



FCC PART 15 SUBPART C TEST REPORT

FCC Part 15.247

Report Reference No.: WE10010005

FCC ID: X5QRD75613

Compiled by

(position+printed name+signature): File administrators Xiankun Ding

Xiankun Ding

Supervised by

(position+printed name+signature): Test Engineer Wenliang Li

Wenliang Li

Approved by

(position+printed name+signature): Manager Jimmy Li

Jimmy Li

Date of issue: Apr 19, 2010

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

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

Applicant's name: Jetlun (Shenzhen) Corporation

Address: 1008A Skyworth Building Gao-xin RD South High-tech Park
Nanshan District Shenzhen China

Test specification:

Standard: FCC Part 15.247: Operation within the bands 920-928 MHz,
2400-2483.5 MHz and 5725-5850 MHz Direct Sequence System

TRF Originator: Shenzhen Huatongwei International Inspection CO., Ltd

Master TRF: Dated 2006-06

Shenzhen Huatongwei International Inspection Co., Ltd. All rights reserved.

This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen Huatongwei International Inspection Co., Ltd is acknowledged as copyright owner and source of the material. Shenzhen Huatongwei International Inspection Co., Ltd takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

Test item description: Appliance Module

Trade Mark: /

Model/Type reference: RD75613

Listed Models: RD75615, RD75621

Serial Number: /

Result: Positive

T E S T R E P O R T

Test Report No. : WE10010005	Apr 19, 2010 Date of issue
--	-------------------------------

Equipment under Test : Appliance Module

Model /Type : RD75613

Listed Models : RD75615,RD75621

Applicant : Jetlun (Shenzhen) Corporation

Address : 1008A Skyworth Building Gao-xin RD South High-tech
Park Nanshan District Shenzhen China

Manufacturer ZHUHAI YUEHUA ELECTRONIC CO.,LTD

Address #13,No.4 PINGDONG ROAD,NANPING TECHNOLOGY
DISTRICT,ZHUHAI,GUANGDONG,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.

Contents

<u>1.</u>	<u>TEST STANDARDS</u>	<u>4</u>
<u>2.</u>	<u>SUMMARY</u>	<u>5</u>
2.1.	General Remarks	5
2.2.	Equipment Under Test	5
2.3.	Short description of the Equipment under Test (EUT)	5
2.4.	EUT operation mode	6
2.5.	EUT configuration	6
2.6.	EUT Configuration and Setup	6
2.7.	Related Submittal(s) / Grant (s)	7
2.8.	Modifications	7
2.9.	NOTE	7
<u>3.</u>	<u>TEST ENVIRONMENT.....</u>	<u>8</u>
3.1.	Address of the test laboratory	8
3.2.	Test Facility	8
3.3.	Environmental conditions	9
3.4.	Configuration of Tested System	9
3.5.	Statement of the measurement uncertainty	9
3.6.	Test Description	10
3.7.	Equipments Used during the Test	10
<u>4.</u>	<u>TEST CONDITIONS AND RESULTS.....</u>	<u>12</u>
4.1.	Conducted Emissions Test	12
4.2.	Radiated Emission Test	16
4.3.	Maximum Peak Output Power	27
4.4.	Power Spectral Density Measurement	30
4.5.	Band Edge Measurement	33
4.6.	Spurious RF conducted emissions	36
4.7.	6dB Bandwidth and 99% Bandwidth Measurement	38
4.8.	MPE Calculation Method	41
4.9.	Antenna Requirement	42
<u>5.</u>	<u>TEST SETUP PHOTOS OF THE EUT</u>	<u>43</u>
<u>6.</u>	<u>EXTERNAL AND INTERNAL PHOTOS OF THE EUT</u>	<u>44</u>

1. TEST STANDARDS

The tests were performed according to following standards:

FCC Rules Part 15.247: Operation within the bands 920-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz Direct Sequence System

ANSI C63.4-2009: American National Standard for Methods of Measurement of Radio-Noise Emissions From Low Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz.

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample : Jan 26, 2010

Testing commenced on : Jan 26, 2010

Testing concluded on : Apr 19, 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)

/

General Description of EUT

Product Name(EUT) : Appliance Module
Model No. : RD75613
Listed Models : RD75615
Operating Frequency : 2405~2480MHz
Number of Channel : 16 channels
Standard Compliance : Zigbee
Modulation : OFDM/DCSK
Transport mode : Zigbee: Up to 206Kbps
Range : Zigbee: Up to 100ft(30m)
Temp. range : 0°C ~ +35°C(indoor usage only)
Operating voltage : 100-240 VAC, 50-60Hz
Test voltage : 230 VAC, 50Hz
Type of Equipment : Stand-alone

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

2.4GHz (Appliance Module)

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 sixteen channels of EUT, and the test carried out at the channel 11(lowest), channel 18(middle) and channel 26 (highest) channels.

Channel	Frequency	Channel	Frequency
11	2405 MHz	19	2445 MHz
12	2410 MHz	20	2450 MHz
13	2415 MHz	21	2455 MHz
14	2420 MHz	22	2460 MHz
15	2425 MHz	23	2465 MHz
16	2430 MHz	24	2470 MHz
17	2435 MHz	25	2475 MHz
18	2440 MHz	26	2480 MHz

Note: 1, Per-Scan have been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports.

2.5. EUT configuration

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

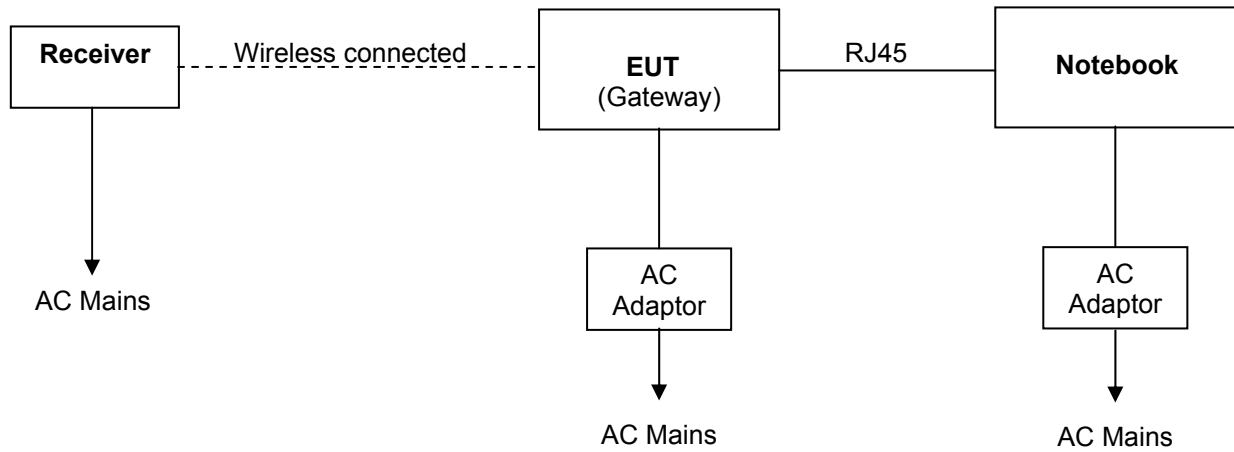
● - supplied by the manufacturer

○ - supplied by the lab

- o Power Cable
 - Length (m) : /
 - Shield : /
 - Detachable : /
- o Multimeter
 - Manufacturer : /
 - Model No. : /

2.6. EUT Configuration and Setup

For all test items, EUT was operated on test mode. Through the software setup into test mode. The test configuration as following:



The following device(s) is a part of EUT, and them

● - supplied by the manufacturer

Receiver Brand : Jetlun
Model : RD75613

● - supplied by the lab

No.	Product	Manufacturer	Model No.	Serial No.	
	Notebook PC	ASUS	I9100L	59NP00972	

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

This submittal(s) (test report) is intended for FCC ID: **X5QRD75613** filing to comply with Section 15.249 of the FCC Part 15, Subpart C Rules.

2.8. Modifications

No modifications were implemented to meet testing criteria.

2.9. NOTE

1. The EUT is a Zigbee Appliance Module.,The functions of the EUT listed as below:

	Test Standards	Reference Report
Zigbee	FCC Part 15 Subpart C (Section 15.247)	WE10010005

2. The frequency bands used in this EUT are listed as follows:

Frequency Band(MHz)	2400-2483.5	5150-5350	5470-5725	5725-5850
Zigbee	√	—	—	—

3. The EUT provides one completed transmitter and receiver.

Modulation Mode	TX Function
Ziabee	1TX

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 (2009) 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: August 02, 2007. Valid time is until March 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 July 1, 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.

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, 2009. 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 09 July, 2010.

3.3. Environmental conditions

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

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

3.4. Configuration of Tested System

Fig. 2-1 Configuration of Tested System

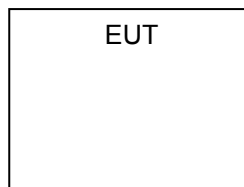


Table 2-1 Equipment Used in Tested System

No.	Product	Manufacturer	Model No.	Serial No.	
	Notebook PC	ASUS	I9100L	59NP00972	

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	4.24 dB	(1)
Radiated Emission	1~18GHz	5.16 dB	(1)
Conducted Disturbance	0.15~30MHz	3.39 dB	(1)

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

3.6. Test Description

FCC PART 15		
FCC Part 15.207	AC Power Conducted Emission	PASS
FCC Part 15.247(a)(2)	6dB Bandwidth	PASS
FCC Part 15.247(d)	Spurious RF conducted emissions	PASS
FCC Part 15.247(b)	Maximum Peak Output Power	PASS
FCC Part 15.247(e)	Power Spectral Density	PASS
FCC Part 15.109/ 15.205/ 15.209	Radiated Emissions	PASS
FCC Part 15.247(d)	Band edge compliance of RF emissions	PASS

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

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Channel
AC Power Line Conducted Emissions	Normal Link	11
Maximum Peak Conducted Output Power Power Spectral Density 6dB Spectrum Bandwidth Spurious RF conducted emissions	Zigbee	11/18/26
Radiated Emissions 9kHz~1GHz	11b/DSSS	11/18/26
Radiated Emissions 1GHz~10th Harmonic	11b/DSSS	11/18/26
Band Edge Emissions	11b/DSSS	11/18/26

3.7. 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	ESCS30	100038	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

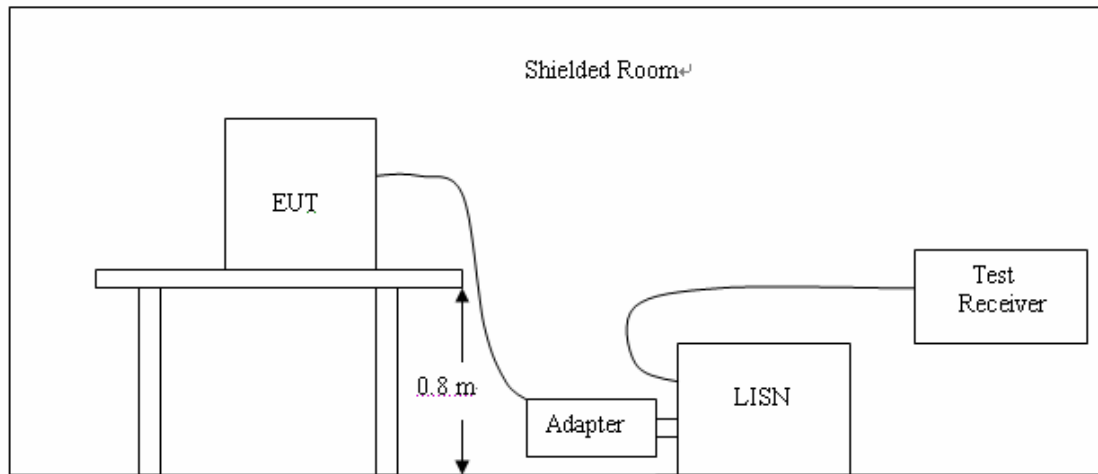
Maximum Peak Output Power / Power Spectral Density / 6dB Bandwidth / Band Edge Measurement/ Spurious RF conducted emissions					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	100009	2009/11

Radiated Emissions					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ULTRA-BROADBAND ANTENNA	ROHDE & SCHWARZ	HL562	100015	2007/06
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 C63.4:2009.
- 2 Support equipment, if needed, was placed as per ANSI C63.4:2009.
- 3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4:2009.
- 4 If a EUT received DC 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.

