Test Report of FCC Part 15 C for FCC Certificate

On Behalf of

SHENZHEN XI LONG ELECTRONICS CO., LTD

Product description:	**PIR motion sensor with hidden camera,SD recorder**
Model No.:	**PIR-SD**
FCC ID:	**WO9- PIR-SD**
Prepared for:	**SHENZHEN XI LONG ELECTRONICS CO., LTD** No.2201, bldg.2, duoli industrial park, no.105, mei hua road, shang meilin, fu tian, shen zhen city, guang dong, china,
Prepared by:	**Bontek Compliance Testing Laboratory Ltd** 1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China Tel: 86-755-86337020 Fax: 86-755-86337028
Report No.:	BCT13AR-0085E-1
Issue Date:	May 2, 2013
Test Date:	March 25~ May 2, 2013

Tested by: Lion Cai

Reviewed by: Kendy Wang

Approved by: Tony Wu

TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	**SHENZHEN XI LONG ELECTRONICS CO., LTD**
Address of applicant:	No.2201, bldg.2, duoli industrial park, no.105, mei hua road, shang meilin, fu tian, shen zhen city, guang dong, china,
Manufacturer:	**SHENZHEN XI LONG ELECTRONICS CO., LTD**
Address of manufacturer:	No.2201, bldg.2, duoli industrial park, no.105, mei hua road, shang meilin, fu tian, shen zhen city, guang dong, china,

General Description of E.U.T

Items	Description
EUT Description:	PIR motion sensor with hidden camera,SD recorder
Trade Name:	N/A
Model No.:	PIR-SD
Rated Voltage	DC 5V 1000mA
Frequency range	433.92MHz
Number of channels	1
Channel Separation	None
Product Class:	Part 15 Security/Remote Control Transmitter

** The test data gathered are from the production sample provided by the manufacturer.*

1.2 Test Standards

The following Declaration of Conformity report of EUT is prepared in accordance with

FCC Rules and Regulations Part 15 Subpart C Section 15.231

The objective of the manufacturer is to demonstrate compliance with the described above standards.

1.3 Test Facility

All measurement required was performed at laboratory of Bontek Compliance Testing Laboratory Ltd at 1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China.

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

FCC – Registration No.: 338263

BONTEK COMPLIANCE TESTING LABORATORY LTD. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 338263, March 03, 2011.

IC Registration No.: 7631A

The 3m alternate test site of BONTEK COMPLIANCE TESTING LABORATORY LTD. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 7631A on January 25, 2011.

CNAS - Registration No.: L3923

BONTEK COMPLIANCE TESTING LABORATORY LTD. to ISO/IEC 17025:25 General Requirements for the Competence of Testing and Calibration Laboratories(CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing. The acceptance letter from the CNAS is maintained in our files: Registration: L3923,March 22,2012.

TUV - Registration No.: UA 50203122-0001

BONTEK COMPLIANCE TESTING LABORATORY LTD. An assessment of the laboratory was conducted according to the"Procedures and Conditions for EMC Test Laboratories"with reference to EN ISO/IEC 17025 by a TUV Rheinland auditor. Audit Report NO. 17010783-002.

2. SYSTEM TEST CONFIGURATION

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The calibrated antennas used to sample the radiated field strength are mounted on a non-conductive, motorized antenna mast 3 or 10 meters from the leading edge of the turntable.

2.3 General Test Procedures

Conducted Emissions: The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 7.1 of ANSI C63.4-2003 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak detector mode.

Radiated Emissions: The EUT is a placed on as turntable, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4-2003.

2.4 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty
Power Line Conducted Emission	+/- 2.3 dB
Radiated Emission	+/- 3.4 dB

Uncertainty figures are valid to a confidence level of 95%.

2.5 Test Equipment List and Details

Test equipments list of Bontek Compliance Testing Laboratory Ltd.

