

FCC Test Report

Product Name	In Wall Smart Dimmer
Model No.	PAD07
FCC ID.	RHHPAD07

Applicant	Philio Technology Corporation
Address	8F.,No.653-2,Zhongzheng Rd., Xinzhuang Dist., New Taipei City 24257,Taiwan(R.O.C)

Date of Receipt	Mar. 04, 2017
Issued Date	Apr. 19, 2017
Report No.	1730090R-RFUSP15V00
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

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Test Report

Issued Date: Apr. 19, 2017

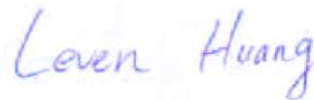
Report No. : 1730090R-RFUSP15V00



Product Name	In Wall Smart Dimmer
Applicant	Philio Technology Corporation
Address	8F.,No.653-2,Zhongzheng Rd., Xinzhuang Dist., New Taipei City 24257,Taiwan(R.O.C)
Manufacturer	Philio Technology Corporation
Model No.	PAD07
FCC ID.	RHHPAD07
EUT Rated Voltage	AC 100-240V, 50-60Hz
EUT Test Voltage	AC 120V/60Hz
Trade Name	
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2015 ANSI C63.4: 2014, ANSI C63.10: 2013
Test Result	Complied

Documented By

:



(Senior Adm. Specialist / Leven Huang)

Tested By

:



(Engineer / Vic Chen)

Approved By

:



(Director / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	In Wall Smart Dimmer
Trade Name	
Model No.	PAD07
FCC ID.	RHHPAD07
Frequency Range	908.4MHz,916MHz
Number of Channels	2
Channel Control	Auto
Antenna Type	Monopole Antenna
Type of Modulation	FSK

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	Philio	ANT-001	Monopole Antenna	0dBi for 908-916MHz

Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency
Channel 1:	908.4MHz	Channel 2:	916MHz

Note:

1. The EUT is an In Wall Smart Dimmer with a built-in Z-Wave transceiver module.
2. These tests are conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.249.
3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
4. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test Mode	Mode 1: Transmit
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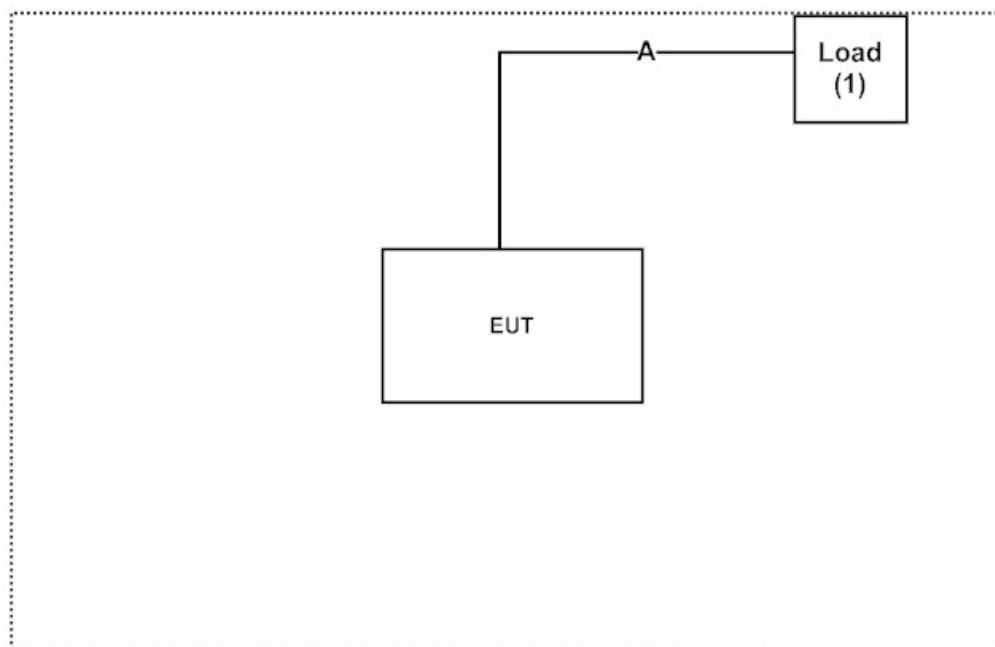
1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	Power Cord
1. Load	N/A	10702FK0425	N/A	N/A

Signal Cable Type	Signal cable Description
A. Power Line Cable	Non-Shielded, 1m, two PCS.

1.4. Configuration of Test System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown in section 1.4.
- (2) Provide the AC Power Source.
- (3) Starts the continuous transmit.
- (4) Verify that the EUT works correctly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site:

<http://www.dekra.com.tw/english/about/certificates.aspx?bval=5>

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: http://www.dekra.com.tw/index_en.aspx

Site Description: Accredited by TAF
Accredited Number: 3023

Site Name: DEKRA Testing and Certification Co., Ltd
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Taiwan, R.O.C.
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E-Mail : info.tw@dekra.com

