

TEST REPORT

Applicant: Dals Lighting Inc.
Address of Applicant: 80 boul. De La Seigneurie Est, Blainville, QC, J7C 4N1, Canada
Manufacturer/Factory: HANGZHOU LIJIACHENG ELECTRIC CO., LTD
Address of Manufacturer/Factory: No.35 Yangshan Road, Gaohong Industrial Zone, Lin'an City, HANGZHOU, Zhejiang, 311300, China
Equipment Under Test (EUT)

Product Name: LED Bulb

Model No.: SM-BLBPAR20

Trade Mark: DALS, ILLUME,  CONNECT

FCC ID: 2AQSN-SMBLBPAR20

IC: 10733A-SMBLBPAR20

HVIN: SM-BLBPAR20

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: October 13,2021

Date of Test: October 15,2021- October 20,2021

Date of report issued: October 22,2021

Test Result : PASS *

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

Authorized Signature:



Robinson Luo

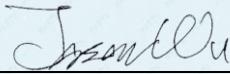
Laboratory Manager

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

2 Version

Version No.	Date	Description
00	2021-10-22	Original

Prepared By:

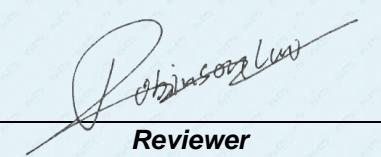


Project Engineer

Date:

2021-10-22

Check By:



Reviewer

Date:

2021-10-22

3 Contents

	Page
1 COVER PAGE	1
2 VERSION	2
3 CONTENTS	3
4 TEST SUMMARY	4
5 GENERAL INFORMATION	5
5.1 GENERAL DESCRIPTION OF EUT	5
5.2 TEST MODE	7
5.3 DESCRIPTION OF SUPPORT UNITS	7
5.4 DEVIATION FROM STANDARDS	7
5.5 ABNORMALITIES FROM STANDARD CONDITIONS	7
5.6 TEST FACILITY	7
5.7 TEST LOCATION	7
5.8 ADDITIONAL INSTRUCTIONS	7
6 TEST INSTRUMENTS LIST	8
7 TEST RESULTS AND MEASUREMENT DATA	10
7.1 ANTENNA REQUIREMENT	10
7.2 CONDUCTED EMISSIONS	11
7.3 CONDUCTED MAX AVERAGE OUTPUT POWER	14
7.4 CHANNEL BANDWIDTH & 99% OCCUPY BANDWIDTH	16
7.5 POWER SPECTRAL DENSITY	21
7.6 BAND EDGES	24
7.6.1 Conducted Emission Method	24
7.6.2 Radiated Emission Method	27
7.7 SPURIOUS EMISSION	44
7.7.1 Conducted Emission Method	44
7.7.2 Radiated Emission Method	47
7.8 FREQUENCY STABILITY	64
8 TEST SETUP PHOTO	67
9 EUT CONSTRUCTIONAL DETAILS	67

4 Test Summary

Test Item	Section	Result
Antenna requirement	FCC part 15.203/15.247 (b)(4) 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

No.	Item	Measurement Uncertainty
1	Radio Frequency	1×10^{-7}
2	Duty cycle	0.37%
3	Occupied Bandwidth	2.8dB
4	RF conducted power	0.75dB
5	RF power density	3dB
6	Conducted Spurious emissions	2.58dB
7	AC Power Line Conducted Emission	3.44dB (0.15MHz ~ 30MHz) 3.1dB (9kHz-30MHz) 3.8039dB (30MHz-200MHz) 3.9679dB (200MHz-1GHz) 4.29dB (1GHz-18GHz) 3.30dB (18GHz-40GHz)
8	Radiated Spurious emission test	

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:	LED Bulb
Model No.:	SM-BLBPAR20
Serial No.:	N/A
Hardware version:	HT-SPAR206W-DY-V1.2
Software version:	1.2.7
Test sample(s) ID:	GTSL202110000195-1
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):7
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:	Internal Antenna
Antenna gain:	4.5dBi
Power supply:	AC 120V/60Hz 6W

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	X	

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
<i>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.</i>	

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.										
<table border="1"> <thead> <tr> <th>Mode</th><th>802.11b</th><th>802.11g</th><th>802.11n(HT20)</th><th>802.11n(HT40)</th></tr> </thead> <tbody> <tr> <td>Data rate</td><td>1Mbps</td><td>6Mbps</td><td>6.5Mbps</td><td>13Mbps</td></tr> </tbody> </table>	Mode	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)	Data rate	1Mbps	6Mbps	6.5Mbps	13Mbps
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 Accreditation 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. 17 2021	Oct. 16 2022
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 17 2021	Oct. 16 2022
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 17 2021	Oct. 16 2022
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

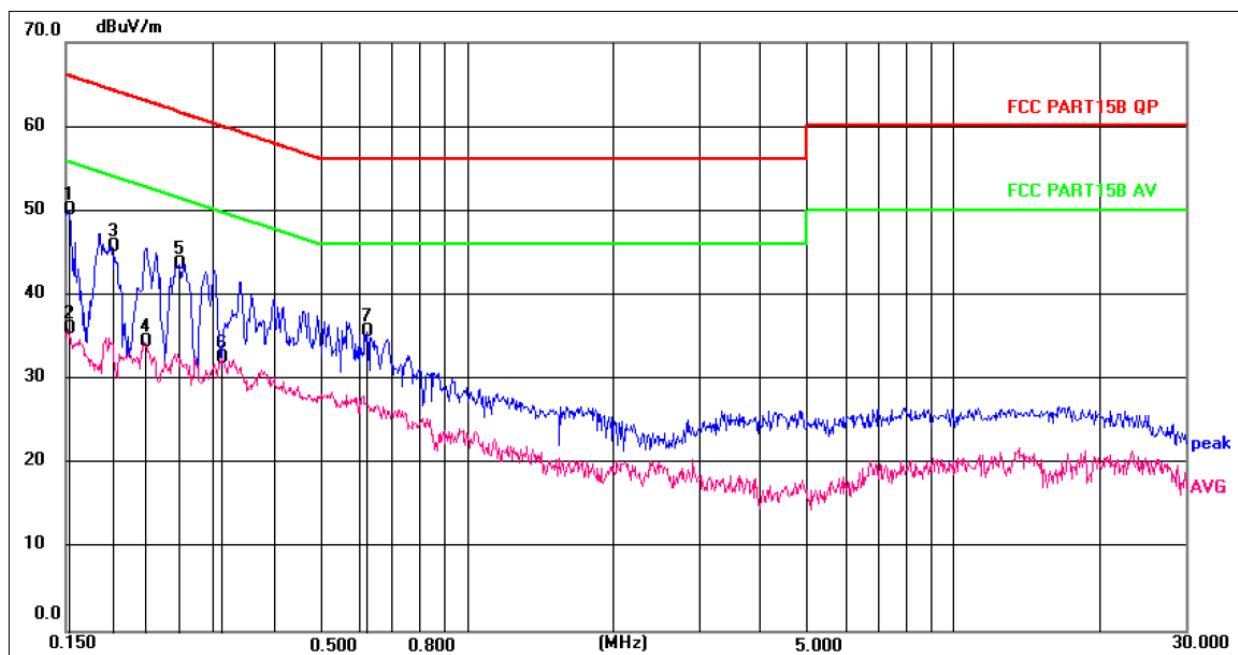
7.1 Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203 /247(b) (4)
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(b)(4) requirement:	
(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.	
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:	
<i>The antenna is Internal Antenna, the best case gain of the antenna is 4.5dBi, reference to the appendix II for details</i>	

7.2 Conducted Emissions

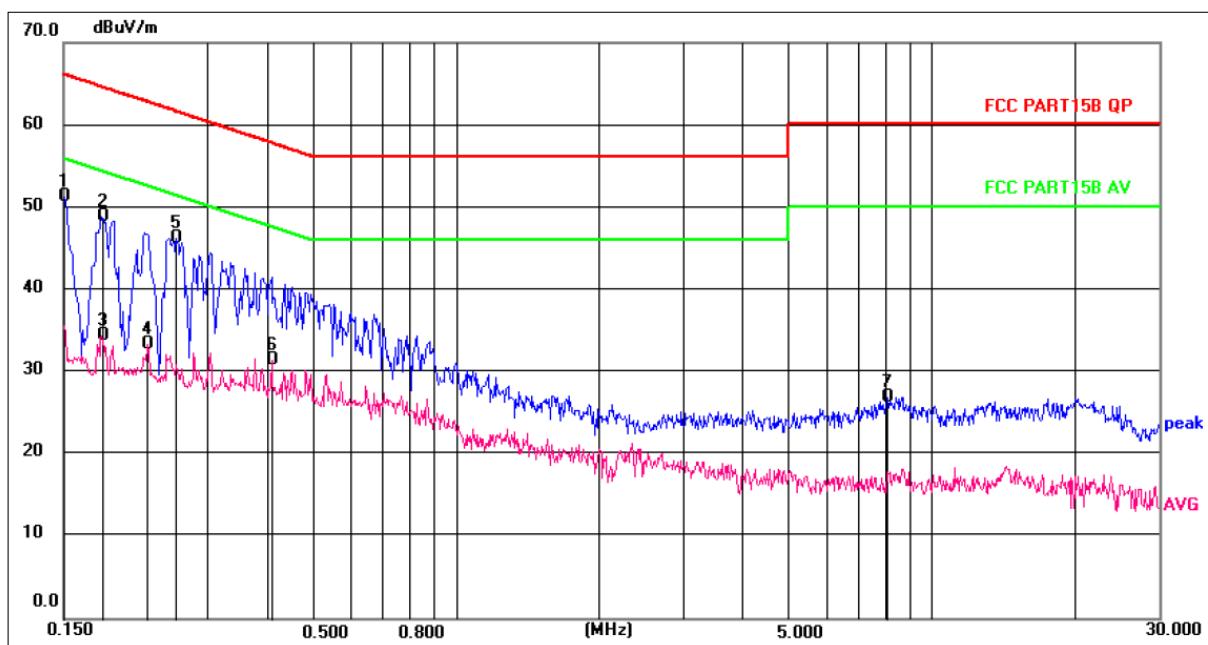
Test Requirement:	FCC Part15 C Section 15.207 RSS-Gen Section 8.8																
Test Method:	ANSI C63.10:2013																
Test Frequency Range:	150KHz to 30MHz																
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto																
Limit:	<table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th> <th colspan="2">Limit (dBuV)</th> </tr> <tr> <th>Quasi-peak</th> <th>Average</th> </tr> </thead> <tbody> <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> </tbody> </table>			Frequency range (MHz)	Limit (dBuV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dBuV)																
	Quasi-peak	Average															
0.15-0.5	66 to 56*	56 to 46*															
0.5-5	56	46															
5-30	60	50															
	* Decreases with the logarithm of the frequency.																
Test setup:	<p>Reference Plane</p> <p>LISN</p> <p>40cm</p> <p>80cm</p> <p>AUX Equipment</p> <p>E.U.T</p> <p>Test table/Insulation plane</p> <p>EMI Receiver</p> <p>Filter</p> <p>AC power</p> <p>Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p>																
Test procedure:	<ol style="list-style-type: none"> 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. 																
Test Instruments:	Refer to section 6.0 for details																
Test mode:	Refer to section 5.2 for details																
Test environment:	Temp.:	25 °C	Humid.:	57%	Press.:	1012mbar											
Test voltage:	AC 120V, 60Hz																
Test results:	Pass																

Remark: N/A

Measurement data
Line:


Site:	Shielding Room	Antenna::L1	Temperature(C):25(C)
Limit:	FCC PART15B		Humidity(%):57%
EUT:	LED Bulb	Test Time:	2021/10/16 18:18:11
M/N.:	SM-BLBPART20	Power Rating:	AC 120V/60Hz
Mode:	ON WITH WIFI	Test Engineer:	Jason
Note:	DALS Lighting Inc.		

