FCC ID TEST REPORT

for

Wireless motion sensor

Model: MS-1

FCC ID: EEX-MS-1

Prepared for: G.G. Telecom
120 Rue J-Aurele-Roux, Victoriaville, Quebec, G6T 0N5 Canada

Prepared by: Shenzhen TCT Testing Technology Co.,Ltd
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Report Number：TCT131101001F2-1
Date of Test： Nov. 05~Nov. 11, 2013
Date of Report： Nov. 11, 2013

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1.0 General Details

1.1 Test Lab Details

Name : Shenzhen Tongce Testing Lab
Address: 1F, Leinuo Watch Building, Fuyong Town, Baoan Dist, Shenzhen, China
Telephone: 13410377511
Fax: --

The test facility is recognized, certified, or accredited by the following organizations:

FCC Registration Number: 572331

Shenzhen TCT Testing Technology Co., Ltd., Shenzhen EMC Laboratory: Shenzhen Tongce Testing Lab
The 3m Semi-anechoic chamber has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.
Registration Number: 572331

Industry Canada (IC)

The 3m Semi-anechoic chamber of Shenzhen TCT Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing
Registration Number IC: 10668A-1

1.2 Applicant Details

Applicant: G.G. Telecom
Address: 120 Rue J-Aurele-Roux, Victoriaville, Quebec, G6T 0N5 Canada
Telephone: 514 868 1811
Fax: 819-751-7000

Manufacturer: G.G. Telecom
Address: 120 Rue J-Aurele-Roux, Victoriaville, Quebec, G6T 0N5 Canada
Telephone: 514 868 1811
Fax: 819-751-7000

1.3 Description of EUT

Product:	Wireless motion sensor
Model No.:	MS-1
Additional Model No.:	S-MS-1
Brand Name:	**SPYPOINT**
Additional Trade Name:	N.A.
Rating:	DC 9V & DC 12V
Operation Frequency:	433.92MHz
Antenna Designation:	A external integral antenna and the maximum gain is 2 dBi.

1.4 Statement: N.A.

1.5 Test Engineer

The sample tested by 

Printed name: Jack Kang

2.0 Test equipments and Associated Equipment used during the test.

2.1 Test Equipments

Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	ROHDE&SCHWARZ	ESPI 3	100379	July 07, 2013	July 06, 2014
Spectrum Analyzer	ROHDE&SCHWARZ	FSEM	848597/001	July 07, 2013	July 06, 2014
Pre-amplifier	Teseq	LAN6900	--	July 08, 2013	July 07, 2014
Pre-amplifier	Agilent	8447D	83153007374	July 08, 2013	July 07, 2014
Pre-amplifier	Agilent	8449B	3008A01738	July 08, 2013	July 07, 2014
Loop antenna	A.R.A.	PLA-1030/B	1029	July 8, 2013	July 7, 2014
Ultra Broadband ANT	ROHDE&SCHWARZ	HL562	100157	July 08, 2013	July 07, 2014
Horn Antenna	ETS LINDGREN	3117	--	July 08, 2013	July 07, 2014

2.2 AE used during the test

Equipment type	Manufacturer	Model
N.A.		
N.A.		
N.A.		
N.A.		

2.3. Block Diagram of EUT Configuration

3.0 Technical Details

3.1 Summary of test results

The EUT has been tested according to the following specifications

Requirement	CFR 47 Section	Result	Notes
Conduction Emission, 0.15MHz to 30MHz	**15.207**	**PASS**	**Complies**
Manually Activated Transmitter	**15.231(a)**	**PASS**	**Complies**
Radiation Emission	**15.231(b), 15.205, 15.209, 15.35**	**PASS**	**Complies**
Occupied Bandwidth	**15.231(c)**	**PASS**	**Complies**

3.2 Test Standards

FCC Part 15:2012 Subpart C, Paragraph 15.231

4.0 EUT Modification

No modification by Shenzhen TCT Testing Technology Co., Ltd

5.0 Measurement Uncertainty（95% confidence levels, k=2)

No.	Item	MU
1.	Radio Frequency	$\pm 1\times 10^{-9}$
2.	Temperature	±0.1℃
3.	Humidity	±1.0%
4.	RF power, conducted	±0.34dB
5.	RF power density, conducted	±1.45dB
6.	Spurious emissions, conducted	±3.70dB
7.	All emissions, radiated	±4.50dB

Note: 1) The EUT is a Motion sensor transmitter. The EUT can be powered by batteries and a DC 12V adaptor. Working transmission frequency: 433.92MHz

2) There is no battery and adapter for product packaging of E.U.T., so the battery and adapter is provided by test laboratory. New batteries are used for E.U.T during the tests.

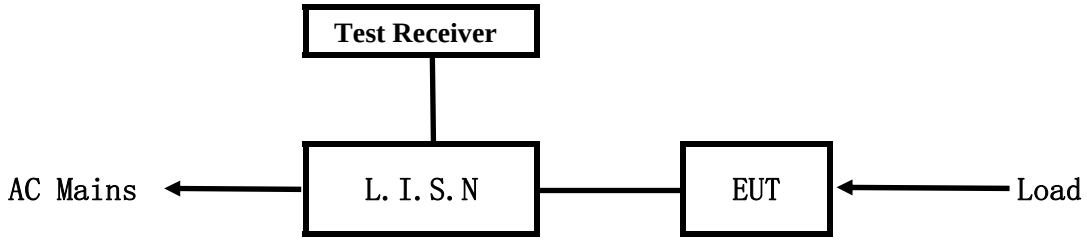
The battery information：DC 9V;
Brand name: GP;
Model: 1604e 6F22;

The adapter information: Input: 100-240V, 50/60Hz;
Output: DC 12V 1.25A;
Model: ZFX151201250;

3) N.A. means Not Applicable.

6.0 Power Line Conducted Emission Test

6.1 Schematics of the test



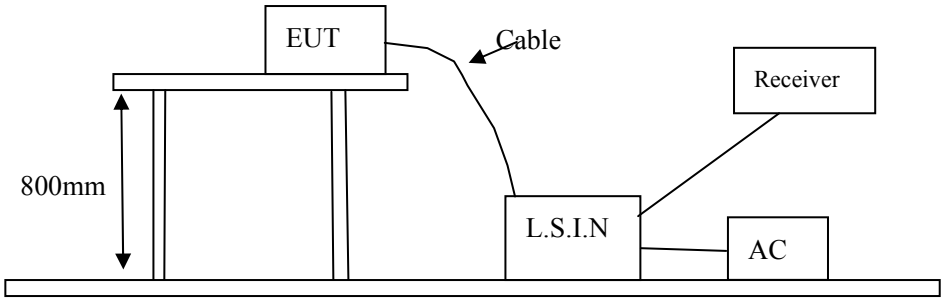
EUT: Equipment Under Test

6.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2009.The Frequency spectrum From 0.15MHz to 30MHz was investigated.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup



6.3 EUT Operating Condition

Operating condition is according to ANSI C63.10 -2009

1) Setup the EUT and simulators as shown on the following

2) Enable AF signal and confirm EUT active to normal condition

6.4 Test Equipment

Please refer to the Section 2

6.5 Conducted Emission Limit

Frequency(MHz)	Class A Limits (dB μ V)		Class B Limits (dB μ V)	
	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level
0.15 ～ 0.50	79.0	66.0	66.0～56.0*	56.0～46.0*
0.50 ～ 5.00	73.0	60.0	56.0	46.0
5.00 ～ 30.00	73.0	60.0	60.0	50.0

Notes: 1) *Decreasing linearly with logarithm of frequency.

2）The tighter limit shall apply at the transition frequencies

6.6 Test specification:

Environmental conditions: Temperature: 26° C Humidity: 55% Atmospheric pressure: 103kPa

Frequency range: 0.15 MHz – 30 MHz

The test was carried out in the following operation mode(s):
TX Mode

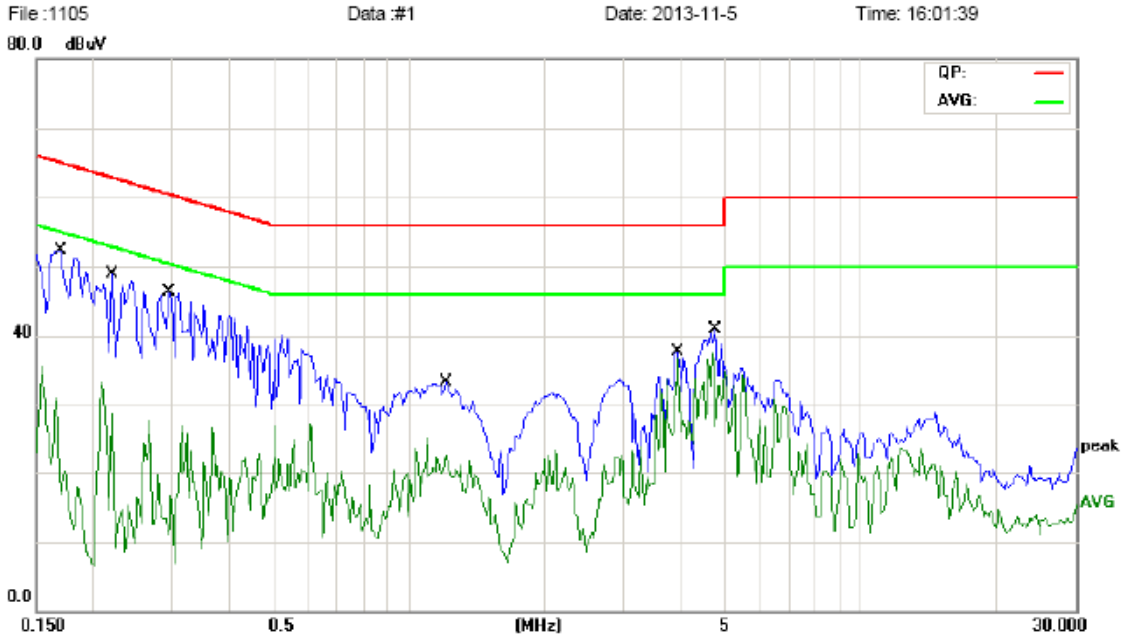
6.7 Test result

PASS

The requirements are FULFILLED

Remarks: 1) According to FCC part 15.207.

A Conducted Emission on Line Terminal of the power line (150kHz to 30MHz)



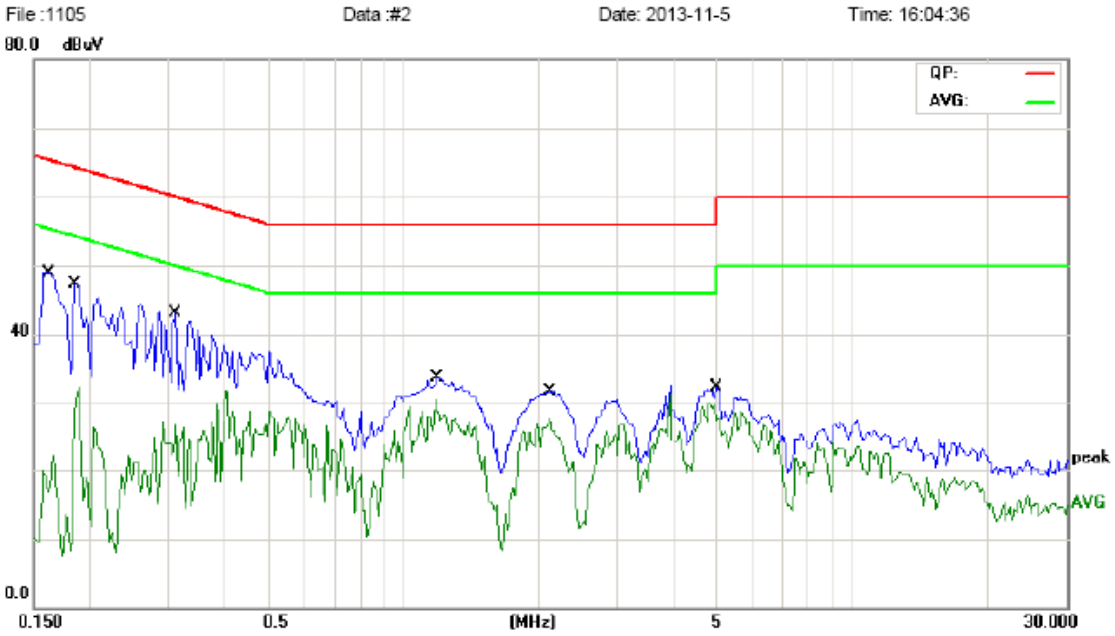
Site Chamber #1
Limit: FCC PART15 Conduction(QP)
EUT: Wireless motion sensor
M/N: MS-1
Mode: TX
Note:

Phase: *L1*
Power: AC 120V/60Hz

Temperature: 26 (C)
Humidity: 55 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1695	36.53	10.57	47.10	64.98	-17.88	QP	
2		0.1695	12.12	10.57	22.69	54.98	-32.29	AVG	
3		0.2203	30.90	10.38	41.28	62.80	-21.52	QP	
4		0.2203	7.66	10.38	18.04	52.80	-34.76	AVG	
5		0.2945	29.62	10.29	39.91	60.39	-20.48	QP	
6		0.2945	8.02	10.29	18.31	50.39	-32.08	AVG	
7		1.2125	17.36	10.53	27.89	56.00	-28.11	QP	
8		1.2125	7.09	10.53	17.62	46.00	-28.38	AVG	
9		3.9492	22.86	10.90	33.76	56.00	-22.24	QP	
10		3.9492	3.55	10.90	14.45	46.00	-31.55	AVG	
11		4.7695	25.15	10.96	36.11	56.00	-19.89	QP	
12		4.7695	3.35	10.96	14.31	46.00	-31.69	AVG	

B Conducted Emission on Neutral Terminal of the power line (150kHz to 30MHz)



Site Chamber #1 Phase: N Temperature: 26 (C)
Limit: FCC PART15 Conduction(QP) Power: AC 120V/60Hz Humidity: 55 %
EUT: Wireless motion sensor
M/N: MS-1
Mode: TX
Note:

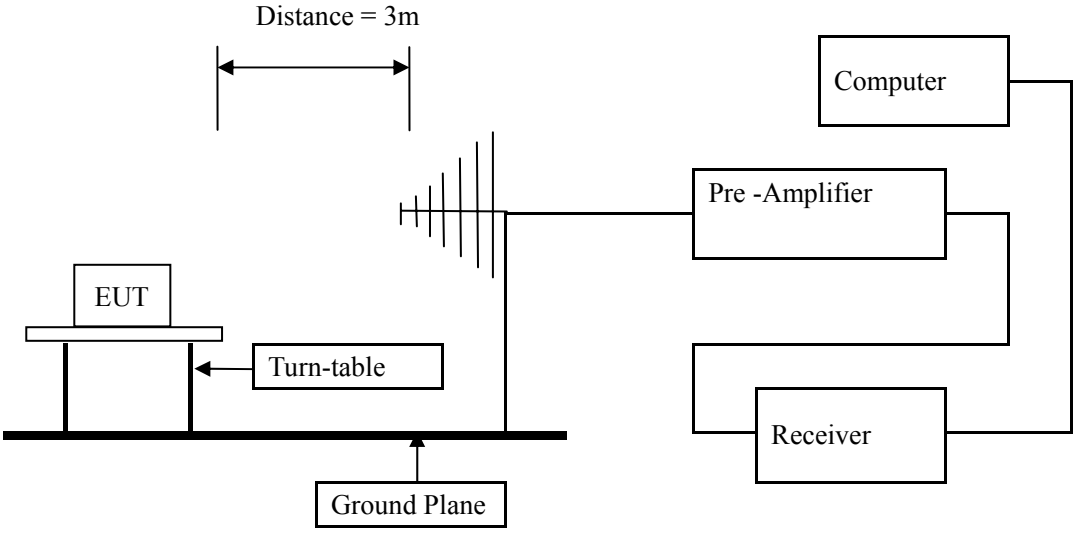
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1617	34.23	10.63	44.86	65.37	-20.51	QP	
2		0.1617	14.18	10.63	24.81	55.37	-30.56	AVG	
3		0.1852	32.14	10.44	42.58	64.24	-21.66	QP	
4		0.1852	13.06	10.44	23.50	54.24	-30.74	AVG	
5		0.3102	27.88	10.25	38.13	59.96	-21.83	QP	
6		0.3102	12.12	10.25	22.37	49.96	-27.59	AVG	
7		1.1891	20.57	10.52	31.09	56.00	-24.91	QP	
8		1.1891	13.94	10.52	24.46	46.00	-21.54	AVG	
9		2.1148	18.99	10.46	29.45	56.00	-26.55	QP	
10		2.1148	11.63	10.46	22.09	46.00	-23.91	AVG	
11		4.9766	18.93	10.99	29.92	56.00	-26.08	QP	
12		4.9766	12.59	10.99	23.58	46.00	-22.42	AVG	

7.0 Manually Activated Transmitter

7.1 Test Method and test Procedure:

1) The EUT was tested according to ANSI C63.10 –2009.
2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2009.
3) By pressing the key on the surface of E.U.T., it can be work in transmitting mode.

7.2 Block diagram of Test setup



7.3 Limit

A transmitter activated automatically shall cease transmission within 5 seconds after activation.

7.4 Test Equipment:

Please refer to the Section 2

7.5 Test specification:

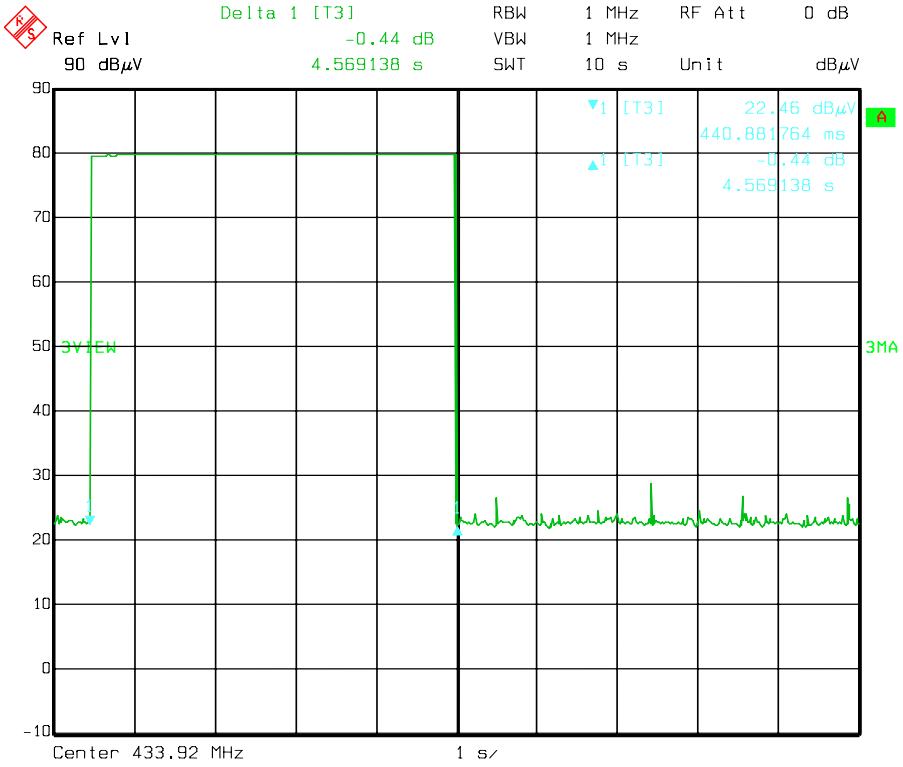
Environmental conditions: Temperature 23° C Humidity: 56% Atmospheric pressure: 103kPa

7.6 Test result

Result: Pass

Test data

Working Mode	Working Frequency(MHz)	Activate Time(s)	Limit(s)
Transmitting	433.92	4.15	5



8.0 Radiated Emission Test

8.1 Test Method and test Procedure:

1) The EUT was tested according to ANSI C63.10 –2009.

2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2009.

3) The frequency spectrum from 9kHz to 5GHz was investigated. All readings from 9kHz to 30MHz are quasi-peak values with a resolution bandwidth of 10 kHz, measured with loop antenna. All readings from 30MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz, measured with Bi-log antenna.All readings are above 1 GHz are peak values with a resolution bandwidth of 1 MHz, measured with horn antenna.

4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for above 30MHz each frequency. The antenna high is 1 m to find the maximum emission for each frequency below 30MHz

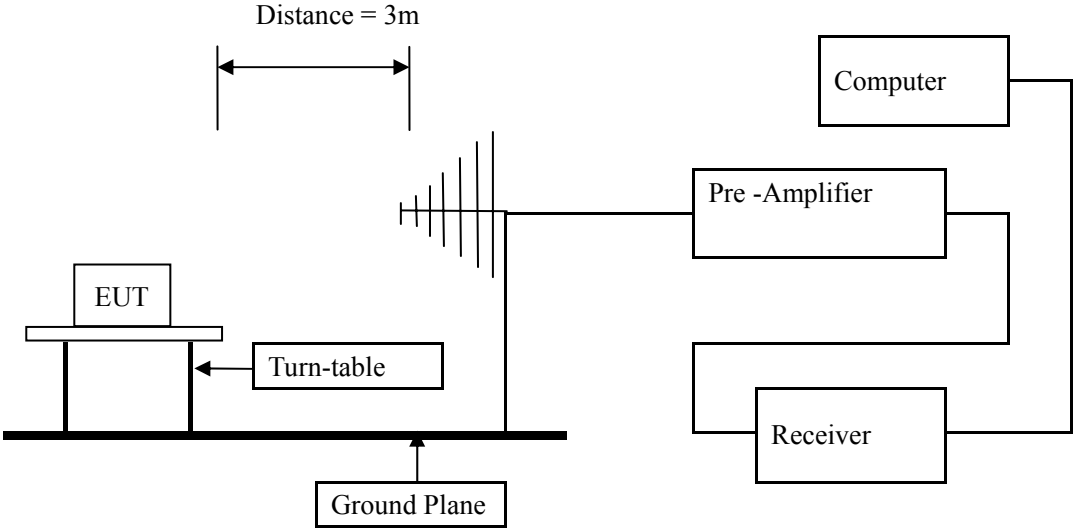
5) Tested distance: 3 meters

6) The antenna polarization: Vertical polarization and Horizontal polarization.

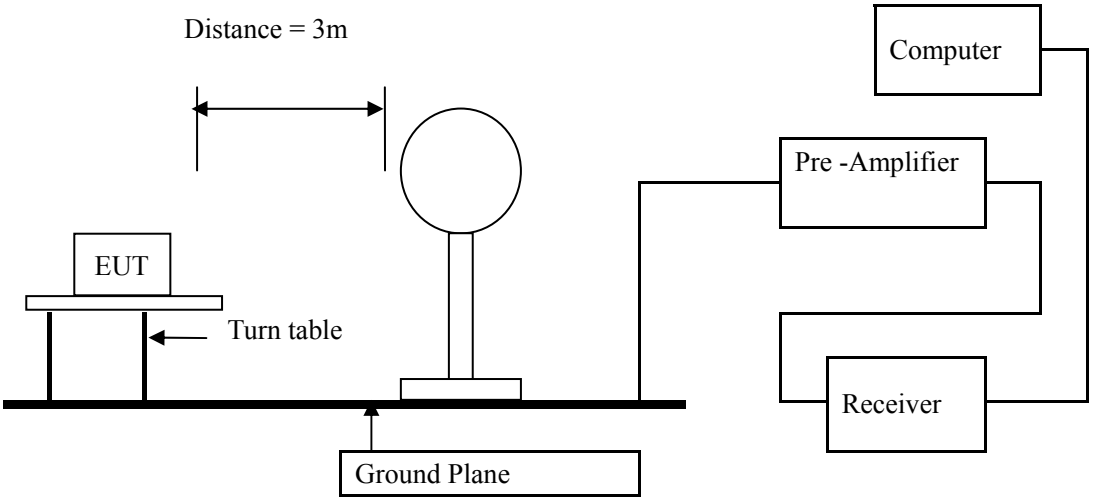
7) Each azimuth of E.U.T will be tested.

8.2 Block diagram of Test setup

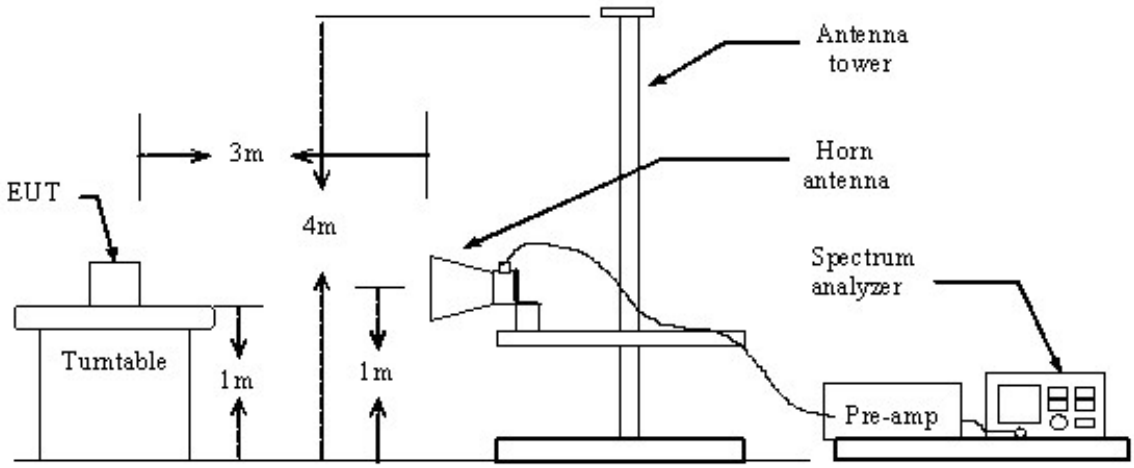
Block diagram of Test setup for frequency 30-1000MHz



Block diagram of Test setup for frequency below 30MHz



Block diagram of Test setup for frequency above 1GHz



8.3 Limit

According to 15.231(b) requirements, the field strength of emissions from intentional radiators operated under this Section shall not exceed the following

Fundamental Frequency (MHz)	Filed Strength of Fundamental (microvolts/meter)	Filed Strength of Spurious Emission (microvolts/meter)
40.66-40.70	2250	225
70-130	1250	125
130-174	1250 to 3750*	125 to 375*
174-260	3750	375
260-470	3750 to 12500*	375 to 1250*
Above 470	12500	1250
*Linear interpolations		
[Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows: for the band 130-174 MHz, μV/m at 3 meters = 56.81818(F) - 6136.3636; for the band 260-470 MHz, μV/m at 3 meters = 41.6667(F) - 7083.3333. The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.]		

For this E.U.T.

Working Frequency(MHz)	Filed Strength of Fundamental(dB μ V/m)	Filed Strength of Spurious Emission(dB μ V/m)
433.92	80.8	60.8
Intentional radiators operating under the provisions of this Section shall demonstrate compliance with the limits on the field strength of emissions, as shown in the above table, based on the average value of the measured emissions.		

According to 15.35, on any frequency or frequencies below or equal to 1000 MHz, the limits Shown are based on measuring equipment employing a CISPR quasi-peak detector function and related measurement bandwidths, unless otherwise specified the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test.

According to 15.231(b) , The limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in Section 15.209, whichever limit permits a higher field strength.
Frequencies in restricted band are complied to limit on Paragraph 15.209.

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
0.009-0.490	3	20log 2400/F (kHz) + 80
0.490-1.705	3	20log 24000/F (kHz) + 40
1.705-30	3	20log 30 + 40
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note: 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 EUT
4)The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.
5) If measurement is made at 3m distance, then F.S Limitation at 3m distance is adjusted by using the formula Ld1 = Ld2 * (d2/d1)

8.4 Test Equipment:

Please refer to the Section 2

8.5 Test specification:

Environmental conditions: Temperature 23° C Humidity: 56% Atmospheric pressure: 103kPa

8.6 Test result

Result: Pass

A Fundamental Radiated Emission

Frequency (MHz)	Emission Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)	Remark
433.92	79.52	H	100.8	Peak
433.92	79.47	V	100.8	Peak

Frequency (MHz)	Peak Emission Level@3m (dBμV/m)	AV Factor (dB)	AV Emission Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)	Remark
433.92	79.52	-0.08	79.44	H	80.8	AV
433.92	79.47	-0.08	79.39	V	80.8	AV

B Harmonics and spurious Radiated Emission

Frequency (MHz)	Emission Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)	Remark
499.524	40.36	H	80.8	Peak
867.815	58.42	H	80.8	Peak
1302.605	52.02	H	74	Peak
496.253	41.36	V	80.8	Peak
867.815	55.36	V	80.8	Peak
1302.605	50.23	V	74	Peak

Frequency (MHz)	Peak Emission Level@3m (dBμV/m)	AV Factor (dB)	AV Emission Level@3m (dBμV/m)	Antenna Polarity	AV Limit@3m (dBμV/m)	Remark
499.524	40.36	-0.08	40.28	H	60.8	AV
867.815	58.42	-0.08	58.34	H	60.8	AV
1302.605	52.02	-0.08	51.94	H	54	AV
496.253	41.36	-0.08	41.28	V	60.8	AV
867.815	55.36	-0.08	55.28	V	60.8	AV
1302.605	50.23	-0.08	50.15	V	54	AV

Note: 1) Emission Level=Reading+ Cable loss+ Antenna factor-Amp factor

2) Test Frequency form 9kHz to 5GHz, the emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement

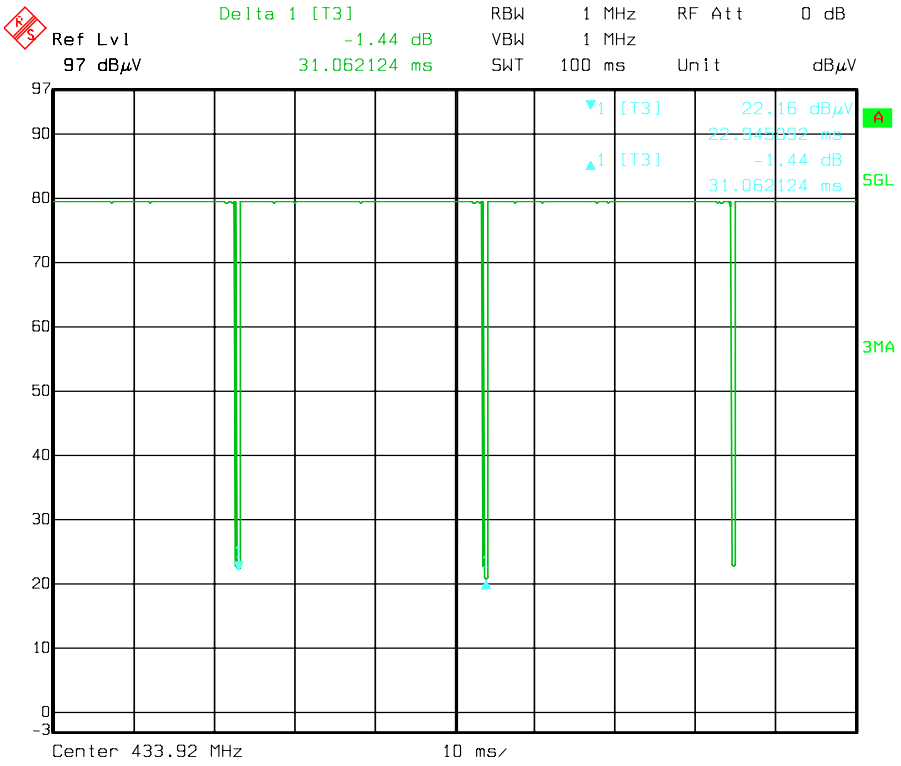
3) AV=Average

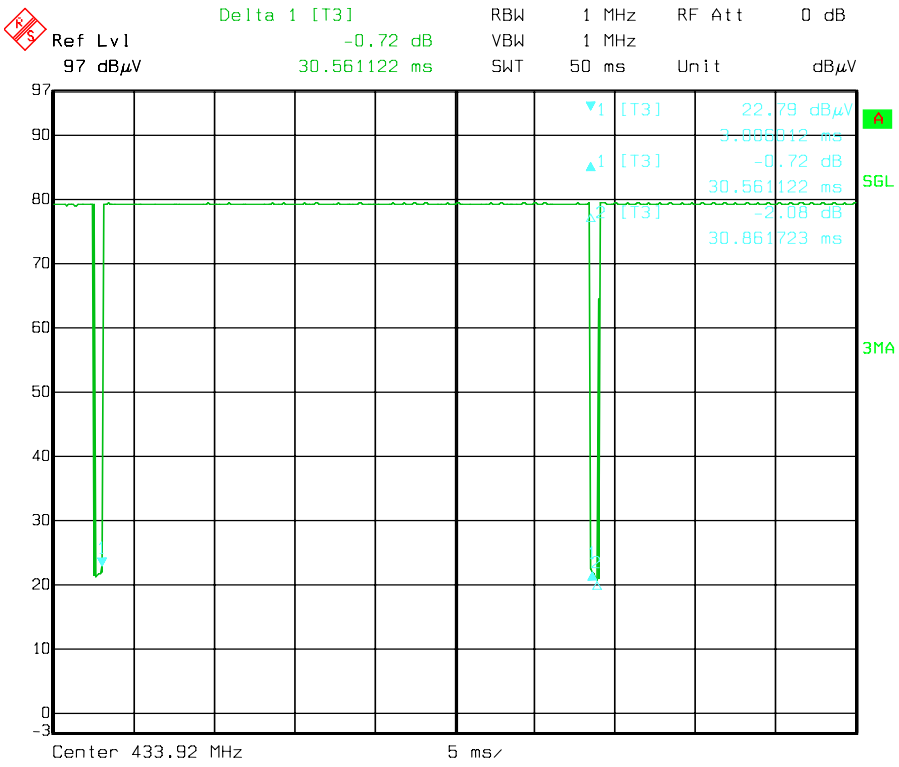
4) AV Emission level = Peak Emissions level +AV Factor

5) AV Factor = 20 log(Duty Cycle)

Duty cycle test data as follows

Total time one cycle	Effective time one cycle	Duty Cycle	AV Factor(dB)
30.8617	30.5611	0.99	-0.08




Delta 1 [T3]
RBW 1 MHz
RF Att 0 dB
Ref Lvl
-0.72 dB
VBW 1 MHz
97 dBµV
30.561122 ms
SWT 50 ms
Unit dBµV
1 [T3] 22.79 dBµV
1 [T3] -0.72 dB
30.561122 ms
[T3] -2.08 dB
30.861723 ms
A
SGL
3MA
97
90
80
70
60
50
40
30
20
10
0
-3
Center 433.92 MHz
5 ms/

9.0 Occupied Bandwidth

9.1 Test Equipment

Please refer to the Section 2

9.2 Test Specification:

Environmental conditions: Temperature 22° C Humidity: 50% Atmospheric pressure: 103kPa

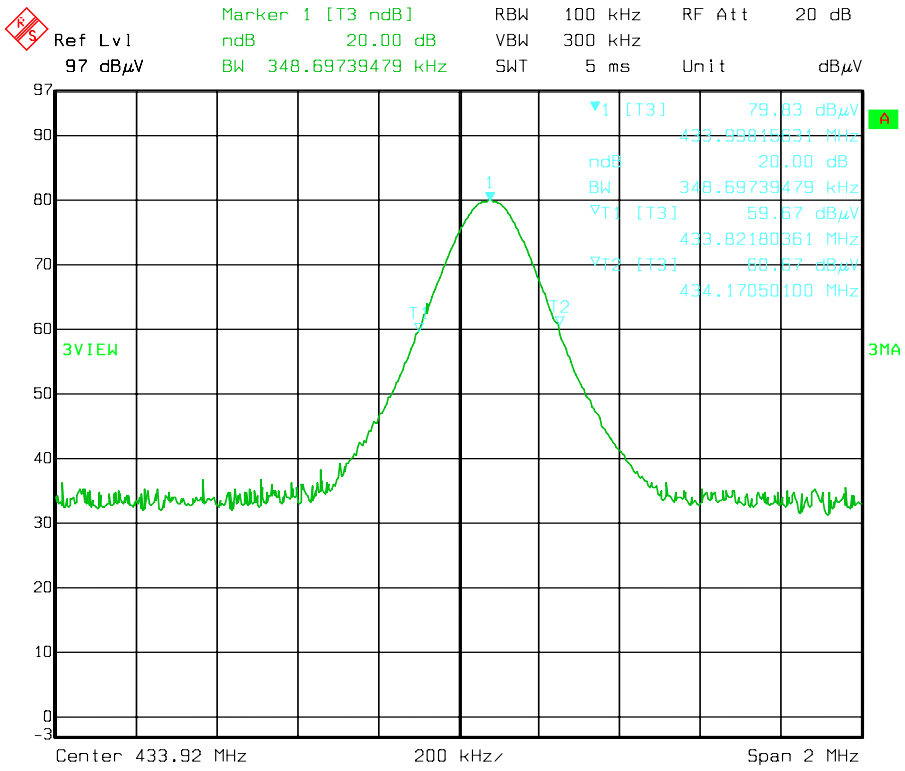
9.3 Limit

According to 15.231(c), the bandwidth of the emission shall be no wider than 0.25% of the centre 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 centre frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

9.4 Test Result:

Channel	20dB Bandwidth (kHz)	Limit (kHz)	Conclusion
(Low)	348.7	1084.8	PASS

Note: Limit = 433.92MHz *0.25% = 1084.8 kHz



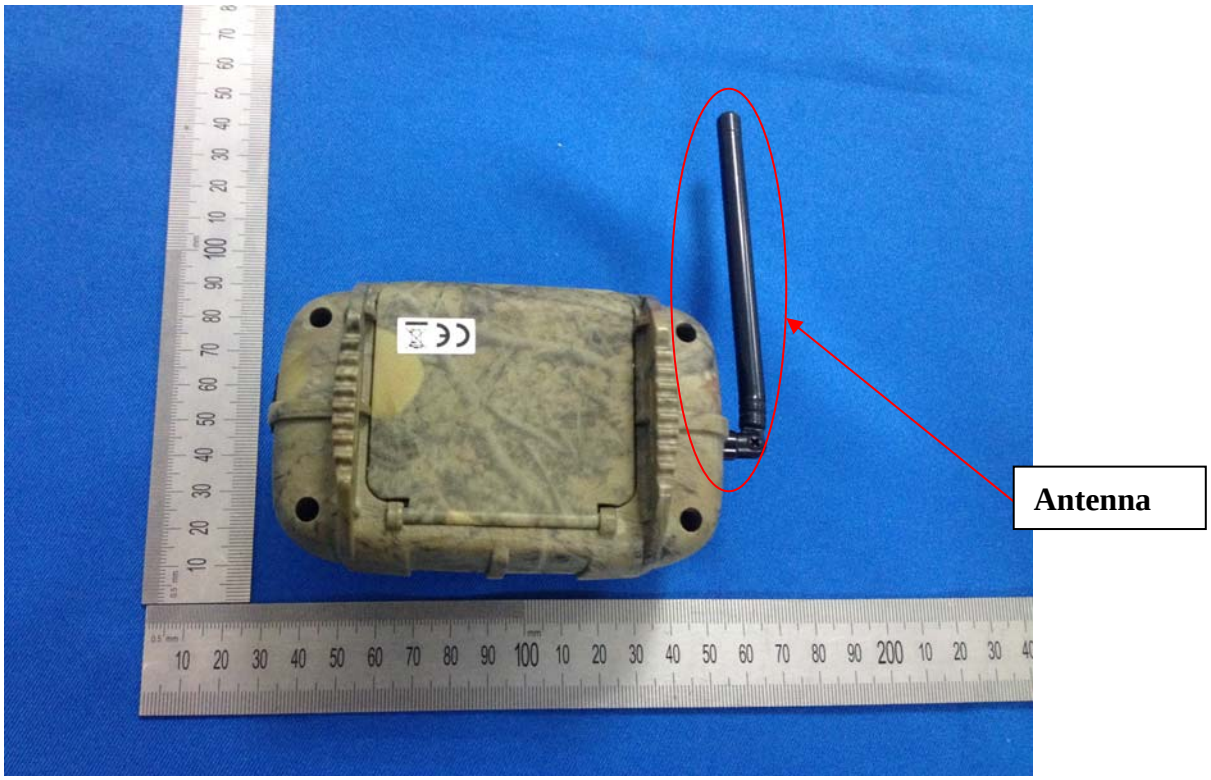
10.0 Antenna Requirement

10.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, 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.

10.2 Antenna Specification

According to the manufacturer declared, the EUT has a external integral antenna; the directional gain of antenna is 2 dBi, and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

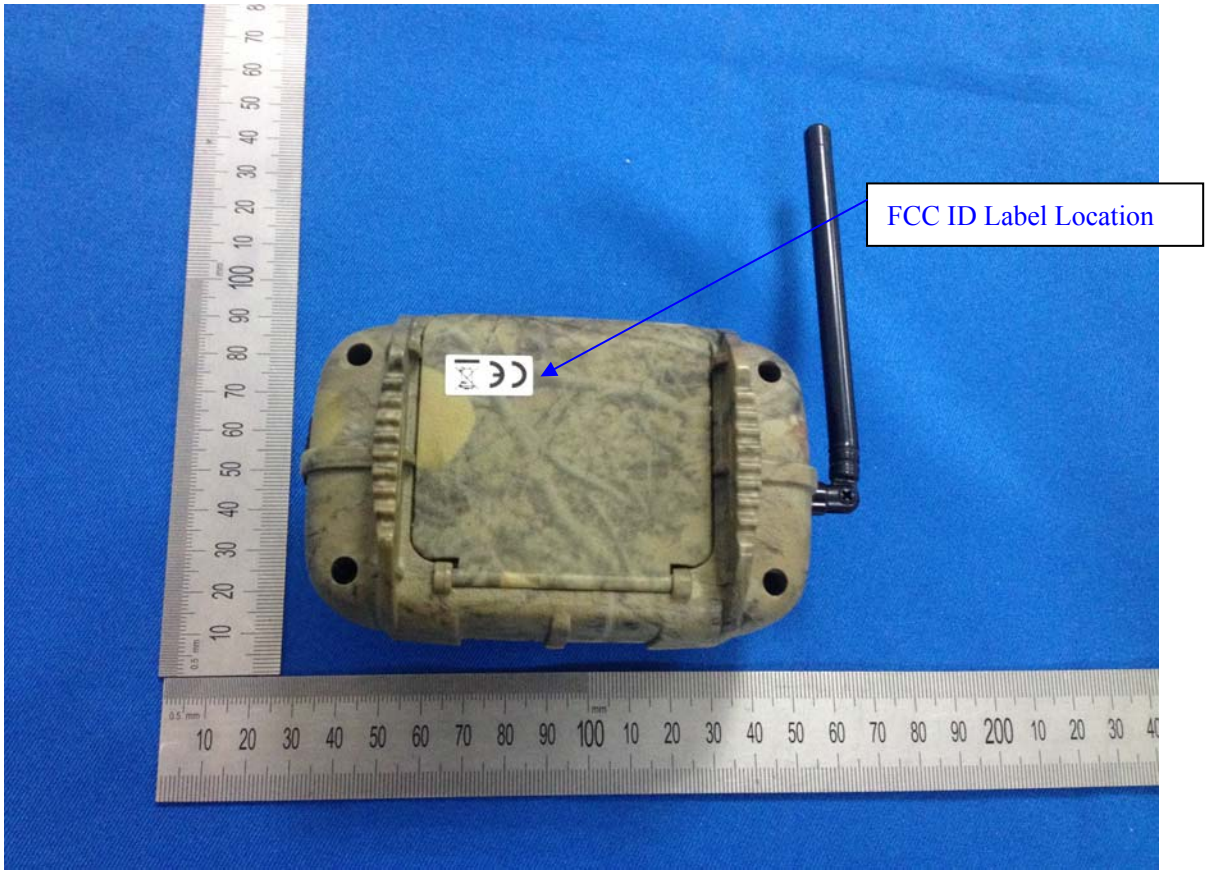


11.0 FCC ID Label

FCC ID: EEX-MS-1

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Mark Location:



--End of the report--