TEST REPORT

Applicant:	**DALS Lighting Inc.**
Address of Applicant:	**80 boul. De La Seigneurie Est, Blainville, QC, J7C 4N1, Canada**
Manufacturer/Factory:	**DALS Lighting Inc.**
Address of Manufacturer/Factory:	**80 boul. De La Seigneurie Est, Blainville, QC, J7C 4N1, Canada**
Equipment Under Test (EUT)	
Product Name:	**Smart Plug**
Model No.:	**SM-PLUG,I-SMPLUG**
Trade Mark:	**DALS, ILLUME**
FCC ID:	**2AQSN-SMPLUG**
IC:	**10733A-SMPLUG**
HVIN:	**SM-PLUG,I-SMPLUG**
Applicable standards:	**FCC CFR Title 47 Part 15 Subpart C Section 15.247** **ANSI C63.10:2013** **RSS-Gen Issue 5** **RSS-247 Issue 2**
Date of sample receipt:	**July 19,2021**
Date of Test:	**July 20,2021-July 30,2021**
Date of report issued:	**July 30,2021**
Test Result :	**PASS ***

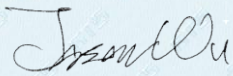
*** In the configuration tested, the EUT complied with the standards specified above.**

Authorized Signature:

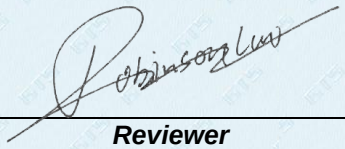
Robinson Luo
Laboratory Manager

2 Version

Version No.	Date	Description
00	*2021-07-30*	*Original*

Prepared By:  ***Date:*** *2021-7-30*

Project Engineer

Check By:  ***Date:*** *2021-7-30*

Reviewer

3 Contents

4 Test Summary

Test Item	Section	Result
Antenna requirement	FCC part 15.203/15.247 (c) RSS-Gen Section 6.8	Pass
AC Power Line Conducted Emission	FCC part 15.207 RSS-Gen Section 8.8	Pass
Conducted Max Average Output Power	FCC part 15.247 (b)(3) RSS-247 Section 5.4(d)	Pass
Channel Bandwidth & 99% OCB	FCC part 15.247 (a)(2) RSS-Gen Section 6.7	Pass
Power Spectral Density	FCC part 15.247 (e) RSS-247 Section 5.2(b)	Pass
Band Edge	FCC part 15.247(d) RSS-247 Section 5.5	Pass
Spurious Emission	FCC part 15.205/15.209 RSS-Gen Section 3.3 & 8.9 & 8.10	Pass
Frequency stability	RSS-Gen Section 6.11& Section 8.11	PASS

Remark: Test according to ANSI C63.10:2013 and RSS-Gen

Pass: The EUT complies with the essential requirements in the standard.

Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	30MHz-200MHz	3.8039dB	(1)
Radiated Emission	200MHz-1GHz	3.9679dB	(1)
Radiated Emission	1GHz-18GHz	4.29dB	(1)
Radiated Emission	18GHz-40GHz	3.30dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	3.44dB	(1)
Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.			

5 General Information

5.1 General Description of EUT

Product Name:	Smart Plug
Model No.:	SM-PLUG, I-SMPLUG
Serial No.:	N/A
Hardware version:	1.0.0
Software version:	1.1.4
Test sample(s) ID:	GTSL202107000255-1
Sample(s) Status	Engineer sample
Operation Frequency:	802.11b/802.11g/802.11n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz
Channel numbers:	802.11b/802.11g /802.11n(HT20): 11 802.11n(HT40):9
Channel separation:	5MHz
Modulation technology:	802.11b: Direct Sequence Spread Spectrum (DSSS) 802.11g/802.11n(HT20)/802.11n(HT40): Orthogonal Frequency Division Multiplexing (OFDM)
Antenna Type:	PCB Antenna
Antenna gain:	2.4dBi
Power supply:	AC 120V/60Hz

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	Frequency (MHz)	
	802.11b/802.11g/802.11n(HT20)	802.11n(HT40)
Lowest channel	2412MHz	2422MHz
Middle channel	2437MHz	2437MHz
Highest channel	2462MHz	2452MHz

Test Item	Software	Description
Conducted RF Testing and Radiated testing	Beken Wi-Fi Test Tool V1.6.0	Set the EUT to different modulation and channel

Output power setting table:

Test Mode	Set Tx Output Power	Data Rate
802.11b	17dBm	1Mbps
802.11g	13 dBm	6Mbps
802.11n(HT20)	13 dBm	6.5Mbps
802.11n(HT40)	13 dBm	13Mbps

5.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode

Remark: During the test, the dutycycle >98%, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data. New battery is used during all test.

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Pre-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

Mode	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)
Data rate	1Mbps	6Mbps	6.5Mbps	13Mbps

5.3 Description of Support Units

None.

5.4 Deviation from Standards

None.

5.5 Abnormalities from Standard Conditions

None.

5.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **FCC—Registration No.: 381383**

Designation Number: CN5029

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files.

● **IC —Registration No.: 9079A**

CAB identifier: CN0091

The 3m Semi-

anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

● **NVLAP (LAB CODE:600179-0)**

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accred itation Program (NVLAP).

5.7 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.
Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102
Tel: 0755-27798480
Fax: 0755-27798960

5.8 Additional Instructions

Test Software	Special test command provided by manufacturer
Power level setup	Default

6 Test Instruments list

Radiated Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July. 02 2020	July. 01 2025
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 24 2021	June. 23 2022
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 24 2021	June. 23 2022
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 24 2021	June. 23 2022
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 24 2021	June. 23 2022
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 24 2021	June. 23 2022
9	Coaxial Cable	GTS	N/A	GTS211	June. 24 2021	June. 23 2022
10	Coaxial cable	GTS	N/A	GTS210	June. 24 2021	June. 23 2022
11	Coaxial Cable	GTS	N/A	GTS212	June. 24 2021	June. 23 2022
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 24 2021	June. 23 2022
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 24 2021	June. 23 2022
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 24 2021	June. 23 2022
15	Band filter	Amindeon	82346	GTS219	June. 24 2021	June. 23 2022
16	Power Meter	Anritsu	ML2495A	GTS540	June. 24 2021	June. 23 2022
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 24 2021	June. 23 2022
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 24 2021	June. 23 2022
19	Splitter	Agilent	11636B	GTS237	June. 24 2021	June. 23 2022
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 24 2021	June. 23 2022
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 18 2020	Oct. 17 2021
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 18 2020	Oct. 17 2021
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 18 2020	Oct. 17 2021
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 24 2021	June. 23 2022

Conducted Emission						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.15 2019	May.14 2022
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 24 2021	June. 23 2022
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 24 2021	June. 23 2022
4	ENV216 2-L-V-NETZNACHB.DE	ROHDE&SCHWARZ	ENV216	GTS226	June. 24 2021	June. 23 2022
5	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Thermo meter	KTJ	TA328	GTS233	June. 24 2021	June. 23 2022
8	Absorbing clamp	Elektronik-Feinmechanik	MDS21	GTS229	June. 24 2021	June. 23 2022
9	ISN	SCHWARZBECK	NTFM 8158	GTS565	June. 24 2021	June. 23 2022
10	High voltage probe	SCHWARZBECK	TK9420	GTS537	July. 09 2021	July. 08 2022

RF Conducted Test:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	June. 24 2021	June. 23 2022
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 24 2021	June. 23 2022
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June. 24 2021	June. 23 2022
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	June. 24 2021	June. 23 2022
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	June. 24 2021	June. 23 2022
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	June. 24 2021	June. 23 2022
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	June. 24 2021	June. 23 2022
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	June. 24 2021	June. 23 2022

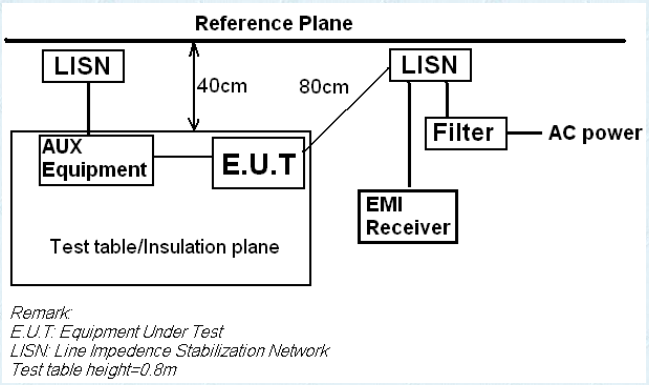
General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 24 2021	June. 23 2022
2	Barometer	ChangChun	DYM3	GTS255	June. 24 2021	June. 23 2022

7 Test results and Measurement Data

7.1 Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. **15.247(c) (1)(i) requirement:** (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.	
Standard requirement:	RSS-Gen Section 6.8
A transmitter can only be sold or operated with antennas with which it was approved. When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on measurement or on data from the antenna manufacturer. For transmitters of RF output power of 10 milliwatts or less, only the portion of the antenna gain that is in excess of 6 dBi (6 dB above isotropic gain) shall be added to the measured RF output power to demonstrate compliance with the radiated power limits specified in the applicable standard. For transmitters of output power greater than 10 milliwatts, the total antenna gain shall be added to the measured RF output power to demonstrate compliance to the specified radiated power	
EUT Antenna:	
The antenna is PCB antenna, the best case gain of the antenna is 2.4dBi, reference to the appendix II for details	

7.2 Conducted Emissions

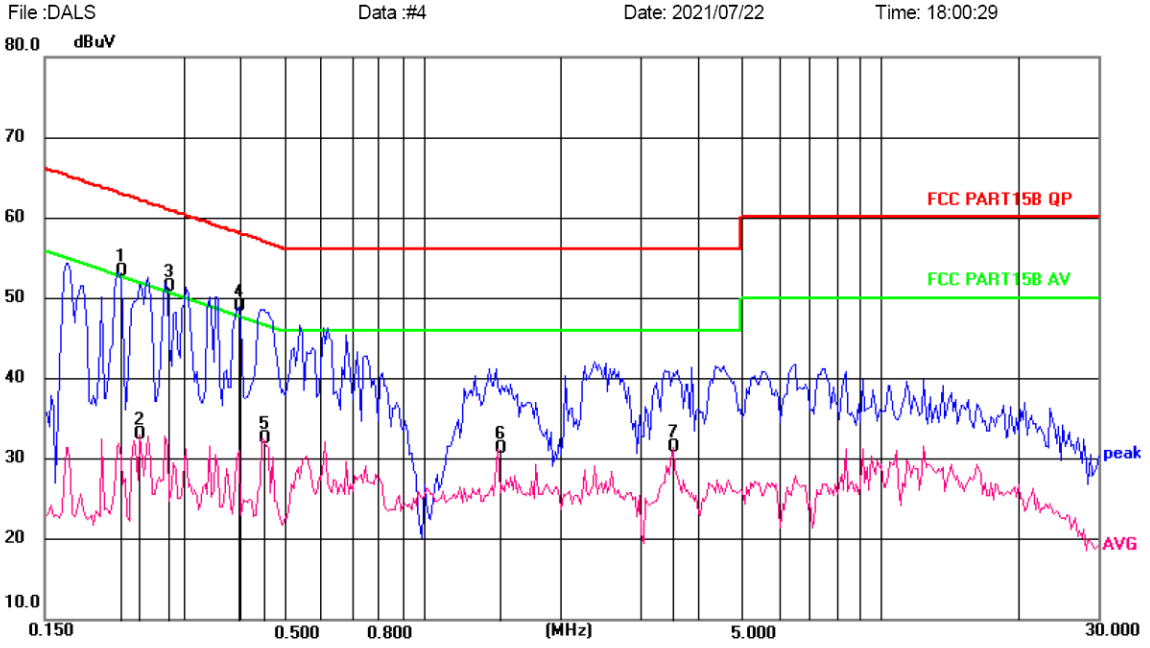
<table>
<tr><td>Test Requirement:</td><td colspan="5">FCC Part15 C Section 15.207
RSS-Gen Section 8.8</td></tr>
<tr><td>Test Method:</td><td colspan="5">ANSI C63.10:2013</td></tr>
<tr><td>Test Frequency Range:</td><td colspan="5">150KHz to 30MHz</td></tr>
<tr><td>Receiver setup:</td><td colspan="5">RBW=9KHz, VBW=30KHz, Sweep time=auto</td></tr>
<tr><td>Limit:</td><td colspan="5">
<table>
<tr><td rowspan="2">Frequency range (MHz)</td><td colspan="2">Limit (dBuV)</td></tr>
<tr><td>Quasi-peak</td><td>Average</td></tr>
<tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr>
<tr><td>0.5-5</td><td>56</td><td>46</td></tr>
<tr><td>5-30</td><td>60</td><td>50</td></tr>
</table>
* Decreases with the logarithm of the frequency.
</td></tr>
<tr><td>Test setup:</td><td colspan="5"> 

Remark:
E.U.T: Equipment Under Test
LISN: Line Impedence Stabilization Network
Test table height=0.8m</td></tr>
<tr><td>Test procedure:</td><td colspan="5">1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.
2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).
3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.</td></tr>
<tr><td>Test Instruments:</td><td colspan="5">Refer to section 6.0 for details</td></tr>
<tr><td>Test mode:</td><td colspan="5">Refer to section 5.2 for details</td></tr>
<tr><td>Test environment:</td><td>Temp.:</td><td>25 °C</td><td>Humid.:</td><td>52%</td><td>Press.:</td><td>1012mbar</td></tr>
<tr><td>Test voltage:</td><td colspan="5">AC 120V, 60Hz</td></tr>
<tr><td>Test results:</td><td colspan="5">Pass</td></tr>
</table>

Remark: Both high and low voltages have been tested to show only the worst low voltage test data.

