CERTiTEK

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# EMC TEST REPORT For FCC

| | | |
|---|---|---|
| Test Report No. | : | 2005100015 |
| Date of Issue | : | October 17, 2005 |
| FCC ID | : | THCB19AC |
| Model/Type No. | : | B19AC |
| Kind of Product | : | 19" CCTV MONITOR |
| Applicant | : | D&T Inc. |
| Applicant Address | : | 59-6 Jang-Dong, Yuseong-Gu Daejeon City, Korea 305-343 |
| Manufacturer | : | D&T Inc. |
| Manufacturer Address | : | 59-6 Jang-Dong, Yuseong-Gu Daejeon City, Korea 305-343 |
| Contact Person | : | Won-Woo Lee (General Manager) |
| Telephone | : | +82-18-311-1246 |
| Received Date | : | October 5, 2005 |
| Test period | : | Start : October 10, 2005 End : October 12, 2005 |
| 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*

Eun-Won, Lee
EMC Test Engineer
Date: October 17, 2005

*Reviewed by*

James Hong
EMC Technical Manager
Date: October 17, 2005

# REPORT REVISION HISTORY

| Date | Revision | Page No |
|---|---|---|
| October 17, 2005 | Issued (2005100015) | All |
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# TABLE OF CONTENTS

# 1.0 General Product Description

## 1.0.1 Tested Equipment

☒ Unless otherwise indicated, all tests were conducted on Model B19AC.
☐ Tests performed on Model _____ were considered to be representative of Model(s) _____.

## 1.0.2 Equipment Size, Mobility and Identification

| | | |
|---|---|---|
| Dimensions: | 418 by 200 by 437.2 | ☒ mm ☐ inch |
| Mobility: | ☐ Hand-held ☒ Table-top ☐ Built-in | |
| | ☐ Traveling ☐ Floor-standing | |
| Serial No.: | Prototype | |

