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Compliance test report ID

**186967-2TRFWL**

Date of issue

September 20, 2011

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## FCC Part 24 Subpart E

Personal Communication Services

Applicant Digital Security Controls, a Division of Tyco Safety  
Products Canada Ltd.  
Product Alarm Communicator  
Model TL255GS-SM-NA  
FCC ID F5311GS255SM

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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



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**Test location**

Nemko Canada Inc.  
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Ottawa, ON, K1V 1H2  
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Test site FCC ID: 176392 (3 m semi anechoic chamber)

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**Tested by** Kevin Rose, Wireless/EMC Specialist

**Reviewed by**

  
\_\_\_\_\_  
Andrey Adelberg, Senior Wireless/EMC Specialist

September 20, 2011

**Date**

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**Limits of responsibility**

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 1 Report summary

### 1.1 Applicant

**Company name** Digital Security Controls, a Division of Tyco Safety Products Canada Ltd.  
95 Bridgeland Ave.  
**Company address** Toronto, Ontario  
Canada  
M6A1Y7

### 1.2 Manufacturer

**Company name** Digital Security Controls, a Division of Tyco Safety Products Canada Ltd.  
95 Bridgeland Ave.  
**Company address** Toronto, Ontario  
Canada  
M6A1Y7

### 1.3 Test specifications

FCC Part 24 Subpart E  
Personal Communication Services

### 1.4 Statement of compliance

In the configuration tested, the EUT was found compliant.

Testing was completed against all relevant requirements of the test standard. Results obtained indicate that the product under test complies in full with the requirements tested. The test results relate only to the items tested.

See "Summary of test results" for full details.

### 1.5 Exclusions

None

### 1.6 Test report revision history

Revision #	Details of changes made to test report
TRF	Original report issued

## Section 2 Summary of test results

### 2.1 FCC Part 24, test results

Part	Test Method	Test description	Verdict
§24.232(c)	2.1046	EIRP limits	Pass
–	2.1047	Modulation characteristics	Not applicable
§24.238(b)	2.1049	Occupied bandwidth	Pass
§24.238(b)	2.1051	Spurious emissions at the antenna terminal	Pass
§24.238(b)	2.1053	Field strength of spurious radiation	Pass
§24.234	2.1055	Frequency stability	Not tested <sup>1</sup>

Note: N/A The EUT does not use audio.

#### Notes:

<sup>1</sup> - Frequency stability was not tested since in the original modular approval Frequency stability test was performed and passed. The final application (with implemented module inside) will not alter the frequency stability characteristics of the module.

## Section 3 Equipment under test (EUT) details

### 3.1 Sample information

**Receipt date** September 9, 2011  
**Nemko sample ID number** 1

### 3.2 EUT information

**Product name** Wireless Alarm Communicator  
**Model** TL255GS-SM-NA  
**Model variant** GS2055-SM-NA, TL255GS-NA, GS2055-NA  
**Serial number** None  
**Part number** UA596 Rev. 01

### 3.3 Technical information

**Operating band** PCS 1900  
**Operating frequency** 1850-1910 MHz  
**Modulation type** GMSK  
**Occupied bandwidth** 312 kHz  
**Emission designator** 312KGXW  
**Power requirements** 120 Volts AC 60 Hz  
**Antenna information** PCB antenna and 3.72 dBi gain  
The EUT uses a unique antenna coupling/ non-detachable antenna to the intentional radiator.

#### Product description and theory of operation

The communicator subassembly is receiving alarm info over the internal bus from the host panel and it send info over GSM network to a compatible DSC alarm receiver

