

RADIO TEST REPORT

According to the standard(s):

FCC part 15 (02/2006)

Equipment under test:

Detector of immersion for swimming-pool
-Swim Alert- ref. SWIM007-US

FCC ID: UQJ - 040

Company:

MG International

Diffusion: Mr CHAUSSIN

(Company: MG International)

Ed.1 | Number of pages: 28 including 4 annexes

Ed.	Date	Modified page(s)	Written by		Technical verification		Quality approval	
			Name	Visa	Name	Visa	Name	Visa
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1	9-Mar-07	1; 3; 6; and 27-28	Régis GONZALEZ		Olivier HEYER		Olivier HEYER	

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NAME OF THE EQUIPMENT UNDER TEST (E.U.T.) : Detector of immersion for swimming-pool Swim Alert
ref. : SWIM007-US

Serial number : None

Part number : None

Software Version : None

MANUFACTURER'S NAME : MG International

APPLICANT'S ADDRESS:

Company : MG International

Adress : Zone Industrielle Athelia II
Avenue de la Sariette
13600 LA CIOTAT
FRANCE

Person(s) present during the tests : Nobody

Responsible : Mr CHAUSSIN

DATE(S) OF TESTS : January, the 31st and February, the 1st 8th 12th 20th
of 2007

TESTS LOCATION(S) : EMITECH Grand Sud laboratory in Vendargues (34)
Open area test site in Salinelles (30)
FCC Registration Number: 812719

TESTS SUPERVISOR(S) : None

TESTS OPERATOR(S) : Régis GONZALEZ

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1. INTRODUCTION

This document submits the results of Radio tests performed on the equipment Detector of immersion for swimming-pool Swim Alert ref. SWIM007-US (denominated hereafter E.U.T.: equipment under test) according to document(s) listed below.

2. REFERENCE DOCUMENT(S)

FCC Part 15 (02/2006)	Code of Federal Regulations Title 47 – Telecommunications Chapter 1 – Federal Communications Commission Part 15 – Radio frequency devices Subpart C – Intentional Radiators
ANSI C 63.4 (03)	American National Standard for Methods of measurement of Radio-Noise from low-voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

3. EQUIPMENT UNDER TEST CONFIGURATION

Equipment under test (E.U.T.) general description: Stand alone detector of immersion for swimming-pool included detector unit and receiver siren

Equipment control procedure during immunity tests: N.A. emission test only

Susceptibility criteria during a continuous disturbance: N.A. emission test only

Susceptibility criteria during a transitory disturbance: N.A. emission test only

Cycle and operating mode during emission tests: Permanent no modulated emission excepted for bandwidth measurement

Equipment modifications applied during tests: No

N.A.: Not applicable

4. EQUIPMENT CHARACTERISTIC

FCC ID: UQJ-040

ITU emission code: 7K00A1D

Utilization: Swimming-pool alarm system with radio siren control

Antenna type: Integrated wire antenna

Operating frequency: 433.92 MHz

Number of channels: 1

Channel spacing: Not concerned

Frequency generation: ☐ SAW Resonator ☐ Crystal ☒ Synthesizer

Modulation: ☒ Amplitude (pulsed modulated device) ☐ Digital ☐ Frequency ☐ Phase

Power source: 4 x LR14 alkaline cells (4 x 1,5 V = 6 V)

5. EQUIPMENT UNDER TEST CONFIGURATION SCHEME

Equipment is set out on a wooden table at 0.8 m of the ground plane (see Photographs) in annex 1).

6. SUMMARY OF TEST RESULTS

Tests designation or section	Results satisfying?	Comments
15.33 Frequency range of radiated measurement	-	Considered
15.35 Measurement detector functions and bandwidths	-	Considered
15.107 Conducted limits	YES	For receiver in class B (Informative)
15.109 Radiated emission limits	YES	For receiver in class B (Informative)
15.203 Antenna requirement	YES	Nota 1
15.205 Restricted bands of operation	YES	
15.209 Radiated emission limits, general requirements	YES	Considered
15.231 Periodic operation in the band 40.66 – 40.70 MHz and above 70 MHz		
a) Transmission requirements	YES	Nota 2
b) Radiated emission	YES	Nota 3
c) Occupied bandwidth	YES	Nota 4
d) Frequency tolerance	N.A.	E.U.T. does not transmit in the band 40.60 – 40.70 MHz
e) Periodic alternate field strength measurement	N.A.	Requirements of a) is used

N.P.: Not Performed.

N.A.: Not Applicable.

Sample submitted to the tests complies with the regulations of the standard FCC part 15 (02/2006) according to limits specified in this tests report.

Nota 1: Internal antenna without connector

Nota 2: Periodic transmissions at regular predetermined intervals are used to determine system integrity of transmitter for safety application (swimming-pool alarm). Four transmissions per hour of 375 ms each are transmitted (See Photograph(s) in annex 3).

Ed.1 | When manually operated transmission is used (switch on / off), the duration is less than 5s (see photo in annex 4)

Nota 3: Calculation of field strength limit of fundamental (433.92 MHz):
 $41.6667 \text{ (F)} - 7083.3333 = 10\,976 \text{ } \mu\text{V/m} = 80.8 \text{ dB}\mu\text{V/m}$

Nota 4: The bandwidth of the emission at 20 dBc is 6.63 kHz (see Graph(s) in annex 2), less than 0.25 % of the center frequency (1084 kHz)

7. AC POWER LINE CONDUCTED EMISSION FOR RECEIVER

Standard: FCC part 15 (02/2006)

Test method: ANSI C 63-4:2003

Test configuration:

Tested cable	Measure with	E.U.T height (cm)
Power supply 115VAC 60 Hz (*)	LISN	40

Frequency band	Tested cable	Resolution Bandwidth	Video Bandwidth	Detection mode
Neutral				
150kHz-30MHz	Power supply 115VAC	10kHz	30kHz	Peak
Line				
150kHz-30MHz	Power supply 115VAC.	10kHz	30kHz	Peak