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	BCT-EMC001	EMI Test Receiver	R&S	ESCI	100687	2013-4-16	2014-4-17
2	BCT-EMC002	EMI Test Receiver	R&S	ESPI	100097	2012-11-1	2013-10-31
3	BCT-EMC003	Amplifier	HP	8447D	1937A02492	2013-4-19	2014-4-18
4	BCT-EMC004	Single Power Conductor Module	R&S	NNBM 8124	242	2013-4-19	2014-4-18
5	BCT-EMC005	Single Power Conductor Module	R&S	NNBM 8124	243	2013-4-19	2014-4-18
6	BCT-EMC006	Power Clamp	SCHWARZBECK	MDS-21	3812	2012-11-5	2013-11-4
7	BCT-EMC007	Positioning Controller	C&C	CC-C-1F	MF7802113	N/A	N/A
8	BCT-EMC008	`Electrostatic Discharge Simulator	TESEQ	NSG437	125	2012-11-2	2013-11-1
9	BCT-EMC009	Fast Transient Burst Generator	SCHAFFNER	MODULA6150	34572	2013-4-16	2014-4-17
10	BCT-EMC010	Fast Transient Noise Simulator	Noiseken	FNS-105AX	10501	2012-6-26	2013-6-25
11	BCT-EMC011	Color TV Pattern Genenator	PHILIPS	PM5418	TM209947	N/A	N/A
12	BCT-EMC012	Power Frequency Magnetic Field Generator	EVERFINE	EMS61000-8K	608002	2013-4-16	2014-4-17
14	BCT-EMC014	Capacitive Coupling Clamp	TESEQ	CDN8014	25096	2013-4-16	2014-4-17
15	BCT-EMC015	High Field Biconical Antenna	ELECTRO-METRICS	EM-6913	166	2012-11-28	2013-11-27
16	BCT-EMC016	Log Periodic Antenna	ELECTRO-METRICS	EM-6950	811	2012-11-28	2013-11-27
17	BCT-EMC017	Remote Active Vertical Antenna	ELECTRO-METRICS	EM-6892	304	2012-11-28	2013-11-27
18	BCT-EMC018	TRILOG Broadband Test-Antenna	SCHWARZBECK	VULB9163	9163-324	2012-5-19	2014-5-18
19	BCT-EMC019	Horn Antenna	SCHWARZBECK	BBHA9120A	0499	2012-11-28	2013-11-27
20	BCT-EMC020	Teo Line Single Phase Module	SCHWARZBECK	NSLK8128	8128247	2012-11-1	2013-10-31
21	BCT-EMC021	Triple-Loop Antenna	EVERFINE	LLA-2	711002	2012-11-15	2013-11-14
22	BCT-EMC022	Electric bridge	Jhai	JK2812C	803024	N/A	N/A
23	BCT-EMC026	RF POWER AMPLIFIER	FRANKONIA	FLL-75	1020A1109	2012-4-17	2013-4-16
24	BCT-EMC027	CDN	FRANKONIA	CDN M2+M3	A3027019	2012-4-17	2013-4-16
25	BCT-EMC029	6DB Attenuator	FRANKONIA	N/A	1001698	2012-4-17	2013-4-16

26	BCT-EMC030	EM Injection clamp	FCC	F-203I-23mm	091536	2013-4-16	2014-4-17
27	BCT-EMC031	9kHz-2.4GHz signal generator 2024	MARCONI	10S/6625-99-457-8730	112260/042	2013-4-16	2014-4-17
28	BCT-EMC032	10dB attenuator	ELECTRO-METRICS	EM-7600	836	2013-4-16	2014-4-17
29	BCT-EMC033	ISN	TESEQ	ISN-T800	30301	2012-11-15	2013-11-14
30	BCT-EMC034	10KV surge generator	SANKI	SKS-0510M	048110003E 321	2012-11-01	2013-10-31
31	BCT-EMC035	HRMONICS&FLICKRE ANALYSER	VOLTECH	PM6000	200006700433	2012-11-20	2013-11-19
32	BCT-EMC036	Spectrum Analyzer	R&S	FSP	100397	2012-11-1	2013-10-31
33	BCT-EMC037	Broadband preamplifier	SCH WARZBECK	BBV9718	9718-182	2013-4-19	2014-4-18

3. SUMMARY OF TEST RESULTS

Standard	Test Items	Status	Application
Part 15 Subpart C Section 15.231	Disturbance Voltage at The Mains Terminals	√	N/A, without AC power supply
	Radiation Emission	√	
	20dB Bandwidth	√	
	Duty Cycle	√	
	Transmission time	√	
	Antennal requirement	√	

√ Indicates that the test is applicable

× Indicates that the test is not applicable

4. DISTURBANCE VOLTAGE AT THE MAINS TERMINALS

4.1 Measurement Uncertainty

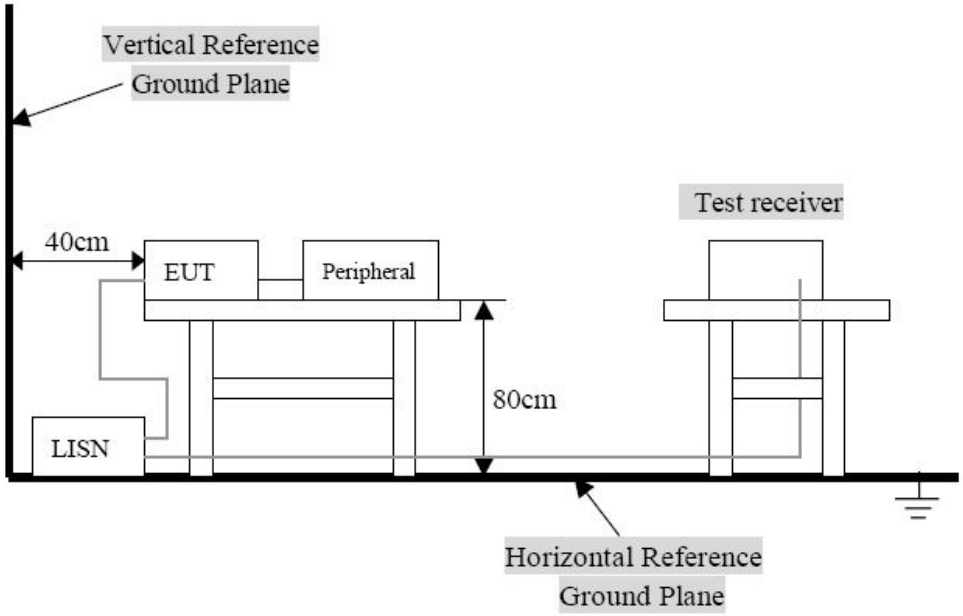
All test results complied with Section 15.207 requirements. Measurement Uncertainty is 2.4 dB.

