CKC LABORATORIES, INC. Testing the Future

ACCREDITED
Certicate Numbers
803.01, 803.02, 803.05, 803.06
EMC

# XCEEDID TEST REPORT

# FOR THE

# PROX/SMART CARD READER, XF1500P

# FCC PART 15 SUBPART C SECTIONS 15.207, 15.209 & 15.225, SUBPART B SECTIONS 15.107 & 15.109 CLASS B AND RSS-210

# COMPLIANCE

**DATE OF ISSUE: MARCH 22, 2007**

**PREPARED FOR:**

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

P.O. No.: MC012607_1
W.O. No.: 85643

**PREPARED BY:**

Mary Ellen Clayton
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Date of test: January 15 - March 15, 2007

**Report No.: FC07-017**

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## ADMINISTRATIVE INFORMATION

**DATE OF TEST:** January 15 - March 15, 2007

**DATE OF RECEIPT:** January 15, 2007

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

**REPRESENTATIVE:** Mike Conlin

**TEST LOCATION:** CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

**TEST METHOD:** ANSI C63.4 (2003), RSS-210 and RSS GEN

**PURPOSE OF TEST:** To demonstrate the compliance of the Prox/Smart Card Reader, XF1500P with the requirements for FCC Part 15 Subpart C Sections 15.207, 15.209 & 15.225 and Subpart B Sections 15.107 & 15.109 Class B devices.

**APPROVALS**

Steve Behm, Director of Engineering Services

**QUALITY ASSURANCE:**

Joyce Walker, Quality Assurance Administrative Manager

**TEST PERSONNEL:**

Mike Wilkinson, EMC Engineer/Lab Manager

Randy Clark, EMC Engineer

## FCC TO CANADA STANDARD CORRELATION MATRIX

| Canadian Standard | Canadian Section | FCC Standard | FCC Section | Test Description |
|---|---|---|---|---|
| RSS GEN | 7.1.4 | 47CFR | 15.203 | Antenna Connector Requirements |
| RSS GEN | 7.2.1 | 47CFR | 15.35(c) | Pulsed Operation |
| RSS GEN | 7.2.2 | 47CFR | 15.207 | AC Mains Conducted Emissions Requirement |
| RSS 210 | 2.1 | 47CFR | 15.215(c) | Frequency Stability Recommendation |
| RSS 210 | 2.2 | 47CFR | 15.205 | Restricted Bands of Operation |
| RSS 210 | 2.6 | 47CFR | 15.209 | General Radiated Emissions Requirement |
| RSS 210 | A2.6 | 47CFR | 15.225(a-c) | Fundamental and Emissions Mask Requirements |
| RSS 210 | A2.6 | NA | NA | ±150kHz to ±450kHz Emissions Requirement |
| RSS 210 | A2.6 | 47CFR | 15.225(d) | Out of band emissions |
| RSS 210 | A2.6 | 47CFR | 15.225(e) | Carrier Stability |
| | IC 3082A-1 | | 784962 | Site File No. |

**CONDITIONS FOR COMPLIANCE**

No modifications to the EUT were necessary to comply.

**FCC 15.33(a) Frequency Ranges Tested**
15.109 Radiated Emissions: 30 kHz – 1000 MHz
15.107/15.207 Conducted Emissions: 150 kHz – 30 MHz
15.209 Radiated Emissions: 9 kHz – 1000 MHz
15.225 Radiated Emissions: Carrier

| 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.

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

**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 customer declares the EUT tested by CKC Laboratories was representative of a production unit.

The following model has been tested by CKC Laboratories:

**Prox/Smart Card Reader, XF1500P**

The manufacturer states that the following additional models are identical electrically to the one which was tested, or any differences between them do not affect their EMC characteristics, and therefore they comply to the level of testing equivalent to the tested models.

| Model Number | Model Description |
|---|---|
| XF1500P | Combo 125kHz/13.56 MHz Pigtail with Wiegand output |
| XF1500C | Combo 125kHz/13.56 MHz Connector with Wiegand output |
| XF1500CS2 | Combo 125kHz/13.56 MHz Pigtail with RS232 interface |
| XF1500CS4 | Combo 125kHz/13.56 MHz Pigtail with RS485 interface |

**EQUIPMENT UNDER TEST**

**Prox/Smart Card Reader**

Manuf: XceedID
Model: XF1500P
Serial: 0006
FCC ID: pending

**PERIPHERAL DEVICES**

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

**Power Supply**

Manuf: Topward
Model: TPS-4000
Serial: 918520

# REPORT OF EMISSIONS MEASUREMENTS

## TESTING PARAMETERS

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

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits to determine compliance. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

## CORRECTION FACTORS

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

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

## TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. The following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used. When conducted emissions testing was performed, a 10 dB external attenuator was used with internal offset correction in the analyzer.

| MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE | | | |
|---|---|---|---|
| TEST | BEGINNING FREQUENCY | ENDING FREQUENCY | BANDWIDTH SETTING |
| CONDUCTED EMISSIONS | 150 kHz | 30 MHz | 9 kHz |
| RADIATED EMISSIONS | 30 MHz | 1000 MHz | 120 kHz |
| RADIATED EMISSIONS | 1000 MHz | >1 GHz | 1 MHz |

## SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions 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 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/receiver readings were recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the measuring device called "peak hold," the measuring device had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

**Quasi-Peak**

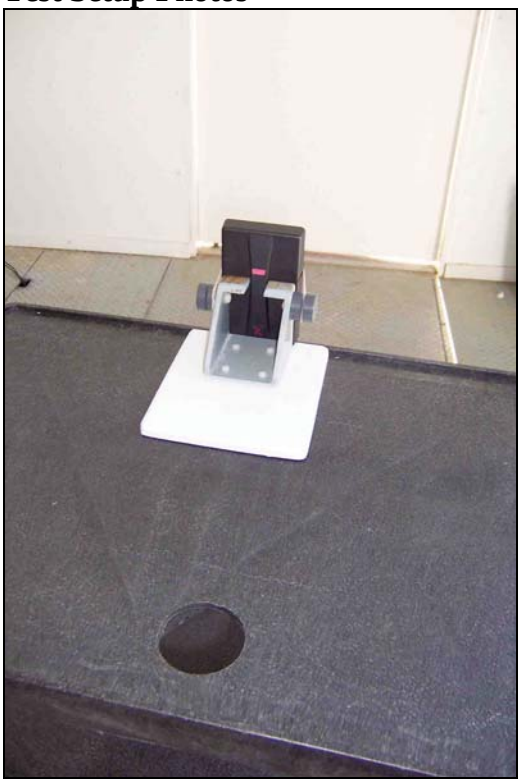
When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the quasi-peak detector.

