

FCC PART 15 SUBPART C TEST REPORT FCC PART 15.249
&
IC TEST REPORT RSS-210

Report Reference No.....: A1211086019-2

FCC ID.....: YH5-850S

IC.....: 8012A-850S

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Date of issue.....: Nov 20, 2012

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Testing Laboratory Name: DTT Services Co.,Ltd

Address: 1F,2 Block,Jiaquan Building,Guanlan High-tech Park,Bao'an District, Shenzhen,Guangdong,China. 518110

Applicant's name.....: Kobian Canada INC.

Address: 560 Denison Street, Unit 5,Markham, Ontario, L3R 2M8,Canada

Test specification:

Standard: **FCC Part 15.249: Operation within the bands 902–928 MHz, 2400–2483.5 MHz, 5725–5875 MHz, and 24.0–24.25 GHz**

IC RSS-210

IC RSS-Gen issue 3

TRF Originator.....: Shenzhen CTL Electron Technology Co., Ltd.

Master TRF.....: Dated 2012-06

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Test item description: Wireless universal dock for iphone/ipod

Trade Mark: /

Manufacturer: E-CORE TECHNOLOGY(CHINA) CO., LTD.

Model/Type reference.....: HS-IPWSP850S

Listed Models: /

Ratings: DC 7.5V/2.4A for Charge Dockbase

DC 3.7 V/1A for Speaker

Operation Frequency: 2403-2478MHz

Modulation: GFSK

Result.....: **Positive**

TEST REPORT

Test Report No. : A1211086019-2	Nov 20, 2012 Date of issue
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Equipment under Test : Wireless universal dock for iphone/ipod

Model /Type : HS-IPWSP850S

Listed Models : /

Applicant : **Kobian Canada INC.**

Address : 560 Denison Street, Unit 5,Markham, Ontario, L3R
2M8,Canada

Manufacturer : **E-CORE TECHNOLOGY(CHINA) CO., LTD.**

Address : 3rd Building,Weidonglong Industry, Heping East Road,
LongHua,Shenzhen, China

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

FCC Rules Part 15.249: Operation within the bands 902–928 MHz, 2400–2483.5 MHz, 5725–5875 MHz, and 24.0–24.25 GHz.

ANSI C63.10-2009: American National Standard for Testing Unlicensed Wireless Devices

RSS-210 Issue 8 December 2010 : Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment

RSS-Gen Issue 3 December 2010 :General Requirements and Information for the Certification of Radio Apparatus

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	Nov 12, 2012
Testing commenced on	:	Nov 12, 2012
Testing concluded on	:	Sep 20, 2012

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage	:	<input checked="" type="radio"/> 120V / 60 Hz	<input type="radio"/> 115V / 60Hz
		<input type="radio"/> 12 V DC	<input type="radio"/> 24 V DC
		<input checked="" type="radio"/> Other (specified in blank below)	

DC 7.5V/2.4A for Charge Dockbase, DC 3.7V from Battery for Speaker

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

2.4G Wireless universal dock for iphone/ipod.

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.

There are 16 channels of EUT, and the test carried out

at the lowest channel, middle channel and highest channel .

Test Channel	Frequency (MHz)	Test Channel	Frequency (MHz)
1	2403	9	2443
2	2408	10	2448
3	2413	11	2453
4	2418	12	2458
5	2423	13	2463
6	2428	14	2468
7	2433	15	2473
8	2438	16	2478

2.5. EUT configuration

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

☒ - supplied by the manufacturer

☐ - supplied by the lab

●	Power Adaptor	Model No. :	PSEC075240U W
○	Notebook PC	Manufacturer :	DELL
		Model No. :	PP26L

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

This submittal(s) (test report) is intended for **FCC ID:YH5-850S, IC: 8012A-850S** filing to comply with Section 15.249 of the FCC Part 15, Subpart C Rules and RSS-210 Rules.

2.7. Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

DTT Services Co.,Ltd
1F,2 Block,Jiaquan Building,Guanlan High-tech Park,Bao'an District, Shenzhen,Guangdong,China.
518110

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.: 9783A

The 3m alternate test site of DTT Services Co.,Ltd EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 9783A on Aug, 2011.

FCC-Registration No.: 214666

DTT Services 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 214666, Sep 19, 2011.

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

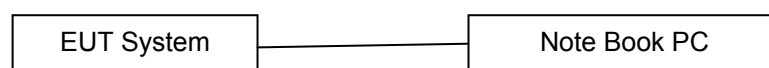


Table 2-1 Equipment Used in Tested System

No.	Product	Manufacturer	Model No.	FCC ID
1	Notebook PC	DELL	PP26L	-----

3.5. Test Description

FCC PART 15 15.247 & RSS-210 & RSS-Gen			
FCC Part 15.207	RSS-Gen	AC Power Conducted Emission	PASS
FCC Part 15.215(C)	RSS-210 A2.9	20dB Bandwidth	PASS
FCC Part 15.249(a) /15.249(c)	RSS-Gen	Radiated Emissions	PASS
FCC Part 15.249(d)	RSS-210 A2.9	Band Edge Compliance of RF Emission	PASS
FCC Part 15.203/15.249 (b)	RSS-Gen	Antenna Requirement	PASS
N/A	RSS-Gen	Receiver Spurious Emissions	PASS

Remark: The measurement uncertainty is not included in the test result.

3.6. 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 TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics;Part 1" and TR-100028-02 "Electromagnetic compatibilityand Radio spectrum Matters (ERM);Uncertainties in the measurementof mobile radio equipment characteristics;Part 2 " and is documented in the DTT Services 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.

Test Items	Measurement Uncertainty	Notes
Frequency stability	150 Hz	(1)
Transmitter power conducted	0.57 dB	(1)
Transmitter power Radiated	2.20 dB	(1)
Conducted spurious emission 9KHz-12.75 GHz	1.60 dB	(1)
Radiated spurious emission 9KHz-12.75 GHz	2.20 dB	(1)
Conducted Emission 9KHz-30MHz	3.39 dB	(1)
Radiated Emission 30~1000MHz	4.24 dB	(1)
Radiated Emissio 1~18GHz	5.16 dB	(1)
Radiated Emissio 18-40GHz	5.54 dB	(1)
Occupied Bandwidth	-----	(1)
Emission Mask	-----	(1)
Modulation Characteristic	-----	(1)
Transmitter Frequency Behavior	-----	(1)

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

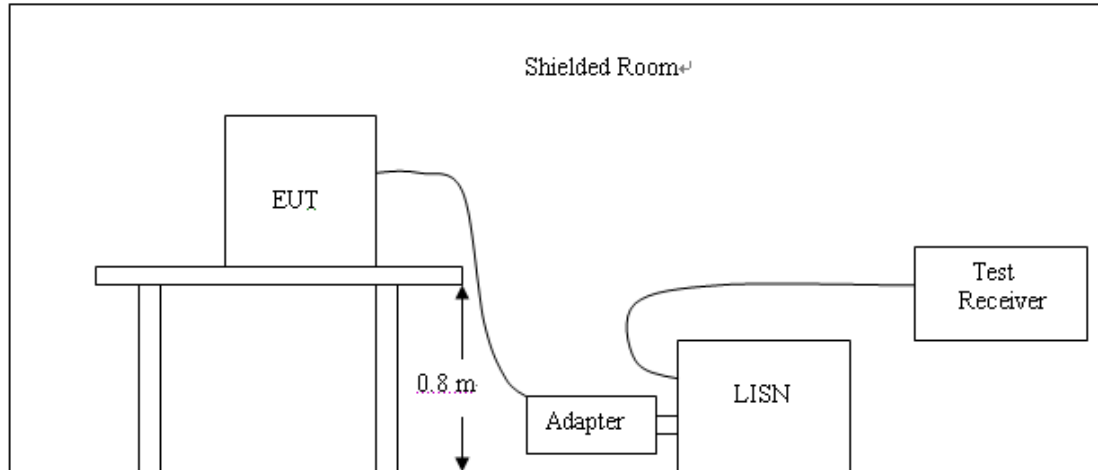
3.7. Equipments Used during the Test

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Low Noise Pre Amplifier	HP	8447D	1937A03050	2012/7/12
2	Low Noise Pre Amplifier	EMCI	EMC051835	980075	2012/7/12
3	Test Receiver	R&S	ESCI	100920	2012/7/12
4	Test Receiver	R&S	ESCI	100658	2012/7/12
5	Bilog Antenna	Schwarzbeck	CBL6141A	4180	2012/7/12
6	Horn Antenna	Schwarzbeck	BBHA 9120D	647	2012/7/12
7	Horn Antenna	Schwarzbeck	BBHA 9120D	648	2012/7/12
8	Analyzer Spectrum	HP	8653E		2012/7/12
9	Bilog Antenna	R&S	HL562	100384	2012/7/12
10	Low Noise Pre Amplifier	Agilent	310N	186194	2012/7/12
11	LISN	R&S	ENV216	101112	2012/7/12
12	LISN	R&S	ENV216	101113	2012/7/12
13	Loop Antenna	Rohde&Schwarz	HFH2-Z2	100020	2012/7/12
14	Amplifer	Compliance Direction systems	PAP-1G-40	57	2012/7/12
15	Broad-Band Antenna Horn	Schwarzbeck	BBHA9170	495	2012/7/12

4. TEST CONDITIONS AND RESULTS

4.1. AC Power Conducted Emission

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 C63.10-2009.
- 2 Support equipment, if needed, was placed as per ANSI C63.10-2009
- 3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10-2009
- 4 The EUT received DC5V power from the adapter, the adapter 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.

