for test frequency range above 1GHz.

2. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.

3. Use the following spectrum analyser settings:

Span = wide enough to fully capture the emission being measured, RBW = 1 MHz for f ≥ 1GHz, 100 kHz for f < 1 GHz, VBW ≥ RBW, Sweep = auto, Detector function = peak, Trace = max hold

4. Follow the guidelines in ANSI C63.4-2014 with respect to maximizing the emission by rotating the EUT, adjusting the measurement antenna height and polarization, etc. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, submit this data. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

5. The peak level, once corrected, must comply with the limit specified in Section 15.209. Set the RBW = 1MHz, VBW = 10Hz, Detector = PK for AV value, while maintaining all of the other instrument settings.

5.3.3 Test Result

Transmitter channel: 2405MHz

Frequency	Ant. Polarization	Emission level	Limits	Detector	
(MHz)	H / V	dBμV/m	dBμV/m		
2405	V	91.58	114	PK	Result
2405	H	95.02	114	PK	
2405	V	79.36	94	AV	
2405	H	83.04	94	AV	
4810	V	50.83	74	PK	
4810	H	53.75	74	PK	
4810	V	42.87	54	AV	
4810	H	42.42	54	AV	

Transmitter channel: 2440MHz

Frequency	Ant. Polarization	Emission level	Limits	Detector	
(MHz)	H / V	dBμV/m	dBμV/m		
2440	V	90.16	114	PK	Result
2440	H	91.21	114	PK	
2440	V	70.32	94	AV	
2440	H	73.38	94	AV	
4880	V	55.57	74	PK	
4880	H	56.75	74	PK	
4880	V	42.15	54	AV	
4880	H	42.34	54	AV	

Transmitter channel: 2480MHz

Frequency	Ant. Polarization	Emission level	Limits	Detector	
(MHz)	H / V	dBμV/m	dBμV/m		
2480	V	86.32	114	PK	Result
2480	H	90.01	114	PK	
2480	V	75.35	94	AV	
2480	H	81.34	94	AV	
4960	V	54.53	74	PK	
4960	H	54.52	74	PK	
4960	V	47.79	54	AV	
4960	H	47.15	54	AV	

5.4 20dB bandwidth

5.4.1 Limits

FCC §15.215(c)

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

5.4.2 Test method

Use the following spectrum analyzer settings:

For 20 dB bandwidth

Span = approximately 2 to 3 times the 20 dB bandwidth,
RBW ≥1% of the 20 dB bandwidth
VBW ≥RBW
Sweep = auto
Detector function = peak
Trace = max hold

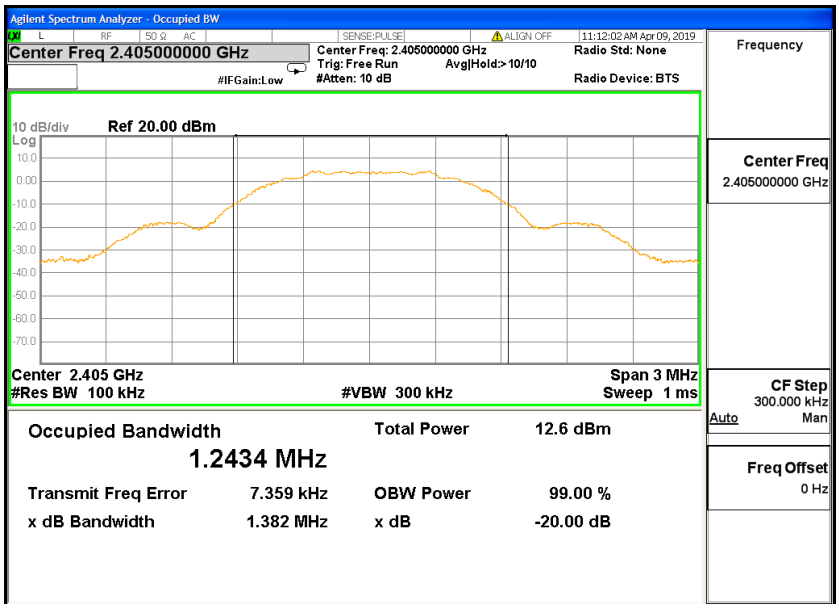
The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth and 99% occupied bandwidth of the emission

5.4.3 Test result

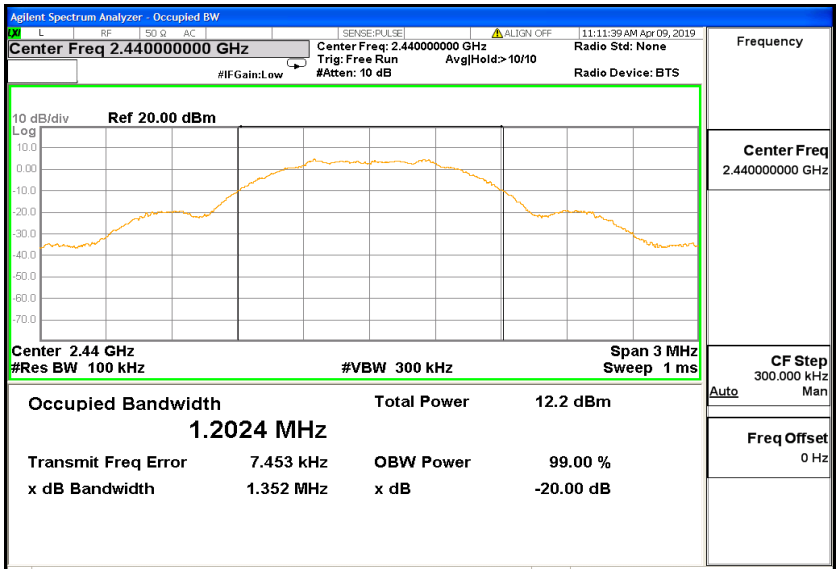
Frequency (MHz)	20dB bandwidth (MHz)
2405	1.382
2440	1.352
2480	1.367

Test plots

2405MHz



2440MHz



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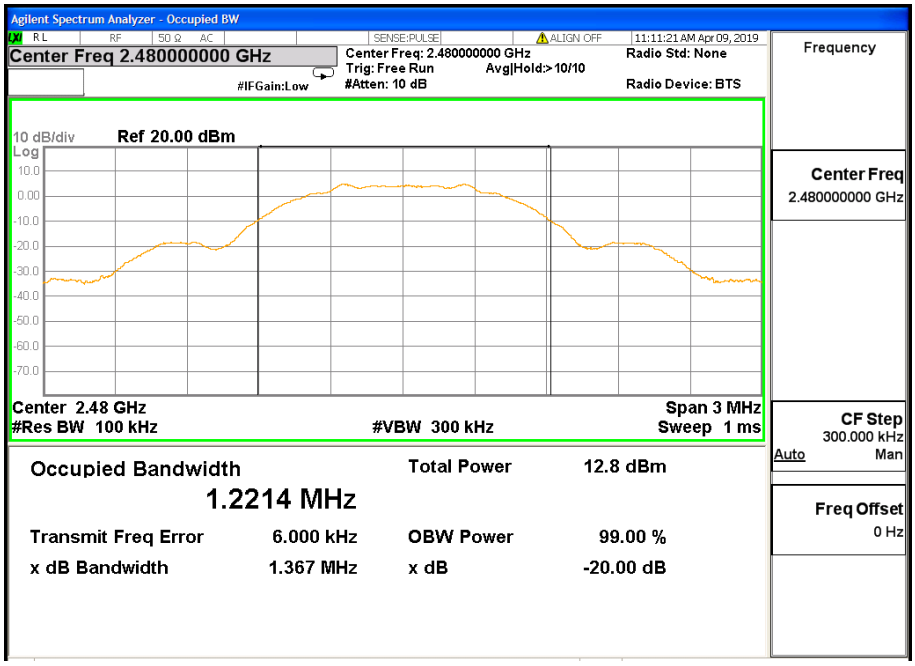
2480MHz


Agilent Spectrum Analyzer - Occupied BW
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 10 dB
Radio Std: None
Radio Device: BTS
#IFGain:Low
10 dB/div
Ref 20.00 dBm
Center 2.48 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 3 MHz
Sweep 1 ms
Occupied Bandwidth
1.2214 MHz
Total Power 12.8 dBm
Transmit Freq Error 6.000 kHz
OBW Power 99.00 %
x dB Bandwidth 1.367 MHz
x dB -20.00 dB
Frequency
Center Freq
2.480000000 GHz
CF Step
300.000 kHz
Auto Man
Freq Offset
0 Hz

5.5 Radiated spurious emission

5.5.1 Limit

FCC PART 15.249(a);

Except as provided in paragraph (a) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Frequency (MHz)	Field Strength of Fundamental (mV/m)	Field Strength of Harmonics (μV/m)
902-928	50	500
2400-2483.5	50	500
5725-5875	50	500

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

According to FCC section 15.209 (a), 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	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

5.5.2 Test method

a) The EUT is placed on a turntable, which is 0.8m above ground plane for test frequency range blew 1GHz, and 1.5m above ground plane for test frequency range above 1GHz.

b) EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.

c) Use the following spectrum analyser settings:

   1) Span = wide enough to fully capture the emission being measured

   2) RBW = 1 MHz for f ≥ 1GHz, 100 kHz for f < 1 GHz

   3) VBW ≥ RBW, Sweep = auto

   4) Detector function = peak

   5) Trace = max hold

d) Follow the guidelines in ANSI C63.4-2014 with respect to maximizing the emission by rotating the EUT, adjusting the measurement antenna height and polarization, etc. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, submit this data. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

e) The peak level, once corrected, must comply with the limit specified in Section 15.209. Set the RBW = 1MHz, VBW = 10Hz, Detector = PK for AV value, while maintaining all of the other instrument settings.

5.5.3 Test Result

Note: If the PK measured values lower than average mode limit, the EUT shall be deemed to meet average limits and then no additional average mode measurement performed.