#### Operational frequencies

25 MHz

#### Software details

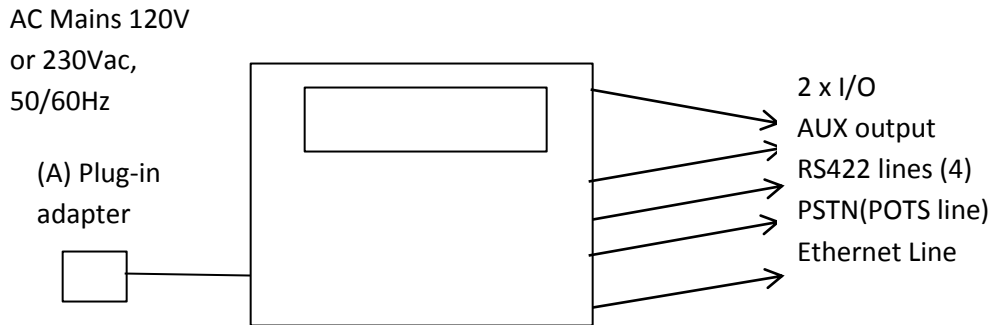
Ver. 2.5

### 3.4 EUT exercise details

Alarm System in alarm condition - Attention the internal sounder is very loud (press fire keys together for 2-3 seconds and then enter 1234 code to reset the alarm system). Alarm System in armed/disarmed mode (enter 1234 code to arm/disarm)

### 3.5 EUT setup diagram

(B) SCW9057D-SM-433 (HOST) including IP/GSM communicator (EUT))



**Diagram 3.5-1: Setup diagram**

**Table 3.5-1: EUT setup details**

Description	Brand name	Model/Part number	Serial number	Rev.
Power Adapter	AC/AC	PTD1620U-CC	None	-
Alarm Control Panel	Panel	SCW9057D-SM-433	UA568	03

**Table 3.5-2: EUT interface ports**

Description	Qty.
AC mains (120Vac/60Hz or 230Vac/50Hz)	1
Input/Output zones (I/O1, I/O2)	2
AUX output (rated 12Vdc/100mA)	1
PSTN connection (POTS line connection)	1
Ethernet	1
RS422 connection (on the TL255GS-SM-NA)	1

**Table 3.5-3: Inter-connection cables**

Cable description	From	To	Length (ft)
Power adapter secondary	AC adapter	EUT	6
I/O zones	EUT	AE	6
AUX output	EUT	AE	6
POTS line connection	EUT	AE	6
Ethernet line connection	EUT	AE	6
RS422 connection (on the TL255GS-SM-NA)	EUT	AE	6



## Section 4 Engineering considerations

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### 4.1 Modifications incorporated in the EUT

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

### 4.2 Technical judgment

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All the tests were performed on the TL255GS-SM-NA model sample. The TL255GS-SM-NA is the most populated unit and therefore was deemed as a representative sample.

### 4.3 Deviations from laboratory tests procedures

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No deviations were made from laboratory procedures.

## Section 5 Test conditions

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### 5.1 Atmospheric conditions

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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.

### 5.2 Power supply range

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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.

## Section 6 Measurement uncertainty

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### 6.1 Uncertainty of measurement

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Nemko Canada Inc. has calculated measurement uncertainty and is documented in EMC/MUC/001 "Uncertainty in EMC measurements." Measurement uncertainty was calculated using the methods described in CISPR 16-4 Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC measurements; as well as described in UKAS LAB34: The expression of Uncertainty in EMC Testing. Measurement uncertainty calculations assume a coverage factor of  $K=2$  with 95% certainty.

## Section 7 Test equipment

### 7.1 Test equipment list

Equipment	Manufacturer	Model no.	Asset no.	Cal./Ver. cycle	Next Cal./Ver.
3 m EMI test chamber	TDK	SAC-3	FA002047	1 year	Mar. 09/12
Flush mount turntable	Sunol	FM2022	FA002082	—	NCR
Controller	Sunol	SC104V	FA002060	—	NCR
Antenna mast	Sunol	TLT2	FA002061	—	NCR
Receiver/spectrum analyzer	Rohde & Schwarz	ESU 26	FA002043	1 year	April 27/12
Power supply	California Inst.	3001I	FA001021	1 year	Jan. 26/12
Bilog antenna	Sunol	JB3	FA002108	1 year	Jan. 31/12
Horn antenna #2	EMCO	3115	FA000825	1 year	Feb. 04/12
1–18 GHz pre-amplifier	JCA	JCA118-503	FA002091	1 year	Aug. 15/12
50 coax cable	Huber + Suhner	NONE	FA002013	1 year	Aug. 15/12
50 coax cable	Huber + Suhner	NONE	FA002074	1 year	Aug. 15/12
Receiver/Spectrum Analyzer	Rohde & Schwarz	ESU40	FA002071	1 year	Jan. 04/12
Power supply	California Inst.	3001I	FA001021	1 year	Jan. 26/12
Lisn	Rohde & Schwarz	ENV216	FA002023	1 year	Nov. 09/11
Note: NCR - no calibration required					

