



Test Report

Product Name : Remote Control
Model No. : X9308024
FCC ID. : WI208K4799

Applicant : Dongguan XYE Computer Co. Ltd.
Address : Baotun Industrial District, Houjie Town,
Dongguan City, Guangdong Province, China

Date of Receipt : 2008/07/14
Issued Date : 2008/08/05
Report No. : 087242R-RFUSP04V01
Version : V1.0

The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

Test Report Certification

Issued Date : 2008/08/05

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Applicant : Dongguan XYE Computer Co. Ltd.

Address : Baotun Industrial District, Houjie Town, Dongguan City,
Guangdong Province, China

Manufacturer : Dongguan XYE Computer Co. Ltd.

Model No. : X9308024

FCC ID. : WI208K4799

EUT Voltage : DC 12V

Trade Name : Dongguan XYE Computer Co. Ltd.

Applicable Standard : FCC 15 Subpart C Section 15.231: 2007
ANSI C63.4: 2003

Test Result : Complied



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Documented By :

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Approved By :

Vincent Lin

(Manager / Vincent Lin)

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1. General Information

1.1. EUT Description

Product Name	Remote Control
Trade Name	Dongguan XYE Computer Co. Ltd.
Model No.	X9308024
FCC ID	WI208K4799
Frequency Range	433.92MHz
Type of Modulation	ASK
Number of Channel	1
Channel Control	Auto
Channel Separation	N/A
Antenna Type	Soldered on PCB (Dipole)

Frequency of Each Channel:

Channel	Frequency
Channel 1:	433.92MHz

Note:

1. The EUT is a Remote Control with a built-in 433.92MHz transmitter.
2. The EUT will stop the transmission immediately when the test button is pressed and releases.
The EUT will stop the transmission within 5 seconds when the test button is pressed and held.
3. The EUT will start the transmission when the probe puts in the water or the button is pressed.
The worst case is when the button is pressed. Only the worst case is shown in the report.
4. These tests are conducted on a sample for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.231.
5. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

1.2. Operation Description

The EUT is a Remote Control with a built-in 433.92MHz transmitter. It is specially designed remote control to Lizard / infinity light. The antenna type is soldered on PCB (Dipole) and the data modulation is ASK.

1.3. Test Mode

QuietTek verified the construction and function in typical operation. All the test modes are performed in normal operation and are defined as:

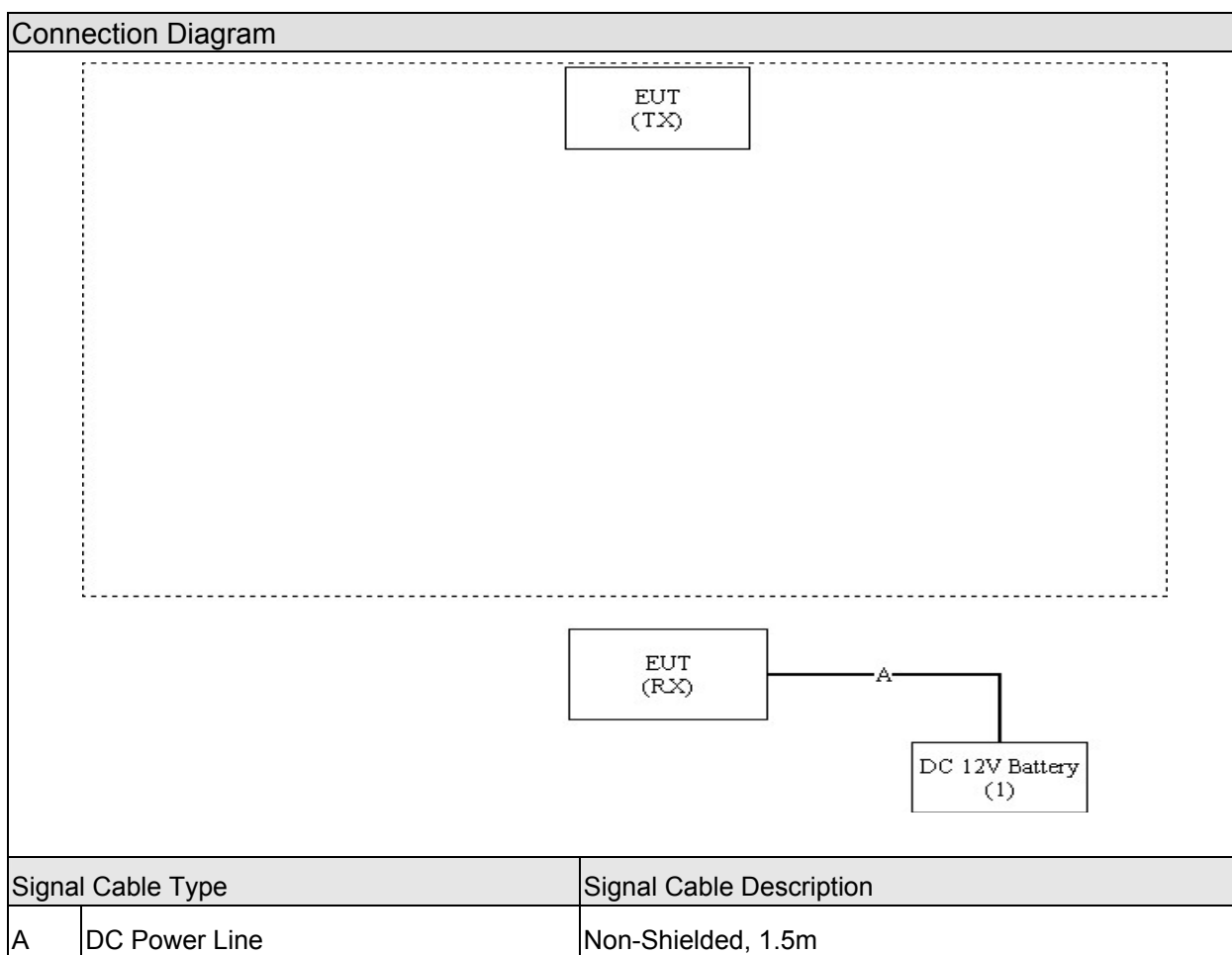
Pre-Test Mode	
TX	Mode 1: Transmit
Final Test Mode	
TX	Mode 1: Transmit