**Average**

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

## FCC 15.109 RADIATED EMISSIONS

### Test Setup Photos



## Test Data Sheets

Test Location: CKC Laboratories •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **XceedID**
Specification: **15.109 CLASS B**
Work Order #: **85643** Date: 3/1/2007
Test Type: **Maximized Emissions** Time: 11:40:53
Equipment: **Prox/Smart Card Reader** Sequence#: 30
Manufacturer: XceedID Tested By: Mike Wilkinson
Model: XF1500P
S/N: 0006

***Test Equipment*:**

| Function | S/N | Calibration Date | Cal Due Date | Asset # |
|---|---|---|---|---|
| Agilent E4446A SA | US44300407 | 01/03/2007 | 01/03/2009 | 02660 |
| HP 8447D Preamp | 1937A02604 | 03/11/2005 | 03/11/2007 | 00099 |
| Chase CBL6111C Bilog | 2456 | 12/30/2006 | 12/30/2008 | 01991 |

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

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Prox/Smart Card Reader* | XceedID | XF1500P | 0006 |

***Support Devices:***

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Power Supply | Topward | TPS-4000 | 918520 |

***Test Conditions / Notes:***

EUT is a multi-technology reader operating on a frequency of 125kHz and 13.56MHz. EUT is mounted on a vertical support structure, simulating normal installation. DC power is provided via support power supply. Power supply is bonded to ground plane. Frequency range of investigation: 30-1000MHz. Temperature: 17ºC, Relative Humidity: 41%.

***Transducer Legend:***

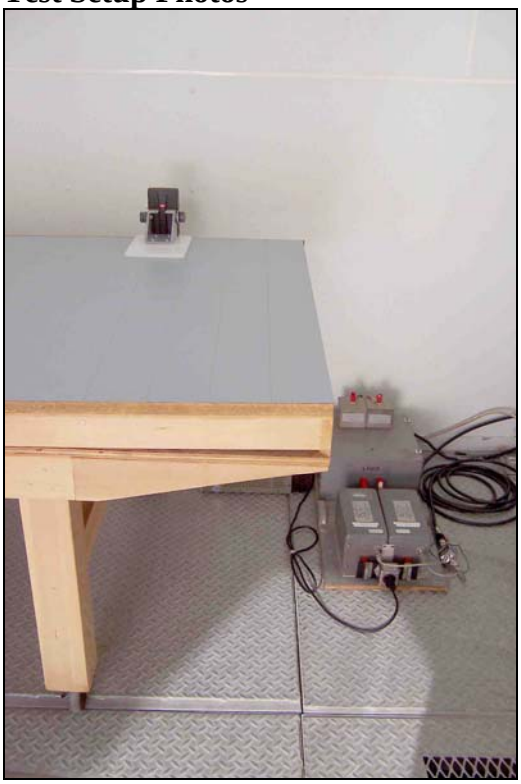
T1=Cable - Site D 10m 9k-1G T2=Amp - S/N 604
T3=Bilog Site D

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

| # | Freq MHz | Rdng dBµV | T1 dB | T2 dB | T3 dB | dB | Dist Table | Corr dBµV/m | Spec dBµV/m | Margin dB | Polar Ant |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 191.988M | 32.8 | +4.0 | -26.6 | +8.3 | | +10.0 | 28.5 | 43.5 | -15.0 | Verti 100 |
| 2 | 208.017M | 30.9 | +4.3 | -26.4 | +9.0 | | +10.0 | 27.8 | 43.5 | -15.7 | Verti 100 |

## FCC 15.107/15.207 CONDUCTED EMISSIONS

### Test Setup Photos



## Test Data Sheets

Test Location: CKC Laboratories •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

| | | | |
|---|---|---|---|
| Customer: | **XceedID** | | |
| Specification: | **FCC 15.207/15.207 - AVE** | | |
| Work Order #: | **85643** | Date: | 3/15/2007 |
| Test Type: | **Conducted Emissions** | Time: | 11:25:13 |
| Equipment: | **Prox/Smart Card Reader** | Sequence#: | 25 |
| Manufacturer: | XceedID | Tested By: | Randal Clark |
| Model: | XF1500P | | 120V 60Hz |
| S/N: | 0006 | | |

***Test Equipment*:**

| Function | S/N | Calibration Date | Cal Due Date | Asset # |
|---|---|---|---|---|
| Agilent E4446A SA | US44300407 | 01/03/2007 | 01/03/2009 | 02660 |
| 150kHz HP Filter TTE | G7754 | 03/09/2006 | 03/09/2008 | 02608 |
| LISN, 8028-50-TS-24-BNC | 8379276, 280 | 06/03/2005 | 06/03/2007 | 1248 & 1249 |
| 10 dB Attenuator 10W | None | 08/18/2005 | 08/18/2007 | P04255 |

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

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Prox/Smart Card Reader* | XceedID | XF1500P | 0006 |

***Support Devices:***

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Power Supply | Topward | TPS-4000 | 918520 |

***Test Conditions / Notes:***

EUT is a multi-technology reader operating on a frequency of 125kHz and 13.56MHz. EUT is mounted on a vertical support structure, simulating normal installation. DC power provided via support power supply is routed through EUT LISN. Power supply is bonded to ground plane. Margin for QP measurements taken with respect to the QP limit, margin for all other measurements taken with respect to the average limit. Frequency range of investigation: 150kHz - 30MHz. Temperature: 19ºC, Relative Humidity: 32%. For the carrier (13.56MHz only) measurement, the integral antenna was replaced with a load of characteristic impedance.