## 1.0.3 Electrical Ratings

| | |
|---|---|
| Input: | 100–240 Vac, 50/60 Hz, 0.6 A |
| Output: | - |

## 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: | 120 Vac |
| Frequency: | 60 Hz |

## 1.0.5 Clock & Other Frequencies Utilized

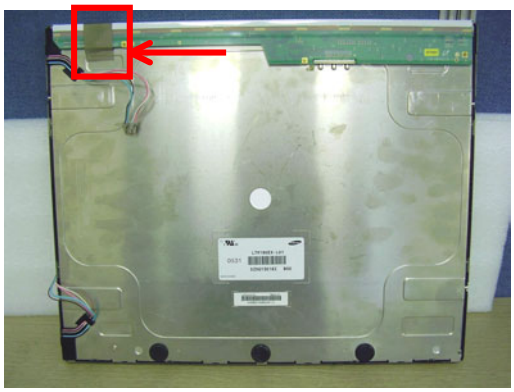
12.000 MHz, 24.57 MHz, 27.0105 MHz

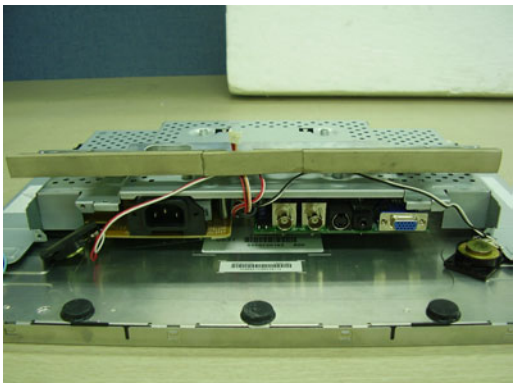
# 1.1 Model Differences

Not applicable

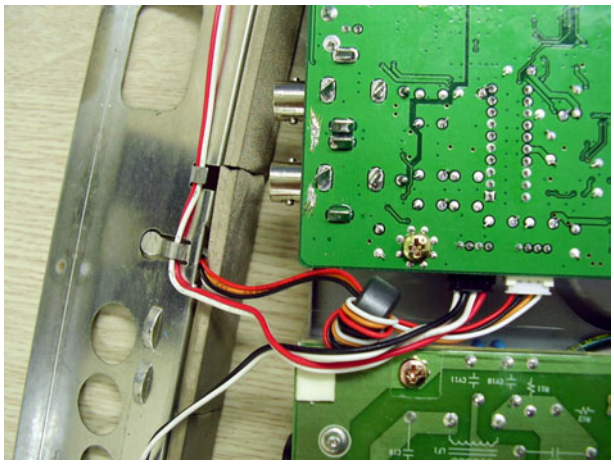
## 1.2 Device Modifications

The following modifications were necessary for compliance:



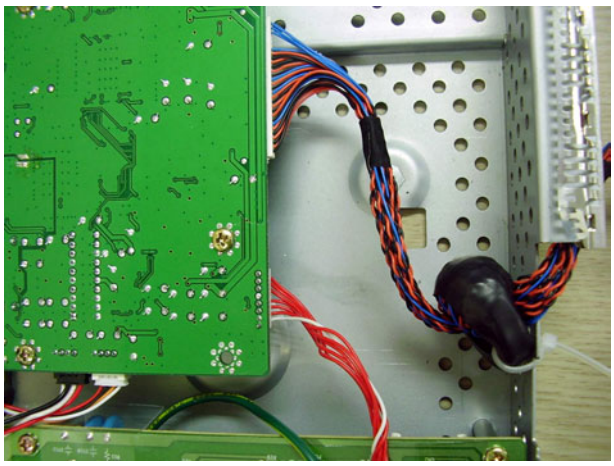


Conductive tape and Gaskets are applied to the panel and the bottom of the chassis.



| Manufacturer | Part No. |
|---|---|
| BOAM/URITE/EQV | TC14B (14.2*7.3*6.35) |

A Ferrite Core is applied to cable.
The cable is connected between the main board and the key board.



| Manufacturer | Part No. |
|---|---|
| NETRON/EQ | TC29A (29*19.4*7.6) |

A Ferrite Core is applied to cable.
The cable is connected between the main board and the front panel.

## 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 |
|---|---|---|---|---|
| Personal Computer | Hewlett-Packard Company | Pavilion t812k | KRJ50403HK | DoC |
| Keyboard (PS/2 type) | Hewlett-Packard Company | 5219 | BN5017686 | DoC |
| Mouse (PS/2 type) | KYE SYSTEMS CORP. | N3 Optical | K045205991 | DoC |
| Mouse (USB type) | SAMSUNG | OMS3CB | 0303009881 | DoC |
| Printer (Parallel type) | Seiko Epson Corp. | Stylus Color 460 | BWCE136524 | DoC |

☒ Cable Description

| # | Description | Ferrite Core | Length (m) | Other Details |
|---|---|---|---|---|
| 1 | Monitor Cable, Shielded | Yes | 1.8 | Between the PC and EUT |
| 2 | Audio Input Cable, Unshielded | Yes | 1.8 | Between the PC and EUT |
| 3 | BNC Input Cable, Shielded | Yes | 1.8 | Unterminated (only cable) |
| 4 | BNC Output Cable, Shielded | Yes | 1.8 | Unterminated (only cable) |
| 5 | S-VHS Input Cable, Shielded | Yes | 1.8 | Unterminated (only cable) |
| 6 | AC power cable, Unshielded | No | 1.8 | Connect to AC power |
| 7 | Mouse cable, Shielded | No | 1.5 | USB type |
| 8 | Mouse cable, Shielded | No | 1.5 | PS/2 type |
| 9 | Keyboard cable, Shielded | No | 1.5 | PS/2 type |
| 10 | Printer cable, Shielded | No | 1.5 | Between the PC and Printer |
| 11 | AC power cable, Unshielded | No | 1.8 | Connect to AC power |
| 12 | AC power cable, Unshielded | No | 1.8 | Connect to AC power |

## 1.4 Test Software

☐ EMC Test V 1.0
☒ Display Test Patterns – V1.5
☒ Winamp - V2.8
☐ Ping.exe
☐ Not applicable