1.4. Tested System Details

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

Product	Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1 DC 12V Battery	TRANE	12B50PE	N/A	DoC	N/A

1.5. Configuration of tested System



1.6. EUT Exercise Software

1	Setup the EUT as shown in section 1.5.
2	Install the battery.
3	Press the test button of the EUT.
4	Verify that the EUT works properly.

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	FCC PART 15 C	15 - 35	22
Humidity (%RH)	15.207 Conducted Emission	25 - 75	55
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.231 Duty Cycle	15 - 35	22
Humidity (%RH)		25 - 75	55
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.231 Occupied Bandwidth	15 - 35	22
Humidity (%RH)		25 - 75	55
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.231 Radiated Emission	15 - 35	22
Humidity (%RH)		25 - 75	55
Barometric pressure (mbar)		860 - 1060	950-1000

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



Site Name: Quietek Corporation

Site Address: No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,
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Taiwan, R.O.C.
TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : service@quietek.com

FCC Accreditation Number: TW1014



2. Conducted Emission

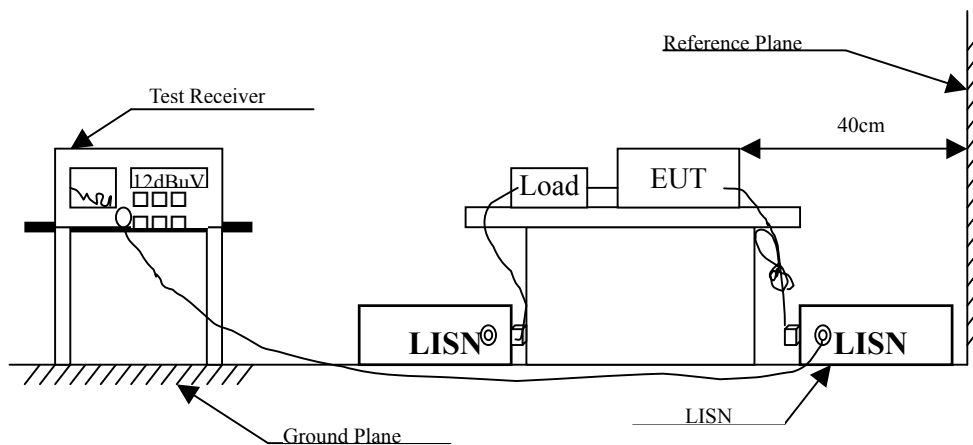
2.1. Test Equipment

The following test equipment are used during the test:

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal.	Remark
1	Test Receiver	R & S	ESCS 30/825442/17	May, 2008	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 2008	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 2008	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	May, 2008	
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 Limits (dBuV)		
Frequency MHz	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 invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.231: 2007

2.6. Uncertainty

± 2.26 dB

2.7. Test Result

The power of the EUT is supplied by battery. This test is not performed.

