CERTiTEK

**CERTiTEK Standards Laboratory Co., Ltd.**
386-1, Ho-Dong, Yongin-City, Kyungki-Do, Korea 449-100
Tel: +82-31-339-9970 Fax: +82-31-339-9855
http://www.certitek.com/

# EMC TEST REPORT For FCC

| | | |
|---|---|---|
| Test Report No. | : | CTK02-F057 |
| Date of Issue | : | May 17. 2002 |
| Model/Type No: | : | Corecess 3311 |
| Kind of Product | : | SHDSL 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 | : | May 17. 2002 |
| Test period | : | Start: May 8. 2002 End: May 8. 2002 |
| Test Results | : | ☒ **In Compliance** ☐ **Not in Compliance** |

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

CERTiTEK Standards Laboratory Co., Ltd. is accredited by Korea Laboratory Accreditation Scheme (KOLAS) which signed the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) for the above test item(s) and test method(s).

*Tested by*

Michael Jang
EMC Test Engineer
Date: May 17. 2002

*Reviewed by*

James Hong
EMC Technical Manager
Date: May 17. 2002

# REPORT REVISION HISTORY

| Date | Revision | Page No |
|---|---|---|
| May 17. 2002 | (CTK02-F057) 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 3311.

☐ Tests performed on Model _____ were considered to be representative of Model(s) _____.

## 1.0.2 Equipment Size, Mobility and Identification

| | | |
|---|---|---|
| Dimensions: | 440 by 225 by 44 | ☒ 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

SHDSL 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

OSC: 34.56 MHz X-TAL: 25MHz
SDRAM: 48MHz UToPIA BUS: 24MHz

# 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 |
| SHDSL Multiplexer | Corecess Inc | Corecess 6724 | 8NY2160020 | - |
| 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 | - | - |

☒ 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 SHDSL Multiplexer |
| 6 | SHDSL 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 |

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)
☐ Standby
☒ Practice operation
☐ Test program (color bar)
☐ Test program (customer specific)

## 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)<br>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:

☐ 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**
May 8. 2002

**Test Location**
EMI-CE: Shielded Room

**Test Instruments**

| | | | |
|---|---|---|---|
| ☒ Field Strength Meter | Rohde Schwarz | ESHS30 | 828144/002 |

**Test Accessories**

| | | | |
|---|---|---|---|
| ☐ LISN | EMCO | 3825/2 | 9206-1971 |
| ☒ LISN | EMCO | 3825/2 | 9409-2246 |
| ☒ LISN | EMCO | 3825/2 | 9607-2574 |
| ☒ 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 1.7 dBμV at 1.14 MHz
☐ NOT MET limit exceeded by maximum of ___ dBμV at _____ MHz
☐ NOT APPLICABLE

