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Test Report: 85146-1TRFWL


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

Apparatus: RFK5500-433 Keypad
RFK5501-433 Keypad
RFK5508-433 Keypad
RFK5516-433 Keypad

FCC ID: F5306RFK55XX4

In Accordance With: FCC Part 15 Subpart B, 15.107 and 15.109
Unintentional Radiators
Class II Permissive change

Tested By: Nemko Canada Inc.
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Authorized By: 
Sim Jagpal, Resource Manager

Date: April 20, 2007

Total Number of Pages: 15

Report Summary

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15, Subpart B. Radiated tests were conducted in accordance with ANSI C63.4-2003. Radiated emissions are made on an open area test site. A description of the test facility is on file with the FCC.

The assessment summary is as follows:

Apparatus Assessed:	RFK5500-433 Keypad RFK5501-433 Keypad RFK5508-433 Keypad RFK5516-433 Keypad
Specification:	FCC Part 15 Subpart B, 15.107 and 15.109
Compliance Status:	Complies
Exclusions:	None
Non-compliances:	None
Report Release History:	Original Release

Author: Jason Nixon, Telecom Specialist

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.

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Section 1 : Equipment Under Test

1.1 Product Identification

The Equipment Under Test was identified as follows:

RFK5500-433 Keypad
RFK5501-433 Keypad
RFK5508-433 Keypad
RFK5516-433 Keypad

1.2 Samples Submitted for Assessment

The following samples of the apparatus have been submitted for type assessment:

Sample No.	Description	Serial No.
2	PK5500-433 keypad	None
3	PC1616 Alarm panel	73-01526
4	Class2 transformer	None

The first samples were received on: April 12, 2007

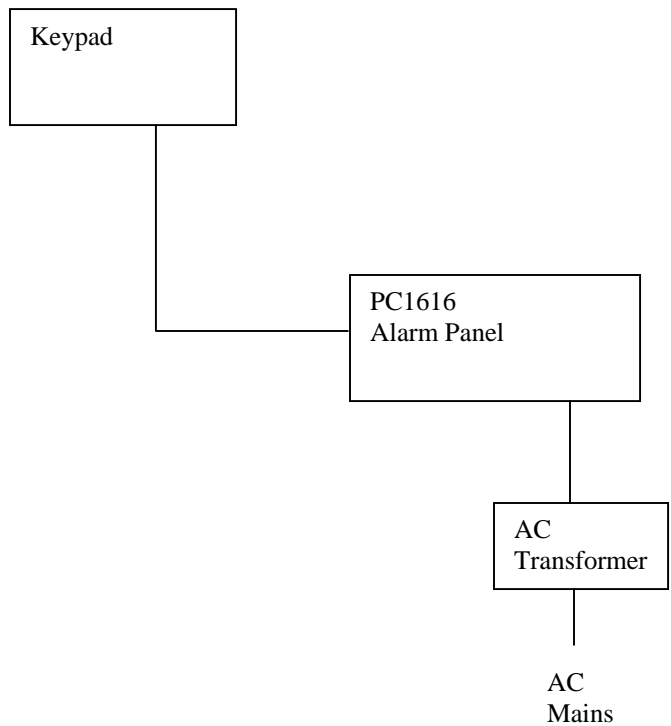
1.3 Theory of Operation

The EUT is used to receive signals from alarm system components such as motion detectors and pass the data to the alarm control panel to indicate alarms.

1.4 Technical Specifications of the EUT

Receive Frequency: 433.92MHz
Receiver Type: Superheterodyne
Antenna Data: Integral
Power Source: 12VDC provided by the Alarm Panel

1.5 Block Diagram of the EUT



Section 2 : Test Conditions

2.1 Specifications

The apparatus was assessed against the following specifications:

FCC Part 15 Subpart B, 15.107 and 15.109
Unintentional Radiators

2.2 Deviations From Laboratory Test Procedures

No deviations were made from laboratory test procedures.

