



Nemko

Nemko USA, Inc.
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CERTIFICATION TEST REPORT

PART 15.225C
IC RSS-210

For The Wireless RFID Contactless Card Reader with Fingerprint Reader
Model: MC7XFPSCR-01R

FCC ID: WHEMC7XFPSCR-01R
IC: 7772A- MC7XFPSC

PREPARED FOR:

Semtek
4217A Ponderosa Avenue
San Diego, CA 92123

Prepared on: July 31, 2008

Report Number: 2008 07107988 FCC

Project Number: 8564-2

NEx Number: 107988

Total Pages: 25

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DOCUMENT HISTORY

REVISION	DATE	COMMENTS
-	July 31, 2008	Prepared By: Alan Laudani
-	July 31, 2008	Initial Release: Alan Laudani

NOTE: Nemko USA, Inc. hereby makes the following statements so as to conform to Chapter 10 (Test Reports) Requirements of ANSI C63.4 (2003) "Methods and Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz":

- The unit described in this report was received at Nemko USA, Inc.'s facilities on June 10, 2008.
- Testing was performed on the unit described in this report on June 10, 2008 to July 30, 2008
- The Test Results reported herein apply only to the Unit actually tested, and to substantially identical Units.
- This report does not imply the endorsement of the Federal Communications Commission (FCC), Industry Canada, NVLAP or any other government agency.

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CERTIFICATION

Nemko USA, Inc., an independent Electromagnetic Compatibility (EMC) Test Laboratory, produced this Test Report and performed the Radio Frequency Interference (RFI) testing and data evaluation contained herein.

Nemko USA, Inc.'s measurement facility is currently registered with the United States Federal Communications Commission (FCC) in accordance with the provisions of 47 United States Code (CFR) Part 2, Subpart I, Section 2.948(a). A current description of Nemko USA, Inc.'s measurement facility is on file with the FCC. Nemko USA Inc. has additionally satisfied the FCC that it complies with the requirements set forth in 47 CFR Part 2, Subpart I, Section 2.948(d) regarding the accreditation of EMC laboratories.

The RFI testing, test data collection and test data evaluation were accomplished in accordance with the ANSI C63.4-2003 Standard, and in accordance with the applicable sections of the FCC rules (47 CFR Parts 2 and 15). The testing was also accomplished in accordance with Industry Canada's ICES-003 standard for unintentional radiating device per EMCAB-3, Issue 3 (May 1998). The administrative summary of this test report provides a description of the test sample.

I hereby certify that the test data, test data evaluation, and equipment configurations used to compile this test report are a true and accurate representation of the test sample's radio frequency interference characteristics as of the test date(s), and, for the design of the test sample.



Alan Laudani
EMC Engineer

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1. ADMINISTRATIVE DATA AND TEST SUMMARY

1.1. Administrative Data

CLIENT: Semtek
4217A Ponderosa Avenue
San Diego, CA 92123

CONTACT: Kerry McKay
E-Mail: contact@company.com

DATE (S) OF TEST: June 10, 2008 to July 30, 2008

EQUIPMENT UNDER TEST (EUT): Wireless RFID Contactless Card Reader with Fingerprint Reader

MODEL: MC7XFPSCR-01R
SERIAL NUMBER: N/A

CONDITION UPON RECEIPT: Suitable for Test

TEST SPECIFICATION: FCC, Part 15.225, Subpart C Operation within the band
13.110–14.010 MHz. and RSS 210 (Issue 7, June 2007) A2.6
General Section, Operating frequencies: 13.110 – 14.010 MHz

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1.2. Test Summary

The column headed “Required” indicates whether the associated clauses were invoked for the apparatus under test. The following abbreviations are used:

N No: not applicable / not relevant
 Y Yes: Mandatory i.e. the apparatus shall conform to these test.
 N/T Not Tested, mandatory but not assessed. (See section 4.4 Test deleted)

The results contained in this section are representative of the operation of the apparatus as originally submitted.

FCC Part 15	RSS	Test Description	Compliance Status
15.225(a)(b)(c)	RSS-210 A2.6 (a)(b)(c)	Field Strength of Emissions within the Band	PASS
	RSS GEN 4.4.1	20dB Bandwidth	PASS
15.225(c)	RSS-210 A2.6(d)	Field Strength of Emissions outside the Band	PASS
15.225(e)	RSS-210 A2.6	Frequency tolerance of the carrier signal	PASS
15.225(f)	RSS-210 2.5	RF Power Tag	NA ¹
15.107 & 15.207(a)	RSS-GEN	Conducted Emissions	PASS
15.109(a)	RSS-GEN	Receiver Spurious Emissions	NA ²

¹The RFID Power Tag is non-powered and not subject to testing.

²The EUT does not receive RF when not transmitting.

Refer to the test results section for further details.

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2. SYSTEM CONFIGURATION

2.1. Description and Method of Exercising the EUT

The MC7XFPSCR-01R is a Wireless RFID Contactless Card Reader with Fingerprint Reader. Its function is to read a RFID and send it to the PDA (Personal Digital Assistant) terminal. The EUT was exercised by a test mode that transmits continuously. For the purposes of immunity tests, if the card data acceptance is disrupted as seen/indicated by the PDA display, or there is loss of functionality, this may have been considered a failure. The battery charging mode of the PDA does not permit the Contactless Card Reader to read cards.

