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Nemko Canada Inc., 303 River Road, R.R. 5, Ottawa, Ontario, Canada, K1V 1H2

Report number: 137758-1TRFWL

Apparatus: RFK5500-433M and RFK5501-433M

Applicant: Digital Security Controls, a Division of Tyco Safety Products  
Canada Ltd.  
3301 Langstaff Road  
Concord, ON  
L4K 4L2, Canada

FCC ID: F5309RFK55M

Test specification:

Title 47 - Telecommunication

Chapter I - Federal Communications Commission

Subchapter A - General

Part 15 - Radio Frequency Devices

Subpart B - Unintentional Radiators

- **§15.107 Conducted limits**
- **§15.109 Radiated emissions limits**

Reviewed by:

  
\_\_\_\_\_  
Signature  
Sim Jagpal, Groupe Manager

October 30, 2009

Date

Tested by: Andrey Adelberg, Senior Wireless/EMC Specialist

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Section 1: Report summary

Report Number: 137758-1TRFWL

Specification: FCC Part 15 Subpart B

## Section 1: Report summary

These tests were conducted on a sample of the equipment submitted at Nemko Canada Inc. for the purpose of demonstrating compliance with Part 15, Subpart B. Radiated tests were conducted in accordance with ANSI C63.4-2003.

**Test specification:**  
FCC Part 15 Subpart B, 15.107 and 15.109

Compliance status:	Complies
Exclusions:	None
Non-compliances:	None
Report release history:	Original release
Test location:	Nemko Canada Inc. 303 River Road, R.R. 5, Ottawa, Ontario, Canada, K1V 1H2
Registration number:	176392 (3 m Semi anechoic chamber)

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contain in this report are within Nemko Canada's ISO/IEC 17025 accreditation.

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## Section 2: Equipment under test

### 2.1 Identification of equipment under test (EUT)

The following information identifies the EUT under test:

Type of equipment:	Alarm System Keypad with RF Receiver
Product marketing name:	DSC
Model number:	RFK5500-433M
Model number variant:	RFK5501-433M
Serial number:	None
Nemko sample number:	1
FCC ID:	F5309RFK55M
Date of receipt:	October 29, 2009

### 2.2 Accessories and support equipment

The following information identifies accessories used to exercise the EUT during testing:

Item # 1	
Type of equipment:	PowerSeries 6-16 Zone Control Panel
Product marketing name:	DSC
Model name:	PC1616
Nemko sample number:	2
Connection port:	Screw connection
Cable length and type:	1.0 m, 22AWG 4-conductor FT4
Item # 2	
Type of equipment:	AC/AC adapter
Product marketing name:	DSC
Part name:	PTD 1640
Nemko sample number:	3
Connection port:	Screw connection to PC1616
Cable length and type:	1.0 m, non-twisted pare

## Section 2: Equipment under test, continued

### 2.3 EUT description

The RFK5500-433M is a PowerSeries 64-Zone LCD Full-Message keypad with RF receiver intended to be used with 433.92 MHz DSC security transmitters.

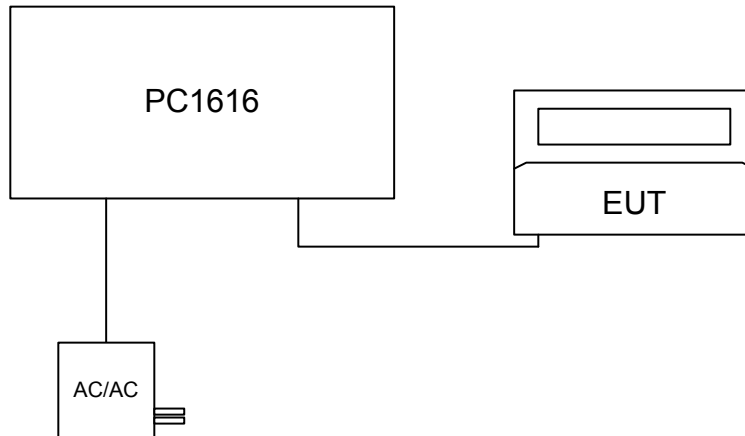
Model variant is RF5501-433M is a PowerSeries 64-Zone LCD Picture Icon Keypad.

