

## EMC TEST REPORT For FCC



Test Report No. : CTK01-F191

Date of Issue : January 10. 2002

Model/Type No: : CB-9020-US

Kind of Product : Personal Digital Assistant

Applicant : CYBERBANK CORPORATION

Applicant Address : 19th Floor Mirae Bldg., 1306-6, Seocho-Dong, Seocho-Gu,  
Seoul, Korea 137-855

Manufacturer : CYBERBANK CORPORATION

Manufacturer Address : 19th Floor Mirae Bldg., 1306-6, Seocho-Dong, Seocho-Gu,  
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Received Date : December 12. 2001

Test period : Start: January 5. 2002 End: January 7. 2002

Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

The test results presented in this report relate only to the object tested.

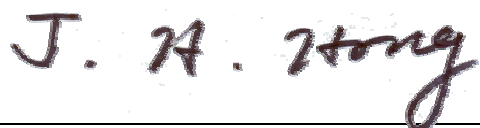
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Tested by



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Date: January 10. 2002

Reviewed by



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Date: January 10. 2002

## REPORT REVISION HISTORY

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## 1.0 General Product Description

The product is Personal Digital Assistant(PDA).

### 1.0.1 Tested Equipment

- ☒ Unless otherwise indicated, all tests were conducted on Model CB-9020-US.
- ☐ Tests performed on Model \_\_\_\_\_ were considered to be representative of Model(s) \_\_\_\_\_.

### 1.0.2 Equipment Size, Mobility and Identification

Dimensions: 103 by 128 by 23 ☒ mm ☐ in

Mobility: ☒ Hand-Held ☐ Table-top ☐ Floor-standing

☐

Serial No.: Not Applicable

### 1.0.3 Electrical Ratings

Input: 100-240V 50/60Hz

Output: 5.0Vdc, 2.0A

Personal Digital Assistant

Input: 5.0Vdc, 2.0A or Battery (3.7V Li-Ion Battery)

### 1.0.4 Test Voltage & Frequency

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

Voltage: 120V

Frequency: 60Hz

### 1.0.5 Clock & Other Frequencies Utilized

CPU: 191.7 MHz

DRAM: 95.85 MHz

Audio: 3 MHz – 18.432 MHz

USB: 48 MHz

LCD: 8.3 MHz

## 1.1 Model Differences

Not applicable

## 1.2 Device Modifications

The following modifications were necessary for compliance:

Not applicable

### 1.3 EUT Configuration(s)

See Appendix A for individual test set-up configuration(s). The following peripheral devices and/or interface cables were connected during the measurement:

☒ Peripheral Devices

| Device       | Manufacturer              | Model No.    | Serial No.    | FCC ID or DoC |
|--------------|---------------------------|--------------|---------------|---------------|
| PC           | HP                        | DTPC-17      | SG01501776    | DOC           |
| Printer      | HP                        | C2688A       | SG04K1104H    | DOC           |
| Monitor      | HP                        | D4820A       | KR64102677    | DOC           |
| Keyboard     | SAN HAWK TECIINNG CO.,LTD | KB120        | -             | D840902 MIC   |
| Game Pad     | Microsoft                 | Side Winder  | 03421317      | C3KMGP1       |
| Headset      | CAMAC                     | CMK-C3       | -             | -             |
| PS/2 Mouse   | PANWEST CHINA LIMITED     | Cyber Beetle | PM1F194036164 | DOC           |
| Serial Mouse | Microsoft                 | BASM1        | 4476257-20000 | DOC           |
| USB Mouse    | PANWEST CHINA LIMITED     | Cyber Beetle | LZE93853157   | DOC           |