FCC Accreditation Number: TW1014

1.7. List of Test Equipment

For Conducted measurements /CB3/SR8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
	Temperature Chamber	WIT GROUP	TH-1S-B	EQ-201-00146	2016/11/28	2017/11/27
X	Spectrum Analyzer	Agilent	N9010A	MY48030495	2016/7/22	2017/7/21
X	Power Meter	Anritsu	ML2495A	6K00003357	2016/6/23	2017/6/22
X	Pulse power sensor	Anritsu	MA2411B	0846193	2016/6/23	2017/6/22
X	EMI Test Receiver	R&S	ESCS 30	100369	2016/10/13	2017/10/12
X	LISN	R&S	ESH3-Z5	836679/017	2017/1/7	2018/1/6
X	LISN	R&S	ENV216	100097	2017/1/7	2018/1/6
X	Coaxial Cable	QTK(Arnist)	RG 400	LC018-RG	2016/6/25	2017/6/24

For Radiated measurements /Site3/CB8

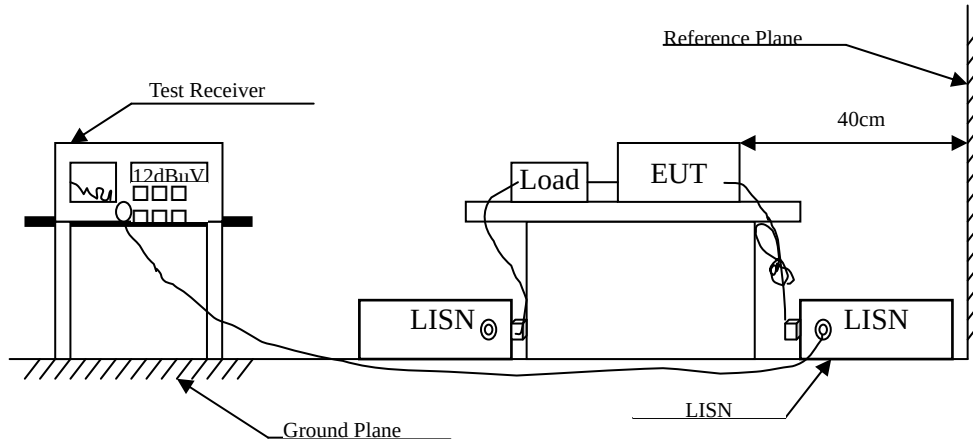
	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	Spectrum Analyzer	R&S	FSP40	100170	2017/1/5	2018/1/4
	Loop Antenna	Teseq	HLA6121	37133	2017/3/18	2018/3/17
X	Bi-Log Antenna	Schaffner Chase	CBL6112B	2707	2016/6/11	2017/6/10
X	<u>Horn Antenna</u>	ETS-Lindgren	3117	00135205	2017/4/6	2018/4/5
	<u>Horn Antenna</u>	Schwarzbeck	BBHA9170	9170430	2017/1/11	2018/1/10
X	<u>Pre-Amplifier</u>	QTK	AP/0100A	CHM/0901069	2016/6/23	2017/6/22
X	<u>Pre-Amplifier</u>	EMCI	EMC012630SE	980210	2017/1/26	2018/1/24
	<u>Pre-Amplifier</u>	NARDA WE	DBL-1840N506	013	2016/9/30	2017/9/29
X	Filter	MicroTRON	BRM50701	019	2016/11/2	2017/11/1
	Filter	Microwave Circuits	N0257881	36681	2016/12/7	2017/12/6
X	EMI Test Receiver	R&S	ESR26	101385	2016/9/29	2017/9/28
X	Coaxial Cable	QTK(Arnist)	SUCOFLEX 106	L1606-015C	2016/6/23	2017/6/22
X	EMI Test Receiver	R&S	ESCS 30	838251/001	2016/7/21	2017/7/20
X	Coaxial Cable	QTK(Arnist)	RG 214	LC003-RG	2016/6/16	2017/6/15
X	Coaxial signal switch	Anritsu	MP59B	6201415889	2016/6/16	2017/6/15

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with "X" are used to measure the final test results.
3. Test Software version :Quietek EMI 2.0 V2.1.113.

2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

2.3. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

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 C63.4: 2014 on conducted measurement.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.4. Uncertainty

± 2.26 dB

2.5. Test Result of Conducted Emission

Product : In Wall Smart Dimmer
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Date : 2017/03/24
 Test Mode : Mode 1: Transmit

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
Line 1					
Quasi-Peak					
0.193	9.766	37.190	46.956	-17.815	64.771
0.263	9.753	35.480	45.233	-17.538	62.771
0.443	9.724	29.910	39.634	-17.995	57.629
1.076	9.734	21.480	31.214	-24.786	56.000
3.880	9.805	13.970	23.775	-32.225	56.000
9.826	9.874	11.050	20.924	-39.076	60.000
Average					
0.193	9.766	35.370	45.136	-9.635	54.771
0.263	9.753	30.960	40.713	-12.058	52.771
0.443	9.724	24.910	34.634	-12.995	47.629
1.076	9.734	17.640	27.374	-18.626	46.000
3.880	9.805	9.900	19.705	-26.295	46.000
9.826	9.874	7.240	17.114	-32.886	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : In Wall Smart Dimmer
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Date : 2017/03/24
 Test Mode : Mode 1: Transmit

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV	dB	dBuV
Line 2					
Quasi-Peak					
0.197	9.739	37.870	47.609	-17.048	64.657
0.330	9.750	34.790	44.540	-16.317	60.857
0.560	9.782	25.580	35.361	-20.639	56.000
1.076	9.854	24.130	33.984	-22.016	56.000
4.630	9.893	16.060	25.953	-30.047	56.000
11.861	9.978	12.030	22.008	-37.992	60.000
Average					
0.197	9.739	34.040	43.779	-10.878	54.657
0.330	9.750	29.430	39.180	-11.677	50.857
0.560	9.782	19.290	29.071	-16.929	46.000
1.076	9.854	19.920	29.774	-16.226	46.000
4.630	9.893	10.040	19.933	-26.067	46.000
11.861	9.978	6.690	16.668	-33.332	50.000