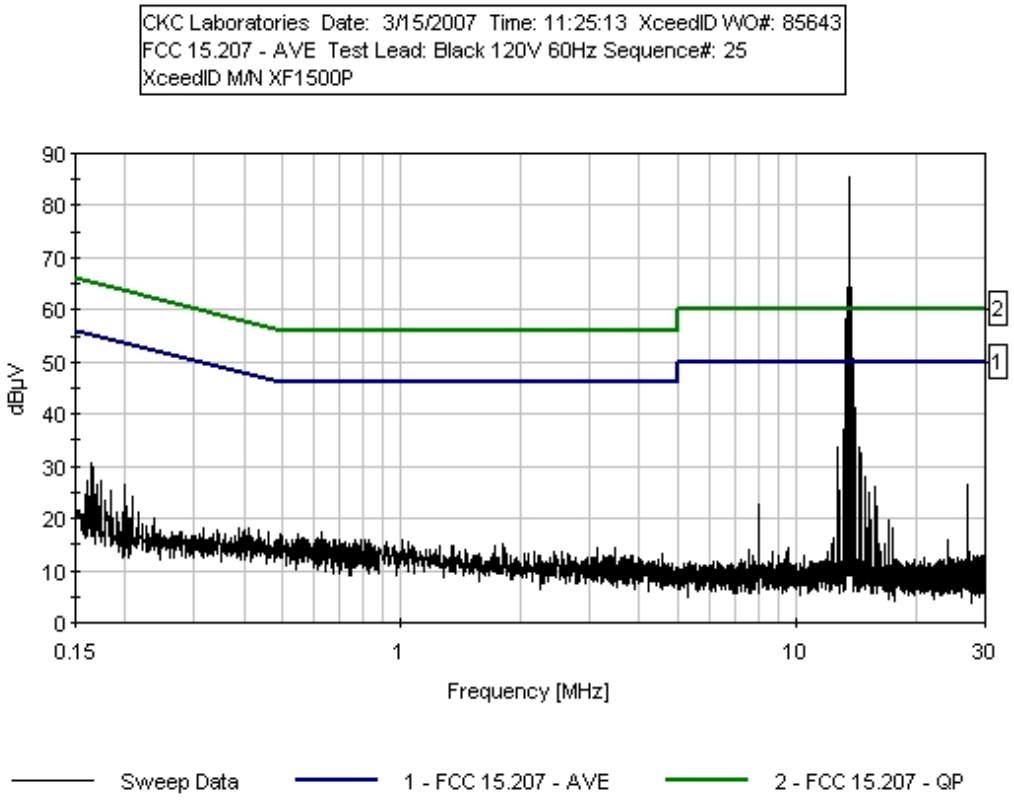
***Transducer Legend:***

| | |
|---|---|
| T1=LISN Insertion Loss s/n280 | T2=Filter 150kHz HP AN02608 |
| T3=Cable - Site D LISN 100k-30M | |

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

| # | Freq MHz | Rdng dBµV | T1 dB | T2 dB | T3 dB | dB | Dist Table | Corr dBµV | Spec dBµV | Margin dB | Polar Ant |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13.560M | 73.0 | +0.4 | +0.1 | +10.9 | | +0.0 | 84.4 | 84.4 | +0.0 | Black |
| | | | | | | | | | Carrier with integral antenna | | |
| 2 | 27.120M | 14.1 | +0.5 | +0.1 | +11.0 | | +0.0 | 25.7 | 50.0 | -24.3 | Black |
| 3 | 13.560M | 13.8 | +0.4 | +0.1 | +10.9 | | +0.0 | 25.2 | 50.0 | -24.8 | Black |
| | | | | | | | | | Carrier with load | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 8.000M | 13.6 | +0.5 | +0.1 | +10.8 | +0.0 | 25.0 | 50.0 | -25.0 | Black |
| 5 | 16.001M | 9.9 | +0.4 | +0.1 | +10.8 | +0.0 | 21.2 | 50.0 | -28.8 | Black |
| 6 | 23.999M | 4.3 | +0.4 | +0.2 | +11.0 | +0.0 | 15.9 | 50.0 | -34.1 | Black |



Test Location: CKC Laboratories •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **XceedID**
Specification: **FCC 15.107/15.207 - AVE**
Work Order #: **85643** Date: 3/15/2007
Test Type: **Conducted Emissions** Time: 11:29:56
Equipment: **Prox/Smart Card Reader** Sequence#: 26
Manufacturer: XceedID Tested By: Randal Clark
Model: XF1500P 120V 60Hz
S/N: 0006

***Test Equipment*:**

| Function | S/N | Calibration Date | Cal Due Date | Asset # |
|---|---|---|---|---|
| Agilent E4446A SA | US44300407 | 01/03/2007 | 01/03/2009 | 02660 |
| 150kHz HP Filter TTE | G7754 | 03/09/2006 | 03/09/2008 | 02608 |
| LISN, 8028-50-TS-24-BNC | 8379276, 280 | 06/03/2005 | 06/03/2007 | 1248 & 1249 |
| 10 dB Attenuator 10W | None | 08/18/2005 | 08/18/2007 | P04255 |

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

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Prox/Smart Card Reader* | XceedID | XF1500P | 0006 |

***Support Devices:***

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Power Supply | Topward | TPS-4000 | 918520 |

