



Test Report

FCC Part15 Subpart C & ISED RSS-247 Issue 2

Product Name : LED lamp
Model No. : 9290018189
FCC ID : 2AGBW9290018189X
IC : 20812-8189X

Applicant : Philips Lighting (China) Investment Co., Ltd.
Address : Building 9, Lane 888, Tianlin Road, Minhang district,
Shanghai,China.

Date of Receipt : Aug. 30th, 2017
Test Date : Aug. 30th, 2017~ Oct. 12th, 2017
Issued Date : Jan. 17th, 2018
Report No. : 1782157R-RF-US-P06V02
Report Version : V 1.0

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF, A2LA or any agency of the government.

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Test Report Certification

Issued Date : Jan. 17th, 2018
Report No. : 1782157R-RF-US-P06V02



Product Name : LED lamp
 Applicant : Philips Lighting (China) Investment Co., Ltd.
 Address : Building 9, Lane 888, Tianlin Road, Minhang district, Shanghai,China.
 Manufacturer : Philips Lighting (China) Investment Co., Ltd.
 Address : Building 9, Lane 888, Tianlin Road, Minhang district, Shanghai,China.
 Model No. : 9290018189
 FCC ID : 2AGBW9290018189X
 IC : 20812-8189X
 Brand Name : Philips
 EUT Voltage : 110 ~ 130Vac, 50-60Hz, 14W
 Test Voltage : AC 120V/60Hz
 Applicable Standard : FCC CFR Title 47 Part 15 Subpart C: 2017
 ANSI C63.4:2014; ANSI C63.10:2013;
 KDB 558074 D01v04
 ISED RSS-Gen Issue 4 / RSS-247 Issue 2
 Test Result : Complied
 Performed Location : DEKRA Testing & Certification (Suzhou) Co., Ltd.
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 FCC Registration Number: CN1199; IC Lab Code: 4075B

Documented By : Kitty Li

(Adm. Specialist: Kitty Li)

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Approved By : Harry Zhao

(Engineering Manager: Harry Zhao)

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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
1782157R-RF-US-P06V02	V1.0	Initial Issued Report	Jan. 17th, 2018

1. General Information

1.1. EUT Description

Product Name	LED Lamp
Brand Name	Philips
Model No.	9290018189
EUT Voltage	110 ~ 130Vac, 50-60Hz, 14W
Frequency Range	2405 ~ 2480MHz
Channel Number	16
Type of Modulation	O-QPSK
Data Rate	250kbps
Antenna Type	Reference to Antenna List
Peak Antenna Gain	Reference to Antenna List

1.2. Working Frequency of Each Channel:

Zigbee Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
11	2405 MHz	12	2410 MHz	13	2415 MHz	14	2420 MHz
15	2425 MHz	16	2430 MHz	17	2435 MHz	18	2440 MHz
19	2445 MHz	20	2450 MHz	21	2455 MHz	22	2460 MHz
23	2465 MHz	24	2470 MHz	25	2475 MHz	26	2480 MHz

1.3. Antenna information

Antenna manufacturer	N/A		
Antenna Delivery	<input checked="" type="checkbox"/> 1*TX+1*RX	<input type="checkbox"/> 2*TX+2*RX	<input type="checkbox"/> 3*TX+3*RX
Antenna technology	<input checked="" type="checkbox"/> SISO		
	<input type="checkbox"/> MIMO	<input type="checkbox"/> Basic	
		<input type="checkbox"/> Sectorized antenna systems	
		<input type="checkbox"/> Cross-polarized antennas	
		<input type="checkbox"/> Unequal antenna gains, with equal transmit powers	
		<input type="checkbox"/> Spatial Multiplexing	
		<input type="checkbox"/> CDD	
		<input type="checkbox"/> Beam-forming	
Antenna Type	<input type="checkbox"/> External	<input type="checkbox"/> Dipole Antenna	
	<input checked="" type="checkbox"/> Internal	<input type="checkbox"/> PIFA Antenna	
		<input checked="" type="checkbox"/> PCB Antenna	
		<input type="checkbox"/> Slot Antenna	
		<input type="checkbox"/> Ceramic Chip Antenna	
		<input type="checkbox"/> Metal plate type F antenna	
		<input type="checkbox"/> Cross-polarize Antenna	
		Antenna Gain	1.42dBi

1.4. Mode of Operation

DEKRA has verified the construction and function in typical operation. See the different modes shown in this test report and defined as:

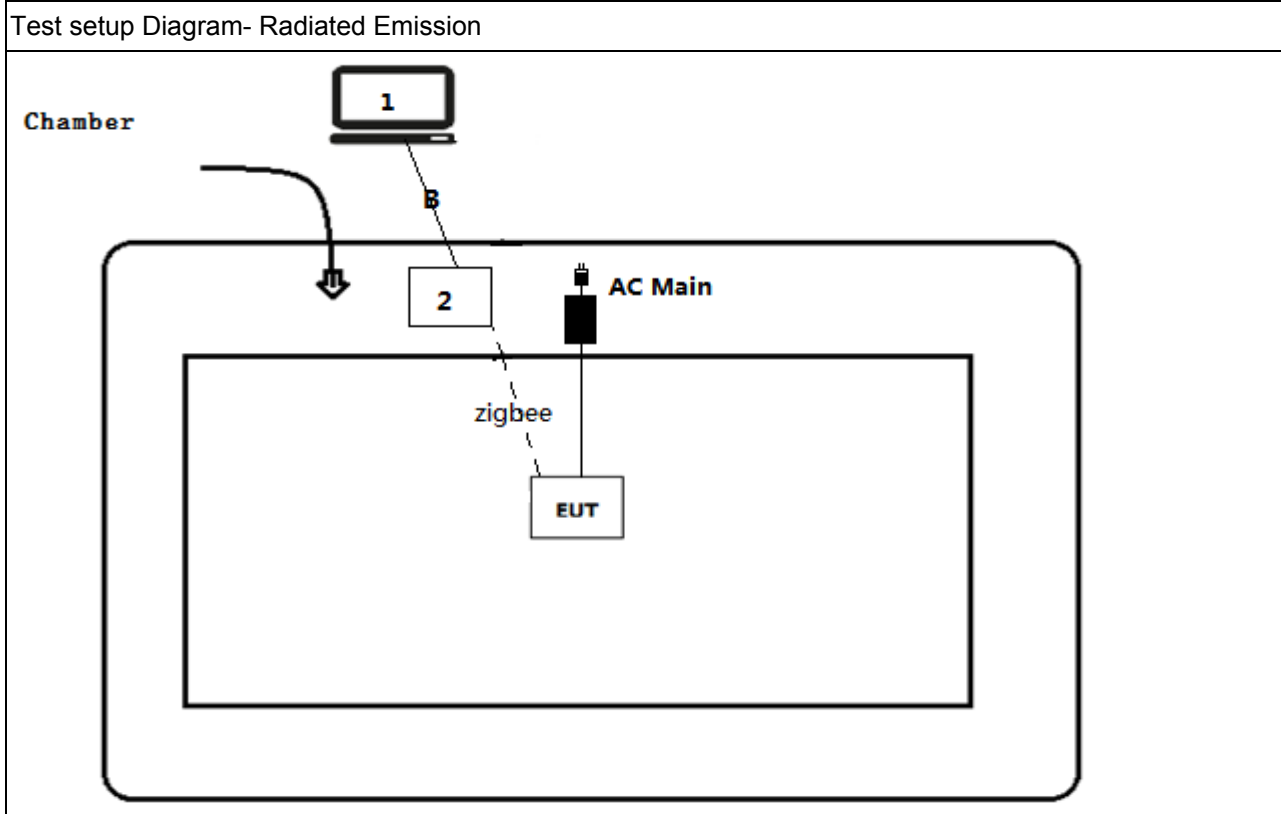
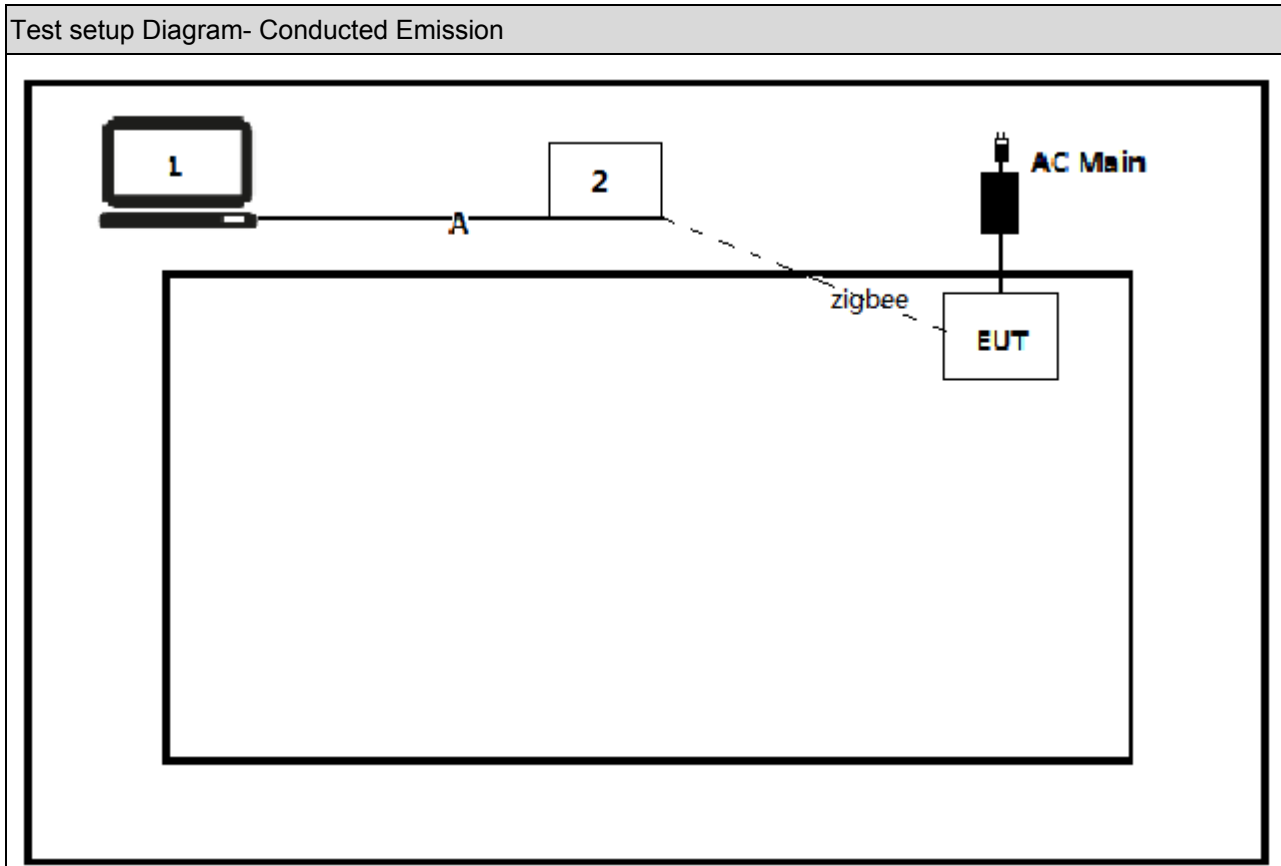
Test Modes List
Mode 1: Transmit by Zigbee

1.5. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

No.	Product	Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook	Think Pad	2526	LV-A3285	Power by adapter
2	Control board	Philips	N/A	N/A	N/A
A	USB Control Cable	N/A	N/A	N/A	Shield, 1m
B	USB Control Cable	N/A	N/A	N/A	Shield, 10m

1.6. Configuration of Tested System



1.7. EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of all equipment.
3	Run the software, and set the test mode and channel, then press OK to start continue receive.

2. Technical Test

2.1. Summary of Test Result

For FCC rule

Performed Test Item	Normative References	Limit	Result
AC Power Line Conducted Emission	FCC CFR Title 47 Part 15 Subpart C: 2017 Section 15.207	FCC 15.207	PASS
Emissions in restricted frequency bands	FCC CFR Title 47 Part 15 Subpart C: 2017 Section 15.209	FCC 15.209	PASS
Emissions in non-restricted frequency bands	FCC CFR Title 47 Part 15 Subpart C: 2017 Section 15.247(d)	20dBc	PASS
Radiated Emission Band Edge	FCC CFR Title 47 Part 15 Subpart C: 2017 15.247(d)	FCC 15.209	PASS
Occupied Bandwidth	FCC CFR Title 47 Part 15 Subpart C: 2017 Section 15.247(a)(2)	500kHz	PASS
Fundamental emission output power	FCC CFR Title 47 Part 15 Subpart C: 2017 Section 15.247(b)(3)	30dBm	PASS
Power Spectral Density	FCC CFR Title 47 Part 15 Subpart C: 2017 Section 15.247(e)	8dBm/3kHz	PASS
Antenna Requirement	FCC CFR Title 47 Part 15 Subpart C: 2017 Section 15.203	FCC 15.203	PASS

For IC rule

Performed Test Item	Normative References	Limit	Result
AC Power Line Conducted Emission	RSS-Gen Issue 4 Section 8.8	RSS-Gen	PASS
Emissions in restricted frequency bands	RSS-Gen Issue 4 Section 8.9	RSS-Gen	PASS
Emissions in non-restricted frequency bands	RSS-247 Issue 2 Section A5.5	20dBc	PASS
Radiated Emission Band Edge	RSS-247 Issue 2 Section A5.5	RSS-247	PASS
Occupied Bandwidth	RSS-Gen Issue 4 Section 6.6 RSS-247 Issue 2 Section A5.2(1)	500kHz	PASS
Fundamental emission output power	RSS-247 Issue 2 Section A5.4(4)	30dBm	PASS
Power Spectral Density	RSS-247 Issue 2 Section A5.2(2)	8dBm/3kHz	PASS
Antenna Requirement	RSS-Gen Issue 4 Section 8.3	RSS-Gen Issue 4	PASS

2.2. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	21
Humidity (%RH)	25-75	50
Barometric pressure (mbar)	860-1060	950-1000

2.3. Measurement Uncertainty

Test Items	Uncertainty
AC Power Line Conducted Emission	$\pm 2.02\text{dB}$
Radiated Emission	Below 1GHz $\pm 3.8\text{ dB}$
	Above 1GHz $\pm 3.9\text{ dB}$
RF Antenna Port Conducted Emission	$\pm 1.27\text{dB}$
Radiated Emission Band Edge	$\pm 3.9\text{dB}$
Occupied Bandwidth	$\pm 1\text{kHz}$
Power Spectral Density	$\pm 1.27\text{dB}$

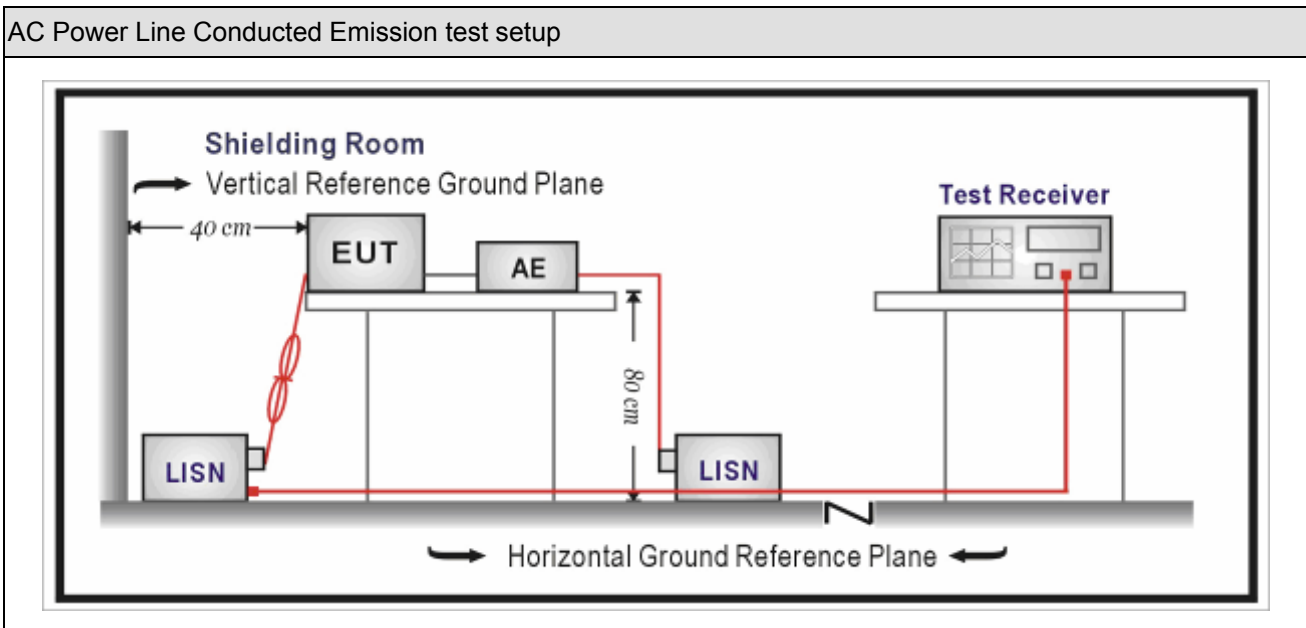
3. AC Power Line Conducted Emission

3.1. Test Equipment

AC Power Line Conducted Emission / TR-1					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100906	2017.03.05	2018.03.04
Two-Line V-Network	R&S	ENV 216	101189	2017.07.16	2018.07.15
Two-Line V-Network	R&S	ENV 216	101044	2017.09.16	2018.09.15
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	N/A	N/A
50ohm Termination	SHX	TF2	07081402	2017.09.16	2018.09.15
Temperature/Humidity Meter	Zhichen	ZC1-2	TR1-TH	2017.01.04	2018.01.03

Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

3.2. Test Setup



3.3. Limit

Frequency of Emission (MHz)	Conducted Limit	
	Quasi-peak (dB μ V)	Average (dB μ V)
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

Note 1: The lower limit shall apply at the transition frequencies.
 Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

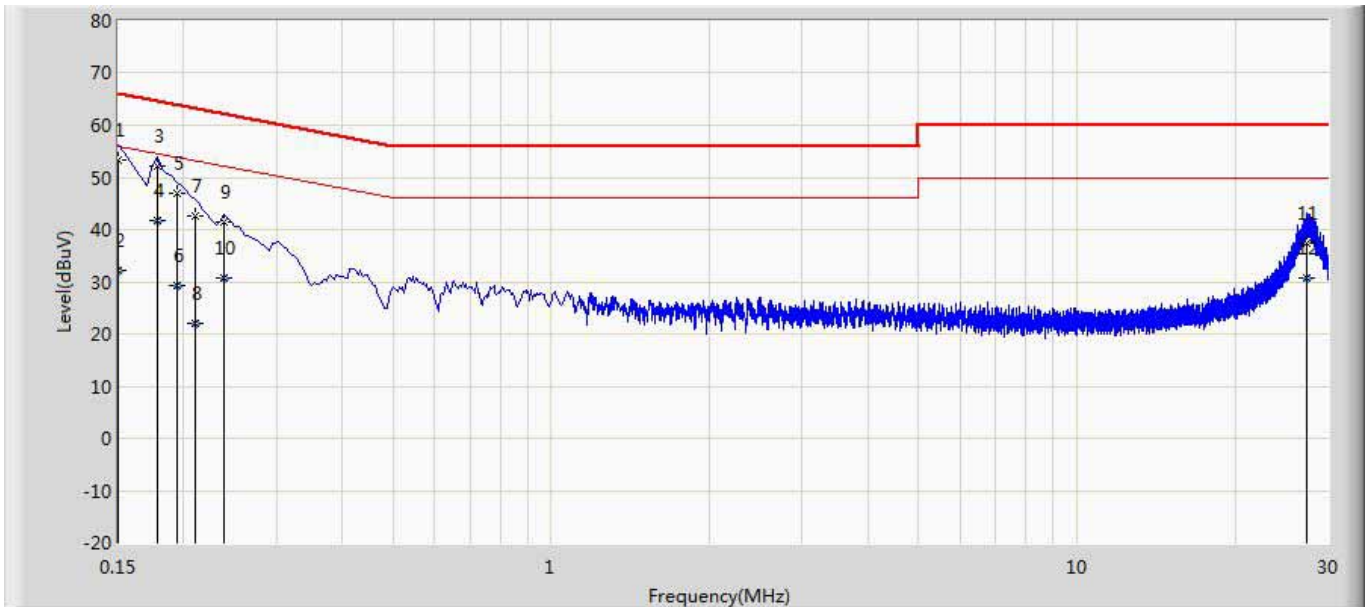
3.4. Test Procedure

Test Method			
	References Rule	Chapter	Item
<input checked="" type="checkbox"/>	ANSI C63.10-2013	6.2	Standard test method for ac power-line conducted emissions from unlicensed wireless devices
<input checked="" type="checkbox"/>	ANSI C63.4-2014	7	AC power-line conducted emission measurements

3.5. Test Result

Diodes:

Engineer: Nino	
Site: TR1	Time: 2017/09/26 - 13:45
Limit: FCC_Part15.107_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Line
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2405MHz by Zigbee	

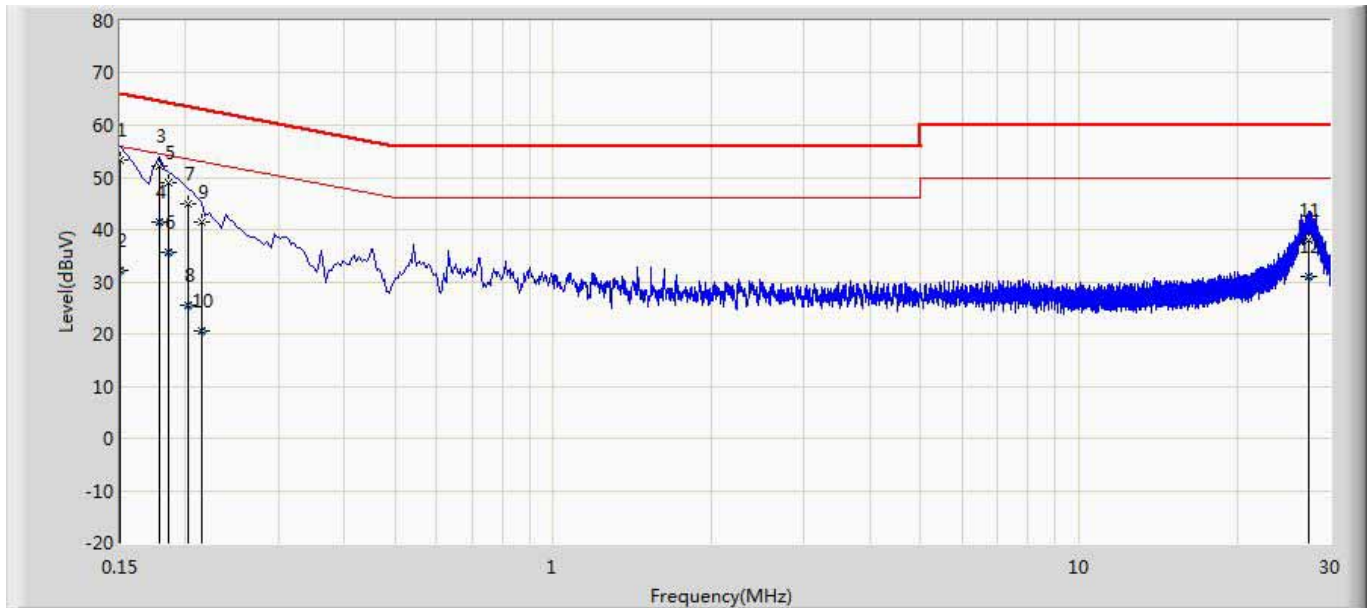


No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.150	53.425	43.790	-12.575	66.000	9.610	0.025	0.000	QP
2		0.150	32.108	22.473	-23.892	56.000	9.610	0.025	0.000	AV
3	*	0.178	52.062	42.430	-12.517	64.578	9.604	0.028	0.000	QP
4		0.178	41.596	31.964	-12.983	54.578	9.604	0.028	0.000	AV
5		0.194	46.888	37.258	-16.975	63.864	9.602	0.028	0.000	QP
6		0.194	29.199	19.569	-24.664	53.864	9.602	0.028	0.000	AV
7		0.210	42.715	33.085	-20.491	63.205	9.601	0.029	0.000	QP
8		0.210	22.077	12.448	-31.128	53.205	9.601	0.029	0.000	AV
9		0.238	41.501	31.872	-20.664	62.166	9.600	0.030	0.000	QP
10		0.238	30.619	20.989	-21.547	52.166	9.600	0.030	0.000	AV
11		27.402	37.478	26.711	-22.522	60.000	10.427	0.340	0.000	QP
12		27.402	30.845	20.078	-19.155	50.000	10.427	0.340	0.000	AV

