



## TEST REPORT

According to FCC, CFR 47 Part 15

**IER 918 F**

**N°060158-CC-1-c**

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**OTHER ASSOCIATED FILES:**

060158 Exhibit 1 ID label WGO918F-08
060158 Exhibit 1b label localisation WGO918F-08
060158 Exhibit 3 External Photographs WGO918F-08
060158 Exhibit 4 Block diagram WGO918F-08
060158 Exhibit 5 Schematics of RF WGO918F-08
060158 Exhibit 7 Test set up photos WGO918F-08
060158 Exhibit 8 installation manual WGO918F-08
060158 Exhibit 8a notice warning statement WGO918F-08
060158 Exhibit 9 Internal Photographs WGO918F-08
GRANT ZKCPP-0403-3003 (RFID 13.56MHz)
DGFSSDRTE8000 TCB GrantForm (Passport reader 13.56MHz)
060158 Exhibit 12 Operational description WGO918F-08
060158 Exhibit 13 cover letter FCC ID WGO918F-08



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## 1 Reference and record of revisions of the test report:

<b>Test report number :</b>	<b>Revision :</b>	<b>Number of pages</b>	<b>Modification reasons :</b>
060158-CC-1-a	a	24	Creation, July 28, 2011
060158-CC-1-b	b	18	change to part 15.249, with new spurious measurement, 4 April 2012
060158-CC-1-c	c	21	Band edge re measurement
<b>Redactor : O.ROY</b>			<b>Date of writing : 10 Mai 2012</b>
<b>Technical control: O. ROY</b> 		<b>Quality Control: F. NOURRY</b> 	

## 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 15.207, 15.209 and related sections concerning its intentional radiator functions.

This equipment complies with the rules of the FCC section 15.107, 15.109 class B and related sections concerning its non intentional radiator functions.

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### 3 GENERAL INFORMATION:

#### 3.1 APPLICANT:

IER  
3 Rue Salomon de Rothschild  
BP 320  
92156 SURESNES Cédex

#### 3.2 MANUFACTURER:

IER  
3 Rue Salomon de Rothschild  
BP 320  
92156 SURESNES Cédex

#### 3.3 TEST DATE:

July 5 to 29, 2011 and March 9, 2012.

#### 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 a kiosk with bag tag/printer is written in accordance with Part 15 of the Federal Communications Commissions. The Equipment under Test (EUT) was IER918F. 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 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.



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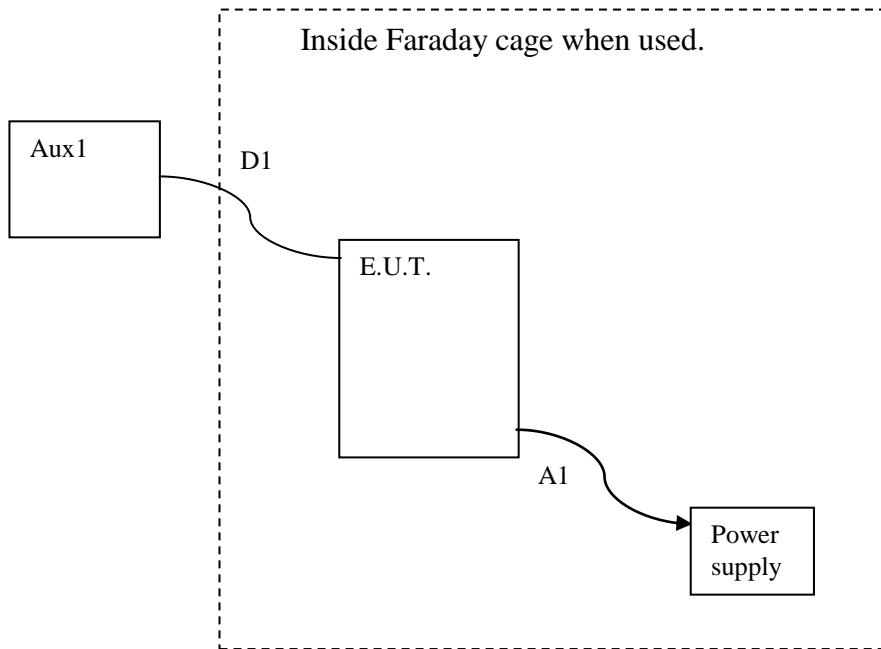
## 5 MEASUREMENT EQUIPMENT LIST:

PART TYPE	MANUFACTURER	MODEL	GYL TECHNOLOGIES NUMBER	CALIBRATION DATE	DUE DATE
RECEIVERS					
Receiver	Rohde & Schwarz	ESI 7	M02020	Jun-11	Jun-12
Spectrum analyzer	Rohde & Schwarz	FSEM 30	M02021	May-11	May-12
Spectrum analyzer	HP	HP8591EM	M96005	May-11	May-12
Amplifier 0.5-18GHz	LUCIX Corporation	S005180L3201	M08007	Oct-10/Oct-11	Oct-11/Oct-12
Filter 150 kHz	Rohde & Schwarz	EZ25	M02040	Feb-11	Feb-12
Satellite synchronized frequency standard	Acquisis	GPS8	M06013	without	
ARTIFICIAL MAINS NETWORKS					
LISN (50µH / 5/50Ω)	Rohde & Schwarz	ESH3-Z5	M02027	Jun-11	Jun-12
ANTENNAS					
Bilog (30-2000MHz)	CHASE	CBL-6112	M02031	Jun-11	Jun-12
Bilog (30-2000MHz)	CHASE	CBL-6112	M02032	Jun-11	Jun-12
Horn antenna	EMCO	3115	M02045	March 11	March 12
OTHER					
Turntable and antenna positionning open site controller	GYL	Champ libre	M10118	Without	



## CONFIGURATION OF TESTED SYSTEM:

For all tests, the device under test was tested with its ancillary equipment.



