



Report No.SH17020004W01

# FCC RF TEST REPORT

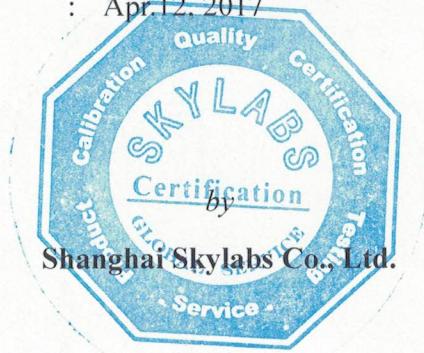
Issued to

**JASCO PRODUCTS COMPANY**

For

**SMART LED LAMP**

Model Name : RGB/24/12/18/2; RGB/36/18/18/2  
Trade Name : enbrighten  
Brand Name : enbrighten  
Standard : 47 CFR Part 15,Subpart C  
ANSI C63.10-2013  
FCC ID : QOBRGBXYZA  
Test date : Mar.20, 2017 - Apr.12, 2017  
Issue date : Apr.12, 2017



Tested by An Peng

Approved by Gu Ting'ing

Review by Xia Dong Wei

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**Change History**

Issue	Date	Reason for change
1.0	Apr.12,2017	First edition



# 1. General Information

## 1.1 Applicant

**JASCO PRODUCTS COMPANY**

10 E Memorial Road, Oklahoma City, OK 73114, USA

## 1.2 Manufacturer

**Shangyu Shunhe Electric Appliance for Illumination Co., LTD**

Xiaoyue Town, Shangyu City, Zhejiang Province of China

## 1.3 Description of EUT

EUT Name.....: SMART LED LAMP  
Model Name.....: RGB/24/12/18/2;RGB/36/18/18/2  
Brand Name.....: enbrighten  
Trade Name .....: enbrighten  
Hardware Version.....: V0  
Software Version .....: V0  
Modulation Type .....: GFSK  
Frequency.....: Low: 2421MHz,Middle: 2442MHz,High: 2464MHz  
Channel Number.....: 3  
Antenna Type.....: PCB metal antenna  
Antenna Gain.....: 2dBi

**The remoter**

Voltage .....: DC 3V

**The lamp string**

Voltage .....: 120ACV  
Frequency.....: 60Hz  
Rating current.....: 105mA;145mA

*Note:*

- 1) *The SMART LED LAMP consists of a lamp string and a remoter.*
- 2) *The lamp string has two models (RGB/24/12/18/2 and RGB/36/18/18/2).*
- 3) *The remoter operates at 2.4GHz ISM band; it only has three channels low(2421MHz),middle (2442MHz), high (2464MHz).it can be used to control the SMART LED LAMP turning on or off, and realizes other functions.*
- 4) *For more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacture.*



## 2. Facilities and Accreditations

### 2.1 Test Facility

Shanghai Skylabs Co., Ltd. (Skylabs Laboratory) is a third party testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L6644. FCC registered number is 196218. IC registered number is 21609

A 9\*6\*6(m) full/semi-anechoic chamber was used for the radiated emissions test.

### 2.2 Environmental Conditions

Ambient temperature: 15 ~ 35°C

Relative humidity: 30 ~ 60%

Atmosphere pressure: 86 ~ 106kPa

### 2.3 Measurement Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

Uncertainty of Conducted Emission:  $\pm 1.76$ dB

Uncertainty of Radiated Emission:  $\pm 3.16$ dB



## 2.4 List of Equipments Used

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU26	200880	2016.2.25	1year
Power Splitter	Weinschel	1506A	NW521	(n.a.)	(n.a.)
Power Splitter	Mini-Circuits	ZFRSC-183-S+	76500F1016	(n.a.)	(n.a.)
Attenuator 1	Resnet	10dB	(n.a.)	(n.a.)	(n.a.)
Attenuator 2	Resnet	3dB	(n.a.)	(n.a.)	(n.a.)
Power supplier	NF	ES2000S	9087735	2016.10.17	1year
Full/Semi-Anechoic Chamber	CHENGYU	9.2×6.25×6.15m	SAR	2016.04.11	3year
EMI Test Receiver	R&S	ESCI7	100787	2017.01.28	2year
LISN	TESEQ	NNB 51	33285	2017.01.28	2year
Personal Computer	HP	6300P	CNG24296YW	(n.a.)	(n.a.)
Test Antenna-Horn	Schwarzbeck	BBHA9170	BBHA91970171	2016.9.21	1year
Test Antenna-Log	Schwarzbeck	VULB 9163	9163-561	2016.7.25	2year
Test Antenna-Horn	Schwarzbeck	BBHA 9120D	9120D-1033	2015.7.25	2year
Temporary Antenna Connector	Farpu	SMA-K	(n.a.)	(n.a.)	(n.a.)
RF Cable	(n.a.)	0-25G	(n.a.)	(n.a.)	(n.a.)

*Note:*

*Equipments listed above have been calibrated and are in the period of validation.*



### 3. Test Standards and Results

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

FCC Part 15 Subpart C §15.247

ANSI C63.10-2013

558074 D01 DTS Meas Guidance v04

*Note:*

*(1) All test items were verified and recorded according to the standards and without any deviation during the test.*

*(2) This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart C, recorded in a separate test report.*

#### Test items and the results

A SMART LED LAMP comprises a remoter and a lamp string, one transmitter is located in the remoter. This transmitter is tested solely with following testing item from 1~5 and 8 in blow table by conducted method. Test item 6~7 is for lamp string and remoter.

Model RGB/24/12/18/2 and RGB/36/18/18/2 has same remoter and different lamp string, so testing solution in this report is that:

A group of conducted testing data for a remoter is recorded, but CE and RE testing data for different models SMART LED LAMP is recorded respectively.

No.	FCC Rules	Description	Result
1	15.203	Antenna Requirement	Pass
2	15.247(b)	Peak Output power	Pass
3	15.247(a)	6dB Bandwidth	Pass
4	15.247(d)	Conducted Spurious Emission and Band Edge	Pass
5	15.247(d)	Restricted Frequency Bands	Pass
6	15.207	Conducted Emission	Pass
7	15.209,15.247(d)	Radiated Emission	Pass
8	15.247(e)	Power Spectral Density (PSD)	Pass



## 4. 47 CFR Part 15C

### 4.1 Antenna requirement

#### 4.1.1 Applicable standard

According to FCC 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by 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.

#### 4.1.2 Result: Compliant

The EUT has a permanently and irreplaceable attached antenna. Please refer to the EUT internal photos.





## 5. Test Result

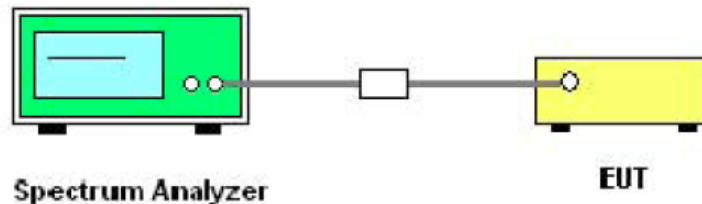
### 5.1 Peak Output Power

#### 5.1.1 Requirement

According to FCC section 15.247(b) (3), for systems using digital modulation in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz bands: The maximum peak conducted output power of the intentional radiator shall not exceed 1 Watt.

#### 5.1.2 Test Description

##### A. Test setup



The EUT (Equipment under test) is coupled to the SA; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading, all test result in SA.

Instrument setting:

- a) Set the RBW =1MHz
- b) Set t VBW=3 MHz
- c) Set the span =3 MHz
- d) Sweep time =auto couple
- e) Detector =peak
- f) Trace mode =max hold
- g) Allow trace to fully stabilize
- h) Use peak marker function to determine the peak amplitude level.

Measurement procedure:

1. Place the EUT on the table and remove the antenna from the EUT;
2. Connect to the SA through RF cable with 50 Ohm impedance and set it work at continuous transmitting mode;
3. Allow the trace to stabilize and record the maximum reading;
4. Repeat the above procedures, until all the channels tested.



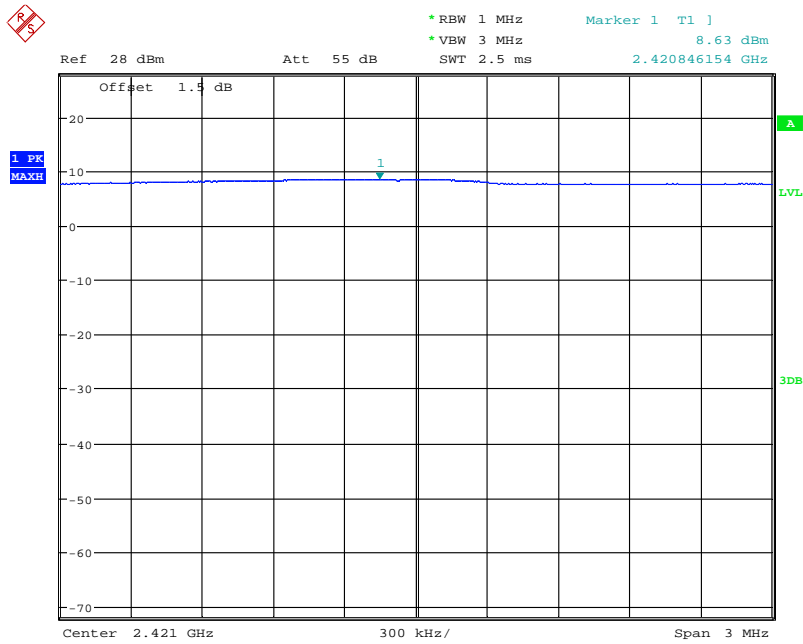
### 5.1.3 Test Result

The low, middle and high channels are selected to perform testing to verify the conducted RF output peak power of the EUT. (Duty cycle > 98%)

