



# TEST REPORT

**Ref. Report No.**

05-1341-006

**Name and address of the applicant**

Belco International Co., Ltd.  
212, Yeokgok-dong, Wonmi-ku, Bucheon-shi,  
Kyungki-do, 420-100, Korea

**Standard / Test regulation**

FCC Part 15, Subpart C

**Test result**

Pass

**Incoming date : February 15, 2004**

**Test date : March 24, 2004**

**Test item(s) ;**

Cordless Telephone System  
(Base and Handy)

**Model/type ref. ;**

PM2420

**Manufacturer ;**

Belco Electronics(Tianjin) Co., Ltd.

**Additional information ;**

-Required Authorization : Certification  
-FCC ID. : NYC-PM2420

**Issue date : March 25, 2005**

*This test report only responds to the tested sample and shall not be reproduced except in full without written approval of the Korea Testing Laboratory.*

**Tested and reported by**

Jeong-Min Kim, Senior Engineer

**Reviewed by**

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Manager

# KOREA TESTING LABORATORY

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### . GENERAL INFORMATION

1. Applicant's Name and Mailing Address : Belco International Co., Ltd.  
212, Yeokgok-dong, Wonmi-ku, Bucheon-shi,  
Kyungki-do, 420-100, Korea
2. Manufacturer's Name and Mailing Address : Belco Electronics (Tianjin) Co., Ltd.  
Gongye-Qu, Beizha-Kou, Jinnan-zone, Tianjin, China
3. Equipment Descriptions
- 3.1 Operating Frequency : Base : 2400.25 MHz ~ 2410.00 MHz (40 Channel 250 kHz Spacing)  
Handy : 2470.00 MHz ~ 2479.75 MHz (40 Channel 250 kHz Spacing)
- 3.2 Type of Emission : Frequency Modulation
- 3.3 Power Supply : Base : DC 5V (Adapter), Handy : DC 3.3~3.8V (Battery)
4. Rules and Regulations : FCC Part 15, Subpart C
5. Measuring Procedure : ANSI C63.4-2003
6. Place of Measurement : Absorber-lined room(3-Meter) of KTL
7. Date of Measurement
- 7.1 Conducted Emission : March 20, 2005
- 7.2 Radiated Emission : March 24, 2005

**. GENERAL REQUIREMENTS OF THE EUT**

## 1. Labelling Requirement (Section 15.19 and Section 15.214)

This device complies with Part 15 of the FCC Rules.  
Operation is subject to following two condition : (1) this device may not cause harmful interference, and  
(2) this device must accept any interference received, including interference that may cause undesired operation.

Privacy of communication may not be ensured when using this phone.

1.1 Location of Label : User's Guide Manual1.2 How Applied : Printed

## 2. Information to User (Section 15.21)

The following or similar statements were provided in the manual for user instruction.

Please refer page 3 of the attached manual for details.

CAUTION : Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## 3. Special Accessories (Section 15.27)

3.1 Were the special Accessories provided? [ ] yes, [ ☒ ] no

3.2 If yes, details for the special accessories are as follows :

3.3 If yes, were the appropriate instructions provided on the first page of the text concerned with the device?

[ ] yes, [ ] no

3.4 Are these accessories provided of the type which can be readily obtained from multiple retail outlets ?

[ ] yes, [ ] no

And therefore does the manual specify what additional components or accessories are required to used in order to comply with the Rules?

[ ] yes, [ ] no

## 4. Digital Security Code (Section 15.214)

Was a circuitry for digital security code provided in the cordless telephone system ?

[ ☒ ] yes, [ ] no

## **. CONDUCTED EMISSION MEASUREMENT (Section 15.207)**

### **1. Test Procedure**

The base station(EUT) is designed to transmit on one of 40 channels in the band 2400.55 to 2410.00 MHz. Therefore measurements were performed with the equipment operating on three frequencies, which were the top(CH40), middle(CH21), and bottom(CH1) in the band, as per Section 15.31(m). Test mode was transmitting mode and charging mode.

Conducted emission measurements on the EUT were performed by "AC Power Line Conducted Emissions Testing" procedure as per ANSI C63.4. The EUT was set up on a wooden table 0.8 meters height, 1.0 by 1.5 meters in size, placed in the shielded enclosed with a side of wall of which constituted a vertical conducting surface of 2.2 m X 3.1 m in size to maintain 40 cm from the rear of EUT

LISN (Line Impedance Stabilization Network, R & S, ESH3-Z5, 50 ohm/50 uH) was installed and electrically boned to the conducting ground plane. The EUT was connected to the LISN.

The frequency range from 150 kHz to 30 MHz was examined and the peak values that are within 6 dB of the limit would be compared to quasi-peak values using the Quasi-Peak mode and average value using the average mode.

The position of connecting cables of the EUT was changed to find the worst case configuration during measurements. The maximum emission level from the EUT occurred in such configuration as shown in the following photograph.

## 2. Photograph for the test configuration



## 3. Sample Calculation

The emission level measured in decibels was shown in following sample calculation.

For example :

