



TEST REPORT

According to CFR 47 Part 15

**Canicom 400
FCC ID: U50-CDD40001**

N°280104-CC-1-a

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FCC CERTIFICATION TEST REPORT

EQUIPMENT FCC ID : U50-CDD40001

The 15 pages of this report are not sharable

Identification : 280104-CC-1-a

FCC registration # 90469

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This report concerns : Original grant Class II change

Equipment tested : Canicom 400

Equipment FCC ID : U50-CDD40001

Designed by : NUM'AXES
745 rue de la Bergeresse
ZAC des Aulnaies - BP 30157
45161 OLIVET cedex

Manufactured by : NUM'AXES
745 rue de la Bergeresse
ZAC des Aulnaies - BP 30157
45161 OLIVET cedex

Deferred grant requested per 47 CFR 0.457 (d)(1)(ii) YES NO

if yes, defer until :

Company Named agrees to notify the Commission by :

of the intended date of announcement of the product so that the grant can be issued on the date

Transition rules requested per 15.37? YES NO
If no, assumed Part 15, Subpart B for intentional or
unintentional radiator
The new 47 CFR [10-1-96 edition] provision


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1 Reference and record of revisions of the test report :

Test report number :	Revision :	Number of pages	Modification reasons :
280104-CC-1-a	a	15	Creation
Redactor : O.ROY		Date of writing : 15 May 2007	
Technical control: O. ROY 		Quality Control: P. BOURVON	

2 Interpretation and remarks :

This equipment complies with the rules of the FCC section 15.249 and related sections.

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3 GENERAL INFORMATION :

3.1 APPLICANT :

NUM'AXES
745 rue de la Bergeresse
ZAC des Aulnaies - BP 30157
45161 OLIVET cedex

3.2 MANUFACTURER :

NUM'AXES
745 rue de la Bergeresse
ZAC des Aulnaies - BP 30157
45161 OLIVET cedex

3.3 TEST DATE :

20 to 22 March 2007, 13 and 15 May 2007

3.4 TEST SITE :

GYL Technologies
Parc d'activités de Lanserre
49610 Juigné sur Loire – France
FCC registration Number : 90469

4 INTRODUCTION :

The following test report concerns a radio command for dog recall (915 MHz radio command) is written in accordance with Part 15 of the Federal Communications Commissions. The Equipment Under Test (EUT) was CANICOM 400. The test results reported in this document relate only to the item that was tested.

All measurements contained in this Application were conducted in accordance with ANSI C63.4 Methods of Measurement of Radio Noise Emissions of 2001. The instrumentation utilized for the measurements conforms to the ANSI C63.4 standard for EMI and Field Strength Instrumentation. Some accessories are used to increase sensitivity and prevent overloading of the measuring instrument. These are explained in this report. Calibration checks are performed regularly on the instruments, and all accessories including the high pass filter, preamplifier and cables.

All radiated and conducted emissions measurements were performed manually at GYL TECHNOLOGIES. The radiated emissions measurements required by the rules were performed on the three to ten meters, open field, test site maintained by GYL Technologies Parc d'activités de Lanserre, 49610 Juigné sur Loire , France. Complete description and site attenuation measurement data have been placed on file with the Federal Communications Commission.

The power line conducted emission measurements were performed in a shielded enclosure also located at the Parc d'activités de Lanserre, 49610 Juigné sur Loire, France facility

5 MEASUREMENT EQUIPMENT LIST :

PART TYPE	MANUFACTURER	MODEL	GYL TECHNOLOGIES NUMBER	CALIBRATION DATE
RECEIVERS				
Receiver	Rohde & Schwarz	ESI 7	M02020	May-07
Spectrum analyzer	Rohde & Schwarz	FSEM 30	M02021	May-07
Filter 150 kHz	Rohde & Schwarz	EZ25	M02040	August-06
Satellite synchronized frequency standard	Acquisis	GPS8	M06013	without
ANTENNAS				
Bilog (30-2000MHz)	CHASE	CBL-6112	M02031	Aug-06
Bilog (30-2000MHz)	CHASE	CBL-6112	M02032	Aug-06
Horn antenna	EMCO	3115	M02045	March 07

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6 EXERCISING TEST CONDITIONS :

Measurements are done with the emitter in continuous emissions (special mode).