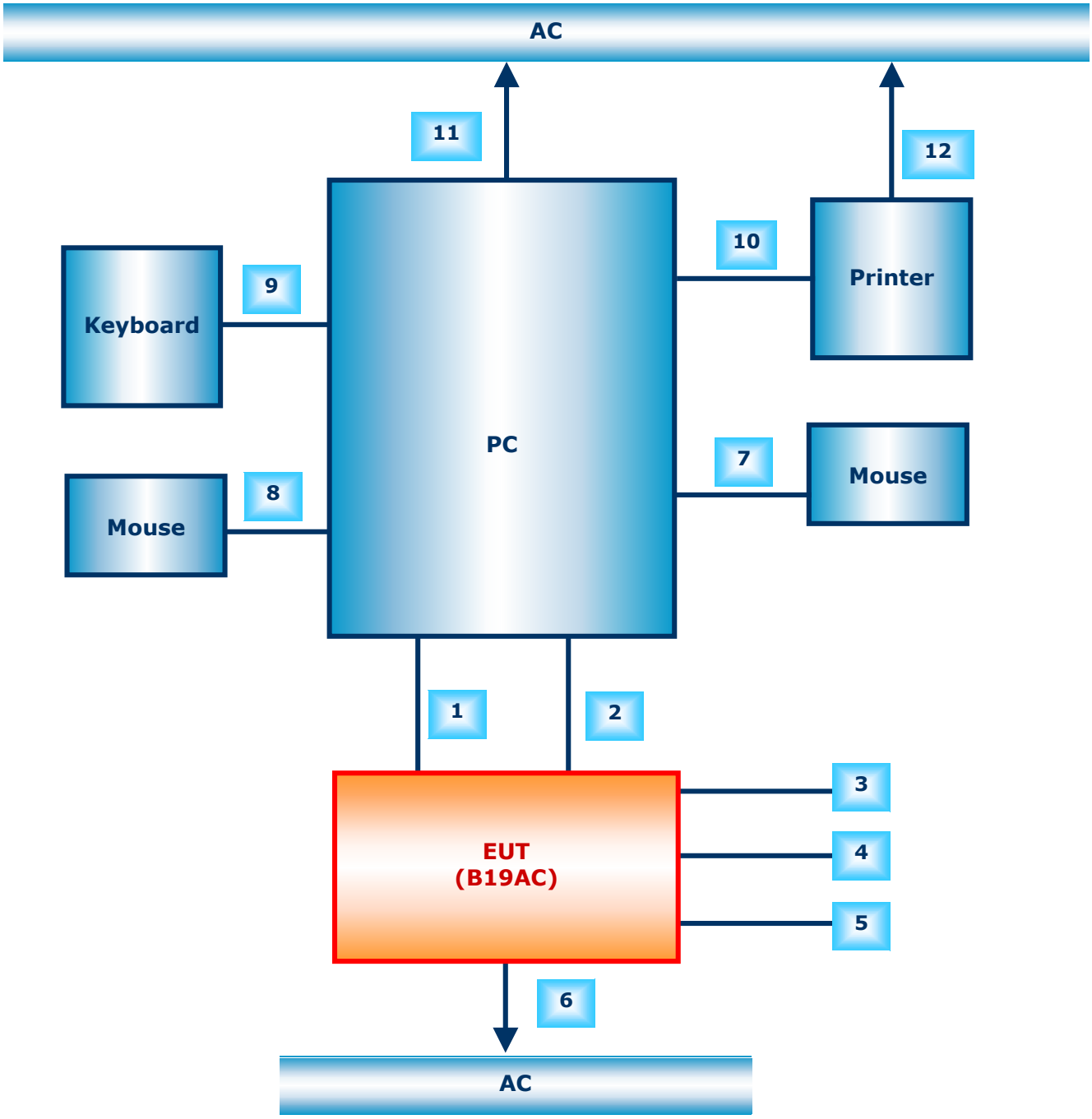
## 1.5 EUT Operating Mode(s)

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

☐ Standby
☐ Display circles pattern
☒ Scrolling 'H'
☐ Read / Write
☒ Practice operation – Resolution : 1280 x 1024 @ 75 Hz

During testing, the EUT was connected to a PC via a RGB Port and an Audio Input Port.