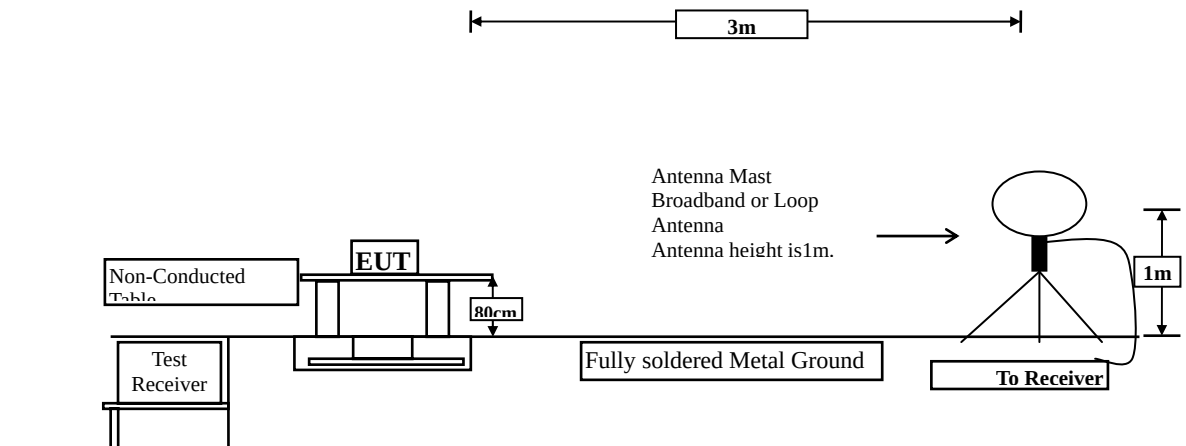
Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

