

# EMI TEST REPORT

## of

E.U.T. : PDA PHONE

MODEL : Mercury 619

## for

APPLICANT : Inventec Corporation

ADDRESS : NO., 66 Hou-Kang Street Shih-Lin District, Taipei  
11170, Taiwan

Test Performed by

**ELECTRONICS TESTING CENTER, TAIWAN**  
NO.34, LIN 5, DINGFU TSUEN, LINKOU SHIANG  
TAIPEI COUNTY, TAIWAN, 24442, R.O.C.  
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Report Number : 06-12-RBF-088-01



## Certificate of Conformity

The products

**EUT : PDA PHONE**  
**Trade Name : Inventec**  
**Model No. : Mercury 619**

which produced by

**Inventec Corporation**  
**NO., 66 Hou-Kang Street Shih-Lin District, Taipei 11170, Taiwan**

Regulation Applied : FCC Rules and Regulations Part 15 Subpart B (2005) / CISPR 22  
ET Docket No. 95-19 (Doc Procedure)

I HEREBY CERTIFY THAT : The data shown in this report were made in accordance with the procedures given in ANSI C63.4 and the energy emitted by the device was founded to be within the limits applicable. I assume full responsibility for accuracy and completeness of these data.

Signature

Will Yaou

Manager of EMC Testing Department II  
Electronics Testing Center, Taiwan



Report Number : 06-12-RBF-088-01

- Note:
1. The result of the testing report relate only to the item tested.
  2. The testing report shall not be reproduced expect in full, without the written approval of ETC.
  3. The report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

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NVLAP NVLAP LAB CODE: 200133-0

# TEST REPORT

Applicant : Inventec Corporation  
NO., 66 Hou-Kang Street Shih-Lin District, Taipei 11170, Taiwan

Manufacturer : Inventec Corporation  
NO., 66 Hou-Kang Street Shih-Lin District, Taipei 11170, Taiwan

Description of EUT :

a) Type of EUT : PDA PHONE  
b) Trade Name : Inventec  
c) Model No. : Mercury 619  
d) Power Supply : Input: 100-240V 50/60Hz 0.25A ; Output: DC 5V 1A  
e) Supply voltage : Lithium Ion Battery: 4.2V 1660mAh

Regulation Applied : FCC Rules and Regulations Part 15 Subpart B (2005) / CISPR 22  
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Date Test Item Received : Dec. 19, 2006  
Date Test Campaign Completed : Dec. 29, 2006  
Date of Issue : Dec. 30, 2006

Test Engineer :

Falcon Shi  
( Falcon Shi )

Approve & Authorized :

Will Yauo  
Will Yauo, Manager  
EMC Dept. II of ELECTRONICS  
TESTING CENTER, TAIWAN



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# 1 GENERAL INFORMATION

## 1.1 Product Description and Operation

- a) Type of EUT : PDA PHONE
- b) Trade Name : Inventec
- c) Model No. : Mercury 619
- d) Power Supply : Input: 100-240V 50/60Hz 0.25A ; Output: DC 5V 1A
- e) Supply voltage : Lithium Ion Battery: 4.2V 1660mAh

## 1.2 Characteristics of Device

- 1) Frequency Range : GSM/GPRS/EDGE 850, 900, 1800, 1900 MHz
- 2) Bluetooth : 2.0 compliant
- 3) Camera : 2 Mega pixel with macro
- 4) Battery : type: Li-ion, 1660 mAh; talk time: 4.5 hours;  
standby time: 200 hours
- 5) Storage : Mini SD

## 1.3 Test Methodology

For PDA PHONE, both conducted and radiated emissions were performed according to the procedures in ANSI C63.4 (2003).

## 1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on the roof top of Building at NO. 34. LIN 5. DINGFU TSUEN, LINKOU SHIANG TAIPEI COUNTY, TAIWAN, 24442, R.O.C.

This site has been fully described in a report submitted to your office, the effective date through June 30, 2007.

## 2 PROVISIONS APPLICABLE

### 2.1 Definition

#### **Unintentional radiator:**

A device that intentionally generates and radio frequency energy for use within the device, or that sends radio frequency signals by conduction to associated equipment via connecting wiring, but which is not intended to emit RF energy by radiation or induction.

#### **Class B Digital Device :**

A digital device which is marketed for use in a residential environment notwithstanding use in a commercial, business or industrial environment. Example of such devices that are marketed for the general public.

Note : A manufacturer may also qualify a device intended to be marketed in a commercial, business, or industrial environment as a Class B digital device, and in fact is encouraged to do so, provided the device complies with the technical specifications for a Class B Digital Device. In the event that a particular type of device has been found to repeatedly cause harmful interference to radio communications, the Commission may classify such a digital device as a Class B Digital Device, Regardless of its intended use.

## 2.2 Requirement for Compliance

### (1) Conducted Emission Requirement

Except for Class A digital devices, for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

Frequency MHz	Quasi Peak dB $\mu$ V	Average dB $\mu$ V
0.15 - 0.5	66-56*	56-46*
0.5 - 5.0	56	46
5.0 - 30.0	60	50

\* Decreases with the logarithm of the frequency

### (2) Radiated Emission Requirement

For unintentional device, according to FCC §15.109(a), 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 $\mu$ V/m	Radiated $\mu$ 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

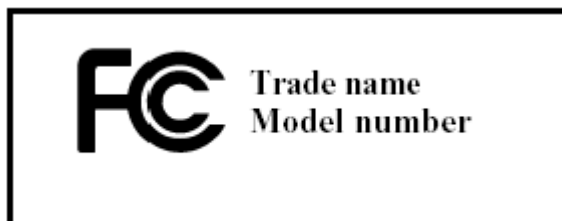
For unintentional device, according to CISPR Radiated Emission Limits class B is as following:

Frequency MHz	Distance Meters	Radiated dB $\mu$ V/m
30 to 230	10	30
230 to 1000	10	37

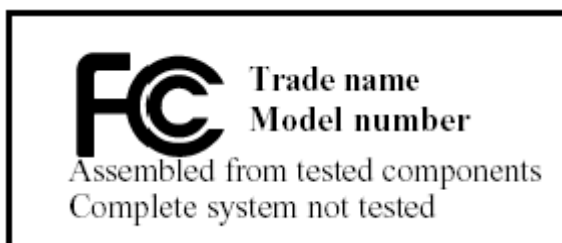
## 2.3 Labeling Requirement

Products subject to authorization under a Declaration of Conformity shall be labeled as follows:

- (1) The label shall be located in a conspicuous location on the device and shall contain the unique identification described in Section 2.1074 of this chapter and the following logo:
  - (i) IF the product is authorized based on testing of the product or system:



- (ii) If the product is authorized based on assembly using separately authorized components, in accordance with Section 15.101(c)(2) or (c)(3), and the resulting product is not separately tested:



- (2) Label text and information should be in a size of type large enough to be readily legible, consistent with the dimensions of the equipment and the label. However, the type size for the text is not required to be larger than eight point.
- (3) When the device is so small or for such used that it is not practicable to place the statement specified under paragraph (b)(1) of this section on it, such as for a CPU board or a plug-in circuit board peripheral device, the text associated with the logo may be placed in a prominent location in the instruction manual or pamphlet supplied to the user. However, the unique identification (trade name and model number) and the logo must be displayed on the device.
- (4) The label shall not be a stick-on, paper label. The label on these products shall be permanently affixed to the product and shall be readily visible to the purchaser at the time of purchase, as described in Section 2.925(d) of this chapter. "Permanently affixed" means that the label is etched, engraved, stamped, silkscreened, indelibly printed, or otherwise permanently marked on a permanently attached part of the equipment or on a nameplate of metal, plastic, or other material fastened to the equipment by welding, riveting, or a permanent adhesive. The label must be designed to last the expected lifetime of the equipment in the environment in which the equipment may be operated and must not be readily detachable.



## 2.4 User Information

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual.

The Federal Communications Commission Radio Frequency Interference Statement includes the following paragraph.

This equipment has been tested and found to comply with the limits for a Class B Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio / TV technician for help.

### 3. SYSTEM TEST CONFIGURATION

#### 3.1 Justification

The system was configured for testing in a typical fashion, as a customer would normally use it.

For radiated emission measuring, the EUT was rotated to obtain the maximum level of radiated emissions. The antenna was varied in height from 1 to 4 meters above ground to obtain the maximum signal strength. Measurement was performed under the condition that a computer program was exercised to simulate data communication of EUT. Three highest emissions were verified with varying placement of the connected cable to maximize the emission from EUT.

#### 3.2 Devices for Tested System

Device	Manufacturer	Model	Description
PDA PHONE*	Inventec Corporation	Mercury 619	1.8m Unshielded AC Power Cord

Remark “\*” means equipment under test.

#### 3.3 Deviation Statement

(If any deviation from additions to or exclusions from test method must be stated)

N/A

## 4 RADIATED EMISSION MEASUREMENT

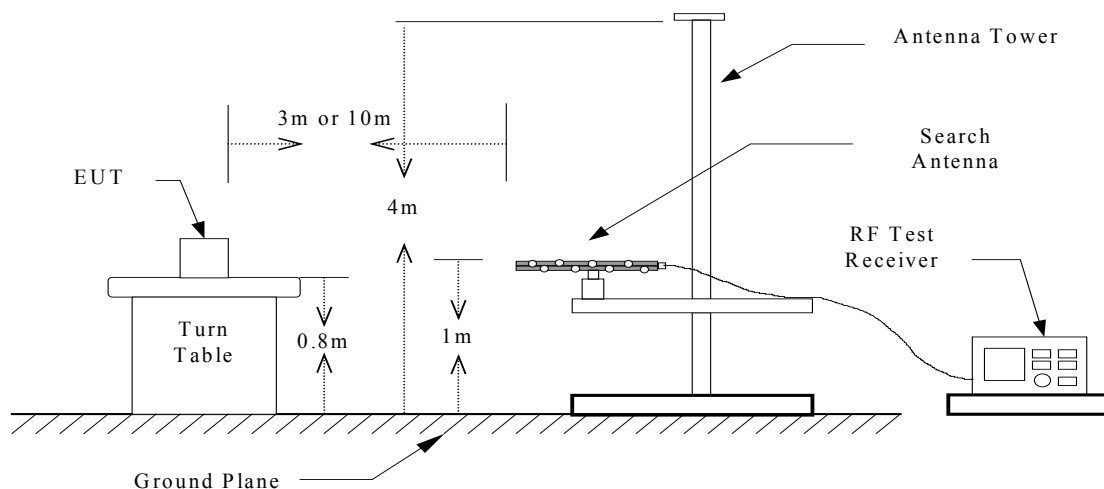
### 4.1 Applicable Standard

For unintentional radiator digital devices, the radiated emission shall comply with § 15.109(a). And according to §15.109 (g), as an alternative to the radiated emission limits is CISPR 22.

### 4.2 Measurement Procedure

1. Setup the configuration per figure 1.
2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a shielded chamber to determine the accurate frequencies of higher emissions will be checked on a open test site.
3. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ° to 360 ° with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading. A RF test receiver is also used to confirm emissions measured.
4. Repeat step 3 until all frequencies need to be measured were complete.
5. Repeat step 4 with search antenna in vertical polarized orientations.
6. Check the three frequencies of highest emission with varying the placement of cables associated with EUT to obtain the worse case and record the result.

Figure 1 : Frequencies measured below 1 GHz configuration



### 4.3 Measuring Instrument

The following instrument are used for radiated emissions measurement :

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
Test Receiver	Rohde & Schwarz	ESVS30	2006/02/16	2007/02/15
Amplifier	HP	8447D	2006/04/28	2007/04/27
Spectrum	Advantest	R3162	2006/01/20	2007/01/19
Bi-Log Antenna	Schaffner	CBL 6111	2006/05/09	2007/05/08
Log-periodic Antenna	EMCO	3146	2006/10/13	2007/10/12
RF Test Receiver	Rohde & Schwarz	ESCI	2006/12/25	2007/12/24

Note: The standards used to perform this calibration are traceable to NML/ROC, NIST/USA and NPL/UK.

Measuring instrument setup in measured frequency band when specified detector function is used :

Frequency Band (MHz)	Instrument	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	RF Test Receiver	Quasi-Peak	120 kHz	N/A
	Spectrum Analyzer	Peak	100 kHz	100 kHz
Above 1000	Spectrum Analyzer	Peak	1 MHz	1 MHz
	Spectrum Analyzer	Average	1 MHz	10Hz

#### 4.4 Radiated Emission Data

A)

Operation Mode : 850MHz

Test Date : Dec. 26, 2006

Temperature : 19 °C

Humidity : 57 %

Emission Frequency ( MHz )	Meter Reading ( dB $\mu$ V )		Corr'd Factor ( dB )	Results ( dB $\mu$ V/m )		AH ( m )		DRT degree		Limit @3m (dB $\mu$ V/m)	Margin ( dB )
	Hor.	Ver.		Hor.	Ver.	Hor.	Ver.	Hor.	Ver.		
145.020	28.6	36.0	-12.4	16.2	23.6	<b>1.8</b>	<b>1.0</b>	<b>11</b>	<b>167</b>	30.0	-6.4
156.090	27.3	31.7	-13.0	14.3	18.7	<b>1.5</b>	<b>1.2</b>	<b>112</b>	<b>106</b>	30.0	-11.3
201.450	33.1	32.9	-13.3	19.8	19.6	<b>1.2</b>	<b>1.6</b>	<b>194</b>	<b>19</b>	30.0	-10.2
232.770	31.9	30.3	-11.5	20.4	18.8	<b>1.5</b>	<b>1.6</b>	<b>14</b>	<b>154</b>	37.0	-16.6
259.770	29.7	27.8	-9.6	20.1	18.2	<b>1.7</b>	<b>1.6</b>	<b>133</b>	<b>186</b>	37.0	-16.9
536.620	22.5	22.6	-3.7	18.8	18.9	<b>1.8</b>	<b>1.0</b>	<b>150</b>	<b>128</b>	37.0	-18.1

B)

Operation Mode : 1900MHz

Test Date : Dec. 26, 2006

Temperature : 19 °C

Humidity : 57 %

Emission Frequency ( MHz )	Meter Reading ( dB $\mu$ V )		Corr'd Factor ( dB )	Results ( dB $\mu$ V/m )		AH ( m )		DRT degree		Limit @3m (dB $\mu$ V/m)	Margin ( dB )
	Hor.	Ver.		Hor.	Ver.	Hor.	Ver.	Hor.	Ver.		
148.530	28.3	36.5	-12.4	15.9	24.1	<b>1.6</b>	<b>1.2</b>	<b>79</b>	<b>57</b>	30.0	-5.9
201.450	33.9	30.2	-13.3	20.6	16.9	<b>1.7</b>	<b>1.7</b>	<b>136</b>	<b>83</b>	30.0	-9.4
216.300	30.7	28.9	-13.1	17.6	15.8	<b>1.5</b>	<b>1.8</b>	<b>102</b>	<b>81</b>	30.0	-12.4
232.770	31.7	30.1	-11.5	20.2	18.6	<b>1.2</b>	<b>1.8</b>	<b>169</b>	<b>114</b>	37.0	-16.8
259.770	29.4	28.0	-9.6	19.8	18.4	<b>1.4</b>	<b>1.8</b>	<b>192</b>	<b>186</b>	37.0	-17.2
519.880	24.5	24.2	-4.4	20.1	19.8	<b>1.4</b>	<b>1.6</b>	<b>29</b>	<b>171</b>	37.0	-16.9

Note :

1. Remark “---” means that the emissions from EUT are too weak to be measured.
2. AH means antenna height, DRT means degrees of rotation of turntable.
3. The expanded uncertainty of the radiated emission tests is 3.53 dB.

