

EMC TEST REPORT For FCC



Test Report No. : CTK02-F084
Date of Issue : June 17. 2002
Model/Type No: : Corecess 3213
Kind of Product : VDSL Modem
Applicant : Corecess Inc.
Applicant Address : 997-4 Daechi-Dong, Kangnam-Ku, Seoul, 135-280, Korea
Manufacturer : Corecess Inc.
Manufacturer Address : 997-4 Daechi-Dong, Kangnam-Ku, Seoul, 135-280, Korea
Contact Person : Kim Ho-Joong
Telephone : +82-2-3016-6859
Received Date : June 3. 2002
Test period : Start: June 12. 2002 End: June 13. 2002
Test Results : In Compliance Not in Compliance

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

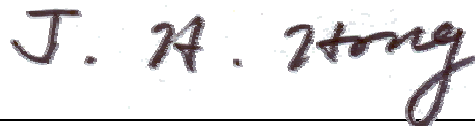
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Tested by



Michael Jang
EMC Test Engineer
Date: June 17. 2002

Reviewed by



James Hong
EMC Technical Manager
Date: June 17. 2002



REPORT REVISION HISTORY

| Date | Revision | Page No |
|---------------|---------------------|---------|
| June 17. 2002 | (CTK02-F084) Issued | All |
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1.0 General Product Description

1.0.1 Tested Equipment

- Unless otherwise indicated, all tests were conducted on Model Corecess 3213.
- Tests performed on Model _____ were considered to be representative of Model(s) _____.

1.0.2 Equipment Size, Mobility and Identification

Dimensions: 140 by 150 by 30 mm in
Mobility: Hand-Held Table-top Floor-standing

Serial No.: Not applicable

1.0.3 Electrical Ratings

Adaptor
Input: 100-240V 50/60Hz
Output: 5Vdc 2.0A

VDSL Modem
Input: 5Vdc
Output: Not applicable

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

25MHz

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 | Hewlett Packard | DTPC-17 | SG01703009 | DOC |
| VDSL Multiplexer | Corecess Inc | DSLlinX 6624 | - | - |
| Printer | Hewlett Packard | C4530A | US7A91703J | DOC |
| Monitor | Hewlett Packard | D2813 | TW61100109 | A3KM043 |
| USB Mouse | PANWEST | Cyber Beetle | PM1F184045737 | DOC |
| Serial Mouse | Microsoft | BASM1 | 4476257-20000 | DOC |
| PS/2 Mouse | PANWEST | Cyber Beetle | PM1F144009938 | DOC |
| Keyboard | WORLD COM MART | KB120 | - | D840902 MIC |
| Game Pad | Microsoft | SideWinder™ game pad | 03426631 | C3KMGP1 |
| Headset | CAMAC | CMK-C3 | - | - |
| Phone | SAMSUNG | - | - | - |

Cable Description

| # | Description | Ferrited | Length (m) | Other Details |
|----|--|----------|------------|----------------------------------|
| 1 | PC Power Cable, Unshielded | No | 1.8 | Connect to AC Power |
| 2 | EUT LAN Cable, Unshielded | No | 2.1 | Between PC and EUT |
| 3 | Adaptor Output Cable, Unshielded | Yes | 1.8 | Between EUT and Adaptor |
| 4 | Adaptor Power Cable, Unshielded | No | 1.8 | Connect to AC Power |
| 5 | EUT LINE Cable, Unshielded | No | 3.0 | Between EUT and VDSL Multiplexer |
| 6 | VDSL Multiplexer Power Cable, Unshielded | No | 1.8 | Connect to AC Power |
| 7 | Printer Signal Cable, Shielded | No | 1.8 | Between PC and Printer |
| 8 | Printer Power Cable, Unshielded | No | 1.8 | Connect to AC Power |
| 9 | Monitor Signal Cable, Shielded | Yes | 1.5 | Between PC and Monitor |
| 10 | Monitor Power Cable, Unshielded | No | 1.8 | Connect to AC Power |
| 11 | USB Mouse Cable, Shielded | No | 1.8 | Connect to 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 | Keyboard Cable, Shielded | No | 1.5 | Connect to PC |
| 15 | Game Pad Cable, Shielded | No | 1.8 | Connect to PC |
| 16 | Headset Cable, Unshielded | No | 3.0 | Connect to PC |
| 17 | Line In Cable, Unshielded | No | 1.5 | Connect to PC |
| 18 | Phone Cable, Unshielded | No | 1.8 | Between EUT and Phone |