2.2. System Components and Power Cables

DEVICE	MANUFACTURER MODEL # SERIAL #	POWER CABLE
EUT - Wireless RFID Contactless Card Reader with Fingerprint Reader	Semtek Sample #1 Model: MC7XFPSCR-01R Serial #: NA	None, Powered from PDA Terminal
EUT - Contactless Card Reader with Fingerprint Reader	Semtek Sample #2 Model: MC7XFPR-01R Serial #: NA	None, Powered from PDA TERMINAL
Support – PDA Terminal	Symbol Model: MC70/MC75 mobile computer P/N: MC7095-PKFDJQHASWR Serial: 7325520800695	None, Internal Battery

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2.3. Device Interconnection and I/O Cables

Connection	I/O Cable
DCR to PDA Terminal	None, Direct Snap-On Attachment

2.4. Design Modifications for Compliance

The following design modifications were made to the EUT during testing.

No design modifications were made to the EUT during testing.

2.5. Technical Specifications of the EUT

Manufacturer: Semtek

Operating Frequency: 13.56 MHz in the 13.110 – 14.010 MHz frequency band.

Measured Field Strength: 44.1 dB μ V/m @ 10m

Modulation: ASK

Antenna Connector: None

Power Source: Battery in support equipment (MC70/MC75 portable computer)

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3. DESCRIPTION OF TEST SITE AND ENVIRONMENT

3.1. Description of Test Site

The test site is located at 11696 Sorrento Valley Road, Suite F, San Diego, CA 92121. The site is physically located 18 miles Northwest of downtown San Diego. The general area is a valley 1.5 miles east of the Pacific Ocean. This particular part of the valley tends to minimize ambient levels, i.e. radio and TV broadcast stations and land mobile communications. The three and ten-meter Open Area Test Site (OATS) is located behind the office/lab building. It conforms to the normalized site attenuation limits and construction specifications as set in the EN 55022 (1987), CISPR 16 and 22 (1985) and ANSI C63.4-2001 documents. The OATS normalized site attenuation characteristics are verified for compliance every year, and registered with the Federal Communications Commission under Registration Number 90579 and Industry Canada under 2040B-1 and 2040B-2.

3.2. Test Environment

All tests were performed under the following environmental conditions:

Temperature range	:	17 – 22 °C
Humidity range	:	29 - 30%
Pressure range	:	87 - 105 kPa

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4. DESCRIPTION OF TESTING METHODS

4.1. Introduction

As required in 47 CFR, Parts 2 and 15, the methods employed to test the radiated and conducted emissions (as applicable) of the EUT are those contained within the American National Standards Institute (ANSI) document ANSI C63.4-2003, titled "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz." All applicable FCC Rule Sections that provide further guidance for performance of such testing are also observed.

For General Test Configuration please refer to Figure 1 on the following page.

Digital devices sold in Canada are required to comply with the Interference Causing Equipment Standard for Digital Apparatus, ICES-003. These test methods and limits are specified in the Canadian Standards Association's (CSA) Standard C108.8-M1983 (1-1-94 version) and are "essentially equivalent" with FCC, Part 15 and CISPR 22 (EN55022) rules for unintentional radiators per EMCAB-3, Issue 3 (May 1998). No further testing is required for compliance to ICES-003.

4.2. Configuration and Methods of Measurements for Conducted Emissions

Section 7 of ANSI C63.4 determines the general configuration of the EUT and associated equipment, as well as the test platform for conducted emissions testing. Tabletop devices are placed on a non-conducting surface 80 centimeters above the ground plane floor and 40 centimeters from the ground plane wall. The EUT and associated system are configured to operate continuously, representing a "normally operating" mode. The EUT is powered via a Line Impedance Stabilization Network (LISN). The emissions are recorded using the required bandwidth of 9 kHz in the quasi-peak mode. The average amplitude is also observed employing a 10 kHz bandwidth to determine the presence of broadband RFI. When such interference is caused by broadband sources (as defined by the FCC and ANSI Rules), the deviation guidelines contained in Section 11.3.1 of ANSI C63.4 are employed, which allows a correction factor of 13 dB to be subtracted from the quasi-peak reading. The emission levels are then compared to the applicable FCC limits to determine compliance.

4.3. Configuration and Methods of Measurements for Frequency Identification

When performing all testing of equipment, the actual emissions of the EUT are segregated from ambient signals present within the laboratory or the open-field test range. Preliminary testing is performed to ensure that ambient signals are sufficiently low to allow for proper observation of the emissions from the EUT. Incoming power lines are filtered using a 120 dB, 30-ampere; 115/208-volt filter to assist in reducing ambient signals for tests of levels of conducted emissions. Ambients within the laboratory are compared to those noted at the nearby open-field site to discriminate between signals produced from the EUT and ambient signals. In the event that a significant emission is produced by the EUT at a frequency which is also demonstrating significant ambient signals, the spectrum analyzer is placed in the peak mode, the bandwidth is narrowed, the EUT's signal is centered on the analyzer, the scan width is expanded to 50 kHz while monitoring the audio to ensure that only the EUT signal is present, the analyzer is switched to quasi-peak mode, and the level of the EUT signal is recorded.