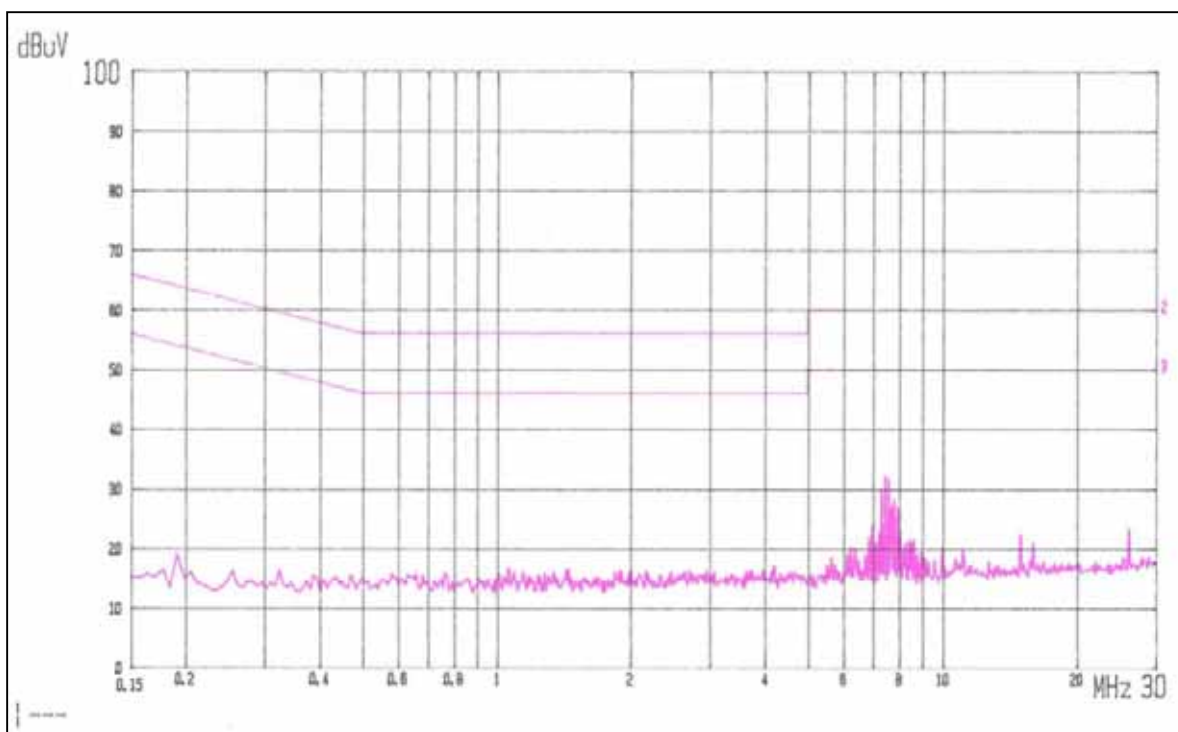
|                   |                    |                 |                |
|-------------------|--------------------|-----------------|----------------|
| Measured Value at | <u>7.50 MHz</u>    | 30.9 dB $\mu V$ | @ Average mode |
| +                 | Cable Loss *       | 0.0 dB          |                |
| <hr/>             |                    |                 |                |
| =                 | Conducted Emission | 30.9 dB $\mu V$ |                |

\* In case of RG214/ RF cable 15Ft, the loss is about 0.17dB at the frequency of 30 MHz which is negligible.

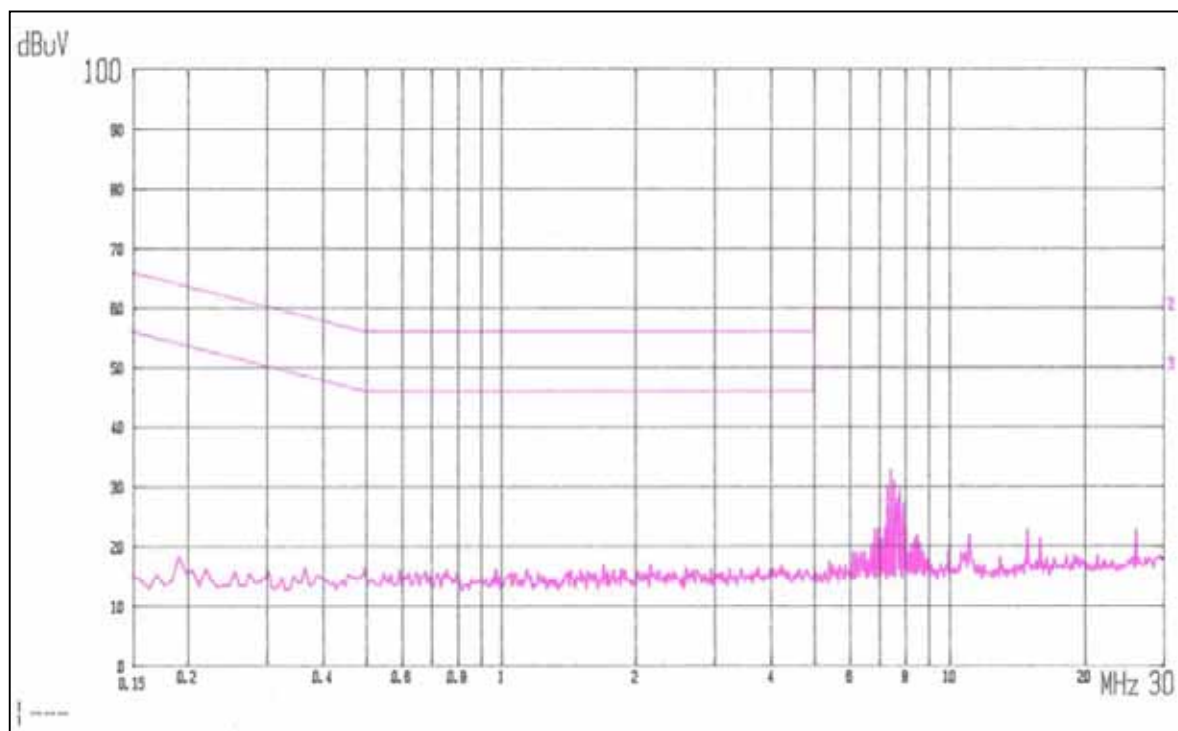
## 4. Measurement Data

- Operating Frequency : 2410.00 MHz (CH 40)  
 - Operating mode : Transmitting mode  
 - Resolution Bandwidth : x CISPR Quasi-Peak (6dB Bandwidth : 9 kHz)  
x Average (6dB Bandwidth : 9 kHz)