Note:

- " * ", means this data is the worst emission level.
- Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Nino	
Site: TR1	Time: 2017/09/26 - 13:48
Limit: FCC_Part15.107_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Neutral
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2405MHz by Zigbee	



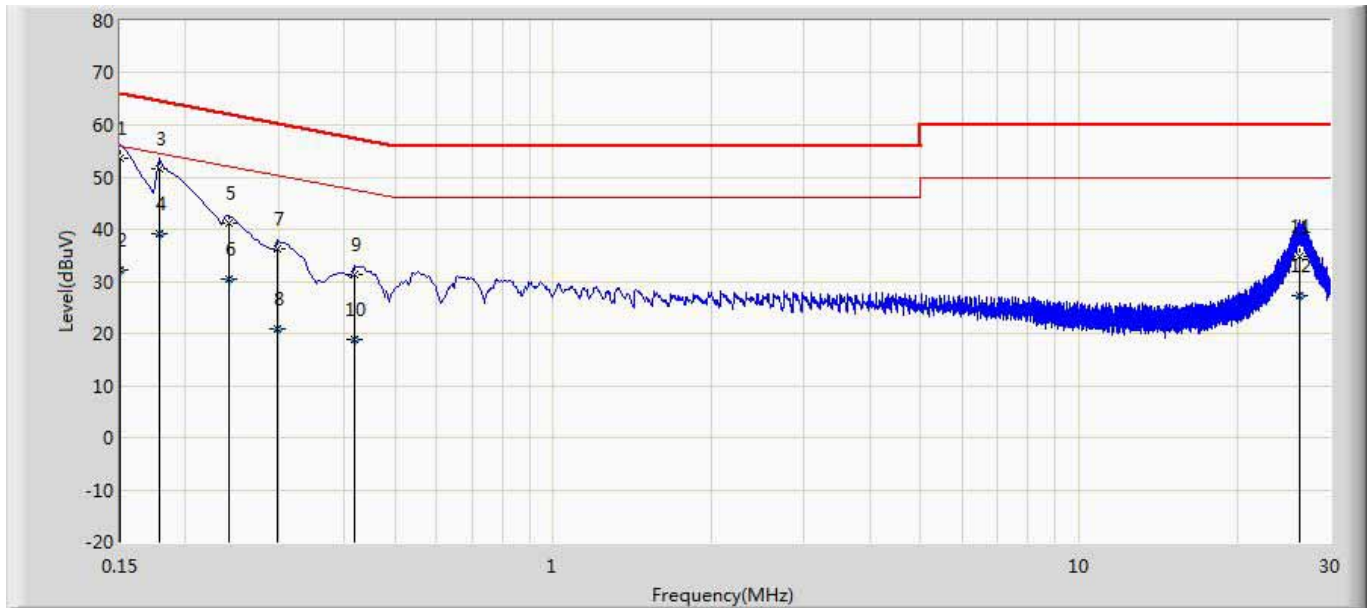
No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.150	53.360	43.741	-12.640	66.000	9.594	0.025	0.000	QP
2		0.150	32.128	22.510	-23.872	56.000	9.594	0.025	0.000	AV
3	*	0.178	52.313	42.689	-12.266	64.578	9.596	0.028	0.000	QP
4		0.178	41.533	31.909	-13.046	54.578	9.596	0.028	0.000	AV
5		0.186	48.855	39.229	-15.358	64.213	9.597	0.028	0.000	QP
6		0.186	35.624	25.998	-18.590	54.213	9.597	0.028	0.000	AV
7		0.202	45.024	35.397	-18.504	63.528	9.598	0.029	0.000	QP
8		0.202	25.548	15.921	-27.980	53.528	9.598	0.029	0.000	AV
9		0.214	41.591	31.963	-21.458	63.049	9.599	0.029	0.000	QP
10		0.214	20.686	11.058	-32.362	53.049	9.599	0.029	0.000	AV
11		27.398	37.986	27.015	-22.014	60.000	10.631	0.340	0.000	QP
12		27.398	30.879	19.908	-19.121	50.000	10.631	0.340	0.000	AV

Note:

1. " * ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Murata:

Engineer: Aaron	
Site: TR1	Time: 2017/11/29
Limit: FCC_Part15.107_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Line
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2405MHz by Zigbee	

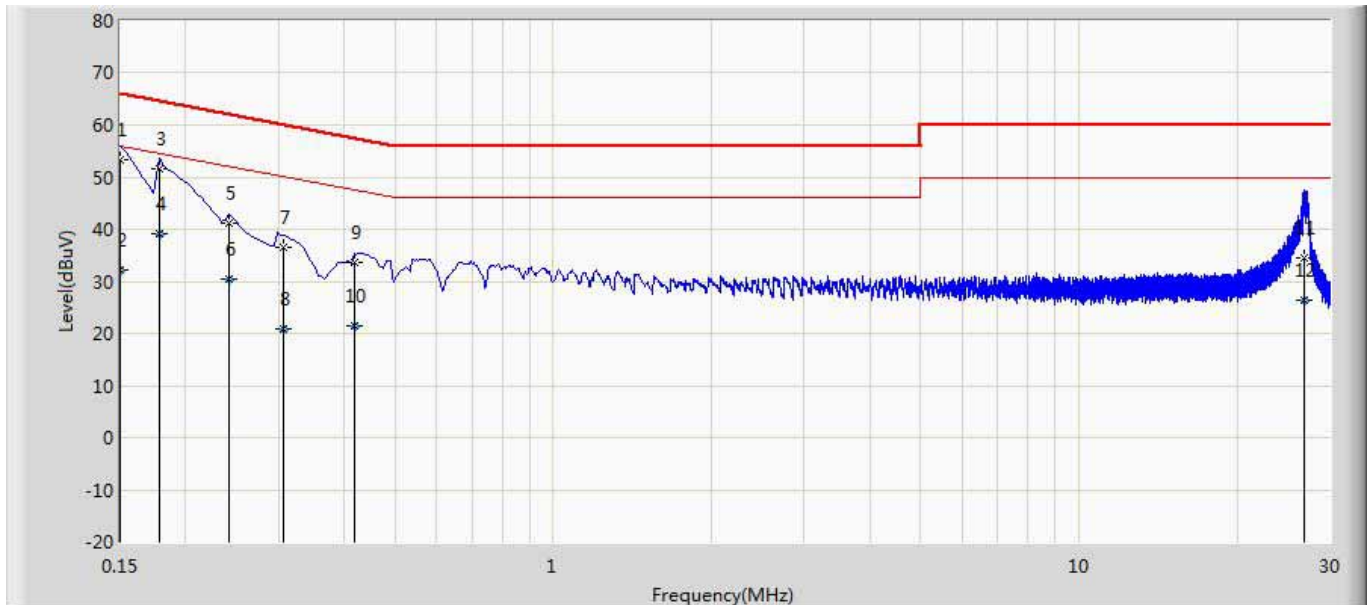


No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1	*	0.150	53.500	43.865	-12.500	66.000	9.610	0.025	0.000	QP
2		0.150	32.194	22.560	-23.806	56.000	9.610	0.025	0.000	AV
3		0.178	51.610	41.978	-12.968	64.578	9.604	0.028	0.000	QP
4		0.178	39.233	29.601	-15.345	54.578	9.604	0.028	0.000	AV
5		0.242	41.090	31.460	-20.937	62.027	9.600	0.030	0.000	QP
6		0.242	30.551	20.921	-21.476	52.027	9.600	0.030	0.000	AV
7		0.298	36.144	26.510	-24.155	60.298	9.600	0.034	0.000	QP
8		0.298	20.971	11.337	-29.327	50.298	9.600	0.034	0.000	AV
9		0.418	31.198	21.559	-26.290	57.488	9.600	0.039	0.000	QP
10		0.418	18.809	9.170	-28.678	47.488	9.600	0.039	0.000	AV
11		26.246	34.779	23.998	-25.221	60.000	10.447	0.333	0.000	QP
12		26.246	27.193	16.413	-22.807	50.000	10.447	0.333	0.000	AV

Note:

1. " * ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Aaron	
Site: TR1	Time: 2017/11/29
Limit: FCC_Part15.107_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Neutral
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2405MHz by Zigbee	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1	*	0.150	53.412	43.793	-12.588	66.000	9.594	0.025	0.000	QP
2		0.150	32.120	22.501	-23.880	56.000	9.594	0.025	0.000	AV
3		0.178	51.672	42.049	-12.906	64.578	9.596	0.028	0.000	QP
4		0.178	39.109	29.485	-15.470	54.578	9.596	0.028	0.000	AV
5		0.242	41.071	31.442	-20.956	62.027	9.598	0.030	0.000	QP
6		0.242	30.500	20.872	-21.527	52.027	9.598	0.030	0.000	AV
7		0.306	36.580	26.949	-23.499	60.078	9.596	0.034	0.000	QP
8		0.306	21.001	11.371	-29.077	50.078	9.596	0.034	0.000	AV
9		0.418	33.568	23.937	-23.919	57.488	9.592	0.039	0.000	QP
10		0.418	21.557	11.926	-25.930	47.488	9.592	0.039	0.000	AV
11		26.834	34.457	23.483	-25.543	60.000	10.638	0.336	0.000	QP
12		26.834	26.471	15.497	-23.529	50.000	10.638	0.336	0.000	AV

Note:

1. " * ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

4. Emissions in restricted frequency bands

4.1. Test Equipment

Radiated Emission(Below 1GHz) / AC-2					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100573	2017.03.29	2018.03.28
Loop Antenna	R&S	HFH2-Z2	833799/003	2016.11.16	2017.11.15
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2016.10.16	2017.10.15
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2016.03.02	2018.03.01
Temperature/Humidity Meter	Zhichen	ZC1-2	AC2-TH	2017.01.03	2018.01.02

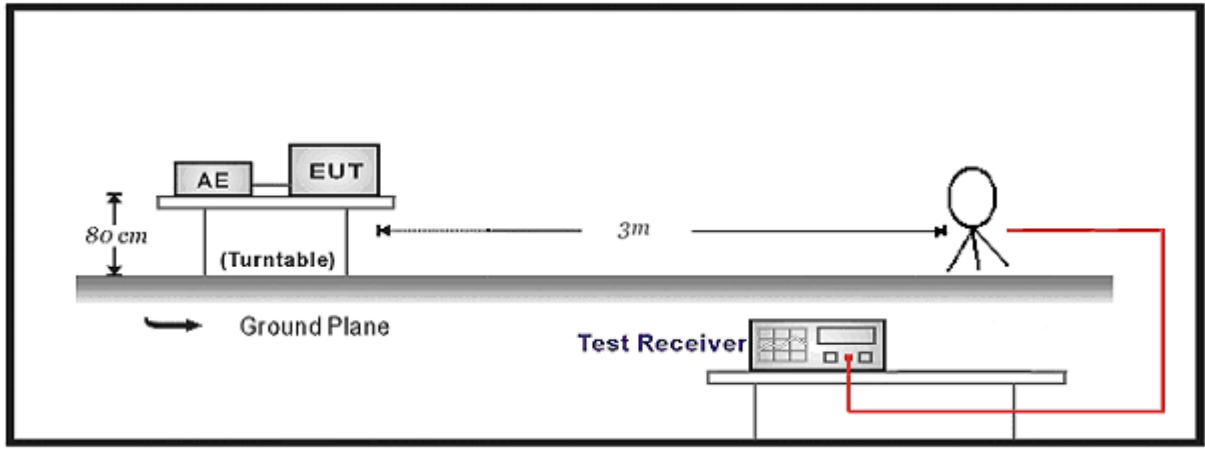
Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

Radiated Emission(Above 1GHz) / AC-5					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2017.01.04	2018.01.03
Preamplifier	Miteq	NSP1800-25	1364185	2017.05.06	2018.05.05
Preamplifier	QuieTek	AP-040G	CHM-0906001	2017.05.06	2018.05.05
DRG Horn	ETS-Lindgren	3117	00123988	2017.01.22	2018.01.21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2016.11.25	2017.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2016.03.02	2018.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2016.03.02	2018.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2016.03.02	2018.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2017.06.10	2018.06.09
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2017.01.04	2018.01.03

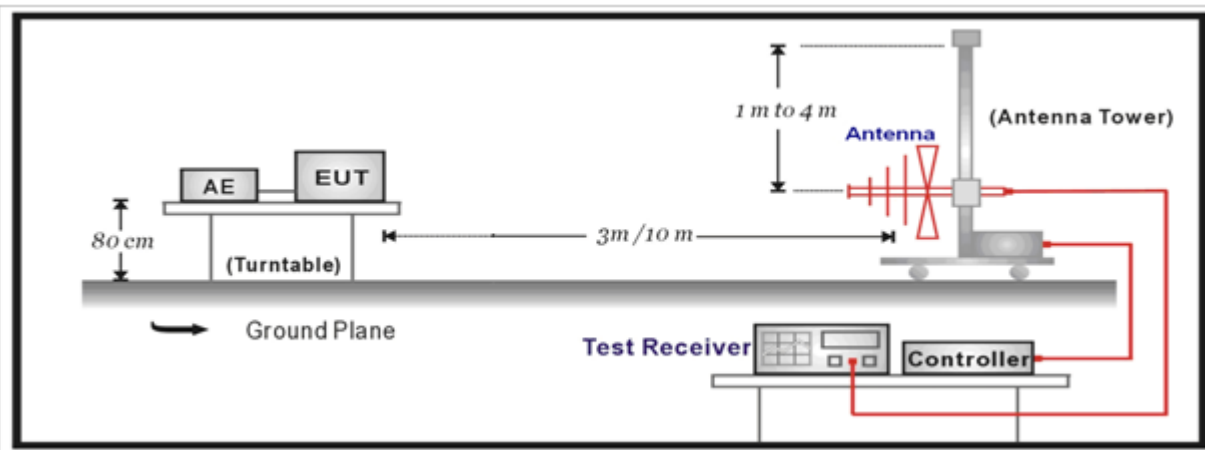
Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

4.2. Test Setup

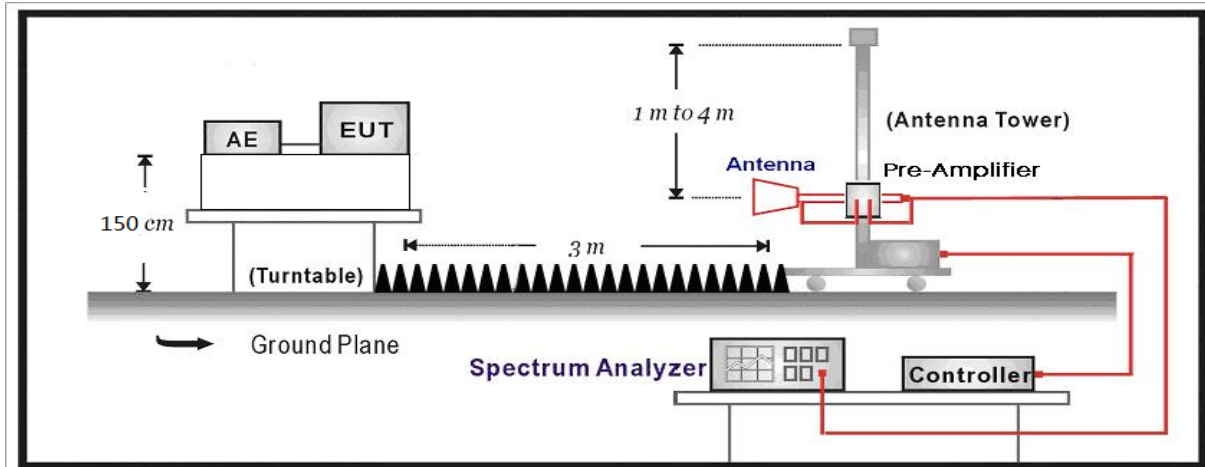
Below 30MHz Test Setup:



30MHz-1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limit

For FCC

Restricted Bands of operation			
Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 – 0.110	16.42 – 16.423	399.9 – 410	4.5 – 5.15
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
8.81425 – 8.81475	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	
13.36 – 13.41			

For IC:

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

Restricted Band Emissions Limit			
Frequency (MHz)	Field strength (μ V/m)	Field strength (dB μ V/m)	Measurement distance (m)
0.009 - 0.49	2400/F(kHz)	48.5 – 13.8	300 _(Note 1)
0.49 - 1.705	24000/F(kHz)	33.8 - 23	30 _(Note 1)
1.705 - 30	30	29.5	30 _(Note 1)
30 - 88	100	40	3 _(Note 2)
88 - 216	150	43.5	3 _(Note 2)
216 - 960	200	46	3 _(Note 2)
Above 960	500	54	3 _(Note 2)

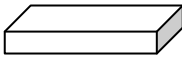
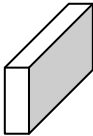
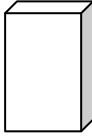



Note 1: At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

Note 2: At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

4.4. Test Procedure

Test Method			
	References Rule	Chapter	Description
<input type="checkbox"/>	ANSI C63.10	11.11	Emissions in non-restricted frequency bands
	<input type="checkbox"/> ANSI C63.10	11.11.2	Reference level measurement
	<input type="checkbox"/> ANSI C63.10	11.11.3	Emission level measurement
<input checked="" type="checkbox"/>	ANSI C63.10	11.12	Emissions in restricted frequency bands
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.1	Radiated emission measurements
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.7	Radiated spurious emission test
	<input checked="" type="checkbox"/> ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
	<input checked="" type="checkbox"/> ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
	<input checked="" type="checkbox"/> ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz
	<input type="checkbox"/> ANSI C63.10	11.12.2.3	Quasi-peak measurement procedure
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.4	Peak power measurement procedure
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.5	Average power measurement procedures
	<input type="checkbox"/> ANSI C63.10	11.12.2.5.1	Trace averaging with continuous EUT transmission at full power
	<input type="checkbox"/> ANSI C63.10	11.12.2.5.2	Trace averaging across ON and OFF times of the EUT transmissions followed by duty cycle correction
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.5.3	Reduced VBW averaging across ON and OFF times of the EUT transmissions with max hold

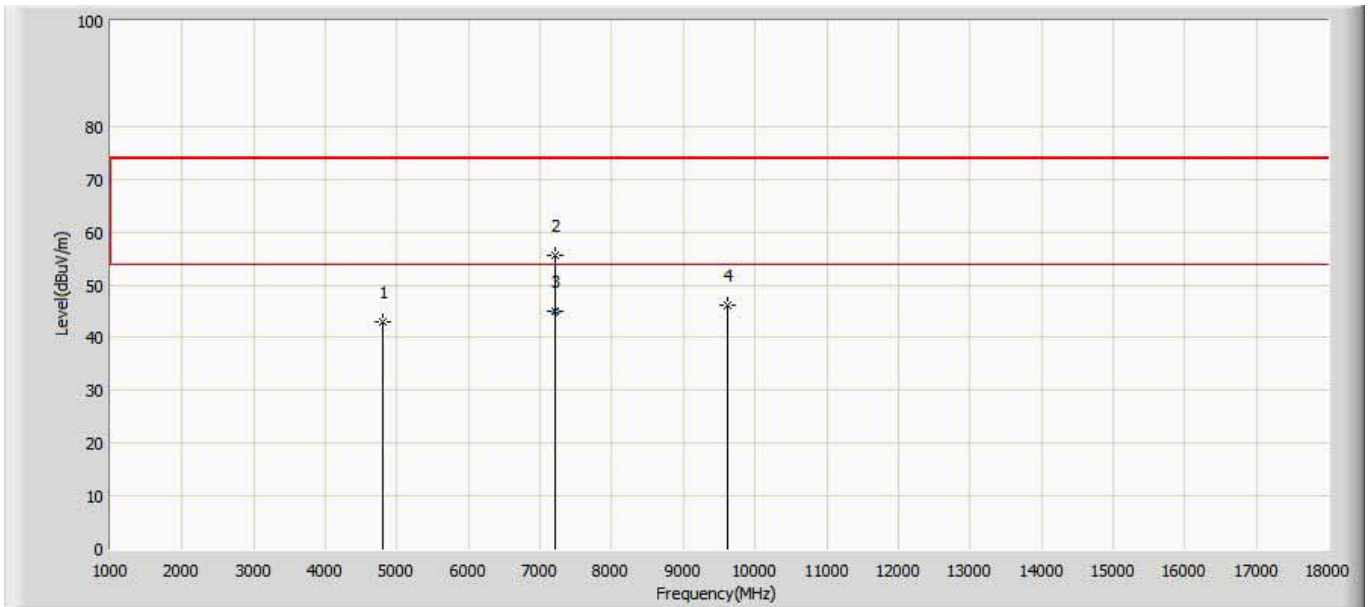
4.5. EUT test Axis definition

Item	Emissions in restricted frequency bands			
Device Category	<input type="checkbox"/>	Fixed point-to-point		
	<input type="checkbox"/>	Emit multiple directional beams, simultaneously or sequentially		
	<input checked="" type="checkbox"/>	Other cases		
Test mode	Mode 1			
Test method	<input checked="" type="checkbox"/>	Radiated		
		X Axis	Y Axis	Z Axis
				
		Worst Axis <input checked="" type="checkbox"/>	Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>
	<input type="checkbox"/>	Conducted		
	<input type="checkbox"/>	Chain 0		
				
	<input type="checkbox"/>	Chain 0	Chain 1	
				
	<input type="checkbox"/>	Chain 0	Chain 1	Chain 2
				

4.6. Test Result

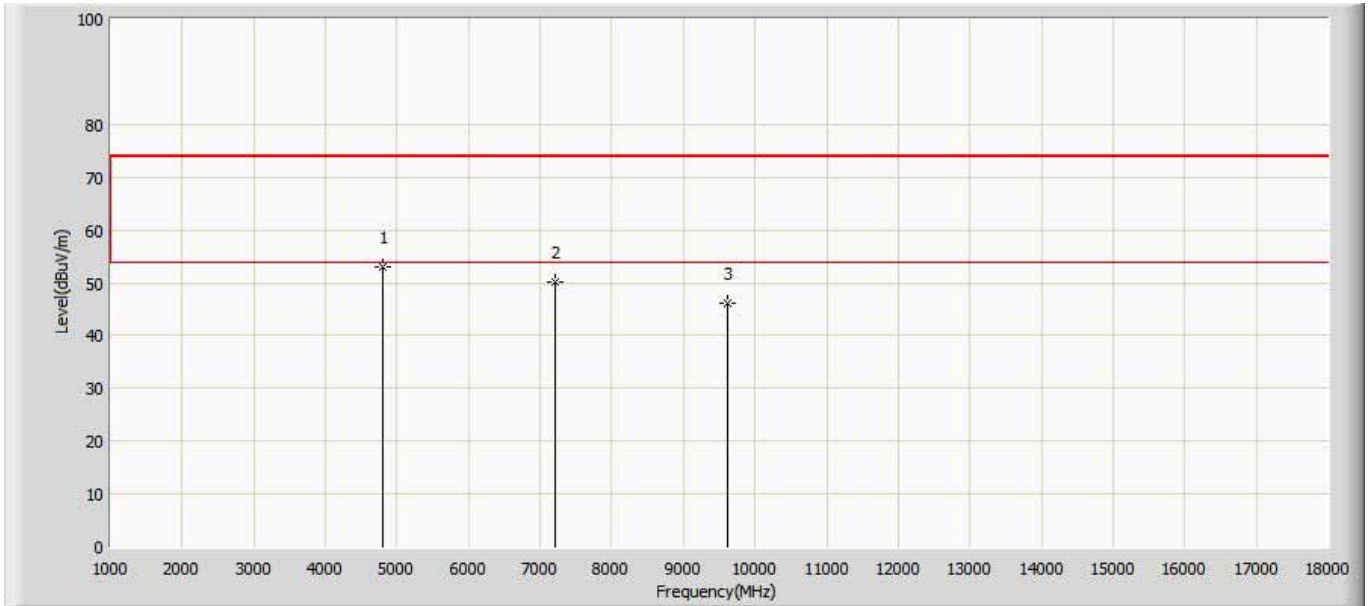
Diodes:

Engineer: Karl	
Site: AC5	Time: 2017/09/30 - 10:04
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2405MHz by zigbee	