(*) Adapter FRIWO: FW75550/12
100-240V~ / 47-63 Hz / 400 mA
12V--- / 1.25 A

Test method deviation: No

Instrumentation test list:

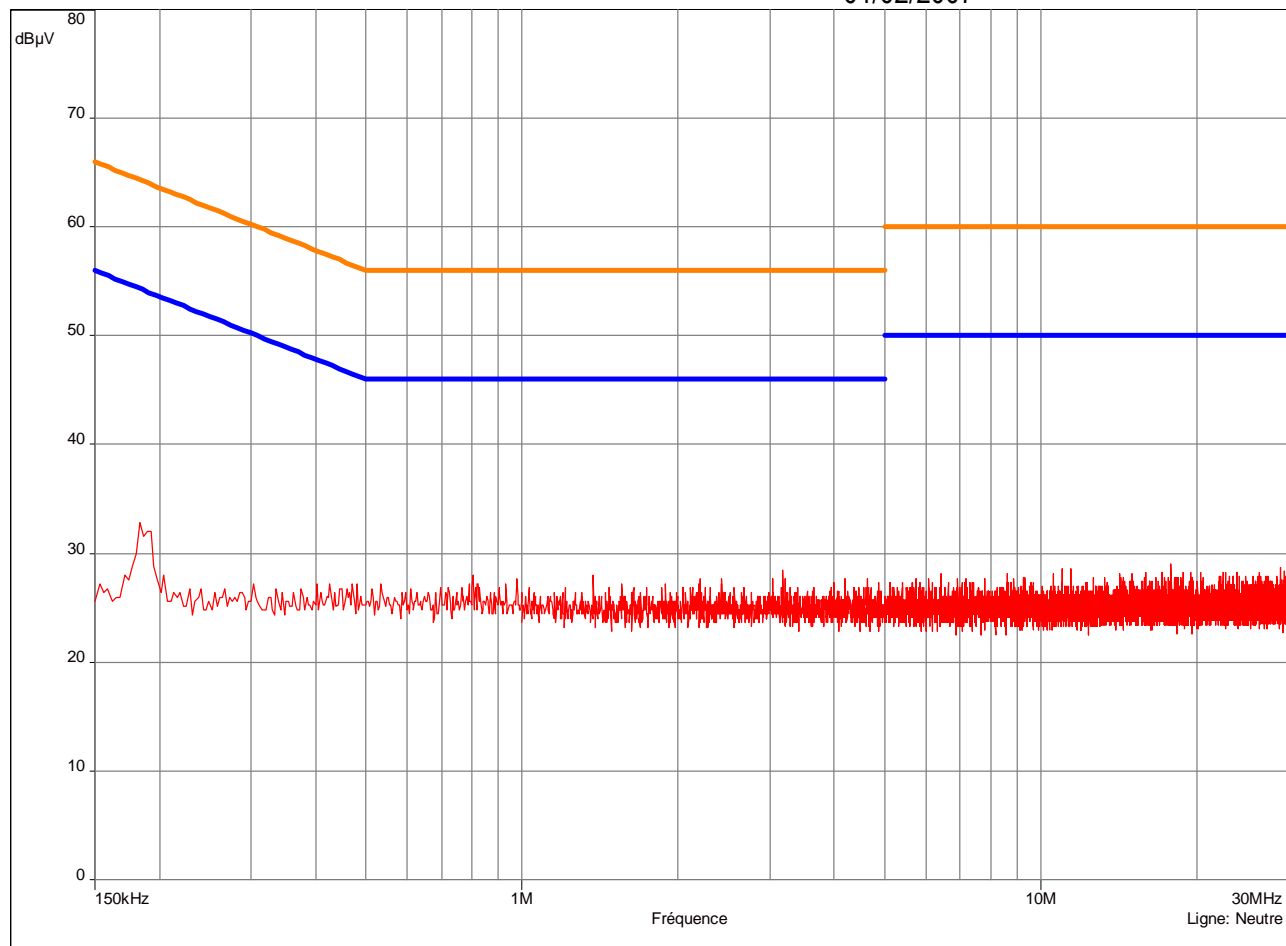
CATEGORIE	MARQUE	TYPE	N° EMITECH
LISN	PMM	L3 - 25	833
Shielded enclosure	Ray proof	C.GS1	1423
Software	Nexio	BAT EMC 3.1.7.1.	0000
Spectrum analyzer	Hewlett Packard	8568 B	809
Transient limiter	Hewlett Packard	11947 A	238

Results: See Graphs below. The limits showed on the curves are average (blue) and quasi peak (orange) limits

