



XCEEDID TEST REPORT
FOR THE
PHYSICAL ACCESS CONTROL READER, XF2100
FCC PART 15 SUBPART C SECTIONS 15.207, 15.209 AND 15.225 AND RSS-210
COMPLIANCE

DATE OF ISSUE: SEPTEMBER 1, 2004

PREPARED FOR:

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

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

PREPARED BY:

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5473A Clouds Rest
Mariposa, CA 95338

Date of test: August 18-26, 2004

Report No.: FC04-063

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ADMINISTRATIVE INFORMATION

DATE OF TEST: August 18-26, 2004

DATE OF RECEIPT: August 18, 2004

PURPOSE OF TEST: To demonstrate the compliance of the Physical Access Control Reader, XF2100 with the requirements for FCC Part 15 Subpart C Sections 15.207, 15.209 and 15.225 and RSS-210 devices.

TEST METHOD: ANSI C63.4 (2001)

MANUFACTURER: XceedID
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, XF2100 was found to be fully compliant with the following standards and specifications:

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

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

CONDITIONS FOR COMPLIANCE

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

APPROVALS

Steve Behm, Director of Engineering Services

QUALITY ASSURANCE:



Joyce Walker, Quality Assurance Administrative Manager

TEST PERSONNEL:



Randy Clark, EMC Engineer

FCC 15.33(a) Frequency Ranges Tested

15.207 Conducted: 150 kHz – 30 MHz

15.209 Radiated: 9 kHz – 1000 MHz

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

FCC 15.203 Antenna Requirements

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

FCC 15.205 Restricted Bands

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

Eut Operating Frequency

The EUT was operating at 13.56 MHz and 125 kHz.

Temperature And Humidity During Testing

The temperature during testing was within +15°C and + 35°C.

The relative humidity was between 20% and 75%.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The EUT tested by CKC Laboratories was a production unit.

EQUIPMENT UNDER TEST

Physical Access Control Reader

Manuf: XceedID
Model: XF2100
Serial: 1001
FCC ID: Pending

PERIPHERAL DEVICES

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

DC Power Supply

Manuf: Topward
Model: TPS-4303
Serial: 918520
FCC ID: NA

REPORT OF MEASUREMENTS

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

Table 1: FCC 15.207 Six Highest Conducted Emission Levels									
FREQUENCY MHz	METER READING dBμV	CORRECTION FACTORS				CORRECTED READING dBμV	SPEC LIMIT dBμV	MARGIN dB	NOTES
		Lisn dB	HPF dB	Cable dB					
4.139051	25.4	0.4	0.1	0.3		26.2	46.0	-19.8	B
7.381250	36.7	0.4	0.1	0.3		37.5	50.0	-12.5	B
7.381250	30.0	0.4	0.1	0.3		30.8	50.0	-19.2	W
13.570000	53.0	0.5	0.1	0.4		54.0	60.0	-6.0	WQ
27.121740	39.3	0.5	0.2	0.5		40.5	50.0	-9.5	B
27.121900	29.1	0.5	0.2	0.5		30.3	50.0	-19.7	B

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

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

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

Table 2: FCC 15.209 Fundamental Emission Levels: 125 kHz

FREQUENCY MHz	METER READING dBμV	CORRECTION FACTORS				CORRECTED READING dBμV/m	SPEC LIMIT dBμV/m	MARGIN DB	NOTES
		Ant dB		Cable dB	Corr dB				
0.125	61.3	9.6		0.1	-60.0	11.0	25.7	-14.7	H
0.125	52.0	9.6		0.1	-60.0	1.7	25.7	-24.0	V

