

FCC REPORT

Applicant: AZTECH TECHNOLOGIES PTE LTD
Address of Applicant: 31 Ubi Road 1, #09-01, Singapore 408694
Equipment Under Test (EUT)
Product Name: Smart Wall Switch
Model No.: KSWs-223-ZB, KSWs-222-ZB, KSWs-221-ZB
Trade mark: KylaS
FCC ID: I38SMARTSWITCH
Applicable standards: FCC CFR Title 47 Part 15 Subpart B
Date of sample receipt: 17 Jan., 2019
Date of Test: 17 Jan., to 22 Feb., 2019
Date of report issued: 16 Jul., 2019
Test Result: PASS *

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

Authorized Signature:



Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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2 Version

Version No.	Date	Description
00	16 Jul., 2019	Original

Tested by:

YT Yang
Test Engineer

Date:

16 Jul., 2019

Reviewed by:

Wimer Zhang
Project Engineer

Date:

16 Jul., 2019

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4 Test Summary

Test Item	Section in CFR 47	Result
Conducted Emission	Part 15.107	Pass
Radiated Emission	Part 15.109	Pass

Remark:
Pass: The EUT complies with the essential requirements in the standard.
N/A: The EUT not applicable of the test item.

5 General Information

5.1 Client Information

Applicant:	AZTECH TECHNOLOGIES PTE LTD
Address:	31 Ubi Road 1, #01-05, Singapore 408694
Manufacturer:	AZTECH TECHNOLOGIES PTE LTD
Address:	31 Ubi Road 1, #01-05, Singapore 408694
Factory:	Aztech Communication Device (DG) LTD
Address:	Jiu Jiang Shui Village, Chang Ping Town, Dong Guan City, Guang Dong Province, China.

5.2 General Description of E.U.T.

Product Name:	Smart Wall Switch
Model No.:	KSWS-223-ZB, KSWS-222-ZB, KSWS-221-ZB
Specification:	<ol style="list-style-type: none"> Model No: KSWS-223-ZB Input: AC100-240V, 60Hz Output: 300W Model No: KSWS-222-ZB Input: AC100-240V, 60Hz Output: 300W Model No: KSWS-221-ZB Input: AC100-240V, 60Hz Output: 300W
Test Sample Condition:	The test samples were provided in good working order with no visible defects.
Remark:	<p>The No.: KSWS-223-ZB, KSWS-222-ZB, KSWS-221-ZB internal same, circuit design, layout, internal wiring, the only difference is:</p> <p>KSWS-223-ZB has 3 relays KSWS-222-ZB has 2 relays KSWS-221-ZB has 1 relay</p> <p>So the report reflects the difference test in the EMC part.</p>

5.3 Test Mode

Operating mode	Detail description
Full Load mode	Keep the EUT in Full Load mode
<p>The sample was placed 0.8m above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.</p>	

5.4 Measurement Uncertainty

Parameters	Expanded Uncertainty
Conducted Emission (9kHz ~ 30MHz)	±2.22 dB (k=2)
Radiated Emission (9kHz ~ 30MHz)	±2.76 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	±4.28 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	±5.72 dB (k=2)
Radiated Emission (18GHz ~ 40GHz)	±2.88 dB (k=2)

5.5 Description of Support Units

N/A

5.6 Related Submittal(s) / Grant (s)

This is an original grant, no related submittals and grants.

5.7 Laboratory Facility

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

- **FCC - Designation No.: CN1211**
Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.
- **ISED – CAB identifier.: CN0021**
The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.
- **CNAS - Registration No.: CNAS L6048**
Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.
- **A2LA - Registration No.: 4346.01**
This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/4346-01.pdf>

5.8 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.
Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road, Bao'an District, Shenzhen, Guangdong, China
Tel: +86-755-23118282, Fax: +86-755-23116366
Email: info@ccis-cb.com, Website: http://www.ccis-cb.com

5.9 Test Instruments list

Radiated Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	SAEMC	9m*6m*6m	966	07-22-2017	07-21-2020
Loop Antenna	SCHWARZBECK	FMZB1519B	00044	03-16-2018	03-15-2019
BiConiLog Antenna	SCHWARZBECK	VULB9163	497	03-16-2018	03-15-2019
Horn Antenna	SCHWARZBECK	BBHA9120D	916	03-16-2018	03-15-2019
Horn Antenna	SCHWARZBECK	BBHA9120D	1805	06-22-2017	06-21-2020
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170582	11-21-2018	11-20-2019
EMI Test Software	AUDIX	E3	Version: 6.110919b		
Pre-amplifier	HP	8447D	2944A09358	03-07-2018	03-06-2019
Pre-amplifier	CD	PAP-1G18	11804	03-07-2018	03-06-2019
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-07-2018	03-06-2019
Spectrum analyzer	Rohde & Schwarz	FSP40	100363	11-21-2018	11-20-2019
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-07-2018	03-06-2019
Cable	ZDECL	Z108-NJ-NJ-81	1608458	03-07-2018	03-06-2019
Cable	MICRO-COAX	MFR64639	K10742-5	03-07-2018	03-06-2019
Cable	SUHNER	SUCOFLEX100	58193/4PE	03-07-2018	03-06-2019

Conducted Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
EMI Test Receiver	Rohde & Schwarz	ESCI	101189	03-07-2018	03-06-2019
Pulse Limiter	SCHWARZBECK	OSRAM 2306	9731	03-07-2018	03-06-2019
LISN	CHASE	MN2050D	1447	03-19-2018	03-18-2019
LISN	Rohde & Schwarz	ESH3-Z5	8438621/010	07-21-2018	07-20-2019
Cable	HP	10503A	N/A	03-07-2018	03-06-2019
EMI Test Software	AUDIX	E3	Version: 6.110919b		

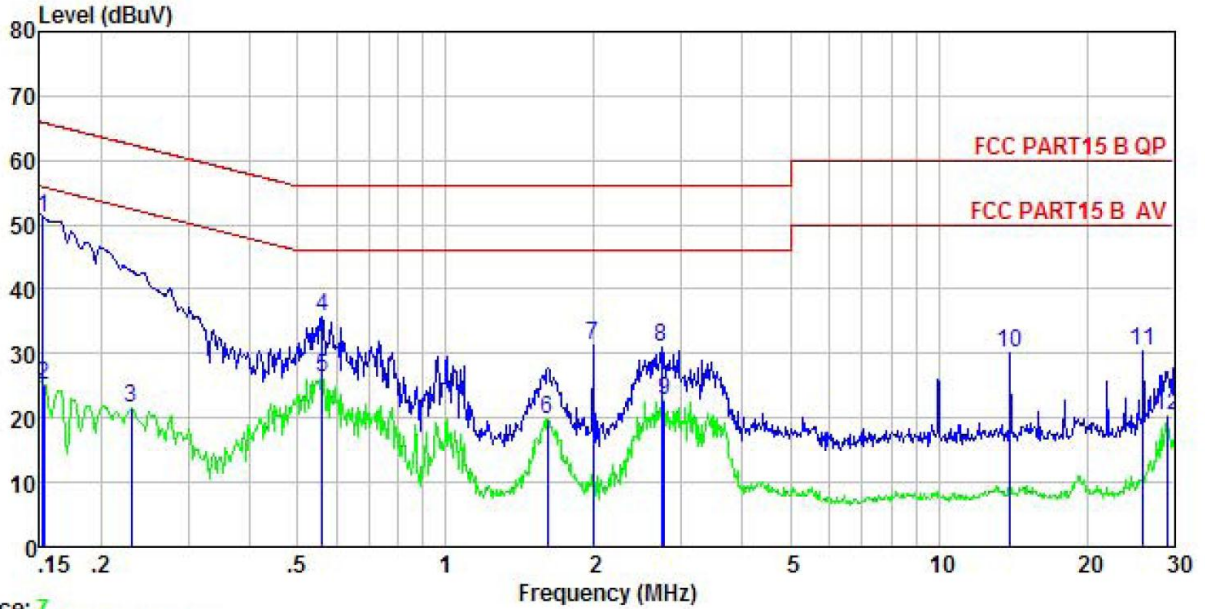
6 Test results and Measurement Data

6.1 Conducted Emission

Test Requirement:	FCC Part 15 B Section 15.107					
Test Method:	ANSI C63.4:2014					
Test Frequency Range:	150kHz to 30MHz					
Class / Severity:	Class B					
Receiver setup:	RBW=9kHz, VBW=30kHz					
Limit:	Frequency range (MHz)	Limit (dB μ V)				
		Quasi-peak		Average		
	0.15-0.5	66 to 56*		56 to 46*		
	0.5-5	56		46		
	0.5-30	60		50		
* Decreases with the logarithm of the frequency.						
Test setup:	<p>Remark E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p>					
Test procedure	<ol style="list-style-type: none"> 1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement. 					
Test environment:	Temp.:	22.5 °C	Humid.:	55%	Press.:	101kPa
Test Instruments:	Refer to section 5.9 for details					
Test mode:	Refer to section 5.3 for details					
Test results:	Pass					

