



**XCEEDID TEST REPORT**  
**FOR THE**  
**PHYSICAL ACCESS CONTROL READER, XF2110**  
**FCC PART 15 SUBPART C SECTIONS 15.207, 15.209, 15.225 AND RSS-210**  
**COMPLIANCE**

**DATE OF ISSUE: AUGUST 31, 2004**

**PREPARED FOR:**

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

P.O. No.: 081604JDM  
W.O. No.: 82526

**PREPARED BY:**

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

Date of test: August 18-26, 2004

**Report No.: FC04-064**

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## TABLE OF CONTENTS

Administrative Information .....	3
Summary of Results .....	4
Conditions for Compliance .....	4
Approvals .....	4
FCC 15.33(a) Frequency Ranges Tested .....	5
FCC 15.35 Analyzer Bandwidth Settings .....	5
FCC 15.203 Antenna Requirements .....	5
FCC 15.205 Restricted Bands .....	5
Eut Operating Frequency .....	5
Temperature And Humidity During Testing .....	5
Equipment Under Test (EUT) Description .....	6
Equipment Under Test .....	6
Peripheral Devices .....	6
Report of Measurements .....	7
Table 1: FCC 15.207 Six Highest Conducted Emission Levels .....	7
Table 2: FCC 15.209 Fundamental Emission Levels: 125 kHz .....	7
Table 3: FCC 15.209 Six Highest Radiated Emission Levels: 9 kHz - 30 MHz .....	7
Table 4: FCC 15.209 Six Highest Radiated Emission Levels: 30-1000 MHz .....	7
Table 5: FCC 15.225(a) Fundamental Emission Levels: 13.56 MHz .....	7
FCC 15.225(a) Emissions Mask .....	7
FCC 15.225(c) Frequency Tolerance .....	7
RSS-210 20dB Bandwidth - 125 kHz .....	7
RSS-210 20dB Bandwidth - 13.56 MHz .....	7
EUT Setup .....	7
Correction Factors .....	7
Table A: Sample Calculations .....	7
Test Instrumentation and Analyzer Settings .....	7
Spectrum Analyzer Detector Functions .....	7
Peak .....	7
Quasi-Peak .....	7
Average .....	7
EUT Testing .....	7
Mains Conducted Emissions .....	7
Radiated Emissions .....	7
Appendix A: Test Setup Photographs and Diagram .....	7
Photograph Showing Mains Conducted Emissions .....	7
Photograph Showing Radiated Emissions .....	7
Photograph Showing Radiated Emissions .....	7
Diagram Showing Temperature Testing .....	7
Appendix B: Test Equipment List .....	7
Appendix C: Measurement Data Sheets .....	7

## **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, XF2110 with the requirements for FCC Part 15 Subpart C Sections 15.207, 15.209, 15.225 and RSS-210 devices.

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

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

**REPRESENTATIVE:** John Menzel

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

## SUMMARY OF RESULTS

As received, the XceedID Physical Access Control Reader, XF2110 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

<b>FCC SECTION 15.35: 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 125 kHz and 13.56 MHz.

### **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: XF2110  
Serial: 1000  
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				CORRECTED READING dBμV	SPEC LIMIT dBμV	MARGIN dB	NOTES
		Lisn dB	HPF dB	Cable dB					
13.354220	38.8	0.5	0.1	0.4		39.8	50.0	-10.2	W
13.543410	44.7	0.4	0.1	0.4		45.6	50.0	-4.4	B
13.543410	43.2	0.5	0.1	0.4		44.2	50.0	-5.8	W
13.588450	42.8	0.5	0.1	0.4		43.8	50.0	-6.2	W
13.588450	42.6	0.4	0.1	0.4		43.5	50.0	-6.5	B
13.633500	38.5	0.5	0.1	0.4		39.5	50.0	-10.5	W

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 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 - 30MHz. Temperature: 23° C, Relative Humidity: 40%.

**Table 2: FCC 15.209 Fundamental Emission Levels: 125 kHz**

FREQUENCY MHz	METER READING dB $\mu$ V	CORRECTION FACTORS				CORRECTED READING dB $\mu$ V/m	SPEC LIMIT dB $\mu$ V/m	MARGIN DB	NOTES
		Ant dB		Cable dB	Corr dB				
0.125	61.0	9.6		0.1	-60.0	10.7	25.7	-15.0	V
0.125	51.6	9.6		0.1	-60.0	1.3	25.7	-24.4	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 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. Note: Test distance correction factor applied in accordance with 15.31. Temperature: 23° C, Relative Humidity: 40%.



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

FREQUENCY MHz	METER READING dB $\mu$ V	CORRECTION FACTORS				CORRECTED READING dB $\mu$ V/m	SPEC LIMIT dB $\mu$ V/m	MARGIN DB	NOTES
		Ant dB		Cable dB	Corr dB				
0.250	42.5	9.6		0.1	-20.0	-7.8	19.6	-27.4	V
7.373	16.0	9.1		0.6	-20.0	5.7	29.5	-23.8	V
7.375	24.2	9.1		0.6	-20.0	13.9	29.5	-15.6	H
14.755	18.8	8.2		0.9	-20.0	7.9	29.5	-21.6	V
27.124	19.4	4.9		1.1	-20.0	5.4	29.5	-24.1	V
27.125	23.3	4.9		1.1	-20.0	9.3	29.5	-20.2	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. Note: Test distance correction factor applied in accordance with 15.31. Temperature: 23° C, Relative Humidity: 40%.