7 CONFORMANCE STATEMENT :

7.1 STANDARDS REFERENCED FOR THIS REPORT :

PART 2: 2004	Frequency allocations and Radio Treaty Matters General Rules and Regulations
PART 15: 2006	Radio frequency devices
ANSI C63.4-2003	Standard format measurements/technical report personal computer and peripherals

7.2 JUSTIFICATION :

As mentioned in paragraph 5 of this report, the equipment is an intentional radiator. It can be installed in residential commercial or light industry areas the following sub clause of the standard mentioned above are

- Part 15.209 (subpart C) for radiated emission for intentional radiator.
- Part 15.249 for intentional radiator in band 902-928 MHz

Note: the equipment is battery powered and has no wire connection.



8 TEST ACCORDING TO CFR 47 Part 15

Tests performed by Olivier ROY at GYL Technologies laboratories from 20 to 22 March of 2007 and 15 May 2007.

8.1 REFERENCE DOCUMENTATION :

FCC part 15 (Sub part C) §15.209 and 15.249 of 2006

8.2 RADIATED EMISSIONS MEASUREMENTS below 1GHz (§15.209):

Measurements below 1GHz

Before final measurements of radiated emissions were made on the open-field three/ten meter range; the EUT was pre-scanned in the semi anechoic at one meter distance. This was done in order to determine its emissions spectrum signature. The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. This process was repeated during final radiated emissions measurements on the open-field range, at each frequency, in order to insure that maximum emission amplitudes were attained.

Final radiated emissions measurements were made on the three/ten-meter, open-field test site. The EUT was placed on a conductive turntable on isolated support, table, 0.8 meter above the ground plane. At each frequency, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters in order to determine the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarizations. The spectrum analyzer's 6 dB bandwidth was set to 120 kHz, and the analyzer was operated in the CISPR quasi-peak detection mode. No video filter less than 10 times the resolution bandwidth was used. The range of the frequency spectrum to be investigated is specified in FCC Part 15. The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

Summary of settings

ESI 7 EMI TEST RECEIVER IN RECEIVER MODE	
Peak measurement time	5 ms
step size	40 kHz
Preamplifier	ON
Preselector	ON
Resolution, Band With	120 kHz
Final Quasi Peak measurement time	1 s minimum
Final average measurement time	1 s minimum

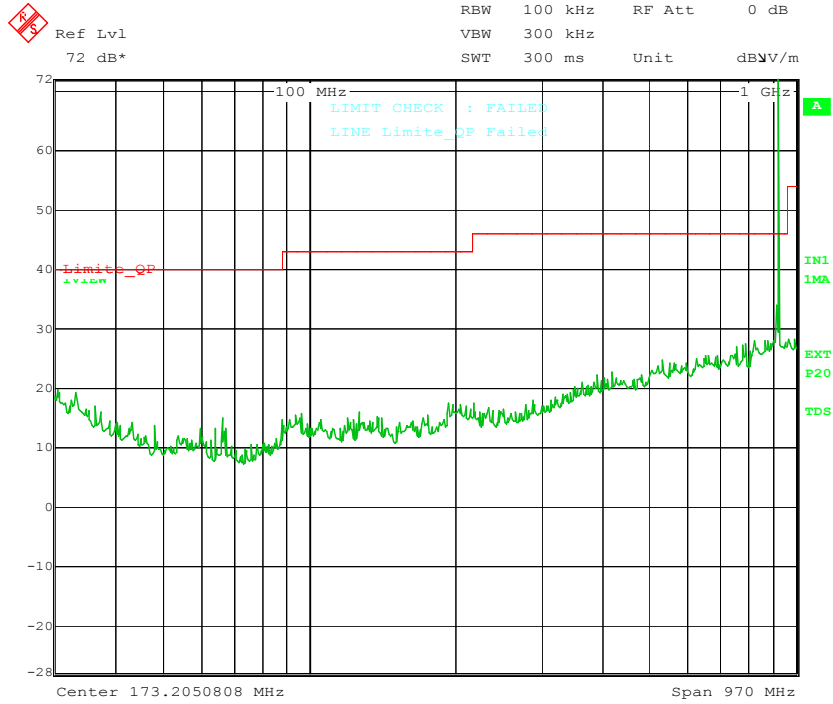
All readings are quasi-peak unless stated otherwise.



