



Test Report:

2W04607

Applicant:

Casi-Rusco
791 Park of Commerce Blvd., Suite 100
Boca Raton, FL
33487
USA

**Equipment Under Test:
(EUT)**

840/845 Contactless Smart Card Readers

In Accordance With:

FCC Part 15, Subpart C, 15.225

Tested By:

Nemko Canada Inc.
3325 River Road, R.R. 5
Ottawa, Ontario K1V 1H2

Authorized By:

G. Westwell, Wireless Technologist

Date:

January 15, 2002

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EQUIPMENT: 840/845 Contactless Smart Card Readers

Section 1. Summary Of Test Results

General

All measurements are traceable to national standards.

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 15, Subpart C for low power devices. All tests were conducted using measurement procedure ANSI C63.4-1992. Radiated Emissions were made on an open area test site. A description of the test facility is on file with the FCC.

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE
TEST SPECIFICATIONS HAVE BEEN MADE.

See " Summary of Test Data".



TESTED BY:

Russell Grant, Wireless Group Manager

DATE: January 11, 2002

Nemko Canada Inc., a testing laboratory, is accredited by the Standards Council of Canada. The tests included in this report are within the scope of this accreditation. The results apply only to the samples tested.

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This report applies only to the items tested.

EQUIPMENT: 840/845 Contactless Smart Card Readers

Summary Of Test Data

Name Of Test	Para. No.	Result
Powerline Conducted Emissions	15.207	N/A
Radiated Emissions	15.225	Complies
Frequency Stability	15.225	Complies

Footnotes For N/A's:

12 VDC Primary Power

Test Conditions:**Indoor**

Temperature: 20 °C

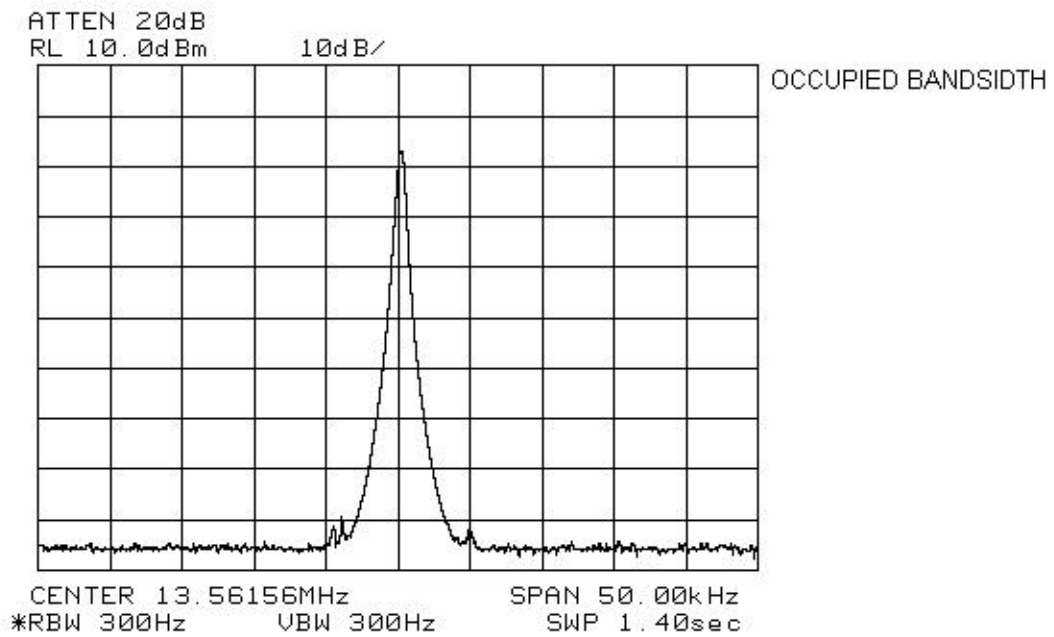
Humidity: 40 %

Outdoor

Temperature: 21 °C

Humidity: 50 %

EQUIPMENT: 840/845 Contactless Smart Card Readers



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Section 2. General Equipment Specification

Manufacturer:	Casi-Rusco
Model No.:	840, 845
Serial No.:	H00216 28/01
Date Received In Laboratory:	January 7, 2002
Nemko Identification No.:	Item #1
Tx:	13.56 MHz Fixed
Emission Designator:	NON

EQUIPMENT: 840/845 Contactless Smart Card Readers

Section 3. Radiated Emissions**Para. No.: 15.225**

Test Performed By: Russell Grant	Date of Test: January 9, 2002
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Minimum Standard:

Spurious Emissions (MHz)	Field Strength ($\mu\text{V/m}$)	Field Strength (dB μV)
0.009 - 0.490	2400/F(kHz) @ 300m	—
0.490 - 1.705	24000/F(kHz) @ 30m	—
1.705 - 30	30 @ 30m	—
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.0
Above 960	500	54.0

Test Results: Complies.**Measurement Data:** See attached table.

