

**Nemko Test Report:** 116933-1TRFWL

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

**Apparatus:** Proximity Tag (M/N: PT4)

**FCC ID:** F5309PT4

**In Accordance With:** FCC Part 15 Subpart C, 15.231  
Periodic operation in the band 40.66-40.70MHz and  
above 70 MHz.

**Authorized By:**

A handwritten signature in blue ink, appearing to read 'Andrey Adelberg'.

Andrey Adelberg, EMC/Wireless Specialist

**Date:** December 16, 2008

**Total Number of Pages:** 16

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## Section 1 : Report Summary

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

The assessment summary is as follows:

<b>Apparatus Assessed:</b>	Proximity Tag (M/N: PT4)
<b>Specification:</b>	FCC Part 15 Subpart C, 15.231
<b>Compliance Status:</b>	Complies
<b>Exclusions:</b>	None
<b>Non-compliances:</b>	None
<b>Report Release History:</b>	Original Release
<b>Test Location:</b>	Nemko Canada Inc. 303 River Road Ottawa, Ontario K1V 1H2
<b>Registration Number:</b>	176392 (3m Semi-Anechoic Chamber)
<b>Tests Performed By:</b>	Jason Nixon, Wireless/Telecom Specialist
<b>Test Dates:</b>	December 15, 2008

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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**Nemko Canada Inc.**

## **Section 2 : Equipment Under Test**

### **2.1 Identification of Equipment Under Test (EUT)**

The following information identifies the EUT under test:

Type of Equipment:	Proximity Tag
Brand Name:	DSC
Model Name or Number:	PT4
Serial Number:	None
Nemko Sample Number:	1, 2 (CW), 4 (CW modified)
FCC ID:	F5309PT4
Date of Receipt:	December 4, 2008

### **2.2 Accessories**

There were no accessories used during this assessment.

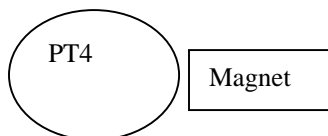
### **2.3 EUT Description**

The EUT is a proximity tag, which is activated by a magnetic field.

## 2.4 Technical Specifications of the EUT

<b>Operating Frequency:</b>	434.0MHz
<b>Modulation:</b>	On-Off keying, Manchester coding
<b>Occupied Bandwidth:</b>	86.5kHz
<b>Emission Designator:</b>	K1D
<b>Antenna Data:</b>	Integral
<b>Power Supply Requirements:</b>	CR2032 battery, 3VDC

## 2.5 EUT Setup diagram



## 2.6 Operation of the EUT during testing

Placing a magnet in proximity to the transmitter activates the EUT. There was also a modified sample provided for radiated measurements that transmitted a CW signal.

## 2.7 Modifications incorporated in the EUT

### 2.7.1 Modification State 1

The EUT failed the requirements of 15.209 as originally submitted. The following modification was performed to the EUT, change C3 to 22pF (03-661), change C1 to 6.8pF (0402 size COG) and change C4 to 5.6pF (03-930). Following this modification the EUT was found to be fully compliant.

## **Section 3 : Test Conditions**

### **3.1 Specifications**

The apparatus was assessed against the following specifications:

FCC Part 15 Subpart C, 15.231

Periodic operation in the band 40.66-40.70 MHz and above 70 MHz.

### **3.2 Deviations From Laboratory Test Procedures**

No deviations were made from laboratory test procedures.