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4.4. Configuration and Methods of Measurements for Radiated Emissions

Section 8 of ANSI C63.4 determines the general configuration and procedures for measuring the radiated emissions of equipment under test. Initially, the primary emission frequencies are identified inside the test lab by positioning a broadband receive antenna one meter from the EUT to locate frequencies of significant radiation. Next, the EUT and associated system are placed on a turntable on a ten meter open area test site (registered with the FCC in accord with its Rules and ANSI C63.4) and the receive antenna is located at a distance of ten meters from the EUT.

The EUT and associated system are configured to operate continuously, representing a “normally operating” mode. All significant radiated emissions are recorded when maximum radiation on each frequency is observed, in accordance with part 8 of ANSI C63.4-2003 and Section 15.33 of the FCC Rules. To ensure that the maximum emission at each discrete frequency of interest is observed, the receive antenna is varied in height from one to four meters and rotated to horizontal and vertical polarities, and the turntable is also rotated to determine the worst emitting configuration. The numerical results of the test are included herein to demonstrate compliance.

The numerical results that are applied to the emissions limits are arrived at by the following method:

Example: $A = RR + CL + AF$

A = Amplitude $\text{dB}\mu\text{V}/\text{m}$

RR = Receiver Reading $\text{dB}\mu\text{V}$

CL = cable loss dB

AF = antenna factor dB/m

Example Frequency = 110MHz

18.5 $\text{dB}\mu\text{V}$ (spectrum analyzer reading)

+3.0 dB (cable loss @ frequency)

21.5 $\text{dB}\mu\text{V}$

+15.4 dB/m (antenna factor @ frequency)

36.9 $\text{dB}\mu\text{V}/\text{m}$ Final adjusted value

The final adjusted value is then compared to the appropriate emission limit to determine compliance.

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5. Test Results

5.1. Conducted Emissions

Part 15.207(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

7.2.2 The purpose of this test is to measure unwanted radio frequency currents induced in any AC conductor external to the equipment which could conduct interference to other equipment via the AC electrical network. Except when the requirements applicable to a given device state otherwise, for any license-exempt radio-communication device equipped to operate from the public utility AC power supply, either directly or indirectly, the radio frequency voltage that is conducted back onto the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown below. The tighter limit applies at the frequency range boundaries. The conducted emissions shall be measured with a 50 ohm/50 micro-Henry line impedance stabilization network

Frequency Range (MHz)	Conducted Limit (dB μ V)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

Test Results:

Testing was not applicable as the rf cannot be activated when the PDA's battery is being recharged by charger.

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5.1.1. Conducted Emissions Test Data – Transmit Mode

Client	Semtek	Temperature		°F
PAN #	8564-2	Relative Humidity		%
EUT Name	Wireless RFID Contactless Card Reader with Fingerprint Reader	Barometric Pressure		Hg
EUT Model	MC7XFPSCR-01R	Test Location	Enclosure 1	
Governing Doc	CFR 47, Part 15B	Test Engineer	Alan Laudani	
Basic Standard	Sec. 15.207	Date		

Test Results:

Testing was not applicable as the EUT draws its power from the PDA's battery and cannot transmit in this mode.

5.1.2. Conducted Emissions Test Data – Receive mode

Client	Semtek	Temperature		°F
PAN #	8564-2	Relative Humidity		%
EUT Name	Wireless RFID Contactless Card Reader with Fingerprint Reader	Barometric Pressure		Hg
EUT Model	MC7XFPSCR-01R	Test Location	Enclosure 1	
Governing Doc	CFR 47, Part 15B	Test Engineer	Alan Laudani	
Basic Standard	Sec. 15.107	Date		

Test Results:

Testing was not applicable as the EUT draws its power from the PDA's battery and a separate receive mode does not exist.

5.2. Radiated Emissions –Receive or Standby Mode

Test Results:

Testing was not applicable as the EUT has no separate receive mode.

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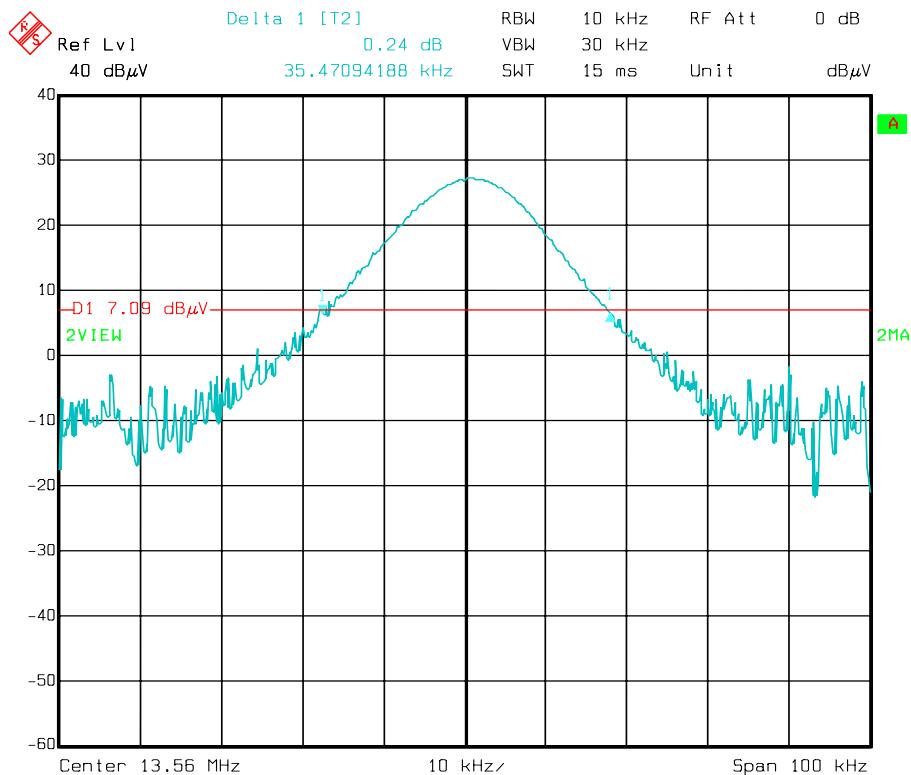
5.3. Bandwidth

RSS-Gen 4.4.1 When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.

