APPLICATION CERTIFICATION FCC Part 15C
On Behalf of

SHENZHEN AVATARCONTROLS CO., LTD.

LED Strip Light

Model No.: ASL02

FCC ID: 2ANJP-ASL02

Prepared for	:	SHENZHEN AVATARCONTROLS CO., LTD.
Address	:	Room 502, 5F, W1-A Block, High-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, China
Prepared by	:	Shenzhen Accurate Technology Co., Ltd.
Address	:	1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China
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Report No.	:	ATE20180194
Date of Test	:	February 28-March 7, 2018
Date of Report	:	March 20, 2018

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Description Page

Test Report Certification

Applicant	:	SHENZHEN AVATARCONTROLS CO., LTD.
Manufacturer	:	VIVANT (Dongguan) Intelligent Technolgy Co., Ltd
Product	:	LED Strip Light
Model No.	:	ASL02
Trade name	:	,

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247: 2017
ANSI C63.10: 2013

The EUT was tested according to DTS test procedure of Apr 05, 2017 KDB558074 D01 DTS Meas Guidance v04 for compliance to FCC 47CFR 15.247 requirements

The device described above is tested by Shenzhen Accurate Technology Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.247 limits. The measurement results are contained in this test report and Shenzhen Accurate Technology Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Shenzhen Accurate Technology Co., Ltd.

Date of Test :	February 28-March 7, 2018
Date of Report :	March 20, 2018

Prepared by : (Bob Wang, Engineer)

Approved & Authorized Signer : (Sean Liu, Manager)

1. GENERAL INFORMATION

1.1.Description of Device (EUT)

EUT	:	LED Strip Light
Model Number	:	ASL02
Trade Mark	:	
Frequency Range	:	802.11b/g/n(20MHz): 2412-2462MHz
Number of Channels	:	802.11b/g/n (20MHz):11
Antenna Gain	:	2dBi
Type of Antenna	:	Integral antenna
Power Supply	:	DC 12V(Power by Adapter)
Adapter	:	Model: SK03T1-1200200U Input: AC 100-240V; 50/60Hz Output: DC 12V; 2A
Data Rate	:	802.11b: 11, 5.5, 2, 1 Mbps 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11n: 72.2~6.5Mbps
Modulation Type	:	DSSS, OFDM
Applicant	:	SHENZHEN AVATARCONTROLS CO., LTD.
Address	:	Room 502, 5F, W1-A Block, High-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, China
Manufacturer	:	VIVANT (Dongguan) Intelligent Technolgy Co., Ltd
Address	:	Room 401, Building 6 of Business Accelerator, No.24 Industry East Road, Songshanhu High-tech Industry Development Zone, Dongguan, Guangdong, China
Date of sample received	:	February 5, 2018
Date of Test	:	February 28-March 7, 2018
Sample number	:	1800148

1.2.Carrier Frequency of Channels

802.11b, 802.11g, 802.11n (20MHz)

Channel	Frequency(MHz)	Channel	Frequency(MHz)
01	2412	07	2442
02	2417	08	2447
03	2422	09	2452
04	2427	10	2457
05	2432	11	2462
06	2437	---	---

1.3.Accessory and Auxiliary Equipment

N/A

1.4.Description of Test Facility

EMC Lab	:	Recognition of accreditation by Federal Communications Commission (FCC) The Designation Number is CN1189 The Registration Number is 708358 Listed by Innovation, Science and Economic Development Canada (ISEDC) The Registration Number is 5077A-2 Accredited by China National Accreditation Service for Conformity Assessment (CNAS) The Registration Number is CNAS L3193 Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 4297.01
Name of Firm	:	Shenzhen Accurate Technology Co., Ltd.
Site Location	:	1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

1.5.Measurement Uncertainty

Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty (9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty (30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty (Above 1GHz)	=	4.06dB, k=2

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated dates	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 06, 2018	1 Year
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 06, 2018	1 Year
Spectrum Analyzer	Rohde&Schwarz	FSV-40	101495	Jan. 06, 2018	1 Year
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 06, 2018	1 Year
Pre-Amplifier	Rohde&Schwarz	CBLU1183540-01	3791	Jan. 06, 2018	1 Year
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 12, 2018	1 Year
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 12, 2018	1 Year
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 12, 2018	1 Year
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 12, 2018	1 Year
Open Switch and Control Unit	Rohde&Schwarz	OSP120 + OSP-B157	101244 + 100866	Jan. 06, 2018	1 Year
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 06, 2018	1 Year
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 06, 2018	1 Year
Highpass Filter	Wainwright Instruments	WHKX3.6/18G-10SS	N/A	Jan. 06, 2018	1 Year
Band Reject Filter	Wainwright Instruments	WRCG2400/2485-2375/2510-60/11SS	N/A	Jan. 06, 2018	1 Year

3. OPERATION OF EUT DURING TESTING

3.1.Operating Mode

The mode is used: **1.802.11b Transmitting mode**
Low Channel: 2412MHz
Middle Channel: 2437MHz
High Channel: 2462MHz

2.802.11g Transmitting mode
Low Channel: 2412MHz
Middle Channel: 2437MHz
High Channel: 2462MHz

3.802.11n (20MHz) Transmitting mode
Low Channel: 2412MHz
Middle Channel: 2437MHz
High Channel: 2462MHz

3.2.Configuration and peripherals

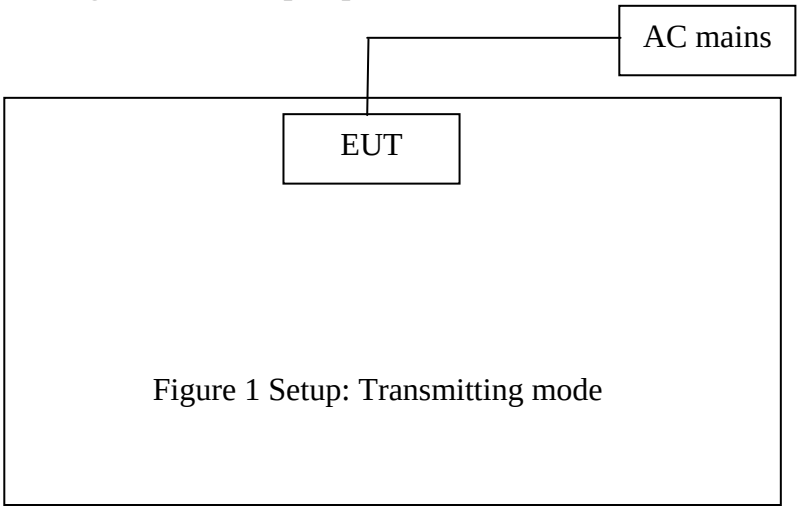


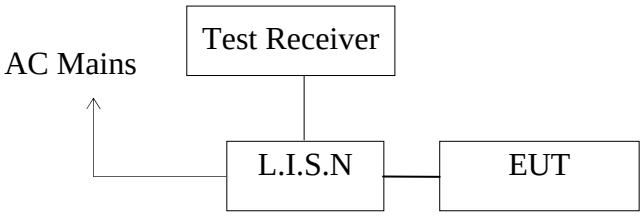
Figure 1 Setup: Transmitting mode

4. TEST PROCEDURES AND RESULTS

FCC Rules	Description of Test	Result
Section 15.207	Power Line Conducted Emission	Compliant
Section 15.247(a)(2)	6dB Bandwidth Test	Compliant
KDB558074 D01 DTS Meas Guidance v04	Duty cycle	Compliant
KDB558074 D01 DTS Meas Guidance v04	99% Occupied Bandwidth	Compliant
Section 15.247(e)	Power Spectral Density Test	Compliant
Section 15.247(b)(3)	Maximum average Output Power Test	Compliant
Section 15.247(d)	Band Edge Compliance Test	Compliant
Section 15.247(d) Section 15.209	Radiated Spurious Emission Test	Compliant
Section 15.203	Antenna Requirement	Compliant

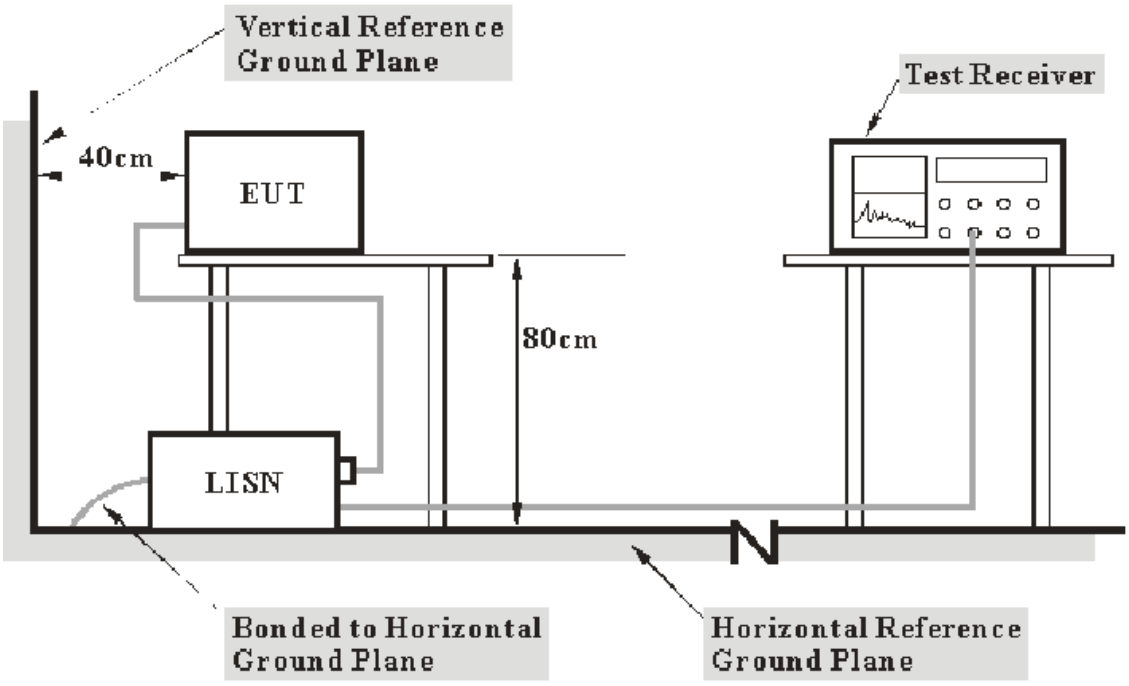
5. POWER LINE CONDUCTED MEASUREMENT

5.1.Block Diagram of Test Setup



(EUT: LED Strip Light)

5.1.1. Test System Setup



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

5.2.Power Line Conducted Emission Measurement Limits

Frequency (MHz)	Limit dB(μV)	
	Quasi-peak Level	Average Level
0.15 - 0.50	66.0 – 56.0 *	56.0 – 46.0 *
0.50 - 5.00	56.0	46.0
5.00 - 30.00	60.0	50.0
NOTE1: The lower limit shall apply at the transition frequencies. NOTE2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.		

5.3.Configuration of EUT on Measurement

The equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

5.4.Operating Condition of EUT

5.4.1. Setup the EUT and simulator as shown as Section 5.1.

5.4.2. Turn on the power of all equipment.

5.4.3. Let the EUT work in test mode and measure it.

5.5.Test Procedure

The EUT is put on the plane 0.8 m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2013 on Conducted Emission Measurement.
The bandwidth of test receiver (R & S ESCS30) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

5.6.Data Sample

Frequency (MHz)	Transducer value (dB)	QuasiPeak Level (dBμV)	Average Level (dBμV)	QuasiPeak Limit (dBμV)	Average Limit (dBμV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
X.XX	10.5	51.1	34.2	56.0	46.0	4.9	11.8	Pass

Frequency(MHz) = Emission frequency in MHz
Transducer value(dB) = Insertion loss of LISN + Cable Loss
Level(dBμV) = Quasi-peak Reading/Average Reading + Transducer value
Limit (dBμV) = Limit stated in standard
Margin = Limit (dBμV) - Level (dBμV)

Calculation Formula:
Margin = Limit (dBμV) - Level (dBμV)

5.7.Power Line Conducted Emission Measurement Results

PASS.

The frequency range from 150kHz to 30MHz is checked.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.
Emissions attenuated more than 20 dB below the permissible value are not reported.

All data was recorded in the Quasi-peak and average detection mode.

The spectral diagrams are attached as below.

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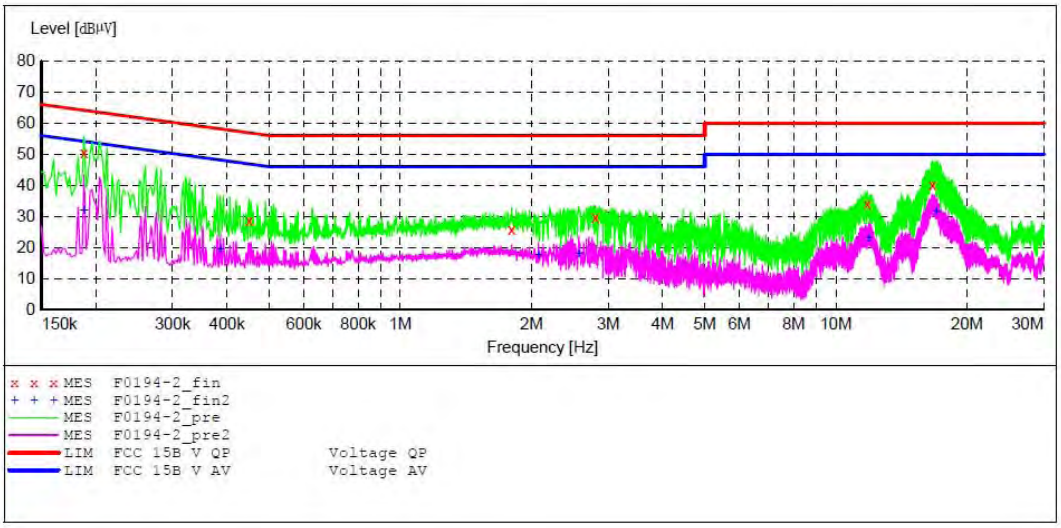
CONDUCTED EMISSION STANDARD FCC PART 15B

```
EUT:                  LED Strip Light  M/N:ASL02
Manufacturer:         VIVANT (Dongguan)Intelligent Technolgy Co.,Ltd
Operating Condition:  ON
Test Site:            1#Shielding Room
Operator:             Frank
Test Specification:   N  120V/60Hz
Comment:              Report NO.:ATE20180194
Start of Test:        2018-2-28 / 10:51:44
```

SCAN TABLE: "V 150K-30MHz fin"

```
  Short Description:            _SUB_STD_VTERM2 1.70
  Start      Stop       Step      Detector  Meas.     IF       Transducer
  Frequency  Frequency  Width               Time      Bandw.
  150.0 kHz  30.0 MHz   4.5 kHz   QuasiPeak 1.0 s     9 kHz    NSLK8126 2008
                                  Average
```



MEASUREMENT RESULT: "F0194-2_fin"

2018-2-28 10:53

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.188000	50.60	10.8	64	13.5	QP	N	GND
0.450000	28.70	11.0	57	28.2	QP	N	GND
1.802000	25.70	11.2	56	30.3	QP	N	GND
2.805000	29.70	11.3	56	26.3	QP	N	GND
11.810000	34.20	11.6	60	25.8	QP	N	GND
16.650000	40.00	11.7	60	20.0	QP	N	GND

MEASUREMENT RESULT: "F0194-2_fin2"

2018-2-28 10:53

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.188000	31.80	10.8	54	22.3	AV	N	GND
0.386000	19.50	11.0	48	28.6	AV	N	GND
2.075000	17.70	11.3	46	28.3	AV	N	GND
2.570000	17.90	11.3	46	28.1	AV	N	GND
11.920000	23.20	11.6	50	26.8	AV	N	GND
17.005000	31.70	11.7	50	18.3	AV	N	GND

ACCURATE TECHNOLOGY CO.,LTD

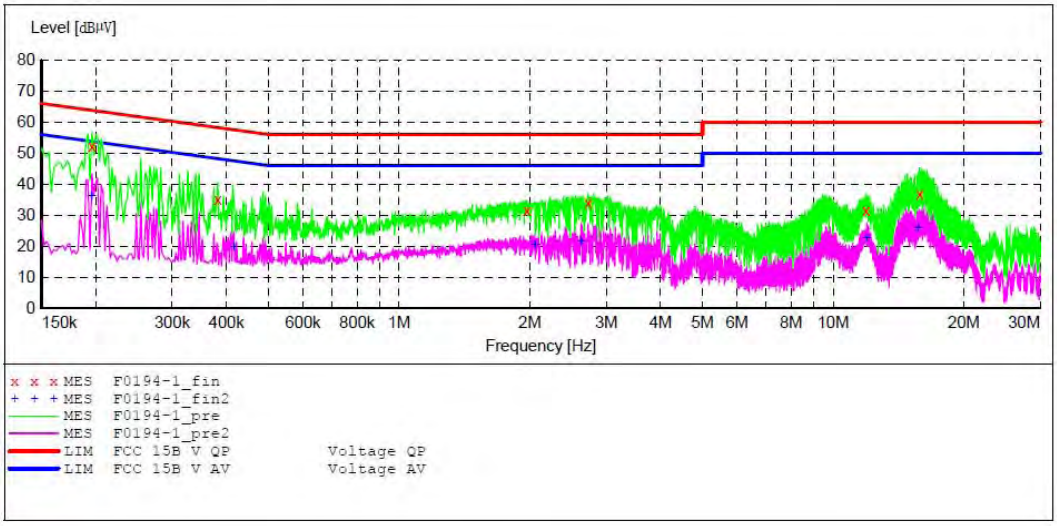
CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: LED Strip Light M/N:ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co.,Ltd
Operating Condition: ON
Test Site: 1#Shielding Room
Operator: Frank
Test Specification: L 120V/60Hz
Comment: Report NO.:ATE20180194
Start of Test: 2018-2-28 / 10:49:25

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak Average	1.0 s	9 kHz	NSLK8126 2008



MEASUREMENT RESULT: "F0194-1_fin"

2018-2-28 10:51

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.196000	52.20	10.8	64	11.6	QP	L1	GND
0.382000	35.10	10.9	58	23.1	QP	L1	GND
1.970000	31.60	11.3	56	24.4	QP	L1	GND
2.725000	34.20	11.3	56	21.8	QP	L1	GND
11.910000	31.60	11.6	60	28.4	QP	L1	GND
15.830000	37.00	11.7	60	23.0	QP	L1	GND

MEASUREMENT RESULT: "F0194-1_fin2"

2018-2-28 10:51

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.196000	36.20	10.8	54	17.6	AV	L1	GND
0.416000	19.70	11.0	48	27.8	AV	L1	GND
2.055000	20.60	11.3	46	25.4	AV	L1	GND
2.625000	21.70	11.3	46	24.3	AV	L1	GND
11.955000	22.50	11.6	50	27.5	AV	L1	GND
15.690000	25.90	11.7	50	24.1	AV	L1	GND

ACCURATE TECHNOLOGY CO.,LTD

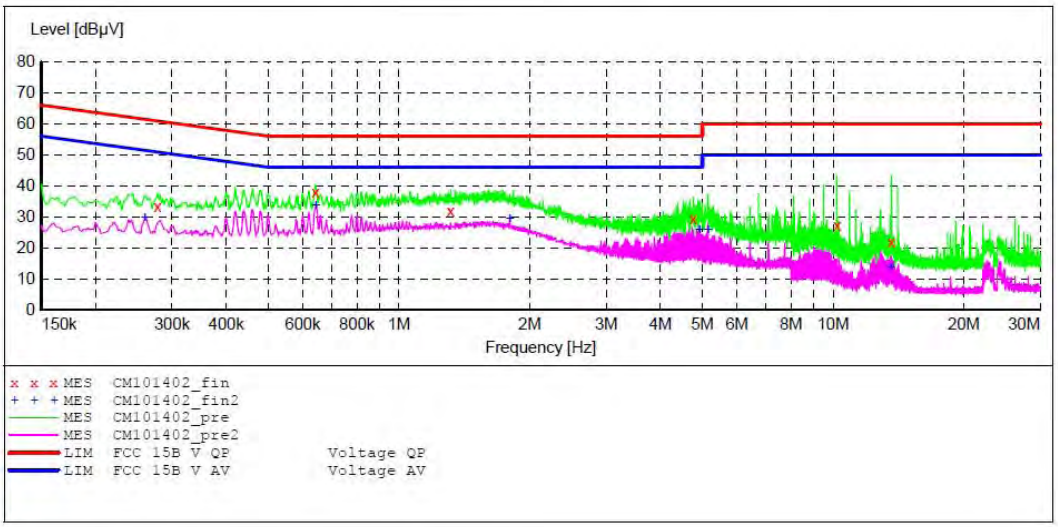
CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: LED Strip Light M/N:ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co.,Ltd
Operating Condition: ON
Test Site: 1#Shielding Room
Operator: Frank
Test Specification: N 240V/60Hz
Comment: Report NO.:ATE20180194
Start of Test: 2018-2-28 / 9:24:54

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak Average	1.0 s	9 kHz	NSLK8126 2008



MEASUREMENT RESULT: "CM101402_fin"

2018-2-28 9:26

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.278000	33.30	10.9	61	27.6	QP	N	GND
0.642000	38.20	11.0	56	17.8	QP	N	GND
1.314000	32.10	11.2	56	23.9	QP	N	GND
4.760000	29.30	11.4	56	26.7	QP	N	GND
10.210000	27.30	11.6	60	32.7	QP	N	GND
13.620000	22.10	11.6	60	37.9	QP	N	GND

MEASUREMENT RESULT: "CM101402_fin2"

2018-2-28 9:26

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.260000	29.70	10.9	51	21.7	AV	N	GND
0.644000	33.70	11.0	46	12.3	AV	N	GND
1.800000	29.60	11.2	46	16.4	AV	N	GND
4.920000	26.00	11.4	46	20.0	AV	N	GND
5.155000	25.90	11.4	50	24.1	AV	N	GND
13.555000	13.70	11.6	50	36.3	AV	N	GND

ACCURATE TECHNOLOGY CO.,LTD

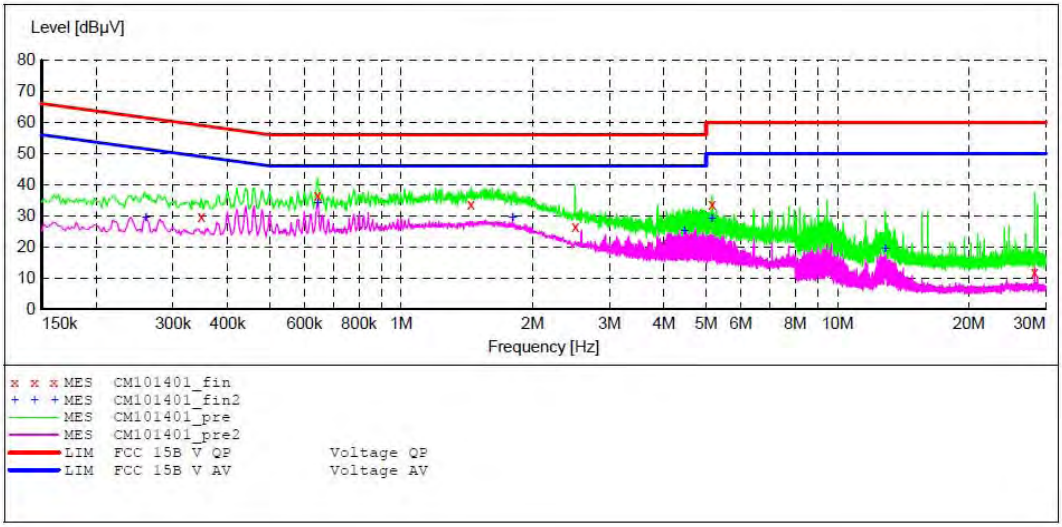
CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: LED Strip Light M/N:ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co.,Ltd
Operating Condition: ON
Test Site: 1#Shielding Room
Operator: Frank
Test Specification: L 240V/60Hz
Comment: Report NO.:ATE20180194
Start of Test: 2018-2-28 / 9:22:00

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak Average	1.0 s	9 kHz	NSLK8126 2008



MEASUREMENT RESULT: "CM101401_fin"

2018-2-28 9:24

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.348000	29.90	10.9	59	29.1	QP	L1	GND
0.644000	36.70	11.0	56	19.3	QP	L1	GND
1.446000	33.60	11.2	56	22.4	QP	L1	GND
2.505000	26.60	11.3	56	29.4	QP	L1	GND
5.160000	33.80	11.4	60	26.2	QP	L1	GND
28.270000	11.80	11.8	60	48.2	QP	L1	GND

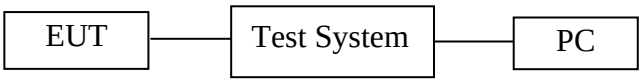
MEASUREMENT RESULT: "CM101401_fin2"

2018-2-28 9:24

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.260000	29.50	10.9	51	21.9	AV	L1	GND
0.644000	34.00	11.0	46	12.0	AV	L1	GND
1.800000	29.50	11.2	46	16.5	AV	L1	GND
4.460000	25.30	11.4	46	20.7	AV	L1	GND
5.160000	29.00	11.4	50	21.0	AV	L1	GND
12.875000	19.40	11.6	50	30.6	AV	L1	GND

6. 6DB BANDWIDTH MEASUREMENT

6.1. Block Diagram of Test Setup



6.2. The Requirement For Section 15.247(a)(2)

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

6.3. EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

6.4. Operating Condition of EUT

6.4.1. Setup the EUT and simulator as shown as Section 6.1.

6.4.2. Turn on the power of all equipment.

6.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 . We select 2412MHz, 2437MHz, 2462MHz TX frequency to transmit.

6.5. Test Procedure

1. Set resolution bandwidth (RBW) = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

6.6.Test Result

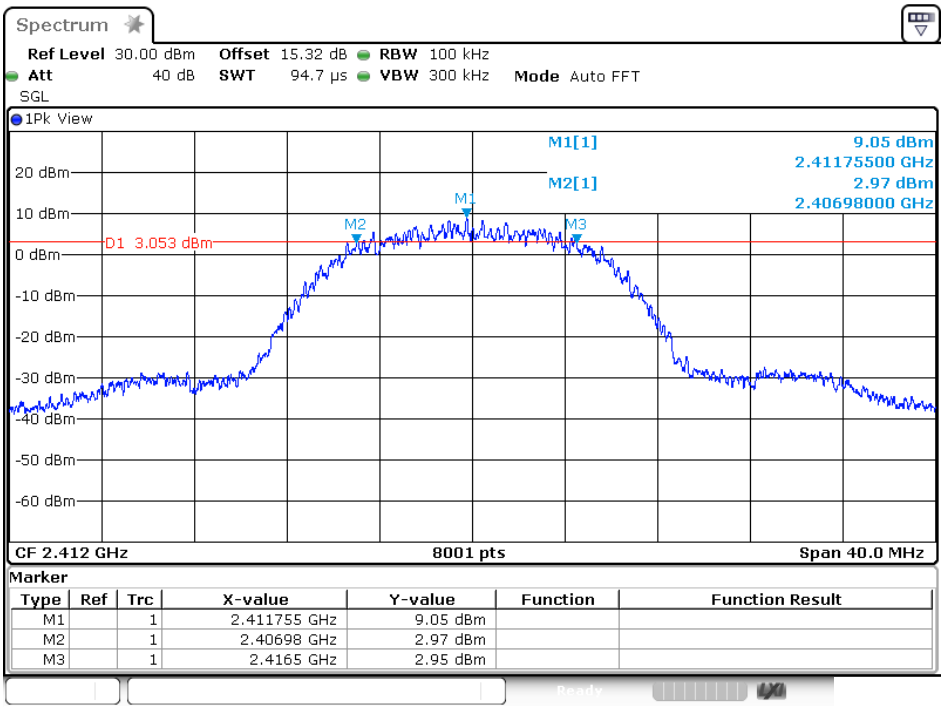
The test was performed with 802.11b			
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
Low	2412	9.520	> 0.5MHz
Middle	2437	9.515	> 0.5MHz
High	2462	9.510	> 0.5MHz

The test was performed with 802.11g			
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
Low	2412	16.490	> 0.5MHz
Middle	2437	16.340	> 0.5MHz
High	2462	16.495	> 0.5MHz

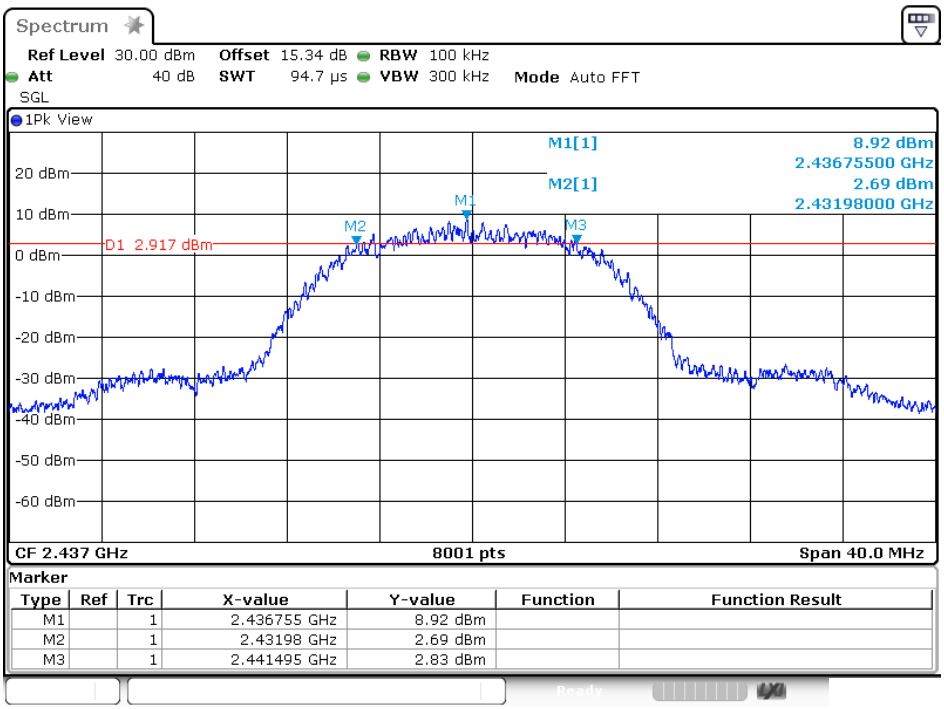
The test was performed with 802.11n (Bandwidth: 20 MHz)			
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
Low	2412	17.585	> 0.5MHz
Middle	2437	17.580	> 0.5MHz
High	2462	17.590	> 0.5MHz

The spectrum analyzer plots are attached as below.

