



# **FCC 47 CFR PART 15 SUBPART C**

## **TEST REPORT**

*For*

**Applicant: Professional Security Corp DBA Personal Safety Corp**

**Address: 1655 Progress Drive, Hiawatha, Iowa 52233, USA**

**Product Name: Secure® Wireless Alarm Transmitter**

**Model Name: WAT-1**

**Brand Name: Secure**

**FCC ID: 2ADJMWAT-1**

**Report No.: MTE/DYY/A15050507**

**Date of Issue: May 06, 2015**

**Issued by: Most Technology Service Co., Ltd.**

**Address : No.5, Langshan 2nd Road, North District, Hi-tech Industrial Park,  
Nanshan, Shenzhen, Guangdong, China**

**Tel : 86-755-8602 6850**

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**1. VERIFICATION OF CONFORMITY**

**Equipment Under Test:** Secure® Wireless Alarm Transmitter  
**Brand Name:** Secure  
**Model Number:** WAT-1  
**Series Number:** N/A  
**Description of Differences:** N/A  
**FCC ID:** 2ADJMWAT-1  
**Applicant:** Professional Security Corp DBA Personal Safety Corp  
1655 Progress Drive, Hiawatha, Iowa 52233, USA  
**Manufacturer:** Professional Security Corp DBA Personal Safety Corp  
1655 Progress Drive, Hiawatha, Iowa 52233, USA  
**Technical Standards:** 47 CFR Part 15 Subpart C  
**File Number:** MTE/DYY/A15050507  
**Date of test:** Apr. 02-26, 2015  
**Deviation:** None  
**Condition of Test Sample:** Normal  
**Test Result:** PASS

The above equipment was tested by MOST for compliance with the requirements set forth in FCC rules and the Technical Standards mentioned above. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment and the level of the immunity endurance of the equipment are within the compliance requirements.

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

Tested by (+ signature):


  
\_\_\_\_\_  
Daisy Yu Apr. 02-26, 2015

Review by (+ signature):

  
\_\_\_\_\_  
Henry Chen May. 06, 2015



Approved by (+ signature):

  
\_\_\_\_\_  
Mark Wen(Manager) May 06, 2015

## 2. GENERAL INFORMATION

### 2.1 Product Information

<b>Product:</b>	Secure® Wireless Alarm Transmitter
<b>Trade Name:</b>	Secure
<b>Model Number:</b>	WAT-1
<b>Series Number:</b>	N/A
<b>Description of Differences:</b>	N/A
<b>Power Supply:</b>	DC 3V by batteries
<b>Frequency Range:</b>	Ch0:2443MHz, Ch1:2454MHz
<b>Modulation Type:</b>	GFSK
<b>Antenna Type:</b>	PCB antenna
<b>Antenna Gain:</b>	0dBi
<b>Channel Number:</b>	2
<b>Temperature Range:</b>	-20°C ~ +70°C

**NOTE:**

1. For a more detailed features description about the EUT, please refer to User's Manual.

## 2.2 Objective

Perform FCC Part 15 Subpart C tests for FCC Marking.

## 2.3 Test Standards and Results

Test items and the results are as bellow:

No.	Section	Description	Result	Date of Test
1	15.249(a) (d)	Spurious Emission	PASS	2015-04-02
2	15.207	Power Line Conducted Emission Test	N/A	---
3	15.249	20dB Bandwidth	PASS	2015-04-06
4	15.203	Antenna Requirement	PASS	2015-04-06
Remark:		N/A means not applicable		

Note: 1. The test result judgment is decided by the limit of measurement standard  
2. The information of measurement uncertainty is available upon the customer's request.

## 2.4 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

- Temperature: 15-35°C
- Humidity: 30-60 %
- Atmospheric pressure: 86-106 kPa

## 2.5 MEASUREMENT UNCERTAINTY

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

The report uncertainty of measurement  $y \pm U$ , where expended uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , Providing a level of confidence of approximately 95%

- Uncertainty of Conducted Emission,  $U_c = \pm 1.8\text{dB}$
- Uncertainty of Radiated Emission,  $U_c = \pm 3.2\text{dB}$

### 3. TEST FACILITY

#### 3.1 TEST FACILITY

Test Site:	Most Technology Service Co., Ltd.
Location:	No.5, Langshan 2nd Rd., North Hi-Tech Industrial park, Nanshan, Shenzhen, Guangdong, China
Description:	<p>There is one 3m semi-anechoic an area test sites and two line conducted labs for final test. The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2009 and CISPR 16 requirements.</p> <p>The FCC Registration Number is <b>490827</b>.</p> <p>The <b>IC</b> Registration Number is <b>7103A-1</b>.</p> <p>The <b>CNAS</b> Registration Number is <b>CNAS L3573</b>.</p>
Site Filing:	The site description is on file with the Federal Communications Commission, 7435 Oakland Mills Road, Columbia, MD 21046.
Instrument Tolerance:	All measuring equipment is in accord with ANSI C63.4:2009 and CISPR 16 requirements that meet industry regulatory agency and accreditation agency requirement.
Ground Plane:	Two conductive reference ground planes were used during the Line Conducted Emission, one in vertical and the other in horizontal. The dimensions of these ground planes are as below. The vertical ground plane was placed distancing 40 cm to the rear of the wooden test table on where the EUT and the support equipment were placed during test. The horizontal ground plane projected 50 cm beyond the footprint of the EUT system and distanced 80 cm to the wooden test table. For Radiated Emission Test, one horizontal conductive ground plane extended at least 1m beyond the periphery of the EUT and the largest measuring antenna, and covered the entire area between the EUT and the antenna.

