



**ISO/IEC17025 Accredited Lab.**

Report No: FCC 1203008-01

File reference No: 2012-03-16

Applicant: Whistler Corporation

Product: Tire Scout

Model No: TS-104

Trademark: N/A

Test Standards: FCC Part 15 Subpart C, Paragraph 15.231

**Test result:** It is herewith confirmed and found to comply with the requirements set up by ANSI C63.4&FCC Part 15 Subpart C, Paragraph 15.231 regulations for the evaluation of electromagnetic compatibility

Approved By

*Jack Chung*

Jack Chung  
Manager

Dated: March 16, 2012

**Results appearing herein relate only to the sample tested**

**The technical reports is issued errors and omissions exempt and is subject to withdrawal at**

**SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO., LTD**

5/F,Block 4, Anhua Industrial Zone.,No.8 TaiRan Rd.CheGongMiao,FuTian District, Shenzhen,CHINA.

Tel (755) 83448688

Fax (755) 83442996



### **Special Statement:**

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meets with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

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

#### **CNAS-LAB Code: L2292**

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of testing Laboratories.

#### **FCC-Registration No.: 899988**

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.:899988.

#### **IC- Registration No.: IC5205A-01**

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration No.: IC 5205A-01.

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## Test Report Conclusion

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## 1.0 General Details

### 1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO., LTD  
Address: 5/F,Block 4, Anhua Industrial Zone.,No.8 TaiRan Rd.CheGongMiao,FuTian District, Shenzhen,CHINA.  
Telephone: (755) 83448688  
Fax: (755) 83442996  
Site on File with the Federal Communications Commission – United States  
Registration Number: 899988  
For 3m & 10 m OATS  
Site Listed with Industry Canada of Ottawa, Canada  
Registration Number: IC: 5205A-01  
For 3m & 10 m OATS

### 1.2 Applicant Details

Applicant: Whistler Corporation  
Address: 16 Elizabeth Drive, Chelmsford, Massachusetts, United States,01824  
Telephone: --  
Fax: --

### 1.3 Description of EUT

Product: Tire Scout  
Brand Name: N/A  
Model Number: TS-104  
Additional Model Name N/A  
Additional Trade Name N/A  
Rating: DC 3V (one pcs CR1632 battery), 8mA  
Operation Frequency 433.92MHz  
Antenna Designation Integral antenna, designed as an indispensable part of the EUT.

### 1.4 Submitted Sample

2 Samples

### 1.5 Test Duration

2012-03-01 to 2012-03-16

### 1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB

Radiated Emissions Uncertainty =4.7dB

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1.7 Test Engineer

*Terry Tang*

The sample tested by \_\_\_\_\_

Print Name: Terry Tang

2.0	Test Equipments				
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
Ultra Broadband ANT	ROHDE&SCHWARZ	HL562	100157	2011-12-05	2012-12-04
System Controller	CT	SC100	-	2012-02-18	2013-02-17
ESPI Test Receiver	ROHDE&SCHWARZ	ESI26	838786/013	2012-02-18	2013-02-17
3m OATS	--	--	N/A	2012-02-18	2013-02-17
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-631	2011-04-26	2012-04-25
Pre-amplifier	EM	EM30265	2727A05017	2011-08-05	2012-08-04
Pre-amplifier	HP	8447D	2727A05017	2011-08-05	2012-08-04

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### 3.0 Technical Details

#### 3.1 Summary of test results

The EUT has been tested according to the following specifications:				
Standard		Test Type	Result	Notes
FCC Part 15, Paragraph 15.207		Conducted Emission Test	PASS	N/A
FCC Part 15, Paragraph 15.209		General Requirement	PASS	Compliant
FCC Part 15, Paragraph 15.231 (b) (e)		Radiated Emission Test	PASS	Compliant
FCC Part 15, Paragraph 15.231 (c)		20dB Bandwidth Testing	PASS	Compliant
FCC Part 15, Paragraph 15.231 (e)		Deactivate Testing	PASS	Compliant
FCC PART 15, Paragraph 15.203		Antenna Requirement	PASS	Compliant

#### 3.2 Test Standards

##### FCC Part 15 Subpart C, Paragraph 15.231

#### 4.0 EUT Modification

No modification by Shenzhen Timeway Technology Consulting Co., Ltd

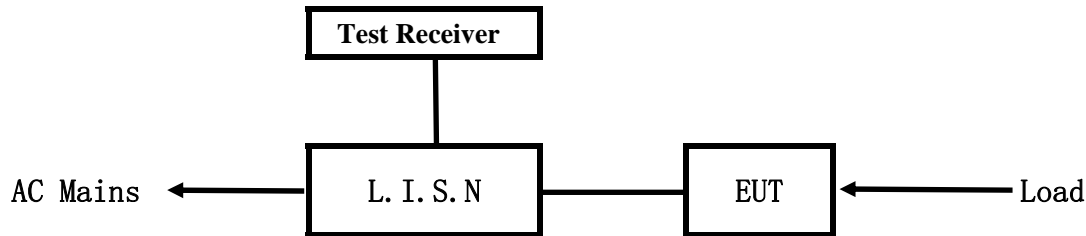
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## 5. Power Line Conducted Emission Test

### 5.1 Schematics of the test

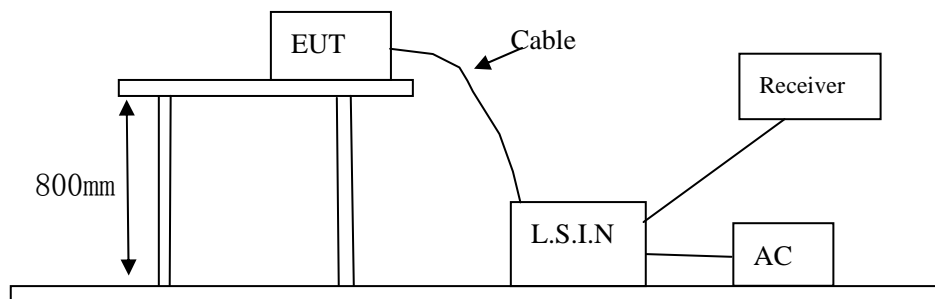


EUT: Equipment Under Test

### 5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.4-2009. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.4 –2009.

Block diagram of Test setup



### 5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.4-2009. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

#### A. EUT

Device	Manufacturer	Model	FCC ID
Tire Scout	Gobiz Electronics Limited	TS-104	HSXTP01

#### B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

#### C. Peripherals

Device	Manufacturer	Model	FCC ID/DOC	Cable
N/A				

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#### 5.4 EUT Operating Condition

Operating condition is according to ANSI C63.4 -2009.