E.U.T.: Equipment under Test

A1: AC power cable

D1: Ethernet cable

Aux1: NEC Laptop: Model: PC NEC Ref: Versa P440

Serial number: 4971487016





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## **6 EXERCISING TEST CONDITIONS:**

Measurements are done in hopping mode in all channels with modulation, and printing tickets with all functions of the kiosk activated (RFID, printing).

For measurements that need to be done in one channel, the channel used was activated with its modulation.

The equipment uses a PRASK modulation for GEN2 mode.

## **7 CONFORMANCE STATEMENT:**

### **7.1 STANDARDS REFERENCED FOR THIS REPORT:**

<b>PART 2: 2004</b>	Frequency allocations and Radio Treaty Matters General Rules and Regulations
<b>PART 15: 2008</b>	Radio frequency devices
<b>ANSI C63.4-2003</b>	Standard format measurements/technical report personal computer and peripherals

### **7.2 JUSTIFICATION:**

As mentioned in paragraph 5 of this report, the equipment is a part of bag tag reader/printer, information technology equipment with radio part. It can be installed in residential commercial or light industry areas the following sub clause of the standard mentioned above are:

- Part 15.249 for intentional radiator in band 902-928 MHz.
- Part 15.207 and 15.209 (subpart C) for respectively conducted and radiated emission for intentional radiator.
- Part 15.107 and 15.109 (subpart B) for respectively conducted and radiated emission for unintentional radiator (printer) Class B.



## 8 TEST ACCORDING TO CFR 47 Part 15

### 8.1 REFERENCE DOCUMENTATION:

FCC part 15 (Sub part B) 15.107, 15.109, 15.207, 15.209 and 15.249 of 2008.

### 8.2 POWER LINE CONDUCTED EMISSIONS MEASUREMENTS (15.207):

Tests performed by O. MARET at GYL Technologies laboratories July 8, 2011.

The power line conducted emission measurements were performed in a semi anechoic chamber. The EUT was assembled on a non conductive 80 centimeters high wooden table. Power was fed to the EUT through a 50 ohm / 50 micro-Henry Line Impedance Stabilization Network (EUT LISN). The EUT LISN was fed power through an A.C. filter box on the outside of the shielded enclosure. The filter box and EUT LISN housing are bonded to the ground plane of the shielded enclosure. The spectrum analyzer was connected to the A.C. line through an isolation transformer. The 50-ohm output of the EUT LISN was connected to the spectrum analyzer input through a Rohde and Schwartz 150 kHz high-pass filter. The filter is used to prevent overload of the spectrum analyzer from noise below 150 kHz. Conducted emission levels were measured on each current-carrying line with the receiver operating in the CISPR quasi-peak mode (or average mode if applicable)

### 8.3 RESULTS:

The conducted emissions initial measurement consists of a prescan (tester in analyser mode), in order to determine the maximum peak values.

- If the conducted emissions have limits showing a margin lower than 20dB, data collection measurement is performed on QP and average on the six (6) highest frequencies to determine the compliance of the EUT.
- If the conducted emissions have limits showing a margin greater than 20dB, data collection measurement is not performed and the curves are given as evidence of compliance.

The following table lists worst-case conducted emission data. Specifically: emission frequency, measurement level (including cable loss and transducer factors) in quasi-peak and average mode and margin.

The conducted test was performed with the EUT exercise program loaded, and the emissions were scanned between 150 kHz to 30 MHz on the NEUTRAL SIDE and LIVE SIDE, herein referred to as Neutral, and Live respectively.



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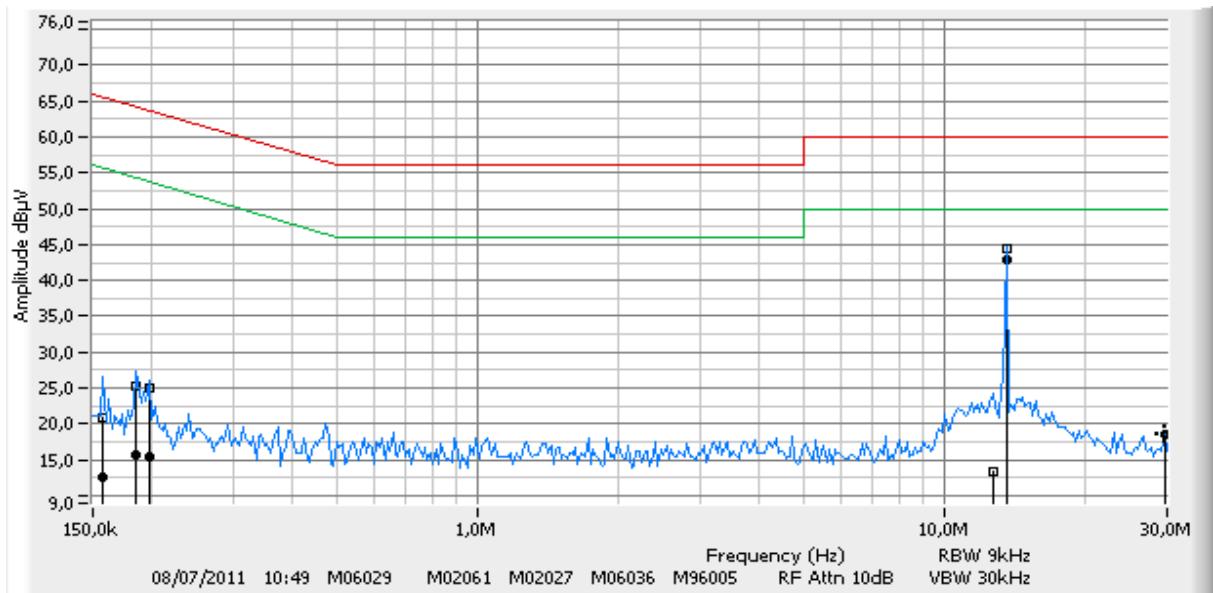
### 8.3.1 Power supply