#### 3.2 Test Conditions

The EUT has been tested under normal operating (TX) .

The field strength of radiation emission was measured in the following position: EUT lie-down position (X axis).

The following data show X axis setup.

Based on client request, all normal using modes of the normal function were tested but only the worst test data of the worst mode is reported by this report.

### 3.3 Channel List

Channel List for GFSK Mode					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2443MHz				
01	2454MHz				

### 3.4 Description of Test Modes

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level, Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively

Pre-test Mode	Description
Mode 1	GFSK CH00/CH01

Note:

The measurements are performed at the highest, middle, lowest available channels.

### 3.5 Table of Parameters of Text Software Setting

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level, the RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of Mouse

Test software Version	Test channels	
GFSK Mode	2443MHz	2454MHz

#### Radiated Emissions

The EUT is placed on a turn table, 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 8.3.1 of ANSI C63.4:2009.



### 3.6 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

- (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
<sup>1</sup> 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	( <sup>2</sup> )
13.36 - 13.41			

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup> Above 38.6

- (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

#### 4. SETUP OF EQUIPMENT UNDER TEST

##### 4.1 SUPPORT EQUIPMENT

Device Type	Manufacturer	Model Name	Serial No.	Data Cable	Power Cable
Notebook	Lenovo	E425	R9-KZL4B	1.6m Un-shielded	1.8m Un-shielded

*Remark:*

*All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*

## 4.2 TEST EQUIPMENT LIST

**Instrumentation:** The following list contains equipment used at Most for testing. The equipment conforms to the CISPR 16-1 / ANSI C63.2 Specifications for Electromagnetic Interference and Field Strength Instrumentation from 10 kHz to 1.0 GHz or above.

No.	Equipment	Manufacturer	Model No.	S/N	Calibration date	Calibration Interval
1	Test Receiver	Rohde & Schwarz	ESCI	100492	2015/03/10	1 Year
2	L.I.S.N.	Rohde & Schwarz	ENV216	100093	2015/03/10	1 Year
3	Coaxial Switch	Anritsu Corp	MP59B	6200283933	2015/03/07	1 Year
4	Terminator	Hubersuhner	50Ω	No.1	2015/03/07	1 Year
5	RF Cable	SchwarzBeck	N/A	No.1	2015/03/07	1 Year
6	Test Receiver	Rohde & Schwarz	ESPI	101202	2015/03/10	1 Year
7	Bilog Antenna	Sunol	JB3	A121206	2015/03/14	1 Year
8	Horn Antenna	SCHWARZBECK	BBHA9120D	756	2015/03/14	1 Year
9	Horn Antenna	Penn Engineering	9034	8376	2015/03/14	1 Year
10	Cable	Resenberger	N/A	NO.1	2015/03/07	1 Year
11	Cable	SchwarzBeck	N/A	NO.2	2015/03/07	1 Year
12	Cable	SchwarzBeck	N/A	NO.3	2015/03/07	1 Year
13	Single Phase Power Line Filter	DuoJi	FNF 202B30	N/A	2015/03/07	1 Year
14	Test Receiver	Rohde & Schwarz	ESCI	100492	2015/03/10	1 Year
15	Spectrum Analyzer	Agilent	E7405A	US44210471	2015/03/07	1 Year

**NOTE:** Equipments listed above have been calibrated and are in the period of validation.

## 5. 47 CFR Part 15C 15.249 Requirements

### 5.1 Spurious Emission Test

#### 5.1.1 Requirement

According to FCC section 15.249(a):

Except as provided in paragraph (a) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental (mV/m)	Field Strength of Harmonics (μV/m)
902-928	50	500
2400-2483.5	50	500
5725-5875	50	500
24000-24250	250	2500

According to FCC section 15.249(d), Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

According to FCC section 15.209 (a), 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 (μV/m)	Measurement Distance (m)
1.705 – 30.0	30	30
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.

