



**ADDENDUM TO XCEEDID TEST REPORT FC04-033**

**FOR THE**

**READER, XF1100**

**FCC PART 15 SUBPART C SECTIONS 15.225, 15.207 & 15.209**

**COMPLIANCE**

**DATE OF ISSUE: OCTOBER 7, 2004**

**PREPARED FOR:**

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

P.O. No.: JC4-204C  
W.O. No.: 81624

**PREPARED BY:**

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Mariposa, CA 95338

Date of test: April 23 - June 17, 2004

**Report No.: FC04-033A**

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## ADMINISTRATIVE INFORMATION

**DATE OF TEST:** April 23 - June 17, 2004

**DATE OF RECEIPT:** April 23, 2004

**PURPOSE OF TEST:** To demonstrate the compliance of the Reader, XF1100 with the requirements for FCC Part 15 Subpart C Sections 15.225, 15.207 & 15.209 devices.  
**Addendum A** is to revise the manufacturer and update the equipment lists.

**TEST METHOD:** ANSI C63.4 (2001)

**MANUFACTURER:** GE Security  
1510 Tate Boulevard SE  
Hickory, NC 28602

**REPRESENTATIVE:** John Menzel

**TEST LOCATION:** CKC Laboratories, Inc.  
5473A Clouds Rest  
Mariposa, CA 95338

## SUMMARY OF RESULTS

As received, the XceedID Reader, XF1100 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           | 6.3              | 47CFR        | 15.205      | Restricted Bands of Operation            |
| 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

Added ferrite, Wurth Part Number 742 701 16 to the EUT end of the cable.

## APPROVALS

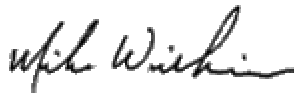
Steve Behm, Director of Engineering Services

### QUALITY ASSURANCE:

### TEST PERSONNEL:



Joyce Walker, Quality Assurance Administrative Manager



Mike Wilkinson, Lab Manager

### **FCC 15.31(m) Number Of Channels**

This device operates on a single channel.

### **FCC 15.33(a) Frequency Ranges Tested**

15.207 Conducted: 150 kHz – 30 MHz

15.209 Radiated: 9 kHz – 1000 MHz

| <b>FCC SECTION 15.35:<br/>ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE</b> |                     |                  |                   |
|-------------------------------------------------------------------------------|---------------------|------------------|-------------------|
| 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**

### **Reader**

Manuf: XceedID  
Model: XF1100  
Serial: 1002  
FCC ID: pending

## **PERIPHERAL DEVICES**

The EUT was tested with the following peripheral device(s):

### **DC Power Supply**

Manuf: Topward Electric Instruments Co., Ltd  
Model: TPS-4000  
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<br>MHz                                          | METER<br>READING<br>dBμV | CORRECTION FACTORS |  |             |           | CORRECTED<br>READING<br>dBμV | SPEC<br>LIMIT<br>dBμV | MARGIN<br>dB | NOTES |
|                                                           |                          | Lisn<br>dB         |  | Cable<br>dB | HPF<br>dB |                              |                       |              |       |
| 1.059879                                                  | 25.6                     | 0.3                |  | 0.2         | 0.2       | 26.3                         | 46.0                  | -19.7        | W     |
| 3.505354                                                  | 26.0                     | 0.4                |  | 0.3         | 0.1       | 26.8                         | 46.0                  | -19.2        | B     |
| 13.564880                                                 | 38.1                     | 0.5                |  | 0.4         | 0.1       | 39.1                         | 50.0                  | -10.9        | B     |
| 13.570430                                                 | 37.6                     | 0.4                |  | 0.4         | 0.1       | 38.5                         | 50.0                  | -11.5        | W     |
| 15.417280                                                 | 26.5                     | 0.4                |  | 0.4         | 0.1       | 27.4                         | 50.0                  | -22.6        | W     |
| 17.417280                                                 | 26.0                     | 0.4                |  | 0.5         | 0.1       | 27.0                         | 50.0                  | -23.0        | B     |

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

NOTES: B = Black Lead  
W = White Lead

COMMENTS: EUT is a Card Reader with an operating frequency of 13.56 MHz and 125 kHz. 12VDC power supplied via support DC power supply. EUT is a fixed wall mount device. Preliminary testing of 3 orthogonal positions indicated the worst case orthogonal was vertical. Frequency Range Investigated: 150 kHz to 30 MHz.

**Table 2: FCC 15.225 Fundamental Emission Levels (13.56 MHz)**

| FREQUENCY<br>MHz | METER<br>READING<br>dB $\mu$ V | CORRECTION FACTORS |  |             |            | CORRECTED<br>READING<br>dB $\mu$ V/m | SPEC<br>LIMIT<br>dB $\mu$ V/m | MARGIN<br>dB | NOTES |
|------------------|--------------------------------|--------------------|--|-------------|------------|--------------------------------------|-------------------------------|--------------|-------|
|                  |                                | Ant<br>dB          |  | Cable<br>dB | Corr<br>dB |                                      |                               |              |       |
| 13.560           | 43.8                           | 8.4                |  | 0.8         | -20.0      | 33.0                                 | 80.0                          | -47.0        | V     |
| 13.560           | 41.5                           | 8.4                |  | 0.8         | -20.0      | 30.7                                 | 80.0                          | -49.3        | H     |

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

NOTES: H = Horizontal Polarization  
V = Vertical Polarization

COMMENTS: EUT is a Card Reader with an operating frequency 13.56 MHz and 125 kHz. 12VDC power supplied via support DC power supply. EUT is a fixed wall mount device. Preliminary testing of 3 orthogonal positions indicated the worst case orthogonal was vertical. Frequency Range Investigated: 13.56 MHz carrier. Test distance correction factor used in accordance with 15.31 of 40dB per decade for comparison to the limit.

**Table 3: FCC 15.209 Fundamental Emission Levels (125 kHz)**

| FREQUENCY<br>MHz | METER<br>READING<br>dB $\mu$ V | CORRECTION FACTORS |  |             |            | CORRECTED<br>READING<br>dB $\mu$ V/m | SPEC<br>LIMIT<br>dB $\mu$ V/m | MARGIN<br>dB | NOTES |
|------------------|--------------------------------|--------------------|--|-------------|------------|--------------------------------------|-------------------------------|--------------|-------|
|                  |                                | Ant<br>dB          |  | Cable<br>dB | Corr<br>dB |                                      |                               |              |       |
| 0.127            | 58.5                           | 9.6                |  | 0.1         | -60.0      | 8.2                                  | 25.5                          | -17.3        | H     |
| 0.130            | 51.4                           | 9.6                |  | 0.1         | -60.0      | 1.1                                  | 25.3                          | -24.2        | 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 Card Reader with an operating frequency 13.56 MHz and 125 kHz. 12VDC power supplied via support DC power supply. EUT is a fixed wall mount device. Preliminary testing of 3 orthogonal positions indicated the worst case orthogonal was vertical. Frequency Range Investigated: 125 kHz carrier. Test distance correction factor used in accordance with 15.31 of 40dB per decade for comparison to the limit.

