Test Report of FCC Part 15 C for FCC Certificate

On Behalf of

PRASTEL FRANCE

Product description:	RADIO REMOTE CONTROL FOR GATE OPENERS
Model No.:	SLIM2E, SLIM4E
FCC ID:	**2AEHC- SLIM4E**
Prepared for:	**PRASTEL FRANCE** ZI ATHELIA II 225 IMPASSE DU SERPOLET 13704 LA CIOTAT CEDEX FRANCE
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.:	BCT15CR-0203E
Issue Date:	**March 20, 2015**
Test Date:	March 15~ 20, 2015

Tested by: Jiankuai.Li

Reviewed by: Owen Yang

Approved by: Tony Wu

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	**PRASTEL FRANCE**
Address of applicant:	ZI ATHELIA II 225 IMPASSE DU SERPOLET 13704 LA CIOTAT CEDEX FRANCE
Manufacturer:	**KINGHEAD ELECTRONICS CO LIMITED**
Address of manufacturer:	PLAT C 23/F LUCXY PLAZA 315-321 LOCKHART ROAD WAN CHAI HK
Factory	**ZHONGSHAN TOPSKING ELECTRONICS CO., LTD**
Address of Factory	12TH, BAOSHENG YI JIE, DONGSHENG TOWN, ZHONGSHAN CITY, GUANGDONG PROVINCE

General Description of E.U.T

Items	Description
EUT Description:	RADIO REMOTE CONTROL FOR GATE OPENERS
Trade Name:	PRASTEL
Test Model No.:	SLIM4E
Supplementary Model:	SLIM2E
Rated Voltage	DC 3V from Battery
Frequency range	433.92MHz
Number of channels	1
Channel Separation	None
Product Class:	Part 15 Security/Remote Control Transmitter

Remark
** The test data gathered are from the production sample provided by the manufacturer.*
**Supplementary models have the same circuit, only the appearance different*

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:

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.

FCC – Registration No.: 970318

Shenzhen CTL Testing Technology Co., 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 970318, December, 2013.

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 C63.4-2009 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 C63.4-2009.

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	2014-4-16	2015-4-17
2	BCT-EMC002	EMI Test Receiver	R&S	ESPI	100097	2014-11-1	2015-10-31
3	BCT-EMC003	Amplifier	HP	8447D	1937A02492	2014-4-19	2015-4-18
4	BCT-EMC004	Single Power Conductor Module	R&S	NNBM 8124	242	2014-4-19	2015-4-18
5	BCT-EMC005	Single Power Conductor Module	R&S	NNBM 8124	243	2014-4-19	2015-4-18
6	BCT-EMC006	Power Clamp	SCHWARZBECK	MDS-21	3812	2014-11-5	2015-11-4
7	BCT-EMC007	Positioning Controller	C&C	CC-C-1F	MF7802113	N/A	N/A
8	BCT-EMC008	`Electrostatic Discharge Simulator	TESEQ	NSG437	125	2014-11-2	2015-11-1
9	BCT-EMC009	Fast Transient Burst Generator	SCHAFFNER	MODULA6150	34572	2014-4-16	2015-4-17
10	BCT-EMC010	Fast Transient Noise Simulator	Noiseken	FNS-105AX	10501	2014-6-26	2015-6-25
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	2014-4-16	2015-4-17
14	BCT-EMC014	Capacitive Coupling Clamp	TESEQ	CDN8014	25096	2014-4-16	2015-4-17
15	BCT-EMC015	High Field Biconical Antenna	ELECTRO-METRICS	EM-6913	166	2014-11-28	2015-11-27
16	BCT-EMC016	Log Periodic Antenna	ELECTRO-METRICS	EM-6950	811	2014-11-28	2015-11-27
17	BCT-EMC017	Remote Active Vertical Antenna	ELECTRO-METRICS	EM-6892	304	2014-11-28	2015-11-27
18	BCT-EMC018	TRILOG Broadband Test-Antenna	SCHWARZBECK	VULB9163	9163-324	2014-5-19	2015-5-18
19	BCT-EMC019	Horn Antenna	SCHWARZBECK	BBHA9120A	0499	2014-11-28	2015-11-27
20	BCT-EMC020	Teo Line Single Phase Module	SCHWARZBECK	NSLK8128	8128247	2014-11-1	2015-10-31
21	BCT-EMC021	Triple-Loop Antenna	EVERFINE	LLA-2	711002	2014-11-15	2015-11-14
22	BCT-EMC022	Electric bridge	Jhai	JK2812C	803024	N/A	N/A
23	BCT-EMC026	RF POWER AMPLIFIER	FRANKONIA	FLL-75	1020A1109	2014-4-17	2015-4-16

