CKC LABORATORIES, INC. Testing the Future

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803.01 - 803.06
EMC/SAFETY

# XCEEDID TEST REPORT

# FOR THE

# PHYSICAL ACCESS CONTROL READER, XF2100

# FCC PART 15 SUBPART C SECTIONS 15.207, 15.209 AND 15.225 AND RSS-210

# COMPLIANCE

**DATE OF ISSUE: SEPTEMBER 1, 2004**

**PREPARED FOR:**

XceedID
112 N. Rubey Drive, Suite 100
Golden, CO 80403

P.O. No.: 081604JDM
W.O. No.: 82527

**PREPARED BY:**

Mary Ellen Clayton
CKC Laboratories, Inc.
5473A Clouds Rest
Mariposa, CA 95338

Date of test: August 18-26, 2004

**Report No.: FC04-063**

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## ADMINISTRATIVE INFORMATION

| | |
|---|---|
| **DATE OF TEST:** | August 18-26, 2004 |
| **DATE OF RECEIPT:** | August 18, 2004 |
| **PURPOSE OF TEST:** | To demonstrate the compliance of the Physical Access Control Reader, XF2100 with the requirements for FCC Part 15 Subpart C Sections 15.207, 15.209 and 15.225 and RSS-210 devices. |
| **TEST METHOD:** | ANSI C63.4 (2001) |
| **MANUFACTURER:** | XceedID<br>112 N. Rubey Drive, Suite 100<br>Golden, CO 80403 |
| **REPRESENTATIVE:** | John Menzel |
| **TEST LOCATION:** | CKC Laboratories, Inc.<br>5473A Clouds Rest<br>Mariposa, CA 95338 |

## SUMMARY OF RESULTS

As received, the XceedID Physical Access Control Reader, XF2100 was found to be fully compliant with the following standards and specifications:

| Canadian Standard | Canadian Section | FCC Standard | FCC Section | Test Description |
|---|---|---|---|---|
| RSS 210 | 5.5 | 47CFR | 15.203 | Antenna Connector Requirements |
| RSS 210 | 6.2.1 | 47CFR | 15.209 | General Radiated Emissions Requirement |
| RSS 210 | 6.2.2(e) | 47CFR | 15.225(a)* | Fundamental Requirements |
| RSS 210 | 6.2.2(e) | NA | NA | ±150kHz to ±450kHz Emissions Requirement |
| RSS 210 | 6.2.2(e) | 47CFR | 15.225(b)* | Out of band emissions |
| RSS 210 | 6.2.2(e) | 47CFR | 15.225(c)* | Carrier Stability |
| RSS 210 | 6.3 | 47CFR | 15.205 | Restricted Bands of Operation |
| RSS 210 | 6.4 | 47CFR | 15.215(c) | Frequency Stability Recommendation |
| RSS 210 | 6.5 | 47CFR | 15.35(c) | Pulsed Operation |
| RSS 210 | 6.6 | 47CFR | 15.207 | AC Mains Conducted Emissions Requirement |
| | IC 3082-D | | 784962 | Site File No. |

* Indicates that FCC Requirements are more stringent than the Canadian Equivalent.

**CONDITIONS FOR COMPLIANCE**

Steward ferrite 42064-200 added to EUT cable at the back of the EUT.

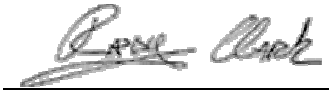
## APPROVALS

Steve Behm, Director of Engineering Services

**QUALITY ASSURANCE:**

Joyce Walker, Quality Assurance Administrative Manager

**TEST PERSONNEL:**



Randy Clark, EMC Engineer

**FCC 15.33(a) Frequency Ranges Tested**
15.207 Conducted: 150 kHz – 30 MHz
15.209 Radiated: 9 kHz – 1000 MHz

| FCC SECTION 15.35: ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE | | | |
|---|---|---|---|
| TEST | BEGINNING FREQUENCY | ENDING FREQUENCY | BANDWIDTH SETTING |
| CONDUCTED EMISSIONS | 150 kHz | 30 MHz | 9 kHz |
| RADIATED EMISSIONS | 9 kHz | 150 kHz | 200 Hz |
| RADIATED EMISSIONS | 150 kHz | 30 MHz | 9 kHz |
| RADIATED EMISSIONS | 30 MHz | 1000 MHz | 120 kHz |

**FCC 15.203 Antenna Requirements**
The antenna is an integral part of the EUT and is non-removable; therefore the EUT complies with Section 15.203 of the FCC rules.

**FCC 15.205 Restricted Bands**
The fundamental operating frequency lies outside the restricted bands and therefore complies with the requirements of Section 15.205 of the FCC rules. Any spurious emission coming from the EUT was investigated to determine if any portion lies inside the restricted band. If any portion of a spurious emissions signal was found to be within a restricted band, investigation was performed to ensure compliance with Section 15.209.

**Eut Operating Frequency**
The EUT was operating at 13.56 MHz and 125 kHz.

**Temperature And Humidity During Testing**
The temperature during testing was within +15°C and + 35°C.
The relative humidity was between 20% and 75%.

**EQUIPMENT UNDER TEST (EUT) DESCRIPTION**
The EUT tested by CKC Laboratories was a production unit.

**EQUIPMENT UNDER TEST**

**Physical Access Control Reader**
Manuf: XceedID
Model: XF2100
Serial: 1001
FCC ID: Pending

**PERIPHERAL DEVICES**

The EUT was tested with the following peripheral device(s):
**DC Power Supply**
Manuf: Topward
Model: TPS-4303
Serial: 918520
FCC ID: NA

## REPORT OF MEASUREMENTS

The following tables report the worst case emissions levels recorded during the tests performed on the EUT. All readings taken were peak readings unless otherwise stated. The data sheets from which the emissions tables were compiled are contained in Appendix C.

**Table 1: FCC 15.207 Six Highest Conducted Emission Levels**

| FREQUENCY MHz | METER READING dBµV | CORRECTION FACTORS Lisn dB | HPF dB | Cable dB | dB | CORRECTED READING dBµV | SPEC LIMIT dBµV | MARGIN dB | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| 4.139051 | 25.4 | 0.4 | 0.1 | 0.3 | | 26.2 | 46.0 | -19.8 | B |
| 7.381250 | 36.7 | 0.4 | 0.1 | 0.3 | | 37.5 | 50.0 | -12.5 | B |
| 7.381250 | 30.0 | 0.4 | 0.1 | 0.3 | | 30.8 | 50.0 | -19.2 | W |
| 13.570000 | 53.0 | 0.5 | 0.1 | 0.4 | | 54.0 | 60.0 | -6.0 | WQ |
| 27.121740 | 39.3 | 0.5 | 0.2 | 0.5 | | 40.5 | 50.0 | -9.5 | B |
| 27.121900 | 29.1 | 0.5 | 0.2 | 0.5 | | 30.3 | 50.0 | -19.7 | B |

Test Method: ANSI C63.4 (2001)
Spec Limit: FCC Part 15 Subpart C Section 15.207

NOTES: Q = Quasi Peak Reading
B = Black Lead
W = White Lead

COMMENTS: EUT is a Physical Access Control Reader operating at 13.56 MHz and 125 kHz. To simulate normal installation, EUT is mounted vertically on a wooden support structure. EUT is powered by a support DC power supply. Support power supply chassis is bonded to ground. Steward ferrite 42064-200 added to EUT cable at the back of the EUT. Frequency Range investigated: 150kHz to 30MHz. Temperature: 23º C, Relative Humidity: 40%.

| Table 2: FCC 15.209 Fundamental Emission Levels: 125 kHz | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | METER | CORRECTION FACTORS | | | | CORRECTED | SPEC | | |
| FREQUENCY | READING | Ant | | Cable | Corr | READING | LIMIT | MARGIN | NOTES |
| MHz | dBµV | dB | dB | dB | dB | dBµV/m | dBµV/m | DB | |
| 0.125 | 61.3 | 9.6 | | 0.1 | -60.0 | 11.0 | 25.7 | -14.7 | H |
| 0.125 | 52.0 | 9.6 | | 0.1 | -60.0 | 1.7 | 25.7 | -24.0 | V |

Test Method: ANSI C63.4 (2001)
Spec Limit: FCC Part 15 Subpart C Section 15.209
Test Distance: 10 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization

COMMENTS: EUT is a Physical Access Control Reader operating at 13.56 MHz and 125 kHz. To simulate normal installation, EUT is mounted vertically on a wooden support structure. EUT is powered by a support DC power supply. Support power supply chassis is bonded to ground. Steward ferrite 42064-200 added to EUT cable at the back of the EUT. Frequency Range investigated: Carrier. Test distance correction factor applied in accordance with 15.31. Temperature: 23º C, Relative Humidity: 40%.