**Table 4: FCC 15.209 Six Highest Radiated Emission Levels: 30-1000 MHz**

FREQUENCY MHz	METER READING dB $\mu$ V	CORRECTION FACTORS				CORRECTED READING dB $\mu$ V/m	SPEC LIMIT dB $\mu$ V/m	MARGIN DB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
40.778	36.6	12.0	-27.3	1.4	10.0	32.7	40.0	-7.3	VQ
108.579	40.0	10.1	-27.2	2.4	10.0	35.3	43.5	-8.2	VQ
325.508	35.1	13.5	-26.7	4.3	10.0	36.2	46.0	-9.8	V
393.325	33.0	15.2	-27.1	5.0	10.0	36.1	46.0	-9.9	V
420.422	34.3	15.8	-27.3	5.1	10.0	37.9	46.0	-8.1	V
447.580	33.1	16.4	-27.5	5.0	10.0	37.0	46.0	-9.0	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: 23° C, Relative Humidity: 40%.

**Table 5: FCC 15.225(a) Fundamental Emission Levels: 13.56 MHz**

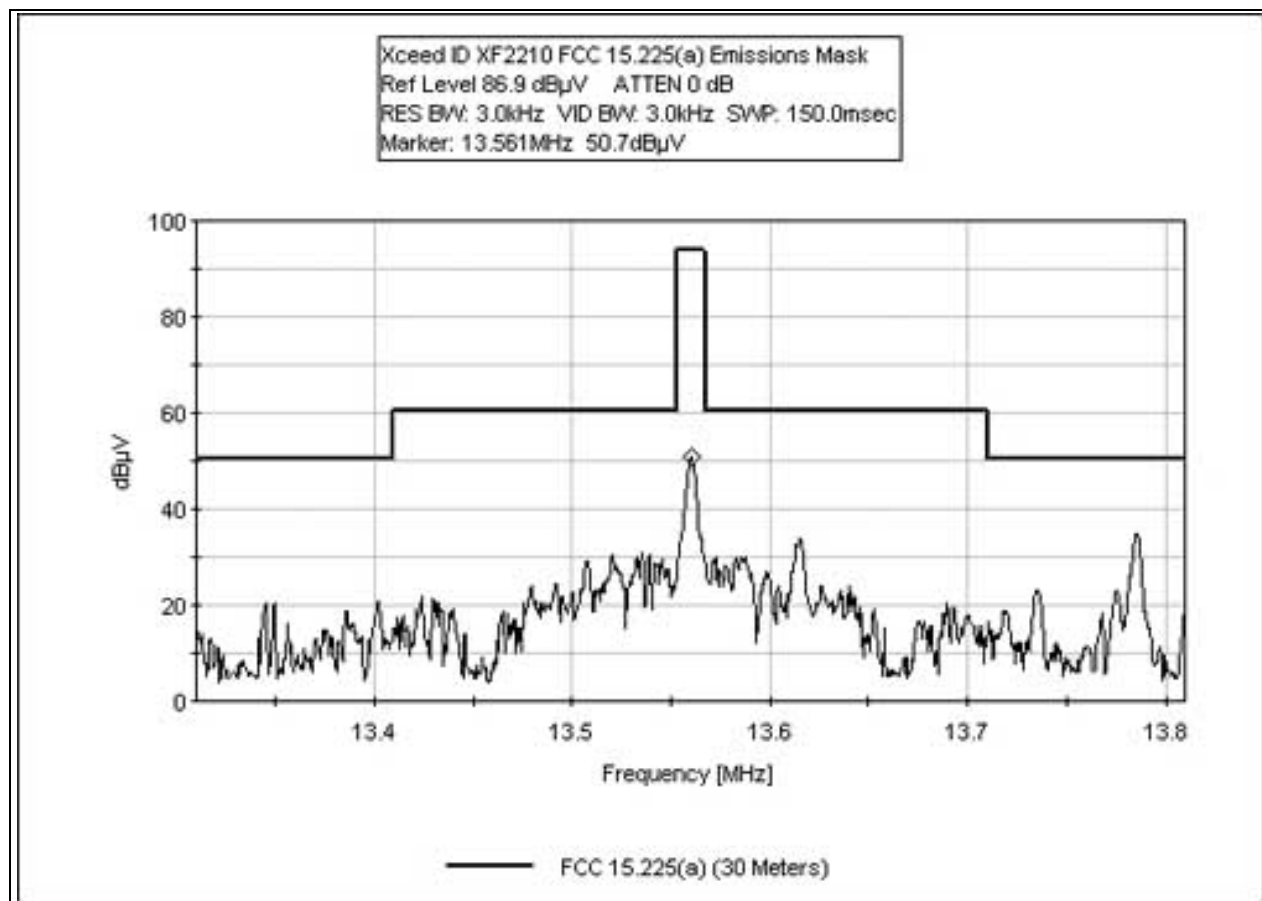
FREQUENCY MHz	METER READING dBμV	CORRECTION FACTORS				CORRECTED READING dBμV/m	SPEC LIMIT dBμV/m	MARGIN DB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
13.559	47.3	8.4		0.8	-19.0	37.5	84.0	-46.5	V
13.560	51.3	8.4		0.8	-19.0	41.5	84.0	-42.5	H