8.2.1 RESULTS (Class B):

During the prescan, no radiation (except intentional emission at 915MHz is detected)

Limit for 3m, measurement done at 1 m.



8.3 Spurious emissions measurement results from 1GHz to 10GHz, (§15.209):

A pre-scan measurement is done very close to the product (less than 10cm) with 100kHz RBW and a max peak detector. Then measurements are performed at 1 m with 1MHz RBW and a video averaging (10Hz) for spurious measurement.

Spurious emissions are made with a permanent emission.

No spurious founded outside harmonics.

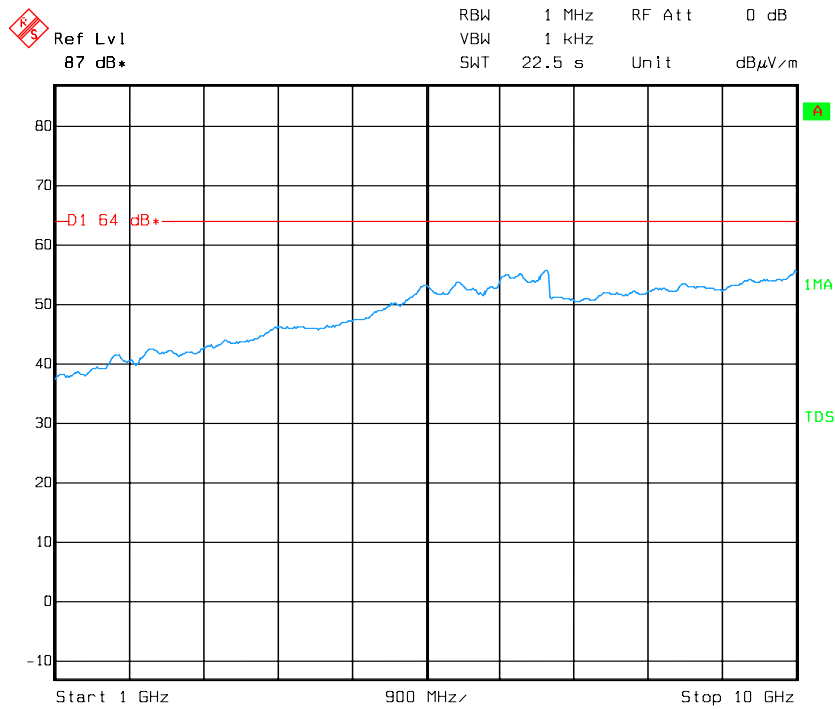
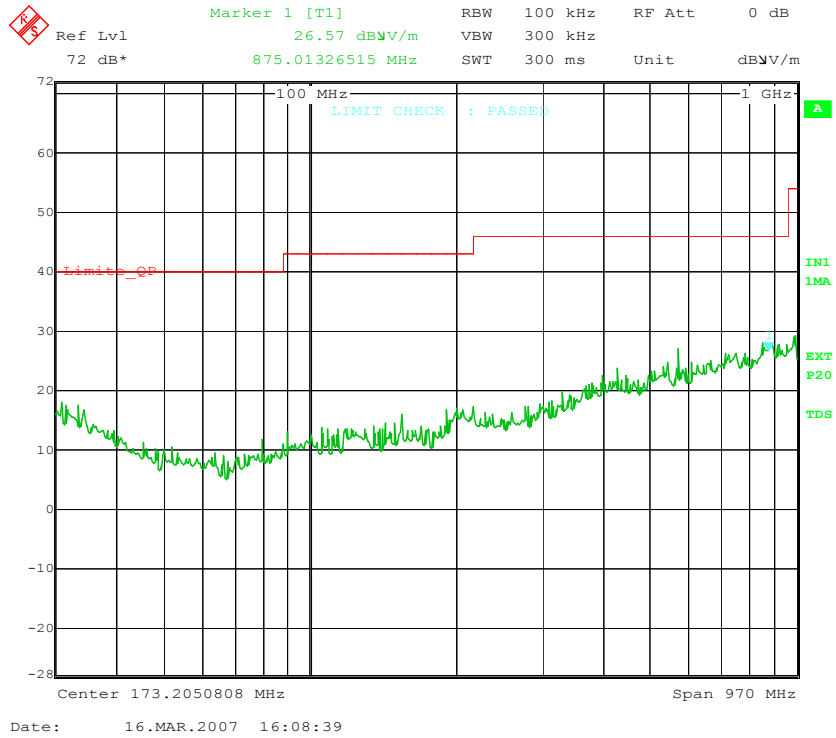
Average limit at 1 m is 64 dB μ V/m, 54 dB μ V/m at 3 m (500 μ V/m)