3. Radiated Emission

3.1. Test Equipment

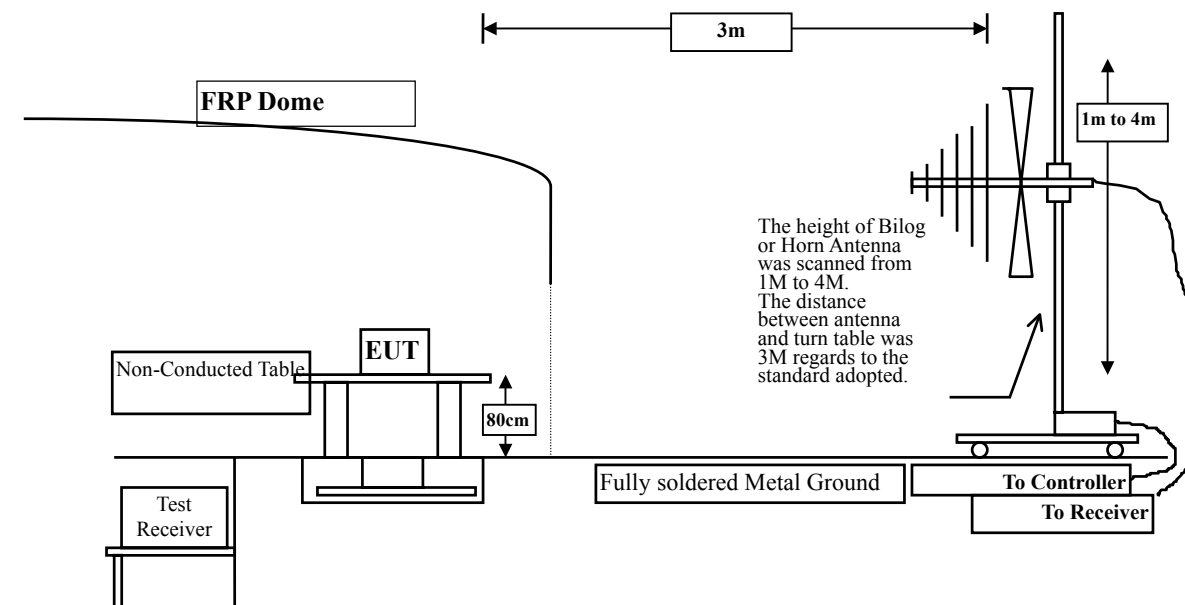
The following test equipment are used during the test:

Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
<input checked="" type="checkbox"/> CB7 (anechoic Chamber 9m*6m*6m)	EMI Test Receiver	R&S	ESI26	Feb., 2008
	Bilog Antenna	Schaffner Chase	CBL6112B	Feb., 2008
	Horn Antenna	Schwarzbeck	9120D	May, 2008
	Pre-Amplifier	QuieTek	AP-025C	July, 2008
	Pre-Amplifier	QuieTek	AP-180C	July, 2008

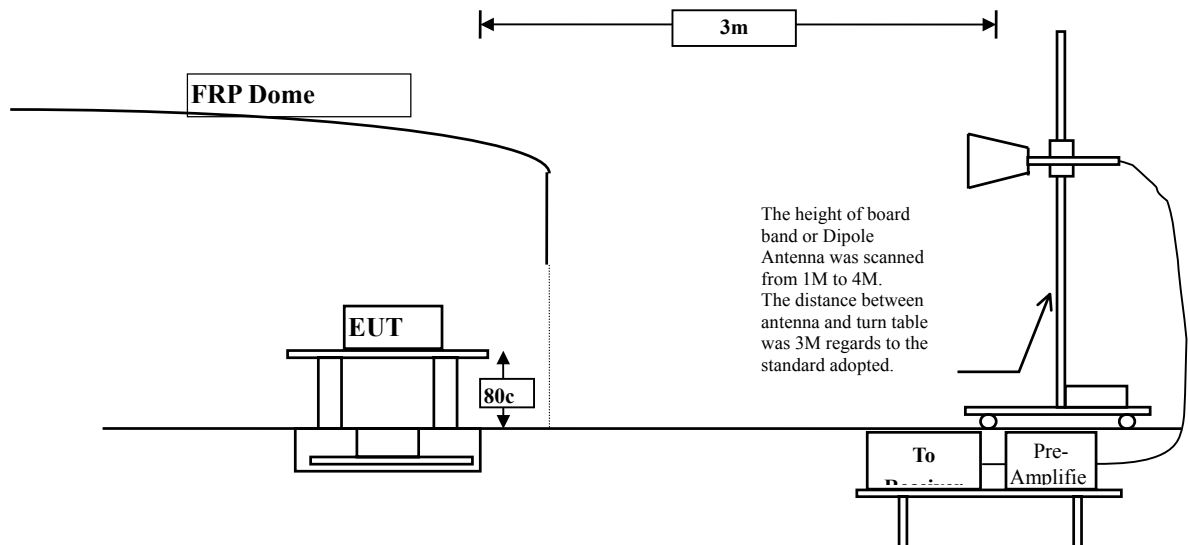
- Note: 1. All instruments are calibrated every one year.
 2. The test instruments marked by "X" are used to measure the final test results.

3.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



3.3. Limits

➤ Fundamental and Harmonics Emission Limits

FCC Part 15 Subpart C Paragraph 15.231 Limits				
Fundamental Frequency MHz	Field Strength of Fundamental		Field Strength of Harmonics	
	uV/m	dBuV/m	uV/m	dBuV/m
40.66-40.70	2250	67.0	225	47.0
70-130	1250	62.0	125	42.0
130-174	1250-3750	62.0-71.5	125-375	42.0-51.5
174-260	3750	71.5	375	51.5
260-470	3750-12500	71.5-82.00	375-1250	51.5-62.0
above 470	12500	82.00	1250	62.0

Remarks : 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

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.

