

## FCC PART 15 SUBPART B TEST REPORT

### 47 CFR FCC Part 15 Subpart B

Report Reference No.: WE10070007

FCC ID: YLDJRB11

Compiled by

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*Jimmy Li*

Date of issue: Jul 14, 2010

Testing Laboratory Name: Shenzhen Huatongwei International Inspection Co., Ltd

Address: Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China

Applicant's name: VSO TECHNOLOGY (DONG GUAN) CO.,LTD.

Address: No.58 LongTou Road, Long Jian Tian, Huang Jiang, Dong Guan, China

#### Test specification:

Standard: 47 CFR FCC Part 15 Subpart B: Unintentional Radiators

TRF Originator: Shenzhen Huatongwei International Inspection CO., Ltd

Master TRF: Dated 2006-06

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Test item description: Receiver

Trade Mark: /

Model/Type reference: JRB11

Listed Models: SKBM2010 SKB1

Result: Positive

**TEST REPORT**

<b>Test Report No. :</b> WE10070007	Jul 14, 2010 Date of issue
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Equipment under Test : Receiver

Model /Type : JRB11

Listed Models : SKBM2010 SKB1

Applicant : VSO TECHNOLOGY (DONG GUAN) CO.,LTD.

Address : No.58 LongTou Road, Long Jian Tian, Huang Jiang, Dong Guan, China

Manufacturer : VSO TECHNOLOGY (DONG GUAN) CO.,LTD.

Address : No.58 LongTou Road, Long Jian Tian, Huang Jiang, Dong Guan, China

<b>Test Result</b> according to the standards on page 4:	<b>Positive</b>
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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:

[47 CFR FCC Rules Part 15 Subpart B](#): Radio Frequency Devices – Unintentional Radiators – Limits and methods of measurement.

## 2. SUMMARY

### 2.1. General Remarks

Date of receipt of test sample : Jul 01, 2010

Testing commenced on : Jul 01, 2010

Testing concluded on : Jul 11, 2010

### 2.2. Equipment Under Test

#### Power supply system utilised

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

DC 5V from USB

---

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

Receiver

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

Serial number: Prototype

### 2.4. EUT operation mode

The EUT has been tested under typical operating condition.

### 2.5. EUT configuration

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

☐ - supplied by the manufacturer

☒ - supplied by the lab

☒ Notebook PC

Manufacturer: DELL

Model No.: PP11L

☒ Printer

Manufacturer: HP

Model No.: Laserjet 6L C3990A

☒ Gigabit Switch

Manufacturer: D-Link

Model No.: DGS-1005D

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

This submittal(s) (test report) is intended for FCC ID: **YLDJRB11** filing to comply with the FCC Part 15, Subpart B Rules.

**2.7. Modifications**

No modifications were implemented to meet testing criteria.

### **3. TEST ENVIRONMENT**

#### **3.1. Address of the test laboratory**

Shenzhen Huatongwei International Inspection Co., Ltd  
Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China  
Phone: 86-755-26715686 Fax: 86-755-26748089

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:

##### **CNAS-Lab Code: L1225**

Shenzhen Huatongwei International Inspection Co., Ltd has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories, Date of Registration: Mar 30, 2009. Valid time is until Mar 29, 2012.

##### **A2LA-Lab Cert. No. 2243.01**

Shenzhen Huatongwei International Inspection Co., Ltd, EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is until Sept 30, 2011.

##### **FCC-Registration No.: 662850**

Shenzhen Huatongwei International Inspection Co., 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 662850, Renewal date Jun 01, 2009.

##### **IC-Registration No.: 5377**

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377 on November Feb 13, 2009. Valid time is until Feb 13, 2011.

##### **ACA**

Shenzhen Huatongwei International Inspection Co., Ltd, EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

##### **NEMKO-Aut. No.: ELA125**

Shenzhen Huatongwei International Inspection Co., Ltd has been assessed the quality assurance system, the testing facilities, qualifications and testing practices of the relevant parts of the organization. The quality assurance system of the Laboratory has been validated against ISO/IEC 17025:2005 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA-10, the Authorization is valid through July 07, 2011.

##### **VCCI**

The 3m Semi-anechoic chamber (12.2m×7.95m×6.7m) and Shielded Room (8m×4m×3m) of Shenzhen Huatongwei International Inspection Co., Ltd has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2484. Date of Registration: December 20, 2006. Valid time is until December 20, 2012.

Main Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-2726. Date of Registration: December 20, 2006. Valid time is until December 19, 2012.

## DNV

Shenzhen Huatongwei International Inspection Co Ltd has been found to comply with the requirements of DNV towards subcontractor of EMC and safety testing services in conjunction with the EMC and Low voltage Directives and in the voluntary field. The acceptance is based on a formal quality Audit and follow-ups according to relevant parts of ISO/IEC Guide 17025(2005), in accordance with the requirements of the DNV Laboratory Quality Manual towards subcontractors. Valid time is until Jul 09, 2010.