**C)**

Operation Mode : 802.11b

Test Date : Dec. 26, 2006      Temperature : 19 °C      Humidity : 57 %

Emission Frequency ( MHz )	Meter Reading ( dB $\mu$ V )		Corr'd Factor ( dB )	Results ( dB $\mu$ V/m )		AH ( m )		DRT degree		Limit @3m (dB $\mu$ V/m)	Margin ( dB )
	Hor.	Ver.		Hor.	Ver.	Hor.	Ver.	Hor.	Ver.		
138.540	27.9	24.2	-12.5	15.4	11.7	<b>1.5</b>	<b>1.0</b>	<b>136</b>	<b>21</b>	30.0	-14.6
176.340	28.8	27.6	-14.0	14.8	13.6	<b>1.8</b>	<b>1.0</b>	<b>159</b>	<b>187</b>	30.0	-15.2
201.450	32.3	28.2	-13.3	19.0	14.9	<b>1.6</b>	<b>1.2</b>	<b>179</b>	<b>172</b>	30.0	-11.0
220.620	29.7	28.9	-12.8	16.9	16.1	<b>1.8</b>	<b>1.4</b>	<b>214</b>	<b>114</b>	30.0	-13.1
576.540	23.3	22.5	-3.9	19.4	18.6	<b>1.7</b>	<b>1.6</b>	<b>128</b>	<b>83</b>	37.0	-17.6
634.620	24.1	22.6	-2.8	21.3	19.8	<b>1.8</b>	<b>2.1</b>	<b>96</b>	<b>299</b>	37.0	-15.7

**D)**

Operation Mode : 802.11g

Test Date : Dec. 26, 2006      Temperature : 19 °C      Humidity : 57 %

Emission Frequency ( MHz )	Meter Reading ( dB $\mu$ V )		Corr'd Factor ( dB )	Results ( dB $\mu$ V/m )		AH ( m )		DRT degree		Limit @3m (dB $\mu$ V/m)	Margin ( dB )
	Hor.	Ver.		Hor.	Ver.	Hor.	Ver.	Hor.	Ver.		
138.540	27.6	25.1	-12.5	15.1	12.6	<b>1.9</b>	<b>1.2</b>	<b>154</b>	<b>36</b>	30.0	-14.9
169.590	26.8	26.7	-13.6	13.2	13.1	<b>1.4</b>	<b>1.6</b>	<b>72</b>	<b>166</b>	30.0	-16.8
201.450	31.2	31.6	-13.3	17.9	18.3	<b>1.4</b>	<b>1.6</b>	<b>199</b>	<b>187</b>	30.0	-11.7
210.090	29.8	30.9	-13.5	16.3	17.4	<b>1.5</b>	<b>1.7</b>	<b>154</b>	<b>83</b>	30.0	-12.6
242.220	27.7	27.8	-10.2	17.5	17.6	<b>1.7</b>	<b>1.9</b>	<b>96</b>	<b>92</b>	37.0	-19.4
383.530	25.3	23.9	-6.1	19.2	17.8	<b>1.8</b>	<b>1.8</b>	<b>197</b>	<b>133</b>	37.0	-17.8

Note :

1. Remark “---” means that the emissions from EUT are too weak to be measured.
2. AH means antenna height, DRT means degrees of rotation of turntable.
3. The expanded uncertainty of the radiated emission tests is 3.53 dB.

**E)**

Operation Mode : Take Video

Test Date : Dec. 26, 2006      Temperature : 19 °C      Humidity : 57 %

Emission Frequency ( MHz )	Meter Reading ( dB $\mu$ V )		Corr'd Factor ( dB )	Results ( dB $\mu$ V/m )		AH ( m )		DRT degree		Limit @3m (dB $\mu$ V/m)	Margin ( dB )
	Hor.	Ver.		Hor.	Ver.	Hor.	Ver.	Hor.	Ver.		
48.020	28.1	38.7	-17.9	10.2	20.8	1.8	1.0	167	192	30.0	-9.2
145.060	28.6	37.0	-12.4	16.2	24.6	1.5	1.6	118	21	30.0	-5.4
201.460	33.4	30.1	-13.3	20.1	16.8	1.2	1.2	173	76	30.0	-9.9
232.780	31.1	30.3	-11.5	19.6	18.8	1.4	1.6	23	89	37.0	-17.4
519.820	25.2	23.2	-4.4	20.8	18.8	1.8	1.5	144	88	37.0	-16.2
615.780	24.0	22.7	-3.1	20.9	19.6	1.8	1.6	54	59	37.0	-16.1

**F)**

Operation Mode : MP4 Play

Test Date : Dec. 26, 2006      Temperature : 19 °C      Humidity : 57 %

Emission Frequency ( MHz )	Meter Reading ( dB $\mu$ V )		Corr'd Factor ( dB )	Results ( dB $\mu$ V/m )		AH ( m )		DRT degree		Limit @3m (dB $\mu$ V/m)	Margin ( dB )
	Hor.	Ver.		Hor.	Ver.	Hor.	Ver.	Hor.	Ver.		
47.010	28.6	36.6	-17.4	11.2	19.2	1.8	1.0	172	183	30.0	-10.8
138.540	25.9	34.3	-12.5	13.4	21.8	1.5	1.7	169	72	30.0	-8.2
145.020	28.6	36.2	-12.4	16.2	23.8	1.6	1.5	83	157	30.0	-6.2
201.450	31.6	29.2	-13.3	18.3	15.9	1.5	2.1	121	54	30.0	-11.7
227.720	31.7	30.5	-12.1	19.6	18.4	1.9	1.9	144	96	30.0	-10.4
270.340	29.0	28.8	-10.4	18.6	18.4	1.8	2.0	76	318	37.0	-18.4

Note :

1. Remark “---” means that the emissions from EUT are too weak to be measured.
2. AH means antenna height, DRT means degrees of rotation of turntable.
3. The expanded uncertainty of the radiated emission tests is 3.53 dB.

**G)**

Operation Mode : Bluetooth

Test Date : Dec. 26, 2006      Temperature : 19 °C      Humidity : 57 %

Emission Frequency ( MHz )	Meter Reading ( dB $\mu$ V )		Corr'd Factor ( dB )	Results ( dB $\mu$ V/m )		AH ( m )		DRT degree		Limit @3m (dB $\mu$ V/m)	Margin ( dB )
	Hor.	Ver.		Hor.	Ver.	Hor.	Ver.	Hor.	Ver.		
47.010	29.5	36.1	-17.4	12.1	18.7	1.6	1.2	196	156	30.0	-11.3
138.540	30.1	34.4	-12.5	17.6	21.9	1.6	1.4	136	21	30.0	-8.1
145.020	29.8	36.2	-12.4	17.4	23.8	1.6	1.2	128	76	30.0	-6.2
207.930	33.1	29.3	-13.5	19.6	15.8	1.9	1.8	83	193	30.0	-10.4
232.500	32.4	30.6	-11.6	20.8	19.0	1.9	2.0	188	96	37.0	-16.2
261.930	30.5	28.1	-9.8	20.7	18.3	1.4	1.0	114	124	37.0	-16.3

**H)**

Operation Mode : GPS

Test Date : Dec. 26, 2006      Temperature : 19 °C      Humidity : 57 %

Emission Frequency ( MHz )	Meter Reading ( dB $\mu$ V )		Corr'd Factor ( dB )	Results ( dB $\mu$ V/m )		AH ( m )		DRT degree		Limit @3m (dB $\mu$ V/m)	Margin ( dB )
	Hor.	Ver.		Hor.	Ver.	Hor.	Ver.	Hor.	Ver.		
145.020	30.3	36.0	-12.4	17.9	23.6	1.4	1.7	187	89	30.0	-6.4
150.690	32.2	34.6	-12.5	19.7	22.1	1.6	1.6	121	76	30.0	-7.9
155.820	32.0	33.8	-13.0	19.0	20.8	1.0	1.5	21	183	30.0	-9.2
201.450	32.9	30.1	-13.3	19.6	16.8	1.4	1.5	141	186	30.0	-10.4
221.700	31.0	31.6	-12.7	18.3	18.9	1.8	1.3	159	149	30.0	-11.1
232.770	32.3	31.1	-11.5	20.8	19.6	1.2	1.4	139	144	37.0	-16.2

Note :

1. Remark “---” means that the emissions from EUT are too weak to be measured.
2. AH means antenna height, DRT means degrees of rotation of turntable.
3. The expanded uncertainty of the radiated emission tests is 3.53 dB.



## 4.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor, High Pass Filter Loss and Cable Loss, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation calculation is as follows:

$$\textbf{Result} = \textbf{Reading} + \textbf{Corrected Factor}$$

where

Corrected Factor = Antenna FACTOR + Cable Loss + High Pass Filter Loss - Amplifier Gain

#### 4.6 Photos of Radiation Measuring Setup



## 5 CONDUCTED EMISSION MEASUREMENT

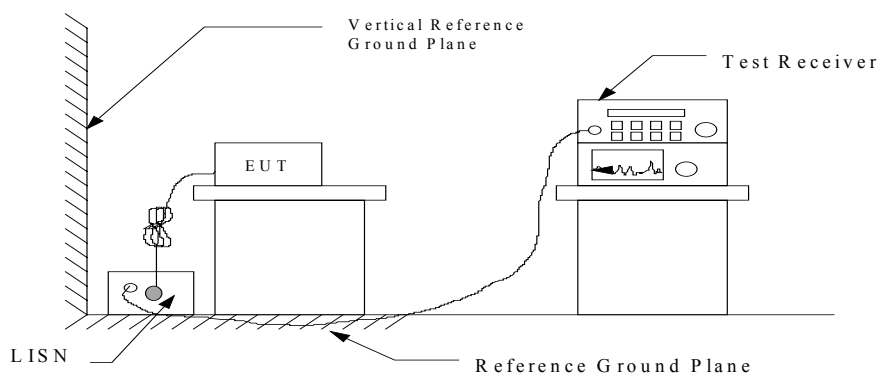
### 5.1 Standard Applicable

For unintentional and intentional device, Line Conducted Emission Limits are in accordance to §15.107(a) and §15.207(a) respectively .

### 5.2 Measurement Procedure

1. Setup the configuration per figure 3.
2. A preliminary scan with a spectrum monitor is performed to identify the frequency of emission that has the highest amplitude relative to the limit by operating the EUT in selected modes of operation, typical cable positions, and with a typical system configuration.
3. Record the 6 or 8 highest emissions relative to the limit.
4. Measure each frequency obtained from step 3 by a test receiver set on quasi peak detector function, and then records the accuracy frequency and emission level. If all emissions measured in the specified band are attenuated more than 20 dB from the limit, this step would be ignored, and the peak detector function would be used.
5. Confirm the highest three emissions with variation of the EUT cable configuration and record the final data.
6. Repeat all above procedures on measuring each operation mode of EUT.

Figure 3 : Conducted emissions measurement configuration



### 5.3 Conducted Emission Data

Operation Mode : 850MHz

Test Date : Dec. 26, 2006

Temperature : 19 °C

Humidity : 57 %

Mode: 850MHz

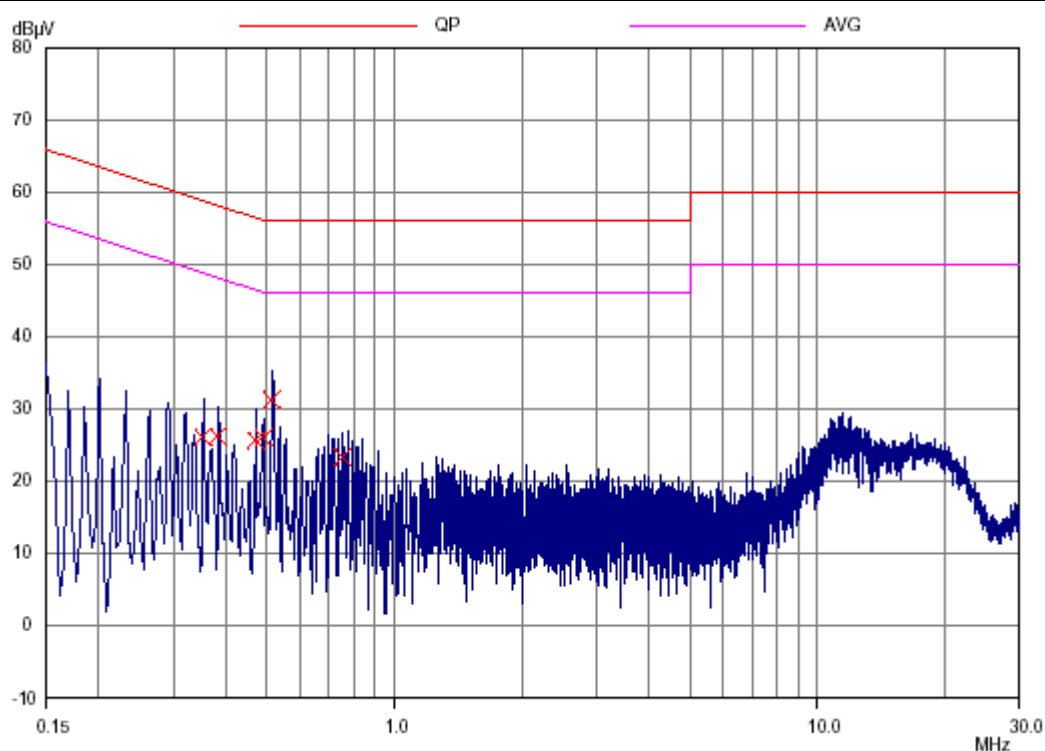
N1

Frequency (MHz)	Meter Reading (dBμV)		Factor (dB)	Result (dBμV)		Limit (dBμV)		Margin (dBμV)	
	Q.P	AVG		Q.P	AVG	Q.P	AVG	Q.P	AVG
0.353	26.1	----	0.3	26.4	----	58.9	48.9	-32.5	----
0.384	26.2	----	0.3	26.5	----	58.2	48.2	-31.7	----
0.470	25.6	----	0.3	25.9	----	56.5	46.5	-30.6	----
0.489	26.0	----	0.3	26.3	----	56.2	46.2	-29.9	----
0.513	31.3	----	0.3	31.6	----	56.0	46.0	-24.4	----
0.755	23.3	----	0.3	23.6	----	56.0	46.0	-32.4	----

Note : 1. The expanded uncertainty of the conducted emission tests is 2.45 dB.