| Power Lead Tested   | Frequency (MHz) | Emission Level      |                      | Limit               |                      | (*) Margin          |                      |
|---|-----------------|---------------------|----------------------|---------------------|----------------------|---------------------|----------------------|
|   |                 | Q-Peak (dB $\mu$ V) | Average (dB $\mu$ V) | Q-Peak (dB $\mu$ V) | Average (dB $\mu$ V) | Q-Peak (dB $\mu$ V) | Average (dB $\mu$ V) |
| Live to Ground  | 7.39            | 26.8                | 26.1                 | 60.0                | 50.0                 | -33.2               | -23.9                |
|   | 7.50            | 31.3                | 30.9                 | 60.0                | 50.0                 | -28.7               | -19.1                |
|   | 7.62            | 30.6                | 29.7                 | 60.0                | 50.0                 | -29.4               | -20.3                |
|   | 7.74            | 22.5                | 21.9                 | 60.0                | 50.0                 | -37.5               | -28.1                |
|   | 7.86            | 23.6                | 23.0                 | 60.0                | 50.0                 | -36.4               | -27.0                |
|   | --              | --                  | --                   | --                  | --                   | --                  | --                   |
| Neutral to Ground   | 7.37            | 26.7                | 26.1                 | 60.0                | 50.0                 | -33.3               | -23.9                |
|   | 7.50            | 31.5                | 31.2                 | 60.0                | 50.0                 | -28.5               | -18.8                |
|   | 7.62            | 31.2                | 30.5                 | 60.0                | 50.0                 | -28.8               | -19.5                |
|   | 7.74            | 23.8                | 22.8                 | 60.0                | 50.0                 | -36.2               | -27.2                |
|   | 7.86            | 24.3                | 23.6                 | 60.0                | 50.0                 | -35.7               | -26.4                |
|   | --              | --                  | --                   | --                  | --                   | --                  | --                   |
| <p>Note : Refer to measured graphs on next page.</p> <p>* Margin(dB) : Emission Level (dB) - Limit (dB)</p> |                 |                     |                      |                     |                      |                     |                      |



(Test side : Live-Ground side)



(Test side : Neutral-Ground side)



## **. RADIATED EMISSION MEASUREMENT (Section 15.249)**

### **1. Test Procedure**

#### **1.1 Preliminary Testing for Reference**

The base station and handy set (EUT) are designed to transmit on one of 40 channels in the band 2400.25 to 2410.00 MHz and 2470.00 to 2479.75 MHz respectively. Therefore measurements were performed with the equipment operating on three frequencies, which were the top(CH40), middle(CH21), and bottom(CH1) in the band, as per Section 15.31(m).

Preliminary testing was performed in a KTL absorber-lined room to determine the emission characteristics of the EUT. The EUT was placed on the wooden table which has dimensions of 0.8 meters in height, 1 meter in length and 1.5 meters in width. Receiving antenna (Biconi-Log antenna : 30 to 1000 MHz or Horn Antenna : 1 to 18 GHz) was placed at the distance of 1 meter from the EUT.

An attempt was made to maximize the emission level with the various configurations of the EUT. Emission levels from the EUT with various configurations were examined on a spectrum analyzer connected with a RF amplifier and graphed by a plotter.

#### **1.2 Final Radiated Emission Test at an Absorber-Lined Room**

The final measurement of radiated field strength was carried out in a KTL absorber-lined Room that was listed up at FCC according to the "Radiated Emissions Testing" procedure specified by ANSI C63.4.

Based on the test results in preliminary test, measurement was made in same test set up and configuration with 3 orthogonal planes where produced maximum emission level. Receiving antenna was installed at 3-meter distance from the EUT, and was connected to an EMI receiver or spectrum analyzer with a RF amplifier.

Turntable was rotated through 360 degrees and receiving antenna height was varied from 1 to 4 meters above the ground plane with horizontal and vertical polarization to read maximum emission level.

If necessary, the radiated emission measurements could be performed at a closer distance than specified distance to ensure higher accuracy and their results were extrapolated to the specified distance using an inverse linear distance extrapolation factor(20dB/decade) as per Section 15.31(f).

The maximum emission level from the EUT occurred in such configuration as shown in the following photograph.

## 2. Photograph of the test configuration



## 3. Sample Calculation

The emission level measured in decibels above one microvolt ( $\text{dB } \mu\text{V}$ ) was calculated as shown in following sample calculation.

For example :

|                   |                              |                                 |
|-------------------|------------------------------|---------------------------------|
| Measured Value at | <u>2400.25 MHz</u>           | 88.0 $\text{dB } \mu\text{V}$   |
| +                 | Antenna Factor               | 28.5 $\text{dB/m}$              |
| +                 | Cable Loss                   | 2.9 $\text{dB}$                 |
| -                 | Preamplifier                 | -35.0 $\text{dB}$               |
| -                 | Distance Correction Factor * | 0.0 $\text{dB}$                 |
| <hr/>             |                              |                                 |
| =                 | Radiated Emission            | 84.4 $\text{dB } \mu\text{V/m}$ |

\* Extrapolated from the measured distance to the specified distance by an inverse linear distance extrapolation.

## 4. Measurement Data

## 4.1 EUT: Base unit

## 4.1.1 Operating Frequency (Bottom : 2400.25 MHz , CH.1)

- Resolution Bandwidth :   x   CISPR Quasi-Peak (6dB Bandwidth : 120kHz for below 1GHz)  
  x   Peak (3dB Bandwidth : 1MHz for above 1GHz)
- Measurement Distance : 3 Meter

| Frequency<br>(MHz)  | *<br>D.M. | *<br>A.P. | Measured<br>Value<br>(dBμV) | *<br>A.F.<br>+<br>C.L.<br>(dB) | *<br>A.G.<br>(dB) | *<br>D.C.F.<br>(dB) | Emission<br>Level |         | Limit<br>(μV/m) | **<br>Margin<br>(dB) |
|---|-----------|-----------|-----------------------------|--------------------------------|-------------------|---------------------|-------------------|---------|-----------------|----------------------|
|   |           |           |                             |                                |                   |                     | (dBμV/m)          | (μV/m)  |                 |                      |
| 800.09  | Q         | H         | 10.2                        | 24.3                           | --                | --                  | 34.5              | 53.1    | 500             | -19.5                |
| 2400.25   | P         | H         | 88.0                        | 31.4                           | -35.0             | --                  | 84.4              | 16595.9 | 50000           | -9.6                 |
| ***<br>4800.50  | P         | H/V       | ****<br><35.0               | 37.6                           | -35.0             | -9.5                | <28.1             | <25.4   | 500             | <-25.9               |
| ***<br>7200.75  | P         | H/V       | ****<br><35.0               | 42.1                           | -35.0             | -9.5                | <32.6             | <42.7   | 500             | <-21.4               |
| ***<br>9601.00  | P         | H/V       | ****<br><35.0               | 44.2                           | -35.0             | -9.5                | <34.7             | <54.3   | 500             | <-19.3               |
| --  | --        | --        | --                          | --                             | --                | --                  | --                | --      | --              | --                   |
| <p>Note</p> <p>* D.M. : Detect Mode (P : Peak, Q : Quasi-Peak, A : Average)<br/> A.P. : Antenna Polarization (H : Horizontal, V : Vertical)<br/> A.F. : Antenna Factor<br/> C.L. : Cable Loss<br/> A.G. : Amplifier Gain<br/> D.C.F. : Distance Correction Factor</p> <p>** Margin (dB) = Emission Level (dB) - Limit (dB)</p> <p>*** In the case of these frequencies, the EUT was measured at 1.0m distance for sufficient sensitivity of measurement system.</p> <p>**** &lt; means less than. The observed spectrum analyzer noise floor level with RF preamplifier was 35.0 dBuV</p> <p>Average detector mode was not measured because the peak emission values were under the average limits.</p> |           |           |                             |                                |                   |                     |                   |         |                 |                      |