**Table 3: FCC 15.209 Six Highest Radiated Emission Levels: 9 kHz - 30 MHz**

| FREQUENCY MHz | METER READING dBµV | CORRECTION FACTORS Ant dB | dB | Cable dB | Corr dB | CORRECTED READING dBµV/m | SPEC LIMIT dBµV/m | MARGIN DB | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| 0.249 | 44.4 | 9.6 | | 0.1 | -60.0 | -5.9 | 19.7 | -25.6 | V |
| 0.499 | 38.1 | 9.6 | | 0.1 | -20.0 | 27.8 | 33.6 | -5.8 | V |
| 7.372 | 13.0 | 9.1 | | 0.3 | -20.0 | 2.4 | 29.5 | -27.1 | H |
| 22.116 | 15.7 | 6.5 | | 0.5 | -20.0 | 2.7 | 29.5 | -26.8 | H |
| 27.119 | 23.7 | 4.9 | | 0.5 | -20.0 | 9.1 | 29.5 | -20.4 | V |
| 27.120 | 37.4 | 4.9 | | 0.5 | -20.0 | 22.8 | 29.5 | -6.7 | H |

Test Method: ANSI C63.4 (2001)
Spec Limit: FCC Part 15 Subpart C Sections 15.209
Test Distance: 10 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization

COMMENTS: EUT is a Physical Access Control Reader operating at 13.56 MHz and 125 kHz. To simulate normal installation, EUT is mounted vertically on a wooden support structure. EUT is powered by a support DC power supply. Support power supply chassis is bonded to ground. Steward ferrite 42064-200 added to EUT cable at the back of the EUT. Frequency Range investigated: 9kHz - 30MHz. Test distance correction factor applied in accordance with 15.31. Temperature: 23º C, Relative Humidity: 40%.

| Table 4: FCC 15.209 Six Highest Radiated Emission Levels: 30-1000 MHz | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | METER | CORRECTION FACTORS | | | | CORRECTED | SPEC | | |
| FREQUENCY MHz | READING dBµV | Ant dB | Amp dB | Cable dB | Dist dB | READING dBµV/m | LIMIT dBµV/m | MARGIN DB | NOTES |
| 81.412 | 44.0 | 6.9 | -27.2 | 2.0 | 10.0 | 35.7 | 40.0 | -4.3 | V |
| 108.555 | 40.7 | 10.1 | -27.2 | 2.4 | 10.0 | 36.0 | 43.5 | -7.5 | VQ |
| 206.366 | 39.4 | 8.8 | -26.6 | 3.3 | 10.0 | 34.9 | 43.5 | -8.6 | V |
| 271.255 | 37.9 | 12.4 | -26.5 | 3.8 | 10.0 | 37.6 | 46.0 | -8.4 | V |
| 298.401 | 41.5 | 12.8 | -26.5 | 4.1 | 10.0 | 41.9 | 46.0 | -4.1 | VQ |
| 325.496 | 39.1 | 13.5 | -26.7 | 4.3 | 10.0 | 40.2 | 46.0 | -5.8 | V |

Test Method: ANSI C63.4 (2001)
Spec Limit: FCC Part 15 Subpart C Section 15.209
Test Distance: 10 Meters

NOTES: Q = Quasi Peak Reading
V = Vertical Polarization

COMMENTS: EUT is a Physical Access Control Reader operating at 13.56 MHz and 125 kHz. To simulate normal installation, EUT is mounted vertically on a wooden support structure. EUT is powered by a support DC power supply. Support power supply chassis is bonded to ground. Steward ferrite 42064-200 added to EUT cable at the back of the EUT. Frequency Range investigated: 30MHz - 1000MHz. Note: Test distance correction factor applied in accordance with 15.31. Temperature: 23º C, Relative Humidity: 40%.

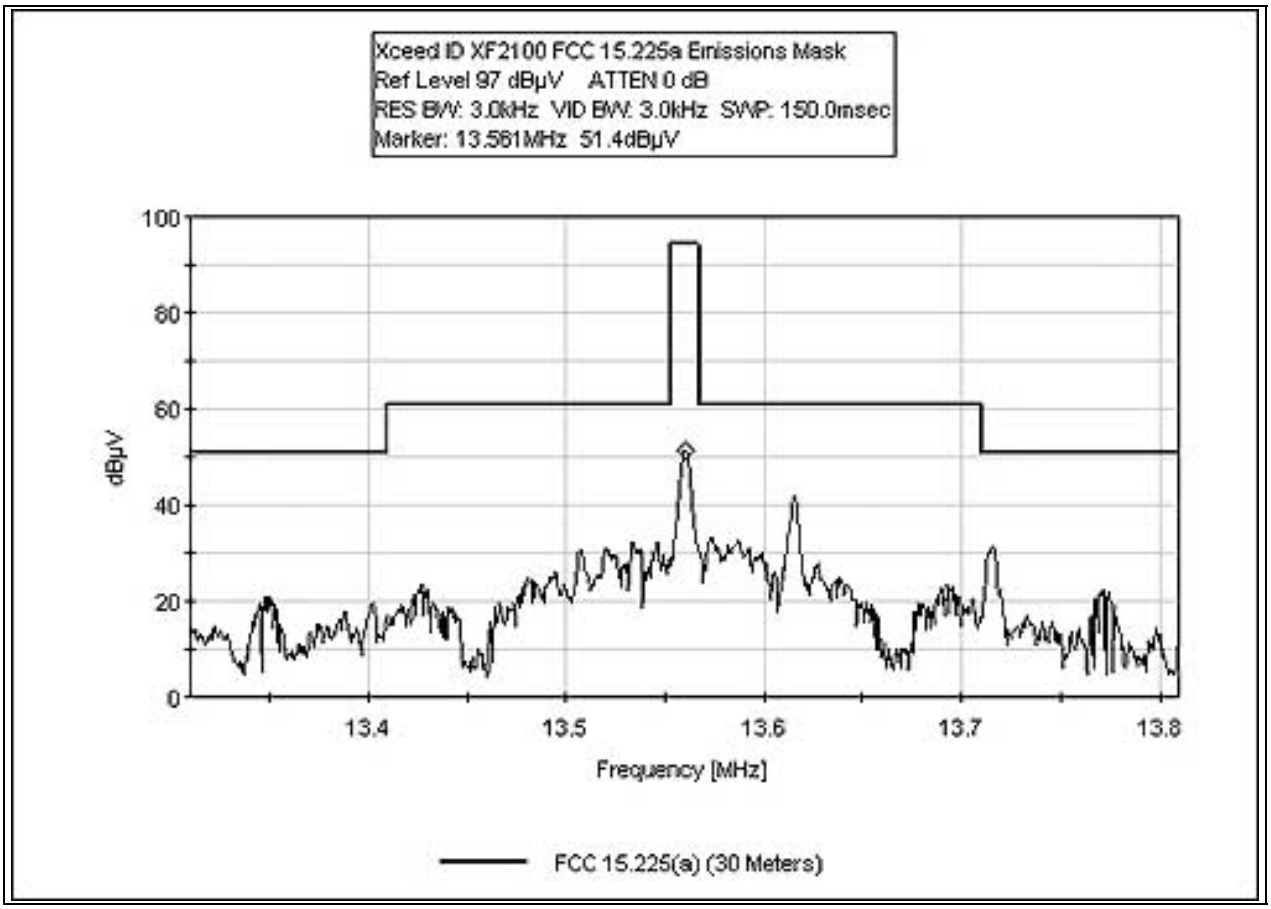
| Table 5: FCC 15.225(a) Fundamental Emission Levels: 13.56 MHz | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | METER | CORRECTION FACTORS | | | | CORRECTED | SPEC | | |
| FREQUENCY MHz | READING dBµV | Ant dB | Amp dB | Cable dB | Dist dB | READING dBµV/m | LIMIT dBµV/m | MARGIN DB | NOTES |
| 13.560 | 51.6 | 8.4 | | 0.4 | -19.0 | 41.4 | 84.0 | -42.6 | H |
| 13.560 | 47.0 | 8.4 | | 0.4 | -19.0 | 36.8 | 84.0 | -47.2 | V |

Test Method: ANSI C63.4 (2001)
Spec Limit: FCC Part 15 Subpart C Section 15.225(a)
Test Distance: 10 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization

COMMENTS: EUT is a Physical Access Control Reader operating at 13.56 MHz and 125 kHz. To simulate normal installation, EUT is mounted vertically on a wooden support structure. EUT is powered by a support DC power supply. Support power supply chassis is bonded to ground. Steward ferrite 42064-200 added to EUT cable at the back of the EUT. Frequency Range investigated: Carrier. Test distance correction factor applied in accordance with 15.31. Temperature: 23º C, Relative Humidity: 40%.