n/a = not available

1.4 Test Software

Pinging

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



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. |  93250 |
| JAPAN | VCCI | 10 meter Open Area Test Site and one conducted site. |  R-948, C-986 |
| KOREA | MIC | EMI (CE, RE) EMS (ESD, BURST, RS, Surge, CS, Power-frequency Susceptibility, Voltage Dips and Short Interruptions) |  No. 51, KR0025 |
| International | KOLAS | EMC |  |

2.0 Emissions Test Regulations

The emissions tests were performed according to following regulations:

- | | | |
|---|--|--|
| <input type="checkbox"/> EN 50081-1 /1992 | | |
| <input type="checkbox"/> EN 55011 /1998 | <input type="checkbox"/> Group 1 <input type="checkbox"/> Class A | <input type="checkbox"/> Group 2 <input type="checkbox"/> Class B |
| <input type="checkbox"/> EN 55013 /A12:1994 | | |
| <input type="checkbox"/> EN 55014 /1987 | <input type="checkbox"/> Household appliances and similar <input type="checkbox"/> Portable tools <input type="checkbox"/> Semiconductor devices | |
| <input type="checkbox"/> EN 55014 /A2:1990 | | |
| <input type="checkbox"/> EN 55014 /1993 | <input type="checkbox"/> Household appliances and similar <input type="checkbox"/> Portable tools <input type="checkbox"/> Semiconductor devices | |
| <input type="checkbox"/> EN 55015 /1987 | | |
| <input type="checkbox"/> EN 55015 /A1:1990 | | |
| <input type="checkbox"/> EN 55015 /1993 | | |
| <input type="checkbox"/> EN 55022 /A1:1995 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> EN 55022 /1998 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> EN 61000-3-2 /1995 (EN 60555 Part 2 /4.87) | | |
| <input type="checkbox"/> EN 61000-3-3 /1995 (EN 60555 Part 3 /4.87) | | |
| <input type="checkbox"/> BS | | |
| <input type="checkbox"/> VCCI V-3/99.05 : 1999 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input checked="" type="checkbox"/> FCC Part 15 SUBPART B | <input type="checkbox"/> Class A | <input checked="" type="checkbox"/> Class B |
| <input type="checkbox"/> AS 3548 (1992) | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> CISPR 11 (1990) | <input type="checkbox"/> Group 1 <input type="checkbox"/> Class A | <input type="checkbox"/> Group 2 <input type="checkbox"/> Class B |
| <input type="checkbox"/> CISPR 22 (1993) | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |

2.1 Conducted Voltage Emissions

Test Date

June 12. 2002

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

150 kHz to 30 MHz
 450 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

MET minimum margin is 5.9 dB μ V at 0.67MHz
 NOT MET limit exceeded by maximum of ____ dB μ V at ____ MHz
 NOT APPLICABLE

Remarks

See Appendix A for test data.

2.2 Radiated Electric Field Emissions

Test Date

June 13, 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

- ULTRA Broadband Antenna R & S HL562 361324/014
 Biconical Antenna Schwarzbeck BBA9106 41-00201
 Biconical Antenna EMCO 3110B 9607-2564
 Log-periodic Antenna EMCO 3146 9607-4567