## 4.1.2 Operating Frequency (Middle : 2405.25 MHz , CH.21)

- Resolution Bandwidth :   x   CISPR Quasi-Peak (6dB Bandwidth : 120kHz for below 1GHz)  
  x   Peak (3dB Bandwidth : 1MHz for above 1GHz)
- Measurement Distance : 3 Meter

| Frequency<br>(MHz)  | *<br>D.M. | *<br>A.P. | Measured<br>Value<br>(dB $\mu$ V) | *<br>A.F.<br>+<br>C.L.<br>(dB) | *<br>A.G.<br>(dB) | *<br>D.C.F.<br>(dB) | Emission<br>Level |              | Limit<br>( $\mu$ V/m) | **<br>Margin<br>(dB) |
|---|-----------|-----------|-----------------------------------|--------------------------------|-------------------|---------------------|-------------------|--------------|-----------------------|----------------------|
|   |           |           |                                   |                                |                   |                     | (dB $\mu$ V/m)    | ( $\mu$ V/m) |                       |                      |
| 801.75  | Q         | V         | 10.7                              | 24.3                           | --                | --                  | 35.0              | 56.2         | 500                   | -19.0                |
| 2405.25   | P         | H         | 88.5                              | 31.4                           | -35.0             | --                  | 84.9              | 17579.2      | 50000                 | -9.1                 |
| ***<br>4810.50  | P         | H/V       | ****<br><35.0                     | 37.6                           | -35.0             | -9.5                | <28.1             | <25.4        | 500                   | <-25.9               |
| ***<br>7215.75  | P         | H/V       | ****<br><35.0                     | 42.1                           | -35.0             | -9.5                | <32.6             | <42.7        | 500                   | <-21.4               |
| ***<br>9621.00  | P         | H/V       | ****<br><35.0                     | 44.2                           | -35.0             | -9.5                | <34.7             | <54.3        | 500                   | <-19.3               |
| --  | --        | --        | --                                | --                             | --                | --                  | --                | --           | --                    | --                   |
| <p>Note</p> <p>* D.M. : Detect Mode (P : Peak, Q : Quasi-Peak, A : Average)<br/> A.P. : Antenna Polarization (H : Horizontal, V : Vertical)<br/> A.F. : Antenna Factor<br/> C.L. : Cable Loss<br/> A.G. : Amplifier Gain<br/> D.C.F. : Distance Correction Factor</p> <p>** Margin (dB) = Emission Level (dB) - Limit (dB)</p> <p>*** In the case of these frequencies, the EUT was measured at 1.0m distance for sufficient sensitivity of measurement system.</p> <p>**** &lt; means less than. The observed spectrum analyzer noise floor level with RF preamplifier was 35.0 dBuV</p> <p>Average detector mode was not measured because the peak emission values were under the average limits.</p> |           |           |                                   |                                |                   |                     |                   |              |                       |                      |

## 4.1.3 Operating Frequency (Top : 2410.00 MHz , CH.40)

- Resolution Bandwidth :   x   CISPR Quasi-Peak (6dB Bandwidth : 120kHz for below 1GHz)  
  x   Peak (3dB Bandwidth : 1MHz for above 1GHz)
- Measurement Distance : 3 Meter

| Frequency<br>(MHz)  | *<br>D.M. | *<br>A.P. | Measured<br>Value<br>(dB $\mu$ V) | *<br>A.F.<br>+<br>C.L.<br>(dB) | *<br>A.G.<br>(dB) | *<br>D.C.F.<br>(dB) | Emission<br>Level |              | Limit<br>( $\mu$ V/m) | **<br>Margin<br>(dB) |
|---|-----------|-----------|-----------------------------------|--------------------------------|-------------------|---------------------|-------------------|--------------|-----------------------|----------------------|
|   |           |           |                                   |                                |                   |                     | (dB $\mu$ V/m)    | ( $\mu$ V/m) |                       |                      |
| 803.34  | Q         | H         | 10.5                              | 24.3                           | --                | --                  | 34.8              | 55.0         | 500                   | -19.2                |
| 2410.00   | P         | H         | 87.3                              | 31.4                           | -35.0             | --                  | 83.7              | 15310.9      | 50000                 | -10.3                |
| ***<br>4820.00  | P         | H/V       | ****<br><35.0                     | 37.6                           | -35.0             | -9.5                | <28.1             | <25.4        | 500                   | <-25.9               |
| ***<br>7230.00  | P         | H/V       | ****<br><35.0                     | 42.1                           | -35.0             | -9.5                | <32.6             | <42.7        | 500                   | <-21.4               |
| ***<br>9640.00  | P         | H/V       | ****<br><35.0                     | 44.2                           | -35.0             | -9.5                | <34.7             | <54.3        | 500                   | <-19.3               |
| --  | --        | --        | --                                | --                             | --                | --                  | --                | --           | --                    | --                   |
| <p>Note</p> <p>* D.M. : Detect Mode (P : Peak, Q : Quasi-Peak, A : Average)<br/> A.P. : Antenna Polarization (H : Horizontal, V : Vertical)<br/> A.F. : Antenna Factor<br/> C.L. : Cable Loss<br/> A.G. : Amplifier Gain<br/> D.C.F. : Distance Correction Factor</p> <p>** Margin (dB) = Emission Level (dB) - Limit (dB)</p> <p>*** In the case of these frequencies, the EUT was measured at 1.0m distance for sufficient sensitivity of measurement system.</p> <p>**** &lt; means less than. The observed spectrum analyzer noise floor level with RF preamplifier was 35.0 dBuV</p> <p>Average detector mode was not measured because the peak emission values were under the average limits.</p> |           |           |                                   |                                |                   |                     |                   |              |                       |                      |

