



Informe de ensayo nº:
Test report No:

NIE: 43009REM.002

Test Report

Radio frequency devices Subpart B. Unintentional radiators & ICES-003 ISSUE 5

Identificación del objeto ensayado.....: Identification of item tested	3G CELLULAR ALARM COMMUNICATOR
Marca Trade	DSC
Modelo y/o referencia tipo Model and /or type reference	3G4000, 3G4000RF
Other identification of the product	N/S: Not provided data
Final HW version	UA674 Rev.02
Final SW version	Ver. 1.0
	FCC ID: F53143G4000 IC ID: 160A-3G4000
Características Features	3G Cellular interface used for connection to Alarm Systems in order to send events to monitoring station. Use integrated Telit radio model UE910-NAR. Module used with external whip antenna
Peticionario Applicant	DIGITAL SECURITY CONTROLS, A DIV. OF TYCO SAFETY PRODUCTS CANADA LTD. 3301 Langstaff Road ON L4K4L2 Concord Canada VAT: Not provided data Dan Nita +905 760 3000. Ext. 2706/ dnita@tycoint.com
Método de ensayo solicitado, norma.....: Test method requested, standard	FCC Rules and Regulations 47 CFR Chapter I Part 15 Subpart B (10-01-12 Edition) & Information Technology Equipment (ITE) — Limits and methods of measurement Issue 5
Resultado Summary	IN COMPLIANCE
Aprobado por (nombre / cargo y firma) Approved by (name / position & signature)	Rafael López Martín LAB EMC Manager
Fecha de realización Date of issue	2014-08-13
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Competences and guarantees

AT4 wireless is a testing laboratory accredited by the National Accreditation Body (ENAC -Entidad Nacional de Acreditación), to perform the tests indicated in the Certificate No. 51/LE 147.

In order to assure the traceability to other national and international laboratories, AT4 wireless has a calibration and maintenance program for its measurement equipment.

AT4 wireless guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at AT4 wireless at the time of performance of the test.

AT4 wireless is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

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General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of AT4 wireless.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of AT4 wireless and the Accreditation Bodies.

Uncertainty

Uncertainty (factor $k=2$) was calculated according to the AT4 wireless internal document PODT000.

Usage of samples

Samples undergoing test have been selected by: the Client

Sample S/01 is composed of the following elements:

Control N°	Description	Manufacturer	Model	Serial number	Reception date
06	AC/DC Adapter	TYCO	HK-XX14-A138N	--	2014-07-15
11	3G Alarm Communicator	TYCO	--	--	2014-07-15
11	RJ -11 Cable	TYCO	--	--	2014-07-15
21	Interface Connector	TYCO	--	--	2014-07-15
22	RJ-11/RS-232 Converter	TYCO	--	--	2014-07-15
23	USB/RS-232 Converter	TYCO	--	--	2014-07-15
09	Antenna	TYCO	--	--	2014-07-15

Test sample description

The sample is a production ready 3G Alarm Communicator with an external whip antenna, with auto-answer and pass through mode.

Test samples supplier

DIGITAL SECURITY CONTROLS, A DIV. OF TYCO SAFETY PRODUCTS CANADA LTD.
3301 Langstaff Road
ON L4K4L2 . Concord. . Canada
CIF: Not Provided data
Dan Nita
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dnita@tycoint.com

Testing period

The performed test started on 2014/07/21 and finished on 2014/08/04.
The tests have been performed at AT4 wireless.

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 20 % Max. = 80 %
Shielding effectiveness	> 100 dB
Electric insulation	> 10 kΩ
Reference resistance to earth	< 0,5 Ω

In the semianechoic chamber, the following limits were not exceeded during the test.

Temperature	Min. = 15 °C Max. = 30 °C
Relative humidity	Min. = 45 % Max. = 60 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar
Shielding effectiveness	> 100 dB
Electric insulation	> 10 kΩ
Reference resistance to earth	< 0,5 Ω
Normal site attenuation (NSA)	< ±4 dB at 10 m & 3m distance between item under test and receiver antenna, (30 MHz to 1000 MHz)
Site VSWR	< ±6 dB at 3m distance between item under test and receiver antenna, (1 GHz to 18 GHz)
Field homogeneity	More than 75% of illuminated surface is between 0 and 6 dB (26 MHz to 18 GHz).

In the chamber for conducted measurements, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 30 °C
Relative humidity	Min. = 45 % Max. = 60 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar
Shielding effectiveness	> 100 dB
Electric insulation	> 10 kΩ
Reference resistance to earth	< 0,5 Ω

Remarks and comments

The tests have been realized by the technical personnel:: Mario Alberto Ureña, Margarita Haro, Pedro Valenzuela.

