

APPLICATION FOR VERIFICATION
On Behalf of
Shenzhen Tongfang Multimedia Technology Co., Ltd.

Limepc
Model No.: X1

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Report Number : 200807748F
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Date of Report : Sep 25, 2008

TABLE OF CONTENTS

Description

	Page
Test Report Verification	
1. GENERAL INFORMATION	3
1.1. Description of Device (EUT)	4
1.2. Description of Test Facility	5
1.3. Measurement Uncertainty	5
2. CONDUCTED POWER LINE TEST	6
2.1. Test Equipment	6
2.2. Test Procedure	6
2.3. Test Setup	6
2.4. Configuration of the EUT	7
2.5. EUT Operating Condition	7
2.6. Conducted Power Line Emission Limits	7
2.7. Conducted Power Line Test Result	7
2.8. Test Plot	8
3. RADIATED EMISSION MEASUREMENT.....	9
3.1. Test Equipment	9
3.2. Block Diagram of Test Setup	9
3.3. Radiated Emission Limit	9
3.4. EUT Configuration on Measurement	10
3.5. Operating Condition of EUT	10
3.6. Test Procedure	10
3.7. Radiated Emission Measurement Results	11
4.PHOTOGRAPH.....	12
4.1. Photo of Conducted Emission Measurement	12
4.2. Photo of Radiated Emission Measurement	12

APPENDIX I (Radiated Emission Test Curves) (2 pages)

APPENDIX II (Photos of EUT) (6 Pages)

TEST REPORT VERIFICATION

Applicant : Shenzhen Tongfang Multimedia Technology Co., Ltd.
Manufacturer : Shenzhen Tongfang Multimedia Technology Co., Ltd.
EUT : Limepc
Model No. : X1
Serial No. : N/A
Trade Mark : N/A
Rating : DC 9V (via adapter)

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart B 2007 & FCC / ANSI C63.4-2003

The device described above is tested by Anbotek Compliance Laboratory Limited. To determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart B limits both radiated and conducted emissions. The measurement results are contained in this test report and Anbotek Compliance Laboratory Limited Is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements. This report applies to above tested sample only.

This report shall not be reproduced in part without written approval of Anbotek Compliance Laboratory Limited.

Date of Test : Sep 19~24, 2008



Prepared by : _____
(Engineer)



Reviewer : _____
(Project Manager)



Approved & Authorized Signer : _____
(Manager)

GENERAL INFORMATION

1.1. Description of Device (EUT)

Description : Limepc

Model Number : X1

Test Power Supply : DC 9V (via adapter)

Applicant : Shenzhen Tongfang Multimedia Technology Co., Ltd.
Address : 9F, Sector D of Tongfang Information Harbor, Hi-tech
Industrial Park(north), Nanshan District, Shenzhen, China

Manufacturer : Shenzhen Tongfang Multimedia Technology Co., Ltd.
Address : 9F, Sector D of Tongfang Information Harbor, Hi-tech
Industrial Park(north), Nanshan District, Shenzhen, China

Date of Sample received : Sep.18, 2008

Date of Test : Sep 19~24, 2008

1.2. Description of Test Facility

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

VCCI-Registration No.: R-2197 and C-2383

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (VCCI) Voluntary Control Council for Interference by Information Technology Equipment. The acceptance letter from the VCCI is maintained in our files. Registration R-2197 and C-2383, September 29, 2005.

FCC-Registration No.: 556682

SGS-CSTC Standards Technical 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 556682, August 04, 2005.

IC-Registration No.: 6002

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration 6002, August 25, 2005.

Test Location

All Emissions tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. at No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China

