



# FCC TEST REPORT

**REPORT NO.:** PLX-11NO0993LTSP-FCC

**MODEL NO.:** PSD3

**RECEIVED:** Nov. 03, 2011

**ISSUED:** Feb.23, 2012

**APPLICANT:** PHILEX ELECTRONIC (NINGBO) CO., LTD

**ADDRESS:** Qi Fa Industrial Park, Qi Ming Road,  
Yinzhou District, Ningbo Zhejiang, 315000,  
China

**ISSUED BY:** BUREAU VERITAS ADT (Shanghai) Corporation

**LAB LOCATION:** 2F, Building C, No.1618, Yishan rd., 201103,  
Shanghai, China

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## 1 CERTIFICATION

**PRODUCT:** Motion Activated Soalr LED Security Light with Digital Wireless DVR

**MODEL NO.:** PSD3

**APPLICANT:** PHILEX ELECTRONIC (NINGBO) CO., LTD

**TESTED:** Nov. 28, 2011 ~Feb. 22, 2012

**TEST ITEM:** Engineering Sample

**STANDARDS:** FCC Part 15:2011,  
Subpart C (Section 15.249),  
ANSI C63.4-2003

We, BUREAU VERITAS ADT (Shanghai) Corporation, declare that the equipment above has been tested in our facility and found compliance with the requirement limits of applicable standards. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate under the standards herein specified.

**PREPARED BY :** Kevin Jiang , **DATE:** Feb.23, 2012  
Kevin Jiang  
Testing Engineer

**TECHNICAL ACCEPTANCE :** Joy Zhu , **DATE:** Feb.23, 2012  
Joy Zhu  
Lab Manager

**APPROVED BY :** Yzhu , **DATE:** Feb.23, 2012  
Zhaoqian YU  
Director of Operations



## 2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C			
Standard Paragraph	Test Type	Result	Remarks
15.207	Conducted Emission Test	N/A	Please refer to 4.1.2.
15.249(a)	Field Strength	PASS	Meet the requirement of limit
15.205	Restricted Band of Operation	PASS	Meet the requirement of limit
15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -3.84dB at 624.06MHz
15.249(d)	Out of Band Emission	PASS	Meet the requirement of limit

### 2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4:

Measurement		Value
Conducted emissions		2.55 dB
Conducted emissions at telecom port		2.60 dB
Radiated emissions	30 MHz ~ 1GHz	3.22 dB
	Above 1GHz	2.89 dB



### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	Motion Activated Soalr LED Security Light with Digital Wireless DVR
<b>MODEL NO.</b>	PSD3
<b>POWER SUPPLY</b>	12V DC by battery
<b>MODULATION TYPE</b>	GFSK
<b>CARRIER FREQUENCY OF EACH CHANNEL</b>	2414.25MHz, 2417.625MHz, 2421MHz, 2424.375MHz, 2427.75MHz, 2431.125MHz, 2434.5MHz, 2437.875MHz, 2441.25MHz, 2444.625MHz, 2448MHz, 2451.375MHz, 2454.75MHz, 2458.125MHz, 2461.5MHz
<b>NUMBER OF CHANNEL</b>	15
<b>ANTENNA TYPE</b>	Connector
<b>DATA CABLE SUPPLIED</b>	N/A
<b>I/O PORTS</b>	N/A

**NOTE:** The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

#### 3.2 DESCRIPTION OF TEST MODES

Test Mode	Description
1	Make sure EUT work in the operation mode.

Below channels is selected to this EUT:

Channel	Frequency
0	2414.25 MHz
7	2437.875MHz
14	2461.5MHz



## TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:

EUT configure mode	Applicable to		Description
	RE	Out of Band Emission	
1	√	√	Continuously transmitting

Where RE: Radiated Emission

### Radiated Emission Test:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, and X.Y.Z. axis.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

Tested Channel	Modulation Type	Axis
0	GFSK	Y
7	GFSK	Y
14	GFSK	Y



### 3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a remote switching. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

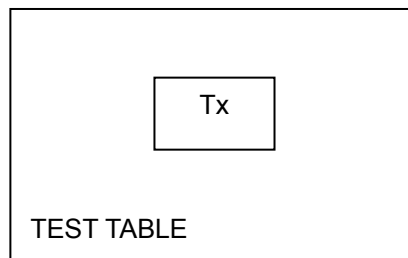
**FCC Part 15, Subpart C. (15.249)**

**ANSI C63.4- 2003**

All test items have been performed and recorded as per the above standards.

### 3.4 DESCRIPTION OF SUPPORT UNITS

**For Transmitter**





## 4 EMISSION TEST

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY (MHz)	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

**NOTES:** 1. The lower limit shall apply at the transition frequencies.  
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

#### 4.1.2 TEST RESULTS

Because the EUT is powered by battery, so the report doesn't require for conduct emission test.





## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

#### TEST STANDARD:

**FCC Part 15: 2011, Subpart C (Section: 15.205)**

**FCC Part 15: 2011, Subpart C (Section: 15.209)**

**FCC Part 15: 2011, Subpart C (Section: 15.249(a))**

According to 15.249 the field strength of emissions from intentional radiators operated under these frequencies bands shall not exceed the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental	Field Strength of Harmonics
	(millivolts/meter)	(microvolts/meter)
902-928	50	500
2400-2483.5	50	500
5725-5875	50	500
24000-242500	250	2500

#### NOTE:

- (1) The above field strength limits are specified at a distance of 3meters. The tighter limits apply at the band edges.



Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

<b>Frequencies (MHz)</b>	<b>Field strength (microvolts/meter)</b>	<b>Measurement distance (meters)</b>
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

## FREQUENCY RANGE OF RADIATED MEASUREMENT

(For intentional radiators)

If the intentional radiator operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.



## 4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	E1R1001	Apr. 19, 2012
BILOG Antenna SCHWARZBECK	VULB9168	E1A1001	Sept. 26, 2012
Preamplifier Agilent	8447D	E1A2001	Jan. 27, 2013
Preamplifier Agilent	8449B	E1A2002	Jan. 27, 2013
Double Ridged Broadband Horn Antenna Schwarzbeck	BBHA 9120D	E1A1002	Feb. 15, 2012
*Spectrum Analyzer Agilent	E4403B	E1S1001	Jan. 13, 2013
*Spectrum Analyzer ROHDE & SCHWARZ	FSP	E1S1002	May. 15, 2012
RF signal cable Woken	RG-402	E1CBH01	May. 30, 2012
RF signal cable Woken	RG-402	E1CBH16	May. 30, 2012
RF signal cable Woken	RG-402	E1CBH20	May. 30, 2012
RF signal cable Woken	RG-412	E1CBL02	May. 30, 2012
RF signal cable Woken	RG-412	E1CBL03	May. 30, 2012
RF signal cable Woken	RG-412	E1CBL04	May. 30, 2012
RF signal cable Woken	RG-402	E1CBH18	May. 30, 2012
Software ADT	ADT_Radiated_V 7.5	N/A	N/A

- NOTE:**
1. The calibration interval of the above test instruments is 12 months.
  2. "\*" = These equipment are used for the final measurement.
  3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
  4. The Spectrum Analyzer (model: FSP) and RF signal cable (SERIAL: E1CBH18) are used only for the measurement of emission frequency above 1GHz if tested.



### 4.2.3 TEST PROCEDURE

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its 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.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

**NOTE:**

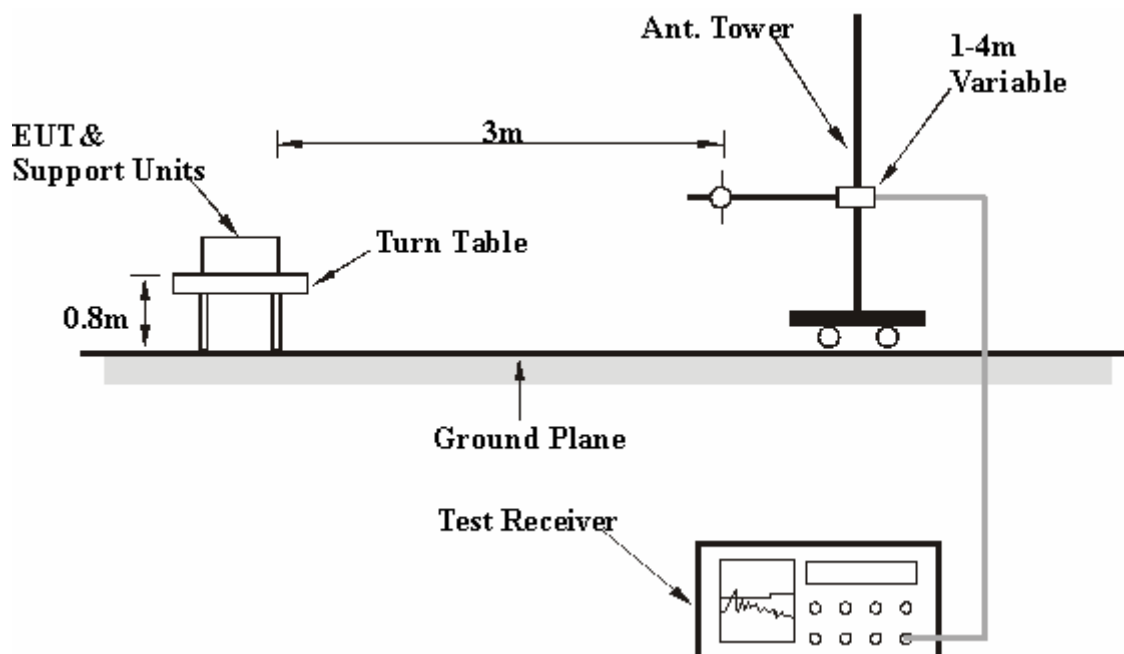
1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection (PK) at frequency above 1GHz.

### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation.



## 4.2.5 TEST SETUP



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

## 4.2.6 EUT OPERATING CONDITIONS

Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.