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. Note: Test distance correction factor applied in accordance with 15.31. Temperature: 23° 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#:** 82526  
**Date:** 25-Aug-04  
**Test Engineer:** Randal Clark

**Device Model #:** XF 2110  
**Operating Voltage:** 12.0 VDC  
**Frequency Limit:** 0.01 %

## Temperature Variations

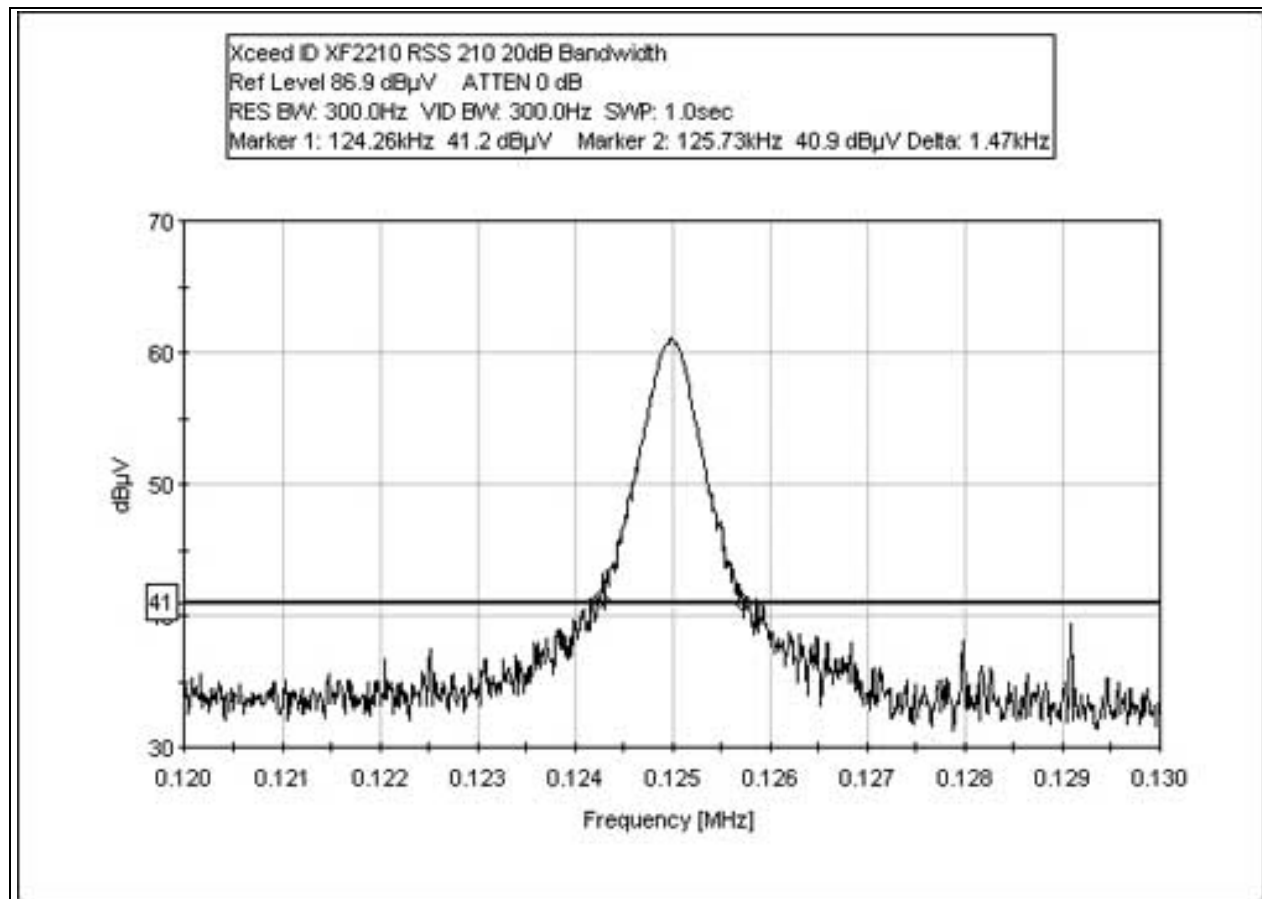
Channel Frequency:		Channel 1 (MHz) Dev. (MHz)	
		13.56	
Temp (C) Voltage			
-30	12.0	13.56013	0.00013
-20	12.0	13.56016	0.00016
-10	12.0	13.56010	0.00010
0	12.0	13.56019	0.00019
10	12.0	13.56020	0.00020
20	12.0	13.56017	0.00017
30	12.0	13.56016	0.00016
40	12.0	13.56014	0.00014
50	12.0	13.56012	0.00012

