

R041-10-105303-1A - DM / CHB

⇒ This report cancels and replaces the test report R041-10-105303-1A Ed.0

## RADIO TEST REPORT

According to the standard(s):

FCC part 15 Subpart C

RSS-Gen:2010

RSS-210:2010

Equipment under test:

**BATTLE TAG**


Company:

**UBISOFT**

Diffusion: Mr DRAPIER

(Company: UBISOFT)

Number of pages: 23 including 1 annex

Ed.	Date	Modified page(s)	Written by		Technical verification and Quality approval	
			Name	Visa	Name	Visa
1	13-Jan-11	1 to 4, 6, 7, 11, 14 and 19	David MONTAULON 		Regis GONZALEZ	

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*NAME OF THE EQUIPMENT UNDER TEST (E.U.T.)* : BATTLE TAG

*Serial number* : Prototype

*Part number* : Prototype

*Software Version* : None

*MANUFACTURER'S NAME* : UBISOFT

*APPLICANT'S ADDRESS:*

*Company* : UBISOFT

*Address* : 28 Rue Armand Carrel  
93100 Montreuil

*Person(s) present during the tests* : Nobody

*Responsible* : Mr DRAPIER

*DATE(S) OF TESTS* : November 18<sup>th</sup>, 19<sup>th</sup> of 2010

*TESTS LOCATION(S)* : Emitech Grand Sud Laboratory in  
Vendargues (34)  
: Open area test site in Salinelles (30)  
FCC Registration number: 8127-19  
IC Filling number : 4379C-1

*TESTS SUPERVISOR(S)* : None

*TESTS OPERATOR(S)* : David MONTAULON

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### 1. INTRODUCTION

This document submits the results of Electromagnetic Compatibility tests performed on the equipment BATTLE TAG (denominated hereafter E.U.T.: equipment under test) according to document(s) listed below.

### 2. REFERENCE DOCUMENT(S)

FCC Part 15 (July 2008)	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 (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
RSS-210:2010 Issue 8, December 2010	Dispositifs de radiocommunication de faible puissance, exempts de licence (pour toutes les bandes de fréquences) : matériel de catégorie I
RSS-Gen: 2010 Issue 3, December 2010	Exigences générales et information relatives à la certification du matériel de radiocommunication

### 3. EQUIPMENT UNDER TEST CONFIGURATION

#### Product description:

The MDS415 is radio equipment with a contactless card interface (13.56MHz with an internal antenna).

FCC ID: ID-NAM4660411  
IC: 4162A-TBLASTER1  
ITU emission code: /  
Utilization: RFID TAG reader  
Antenna type: Incorporated antenna  
Antenna gain: Unknown  
Operating frequency range: 13.56 MHz  
Number of channels: 1  
Channel spacing: /  
Modulation: /  
Power source: 6Vdc  
Power level and frequency range are not user adjustable

#### Modifications of E.U.T. applied during tests:

Place a ferrite (Würth Elektronik ref 742 711 22) with one loop on waistcoat cable (gun side)

**4. EQUIPMENT UNDER TEST CONFIGURATION SCHEME**

E.U.T. is powered by internal batteries

## 5. SUMMARY OF TEST RESULTS

Tests designation	Results satisfying?	Comments
Antenna requirement - section 15.203	YES	Integrated antenna
Restricted band of operation - section 15.205	YES	
Conducted emissions - section 15.207, RSS-Gen: 2010 § 7.2.2.	N.A.	Powered by internal batteries
Radiated emissions (below 30MHz) - section 15.209 & RSS-210: 2010 (§2.7 table 3)	YES	
Radiated emissions (above 30MHz) - section 15.209, RSS-210: 2010 (§2.7 table 2)	YES	
Field strength - section 15.225, RSS-210: 2010 (annex A.2.6)	YES	
Frequency tolerance - section 15.225	YES	
Occupied bandwidth - CNR-Gen § 4.6	YES	

N.P.: Not Performed.

N.A.: Not Applicable.