Mode: 850MHz

N1



Mode: 850MHz

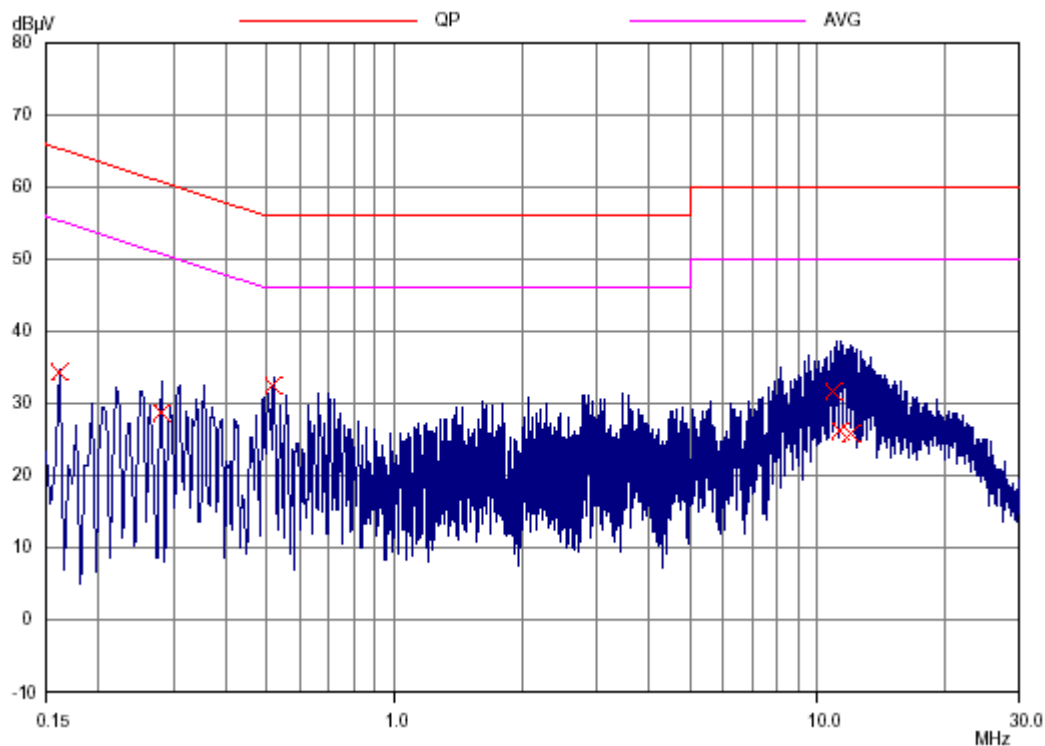
L1

Frequency (MHz)	Meter Reading (dBμV)		Factor (dB)	Result (dBμV)		Limit (dBμV)		Margin (dBμV)	
	Q.P	AVG		Q.P	AVG	Q.P	AVG	Q.P	AVG
0.161	34.3	----	0.2	34.5	----	65.4	55.4	-30.9	----
0.282	28.7	----	0.2	28.9	----	60.8	50.8	-31.8	----
0.517	32.5	----	0.3	32.8	----	56.0	46.0	-23.2	----
10.941	31.6	----	0.9	32.5	----	60.0	50.0	-27.5	----
11.371	26.2	----	0.9	27.1	----	60.0	50.0	-32.9	----
12.046	25.7	----	0.9	26.6	----	60.0	50.0	-33.4	----

Note : 1. The expanded uncertainty of the conducted emission tests is 2.45 dB.

Mode: 850MHz

L1



Operation Mode : 1900MHz

Test Date : Dec. 26, 2006

Temperature : 19 °C

Humidity : 57 %

Mode: 1900MHz

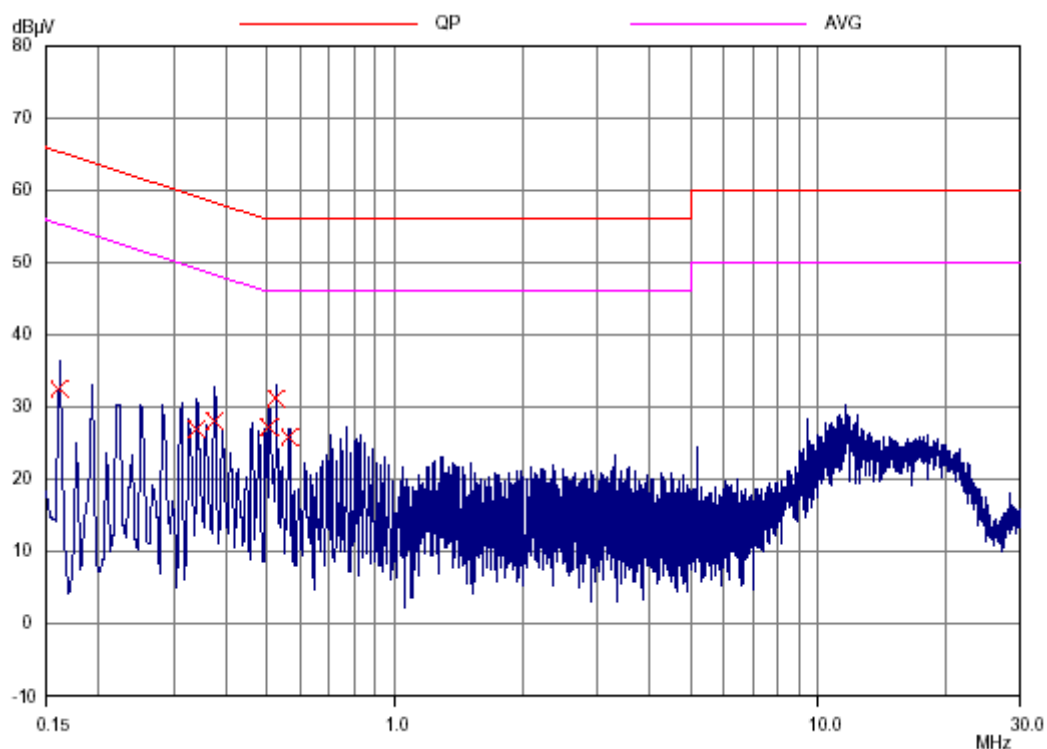
N1

Frequency (MHz)	Meter Reading (dBμV)		Factor (dB)	Result (dBμV)		Limit (dBμV)		Margin (dBμV)	
	Q.P	AVG		Q.P	AVG	Q.P	AVG	Q.P	AVG
0.161	32.6	----	0.2	32.8	----	65.4	55.4	-32.6	----
0.341	26.9	----	0.3	27.2	----	59.2	49.2	-32.0	----
0.376	28.1	----	0.3	28.4	----	58.4	48.4	-30.0	----
0.505	27.2	----	0.3	27.5	----	56.0	46.0	-28.5	----
0.525	31.1	----	0.3	31.4	----	56.0	46.0	-24.6	----
0.564	25.9	----	0.3	26.2	----	56.0	46.0	-29.8	----

Note : 1. The expanded uncertainty of the conducted emission tests is 2.45 dB.

Mode: 1900MHz

N1



Mode: 1900MHz

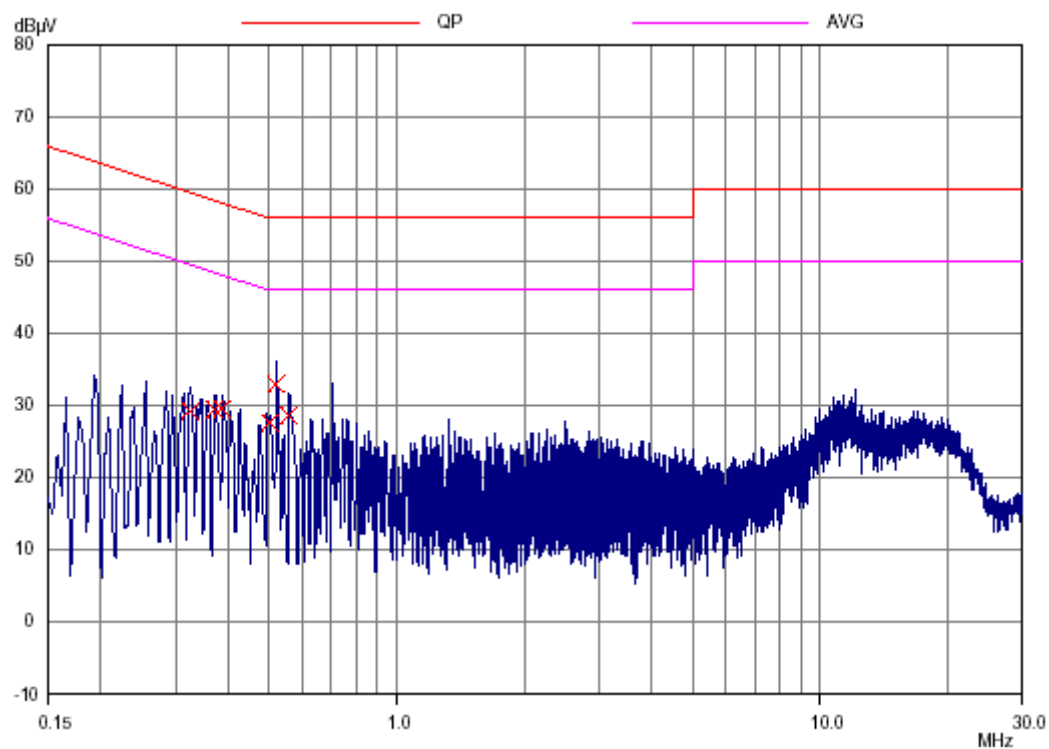
L1

Frequency (MHz)	Meter Reading (dBμV)		Factor (dB)	Result (dBμV)		Limit (dBμV)		Margin (dBμV)	
	Q.P	AVG		Q.P	AVG	Q.P	AVG	Q.P	AVG
0.325	29.2	----	0.3	29.5	----	59.6	49.6	-30.1	----
0.372	29.5	----	0.3	29.8	----	58.5	48.5	-28.7	----
0.388	29.6	----	0.3	29.9	----	58.1	48.1	-28.2	----
0.501	27.6	----	0.3	27.9	----	56.0	46.0	-28.1	----
0.521	32.9	----	0.3	33.2	----	56.0	46.0	-22.8	----
0.556	28.6	----	0.3	28.9	----	56.0	46.0	-27.1	----

Note : 1. The expanded uncertainty of the conducted emission tests is 2.45 dB.

Mode: 1900MHz

L1



Operation Mode : 802.11b

Test Date : Dec. 26, 2006

Temperature : 19 °C

Humidity : 57 %

Mode: 802.11b

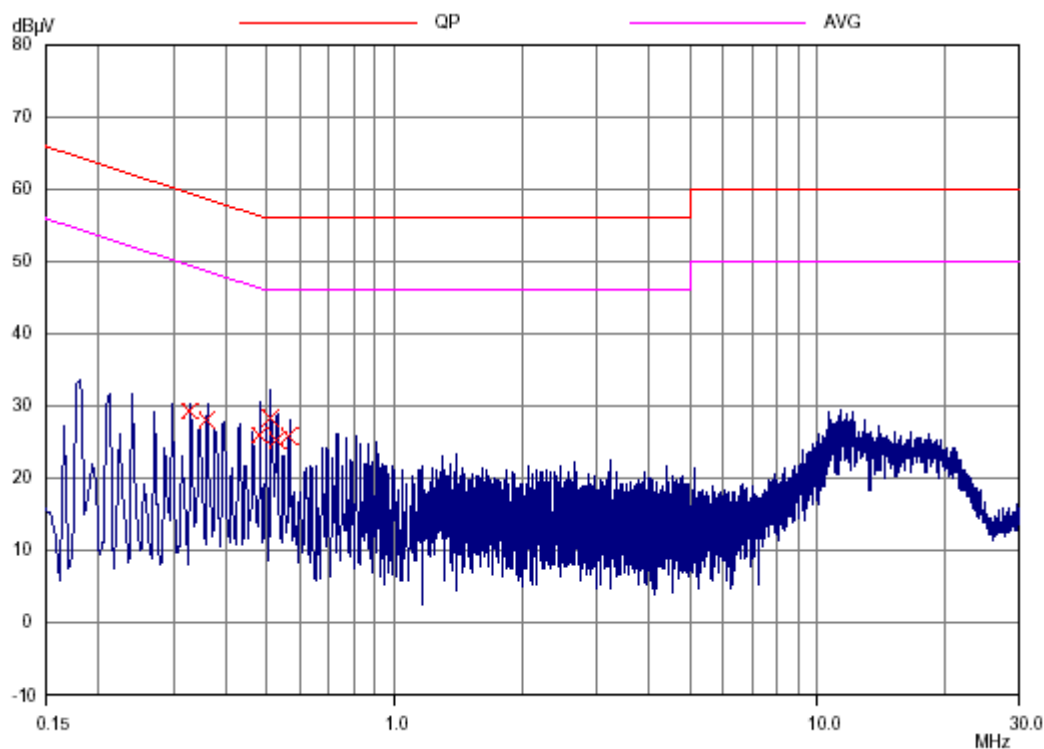
N1

Frequency (MHz)	Meter Reading (dBμV)		Factor (dB)	Result (dBμV)		Limit (dBμV)		Margin (dBμV)	
	Q.P	AVG		Q.P	AVG	Q.P	AVG	Q.P	AVG
0.329	29.3	----	0.3	29.6	----	59.5	49.5	-29.9	----
0.360	28.1	----	0.3	28.4	----	58.7	48.7	-30.3	----
0.482	26.0	----	0.3	26.3	----	56.3	46.3	-30.0	----
0.509	28.4	----	0.3	28.7	----	56.0	46.0	-27.3	----
0.528	25.3	----	0.3	25.6	----	56.0	46.0	-30.4	----
0.564	25.8	----	0.3	26.1	----	56.0	46.0	-29.9	----

Note : 1. The expanded uncertainty of the conducted emission tests is 2.45 dB.