#### A. Test Verdict

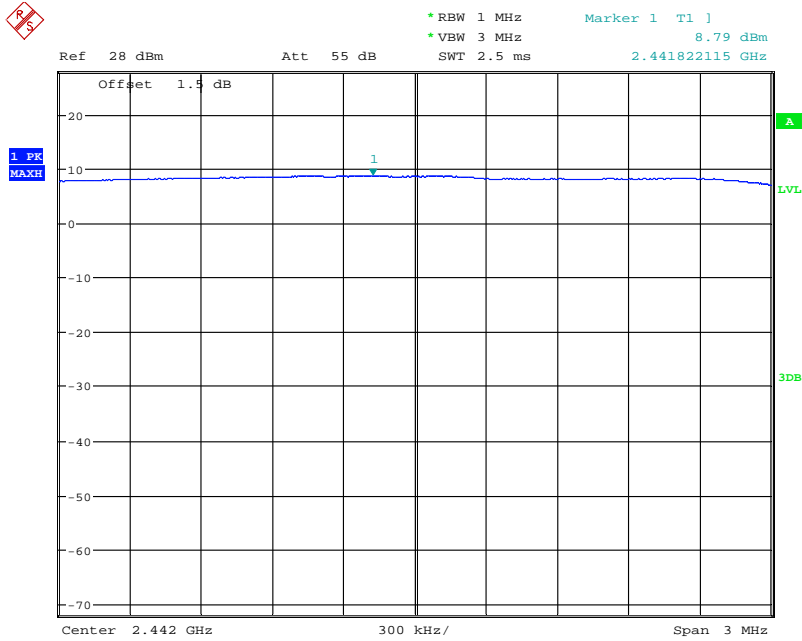
Channel	Frequency (MHz)	Measured Output Peak Power		Limit		Verdict
		dBm	W	dBm	W	
Low	2421	8.63	0.00733	30	1	Pass
Middle	2442	8.79	0.00757			Pass
High	2464	8.46	0.00701			Pass

#### B. Test Plots



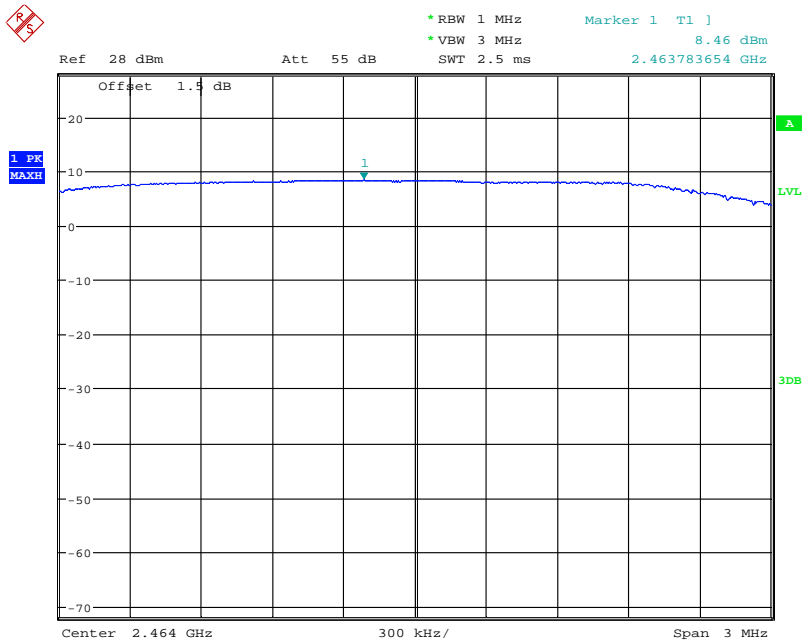
Date: 20.MAR.2017 11:04:37

(Peak Output Power\_low channel at 2421MHz)



Date: 20.MAR.2017 11:03:01

(Peak Output Power\_middle channel at 2442MHz)



Date: 20.MAR.2017 11:03:44

(Peak Output Power\_high channel at 2464MHz)

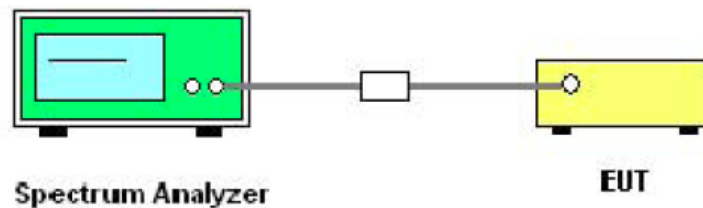


## 5.2 6dB Bandwidth

### 5.2.1 Requirement

According to FCC section 15.247(a) (2), Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

### 5.2.2 Test Description



Instrument setting:

- a) Set RBW = 100 kHz
- b) Set the video bandwidth (VBW)  $\geq 3$  RBW
- c) Detector=Peak
- d) Trace mode= max hold
- e) Sweep =auto couple
- f) Allow the trace to stabilize
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Measurement procedure:

1. Place the EUT on the table and remove the antenna from the EUT;
2. Connect to the SA through RF cable with 50 Ohm impedance and set it work at continuous transmitting mode;
3. Mark the peak frequency and -6dB(upper and lower frequencies);
4. Allow the trace to stabilize, record the SA reading;
5. Repeat the above procedures, until all the channels tested.



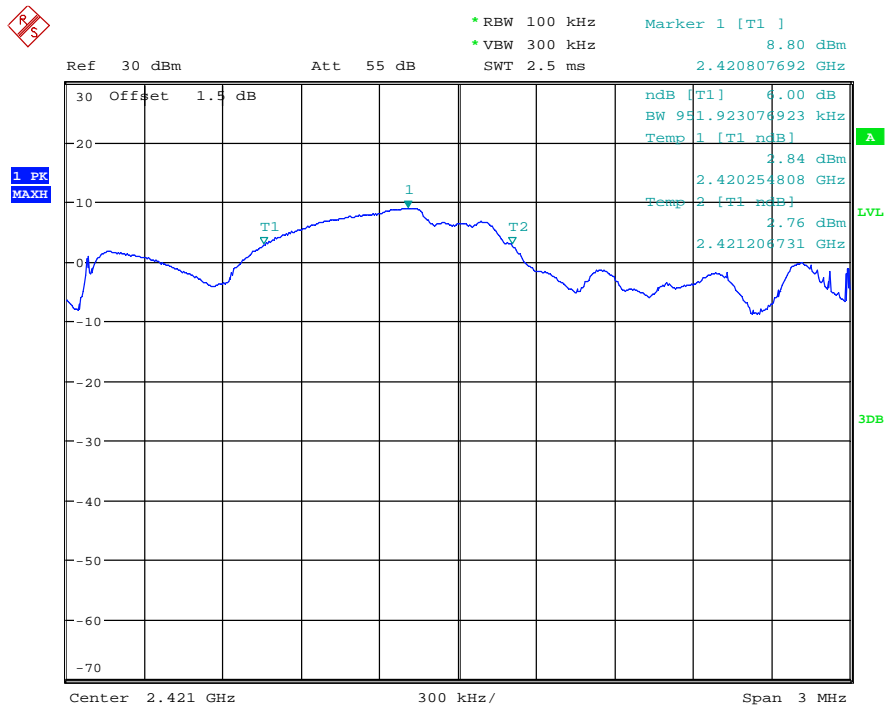
### 5.2.3 Test Result

The low, middle and high channels are tested to record the 6 dB bandwidth of the EUT.

#### A. Test Verdict

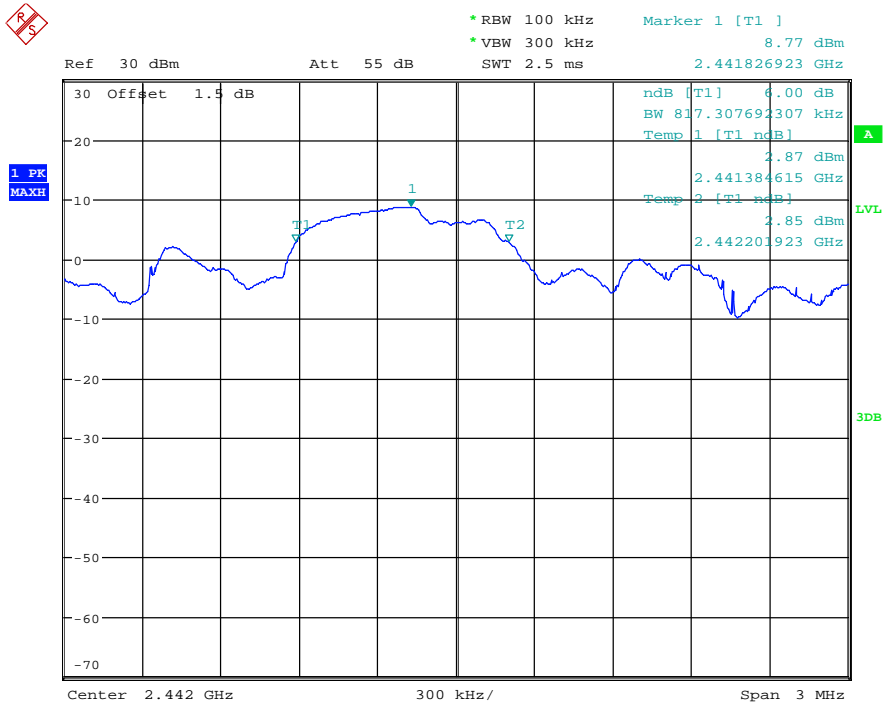
Channel	Frequency (MHz)	6dB Bandwidth (kHz)	Refer to plot	Limit (KHz)	Result
Low	2421	951.923	Plot A	≥500	Pass
Middle	2442	817.307	Plot B		Pass
High	2464	745.192	Plot C		Pass

#### B. Test Plots



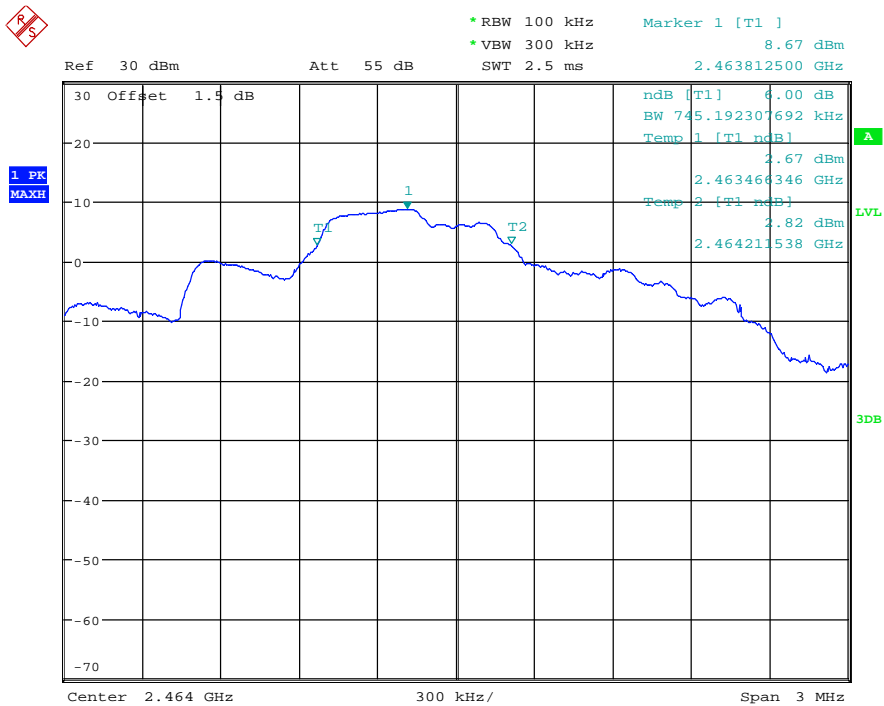
Date: 20.MAR.2017 10:57:20

Plot A



Date: 20.MAR.2017 10:58:43

Plot B



Date: 20.MAR.2017 10:59:58

Plot C

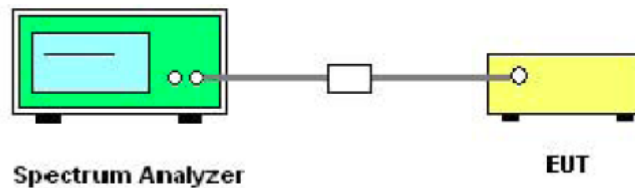


## 5.3 Conducted Spurious Emissions and Band Edge

### 5.3.1 Requirement

According to FCC section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

### 5.3.2 Test Description



Instrument setting:

- a) Set the center frequency and span to encompass frequency range to be measured
- b) Set the RBW = 100 kHz
- c) Set the VBW = 300 kHz
- d) Detector = peak
- e) Sweep time = auto couple
- f) Trace mode = max hold
- g) Allow trace to fully stabilize
- h) Use the peak marker function to determine the maximum amplitude level.

