



TEST REPORT

According to FCC, CFR 47 Part 15

UDEE radio remote control

N°662101-CC-1-b

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FCC CERTIFICATION TEST REPORT

EQUIPMENT FCC ID : OQMUD

The 17 pages of this report are not sharable

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Identification :662101-CC-1-b

FCC registration # 90469

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1 Reference and record of revisions of the test report:

Test report number :	Revision :	Number of pages	Modification reasons :
662101-CC-1-a	a	21	Creation, June 5, 2009
662101-CC-1-b	b	17	Separation of receiver and emitter
Redactor : Jean-Luc JAMET			Date of writing : September 23, 2009
Technical control: O. ROY 			Quality Control: M. CABALLERO 

2 Interpretation and remarks:

2.1 RESULTS:

This equipment complies with the rules of the FCC section 15.249 and related sections concerning its radio functions.

This equipment complies with the rules of the FCC section 15.209 class B and related sections concerning its intentional radiator functions.

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3 GENERAL INFORMATION:

3.1 APPLICANT:

JAY ELECTRONIQUE
ZAC La Bâtie
35 Allée Champrond
38330 SAINT ISMIER Cedex
FRANCE

3.2 MANUFACTURER:

JAY ELECTRONIQUE
ZAC La Bâtie
35 Allée Champrond
38330 SAINT ISMIER Cedex

3.3 TEST DATE:

June 3 to 5, 2009

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 for radio remote controls is written in accordance with Part 15 of the Federal Communications Commissions. The Equipment under Test (EUT) was Industrial Enhanced-Safety Radio Controls named "UDEE radio remote control". The test results reported in this document relate only to the item that was tested.

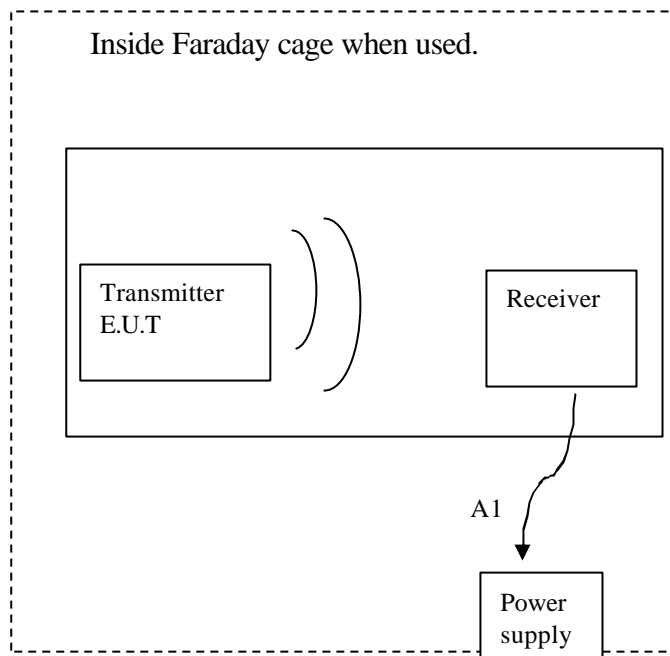
All measurements contained in this Application were conducted in accordance with ANSI C63.4 Methods of Measurement of Radio Noise Emissions of 2003. The instrumentation utilized for the measurements conforms to the ANSI C63.4 standard for EMI and Field Strength Instrumentation. Some accessories are used 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 conducted and radiated 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.

5 MEASUREMENT EQUIPMENT LIST:

PART TYPE	MANUFACTURER	MODEL	GYL NUMBER	CALIBRATION DATE	CALIBRATION DUE DATE
RECEIVERS					
Receiver	Rohde & Schwarz	ESI 7	M02020	May 09	May 10
Spectrum analyzer	Rohde & Schwarz	FSEM 30	M02021	May 09	May 10
ANTENNAS					
Bilog (30-2000MHz)	CHASE	CBL-6112	M02031	June-08	June-09
Bilog (30-2000MHz)	CHASE	CBL-6112	M02032	June-08	June-09
Magnetic field antenna	R&S	HFH2-Z2	M01128	April 08	April 10
Horn antenna	EMCO	3115	M02045	Feb-09	Feb-10
Amplifier 0.5-18GHz	LUCIX Corporation	S005180L3201	M08007	April 09	April 10