### 3.3. Environmental conditions

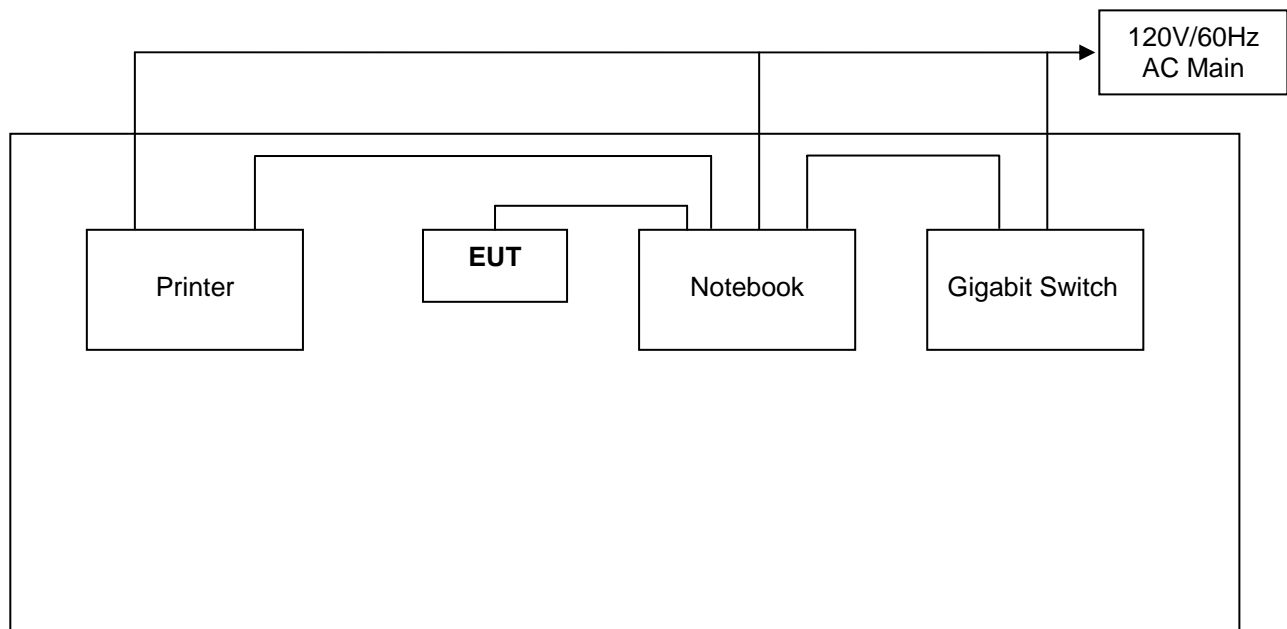
During the measurement the environmental conditions were within the listed ranges:

Temperature: 15-35 ° C

Humidity: 30-60 %

Atmospheric pressure: 950-1050mbar

### 3.4. Configuration of Tested System



#### Equipment Used in Tested System

No.	Equipment	Manufacturer	Model No.	Serial No.
1	Notebook PC	DELL	PP11L	H5917A01
2	Printer	HP	Laserjet 6L C3990A	JPZP024664
3	Gigabit Switch	D-Link	DGS-1005D	DRJP576000511



### 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 Shenzhen Huatongwei International Inspection Co., 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 Shenzhen Huatongwei laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.22dB	(1)
Radiated Emission	1~12.75GHz	4.35dB	(1)
Conducted Disturbance	0.15~30MHz	3.29dB	(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

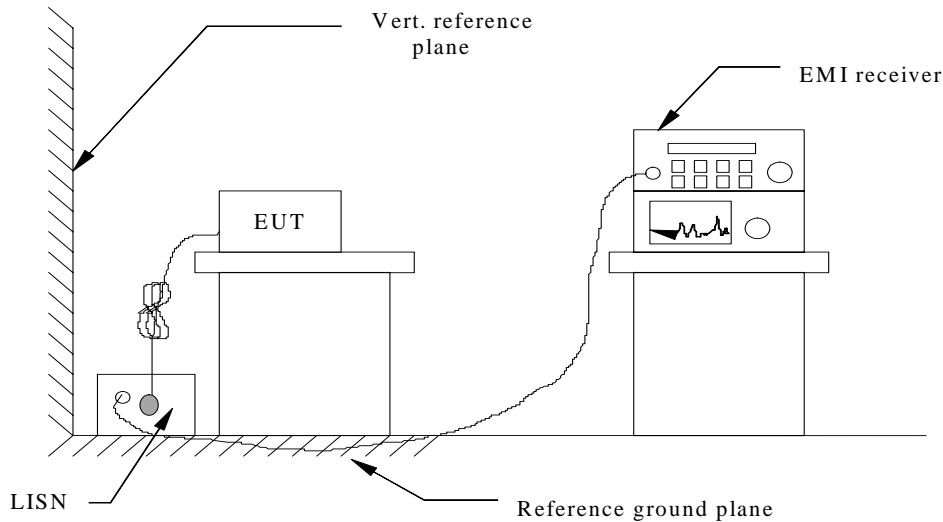
AC Power Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESCI	100106	2009/11
2	ARTIFICIAL MAINS	ROHDE & SCHWARZ	ESH2-Z5	100028	2009/11
3	PULSE LIMITER	ROHDE & SCHWARZ	ESHSZ2	100044	2009/11
4	EMI TEST SOFTWARE	ROHDE & SCHWARZ	ES-K1 1.71	N/A	2009/11

Radiated Emissions					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ULTRA-BROADBAND ANTENNA	ROHDE & SCHWARZ	HL562	100015	2010/05
2	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	100009	2009/11
3	RF TEST PANEL	ROHDE & SCHWARZ	TS / RSP	335015/ 0017	2009/11
4	TURNTABLE	ETS	2088	2149	2009/11
5	ANTENNA MAST	ETS	2075	2346	2009/11
6	EMI TEST SOFTWARE	ROHDE & SCHWARZ	ESK1	N/A	2009/11

## 4. TEST CONDITIONS AND RESULTS

### 4.1. Conducted Emissions Test

#### TEST CONFIGURATION



#### TEST PROCEDURE

- 1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4.
- 2 Support equipment, if needed, was placed as per ANSI C63.4.
- 3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- 4 The EUT received DC power from the PC, and the PC received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5 All support equipments received AC power from a second LISN, if any.
- 6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
- 8 During the above scans, the emissions were maximized by cable manipulation.