Measurement procedure:

1. Place the EUT on the table and remove the antenna from the EUT;
2. Connect to the SA through RF cable with 50 Ohm impedance and set it work at continuous transmitting mode;
3. Allow the trace to stabilize, mark the peak frequency and record the SA reading;
5. Repeat above procedures, until all the channels tested.



### 5.3.3 Test Result

The EUT operates at hopping-off test mode. The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The low, middle and high channels are tested to verify the spurious emissions.

#### A. Test Verdict

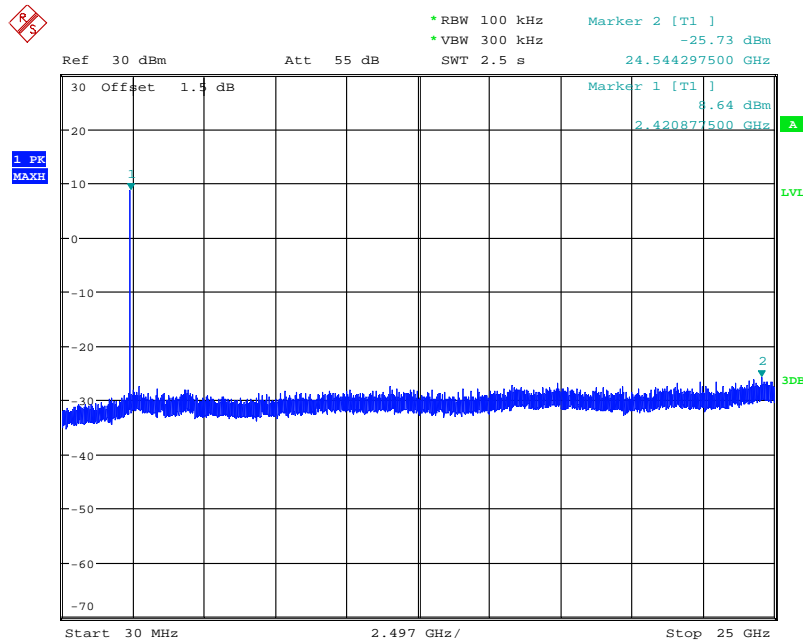
Conducted Spurious Emissions:

Channel	Frequency (MHz)	Measured max out of band emission(dBm)	Refer to plot	Limit(dBm)		Result
				Carrier level	Calculated -20dBc limit	
Low	2421	-25.73	Plot A	8.64	-11.36	Pass
Middle	2442	-26.49	Plot B	8.55	-11.45	Pass
High	2464	-27.06	Plot C	8.19	-11.81	Pass

Band edge:

Channel	Frequency(MHz)	Amplitude(dBm)	Refer to plot	Result
Low	2420.913	8.60	Plot D	Pass
	2400.000	-29.59		
High	2463.788	8.27	Plot E	Pass
	2483.500	-29.05		