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Remark
1 *	0.1516	39.98	10.01	49.99	65.91	15.92	QP	
2	0.1516	25.87	10.01	35.88	55.91	20.03	AVG	
3	0.1864	35.62	10.02	45.64	64.20	18.56	QP	
4	0.2174	24.33	10.02	34.35	52.92	18.57	AVG	
5	0.2575	33.58	10.02	43.60	61.51	17.91	QP	
6	0.3133	22.38	10.03	32.41	49.88	17.47	AVG	
7	0.6238	25.47	10.06	35.53	56.00	20.47	QP	

Neutral:


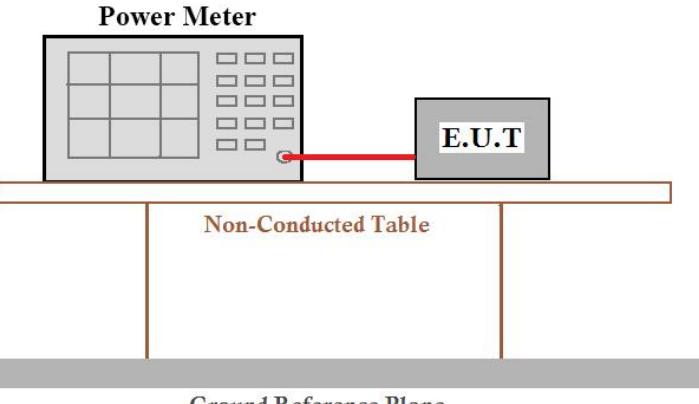
Site:	Shielding Room	Antenna::N	Temperature(C):25(C)
Limit:	FCC PART15B		Humidity(%):57%
EUT:	LED Bulb	Test Time:	2021/10/16 18:14:04
M/N.:	SM-BLBPAR20	Power Rating:	AC 120V/60Hz
Mode:	ON WITH WIFI	Test Engineer:	Jason
Note:	DALS Lighting Inc.		

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Remark
1 *	0.1507	41.20	10.01	51.21	65.96	14.75	QP	
2	0.1805	38.77	10.02	48.79	64.46	15.67	QP	
3	0.1805	24.34	10.02	34.36	54.46	20.10	AVG	
4	0.2255	23.33	10.02	33.35	52.61	19.26	AVG	
5	0.2587	36.24	10.03	46.27	61.47	15.20	QP	
6	0.4104	21.47	10.04	31.51	47.64	16.13	AVG	
7	8.0624	16.09	10.86	26.95	60.00	33.05	QP	

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	99.59	0.02
802.11g	99.71	0.01
802.11n(HT20)	99.73	0.01
802.11n(HT40)	100	0

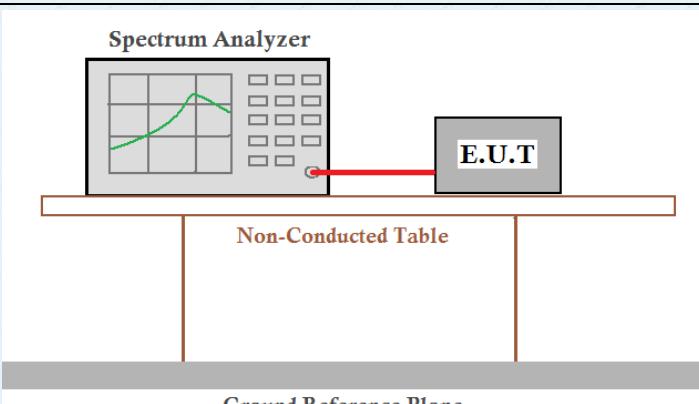
Output Power:

Test Mode	Frequency (MHz)	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Result
802.11b	2412	14.806	0.02	14.826	30	Pass
	2437	14.296	0.02	14.316	30	Pass
	2462	14.222	0.02	14.242	30	Pass
802.11g	2412	11.893	0.01	11.903	30	Pass
	2437	10.877	0.02	10.897	30	Pass
	2462	10.736	0.01	10.746	30	Pass
802.11n(HT20)	2412	10.569	0.01	10.579	30	Pass
	2437	9.657	0.01	9.667	30	Pass
	2462	9.496	0.01	9.506	30	Pass
802.11n(HT40)	2422	9.852	0	9.852	30	Pass
	2437	8.553	0	8.553	30	Pass
	2452	8.239	0	8.239	30	Pass

EIRP:

Test Channel	e.i.r.p (dBm)				Limit(dBm)	Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)		
Lowest	19.326	16.403	15.079	14.352	36	Pass
Middle	18.816	15.397	14.167	13.053		
Highest	18.742	15.246	14.006	12.739		

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

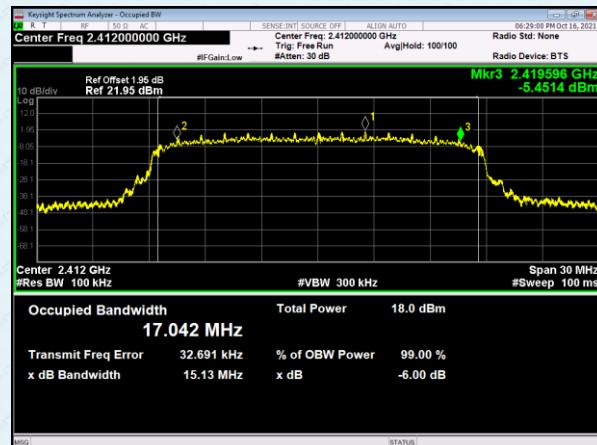
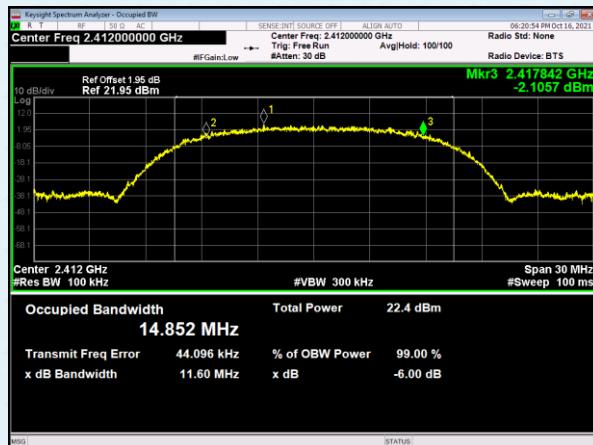
Test Channel	Channel Bandwidth (MHz)				Limit(KHz)	Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)		
Lowest	11.596	15.126	17.313	35.053	>500	Pass
Middle	11.587	15.122	17.315	35.085		
Highest	12.25	15.118	16.689	35.065		

Test Channel	99% Occupy Bandwidth (MHz)				Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)	
Lowest	14.906	17.215	18.167	35.582	Pass
Middle	14.964	17.225	18.182	35.681	
Highest	14.925	17.177	18.165	35.640	

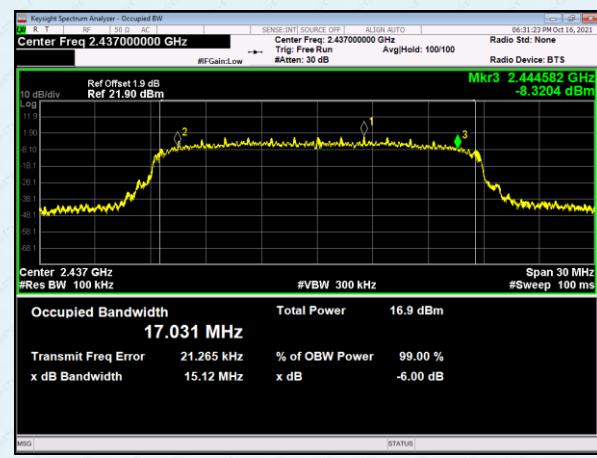
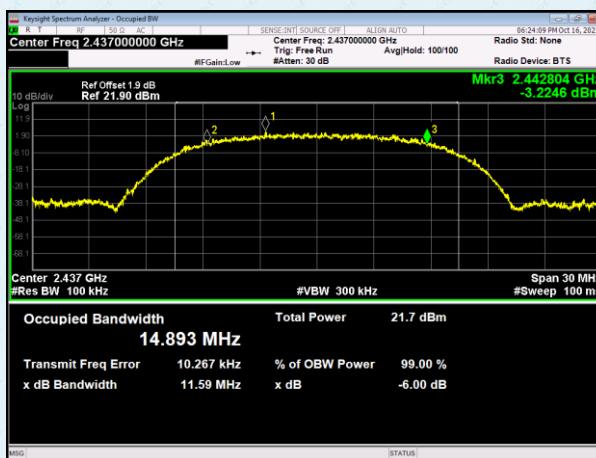
Test plot as follows:

-6dB BW:

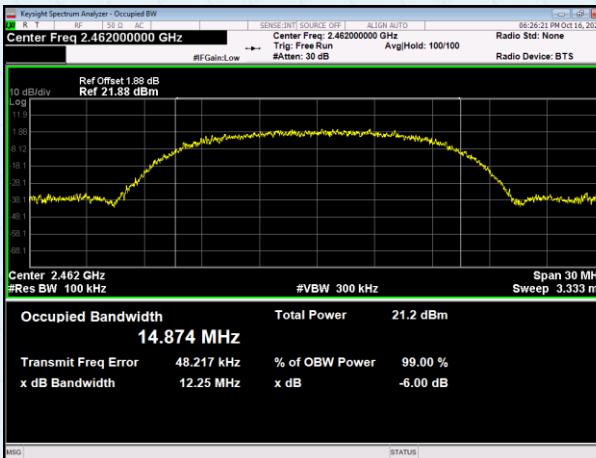
Test mode:	802.11b	Test mode:	802.11g
------------	---------	------------	---------



Lowest channel



Middle channel



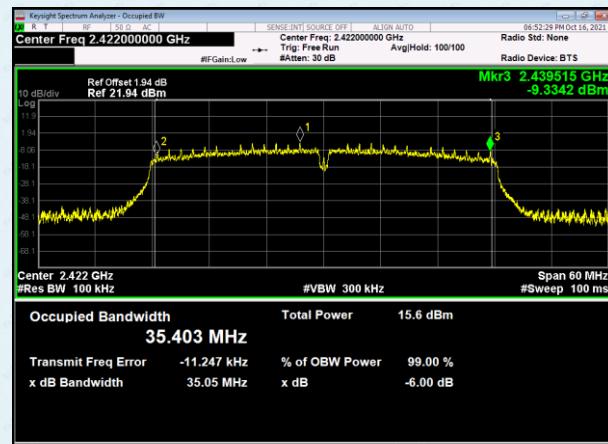
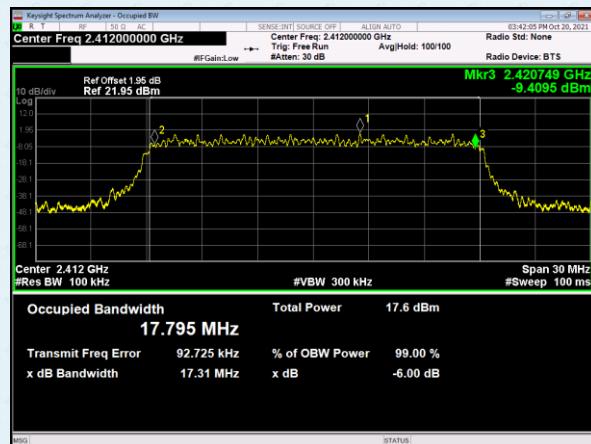
Highest channel

Test mode:

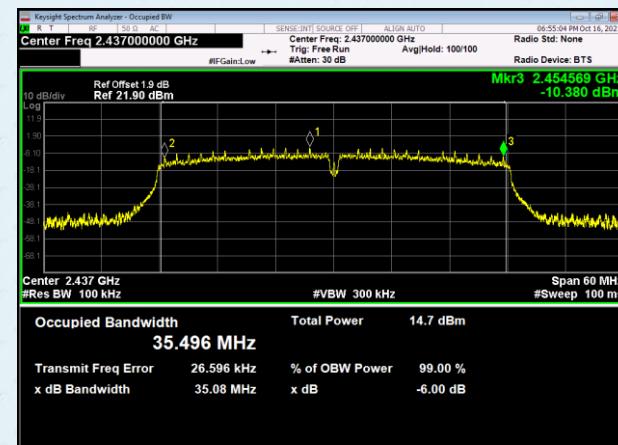
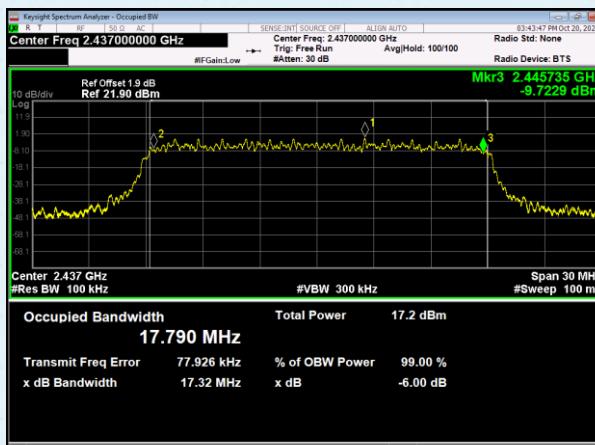
802.11n(HT20)