24	BCT-EMC027	CDN	FRANKONIA	CDN M2+M3	A3027019	2014-4-17	2015-4-16
25	BCT-EMC029	6DB Attenuator	FRANKONIA	N/A	1001698	2014-4-17	2015-4-16
26	BCT-EMC030	EM Injection clamp	FCC	F-203I-23mm	091536	2014-4-16	2015-4-17
27	BCT-EMC031	9kHz-2.4GHz signal generator 2024	MARCONI	10S/6625-99-457-8730	112260/042	2014-4-16	2015-4-17
28	BCT-EMC032	10dB attenuator	ELECTRO-METRICS	EM-7600	836	2014-4-16	2015-4-17
29	BCT-EMC033	ISN	TESEQ	ISN-T800	30301	2014-11-15	2015-11-14
30	BCT-EMC034	10KV surge generator	SANKI	SKS-0510M	048110003E 321	2014-11-01	2015-10-31
31	BCT-EMC035	HRMONICS&FLICK RE ANALYSER	VOLTECH	PM6000	200006700433	2014-11-20	2015-11-19
32	BCT-EMC036	Spectrum Analyzer	R&S	FSP	100397	2014-11-1	2015-10-31
33	BCT-EMC037	Broadband preamplifier	SCH WARZBECK	BBV9718	9718-182	2014-4-19	2015-4-18

3. SUMMARY OF TEST RESULTS

Standard	Test Items	Status	Application
Part 15 Subpart C Section 15.231	Radiation Emission	√	
	20dB Bandwidth	√	
	Duty Cycle	√	
	Transmission time	√	
	Antennal requirement	√	

√ Indicates that the test is applicable

× Indicates that the test is not applicable

4. RADIATED EMISSIONS

4.1 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.

4.2 Limit of Radiated Emissions

4.2.1 According to §15.231(b), In addition to the provisions of Section 15.205, the field strength of emissions from intentional radiators operated under this Section shall not exceed the following: Fundamental Field Strength of Field Strength of Frequency Fundamental Spurious Emissions (MHz) (microvolts/meter) (microvolts/meter)

Fundamental Frequency (MHz)	Field Strength of Fundamental (microvolts/meter)	Field Strength of Spurious Emissions (microvolts/meter)
40.66 – 40.70	2,250	225
70 – 130	1,250	125
130 – 174	1,250 to 3,750 **	125 to 375 **
174 – 260	3,750	375
260 – 470	3,750 to 12,500 **	375 to 1,250 **
Above 470	12,500	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 the 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.]

4.2.2 Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (mV/m)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

Remark: *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.*

4.2.3. In the above emission table, the tighter limit applies at the band edges.

Frequency (Hz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

4.3 Test Procedure

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

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

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.

3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.

4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.

