

26(C) Site 966 Chamber Temperature: Polarization: Vertical

Distance: 3m

Limit: FCC 15B BOVE 1G-PK Power: AC120V/60Hz Humidity: 54 % EUT: Smart Plug

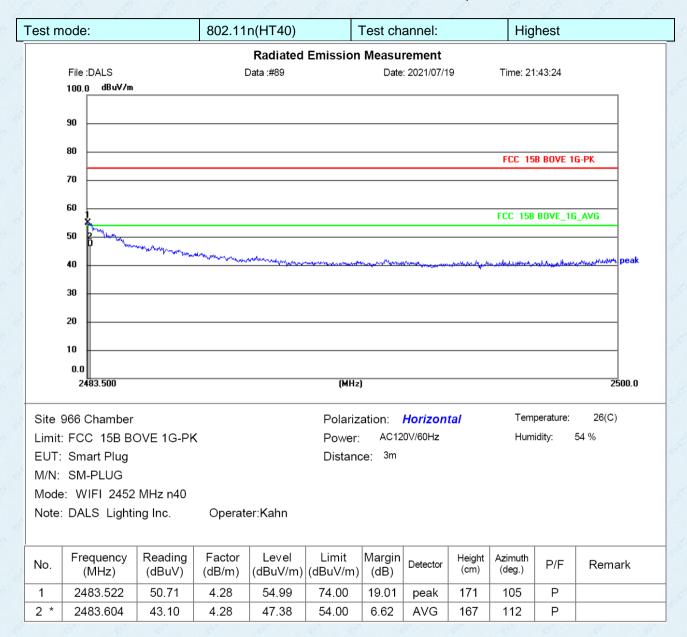
M/N: SM-PLUG

Mode: WIFI 2422 MHz n40

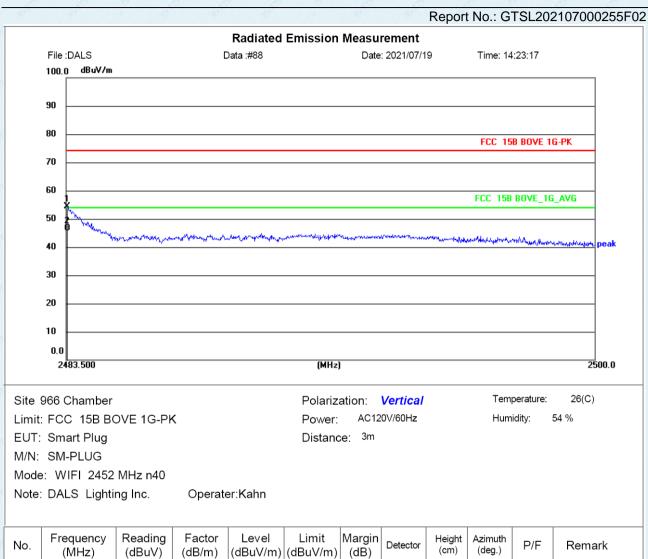
Note: DALS Lighting Inc. Operater:Kahn

0	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	2389.520	45.10	3.90	49.00	74.00	25.00	peak	152	18	Р	
3	2 *	2389.520	38.59	3.90	42.49	54.00	11.51	AVG	161	35	Р	









Re	ma	arks	

1

2 *

2483.522

2483.522

50.21

42.34

1. The tests were performed on lowest and highest frequencies.

4.28

4.28

2. Final Level =Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor

54.49

46.62

3. The emission levels of other frequencies are very lower than the limit and not show in test report.

74.00

54.00

19.51

7.38

peak

AVG

131

142

58

104

Ρ

Ρ



7.7 Spurious Emission

7.7.1 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:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane							
Test Instruments:	Refer to section 6.0 for details							
Test mode:	Refer to section 5.2 for details							
Test results:	Pass							

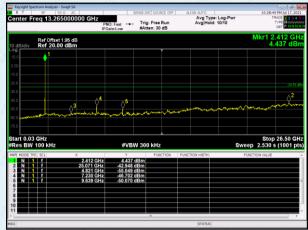


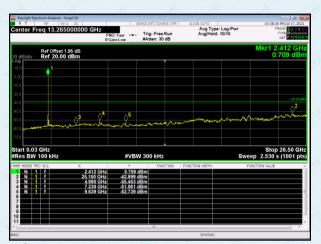
Test plot as follows:

Report No.: GTSL202107000255F02

Test mode: 802.11b Test mode: 802.11g

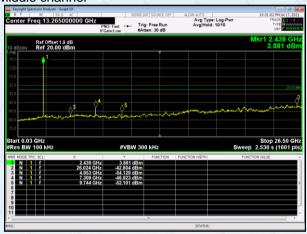
Lowest channel

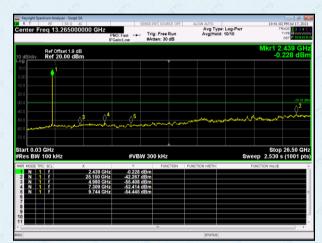




30MHz~26.5GHz

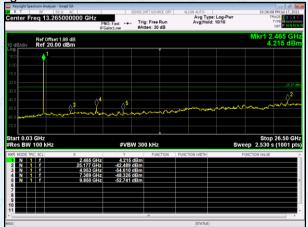
Middle channel

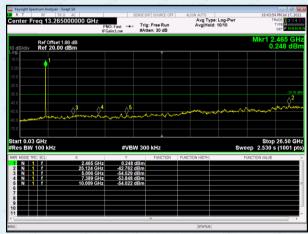




30MHz~26.5GHz

Highest channel



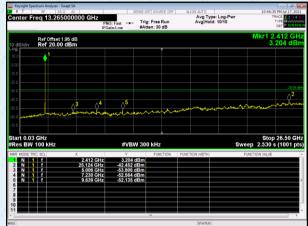


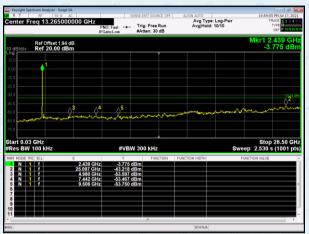
30MHz~26.5GHz



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

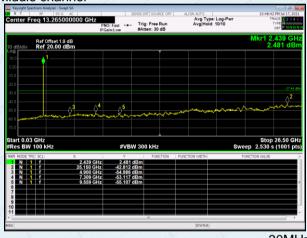
Lowest channel

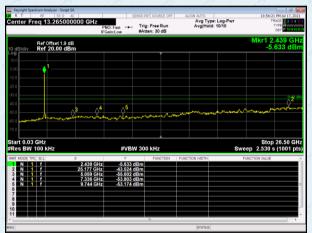




30MHz~26.5GHz

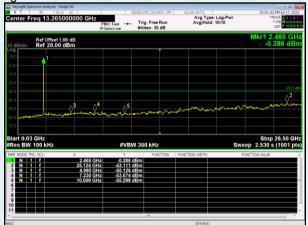
Middle channel

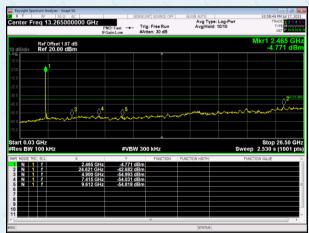




30MHz~26.5GHz

Highest channel





30MHz~26.5GHz



7.7.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 3.			ection 8	3.9			
Test Method:	ANSI C63.10: 2013	& RS	S-Gen					
Test Frequency Range:	9kHz to 26.5GHz				6	63		
Test site:	Measurement Distar	nce: 3	3m	4				
Receiver setup:	Frequency		Detector		N	VBW	Value	
	9KHz-150KHz		uasi-peak	200l	Ηz	600Hz	Quasi-peak	
	150KHz-30MHz	Qı	ıasi-peak	9KH	łz	30KHz	Quasi-peak	
	30MHz-1GHz	Qı	uasi-peak	100K	Hz	300KH	z Quasi-peak	
	Above 1GHz	.e)	Peak	1MF	Ηz	3MHz	Peak	
	Above 10112		Peak	1MF	Ηz	10Hz	Average	
Limit:	Frequency	6	Limit (u\	//m)	V	alue	Measurement Distance	
	0.009MHz-0.490M	0.009MHz-0.490MHz			(QP	300m	
	0.490MHz-1.705M	0.490MHz-1.705MHz			QP		300m	
	1.705MHz-30MH	30		QP		30m		
	30MHz-88MHz	6	100		QP			
	88MHz-216MHz	Z	150		QP			
	216MHz-960MH		200			QP	3m	
	960MHz-1GHz	0	500			QP	ge ge	
	Above 1GHz		500		Average			
	47	- 4	5000	Р	eak	8 8		
Test setup: For radiated emissions from 9kHz to 30MHz Tum Table Tum Table								
	For radiated emiss	sions	from 30M	Recei		z		



Report No.: GTSL202107000255F02 Test Antenna < 1m ... 4m EUT. Turn Table Turn Table < 80cm Preamplifier. For radiated emissions above 1GHz Test Antenna+ < 1m ... 4m > FUT. Tum Table <150cm Receiver+ Preamplifier-Test Procedure: 1. The EUT was placed on the top of a rotating table (0.8m for below 1G and 1.5m for above 1G) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. Test Instruments: Refer to section 6.0 for details Test mode: Refer to section 5.2 for details