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

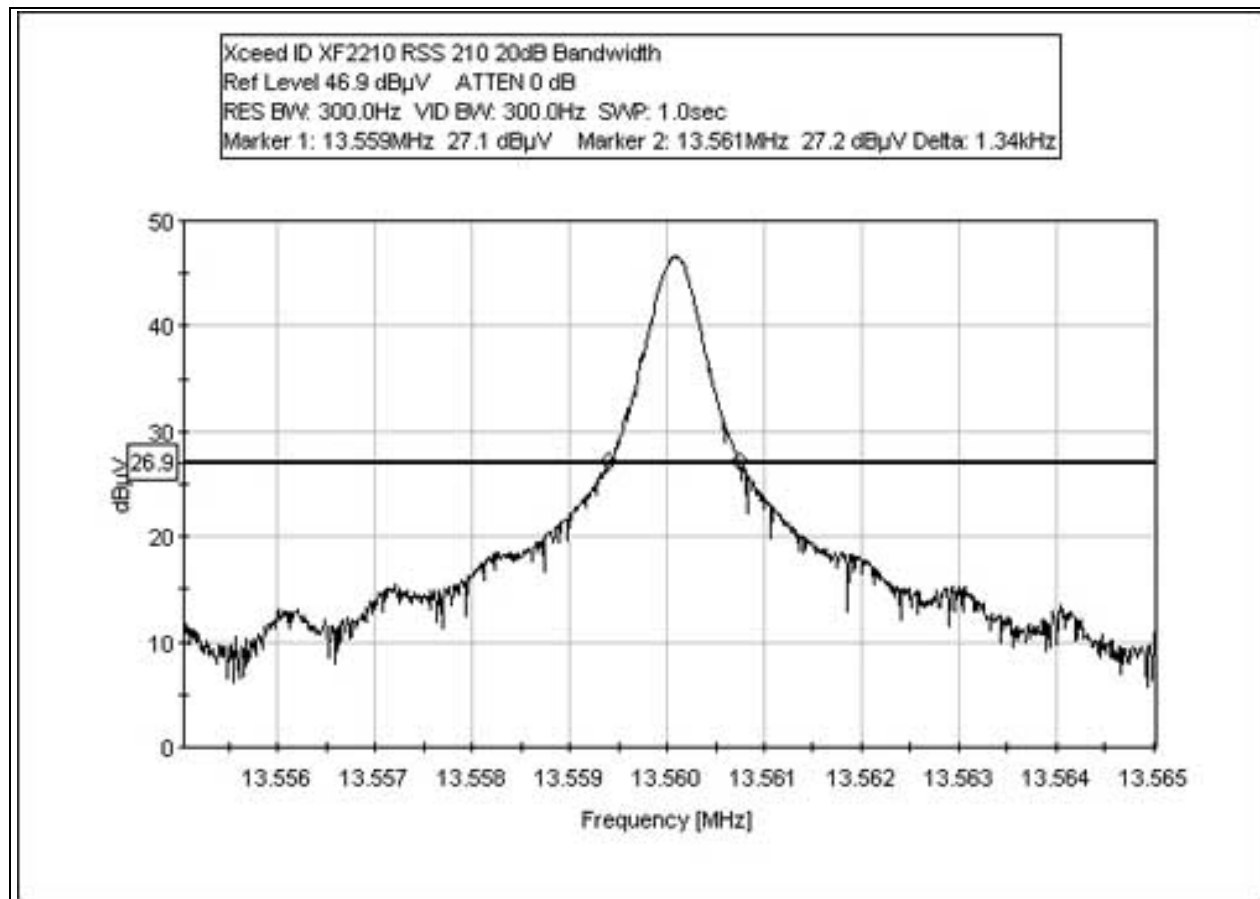
20	10.2	13.56017	0.00017
20	12.0	13.56017	0.00017
20	13.8	13.56017	0.00017

<b>Max Deviation (MHz)</b>	<b>0.00020</b>
<b>Max Deviation (%)</b>	<b>0.00149</b>
<b>PASS</b>	

## 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 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. 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 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  $\mu$ H/+50 ohms. Above 150 kHz, a 0.15  $\mu$ 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 AND DIAGRAM**

**PHOTOGRAPH SHOWING MAINS CONDUCTED EMISSIONS**



Mains Conducted Emissions - Front View

**PHOTOGRAPH SHOWING RADIATED EMISSIONS**



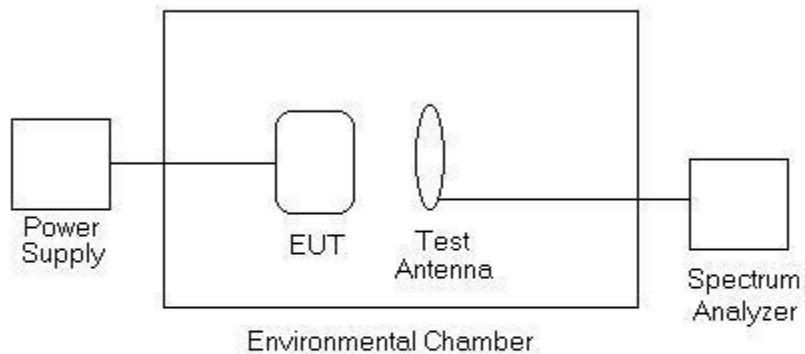
Radiated Emissions - Front View

**PHOTOGRAPH SHOWING RADIATED EMISSIONS**



Radiated Emissions - Back View

## DIAGRAM SHOWING TEMPERATURE TESTING



Xceed ID XF 2110 Temperature Testing Setup Diagram

## APPENDIX B

### TEST EQUIPMENT LIST

30-1000 MHz, 15.209

<i>Description</i>	<i>Asset #</i>	<i>Manufacturer</i>	<i>Model #</i>	<i>Serial #</i>	<i>Cal Date</i>	<i>Cal Due</i>
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

<i>Description</i>	<i>Asset #</i>	<i>Manufacturer</i>	<i>Model #</i>	<i>Serial #</i>	<i>Cal Date</i>	<i>Cal Due</i>
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