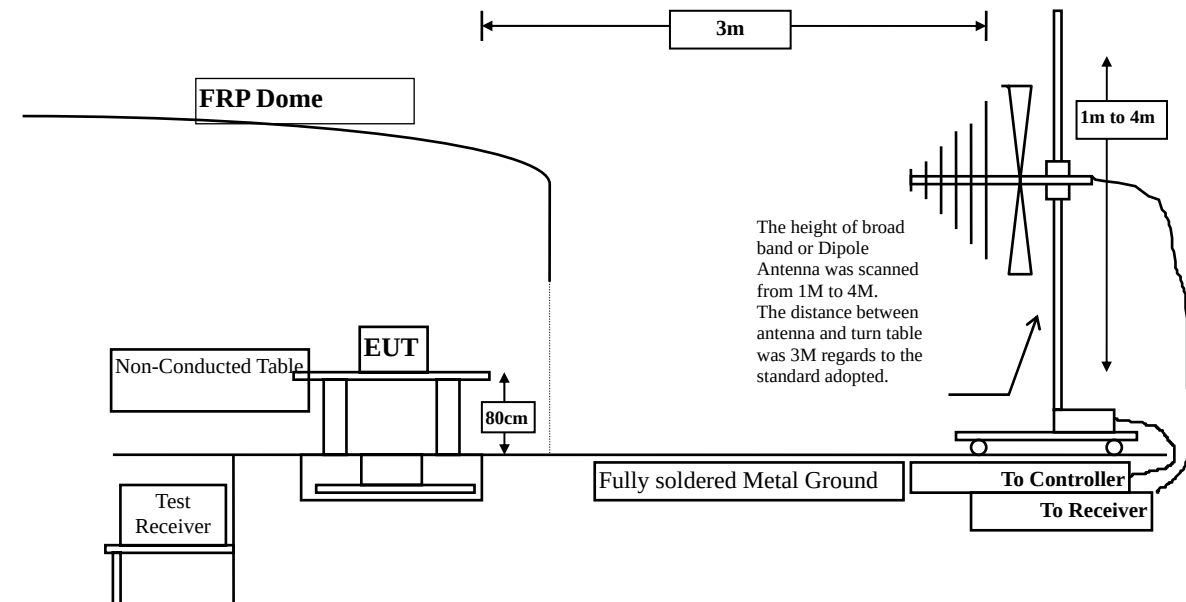
3. Radiated Emission

3.1. Test Setup

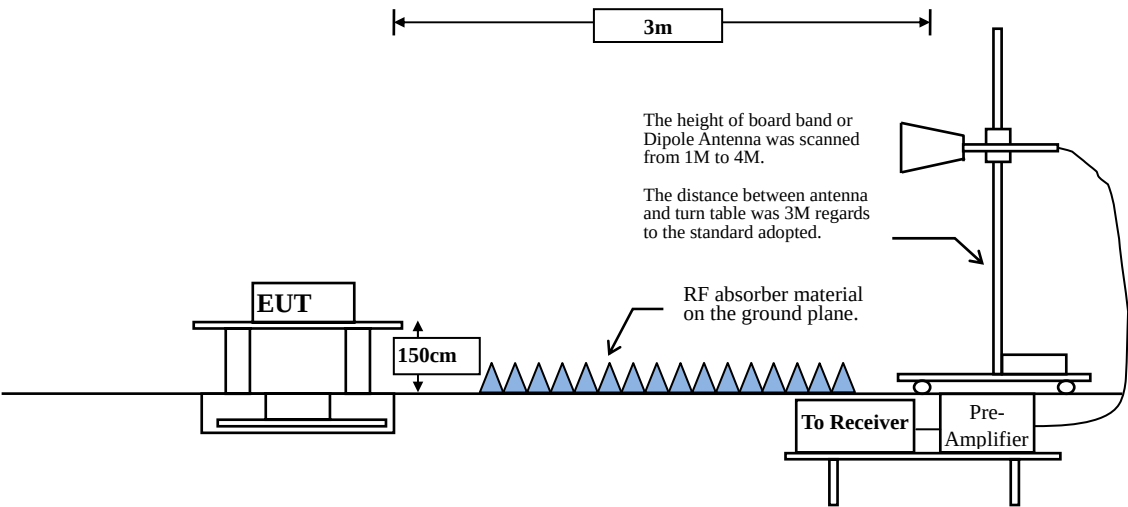
Under 30MHz



Below 1GHz



Above 1GHz



3.2. Limits

➤ Fundamental and Harmonics Emission Limits

FCC Part 15 Subpart C Paragraph 15.249 Limits				
Frequency MHz	Field Strength of Fundamental		Field Strength of Harmonics	
	(mV/m @3m)	(dBuV/m @3m)	(uV/m @3m)	(dBuV/m @3m)
902-928	50	94	500	54
2400-2483.5	50	94	500	54
5725-5875	50	94	500	54

Remarks : 1. RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)
 2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

➤ General Radiated Emission Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks : 1. RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)
 2. In the Above Table, the tighter limit applies at the band edges.
 3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested compliance to FCC 47CFR 15.249 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground, when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.

The measurement frequency range from 9kHz - 10th Harmonic of fundamental was investigated.

3.4. Uncertainty

± 4.08 dB above 1GHz

± 4.22 dB below 1GHz

3.5. Test Result of Radiated Emission

Product : In Wall Smart Dimmer
 Test Item : Fundamental Radiated Emission
 Test Site : No.3OATS
 Test Date : 2017/04/11
 Test Mode : Mode 1: Transmit (X-asix)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
908.400	4.762	88.200	92.962	-1.038	94.000
916.000	4.900	86.900	91.800	-2.200	94.000
Vertical					
908.400	4.762	82.800	87.562	-6.438	94.000
916.000	4.900	83.000	87.900	-6.100	94.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna Factor + Cable Loss – PreAMP.

Product : In Wall Smart Dimmer
 Test Item : Fundamental Radiated Emission
 Test Site : No.3OATS
 Test Date : 2017/04/11
 Test Mode : Mode 1: Transmit (Y-asix)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
908.400	4.762	86.900	91.662	-2.338	94.000
916.000	4.900	87.000	91.900	-2.100	94.000
Vertical					
908.400	4.762	84.900	89.662	-4.338	94.000
916.000	4.900	84.200	89.100	-4.900	94.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna Factor + Cable Loss – PreAMP.

Product : In Wall Smart Dimmer
 Test Item : Fundamental Radiated Emission
 Test Site : No.3OATS
 Test Date : 2017/04/11
 Test Mode : Mode 1: Transmit (Z-axis)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
908.400	4.762	86.800	91.562	-2.438	94.000
916.000	4.900	86.200	91.100	-2.900	94.000
Vertical					
908.400	4.762	86.400	91.162	-2.838	94.000
916.000	4.900	86.600	91.500	-2.500	94.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna Factor + Cable Loss – PreAMP.

Product : In Wall Smart Dimmer
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Date : 2017/03/24
 Test Mode : Mode 1: Transmit (908.4MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
1816.800	-0.546	43.120	42.575	-31.425	74.000
2725.200	-2.123	41.440	39.317	-34.683	74.000
3633.600	-1.291	42.600	41.309	-32.691	74.000
4542.000	0.732	41.000	41.731	-32.269	74.000
5450.400	3.621	41.040	44.661	-29.339	74.000
6358.800	5.741	39.970	45.711	-28.289	74.000
7267.200	9.268	39.740	49.009	-24.991	74.000
8175.600	10.122	41.430	51.552	-22.448	74.000
9084.000	11.666	39.112	50.778	-23.222	74.000

Average Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : In Wall Smart Dimmer
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Date : 2017/03/24
 Test Mode : Mode 1: Transmit (908.4MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Vertical					
Peak Detector:					
1816.800	0.256	42.760	43.017	-30.983	74.000
2725.200	-2.972	40.840	37.868	-36.132	74.000
3633.600	-1.186	42.760	41.574	-32.426	74.000
4542.000	2.357	40.490	42.846	-31.154	74.000
5450.400	3.829	40.140	43.969	-30.031	74.000
6358.800	5.583	40.370	45.953	-28.047	74.000
7267.200	9.789	39.680	49.469	-24.531	74.000
8175.600	11.090	38.730	49.820	-24.180	74.000
9084.000	11.885	36.350	48.235	-25.765	74.000

Average Detector:

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
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Product : In Wall Smart Dimmer
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Date : 2017/03/24
 Test Mode : Mode 1: Transmit (916MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
1832.000	-1.292	42.950	41.658	-32.342	74.000
2748.000	-1.900	42.590	40.690	-33.310	74.000
3664.000	-1.641	42.540	40.899	-33.101	74.000
4580.000	0.670	40.780	41.451	-32.549	74.000
5496.000	4.424	40.140	44.565	-29.435	74.000
6412.000	5.944	39.490	45.435	-28.565	74.000
7328.000	10.103	38.720	48.823	-25.177	74.000
8244.000	10.591	38.370	48.961	-25.039	74.000
9160.000	11.453	38.890	50.343	-23.657	74.000

Average Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
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Product : In Wall Smart Dimmer
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Date : 2017/03/24
 Test Mode : Mode 1: Transmit (916MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Vertical					
Peak Detector:					
1832.000	-0.666	42.850	42.184	-31.816	74.000
2748.000	-2.777	41.850	39.073	-34.927	74.000
3664.000	-1.420	42.140	40.719	-33.281	74.000
4580.000	2.285	40.660	42.945	-31.055	74.000
5496.000	4.419	39.570	43.989	-30.011	74.000
6412.000	6.060	39.560	45.620	-28.380	74.000
7328.000	10.732	38.990	49.722	-24.278	74.000
8244.000	11.499	38.480	49.979	-24.021	74.000
9160.000	11.539	39.340	50.879	-23.121	74.000

Average Detector:

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : In Wall Smart Dimmer
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Date : 2017/03/24
 Test Mode : Mode 1: Transmit (908.4MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
371.440	0.860	23.798	24.658	-21.342	46.000
466.500	3.156	21.258	24.414	-21.586	46.000
546.040	4.386	21.709	26.095	-19.905	46.000
596.480	3.587	23.065	26.652	-19.348	46.000
852.560	7.106	21.890	28.996	-17.004	46.000
986.420	8.189	20.638	28.827	-25.173	54.000
Vertical					
111.480	-3.439	23.886	20.448	-23.052	43.500
340.400	-1.287	21.952	20.665	-25.335	46.000
365.620	0.282	21.819	22.101	-23.899	46.000
602.300	1.704	22.372	24.076	-21.924	46.000
827.340	2.711	22.305	25.016	-20.984	46.000
924.340	3.149	21.225	24.374	-21.626	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : In Wall Smart Dimmer
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Date : 2017/03/24
 Test Mode : Mode 1: Transmit (916MHz)

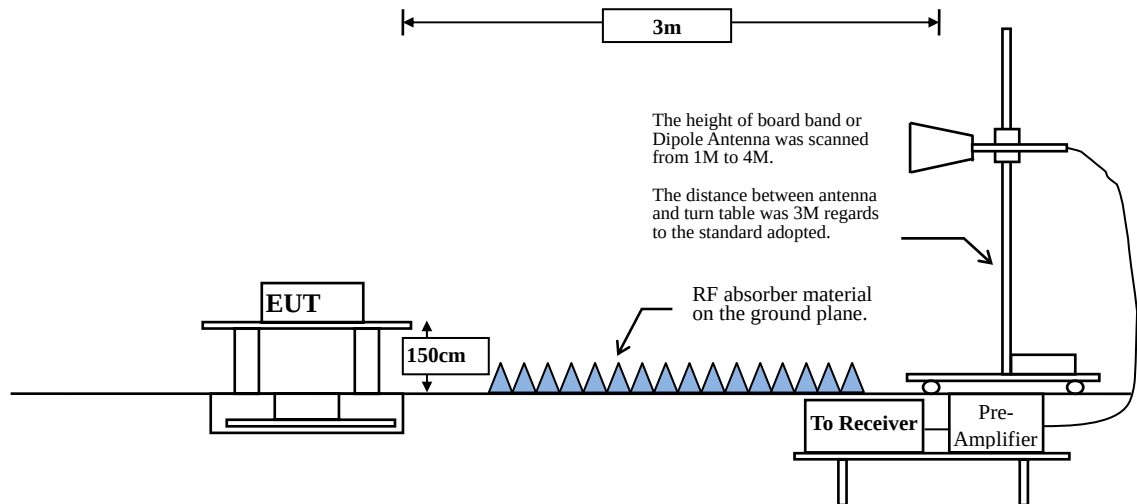
Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
191.020	-9.679	39.441	29.762	-13.738	43.500
355.920	-1.242	23.678	22.436	-23.564	46.000
522.760	3.176	23.419	26.595	-19.405	46.000
672.140	2.179	24.312	26.491	-19.509	46.000
790.480	6.363	22.108	28.471	-17.529	46.000
928.220	7.230	22.495	29.725	-16.275	46.000
Vertical					
152.220	-5.306	23.111	17.805	-25.695	43.500
365.620	0.282	23.352	23.634	-22.366	46.000
600.360	1.302	23.518	24.820	-21.180	46.000
751.680	2.372	21.636	24.008	-21.992	46.000
842.860	2.378	22.427	24.805	-21.195	46.000
924.340	3.149	20.949	24.098	-21.902	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

4. Band Edge

4.1. Test Setup



4.2. Limit

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

4.3. Test Procedure

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

The bandwidth setting below 1GHz and above 1GHz on the field strength meter is 120 kHz and 1MHz, respectively.