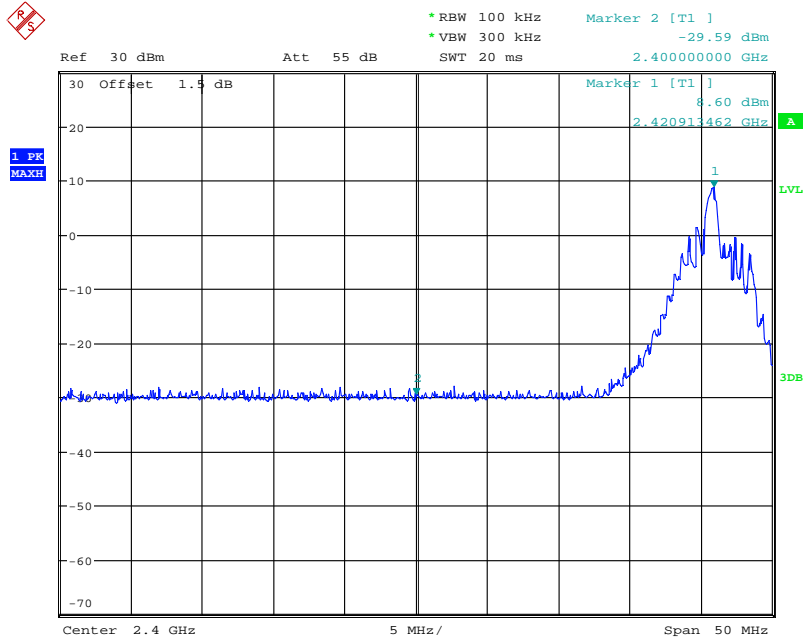
#### B. Test Plots



Date: 20.MAR.2017 11:08:56

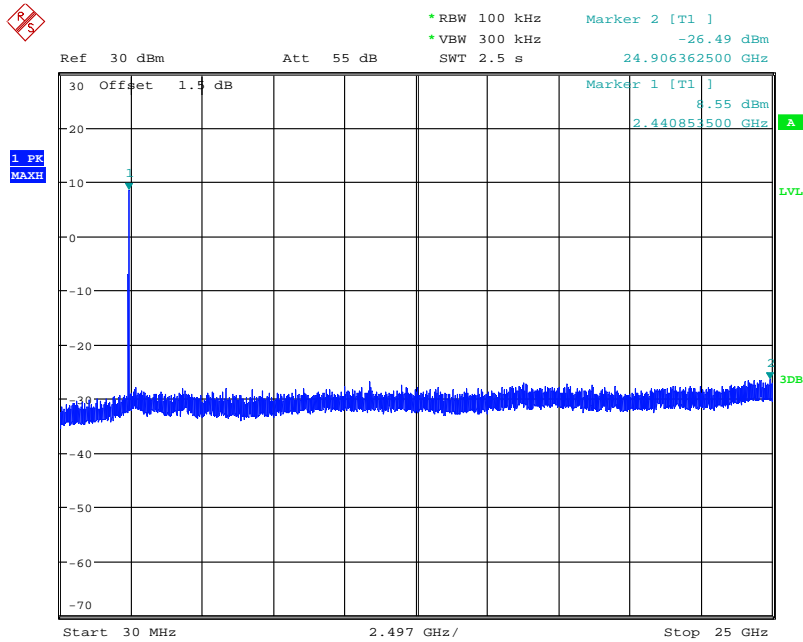
Plot A Channel Low 30MHz~25GHz





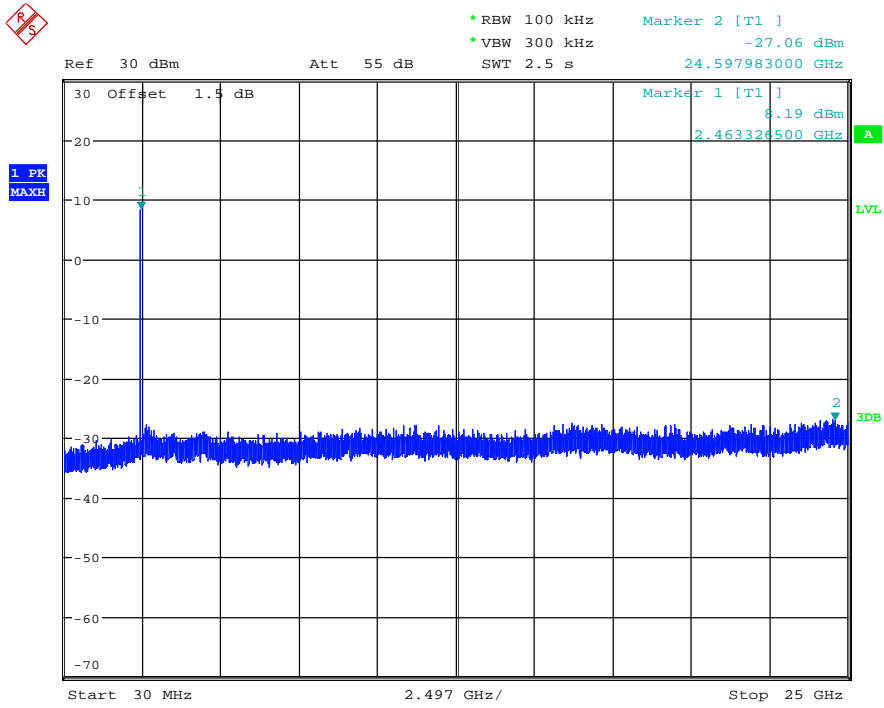
Date: 20.MAR.2017 11:25:25

### Plot B Channel Low Band Edge



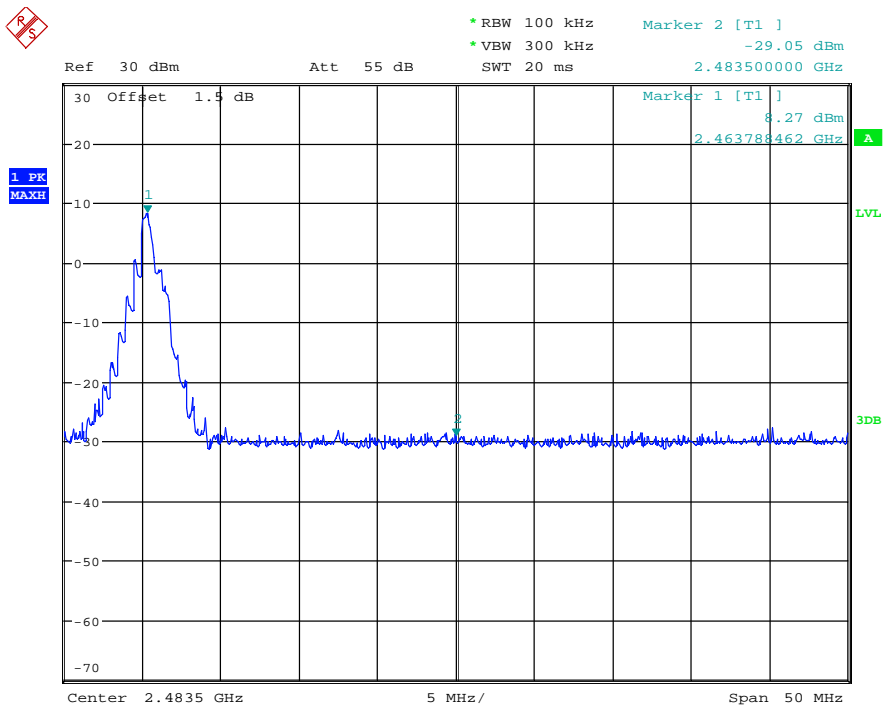
Date: 20.MAR.2017 11:27:42

### Plot C Channel Middle 30MHz~25GHz



Date: 20.MAR.2017 11:29:03

Plot D Channel High 30MHz~25GHz



Date: 20.MAR.2017 11:30:07

Plot E Channel High Band Edge

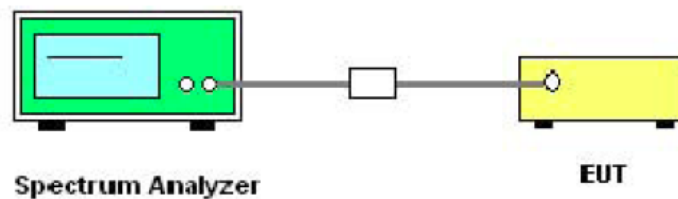


## 5.4 Power Spectral Density (PSD)

### 5.4.1 Requirement

According to FCC section 15.247(e), the same method of determining the conducted output power shall be used to determine the power spectral density. If a peak output power is measured, then a peak power spectral density measurement is required. If an average output power is measured, then an average power spectral density measurement should be used.

### 5.4.2 Test Description



Instrument setting:

- Set analyzer center frequency to DTS channel center frequency
- Set the span = 3MHz
- Set the RBW to  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$
- Set the VBW  $\geq 3 \text{ RBW}$
- Detector = peak
- Sweep time = auto couple
- Trace mode = max hold
- Allow trace to fully stabilize
- Use the peak marker function to determine the maximum amplitude level within the RBW
- If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

Measurement procedure:

- Place the EUT on the table and set it work at continuous transmitting mode;
- Remove the antenna from the EUT and the connect to the SA through RF cable with 50 Ohm impedance;
- Allow the trace to stabilize, mark the peak amplitude level, record the SA reading;
- Repeat above procedures, until all the channels tested.

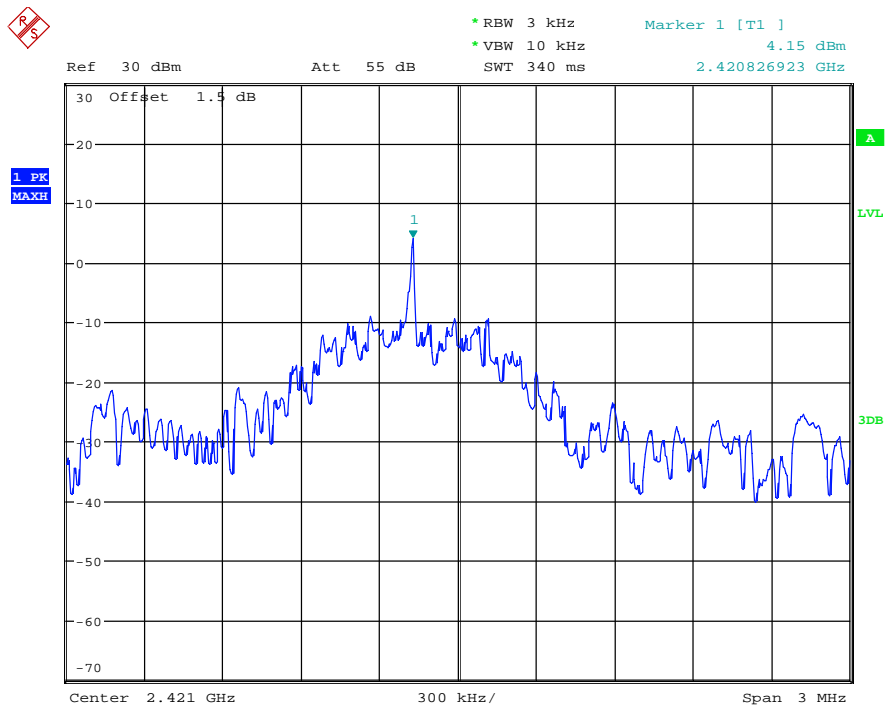


### 5.4.3 Test Result

#### A. Test Verdict

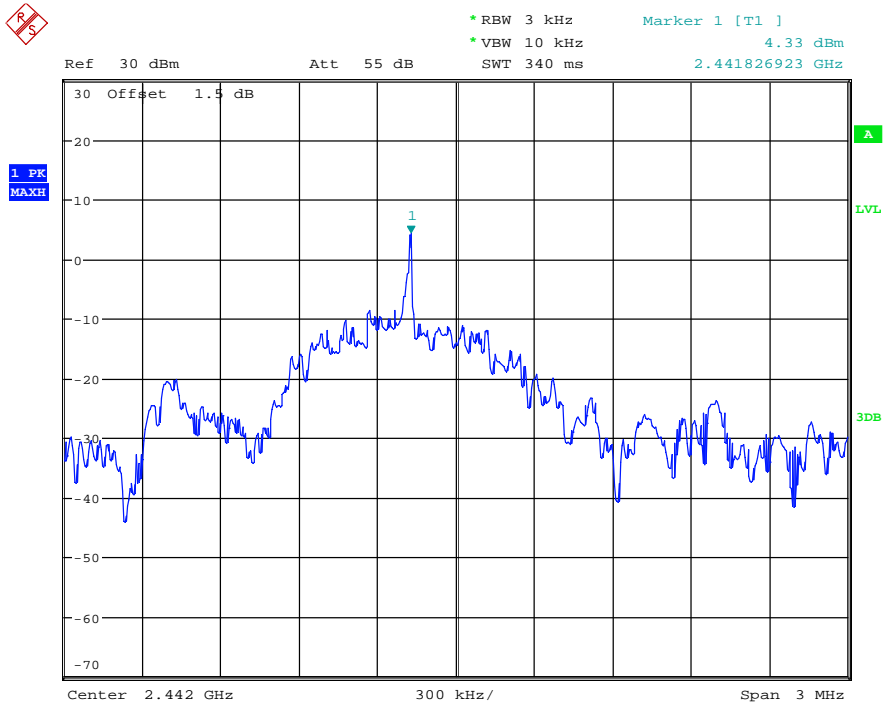
Channel	Frequency (MHz)	Measured PSD (dBm/3kHz)	Refer to plot	Limit (dBm/3kHz)	Result
Low	2421	4.15	Plot A	8	Pass
Middle	2442	4.33	Plot B		Pass
High	2464	3.98	Plot C		Pass