<i>Description</i>	<i>Asset #</i>	<i>Manufacturer</i>	<i>Model #</i>	<i>Serial #</i>	<i>Cal Date</i>	<i>Cal Due</i>
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:

<i>Description</i>	<i>Asset #</i>	<i>Manufacturer</i>	<i>Model #</i>	<i>Serial #</i>	<i>Cal Date</i>	<i>Cal Due</i>
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 #: **82526**  
 Test Type: **Conducted Emissions**  
 Equipment: **Physical Access Control Reader**  
 Manufacturer: **XceedID**  
 Model: **XF2110**  
 S/N: **1000**

Date: 08/18/2004  
 Time: 12:19:21  
 Sequence#: 3  
 Tested By: Randal Clark  
 120V 60Hz

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

Function	Manufacturer	Model #	S/N
Physical Access Control Reader*	XceedID	XF2110	1000

**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 - 30MHz. Temperature: 23° C, Relative Humidity: 40%.

**Transducer Legend:**

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

**Measurement Data:**

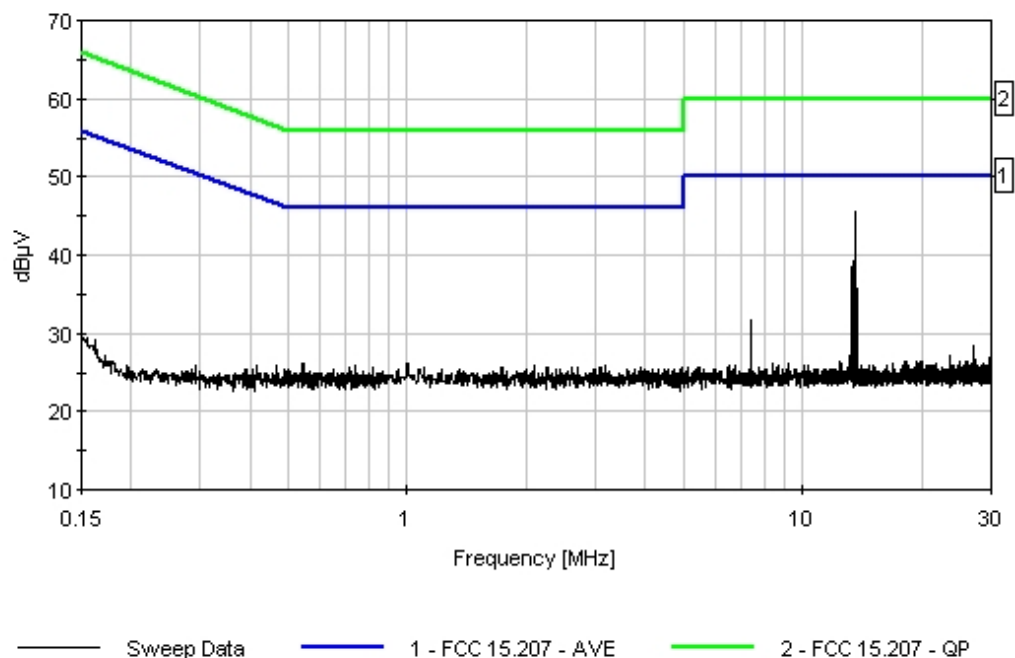
Reading listed by margin.

Test Lead: Black

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	Dist dB	Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	13.543M	44.7	+0.4	+0.4	+0.1	+0.0		45.6	50.0	-4.4	Black
2	13.588M	42.6	+0.4	+0.4	+0.1	+0.0		43.5	50.0	-6.5	Black
3	13.489M	38.4	+0.4	+0.4	+0.1	+0.0		39.3	50.0	-10.7	Black
4	13.354M	37.5	+0.4	+0.4	+0.1	+0.0		38.4	50.0	-11.6	Black
5	13.634M	36.8	+0.4	+0.4	+0.1	+0.0		37.7	50.0	-12.3	Black
6	13.444M	35.8	+0.4	+0.4	+0.1	+0.0		36.7	50.0	-13.3	Black
7	27.125M	35.1	+0.5	+0.5	+0.2	+0.0		36.3	50.0	-13.7	Black
8	13.769M	34.7	+0.4	+0.4	+0.1	+0.0		35.6	50.0	-14.4	Black
9	13.679M	32.3	+0.4	+0.4	+0.1	+0.0		33.2	50.0	-16.8	Black
10	13.399M	31.0	+0.4	+0.4	+0.1	+0.0		31.9	50.0	-18.1	Black

11	7.390M	31.0	+0.3	+0.4	+0.1	+0.0	31.8	50.0	-18.2	Black
12	7.377M	30.9	+0.3	+0.4	+0.1	+0.0	31.7	50.0	-18.3	Black
13	13.724M	30.6	+0.4	+0.4	+0.1	+0.0	31.5	50.0	-18.5	Black
14	544.870k	25.5	+0.1	+0.3	+0.3	+0.0	26.2	46.0	-19.8	Black
15	1.000M	25.4	+0.2	+0.3	+0.2	+0.0	26.1	46.0	-19.9	Black
16	27.135M	27.1	+0.5	+0.5	+0.2	+0.0	28.3	50.0	-21.7	Black
17	13.300M	27.0	+0.4	+0.4	+0.1	+0.0	27.9	50.0	-22.1	Black
18	18.120M	25.4	+0.5	+0.4	+0.2	+0.0	26.5	50.0	-23.5	Black
19	151.454k	26.3	+0.1	+0.3	+2.6	+0.0	29.3	55.9	-26.6	Black
20	13.564M	21.7	+0.4	+0.4	+0.1	+0.0	22.6	50.0	-27.4	Black
Ave										
^	13.564M	59.5	+0.4	+0.4	+0.1	+0.0	60.4	50.0	+10.4	Black