Receiver of SWIM ALERT

Conducted voltage emission (measurement)- FCC part 15

01/02/2007



Alimentation 115Vac-60 Hz with FRIWO adapter - 01/02/2007 14:36 - 593

Limits: FCC Part 15 - Cl.B

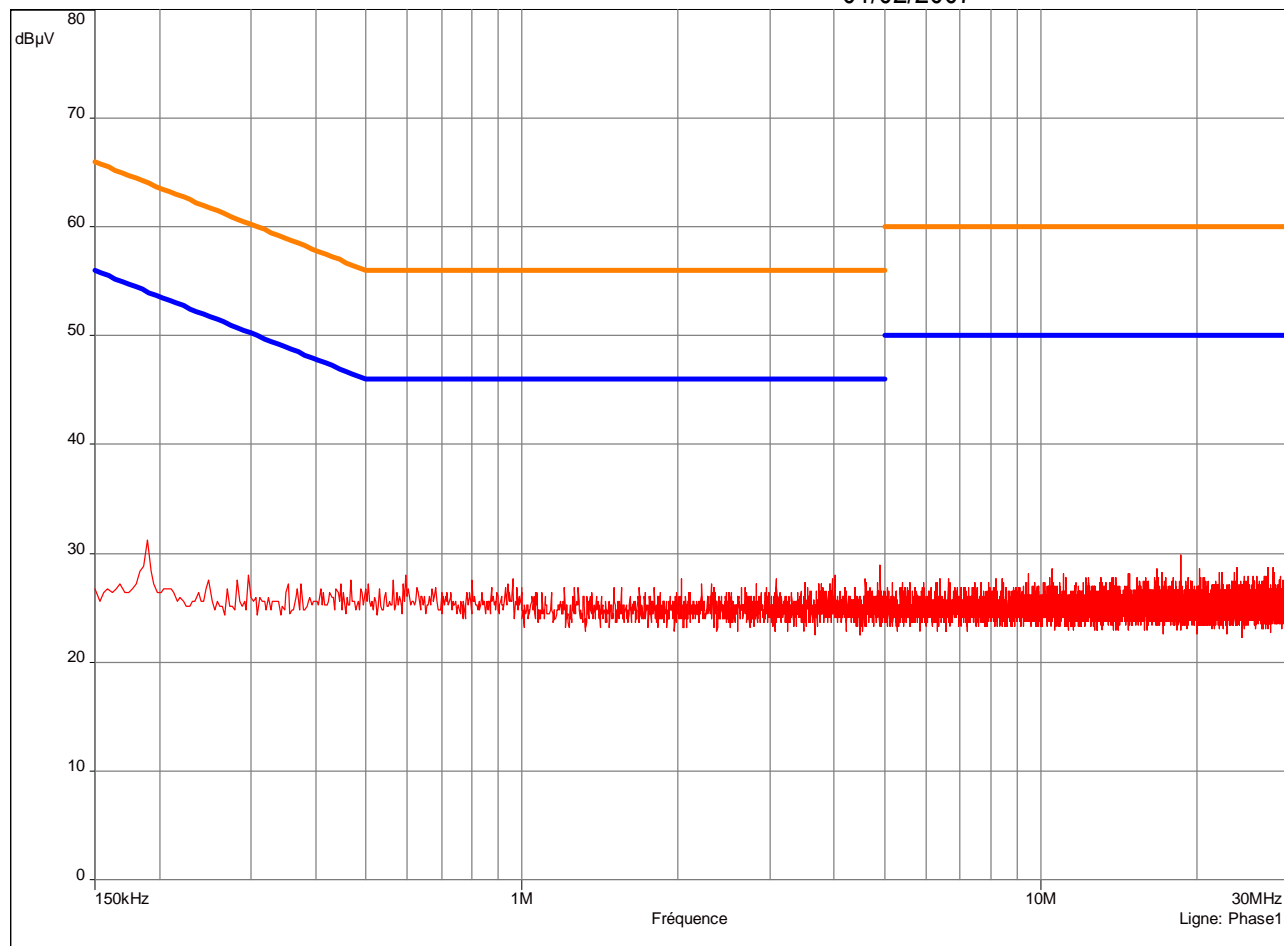
Parameters:

Ligne	F min	F max	RBW
Neutral	150kHz	1MHz	10kHz
Neutral	1MHz	10MHz	10kHz
Neutral	10MHz	30MHz	10kHz

Receiver of SWIM ALERT

Conducted voltage emission (measurement)- FCC part 15

01/02/2007



Alimentation 115Vac-60 Hz with FRIWO adapter - 01/02/2007 14:36 - 593

Limits: FCC Part 15 - Cl.B

Parameters:

Ligne	F min	F max	RBW
Phase1	150kHz	1MHz	10kHz
Phase1	1MHz	10MHz	10kHz
Phase1	10MHz	30MHz	10kHz

8. RADIATED ELECTRIC FIELD MEASUREMENT

Standard: FCC part 15 (02/2006)

Test method: ANSI C 63.4:2003

Measurement on open area test site:

Test configuration: For each measured frequency, receiving antenna height varies between 1 m and 4 m, E.U.T. is set on a turntable in order to find the highest level.

Frequency band	Initial position (0°)	Resolution bandwidth	Measuring distance	Detection mode	E.U.T. height
30MHz-1GHz	0° is the front side	120kHz	3m	Peak	80cm
> 1GHz	0° is the front side	1 MHz	3m	Peak	80cm

Test method deviation: No

Test equipment list:

CATEGORY	BRAND	MODEL NUMBER	N° EMITECH
Horn antenna	Emco	RGA-60 (3115)	1053
Log-periodic antenna	Rohde & Schwarz	HL223	3126
OATS	Emitech	Salinelles	3482
Preamplifier	Microwave	C005180F-4B1	2165
Spectrum analyzer	Agilent Technologies	E7405A	2161

Results: See Board(s) below (only highest levels are recorded)

Detection unit

HORIZONTAL POLARIZATION

Frequency (MHz)	Azimut (degrees)	Antenna Height (cm)	Measure (dBμV/m) without DCF	Duty Cycle Factor (*) (dB)	Standard limit (dBμV/m)	Comments
Fundamental 433.92	21	100	83.80	-6.70	80.80	C
867.84	21	100	48.00	-6.70	60.80	C
1301.76	220	168	53.00	-6.70	54.00 (**)	C
1735.68	345	154	49.90	-6.70	60.80	C
2169.60	27	156	56.40	-6.70	60.80	C
2603.52	204	139	48.90	-6.70	60.80	C
3037.44	215	164	51.20	-6.70	60.80	C
3471.36	157	140	36.80	-6.70	60.80	C
3905.28	183	160	54.60	-6.70	60.80	C
4339.20	228	178	44.10	-6.70	54.00 (**)	C