#### 8.3.1.1 Neutral:

Legend: curve represents the peak values

Frequency (MHz)	Quasi-peak (dB $\mu$ V)	QP Limit (dB $\mu$ V)	QP margin (dB)
0,158	20,9	65,6	44,7
0,185	25,2	64,3	39,1
0,198	25,2	63,7	38,5
12,710	13,5	60,0	46,5
13,560	44,5	60,0	15,5
29,606	0,0	60,0	60,0

Frequency (MHz)	Average (dB $\mu$ V)	Average Limit (dB $\mu$ V)	Average margin (dB)
0,158	12,6	55,6	42,9
0,185	15,7	54,3	38,6
0,198	15,5	53,7	38,2
12,710	7,1	50,0	42,9
13,560	42,9	50,0	7,2
29,606	18,7	50,0	31,3





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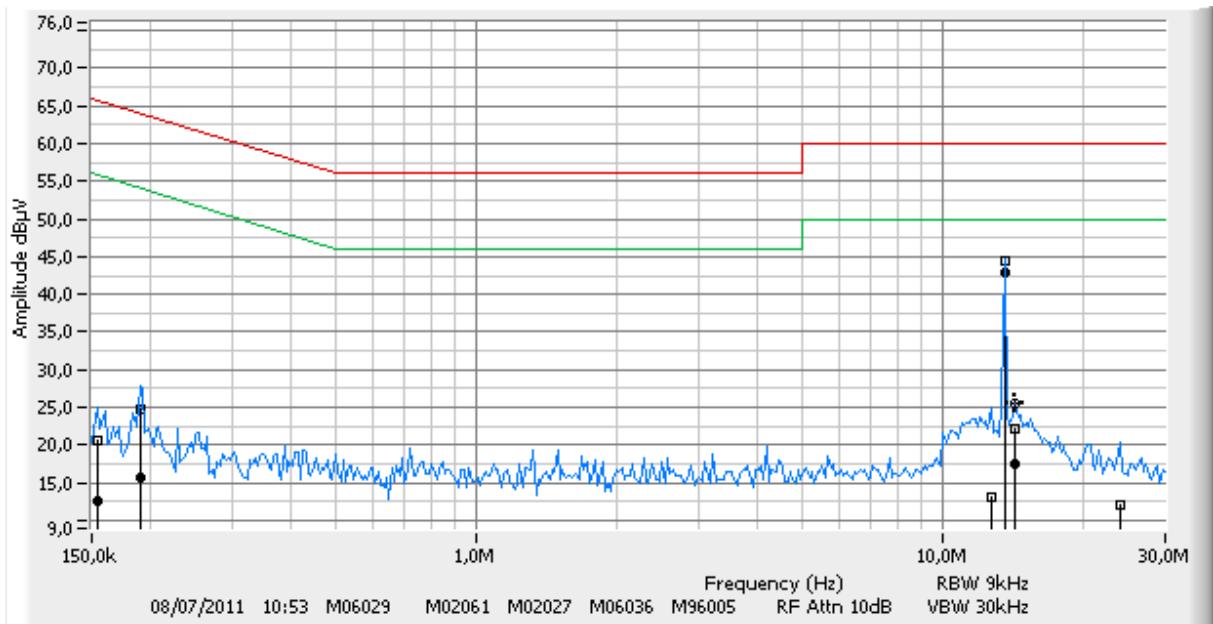
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### 8.3.1.2 LIVE:

Frequency (MHz)	Quasi-peak (dB $\mu$ V)	QP Limit (dB $\mu$ V)	QP margin (dB)
0,154	20,8	65,8	45,0
0,190	24,7	64,0	39,4
12,710	13,1	60,0	46,9
13,560	44,5	60,0	15,5
14,315	22,1	60,0	37,9
23,965	12,2	60,0	47,8

Frequency (MHz)	Average (dB $\mu$ V)	Average Limit (dB $\mu$ V)	Average margin (dB)
0,154	12,6	55,8	43,2
0,190	15,6	54,0	38,4
12,710	8,0	50,0	42,0
13,560	42,8	50,0	7,2
14,315	17,6	50,0	32,5
23,965	6,0	50,0	44,0



### 8.4 INTERPRETATION AND REMARKS:

The equipment complies with the §15.107 Class B and §15.207 requirements.