#### B. Test Plots



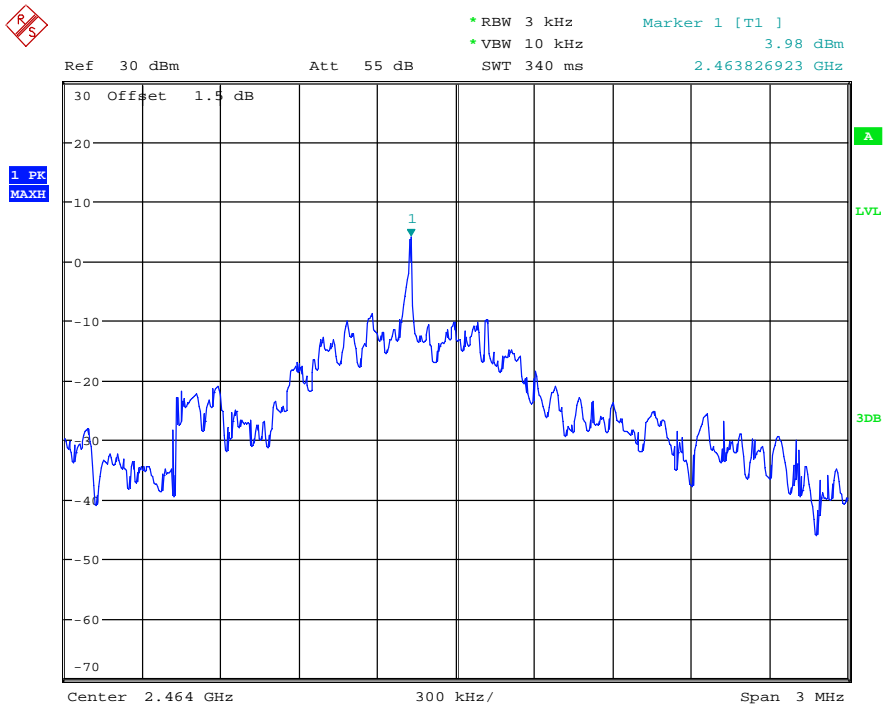
Date: 20.MAR.2017 11:34:24

Plot A



Date: 20.MAR.2017 11:35:45

Plot B



Date: 20.MAR.2017 11:36:40

Plot C

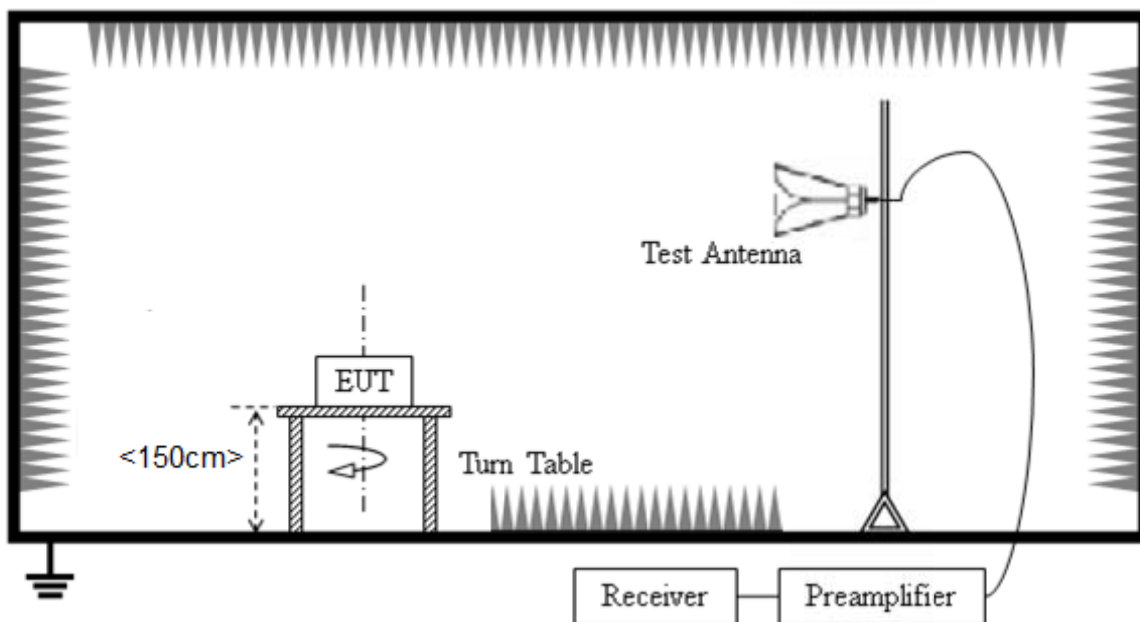


## 5.5 Restricted Frequency Bands

### 5.5.1 Requirement

According to FCC section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, , In addition, radiated emissions which fall in the restricted bands, as defined in 15.205(a), must also comply with the radiated emission limits specified in 15.209(a).

### 5.5.2 Test Description



The EUT is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading.

For the Test Antenna:

Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.

Instrument setting:

- Set the center frequency and span to encompass frequency range to be measured
- Set the RBW = 1MHz
- Set the VBW = 3MHz
- Detector = peak
- Sweep time = auto couple
- Trace mode = max hold
- Allow trace to fully stabilize
- Use the peak marker function to determine the maximum amplitude level.



Measurement procedure:

1. Place the EUT on a 0.8m turn table above ground plane and set it work at continuous transmitting mode;
2. Set the EUT 3m away from the antenna which varied from 1-4m to find the highest emissions;
3. Let the turn table rotate 360 degrees to find the position of maximum emission level;
4. And each emission was to be maximized by changing the polarization of antenna both horizontal and vertical;
5. Record the maximum emission points;
6. Repeat the above procedures, until all the channels tested.

### 5.5.3 Test Result

The lowest and highest channels are tested to verify the restricted frequency bands.

The measurement results are obtained as below:

$$E \text{ [dBV/m]} = UR + AT + A\text{Factor [dB]}; AT = LCable \text{ loss [dB]} - G\text{preamp [dB]}$$

AT: Total correction Factor except Antenna

UR: Receiver Reading

Gpreamp: Preamplifier Gain

AFactor: Antenna Factor at 3m

Note:

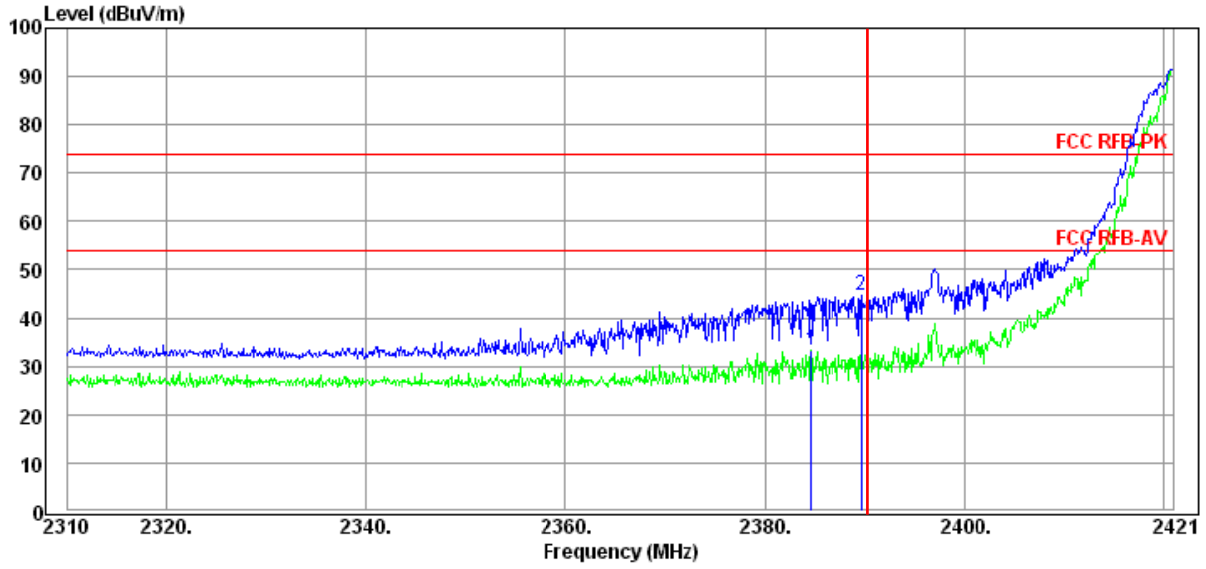
Restricted Frequency Bands were performed when antenna was at vertical and horizontal polarity, and only the worse test condition (vertical) was recorded in this test report.

The lowest and highest channels are tested to verify the restricted frequency bands.

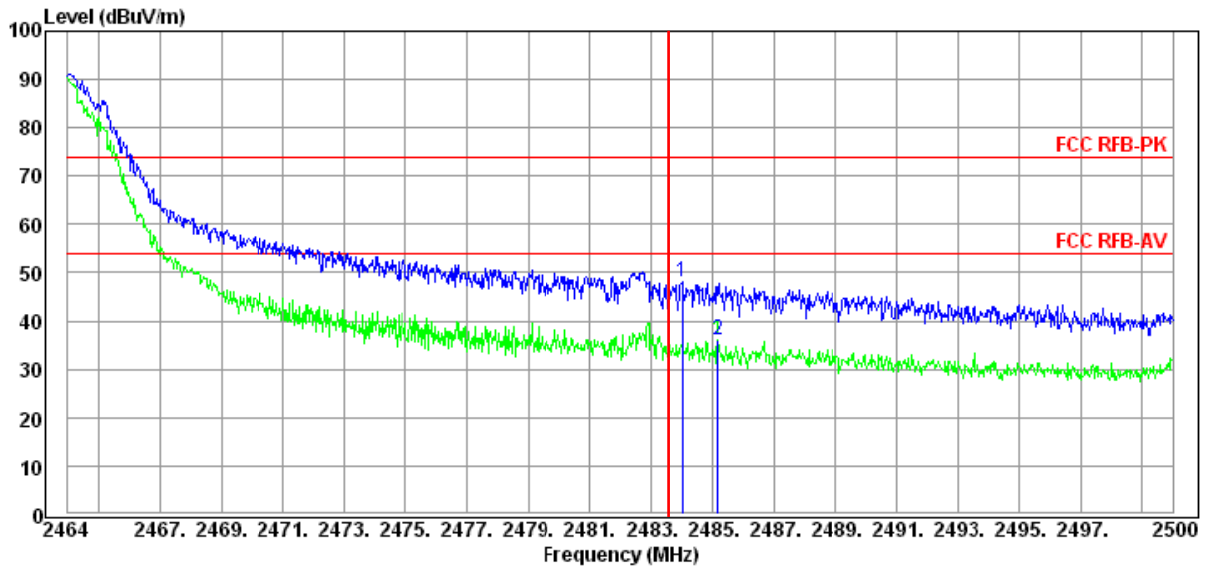
#### A. Test Verdict

Channel	Frequency (MHz)	Detector PK/AV	Max. Emission (dBuV/m)	Limit (dBuV/m)	Plot	Result
Low	2389.70	PK	44.79	74	Plot A	Pass
Low	2384.59	AV	33.19	54		Pass
High	2484.02	PK	48.26	74	Plot B	Pass
High	2485.17	AV	36.08	54		Pass

#### B. Test Plots



Plot A



Plot B





## 5.6 Conducted Emission

### 5.6.1 Requirement

According to FCC section 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 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 $\mu$ H/50 $\Omega$  line impedance stabilization network (LISN).

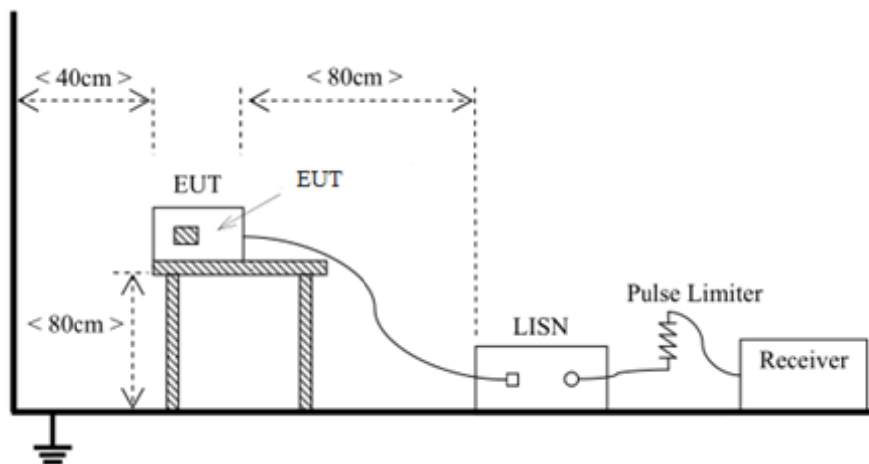
Frequency range (MHz)	Conducted Limit (dB $\mu$ V)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

Note:

(a) The lower limit shall apply at the band edges.

(b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

### 5.6.2 Test Description



Instruments setting:

- Set the span = 0.15-30MHz
- Set the RBW = 9kHz
- Set the VBW  $\geq$  3RBW
- Detector = quai-peak & average
- Sweep time = auto couple
- Allow trace to fully stabilize
- Mark suspicious frequencies points

Measurements procedure:

- The EUT was placed upon a non-metallic table 0.8m above the horizontal metal reference ground



plane and 0.4m away from the conducted wall;

2. The EUT was connected to LISN and LISN was connected to reference ground plane. EUT was 80cm from LISN. Power supplier is setting to 120V/60Hz, let the EUT work in the test mode and test it;

3. Emissions were measured on each current carrying line of the EUT using an EMI test receiver connected to the LISN powering the EUT;

4. The frequency range from 150kHz to 30MHz was searched. The test data of the worst conditions were recorded. Emission levels under limit 20dB were not recorded .