## Section 8 Testing data

### 8.1 Clause 24.232(c) Effective isotropic Radiated Power Limits

#### 8.1.1 Definitions and limits

Mobile/portable stations are limited to 2 watts EIRP peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

#### 8.1.2 Test summary

<b>Test date</b>	September 14, 2011	<b>Test engineer</b>	Kevin Rose	<b>Verdict</b>	Pass
<b>Temperature</b>	22 °C	<b>Air pressure</b>	1002 mbar	<b>Relative humidity</b>	33 %

#### 8.1.3 Observations/special notes

The EUT was set up as tabletop configuration.

#### 8.1.4 Test data

**Table 8.1-1:** Effective Radiated Power results

Frequency, MHz	Conducted level, dBm	Antenna Gain, dBi	Combined, dBm	EIRP limit, dBm	Margin, dB
1850.2	28.39	3.72	32.11	33.00	0.89
1880.0	28.49	3.72	32.21	33.00	0.79
1909.2	28.11	3.72	31.83	33.00	1.17

8.2 Clause 24.238(b) Occupied bandwidth

8.2.1 Definitions and limits

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

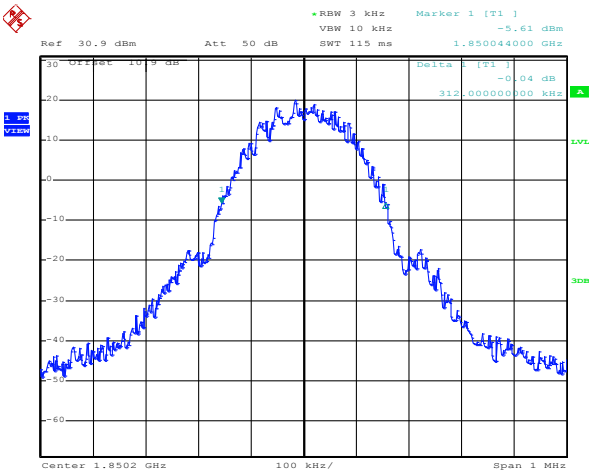
8.2.2 Test summary

<b>Test date</b>	September 14, 2011	<b>Test engineer</b>	Kevin Rose	<b>Verdict</b>	Pass
<b>Temperature</b>	22 °C	<b>Air pressure</b>	1002 mbar	<b>Relative humidity</b>	33 %