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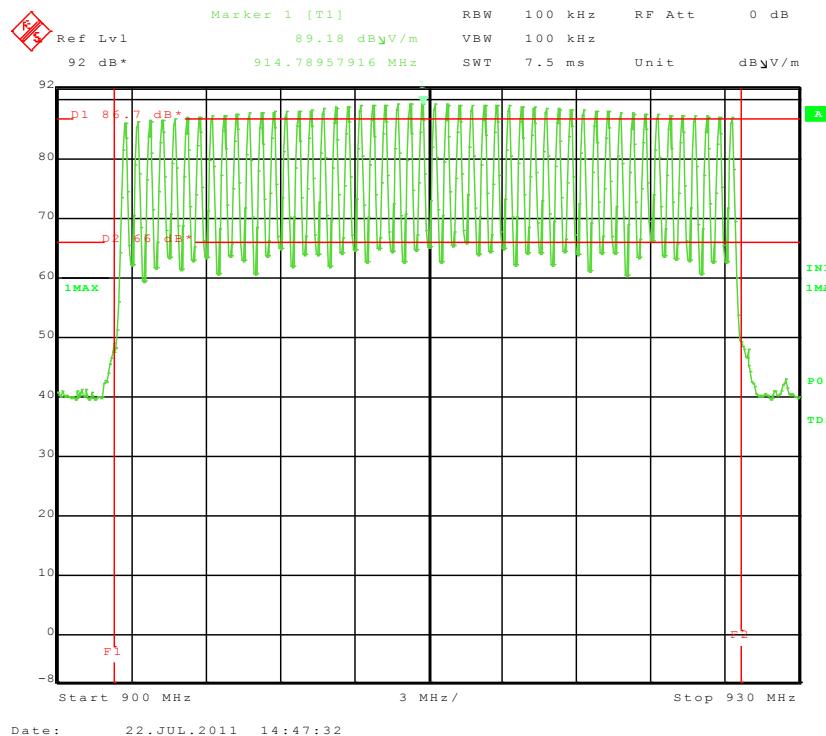
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## 8.5 Intentional radiator operation within the band 902 – 928 MHz §15.249:

The system uses 50 channels numbered from 1 to 50.

For details of frequency hopping technology used see Exhibit 12 operational description.





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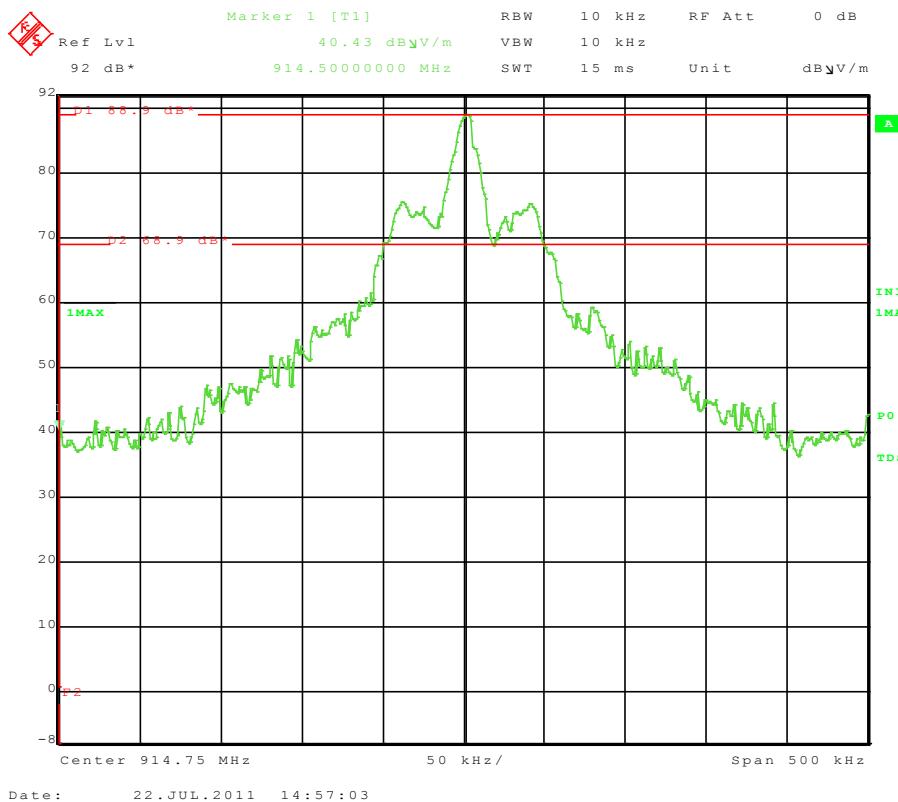
### 8.5.1 Maximum field Strength of Fundamental

Measurements are done on OATS at 3 m distance with peak detector, RBW = 100kHz (greater than 20dB BW), VBW = 300kHz. Limit is 50mV/m at 3 m that is 94dB $\mu$ V/m

Results	Frequency (MHz)	3 m dB $\mu$ V/m	Limit dB $\mu$ V/m	Margin dB	Power (mW)
Lowest channel	902.75	82.9	94.0	11.1	0.06
Middle channel	914.75	85.9	94.0	8.1	0.12
Highest channel	927.25	89.2	94.0	<b>4.8</b>	<b>0.25</b>

Power measurement done with input voltage at 102V, 120V and 138V without any change (delta lower than repeatability of measurement 0.2 dB)

20dB bandwidth :



### 8.5.2 Spurious emissions (15.249 § (d))

Outside the frequency band, the level is at least 50 dB below the level of fundamental or below the 15.209 limit.