Measurement data (By KSWs-223-ZB):

Product name:	Smart Wall Switch	Product model:	KSWs-223-ZB
Test by:	Caffrey	Test mode:	Full Load mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Line
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5°C Humi: 55%



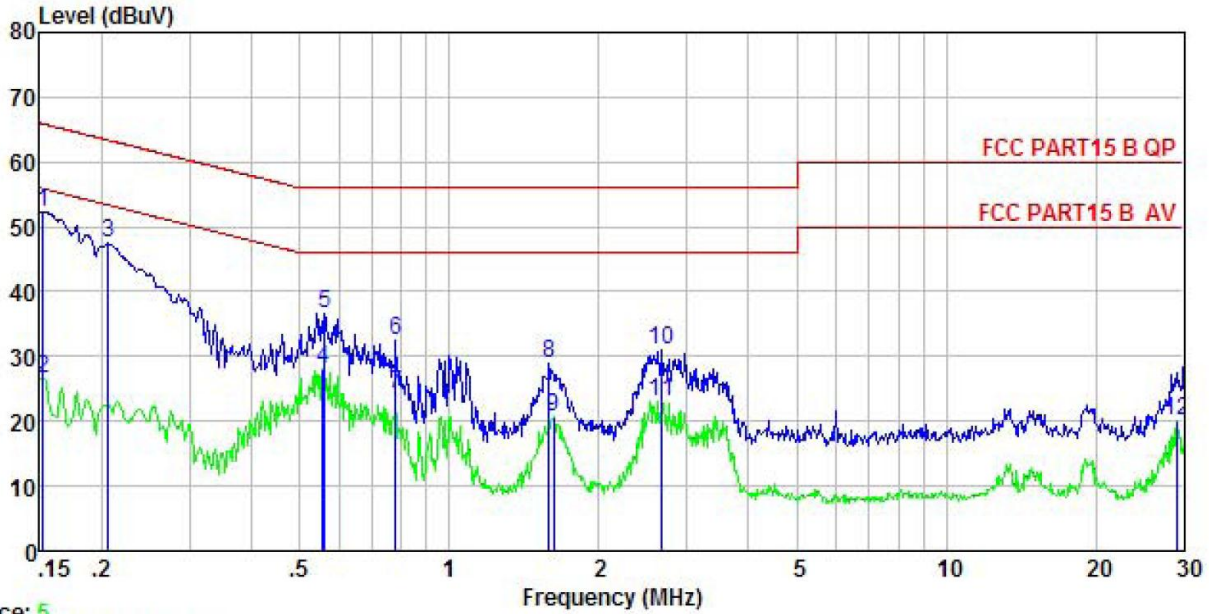
Trace: 7

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.152	40.23	0.18	10.78	51.19	65.87	-14.68	QP
2	0.153	14.15	0.18	10.78	25.11	55.82	-30.71	Average
3	0.230	10.54	0.14	10.75	21.43	52.44	-31.01	Average
4	0.561	24.92	0.12	10.76	35.80	56.00	-20.20	QP
5	0.561	15.31	0.12	10.76	26.19	46.00	-19.81	Average
6	1.610	8.62	0.14	10.93	19.69	46.00	-26.31	Average
7	1.991	20.12	0.14	10.96	31.22	56.00	-24.78	QP
8	2.736	20.04	0.16	10.93	31.13	56.00	-24.87	QP
9	2.779	11.75	0.16	10.93	22.84	46.00	-23.16	Average
10	13.989	19.02	0.32	10.91	30.25	60.00	-29.75	QP
11	26.001	19.04	0.35	10.87	30.26	60.00	-29.74	QP
12	29.216	9.13	0.40	10.87	20.40	50.00	-29.60	Average

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss.

Product name:	Smart Wall Switch	Product model:	KSWS-223-ZB
Test by:	Caffrey	Test mode:	Full Load mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Neutral
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5°C Humi: 55%



Trace: 5

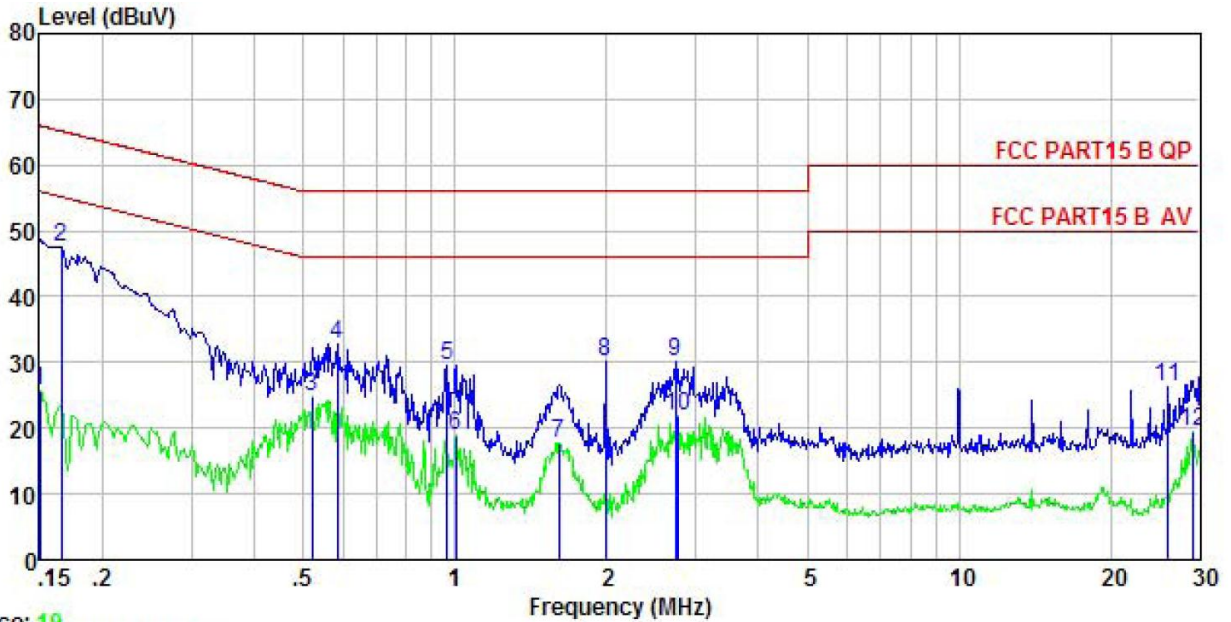
	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.152	40.53	0.99	10.78	52.30	65.87	-13.57	QP
2	0.152	14.72	0.99	10.78	26.49	55.87	-29.38	Average
3	0.206	35.75	0.92	10.76	47.43	63.36	-15.93	QP
4	0.555	16.39	0.97	10.76	28.12	46.00	-17.88	Average
5	0.561	24.94	0.97	10.76	36.67	56.00	-19.33	QP
6	0.779	20.66	0.97	10.80	32.43	56.00	-23.57	QP
7	0.779	12.37	0.97	10.80	24.14	46.00	-21.86	Average
8	1.585	16.99	0.98	10.93	28.90	56.00	-27.10	QP
9	1.619	8.85	0.98	10.93	20.76	46.00	-25.24	Average
10	2.664	19.11	0.99	10.93	31.03	56.00	-24.97	QP
11	2.664	11.19	0.99	10.93	23.11	46.00	-22.89	Average
12	29.216	8.15	1.17	10.87	20.19	50.00	-29.81	Average

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss.

Measurement data (By KSWs-222-ZB):

Product name:	Smart Wall Switch	Product model:	KSWs-222-ZB
Test by:	Caffrey	Test mode:	Full Load mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Line
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5°C Humi: 55%