A Setup the EUT and simulators as shown on follow

B Enable AF signal and confirm EUT active to normal condition

#### 5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency (MHz)	Class A Limits (dB $\mu$ V)		Class B Limits (dB $\mu$ 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

#### 5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz. (The average detector is necessary when the Quasi-peak emission level beyond the average Limit.)

**Note: Due to DC operation, this test item not applicable.**

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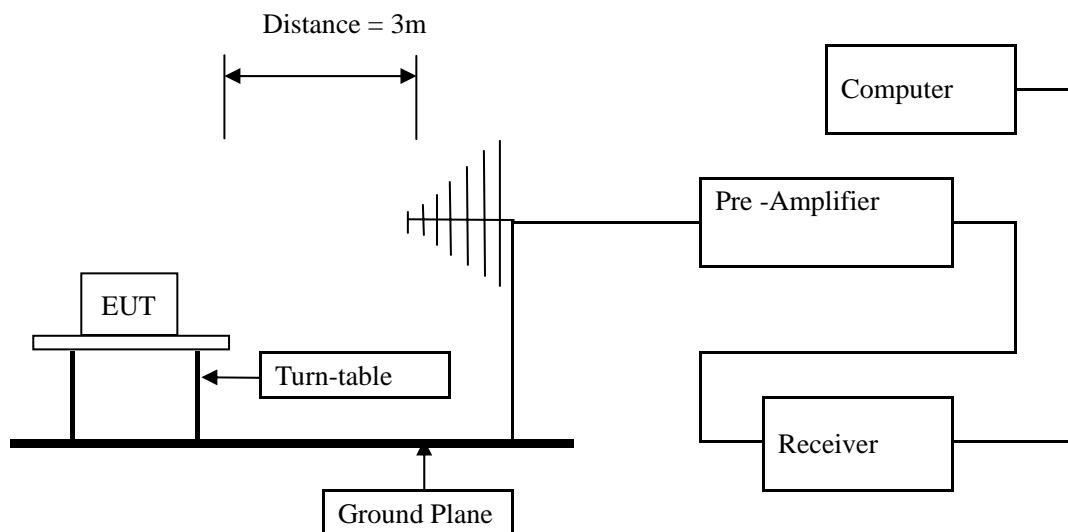


## 6 Radiated Emission Test

### 6.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.4 –2009. The radiated test was performed at Timeway Laboratory. This site is on file with the FCC laboratory division, Registration No.899988
- (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 C63.4-2009.
- (3) The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz. All readings are above 1 GHz, peak values with a resolution bandwidth of 1 MHz . Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "QP" in the data table.
- (6) The antenna polarization : Vertical polarization and Horizontal polarization.

### Block diagram of Test setup



- 6.2 Configuration of The EUT  
Same as section 5.3 of this report

- 6.3 EUT Operating Condition  
Same as section 5.4 of this report.

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#### 6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

##### A FCC Part 15 Subpart C Paragraph 15.231(e) Limit

Fundamental Frequency (MHz)	Field Strength of Fundamental		Field Strength of Spurious Emission	
	uV/m	dBuV/m	uV/m	dBuV/m
40.66-40.70	1000	60.00	100	40.00
70-130	500	53.98	50	33.98
130-174	500-1500	53.98-63.52	50-150	33.98-43.52
174-260	1500	63.52	150	43.52
260-470	1500-5000	63.52-73.98	150-500	43.52-53.98
Above 470	5000	73.98	500	53.98

- Note:
1. RF Field Strength (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.
  4. Linear interpolations for frequency ranges 130-174MHz and 260-470MHz
  5. the above field strength limits are specified at a distance of 3-meters and the tighter limits apply at the band edges
  6. New batteries were installed in the equipment under test for radiated emission testing.

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**B. Frequencies in restricted band are complied to limit on Paragraph 15.209.**

Frequency Range (MHz)	Distance (m)	Field strength (dB $\mu$ V/m)
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. All scanning using PK detector. And the final emission level was get using QP detector for frequency range from 30-1000MHz.As to 1G-5G, the final emission level got using PK detector. And Average = peak(dBuV/m) – duty cycle(dB)

**6.5 Test result**

**A Fundamental Radiated Emission Data**

Product:	Tire Scout	Test Mode:	Tx transmitting
Test Item:	Fundamental Radiated Emission and Spurious Emission Data	Temperature:	25°C
Test Voltage:	DC 3V	Humidity:	56%
Test Result:	Pass		

Frequency (MHz)	Emission PK/AV (dBuV/m)	Horiz / Vert	Limits PK/AV (dBuV/m)	Margin(dB)
433.92	41.0(PK)	Horizontal	92.87/72.87	-31.87
433.92	53.05(PK)	Vertical	92.87/72.87	-19.82
867.84	--	Horizontal	72.87/52.87	--
867.84	38.91(PK)	Vertical	72.87/52.87	-13.96

- Note:1. Average = peak(dBuV/m) – duty cycle(dB). Due to the measure PK emission level less than the AV limit value. No necessary to take down the AV emission level.**
- 2. The EUT is in continuous transmitting during Radiated Emissions Test. So PDCF is not needed.**



