ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 15 SUBPART C REQUIREMENT

OF

Wireless Smoke Detector

MODEL No.: SA-61H (Base: AS-60-H, Sensor: AS-61-R)

Trade mark: ROSSLARE

FCC ID: GCDSA-61H

REPORT NO: KAD120911024E

ISSUE DATE: September 28, 2012

Prepared for

Rosslare Enterprises Ltd

**Flat 12, 9/F Wing Fat Industrial Bldg. 12 Wang Tai Rd.
Kowloon Bay, Kowloon, Hong Kong**

Prepared by

DONGGUAN EMTEK CO., LTD.

**No.281, Guantai Road, Nancheng District,
Dongguan, Guangdong, China
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VERIFICATION OF COMPLIANCE

Applicant:	Rosslare Enterprises Ltd Flat 12, 9/F Wing Fat Industrial Bldg. 12 Wang Tai Rd. Kowloon Bay, Kowloon, Hong Kong
Manufacturer:	Rosslare Electronics(Shenzhen) Co.,Ltd Block 2, No.A-1 Baiwangxin Industrial Park, Xili Town, Shenzhen, China
Product Description:	Wireless Smoke Detector
Model Number:	SA-61H (Base: AS-60-H, Sensor: AS-61-R)
Serial Number:	N/A
Modulation:	ASK
File Number:	KAD120911024E
Date of Test:	September 11, 2012 to September 28, 2012

We hereby certify that:

The above equipment was tested by DONGGUAN EMTEK Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2009) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.231.

The test results of this report relate only to the tested sample identified in this report.

Approved By

Sam Lv / Q.A. Manager
DONGGUAN EMTEK CO., LTD.

Table of Contents

1. GENERAL INFORMATION

1.1 Product Description

The Wireless Smoke Detector Model: SA-61H (Base: AS-60-H, Sensor: AS-61-R) (referred to as the EUT in this report) The EUT is an short range, lower power, designed as an Input Device.

A major technical descriptions of EUT is described as following:

A). Operation Frequency: 868.35MHz, one channel.
B). Power Supply: DC 3V

1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: GCDSA-61H filing to comply with Section 15.231 of the FCC Part 15, Subpart C Rules.

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2009). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Special Accessories

Not available for this EUT intended for grant.

1.5 Equipment Modifications

Not available for this EUT intended for grant.

1.6 Test Facility

Site Description

EMC Lab. : Accredited by FCC, Aug. 18, 2011
The Certificate Number is 247565

Accredited by Industry Canada, January 13, 2011
The Certificate Number is 9444A

Name of Firm : DONGGUAN EMTEK Co., Ltd.

Site Location : No.281, Guantai Road, Nancheng District, Dongguan, Guangdong, China.

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 which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The Transmitter was operated in the normal operating mode. the Tx frequency was fixed which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1 Conducted Emissions (Not apply in the report)

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 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 and average detector mode**.

2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table 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 max. emission, the relative positions of this hand-held transmitter(EUT) was rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4-2009.

2.4 Limitation

(1) Conducted Emission (Not applicable in this report)
According to section 15.207(a) Conducted Emission Limits is as following.

Frequency range MHz	Limits dB(uV)	
	Quasi-peak	**Average**
0.15 to 0.50	**66 to 56**	**56 to 46**
0.50 to 5	**56**	**46**
5 to 30	**60**	**50**
Note 1.The lower limit shall apply at the transition frequencies 2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

(2) Radiated Emission

a. The field strength of any emission within this band (section 15.231) shall not exceed 10000 micro volts/meter at 3 meters. (80dBμV at 3m) The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in section 15.35 for limiting peak emissions apply.
b. The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in section 15.209 and section 15.231(Intentional Radiators general limit). as below.

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

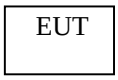
Remark: 1. Emission level in dBuV/m=20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of ξ 15.205
4. Emission spurious frequency which appearing within the Restricted Bands specified in provision of ξ15.205, then the general radiated emission limits in ξ 15.209 apply.

Fundamental Frequency(MHZ)	Field Strength of Fundamental	
	uV/m	dBuV/m
868.350	10979.2	80.83
Harmonics	1097.9	60.83

Remark: (1) Emission level in dBuV/m=20 log (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.
(3)The emission limit in this paragraph is based on measurement instrumentation employing an average detector. Measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit

2.5 Configuration of Tested System

Fig. 2-1 Configuration of Tested System



3. Summary Of Test Results

FCC Rules	Description Of Test	Result
§ 15.207	Conducted Emission	N/A
§ 15.231 (b)	Radiated Emission	Compliant
§ 15.231 (c)	Bandwidth Test	Compliant
§ 15.231 (a)(2)	Cease transmission Testing	Compliant
§ 15.231 (a)(3)	Duration of Transmissions	Compliant

4. Description of test modes

The EUT (Wireless Smoke Detector) has been tested under normal operating condition.
The EUT stay in continuous transmitting mode. The Frequency 868.35MHz are chosen for testing.