Below 30MHz

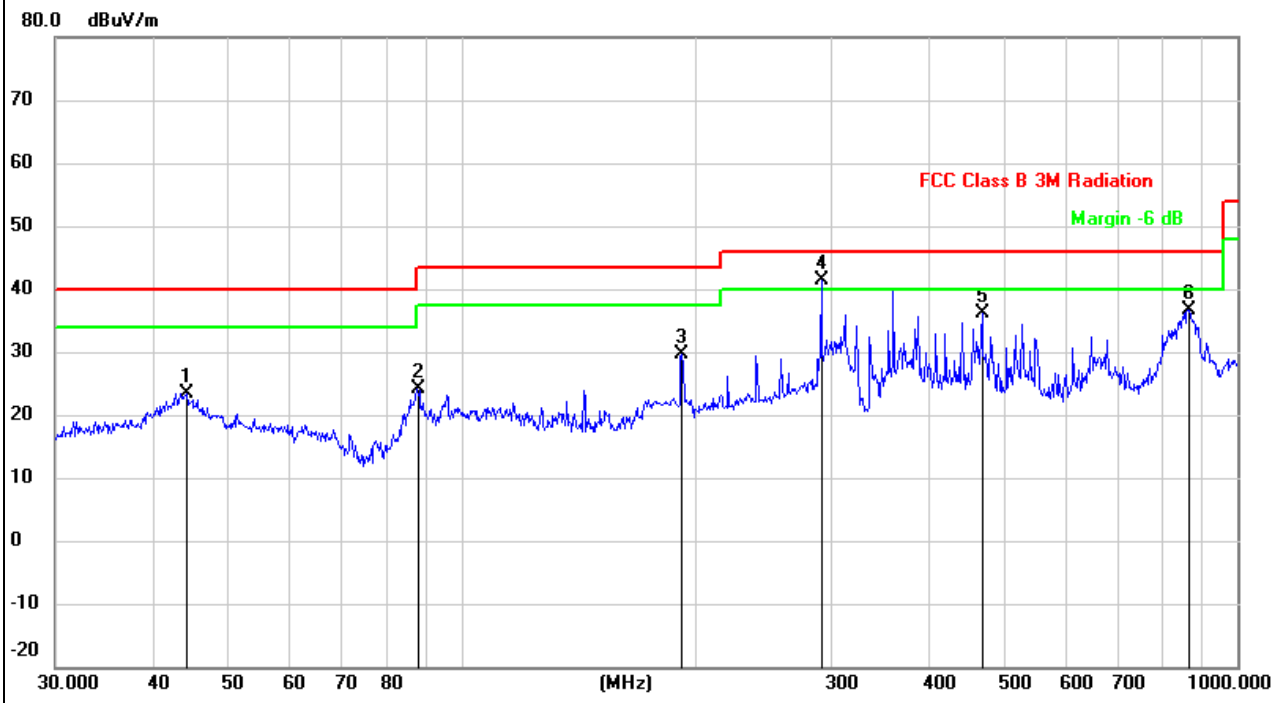
EUT：	Gateway	Model Name. ：	1.0
Pressure：	1010 hPa	Test Voltage：	DC 48V from POE
Test Mode：	TX	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	Pass
--	--	--	--	Pass

Note:
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =40 log (specific distance/test distance)(dB);
Limit line = specific limits (dBuV) + distance extrapolation factor.

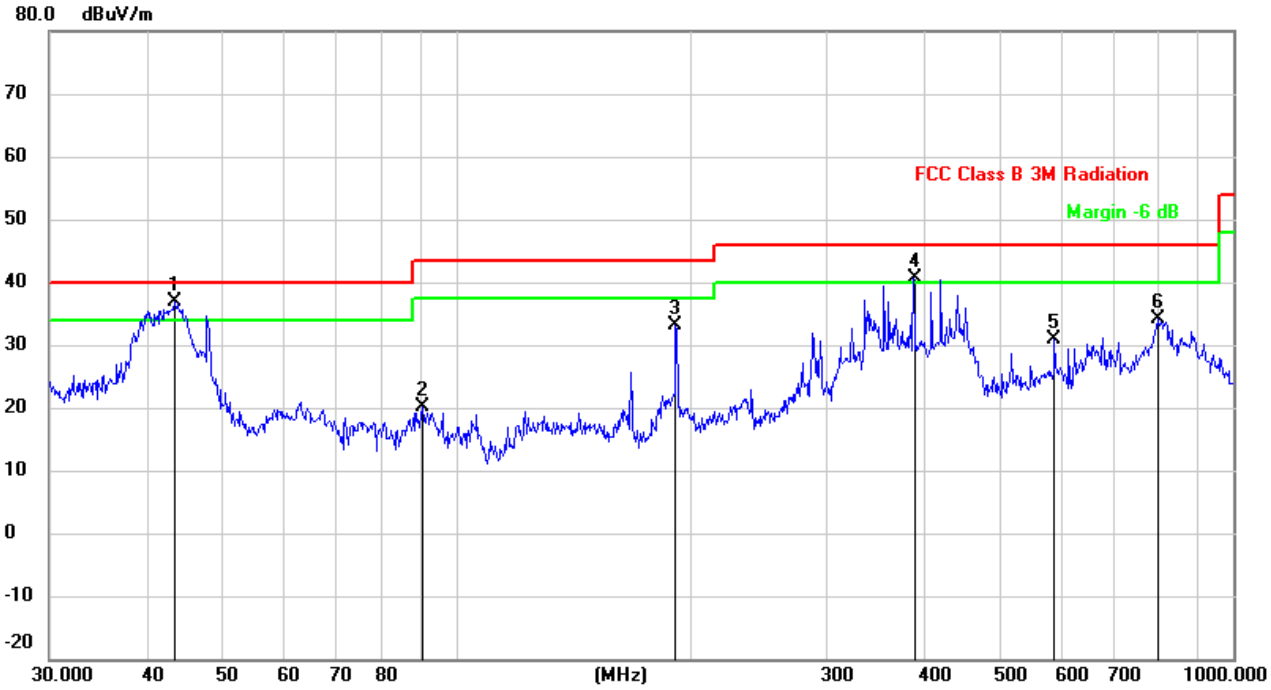
Radiation (30MHz – 1GHz)

EUT:	Gateway	Model Name:	1.0
Pressure:	1010hPa	Polarization:	H
Test Voltage :	DC 48V from POE	Test Mode:	TX



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1		44.2751	33.32	-9.84	23.48	40.00	-16.52	QP
2		87.7248	37.79	-13.65	24.14	40.00	-15.86	QP
3		192.4182	42.54	-12.89	29.65	43.50	-13.85	QP
4	*	291.0360	50.17	-8.88	41.29	46.00	-4.71	QP
5		468.8761	41.75	-5.54	36.21	46.00	-9.79	QP
6		866.0878	38.55	-1.80	36.75	46.00	-9.25	QP

EUT:	Gateway	Model Name:	1.0
Pressure:	1010hPa	Polarization:	V
Test Voltage :	DC 48V from POE	Test Mode:	TX

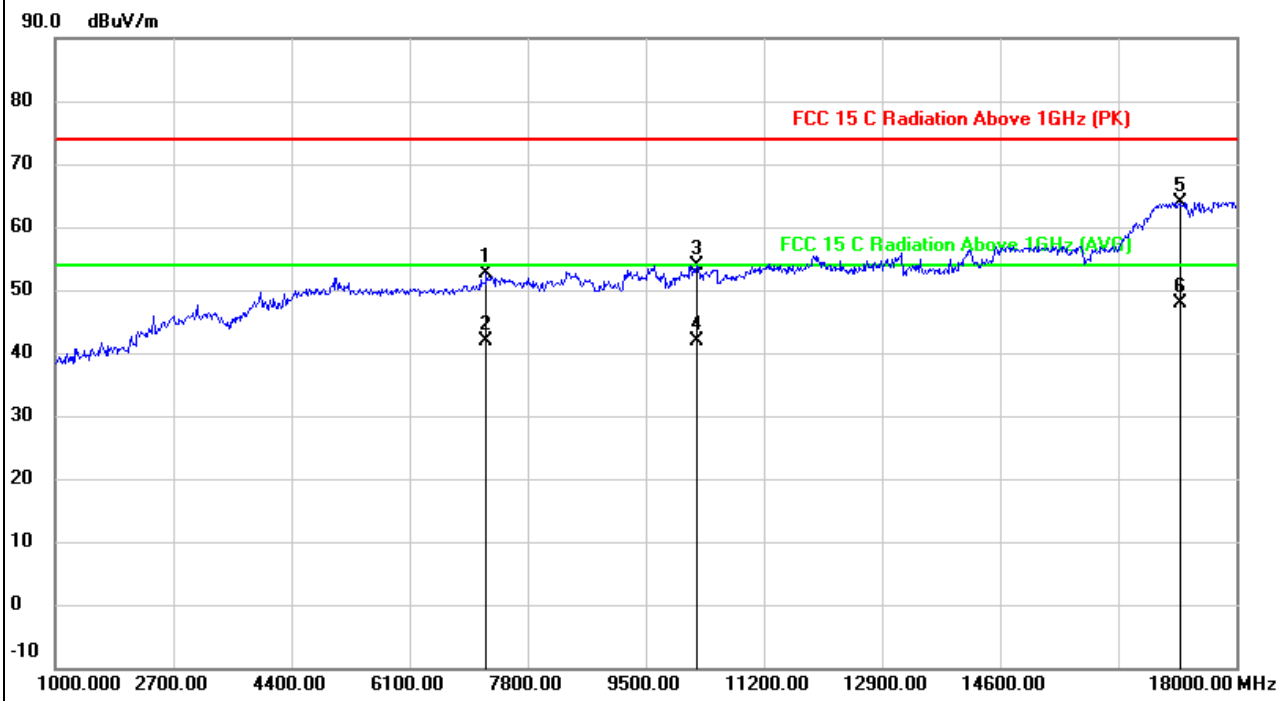


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1	*	43.5056	46.78	-9.99	36.79	40.00	-3.21	QP
2		90.5374	33.20	-13.02	20.18	43.50	-23.32	QP
3		191.7450	43.80	-10.57	33.23	43.50	-10.27	QP
4	!	387.9920	47.39	-6.79	40.60	46.00	-5.40	QP
5		588.9048	35.50	-4.53	30.97	46.00	-15.03	QP
6		798.9796	37.02	-2.81	34.21	46.00	-11.79	QP