Conducted Power Line Emission Limit

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

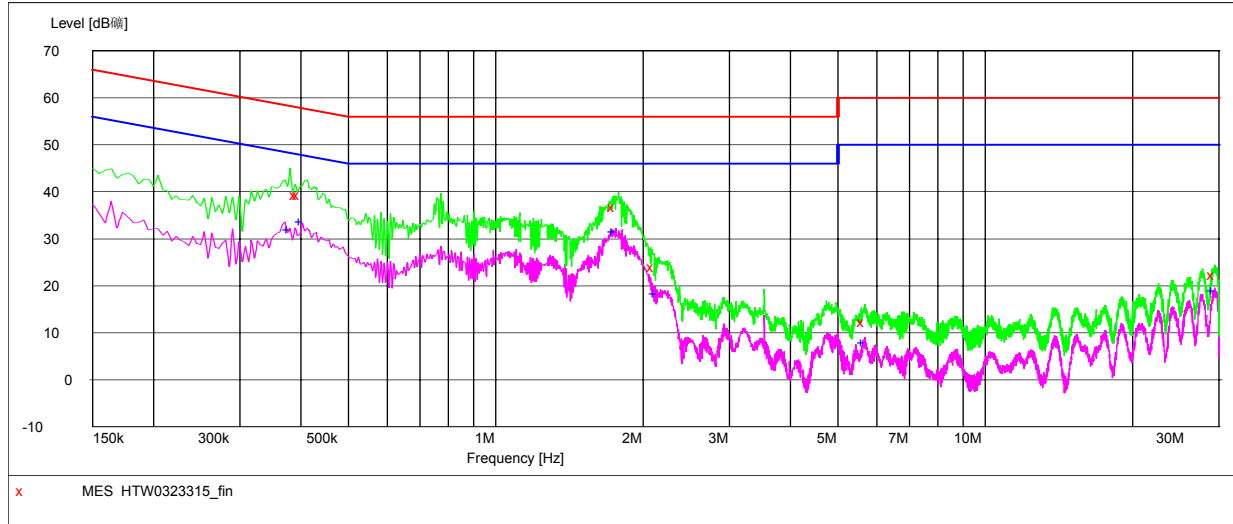
Frequency (MHz)	Maximum RF Line Voltage (dBμV)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* 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: "HTW0323315_fin"**

3/23/2010 9:02PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.393000	39.40	10.1	58	18.6	QP	L1	GND
0.397500	39.20	10.1	58	18.7	QP	L1	GND
1.747500	36.70	10.2	56	19.3	QP	L1	GND
2.107500	24.00	10.2	56	32.0	QP	L1	GND
5.667000	12.20	10.2	60	47.8	QP	L1	GND
29.391000	22.40	11.0	60	37.6	QP	L1	GND

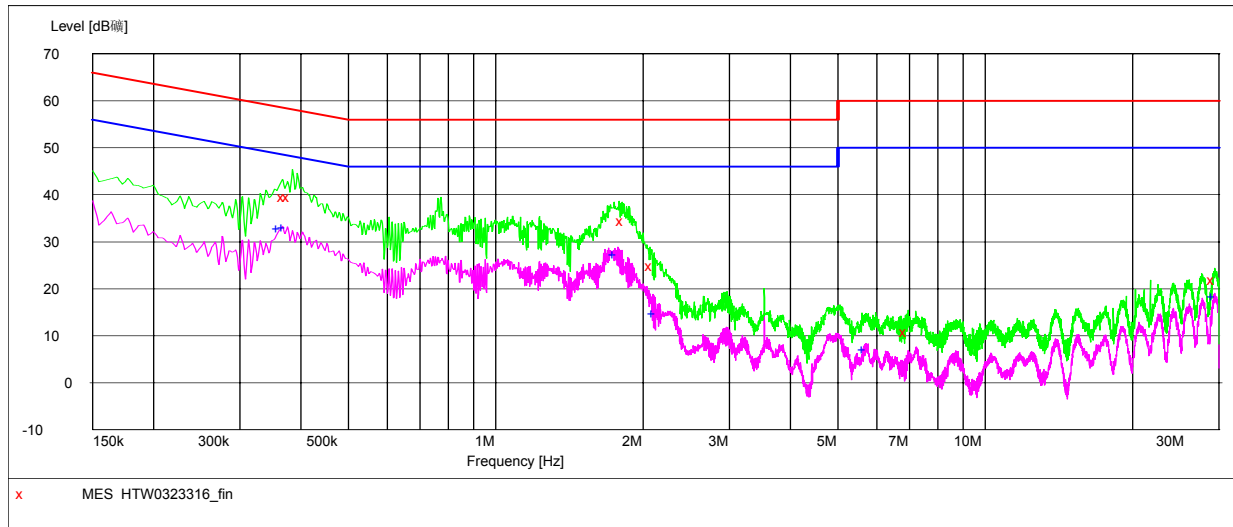
MEASUREMENT RESULT: "HTW0323315_fin2"

3/23/2010 9:02PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.379500	31.80	10.1	48	16.5	AV	L1	GND
0.402000	33.50	10.1	48	14.3	AV	L1	GND
1.747500	31.50	10.2	46	14.5	AV	L1	GND
2.125500	18.20	10.2	46	27.8	AV	L1	GND
5.667000	7.80	10.2	50	42.2	AV	L1	GND
29.391000	18.90	11.0	50	31.1	AV	L1	GND

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

Short Description: 150K-30M Voltage

**MEASUREMENT RESULT: "HTW0323316_fin"**

3/23/2010 9:08PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.370500	39.50	10.1	59	19.0	QP	N	GND
0.379500	39.40	10.1	58	18.9	QP	N	GND
1.824000	34.30	10.2	56	21.7	QP	N	GND
2.085000	24.90	10.2	56	31.1	QP	N	GND
6.913500	10.70	10.2	60	49.3	QP	N	GND
29.422500	21.80	11.0	60	38.2	QP	N	GND

MEASUREMENT RESULT: "HTW0323316_fin2"

3/23/2010 9:10PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.361500	32.70	10.1	49	16.0	AV	N	GND
0.370500	33.00	10.1	49	16.0	AV	N	GND
1.761000	27.10	10.2	46	18.9	AV	N	GND
2.112000	14.60	10.2	46	31.4	AV	N	GND
5.671500	7.00	10.2	50	43.0	AV	N	GND
29.382000	18.20	11.0	50	31.8	AV	N	GND

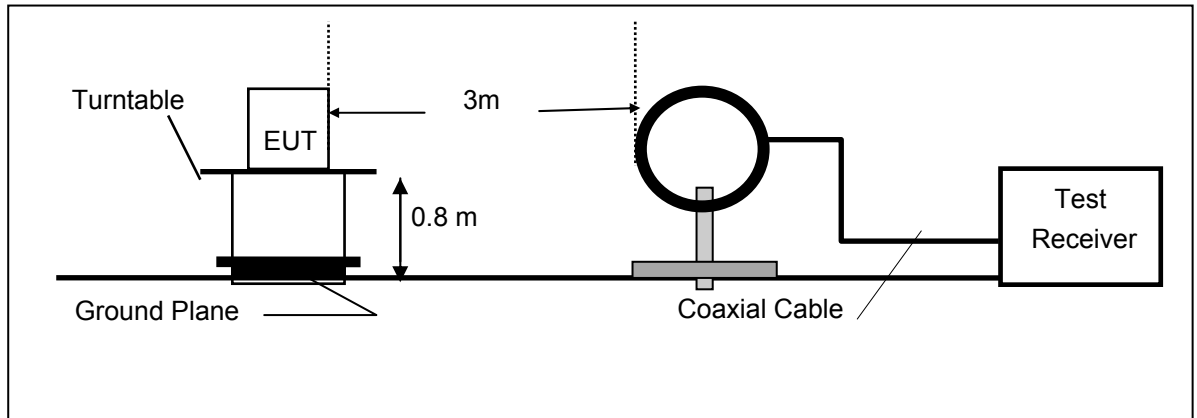
REMARKS :

1. Margin value = Limit value- Emission level
2. The EUT was set to be normal operation condition. Each Ethernet port was connected and data payload was transmitted at highest data rate. The RF chip can be operated in Zigbee mode. The rf chip will detect the environment and select the proper mode automatically. The WLAN function was set to normal operation condition.

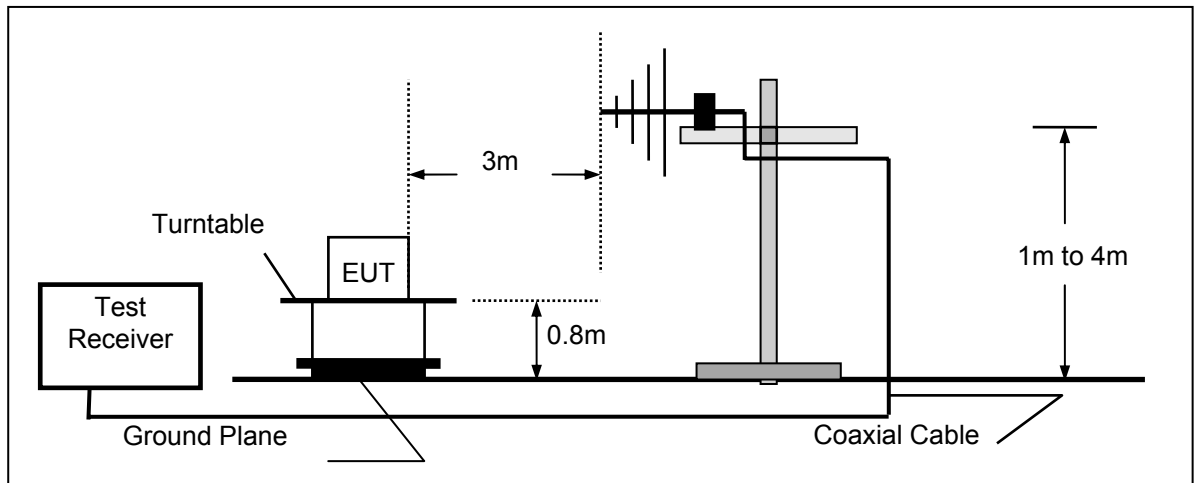
4.2. Radiated Emission Test

TEST CONFIGURATION

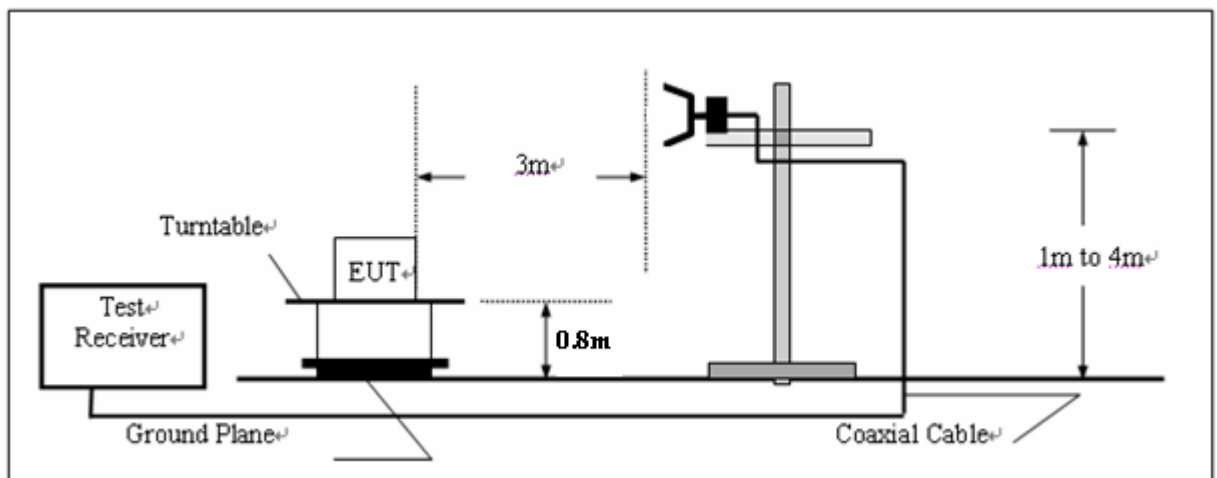
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



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



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



TEST PROCEDURE

- 1 The EUT 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.

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 Procedure

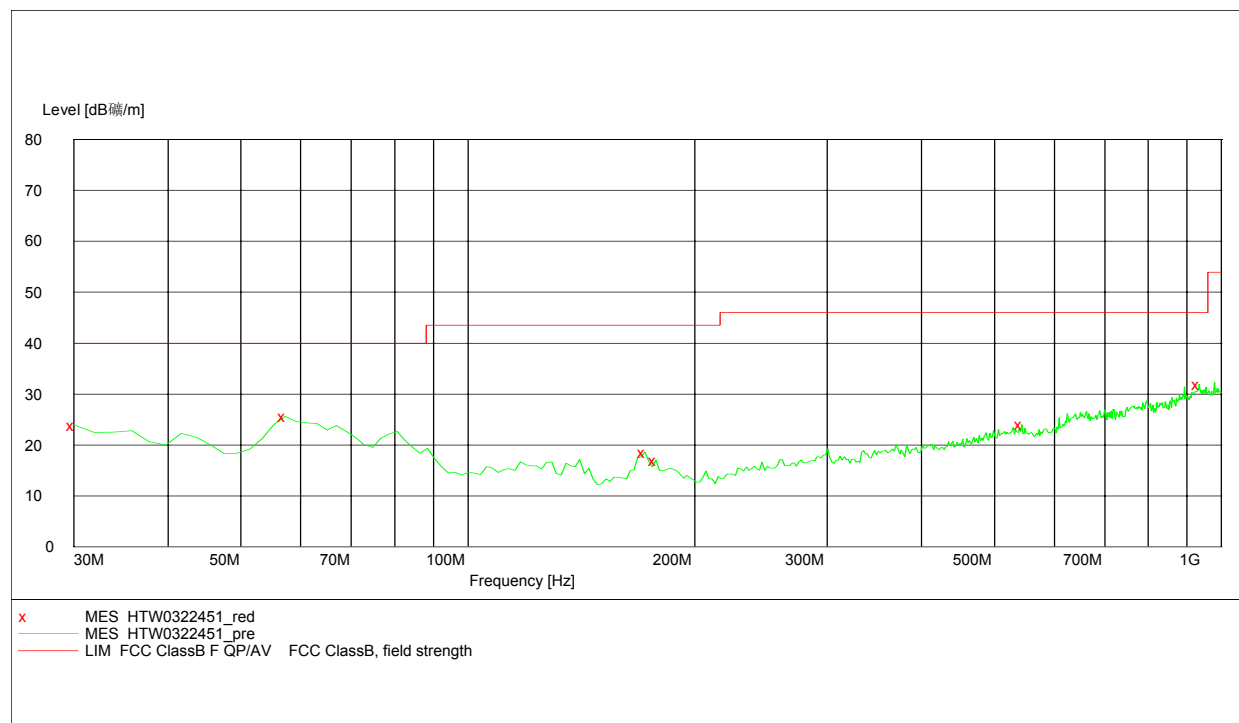
1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure 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.