Measured: 13.56 MHz
65.5 dB μV @ 2m Peak Detector
53.0 dB μV @ 4m 10 kHz RBW
12.5 dB/Octave
2 to 30, 3.9 Octave

Field Strength: $65.5 - 3.9 \times 12.5 = 16.8$ dB $\mu\text{V/m}$

The spectrum was searched from 10 kHz to 1 GHz for spurious emissions. No emissions were detected within 20 dB of the limit. The equipment was configured on 3 axis in order to maximize emissions.

EQUIPMENT: 840/845 Contactless Smart Card Readers

Radiated Emissions Photograph

Front View:



EQUIPMENT: 840/845 Contactless Smart Card Readers

Section 4. Frequency Stability**Para. No.: 15.225**

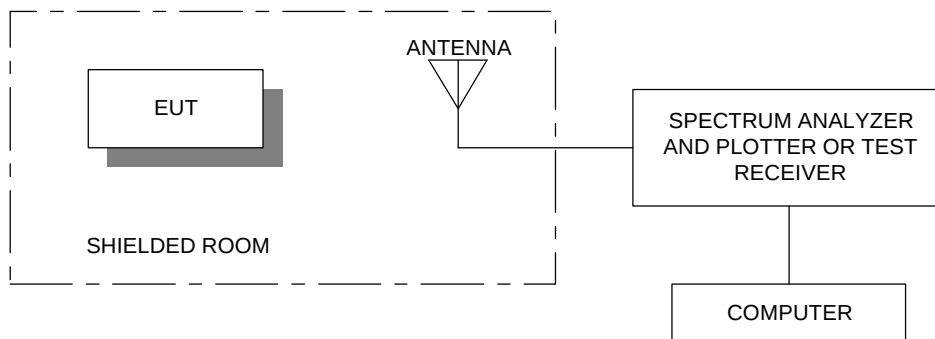
Test Performed By: Russell Grant	Date of Test: January 9, 2002
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Minimum Standard: 0.01%, 100 ppm, 1356 Hz**Test Results:** Complies.**Measurement Data:** STV: 12 VDC

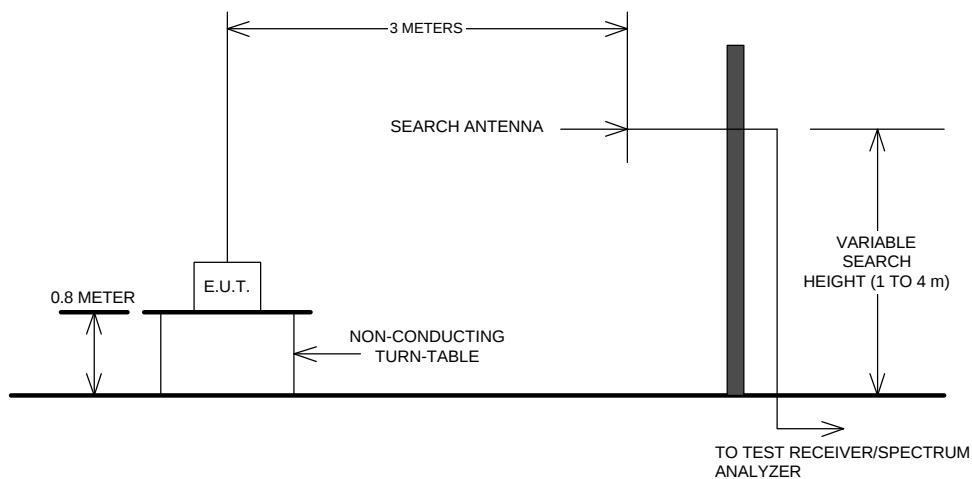
Test Condition	Frequency (Hz)	Frequency Drift (Hz)
20°C, ± STV, STV	13.561 547	0
-20°C, STV	13.561 614	67
-10°C, STV	13.561 614	67
0°C, STV	13.561 614	67
+10°C, STV	13.561 606	59
+30°C, STV	13.561 590	43
+40°C, STV	13.561 576	29
+50°C, STV	13.561 489	-58

Section 5. Block Diagrams

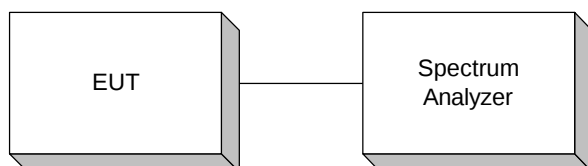
Radiated Prescan



Test Site For Radiated Emissions



Frequency Stability



EQUIPMENT: 840/845 Contactless Smart Card Readers

Section 6. Test Equipment List

CAL CYCLE	EQUIPMENT	MANUFACTURER	MODEL	SERIAL	LAST CAL.	NEXT CAL.
1 Year	Spectrum Analyzer	Hewlett Packard	8565E	FA000981	June 08/01	June 08/02
1 Year	Climate Chamber	Thermotron	SM-16C	15649-S	COU	COU
1 Year	Receiver	Rohde & Schwarz	ESH3	892473/002	Oct. 18/01	Oct. 18/02
1 Year	Active Loop Antenna	Rohde & Schwarz	HFH2-Z2	FA000631	March 20/01	March 20/02

NA: Not Applicable

NCR: No Cal Required

COU: CAL On Use