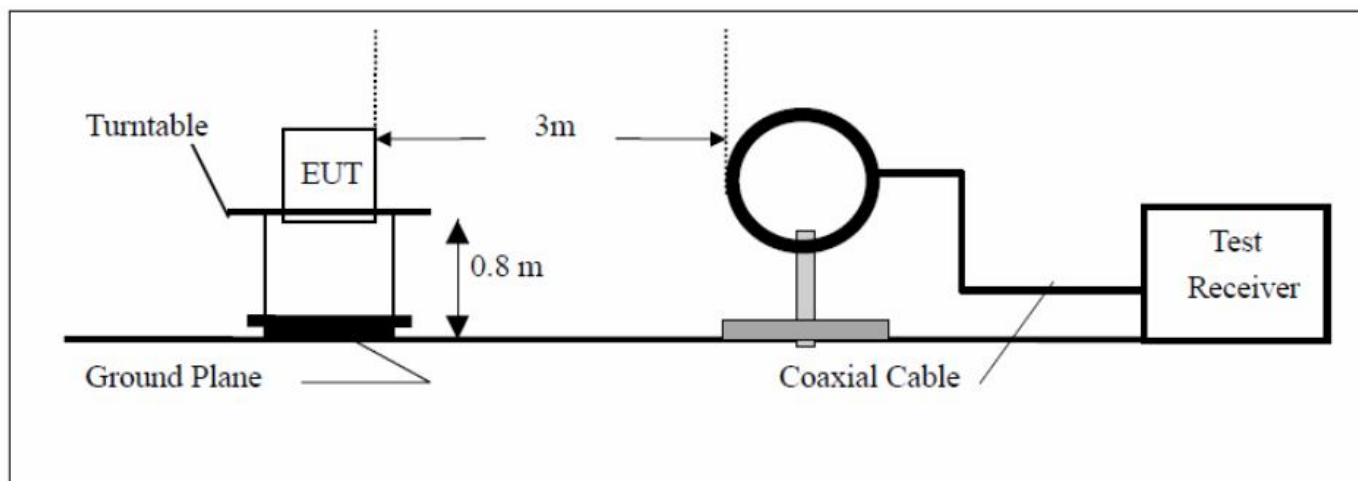
In the above emission table, the tighter limit applies at the band edges.