CKC Laboratories Date: 08/18/2004 Time: 12:19:21 XceedID WO#: 82526  
FCC 15.207 - AVE Test Lead: Black 120V 60Hz Sequence#: 3  
XceedID M/N XF2110



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

Customer: **XceedID**  
 Specification: **FCC 15.207 - AVE**  
 Work Order #: **82526**  
 Test Type: **Conducted Emissions**  
 Equipment: **Physical Access Control Reader**  
 Manufacturer: **XceedID**  
 Model: **XF2110**  
 S/N: **1000**

Date: 08/18/2004  
 Time: 12:28:22  
 Sequence#: 4  
 Tested By: Randal Clark  
 120V 60Hz

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

Function	Manufacturer	Model #	S/N
Physical Access Control Reader*	XceedID	XF2110	1000

**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 - 30MHz. Temperature: 23° C, Relative Humidity: 40%.

**Transducer Legend:**

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

**Measurement Data:**

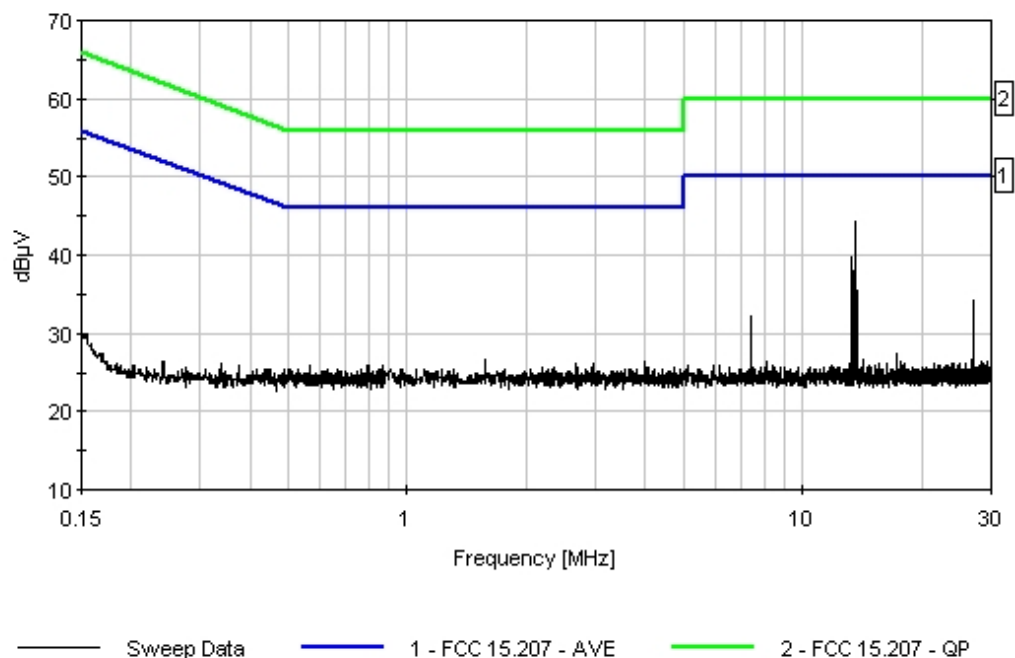
Reading listed by margin.

Test Lead: White

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	Dist dB	Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	13.543M	43.2	+0.4	+0.5	+0.1	+0.0		44.2	50.0	-5.8	White
2	13.588M	42.8	+0.4	+0.5	+0.1	+0.0		43.8	50.0	-6.2	White
3	13.354M	38.8	+0.4	+0.5	+0.1	+0.0		39.8	50.0	-10.2	White
4	13.634M	38.5	+0.4	+0.5	+0.1	+0.0		39.5	50.0	-10.5	White
5	13.498M	36.9	+0.4	+0.5	+0.1	+0.0		37.9	50.0	-12.1	White
6	13.453M	35.1	+0.4	+0.5	+0.1	+0.0		36.1	50.0	-13.9	White
7	13.688M	34.4	+0.4	+0.5	+0.1	+0.0		35.4	50.0	-14.6	White
8	27.127M	33.4	+0.5	+0.4	+0.2	+0.0		34.5	50.0	-15.5	White
9	27.129M	33.0	+0.5	+0.4	+0.2	+0.0		34.1	50.0	-15.9	White
10	13.778M	31.7	+0.4	+0.5	+0.1	+0.0		32.7	50.0	-17.3	White