**Remarks**
See Appendix A for test data.

## 2.2 Radiated Electric Field Emissions

**Test Date**
May 8. 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

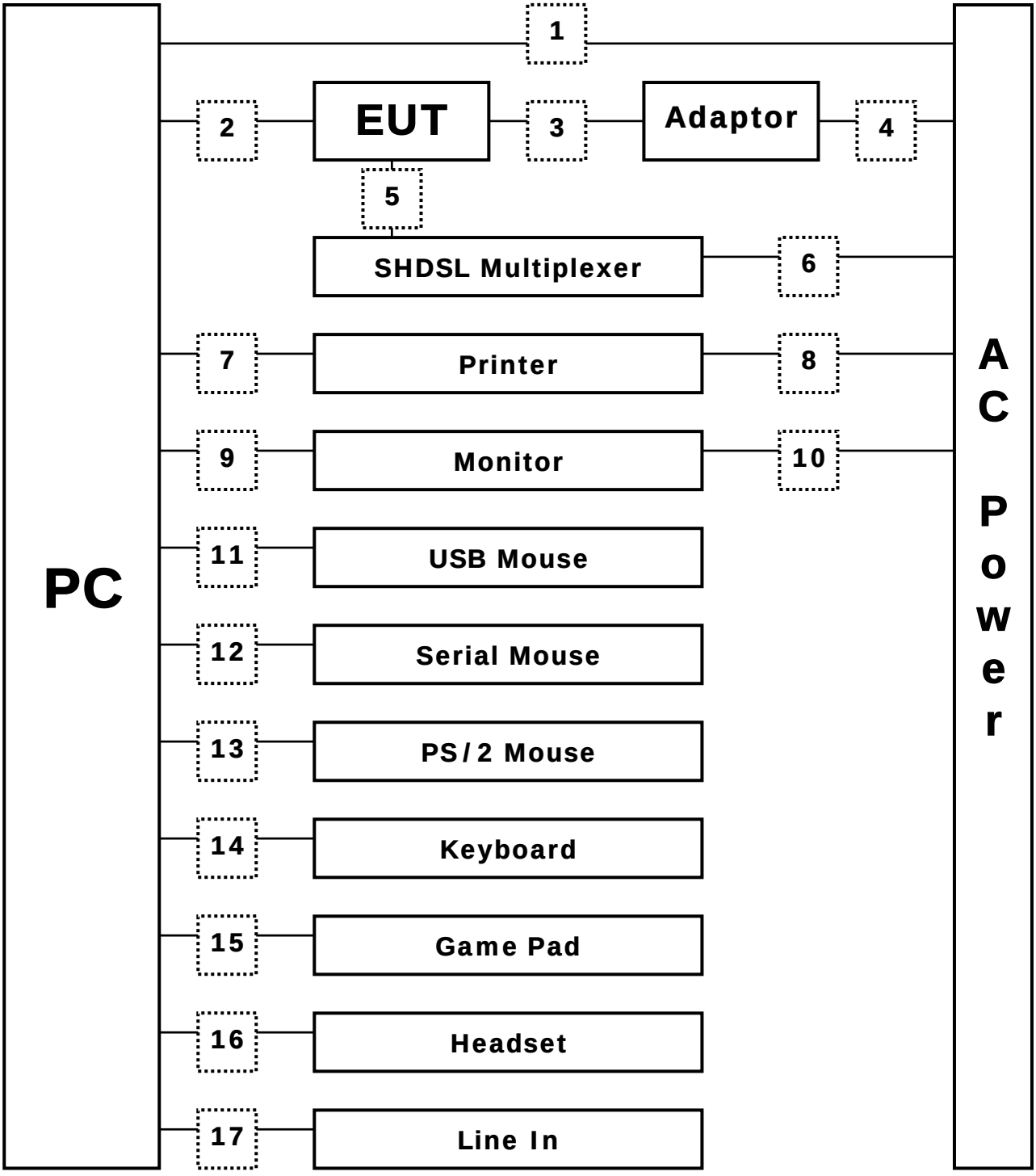
**Instrument Settings**
IF Band Width: 120 kHz

**Test Results**
The requirements are:

☒ MET minimum margin is 16.8 dB (μV/m) at 720.00 MHz
☐ NOT MET limit exceeded by maximum of ___ dB(μV/m) at _____ MHz
☐ NOT APPLICABLE

