

FCC RADIO TEST REPORT**For
FCC ID: 2AUFWAL04**

Report Reference No..... : 19EFFS08006 1581
Date of issue : 2019-09-02
FCC Registration Number : 171688
Testing Laboratory : DongGuan ShuoXin Electronic Technology Co., Ltd.
Address..... : Zone A, 1F, No. 6, XinGang Road YuanGang Street, XinAn
District, ChangAn Town, DongGuan City, GuangDong,
China

Applicant's name..... : Dongguan You You Lighting Technology Co., Ltd
Address..... : 4th Floor, Building A, No. 1724, Provincial Road S358,
Xiabian Community,Changan Town, Dongguan City,
Guangdong Province, China
Manufacturer..... : Dongguan You You Lighting Technology Co., Ltd

Test specification:

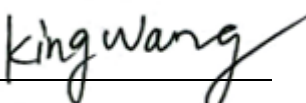
Test item description..... : LED SMART DESK LAMP
Trade Mark..... : N/A
Model/Type reference..... : AL04-05
Ratings..... : I/P: DC 20V 0.5A by Adapter

Responsible Engineer :



Smile Wang

Authorized Signatory:



King Wang

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TEST REPORT DECLARE

Applicant	:	Dongguan You You Lighting Technology Co., Ltd
Address	:	4th Floor, Building A, No. 1724, Provincial Road S358, Xiabian Community, Changan Town, Dongguan City, Guangdong Province, China
Equipment under Test	:	LED SMART DESK LAMP
Test Model No	:	AL04-05
Manufacturer	:	Dongguan You You Lighting Technology Co., Ltd
Address	:	4th Floor, Building A, No. 1724, Provincial Road S358, Xiabian Community, Changan Town, Dongguan City, Guangdong Province, China

Test Standard Used: FCC Rules and Regulations Part 15 Subpart C (15.247)

Test procedure used: ANSI C63.10:2013, 558074 v05r02.

We Declare:

The equipment described above is tested by DongGuan ShuoXin Electronic Technology Co., Ltd. and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and DongGuan ShuoXin Electronic Technology Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above FCC standards.

Report No:	19EFFF08006 1581		
Date of Test:	2019-08-01 To 2019-09-02	Date of Report:	2019-09-02

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of DongGuan ShuoXin Electronic Technology Co., Ltd.

1. Summary of test Standards and results

The EUT have been tested according to the applicable standards as referenced below.

Description of Test Item	Standard	Results
6dB Bandwidth And 99% Occupied Bandwidth	FCC Part 15.247 (a)(2)	PASS
Peak Output Power	FCC Part 15.247(b)(3)	PASS
Power Spectral Density	FCC Part 15.247(e)	PASS
Spurious Emissions at Antenna Port	FCC Part 15.247(d)	PASS
Spurious Emissions	FCC Part 15.205, 15.209, FCC Part 15.247(d)	PASS
100 kHz Bandwidth of Frequency Band Edge	FCC Part 15.247(d)	PASS
AC Line Conducted Emissions	FCC Part 15.207 (a)	PASS
Antenna requirement	FCC Part 15: 15.203	PASS

2. GENERAL TEST INFORMATION

2.1. Description of EUT

EUT* Name	:	LED SMART DESK LAMP
Model Number	:	AL04-05
Trade Mark	:	N/A
EUT function description	:	Please reference user manual of this device
Power supply	:	DC20V 0.5A
Adaptor	:	100-240VAC 50/60Hz 0.35A
Radio Specification	:	IEEE802.11b/g/n20
Operation frequency	:	IEEE 802.11b: 2412MHz—2462MHz IEEE 802.11g: 2412MHz—2462MHz IEEE 802.11n20: HT20: 2412MHz—2462MHz
Modulation	:	IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n20: HT20: OFDM (64QAM, 16QAM, QPSK,BPSK)
Antenna Type	:	Internal Antenna, maximum PK gain: 0.54dBi
FVIN	:	NA
Date of Receipt	:	2019/08/01
Sample Type	:	Series production

Note: EUT is the ab. of equipment under test.

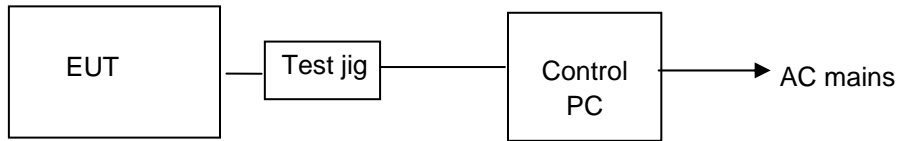
2.2. Accessories of EUT

Description of Accessories	Manufacturer	Model number or Type	Other
Adapter	SHENZHEN NALIN	NLB050200W1A5S58	N/A

2.3. Assistant equipment used for test

Description of Assistant equipment	Manufacturer	Model number or Type	Other
Notebook	Acer	MS2367	32807810766

2.4. Block diagram of EUT configuration for test



EUT enters the engineering interface by clicking the system version. The Transmit duty cycle was set to 100%.

Tested mode, channel, and data rate information			
Mode	data rate (Mbps) (see Note)	Channel	Frequency (MHz)
IEEE 802.11b	1	Low :CH1	2412
	1	Middle: CH6	2437
	1	High: CH11	2462
IEEE 802.11g	6	Low :CH1	2412
	6	Middle: CH6	2437
	6	High: CH11	2462
IEEE 802.11n HT20	MCS 0	Low :CH1	2412
	MCS 0	Middle: CH6	2437
	MCS 0	High: CH11	2462

Note: According exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test.

2.5. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature range:	21-25°C
Humidity range:	40-75%
Pressure range:	86-106kPa

2.6. Measurement uncertainty

Test Item	Uncertainty
Uncertainty for Conduction emission test (9kHz-150kHz)	3.7 dB
Uncertainty for Conduction emission test (150kHz-30MHz)	3.3 dB
Uncertainty for Radiation Emission test (30MHz-200MHz)	4.60 dB (Polarize: V)
	4.60 dB (Polarize: H)
Uncertainty for Radiation Emission test (200MHz-1GHz)	6.10 dB (Polarize: V)
	5.08 dB (Polarize: H)
Uncertainty for Radiation Emission test (1GHz-6GHz)	5.01 dB (Polarize: V)
	5.01 dB (Polarize: H)
Uncertainty for Radiation Emission test (6GHz-18GHz)	5.26 dB (Polarize: V)
	5.26 dB (Polarize: H)
Uncertainty for Radiation Emission test (18GHz-40GHz)	5.06 dB (Polarize: V)
	5.06 dB (Polarize: H)
Uncertainty for radio frequency	$\pm 0.048\text{kHz}$
Uncertainty for conducted RF Power	$\pm 0.32\text{dB}$

Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

2.7 Table of Parameters of Test Software Setting

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RFoutput power expected by the customer and is going to be fixed on the firmware of the final end product.

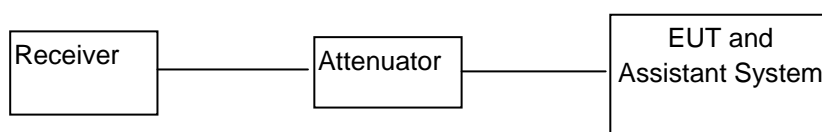
Test Software Version	ESP Series Modules FCC&CE Test Tool V2.2.2.0		
Frequency (MHz)	2412	2437	2462
Power Parameters (802.11b)	default	default	default
Power Parameters (802.11g)	default	default	default
Power Parameters (802.11n20)	default	default	default

3. 6dB Bandwidth and 99% Occupied Bandwidth

3.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Calibrated until	Calibrated Date
1	Spectrum analyzer	KEYSIGHT	N9010A	MY55150427	05/27/2020	05/28/2019
2	Attenuator	Mini-Circuits	BW-S10W2	101109	12/16/2019	12/17/2018
3	RF Cable	Micable	C10-01-01-1	100309	12/16/2019	12/17/2018

3.2. Block diagram of test setup



3.3. Limits

For direct sequence systems, the minimum 6dB bandwidth shall be at least 500 KHz

3.4. Test Procedure

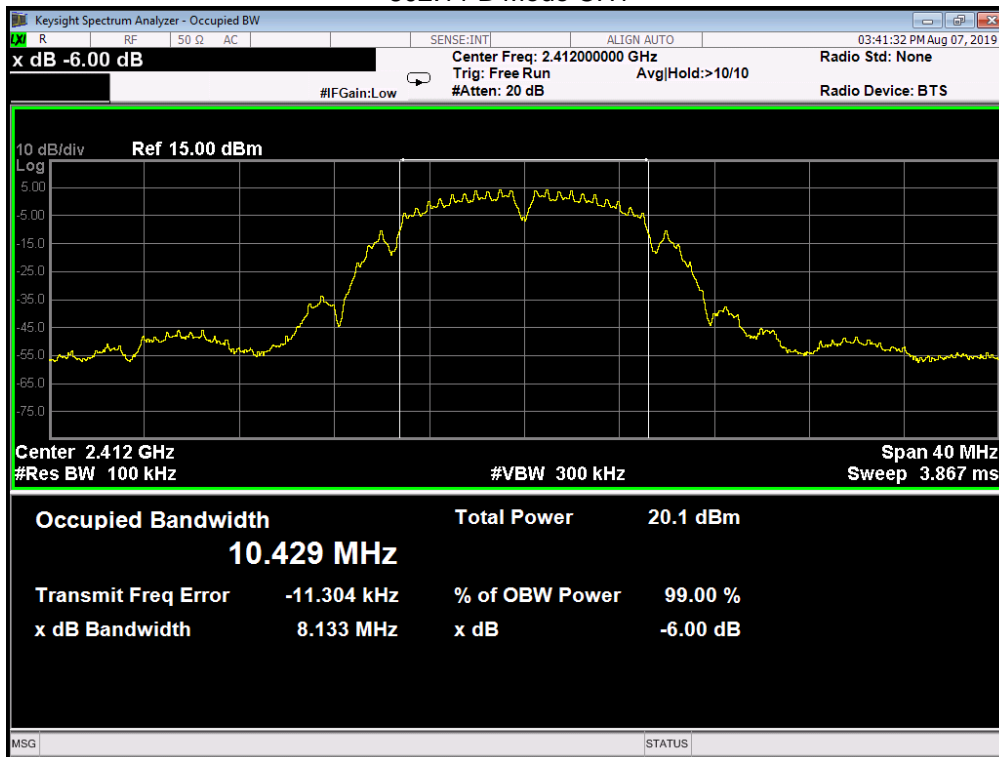
- (1) Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- (2) Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- (3) Measure the frequency difference of two frequencies that were attenuated 6 dB from the reference level. Record the frequency difference as the emission bandwidth.
- (4) Repeat above procedures until all frequencies measured were complete.

3.. Test Result

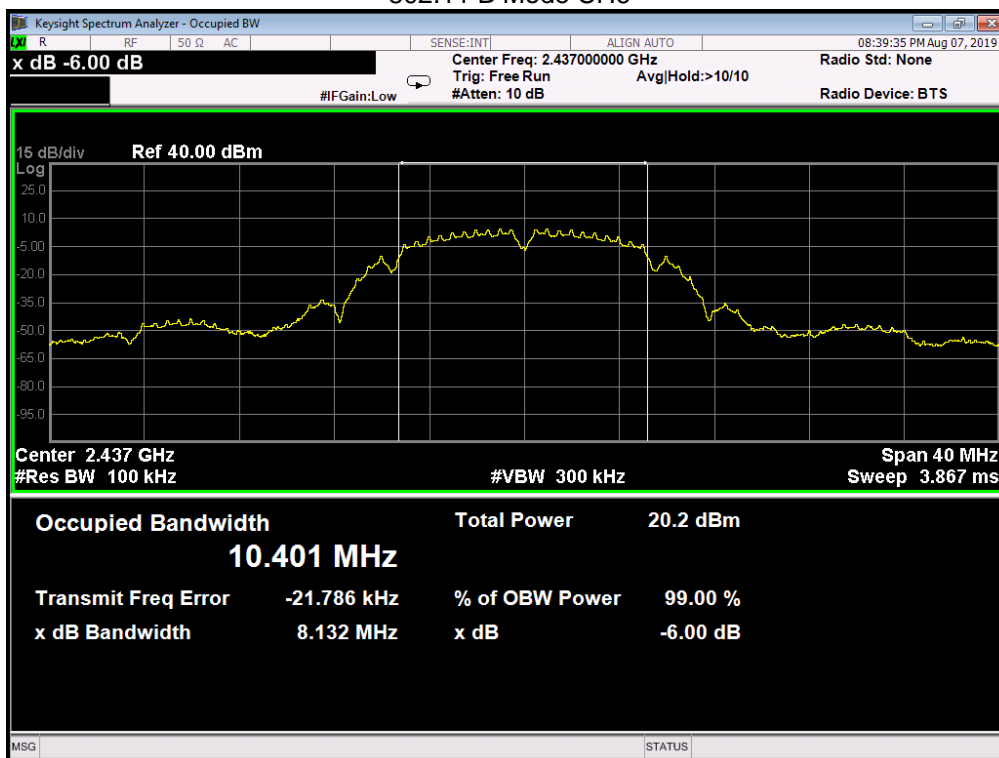
EUT Set Mode	CH or Frequency	6 dB bandwidth	99% dB bandwidth	Limt	Conclusion
		Result (MHz)	Result (MHz)	>500KHz	
IEEE 802.11B	CH 1	8.133	10.429	>500KHz	PASS
	CH 6	8.132	10.401		PASS
	CH 11	8.134	10.387		PASS
IEEE 802.11G	CH 1	16.40	16.802		PASS
	CH 6	16.41	16.732		PASS
	CH 11	15.80	16.523		PASS
IEEE 802.11N20	CH 1	17.61	17.905		PASS
	CH 6	17.64	18.004		PASS
	CH 11	17.64	18.007		PASS