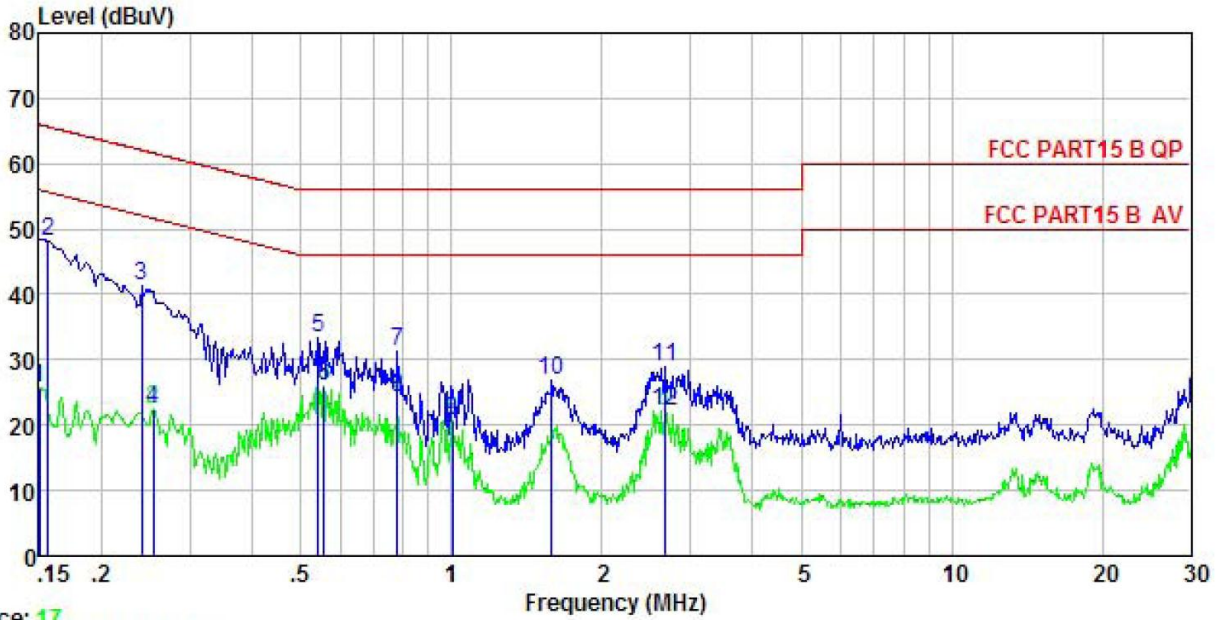
Trace: 19

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.150	14.77	0.18	10.78	25.73	56.00	-30.27	Average
2	0.166	36.60	0.17	10.77	47.54	65.16	-17.62	QP
3	0.521	13.96	0.12	10.76	24.84	46.00	-21.16	Average
4	0.585	22.03	0.12	10.76	32.91	56.00	-23.09	QP
5	0.963	18.57	0.13	10.86	29.56	56.00	-26.44	QP
6	1.005	7.86	0.13	10.87	18.86	46.00	-27.14	Average
7	1.610	6.62	0.14	10.93	17.69	46.00	-28.31	Average
8	1.991	19.12	0.14	10.96	30.22	56.00	-25.78	QP
9	2.736	19.04	0.16	10.93	30.13	56.00	-25.87	QP
10	2.779	10.75	0.16	10.93	21.84	46.00	-24.16	Average
11	26.001	15.04	0.35	10.87	26.26	60.00	-33.74	QP
12	29.216	8.13	0.40	10.87	19.40	50.00	-30.60	Average

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss.

Product name:	Smart Wall Switch	Product model:	KSWs-222-ZB
Test by:	Caffrey	Test mode:	Full Load mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Neutral
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5°C Humi: 55%



Trace: 17

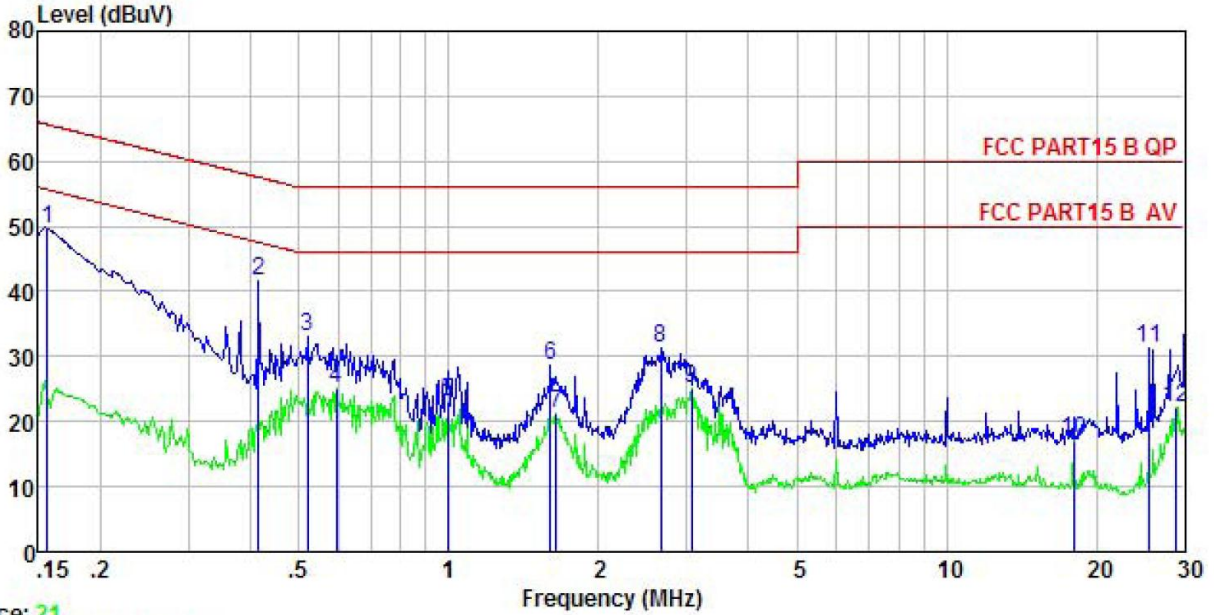
	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.150	15.61	-0.68	10.78	25.71	56.00	-30.29	Average
2	0.156	36.35	0.98	10.77	48.10	65.65	-17.55	QP
3	0.240	29.62	0.94	10.75	41.31	62.08	-20.77	QP
4	0.253	12.40	-0.65	10.75	22.50	51.64	-29.14	Average
5	0.541	21.73	0.97	10.76	33.46	56.00	-22.54	QP
6	0.555	16.01	-0.65	10.76	26.12	46.00	-19.88	Average
7	0.779	19.66	0.97	10.80	31.43	56.00	-24.57	QP
8	0.779	13.98	-0.64	10.80	24.14	46.00	-21.86	Average
9	1.005	10.38	-0.63	10.87	20.62	46.00	-25.38	Average
10	1.585	14.99	0.98	10.93	26.90	56.00	-29.10	QP
11	2.664	17.11	0.99	10.93	29.03	56.00	-26.97	QP
12	2.664	11.85	-0.67	10.93	22.11	46.00	-23.89	Average

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss.

Measurement data (By KSWs-221-ZB):

Product name:	Smart Wall Switch	Product model:	KSWs-221-ZB
Test by:	Caffrey	Test mode:	Full Load mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Line
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5°C Humi: 55%

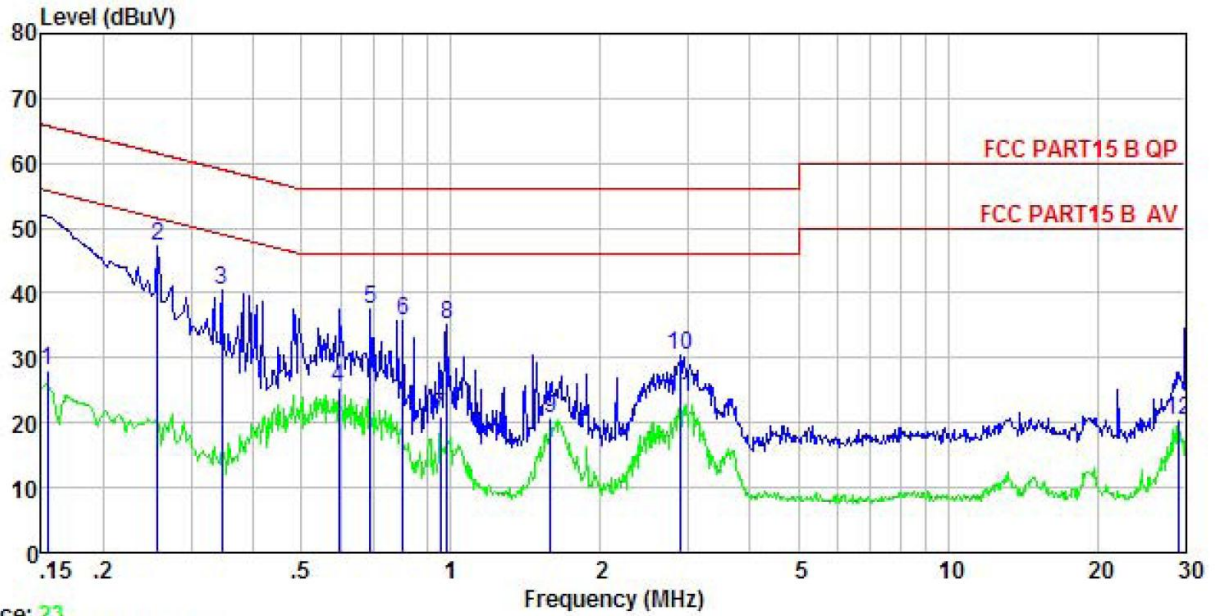


	Read Freq	LISN Level	Cable Factor	Cable Loss	Limit Level	Over Line	Limit Remark
	MHz	dBuV	dB	dB	dBuV	dB	
1	0.156	38.66	0.18	10.77	49.61	65.65	-16.04 QP
2	0.415	30.68	0.12	10.73	41.53	57.55	-16.02 QP
3	0.521	22.08	0.12	10.76	32.96	56.00	-23.04 QP
4	0.595	14.11	0.13	10.77	25.01	46.00	-20.99 Average
5	0.994	12.03	0.13	10.87	23.03	46.00	-22.97 Average
6	1.602	17.60	0.14	10.93	28.67	56.00	-27.33 QP
7	1.645	10.11	0.14	10.93	21.18	46.00	-24.82 Average
8	2.664	20.28	0.16	10.93	31.37	56.00	-24.63 QP
9	3.074	13.97	0.16	10.92	25.05	46.00	-20.95 Average
10	17.944	6.03	0.29	10.92	17.24	50.00	-32.76 Average
11	25.591	19.95	0.35	10.87	31.17	60.00	-28.83 QP
12	28.755	10.81	0.39	10.87	22.07	50.00	-27.93 Average

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss.