### 5.6.3 Test result

Base on client request, the different models of lamps string are tested but only the worst test data of the worst mode is recorded in this report.

Test verdict recorded for suspicious points:

1) Model No.: RGB/24/12/18/2

Line	Freq MHz	Result dB $\mu$ V	Limit dB $\mu$ V	Margin dB
Average	11.93	33.10	50.00	16.90
QP	11.93	39.14	60.00	20.86
Average	20.81	31.39	50.00	18.61
QP	20.81	37.07	60.00	22.93
Average	21.60	31.41	50.00	18.59
QP	21.60	47.24	60.00	12.76

Neutral	Freq MHz	Result dB $\mu$ V	Limit dB $\mu$ V	Margin dB
Average	11.20	35.57	50.00	14.43
QP	11.20	41.34	60.00	18.66
Average	12.00	32.58	50.00	17.42
QP	12.00	41.32	60.00	18.68
Average	21.60	30.47	50.00	19.53
QP	21.60	47.10	60.00	12.90



## 2) Model No.: RGB/36/18/18/2

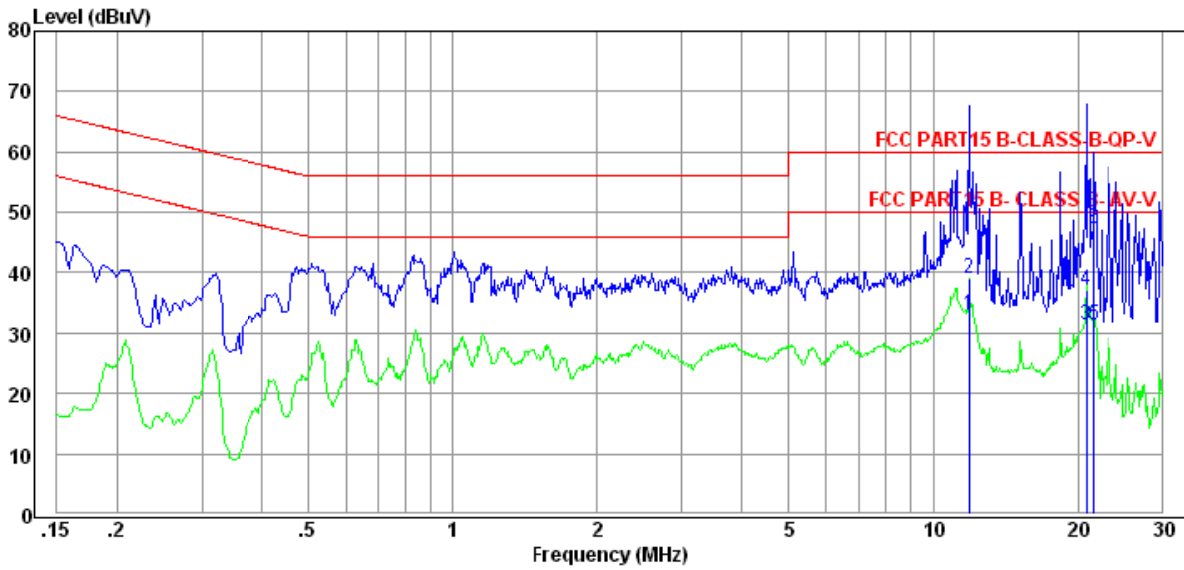
Line	Freq MHz	Result dB $\mu$ V	Limit dB $\mu$ V	Margin dB
Average	9.55	22.54	50.00	27.46
QP	9.55	30.87	60.00	29.13
Average	10.29	28.46	50.00	21.54
QP	10.29	41.11	60.00	18.89
Average	15.23	31.58	50.00	18.42
QP	15.23	42.77	60.00	17.23
Average	15.97	29.17	50.00	20.83
QP	15.97	42.61	60.00	17.39
Average	18.43	16.46	50.00	33.54
QP	18.43	29.48	60.00	30.52
Average	20.81	12.42	50.00	37.58
QP	20.81	26.49	60.00	33.51

Neutral	Freq MHz	Result dB $\mu$ V	Limit dB $\mu$ V	Margin dB
Average	9.71	24.21	50.00	25.79
QP	9.71	51.09	60.00	8.91
Average	10.18	28.45	50.00	21.55
QP	10.18	54.71	60.00	5.29
Average	10.29	27.48	50.00	22.52
QP	10.29	41.28	60.00	18.72
Average	15.15	32.05	50.00	17.95
QP	15.15	38.83	60.00	21.17
Average	15.97	28.70	50.00	21.30
QP	15.97	42.26	60.00	17.74
Average	16.75	29.93	50.00	20.07
QP	16.75	40.15	60.00	19.85

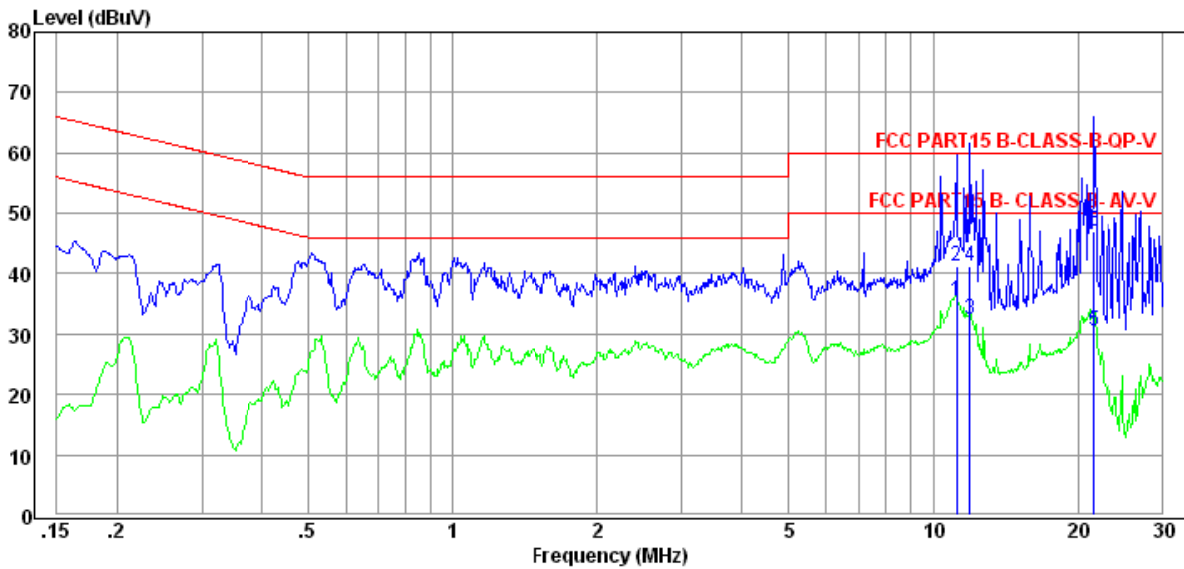


Test Plots:

1) Model No.: RGB/24/12/18/2



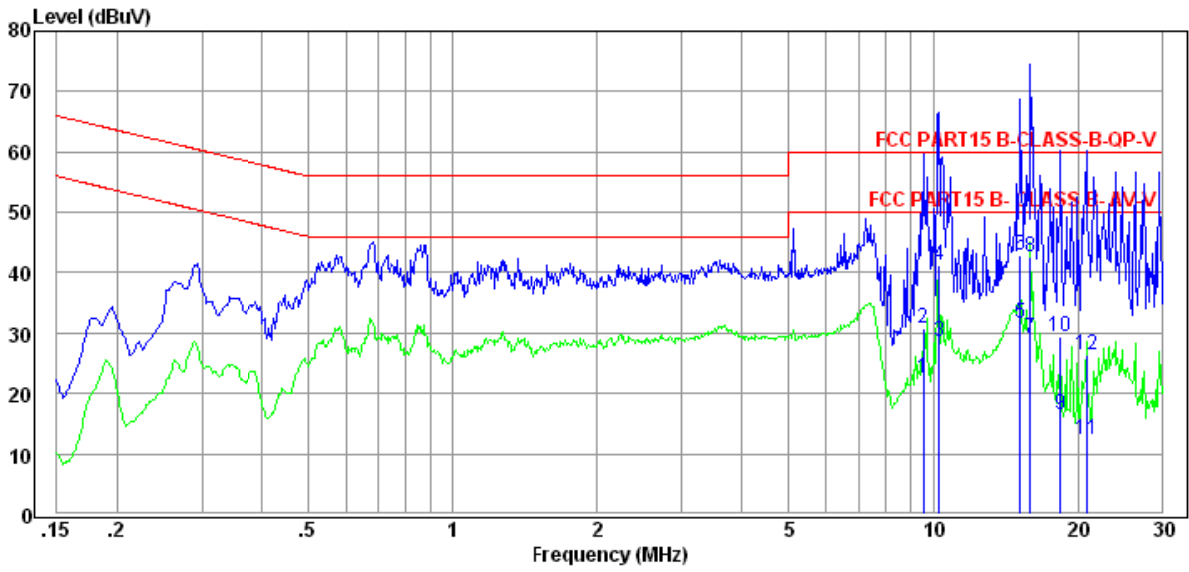
(Plot A: L Phase)



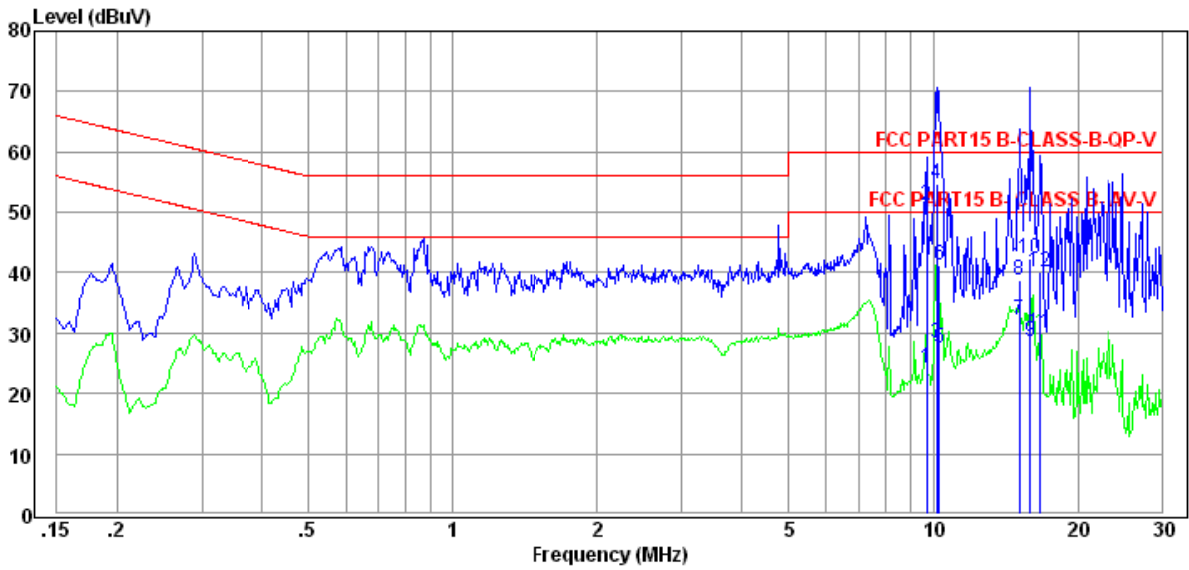
(Plot B: N Phase)