3.6. Original test data

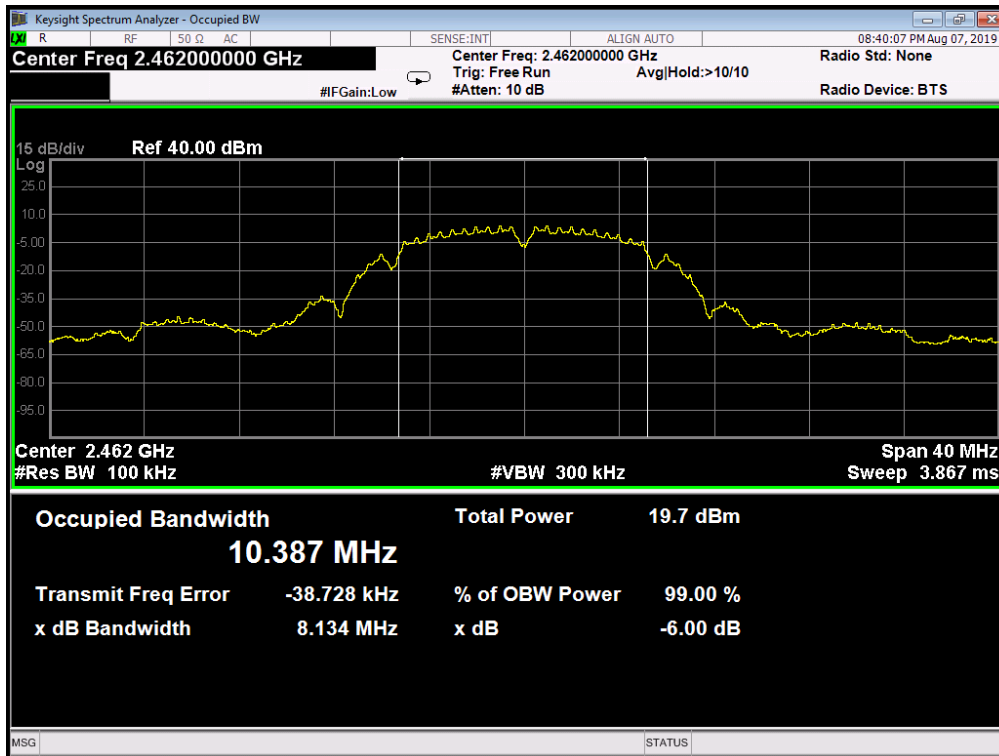
802.11 B Mode CH1



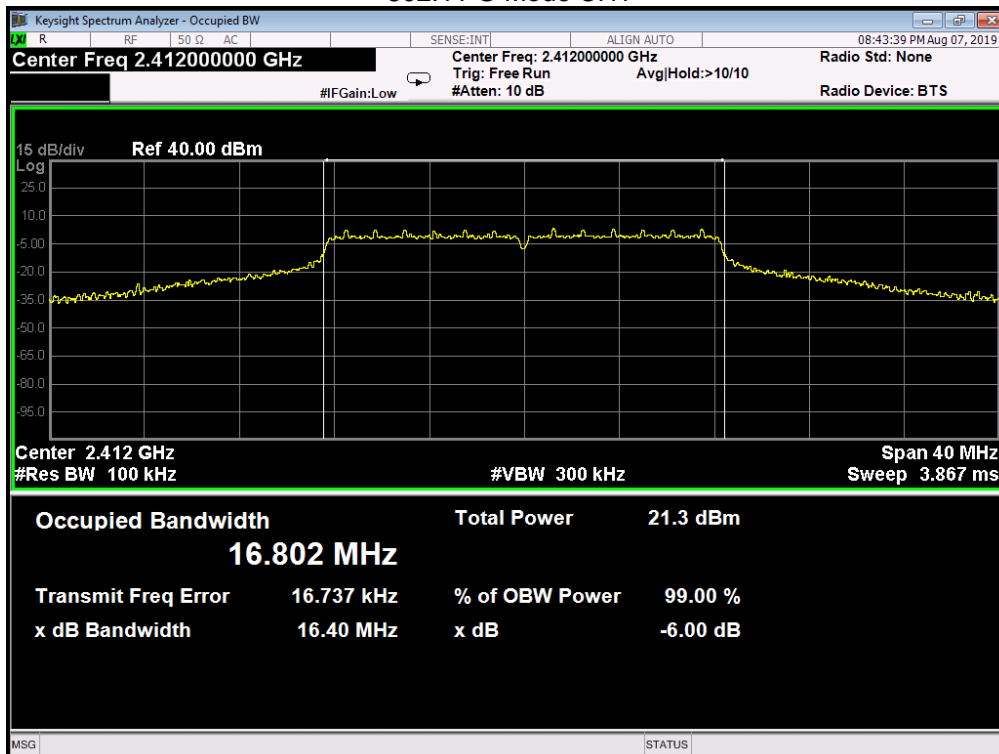
802.11 B Mode CH6



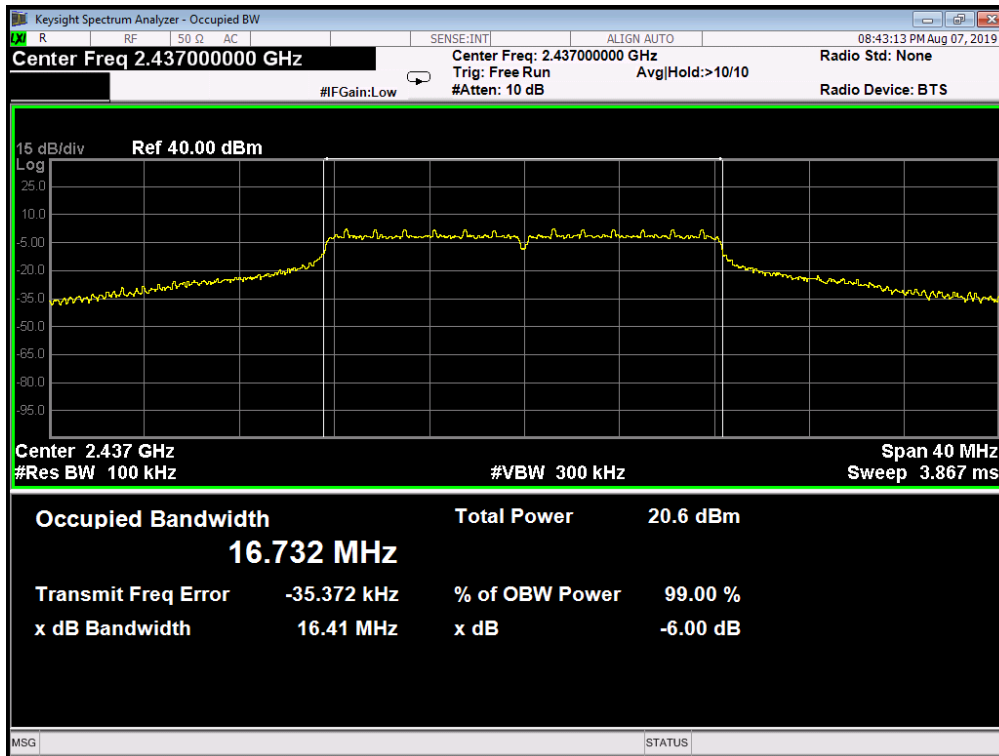
802.11 B Mode CH11



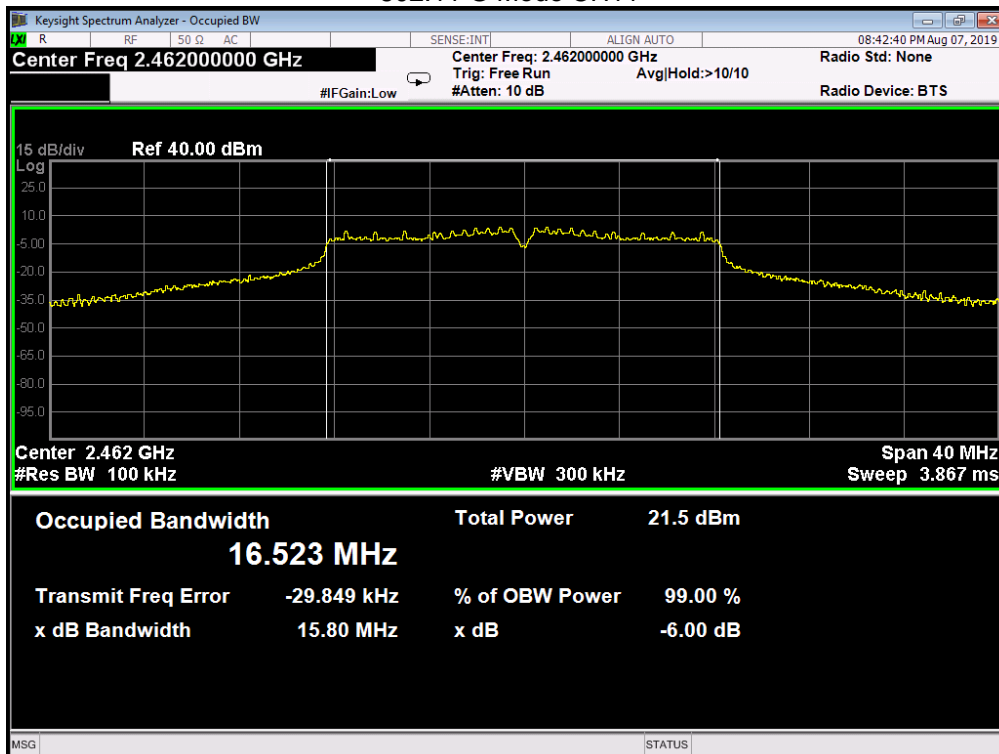
802.11 G Mode CH1



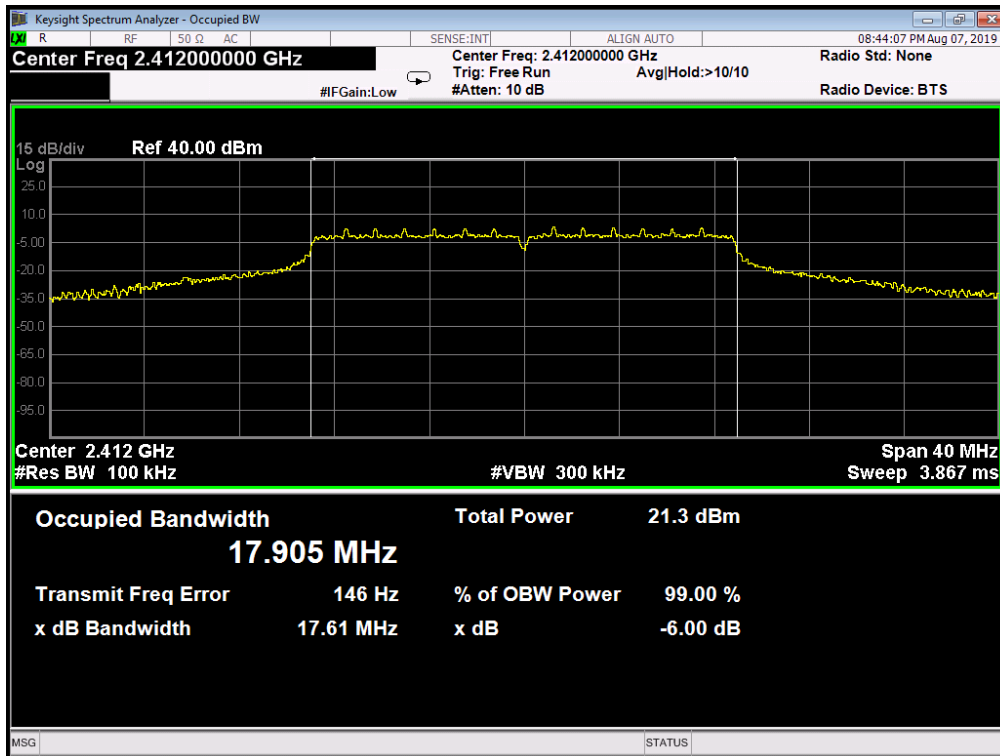
802.11 G Mode CH6



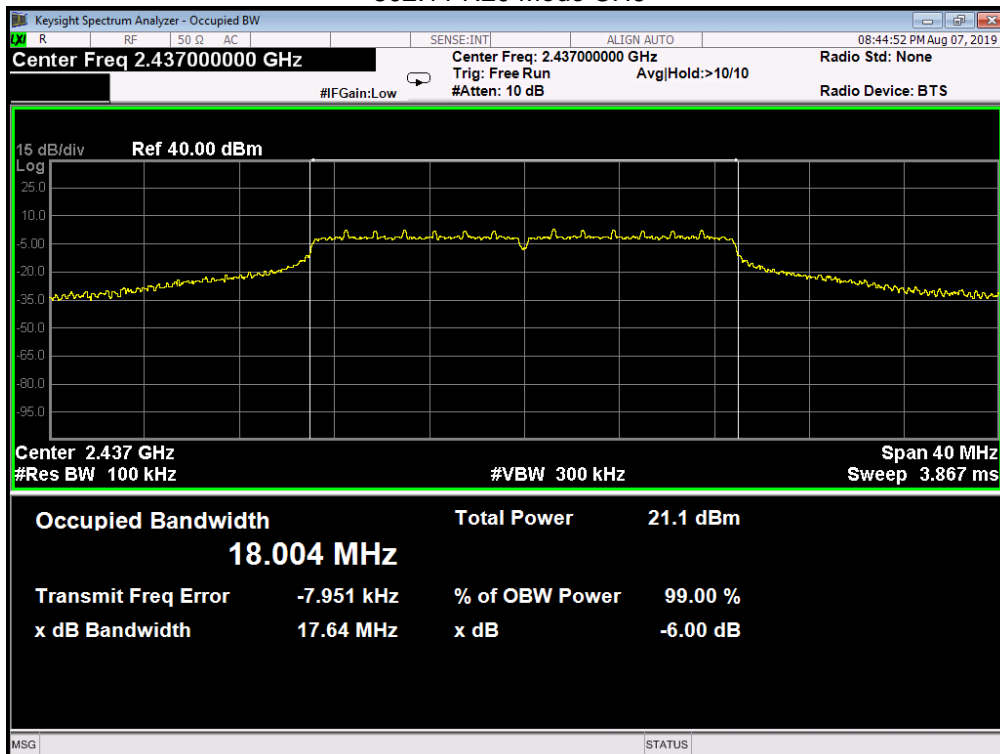
802.11 G Mode CH11

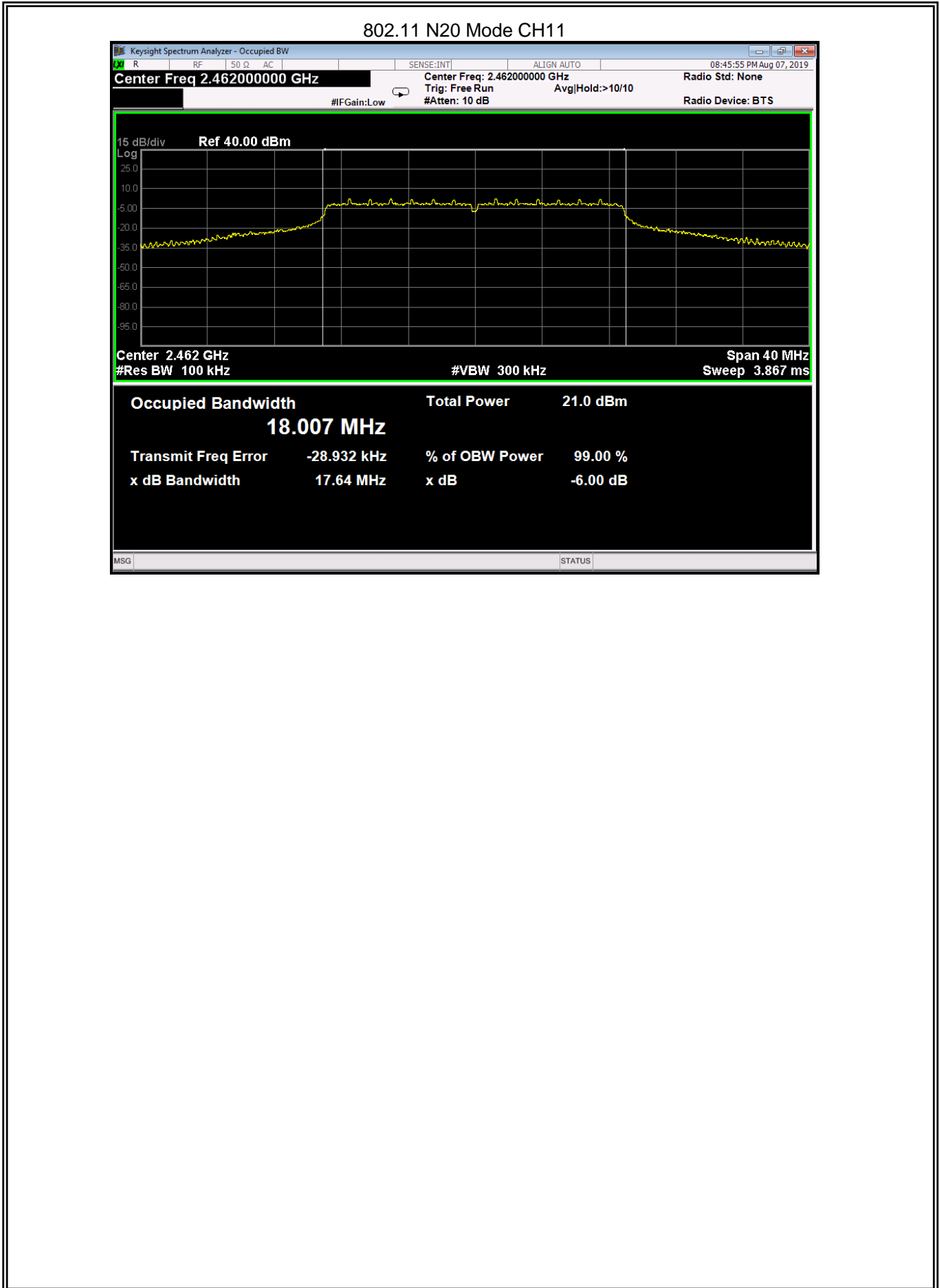


802.11 N20 Mode CH1



802.11 N20 Mode CH6



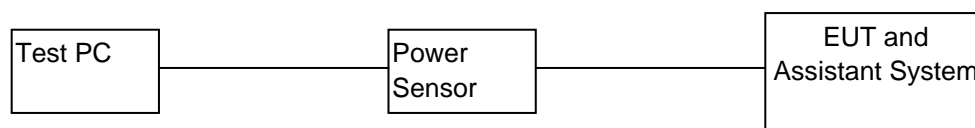


4. Maximum Peak Output Power

4.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Calibrated until	Calibrated Date
1	Power Sensor	KEYSIGHT	U2021XA	MY55240009	05/27/2020	05/28/2019
2	Attenuator	Mini-Circuits	BW-S10W2	101109	12/16/2019	12/17/2018
3	RF Cable	Micable	C10-01-01-1	100309	12/16/2019	12/17/2018
4	Test Software	KEYSIGHT	Power Panel	V3.11	N/A	N/A

4.2. Block diagram of test setup



4.3. Limits

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz bands: 1 Watt. 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 as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

4.4. Test Procedure

1. Place the EUT on a bench and set it in transmitting mode.
2. A wide band power meter with a matched thermocouple detector was used to directly measure the output power from the RF output port of the EUT in continuously transmitting mode.
3. The measurement shall be repeated at the lowest, the middle, and the highest channel of the stated frequency range.

4.5. TEST RESULT

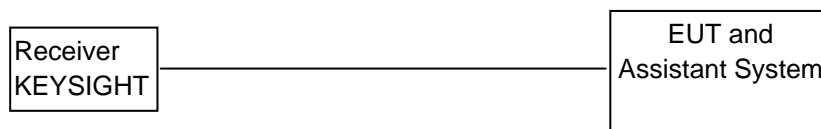
EUT Set Mode	CH	Result(dBm)	Total Power (dBm)	Limit	Conclusion
		Peak			
IEEE 802.11B	CH 1	10.28	/	30dBm	PASS
	CH 6	9.15	/	30dBm	PASS
	CH 11	9.43	/	30dBm	PASS
IEEE 802.11G	CH 1	14.13	/	30dBm	PASS
	CH 6	13.50	/	30dBm	PASS
	CH 11	13.63	/	30dBm	PASS
IEEE 802.11N20	CH 1	14.20	/	30dBm	PASS
	CH 6	13.46	/	30dBm	PASS
	CH 11	14.02	/	30dBm	PASS

5. Power Spectral Density

5.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Calibrated until	Calibrated Date
1	Spectrum analyzer	KEYSIGHT	N9010A	MY55150427	05/27/2020	05/28/2019
2	Attenuator	Mini-Circuits	BW-S10W2	101109	12/16/2019	12/17/2018
3	RF Cable	Micable	C10-01-01-1	100309	12/16/2019	12/17/2018

5.2. Block diagram of test setup



5.3. Limits

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

5.4. TEST PROCEDURE

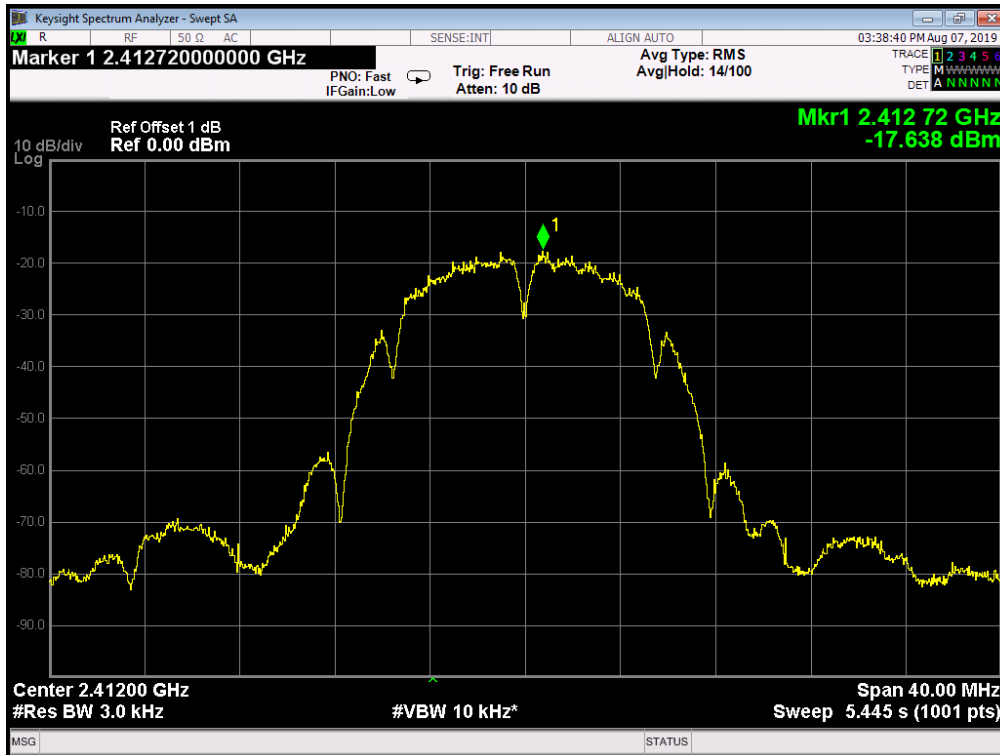
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generatorl.
2. Position the EUT was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range
3. According to KDB 558074 D01 DTS Meas Guidance v05r02, set the RBW = 3 kHz, VBW = 30 kHz, Set the span to 1.5 times the DTS channel bandwidth.
4. Use the peak marker function to determine the maximum power level in any 3 kHz band segment within the fundamental EBW

5.5. Test Result

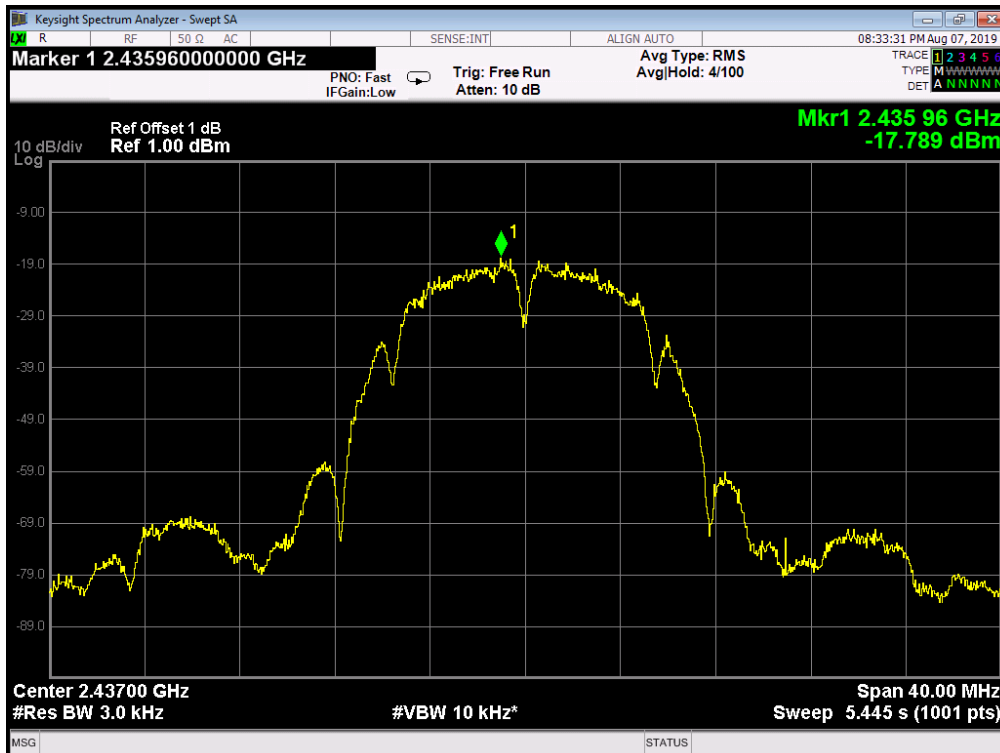
EUT Set Mode	CH	Result(dBm)	Total (dBm)	Limit (dBm)	Conclusion
IEEE 802.11B	CH 1	-17.638	/	8	PASS
	CH 6	-17.789	/	8	PASS
	CH 11	-17.649	/	8	PASS
IEEE 802.11G	CH 1	-21.309	/	8	PASS
	CH 6	-22.426	/	8	PASS
	CH 11	-23.066	/	8	PASS
IEEE 802.11N20	CH 1	-23.591	/	8	PASS
	CH 6	-22.678	/	8	PASS
	CH 11	-22.864	/	8	PASS