### 2.4 Technical specifications of the EUT

Receiving frequency:	433.92 MHz
Type of receiver:	Superheterodyne
Antenna type:	Integral Permanent fixed antenna, which may be built-in, (Equipment does not have an external 50 $\Omega$ RF connector)
Power source	16 VAC, 60 Hz from Control panel Control panel works under 120 VAC, 60 Hz.

Section 2: Equipment under test, continued

## 2.5 EUT setup diagram



## 2.6 Operation of the EUT during testing

Keypad is in supervision mode, armed/disarmed state waiting for alarms from wireless transmitters.

## 2.7 Modifications incorporated in the EUT

There were no modifications performed to the EUT during this assessment.

## Section 3: Test conditions

### 3.1 Deviations from laboratory tests procedures

No deviations were made from laboratory test procedures.

### 3.2 Test conditions, power source and ambient temperatures

Normal temperature, humidity and air pressure test conditions	Temperature: 15–30 °C Relative humidity: 20–75 % Air pressure: 86–106 kPa  When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.
Power supply range:	The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages $\pm 5\%$ , for which the equipment was designed.



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Section 3: Test conditions

Report Number: 137758-1TRFWL

Specification: FCC Part 15 Subpart B

### Section 3: Test conditions, continued

### 3.3 Measurement uncertainty

Nemko Canada measurement uncertainty has been calculated using guidance of UKAS LAB 34:2003 and TIA-603-B Nov 7, 2002. All calculations have been performed to provide a confidence level of 95 % and can be found in Nemko Canada document MU-003.

### 3.4 Test equipment

Equipment	Manufacturer	Model No.	Asset/Serial No.	Next cal.
International Power Supply	California Inst.	3001i	FA001021	Jan. 13/10
Receiver/Spectrum Analyzer	Rohde & Schwarz	ESU 26	FA002043	Dec. 16/09
Bilog	Sunol	JB3	FA002108	Jan. 27/10
Horn Antenna #2	EMCO	3115	FA000825	Jan. 21/10
1 – 18 GHz Amplifier	JCA	JCA118-503	FA002091	Oct 07/10
LISN	Rohde & Schwarz	ENV216	FA002023	Sept. 08/10

Note: N/A = Not Applicable, NCR = No Cal Required, COU = CAL On Use





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Section 4: Result summary

Report Number: 137758-1TRFWL

Specification: FCC Part 15 Subpart B

## Section 4: Result summary

### 4.1 Test results

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 tests.
N/T	Not Tested, mandatory but not assessed. (See report summary)

Part	Test description	Required	Result
<b>General requirements for FCC Part 15 Subpart B</b>			
§15.107(a)	Conducted emissions for class B	Y	Pass
§15.109(a)	Radiated emissions for class B	Y	Pass
Notes: None			

## Appendix A: Test results

### Clause 15.107(a) Conducted emissions

An unintentional 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  $\mu$ H/50  $\Omega$  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 band edges.

Frequency of emission (MHz)	Conducted limit (dB $\mu$ 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 date: October 30, 2009

Test results: Pass

#### Special notes

Port under test: AC/AC adapter

**Preview measurements:**

0.15 MHz to 30 MHz

Receiver settings:

- Peak and average detector
- 9 kHz RBW

**Final measurement:**

0.15 MHz to 30 MHz

Receiver settings:

- Q-Peak and average detector
- 9 kHz RBW

- Spectral plots have been corrected for transducer factors; cable loss, LISN, and attenuators.
- No emissions were detected within 6 dB of limit.