☒ Cable Description

| #  | Description                     | Ferrited | Length (m) | Other Details           |
|----|---------------------------------|----------|------------|-------------------------|
| 1  | PC Power Cable, Unshielded      | No       | 1.8        | Connect to AC Power     |
| 2  | Printer Power Cable, Unshielded | No       | 1.8        | Connect to AC Power     |
| 3  | Monitor Power Cable, Shielded   | YES      | 1.8        | Connect to AC Power     |
| 4  | Monitor Cable, Shielded         | YES      | 1.8        | Between PC and Monitor  |
| 5  | Printer Cable, Shielded         | Yes      | 1.8        | Between PC and Printer  |
| 6  | Game Pad Cable, Unshielded      | No       | 2.0        | Connect to PC           |
| 7  | Headset Cable, Unshielded       | No       | 3.0        | Connect to PC           |
| 8  | Line In Cable, Unshielded       | No       | 1.5        | Connect to PC           |
| 9  | Keyboard Cable, Shielded        | No       | 1.5        | Connect to PC           |
| 10 | USB Mouse Cable, Shielded       | No       | 1.8        | Connect to PC           |
| 11 | USB Cable, Shielded             | Yes      | 1.8        | Between EUT and PC      |
| 12 | Serial Mouse Cable, Shielded    | No       | 1.8        | Connect to PC           |
| 13 | PS/2 Mouse Cable, Shielded      | No       | 1.8        | Connect to PC           |
| 14 | Adaptor Power Cable, Unshielded | No       | -          | Connect to AC Power     |
| 15 | Adaptor OUT Cable, Unshielded   | Yes      | 1.8        | Between EUT and Adaptor |
| 16 | Earphone Cable, Unshielded      | No       | 0.8        | Connect to EUT          |

n/a = not available

### 1.4 Test Software

- ☐ Pinging  
☒ Microsoft Active Sync (Version: 3.5)

### 1.5 EUT Operating Mode(s)

Equipment under test was operated during the measurement under the following conditions:

- ☐ Test program (H-Pattern) ☐ Test program (color bar)  
☐ Standby ☐ Test program (customer specific)  
☒ Practice operation – Upload and Play

## **1.6 Calibration Details of Equipment Used for Measurement**

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

## **1.7 Test Facility**

The measurement facility is located at 386-1, Ho-Dong, Yongin-City, Kyungki-Do, Korea 449-100. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

## **1.8 Measurement Procedure**

Preliminary AC power line conducted emissions tests were performed shielded room. To find worst mode, several typical mode and typical cable position were tested. Final AC power line conducted emissions test was performed shielded room. (location is same as Preliminary test)  
Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

Preliminary radiated emissions test were performed anechoic chamber (Distance of antenna and EUT was 3 m). To find worst mode, several typical mode and typical cable position were tested and peak level and frequency were recorded.

Final radiated emissions test was performed Open Area Test Site. Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

\* Measurement procedures was In accordance with ANSI C63.4-1992 7.2.3, 7.2.4, 8.3.1.1, 8.3.1.2

## 1.9 Laboratory Accreditations and Listings

| Country       | Agency | Scope of Accreditation                                                      | Logo                                                                                                  |
|---------------|--------|-----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| USA           | FCC    | 3 and 10 meter Open Area Test Sites to perform FCC Part 15/18 measurements. | <br>93250          |
| JAPAN         | VCCI   | 10 meter Open Area Test Site and one conducted site.                        | <br>R-948, C-986   |
| KOREA         | MIC    | 10 meter Open Area Test Site and EMS (ESD, RS, EFT/Burst, Surge)            | <br>No. 51, KR0025 |
| International | KOLAS  | EMC                                                                         |                   |

## 2.0 Emissions Test Regulations

The emissions tests were performed according to following regulations:

☐ EN 50081-1 /1992

☐ EN 55011 /1998

☐ Group 1

☐ Group 2

☐ Class A

☐ Class B

☐ EN 55013 /A12:1994

☐ EN 55014 /1987

☐ Household appliances and similar

☐ Portable tools

☐ Semiconductor devices

☐ EN 55014 /A2:1990

☐ EN 55014 /1993

☐ Household appliances and similar

☐ Portable tools

☐ Semiconductor devices

☐ EN 55015 /1987

☐ EN 55015 /A1:1990

☐ EN 55015 /1993

☐ EN 55022 /A1:1995

☐ Class A

☐ Class B

☐ EN 55022 /1998

☐ Class A

☐ Class B

☐ EN 61000-3-2 /1995 (EN 60555 Part 2 /4.87)

☐ EN 61000-3-3 /1995 (EN 60555 Part 3 /4.87)

☐ BS

☐ VCCI V-3/99.05 : 1999

☐ Class A

☐ Class B

☒ FCC Part 15 SUBPART B

☐ Class A

☒ Class B

☐ AS 3548 (1992)

☐ Class A

☐ Class B

☐ CISPR 11 (1990)