8.2.3 Observations/special notes

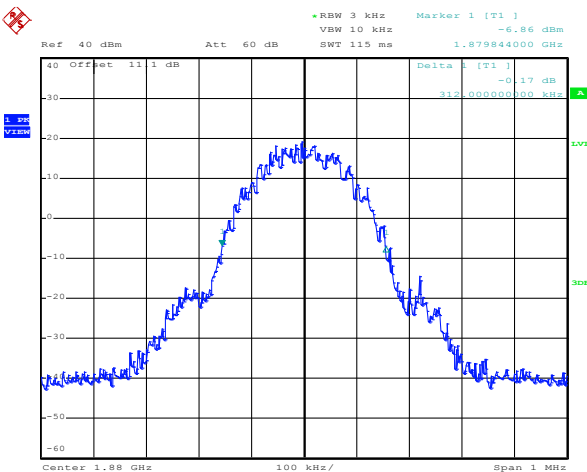
None

8.2.4 Test data



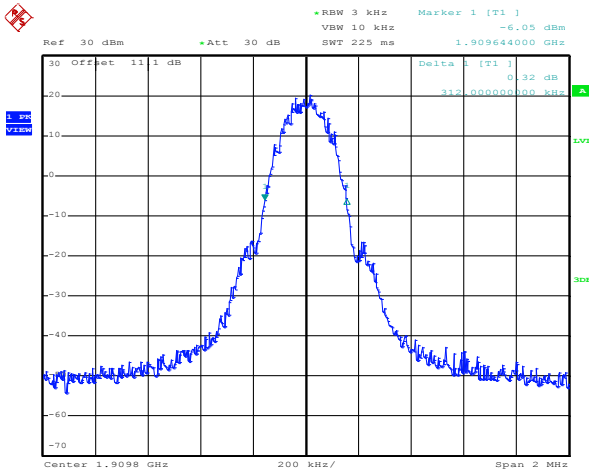
Date: 15.SEP.2011 16:09:04

Plot 8.2-1: Low Channel OBW



Date: 15.SEP.2011 16:27:16

Plot 8.2-2: Mid Channel OBW



Date: 15.SEP.2011 16:36:54

Plot 8.2-3: High Channel OBW

Table 8.2-1: 26 dB bandwidth

26 dB bandwidth (MHz)	OBW (kHz)
1850.2	312.0
1880.0	312.0
1909.8	312.0

### 8.3    Clause 24.238(a) Spurious emissions at the antenna terminal

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#### 8.3.1    Definitions and limits

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Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

#### 8.3.2    Test summary

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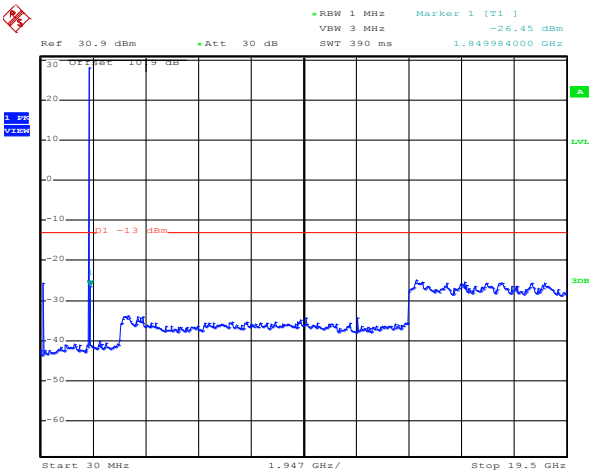
<b>Test date</b>	September 14, 2011	<b>Test engineer</b>	Kevin Rose	<b>Verdict</b>	Pass
<b>Temperature</b>	22 °C	<b>Air pressure</b>	1002 mbar	<b>Relative humidity</b>	33 %

#### 8.3.3    Observations/special notes

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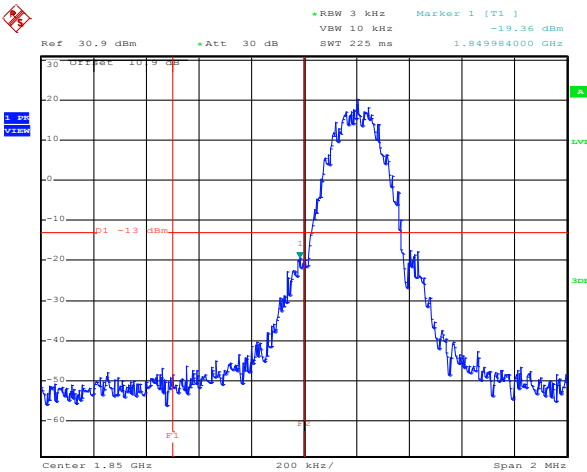
Peak detector with 1 MHz RBW was used within 30–10,000 MHz range. Within 1 MHz outside and adjacent to the band edges 1 % of EBW was used.