2.3 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

2.4 Test Equipment

Equipment	Manufacturer	Model No.	Asset/Serial No.	Next Cal.
LISN	Rohde & Schwarz	ENV216	FA002023	Aug. 28/07
Receiver/Spectrum Analyzer	Rohde & Schwarz	ESU	FA002043	Oct. 24/07
International Power Supply	California Inst.	3001i	FA001021	Jan. 09/08
Receiver	Rohde & Schwarz	ESVS-30	FA001445	July 14/07
Spectrum Analyzer	Hewlett-Packard	8565E	FA000981	Oct. 06/07
Biconical (1) Antenna	EMCO	3109	FA000805	May 03/07
Log Periodic Antenna #1	EMCO	LPA-25	FA000477	Sept. 12/07
Horn Antenna #2	EMCO	3115	FA000825	Jan. 30/08
1.0 – 2.0 GHz Amplifier	JCA	12-400	FA001498	Aug. 02/07

COU – Calibrate on Use

NCR – No Calibration Required

Section 3 : Observations

3.1 Modifications Performed During Assessment

No modifications were performed during assessment.

3.2 Record Of Technical Judgements

The following technical judgement was made during this assessment:

3.2.1 Technical Judgement 1

The RFK5500-433, RFK5501-433, RFK5508-433, RFK5516-433 Keypads all use the same hardware (RF and Keypad controls). The difference between them is the method used for displaying the status information.

RFK5500-433 – Keypad with RF receiver and Alphanumeric LCD display

RF5501-433 – Keypad with RF receiver and Fixed messages LCD display

RFK5508-433 – Keypad with RF receiver and 8 zone LED's display

RFK5516-433 – Keypad with RF receiver and 16 zone LED's display

It was judged that the results from the RFK5501-433 would be representative of all models.

3.3 EUT Parameters Affecting Compliance

The user of the apparatus could not alter parameters that would affect compliance.

3.4 Test Deleted

No Tests were deleted from this assessment.

3.5 Additional Observations

The following observation was made during this assessment:

3.5.1 Observation 1 – Class II changes

The keypad board assembly has been modified with a SAW filter on the receiver to reject unwanted interference for the European market. This SAW is not populated for the North American market.

Section 4 : Results Summary

This section contains the following:

FCC Part 15 Subpart B : 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 section 3.4 Test deleted)

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

4.1 FCC Part 15 Subpart C : Test Results

Part 15	Test Description	Required	Result
15.107(a)	Conducted Emissions for Class B	Y	PASS
15.109(a)	Radiated Emissions for Class B	Y	PASS

Notes:

Appendix A : Test Results

Clause 15.107(a) Conducted Emissions

Frequency of Conducted limit (dBuV)		
Emission (MHz)	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 Conditions:

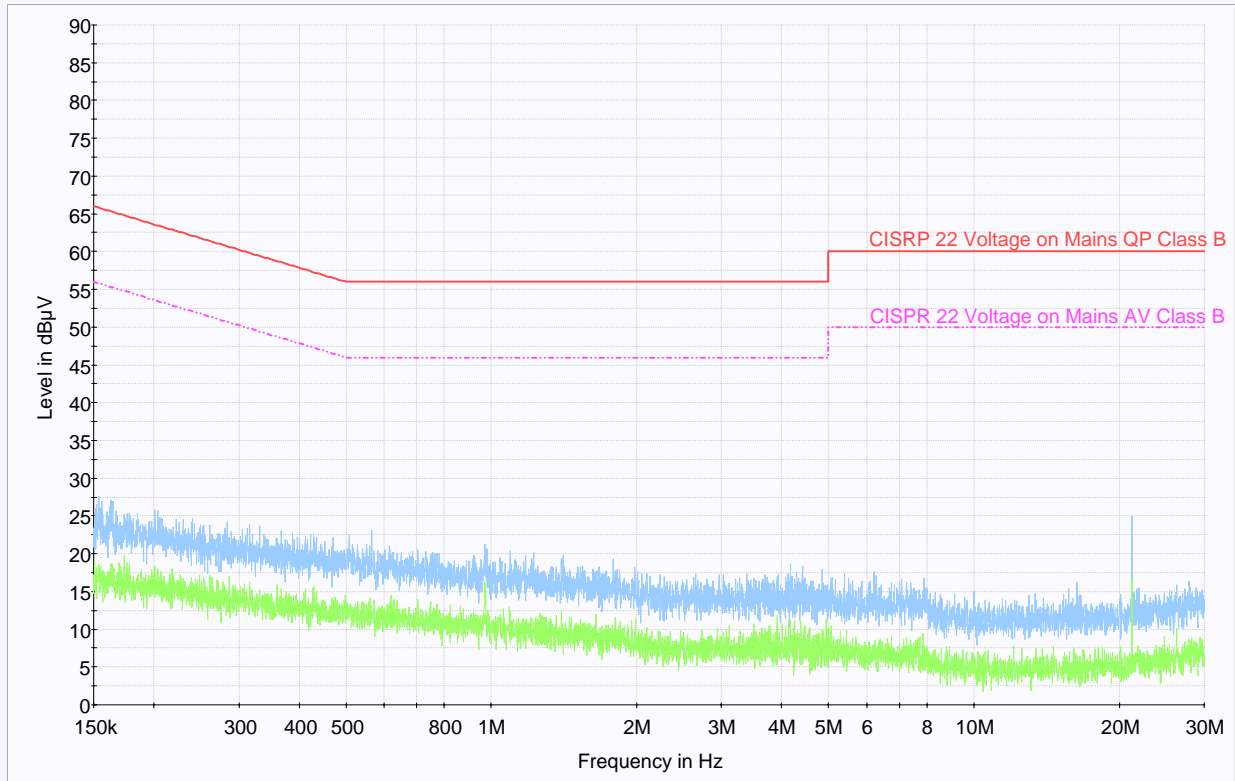
Sample Number:	2	Temperature (°C):	22
Date:	April 18, 2007	Humidity (%):	30
Modification State:	0	Tester:	Jason Nixon
		Laboratory:	Shielded Room