## FCC 15.225(a) EMISSIONS MASK



## FCC 15.225(c) FREQUENCY TOLERANCE

**Test Conditions**: EUT is continuously transmitting inside temperature chamber.

| | |
|---|---|
| **Customer:** | Xceed ID |
| **WO#:** | 82527 |
| **Date:** | 25-Aug-04 |
| **Test Engineer:** | Randal Clark |

| | |
|---|---|
| **Device Model #:** | XF 2100 |
| **Operating Voltage:** | 12.0 **VDC** |
| **Frequency Limit:** | 0.01 **%** |

**Temperature Variations**

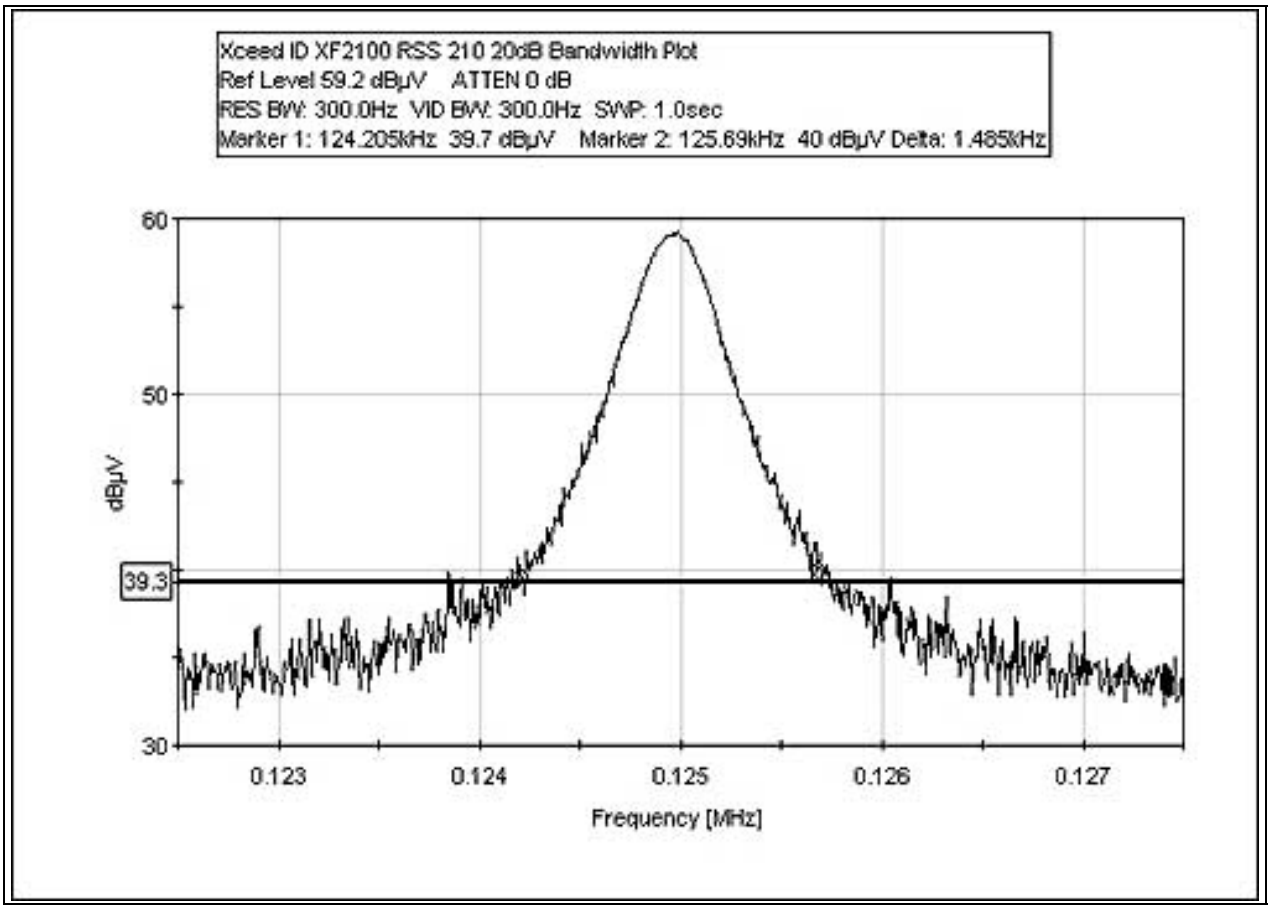
| | | Channel 1 (MHz) | Dev. (MHz) |
|---|---|---|---|
| Channel Frequency: | | **13.56** | |
| Temp (C) | Voltage | | |
| -30 | 12.0 | 13.55993 | 0.00007 |
| -20 | 12.0 | 13.55997 | 0.00003 |
| -10 | 12.0 | 13.56002 | 0.00002 |
| 0 | 12.0 | 13.56004 | 0.00004 |
| 10 | 12.0 | 13.56004 | 0.00004 |
| 20 | 12.0 | 13.56002 | 0.00002 |
| 30 | 12.0 | 13.56020 | 0.00020 |
| 40 | 12.0 | 13.56012 | 0.00012 |
| 50 | 12.0 | 13.56006 | 0.00006 |

**Voltage Variations (±15%)**

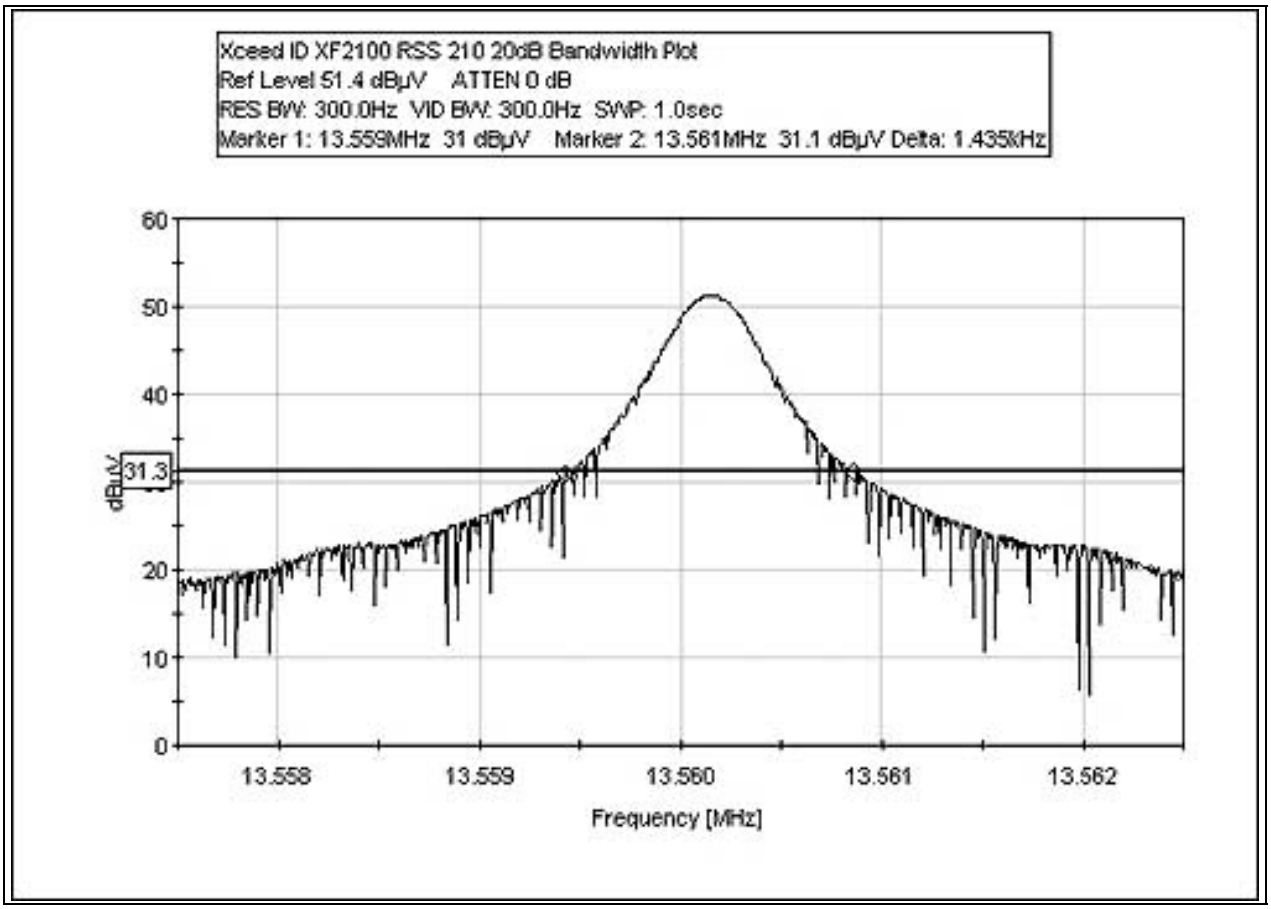
| | | | |
|---|---|---|---|
| 20 | 10.2 | 13.56001 | 0.00001 |
| 20 | 12.0 | 13.56002 | 0.00002 |
| 20 | 13.8 | 13.56002 | 0.00002 |

| | |
|---|---|
| **Max Deviation (MHz)** | **0.00020** |
| **Max Deviation (%)** | **0.00145** |
| | **PASS** |

## RSS-210 20dB BANDWIDTH 125 kHz



## RSS-210 20dB BANDWIDTH 13.56 MHz



**EUT SETUP**

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the photographs in Appendix A. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables. The corrected data was then compared to the applicable emission limits to determine compliance.