6 CONFIGURATION OF TESTED SYSTEM:



E.U.T.: Equipment Under Test

7 EXERCISING TEST CONDITIONS:

The receiver is connected on the main supply. On the transmitter we unlock the stop palms witch button. We press the green button. The transmitter is in permanent emission on the channel activated with its modulation

8 CONFORMANCE STATEMENT:

8.1 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

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8.2 JUSTIFICATION:

As mentioned in paragraph 5 of this report, the equipment is the emitter of a radio remote control system. It can be installed in industry areas the following sub clause of the standard mentioned above are:

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



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9 TEST ACCORDING TO CFR 47 Part 15

Tests performed by Jean-Luc JAMET at GYL Technologies laboratories from 3 to 5 June, 2009.

9.1 REFERENCE DOCUMENTATION:

FCC part 15 (Sub part B) 15.209 and 15.249 of 2008

9.2 Intentional radiator operation within the band 902 – 928 MHz §15.249(a)

The system uses 64 channels numbered from 1 to 64

9.2.1 Field strength of emission §15.249(a)

The limit is 50mV/m (94dBμV/m) at 3 m distance.

Measurements are done on OATS at 3 m distance.

Peak detector is adjusted with RBW/VBW=100 kHz

The minimum power supply voltage of the emitter is 3.3VDC / the maximum power of the emitter is 4VDC

All tests are done with batteries fully charged (transmitter part).

Results	Frequency (MHz)	Power supply	At 3 m dBμV/m	Limit dBμV/m	Margin dB	Power* (μW)
Channel 1	911.8	Min	79.50	93.98	14.48	26.7
		Max	79.62	93.98	14.36	27.5
Channel 32	915.0	Min	79.72	93.98	14.26	28.1
		Max	79.78	93.98	14.20	28.5
Channel 64	918.2	Min	79.33	93.98	14.65	25.7
		Max	79.33	93.98	14.65	25.7

*The maximum peak conducted power can't be measured in this product (internal antenna without connector).

According to DA 00-705, the alternative test procedure is used to calculate the conducted peak power.

$$P = \frac{(E \cdot d)^2}{30G}$$

For calculation, G is taken to be 1 (worst case in the antenna data sheet).

That gives a maximum Power of 28.5 μW



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9.2.2 Spurious emissions (15.249 § (d))