➤ Spurious electric field strength limits

FCC Part 15 Subpart C Paragraph 15.209 Limits			
Frequency MHz	uV/m	dBuV/m	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	See Remark ¹	300
0.490-1.705	24000/F(kHz)	See Remark ¹	30
1.705-30	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

Remarks : 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3.4. 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 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 beamwidth of the antenna.

The worst radiated emission is measured on the Final Measurement.

The frequency range from 30MHz to 10th harmonics is checked.

3.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.231: 2007

3.6. Uncertainty

± 3.8 dB below 1GHz

± 3.9 dB above 1GHz

3.7. Test Result

Product	Remote Control		
Test Item	Fundamental Radiated Emission		
Test Mode	Mode 1: Transmit		
Date of Test	2008/08/01	Test Site	No.3 OATS

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Peak Limit dBuV/m	Average Limit dBuV/m
Horizontal					
Peak					
433.970(X-Line)	-1.060	69.071	68.011	92.87	72.87
433.970(Y-Line)	-1.060	63.374	62.314	92.87	72.87
433.970(Z-Line)	-1.060	68.185	67.125	92.87	72.87
Average					
433.970(X-Line)	--	--	59.419	92.87	72.87
433.970(Y-Line)	--	--	53.722	92.87	72.87
433.970(Z-Line)	--	--	85.533	92.87	72.87
Vertical					
Peak					
433.970(X-Line)	-1.990	61.469	59.479	92.87	72.87
433.970(Y-Line)	-1.990	54.853	52.863	92.87	72.87
433.970(Z-Line)	-1.990	60.457	58.467	92.87	72.87
Average					
433.970(X-Line)	--	--	50.887	92.87	72.87
433.970(Y-Line)	--	--	44.271	92.87	72.87
433.970(Z-Line)	--	--	49.875	92.87	72.87

Note: 1. Average Measurement=Peak + 20* Log (Duty Cycle)

Duty Cycle = (Ton / Ton + Toff)= 0.6902ms / 1.856ms= 0.371875

20 * Log (Duty Cycle) = -8.592dB

Product	Remote Control				
Test Item	Harmonic Radiated Emission				
Test Mode	Mode 1: Transmit				
Date of Test	2008/07/26	Test Site	No.3 OATS		

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m

Harmonic Radiated Emission

Horizontal

Peak

1740.000	-4.798	45.971	41.173	-31.697	72.87
----------	--------	--------	--------	---------	-------

Vertical

Peak

1740.000	-4.798	40.631	35.833	-37.037	72.87
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Note:

1. All Readings Levels are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level +Correct Factor.
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.

Product	Remote Control				
Test Item	General Radiated Emission				
Test Mode	Mode 1: Transmit				
Date of Test	2008/07/26	Test Site	No.3 OATS		

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Quasi-Peak					
869.050	4.360	47.214	51.574	-1.296	52.87
Vertical					
Quasi-Peak					
869.050	4.580	42.580	47.16	-5.710	52.87

Note:

1. All Reading Levels are quasi-peak values.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

4. Occupied Bandwidth

4.1. Test Equipment

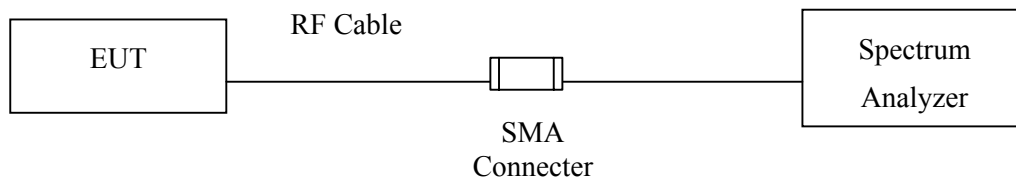
The following test equipments are used during the radiated emission tests:

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
X Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2008
Spectrum Analyzer	R & S	FSP40 / 100170	Nov, 2007