AC Power Conducted Emission Limit

For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following :

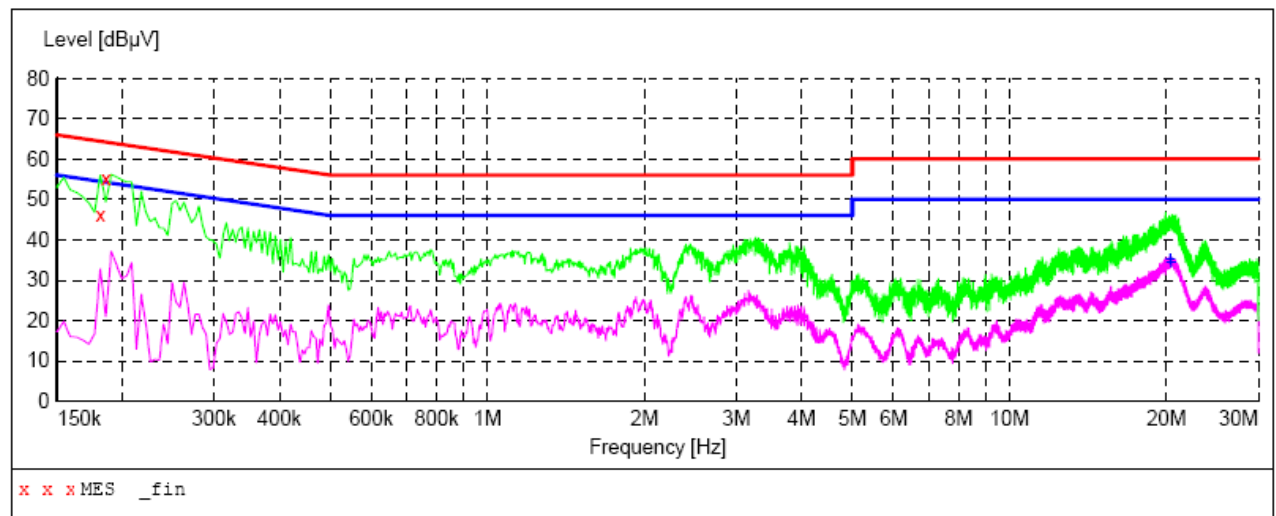
Frequency (MHz)	Maximum RF Line Voltage (dBµV)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

TEST RESULTS

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

Short Description: 150K-30M Voltage

**MEASUREMENT RESULT:**

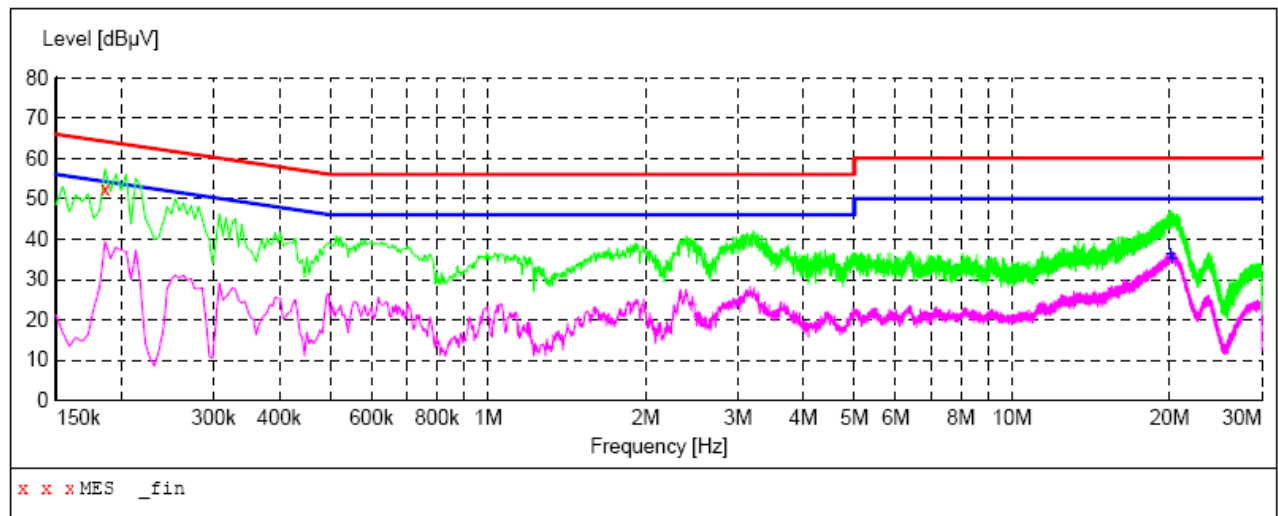
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.181500	46.40	9.9	64	18.0	PK	N	GND
0.186000	55.20	9.9	64	9.0	PK	N	GND

MEASUREMENT RESULT:

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
20.355000	35.30	10.9	50	14.7	AV	N	GND
20.386500	34.40	11.0	50	15.6	AV	N	GND

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

Short Description: 150K-30M Voltage

**MEASUREMENT RESULT:**

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.186000	52.30	9.9	64	11.9	PK	L1	GND

MEASUREMENT RESULT:

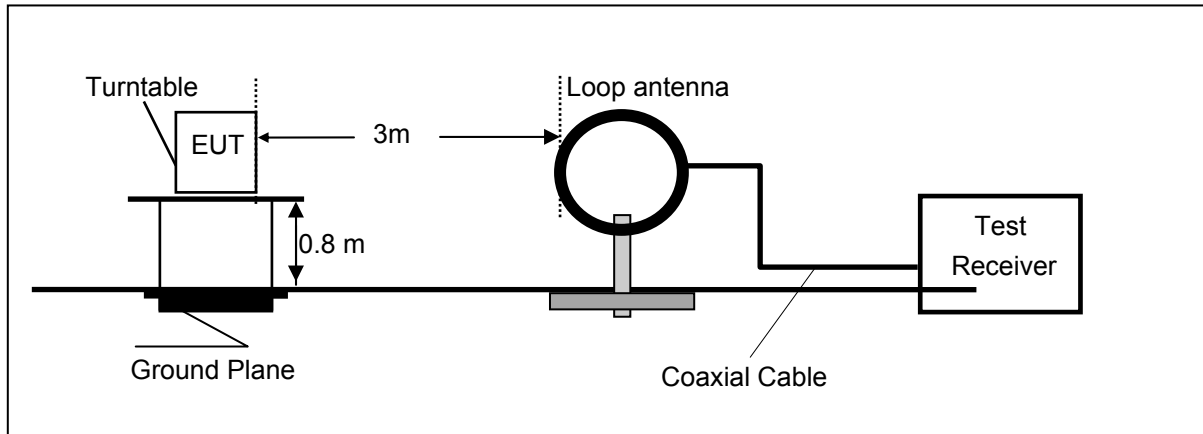
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
20.107500	36.60	10.9	50	13.4	AV	L1	GND
20.242500	35.40	10.9	50	14.6	AV	L1	GND

4.2. Radiated Emission

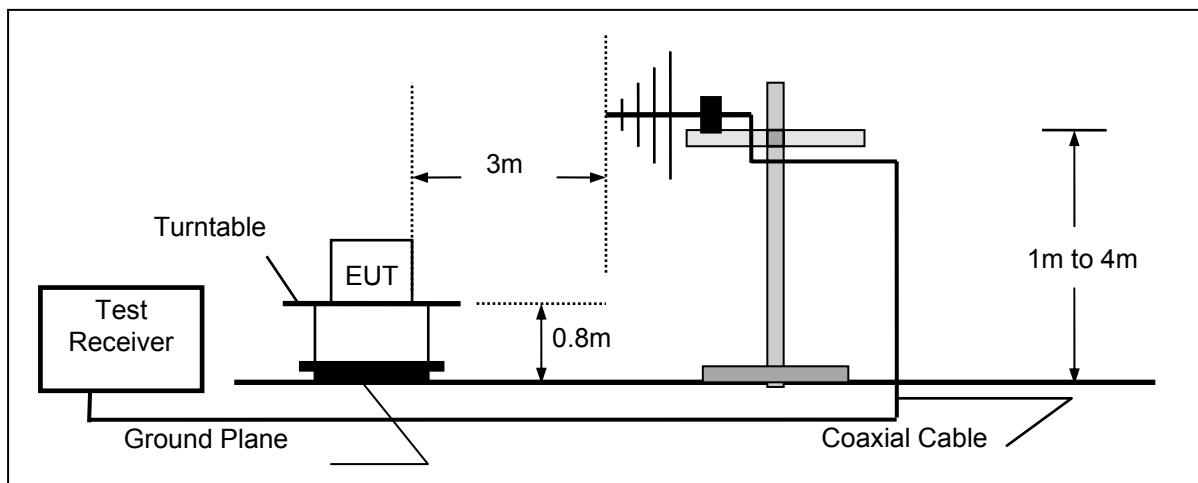
TEST CONFIGURATION

Radiated Emission Test Set-Up

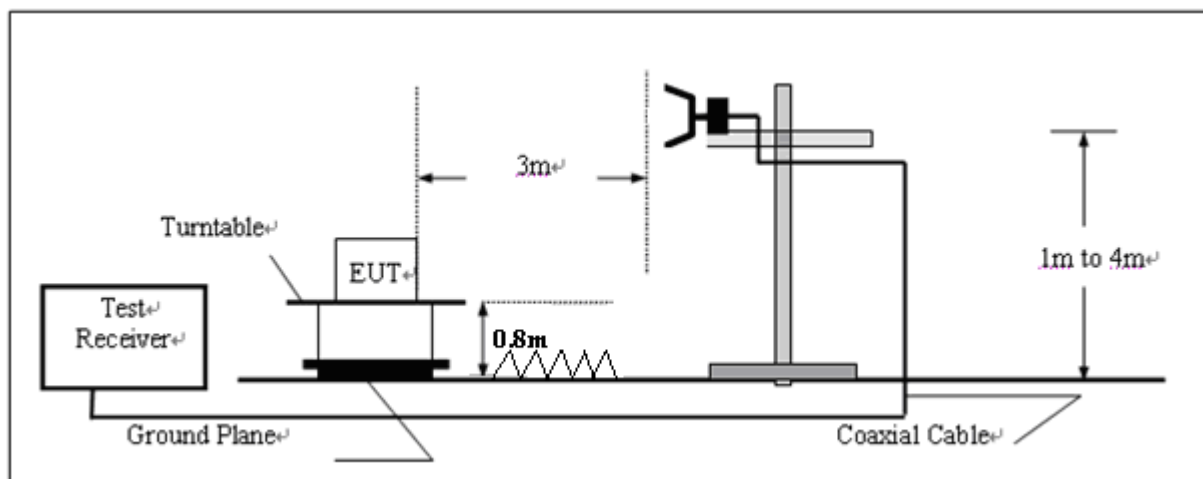
Frequency range 9KHz – 30MHz



Frequency range 30MHz – 1000MHz



Frequency range above 1GHz-25GHz



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.
- 7 the fundamental frequency is 2.45GHz and the lowest crystal frequency is 45MHz, So the radiation emissions frequency range were tested from 30MHz to 25GHz.