**Table 4: FCC 15.209/15.225 Six Highest Radiated Emission Levels: 9 kHz - 30 MHz**

| FREQUENCY<br>MHz | METER<br>READING<br>dB $\mu$ V | CORRECTION FACTORS |  |             |            | CORRECTED<br>READING<br>dB $\mu$ V/m | SPEC<br>LIMIT<br>dB $\mu$ V/m | MARGIN<br>dB | NOTES |
|------------------|--------------------------------|--------------------|--|-------------|------------|--------------------------------------|-------------------------------|--------------|-------|
|                  |                                | Ant<br>dB          |  | Cable<br>dB | Corr<br>dB |                                      |                               |              |       |
| 0.498            | 29.4                           | 9.6                |  | 0.2         | -20.0      | 19.2                                 | 33.7                          | -14.5        | V     |
| 0.625            | 26.4                           | 9.6                |  | 0.2         | -20.0      | 16.2                                 | 31.7                          | -15.5        | H     |
| 0.750            | 21.9                           | 9.6                |  | 0.2         | -20.0      | 11.8                                 | 30.1                          | -18.3        | V     |
| 1.125            | 14.2                           | 9.6                |  | 0.3         | -60.0      | 4.3                                  | 26.5                          | -22.2        | V     |
| 7.373            | 21.7                           | 9.1                |  | 0.6         | -20.0      | 11.4                                 | 29.5                          | -18.1        | V     |
| 20.937           | 11.0                           | 6.9                |  | 1.0         | -20.0      | -1.1                                 | 29.5                          | -30.6        | 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 Card Reader with an operating frequency 13.56 MHz and 125 kHz. 12VDC power supplied via support DC power supply. EUT is a fixed wall mount device. Preliminary testing of 3 orthogonal positions indicated the worst case orthogonal was vertical. Frequency Range Investigated: 125 kHz and 13.56 MHz carrier, 9 kHz to 30 MHz. Test distance correction factor used in accordance with 15.31 of 40dB per decade for comparison to the limit.

**Table 5: FCC 15.209 Six Highest Radiated Emission Levels: 30-1000 MHz (13.56 MHz)**

| FREQUENCY<br>MHz | METER<br>READING<br>dB $\mu$ V | CORRECTION FACTORS |           |             |            | CORRECTED<br>READING<br>dB $\mu$ V/m | SPEC<br>LIMIT<br>dB $\mu$ V/m | MARGIN<br>dB | NOTES |
|------------------|--------------------------------|--------------------|-----------|-------------|------------|--------------------------------------|-------------------------------|--------------|-------|
|                  |                                | Ant<br>dB          | Amp<br>dB | Cable<br>dB | Dist<br>dB |                                      |                               |              |       |
| 189.932          | 41.7                           | 8.3                | -26.7     | 3.2         | 10.0       | 36.5                                 | 43.5                          | -7.0         | HQ    |
| 244.175          | 42.0                           | 11.6               | -26.5     | 3.6         | 10.0       | 40.7                                 | 46.0                          | -5.3         | V     |
| 271.295          | 39.9                           | 12.4               | -26.5     | 3.8         | 10.0       | 39.6                                 | 46.0                          | -6.4         | VQ    |
| 271.297          | 42.4                           | 12.4               | -26.5     | 3.8         | 10.0       | 42.1                                 | 46.0                          | -3.9         | HQ    |
| 325.487          | 38.3                           | 13.5               | -26.7     | 4.3         | 10.0       | 39.4                                 | 46.0                          | -6.6         | H     |
| 339.054          | 39.4                           | 13.9               | -26.7     | 4.4         | 10.0       | 41.0                                 | 46.0                          | -5.0         | H     |

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  
Q = Quasi Peak Reading

COMMENTS: EUT is a Card Reader with an operating frequency 13.56 MHz and 125 kHz. 12VDC power supplied via support DC power supply. EUT is a fixed wall mount device. Preliminary testing of 3 orthogonal positions indicated the worst case orthogonal was vertical. Frequency Range Investigated: 13.56 MHz carrier, 30 MHz to 1000 MHz. Added ferrite, Wurth Part Number 742 701 16 to the EUT end of the cable.

**Table 6: FCC 15.209 Six Highest Radiated Emission Levels: 30-1000 MHz (125 kHz)**

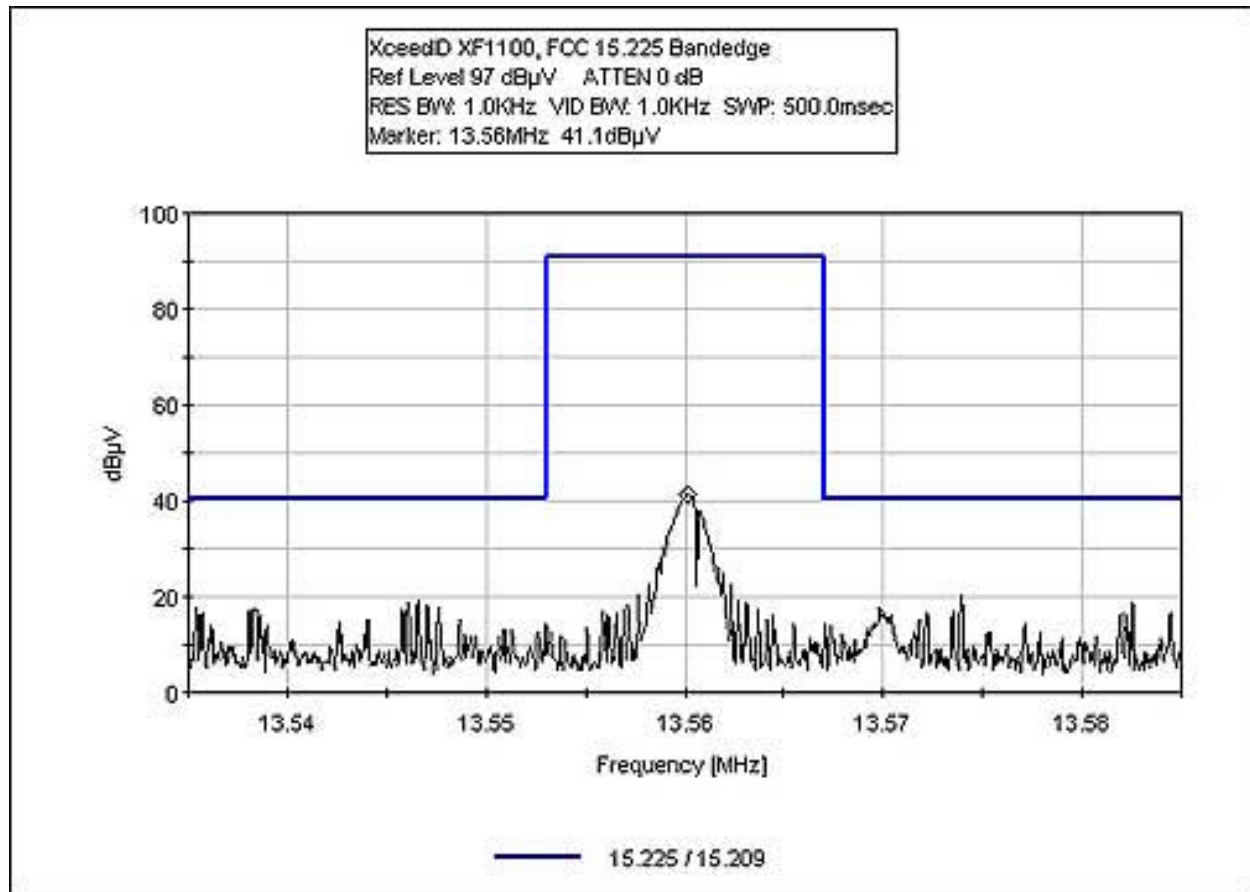
| FREQUENCY<br>MHz | METER<br>READING<br>dB $\mu$ V | CORRECTION FACTORS |           |             |            | CORRECTED<br>READING<br>dB $\mu$ V/m | SPEC<br>LIMIT<br>dB $\mu$ V/m | MARGIN<br>dB | NOTES |
|------------------|--------------------------------|--------------------|-----------|-------------|------------|--------------------------------------|-------------------------------|--------------|-------|
|                  |                                | Ant<br>dB          | Amp<br>dB | Cable<br>dB | Dist<br>dB |                                      |                               |              |       |
| 30.119           | 24.0                           | 17.8               | -27.3     | 1.2         | 10.0       | 25.7                                 | 40.0                          | -14.3        | H     |
| 30.133           | 25.9                           | 17.8               | -27.3     | 1.2         | 10.0       | 27.6                                 | 40.0                          | -12.4        | V     |
| 49.994           | 36.9                           | 8.3                | -27.3     | 1.6         | 10.0       | 29.5                                 | 40.0                          | -10.5        | V     |
| 49.994           | 28.8                           | 8.3                | -27.3     | 1.6         | 10.0       | 21.4                                 | 40.0                          | -18.6        | H     |
| 200.744          | 25.6                           | 8.4                | -26.7     | 3.3         | 10.0       | 20.6                                 | 43.5                          | -22.9        | V     |
| 299.994          | 24.4                           | 12.8               | -26.5     | 4.1         | 10.0       | 24.8                                 | 46.0                          | -21.2        | H     |