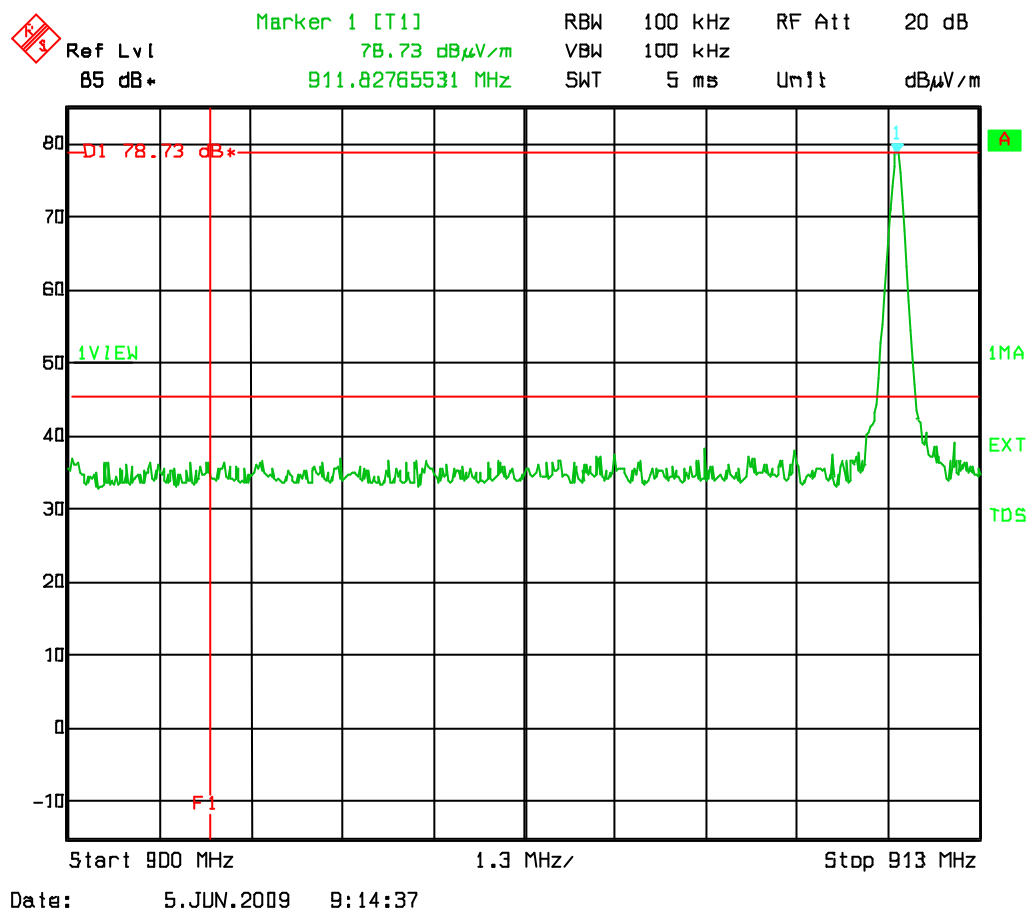
50 dB below the level of fundamental is below the general