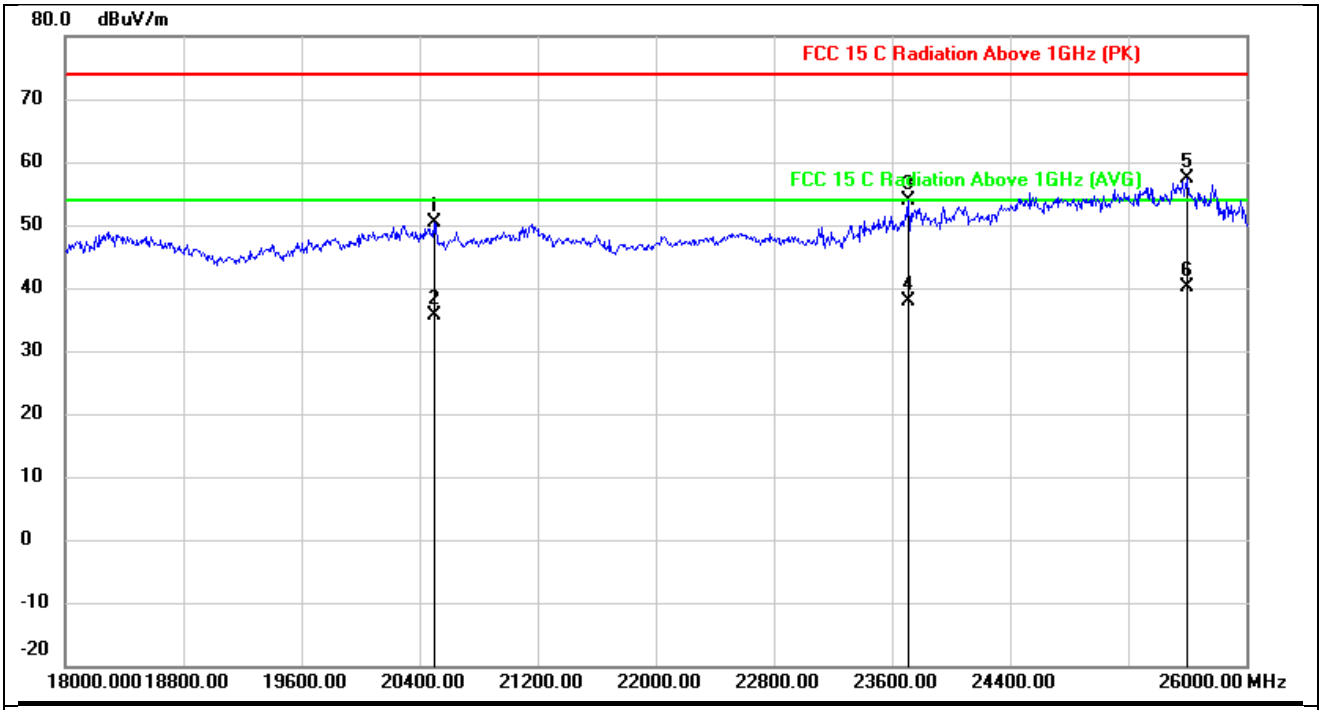
Above 1GHz:

Note: Test with 2.4GHz-2.4835GHz notch Filter

EUT:	Gateway	Model name:	1.0
Pressure:	1010hPa	Polarization:	H
Test voltage :	DC 48V from POE	Test mode:	TX
Test channel:	2405MHz		

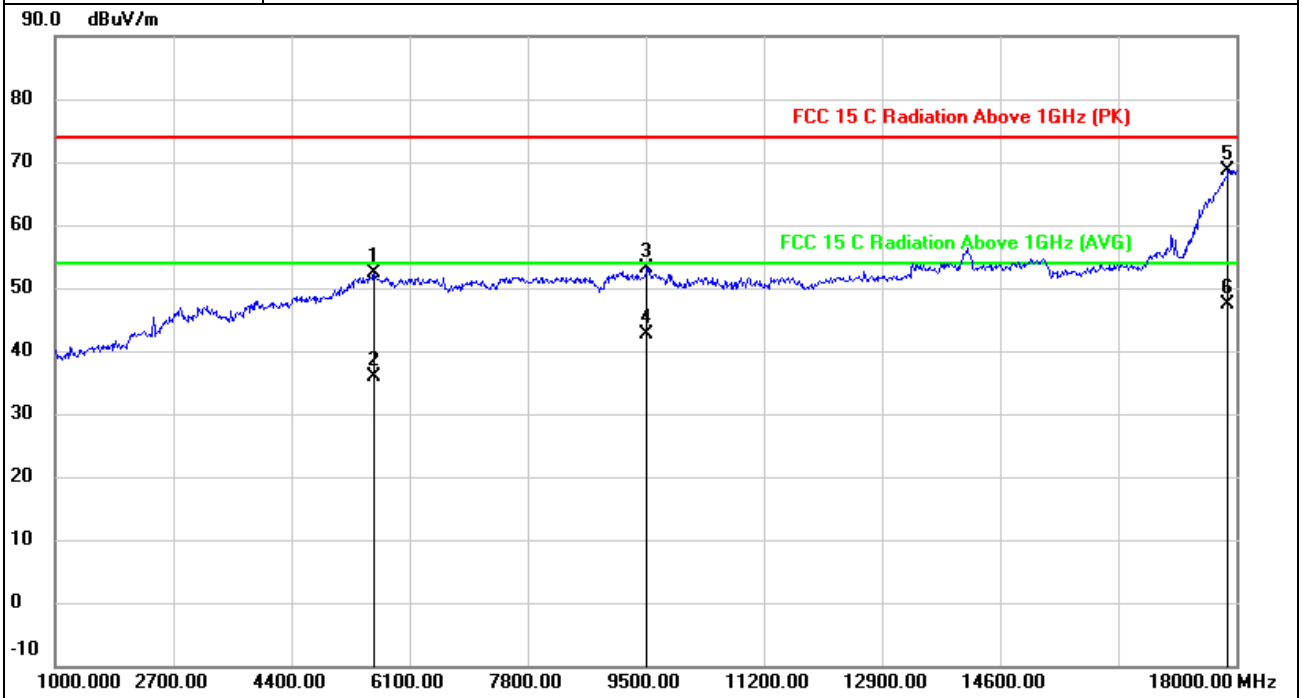


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1		7205.000	52.92	-0.30	52.62	74.00	-21.38	peak
2		7205.000	42.30	-0.30	42.00	54.00	-12.00	AVG
3		10231.000	50.78	3.19	53.97	74.00	-20.03	peak
4		10231.000	38.61	3.19	41.80	54.00	-12.20	AVG
5		17184.000	56.34	7.65	63.99	74.00	-10.01	peak
6	*	17184.000	40.35	7.65	48.00	54.00	-6.00	AVG

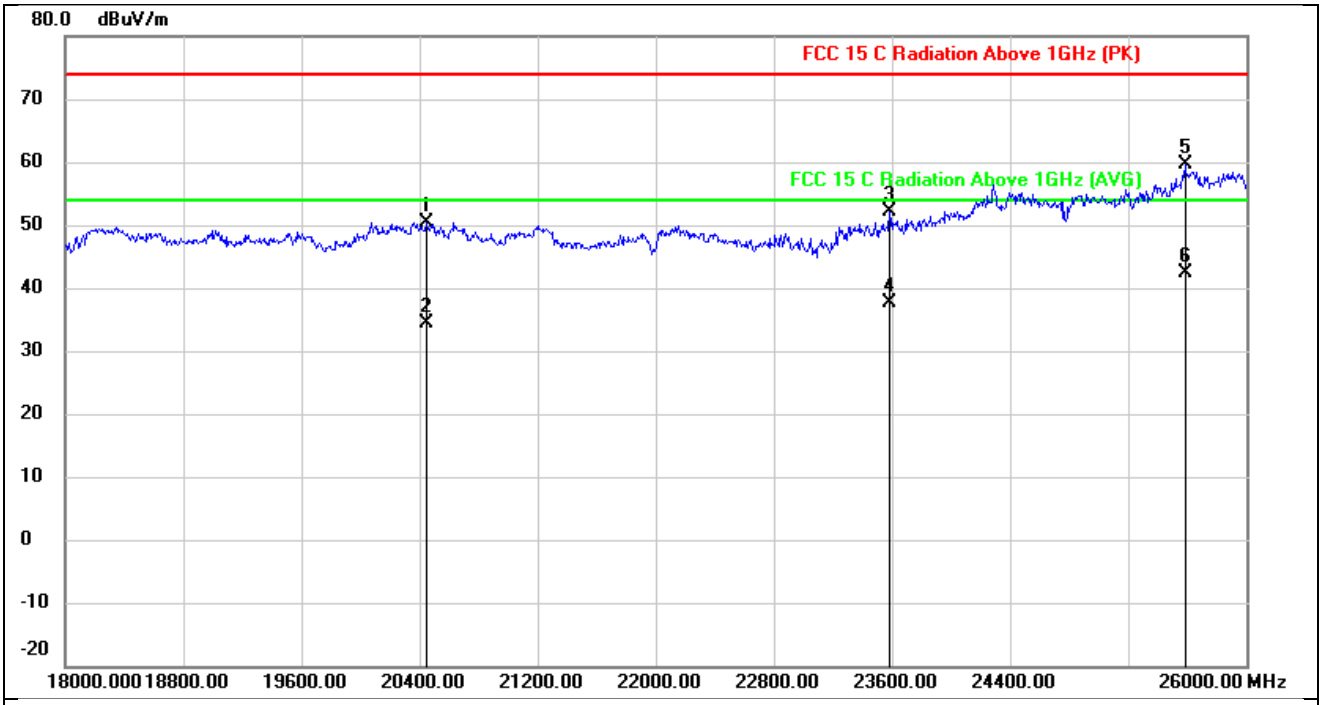


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1		20496.000	31.37	18.91	50.28	74.00	-23.72	peak
2		20496.000	16.79	18.91	35.70	54.00	-18.30	AVG
3		23712.000	34.43	19.57	54.00	74.00	-20.00	peak
4		23712.000	18.43	19.57	38.00	54.00	-16.00	AVG
5		25600.000	37.98	19.44	57.42	74.00	-16.58	peak
6	*	25600.000	20.76	19.44	40.20	54.00	-13.80	AVG