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

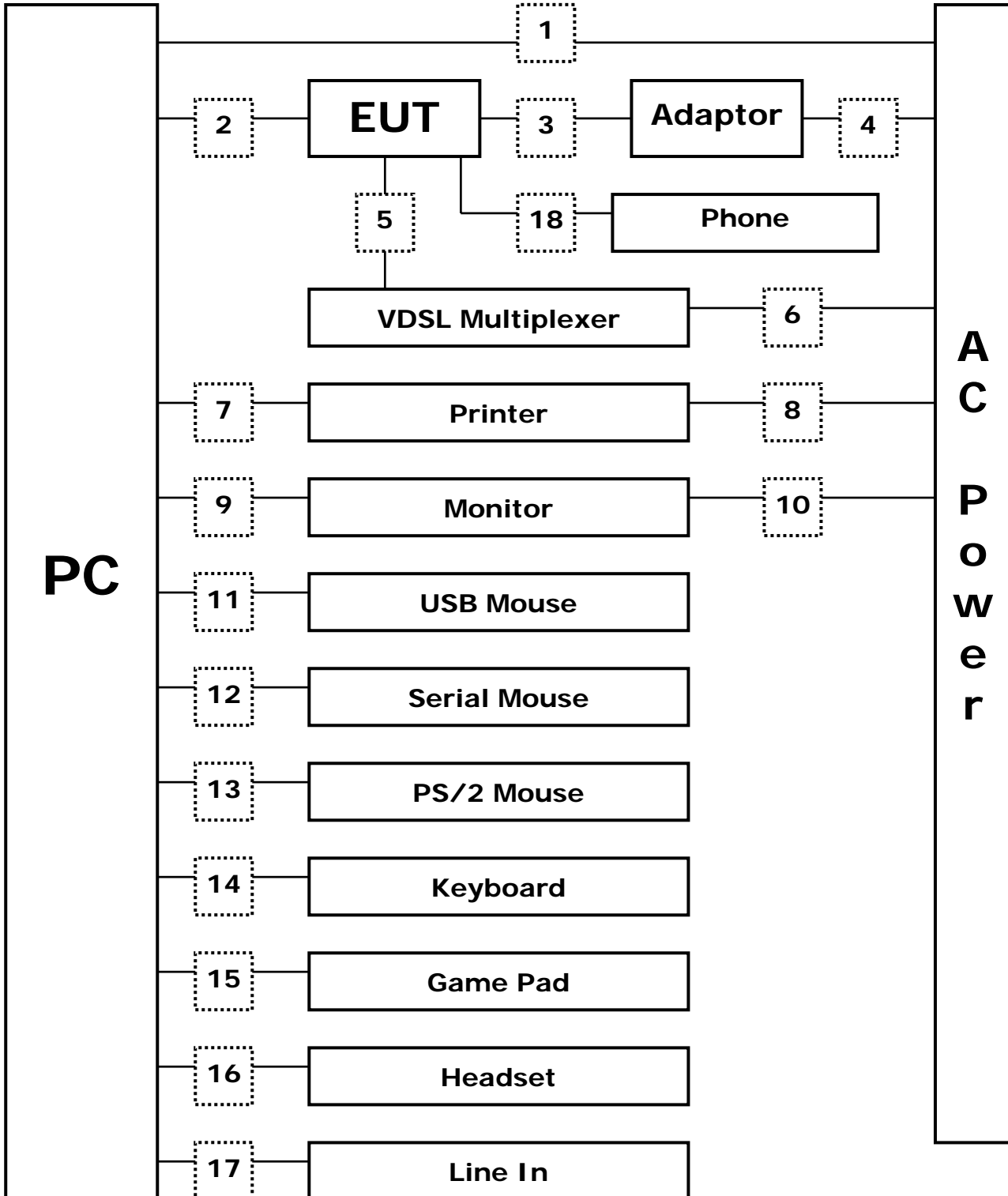
The requirements are:

- MET minimum margin is 12.5 dB ($\mu\text{V}/\text{m}$) at 75.20 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