1.3. Measurement Uncertainty

Radiation Uncertainty : $Ur = \pm 4.26\text{dB}$

Conduction Uncertainty : $Uc = \pm 2.66\text{dB}$

2. Conducted Power Line Test

2.1. Test Equipment

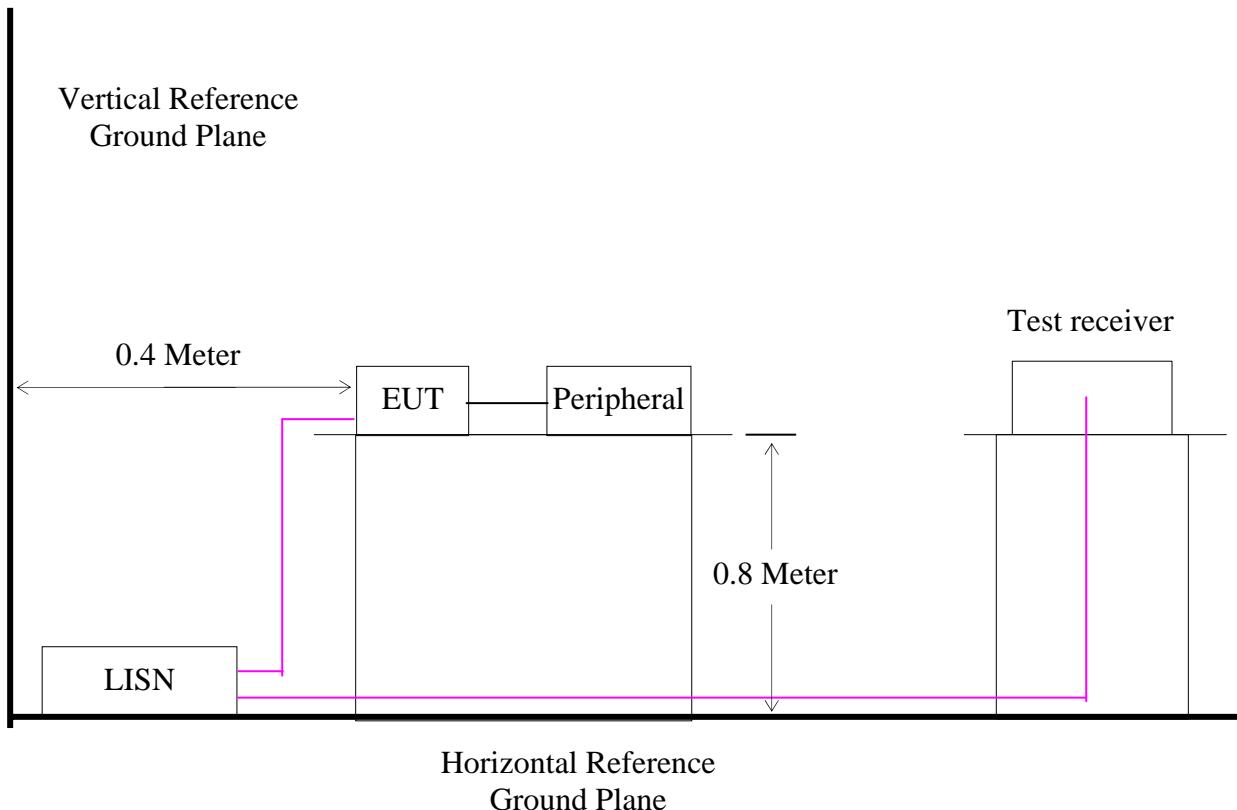
Please refer to Section 2 this report

2.2. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm/50 μ H coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50 μ H coupling impedance with 50ohm termination.

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4:2003 on conducted measurement. Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.3. Test Setup



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

2.4. Configuration of the EUT

The EUT was configured according to ANSI C63.4-2003. EUT was used DC source. The operation frequency is from 2412MHz~2462MHz. Enable the signal transmitted from the EUT. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

Note:

- 1)Operating Modes: Each of lowest, middle and highest channel frequencies transmits continuously for emissions measurements. The EUT operates in normal DSSS.
- 2)Special Test Software & Hardware: Special firmware and hardware provided by the Applicant are installed to allow the EUT to operates in DSSS at each channel frequency continuously. For example, the transmitter will be operated at each of lowest, middle and highest frequencies individually continuously during testing.
- 3)Transmitter Test Antenna: The EUT is tested with the antenna fitted in a manner typical of normal intended use as an integral / non-integral antenna equipment as describe with the test results.
- 4)Frequency(ies) Tested: 2412MHz, 2437MHz and 2462MHz were pre-tested, The worst case one, was chosen for conducted emission test.
- 5)Above 1GHz, the 2412MHz, 2437MHz and 2462MHz were tested individually.
- 6)Normal Test Modulation: DSSS
- 7)Modulating Signal Source: Internal

* Associated Antenna Descriptions: The antenna used in this product is embedded antenna

2.5. EUT Operating Condition

Operating condition is according to ANSI C63.4 - 2003

- 4.5.1 Setup the EUT and simulator as shown as Section 4.3.
- 4.5.2 Turn on the power of all equipment.
- 4.5.3 Let the EUT work in test mode (On) and measure it.