TEST RESULTS

Company	Jetlun (Shenzhen) Corporation	Test Date	03/22/2010
Test Mode	Zigbee Channel 11	Detector Function	Peak(PK)/Average(AV)
Product Name	Appliance Module	Test By	Wenliang Li
Model Name	RD75613	TEMP&Humidity	25 °C, 55%

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	100 kHz	HL562 09

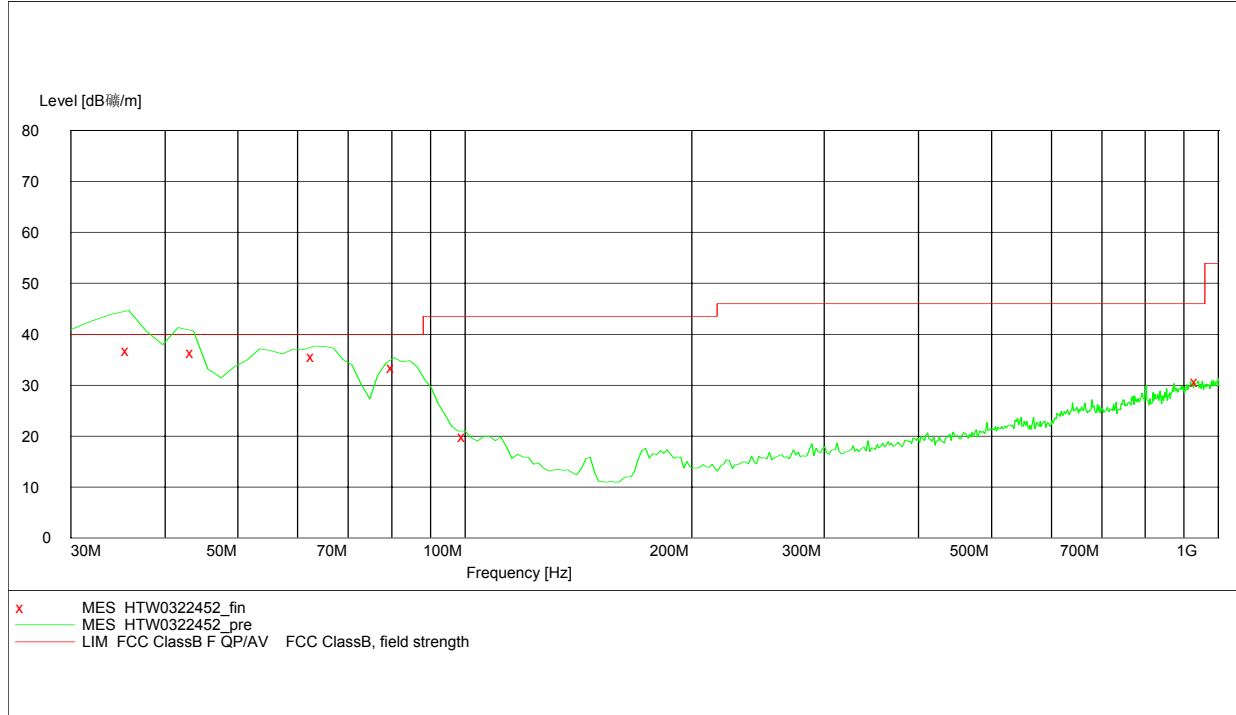
***MEASUREMENT RESULT: "HTW0322451_red"***

3/22/2010 9:39AM

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	23.90	-4.7	40.0	16.1	Peak	300.0	357.00	HORIZONTAL
57.214429	25.60	-18.4	40.0	14.4	Peak	300.0	218.00	HORIZONTAL
171.903808	18.60	-17.3	43.5	24.9	Peak	300.0	225.00	HORIZONTAL
177.735471	17.00	-16.9	43.5	26.5	Peak	100.0	205.00	HORIZONTAL
543.186373	24.00	-5.8	46.0	22.0	Peak	100.0	212.00	HORIZONTAL
933.907816	31.90	2.6	46.0	14.1	Peak	100.0	238.00	HORIZONTAL

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 09

**MEASUREMENT RESULT: "HTW0322452_fin"**

3/22/2010 9:43AM

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
35.830000	36.80	-7.9	40.0	3.2	QP	100.0	56.00	VERTICAL
43.600000	36.50	-8.2	40.0	3.5	QP	125.0	56.00	VERTICAL
63.050000	35.70	-18.6	40.0	4.3	QP	108.0	351.00	VERTICAL
80.550000	33.40	-15.4	40.0	6.6	QP	150.0	150.00	VERTICAL
100.000000	20.00	-13.8	43.5	23.5	QP	124.0	102.00	VERTICAL
939.750000	30.80	2.8	46.0	15.2	QP	100.0	12.00	VERTICAL

For 1000MHz to 25GHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	50.00 PK	74.00	-24.00	1.87 H	142	53.30	-3.30
1	2390.00	34.90 AV	54.00	-14.10	1.87 H	142	38.20	-3.30
2	*2405.00	106.30 PK			1.50 H	123	109.60	-3.30
2	*2405.00	95.50 AV			1.50H	123	102.80	-3.30
3	4810.00	56.40 PK	74.00	-17.60	1.32 H	216	52.60	3.80
3	4810.00	39.60 AV	54.00	-13.90	1.32 H	216	36.10	3.80
4	7215.00	54.40 PK	74.00	-19.60	1.43 H	176	45.00	9.40
4	7215.00	42.10 AV	54.00	-11.90	1.43 H	176	32.70	9.40
5	9620.00	61.50 PK	74.00	-12.50	1.08 H	72	48.90	12.60
5	9620.00	47.40 AV	54.00	-6.60	1.08 H	72	34.80	12.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	41.00 PK	74.00	-33.00	1.20 V	199	44.30	-3.30
1	2390.00	27.60 AV	54.00	-26.40	1.20 V	199	30.90	-3.30
2	*2405.00	102.20 PK			1.61 V	127	105.50	-3.30
2	*2405.00	88.60 AV			1.61 V	127	101.90	-3.30
3	4810.00	54.80 PK	74.00	-19.20	1.38 V	95	51.00	3.80
3	4810.00	40.10 AV	54.00	-13.90	1.38 V	95	36.80	3.80
4	7215.00	54.20 PK	74.00	-19.80	1.17 V	0	44.80	9.40
4	7215.00	42.10 AV	54.00	-11.90	1.17 V	0	32.70	9.40
5	9620.00	61.40 PK	74.00	-12.60	1.00 V	264	48.80	12.60
5	9620.00	47.50 AV	54.00	-6.50	1.00 V	264	34.90	12.60

Remark:

- (1) Measuring frequencies from 30 MHz to the 25 GHz.
- (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) 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.
- (5) 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.

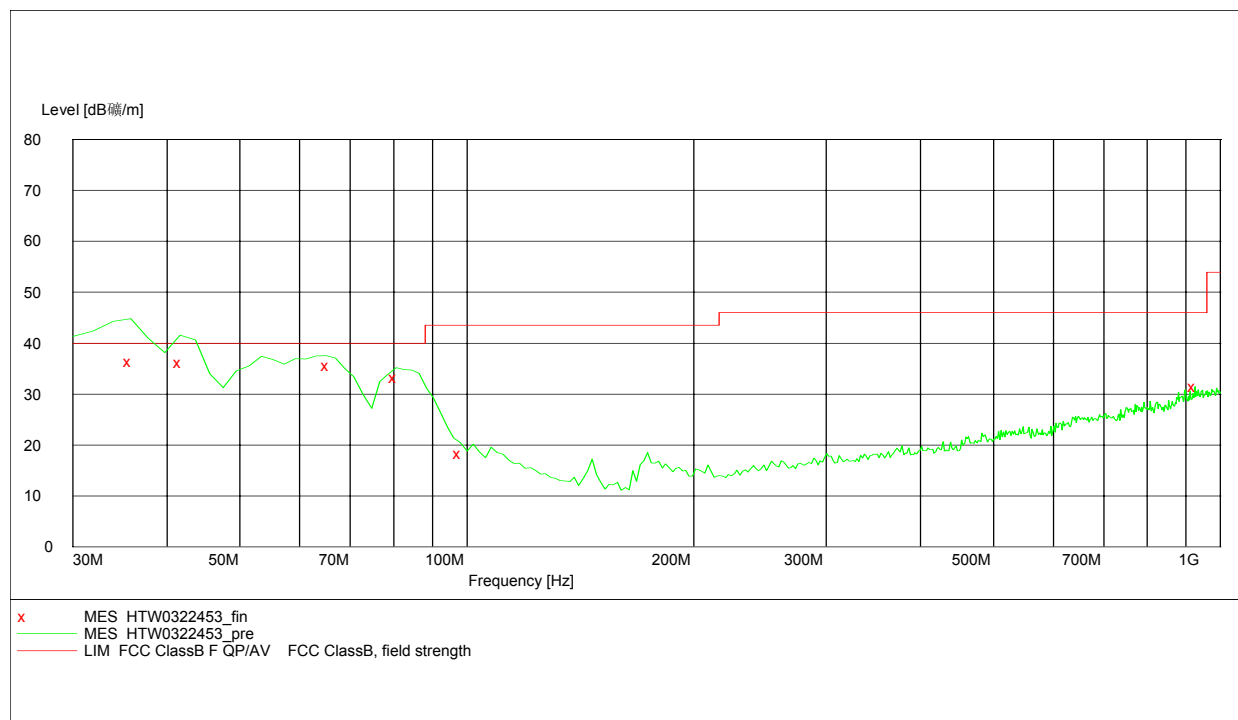
Company	Jetlun (Shenzhen) Corporation	Test Date	03/22/2010
Test Mode	Zigbee Channel 18	Detector Function	Peak(PK)/Average(AV)
Product Name	Appliance Module	Test By	Wenliang Li
Model Name	RD75613	TEMP&Humidity	25 °C, 55%

For 30MHz to 1000MHz

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 09



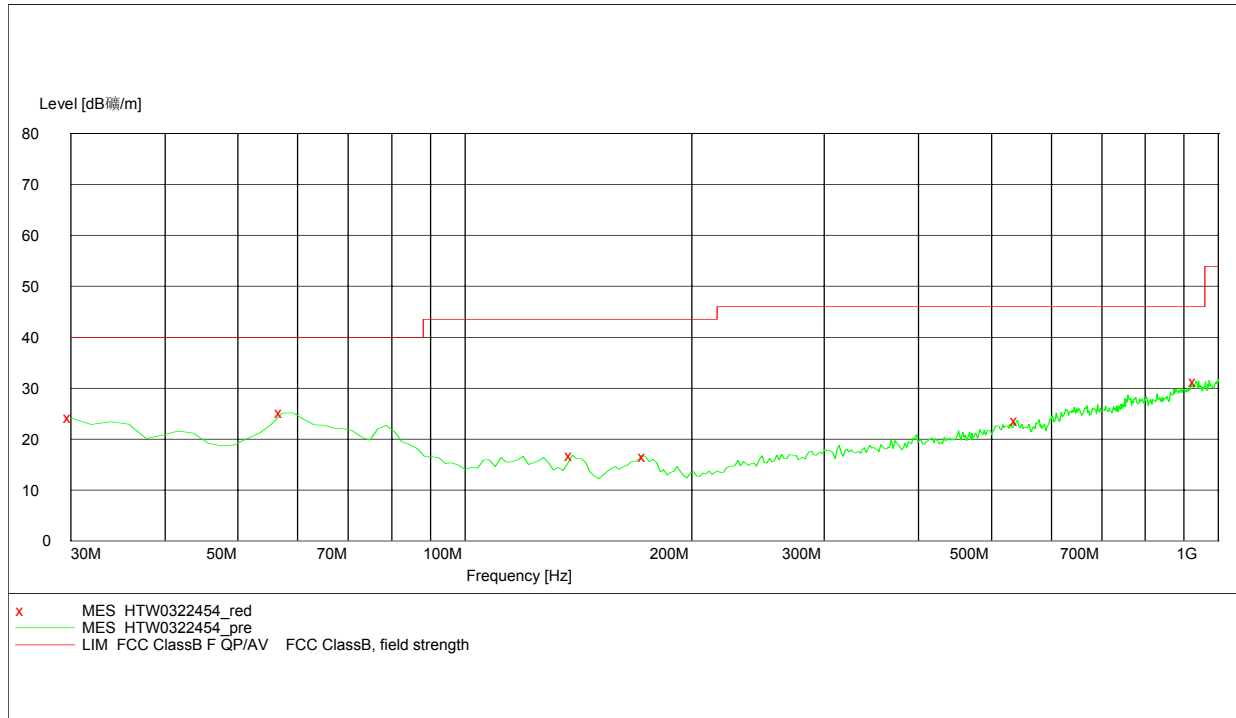
MEASUREMENT RESULT: "HTW0322453_fin"

3/22/2010 9:58AM

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
35.830000	36.50	-7.9	40.0	3.5	QP	123.0	56.00	VERTICAL
41.670000	36.10	-8.1	40.0	3.9	QP	150.0	56.00	VERTICAL
65.500000	35.60	-18.2	40.0	5.4	QP	108.0	360.00	VERTICAL
80.540000	33.20	-15.4	40.0	6.8	QP	100.0	151.00	VERTICAL
98.090000	18.40	-13.8	43.5	25.1	QP	144.0	151.00	VERTICAL
926.130000	31.40	2.5	46.0	14.6	QP	100.0	97.00	VERTICAL