Test mode:

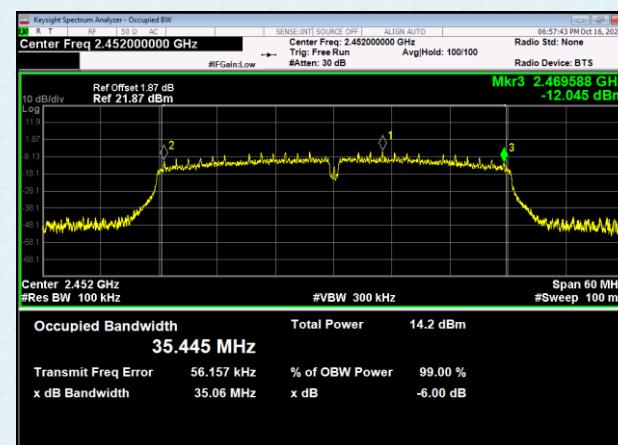
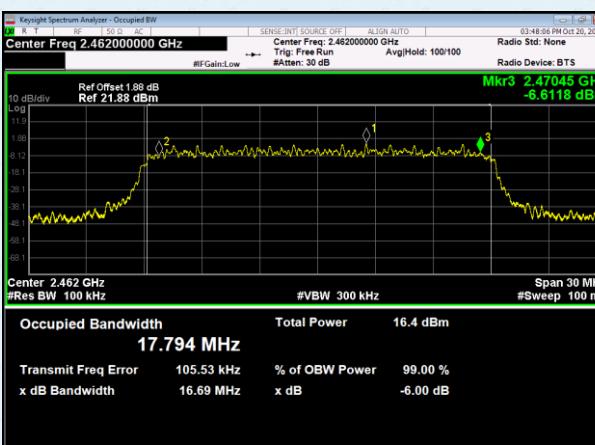
802.11n(HT40)



Lowest channel



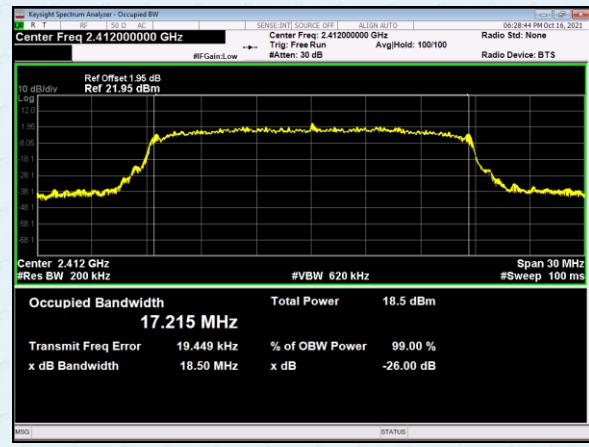
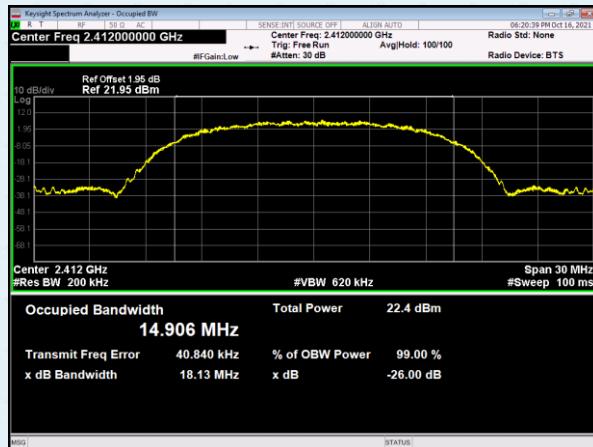
Middle channel



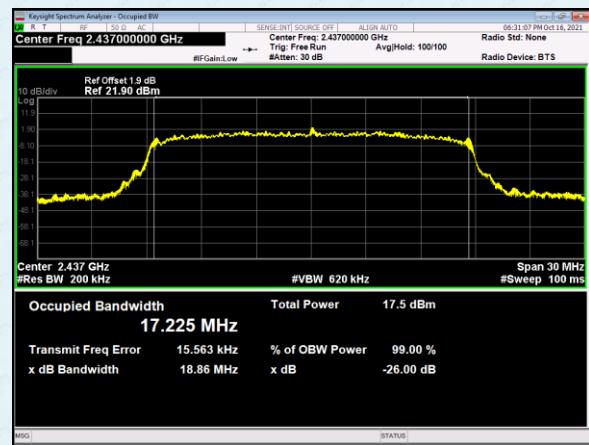
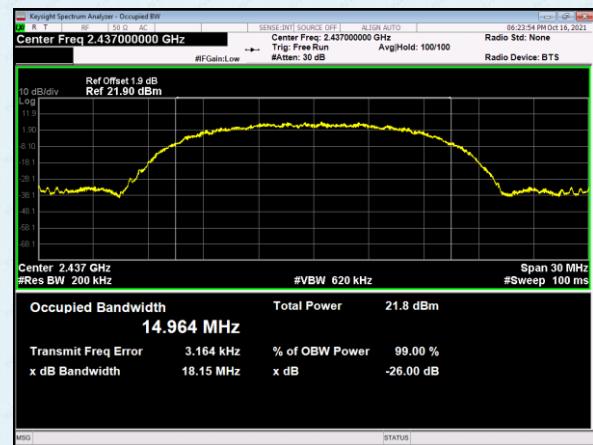
Highest channel

99% BW:

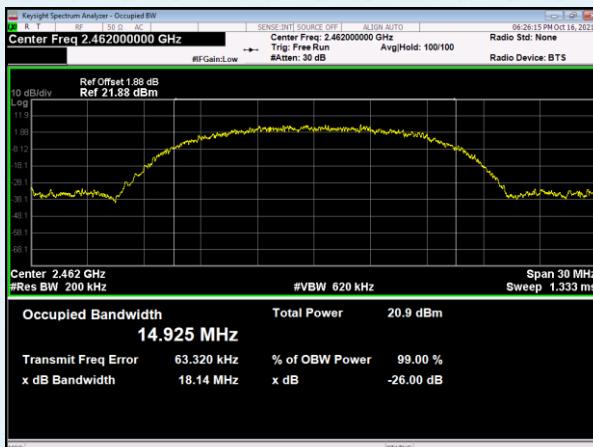
Test mode:	802.11b	Test mode:	802.11g
------------	---------	------------	---------



Lowest channel



Middle channel



Highest channel

Global United Technology Services Co., Ltd.

 No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone,
 Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

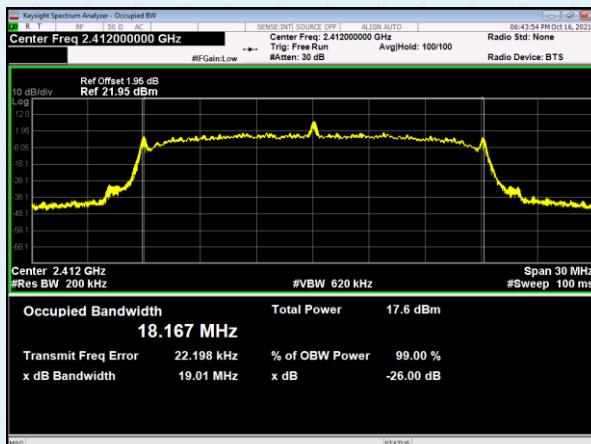
Telephone: +86 (0) 755 2779 8480 Fax: +86 (0) 755 2779 8960

Test mode:

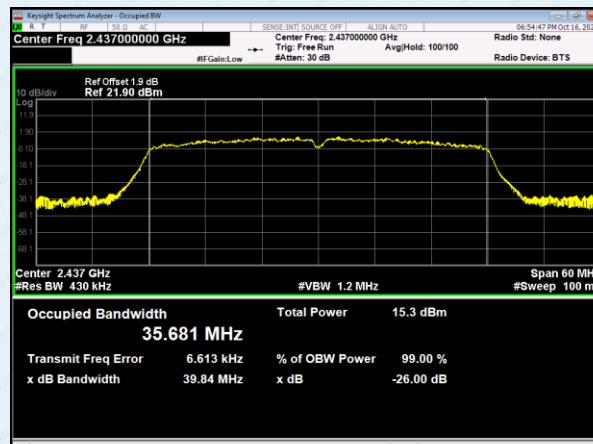
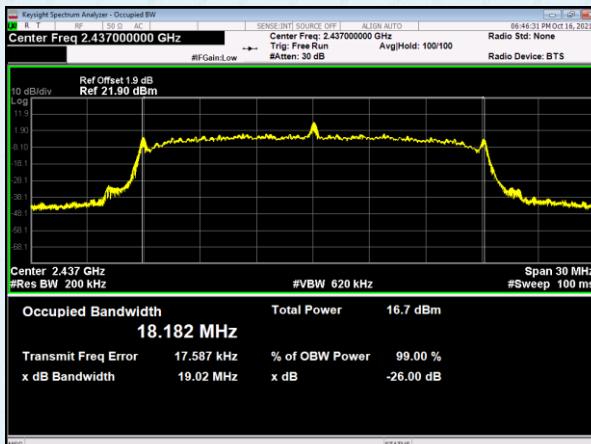
802.11n(HT20)

Test mode:

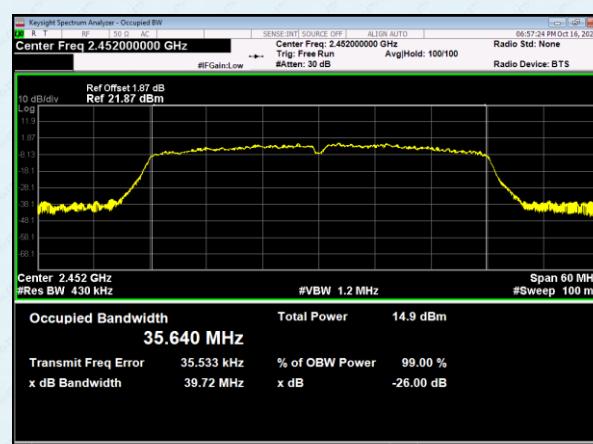
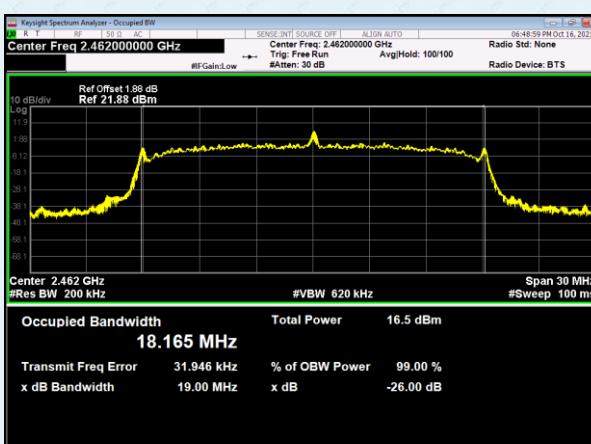
802.11n(HT40)