Mode: 802.11b

N1





Mode: 802.11b

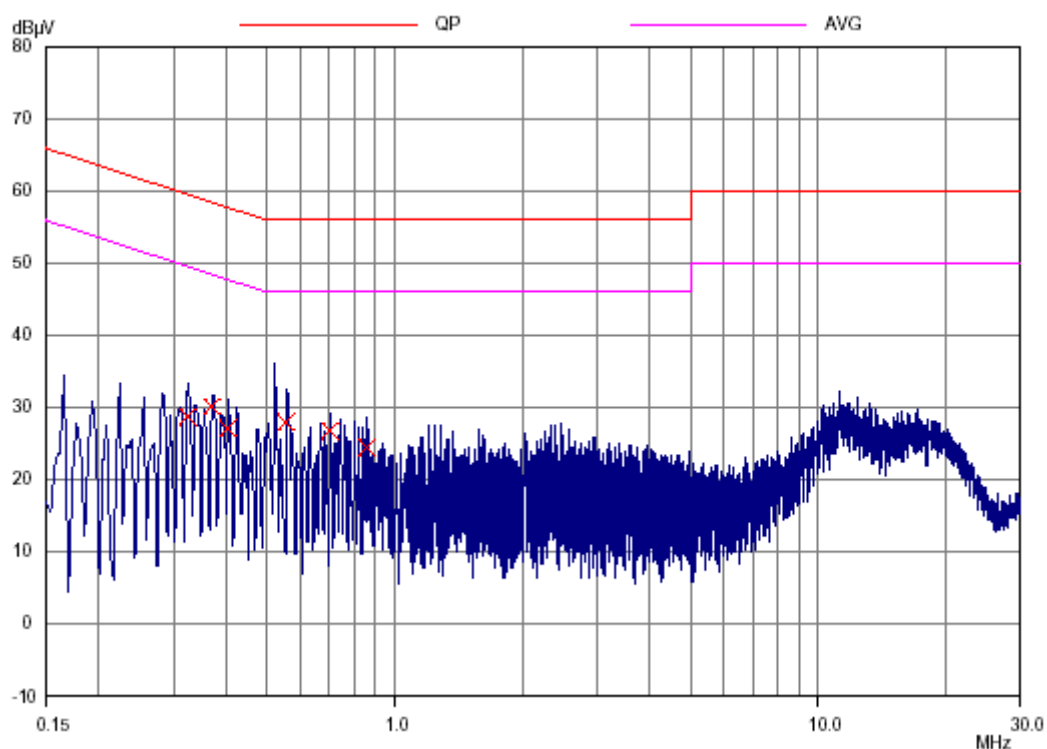
L1

Frequency (MHz)	Meter Reading (dBμV)		Factor (dB)	Result (dBμV)		Limit (dBμV)		Margin (dBμV)	
	Q.P	AVG		Q.P	AVG	Q.P	AVG	Q.P	AVG
0.325	28.6	----	0.3	28.9	----	59.6	49.6	-30.7	----
0.372	30.1	----	0.3	30.4	----	58.5	48.5	-28.1	----
0.403	27.1	----	0.3	27.4	----	57.8	47.8	-30.4	----
0.556	27.9	----	0.3	28.2	----	56.0	46.0	-27.8	----
0.704	26.7	----	0.3	27.0	----	56.0	46.0	-29.0	----
0.860	24.4	----	0.3	24.7	----	56.0	46.0	-31.3	----

Note : 1. The expanded uncertainty of the conducted emission tests is 2.45 dB.

Mode: 802.11b

L1



Operation Mode : 802.11g

Test Date : Dec. 26, 2006

Temperature : 19 °C

Humidity : 57 %

Mode: 802.11g

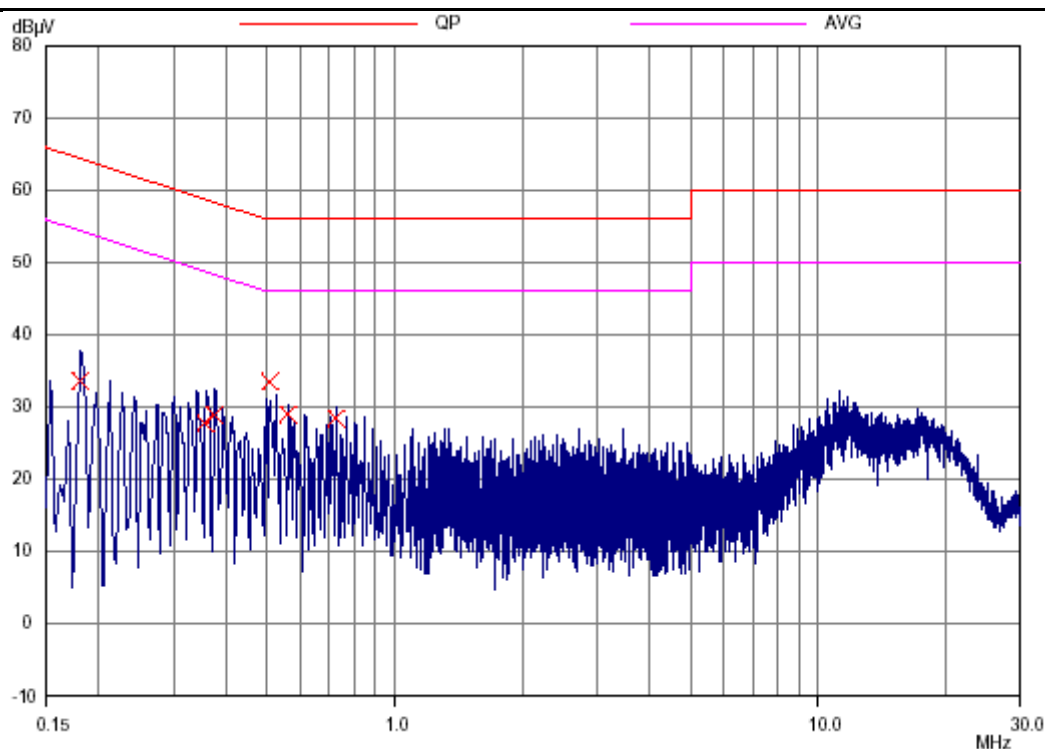
N1

Frequency (MHz)	Meter Reading (dBμV)		Factor (dB)	Result (dBμV)		Limit (dBμV)		Margin (dBμV)	
	Q.P	AVG		Q.P	AVG	Q.P	AVG	Q.P	AVG
0.181	33.6	----	0.2	33.8	----	64.4	54.4	-30.6	----
0.357	27.8	----	0.3	28.1	----	58.8	48.8	-30.7	----
0.376	28.8	----	0.3	29.1	----	58.4	48.4	-29.3	----
0.509	35.6	----	0.3	35.9	----	56.0	46.0	-20.1	----
0.560	28.9	----	0.3	29.2	----	56.0	46.0	-26.8	----
0.728	28.4	----	0.3	28.7	----	56.0	46.0	-27.3	----

Note : 1. The expanded uncertainty of the conducted emission tests is 2.45 dB.

Mode: 802.11g

N1



Mode: 802.11g

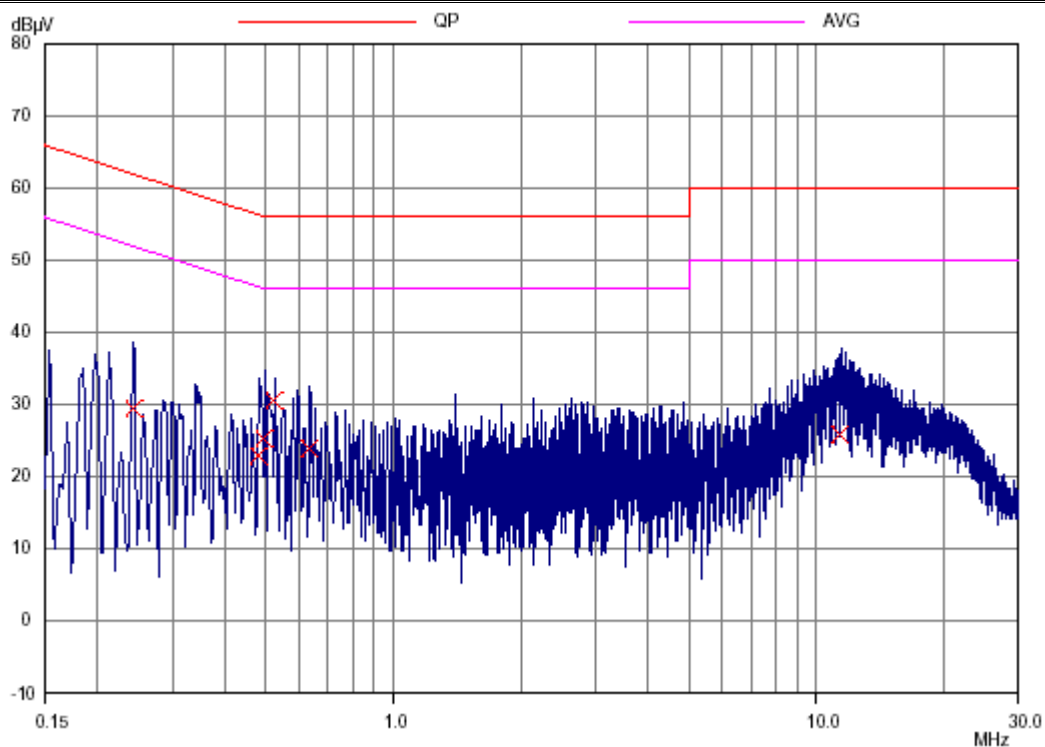
L1

Frequency (MHz)	Meter Reading (dBμV)		Factor (dB)	Result (dBμV)		Limit (dBμV)		Margin (dBμV)	
	Q.P	AVG		Q.P	AVG	Q.P	AVG	Q.P	AVG
0.243	29.5	----	0.2	29.7	----	62.0	52.0	-32.3	----
0.482	22.9	----	0.3	23.2	----	56.3	46.3	-33.1	----
0.497	25.3	----	0.3	25.6	----	56.0	46.0	-30.4	----
0.525	30.6	----	0.3	30.9	----	56.0	46.0	-25.1	----
0.634	23.9	----	0.3	24.2	----	56.0	46.0	-31.8	----
11.406	25.9	----	0.9	26.8	----	60.0	50.0	-33.2	----

Note : 1. The expanded uncertainty of the conducted emission tests is 2.45 dB.

Mode: 802.11g

L1



Operation Mode : Take Video

Test Date : Dec. 26, 2006

Temperature : 19 °C

Humidity : 57 %

Mode: Take Video

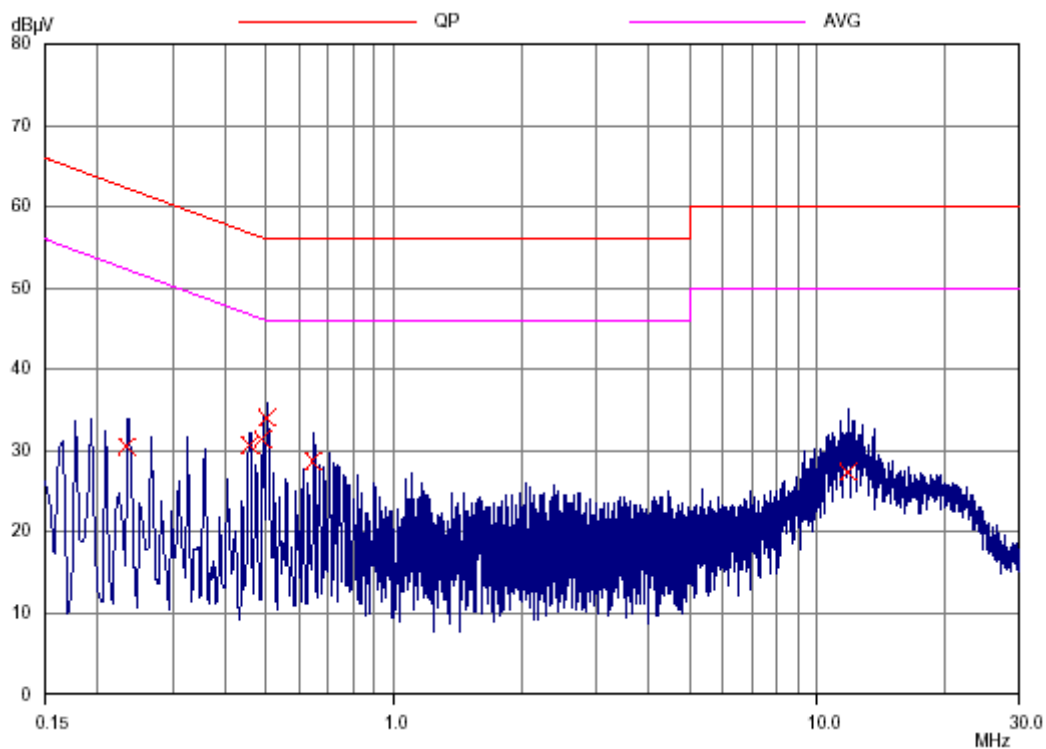
N1

Frequency (MHz)	Meter Reading (dBμV)		Factor (dB)	Result (dBμV)		Limit (dBμV)		Margin (dBμV)	
	Q.P	AVG		Q.P	AVG	Q.P	AVG	Q.P	AVG
0.235	30.5	----	0.2	30.7	----	62.3	52.3	-31.6	----
0.458	30.5	----	0.3	30.8	----	56.7	46.7	-25.9	----
0.489	31.4	----	0.3	31.7	----	56.2	46.2	-24.5	----
0.501	34.0	----	0.3	34.3	----	56.0	46.0	-21.7	----
0.646	28.7	----	0.3	29.0	----	56.0	46.0	-27.0	----
11.847	27.3	----	0.9	28.2	----	60.0	50.0	-31.8	----

Note : 1. The expanded uncertainty of the conducted emission tests is 2.45 dB.