				Report No.: 0	STSL2021070	000255F02
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar
Test voltage:	AC 120V,	60Hz				8 - 8
Test results:	Pass	10 10	je -	8 8	100	9 /9

Remarks:

- 1. Only the worst case Main Antenna test data.
- 2. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

Measurement data:

■ 9kHz~30MHz

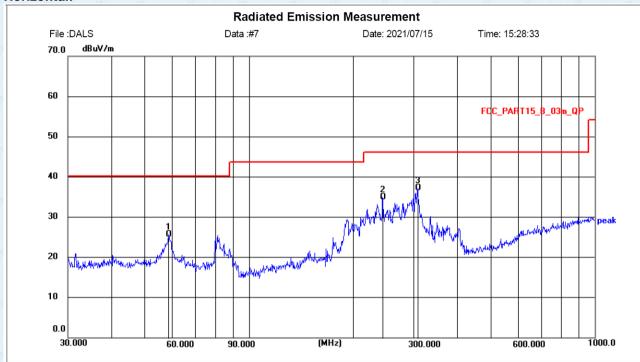
The emission from 9 kHz-30MHz and 18-26.5GHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.



■ Below 1GHz

Pre-scan all test modes, found worst case at 802.11b 2412MHz, and so only show the test result of 802.11b 2412MHz

Horizontal:



Site 966 Chamber

Limit: FCC_PART15_B_03m_QP

EUT: Smart Plug

M/N: SM-PLUG Mode: WIFI 2412MHz

Note: DALS Lighting Inc. Operater:Kahn

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	58.6126	11.41	14.29	25.70	40.00	14.30	QP	146	138	Р	
2	243.3772	21.43	13.41	34.84	46.00	11.16	QP	219	27	Р	
3 *	307.8313	22.19	14.96	37.15	46.00	8.85	QP	104	156	Р	

Power:

Distance: 3m

Polarization: Horizontal

AC120V/60Hz

Remark:

- 1 Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2 The emission levels of other frequencies are very lower than the limit and not show in test report.

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

Temperature:

Humidity:

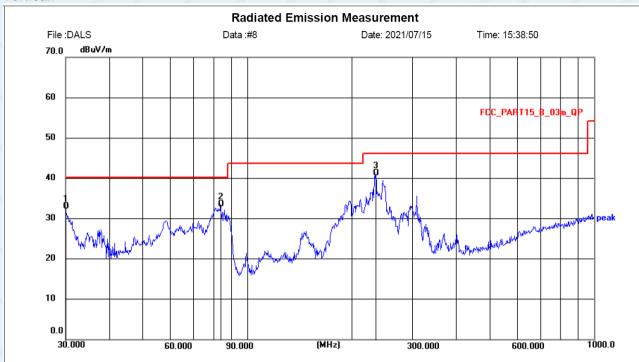
26(C)

54 %

GTS

Report No.: GTSL202107000255F02

Vertical:



Site 966 Chamber

Limit: FCC_PART15_B_03m_QP

EUT: Smart Plug

M/N: SM-PLUG

Mode: WIFI 2412MHz

Note: DALS Lighting Inc. Operater:Kahn

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	30.0000	18.53	14.40	32.93	40.00	7.07	QP	115	131	Р	
2	83.8156	22.55	11.01	33.56	40.00	6.44	QP	154	129	Р	
3 *	234.9909	28.10	13.15	41.25	46.00	4.75	QP	204	278	Р	

Polarization:

Distance: 3m

Power:

Vertical

AC120V/60Hz

Remark:

- 1 Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2 The emission levels of other frequencies are very lower than the limit and not show in test report.

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

26(C)

54 %

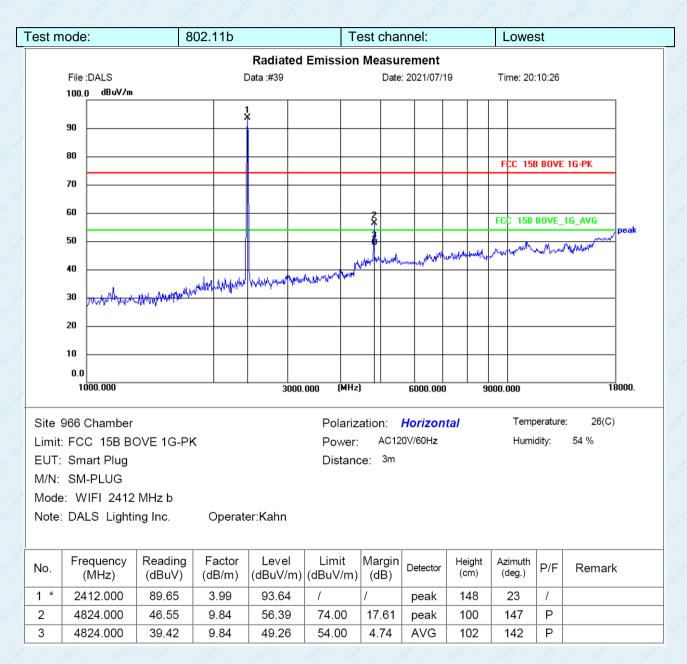
Temperature:

Humidity:



■ Above 1GHz

Pre-scan all test modes, found worst case at 802.11b, and so only show the test result of 802.11b.



Remark:

- 1 Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2 The emission levels of other frequencies are very lower than the limit and not show in test report.



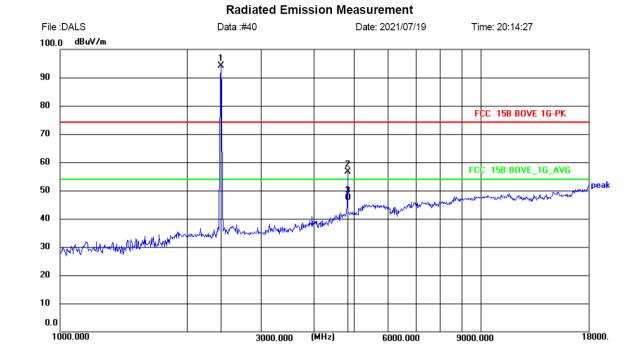
Temperature:

Humidity:

26(C)

54 %





Site 966 Chamber

Limit: FCC 15B BOVE 1G-PK

EUT: Smart Plug

M/N: SM-PLUG

Mode: WIFI 2412 MHz b

Note: DALS Lighting Inc. Operater:Kahn

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 *	2412.000	90.05	3.99	94.04	/	/	peak	148	59	/	
2	4824.000	46.87	9.84	56.71	74.00	17.29	peak	105	149	Р	
3	4825.000	37.56	9.84	47.40	54.00	6.60	AVG	110	235	Р	

Polarization:

Distance: 3m

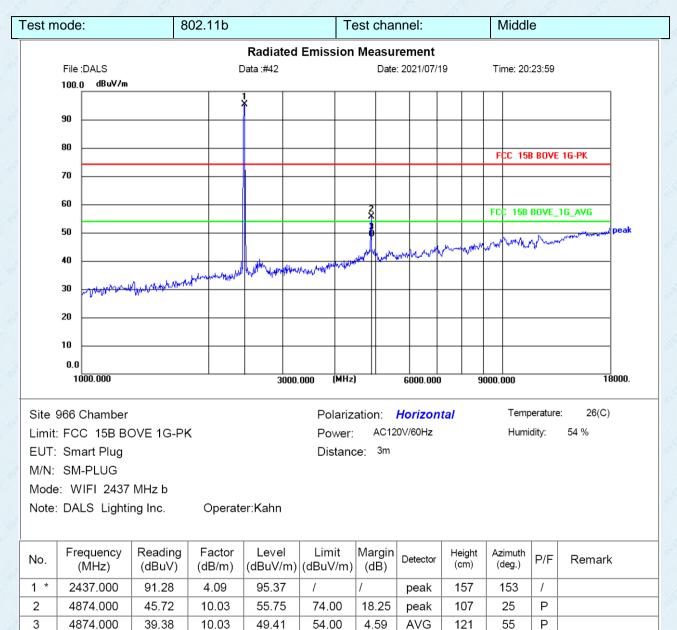
Power:

Vertical

AC120V/60Hz

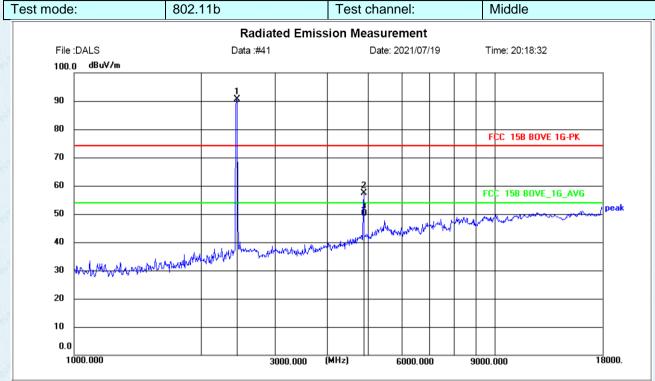
- 1 Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2 The emission levels of other frequencies are very lower than the limit and not show in test report.