## 4.2 EUT: Handy unit

## 4.2.1 Operating Frequency (Bottom : 2470.00 MHz , CH.1)

- Resolution Bandwidth :   x   CISPR Quasi-Peak (6dB Bandwidth : 120kHz for below 1GHz)  
  x   Peak (3dB Bandwidth : 1MHz for above 1GHz)
- Measurement Distance : 3 Meter

| Frequency<br>(MHz)  | *<br>D.M. | *<br>A.P. | Measured<br>Value<br>(dBμV) | *<br>A.F.<br>+<br>C.L.<br>(dB) | *<br>A.G.<br>(dB) | *<br>D.C.F.<br>(dB) | Emission<br>Level |         | Limit<br>(μV/m) | **<br>Margin<br>(dB) |
|---|-----------|-----------|-----------------------------|--------------------------------|-------------------|---------------------|-------------------|---------|-----------------|----------------------|
|   |           |           |                             |                                |                   |                     | (dBμV/m)          | (μV/m)  |                 |                      |
| 2470.00   | P         | H         | 89.1                        | 31.6                           | -35.0             | --                  | 85.7              | 19275.2 | 50000           | -8.3                 |
| ***<br>4940.00  | P         | H/V       | ****<br><35.0               | 38.1                           | -35.0             | -9.5                | <28.6             | <26.9   | 500             | <-25.4               |
| ***<br>7410.00  | P         | H/V       | ****<br><35.0               | 43.0                           | -35.0             | -9.5                | <33.5             | <47.3   | 500             | <-20.5               |
| ***<br>9880.00  | P         | H/V       | ****<br><35.0               | 44.9                           | -35.0             | -9.5                | <35.4             | <58.9   | 500             | <-18.6               |
| --  | --        | --        | --                          | --                             | --                | --                  | --                | --      | --              | --                   |
|   |           |           |                             |                                |                   |                     |                   |         |                 |                      |
|   |           |           |                             |                                |                   |                     |                   |         |                 |                      |
| <p>Note</p> <p>* D.M. : Detect Mode (P : Peak, Q : Quasi-Peak, A : Average)<br/> A.P. : Antenna Polarization (H : Horizontal, V : Vertical)<br/> A.F. : Antenna Factor<br/> C.L. : Cable Loss<br/> A.G. : Amplifier Gain<br/> D.C.F. : Distance Correction Factor</p> <p>** Margin (dB) = Emission Level (dB) - Limit (dB)</p> <p>*** In the case of these frequencies, the EUT was measured at 1.0m distance for sufficient sensitivity of measurement system.</p> <p>**** &lt; means less than. The observed spectrum analyzer noise floor level with RF preamplifier was 35.0 dBuV</p> <p>Average detector mode was not measured because the peak emission values were under the average limits.</p> |           |           |                             |                                |                   |                     |                   |         |                 |                      |

## 4.2.2 Operating Frequency (Middle : 2475.00 MHz , CH.21)

- Resolution Bandwidth :   x   CISPR Quasi-Peak (6dB Bandwidth : 120kHz for below 1GHz)  
  x   Peak (3dB Bandwidth : 1MHz for above 1GHz)
- Measurement Distance : 3 Meter

| Frequency<br>(MHz) | *<br>D.M. | *<br>A.P. | Measured<br>Value<br>(dB $\mu$ V) | *<br>A.F.<br>+<br>C.L.<br>(dB) | *<br>A.G.<br>(dB) | *<br>D.C.F.<br>(dB) | Emission<br>Level |              | Limit<br>( $\mu$ V/m) | **<br>Margin<br>(dB) |
|--------------------|-----------|-----------|-----------------------------------|--------------------------------|-------------------|---------------------|-------------------|--------------|-----------------------|----------------------|
|                    |           |           |                                   |                                |                   |                     | (dB $\mu$ V/m)    | ( $\mu$ V/m) |                       |                      |
| 2475.00            | P         | H         | 88.4                              | 31.6                           | -35.0             | --                  | 85.0              | 17782.8      | 50000                 | -9.0                 |
| ***<br>4950.00     | P         | H/V       | ****<br><35.0                     | 38.1                           | -35.0             | -9.5                | <28.6             | <26.9        | 500                   | <-25.4               |
| ***<br>7425.00     | P         | H/V       | ****<br><35.0                     | 43.0                           | -35.0             | -9.5                | <33.5             | <47.3        | 500                   | <-20.5               |
| ***<br>9900.00     | P         | H/V       | ****<br><35.0                     | 44.9                           | -35.0             | -9.5                | <35.4             | <58.9        | 500                   | <-18.6               |
| --                 | --        | --        | --                                | --                             | --                | --                  | --                | --           | --                    | --                   |
|                    |           |           |                                   |                                |                   |                     |                   |              |                       |                      |
|                    |           |           |                                   |                                |                   |                     |                   |              |                       |                      |

Note

\* D.M. : Detect Mode (P : Peak, Q : Quasi-Peak, A : Average)  
A.P. : Antenna Polarization (H : Horizontal, V : Vertical)  
A.F. : Antenna Factor  
C.L. : Cable Loss  
A.G. : Amplifier Gain  
D.C.F. : Distance Correction Factor

\*\* Margin (dB) = Emission Level (dB) - Limit (dB)

\*\*\* In the case of these frequencies, the EUT was measured at 1.0m distance for sufficient sensitivity of measurement system.

\*\*\*\* < means less than. The observed spectrum analyzer noise floor level with RF preamplifier was 35.0 dBuV

Average detector mode was not measured because the peak emission values were under the average limits.