EUT:	Gateway	Model name:	1.0
Pressure:	1010hPa	Polarization:	V
Test voltage :	DC 48V from POE	Test mode:	TX
Test channel:	2405MHz		

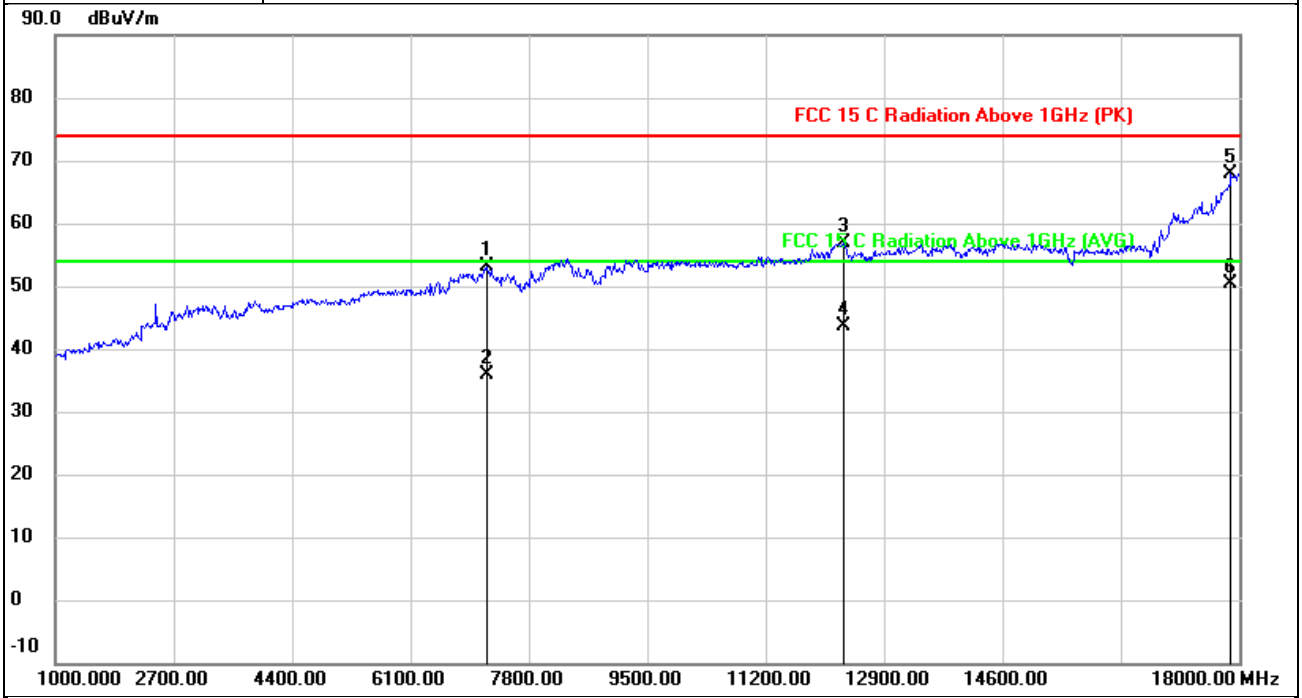


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1		5590.000	57.78	-5.40	52.38	74.00	-21.62	peak
2		5590.000	41.20	-5.40	35.80	54.00	-18.20	AVG
3		9517.000	50.85	2.28	53.13	74.00	-20.87	peak
4		9517.000	40.32	2.28	42.60	54.00	-11.40	AVG
5	*	17881.000	55.50	13.23	68.73	74.00	-5.27	peak
6		17881.000	34.17	13.23	47.40	54.00	-6.60	AVG

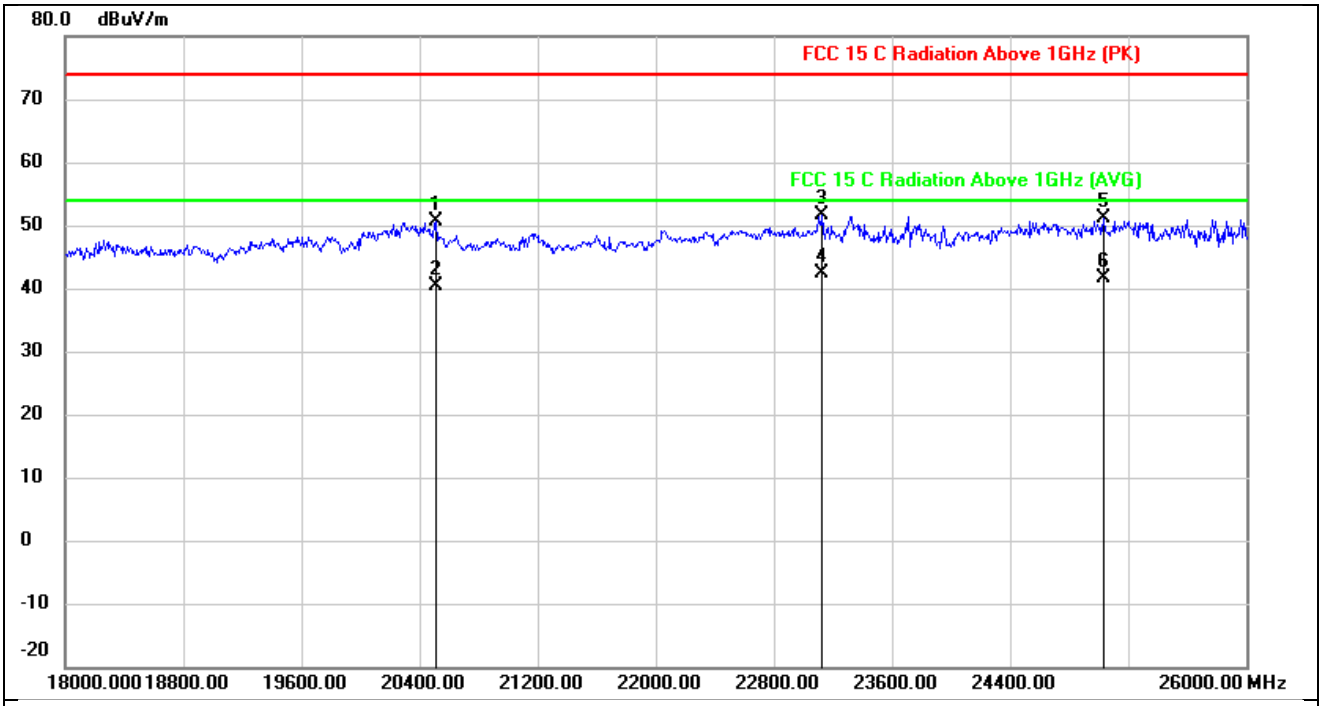


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1		20448.000	31.59	18.90	50.49	74.00	-23.51	peak
2		20448.000	15.60	18.90	34.50	54.00	-19.50	AVG
3		23584.000	32.50	19.55	52.05	74.00	-21.95	peak
4		23584.000	18.05	19.55	37.60	54.00	-16.40	AVG
5		25584.000	40.27	19.45	59.72	74.00	-14.28	peak
6	*	25584.000	22.85	19.45	42.30	54.00	-11.70	AVG

EUT:	Gateway	Model name:	1.0
Pressure:	1010hPa	Polarization:	H
Test voltage :	DC 48V from POE	Test mode:	TX
Test channel:	2440MHz		

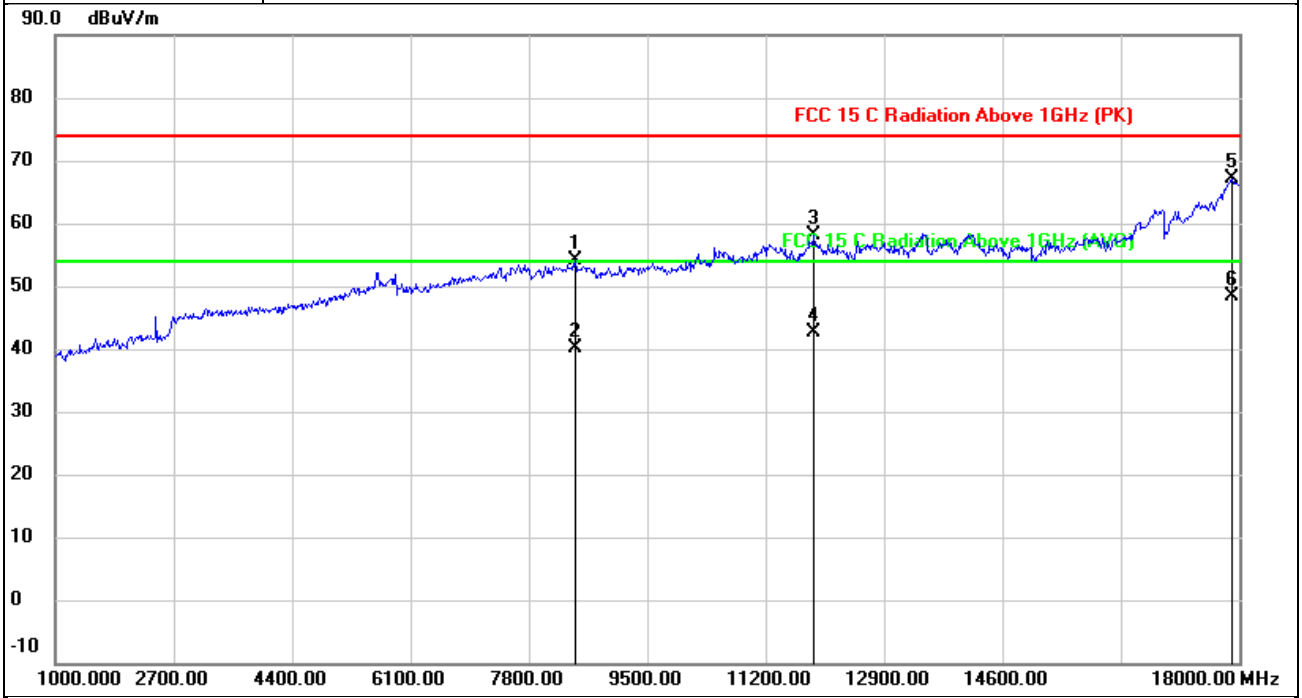


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1		7188.000	53.47	-0.37	53.10	74.00	-20.90	peak
2		7188.000	36.20	-0.37	35.83	54.00	-18.17	AVG
3		12322.000	52.98	3.94	56.92	74.00	-17.08	peak
4		12322.000	39.66	3.94	43.60	54.00	-10.40	AVG
5		17881.000	54.58	13.23	67.81	74.00	-6.19	peak
6	*	17881.000	37.07	13.23	50.30	54.00	-3.70	AVG