5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

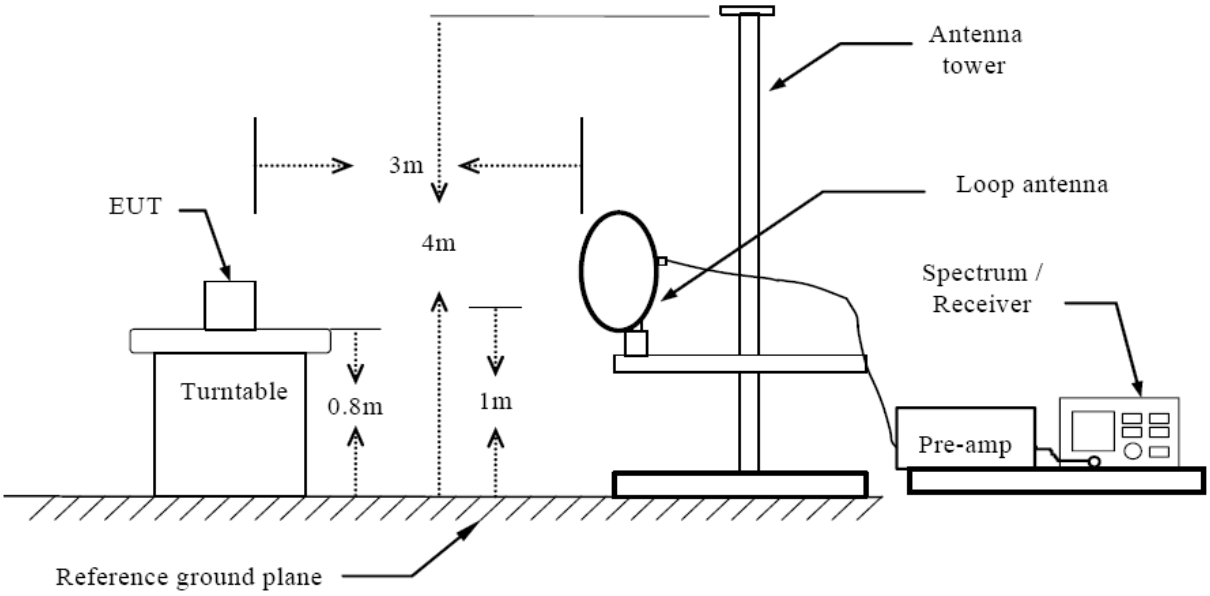
6. Set the spectrum analyzer in the following setting as: Below 1GHz:
RBW=100kHz / VBW=300kHz / Sweep=AUTO Above 1GHz:
(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

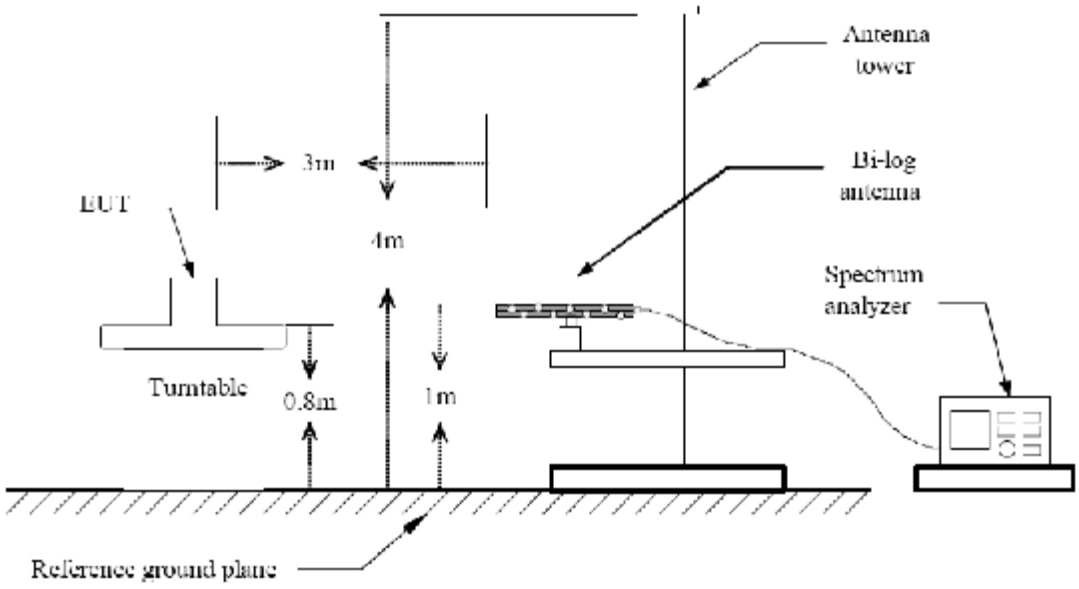
7. Repeat above procedures until the measurements for all frequencies are complete.