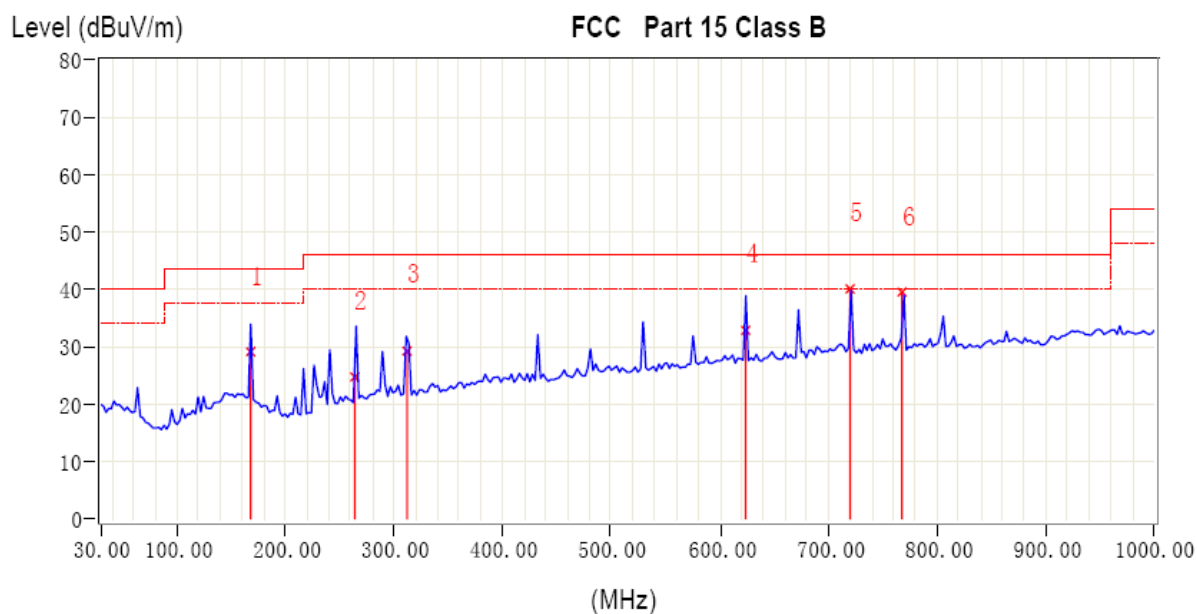


## 4.2.7 TEST RESULTS

Below 1GHz Worst-Case Data

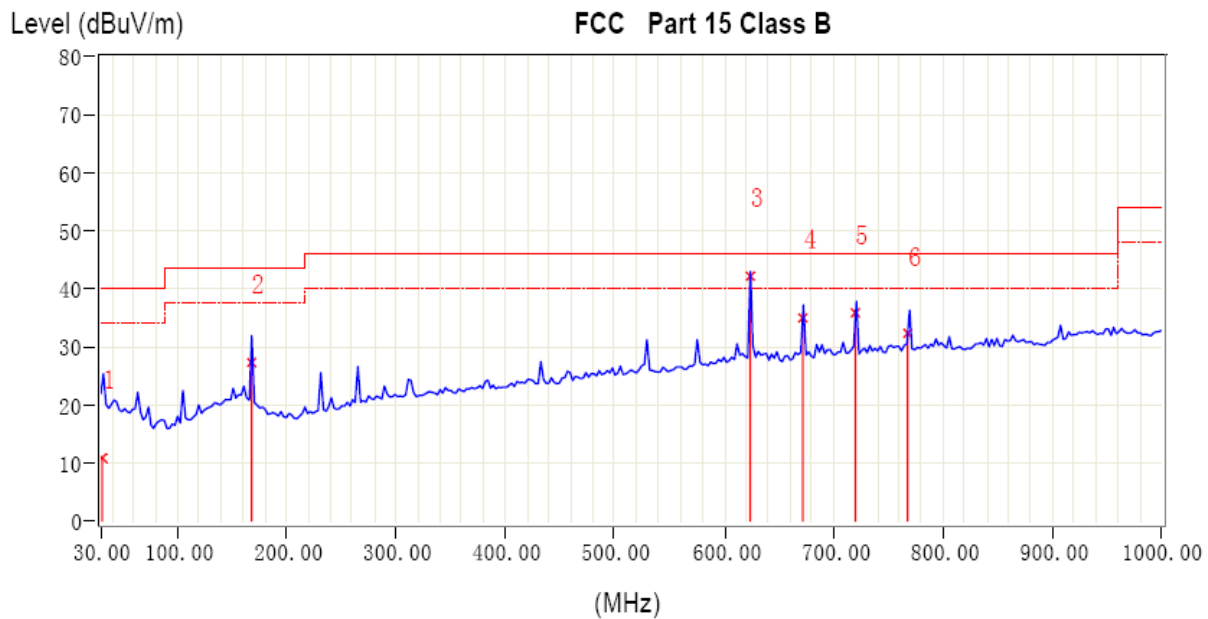
<b>EUT</b>	Motion Activated Solar LED Security Light with Digital Wireless DVR	<b>MODEL NO.</b>	PSD3
<b>CHANNEL</b>	Channel 0	<b>FREQUENCY RANGE</b>	30 ~ 1000 MHz
<b>MODULATION TYPE</b>	GFSK	<b>INPUT POWER (SYSTEM)</b>	12V DC by battery
<b>ENVIRONMENTAL CONDITIONS</b>	20 deg. C, 50% RH, 1000 hPa	<b>DETECTOR FUNCTION</b>	Quasi-Peak, 120KHz
<b>TESTED BY</b>	Gray SONG		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	168	16.02	13.09	29.11	43.5	-14.39	142	63
2	264	15	9.74	24.74	46	-21.26	124	247
3	312	16.53	12.7	29.23	46	-16.77	114	85
4	624.05	23.28	9.57	32.85	46	-13.15	120	125
5	720.08	24.66	15.39	40.05	46	-5.95	115	290
6	768.08	25.24	14.28	39.52	46	-6.48	120	98





ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	31.45	14.97	-4.07	10.89	40	-29.11	99	128
2	168	16.02	11.28	27.3	43.5	-16.2	107	294
3	624.06	23.28	18.88	42.16	46	-3.84	100	15
4	672.08	23.9	11.06	34.95	46	-11.05	111	253
5	720.08	24.66	11.18	35.84	46	-10.16	118	197
6	768.08	25.24	7.09	32.33	46	-13.67	123	111