Sample Number:	MC7XFPSCR-01R	Temperature:	22°C
Date:		Humidity:	70%
Modification State:	Modulated	Tester:	Alan Laudani
Laboratory:			Nemko SOATS

Radiated measurements were made at 3 meters. The RF fundamental was maximized in the OATS before any reading was made. Analyzer RES BW was set to 10 kHz. A PEAK output reading was noted, a DISPLAY line was drawn 20 dB lower than PEAK level. The bandwidth was determined from where the channel output spectrum intersected the display line. The test RFID card was placed near the EUT to provide a modulated emission. Max peak hold.

Test Results: 35.5 kHz Bandwidth



Date: 01.JUL.2008 10:47:54

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5.4. The field strength of any emissions within the band 13.553–13.567 MHz

Sample Number:	MC7XFPSCR-01R	Temperature:	22°C
Date:	7-1-08	Humidity:	70%
Modification State:	Modulated	Tester:	Alan Laudani
Laboratory:			SOATS

Test Results:

- The EUT was placed 10m from the receiving loop antenna.
- The EUT is a single channel transceiver at 13.56 MHz.
- The Spectrum Analyzer RES BW was set to 10 kHz, the VBW was set to 30 kHz.
- The EUT's internal battery was freshly recharged.
- Measurements were made along three orthogonal axes.
- The loop antenna was turned 90 degrees to the plane defined between the antenna mast and the EUT vertically and horizontally.
- Peak Hold detector used.
- Plots show compliance with the limits above the plot.
- The reference level offset allowed the limit to be displayed directly on the plot. The offset was determined from the antenna factor and cable loss combined with the extrapolation factor from 30 to 10 m.

offset = antenna factor and cable losses + extrapolation factor.

Sample calculation

Antenna factor and cable loss $35.1 + 0.5 = 35.6 \text{ dB}\mu\text{V/m}$ @ 30 m

30 to 10 m extrapolation factor = $40 \log(30/10) = 19.1 \text{ dB}$

Limit @30m = $20 * \log(15484\mu\text{V}) = 84 \text{ dB}\mu\text{V/m}$

10 m limit is $84 + 19.1 = 103.1 \text{ dB}\mu\text{V/m}$ and margin of compliance is $103.1 - 44.1 = 59 \text{ dB}$.

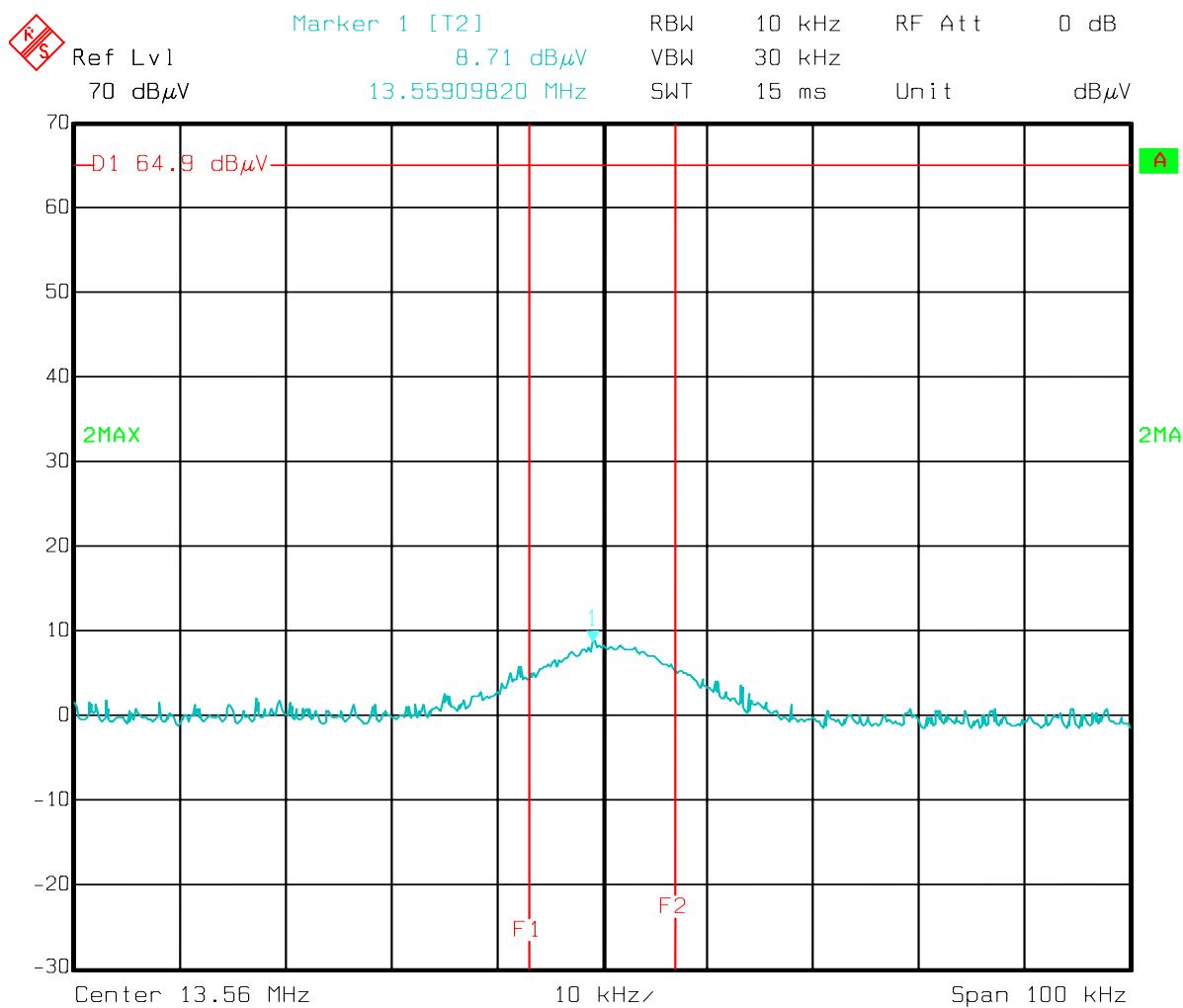
To show limits on plots use the extrapolation factor = $84 - 19.1 = 64.9 \text{ dB}\mu\text{V/m}$