The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available I/O ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. I/O cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The radiated and conducted emissions data of the EUT was taken with the HP Spectrum Analyzer. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in Table A.

Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

**CORRECTION FACTORS**

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula in Table A. This reading was then compared to the applicable specification limit to determine compliance.

**TABLE A: SAMPLE CALCULATIONS**

| | | |
|---|---|---|
| | Meter reading | (dBµV) |
| + | Antenna Factor | (dB) |
| + | Cable Loss | (dB) |
| - | Distance Correction | (dB) |
| - | Preamplifier Gain | (dB) |
| = | Corrected Reading | (dBµV/m) |

## TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed in Appendix B were used to collect both the radiated and conducted emissions data. For radiated measurements from 9 kHz to 30 MHz, the magnetic loop antenna was used. For frequencies from 30 to 1000 MHz, the biconilog antenna was used. The horn antenna was used for frequencies above 1000 MHz. Conducted emissions tests required the use of the FCC type LISNs.

The HP spectrum analyzer was used for all measurements. Table B shows the analyzer bandwidth settings that were used in designated frequency bands. For conducted emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used. A 10 dB external attenuator was also used during conducted tests, with internal offset correction in the analyzer. During radiated testing, the measurements were made with 0 dB of attenuation, a reference level of 97 dBµV, and a vertical scale of 10 dB per division.

## SPECTRUM ANALYZER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the Tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the six highest readings, this is indicated as a "Q" or an "A" in the appropriate table. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

**Peak**

In this mode, the Spectrum Analyzer or test engineer recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the analyzer called "peak hold," the analyzer had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the analyzer made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

**Quasi-Peak**

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the HP Quasi-Peak Adapter for the HP Spectrum Analyzer. The detailed procedure for making quasi peak measurements contained in the HP Quasi-Peak Adapter manual were followed.

**Average**

For certain frequencies, average measurements may be made using the spectrum analyzer. To make these measurements, the test engineer reduces the video bandwidth on the analyzer until the modulation of the signal is filtered out. At this point the analyzer is set into the linear mode and the scan time is reduced.

## EUT TESTING

**Mains Conducted Emissions**

During conducted emissions testing, the EUT was located on a wooden table measuring approximately 80 cm high, 1 meter deep, and 1.5 meters in length. One wall of the room where the EUT was located has a minimum 2 meter by 2 meter conductive plane. The EUT was mounted on the wooden table 40 cm away from the conductive plane, and 80 cm from any other conductive surface.

The vertical metal plane used for conducted emissions was grounded to the earth. Power to the EUT was provided through a LISN. The LISN was grounded to the ground plane. All other objects were kept a minimum of 80 cm away from the EUT during the conducted test.

The LISNs used were 50 µH-/+50 ohms. Above 150 kHz, a 0.15 µF series capacitor was added in-line prior to connecting the analyzer to restore the proper impedance for the range. A 30 to 50 second sweep time was used for automated measurements in the frequency bands of 150 kHz to 500 kHz, and 500 kHz to 30 MHz. All readings within 20 dB of the limit were recorded, and those within 6 dB of the limit were examined with additional measurements using a slower sweep time.

**Radiated Emissions**

The EUT was mounted on a nonconductive, rotating table 80 cm above the conductive grid. The nonconductive table dimensions were 1 meter by 1.5 meters.

During the preliminary radiated scan, the EUT was powered up and operating in its defined FCC test mode. For radiated measurements from 9 kHz to 30 MHz, the magnetic loop antenna was used. The frequency range of 30 MHz to 1000 MHz was scanned with the biconilog antenna located about 1.5 meter above the ground plane in the vertical polarity. During this scan, the turntable was rotated and all peaks at or near the limit were recorded. A scan of the FM band from 88 to 110 MHz was then made using a reduced resolution bandwidth and frequency span. The biconilog antenna was changed to the horizontal polarity and the above steps were repeated. Care was taken to ensure that no frequencies were missed within the FM and TV bands. An analysis was performed to determine if the signals that were at or near the limit were caused by an ambient transmission. If unable to determine by analysis, the equipment was powered down to make the final determination if the EUT was the source of the emission.

A thorough scan of all frequencies was made manually using a small frequency span, rotating the turntable and raising and lowering the antenna from one to four meters as needed. The test engineer maximized the readings with respect to the table rotation, antenna height, and configuration of EUT. Maximizing of the EUT was achieved by monitoring the spectrum analyzer on a closed circuit television monitor.

# APPENDIX A

# TEST SETUP PHOTOGRAPHS AND DIAGRAM

## PHOTOGRAPH SHOWING MAINS CONDUCTED EMISSIONS

Mains Conducted Emissions - Front View

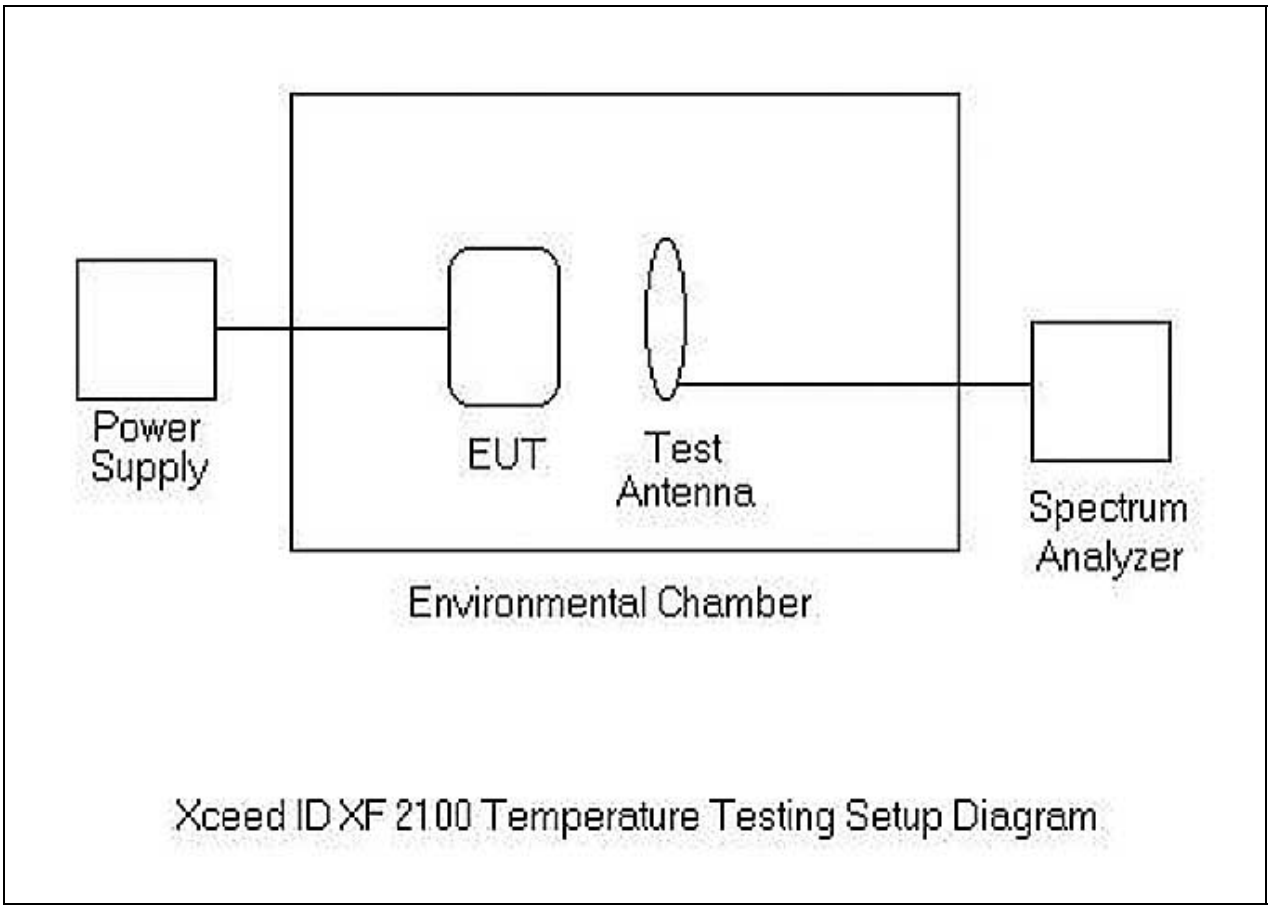
## PHOTOGRAPH SHOWING RADIATED EMISSIONS