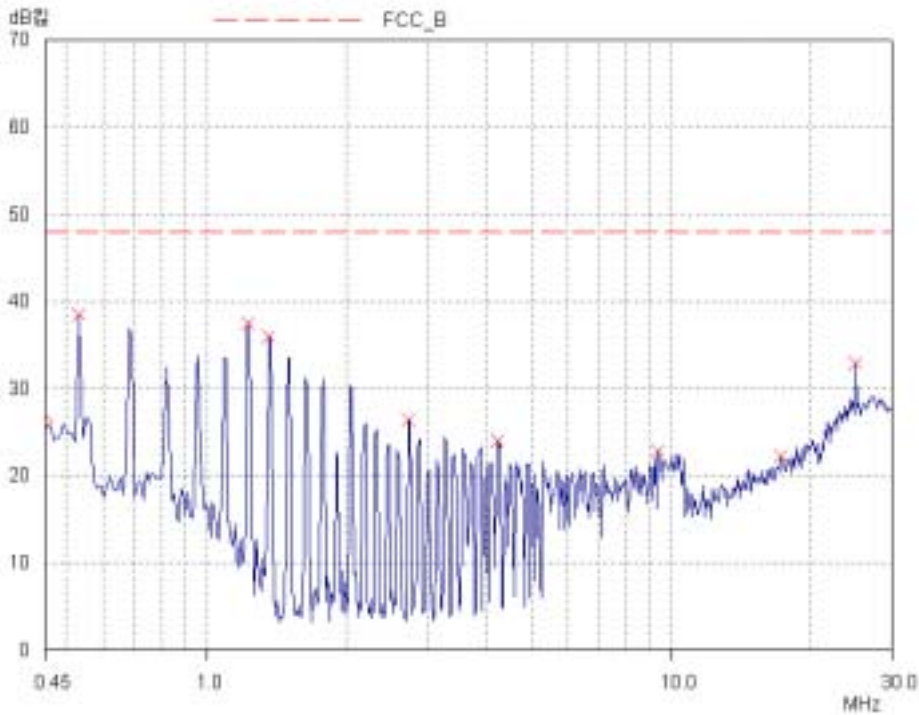
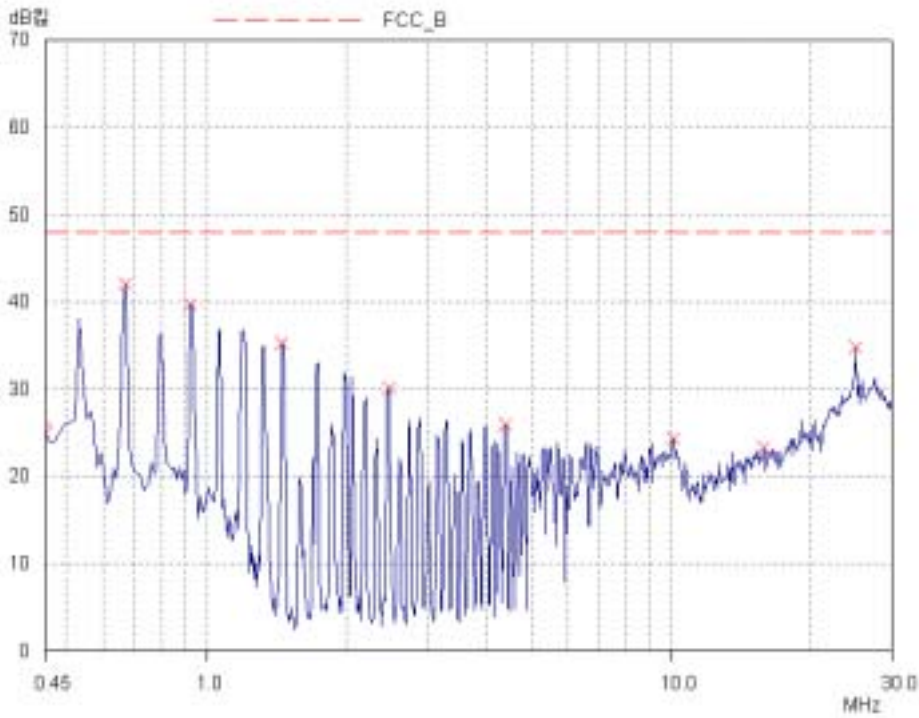