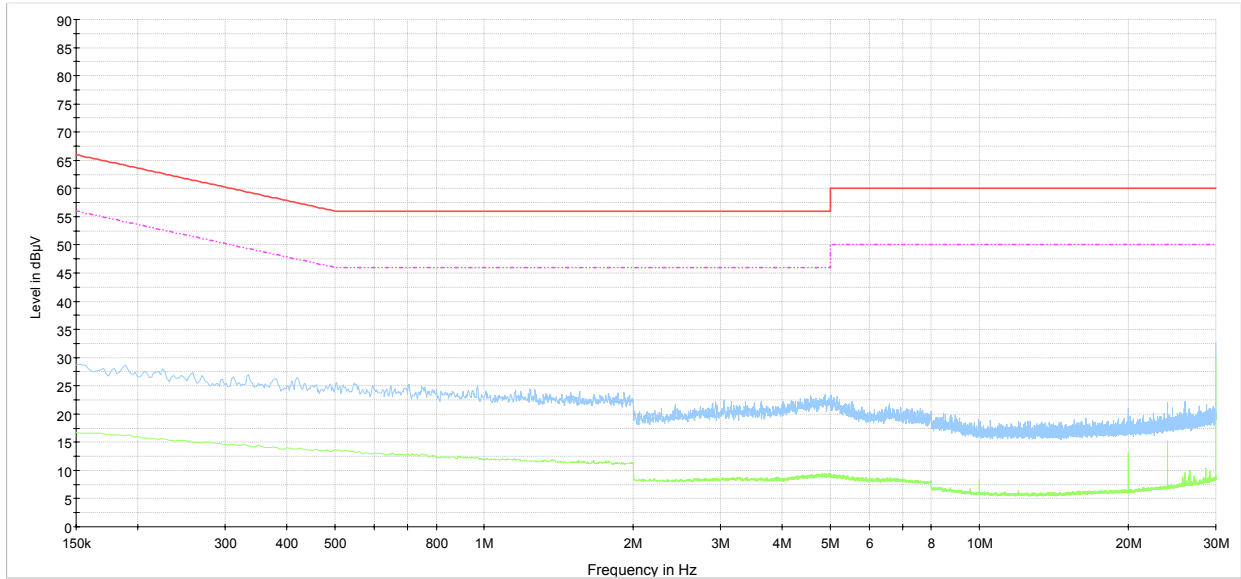


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Clause 15.107(a) Conducted emissions, continued

