



# Test Report

Product Name	Gate alarm
Model No.	SA809-2, PSA03-2
FCC ID	FU5SA809

Applicant	EVERSPRING INDUSTRY CO., LTD
Address	7th fl. 609 Wan Shou Road Sec. 1, Kweishan, Taoyuan Hsien 333, Taiwan, R.O.C.

Date of Receipt	Apr. 02, 2010
Issued Date	Apr. 23, 2010
Report No.	104125R-RFUSP44V01
Report Version	V0.1-Draft

The test results relate only to the samples tested.  
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 This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

# Test Report Certification

Issued Date: Apr. 23, 2010

Report No.: 104125R-RFUSP44V01



Product Name	Gate alarm
Applicant	EVERSPRING INDUSTRY CO., LTD
Address	7th fl. 609 Wan Shou Road Sec. 1, Kweishan, Taoyuan Hsien 333, Taiwan, R.O.C.
Manufacturer	Dong-Guan Li Yuan Electronics Co., Ltd
Model No.	SA809-2, PSA03-2
EUT Rated Voltage	DC 6V (Battery 1.5V*4) AC 100-240V / 50-60Hz
EUT Test Voltage	DC 6V (Battery 1.5V*4) AC 120V / 60Hz
Trade Name	EVERSPRING
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2009 ANSI C63.4: 2003
Test Result	Complied



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**1. GENERAL INFORMATION**

**1.1. EUT Description**

Product Name	Gate alarm
Trade Name	EVERSPRING
Model No.	SA809-2, PSA03-2
FCC ID	FU5SA809
Frequency Range	923MHz
Channel Control	N/A
Antenna Type	Monopole
Channel Number	1
Type of Modulation	FSK
Power Adapter	Ktec, KSAC0900100W1US Input: 100-240V, 50/60Hz, 0.4A Output: 9V, 1.0A Cable out: Non-Shielded, 1.8m, with one ferrite core bonded.

**Antenna List**

No.	Manufacturer	Part No.	Antenna Type
1	Dong-Guan Li Yuan	N/A	Monopole Antenna

Note: The antenna of EUT is conform to FCC 15.203

Note:

1. The EUT is a Gate alarm with a built-in 923MHz transceiver.
2. These tests are conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.249 for spread spectrum devices.
3. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

## 1.2. Operational Description

The EUT is Gate alarm with a built-in 923MHz transceiver module. The EUT operation frequency is 923.00MHz. The signals modulated by FSK are transmitted from the Monopole Antenna of the EUT.

Test Mode	Mode 1: Transmit(AC Adapter Mode) Mode 2: Transmit(Battery Mode)
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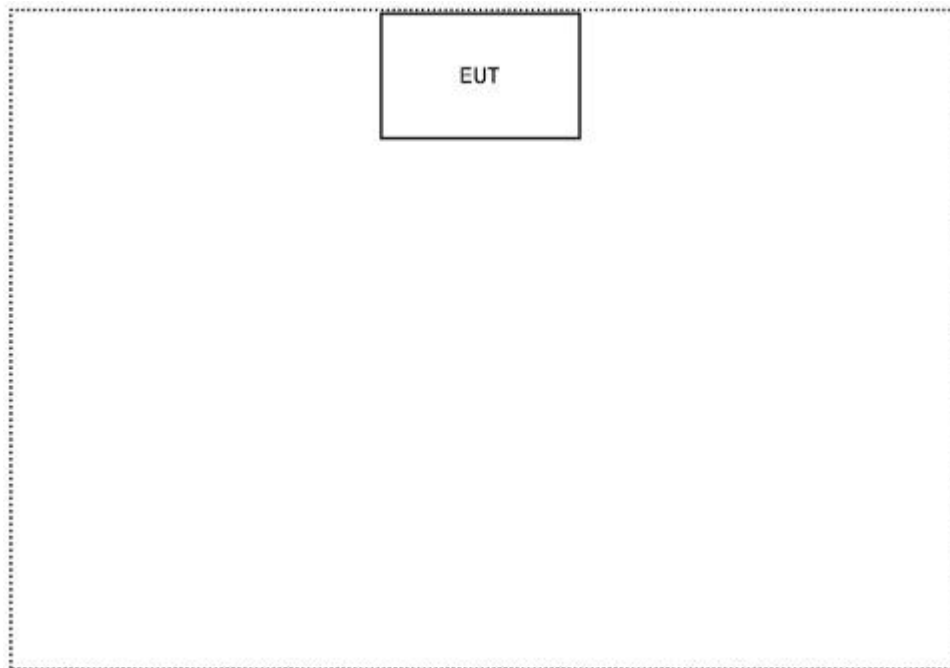
**1.3. Tested System Details**