☐ Group 1

☐ Group 2

☐ Class A

☐ Class B

☐ CISPR 22 (1993)

☐ Class A

☐ Class B

## 2.1 Conducted Voltage Emissions

### Test Date

January 5, 2001

### Test Location

EMI-CE: Shielded Room

### Test Instruments

|                                                          |               |        |            |
|----------------------------------------------------------|---------------|--------|------------|
| <input checked="" type="checkbox"/> Field Strength Meter | Rohde Schwarz | ESHS30 | 828144/002 |
|----------------------------------------------------------|---------------|--------|------------|

### Test Accessories

|                                                |      |            |            |
|------------------------------------------------|------|------------|------------|
| <input type="checkbox"/> LISN                  | EMCO | 3825/2     | 9206-1971  |
| <input checked="" type="checkbox"/> LISN       | EMCO | 3825/2     | 9409-2246  |
| <input checked="" type="checkbox"/> LISN       | EMCO | 3825/2     | 9607-2574  |
| <input checked="" type="checkbox"/> Control PC | HP   | Vectra 500 | SG72000192 |

### Frequency Range of Measurement

|                                                       |
|-------------------------------------------------------|
| <input type="checkbox"/> 150 kHz to 30 MHz            |
| <input checked="" type="checkbox"/> 450 kHz to 30 MHz |
| <input type="checkbox"/> _____                        |

### Instrument Settings

IF Band Width: 9 kHz

### Test Results

The requirements are:

|                                         |                                                          |
|-----------------------------------------|----------------------------------------------------------|
| <input checked="" type="checkbox"/> MET | minimum margin is 5.5 dB $\mu$ V at 27.27 MHz            |
| <input type="checkbox"/> NOT MET        | limit exceeded by maximum of ____ dB $\mu$ V at ____ MHz |
| <input type="checkbox"/> NOT APPLICABLE |                                                          |

### Remarks

See Appendix A for test data.

## 2.2 Radiated Electric Field Emissions

### Test Date

January 7, 2002

### Test Location

- ☐ EMI-OATS: Testing was performed at a test distance of 10 m  
☒ EMI-OATS: Testing was performed at a test distance of 3 m

### Test Instruments

☒ Field Strength Meter Rohde Schwarz ESVS30 826638/008

### Test Accessories

|                                                             |             |         |            |
|-------------------------------------------------------------|-------------|---------|------------|
| <input checked="" type="checkbox"/> ULTRA Broadband Antenna | R & S       | HL562   | 361324/014 |
| <input type="checkbox"/> Biconical Antenna                  | Schwarzbeck | BBA9106 | 41-00201   |
| <input type="checkbox"/> Biconical Antenna                  | EMCO        | 3110B   | 9607-2564  |
| <input type="checkbox"/> Log-periodic Antenna               | EMCO        | 3146    | 9607-4567  |