### ▪ In emission:

Sample subject to the test complies with prescriptions of the standard(s) FCC part 15 Subpart C 15.225 (07/2008), RSS-Gen: 2010 & RSS-210:2010 according to limits specified in this test report.

# 6. RADIATED EMISSIONS – SECTION 15.209 – RSS-210:2010 (§2.7 TABLE 2 & 3)

Temperature (°C): 22.5

Humidity (%HR): 33

Pressure (hPa): 996

## a) Radiated emissions (below 30MHz)

Standards: FCC part 15 Subpart C 15.209 (07/2008) & RSS-210: 2010 (§2.7)

Test methods: ANSI C63.4:2003 & RSS-Gen: 2010

Test configuration:

Frequency band	Tested side	Resolution bandwidth	Video bandwidth	Detection mode	E.U.T. height
9kHz-150kHz	Front side / antenna 0°	200Hz	1kHz	Peak	80cm
9kHz-150kHz	Front side / antenna 45°	200Hz	1kHz	Peak	80cm
9kHz-150kHz	Front side / antenna 90°	200Hz	1kHz	Peak	80cm
150kHz-30MHz	Front side / antenna 0°	10kHz	30kHz	Peak	80cm
150kHz-30MHz	Front side / antenna 45°	10kHz	30kHz	Peak	80cm
150kHz-30MHz	Front side / antenna 90°	10kHz	30kHz	Peak	80cm

Measure is done with an antenna position of 0°, 90° and 45°.

Test method deviation:

Measurements are made in peak detection instead of average mode in frequency band 9 kHz-500 kHz

- Measurements are given in dBµA/m instead of µV/m
- Measuring distance is 3 meters instead of 30 and 300 meters

Radiated emissions limits in this frequency band are specified at 30 or 300 meters. Measurement distance used during the test, subject of this report, is 3 meters. Then published limits come from a theoretical conversion using an extrapolation factor of 40dB / decade.

Test equipment list:

CATEGORY	BRAND	TYPE	N° EMITECH	CAL DATE	DUE DATE
Antenna	Rohde & Schwarz	HFH2-Z2	5825	20/08/10	19/10/12
Cable	C&C	N-1.5m	4201	06/10/09	05/12/11
Cable	C&C	N-8m	5014	18/08/10	17/10/12
Receiver	Agilent	E4440A	5824	19/04/10	18/06/12
Shielded enclosure	RAY PROOF	C.GS3	1123	-	-
Software	Nexio	BAT EMC	0000	-	-