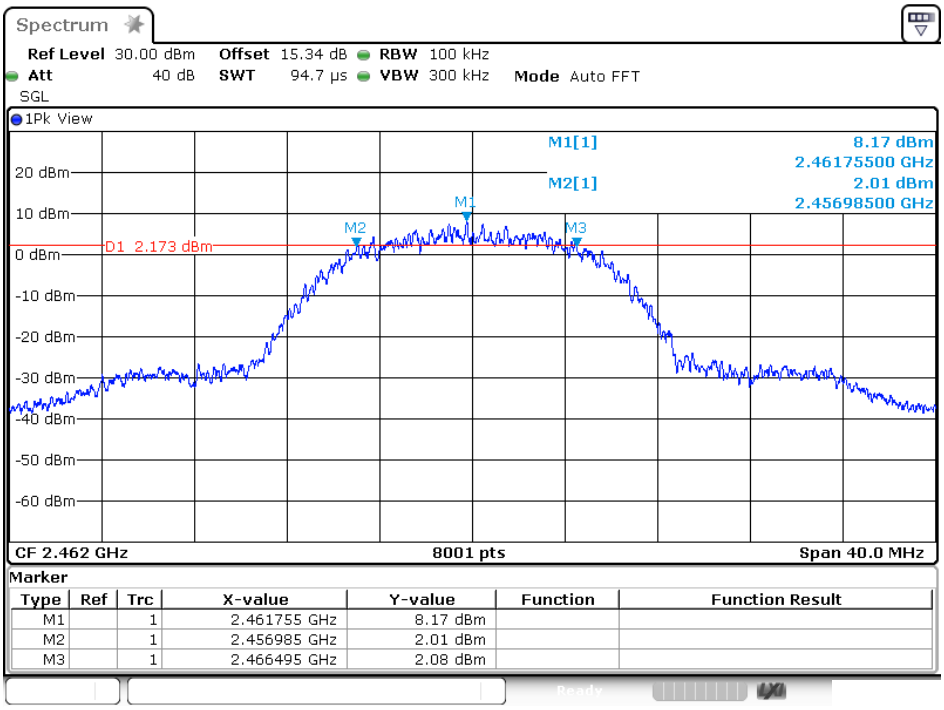
802.11b Channel Low 2412MHz



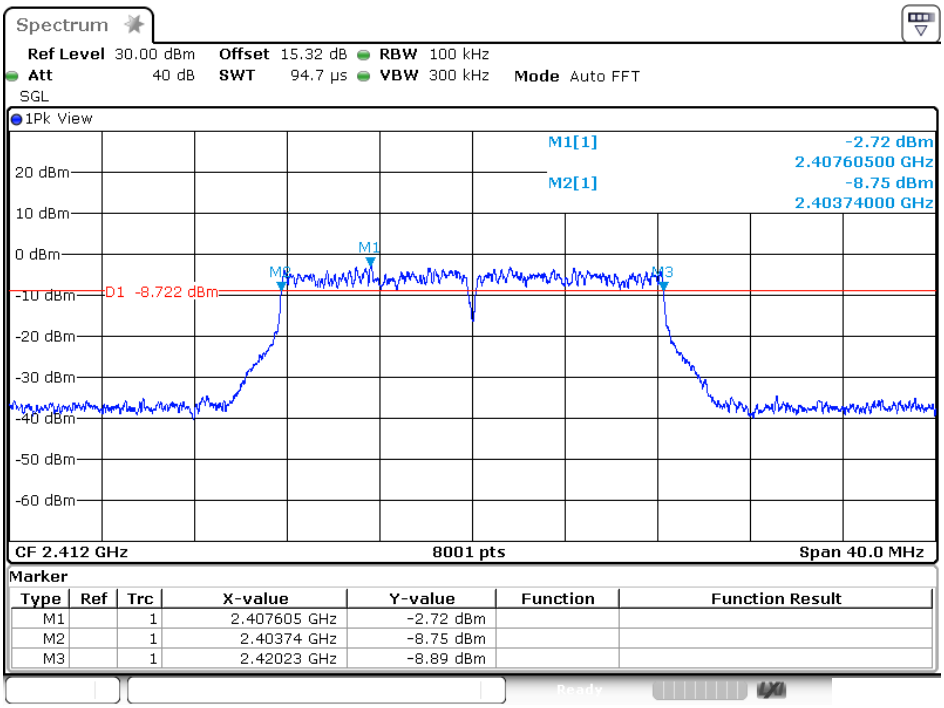
802.11b Channel Middle 2437MHz



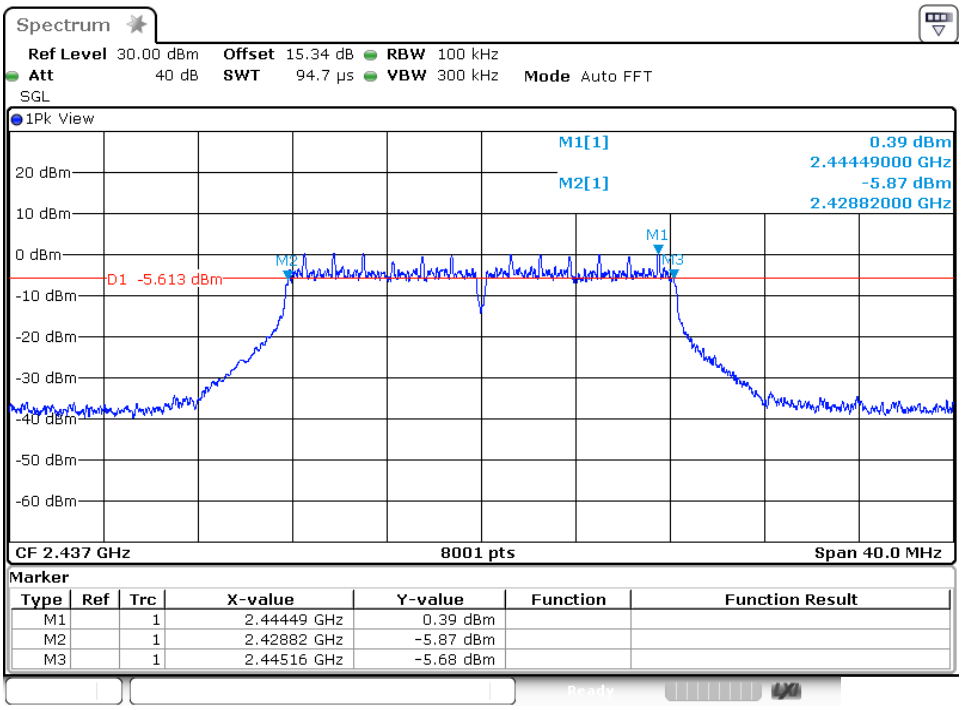
802.11b Channel High 2462MHz



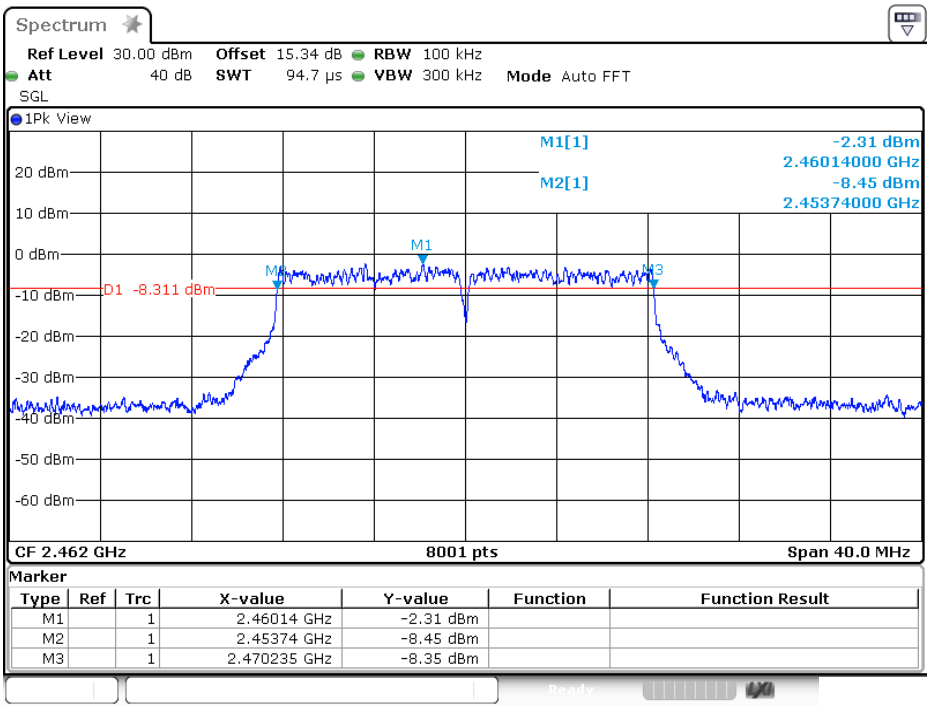
802.11g Channel Low 2412MHz



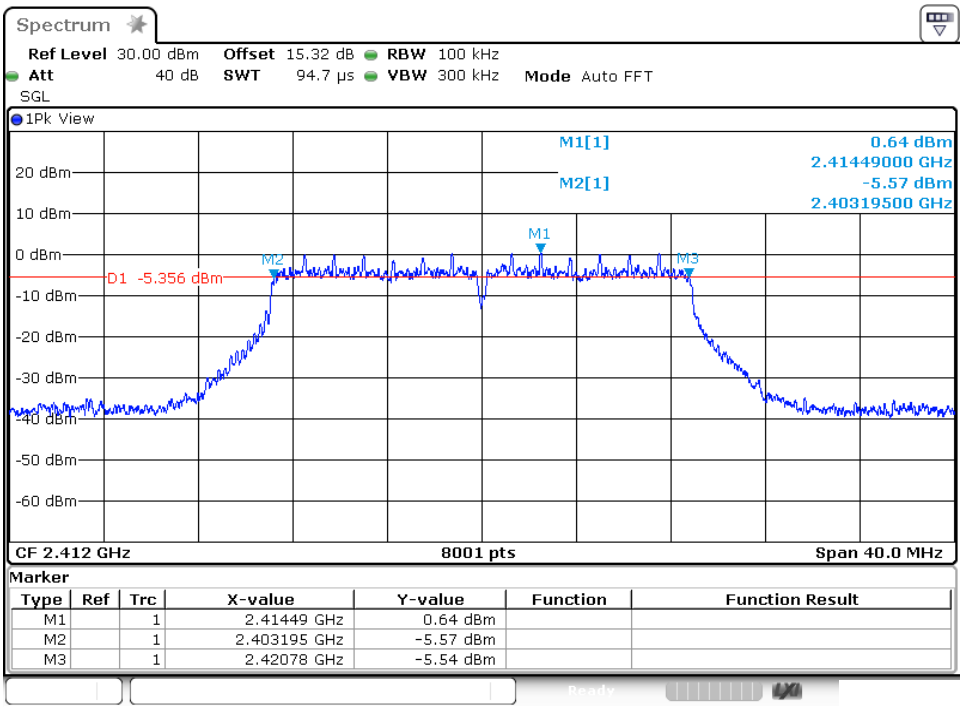
802.11g Channel Middle 2437MHz



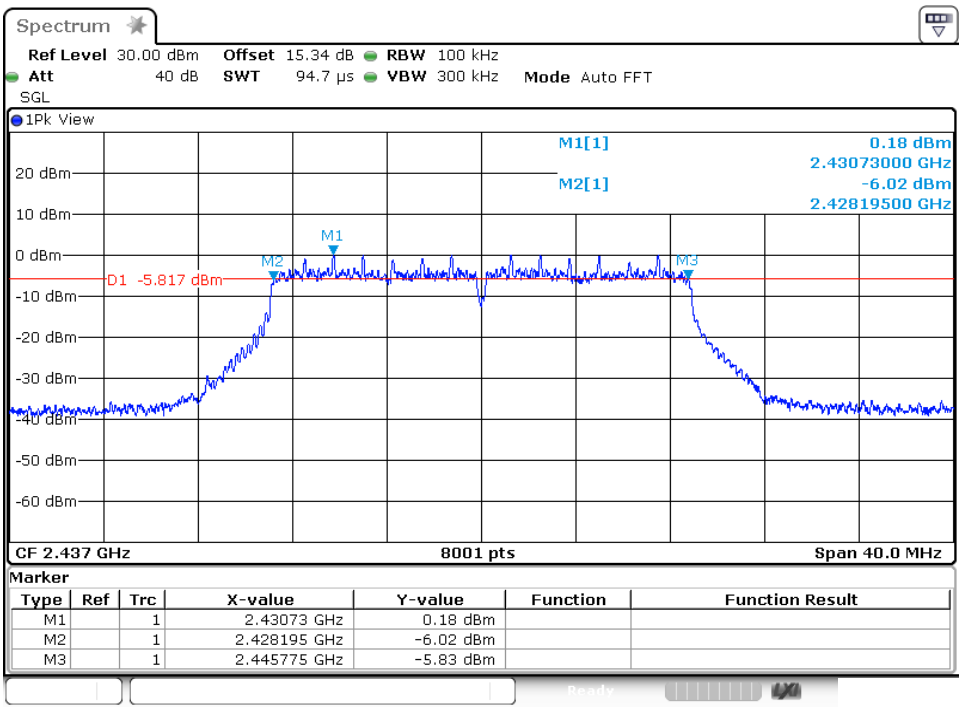
802.11g Channel High 2462MHz



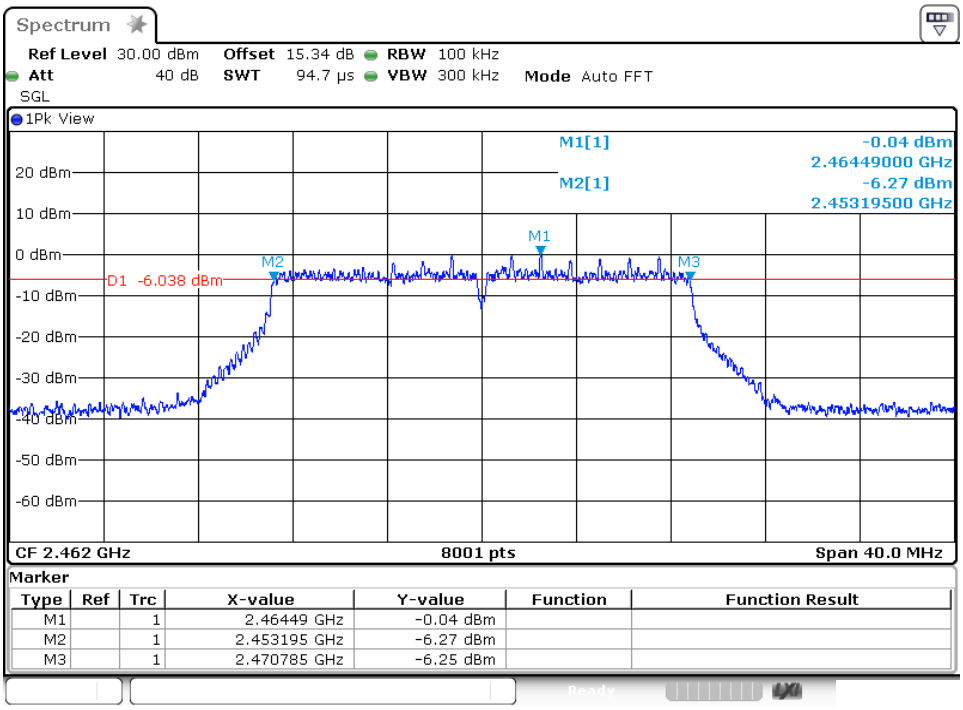
802.11n Channel Low 2412MHz (20MHz)



802.11n Channel Middle 2437MHz(20MHz)

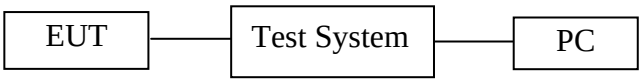


802.11n Channel High 2462MHz(20MHz)



7. DUTY CYCLE MEASUREMENT

7.1. Block Diagram of Test Setup



7.2. EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

7.3. Operating Condition of EUT

7.3.1. Setup the EUT and simulator as shown as Section 7.1.

7.3.2. Turn on the power of all equipment.

7.3.3. Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 . We select 2412MHz, 2437MHz, 2462MHz TX frequency to transmit.

7.4. Test Procedure

Measurements of duty cycle and transmission duration shall be performed using one of the following techniques:
1. A diode detector and an oscilloscope that together have sufficiently short response time to permit accurate measurements of the on- and off-times of the transmitted signal.
2. The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on- and off-times of the transmitted signal
a. Set the center frequency of the instrument to the centre frequency of the transmission
b. Set RBW ≥ OBW if possible; otherwise, set RBW to the largest
available value(10MHz).
c. Set detector = Peak or average.
d. The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100.
(For example, if VBW and/or RBW are limited to 3MHz, then the zero-span method of measuring duty cycle shall not be used if T≤16.7 microseconds.)

7.5.Test Result

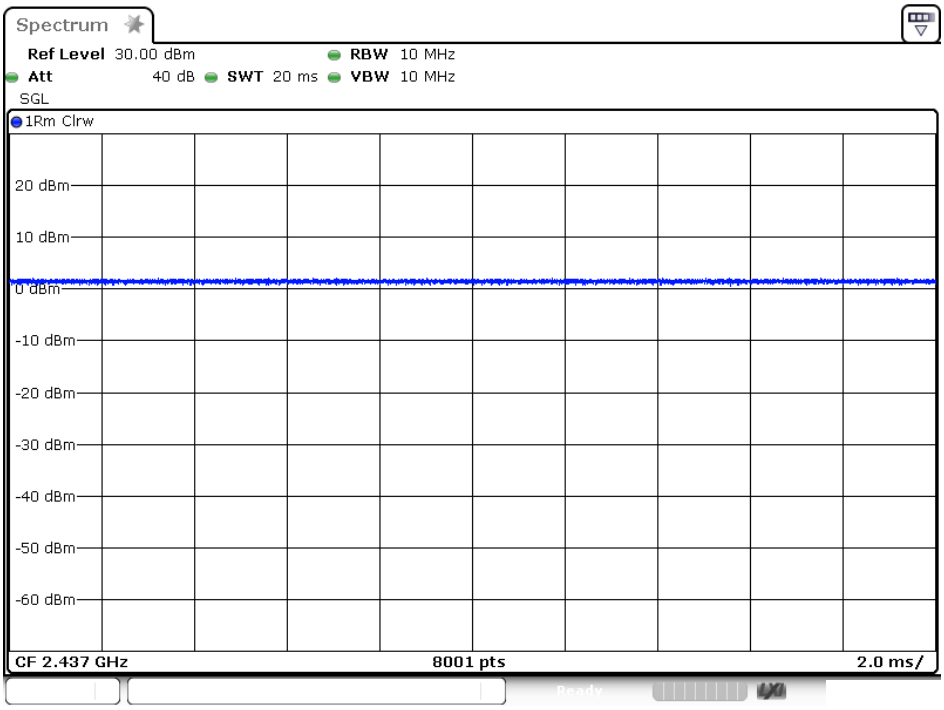
The test was performed with 802.11b			
Channel	Frequency (MHz)	duty cycle(x)	10log(1/x)
Middle	2437	100%	0

The test was performed with 802.11g			
Channel	Frequency (MHz)	duty cycle(x)	10log(1/x)
Middle	2437	100%	0

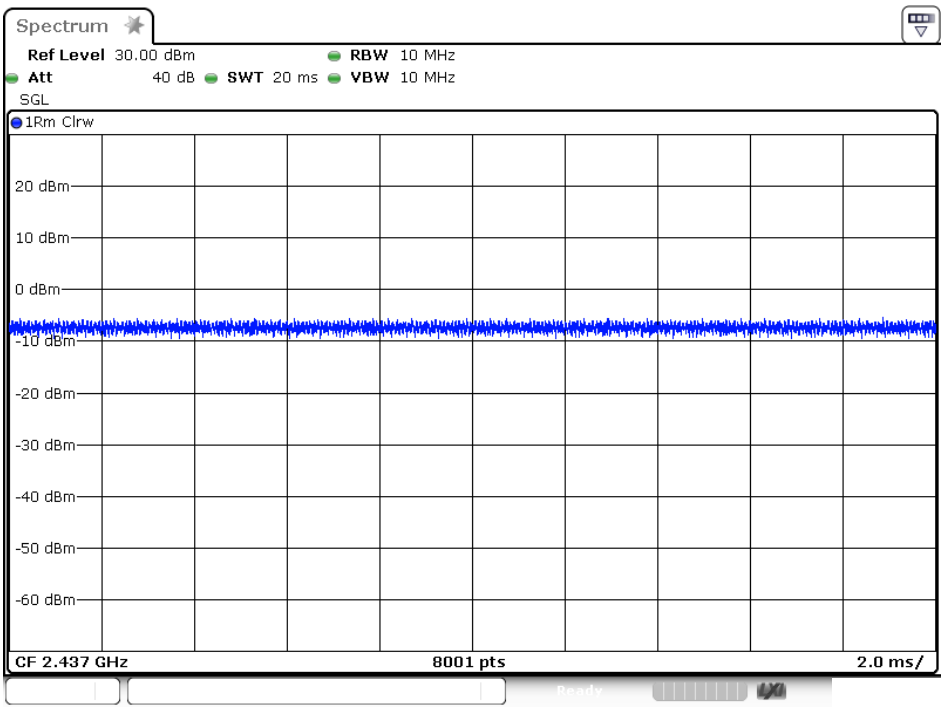
The test was performed with 802.11n (Bandwidth: 20 MHz)			
Channel	Frequency (MHz)	duty cycle(x)	10log(1/x)
Middle	2437	100%	0

The spectrum analyzer plots are attached as below.

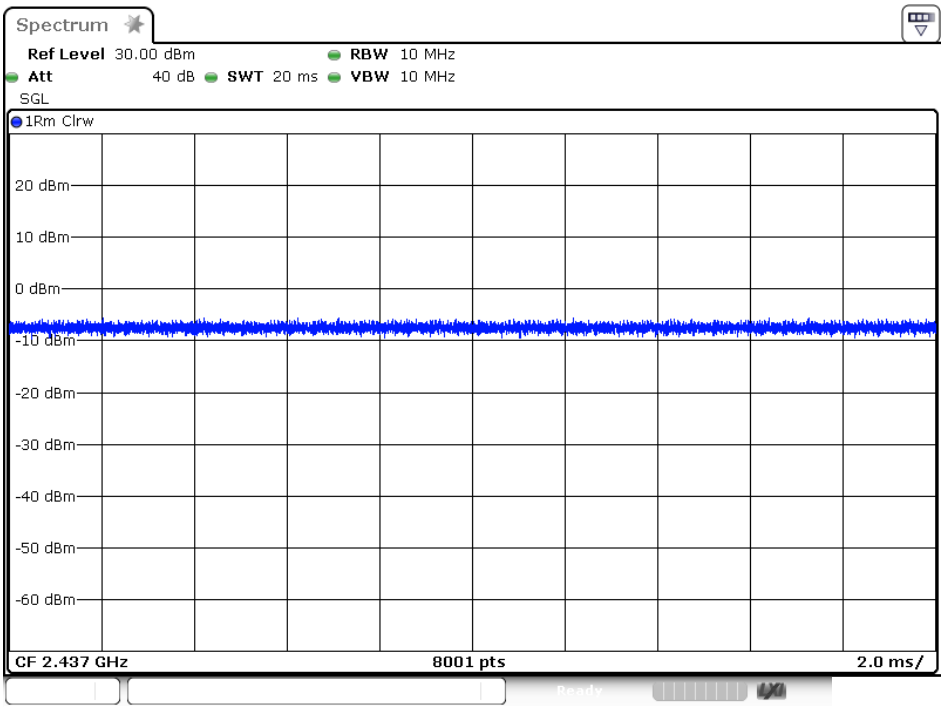
802.11b Channel Middle 2437MHz



802.11g Channel Middle 2437MHz

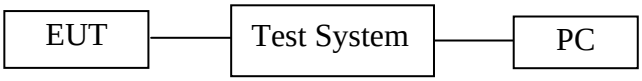


802.11n Channel Middle 2437MHz(20MHz)



8. MAXIMUM CONDUCTED (AVERAGE) OUTPUT POWER

8.1.Block Diagram of Test Setup



8.2.The Requirement For Section 15.247(b)(3)

Section 15.247(b)(3): For systems using digital modulation in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz bands: 1 Watt.

8.3.EUT Configuration on Measurement

The equipment is installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

8.4.Operating Condition of EUT

8.4.1.Setup the EUT and simulator as shown as Section 8.1.

8.4.2.Turn on the power of all equipment.

8.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 . We select 2412MHz, 2437MHz, 2462MHz TX frequency to transmit.

8.5.Test Procedure

8.5.1.The EUT was tested according to DTS test procedure of Apr 05, 2017 KDB558 074 D01 DTS Meas Guidance v04 for compliance to FCC 47CFR 15.247 requirements.

8.5.2.The transmitter output was connected to the spectrum analyzer through a low loss cable.

8.5.3.Set RBW = 1-5% of the OBW, not to exceed 1 MHz, VBW ≥ 3 x RBW, Sweep time = auto, Set span to at least 1.5 times the OBW, Detector = RMS.

8.5.4.Measurement the Maximum conducted (average) output power.

8.6.Test Result

Final power= Ave output power+10log(1/ duty cycle)

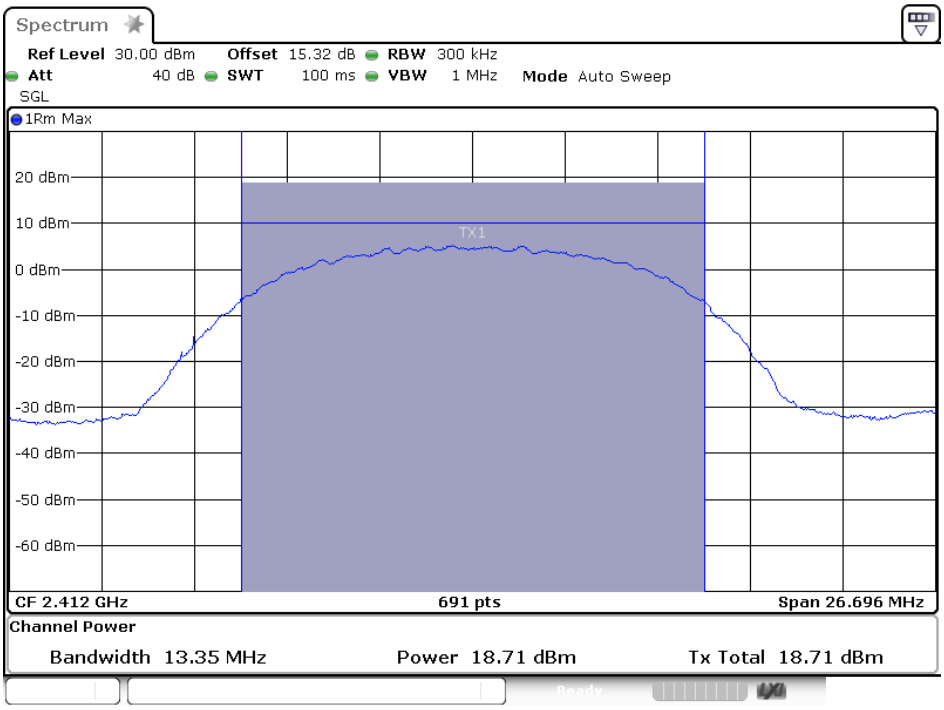
The test was performed with 802.11b						
Channel	Frequency (MHz)	Ave output power (dBm)	10log(1/ duty cycle)	Final power (dBm)	Final power (W)	Limits dBm / W
Low	2412	18.71	0	18.71	0.0743	30 dBm / 1 W
Middle	2437	17.96	0	17.96	0.0625	30 dBm / 1 W
High	2462	17.50	0	17.50	0.0562	30 dBm / 1 W

The test was performed with 802.11g						
Channel	Frequency (MHz)	Ave output power (dBm)	10log(1/ duty cycle)	Final power (dBm)	Final power (W)	Limits dBm / W
Low	2412	10.30	0	10.30	0.0107	30 dBm / 1 W
Middle	2437	10.60	0	10.60	0.0115	30 dBm / 1 W
High	2462	10.61	0	10.61	0.0115	30 dBm / 1 W

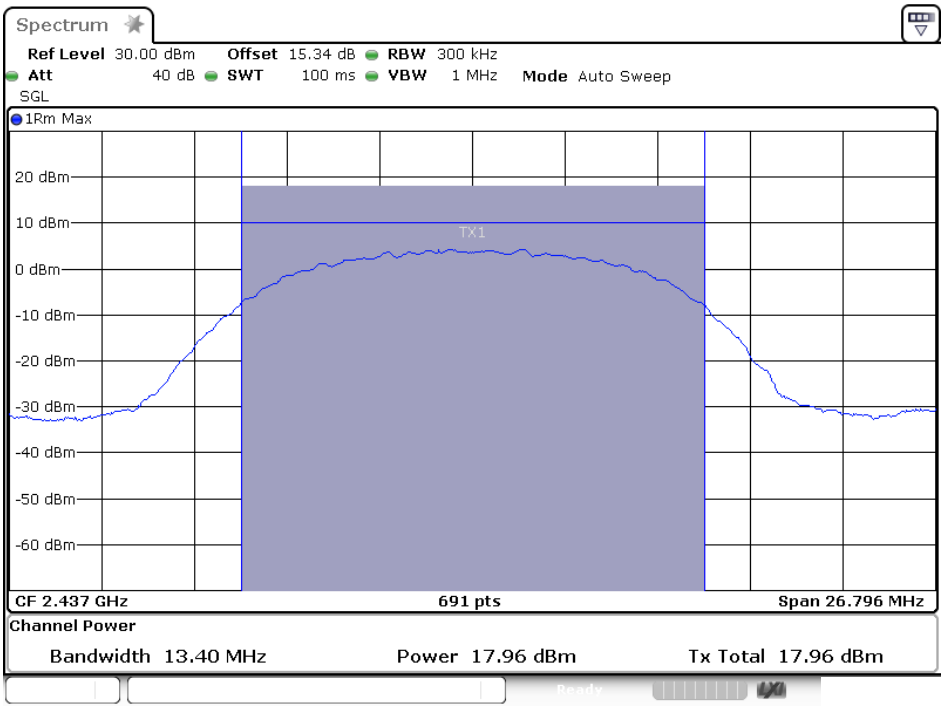
The test was performed with 802.11n (20MHz)						
Channel	Frequency (MHz)	Ave output power (dBm)	10log(1/ duty cycle)	Final power (dBm)	Final power (W)	Limits dBm / W
Low	2412	10.43	0	10.43	0.0110	30 dBm / 1 W
Middle	2437	10.84	0	10.84	0.0121	30 dBm / 1 W
High	2462	11.11	0	11.11	0.0129	30 dBm / 1 W

The spectrum analyzer plots are attached as below.