### Frequency Range of Measurement

30 MHz to 2 GHz

### Instrument Settings

IF Band Width: 120 kHz

### Test Results

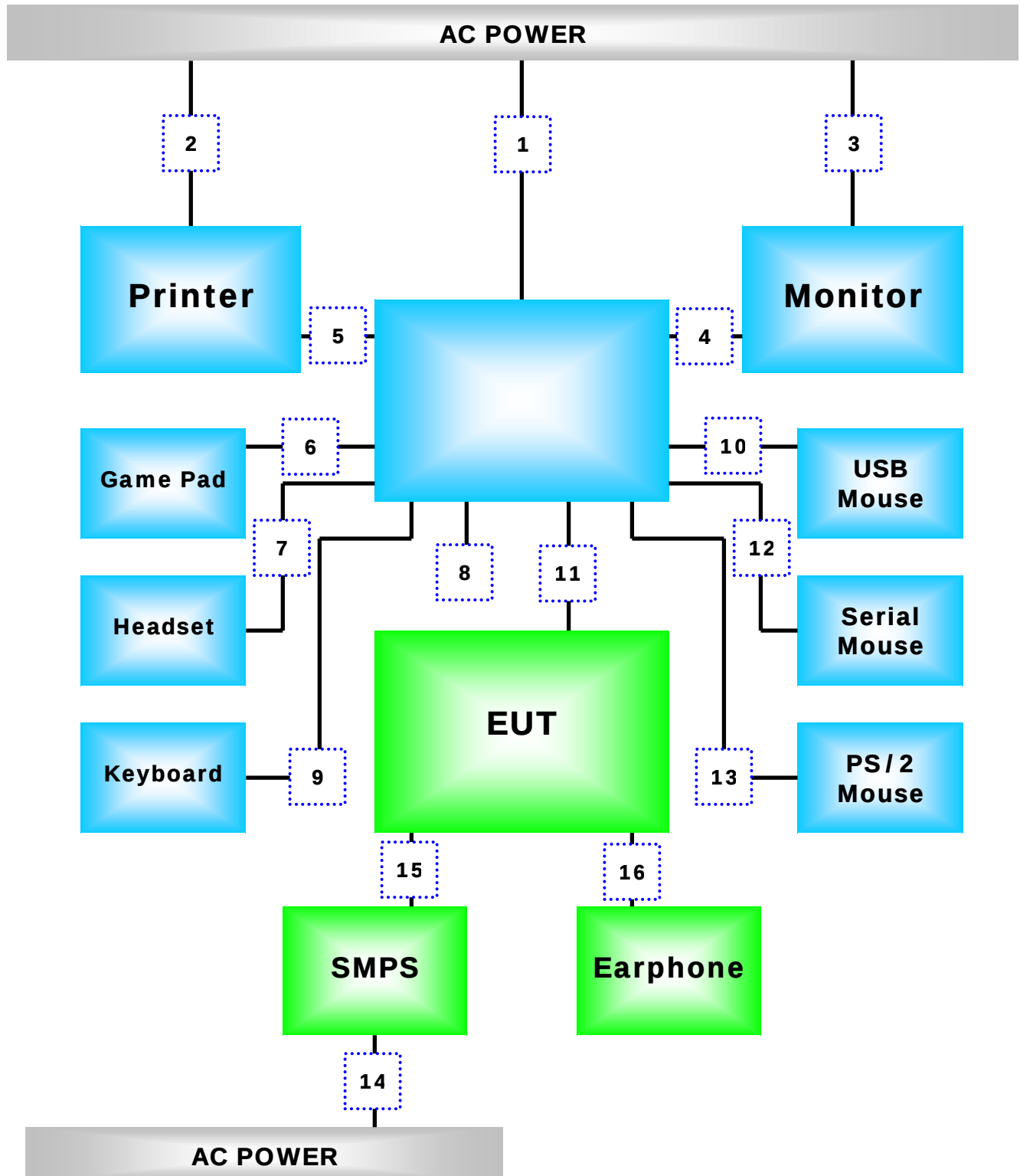
The requirements are:

- ☒ MET minimum margin is 6.6 dB ( $\mu\text{V}/\text{m}$ ) at 55.70 MHz  
☐ NOT MET limit exceeded by maximum of \_\_\_\_ dB( $\mu\text{V}/\text{m}$ ) at \_\_\_\_ MHz  
☐ NOT APPLICABLE