radiated emission limit of 15.209.

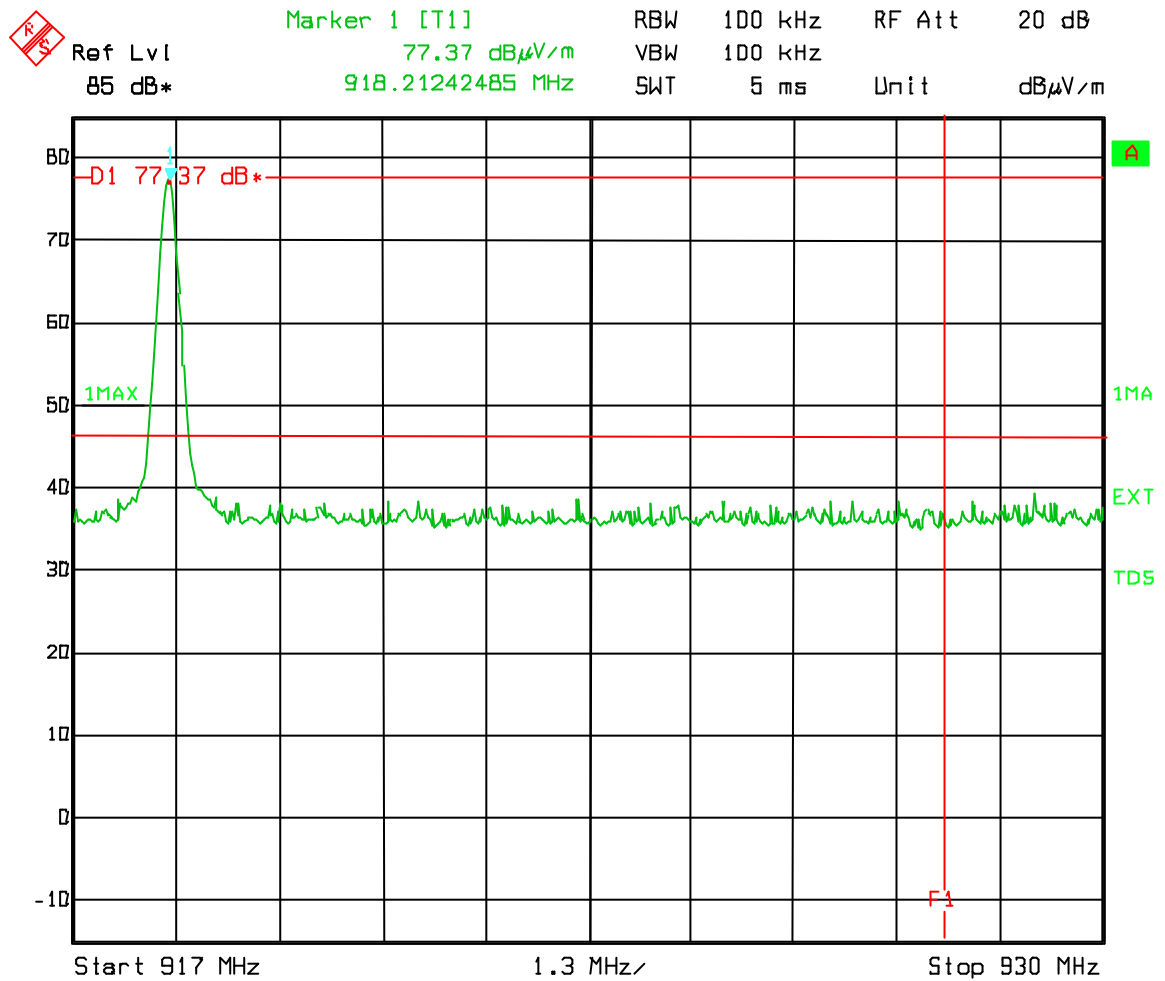
Only 15.209 limits apply.