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	

For example

Frequency (MHz)	FS (dBμV/m)	RA (dBμV/m)	AF (dB)	CL (dB)	AG (dB)	Transd (dB)
300.00	40	58.1	12.2	1.6	31.90	-18.1

$$\text{Transd} = \text{AF} + \text{CL} - \text{AG}$$

RADIATION LIMIT

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission from intentional radiators at a distance of 3 meters shall not exceed the following table. According to § 15.249(d), in any 100kHz bandwidth outside the frequency band in which the EUT is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of desired power.

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	300	$20\log(2400/F(\text{KHz}))+80$	$2400/F(\text{KHz})$
0.49-1.705	30	$20\log(24000/F(\text{KHz}))+40$	$24000/F(\text{KHz})$
1.705-30	30	$20\log(30)+40$	30
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. As per §15.249 (a), except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902–928 MHz	50	500
2400–2483.5 MHz	50	500
5725–5875 MHz	50	500
24.0–24.25 GHz	250	2500

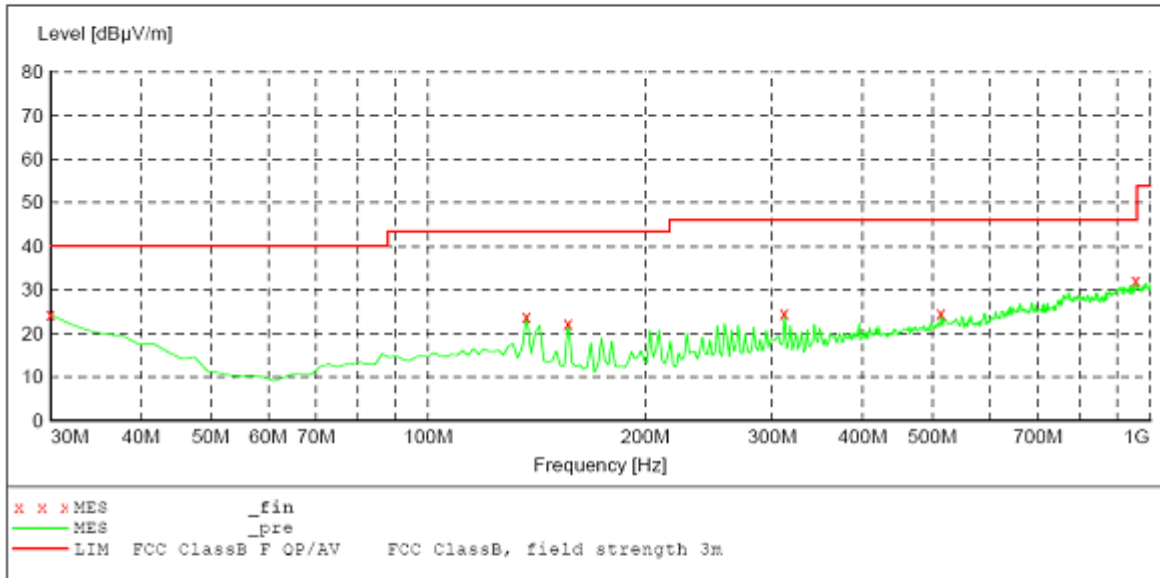
As per §15.249 (c), Field strength limits are specified at a distance of 3 meters.

TEST RESULTS**For 9KHz to 30MHz**

Frequency (MHz)	Corrected Reading (dB μ V/m)@3m	FCC Limit (dB μ V/m) @3m	Margin (dB)	Detector	Result
12.29	45.69	69.54	23.85	QP	Pass
24.50	48.41	69.54	21.13	QP	Pass

For 30MHz to 1000MHz**SWEEP TABLE: "test (30M-1G)"**

Short Description:		Field Strength			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
30.0 MHz	1.0 GHz	MaxPeak	Coupled	120 kHz	HL562 2011

**MEASUREMENT RESULT:**

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	24.30	21.1	40.0	15.7	QP	300.0	111.00	HORIZONTAL
136.910000	24.00	10.7	43.5	19.5	QP	300.0	0.00	HORIZONTAL
156.350000	22.30	9.0	43.5	21.2	QP	300.0	158.00	HORIZONTAL
311.860000	24.70	14.4	46.0	21.3	QP	300.0	133.00	HORIZONTAL
514.020000	24.70	19.1	46.0	21.3	QP	100.0	63.00	HORIZONTAL
957.230000	32.10	25.9	46.0	13.9	QP	300.0	59.00	HORIZONTAL

REMARKS :

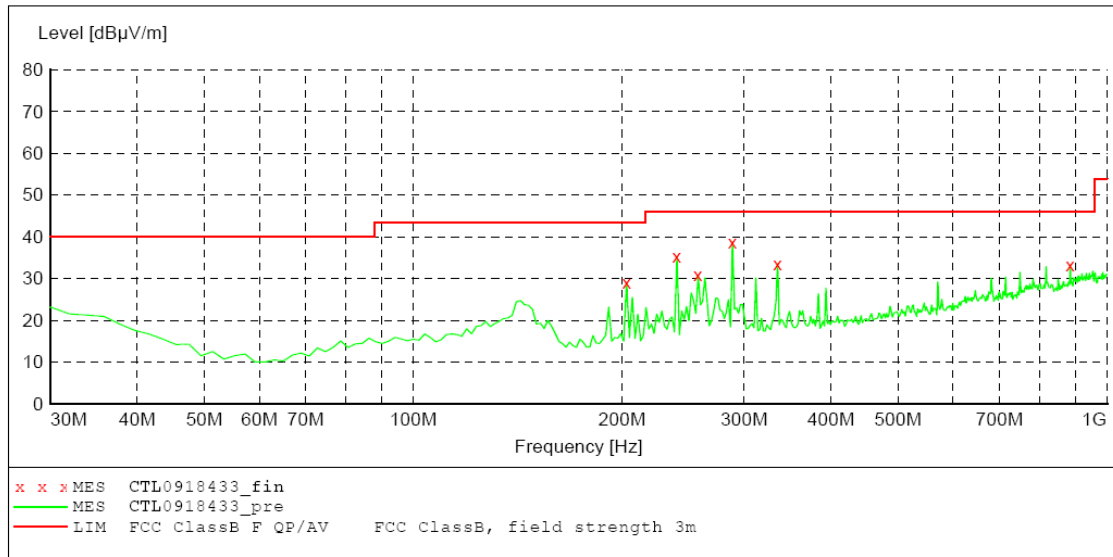
- *Undetectable
- The IF bandwidth of EMI Test Receiver was 120KHz for measuring from 30 MHz to 1 GHz and 1 MHz for measuring above 1 GHz
- The Transd=Cabel loss +Antenna factor -pre-amplifier factor
- The pre-test have done for the EUT in three axes and found the worst emission at position shown in test setup photos. The worst case data is recorded in the report.

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

Short Description:		Field Strength			Transducer
Start	Stop	Detector	Meas.	IF	
Frequency	Frequency		Time	Bandw.	
30.0 MHz	1.0 GHz	MaxPeak	Coupled	120 kHz	HL562 2011

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

Short Description:		Field Strength			Transducer
Start	Stop	Detector	Meas.	IF	
Frequency	Frequency		Time	Bandw.	
30.0 MHz	1.0 GHz	MaxPeak	Coupled	120 kHz	HL562 2011

**MEASUREMENT RESULT: "CTL0918433_fin"**

9/18/2012 12:50AM

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
203.000000	29.10	10.8	43.5	14.4	QP	300.0	0.00	HORIZONTAL
239.930000	35.40	12.7	46.0	10.6	QP	100.0	210.00	HORIZONTAL
257.430000	30.80	13.1	46.0	15.2	QP	100.0	187.00	HORIZONTAL
288.530000	38.80	14.2	46.0	7.2	QP	100.0	187.00	HORIZONTAL
335.190000	33.60	14.8	46.0	12.4	QP	100.0	37.00	HORIZONTAL
885.310000	33.30	25.1	46.0	12.7	QP	100.0	187.00	HORIZONTAL

REMARKS :

1. *Undetectable
2. 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
3. The Transd=Cabel loss +Antenna factor -pre-amplifier factor
4. The pre-test have done for the EUT in three axes and found the worst emission at position shown in test setup photos. The worst case data is recorded in the report.