### Remarks

See Appendix A for test data

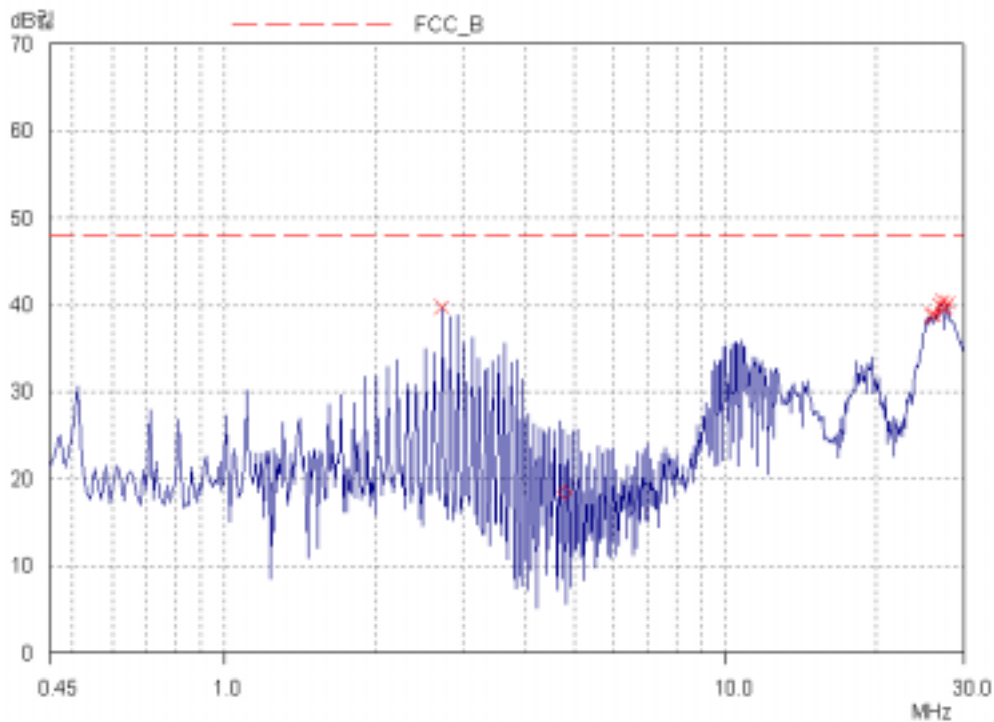
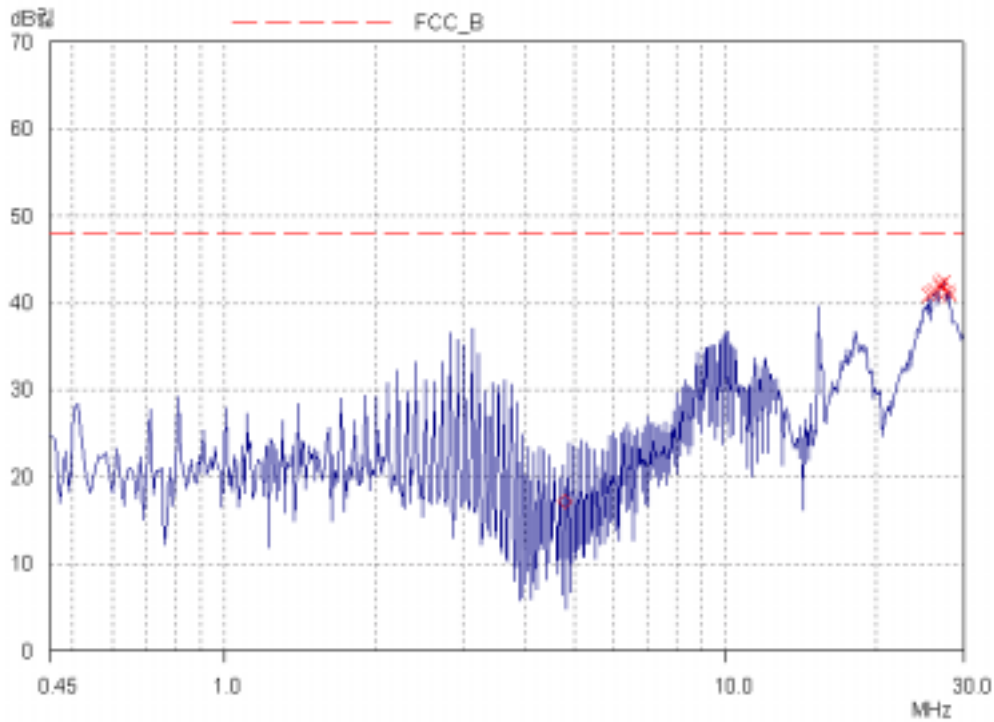
## Configuration