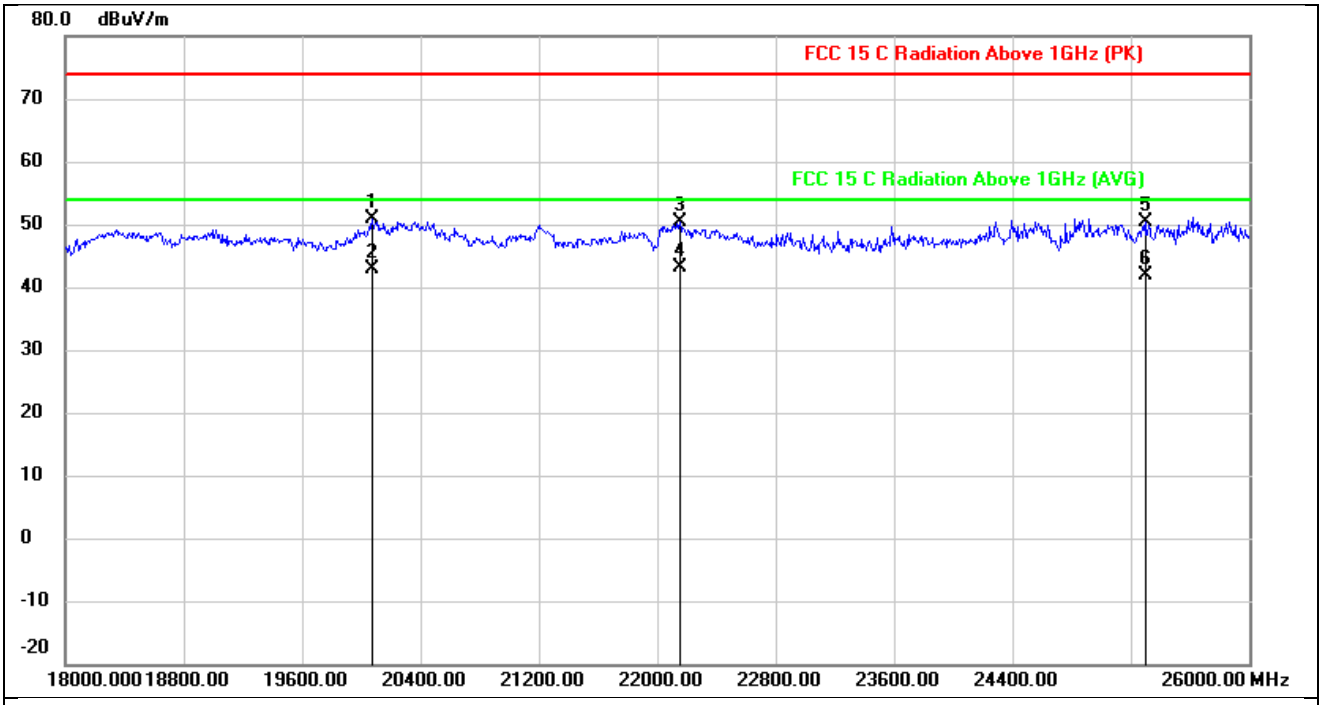


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1		20512.000	31.80	18.91	50.71	74.00	-23.29	peak
2		20512.000	21.59	18.91	40.50	54.00	-13.50	AVG
3		23128.000	32.08	19.45	51.53	74.00	-22.47	peak
4	*	23128.000	22.85	19.45	42.30	54.00	-11.70	AVG
5		25032.000	31.39	19.82	51.21	74.00	-22.79	peak
6		25032.000	21.88	19.82	41.70	54.00	-12.30	AVG

EUT:	Gateway	Model name:	1.0
Pressure:	1010hPa	Polarization:	V
Test voltage :	DC 48V from POE	Test mode:	TX
Test channel:	2440MHz		

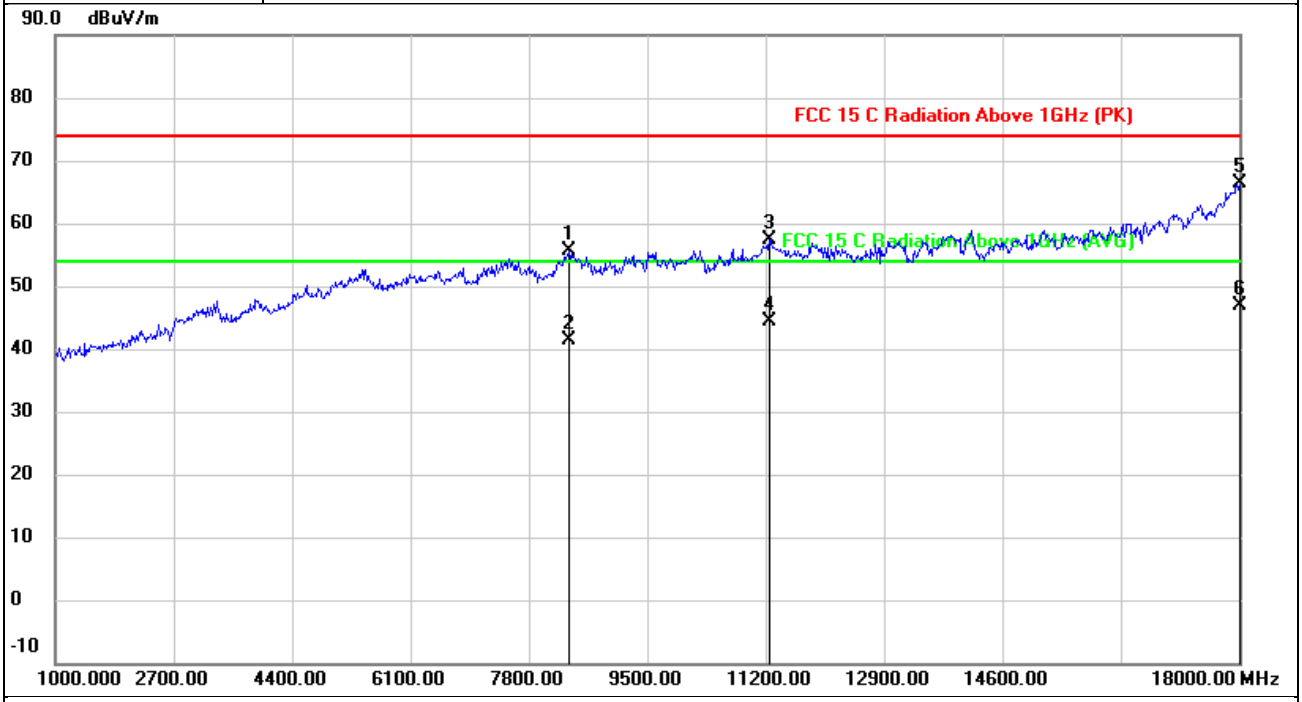


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1		8463.000	52.53	1.56	54.09	74.00	-19.91	peak
2		8463.000	38.60	1.56	40.16	54.00	-13.84	AVG
3		11897.000	53.53	4.48	58.01	74.00	-15.99	peak
4		11897.000	38.12	4.48	42.60	54.00	-11.40	AVG
5		17898.000	53.84	13.34	67.18	74.00	-6.82	peak
6	*	17898.000	35.06	13.34	48.40	54.00	-5.60	AVG

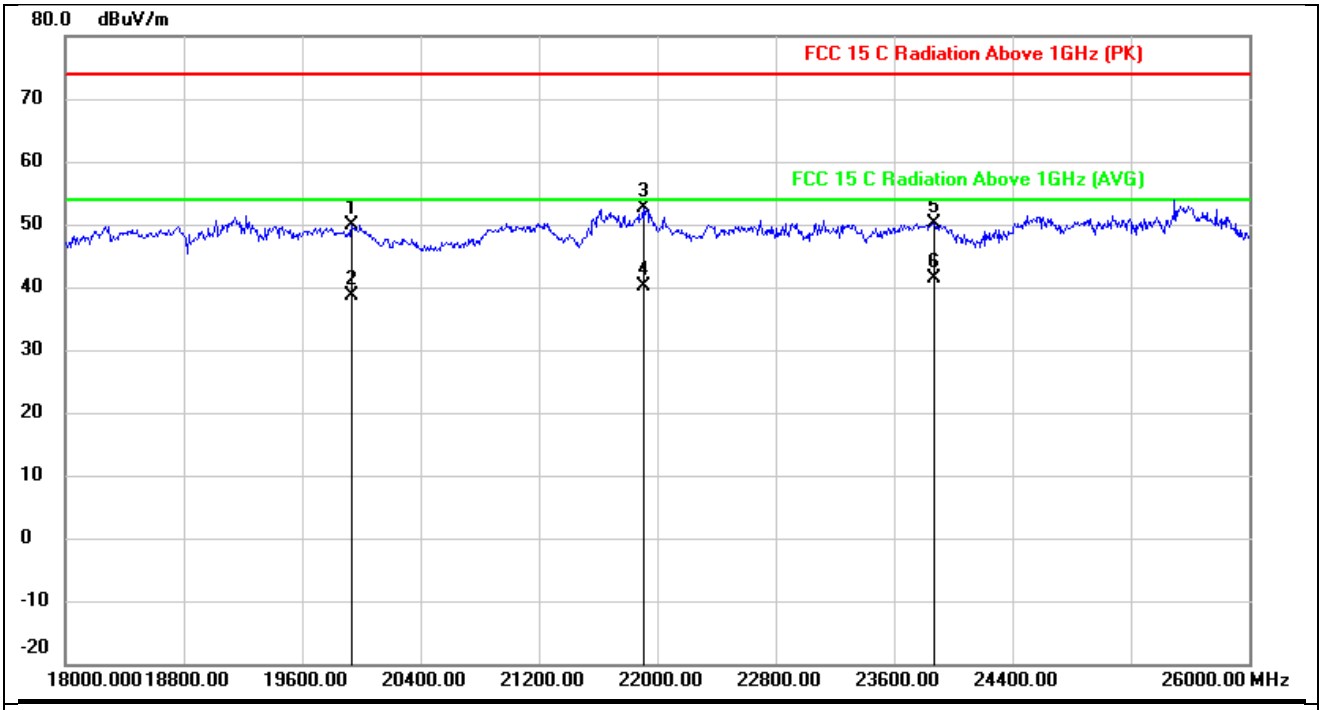


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1		20072.000	32.06	18.82	50.88	74.00	-23.12	peak
2		20072.000	24.08	18.82	42.90	54.00	-11.10	AVG
3		22152.000	31.01	19.25	50.26	74.00	-23.74	peak
4	*	22152.000	23.95	19.25	43.20	54.00	-10.80	AVG
5		25304.000	30.86	19.64	50.50	74.00	-23.50	peak
6		25304.000	22.16	19.64	41.80	54.00	-12.20	AVG