Test Results: See Attached Plots.

Additional Observations:

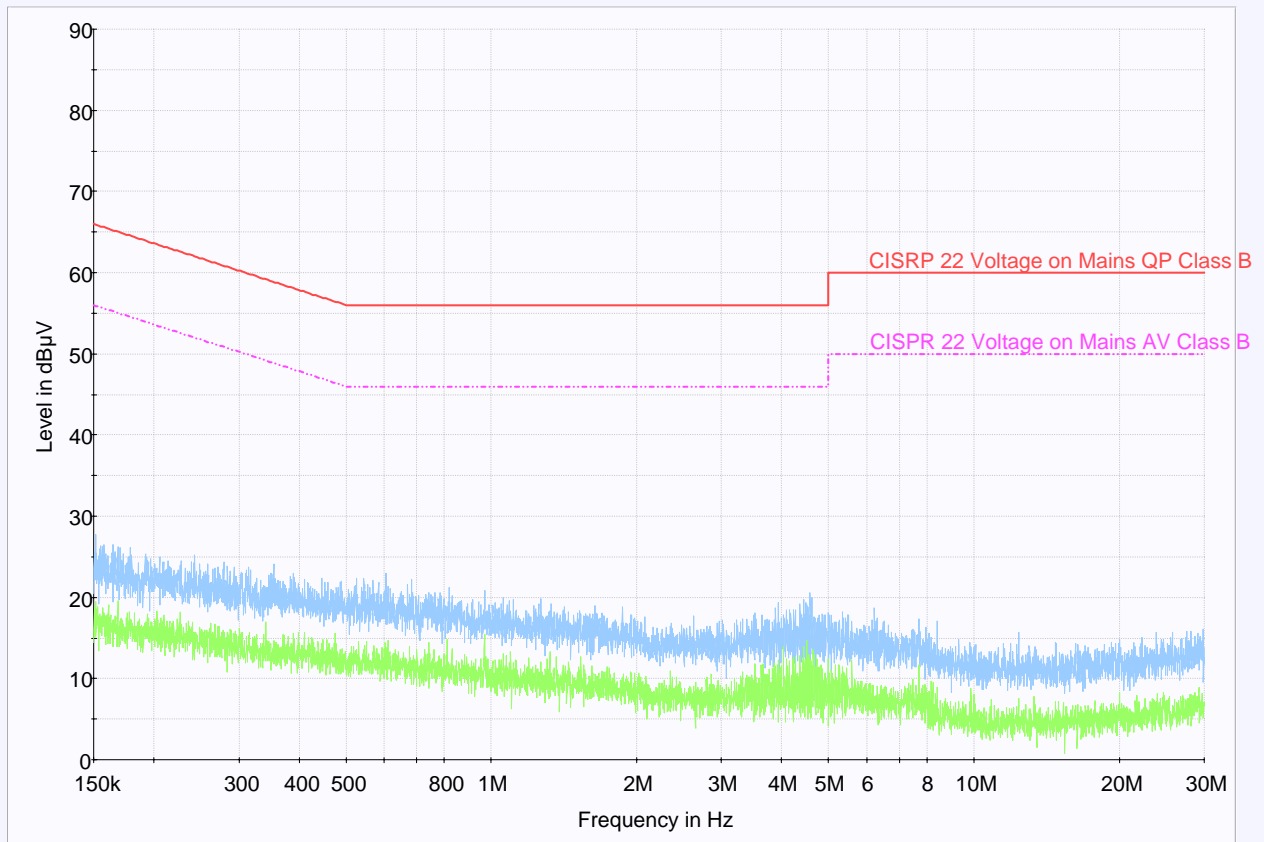
All measurements were performed using a Peak or Average detector with a 10kHz RBW.