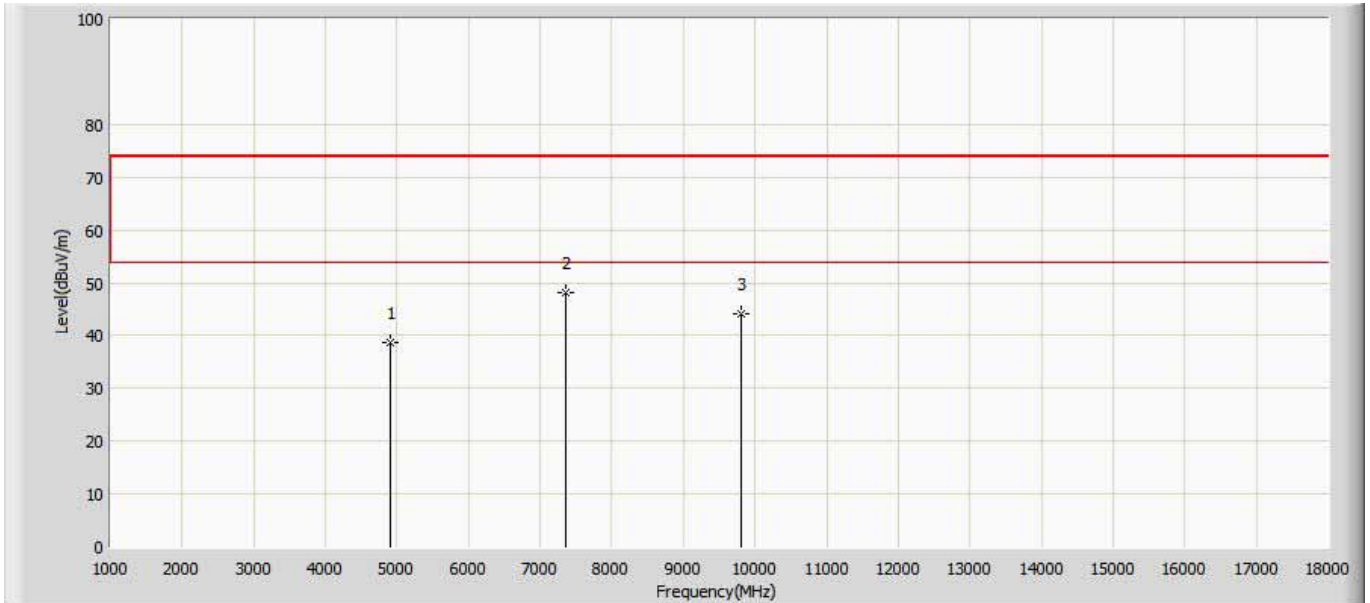
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4810.000	43.024	56.034	-30.976	74.000	-13.010	PK
2		7213.500	55.505	63.215	-18.495	74.000	-7.710	PK
3	*	7213.760	45.120	52.830	-8.880	54.000	-7.710	AV
4		9620.000	46.169	47.759	-27.831	74.000	-1.590	PK

Engineer: Karl	
Site: AC5	Time: 2017/09/30 - 10:04
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2405MHz by zigbee	



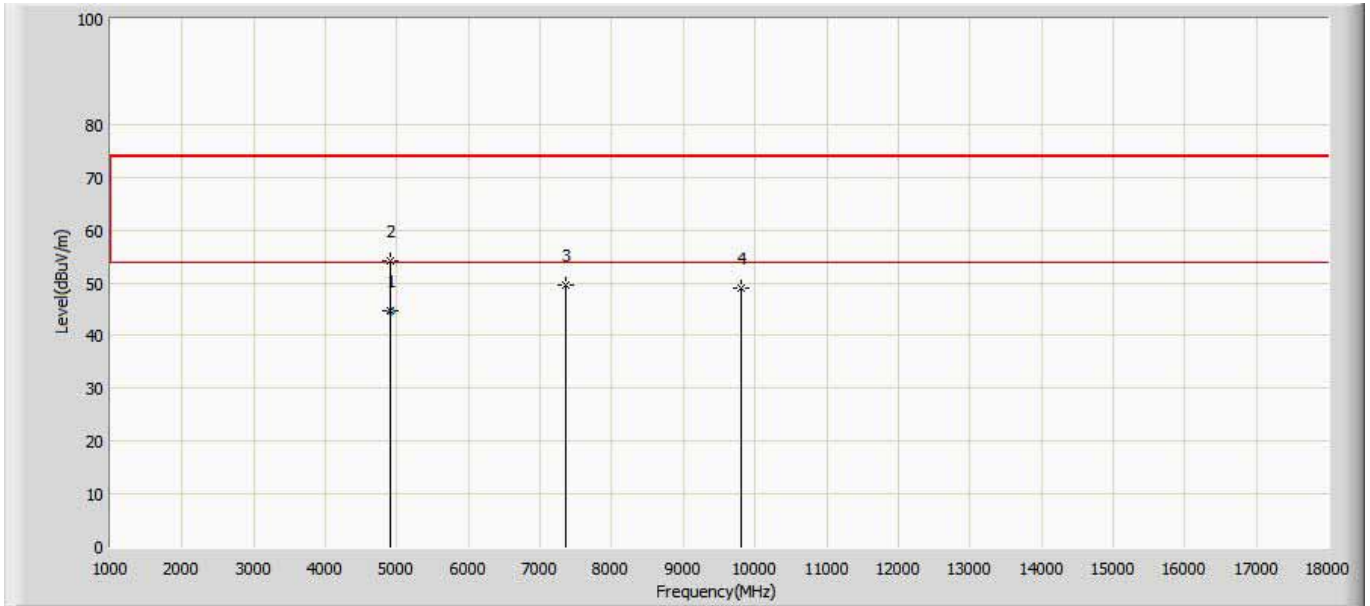
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4808.000	52.885	65.895	-21.115	74.000	-13.010	PK
2		7213.500	50.177	57.887	-23.823	74.000	-7.710	PK
3		9620.000	46.129	47.719	-27.871	74.000	-1.590	PK

Engineer: Karl	
Site: AC5	Time: 2017/09/30 - 10:05
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2450MHz by zigbee	



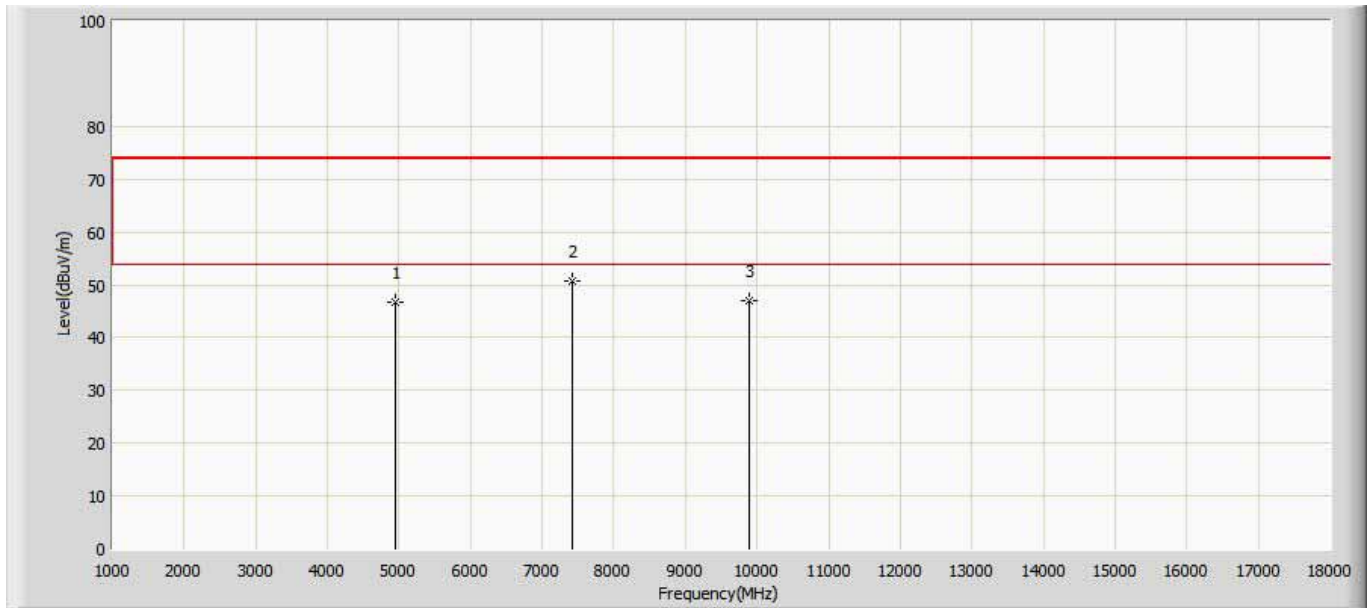
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4900.000	38.657	51.667	-35.343	74.000	-13.010	PK
2	*	7349.500	48.071	55.781	-25.929	74.000	-7.710	PK
3		9800.000	44.129	45.719	-29.871	74.000	-1.590	PK

Engineer: Karl	
Site: AC5	Time: 2017/09/30 - 10:05
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2450MHz by zigbee	



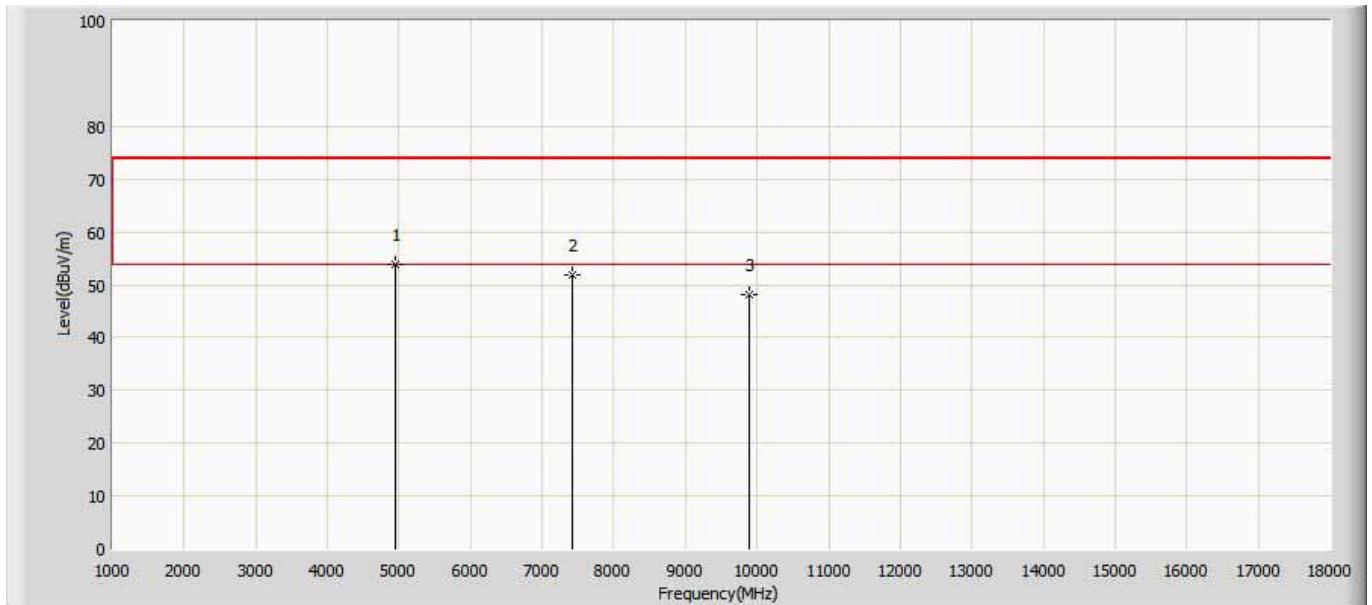
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4900.968	44.810	57.820	-9.190	54.000	-13.010	AV
2		4901.500	54.077	67.087	-19.923	74.000	-13.010	PK
3		7350.000	49.586	57.296	-24.414	74.000	-7.710	PK
4		9800.000	48.995	50.585	-25.005	74.000	-1.590	PK

Engineer: Karl	
Site: AC5	Time: 2017/09/30 - 10:05
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2475MHz by zigbee	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4952.500	46.809	59.039	-27.191	74.000	-12.230	PK
2	*	7426.000	50.678	57.338	-23.322	74.000	-6.660	PK
3		9900.000	47.125	49.085	-26.875	74.000	-1.960	PK

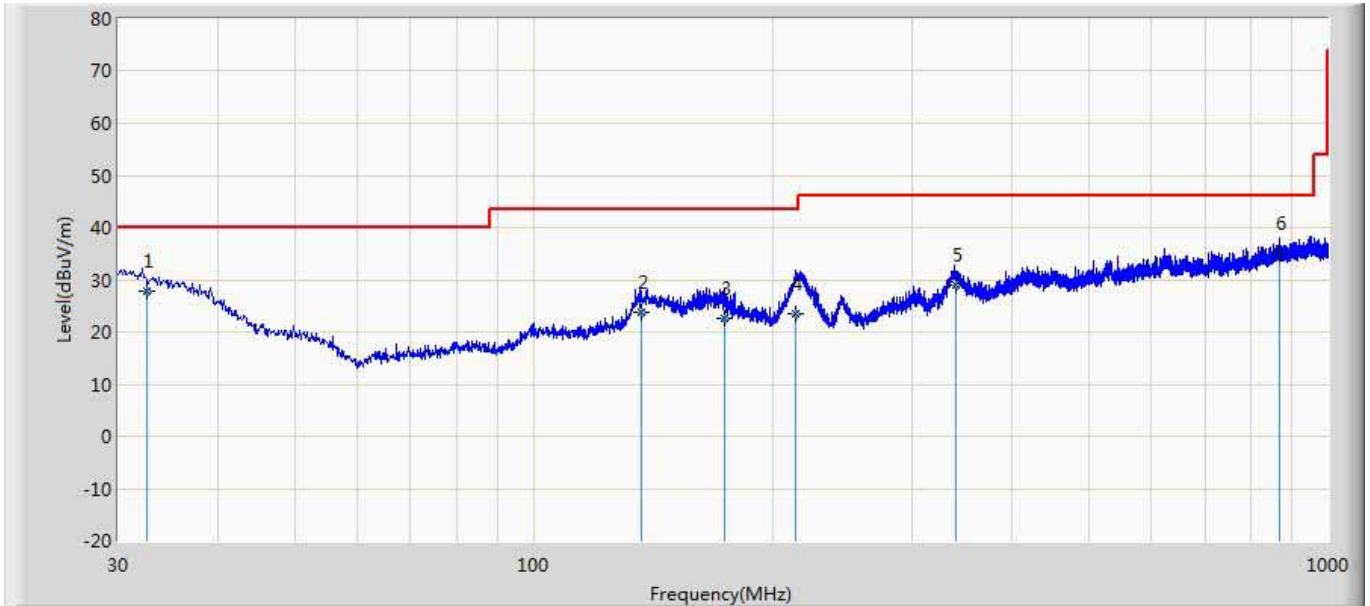
Engineer: Karl	
Site: AC5	Time: 2017/09/30 - 10:05
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2475MHz by zigbee	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4952.500	53.790	66.020	-20.210	74.000	-12.230	PK
2		7426.000	52.001	58.661	-21.999	74.000	-6.660	PK
3		9900.000	48.100	50.060	-25.900	74.000	-1.960	PK

The worst case of Radiated Emission below 1GHz:

Engineer: Leon	
Site: AC3	Time: 2017/09/06
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: AC3_3m (30-1000MHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2405MHz by Zigbee	

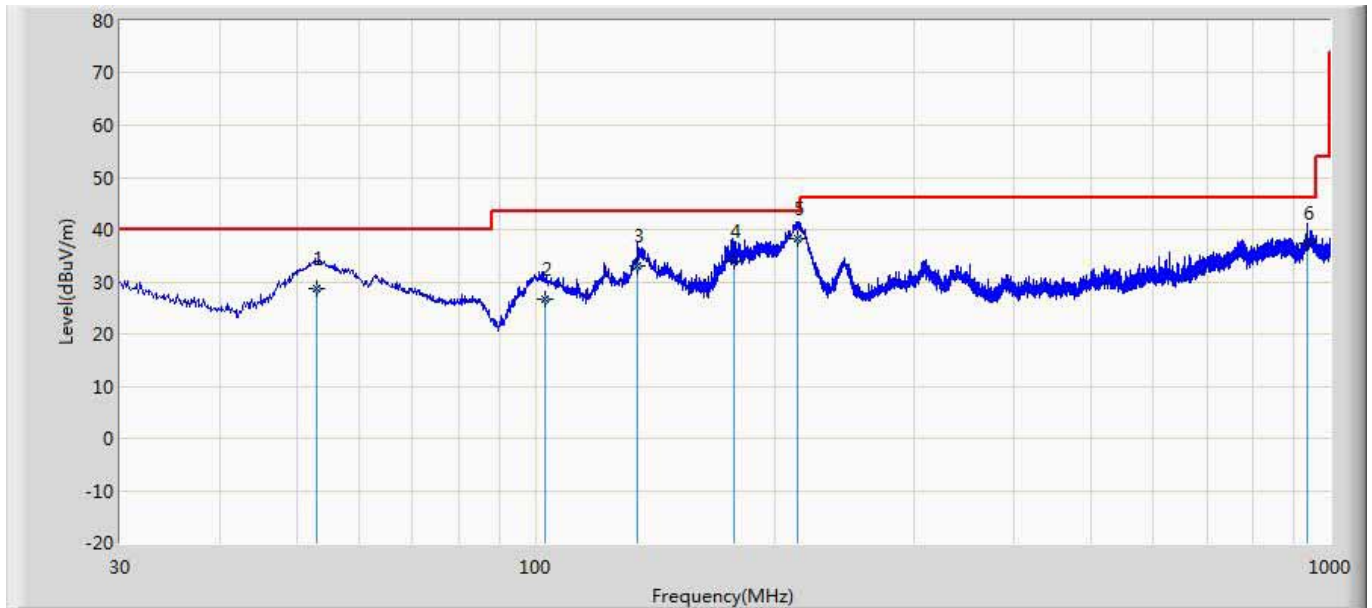


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		32.557	27.742	1.200	-12.258	40.000	20.074	6.468	0.000	100	50	QP
2		136.847	23.860	6.200	-19.640	43.500	10.637	7.023	0.000	200	308	QP
3		174.050	22.726	5.200	-20.774	43.500	10.348	7.178	0.000	100	90	QP
4		213.450	23.421	6.200	-20.079	43.500	9.890	7.331	0.000	100	300	QP
5		339.456	29.111	6.160	-16.889	46.000	15.213	7.738	0.000	100	350	QP
6	*	867.490	35.055	3.200	-10.945	46.000	22.832	9.023	0.000	200	100	QP

Note:

1. " * ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Leon	
Site: AC3	Time: 2017/09/06
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: AC3_3m (30-1000MHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1: Transmit at channel 2405MHz by Zigbee	



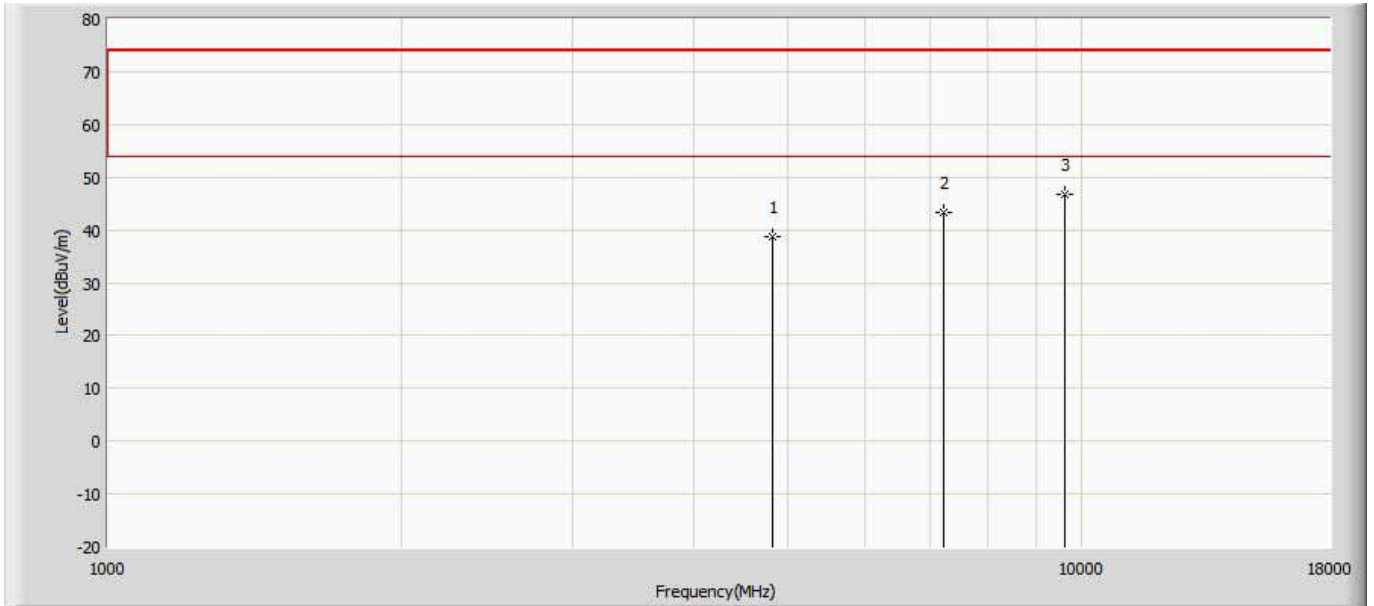
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		52.945	28.570	11.100	-11.430	40.000	10.861	6.609	0.000	100	20	QP
2		102.780	26.576	4.500	-16.924	43.500	15.208	6.867	0.000	200	10	QP
3		134.587	33.116	12.400	-10.384	43.500	13.706	7.010	0.000	100	69	QP
4		177.460	33.811	15.900	-9.689	43.500	10.717	7.194	0.000	100	60	QP
5	*	213.560	38.128	15.100	-5.372	43.500	15.697	7.331	0.000	200	203	QP
6		934.560	37.275	3.100	-8.725	46.000	25.006	9.169	0.000	200	22	QP

Note:

1. " * ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

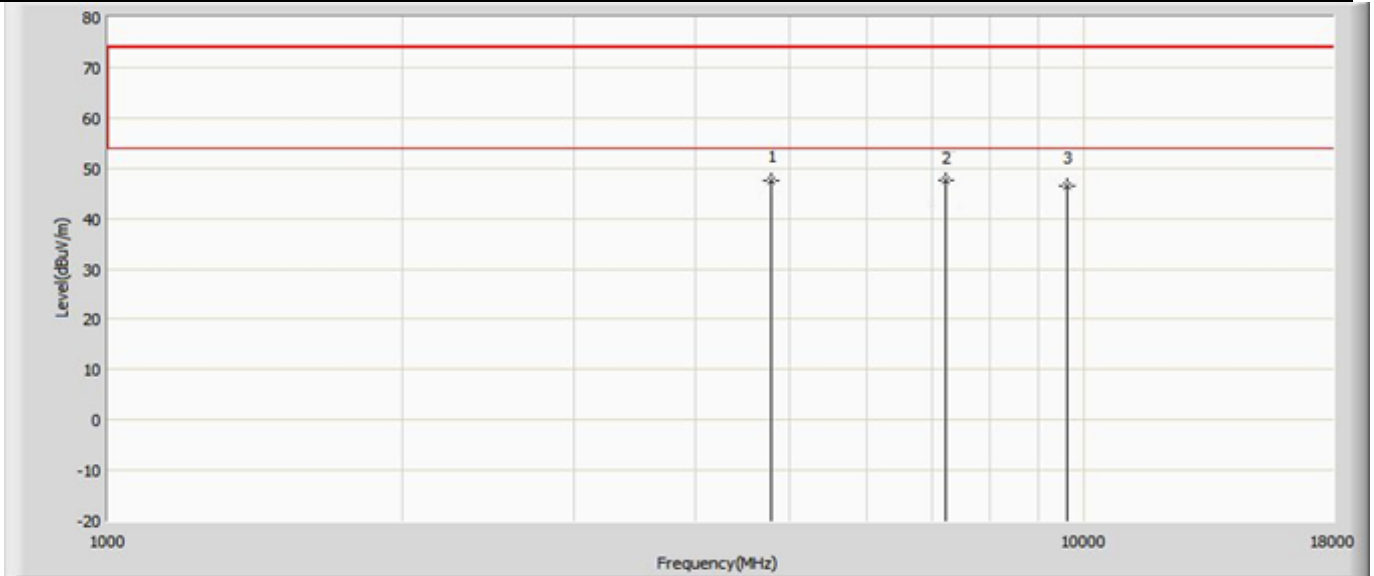
Murata:

5. Engineer:ALLEN	
Site:AC5	Time: 2017/12/01 - 10:24
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2405MHz by Zigbee	