APPENDIX A – TEST DATA

Conducted Voltage Emissions (Quasi-Peak reading)

| Frequency [MHz] | Correction Factor | | Line | Quasi-peak | | | | Average | | | |
|--------------------|----------------------|-------|------|------------|---------|--------|--------|---------|---------|--------|--------|
| | LISN | Cable | | Limit | Reading | Result | Margin | Limit | Reading | Result | Margin |
| | | | | [dBuV] | [dBuV] | [dBuV] | [dB] | [dBuV] | [dBuV] | [dBuV] | [dB] |
| 0.53 | 0.3 | 0.1 | L | 48.0 | 38.1 | 38.5 | 9.5 | | | | |
| 0.67 | 0.2 | 0.1 | N | 48.0 | 41.8 | 42.1 | 5.9 | | | | |
| 0.92 | 0.2 | 0.1 | N | 48.0 | 39.3 | 39.6 | 8.4 | | | | |
| 1.23 | 0.2 | 0.1 | L | 48.0 | 37.1 | 37.4 | 10.6 | | | | |
| 1.36 | 0.2 | 0.1 | L | 48.0 | 35.7 | 36.0 | 12.0 | | | | |
| 1.45 | 0.2 | 0.1 | N | 48.0 | 35.0 | 35.3 | 12.7 | | | | |
| 2.48 | 0.3 | 0.1 | N | 48.0 | 29.6 | 30.0 | 18.0 | | | | |
| 2.73 | 0.2 | 0.1 | L | 48.0 | 26.0 | 26.3 | 21.7 | | | | |
| 4.21 | 0.3 | 0.1 | L | 48.0 | 23.6 | 24.0 | 24.0 | | | | |
| 4.38 | 0.3 | 0.1 | N | 48.0 | 25.5 | 25.9 | 22.1 | | | | |
| 9.36 | 0.3 | 0.1 | L | 48.0 | 22.4 | 22.8 | 25.2 | | | | |
| 10.12 | 0.3 | 0.2 | N | 48.0 | 23.8 | 24.3 | 23.8 | | | | |
| 15.86 | 0.2 | 0.2 | N | 48.0 | 22.8 | 23.2 | 24.8 | | | | |
| 17.25 | 0.2 | 0.2 | L | 48.0 | 21.8 | 22.2 | 25.8 | | | | |
| 25.00 | 0.6 | 0.4 | N | 48.0 | 33.8 | 34.8 | 13.2 | | | | |
| 25.00 | 0.6 | 0.4 | L | 48.0 | 31.9 | 32.9 | 15.1 | | | | |



Radiated Electric Field Emissions (Quasi-Peak reading)

| Frequency [MHz] | Reading [dBuV/m] | Pol. | Height [m] | Correction Factor | | Limits [dBuV/m] | Result [dBuV/m] | Margin [dB] |
|--------------------|---------------------|------|---------------|----------------------|-------|--------------------|--------------------|----------------|
| | | | | Antenna | Cable | | | |
| 192.00 | 12.2 | H | 4.0 | 7.0 | 1.6 | 43.5 | 20.8 | 22.7 |
| 192.00 | 14.9 | V | 2.4 | 7.0 | 1.6 | 43.5 | 23.5 | 20.0 |
| 216.30 | 14.1 | V | 1.0 | 8.0 | 1.8 | 46.0 | 23.8 | 22.2 |
| 216.30 | 17.4 | H | 4.0 | 8.0 | 1.8 | 46.0 | 27.1 | 18.9 |
| 287.90 | 10.6 | V | 3.5 | 10.6 | 2.5 | 46.0 | 23.7 | 22.3 |
| 287.90 | 11.8 | H | 3.5 | 10.6 | 2.5 | 46.0 | 24.9 | 21.2 |
| 720.00 | 3.4 | V | 2.6 | 18.8 | 4.0 | 46.0 | 26.2 | 19.8 |
| 720.00 | 6.4 | H | 2.0 | 18.8 | 4.0 | 46.0 | 29.2 | 16.8 |