Note: 1. All instruments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

4.2. Test Setup



4.3. Limits

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

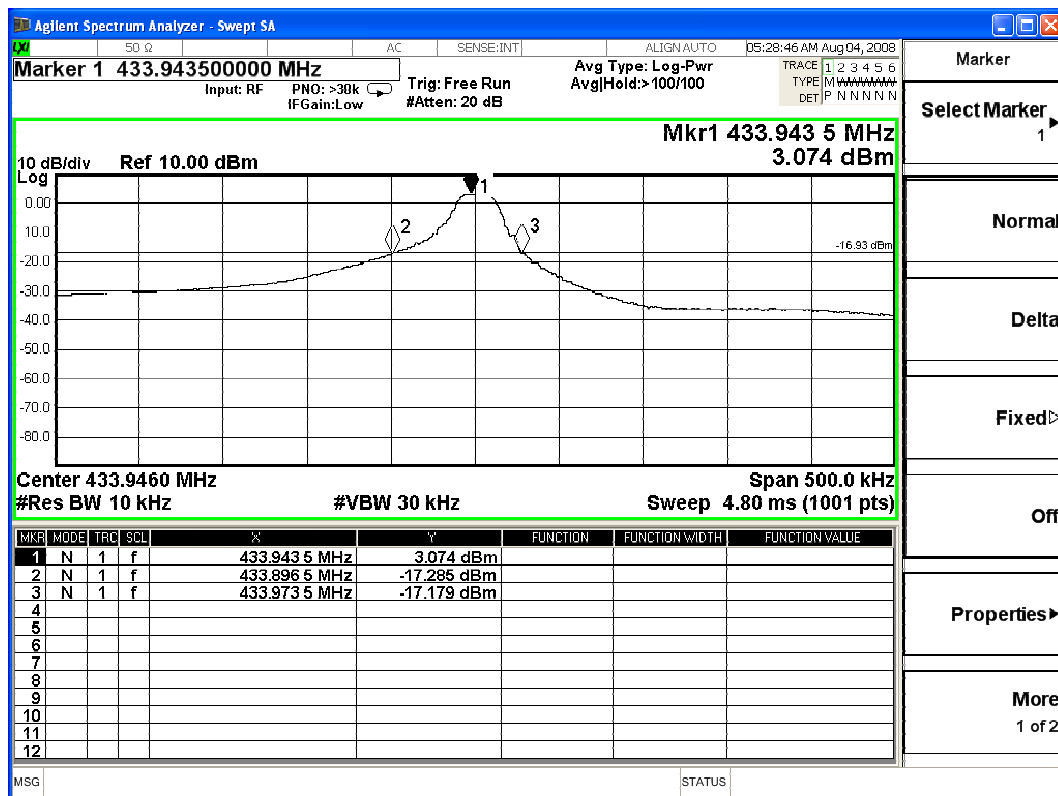
4.4. Uncertainty

± 150Hz

4.5. Test Result

Product	Tire Pressure Monitoring System		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2008/08/04	Test Site	No.3 OATS

Center Frequency	433.94 MHz
Allowable Bandwidth (70-900 MHz: 0.25%, Above 900MHz: 0.5%)	1084.8 kHz
Bandwidth at 20dB down (Max)	77kHz
Result	PASS



5. Duty cycle

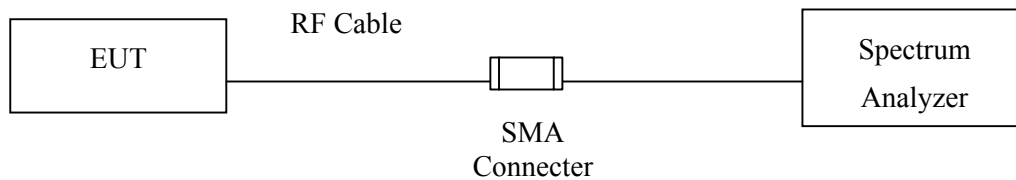
5.1. Test Equipment

The following test equipments are used during the radiated emission tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2008
	Spectrum Analyzer	R & S	FSP40 / 100170	Nov, 2007