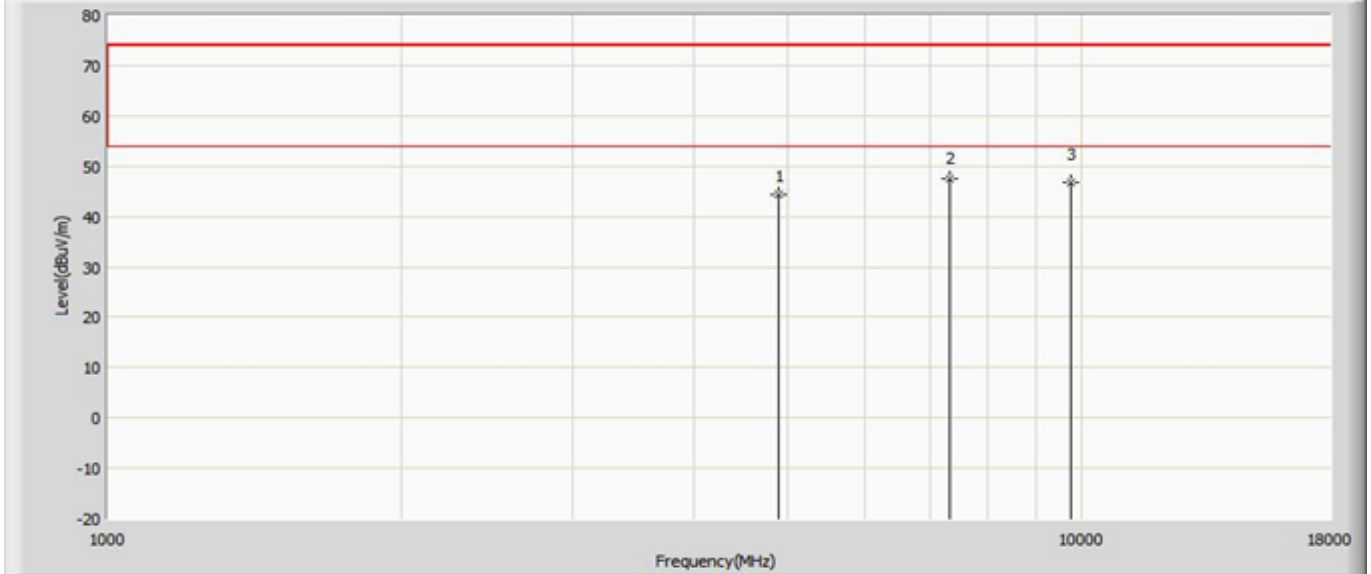
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4810.000	40.746	53.756	-33.254	74.000	-13.010	PK
2		7215.000	43.393	51.103	-30.607	74.000	-7.710	PK
3	*	9620.000	46.524	48.114	-27.476	74.000	-1.590	PK

Engineer:ALLEN	
Site:AC5	Time:2017/12/01 - 10:25
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2405MHz by Zigbee	



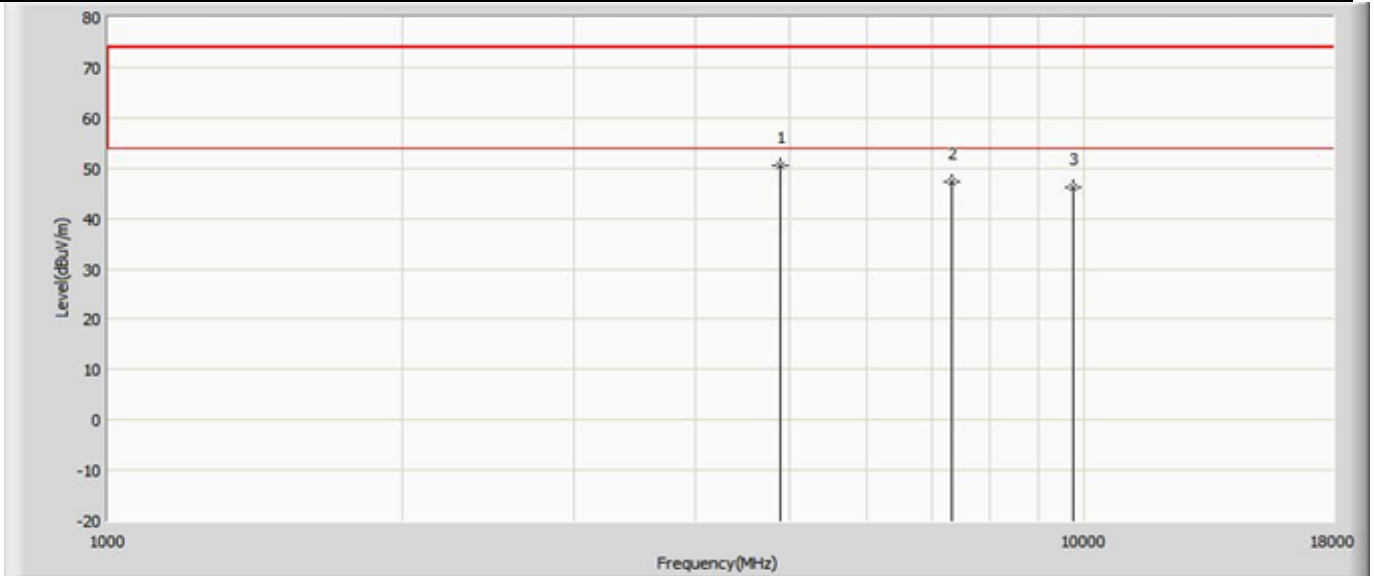
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4791.000	49.894	62.904	-24.106	74.000	-13.010	PK
2		7215.000	49.995	57.705	-24.005	74.000	-7.710	PK
3		9620.000	46.207	47.797	-27.793	74.000	-1.590	PK

Engineer:ALLEN	
Site:AC5	Time: 2017/12/01 - 10:25
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2450MHz by Zigbee	



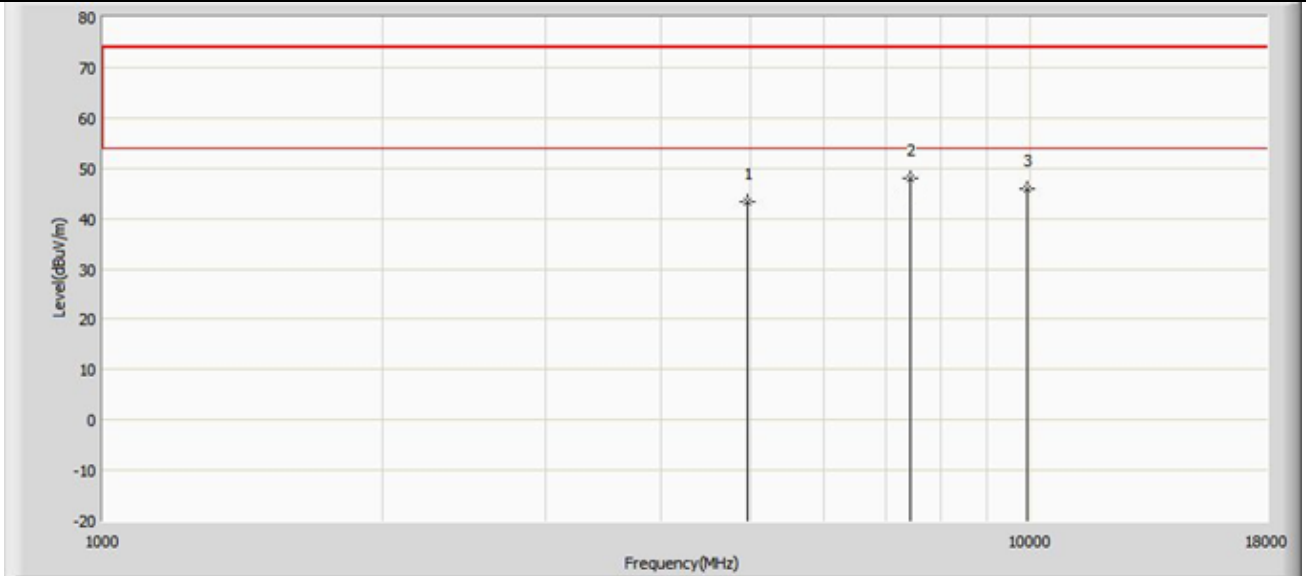
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	38.252	51.262	-35.748	74.000	-13.010	PK
2		7320.000	49.200	56.910	-25.000	74.000	-7.710	PK
3	*	9760.000	45.654	47.244	-28.346	74.000	-1.590	PK

Engineer:ALLEN	
Site:AC5	Time:2017/12/01 - 10:25
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2450MHz by Zigbee	



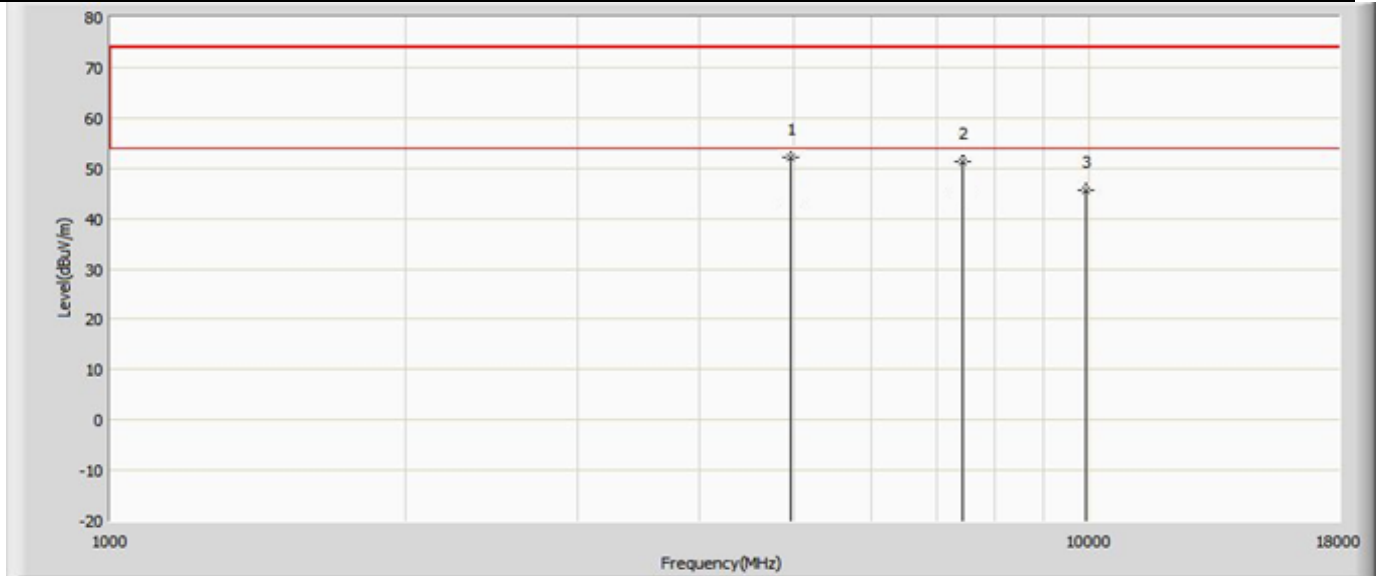
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	51.671	64.781	-22.229	74.000	-13.010	PK
2		7320.000	49.422	57.132	-24.578	74.000	-7.710	PK
3	*	9760.000	46.285	47.875	-27.715	74.000	-1.590	PK

Engineer:ALLEN	
Site:AC5	Time: 2017/12/01 - 10:25
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2475MHz by Zigbee	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4951.000	44.265	56.495	-29.735	74.000	-12.230	PK
2		7426.000	49.335	55.995	-24.665	74.000	-6.660	PK
3	*	9900.000	45.793	47.553	-28.207	74.000	-1.960	PK

Engineer:ALLEN	
Site:AC5	Time: 2017/12/01 - 10:25
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2475MHz by Zigbee	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4951.000	52.794	65.024	-21.206	74.000	-12.230	PK
2		7426.000	51.586	58.246	-22.414	74.000	-6.660	PK
3	*	9900.500	45.442	47.402	-28.558	74.000	-1.960	PK

Note:

1. Measured Level = Reading Level + Factor.
2. The test frequency range, 9kHz~30MHz, 18GHz~26GHz, both of the worst case are at least 20dB below the limits, therefore no data appear in the report.
3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.
4. As the radiated emission was performed, so conducted emission was not tested.

The worst case of Radiated Emission below 1GHz:

Engineer: Lucas	
Site: AC2	Time: 2017/11/28
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: AC2_3M(30-1000M)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2405MHz by Zigbee	

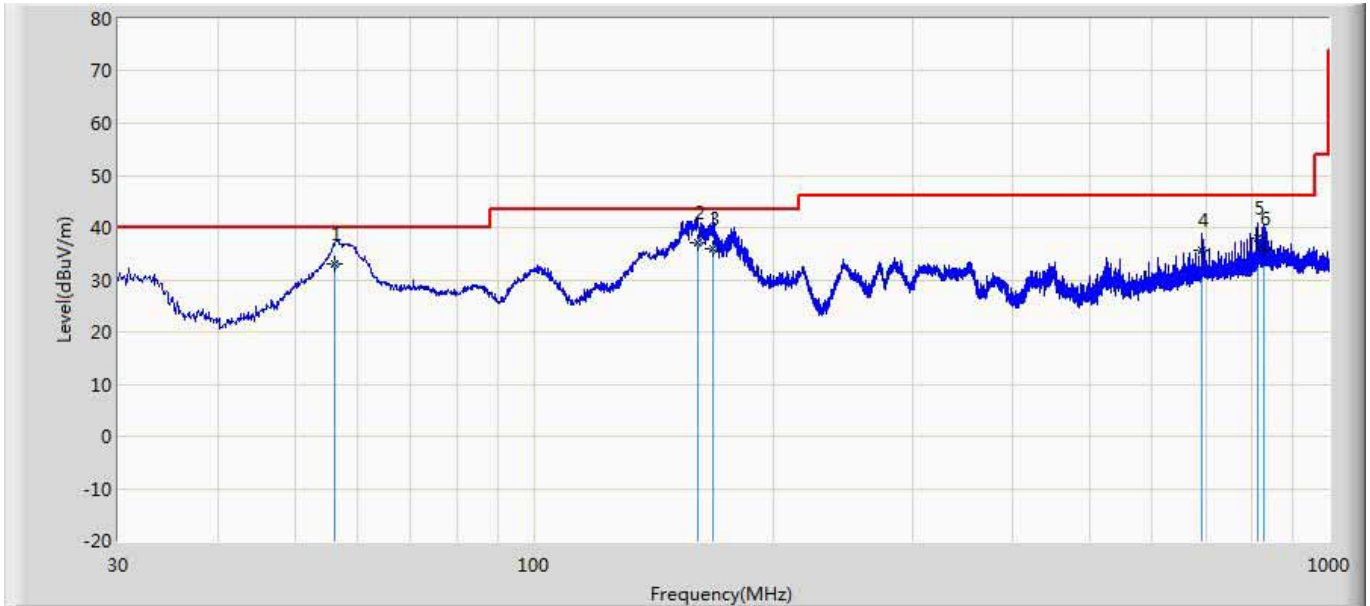


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		30.360	30.003	2.360	-9.997	40.000	21.019	6.624	0.000	200	3	QP
2		136.350	25.326	7.480	-18.174	43.500	10.749	7.097	0.000	100	54	QP
3		285.350	30.178	9.650	-15.822	46.000	12.923	7.605	0.000	100	65	QP
4		451.200	32.258	5.250	-13.742	46.000	19.013	7.995	0.000	100	14	QP
5		827.450	38.406	6.650	-7.594	46.000	22.681	9.075	0.000	100	360	QP
6	*	894.150	36.809	4.500	-9.191	46.000	23.073	9.236	0.000	100	199	QP

Note:

1. " * ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Engineer: Lucas	
Site: AC2	Time: 2017/11/28
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: AC2_3M(30-1000M)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2405MHz by Zigbee	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		56.250	30.019	12.800	-9.981	40.000	10.566	6.653	0.000	100	199	QP
2	*	160.453	35.045	16.200	-8.455	43.500	11.594	7.251	0.000	100	57	QP
3		168.103	36.046	16.700	-7.454	43.500	12.076	7.270	0.000	100	360	QP
4		692.360	35.587	5.200	-10.413	46.000	21.657	8.731	0.000	100	23	QP
5		814.450	38.103	5.200	-7.897	46.000	23.859	9.044	0.000	100	144	QP
6		828.450	36.013	3.260	-9.987	46.000	23.675	9.078	0.000	100	165	QP

Note:

- " * ", means this data is the worst emission level.
- Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

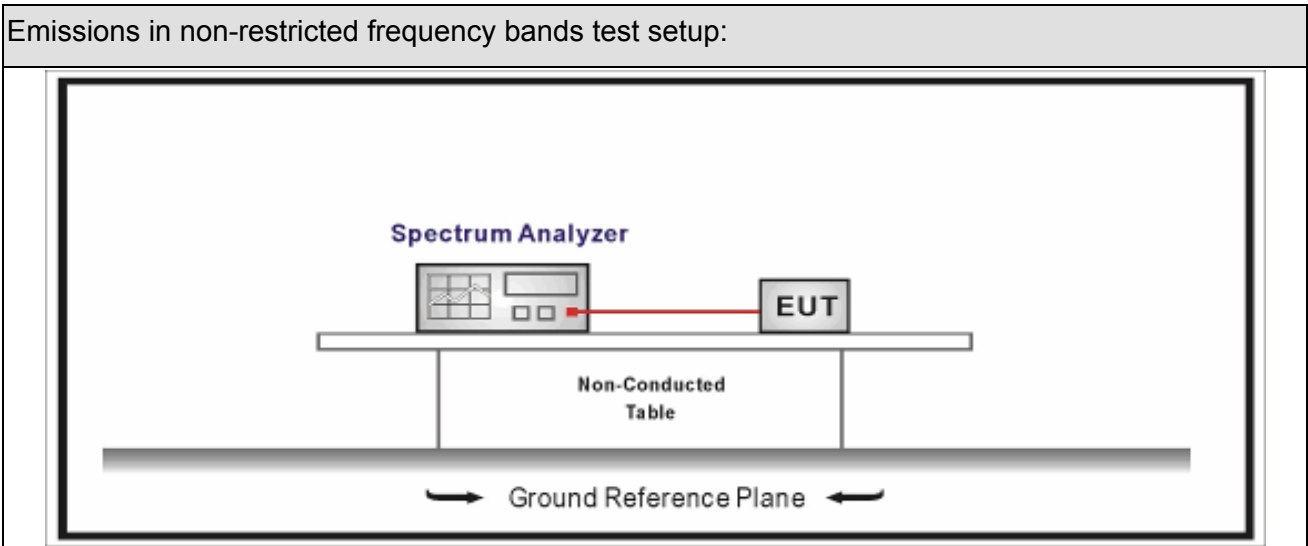
6. Emissions in non-restricted frequency bands

6.1. Test Equipment

Emissions in non-restricted frequency bands / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2017.02.04	2018.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2017.04.09	2018.04.08
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2017.04.09	2018.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2017.04.10	2018.04.09

Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

6.2. Test Setup



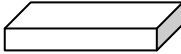
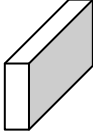
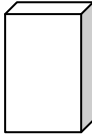



6.3. Limit

Un-Restricted Band Emissions Limit	
RF Output power (Detection methods)	Limit(dB)
RF Output power(Average detector)	30c(Note1)
RF Output power(PK detector)	20c(Note2)
<p>Note 1: If maximum conducted (average) output power was used to demonstrate compliance as described in 9.2, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 30 dBc).</p> <p>Note 2: If the maximum peak conducted output power procedure was used, then the peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 20 dBc).</p>	

6.4. Test Procedure

Test Method			
	References Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	11.11	Emissions in non-restricted frequency bands
	<input checked="" type="checkbox"/> ANSI C63.10	11.11.2	Reference level measurement
	<input checked="" type="checkbox"/> ANSI C63.10	11.11.3	Emission level measurement
<input type="checkbox"/>	ANSI C63.10	11.12	Emissions in restricted frequency bands
	<input type="checkbox"/> ANSI C63.10	11.12.1	Radiated emission measurements
	<input type="checkbox"/> ANSI C63.10	11.12.2.7	Radiated spurious emission test
<input type="checkbox"/>	ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
<input type="checkbox"/>	ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
<input type="checkbox"/>	ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2	Antenna-port conducted measurements
	<input type="checkbox"/> ANSI C63.10	11.12.2.3	Quasi-peak measurement procedure
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.4	Peak power measurement procedure
	<input type="checkbox"/> ANSI C63.10	11.12.2.5	Average power measurement procedures
	<input type="checkbox"/> ANSI C63.10	11.12.2.5.1	Trace averaging with continuous EUT transmission at full power
	<input type="checkbox"/> ANSI C63.10	11.12.2.5.2	Trace averaging across ON and OFF times of the EUT transmissions followed by duty cycle correction
	<input type="checkbox"/> ANSI C63.10	11.12.2.5.3	Reduced VBW averaging across ON and OFF times of the EUT transmissions with max hold

6.5. EUT test Axis definition

Item	Emissions in non-restricted frequency bands			
Device Category	<input type="checkbox"/>	Fixed point-to-point		
	<input type="checkbox"/>	Emit multiple directional beams, simultaneously or sequentially		
	<input checked="" type="checkbox"/>	Other cases		
Test mode	Mode 1			
Test method	<input type="checkbox"/>	Radiated		
		X Axis	Y Axis	Z Axis
				
		Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>
	<input checked="" type="checkbox"/>	Conducted		
	<input checked="" type="checkbox"/>	Chain 0		
				
	<input type="checkbox"/>	Chain 0	Chain 1	
				
	<input type="checkbox"/>	Chain 0	Chain 1	Chain 2
				

6.6. Test Result

Product Name	: LED lamp	Power	: AC 120V/60Hz
Test Mode	: Mode 1	Test Site	: TR-8
Test Date	: 2017.09.15		

Diodes:

Mode	Channel	Test Frequency (MHz)	In-Band PSD[a] (dBm/100kHz)	Frequency (MHz)	Out-Band PSD[b] (dBm/100kHz)	[a]-[b] (dB)	Limit (dB)	Result
1	11	2405	5.167	2400.00	-50.342	55.509	>20	Pass
1	26	2480	4.379	2500.00	-62.155	66.534	>20	Pass

Note: The worst case of Emissions in non-restricted frequency bands as below:

Mode 1 CH11 (2405MHz)

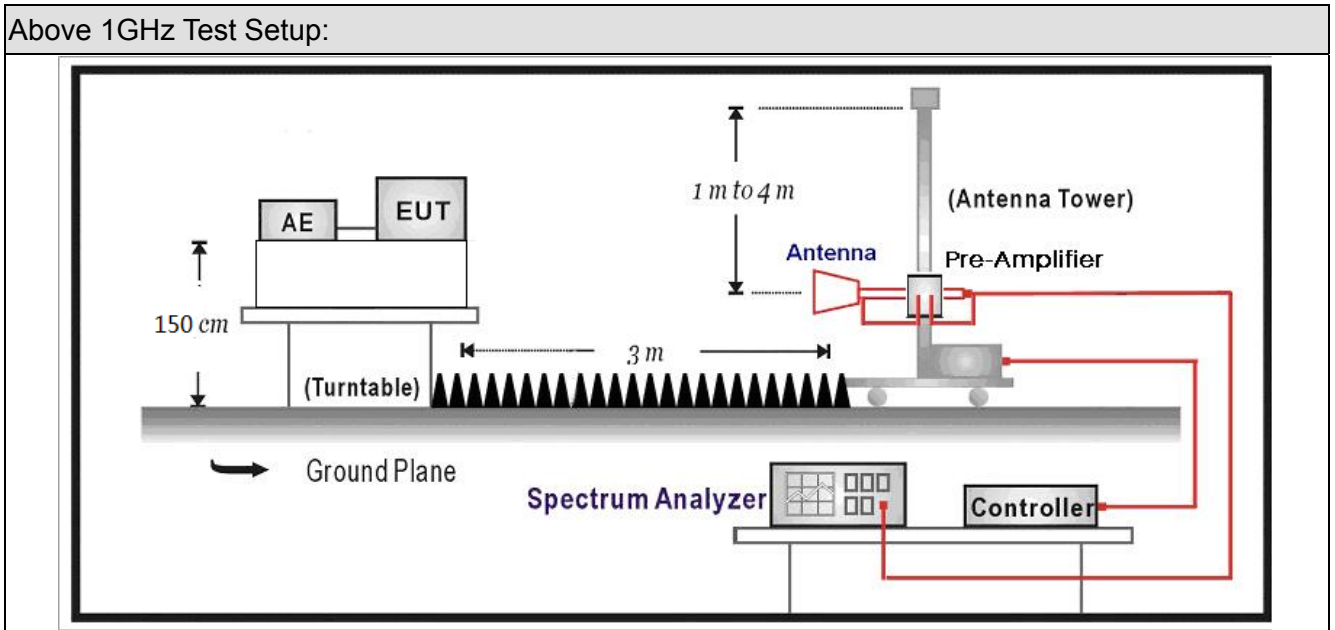


7. Radiated Emission Band Edge

7.1. Test Equipment

Radiated Emission(Above 1GHz) / AC-5					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Receiver	Agilent	N9038A	MY51210196	2017.07.16	2018.07.15
Pre-Amplifier	Miteq	NSP1800-25	1364185	2017.05.03	2018.05.02
DRG Horn Antenna	ETS-Lindgren	3117	00167055	2017.07.12	2018.07.11
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2017.09.18	2018.09.17
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2017.02.28	2018.02.27
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2017.02.28	2018.02.27
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2017.01.05	2018.01.04

7.2. Test Setup



7.3. Limit

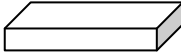
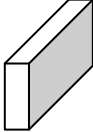
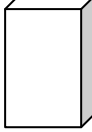



Band edge Limit				
Frequency bands (MHz)	Detector	Limit (dB μ V/m)	RBW (MHz)	Distance (m)
2310-2390	PK	74	1	3
2483.5-2500	AV	54	1	3

Note: The field strength of emissions appearing within these frequency bands shall not exceed the limits.