5.6. Original test data

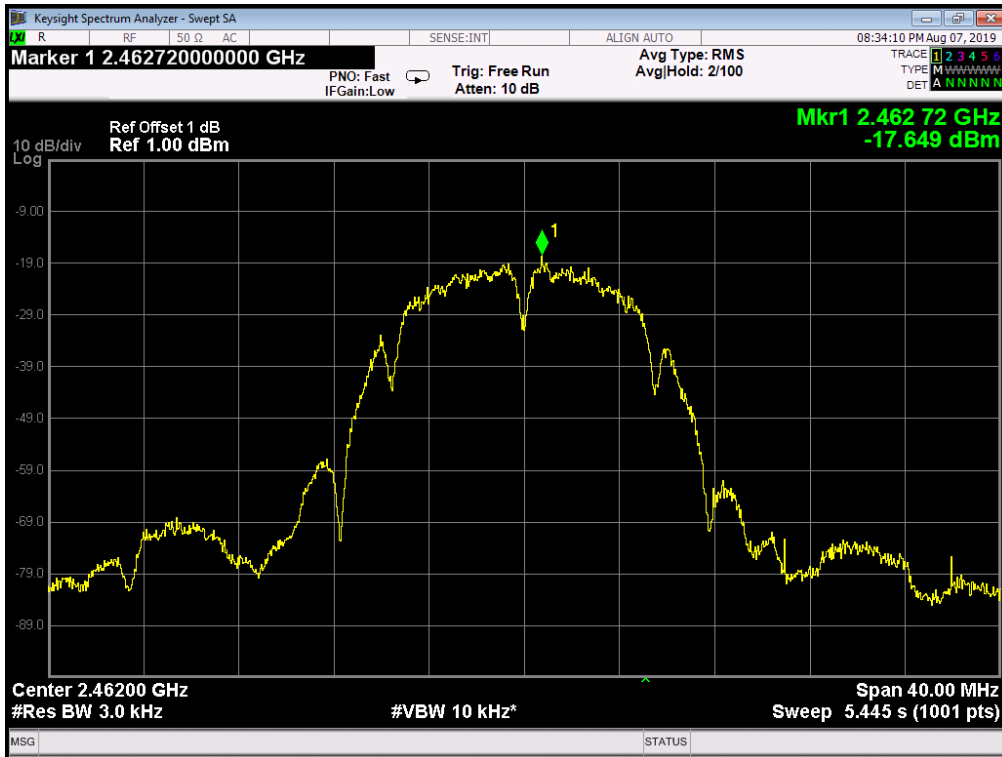
802.11 B Mode CH1



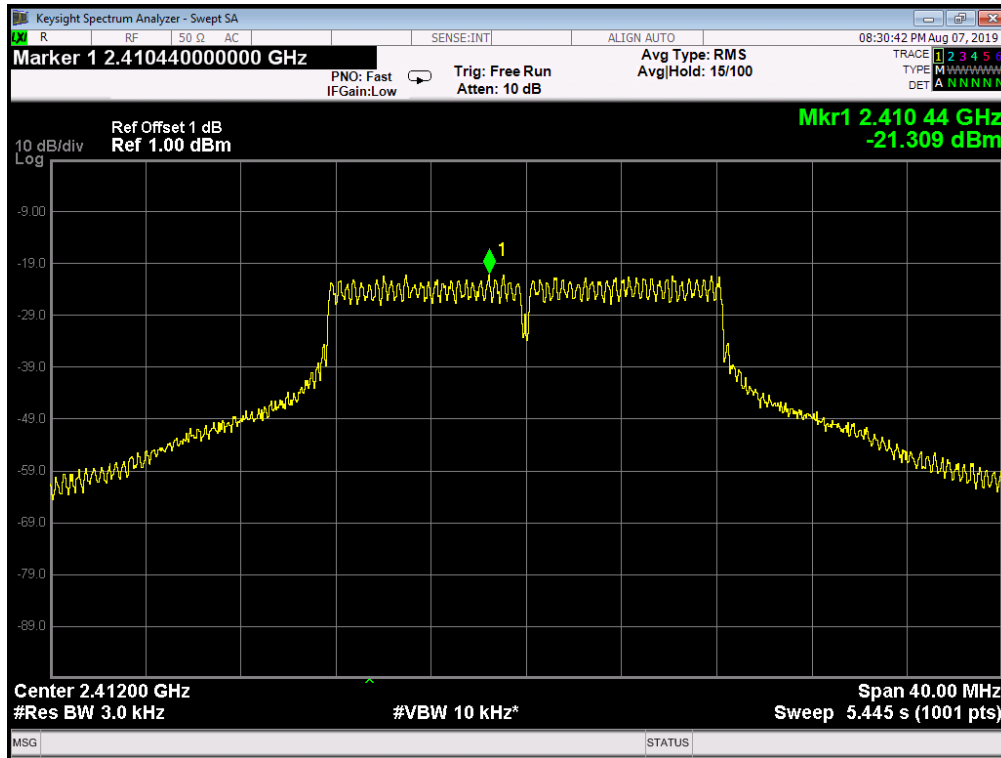
802.11 B Mode CH6



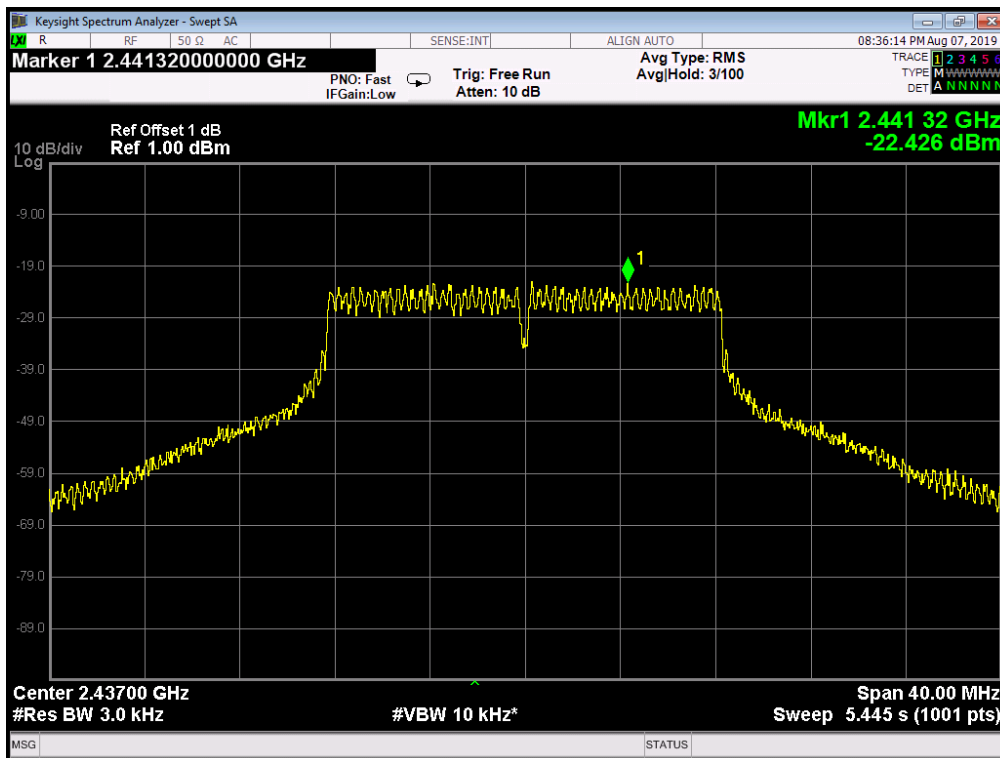
802.11 B Mode CH11



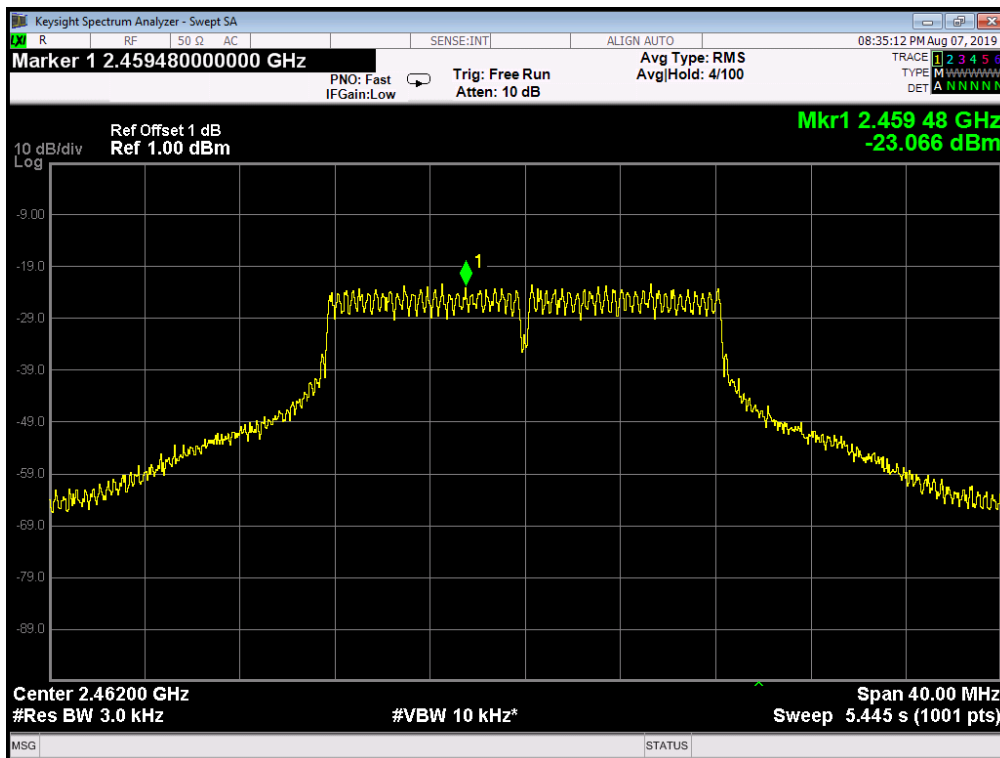
802.11 G Mode CH1



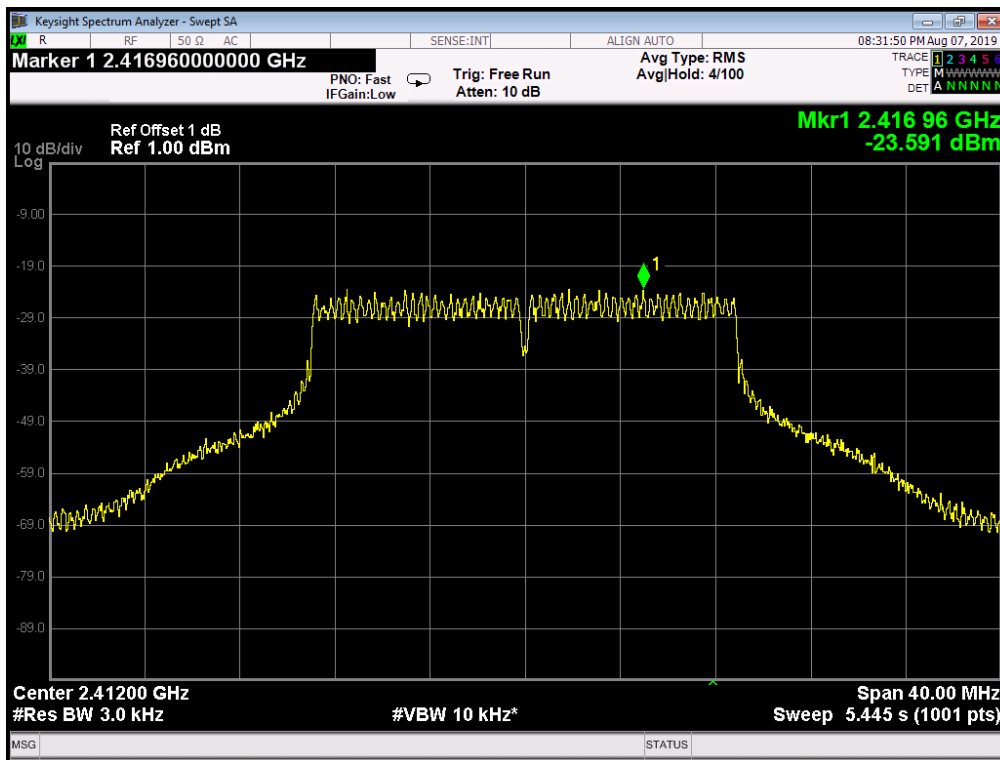
802.11 G Mode CH6



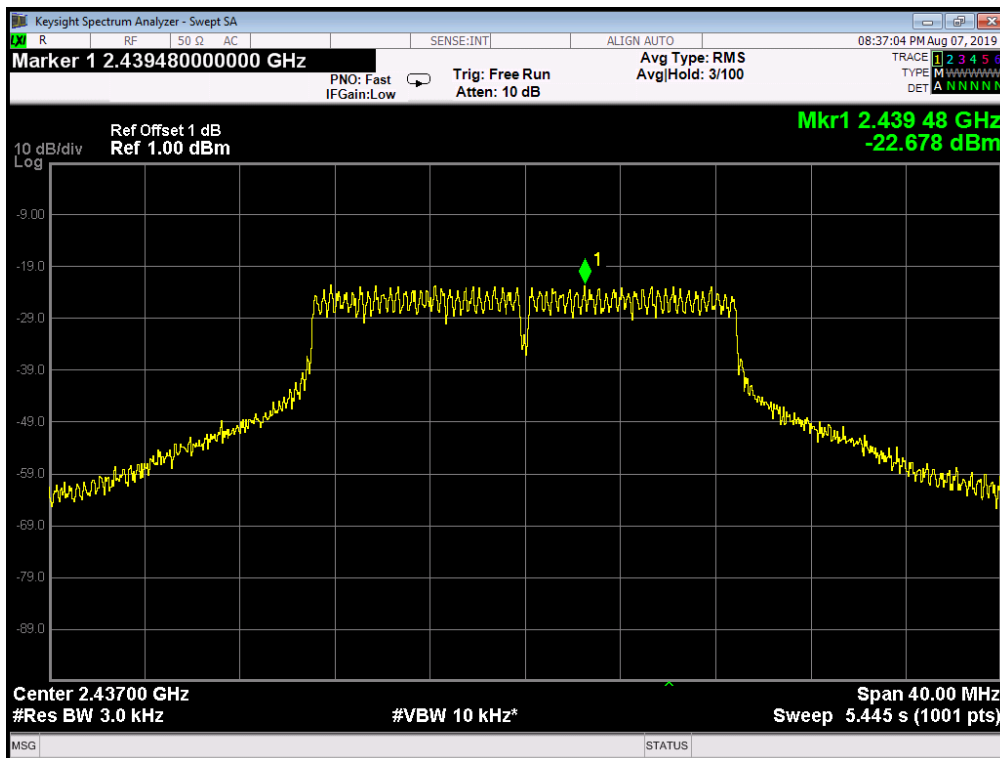
802.11 G Mode CH11



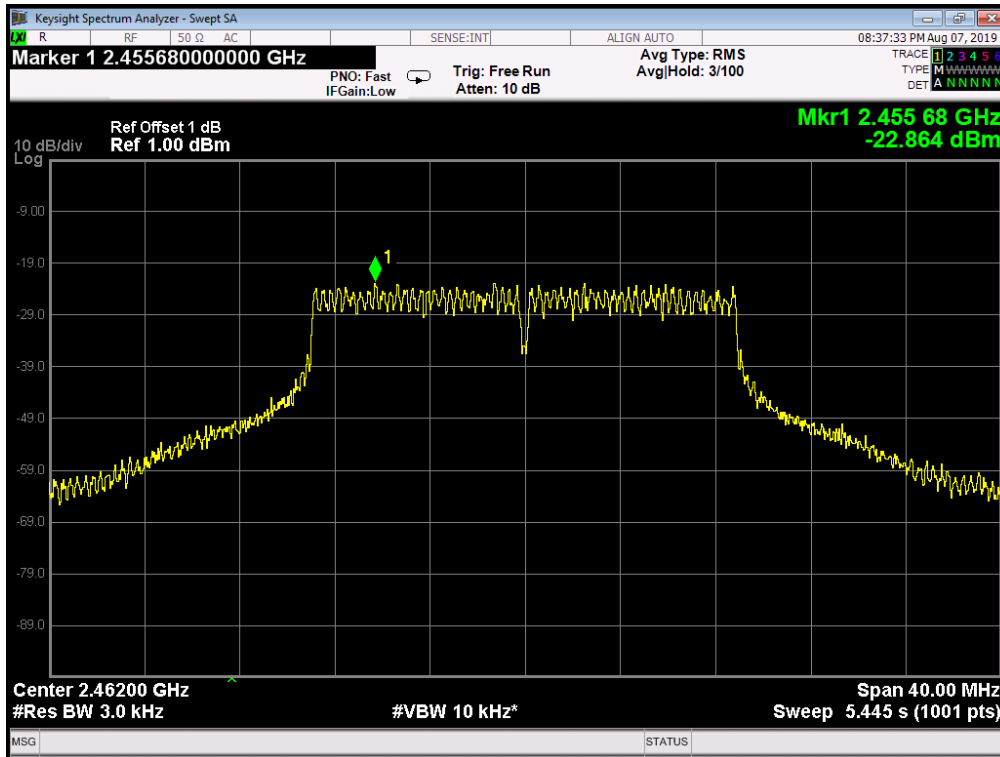
802.11 N20 Mode CH1



802.11 N20 Mode CH6



802.11 N20 Mode CH11



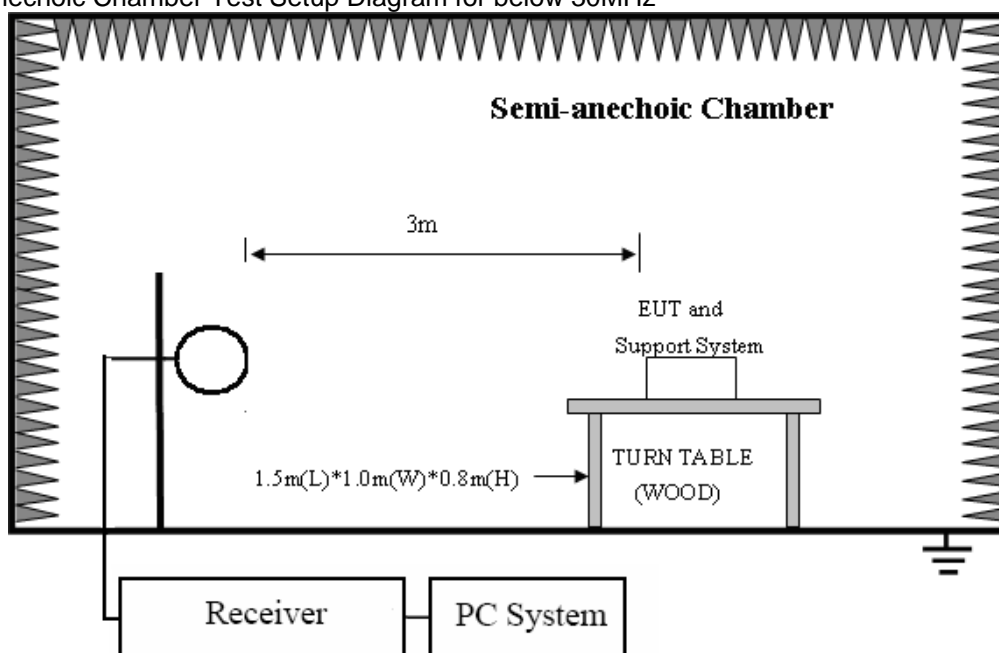
6. Spurious Emissions

6.1. Test equipment

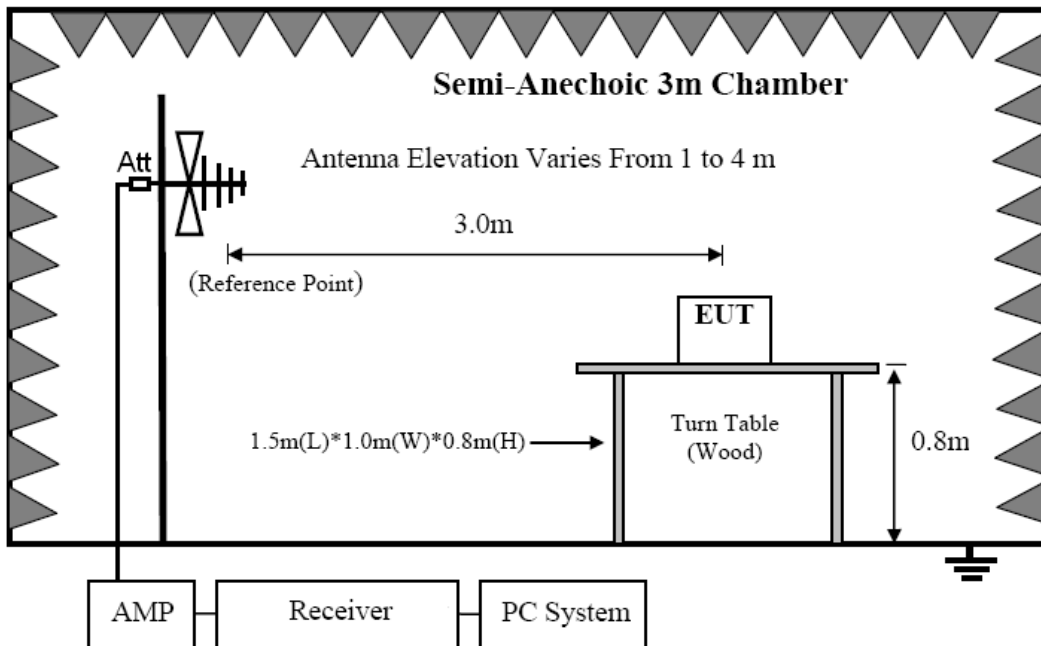
Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Due.	Cal. Interval
1	EMI Test Receiver	R&S	ESCI	101307	2019/12/16	1 Year
2	Spectrum Analyzer	Agilent	E4407B	US40240708	11/20/2019	1 Year
3	Spectrum analyzer	R&S	FSU	1166.1660.26	2019/12/16	1 Year
4	Loop antenna	TESEQ	HLA6120	20129	2019/12/16	1 Year
5	Trilog Broadband Antenna	Schwarzbeck	VULB9163	9163-462	2019/12/16	1 Year
6	Double Ridged Horn Antenna	Schwarzbeck	BBHA9120D	9120D 1065	2019/12/16	1 Year
7	Horn Antenna	Schwarzbeck	BBHA 9170	9170 1248	2019/12/16	1 Year
8	Pre-amplifier	A.H.	PAM-1840VH	562	2019/12/16	1 Year
9	Pre-amplifier	R&S	AFS33-18002 650-30-8P-44	SEL0080	2019/12/16	1 Year
10	Pre-Amplifier	HP	8449B	3274A06298	2019/12/16	1 Year
11	RF Cable	R&S	R01	10403	2019/12/16	1 Year
12	RF Cable	R&S	R02	10512	2019/12/16	1 Year
13	Measurement Software	Farad	EZ-EMC (Ver.ATT-03A)	N/A	N/A	N/A

6.2. Block diagram of test setup

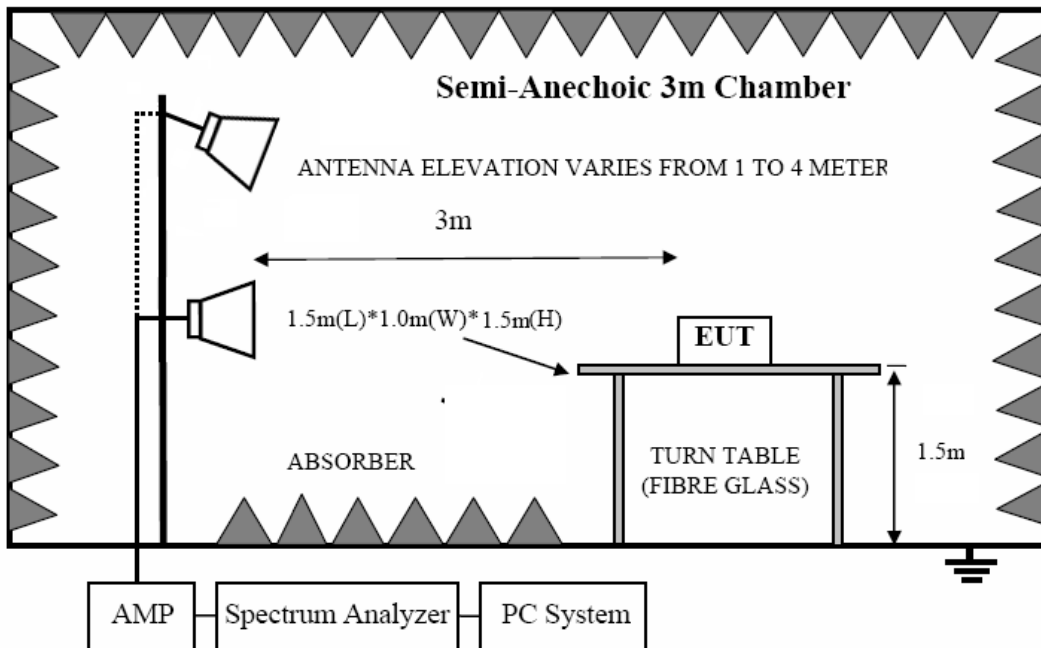
In 3m Anechoic Chamber Test Setup Diagram for below 30MHz



In 3m Anechoic Chamber Test Setup Diagram for 30MHz-1GHz



In 3m Anechoic Chamber Test Setup Diagram for frequency above 1GHz



Note: For harmonic emissions test a appropriate high pass filter was inserted in the input port of AMP.

6.3. Limit

6.3.1 FCC 15.205 Restricted frequency band

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)

6.3.2 FCC 15.209 Limit

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V}/\text{m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	

6.3.3 Limit for this EUT

The radiated emission tests were performed in the 3 meters test site, using the setup accordance with the ANSI C63.10:2013. The specification used was the FCC 15.209, and FCC 15.247 limits.

6.4. TEST PROCEDURE

- (1) EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber.
- (2) Setup EUT and assistant system according clause 2.4 and 8.2
- (3) Test antenna was located 3m from the EUT on an adjustable mast. Below pre-scan procedure was first performed in order to find prominent radiated emissions.
 - (a) Change work frequency or channel of device if practicable.
 - (b) Change modulation type of device if practicable.
 - (c) Change power supply range from 85% to 115% of the rated supply voltage
 - (d) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions
- (4) Spectrum frequency from 9MHz to 25GHz (tenth harmonic of fundamental frequency) was investigated, and no any obvious emission were detected from 9KHz to 30MHz and 18GHz to 25GHz, so below final test was performed with frequency range from 30MHz to 18GHz.
- (5) For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10 2013 on Radiated Emission test.
- (6) For emissions from 30MHz to 1GHz, Quasi-Peak values were measured with EMI Receiver and the bandwidth of Receiver is 120 KHz.
- (7) For emissions above 1GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1MHz, VBW is set at 3MHz for Peak measure, Detector is at PK; RBW is set at 1MHz, VBW is set at 3MHz for Average measure, Detector is at RMS.