Measurements have been corrected with the LISN and cable losses to show compliance.



AC Powerline Conducted - Neutral

- CISRP 22 Voltage on Mains QP Class B
- - - CISRP 22 Voltage on Mains AV Class B
- Peak Detector
- Average Detector



AC Powerline Conducted - Phase

— CISRP 22 Voltage on Mains QP Class B	- - - CISPR 22 Voltage on Mains AV Class B
— Peak Detector	— Average Detector

Clause 15.109(a) Radiated Emissions

Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency of Emission (MHz)	Field Strength (microvoltsmeter)
30 - 88	100
88 - 216	150
216 - 960	200
Above 960	500

Test Conditions:

Sample Number:	2	Temperature (°C):	10
Date:	April 18, 2007	Humidity (%):	58
Modification State:	0	Tester:	Jason Nixon
		Laboratory:	OATS

Test Results:

See Attached Table for Results

Additional Observations:

The Spectrum was searched from 30MHz to 2GHz.

Measurement equipment setup was 120kHz Quasi-peak detector for measurements below 1GHz and 1MHz RBW/VBW peak detector above 1GHz.

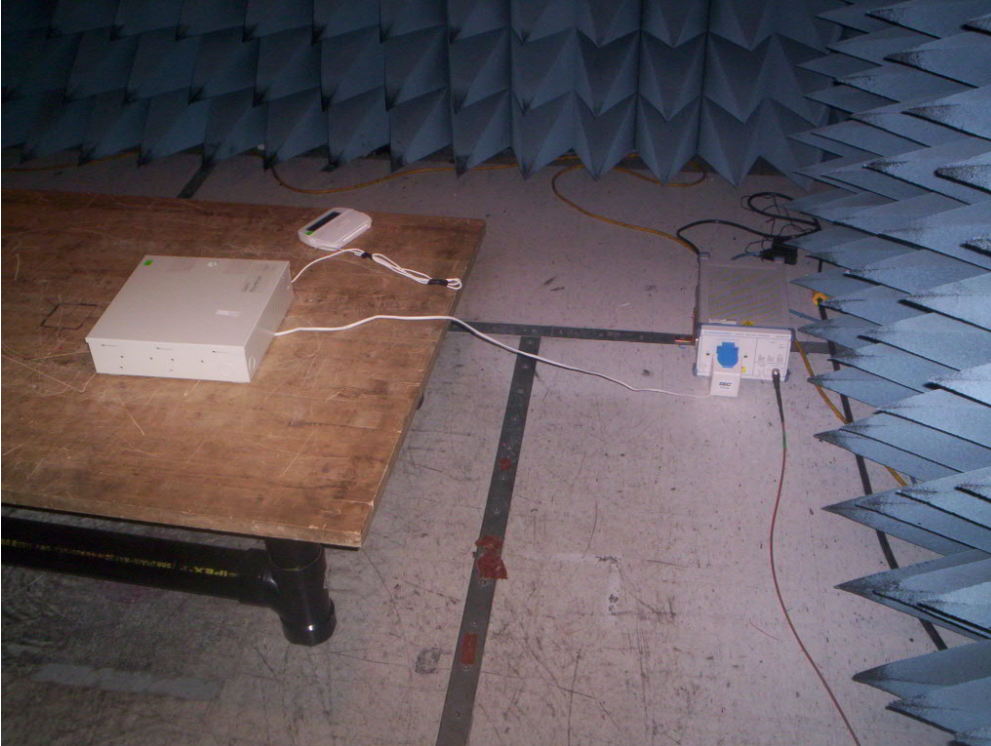
All Measurements were performed at 3 meters.