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

NOTES: H = Horizontal Polarization
V = Vertical Polarization

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

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

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

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

NOTES: H = Horizontal Polarization
V = Vertical Polarization

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

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

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

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

NOTES: Q = Quasi Peak Reading
V = Vertical Polarization

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

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

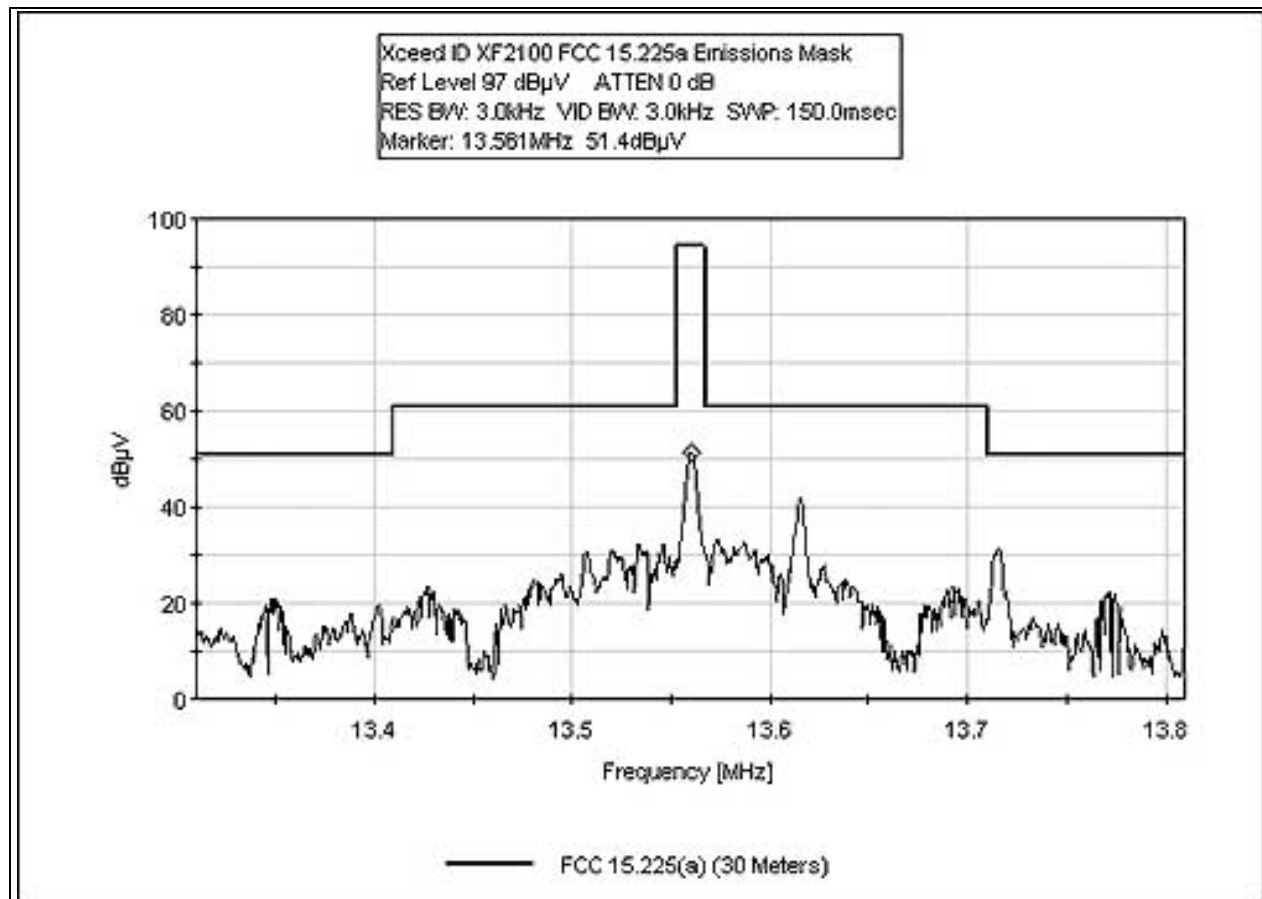
FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN DB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
13.560	51.6	8.4		0.4	-19.0	41.4	84.0	-42.6	H
13.560	47.0	8.4		0.4	-19.0	36.8	84.0	-47.2	V

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

NOTES: H = Horizontal Polarization
 V = Vertical Polarization

COMMENTS: EUT is a Physical Access Control Reader operating at 13.56 MHz and 125 kHz. To simulate normal installation, EUT is mounted vertically on a wooden support structure. EUT is powered by a support DC power supply. Support power supply chassis is bonded to ground. Steward ferrite 42064-200 added to EUT cable at the back of the EUT. Frequency Range investigated: Carrier. Test distance correction factor applied in accordance with 15.31. Temperature: 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#: 82527
Date: 25-Aug-04
Test Engineer: Randal Clark