The total uncertainty of the measurement system for the measured conducted disturbance characteristics of EUT from 150 kHz to 30 MHz is $I = \pm 3,60$ dB for quasi-peak measurements, $I = \pm 3,48$ dB for peak measurements ($k = 2$).

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 30 MHz to 1 GHz is $I = \pm 4,57$ dB for quasi-peak measurements, $I = \pm 4,48$ dB for peak measurements ($k = 2$) and from 1 to 12,75 GHz is $I = \pm 3,43$ dB for average and peak measurements.

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 12,75 GHz to 26 GHz is $I = \pm 4,09$ dB for average and peak measurements.

Testing verdicts

Not applicable	N/A
Pass	P
Fail	F
Not measured	N/M

List of equipment used during the test					
CONTROL NUMBER	DESCRIPTION	MANUFACTURER	MODEL	LAST CALIBRATION	NEXT CALIBRATION
1999	EMI Receptor	ROHDE & SCHWARZ	ESIB 26	2013-05-30	2015-05-30
4612	Horn Antenna	SCHWARZBECK	BBHA 9120	2013-12-19	2016-12-19
1658	RF Amplifier	SCHAFFNER	CPA9231A	2011-06-17	2013-06-17
4659	RF Amplifier	SCHWARZBECK	BBV 9718	2014-02-26	2015-02-26
3541	Bilog Hybrid antenna	SUNOL SCIENCES CORPORATION	JB6	2012-06-01	2015-06-01
1920	Horn Antenna	AGILENT	11966J	2011-09-27	2014-09-27
1975	RF Amplifier	MITEQ	JS4-12002600-30-5A	2014-05-22	2016-05-22
3556	Thermohygrograph	T&D	TR-72W	2014-01-21	2015-01-21
3545	Thermohygrograph	PICO TECHNOLOGIES	HUMIDIPROBE	2014-01-21	2015-01-21

Appendix A – Test result

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DESCRIPTION OF THE OPERATION MODES

The operation modes described in this paragraph constitute a functionality of the sample under test for itself. Every operation mode takes a failure criteria for the immunity test that they were applying to it and a monitoring to guarantee performance of the same ones.

In the following table appears the operation modes used by the samples tested to that it refers the present test report.

OPERATION MODE	DESCRIPTION
OM#01	EUT ON. IDLE Mode. Power Supply: 115 Vac
OM#02	EUT ON. TCH Mode. Power Supply: 115 Vac

CONTINUOUS CONDUCTED EMISSION ON POWER LEADS

LIMITS	Product Standard	FCC 15.B (10.01.12 Edition)
	Test standard :	FCC 15.B (10.01.12 Edition)

CLASS B

The applied limit for continuous conducted emissions in power leads, according with the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B (10-01-12 Edition), in the frequency range 0,15 to 30 MHz, for Class B equipment was:

Frequency range (MHz)	Limit (dB μ V)	
	Quasi-peak	Average
0,15 to 0,5	66-56	56-46
0,5 to 5	56	46
5 to 30	60	50

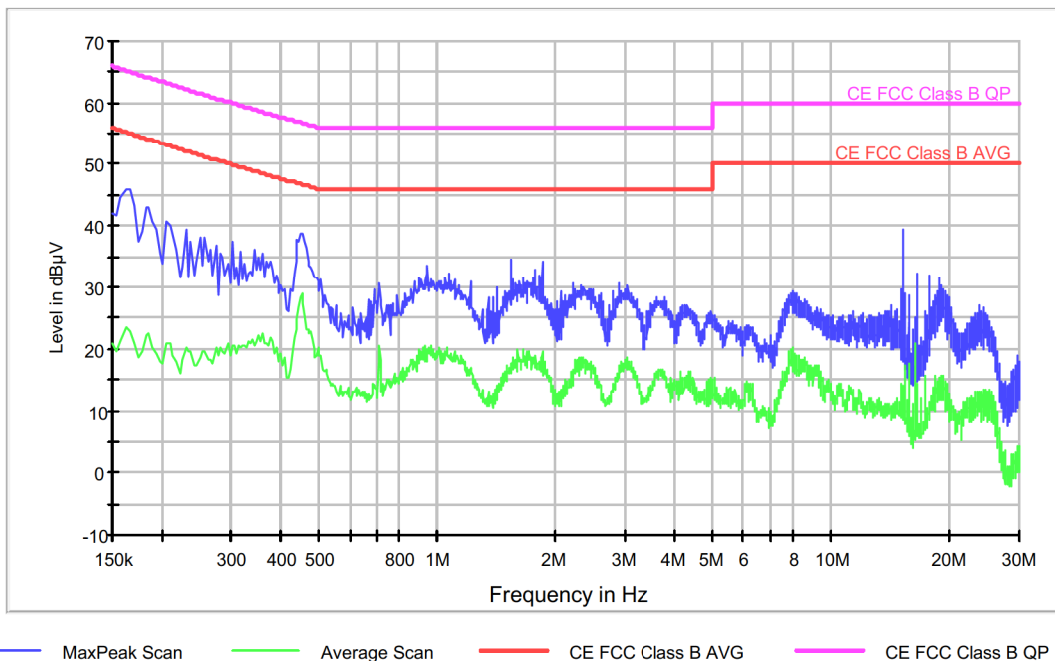
TESTED SAMPLES:	S/01
TESTED OPERATION MODES:	OM#01 & OM#02
TEST RESULTS :	CCmmnnhh: CC, Conducted Condition; mm: Sample number; nn: Operation mode; hh: wire