4.4. Uncertainty

± 4.08 dB above 1GHz

± 4.22 dB below 1GHz

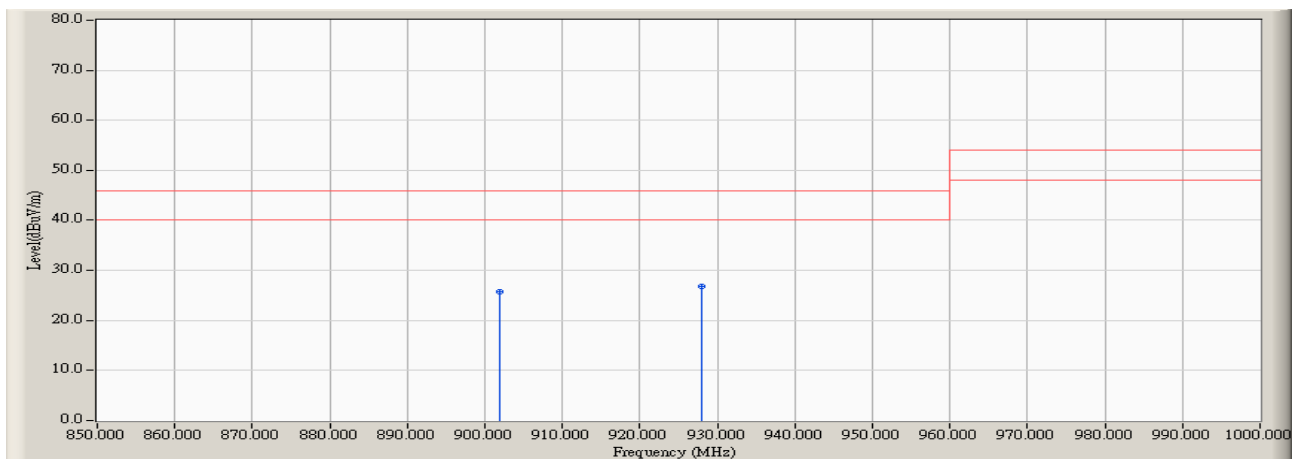
4.5. Test Result of Band Edge

Product : In Wall Smart Dimmer
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Date : 2017/04/11
 Test Mode : Mode 1: Transmit (908.4MHz)

RF Radiated Measurement (Horizontal):

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Quasi-Peak Limit (dBuV/m)	Result
01(Quasi-Peak)	902.000	4.656	21.100	25.755	46.000	Pass
02(Quasi-Peak)	928.000	5.107	21.600	26.707	46.000	Pass

Figure Channel 01: Horizontal (Quasi-Peak)



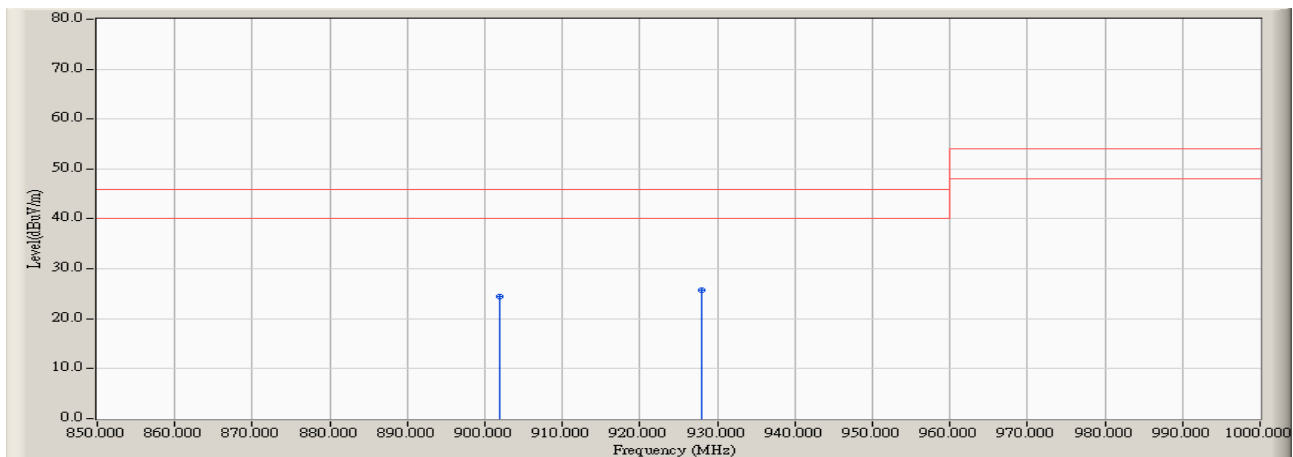
Note:

1. Quasi-Peak measurements: RBW=100kHz, VBW=1MHz, Sweep: Auto.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Product : In Wall Smart Dimmer
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Date : 2017/04/11
 Test Mode : Mode 1: Transmit (908.4MHz)

RF Radiated Measurement (Vertical):

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Quasi-Peak Limit (dBuV/m)	Result
01(Quasi-Peak)	902.000	4.656	19.800	24.455	46.000	Pass
02(Quasi-Peak)	928.000	5.107	20.700	25.807	46.000	Pass

Figure Channel 01:
Vertical (Quasi-Peak)


Note:

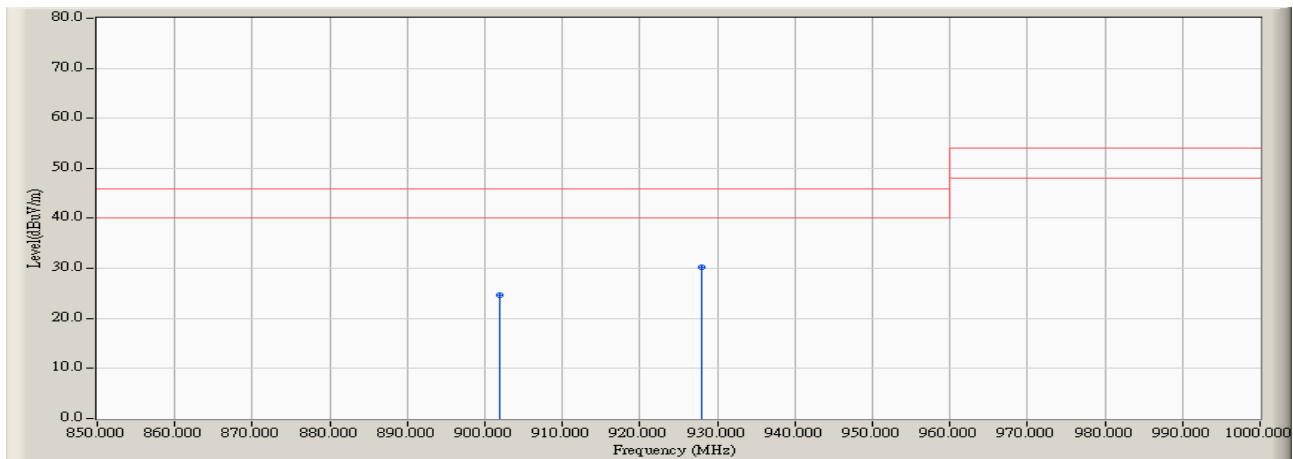
1. Quasi-Peak measurements: RBW=100kHz,VBW=1MHz,Sweep: Auto.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Product : In Wall Smart Dimmer
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Date : 2017/04/11
 Test Mode : Mode 1: Transmit (916MHz)

RF Radiated Measurement (Horizontal):

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Quasi-Peak Limit (dBuV/m)	Result
01(Quasi-Peak)	902.000	4.656	20.000	24.655	46.000	Pass
02(Quasi-Peak)	928.000	5.107	25.100	30.207	46.000	Pass

Figure Channel 01: Horizontal (Quasi-Peak)



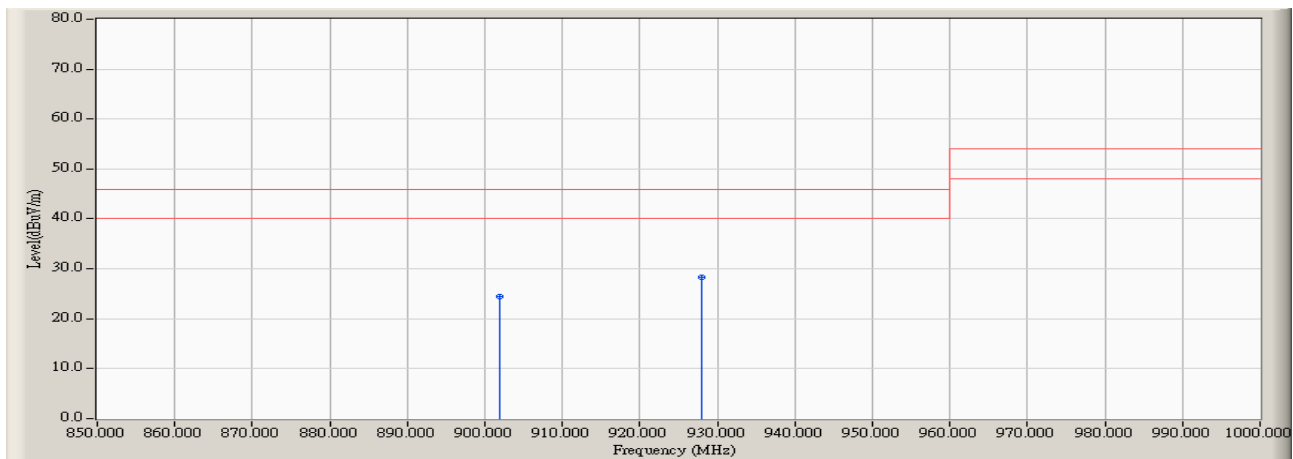
Note:

1. Quasi-Peak measurements: RBW=100kHz, VBW=1MHz, Sweep: Auto.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Product : In Wall Smart Dimmer
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Date : 2017/04/11
 Test Mode : Mode 1: Transmit (916MHz)

RF Radiated Measurement (Vertical):

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Quasi-Peak Limit (dBuV/m)	Result
01(Quasi-Peak)	902.000	4.656	19.700	24.355	46.000	Pass
02(Quasi-Peak)	928.000	5.107	23.300	28.407	46.000	Pass

Figure Channel 01:
Vertical (Quasi-Peak)