5. Conducted Emissions Test (Not applicable in this report)

5.1 Measurement Procedure:

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured was complete.

5.2 Test SET-UP (Block Diagram of Configuration)

5.3 Measurement Equipment Used:

Conducted Emission Test Site # 4					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Test Receiver	Rohde & Schwarz	ESCS30	100018	05/29/2012	05/28/2013
L.I.S.N	Rohde & Schwarz	ENV216	100017	05/29/2012	05/28/2013
RF Switching Unit	CDS	RSU-M2	38401	05/29/2012	05/28/2013

5.4 Measurement Result:

N/A

5.5 Conducted Measurement Photos:

N/A

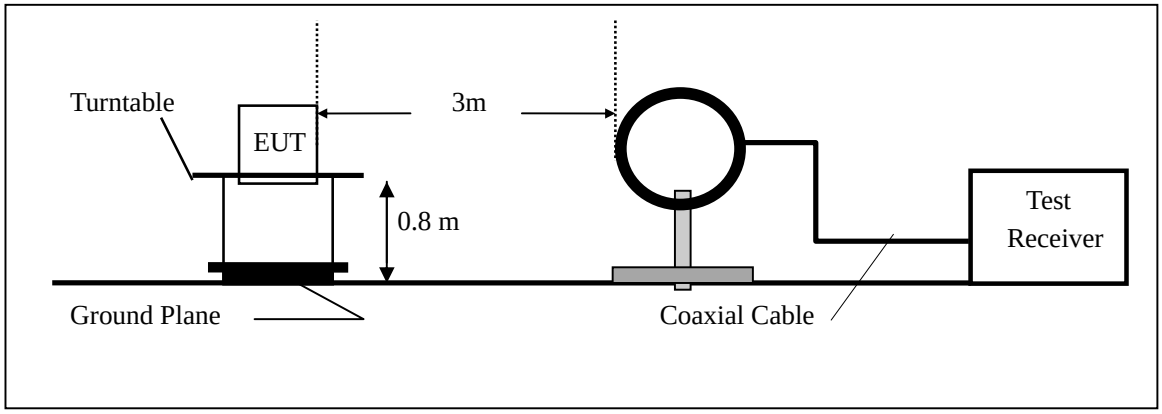
6. Radiated Emission Test

6.1 Measurement Procedure

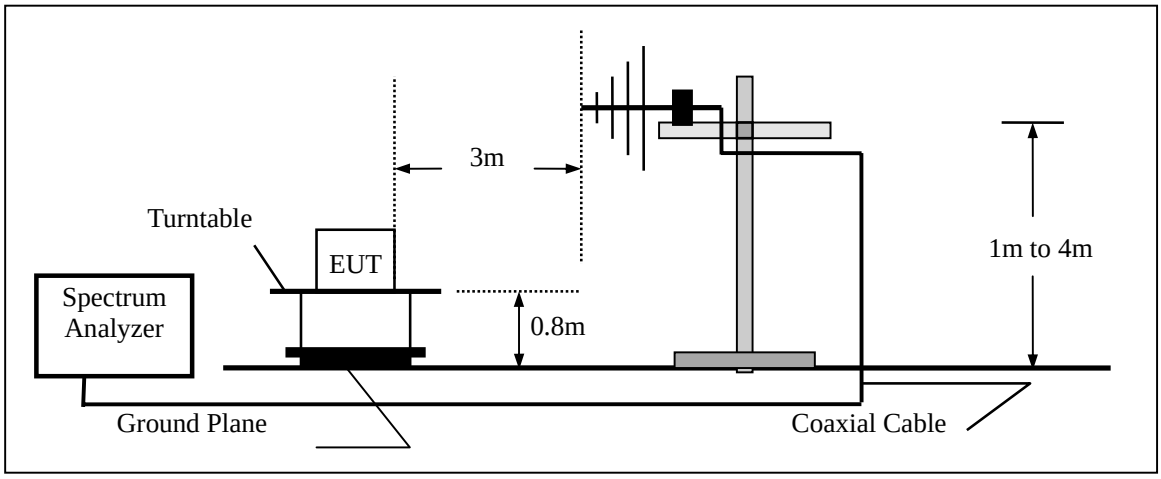
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