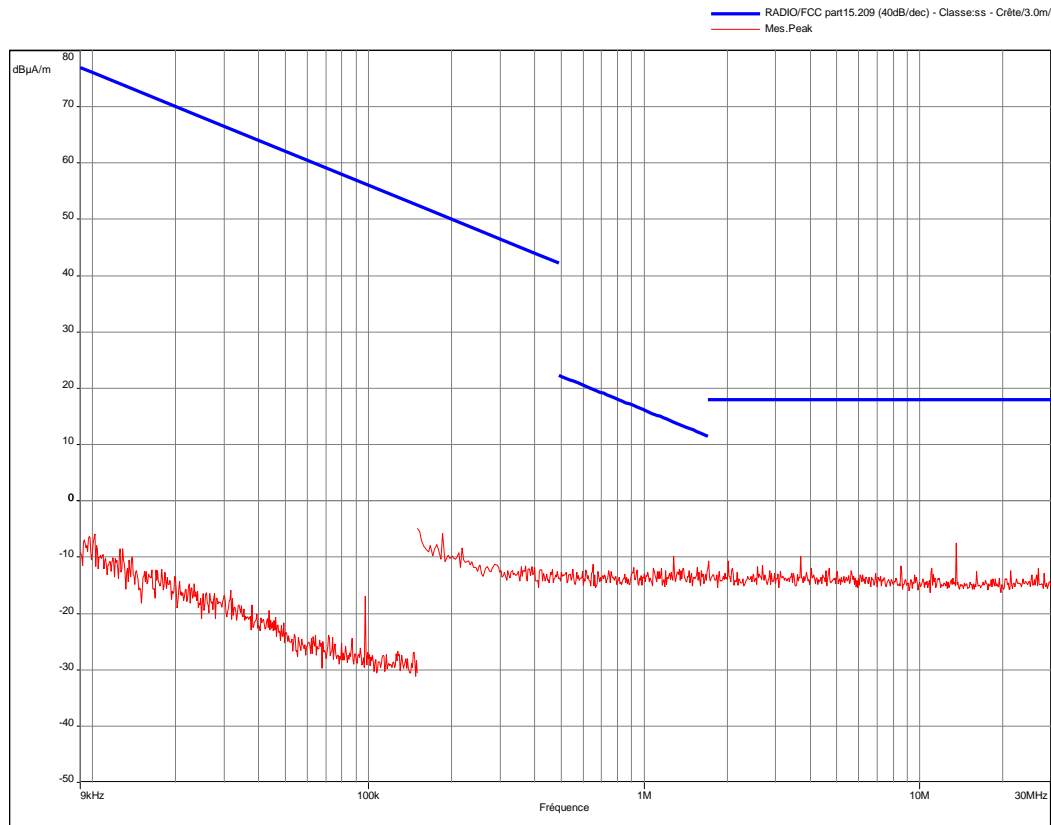
BAT-EMC software version: V3.5.0.2

Results: See Graph(s) hereafter (pre-measurement).

## Radiated magnetic field emission (measurement)

EMI1004

Front side / antenna 0°



Date: 18/11/2010

Technician: DM

Detection:  
Peak

T (°C): 22.5

H (%): 33

P (hpa): 996

Modification(s) during test:

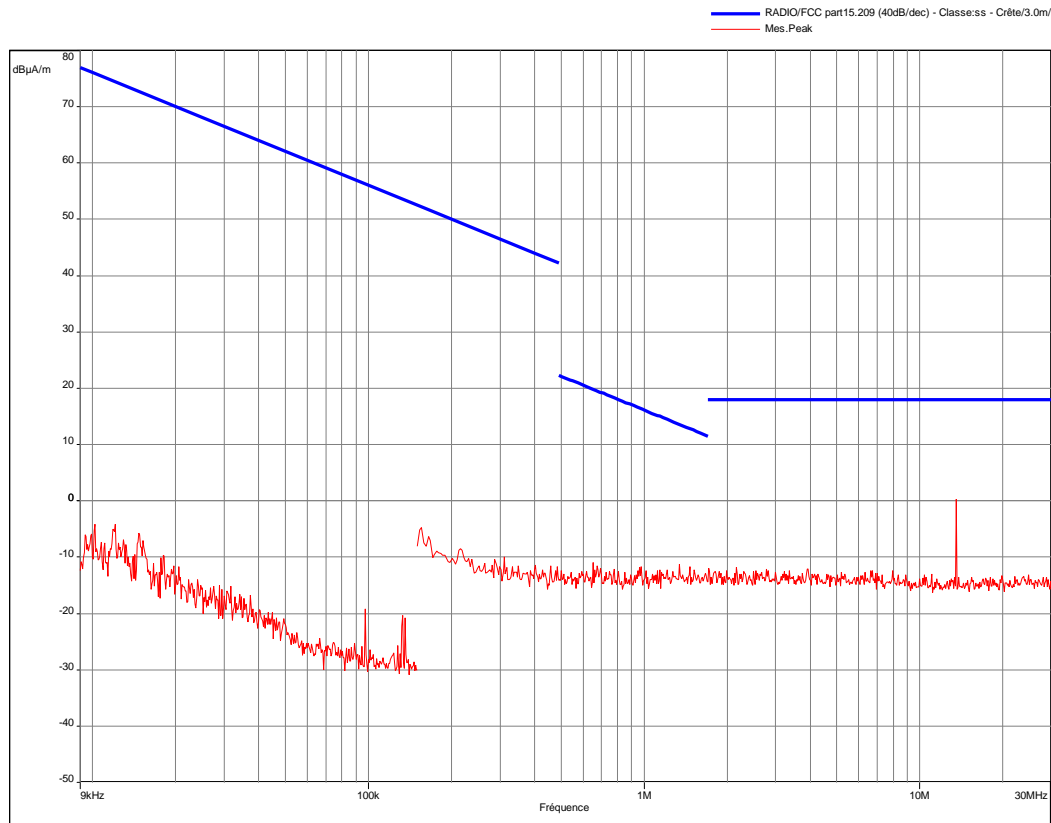
Limit indicated on this plot is calculated with 40 dB/decade extrapolation factor and 51.5 dB conversion factor.