C: Compliant

NC: Not Compliant

VERTICAL POLARIZATION

Frequency (MHz)	Azimut (degrees)	Antenna Height (cm)	Measure (dBμV/m) without DCF	Duty Cycle Factor (*) (dB)	Standard limit (dBμV/m)	Comments
Fundamental 433.92	21	200	72.80	-6.70	80.80	C
867.84	70	200	46.00	-6.70	60.80	C
1301.76	300	170	50.00	-6.70	54.00 (**)	C
1735.68	328	167	44.90	-6.70	60.80	C
2169.60	350	158	54.50	-6.70	60.80	C
2603.52	180	163	45.50	-6.70	60.80	C
3037.44	165	151	57.20	-6.70	60.80	C
3471.36	171	110	38.80	-6.70	60.80	C
3905.28	171	134	56.60	-6.70	60.80	C
4339.20	202	157	49.10	-6.70	54.00 (**)	C

C: Compliant

NC: Not Compliant

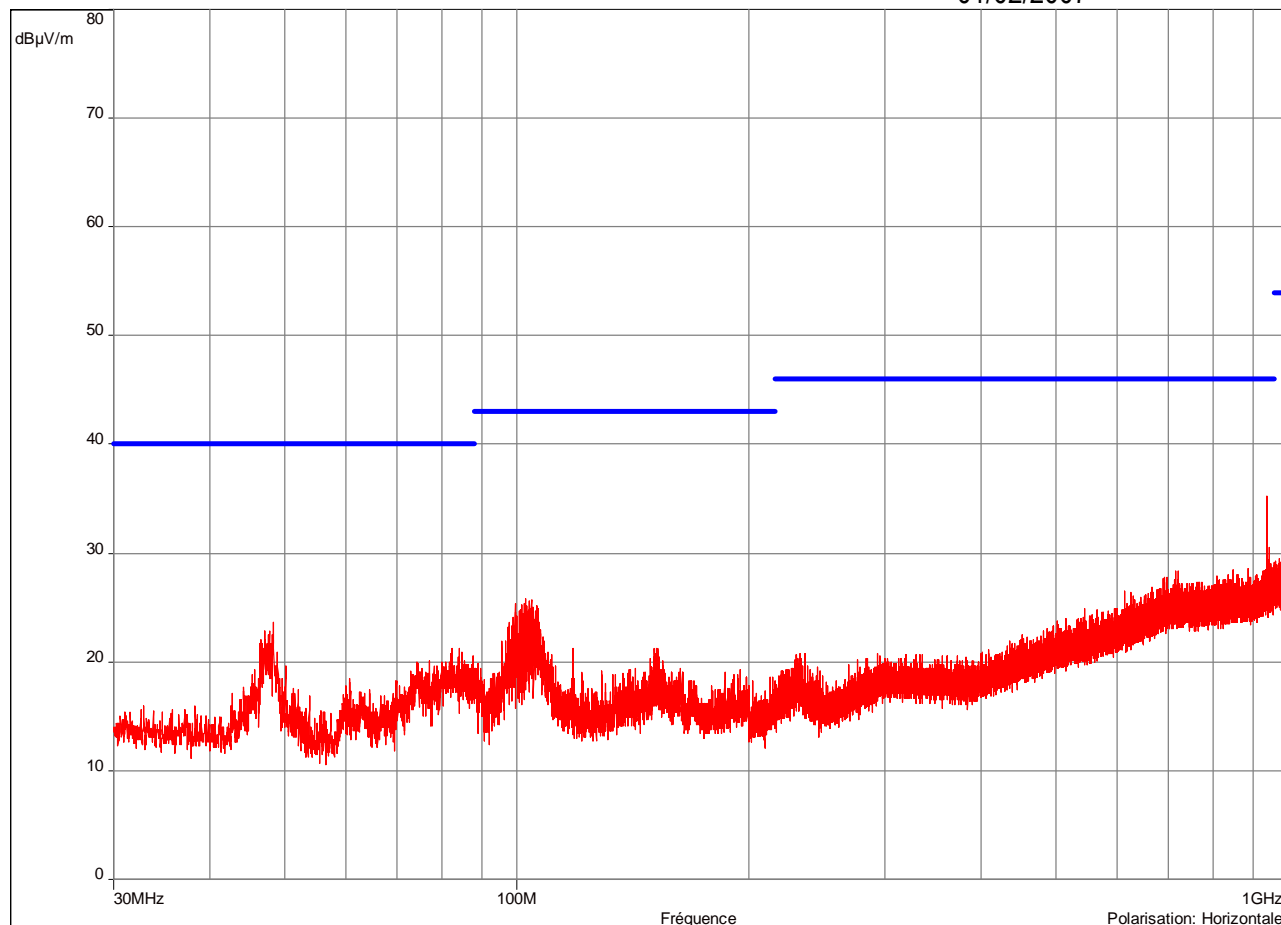
(*) Duty Cycle correction Factor is 0 dB

(**) Restricted band of operation (15.205)

Receiver of SWIM ALERT

Radiated electric emission (measurement)- FCC Part 15
Measure at 3 m in semi anechoic chamber in peak detection (informative)