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 Card Reader with an operating frequency 13.56 MHz. and 125 kHz. 12VDC power supplied via support DC power supply. EUT is a fixed wall mount device. Preliminary testing of 3 orthogonal positions indicated the worst case orthogonal was vertical. Frequency Range Investigated: 125 kHz carrier, 30 MHz to 1000 MHz. Added ferrite, Wurth Part Number 742 701 16 to the EUT end of the cable.

### 15.225(b) BAND EDGE PLOT



### 15.215(c) FREQUENCY STABILITY

**Test Conditions:** EUT is a Card Reader with operating frequencies of 13.56MHz. and 125 kHz. 12VDC power supplied via support DC power supply. Both transmitters are in the transmit mode. No Temperature Stability measurements required for the 125 kHz transmitter. EUT drain wire is disconnected. EUT is placed inside of a temperature chamber. Carrier amplitude readings inside temperature chamber are calibrated to OATS readings.

**Operating Voltage:** 12 VDC  
**Frequency Limit:** 0.01 %

#### Temperature Variations

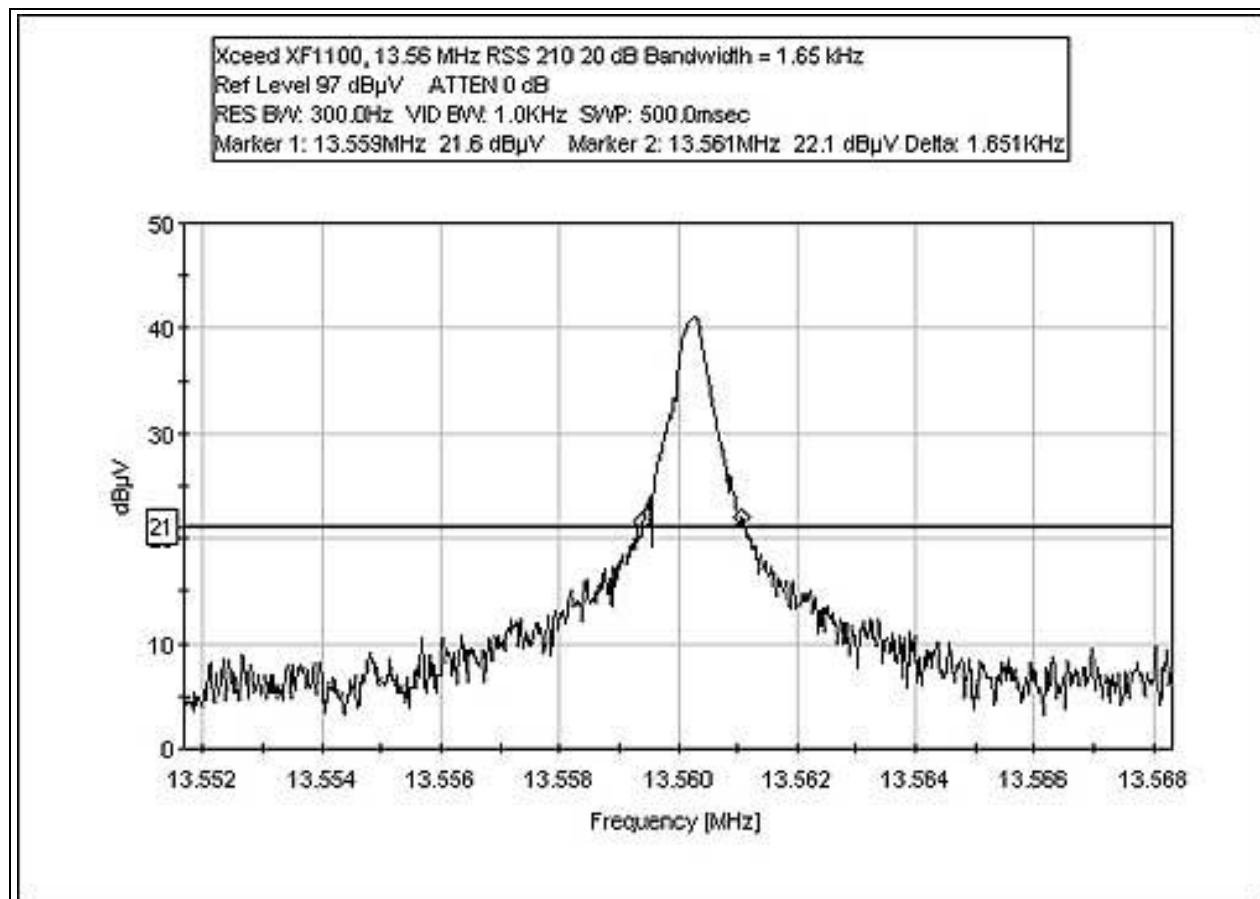
| Channel Frequency: |         | Channel 1 (MHz) | Dev. (MHz) |
|--------------------|---------|-----------------|------------|
|                    |         | 13.56           |            |
| Temp (C)           | Voltage |                 |            |
| -30                | 12      |                 |            |
| -20                | 12      | 13.56002        | 0.00001    |
| -10                | 12      | 13.56005        | 0.00005    |
| 0                  | 12      | 13.56013        | 0.00013    |
| 10                 | 12      | 13.56015        | 0.00015    |
| 20                 | 12      | 13.56011        | 0.00011    |
| 30                 | 12      | 13.56012        | 0.00012    |
| 40                 | 12      | 13.56009        | 0.00009    |
| 50                 | 12      | 13.56011        | 0.00011    |