***Test Conditions / Notes:***

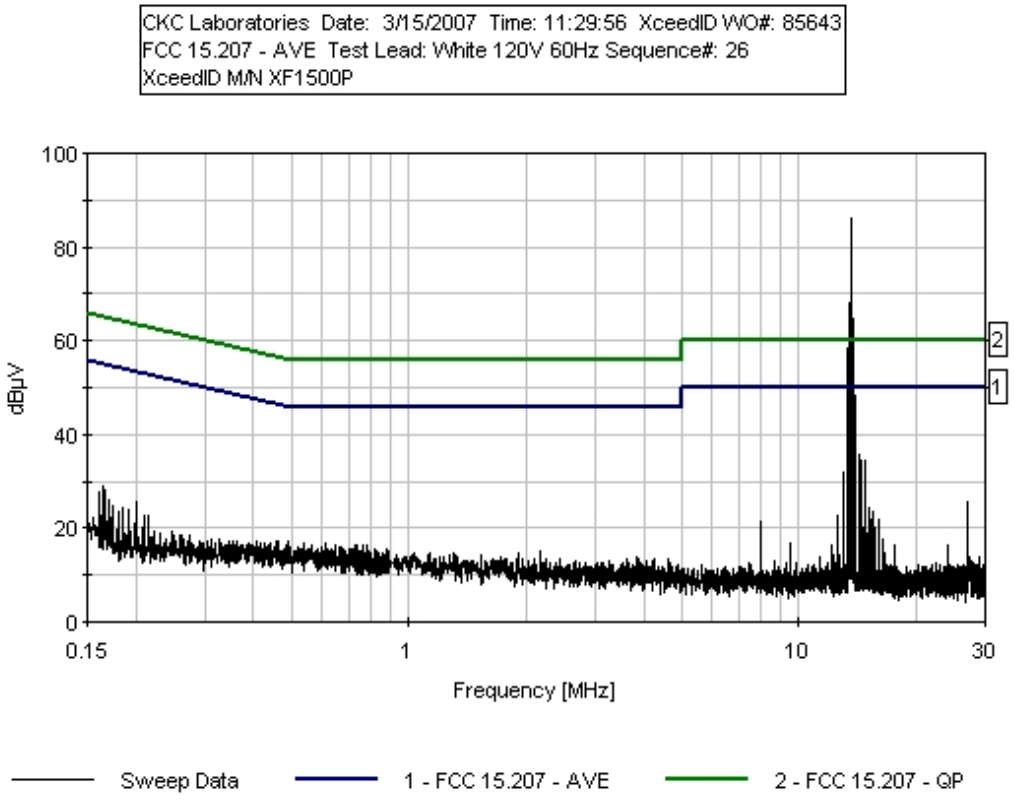
EUT is a multi-technology reader operating on a frequency of 125kHz and 13.56MHz. EUT is mounted on a vertical support structure, simulating normal installation. DC power provided via support power supply is routed through EUT LISN. Power supply is bonded to ground plane. Margin for QP measurements taken with respect to the QP limit, margin for all other measurements taken with respect to the average limit. Frequency range of investigation: 150kHz - 30MHz. Temperature: 19ºC, Relative Humidity: 32%. For the carrier (13.56MHz only) measurement, the integral antenna was replaced with a load of characteristic impedance.

***Transducer Legend:***

T1=LISN Insertion Loss s/n276 T2=Filter 150kHz HP AN02608
T3=Cable - Site D LISN 100k-30M

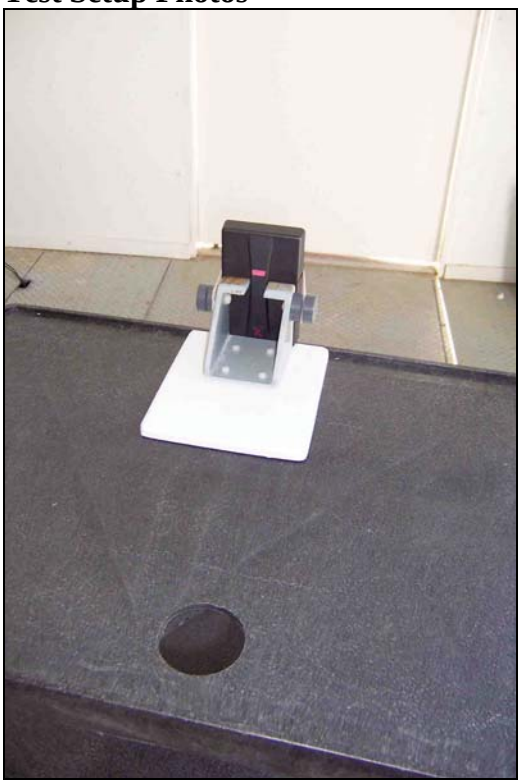
***Measurement Data:*** Reading listed by margin. Test Lead: White

| # | Freq MHz | Rdng dBµV | T1 dB | T2 dB | T3 dB | dB | Dist Table | Corr dBµV | Spec dBµV | Margin dB | Polar Ant |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13.560M | 75.1 | +0.5 | +0.1 | +10.9 | | +0.0 | 86.6 | 86.6 | +0.0 | White |
| | | | | | | | | | Carrier with integral antenna | | |
| 2 | 13.560M | 15.4 | +0.5 | +0.1 | +10.9 | | +0.0 | 26.9 | 50.0 | -23.2 | White |
| | | | | | | | | | Carrier with load | | |
| 3 | 27.121M | 13.8 | +0.4 | +0.1 | +11.0 | | +0.0 | 25.3 | 50.0 | -24.7 | White |
| 4 | 8.000M | 12.9 | +0.5 | +0.1 | +10.8 | | +0.0 | 24.3 | 50.0 | -25.7 | White |
| 5 | 15.999M | 10.8 | +0.4 | +0.1 | +10.8 | | +0.0 | 22.1 | 50.0 | -27.9 | White |
| 6 | 24.001M | 4.9 | +0.4 | +0.2 | +11.0 | | +0.0 | 16.5 | 50.0 | -33.5 | White |


CKC Laboratories Date: 3/15/2007 Time: 11:29:56 XceedID WO#: 85643
FCC 15.207 - AVE Test Lead: White 120V 60Hz Sequence#: 26
XceedID M/N XF1500P
100
80
60
40
20
0
dBµV
0.15
1
10
30
Frequency [MHz]
2
1
Sweep Data
1 - FCC 15.207 - AVE
2 - FCC 15.207 - QP

## FCC 15.209 RADIATED EMISSIONS

### Test Setup Photos



## Test Data Sheets

Test Location: CKC Laboratories •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **XceedID**
Specification: **FCC 15.209**
Work Order #: **85643** Date: 3/2/2007
Test Type: **Maximized Emissions** Time: 13:26:36
Equipment: **Prox/Smart Card Reader** Sequence#: 6
Manufacturer: XceedID Tested By: Mike Wilkinson
Model: XF1500P
S/N: 0006