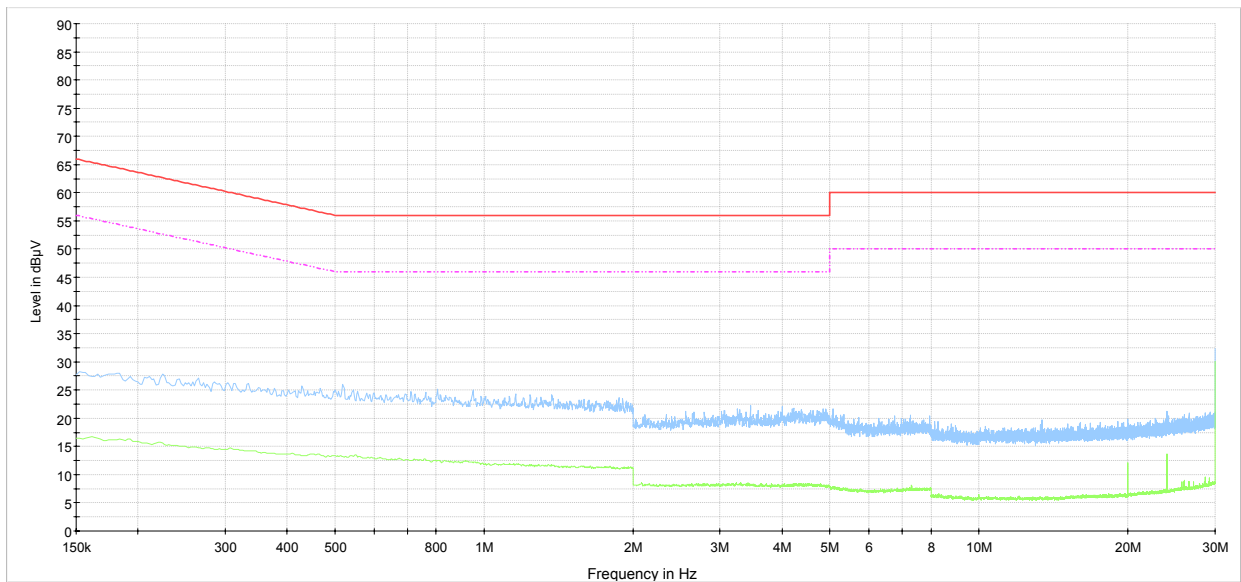
Test data

Phase line:



Conducted emissions on phase line  
— CISPR 22 Mains QP Class B.LimitLine  
- - - CISPR 22 Mains AV Class B.LimitLine  
— Preview Result 1  
— Preview Result 2

Neutral line:



Conducted emissions on neutral line  
— CISPR 22 Mains QP Class B.LimitLine  
- - - CISPR 22 Mains AV Class B.LimitLine  
— Preview Result 1  
— Preview Result 2

Clause 15.107(a) Conducted emissions, continued

Set up photo





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## Clause 15.109(a) Radiated emissions

The field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency (MHz)	Field strength	
	( $\mu$ V/m)	(dB $\mu$ V/m)
30–88	100	40.0
88–216	150	43.5
216–960	200	46.0
above 960	500	54.0

Notes: For frequencies above 1 GHz the limit on peak RF emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.

In the emission tables above, the tighter limit applies at the band edges. Sections 15.33 and 15.35, which specify the frequency range over which radiated emissions, are to be measured and the detector functions and other measurement standards apply.

Test date: October 30, 2009

Test results: Pass

### Special notes

**Measuring distance:** 3 m      **Antenna height:** 1–4 m

**Preview measurements:**

30 MHz to 1 GHz  
Receiver settings:  
– Peak detector, Max hold  
– 120 kHz RBW

**Final measurement:**

30 MHz to 1 GHz  
Receiver settings:  
– Quasi-Peak detector  
– 120 kHz RBW

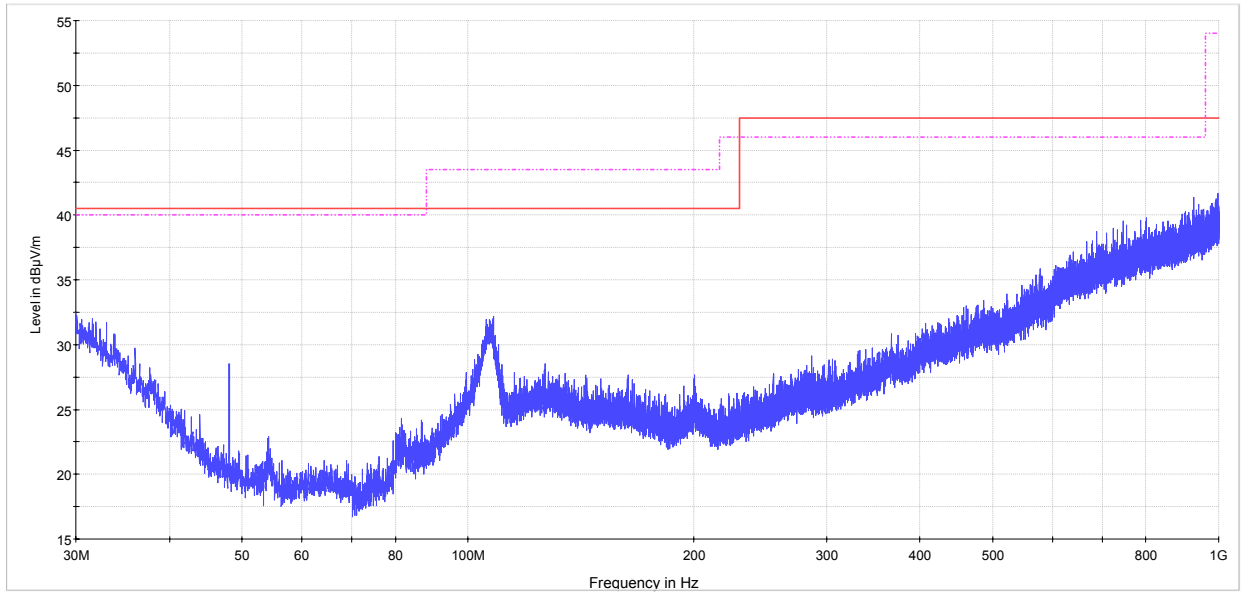
1 GHz to 6 GHz  
Spectrum analyzer settings:  
– Peak detector, Max hold  
– 1 MHz RBW