Freq. (GHz)	Harm.	Peak (dB μ V/m)	Peak corrected for 3 m distance (dB μ V/m)	Limit (dB μ V/m)	Minimum Margin (dB)
1.830	2	47.5	37.5	54.0	-16.5
2.745	3	53.8	43.8	54.0	-10.2
3.660	4	48.7	38.7	54.0	-15.3
4.575	5	NF			
5.490	6	NF			
6.405	7	NF			
7.320	8	NF			
8.235	9	NF			
9.150	10	NF			

* NF means Noise Floor at least 6 dB below the limit.



Noise Floor



8.4 INTERPRETATION AND REMARKS:

The equipment complies with the §15.209 requirements, class B.

8.5 Intentional radiator operation within the band 902-928 MHz §15.249:

8.5.1 Field Strength (15.249 (a))

Limit is 50mV/m that is 94dBμV/m at 3 m

3 meters measurement:

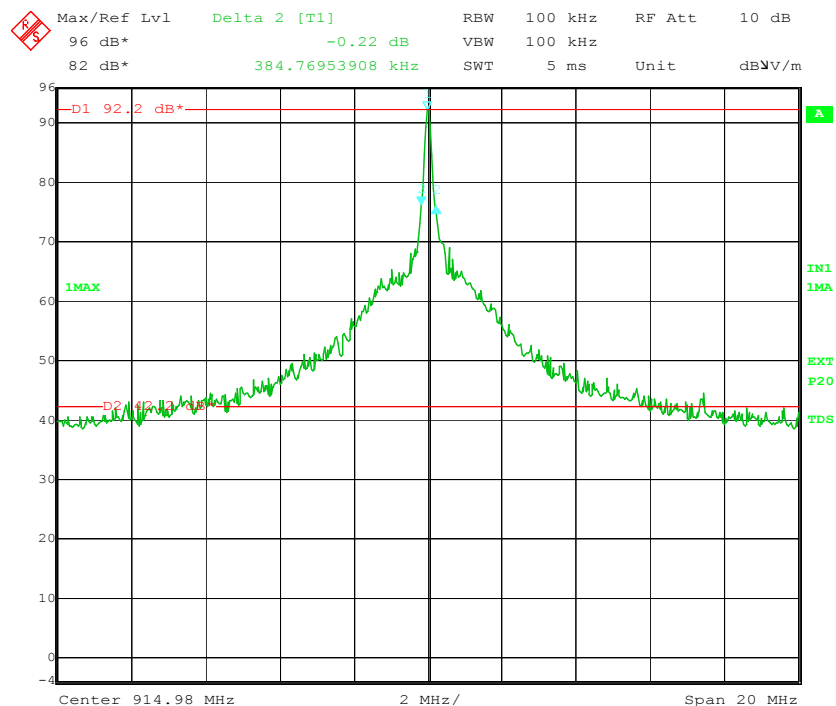
Frequency (MHz)	Peak (dBμV/m)	Margin (dB)	Polar.	Height (cm)	Angle (°)	Factor Corr. (dB)	Comments
914,982	93,58	-0.42	V	117	228	25,91	

8.5.2 Field Strength of Harmonics and other spurious emissions (15.249 (a), (d))

Limit is 500μV/m that is the same limit as the general limit of §15.209

The limit of 50dB below the fundamental is more stringent and thus not used.