#### Conducted Power Line Emission Limit

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

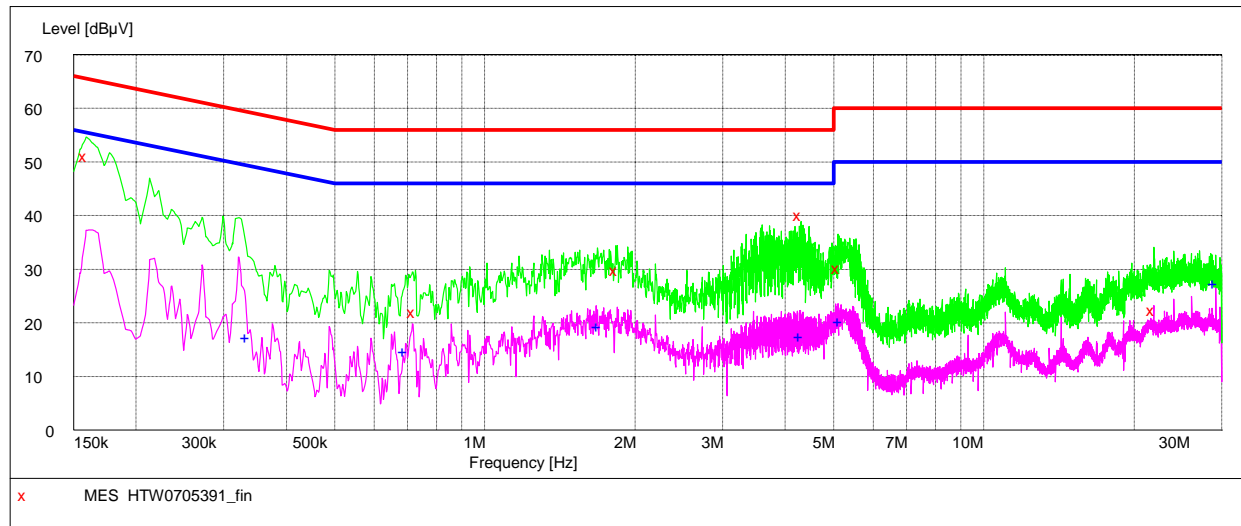
\* Decreasing linearly with the logarithm of the frequency

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

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

Short Description:

150K-30M Voltage

**MEASUREMENT RESULT: "HTW0705391\_fin"**

7/5/2010 10:58PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.159000	51.20	10.1	66	14.3	QP	L1	GND
0.721500	22.10	10.1	56	33.9	QP	L1	GND
1.837500	29.90	10.2	56	26.1	QP	L1	GND
4.294500	40.20	10.2	56	15.8	QP	L1	GND
5.113500	30.40	10.2	60	29.6	QP	L1	GND
21.939000	22.60	10.9	60	37.4	QP	L1	GND

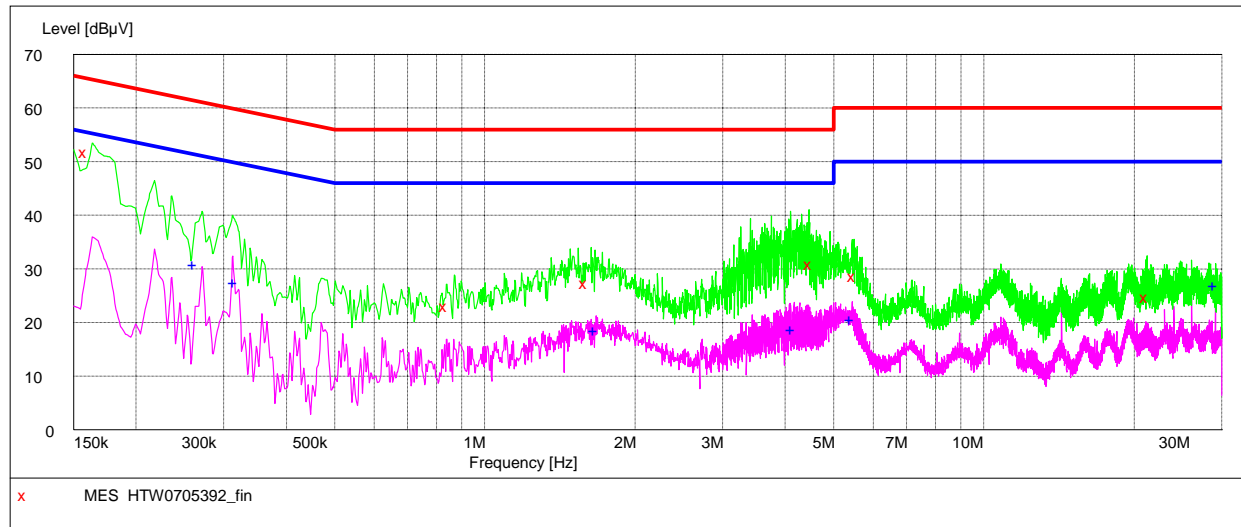
**MEASUREMENT RESULT: "HTW0705391\_fin2"**

7/5/2010 10:58PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.334500	17.50	10.1	49	31.8	AV	L1	GND
0.694500	14.90	10.1	46	31.1	AV	L1	GND
1.698000	19.60	10.2	46	26.4	AV	L1	GND
4.308000	17.70	10.2	46	28.3	AV	L1	GND
5.167500	20.40	10.2	50	29.6	AV	L1	GND
29.184000	27.50	11.1	50	22.5	AV	L1	GND

