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FCC PART 15 SUBPART B TEST REPORT

FCC Part 15B

Report Reference No..... :	**CTL130305278-WD**
Compiled by (position+printed name+signature).. :	File administrators Jacky Chen
Name of the organization performing the tests (position+printed name+signature).. :	Test Engineer Tracy Qi
Approved by (position+printed name+signature).. :	Manager Tracy Qi
Date of issue..... :	Mar. 13, 2013
Representative Laboratory Name. :	**Shenzhen CTL Electromagnetic Technology Co., Ltd.**
Address..... :	Zone B, 4/F, Block 20, Guangqian Industrial Park, Longzhu Road, Nanshan, Shenzhen 518055 China.
Test Firm..... :	**Bontek Compliance Testing Laboratory Ltd**
Address..... :	1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China
Applicant's name..... :	**SHENZHEN REMOTE TECH-DEVELOPING CO.，LTD**
Address..... :	Building 2, Penghua Industrial Park, Heping West Road, Longhua Street Office, Baoan District Shenzhen City, Guangdong Province, China
Test specification:	
Standard..... :	FCC Part 15B: Unintentional Radiators
TRF Originator..... :	Shenzhen CTL Electromagnetic Technology Co., Ltd.
Master TRF..... :	Dated 2011-01

Test item description.....:	**Air Mouse Remoter Receiver**
FCC ID……..…..:	**SAVRF12F-RX**
Trade Mark..... :	/
Model/Type reference..... :	RF12F-Rx
I/O Type of EUT..... :	USB Port
I/O Q'TY..... :	1
Work Frequency……..... :	2405 MHz~2476 MHz
Antenna Type……..... :	PCB Antenna
Result..... :	**Positive**

TEST REPORT

Test Report No. :	CTL130305278-WD	Mar. 13, 2013 Date of issue

Equipment under Test	:	Air Mouse Remoter Receiver
Model /Type	:	RF12F-Rx
Listed Models	:	/
Applicant	:	**SHENZHEN REMOTE TECH-DEVELOPING CO.，LTD**
Address	:	Building 2, Penghua Industrial Park, Heping West Road, Longhua Street Office, Baoan District Shenzhen City, Guangdong Province, China
Manufacturer		**SHENZHEN REMOTE TECH-DEVELOPING CO.，LTD**
Address		Building 2, Penghua Industrial Park, Heping West Road, Longhua Street Office, Baoan District Shenzhen City, Guangdong Province, China

Test Result according to the standards on page 4:	**Positive**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. TEST STANDARDS

The tests were performed according to following standards:

FCC Part 15B: Unintentional Radiators

ANCI C63.4: 2003

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample : Feb. 27, 2013

Testing commenced on : Feb. 28, 2013

Testing concluded on : Mar. 12, 2013

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage : ● 120V / 60 Hz o 115V / 60Hz
o 12 V DC o 24 V DC
● Other (specified in blank below)

DC 5V from USB port

2.3. Short description of the Equipment under Test (EUT)

The device is a Air Mouse Remoter Receiver.

For more details, refer to the user's manual of the EUT.

Serial number: Prototype

2.4. EUT operation mode

Test Mode(TM)	Description	Remark
TM1	Transferring	Connect to PC

The field strength of radiation emission was measured in the following position: EUT stand-up position (Y axis), lie-down position (X, Z axis).
The following data show only with the worst case setup.
The worst case of Y axis was reported.
Based on client request, all normal using modes of the normal function were tested but only the worst test data of the worst mode is reported by this report.

The worst case of AC Conducted Emission is mode 1; the test data of this mode was reported.

2.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
/			
/			

- ● - supplied by the manufacturer
- ● - supplied by the lab

● Notebook PC	Manufacturer : HP
	Model No. : 4-1007TX

2.6. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **SAVRF12F-RX** filing to comply with of the FCC Part 15B Rules.

2.7. Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Bontek Compliance Testing Laboratory Ltd
1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2003) and CISPR Publication 22.

3.2. Test Facility

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

IC Registration No.: 7631A

The 3m alternate test site of Bontek Compliance Testing Laboratory Ltd EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 7631A on March, 2011.

FCC-Registration No.: 338263

Bontek Compliance Testing Laboratory Ltd 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 338263, March 24, 2008.