1 GHz to 6 GHz  
Receiver settings:  
– Average and Peak detector  
– 1 MHz RBW

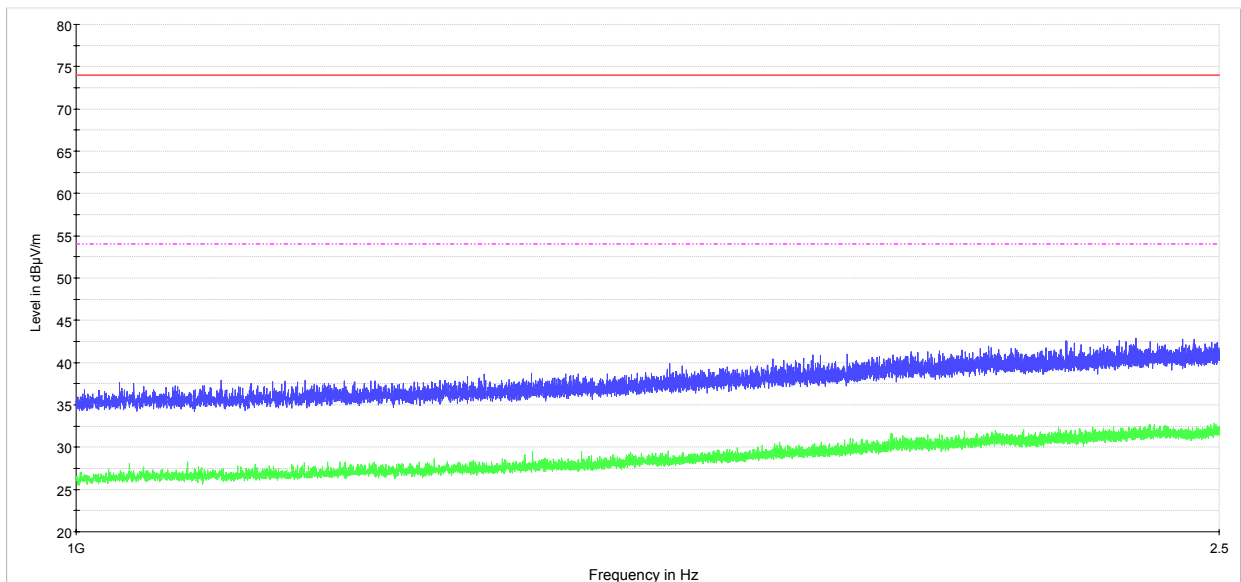
- The spectral plot is a combined vertical and horizontal scan.
- Spectral plots have been corrected with transducer factors for antennas, cable loss, amplifiers, and attenuators.
- Limits have been adjusted to reflect 3 m measurement.
- The preview measurement was generated with receiver in continuous scan or sweep mode while the EUT was rotated and antenna adjusted for maximized radiated emission.
- No emissions were detected within 6 dB of limit.