**NOTE:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB)
2. Correction Factor (dB) = Antenna Factor (dB) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “\*” = Fundamental frequency
6. The average value of fundamental frequency and spurious emission is: Average = Peak value + 20log(Duty cycle)  
 Where the duty factor is calculated from following formula:  
 $20\log(\text{Duty cycle}) = 20\log(0.032\text{ms} \times 500/100\text{ms}) = -15.92\text{dB}$   
 $\text{Average} = \text{PK value} + 20\log(\text{Duty cycle}) = \text{PK value} - 15.92\text{dB}$   
 please see page 22 for plotted duty



## Above 1GHz Worst-Case Data

<b>EUT</b>	Motion Activated Soalr LED Security Light with Digital Wireless DVR	<b>MODEL NO.</b>	PSD3
<b>CHANNEL</b>	Channel 0	<b>FREQUENCY RANGE</b>	Above 1GHz
<b>MODULATION TYPE</b>	GFSK	<b>INPUT POWER (SYSTEM)</b>	12V DC by battery
<b>ENVIRONMENTAL CONDITIONS</b>	20 deg. C, 50% RH, 1000 hPa	<b>DETECTOR FUNCTION</b>	Peak/ Average, 1MHz
<b>TESTED BY</b>	Keynes SHEN		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	2414.20 PK	32.59	59.22	91.81	114.00	-22.19	--	--
2	2414.20 AV	N/A	N/A	75.89	94.00	-18.11	--	--
3	4811.04 PK	37.77	16.85	54.62	74.00	-19.38	--	--
4	4811.04 AV	N/A	N/A	38.7	54.00	-15.3	--	--
5	7230.72 PK	44.63	15.82	60.45	74.00	-13.55	--	--
6	7230.72 AV	N/A	N/A	44.53	54.00	-9.47	--	--
7	9650.40 PK	47.23	12.95	60.18	74.00	-13.82	--	--
8	9650.40 AV	N/A	N/A	44.26	54.00	-9.74	--	--
9	12070.08 PK	48.21	11.31	59.52	74.00	-14.48	--	--
10	12070.08 AV	N/A	N/A	43.6	54.00	-10.4	--	--
11	14487.00 PK	52.76	12.56	65.33	74.00	-8.67	--	--
12	14487.00 AV	N/A	N/A	49.41	54.00	-4.59	--	--
13	16901.00 PK	50.07	12.76	62.83	74.00	-11.17	--	--
14	16901.00 AV	N/A	N/A	46.91	54.00	-7.09	--	--





ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	2414.20 PK	32.59	63.57	96.16	114.00	-17.84	--	--
2	2414.20 AV	N/A	N/A	80.24	94.00	-13.76	--	--
3	4811.04 PK	37.77	19.69	57.46	74.00	-16.54	--	--
4	4811.04 AV	N/A	N/A	41.54	54.00	-12.46	--	--
5	7230.72 PK	44.63	16.28	60.91	74.00	-13.09	--	--
6	7230.72 AV	N/A	N/A	44.99	54.00	-9.01	--	--
7	9650.40 PK	47.23	17.11	64.34	74.00	-9.66	--	--
8	9650.40 AV	N/A	N/A	48.42	54.00	-5.58	--	--
9	12072.00 PK	48.21	12.34	60.55	74.00	-13.45	--	--
10	12072.00 AV	N/A	N/A	44.63	54.00	-9.37	--	--
11	14487.00 PK	52.76	12.43	65.19	74.00	-8.81	--	--
12	14487.00 AV	N/A	N/A	49.27	54.00	-4.73	--	--
13	16901.00 PK	50.07	13.23	63.30	74.00	-10.70	--	--
14	16901.00 AV	N/A	N/A	47.38	54.00	-6.62	--	--

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The average value of fundamental frequency and spurious emission is: Average = Peak value + 20log(Duty cycle)  
Where the duty factor is calculated from following formula:  
 $20\log(\text{Duty cycle}) = 20\log(0.032\text{ms} \times 47/10\text{ms}) = -15.92\text{dB}$   
 $\text{Average} = \text{PK value} + 20\log(\text{Duty cycle}) = \text{PK value} - 15.92\text{dB}$   
 please see page 22 for plotted duty



<b>EUT</b>	Motion Activated Soalr LED Security Light with Digital Wireless DVR	<b>MODEL NO.</b>	PSD3
<b>CHANNEL</b>	Channel 7	<b>FREQUENCY RANGE</b>	Above 1GHz
<b>MODULATION TYPE</b>	GFSK	<b>INPUT POWER (SYSTEM)</b>	12V DC by battery
<b>ENVIRONMENTAL CONDITIONS</b>	20 deg. C, 50% RH, 1000 hPa	<b>DETECTOR FUNCTION</b>	Peak/ Average, 1MHz
<b>TESTED BY</b>	Keynes SHEN		