Equipment Used: 552, 835

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15.225(a) The field strength of any emissions within the band 13.553- 13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

A2.6 (a) The field strength of any emissions shall not exceed 15,848 microvolts/meter at 30 meters within the band 13.553-13.567 MHz



Date: 07.JUL.2008 17:09:39

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For this radiated emissions table the limit was calculated:

Limit @30m = 20 * log(15484μV) = 84 dBμV/m

30 to 10 m extrapolation factor = $40 \log (30/10) = 19.1 \text{ dB}$

$$84 - 19.1 = 103.1 \text{ dB}\mu\text{V/m}$$

Measured 8.7 dB μ V + Antenna factor and cable loss $35.1 + 0.3 = 44.1$ dB μ V/m

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5.5. Emissions Mask

Sample Number:	MC7XFPSCR-01R	Temperature:	22°C
Date:	7-1-08	Humidity:	70%
Modification State:	Modulated	Tester:	Alan Laudani
		Laboratory:	SOATS

Test Results:

- The EUT was placed 10m from the receiving loop antenna.
- The EUT is a single channel transceiver at 13.56 MHz.
- The Spectrum Analyzer RES BW was set to 10 kHz, the VBW was set to 30 kHz.
- The EUT's internal battery was freshly recharged.
- Measurements were made along three orthogonal axes.
- The loop antenna was turned 0 and 90 degrees to the plane defined between the antenna mast and the EUT vertically and horizontally.
- Peak Hold detector used.
- Plots show compliance with the limits above the plot.
- The reference level offset allowed the limit to be displayed directly on the plot. The offset was determined from the antenna factor and cable loss combined with the extrapolation factor from 30 to 10 m.

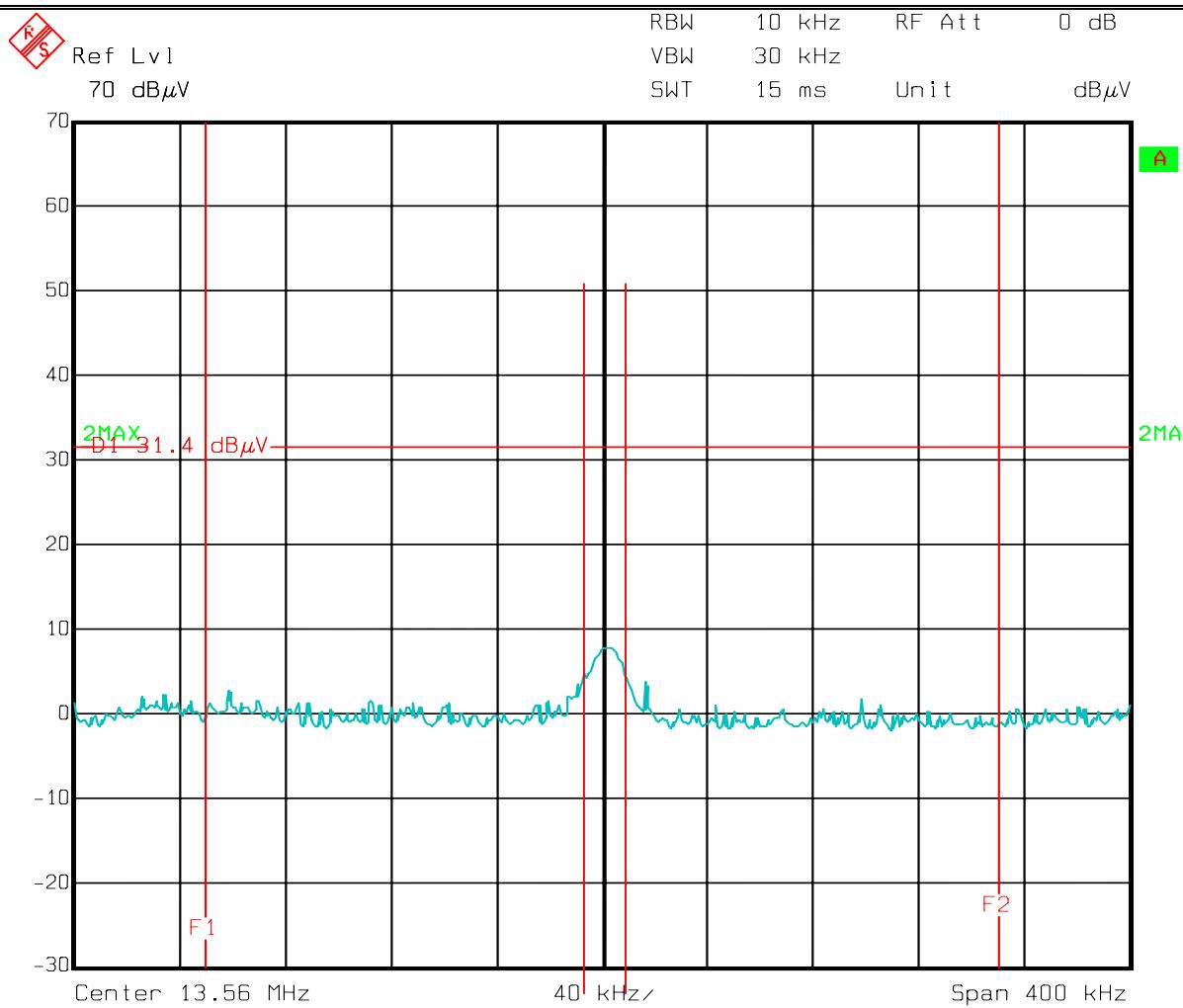
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EUT complies.