EUT:	Gateway	Model name:	1.0
Pressure:	1010hPa	Polarization:	H
Test voltage :	DC 48V from POE	Test mode:	TX
Test channel:	2480MHz		

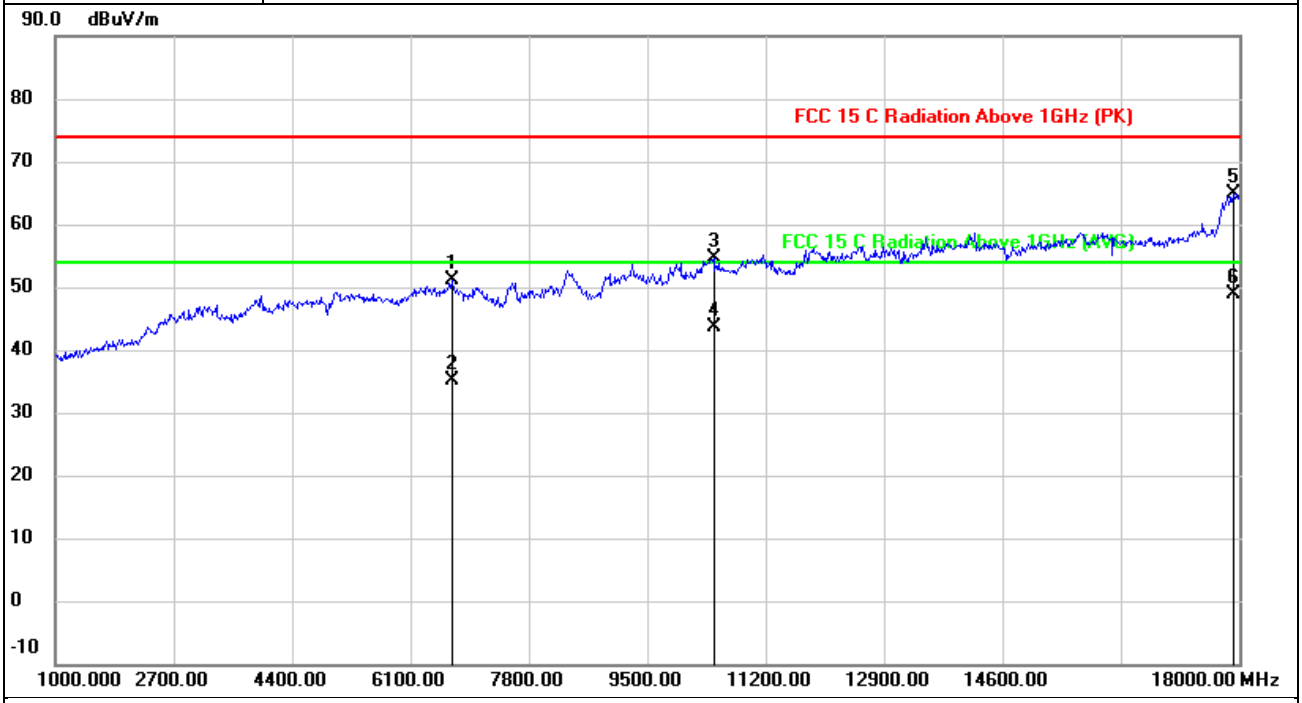


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1		8378.000	54.25	1.37	55.62	74.00	-18.38	peak
2		8378.000	40.03	1.37	41.40	54.00	-12.60	AVG
3		11251.000	52.56	4.89	57.45	74.00	-16.55	peak
4		11251.000	39.60	4.89	44.49	54.00	-9.51	AVG
5		18000.000	52.14	14.12	66.26	74.00	-7.74	peak
6	*	18000.000	32.68	14.12	46.80	54.00	-7.20	AVG

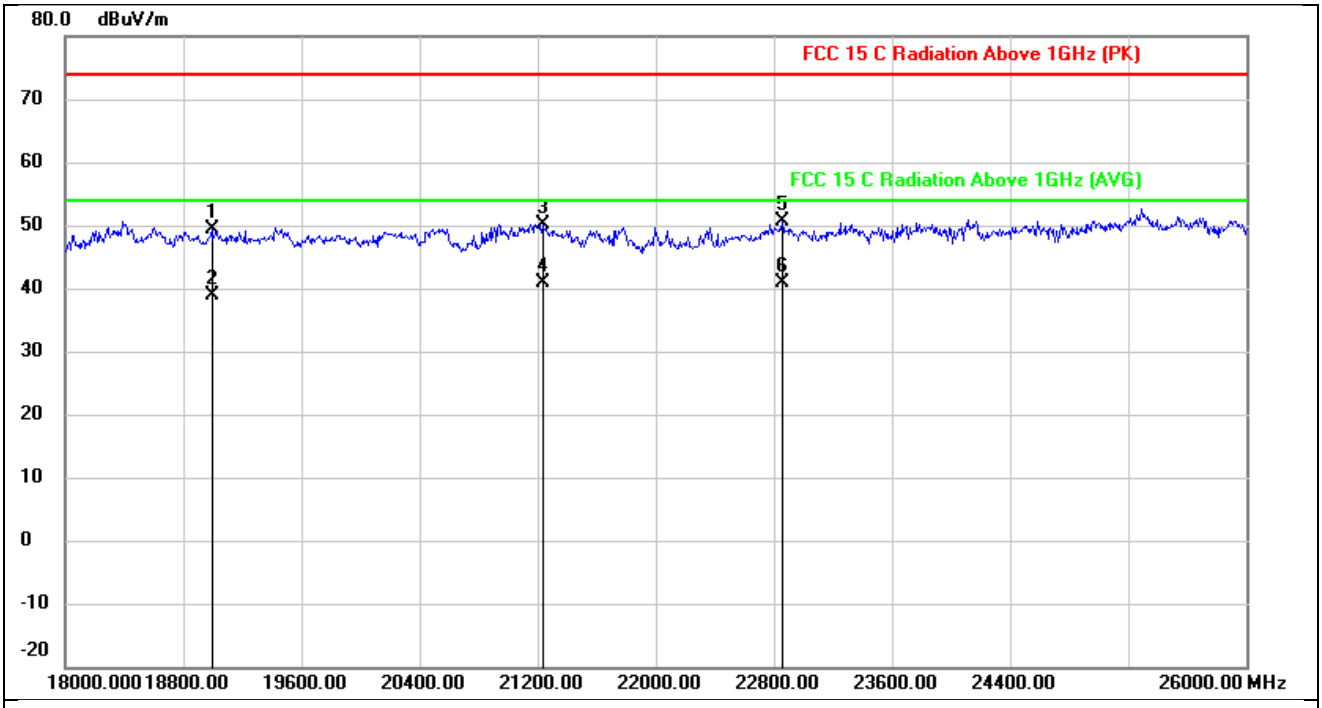


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1		19936.000	31.13	18.83	49.96	74.00	-24.04	peak
2		19936.000	19.77	18.83	38.60	54.00	-15.40	AVG
3		21904.000	33.43	19.20	52.63	74.00	-21.37	peak
4		21904.000	20.90	19.20	40.10	54.00	-13.90	AVG
5		23872.000	30.59	19.61	50.20	74.00	-23.80	peak
6	*	23872.000	21.79	19.61	41.40	54.00	-12.60	AVG

EUT:	Gateway	Model name:	1.0
Pressure:	1010hPa	Polarization:	V
Test voltage :	DC 48V from POE	Test mode:	TX
Test channel:	2480MHz		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1		6695.000	53.17	-2.11	51.06	74.00	-22.94	peak
2		6695.000	37.20	-2.11	35.09	54.00	-18.91	AVG
3		10452.000	50.88	3.81	54.69	74.00	-19.31	peak
4		10452.000	39.89	3.81	43.70	54.00	-10.30	AVG
5		17915.000	51.39	13.48	64.87	74.00	-9.13	peak
6	*	17915.000	35.42	13.48	48.90	54.00	-5.10	AVG