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

Short Description: 150K-30M Voltage

**MEASUREMENT RESULT: "HTW0705392\_fin"**

7/5/2010 11:02PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.159000	52.00	10.1	66	13.5	QP	N	GND
0.838500	23.20	10.1	56	32.8	QP	N	GND
1.599000	27.60	10.2	56	28.4	QP	N	GND
4.510500	31.00	10.2	56	25.0	QP	N	GND
5.509500	28.80	10.2	60	31.2	QP	N	GND
21.286500	25.00	10.8	60	35.0	QP	N	GND

**MEASUREMENT RESULT: "HTW0705392\_fin2"**

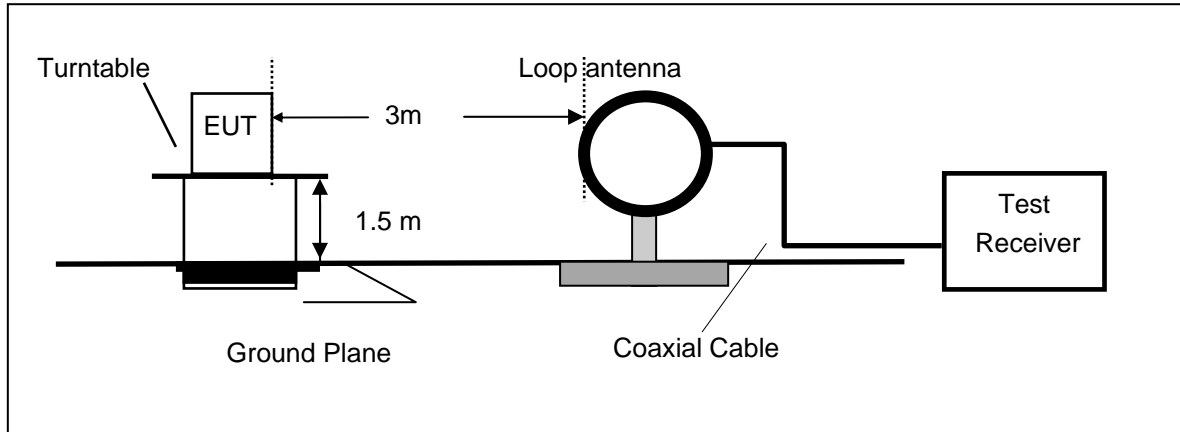
7/5/2010 11:02PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.262500	31.00	10.1	51	20.4	AV	N	GND
0.316500	27.70	10.1	50	22.1	AV	N	GND
1.666500	18.80	10.2	46	27.2	AV	N	GND
4.150500	18.90	10.2	46	27.1	AV	N	GND
5.451000	20.80	10.2	50	29.2	AV	N	GND
29.184000	27.20	11.1	50	22.8	AV	N	GND