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	2437.88 PK	32.64	49.88	82.52	114.00	-31.48	--	--
2	2437.88 AV	N/A	N/A	66.6	94.00	-27.4	--	--
3	4875.75 PK	38.02	14.63	52.65	74.00	-21.35	--	--
4	4875.75 AV	N/A	N/A	36.73	54.00	-17.27	--	--
5	7313.64 PK	44.66	11.78	56.43	74.00	-17.57	--	--
6	7313.64 AV	N/A	N/A	40.51	54.00	-13.49	--	--
7	9751.64 PK	47.49	12.04	59.54	74.00	-14.46	--	--
8	9751.64 AV	N/A	N/A	43.62	54.00	-10.38	--	--
9	12189.60 PK	48.27	8.84	57.12	74.00	-16.88	--	--
10	12189.60 AV	N/A	N/A	41.2	54.00	-12.8	--	--
11	14627.28 PK	52.22	11.90	64.12	74.00	-9.88	--	--
12	14627.28 AV	N/A	N/A	48.2	54.00	-5.8	--	--
13	17065.16 PK	50.69	12.64	63.33	74.00	-10.67	--	--
14	17065.16 AV	N/A	N/A	47.41	54.00	-6.59	--	--



ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	2437.88 PK	32.64	55.97	88.62	114.00	-25.38	--	--
2	2437.88 AV	N/A	N/A	72.7	94.00	-21.3	--	--
3	4875.75 PK	38.02	19.97	57.99	74.00	-16.01	--	--
4	4875.75 AV	N/A	N/A	42.07	54.00	-11.93	--	--
5	7313.64 PK	44.66	17.79	62.45	74.00	-11.55	--	--
6	7313.64 AV	N/A	N/A	46.53	54.00	-7.47	--	--
7	9751.64 PK	47.49	14.60	62.10	74.00	-11.90	--	--
8	9751.64 AV	N/A	N/A	46.18	54.00	-7.82	--	--
9	12189.60 PK	48.27	12.29	60.56	74.00	-13.44	--	--
10	12189.60 AV	N/A	N/A	44.64	54.00	-9.36	--	--
11	14627.28 PK	52.22	13.29	65.51	74.00	-8.49	--	--
12	14627.28 AV	N/A	N/A	49.59	54.00	-4.41	--	--
13	17065.16 PK	50.69	14.46	65.15	74.00	-8.85	--	--
14	17065.16 AV	N/A	N/A	49.23	54.00	-4.77	--	--

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The average value of fundamental frequency and spurious emission is: Average = Peak value + 20log(Duty cycle)  
Where the duty factor is calculated from following formula:  
 $20\log(\text{Duty cycle}) = 20\log(0.032\text{ms} \cdot 47/10\text{ms}) = -15.92\text{dB}$   
 $\text{Average} = \text{PK value} + 20\log(\text{Duty cycle}) = \text{PK value} - 15.92\text{dB}$   
 please see page 22 for plotted duty



<b>EUT</b>	Motion Activated Soalr LED Security Light with Digital Wireless DVR	<b>MODEL NO.</b>	PSD3
<b>CHANNEL</b>	Channel 14	<b>FREQUENCY RANGE</b>	Above 1GHz
<b>MODULATION TYPE</b>	GFSK	<b>INPUT POWER (SYSTEM)</b>	12V DC by battery
<b>ENVIRONMENTAL CONDITIONS</b>	20 deg. C, 50% RH, 1000 hPa	<b>DETECTOR FUNCTION</b>	Peak/ Average, 1MHz
<b>TESTED BY</b>	Keynes SHEN		

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	2461.46 PK	32.71	60.16	92.87	114.00	-21.13	--	--
2	2461.46 AV	N/A	N/A	76.95	94.00	-17.05	--	--
3	4922.82 PK	38.15	17.91	56.05	74.00	-17.95	--	--
4	4922.82 AV	N/A	N/A	40.13	54.00	-13.87	--	--
5	7384.28 PK	44.64	16.75	61.40	74.00	-12.60	--	--
6	7384.28 AV	N/A	N/A	45.48	54.00	-8.52	--	--
7	9845.72 PK	47.67	16.39	64.06	74.00	-9.94	--	--
8	9845.72 AV	N/A	N/A	48.14	54.00	-5.86	--	--
9	12307.50 PK	48.34	11.91	60.25	74.00	-13.75	--	--
10	12307.50 AV	N/A	N/A	44.33	54.00	-9.67	--	--
11	14768.76 PK	51.64	13.37	65.01	74.00	-8.99	--	--
12	14768.76 AV	N/A	N/A	49.09	54.00	-4.91	--	--
13	17230.22 PK	51.41	13.86	65.27	74.00	-8.73	--	--
14	17230.22 AV	N/A	N/A	49.35	54.00	-4.65	--	--