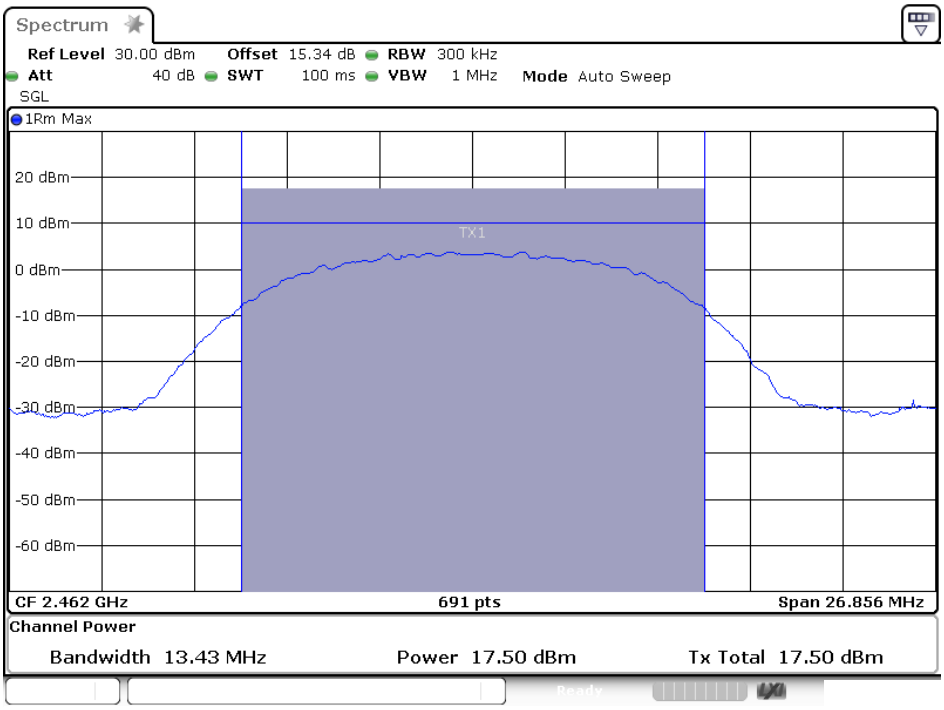
802.11b Channel Low 2412MHz



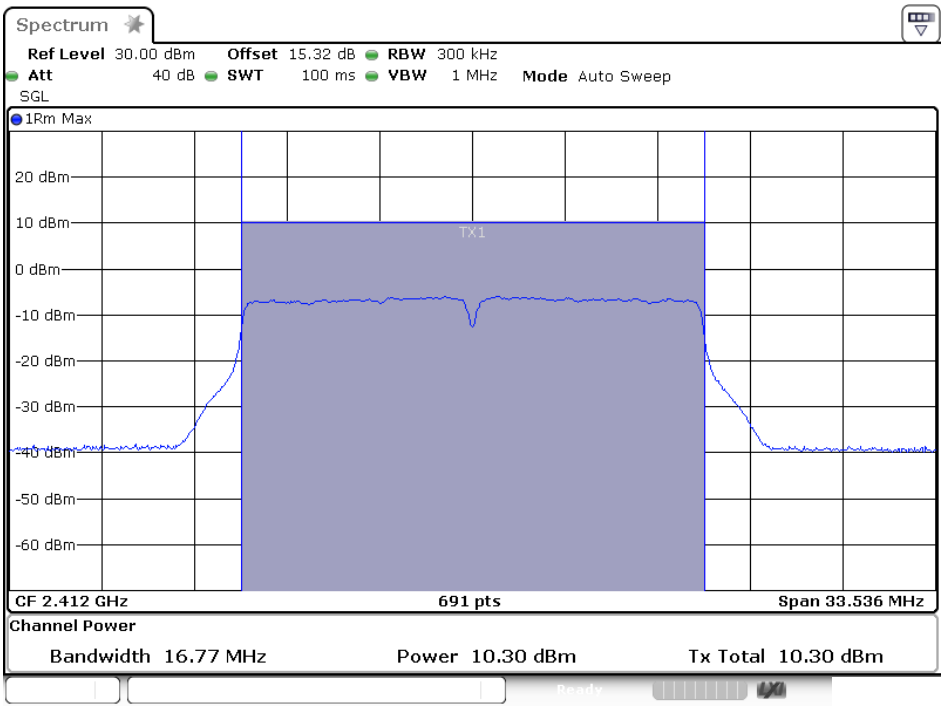
802.11b Channel Middle 2437MHz



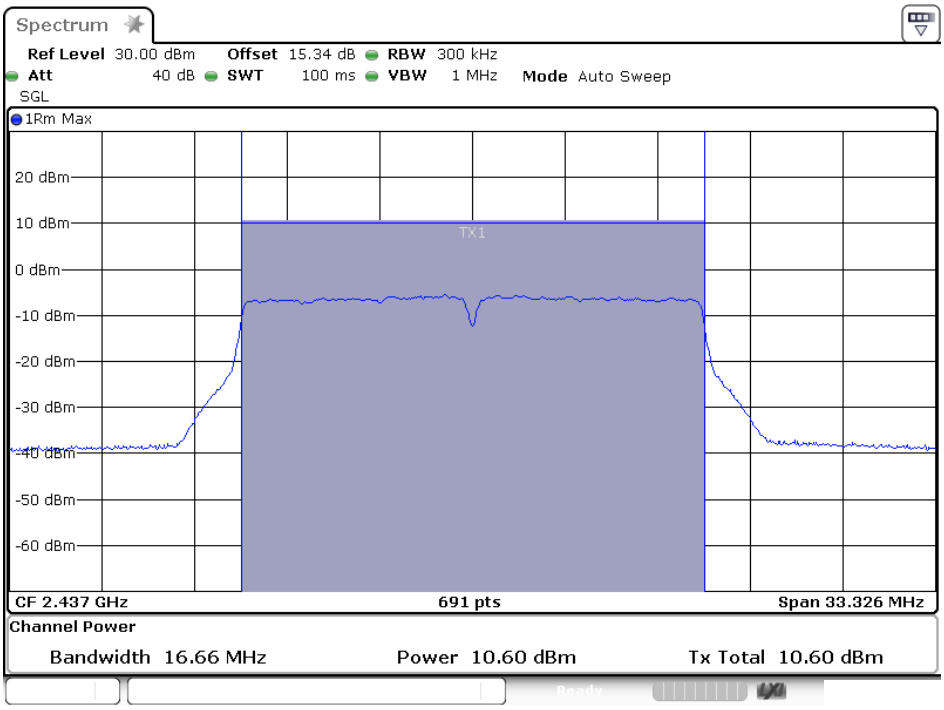
802.11b Channel High 2462MHz



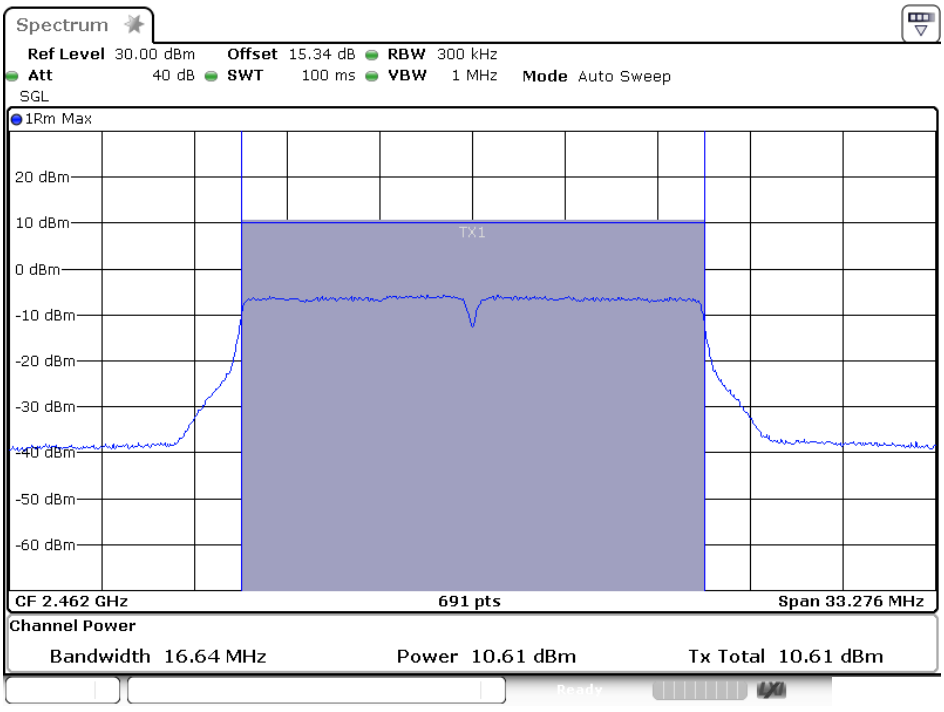
802.11g Channel Low 2412MHz



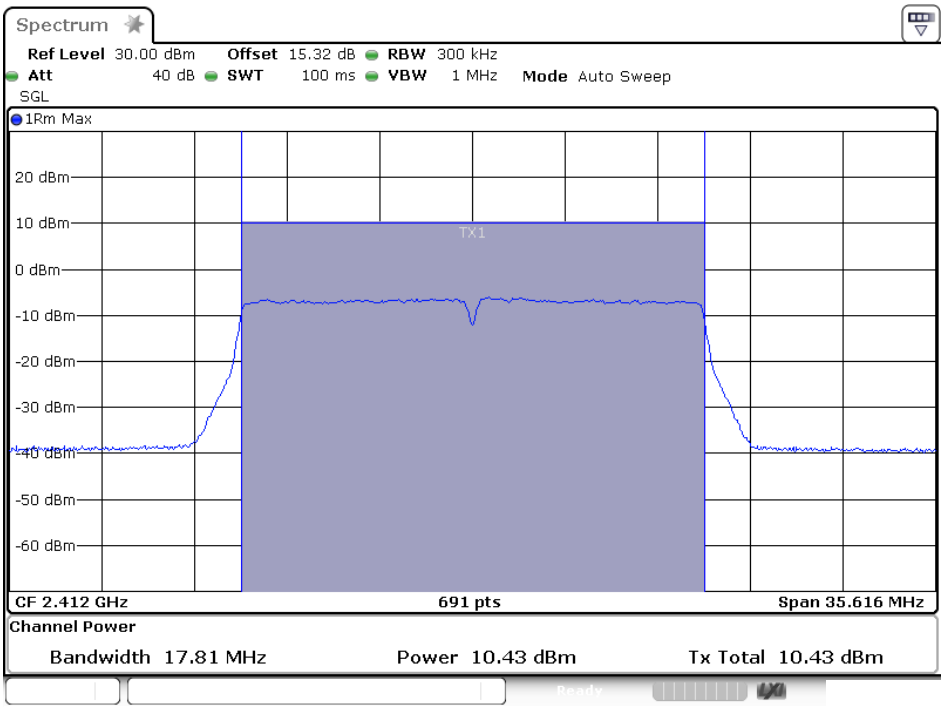
802.11g Channel Middle 2437MHz



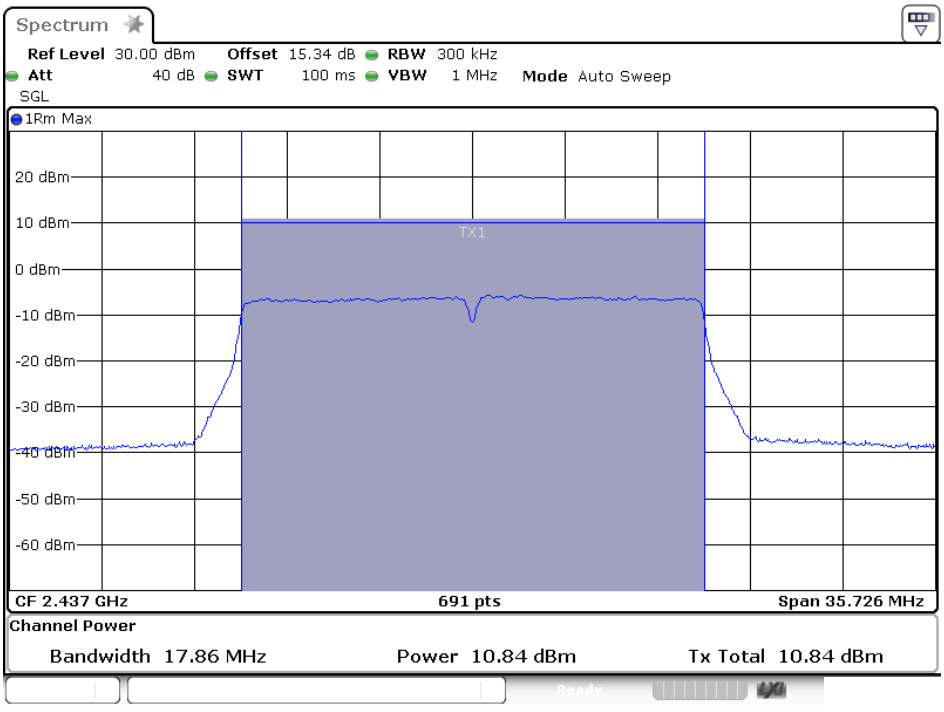
802.11g Channel High 2462MHz



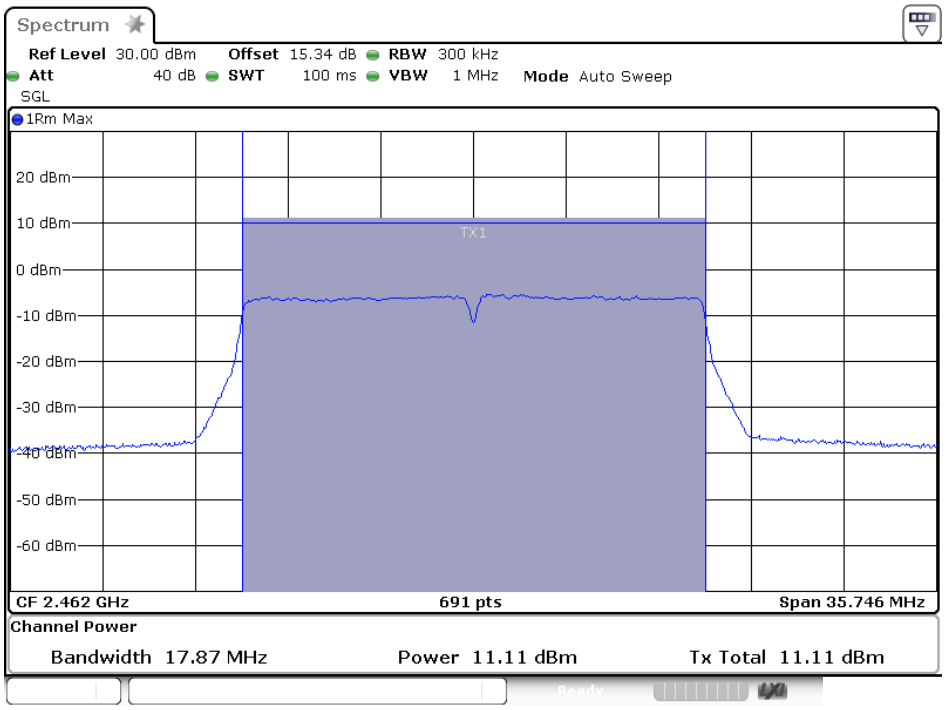
802.11n Channel Low 2412MHz (20MHz)



802.11n Channel Middle 2437MHz (20MHz)

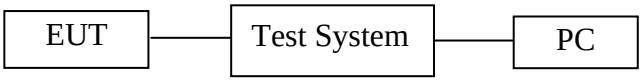


802.11n Channel High 2462MHz (20MHz)



9. POWER SPECTRAL DENSITY MEASUREMENT

9.1.Block Diagram of Test Setup



9.2.The Requirement For Section 15.247(e)

Section 15.247(e): For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

9.3.EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

9.4.Operating Condition of EUT

9.4.1.Setup the EUT and simulator as shown as Section 9.1.

9.4.2.Turn on the power of all equipment.

9.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 . We select 2412MHz, 2437MHz, 2462MHz TX frequency to transmit.

9.5.Test Procedure

9.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.

9.5.2.Measurement Procedure AVGPSD-2:

This procedure is applicable when the EUT cannot be configured to transmit continuously(i.e., duty cycle<98%), and when sweep triggering/signal gating cannot be used to measure only when the EUT is transmitting at its maximum power control level, and when the transmission duty is constant(i.e., duty cycle variations are less than ±2%):

Measure the dyty cycle(x) of the transmitter output signal as described in Section 6.0.

Set instrument center frequency to DTS channel center frequency.
Set span to at least 1.5×OBW.
Set RBW to: 3kHz≤ RBW≤100kHz.
Set VBW≥ 3×RBW
Detector=power averaging(RMS) or sample detector(when RMS not available).
Ensure that the number of measurement points in sweep≥2×span/RBW.
Sweep time=auto couple.
Do not use sweep triggering. Allow sweep to “free run”.
Employ trace averaging(RMS) mode over a minimum of 100 traces.
Use the peak maker function to determine the maximum amplitude level.
Add 10log(1/x), where x is the duty cycle measured in step(a, to the measured PSD to compute the average PSD during the actual transmission time.
If resultant value exceeds the limit, then reduce RBW(no less than 3kHz) and repeat(note that this may require zooming in on the emission of interest and reducing the span in order to meet the minimum measurement point requirement as the RBW is reduced).

9.6.Test Result

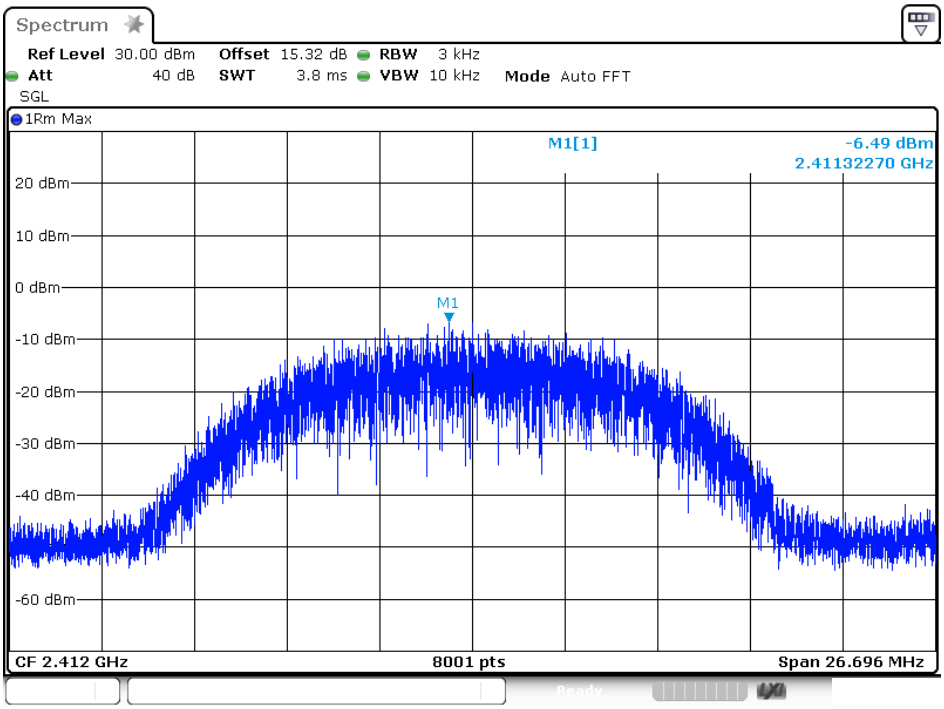
The test was performed with 802.11b					
Channel	Frequency (MHz)	AVG Power Spectral Density (dBm)	10log(1/ duty cycle)	Final Power Spectral Density (dBm)	Limits (dBm)
Low	2412	-6.49	0	-6.49	8 dBm
Middle	2437	-7.07	0	-7.07	8 dBm
High	2462	-7.59	0	-7.59	8 dBm

The test was performed with 802.11g					
Channel	Frequency (MHz)	AVG Power Spectral Density (dBm)	10log(1/ duty cycle)	Final Power Spectral Density (dBm)	Limits (dBm)
Low	2412	-18.00	0	-18.00	8 dBm
Middle	2437	-17.86	0	-17.86	8 dBm
High	2462	-17.63	0	-17.63	8 dBm

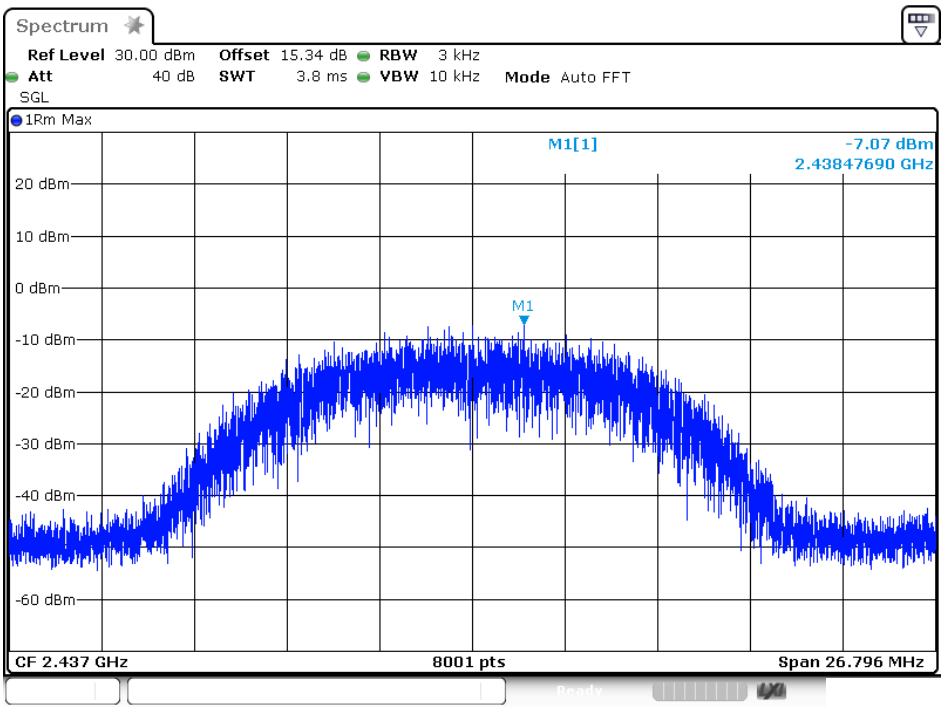
The test was performed with 802.11n (20MHz)					
Channel	Frequency (MHz)	AVG Power Spectral Density (dBm)	10log(1/ duty cycle)	Final Power Spectral Density (dBm)	Limits (dBm)
Low	2412	-16.73	0	-16.73	8 dBm
Middle	2437	-16.22	0	-16.22	8 dBm
High	2462	-16.00	0	-16.00	8 dBm

The spectrum analyzer plots are attached as below.