6.5. TEST RESULT

Below 30M

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24°C	Relative Humidity:	55%
Distance:	3m	Test Power:	120V/60Hz
Polarization:	--	Test Result:	Pass
Test Mode:	Keep TX Mode	Test By:	smile

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	P
--	--	--	--	P

Note:

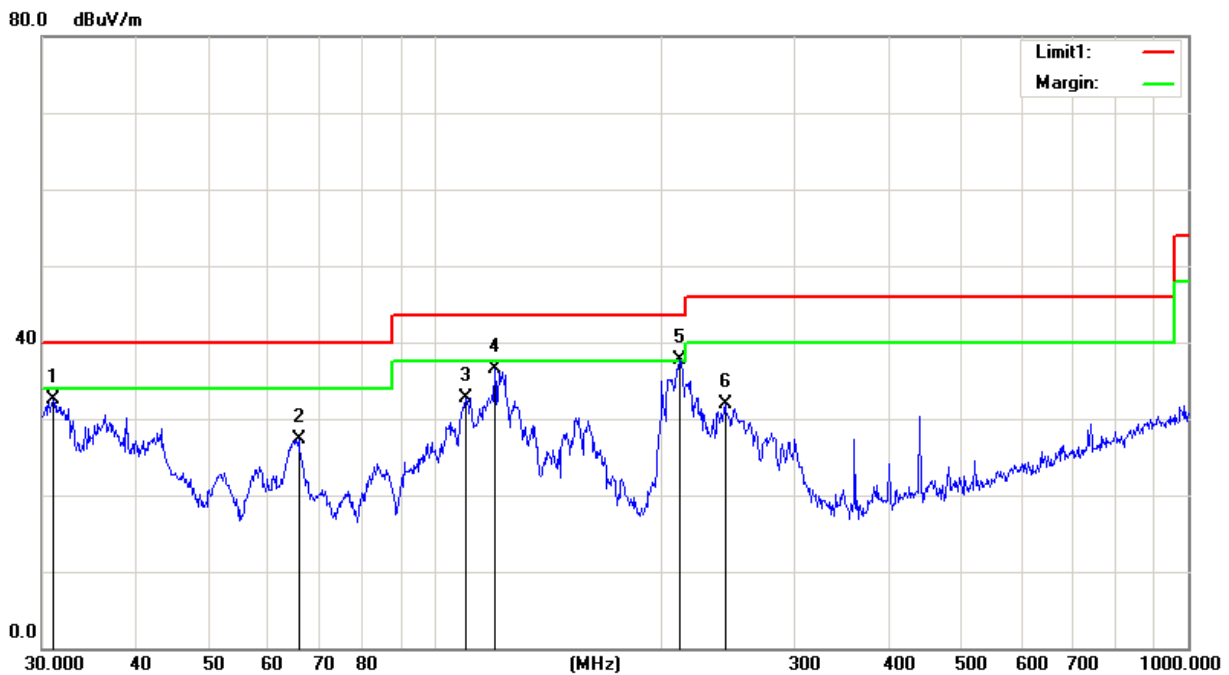
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $20 \log(\text{specific distance}/\text{test distance})(\text{dB})$;

Limit line = specific limits(dBuv) + distance extrapolation factor

Between 30M – 1000 MHz(802.11 B is worst case)

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Horizontal	Test Result:	Pass
Test Time:	2019-8-2	Test By:	
Standard:	(RE)FCC PART 15 class B 3m		
Test Mode:	TX		
Note:	B 2412		

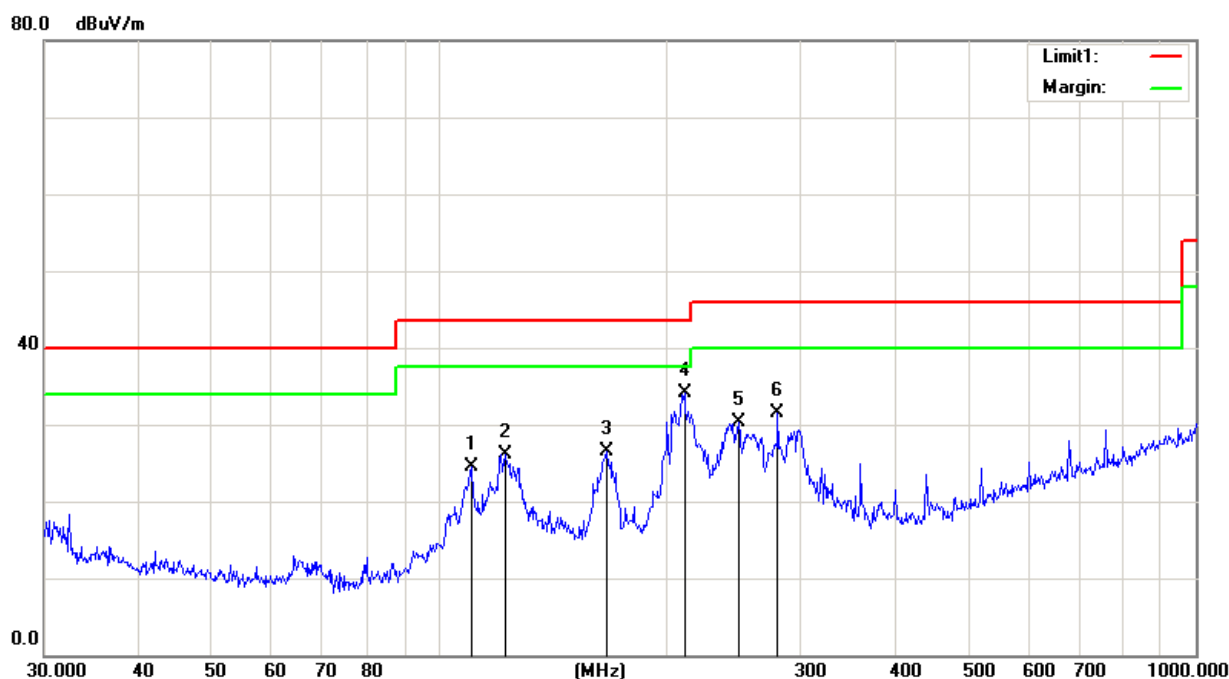


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	31.0706	46.36	-13.92	32.44	40.00	-7.56	peak
2	65.8031	43.25	-16.01	27.24	40.00	-12.76	peak
3	109.7960	47.64	-14.98	32.66	43.50	-10.84	peak
4	119.8556	51.09	-14.67	36.42	43.50	-7.08	peak
5	211.5265	47.26	-9.59	37.67	43.50	-5.83	peak
6	242.5253	38.61	-6.65	31.96	46.00	-14.04	peak

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Vertical	Test Result:	Pass
Test Time:	2019-8-2	Test By:	
Standard:	(RE)FCC PART 15 class B 3m		
Test Mode:	TX		
Note:	B 2412		

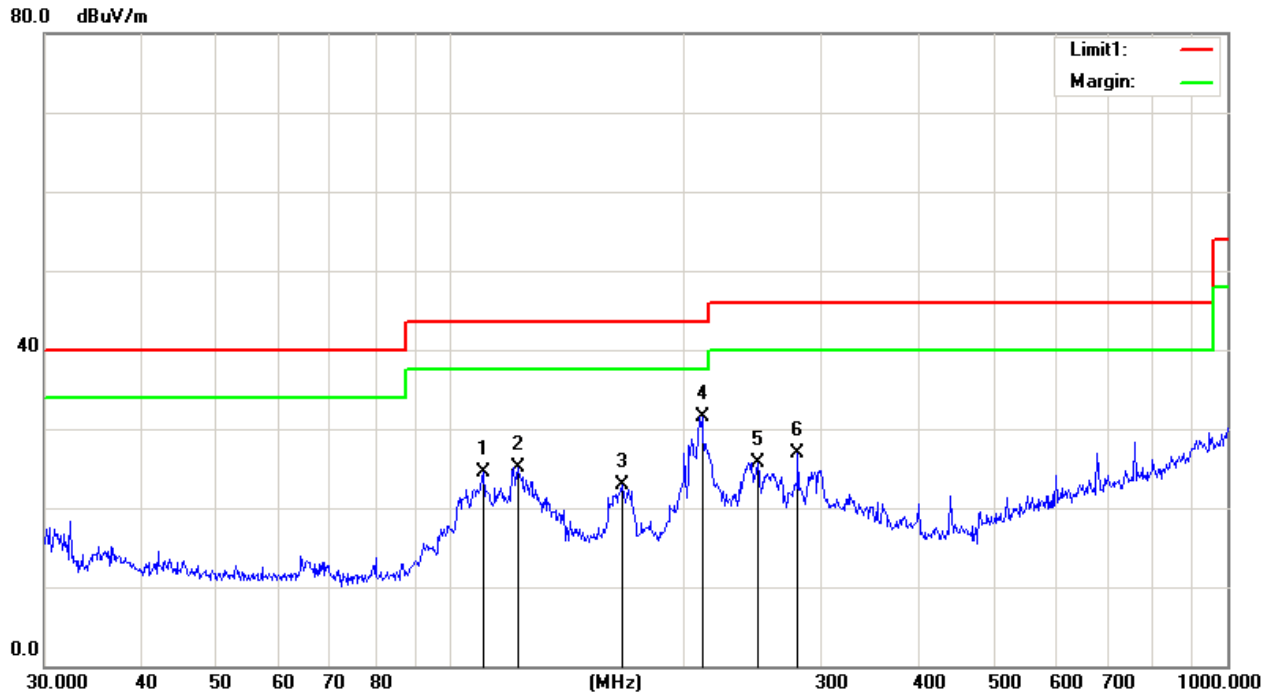


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	110.1816	39.42	-14.93	24.49	43.50	-19.01	peak
2	121.9755	40.21	-14.11	26.10	43.50	-17.40	peak
3	166.0680	38.78	-12.29	26.49	43.50	-17.01	peak
4	210.7860	43.53	-9.47	34.06	43.50	-9.44	peak
5	248.5519	36.87	-6.62	30.25	46.00	-15.75	peak
6	280.0237	37.28	-5.84	31.44	46.00	-14.56	peak

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Vertical	Test Result:	Pass
Test Time:	2019-8-2	Test By:	
Standard:	(RE)FCC PART 15 class B 3m		
Test Mode:	TX		
Note:	B 2437		

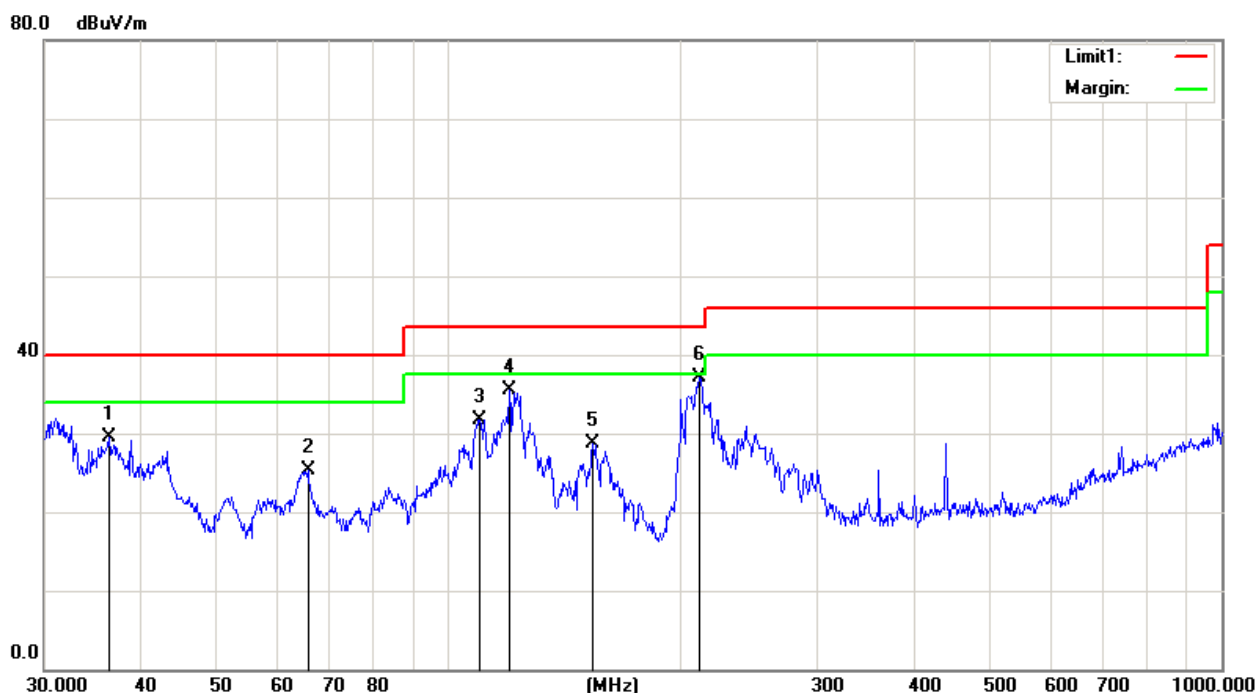


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	110.1816	39.42	-14.93	24.49	43.50	-19.01	peak
2	121.9753	39.21	-14.11	25.10	43.50	-18.40	peak
3	166.0680	35.28	-12.29	22.99	43.50	-20.51	peak
4	210.7860	41.03	-9.47	31.56	43.50	-11.94	peak
5	248.5517	32.37	-6.62	25.75	46.00	-20.25	peak
6	280.0237	32.78	-5.84	26.94	46.00	-19.06	peak

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Horizontal	Test Result:	Pass
Test Time:	2019-8-2	Test By:	
Standard:	(RE)FCC PART 15 class B 3m		
Test Mode:	TX		
Note:	B 2437		

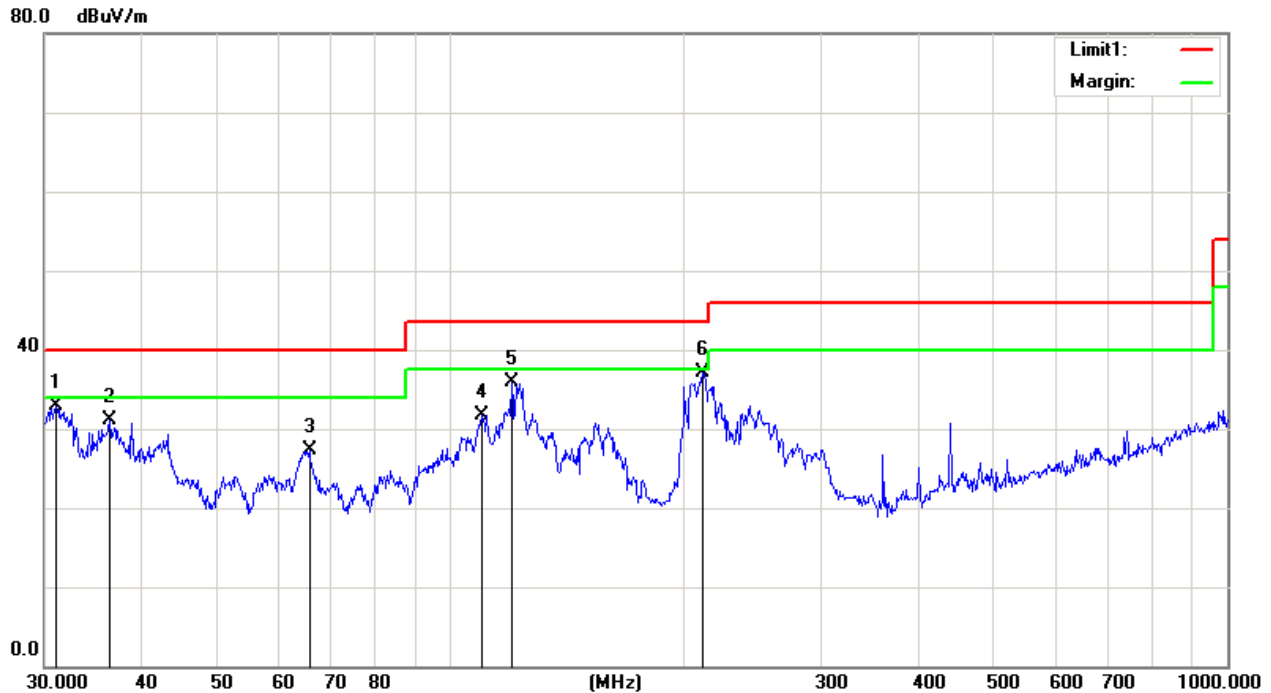


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	36.3813	44.80	-15.28	29.52	40.00	-10.48	peak
2	65.8031	41.26	-16.02	25.24	40.00	-14.76	peak
3	109.7960	46.64	-14.98	31.66	43.50	-11.84	peak
4	119.8555	50.09	-14.67	35.42	43.50	-8.08	peak
5	153.7384	42.01	-13.40	28.61	43.50	-14.89	peak
6	211.5261	46.76	-9.59	37.17	43.50	-6.33	peak

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Horizontal	Test Result:	Pass
Test Time:	2019-8-2	Test By:	
Standard:	(RE)FCC PART 15 class B 3m		
Test Mode:	TX		
Note:	B 2462		

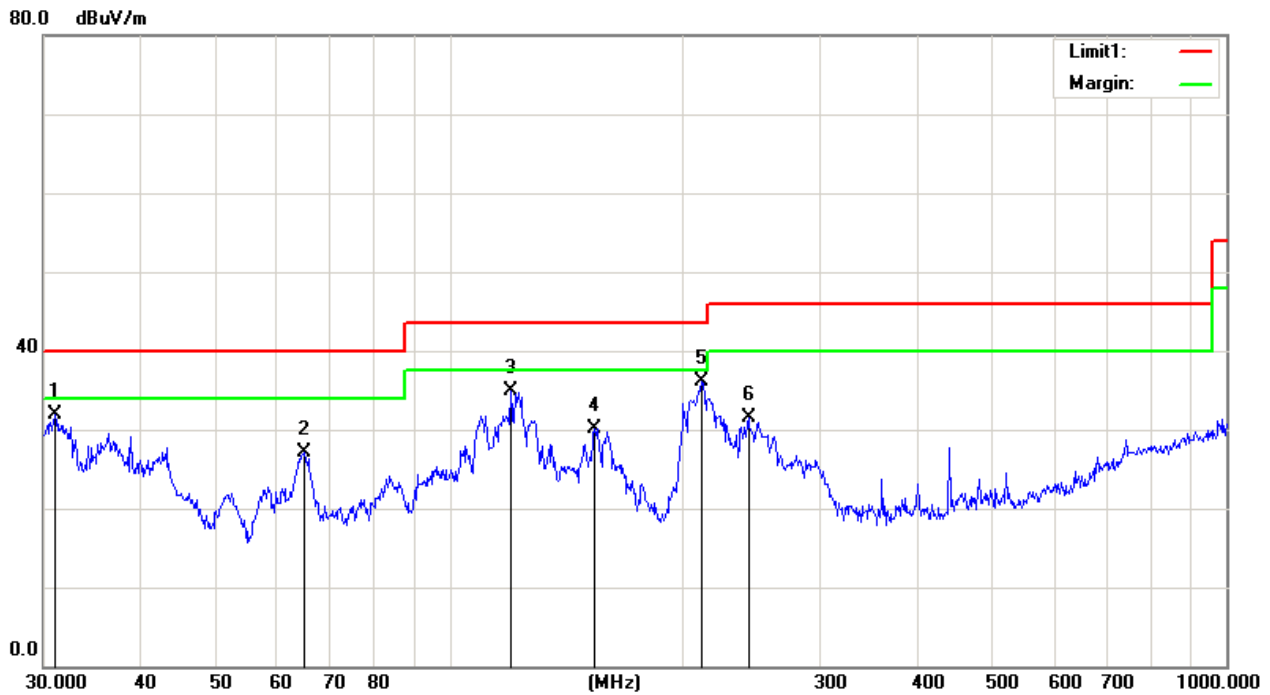


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	31.0702	46.86	-13.92	32.94	40.00	-7.06	peak
2	36.3813	46.30	-15.28	31.02	40.00	-8.98	peak
3	65.8031	43.26	-16.02	27.24	40.00	-12.76	peak
4	109.7960	46.64	-14.98	31.66	43.50	-11.84	peak
5	119.8555	50.59	-14.67	35.92	43.50	-7.58	peak
6	211.5261	46.76	-9.59	37.17	43.50	-6.33	peak

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Vertical	Test Result:	Pass
Test Time:	2019-8-2	Test By:	
Standard:	(RE)FCC PART 15 class B 3m		
Test Mode:	TX		
Note:	B 2462		



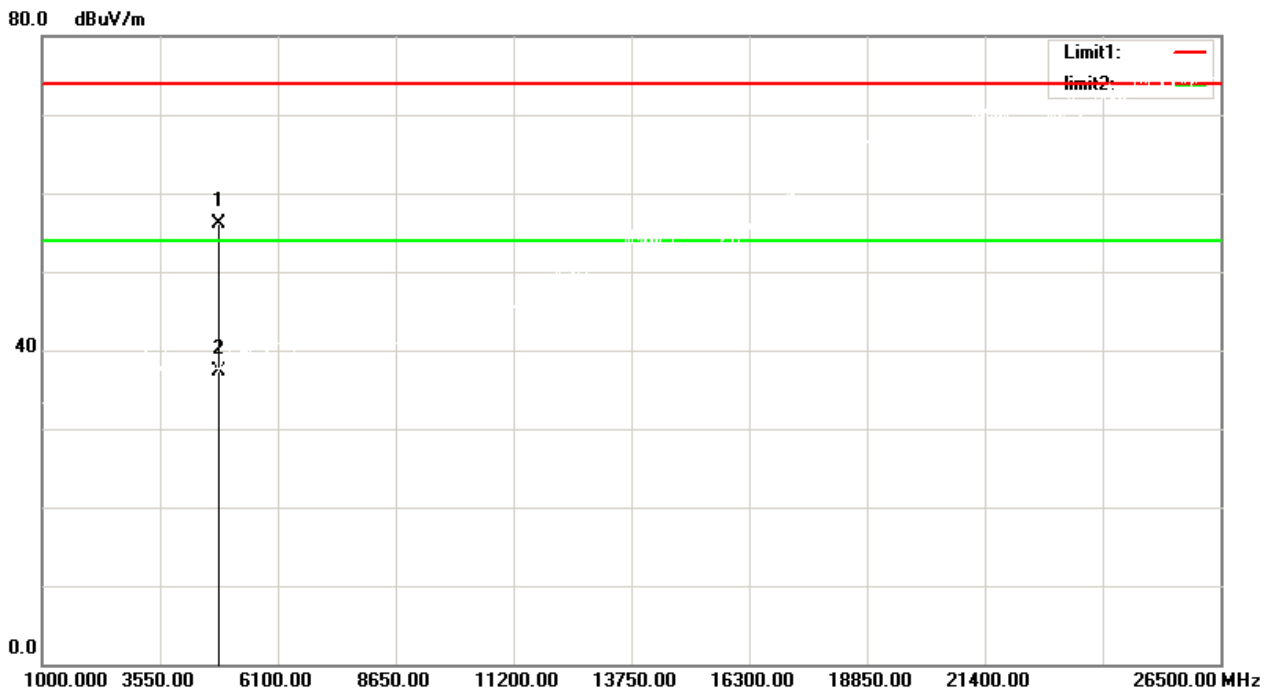
No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	31.0701	45.86	-13.92	31.94	40.00	-8.06	peak
2	65.1145	43.07	-15.94	27.13	40.00	-12.87	peak
3	119.8555	49.59	-14.67	34.92	43.50	-8.58	peak
4	153.7384	43.51	-13.40	30.11	43.50	-13.39	peak
5	211.5261	45.76	-9.59	36.17	43.50	-7.33	peak
6	242.5252	38.11	-6.65	31.46	46.00	-14.54	peak

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

Between 1000M – 25000 MHz(802.11 B is worst case)

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Horizontal	Test Result:	Pass
Test Time:	2019-8-10	Test By:	
Standard:	FCC PART 15 C 1-26.5G PEAK		
Test Mode:	TX		
Note:	B 2412MHz		

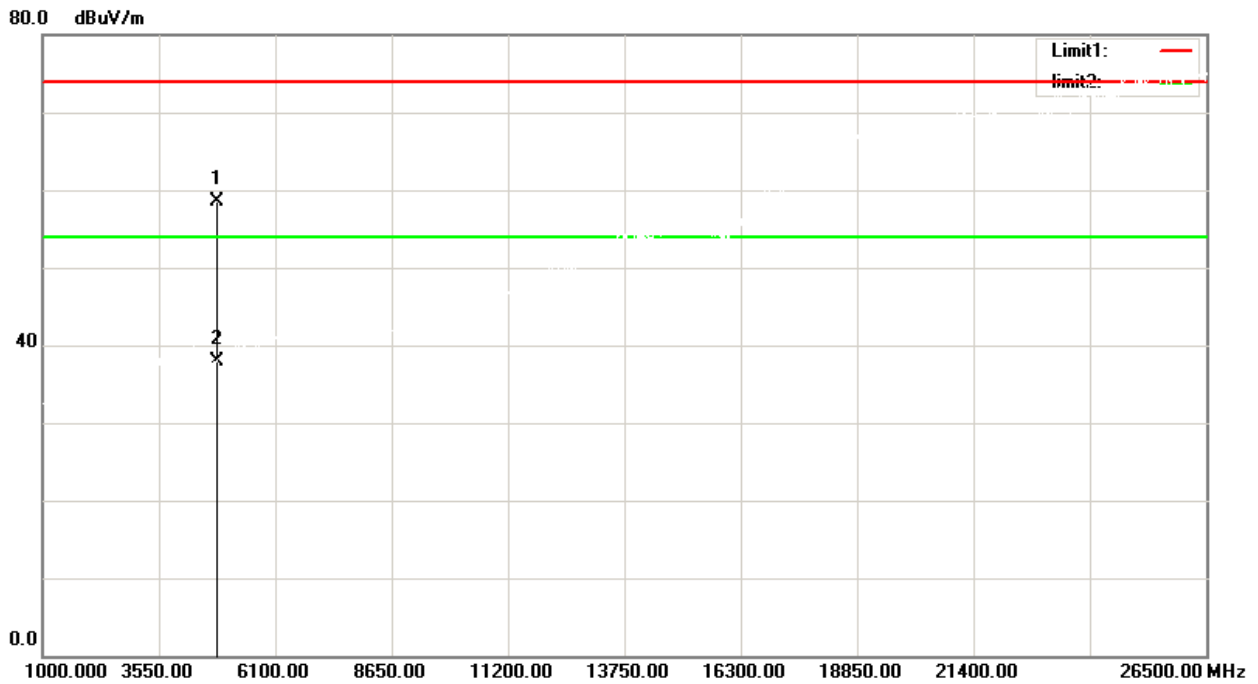


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.032	67.03	-10.92	56.11	74.00	-17.89	peak
2	4824.032	48.27	-10.92	37.35	54.00	-16.65	AVG