6.2 Test SET-UP (Block Diagram of Configuration)

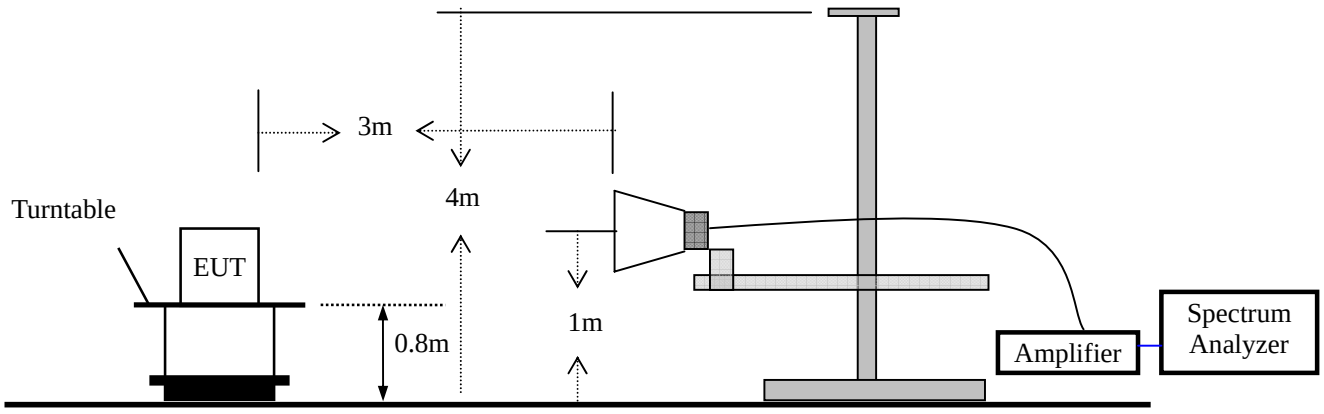
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



6.3 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Rohde & Schwarz	ESCI	100137	05/29/2012	05/28/2013
Test Receiver	Rohde & Schwarz	ESCI	100137	05/29/2012	05/28/2013
Bilog Antenna	Schwarzbeck	VULB9163	000141	05/29/2012	05/28/2013
Power Amplifier	CDS	RSU-M352	818	05/29/2012	05/28/2013
Power Amplifier	HP	8447F	OPT H64	05/29/2012	05/28/2013
Color Monitor	SUNSPO	SP-140A	N/A	05/29/2012	05/28/2013
Single Line Filter	JIANLI	XL-3	N/A	05/29/2012	05/28/2013
Single Phase Power Line Filter	JIANLI	DL-2X100B	N/A	05/29/2012	05/28/2013
3 Phase Power Line Filter	JIANLI	DL-4X100B	N/A	05/29/2012	05/28/2013
DC Power Filter	JIANLI	DL-2X50B	N/A	05/29/2012	05/28/2013
Cable	Schwarzbeck	PLF-100	549489	05/29/2012	05/28/2013
Cable	Rosenberger	CIL02	A0783566	05/29/2012	05/28/2013
Cable	Rosenberger	RG 233/U	525178	05/29/2012	05/28/2013

6.4 Measurement Result

A. Fundamental Radiated Emission Data

Operation Mode:	Transmitting Mode	Test Date :	September 12, 2012
Test Item:	Fundamental Radiated Emission Data	Temperature :	24 ℃
Fundamental Frequency:	868.35MHz	Humidity :	50 %
Test Result:	PASS	Test By:	Andy

Freq. (MHz)	Ant. Pol. H/V	Emission Level (dBuV/m) Peak	AV factor	Average	Limit 3m (dBuV/m) Average	Margin (dB) Average
868.35	V	75.12	-6.73	68.39	80.83	-12.44
1736.70	V	52.12	-6.73	45.39	60.83	-15.44
2605.05	V	53.22	-6.73	46.49	54.00	-7.51
3473.40	V	54.06	-6.73	47.33	54.00	-6.67
4341.75	V	50.25	-6.73	43.52	54.00	-10.48
868.35	H	79.41	-6.73	72.68	80.83	-8.15
1736.70	H	54.37	-6.73	47.64	60.83	-13.19
2605.05	H	52.24	-6.73	45.51	54.00	-8.49
3473.40	H	54.36	-6.73	47.63	54.00	-6.37
4341.75	H	51.27	-6.73	44.54	54.00	-9.46

Note: 1. 1300.00MHz is in a restricted band. Above 1000MHz, compliance with the emission limits in section 15.209 shall be demonstrated based on the average value of the measured emissions. The maximum Permitted average limit should be 54dBuV/m.