## Radiated magnetic field emission (measurement)

EMI1008

Front side / antenna 45°



Date: 18/11/2010

Technician: DM

Detection:  
Peak

T (°C): 22.5

H (%): 33

P (hpa): 996

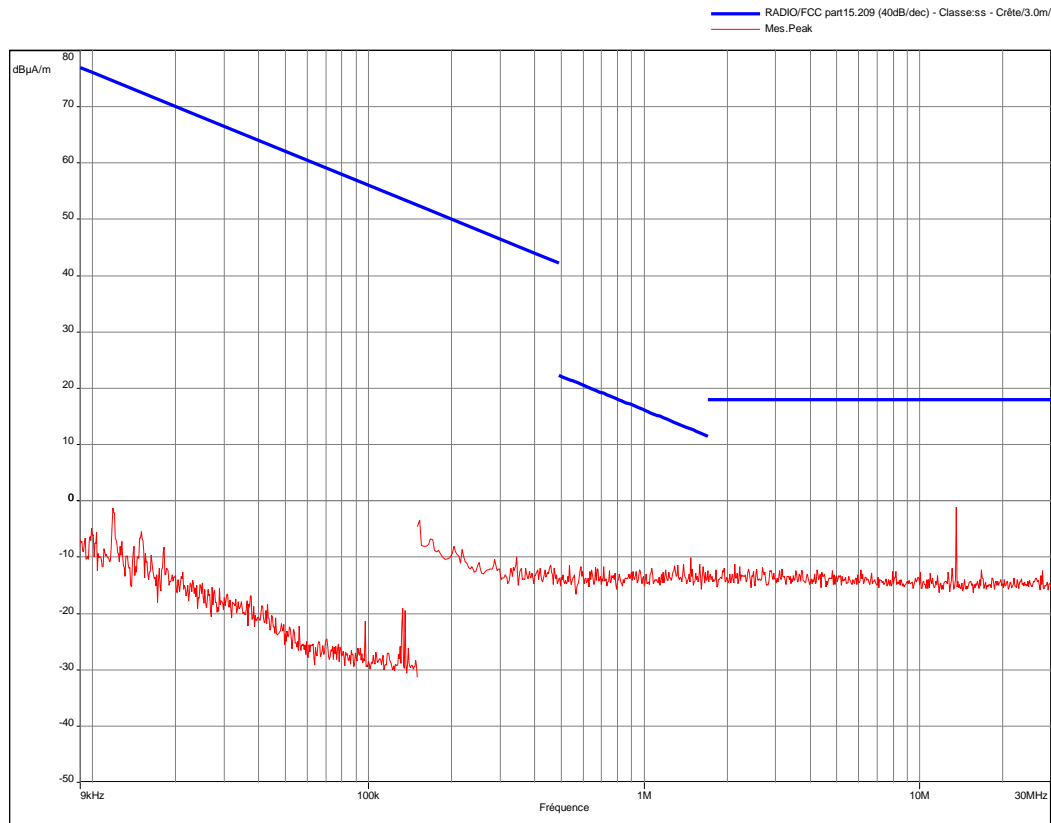
Modification(s) during test:

Limit indicated on this plot is calculated with 40 dB/decade extrapolation factor and 51.5 dB conversion factor.