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	100 kHz	HL562 09

***MEASUREMENT RESULT: "HTW0322454_red"***

3/22/2010 10:04AM

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	24.20	-4.7	40.0	15.8	Peak	300.0	37.00	HORIZONTAL
57.214429	25.20	-18.4	40.0	14.8	Peak	300.0	287.00	HORIZONTAL
138.857715	16.80	-15.1	43.5	26.7	Peak	300.0	199.00	HORIZONTAL
173.847695	16.50	-17.1	43.5	27.0	Peak	300.0	219.00	HORIZONTAL
541.242485	23.70	-5.8	46.0	22.3	Peak	300.0	253.00	HORIZONTAL
933.907816	31.40	2.6	46.0	14.6	Peak	100.0	198.00	HORIZONTAL

For 1000MHz to 25GHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2440.00	102.60 PK			1.47 H	100	105.80	-3.20
1	*2440.00	89.60 AV			1.47 H	100	92.80	-3.20
2	4880.00	54.20 PK	74.00	-19.80	1.39 H	214	50.80	3.40
2	4880.00	38.90 AV	54.00	-15.10	1.39 H	214	35.50	3.40
3	7320.00	54.30 PK	74.00	-23.20	1.20 H	0	44.90	9.40
3	7320.00	42.10 AV	54.00	-14.30	1.20 H	0	32.70	9.40
4	9760.00	62.00 PK	74.00	-12.00	1.15 H	163	48.40	12.60
4	9760.00	47.60 AV	54.00	-6.40	1.15 H	163	35.00	12.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2440.00	97.50 PK			1.31 V	122	108.70	-3.20
1	*2440.00	83.80 AV			1.31 V	122	101.00	-3.20
2	4880.00	53.80 PK	74.00	-20.20	1.24 V	100	50.40	3.40
2	4880.00	38.10 AV	54.00	-15.90	1.24 V	100	34.70	3.40
3	7320.00	54.30 PK	74.00	-19.80	1.09 V	356	44.90	9.40
3	7320.00	42.10 AV	54.00	-11.90	1.09 V	356	32.70	9.40
4	9760.00	61.20 PK	74.00	-12.80	1.57 V	26	48.60	12.60
4	9760.00	47.40 AV	54.00	-6.60	1.57 V	26	34.80	12.60

Remark:

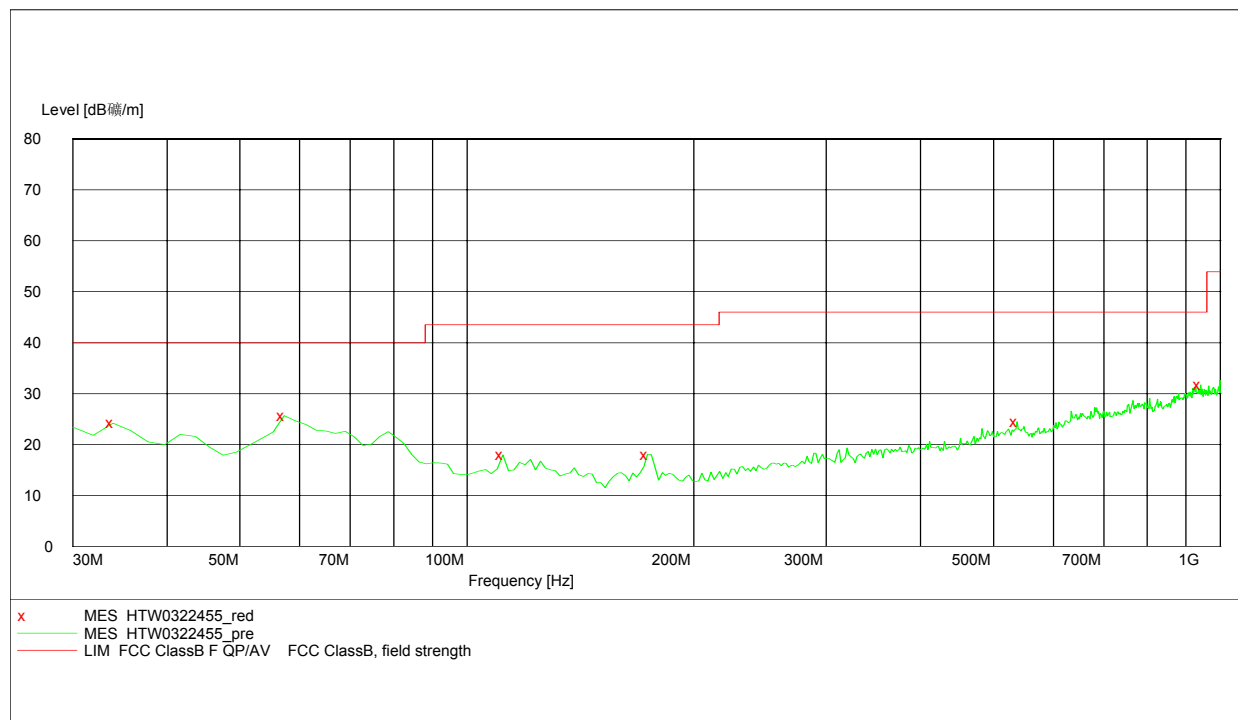
- (1) Measuring frequencies from 30 MHz to the 25 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) 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.
- (5) 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

Company	Jetlun (Shenzhen) Corporation	Test Date	03/22/2010
Test Mode	Zigbee Channel 26	Detector Function	Peak(PK)/Average(AV)
Product Name	Appliance Module	Test By	Wenliang Li
Model Name	RD75613	TEMP&Humidity	25 °C, 55%

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	100 kHz	HL562 09



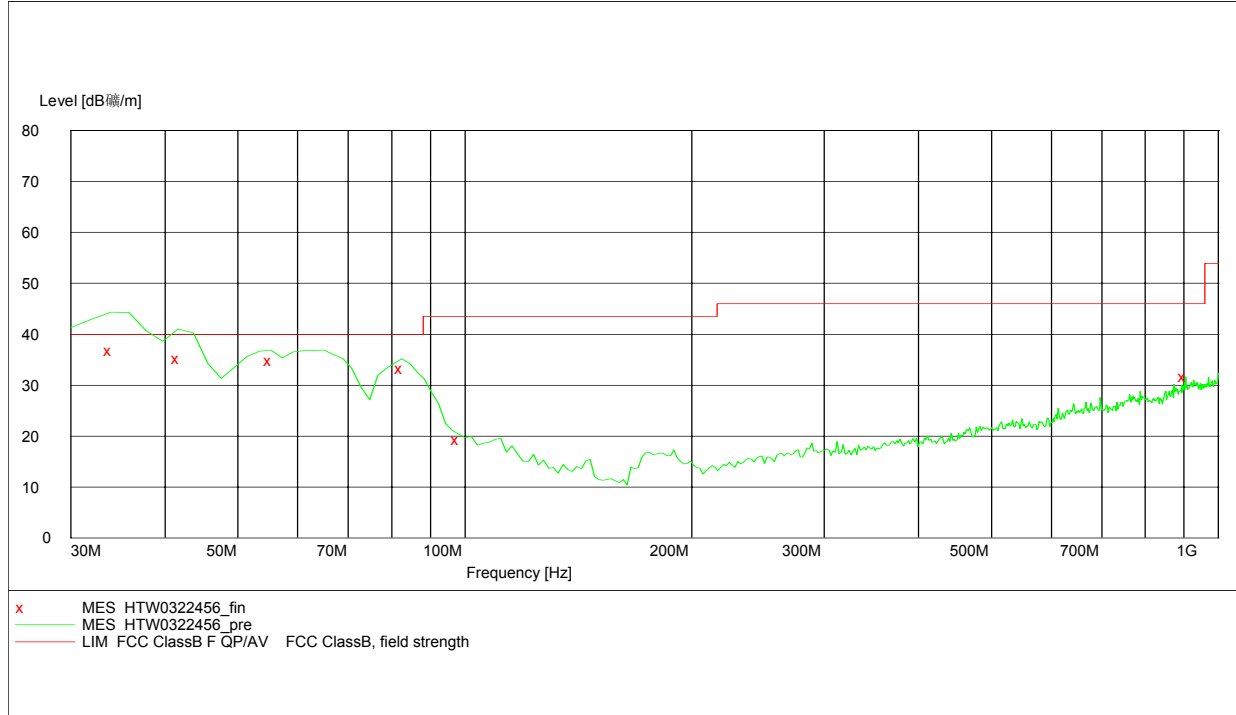
MEASUREMENT RESULT: "HTW0322455_red"

3/22/2010 10:07AM

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
33.887776	24.20	-6.9	40.0	15.8	Peak	100.0	116.00	HORIZONTAL
57.214429	25.70	-18.4	40.0	14.3	Peak	300.0	283.00	HORIZONTAL
111.643287	18.00	-13.1	43.5	25.5	Peak	300.0	209.00	HORIZONTAL
173.847695	18.10	-17.1	43.5	25.4	Peak	300.0	237.00	HORIZONTAL
537.354709	24.50	-5.8	46.0	21.5	Peak	300.0	111.00	HORIZONTAL
941.683367	31.70	2.8	46.0	14.3	Peak	100.0	0.00	HORIZONTAL

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 09

**MEASUREMENT RESULT: "HTW0322456_fin"**

3/22/2010 10:12AM

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
33.900000	36.80	-6.9	40.0	3.2	QP	100.0	116.00	VERTICAL
41.670000	35.30	-6.9	40.0	4.7	QP	124.0	116.00	VERTICAL
55.270000	34.90	-17.8	40.0	5.1	QP	100.0	356.00	VERTICAL
82.510000	33.20	-15.1	40.0	6.8	QP	150.0	116.00	VERTICAL
98.050000	19.40	-13.8	43.5	24.1	QP	144.0	63.00	VERTICAL
904.760000	31.60	1.8	46.0	14.4	QP	100.0	96.00	VERTICAL

For 1000MHz to 25GHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2480.00	105.40 PK			1.89 H	156	108.70	-3.30
1	*2480.00	90.50 AV			1.89 H	156	93.80	-3.30
2	2483.50	57.30 PK	74.00	-16.70	1.12H	191	60.60	-3.30
2	2483.50	41.60 AV	54.00	-12.40	1.12 H	191	44.90	-3.30
3	4960.00	52.90 PK	74.00	-21.10	1.29 H	198	49.10	3.80
3	4960.00	40.20 AV	54.00	-13.80	1.29 H	198	36.40	3.80
4	7440.00	54.30 PK	74.00	-19.70	1.45 H	90	44.90	9.40
4	7440.00	42.60 AV	54.00	-11.40	1.45 H	90	33.20	9.40
5	9920.00	61.50 PK	74.00	-12.50	1.14 H	124	48.90	12.60
5	9920.00	46.90 AV	54.00	-7.10	1.14 H	124	34.30	12.60

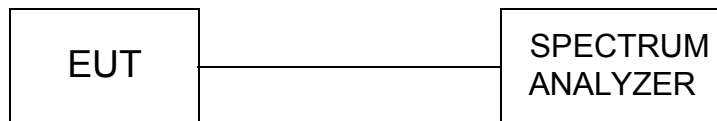
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2480.00	102.00 PK			1.30 V	125	105.30	-3.30
1	*2480.00	89.30 AV			1.30 V	125	92.60	-3.30
2	2483.50	53.80 PK	74.00	-20.20	1.54 V	348	57.10	-3.30
2	2483.50	38.00 AV	54.00	-16.00	1.54 V	348	41.30	-3.30
3	4960.00	49.80 PK	74.00	-24.20	1.20 V	96	46.00	3.80
3	4960.00	37.80 AV	54.00	-16.20	1.20 V	96	34.00	3.80
4	7440.00	55.90 PK	74.00	-18.10	1.28 V	35	46.50	9.40
4	7440.00	37.80 AV	54.00	-16.20	1.28 V	35	28.40	9.40
5	9920.00	61.40 PK	74.00	-12.60	1.00 V	37	48.80	12.60
5	9920.00	47.60 AV	54.00	-6.40	1.00 V	37	35.00	12.60

Remark:

- (1) Measuring frequencies from 30 MHz to the 25 GHz.
- (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) 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.
- (5) 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

4.3. Maximum Peak Output Power

TEST CONFIGURATION



TEST PROCEDURE

1. The spectrum shall be set as follows:
 Span: 1.5 times channel integration bandwidth.
 RBW: 100 KHz
 VBW: 300 KHz
 Detector: Peak
 Sweep: Single trace
2. Compute the combined power of all signal responses contained in the trace by covering all the data points.
3. For 99% occupied BW, place the markers at the frequency at which 0.5% of the power lies to the right of the right marker and 0.5% of the power lies to the left of the left marker.
4. The peak output power is the channel power integrated over 99% bandwidth.