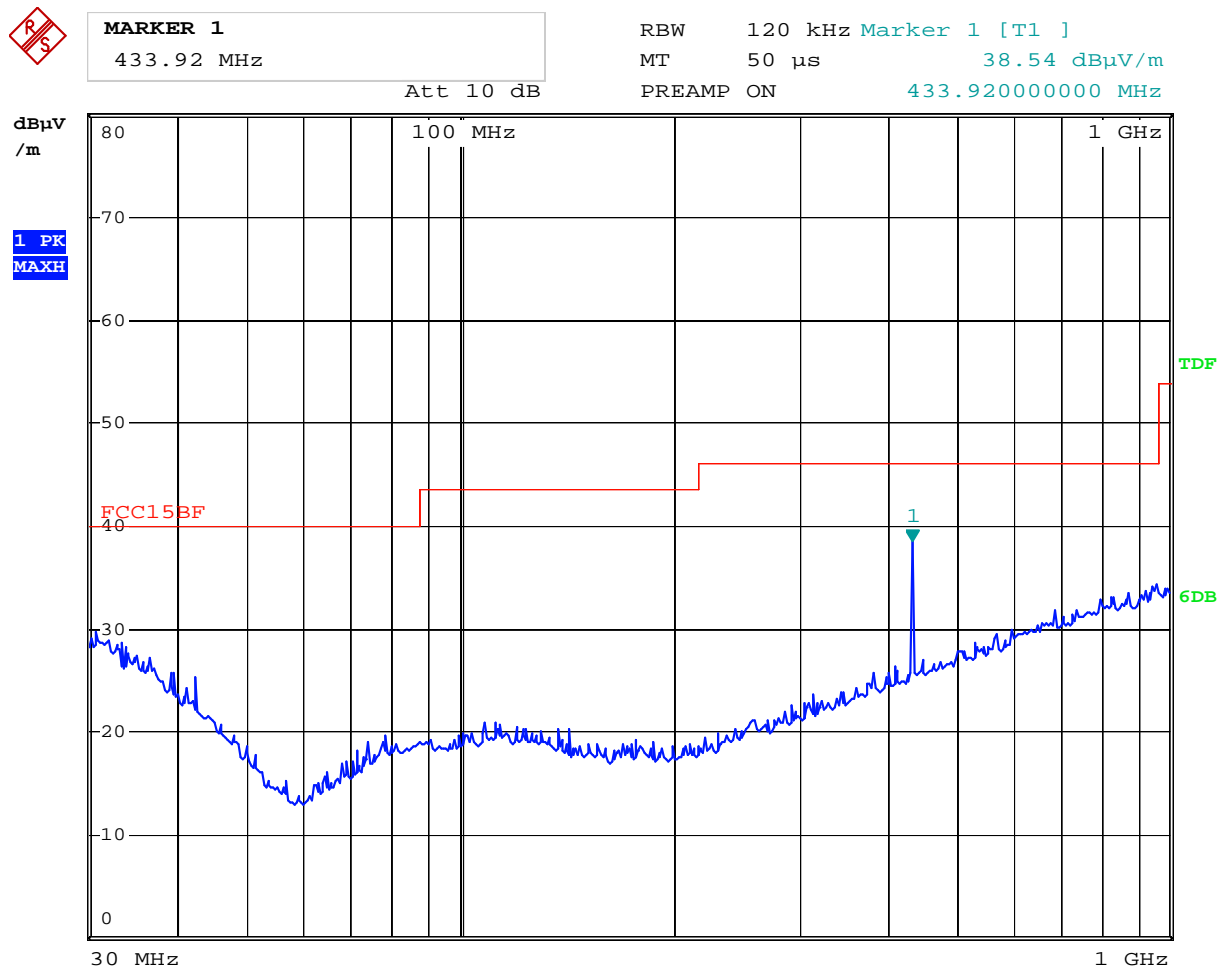
B. General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Tx Transmitting

Results: Pass

Please refer to following diagram for individual



Date: 8.MAR.2012 08:23:40

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
--	--	H	--

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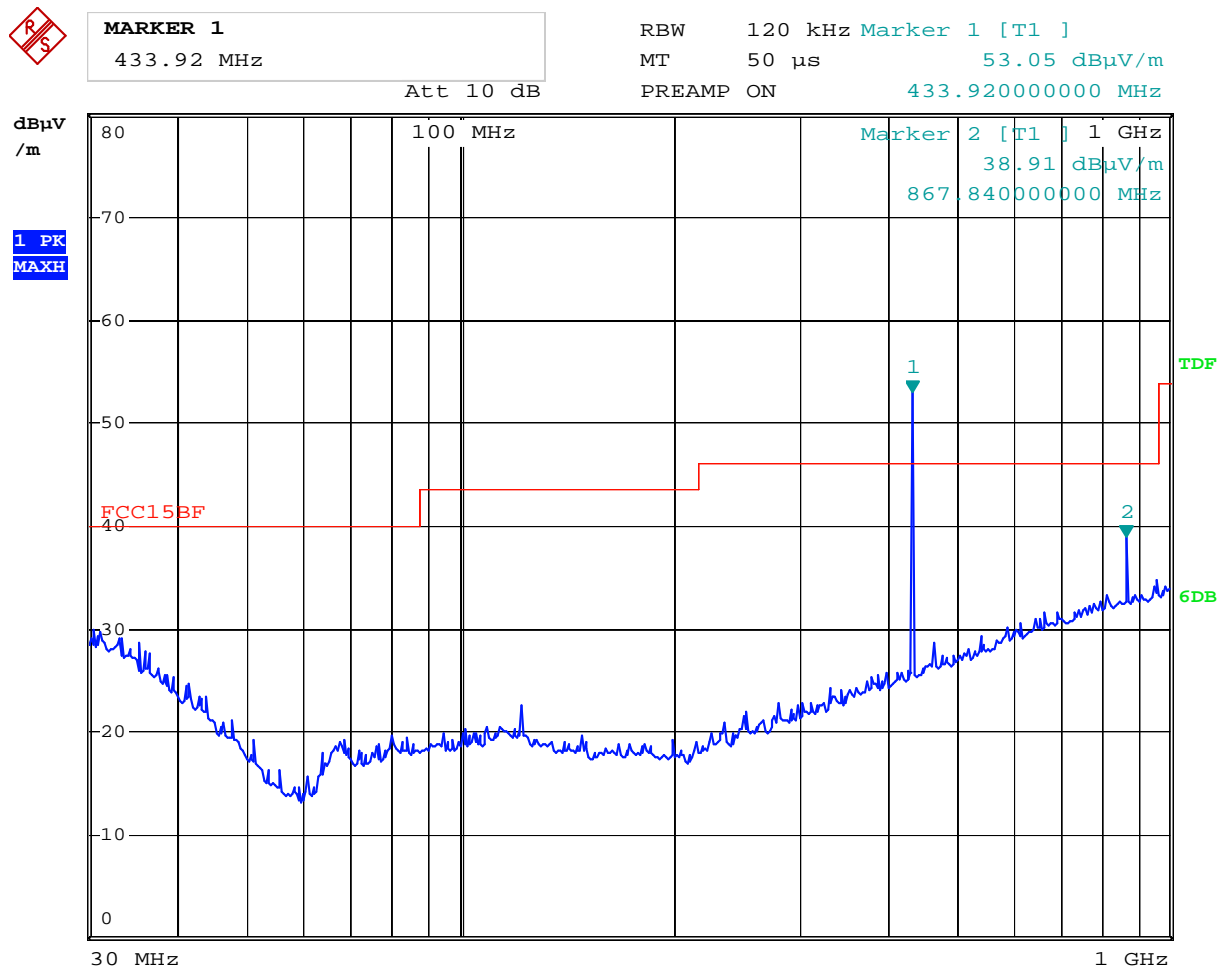
B. General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Tx Transmitting