## 4.2.3 Operating Frequency (Top : 2480.00 MHz , CH.40)

- Resolution Bandwidth :   x   CISPR Quasi-Peak (6dB Bandwidth : 120kHz for below 1GHz)  
  x   Peak (3dB Bandwidth : 1MHz for above 1GHz)
- Measurement Distance : 3 Meter

| Frequency<br>(MHz) | *<br>D.M. | *<br>A.P. | Measured<br>Value<br>(dB $\mu$ V) | *<br>A.F.<br>+<br>C.L.<br>(dB) | *<br>A.G.<br>(dB) | *<br>D.C.F.<br>(dB) | Emission<br>Level |              | Limit<br>( $\mu$ V/m) | **<br>Margin<br>(dB) |
|--------------------|-----------|-----------|-----------------------------------|--------------------------------|-------------------|---------------------|-------------------|--------------|-----------------------|----------------------|
|                    |           |           |                                   |                                |                   |                     | (dB $\mu$ V/m)    | ( $\mu$ V/m) |                       |                      |
| 2480.00            | P         | H         | 86.6                              | 31.6                           | -35.0             | --                  | 83.2              | 14454.4      | 50000                 | -10.8                |
| ***<br>4960.00     | P         | H/V       | ****<br><35.0                     | 38.1                           | -35.0             | -9.5                | <28.6             | <26.9        | 500                   | <-25.4               |
| ***<br>7440.00     | P         | H/V       | ****<br><35.0                     | 43.0                           | -35.0             | -9.5                | <33.5             | <47.3        | 500                   | <-20.5               |
| ***<br>9920.00     | P         | H/V       | ****<br><35.0                     | 44.9                           | -35.0             | -9.5                | <35.4             | <58.9        | 500                   | <-18.6               |
| --                 | --        | --        | --                                | --                             | --                | --                  | --                | --           | --                    | --                   |
|                    |           |           |                                   |                                |                   |                     |                   |              |                       |                      |
|                    |           |           |                                   |                                |                   |                     |                   |              |                       |                      |

## Note

\* D.M. : Detect Mode (P : Peak, Q : Quasi-Peak, A : Average)  
 A.P. : Antenna Polarization (H : Horizontal, V : Vertical)  
 A.F. : Antenna Factor  
 C.L. : Cable Loss  
 A.G. : Amplifier Gain  
 D.C.F. : Distance Correction Factor

\*\* Margin (dB) = Emission Level (dB) - Limit (dB)

\*\*\* In the case of these frequencies, the EUT was measured at 1.0m distance for sufficient sensitivity of measurement system.

\*\*\*\* < means less than. The observed spectrum analyzer noise floor level with RF preamplifier was 35.0 dBuV

Average detector mode was not measured because the peak emission values were under the average limits.



Note ;

- (1) Fundamental emissions from the intentional radiators were not located within any of frequency bands described in section 15.205(a) listed below ;

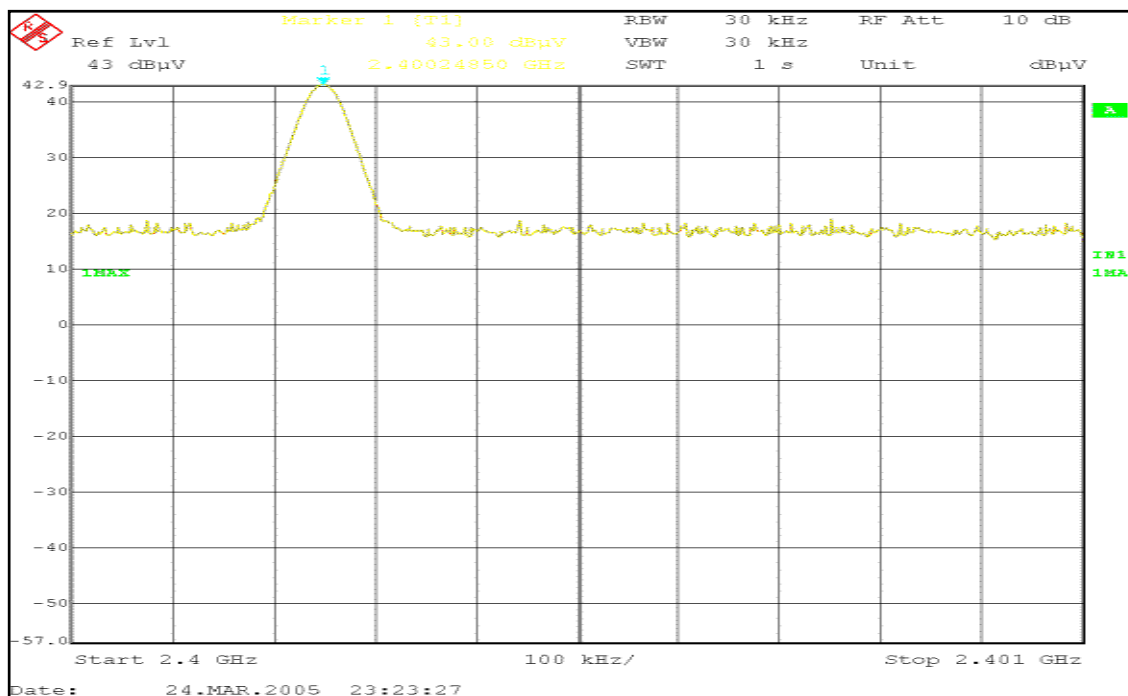
| <b>MHz</b>        | <b>MHz</b>          | <b>MHz</b>    | <b>GHz</b>  |
|-------------------|---------------------|---------------|-------------|
| 0.090-0.110       | 16.42-16.423        | 399.9-410     | 4.5-5.25    |
| 0.495-0.505       | 16.69475-16.69525   | 608-614       | 5.35-5.46   |
| 2.1735-2.1905     | 16.80425-16.80475   | 960-1240      | 7.25-7.75   |
| 4.125-4.128       | 25.5-25.67          | 1300-1427     | 8.025-8.5   |
| 4.17725-4.1775    | 37.5-38.25          | 1435-1626.5   | 9.0-9.2     |
| 4.20725-4.20775   | 73-74.6             | 1645.5-1646.5 | 9.3-9.5     |
| 6.215-6.218       | 74.8-75.2           | 1660-1710     | 10.6-12.7   |
| 6.26775-6.26825   | 108-121.94          | 1718.8-1722.2 | 13.25-13.4  |
| 6.31175-6.31225   | 123-138             | 2200-2300     | 14.47-14.5  |
| 8.291-8.294       | 149.9-150.05        | 2310-2390     | 15.35-16.2  |
| 8.362-8.366       | 156.52475-156.52525 | 2483.5-2500   | 17.7-21.4   |
| 8.37625-8.38675   | 156.7-156.9         | 2655-2900     | 22.01-23.12 |
| 8.41425-8.41475   | 162.0125-167.17     | 3260-3267     | 23.6-24.0   |
| 12.29-12.293      | 167.72-173.2        | 3332-3339     | 31.2-31.8   |
| 12.51975-12.52025 | 240-285             | 3345.8-3358   | 36.43-36.5  |
| 12.57675-12.57725 | 322-335.4           | 3600-4400     |             |
| 13.36-13.41       |                     |               |             |

The field strength of emissions appearing within above frequency bands did not exceed the limits shown in section 15.209. At frequency equal to or less than 1000 MHz, compliance with the limits section 15.209 was demonstrated using measurement employing a CISPR quasi-peak detector. Above 1000 MHz, demonstrated based on the average value of the measured emissions.

