

RADIO TESTS REPORT

According to (the) standard(s) :

RSS-210 Issue 6 (September 2005)
& FCC Part 15 (February 2006)

Equipment under test:

Transmitter (WUS) for motorcycle's tyres - Tire Watch -
IC: 6450AS106064
FCC ID: T45S106064

Company:

LDL Technology

Diffusion: Mr AUBINEAU

(Company: LDL Technology)

Number of pages: 13 with 1 annex

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NAME OF THE EQUIPMENT UNDER TEST (E.U.T): Transmitter (WUS) for motorcycle's tyres -
Tire Watch -

Serial number : 6064298060004

Part number : None

Software Version : None

MANUFACTURER'S NAME : LDL Technology

APPLICANT'S ADDRESS:

Company: LDL Technology

Address: 42 avenue du Général de Croutte
31100 TOULOUSE
FRANCE

Person(s) present during the tests: Nobody

Responsible: Mr AUBINEAU

DATE(S) OF TEST(S) : February, the 8th and 14th of 2007

TEST(S) LOCATION(S) : Emitech Grand Sud Laboratory in Vendargues (34)
Open Area Test Site in Salinelles (30)
IC filing number: 6290
FCC Registration number: 812719

TEST(S) SUPERVISOR : Nobody

TEST(S) OPERATOR(S) : Régis GONZALEZ

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1. INTRODUCTION

This document submits the results of Radio tests performed on the equipment Transmitter (WUS) for motorcycle's tyres -Tire Watch - according to the document(s) listed below.

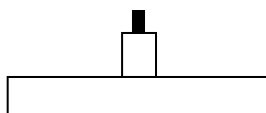
2. REFERENCE DOCUMENT(S)

RSS-210 Issue (6 September 2005)	Low-power – Licence exempt Radiocommunication devices (all frequency bands): category 1 equipment
FCC Part 15 (February 2006)	Code of Federal Regulations Title 47 – Telecommunications Chapter 1 – Federal Communications Commission Part 15 – Radio frequency devices Subpart C – Intentional Radiators
RSS-Gen Issue 1 (September 2005)	General requirements and information for the Certification of radiocommunication equipment
RSS-212 Issue 1 (Provisional) (February 27, 1999)	Test facilities and Tests methods for radio equipment
ANSI C 63.4 (2003)	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 AND DESCRIPTION

Equipment under test (E.U.T.) description: Pressure of motorcycle's tyres is transmitted from wheels (wheel unit sensor transmitter) to receiver on handle bar. Equipment is stand alone and has no wire.

Cycle and operating mode during emission tests: Transmitter is on permanent no modulated emission excepted for bandwidth measurement.



Wheel unit sensor transmitter
(WUS)

Equipment modifications applied during tests: No

4. EQUIPMENT CHARACTERISTIC

IC: 6450AS106064

FCC ID: T45S106064

ITU emission code: 100KF1D

Utilization: Pressure of motorcycle's tyres is transmitted from wheels (wheel unit sensor transmitter) to receiver on handle bar. Equipment is stand alone and has no wire.

Antenna type: Integrated wire antenna

Operating frequency: 315 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: 1 x BR2032 (3 V)

5. EQUIPMENT UNDER TEST CONFIGURATION SCHEME

Equipment is set out on a wooden table at 0.8 m of the ground plane (see Photograp(s) 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 and Table 1 of RSS-210 Restricted bands of operation	YES	
15.209 and Table 2 of RSS-210 Radiated emission limits, general requirements	YES	Considered
15.231 and Annex 1 of RS 210 Momentarily Operated Devices and Remote Control Periodic operation in the band 40.66 40.70 MHz and above 70 MHz		
a) and A.1.1.1.) Transmission requirements	YES	Requirements of e) is used
b) and A 1.1.2.) Radiated emission	N.A.	Requirements of e) is used
c) and A 1.1.3.) Occupied bandwidth	YES	Nota 2
d) and A 1.1.4.) Frequency tolerance	N.A.	E.U.T. does not transmit in the band 40.60 – 40.70 MHz
e) and A 1.1.5.) Periodic alternate field strength measurement	YES	Nota 3

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) and with the requirements of RSS-210 (09/2005) according to limits specified in this tests report.