Above 1G**Radiated emission of low CH emission**

Frequency (MHz)	Corrected Reading (dB μ V/m)@3m	FCC Limit (dB μ V/m) @3m	Margin (dB)	Detector	Polarization
2403	99.40	114.00	14.60	PK	Horizontal
2403	86.26	94.00	7.74	AV	Horizontal
2403	98.15	114.00	15.85	PK	Vertical
2403	85.61	94.00	8.39	AV	Vertical

Spurious radiated emission

Frequency (MHz)	Corrected Reading (dB μ V/m)@3m	FCC Limit (dB μ V/m) @3m	Margin (dB)	Detector	Polarization
4806.00	59.26	74.00	14.74	PK	Horizontal
4806.00	50.14	54.00	3.86	AV	Horizontal
7209.00	56.82	74.00	17.18	PK	Horizontal
7209.00	47.91	54.00	6.09	AV	Horizontal
4806.00	61.18	74.00	12.82	PK	Vertical
4806.00	51.63	54.00	2.37	AV	Vertical
7209.00	56.00	74.00	18.00	PK	Vertical
7209.00	47.86	54.00	6.14	AV	Vertical

REMARKS:

1. The other emission levels were very low against the limit.
2. The limit value is defined as per 15.249
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Radiated emission of middle CH emission

Frequency (MHz)	Corrected Reading (dB μ V/m)@3m	FCC Limit (dB μ V/m) @3m	Margin (dB)	Detector	Polarization
2443	98.46	114.00	15.54	PK	Horizontal
2443	86.75	94.00	7.25	AV	Horizontal
2443	96.17	114.00	17.83	PK	Vertical
2443	85.25	94.00	8.75	AV	Vertical

Spurious radiated emission

Frequency (MHz)	Corrected Reading (dB μ V/m)@3m	FCC Limit (dB μ V/m) @3m	Margin (dB)	Detector	Polarization
4886.00	55.26	74.00	18.74	PK	Horizontal
4886.00	48.16	54.00	5.84	AV	Horizontal
7329.00	53.82	74.00	20.18	PK	Horizontal
7329.00	47.95	54.00	6.05	AV	Horizontal
4886.00	63.17	74.00	10.83	PK	Vertical
4886.00	47.00	54.00	7.00	AV	Vertical
7329.00	55.00	74.00	19.00	PK	Vertical
7329.00	47.85	54.00	6.15	AV	Vertical

REMARKS:

1. The other emission levels were very low against the limit.
2. The limit value is defined as per 15.249
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Radiated emission of High CH emission

Frequency (MHz)	Corrected Reading (dB μ V/m)@3m	FCC Limit (dB μ V/m) @3m	Margin (dB)	Detector	Polarization
2478	96.77	114.00	17.23	PK	Horizontal
2478	85.60	94.00	8.40	AV	Horizontal
2478	95.10	114.00	18.90	PK	Vertical
2478	84.12	94.00	9.88	AV	Vertical

Spurious radiated emission

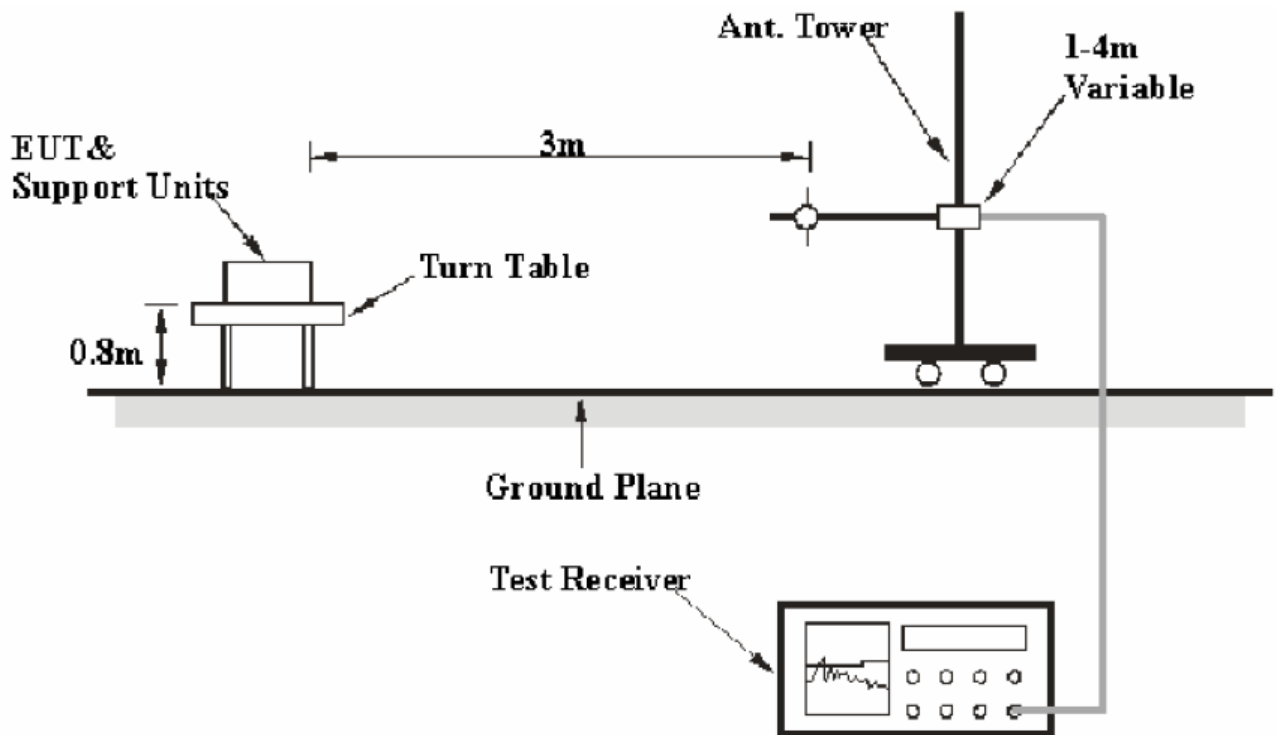
Frequency (MHz)	Corrected Reading (dB μ V/m)@3m	FCC Limit (dB μ V/m) @3m	Margin (dB)	Detector	Polarization
4956.00	55.76	74.00	18.24	PK	Horizontal
4956.00	46.32	54.00	7.68	AV	Horizontal
7434.00	51.85	74.00	22.15	PK	Horizontal
7434.00	47.60	54.00	6.40	AV	Horizontal
4956.00	61.19	74.00	12.81	PK	Vertical
4956.00	48.63	54.00	7.37	AV	Vertical
7434.00	50.00	74.00	24.00	PK	Vertical
7434.00	46.56	54.00	7.44	AV	Vertical

REMARKS:

1. The other emission levels were very low against the limit.
2. The limit value is defined as per 15.249
3. The average measurement was not performed when the peak measured data under the limit of average detection.

4.3. Out of band emissions

TEST CONFIGURATION



TEST PROCEDURE

The band edge compliance of RF radiated emission should be measured by following the guidance in ANSI C63.4 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW to 1MHz and VBM to 3MHz to measure the peak field strength and set RBW to 1MHz and VBW to 10Hz to measure the average radiated field strength. The conducted RF band edge was measured by using a spectrum analyzer. Set span wide enough to capture the highest in-band emission and the emission at the band edge. Set RBW to 100 KHz and VBM to 300 KHz, to measure the conducted peak band edge.

LIMIT

FCC PART 15.249(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

TEST RESULTS

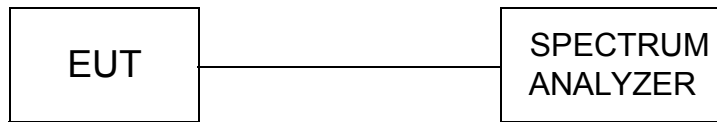
Frequency (MHz)	Corrected Reading (dBμV/m)@3m	FCC Limit (dBμV/m) @3m	Margin (dB)	Detector	Polarization
Out of left side band					
2390.00	43.15	54.00	10.85	PK	Horizontal
2390.00	46.28	54.00	7.72	PK	Vertical
Out of right side band					
2483.50	49.20	54.00	4.80	PK	Horizontal
2483.50	52.39	54.00	1.61	PK	Vertical

Note: 1. The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in Section 15.209.

2. The average measurement was not performed when the peak measured data under the limit of average detection.

4.4. 20dB Bandwidth Measurement

TEST CONFIGURATION



TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with RBW=30 KHz and VBW=100KHz.

The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

LIMIT

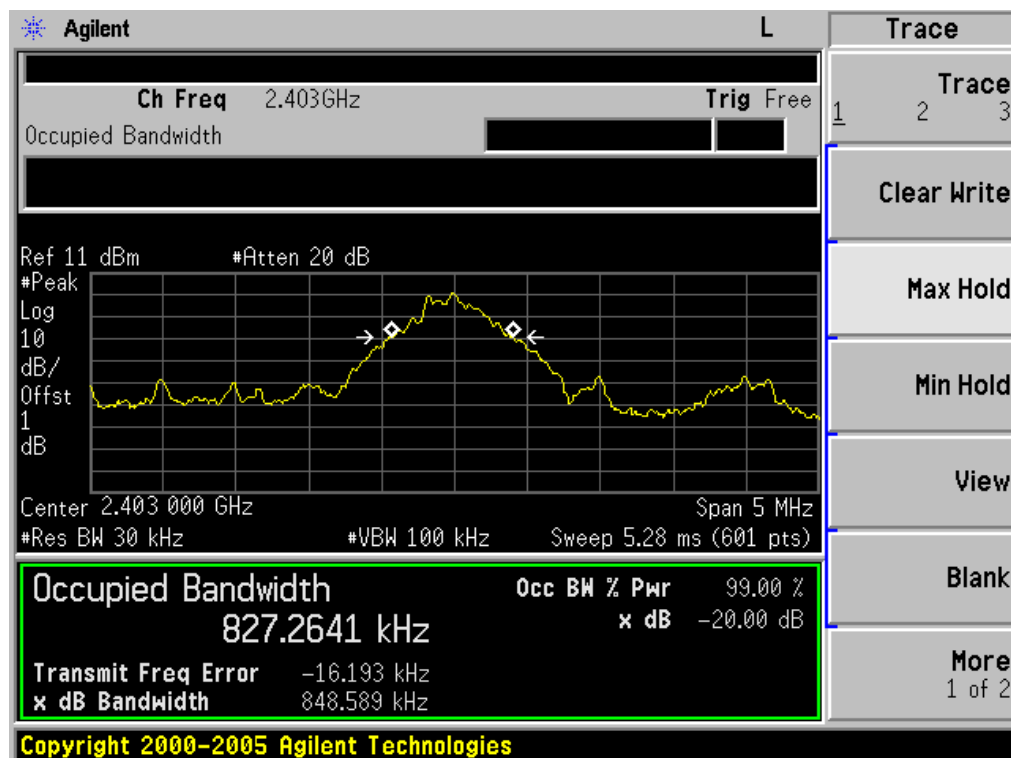
Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