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Vertical	Test Result:	Pass
Test Time:	2019-8-10	Test By:	
Standard:	FCC PART 15 C 1-26.5G PEAK		
Test Mode:	TX		
Note:	B 2412MHz		

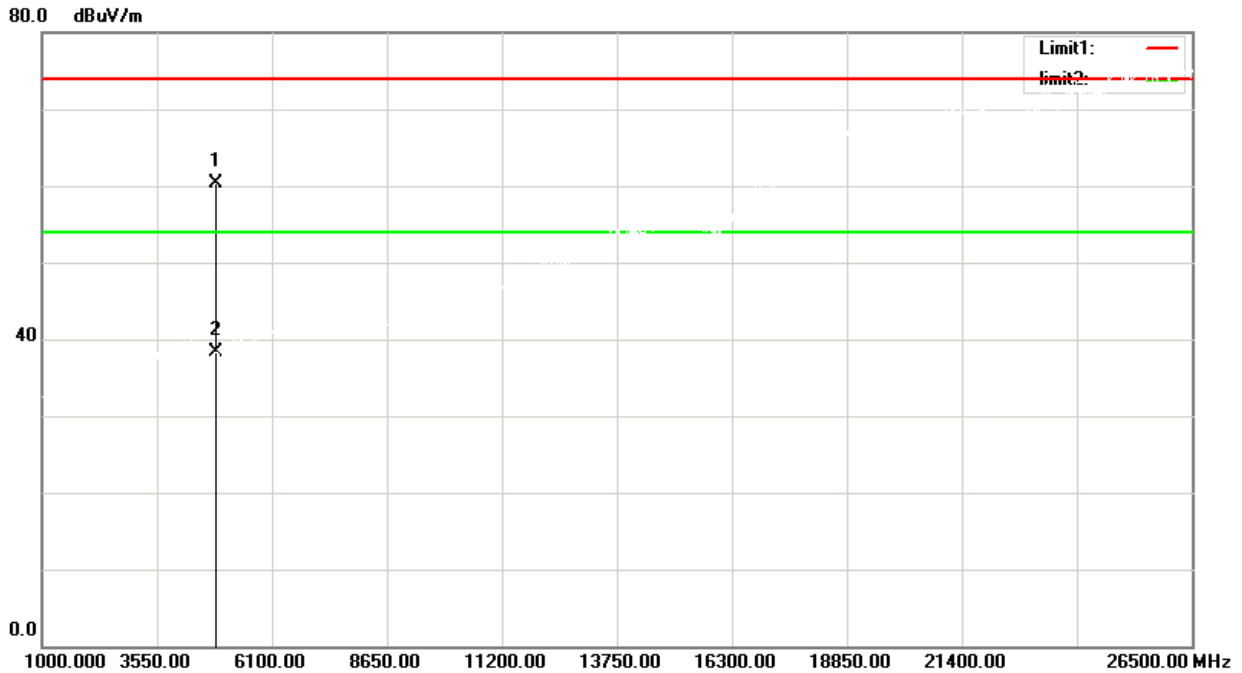


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.014	69.38	-10.92	58.46	74.00	-15.54	peak
2	4824.014	48.85	-10.92	37.93	54.00	-16.07	AVG

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Vertical	Test Result:	Pass
Test Time:	2019-8-10	Test By:	
Standard:	FCC PART 15 C 1-26.5G PEAK		
Test Mode:	TX		
Note:	B 2437MHz		

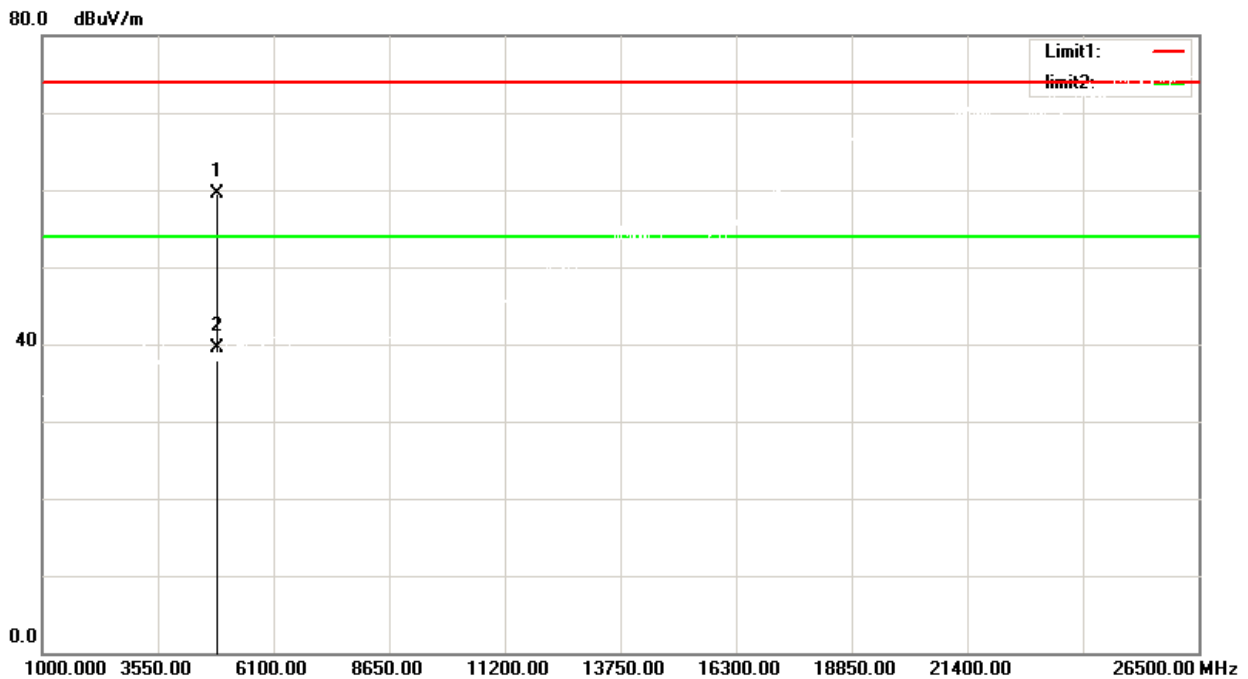


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.210	71.03	-10.73	60.30	74.00	-13.70	peak
2	4874.210	49.08	-10.73	38.35	54.00	-15.65	AVG

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Horizontal	Test Result:	Pass
Test Time:	2019-8-10	Test By:	
Standard:	FCC PART 15 C 1-26.5G PEAK		
Test Mode:	TX		
Note:	B 2437MHz		

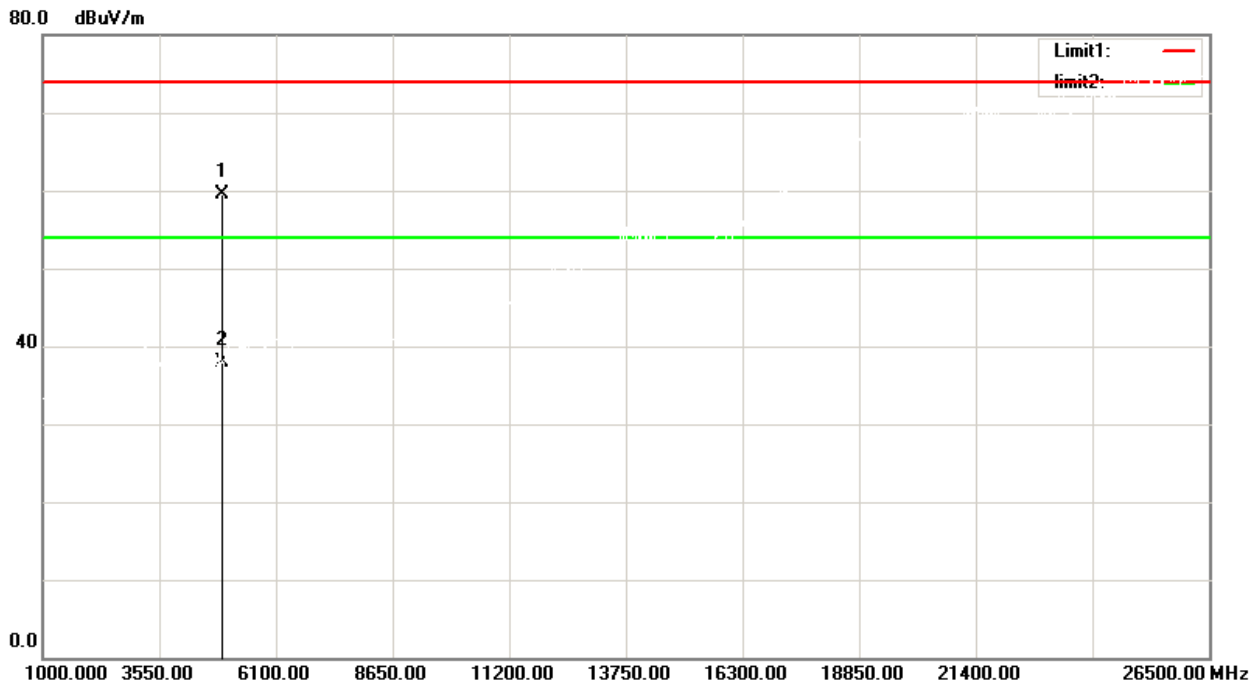


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.052	70.21	-10.73	59.48	74.00	-14.52	peak
2	4874.052	50.28	-10.73	39.55	54.00	-14.45	AVG

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Horizontal	Test Result:	Pass
Test Time:	2019-8-10	Test By:	
Standard:	FCC PART 15 C 1-26.5G PEAK		
Test Mode:	TX		
Note:	B 2462MHz		

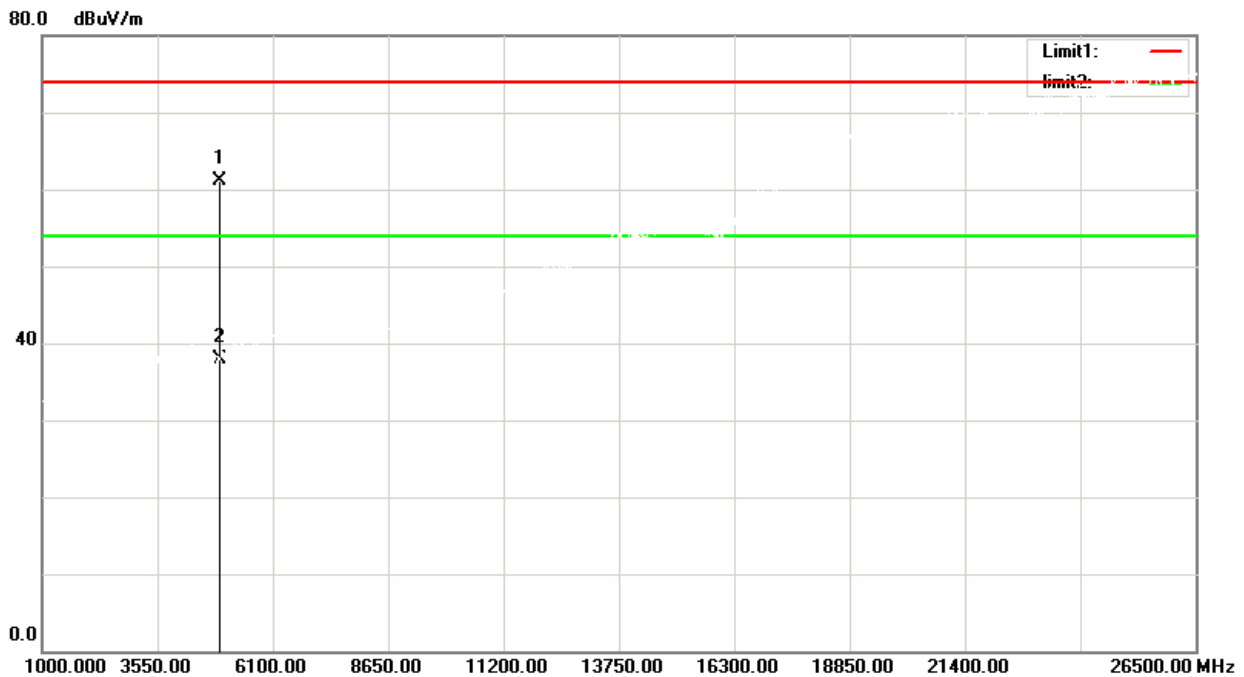


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4924.330	70.01	-10.56	59.45	74.00	-14.55	peak
2	4924.330	48.55	-10.56	37.99	54.00	-16.01	AVG

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Vertical	Test Result:	Pass
Test Time:	2019-8-10	Test By:	
Standard:	FCC PART 15 C 1-26.5G PEAK		
Test Mode:	TX		
Note:	B 2462MHz		



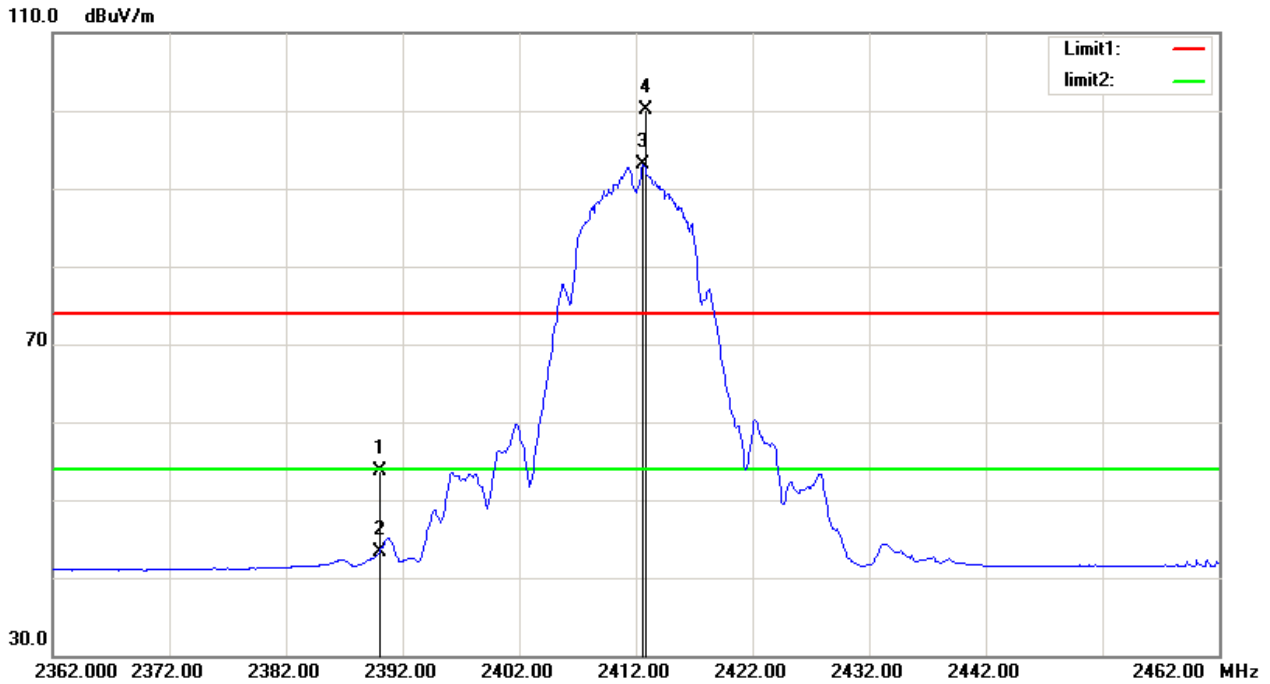
No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4924.132	71.68	-10.56	61.12	74.00	-12.88	peak
2	4924.132	48.43	-10.56	37.87	54.00	-16.13	AVG

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

Rediated Band Edge:

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Vertical	Test Result:	PASS
Test Time:	2019-8-10	Test By:	
Standard:	FCC PART 15 C 1-26.5G PEAK		
Test Mode:	TX		
Note:	B 2412MHz		

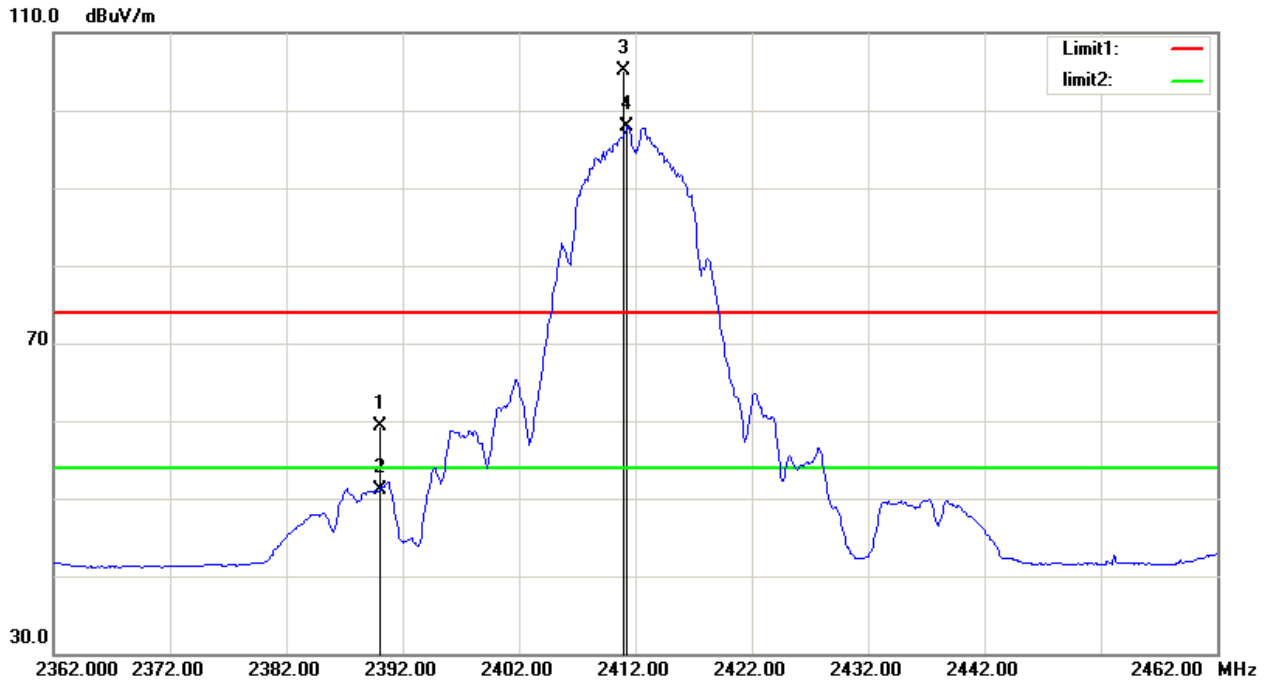


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	23.02	30.74	53.76	74.00	-20.24	peak
2	2390.000	12.47	30.74	43.21	54.00	-10.79	AVG
3	2412.600	62.22	30.81	93.03	/	/	AVG
4	2412.900	69.30	30.81	100.11	/	/	peak

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Horizontal	Test Result:	PASS
Test Time:	2019-8-10	Test By:	
Standard:	FCC PART 15 C 1-26.5G PEAK		
Test Mode:	TX		
Note:	B 2412MHz		

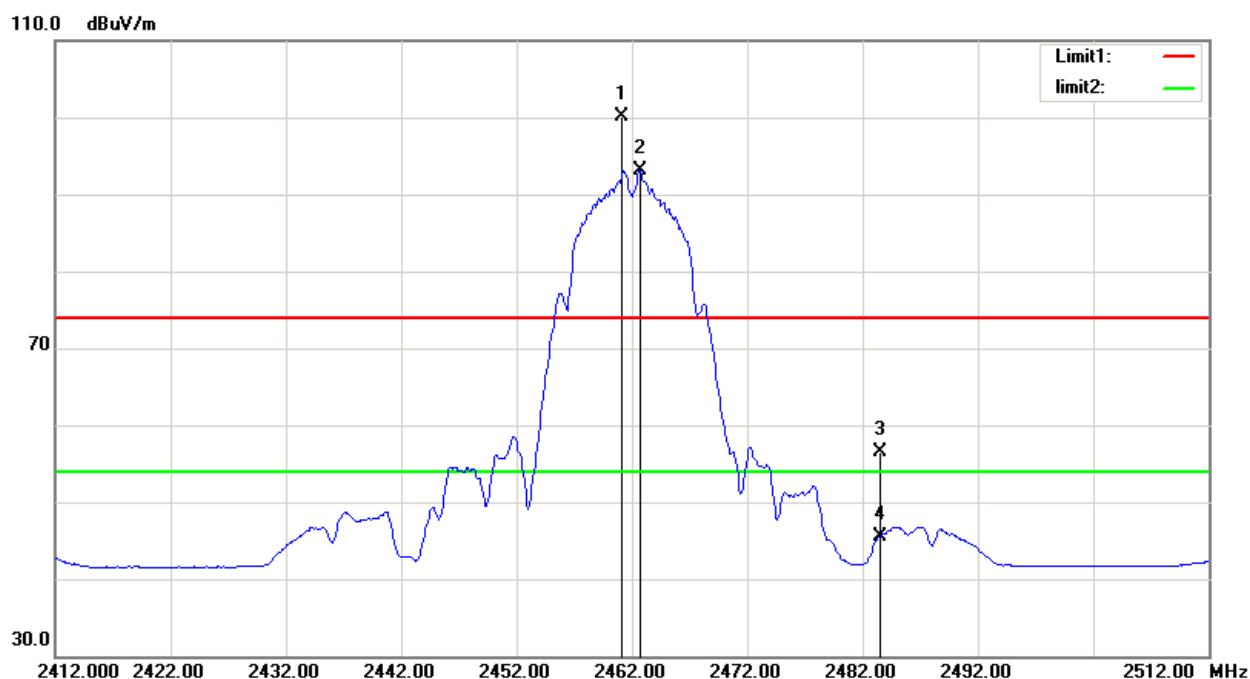


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	28.48	30.74	59.22	74.00	-14.78	peak
2	2390.000	20.35	30.74	51.09	54.00	-2.91	AVG
3	2411.000	74.36	30.81	105.17	/	/	peak
4	2411.300	67.09	30.81	97.90	/	/	AVG

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Horizontal	Test Result:	PASS
Test Time:	2019-8-10	Test By:	
Standard:	FCC PART 15 C 1-26.5G PEAK		
Test Mode:	TX		
Note:	B 2462MHz		