7.4. Test Procedure

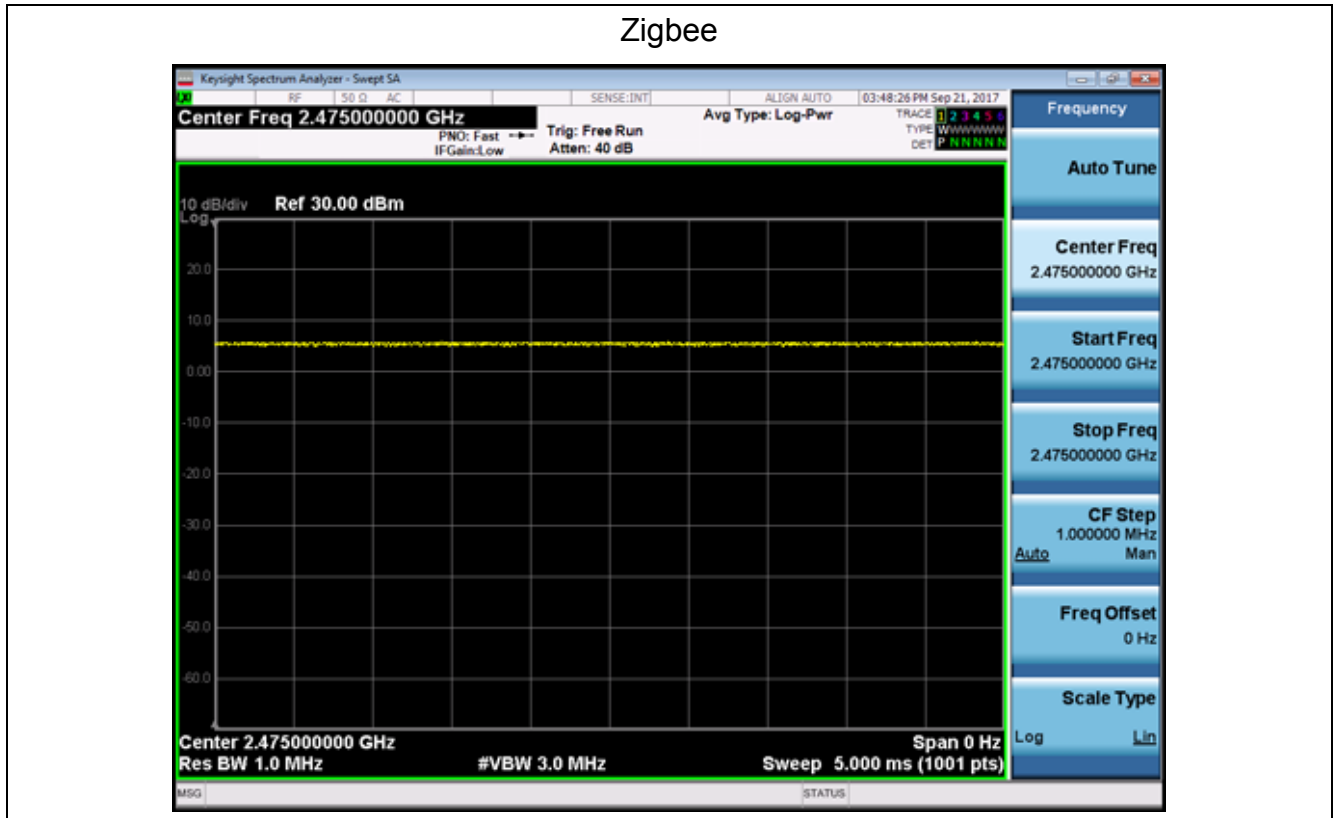
Test Method					
	References	Rule	Chapter	Description	
<input checked="" type="checkbox"/>		ANSI C63.10	6.10	Band-edge testing	
	<input checked="" type="checkbox"/>	ANSI C63.10	6.10.5	Restricted-band band-edge measurements	
	<input type="checkbox"/>	ANSI C63.10	6.10.6	Marker-delta method	
<input checked="" type="checkbox"/>		ANSI C63.10	11.12	Emissions in restricted frequency bands	
	<input checked="" type="checkbox"/>	ANSI C63.10	11.12.1	Radiated emission measurements	
	<input checked="" type="checkbox"/>	ANSI C63.10	11.12.2.7	Radiated spurious emission test	
<input type="checkbox"/>		ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz	
<input type="checkbox"/>		ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz	
<input checked="" type="checkbox"/>		ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz	
		<input type="checkbox"/>	ANSI C63.10	11.12.2.3	Quasi-peak measurement procedure
		<input checked="" type="checkbox"/>	ANSI C63.10	11.12.2.4	Peak power measurement procedure
		<input checked="" type="checkbox"/>	ANSI C63.10	11.12.2.5	Average power measurement procedures
		<input type="checkbox"/>	ANSI C63.10	11.12.2.5.1	Trace averaging with continuous EUT transmission at full power
		<input type="checkbox"/>	ANSI C63.10	11.12.2.5.2	Trace averaging across ON and OFF times of the EUT transmissions followed by duty cycle correction
		<input checked="" type="checkbox"/>	ANSI C63.10	11.12.2.5.3	Reduced VBW averaging across ON and OFF times of the EUT transmissions with max hold

7.5. EUT test definition

Item	Radiated Emission Band Edge			
Device Category	<input type="checkbox"/>	Fixed point-to-point		
	<input type="checkbox"/>	Emit multiple directional beams, simultaneously or sequentially		
	<input checked="" type="checkbox"/>	Other cases		
Test mode	Mode 1			
Test method	<input checked="" type="checkbox"/>	Radiated		
		X Axis	Y Axis	Z Axis
				
		Worst Axis <input checked="" type="checkbox"/>	Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>
	<input type="checkbox"/>	Conducted		
	<input type="checkbox"/>	Chain 0		
				
	<input type="checkbox"/>	Chain 0	Chain 1	
				
	<input type="checkbox"/>	Chain 0	Chain 1	Chain 2
				

7.6. Duty Cycle

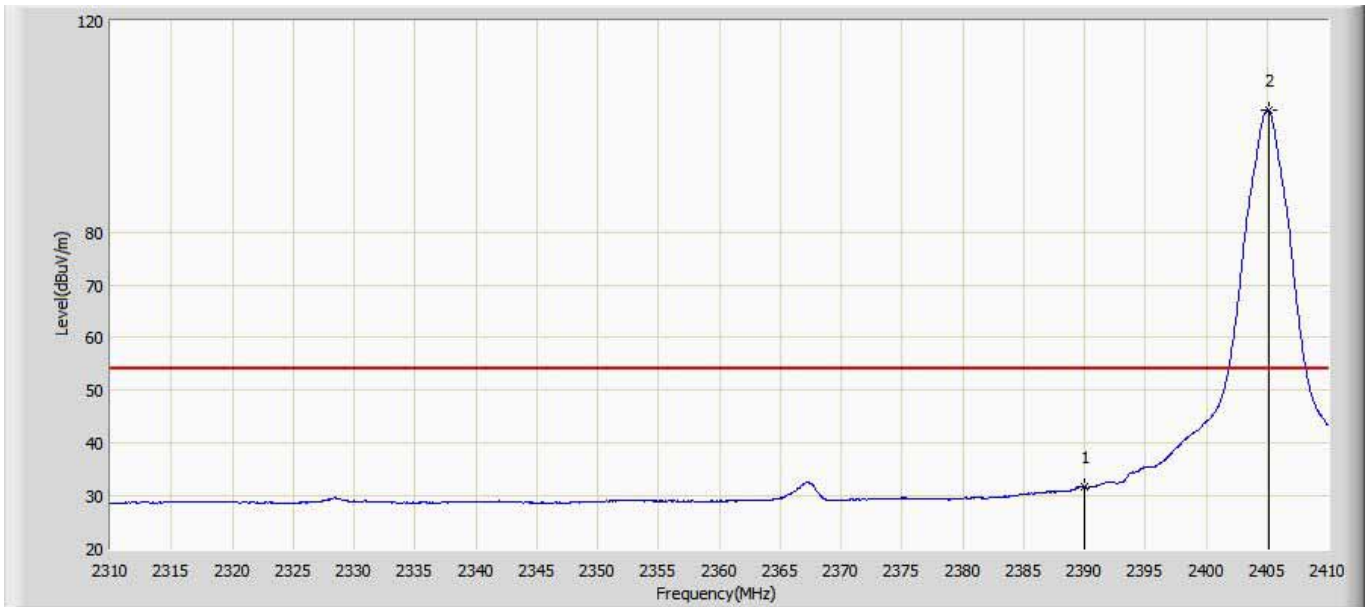
Test Mode	Tx On (ms)	Tx Off (ms)	Reduced VBW (kHz)	Tx On + Tx Off (ms)	Duty Cycle
Zigbee	-	-	10Hz	-	100%



6.7 Test Result

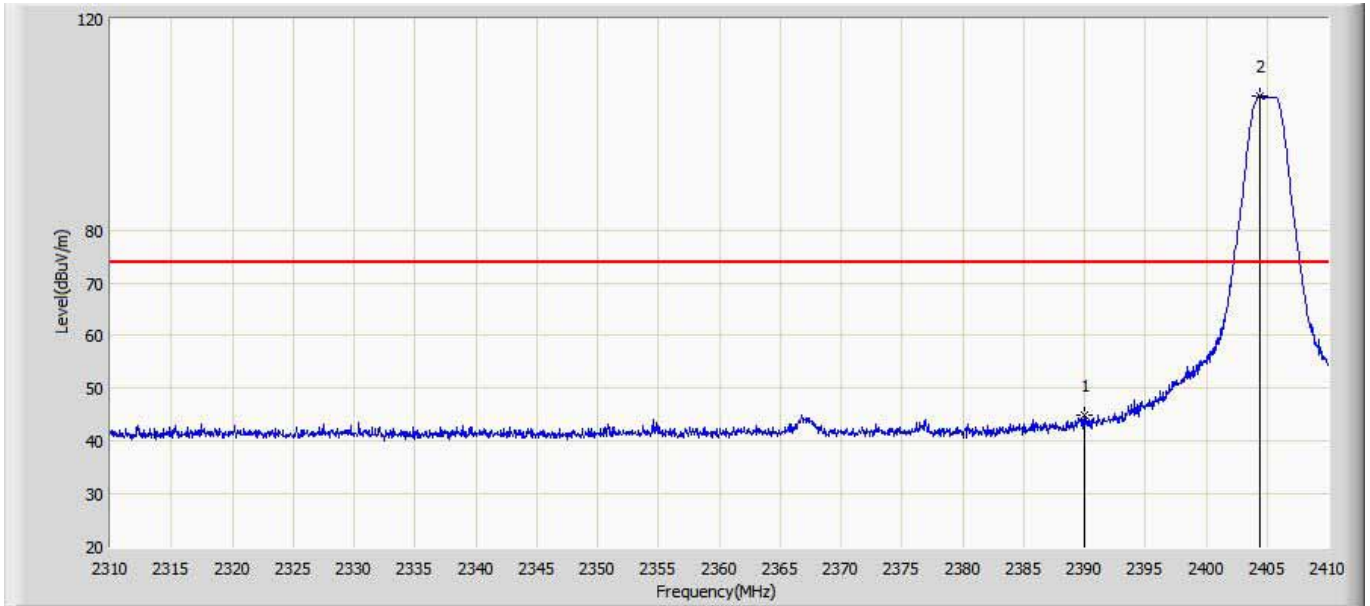
Diodes:

Engineer: Karl	
Site: AC5	Time: 2017/09/22 - 16:02
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2405MHz by zigbee	



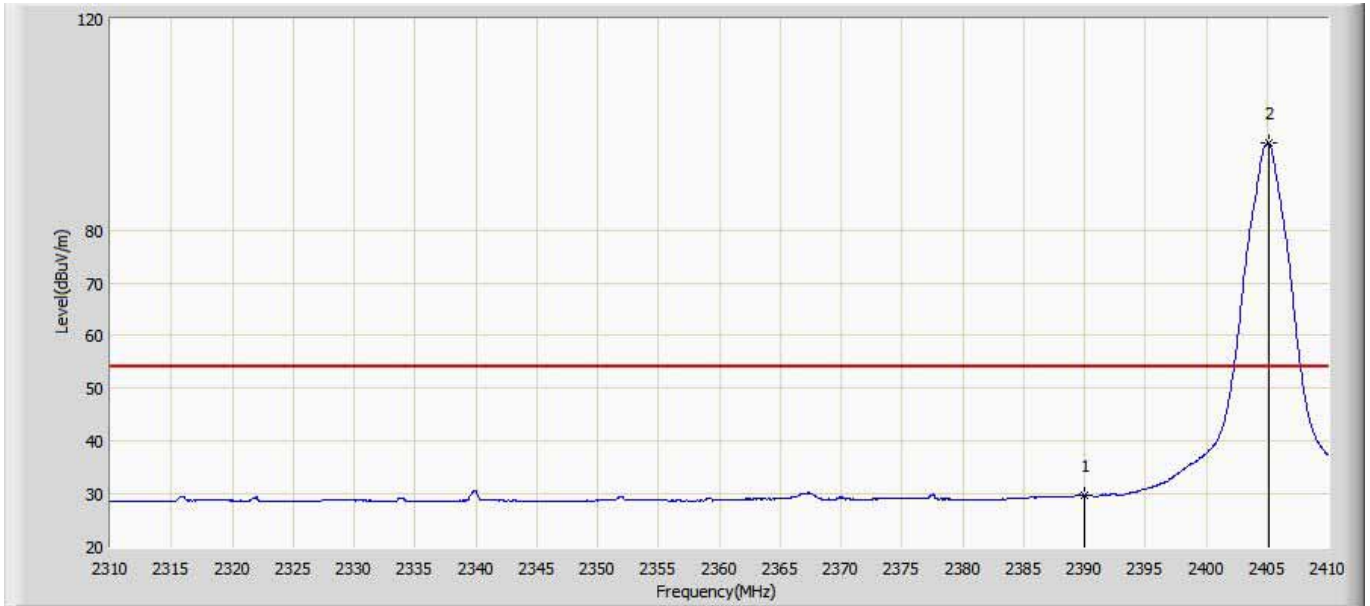
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	31.738	2.690	-22.262	54.000	29.048	AV
2	*	2405.100	102.991	74.064	N/A	N/A	28.927	AV

Engineer: Karl	
Site: AC5	Time: 2017/09/22 - 16:08
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2405MHz by zigbee	



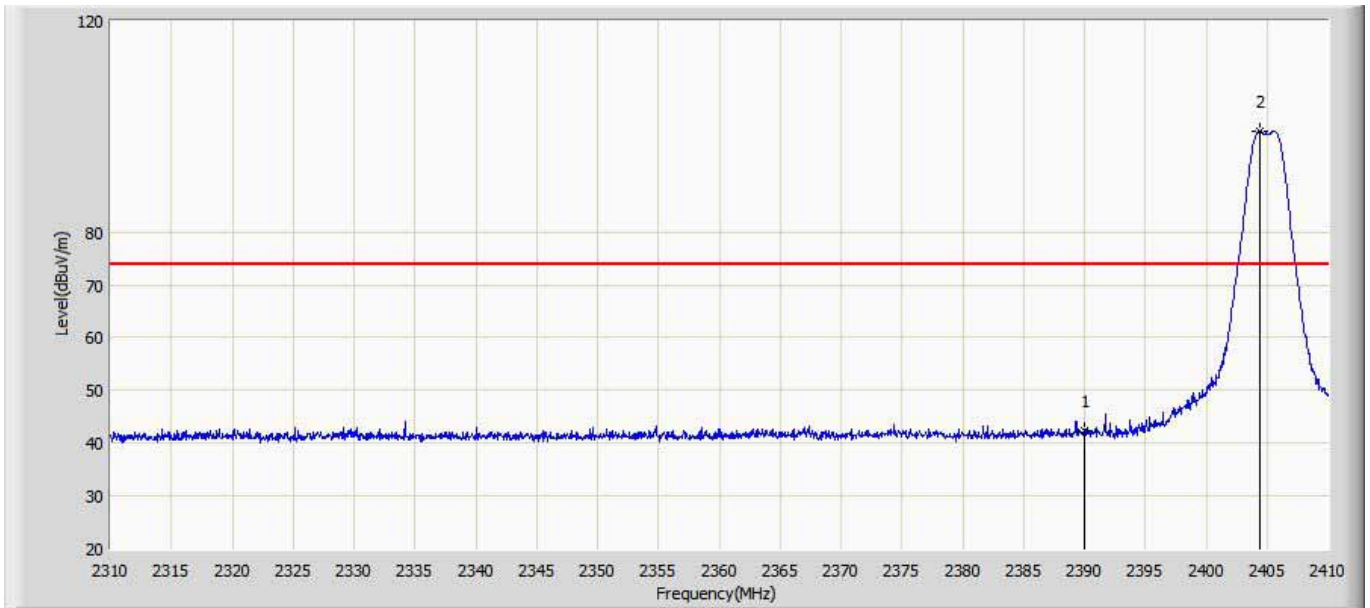
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	44.800	15.752	-29.200	74.000	29.048	PK
2	*	2404.450	105.345	76.411	N/A	N/A	28.934	PK

Engineer: Karl	
Site: AC5	Time: 2017/09/22 - 16:17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2405MHz by zigbee	



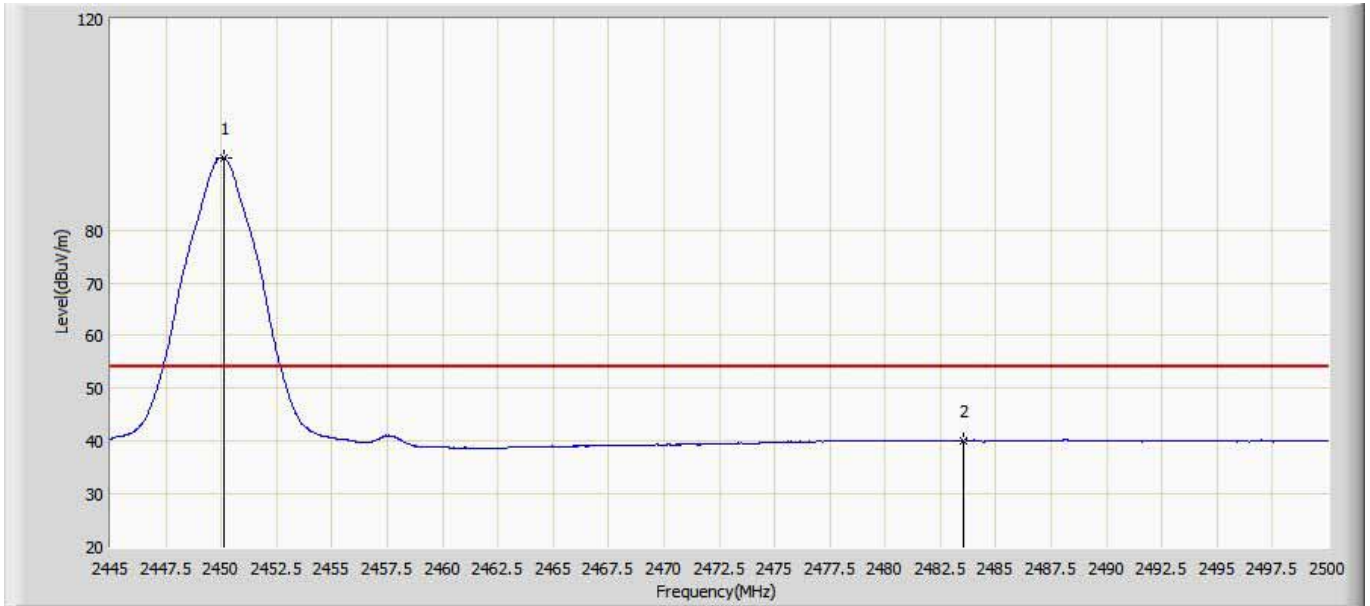
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	29.717	0.669	-24.283	54.000	29.048	AV
2	*	2405.100	96.380	67.453	N/A	N/A	28.927	AV

Engineer: Karl	
Site: AC5	Time: 2017/09/22 - 16:26
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2405MHz by zigbee	



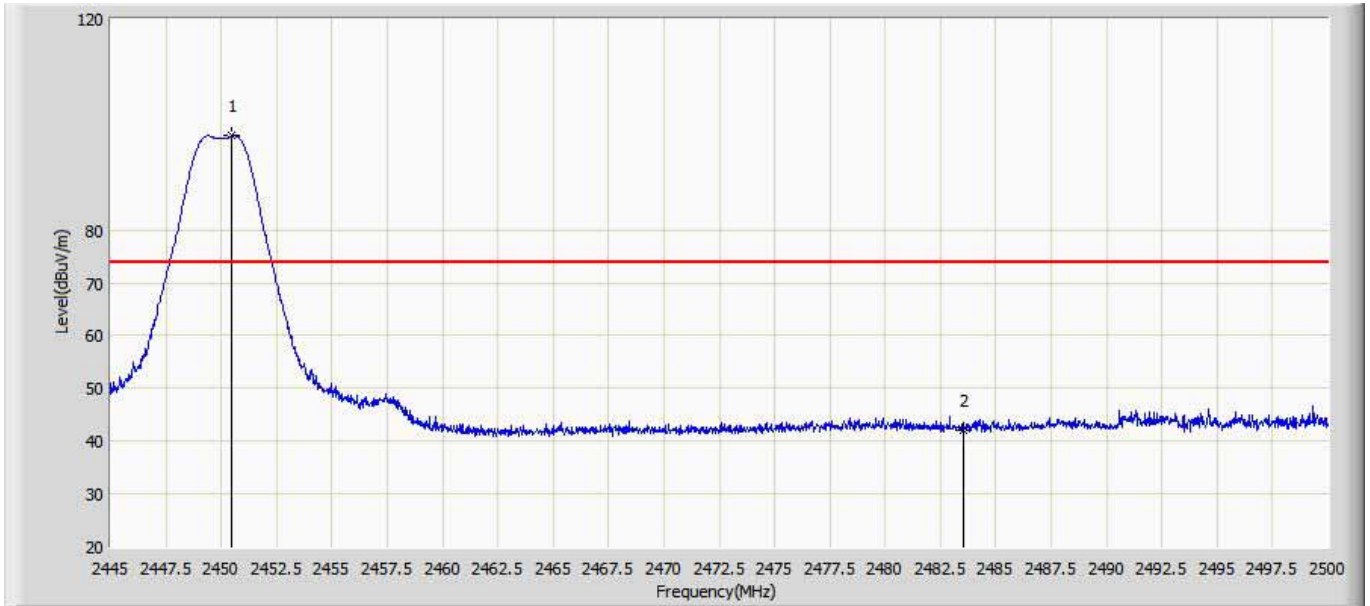
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	42.223	13.175	-31.777	74.000	29.048	PK
2	*	2404.350	99.045	70.110	N/A	N/A	28.935	PK

Engineer: Karl	
Site: AC5	Time: 2017/09/22 - 16:56
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2450MHz by zigbee	