01/02/2007



Face avant - 01/02/2007 15:05 - 590

Limits: FCC Part.15 general- Cl.B

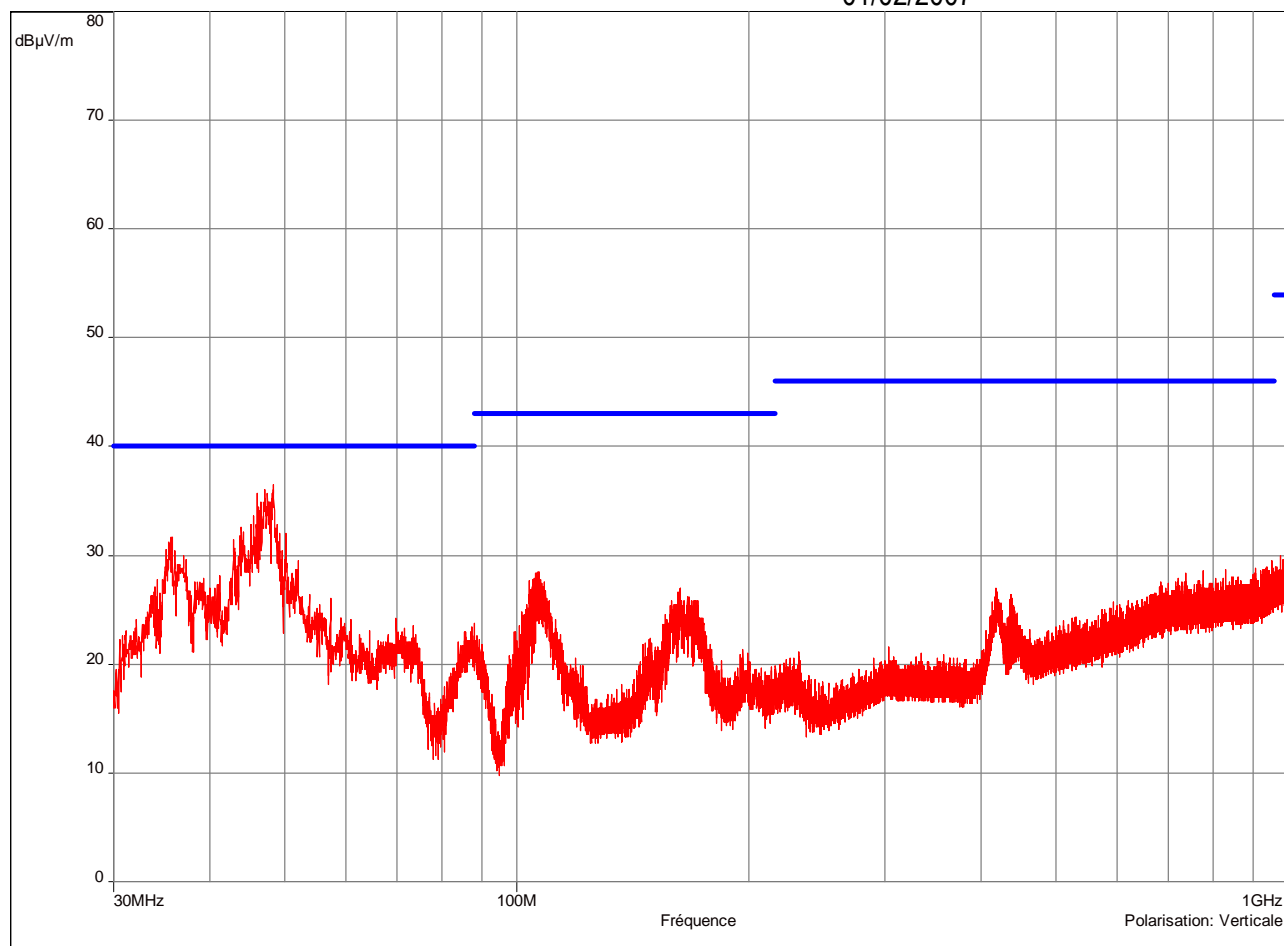
Parameters:

Polarisation	F min	F max	RBW
Horizontal	30MHz	200MHz	100kHz
Horizontal	200MHz	1GHz	100kHz

Receiver of SWIM ALERT

Radiated electric emission (measurement)- FCC Part 15
Measure at 3 m in semi anechoic chamber in peak detection (informative)

01/02/2007



Face avant - 01/02/2007 15:05 - 590

Limits: FCC Part.15 general- Cl.B

Parameters:

Polarisation	F min	F max	RBW
Vertical	30MHz	200MHz	100kHz
Vertical	200MHz	1GHz	100kHz

Receiver unitHORIZONTAL POLARIZATION

Frequency (MHz)	Azimut (degrees)	Antenna Height (cm)	Measure (dB μ V/m)	Standard limit (dB μ V/m)	Comments
48.40	0	400	16.70	40.00	C
103.70	0	400	17.80	43.00	C

C: Compliant

NC: Not Compliant

HORIZONTAL POLARIZATION

Frequency (MHz)	Azimut (degrees)	Antenna Height (cm)	Measure (dB μ V/m)	Standard limit (dB μ V/m)	Comments
36.70	0	100	17.20	40.00	C
43.95	0	100	16.40 (*)	40.00	C
45.20	0	100	17.20 (*)	40.00	C
48.40	0	100	17.40	40.00	C

C: Compliant

NC: Not Compliant

(*) Noise level

End of report – 3 annexes to be forwarded

ANNEX 1: PHOTOGRAPH(S)

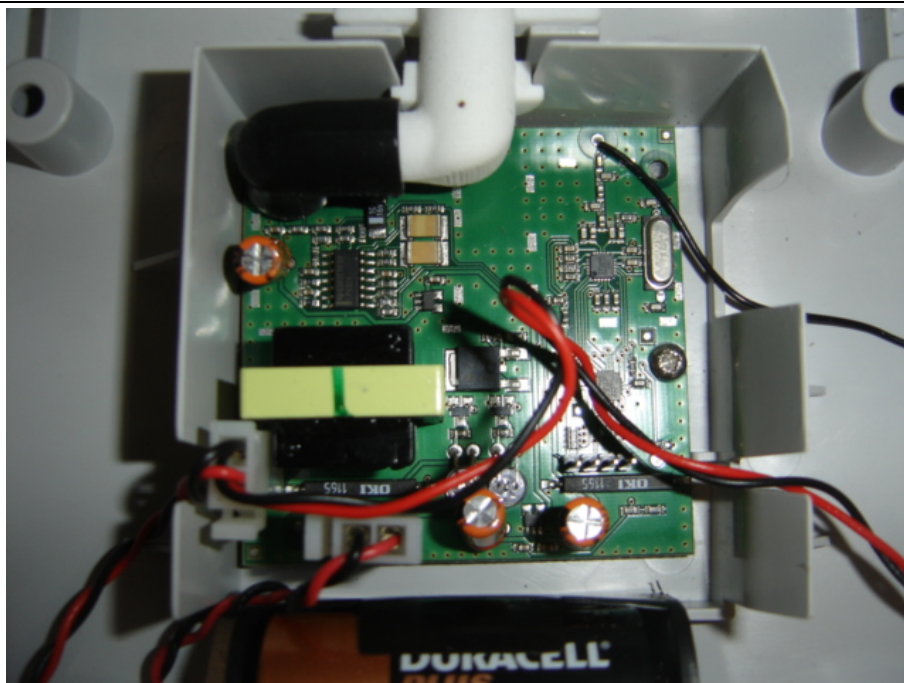
EQUIPEMENT UNDER TEST (E.U.T.) PHOTOGRAPH(S)