Radiated Emissions - Front View

## PHOTOGRAPH SHOWING RADIATED EMISSIONS


Radiated Emissions - Back View

## DIAGRAM SHOWING TEMPERATURE TESTING




Xceed ID XF 2100 Temperature Testing Setup Diagram

# APPENDIX B

# TEST EQUIPMENT LIST

30-1000 MHz, 15.209

| *Description* | *Asset #* | *Manufacturer* | *Model #* | *Serial #* | *Cal Date* | *Cal Due* |
|---|---|---|---|---|---|---|
| Antenna, Biconilog | 01991 | Chase | CBL6111C | 2456 | 12/13/02 | 12/12/04 |
| Preamp | 00099 | HP | 8447D | 1937A02604 | 3/7/03 | 3/6/05 |
| Spectrum Analyzer 100Hz - 22.5GHz | 00490 | HP | 8566B | 2209A01404 | 2/26/03 | 2/25/05 |
| Spectrum Analyzer Display | 00489 | HP | 8566B | 2403A08241 | 2/26/03 | 2/25/05 |
| Spectrum Analyzer QP Adapter | 00478 | HP | 85650A | 2811A01267 | 2/26/03 | 2/25/05 |

<30MHz 15.209

| *Description* | *Asset #* | *Manufacturer* | *Model #* | *Serial #* | *Cal Date* | *Cal Due* |
|---|---|---|---|---|---|---|
| Antenna, Loop | 00226 | EMCO | 6502 | 1074 | 5/21/03 | 5/20/05 |
| Spectrum Analyzer 100Hz - 22.5GHz | 00490 | HP | 8566B | 2209A01404 | 2/26/03 | 2/25/05 |
| Spectrum Analyzer Display | 00489 | HP | 8566B | 2403A08241 | 2/26/03 | 2/25/05 |
| Spectrum Analyzer QP Adapter | 00478 | HP | 85650A | 2811A01267 | 2/26/03 | 2/25/05 |

Carrier tests: 15.225, 15.209

| *Description* | *Asset #* | *Manufacturer* | *Model #* | *Serial #* | *Cal Date* | *Cal Due* |
|---|---|---|---|---|---|---|
| Antenna, Loop | 00226 | EMCO | 6502 | 1074 | 5/21/03 | 5/20/05 |
| Spectrum Analyzer 100Hz - 22.5GHz | 00490 | HP | 8566B | 2209A01404 | 2/26/03 | 2/25/05 |
| Spectrum Analyzer Display | 00489 | HP | 8566B | 2403A08241 | 2/26/03 | 2/25/05 |
| Spectrum Analyzer QP Adapter | 00478 | HP | 85650A | 2811A01267 | 2/26/03 | 2/25/05 |

Temperature tests:

| *Description* | *Asset #* | *Manufacturer* | *Model #* | *Serial #* | *Cal Date* | *Cal Due* |
|---|---|---|---|---|---|---|
| Spectrum Analyzer 100Hz - 22.5GHz | 00490 | HP | 8566B | 2209A01404 | 2/26/03 | 2/25/05 |
| Spectrum Analyzer Display | 00489 | HP | 8566B | 2403A08241 | 2/26/03 | 2/25/05 |
| Spectrum Analyzer QP Adapter | 00478 | HP | 85650A | 2811A01267 | 2/26/03 | 2/25/05 |
| Digital Multimeter | 01241 | Radio Shack | 22-183 | NA | NR | NR |
| Temp Chamber | 01879 | Thermotron | S-1.2 MiniMax | 11899 | 1/31/03 | 1/30/05 |
| Thermometer | 02242 | Omega | HH-26K | T-202884 | 8/15/03 | 8/14/05 |

NR = Not Required

**APPENDIX C:**

**MEASUREMENT DATA SHEETS**

Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **XceedID**
Specification: **FCC 15.207 - AVE**
Work Order #: **82527** Date: 08/19/2004
Test Type: **Conducted Emissions** Time: 14:01:24
Equipment: **Physical Access Control Reader** Sequence#: 22
Manufacturer: XceedID Tested By: Randal Clark
Model: XF2100 120V 60Hz
S/N: 1001

***Equipment Under Test* (* = EUT):**

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Physical Access Control Reader* | XceedID | XF2100 | 1001 |

***Support Devices:***

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| DC Power Supply | Topward | TPS-4303 | 918520 |

***Test Conditions / Notes:***

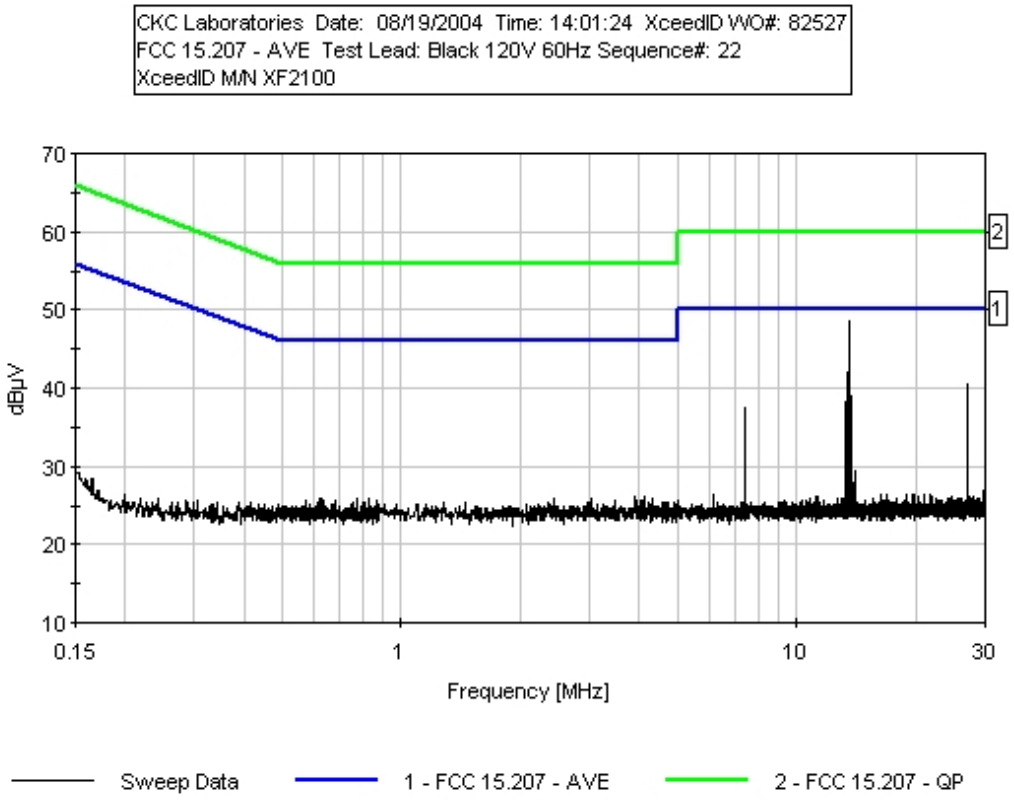
EUT is a Physical Access Control Reader operating at 13.56 MHz and 125 kHz. To simulate normal installation, EUT is mounted vertically on a wooden support structure. EUT is powered by a support DC power supply. Support power supply chassis is bonded to ground. Steward ferrite 42064-200 added to EUT cable at the back of the EUT. Frequency Range investigated: 150kHz to 30MHz. Temperature: 23º C, Relative Humidity: 40%.