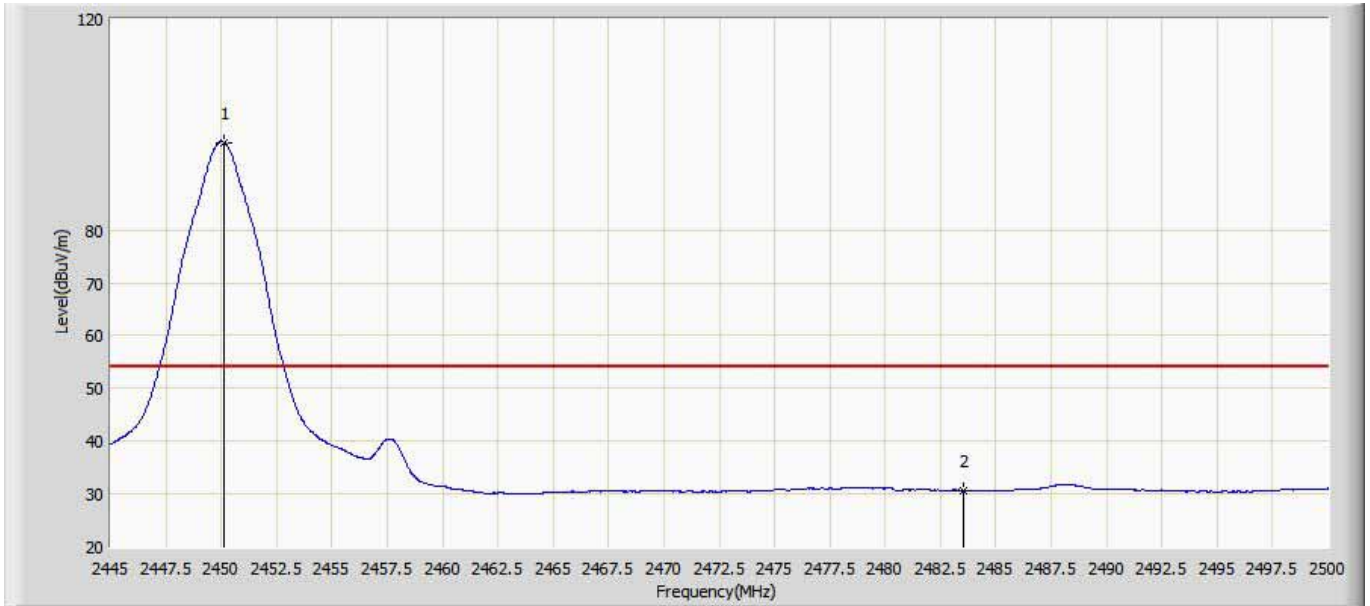
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2450.143	93.606	64.646	N/A	N/A	28.960	AV
2		2483.500	40.057	9.573	-13.943	54.000	30.484	AV

Engineer: Karl	
Site: AC5	Time: 2017/09/22 - 17:05
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2450MHz by zigbee	



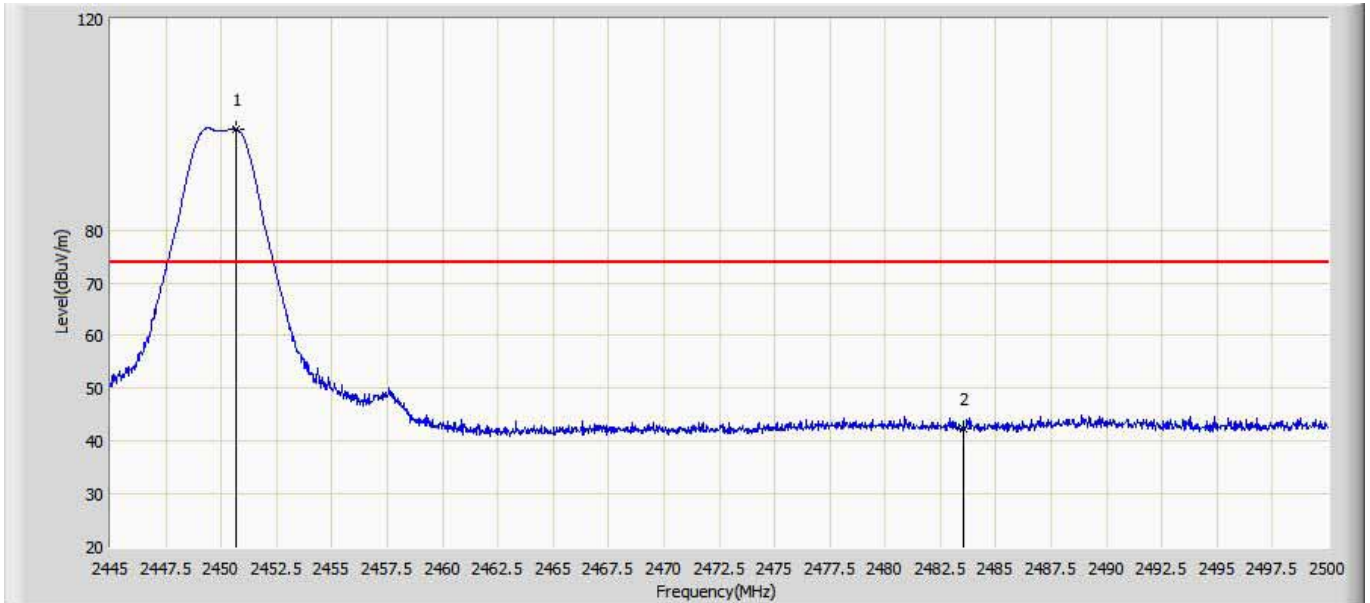
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2450.472	97.814	68.852	N/A	N/A	28.962	PK
2		2483.500	42.170	11.686	-31.830	74.000	30.484	PK

Engineer: Karl	
Site: AC5	Time: 2017/09/22 - 17:09
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2450MHz by zigbee	



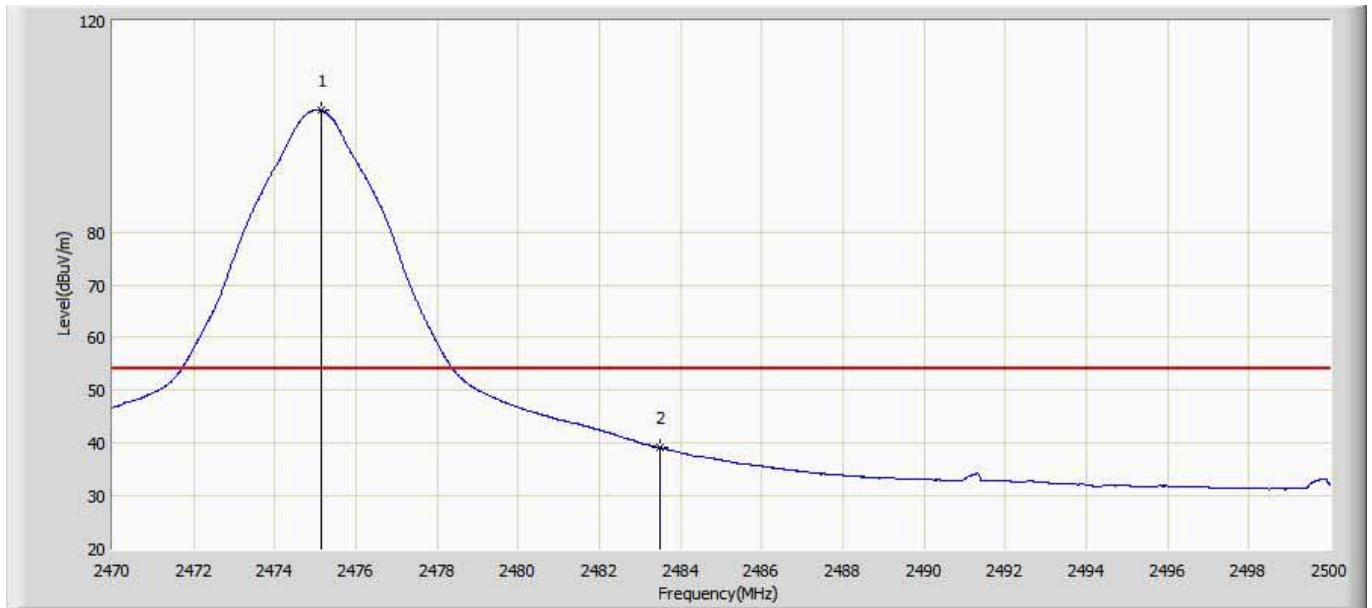
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2450.143	96.596	67.636	N/A	N/A	28.960	AV
2		2483.500	30.694	0.210	-23.306	54.000	30.484	AV

Engineer: Karl	
Site: AC5	Time: 2017/09/22 - 17:14
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2450MHz by zigbee	



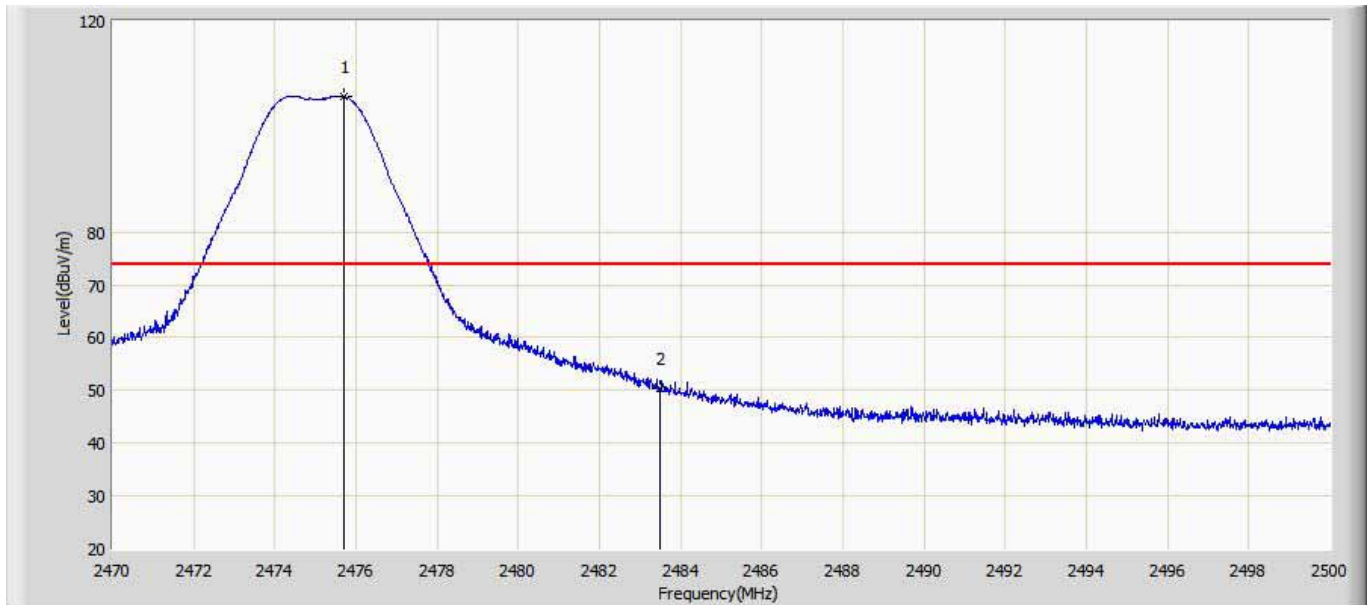
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2450.665	99.179	70.216	N/A	N/A	28.963	PK
2		2483.500	42.391	11.907	-31.609	74.000	30.484	PK

Engineer: Karl	
Site: AC5	Time: 2017/09/22 - 17:17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2475MHz by zigbee	



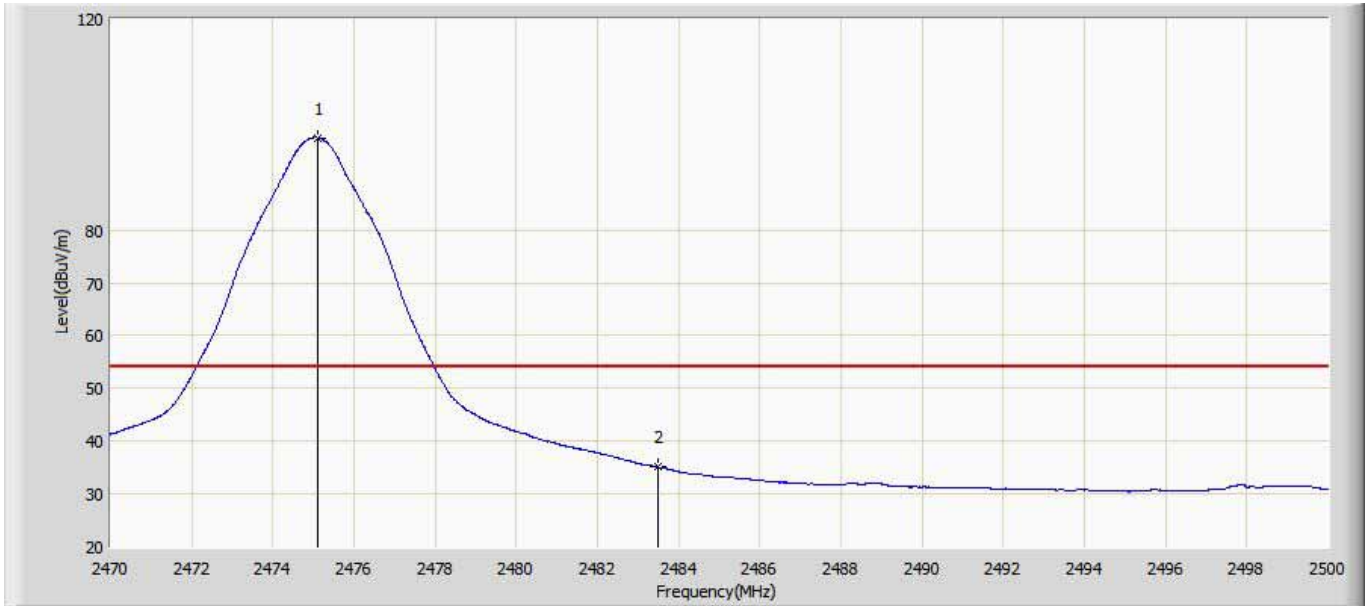
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2475.145	103.106	72.917	N/A	N/A	30.189	AV
2		2483.500	39.174	8.690	-14.826	54.000	30.484	AV

Engineer: Karl	
Site: AC5	Time: 2017/09/22 - 17:21
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2475MHz by zigbee	



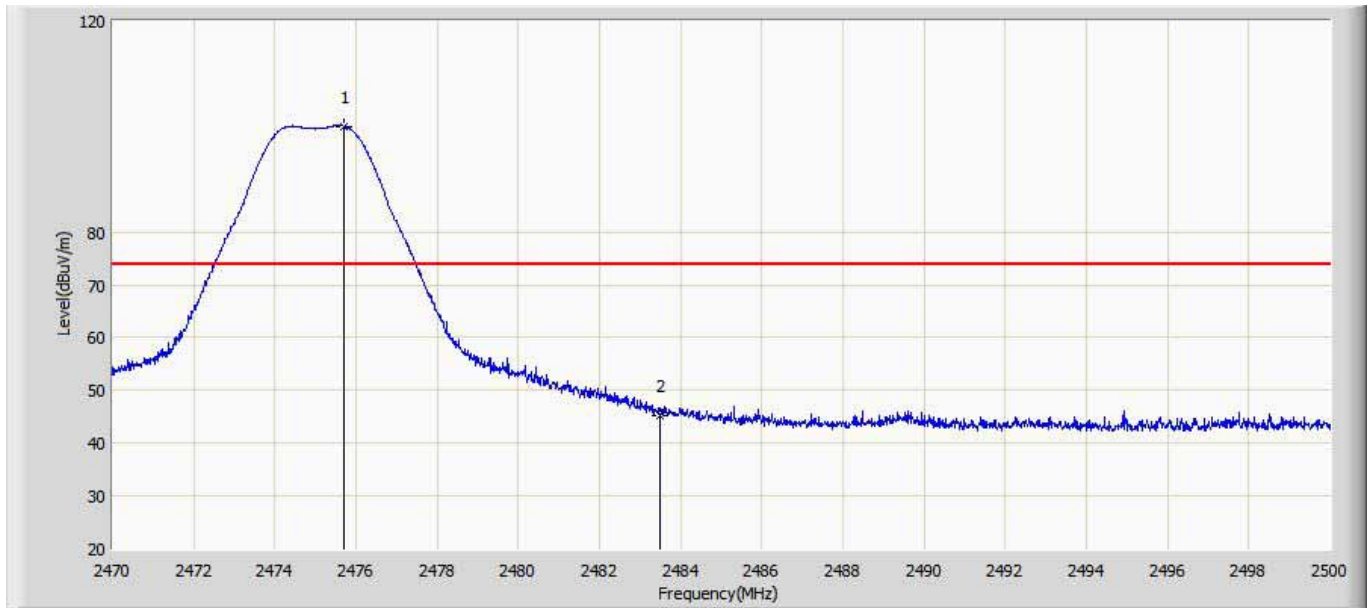
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2475.715	105.615	75.376	N/A	N/A	30.239	PK
2		2483.500	50.390	19.906	-23.610	74.000	30.484	PK

Engineer: Karl	
Site: AC5	Time: 2017/09/22 - 17:23
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2475MHz by zigbee	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2475.100	97.498	67.313	N/A	N/A	30.185	AV
2		2483.500	35.055	4.571	-18.945	54.000	30.484	AV

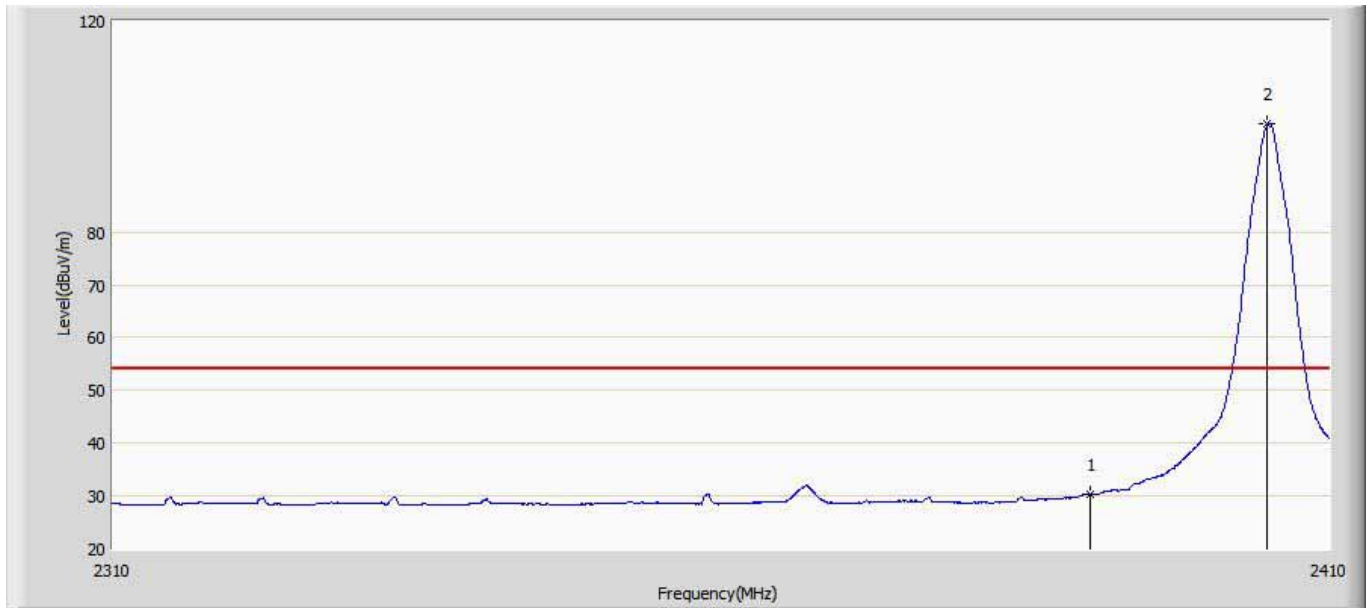
Engineer: Karl	
Site: AC5	Time: 2017/09/22 - 17:26
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2475MHz by zigbee	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2475.715	100.020	69.781	N/A	N/A	30.239	PK
2		2483.500	45.349	14.864	-28.651	74.000	30.484	PK

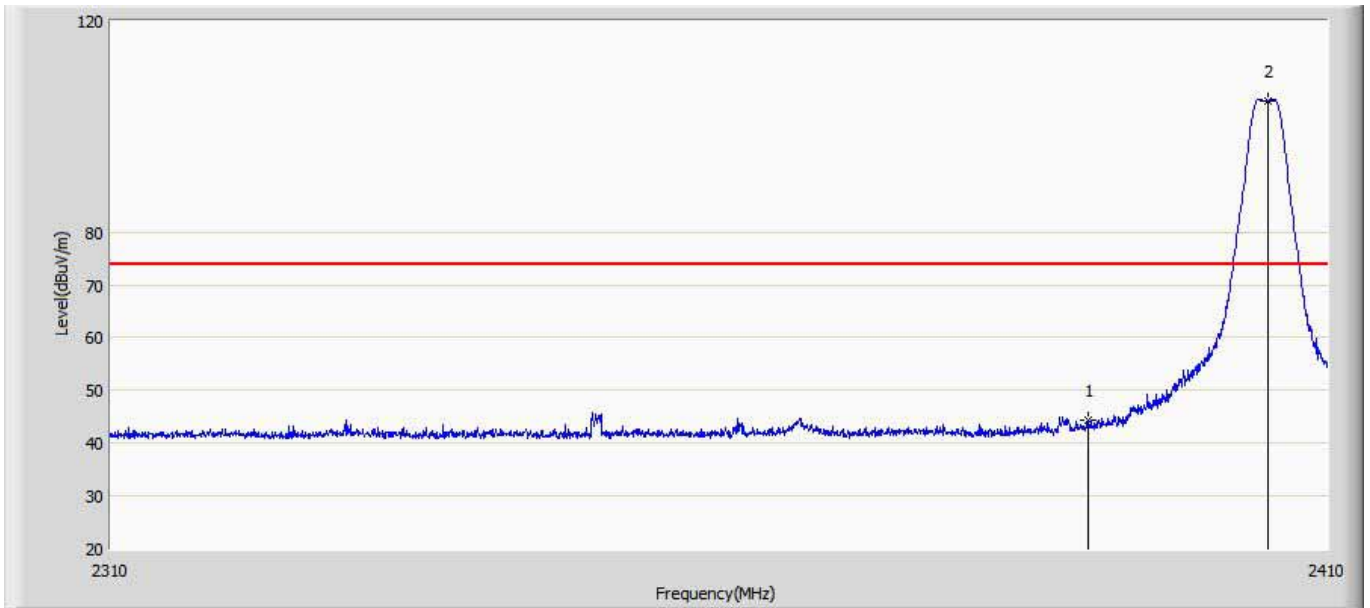
Murata:

Engineer: ALLAN	
Site: AC5	Time: 2017/11/29 - 17:01
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2405MHz by Zigbee	



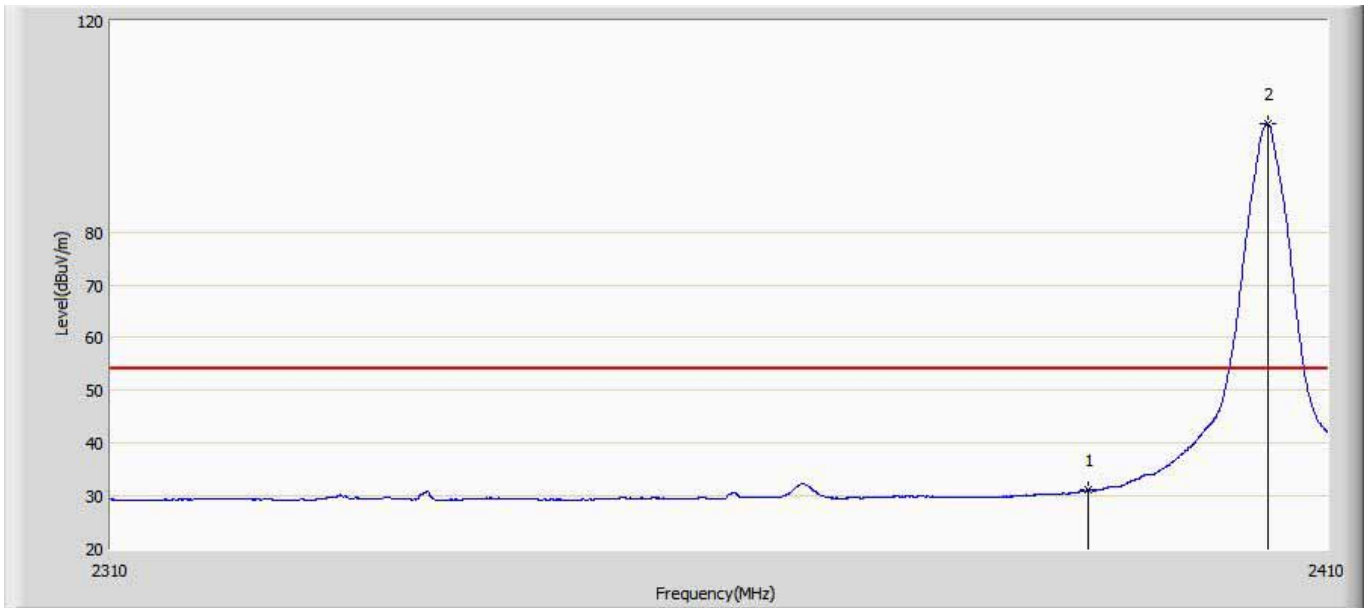
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	30.228	1.180	-23.772	54.000	29.048	AV
2	*	2404.850	100.404	71.474	46.404	54.000	28.930	AV