2.6. Conducted Power Line Emission Limits

FCC Part 15 Paragraph 15.207		
Frequency Range	Limits (dB μ V)	
	Class A QP/AV	Class B QP/AV
0.15 ~ 0.50	79/66	66 ~ 56 / 56 ~ 46*
0.50 ~ 5.00	73/60	56/46
5.00 ~ 30.00	73/60	60/50

Notes: 1. *Decreasing linearly with logarithm of frequency.

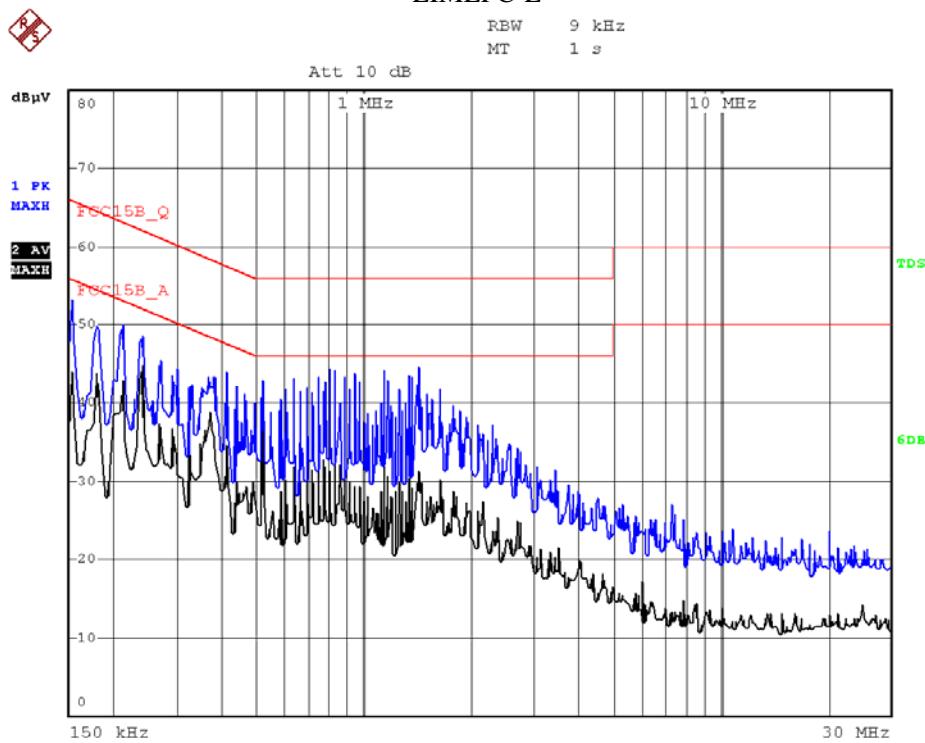
2. In the above table, the tighter limit applies at the band edges.