Clause 15.109(a) Radiated emissions, continued

Test data



Radiated emissions  
 — MaxPeak-MaxHold  
 — CISPR22 Class B QP 3m  
 - - - FCC Part 15 Class B 3m QP+AV



Radiated emissions  
 — MaxPeak-MaxHold  
 — Average-MaxHold  
 — FCC Part 15 Class B 3m Peak above 1GHz  
 - - - FCC Part 15 Class B 3m QP+AV

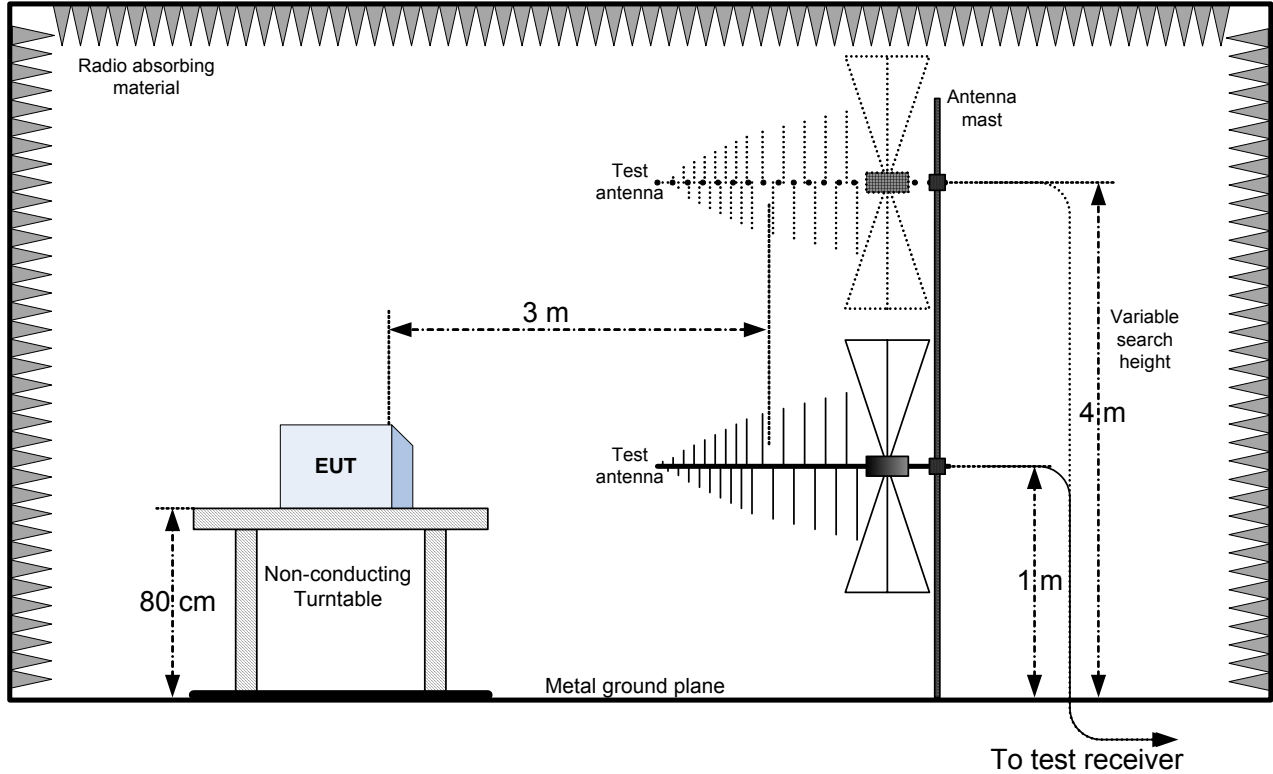
Clause 15.109(a) Radiated emissions, continued

Set up photo



## Appendix B: Block diagrams of test set-ups

### Radiated emissions set-up



### Conducted emissions set-up