Detector of immersion for swimming-pool
-Swim Alert- ref. SWIM007-US


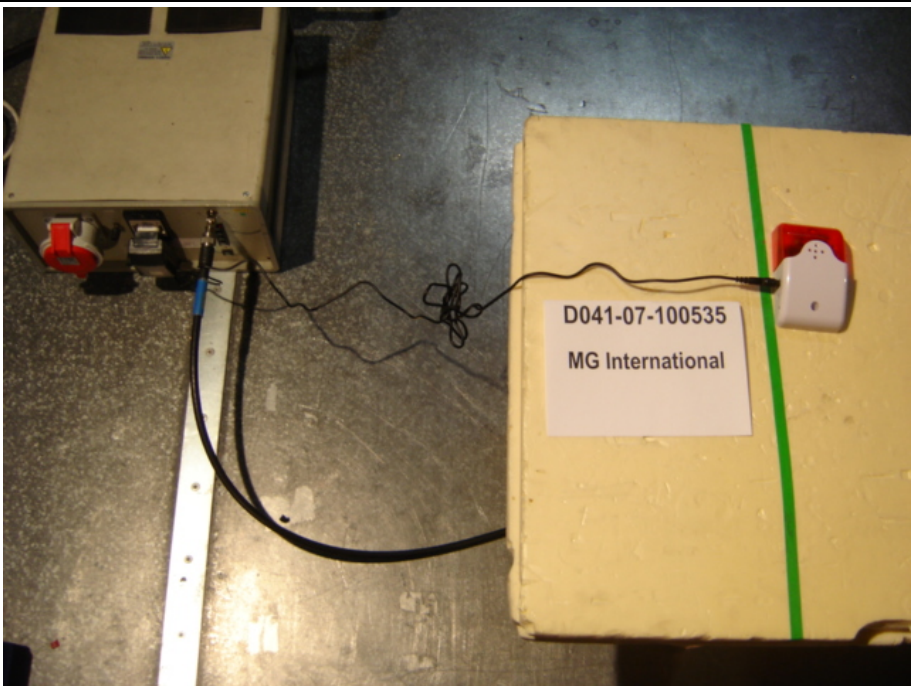
E.U.T. Photograph(s)
(internal view)



E.U.T. Photograph(s)
(internal view)



<p>E.U.T.</p>	 <p>The image shows the back of a white, trapezoidal electronic device. A label on the device features a red 'X' symbol, a small figure, and the text 'SWIM ALERT'. Below the label, handwritten text reads 'Test FCC' and '31/01/2007'. To the right of the device, a white label displays the identification number 'D041-07-100535' and the company name 'MG International'.</p>
<p>Radiated electric emission (measurement in OATS)</p>	 <p>The image shows the same white electronic device placed on a wooden surface, likely a table. A white label next to it contains the identification number 'D041-07-100535' and the company name 'MG International'. The background shows the wooden structure of the table and a dark, reflective floor.</p>

<p>Radiated electric emission (measurement in OATS)</p>	
<p>Conducted emission</p>	