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

5.2. Test Setup



5.3. Limits

N/A

5.4. Uncertainty

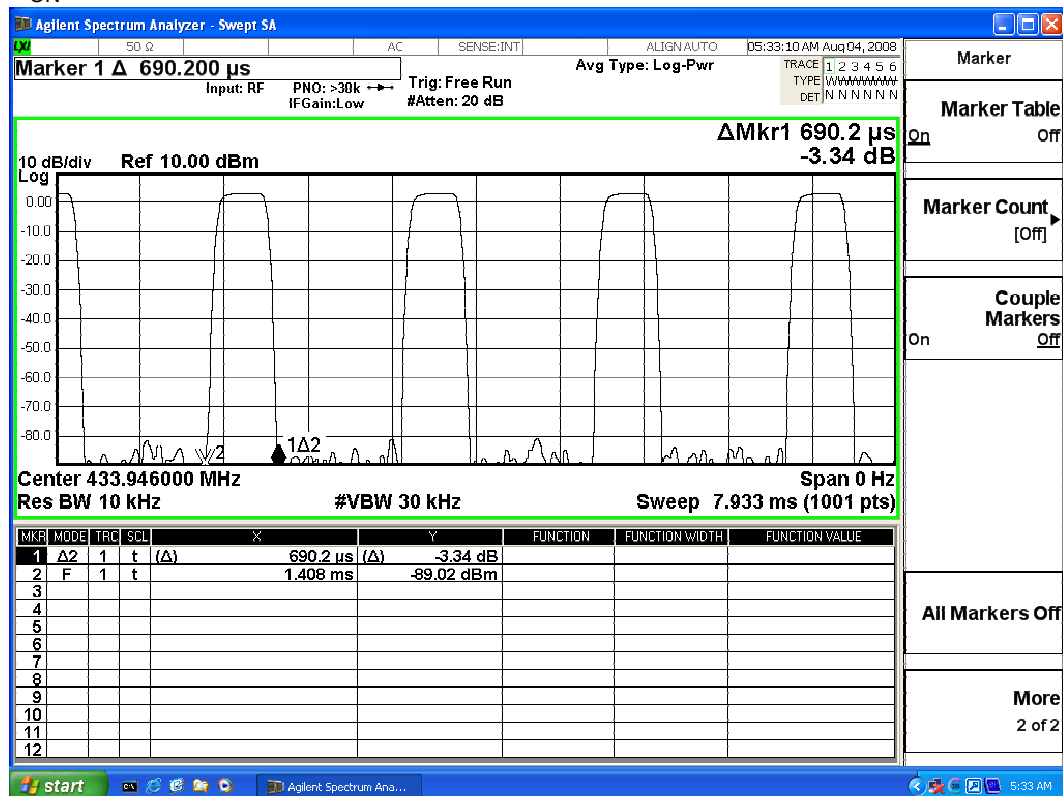
± 25msec

5.5. Test Result

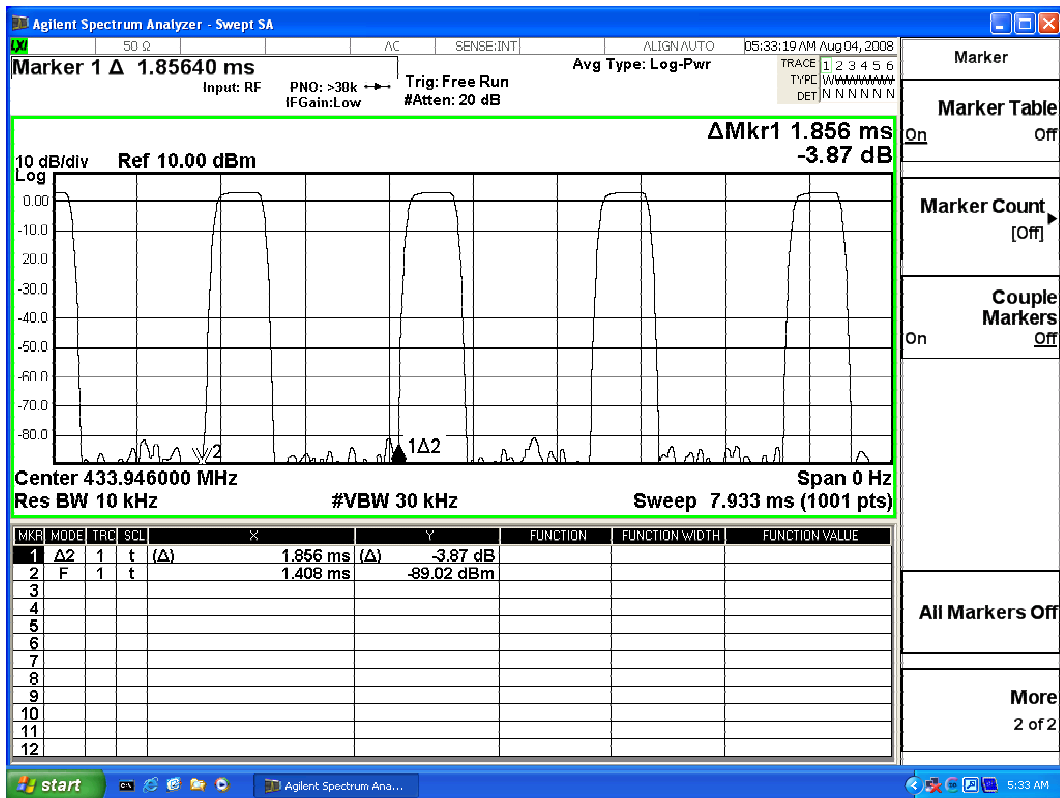
Product	Tire Pressure Monitoring System		
Test Item	Duty Cycle		
Test Mode	Mode 1: Transmit		
Date of Test	2008/08/04	Test Site	No.3 OATS

Center Frequency	433.92 MHz
Ton = 0.6902ms Ton + Toff = 1.856ms	
Duty Cycle = 0.6902ms / 1.856ms	0.371875

T_{ON}



T_{ON}+ T_{OFF}



6. Transmitter time

6.1. Test Equipment

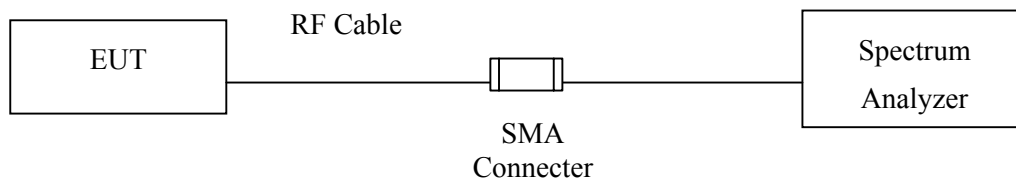
The following test equipments are used during the radiated emission tests:

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
X Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2008
Spectrum Analyzer	R & S	FSP40 / 100170	Nov, 2007