Nota 1: Internal antenna without connector

Nota 2: The bandwidth of the emission at 20 dBc is 100 kHz (see Photo(s) in annex), less than 0.25 % of the center frequency (787.5 kHz)

Nota 3: Calculation of field strength limit of fundamental (315 MHz):
 $16.6667 (F) - 2833.3333 = 2416.7 \mu V/m = 67.60 dB\mu V/m$
 Burst duration of each transmission is 300 ms every minute (see Photo(s) in annex).

7. RADIATED ELECTRIC FIELD MEASUREMENT

Standard: RSS-210 Issue 6 (September 2005) & FCC part 15 (February 2006)

Test method: RSS-212 Issue 1 (provisional) February 27, 1999 and ANSI C 63.4 (2003)

Test method deviation: No

Measured condition: Measure applies on open area test site. Test antenna is oriented in vertical and horizontal polarisation, product is rotated through 360° in the horizontal plane. Highest levels are recorded. Measuring distance between equipment and test antenna is 3 m.

Instrumentation test List:

CATEGORY	BRAND	TYPE	N° EMITECH
Antenna	Electro-Metrics	Log-périodique LPA-30	0855
Antenna	Emco	Cornet 3115	1053
Cable		N-6m	3610
Cable		N-6m	3620
Filter	Micro Tonics	Passe haut	4392
OATS	Emitech	Salinelles	3482
Preamplifier	Mini-circuit	RF	1119
Preamplifier	Microwave	HF	2165
Receiver	Agilent Technologies	Agilent E7405A	2161

Resolution bandwidth used on Open Area Test Site:

Frequency band	Resolution Bandwidth	Detection mode
$30 \text{ MHz} \leq F < 1 \text{ GHz}$	120 kHz	Quasi peak
$1 \text{ GHz} \leq F \leq 3.15 \text{ GHz}$	1 MHz	Average

Test operating condition of the equipment: Permanent emission

Results: See Boards hereafter

- TEST LOCATION : Open area test site SALINELLES (30)
- RADIATED EMISSION : Electric field
- STANDARD : RSS-210 Issue 6 (September 2005) & FCC part 15 (February 2006)
- TEST DISTANCE : 3 m
- EQUIPMENT UNDER TEST : Tire watch
- INITIAL POSITION : 0° is the front side

VERTICAL POLARISATION

	Frequency (MHz)	Azimuth (Degrees)	Antenna Height (cm)	Measure (dBµV/m) without DCF	Duty Cycle Factor (*) (dB)	Standard Limit (dBµV/m)	Comments
Fundamental	315.00	0	200	66.82	-17.00	67.60	C
H2	630.00	0	150	32.00	-17.00	54.00	C
H3	945.00	0	150	31.80	-17.00	54.00	C
H4	1260.00	25	147	38.20	-17.00	54.00	C
H5	1575.00	15	111	32.90	-17.00	54.00	C
H6	1890.00	25	128	36.90	-17.00	54.00	C
H7	2205.00	15	105	31.40	-17.00	54.00	C
H8	2520.00	8	222	29.90	-17.00	54.00	C
H9	2835.00	-	-	31.20 ⁽¹⁾	-17.00	54.00	C
H10	3150.00	-	-	31.20 ⁽¹⁾	-17.00	54.00	C

C = Compliant

NC = Not compliant

HORIZONTAL POLARISATION

	Frequency (MHz)	Azimuth (Degrees)	Antenna Height (cm)	Measure (dBµV/m) without DCF	Duty Cycle Factor (*) (dB)	Standard Limit (dBµV/m)	Comments
Fundamental	315.00	0	100	82.92	-17.00	67.60	C
H2	630.00	0	120	43.43	-17.00	54.00	C
H3	945.00	0	100	44.80	-17.00	54.00	C
H4	1260.00	0	122	38.20	-17.00	54.00	C
H5	1575.00	0	105	29.90	-17.00	54.00	C
H6	1890.00	0	108	28.90	-17.00	54.00	C
H7	2205.00	-	-	27.40 ⁽¹⁾	-17.00	54.00	C
H8	2520.00	14	132	31.90	-17.00	54.00	C
H9	2835.00	15	118	40.20	-17.00	54.00	C
H10	3150.00	-	-	31.20 ⁽¹⁾	-17.00	54.00	C