Mode: Take Video

N1



Mode: Take Video

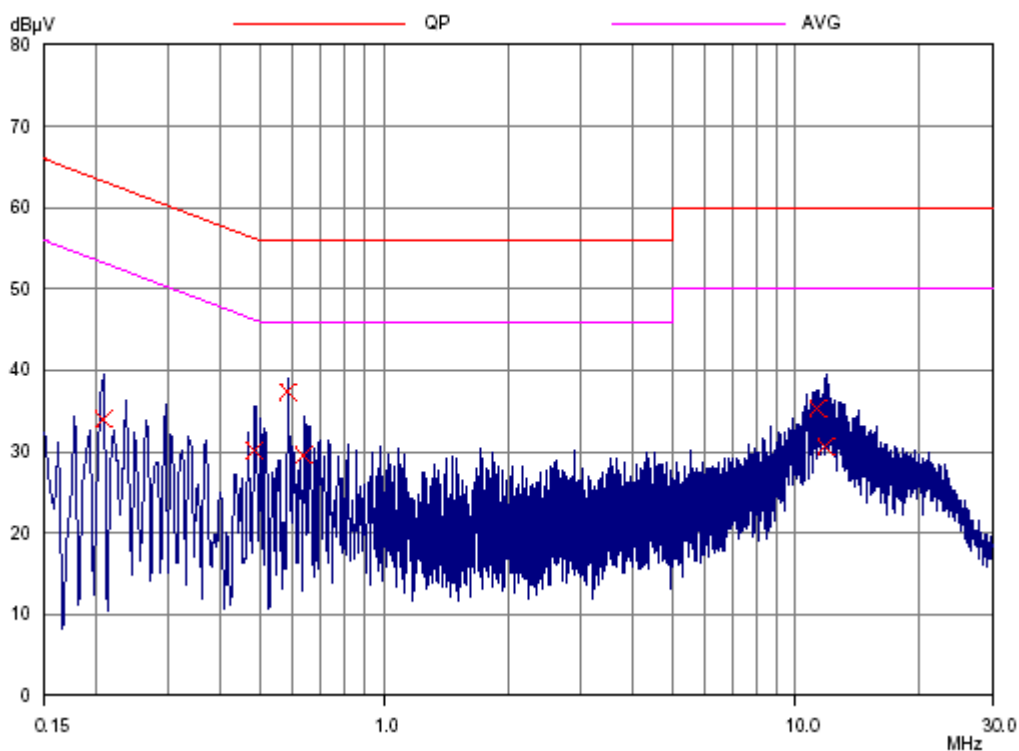
L1

Frequency (MHz)	Meter Reading (dBμV)		Factor (dB)	Result (dBμV)		Limit (dBμV)		Margin (dBμV)	
	Q.P	AVG		Q.P	AVG	Q.P	AVG	Q.P	AVG
0.208	34.0	----	0.2	34.2	----	63.3	53.3	-29.1	----
0.485	30.0	----	0.3	30.3	----	56.3	46.3	-26.0	----
0.583	37.3	----	0.3	37.6	----	56.0	46.0	-18.4	----
0.638	29.6	----	0.3	29.9	----	56.0	46.0	-26.1	----
11.347	35.2	----	0.9	36.1	----	60.0	50.0	-23.9	----
11.835	30.7	----	0.9	31.6	----	60.0	50.0	-28.4	----

Note : 1. The expanded uncertainty of the conducted emission tests is 2.45 dB.

Mode: Take Video

L1



Operation Mode : MP4 Play

Test Date : Dec. 26, 2006

Temperature : 19 °C

Humidity : 57 %

Mode: MP4 Play

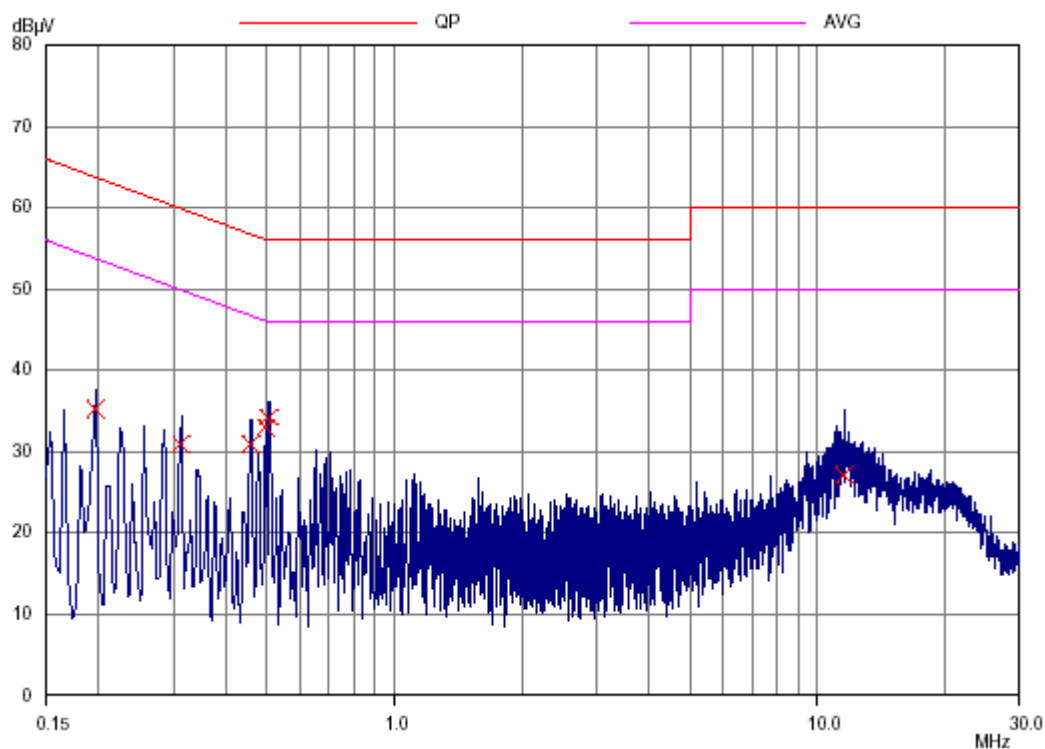
N1

Frequency (MHz)	Meter Reading (dBμV)		Factor (dB)	Result (dBμV)		Limit (dBμV)		Margin (dBμV)	
	Q.P	AVG		Q.P	AVG	Q.P	AVG	Q.P	AVG
0.196	35.2	----	0.2	35.4	----	63.8	53.8	-28.4	----
0.314	30.9	----	0.3	31.2	----	59.9	49.9	-28.7	----
0.458	30.9	----	0.3	31.2	----	56.7	46.7	-25.5	----
0.497	32.9	----	0.3	33.2	----	56.0	46.0	-22.8	----
0.505	34.1	----	0.3	34.4	----	56.0	46.0	-21.6	----
11.625	27.1	----	0.9	28.0	----	60.0	50.0	-32.0	----

Note : 1. The expanded uncertainty of the conducted emission tests is 2.45 dB.

Mode: MP4 Play

N1



Mode: MP4 Play

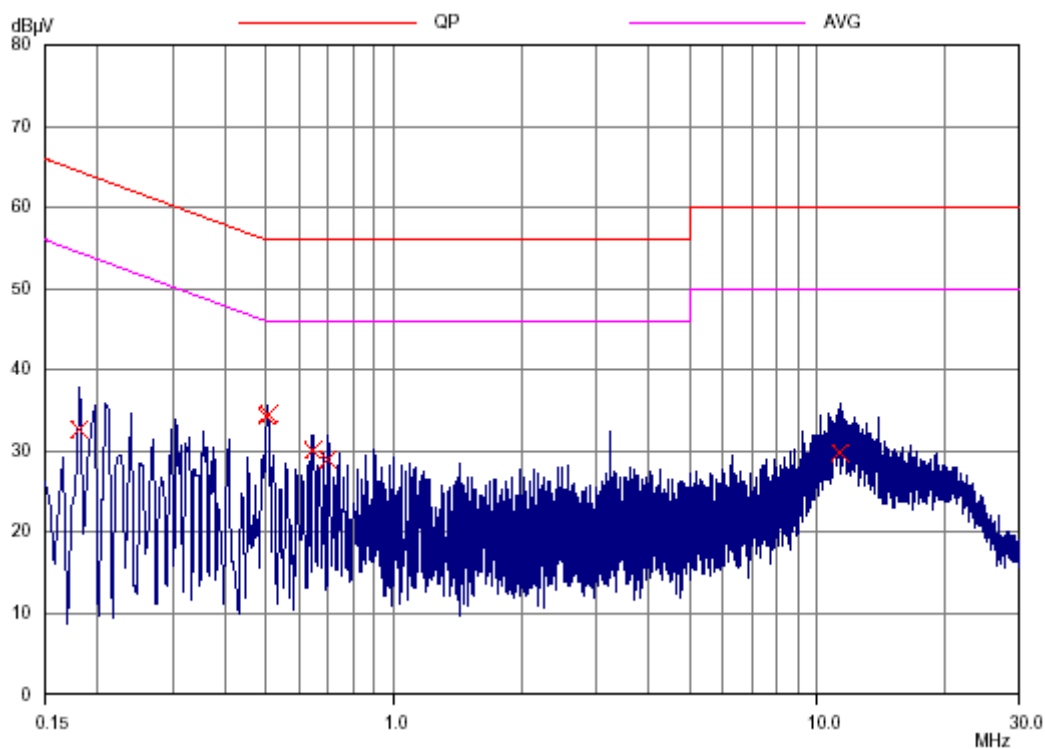
L1

Frequency (MHz)	Meter Reading (dBμV)		Factor (dB)	Result (dBμV)		Limit (dBμV)		Margin (dBμV)	
	Q.P	AVG		Q.P	AVG	Q.P	AVG	Q.P	AVG
0.181	32.6	----	0.2	32.8	----	64.4	54.4	-31.6	----
0.501	34.2	----	0.3	34.5	----	56.0	46.0	-21.5	----
0.509	34.5	----	0.3	34.8	----	56.0	46.0	-21.2	----
0.646	30.0	----	0.3	30.3	----	56.0	46.0	-25.7	----
0.700	28.9	----	0.3	29.2	----	56.0	46.0	-26.8	----
11.308	29.7	----	0.9	30.6	----	60.0	50.0	-29.4	----

Note : 1. The expanded uncertainty of the conducted emission tests is 2.45 dB.

Mode: MP4 Play

L1



Operation Mode : Bluetooth

Test Date : Dec. 26, 2006

Temperature : 19 °C

Humidity : 57 %

Mode: Bluetooth

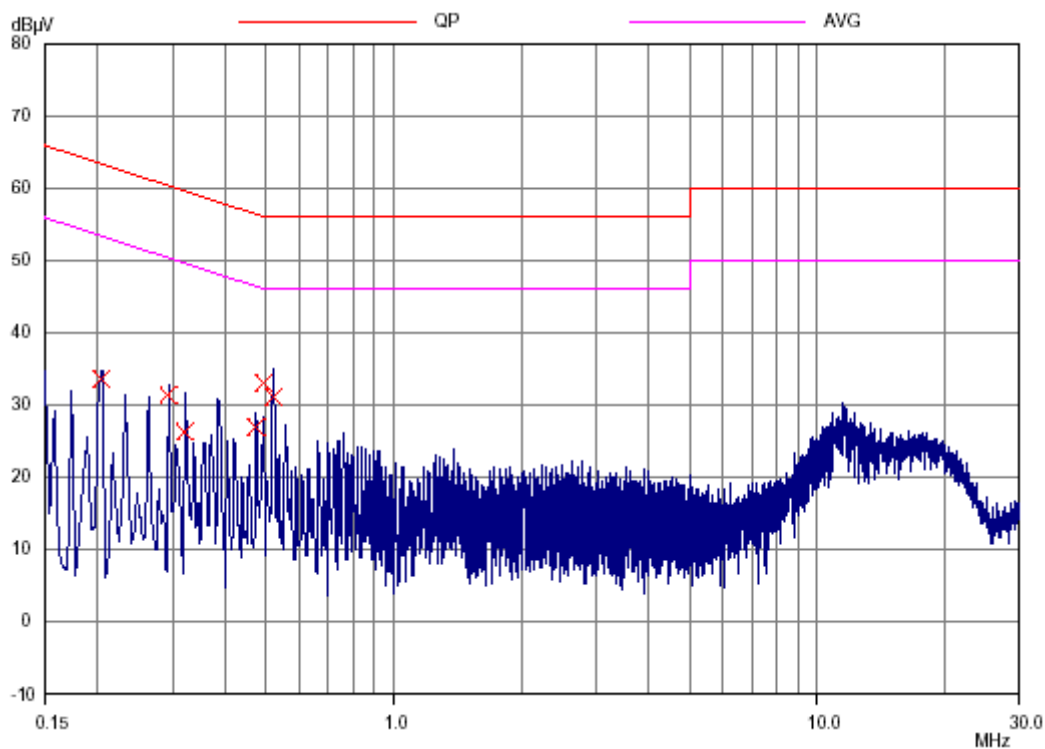
N1

Frequency (MHz)	Meter Reading (dBμV)		Factor (dB)	Result (dBμV)		Limit (dBμV)		Margin (dBμV)	
	Q.P	AVG		Q.P	AVG	Q.P	AVG	Q.P	AVG
0.204	33.7	----	0.2	33.9	----	63.4	53.4	-29.5	----
0.294	31.4	----	0.2	31.6	----	60.4	50.4	-28.8	----
0.321	26.3	----	0.3	26.6	----	59.7	49.7	-33.1	----
0.474	26.9	----	0.3	27.2	----	56.4	46.4	-29.2	----
0.493	33.0	----	0.3	33.3	----	56.1	46.1	-22.8	----
0.521	31.1	----	0.3	31.4	----	56.0	46.0	-24.6	----

Note : 1. The expanded uncertainty of the conducted emission tests is 2.45 dB.