***Transducer Legend:***

T1=Cable - Internal + cab T2=LISN Insertion Loss s/n280
T3=HP Filter AN02608

***Measurement Data:*** Reading listed by margin. Test Lead: Black

| # | Freq MHz | Rdng dBµV | T1 dB | T2 dB | T3 dB | dB | Dist Table | Corr dBµV | Spec dBµV | Margin dB | Polar Ant |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 27.122M | 39.3 | +0.5 | +0.5 | +0.2 | | +0.0 | 40.5 | 50.0 | -9.5 | Black |
| 2 | 7.381M | 36.7 | +0.3 | +0.4 | +0.1 | | +0.0 | 37.5 | 50.0 | -12.5 | Black |
| 3 | 27.122M | 29.1 | +0.5 | +0.5 | +0.2 | | +0.0 | 30.3 | 50.0 | -19.7 | Black |
| 4 | 4.139M | 25.4 | +0.3 | +0.4 | +0.1 | | +0.0 | 26.2 | 46.0 | -19.8 | Black |
| 5 | 14.057M | 28.4 | +0.4 | +0.4 | +0.1 | | +0.0 | 29.3 | 50.0 | -20.7 | Black |
| 6 | 7.375M | 26.8 | +0.3 | +0.4 | +0.1 | | +0.0 | 27.6 | 50.0 | -22.4 | Black |
| 7 | 16.832M | 25.6 | +0.4 | +0.4 | +0.1 | | +0.0 | 26.5 | 50.0 | -23.5 | Black |
| 8 | 150.000k | 26.3 | +0.1 | +0.3 | +2.7 | | +0.0 | 29.4 | 56.0 | -26.6 | Black |
| 9 | 13.563M Ave | 13.2 | +0.4 | +0.4 | +0.1 | | +0.0 | 14.1 | 50.0 | -35.9 | Black |
| ^ | 13.563M | 53.7 | +0.4 | +0.4 | +0.1 | | +0.0 | 54.6 | 50.0 | +4.6 | Black |


CKC Laboratories Date: 08/19/2004 Time: 14:01:24 XceedID WO#: 82527
FCC 15.207 - AVE Test Lead: Black 120V 60Hz Sequence#: 22
XceedID M/N XF2100
70
60
50
40
30
20
10
dBµV
0.15
1
10
30
Frequency [MHz]
2
1
Sweep Data
1 - FCC 15.207 - AVE
2 - FCC 15.207 - QP

Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **XceedID**
Specification: **FCC 15.207 - AVE**
Work Order #: **82527** Date: 08/19/2004
Test Type: **Conducted Emissions** Time: 14:41:05
Equipment: **Physical Access Control Reader** Sequence#: 24
Manufacturer: XceedID Tested By: Randal Clark
Model: XF2100 120V 60Hz
S/N: 1001

***Equipment Under Test* (* = EUT):**

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Physical Access Control Reader* | XceedID | XF2100 | 1001 |

***Support Devices:***

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| DC Power Supply | Topward | TPS-4303 | 918520 |

***Test Conditions / Notes:***

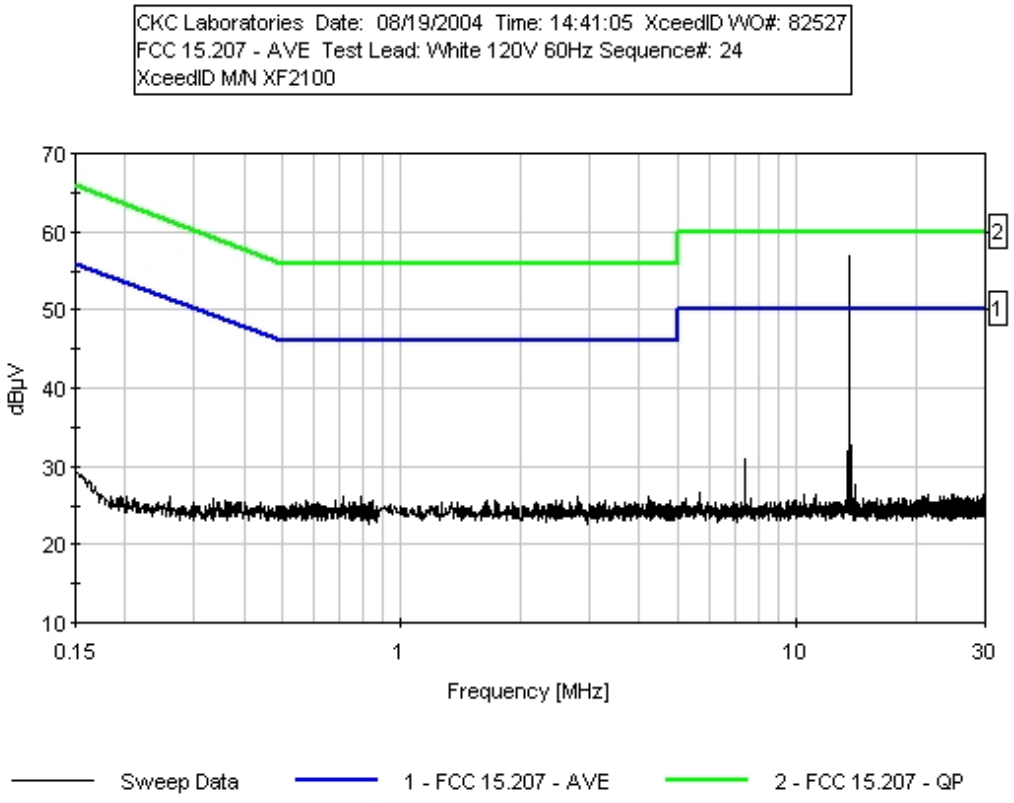
EUT is a Physical Access Control Reader operating at 13.56 MHz and 125 kHz. To simulate normal installation, EUT is mounted vertically on a wooden support structure. EUT is powered by a support DC power supply. Support power supply chassis is bonded to ground. Steward ferrite 42064-200 added to EUT cable at the back of the EUT. Frequency Range investigated: 150kHz to 30MHz. Temperature: 23º C, Relative Humidity: 40%.

***Transducer Legend:***

T1=Cable - Internal + cab T2=LISN Insertion Loss s/n276
T3=HP Filter AN02608

***Measurement Data:*** Reading listed by margin. Test Lead: White

| # | Freq MHz | Rdng dBµV | T1 dB | T2 dB | T3 dB | dB | Dist Table | Corr dBµV | Spec dBµV | Margin dB | Polar Ant |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13.570M QP | 53.0 | +0.4 | +0.5 | +0.1 | | +0.0 | 54.0 | 60.0 | -6.0 | White |
| ^ | 13.570M | 55.8 | +0.4 | +0.5 | +0.1 | | +0.0 | 56.8 | 50.0 | +6.8 | White |
| 3 | 7.381M | 30.0 | +0.3 | +0.4 | +0.1 | | +0.0 | 30.8 | 50.0 | -19.2 | White |
| 4 | 4.203M | 25.4 | +0.3 | +0.4 | +0.1 | | +0.0 | 26.2 | 46.0 | -19.8 | White |
| 5 | 5.670M | 25.8 | +0.3 | +0.4 | +0.1 | | +0.0 | 26.6 | 50.0 | -23.4 | White |
| 6 | 29.774M | 25.3 | +0.6 | +0.4 | +0.2 | | +0.0 | 26.5 | 50.0 | -23.5 | White |
| 7 | 21.588M | 25.3 | +0.5 | +0.4 | +0.2 | | +0.0 | 26.4 | 50.0 | -23.6 | White |
| 8 | 13.570M Ave | 24.0 | +0.4 | +0.5 | +0.1 | | +0.0 | 25.0 | 50.0 | -25.0 | White |
| 9 | 150.000k | 27.2 | +0.1 | +0.4 | +2.7 | | +0.0 | 30.4 | 56.0 | -25.6 | White |


CKC Laboratories Date: 08/19/2004 Time: 14:41:05 XceedID WO#: 82527
FCC 15.207 - AVE Test Lead: White 120V 60Hz Sequence#: 24
XceedID M/N XF2100
70
60
50
40
30
20
10
dBµV
0.15
1
10
30
Frequency [MHz]
2
1
Sweep Data
1 - FCC 15.207 - AVE
2 - FCC 15.207 - QP

Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **XceedID**
Specification: **FCC 15.209**
Work Order #: **82527** Date: 08/20/2004
Test Type: **Maximized Emissions** Time: 10:25:17
Equipment: **Physical Access Control Reader** Sequence#: 28
Manufacturer: XceedID Tested By: Randal Clark
Model: XF2100
S/N: 1001

***Equipment Under Test* (* = EUT):**

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Physical Access Control Reader* | XceedID | XF2100 | 1001 |

***Support Devices:***

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| DC Power Supply | Topward | TPS-4303 | 918520 |

***Test Conditions / Notes:***

EUT is a Physical Access Control Reader operating at 13.56 MHz and 125 kHz. To simulate normal installation, EUT is mounted vertically on a wooden support structure. EUT is powered by a support DC power supply. Support power supply chassis is bonded to ground. Steward ferrite 42064-200 added to EUT cable at the back of the EUT. Frequency Range investigated: Carrier. Test distance correction factor applied in accordance with 15.31. Temperature: 23º C, Relative Humidity: 40%/

***Transducer Legend:***

T1=Mag Loop - Site B - AN 00226 - 9kHz-30M T2=Cable - Internal + cab
T3=15.31 10m 40dB/Dec Correction