## 1.6 Configuration



## 1.7 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.

## 1.8 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.

## 1.9 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 C63.4-2001 7.2.3, 7.2.4, 8.3.1.1, 8.3.1.2

# 1.10 Laboratory Accreditations and Listings

| Country | Agency | Scope of Accreditation | Logo |
|---|---|---|---|
| USA | **FCC** | 3 & 10 meter Open Area Test Sites and one conducted site 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 (10 meter Open Area Test Site and two conducted sites)<br>EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions) | No. 51, KR0025 |
| International | **KOLAS** | EMC | |
| Europe | **GLAS** | EMC<br>EN 55011, EN 55022, EN 61000-6-3, EN 61000-6-4, EN 61000-3-2, EN 61000-3-3, EN 61000-6-1, EN 61000-6-2, EN 50130-4, EN 55024, EN 61204-3, EN 60601-1-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11 | No.13000796-02 |

## 2.0 Emissions Test Regulations

The emissions tests were performed according to following regulations:

| | | |
|---|---|---|
| ☐ EN 61000-6-3:2001 | ☐ Class A | ☐ Class B |
| ☐ EN 61000-6-4:2001 | ☐ Class A | ☐ Class B |
| ☐ EN 50083-2:2001 | | |
| ☐ EN 55011:1998 +A1:1999 | ☐ Group 1<br>☐ Class A | ☐ Group 2<br>☐ Class B |
| ☐ EN 55011:1998 +A1:1999 +A2:2002 | ☐ Group 1<br>☐ Class A | ☐ Group 2<br>☐ Class B |
| ☐ EN 55013:1990 +A12:1994 +A13:1996 +A14:1999<br>☐ EN 55013:2001 | | |
| ☐ EN 55014-1:2000<br>☐ EN 55014-1:2000 +A1:2001 | | |
| ☐ EN 55015:2000<br>☐ EN 55015:2000 +A1:2001 | | |
| ☐ EN 55022:1994 +A1:1995 +A2:1997 | ☐ Class A | ☐ Class B |
| ☐ EN 55022:1998 | ☐ Class A | ☐ Class B |
| ☐ EN 55022:1998 +A1:2000 | ☐ Class A | ☐ Class B |
| ☐ EN 55022:1998 +A1:2000 +A2:2003 | ☐ Class A | ☐ Class B |
| ☐ EN 61000-3-2:2000 | | |
| ☐ EN 61000-3-3:1995 +A1:2001 | | |
| ☐ VCCI V-3/2004.04 | ☐ Class A | ☐ Class B |
| ☐ AS/NZS 3548:1995 +A1:1997 +A2:1997 | ☐ Class A | ☐ Class B |
| ☒ FCC Part 15 Subpart B | ☐ Class A | ☒ Class B |
| ☒ CISPR 22:1997 | ☐ Class A | ☒ Class B |
| ☐ CISPR 22:1997 +A1:2000 | ☐ Class A | ☐ Class B |

The unit was tested to CISPR 22 and complied with the alternate methods allowed by FCC under paragraphs 15.107 and 15.109.

## 2.1 Conducted Voltage Emissions

### Test Date
October 10, 2005

### Test Location
Shielded Room

### Test Equipment

| | Name of Equipment | Manufacturer | Model No. | Serial No. | Due Date |
|---|---|---|---|---|---|
| ☒ | Field Strength Meter | Rohde & Schwarz | ESHS30 | 828144/002 | 2006-02-01 |
| ☒ | LISN | EMCO | 3825/2 | 9607-2575 | 2006-09-03 |
| ☒ | LISN | EMCO | 3825/2 | 9409-2246 | 2006-09-03 |

### Frequency Range of Measurement
150 kHz to 30 MHz

### Test Results
The requirements are:

☒ MET

| Frequency (MHz) | Measured Data (dBuV) | Margin (dB) | Remark |
|---|---|---|---|
| 0.20 | 56.6 | 7.0 | Quasi-peak |