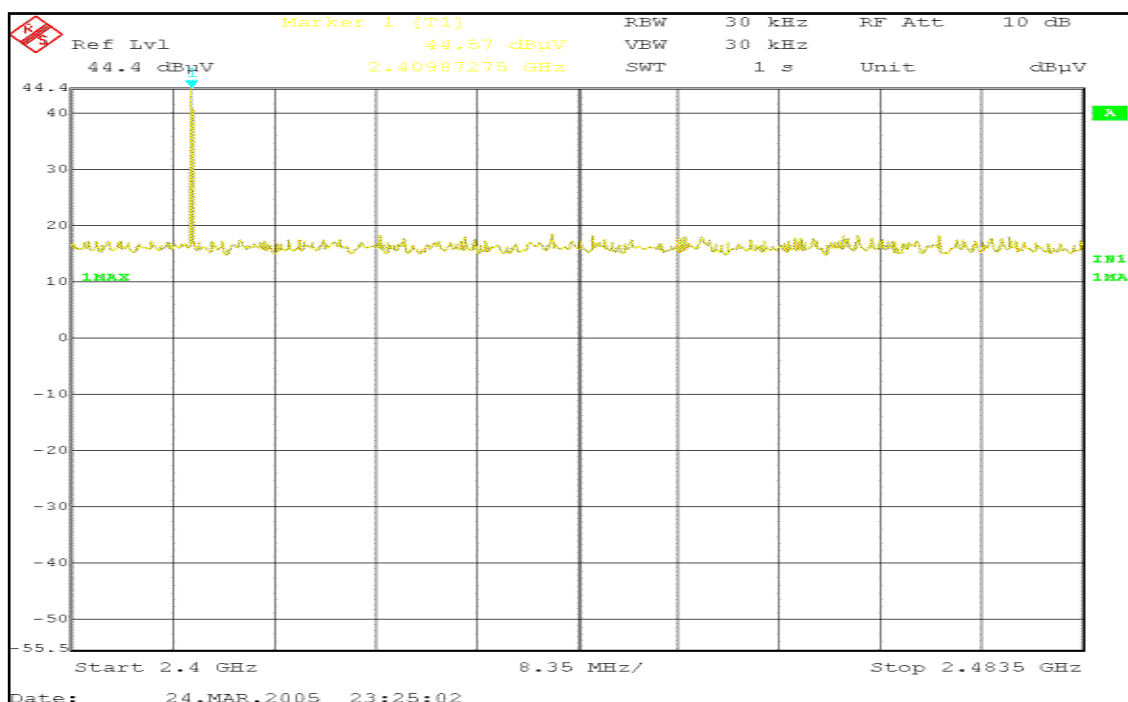
- (2) If the intentional radiator was operated under the radiated emission limits of the general requirements of section 15.209, its fundamental emissions were not located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz, 470-860 MHz.
- (3) The level of any unwanted emissions from an intentional radiator did not exceed the level of the fundamental emission.
- (4) Radiated and spurious emissions were checked from 30 MHz to 5 GHz. And all other emissions not reported on data were more than 30 dB below the permitted level.

### . OCCUPIED BANDWIDTH MEASUREMENT (Section 15.215)

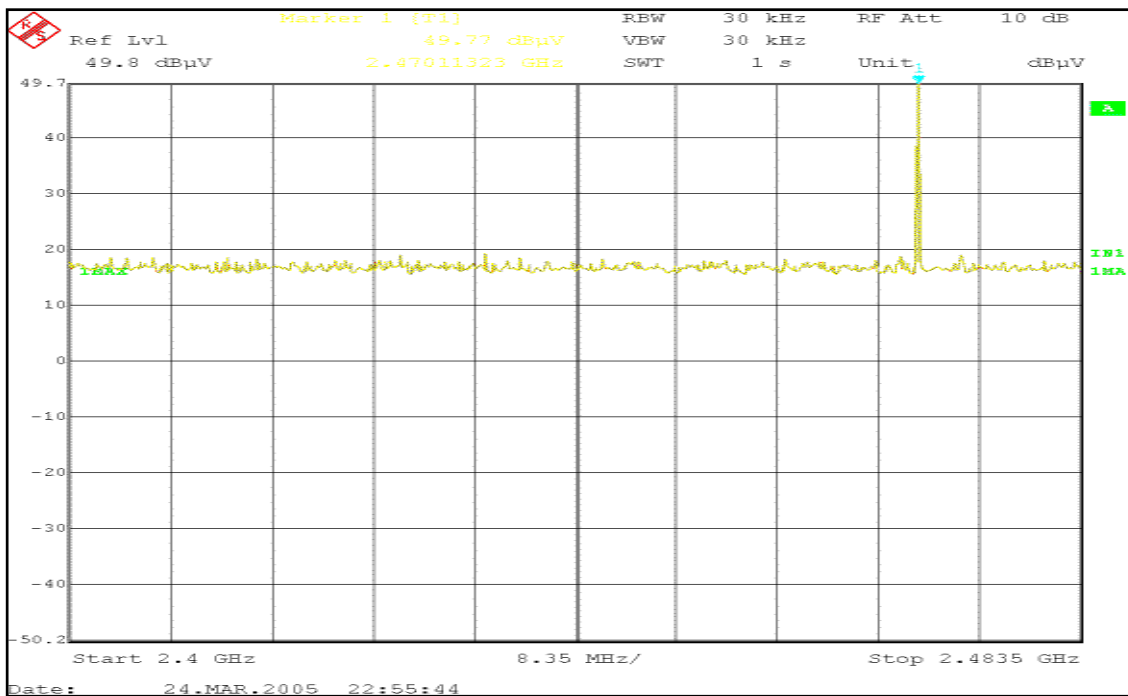
1. Frequency Band = 2400 MHz ~ 2483.25 MHz
2. The 20dB bandwidth of the emission is contained within the designated frequency band