- 1 Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2 The emission levels of other frequencies are very lower than the limit and not show in test report.





Site 966 Chamber

Limit: FCC 15B BOVE 1G-PK

EUT: Smart Plug

M/N: SM-PLUG

Mode: WIFI 2437 MHz b

Note: DALS Lighting Inc. Operater:Kahn

1											
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 *	2437.000	86.52	4.09	90.61	/	1	peak	156	243	/	
2	4874.000	47.41	10.03	57.44	74.00	16.56	peak	113	25	Р	
3	4876.000	40.05	10.05	50.10	54.00	3.90	AVG	107	129	Р	

Polarization:

Distance: 3m

Power:

Vertical

AC120V/60Hz

Temperature:

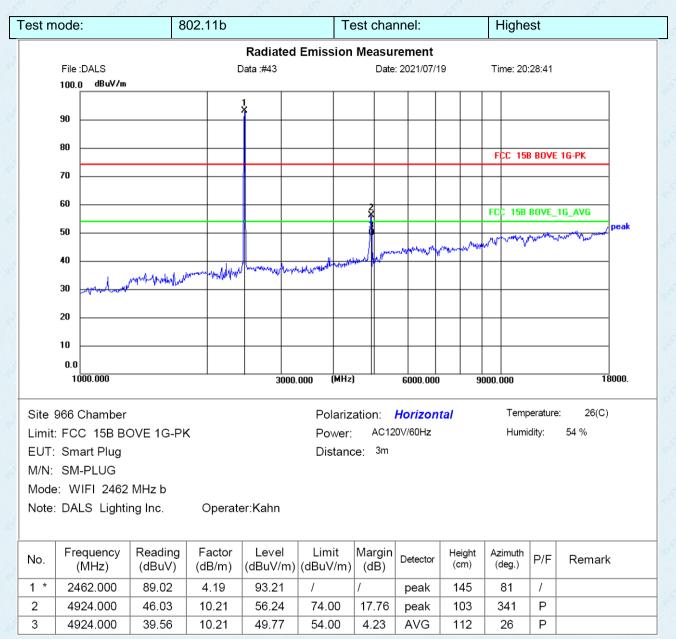
Humidity:

26(C)

54 %

- 1 Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2 The emission levels of other frequencies are very lower than the limit and not show in test report.





- 1 Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2 The emission levels of other frequencies are very lower than the limit and not show in test report.



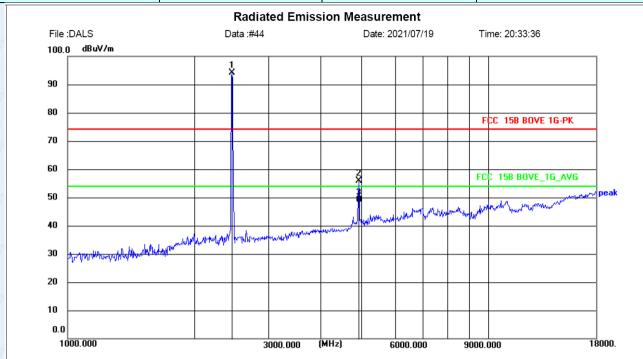
Temperature:

Humidity:

26(C)

54 %





Site 966 Chamber

Limit: FCC 15B BOVE 1G-PK

EUT: Smart Plug

M/N: SM-PLUG

Mode: WIFI 2462 MHz b

Note: DALS Lighting Inc. Operater:Kahn

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 *	2462.000	89.83	4.19	94.02	1	/	peak	175	134	/	
2	4924.000	45.62	10.21	55.83	74.00	18.17	peak	128	42	Р	
3	4924.000	38.95	10.21	49.16	54.00	4.84	AVG	136	257	Р	

Polarization:

Distance: 3m

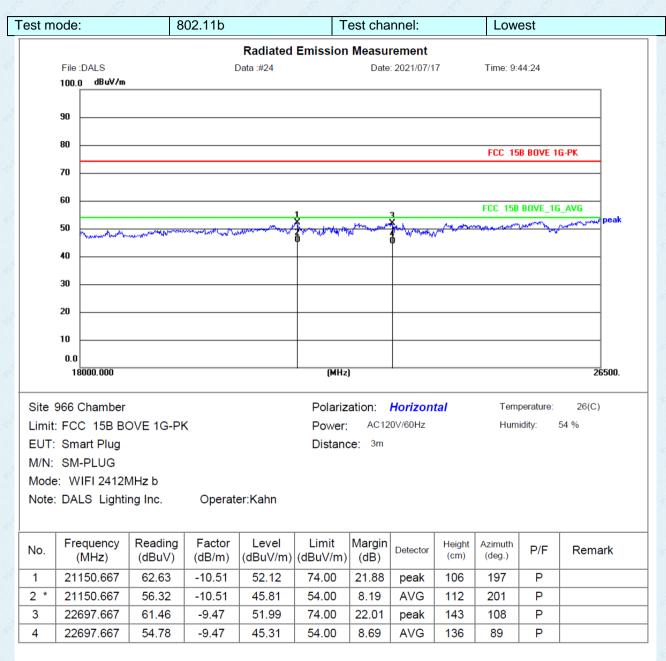
Power:

n: Vertical AC120V/60Hz

- 1 Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2 The emission levels of other frequencies are very lower than the limit and not show in test report.