2) Model No.: RGB/36/18/18/2



(Plot C: L Phase)



(Plot D: N Phase)



## 5.7 Radiated Emission

### 5.7.1 Requirement

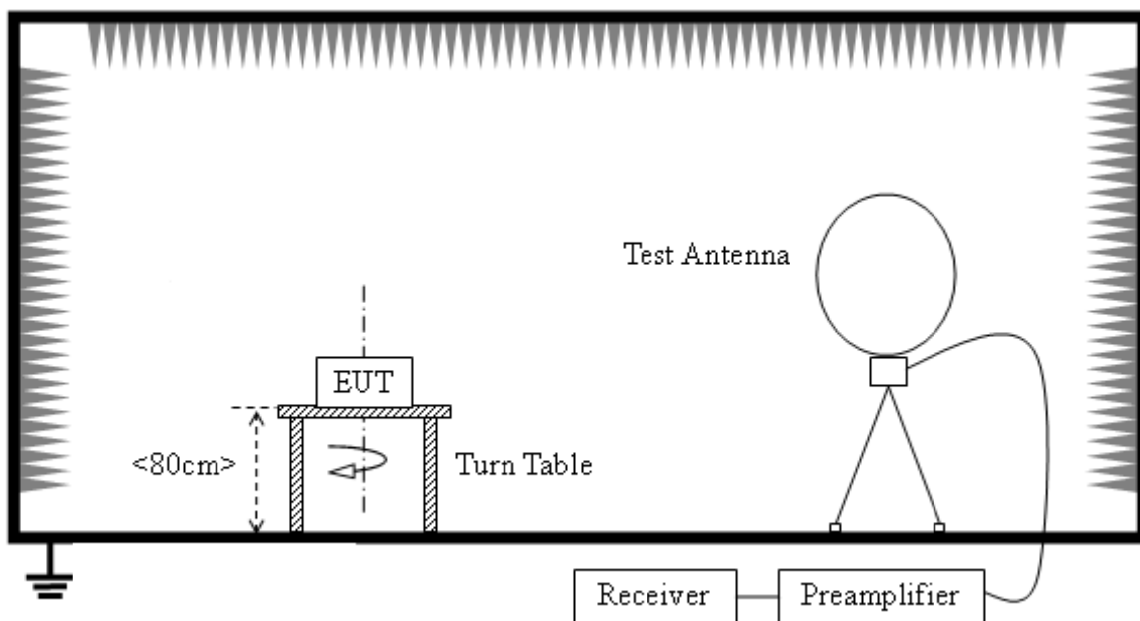
According to FCC section 15.247(c), radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

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.

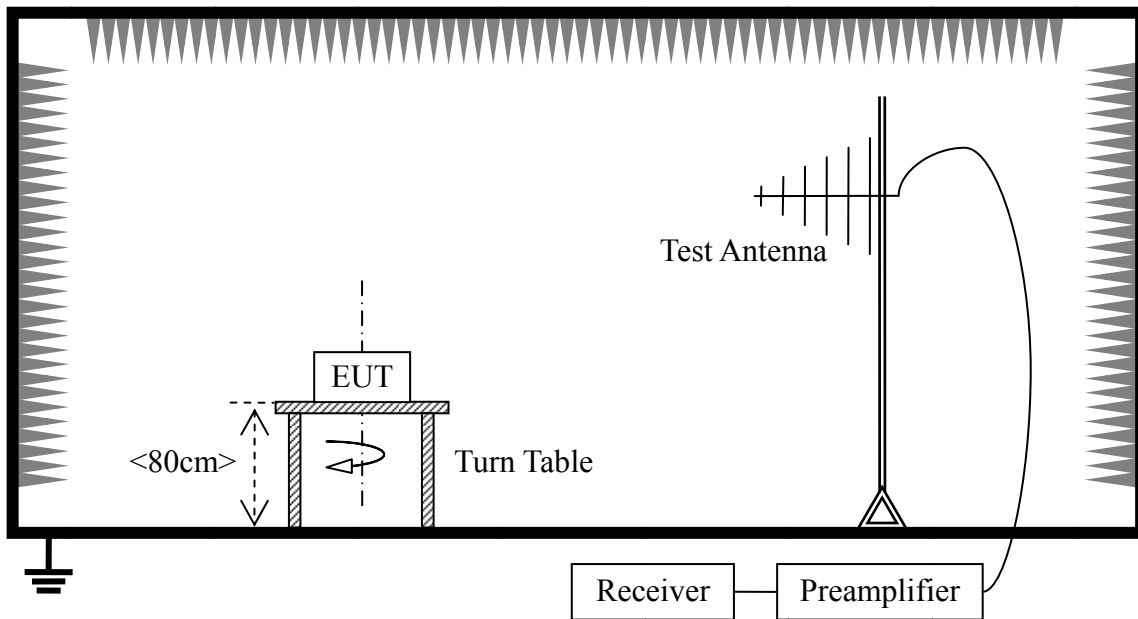
Frequency (MHz)	Field Strength ( $\mu\text{V/m}$ )	Measurement Distance (m)	Limit( $\text{dB}\mu\text{V/m}$ )	Detector
0.009-0.490	2400/F(kHz)	300	/	/
0.490-1.705	24000/F(kHz)	30	/	/
1.705-30	30	30	/	/
30 - 88	100	3	40	QP
88 - 216	150	3	43.5	QP
216 - 960	200	3	46	QP
960 - 1000	500	3	54	QP
Above 1000	500	3	54	AV

In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table)

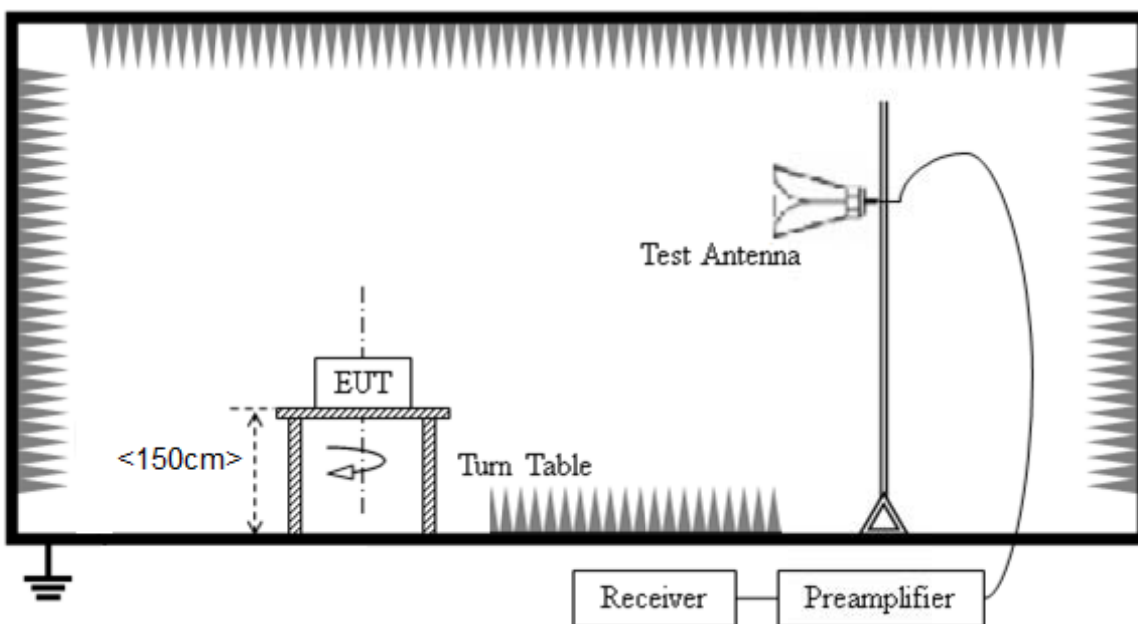
### 5.7.2 Test setup



Radiated Emissions below 30MHz



Radiated Emissions 30-1000MHz



Radiated Emissions above 1000MHz

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4dB according to the standards: ANSI C63.10-2013. Below 1GHz, the EUT was set-up on insulator 80cm above the ground plane. Above 1GHz, the EUT was set-up on insulator 150cm above the ground plane. The set-up and test methods were according to ANSI C63.10.

The EUT is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading.

For the Test Antenna: In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used.



Test procedure and instrument setting:

- 1) The EUT is placed on a turntable, which is 0.8m or 1.5m above the ground plane;
- 2) The azimuth range of turntable was 0° to 360°, the receive antenna has two polarizations horizontal and vertical;
- 3) Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength;
- 4) SA setting as below  
For 30MHz to 1GHz, RBW/VBW=100kHz/300 kHz, sweep =auto  
For above 1GHz, RBW/VBW=1MHz/2 kHz, sweep =auto
- 5) Repeat the above procedures, until all the channels tested. And the worst-case data was presented.

### 5.7.3 Test Result

#### A. Test Result for 9kHz ~ 30MHz

Frequency (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
--	--	20	--	See Note

Note:

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

Radiated emissions of EUT are tested, which contains lamp string and remoter. The same remoter and different lamp string with model RGB/24/12/18/2 and RGB/36/18/18/2 all tested, testing data for different models is recorded respectively.