#### Voltage Variations ( $\pm 15\%$ )

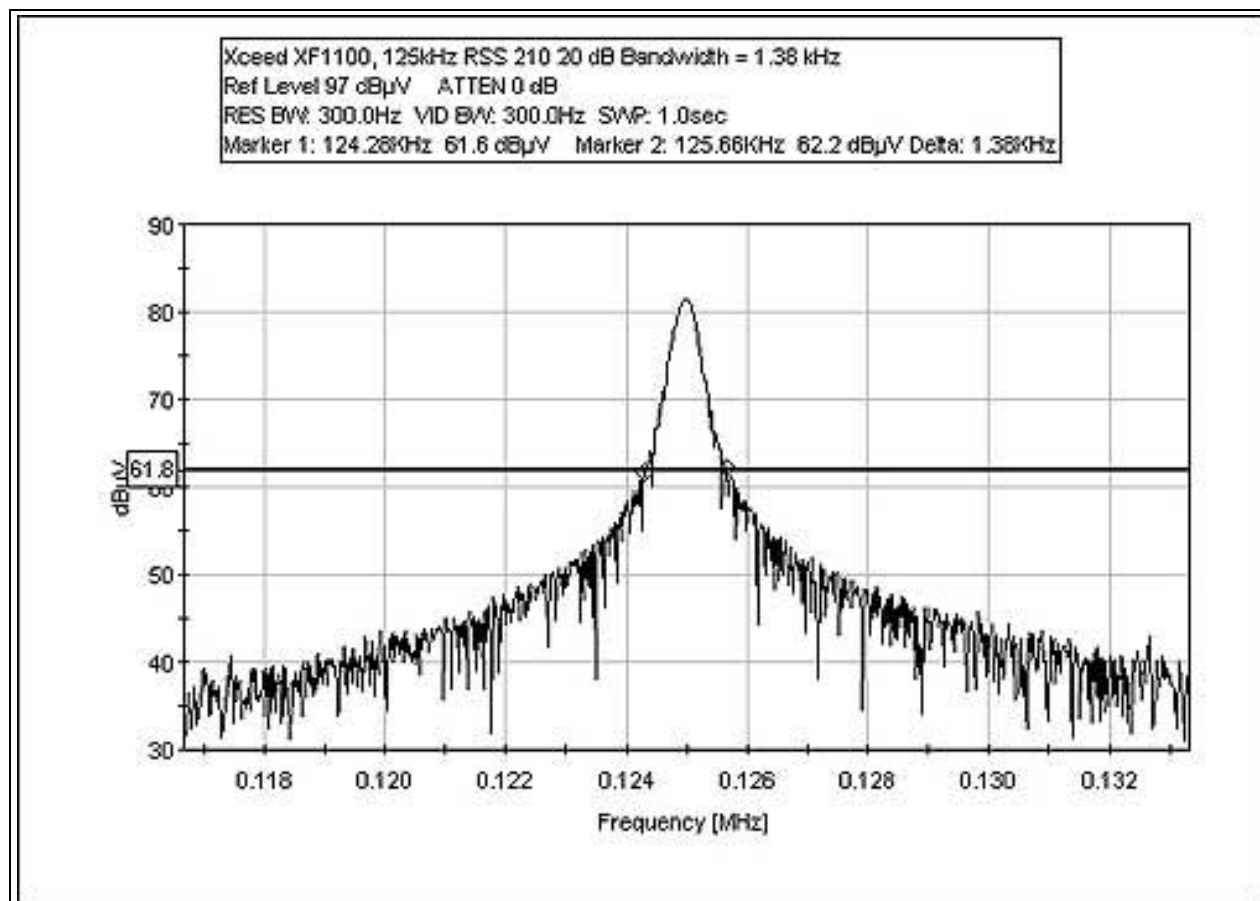
|    |      |          |         |
|----|------|----------|---------|
| 20 | 10.2 | 13.56010 | 0.00010 |
| 20 | 12   | 13.56011 | 0.00011 |
| 20 | 13.8 | 13.56012 | 0.00012 |

|                            |                |
|----------------------------|----------------|
| <b>Max Deviation (MHz)</b> | <b>0.00015</b> |
| <b>Max Deviation (%)</b>   | <b>0.00108</b> |
|                            | <b>PASS</b>    |

## RSS-210 OCCUPIED BANDWIDTH 13.56 MHz



## RSS-210 OCCUPIED BANDWIDTH 125 kHz



## 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 dB $\mu$ V/m, the spectrum analyzer reading in dB $\mu$ V 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       | (dB $\mu$ V)   |
| +                            | Antenna Factor      | (dB)           |
| +                            | Cable Loss          | (dB)           |
| -                            | Distance Correction | (dB)           |
| -                            | Preamplifier Gain   | (dB)           |
| =                            | Corrected Reading   | (dB $\mu$ V/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. 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 dB $\mu$ V, 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  $\mu\text{H}$  /  $\pm 50$  ohms. Above 150 kHz, a 0.15  $\mu\text{F}$  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**

**PHOTOGRAPH SHOWING MAINS CONDUCTED EMISSIONS**



Mains Conducted Emissions - Front View

**PHOTOGRAPH SHOWING MAINS CONDUCTED EMISSIONS**



Mains Conducted Emissions - Side View

**PHOTOGRAPH SHOWING RADIATED EMISSIONS**



Radiated Emissions - Front View

**PHOTOGRAPH SHOWING RADIATED EMISSIONS**



Radiated Emissions - Back View

**PHOTOGRAPH SHOWING TEMPERATURE TESTING**



## APPENDIX B

### TEST EQUIPMENT LIST

#### *FCC 15.207*

| Function                     | S/N               | Calibration Date | Cal Due Date | Asset # |
|------------------------------|-------------------|------------------|--------------|---------|
| LISN Model 8028-50-TS-24-BNC | 8379276 & 8379280 | 06/05/2003       | 06/05/2005   | 00330   |
| HP 8566B SA                  | 2209A01404        | 02/26/2003       | 02/26/2005   | 00490   |
| HP 8566B SA Display          | 2403A08241        | 02/26/2003       | 02/26/2005   | 00489   |
| HP 85650A QPA                | 2811A01267        | 02/26/2003       | 02/26/2005   | 00478   |

#### *FCC 15.209 30-1000 MHz*

| Function              | S/N        | Calibration Date | Cal Due Date | Asset # |
|-----------------------|------------|------------------|--------------|---------|
| HP 8566B SA           | 2209A01404 | 02/26/2003       | 02/26/2005   | 00490   |
| HP 8566B SA Display   | 2403A08241 | 02/26/2003       | 02/26/2005   | 00489   |
| HP 85650A QPA         | 2811A01267 | 02/26/2003       | 02/26/2005   | 00478   |
| Chase CBL6111C Bilog  | 2456       | 12/13/2002       | 12/13/2004   | 01991   |
| HP 8447D Preamplifier | 1937A02604 | 03/07/2003       | 03/07/2005   | 00099   |

#### *FCC 15.215*

| Function                                   | S/N        | Calibration Date | Cal Due Date | Asset # |
|--------------------------------------------|------------|------------------|--------------|---------|
| Antenna, Loop Sensor Solar 9229-1          | 006720     | 12/09/2002       | 12/08/2004   | 00862   |
| Temp Chamber Thermotron S-1.2 MiniMax      | 11899      | 01/31/2003       | 01/30/2005   | 01879   |
| Thermometer Omega HH-26K                   | T-202884   | 08/15/2003       | 08/14/2005   | 02242   |
| Spectrum Analyzer 100Hz - 22.5GHz HP 8566B | 2209A01404 | 02/26/2003       | 02/25/2005   | 00490   |
| Spectrum Analyzer Display HP 8566B         | 2403A08241 | 02/26/2003       | 02/25/2005   | 00489   |
| Spectrum Analyzer QP Adapter HP 85650A     | 2811A01267 | 02/26/2003       | 02/25/2005   | 00478   |
| Power Supply, DC HP 6205C                  | 2228A01775 | 06/05/2003       | 06/04/2005   | 00762   |