Results: Pass

Please refer to following diagram for individual



Date: 8.MAR.2012 08:17:42

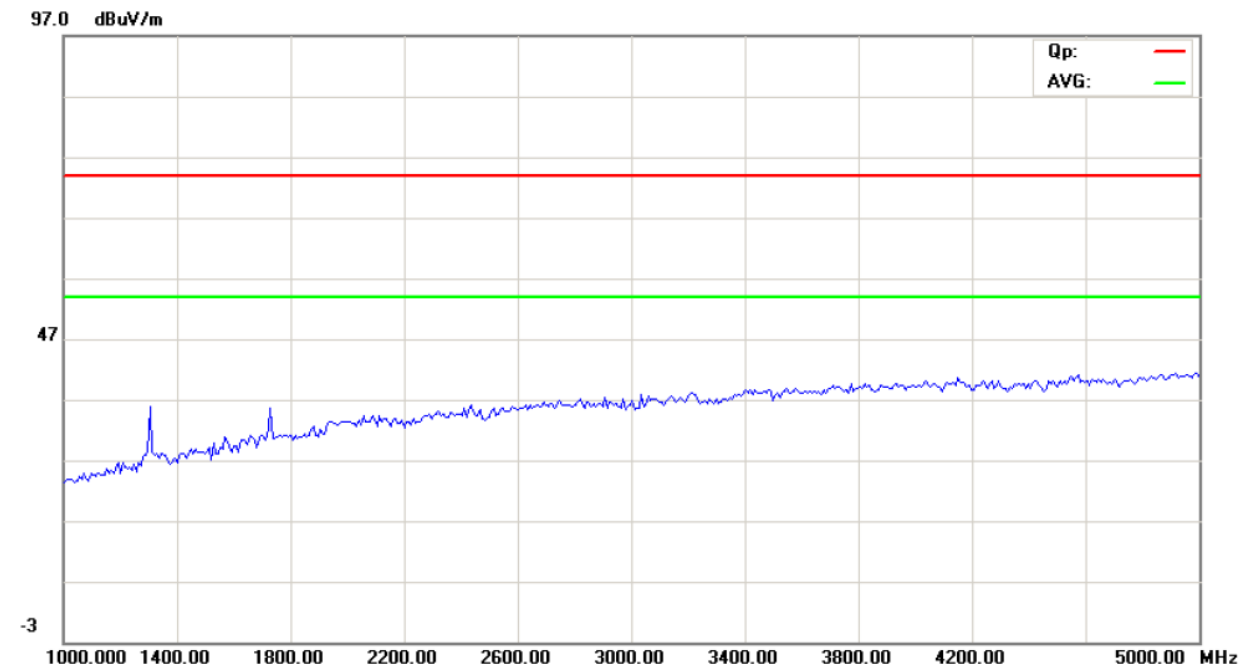
Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
--	--	V	--
--	--	V	--

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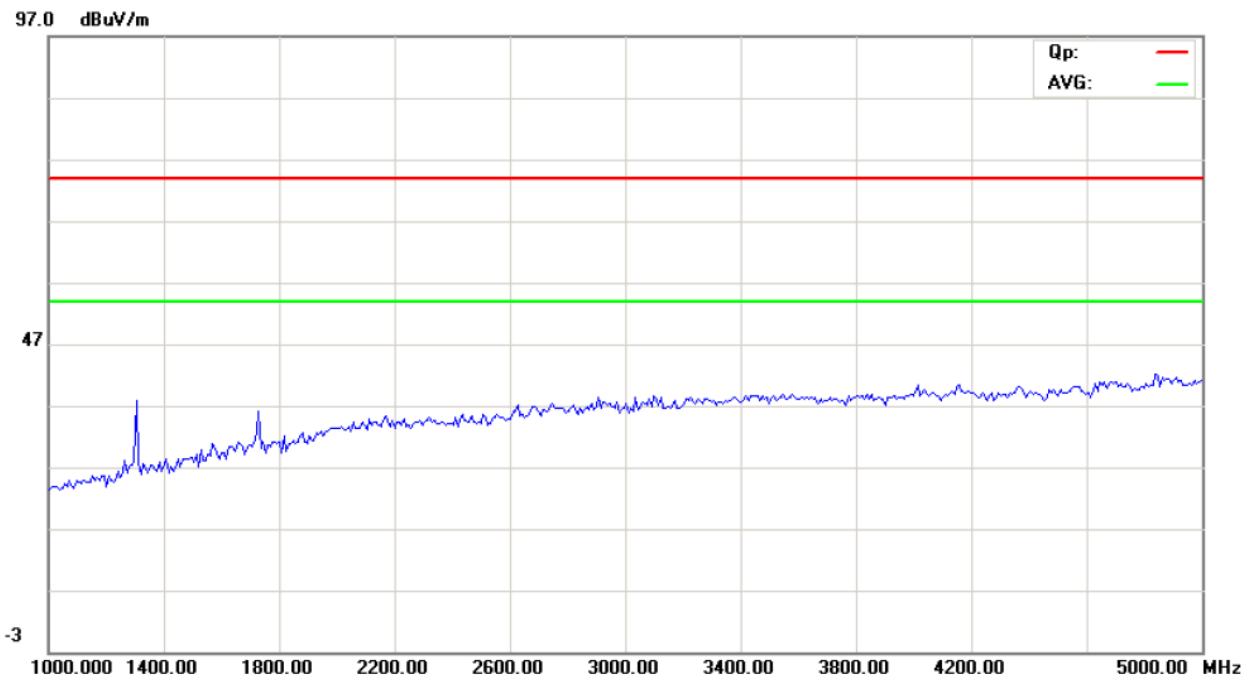


Test Plot above 1G

Horizontal



Vertical



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## 7.0 20dB Bandwidth Testing

### 7.1 Requirement

Per 15.231(c), 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. Bandwidth is determined at the points 20 dB down from the modulated carrier.

### 7.2 Test Procedure

With the EUT's antenna attached, the EUT's 20dB Bandwidth power was received by the test antenna which was connected to the spectrum analyzer with the START and STOP frequencies set to the EUT's operation band.