TEST RESULTS

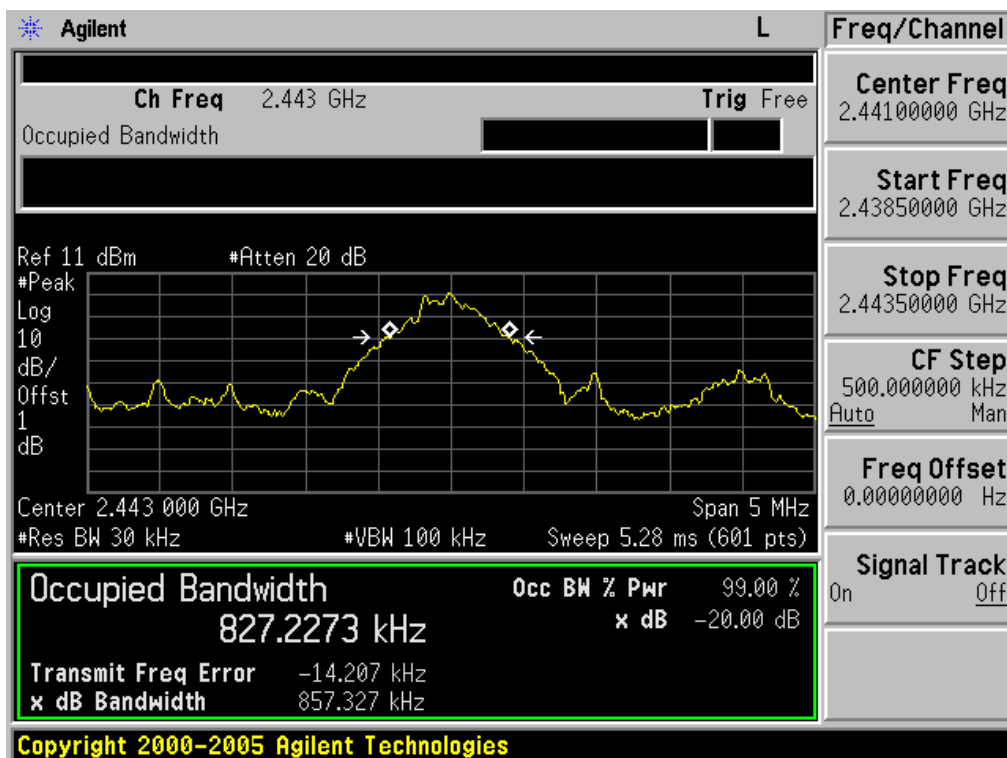
20dB Bandwidth Measurement Result			
Operating Frequency	Test Data(kHz)	Limits(MHz)	Result
2.403GHz	848.589	6.0075	PASS
2.443GHz	857.327	6.1075	PASS
2.478GHz	851.326	6.1950	PASS

Photos of 20dB Bandwidth Measurement

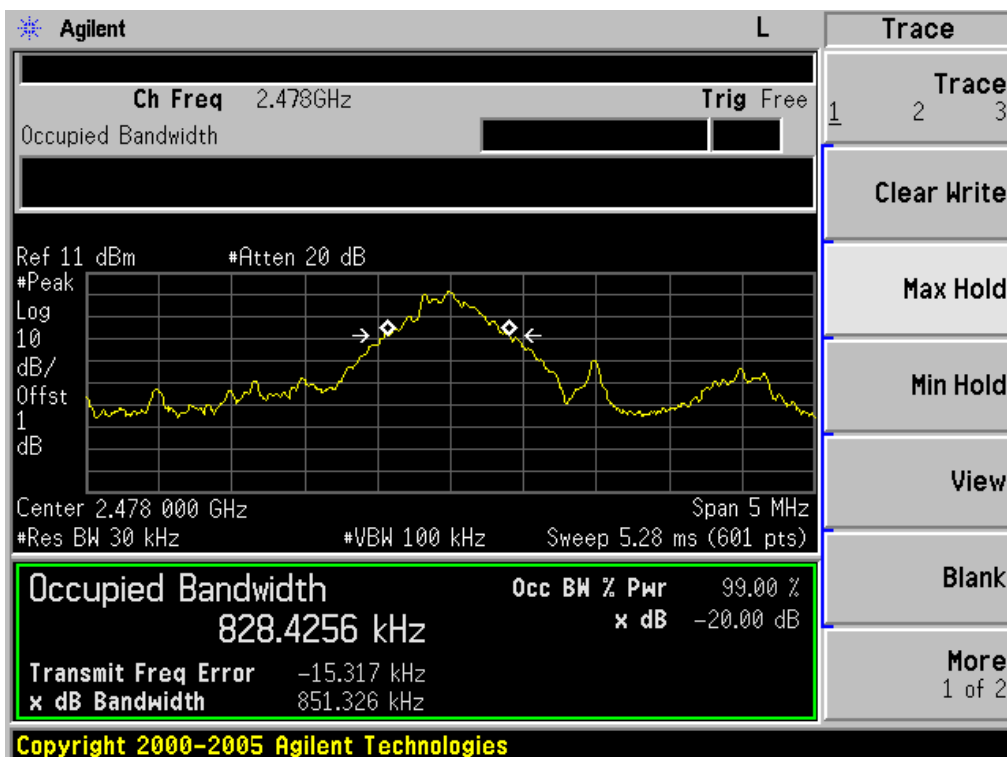
Low Channel



Middle Channel



High Channel



4.5. Receiver spurious Emissions(Not For FCC Review)

TEST APPLICABLE

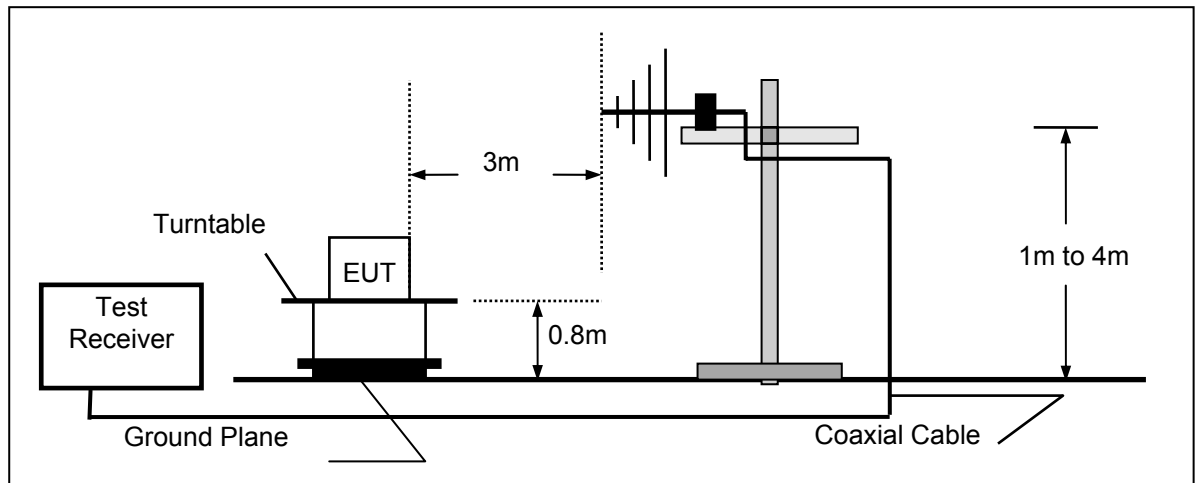
The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

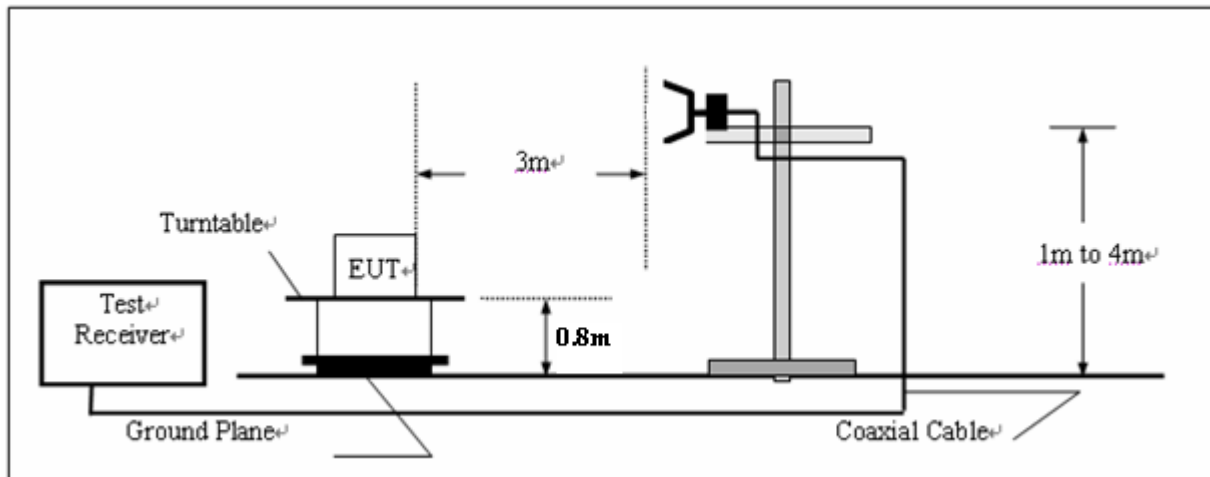
Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

TEST CONFIGURATION

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



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



TEST PROCEDURE

- 1 The EUT was placed on a turn table which is 0.8m above ground plane.
- 2 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
- 3 And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 4 Repeat above procedures until all frequency measurements have been completed.