LIMIT

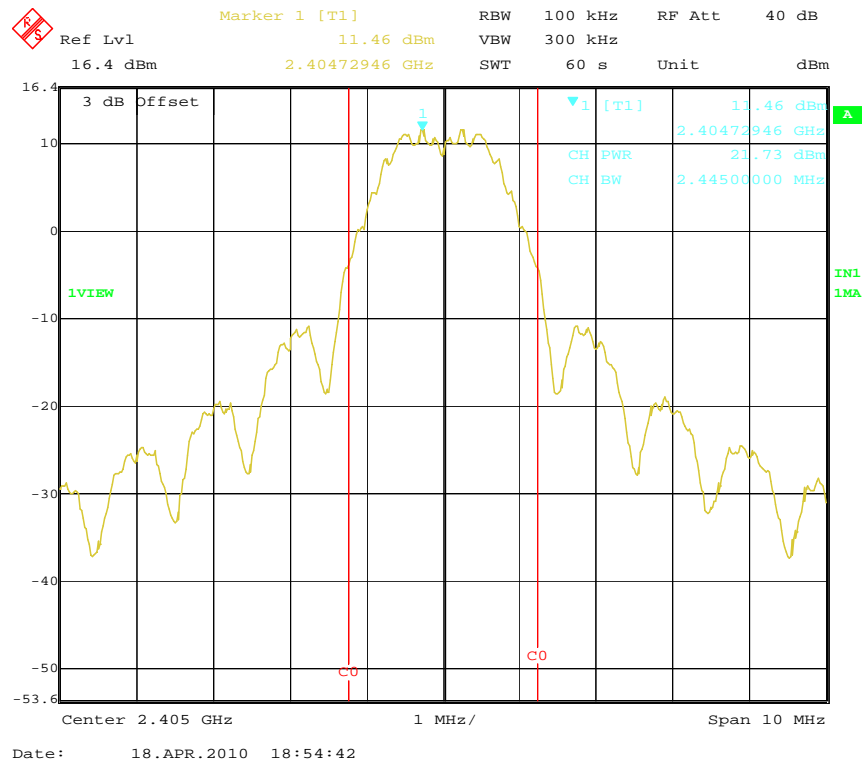
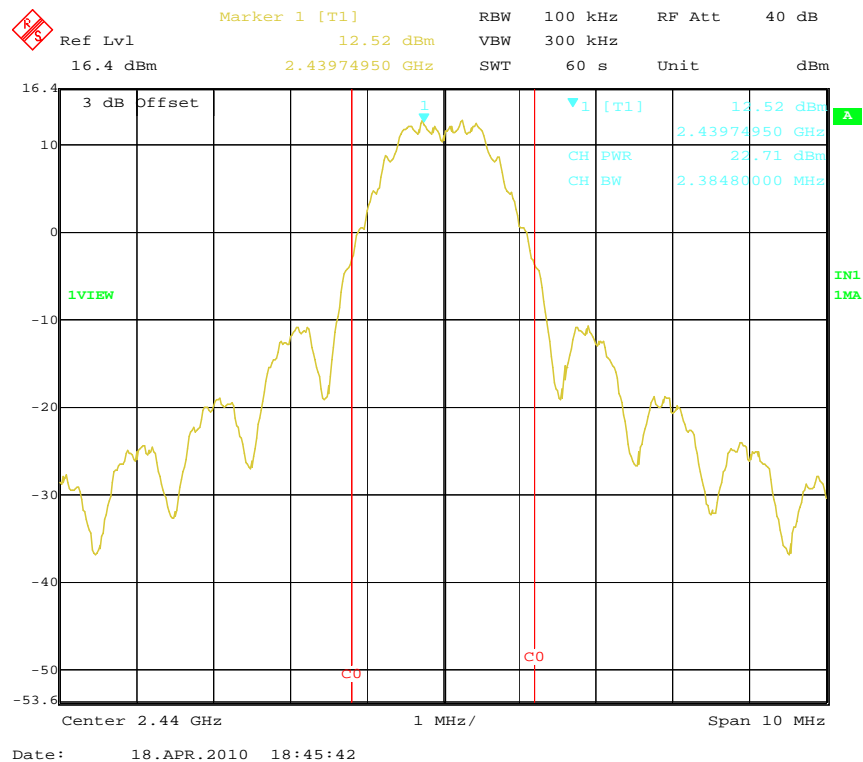
The Maximum Peak Output Power Measurement is 30dBm.

TEST RESULTS

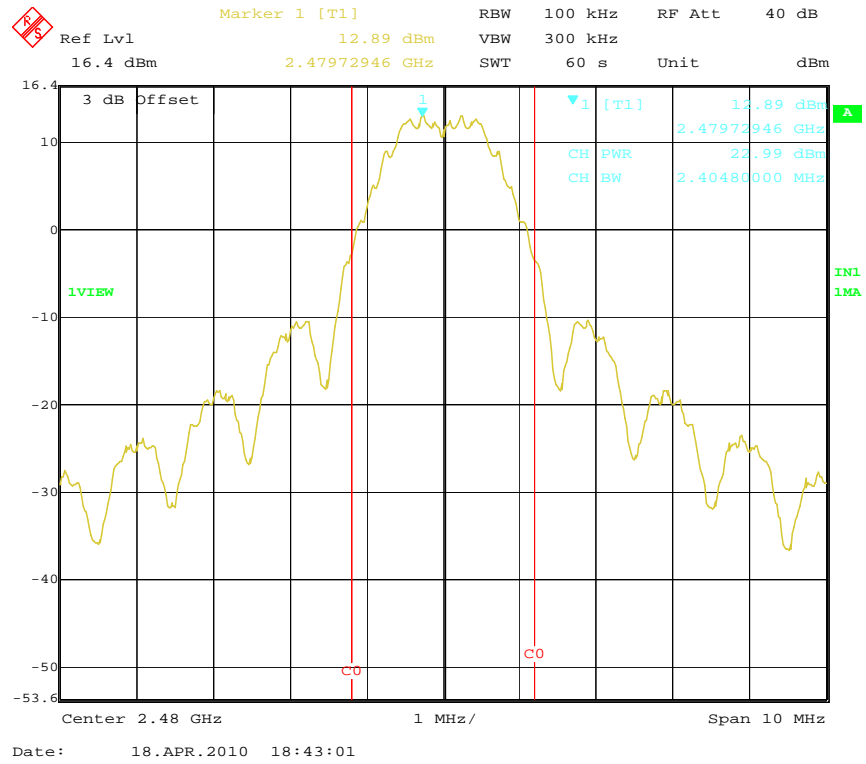
Company	Jetlun (Shenzhen) Corporation	Test Date	04/18/2010
Test Mode	Zigbee Channel 26	Detector Function	Peak(PK)/Average(AV)
Product Name	Gateway Pro.	Test By	Wenliang Li
Model Name	RD75613	TEMP&Humidity	25 °C, 55%

Channel Frequency (MHz)	Peak Power Output (dBm)	Peak Power Limit (dBm)	Test Results
2405	21.73	30	PASS
2440	22.71	30	PASS
2480	22.99	30	PASS

Note: Measured Results includes the cable loss.

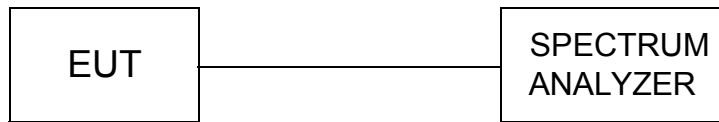
Photo of Maximum Peak Output Power Measurement**Channel 11****Channel 18**

Channel 26



4.4. Power Spectral Density Measurement

TEST CONFIGURATION



TEST PROCEDURE

1. The transmitter output (antenna port) was connected to the spectrum analyser.
2. Set RBW of spectrum analyzer to 3 kHz and VBW to 30 kHz. Set Detector to Peak, Trace to Max Hold.
3. Mark the frequency with maximum peak power as the center of the display of the spectrum.
4. Set the span to 1.5MHz and the sweep time to 60s and record the maximum peak value.

LIMIT

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST RESULTS

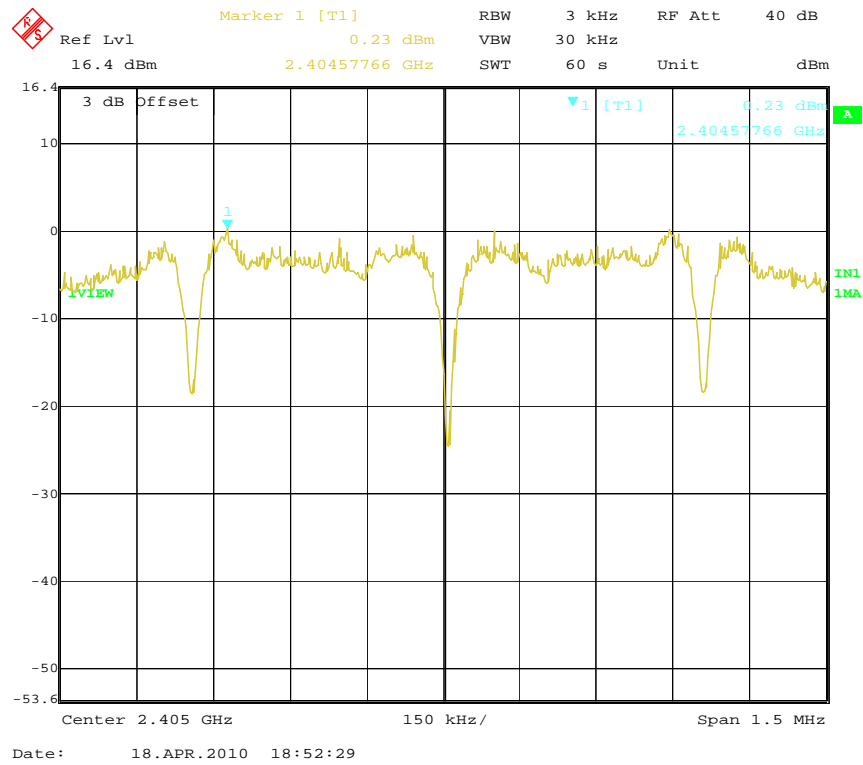
Company	Jetlun (Shenzhen) Corporation	Test Date	04/18/2010
Test Mode	Zigbee Channel 26	Detector Function	Peak(PK)/Average(AV)
Product Name	Gateway Pro.	Test By	Wenliang Li
Model Name	RD75613	TEMP&Humidity	25 °C, 55%

Channel Frequency (MHz)	Peak Power Output (dBm)	Peak Power Limit (dBm)	Test Results
2405	0.23	8	PASS
2440	0.65	8	PASS
2480	1.78	8	PASS

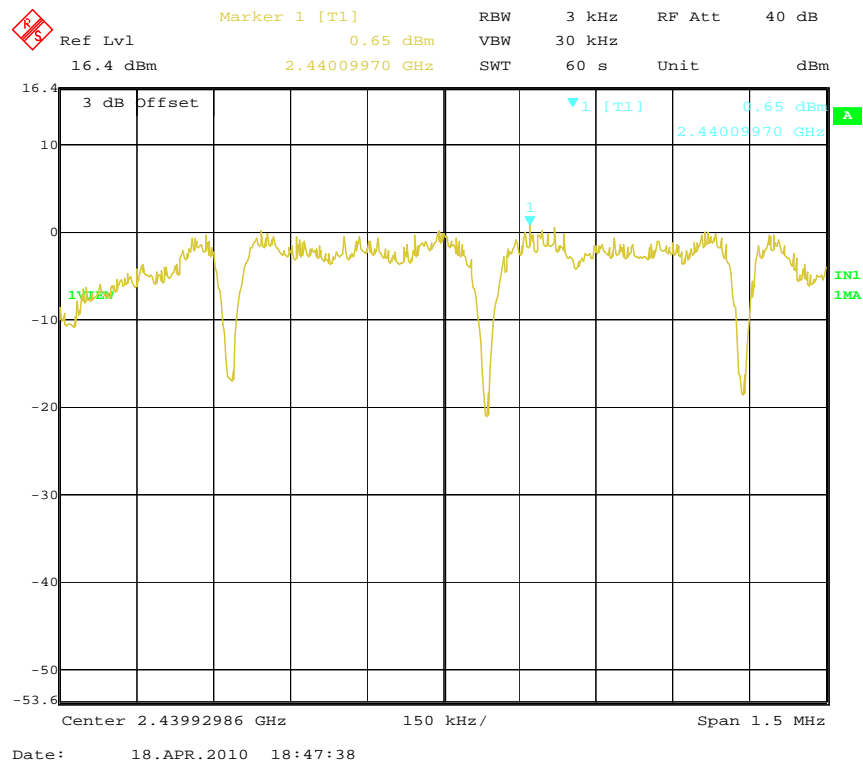
Note: Measured Results includes the cable loss.