Measurements are performed with 15.209 limits, see next pages



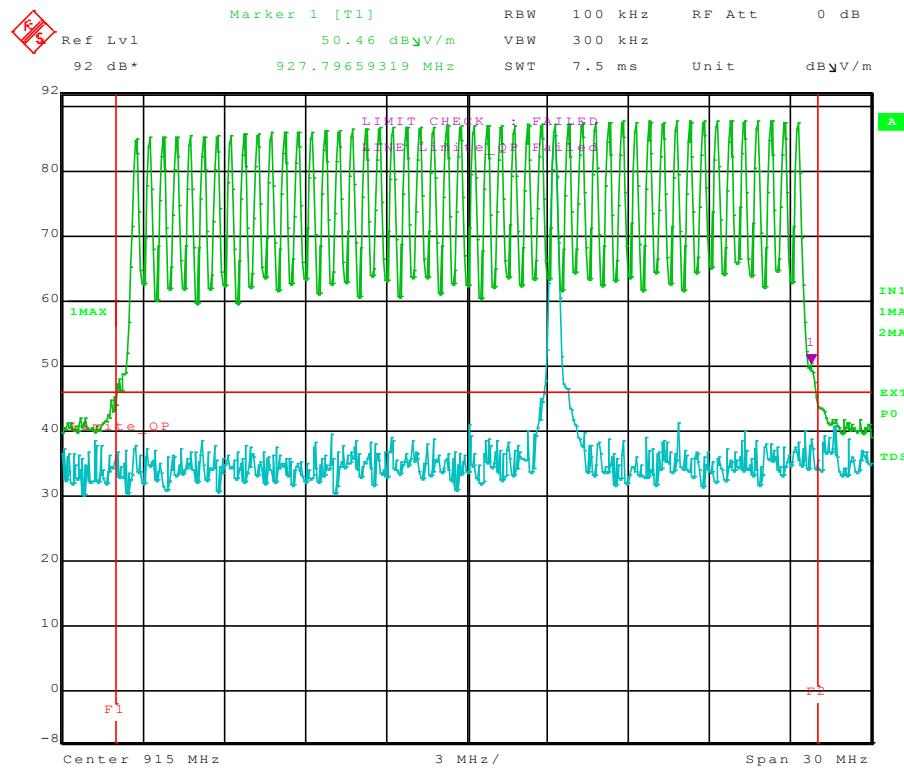
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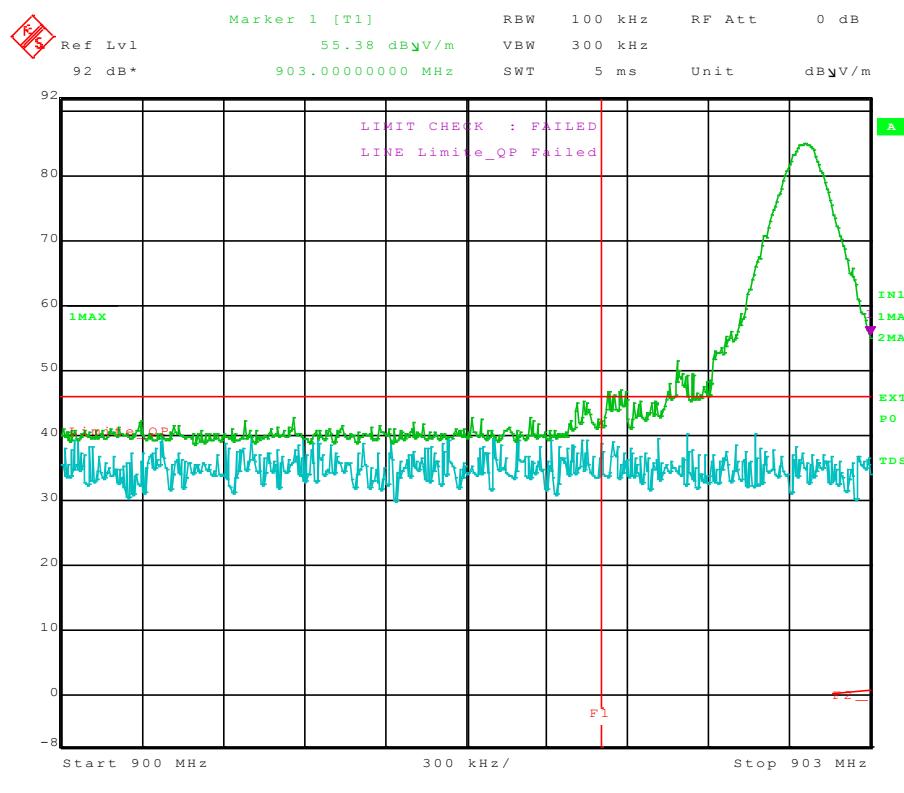
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At band edge F1 (902 MHz), F2 (928MHz), the level is below the 15.209 limit with and without hopping (3 m measurement in max position, horizontal polarization) :

Peak measurement with maxhold : green trace. Blue trace is peak measurement in clear-write mode.



Date: 4.MAY.2012 11:24:27  
QP measurement at 902 MHz in receiver mode with 120kHz RBW, with hopping: 39.7 dB $\mu$ V/m (limit 46.0)