#### *FCC 15.225 and 15.209 9 kHz – 30 MHz*

| Function            | S/N        | Calibration Date | Cal Due Date | Asset # |
|---------------------|------------|------------------|--------------|---------|
| HP 8566B SA         | 2209A01404 | 02/26/2003       | 02/26/2005   | 00490   |
| HP 8566B SA Display | 2403A08241 | 02/26/2003       | 02/26/2005   | 00489   |
| HP 85650A QPA       | 2811A01267 | 02/26/2003       | 02/26/2005   | 00478   |
| EMCO Loop Antenna   | 1074       | 05/21/2003       | 05/21/2005   | 00226   |

**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 #: **81624**  
 Test Type: **Conducted Emissions**  
 Equipment: **Physical Access Control Reader**  
 Manufacturer: XceedID  
 Model: XF1100  
 S/N: 1002

Date: 06/15/2004  
 Time: 10:28:19  
 Sequence#: 26  
 Tested By: Mike Wilkinson  
 120V 60Hz

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

| Function                        | Manufacturer | Model # | S/N  |
|---------------------------------|--------------|---------|------|
| Physical Access Control Reader* | XceedID      | XF1100  | 1002 |

**Support Devices:**

| Function        | Manufacturer                          | Model #  | S/N    |
|-----------------|---------------------------------------|----------|--------|
| DC Power Supply | Topward Electric Instruments Co., Ltd | TPS-4000 | 918520 |

**Test Conditions / Notes:**

EUT is a Card Reader with an operating frequency 13.56 MHz. and 125 kHz. 12VDC power supplied via support DC power supply. EUT is a fixed wall mount device. Preliminary testing of 3 orthogonal positions indicated the worst case orthogonal was vertical. Frequency Range Investigated: 150 kHz to 30 MHz.

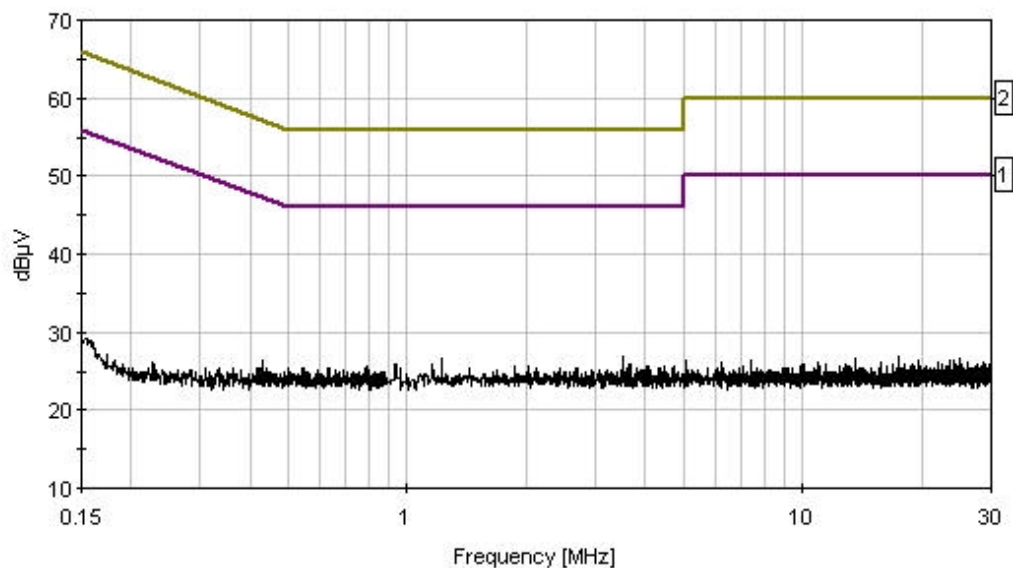
**Transducer Legend:**

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

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

| # | Freq<br>MHz | Rdng<br>dBµV | T1<br>dB | T2<br>dB | T3<br>dB | Dist<br>dB | Table | Corr<br>dBµV | Spec<br>dBµV | Margin<br>dB | Polar<br>Ant |
|---|-------------|--------------|----------|----------|----------|------------|-------|--------------|--------------|--------------|--------------|
| 1 | 13.565M     | 38.1         | +0.4     | +0.5     | +0.1     | +0.0       |       | 39.1         | 50.0         | -10.9        | Black        |
| 2 | 3.505M      | 26.0         | +0.3     | +0.4     | +0.1     | +0.0       |       | 26.8         | 46.0         | -19.2        | Black        |
| 3 | 17.417M     | 26.0         | +0.5     | +0.4     | +0.1     | +0.0       |       | 27.0         | 50.0         | -23.0        | Black        |
| 4 | 24.833M     | 25.5         | +0.5     | +0.4     | +0.2     | +0.0       |       | 26.6         | 50.0         | -23.4        | Black        |
| 5 | 150.000k    | 26.7         | +0.1     | +0.4     | +2.7     | +0.0       |       | 29.9         | 56.0         | -26.1        | Black        |

CKC Laboratories Date: 06/15/2004 Time: 10:28:19 XceedID VVO#: 81624  
 FCC 15.207 - AVE Test Lead: Black 120V 60Hz Sequence#: 26  
 XceedID M/N XF1100



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 #: **81624**  
 Test Type: **Conducted Emissions**  
 Equipment: **Physical Access Control Reader**  
 Manufacturer: XceedID  
 Model: XF1100  
 S/N: 1002

Date: 06/15/2004  
 Time: 10:34:07 AM  
 Sequence#: 27  
 Tested By: Mike Wilkinson  
 120V 60Hz

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

| Function                        | Manufacturer | Model # | S/N  |
|---------------------------------|--------------|---------|------|
| Physical Access Control Reader* | XceedID      | XF1100  | 1002 |

**Support Devices:**

| Function        | Manufacturer                          | Model #  | S/N    |
|-----------------|---------------------------------------|----------|--------|
| DC Power Supply | Topward Electric Instruments Co., Ltd | TPS-4000 | 918520 |

**Test Conditions / Notes:**

EUT is a Card Reader with an operating frequency 13.56 MHz. and 125 kHz. 12VDC power supplied via support DC power supply. EUT is a fixed wall mount device. Preliminary testing of 3 orthogonal positions indicated the worst case orthogonal was vertical. Frequency Range Investigated: 150 kHz to 30 MHz.