Lowest channel

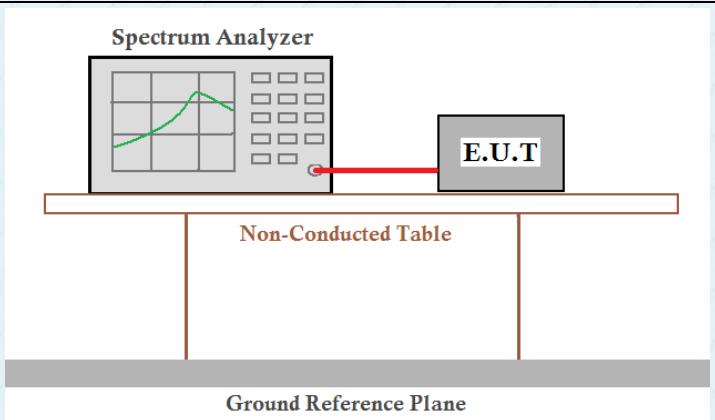


Middle channel



Highest channel

7.5 Power Spectral Density

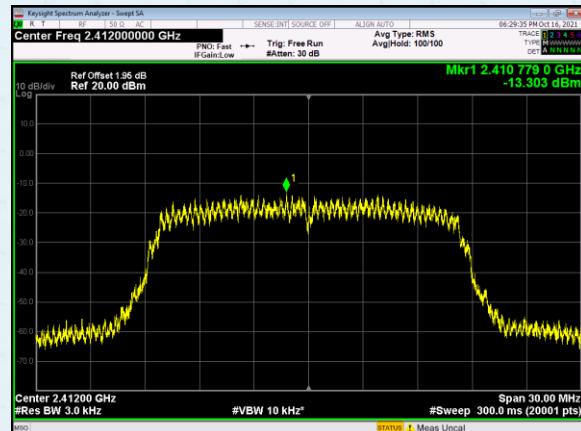
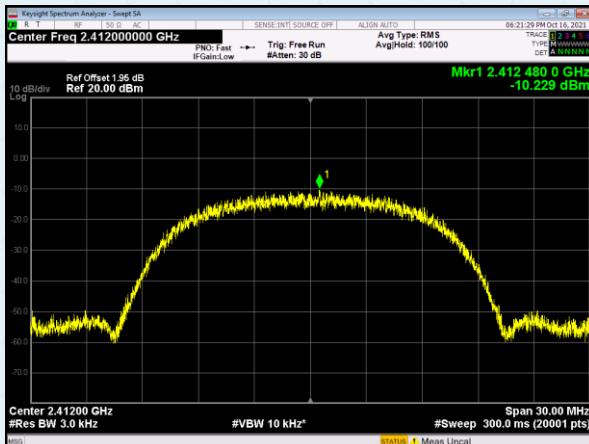
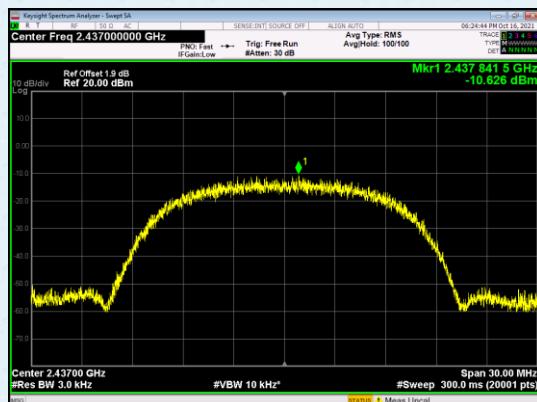
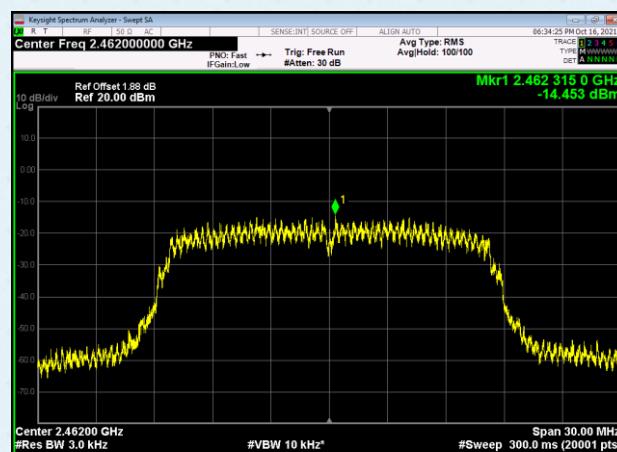
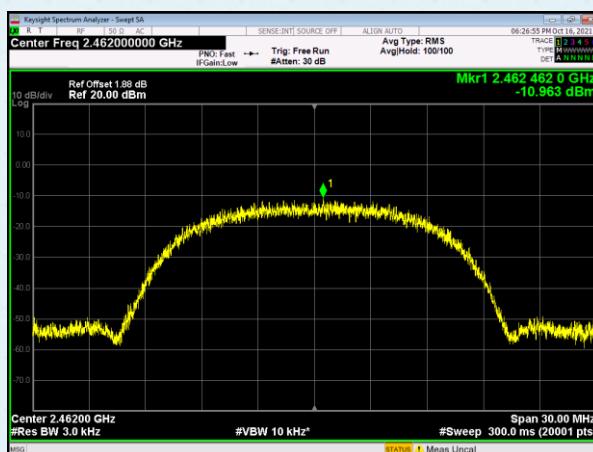
Test Requirement:	FCC Part15 C Section 15.247 (e) RSS-247 Section 5.2(b)
Test Method:	KDB558074 D01 15.247 Meas Guidance v05r02 ANSI C63.10:2013 and RSS-Gen
Limit:	8dBm/3kHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

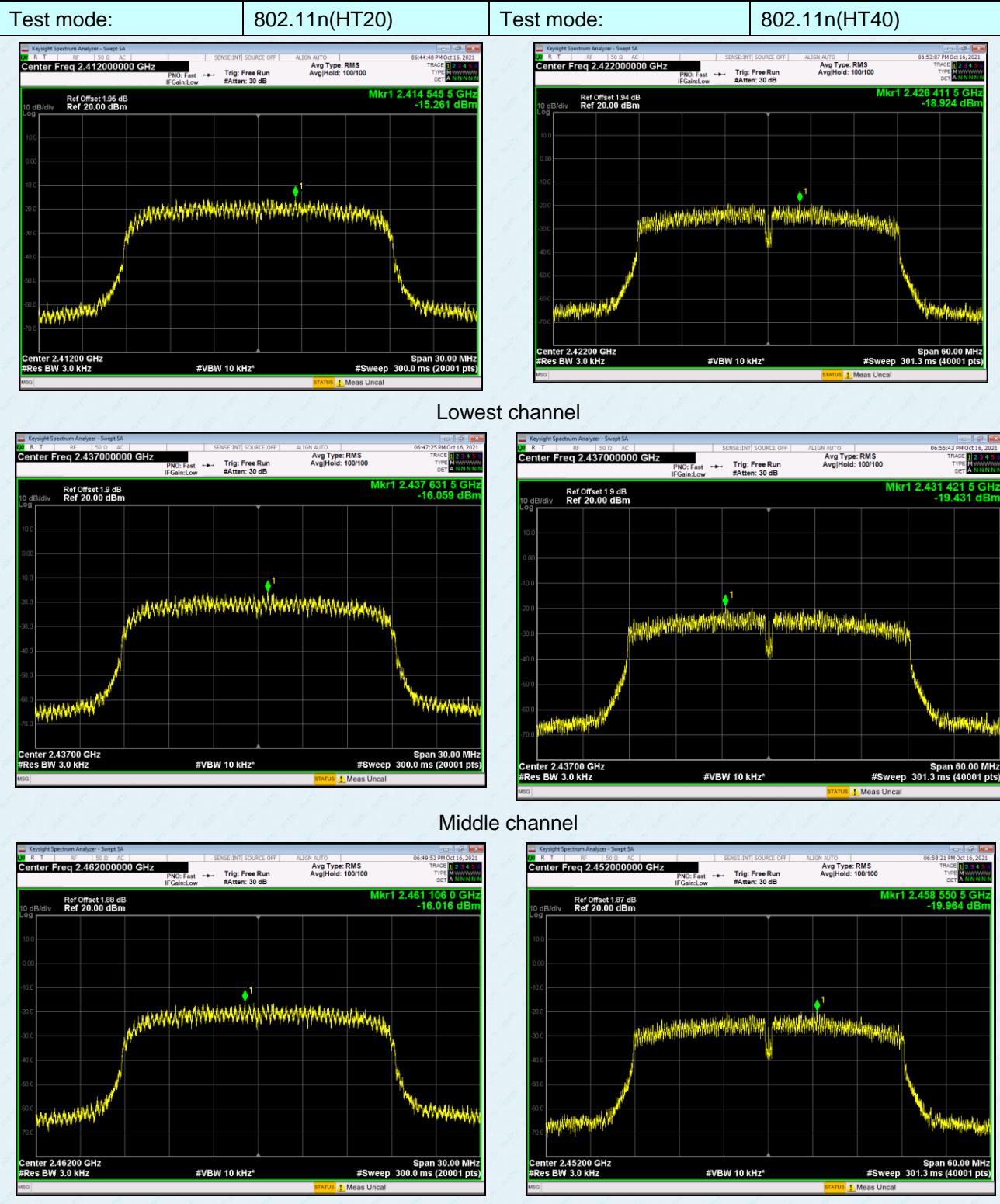
Measurement Data

Test CH	Power Spectral Density (dBm/3kHz)				Limit (dBm/3kHz)	Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)		
Lowest	-10.229	-13.303	-15.261	-18.924	8.00	Pass
Middle	-10.626	-14.389	-16.059	-19.431		
Highest	-10.963	-14.453	-16.016	-19.964		

Test plot as follows:

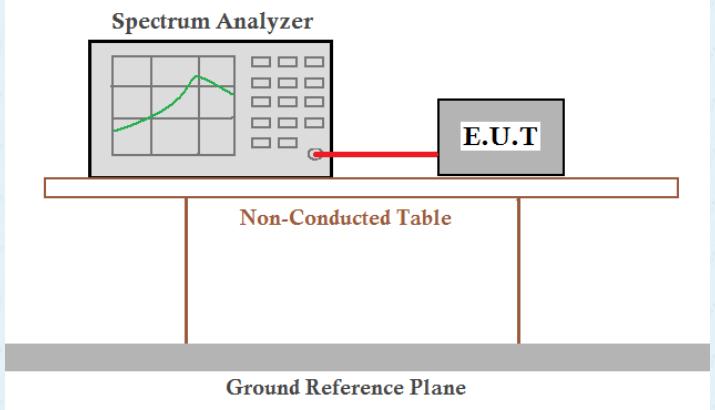
Test mode:	802.11b	Test mode:	802.11g
------------	---------	------------	---------


Lowest channel

Middle channel

Highest channel



7.6 Band edges

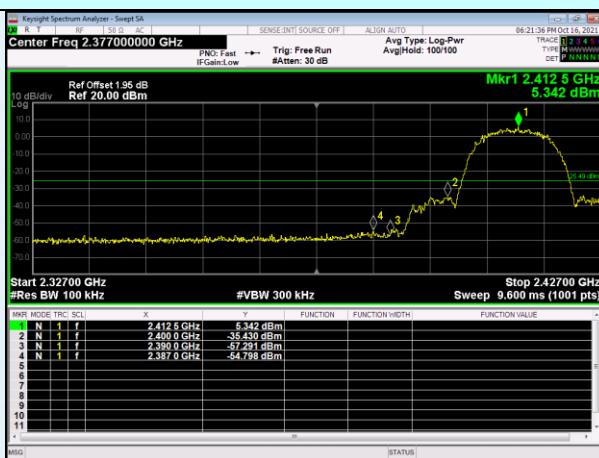
7.6.1 Conducted Emission Method

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



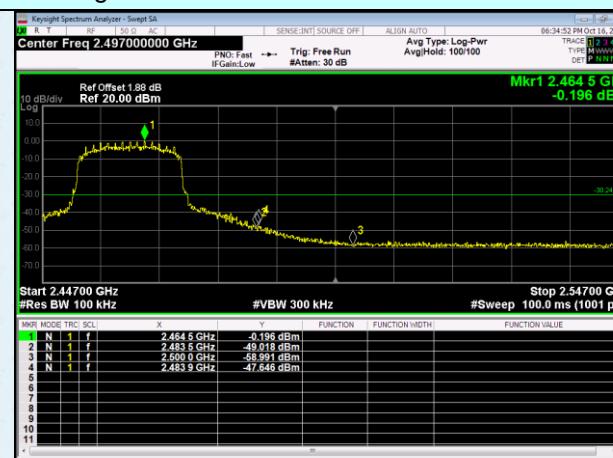
Highest channel

Test mode:

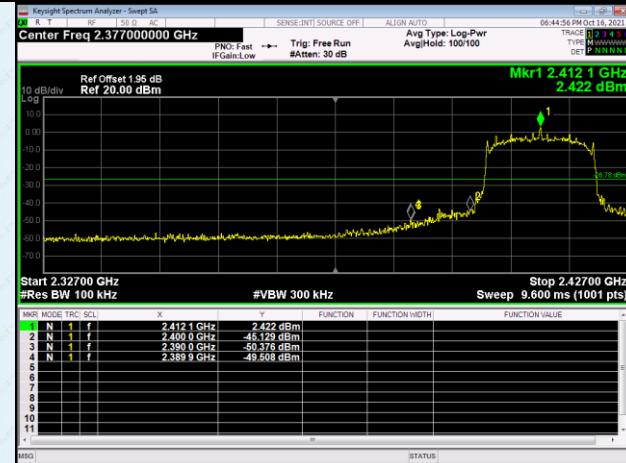
802.11g



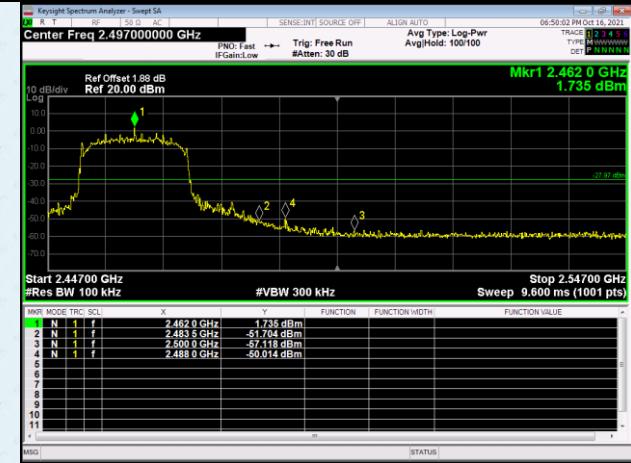
Lowest channel



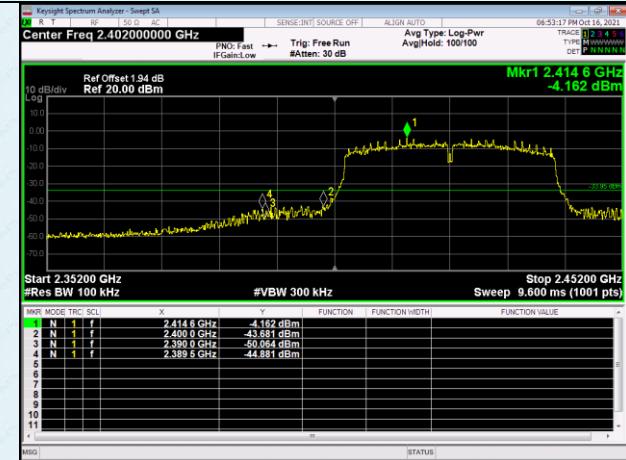
Highest channel

Test mode:


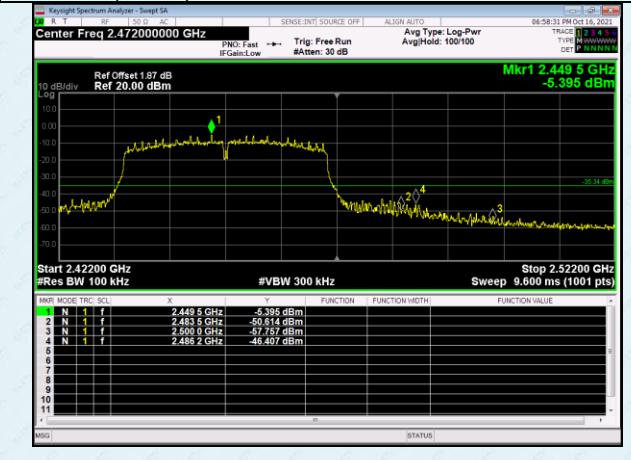
Lowest channel

802.11n(HT20)


Highest channel

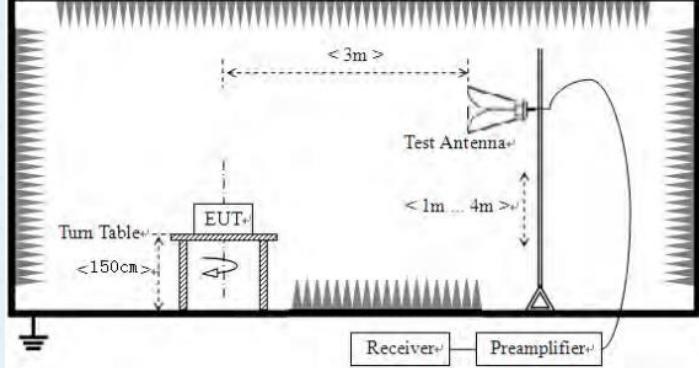
Test mode:


Lowest channel

802.11n(HT40)


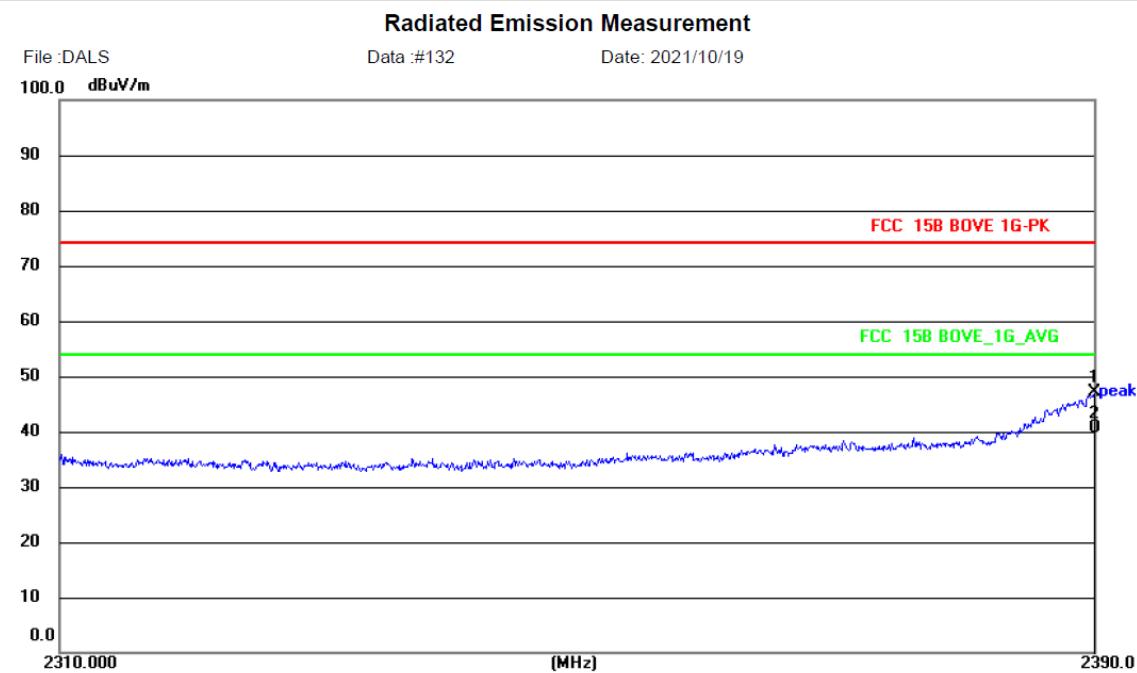
Highest channel

7.6.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205 RSS-247 3.3 & RSS-Gen Section 8.9						
Test Method:	ANSI C63.10: 2013 & RSS-Gen						
Test Frequency Range:	All of the restrict bands were tested, only the worst band's (2310MHz to 2500MHz) data was showed.						
Test site:	Measurement Distance: 3m						
Receiver setup:	Frequency	Detector	RBW	VBW	Value		
	Above 1GHz	Peak	1MHz	3MHz	Peak		
Limit:	Frequency		Limit (dBuV/m @3m)		Value		
	Above 1GHz		54.00		Average		
	Above 1GHz		74.00		Peak		
Test setup:							
Test Procedure:	<ol style="list-style-type: none"> 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. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 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. 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. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 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. 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. 						
Test Instruments:	Refer to section 6.0 for details						
Test mode:	Refer to section 5.2 for details						
Test results:	Pass						

Measurement data:

Test mode: 802.11b Test channel: Lowest



Site 966 Chamber
Limit: FCC 15B BOVE 1G-PK
EUT: LED Bulb
M/N: SM-BLBPAR20
Mode: WIFI 2412 MHz b
Note: DALS Lighting Inc.

Polarization: *Horizontal*

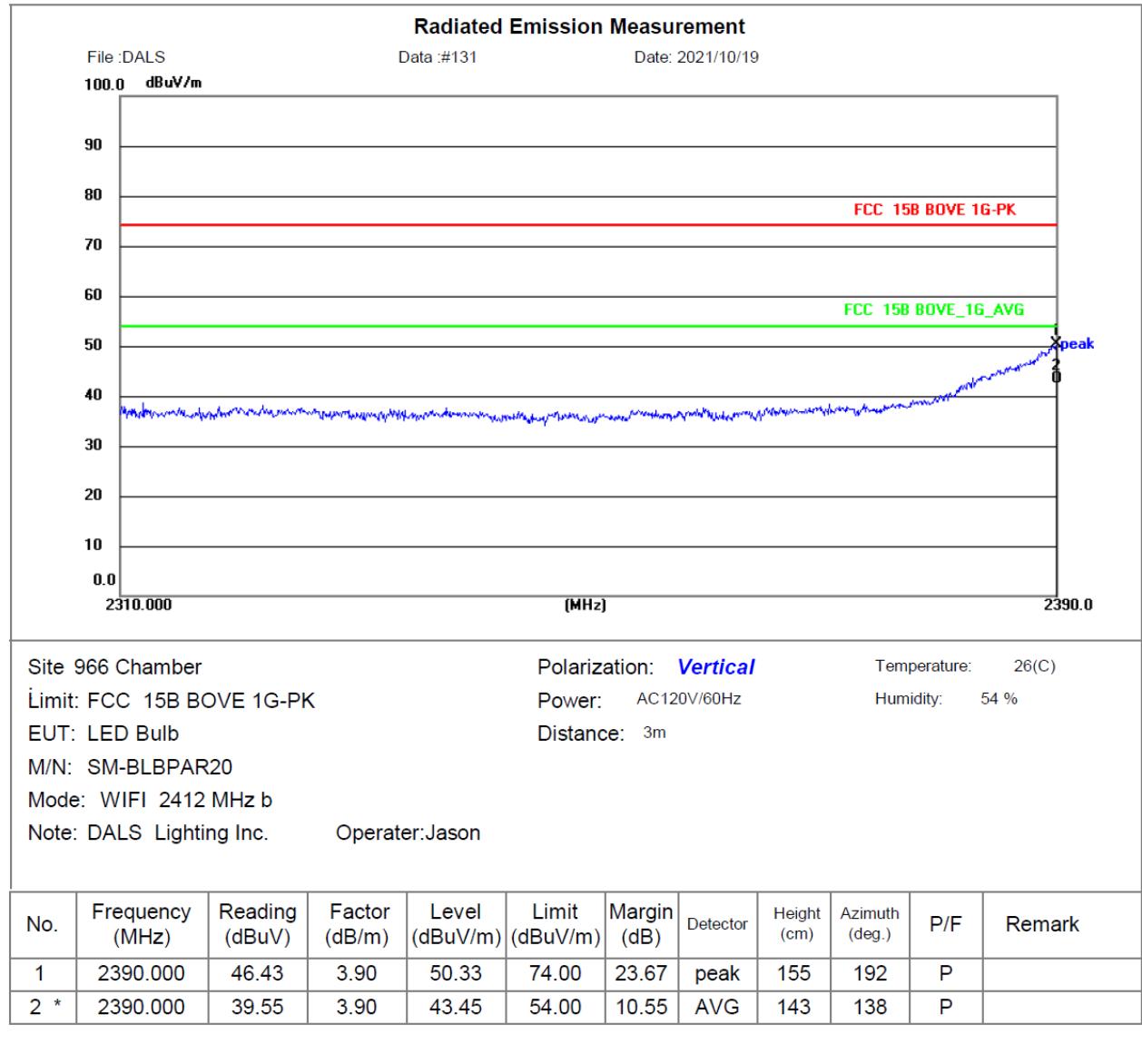
Temperature: 26(C)