## Radiated magnetic field emission (measurement)

EMI1009

Front side / antenna 90°



Date: 18/11/2010

Technician: DM

Detection:  
Peak

T (°C): 22.5

H (%): 33

P (hpa): 996

Modification(s) during test:

Limit indicated on this plot is calculated with 40 dB/decade extrapolation factor and 51.5 dB conversion factor.

**b) Radiated emissions pre-measurement (above 30MHz)**

**Standards:** FCC part 15 Subpart C 15.209 (07/2008) & RSS-210: 2010 (§2.7)

**Test methods:** ANSI C63.4:2003 & RSS-Gen: 2010

**Test configuration:**

Frequency band	Tested side	Resolution bandwidth	Video bandwidth	Detection mode	E.U.T. height
30MHz-1GHz	Front side (pre-measurement in semi anechoic chamber)	100kHz	300kHz	Peak	80cm

**Test method deviation:** No

**Measuring distance:** 3 meters

**Test equipment list:**

CATEGORY	BRAND	TYPE	N° EMITECH	CAL DATE	DUE DATE
Antenna	Electro-Metrics	BIA-30HF	1107	13/11/06	12/01/11
Antenna	Rohde & Schwarz	HL223	1137	13/11/06	12/01/11
Cable		N-1m	2706	13/02/09	14/04/11
Cable		N-5m	2716	25/09/08	24/11/10
Receiver	Agilent	E7405A	2161	13/08/10	12/10/12
Shielded enclosure	RAY PROOF	C.GS3	1123	-	-
Software	Nexio	BAT EMC	0000	-	-

*BAT-EMC software version: V3.5.0.2*

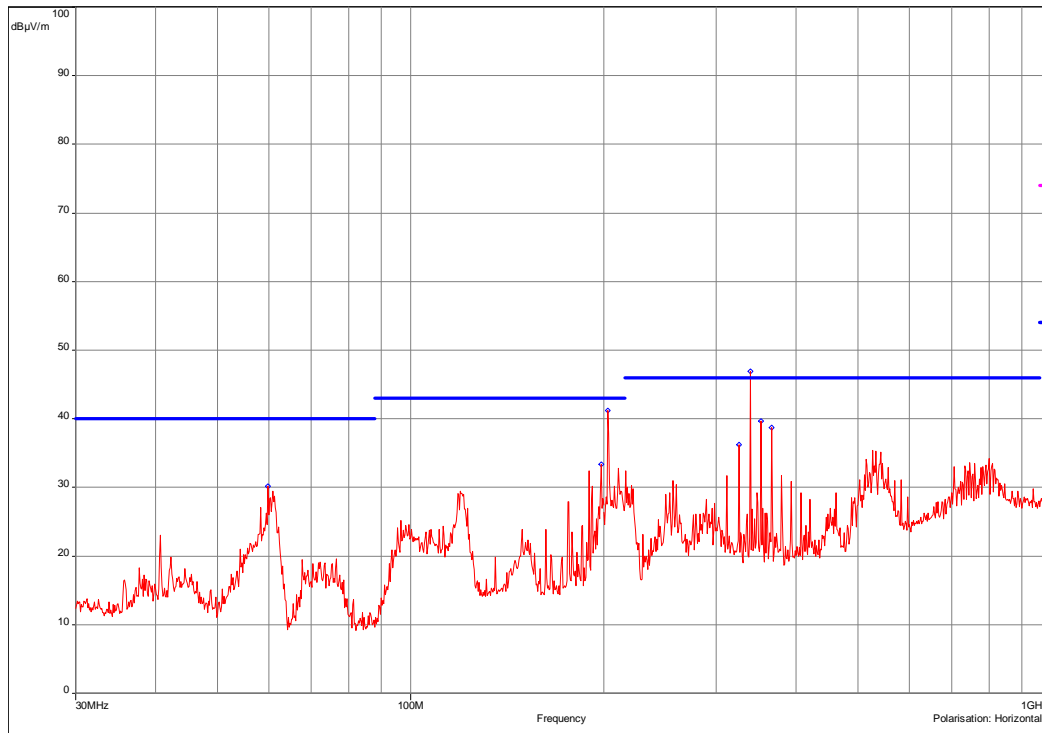
**Results:** See Graph(s) (indoor pre-measurement)