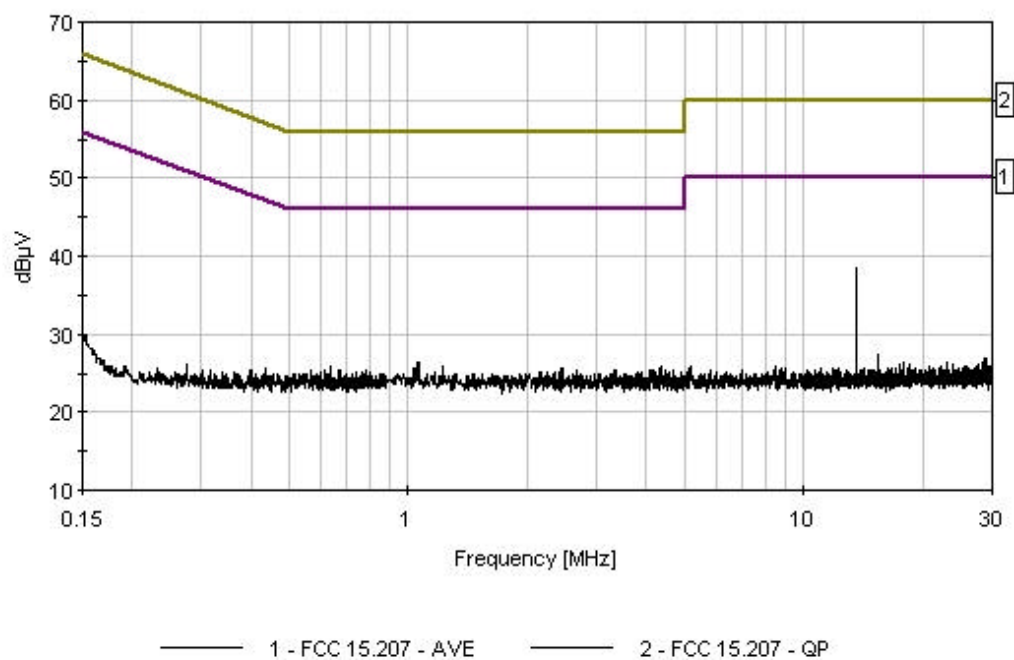
**Transducer Legend:**

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

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

| # | Freq<br>MHz | Rdng<br>dBµV | T1<br>dB | T2<br>dB | T3<br>dB | Dist<br>dB | Table | Corr<br>dBµV | Spec<br>dBµV | Margin<br>dB | Polar<br>Ant |
|---|-------------|--------------|----------|----------|----------|------------|-------|--------------|--------------|--------------|--------------|
| 1 | 13.570M     | 37.6         | +0.4     | +0.4     | +0.1     | +0.0       |       | 38.5         | 50.0         | -11.5        | White        |
| 2 | 1.060M      | 25.6         | +0.2     | +0.3     | +0.2     | +0.0       |       | 26.3         | 46.0         | -19.7        | White        |
| 3 | 15.417M     | 26.5         | +0.4     | +0.4     | +0.1     | +0.0       |       | 27.4         | 50.0         | -22.6        | White        |
| 4 | 28.814M     | 25.5         | +0.6     | +0.5     | +0.2     | +0.0       |       | 26.8         | 50.0         | -23.2        | White        |
| 5 | 152.909k    | 27.0         | +0.1     | +0.3     | +2.4     | +0.0       |       | 29.8         | 55.8         | -26.0        | White        |

CKC Laboratories Date: 06/15/2004 Time: 10:34:07 AM XceedID WVO#: 81624  
 FCC 15.207 - AVE Test Lead: White 120V 60Hz Sequence#: 27  
 XceedID MN XF1100



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

Customer: **XceedID**  
 Specification: **FCC 15.225(a)**  
 Work Order #: **81624**  
 Test Type: **Maximized Emissions**  
 Equipment: **Physical Access Control Reader**  
 Manufacturer: XceedID  
 Model: XF1100  
 S/N: 1001

Date: 06/16/2004  
 Time: 09:23:54  
 Sequence#: 1  
 Tested By: Mike Wilkinson

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

| Function                        | Manufacturer | Model # | S/N  |
|---------------------------------|--------------|---------|------|
| Physical Access Control Reader* | XceedID      | XF1100  | 1001 |

**Support Devices:**

| Function        | Manufacturer                          | Model #  | S/N    |
|-----------------|---------------------------------------|----------|--------|
| DC Power Supply | Topward Electric Instruments Co., Ltd | TPS-4000 | 918520 |

**Test Conditions / Notes:**

EUT is a Card Reader with an operating frequency 13.56 MHz. and 125 kHz. 12VDC power supplied via support DC power supply. EUT is a fixed wall mount device. Preliminary testing of 3 orthogonal positions indicated the worst case orthogonal was vertical. Frequency Range Investigated: 13.56 MHz carrier. Test distance correction factor used in accordance with 15.31 of 40dB per decade for comparison to the limit.

**Transducer Legend:**

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

**Measurement Data:**

Reading listed by margin.

Test Distance: 10 Meters

| # | Freq<br>MHz | Rdng<br>dBμV | T1<br>dB | T2<br>dB | T3<br>dB | Dist<br>dB | Table       | Corr<br>dBμV/m | Spec<br>dBμV/m | Margin<br>dB | Polar<br>Ant |
|---|-------------|--------------|----------|----------|----------|------------|-------------|----------------|----------------|--------------|--------------|
| 1 | 13.560M     | 43.8         | -20.0    | +8.4     | +0.8     |            | +0.0<br>257 | 33.0           | 80.0           | -47.0        | 100          |
| 2 | 13.560M     | 41.5         | -20.0    | +8.4     | +0.8     |            | +0.0<br>164 | 30.7           | 80.0           | -49.3        | Horiz<br>100 |

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

Customer: **XceedID**  
 Specification: **FCC 15.209**  
 Work Order #: **81624**  
 Test Type: **Maximized Emissions**  
 Equipment: **Physical Access Control Reader**  
 Manufacturer: XceedID  
 Model: XF1100  
 S/N: 1001

Date: 05/24/2004  
 Time: 09:55:49  
 Sequence#: 3  
 Tested By: Mike Wilkinson

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

| Function                        | Manufacturer | Model # | S/N  |
|---------------------------------|--------------|---------|------|
| Physical Access Control Reader* | XceedID      | XF1100  | 1001 |

**Support Devices:**

| Function        | Manufacturer                          | Model #  | S/N    |
|-----------------|---------------------------------------|----------|--------|
| DC Power Supply | Topward Electric Instruments Co., Ltd | TPS-4000 | 918520 |

**Test Conditions / Notes:**

EUT is a Card Reader with an operating frequency 13.56 MHz. and 125 kHz. 12VDC power supplied via support DC power supply. EUT is a fixed wall mount device. Preliminary testing of 3 orthogonal positions indicated the worst case orthogonal was vertical. Frequency Range Investigated: 125 kHz carrier. Test distance correction factor used in accordance with 15.31 of 40dB per decade for comparison to the limit.

**Transducer Legend:**

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

**Measurement Data:**

Reading listed by margin.