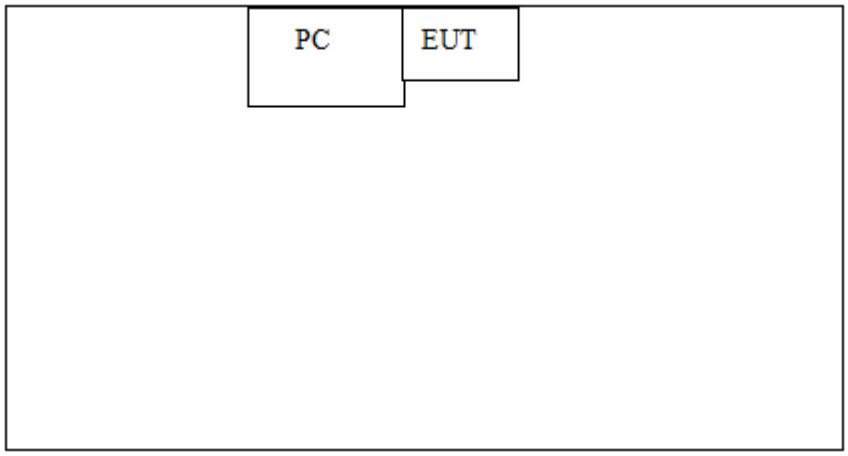
3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

3.4. Configuration of Tested System

Fig. 2-1 Configuration of Tested System



3.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Bontek Compliance Testing Laboratory Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.
Hereafter the best measurement capability for Bontek laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10dB	(1)
Radiated Emission	1~26.5GHz	4.32dB	(1)
Conducted Disturbance	0.15~30MHz	3.20dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.6. Equipments Used during the Test

Item	Test Equipment	Manufacturer	Model No.	Last Cal.	Due. Date
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	2012/04/14	2013/04/13
2	Radio Communication Tester	ROHDE & SCHWARZ	CMU200	2012/04/14	2013/04/13
3	Dual Directional Coupler	Agilent	778D	2012/04/14	2013/04/13
4	10dB attenuator	SCHWARZBECK	MTAIMP-136	2012/04/14	2013/04/13
5	Tunable Bandreject filter	K&L	3TNF-800	2012/04/14	2013/04/13
6	Tunable Bandreject filter	K&L	5TNF-1700	2012/04/14	2013/04/13
7	High-Pass Filter	K&L	9SH10-2700/X12750-O/O	2012/04/14	2013/04/13
8	High-Pass Filter	K&L	41H10-1375/U12750-O/O	2012/04/14	2013/04/13
9	Coaxial Cable	Huber+Suhner	AC4-RF-H	2012/04/14	2013/04/13
10	AC Power Supply	IDRC	CF-500TP	2012/04/14	2013/04/13
11	DC Power Supply	IDRC	CD-035-020PR	2012/04/14	2013/04/13
12	RF Current Probe	FCC	F-33-4	2012/04/14	2013/04/13
13	Temperature /Humidity Meter	zhicheng	ZC1-2	2012/04/14	2013/04/13
14	MICROWAVE AMPLIFIER	HP	8349B	2012/04/14	2013/04/13
15	Amplifier	HP	8447D	2012/04/14	2013/04/13
16	SIGNAL GENERATOR	HP	8647A	2012/04/14	2013/04/13
17	Log Periodic Antenna	ELECTRO-METRICS	EM-6950	2012/04/14	2013/04/13
18	Horn Antenna	Schwarzbeck	BBHA9120A	2012/04/14	2013/04/13
19	EMI Test Receiver	R&S	ESPI	2012/04/14	2013/04/13
20	Loop Antenna	ZHINAN	ZN30900A	2012/04/14	2013/04/13
21	Horn Antenna	Schwarzbeck	BBHA9120D	2012/04/14	2013/04/13
22	Horn Antenna	Schwarzbeck	BBHA9170	2012/04/14	2013/04/13

3.7. Summary of Test Result

No deviations from the test standards

Test Item	Test Requirement	Standard Paragraph	Result
Radiated Emission	FCC PART 15	Section 15.109	PASS
Conducted Emission	FCC PART 15	Section 15.107	PASS

3.8. Test Software

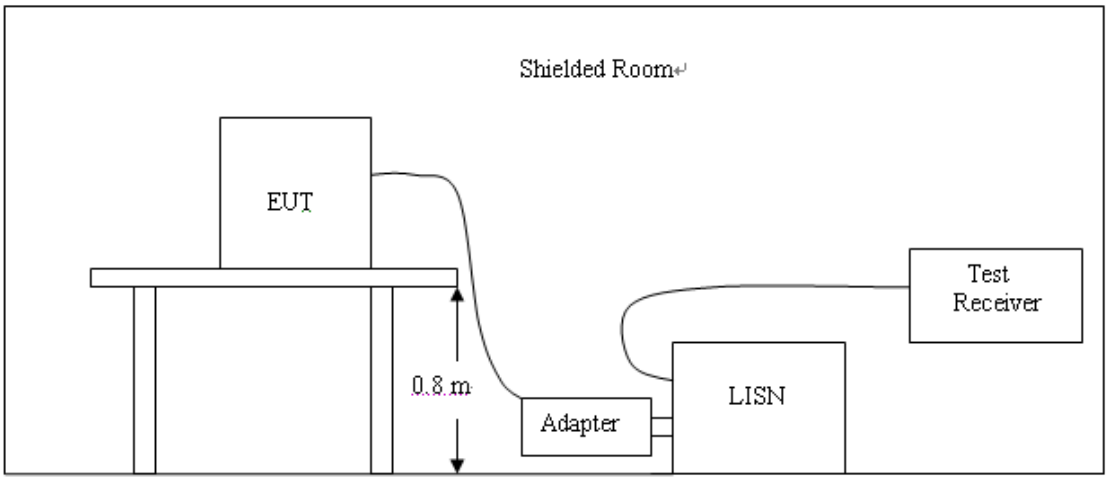
The following programs installed in the EUT were programmed during the test.