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

Temperature Variations

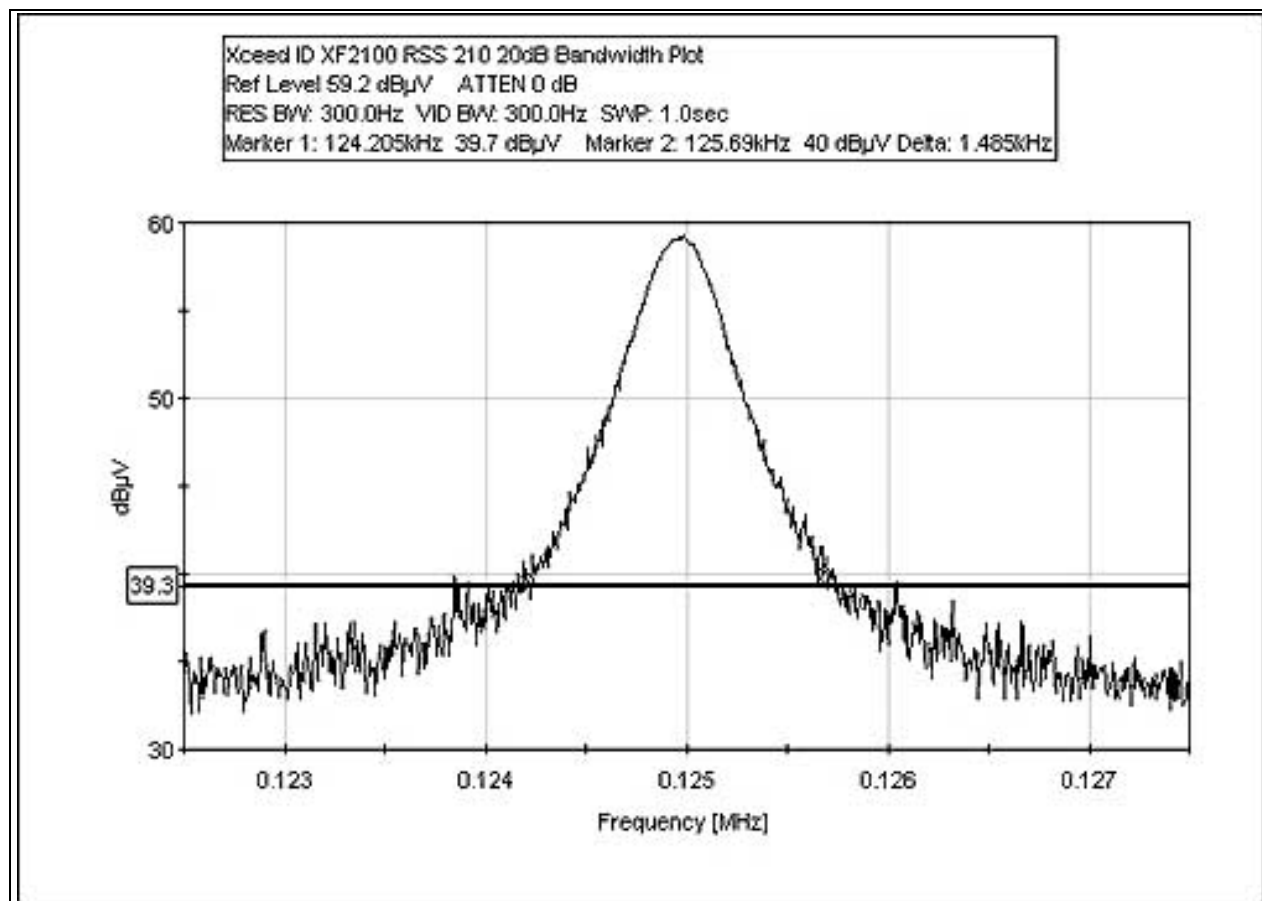
		Channel 1 (MHz) Dev. (MHz)	
Channel Frequency:		13.56	
Temp (C) Voltage			
-30	12.0	13.55993	0.00007
-20	12.0	13.55997	0.00003
-10	12.0	13.56002	0.00002
0	12.0	13.56004	0.00004
10	12.0	13.56004	0.00004
20	12.0	13.56002	0.00002
30	12.0	13.56020	0.00020
40	12.0	13.56012	0.00012
50	12.0	13.56006	0.00006