8.3.3 Test Data



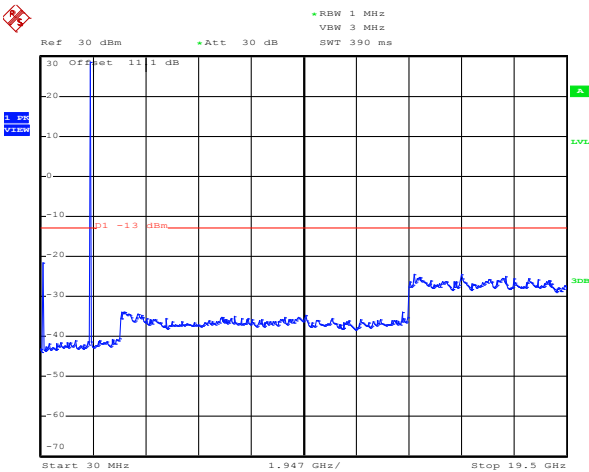
Date: 15.SEP.2011 16:13:23

Plot 8.3-1: Low Channel Spurious 30-19,500 MHz



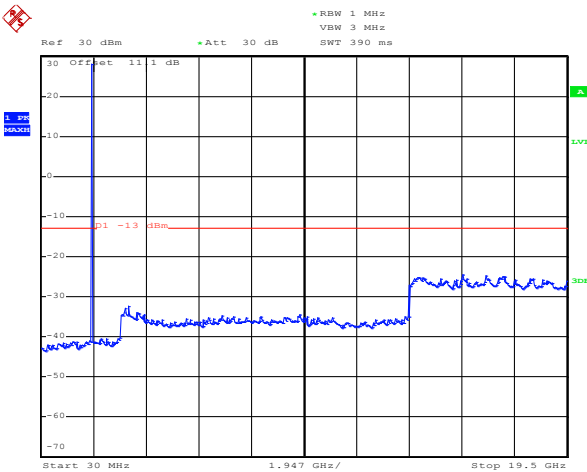
Date: 15.SEP.2011 16:12:02

Plot 8.3-2: Low Channel Band edge  
The Level was integrated over 3.12 kHz RBW (1 % of EBW)



Date: 15.SEP.2011 16:29:31

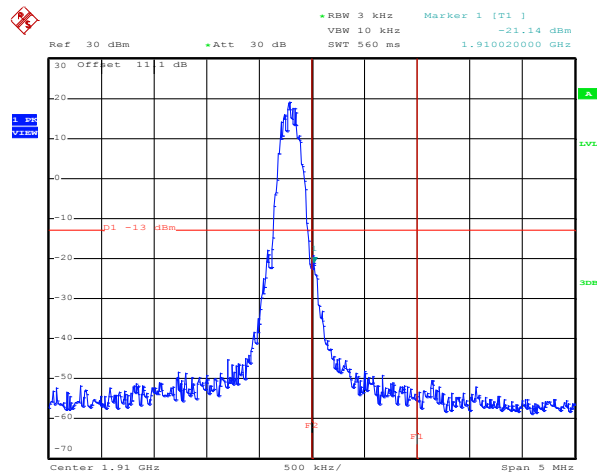
Plot 8.3-3: Mid Channel Spurious 30-19,500 MHz



Date: 15.SEP.2011 16:31:24

Plot 8.3-4: High Channel Spurious 30-19,500 MHz

8.3.3 Test Data Continued



Date: 15.SEP.2011 16:34:27

Plot 8.3-5: High Channel Band edge

The Level was integrated over 3.12 kHz RBW (1 % of EBW)

## 8.4 Clause 24.238(a) Field strength of spurious radiation

### 8.4.1 Definitions and limits

Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

### 8.4.2 Test summary

<b>Test date</b>	September 14, 2011	<b>Test engineer</b>	Kevin Rose	<b>Verdict</b>	Pass
<b>Temperature</b>	22 °C	<b>Air pressure</b>	1002 mbar	<b>Relative humidity</b>	33 %

### 8.4.3 Observations/special notes

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

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

### 8.4.4 Test data

No emissions were detected within 20 dB of the limit.

# Section 9 Block diagrams of test set-ups

## 9.1 Radiated emissions set-up