TEST CONFIGURATION

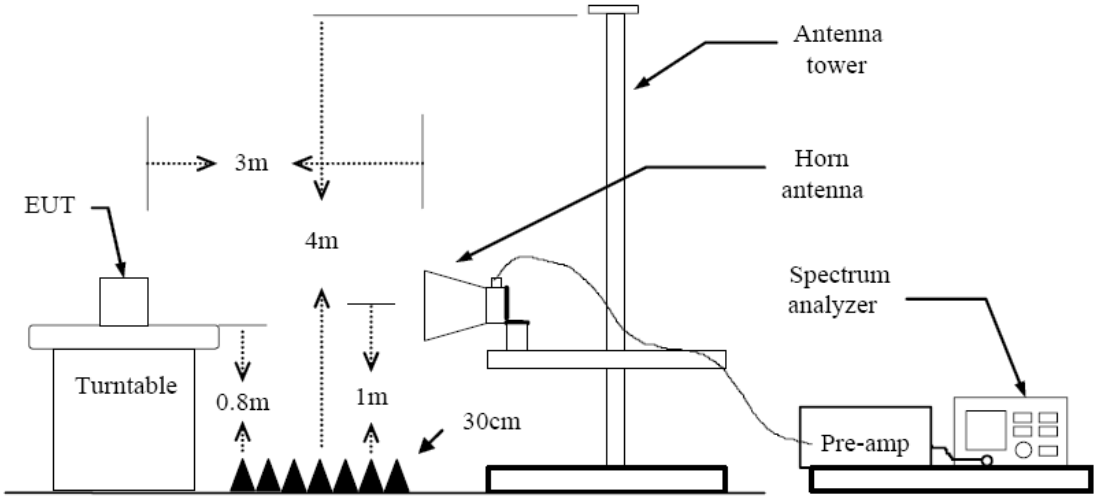
Below 30MHz



Below 1 GHz



Above 1 GHz



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.4 Radiated Emissions Test Result

Temperature (℃) : 22~23	EUT: PIR motion sensor with hidden camera, SD recorder
Humidity (%RH): 50~54	M/N: SLIM2E
Barometric Pressure (mbar): 950~1000	Operation Condition: Transmitting

Frequency (MHz)	= Emission frequency in MHz
Reading (dBuV)	= Uncorrected Analyzer / Receiver reading
Correction Factor (dB/m)	= Antenna factor + Cable loss – Amplifier
gain Result (dBuV/m)	= Reading (dBuV) + Corr. Factor (dB/m)
Limit (dBuV/m)	= Limit stated in standard
Margin (dB)	= Result (dBuV/m) – Limit
(dBuV/m) Q.P.	= Quasi-peak Reading
Peak	= Peak Reading
AVG	= Average Reading

TEST DATA:

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
433.9200	114.46	-15.61	98.85	100.80	-1.95	H	Peak
433.9200	81.82	-15.61	66.21	80.80	-14.59	H	AVG
433.9200	106.24	-15.61	90.63	100.80	-10.17	V	Peak
433.9200	73.60	-15.61	57.99	80.80	-22.81	V	AVG

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
39.7000	48.20	-14.46	33.74	40.00	-6.26	V	QP
118.9167	48.09	-20.30	27.79	43.50	-15.71	V	QP
317.7667	46.09	-17.70	28.39	46.00	-17.61	V	QP
704.1500	38.10	-10.67	27.43	46.00	-18.57	V	QP
865.8167	46.17	-9.47	36.70	46.00	-9.30	V	QP
961.2000	37.66	-8.24	29.42	54.00	-24.58	V	QP
41.3166	47.06	-14.73	32.33	40.00	-7.67	H	QP
117.3000	44.83	-20.48	24.35	43.50	-19.15	H	QP
317.7667	54.63	-17.70	36.93	46.00	-9.07	H	QP
612.0000	37.34	-12.34	25.00	46.00	-21.00	H	QP
702.5333	37.97	-10.53	27.44	46.00	-18.56	H	QP
865.8167	51.27	-9.47	41.80	46.00	-4.20	H	QP

Remark: *No emission found between lowest internal used/generated frequency to 30MHz.*

Remark:

1. *Measuring frequencies from 9kHz to 30 MHz, 30MHz to 1GHz.*
2. *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.*
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. *The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.*