Note: 1. All instruments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

6.2. Test Setup



6.3. Limits

A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

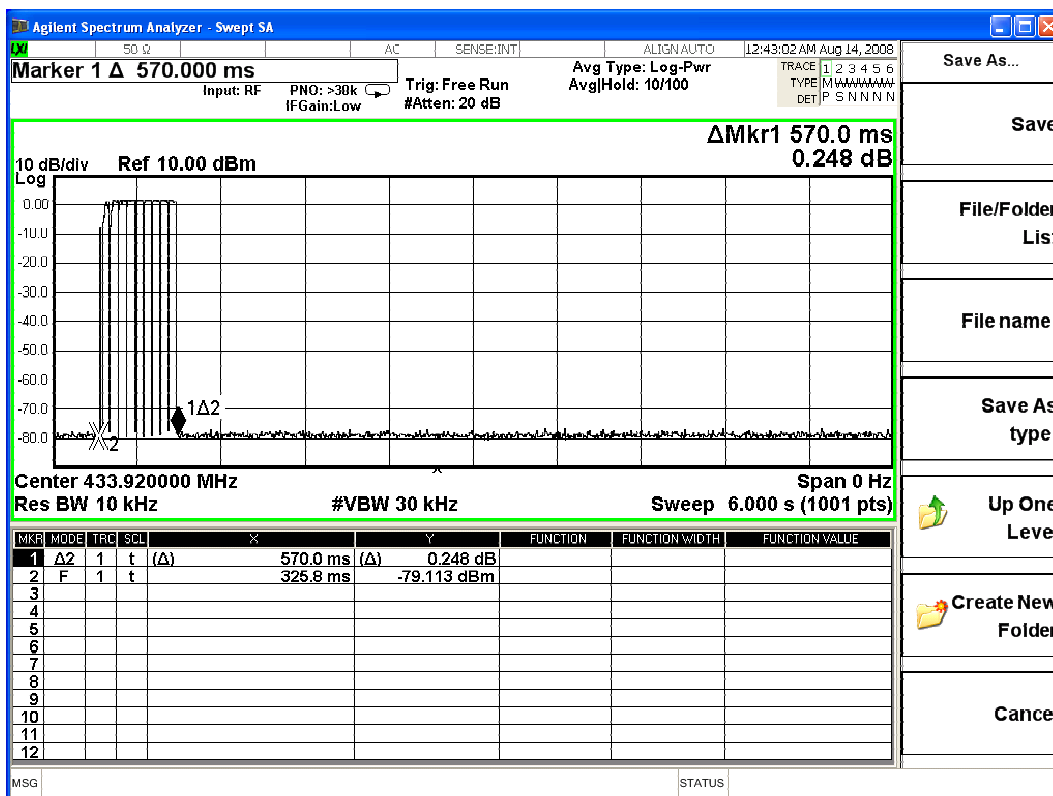
6.4. Uncertainty

$\pm 25\text{msec}$

6.5. Test Result

Product	Tire Pressure Monitoring System		
Test Item	Transmitter time		
Test Mode	Mode 1: Transmit		
Date of Test	2008/08/04	Test Site	No.3 OATS

Center Frequency	433.92 MHz
Transmitter time = 570ms < 5 sec.	Below 5 sec.
Result	PASS



7. Band Edge

7.1. Test Equipment

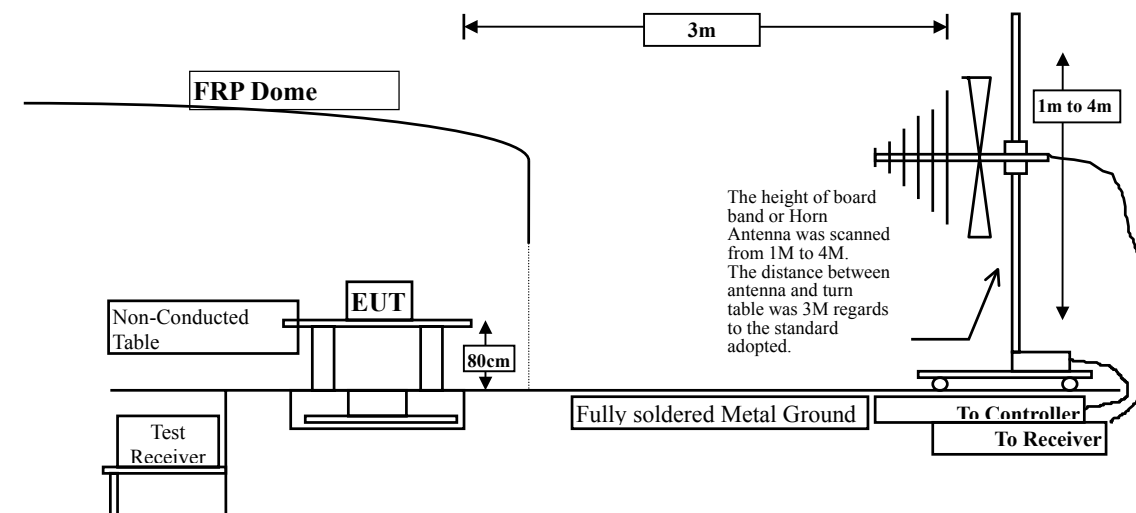
Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒CB7 (anechoic Chamber 9m*6m*6m)	EMI Test Receiver	R&S	ESI26	Feb., 2008
	Bilog Antenna	Schaffner Chase	CBL6112B	Feb., 2008
	Horn Antenna	Schwarzbeck	9120D	May, 2008
	Pre-Amplifier	QuieTek	AP-025C	July, 2008
	Pre-Amplifier	QuieTek	AP-180C	July, 2008

Note: 1. All equipments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

7.2. Test Setup

RF Radiated Measurement:



7.3. Limit

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)).