***Measurement Data:*** Reading listed by margin. Test Distance: 10 Meters

| # | Freq MHz | Rdng dBµV | T1 dB | T2 dB | T3 dB | dB | Dist Table | Corr dBµV/m | Spec dBµV/m | Margin dB | Polar Ant |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 124.968k | 61.3 | +9.6 | +0.1 | -60.0 | | +0.0 | 11.0 | 25.7 | -14.7 | Horiz 100 |
| 2 | 124.968k | 52.0 | +9.6 | +0.1 | -60.0 | | +0.0 | 1.7 | 25.7 | -24.0 | Vert 100 |

Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **XceedID**
Specification: **FCC 15.209**
Work Order #: **82527** Date: 08/20/2004
Test Type: **Maximized Emissions** Time: 11:00:19
Equipment: **Physical Access Control Reader** Sequence#: 29
Manufacturer: XceedID Tested By: Randal Clark
Model: XF2100
S/N: 1001

***Equipment Under Test* (* = EUT):**

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Physical Access Control Reader* | XceedID | XF2100 | 1001 |

***Support Devices:***

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| DC Power Supply | Topward | TPS-4303 | 918520 |

***Test Conditions / Notes:***

EUT is a Physical Access Control Reader operating at 13.56 MHz and 125 kHz. To simulate normal installation, EUT is mounted vertically on a wooden support structure. EUT is powered by a support DC power supply. Support power supply chassis is bonded to ground. Steward ferrite 42064-200 added to EUT cable at the back of the EUT. Frequency Range investigated: 9kHz - 30MHz. Test distance correction factor applied in accordance with 15.31. Temperature: 23º C, Relative Humidity: 40%.

***Transducer Legend:***

T1=Mag Loop - Site B - AN 00226 - 9kHz-30M T2=Cable - Internal + cab
T3=15.31 10m 40dB/Dec Correction

***Measurement Data:*** Reading listed by margin. Test Distance: 10 Meters

| # | Freq MHz | Rdng dBµV | T1 dB | T2 dB | T3 dB | dB | Dist Table | Corr dBµV/m | Spec dBµV/m | Margin dB | Polar Ant |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 499.200k | 38.1 | +9.6 | +0.1 | -20.0 | | +0.0 | 27.8 | 33.6 | -5.8 | Vert 100 |
| 2 | 27.120M | 37.4 | +4.9 | +0.5 | -20.0 | | +0.0 | 22.8 | 29.5 | -6.7 | Horiz 100 |
| 3 | 27.119M | 23.7 | +4.9 | +0.5 | -20.0 | | +0.0 | 9.1 | 29.5 | -20.4 | Vert 100 |
| 4 | 249.200k | 44.4 | +9.6 | +0.1 | -60.0 | | +0.0 | -5.9 | 19.7 | -25.6 | Vert 100 |
| 5 | 22.116M | 15.7 | +6.5 | +0.5 | -20.0 | | +0.0 | 2.7 | 29.5 | -26.8 | Horiz 100 |
| 6 | 7.372M | 13.0 | +9.1 | +0.3 | -20.0 | | +0.0 | 2.4 | 29.5 | -27.1 | Horiz 100 |
| 7 | 7.372M | 12.9 | +9.1 | +0.3 | -20.0 | | +0.0 | 2.3 | 29.5 | -27.2 | Vert 100 |
| 8 | 14.744M | 12.4 | +8.2 | +0.4 | -20.0 | | +0.0 | 1.0 | 29.5 | -28.5 | Horiz 100 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 9 | 14.744M | 11.2 | +8.2 | +0.4 | -20.0 | +0.0 | -0.2 | 29.5 | -29.7 | Vert 100 |
| 10 | 22.116M | 11.0 | +6.5 | +0.5 | -20.0 | +0.0 | -2.0 | 29.5 | -31.5 | Vert 100 |
| 11 | 29.488M | 12.3 | +4.2 | +0.6 | -20.0 | +0.0 | -2.9 | 29.5 | -32.4 | Vert 100 |
| 12 | 29.488M | 11.0 | +4.2 | +0.6 | -20.0 | +0.0 | -4.2 | 29.5 | -33.7 | Horiz 100 |

Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **XceedID**
Specification: **FCC 15.209**
Work Order #: **82526** Date: 08/19/2004
Test Type: **Maximized Emissions** Time: 11:53:35
Equipment: **Physical Access Control Reader** Sequence#: 25
Manufacturer: XceedID Tested By: Randal Clark
Model: XF2100
S/N: 1001

***Equipment Under Test* (* = EUT):**

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Physical Access Control Reader* | XceedID | XF2100 | 1001 |

***Support Devices:***

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| DC Power Supply | Topward | TPS-4303 | 918520 |

***Test Conditions / Notes:***

EUT is a Physical Access Control Reader operating at 13.56 MHz and 125 kHz. To simulate normal installation, EUT is mounted vertically on a wooden support structure. EUT is powered by a support DC power supply. Support power supply chassis is bonded to ground. Steward ferrite 42064-200 added to EUT cable at the back of the EUT. Frequency Range investigated: 30MHz - 1000MHz. Note: Test distance correction factor applied in accordance with 15.31. Temperature: 23º C, Relative Humidity: 40%.

