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Compliance test report ID

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Date of issue

September 20, 2011

FCC Part 22 Subpart H

Cellular Radiotelephone Service

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

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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Reviewed by



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September 20, 2011

Date

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 22 Subpart H
Cellular Radiotelephone Service

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 22, test results

Part	Test Method	Test description	Verdict
22.913(a)	2.1046	Effective Radiated Power Limits	Pass
—	2.1047	Modulation Characteristics	Not applicable
22.917(b)	2.1049	Occupied bandwidth	Pass
22.917(a)	2.1051	Spurious Emissions at the antenna terminal	Pass
22.917(a)	2.1053	Field strength of spurious radiation	Pass
22.355	2.1055	Frequency stability	Not tested ¹

Notes:

¹ - 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 GSM 850
Operating frequency 824-849 MHz
Modulation type GMSK
Occupied bandwidth 322 kHz
Emission designator 322KGXW
Power requirements 120 Volts AC 60 Hz
Antenna information PCB antenna and -1.75 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))

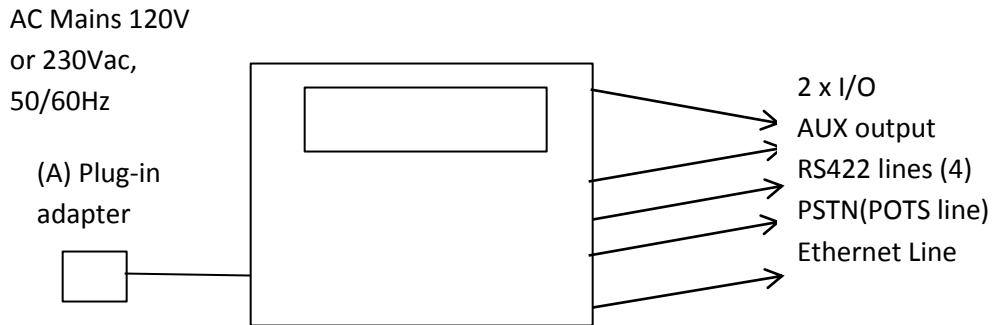


Diagram 3.5-1: Setup diagram

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

4.1 Modifications incorporated in the EUT

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

4.2 Technical judgment

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

No deviations were made from laboratory procedures.

Section 5 Test conditions

5.1 Atmospheric 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.

5.2 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.

Section 6 Measurement uncertainty

6.1 Uncertainty of measurement

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 22.913(a) Effective Radiated Power Limits

8.1.1 Definitions and limits

(a) Maximum ERP. In general, the effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts. However, for those systems operating in areas more than 72 km (45 miles) from international borders that:

- (1) Are located in counties with population densities of 100 persons or fewer per square mile, based upon the most recently available population statistics from the Bureau of the Census; or,
- (2) Extend coverage on a secondary basis into cellular unserved areas, as those areas are defined in §22.949, the ERP of base transmitters and cellular repeaters of such systems must not exceed 1000 Watts. The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

8.1.2 Test summary

Test date	September 14, 2011	Test engineer	Kevin Rose	Verdict	Pass
Temperature	22 °C	Air pressure	1002 mbar	Relative humidity	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, dBd	ERP, dBm	ERP limit, dBm	Margin, dB
849.8	29.89	-3.9	25.99	38.45	12.46
837.6	30.11	-3.9	26.21	38.45	12.24
824.2	29.92	-3.9	26.02	38.45	12.43