2. All x, y, z orientation has been investigated, and present only worst orientation data.

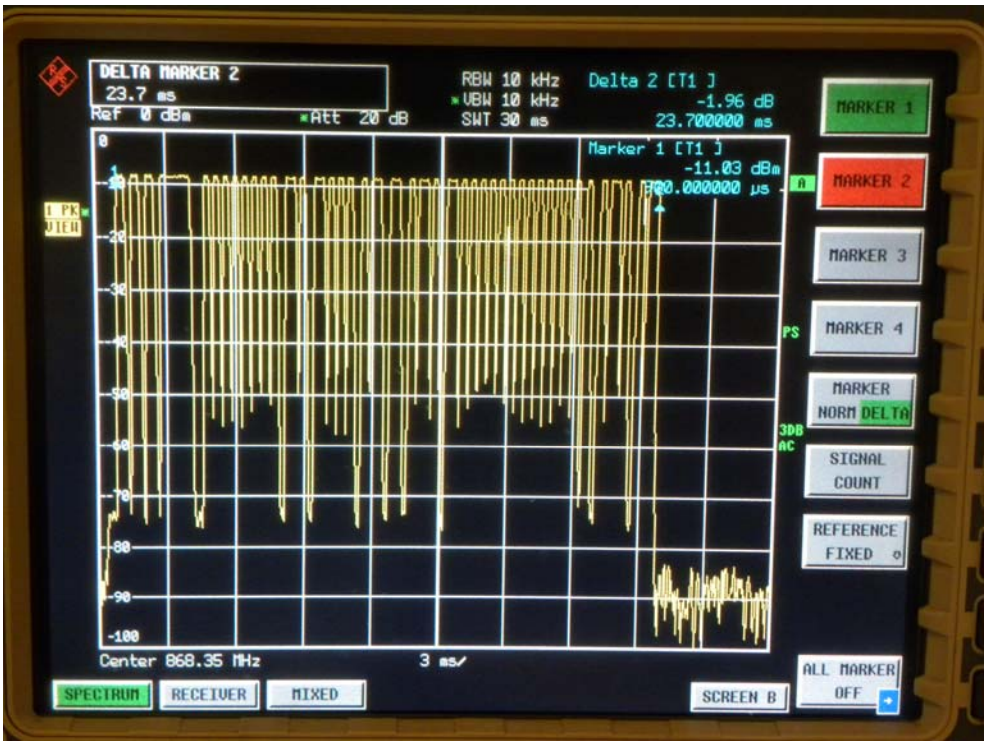
Other harmonics emissions are lower than 20dB below the allowable limit.

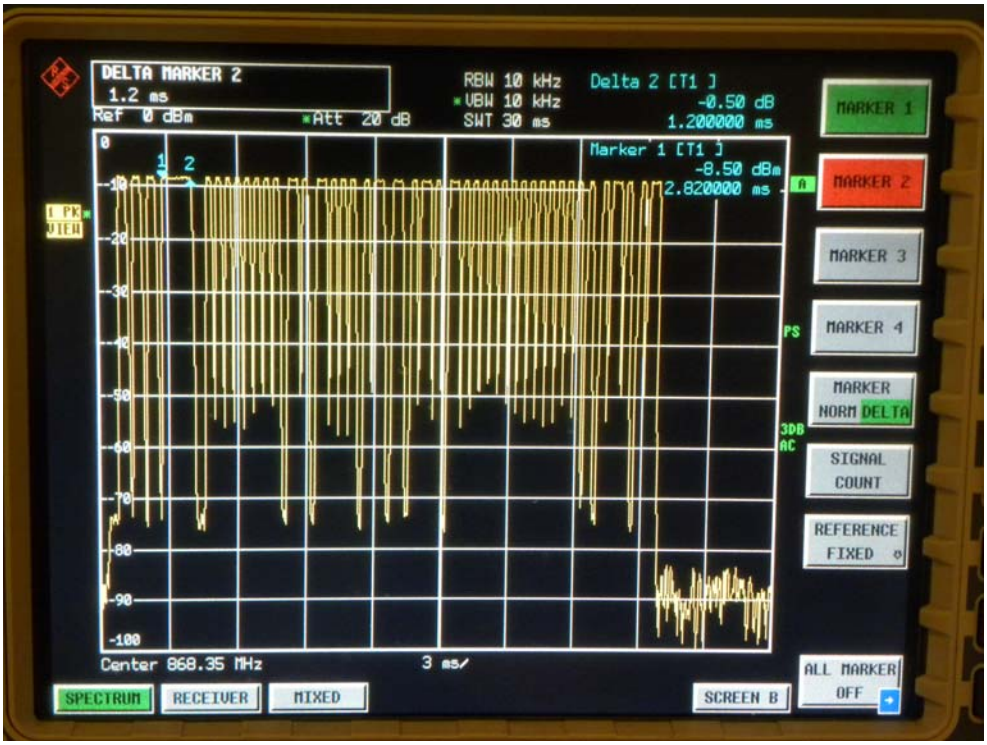
Note: (1) Readings are Average Value and Peak Value.
(2) Emission Level= Reading Level+ Probe Factor +Cable Loss.