***Test Equipment*:**

| Function | S/N | Calibration Date | Cal Due Date | Asset # |
|---|---|---|---|---|
| Agilent E4446A SA | US44300407 | 01/03/2007 | 01/03/2009 | 02660 |
| EMCO Loop Antenna | 1074 | 05/13/2005 | 05/13/2007 | 00226 |

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

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Prox/Smart Card Reader* | XceedID | XF1500P | 0006 |

***Support Devices:***

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Power Supply | Topward | TPS-4000 | 918520 |

***Test Conditions / Notes:***

EUT is a multi-technology reader operating on a frequency of 125kHz and 13.56MHz. EUT is mounted on a vertical support structure, simulating normal installation. DC power is provided via support power supply. Power supply is bonded to ground plane. Test data is corrected for proper test distance using 40dB per decade correction factor in accordance with 15.31. Frequency range of investigation: 9kHz to 30MHz. Temperature: 17ºC, Relative Humidity: 41%.

***Transducer Legend:***

T1=Cable - Site D 10m 9k-1G T2=Mag Loop - AN 00226 - 9kHz-30M
T3=15.31 10m 40dB/Dec Correction

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

| # | Freq MHz | Rdng dBµV | T1 dB | T2 dB | T3 dB | dB | Dist Table | Corr dBµV/m | Spec dBµV/m | Margin dB | Polar Ant |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 27.127M | 22.2 | +1.4 | +6.6 | -20.0 | | +0.0 | 10.2 | 29.5 | -19.3 | Horiz |
| 2 | 250.017k | 40.1 | +0.2 | +10.2 | -60.0 | | +0.0 | -9.5 | 19.6 | -29.1 | Vert |
| 3 | 249.980k | 39.7 | +0.2 | +10.2 | -60.0 | | +0.0 | -9.9 | 19.6 | -29.5 | Horiz |
| 4 | 8.125M | 8.9 | +0.8 | +9.8 | -20.0 | | +0.0 | -0.5 | 29.5 | -30.0 | Vert |
| 5 | 27.123M | 8.6 | +1.4 | +6.6 | -20.0 | | +0.0 | -3.4 | 29.5 | -32.9 | Vert |

Test Location: CKC Laboratories •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **XceedID**
Specification: **FCC 15.209**
Work Order #: **85643** Date: 3/1/2007
Test Type: **Maximized Emissions** Time: 11:40:53
Equipment: **Prox/Smart Card Reader** Sequence#: 1
Manufacturer: XceedID Tested By: Mike Wilkinson
Model: XF1500P
S/N: 0006

***Test Equipment*:**

| Function | S/N | Calibration Date | Cal Due Date | Asset # |
|---|---|---|---|---|
| Agilent E4446A SA | US44300407 | 01/03/2007 | 01/03/2009 | 02660 |
| HP 8447D Preamp | 1937A02604 | 03/11/2005 | 03/11/2007 | 00099 |
| Chase CBL6111C Bilog | 2456 | 12/30/2006 | 12/30/2008 | 01991 |

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

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Prox/Smart Card Reader* | XceedID | XF1500P | 0006 |

***Support Devices:***

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Power Supply | Topward | TPS-4000 | 918520 |

***Test Conditions / Notes:***

EUT is a multi-technology reader operating on a frequency of 125kHz and 13.56MHz. EUT is mounted on a vertical support structure, simulating normal installation. DC power is provided via support power supply. Power supply is bonded to ground plane. Frequency range of investigation: 30-1000MHz. Temperature: 17ºC, Relative Humidity: 41%.