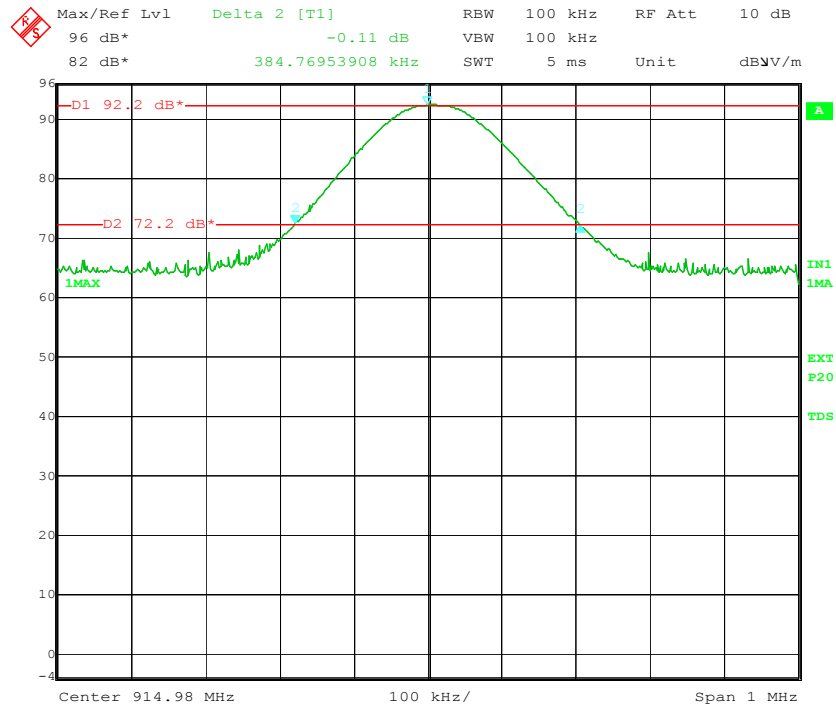
The normal modulation gives more than 50dB below the fundamental outside the 905-925MHz band.



For other results see § spurious measurement above.



For information, with 100 kHz RBW, the 20 dB bandwidth is 385kHz



8.5.3 Requirement of §15.37 (d) : (15.249 (f))

The equipment operates at 915MHz and not in the 902-905MHz band.

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8.5.4 Exposition of public to radio frequency energy.

The equipment is a hand held remote control with emission only when a push button is maintained.

The emission duration is only 26 ms maximum and can be repeated when the remote control push button is maintained.

It is estimated that the push button can be maintained several seconds.

In the frequency range of this product, the limit of S is 0.61 mW/cm².

With the formula given in OET 65 and the measurement of EIRP, we can compute that the minimum distance between a body and the antenna is:

EIRP that gives 50mV/m at 3 m is less than 0.75mW

For

$$R = \text{square root} (EIRP/(4*\text{Pi}*0.61))$$

$$R = \text{square root} (0.00075/(4*\text{Pi}*0.61))$$

$$R = 1 \text{ cm}$$

User notice indicates to have the emitter at a distance greater than 20 cm from the body.

Safe distance for hands and fingers is lower (FCC limits is 4W/kg instead of 0.08W/kg for whole body)

With the averaging on 10 grams of tissue for the hand that gives 40mW on 10 grams as a limit.

The power of the emitter is less than 0.75mW, less than 40mW thus it complies to FCC requirements concerning exposition of public to radio frequency energy

8.6 Antenna requirements (§15.203)

Not applicable because the antenna is soldered on the mother board located inside the equipment and not replaceable without modifying the equipment.

8.7 Measurement of frequency stability §15.215 (c)

The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

Measurements were conducted according to the operating temperature range given in the installation guide.

CANICOM 400 uses exactly same RF module as CANICOM 200 (FCC ID : U5O-CDS20001) and an identical mother board concerning power supply.

Here are reported measurements done on CANICOM 200 (FCC ID : U5O-CDS20001)

Frequencies (MHz)

Results				
Temperature	-20°C		+40°C	
Power Supply	3V	2.54V	3V	2.54V
Fc (MHz)	915.009	915.009	914.999	914.999

Neither voltage nor temperature variations affect the frequency stability that is better than ± 11 ppm