Product name:	Smart Wall Switch	Product model:	KSWs-221-ZB
Test by:	Caffrey	Test mode:	Full Load mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Neutral
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5°C Humi: 55%



Trace: 23

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.154	16.22	0.98	10.78	27.98	55.78	-27.80	Average
2	0.258	35.45	0.95	10.75	47.15	61.51	-14.36	QP
3	0.346	28.84	0.97	10.73	40.54	59.05	-18.51	QP
4	0.595	13.77	0.97	10.77	25.51	46.00	-20.49	Average
5	0.690	25.64	0.97	10.77	37.38	56.00	-18.62	QP
6	0.800	24.04	0.97	10.81	35.82	56.00	-20.18	QP
7	0.953	9.17	0.97	10.86	21.00	46.00	-25.00	Average
8	0.984	23.16	0.97	10.87	35.00	56.00	-21.00	QP
9	1.585	8.76	0.98	10.93	20.67	46.00	-25.33	Average
10	2.900	18.46	0.99	10.92	30.37	56.00	-25.63	QP
11	2.900	12.01	0.99	10.92	23.92	46.00	-22.08	Average
12	29.216	8.33	1.17	10.87	20.37	50.00	-29.63	Average

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss.

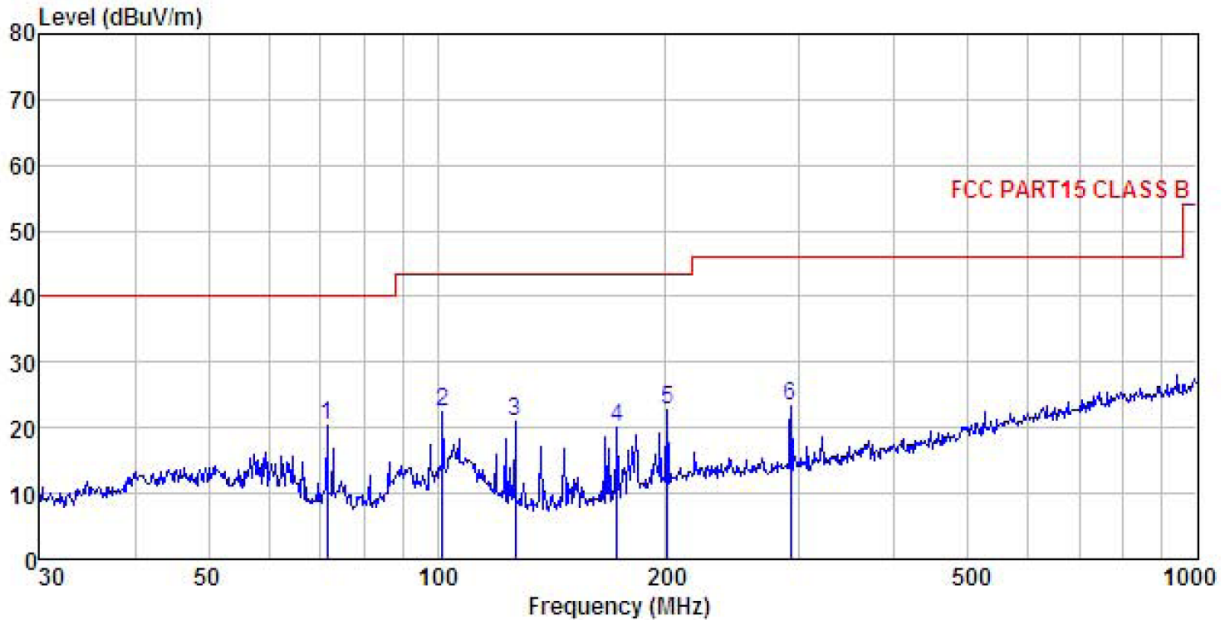
6.2 Radiated Emission

Test Requirement:	FCC Part 15 B Section 15.109				
Test Method:	ANSI C63.4:2014				
Test Frequency Range:	30MHz to 6000MHz				
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
RMS		1MHz	3MHz	Average Value	
Limit:	Frequency	Limit (dBuV/m @3m)			Remark
	30MHz-88MHz	40.0			Quasi-peak Value
	88MHz-216MHz	43.5			Quasi-peak Value
	216MHz-960MHz	46.0			Quasi-peak Value
	960MHz-1GHz	54.0			Quasi-peak Value
Above 1GHz	54.0			Average Value	
	74.0			Peak Value	
Test setup:	Below 1GHz				
Test setup:	Above 1GHz				

<p>Test Procedure:</p>	<ol style="list-style-type: none"> 1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. 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 rotatable 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. 						
<p>Test environment:</p>	<table border="1"> <tr> <td>Temp.:</td> <td>24 °C</td> <td>Humid.:</td> <td>57%</td> <td>Press.:</td> <td>1 01kPa</td> </tr> </table>	Temp.:	24 °C	Humid.:	57%	Press.:	1 01kPa
Temp.:	24 °C	Humid.:	57%	Press.:	1 01kPa		
<p>Test Instruments:</p>	<p>Refer to section 5.9 for details</p>						
<p>Test mode:</p>	<p>Refer to section 5.3 for details</p>						
<p>Test results:</p>	<p>Passed</p>						
<p>Remark:</p>	<p>All of the observed value above 6GHz were the noise floor , which were no recorded</p>						

Measurement Data (By KSWs-223-ZB):
Below 1GHz:

Product Name:	Smart Wall Switch	Product model:	KSWs-223-ZB
Test By:	Caffrey	Test mode:	Full Load mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Humi: 57%

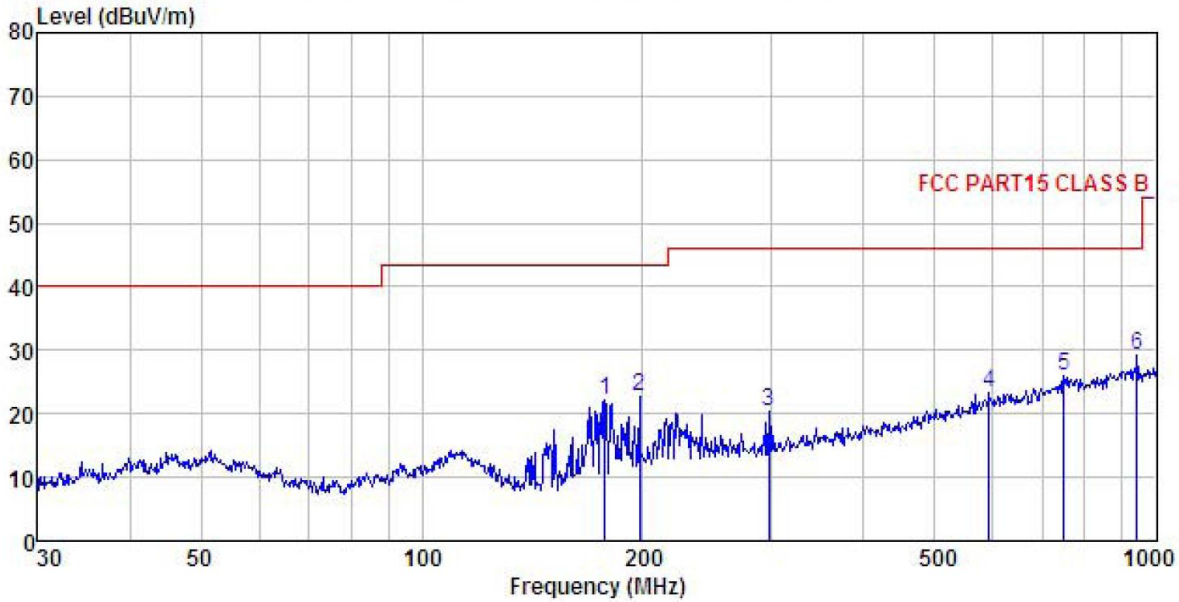


	Read	Antenna	Cable	Preamp	Limit	Over	
Freq	Level	Factor	Loss	Factor	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	71.581	39.50	8.93	1.56	29.71	20.28	40.00 -19.72 QP
2	101.644	38.12	11.80	1.95	29.52	22.35	43.50 -21.15 QP
3	126.772	38.99	9.17	2.25	29.35	21.06	43.50 -22.44 QP
4	172.599	37.03	9.51	2.68	29.03	20.19	43.50 -23.31 QP
5	200.688	37.04	11.53	2.87	28.83	22.61	43.50 -20.89 QP
6	292.058	35.25	13.56	2.92	28.46	23.27	46.00 -22.73 QP