Photo of Power Spectral Density Measurement

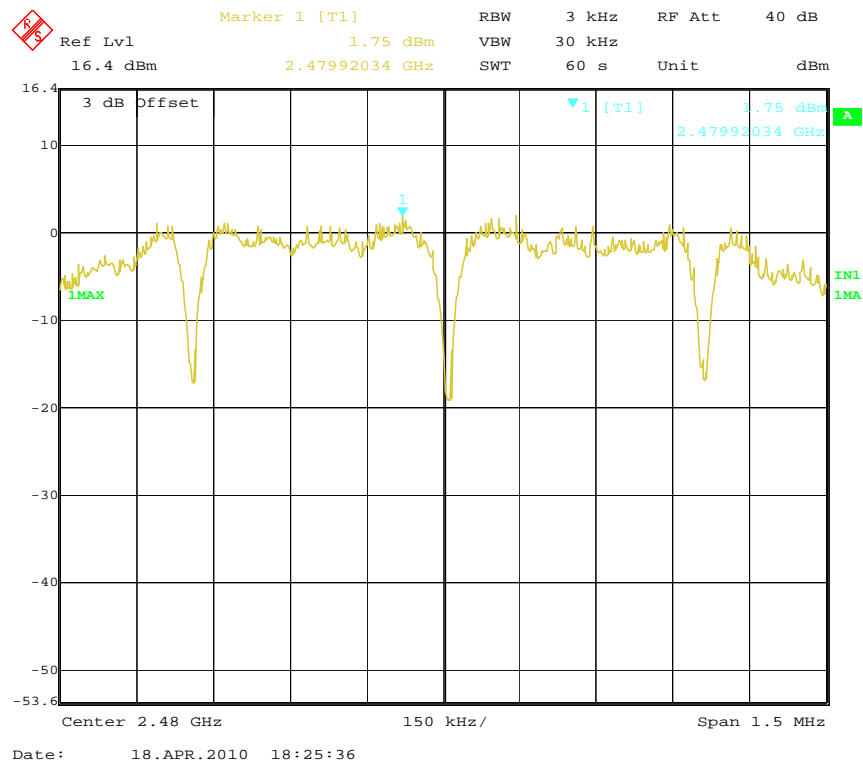
Channel 11



Channel 18

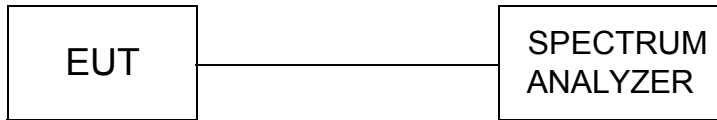


Channel 26



4.5. Band Edge Measurement

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=100kHz and VBM= 300KHz 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 and VBW to 100 kHz, to measure the conducted peak band edge.

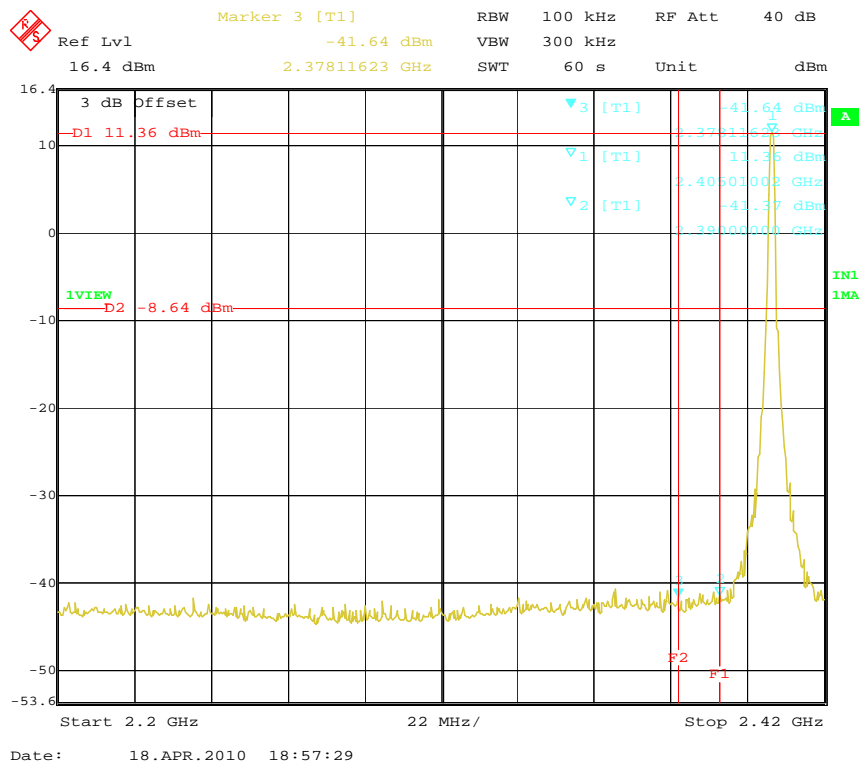
LIMIT

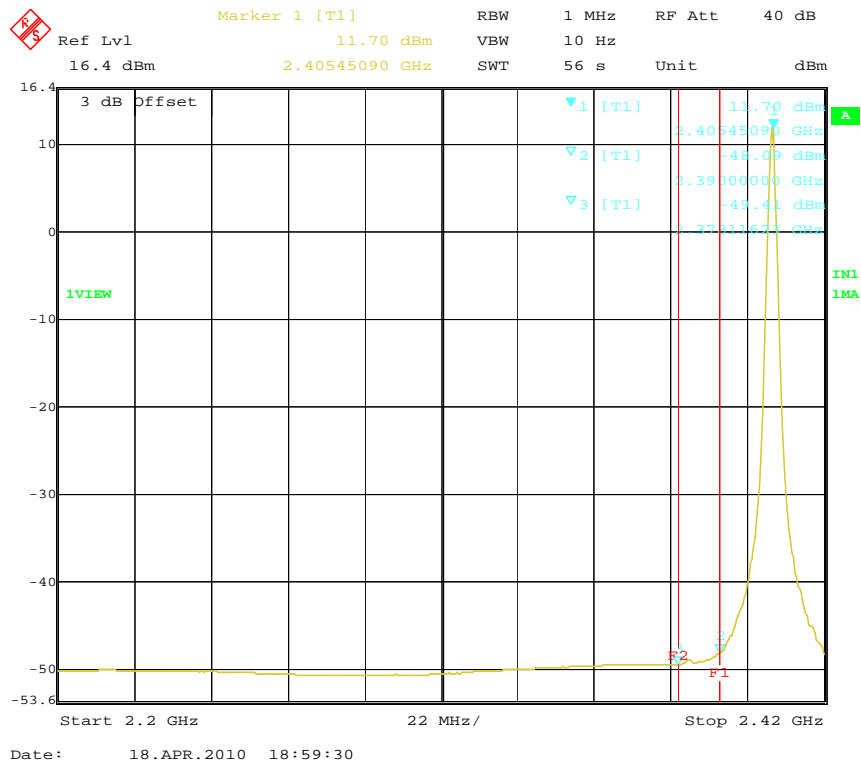
1. Below -20dB of the highest emission level in operating band.
2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209(see Section 15.205(c)).

Frequency (MHz)	Limit Average (dBuV/m)	Limit Peak (dBuV/m)
Below 2390 or Above 2483.5	54	74

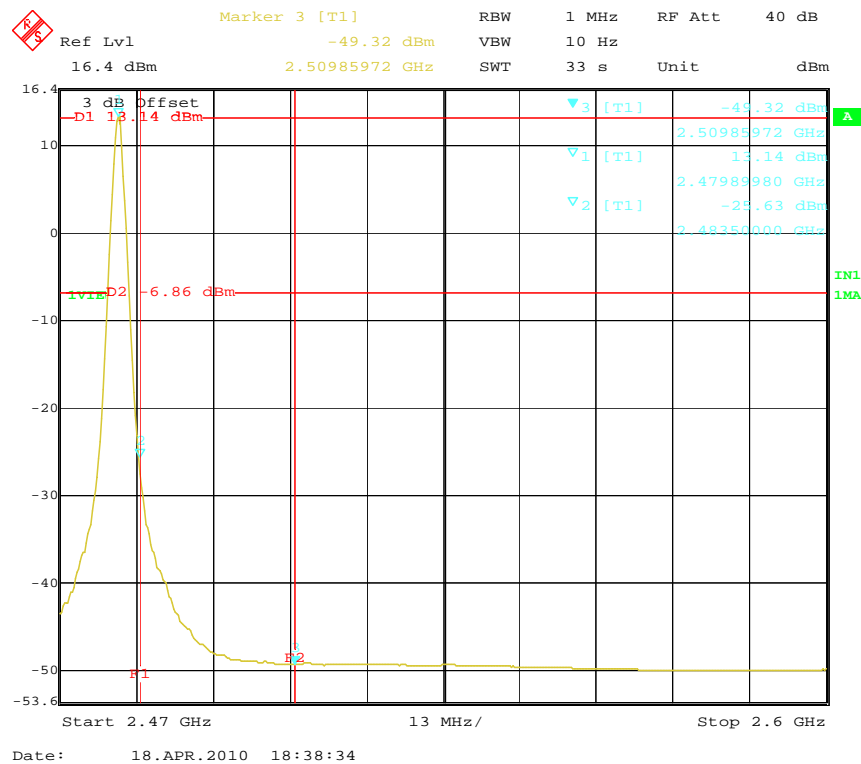
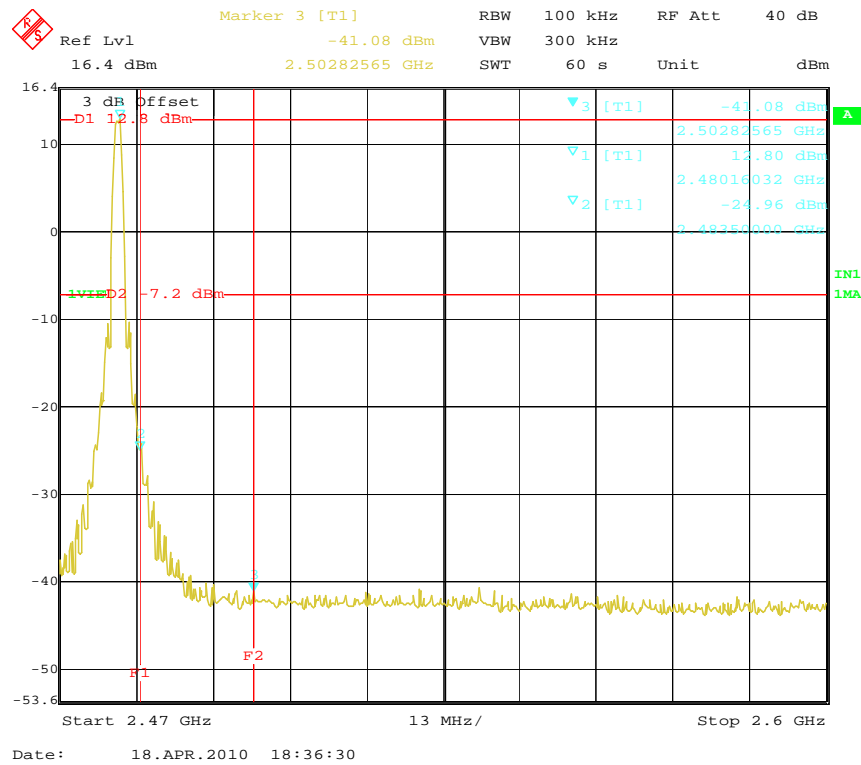
TEST RESULTS

Photo of Band Edge Measurement





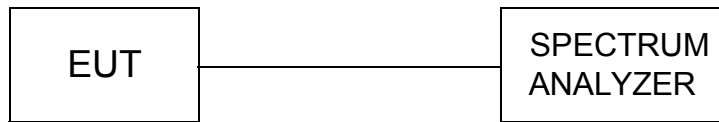
Results: Max carrier field strength PK 106.30dBuV/m, AV 95.50dBuV/m; At 2.390GHz, the deviation of PK plot is 55.41dB and the deviation of AV plot is 57.06dB; The field strength at 2.390GHz PK is 50.89dBuV/m and the field strength at 2.390GHz AV is 38.44 dBuV/m Which are fulfill the requirement of PK 74dBuV/m, AV 54dBuV/m.



Results: Max carrier field strength PK 105.40dBuV/m, AV 90.50 dBuV/m; At 2.4835GHz, the deviation of PK plot is 41.04dB and the deviation of AV plot is 39.85dB; The field strength at 2.4835GHz PK is 64.36 dBuV/m and the field strength at 2.4835GHz AV is 50.65 dBuV/m Which are fulfill the requirement of PK 74dBuV/m, AV 54dBuV/m.

4.6. Spurious RF conducted emissions

TEST CONFIGURATION



TEST PROCEDURE

The Spurious RF conducted emissions compliance of RF radiated emission should be measured by following the guidance in ANSI C63.4:2009 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=100 kHz and VBM= 300 KHz to measure the peak field strength, and measure frequency range from 30MHz to 26.5GHz.