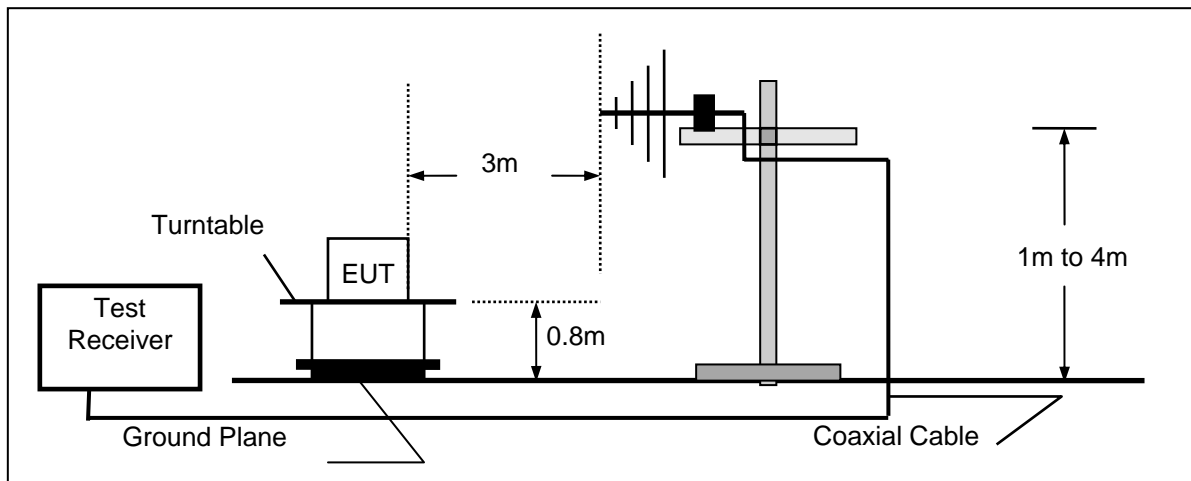
## 4.2. Radiated Emission Test

### TEST CONFIGURATION

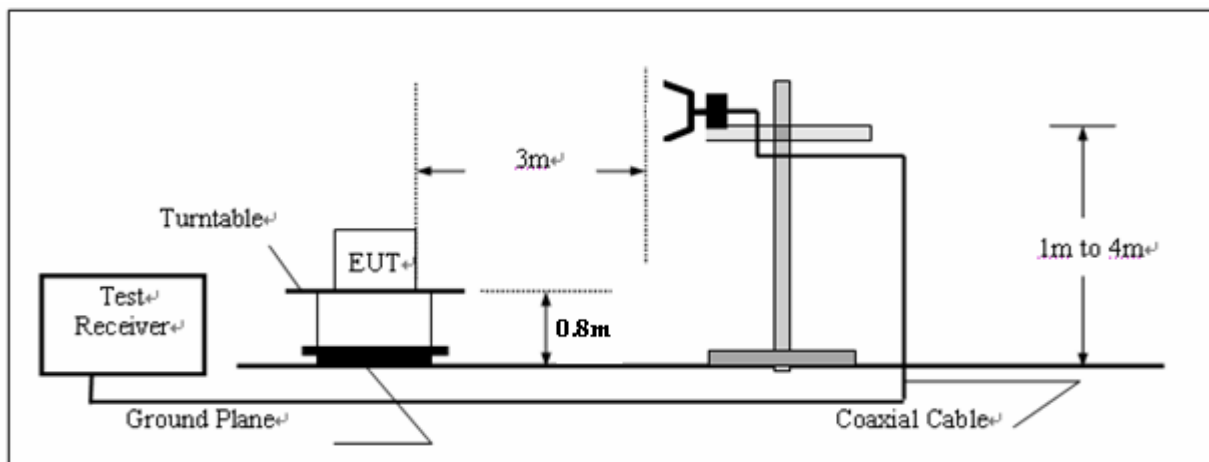
(A) Radiated Emission Test Set-Up, Frequency below 30MHz



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



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



**TEST PROCEDURE**

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

**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	

**RADIATION LIMIT**

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency (MHz)	Distance (Meters)	Radiated (dBµV/m)	Radiated (µV/m)
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

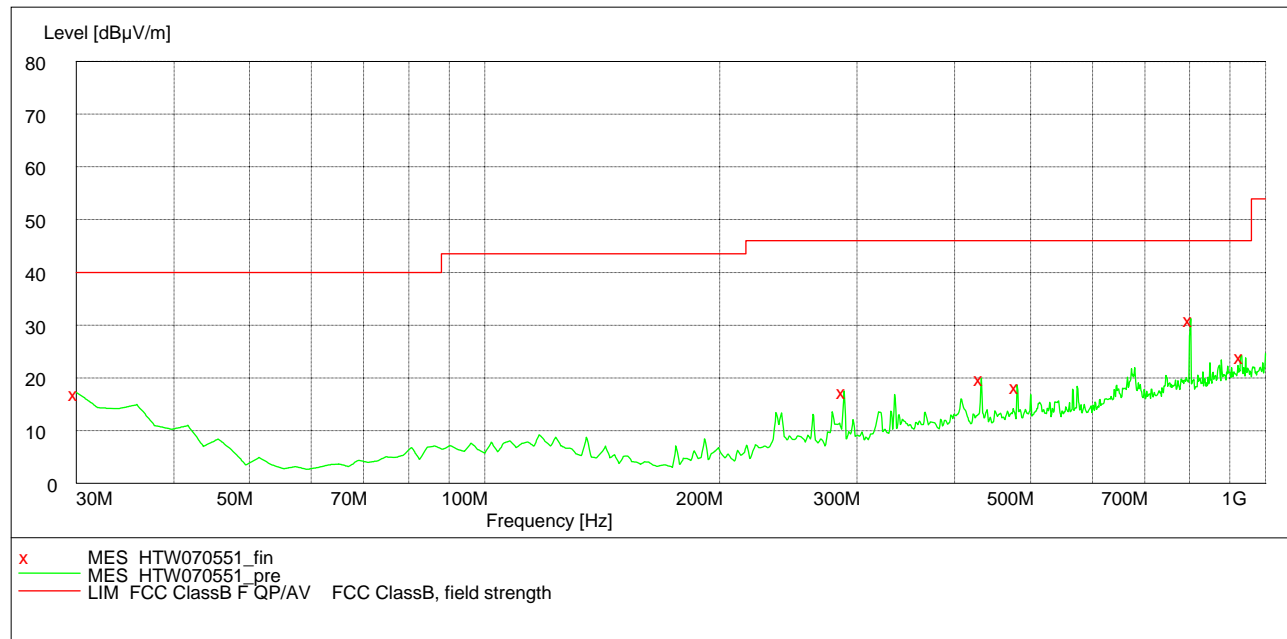
For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

**TEST RESULTS**

Operation Mode: Normal Operation      Temperature: 20 °C    Humidity: 70 % RH      Polarity: Ver. / Hor.

**SCAN TABLE: "test Field(30M-1G)QP"**

Short Description:		Field Strength(30M-1G)				
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width				
30.0 MHz	1.0 GHz	60.0 kHz	QuasiPeak	1.0 s	120 kHz	HL562 10