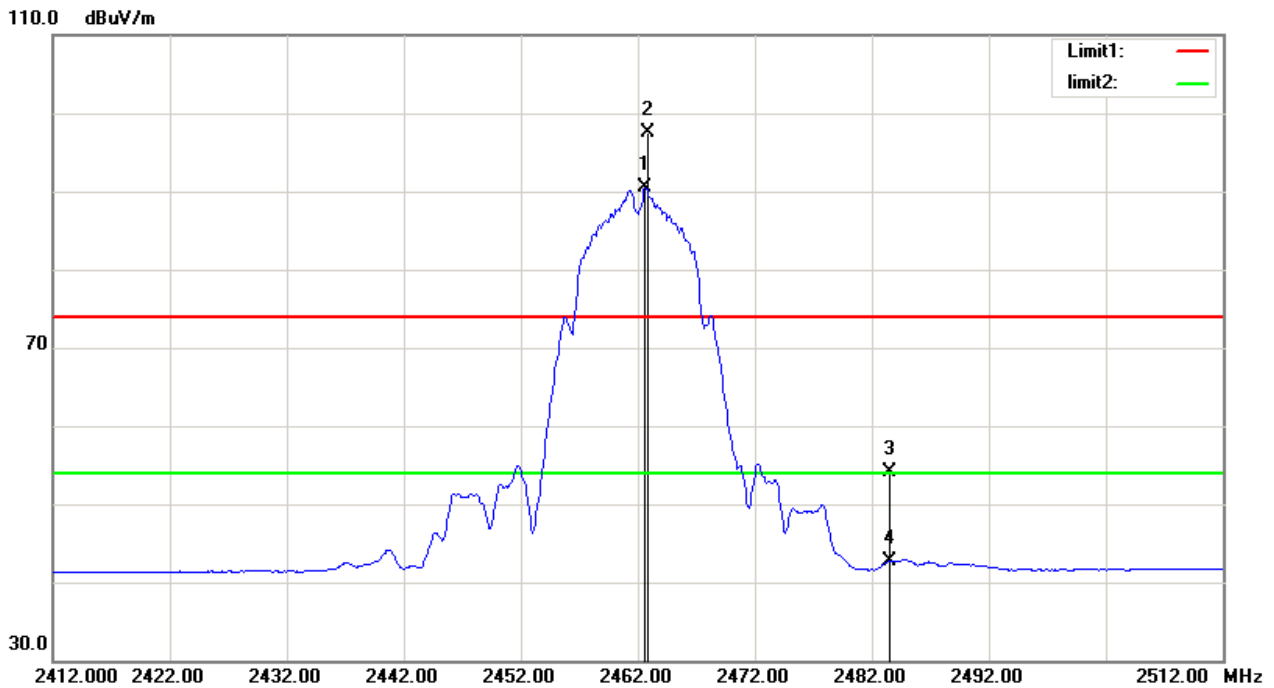


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2461.100	69.18	30.98	100.16	/	/	peak
2	2462.700	62.16	30.98	93.14	/	/	AVG
3	2483.500	25.54	31.05	56.59	74.00	-17.41	peak
4	2483.500	14.50	31.05	45.55	54.00	-8.45	AVG

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Vertical	Test Result:	PASS
Test Time:	2019-8-10	Test By:	
Standard:	FCC PART 15 C 1-26.5G PEAK		
Test Mode:	TX		
Note:	B 2462MHz		

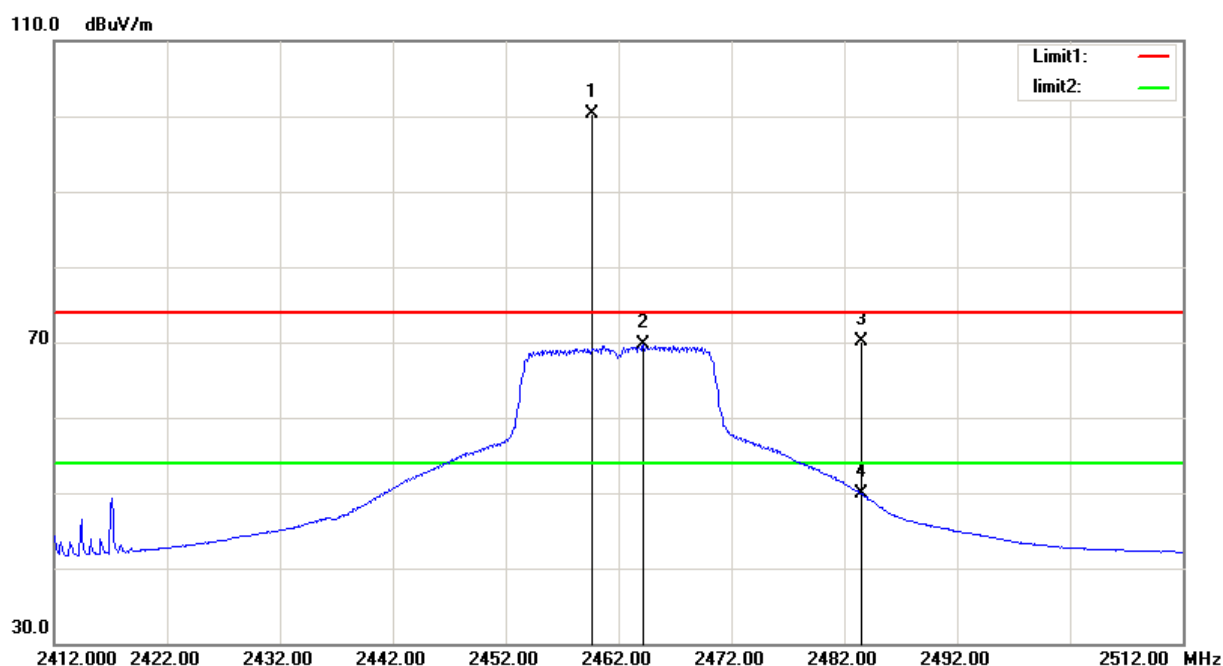


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2462.600	59.44	30.98	90.42	/	/	AVG
2	2462.900	66.45	30.98	97.43	/	/	peak
3	2483.500	23.09	31.05	54.14	74.00	-19.86	peak
4	2483.500	11.61	31.05	42.66	54.00	-11.34	AVG

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Vertical	Test Result:	PASS
Test Time:	2019-8-10	Test By:	
Standard:	FCC PART 15 C 1-26.5G PEAK		
Test Mode:	TX		
Note:	G 2462MHz		

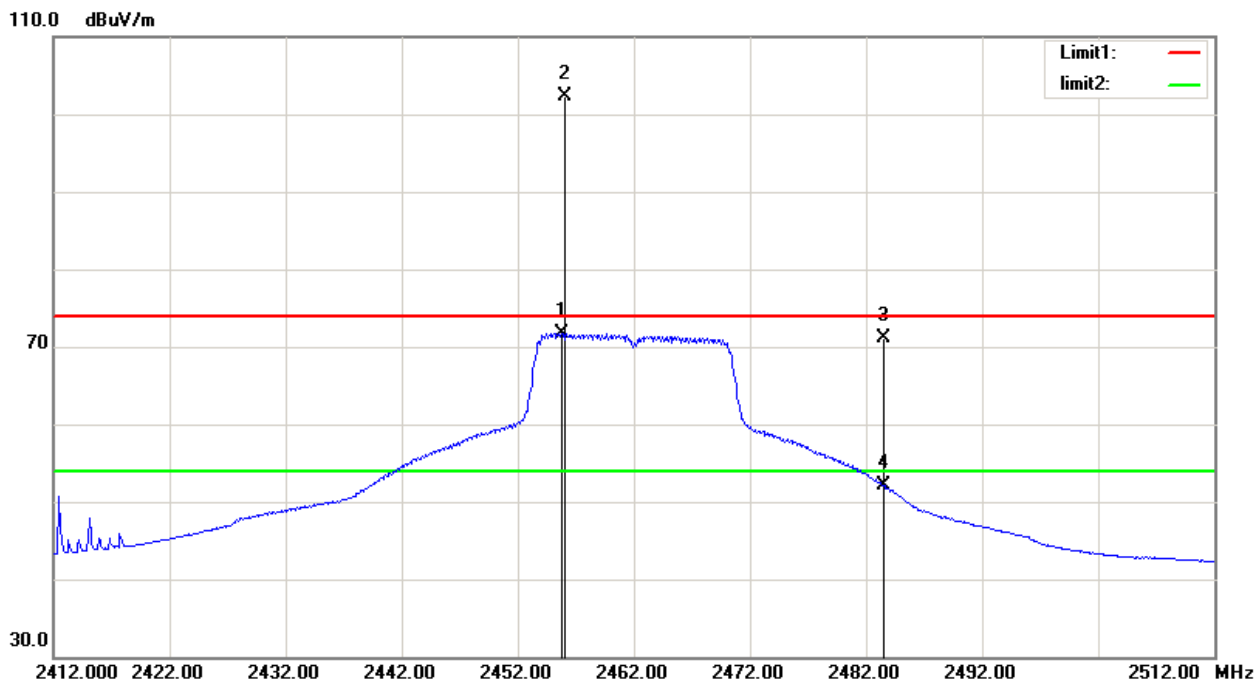


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2459.700	69.29	30.97	100.26	/	/	peak
2	2464.200	38.75	30.98	69.73	/	/	peak
3	2483.500	39.13	31.05	70.18	74.00	-3.82	peak
4	2483.500	18.86	31.05	49.91	74.00	-24.09	peak

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Horizontal	Test Result:	PASS
Test Time:	2019-8-10	Test By:	
Standard:	FCC PART 15 C 1-26.5G PEAK		
Test Mode:	TX		
Note:	G 2462MHz		

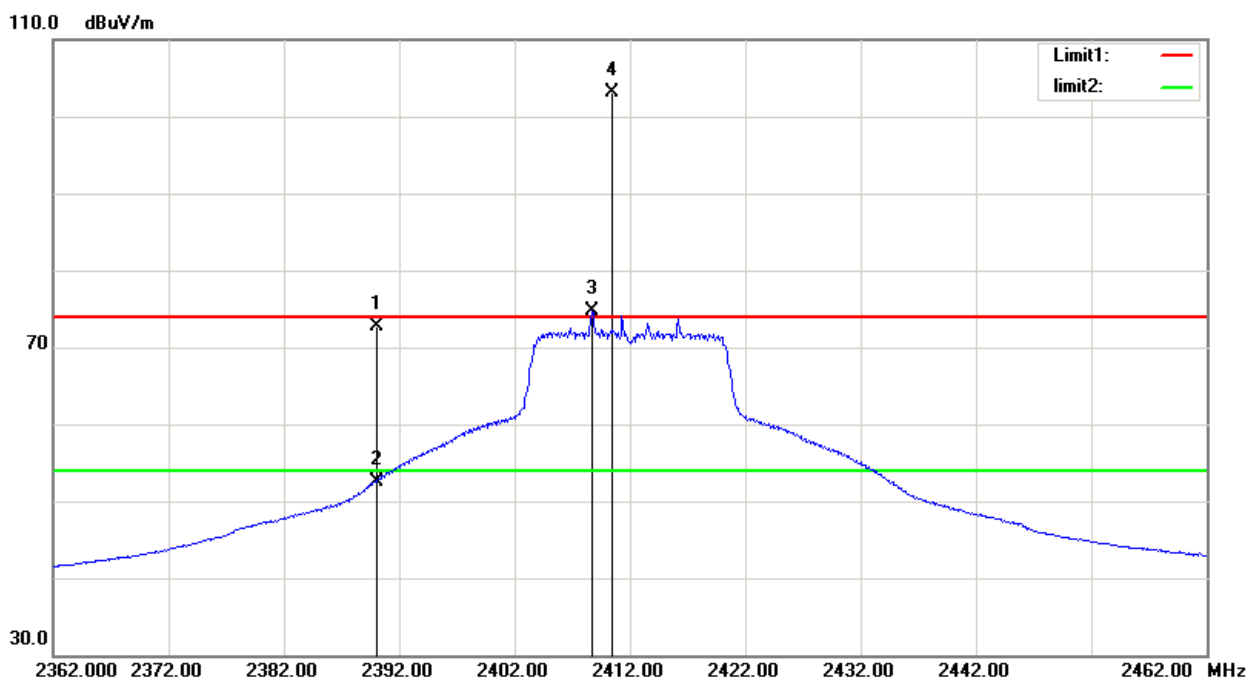


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2455.800	40.73	30.95	71.68	/	/	AVG
2	2456.100	71.36	30.95	102.31	/	/	peak
3	2483.500	40.01	31.05	71.06	74.00	-2.94	peak
4	2483.500	21.12	31.05	52.17	54.00	-1.83	AVG

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Horizontal	Test Result:	PASS
Test Time:	2019-8-10	Test By:	
Standard:	FCC PART 15 C 1-26.5G PEAK		
Test Mode:	TX		
Note:	G 2412MHz		

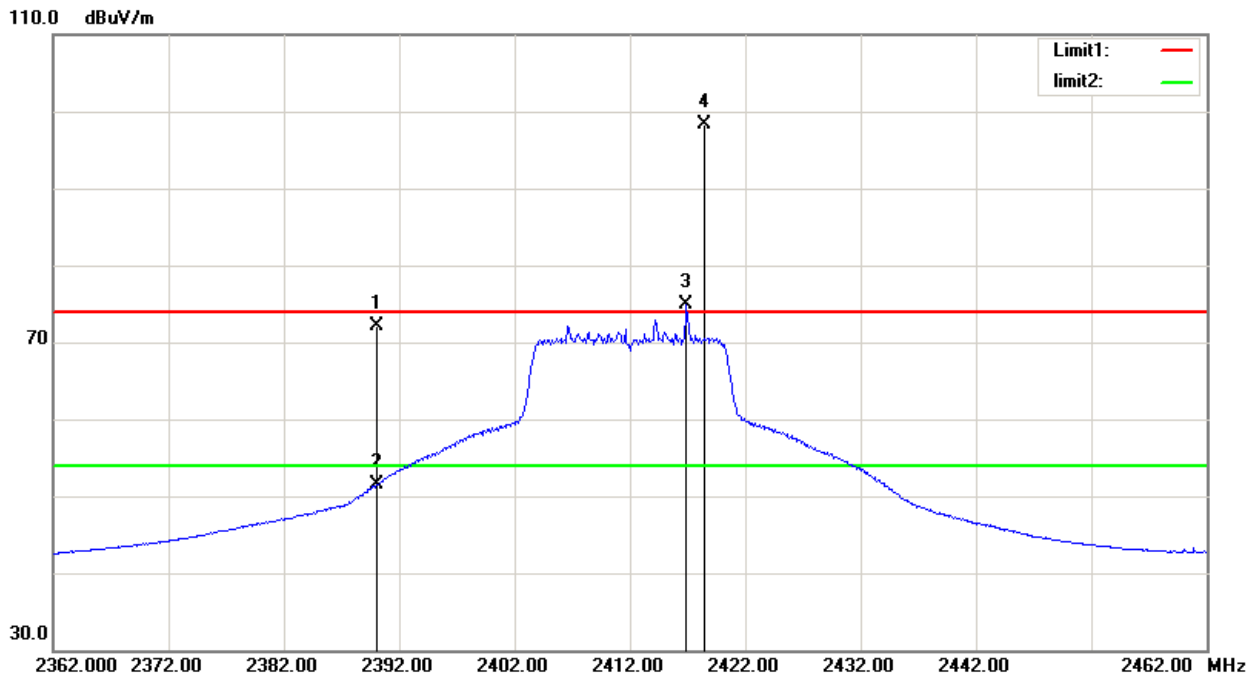


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	42.02	30.74	72.76	74.00	-1.24	peak
2	2390.000	21.68	30.74	52.42	54.00	-1.58	AVG
3	2408.700	43.87	30.80	74.67	/	/	AVG
4	2410.500	72.36	30.80	103.16	/	/	peak

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Vertical	Test Result:	PASS
Test Time:	2019-8-10	Test By:	
Standard:	FCC PART 15 C 1-26.5G PEAK		
Test Mode:	TX		
Note:	G 2412MHz		

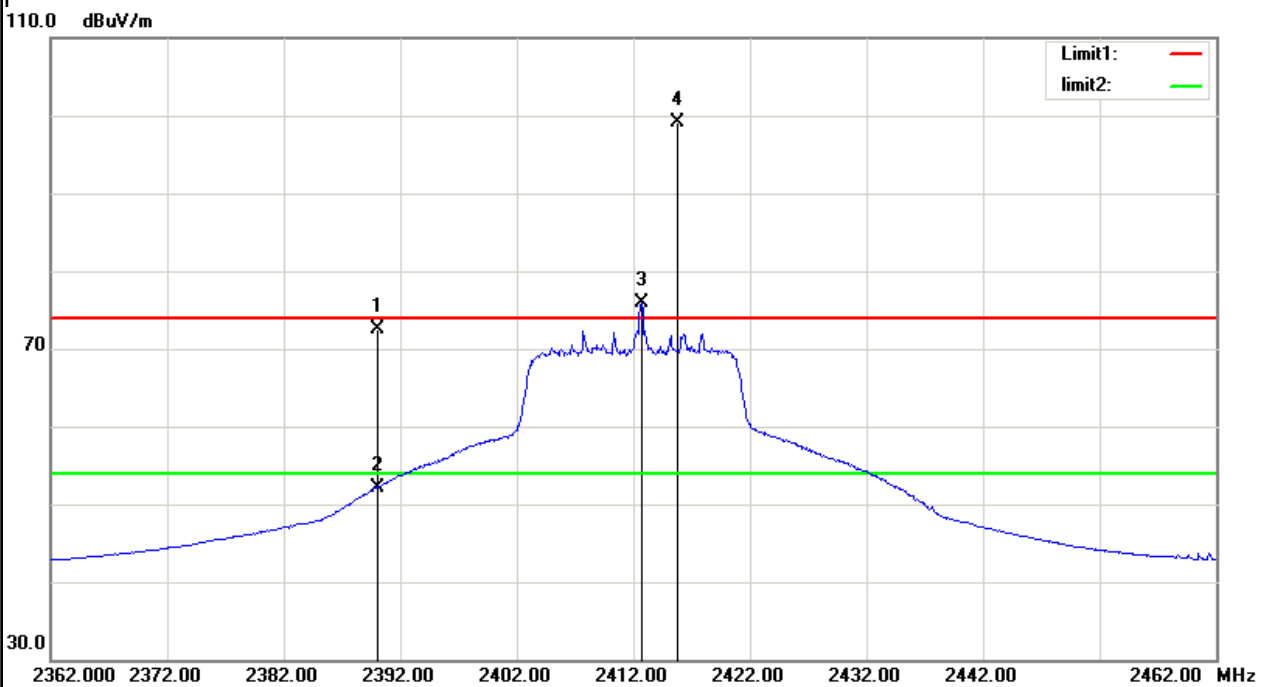


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	41.39	30.74	72.13	74.00	-1.87	peak
2	2390.000	20.73	30.74	51.47	54.00	-2.53	AVG
3	2416.900	44.06	30.83	74.89	/	/	AVG
4	2418.500	67.38	30.83	98.21	/	/	peak

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Vertical	Test Result:	PASS
Test Time:	2019-8-10	Test By:	
Standard:	FCC PART 15 C 1-26.5G PEAK		
Test Mode:	TX		
Note:	N20 2412MHz		

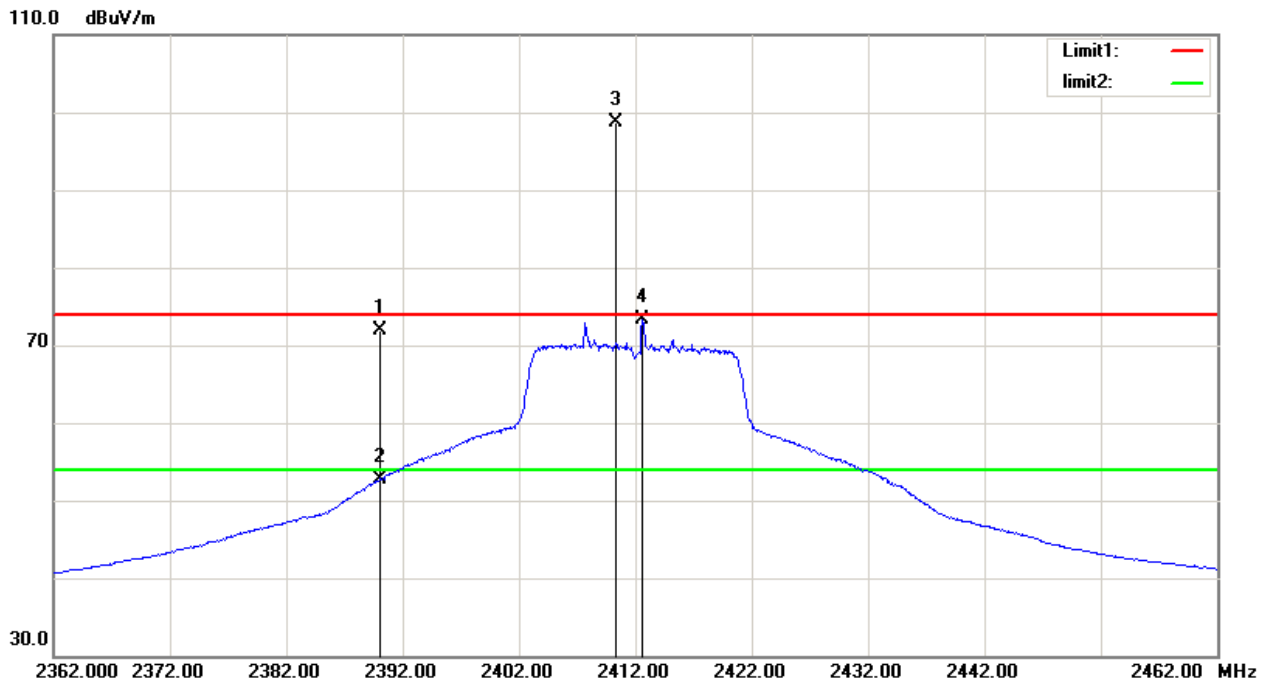


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	41.71	30.74	72.45	74.00	-1.55	peak
2	2390.000	21.38	30.74	52.12	54.00	-1.88	AVG
3	2412.700	45.18	30.81	75.99	/	/	AVG
4	2415.800	68.33	30.83	99.16	/	/	peak

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Horizontal	Test Result:	PASS
Test Time:	2019-8-10	Test By:	
Standard:	FCC PART 15 C 1-26.5G PEAK		
Test Mode:	TX		
Note:	N20 2412MHz		