2.7. Conducted Power Line Test Result

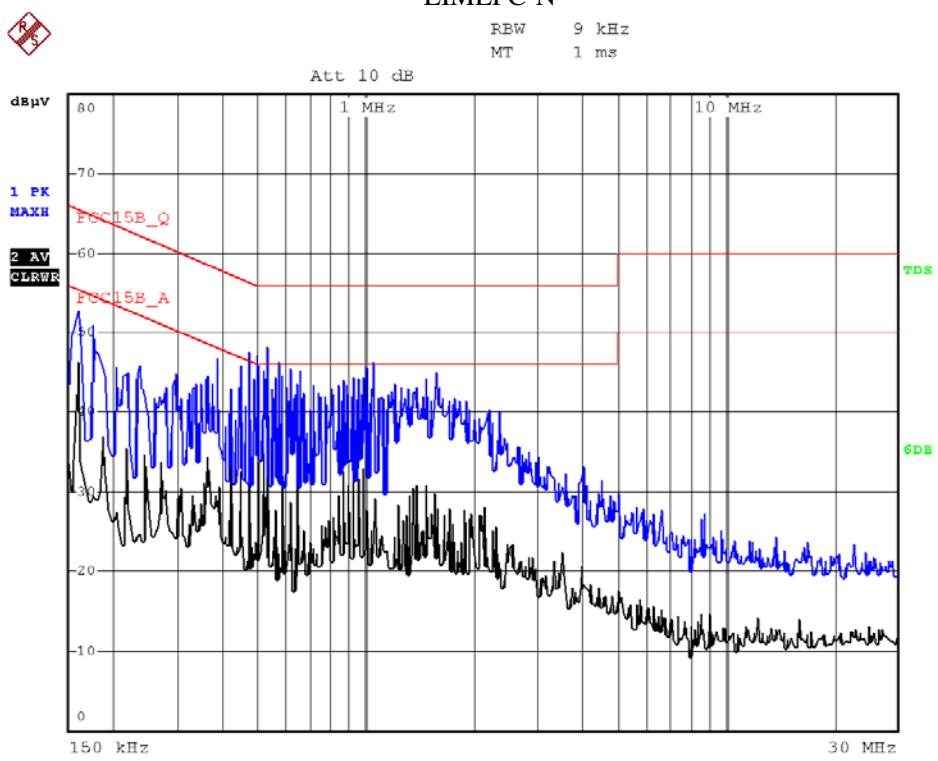
Pass

2.8. Test Plot

LIMEPC-L



LIMEPC-N



3. RADIATED EMISSION MEASUREMENT

3.1. Test Equipment

The following test equipments are used during the radiated emission measurement:

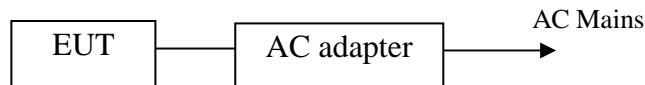
3.1.1. For Anechoic Chamber

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Ultra-Broadband Antenna	Rohde & Schwarz	HL562	100015	Nov.12, 2007	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESI26	100009	Nov.12, 2007	1 Year
3.	EMI Test Software	Rohde & Schwarz	ESK1	N/A	N/A	N/A
4.	Bilog Antenna	Schwarzbeck	CBL6143	N/A	Nov.05, 2007	1 Year
5.	Coaxial cable	SGS	N/A	N/A	N/A	N/A
6.	PC	N/A	486DX2	N/A	N/A	N/A

3.2. Block Diagram of Test Setup

3.2.1. Block diagram of connection between the EUT and simulators

3.2.1.1 For Mode ON

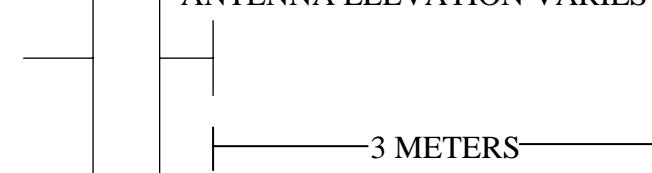


(EUT: Limepc)

3.2.2. Anechoic Chamber Test Setup Diagram

ANTENNA TOWER

ANTENNA ELEVATION VARIES FROM 1 TO 4 METERS



EUT SYSTEM

TURN TABLE

0.8 METERS

GROUND PLANE

(EUT: Limepc)

3.3. Radiated Emission Limit

FREQUENCY	DISTANCE	FIELD STRENGTHS LIMIT
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MHz	Meters	$\mu\text{V}/\text{m}$	$\text{dB}(\mu\text{V})/\text{m}$
30~88	3	100	40.0
88~216	3	150	43.5
216~960	3	200	46.0
960~1000	3	500	54.0

Remark :

- (1) Emission level (dB) μV = 20 log Emission level $\mu\text{V}/\text{m}$
- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

3.4. EUT Configuration on Measurement

The following equipments are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

EUT : Limepc
 Model Number : X1
 Applicant : Shenzhen Tongfang Multimedia Technology Co., Ltd.

3.5. Operating Condition of EUT

3.5.1. Setup the EUT as shown in Section 3.2.

3.5.2. Let the EUT work in test mode (ON) and measure it.

3.6. Test Procedure

EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down

FCC ID: WLVLIMEPC200808

between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2003 on radiated emission measurement.

The bandwidth of the EMI test receiver (R&S ESI26) is set at 120KHz.

The frequency range from 30MHz to 1000MHz is checked.

The test mode (ON) is tested in chamber and all the test results are listed in Section 3.7.

3.7. Radiated Emission Measurement Results

PASS.

The test curves are shown in the APPENDIX I.