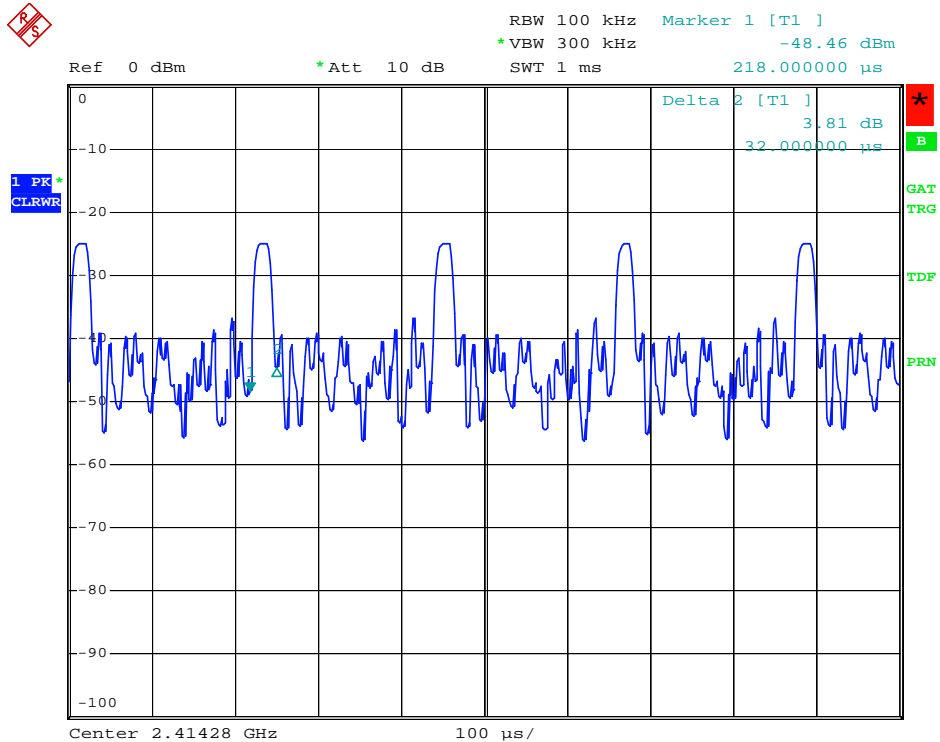
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	2461.46 PK	32.71	57.01	89.72	114.00	-24.28	--	--
2	2461.46 AV	N/A	N/A	73.8	94.00	-20.2	--	--
3	4922.82 PK	38.15	20.37	58.52	74.00	-15.48	--	--
4	4922.82 AV	N/A	N/A	42.6	54.00	-11.4	--	--
5	7384.28 PK	44.64	20.27	64.91	74.00	-9.09	--	--
6	7384.28 AV	N/A	N/A	48.99	54.00	-5.01	--	--
7	9845.72 PK	47.67	16.91	64.58	74.00	-9.42	--	--
8	9845.72 AV	N/A	N/A	48.66	54.00	-5.34	--	--
9	12307.50 PK	48.34	12.09	60.43	74.00	-13.57	--	--
10	12307.50 AV	N/A	N/A	44.51	54.00	-9.49	--	--
11	14768.76 PK	51.64	13.46	65.10	74.00	-8.90	--	--
12	14768.76 AV	N/A	N/A	49.18	54.00	-4.82	--	--
13	17230.22 PK	51.41	12.88	64.29	74.00	-9.71	--	--
14	17230.22 AV	N/A	N/A	48.37	54.00	-5.63	--	--

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The average value of fundamental frequency and spurious emission is: Average = Peak value + 20log(Duty cycle)  
Where the duty factor is calculated from following formula:  
 $20\log(\text{Duty cycle}) = 20\log(0.032\text{ms} \cdot 47/10\text{ms}) = -15.92\text{dB}$   
 Average = PK value + 20log(Duty cycle) = PK value - 15.92dB  
 please see page 22 for plotted duty

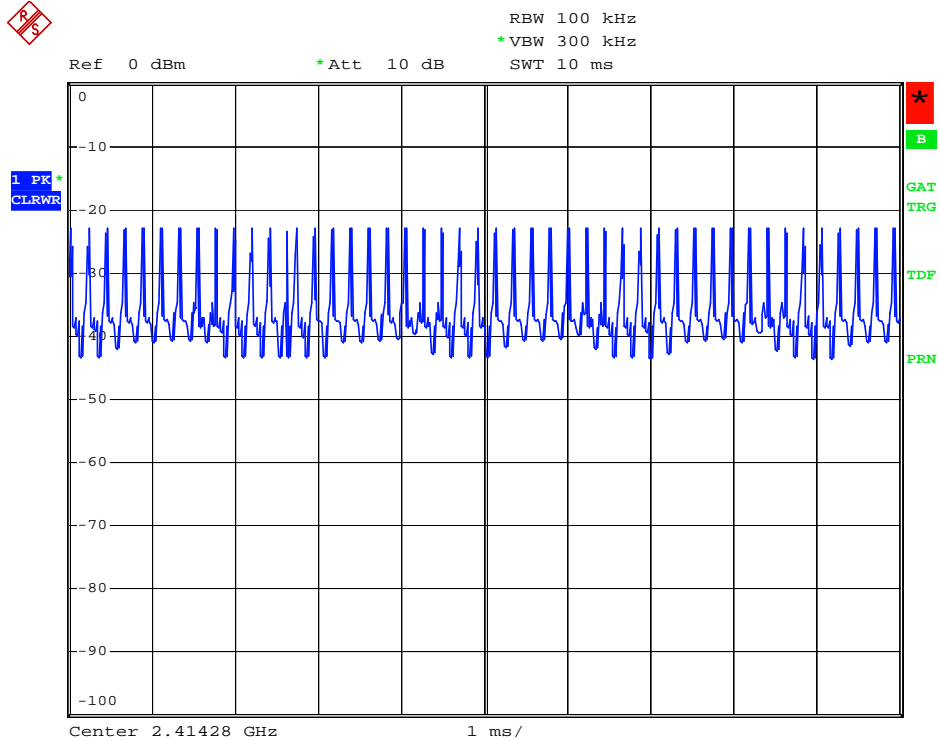


1ms



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10ms



Date: 30.NOV.2011 15:11:07



## 4.3 OUT OF BAND EMISSIONS

### 4.3.1 LIMITS OF OUT OF BAND EMISSIONS

#### TEST STANDARD:

#### FCC Part 15: 2011, Subpart C (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.

Fundamental Frequency (MHz)	Limit of Out of Band Emissions(dBuV/m)
2413.02 MHz	54
2436.34MHz	54
2459.92MHz	54