4.2 Applicable Standard

Section 15.207: For a Low-power Radio-frequency Device is designed to be connected to the AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed below limits table.

Frequency Range (MHz)	Limits (dBuV)	
	Quasi-Peak	Average
0.150～0.500	66～56	56～46
0.500～5.000	56	46
5.000～30.00	60	50

4.3 Test Setup Diagram



Remark: The EUT was connected to a 120 VAC/ 60Hz power source.

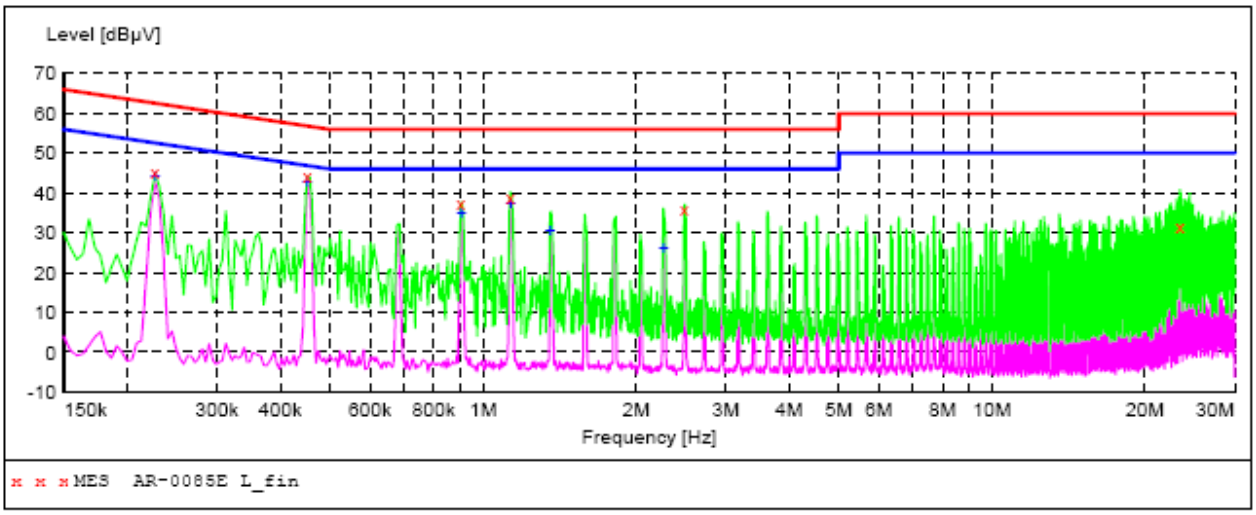
4.4 Test Result

Temperature (℃) : 23~25	EUT: PIR motion sensor with hidden camera, SD recorder
Humidity (%RH): 45~58	M/N: PIR-SD
Barometric Pressure (mbar): 950~1000	Operation Condition: Charging with Tx Mode

Conducted Emission:

EUT:	PIR motion sensor with hidden camera,SD recorder
M/N:	PIR-SD
Operating Condition:	Charging with Tx Mode
Test Site:	Shielded Room
Operator:	Yang
Test Specification:	AC 120V/60Hz for adapter
Comment:	L Line

SCAN TABLE: "Voltage (9K-30M)FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "AR-0085E L_fin"

4/18/2013 2:13PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.226500	45.20	10.7	63	17.4	QP	L1	GND
0.451500	44.40	10.3	57	12.4	QP	L1	GND
0.901500	37.30	10.2	56	18.7	QP	L1	GND
1.131000	39.00	10.3	56	17.0	QP	L1	GND
2.481000	36.10	10.2	56	19.9	QP	L1	GND
23.419500	31.60	10.8	60	28.4	QP	L1	GND

MEASUREMENT RESULT: "AR-0085E L_fin2"

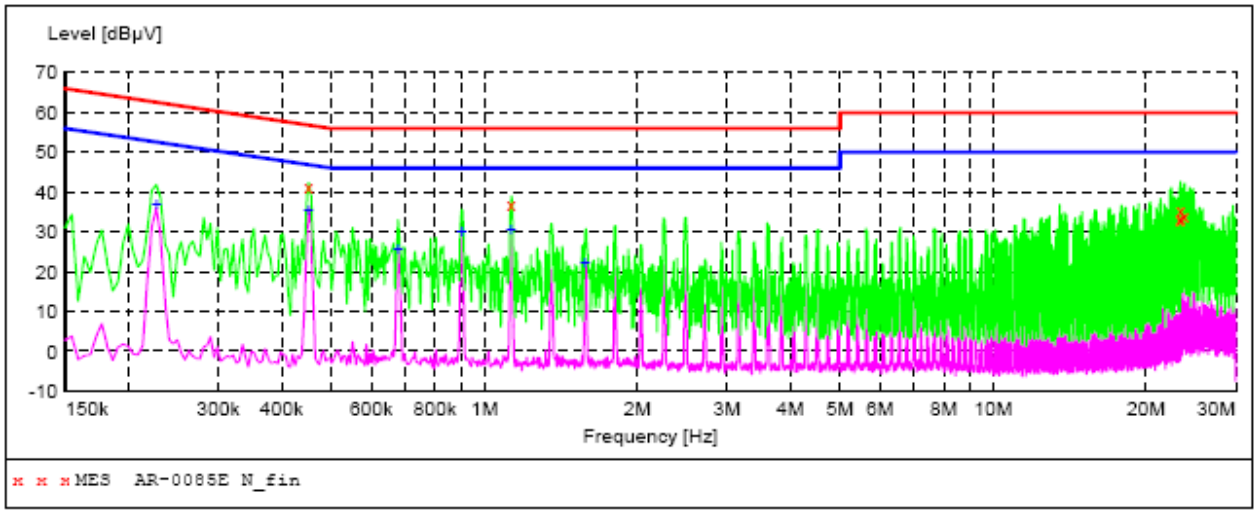
4/18/2013 2:13PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.226500	44.20	10.7	53	8.4	AV	L1	GND
0.451500	43.10	10.3	47	3.7	AV	L1	GND
0.906000	34.80	10.2	46	11.2	AV	L1	GND
1.131000	37.40	10.3	46	8.6	AV	L1	GND
1.356000	30.70	10.2	46	15.3	AV	L1	GND
2.265000	26.00	10.2	46	20.0	AV	L1	GND

Conducted Emission:

EUT:	PIR motion sensor with hidden camera,SD recorder
M/N:	PIR-SD
Operating Condition:	Charging with Tx Mode
Test Site:	Shielded Room
Operator:	Yang
Test Specification:	AC 120V/60Hz for adapter
Comment:	N Line

SCAN TABLE: "Voltage (9K-30M) FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "AR-0085E N_fin"

4/18/2013 2:16PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.451500	41.20	10.3	57	15.6	QP	N	GND
1.126500	36.90	10.3	56	19.1	QP	N	GND
23.347500	33.30	10.8	60	26.7	QP	N	GND
23.370000	35.50	10.8	60	24.5	QP	N	GND
23.379000	33.60	10.8	60	26.4	QP	N	GND
23.752500	34.10	10.8	60	25.9	QP	N	GND

MEASUREMENT RESULT: "AR-0085E N_fin2"

4/18/2013 2:16PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.226500	37.10	10.7	53	15.5	AV	N	GND
0.451500	35.50	10.3	47	11.3	AV	N	GND
0.676500	25.90	10.2	46	20.1	AV	N	GND
0.901500	30.00	10.2	46	16.0	AV	N	GND
1.126500	30.70	10.3	46	15.3	AV	N	GND
1.576500	22.10	10.2	46	23.9	AV	N	GND

5. RADIATED DISTURBANCES

5.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is ±3.4 dB.

5.2 Limit of Radiated Disturbances

According to 15.231(b), the field strength of emissions from Intentional Radiators operated under this section shall not exceed the following:

Fundamental Frequency	Field Strength of Fundamental		Field Strength of Spurious	
(MHz)	(dBuV/m)	(uV/m)	(dBuV/m)	(uV/m)
40.66 - 40.70	67.04	2,250	47.04	225
70 - 130	61.94	1,250	41.94	125
130 - 174	* 61.94 - 71.48	* 1,250 -3,750	* 41.94 - 51.48	* 125 - 375
174 - 260	71.48	3,750	51.48	375
260 - 470	* 71.48 - 81.94	* 3,750 - 12,500	* 51.48 - 61.94	* 375 - 1,250
above 470	81.94	12,500	61.94	1,250

** linear interpolations

Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows: for the band 130-174 MHz, uV/m at 3 meters = 56.81818(F) - 6136.3636; for band 260-470 MHz, uV/m at 3 meters = 41.6667(F) - 7083.3333. The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.

5.3 EUT Setup

The radiated emission tests were performed in the in the 3-meter anechoic chamber, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC Part 15 Subpart B limits.

The EUT was placed on the center of the test table. In the frequency range below 1 GHz, Ultra-Broadband Antenna horn-antenna is used. In the frequency range above 1 GHz horn-antenna is used. Test setup refer to Section 2.4 Basic Test Setup Block Diagram of this report.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

5.4 Test Receiver Setup

According to FCC Part 15 rule, the frequency was investigated from 30 to 4000 MHz.During the radiated emission test, the test receiver was set with the following configurations:

Test Receiver Setting for frequency range below 1000MHz:

Detector……..Peak & Quasi-Peak
IF Band Width……..…..100KHz
Frequency Range…….30MHz to 1000MHz
Turntable Rotated…….0 to 360 degrees

Test Receiver Setting for frequency range above 1000MHz:

Detector……..Peak
IF Band Width……..…..1MHz
Frequency Range…….1000MHz to 4000MHz
Turntable Rotated…….0 to 360 degrees

Antenna Position:

Height……..…1m to 4m
Polarity……....Horizontal and Vertical

5.5 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

1). Configure the EUT according to ANSI C63.4:2009.

2). The EUT was placed on the top of the turntable 0.8 meter above ground.

3). The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.

4). Power on the EUT and all the supporting units.

5). The turntable was rotated by 360 degrees to determine the position of the highest radiation.

6). The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of both horizontal and vertical polarization.

7). For each suspected emission, the antenna tower was scanned (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.

8). Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode. Then all data was recorded in the peak detection mode.

Quasi-peak readings performed only when an emission was found to be marginal (within -10 dBμV of specification limits), and are distinguished with a "**QP**" in the data plots.

5.6 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude Indicated reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Transd.

Transd.= Antenna Factor + Cable Factor - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dBμV means the emission is 7dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. –Limit

5.7 Radiated Emissions Test Result

Temperature (℃) : 22~23	EUT: PIR motion sensor with hidden camera, SD recorder
Humidity (%RH): 50~54	M/N: PIR-SD
Barometric Pressure (mbar): 950~1000	Operation Condition: Transmitting

WORST-CASE RADIATED EMISSION BELOW 30 MHz

Frequency	Meter Reading	Antenna Factor	Cable Loss	Emission Levels	Limits	Margin	Detector Mode
(MHz)	(dBμV)	(dB/M)	(dB)	(dBμV/M)	(dB μ V/M)	(dB)	PK/QP
7.71	26.42	9.02	1.01	36.45	67	-30.55	QP
11.25	22.31	9.16	1.19	32.66	49.5	-16.84	QP
21.36	23.65	9.25	1.08	33.98	49.5	-15.52	QP
27.45	24.21	9.13	1.66	35.06	49.5	-14.44	QP

Remark：

(1) In this testing, the EUT was respectively tested in three different orientations. That is:

1. EUT was lie vertically, and then its Antenna oriented upward
2. EUT was lie vertically, and then its Antenna oriented downward
3. EUT was lie flatwise, and then its Antenna oriented to the receiving antenna

When the EUT was lie flatwise, and its Antenna oriented to the receiving antenna, the worst test data was got as following table.

433.52 MHz Tx in operation										
Maximum Frequency (MHz)	Emission Position and Level						Limit		Margin	
	Polarity	m	Deg°	Transd	Peak (dBμV/m)	AV (dBμV/m)	Peak (dBμV/m)	AV\QP (dBμV/m)	Peak (dB)	AV\QP (dB)
35.38	V	1.3	125	14.7	30.85	16.82	80.82	60.82	49.97	44
198.55	V	1.2	134	14.9	38.36	24.33	80.82	60.82	42.46	36.49
299.66	V	1.4	89	18.7	38.95	24.92	80.82	60.82	41.87	35.9
350.12	V	1.5	207	20.4	38.21	24.18	80.82	60.82	42.61	36.64
433.52	V	1.2	128	22	78.35	64.32	100.82	80.82	22.47	16.5
868.08	V	1	109	28.8	54.35	40.32	80.82	60.82	26.47	20.5
1302.14	V	1.3	185	24.1	32.33	18.3	74.00*	54.00*	39.67	33.7
1744.11	V	1.5	254	23.4	33.36	19.33	80.82	60.82	47.46	41.49
2169.05	V	---	---	---	---	---	80.82	60.82	---	
2603.91	V	---	---	---	---	---	80.82	60.82	---	
3037.03	V	---	---	---	---	---	80.82	60.82	---	
3471.22	V	---	---	---	---	---	80.82	60.82	---	
3905.31	V	---	---	---	---	---	80.82	60.82	---	
4339.94	V	---	---	---	---	---	80.82	60.82	---	

Remark：

(1) In this testing, the EUT was respectively tested in three different orientations. That is:

4. EUT was lie vertically, and then its Antenna oriented upward
5. EUT was lie vertically, and then its Antenna oriented downward
6. EUT was lie flatwise, and then its Antenna oriented to the receiving antenna

When the EUT was lie flatwise, and its Antenna oriented to the receiving antenna, the worst test data was got as following table.

(2) Measuring frequencies from 30 MHz to the 10th harmonic of fundamental frequency of 433.52 MHz。

(3) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(4) * denotes spurious frequency which falls within the Restricted Bands specified in provision of § 15.205, then the general radiated emission limits in § 15.209 apply.

(5) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 8GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms

433.52 MHz Tx in operation										
Maximum Frequency (MHz)	Emission Position and Level						Limit		Margin	
	Polarity	m	Deg°	Transd	Peak (dBμV/m)	AV\QP (dBμV/m)	Peak (dBμV/m)	AV\QP (dBμV/m)	Peak (dB)	AV\QP (dB)
35.82	H	1.2	141	14.7	31	16.97	80.82	60.82	49.82	43.85
198.78	H	1.4	138	14.9	40.3	26.27	80.82	60.82	40.52	34.55
299.66	H	1.5	85	18.7	40.6	26.57	80.82	60.82	40.22	34.25
350.1	H	1.2	289	20.4	38.2	24.17	80.82	60.82	42.62	36.65
433.52	H	1.4	136	22	81.1	67.07	100.82	80.82	19.72	13.75
868.08	H	1.5	95	28.8	59.9	45.87	80.82	60.82	20.92	14.95
1302.14	H	1.2	98	24.1	34.33	20.3	74.00*	54.00*	39.67	33.7
1744.11	H	1.3	107	23.4	33.05	19.02	80.82	60.82	47.77	41.8
2169.05	H	---	---	---	---	---	80.82	60.82	---	
2603.91	H	---	---	---	---	---	80.82	60.82	---	
3037.03	H	---	---	---	---	---	80.82	60.82	---	
3471.22	H	---	---	---	---	---	80.82	60.82	---	
3905.31	H	---	---	---	---	---	80.82	60.82	---	
4339.94	H	---	---	---	---	---	80.82	60.82	---	

Remark：

(1) In this testing, the EUT was respectively tested in three different orientations. That is:

1. EUT was lie vertically, and then its Antenna oriented upward
2. EUT was lie vertically, and then its Antenna oriented downward
3. EUT was lie flatwise, and then its Antenna oriented to the receiving antenna

When the EUT was lie flatwise, and its Antenna oriented to the receiving antenna, the worst test data was got as following table.

(2) Measuring frequencies from 30 MHz to the 10th harmonic of fundamental frequency of 433.52 MHz。

(3) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(4) * denotes spurious frequency which falls within the Restricted Bands specified in provision of ξ 15.205, then the general radiated emission limits in ξ 15.209 apply.

(5) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 8GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms

6. 20dB BANDWIDTH

6.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is ±3.4 dB.

6.2 Limit of 20dB Bandwidth

In accordance with Part15.231(c), the fundamental frequency bandwidth was kept within 0.25% of the center frequency for devices operating>70MHz and <900MHz.

Fundamental Frequency (MHz)	Limit of 20dB Bandwidth (kHz)
433.946	433946x0.0025=1084.87

6.3 EUT Setup

The radiated emission tests were performed in the in the 3-meter anechoic chamber, using the setup accordance with the ANSI C63.4-2009.

The EUT was placed on the center of the nonmetal table which is 0.8 meter above a grounded turntable. The turntable can rotate 360 degrees to determine the azimuth of the maximum emission level.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

6.4 Test Procedure

1) Turn on the transmitter, and set it to transmit the pulse train continuously.

2) Set Test Receiver into spectrum analyzer mode, Tune the spectrum analyzer to the transmitter carrier frequency, and set the spectrum analyzer resolution bandwidth(RBW) to 100kHz and video bandwidth(VBW) to 100kHz, then select Peak function to scan the channel frequency.

3) The 20dB bandwidth was measured and recorded.

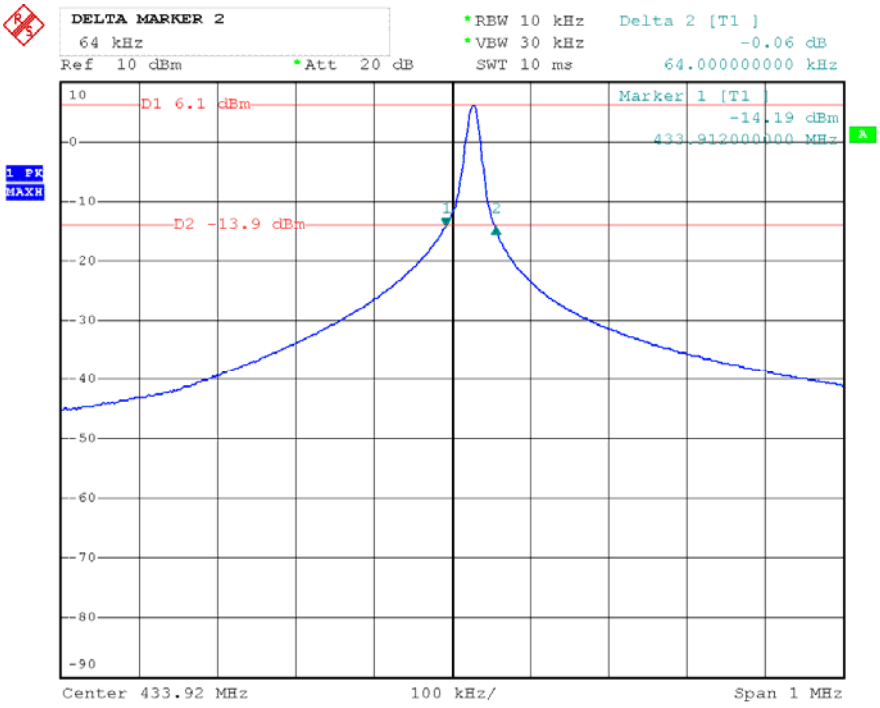
Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

6.5 Emissions within Band Edges Test Result

Temperature (℃) : 22~23	EUT: PIR motion sensor with hidden camera, SD recorder
Humidity (%RH): 50~54	M/N: PIR-SD
Barometric Pressure (mbar): 950~1000	Operation Condition: Transmitting

Test plots see following pages

Fundamental Frequency (MHz)	20dB Bandwidth (kHz)	Maximum Limit (kHz)	Pass/Fail
433.92	64	1084.87	Pass



7. Duty Cycle

7.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is ±3.4 dB.

7.2 EUT Setup

The radiated emission tests were performed in the in the 3-meter anechoic chamber, using the setup accordance with the ANSI C63.4-2009

The EUT was placed on the center of the nonmetal table which is 0.8 meter above a grounded turntable. The turntable can rotate 360 degrees to determine the azimuth of the maximum emission level.

7.3 Test Procedure

1) The EUT was placed on a turntable which is 0.8m above ground plane.

2) Set EUT operating in continuous transmitting mode

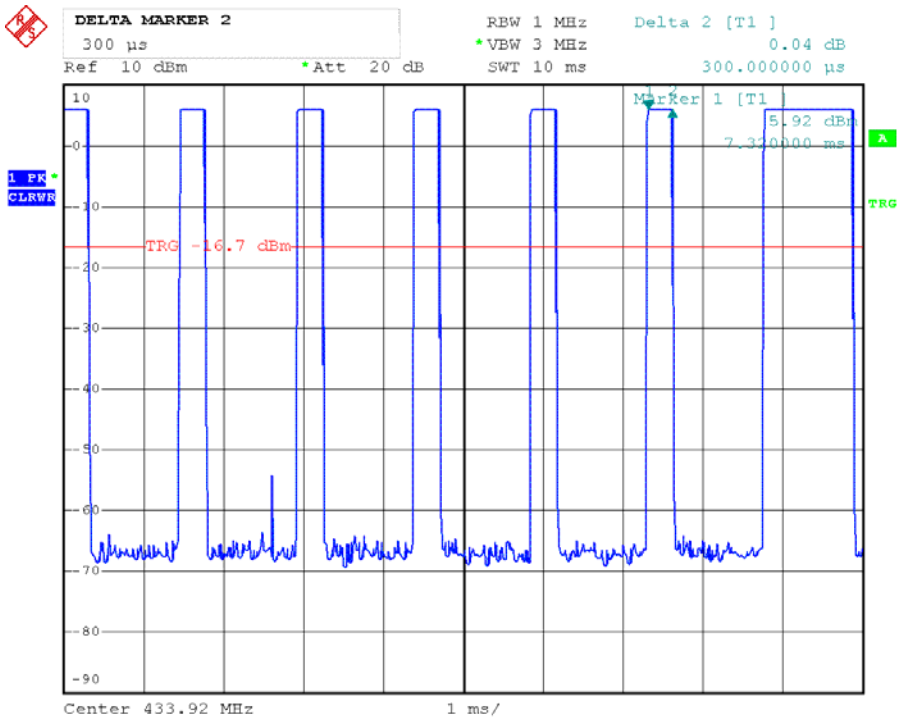
3) Set Test Receiver into spectrum analyzer mode, Tune the spectrum analyzer to the transmitter carrier frequency, and set the spectrum analyzer resolution bandwidth(RBW) to 1000kHz and video bandwidth(VBW) to 1000kHz, Span was set to 0Hz.

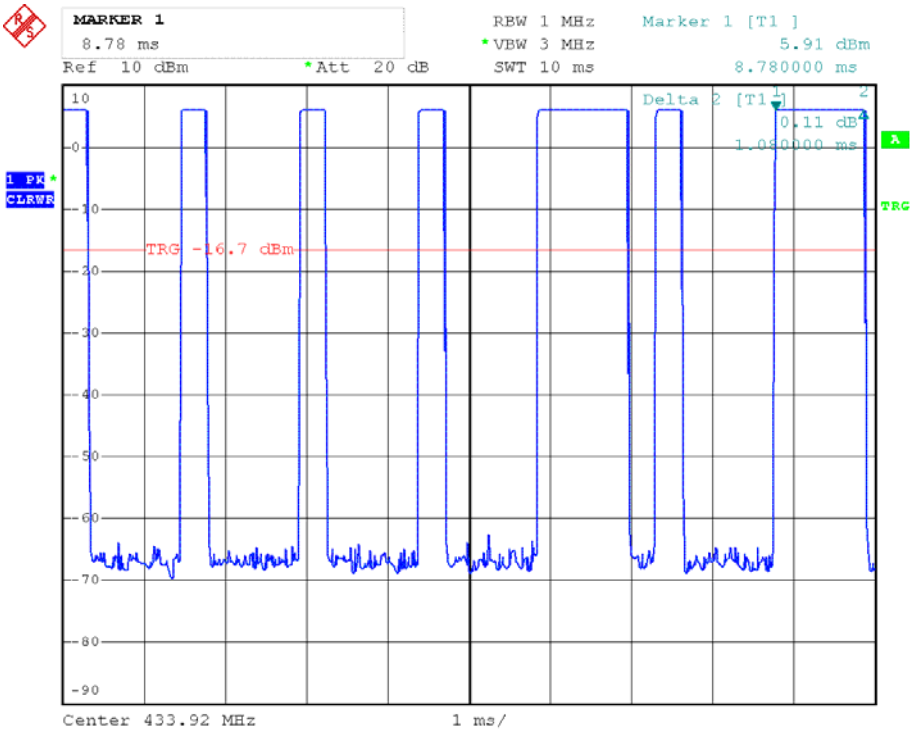
4) The Duty Cycle was measured and recorded.

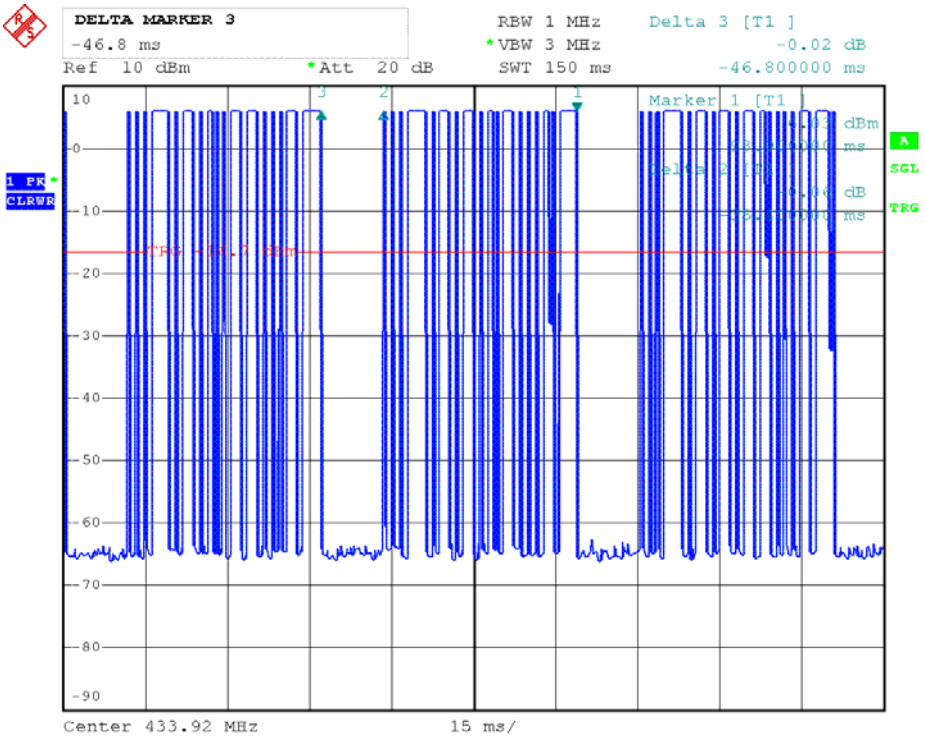
7.4 Measurement Result

Temperature (℃) : 22~23	EUT: PIR motion sensor with hidden camera,SD recorder
Humidity (%RH): 50~54	M/N: PIR-SD
Barometric Pressure (mbar): 950~1000	Operation Condition: Transmitting

The Duty Cycle= (0.3* 13+ 1.08*5)/46.8= 19.9%
Then the Duty Cycle Correction Factor derived from the19.9% is: 20 Log.3144= -14.03dB
This value is used to adjust the average corrected value.
.
Note Fundamental AVG=PK+LOG(Dutycycle)


DELTA MARKER 2
300 µs
RBW 1 MHz
*VBW 3 MHz
SWT 10 ms
Delta 2 [T1]
0.04 dB
300.000000 µs
Ref 10 dBm
*Att 20 dB
Marker 1 [T1]
5.92 dBm
1 PK
CLRWR
TRG
TRG -16.7 dBm
Center 433.92 MHz
1 ms/


MARKER 1
8.78 ms
RBW 1 MHz
*VBW 3 MHz
SWT 10 ms
Marker 1 [T1]
5.91 dBm
8.780000 ms
Ref 10 dBm
*Att 20 dB
Delta 2 [T1]
0.11 dB
1 PK
CLRWR
TRG
TRG -16.7 dBm
Center 433.92 MHz
1 ms/



8. Transmission Time

8.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is +3.4 dB.

8.2 EUT Setup

The radiated emission tests were performed in the in the 3-meter anechoic chamber, using the setup accordance with the ANSI C63.4-2009.

The EUT was placed on the center of the nonmetal table which is 0.8 meter above a grounded turntable. The turntable can rotate 360 degrees to determine the azimuth of the maximum emission level.

8.3 Test Procedure

3) The EUT was placed on a turntable which is 0.8m above ground plane.

4) Set EUT operating in continuous transmitting mode

3) Set Test Receiver into spectrum analyzer mode, Tune the spectrum analyzer to the transmitter carrier frequency, and set the spectrum analyzer resolution bandwidth(RBW) to 1000kHz and video bandwidth(VBW) to 1000kHz, Span was set to 0Hz.

5) The Transmission time was measured and recorded.

8.4 Limit of Transmission time

In accordance with Part15.231(a)(2), A transmitter activated automatically shall cease transmission within 5 seconds after activation

Fundamental Frequency (MHz)	Limit of Transmission (S)
433.946	5

8.5 Transmission Time Test Result

Temperature (℃) : 22~23	EUT: PIR motion sensor with hidden camera,SD recorder
Humidity (%RH): 50~54	M/N: PIR-SD
Barometric Pressure (mbar): 950~1000	Operation Condition: Transmitting

Test plots see following pages

Fundamental Frequency (MHz)	Transmission time (S)	Maximum Limit (S)	Pass/Fail
433.92	2.31	5	Pass

9. ANTENNA REQUIREMENT

9.1 Standard Applicable

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

9.2 Antenna Connected Construction

The antenna connector is designed with permanent attachment and no consideration of replacement.