### 7.3 Test Data

A: EUT set Condition: Periodic Tx Transmitting

Frequency (MHz)	20dB Bandwidth Emission (kHz)	Limit (kHz)	Result
433.92	28.40	1084.80	Pass

Limit=Frequency x 0.25%=433.92x 0.25%=1084.80kHz

Refer to attached plots:

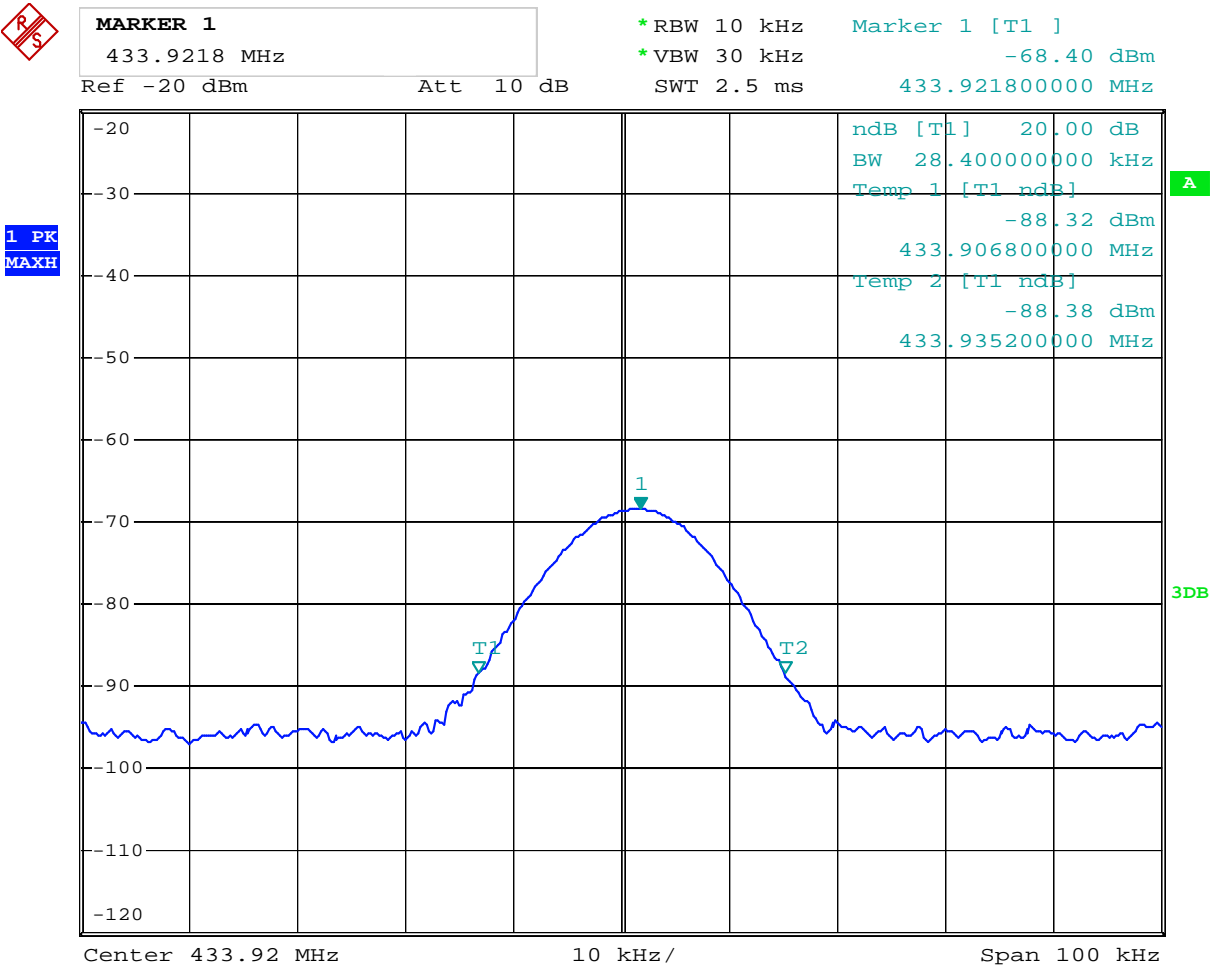
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Tx Transmitting



Date: 8.MAR.2012 08:28:19

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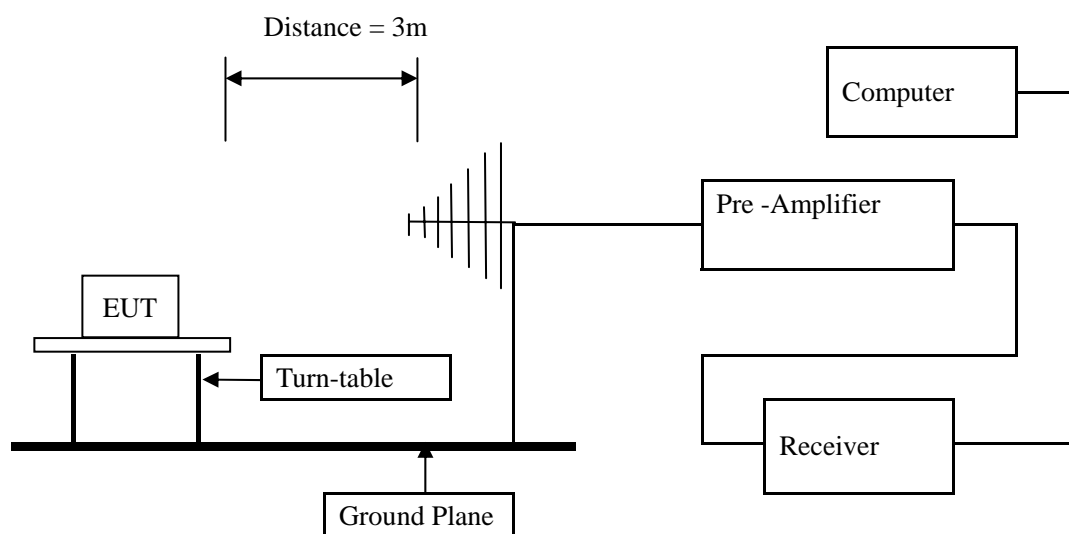
## 8.0 Deactivate Test

### 8.1 Requirement

Per 15.231(e)

Devices operated under the provisions of this paragraph shall be provided with a means for automatically limiting operation so that the duration of each transmission shall not be greater than one second and the silent period between transmissions shall be at least 30 times the duration of the transmission but in no case less than 10 seconds.

### 8.2 Radiated Test Setup



For the actual test configuration , please refer to the related items – Photos of Testing

The deactivation test was performed in the 3 meters chamber B test site, using the setup accordance with the ANSI C63.4 - 2009. The specification used was the FCC 15.231(e) limits.