Table 1: Radiated emissions for remoter and lamp string with model of RGB/24/12/18/2

Frequency (MHz)	Level (dBuV)	Limit Line (dBuV)	Margin (dB)	Antenna Polarization	Detector	Result
47.49	21.42	40.00	18.58	Horizontal	QP	PASS
236.65	20.12	46.00	25.88	Horizontal	QP	PASS
813.11	32.35	46.00	13.65	Horizontal	QP	PASS
1378.13	21.10	54.00	32.90	Horizontal	Average	PASS
1378.13	38.26	74.00	35.74	Horizontal	Peak	PASS
1496.53	21.38	54.00	32.62	Horizontal	Average	PASS
1496.53	40.71	74.00	33.29	Horizontal	Peak	PASS
1724.08	19.82	54.00	34.18	Horizontal	Average	PASS
1724.08	41.22	74.00	32.78	Horizontal	Peak	PASS





Frequency (MHz)	Level (dBuV)	Limit Line (dBuV)	Margin (dB)	Antenna Polarization	Detector	Result
2371.75	34.49	54.00	19.51	Horizontal	Average	PASS
2371.75	43.94	74.00	30.06	Horizontal	Peak	PASS
4884.74	38.60	54.00	15.40	Horizontal	Average	PASS
4884.74	46.22	74.00	27.78	Horizontal	Peak	PASS
7215.13	42.15	54.00	11.85	Horizontal	Average	PASS
7215.13	49.33	74.00	24.67	Horizontal	Peak	PASS
52.21	26.76	40.00	13.24	Vertical	QP	PASS
200.69	21.80	43.50	21.70	Vertical	QP	PASS
362.98	27.08	46.00	18.92	Vertical	QP	PASS
1329.62	23.30	54.00	30.70	Vertical	Average	PASS
1329.62	31.17	74.00	42.83	Vertical	Peak	PASS
1724.08	21.48	54.00	32.52	Vertical	Average	PASS
1724.08	31.06	74.00	42.94	Vertical	Peak	PASS
1996.95	22.80	54.00	31.20	Vertical	Average	PASS
1996.95	33.87	74.00	40.13	Vertical	Peak	PASS
2350.60	27.90	54.00	26.10	Vertical	Average	PASS
2350.60	36.19	74.00	37.81	Vertical	Peak	PASS
4884.74	47.24	54.00	6.76	Vertical	Average	PASS
4884.74	55.43	74.00	18.57	Vertical	Peak	PASS
7335.46	40.24	54.00	13.76	Vertical	Average	PASS
7335.46	48.77	74.00	25.23	Vertical	Peak	PASS

Table 2: Radiated emissions for remoter and lamp string with model of RGB/36/18/18/2

Frequency (MHz)	Level (dBuV)	Limit Line (dBuV)	Margin (dB)	Antenna Polarization	Detector	Result
86.20	31.59	40.00	8.41	Horizontal	QP	PASS
104.54	31.56	43.50	11.94	Horizontal	QP	PASS
191.07	28.56	43.50	14.94	Horizontal	QP	PASS
1512.70	17.66	54.00	36.34	Horizontal	Average	PASS
1512.70	29.43	74.00	44.57	Horizontal	Peak	PASS
2410.31	25.53	54.00	28.47	Horizontal	Average	PASS
2410.31	35.56	74.00	38.44	Horizontal	Peak	PASS
2752.04	30.24	54.00	23.76	Horizontal	Average	PASS
2752.04	44.84	74.00	29.16	Horizontal	Peak	PASS
2791.78	31.80	54.00	22.20	Horizontal	Average	PASS
2791.78	46.62	74.00	27.38	Horizontal	Peak	PASS
2806.82	33.05	54.00	20.95	Horizontal	Average	PASS
2806.82	46.58	74.00	27.42	Horizontal	Peak	PASS
4844.21	27.83	54.00	26.17	Horizontal	Average	PASS



Frequency (MHz)	Level (dBuV)	Limit Line (dBuV)	Margin (dB)	Antenna Polarization	Detector	Result
4844.21	46.78	74.00	27.22	Horizontal	Peak	PASS
7322.15	40.27	54.00	13.73	Horizontal	Average	PASS
7322.15	49.18	74.00	24.82	Horizontal	Peak	PASS
35.13	28.98	40.00	11.02	Vertical	QP	PASS
58.20	35.95	40.00	4.05	Vertical	QP	PASS
87.11	31.79	40.00	8.21	Vertical	QP	PASS
1334.39	17.86	54.00	36.14	Vertical	Average	PASS
1334.39	30.12	74.00	43.88	Vertical	Peak	PASS
1764.71	18.12	54.00	35.88	Vertical	Average	PASS
1764.71	32.28	74.00	41.72	Vertical	Peak	PASS
2414.63	26.69	54.00	27.31	Vertical	Average	PASS
2414.63	34.77	74.00	39.23	Vertical	Peak	PASS
2752.04	29.97	54.00	24.03	Vertical	Average	PASS
2752.04	44.56	74.00	29.44	Vertical	Peak	PASS
2806.84	32.83	54.00	21.17	Vertical	Average	PASS
2806.84	46.44	74.00	27.56	Vertical	Peak	PASS
4844.21	47.82	54.00	6.18	Vertical	Average	PASS
4844.21	57.35	74.00	16.65	Vertical	Peak	PASS
7322.43	40.24	54.00	13.76	Vertical	Average	PASS
7322.43	51.18	74.00	22.82	Vertical	Peak	PASS

*Note:*

- 1) Radiated emissions measured in frequency above 1GHz were made with an instrument using peak/average detector mode.*
- 2) All working modes and different channels are measured, and only the worst -case data is recorded in the report.*



## Annex A Photos of the EUT



model number : RGB/24/12/18/2



model number: RGB/36/18/18/2



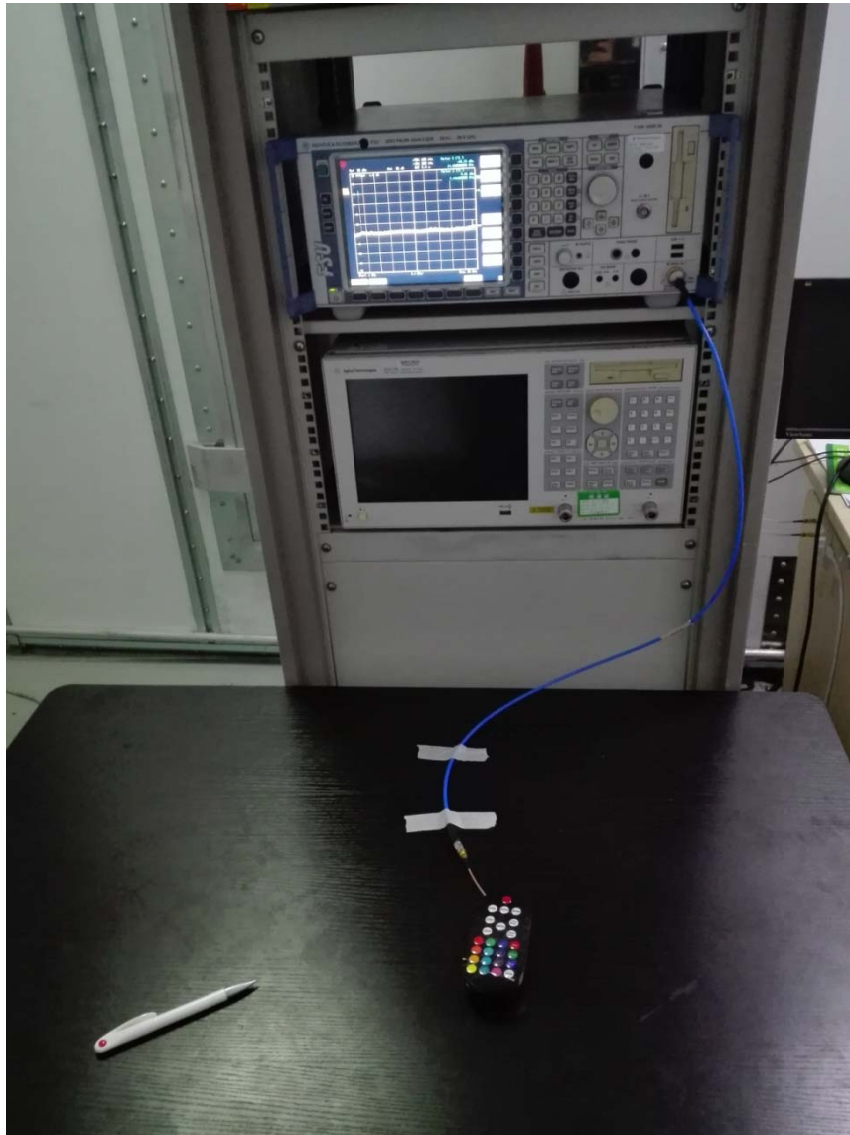






## Annex B Photos of Setup

### 1. RF

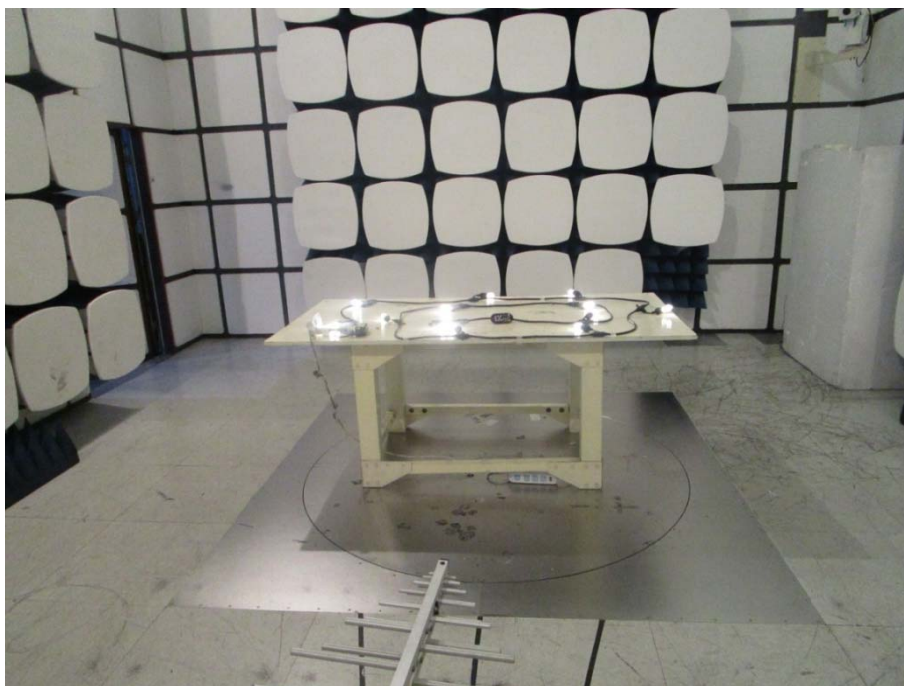




## 2. Conducted Emission



## 3. Radiated Emission





**\*\* END OF REPORT \*\***