### **3.3 Test Environment**

All tests were performed under the following environmental conditions:

Temperature range	:	15 – 30 °C
Humidity range	:	20 - 75 %
Pressure range	:	86 - 106 kPa
Power supply range	:	+/- 5% of rated voltages

### **3.4 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.

### 3.5 Test Equipment

Equipment	Manufacturer	Model No.	Asset/Serial No.	Cal. Date	Next Cal.
Spectrum Analyzer	Rohde & Schwarz	FSP40	FA001920	April 14/08	April 14/09
3m EMI Test Chamber	TDK	SAC-3	FA002047	May 06/08	May 06/09
Bilog	Sunol	JB3	FA002108	Jan. 21/08	Jan. 21/09
Flush Mount Turntable	Sunol	FM2022	FA002082	NCR	NCR
Controller	Sunol	SC104V	FA002060	NCR	NCR
Mast	Sunol	TLT2	FA002061	NCR	NCR
Receiver/Spectrum Analyzer	Rohde & Schwarz	ESU 40	FA002071	Nov. 25/08	Nov. 25/09
50 Coax cable	HUBER + SUHNER	None	FA002022	July 07/08	July 07/09
50 Coax cable	HUBER + SUHNER	None	FA002074	July 07/08	July 07/09
Horn Antenna #2	EMCO	3115	FA000825	Jan. 15/08	Jan. 15/09
1 – 18 GHz Amplifier	JCA	JCA118-503	FA002091	Oct 2/08	Oct 2/09

COU – Calibrate on Use

NCR – No Calibration Required

## Section 4 : Results Summary

This section contains the following:

### FCC Part 15 Subpart C : 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)

### 4.1 FCC Part 15 Subpart C : Test Results

Part 15	Test Description	Required	Result
15.31(e)	Variation of Power source	N	
15.207(a)	Powerline Conducted Emissions	N	
15.209(a)	Radiated Emissions within Restricted Bands	Y	PASS
15.231(a)(1)	Manually operated transmitter	N	
15.231(a)(2)	Automatically activated transmitter	Y	PASS
15.231(a)(3)	Periodic transmissions at regular predetermined intervals	N	
15.231(a)(4)	Radiators used in cases of emergency	N	
15.231(a)(5)	Set-up information for security systems	N	
15.231(b)	Radiated Emissions	Y	PASS
15.231(c)	20dB Bandwidth	Y	PASS
15.231(d)	Devices operating within the frequency band 40.66-40.70 MHz	N	
15.231(e)	Radiated emissions for Periodic radiators	N	

Notes:



## Appendix A : Test Results

### Clause 15.209(a) Radiated Emissions within Restricted Bands

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 (microvoltsmeter) (kHz)	Measurement Distance (meters)
0.009-0.490	2400/F (kHz)	300
0.490-1.705	24000/F (kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

**Test Results:** Pass

No emissions were detected within 20dB below of the limit.

### Additional Observations:

The Spectrum was searched from 30MHz to the 10<sup>th</sup> Harmonic.

These results apply to emissions found in the Restricted bands defined in FCC Part 15 Subpart C, 15.205.

The EUT was measured on three orthogonal axis with a fresh new battery.

All measurements were performed using a Peak Detector with 100kHz RBW/VBW below 1GHz and a 1MHz RBW/VBW above 1GHz at a distance of 3 meters.