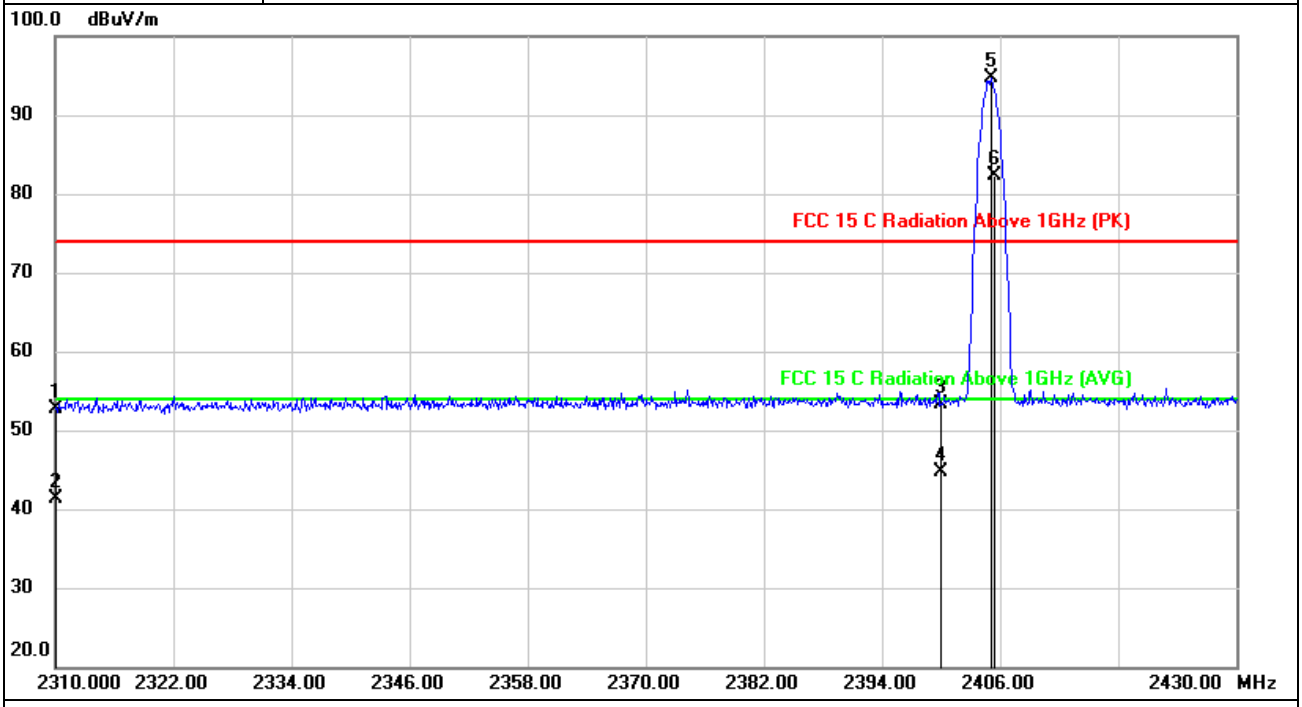
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1		18992.000	30.27	19.12	49.39	74.00	-24.61	peak
2		18992.000	19.68	19.12	38.80	54.00	-15.20	AVG
3		21232.000	31.18	19.06	50.24	74.00	-23.76	peak
4		21232.000	21.74	19.06	40.80	54.00	-13.20	AVG
5		22856.000	31.23	19.40	50.63	74.00	-23.37	peak
6	*	22856.000	21.60	19.40	41.00	54.00	-13.00	AVG

5.5.4 Band edge-radiated

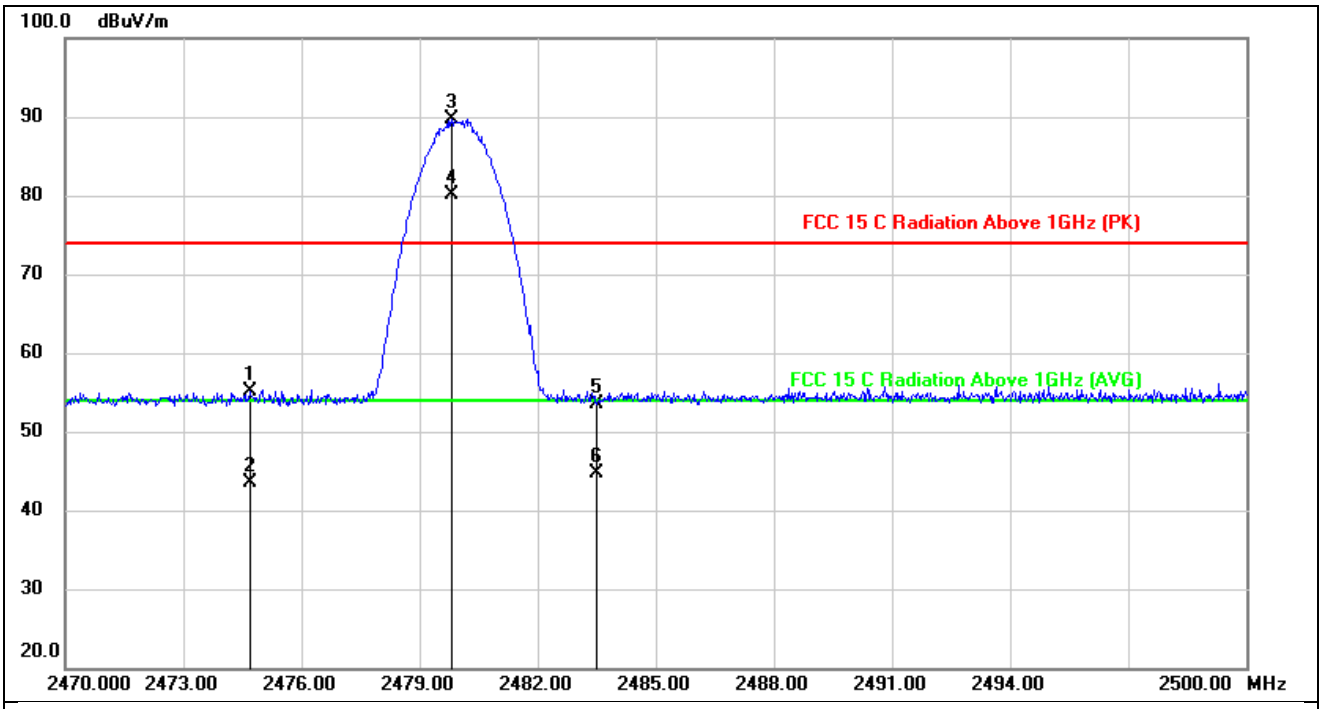
Note: (1) All Readings are Peak Value (VBW=3MHz) and AV Value (VBW=10Hz).
(2)Emission Level= Antenna Factor + Cable Loss + Read Level - Preamp Factor
(3) All other emissions more than 20dB below the limit.

All the modulation modes have been tested, and the worst result was report as below:

EUT:	Gateway	Model name:	1.0
Pressure:	1010hPa	Polarization:	H
Test voltage :	DC 48V from POE	Test mode:	TX
Test channel:	2405MHz		

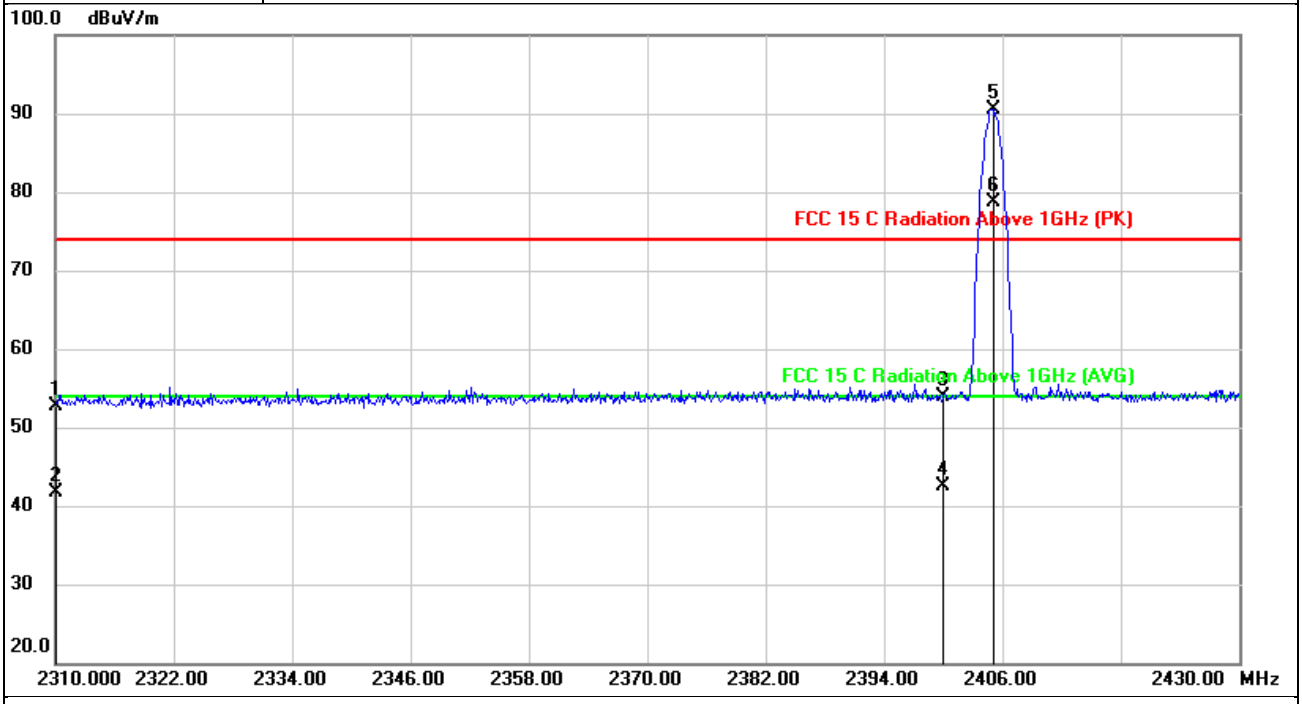


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1		2310.000	57.49	-4.83	52.66	74.00	-21.34	peak
2		2310.000	46.23	-4.83	41.40	54.00	-12.60	AVG
3		2400.000	57.60	-4.35	53.25	74.00	-20.75	peak
4		2400.000	49.15	-4.35	44.80	54.00	-9.20	AVG
5	X	2405.040	99.00	-4.33	94.67	74.00	20.67	peak
6	*	2405.400	86.62	-4.32	82.30	54.00	28.30	AVG