Above 1 GHz

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1300.000	90.81	-19.03	71.78	74.00	-2.22	V	peak
1300.000	58.17	-19.03	39.14	54.00	-14.86	V	AVG
1733.333	88.20	-19.82	68.38	74.00	-5.62	V	peak
1733.333	55.56	-19.82	35.74	54.00	-18.26	V	AVG
2166.667	80.28	-18.30	61.98	74.00	-12.02	V	peak
2166.667	47.64	-18.30	29.34	54.00	-24.66	V	AVG
2600.000	69.95	-16.76	53.19	74.00	-20.81	V	peak
2600.000	37.31	-16.76	20.55	54.00	-33.45	V	AVG
3033.333	70.87	-14.88	55.99	74.00	-18.01	V	peak
3033.333	38.23	-14.88	23.35	54.00	-30.65	V	AVG
3466.667	71.29	-13.51	57.78	74.00	-16.22	V	peak
3466.667	38.65	-13.51	25.14	54.00	-28.86	V	AVG
3900.000	78.61	-13.32	65.29	74.00	-8.71	V	peak
3900.000	45.97	-13.32	32.65	54.00	-21.35	V	AVG
4326.667	75.91	-11.73	64.18	74.00	-9.82	V	peak
4326.667	43.27	-11.73	31.54	54.00	-22.46	V	AVG
4760.000	73.78	-9.98	63.80	74.00	-10.20	V	peak
4760.000	41.14	-9.98	31.16	54.00	-22.84	V	AVG
1300.000	90.80	-19.03	71.77	74.00	-2.23	H	peak
1300.000	58.16	-19.03	39.13	54.00	-14.87	H	AVG
1733.333	91.02	-19.82	71.20	74.00	-2.80	H	peak
1733.333	58.38	-19.82	38.56	54.00	-15.44	H	AVG
2166.667	83.79	-18.30	65.49	74.00	-8.51	H	peak
2166.667	51.15	-18.30	32.85	54.00	-21.15	H	AVG
3033.333	71.15	-14.88	56.27	74.00	-17.73	H	peak
3033.333	38.51	-14.88	23.63	54.00	-30.37	H	AVG
3466.667	68.04	-13.51	54.53	74.00	-19.47	H	peak
3466.667	35.40	-13.51	21.89	54.00	-32.11	H	AVG
3893.333	78.92	-13.32	65.60	74.00	-8.40	H	peak
3893.333	46.28	-13.32	32.96	54.00	-21.04	H	AVG
4326.667	76.60	-11.73	64.87	74.00	-9.13	H	peak
4326.667	43.96	-11.73	32.23	54.00	-21.77	H	AVG
4760.000	73.31	-9.98	63.33	74.00	-10.67	H	peak
4760.000	40.67	-9.98	30.69	54.00	-23.31	H	AVG

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.

4. Spectrum setting:

a. Spectrum Peak Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 1MHz, Sweep time = 200 ms. b. Spectrum AV Setting 1GH z- 26GHz, RBW = 1MHz, VBW = 10Hz, Sweep time = 200 ms.

5. 20dB BANDWIDTH

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 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)
433.92	433946x0.0025=1084.8

5.3 EUT Setup

The radiated emission tests were performed in the in the 3-meter Semi-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.

5.4 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.

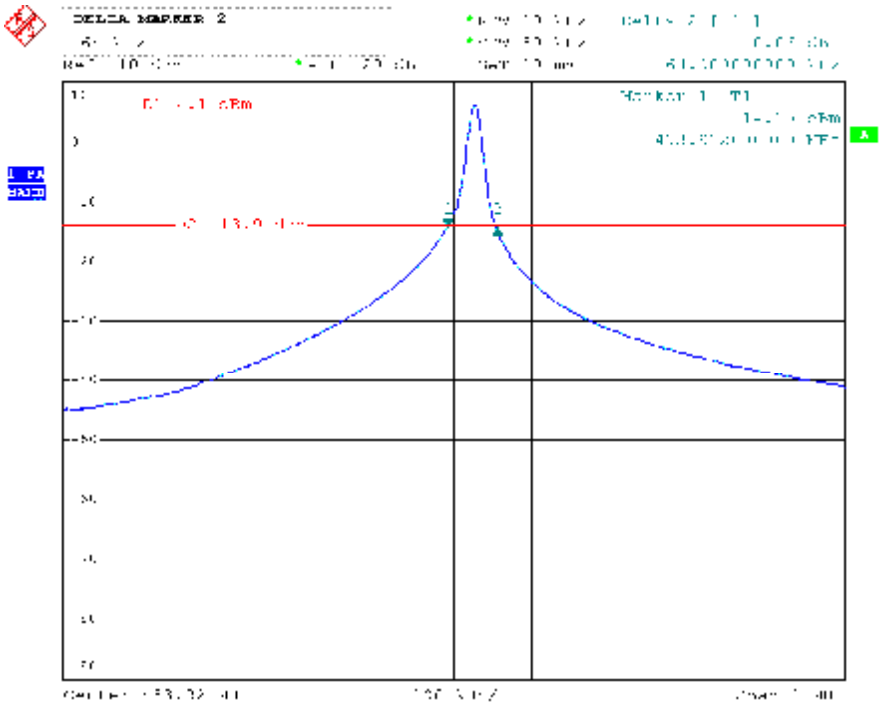
Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