***Transducer Legend:***

T1=Amp - S/N 604 T2=Bilog Site B
T3=Cable - 10 Meter

***Measurement Data:*** Reading listed by margin. Test Distance: 10 Meters

| # | Freq MHz | Rdng dBµV | T1 dB | T2 dB | T3 dB | dB | Dist Table | Corr dBµV/m | Spec dBµV/m | Margin dB | Polar Ant |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 298.401M QP | 41.5 | -26.5 | +12.8 | +4.1 | | +10.0 | 41.9 | 46.0 | -4.1 | Verti 100 |
| ^ | 298.392M | 43.9 | -26.5 | +12.8 | +4.1 | | +10.0 | 44.3 | 46.0 | -1.7 | Verti 100 |
| 3 | 81.412M | 44.0 | -27.2 | +6.9 | +2.0 | | +10.0 | 35.7 | 40.0 | -4.3 | Verti 225 |
| 4 | 325.496M | 39.1 | -26.7 | +13.5 | +4.3 | | +10.0 | 40.2 | 46.0 | -5.8 | Verti 100 |
| 5 | 108.555M QP | 40.7 | -27.2 | +10.1 | +2.4 | | +10.0 | 36.0 | 43.5 | -7.5 | Verti 100 |
| ^ | 108.560M | 42.7 | -27.2 | +10.1 | +2.4 | | +10.0 | 38.0 | 43.5 | -5.5 | Verti 100 |
| 7 | 271.255M | 37.9 | -26.5 | +12.4 | +3.8 | | +10.0 | 37.6 | 46.0 | -8.4 | Verti 100 |
| 8 | 206.366M | 39.4 | -26.6 | +8.8 | +3.3 | | +10.0 | 34.9 | 43.5 | -8.6 | Verti 100 |
| 9 | 189.896M | 40.0 | -26.7 | +8.3 | +3.2 | | +10.0 | 34.8 | 43.5 | -8.7 | Verti 100 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 162.731M QP | 38.6 | -26.9 | +9.8 | +2.9 | +10.0 | 34.4 | 43.5 | -9.1 | Verti 100 |
| ^ | 162.719M | 40.9 | -26.9 | +9.8 | +2.9 | +10.0 | 36.7 | 43.5 | -6.8 | Verti 100 |
| 12 | 206.386M | 38.7 | -26.6 | +8.8 | +3.3 | +10.0 | 34.2 | 43.5 | -9.3 | Verti 135 |
| 13 | 205.627M | 38.6 | -26.7 | +8.8 | +3.3 | +10.0 | 34.0 | 43.5 | -9.5 | Verti 100 |
| 14 | 203.447M | 38.8 | -26.7 | +8.6 | +3.3 | +10.0 | 34.0 | 43.5 | -9.5 | Verti 100 |
| 15 | 298.320M | 36.1 | -26.5 | +12.8 | +4.1 | +10.0 | 36.5 | 46.0 | -9.5 | Horiz 400 |
| 16 | 199.134M | 39.0 | -26.7 | +8.3 | +3.3 | +10.0 | 33.9 | 43.5 | -9.6 | Verti 100 |
| 17 | 135.667M | 37.4 | -27.1 | +11.0 | +2.6 | +10.0 | 33.9 | 43.5 | -9.6 | Horiz 400 |
| 18 | 244.110M | 37.5 | -26.5 | +11.6 | +3.6 | +10.0 | 36.2 | 46.0 | -9.8 | Verti 100 |
| 19 | 230.586M | 38.4 | -26.5 | +10.7 | +3.4 | +10.0 | 36.0 | 46.0 | -10.0 | Verti 100 |
| 20 | 420.365M | 31.8 | -27.3 | +15.8 | +5.1 | +10.0 | 35.4 | 46.0 | -10.6 | Horiz 400 |
| 21 | 217.041M QP | 38.6 | -26.6 | +9.7 | +3.4 | +10.0 | 35.1 | 46.0 | -10.9 | Verti 100 |
| ^ | 217.041M | 40.8 | -26.6 | +9.7 | +3.4 | +10.0 | 37.3 | 46.0 | -8.7 | Verti 100 |
| 23 | 189.843M | 37.8 | -26.7 | +8.3 | +3.2 | +10.0 | 32.6 | 43.5 | -10.9 | Horiz 400 |
| 24 | 284.846M | 35.0 | -26.5 | +12.6 | +3.9 | +10.0 | 35.0 | 46.0 | -11.0 | Verti 100 |
| 25 | 379.717M | 32.1 | -27.0 | +14.9 | +4.9 | +10.0 | 34.9 | 46.0 | -11.1 | Verti 100 |
| 26 | 339.170M | 33.1 | -26.7 | +13.9 | +4.4 | +10.0 | 34.7 | 46.0 | -11.3 | Verti 100 |
| 27 | 199.649M | 37.2 | -26.7 | +8.3 | +3.3 | +10.0 | 32.1 | 43.5 | -11.4 | Verti 100 |
| 28 | 284.766M | 34.6 | -26.5 | +12.6 | +3.9 | +10.0 | 34.6 | 46.0 | -11.4 | Horiz 314 |
| 29 | 352.638M | 32.3 | -26.8 | +14.3 | +4.5 | +10.0 | 34.3 | 46.0 | -11.7 | Verti 100 |
| 30 | 461.044M | 29.5 | -27.6 | +16.7 | +5.1 | +10.0 | 33.7 | 46.0 | -12.3 | Horiz 400 |
| 31 | 54.277M | 36.1 | -27.3 | +7.3 | +1.6 | +10.0 | 27.7 | 40.0 | -12.3 | Verti 100 |
| 32 | 488.169M | 28.5 | -27.7 | +17.2 | +5.4 | +10.0 | 33.4 | 46.0 | -12.6 | Horiz 400 |
| 33 | 447.481M | 29.5 | -27.5 | +16.4 | +5.0 | +10.0 | 33.4 | 46.0 | -12.6 | Horiz 400 |
| 34 | 311.907M | 32.5 | -26.6 | +13.2 | +4.2 | +10.0 | 33.3 | 46.0 | -12.7 | Verti 100 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 35 | 200.073M | 35.7 | -26.7 | +8.3 | +3.3 | +10.0 | 30.6 | 43.5 | -12.9 | Verti 100 |
| 36 | 366.167M | 30.7 | -26.9 | +14.6 | +4.7 | +10.0 | 33.1 | 46.0 | -12.9 | Verti 100 |
| 37 | 214.750M | 34.1 | -26.6 | +9.5 | +3.4 | +10.0 | 30.4 | 43.5 | -13.1 | Verti 100 |
| 38 | 147.454M | 34.1 | -27.0 | +10.5 | +2.8 | +10.0 | 30.4 | 43.5 | -13.1 | Horiz 400 |
| 39 | 433.926M | 29.0 | -27.4 | +16.1 | +5.0 | +10.0 | 32.7 | 46.0 | -13.3 | Horiz 400 |
| 40 | 447.483M | 28.7 | -27.5 | +16.4 | +5.0 | +10.0 | 32.6 | 46.0 | -13.4 | Horiz 400 |
| 41 | 311.882M | 31.3 | -26.6 | +13.2 | +4.2 | +10.0 | 32.1 | 46.0 | -13.9 | Horiz 400 |
| 42 | 528.844M | 26.0 | -27.8 | +17.9 | +5.8 | +10.0 | 31.9 | 46.0 | -14.1 | Horiz 400 |
| 43 | 325.441M | 30.7 | -26.7 | +13.5 | +4.3 | +10.0 | 31.8 | 46.0 | -14.2 | Horiz 400 |
| 44 | 162.726M | 33.5 | -26.9 | +9.8 | +2.9 | +10.0 | 29.3 | 43.5 | -14.2 | Horiz 400 |
| 45 | 197.377M | 34.3 | -26.7 | +8.3 | +3.3 | +10.0 | 29.2 | 43.5 | -14.3 | Verti 100 |
| 46 | 195.379M | 34.4 | -26.7 | +8.3 | +3.2 | +10.0 | 29.2 | 43.5 | -14.3 | Verti 100 |
| 47 | 271.200M | 31.9 | -26.5 | +12.4 | +3.8 | +10.0 | 31.6 | 46.0 | -14.4 | Horiz 400 |
| 48 | 474.604M | 26.5 | -27.7 | +16.9 | +5.3 | +10.0 | 31.0 | 46.0 | -15.0 | Horiz 400 |
| 49 | 108.521M | 33.1 | -27.2 | +10.1 | +2.4 | +10.0 | 28.4 | 43.5 | -15.1 | Horiz 400 |
| 50 | 257.684M | 31.6 | -26.5 | +12.1 | +3.7 | +10.0 | 30.9 | 46.0 | -15.1 | Verti 100 |
| 51 | 228.501M | 33.2 | -26.5 | +10.5 | +3.4 | +10.0 | 30.6 | 46.0 | -15.4 | Verti 100 |
| 52 | 244.088M | 30.7 | -26.5 | +11.6 | +3.6 | +10.0 | 29.4 | 46.0 | -16.6 | Horiz 170 |
| 53 | 216.960M | 32.6 | -26.6 | +9.6 | +3.4 | +10.0 | 29.0 | 46.0 | -17.0 | Horiz 400 |
| 54 | 230.520M | 31.3 | -26.5 | +10.7 | +3.4 | +10.0 | 28.9 | 46.0 | -17.1 | Horiz 400 |
| 55 | 339.010M | 26.3 | -26.7 | +13.9 | +4.4 | +10.0 | 27.9 | 46.0 | -18.1 | Horiz 400 |
| 56 | 257.645M | 28.5 | -26.5 | +12.1 | +3.7 | +10.0 | 27.8 | 46.0 | -18.2 | Horiz 400 |
| 57 | 218.934M | 30.4 | -26.5 | +9.8 | +3.4 | +10.0 | 27.1 | 46.0 | -18.9 | Verti 100 |
| 58 | 168.501M | 29.0 | -26.8 | +9.2 | +3.0 | +10.0 | 24.4 | 43.5 | -19.1 | Verti 100 |
| 59 | 168.328M | 26.5 | -26.9 | +9.2 | +2.9 | +10.0 | 21.7 | 43.5 | -21.8 | Verti 100 |

Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

| | | | |
|---|---|---|---|
| Customer: | **XceedID** | | |
| Specification: | **FCC 15.225(a) (30 Meters)** | | |
| Work Order #: | **82527** | Date: | 08/20/2004 |
| Test Type: | **Maximized Emissions** | Time: | 10:07:36 |
| Equipment: | **Physical Access Control Reader** | Sequence#: | 27 |
| Manufacturer: | XceedID | Tested By: | Randal Clark |
| Model: | XF2100 | | |
| S/N: | 1001 | | |

***Equipment Under Test* (* = EUT):**

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Physical Access Control Reader* | XceedID | XF2100 | 1001 |

***Support Devices:***

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| DC Power Supply | Topward | TPS-4303 | 918520 |

***Test Conditions / Notes:***

EUT is a Physical Access Control Reader operating at 13.56 MHz and 125 kHz. To simulate normal installation, EUT is mounted vertically on a wooden support structure. EUT is powered by a support DC power supply. Support power supply chassis is bonded to ground. Steward ferrite 42064-200 added to EUT cable at the back of the EUT. Frequency Range investigated: Carrier. Test distance correction factor applied in accordance with 15.31. Temperature: 23º C, Relative Humidity: 40%.

***Transducer Legend:***

| | |
|---|---|
| T1=Mag Loop - Site B - AN 00226 - 9kHz-30M | T2=Cable - Internal + cab |

***Measurement Data:*** Reading listed by margin. Test Distance: 10 Meters

| # | Freq MHz | Rdng dBµV | T1 dB | T2 dB | dB | dB | Dist Table | Corr dBµV/m | Spec dBµV/m | Margin dB | Polar Ant |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13.560M | 51.6 | +8.4 | +0.4 | | | -19.0 | 41.4 | 84.0 | -42.6 | Horiz 100 |
| 2 | 13.560M | 47.0 | +8.4 | +0.4 | | | -19.0 | 36.8 | 84.0 | -47.2 | Vert 100 |