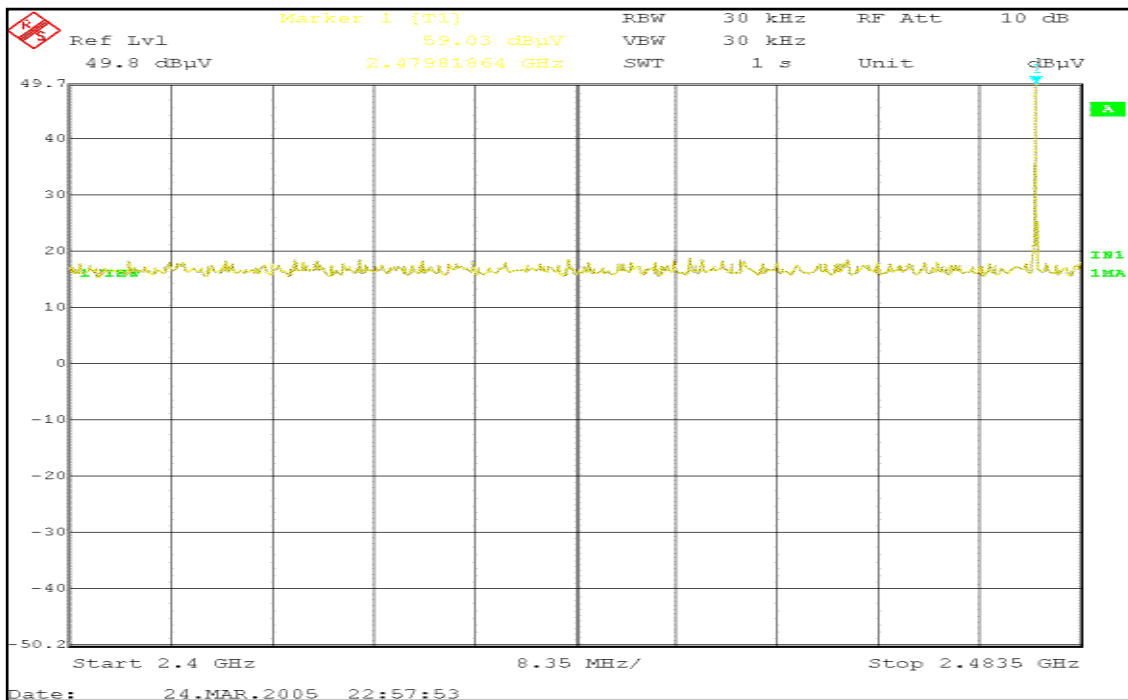
(Base Unit CH. 1)



(Base Unit CH. 40)



(Handy Unit CH. 1)



(Handy Unit CH. 40)

**. TEST EQUIPMENTS USED FOR MEASUREMENTS**

| <u>Equipment</u>                                       | <u>Model No.</u> | <u>Manufacturer</u> | <u>Serial No.</u> | <u>Effective Cal. Duration</u> |
|--|------------------|---------------------|-------------------|--------------------------------|
| [x] EMI Receiver<br>(20 MHz-1 GHz)                     | ESVS30           | R & S               | 830516/002        | 06/16/04-06/16/05              |
| [x] EMI Receiver<br>(20 Hz-7 GHz)                      | ESI              | R & S               | 835571/004        | 09/08/04-09/08/05              |
| [x] Spectrum Analyzer<br>(9 kHz-26.5 GHz)              | 8563A            | H. P.               | 3222A02069        | 03/29/04-03/29/05              |
| [x] Spectrum Analyzer<br>(100 Hz-22 GHz)               | 8566B            | H. P.               | 3014A07057        | 05/27/04-05/27/05              |
| [x] Quasi-Peak Adapter<br>(10 kHz-1 GHz)               | 85650A           | H. P.               | 3107A01511        | 05/27/04-05/27/05              |
| [x] RF-Preselector<br>(20 Hz-2 GHz)                    | 85685A           | H. P.               | 3010A01181        | 05/27/04-05/27/05              |
| [x] Test Receiver<br>(9 kHz-30 MHz)                    | ESH3             | R & S               | 860905/001        | 06/16/04-06/16/05              |
| [ ] Synthesized Sweeper<br>(10 MHz-20 GHz)             | 83620A           | H. P.               | 3250A01653        | 06/16/04-06/16/05              |
| [x] Pre-Amplifier<br>(0.1-3000 MHz, 30 dB)             | 8347A            | H. P.               | 2834A00543        | 05/27/04-05/27/05              |
| [x] Pre-Amplifier<br>(1-26.5 GHz, 35 dB)               | 8449B            | H. P.               | 3008A00302        | 05/27/04-05/27/05              |
| [x] LISN(50 $\Omega$ , 50 $\mu$ H)<br>(10 kHz-100 MHz) | 3825/2           | EMCO                | 9010-1710         | 05/27/04-05/27/05              |
| [ ] Tuned Dipole Ant.<br>(30 MHz-300 MHz)              | VHA 9103         | Schwarzbeck         | -                 | *                              |
| [ ] Tuned Dipole Ant.<br>(300 MHz-1 GHz)               | UHA 9105         | Schwarzbeck         | -                 | *                              |
| [ ] Biconical Ant.<br>(30 MHz-300 MHz)                 | BBA 9106         | Schwarzbeck         | -                 | *                              |
| [x] Biconi-Log Ant.<br>(30 MHz-1000 MHz)               | VULB9168         | Schwarzbeck         | 9168-167          | *                              |
| [ ] Log Periodic Ant.<br>(200 MHz-1 GHz)               | 3146             | EMCO                | -                 | *                              |
| [x] Horn Ant.<br>(1 GHz-18 GHz)                        | 3115             | EMCO                | -                 | *                              |
| [ ] Active Loop Ant.<br>(9 kHz-30 MHz)                 | 6502             | EMCO                | 2532              | *                              |
| [ ] Shielded Room<br>(5.0 m x 4.5 m)                   | -                | SIN-MYUNG           | -                 | -                              |

\* Each set of antennas has been calibrated to ensure correlation with ANSI C63.5 standard. The calibration of antennas is traceable to Korea Standard Research Institute(KSRI).