1. Execute the program, “Winthrax”, installed in PC for files transfer with EUT via USB port.
2. Turn on camera to capture images.

4. TEST CONDITIONS AND RESULTS

4.1. Conducted Emissions Test

TEST CONFIGURATION



TEST PROCEDURE

For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following：

Frequency (MHz)	Maximum RF Line Voltage (dBμv)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

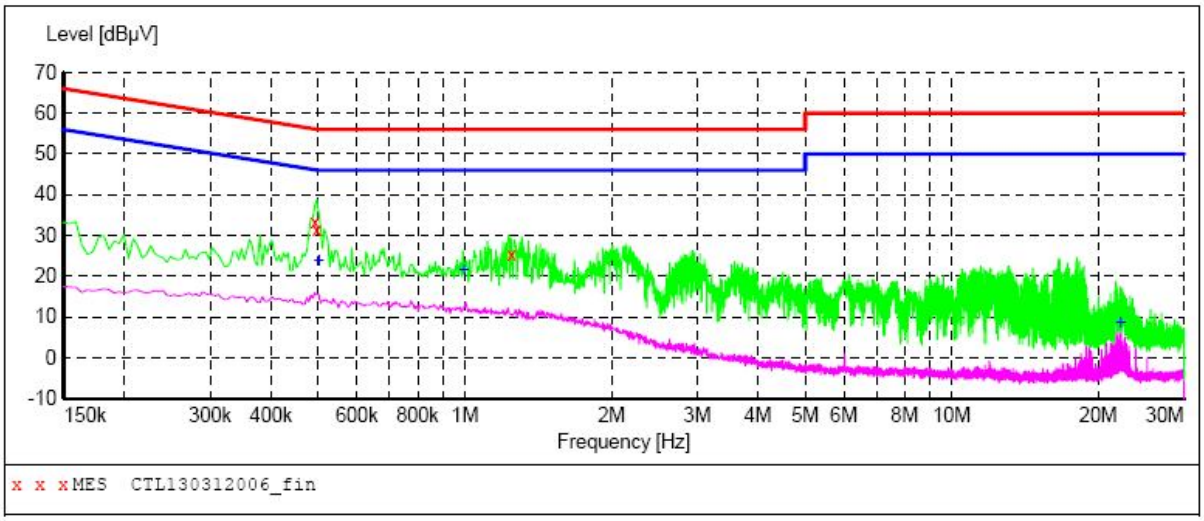
1. Please follow the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connecting to the other LISN.
5. The LISN provides 50 ohm coupling impedance for the measuring instrument.
6. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
7. Both sides of AC line were checked for maximum conducted interference.
8. The frequency range from 150 kHz to 30 MHz was searched.
9. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

The RBW/VBW for 150KHz to 30MHz: 9KHz

TEST RESULTS

TM1:

SCAN TABLE: "Voltage (9K-30M)FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL130312006_fin"

3/12/2013 1:42PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.492000	33.40	10.2	56	22.7	QP	N	GND
0.496500	31.60	10.2	56	24.5	QP	N	GND
1.248000	25.60	10.3	56	30.4	QP	N	GND