RECEIVER RADIATED SPOUIOUS LIMIT

For unintentional device, according to § 15.109(a) and RSS-Gen, 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 (dB μ V/m)	Radiated (μ V/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.

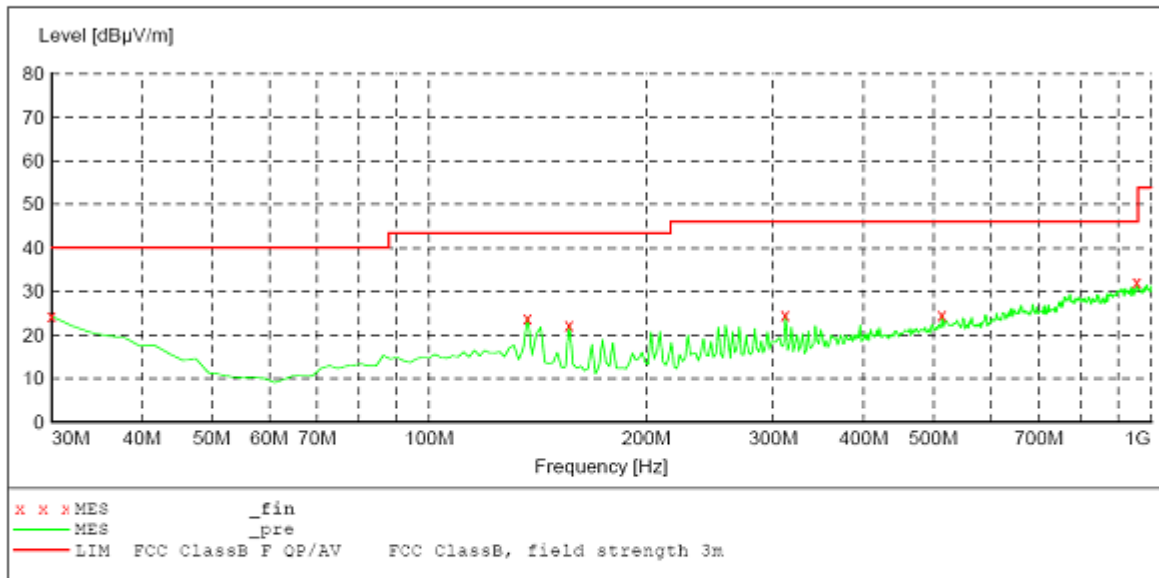
TEST RESULTS

The Radiated Measurement are performed to the four channels (the high channel, the middle channel and the low channel), the datum recorded below is the worst case for each channel separation; and the EUT shall be scanned from 30 MHz to the 5th harmonic of the highest oscillator frequency in the digital devices or 1 GHz whichever is higher.

TEST RESULTS

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

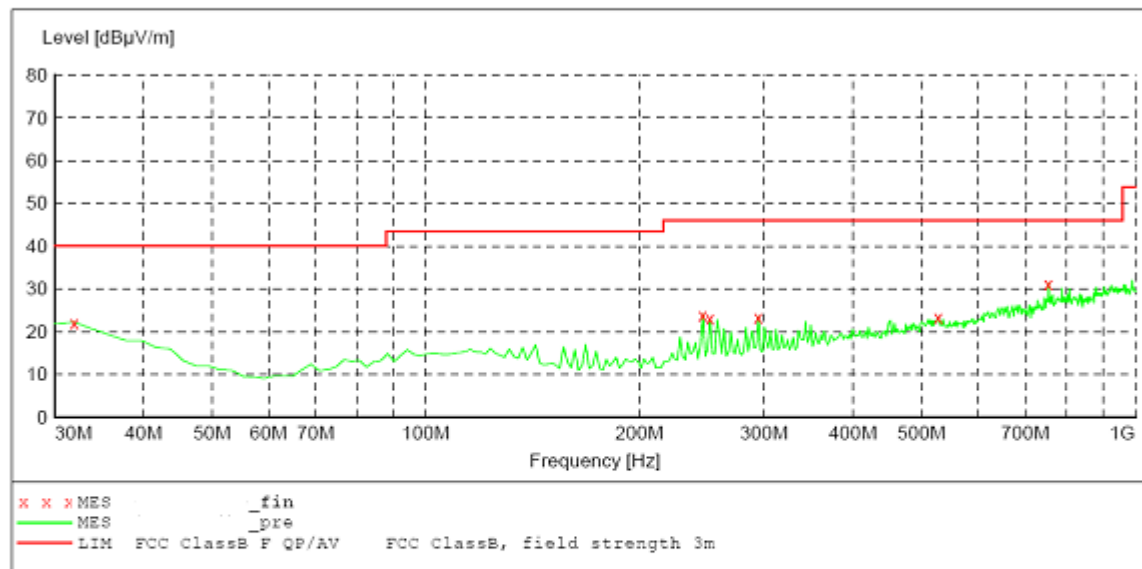
Short Description:		Field Strength			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
30.0 MHz	1.0 GHz	MaxPeak	Coupled	120 kHz	HL562 2011

***MEASUREMENT RESULT:***

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	24.30	21.1	40.0	15.7	QP	300.0	111.00	HORIZONTAL
136.910000	24.00	10.7	43.5	19.5	QP	300.0	0.00	HORIZONTAL
156.350000	22.30	9.0	43.5	21.2	QP	300.0	158.00	HORIZONTAL
311.860000	24.70	14.4	46.0	21.3	QP	300.0	133.00	HORIZONTAL
514.020000	24.70	19.1	46.0	21.3	QP	100.0	63.00	HORIZONTAL
957.230000	32.10	25.9	46.0	13.9	QP	300.0	59.00	HORIZONTAL

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

Short Description:		Field Strength			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency	Time	Bandw.		
30.0 MHz	1.0 GHz	MaxPeak	Coupled	120 kHz	HL562 2011

***MEASUREMENT RESULT:***

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
31.940000	22.20	20.0	40.0	17.8	QP	100.0	235.00	VERTICAL
245.770000	24.00	12.9	46.0	22.0	QP	100.0	201.00	VERTICAL
251.600000	23.00	13.1	46.0	23.0	QP	100.0	267.00	VERTICAL
294.360000	23.50	14.4	46.0	22.5	QP	100.0	100.00	VERTICAL
527.630000	23.40	19.3	46.0	22.6	QP	100.0	100.00	VERTICAL
755.070000	31.30	23.6	46.0	14.7	QP	100.0	301.00	VERTICAL

*Within measurement uncertainty.

Above 1GHz

Frequency (MHz)	Corrected Reading (dB μ V/m)@3m	IC Limit (dB μ V/m) @3m	Margin (dB)	Detector	Polarization
5589.69	49.00	54	6.00	PK	Horizontal
18000.00	62.00	74	12.00	PK	Horizontal
18000.00	51.36	54	2.64	AV	Horizontal
6000.00	52.14	54	1.84	PK	Vertical
18000.00	62.66	74	11.34	PK	Vertical
18000.00	52.99	54	1.01	AV	Vertical

*Within measurement uncertainty.

4.6. Antenna Requirement

According to FCC Part 15C § 15.203.

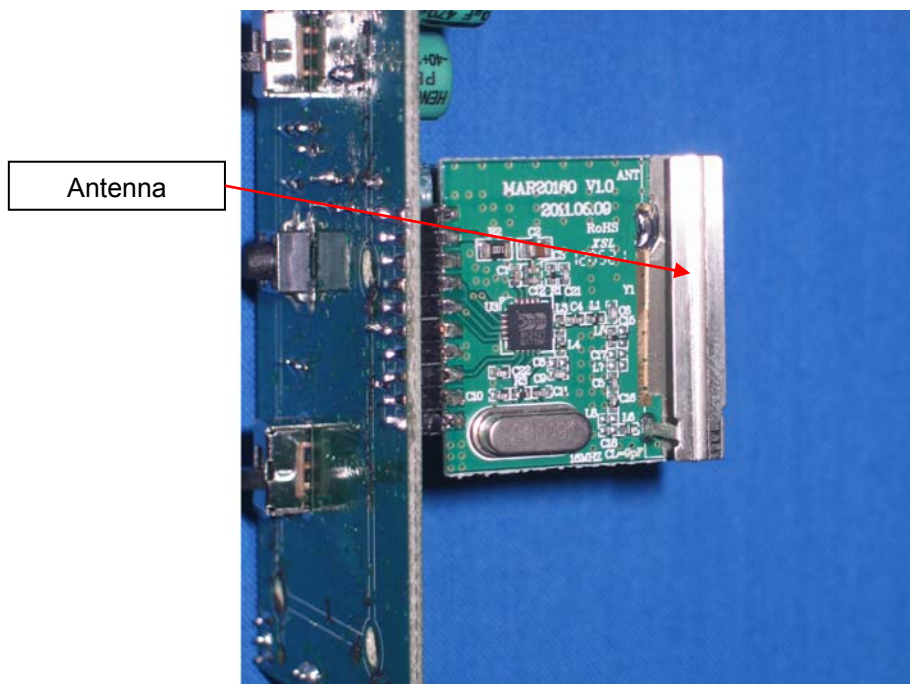
a), An intentional radiator shall be de-signed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