☐ NOT MET

| Frequency (MHz) | Measured Data (dBuV) | Margin (dB) | Remark |
|---|---|---|---|
| | | | |

☐ NOT APPLICABLE

### Remarks
See Appendix A for test data.

## 2.2 Radiated Electric Field Emissions

### Test Date
October 12, 2005

### Test Location
☒ Testing was performed at a test distance of 10 meter Open Area Test Site

### Test Equipment

| | Name of Equipment | Manufacturer | Model No. | Serial No. | Due Date |
|---|---|---|---|---|---|
| ☒ | Field Strength Meter | Rohde & Schwarz | ESVS30 | 826638/008 | 2006-04-14 |
| ☒ | ULTRA Broadband Antenna | Rohde & Schwarz | HL562 | 361324/014 | 2006-05-27 |
| ☐ | Biconical Antenna | EMCO | 3110 | 9202-1510 | 2006-04-13 |
| ☐ | Log-periodic Antenna | EMCO | 3146 | 9607-4567 | 2006-04-08 |

### Frequency Range of Measurement
30 MHz to 1 GHz

### Test Results
The requirements are:

☒ MET

| Frequency (MHz) | Measured Data (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|
| 110.06 | 26.2 | 3.8 | Quasi-peak |

☐ NOT MET

| Frequency (MHz) | Measured Data (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|
| | | | |