Remark:

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

Product Name:	Smart Wall Switch	Product model:	KSWS-223-ZB
Test By:	Caffrey	Test mode:	Full Load mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Humi: 57%



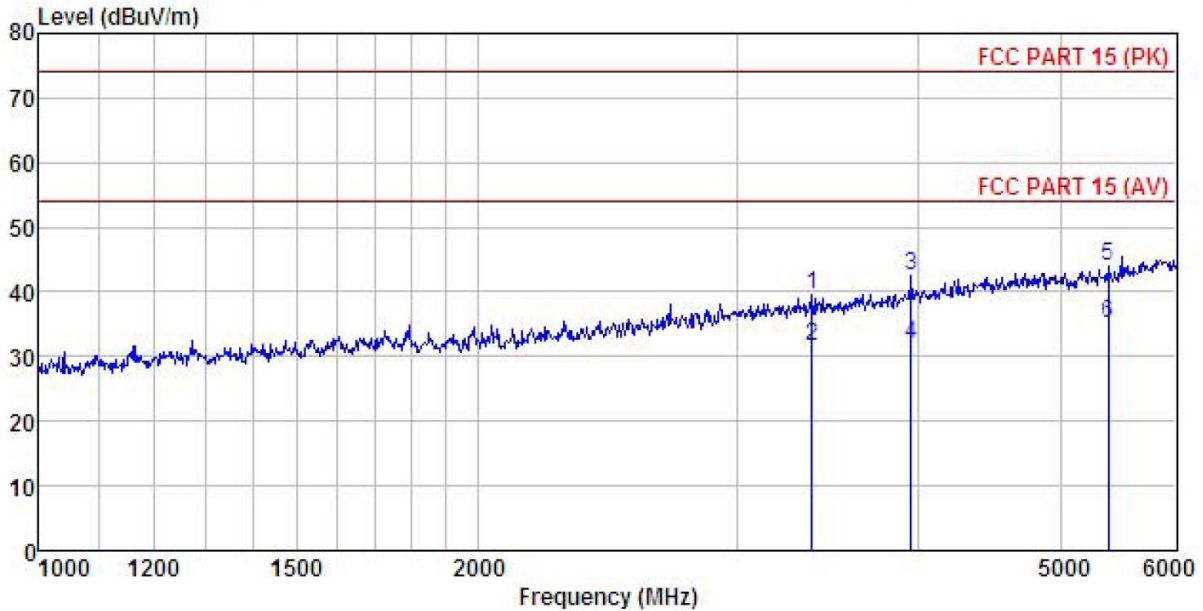
	Read	Antenna	Cable	Preamp	Level	Limit	Over	Remark
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	
-----	-----	-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	177.509	38.86	9.70	2.71	28.99	22.28	43.50	-21.22 QP
2	197.893	37.16	11.44	2.86	28.84	22.62	43.50	-20.88 QP
3	297.224	32.28	13.58	2.93	28.46	20.33	46.00	-25.67 QP
4	593.050	29.26	19.04	3.93	28.96	23.27	46.00	-22.73 QP
5	750.108	29.08	21.00	4.36	28.48	25.96	46.00	-20.04 QP
6	942.131	30.50	22.38	4.13	27.75	29.26	46.00	-16.74 QP

Remark:

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

Above 1GHz:

Product Name:	Smart Wall Switch	Product model:	KSWs-223-ZB
Test By:	Caffrey	Test mode:	Full Load mode
Test Frequency:	1 GHz ~ 6 GHz	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Humi: 57%

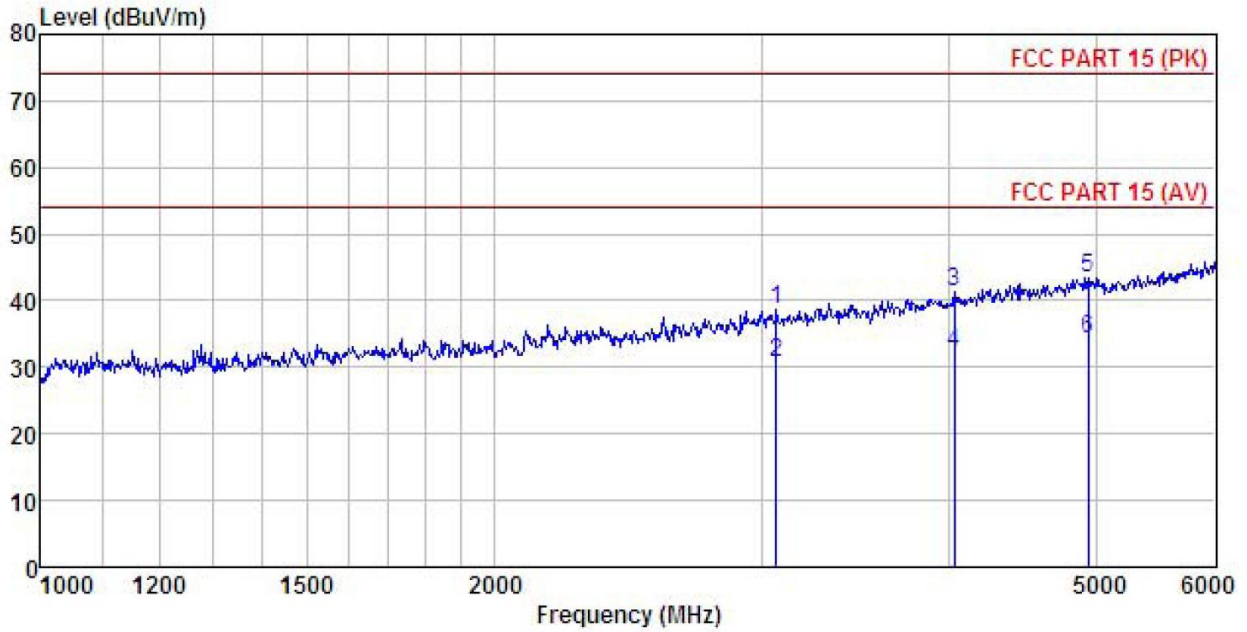


	Freq	ReadAntenna	Cable Preamp	Limit	Over	Remark			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	
		dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3381.760	46.47	28.83	5.61	41.35	39.56	74.00	-34.44	Peak
2	3381.760	38.55	28.83	5.61	41.35	31.64	54.00	-22.36	Average
3	3952.228	48.22	30.08	6.10	41.80	42.60	74.00	-31.40	Peak
4	3952.228	37.62	30.08	6.10	41.80	32.00	54.00	-22.00	Average
5	5388.429	46.43	32.29	7.12	41.87	43.97	74.00	-30.03	Peak
6	5388.429	37.46	32.29	7.12	41.87	35.00	54.00	-19.00	Average

Remark:

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

Product Name:	Smart Wall Switch	Product model:	KSWs-223-ZB
Test By:	Caffrey	Test mode:	Full Load mode
Test Frequency:	1 GHz ~ 6 GHz	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Humi: 57%



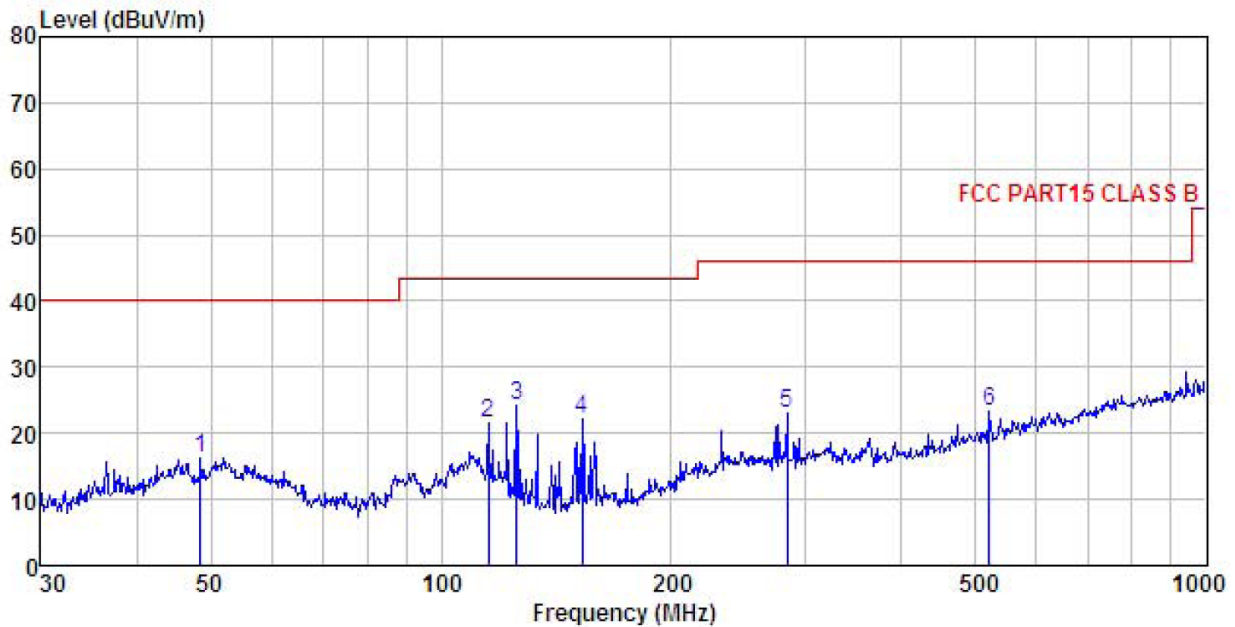
	ReadAntenna	Cable Preamp	Limit	Over					
Freq	Level	Factor	Loss	Factor	Level				
-----	-----	-----	-----	-----	-----				
MHz	dBuV	dB/m	dB	dB	dBuV/m				
1	3069.889	46.04	28.64	5.38	41.47	38.59	74.00	-35.41	Peak
2	3069.889	38.21	28.64	5.38	41.47	30.76	54.00	-23.24	Average
3	4030.897	46.65	30.26	6.15	41.81	41.25	74.00	-32.75	Peak
4	4030.897	37.68	30.26	6.15	41.81	32.28	54.00	-21.72	Average
5	4944.370	46.62	31.82	6.90	41.86	43.48	74.00	-30.52	Peak
6	4944.370	37.51	31.82	6.90	41.86	34.37	54.00	-19.63	Average