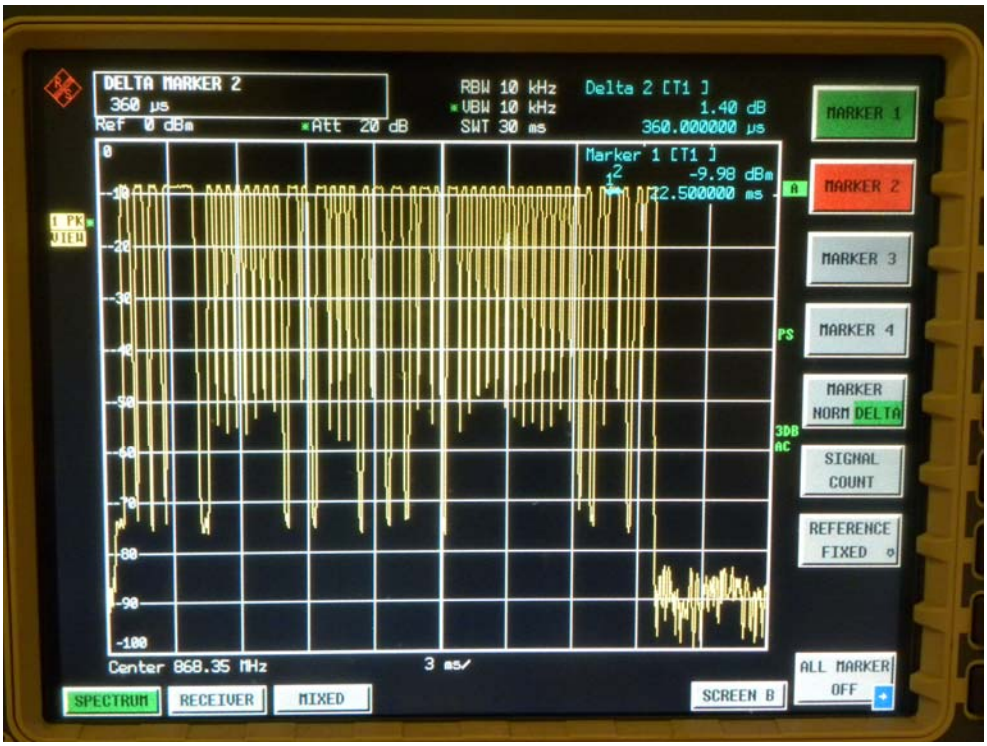
DUTY CYCLE TEST：

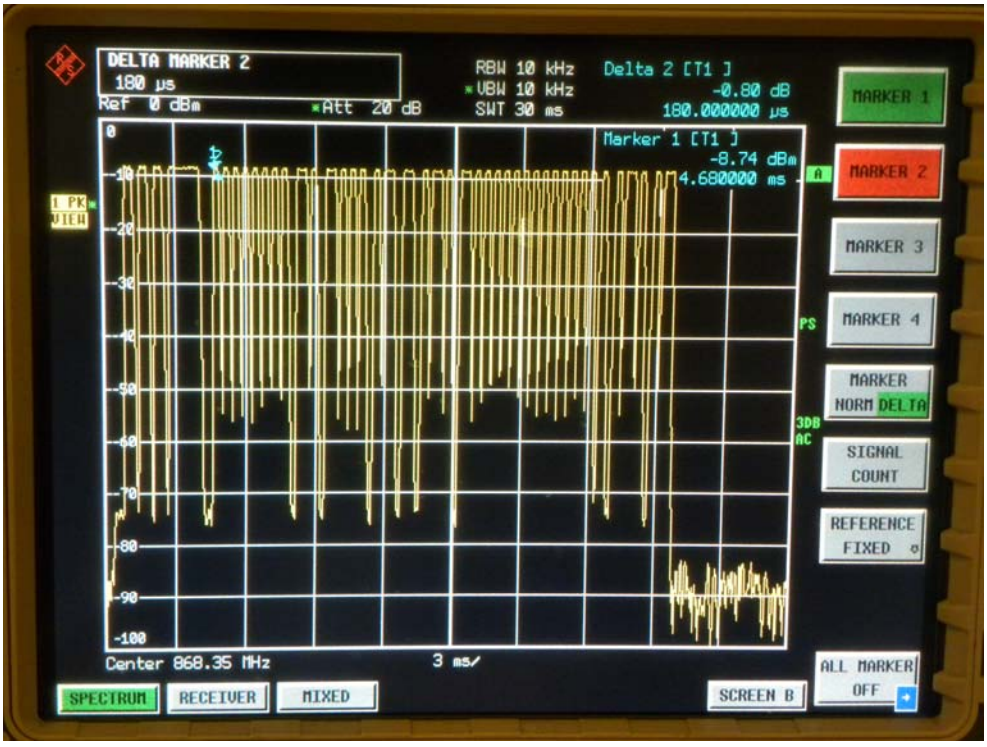
	Number of pulses	**T[ms]**	**Duty Cycle**	**Duty cycle Correction [dB]**
Pulse Train	**44**	**23.70**	**1**	**-6.73**
Transmitter ON(Long time)	**1**	**1.20**		
Transmitter ON(Middle time)	**11**	**0.36**		
Transmitter ON(Short time)	**32**	**0.18**		