GTS

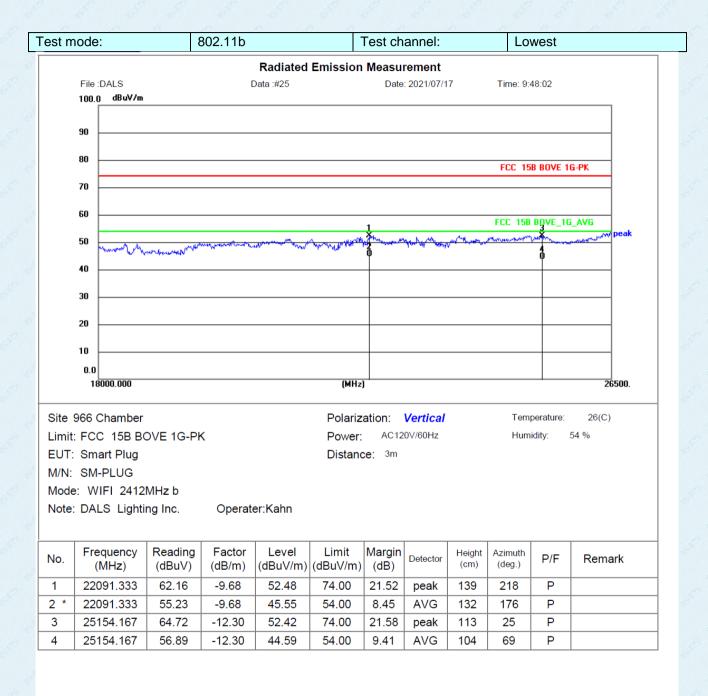
Report No.: GTSL202107000255F02



- 1 Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2 The emission levels of other frequencies are very lower than the limit and not show in test report.

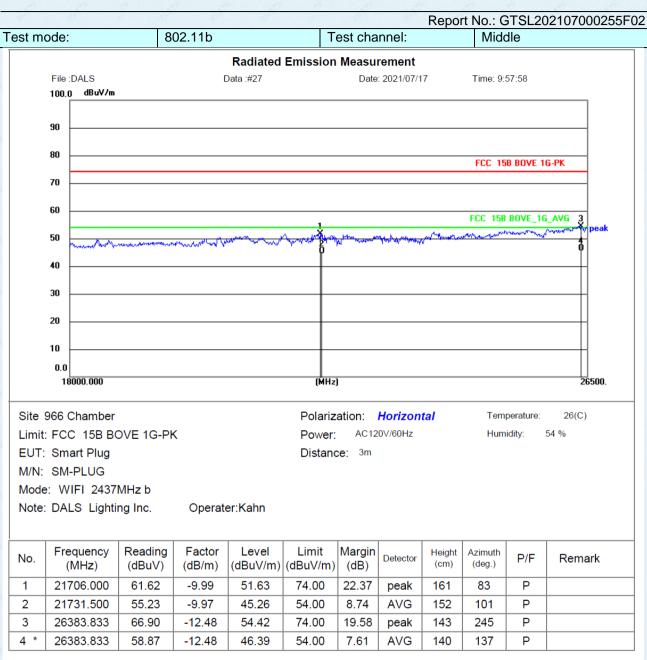
GTS

Report No.: GTSL202107000255F02



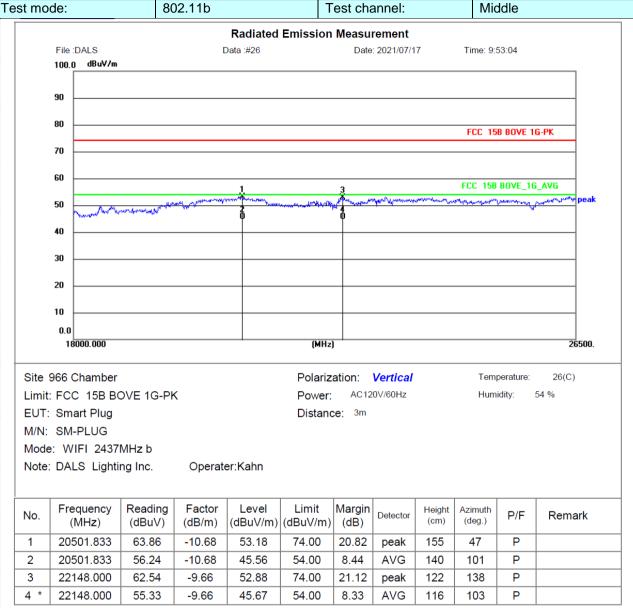
- 1 Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2 The emission levels of other frequencies are very lower than the limit and not show in test report.