4.PHOTOGRAPH

4.1. Photo of Conducted Emission Measurement



4.2. Photo of Radiated Emission Measurement



APPENDIX I

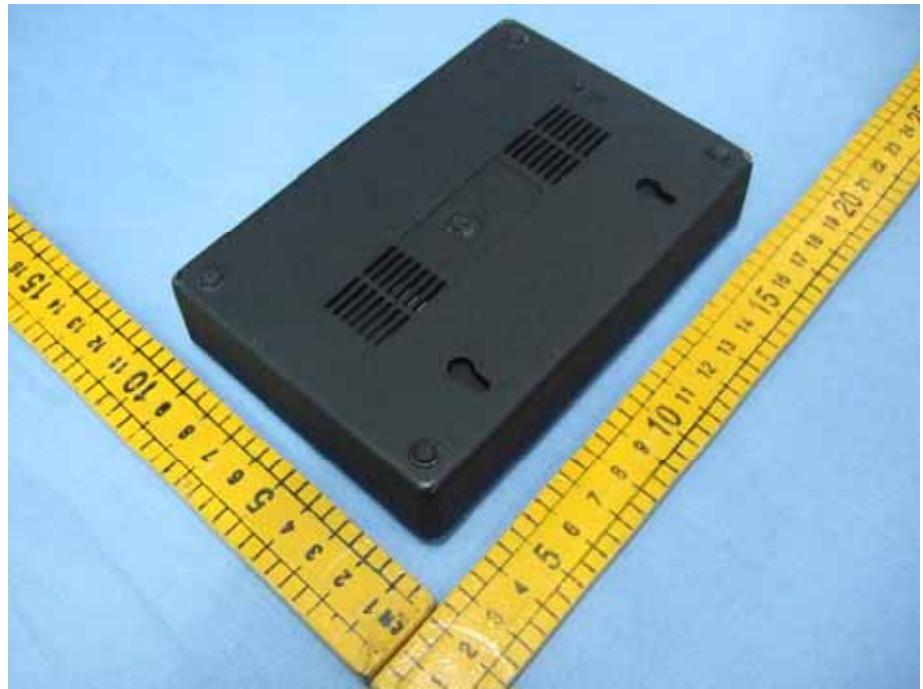
(Radiated Emission Test Curves)

APPENDIX II (Photos of EUT)

Figure 1
The EUT-Front View



Figure 2
The EUT-Back View



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Figure 3
The EUT-Inside View-1



Figure 4
The EUT-Inside View-2



Figure 5
PCB of the EUT Front-View 1



Figure 6
PCB of the EUT Back-View 1



Figure 7
PCB of the EUT Front-View 2

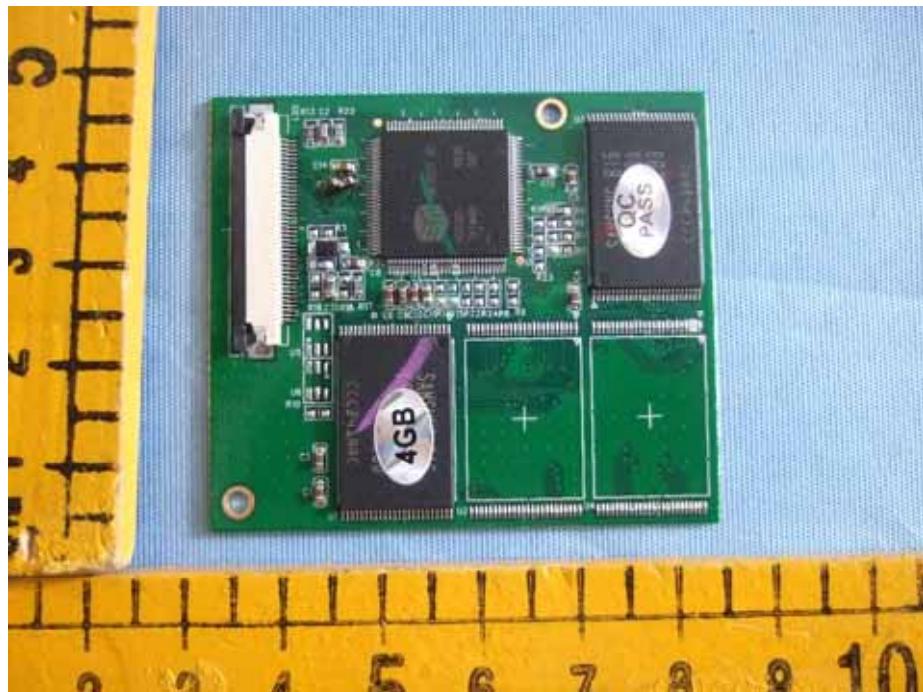


Figure 8
PCB of the EUT Back-View 2



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Figure 9
PCB of the EUT Front-View 3