7.4. 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 additional latch filter below 1GHz was used to measure the level of harmonics radiated emission during field strength of harmonics measurement.

The bandwidth below 30MHz setting on the field strength meter is 10 kHz

7.5. Test Result of Band Edge

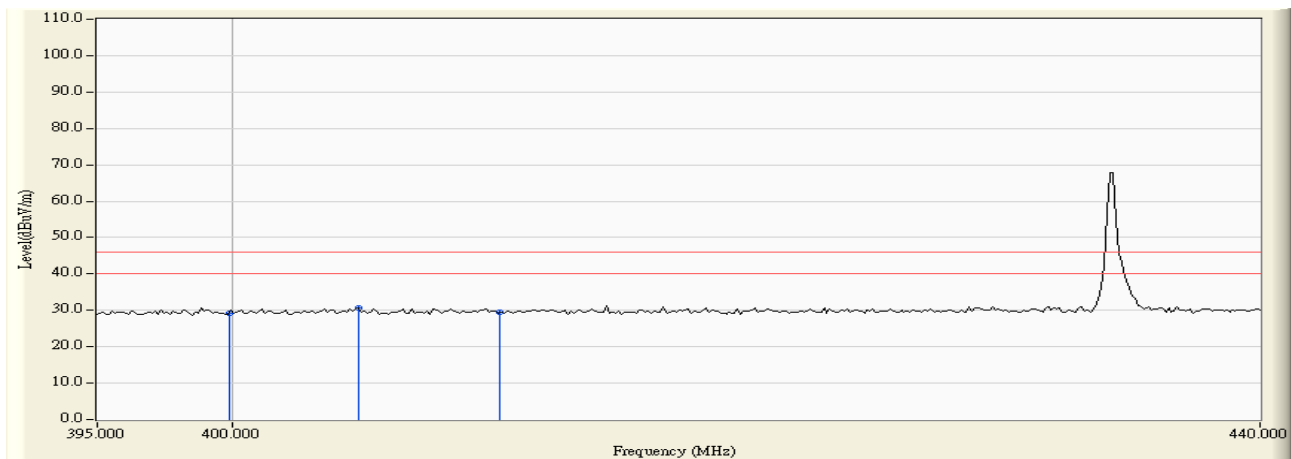
Product : Remote Control
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Quasi-Peak (dBuV/m)	Result
01(Quasi-Peak)	404.675	-1.390	31.938	30.548	46.000	Pass

Figure Channel 01:

Horizontal (Quasi-Peak)



Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

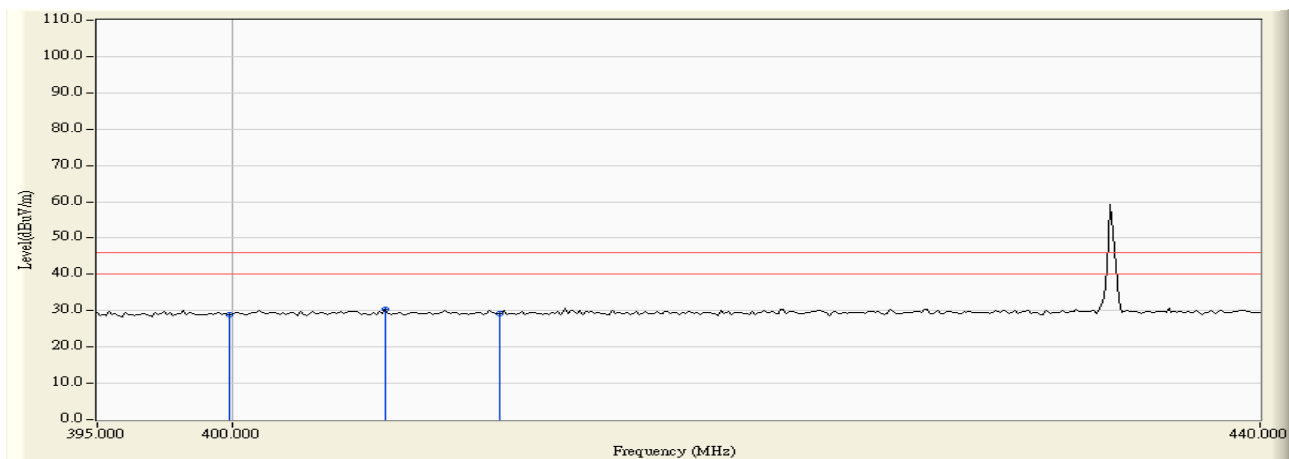
Product : Remote Control
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Quasi-Peak (dBuV/m)	Result
01(Quasi-Peak)	405.687	-2.177	32.698	30.521	46.000	Pass

Figure Channel 01:

Vertical (Quasi-Peak)



Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor