R041-07-100329-1A - RG / CD

RADIO TEST REPORT

According to the standard(s):

FCC part 15 (02/2006)

Equipment under test:

Detector of immersion for swimming-pool
TRITON Pool Alarm

FCC ID: U8UGC762981

Company:

SAFEBLUE SA

Diffusion: Mr FONZES (Company: ALTRAN)

Number of pages: 19 including 4 annexes

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0	27-Apr-07	Creation	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 TRITON Pool Alarm
Serial number	:	PCB # 3 and # 22
Part number	:	None
Software Version	:	None
MANUFACTURER'S NAME	:	ALTRAN

APPLICANT'S ADRESS:

Company	:	SAFEBLUE SA
Adress	:	C/o Gestrust 2 rue Thalberg Case Postale 1507 GENEVE 1 SWITZERLAND
Person(s) present during the tests	:	Mr CRAHAY
Responsible	:	Mr FONZES

DATE(S) OF TESTS	:	April, the 5th and the 19th 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 TRITON Pool Alarm (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 Commision 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

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 exepted for bandwidth measurement

Equipment modifications applied during tests: No

N.A.: Not applicable

4. EQUIPMENT CHARACTERISTIC

FCC ID: U8UGC762981

ITU emission code: 4K75A1D

Utilization: Swimming-pool alarm system

Antenna type: Integrated wire antenna

Operating frequency: 433.92 MHz

Number of channels: 1

Channel spacing: Not concerned

Frequency generation: □ SAW Resonator ☒ Crystal □Synthetizer

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

Power source: 4 x LR20 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
15.203	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 not used.
When manually operated transmission is used (switch on / off), the duration is less than 5s (see photographs in annex 4)
When E.U.T. transmits an alarm, it operates during the pendency of the alarm condition (15.231 a4).

Nota 3: Calculation of field strength limit of fundamental (433.92 MHz):
41.6667 (F) – 7083.3333 = 10 976 μV/m = 80.8 dBμV/m

Nota 4: The bandwidth of the emission at 20 dBc is 4.75 kHz (see Graph(s) in annex 2), less than 0.25 % of the center frequency (1084 kHz)

7. 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
Spectrum analyzer	Hewlett packard	8562A	5091

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

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	30	100	89.80	-11	80.80	C
867.84	300	100	50.80	-11	60.80	C
1301.76	330	130	46.20	-11	54.00 (**)	C
1735.68	330	130	45.90	-11	60.80	C
2169.60	304	100	33.40	-11	60.80	C
2603.52	-	-	< 26.70 (***)	-11	60.80	C
3037.44	-	-	< 31.20 (***)	-11	60.80	C
3471.36	-	-	< 33.80 (***)	-11	60.80	C
3905.28	-	-	< 35.60 (***)	-11	60.80	C
4339.20	-	-	< 36.10 (***)	-11	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	30	120	77.80	-11	80.80	C
867.84	230	100	34.40	-11	60.80	C
1301.76	190	100	40.20	-11	54.00 (**)	C
1735.68	300	100	39.90	-11	60.80	C
2169.60	0	100	30.40	-11	60.80	C
2603.52	-	-	< 26.70 (***)	-11	60.80	C
3037.44	-	-	< 31.20 (***)	-11	60.80	C
3471.36	-	-	< 34.30 (***)	-11	60.80	C
3905.28	-	-	< 36.10 (***)	-11	60.80	C
4339.20	-	-	< 36.60 (***)	-11	54.00 (**)	C

C: Compliant NC: Not Compliant

(*) Duty Cycle correction Factor is 20 Log (28/100) = - 11 dB (see graphs on annex 3)
(**) Restricted band of operation (15.205)
(***) Noise level

□□□ End of report – 4 annexes to be forwarded □□□

ANNEX 1:
PHOTOGRAPH(S)

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

Detector of immersion for swimming-pool
TRITON Pool Alarm

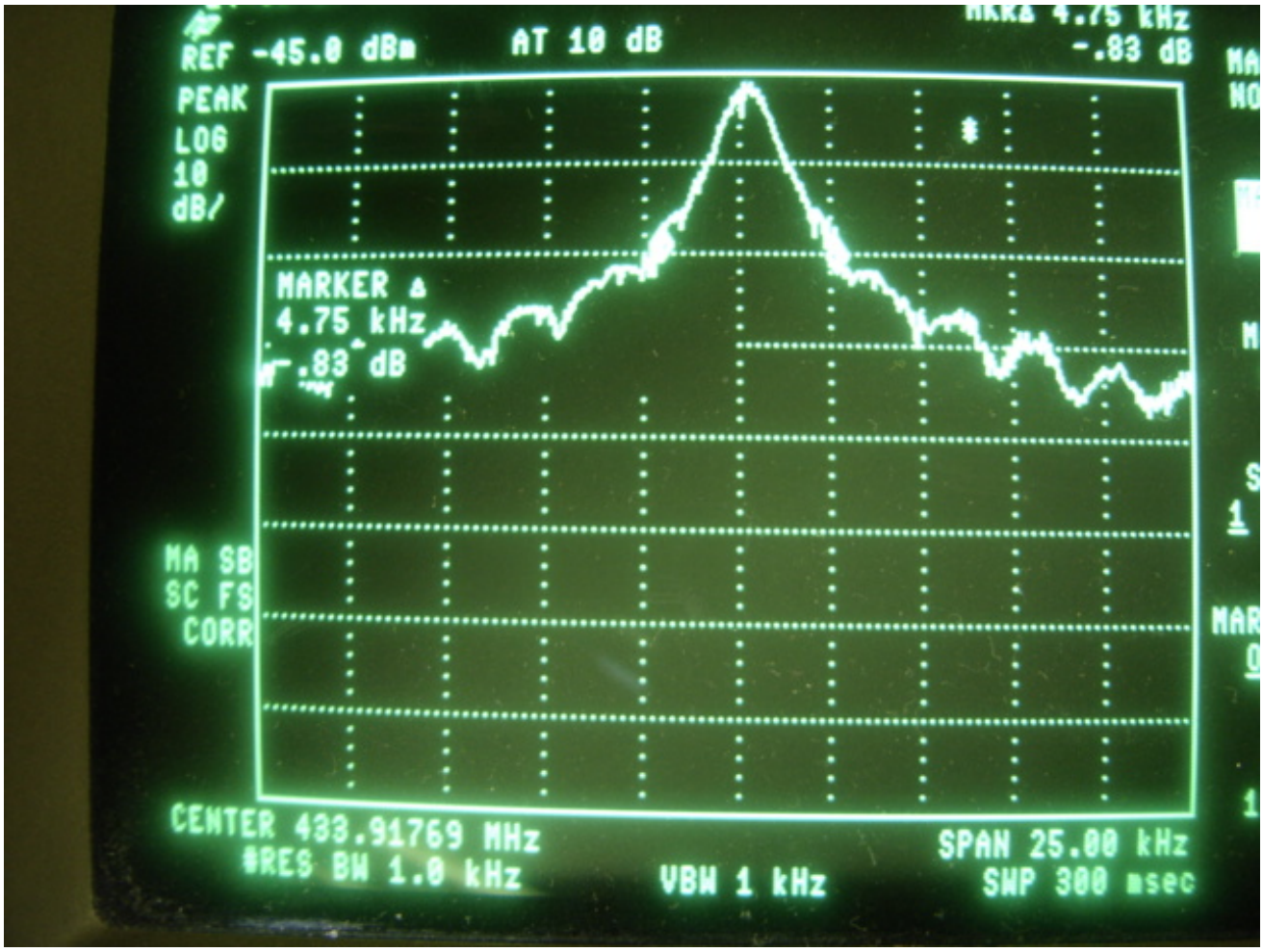
E.U.T. Photograph(s) (internal view)	
	

E.U.T.	 D041-07-100329 ALTRAN MEDITERRANEE TRITON 1 2 3 4 POOL ALARM  TRITON 1 2 3 4 POOL ALARM

E.U.T.	
Radiated electric emission (measurement in OATS) Front side	

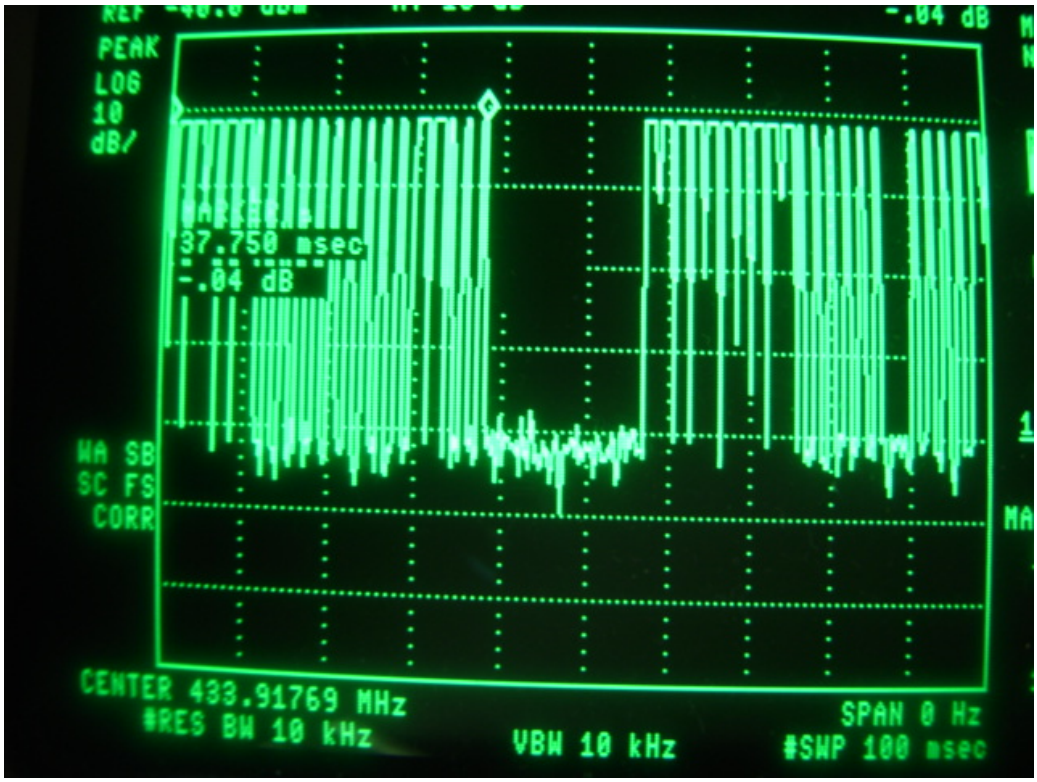
Radiated electric emission (measurement in OATS) Front side	