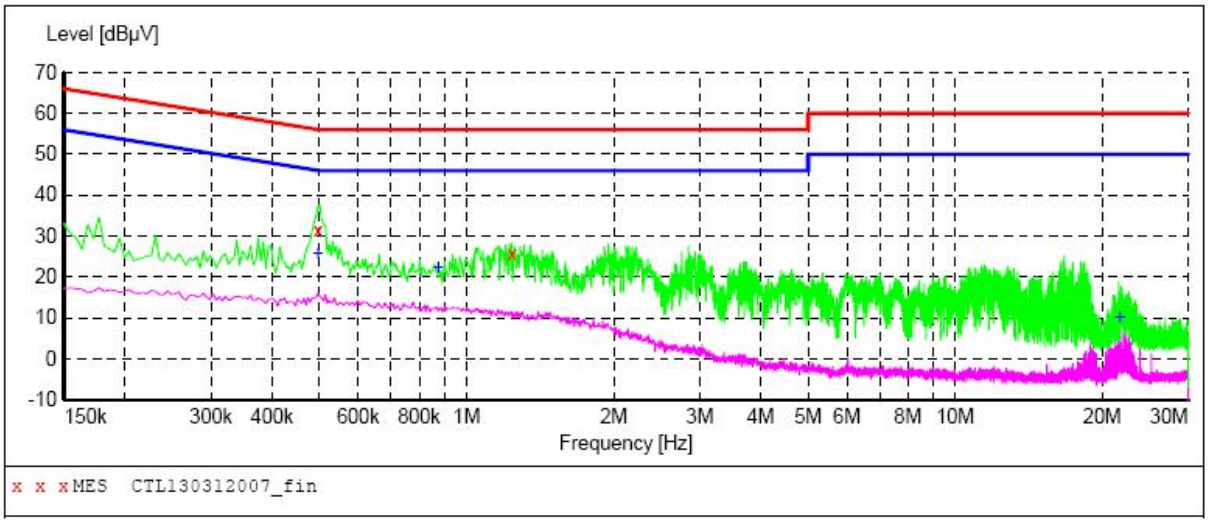
MEASUREMENT RESULT: "CTL130312006_fin2"

3/12/2013 1:42PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.501000	24.00	10.2	46	22.0	AV	N	GND
0.996000	21.70	10.3	46	24.3	AV	N	GND
22.245000	8.60	10.9	50	41.4	AV	N	GND

SCAN TABLE: "Voltage (9K-30M)FIN"

Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL130312007_fin"

3/12/2013 1:44PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.496500	31.50	10.2	56	24.6	QP	L1	GND
1.239000	25.70	10.3	56	30.3	QP	L1	GND

MEASUREMENT RESULT: "CTL130312007_fin2"

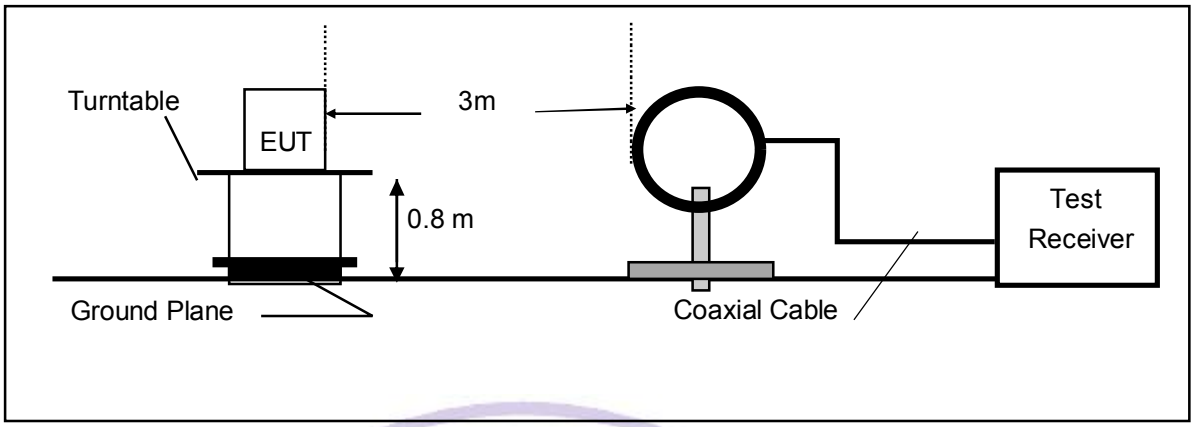
3/12/2013 1:44PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.496500	25.70	10.2	46	20.4	AV	L1	GND
0.874500	22.20	10.2	46	23.8	AV	L1	GND
21.763500	10.20	10.9	50	39.8	AV	L1	GND