C = Compliant

NC = Not compliant

⁽¹⁾ Noise level

^(*) Duty Cycle correction Factor is $20 \text{ Log } (14/100) = -17\text{dB}$

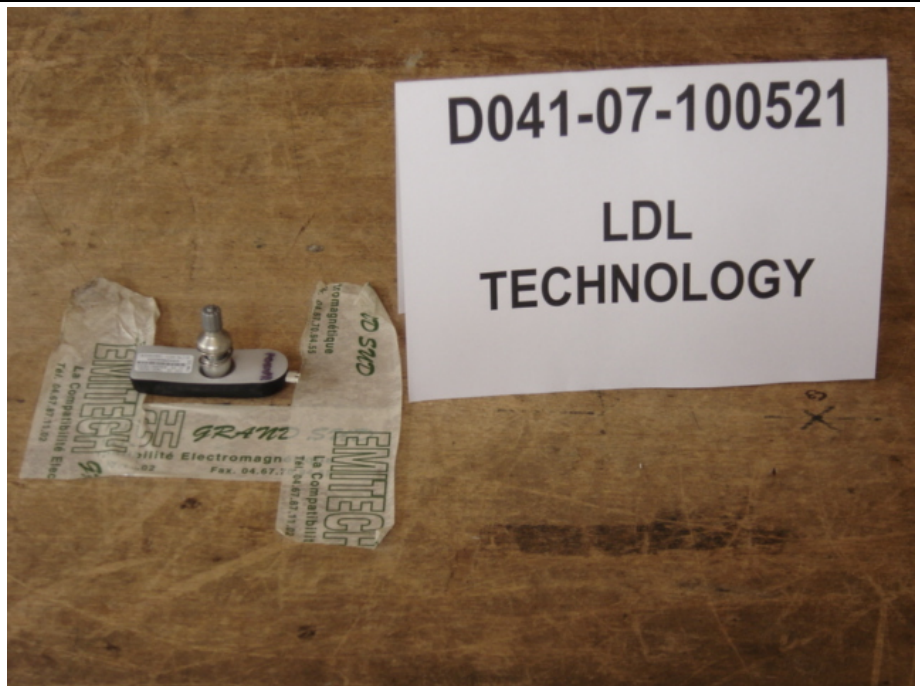
□□□ End of Report – 1 annex to be forwarded □□□

ANNEX: PHOTOGRAPH(S)

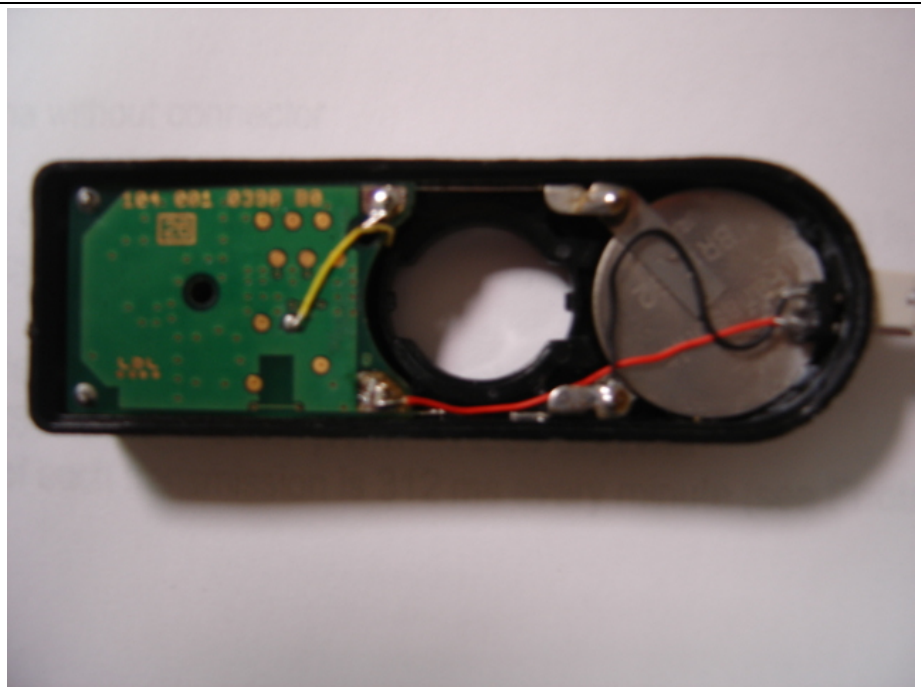
Equipment Under Test (E.U.T.) PHOTOGRAPH(S):