Date: 4.MAY.2012 11:32:13

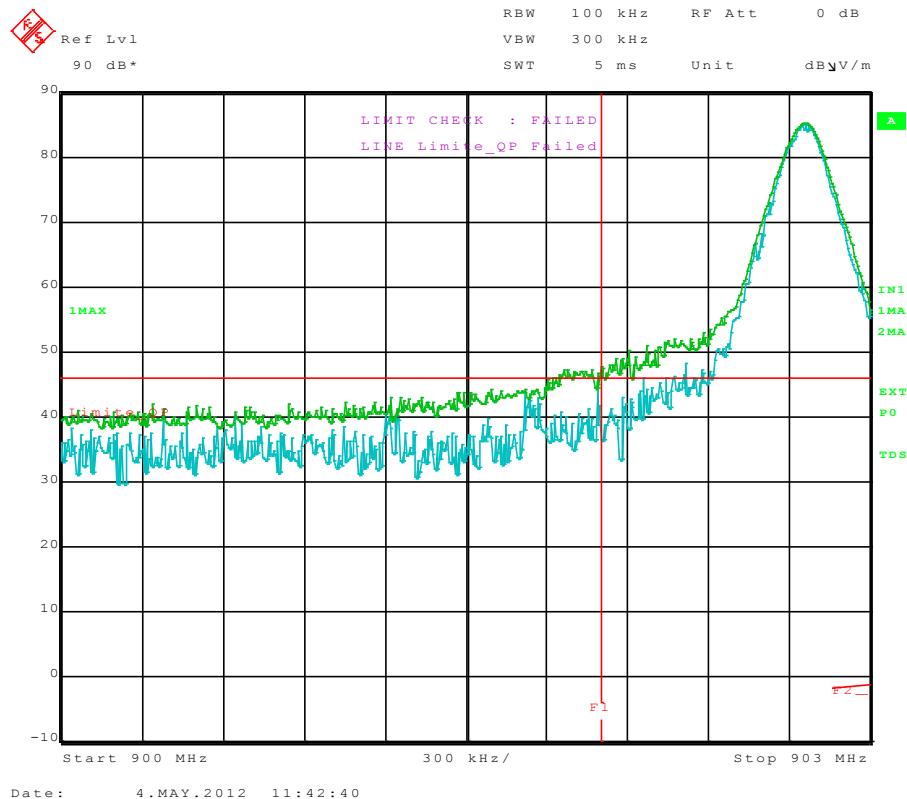


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QP measurement at 902 MHz in receiver mode with 120kHz RBW, without hopping : 41.3 dB $\mu$ V/m (limit 46.0)



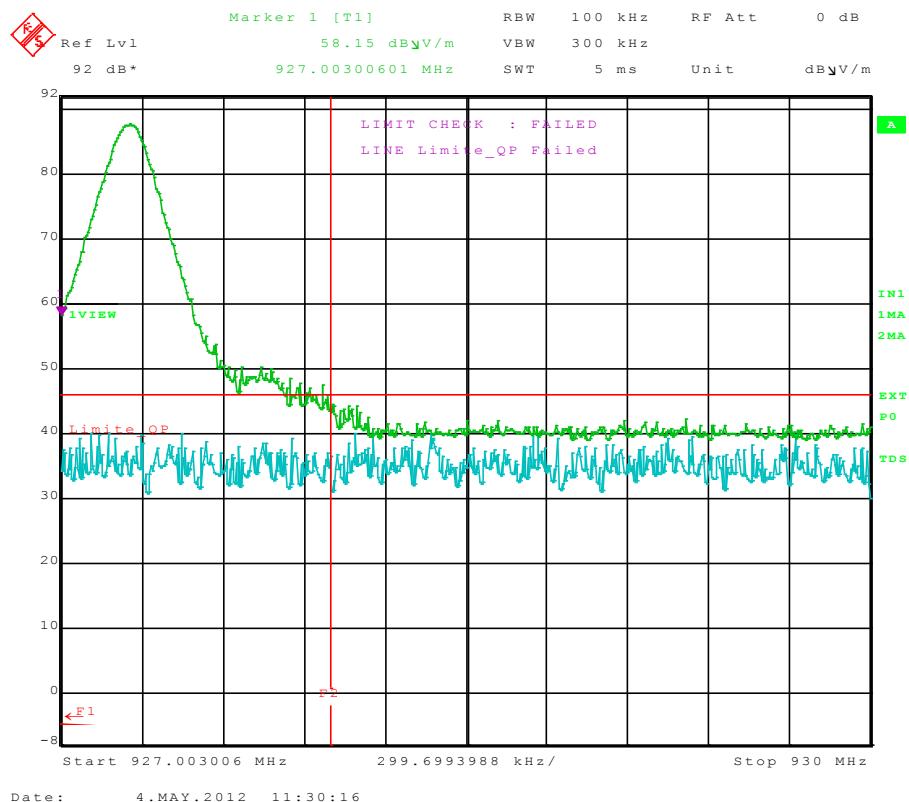


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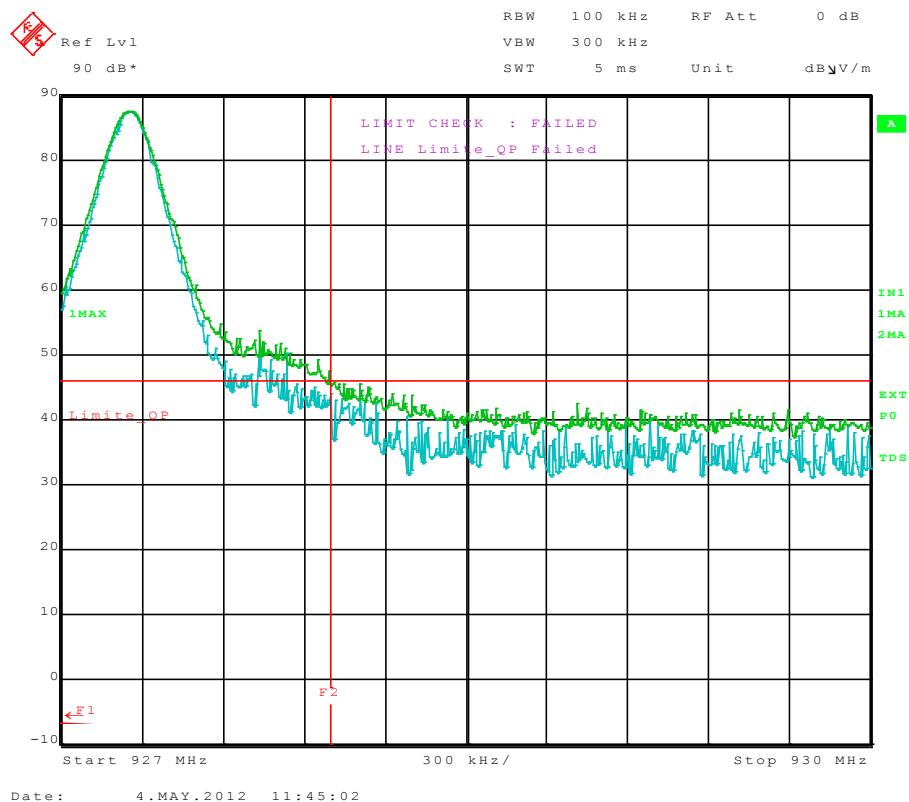
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QP measurement at 928 MHz in receiver mode with 120kHz RBW, with hopping : 40.6 dB $\mu$ V/m (limit 46.0)



QP measurement at 928 MHz in receiver mode with 120kHz RBW, without hopping 41.3 dB $\mu$ V/m (limit 46.0)





## SPURIOUS EMISSIONS MEASUREMENTS:

### 8.5.3 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

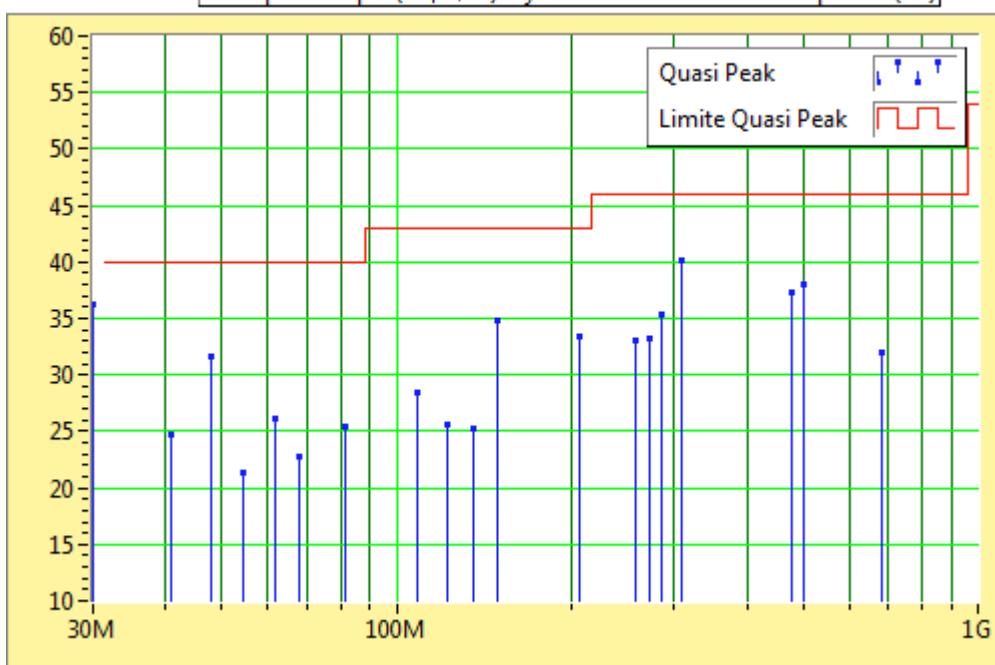
<b>ESI 7 EMI TEST RECEIVER IN RECEIVER MODE</b>	
Preamplifier	ON
Preselector	ON
Resolution, Band Width	120 kHz
Final Quasi Peak measurement time	1 s minimum

### 8.5.3.1 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.  
 Intentional radiator and Class B non intentional radiator

Frequency in MHz	Peak Value in dB $\mu$ V/m	Quasi-Peak Value in dB $\mu$ V/m	Quasi-Peak Limit in dB $\mu$ V/m	Margin in dB	Pol	Height in cm	Angles in °	Correction Factors in dB
30.000	41.5	36.2	40.0	3.8	V	100	196	18.7
40.720	29.9	24.6	40.0	15.4	V	100	64	14.3
47.800	35.0	31.7	40.0	8.3	V	106	148	10.7
54.320	32.7	21.4	40.0	18.6	V	108	178	8.6
61.672	31.2	26.2	40.0	13.8	V	114	71	8.2
67.828	27.5	22.8	40.0	17.2	V	107	197	8.0
81.380	29.3	25.5	40.0	14.5	V	109	153	9.1
108.465	31.5	28.5	43.0	14.6	V	118	191	13.7
122.060	28.5	25.6	43.0	17.4	H	125	254	14.1
135.625	28.2	25.3	43.0	17.7	H	125	138	13.7
149.138	36.7	34.8	43.0	8.2	H	184	180	13.0
205.910	37.0	33.4	43.0	9.6	V	213	185	13.1
257.670	36.2	33.0	46.0	13.0	H	118	163	15.8
271.228	35.1	33.1	46.0	12.9	H	106	168	16.4
284.785	37.2	35.4	46.0	10.6	H	209	198	17.1
308.543	42.6	40.2	46.0	5.8	V	151	106	18.0
480.028	42.7	37.3	46.0	8.7	H	143	288	21.7
499.913	39.4	37.9	46.0	8.1	H	107	344	22.0
685.648	35.0	32.0	46.0	14.0	V	182	180	24.8

Champ électrique (dB $\mu$ V/m) rayonné en fonction de la fréquence (Hz)





### 8.5.4 Spurious emissions measurement results from 1GHz to 10GHz:

In restricted bands, 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 VBW for peak measurement and a video averaging (10Hz) for average measurements if needed.

Spurious emissions are also made with a permanent emission on lowest, middle and highest channel.