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

	Product	Manufacturer	Model No.	Serial No.	Power Cord
(1)	N/A	N/A	N/A	N/A	N/A

	Signal Cable Type	Signal cable Description
A.	N/A	N/A

**1.4. Configuration of Test System**



**1.5. EUT Exercise Software**

- (1) Setup the EUT as shown in section 1.4.
- (2) Provide the EUT power source.
- (3) Starts the continuous transmit.
- (4) Verify that the EUT works correctly.

**1.6. Test Facility**

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from Quietek Corporation's Web Site : <http://tw.quietek.com/tw/emc/accreditations/accreditations.htm>

The address and introduction of Quietek Corporation's laboratories can be founded in our Web site : <http://www.quietek.com/>

Site Description: File on  
 Federal Communications Commission  
 FCC Engineering Laboratory  
 7435 Oakland Mills Road  
 Columbia, MD 21046  
 Registration Number: 92195



Accreditation on NVLAP  
 NVLAP Lab Code: 200533-0



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FCC Accreditation Number: TW1014



**2. Conducted Emission**

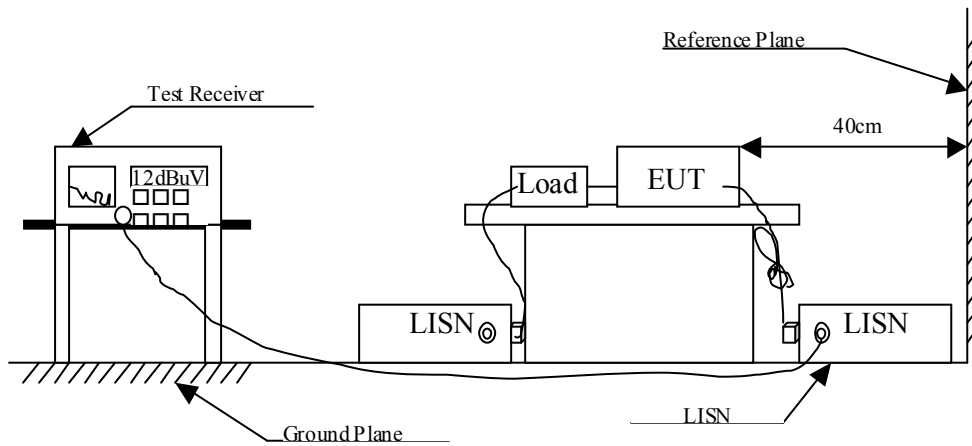
**2.1. Test Equipment**

The following test equipment are used during the conducted emission test:

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal.	Remark
1	Test Receiver	R & S	ESCS 30/825442/17	May, 2009	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 2009	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 2009	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	May, 2009	
5	No.1 Shielded Room			N/A	

Note: All instruments are calibrated every one year.

**2.2. Test Setup**



**2.3. Limits**

FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

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



## 2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

## 2.5. Uncertainty

$\pm 2.26$  dB

**2.6. Test Result of Conducted Emission**

Product : Gate alarm  
 Test Item : Conducted Emission Test  
 Power Line : Line 1  
 Test Mode : Mode 1: Transmit(AC Adapter Mode) (923MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
<b>Line 1</b>					
<b>Quasi-Peak</b>					
0.212	9.698	28.660	38.358	-25.871	64.229
0.291	9.653	31.580	41.233	-20.738	61.971
0.334	9.650	31.180	40.830	-19.913	60.743
0.404	9.648	35.400	45.048	-13.695	58.743
0.486	9.640	30.660	40.300	-16.100	56.400
1.033	9.670	26.690	36.360	-19.640	56.000
<b>Average</b>					
0.212	9.698	22.070	31.768	-22.461	54.229
0.291	9.653	19.880	29.533	-22.438	51.971
0.334	9.650	11.330	20.980	-29.763	50.743
0.404	9.648	18.830	28.478	-20.265	48.743
0.486	9.640	17.900	27.540	-18.860	46.400
1.033	9.670	14.470	24.140	-21.860	46.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. "█" means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Gate alarm  
 Test Item : Conducted Emission Test  
 Power Line : Line 2  
 Test Mode : Mode 1: Transmit(AC Adapter Mode) (923MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
<b>Line 2</b>					
<b>Quasi-Peak</b>					
0.201	9.716	29.460	39.176	-25.367	64.543
0.279	9.667	15.190	24.857	-37.457	62.314
0.338	9.660	6.070	15.730	-44.899	60.629
0.412	9.650	14.430	24.080	-34.434	58.514
0.502	9.640	17.200	26.840	-29.160	56.000
0.873	9.672	25.620	35.292	-20.708	56.000
<b>Average</b>					
0.201	9.716	17.870	27.586	-26.957	54.543
0.279	9.667	4.620	14.287	-38.027	52.314
0.338	9.660	6.060	15.720	-34.909	50.629
0.412	9.650	5.470	15.120	-33.394	48.514
0.502	9.640	6.430	16.070	-29.930	46.000
0.873	9.672	1.710	11.382	-34.618	46.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. "█" means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