**MEASUREMENT RESULT: "HTW070551\_fin"**

7/5/2010 10:37PM

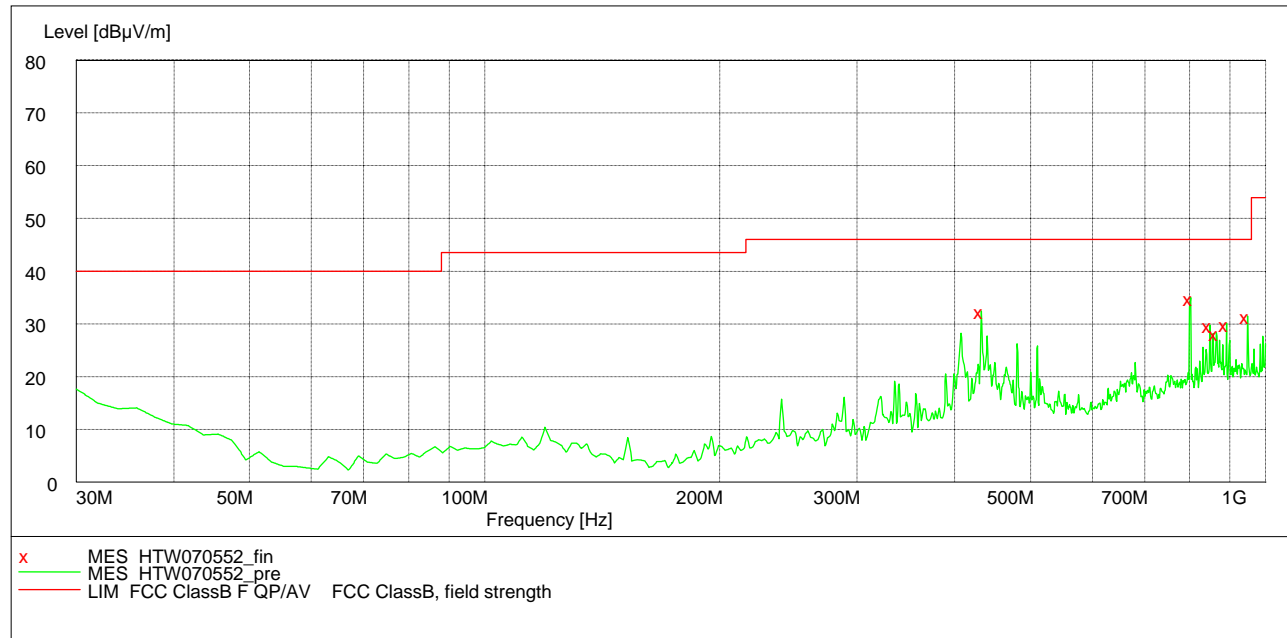
Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	17.20	-10.7	40.0	22.8	QP	100.0	334.00	HORIZONTAL
288.537074	17.50	-17.7	46.0	28.5	QP	100.0	135.00	HORIZONTAL
432.384770	20.00	-15.2	46.0	26.0	QP	100.0	202.00	HORIZONTAL
480.981964	18.60	-14.0	46.0	27.4	QP	300.0	227.00	HORIZONTAL
801.723447	31.20	-7.5	46.0	14.8	QP	100.0	202.00	HORIZONTAL
931.963928	24.20	-4.5	46.0	21.8	QP	300.0	360.00	HORIZONTAL

**Remark:**

- (1) Measuring frequencies from 30 MHz to the 1 GHz.
- (2) \* 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.
- (3) Data 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.
- (4) The IF bandwidth of EMI Test Receiver was 120KHz for measuring from 30 MHz to 1 GHz and 1 MHz for measuring above 1 GHz

**SCAN TABLE: "test Field(30M-1G)QP"**

Short Description:			Field Strength(30M-1G)			
Start	Stop	Step	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
30.0 MHz	1.0 GHz	60.0 kHz	QuasiPeak	1.0 s	120 kHz	HL562 10

**MEASUREMENT RESULT: "HTW070552\_fin"**

7/5/2010 10:39PM

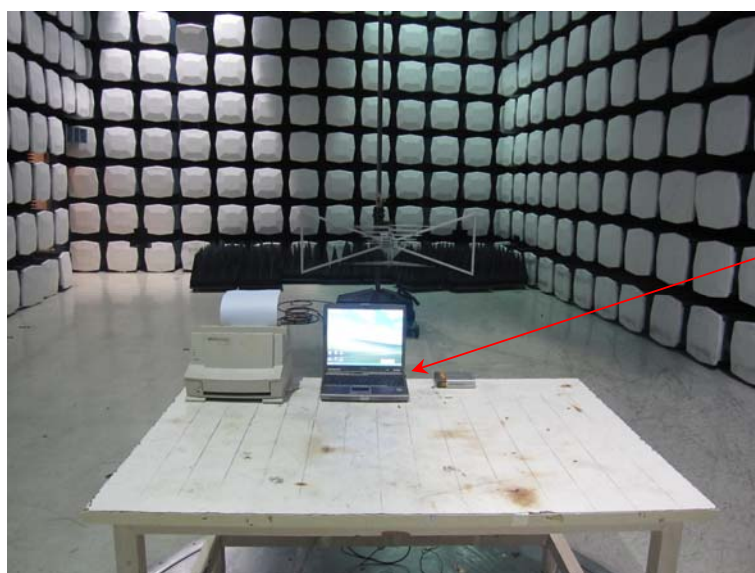
Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
432.384770	32.50	-15.2	46.0	13.5	QP	100.0	100.00	VERTICAL
801.723447	35.00	-7.5	46.0	11.0	QP	100.0	235.00	VERTICAL
848.376754	29.80	-7.4	46.0	16.2	QP	100.0	332.00	VERTICAL
865.871743	28.30	-6.9	46.0	17.7	QP	100.0	332.00	VERTICAL
891.142285	30.10	-5.7	46.0	15.9	QP	100.0	359.00	VERTICAL
949.458918	31.50	-4.5	46.0	14.5	QP	100.0	359.00	VERTICAL

**Remark:**

- (1) Measuring frequencies from 30 MHz to the 1 GHz.
- (2) \* 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.
- (3) Data 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.
- (4) The IF bandwidth of EMI Test Receiver was 120KHz for measuring from 30 MHz to 1 GHz and 1 MHz for measuring above 1 GHz