Engineer: ALLAN	
Site: AC5	Time: 2017/11/29 - 17:16
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2405MHz by Zigbee	



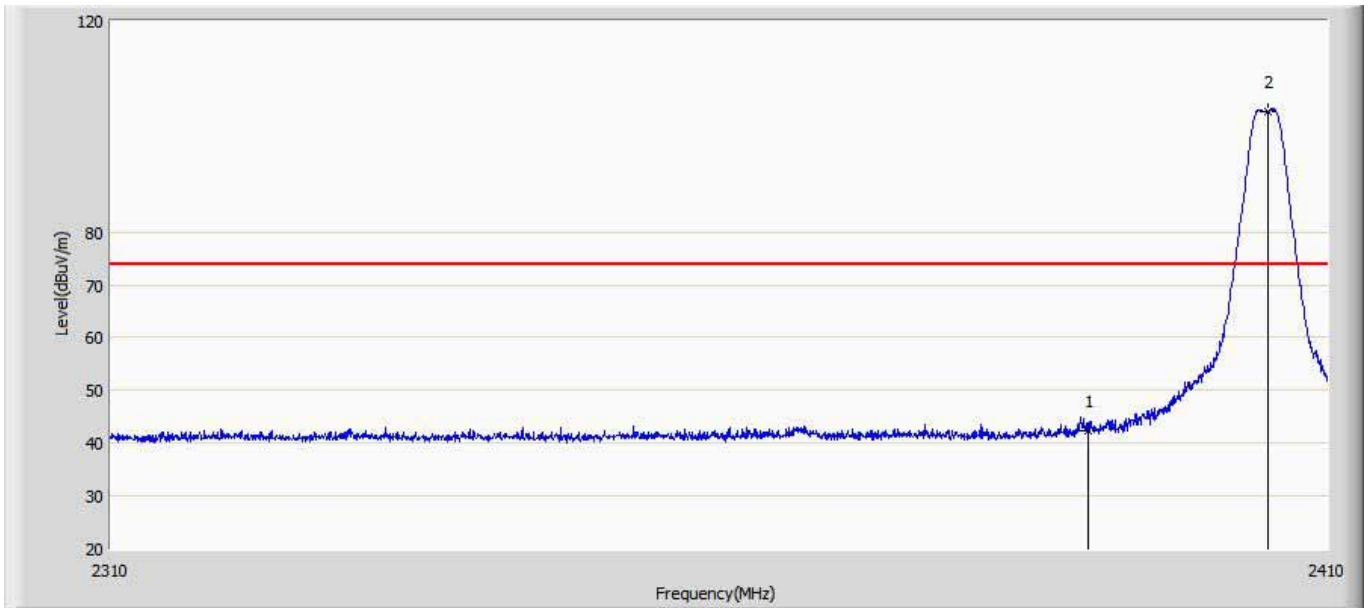
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	44.233	15.185	-29.767	74.000	29.048	PK
2	*	2405.000	104.706	75.778	30.706	74.000	28.928	PK

Engineer: ALLAN	
Site: AC5	Time: 2017/11/29 - 17:24
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2405MHz by Zigbee	



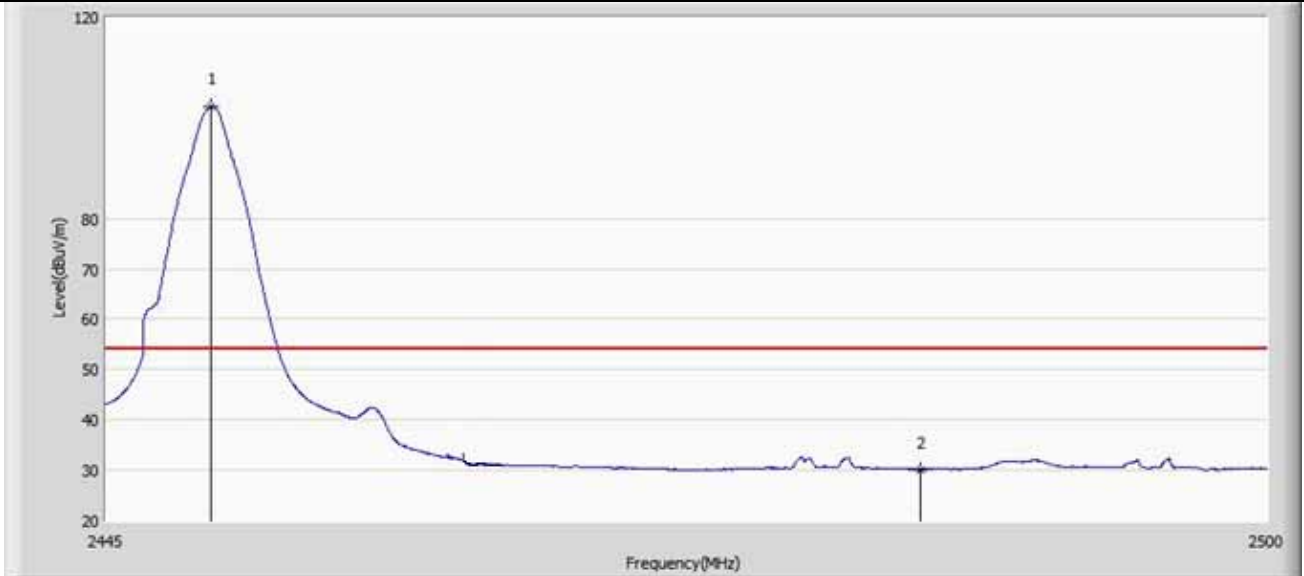
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	31.082	2.034	-22.918	54.000	29.048	AV
2	*	2405.000	100.554	71.626	46.554	54.000	28.928	AV

Engineer: ALLAN	
Site: AC5	Time: 2017/11/29 - 17:29
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2405MHz by Zigbee	



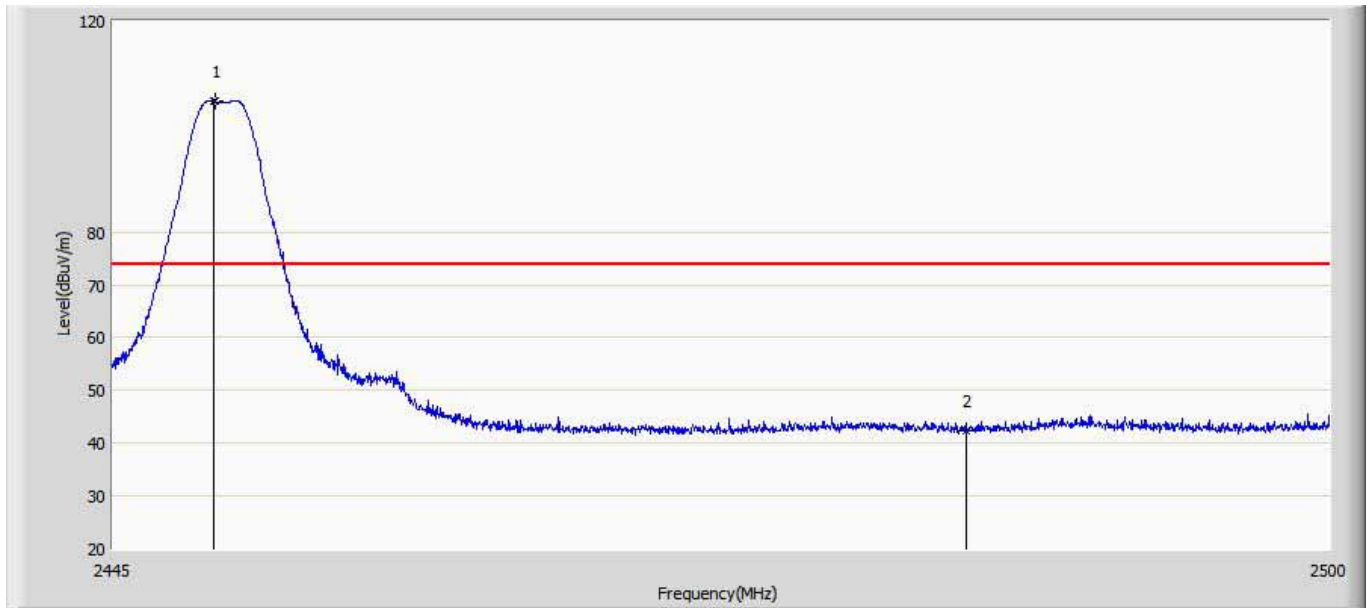
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	42.478	13.430	-31.522	74.000	29.048	PK
2	*	2405.000	102.815	73.887	28.815	74.000	28.928	PK

Engineer: ALLAN	
Site: AC5	Time: 2017/11/29 - 17:34
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2450MHz by Zigbee	



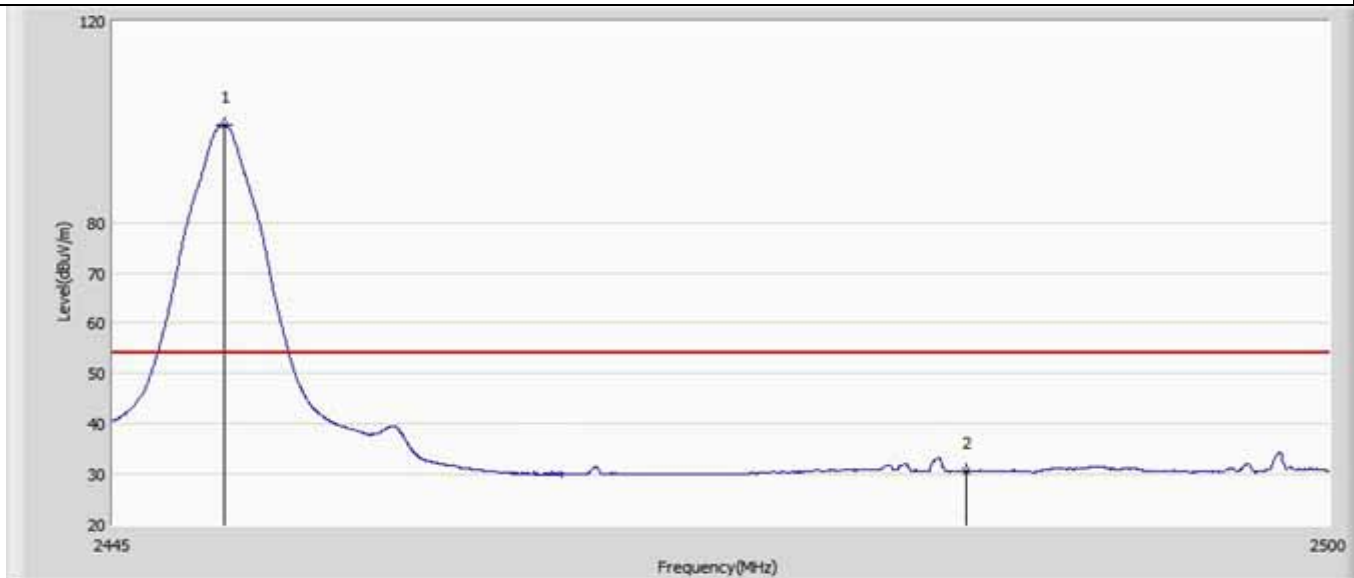
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2449.923	102.244	73.286	48.244	54.000	28.958	AV
3		2483.500	30.158	-0.326	-23.842	54.000	30.484	AV

Engineer: ALLAN	
Site: AC5	Time: 2017/11/29 - 17:41
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2450MHz by Zigbee	



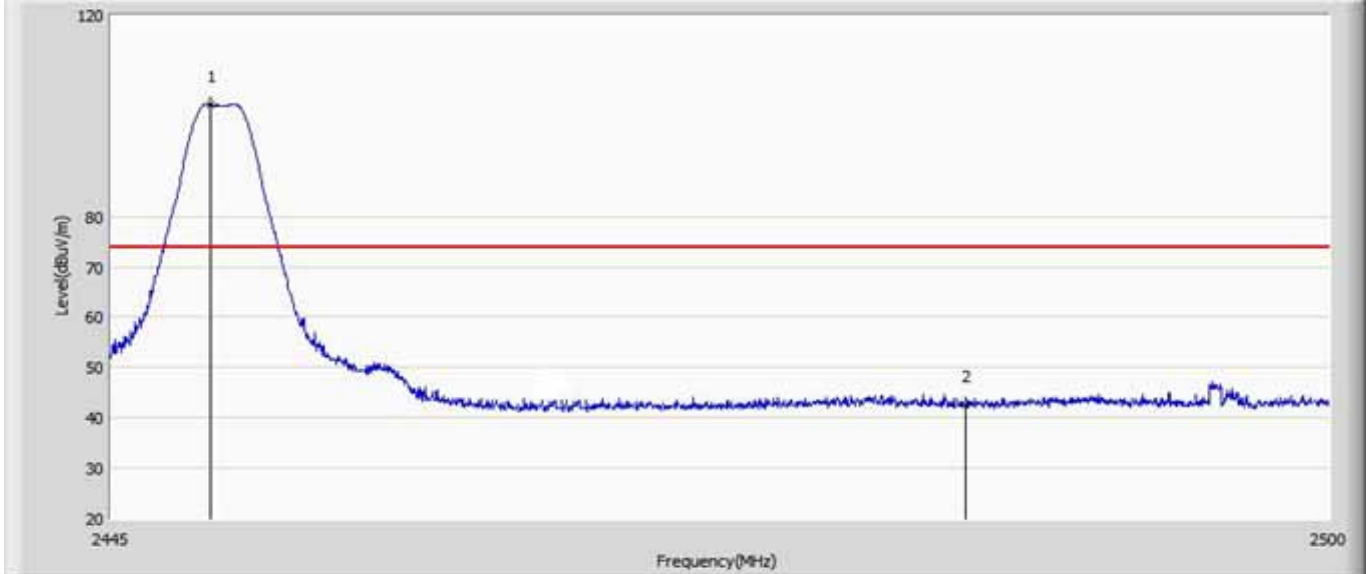
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2449.565	104.725	75.770	30.725	74.000	28.955	PK
2		2483.500	42.369	11.885	-31.631	74.000	30.484	PK

Engineer: ALLAN	
Site: AC5	Time: 2017/11/29 - 17:43
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2450MHz by Zigbee	



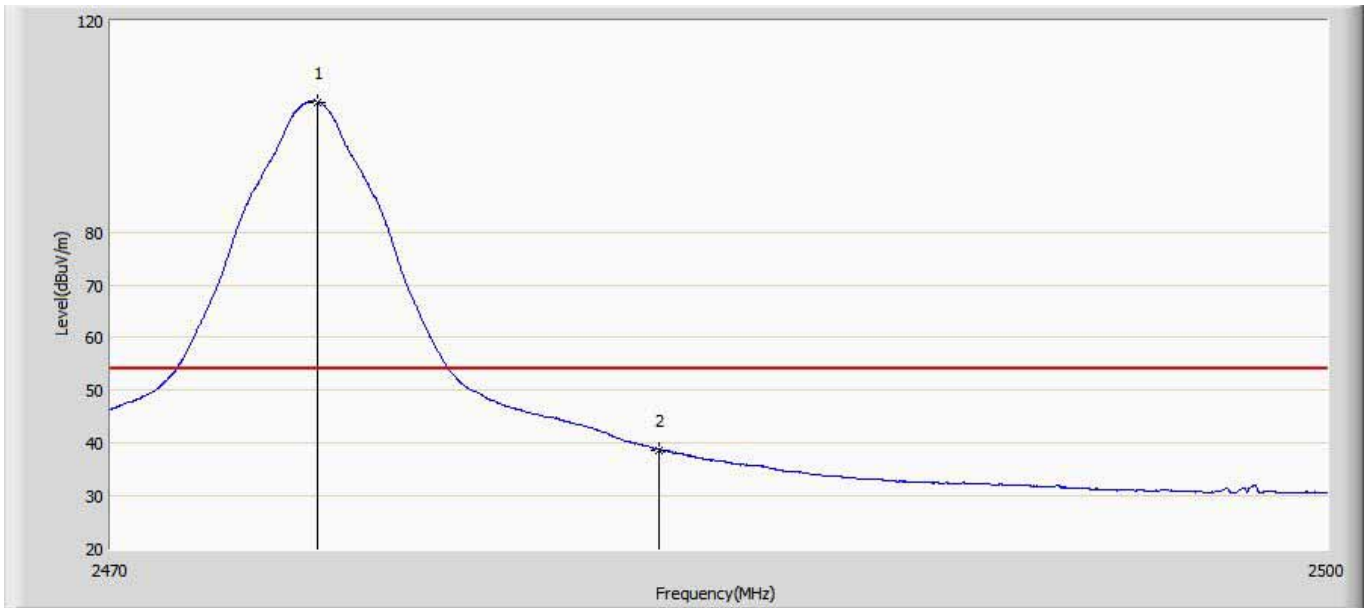
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2450.005	99.499	70.540	45.499	54.000	28.959	AV
2		2483.500	30.566	0.082	-23.434	54.000	30.484	AV

Engineer: ALLAN	
Site: AC5	Time: 2017/11/29 - 17:51
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2450MHz by Zigbee	



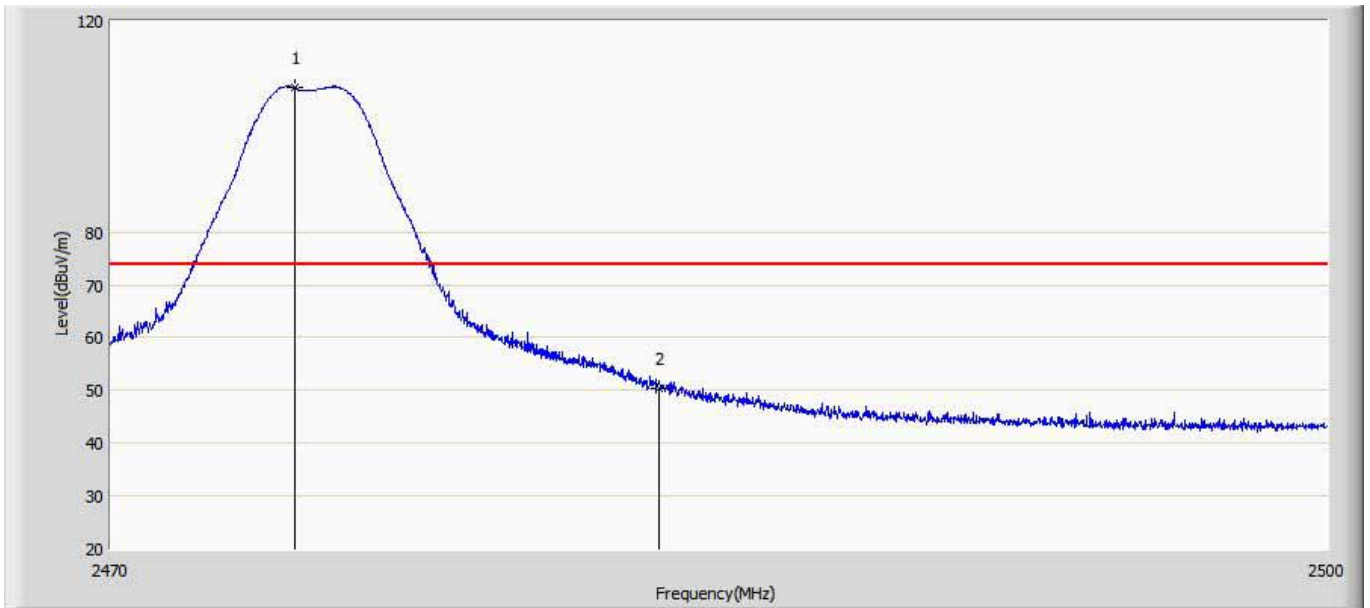
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2449.482	102.282	73.327	28.282	74.000	28.955	PK
2		2483.500	42.610	12.126	-31.390	74.000	30.484	PK

Engineer: ALLAN	
Site: AC5	Time: 2017/11/30 - 10:49
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2475MHz by Zigbee	



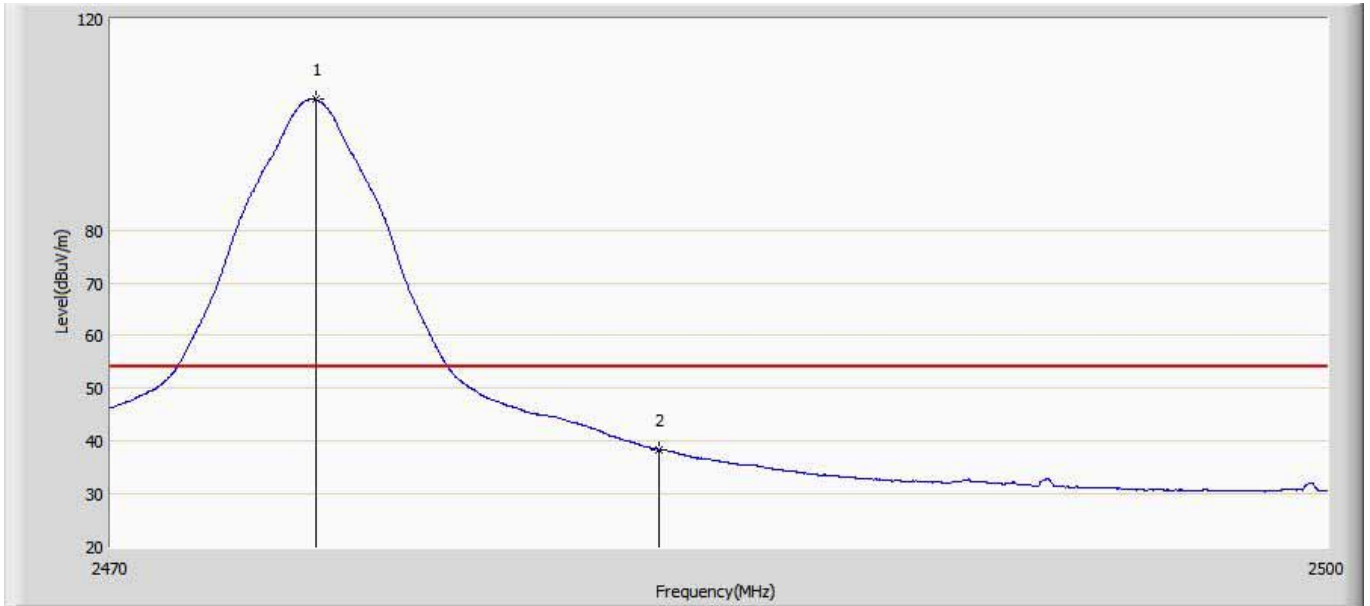
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2475.070	104.647	74.464	50.647	54.000	30.183	AV
2		2483.500	38.757	8.273	-15.243	54.000	30.484	AV

Engineer: ALLAN	
Site: AC5	Time: 2017/11/30 - 10:55
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2475MHz by Zigbee	