$$50.5 - 19.1 = 31.4 \text{ dB}\mu\text{V/m}$$

RSS-210 A2.6 (b) The field strength of any emissions shall not exceed 334 microvolts/meter (50.5 dB μ V/m) at 30 meters within the band 13.410-13.553 MHz and 13.567-13.710 MHz.

and FCC 15.225 (b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.



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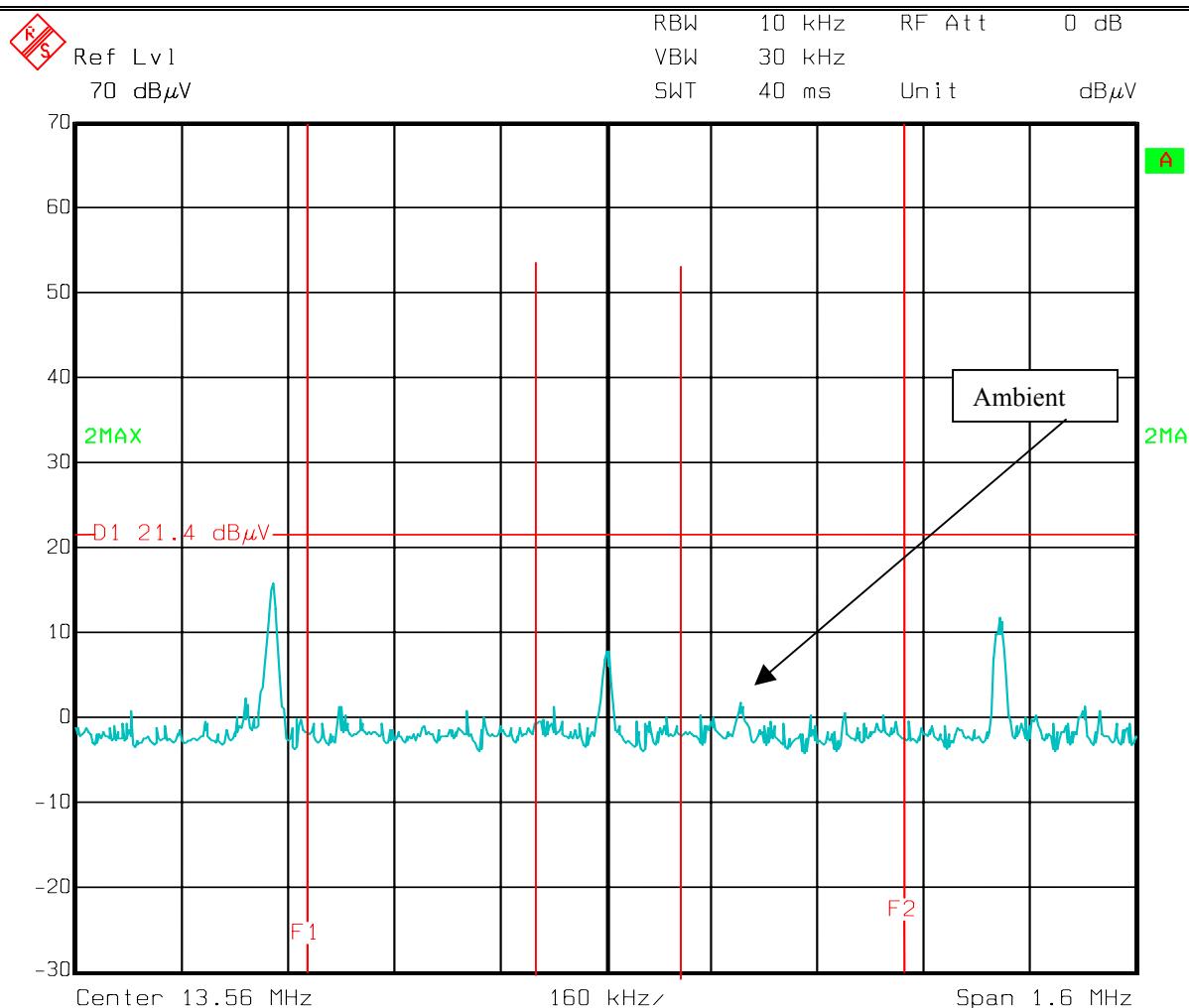
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EUT complies.