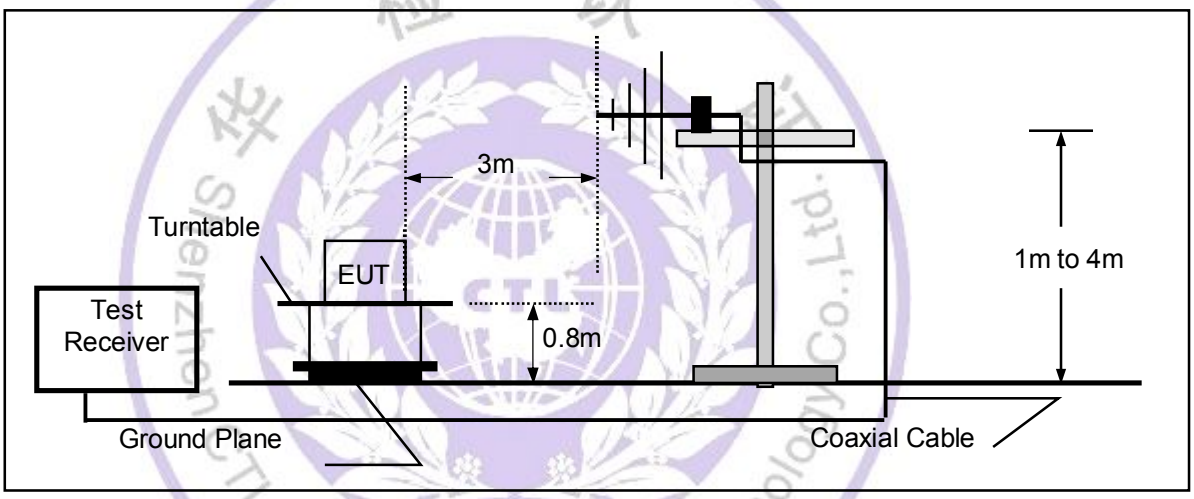
4.2. Radiated Emissions Test

TEST CONFIGURATION

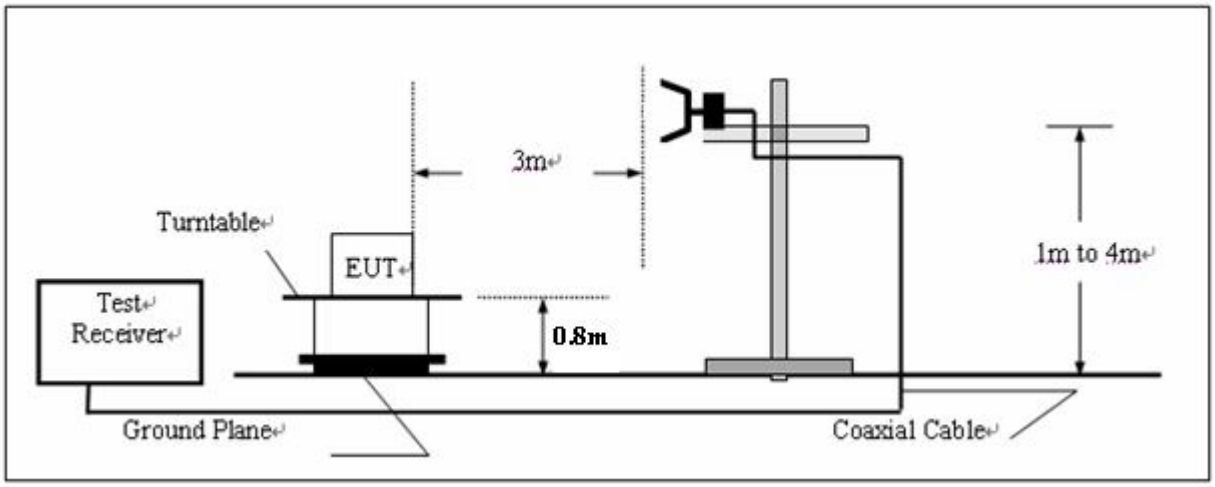
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



LIMIT

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
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

FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

TEST PROCEDURE

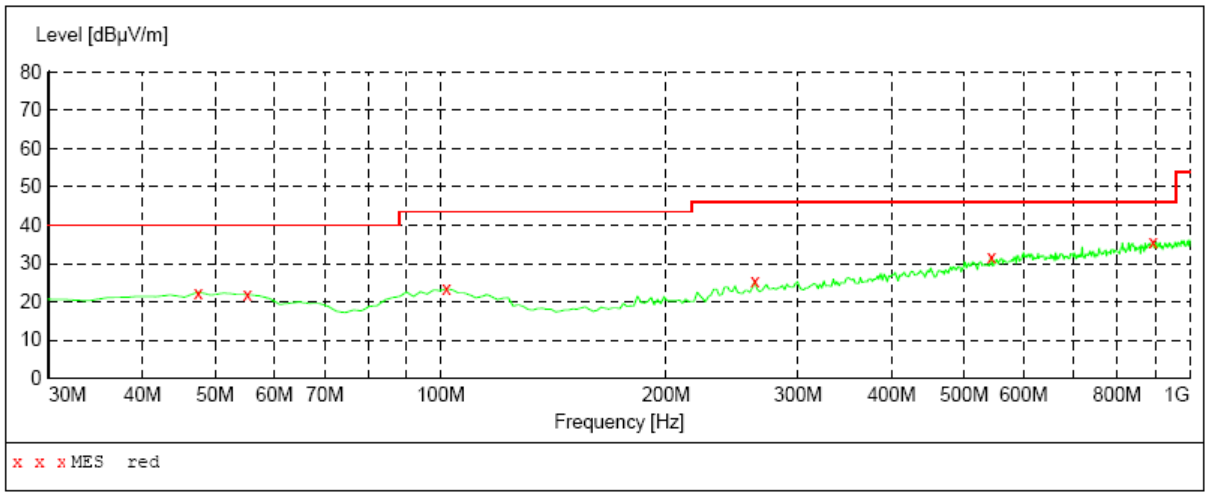
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed on a turn table which is 0.8m above ground plane.
3. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0℃ to 360℃ to acquire the highest emissions from EUT
4. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
5. Repeat above procedures until all frequency measurements have been completed.
6. Based on the Frequency Generator in the device include 16MHz, so the test frequency range from 9KHz to 1GHz per FCC PART 15.33(a) and 1.33(b)(1).