### 8.3 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

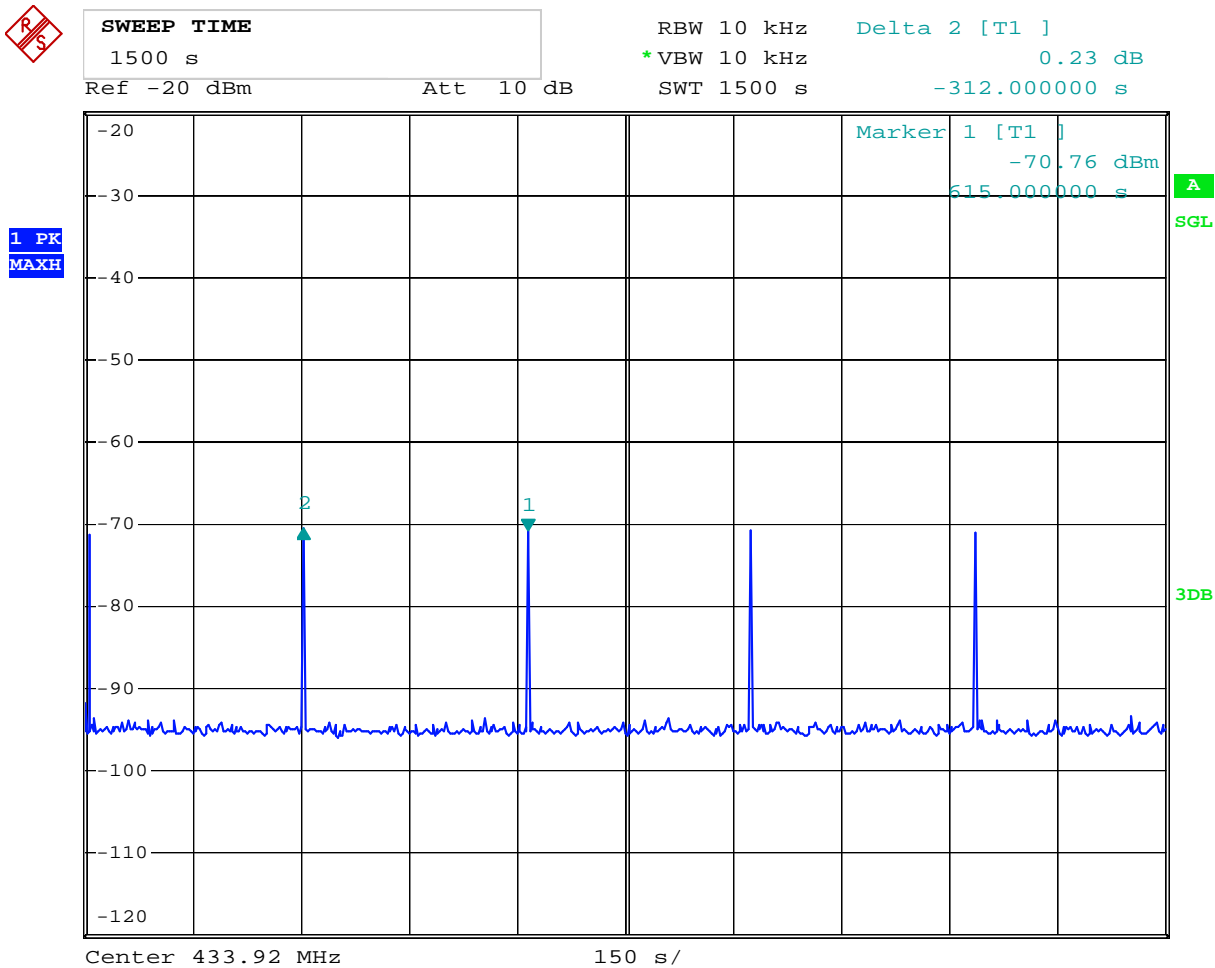
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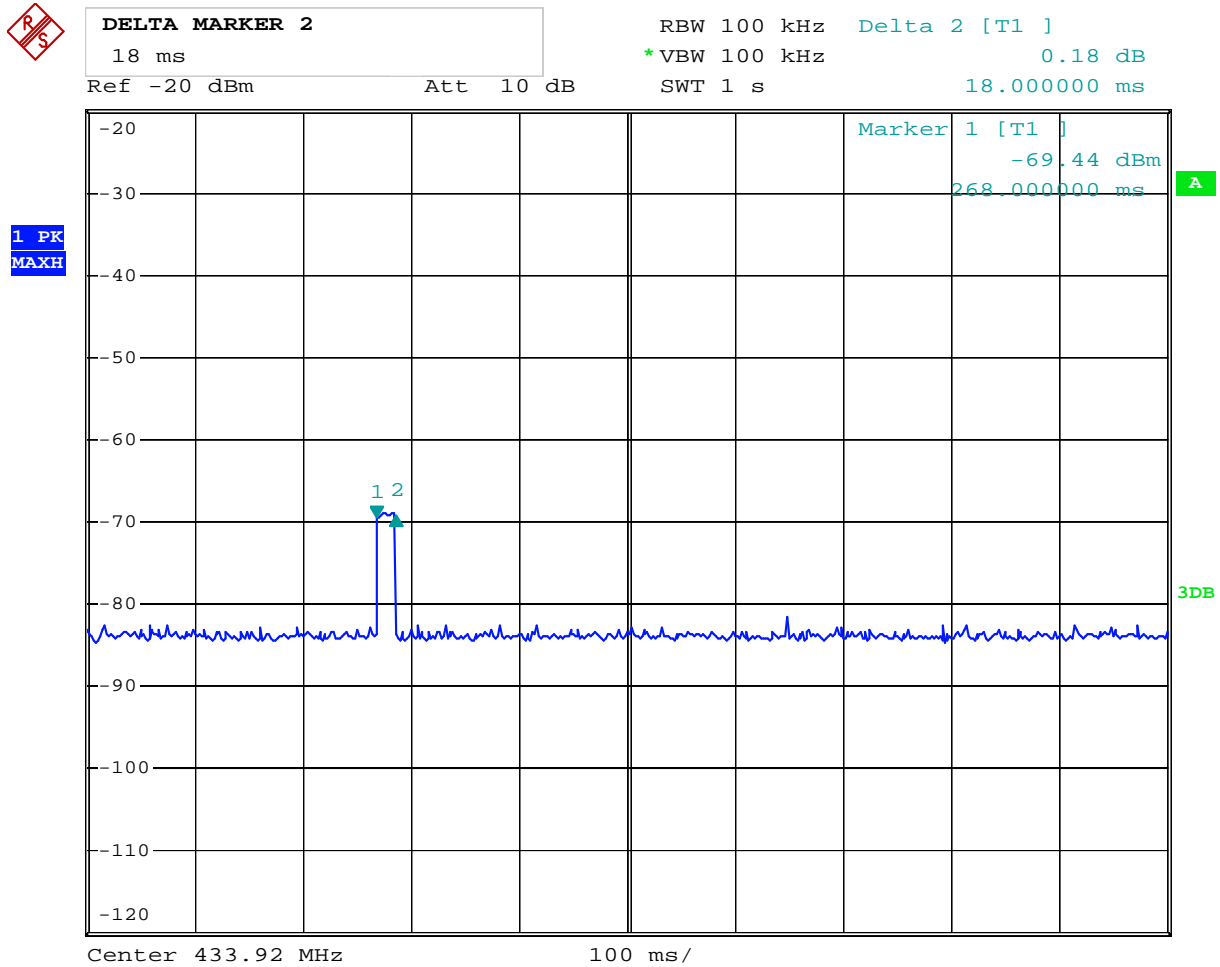
8.4 Test Data  
Refer to attached plots:  
Test Mode: Tx Transmitting