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

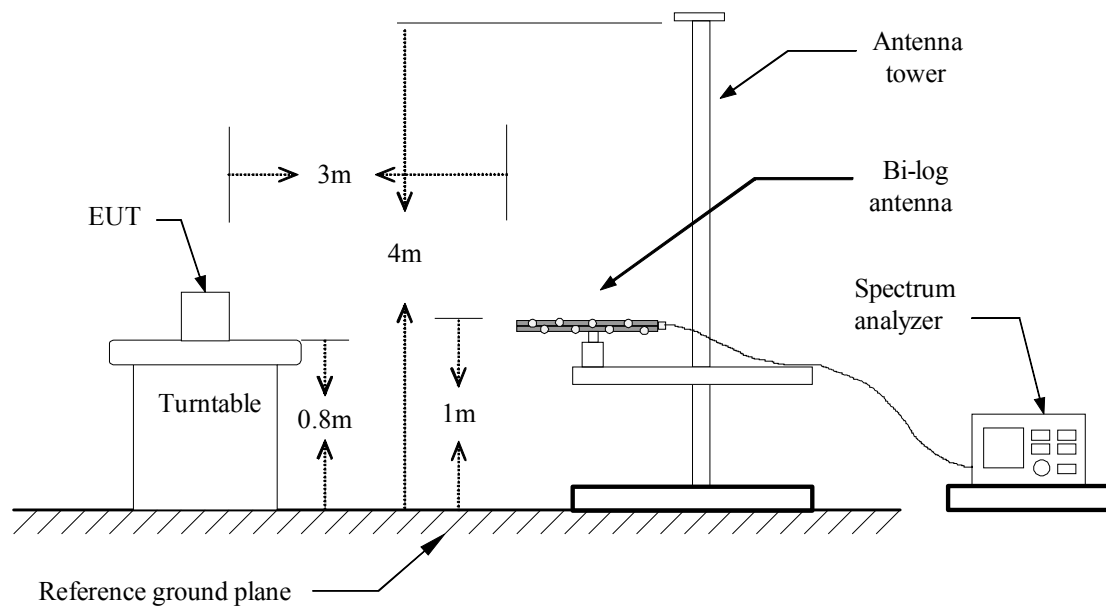
### 5.1.2 Test Description

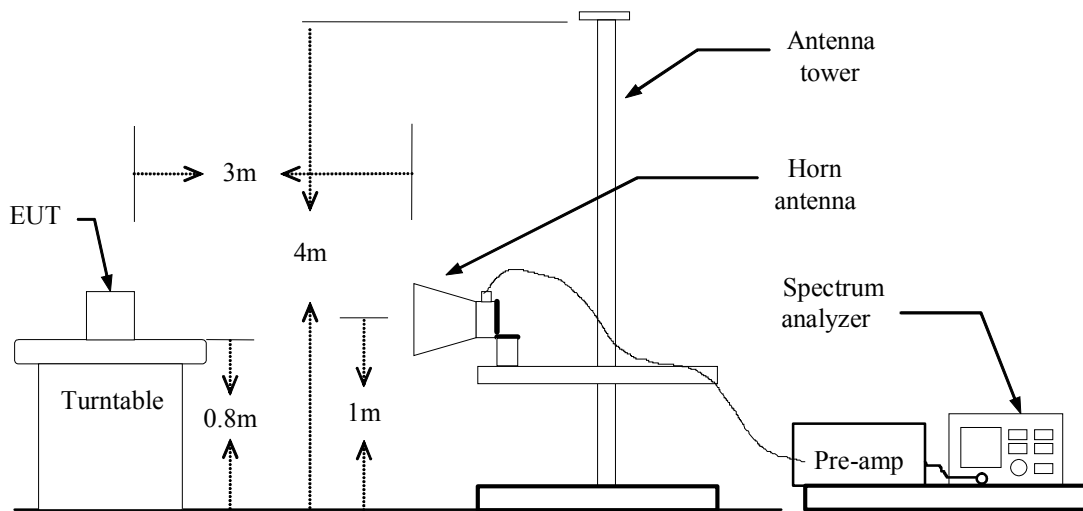
#### Test Setup:

#### From 9KHz to 30MHz:



#### From 30MHz to 1GHz:



**Above 1GHz:****5.1.3 Test Description**

1. For frequencies above 1GHz, the frequencies of maximum emission was recorded by manually positioning the antenna close to the EUT and by moving the antenna over all sides of the EUT while observing a spectral display.
2. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
3. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
4. 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.
5. 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 rotate table was turned from 0 degrees to 360 degrees to find the maximum reading.

6. Set the spectrum analyzer in the following setting as:

Below 1GHz: PEAK: RBW=100 kHz / VBW=300 kHz / Sweep=AUTO QP: RBW=120 kHz / Sweep=AUTO

Above 1GHz: (a)PEAK: RBW=VBW=1MHz / Sweep=AUTO

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

The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

7. 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.

#### 5.1.4 Test Result

From 9 KHz to 30MHz:

-Note: No test data was detected in below 30MHz.

From 30MHz to 1GHz:

The following test mode(s) were scanned during the preliminary test:

Preliminary Radiated Emission Test				
Frequency Range Investigated		9KHz TO 26 GHz		
Mode of operation	Date	Report No.	Data#	Worst Mode
GFSK	2015-04-02	MTE/DYY/A15050506	WAT-1(V, H)	<input checked="" type="checkbox"/>

**Note:**

The GFSK Low channel modulation type was the worst case condition, The worse test data was shown on the summary data page.





Address: No.5, Langshan 2nd Rd., North Hi-Tech Industrial park  
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### Radiated Emission Measurement

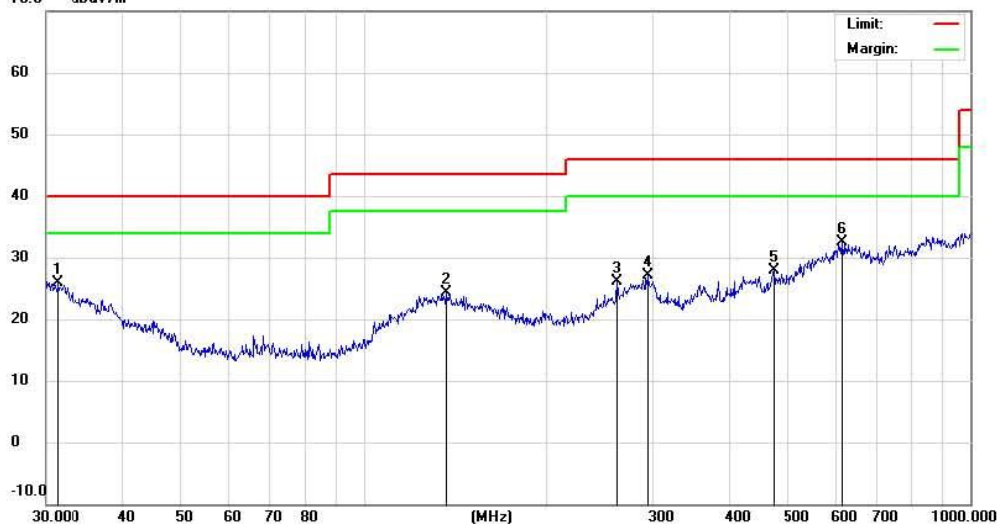
File: WAT-1

Data: #7

Date: 2015-4-2

Time: 10:11:50

70.0 dBuV/m



Site: Chamber #1

Polarization: **Horizontal**

Temperature: 24.0

Limit: FCC Part15 B 3M Radiation

Power: DC 3V by Batteries

Humidity: 52.9 %

EUT: Secure® Wireless Alarm Transmitter

Distance: 3m

M/N: WAT-1

Mode: GFSK(CH0)

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		31.3992	4.78	21.15	25.93	40.00	-14.07	QP		
2		137.4201	7.05	17.32	24.37	43.50	-19.13	QP		
3		261.9752	8.24	17.86	26.10	46.00	-19.90	QP		
4		294.1136	7.67	19.36	27.03	46.00	-18.97	QP		
5		473.8346	6.60	21.39	27.99	46.00	-18.01	QP		
6	*	616.3716	9.08	23.39	32.47	46.00	-13.53	QP		

\*:Maximum data x:Over limit l:over margin

Engineer Signature:

lidegan



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### Radiated Emission Measurement

File: WAT-1

Data: #8

Date: 2015-4-2

Time: 10:18:33

70.0 dBuV/m



Site: Chamber #1

Polarization: **Vertical**

Temperature: 24.0

Limit: FCC Part15 B 3M Radiation

Power: DC 3V by Batteries

Humidity: 52.9 %

EUT: Secure® Wireless Alarm Transmitter

Distance: 3m

M/N: WAT-1

Mode: GFSK(CH0)

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	31.1797	4.45	22.35	26.80	40.00	-13.20	QP		
2		42.8997	8.22	14.35	22.57	40.00	-17.43	QP		
3		99.8777	9.34	13.18	22.52	43.50	-20.98	QP		
4		284.9766	5.77	19.40	25.17	46.00	-20.83	QP		
5		618.5368	5.77	23.46	29.23	46.00	-16.77	QP		
6		760.7035	5.09	25.62	30.71	46.00	-15.29	QP		

\*: Maximum data x: Over limit l: over margin

Engineer Signature: lidegan

Above 1 GHz:



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## Radiated Emission Measurement

File: WAT-1

Data: #2

Date: 2015-4-6

Time: 8:31:20



Site: site #1

Polarization: **Vertical**

Temperature: 25.9

Limit: FCC RF LIMIT PEAK

Power: DC 3V by Batteries

Humidity: 51.6 %

EUT: Secure® Wireless Alarm Transmitter

Distance: 3m

M/N: WAT-1

Mode: GFSK-CH0

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree
1	X	2443.000	99.25	-8.36	90.89	74.00	16.89	peak		
2	*	2443.000	91.26	-8.36	82.90	54.00	28.90	AVG		
3		4886.000	54.68	-5.16	49.52	74.00	-24.48	peak		
4		4886.000	49.20	-5.16	44.04	54.00	-9.96	AVG		

\*:Maximum data    x:Over limit    !:over margin

Engineer Signature:

John



Address: No.5, Langshan 2nd Rd., North Hi-Tech Industrial park  
Guangdong, China  
Tel: 0755-86026850 Fax: 0755-26013350

### Radiated Emission Measurement

File: WAT-1

Data: #3

Date: 2015-4-6

Time: 8:45:06

96.9 dBuV/m



Site: site #1

Polarization: **Vertical**

Temperature: 25.9

Limit: FCC RF LIMIT PEAK

Power: DC 3V by Batteries

Humidity: 51.6 %

EUT: Secure® Wireless Alarm Transmitter

Distance: 3m

M/N: WAT-1

Mode: GFSK-CH1

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree degree	Comment
1	X	2454.000	98.05	-8.34	89.71	74.00	15.71	peak			
2	*	2454.000	93.17	-8.34	84.83	54.00	30.83	AVG			
3		4908.000	55.63	-4.90	50.73	74.00	-23.27	peak			
4		4908.000	48.90	-4.90	44.00	54.00	-10.00	AVG			

\*: Maximum data    x: Over limit    !: over margin

Engineer Signature:

John

## 5.2 LINE CONDUCTED EMISSION TEST

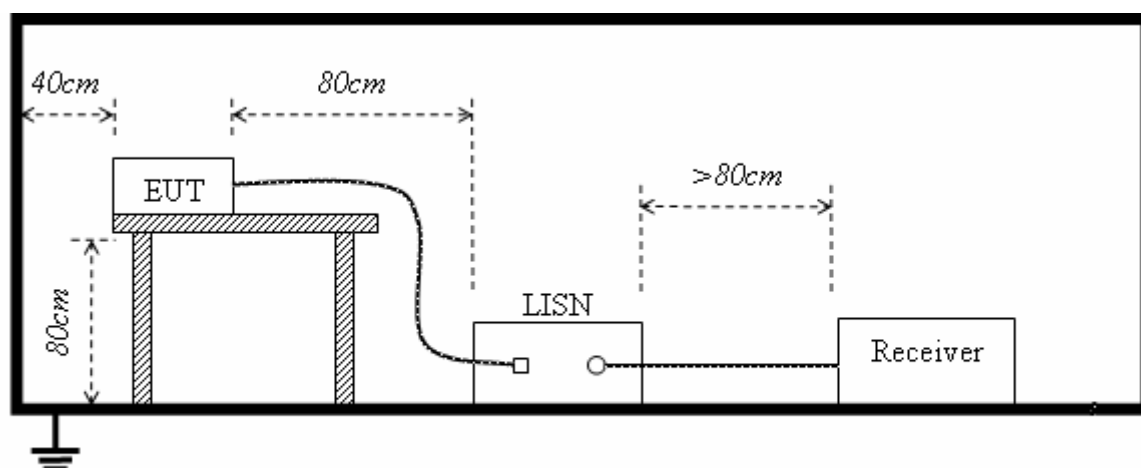
### 5.2.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P.( dBuV)	Average( dBuV)
150kHz-500kHz	66-56	56-46
500kHz-5MHz	56	46
5MHz-30MHz	60	50