Duty cycle test plot:






DELTA MARKER 2
360 µs
Ref 0 dBm
Att 20 dB
RBW 10 kHz
VBW 10 kHz
SWT 30 ms
Delta 2 [T1]
1.40 dB
360.000000 µs
Marker 1 [T1]
-9.98 dBm
2.500000 ms
1 PK VIEW
MARKER 1
MARKER 2
MARKER 3
MARKER 4
MARKER NORM DELTA
SIGNAL COUNT
REFERENCE FIXED
ALL MARKER OFF
Center 868.35 MHz
3 ms/
SPECTRUM
RECEIVER
MIXED
SCREEN B


DELTA MARKER 2
180 µs
Ref 0 dBm
Att 20 dB
RBW 10 kHz
VBW 10 kHz
SWT 30 ms
Delta 2 [T1]
-0.80 dB
180.000000 µs
Marker 1 [T1]
-8.74 dBm
4.680000 ms
1 PK VIEW
MARKER 1
MARKER 2
MARKER 3
MARKER 4
MARKER NORM DELTA
SIGNAL COUNT
REFERENCE FIXED
ALL MARKER OFF
Center 868.35 MHz
3 ms/
SPECTRUM
RECEIVER
MIXED
SCREEN B

B. General Radiated Emission Data

Operation Mode:	Transmitting Mode	Test Date :	September 12, 2012
Test Item:	General Radiated Emission Data	Temperature :	24 ℃
Fundamental Frequency:	868.35MHz	Humidity :	50%
Test Result:	PASS	Test By:	Andy

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)	Note
30.000	V	25.24	40.00	-14.76	Peak
31.940	V	22.98	40.00	-17.02	Peak
53.280	V	20.43	40.00	-19.57	Peak
61.040	V	20.68	40.00	-19.32	Peak
78.500	V	20.69	40.00	-19.31	Peak
92.080	V	23.85	43.50	-19.65	Peak
30.000	H	26.14	40.00	-13.86	Peak
96.930	H	22.91	43.50	-20.59	Peak
104.690	H	21.87	43.50	-21.63	Peak
131.850	H	20.01	43.50	-23.49	Peak
219.150	H	21.09	46.00	-24.91	Peak
266.680	H	22.02	46.00	-23.98	Peak

Note: Emission Level= Reading Level+ Probe Factor + Cable Loss.

7. CEASE TRANSMISSION TESTING

7.1 Requirement

Per 15.231(a) (2), a transmitter activated automatically shall cease transmission within 5 seconds after activation.

7.2 Test SET-UP

Same as 6.2 Radiated Emission Measurements.

7.3 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	Rohde & Schwarz	ESCS30	828985/018	05/29/2012	05/28/2013
Pre-Amplifier	HP	8447D	2944A07999	05/29/2012	05/28/2013
Broadband Antenna	Sunol Sciences	JB1	A040904-2	05/29/2012	05/28/2013

7.4 Test Procedure

1. The deactivation test was performed in the 3 meters chamber B test site, using the setup accordance with the ANSI C63.4 - 2009. The specification used was the FCC 15.231(a) limits.
2. Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