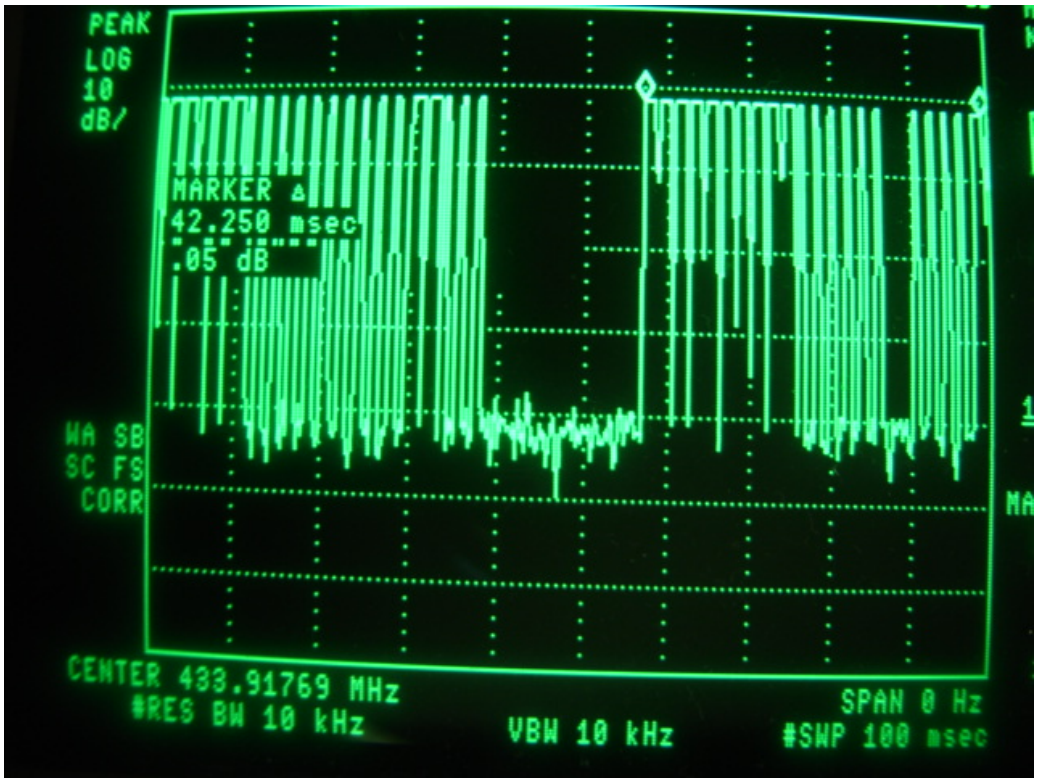
ANNEX 2:
EMISSION BANDWIDTH


REF -45.0 dBm
AT 10 dB
-.83 dB
PEAK
LOG
10
dB/
MARKER Δ
4.75 kHz
-.83 dB
MA SB
SC FS
CORR
CENTER 433.91769 MHz
#RES BW 1.0 kHz
VBW 1 kHz
SPAN 25.00 kHz
SWP 300 msec

ANNEX 3:

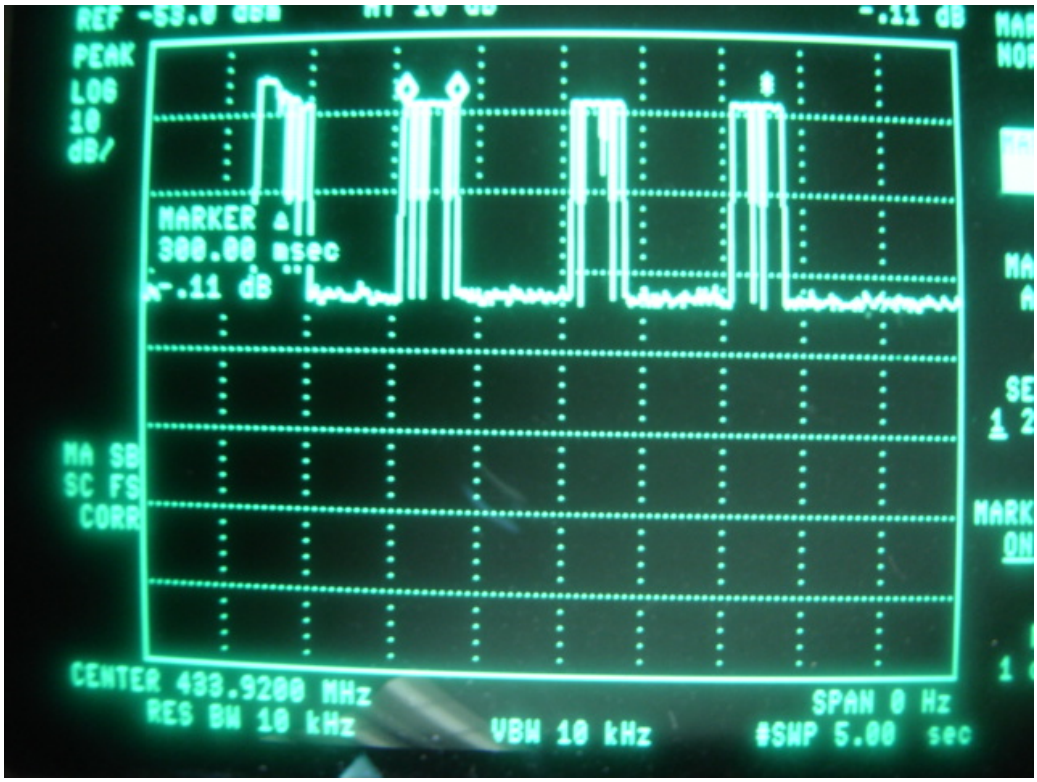
MANUALLY OPERATED TRANSMISSION BURST

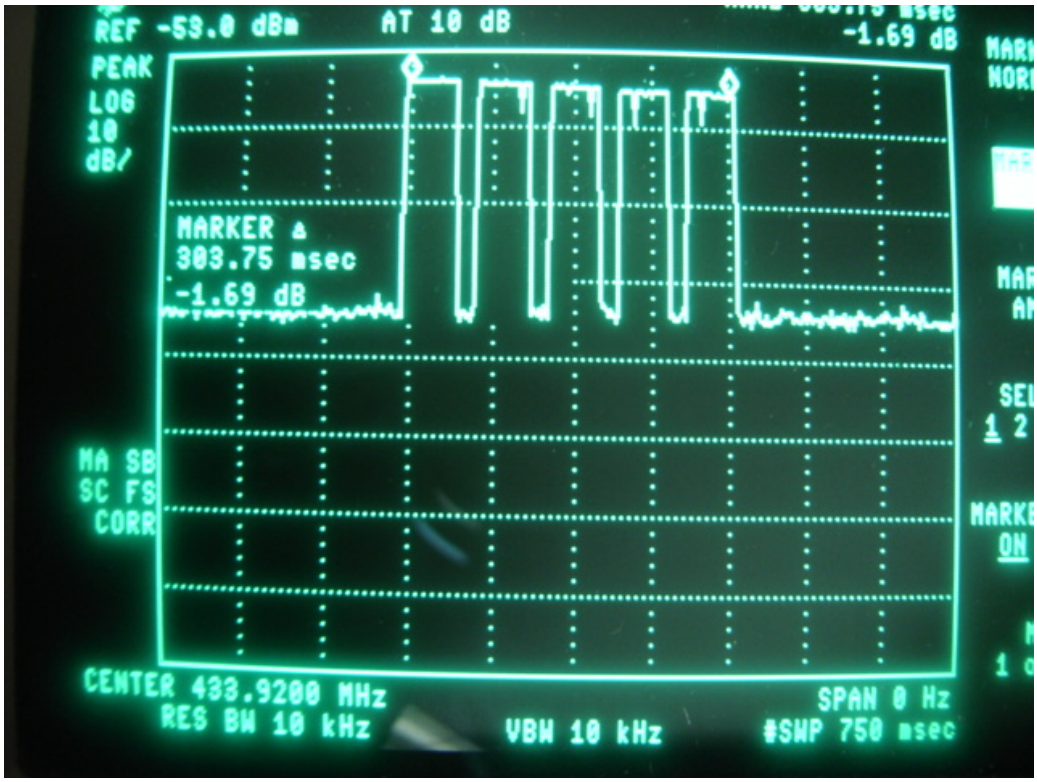

PEAK
LOG
10
dB/
37.750 msec
-.04 dB
MA SB
SC FS
CORR
CENTER 433.91769 MHz
#RES BW 10 kHz
VBW 10 kHz
SPAN 0 Hz
#SWP 100 msec


PEAK
LOG
10
dB/
MARKER Δ
42.250 msec
.05 dB
MA SB
SC FS
CORR
CENTER 433.91769 MHz
#RES BW 10 kHz
VBW 10 kHz
SPAN 0 Hz
#SWP 100 msec

ANNEX 4:

MANUALLY OPERATED TRANSMISSION DURATION





Detail of one pulse train