**\*\*Note:** 1. the lower limit shall apply at the transition frequency.

2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz

### 5.2.2. BLOCK DIAGRAM OF TEST SETUP



### 5.2.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per FCC Part 15 (see Test Facility for the dimensions of the ground plane used). When the EUT is floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2) Support equipment, if needed, was placed as per FCC Part 15.
- 3) All I/O cables were positioned to simulate typical actual usage as per FCC Part 15.
- 4) The EUT received DC 6V by Adapter which received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5) All support equipments received power from a second LISN supplying power of AC 120V/60Hz, if any.
- 6) The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7) Analyzer / Receiver scanned from 150 kHz to 30 MHz for emissions in each of the test modes.
- 8) During the above scans, the emissions were maximized by cable manipulation.

### 5.2.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

EUT and support equipment was set up on the test bench as per step 9 of the preliminary test.

A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.

### 5.2.5. Test result

The following test mode(s) were scanned during the preliminary test:

Preliminary Conducted Emission Test				
Frequency Range Investigated		150KHz TO 30 MHz		
Mode of operation	Date	Report No.	Data#	Worst Mode
Charging+ BT Mode	2015-04-02	MTE/DYY/A15050506	WAM-1_(V, H)	<input checked="" type="checkbox"/>

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

#### Note:

The GFSK Low channel modulation type was the worst case condition, The worse test data was shown on the summary data page.

### 5.2.6. TEST RESULT OF LINE CONDUCTED EMISSION TEST

Not applicable to battery operated equipment

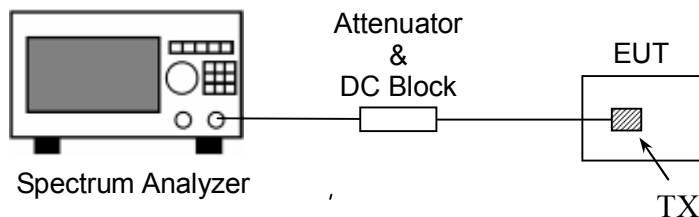
## 5.2 20 dB Bandwidth

### 5.2.1 Definition

Intentional radiators operating under the alternative provisions to the general emission limits, as Contained in §§15.217 through 15.257 and in sub-part E of this part, must be designed to ensure that the 20 dB Bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific Rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

### 5.2.2 Block Diagram Of Test Setup

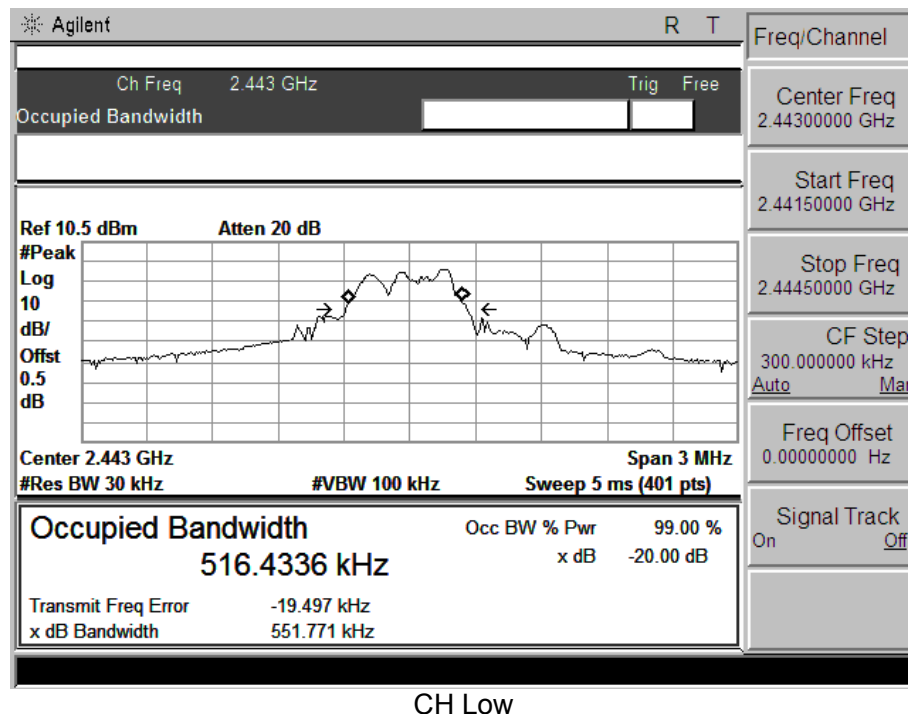
The EUT is powered by the Battery, is coupled to the Spectrum Analyzer (SA) through the Attenuator/DC Block. The path loss as the factor is calibrated to correct the reading. During the measurement, the EUT is activated and is set to operate at maximum power. The RF load attached to the EUT antenna terminal is 50Ohm.