Freq. (MHz)	Ant	Pol. V/H	RCVD Signal (dBμV)	Ant. Factor (dB)	Amp. Gain (dB)	Cable Loss (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)
30.0014	BC1	V	24.1	11.8	N/A	0.6	36.6	40.0	3.4
30.0014	BC1	H	6.5	13.0	N/A	0.6	20.2	40.0	19.8
36.0019	BC1	V	17.2	11.1	N/A	0.6	28.9	40.0	11.1
36.0019	BC1	H	6.8	12.3	N/A	0.6	19.7	40.0	20.3
39.9999	BC1	V	26.5	11.0	N/A	0.6	38.1	40.0	1.9
39.9999	BC1	H	9.2	12.2	N/A	0.6	22.0	40.0	18.0
48.0007	BC1	V	21.1	10.3	N/A	0.7	32.1	40.0	7.9
48.0007	BC1	H	20.5	10.7	N/A	0.7	31.9	40.0	8.1

Note 1: Antenna Legend: BC = Biconical, BL = Bilog, LP = Log-Periodic, Horn = Horn, ED = EMCO Dipole

Appendix B : Setup Photographs

Conducted Emissions Setup:

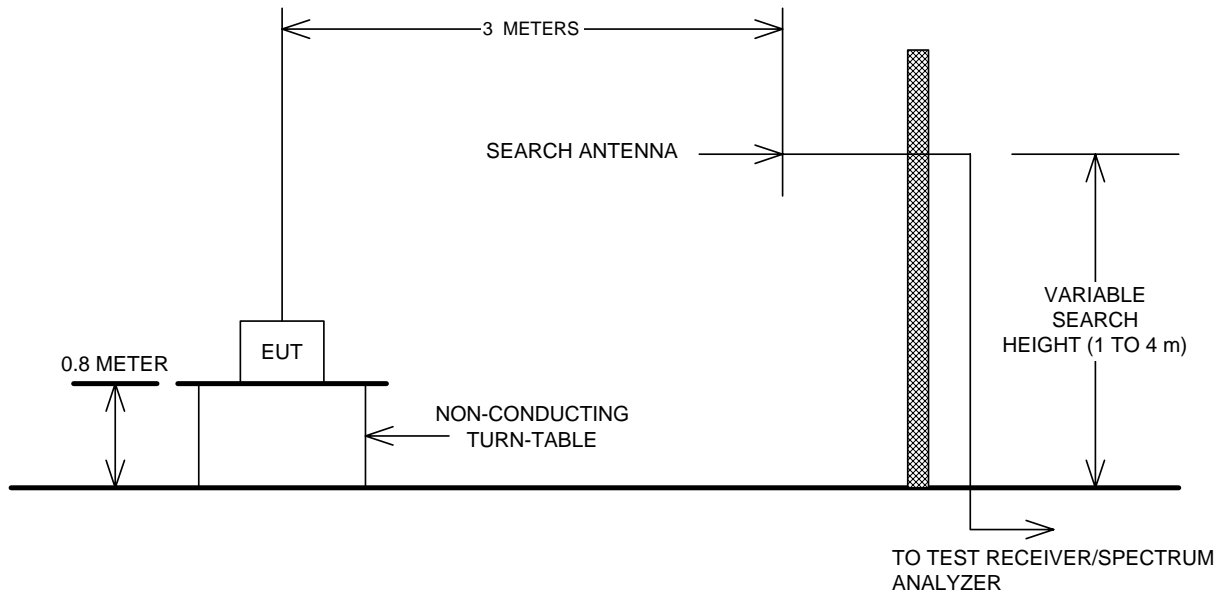


Spurious Emissions Setup:



Appendix C : Block Diagram of Test Setups

Test Site For Radiated Emissions



Conducted Emissions