7.5 Test Data

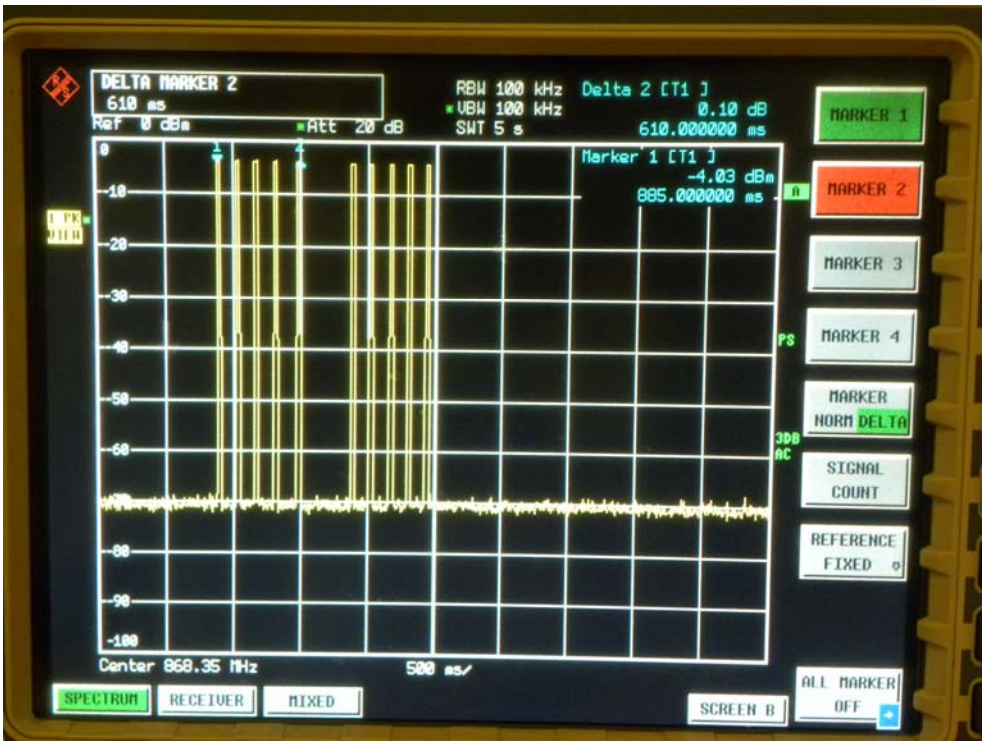
Environmental Conditions

Temperature: Relative Humidity:	24 ° C 52%
ATM Pressure:	1032mbar

Test Mode: Transmitting

Transmitting time	Limit (Second)	Result
0.61s	5s	PASS

Refer to the attached data plot:



Remark: There is a test button on smoke sensor, when we press this button, it simulate the ambient environment smoke concentration already reach the alarm level, so the device sent a signal to indicate alarm, and then we released the button, it also sent a signal, so we can see the signal just appeared twice, that is 10 RF massages. When the ambient environment smoke concentration is lower than the alarm level for a zone, the device will automatically restore without any operation.

8. Occupied Bandwidth

8.1. Requirements:

The bandwidth of the emissions shall be no wide than 0.25% of the center frequency for devises operating above 70MHz and below 900MHz, Bandwidth is determined at the points 20dB down from the modulated carrier, For 868.35MHz center frequency allowed occupied bandwidth shall be less than (868.35/100)*0.25=2.1708MHz

8.2 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as normal operation
3. Set SPA Center Frequency = fundamental frequency, RBW=10KHz, VBW= 100KHz
4. Set SPA Max hold. Mark peak.

8.3 Test SET-UP (Block Diagram of Configuration)

Same as 6.2 Radiated Emission Measurement.

8.4 Measurement Equipment Used:

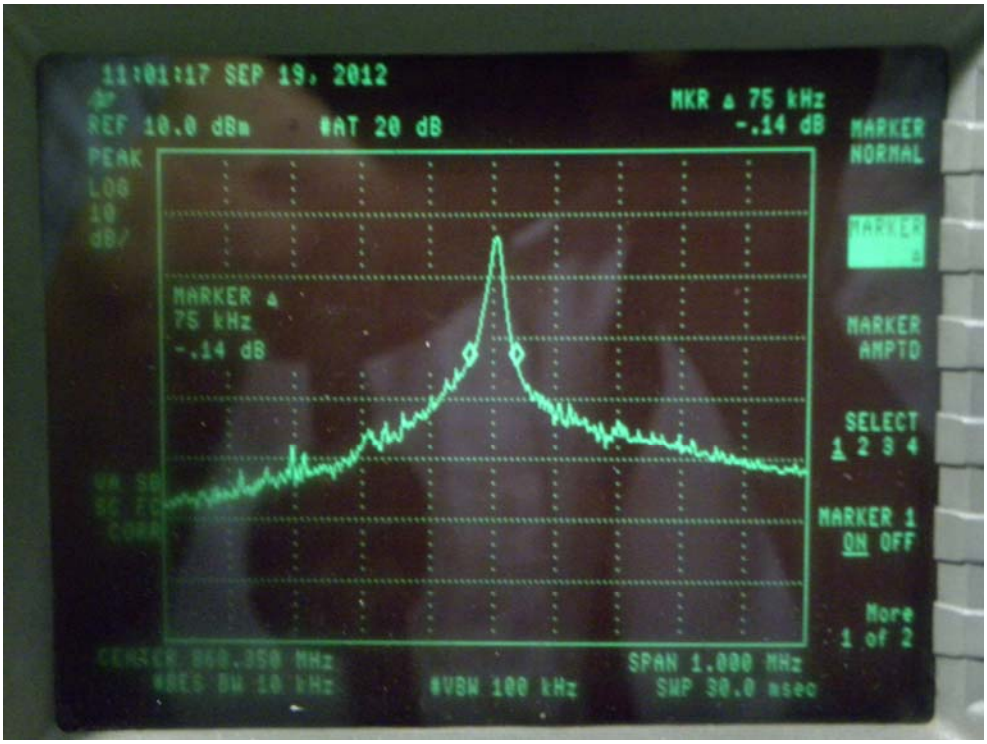
Same as 6.2 Radiated Emission Measurement.