CCmmnnhh	Description	Result
CC0101N	Pass	P
CC0101L1	Pass	P
CC0102N	Pass	P
CC0102L1	Pass	P

Continuous Conducted Emission: CC0101L1

Project: 43009rem002
 Company: TYCO
 Sample: S/01
 Operation mode: OM#01
 Description: EUT ON. IDLE Mode. 115 Vac. Phase wire noise.

EC FCC Class B ESPI CC



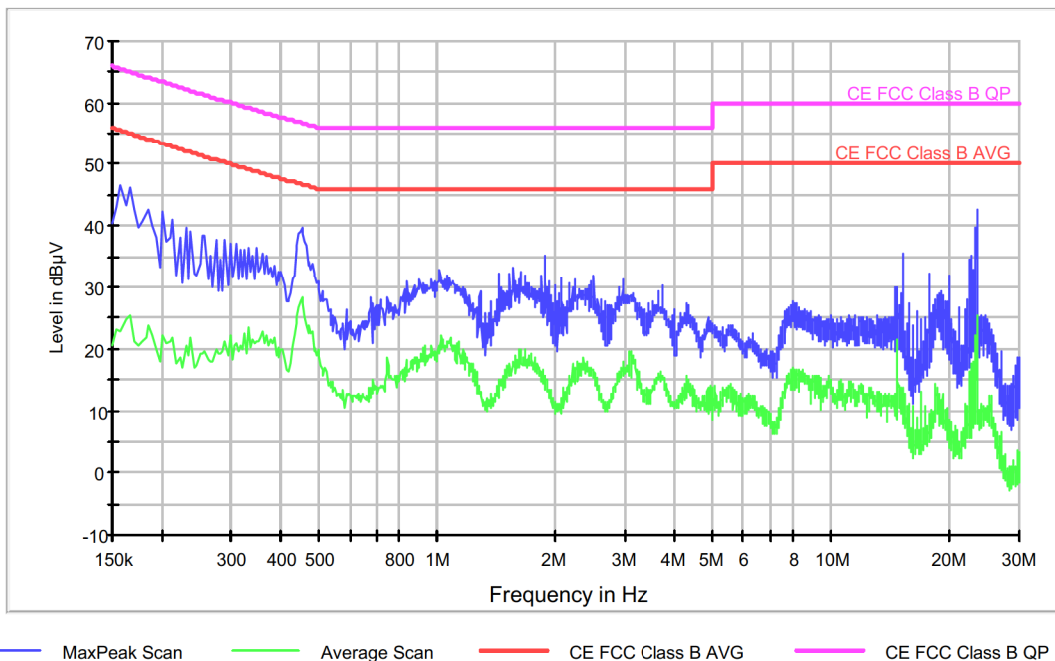
Subrange Maxima

Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.162000	46.0	23.4
0.258000	38.0	19.6
0.458000	38.8	27.3
0.946000	33.5	19.9
1.542000	34.6	17.7
2.214000	30.6	16.1
3.778000	28.3	15.7
7.986000	29.4	19.3
15.302000	39.4	13.5
18.822000	31.7	14.0

Continuous Conducted Emission: CC01010N

Project: 43009rem002
 Company: TYCO
 Sample: S/01
 Operation mode: OM#01
 Description: EUT ON. IDLE Mode. 115 Vac. Neutral wire noise.

EC FCC Class B ESPI CC



Subrange Maxima

Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.158000	46.6	22.9
0.258000	38.5	19.7
0.454000	39.6	28.3
1.014000	33.0	19.2
1.874000	35.2	15.8
2.498000	32.0	16.4
3.754000	30.2	15.5
7.970000	27.6	16.9
15.298000	35.4	12.8
23.382000	42.6	25.6