***Transducer Legend:***

T1=Cable - Site D 10m 9k-1G T2=Amp - S/N 604
T3=Bilog Site D

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

| # | Freq MHz | Rdng dBµV | T1 dB | T2 dB | T3 dB | dB | Dist Table | Corr dBµV/m | Spec dBµV/m | Margin dB | Polar Ant |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 40.680M QP | 39.8 | +1.7 | -27.0 | +12.0 | | +10.0 | 36.5 | 40.0 | -3.5 | Verti 105 |
| 2 | 555.984M | 31.8 | +8.2 | -27.5 | +18.4 | | +10.0 | 40.9 | 46.0 | -5.1 | Horiz 100 |
| 3 | 189.840M QP | 42.4 | +4.0 | -26.6 | +8.3 | | +10.0 | 38.1 | 43.5 | -5.4 | Verti 100 |
| 4 | 542.429M QP | 31.7 | +8.1 | -27.5 | +18.2 | | +10.0 | 40.5 | 46.0 | -5.5 | Horiz 163 |
| 5 | 610.204M QP | 29.4 | +8.4 | -27.7 | +19.2 | | +10.0 | 39.3 | 46.0 | -6.7 | Horiz 132 |
| 6 | 583.092M | 29.5 | +8.3 | -27.6 | +18.8 | | +10.0 | 39.0 | 46.0 | -7.0 | Verti 100 |
| 7 | 569.540M | 29.6 | +8.3 | -27.6 | +18.6 | | +10.0 | 38.9 | 46.0 | -7.1 | Verti 100 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 583.105M QP | 28.3 | +8.3 | -27.6 | +18.8 | +10.0 | 37.8 | 46.0 | -8.2 | Horiz 163 |
| ^ | 583.105M | 30.5 | +8.3 | -27.6 | +18.8 | +10.0 | 40.0 | 46.0 | -6.0 | Horiz 163 |
| 10 | 528.857M | 29.3 | +7.8 | -27.4 | +17.9 | +10.0 | 37.6 | 46.0 | -8.4 | Verti 100 |
| 11 | 555.975M | 28.4 | +8.2 | -27.5 | +18.4 | +10.0 | 37.5 | 46.0 | -8.5 | Verti 100 |
| 12 | 515.297M | 29.4 | +7.6 | -27.4 | +17.7 | +10.0 | 37.3 | 46.0 | -8.7 | Verti 100 |
| 13 | 54.244M | 38.7 | +2.0 | -26.8 | +7.3 | +10.0 | 31.2 | 40.0 | -8.8 | Verti 105 |
| 14 | 542.407M QP | 28.0 | +8.1 | -27.5 | +18.2 | +10.0 | 36.8 | 46.0 | -9.2 | Verti 100 |
| 15 | 244.092M | 35.6 | +4.9 | -26.0 | +11.6 | +10.0 | 36.1 | 46.0 | -9.9 | Verti 100 |
| 16 | 596.659M QP | 26.4 | +8.4 | -27.7 | +19.0 | +10.0 | 36.1 | 46.0 | -9.9 | Horiz 163 |
| ^ | 596.659M | 30.4 | +8.4 | -27.7 | +19.0 | +10.0 | 40.1 | 46.0 | -5.9 | Horiz 163 |
| 18 | 216.963M | 38.4 | +4.4 | -26.3 | +9.6 | +10.0 | 36.1 | 46.0 | -9.9 | Verti 105 |
| 19 | 40.673M | 33.1 | +1.7 | -27.0 | +12.0 | +10.0 | 29.8 | 40.0 | -10.2 | Horiz 163 |
| 20 | 256.012M | 33.9 | +5.1 | -26.0 | +12.1 | +10.0 | 35.1 | 46.0 | -10.9 | Verti 100 |
| 21 | 67.804M | 37.6 | +2.3 | -26.8 | +5.8 | +10.0 | 28.9 | 40.0 | -11.1 | Verti 105 |
| 22 | 149.162M | 34.7 | +3.6 | -26.7 | +10.4 | +10.0 | 32.0 | 43.5 | -11.5 | Verti 105 |
| 23 | 203.403M | 35.6 | +4.2 | -26.5 | +8.6 | +10.0 | 31.9 | 43.5 | -11.6 | Verti 100 |
| 24 | 176.283M | 34.9 | +3.9 | -26.7 | +8.4 | +10.0 | 30.5 | 43.5 | -13.0 | Verti 100 |
| 25 | 244.050M | 31.8 | +4.9 | -26.0 | +11.6 | +10.0 | 32.3 | 46.0 | -13.7 | Horiz 163 |
| 26 | 257.643M | 30.8 | +5.1 | -26.0 | +12.1 | +10.0 | 32.0 | 46.0 | -14.0 | Verti 100 |
| 27 | 191.988M | 32.8 | +4.0 | -26.6 | +8.3 | +10.0 | 28.5 | 43.5 | -15.0 | Verti 100 |
| 28 | 352.584M | 27.4 | +5.6 | -26.5 | +14.3 | +10.0 | 30.8 | 46.0 | -15.2 | Horiz 163 |
| 29 | 230.523M | 31.3 | +4.7 | -26.2 | +10.7 | +10.0 | 30.5 | 46.0 | -15.5 | Verti 100 |
| 30 | 271.203M | 28.7 | +5.3 | -26.0 | +12.4 | +10.0 | 30.4 | 46.0 | -15.6 | Verti 100 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 31 | 208.017M | 30.9 | +4.3 | -26.4 | +9.0 | +10.0 | 27.8 | 43.5 | -15.7 | Verti 100 |
| 32 | 162.723M | 30.2 | +3.8 | -26.7 | +9.8 | +10.0 | 27.1 | 43.5 | -16.4 | Verti 100 |
| 33 | 122.044M | 28.6 | +3.3 | -26.7 | +11.0 | +10.0 | 26.2 | 43.5 | -17.3 | Verti 105 |
| 34 | 325.443M | 25.3 | +5.6 | -26.4 | +13.5 | +10.0 | 28.0 | 46.0 | -18.0 | Verti 100 |

Test Location: CKC Laboratories •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **XceedID**
Specification: **FCC 15.209**
Work Order #: **85643** Date: 3/2/2007
Test Type: **Maximized Emissions** Time: 13:59:51
Equipment: **Prox/Smart Card Reader** Sequence#: 7
Manufacturer: XceedID Tested By: Mike Wilkinson
Model: XF1500P
S/N: 0006

***Test Equipment*:**

| Function | S/N | Calibration Date | Cal Due Date | Asset # |
|---|---|---|---|---|
| Agilent E4446A SA | US44300407 | 01/03/2007 | 01/03/2009 | 02660 |
| EMCO Loop Antenna | 1074 | 05/13/2005 | 05/13/2007 | 00226 |

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

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Prox/Smart Card Reader* | XceedID | XF1500P | 0006 |

***Support Devices:***

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Power Supply | Topward | TPS-4000 | 918520 |

***Test Conditions / Notes:***

EUT is a multi-technology reader operating on a frequency of 125kHz and 13.56MHz. EUT is mounted on a vertical support structure, simulating normal installation. DC power is provided via support power supply. Power supply is bonded to ground plane. Test data is corrected for proper test distance using 40dB per decade correction factor in accordance with 15.31. Frequency range of investigation: Carrier. Temperature: 17ºC, Relative Humidity: 41%.

***Transducer Legend:***

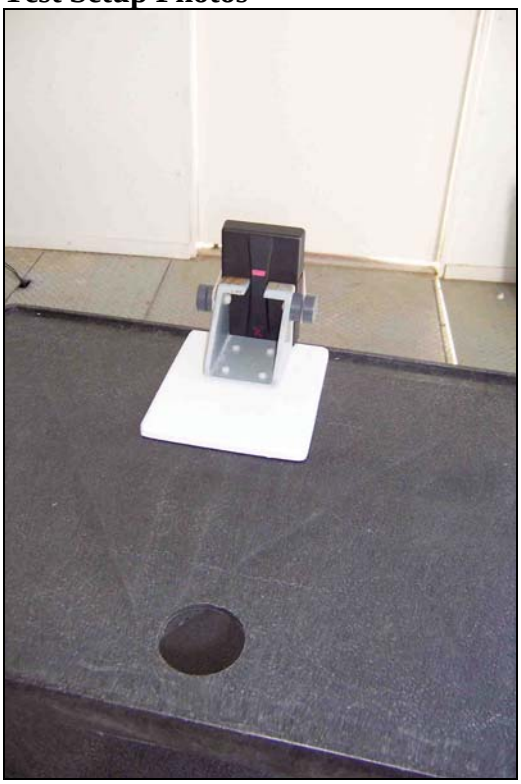
T1=Cable - Site D 10m 9k-1G T2=Mag Loop - AN 00226 - 9kHz-30M
T3=15.31 10m 40dB/Dec Correction