Voltage Variations ($\pm 15\%$)

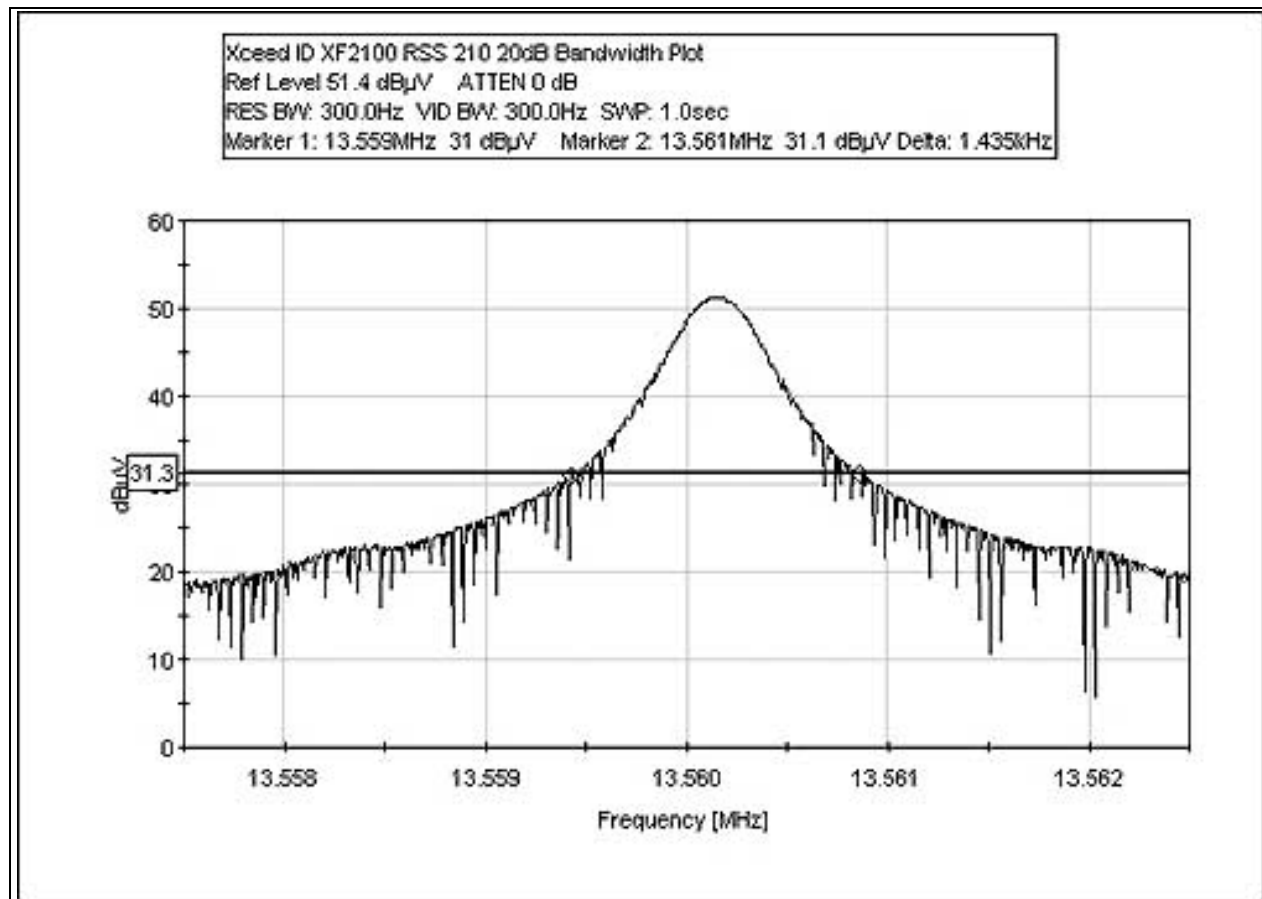
20	10.2	13.56001	0.00001
20	12.0	13.56002	0.00002
20	13.8	13.56002	0.00002