Note: Antenna gain is -1.75 dBi = -3.9 dBd

8.2 Clause 22.917(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.

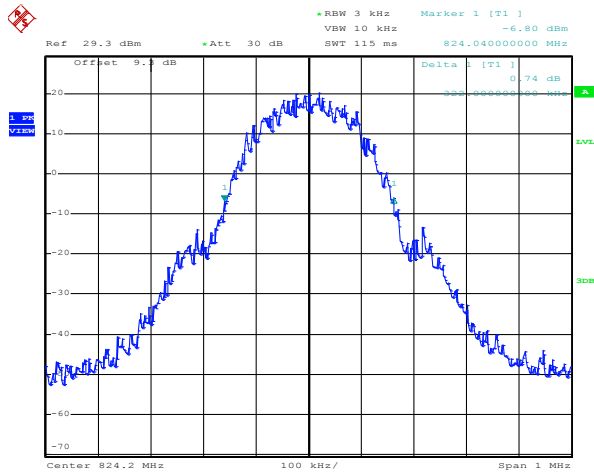
8.2.2 Test summary

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

8.2.3 Observations/special notes

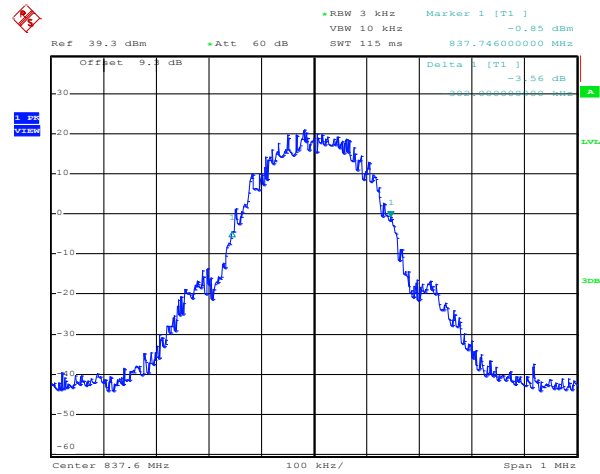
None

8.2.4 Test data



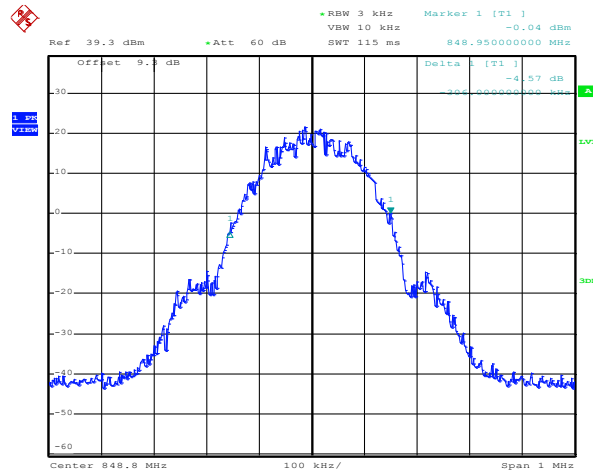
Date: 15.SEP.2011 13:03:32

Plot 8.2-1: Low Channel OBW



Date: 15.SEP.2011 13:50:45

Plot 8.2-2: Mid Channel OBW



Date: 15.SEP.2011 13:45:10

Plot 8.2-3: High Channel OBW

Table 8.2-1: 26 dB bandwidth

Frequency (MHz)	26 dB BW (kHz)
824.2	322.0
837.6	302.0
848.8	306.0



8.3 Clause 22.917(a) Spurious emissions at the antenna terminal

8.3.1 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.

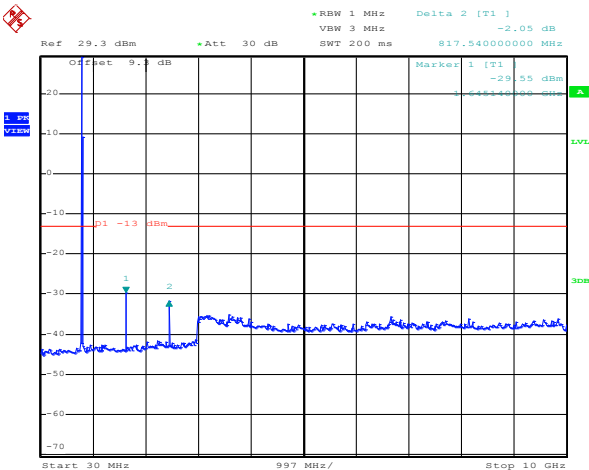
8.3.2 Test summary

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

8.3.3 Observations/special notes

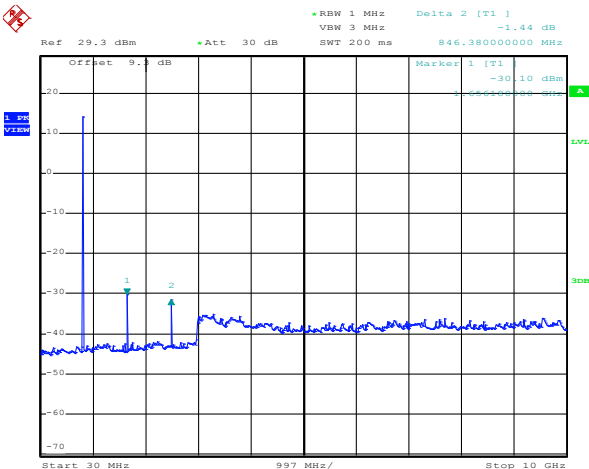
Peak detector with 1 MHz RBW was used within 30–10,000 MHz range. Within 1 MHz outside and adjacent to the band edges 1 % of EBW was used.