Mode: Bluetooth

N1





Mode: Bluetooth

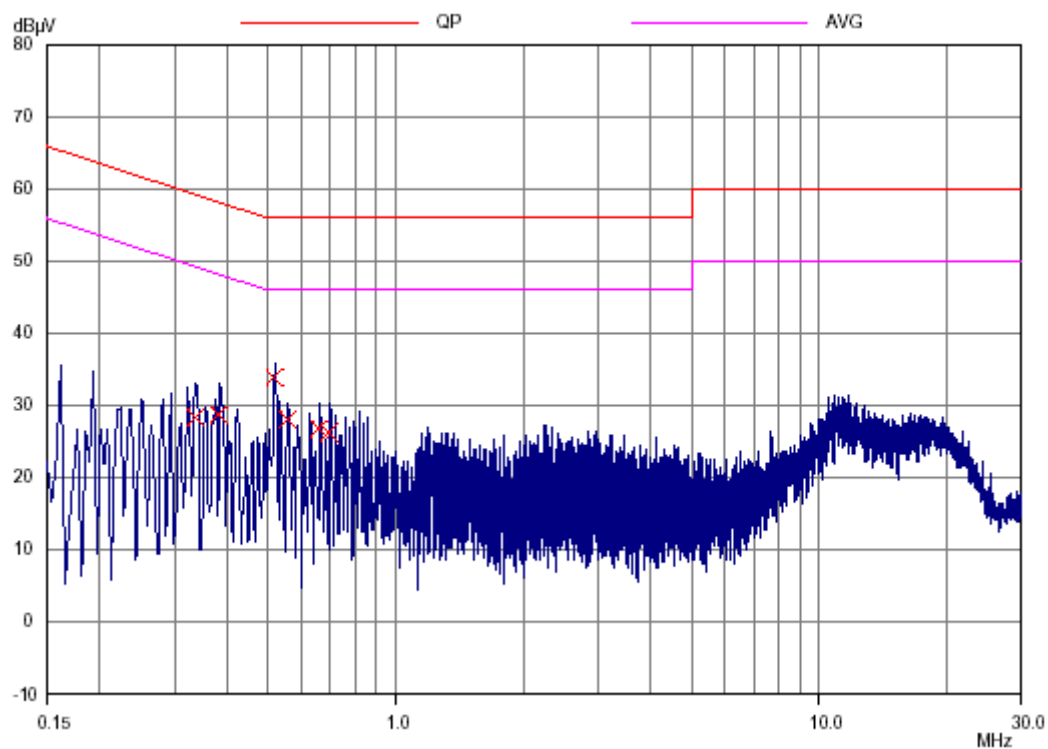
L1

Frequency (MHz)	Meter Reading (dBμV)		Factor (dB)	Result (dBμV)		Limit (dBμV)		Margin (dBμV)	
	Q.P	AVG		Q.P	AVG	Q.P	AVG	Q.P	AVG
0.337	28.3	----	0.3	28.6	----	59.3	49.3	-30.7	----
0.384	28.7	----	0.3	29.0	----	58.2	48.2	-29.2	----
0.517	33.8	----	0.3	34.1	----	56.0	46.0	-21.9	----
0.556	28.1	----	0.3	28.4	----	56.0	46.0	-27.6	----
0.661	26.8	----	0.3	27.1	----	56.0	46.0	-28.9	----
0.700	26.2	----	0.3	26.5	----	56.0	46.0	-29.5	----

Note : 1. The expanded uncertainty of the conducted emission tests is 2.45 dB.

Mode: Bluetooth

L1



Operation Mode : GPS

Test Date : Dec. 26, 2006

Temperature : 19 °C

Humidity : 57 %

Mode: GPS

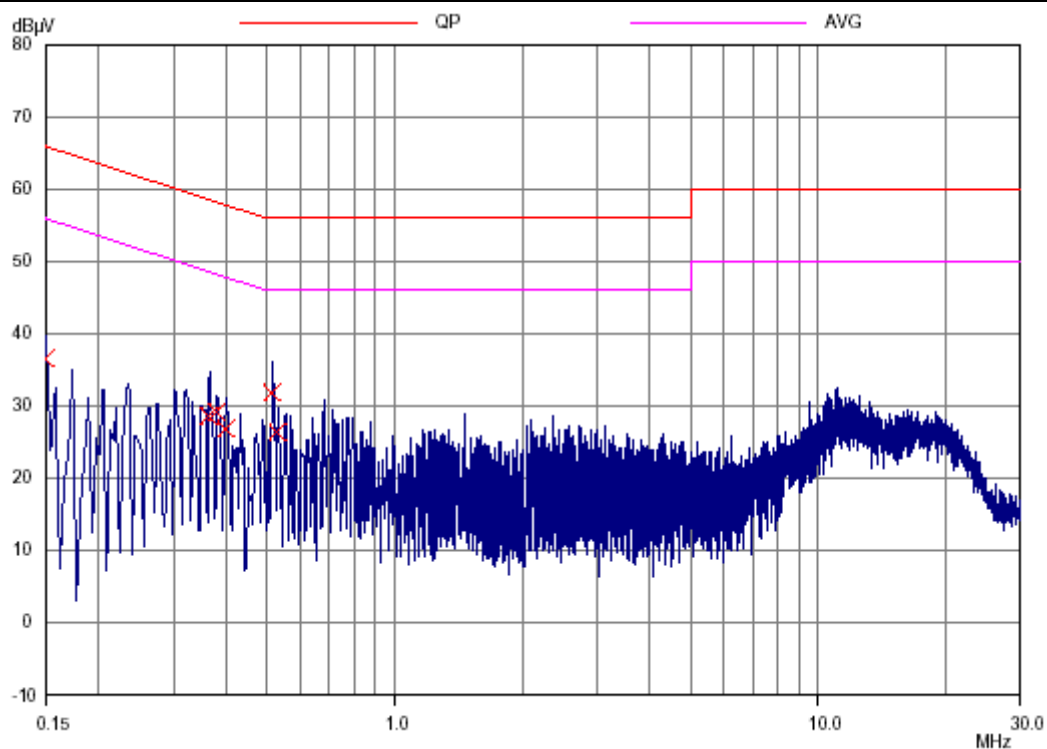
N1

Frequency (MHz)	Meter Reading (dBμV)		Factor (dB)	Result (dBμV)		Limit (dBμV)		Margin (dBμV)	
	Q.P	AVG		Q.P	AVG	Q.P	AVG	Q.P	AVG
0.150	36.6	----	0.2	36.8	----	66.0	56.0	-29.2	----
0.364	28.6	----	0.3	28.9	----	58.6	48.6	-29.8	----
0.380	29.1	----	0.3	29.4	----	58.3	48.3	-28.9	----
0.400	26.8	----	0.3	27.1	----	57.9	47.9	-30.8	----
0.513	31.9	----	0.3	32.2	----	56.0	46.0	-23.8	----
0.528	26.5	----	0.3	26.8	----	56.0	46.0	-29.2	----

Note : 1. The expanded uncertainty of the conducted emission tests is 2.45 dB.

Mode: GPS

N1



Mode: GPS

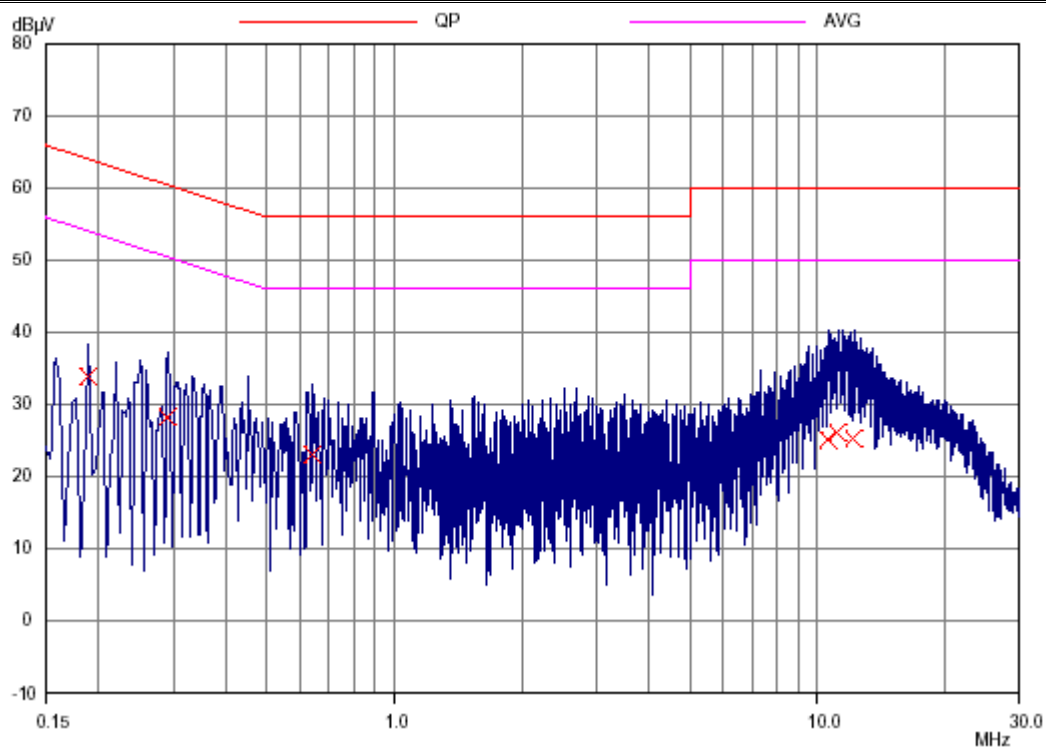
L1

Frequency (MHz)	Meter Reading (dBμV)		Factor (dB)	Result (dBμV)		Limit (dBμV)		Margin (dBμV)	
	Q.P	AVG		Q.P	AVG	Q.P	AVG	Q.P	AVG
0.189	33.8	----	0.2	34.0	----	64.1	54.1	-30.1	----
0.290	28.2	----	0.2	28.4	----	60.5	50.5	-32.1	----
0.642	23.0	----	0.3	23.3	----	56.0	46.0	-32.7	----
10.644	25.0	----	0.8	25.8	----	60.0	50.0	-34.2	----
11.171	26.0	----	0.9	26.9	----	60.0	50.0	-33.1	----
12.230	25.3	----	0.9	26.2	----	60.0	50.0	-33.8	----

Note : 1. The expanded uncertainty of the conducted emission tests is 2.45 dB.

Mode: GPS

L1



## 5.4 Result Data Calculation

The result data is calculated by adding the LISN Factor to the measured reading. The basic equation with a sample calculation is as follows:

$$\text{RESULT} = \text{READING} + \text{LISN FACTOR}$$

Assume a receiver reading of 22.5 dB  $\mu$  V is obtained, and LISN Factor is 0.1 dB, then the total of disturbance voltage is 22.6 dB  $\mu$  V.

$$\text{RESULT} = 22.5 + 0.1 = 22.6 \text{ dB } \mu \text{ V}$$

$$\begin{aligned} \text{Level in } \mu \text{ V} &= \text{Common Antilogarithm}[(22.6 \text{ dB } \mu \text{ V})/20] \\ &= 13.48 \mu \text{ V} \end{aligned}$$

## 5.5 Conducted Measurement Equipment

The following test equipment are used during the conducted test .

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
EMI Test Receiver	Rohde & Schwarz	ESCI	2006/11/29	2007/11/28
LISN	EMCO	3825/2	2006/07/04	2007/07/03
LISN	Rohde & Schwarz	ESH2-Z5	2006/09/12	2007/09/11