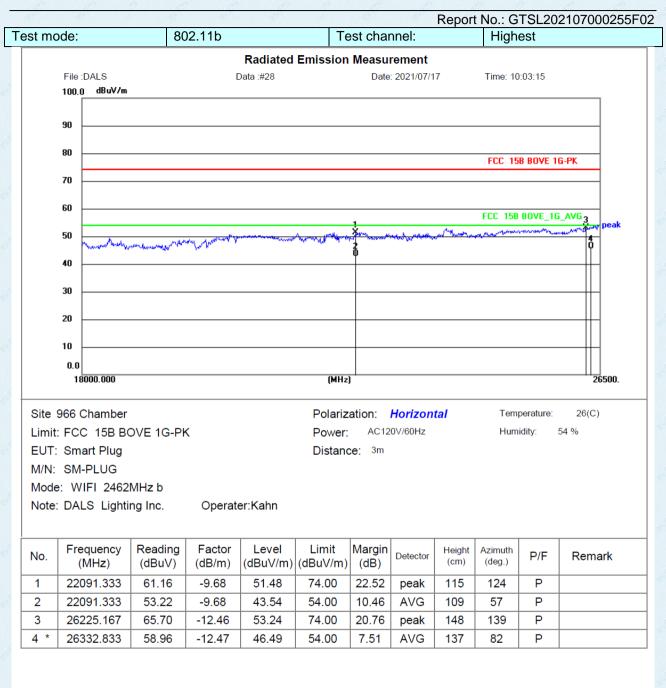
- 1 Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2 The emission levels of other frequencies are very lower than the limit and not show in test report.





- 1 Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2 The emission levels of other frequencies are very lower than the limit and not show in test report.

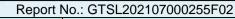




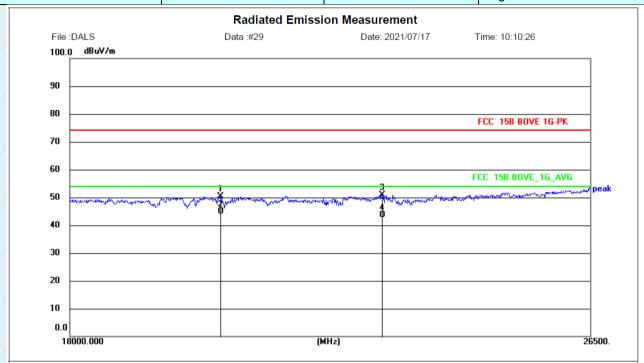
Remark:

- 1 Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2 The emission levels of other frequencies are very lower than the limit and not show in test report.





Test mode: 802.11b Test channel: Highest



Site 966 Chamber Polarization: Vertical Temperature: 26(C)

Limit: FCC 15B BOVE 1G-PK Power: AC120V/60Hz Humidity: 54 %

EUT: Smart Plug Distance: 3m

M/N: SM-PLUG

Mode: WIFI 2462MHz b

Note: DALS Lighting Inc. Operater:Kahn

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	l	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	20142.000	61.19	-10.70	50.49	74.00	23.51	peak	106	21	Р	
2 *	20142.000	55.68	-10.70	44.98	54.00	9.02	AVG	114	103	Р	
3	22697.667	60.46	-9.47	50.99	74.00	23.01	peak	145	114	Р	
4	22697.667	53.21	-9.47	43.74	54.00	10.26	AVG	137	62	Р	

Remark:

- 1 Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2 The emission levels of other frequencies are very lower than the limit and not show in test report.



7.8 Frequency stability

Test Requirement:	RSS-Gen Section 6.11& Section 8.11
Test Method:	ANSI C63.10: 2013 & RSS-Gen
Limit:	Manufactures of devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified
Test Procedure:	The EUT was setup to ANSI C63.10, 2013; tested to 2.1055 for compliance to RSS-Gen requirements.
Test setup:	Spectrum analyzer EUT Variable Power Supply Note: Measurement setup for testing on Antenna connector
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass Pass Pass Pass Pass Pass Pass Pass

Remark: Set the EUT transmits at un-modulation mode to test frequency stability.