8.3.3 Test Data



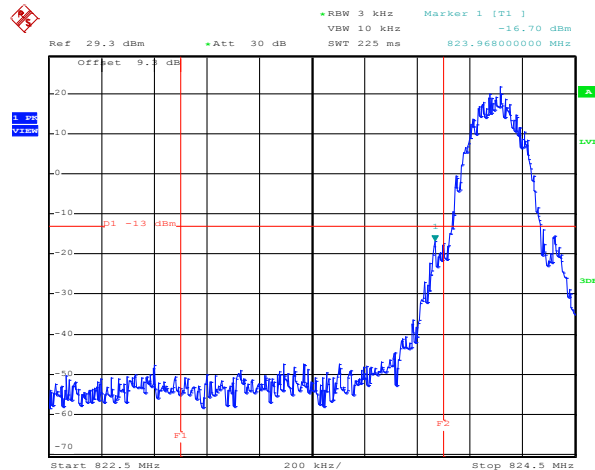
Date: 15.SEP.2011 13:01:40

Plot 8.3-1: Low Channel Spurious 30-10000 MHz



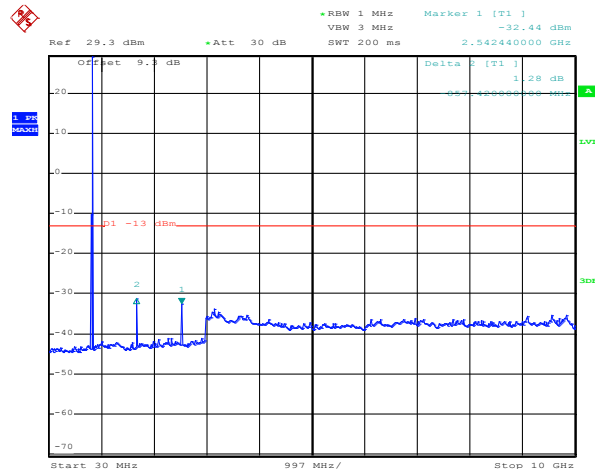
Date: 15.SEP.2011 13:56:22

Plot 8.3-3: Mid Channel Spurious 30-10000 MHz



Date: 15.SEP.2011 13:29:25

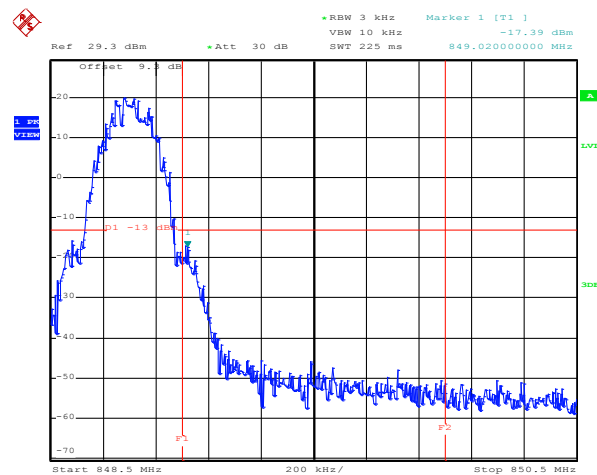
Plot 8.3-2: Low Channel Band edge
The Level was integrated over 3.2 kHz RBW (1 % of EBW)



Date: 15.SEP.2011 13:41:25

Plot 8.3-4: High Channel Spurious 30-10000 MHz

8.3.3 Test Data Continued



Date: 15.SEP.2011 13:36:54

Plot 8.3-5: High Channel Band edge

The Level was integrated over 3.2 kHz RBW (1 % of EBW)

8.4 Clause 22.917(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

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

8.4.3 Observations/special notes

The Spectrum was searched from 30 MHz to the 10th 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