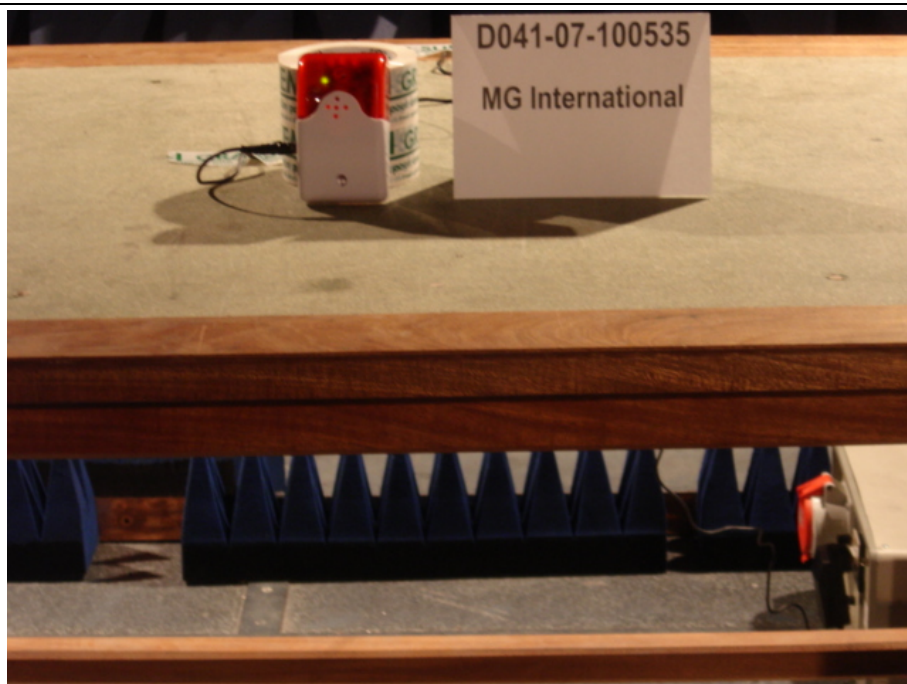
Conducted emission



Radiated emission in chamber



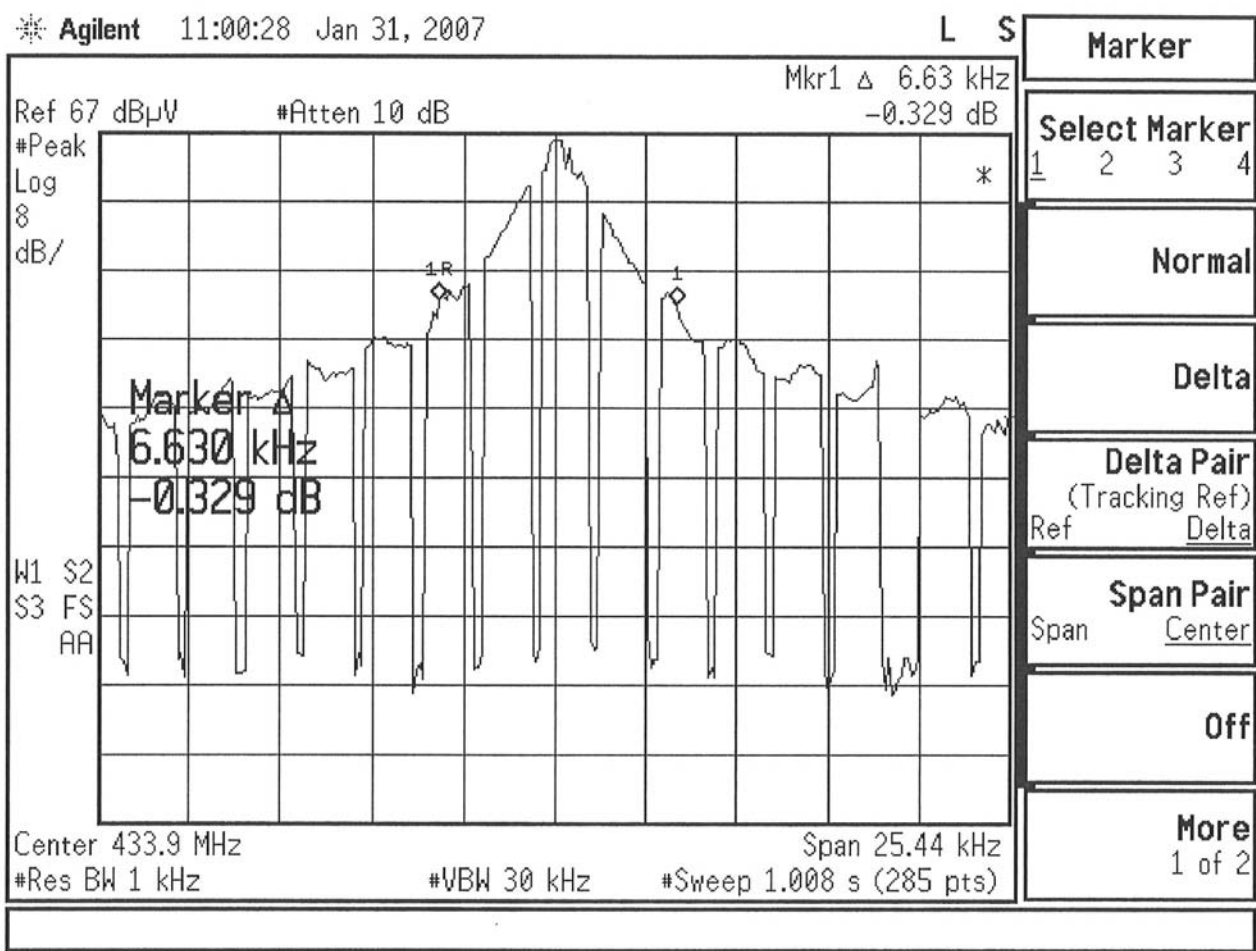
Radiated emission in
chamber



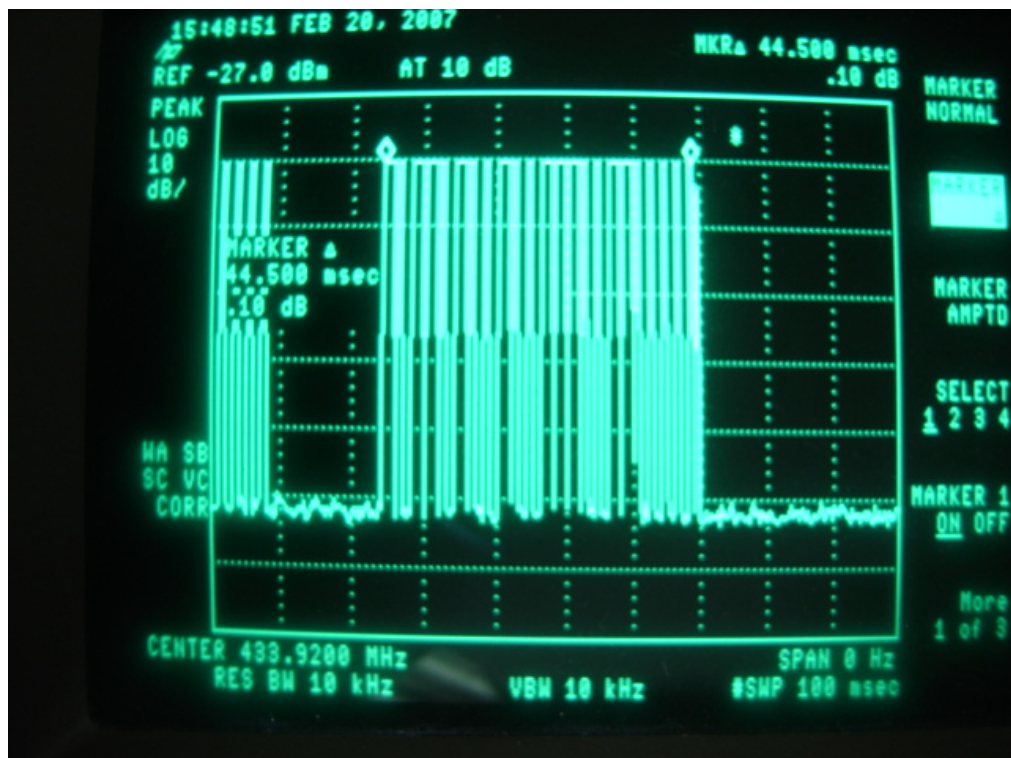
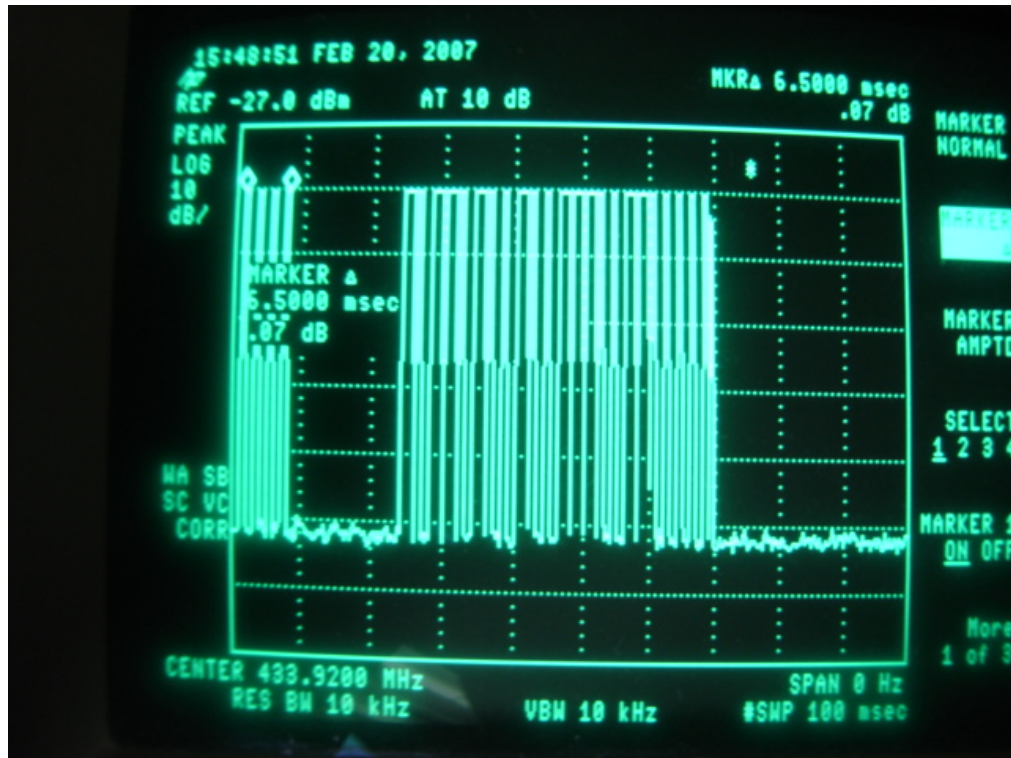
Radiated emission