TEST RESULTS

TM 1:

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW

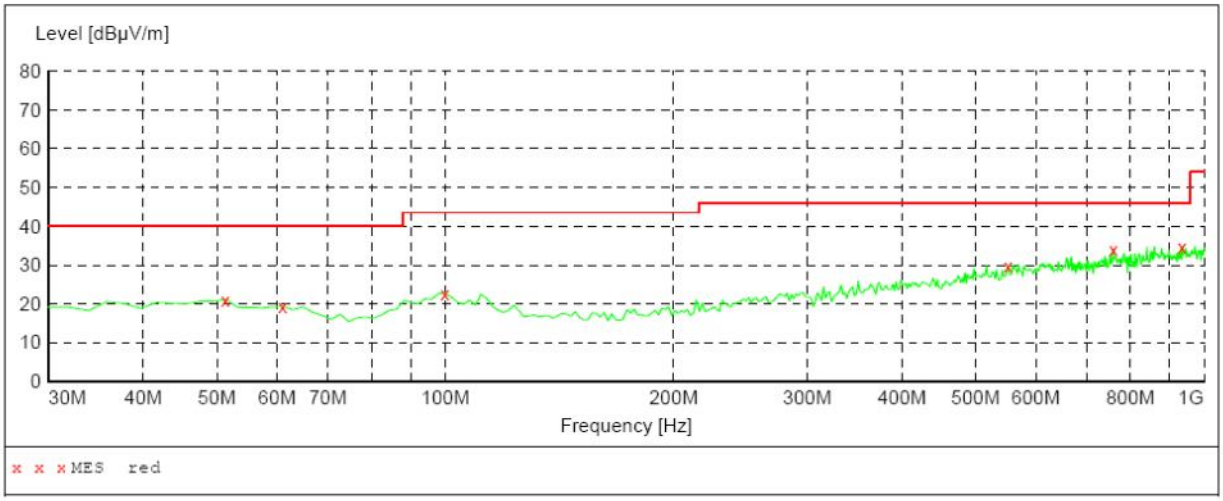


MEASUREMENT RESULT:

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
47.460000	22.50	15.8	40.0	17.5	---	100.0	0.00	HORIZONTAL
55.220000	21.80	15.6	40.0	18.2	---	100.0	0.00	HORIZONTAL
101.780000	23.40	17.3	43.5	20.1	---	100.0	0.00	HORIZONTAL
262.800000	25.30	17.5	46.0	20.7	---	100.0	0.00	HORIZONTAL
544.100000	31.70	24.9	46.0	14.3	---	100.0	0.00	HORIZONTAL
893.300000	35.60	29.1	46.0	10.4	---	100.0	0.00	HORIZONTAL

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW



MEASUREMENT RESULT:

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
51.340000	21.10	15.7	40.0	18.9	---	100.0	0.00	VERTICAL
61.040000	19.40	14.2	40.0	20.6	---	100.0	0.00	VERTICAL
99.840000	22.70	17.5	43.5	20.8	---	100.0	0.00	VERTICAL
551.860000	29.70	25.0	46.0	16.3	---	100.0	0.00	VERTICAL
759.440000	34.10	27.4	46.0	11.9	---	100.0	0.00	VERTICAL
935.980000	34.80	29.5	46.0	11.2	---	100.0	0.00	VERTICAL

Remark：

(1) Measuring frequencies from 9 KHz to the 1GHz, Loop Antenna used below 30MHz. See Section 3.6 table item 20. Radiated emission test from 9KHz to 30MHz, above 1GHz were verified, and no any emission was found except system noise floor.

(2) “F” denotes fundamental frequency; “H” denotes spurious frequency. “E” denotes band edge frequency.

(3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.