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

| # | Freq MHz | Rdng dBµV | T1 dB | T2 dB | T3 dB | dB | Dist Table | Corr dBµV/m | Spec dBµV/m | Margin dB | Polar Ant |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 125.001k | 44.3 | +0.2 | +10.2 | -60.0 | | +0.0 | -5.3 | 25.7 | -31.0 | Vert |
| 2 | 125.010k | 37.4 | +0.2 | +10.2 | -60.0 | | +0.0 | -12.2 | 25.7 | -37.9 | Horiz |

## FCC 15.225 RADIATED EMISSIONS

### Test Setup Photos



## Test Data Sheets

Test Location: CKC Laboratories •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **XceedID**
Specification: **47 CFR 15.225 Mask**
Work Order #: **85643** Date: 3/2/2007
Test Type: **Maximized Emissions** Time: 11:46:26
Equipment: **Prox/Smart Card Reader** Sequence#: 5
Manufacturer: XceedID Tested By: Mike Wilkinson
Model: XF1500P
S/N: 0006

***Test Equipment*:**

| Function | S/N | Calibration Date | Cal Due Date | Asset # |
|---|---|---|---|---|
| Agilent E4446A SA | US44300407 | 01/03/2007 | 01/03/2009 | 02660 |
| EMCO Loop Antenna | 1074 | 05/13/2005 | 05/13/2007 | 00226 |

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

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Prox/Smart Card Reader* | XceedID | XF1500P | 0006 |

***Support Devices:***

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Power Supply | Topward | TPS-4000 | 918520 |

***Test Conditions / Notes:***

EUT is a multi-technology reader operating on a frequency of 125kHz and 13.56MHz. EUT is mounted on a vertical support structure, simulating normal installation. DC power is provided via support power supply. Power supply is bonded to ground plane. Test data is corrected for proper test distance using 40dB per decade correction factor in accordance with 15.31. Frequency range of investigation: Carrier. Temperature: 17ºC, RelATIVE Humidity: 41%.

***Transducer Legend:***

| | |
|---|---|
| T1=Cable - Site D 10m 9k-1G | T2=Mag Loop - AN 00226 - 9kHz-30M |

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

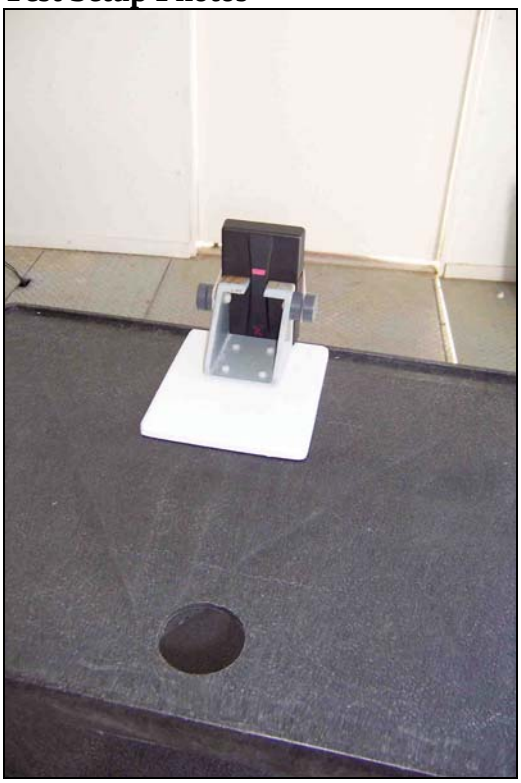
| # | Freq MHz | Rdng dBµV | T1 dB | T2 dB | dB | dB | Dist Table | Corr dBµV/m | Spec dBµV/m | Margin dB | Polar Ant |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13.565M | 55.5 | +1.0 | +9.6 | | | -19.0 | 47.1 | 84.0 | -36.9 | Horiz |
| 2 | 13.563M | 51.1 | +1.0 | +9.6 | | | -19.0 | 42.7 | 84.0 | -41.3 | Vert |

## OCCUPIED BANDWIDTH

### Test Equipment

| Function | S/N | Calibration Date | Cal Due Date | Asset # |
|---|---|---|---|---|
| Agilent E4446A SA | US44300407 | 01/03/2007 | 01/03/2009 | 02660 |
| EMCO Loop Antenna | 1074 | 05/13/2005 | 05/13/2007 | 00226 |