11	7.377M	31.4	+0.3	+0.4	+0.1	+0.0	32.2	50.0	-17.8	White
12	13.408M	31.2	+0.4	+0.5	+0.1	+0.0	32.2	50.0	-17.8	White
13	7.390M	31.3	+0.3	+0.4	+0.1	+0.0	32.1	50.0	-17.9	White
14	1.570M	25.9	+0.2	+0.4	+0.1	+0.0	26.6	46.0	-19.4	White
15	13.733M	28.8	+0.4	+0.5	+0.1	+0.0	29.8	50.0	-20.2	White
16	13.309M	28.3	+0.4	+0.5	+0.1	+0.0	29.3	50.0	-20.7	White
17	13.823M	26.6	+0.4	+0.5	+0.1	+0.0	27.6	50.0	-22.4	White
18	17.327M	26.3	+0.5	+0.4	+0.1	+0.0	27.3	50.0	-22.7	White
19	13.564M	23.9	+0.4	+0.5	+0.1	+0.0	24.9	50.0	-25.1	White
Ave										
^	13.564M	59.7	+0.4	+0.5	+0.1	+0.0	60.7	50.0	+10.7	White
21	154.363k	27.2	+0.1	+0.4	+2.3	+0.0	30.0	55.8	-25.8	White

CKC Laboratories Date: 08/18/2004 Time: 12:28:22 XceedID WO#: 82526  
FCC 15.207 - AVE Test Lead: White 120V 60Hz Sequence#: 4  
XceedID M/N XF2110



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

Customer: **XceedID**  
 Specification: **FCC 15.209**  
 Work Order #: **82526**  
 Test Type: **Maximized Emissions**  
 Equipment: **Physical Access Control Reader**  
 Manufacturer: **XceedID**  
 Model: **XF2110**  
 S/N: **1000**

Date: 08/18/2004  
 Time: 15:25:22  
 Sequence#: 10  
 Tested By: Randal Clark

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

Function	Manufacturer	Model #	S/N
Physical Access Control Reader*	XceedID	XF2110	1000

**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. Note: Test distance correction factor applied in accordance with 15.31. Temperature: 23° C, Relative Humidity: 40%.

**Transducer Legend:**

T1=Mag Loop - Site B - AN 00226 - 9kHz-30M	T2=Cable - 10 Meter
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	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	124.980k	61.0	+9.6	+0.1	-60.0	+0.0	10.7	25.7	-15.0	Verti 100
2	124.940k	51.6	+9.6	+0.1	-60.0	+0.0	1.3	25.7	-24.4	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**  
 Test Type: **Maximized Emissions**  
 Equipment: **Physical Access Control Reader**  
 Manufacturer: **XceedID**  
 Model: **XF2110**  
 S/N: **1000**

Date: 08/18/2004  
 Time: 16:12:01  
 Sequence#: 11  
 Tested By: Randal Clark

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

Function	Manufacturer	Model #	S/N
Physical Access Control Reader*	XceedID	XF2110	1000

**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. Note: Test distance correction factor applied in accordance with 15.31. Temperature: 23° C, Relative Humidity: 40%.

**Transducer Legend:**

T1=Mag Loop - Site B - AN 00226 - 9kHz-30M	T2=Cable - 10 Meter
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	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	500.848k	38.6	+9.6	+0.2	-20.0	+0.0	28.4	33.6	-5.2	Verti 100
								Ambient Noise Floor Reading		
2	500.850k	37.5	+9.6	+0.2	-20.0	+0.0	27.3	33.6	-6.3	Horiz 100
								Ambient Noise Floor Reading		
3	7.375M	24.2	+9.1	+0.6	-20.0	+0.0	13.9	29.5	-15.6	Horiz 100
4	27.125M	23.3	+4.9	+1.1	-20.0	+0.0	9.3	29.5	-20.2	Horiz 100
5	14.755M	18.8	+8.2	+0.9	-20.0	+0.0	7.9	29.5	-21.6	Verti 100
6	7.373M	16.0	+9.1	+0.6	-20.0	+0.0	5.7	29.5	-23.8	Verti 100

7	27.124M	19.4	+4.9	+1.1	-20.0	+0.0	5.4	29.5	-24.1	Verti 100
8	250.420k	42.5	+9.6	+0.1	-60.0	+0.0	-7.8	19.6	-27.4	Verti 100
9	29.493M	14.0	+4.2	+1.2	-20.0	+0.0	-0.6	29.5	-30.1	Verti 100
10	250.420k	38.9	+9.6	+0.1	-60.0	+0.0	-11.4	19.6	-31.0	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**  
 Test Type: **Maximized Emissions**  
 Equipment: **Physical Access Control Reader**  
 Manufacturer: **XceedID**  
 Model: **XF2110**  
 S/N: **1000**

Date: 08/19/2004  
 Time: 13:37:20  
 Sequence#: 2  
 Tested By: Randal Clark

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

Function	Manufacturer	Model #	S/N
Physical Access Control Reader*	XceedID	XF2110	1000

**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: 23° 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		Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	40.778M	36.6	-27.3	+12.0	+1.4		+10.0	32.7	40.0	-7.3	Verti
	QP										186
^	40.768M	41.8	-27.3	+12.0	+1.4		+10.0	37.9	40.0	-2.1	Verti
											186
3	420.422M	34.3	-27.3	+15.8	+5.1		+10.0	37.9	46.0	-8.1	Verti
											100
4	108.579M	40.0	-27.2	+10.1	+2.4		+10.0	35.3	43.5	-8.2	Verti
	QP										100
^	108.580M	42.1	-27.2	+10.1	+2.4		+10.0	37.4	43.5	-6.1	Verti
											100
6	447.580M	33.1	-27.5	+16.4	+5.0		+10.0	37.0	46.0	-9.0	Verti
											100
7	325.508M	35.1	-26.7	+13.5	+4.3		+10.0	36.2	46.0	-9.8	Verti
											100
8	393.325M	33.0	-27.1	+15.2	+5.0		+10.0	36.1	46.0	-9.9	Verti
											100
9	203.486M	38.2	-26.7	+8.6	+3.3		+10.0	33.4	43.5	-10.1	Verti
											100