b), The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

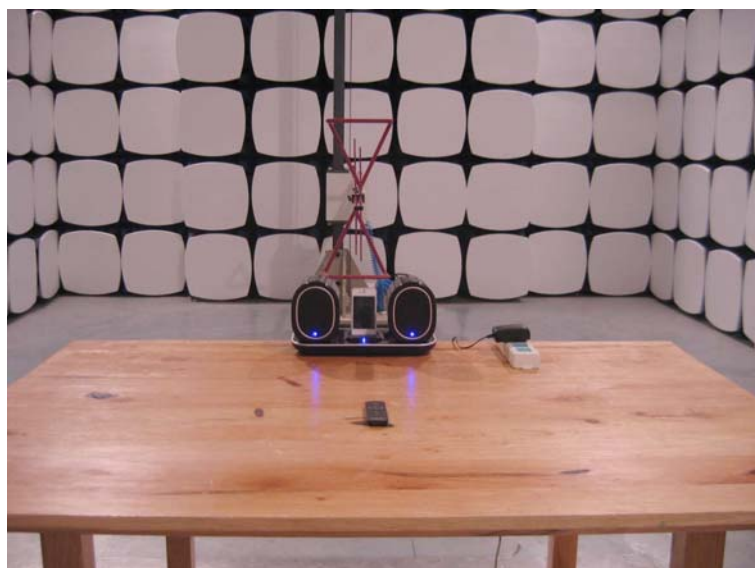
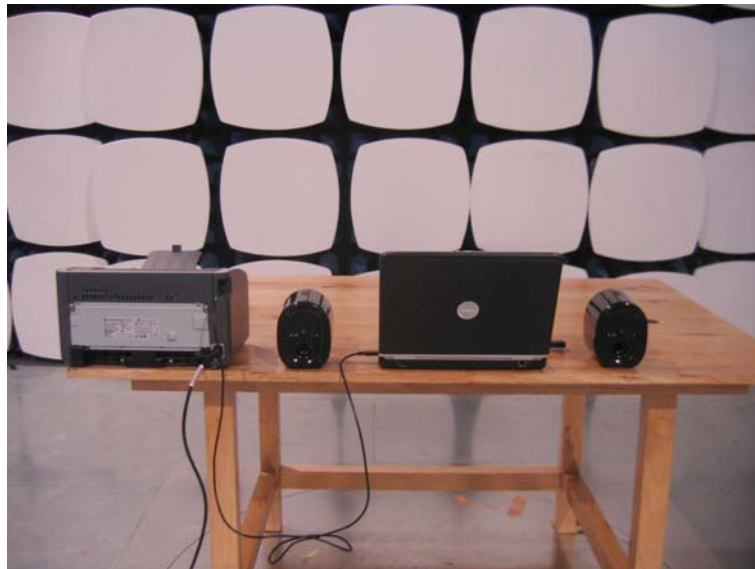
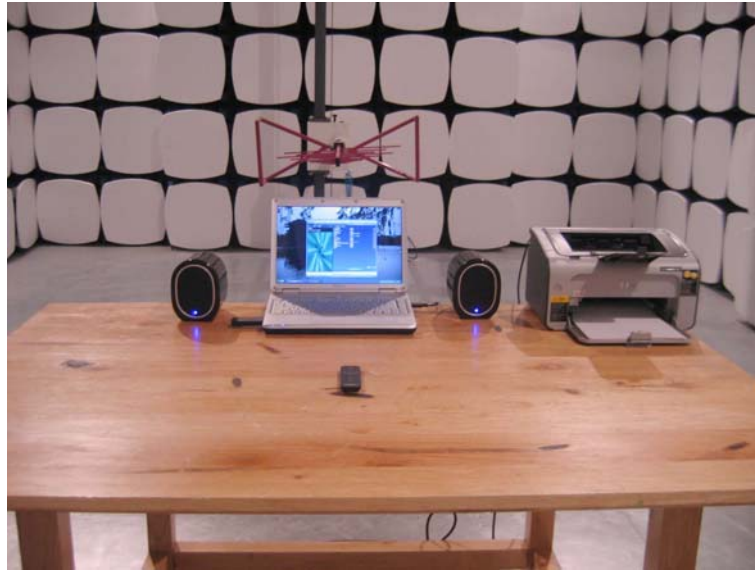
The EUT use of a Integral antenna, Please refer to the EUT Internal photos.

The EUT complied the antenna requirement.

Please refer to the EUT photos.



5. Test Setup Photos of the EUT

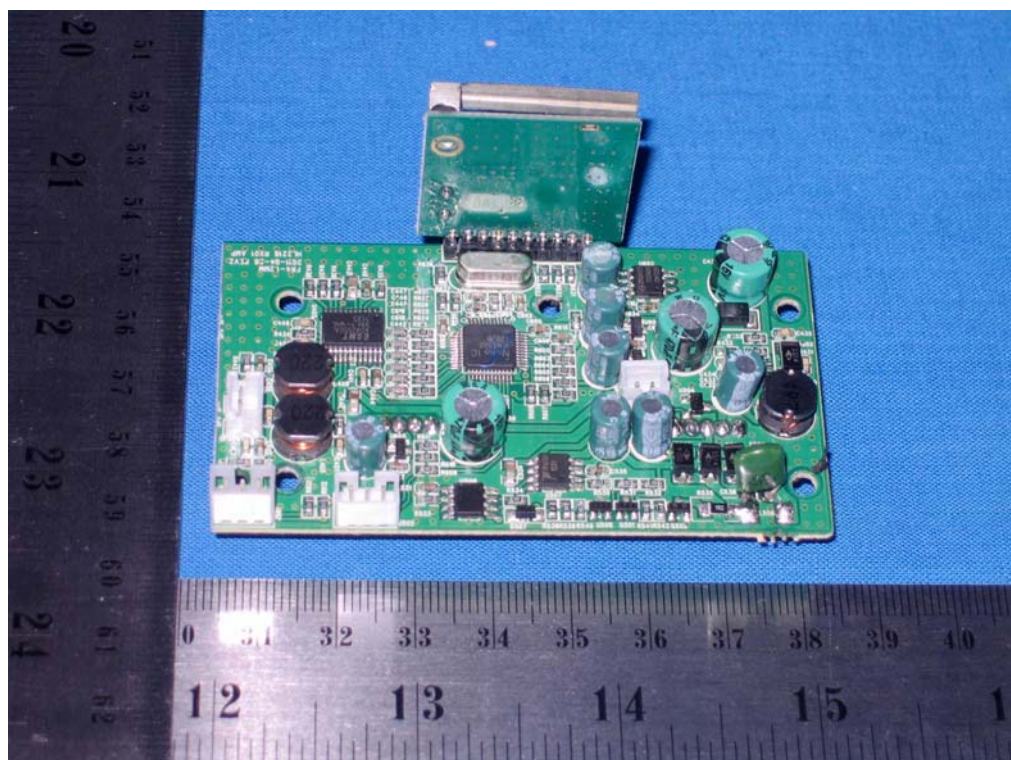


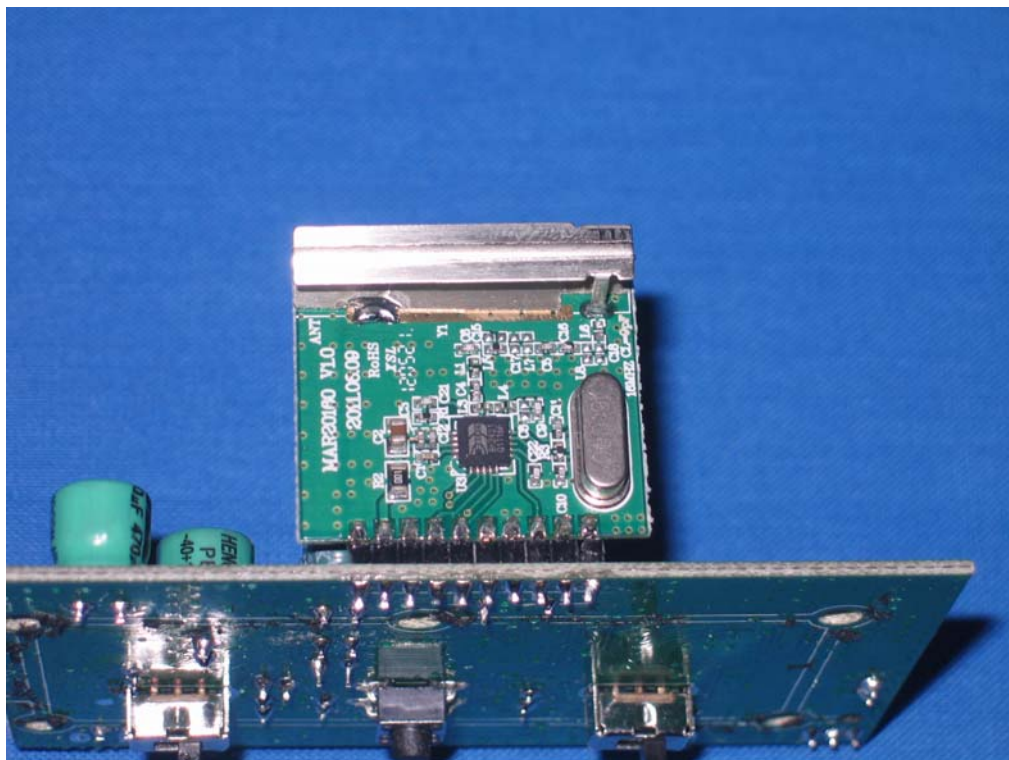
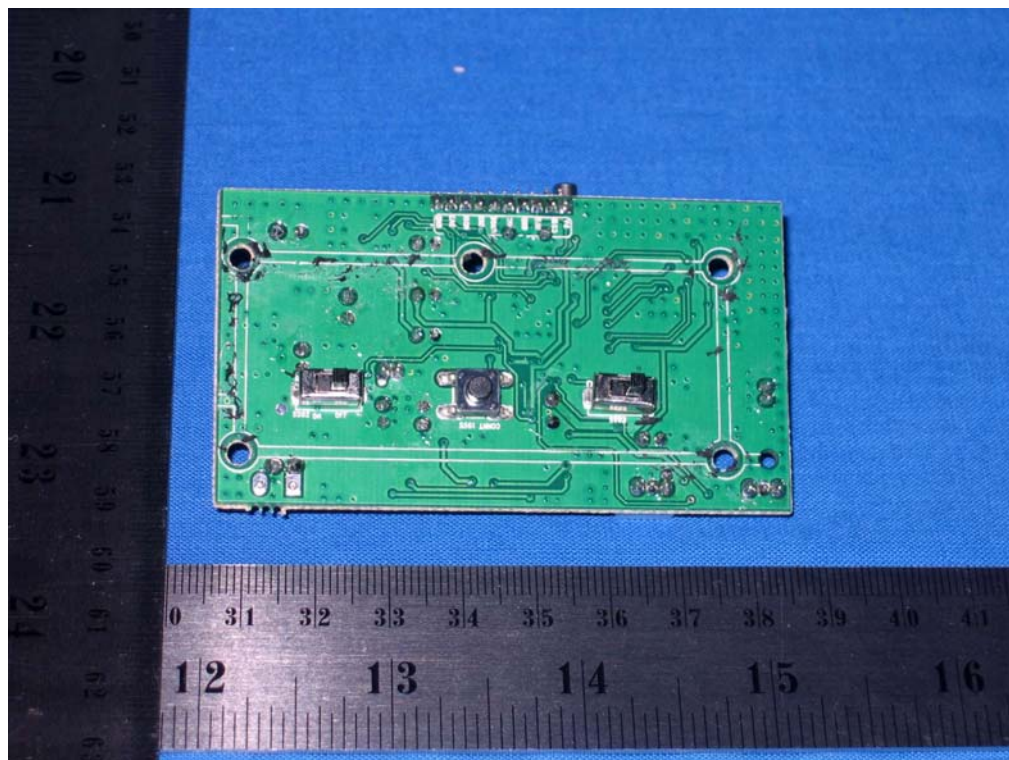