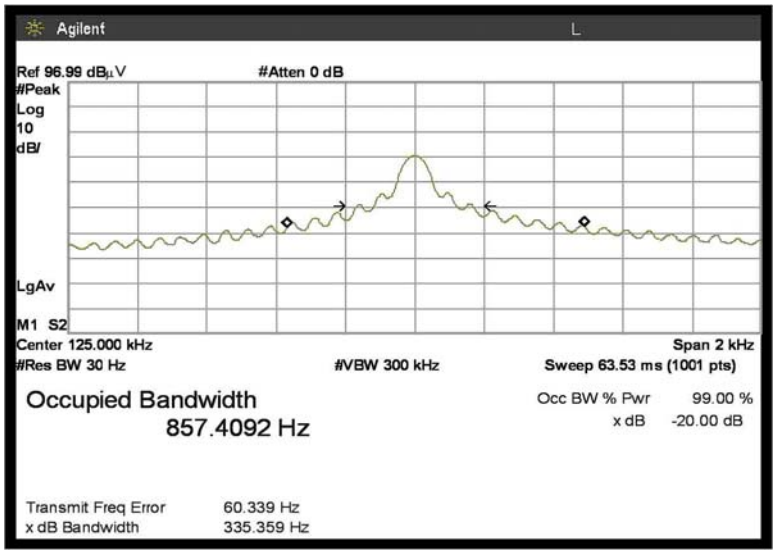
### Test Setup Photos



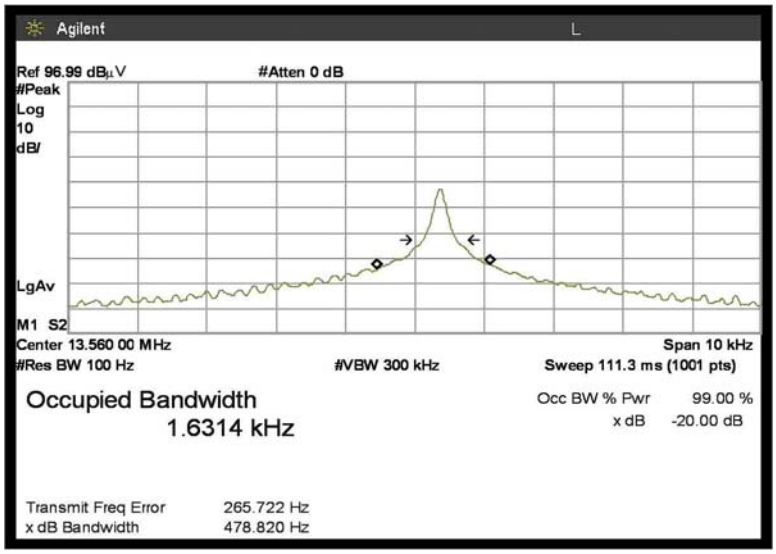
**Test Conditions:** EUT is a multi-technology reader operating on a frequency of 125kHz and 13.56MHz. EUT is mounted on a vertical support structure, simulating normal installation. DC power is provided via support power supply. Power supply is bonded to ground plane.

**Plots**

**RSS-210 OCCUPIED BANDWIDTH 125kHz**



## RSS-210 OCCUPIED BANDWIDTH 13.56MHz



## FREQUENCY STABILITY

### Test Equipment

| Function | S/N | Calibration Date | Cal Due Date | Asset # |
|---|---|---|---|---|
| Oven Thermotron S-1.2 Min. | 11899 | 12/21/2006 | 12/21/2008 | 01879 |
| Spectrum Analyzer, PSA Agilent E4446A | US44300407 | 1/3/2007 | 1/3/2009 | 02660 |
| Power Supply, DC HP 6205C | 2228A01775 | 8/15/2005 | 8/15/2007 | 00762 |

### Test Setup Photos

**Test Conditions:** Equipment is placed inside of a temperature chamber. EUT power is provided via bench supply. Power variations are performed while monitoring with a digital voltage meter.

## Test Data

| | |
|---|---|
| **Customer:** | XceedID |
| **WO#:** | 85643 |
| **Date:** | 6-Mar-07 |
| **Test Engineer:** | Randal Clark |

| | | |
|---|---|---|
| **Device Model #:** | XF1500P | |
| **Operating Voltage:** | 12.00 | **VDC** |
| **Frequency Limit:** | 0.01 | **%** |

### Temperature Variations

| | | XF1500P | Dev. (MHz) |
|---|---|---|---|
| Channel Frequency: | | **13.5603** | |
| Temp (C) | Voltage | | |
| -30 | 12.00 | | |
| -20 | 12.00 | 13.56039 | 0.00009 |
| -10 | 12.00 | 13.56035 | 0.00005 |
| 0 | 12.00 | 13.56036 | 0.00006 |
| 10 | 12.00 | 13.56035 | 0.00005 |
| 20 | 12.00 | 13.56031 | 0.00001 |
| 30 | 12.00 | 13.56034 | 0.00004 |
| 40 | 12.00 | 13.56041 | 0.00011 |
| 50 | 12.00 | 13.56037 | 0.00007 |

### Voltage Variations (±15%)

| | | | |
|---|---|---|---|
| 20 | 10.2 | 13.56032 | 0.00002 |
| 20 | 12.00 | 13.56031 | 0.00001 |
| 20 | 13.8 | 13.56031 | 0.00001 |

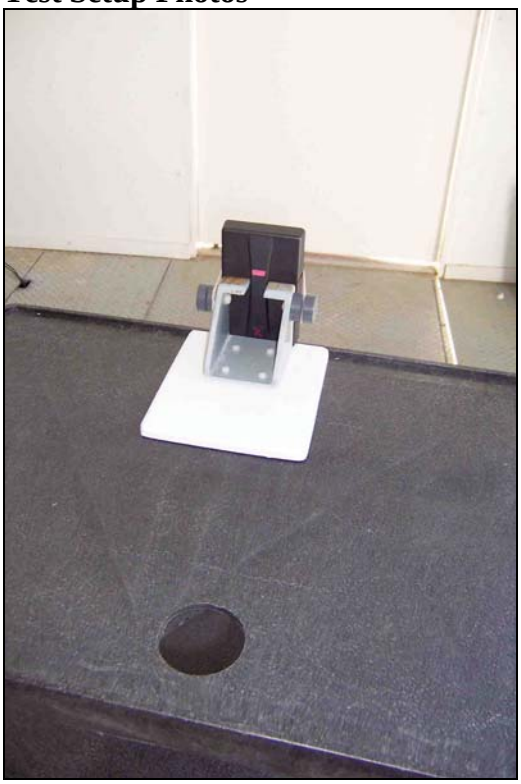
| | |
|---|---|
| **Max Deviation (MHz)** | **0.00011** |
| **Max Deviation (%)** | **0.00081** |
| | **PASS** |

## FCC 15.225/RSS-210 EMISSIONS MASK

### Test Equipment

| Function | S/N | Calibration Date | Cal Due Date | Asset # |
|---|---|---|---|---|
| Agilent E4446A SA | US44300407 | 01/03/2007 | 01/03/2009 | 02660 |
| EMCO Loop Antenna | 1074 | 05/13/2005 | 05/13/2007 | 00226 |

### Test Setup Photos



**Test Conditions:** EUT is a multi-technology reader operating on a frequency of 125kHz and 13.56MHz. EUT is mounted on a vertical support structure, simulating normal installation. DC power is provided via support power supply. Power supply is bonded to ground plane.

**Plot**