### 4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SIGNAL ANALYZER Rohde & Schwarz	FSP	E1S1002	Mar. 16, 2012
Preamplifier Agilent	8449B	E1A2002	Jan. 27, 2013
Double Ridged Broadband Horn Antenna Schwarzbeck	BBHA 9120D	E1A1002	Feb. 15, 2013
RF signal cable Woken	RG-402	E1CBH01	May. 30, 2012

**NOTE:** The calibration interval of the above test instruments is 12 months.



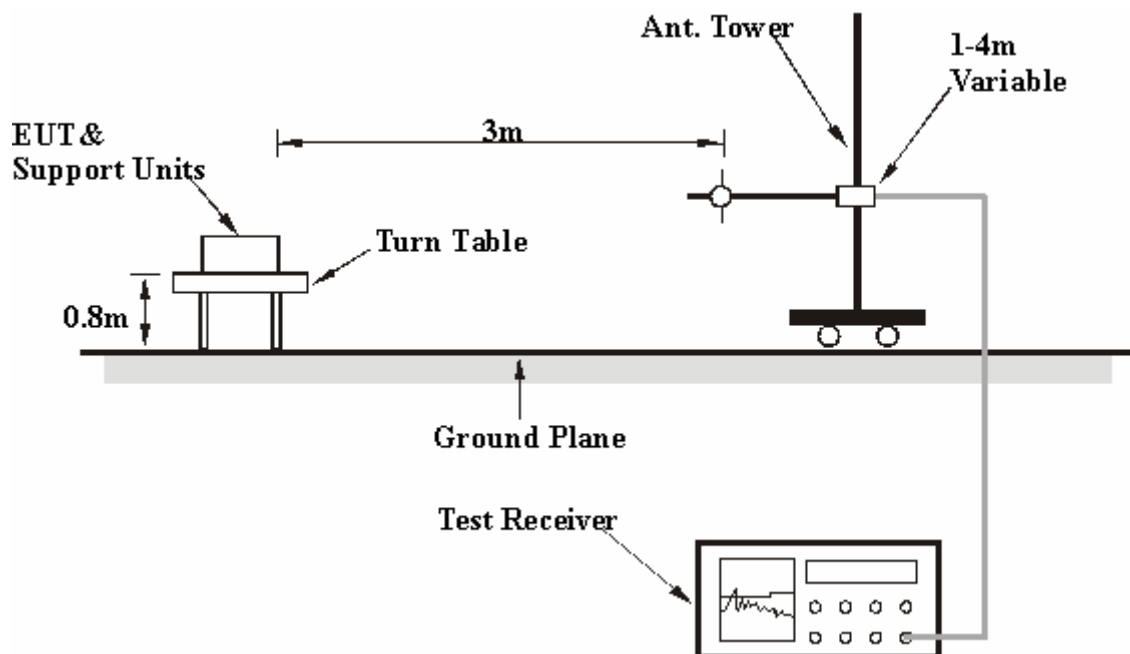
### 4.3.3 TEST PROCEDURES

1. The EUT was placed on the turning table.
2. The signal was coupled to the spectrum analyzer through an antenna.
3. Set the resolution bandwidth to 100 kHz and video bandwidth to 300 kHz then select Peak function to scan the channel frequency.
4. Out of band emissions was measured and recorded.

### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation.

### 4.3.5 TEST SETUP



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



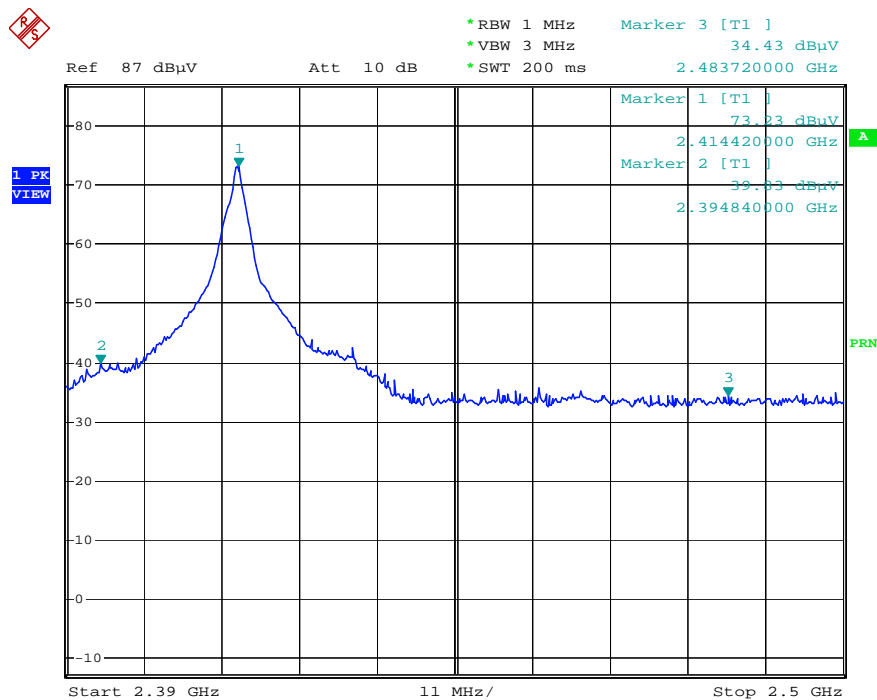


### 4.3.6 TEST RESULTS

Frequency (MHz)	channel	Emission (dBuV/m)	Maximum limit (dBuV/m)	Pass / Fail
2394.84	0	39.83	54	Pass
2483.72	0	34.43	54	Pass
2399.56	7	39.61	54	Pass
2485.92	7	38.55	54	Pass
2396.82	14	33.93	54	Pass
2491.64	14	33.91	54	Pass

The plot of test result is attached as below.