At band edge F1 (902 MHz), F2 (928MHz), the level is far below this limit:

Measured during prescan in shielded enclosure at 3 m distance

Using peak detector and max-hold until stability.



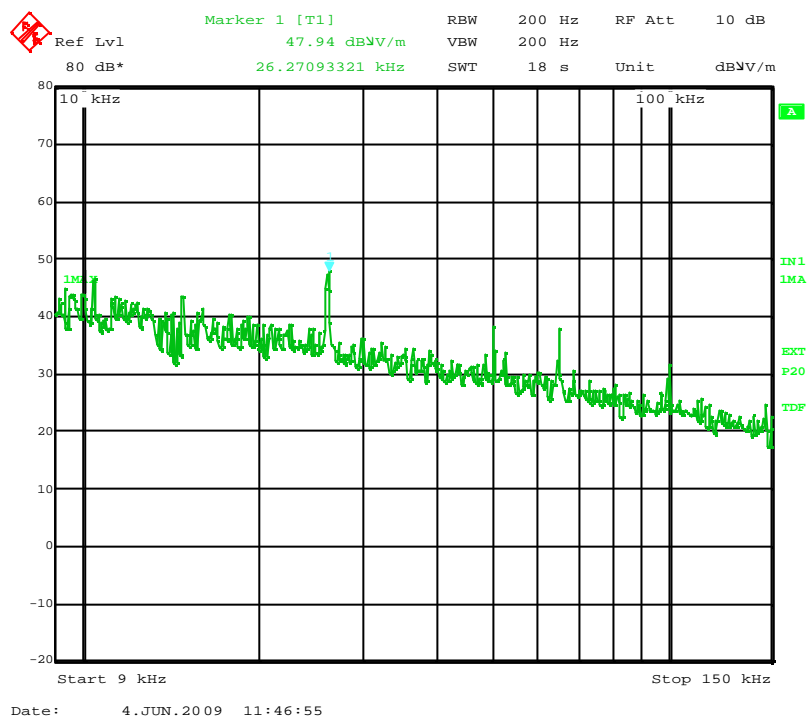


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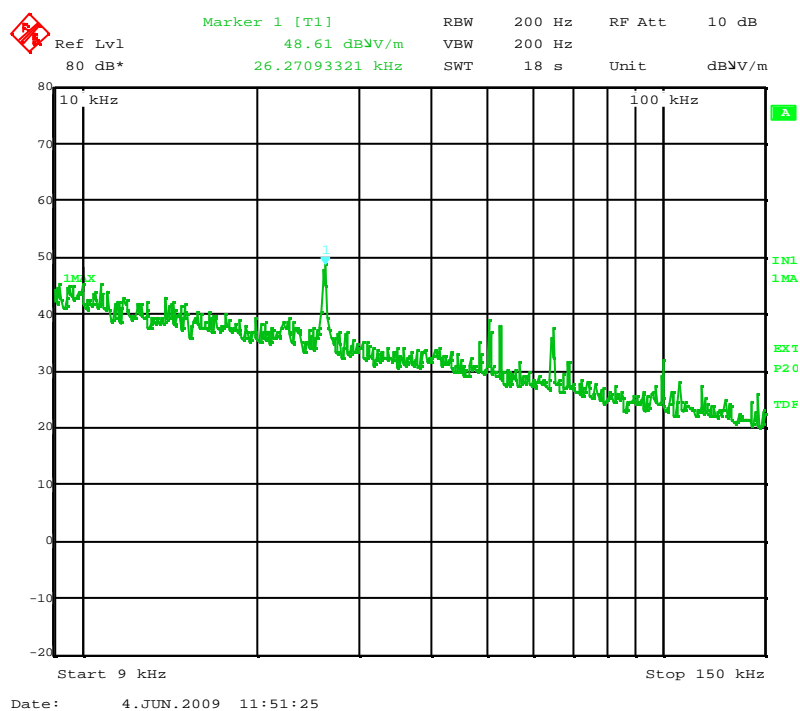
SPURIOUS EMISSIONS MEASUREMENTS:

Spurious emissions measurement results from 9 kHz to 150 kHz:

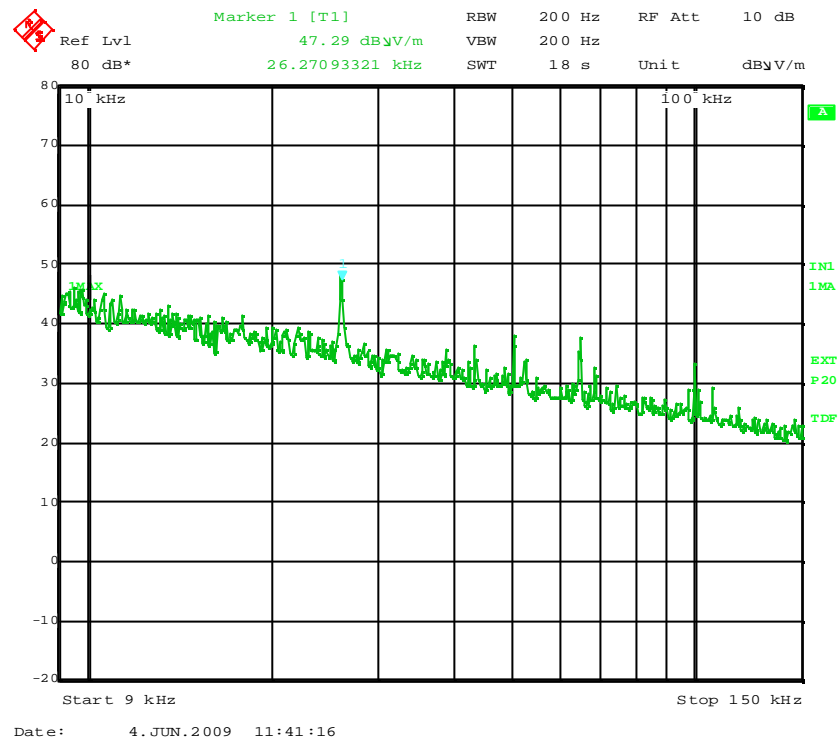
On Ch 01



On Ch 32

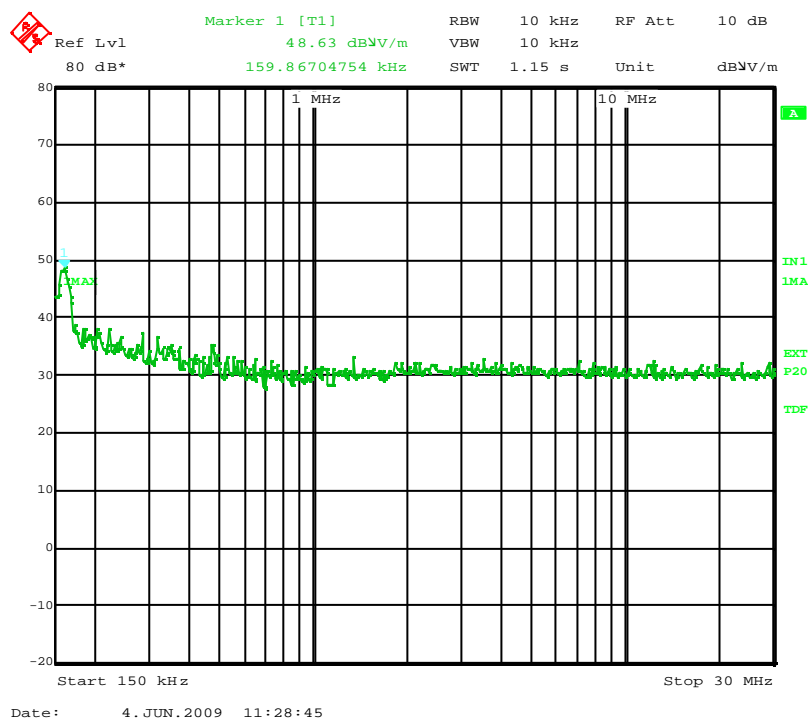


On Ch 64

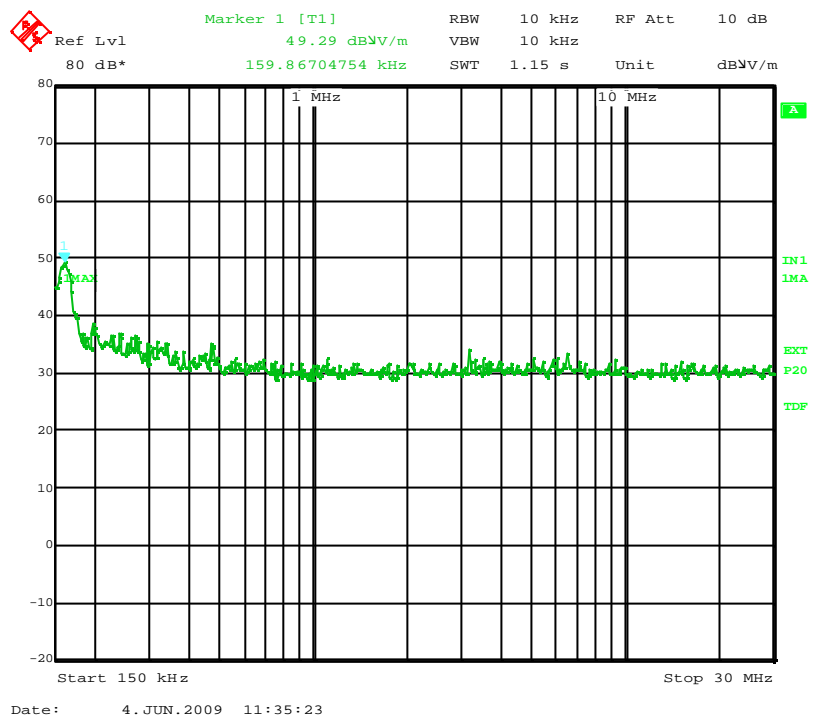


Spurious emissions measurement results from 150 kHz to 30 MHz:

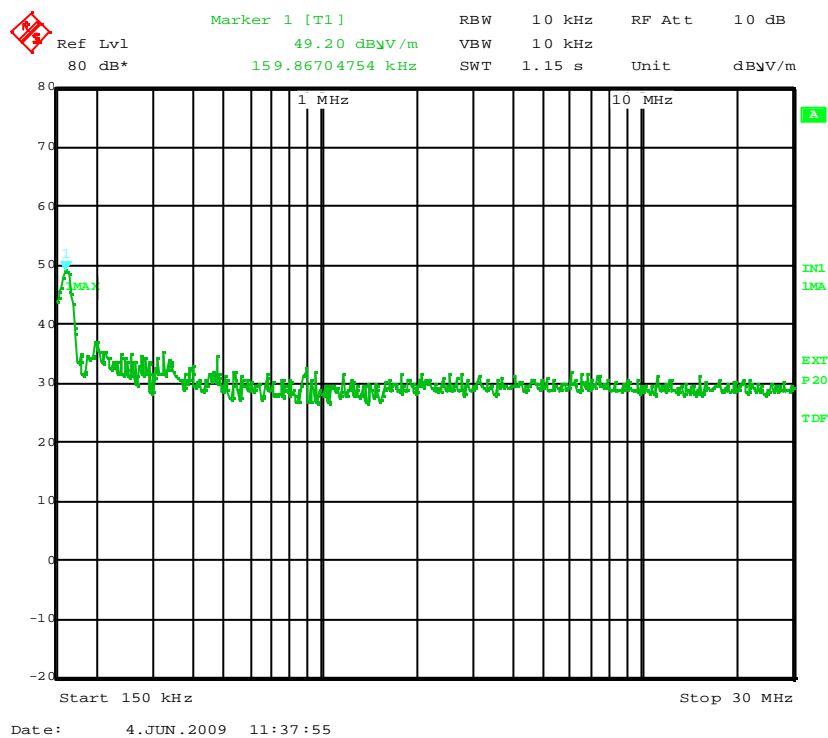
On Ch 01



On Ch 32



On Ch 64



Spurious emissions measurement results from 30MHz to 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 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 100kHz for peak measurement and 120 kHz for quasi-peak, and the analyzer was operated in the CISPR quasi-peak detection mode when needed. 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 for measurements in restricted bands below 1GHz

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



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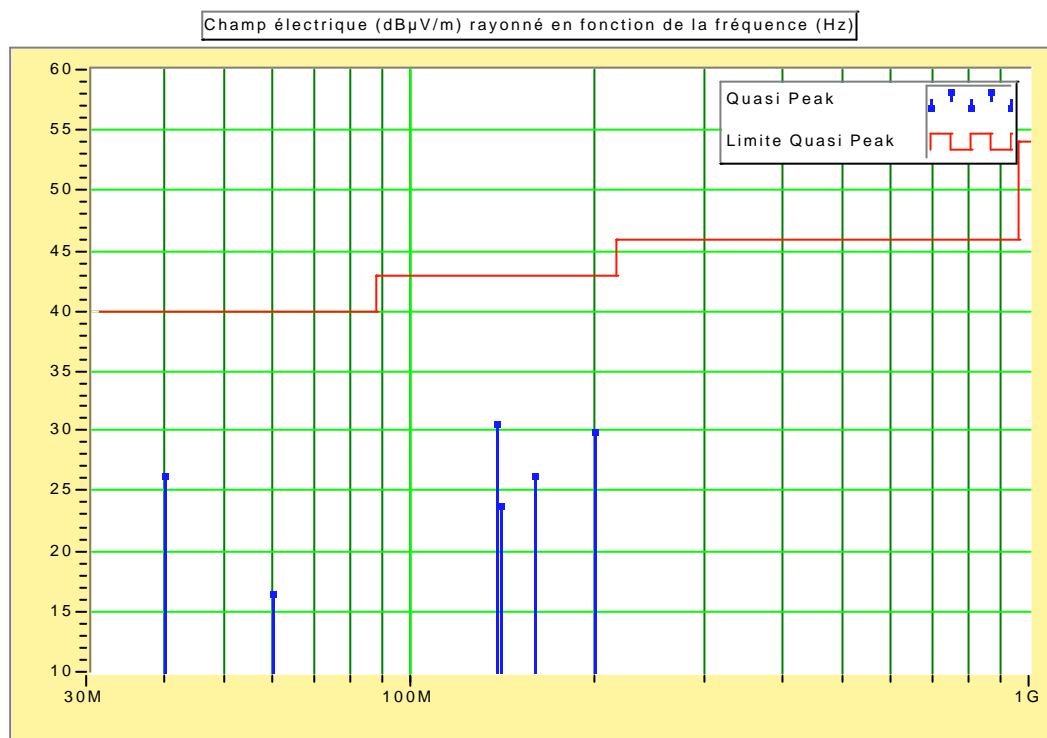
FCC registration # 90469

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RESULTS (Class B):

The following data table lists the most significant emission frequencies, measured level, correction factor (includes cable and antenna corrections), corrected reading and the limit. The highest peaks are measured in quasi-peak detection mode at 3 meters distance.