## 5.6 Photos of Conduction Measuring Setup



## CONSTRUCTED PHOTOS of EUT

### A. EUT

#### 1. Top View of EUT



#### 2. Bottom View of EUT





## CONSTRUCTED PHOTOS of EUT

### 3. Side View of EUT



### 4. Side View of EUT



## CONSTRUCTED PHOTOS of EUT

### 5. Internal View of EUT



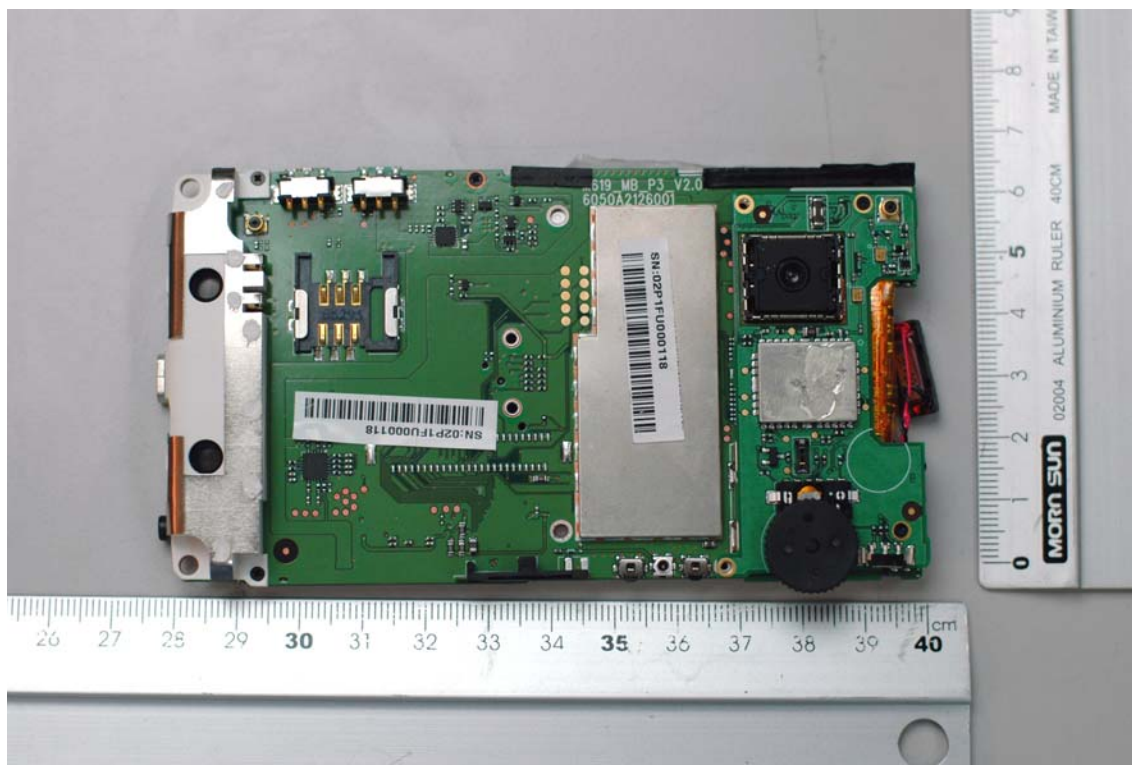
### 6. Internal View of EUT



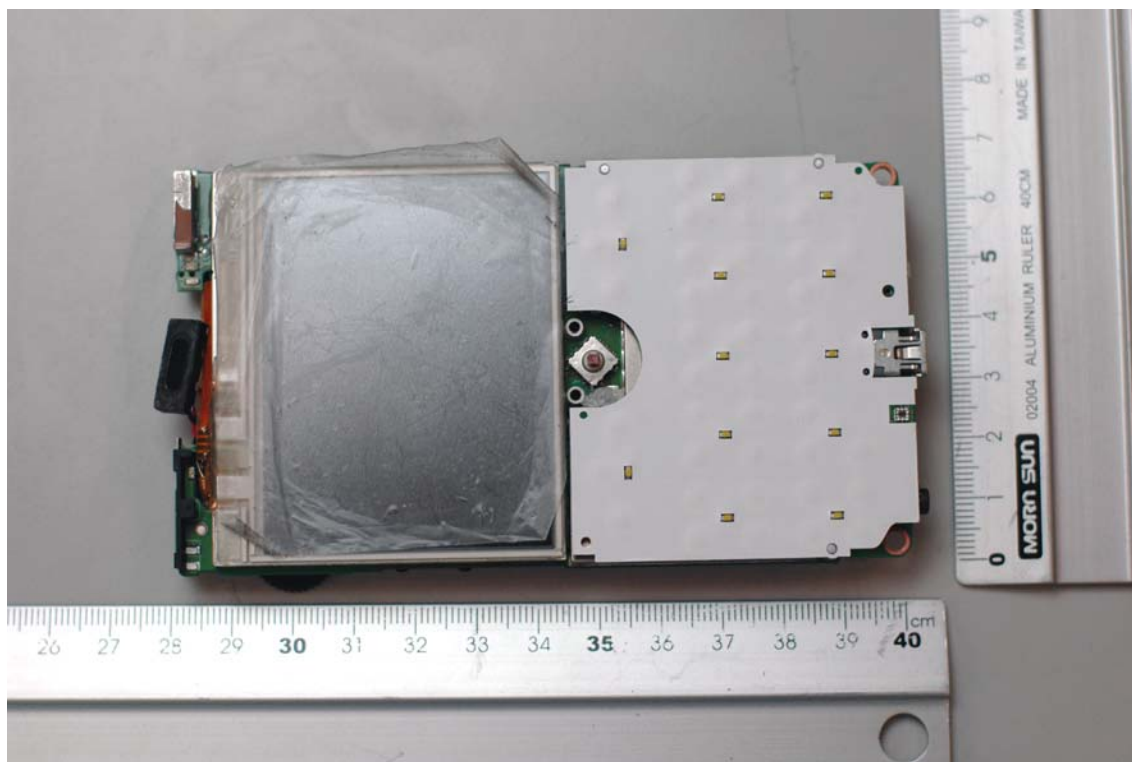


## CONSTRUCTED PHOTOS of EUT

### 7. Internal View of EUT

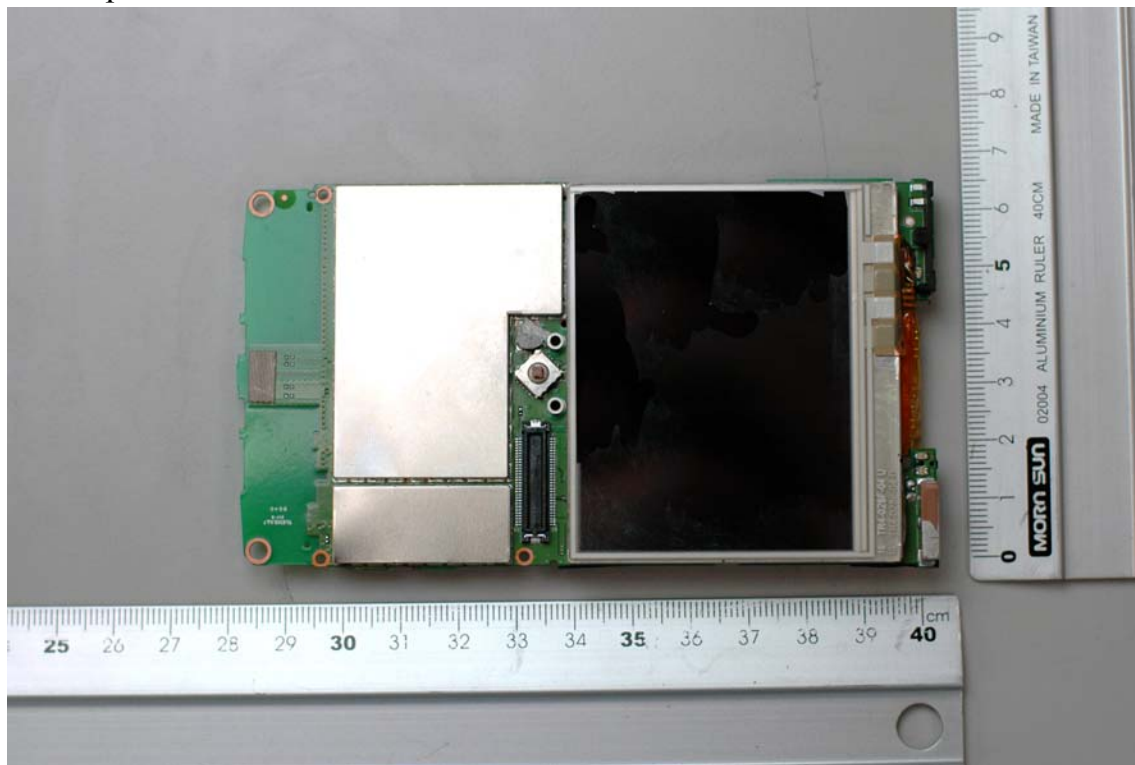


### 8. Internal View of EUT



## CONSTRUCTED PHOTOS of EUT

### 9. Component View of PCB

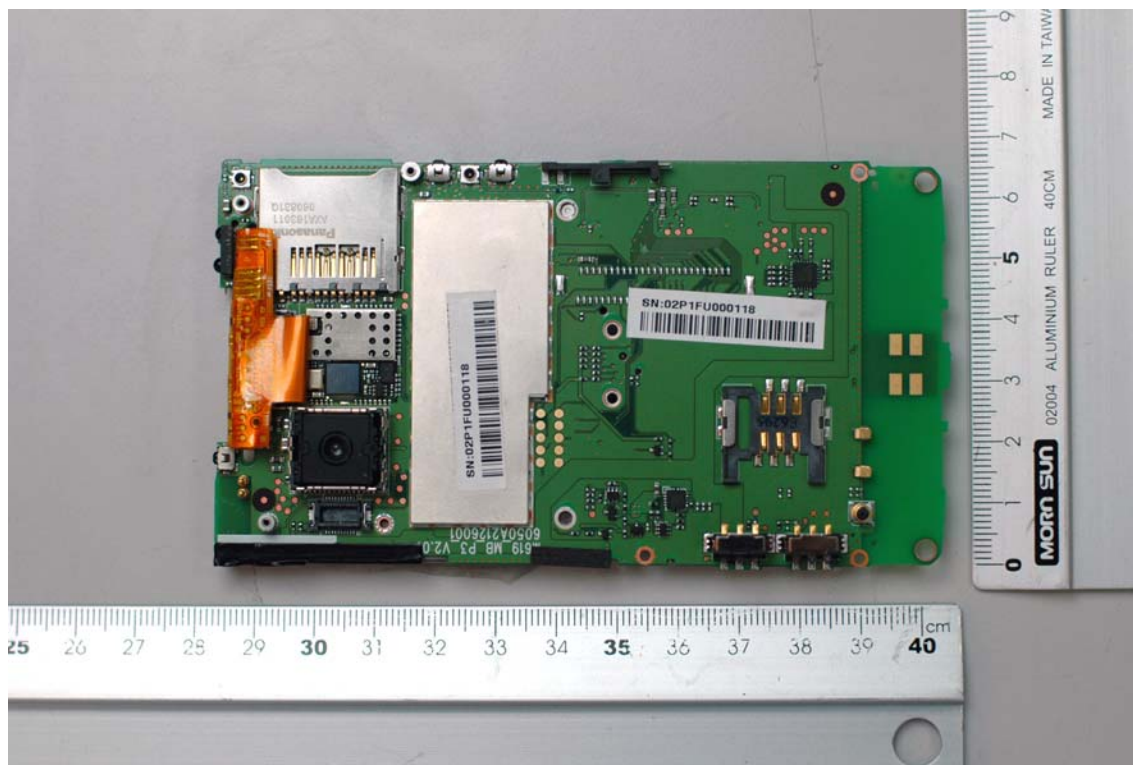


### 10. Component View of PCB

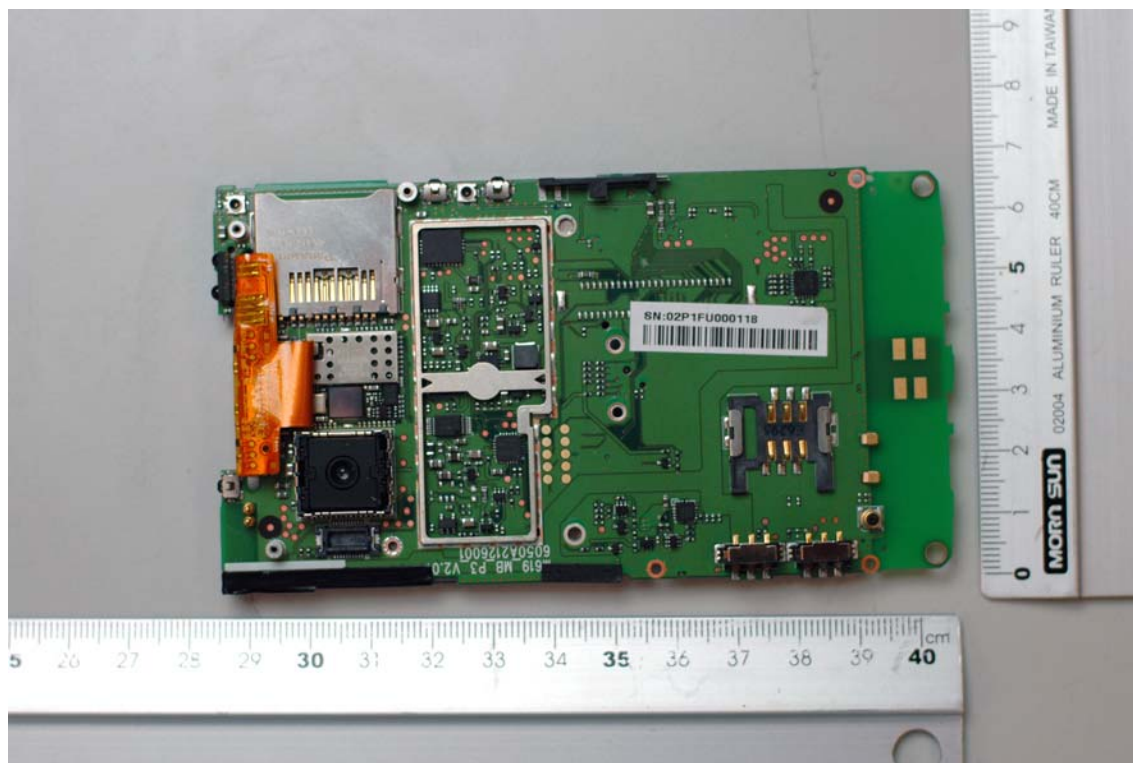


## CONSTRUCTED PHOTOS of EUT

### 11. Solder View of PCB



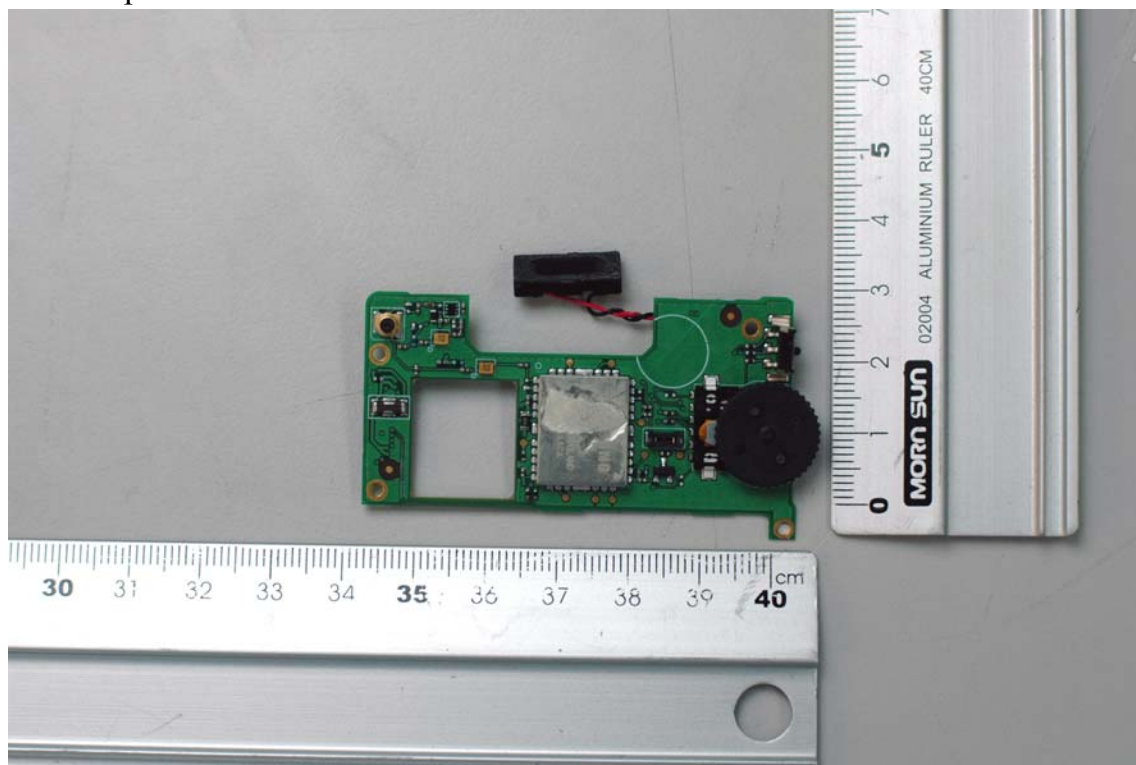