# Radiated electric emission (indoor pre-measurement measurement)

EMI1006

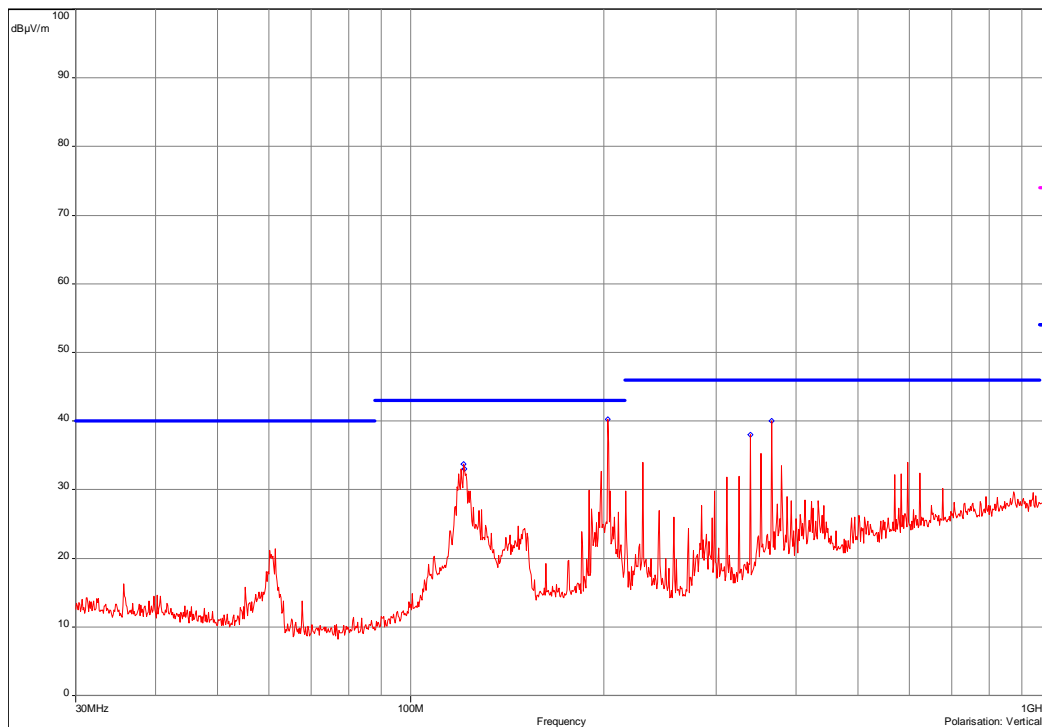
## Front side

- C.E.M. (civil)/FCC Part.15 - Class:B - Moyenne/3.0m/
- C.E.M. (civil)/FCC Part.15 - Class:B - QCrête/3.0m/
- C.E.M. (civil)/FCC Part.15 - Class:B - Crête/3.0m/
- Mes.Peak (Horizontale)
- ◊ Peak/LimQ-Peak (Horizontale)



Face avant - 11/18/2010 09:27 - 1006

- C.E.M. (civil)/FCC Part.15 - Class:B - Moyenne/3.0m/
- C.E.M. (civil)/FCC Part.15 - Class:B - QCrête/3.0m/
- C.E.M. (civil)/FCC Part.15 - Class:B - Crête/3.0m/
- Mes.Peak (Verticale)
- ◊ Peak/LimQ-Peak (Verticale)



Face avant - 11/18/2010 09:27 - 1006

Date: 18/11/2010

Technician: DM

Detection:  
Peak

T (°C): 23  
H (%): 33  
P (hpa): 996

Modification(s) during test:

### c) Final radiated electric emission on Open Area Test Site

#### Test configuration:

Frequency band	Tested side	Resolution bandwidth	Video bandwidth	Detection mode	E.U.T. height
30MHz-1GHz	(Open area measurement)	120kHz	300kHz	Quasi peak	3cm

For each measured frequencies, E.U.T. is set via a turntable in order to find the highest level. Test antenna is set between 1m and 4m in order to find the highest level in vertical and horizontal polarization.