## APPENDIX A – TEST DATA

### Conducted Voltage Emissions (Quasi-Peak reading)

| Frequency<br><br>[MHz] | Correction<br>Factor |       | Line | Quasi-peak |         |        |        | Average |         |        |        |
|------------------------|----------------------|-------|------|------------|---------|--------|--------|---------|---------|--------|--------|
|                        |                      |       |      | Limit      | Reading | Result | Margin | Limit   | Reading | Result | Margin |
|                        | LISN                 | Cable |      | [dBuV]     | [dBuV]  | [dBuV] | [dB]   | [dBuV]  | [dBuV]  | [dBuV] | [dB]   |
| 2.73                   | 0.2                  | 0.1   | L    | 48.0       | 39.5    | 39.8   | 8.2    |         |         |        |        |
| 25.55                  | 0.4                  | 0.4   | L    | 48.0       | 40.1    | 40.9   | 7.1    |         |         |        |        |
| 25.77                  | 0.4                  | 0.4   | N    | 48.0       | 38.0    | 38.8   | 9.2    |         |         |        |        |
| 25.96                  | 0.4                  | 0.4   | L    | 48.0       | 40.2    | 41.0   | 7.0    |         |         |        |        |
| 26.17                  | 0.4                  | 0.4   | N    | 48.0       | 38.1    | 38.9   | 9.1    |         |         |        |        |
| 26.26                  | 0.4                  | 0.4   | L    | 48.0       | 40.6    | 41.4   | 6.6    |         |         |        |        |
| 26.77                  | 0.5                  | 0.4   | L    | 48.0       | 41.3    | 42.2   | 5.8    |         |         |        |        |
| 26.78                  | 0.5                  | 0.4   | N    | 48.0       | 39.0    | 39.9   | 8.1    |         |         |        |        |
| 26.97                  | 0.5                  | 0.4   | L    | 48.0       | 40.8    | 41.7   | 6.3    |         |         |        |        |
| 27.08                  | 0.5                  | 0.4   | N    | 48.0       | 39.5    | 40.4   | 7.6    |         |         |        |        |
| 27.18                  | 0.5                  | 0.4   | N    | 48.0       | 38.7    | 39.6   | 8.5    |         |         |        |        |
| 27.27                  | 0.5                  | 0.4   | L    | 48.0       | 41.6    | 42.5   | 5.5    |         |         |        |        |
| 27.49                  | 0.5                  | 0.4   | N    | 48.0       | 38.6    | 39.5   | 8.5    |         |         |        |        |
| 27.79                  | 0.4                  | 0.4   | N    | 48.0       | 39.5    | 40.3   | 7.7    |         |         |        |        |
| 27.88                  | 0.4                  | 0.4   | L    | 48.0       | 40.6    | 41.4   | 6.6    |         |         |        |        |
| 28.08                  | 0.4                  | 0.4   | L    | 48.0       | 40.0    | 40.8   | 7.2    |         |         |        |        |



## Radiated Electric Field Emissions (Quasi-Peak reading)

| Frequency<br>[MHz] | Reading<br>[dBuV / m] | Pol. | Height<br>[m] | Correction<br>Factor |       | Limits<br>[dBuV / m] | Result<br>[dBuV / m] | Margin<br>[dB] |
|--------------------|-----------------------|------|---------------|----------------------|-------|----------------------|----------------------|----------------|
|                    |                       |      |               | Antenna              | Cable |                      |                      |                |
| 55.70              | 28.1                  | H    | 4.0           | 4.70                 | 0.60  | 40.0                 | 33.40                | 6.60           |
| 96.20              | 25.5                  | H    | 4.0           | 8.90                 | 0.90  | 43.5                 | 35.34                | 8.16           |
| 121.80             | 21.3                  | H    | 3.9           | 9.55                 | 1.10  | 43.5                 | 31.99                | 11.51          |
| 183.20             | 22.8                  | H    | 4.0           | 6.85                 | 1.60  | 43.5                 | 31.21                | 12.29          |
| 192.00             | 26.2                  | V    | 1.0           | 7.00                 | 1.60  | 43.5                 | 34.80                | 8.70           |
| 200.10             | 24.2                  | V    | 1.0           | 7.20                 | 1.60  | 43.5                 | 32.98                | 10.52          |
| 221.70             | 24.6                  | V    | 1.1           | 8.10                 | 1.80  | 46.0                 | 34.49                | 11.51          |
| 287.90             | 17.7                  | V    | 1.0           | 10.60                | 2.50  | 46.0                 | 30.84                | 15.16          |
| 352.50             | 22.9                  | H    | 3.8           | 12.30                | 2.60  | 46.0                 | 37.78                | 8.22           |
| 601.00             | 16.8                  | H    | 4.0           | 17.00                | 3.70  | 46.0                 | 37.46                | 8.54           |
| 699.00             | 16.3                  | V    | 1.2           | 18.40                | 3.90  | 46.0                 | 38.61                | 7.39           |
| 1535.00            | 6.2                   | H    | 3.5           | 25.40                | 5.60  | 54.0                 | 37.21                | 16.79          |
| 1726.30            | 9.8                   | V    | 2.4           | 26.20                | 5.60  | 54.0                 | 41.58                | 12.42          |