10	189.940M	38.6	-26.7	+8.3	+3.2	+10.0	33.4	43.5	-10.1	Verti 100
^	189.941M	43.0	-26.7	+8.3	+3.2	+10.0	37.8	43.5	-5.7	Verti 100
12	122.105M	36.9	-27.2	+11.0	+2.5	+10.0	33.2	43.5	-10.3	Verti 100
13	54.290M	38.0	-27.3	+7.3	+1.6	+10.0	29.6	40.0	-10.4	Verti 118
14	366.231M	33.0	-26.9	+14.6	+4.7	+10.0	35.4	46.0	-10.6	Verti 100
15	284.860M	35.4	-26.5	+12.6	+3.9	+10.0	35.4	46.0	-10.6	Verti 100
16	135.700M	36.4	-27.1	+11.0	+2.6	+10.0	32.9	43.5	-10.6	Verti 100
17	298.410M	34.9	-26.5	+12.8	+4.1	+10.0	35.3	46.0	-10.7	Verti 100
18	311.975M	33.8	-26.6	+13.2	+4.2	+10.0	34.6	46.0	-11.4	Verti 100
19	108.560M	36.8	-27.2	+10.1	+2.4	+10.0	32.1	43.5	-11.4	Horiz 400
20	176.361M	37.3	-26.8	+8.4	+3.0	+10.0	31.9	43.5	-11.6	Verti 100
21	149.203M	35.6	-27.0	+10.4	+2.8	+10.0	31.8	43.5	-11.7	Verti 100
22	81.450M	36.4	-27.2	+6.9	+2.0	+10.0	28.1	40.0	-11.9	Verti 100
23	162.721M	35.7	-26.9	+9.8	+2.9	+10.0	31.5	43.5	-12.0	Verti 100
24	339.059M	32.3	-26.7	+13.9	+4.4	+10.0	33.9	46.0	-12.1	Verti 100
25	244.167M	35.0	-26.5	+11.6	+3.6	+10.0	33.7	46.0	-12.3	Verti 100
26	230.567M	35.8	-26.5	+10.7	+3.4	+10.0	33.4	46.0	-12.6	Verti 100
27	217.062M	36.6	-26.6	+9.7	+3.4	+10.0	33.1	46.0	-12.9	Verti 100
	QP							larger ferrite		
^	217.056M	39.5	-26.6	+9.7	+3.4	+10.0	36.0	46.0	-10.0	Verti 100
								larger ferrite		
^	217.061M	38.2	-26.6	+9.7	+3.4	+10.0	34.7	46.0	-11.3	Verti 100
30	271.245M	32.9	-26.5	+12.4	+3.8	+10.0	32.6	46.0	-13.4	Verti 100
31	149.257M	33.4	-27.0	+10.4	+2.8	+10.0	29.6	43.5	-13.9	Verti 100
32	237.330M	33.5	-26.5	+11.1	+3.5	+10.0	31.6	46.0	-14.4	Verti 100
33	67.893M	34.9	-27.2	+5.8	+1.9	+10.0	25.4	40.0	-14.6	Verti 100
34	162.721M	33.0	-26.9	+9.8	+2.9	+10.0	28.8	43.5	-14.7	Horiz 309

35	257.684M	31.9	-26.5	+12.1	+3.7	+10.0	31.2	46.0	-14.8	Verti 100
36	238.940M	31.1	-26.5	+11.2	+3.5	+10.0	29.3	46.0	-16.7	Verti 100
37	231.950M	31.3	-26.5	+10.8	+3.5	+10.0	29.1	46.0	-16.9	Verti 100
38	241.000M	30.7	-26.5	+11.4	+3.5	+10.0	29.1	46.0	-16.9	Verti 100
39	229.570M	31.0	-26.5	+10.6	+3.4	+10.0	28.5	46.0	-17.5	Verti 100
40	226.700M	30.4	-26.5	+10.4	+3.4	+10.0	27.7	46.0	-18.3	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 #: **82526**  
 Test Type: **Maximized Emissions**  
 Equipment: **Physical Access Control Reader**  
 Manufacturer: **XceedID**  
 Model: **XF2110**  
 S/N: **1000**

Date: 08/18/2004  
 Time: 15:26:03  
 Sequence#: 9  
 Tested By: Randal Clark

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

Function	Manufacturer	Model #	S/N
Physical Access Control Reader*	XceedID	XF2110	1000

**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. Note: Test distance correction factor applied in accordance with 15.31. Temperature: 23° C, Relative Humidity: 40%.

**Transducer Legend:**

T1=Mag Loop - Site B - AN 00226 - 9kHz-30M	T2=Cable - 10 Meter
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**Measurement Data:** Reading listed by margin. Test Distance: 10 Meters

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB		Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	13.560M	51.3	+8.4	+0.8		-19.0	41.5	84.0	-42.5	Horiz 100
2	13.559M	47.3	+8.4	+0.8		-19.0	37.5	84.0	-46.5	Verti 100