**Clause 15.231(a) Conditions for intentional radiators to comply with periodic operation**

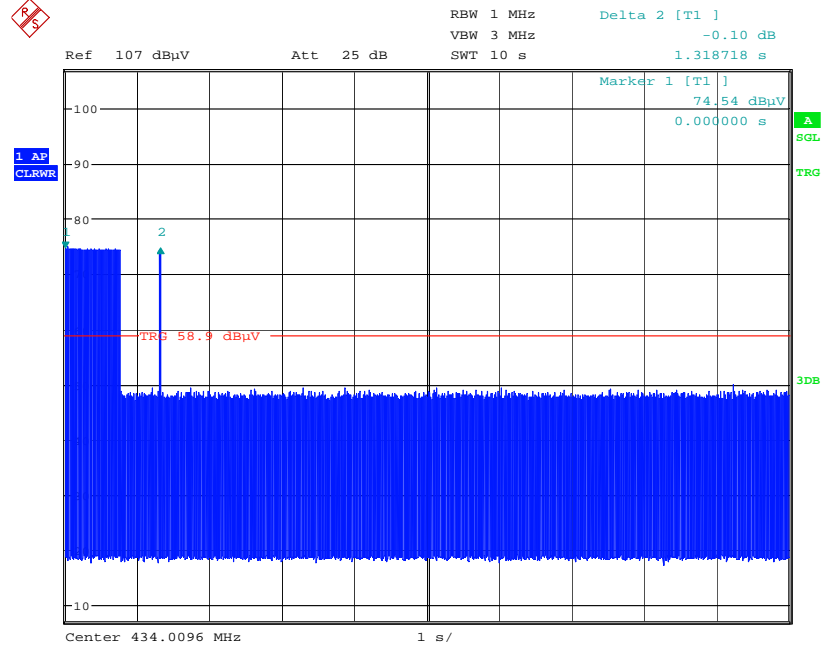
The provisions of this section are restricted to periodic operation within the band 40.66-40.70 MHz and above 70 MHz. Except as shown in paragraph (e) of this section, the intentional radiator is restricted to the transmission of a control signal such as those used with alarm systems, door openers, remote switches, etc. Continuous transmissions, voice, video and the radio control of toys are not permitted. Data is permitted to be sent with a control signal. The following conditions shall be met to comply with the provisions for this periodic operation:

- (1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.
- (2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.
- (3) Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour.
- (4) Intentional radiators, which are employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition.
- (5) Transmission of set-up information for security systems may exceed the transmission duration limits in paragraphs (a)(1) and (a)(2) of this section, provided such transmissions are under the control of a professional installer and do not exceed ten seconds after a manually operated switch is released or a transmitter is activated automatically. Such set-up information may include data.

**Test Results:** Pass

- (1) The EUT is not manually triggered.
- (2) The EUT automatically ceases transmission in 1.32sec. See attached plot.
- (3) The EUT is not a periodic transmitter.
- (4) The EUT is used in a security system, but it does not transmit during a safety of life operation.
- (5) The EUT does not have an installer option.

**Automatic transmission time**



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**Clause 15.231(b) Radiated Emissions**

In addition to the provisions of 15.205, the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental (microvolts/meter)	Field Strength of Spurious Emissions (microvolts/meter)
40.66-40.70	2,250	225
70-130	1,250	125
130-174	1,250 to 3,750	125 to 375
174-260	3,750	375
260-470	3,750 to 12,500	375 to 1,250
Above 470	12,500	1,250

**Test Results:** Pass

**Additional Observations:**

The Spectrum was searched from 30MHz to the 10<sup>th</sup> Harmonic.

The EUT was measured on three orthogonal axis with a fresh new battery.

All measurements were performed using a Peak Detector with 100kHz RBW/VBW below 1GHz and a 1MHz RBW/VBW above 1GHz at a distance of 3 meters.

Freq. (MHz)	Pol. V/H	RCVD Signal (dBμV)	Ant. Factor (dB)	Cable Loss (dB)	Amp. gain (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)
434	V	40.04	16.4	1.8	0.0	58.24	80.8	22.56
434	H	31.99	16.9	1.8	0.0	50.69	80.8	30.11
434	V	38.38	16.4	1.8	0.0	56.58	80.8	24.22
434	H	37.01	16.9	1.8	0.0	55.71	80.8	25.09
434	V	34.56	16.4	1.8	0.0	52.76	80.8	28.04
434	H	37.67	16.9	1.8	0.0	56.37	80.8	24.43
868	V	20.27	21.7	2.6	0.0	44.57	60.8	16.23
868	H	22.01	22.3	2.6	0.0	46.91	60.8	13.89
2170	V	58.32	27.6	4.2	46.1	44.02	60.8	16.78
3472	V	57.33	31.2	5.4	45.9	48.03	60.8	12.77

Level (peak) = RCVD + Ant factor + Cable loss – Amp Gain  
 Measurements were performed using peak detector and compared to the average limit.



## Appendix B : Setup Photographs

### Spurious Emissions Setup:





## Appendix C : Block Diagram of Test Setups

### Radiated Emissions above 30MHz Test Site