### 3. Radiated Emission

#### 3.1. Test Equipment

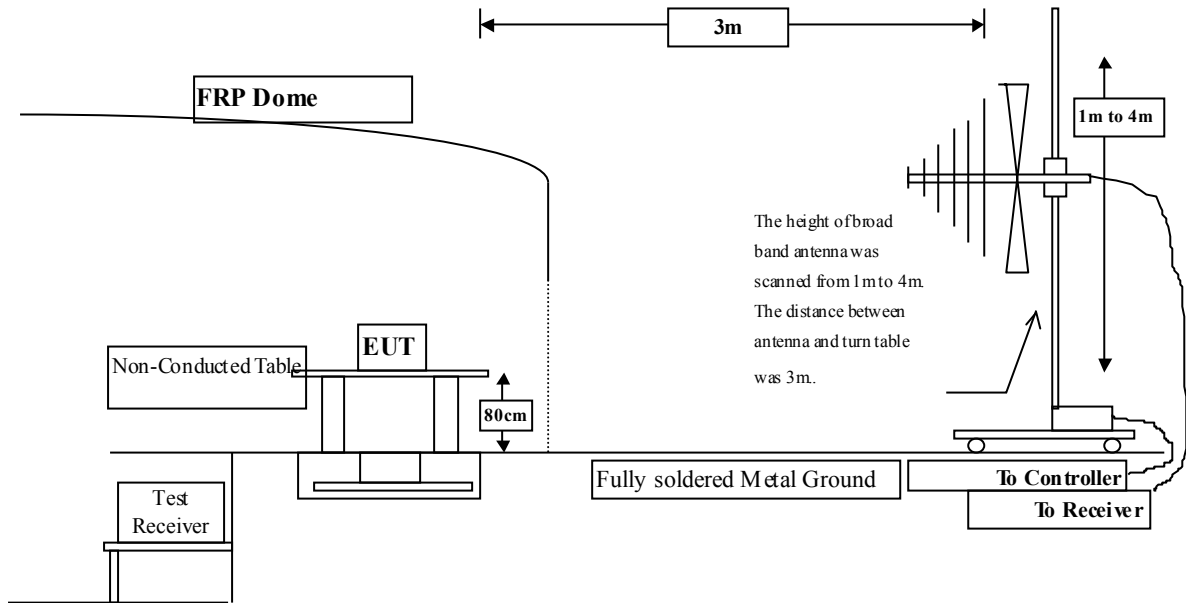
The following test equipment are used during the radiated emission test:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒ Site # 3	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2009
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2009
		Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2009
	X	Pre-Amplifier	Agilent	8447D/2944A09549	Sep., 2009
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2009
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2009
	X	Coaxial Cable	Quietek	QTK-CABLE/ CAB5	Feb., 2010
	X	Controller	Quietek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

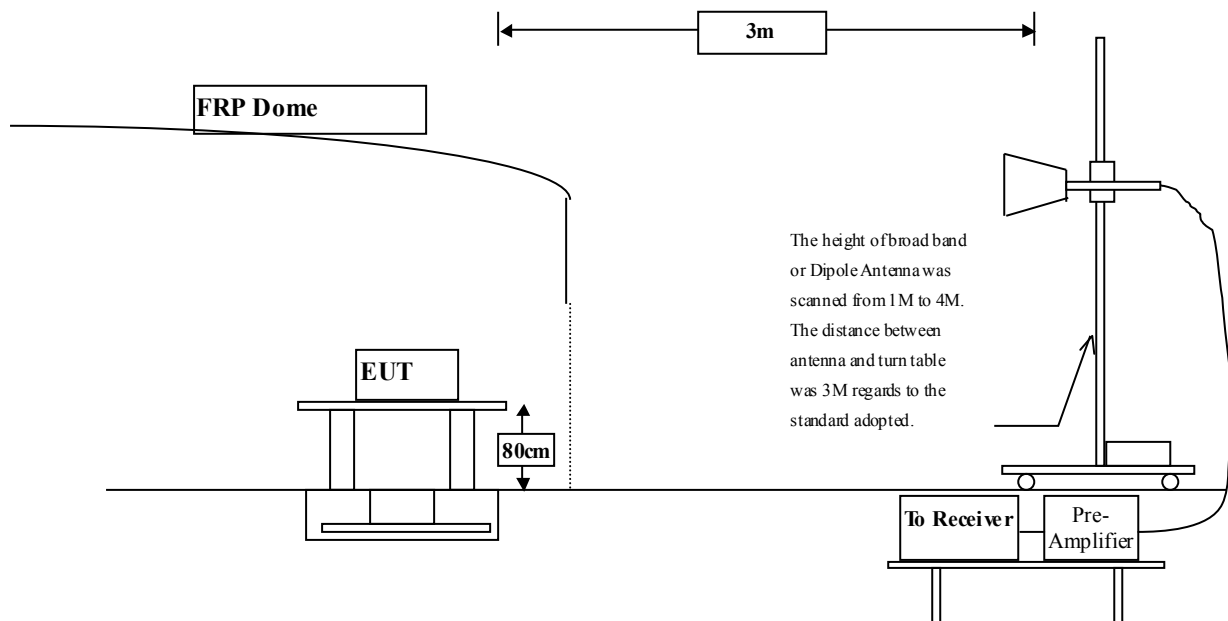
- Note:
1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
  2. The test instruments marked with "X" are used to measure the final test results.

### 3.2. Test Setup

#### Radiated Emission Below 1GHz



#### Radiated Emission Above 1GHz



### 3.3. Limits

#### ➤ General Radiated Emission Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

<b>FCC Part 15 Subpart C Paragraph 15.209(a) Limits</b>		
Frequency MHz	uV/m @3m	dBuV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks: E field strength (dBuV/m) = 20 log E field strength (uV/m)

### 3.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.249 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4: 2003 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured on the Final Measurement.

The measurement frequency range from 30MHz - 10th Harmonic of fundamental was investigated.

### 3.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

**3.6. Test Result of Radiated Emission**

Product : Gate alarm  
 Test Item : Fundamental Radiated Emission  
 Test Site : No.3OATS  
 Test Mode : Mode 1: Transmit(AC Adapter Mode) (X- Axis)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
923.000	6.633	99.442	106.075	-7.925	114.000
<b>Average Detector:</b>					
--					
<b>Vertical</b>					
<b>Peak Detector:</b>					
923.000	3.181	96.961	100.142	-13.858	114.000
<b>Average Detector:</b>					
--					

Note:

1. Measurement Level = Reading Level + Correct Factor.
2. Correct Factor = Antenna Factor + Cable Loss – PreAMP.
3. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.



**Average Detector:**

Frequency MHz	Peak Measurement dBuV/m	Duty Cycle Correct Factor dB	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
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**Horizontal  
Average Detector:**

923	106.075	-20.000	86.075	-7.925	94.000
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**Vertical  
Average Detector:**

923	100.142	-20.000	80.142	-13.858	94.000
-----	---------	---------	--------	---------	--------

Note:

1.  $AVG \text{ Measurement} = \text{Peak Measurement} + \text{Duty Cycle Correct Factor}$
2. The Duty Cycle is refer to section 5.
3. If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.

Product : Gate alarm  
 Test Item : Fundamental Radiated Emission  
 Test Site : No.3OATS  
 Test Mode : Mode 1: Transmit(AC Adapter Mode) (Y- Axis)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
923.000	6.633	93.940	100.573	-13.427	114.000
<b>Average Detector:</b>					
--					
<b>Vertical</b>					
<b>Peak Detector:</b>					
923.000	3.181	100.124	103.305	-10.695	114.000
<b>Average Detector:</b>					
--					

Note:

1. Measurement Level = Reading Level + Correct Factor.
2. Correct Factor = Antenna Factor + Cable Loss – PreAMP.
3. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

**Average Detector:**

Frequency MHz	Peak Measurement dBuV/m	Duty Cycle Correct Factor dB	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Average Detector:</b>					
923	100.573	-20.000	80.573	-13.427	94.000

**Vertical  
Average Detector:**

923	103.305	-20.000	83.305	-10.695	94.000
-----	---------	---------	--------	---------	--------

Note:

1.  $AVG\ Measurement = Peak\ Measurement + Duty\ Cycle\ Correct\ Factor$
2. The Duty Cycle is refer to section 5.
3. If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.

Product : Gate alarm  
 Test Item : Fundamental Radiated Emission  
 Test Site : No.3OATS  
 Test Mode : Mode 1: Transmit(AC Adapter Mode) (Z- Axis)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
923.000	6.633	95.424	102.057	-11.943	114.000
<b>Average Detector:</b>					
--					
<b>Vertical</b>					
<b>Peak Detector:</b>					
923.000	3.181	96.683	99.864	-14.136	114.000
<b>Average Detector:</b>					
--					

Note:

1. Measurement Level = Reading Level + Correct Factor.
2. Correct Factor = Antenna Factor + Cable Loss – PreAMP.
3. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

**Average Detector:**

Frequency MHz	Peak Measurement dBuV/m	Duty Cycle Correct Factor dB	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
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**Horizontal  
Average Detector:**

923	102.057	-20.000	82.057	-11.943	94.000
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**Vertical  
Average Detector:**

923	99.864	-20.000	79.864	-14.136	94.000
-----	--------	---------	--------	---------	--------

Note:

1.  $AVG\ Measurement = Peak\ Measurement + Duty\ Cycle\ Correct\ Factor$
2. The Duty Cycle is refer to section 5.
3. If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.

Product : Gate alarm  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit(AC Adapter Mode) (923MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
1846.000	-3.980	40.361	36.381	-37.619	74.000
2769.000	-3.840	41.260	37.421	-36.579	74.000
3692.000	-4.037	40.670	36.633	-37.367	74.000
4615.000	-1.329	40.940	39.612	-34.388	74.000
5538.000	2.517	45.020	47.537	-26.463	74.000
6461.000	4.366	32.500	36.866	-37.134	74.000
7384.000	8.514	34.210	42.723	-31.277	74.000
8307.000	8.861	33.790	42.651	-31.349	74.000
9230.000	9.349	37.880	47.229	-26.771	74.000

**Average Detector:**

--

**Note:**

1. The reading levels below 1GHz and above 1GHz are quasi-peak values and peak/average values, respectively.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz °
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Gate alarm  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit(AC Adapter Mode) (923MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Vertical</b>					
<b>Peak Detector:</b>					
1846.000	-3.516	40.746	37.229	-36.771	74.000
2769.000	-4.743	41.160	36.417	-37.583	74.000
3692.000	-3.714	40.970	37.257	-36.743	74.000
4615.000	0.239	41.070	41.309	-32.691	74.000
5538.000	2.513	45.390	47.903	-26.097	74.000
6461.000	4.368	32.590	36.958	-37.042	74.000
7384.000	9.314	34.460	43.773	-30.227	74.000
8307.000	9.878	33.950	43.828	-30.172	74.000
9230.000	9.335	37.890	47.224	-26.776	74.000

**Average Detector:**

--

Note:

1. The reading levels below 1GHz and above 1GHz are quasi-peak values and peak/average values, respectively.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz ◦
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Gate alarm  
 Test Item : General Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit(AC Adapter Mode) (923MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
31.940	-0.505	28.563	28.058	-11.942	40.000
61.040	-12.057	40.002	27.945	-12.055	40.000
105.660	-7.676	35.299	27.622	-15.878	43.500
598.420	3.524	28.137	31.661	-14.339	46.000
747.800	3.915	35.292	39.207	-6.793	46.000
829.280	7.376	27.165	34.541	-11.459	46.000
<b>Vertical</b>					
105.660	-4.576	38.392	33.815	-9.685	43.500
175.500	-1.842	31.651	29.809	-13.691	43.500
377.260	0.647	25.386	26.033	-19.967	46.000
598.420	1.114	30.478	31.592	-14.408	46.000
747.800	1.665	38.420	40.085	-5.915	46.000
838.980	1.961	32.953	34.914	-11.086	46.000

Note:

1. The reading levels below 1GHz are quasi-peak values.
2. “ ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The radiated emissions below 1GHz of the lowest, middle, highest frequency are pretested. Only the worst case is shown on the report.



Product : Gate alarm  
 Test Item : General Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit(Battery Mode) (923MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
241.460	-6.590	32.014	25.424	-20.576	46.000
472.320	2.932	24.562	27.494	-18.506	46.000
598.420	3.524	27.817	31.341	-14.659	46.000
707.060	3.066	32.925	35.991	-10.009	46.000
965.080	7.222	35.291	42.513	-11.487	54.000
1000.000	9.564	31.291	40.855	-13.145	54.000
<b>Vertical</b>					
45.520	-10.625	38.732	28.107	-11.893	40.000
80.440	-4.848	31.270	26.422	-13.578	40.000
241.460	-6.000	32.619	26.619	-19.381	46.000
598.420	1.114	24.742	25.856	-20.144	46.000
747.800	1.665	35.822	37.487	-8.513	46.000
842.860	2.378	32.313	34.691	-11.309	46.000

Note:

5. The reading levels below 1GHz are quasi-peak values.
6. "■" means the worst emission level.
7. Measurement Level = Reading Level + Correct Factor.
8. The radiated emissions below 1GHz of the lowest, middle, highest frequency are pretested. Only the worst case is shown on the report.

#### 4. Band Edge

##### 4.1. Test Equipment

###### RF Conducted Measurement

The following test equipments are used during the band edge tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2009
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2009
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2010

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

###### RF Radiated Measurement:

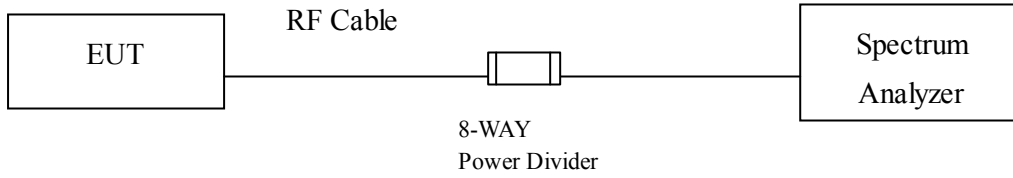
The following test equipments are used during the band edge tests:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒ Site # 3		Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2009
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2009
		Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2009
	X	Pre-Amplifier	Agilent	8447D/2944A09549	Sep., 2009
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2009
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2009
	X	Coaxial Cable	Quietek	QTK-CABLE/ CAB5	Feb., 2010
	X	Controller	Quietek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

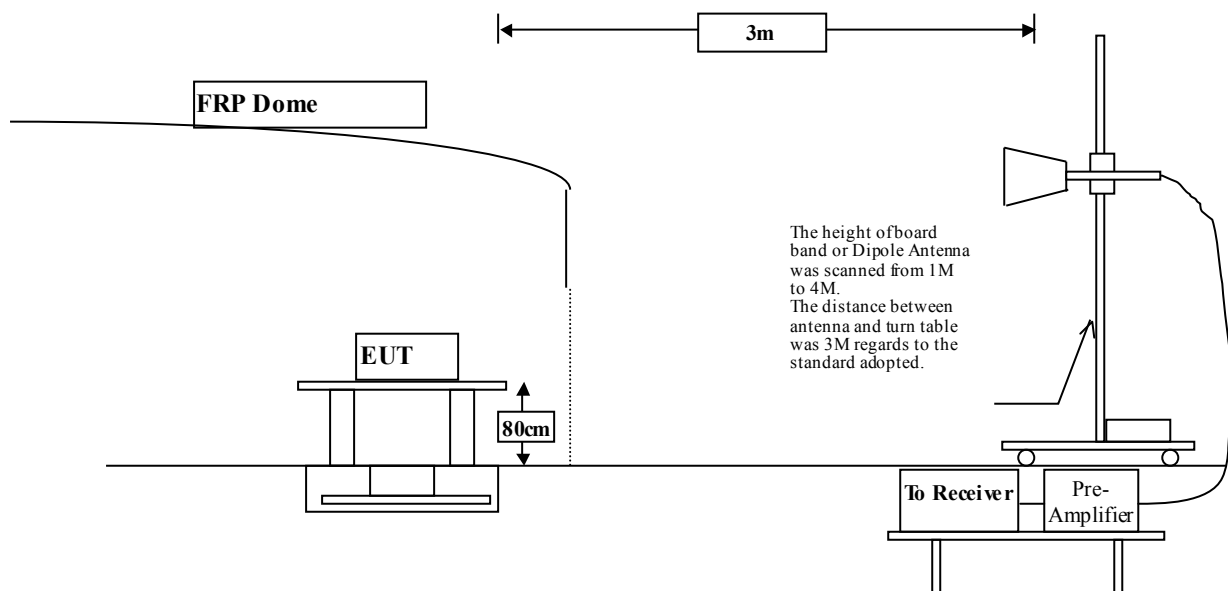
- Note:
1. All equipments are calibrated every one year.
  2. The test equipments marked by “X” are used to measure the final test results.