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.

Measurement Data (By KSWs-222-ZB):
Below 1GHz:

Product Name:	Smart Wall Switch	Product model:	KSWs-222-ZB
Test By:	Caffrey	Test mode:	Full Load mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Humi: 57%

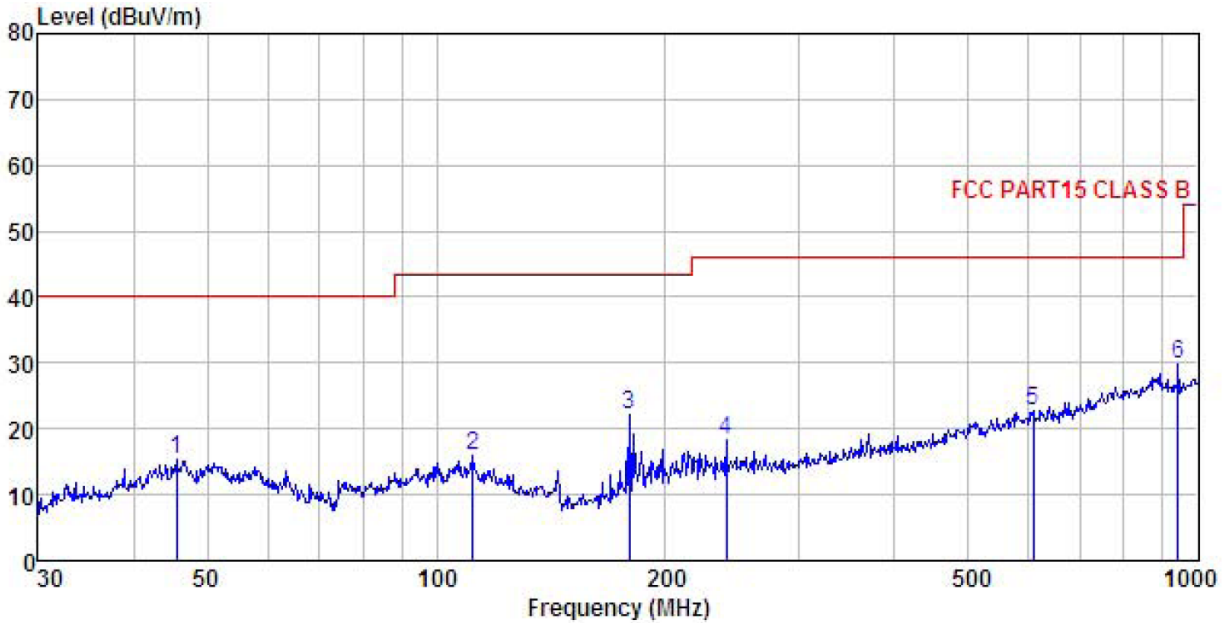


	Read Freq	Antenna Level	Cable Factor	Preamp Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	48.502	30.95	13.98	1.27	29.83	16.37	40.00	-23.63	QP
2	115.321	37.80	11.16	2.11	29.42	21.65	43.50	-21.85	QP
3	125.446	42.02	9.37	2.24	29.36	24.27	43.50	-19.23	QP
4	152.664	39.92	8.74	2.53	29.20	21.99	43.50	-21.51	QP
5	282.985	35.17	13.50	2.89	28.48	23.08	46.00	-22.92	QP
6	520.888	31.02	17.71	3.73	29.01	23.45	46.00	-22.55	QP

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.

Product Name:	Smart Wall Switch	Product model:	KSWs-222-ZB
Test By:	Caffrey	Test mode:	Full Load mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Humi: 57%



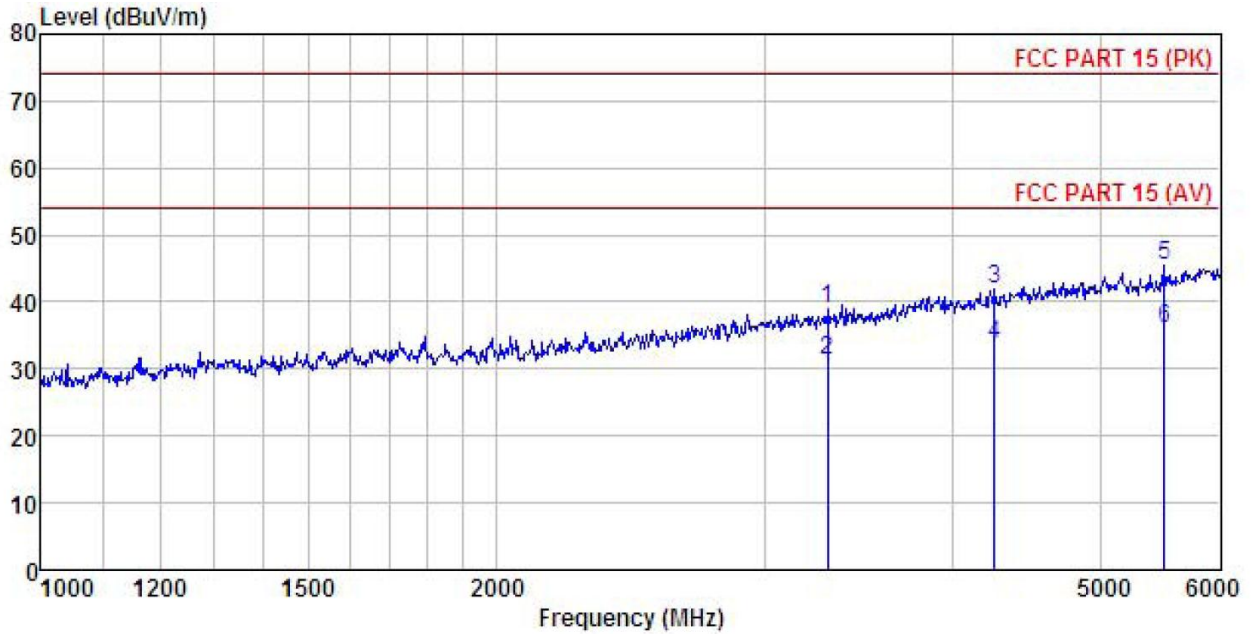
	ReadAntenna	Cable	Preamp	Limit	Over				
Freq	Level	Factor	Loss	Line	Limit	Remark			
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	45.535	30.11	13.74	1.29	29.86	15.28	40.00	-24.72	QP
2	111.738	31.29	11.92	2.08	29.44	15.85	43.50	-27.65	QP
3	179.386	38.69	9.78	2.73	28.98	22.22	43.50	-21.28	QP
4	239.987	30.98	12.97	2.82	28.59	18.18	46.00	-27.82	QP
5	607.787	28.51	19.30	3.93	28.91	22.83	46.00	-23.17	QP
6	942.131	30.98	22.38	4.13	27.75	29.74	46.00	-16.26	QP

Remark:

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

Above 1GHz:

Product Name:	Smart Wall Switch	Product model:	KSWs-222-ZB
Test By:	Caffrey	Test mode:	Full Load mode
Test Frequency:	1 GHz ~ 6 GHz	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Humi: 57%

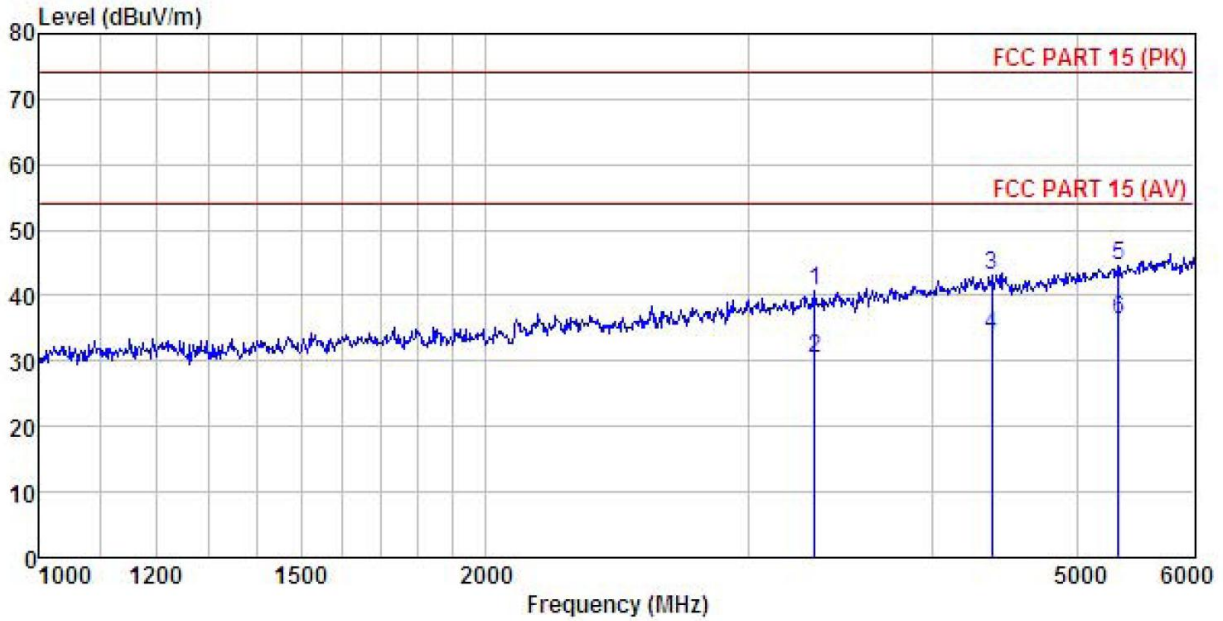


	Read	Antenna	Cable	Preamp	Limit	Over			
Freq	Level	Factor	Loss	Factor	Line	Limit	Remark		
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	3303.900	46.00	28.79	5.52	41.38	38.93	74.00	-35.07	Peak
2	3303.900	38.26	28.79	5.52	41.38	31.19	54.00	-22.81	Average
3	4261.126	46.46	30.68	6.50	41.86	41.78	74.00	-32.22	Peak
4	4261.126	38.33	30.68	6.50	41.86	33.65	54.00	-20.35	Average
5	5515.415	47.54	32.43	7.23	41.82	45.38	74.00	-28.62	Peak
6	5515.415	38.14	32.43	7.23	41.82	35.98	54.00	-18.02	Average

Remark:

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

Product Name:	Smart Wall Switch	Product model:	KSWs-222-ZB
Test By:	Caffrey	Test mode:	Full Load mode
Test Frequency:	1 GHz ~ 6 GHz	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Humi: 57%



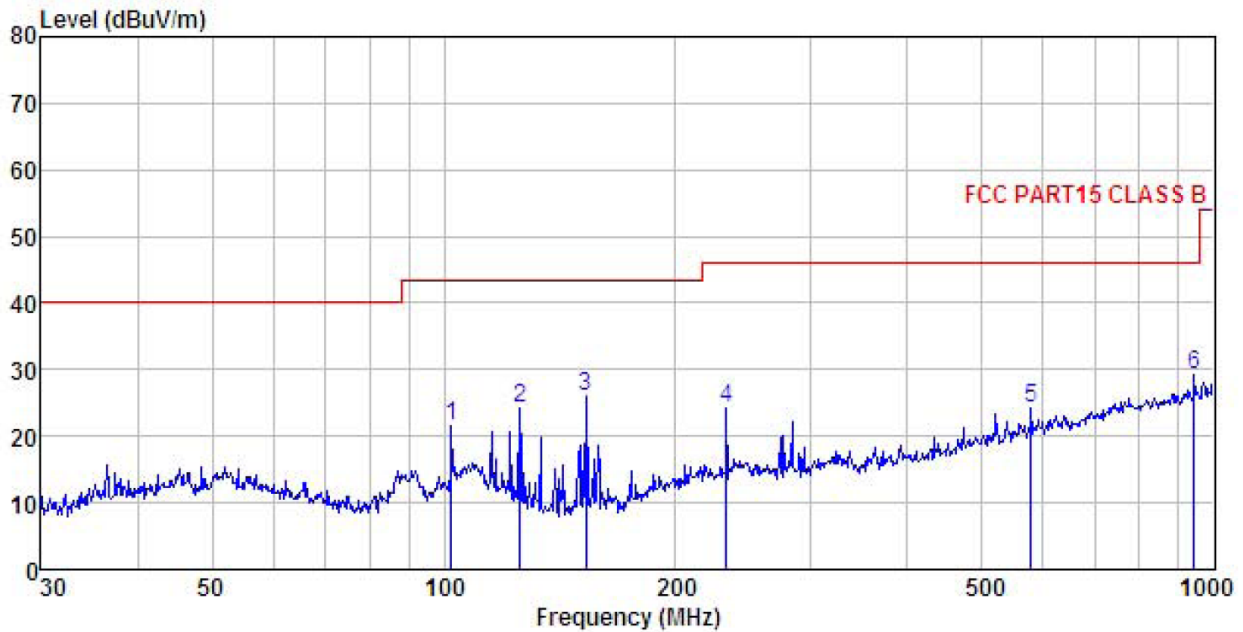
	ReadAntenna	Cable Preamp	Limit	Over					
Freq	Level	Factor	Loss	Factor	Level				
MHz	dBuV	dB/m	dB	dB	dBuV/m				
1	3327.664	47.63	28.80	5.55	41.37	40.61	74.00	-33.39	Peak
2	3327.664	37.29	28.80	5.55	41.37	30.27	54.00	-23.73	Average
3	4385.052	47.61	30.90	6.67	41.95	43.23	74.00	-30.77	Peak
4	4385.052	38.37	30.90	6.67	41.95	33.99	54.00	-20.01	Average
5	5330.811	47.13	32.24	7.11	41.89	44.59	74.00	-29.41	Peak
6	5330.811	38.90	32.24	7.11	41.89	36.36	54.00	-17.64	Average

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.

Measurement Data (By KSWs-221-ZB):
Below 1GHz:

Product Name:	Smart Wall Switch	Product model:	KSWs-221-ZB
Test By:	Caffrey	Test mode:	Full Load mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Humi: 57%

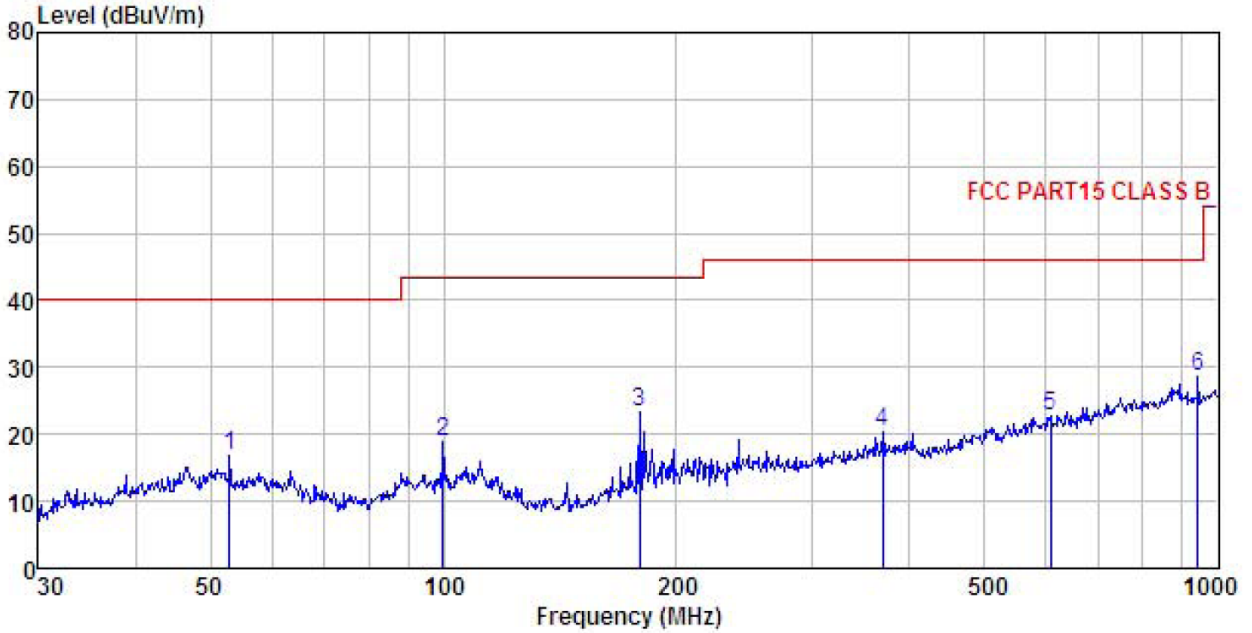


	ReadAntenna	Cable Preamp	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level
MHz	dBuV	dB/m	dB	dB	dBuV/m
1	37.21	11.85	1.96	29.51	21.51
2	42.02	9.37	2.24	29.36	24.27
3	43.92	8.74	2.53	29.20	25.99
4	37.44	12.72	2.83	28.64	24.35
5	30.63	18.70	3.92	29.01	24.24
6	30.59	22.38	4.13	27.75	29.35

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.

Product Name:	Smart Wall Switch	Product model:	KSWs-221-ZB
Test By:	Caffrey	Test mode:	Full Load mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Humi: 57%



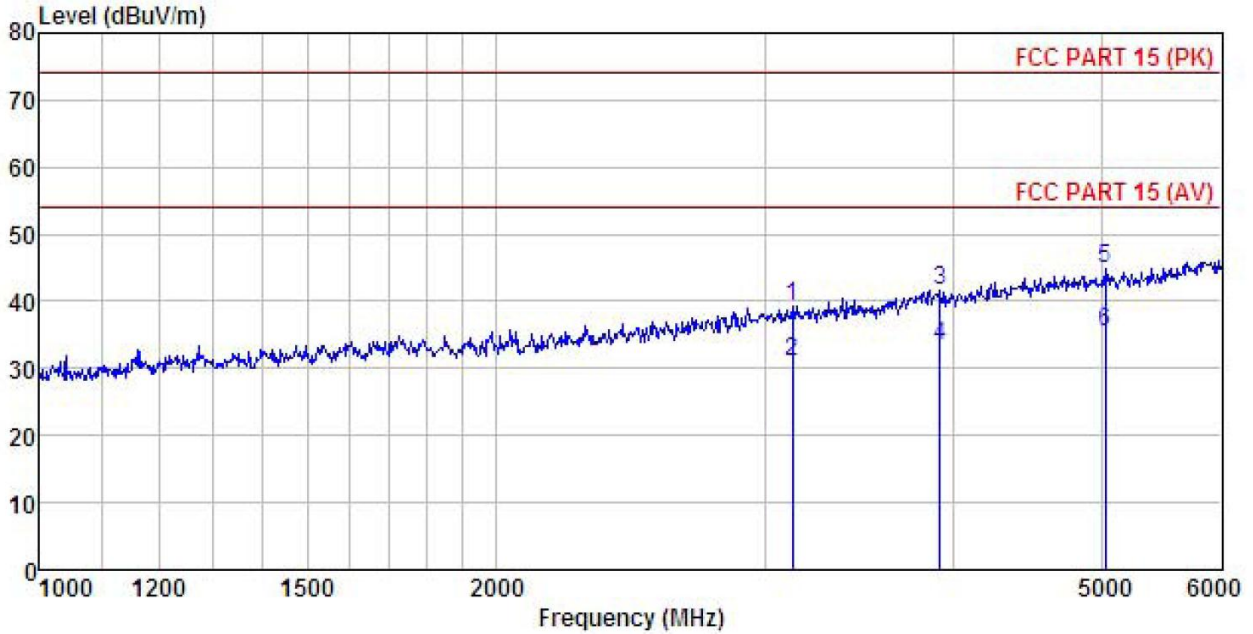
	Read Freq	Antenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	52.945	31.74	13.57	1.32	29.81	16.82	40.00	-23.18	QP
2	99.878	34.77	11.68	1.94	29.53	18.86	43.50	-24.64	QP
3	179.386	39.69	9.78	2.73	28.98	23.22	43.50	-20.28	QP
4	369.405	30.87	14.96	3.09	28.65	20.27	46.00	-25.73	QP
5	607.787	28.51	19.30	3.93	28.91	22.83	46.00	-23.17	QP
6	942.131	29.98	22.38	4.13	27.75	28.74	46.00	-17.26	QP

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.

Above 1GHz:

Product Name:	Smart Wall Switch	Product model:	KSWs-221-ZB
Test By:	Caffrey	Test mode:	Full Load mode
Test Frequency:	1 GHz ~ 6 GHz	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Humi: 57%

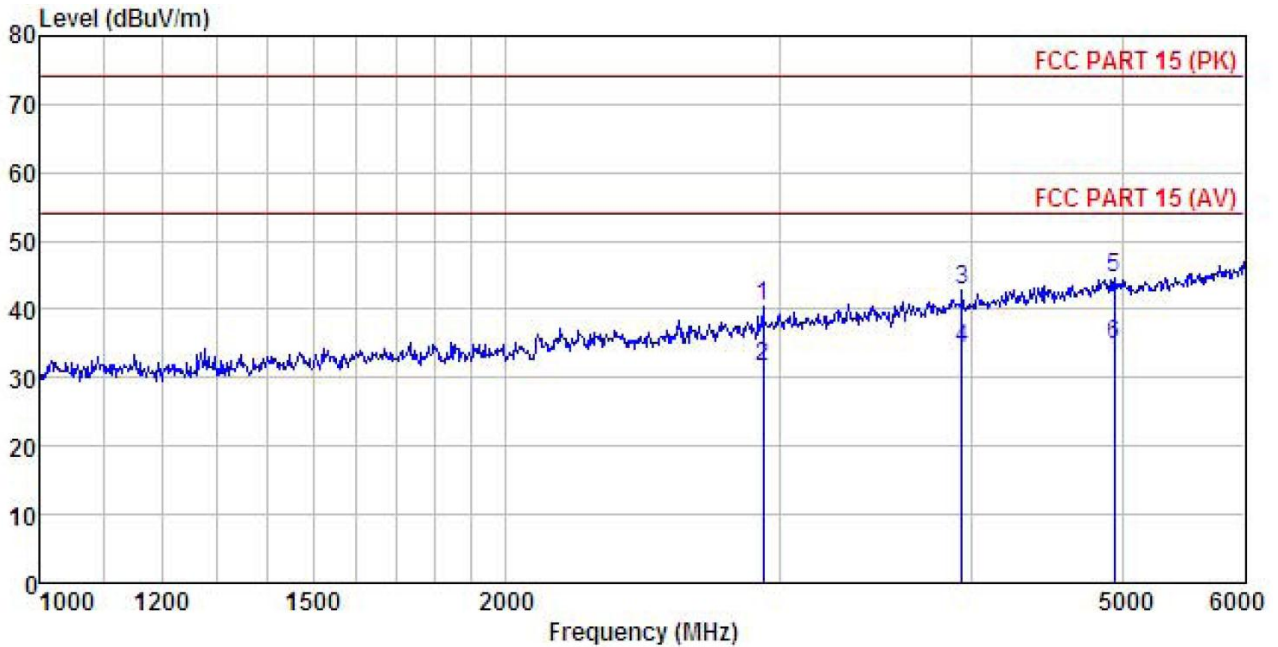


	ReadAntenna	Cable Preamp	Limit	Over					
Freq	Level	Factor	Loss	Factor	Level				
MHz	dBuV	dB/m	dB	dB	dBuV/m				
1	3130.995	46.55	28.68	5.40	41.44	39.19	74.00	-34.81	Peak
2	3130.995	38.47	28.68	5.40	41.44	31.11	54.00	-22.89	Average
3	3916.979	47.34	30.00	6.10	41.80	41.64	74.00	-32.36	Peak
4	3916.979	39.19	30.00	6.10	41.80	33.49	54.00	-20.51	Average
5	5033.759	47.74	31.94	6.96	41.89	44.75	74.00	-29.25	Peak
6	5033.759	38.53	31.94	6.96	41.89	35.54	54.00	-18.46	Average

Remark:

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

Product Name:	Smart Wall Switch	Product model:	KSWS-221-ZB
Test By:	Caffrey	Test mode:	Full Load mode
Test Frequency:	1 GHz ~ 6 GHz	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Humi: 57%



	ReadAntenna	Cable Preamp	Limit	Over					
Freq	Level	Factor	Loss	Factor	Level				
-----	-----	-----	-----	-----	-----				
MHz	dBuV	dB/m	dB	dB	dBuV/m				
1	2930.156	48.18	28.47	5.28	41.56	40.37	74.00	-33.63	Peak
2	2930.156	39.43	28.47	5.28	41.56	31.62	54.00	-22.38	Average
3	3938.091	48.42	30.05	6.10	41.80	42.77	74.00	-31.23	Peak
4	3938.091	39.83	30.05	6.10	41.80	34.18	54.00	-19.82	Average
5	4944.370	47.62	31.82	6.90	41.86	44.48	74.00	-29.52	Peak
6	4944.370	38.11	31.82	6.90	41.86	34.97	54.00	-19.03	Average

Remark:

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