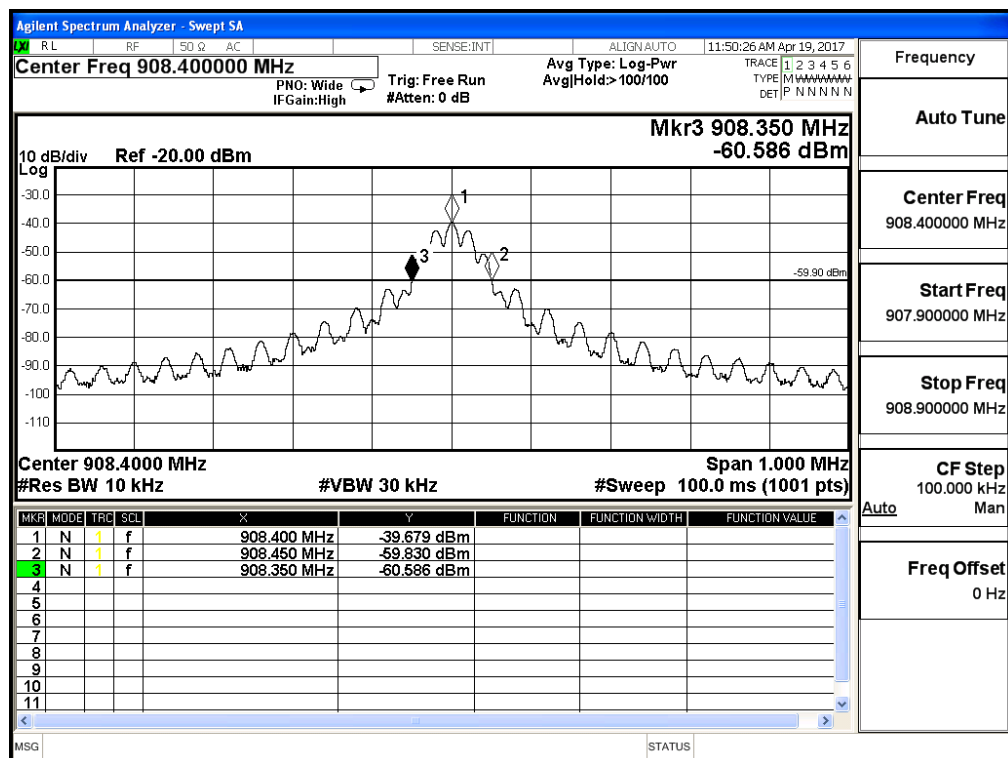
Note:

1. Quasi-Peak measurements: RBW=100kHz,VBW=1MHz,Sweep: Auto.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Product : In Wall Smart Dimmer
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Date : 2017/04/19
 Test Mode : Mode 1: Transmit (908.4MHz)

Test Frequency (MHz)	Measurement Level (20dB BW) (MHz)	Limit (MHz)	Result
908.4	908.35	>902	PASS

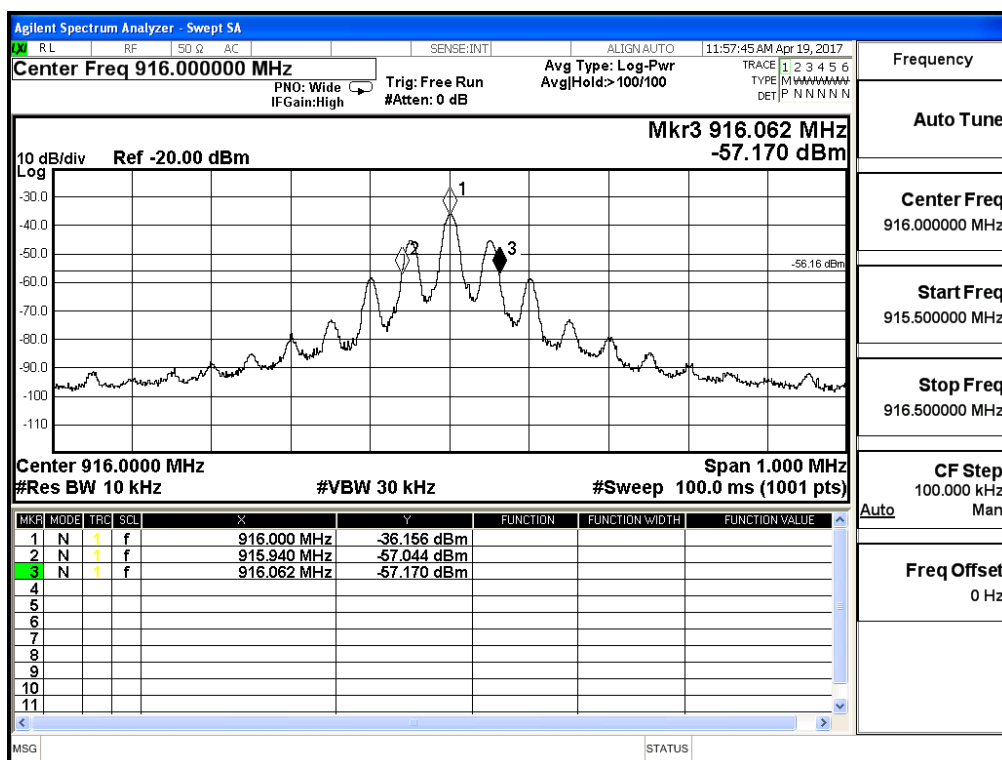
NOTE Accordance with 15.215 requirement.



Product : In Wall Smart Dimmer
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Date : 2017/04/19
 Test Mode : Mode 1: Transmit (916MHz)

Test Frequency (MHz)	Measurement Level (20dB BW) (MHz)	Limit (MHz)	Result
916.2	916.062	>928	PASS

NOTE Accordance with 15.215 requirement.



5. EMI Reduction Method During Compliance Testing

No modification was made during testing.