8.5 Measurement Results:

The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in section 15.209.
Refer to attached data chart.

The result of 20dB down from the modulated carrier is 75.0 KHz.
The tested unit meets the standards requirements.

Band Width Test Data



9. DURATION OF TRANSMISSIONS

9.1. Requirements:

15.231(a)(3) Periodic transmissions at regular predetermined intervals are not permitted. However, polling or the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour.

9.2 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Let the EUT connect to a variable voltage supply, and then slowly dropping the voltage by 0.1V, so as to let the EUT work in a low battery mode and then it will transmit signals.
3. Set SPA Center Frequency = fundamental frequency, RBW=1MHz, VBW= 1MHz
4. Set SPA Max hold. Mark peak.
5. Count the total number of transmissions within an hour.

9.3 Test SET-UP (Block Diagram of Configuration)

Same as 6.2 Radiated Emission Measurement.

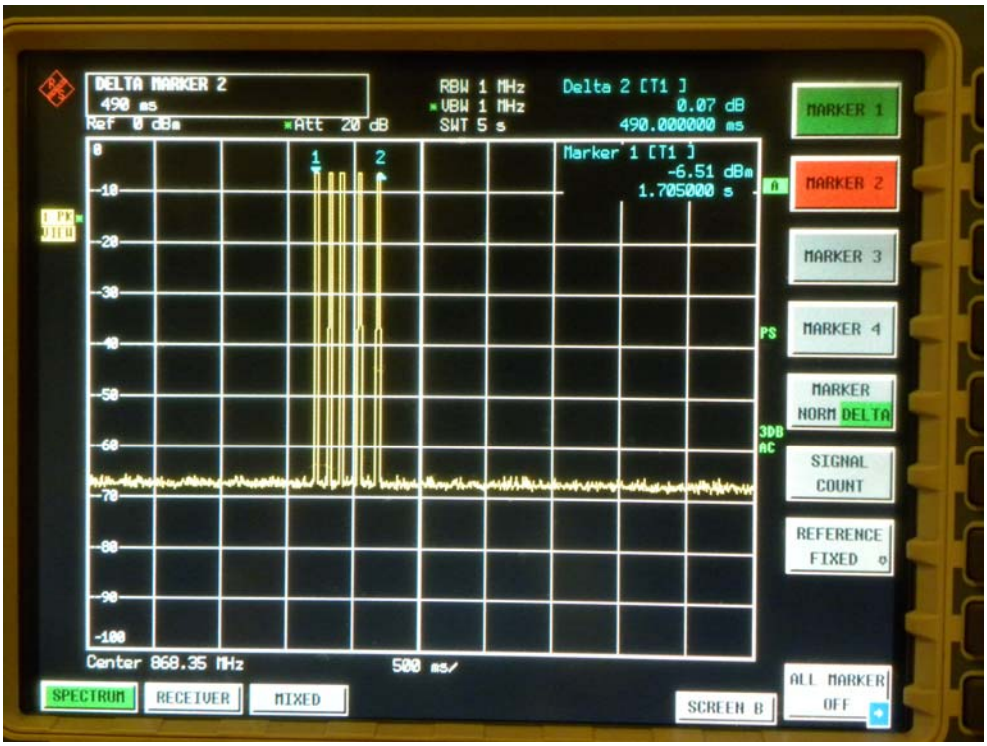
9.4 Measurement Equipment Used:

Same as 6.2 Radiated Emission Measurement.

9.5 Measurement Results:

Within an hour, the EUT totally transmitted 3 times, so the total transmission time is:
3* 0.490 s =1.470 s

Pass. Please refer the following data.


DELTA MARKER 2
490 ms
Ref 0 dBm
*Att 20 dB
RBW 1 MHz
*VBW 1 MHz
SWT 5 s
Delta 2 [T1]
0.07 dB
490.000000 ms
Marker 1 [T1]
-6.51 dBm
1.705000 s
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
Center 868.35 MHz
500 ms/
MARKER 1
MARKER 2
MARKER 3
MARKER 4
MARKER NORM DELTA
SIGNAL COUNT
REFERENCE FIXED
ALL MARKER OFF
SPECTRUM
RECEIVER
MIXED
SCREEN B

APPENDIX 1

PHOTOGRAPHS OF SET UP

Radiated Emission Setup Photos