**Remarks**
See Appendix A for test data

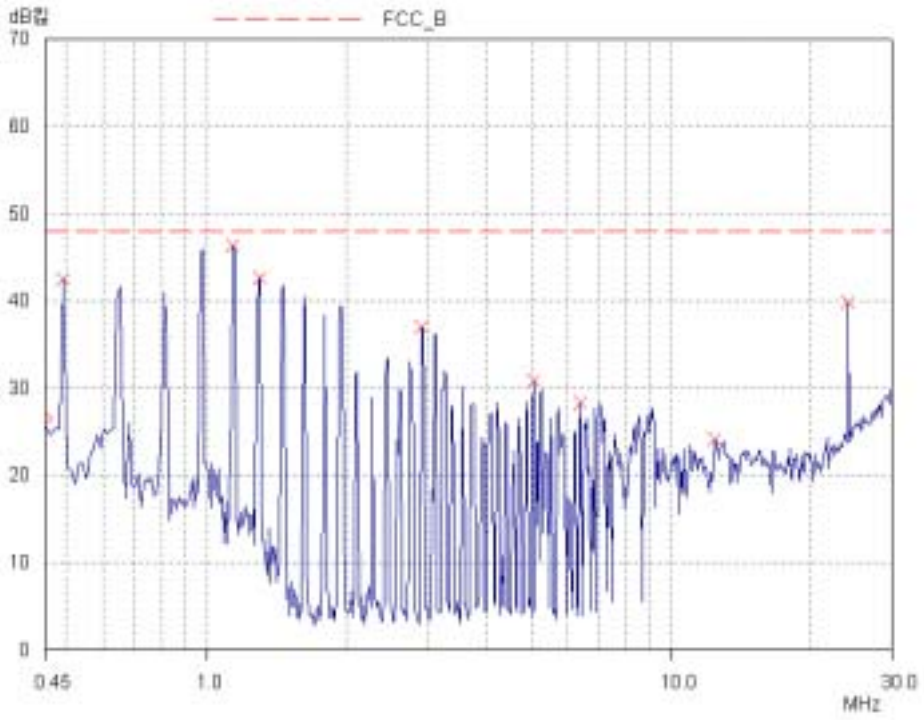
## Configuration

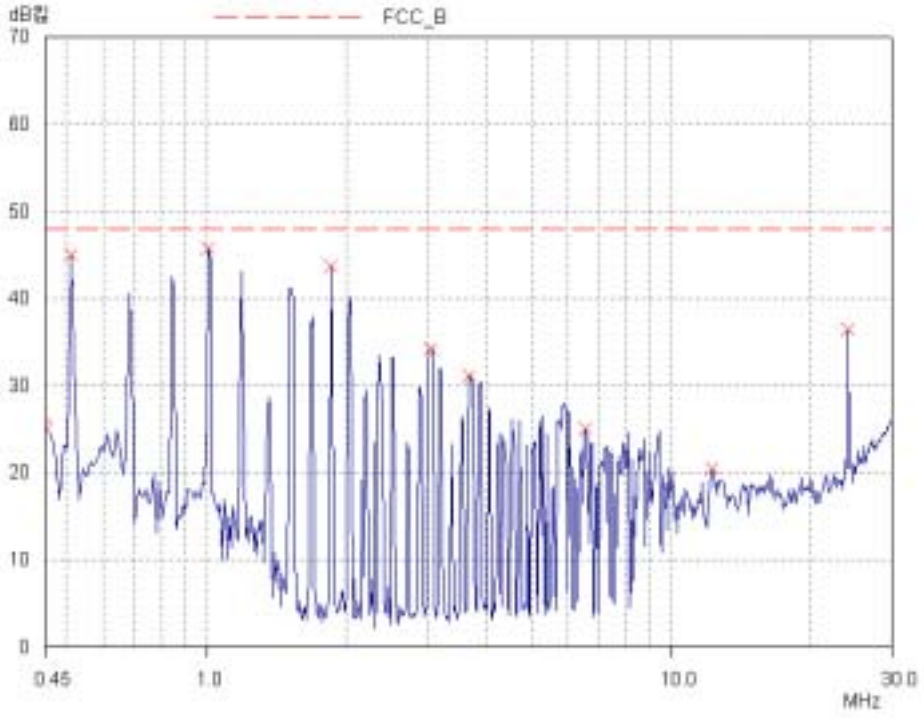


# APPENDIX A – TEST DATA

## Conducted Voltage Emissions (Quasi-Peak reading)

| Frequency | Correction Factor | | Line | Quasi-peak | | | | Average | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Limit | Reading | Result | Margin | Limit | Reading | Result | Margin |
| [MHz] | LISN | Cable | | [dBuV] | [dBuV] | [dBuV] | [dB] | [dBuV] | [dBuV] | [dBuV] | [dB] |
| 0.49 | 0.3 | 0.1 | L | 48.0 | 42.1 | 42.5 | 5.5 | | | | |
| 0.51 | 0.3 | 0.1 | N | 48.0 | 44.6 | 45.0 | 3.0 | | | | |
| 1.01 | 0.2 | 0.1 | N | 48.0 | 45.4 | 45.7 | 2.3 | | | | |
| 1.14 | 0.2 | 0.1 | L | 48.0 | 46.0 | 46.3 | 1.7 | | | | |
| 1.30 | 0.2 | 0.1 | L | 48.0 | 42.3 | 42.6 | 5.4 | | | | |
| 1.86 | 0.3 | 0.1 | N | 48.0 | 43.3 | 43.7 | 4.3 | | | | |
| 2.91 | 0.2 | 0.1 | L | 48.0 | 36.7 | 37.0 | 11.0 | | | | |
| 3.04 | 0.2 | 0.1 | N | 48.0 | 34.0 | 34.3 | 13.7 | | | | |
| 3.69 | 0.3 | 0.1 | N | 48.0 | 30.7 | 31.1 | 16.9 | | | | |
| 5.06 | 0.3 | 0.1 | L | 48.0 | 30.3 | 30.7 | 17.3 | | | | |
| 6.38 | 0.3 | 0.1 | L | 48.0 | 27.9 | 28.3 | 19.7 | | | | |
| 6.51 | 0.2 | 0.2 | N | 48.0 | 24.6 | 25.0 | 23.0 | | | | |
| 12.28 | 0.3 | 0.3 | N | 48.0 | 19.9 | 20.5 | 27.5 | | | | |
| 12.41 | 0.3 | 0.3 | L | 48.0 | 23.5 | 24.1 | 23.9 | | | | |
| 24.00 | 0.5 | 0.4 | L | 48.0 | 38.9 | 39.8 | 8.2 | | | | |
| 24.00 | 0.5 | 0.4 | N | 48.0 | 35.6 | 36.5 | 11.6 | | | | |



## 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 |