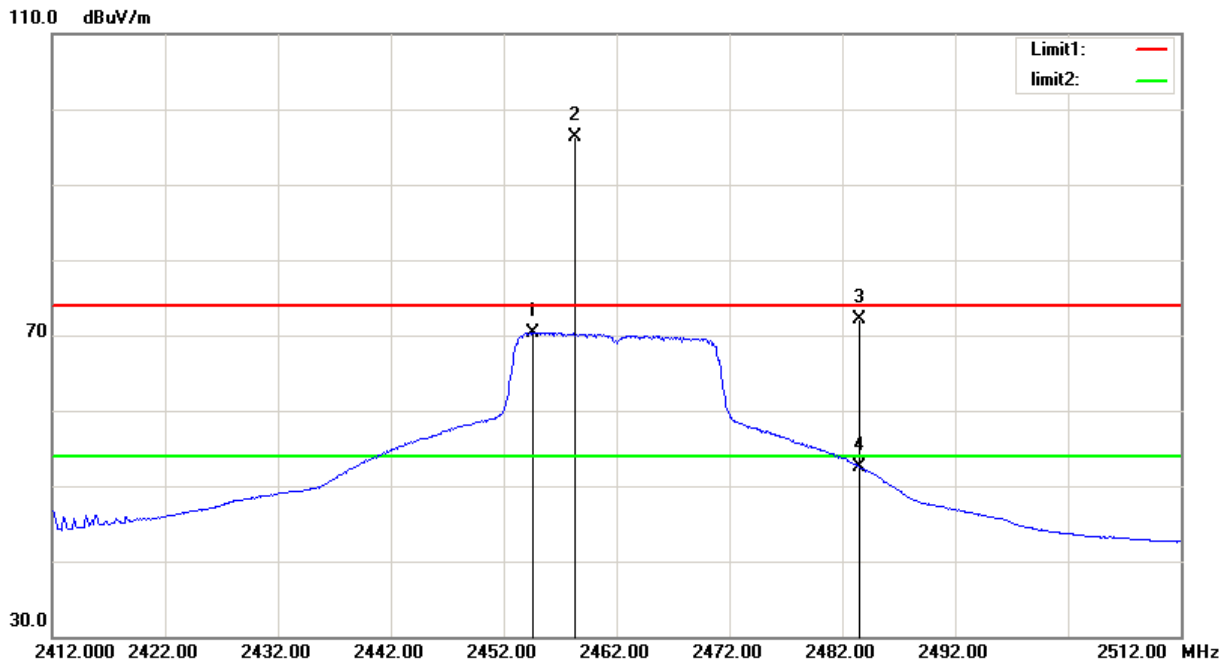


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	41.09	30.74	71.83	74.00	-2.17	peak
2	2390.000	22.01	30.74	52.75	54.00	-1.25	AVG
3	2410.300	68.00	30.80	98.80	/	/	peak
4	2412.600	42.41	30.81	73.22	/		AVG

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Horizontal	Test Result:	PASS
Test Time:	2019-8-10	Test By:	
Standard:	FCC PART 15 C 1-26.5G PEAK		
Test Mode:	TX		
Note:	N20 2462MHz		

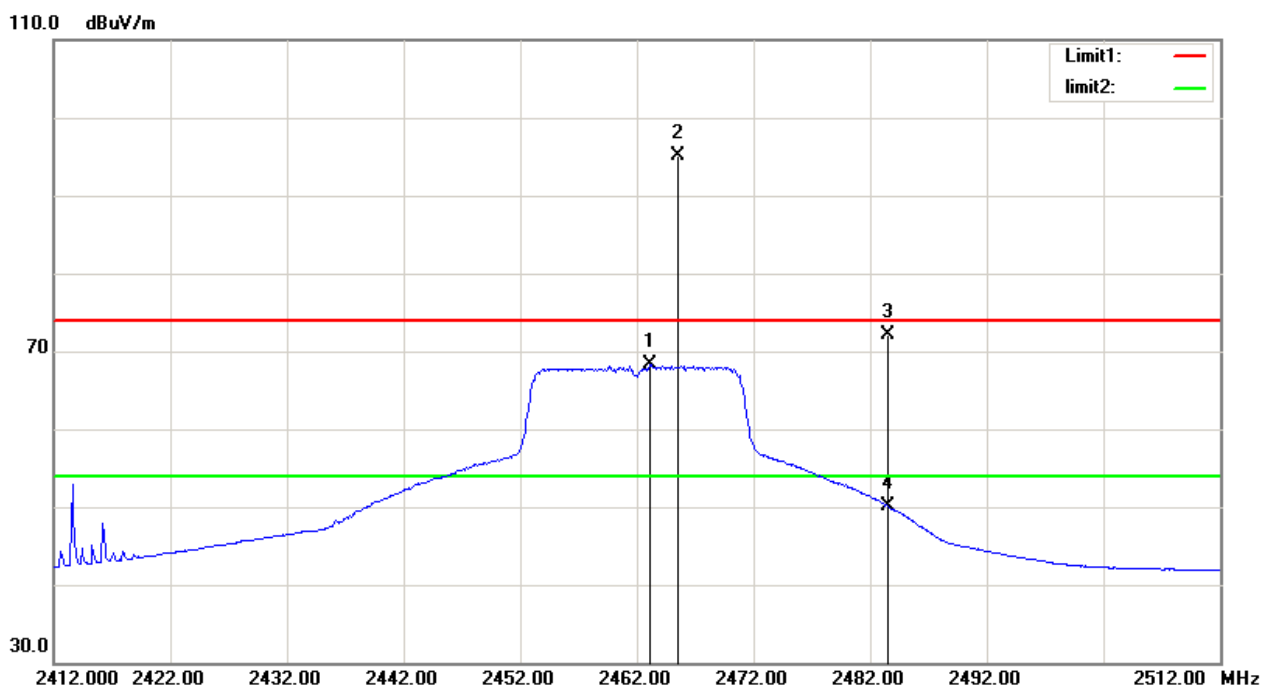


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2454.600	39.43	30.95	70.38	/	/	AVG
2	2458.300	65.38	30.97	96.35	/		peak
3	2483.500	41.03	31.05	72.08	74.00	-1.92	peak
4	2483.500	21.47	31.05	52.52	54.00	-1.48	AVG

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	66%
Distance:	3m	Test Power:	AC 120V/60Hz
Polarization:	Vertical	Test Result:	PASS
Test Time:	2019-8-10	Test By:	
Standard:	FCC PART 15 C 1-26.5G PEAK		
Test Mode:	TX		
Note:	N20 2462MHz		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2463.100	37.32	30.98	68.30	/	/	AVG
2	2465.600	64.18	30.99	95.17	/	/	peak
3	2483.500	41.05	31.05	72.10	74.00	-1.90	peak
4	2483.500	19.12	31.05	50.17	54.00	-3.83	AVG

The test result is calculated as the following:

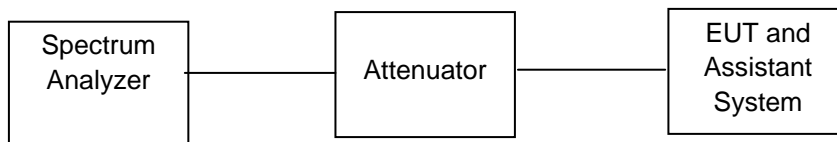
- (1) Result = Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
- (3) Margin = Result - Limit

7. 100 kHz Bandwidth of Frequency Band Edge

7.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Calibrated until	Calibrated Date
1	Spectrum analyzer	KEYSIGHT	N9010A	MY55150427	2020/05/27	2019/05/28
2	Attenuator	Mini-Circuits	BW-S10W2	101109	2019/12/16	2018/12/17
3	RF Cable	Micable	C10-01-01-1	100309	2019/12/16	2018/12/17

7.2. Block diagram of test setup



7.3. Limit

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 §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

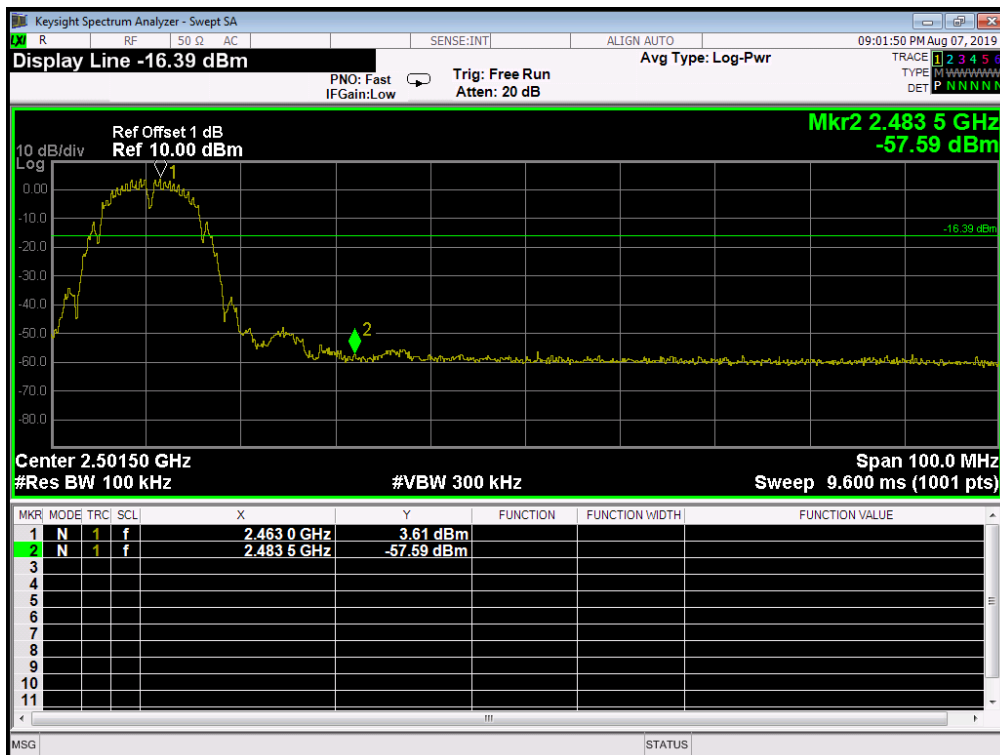
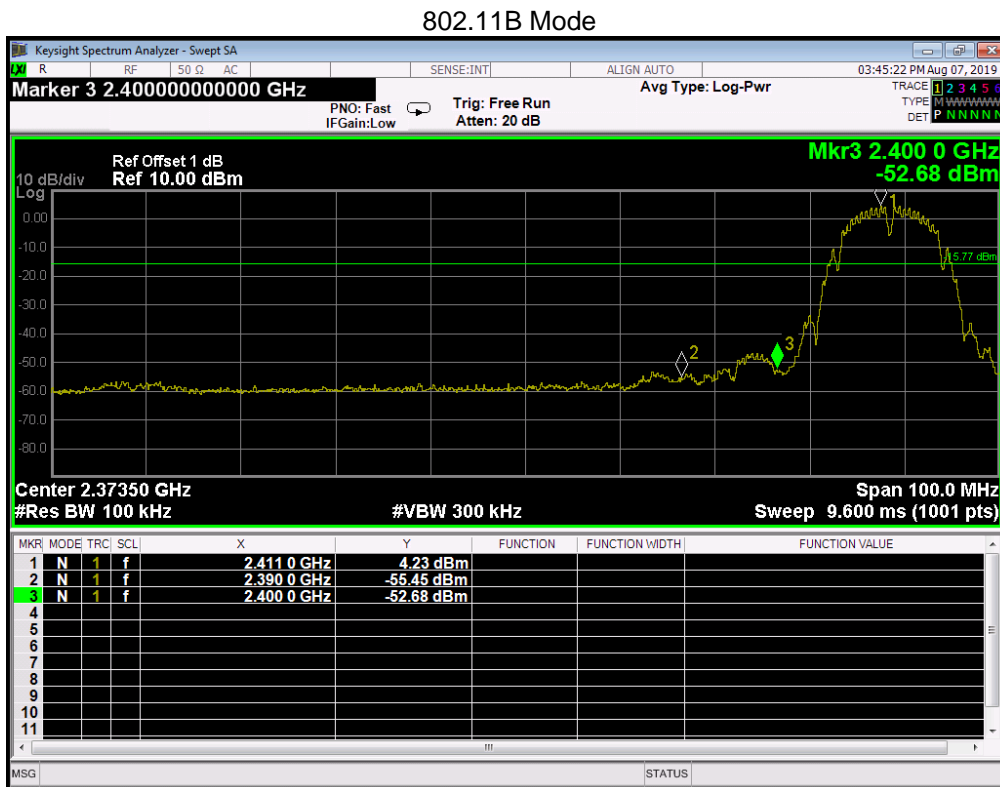
7.4. Test Procedure

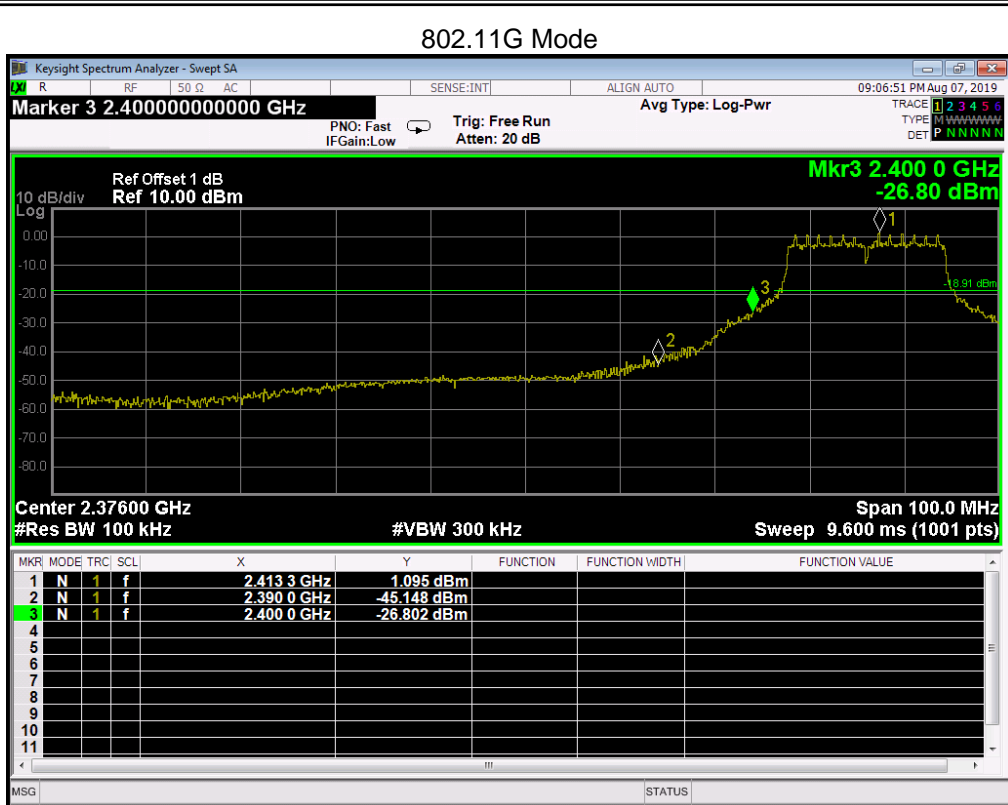
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Remove the antenna from the EUT and then connect to a low loss RF cable from the antenna port to a EMI test receiver, then turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.
3. Set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

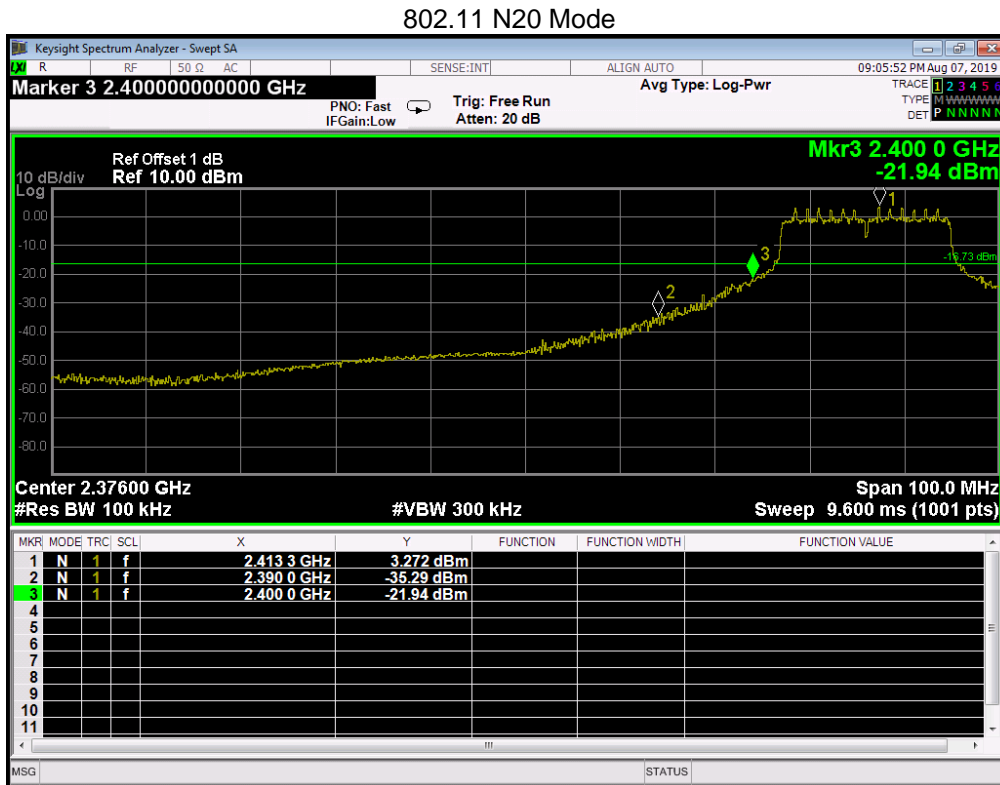
7.5. Test result

Antenna A

Frequency Band	Delta Peak to band emission (dBc)	>Limit (dBc)	Result
IEEE 802.11B Mdoe			
2390	59.68	20	Pass
2483.5	61.20	20	Pass
IEEE 802.11G Mdoe			
2390	46.243	20	Pass
2483.5	39.875	20	Pass
IEEE 802.11N20 Mdoe			
2390	38.562	20	Pass
2483.5	38.802	20	Pass







8. Conducted Spurious Emissions

8.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Calibrated until	Calibrated Date
1	Spectrum analyzer	KEYSIGHT	N9010A	MY55150427	2020/05/27	2019/05/28
2	Attenuator	Mini-Circuits	BW-S10W2	101109	2019/12/16	2018/12/17
3	RF Cable	Micable	C10-01-01-1	100309	2019/12/16	2018/12/17

8.2. Limit

In any 100kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

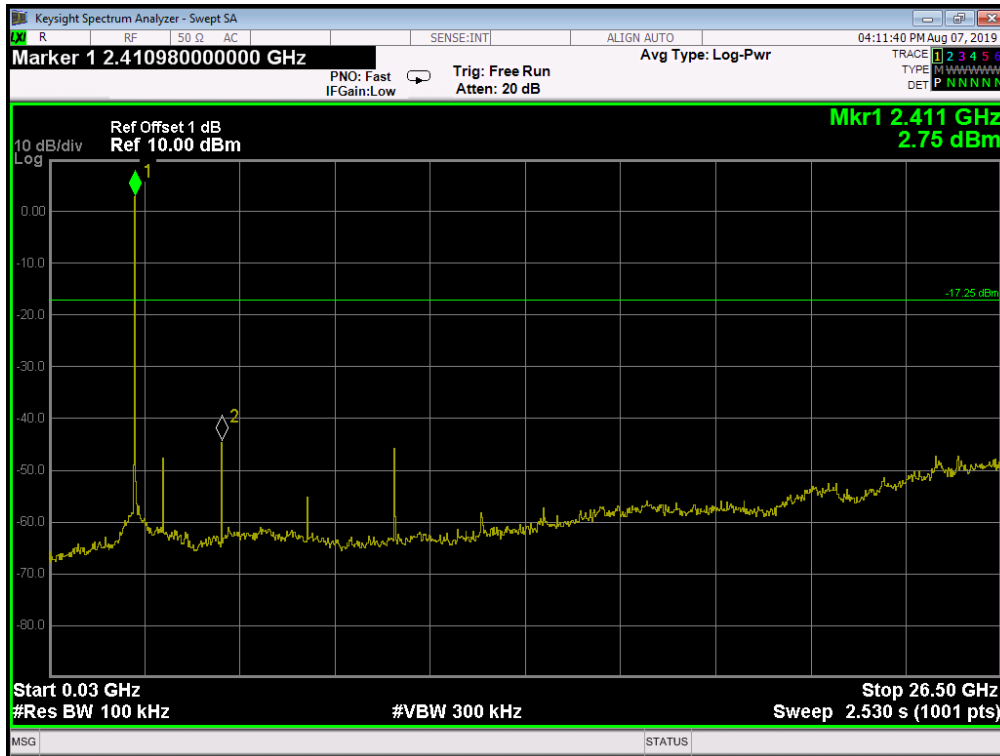
8.3. Test Procedure

The transmitter output was connected to a spectrum analyzer, The resolution bandwidth is set to 100 kHz, The video bandwidth is set to 300 kHz and measure all the emissions detected.

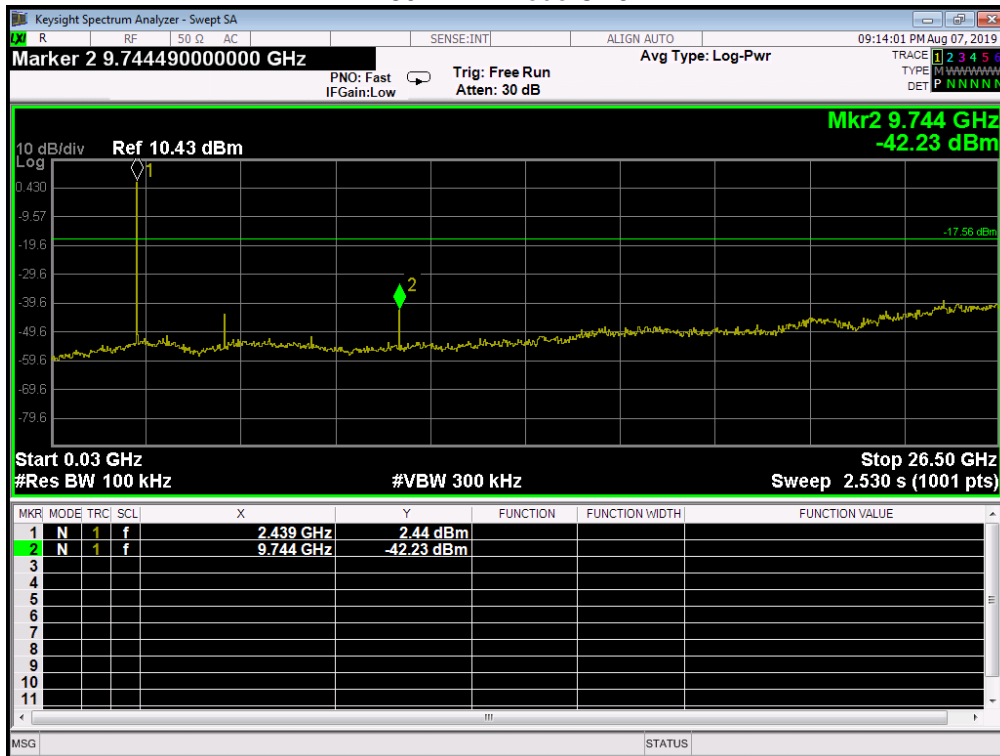
8.4. Test result

PASS (See below detailed test result.)