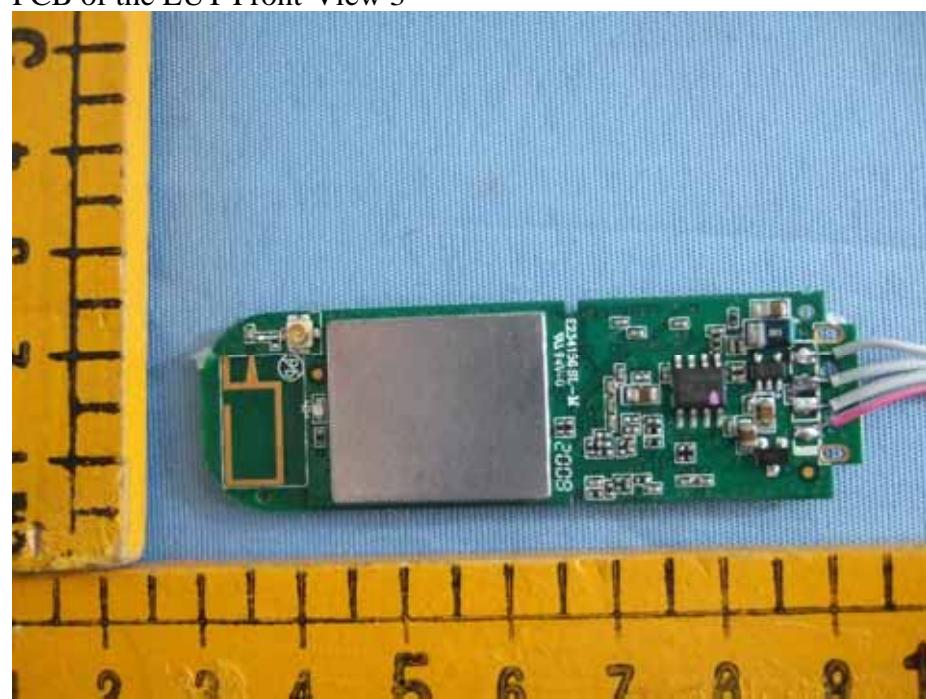
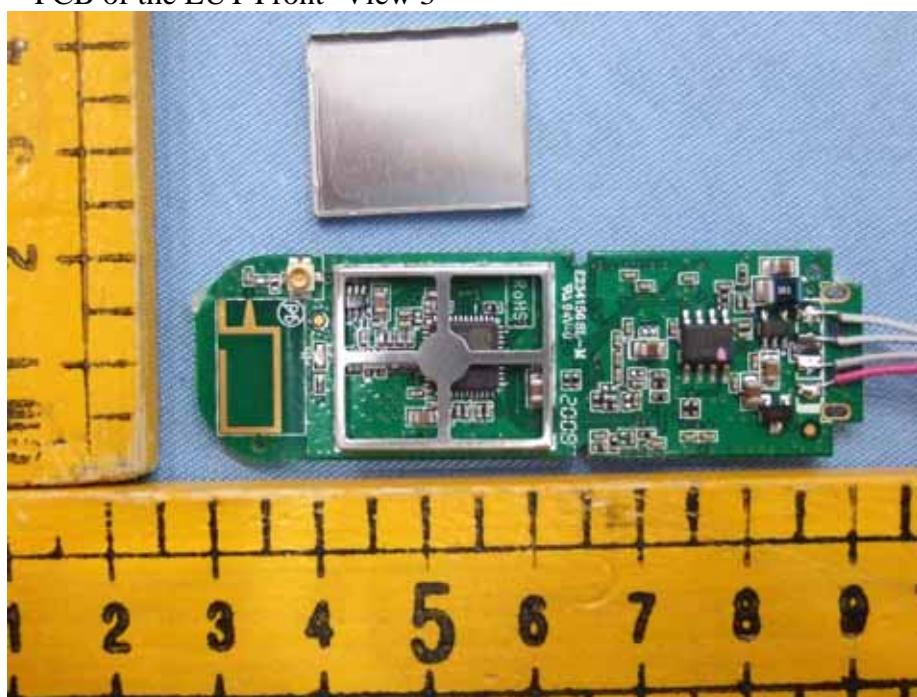


Figure 10
PCB of the EUT Front -View 3



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Figure 11
PCB of the EUT Back-View 3