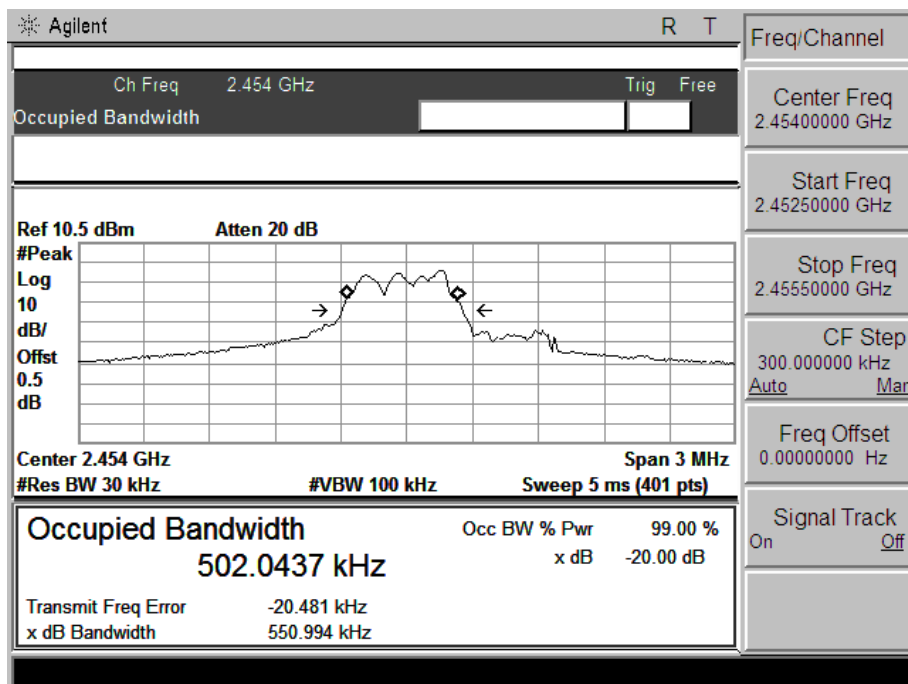


### 5.2.3 Test Result

#### GFSK Modulation test result:

Channel	Frequency (MHz)	Test Result(MHz)
0	2443	0.552
1	2454	0.551





CH High



## **5.3 Antenna Requirement**

### **5.3.1 Definition**

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, An analysis of the EUT was performed to determine compliance with FCC Section 15.203. This section requires specific handling and control of antennas used for devices subject to regulations.

### **5.3.2 Evaluation Criteria**

Section 15.203 of the rules states that the subject device must meet at least one of the following criteria:

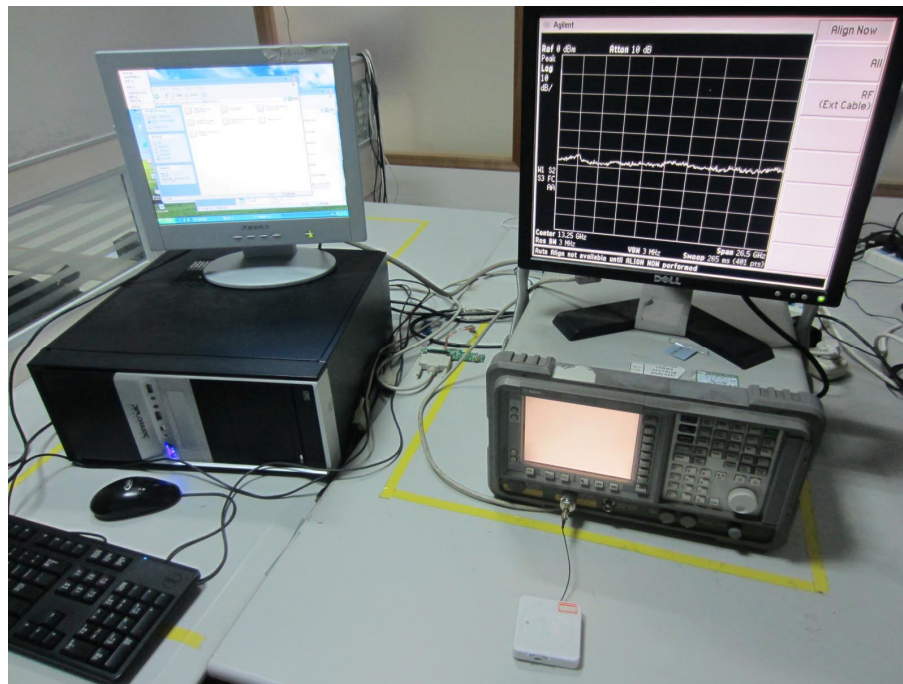
- (a) Antenna must be permanently attached to the unit.
- (b) Antenna must use a unique type of connector to attach to the EUT.
- (c) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