$$40.5 - 19.1 = 21.4 \text{ dB}\mu\text{V/m}$$

RSS-201 A2.6 (c) The field strength of any emissions shall not exceed 106 microvolts/meter (40.5 dB μ V/m) at 30 meters within the band 13.110-13.410 MHz and 13.710-14.010 MHz

And FCC 15.225(c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.



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No emissions evident above D1 outside of F1 and F2 so EUT complies.

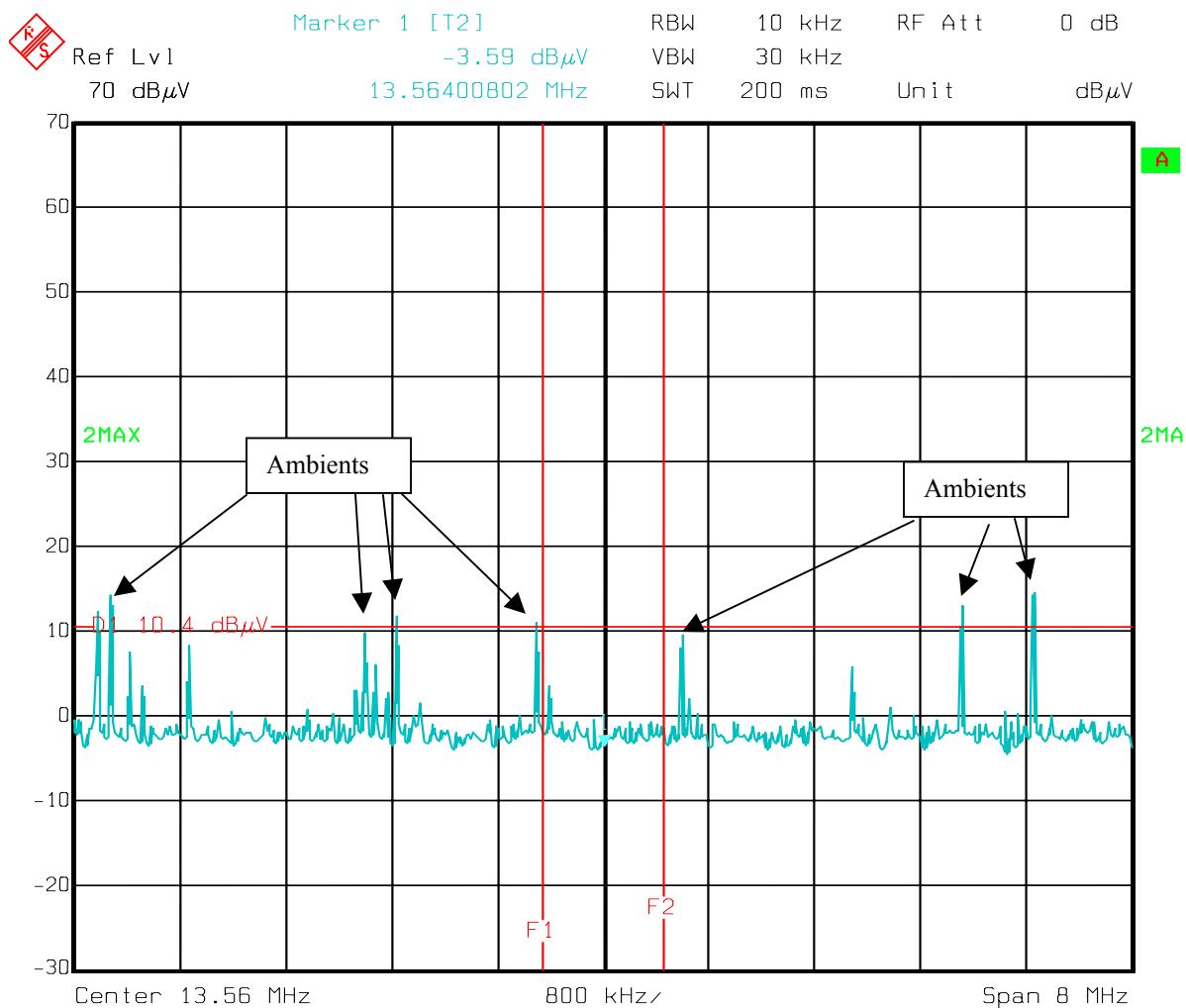
Emissions were searched from 9 kHz to 10 times the transmit frequency of 13.560 MHz or 136 MHz.

No emissions were detected other than the transmit frequency.