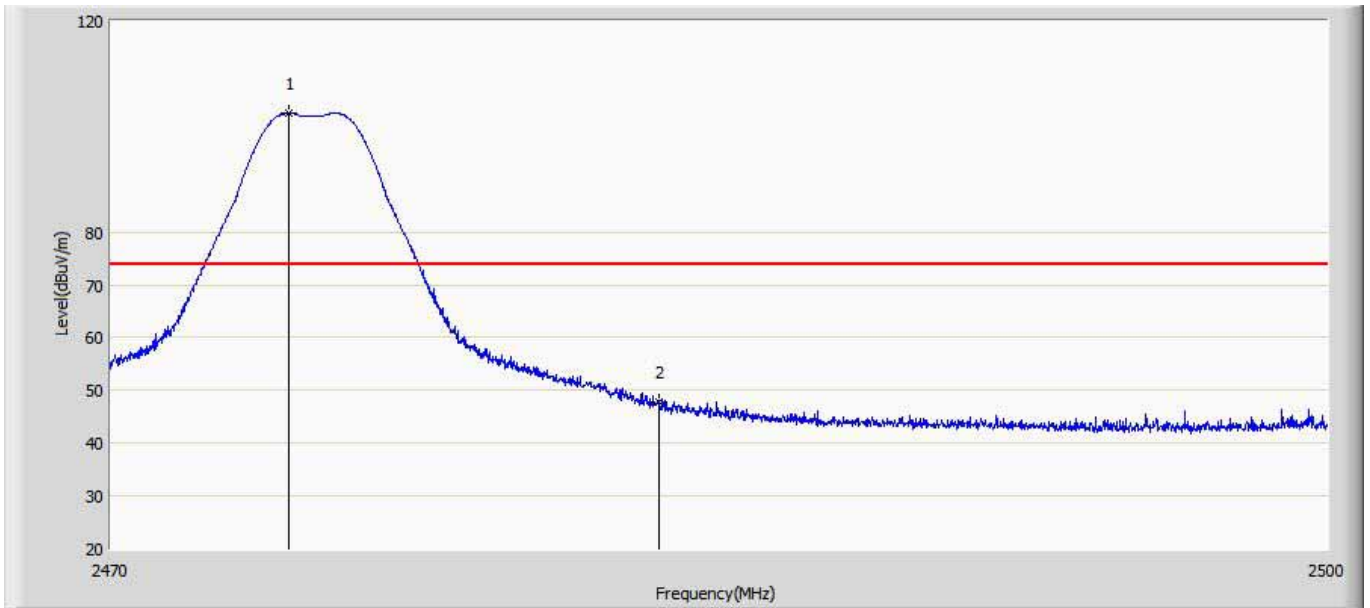
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2474.515	107.425	77.291	33.425	74.000	30.134	PK
2		2483.500	50.422	19.938	-23.578	74.000	30.484	PK

Engineer: ALLAN	
Site: AC5	Time: 2017/11/30 - 11:04
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2475MHz by Zigbee	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2475.025	104.718	74.539	50.718	54.000	30.179	AV
2		2483.500	38.429	7.945	-15.571	54.000	30.484	AV

Engineer: ALLAN	
Site: AC5	Time: 2017/11/30 - 11:17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2475MHz by Zigbee	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2474.380	102.459	72.336	28.459	74.000	30.123	PK
2		2483.500	47.891	17.407	-26.109	74.000	30.484	PK

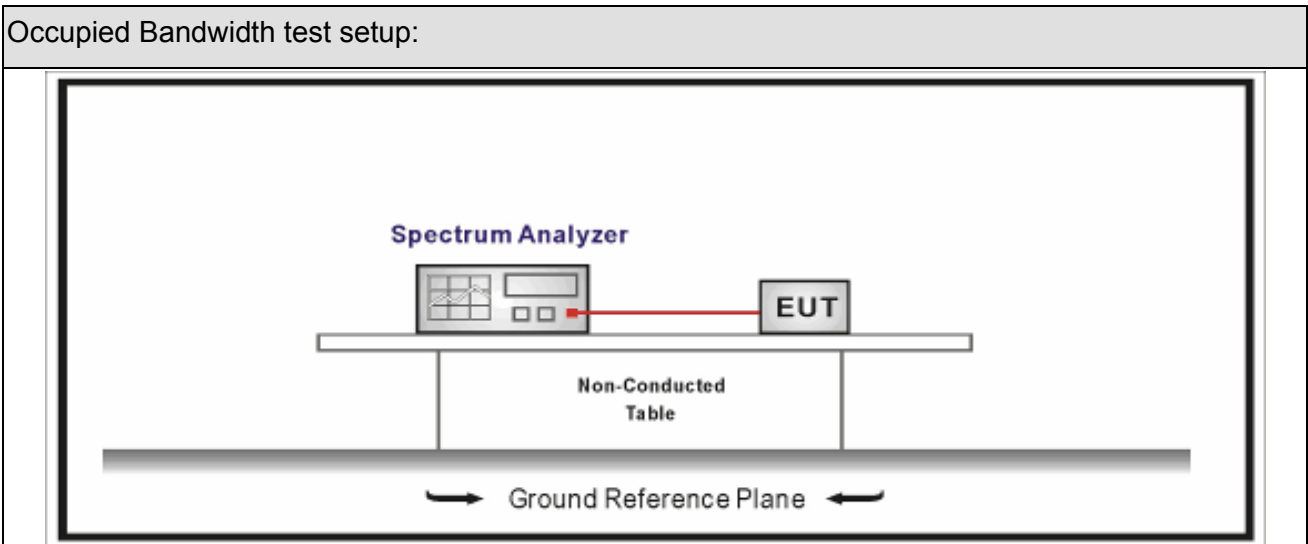
8. Occupied Bandwidth

8.1. Test Equipment

Occupied Bandwidth / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2017.02.04	2018.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2017.04.09	2018.04.08
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2017.04.09	2018.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2017.04.10	2018.04.09

Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

8.2. Test Setup



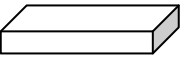
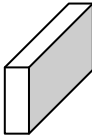
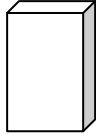
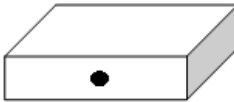
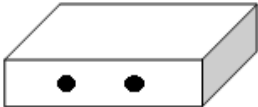

8.3. Limit

Occupied Bandwidth
Systems using digital modulation techniques operate in the 2400-2483.5 MHz. The minimum 6 dB bandwidth shall be at least 500 kHz

8.4. Test Procedure

Test Method			
	Reference Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	11.8	DTS bandwidth
<input type="checkbox"/>	ANSI C63.10	11.8.1	Option 1
<input checked="" type="checkbox"/>	ANSI C63.10	11.8.2	Option 2

8.5. EUT test definition

Item	Occupied Bandwidth			
Device Category	<input type="checkbox"/>	Fixed point-to-point		
	<input type="checkbox"/>	Emit multiple directional beams, simultaneously or sequentially		
	<input checked="" type="checkbox"/>	Other cases		
Test mode	Mode 1			
Test method	<input type="checkbox"/>	Radiated		
		X Axis	Y Axis	Z Axis
				
		Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>
	<input checked="" type="checkbox"/>	Conducted		
	<input checked="" type="checkbox"/>	Chain 0		
				
	<input type="checkbox"/>	Chain 0	Chain 1	
				
	<input type="checkbox"/>	Chain 0	Chain 1	Chain 2
				

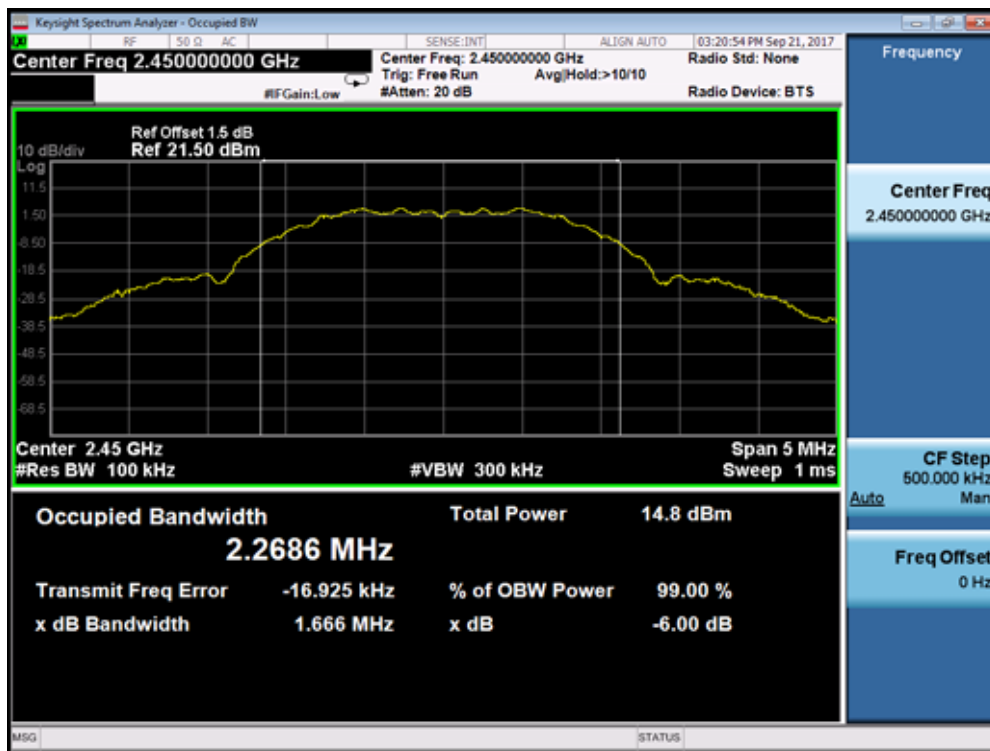
8.6. Test Result

Product Name	: LED lamp	Power	: AC 120V/60Hz
Test Mode	: Mode 1	Test Site	: TR-8
Test Date	: 2017.09.15		

Mode	CH.	Test Freq. (MHz)	99% Occupied Bandwidth (kHz)	6dB Occupied Bandwidth (kHz)	Limit (kHz)	Result
1	11	2405	2255.3	1683	>500	Pass
1	15	2425	2250.2	1692	>500	Pass
1	20	2450	2268.6	1666	>500	Pass
1	25	2475	2256.6	1689	>500	Pass

Note : The worst case of Occupied Bandwidth as below:

Mode 1 CH20 (2450MHz)



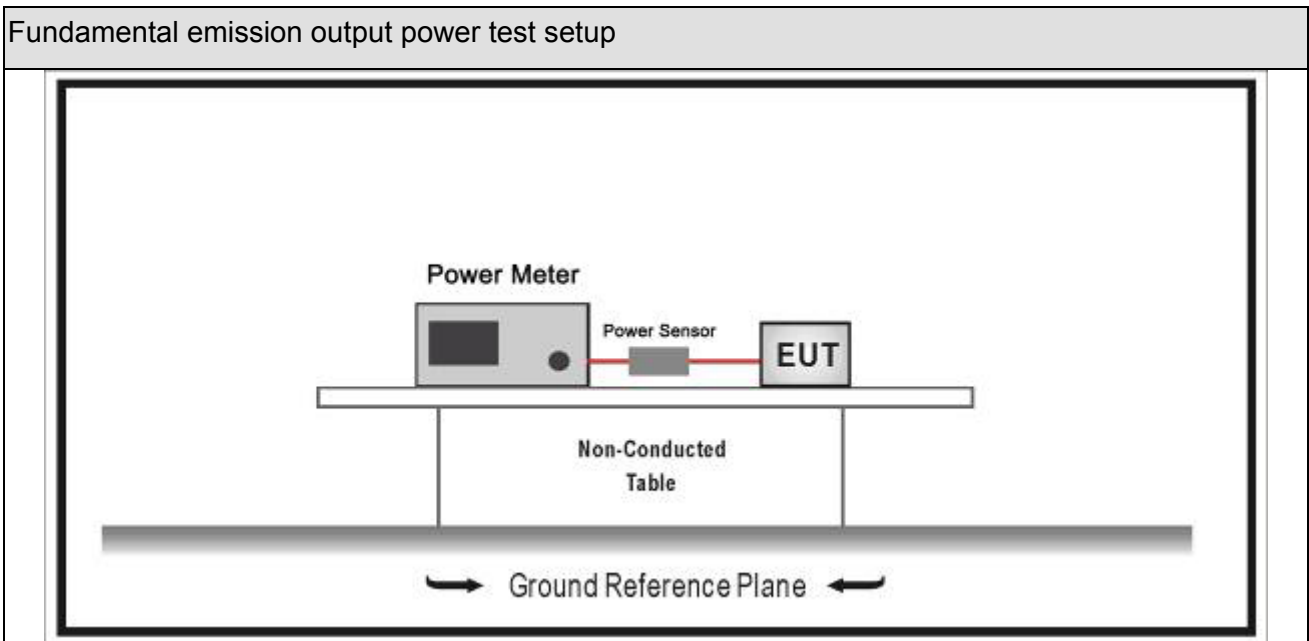
9. Fundamental emission output power

9.1. Test Equipment

Fundamental emission output power/ TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2017.01.04	2018.01.03
Spectrum Analyzer	Agilent	N9010A	MY48030494	2017.01.04	2018.01.03
Wideband Peak Power Meter	Anritsu	ML2495A	0905006	2016.10.14	2017.10.13
Power Sensor	Anritsu	MA2411B	0846014	2016.10.14	2017.10.13
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2017.04.10	2018.04.09

Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

9.2. Test Setup



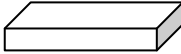
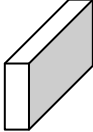
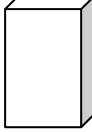



9.3. Limit

Fundamental emission output power Limit		
<input checked="" type="checkbox"/>	$G_{TX} < 6\text{dBi}$	$P_{out} \leq 30\text{dBm}$
<input type="checkbox"/>	$G_{TX} > 6\text{dBi}$	
<input type="checkbox"/>	Non-Fix point-point	$P_{out} \leq 30 - (G_{TX} - 6)$
<input type="checkbox"/>	Fix point-point	$P_{out} \leq 30 - [(G_{TX} - 6)]/3$
<input type="checkbox"/>	Point-to-multipoint	$P_{out} \leq 30 - (G_{TX} - 6)$
<input type="checkbox"/>	Overlap Beams	$P_{out} \leq 30 - [(G_{TX} - 6)]/3$
<input type="checkbox"/>	Aggregate power transmitted simultaneously on all beams	$P_{out} \leq 30 - [(G_{TX} - 6)]/3$
<input type="checkbox"/>	single directional beam	$P_{out} \leq 30 - [(G_{TX} - 6)]/3 + 8\text{dB}$
<p>Note 1 : G_{TX} directional gain of transmitting antennas.</p> <p>Note 2 : P_{out} is maximum peak conducted output power .</p>		

9.4. Test Procedure

Fundamental emission output power Test Method						
	References Rule		Chapter	Description		
<input checked="" type="checkbox"/>	ANSI C63.10		11.9	Fundamental emission output power		
	<input checked="" type="checkbox"/>	ANSI C63.10		11.9.1	Maximum peak conducted output power	
		<input type="checkbox"/>	ANSI C63.10	11.9.1.1	RBW ≥ DTS bandwidth	
		<input type="checkbox"/>	ANSI C63.10	11.9.1.2	Integrated band power method	
		<input checked="" type="checkbox"/>	ANSI C63.10	11.9.1.3	PKPM1 Peak power meter method	
		<input type="checkbox"/>	ANSI C63.10		11.9.2	Maximum conducted (average) output power
		<input type="checkbox"/>	ANSI C63.10		11.9.2.2	Measurement using a spectrum analyzer (SA)
			<input type="checkbox"/>	ANSI C63.10	11.9.2.2.2	Method AVGSA-1(Duty cycle 98%)
			<input type="checkbox"/>	ANSI C63.10	11.9.2.2.3	Method AVGSA-1A(Duty cycle 98%)
			<input type="checkbox"/>	ANSI C63.10	11.9.2.2.4	Method AVGSA-2(Duty cycle 98%)
			<input type="checkbox"/>	ANSI C63.10	11.9.2.2.5	Method AVGSA-2A(Duty cycle 98%)
			<input type="checkbox"/>	ANSI C63.10	11.9.2.2.4	Method AVGSA-3
			<input type="checkbox"/>	ANSI C63.10	11.9.2.2.5	Method AVGSA-3A
		<input type="checkbox"/>	ANSI C63.10		11.9.2.3	Measurement using a power meter (PM)
			<input type="checkbox"/>	ANSI C63.10	11.9.2.3.1	Method AVGPM
		<input type="checkbox"/>	ANSI C63.10	11.9.2.3.2	Method AVGPM-G	

9.5. EUT test definition

Item	Fundamental emission output power			
Device Category	<input type="checkbox"/>	Fixed point-to-point		
	<input type="checkbox"/>	Emit multiple directional beams, simultaneously or sequentially		
	<input checked="" type="checkbox"/>	Other cases		
Test mode	Mode 1			
Test method	<input type="checkbox"/>	Radiated		
		X Axis	Y Axis	Z Axis
				
		Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>
	<input checked="" type="checkbox"/>	Conducted		
	<input checked="" type="checkbox"/>	Chain 0		
				
	<input type="checkbox"/>	Chain 0	Chain 1	
				
	<input type="checkbox"/>	Chain 0	Chain 1	Chain 2
				

9.6. Test Result

Product Name	: LED lamp	Power	: AC 120V/60Hz
Test Mode	: Mode 1	Test Site	: TR-8
Test Date	: 2017.09.15		

Diodes:

Mode	Channel	Test Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
1	11	2405	8.03	30	Pass
1	15	2425	7.82	30	Pass
1	20	2450	7.51	30	Pass
1	25	2475	7.21	30	Pass

Murata:

Mode	Channel	Test Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
1	11	2405	7.98	30	Pass
1	15	2425	7.62	30	Pass
1	20	2450	7.29	30	Pass
1	25	2475	7.15	30	Pass

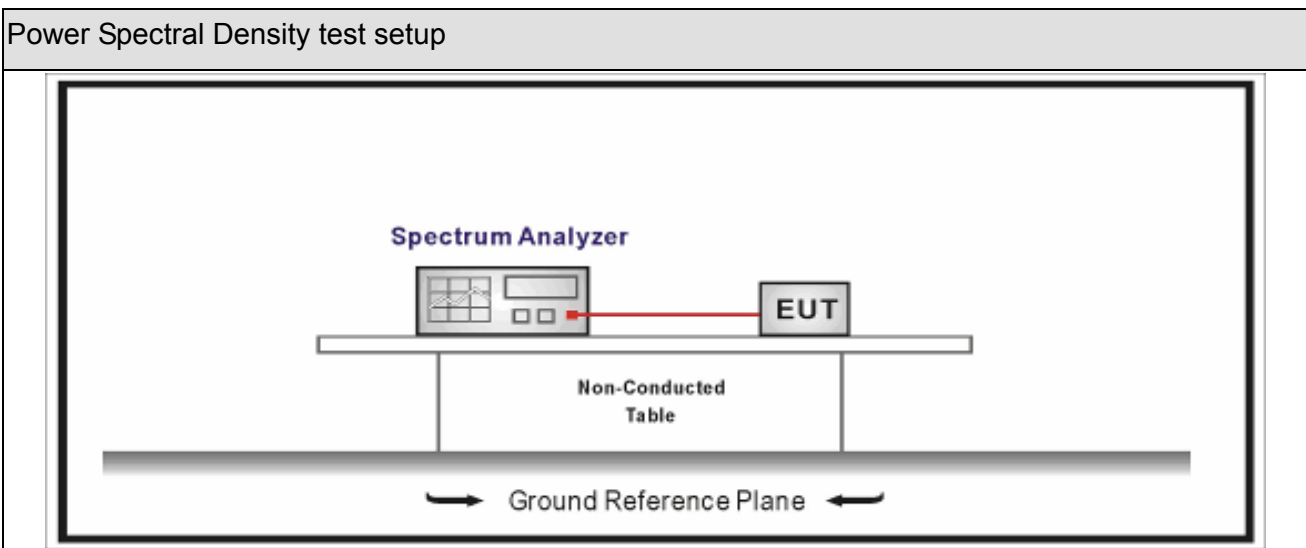
10. Power Spectral Density

10.1. Test Equipment

Power Spectral Density / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2017.02.04	2018.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2017.04.09	2018.04.08
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2017.04.09	2018.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2017.04.10	2018.04.09

Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

10.2. Test Setup



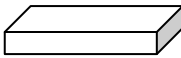
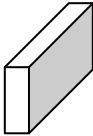
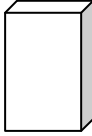
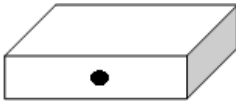
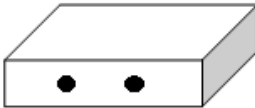
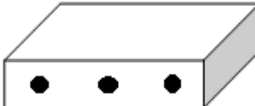
10.3. Limit

Power Spectral Density Limit
Power Spectral Density 8dBm/3kHz

10.4. Test Procedure

Power Spectral Density Test Method			
	References Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	11.10	Maximum power spectral density level in the fundamental emission
<input checked="" type="checkbox"/>	ANSI C63.10	11.10.2	Method PKPSD (peak PSD)
<input type="checkbox"/>	ANSI C63.10	11.10.3	Method AVGPSD-1(Duty cycle 98%)
<input type="checkbox"/>	ANSI C63.10	11.10.4	Method AVGPSD-1A(Duty cycle 98%)
<input type="checkbox"/>	ANSI C63.10	11.10.5	Method AVGPSD-2(Duty cycle < 98%)
<input type="checkbox"/>	ANSI C63.10	11.10.6	Method AVGPSD-2A(Duty cycle < 98%)
<input type="checkbox"/>	ANSI C63.10	11.10.7	Method AVGPSD-3
<input type="checkbox"/>	ANSI C63.10	11.10.8	Method AVGPSD-3A

10.5. EUT test definition

Item	Power Spectral Density Test Method			
Device Category	<input type="checkbox"/>	Fixed point-to-point		
	<input type="checkbox"/>	Emit multiple directional beams, simultaneously or sequentially		
	<input checked="" type="checkbox"/>	Other cases		
Test mode	Mode 1			
Test method	<input type="checkbox"/>	Radiated		
		X Axis	Y Axis	Z Axis
				
		Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>
	<input checked="" type="checkbox"/>	Conducted		
	<input checked="" type="checkbox"/>	Chain 0		
				
	<input type="checkbox"/>	Chain 0	Chain 1	
				
	<input type="checkbox"/>	Chain 0	Chain 1	Chain 2
				

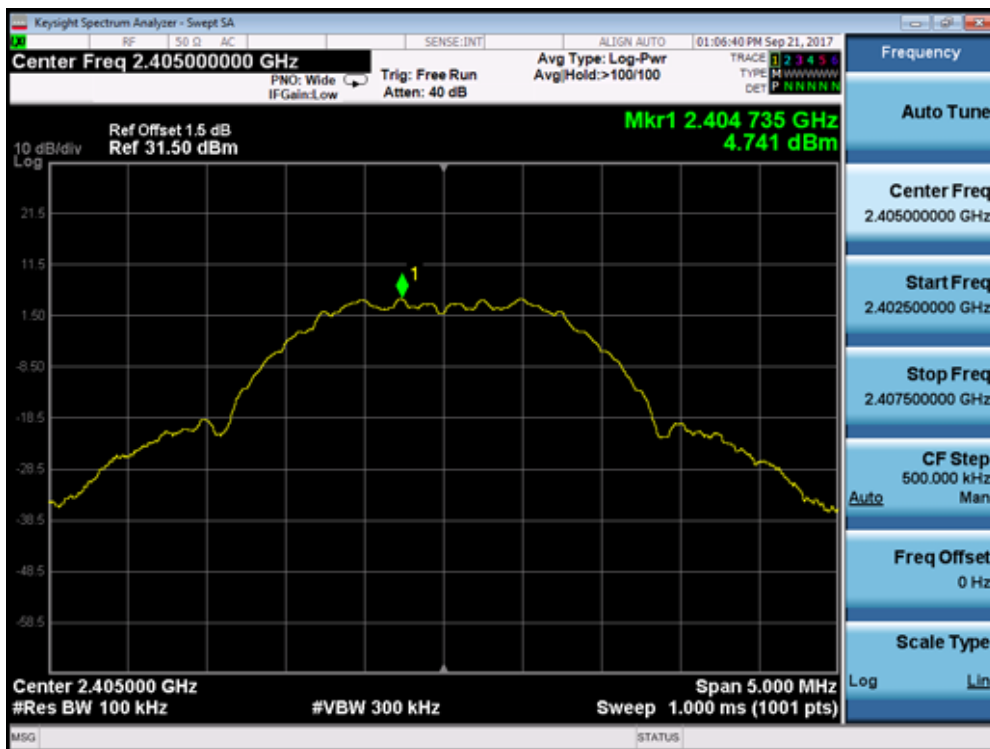
10.6. Test Result

Product Name	: LED lamp	Power	: AC 120V/60Hz
Test Mode	: Mode 1	Test Site	: TR-8
Test Date	: 2017.09.15		

Mode	Channel	Test Frequency (MHz)	Measurement PSD (dBm/3kHz)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
1	11	2405	4.741	4.741	8	Pass
1	15	2425	4.339	4.339	8	Pass
1	20	2450	3.824	3.824	8	Pass
1	25	2475	3.915	3.915	8	Pass

Note : The worst case of Power Spectral Density as below:

Mode 1 CH11(2405MHz)



11. Antenna Requirement

11.1. Limit

Antenna Requirement Limit
<p>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, or §15.221. 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.</p>

11.2. Antenna Connector Construction

Antenna Connector Construction	
<input checked="" type="checkbox"/>	The use of a permanently attached antenna
<input type="checkbox"/>	The antenna use of a unique coupling to the intentional radiator
<input type="checkbox"/>	The use of a nonstandard antenna jack or electrical connector
Please refer to the attached document "Internal Photograph" to show the antenna connector.	

_____ The End _____