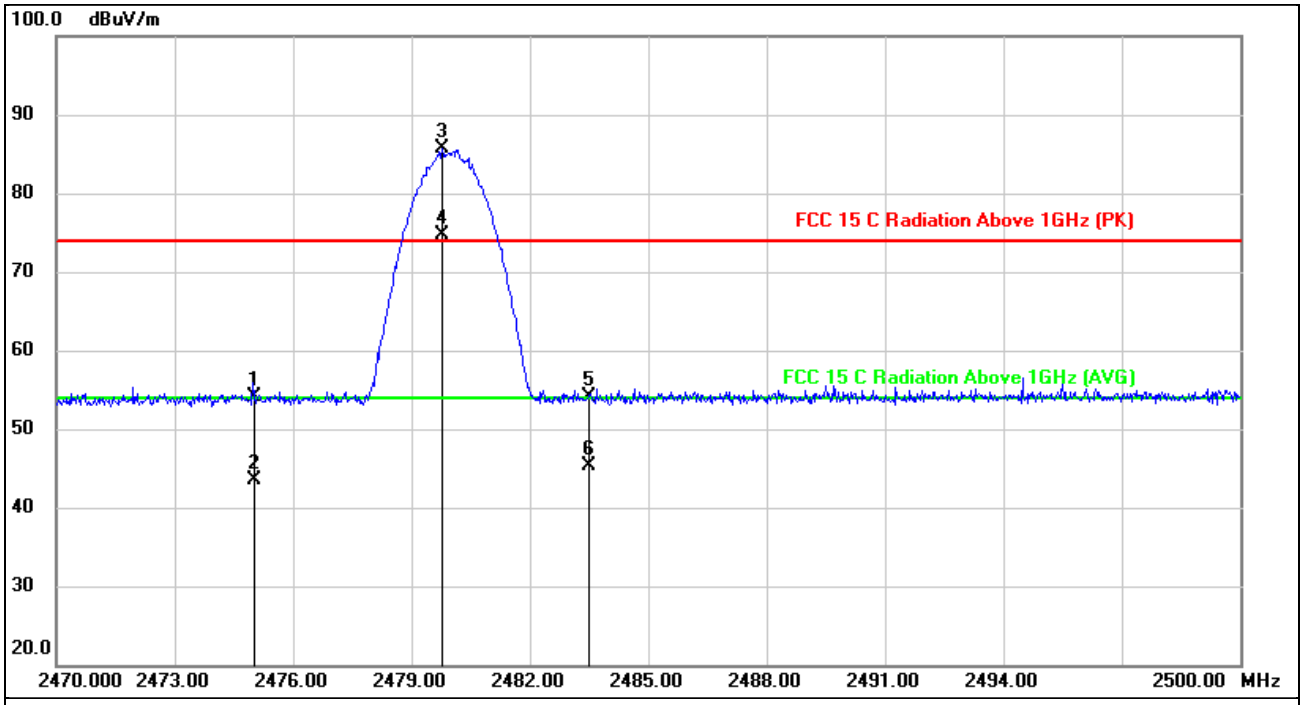


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1		2474.680	59.06	-3.95	55.11	74.00	-18.89	peak
2		2474.680	47.55	-3.95	43.60	54.00	-10.40	AVG
3	X	2479.810	93.73	-3.93	89.80	74.00	15.80	peak
4	*	2479.810	84.13	-3.93	80.20	54.00	26.20	AVG
5		2483.500	57.46	-3.91	53.55	74.00	-20.45	peak
6		2483.500	48.71	-3.91	44.80	54.00	-9.20	AVG

EUT:	Gateway	Model name:	1.0
Pressure:	1010hPa	Polarization:	V
Test voltage :	DC 48V from POE	Test mode:	TX
Test channel:	2470MHz		

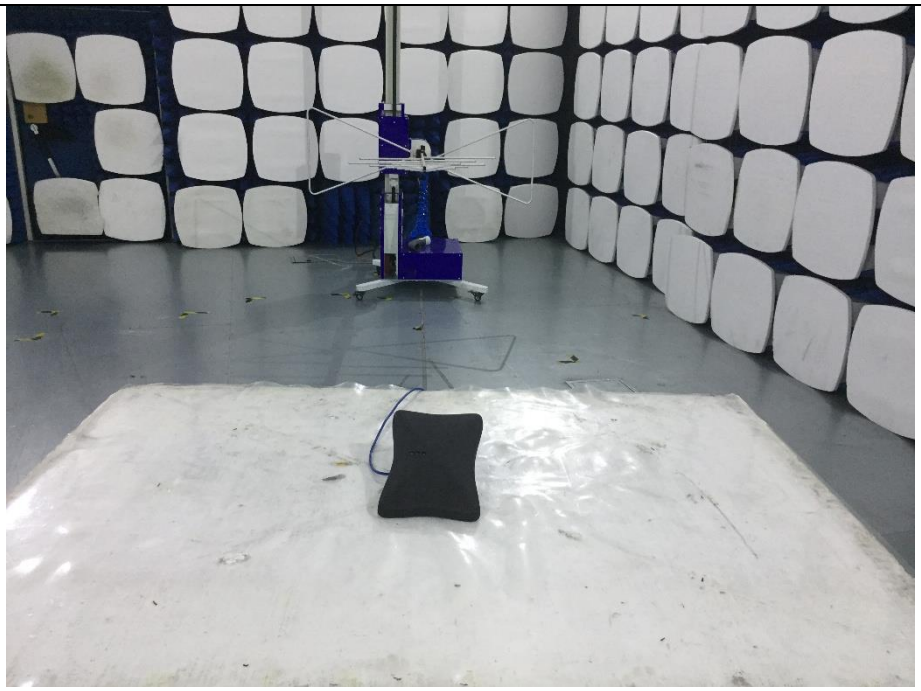
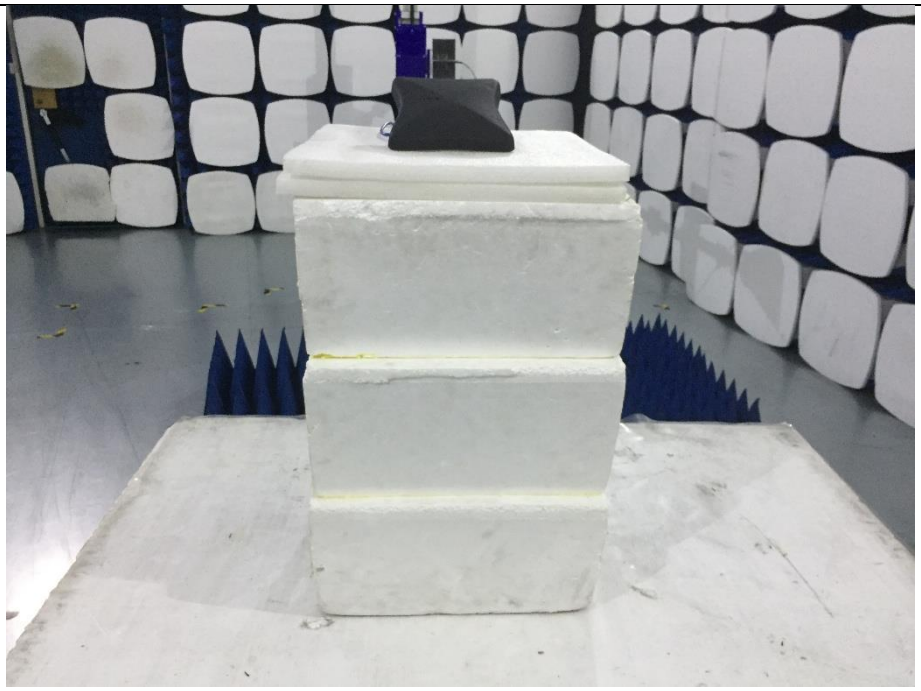


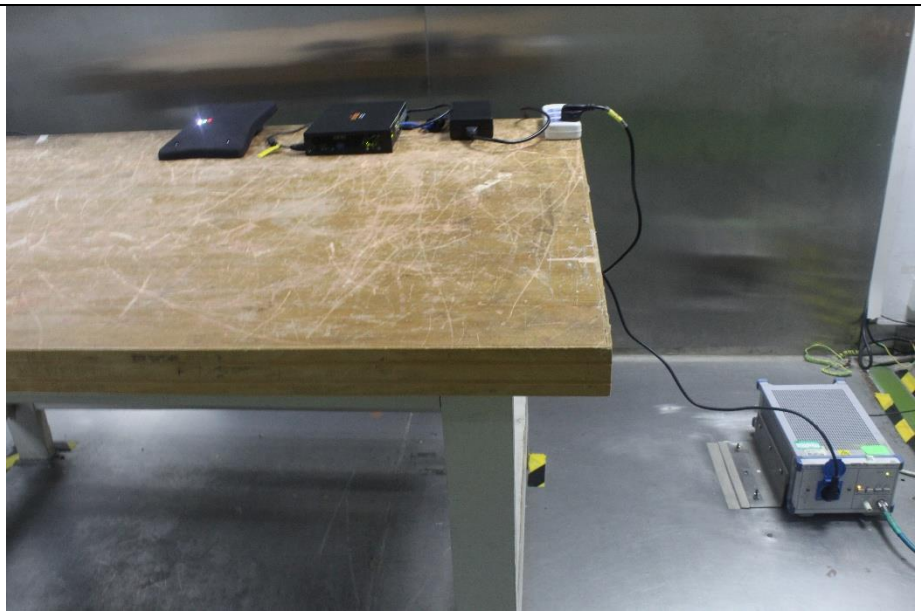
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1		2310.000	57.55	-4.83	52.72	74.00	-21.28	peak
2		2310.000	46.53	-4.83	41.70	54.00	-12.30	AVG
3		2400.000	58.29	-4.35	53.94	74.00	-20.06	peak
4		2400.000	46.95	-4.35	42.60	54.00	-11.40	AVG
5	X	2405.040	94.90	-4.33	90.57	74.00	16.57	peak
6	*	2405.040	83.03	-4.33	78.70	54.00	24.70	AVG



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1		2475.000	58.10	-3.95	54.15	74.00	-19.85	peak
2		2475.000	47.55	-3.95	43.60	54.00	-10.40	AVG
3	X	2479.780	89.56	-3.93	85.63	74.00	11.63	peak
4	*	2479.780	78.63	-3.93	74.70	54.00	20.70	AVG
5		2483.500	57.96	-3.91	54.05	74.00	-19.95	peak
6		2483.500	49.11	-3.91	45.20	54.00	-8.80	AVG

Photographs of the Test Setup

Radiated emission – below 1GHz

Radiated emission – above 1GHz


Conducted emission


Photographs of the EUT

See the APPENDIX 1: EUT PHOTO in the report No.: MTi190731E037-1.

----END OF REPORT----