### 12. Solder View of PCB



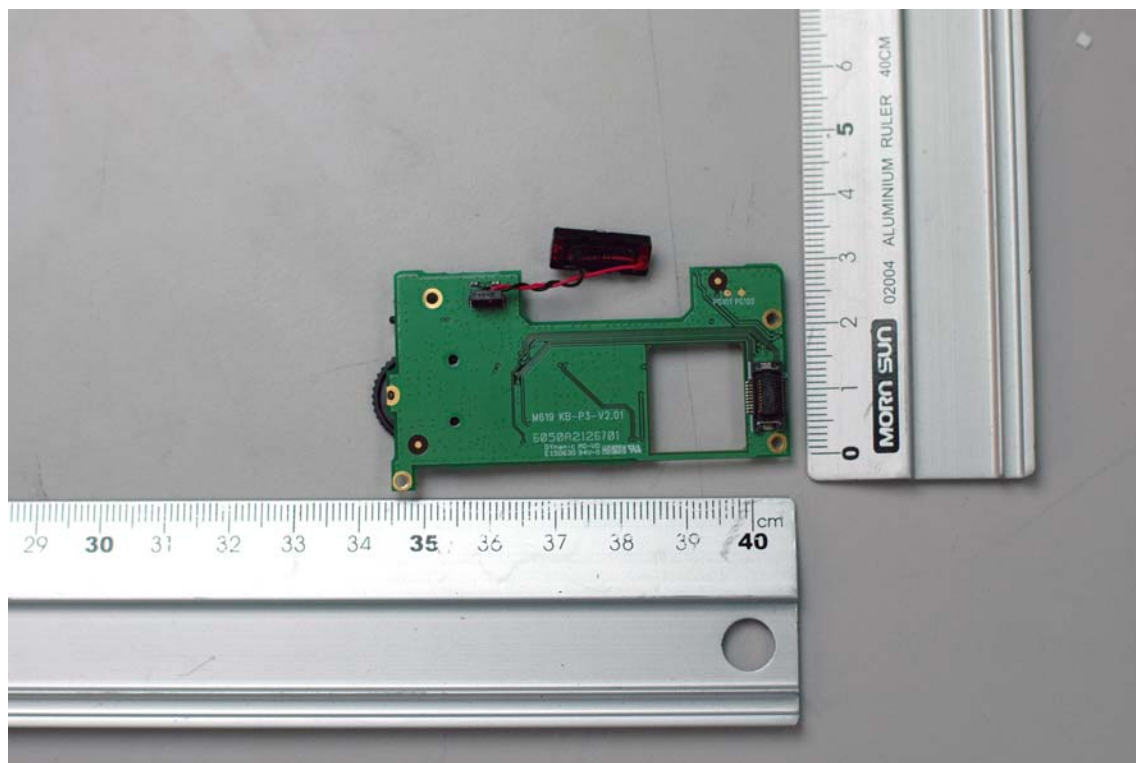


## CONSTRUCTED PHOTOS of EUT

### 13. Component View of PCB

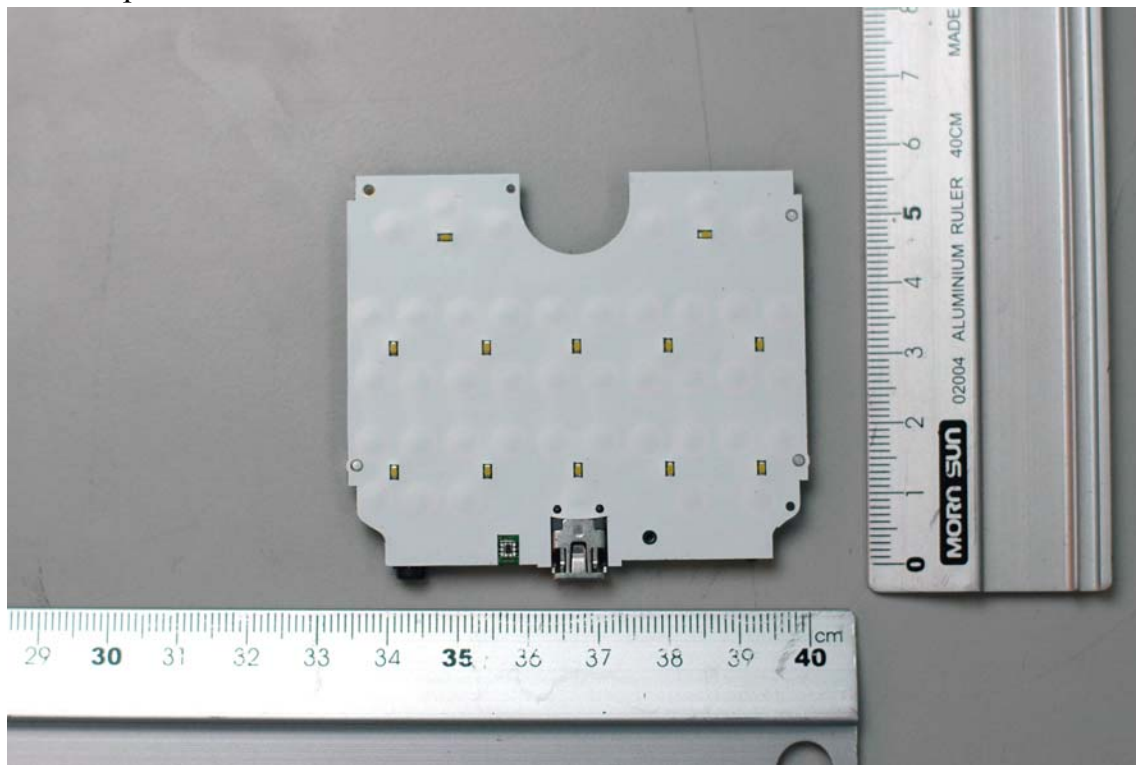


#### 14. Solder View of PCB

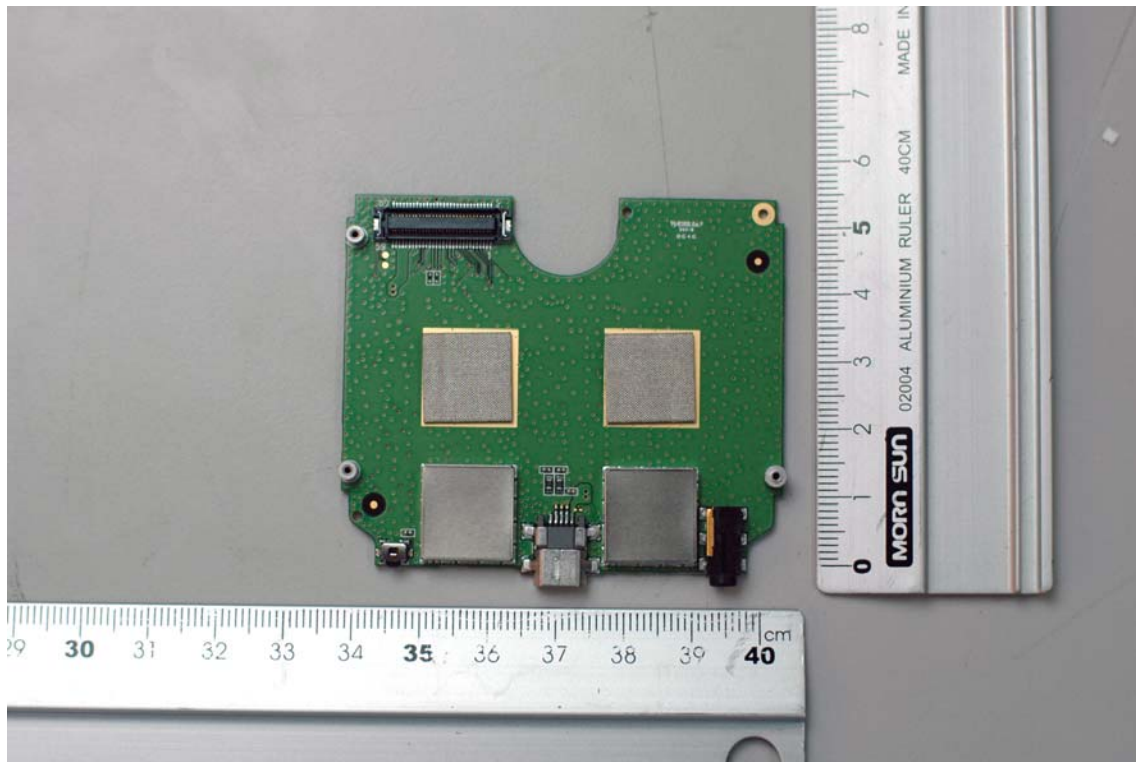


## CONSTRUCTED PHOTOS of EUT

### 15. Component View of PCB

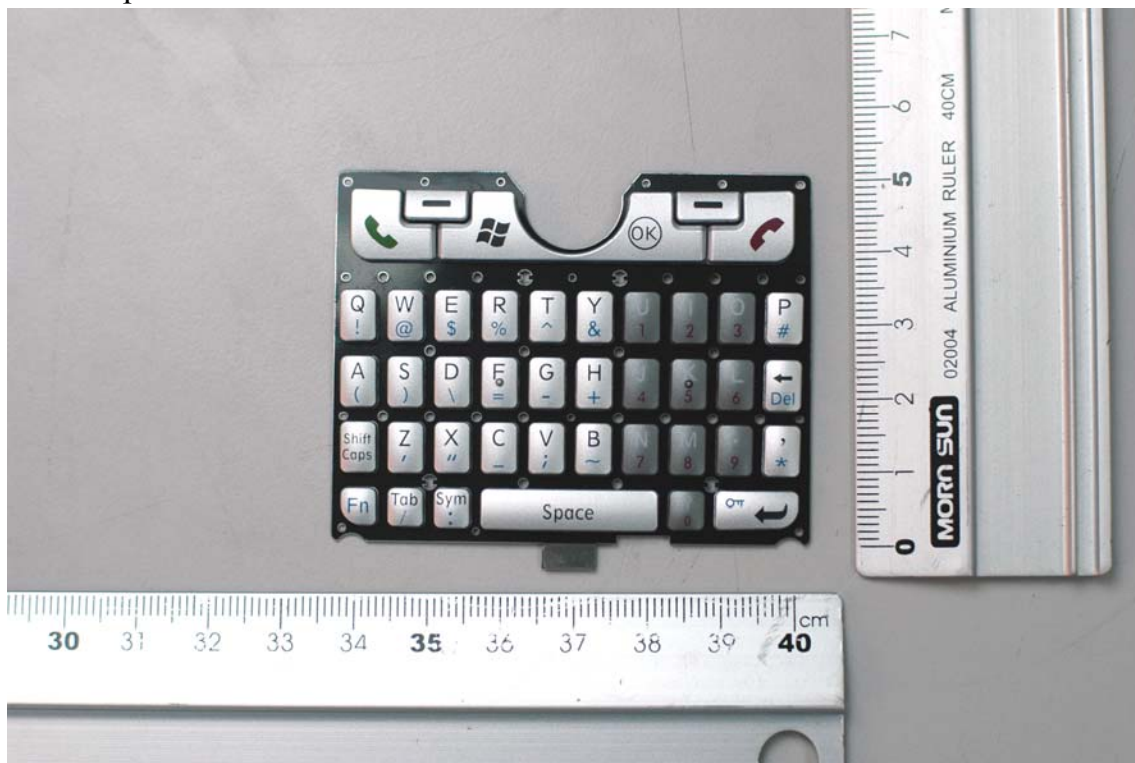


### 16. Solder View of PCB

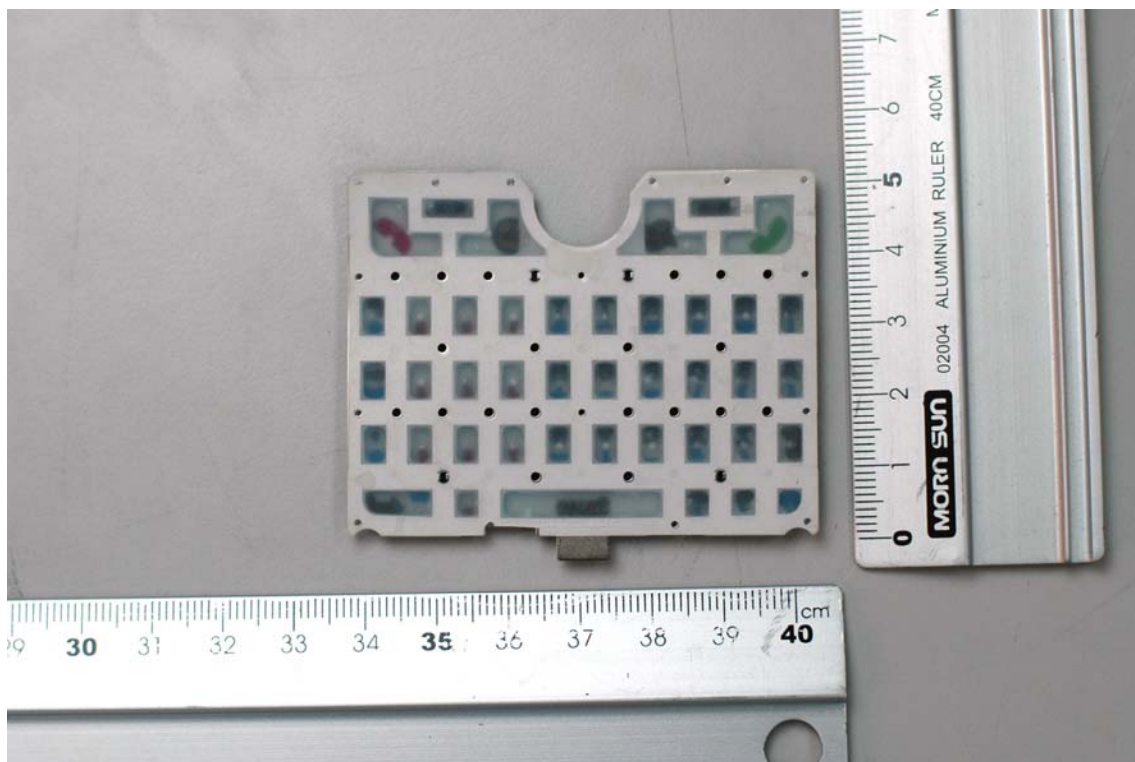


## CONSTRUCTED PHOTOS of EUT

### 17. Component View of PCB



### 18. Solder View of PCB





## CONSTRUCTED PHOTOS of EUT

### 19. Front View of Battery



### 20. Rear View of Battery



## CONSTRUCTED PHOTOS of EUT

### B. Adaptor

#### 1. Top View of Adaptor



#### 2. Side View of Adaptor





## CONSTRUCTED PHOTOS of EUT

### 3. Side View of Adaptor



### 4. Front View of Adaptor



## CONSTRUCTED PHOTOS of EUT

### 5. Side View of Adaptor