OATS

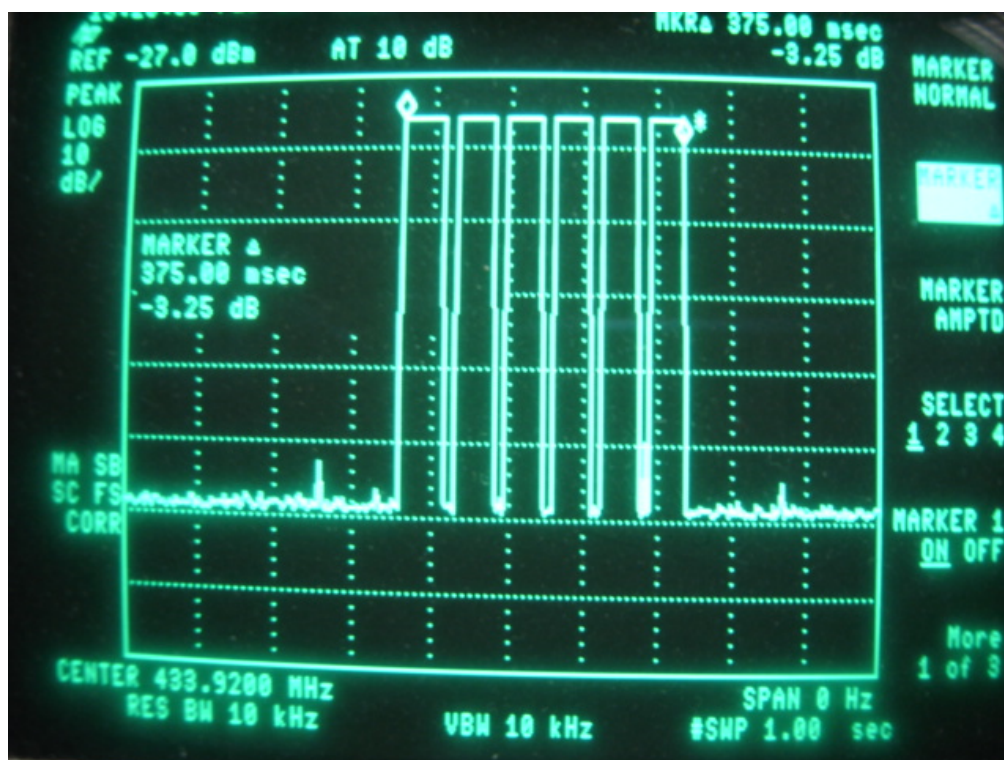


ANNEX 2: EMISSION BANDWIDTH



ANNEX 3: TRANSMISSION BURST





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ANNEX 4:

MANUALLY OPERATED TRANSMISSION DURATION

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