Max Deviation (MHz)	0.00020
Max Deviation (%)	0.00145
	PASS

RSS-210 20dB BANDWIDTH 125 kHz



RSS-210 20dB BANDWIDTH 13.56 MHz



EUT SETUP

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

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

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

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

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dB μ V/m, the spectrum analyzer reading in dB μ 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 μ V)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dB μ 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 μ 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 μ H/+50 ohms. Above 150 kHz, a 0.15 μ 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



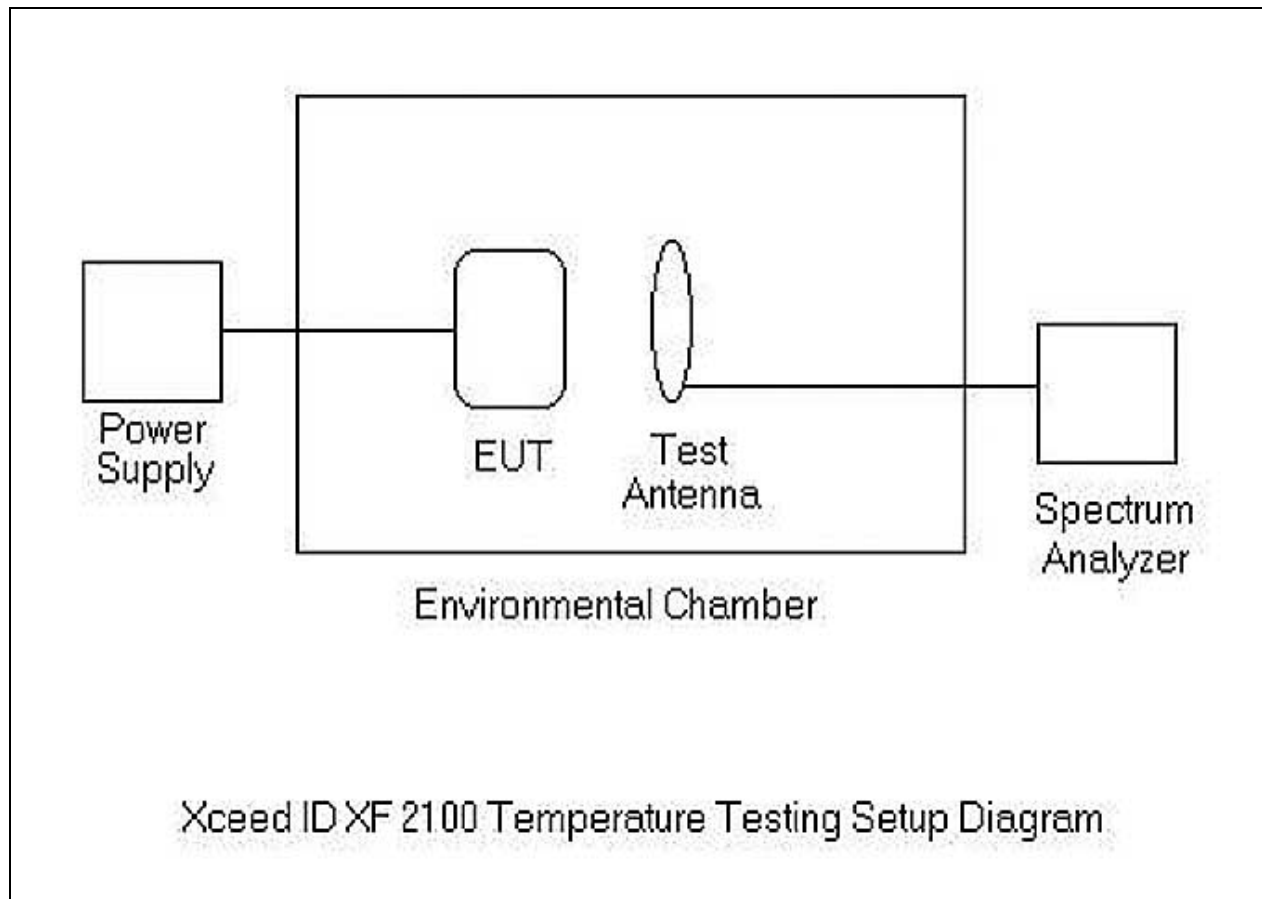
Radiated Emissions - Front View

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Back View

DIAGRAM SHOWING TEMPERATURE TESTING



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 #: **82527**
 Test Type: **Conducted Emissions**
 Equipment: **Physical Access Control Reader**
 Manufacturer: **XceedID**