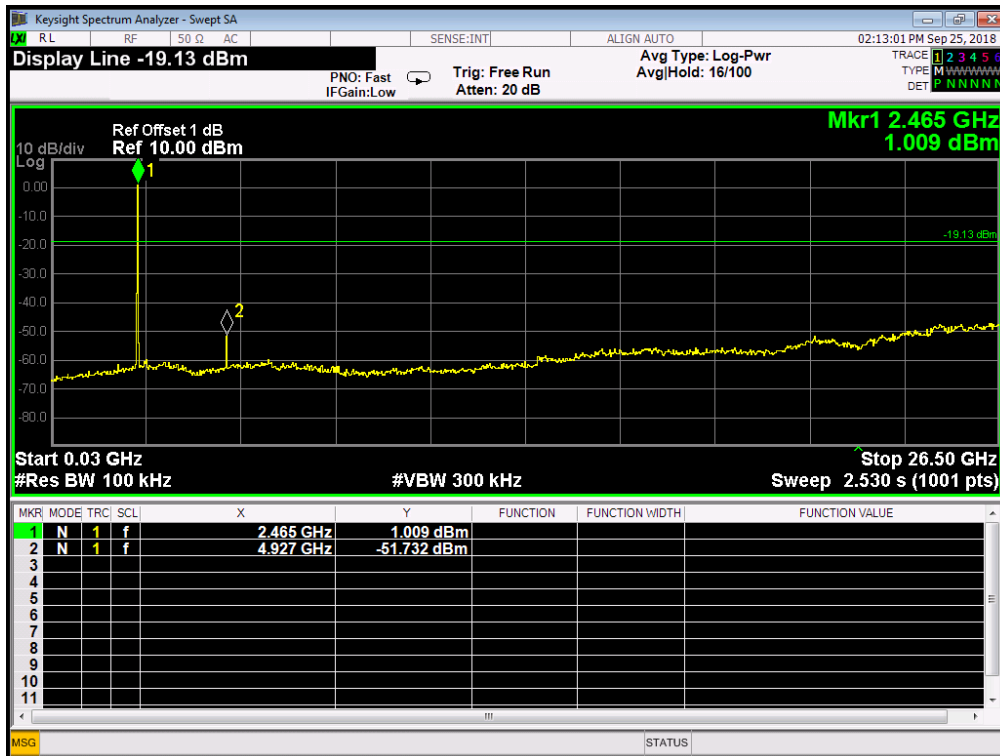
802.11 B Mode CH0



802.11 B Mode CH6



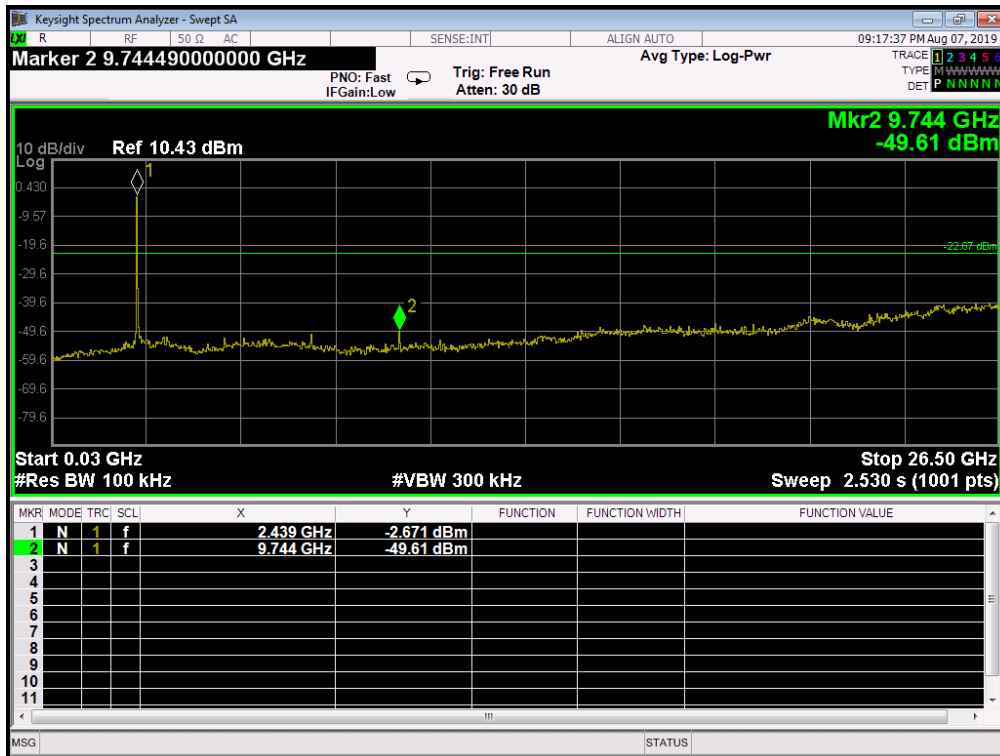
802.11 B Mode CH11



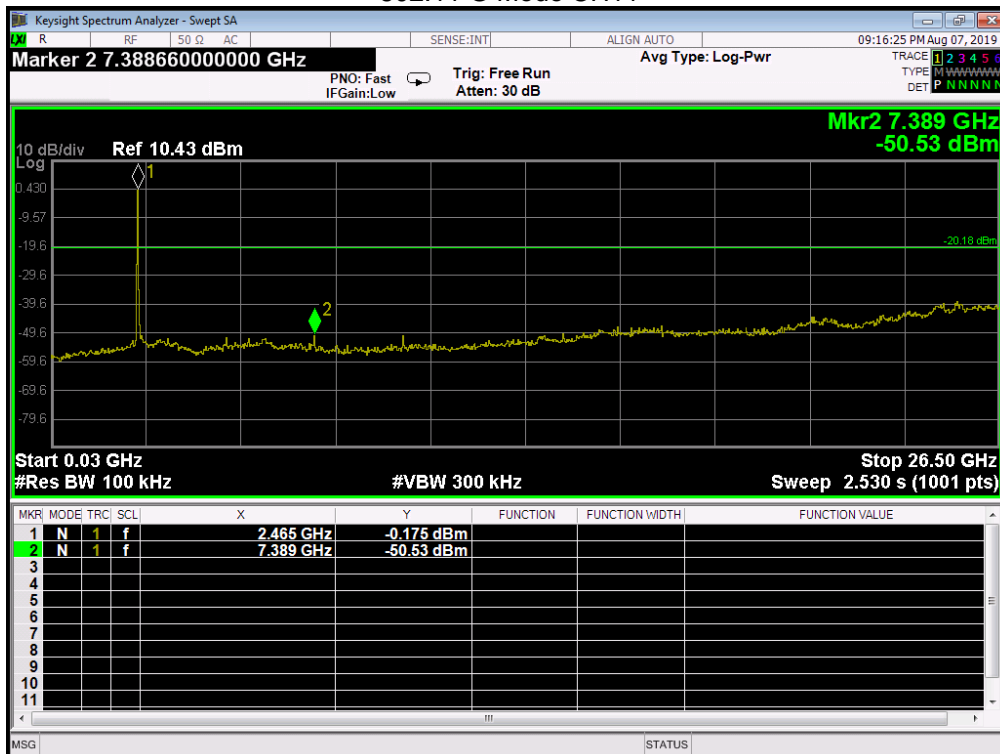
802.11 G Mode CH1



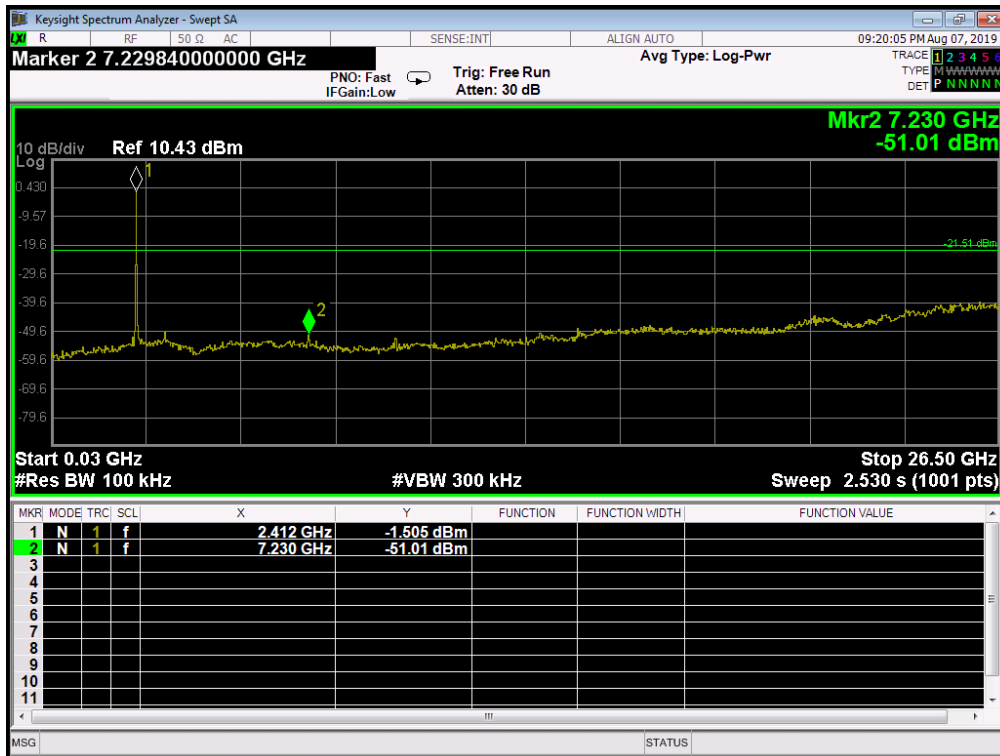
802.11 G Mode CH6



802.11 G Mode CH11

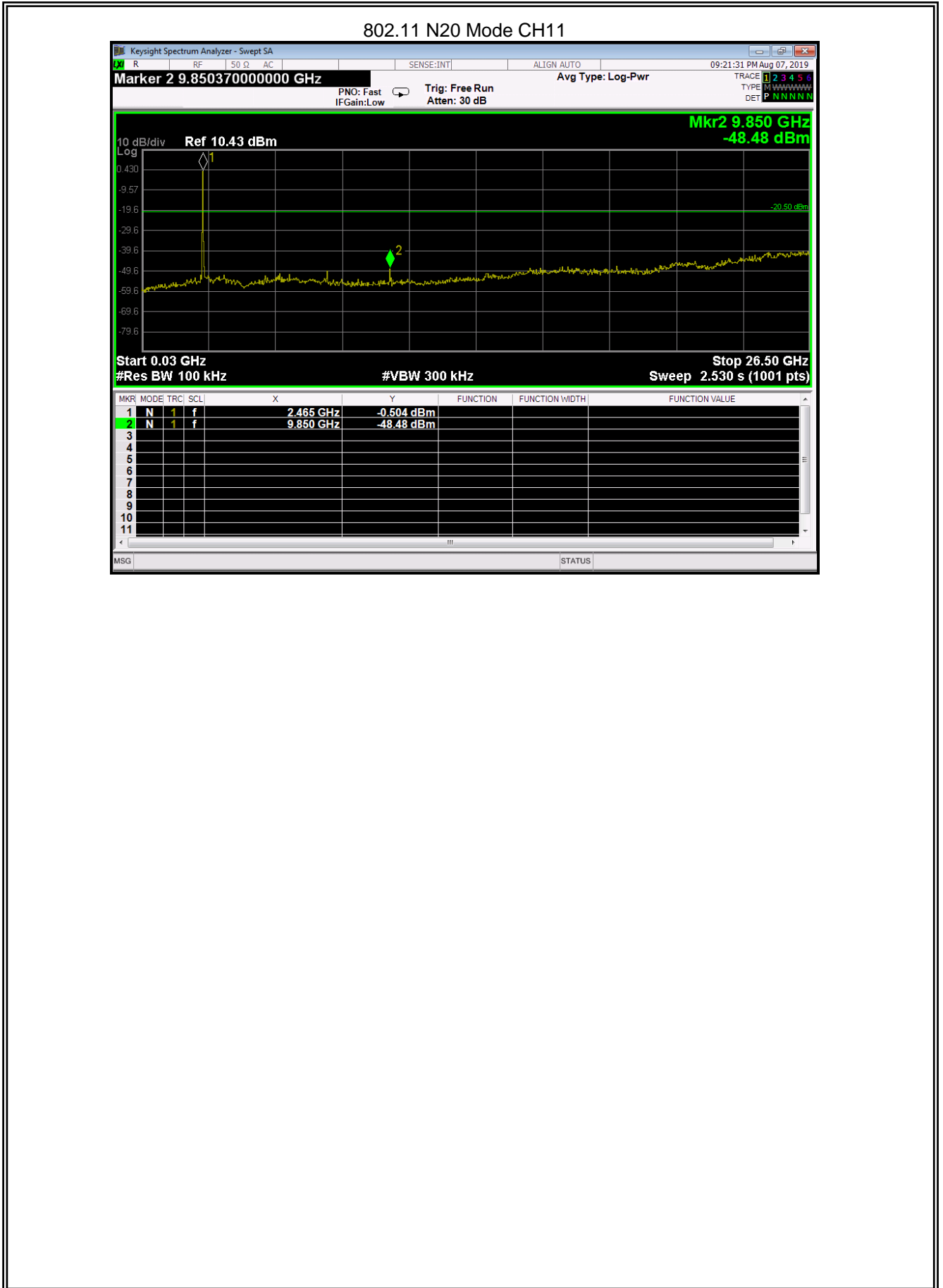


802.11 N20 Mode CH1



802.11 N20 Mode CH6



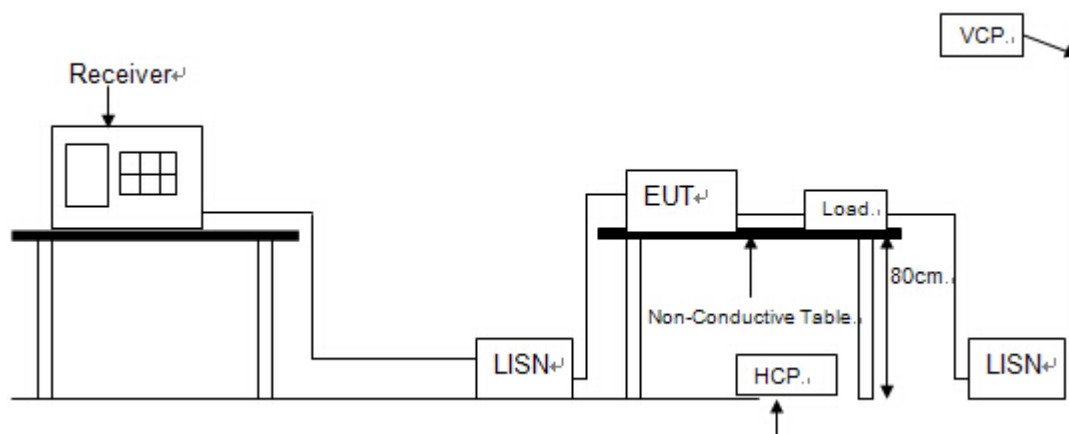


9 Power Line Conducted Emission

9.1 Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Pulse Limiter	MTS-systemtechnik	MTS-IMP-136	261115-010-0024	12/16/2019
2	EMI Test Receiver	R&S	ESCI	101308	12/16/2019
3	LISN	AFJ	LS16	16011103219	12/16/2019
4	LISN	Schwarzbeck	NSLK 8127	8127-432	12/16/2019
5	Measurement Software	Farad	EZ-EMC (Ver.ATT-03A)	N/A	N/A
6	MeasurementSoftware	Farad	EZ-EMC (Ver.ATT-03A)	N/A	N/A

9.2 Block diagram of test setup



9.3 Power Line Conducted Emission Limits(Class B)

Frequency	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Note 1: * Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.

9.4 Test Procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.4 and test equipment as described in clause 10.2 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.4 were scanned during the preliminary test.

After the preliminary scan, we found the test mode producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 KHz.

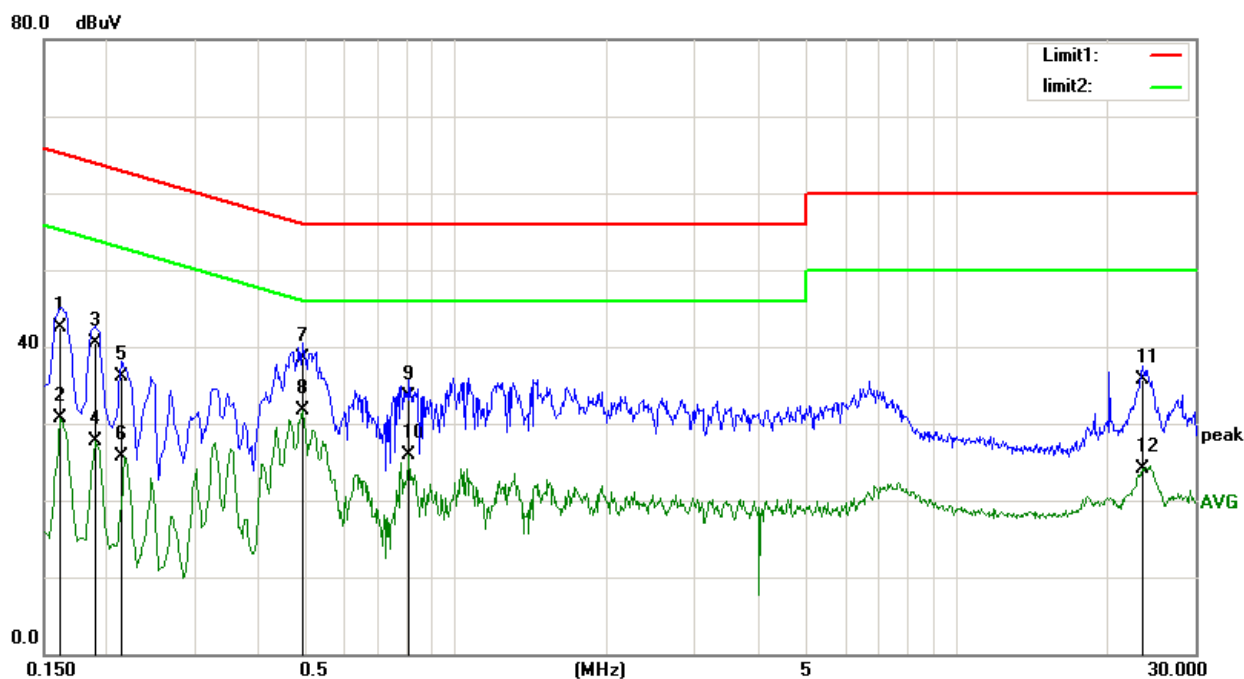
9.5 Test Result

PASS. (See below detailed test result)

Note1: All emissions not reported below are too low against the prescribed limits.

Note2: "-----" means peak detection; "-----" mans average detection

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	55%
		Test Power:	AC 120V/60Hz
Probe:	L1	Test Result:	Pass
Test Time:	2019-8-10	Test By:	
Standard:	(CE)FCC PART 15 class B_QP		
Test Mode:	TX		
Note:			

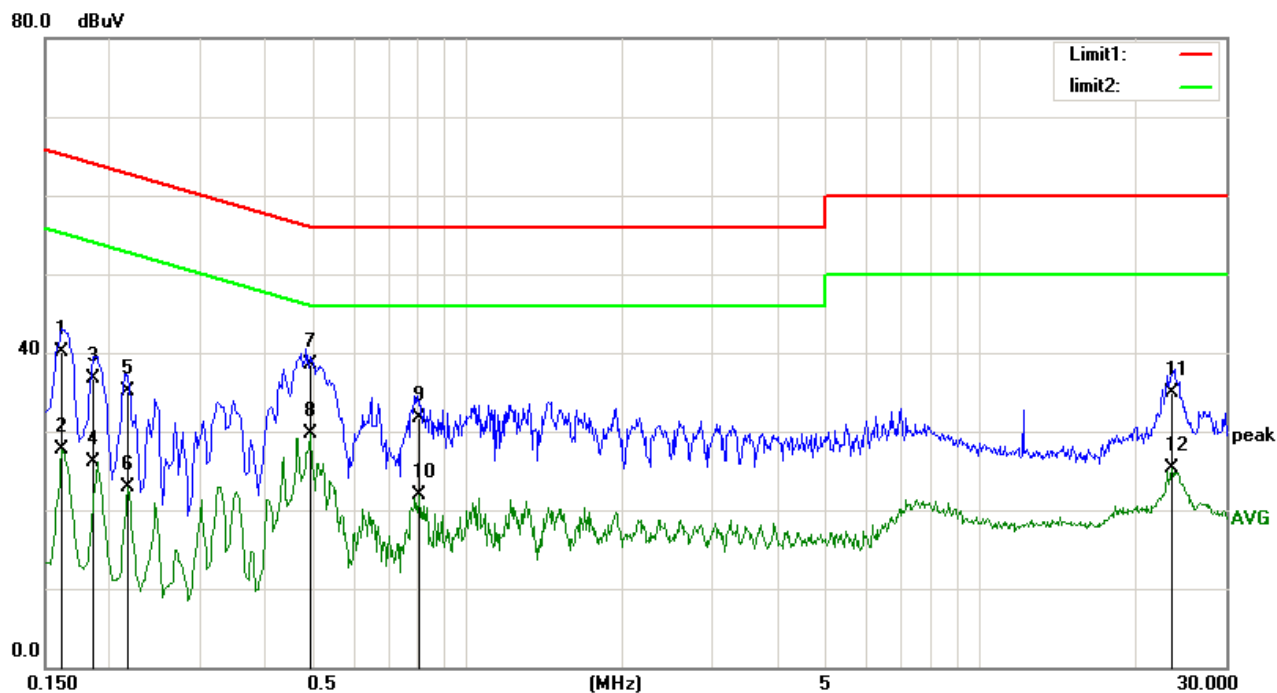


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1620	31.03	11.39	42.42	65.36	-22.94	QP
2	0.1620	19.29	11.39	30.68	55.36	-24.68	AVG
3	0.1900	29.36	11.19	40.55	64.03	-23.48	QP
4	0.1900	16.52	11.19	27.71	54.03	-26.32	AVG
5	0.2140	25.15	11.03	36.18	63.04	-26.86	QP
6	0.2140	14.59	11.03	25.62	53.04	-27.42	AVG
7	0.4940	28.41	10.19	38.60	56.10	-17.50	QP
8	0.4940	21.44	10.19	31.63	46.10	-14.47	AVG
9	0.8059	23.39	10.09	33.48	56.00	-22.52	QP
10	0.8059	15.87	10.09	25.96	46.00	-20.04	AVG
11	23.5580	25.43	10.19	35.62	60.00	-24.38	QP
12	23.5580	13.90	10.19	24.09	50.00	-25.91	AVG

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = (LISN, ISN, PLC or Current Probe) Factor + Cable Loss + Attenuator
- (3) Margin = Result - Limit

EUT:	LED SMART DESK LAMP	Model No.:	AL04-05
Temperature:	24	Relative Humidity:	55%
		Test Power:	AC 120V/60Hz
Probe:	N	Test Result:	Pass
Test Time:	2019-8-10	Test By:	
Standard:	(CE)FCC PART 15 class B_QP		
Test Mode:	TX		
Note:			



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1620	28.74	11.39	40.13	65.36	-25.23	QP
2	0.1620	16.36	11.39	27.75	55.36	-27.61	AVG
3	0.1860	25.39	11.22	36.61	64.21	-27.60	QP
4	0.1860	14.85	11.22	26.07	54.21	-28.14	AVG
5	0.2180	24.12	11.00	35.12	62.89	-27.77	QP
6	0.2180	11.94	11.00	22.94	52.89	-29.95	AVG
7	0.4940	28.36	10.19	38.55	56.10	-17.55	QP
8	0.4940	19.53	10.19	29.72	46.10	-16.38	AVG
9	0.8059	21.57	10.09	31.66	56.00	-24.34	QP
10	0.8059	11.73	10.09	21.82	46.00	-24.18	AVG
11	23.6060	24.69	10.19	34.88	60.00	-25.12	QP
12	23.6060	15.11	10.19	25.30	50.00	-24.70	AVG

The test result is calculated as the following:

- (1) Result = Reading + Correct Factor
- (2) Correct Factor = (LISN, ISN, PLC or Current Probe) Factor + Cable Loss + Attenuator
- (3) Margin = Result - Limit

10. Antenna Requirements

10.1. Limit

For intentional device, according to FCC 47 CFR 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. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

10.2. Result

The antennas used for this product are built-in undetachable dipole antenna and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is only 0.54dBi. The EUT has an internal antenna, the directional gain of antenna is 0.54 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.