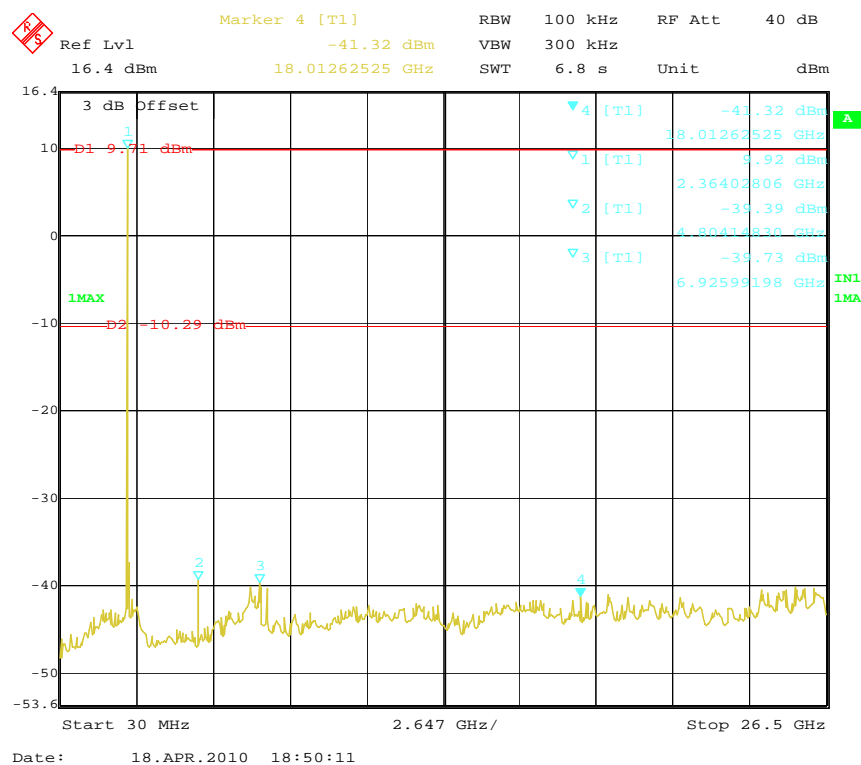
LIMIT

1. Below -20dB of the highest emission level in operating band.
2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

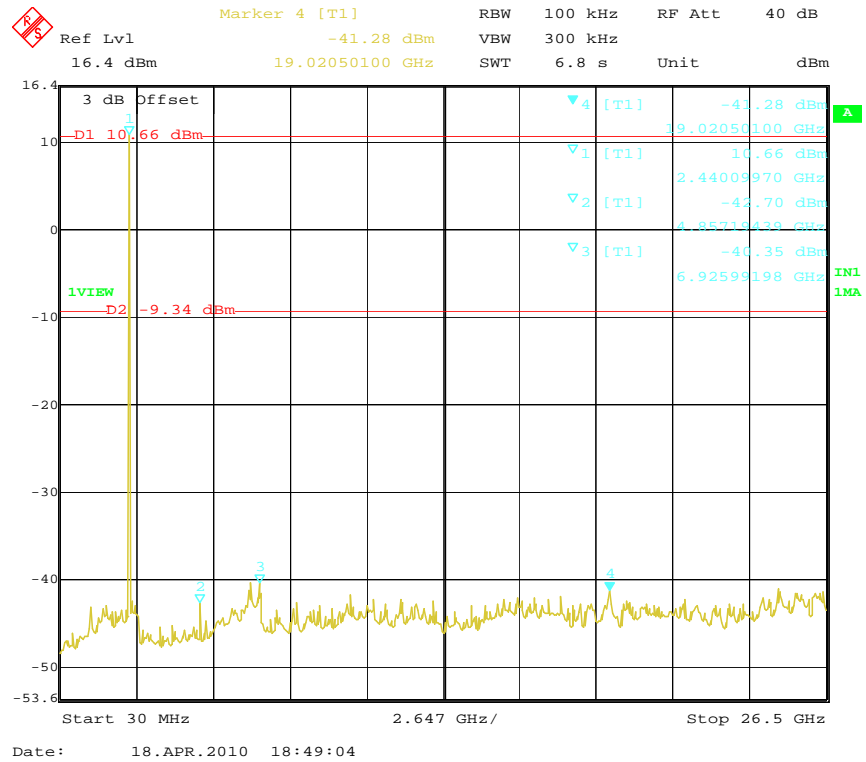
TEST RESULTS

Photo of Spurious RF conducted emissions Measurement

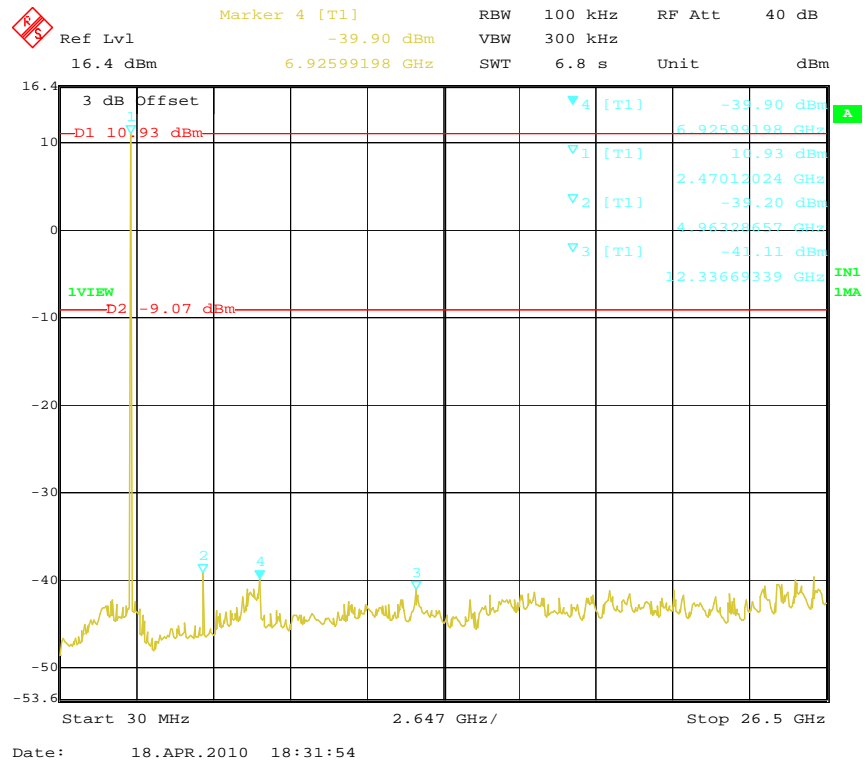
Channel 11



Channel 18

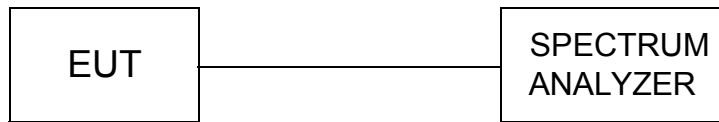


Channel 26



4.7. 6dB Bandwidth and 99% 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 100 KHz RBW and 300 KHz VBW.

The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

LIMIT

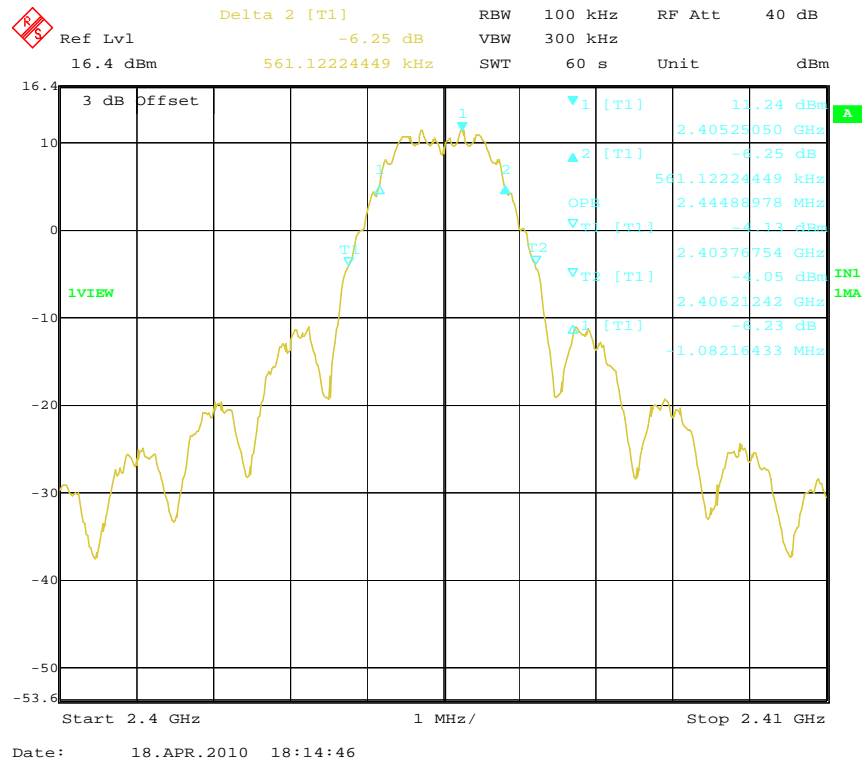
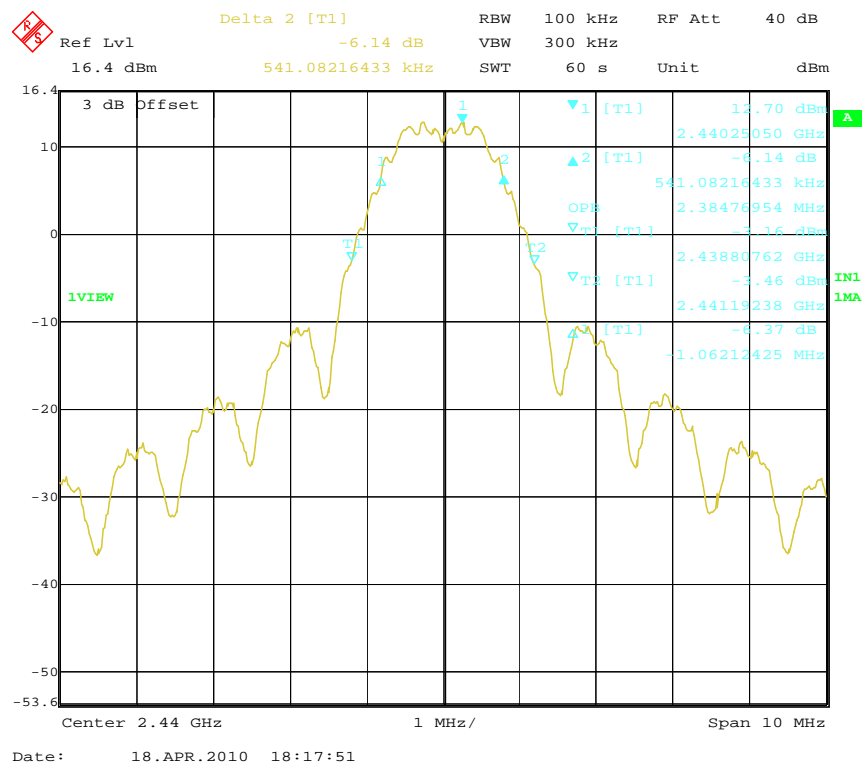
For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

TEST RESULTS

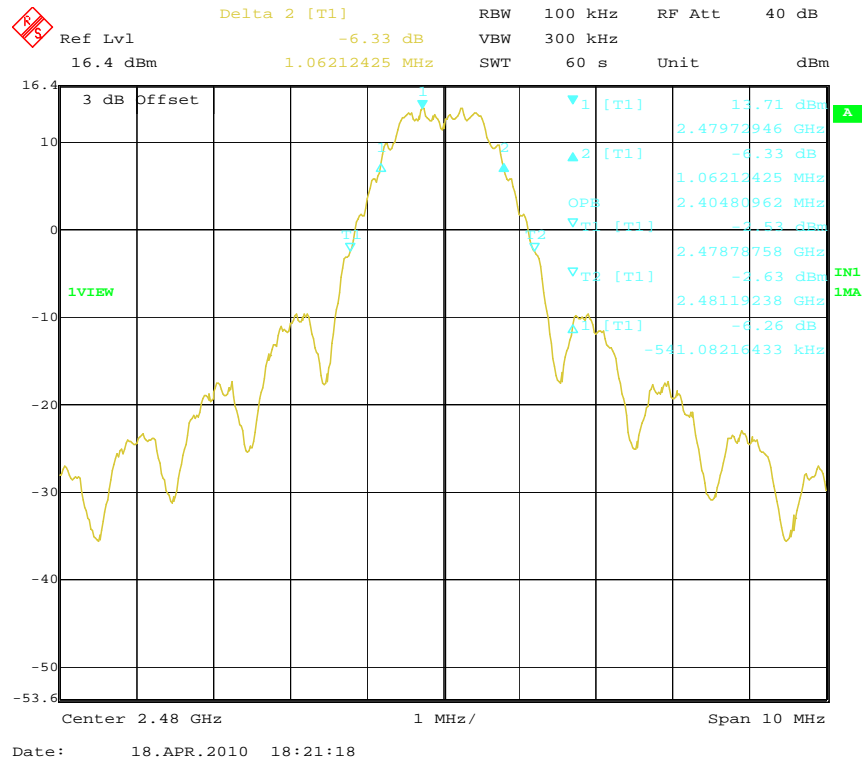
Company	Jetlun (Shenzhen) Corporation	Test Date	04/18/2010
Test Mode	Zigbee Channel 26	Detector Function	Peak(PK)/Average(AV)
Product Name	Gateway Pro.	Test By	Wenliang Li
Model Name	RD75613	TEMP&Humidity	25 °C, 55%

Channel	Channel Frequency (MHz)	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	Minimum Limit (MHz)	Results
11	2405	2.445	1.643	0.5	Pass
18	2440	2.385	1.603	0.5	Pass
26	2480	2.405	1.603	0.5	Pass

Note: Measured Results includes the cable loss.

Photo of 6dB Bandwidth and 99% Bandwidth Measurement**Channel 11****Channel 18**

Channel 26



4.8. MPE Calculation Method

Applicable Standard

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

LIMIT

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	6
3.0 – 30	1842/f	4.89/f	(900/f)*	6
30 – 300	61.4	0.163	1.0	6
300 – 1500	/	/	f/300	6
1500 – 100,000	/	/	5	6

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	30
3.0 – 30	824/f	2.19/f	(180/f)*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	/	/	f/1500	30
1500 – 100,000	/	/	1.0	30

F=frequency in MHz

*=Plane-wave equivalent power density

MPE Calculation Method

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S=PG/4\pi R^2$$

Where: S=power density

P=power input to antenna

G=power gain of the antenna in the direction of interest relative to an isotropic radiator

R=distance to the center of radiation of the antenna

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna is 0.5dBi, the RF power density can be obtained.