Frequency (MHz)	Peak (dBμV/m)	Quasi peak (dBμV/m)	Limits	Margin (dB)	Polar.	Height (cm)	Angle (°)	Factor Corr. (dB)	Comment
40.001	33.0	26.3	40.0	13.8	V	105	401	14.3	ch64
59.989	20.9	16.4	40.0	23.6	V	105	142	8.9	ch01
137.628	32.0	30.5	43.0	12.5	H	128	233	14.7	ch64
140.053	26.4	23.8	43.0	19.2	H	112	247	14.5	ch32
159.993	29.0	26.2	43.0	16.8	H	158	73	14.1	ch32
199.988	31.8	29.8	43.0	13.2	H	171	94	13.0	ch32



Spurious emissions measurement results from 1GHz to 10GHz:

A pre-scan measurement is done very close to the product (less than 10cm) with 100 kHz RBW and a max peak detector. Then measurements are performed at 3 m with 1MHz RBW and a video averaging (10Hz) for average measurement.

Spurious RESULTS:

The following data table lists the most significant emission frequencies, measured level, correction factor (includes cable and antenna corrections), corrected reading and the limit.

On the emitter part

Max spurious for channel 01 at 911.8

Freq. (MHz)	Harmonics.	Peak(1) (dBμV/m) At 3m	Peak Limit (dBμV/m)	Peak margin (dB)	Avg (dBμV/m) At 3m	Avg Limit (dBμV/m)	Avg margin (dB)
911.8	1						
1823.6	2	44.2	74	29.8	41.26	54	12.74
2735.4	3	39.3	74	34.7	29.45	54	24.55
3647.2	4	43.98	74	30.02	37.38	54	16.62
4559	5	NF	74			54	
5470.8	6	NF	74			54	
6382.6	7	NF	74			54	
7294.4	8	48.05	74	25.95	37.3	54	16.7
8206.2	9	NF	74			54	
9118	10	NF	74			54	

(1) Peak measurement with 1MHz RBW and VBW when frequency in restricted bands.

* NF means Noise Floor

Max spurious for channel 32 at 915 MHz

Freq. (MHz)	H.	Peak(1) (dBμV/m) At 3m	Peak Limit (dBμV/m)	Peak margin (dB)	Avg (dBμV/m) At 3m	Avg Limit (dBμV/m)	Avg margin (dB)
915	1						
1830	2	43.8	74	30.2	40.08	54	13.92
2745	3	40.2	74	33.8	30	54	24
3660	4	44.5	74	29.5	36.7	54	17.3
4575	5	NF	74			54	
5490	6	NF	74			54	
6405	7	NF	74			54	
7320	8	41.3	74	32.7	37.78	54	16.22
8235	9	NF	74			54	
9150	10	Nf	74			54	

Max spurious for channel 64 at 918.2 MHz

Freq. (MHz)	H.	Peak(1) (dBμV/m) At 3m	Peak Limit (dBμV/m)	Peak margin (dB)	Avg (dBμV/m) At 3m	Avg Limit (dBμV/m)	Avg margin (dB)
918.2	1						
1836.4	2	43.22	74	30.78	40.96	54	13.04
2754.6	3	32.66	74	41.34	28.04	54	25.96
3672.8	4	42.8	74	31.2	36.85	54	17.15
4591	5	NF	74			54	
5509.2	6	NF	74			54	
6427.4	7	NF	74			54	
7345.6	8	46.8	74	27.2	38.3	54	15.7
8263.8	9	NF	74			54	
9182	10	NF	74			54	

9.2.3 Measurement of frequency stability

Not requested

9.2.4 Antenna requirements

Not applicable because the antenna is located inside the equipment and is not replaceable without modifying the product.

9.3 Conclusion:

The equipment complies with 15.209 and 15.249 limits