Date: 8.MAR.2012 10:22:45

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### Tx Transmitting



Date: 8.MAR.2012 11:04:04

**8.5 Test result: there is one transmission every 312s. And the duration of each transmission is 18ms.  
So the EUT meet the FCC Part 15.231 (e) rule**

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## 9.0 Duty Cycle

### 9.1 Limit

Nil (No dedicated limit specified in the Rules).

### 9.2 Test Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set center frequency of spectrum analyzer=operating frequency.
4. Set the spectrum analyzer as 1. RBW, VBW=10kHz, Span=0Hz, Adjust Sweep=1500s.  
2. RBW, VBW=100kHz, Span=0Hz, Adjust Sweep=1s.
5. Repeat above procedures until all frequency measured were complete.

### 9.3 Test Data

**There is one transmission every 312s which is more than 100ms. And the duration of each transmission is 18ms.**

**So**

$T_p = 100\text{ms}$

$T_{on} = 18\text{ms}$

$\text{Factor} = 20 * \log (T_{on} / T_p) = 20 * \log (18/100) = -14.89\text{dB}$

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## 10.0 Antenna Requirement according to Part 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.

### Result:

Integral antenna, designed as an indispensable part of the EUT. And it meets the FCC requirement.

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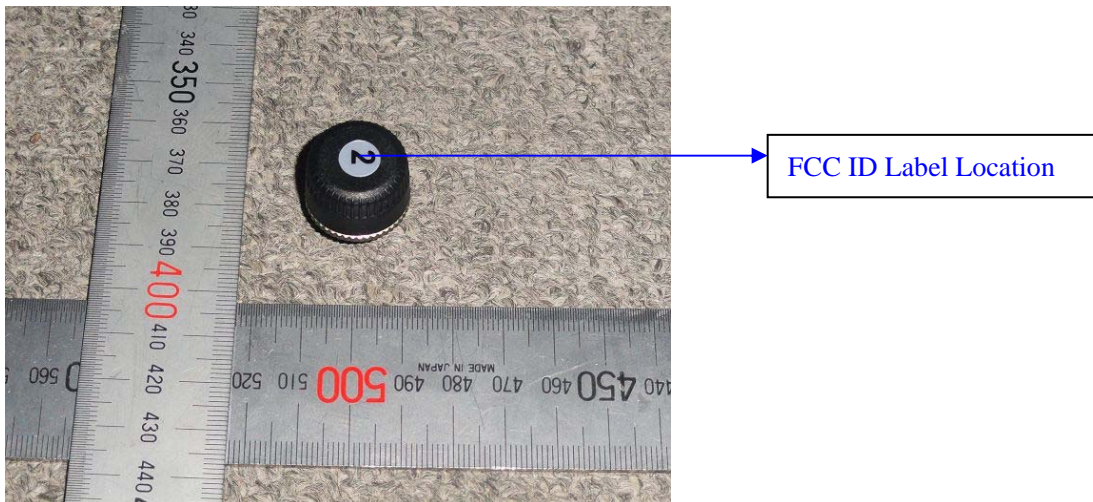
## 11.0 FCC ID Label

### FCC ID: HSXTP01

**This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.**

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:



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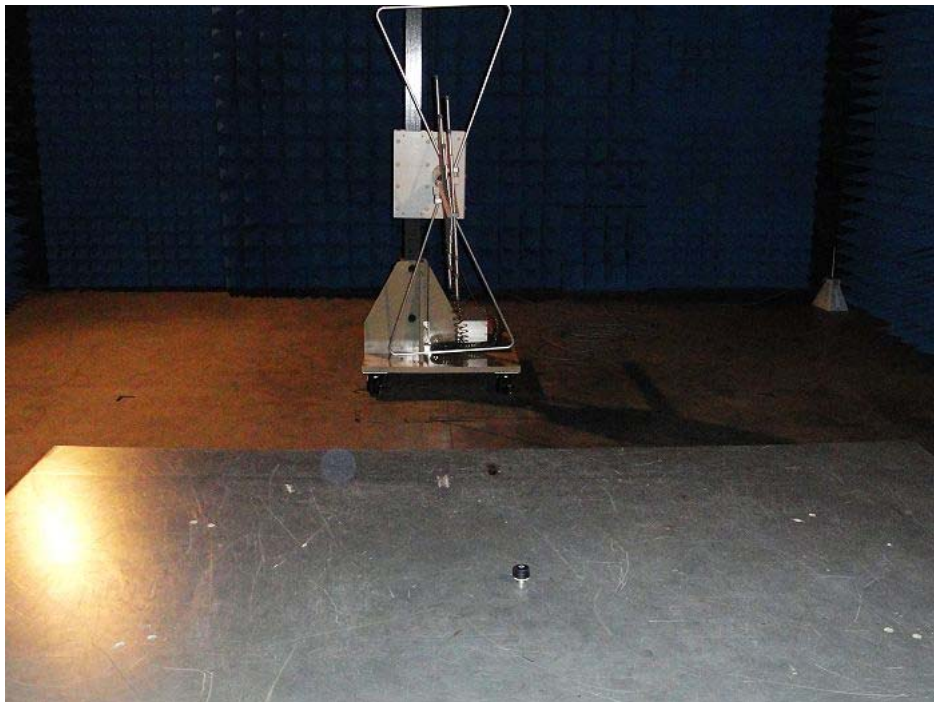
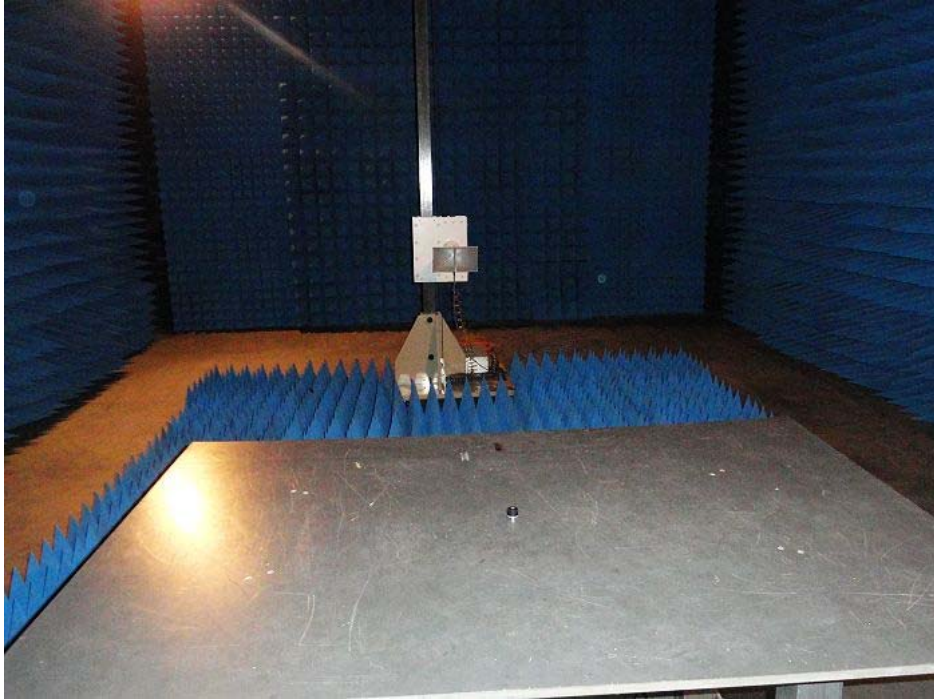
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## 12.0. Photo of testing