Test Distance: 10 Meters

| # | Freq<br>MHz | Rdng<br>dBμV | T1<br>dB | T2<br>dB | T3<br>dB | Dist<br>dB | Table | Corr<br>dBμV/m | Spec<br>dBμV/m | Margin<br>dB | Polar<br>Ant |
|---|-------------|--------------|----------|----------|----------|------------|-------|----------------|----------------|--------------|--------------|
| 1 | 126.750k    | 58.5         | -60.0    | +9.6     | +0.1     | +0.0       | 5     | 8.2            | 25.5           | -17.3        | Horiz<br>100 |
| 2 | 129.800k    | 51.4         | -60.0    | +9.6     | +0.1     | +0.0       | 362   | 1.1            | 25.3           | -24.2        | Vert<br>100  |

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

Customer: **XceedID**  
 Specification: **15.225 / 15.209**  
 Work Order #: **81624**  
 Test Type: **Maximized Emissions**  
 Equipment: **Physical Access Control Reader**  
 Manufacturer: XceedID  
 Model: XF1100  
 S/N: 1001

Date: 04/27/2004  
 Time: 11:42:10  
 Sequence#: 2  
 Tested By: Mike Wilkinson

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

| Function                        | Manufacturer | Model # | S/N  |
|---------------------------------|--------------|---------|------|
| Physical Access Control Reader* | XceedID      | XF1100  | 1001 |

**Support Devices:**

| Function        | Manufacturer                          | Model #  | S/N    |
|-----------------|---------------------------------------|----------|--------|
| DC Power Supply | Topward Electric Instruments Co., Ltd | TPS-4000 | 918520 |

**Test Conditions / Notes:**

EUT is a Card Reader with an operating frequency 13.56 MHz. and 125 kHz. 12VDC power supplied via support DC power supply. EUT is a fixed wall mount device. Preliminary testing of 3 orthogonal positions indicated the worst case orthogonal was vertical. Frequency Range Investigated: 125 kHz and 13.56 MHz carrier, 9 kHz to 30 MHz. Test distance correction factor used in accordance with 15.31 of 40dB per decade for comparison to the limit.

**Transducer Legend:**

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

**Measurement Data:**

Reading listed by margin.

Test Distance: 10 Meters

| # | Freq<br>MHz | Rdng<br>dBµV | T1<br>dB | T2<br>dB | T3<br>dB | dB | Dist<br>Table | Corr<br>dBµV/m | Spec<br>dBµV/m      | Margin<br>dB | Polar<br>Ant |
|---|-------------|--------------|----------|----------|----------|----|---------------|----------------|---------------------|--------------|--------------|
| 1 | 498.090k    | 29.4         | -20.0    | +9.6     | +0.2     |    | +0.0          | 19.2           | 33.7                | -14.5        | Vert         |
| 2 | 624.990k    | 26.4         | -20.0    | +9.6     | +0.2     |    | +0.0          | 16.2           | 31.7                | -15.5        | Horiz        |
| 3 | 7.373M      | 21.7         | -20.0    | +9.1     | +0.6     |    | +0.0          | 11.4           | 29.5                | -18.1        | Vert         |
| 4 | 750.020k    | 21.9         | -20.0    | +9.7     | +0.2     |    | +0.0          | 11.8           | 30.1                | -18.3        | Vert         |
| 5 | 124.990k    | 56.4         | -60.0    | +9.6     | +0.1     |    | +0.0          | 6.1            | 25.7<br>Fundamental | -19.6        | Horiz        |
| 6 | 1.125M      | 14.2         | -20.0    | +9.8     | +0.3     |    | +0.0          | 4.3            | 26.5                | -22.2        | Vert         |
| 7 | 124.890k    | 48.3         | -60.0    | +9.6     | +0.1     |    | +0.0          | -2.0           | 25.7<br>Fundamental | -27.7        | Vert         |
| 8 | 20.937M     | 11.0         | -20.0    | +6.9     | +1.0     |    | +0.0          | -1.1           | 29.5                | -30.6        | Vert         |
| 9 | 27.120M     | 12.3         | -20.0    | +4.9     | +1.1     |    | +0.0          | -1.7           | 29.5                | -31.2        | Vert         |

|    |          |      |       |      |      |      |       |             |       |       |
|----|----------|------|-------|------|------|------|-------|-------------|-------|-------|
| 10 | 374.890k | 29.1 | -60.0 | +9.6 | +0.2 | +0.0 | -21.1 | 16.1        | -37.2 | Vert  |
| 11 | 249.990k | 29.6 | -60.0 | +9.6 | +0.1 | +0.0 | -20.7 | 19.6        | -40.3 | Horiz |
| 12 | 13.561M  | 42.4 | -20.0 | +8.4 | +0.8 | +0.0 | 31.6  | 80.0        | -48.4 | Vert  |
|    |          |      |       |      |      |      |       | Fundamental |       |       |
| 13 | 13.560M  | 41.5 | -20.0 | +8.4 | +0.8 | +0.0 | 30.7  | 80.0        | -49.3 | Horiz |
|    |          |      |       |      |      |      |       | Fundamental |       |       |

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

Customer: **XceedID**  
 Specification: **FCC 15.209**  
 Work Order #: **81624**  
 Test Type: **Maximized Emissions**  
 Equipment: **Physical Access Control Reader**  
 Manufacturer: XceedID  
 Model: XF1100  
 S/N: 1002

Date: 06/15/2004  
 Time: 14:00:13  
 Sequence#: 30  
 Tested By: Mike Wilkinson

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

| Function                        | Manufacturer | Model # | S/N  |
|---------------------------------|--------------|---------|------|
| Physical Access Control Reader* | XceedID      | XF1100  | 1002 |

**Support Devices:**

| Function        | Manufacturer                          | Model #  | S/N    |
|-----------------|---------------------------------------|----------|--------|
| DC Power Supply | Topward Electric Instruments Co., Ltd | TPS-4000 | 918520 |

**Test Conditions / Notes:**

EUT is a Card Reader with an operating frequency 13.56 MHz. and 125 kHz. 12VDC power supplied via support DC power supply. EUT is a fixed wall mount device. Preliminary testing of 3 orthogonal positions indicated the worst case orthogonal was vertical. Frequency Range Investigated: 13.56 MHz carrier, 30 MHz to 1000 MHz. Added ferrite, Wurth Part Number 742 701 16 to the EUT end of the cable.

**Transducer Legend:**

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

**Measurement Data:**

Reading listed by margin.

Test Distance: 10 Meters

| # | Freq<br>MHz | Rdng<br>dBµV | T1<br>dB | T2<br>dB | T3<br>dB |  | Dist<br>Table | Corr<br>dBµV/m | Spec<br>dBµV/m | Margin<br>dB | Polar<br>Ant |
|---|-------------|--------------|----------|----------|----------|--|---------------|----------------|----------------|--------------|--------------|
| 1 | 271.297M    | 42.4         | +3.8     | -26.5    | +12.4    |  | +10.0         | 42.1           | 46.0           | -3.9         | Horiz        |
|   | QP          |              |          |          |          |  | 236           |                |                |              | 400          |
| ^ | 271.282M    | 44.5         | +3.8     | -26.5    | +12.4    |  | +10.0         | 44.2           | 46.0           | -1.8         | Horiz        |
|   |             |              |          |          |          |  | 236           |                |                |              | 400          |
| 3 | 339.054M    | 39.4         | +4.4     | -26.7    | +13.9    |  | +10.0         | 41.0           | 46.0           | -5.0         | Horiz        |
|   |             |              |          |          |          |  | 236           |                |                |              | 342          |
| 4 | 244.175M    | 42.0         | +3.6     | -26.5    | +11.6    |  | +10.0         | 40.7           | 46.0           | -5.3         | Vert         |
|   |             |              |          |          |          |  | 83            |                |                |              | 103          |
| 5 | 271.295M    | 39.9         | +3.8     | -26.5    | +12.4    |  | +10.0         | 39.6           | 46.0           | -6.4         | Vert         |
|   | QP          |              |          |          |          |  | 83            |                |                |              | 103          |
| ^ | 271.258M    | 42.2         | +3.8     | -26.5    | +12.4    |  | +10.0         | 41.9           | 46.0           | -4.1         | Vert         |
|   |             |              |          |          |          |  | 83            |                |                |              | 103          |
| 7 | 325.487M    | 38.3         | +4.3     | -26.7    | +13.5    |  | +10.0         | 39.4           | 46.0           | -6.6         | Horiz        |
|   |             |              |          |          |          |  | 236           |                |                |              | 342          |
| 8 | 189.932M    | 41.7         | +3.2     | -26.7    | +8.3     |  | +10.0         | 36.5           | 43.5           | -7.0         | Horiz        |
|   | QP          |              |          |          |          |  | 236           |                |                |              | 400          |
| ^ | 189.932M    | 46.2         | +3.2     | -26.7    | +8.3     |  | +10.0         | 41.0           | 43.5           | -2.5         | Horiz        |
|   |             |              |          |          |          |  | 236           |                |                |              | 400          |