Measurement data:

Report No.: GTSL202107000255F02

		Frequenc	cy stability vers	sus Temp.					
Power Supply: AC 120V/60Hz									
25	Operation	0 minute	2 minute	5 minute	10 minute	28			
Temp.	Operating	Measured	Measured	Measured	Measured	Pass			
(°C)	Frequency	Frequency	Frequency	Frequency	Frequency	/Fail			
	(MHz)	(MHz)	(MHz)	(MHz)	(MHz)				
-30	2412	2411.999	2412.000	2412.000	2412.000	Pass			
	2422	2422.001	2422.000	2422.000	2422.001	Pass			
	2437	2436.997	2436.998	2436.999	2436.999	Pass			
	2452	2452.000	2452.000	2452.000	2452.001	Pass			
	2462	2462.000	2462.001	2462.000	2462.000	Pass			
-20	2412	2411.998	2412.001	2412.001	2412.000	Pass			
	2422	2422.000	2422.001	2422.000	2422.000	Pass			
	2437	2436.998	2436.999	2436.999	2436.999	Pass			
	2452	2452.000	2452.000	2452.000	2452.001	Pass			
	2462	2462.001	2462.001	2462.000	2462.000	Pass			
	2412	2412.000	2411.999	2412.000	2412.000	Pass			
	2422	2422.000	2422.001	2422.000	2422.000	Pass			
-10	2437	2436.999	2436.998	2436.998	2437.000	Pass			
.0	2452	2452.001	2452.000	2452.001	2452.001	Pass			
	2462	2462.000	2462.000	2462.001	2462.000	Pass			
<u> </u>	2412	2412.000	2411.999	2412.000	2412.000	Pass			
0	2400	2422.000	2422.001	2422.000	2422.000	Pass			
	2437	2436.999	2436.998	2436.998	2437.000	Pass			
	2452	2452.001	2452.000	2452.001	2452.001	Pass			
	2462	2462.000	2462.000	2462.001	2462.000	Pass			
10	2412	2412.000	2411.999	2412.000	2412.000	Pass			
	2422	2422.000	2422.001	2422.000	2422.000	Pass			
	2437	2436.999	2436.998	2436.998	2437.000	Pass			
10	2452	2452.001	2452.000	2452.001	2452.001	Pass			
	2462	2462.000	2462.000	2462.001	2462.000	Pass			
	2412	2411.999	2412.000	2412.000	2412.000	Pass			
	2400	2422.001	2422.000	2422.000	2422.001	Pass			
20	2437	2436.997	2436.998	2436.999	2436.999	Pass			
		2452.000			2450.999				
	2452		2452.000	2452.000		Pass			
	2462 2412	2462.000 2412.000	2462.001 2411.999	2462.000 2412.000	2462.000 2412.000	Pass			
30				The second secon		Pass			
	2422	2422.000	2422.001	2422.000	2422.000	Pass			
	2437	2436.999	2436.998	2436.998	2437.000	Pass			
	2452	2452.001	2452.000	2452.001	2452.001	Pass			
	2462	2462.000	2462.000	2462.001	2462.000	Pass			
	2412	2411.998	2412.001	2412.001	2412.000	Pass			
40	2422	2422.000	2422.001	2422.000	2422.000	Pass			
	2437	2436.998	2436.999	2436.999	2436.999	Pass			
	2452	2452.000	2452.000	2452.000	2452.001	Pass			
50	2462	2462.001	2462.001	2462.000	2462.000	Pass			
	2412	2411.999	2412.000	2412.000	2412.000	Pass			
	2422	2422.001	2422.000	2422.000	2422.001	Pass			
	2437	2436.997	2436.998	2436.999	2436.999	Pass			
	2452	2452.000	2452.000	2452.000	2452.001	Pass			
	2462	2462.000	2462.001	2462.000	2462.000	Pass			



	Frequency stability versus Voltage											
Temperature: 25°C												
Power Supply	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute	Pass						
		Measured	Measured	Measured	Measured							
		Frequency	Frequency	Frequency	Frequency	/Fail						
		(MHz)	(MHz)	(MHz)	(MHz)	0 0						
AC 120V/60Hz	2412	2412.000	2411.999	2412.001	2412.000	Pass						
	2422	2422.000	2422.001	2422.000	2422.000	Pass						
	2437	2437.000	2436.999	2436.998	2437.000	Pass						
	2452	2452.001	2452.000	2452.001	2452.001	Pass						
	2462	2462.001	2462.001	2462.000	2462.000	Pass						



8 Test Setup Photo

Reference to the appendix I for details.

9 EUT Constructional Details

Reference to the appendix II for details.

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