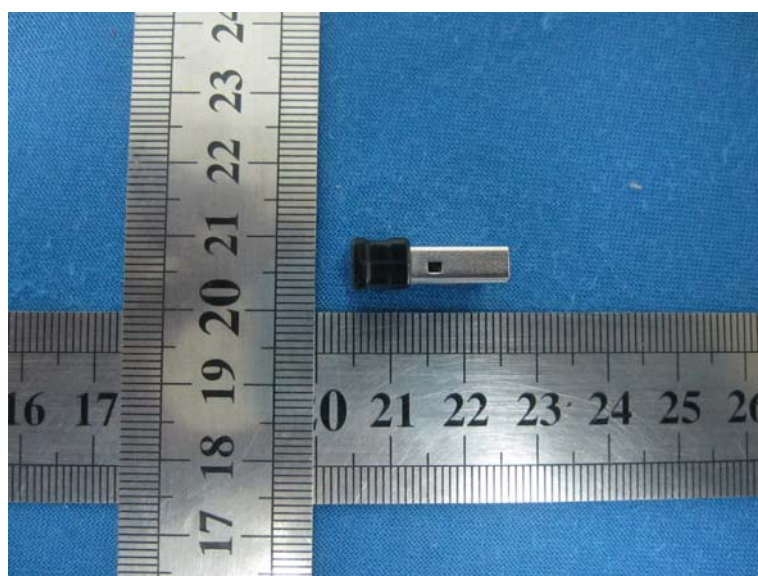
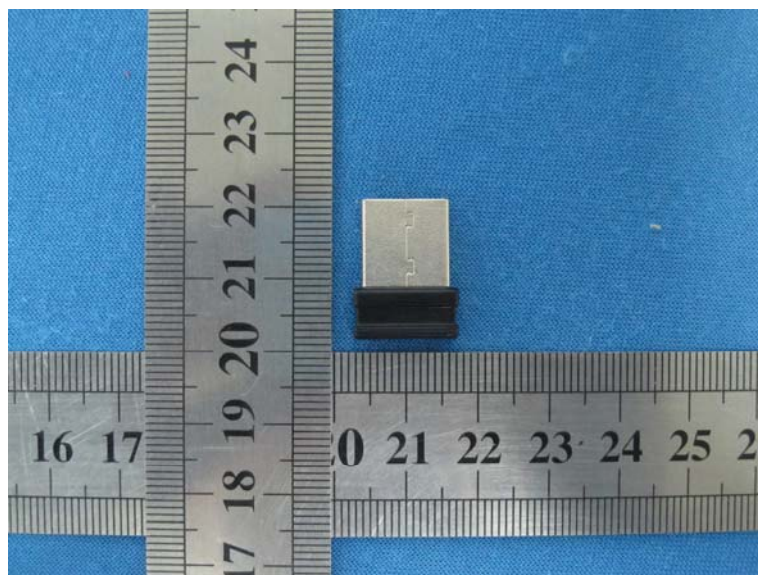


## 5. Test Setup Photos of the EUT

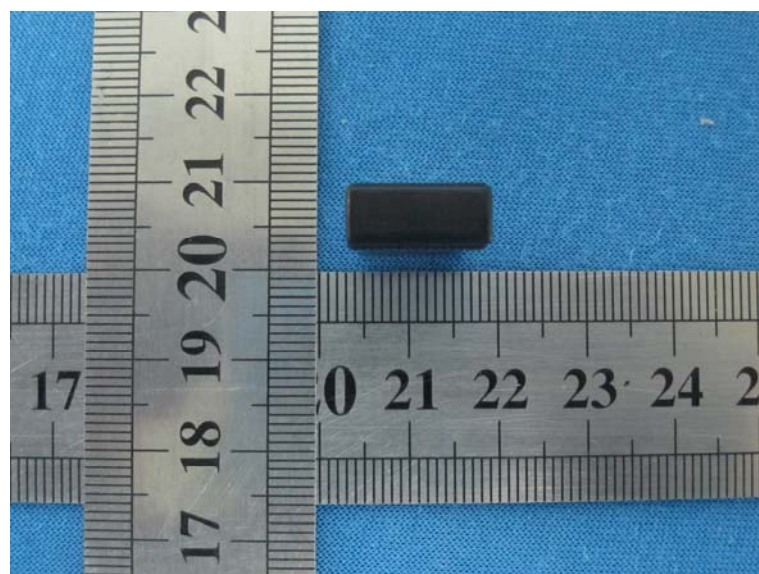
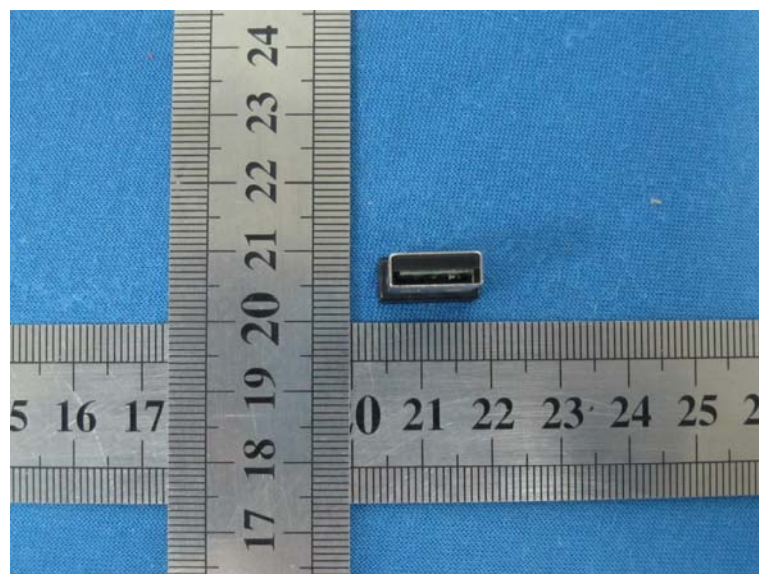