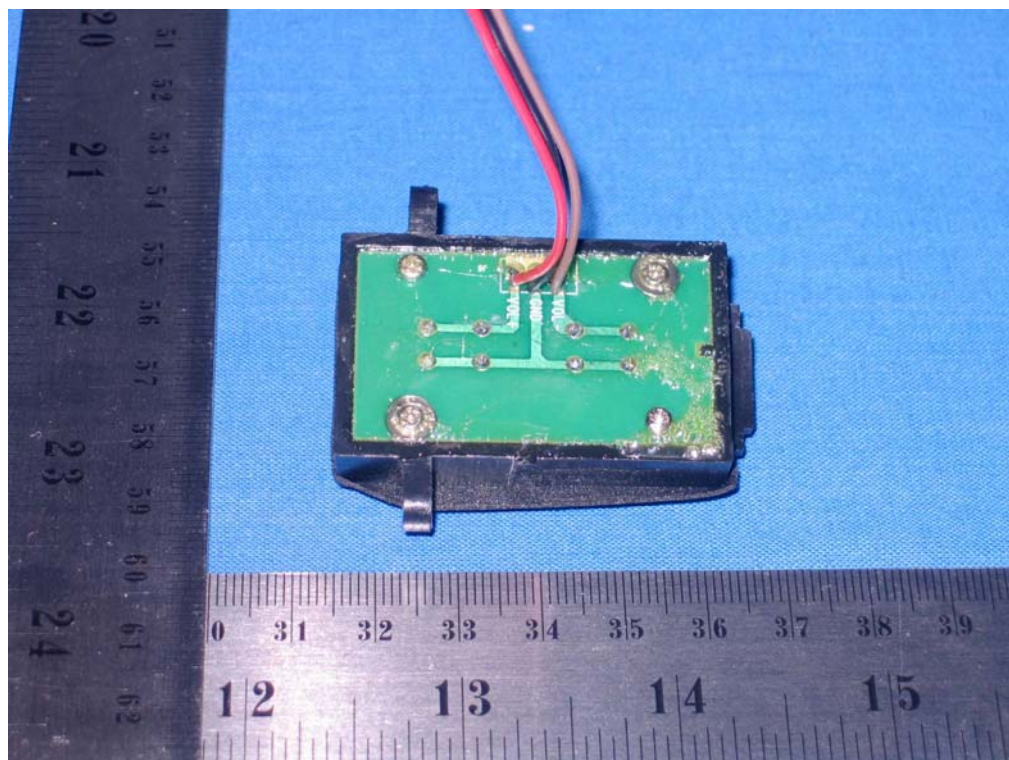
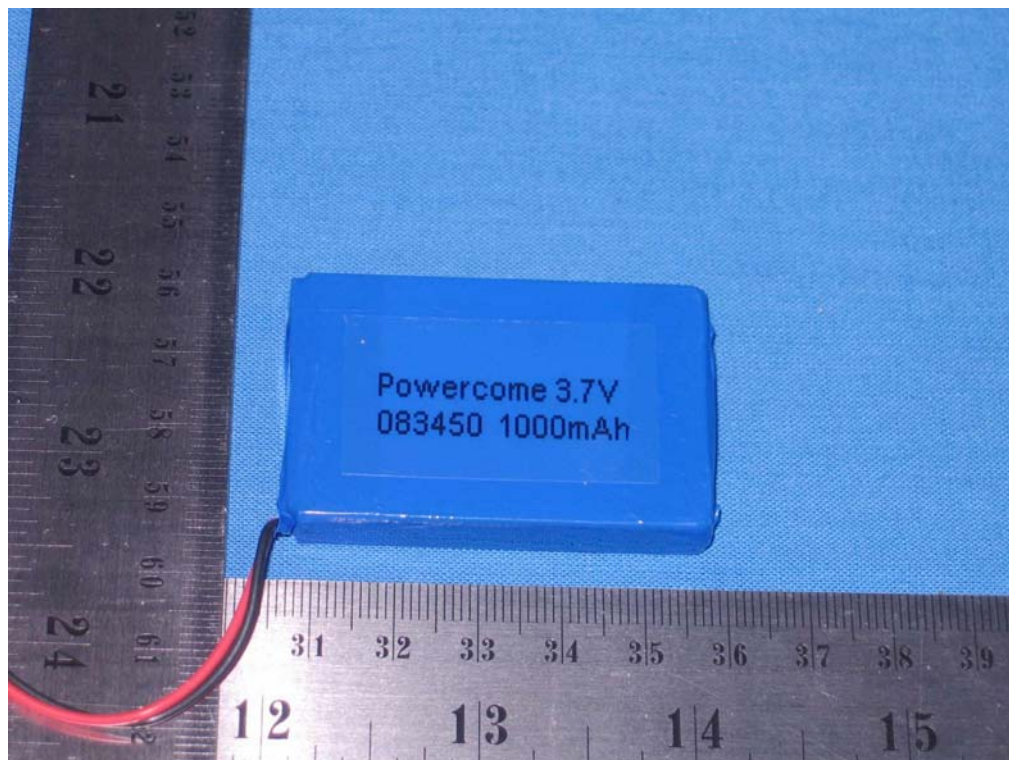
6. External and Internal Photos of the EUT

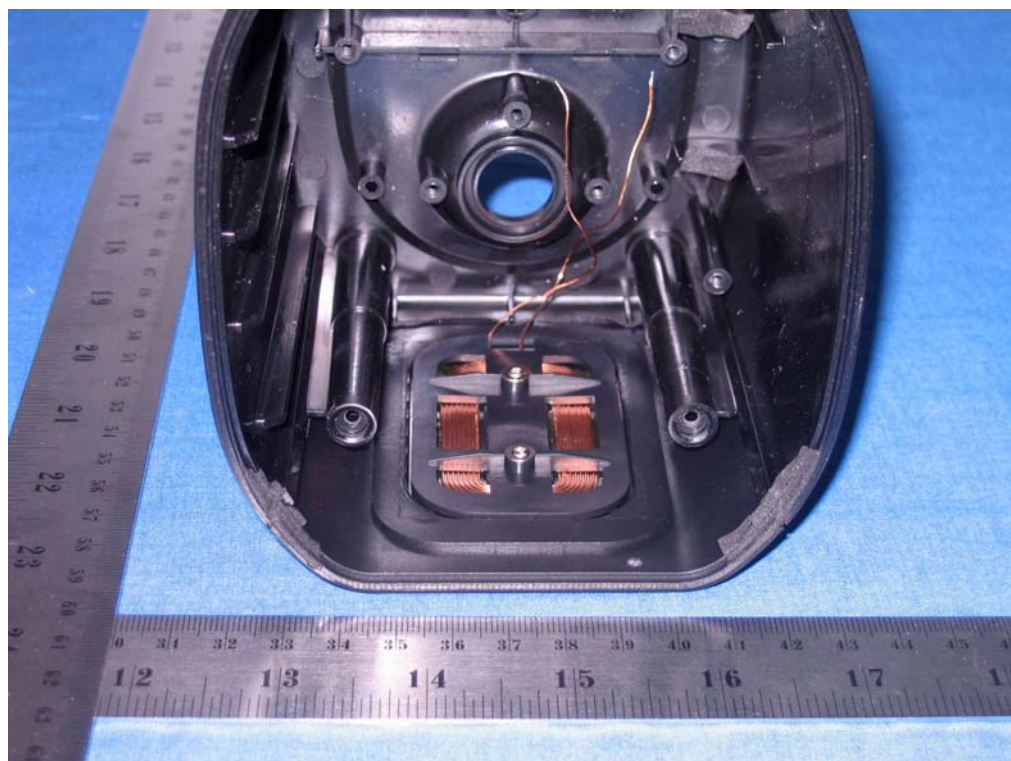
External Photos



Internal Photos







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