Power: AC120V/60Hz

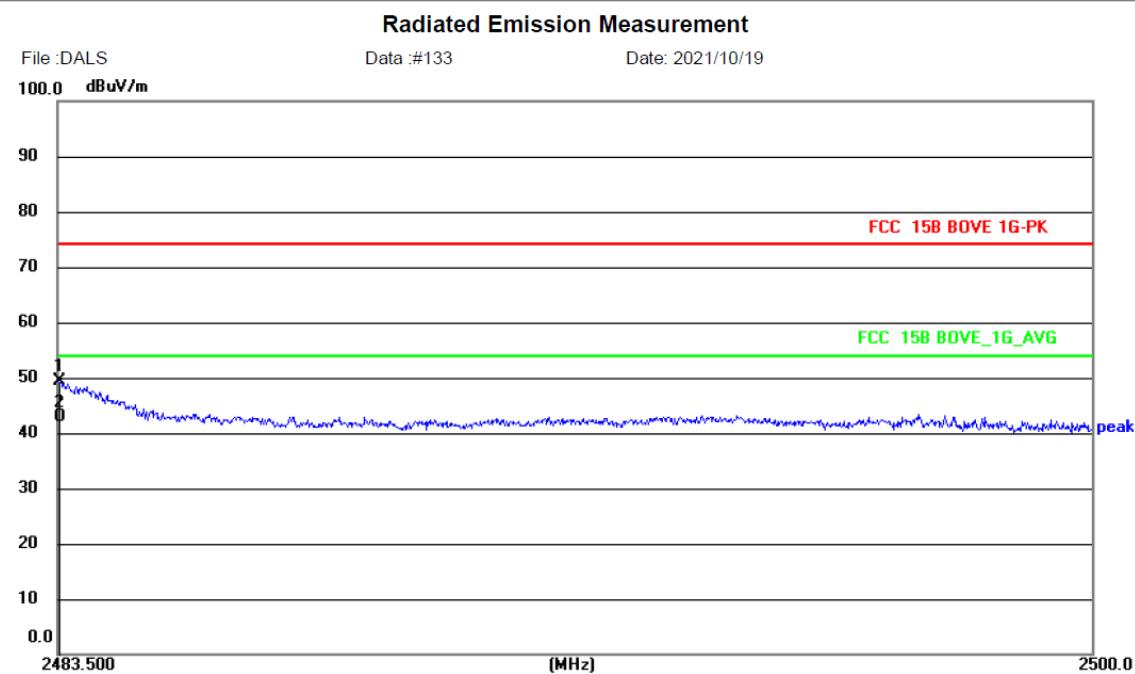
Humidity: 54 %

Distance: 3m

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	43.14	3.90	47.04	74.00	26.96	peak	145	316	P	
2 *	2390.000	36.62	3.90	40.52	54.00	13.48	AVG	132	324	P	



Test mode: 802.11b Test channel: Highest



Site 966 Chamber
Limit: FCC 15B BOVE 1G-P
EUT: LED Bulb
M/N: SM-BLBPAR20
Mode: WIFI 2462 MHz b
Note: DALS Lighting Inc.

Polarization: *Horizontal*

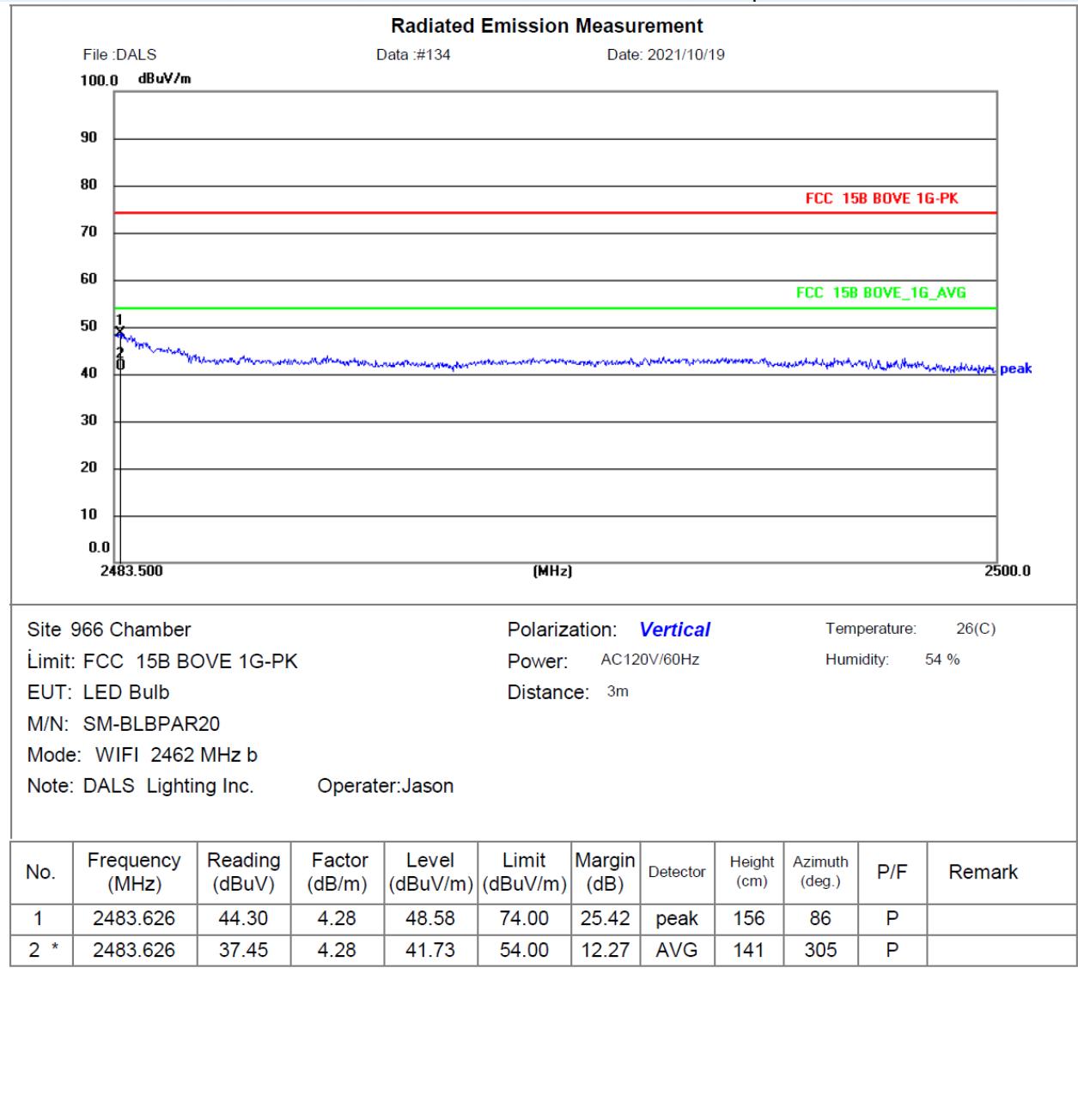
Temperature: 26(C)

Power: AC120V/60Hz

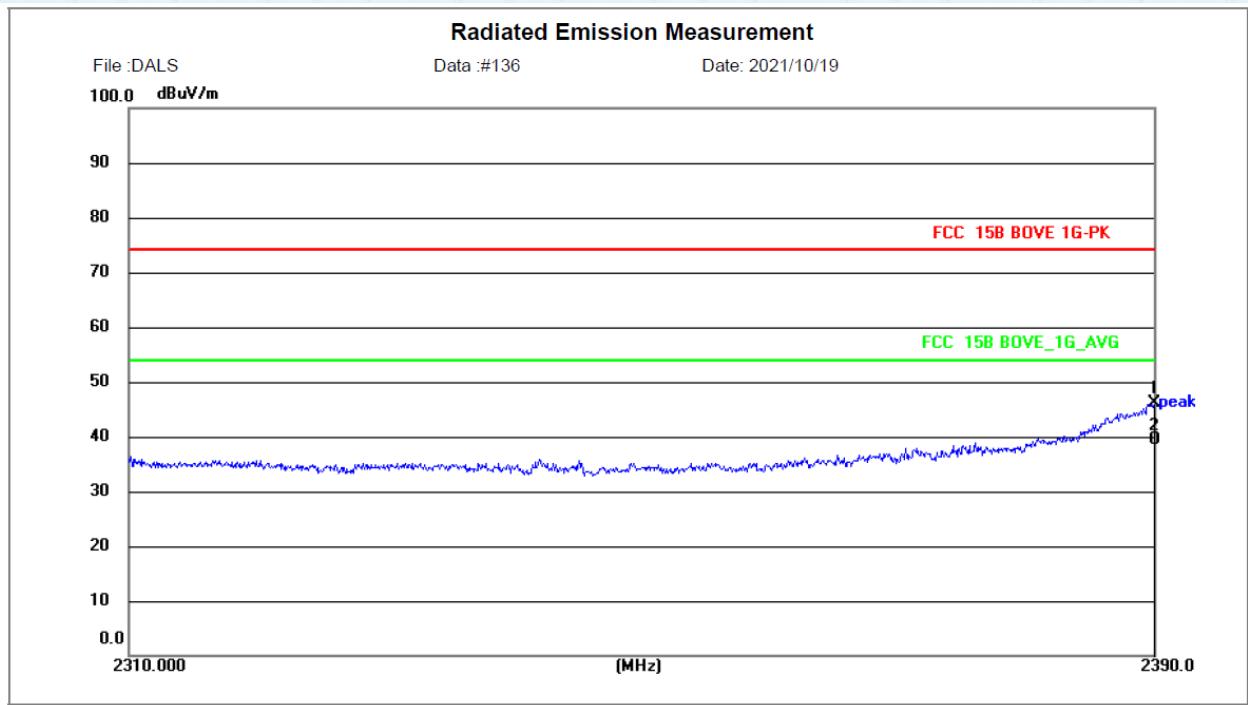
Humidity: 54 %

Distance: 3m

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	2483.522	45.21	4.28	49.49	74.00	24.51	peak	133	215	P	
2 *	2483.522	38.62	4.28	42.90	54.00	11.10	AVG	120	227	P	



Test mode: 802.11g Test channel: Lowest



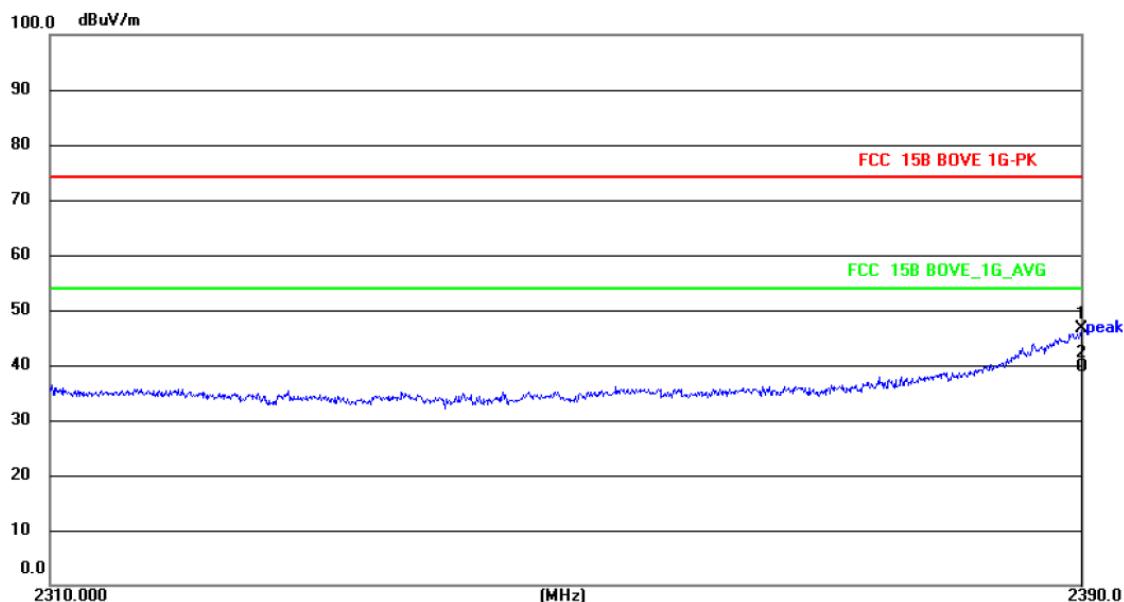
Site: 966 Chamber	Polarization: Horizontal	Temperature: 26(C)
Limit: FCC 15B BOVE 1G-PK	Power: AC120V/60Hz	Humidity: 54 %
EUT: LED Bulb	Distance: 3m	
M/N: SM-BLBPAR20		
Mode: WIFI 2412 MHz g		
Note: DALS Lighting Inc.	Operator: Jason	

Radiated Emission Measurement

File :DALS

Data :#135

Date: 2021/10/19



Site 966 Chamber

 Polarization: **Vertical**

Temperature: 26(C)