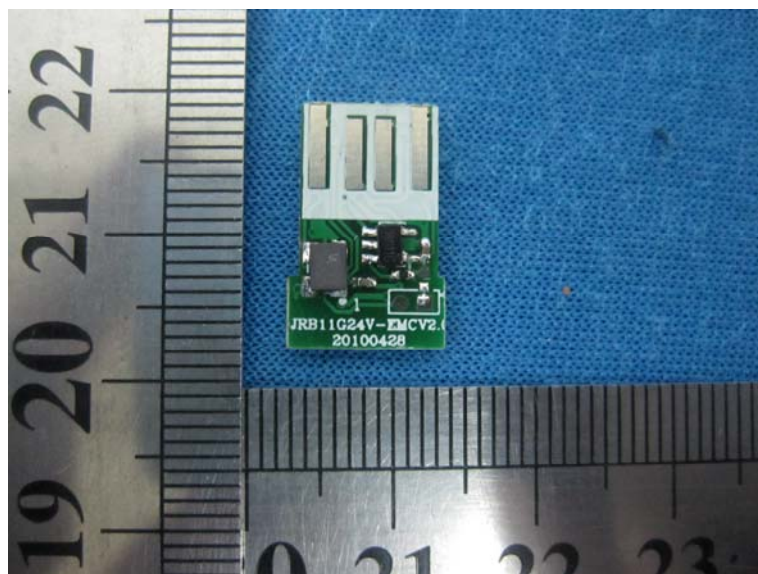
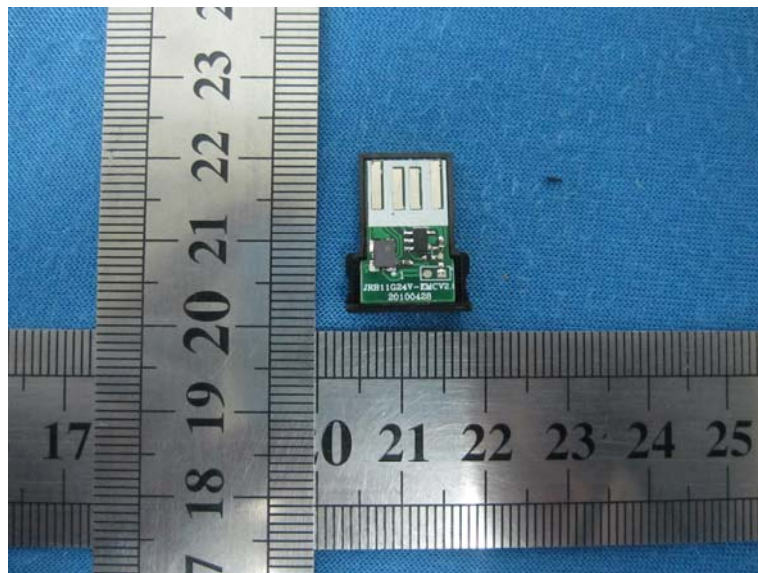
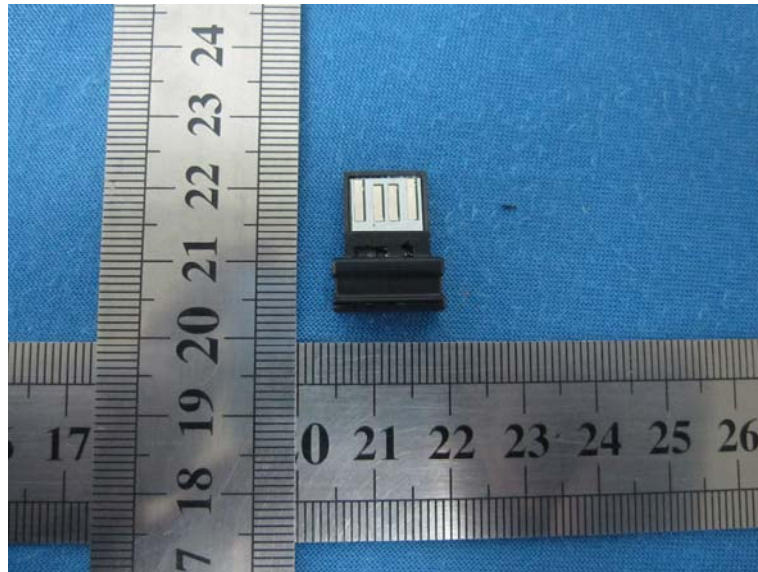
## 6. External and Internal Photos of the EUT

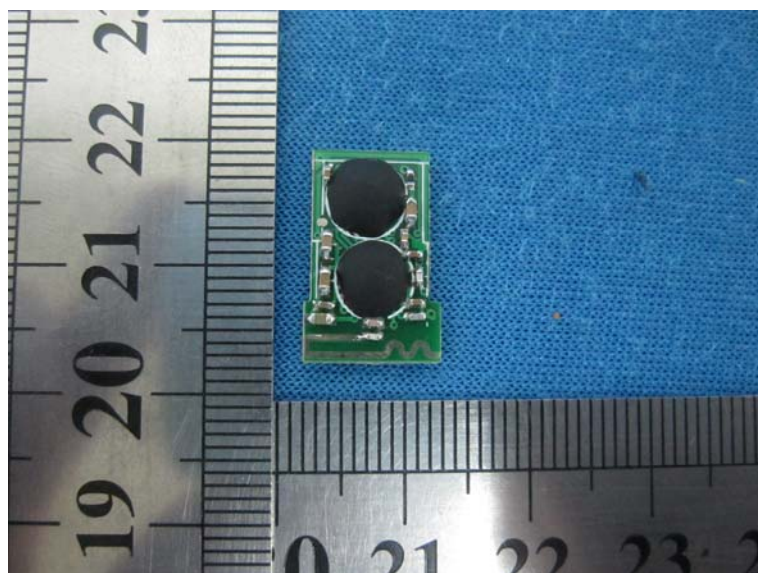
### External Photos







Internal Photos



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