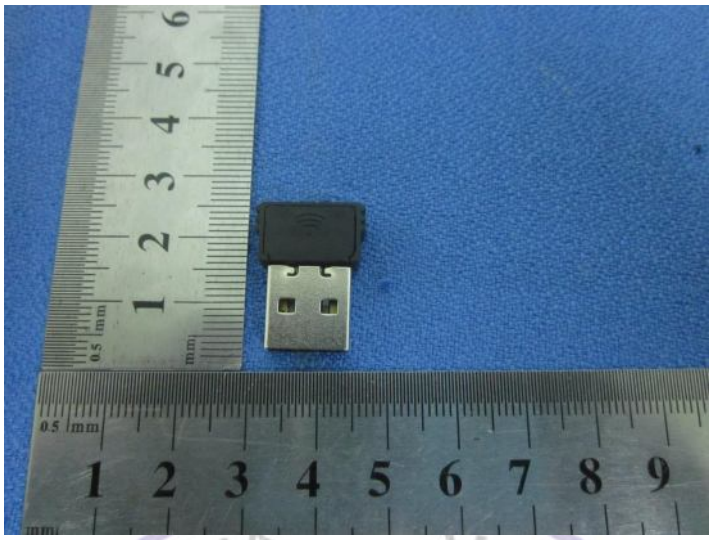
(4) Datas of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured. The test results from 9KHz to 30MHz, above 1GHz are not reported because the emissions levels that are 20dB below the official limit.

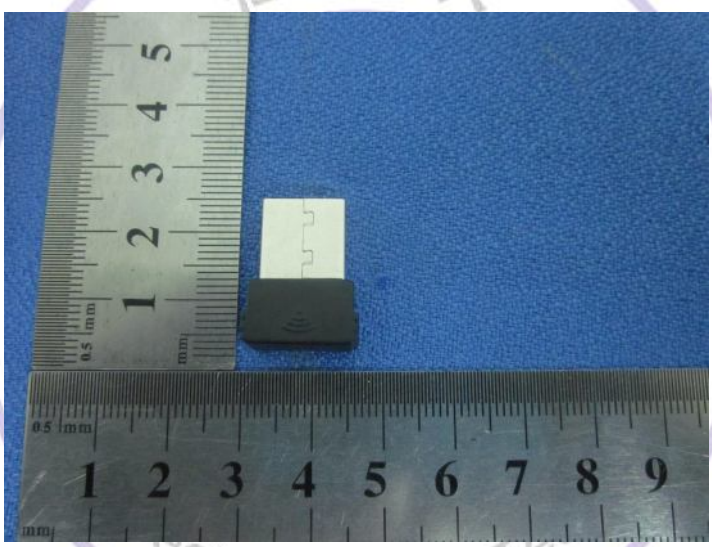
(5) The IF bandwidth of EMI Test Receiver between30MHz to 1GHz was 100KHz. Below 30MHz was 10KHz. Above 1GHz was 1MHz.