### **5.3.3 Evaluation Results**

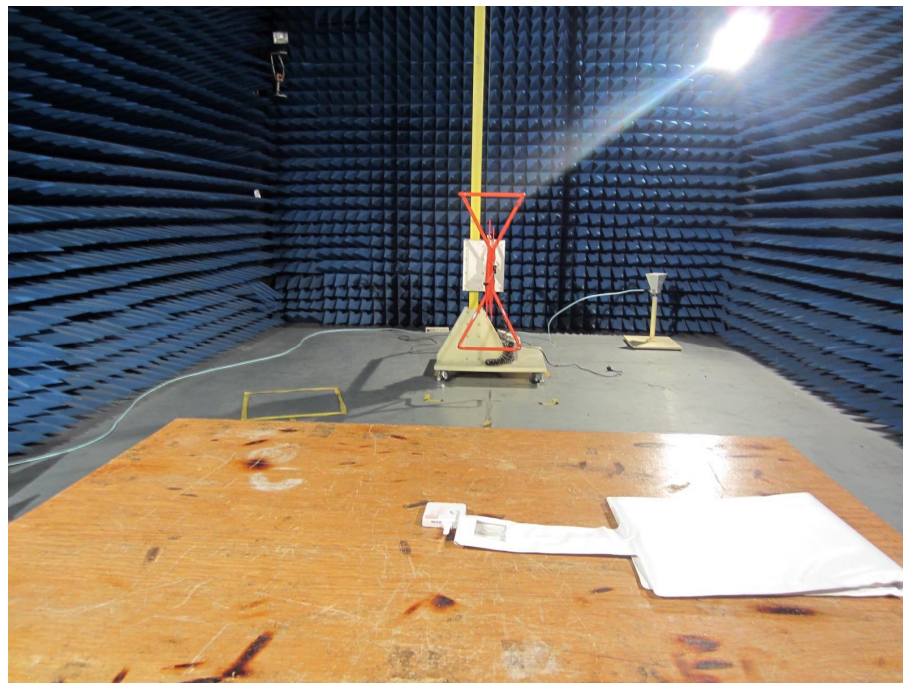
The antenna used in this product is PCB antenna. The antenna is permanently attached. It is inaccessible to the user.

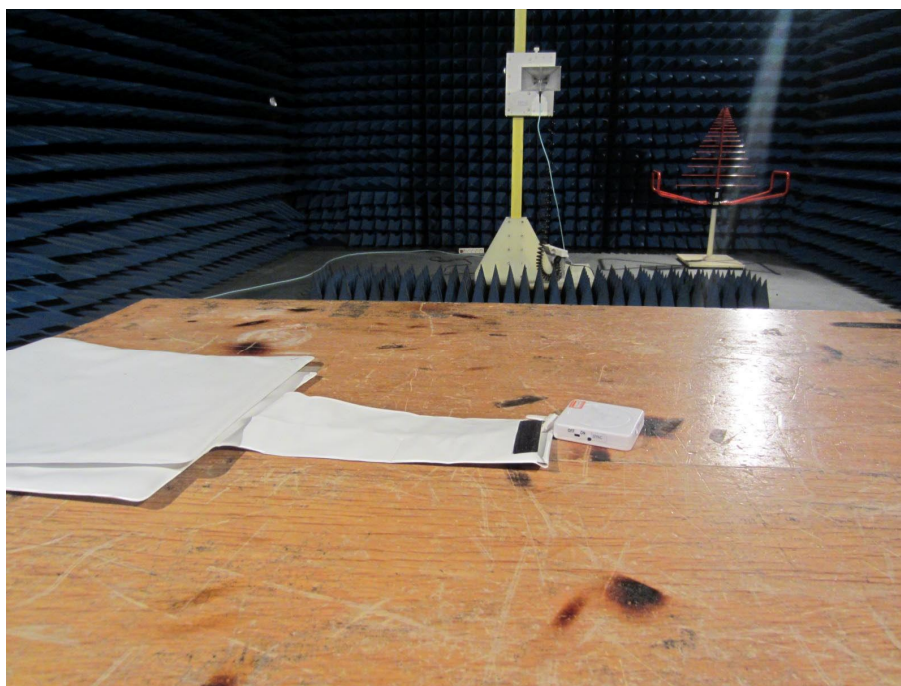
**APPENDIX 1**  
**PHOTOGRAPHS OF TEST SETUP**

# CONDUCTED TEST SETUP



# RE TEST SETUP





-----END OF REPORT-----