|    |                |      |      |       |       |              |      |      |       |              |
|----|----------------|------|------|-------|-------|--------------|------|------|-------|--------------|
| 10 | 366.204M       | 35.3 | +4.7 | -26.9 | +14.6 | +10.0<br>83  | 37.7 | 46.0 | -8.3  | Vert<br>100  |
| 11 | 217.051M<br>QP | 40.3 | +3.4 | -26.6 | +9.7  | +10.0<br>80  | 36.8 | 46.0 | -9.2  | Vert<br>103  |
| ^  | 217.055M       | 42.2 | +3.4 | -26.6 | +9.7  | +10.0<br>80  | 38.7 | 46.0 | -7.3  | Vert<br>103  |
| 13 | 162.819M       | 38.4 | +2.9 | -26.9 | +9.8  | +10.0<br>236 | 34.2 | 43.5 | -9.3  | Horiz<br>400 |
| 14 | 325.535M       | 35.5 | +4.3 | -26.7 | +13.5 | +10.0<br>83  | 36.6 | 46.0 | -9.4  | Vert<br>100  |
| 15 | 217.051M<br>QP | 40.0 | +3.4 | -26.6 | +9.7  | +10.0<br>236 | 36.5 | 46.0 | -9.5  | Horiz<br>400 |
| ^  | 217.017M       | 42.0 | +3.4 | -26.6 | +9.7  | +10.0<br>236 | 38.5 | 46.0 | -7.5  | Horiz<br>400 |
| 17 | 230.622M       | 38.6 | +3.4 | -26.5 | +10.7 | +10.0<br>83  | 36.2 | 46.0 | -9.8  | Vert<br>103  |
| 18 | 108.562M       | 37.3 | +2.4 | -27.2 | +10.1 | +10.0<br>236 | 32.6 | 43.5 | -10.9 | Horiz<br>400 |
| 19 | 420.445M       | 31.5 | +5.1 | -27.3 | +15.8 | +10.0<br>83  | 35.1 | 46.0 | -10.9 | Vert<br>100  |
| 20 | 203.494M       | 36.3 | +3.3 | -26.7 | +8.6  | +10.0<br>236 | 31.5 | 43.5 | -12.0 | Horiz<br>400 |
| 21 | 257.691M       | 34.4 | +3.7 | -26.5 | +12.1 | +10.0<br>83  | 33.7 | 46.0 | -12.3 | Vert<br>103  |
| 22 | 149.214M       | 34.7 | +2.8 | -27.0 | +10.4 | +10.0        | 30.9 | 43.5 | -12.6 | Vert<br>110  |
| 23 | 189.925M<br>QP | 36.0 | +3.2 | -26.7 | +8.3  | +10.0<br>80  | 30.8 | 43.5 | -12.7 | Vert<br>103  |
| ^  | 189.884M       | 41.2 | +3.2 | -26.7 | +8.3  | +10.0<br>80  | 36.0 | 43.5 | -7.5  | Vert<br>103  |
| 25 | 203.475M       | 35.4 | +3.3 | -26.7 | +8.6  | +10.0<br>80  | 30.6 | 43.5 | -12.9 | Vert<br>103  |
| 26 | 230.615M       | 34.3 | +3.4 | -26.5 | +10.7 | +10.0<br>236 | 31.9 | 46.0 | -14.1 | Horiz<br>400 |

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

Customer: **XceedID**  
 Specification: **FCC 15.209**  
 Work Order #: **81624**  
 Test Type: **Maximized Emissions**  
 Equipment: **Physical Access Control Reader**  
 Manufacturer: XceedID  
 Model: XF1100  
 S/N: 1002

Date: 06/15/2004  
 Time: 16:26:12  
 Sequence#: 31  
 Tested By: Mike Wilkinson

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

| Function                        | Manufacturer | Model # | S/N  |
|---------------------------------|--------------|---------|------|
| Physical Access Control Reader* | XceedID      | XF1100  | 1002 |

**Support Devices:**

| Function        | Manufacturer                          | Model #  | S/N    |
|-----------------|---------------------------------------|----------|--------|
| DC Power Supply | Topward Electric Instruments Co., Ltd | TPS-4000 | 918520 |

**Test Conditions / Notes:**

EUT is a Card Reader with an operating frequency 13.56 MHz. and 125 kHz. 12VDC power supplied via support DC power supply. EUT is a fixed wall mount device. Preliminary testing of 3 orthogonal positions indicated the worst case orthogonal was vertical. Frequency Range Investigated: 125 kHz carrier, 30 MHz to 1000 MHz. Added ferrite, Wurth Part Number 742 701 16 to the EUT end of the cable.

**Transducer Legend:**

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

**Measurement Data:**

Reading listed by margin.

Test Distance: 10 Meters

| # | Freq<br>MHz | Rdng<br>dBμV | T1<br>dB | T2<br>dB | T3<br>dB |  | Dist<br>Table | Corr<br>dBμV/m | Spec<br>dBμV/m | Margin<br>dB | Polar<br>Ant |
|---|-------------|--------------|----------|----------|----------|--|---------------|----------------|----------------|--------------|--------------|
| 1 | 49.994M     | 36.9         | +1.6     | -27.3    | +8.3     |  | +10.0<br>190  | 29.5           | 40.0           | -10.5        | Vert<br>100  |
| 2 | 30.133M     | 25.9         | +1.2     | -27.3    | +17.8    |  | +10.0<br>190  | 27.6           | 40.0           | -12.4        | Vert<br>100  |
| 3 | 30.119M     | 24.0         | +1.2     | -27.3    | +17.8    |  | +10.0<br>365  | 25.7           | 40.0           | -14.3        | Horiz<br>400 |
| 4 | 49.994M     | 28.8         | +1.6     | -27.3    | +8.3     |  | +10.0<br>362  | 21.4           | 40.0           | -18.6        | Horiz<br>400 |
| 5 | 299.994M    | 24.4         | +4.1     | -26.5    | +12.8    |  | +10.0<br>190  | 24.8           | 46.0           | -21.2        | Horiz<br>100 |
| 6 | 299.994M    | 22.7         | +4.1     | -26.5    | +12.8    |  | +10.0<br>190  | 23.1           | 46.0           | -22.9        | Vert<br>100  |
| 7 | 200.744M    | 25.6         | +3.3     | -26.7    | +8.4     |  | +10.0<br>190  | 20.6           | 43.5           | -22.9        | Vert<br>100  |
| 8 | 80.994M     | 24.6         | +2.0     | -27.2    | +6.8     |  | +10.0<br>190  | 16.2           | 40.0           | -23.8        | Vert<br>100  |
| 9 | 124.997M    | 6.5          | +2.5     | -27.2    | +11.2    |  | +10.0<br>190  | 3.0            | 43.5           | -40.5        | Vert<br>100  |