Limit: FCC 15B BOVE 1G-PK

Power: AC120V/60Hz

Humidity: 54 %

EUT: LED Bulb

Distance: 3m

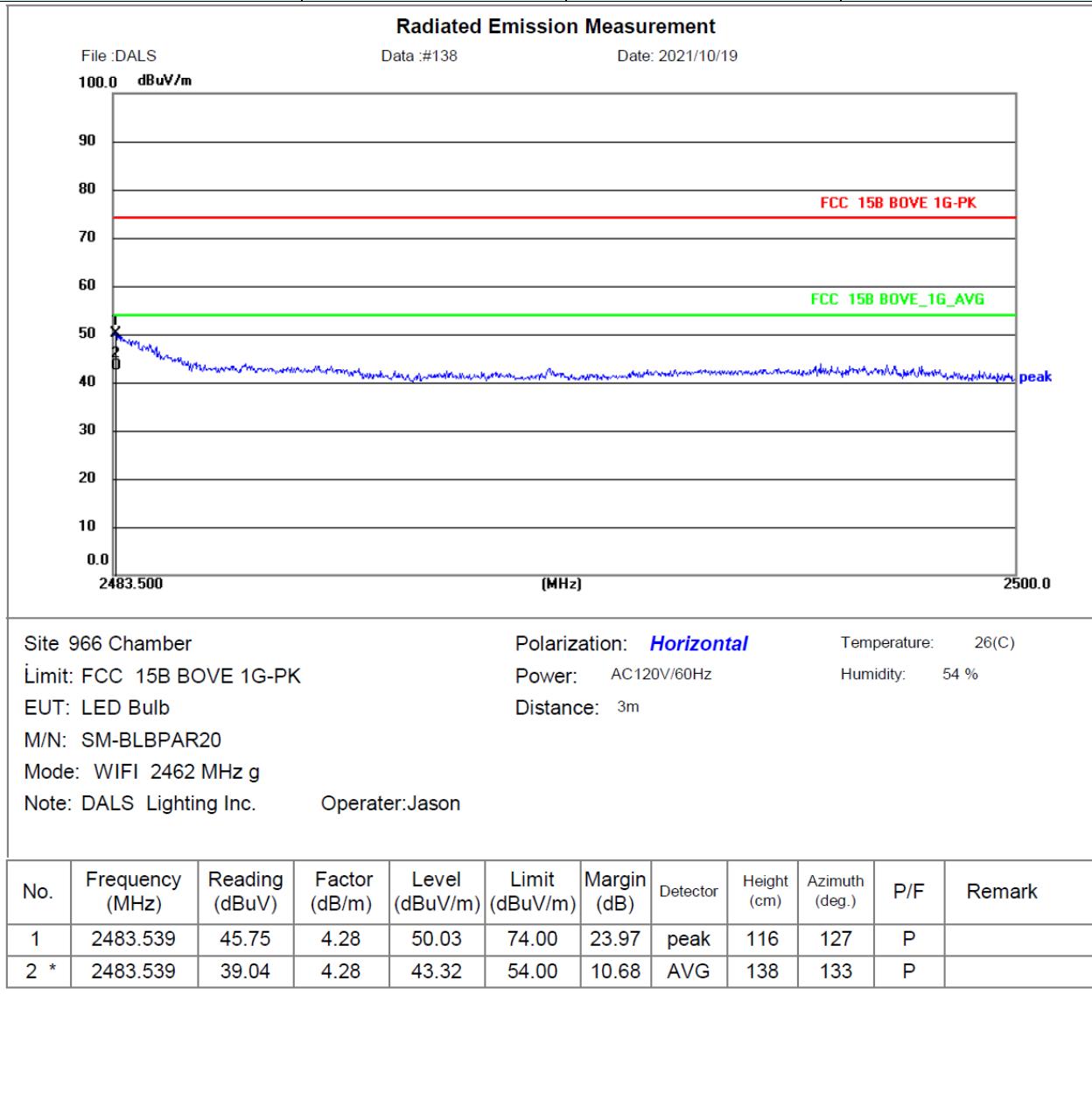
M/N: SM-BLBBPAR20

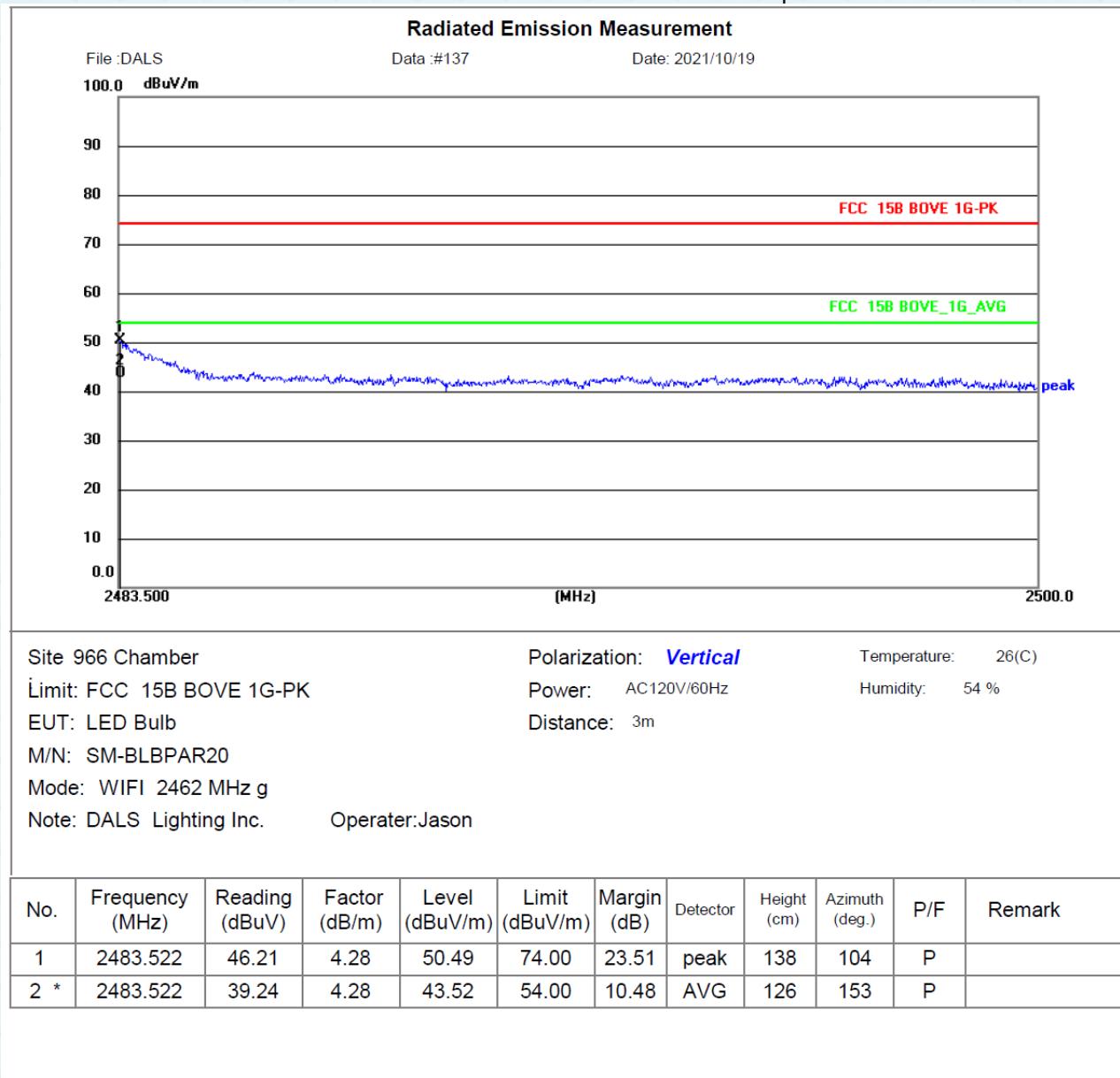
Mode: WIFI 2412 MHz g

Note: DALS Lighting Inc. Operator: Jason

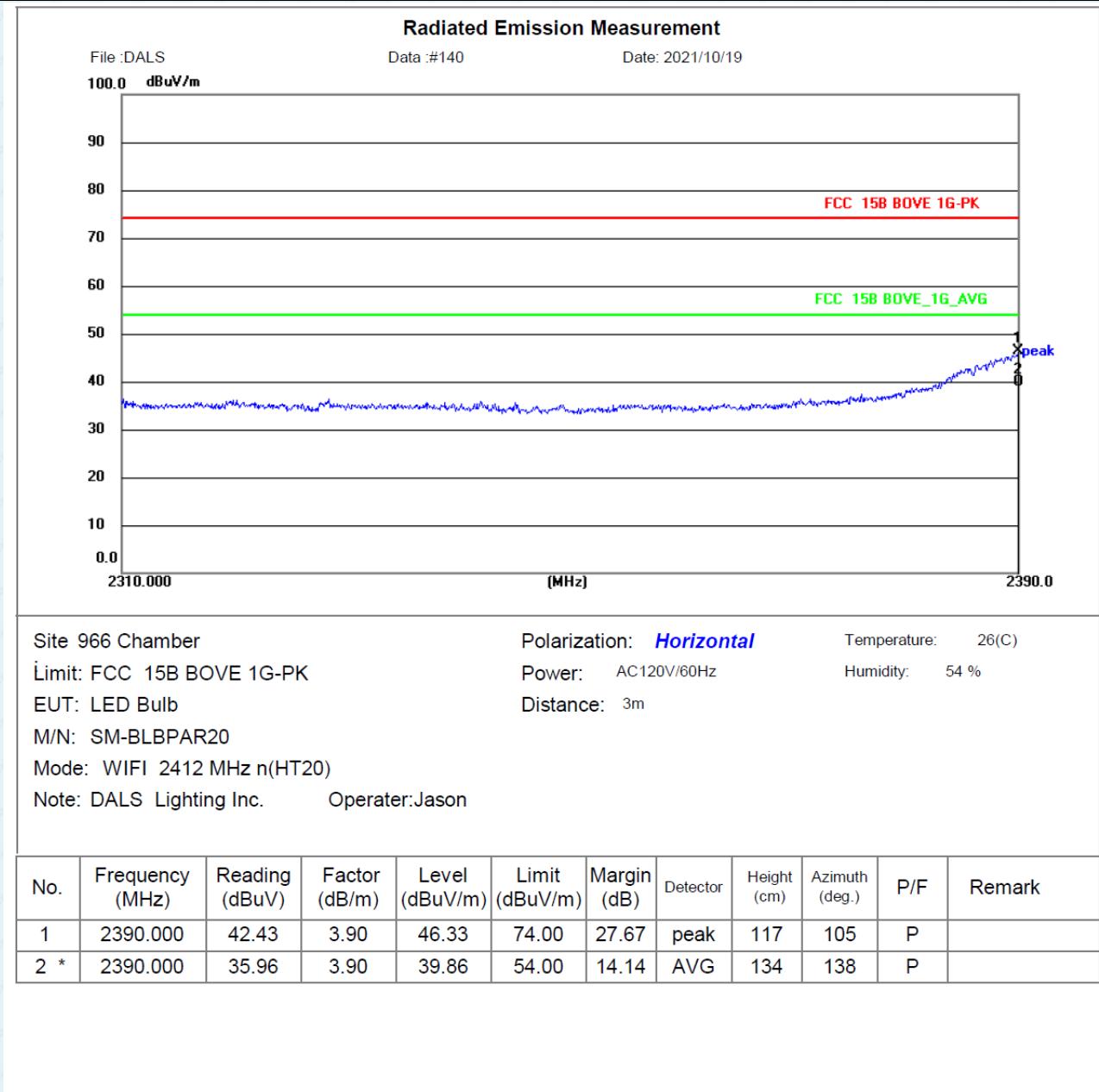
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2390.000	42.81	3.90	46.71	74.00	27.29	peak	151	117	P	
2 *	2390.000	35.73	3.90	39.63	54.00	14.37	AVG	143	146	P	

Test mode:	802.11g	Test channel:	Highest
------------	---------	---------------	---------