 Model: **XF2100**
 S/N: **1001**

Date: 08/19/2004
 Time: 14:01:24
 Sequence#: 22
 Tested By: Randal Clark
 120V 60Hz

Equipment Under Test (* = EUT):

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

Support Devices:

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

Test Conditions / Notes:

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

Transducer Legend:

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

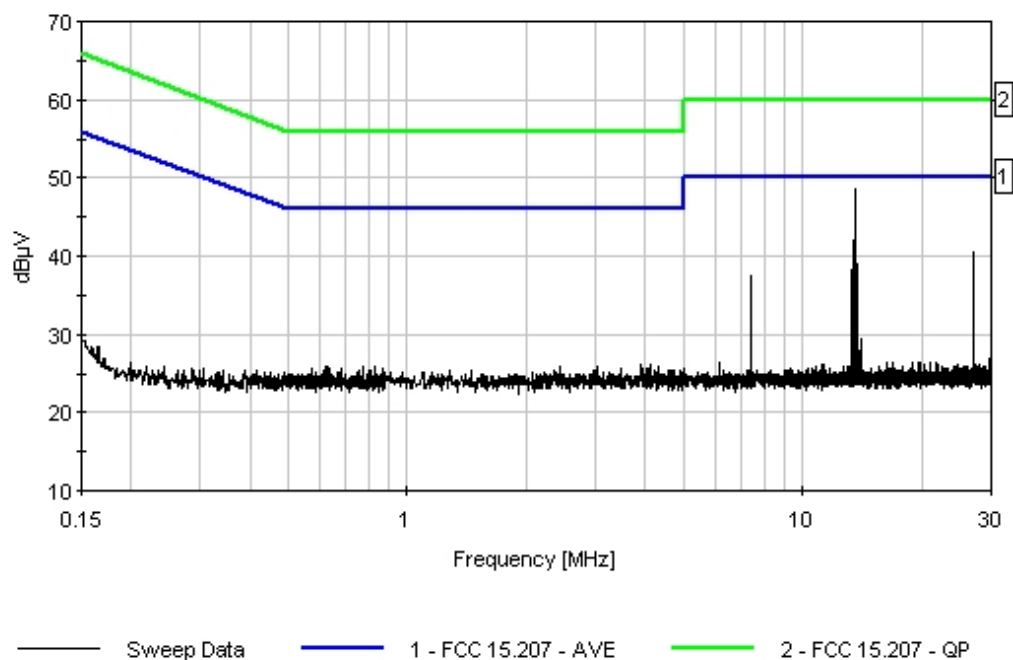
Measurement Data:

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	27.122M	39.3	+0.5	+0.5	+0.2	+0.0		40.5	50.0	-9.5	Black
2	7.381M	36.7	+0.3	+0.4	+0.1	+0.0		37.5	50.0	-12.5	Black
3	27.122M	29.1	+0.5	+0.5	+0.2	+0.0		30.3	50.0	-19.7	Black
4	4.139M	25.4	+0.3	+0.4	+0.1	+0.0		26.2	46.0	-19.8	Black
5	14.057M	28.4	+0.4	+0.4	+0.1	+0.0		29.3	50.0	-20.7	Black
6	7.375M	26.8	+0.3	+0.4	+0.1	+0.0		27.6	50.0	-22.4	Black
7	16.832M	25.6	+0.4	+0.4	+0.1	+0.0		26.5	50.0	-23.5	Black
8	150.000k	26.3	+0.1	+0.3	+2.7	+0.0		29.4	56.0	-26.6	Black
9	13.563M	13.2	+0.4	+0.4	+0.1	+0.0		14.1	50.0	-35.9	Black
Ave											
^	13.563M	53.7	+0.4	+0.4	+0.1	+0.0		54.6	50.0	+4.6	Black