5.5 Emissions within Band Edges Test Result

Temperature (℃) : 22~23	EUT: PIR motion sensor with hidden camera, SD recorder
Humidity (%RH): 50~54	M/N: SLIM2E
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	1084.8	Pass



6. Duty Cycle

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 EUT Setup

The radiated emission tests were performed in the in the 3-meter Semi-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.

6.3 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.

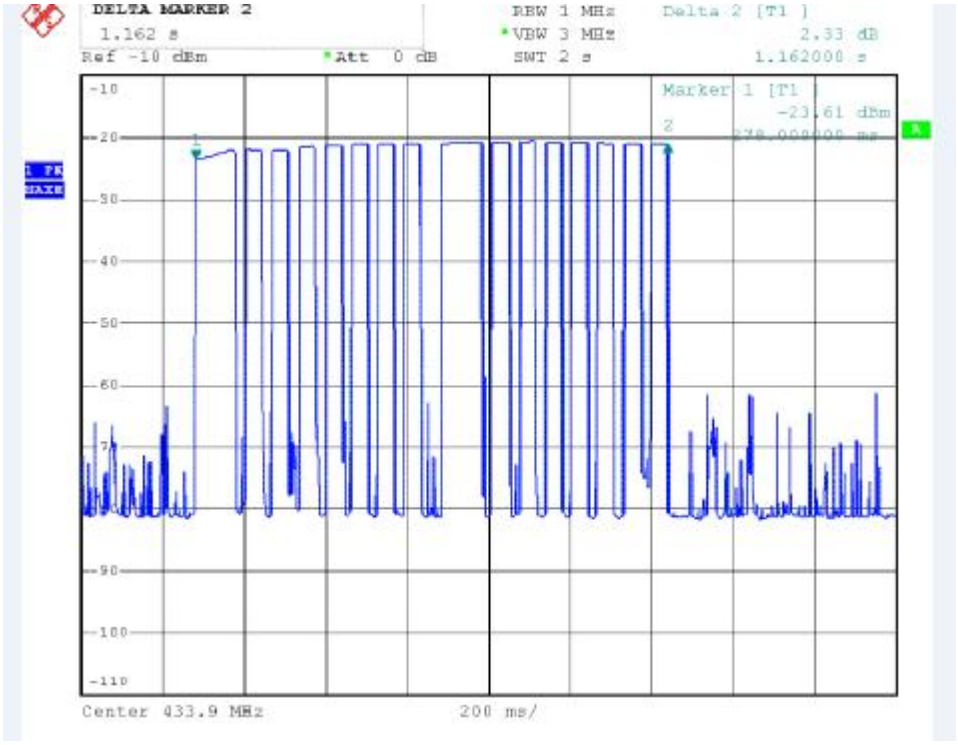