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



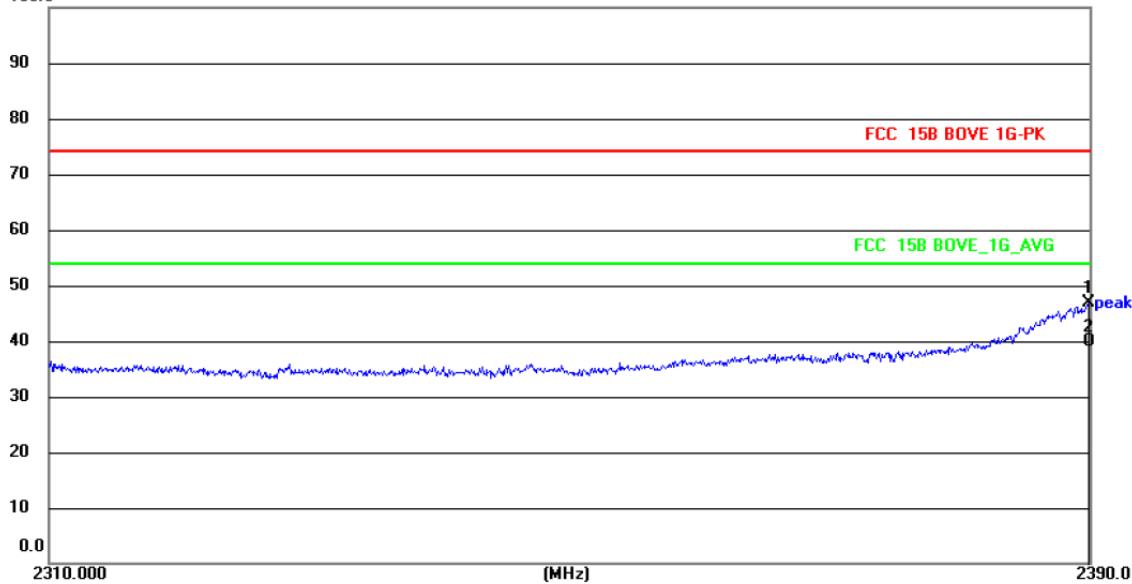
Radiated Emission Measurement

File :DALS

Data :#139

Date: 2021/10/19

100.0 dBuV/m



Site 966 Chamber

 Polarization: **Vertical**

Temperature: 26(C)

Limit: FCC 15B BOVE 1G-PK

Power: AC120V/60Hz

Humidity: 54 %

EUT: LED Bulb

Distance: 3m

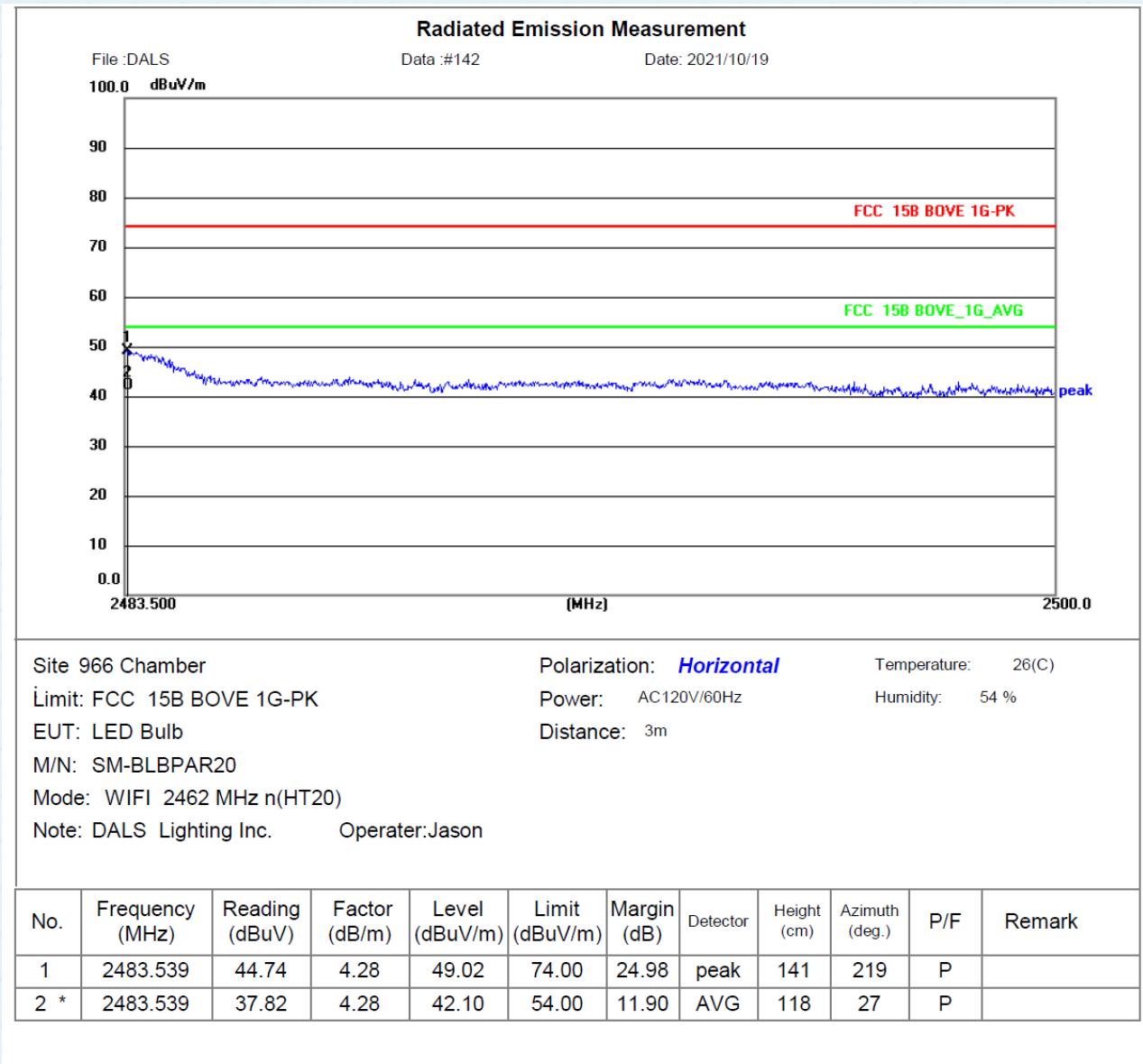
M/N: SM-BLBBPAR20

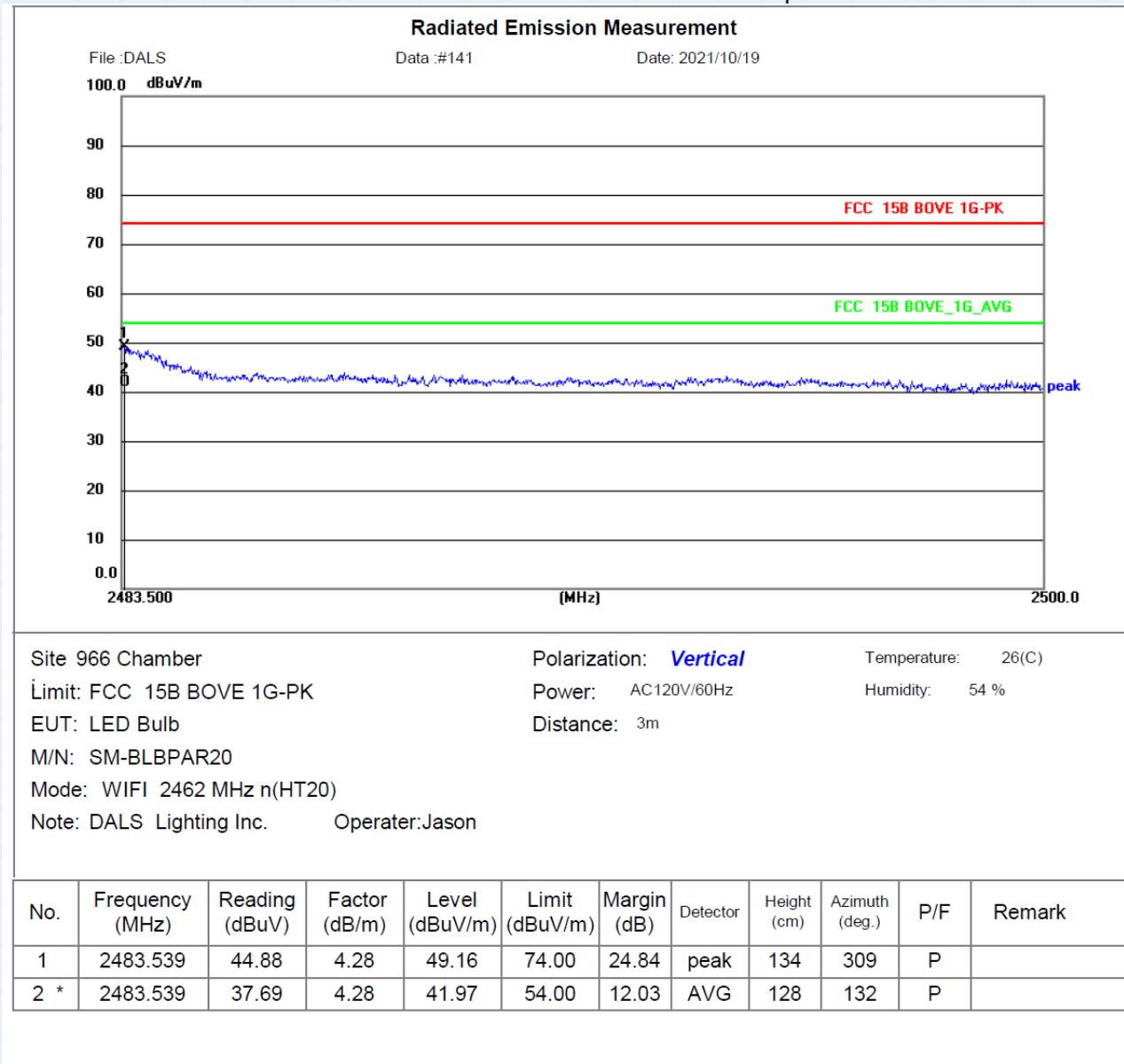
Mode: WIFI 2412 MHz n(HT20)

Note: DALS Lighting Inc. Operator:Jason

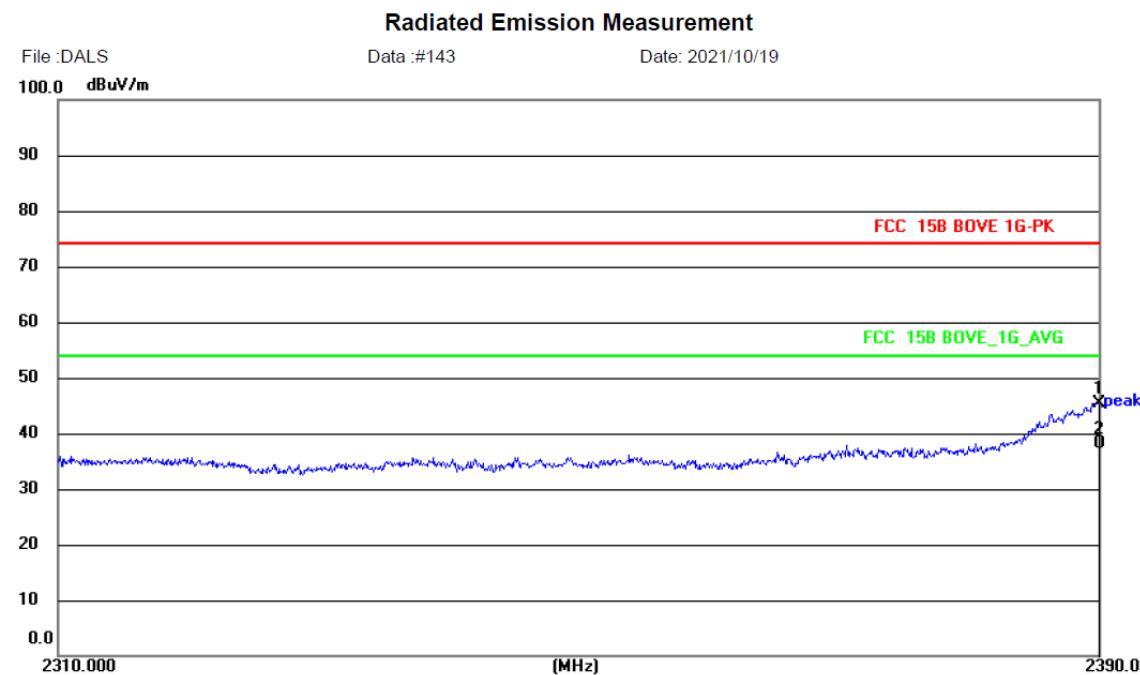
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2389.920	43.07	3.90	46.97	74.00	27.03	peak	139	117	P	
2 *	2389.920	36.01	3.90	39.91	54.00	14.09	AVG	125	352	P	

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





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



Site 966 Chamber
Limit: FCC 15B BOVE 1G-PK
EUT: LED Bulb
M/N: SM-BLBPAPR20
Mode: WIFI 2422 MHz n(HT-
Note: DALI Lighting Inc.

Polarization: *Horizontal*

Temperature: 26(C)

Power: AC120V/60Hz

Humidity: 54 %

Distance: 3m

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	41.53	3.90	45.43	74.00	28.57	peak	113	139	P	
2 *	2390.000	34.27	3.90	38.17	54.00	15.83	AVG	127	312	P	