CKC Laboratories Date: 08/19/2004 Time: 14:01:24 XceedID VVO#: 82527
 FCC 15.207 - AVE Test Lead: Black 120V 60Hz Sequence#: 22
 XceedID M/N XF2100



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

Customer: **XceedID**
 Specification: **FCC 15.207 - AVE**
 Work Order #: **82527**
 Test Type: **Conducted Emissions**
 Equipment: **Physical Access Control Reader**
 Manufacturer: **XceedID**
 Model: **XF2100**
 S/N: **1001**

Date: 08/19/2004
 Time: 14:41:05
 Sequence#: 24
 Tested By: Randal Clark
 120V 60Hz

Equipment Under Test (* = EUT):

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

Support Devices:

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

Test Conditions / Notes:

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

Transducer Legend:

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

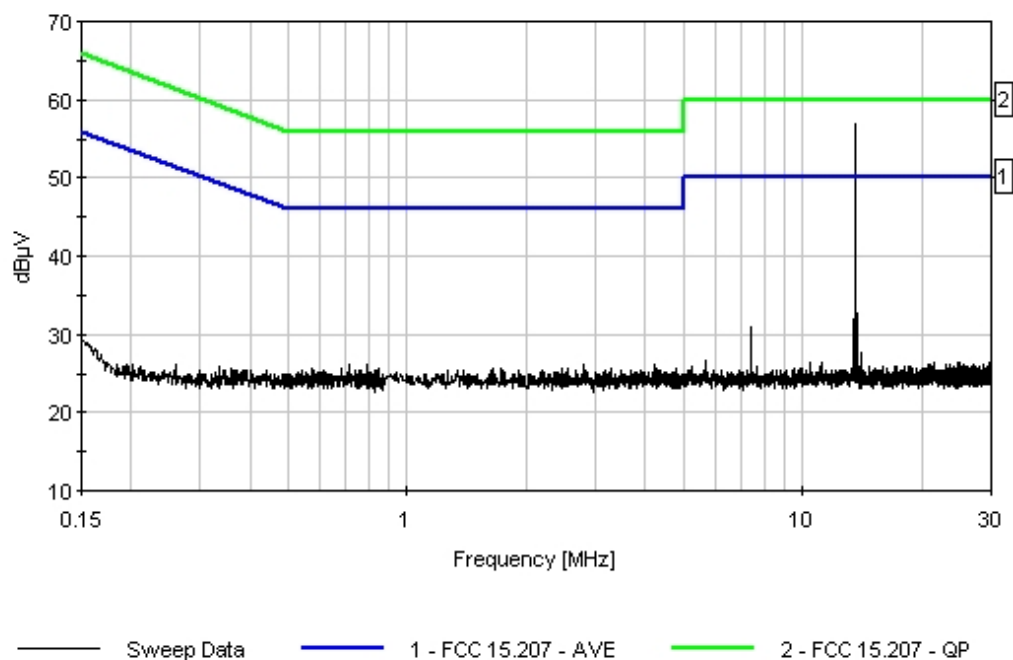
Measurement Data:

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	13.570M	53.0	+0.4	+0.5	+0.1		+0.0	54.0	60.0	-6.0	White
QP											
^	13.570M	55.8	+0.4	+0.5	+0.1		+0.0	56.8	50.0	+6.8	White
3	7.381M	30.0	+0.3	+0.4	+0.1		+0.0	30.8	50.0	-19.2	White
4	4.203M	25.4	+0.3	+0.4	+0.1		+0.0	26.2	46.0	-19.8	White
5	5.670M	25.8	+0.3	+0.4	+0.1		+0.0	26.6	50.0	-23.4	White
6	29.774M	25.3	+0.6	+0.4	+0.2		+0.0	26.5	50.0	-23.5	White
7	21.588M	25.3	+0.5	+0.4	+0.2		+0.0	26.4	50.0	-23.6	White
8	13.570M	24.0	+0.4	+0.5	+0.1		+0.0	25.0	50.0	-25.0	White
Ave											
9	150.000k	27.2	+0.1	+0.4	+2.7		+0.0	30.4	56.0	-25.6	White