6.4 Measurement Result

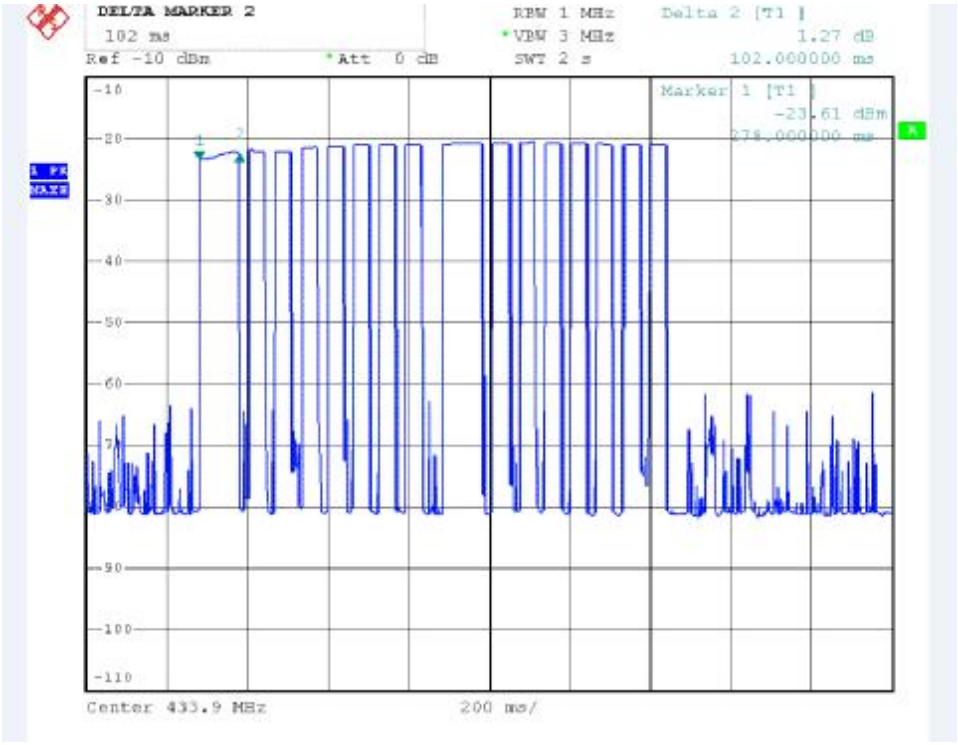
Temperature (℃) : 22~23	EUT: RADIO REMOTE CONTROL FOR GATE OPENERS
Humidity (%RH): 50~54	M/N: SLIM2E
Barometric Pressure (mbar): 950~1000	Operation Condition: Transmitting

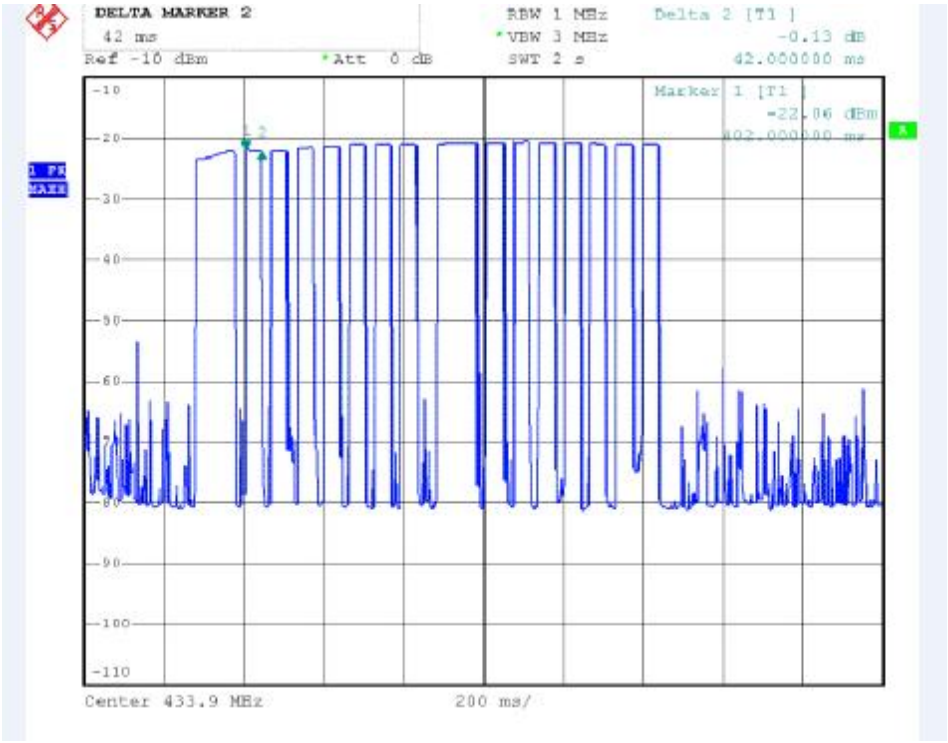
The EUT is manual operation for remote controller, the transmitter remains on until the trigger is released or the device is manually reset. It's declared by the manufacturer as a duty cycle ratio of less than 100%