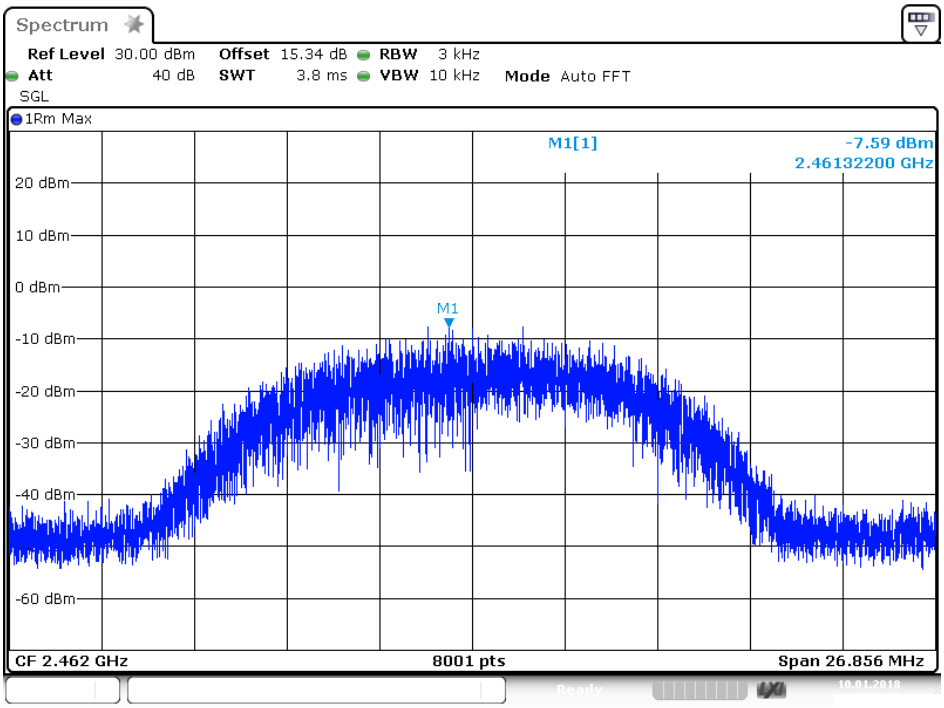
802.11b Channel Low 2412MHz



802.11b Channel Middle 2437MHz

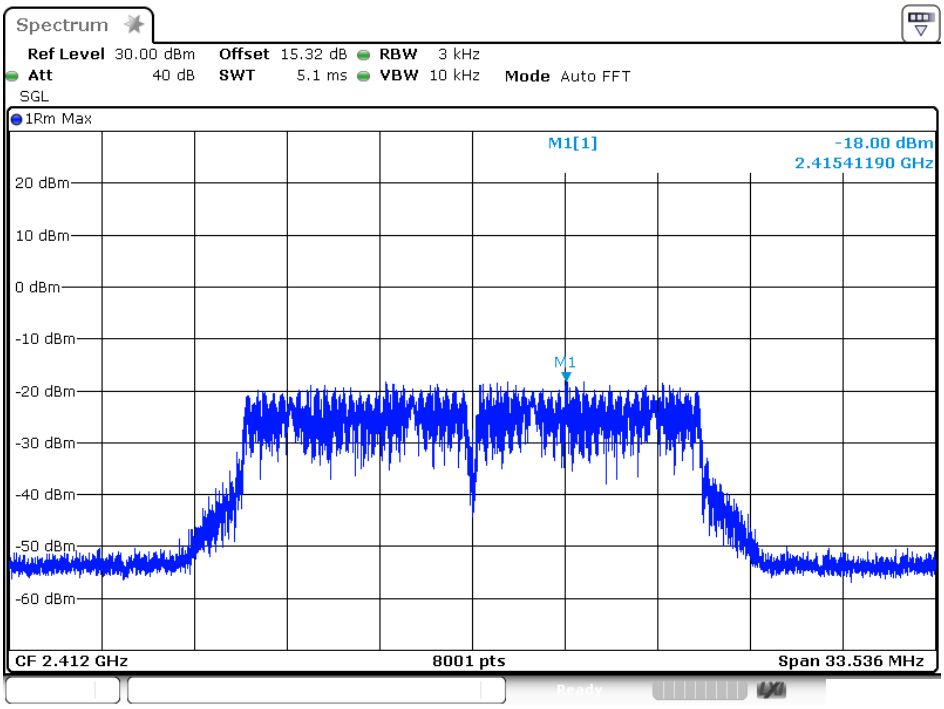


802.11b Channel High 2462MHz

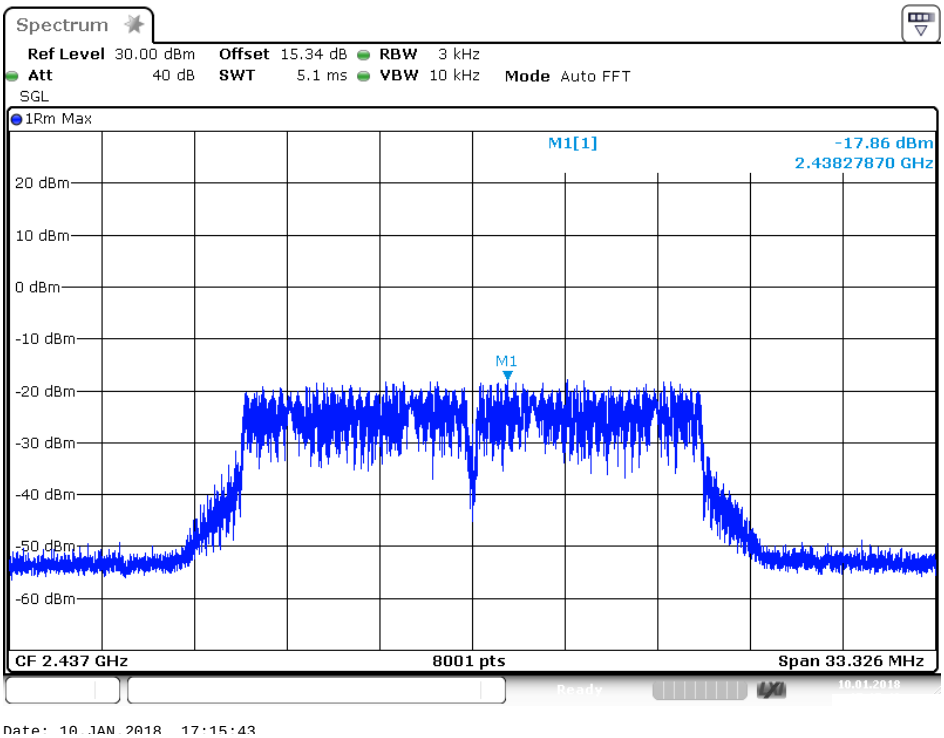


Date: 10.JAN.2018 15:37:55

802.11g Channel Low 2412MHz

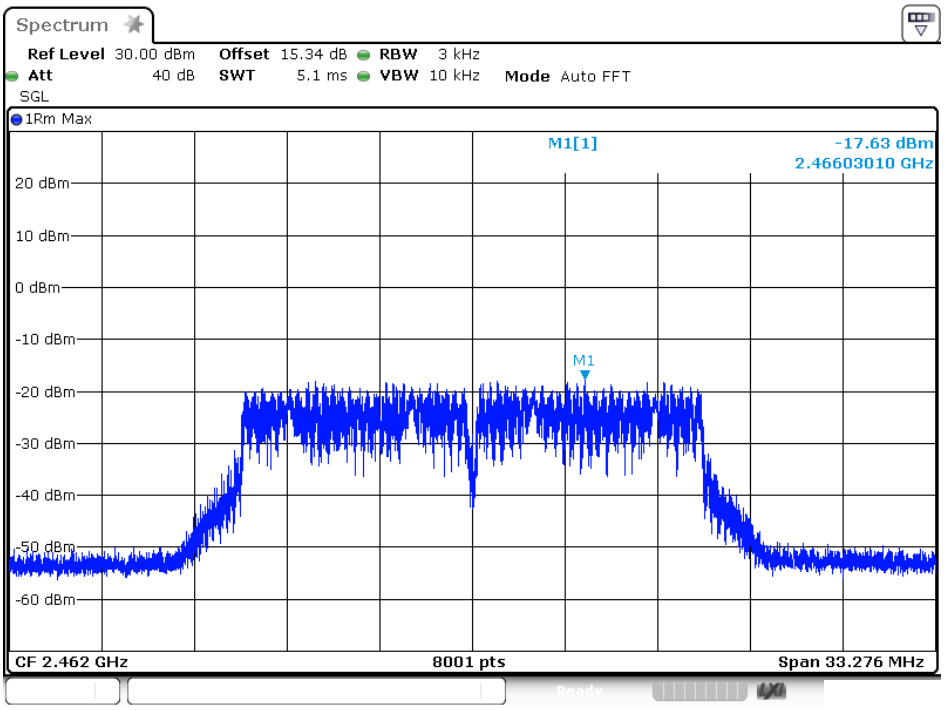


802.11g Channel Middle 2437MHz

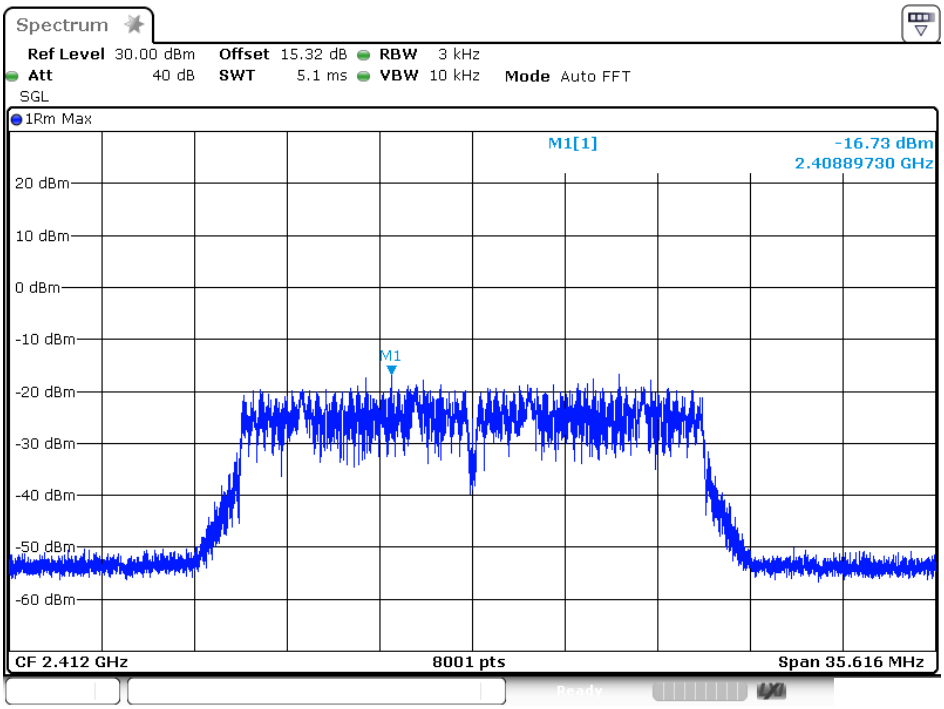


Date: 10.JAN.2018 17:15:43

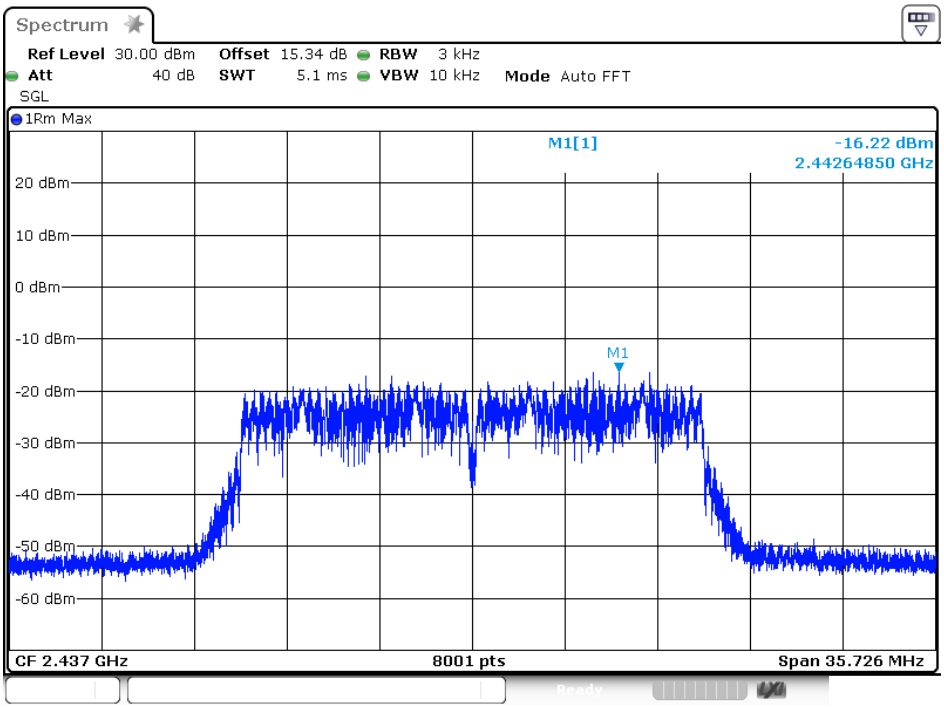
802.11g Channel High 2462MHz



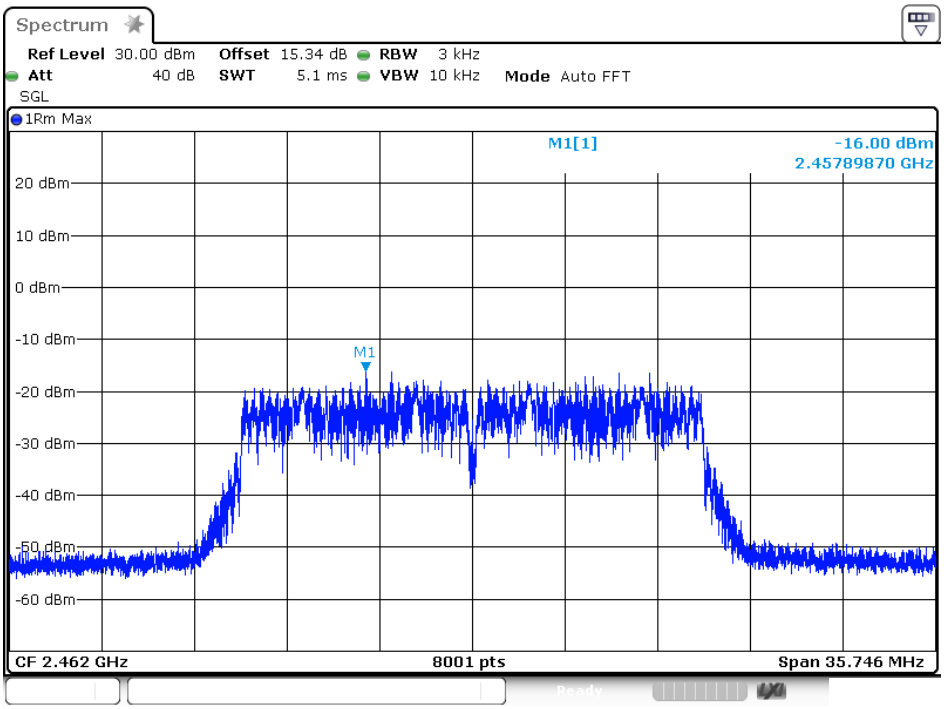
802.11n Channel Low 2412MHz (20MHz)



802.11n Channel Middle 2437MHz (20MHz)

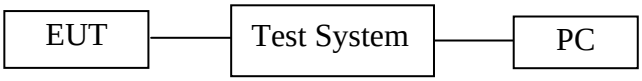


802.11n Channel High 2462MHz(20MHz)



10.BAND EDGE COMPLIANCE TEST

10.1.Block Diagram of Test Setup



10.2.The Requirement For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

10.3.EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

10.4.Operating Condition of EUT

10.4.1.Setup the EUT and simulator as shown as Section 9.1.

10.4.2.Turn on the power of all equipment.

10.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 MHz. We select 2412MHz, 2462MHz TX frequency to transmit.

10.5.Test Procedure

Conducted Band Edge:

10.5.1.The transmitter output was connected to the spectrum analyzer via a low loss cable.

10.5.2.Set RBW of spectrum analyzer to 100kHz and VBW to 300kHz.

Radiate Band Edge:

10.5.3.The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.

10.5.4.The turntable was rotated for 360 degrees to determine the position of maximum emission level.

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

10.5.6.Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

10.5.7.RBW=100kHz, VBW=300kHz

10.5.8.The band edges was measured and recorded.

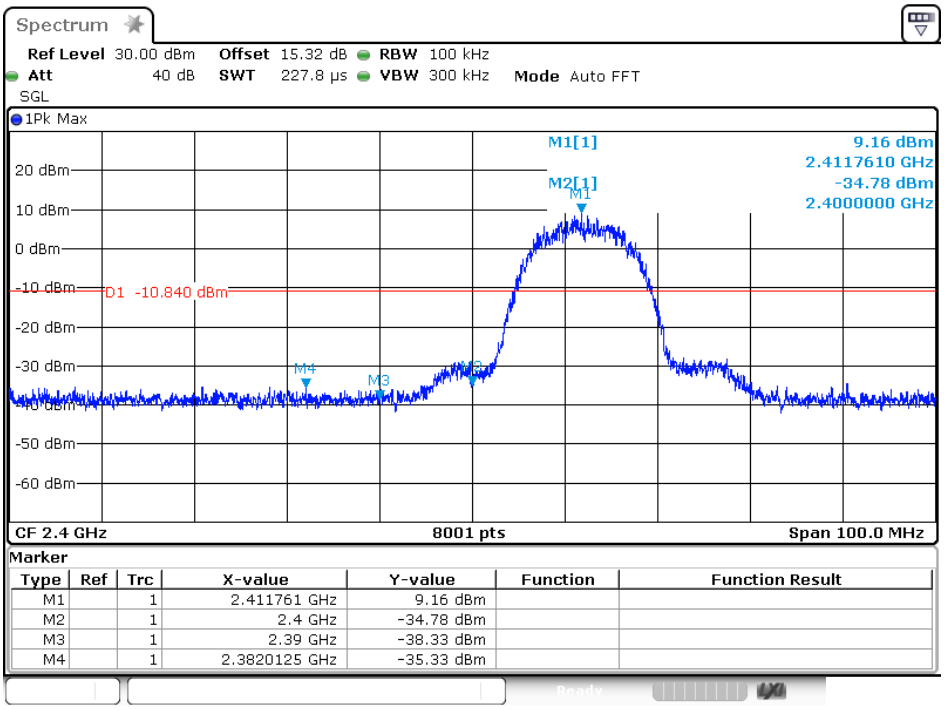
10.6.Test Result

The test was performed with 802.11b		
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2400	43.94	> 30dBc
2483.5	47.04	> 30dBc

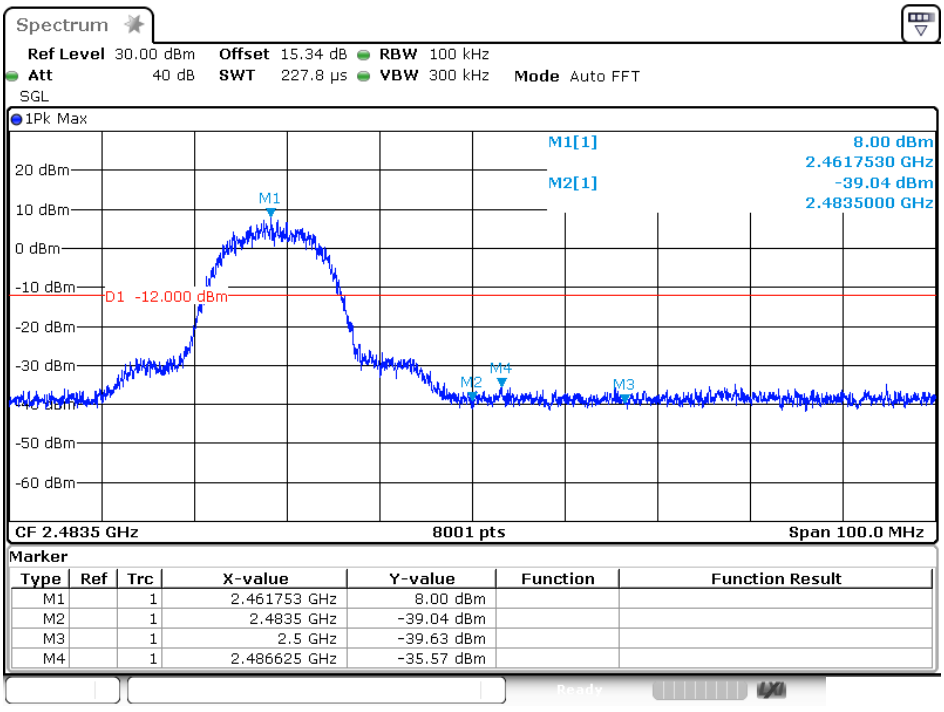
The test was performed with 802.11g		
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2400	37.52	> 30dBc
2483.5	38.29	> 30dBc

The test was performed with 802.11n (20MHz)		
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2400	36.16	> 30dBc
2483.5	37.95	> 30dBc

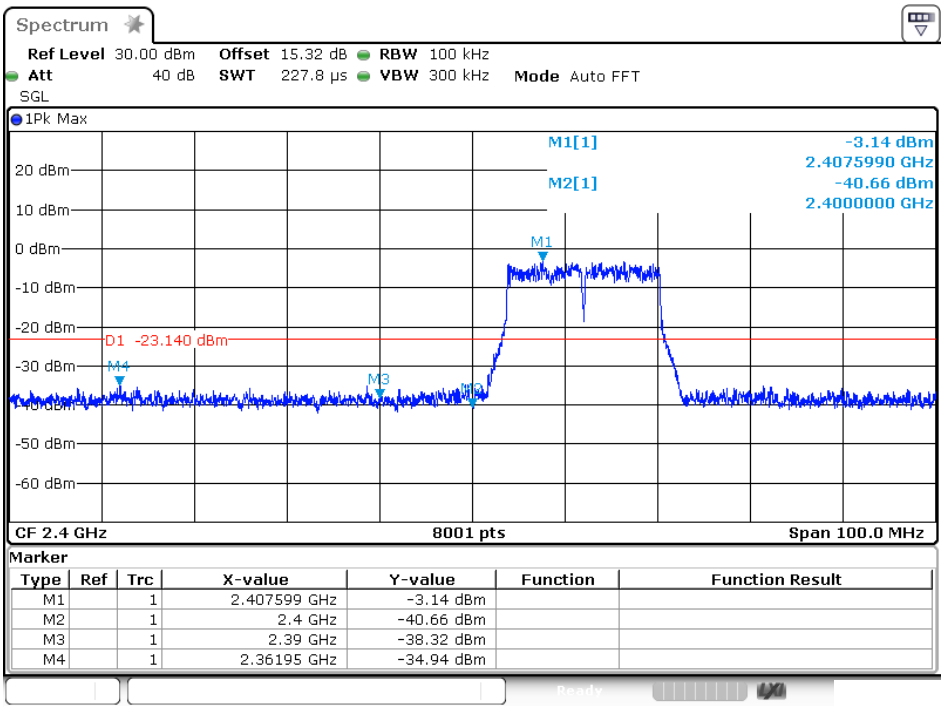
802.11b Channel Low 2412MHz



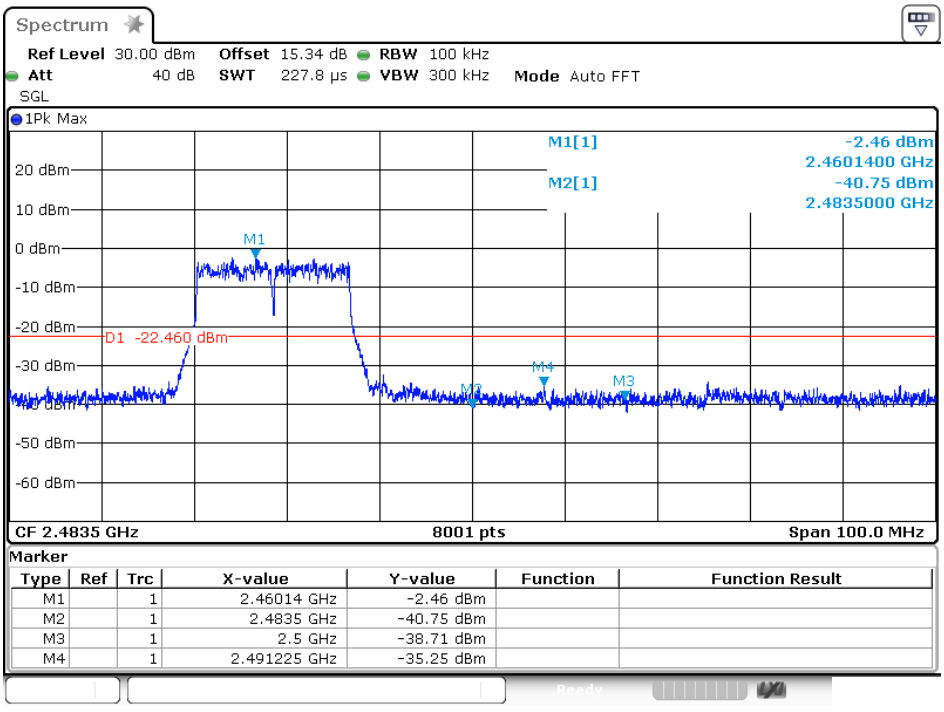
802.11b Channel High 2462MHz



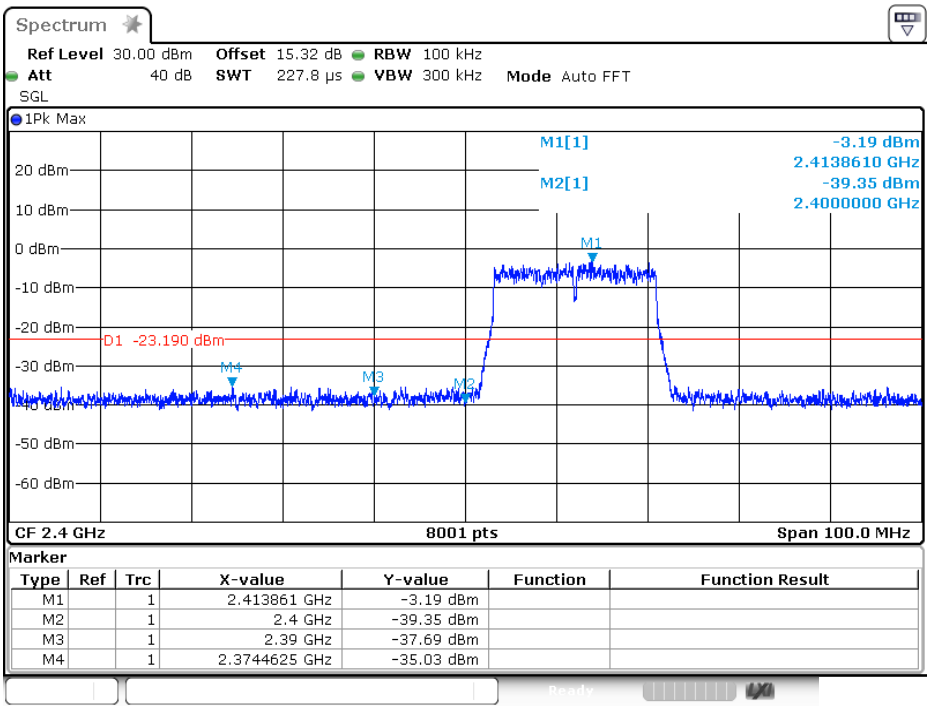
802.11g Channel Low 2412MHz



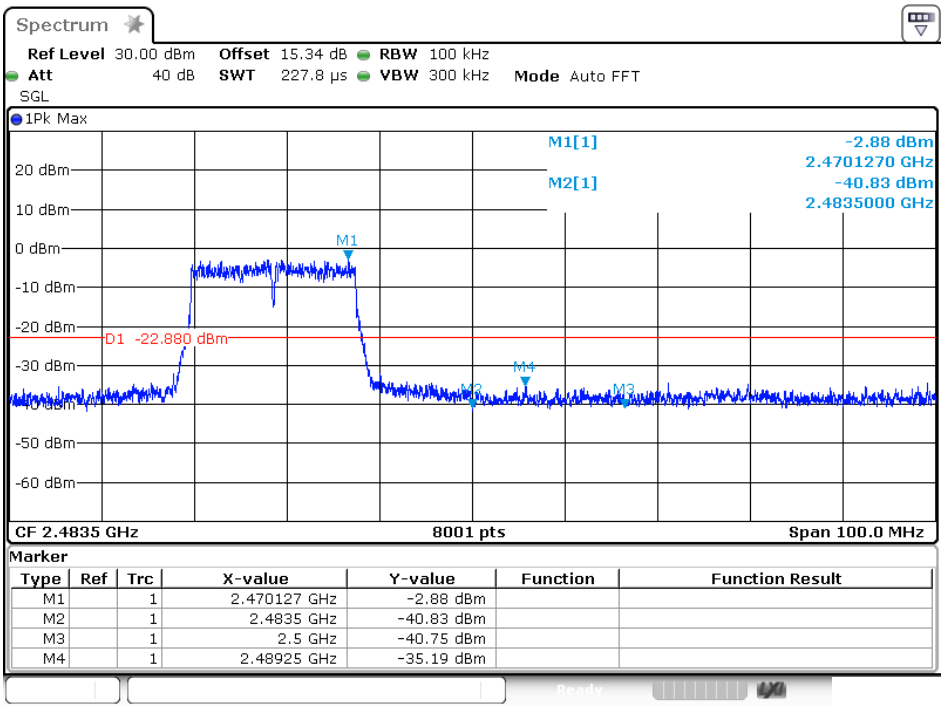
802.11g Channel High 2462MHz



802.11n Channel Low 2412MHz (20MHz)



802.11n Channel High 2462MHz (20MHz)



Radiated Band Edge Result

Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:
   Result = Reading + Corrected Factor
3. Display the measurement of peak values.

Test Procedure:

The EUT and its simulators are placed on a turntable, which is 1.5 meter high above ground(Above 1GHz). The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

Let the EUT work in TX modes then measure it.
We select 2412MHz, 2462MHz TX frequency to transmit(802.11b/g/n20 mode).

During the radiated emission test, the spectrum analyzer was set with the following configurations:
1.The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.
2.The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
3.All modes of operation were investigated and the worst-case emissions are reported.

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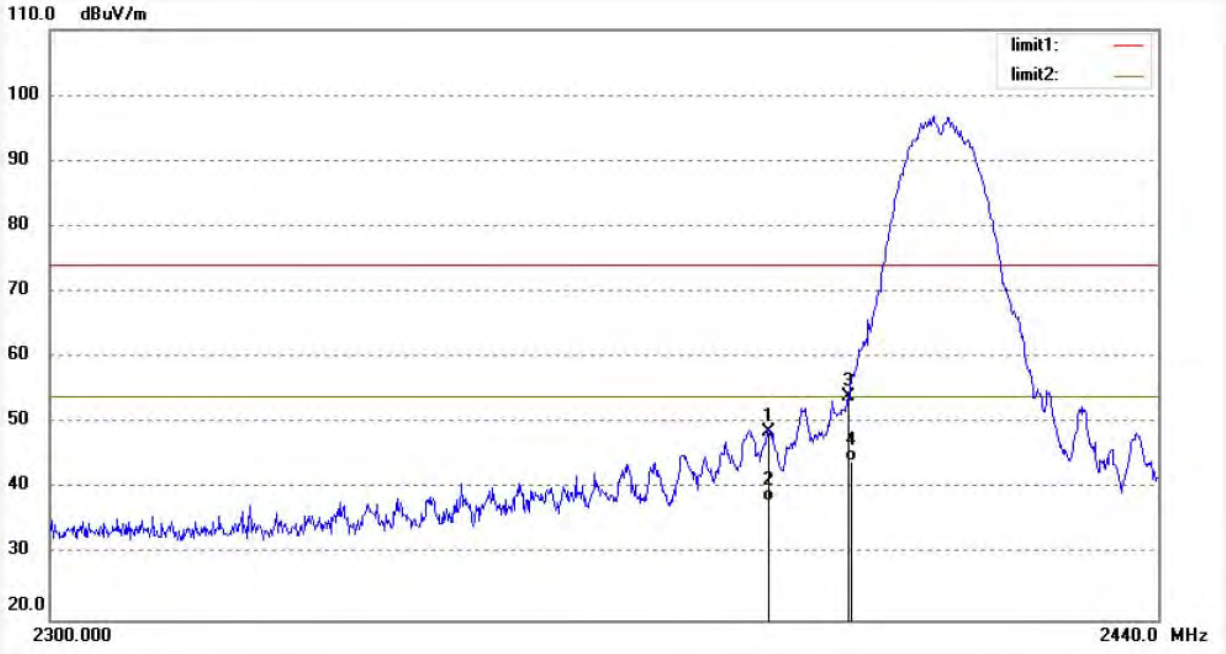
Fax:+86-0755-26503396

Job No.: frank2018 #329
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: L MINI Wi-Fi Plug
Mode: TX Channel 1(802.11B)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 16/46/58
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	56.72	-8.00	48.72	74.00	-25.28	peak	250	315	
2	2390.000	46.15	-8.00	38.15	54.00	-15.85	AVG	250	27	
3	2400.000	62.06	-7.97	54.09	74.00	-19.91	peak	250	215	
4	2400.000	52.15	-7.97	44.18	54.00	-9.82	AVG	250	67	

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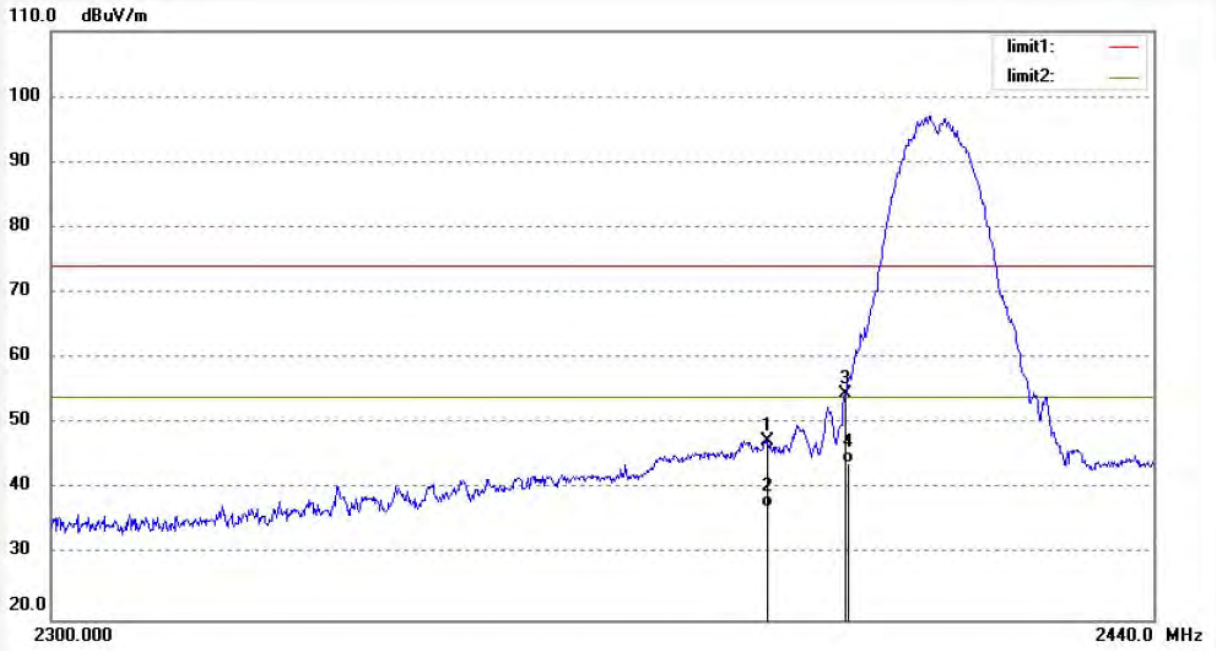
Job No.: frank2018 #331
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 1(802.11B)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 16/48/52
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	55.26	-8.00	47.26	74.00	-26.74	peak	150	332	
2	2390.000	45.15	-8.00	37.15	54.00	-16.85	AVG	150	45	
3	2400.000	62.53	-7.97	54.56	74.00	-19.44	peak	150	321	
4	2400.000	52.00	-7.97	44.03	54.00	-9.97	AVG	150	97	

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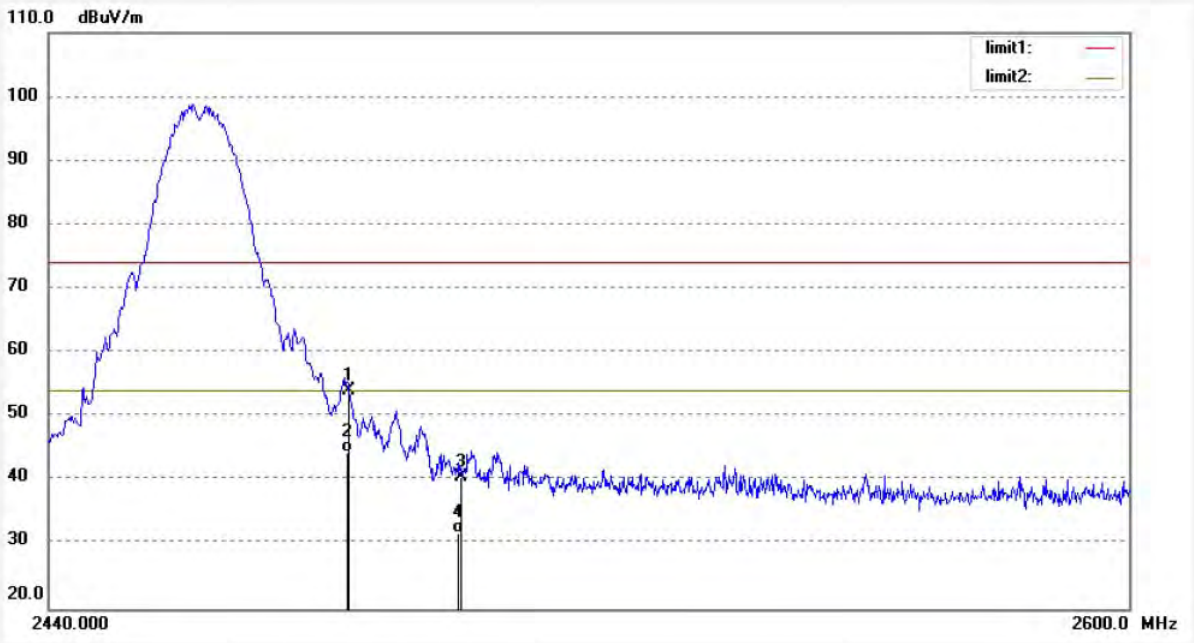
Fax:+86-0755-26503396

Job No.: frank2018 #327
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 11(802.11B)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 16/42/45
Engineer Signature: frank
Frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	61.92	-7.76	54.16	74.00	-19.84	peak	150	29	
2	2483.500	52.15	-7.76	44.39	54.00	-9.61	AVG	150	216	
3	2500.000	48.27	-7.71	40.56	74.00	-33.44	peak	200	245	
4	2500.000	39.48	-7.71	31.77	54.00	-22.23	AVG	150	62	

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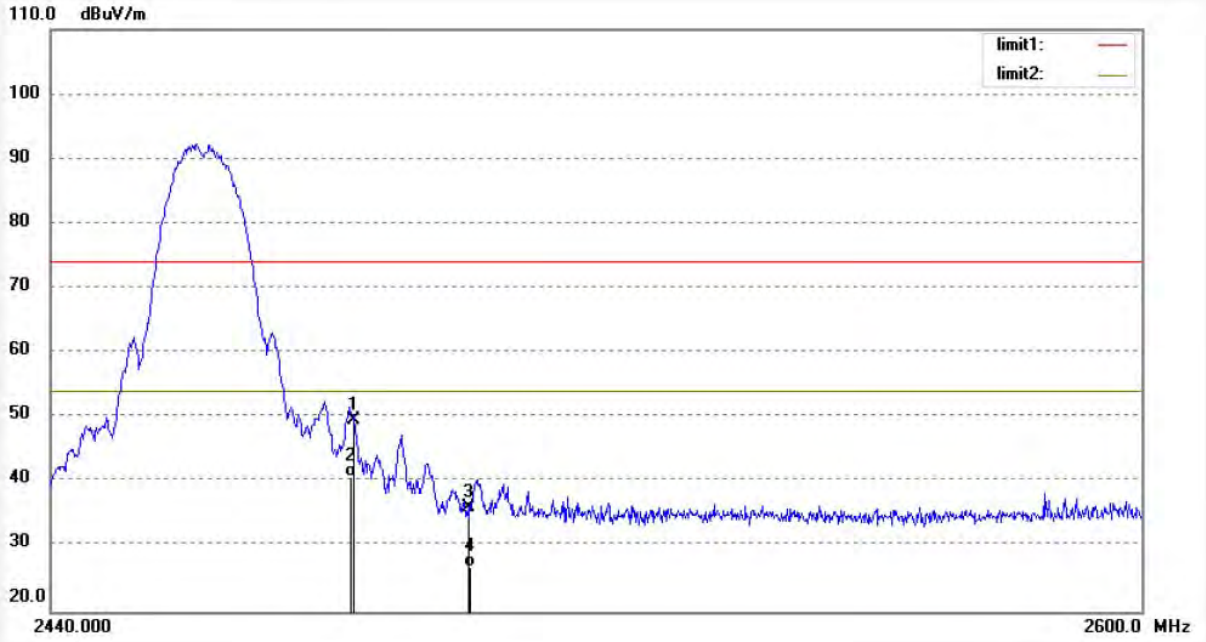
Job No.: frank2018 #328
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 11(802.11B)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 16/44/41
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	57.41	-7.76	49.65	74.00	-24.35	peak	250	102	
2	2483.500	48.54	-7.76	40.78	54.00	-13.22	AVG	250	43	
3	2500.000	43.78	-7.71	36.07	74.00	-37.93	peak	250	212	
4	2500.000	34.66	-7.71	26.95	54.00	-27.05	AVG	200	35	

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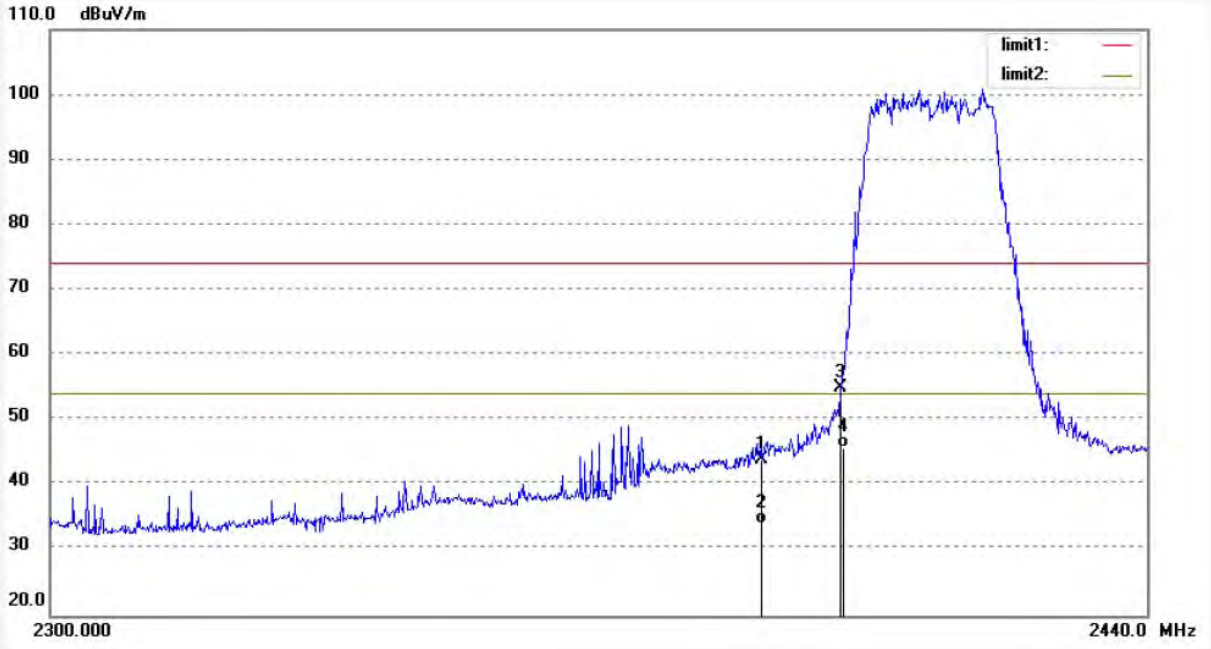
Job No.: frank2018 #332	Polarization: Vertical
Standard: FCC PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2018-3-7
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 16/51/16
EUT: LED Strip Light	Engineer Signature: frank
Mode: TX Channel 1(802.11G)	Distance: 3m
Model: ASL02	
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.	

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	51.95	-8.00	43.95	74.00	-30.05	peak	150	224	
2	2390.000	42.01	-8.00	34.01	54.00	-19.99	AVG	150	54	
3	2400.000	62.98	-7.97	55.01	74.00	-18.99	peak	150	21	
4	2400.000	53.67	-7.97	45.70	54.00	-8.30	AVG	150	320	

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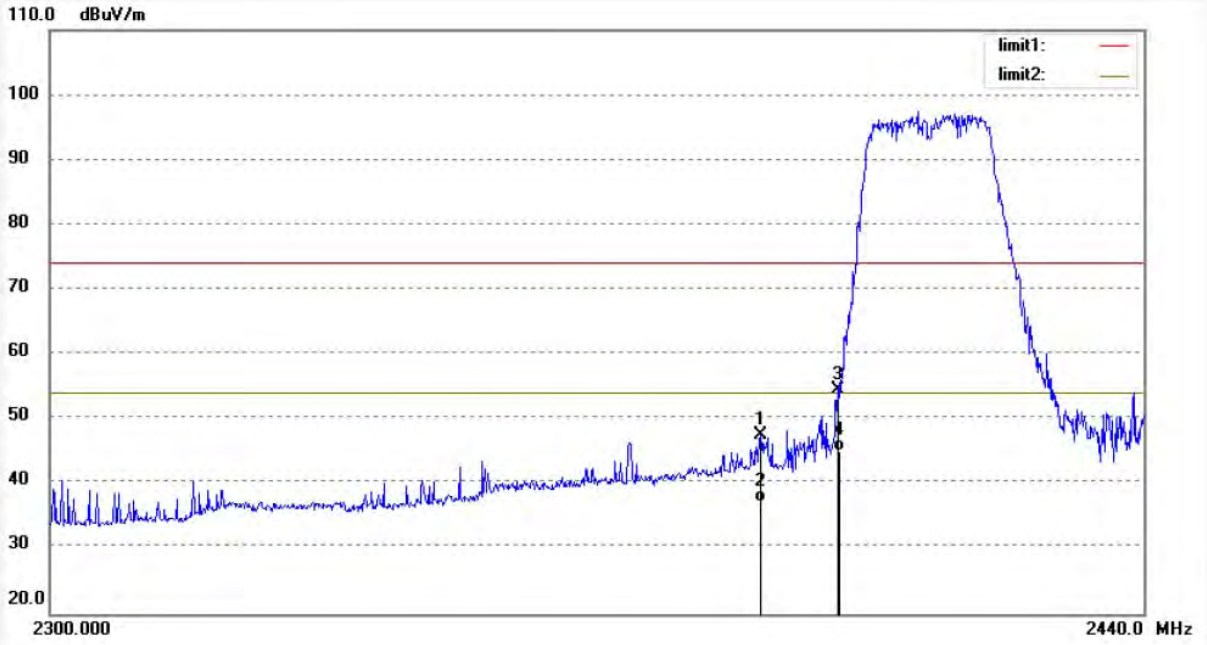
Job No.: frank2018 #333
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 1(802.11G)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 16/52/11
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	55.48	-8.00	47.48	74.00	-26.52	peak	200	138	
2	2390.000	45.27	-8.00	37.27	54.00	-16.73	AVG	250	74	
3	2400.000	62.40	-7.97	54.43	74.00	-19.57	peak	250	54	
4	2400.000	53.12	-7.97	45.15	54.00	-8.85	AVG	250	146	

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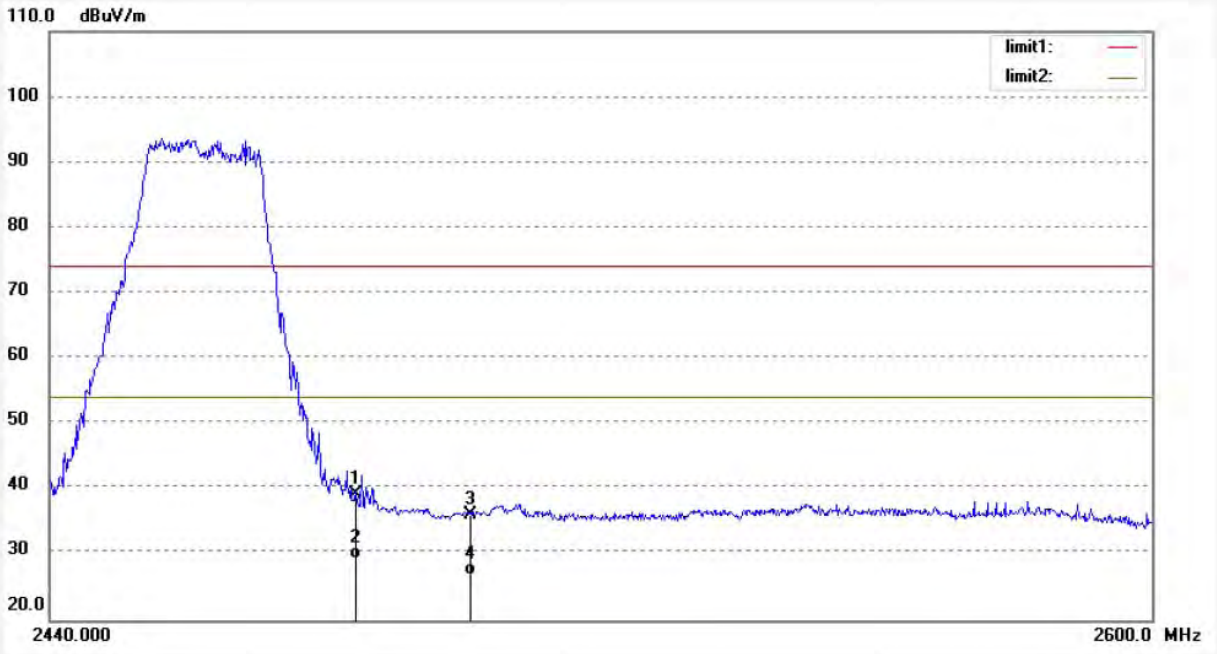
Job No.: frank2018 #323
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 11(802.11G)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 16/37/48
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	46.90	-7.76	39.14	74.00	-34.86	peak	150	101	
2	2483.500	37.15	-7.76	29.39	54.00	-24.61	AVG	150	312	
3	2500.000	43.75	-7.71	36.04	74.00	-37.96	peak	150	32	
4	2500.000	34.64	-7.71	26.93	54.00	-27.07	AVG	150	240	

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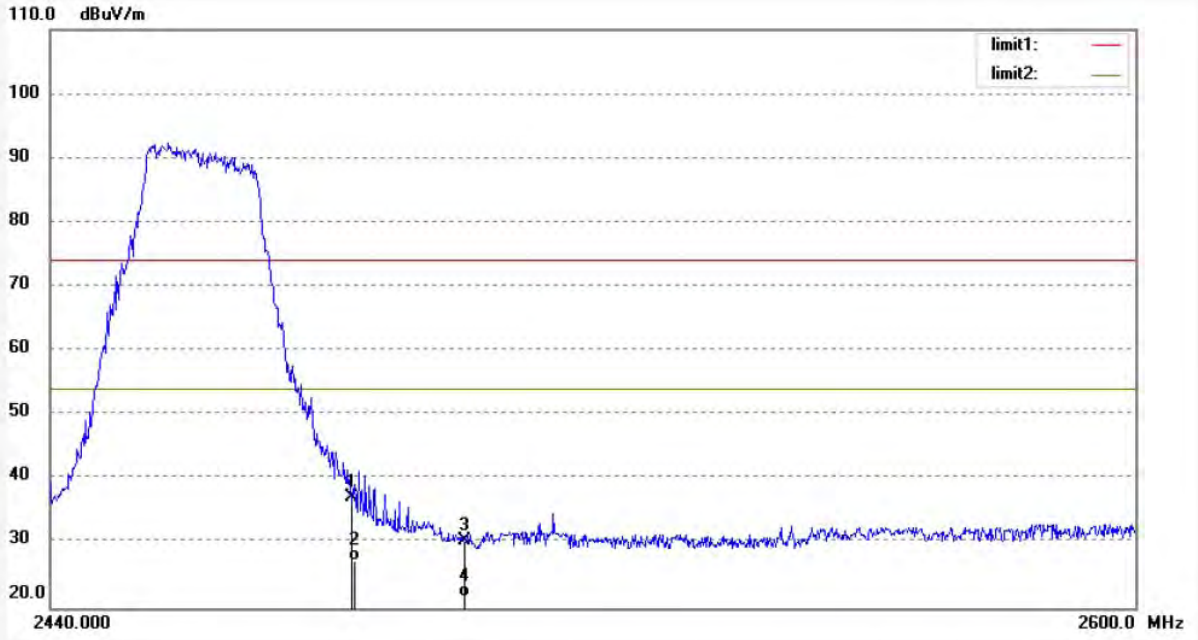
Job No.: frank2018 #324
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 11(802.11G)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 16/38/06
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	44.95	-7.76	37.19	74.00	-36.81	peak	250	321	
2	2483.500	35.00	-7.76	27.24	54.00	-26.76	AVG	250	120	
3	2500.000	38.11	-7.71	30.40	74.00	-43.60	peak	250	201	
4	2500.000	29.41	-7.71	21.70	54.00	-32.30	AVG	300	23	

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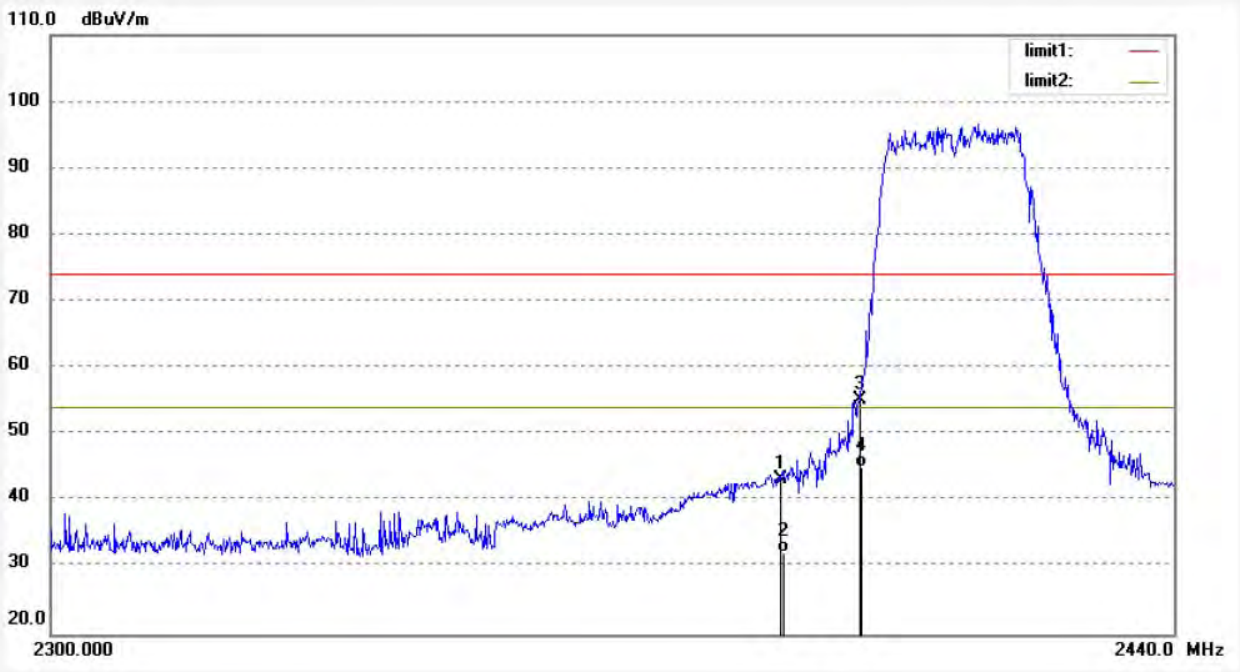
Job No.: frank2018 #334
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 1(802.11N20)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 16/53/17
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	51.31	-8.00	43.31	74.00	-30.69	peak	200	102	
2	2390.000	40.34	-8.00	32.34	54.00	-21.66	AVG	250	34	
3	2400.000	63.10	-7.97	55.13	74.00	-18.87	peak	200	210	
4	2400.000	52.98	-7.97	45.01	54.00	-8.99	AVG	250	57	

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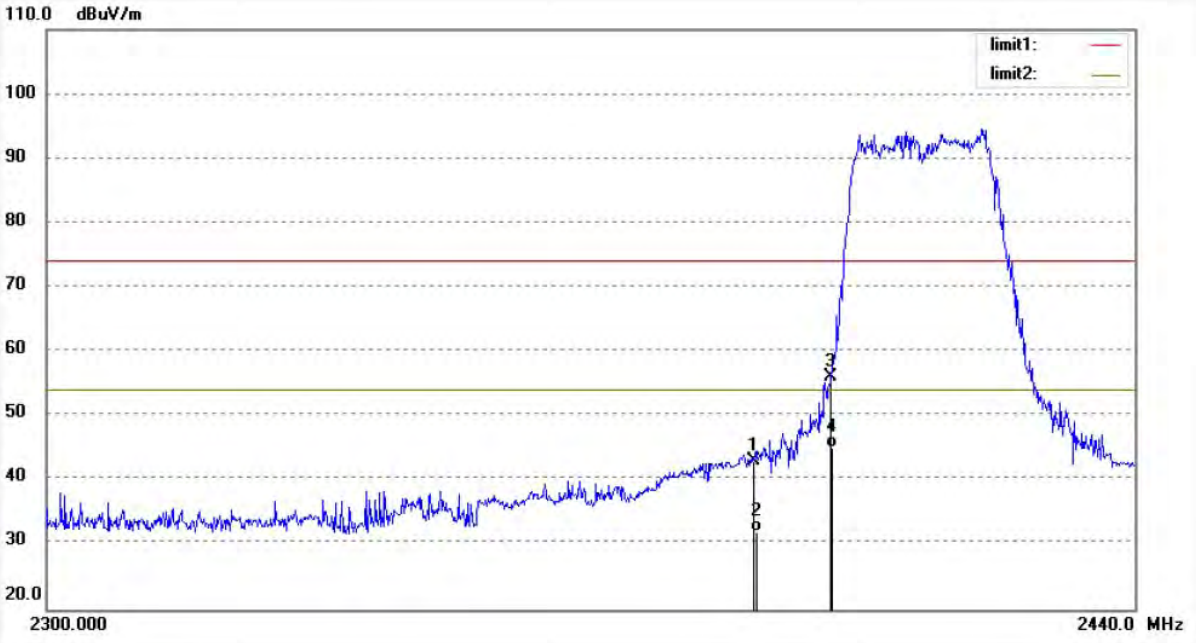
Job No.: frank2018 #336
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 1(802.11N20)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 16/53/17
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	51.10	-8.00	43.10	74.00	-30.90	peak	200	246	
2	2390.000	40.01	-8.00	32.01	54.00	-21.99	AVG	250	64	
3	2400.000	64.01	-7.97	56.04	74.00	-17.96	peak	200	120	
4	2400.000	53.01	-7.97	45.04	54.00	-8.96	AVG	250	169	

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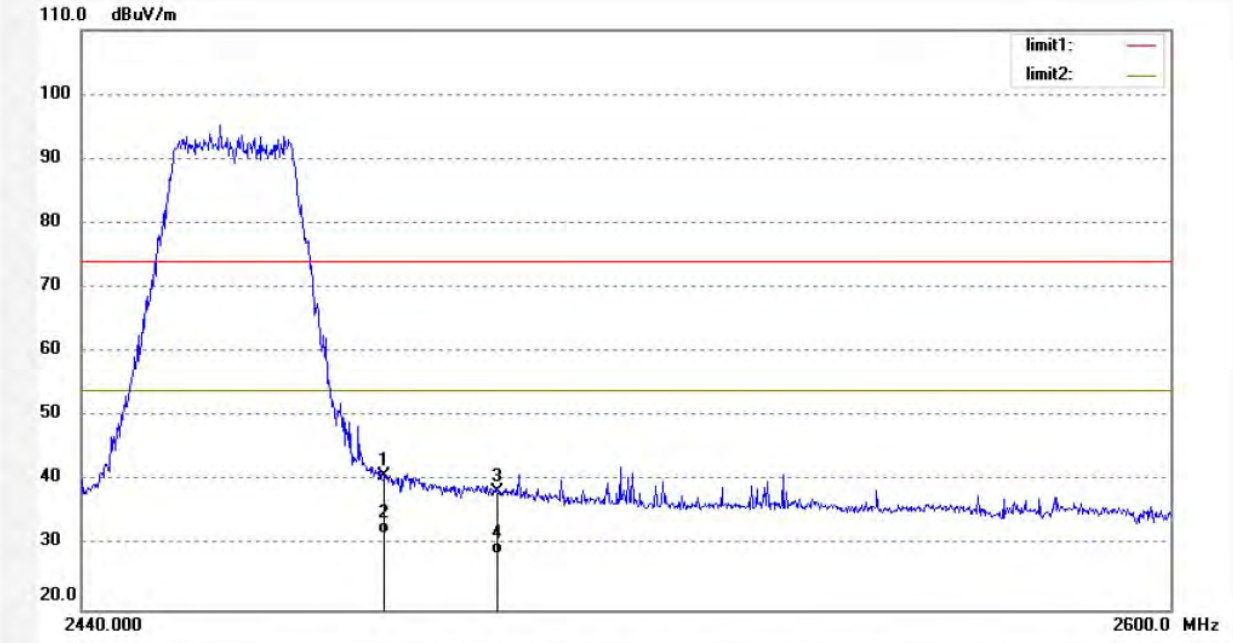
Job No.: frank2018 #325
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 11(802.11N20)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 16/39/52
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	48.47	-7.76	40.71	74.00	-33.29	peak	250	131	
2	2483.500	39.49	-7.76	31.73	54.00	-22.27	AVG	200	238	
3	2500.000	45.99	-7.71	38.28	74.00	-35.72	peak	250	320	
4	2500.000	36.46	-7.71	28.75	54.00	-25.25	AVG	250	89	

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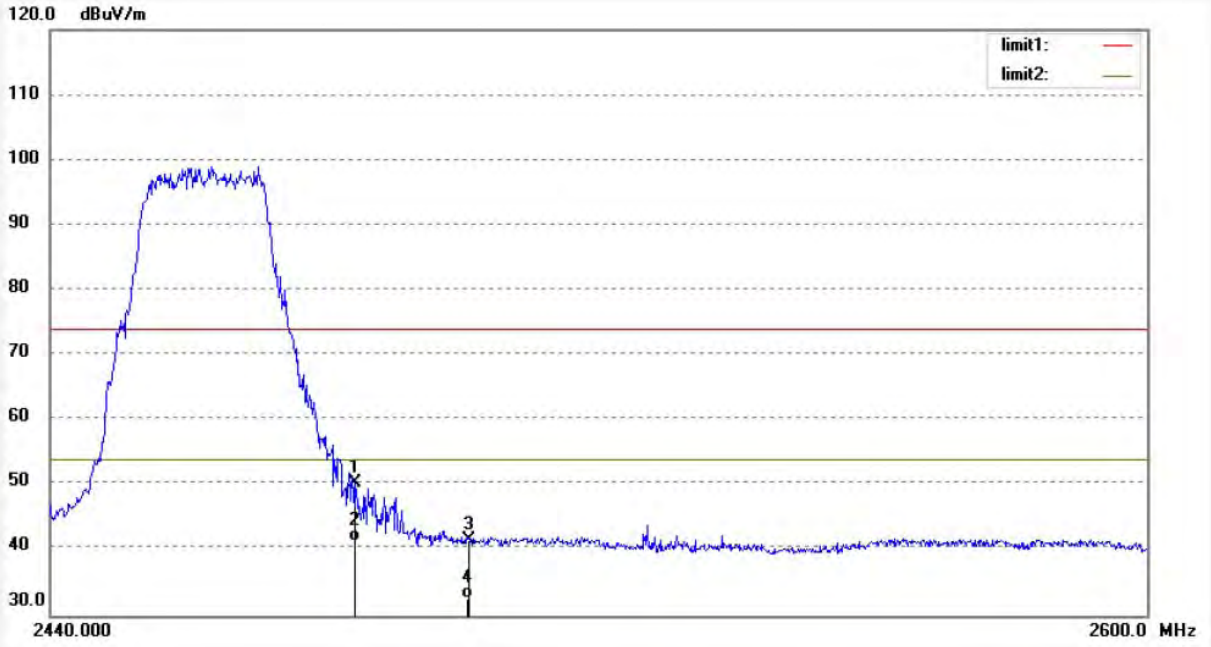
Fax:+86-0755-26503396

Job No.: frank2018 #326
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 11(802.11N20)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 16/41/00
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	58.14	-7.76	50.38	74.00	-23.62	peak	150	120	
2	2483.500	49.16	-7.76	41.40	54.00	-12.60	AVG	150	96	
3	2500.000	49.26	-7.71	41.55	74.00	-32.45	peak	150	56	
4	2500.000	40.32	-7.71	32.61	54.00	-21.39	AVG	200	182	

11.RADIATED SPURIOUS EMISSION TEST

11.1.Block Diagram of Test Setup

11.1.1.Block diagram of connection between the EUT and peripherals

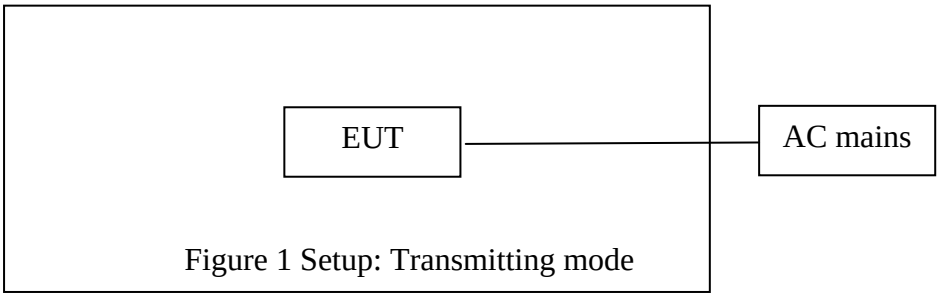
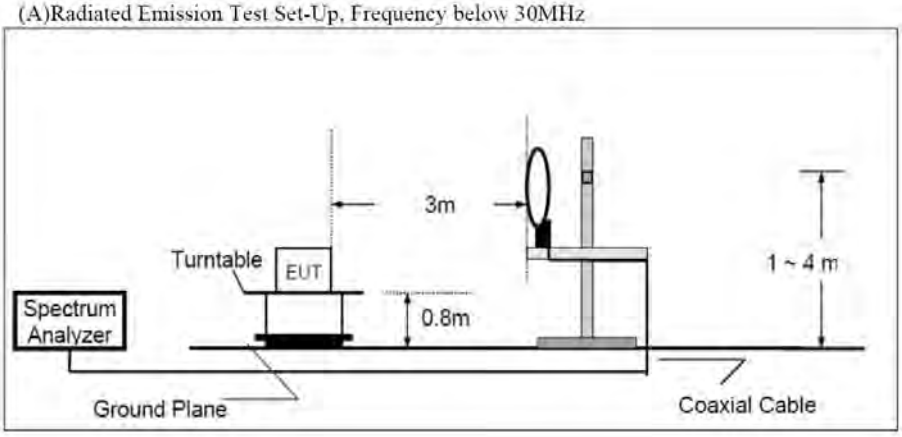


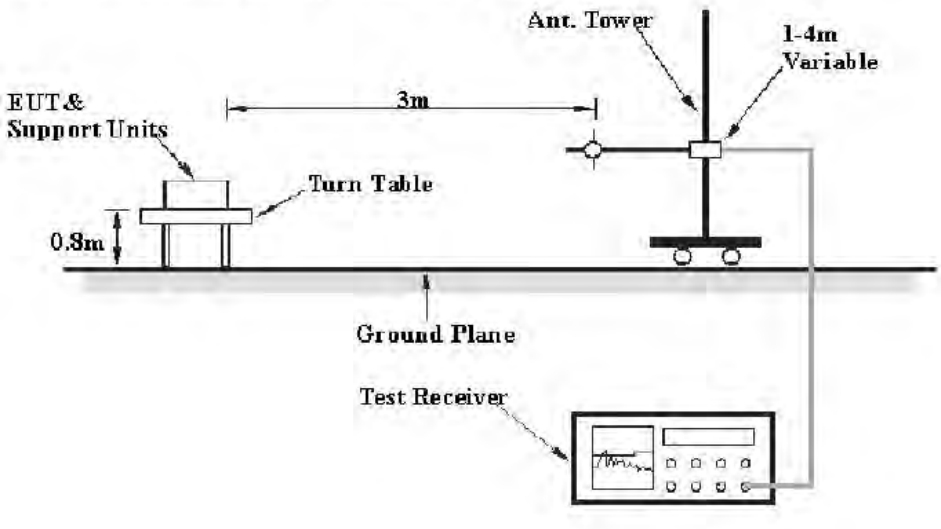
Figure 1 Setup: Transmitting mode

11.1.2.Semi-Anechoic Chamber Test Setup Diagram

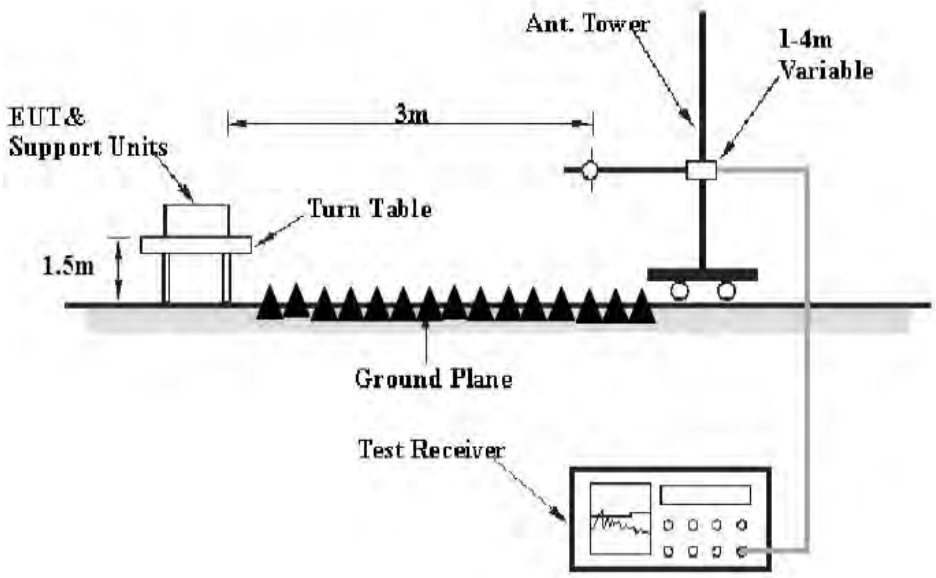
(A)Radiated Emission Test Set-Up, Frequency below 30MHz



(B)Radiated Emission Test Set-Up, Frequency 30MHz-1GHz



(C) Radiated Emission Test Set-Up, Frequency above 1GHz



11.2.The Limit For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

11.3.Restricted bands of operation

11.3.1.FCC Part 15.205 Restricted bands of operation

(a) Except as shown in paragraph (d) of this section, Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	([2])
13.36-13.41			

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

(b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in Section15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

11.4.Configuration of EUT on Measurement

The equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

11.5. Operating Condition of EUT

11.5.1. Setup the EUT and simulator as shown as Section 11.1.

11.5.2. Turn on the power of all equipment.

11.5.3. Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 . We select 2412MHz, 2437MHz, 2462MHz TX frequency to transmit.

11.6. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground(Below 1GHz). The EUT and its simulators are placed on a turntable, which is 1.5 meter high above ground(Above 1GHz). The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

The worst-case data rate for this channel to be 1Mbps for 802.11b mode and 6Mbps for 802.11g mode and 150Mbps for 802.11n mode, based on previous with 802.11 WLAN product design architectures.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

11.7.Data Sample

Frequency (MHz)	Reading (dBμv)	Factor (dB/m)	Result (dBμv/m)	Limit (dBμv/m)	Margin (dB)	Remark
X.XX	48.69	-13.35	35.34	46	-10.66	QP

Frequency(MHz) = Emission frequency in MHz
Reading(dBμv) = Uncorrected Analyzer/Receiver reading
Factor (dB/m) = Antenna factor + Cable Loss – Amplifier gain
Result(dBμv/m) = Reading(dBμv) + Factor(dB/m)
Limit (dBμv/m) = Limit stated in standard
Margin (dB) = Result(dBμv/m) - Limit (dBμv/m)
QP = Quasi-peak Reading

Calculation Formula:
Margin(dB) = Result (dBμV/m)–Limit(dBμV/m)
Result(dBμV/m)= Reading(dBμV)+ Factor(dB/m)

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the limit.

11.8.The Field Strength of Radiation Emission Measurement Results

PASS.

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

2. *: Denotes restricted band of operation.

3. The EUT is tested radiation emission at each test mode (802.11 b/g/n) in three axes. The worst emissions are reported in all test mode and channels.

4. The radiation emissions from 18-25GHz and 9KHz-30MHz are not reported, because the test values lower than the limits of 20dB.

5.We tested 802.11b,g,n mode and recorded the worst case data(802.11b) for radiated emission test below 1GHz.

Below 1G

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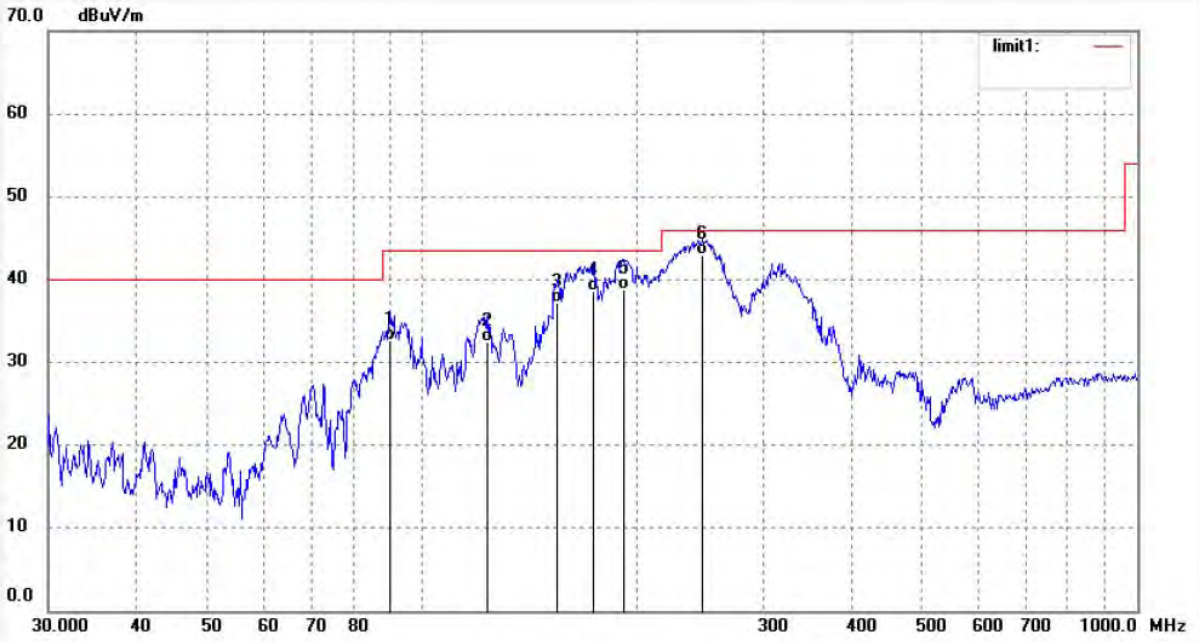
Job No.: frank2018 #264
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 1(802.11b)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/03/03/
Time: 9/25/45
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	90.4196	53.16	-20.56	32.60	43.50	-10.90	QP	200	101	
2	123.6149	52.42	-19.93	32.49	43.50	-11.01	QP	200	56	
3	154.2427	58.65	-21.39	37.26	43.50	-6.24	QP	200	198	
4	173.2050	58.64	-20.09	38.55	43.50	-4.95	QP	200	197	
5	191.1114	58.01	-19.19	38.82	43.50	-4.68	QP	200	306	
6	246.9901	60.75	-17.81	42.94	46.00	-3.06	QP	200	240	

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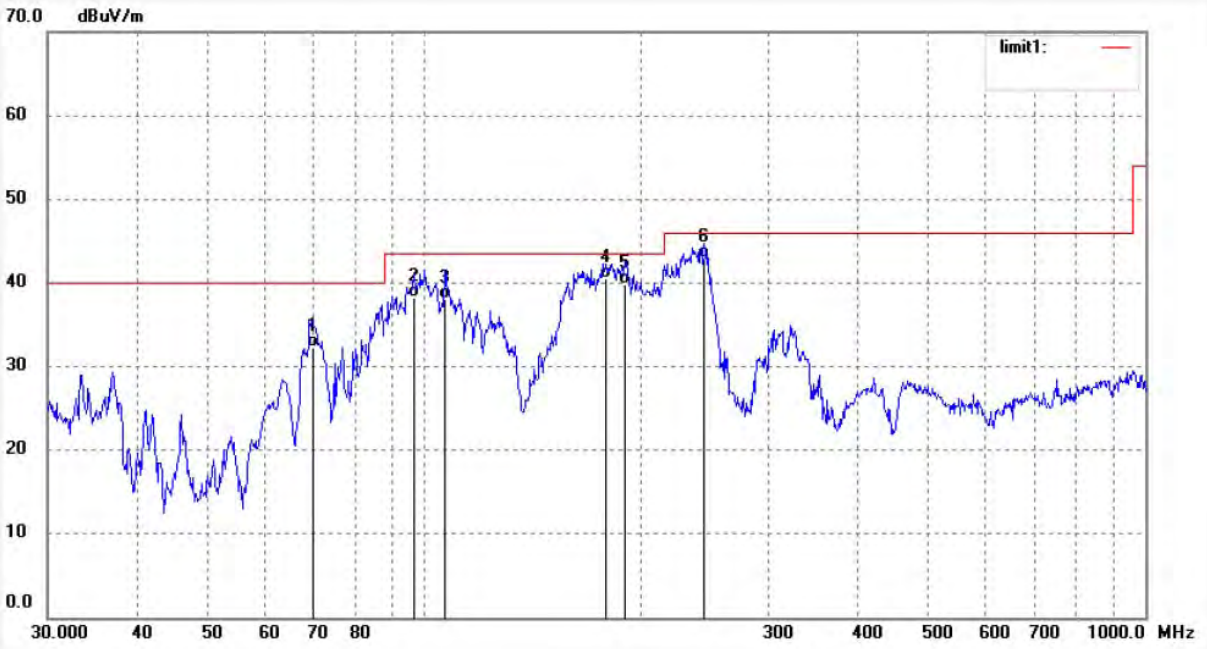
Job No.: frank2018 #265
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 1(802.11b)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/03/03/
Time: 9/27/46
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	69.9632	58.15	-25.78	32.37	40.00	-7.63	QP	100	89	
2	96.6620	57.65	-19.37	38.28	43.50	-5.22	QP	100	102	
3	106.6551	57.46	-19.37	38.09	43.50	-5.41	QP	100	59	
4	178.1425	60.48	-20.00	40.48	43.50	-3.02	QP	100	301	
5	189.7732	58.96	-19.21	39.75	43.50	-3.75	QP	100	199	
6	244.4002	60.70	-17.81	42.89	46.00	-3.11	QP	100	112	

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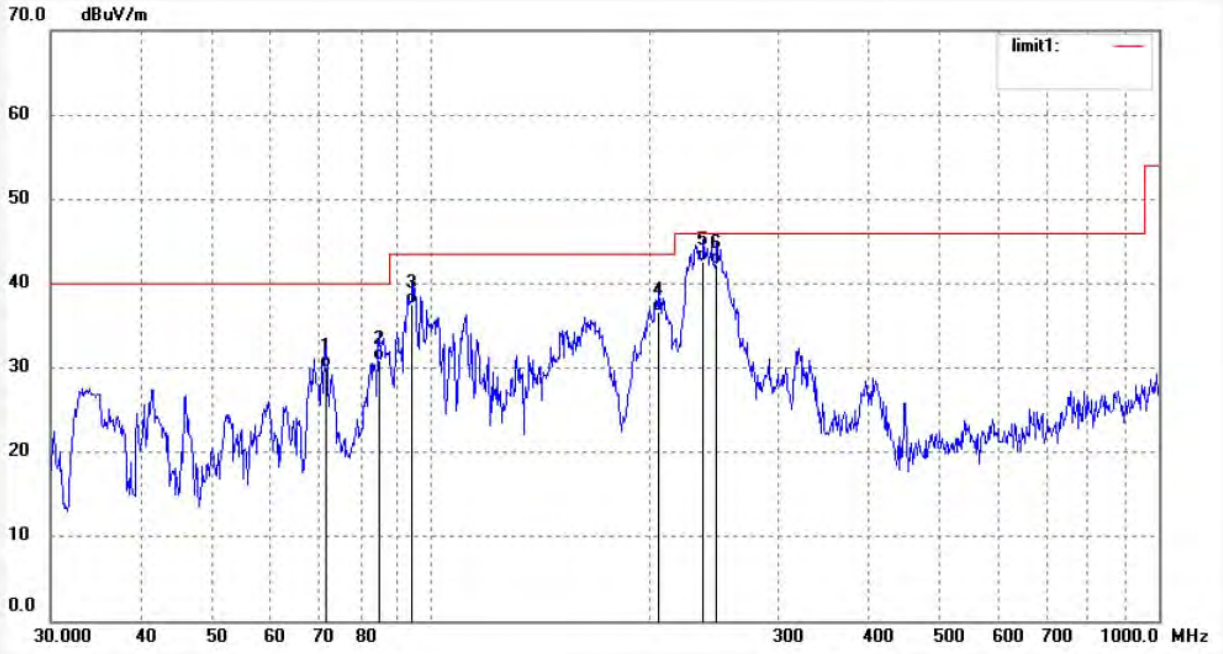
Job No.: frank2018 #266
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 6(802.11b)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/03/03/
Time: 9/45/58
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	71.7053	55.61	-25.67	29.94	40.00	-10.06	QP	100	101	
2	84.8782	53.49	-22.58	30.91	40.00	-9.09	QP	100	41	
3	94.3135	57.61	-20.03	37.58	43.50	-5.92	QP	100	60	
4	205.7458	55.64	-18.98	36.66	43.50	-6.84	QP	100	197	
5	236.7927	60.54	-17.92	42.62	46.00	-3.38	QP	100	62	
6	246.9901	60.15	-17.81	42.34	46.00	-3.66	QP	100	210	

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Job No.: frank2018 #267
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 6(802.11b)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/03/03/
Time: 9/25/45
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194

No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	90.4196	53.19	-20.56	32.63	43.50	-10.87	QP	200	102	
2	123.6149	52.84	-19.93	32.91	43.50	-10.59	QP	200	67	
3	168.9970	58.60	-20.25	38.35	43.50	-5.15	QP	200	194	
4	191.1114	58.64	-19.19	39.45	43.50	-4.05	QP	200	320	
5	246.9901	60.78	-17.81	42.97	46.00	-3.03	QP	200	54	
6	315.8599	55.70	-16.15	39.55	46.00	-6.45	QP	200	251	

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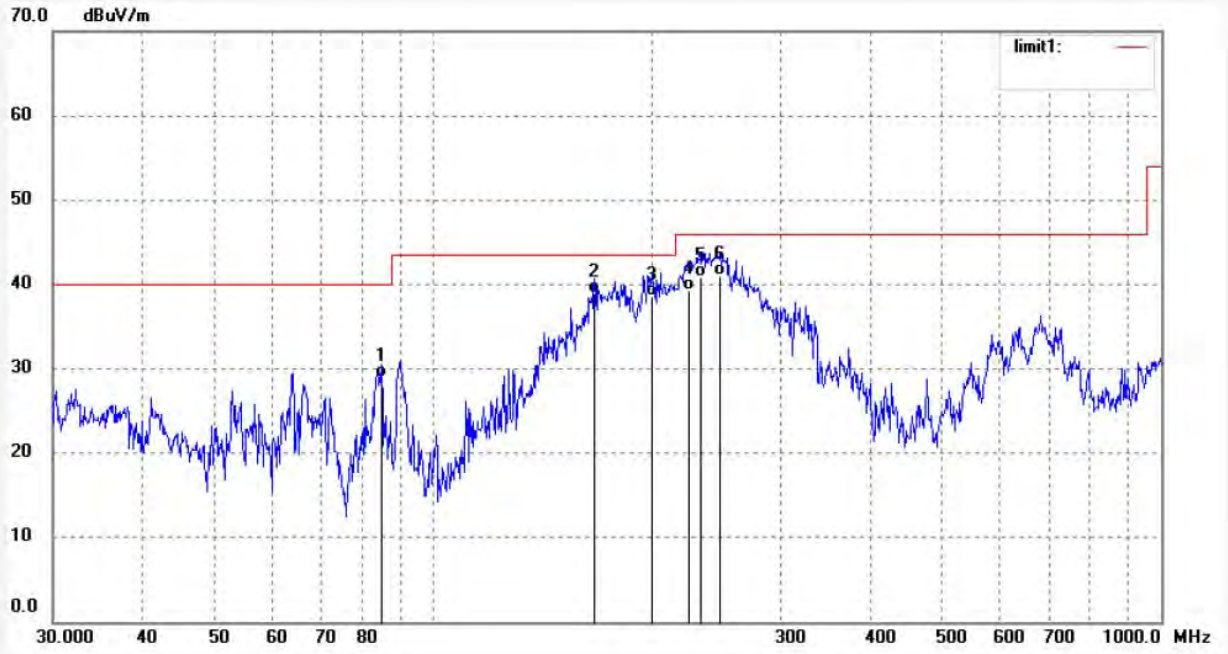
Job No.: frank2018 #268
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 11(802.11b)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/03/03/
Time: 9/48/04
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	84.8782	50.46	-21.58	28.88	40.00	-11.12	QP	200	101	
2	166.6383	59.49	-20.59	38.90	43.50	-4.60	QP	200	29	
3	199.3414	57.61	-19.10	38.51	43.50	-4.99	QP	200	331	
4	223.0629	57.69	-18.38	39.31	46.00	-6.69	QP	200	201	
5	232.6690	58.91	-18.08	40.83	46.00	-5.17	QP	200	64	
6	247.8593	58.92	-17.81	41.11	46.00	-4.89	QP	200	94	

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Job No.: frank2018 #269
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 11(802.11b)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/03/03/
Time: 9/50/28
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194

No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	38.7714	53.16	-19.22	33.94	40.00	-6.06	QP	100	102	
2	41.3029	53.55	-19.56	33.99	40.00	-6.01	QP	100	91	
3	70.2095	59.64	-25.77	33.87	40.00	-6.13	QP	100	301	
4	100.1187	56.49	-18.60	37.89	43.50	-5.61	QP	100	53	
5	214.6063	58.46	-18.67	39.79	43.50	-3.71	QP	100	94	
6	239.3019	59.61	-17.83	41.78	46.00	-4.22	QP	100	180	

Above 1G

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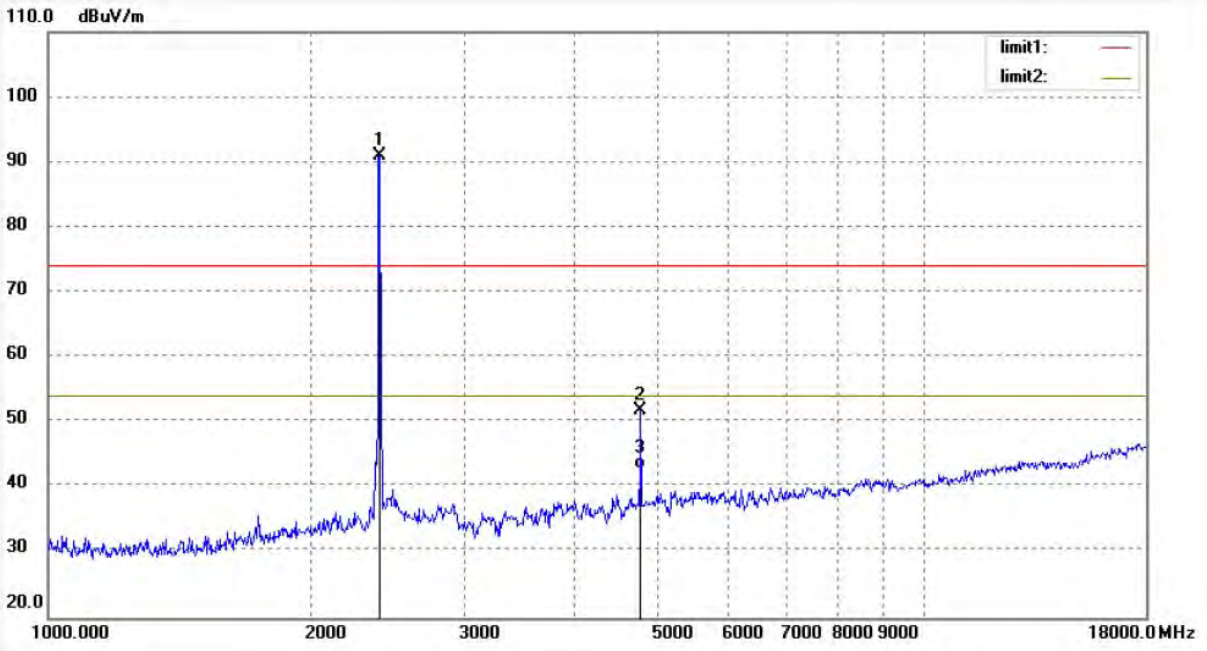
Job No.: frank2018 #302	Polarization: Horizontal
Standard: FCC PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2018-3-7
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 15/45/56
EUT: LED Strip Light	Engineer Signature: frank
Mode: TX Channel 1(802.11b)	Distance: 3m
Model: ASL02	
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.	

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2412.000	98.95	-7.98	90.97	74.00	16.97	peak	250	48	
2	4824.000	54.32	-2.44	51.88	74.00	-22.12	peak	200	121	
3	4824.000	45.38	-2.44	42.94	54.00	-11.06	AVG	250	156	

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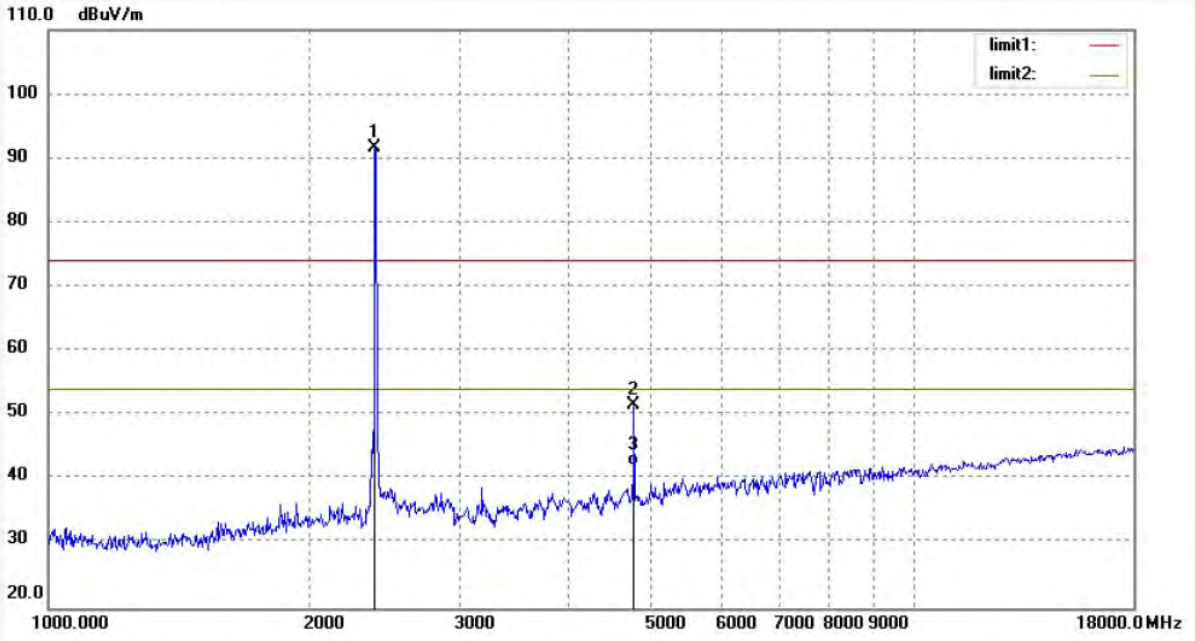
Job No.: frank2018 #303
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 1(802.11b)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 15/47/22
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2412.000	99.63	-8.00	91.63	74.00	17.63	peak	150	54	
2	4824.000	54.14	-2.44	51.70	74.00	-22.30	peak	150	210	
3	4824.000	44.56	-2.44	42.12	54.00	-11.88	AVG	150	174	

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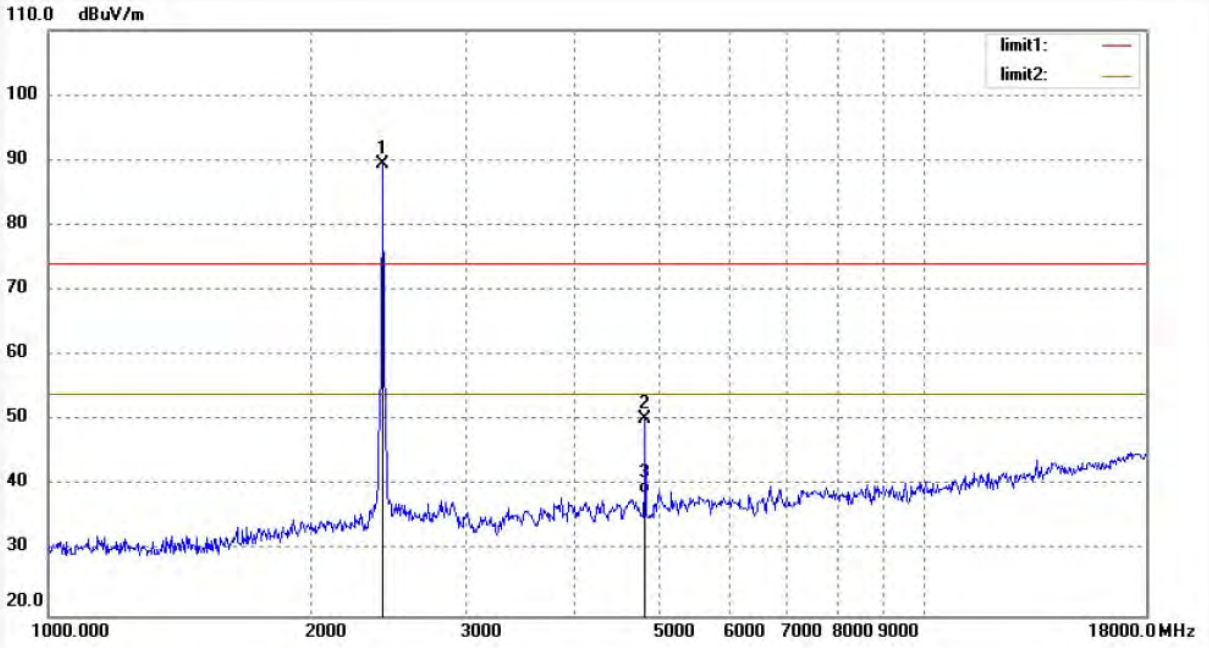
Job No.: frank2018 #304
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 6(802.11b)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 15/49/05
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2437.000	97.27	-7.96	89.31	74.00	15.31	peak	150	207	
2	4874.000	52.48	-2.25	50.23	74.00	-23.77	peak	150	104	
3	4874.000	41.15	-2.25	38.90	54.00	-15.10	AVG	150	357	

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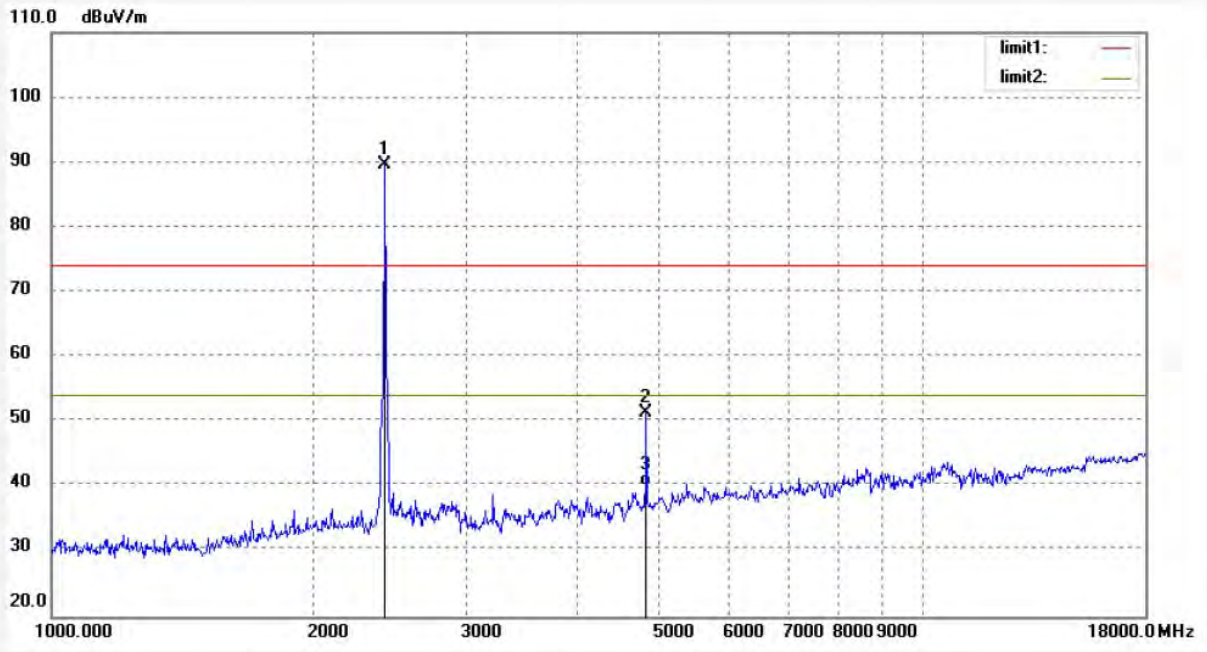
Job No.: frank2018 #305
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 6(802.11b)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 15/50/35
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2437.000	97.55	-7.93	89.62	74.00	15.62	peak	250	91	
2	4874.000	53.57	-2.25	51.32	74.00	-22.68	peak	250	100	
3	4874.000	42.45	-2.25	40.20	54.00	-13.80	AVG	250	318	

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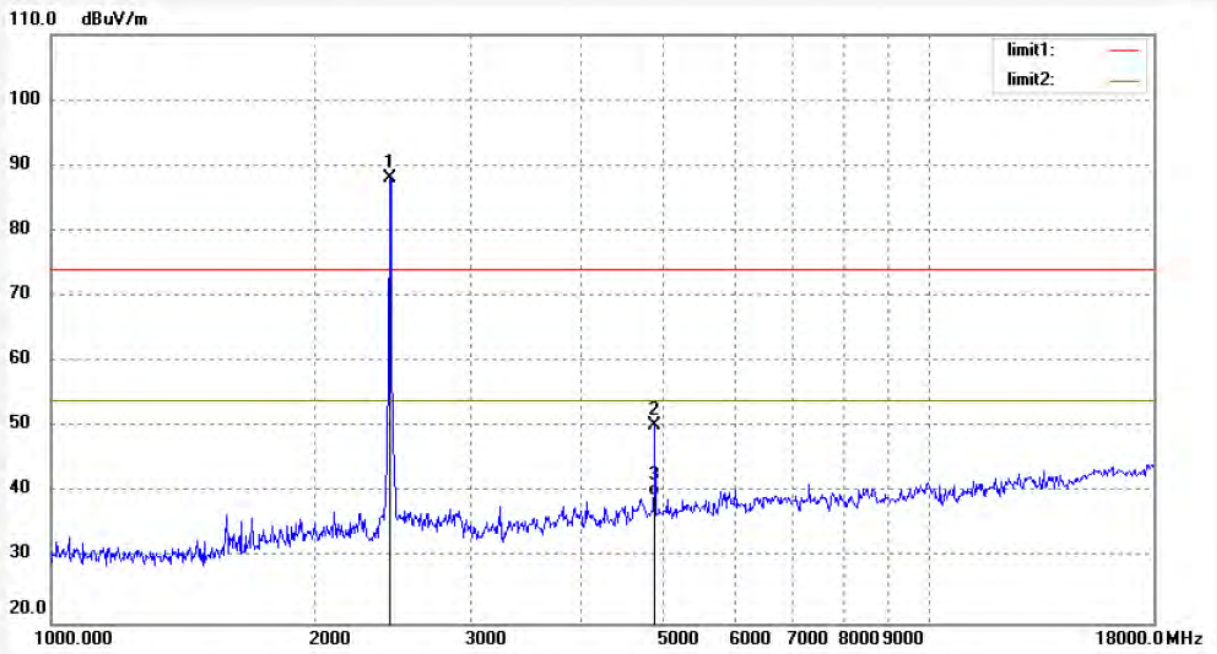
Job No.: frank2018 #306
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 11(802.11b)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 15/52/13
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2462.000	96.03	-7.90	88.13	74.00	14.13	peak	250	101	
2	4924.000	52.28	-2.05	50.23	74.00	-23.77	peak	250	92	
3	4924.000	41.44	-2.05	39.39	54.00	-14.61	AVG	250	317	

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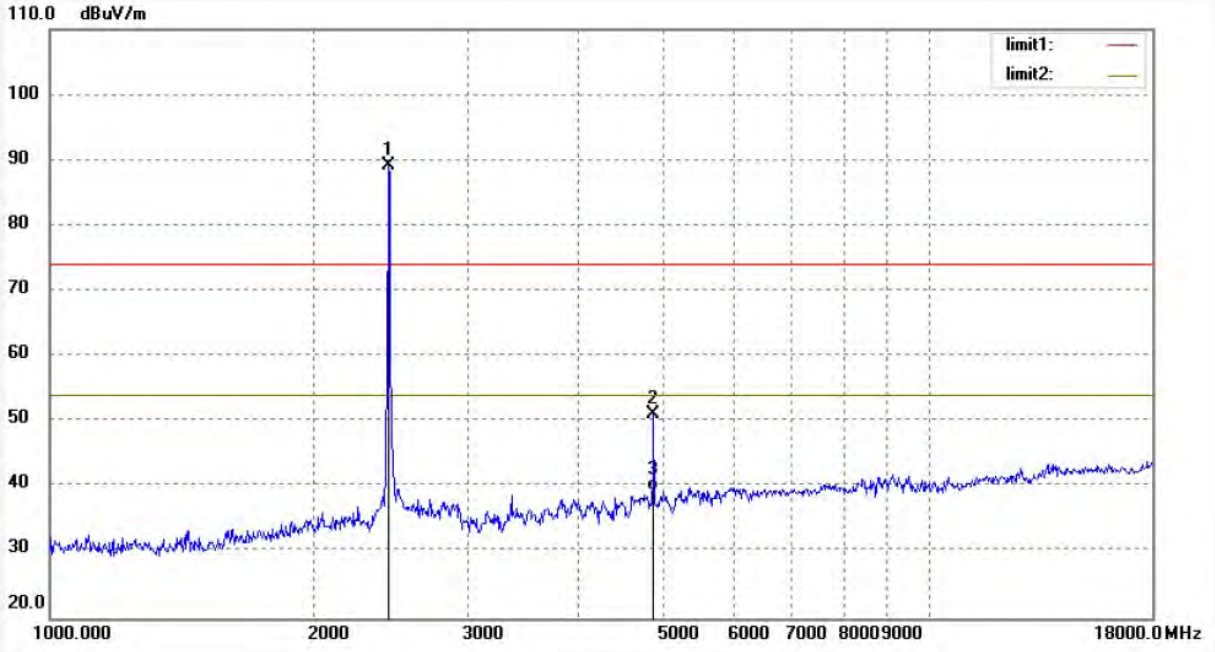
Job No.: frank2018 #307
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 11(802.11b)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 15/54/21
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2462.000	97.10	-7.90	89.20	74.00	15.20	peak	150	320	
2	4924.000	53.22	-2.05	51.17	74.00	-22.83	peak	150	120	
3	4924.000	41.45	-2.05	39.40	54.00	-14.60	AVG	150	314	

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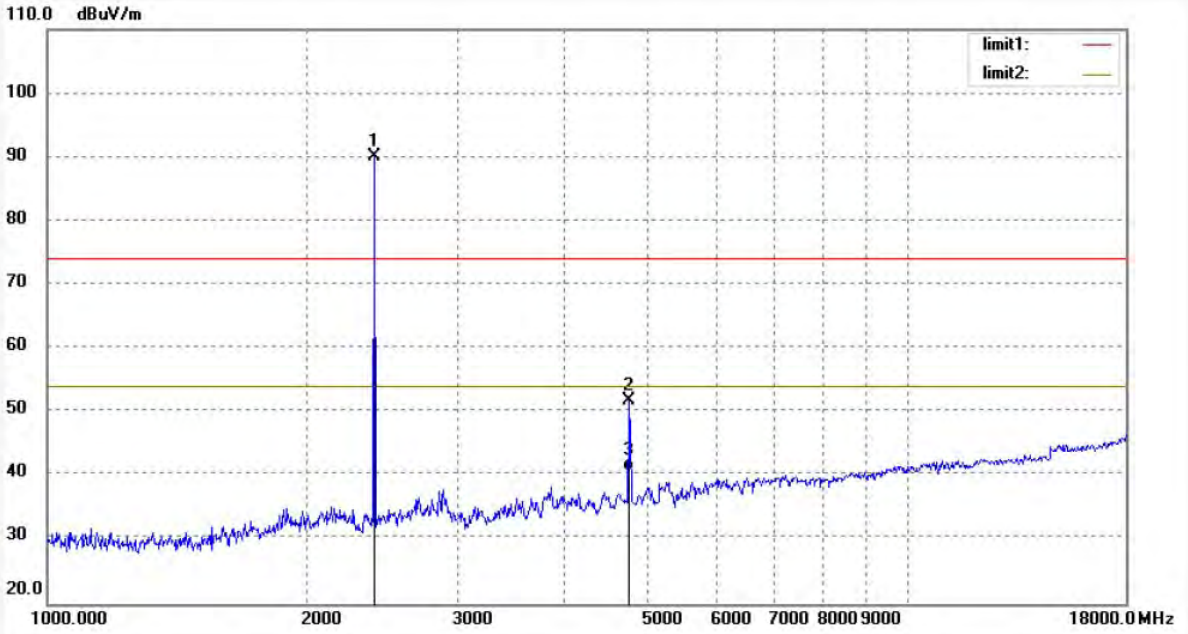
Job No.: frank2018 #309	Polarization: Horizontal
Standard: FCC PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2018-3-7
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 16/01/48
EUT: LED Strip Light	Engineer Signature: frank
Mode: TX Channel 1(802.11G)	Distance: 3m
Model: ASL02	
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.	

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2412.000	98.16	-7.97	90.19	74.00	16.19	peak	250	110	
2	4824.000	54.26	-2.44	51.82	74.00	-22.18	peak	250	96	
3	4824.000	43.15	-2.44	40.71	54.00	-13.29	AVG	250	134	

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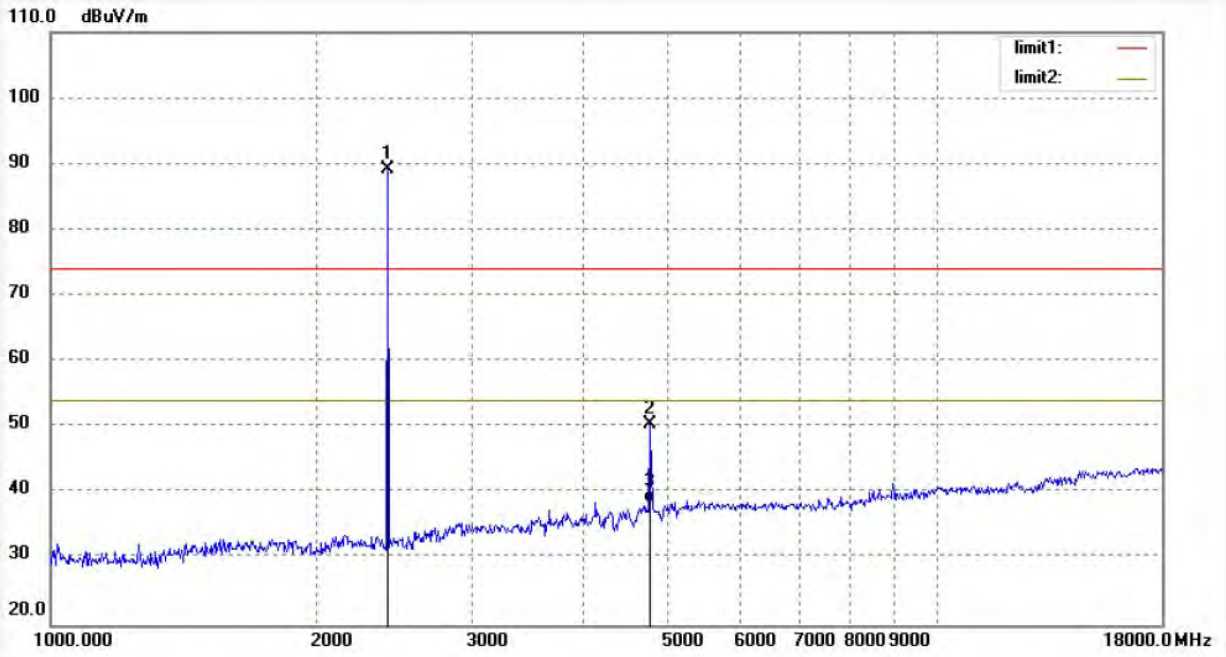
Job No.: frank2018 #310
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 1(802.11G)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 16/03/19
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2412.000	97.13	-7.97	89.16	74.00	15.16	peak	200	122	
2	4824.000	52.87	-2.48	50.39	74.00	-23.61	peak	250	178	
3	4824.000	41.14	-2.48	38.66	54.00	-15.34	AVG	250	347	

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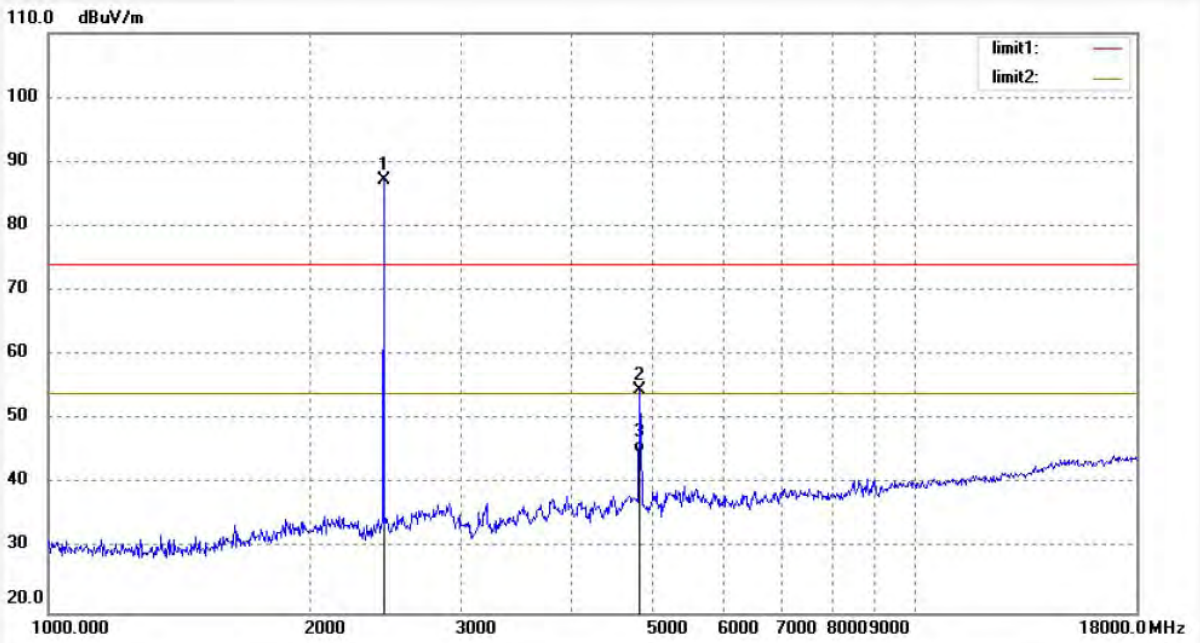
Fax:+86-0755-26503396

Job No.: frank2018 #311
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 6(802.11G)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 16/05/06
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2437.000	94.97	-7.88	87.09	74.00	13.09	peak	150	231	
2	4874.000	56.79	-2.25	54.54	74.00	-19.46	peak	150	22	
3	4874.000	47.15	-2.25	44.90	54.00	-9.10	AVG	150	314	

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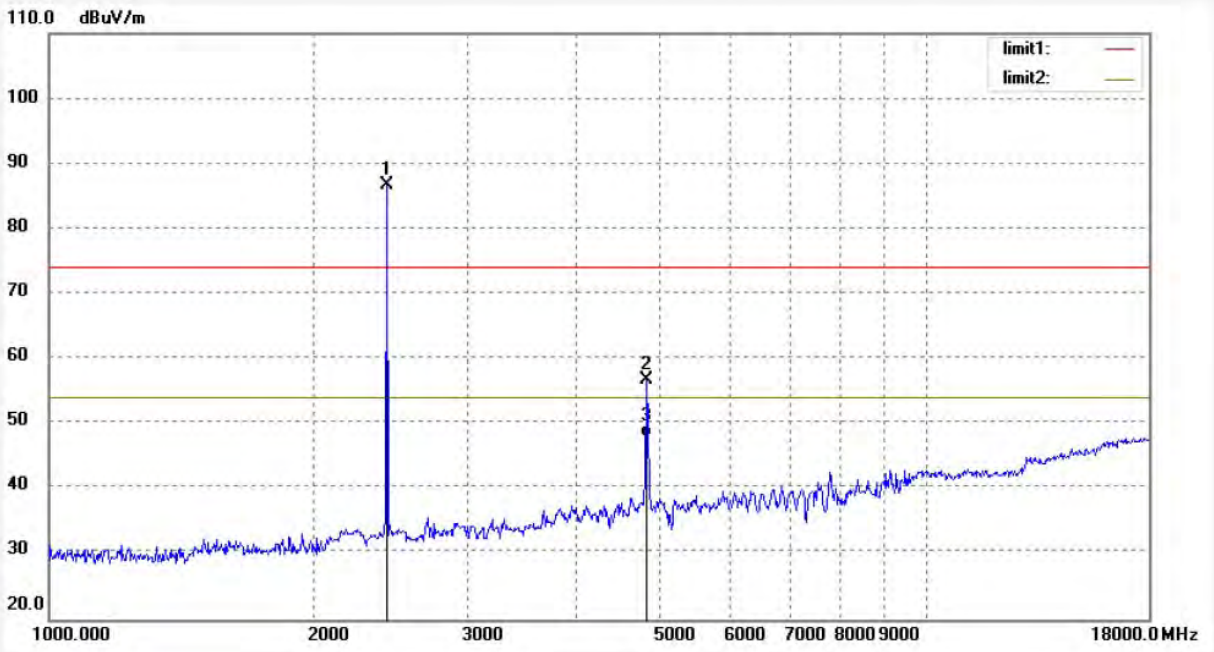
Job No.: frank2018 #312
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 6(802.11G)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 16/06/08
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2437.000	94.66	-7.90	86.76	74.00	12.76	peak	150	210	
2	4874.000	59.11	-2.25	56.86	74.00	-17.14	peak	150	28	
3	4874.000	50.18	-2.25	47.93	54.00	-6.07	AVG	150	312	

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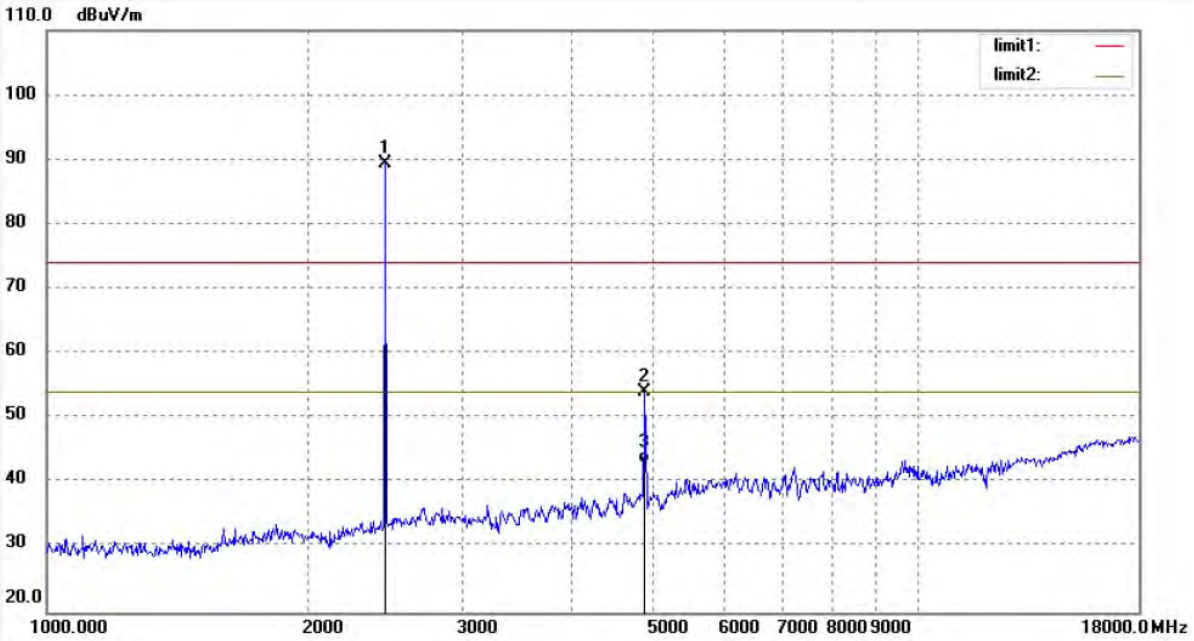
Job No.: frank2018 #313
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 11(802.11G)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 16/07/29
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2462.000	97.33	-7.84	89.49	74.00	15.49	peak	200	115	
2	4924.000	56.15	-2.05	54.10	74.00	-19.90	peak	250	97	
3	4924.000	45.15	-2.05	43.10	54.00	-10.90	AVG	250	310	

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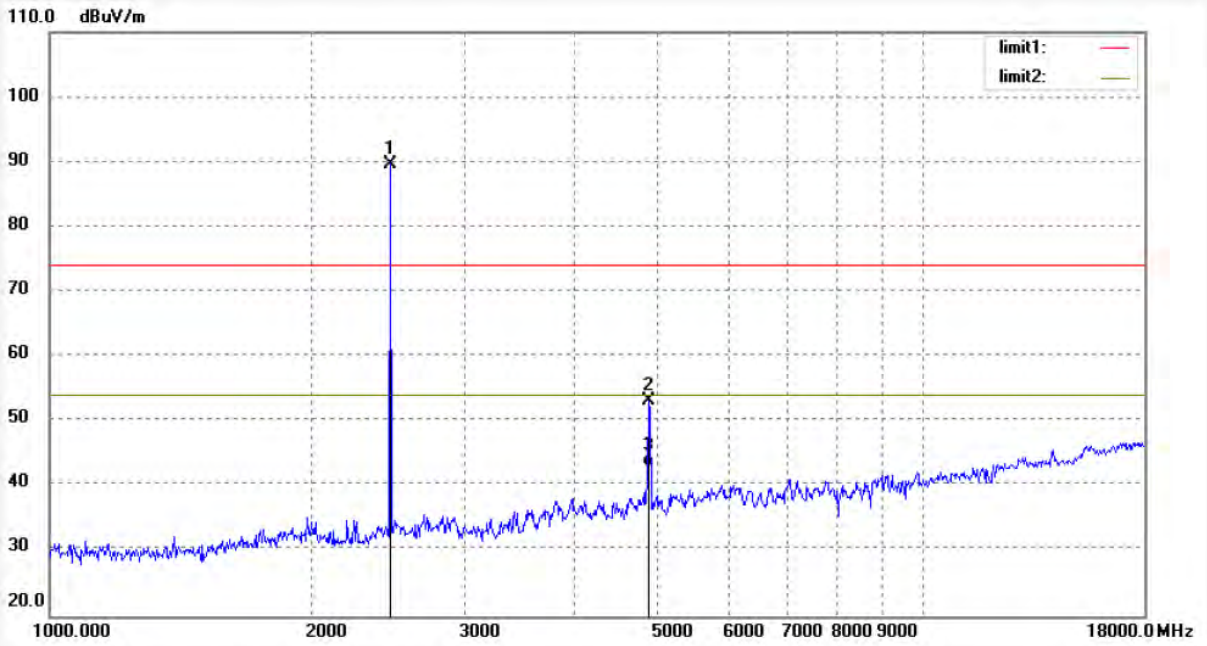
Job No.: frank2018 #314
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 11(802.11G)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 16/08/28
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2462.000	97.55	-7.83	89.72	74.00	15.72	peak	250	76	
2	4924.000	55.27	-2.10	53.17	74.00	-20.83	peak	250	51	
3	4924.000	45.15	-2.10	43.05	54.00	-10.95	AVG	250	315	

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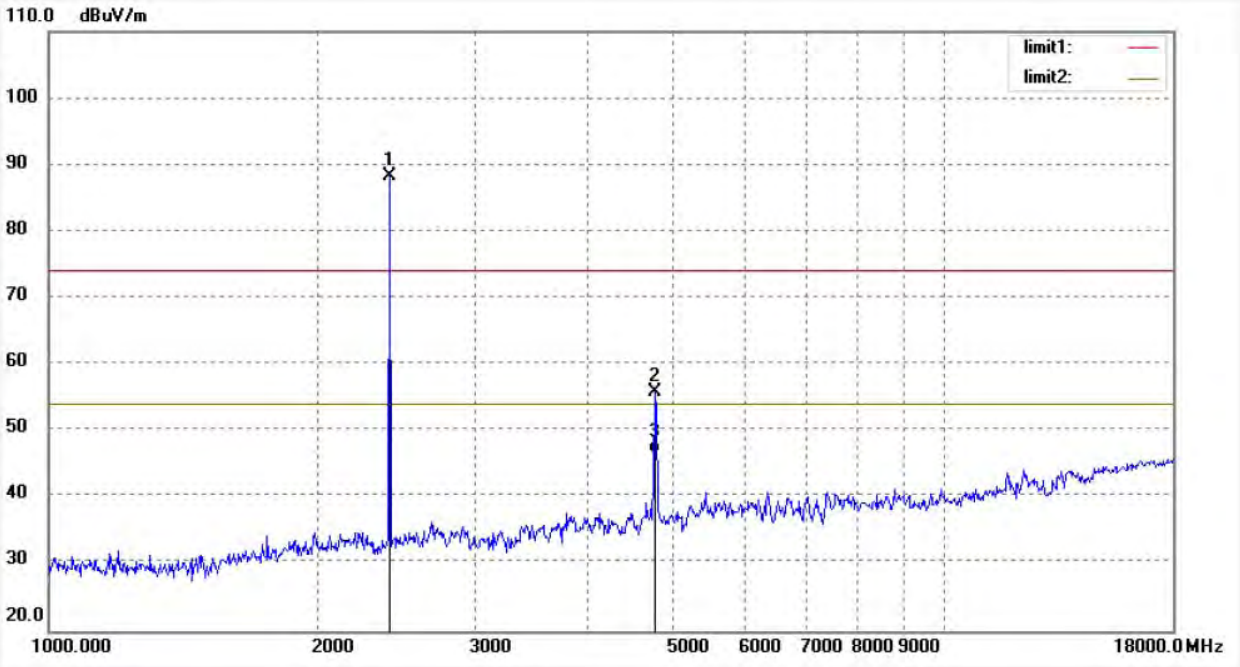
Fax:+86-0755-26503396

Job No.: frank2018 #315
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 1(802.11N20)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 16/10/09
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2412.000	96.24	-7.97	88.27	74.00	14.27	peak	150	102	
2	4824.000	58.40	-2.48	55.92	74.00	-18.08	peak	150	48	
3	4824.000	49.15	-2.48	46.67	54.00	-7.33	AVG	150	79	

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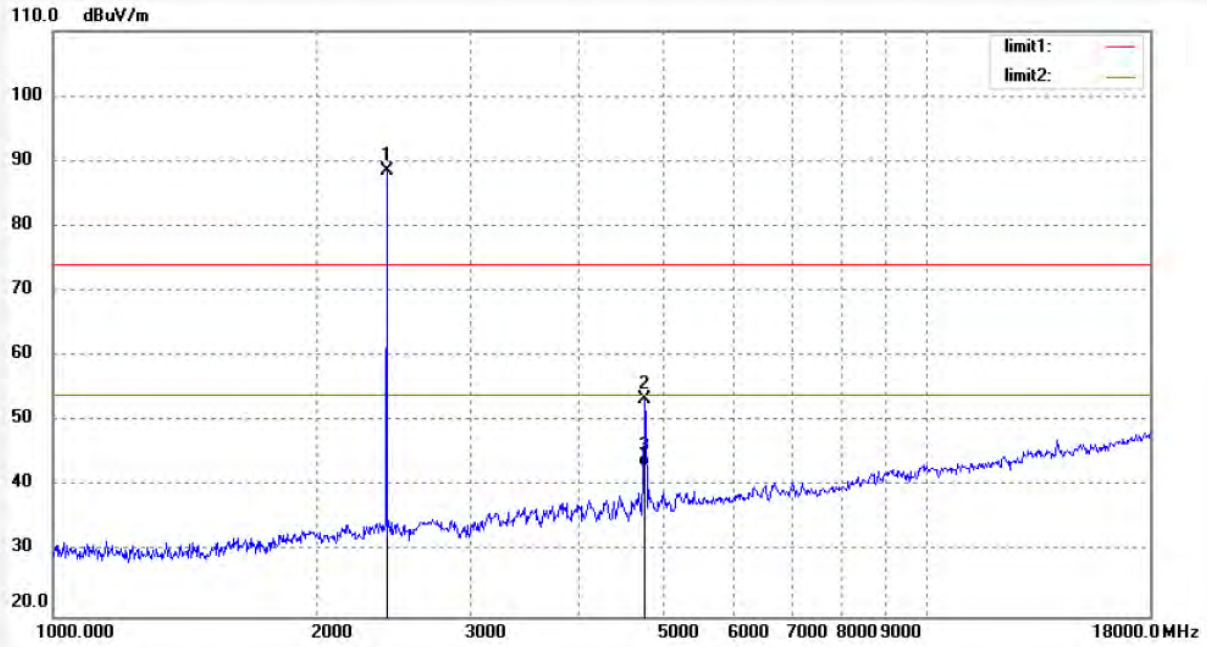
Fax:+86-0755-26503396

Job No.: frank2018 #316
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 1(802.11N20)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 16/11/53
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2412.000	96.50	-7.96	88.54	74.00	14.54	peak	150	231	
2	4824.000	55.85	-2.44	53.41	74.00	-20.59	peak	150	102	
3	4824.000	45.48	-2.44	43.04	54.00	-10.96	AVG	150	312	

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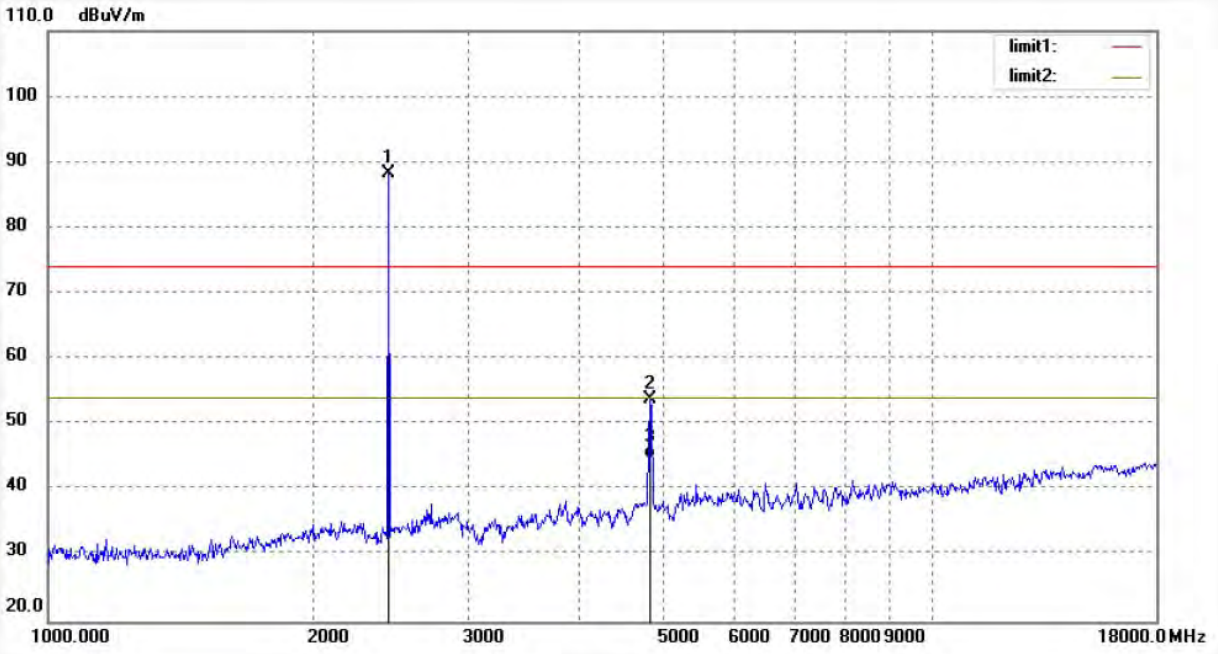
Fax:+86-0755-26503396

Job No.: frank2018 #319
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 6(802.11N20)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 16/19/20
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2437.000	96.08	-7.90	88.18	74.00	14.18	peak	250	310	
2	4874.000	56.05	-2.25	53.80	74.00	-20.20	peak	300	127	
3	4874.000	47.16	-2.25	44.91	54.00	-9.09	AVG	300	102	

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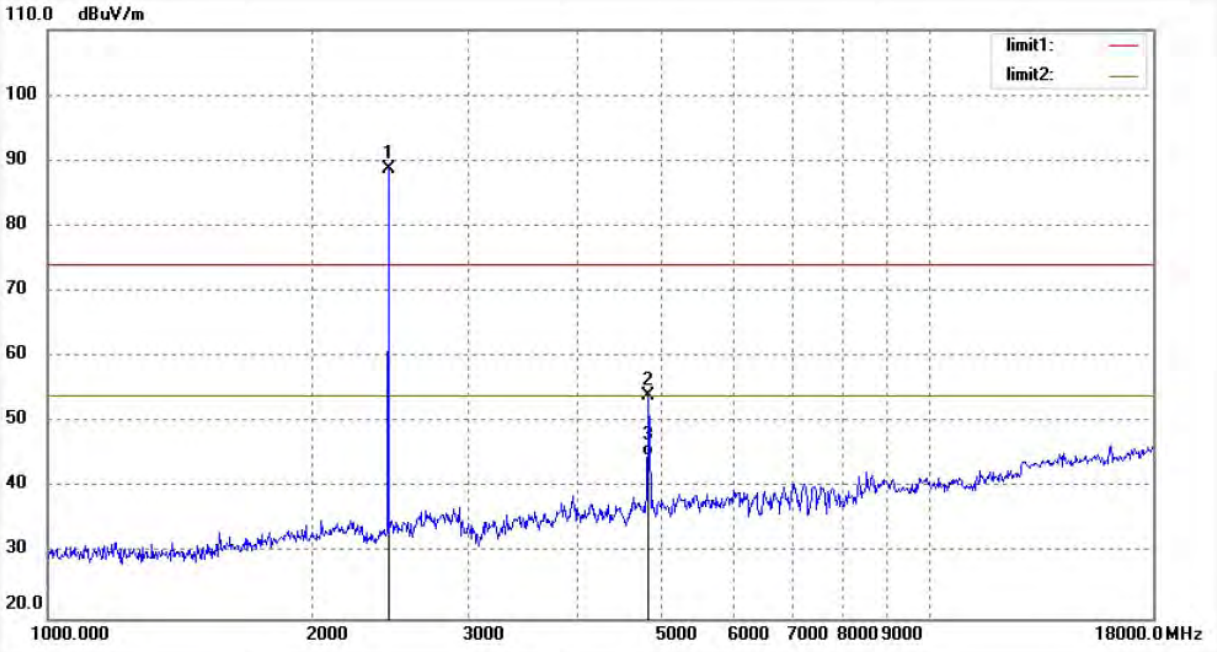
Fax:+86-0755-26503396

Job No.: frank2018 #320
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 6(802.11N20)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 16/20/11
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2437.000	96.54	-7.88	88.66	74.00	14.66	peak	250	102	
2	4874.000	56.33	-2.25	54.08	74.00	-19.92	peak	250	322	
3	4874.000	47.15	-2.25	44.90	54.00	-9.10	AVG	250	38	

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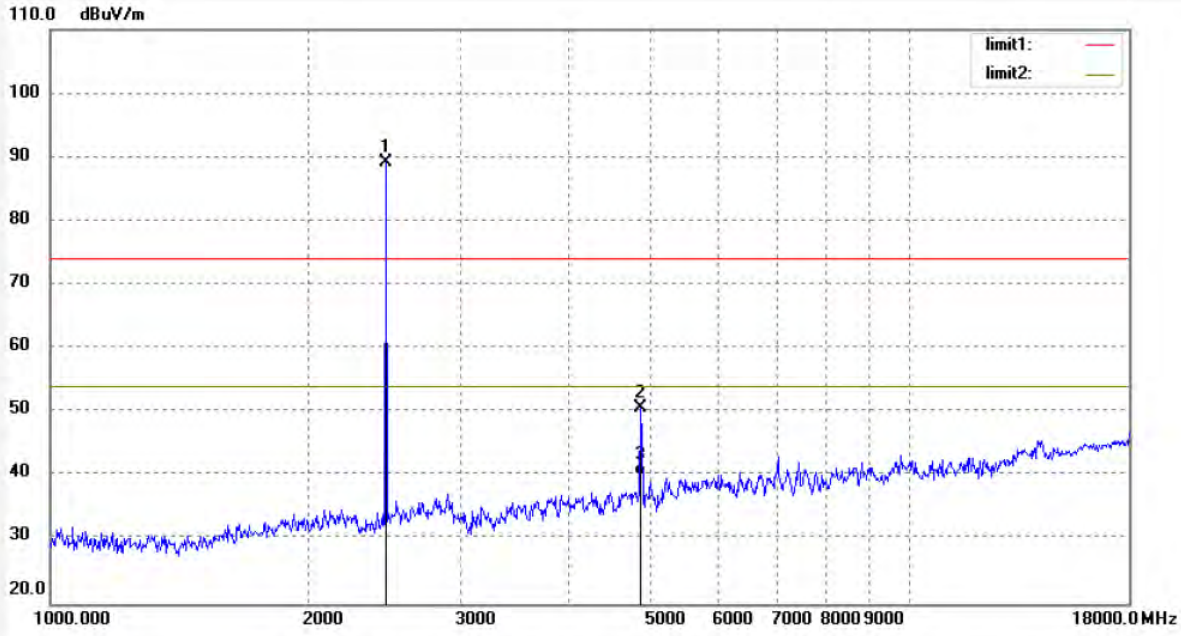
Job No.: frank2018 #321
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 11(802.11N20)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 16/22/01
Engineer Signature: frank
Distance: 3m

Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2462.000	96.94	-7.83	89.11	74.00	15.11	peak	150	98	
2	4924.000	52.79	-2.10	50.69	74.00	-23.31	peak	150	210	
3	4924.000	42.18	-2.10	40.08	54.00	-13.92	AVG	150	312	

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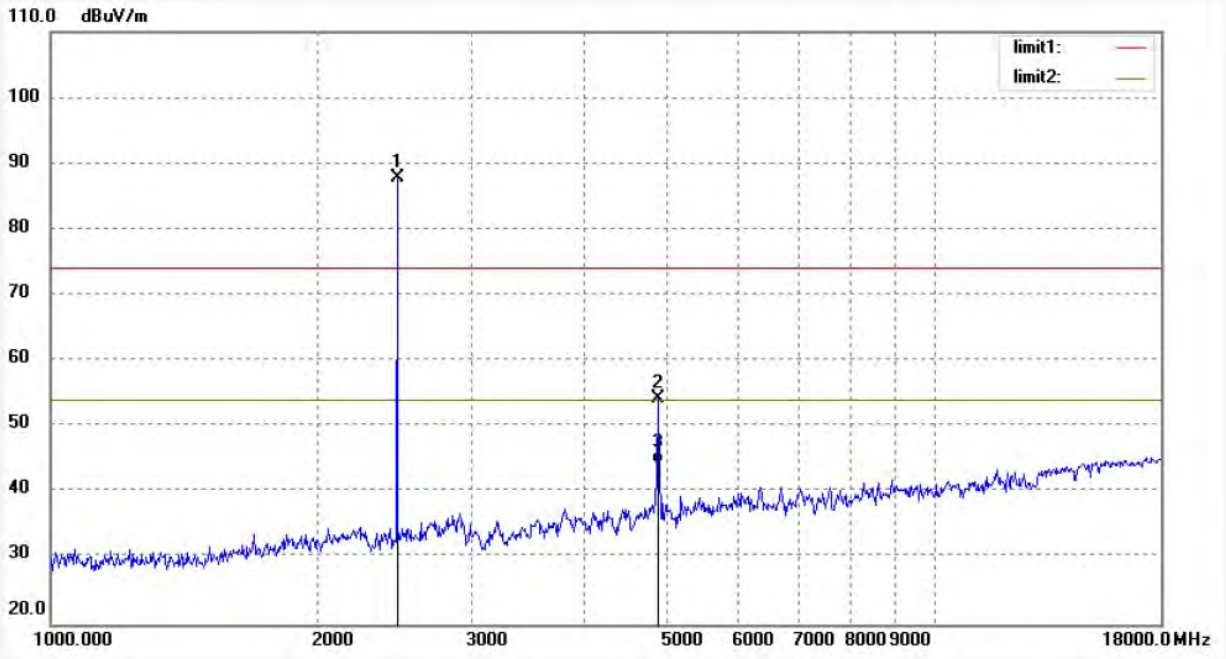
Job No.: frank2018 #322
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: LED Strip Light
Mode: TX Channel 11(802.11N20)
Model: ASL02
Manufacturer: VIVANT (Dongguan)Intelligent Technolgy Co., Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2018-3-7
Time: 16/22/33
Engineer Signature: frank
Distance: 3m

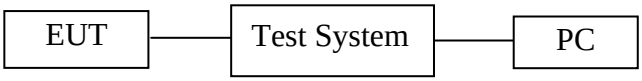
Note: Report NO.:ATE20180194



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2462.000	95.53	-7.80	87.73	74.00	13.73	peak	150	320	
2	4924.000	56.42	-2.05	54.37	74.00	-19.63	peak	150	123	
3	4924.000	46.45	-2.05	44.40	54.00	-9.60	AVG	150	102	

12.99% OCCUPIED BANDWIDTH

12.1.Block Diagram of Test Setup



12.2.EUT Configuration on Measurement

The following equipment is installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

12.3.Operating Condition of EUT

12.3.1.Setup the EUT and simulator as shown as Section 12.1.

12.3.2.Turn on the power of all equipment.

12.3.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 . We select 2412MHz, 2437MHz, 2462MHz TX frequency to transmit.

12.4.Test Procedure

12.4.1.The transmitter output was connected to the spectrum analyzer through a low loss cable. The transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

12.4.2.The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

12.4.3.A peak, or peak hold, may be used in place of the sampling detector as this may produce a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold may be necessary to determine the occupied bandwidth if the device is not transmitting continuously.

12.4.4.Set SPA “Meas” function, Select “Occupied Bandwidth” function, Select “99% Power Bandwidth”. The frequency of the upper and lower markers indicating the edges of the transmitters “99% Power” emission bandwidth shall be recorded to automate by SPA.

12.5.Measurement Result

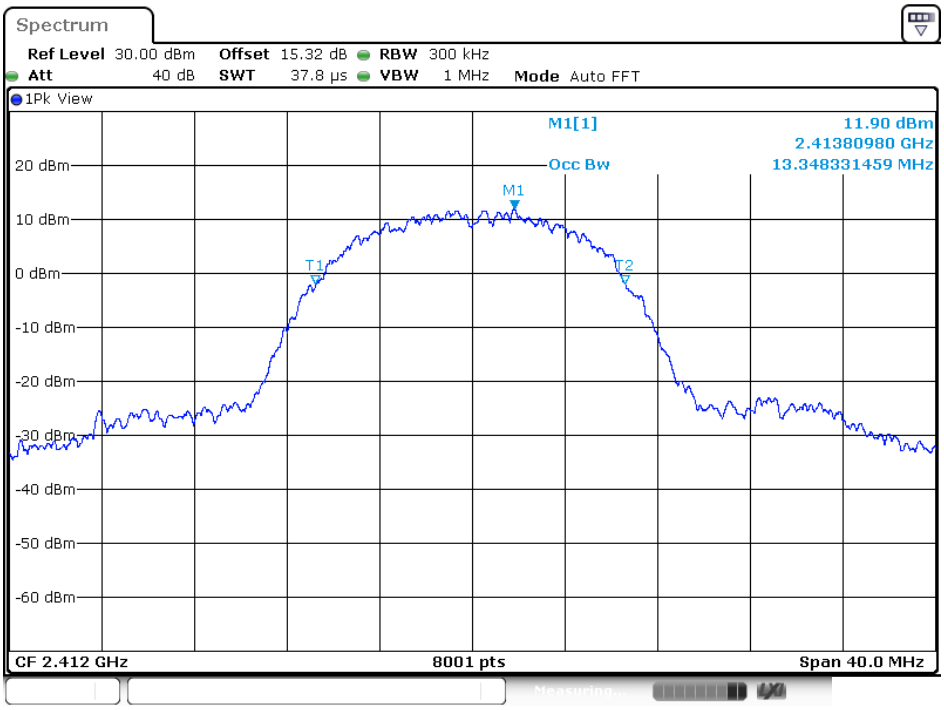
The test was performed with 802.11b		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
Low	2412	13.348
Middle	2437	13.398
High	2462	13.428

The test was performed with 802.11g		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
Low	2412	16.768
Middle	2437	16.663
High	2462	16.638

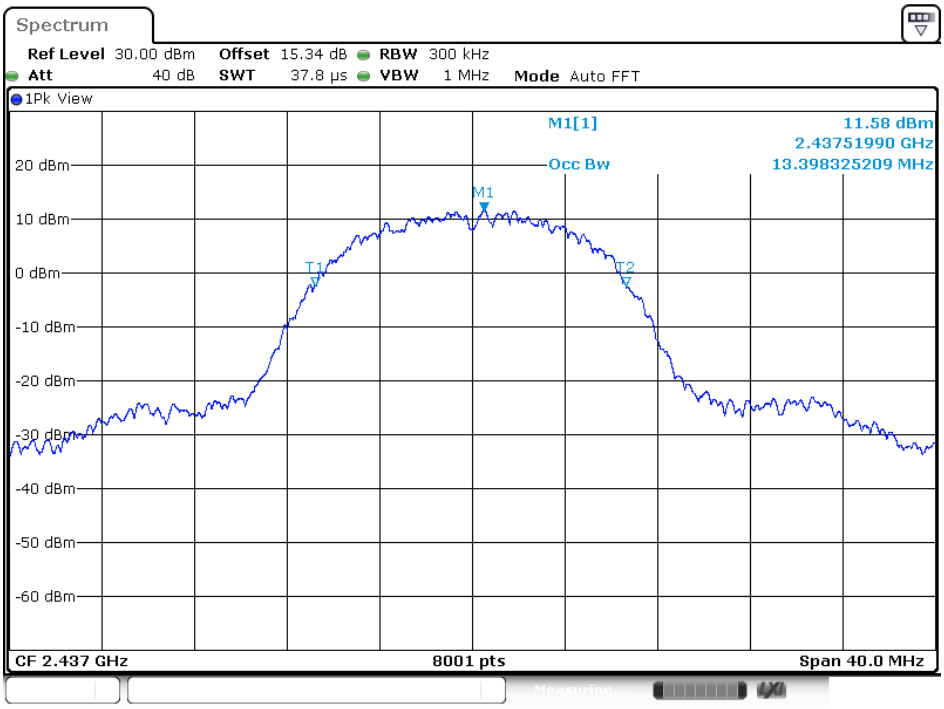
The test was performed with 802.11n (Bandwidth: 20 MHz)		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
Low	2412	17.808
Middle	2437	17.863
High	2462	17.873

The spectrum analyzer plots are attached as below.

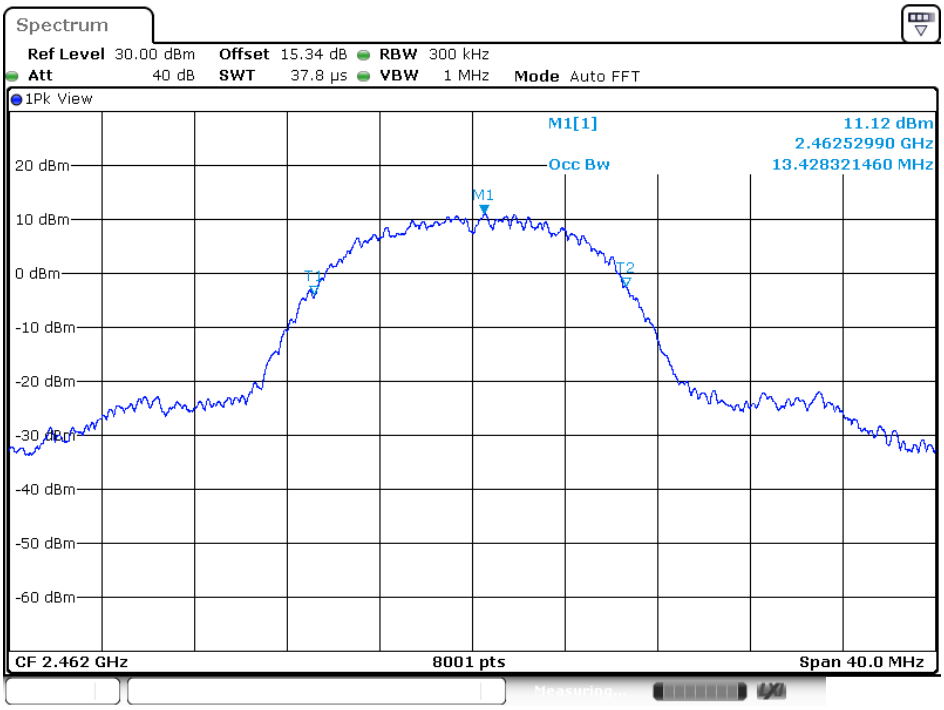
802.11b Channel Low 2412MHz



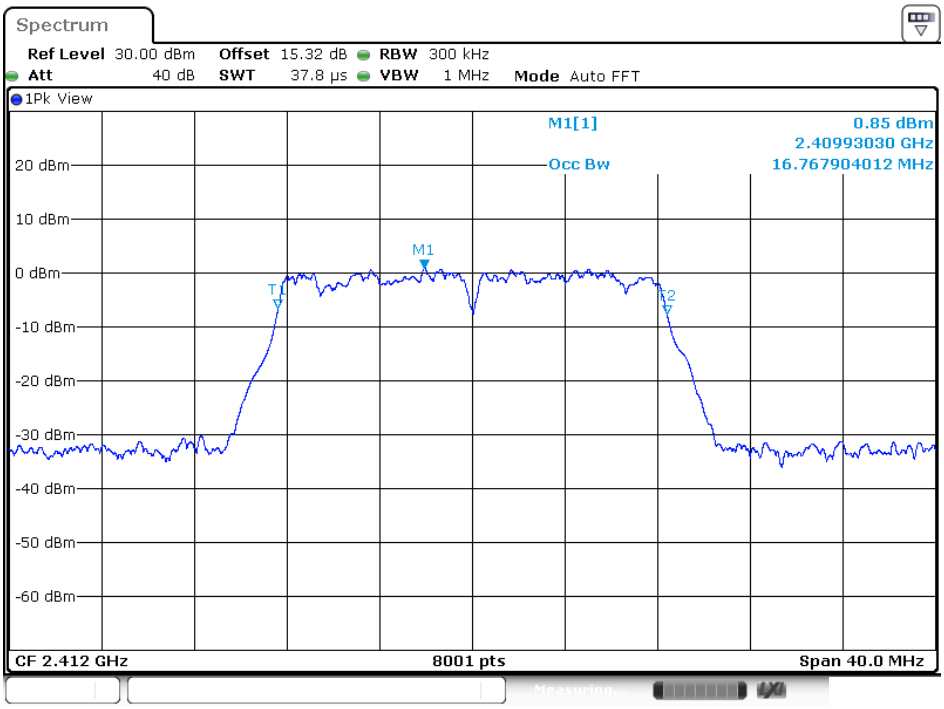
802.11b Channel Middle 2437MHz



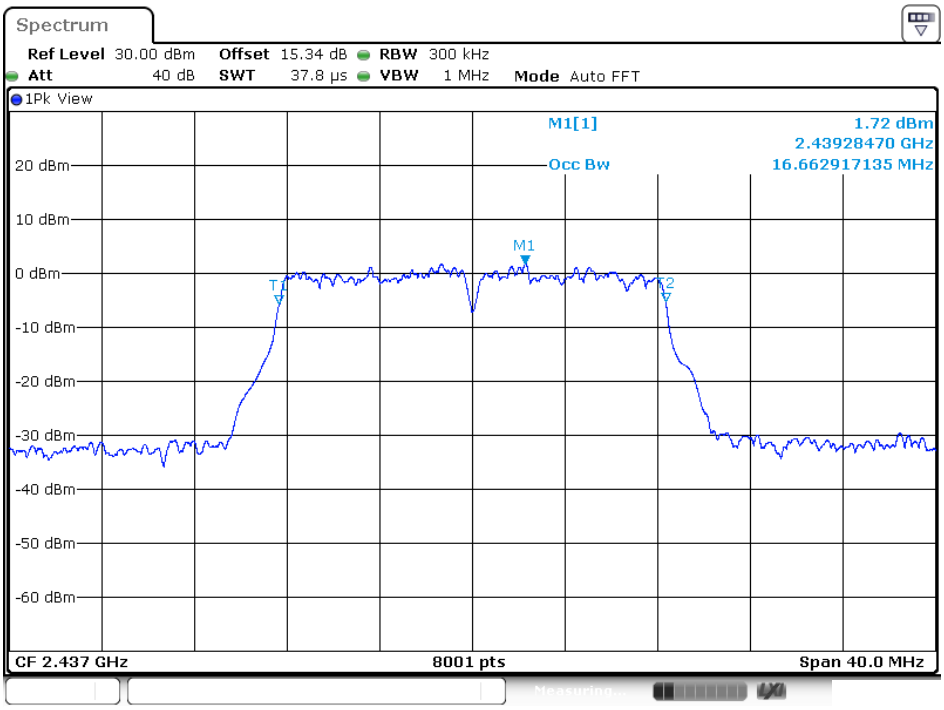
802.11b Channel High 2462MHz



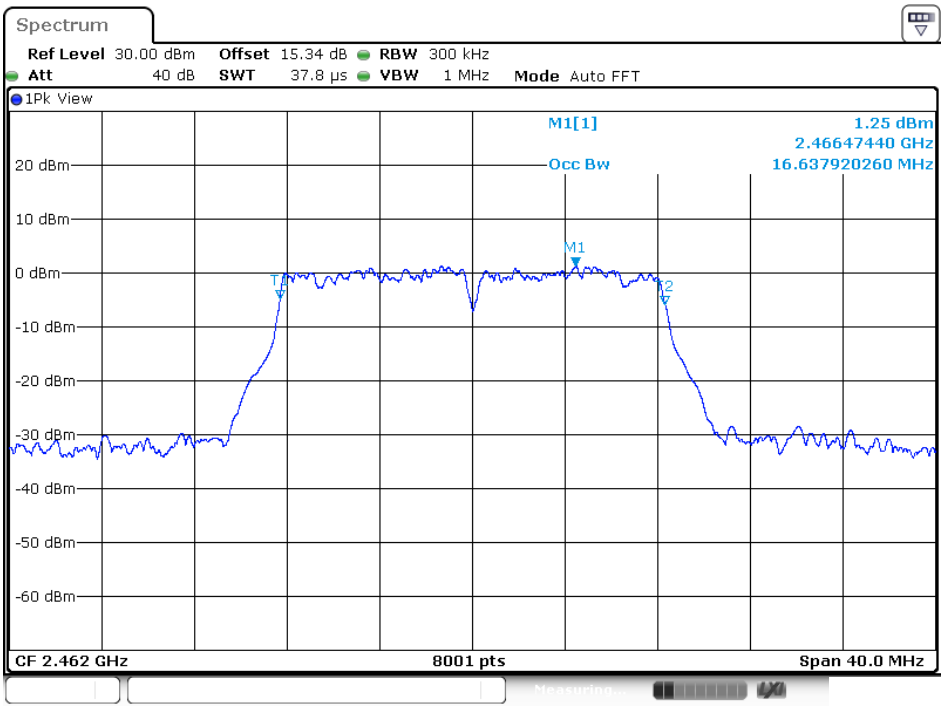
802.11g Channel Low 2412MHz



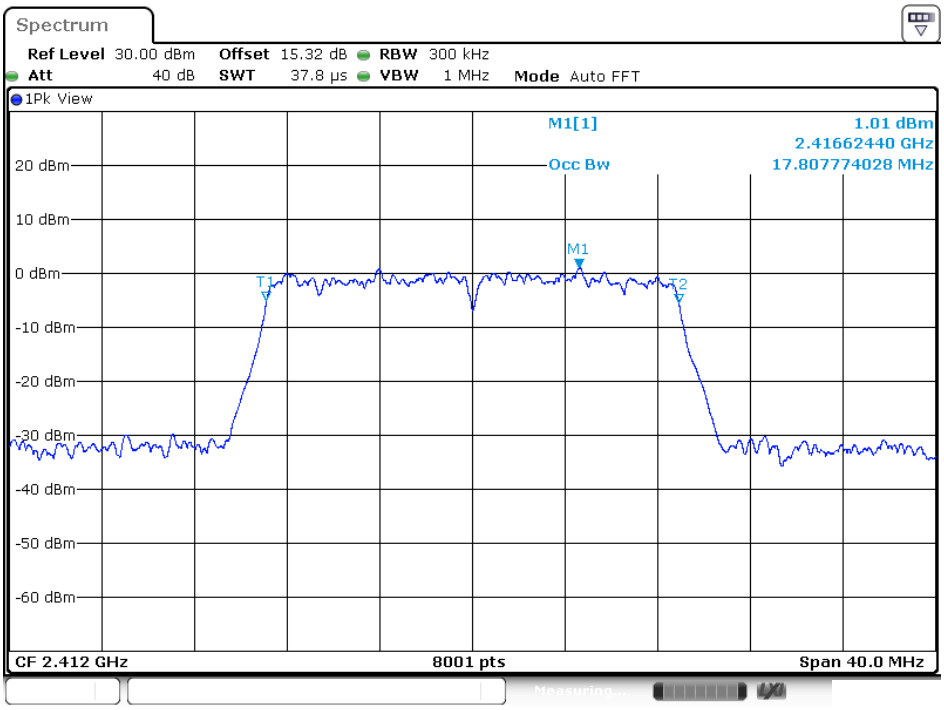
802.11g Channel Middle 2437MHz



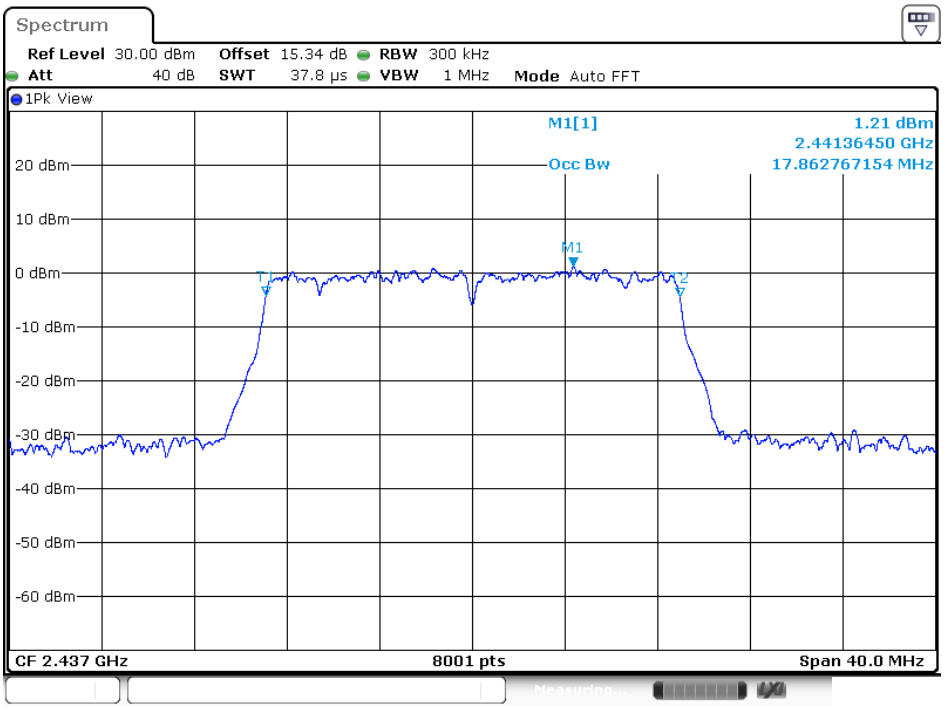
802.11g Channel High 2462MHz



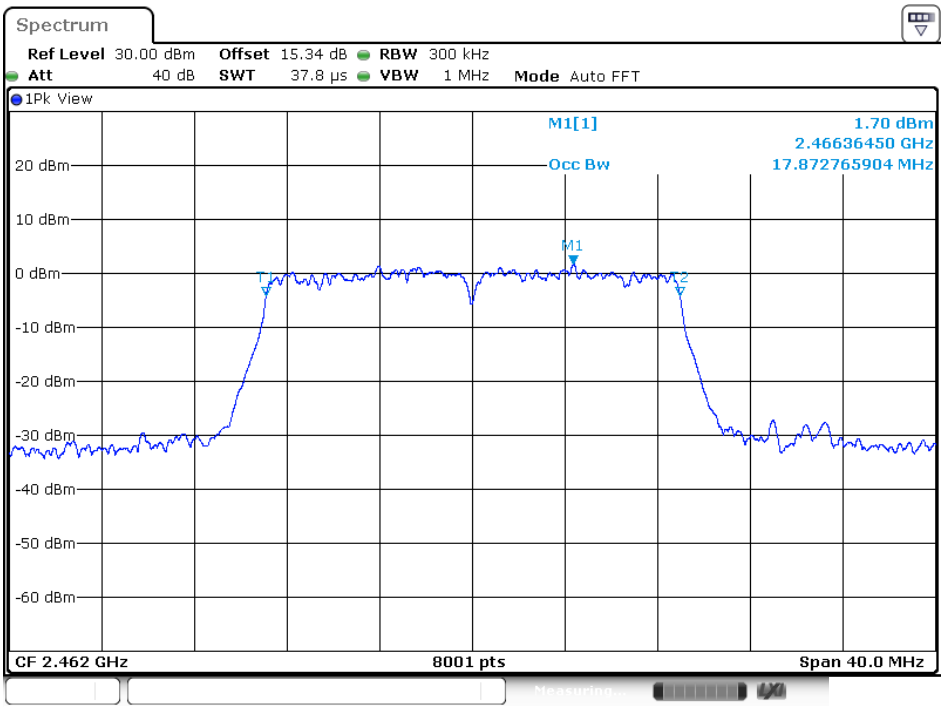
802.11n Channel Low 2412MHz (20MHz)



802.11n Channel Middle 2437MHz(20MHz)



802.11n Channel High 2462MHz(20MHz)



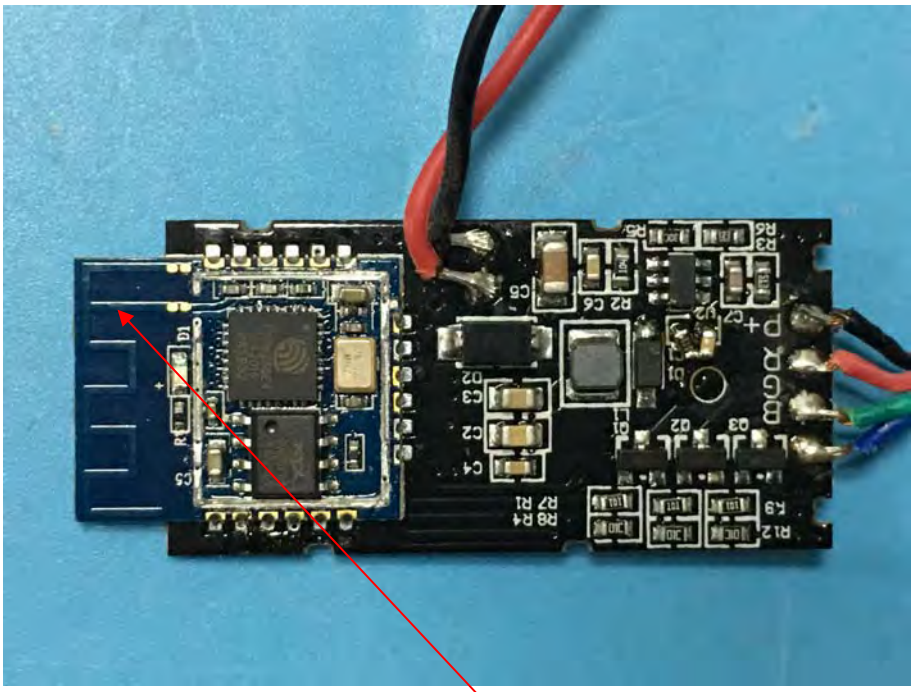
13. ANTENNA REQUIREMENT

13.1. The Requirement

According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

13.2. Antenna Construction

Device is equipped with permanent attached antenna, which isn't displaced by other antenna. The Antenna gain of EUT is 2dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.



******* End of Test Report *******