## 4.2. Test Setup

### RF Conducted Measurement



### RF Radiated Measurement:



### **4.3. Limits**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

### **4.4. Test Procedure**

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated measurement.

The bandwidth setting below 1GHz and above 1GHz on the field strength meter is 120 kHz and 1MHz, respectively.

### **4.5. Uncertainty**

Conducted is  $\pm 1.27$  dB

Radiated is  $\pm 3.9$  dB

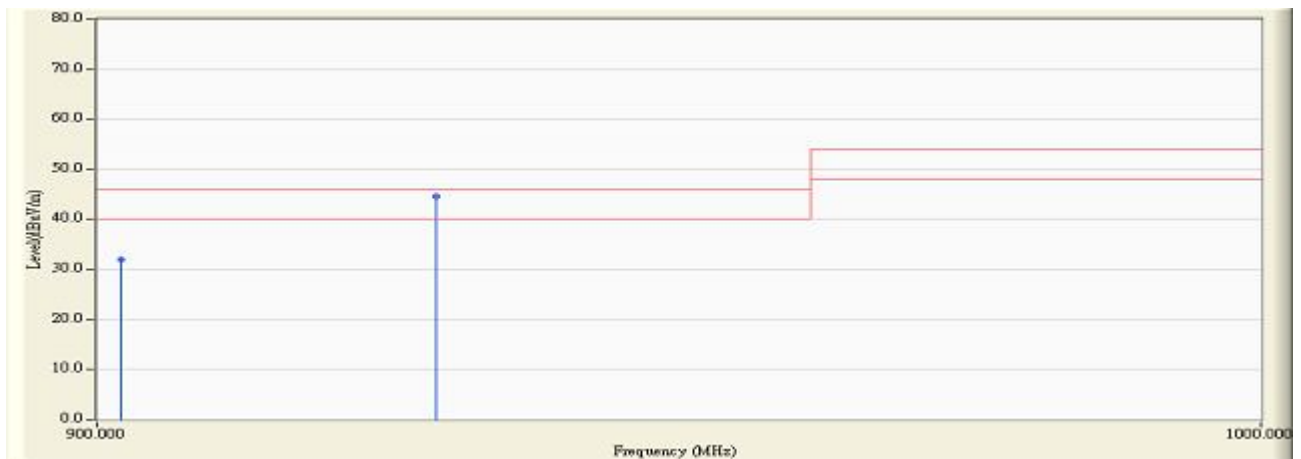
**4.6. Test Result of Band Edge**

Product : Gate alarm  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit(AC Adapter Mode)

**RF Radiated Measurement (Horizontal):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Margin (dB)	Quasi-Peak Limit (dBuV/m)	Result
01(Quasi-Peak)	902.000	30.450	1.580	32.030	-13.970	46.000	Pass
01(Quasi-Peak)	928.000	30.876	13.690	44.565	-1.435	46.000	Pass

**Figure Channel 01: Horizontal (Quasi-Peak)**



Note:

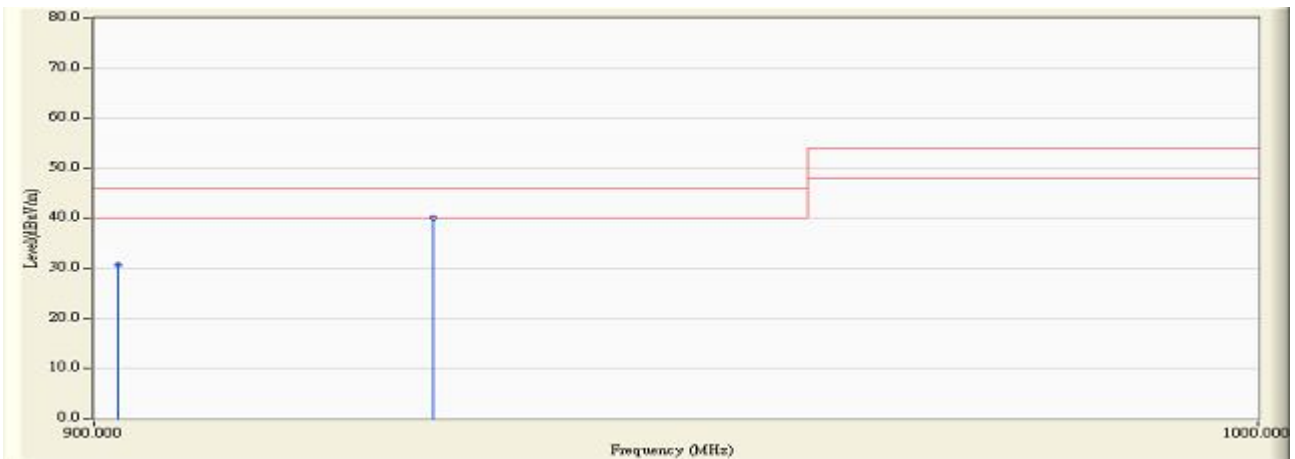
1. Quasi-Peak measurements: RBW=100kHz,VBW=1MHz,Sweep: Auto.
2. “\*” , means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Product : Gate alarm  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit(AC Adapter Mode)

**RF Radiated Measurement (Vertical):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Margin (dB)	Quasi-Peak Limit (dBuV/m)	Result
01(Quasi-Peak)	902.000	30.450	0.125	30.574	-15.426	46.000	Pass
01(Quasi-Peak)	928.000	30.808	9.406	40.214	-5.786	46.000	Pass

**Figure Channel 01: Vertical (Quasi-Peak)**



Note:

1. Quasi-Peak measurements: RBW=100kHz,VBW=1MHz,Sweep: Auto.
2. “\*” , means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

**5. Duty Cycle**

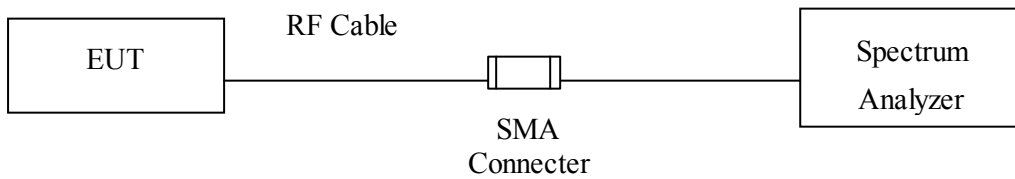
**5.1. Test Equipment**

The following test equipments are used during the band edge tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2009
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2009
	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2010

- Note:
1. All equipments are calibrated every one year.
  2. The test equipments marked by "X" are used to measure the final test results.

**5.2. Test Setup**

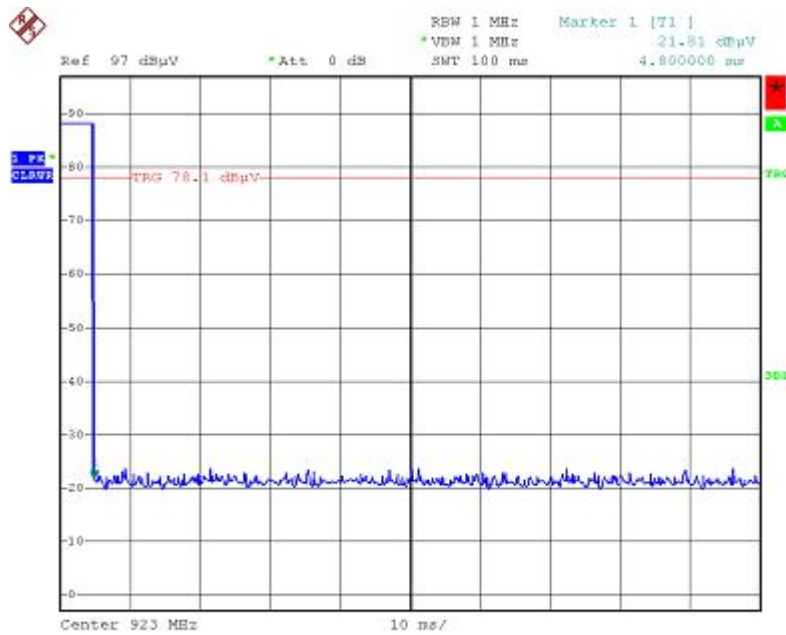


**5.3. Uncertainty**

± 150Hz

5.4. Test Result of Duty Cycle

Product : Gate alarm  
 Test Item : Duty Cycle Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit(AC Adapter Mode)



Date: 14.APR.2010 00:12:50

Time on of 100ms= 4.8 ms

Duty Cycle= 4.8ms / 100ms= 0.048

Duty Cycle correction factor= 20 LOG 0.048= -26.375 dB

Duty Cycle correction factor	-20.000	dB
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Remark:

If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.



## 6. EMI Reduction Method During Compliance Testing

No modification was made during testing.