29.5 -19.1 = 10.4 dB μ V/m

RSS-210 A2.6 (d) The field strength of any emissions shall not exceed 30 microvolts/meter (29.5 dB μ V/m) at 30 meters outside the 13.110-14.010 MHz band

And FCC 15.225 (d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in §15.209.



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5.6. Out-of-band Emissions

15.209(a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (uV/meter)	Measurement Distance (meter)
0.009-0.490	2400/F (kHz)	300
0.490-1.705	24000/F (kHz)	30
1.705-30.0	30	3
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

RSS-210 A2.6 (d) The field strength of any emissions shall not exceed 30 microvolts/meter (29.5 dB μ V/m) at 30 meters outside the 13.110-14.010 MHz band

And FCC 15.225 (d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in §15.209.

Sample Number:	MC7XFPSCR-01R	Temperature:	22°C
Date:	7-1-08	Humidity:	70%
Modification State:	Modulated	Tester:	Alan Laudani
		Laboratory:	SOATS

Test Results:

- The Spectrum was searched from 30MHz to the 10th Harmonic and 1000 MHz.
- The EUT was measured on three orthogonal axes.
- Radiated Measurements below 1GHz were performed at 3m with a Quasi-Peak detector (RBW 120kHz/VBW 300kHz) while Radiated Peak (RBW 1MHz/VBW 3MHz) and Average (RBW 1MHz/VBW 10Hz) measurements conducted above 1GHz.
- Three orthogonal axes were tried to maximize emissions. No RF emissions detected.
- The internal battery was fully charged initially.
- The device has an integral antenna with no conducted measurement capability.

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Radiated Emissions Data

Job # :	8564-2	Date :	7/7/2008	Page	1	of	1
NEX #:	107988	Time :	1300				
		Staff :	AAL				
Client Name :	Semtek			EUT Voltage :	Battery		
EUT Name :	Wireless RFID Contactless Card Reader			EUT Frequency :	NA		
EUT Model #:	MC7XFPSCR-01R			Phase:	NA		
EUT Serial #:	NA			NOATS			
EUT Config. :	Continuous Transmit			SOATS	X		
Specification :	CFR47 Part 15, Subpart B, Class B			Distance < 1000 MHz:	10 m		
Loop Ant. #:	NA			Distance > 1000 MHz:	3 m		
Bicon Ant.#:	115	Temp. (°C) :	23				
Log Ant.#:	111	Humidity (%) :	30				
DRG Ant. #	NA	Spec An.#:	711				
Cable LF#:	SOATS	Spec An. Display #:	404				
Cable HF#:	NA	QP #:	421				
Preamp LF#:	902	PreSelect#:	NA				
Preamp HF#	NA						

Measurements below 1 GHz are Quasi-Peak values, unless otherwise stated.
Measurements above 1 GHz are Average values, unless otherwise stated.

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5.7. Carrier Frequency Stability

RSS-210 A2.6 Carrier Frequency Stability shall be maintained to $\pm 0.01\%$ (100 ppm)

RSS-210(e) The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

Sample Number:	MC7XFPSCR-01R	Temperature:	22°C
Date:	7-30-08	Humidity:	58%
Modification State:	CW	Tester:	Alan Laudani
		Laboratory:	Environmental Chamber

Test Results: Results are tabulated below.

This equipment test was performed using a freshly charged battery.

No remote control possible for device and transmitting was continuous throughout the test.

RBW = 1 kHz, Peak Hold refreshed for each measurement after temperature level is stable.

EUT is battery powered, therefore no power input stability results.

Limit: 100 ppm x 13.56 MHz = 1356 Hz

The Frequency drift is 0.0 ppm < 100 ppm, therefore the EUT complies.

Equipment: 552,835,N149

Temperature	Frequency	Frequency Drift				
		Degrees C	MHz	Hz	ppm	%
-30	13.560128	96	96	7.08	0.0007%	
-20	13.560128	96	96	7.08	0.0007%	
-10	13.560128	96	96	7.08	0.0007%	
0	13.560128	96	96	7.08	0.0007%	
10	13.560128	96	96	7.08	0.0007%	
20	13.560032	0	0	0.00	0.0000%	
30	13.560032	0	0	0.00	0.0000%	
40	13.560032	0	0	0.00	0.0000%	
50	13.560032	0	0	0.00	0.0000%	

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5.8. Test Equipment

Nemko ID	Device	Manufacturer	Model	Serial Number	Cal Date	Cal Due Date
114	Antenna, Bicon	EMCO	3104	2996	10-Jan-08	10-Jan-09
110	Antenna, LPA	EMCO	3146	1382	10-Jan-08	10-Jan-09
902	pre amp	Sonoma	310 N	185803	10-Jul-07	10-Jul-08
674	Spectrum Analyzer	HP	8568B	2007A00910	11-Apr-08	11-Apr-09
675	Spectrum Analyzer Display	HP	85662A	2005A01282	11-Apr-08	11-Apr-09
676	Quasi-Peak Adapter	HP	85650A	2430A00576	11-Apr-08	11-Apr-09
835	Spectrum Analyzer	Rohde & Schwarz	RHDFSEK	829058/005	27-Jun-08	27-Jun-09
552	Antenna, Loop	EMCO	ALR-30M	820	27-Aug-07	27-Aug-08
N149	Environmental Chamber	Cincinnati Sub-Zero	ZPHS-32- 2-2-H/AC	ZP0552665	05-30-08	05-30-09