Measurement data

Line:



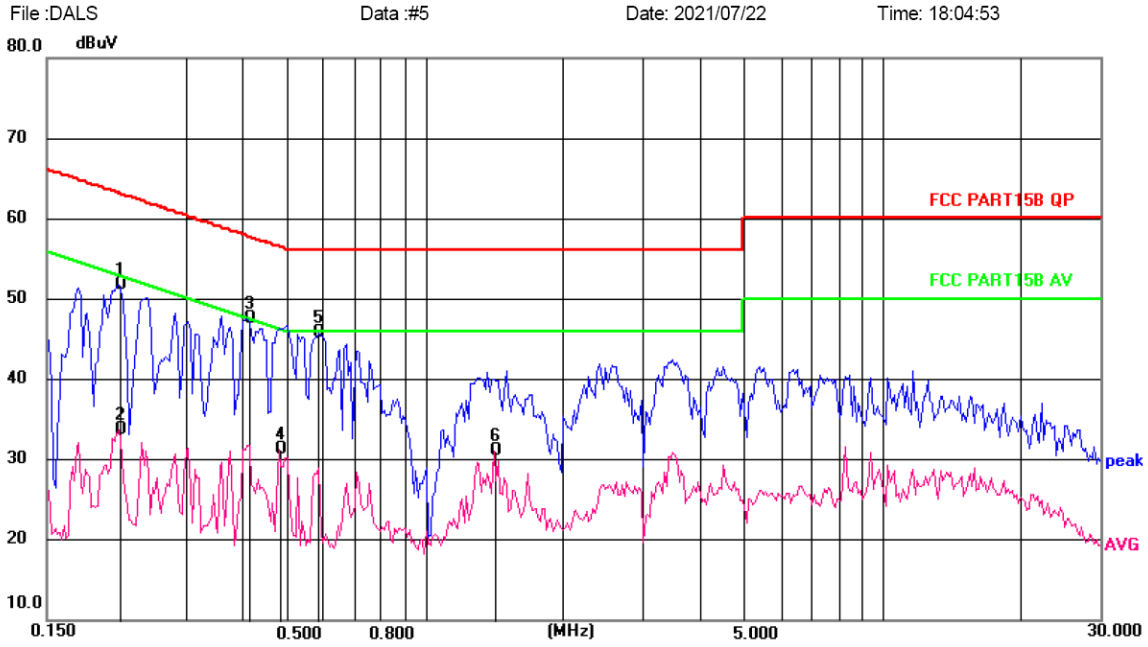
Site Shielding Room
Limit: FCC PART15C
EUT: Smart Plug
M/N: SM-PLUG
Mode: ON WITH WIFI
Note: DALS Lighting Inc.

Phase: *L1*
Power: AC 120V/60Hz

Temperature: 25(C)
Humidity: 56 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector				
1	0.2174	43.29	10.00	53.29	62.92	9.63	QP				
2	0.2416	23.00	10.00	33.00	52.04	19.04	AVG				
3	0.2773	41.44	10.00	51.44	60.90	9.46	QP				
4 *	0.3976	39.01	10.00	49.01	57.90	8.89	QP				
5	0.4468	22.41	10.00	32.41	46.93	14.52	AVG				
6	1.4640	21.27	10.01	31.28	46.00	14.72	AVG				
7	3.5278	21.48	10.02	31.50	46.00	14.50	AVG				

Neutral:



Site Shielding Room
Limit: FCC PART15C
EUT: Smart Plug
M/N: SM-PLUG
Mode: ON WITH WIFI
Note: DALS Lighting Inc.

Phase: *N*
Power: AC 120V/60Hz

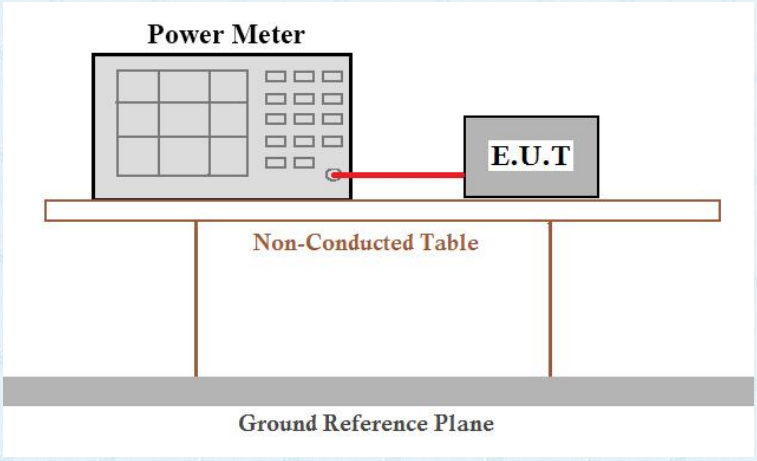
Temperature: 25(C)
Humidity: 56%

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector				
1	0.2151	41.75	10.00	51.75	63.01	11.26	QP				
2	0.2151	23.65	10.00	33.65	53.01	19.36	AVG				
3 *	0.4105	37.57	10.00	47.57	57.64	10.07	QP				
4	0.4812	21.20	10.00	31.20	46.32	15.12	AVG				
5	0.5885	35.70	10.00	45.70	56.00	10.30	QP				
6	1.4182	21.07	10.01	31.08	46.00	14.92	AVG				

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level =Receiver Read level + LISN Factor + Cable Loss
4. *If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.*

7.3 Conducted Max Average Output Power

Test Requirement :	FCC Part15 C Section 15.247 (b)(3) RSS-247 Section 5.4(d)
Test Method :	KDB558074 D01 15.247 Meas Guidance v05r02 ANSI C63.10:2013 and RSS-Gen
Limit:	30dBm 36dBm(4W for e.i.r.p)
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

Duty Cycle:

Test Mode (Worse case)	Duty Cycle(x)	10log(1/x)
802.11b	99.12	0.04
802.11g	99.7	0.01
802.11n(HT20)	99.75	0.01
802.11n(HT40)	100	0

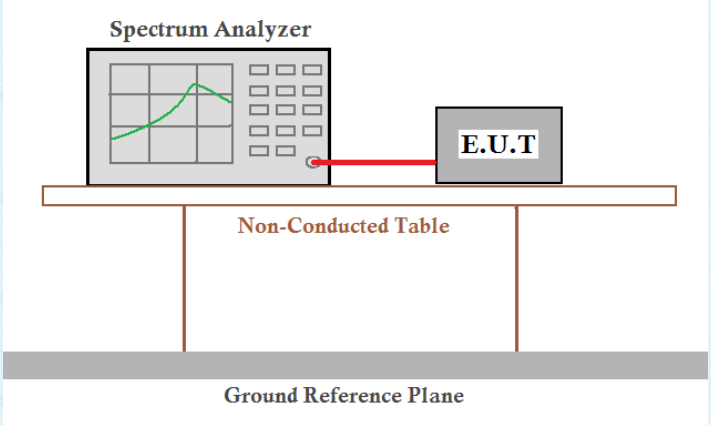
Output Power:

Test Mode	Frequency (MHz)	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Result
802.11b	2412	16.030	0.04	16.070	30	Pass
	2437	14.824	0.04	14.864	30	Pass
	2462	14.811	0.04	14.851	30	Pass
802.11g	2412	12.242	0.01	12.252	30	Pass
	2437	11.200	0.01	11.210	30	Pass
	2462	11.001	0.01	11.011	30	Pass
802.11n(HT20)	2412	11.049	0.01	11.059	30	Pass
	2437	9.966	0.01	9.976	30	Pass
	2462	9.876	0.01	9.886	30	Pass
802.11n(HT40)	2422	9.743	0	9.743	30	Pass
	2437	8.937	0	8.937	30	Pass
	2452	8.555	0	8.555	30	Pass

EIRP:

Test Channel	e.i.r.p (dBm)				Limit(dBm)	Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)		
Lowest	18.470	18.652	13.459	12.143	36	Pass
Middle	17.264	13.610	12.376	11.337		
Highest	17.251	13.411	12.286	10.955		

7.4 Channel Bandwidth & 99% Occupy Bandwidth

Test Requirement :	FCC Part15 C Section 15.247 (a)(2) RSS-Gen Section 6.7 & RSS-247 Section 5.2(a)
Test Method :	KDB558074 D01 15.247 Meas Guidance v05r02 ANSI C63.10:2013 and RSS-Gen
Limit:	>500KHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

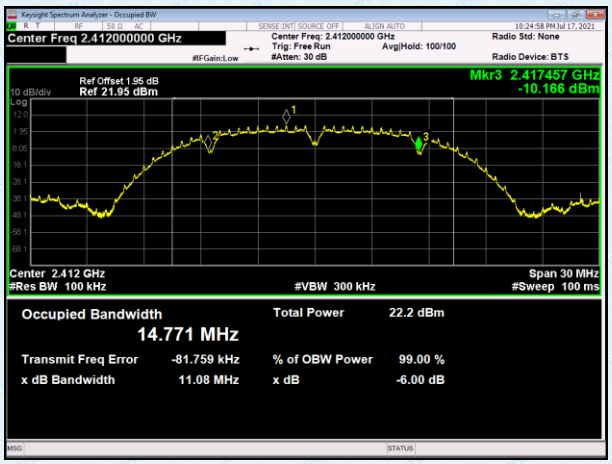
Test Channel	Channel Bandwidth (MHz)				Limit(KHz)	Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)		
Lowest	11.078	15.093	16.989	32.53	>500	Pass
Middle	11.056	15.097	16.947	32.544		
Highest	11.062	15.095	17.111	31.332		

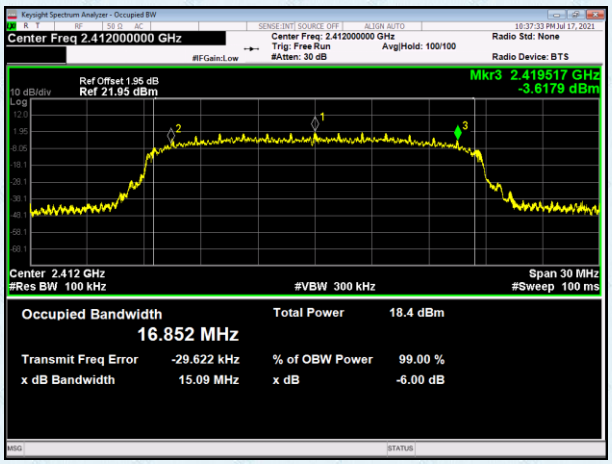
Test Channel	99% Occupy Bandwidth (MHz)				Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)	
Lowest	14.801	17.056	18.074	35.336	Pass
Middle	14.727	17.069	18.080	35.437	
Highest	14.728	17.049	18.073	35.370	

Test plot as follows:

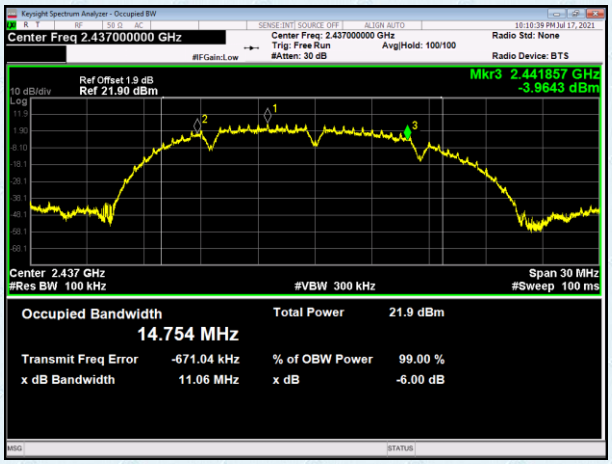
-6dB BW:

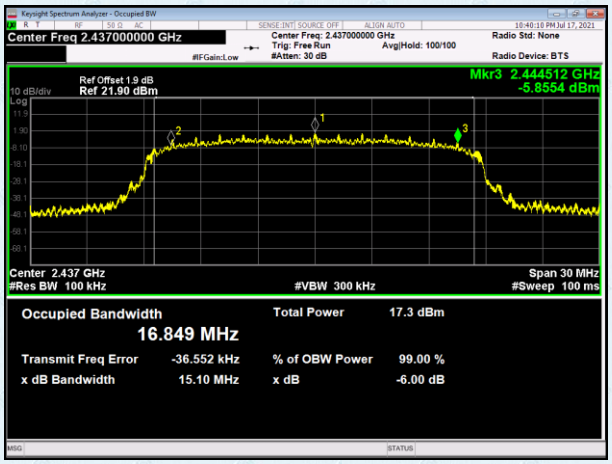
Test mode:	802.11b	Test mode:	802.11g



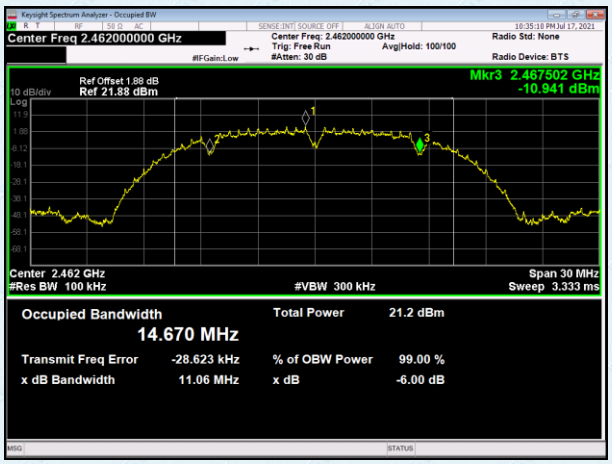


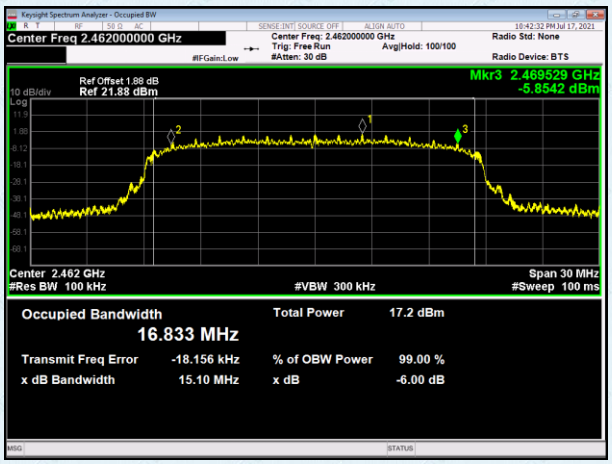
Lowest channel





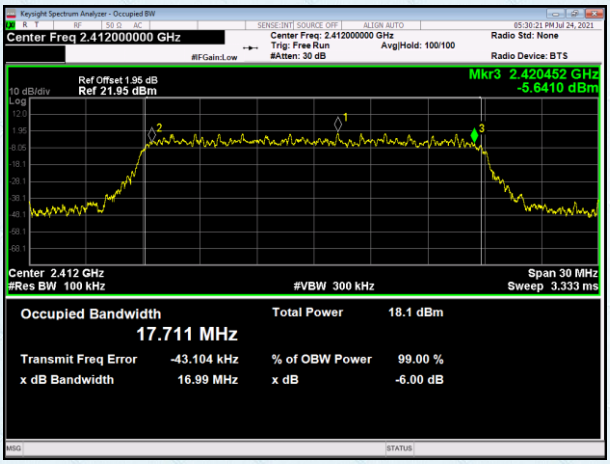
Middle channel

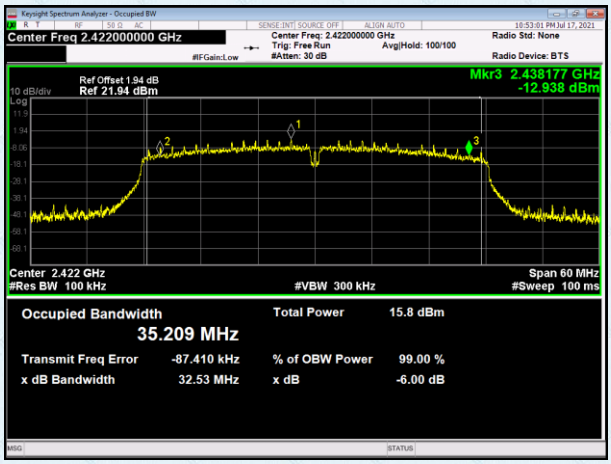




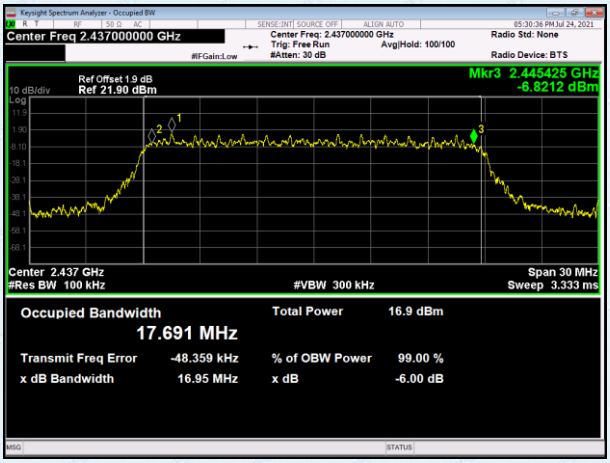
Highest channel

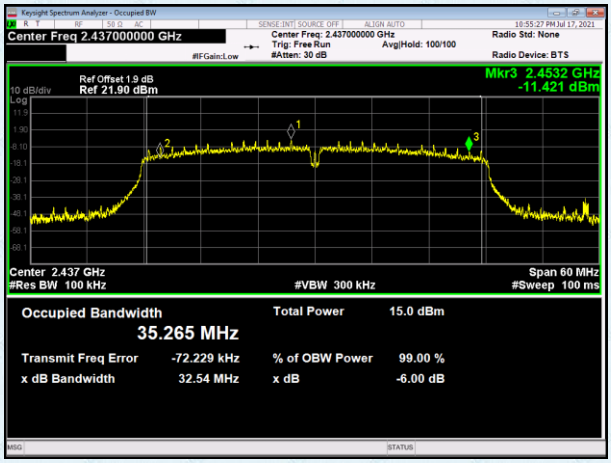
Test mode:	802.11n(HT20)	Test mode:	802.11n(HT40)



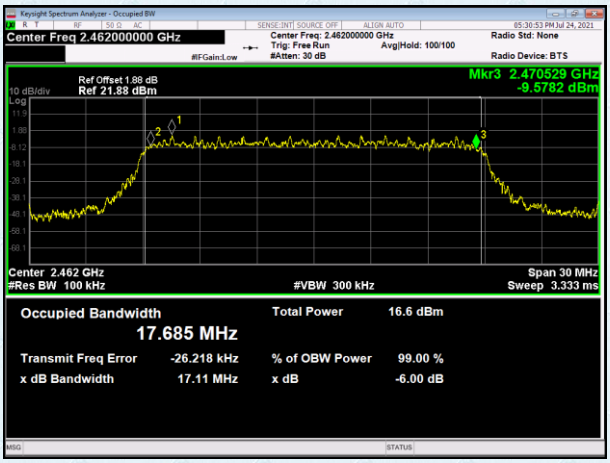


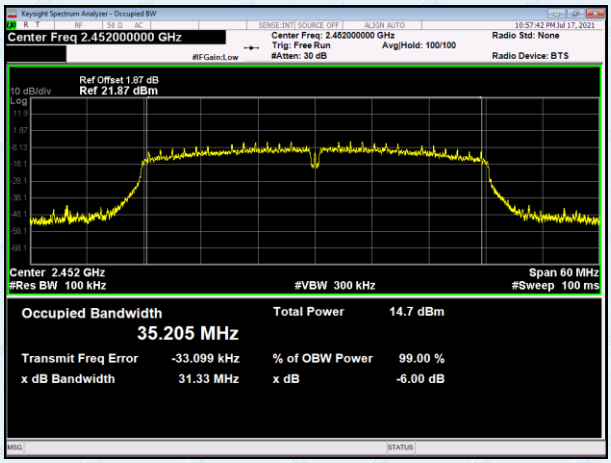
Lowest channel





Middle channel

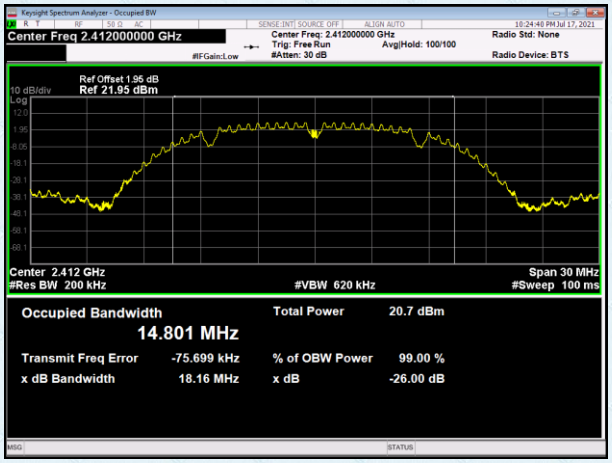


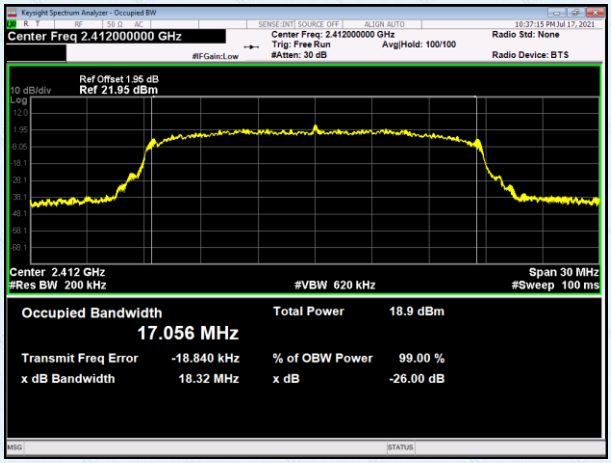


Highest channel

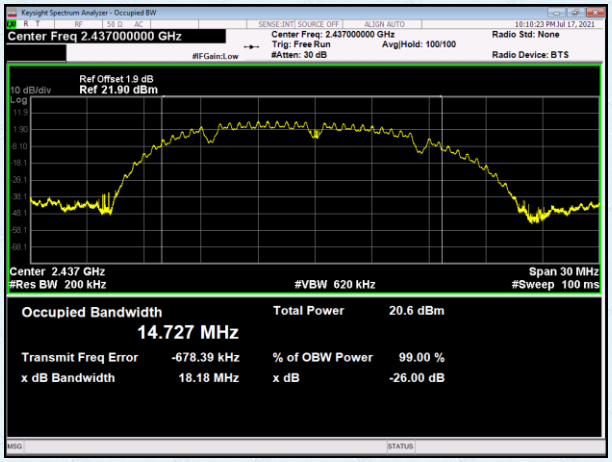
99% BW:

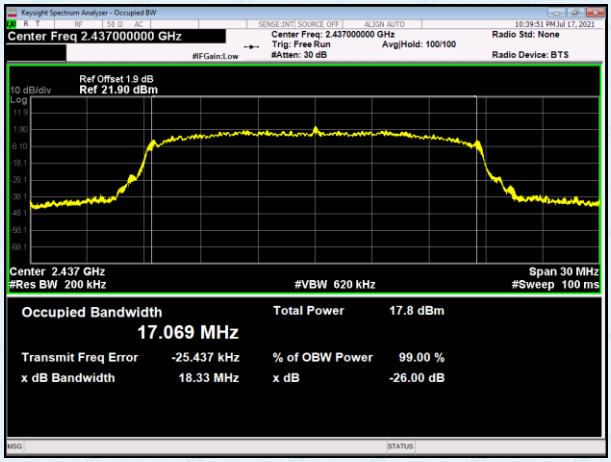
Test mode:	802.11b	Test mode:	802.11g



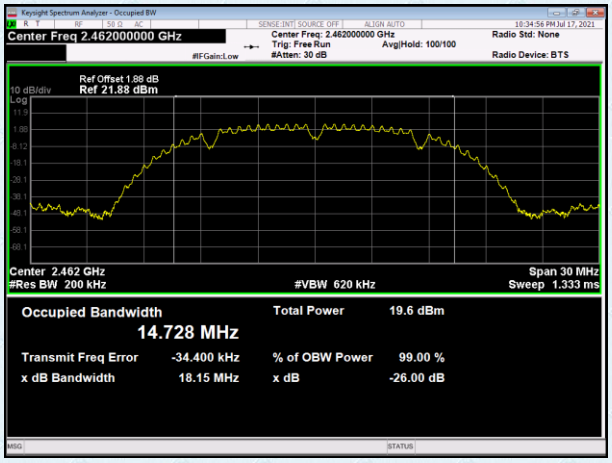


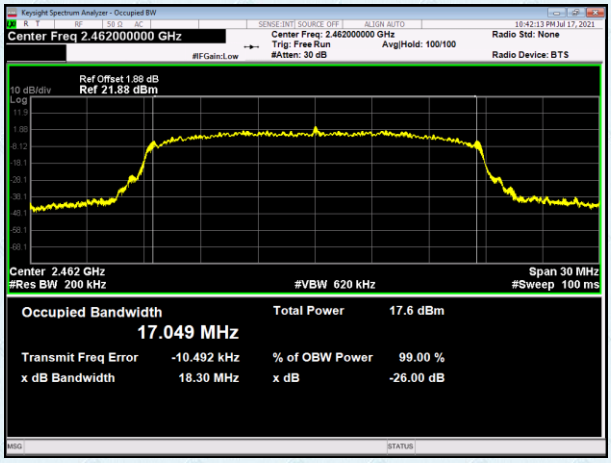
Lowest channel





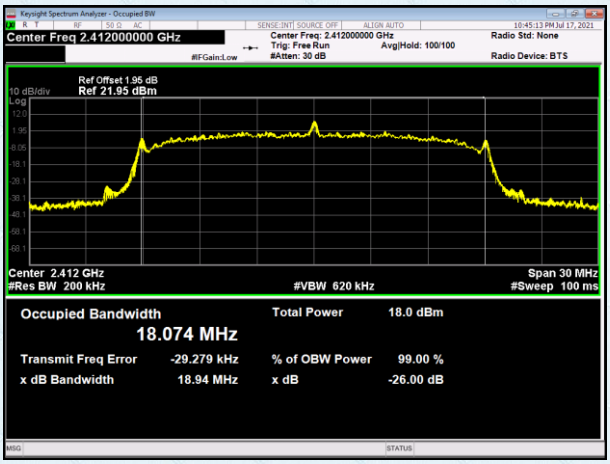
Middle channel

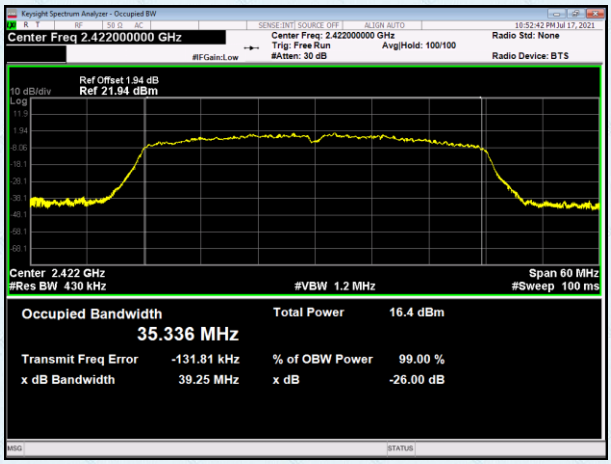




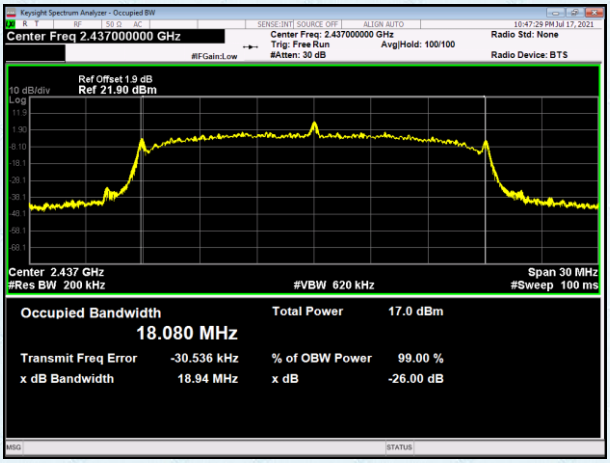
Highest channel

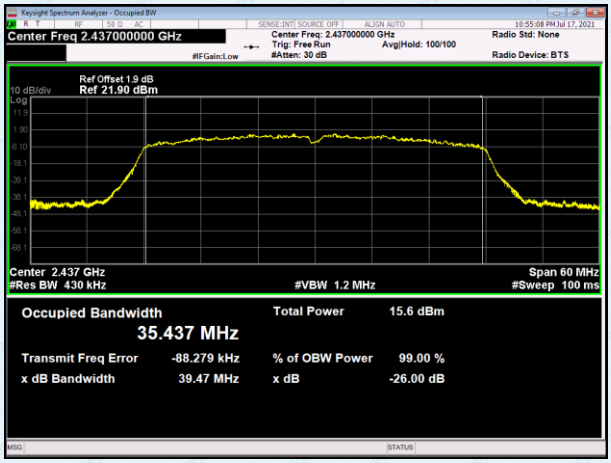
Test mode:	802.11n(HT20)	Test mode:	802.11n(HT40)