Transmitter (WUS) for motorcycle's tyres - Tire Watch -

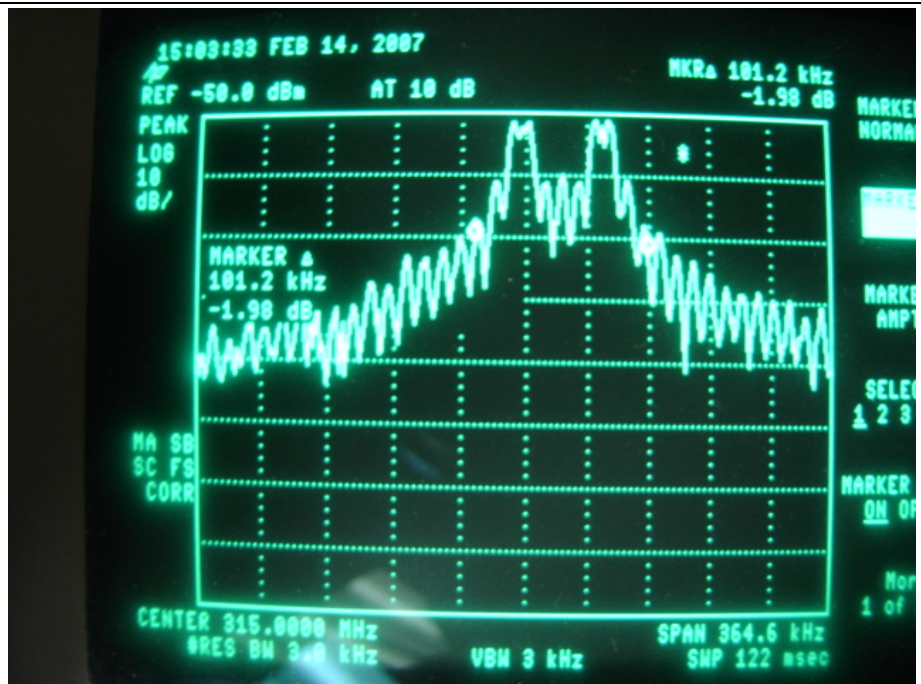
OATS measurement



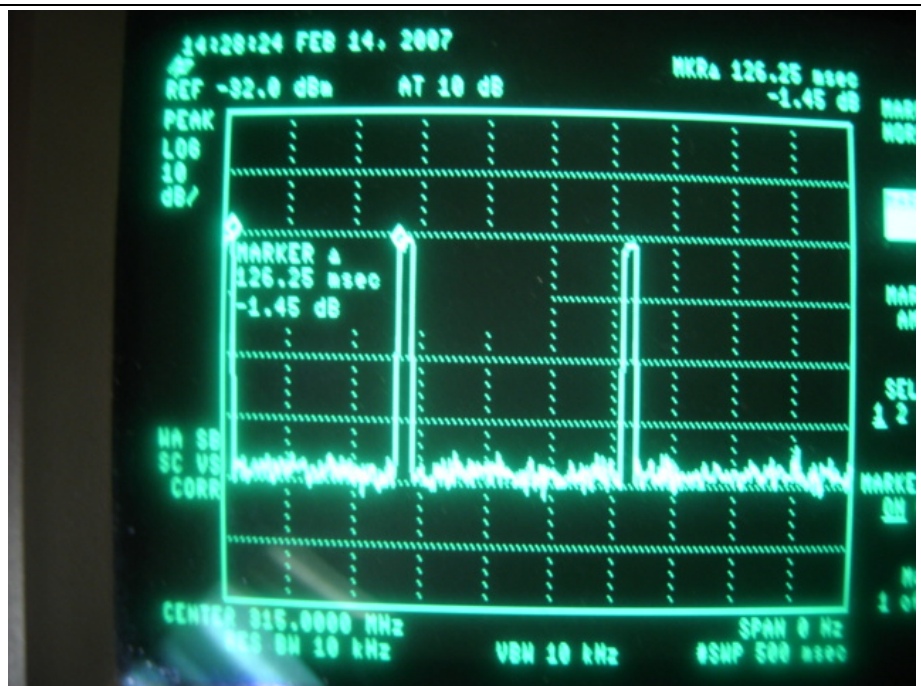
E.U.T.



Occupied bandwidth



Transmission burst



Transmission burst