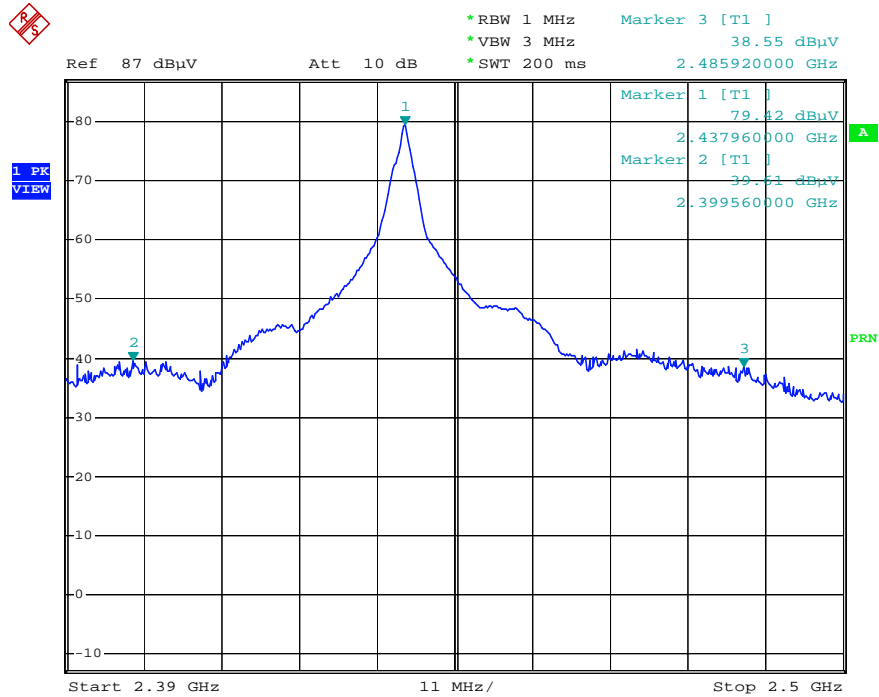
Ch0



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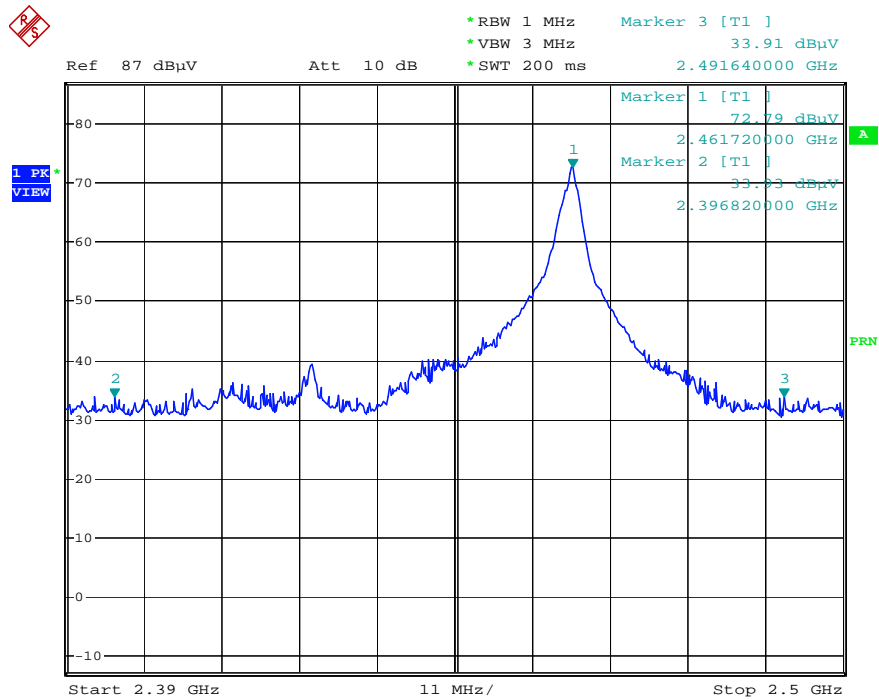


## Ch7



Date: 1.JAN.2000 00:59:05

## Ch14



Date: 1.JAN.2000 00:52:13



## 5 APPENDIX - INFORMATION ON THE TESTING LABORATORIES

We, BUREAU VERITAS ADT (Shanghai) Corporation, were founded in 2004 to provide our best service in EMC, Radio and Vehicle consultation. Our laboratories are accredited by the following accreditation bodies according to ISO/IEC 17025 (2005) .

<b>USA</b>	A2LA Certificate No.: 2343.01
<b>China</b>	CNAS Certificate No.: L2810

Copies of accreditation certificates could be inquired from our office. If you have any comments, please feel free to contact us at the following:

**EMC / RF / Vehicle Lab:**

Tel: +86 21 6465 9091

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Email: [bvadtshmail@cn.bureauveritas.com](mailto:bvadtshmail@cn.bureauveritas.com)

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