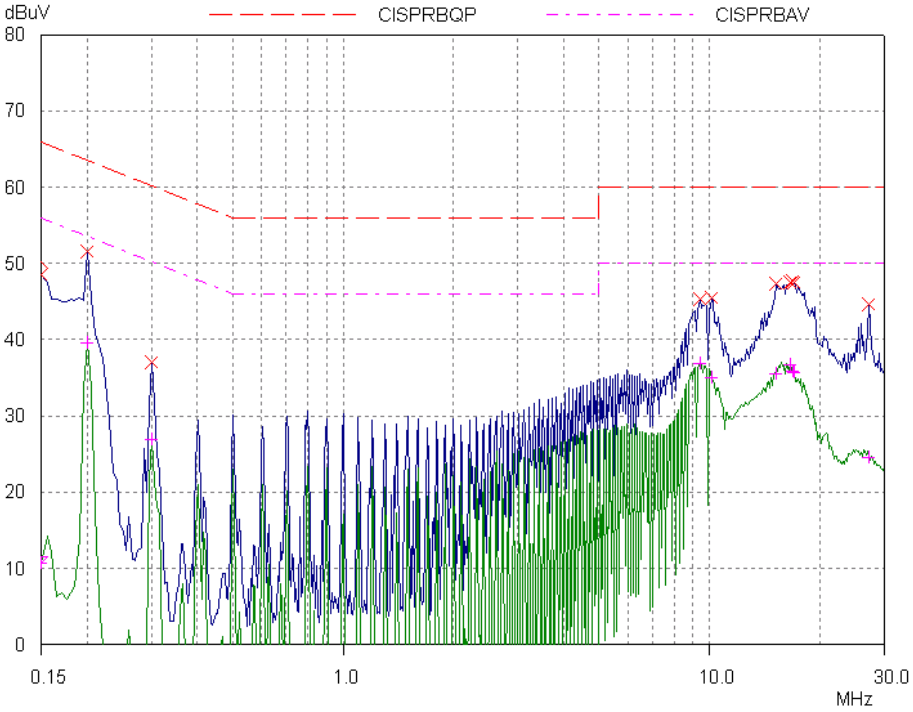
☐ NOT APPLICABLE

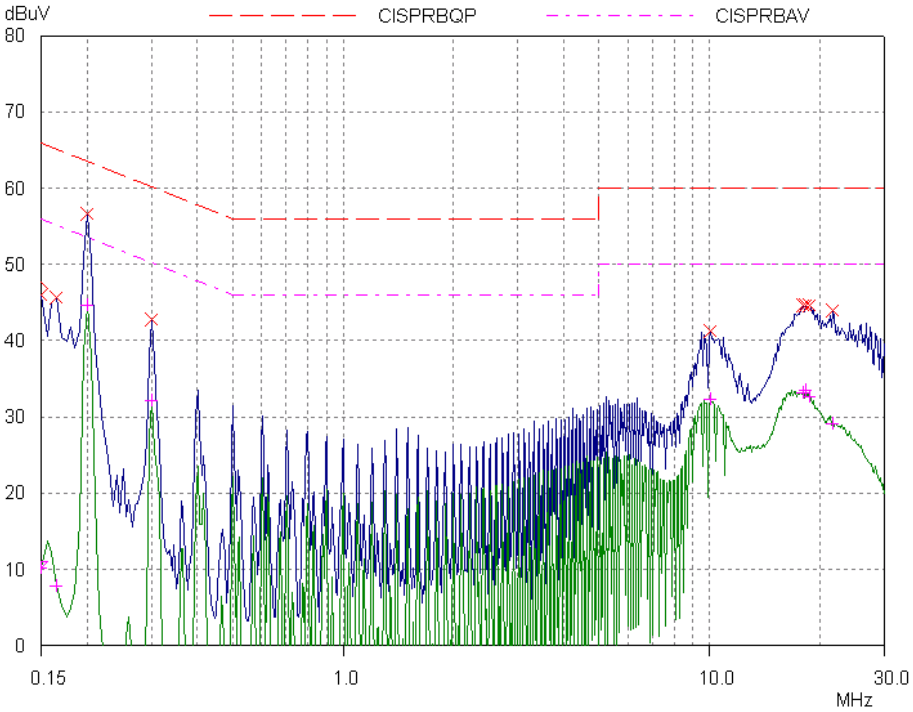
### Remarks
See Appendix A for test data

# APPENDIX A – TEST DATA

## Conducted Voltage Emissions

| 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] |
| 0.20 | 0.2 | 0.1 | N | 63.6 | 56.3 | 56.6 | 7.0 | 53.6 | 44.4 | 44.7 | 8.9 |
| 9.40 | 0.1 | 0.2 | H | 60.0 | 45.0 | 45.3 | 14.7 | 50.0 | 36.4 | 36.7 | 13.3 |
| 15.09 | 0.2 | 0.3 | H | 60.0 | 46.8 | 47.3 | 12.7 | 50.0 | 35.0 | 35.5 | 14.5 |
| 16.50 | 0.2 | 0.3 | H | 60.0 | 46.9 | 47.4 | 12.6 | 50.0 | 36.2 | 36.7 | 13.3 |
| 16.79 | 0.2 | 0.3 | H | 60.0 | 47.2 | 47.7 | 12.3 | 50.0 | 35.4 | 35.9 | 14.1 |
| 18.30 | 0.1 | 0.3 | N | 60.0 | 44.2 | 44.6 | 15.4 | 50.0 | 33.1 | 33.5 | 16.5 |



## Radiated Electric Field Emissions

| Frequency [MHz] | Reading [dBuV/m] | Pol. | Height [m] | Correction Factor | | Limits [dBuV/m] | Result [dBuV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|
| | | | | Antenna | Cable | | | |
| 66.58 | 18.9 | V | 2.0 | 5.7 | 1.5 | 30.0 | 26.1 | 3.9 |
| 110.06 | 14.7 | V | 1.8 | 9.5 | 2.0 | 30.0 | 26.2 | 3.8 |
| 117.32 | 13.6 | V | 2.0 | 9.7 | 2.0 | 30.0 | 25.3 | 4.7 |
| 144.02 | 15.2 | H | 4.0 | 7.7 | 2.3 | 30.0 | 25.2 | 4.8 |
| 541.75 | 11.7 | V | 4.0 | 16.0 | 4.4 | 37.0 | 32.1 | 4.9 |
| 602.31 | 9.8 | H | 1.0 | 17.1 | 4.7 | 37.0 | 31.6 | 5.4 |