CKC Laboratories Date: 08/19/2004 Time: 14:41:05 XceedID VVO#: 82527
 FCC 15.207 - AVE Test Lead: White 120V 60Hz Sequence#: 24
 XceedID M/N XF2100



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

Customer: **XceedID**
 Specification: **FCC 15.209**
 Work Order #: **82527**
 Test Type: **Maximized Emissions**
 Equipment: **Physical Access Control Reader**
 Manufacturer: **XceedID**
 Model: **XF2100**
 S/N: **1001**

Date: 08/20/2004
 Time: 10:25:17
 Sequence#: 28
 Tested By: Randal Clark

Equipment Under Test (* = EUT):

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

Support Devices:

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

Test Conditions / Notes:

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

Transducer Legend:

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

Measurement Data:

Reading listed by margin.

Test Distance: 10 Meters

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

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

Customer: **XceedID**
 Specification: **FCC 15.209**
 Work Order #: **82527**
 Test Type: **Maximized Emissions**
 Equipment: **Physical Access Control Reader**
 Manufacturer: **XceedID**
 Model: **XF2100**
 S/N: **1001**

Date: 08/20/2004
 Time: 11:00:19
 Sequence#: 29
 Tested By: Randal Clark

Equipment Under Test (* = EUT):

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

Support Devices:

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

Test Conditions / Notes:

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

Transducer Legend:

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

Measurement Data:

Reading listed by margin.

Test Distance: 10 Meters

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

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

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

Customer: **XceedID**
 Specification: **FCC 15.209**
 Work Order #: **82526**
 Test Type: **Maximized Emissions**
 Equipment: **Physical Access Control Reader**
 Manufacturer: **XceedID**
 Model: **XF2100**
 S/N: **1001**

Date: 08/19/2004
 Time: 11:53:35
 Sequence#: 25
 Tested By: Randal Clark

Equipment Under Test (* = EUT):

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

Support Devices:

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

Test Conditions / Notes:

EUT is a Physical Access Control Reader operating at 13.56 MHz and 125 kHz. To simulate normal installation, EUT is mounted vertically on a wooden support structure. EUT is powered by a support DC power supply. Support power supply chassis is bonded to ground. Steward ferrite 42064-200 added to EUT cable at the back of the EUT. Frequency Range investigated: 30MHz - 1000MHz. Note: Test distance correction factor applied in accordance with 15.31. Temperature: 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	298.401M	41.5	-26.5	+12.8	+4.1		+10.0	41.9	46.0	-4.1	Verti 100
	QP										
^	298.392M	43.9	-26.5	+12.8	+4.1		+10.0	44.3	46.0	-1.7	Verti 100
3	81.412M	44.0	-27.2	+6.9	+2.0		+10.0	35.7	40.0	-4.3	Verti 225
4	325.496M	39.1	-26.7	+13.5	+4.3		+10.0	40.2	46.0	-5.8	Verti 100
5	108.555M	40.7	-27.2	+10.1	+2.4		+10.0	36.0	43.5	-7.5	Verti 100
	QP										
^	108.560M	42.7	-27.2	+10.1	+2.4		+10.0	38.0	43.5	-5.5	Verti 100
7	271.255M	37.9	-26.5	+12.4	+3.8		+10.0	37.6	46.0	-8.4	Verti 100
8	206.366M	39.4	-26.6	+8.8	+3.3		+10.0	34.9	43.5	-8.6	Verti 100
9	189.896M	40.0	-26.7	+8.3	+3.2		+10.0	34.8	43.5	-8.7	Verti 100

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

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

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

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

Equipment Under Test (* = EUT):

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

Support Devices:

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

Test Conditions / Notes:

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

Transducer Legend:

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

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