Average limit in restricted bands §15.205 at 3 m is 54 dB $\mu$ V/m (with a peak limit at 74 dB $\mu$ V/m).

#### RESULTS:

Measurements have been performed on March 9, 2012. In this campaign, the tooling cable and tooling laptop used previously to fix the frequency were removed and the full spectrum bandwidth was analysed (span > 52MHz for H2 up to span > 260MHz for H10). The level given for the middle channel is the maximum level measured (always close to the 914.75MHz channel).

The following data table lists the most significant emission frequencies, measured level and the limits.

No spurious founded outside harmonics.

Final measurements results at 3 m

Max spurious for channel 902.75

Freq. (MHz)	H.	Peak (1) (dB $\mu$ V/m) 3 m distance	Peak Limit (dB $\mu$ V/m)	Avg Limit (dB $\mu$ V/m)	Min. Margin (dB)
<b>902,75</b>	1				
1 806	2	39.3	74.0	54.0	14.7
2 708	3	NF	74.0	54.0	
3 611	4	NF	74.0	54.0	
4 514	5	NF	74.0	54.0	
5 417	6	NF	74.0	54.0	
6 319	7	NF	74.0	54.0	
7 222	8	NF	74.0	54.0	
8 125	9	NF	74.0	54.0	
9 028	10	NF	74.0	54.0	

(1) Peak measurement with 1MHz RBW and VBW.

\* NF means Noise Floor : from 39dB $\mu$ V/m at 2.7GHz to 46.3dB $\mu$ V/m at 7.3GHz.



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Max spurious for channel 914.75 MHz

Freq. (MHz)	H.	Peak (1) (dB $\mu$ V/m) 3 m distance	Peak Limit (dB $\mu$ V/m)	Avg Limit (dB $\mu$ V/ m)	Min. Margin (dB)
914,75	1				
1 830	2	41.0	74.0	54.0	13.0
2 744	3	42.0	74.0	54.0	12.0
3 659	4	NF	74.0	54.0	
4 574	5	NF	74.0	54.0	
5 489	6	NF	74.0	54.0	
6 403	7	NF	74.0	54.0	
7 318	8	NF	74.0	54.0	
8 233	9	NF	74.0	54.0	
9 148	10	NF	74.0	54.0	

Max spurious for channel 927.25

Freq. (MHz)	H.	Peak (1) (dB $\mu$ V/m) 3 m distance	Peak Limit (dB $\mu$ V/m)	Avg Limit (dB $\mu$ V/m)	Min. Margin (dB)
927,25	1				
1 855	2	38.2	74.0	54.0	15.8
2 782	3	NF	74.0	54.0	
3 709	4	NF	74.0	54.0	
4 636	5	NF	74.0	54.0	
5 564	6	NF	74.0	54.0	
6 491	7	NF	74.0	54.0	
7 418	8	NF	74.0	54.0	
8 345	9	NF	74.0	54.0	
9 273	10	NF	74.0	54.0	

\* NF means Noise Floor

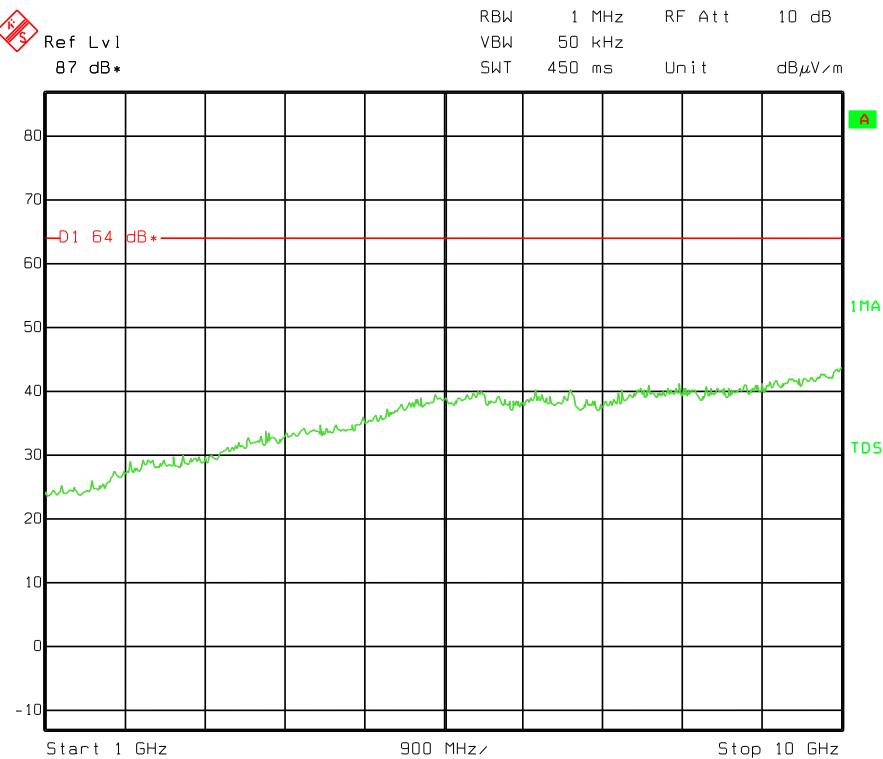


**FCC CERTIFICATION TEST REPORT  
EQUIPMENT FCC ID : WGO918F-08**  
The 21 pages of this report are not sharable

Identification : 060158-CC-1-c  
**FCC registration # 90469**

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### Noise Floor



### 8.6 Receiver spurious radiation

No spurious emission has been found in receiver mode over the noise floor.

### 8.7 Antenna requirements

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