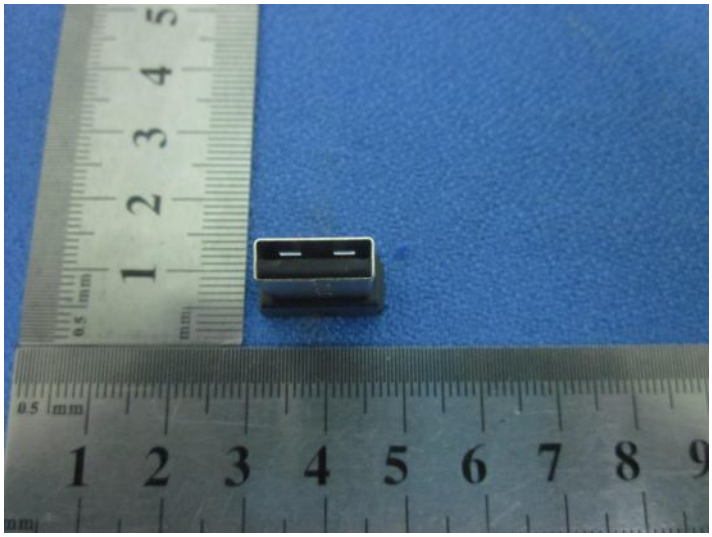
5. Test Setup Photos of the EUT

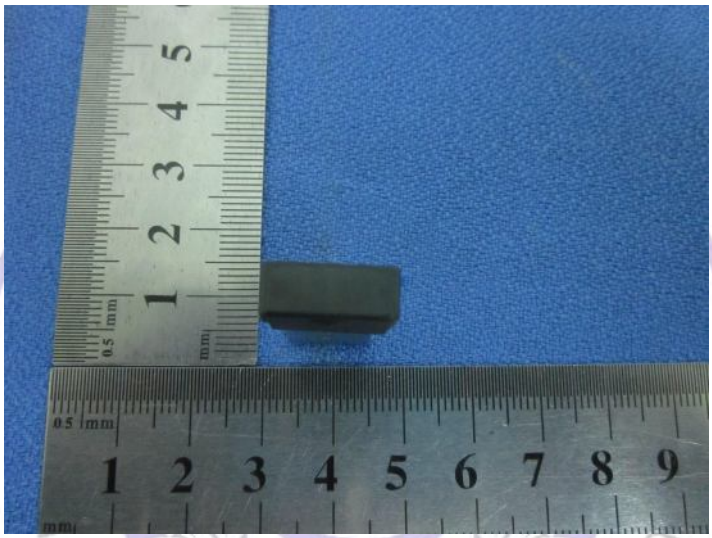
6. External and Internal Photos of the EUT

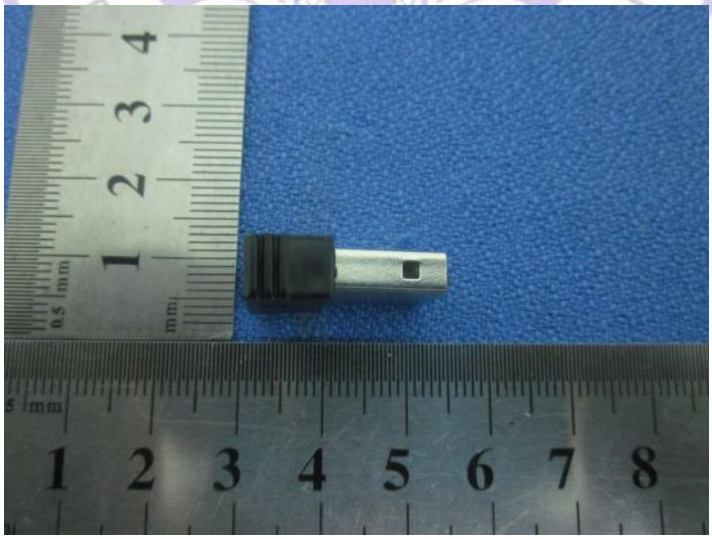
External Photos



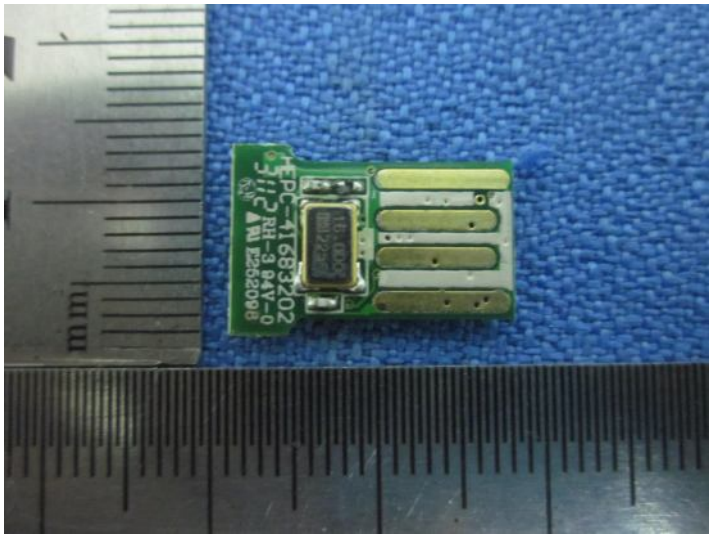


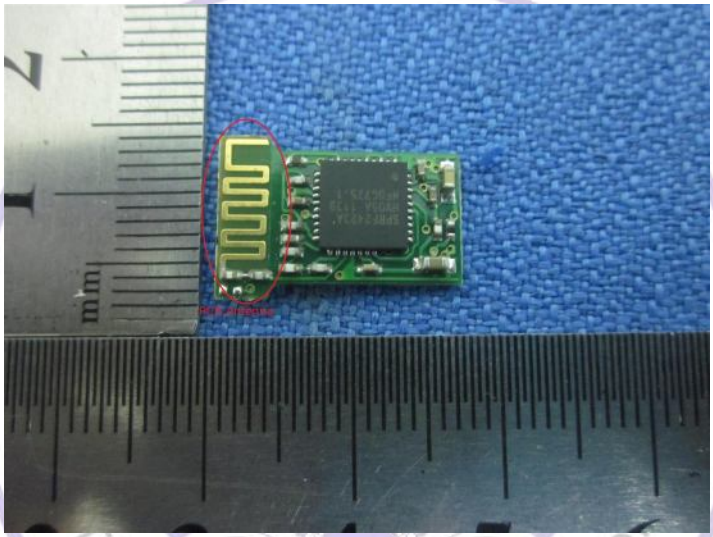






Internal Photos





.....End of Report.....