Test plots see following pages
Total Pulse Time of Transmitter = 0.102* 2+0.042*14=0.792msec
The Duty Cycle=0.792 /1.162=68.16%

Duty Cycle Correction Factor=20*log(Duty Cycle)= 20*log(68.16%)= -3.33dB


DELTA MARKER 2
1.162 s
RBW 1 MHz
VBW 3 MHz
SWT 2 s
Delta 2 [T1]
2.33 dB
1.162000 s
Ref -10 dBm
Att 0 dB
Marker 1 [T1]
-23.61 dBm
Center 433.9 MHz
200 ms/


DELTA MARKER 2
102 ms
RBW 1 MHz
VBW 3 MHz
SWT 2 s
Delta 2 [T1]
1.27 dB
102.000000 ms
Ref -10 dBm
Att 0 dB
Marker 1 [T1]
-23.61 dBm
Center 433.9 MHz
200 ms/


DELTA MARKER 2
42 ms
Ref -10 dBm
*Att 0 dB
RBW 1 MHz
*VBW 3 MHz
SWT 2 s
Delta 2 [T1]
-0.13 dB
42.000000 ms
Marker 1 [T1]
-22.06 dBm
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
Center 433.9 MHz
200 ms/

7. Transmission Time

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 Semi-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

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.

7.4 Limit of Transmission time

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

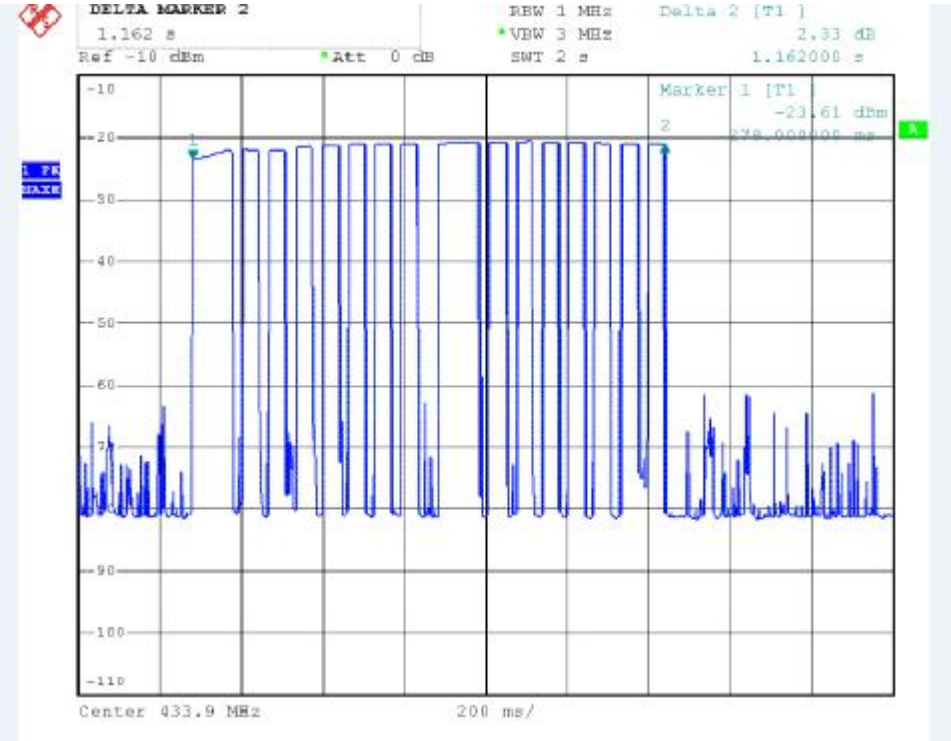
Fundamental Frequency (MHz)	Limit of Transmission (S)
433.92	5

7.5 Transmission Time Test Result

Temperature (℃) : 22~23	EUT: RADIO REMOTE CONTROL FOR GATE OPENERS
Humidity (%RH): 50~54	M/N: SLIM2E
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	1.162	5	Pass



8. ANTENNA REQUIREMENT

8.1 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.

8.2 Antenna Connected Construction

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