TEST RESULTS

Mode	Minimum Separation Distance (20cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Nemeric)	Power Density Limit (mW/cm ²)	Power Density At 20 cm (mW/cm ²)	Test Results
2405	20.00	21.73	148.94	1.122	1.000	0.0332	Pass
2440	20.00	22.71	186.64	1.122	1.000	0.0417	Pass
2480	20.00	22.99	199.07	1.122	1.000	0.0444	Pass

4.9. Antenna Requirement

Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

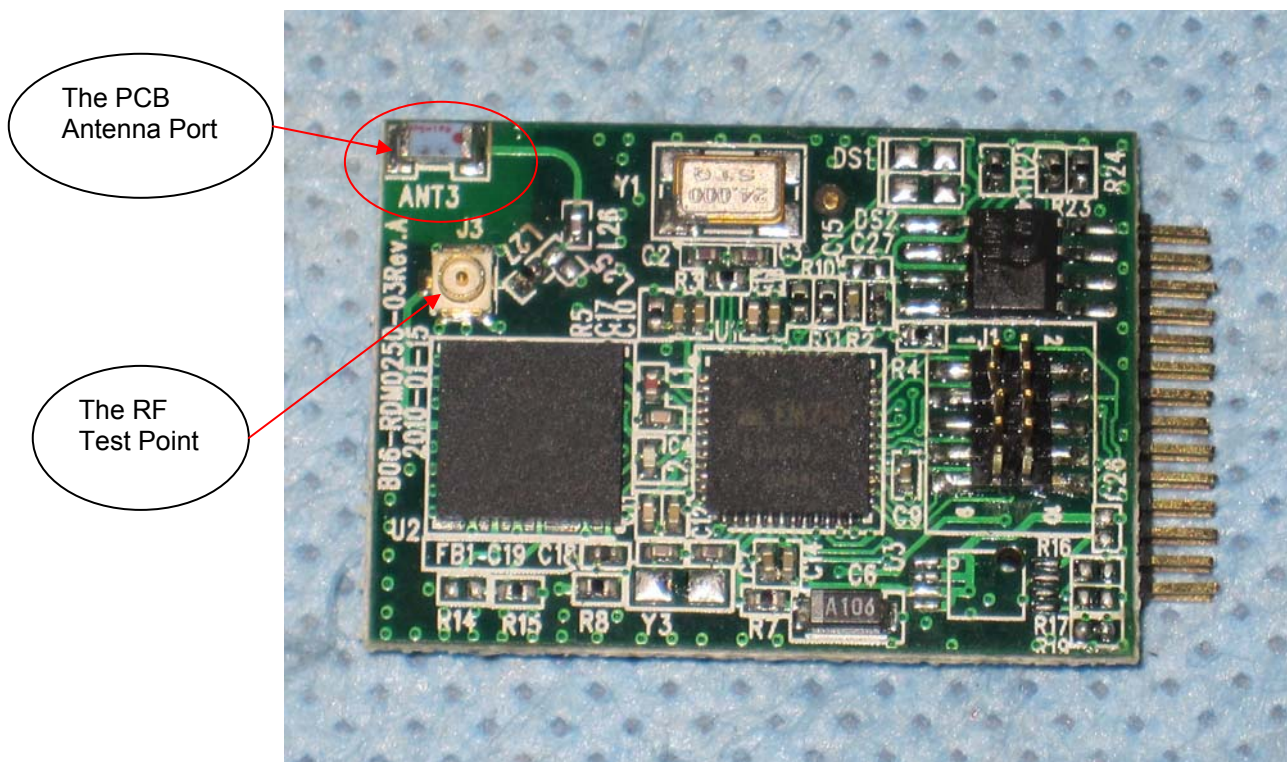
And according to FCC 47 CFR Section 15.247 (c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Refer to statement below for compliance.

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

Antenna Connected Construction

The antenna used in this product is internal PCB antenna. The maximum Gain of the antenna only 0.5dBi. Detail please see the photos as following:



5. Test Setup Photos of the EUT

Radiated Emission (30MHz-1GHz)



Radiated Emission (1GHz-25GHz)



Conducted Emission (AC Mains)



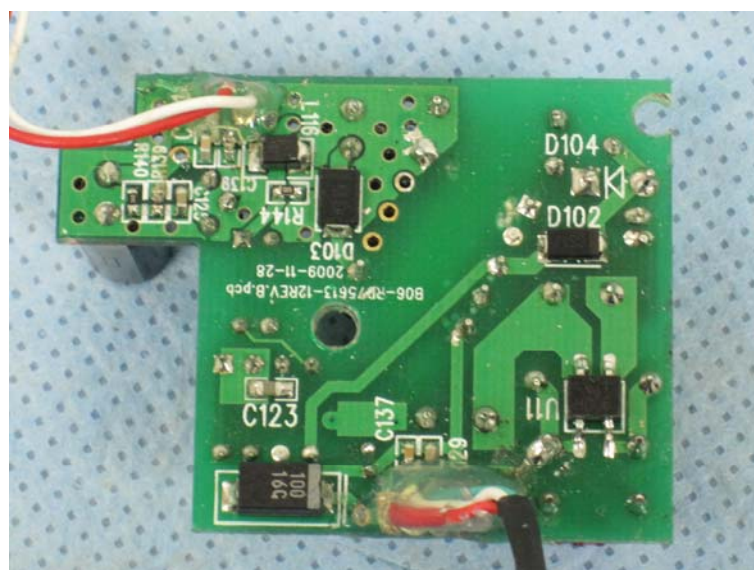
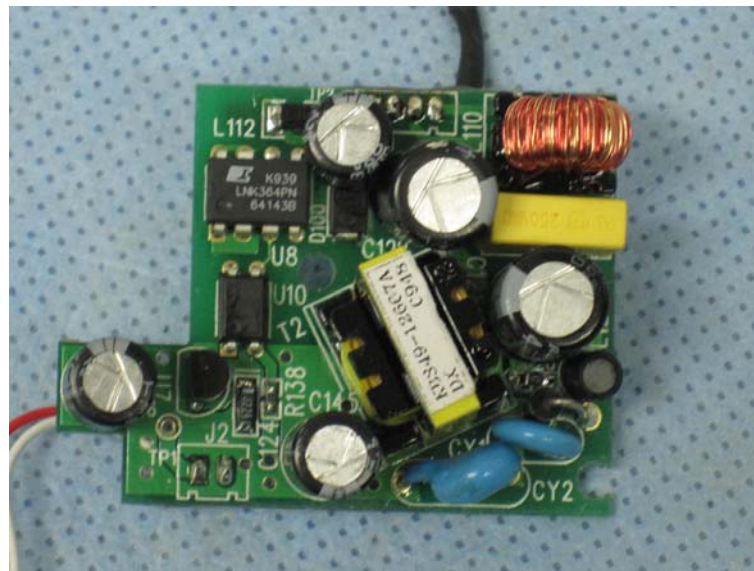
6. External and Internal Photos of the EUT

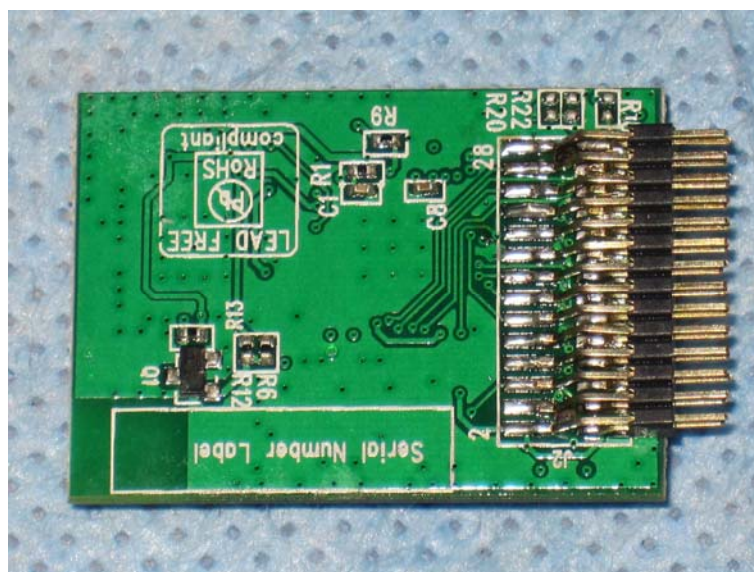
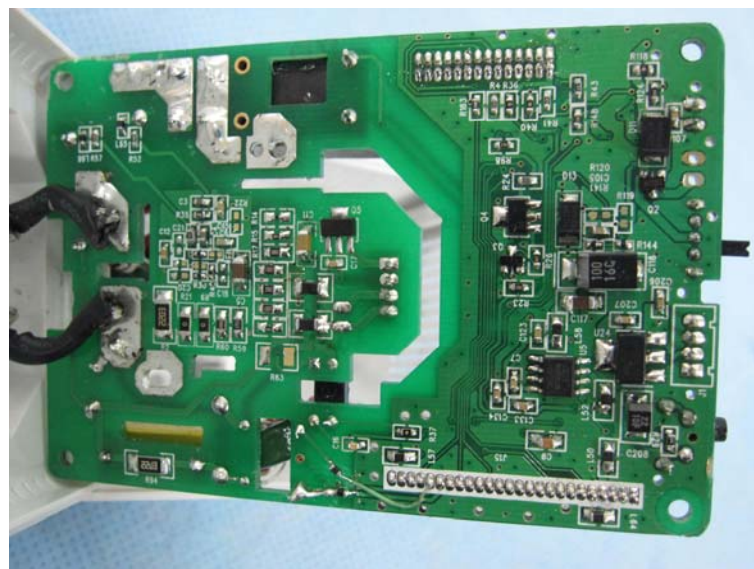
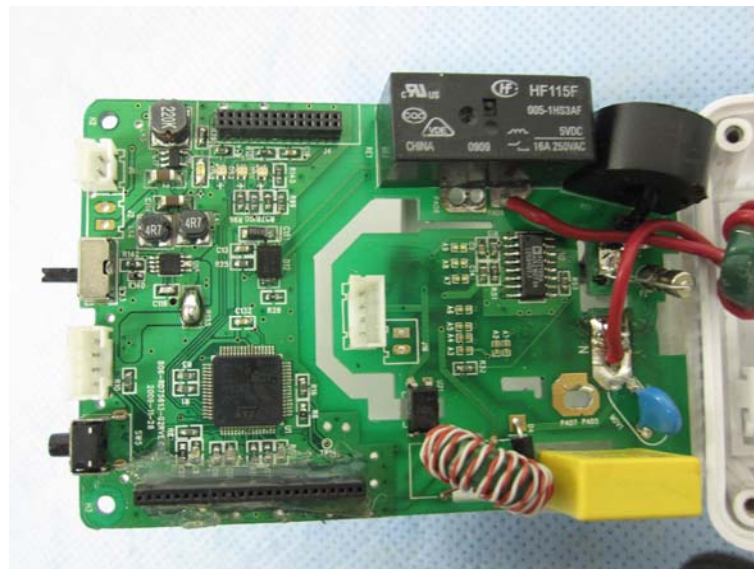
External Photos

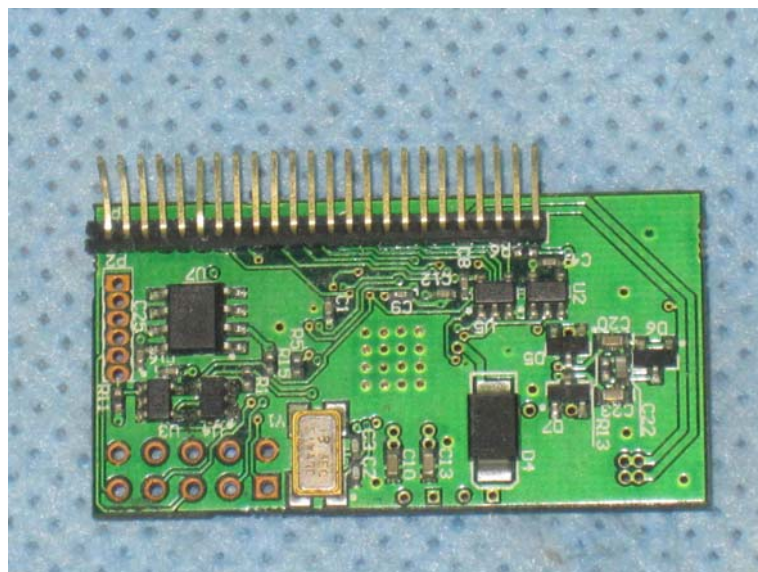
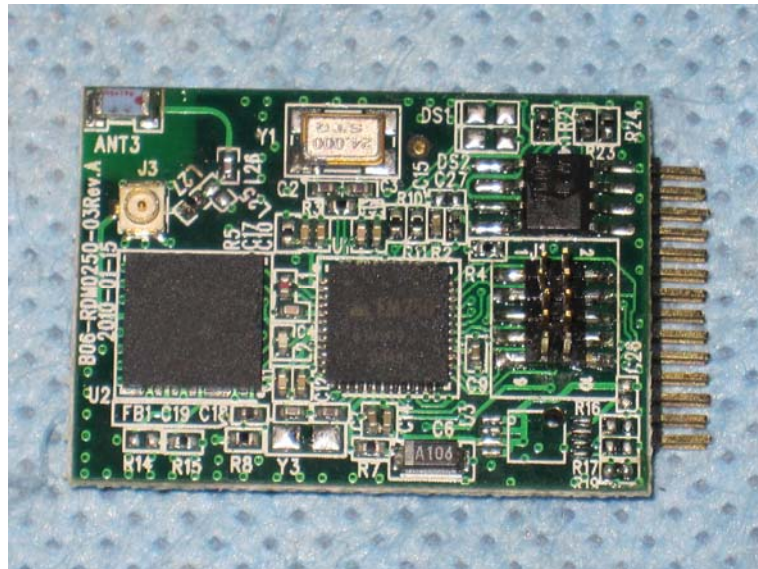




Internal Photos







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