12.1 Conducted test View—N/A

12.2 Radiated emission test view



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### 11.3 Photo for the EUT



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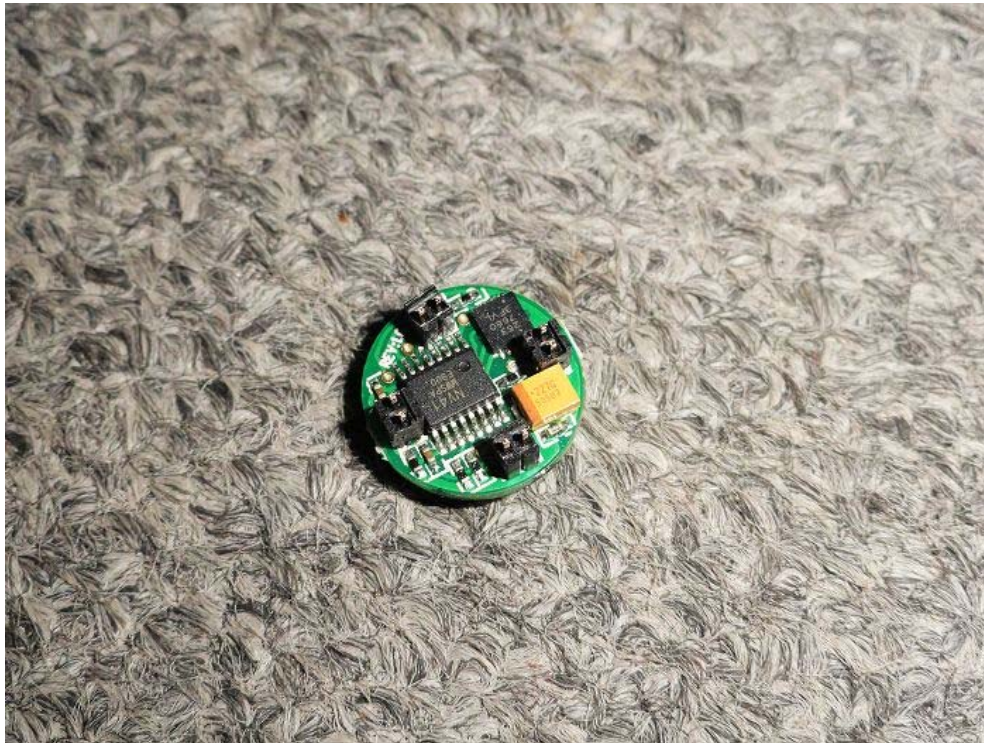
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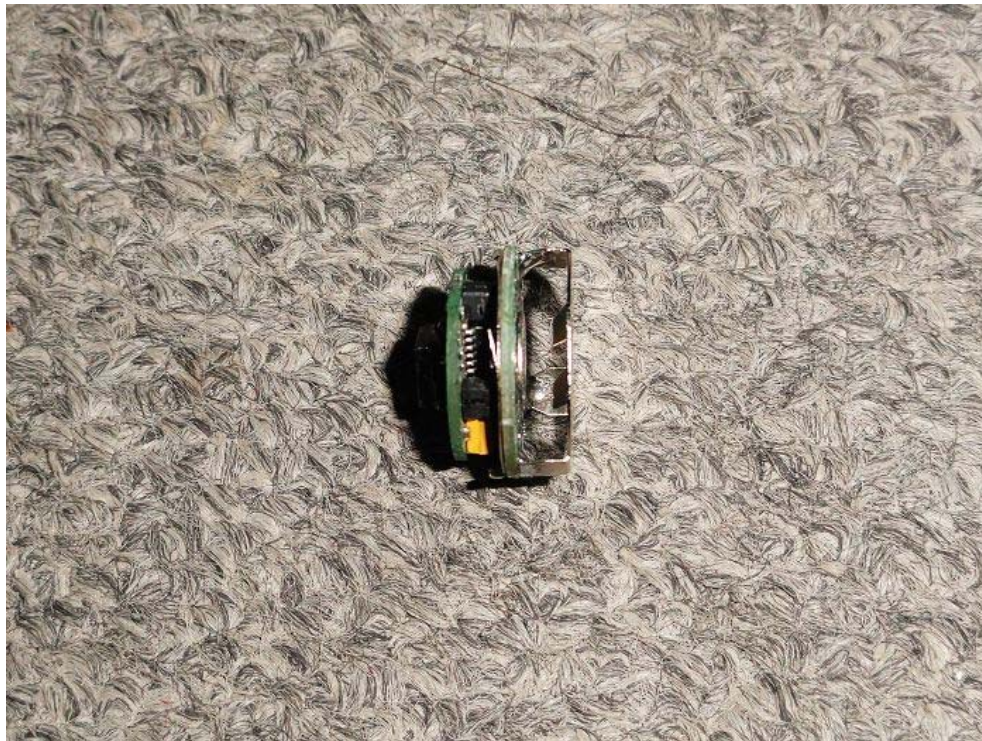
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### 11.3 Photo for the EUT



**--End of the report--**

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