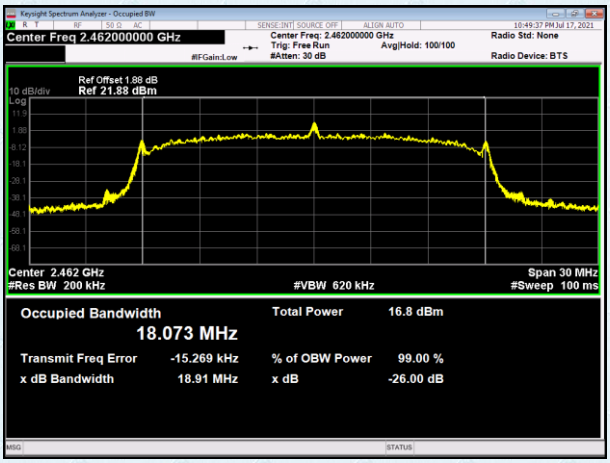


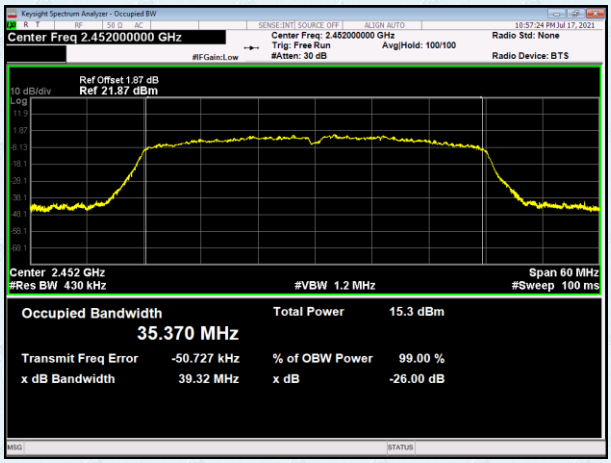
Lowest channel





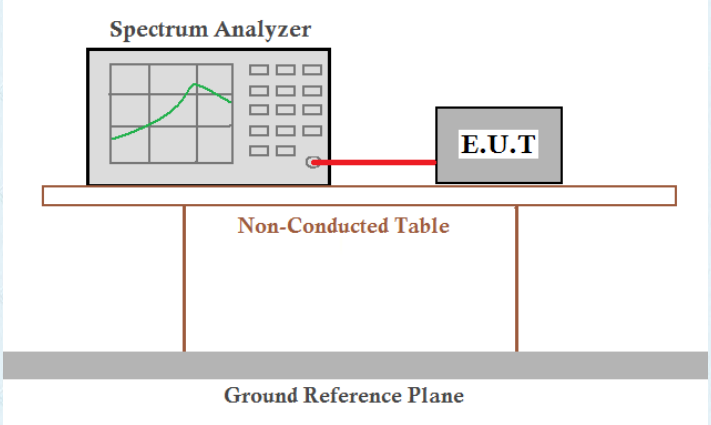
Middle channel





Highest channel

7.5 Power Spectral Density

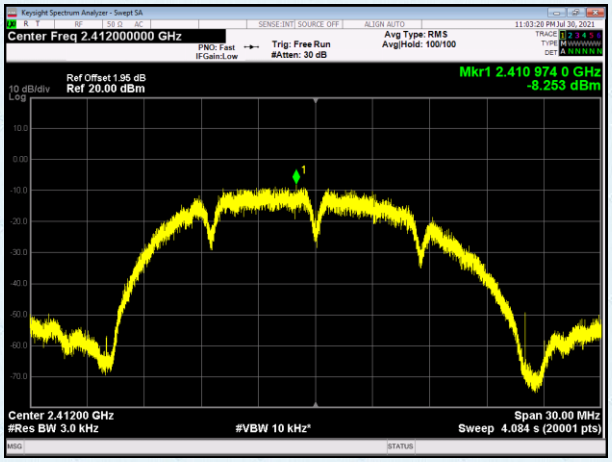
Test Requirement:	FCC Part15 C Section 15.247 (e) RSS-247 Section 5.2(b)
Test Method:	KDB558074 D01 15.247 Meas Guidance v05r02 ANSI C63.10:2013 and RSS-Gen
Limit:	8dBm/3kHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

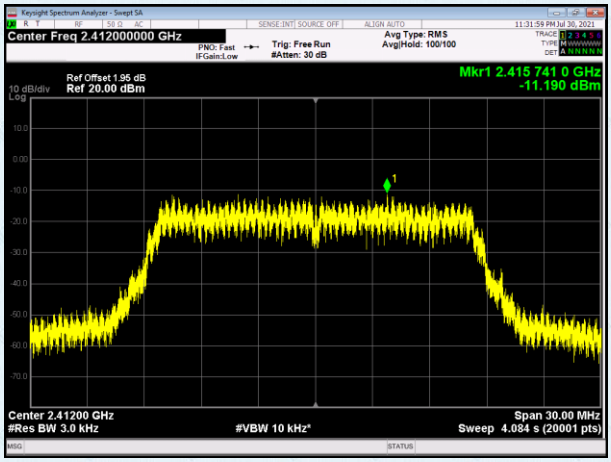
Measurement Data

Test CH	Power Spectral Density (dBm/3kHz)				Limit (dBm/3kHz)	Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)		
Lowest	-8.253	-11.190	-11.442	-16.008	8.00	Pass
Middle	-9.739	-11.800	-13.024	-16.235		
Highest	-9.303	-12.615	-12.793	-17.534		

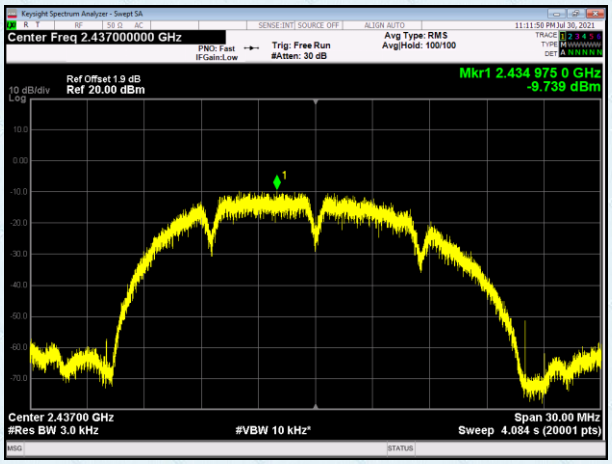
Test plot as follows:

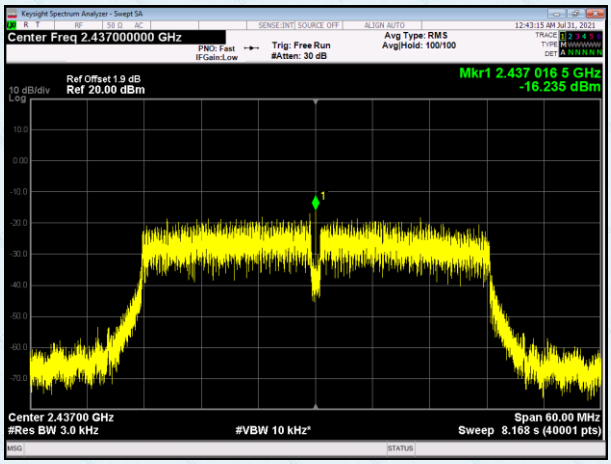
Test mode:	802.11b	Test mode:	802.11g



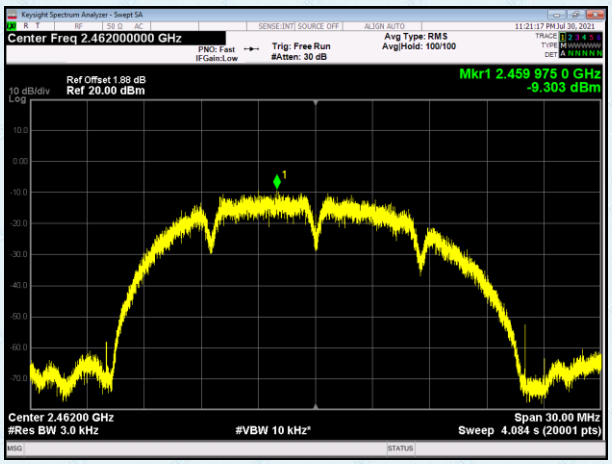


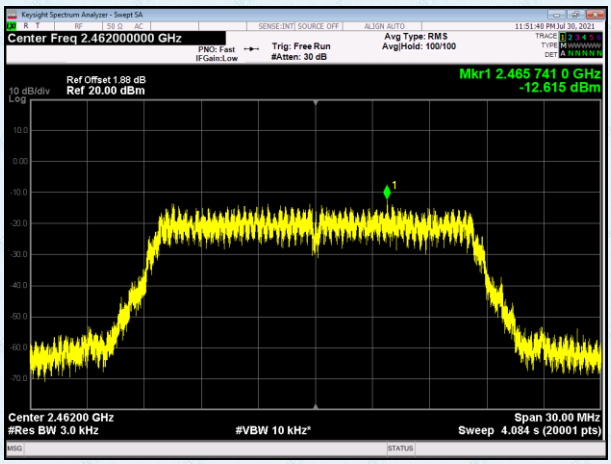
Lowest channel





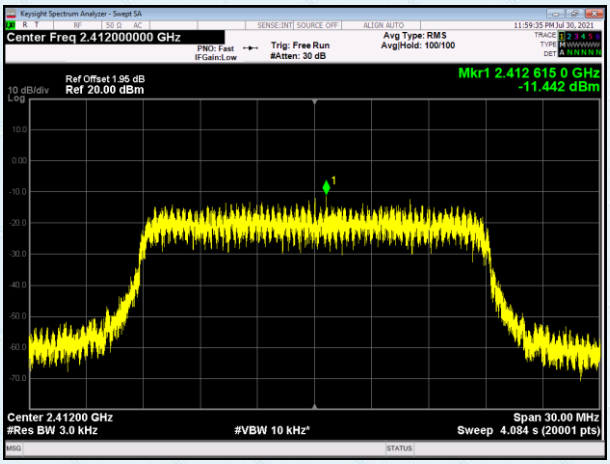
Middle channel

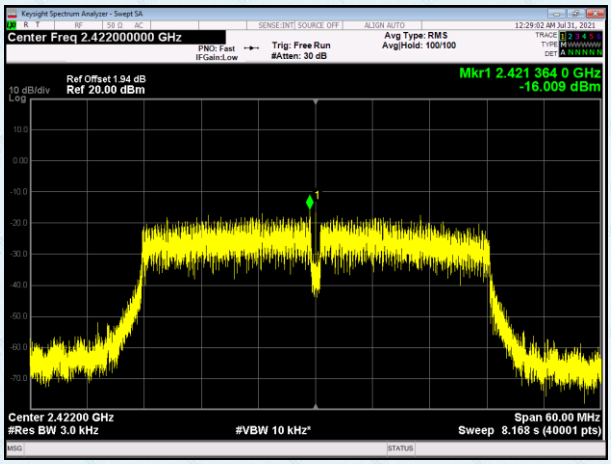




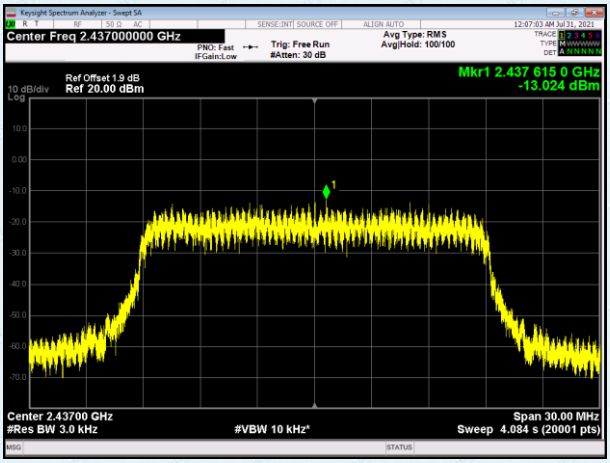
Highest channel

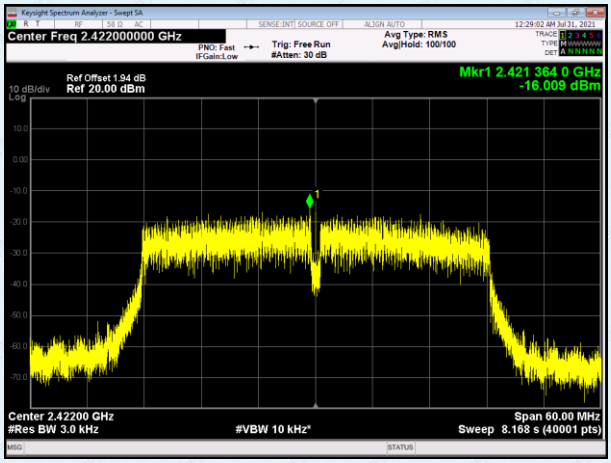
Test mode:	802.11n(HT20)	Test mode:	802.11n(HT40)



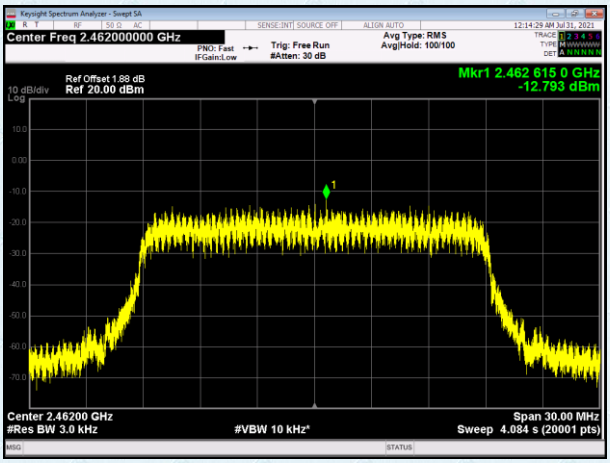


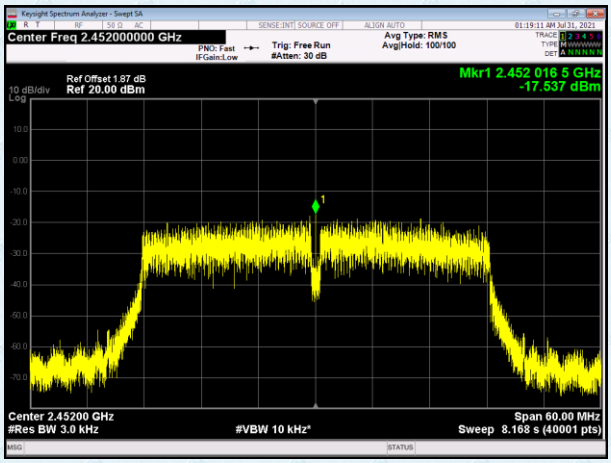
Lowest channel





Middle channel

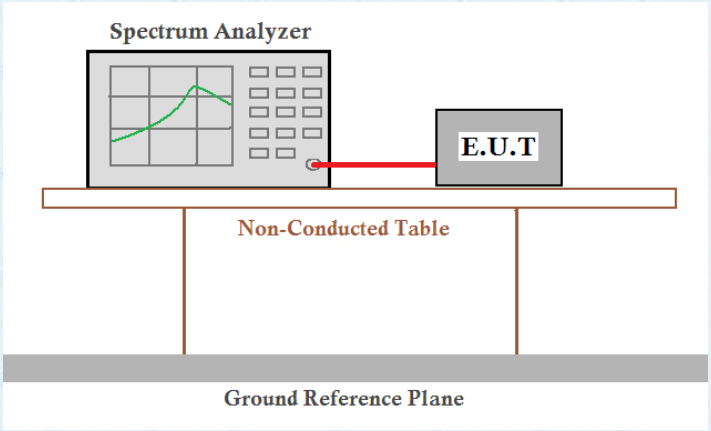




Highest channel

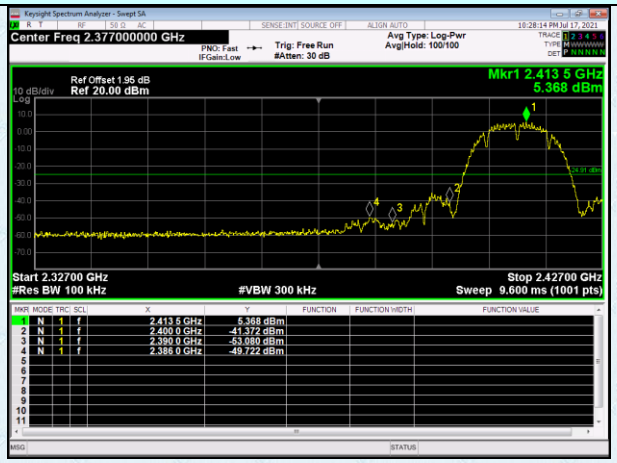
7.6 Band edges

7.6.1 Conducted Emission Method

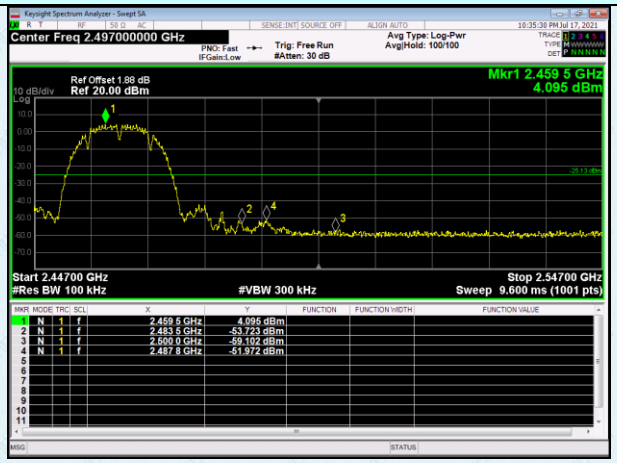
Test Requirement:	FCC Part15 C Section 15.247 (d) RSS-247 Section 5.5
Test Method:	KDB558074 D01 15.247 Meas Guidance v05r02 ANSI C63.10:2013 & RSS-Gen
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power 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.
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Test plot as follows:

Test mode:	802.11b

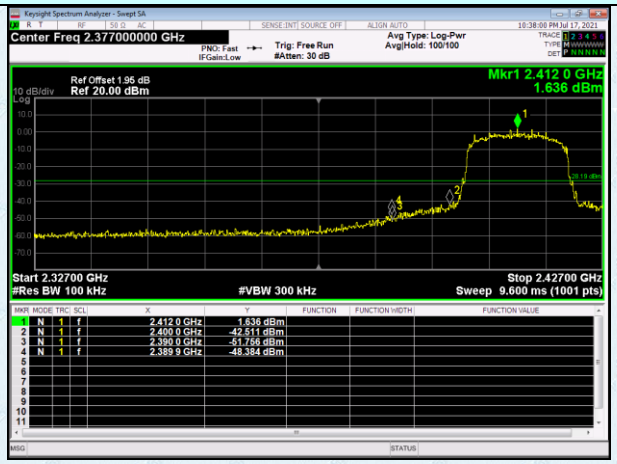


Lowest channel

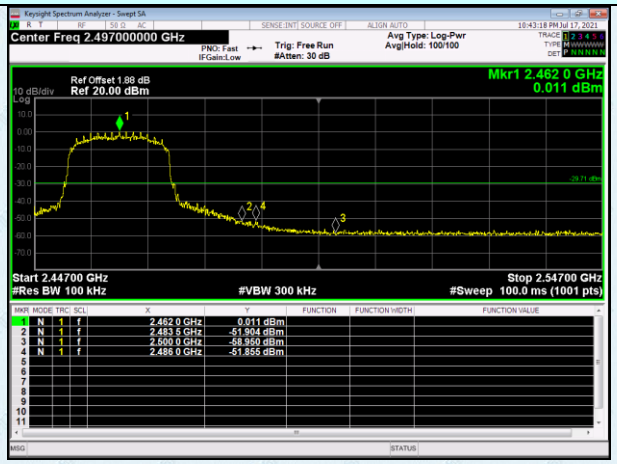


Highest channel

Test mode:	802.11g

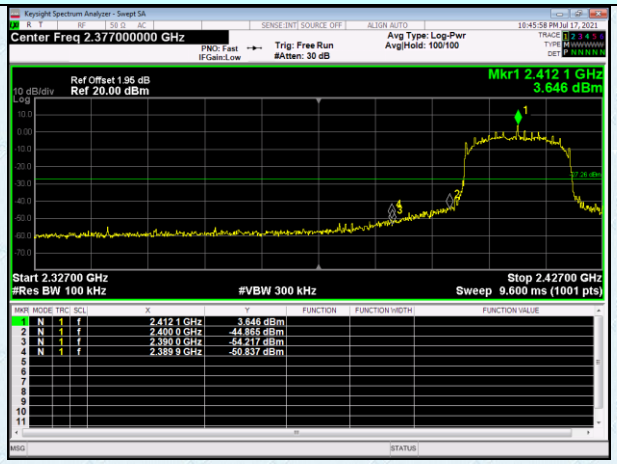


Lowest channel

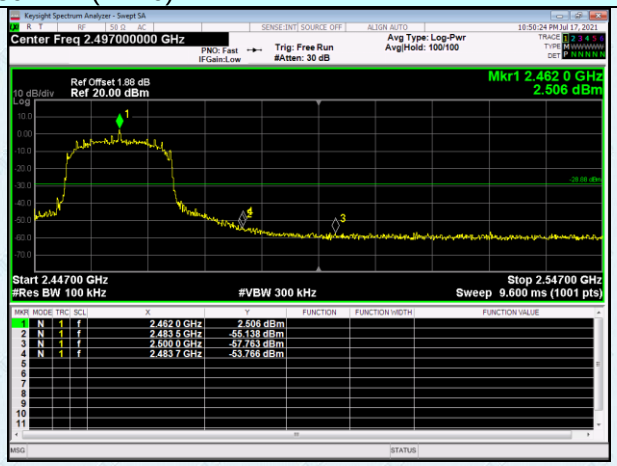


Highest channel

Test mode:	802.11n(HT20)

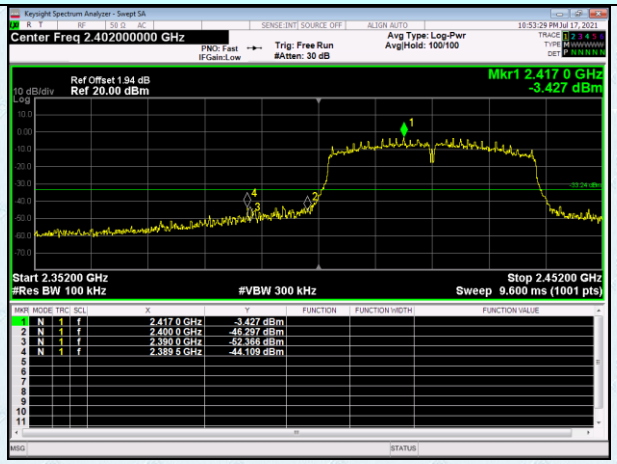


Lowest channel

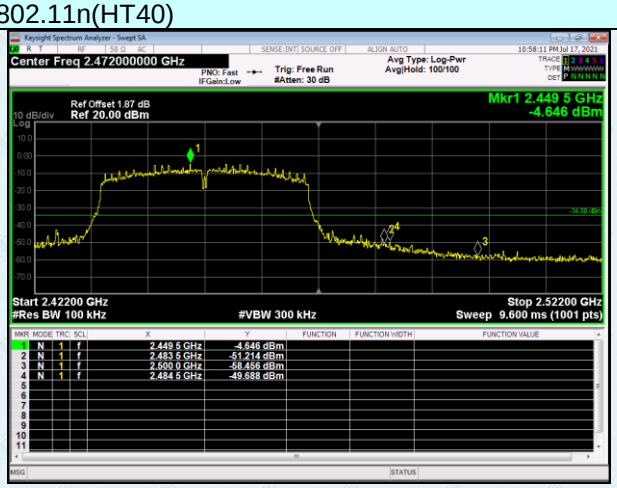


Highest channel

Test mode:	802.11n(HT40)

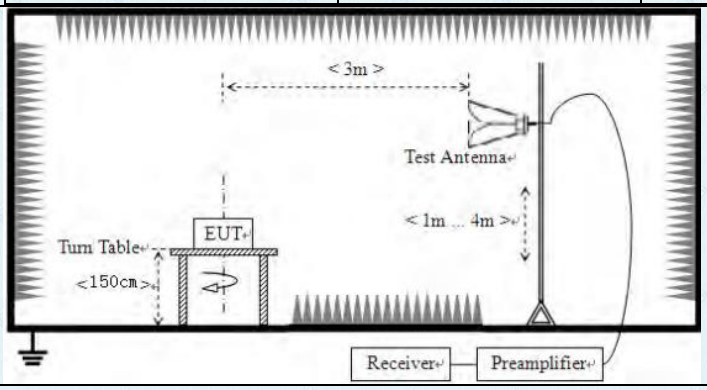


Lowest channel



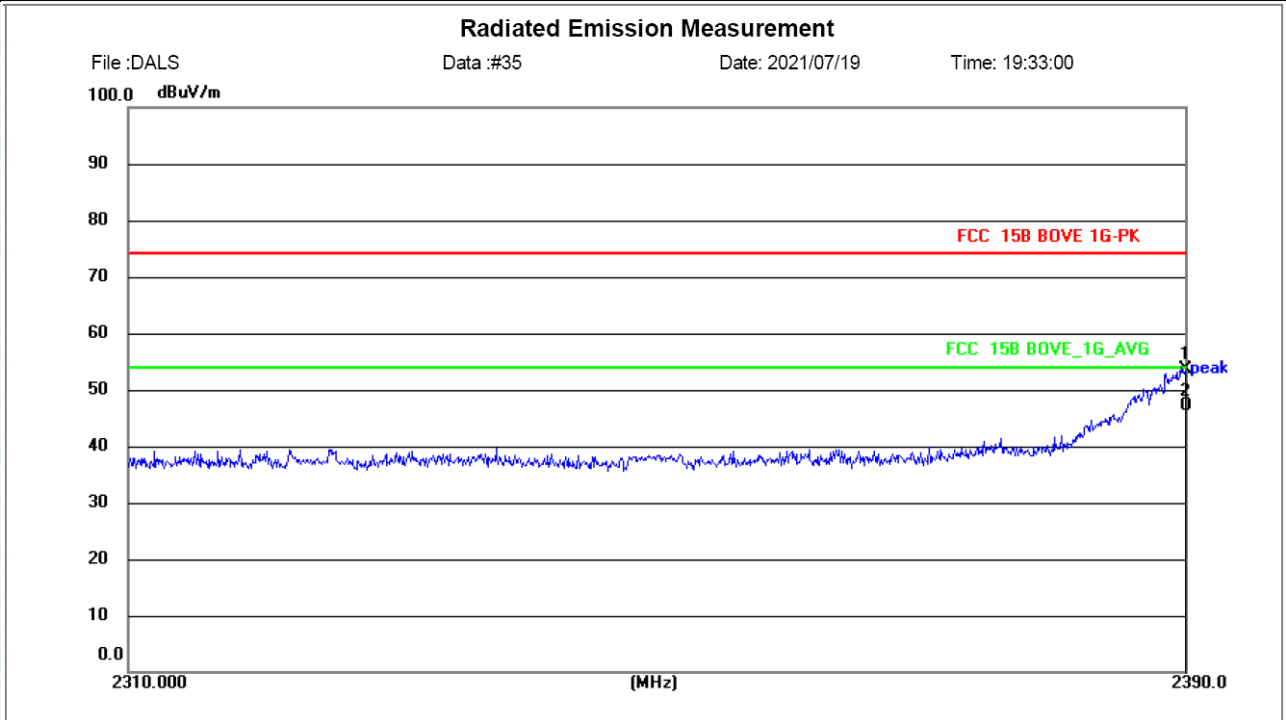
Highest channel

7.6.2 Radiated Emission Method

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.209 and 15.205
RSS-247 3.3 & RSS-Gen Section 8.9</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10: 2013 & RSS-Gen</td></tr>
<tr><td>Test Frequency Range:</td><td>All of the restrict bands were tested, only the worst band's (2310MHz to 2500MHz) data was showed.</td></tr>
<tr><td>Test site:</td><td>Measurement Distance: 3m</td></tr>
<tr><td>Receiver setup:</td><td>
<table>
<tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak</td></tr>
<tr><td>Average</td><td>1MHz</td><td>3MHz</td><td>Average</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><td>Frequency</td><td>Limit (dBuV/m @3m)</td><td>Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>54.00</td><td>Average</td></tr>
<tr><td>74.00</td><td>Peak</td></tr>
</table>
</td></tr>
<tr><td>Test setup:</td><td> 
</td></tr>
<tr><td>Test Procedure:</td><td>1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
7. The radiation measurements are performed in X, Y, Z axis positioning. And found the Y axis positioning which it is worse case, only the test worst case mode is recorded in the report.</td></tr>
<tr><td>Test Instruments:</td><td>Refer to section 6.0 for details</td></tr>
<tr><td>Test mode:</td><td>Refer to section 5.2 for details</td></tr>
<tr><td>Test results:</td><td>Pass</td></tr>
</table>

Measurement data:

Test mode:	802.11b	Test channel:	Lowest



Site 966 Chamber
Limit: FCC 15B BOVE 1G-PK
EUT: Smart Plug
M/N: SM-PLUG
Mode: WIFI 2412 MHz b
Note: DALS Lighting Inc. Operater:Kahn

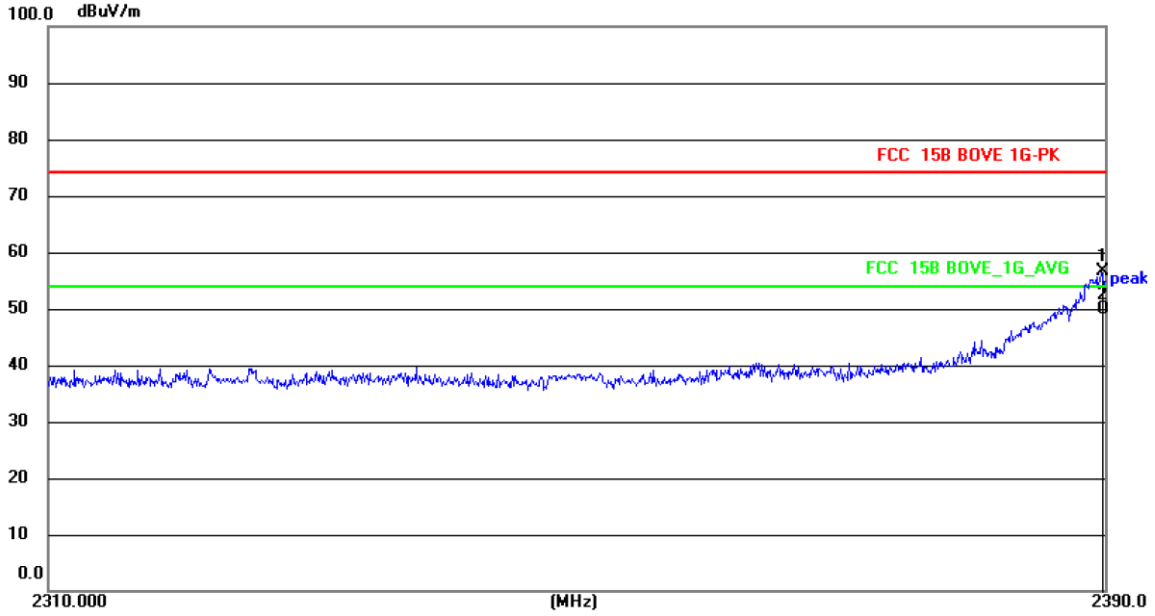
Polarization: ***Horizontal***
Power: AC120V/60Hz
Distance: 3m

Temperature: 26(C)
Humidity: 54 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2390.000	49.76	3.90	53.66	74.00	20.34	peak	128	143	P	
2 *	2390.000	43.18	3.90	47.08	54.00	6.92	AVG	136	186	P	

Radiated Emission Measurement

File :DALS Data :#38 Date: 2021/07/19 Time: 19:47:05



Site 966 Chamber
Limit: FCC 15B BOVE 1G-PK
EUT: Smart Plug
M/N: SM-PLUG
Mode: WIFI 2412 MHz b
Note: DALS Lighting Inc. Operater:Kahn

Polarization: *Vertical*
Power: AC120V/60Hz
Distance: 3m

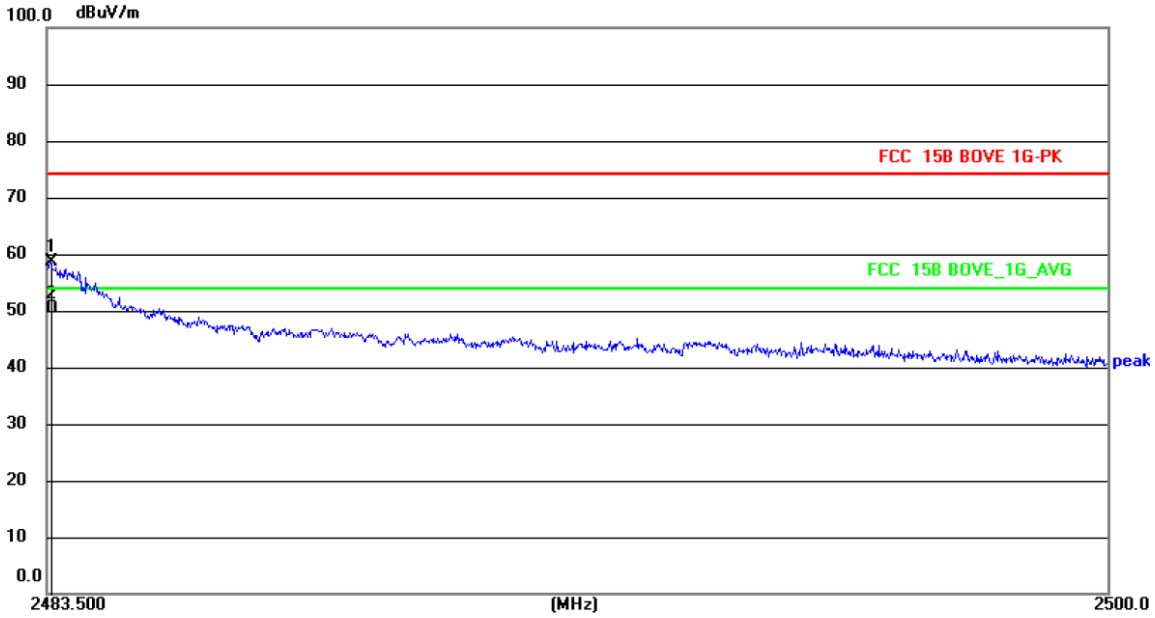
Temperature: 26(C)
Humidity: 54 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2389.787	52.65	3.90	56.55	74.00	17.45	peak	112	143	P	
2 *	2389.893	45.96	3.90	49.86	54.00	4.14	AVG	113	146	P	

Test mode:	802.11b	Test channel:	Highest

Radiated Emission Measurement

File :DALS Data :#37 Date: 2021/07/19 Time: 19:43:26



Site 966 Chamber
Limit: FCC 15B BOVE 1G-PK
EUT: Smart Plug
M/N: SM-PLUG
Mode: WIFI 2462MHz b
Note: DALS Lighting Inc. Operater:Kahn

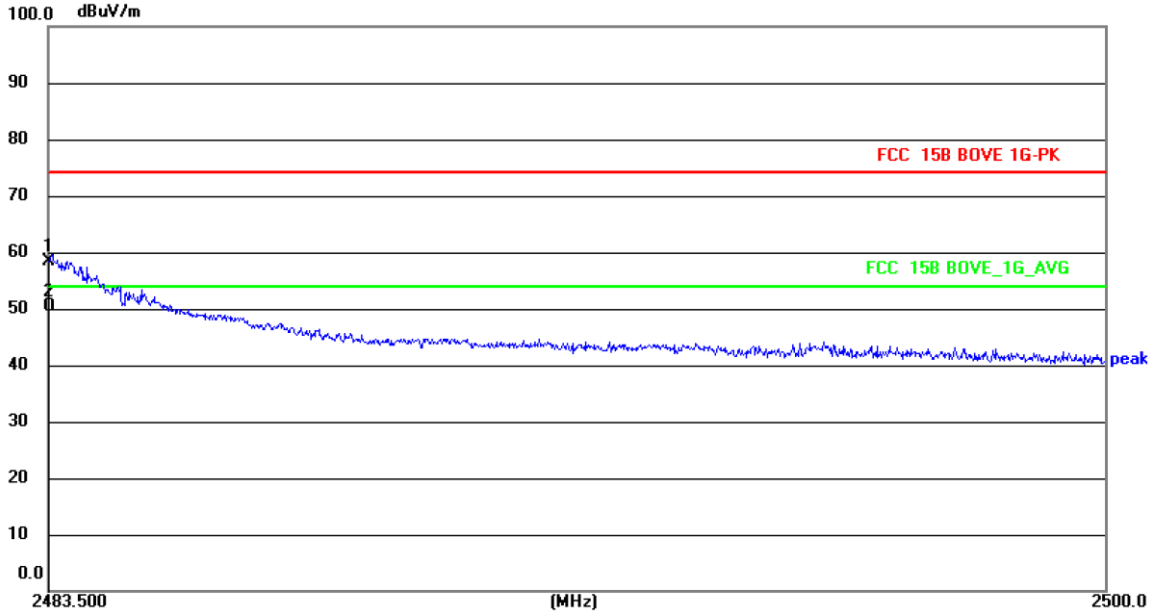
Polarization: ***Horizontal***
Power: AC120V/60Hz
Distance: 3m

Temperature: 26(C)
Humidity: 54 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.561	54.46	4.28	58.74	74.00	15.26	peak	125	136	P	
2 *	2483.561	46.12	4.28	50.40	54.00	3.60	AVG	131	142	P	

Radiated Emission Measurement

File :DALS Data :#36 Date: 2021/07/19 Time: 19:38:15



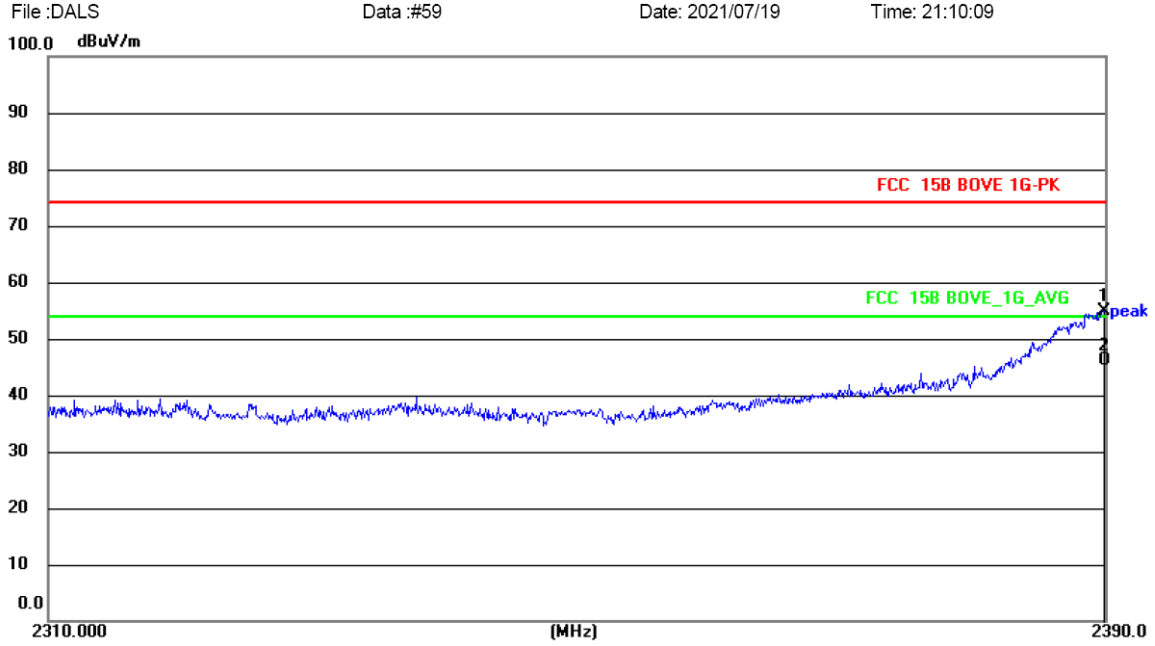
Site 966 Chamber
Limit: FCC 15B BOVE 1G-PK
EUT: Smart Plug
M/N: SM-PLUG
Mode: WIFI 2462MHz b
Note: DALS Lighting Inc. Operater:Kahn

Polarization: *Vertical*
Power: AC120V/60Hz
Distance: 3m

Temperature: 26(C)
Humidity: 54 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.511	54.13	4.28	58.41	74.00	15.59	peak	146	28	P	
2 *	2483.511	46.16	4.28	50.44	54.00	3.56	AVG	139	35	P	

Test mode:	802.11g	Test channel:	Lowest



Site 966 Chamber
Limit: FCC 15B BOVE 1G-PK
EUT: Smart Plug
M/N: SM-PLUG
Mode: WIFI 2412 MHz g
Note: DALS Lighting Inc. Operater:Kahn

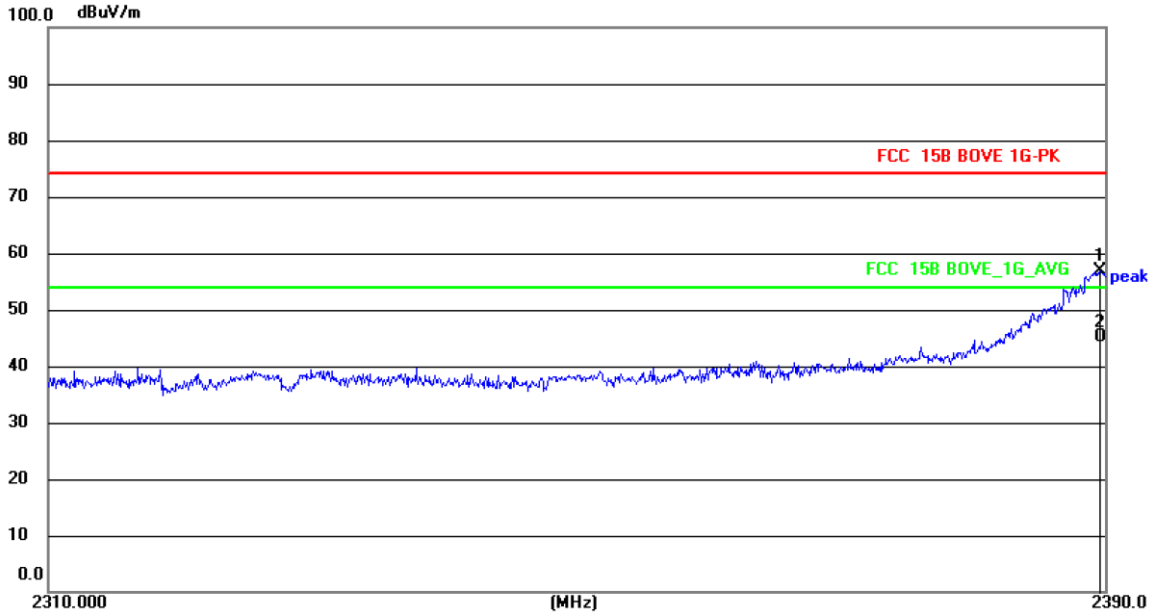
Polarization: *Horizontal*
Power: AC120V/60Hz
Distance: 3m

Temperature: 26(C)
Humidity: 54 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2389.920	51.07	3.90	54.97	74.00	19.03	peak	115	147	P	
2 *	2389.920	42.13	3.90	46.03	54.00	7.97	AVG	124	39	P	

Radiated Emission Measurement

File :DALS Data :#60 Date: 2021/07/19 Time: 21:15:23



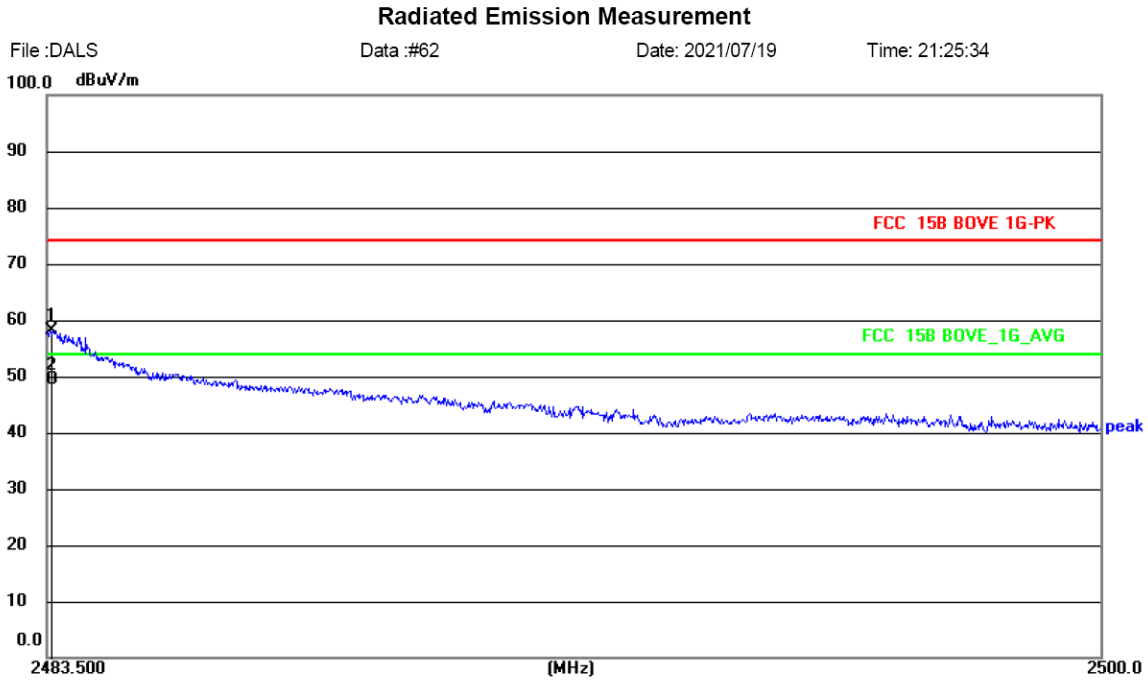
Site 966 Chamber
Limit: FCC 15B BOVE 1G-PK
EUT: Smart Plug
M/N: SM-PLUG
Mode: WIFI 2412 MHz g
Note: DALS Lighting Inc. Operater:Kahn

Polarization: *Vertical*
Power: AC120V/60Hz
Distance: 3m

Temperature: 26(C)
Humidity: 54 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2389.600	53.09	3.90	56.99	74.00	17.01	peak	139	48	P	
2 *	2389.600	41.35	3.90	45.25	54.00	8.75	AVG	128	156	P	

Test mode:	802.11g	Test channel:	Highest

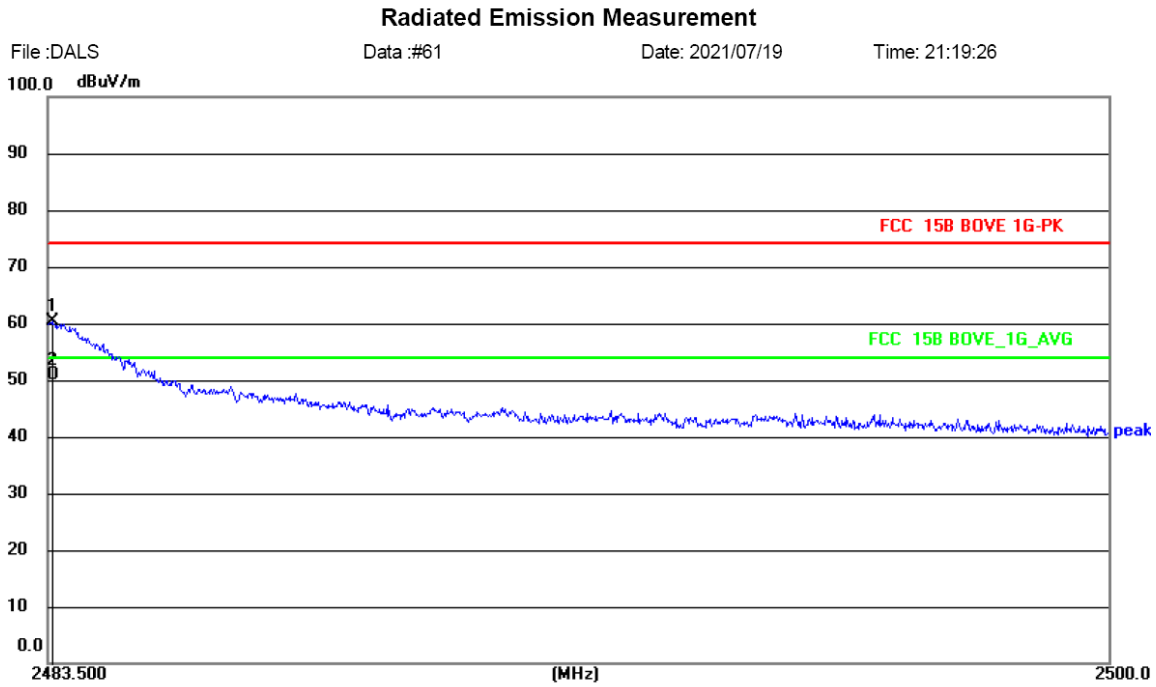


Site 966 Chamber
Limit: FCC 15B BOVE 1G-PK
EUT: Smart Plug
M/N: SM-PLUG
Mode: WIFI 2462MHz g
Note: DALS Lighting Inc. Operater:Kahn

Polarization: *Horizontal*
Power: AC120V/60Hz
Distance: 3m

Temperature: 26(C)
Humidity: 54 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.561	53.96	4.28	58.24	74.00	15.76	peak	131	124	P	
2 *	2483.561	45.13	4.28	49.41	54.00	4.59	AVG	128	203	P	



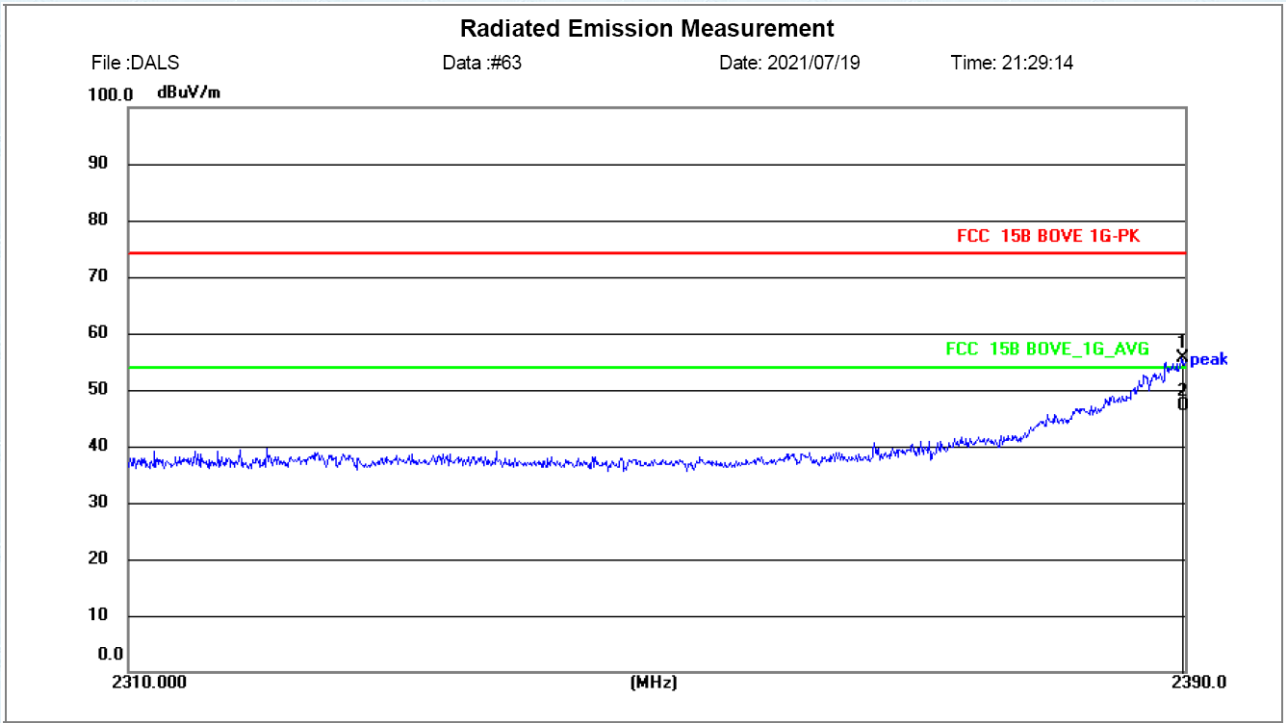
Site 966 Chamber
Limit: FCC 15B BOVE 1G-PK
EUT: Smart Plug
M/N: SM-PLUG
Mode: WIFI 2462MHz g
Note: DALS Lighting Inc. Operater:Kahn

Polarization: *Vertical*
Power: AC120V/60Hz
Distance: 3m

Temperature: 26(C)
Humidity: 54 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.593	56.17	4.28	60.45	74.00	13.55	peak	146	76	P	
2 *	2483.593	46.49	4.28	50.77	54.00	3.23	AVG	138	134	P	

Test mode:	802.11n(HT20)	Test channel:	Lowest



Site 966 Chamber
Limit: FCC 15B BOVE 1G-PK
EUT: Smart Plug
M/N: SM-PLUG
Mode: WIFI 2412 MHz n20
Note: DALS Lighting Inc. Operater:Kahn

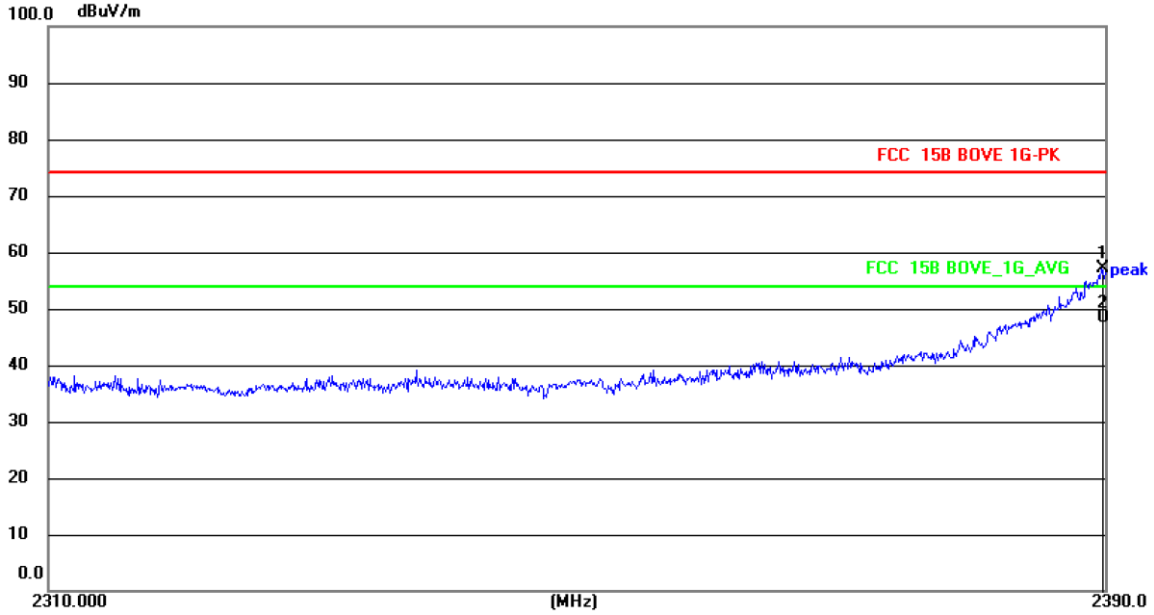
Polarization: ***Horizontal***
Power: AC120V/60Hz
Distance: 3m

Temperature: 26(C)
Humidity: 54 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2389.787	51.65	3.90	55.55	74.00	18.45	peak	149	245	P	
2 *	2389.787	43.24	3.90	47.14	54.00	6.86	AVG	158	204	P	

Radiated Emission Measurement

File :DALS Data :#64 Date: 2021/07/19 Time: 21:35:03



Site 966 Chamber
Limit: FCC 15B BOVE 1G-PK
EUT: Smart Plug
M/N: SM-PLUG
Mode: WIFI 2412 MHz n20
Note: DALS Lighting Inc. Operater:Kahn

Polarization: *Vertical*
Power: AC120V/60Hz
Distance: 3m

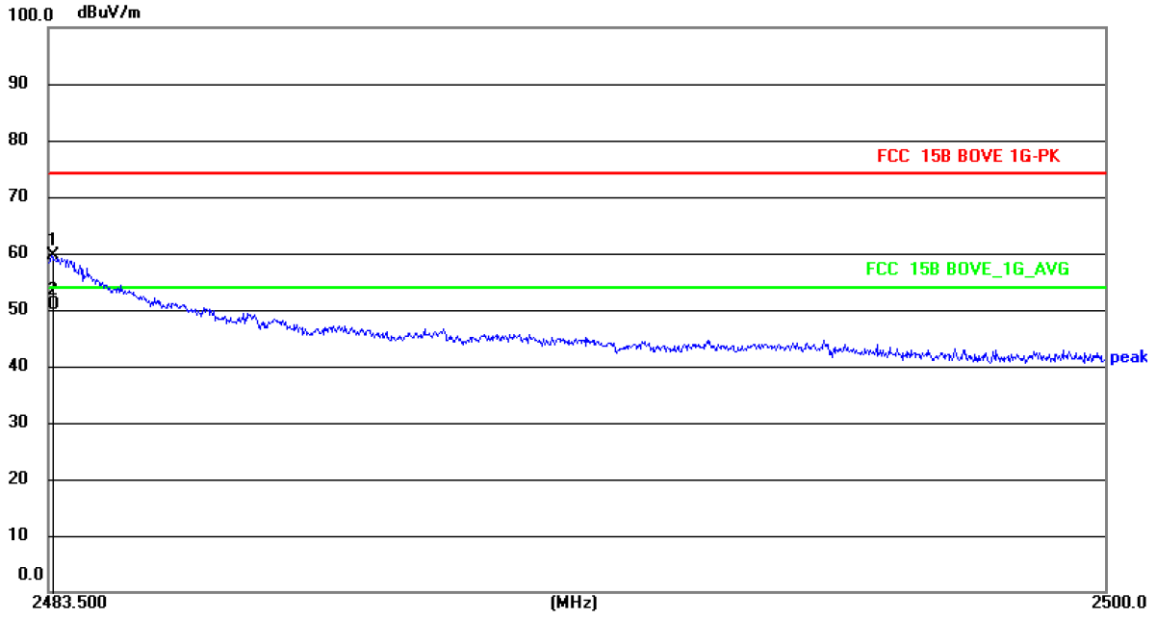
Temperature: 26(C)
Humidity: 54 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2389.787	53.15	3.90	57.05	74.00	16.95	peak	157	36	P	
2 *	2389.787	44.48	3.90	48.38	54.00	5.62	AVG	142	153	P	

Test mode:	802.11n(HT20)	Test channel:	Highest

Radiated Emission Measurement

File :DALS Data :#66 Date: 2021/07/19 Time: 21:43:24

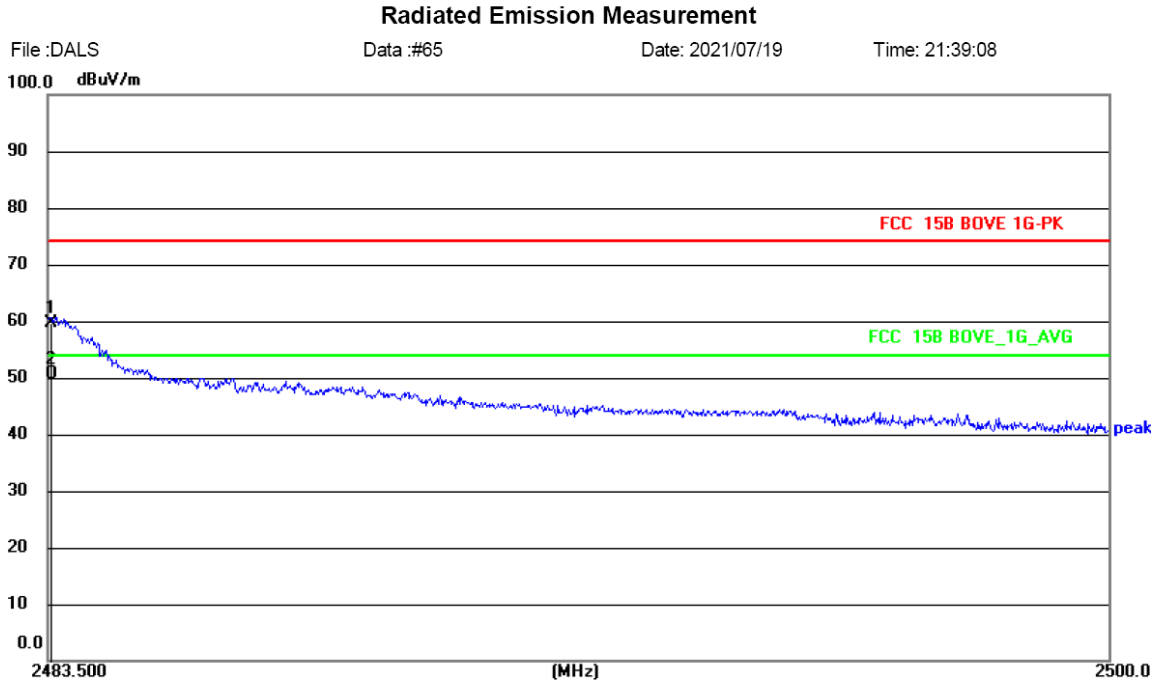


Site 966 Chamber
Limit: FCC 15B BOVE 1G-PK
EUT: Smart Plug
M/N: SM-PLUG
Mode: WIFI 2462MHz n20
Note: DALS Lighting Inc. Operater:Kahn

Polarization: *Horizontal*
Power: AC120V/60Hz
Distance: 3m

Temperature: 26(C)
Humidity: 54 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.561	55.46	4.28	59.74	74.00	14.26	peak	141	182	P	
2 *	2483.561	46.57	4.28	50.85	54.00	3.15	AVG	137	134	P	



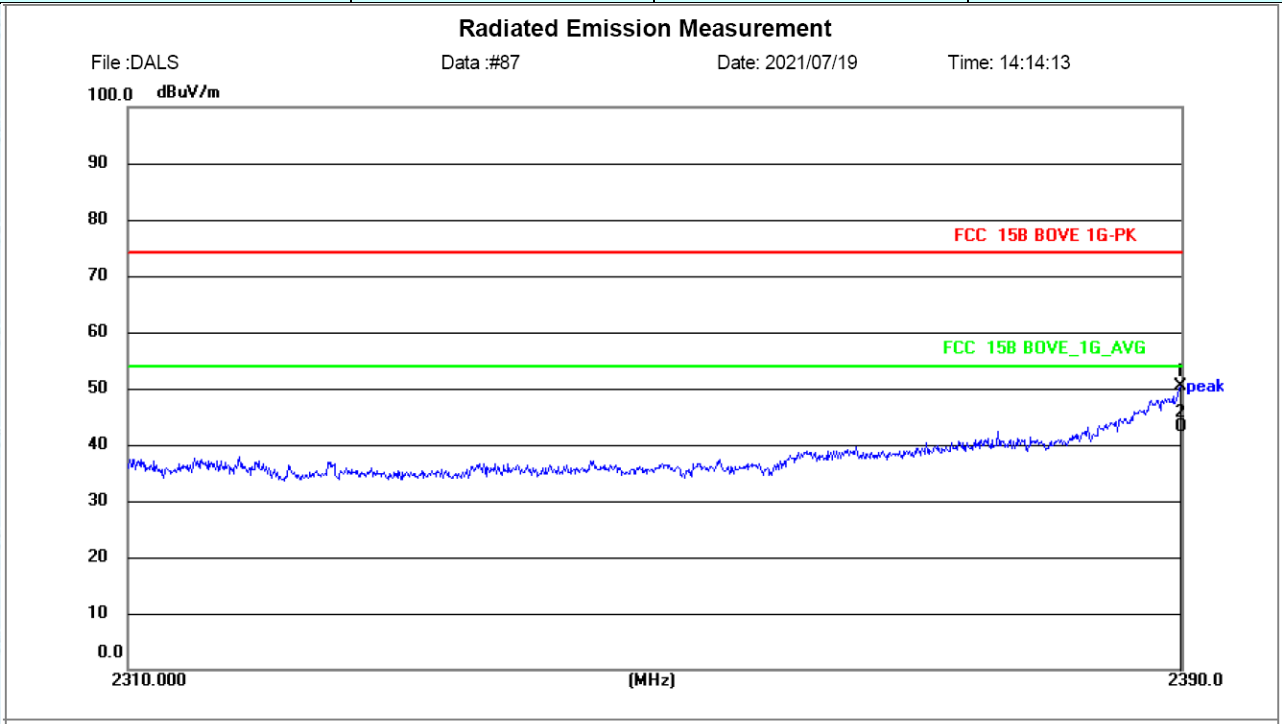
Site 966 Chamber
Limit: FCC 15B BOVE 1G-PK
EUT: Smart Plug
M/N: SM-PLUG
Mode: WIFI 2462MHz n20
Note: DALS Lighting Inc. Operater:Kahn

Polarization: *Vertical*
Power: AC120V/60Hz
Distance: 3m

Temperature: 26(C)
Humidity: 54 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.539	55.46	4.28	59.74	74.00	14.26	peak	162	287	P	
2 *	2483.539	46.39	4.28	50.67	54.00	3.33	AVG	156	139	P	

Test mode:	802.11n(HT40)	Test channel:	Lowest



Site 966 Chamber
Limit: FCC 15B BOVE 1G-PK
EUT: Smart Plug
M/N: SM-PLUG
Mode: WIFI 2422 MHz n40
Note: DALS Lighting Inc. Operater:Kahn

Polarization: *Horizontal*
Power: AC120V/60Hz
Distance: 3m

Temperature: 26(C)
Humidity: 54 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2389.920	46.57	3.90	50.47	74.00	23.53	peak	153	141	P	
2 *	2389.920	39.32	3.90	43.22	54.00	10.78	AVG	147	128	P	