Only highest levels are recorded.

E.U.T. is powered at its nominal power supply. E.U.T. power supply is monitored via a multimeter.

Measuring distance: 3 meters

#### Test equipment list (Open area measurement):

CATEGORY	BRAND	TYPE	N° EMITECH	CAL DATE	DUE DATE
Antenna	Electro-Metrics	BIA-30HF	1107	13/11/06	12/01/11
Antenna	Rohde & Schwarz	HL223	3126	13/11/06	12/01/11
Antenna mast	Heinrich Deisel	HD100	4036	-	-
Antenna mast	Heinrich Deisel	MA240	4037	-	-
Cable		N-1m	2704	18/08/10	17/10/12
Cable		N-17m	3620	21/02/08	20/04/11
Cable		N-5m	2715	21/02/08	20/04/11
Cable		N-8m	3694	21/02/08	20/04/11
Open area test site	Emitech	Salinelles	3482	21/02/08	20/04/11
Receiver	Agilent Technologies	E7405A	2161	-	-
Turntable	Heinrich Deisel	D4420	4038	-	-

Results: See Board(s) below

Frequency (MHz)	Polarization	Azimut (degree)	Antenna Height (cm)	Measure (dBμV/m)	Limit (dBμV/m)	Comments
59.80	Horizontal	0	100	15.63	40	C
198.28	Horizontal	140	100	28.88	43	C
203.44	Horizontal	300	100	39.59	43	C
325.44	Horizontal	225	100	39.98	46	C
339.04	Horizontal	45	100	42.78	46	C
352.55	Horizontal	34	100	40.64	46	C
366.16	Horizontal	34	100	39.98	46	C
366.16	Vertical	125	130	40.91	46	C
339.16	Vertical	180	130	37.74	46	C
203.40	Vertical	260	100	39.60	43	C
120.00	Vertical	140	100	28.50	43	C

C= Compliant

NC= Not compliant

## 7. OPERATION WITHIN THE BAND 13.110-14.010 MHZ – SECTION 15.225

### a) Field strength

Standards: FCC part 15 Subpart C 15.225 (07/2008) & RSS-210 Annex 2.6

Test methods: ANSI C63.4:2003 & RSS-Gen: 2010

Test configuration:

Frequency band	Tested side	Resolution bandwidth	Video bandwidth	Detection mode	E.U.T. height
13.11MHz-14.01MHz	Front side / antenna 0°	10kHz	30kHz	Peak	80cm
13.11MHz-14.01MHz	Front side / antenna 45°	10kHz	30kHz	Peak	80cm
13.11MHz-14.01MHz	Front side / antenna 90°	10kHz	30kHz	Peak	80cm

Measure is done with an antenna position of 0°, 90° and 45°.

Test method deviation:

Measurements are given in dBμA/m instead of dBμV/m (conversion factor: 51.5 dB)

Measuring distance is 10 meters instead of 30 m

Test equipment list:

CATEGORY	BRAND	TYPE	N° EMITECH	CAL DATE	DUE DATE
Antenna	Rohde & Schwarz	HFH2-Z2	5825	20/08/10	19/10/12
Cable	C&C	N-1.5m	4201	06/10/09	05/12/11
Cable	C&C	N-8m	5014	18/08/10	17/10/12
Receiver	Agilent Technologies	E7405A	2161	13/08/10	12/10/12
Receiver	Agilent	E4440A	5824	19/04/10	18/06/10
Software	Nexio	BAT EMC	0000	-	-

*BAT-EMC software version: V3.5.0.2*

Results: See Graph(s) hereafter.

Carrier measurement at 10m: -13.5 dBμA/m (≈ 38dBμV/m)

Using an extrapolation factor of 40 dB/decade (as described in section 15.31 (f)), the level is about 18dBμV/m (25.10μV/m) for a limit at 15.848 mV/m.

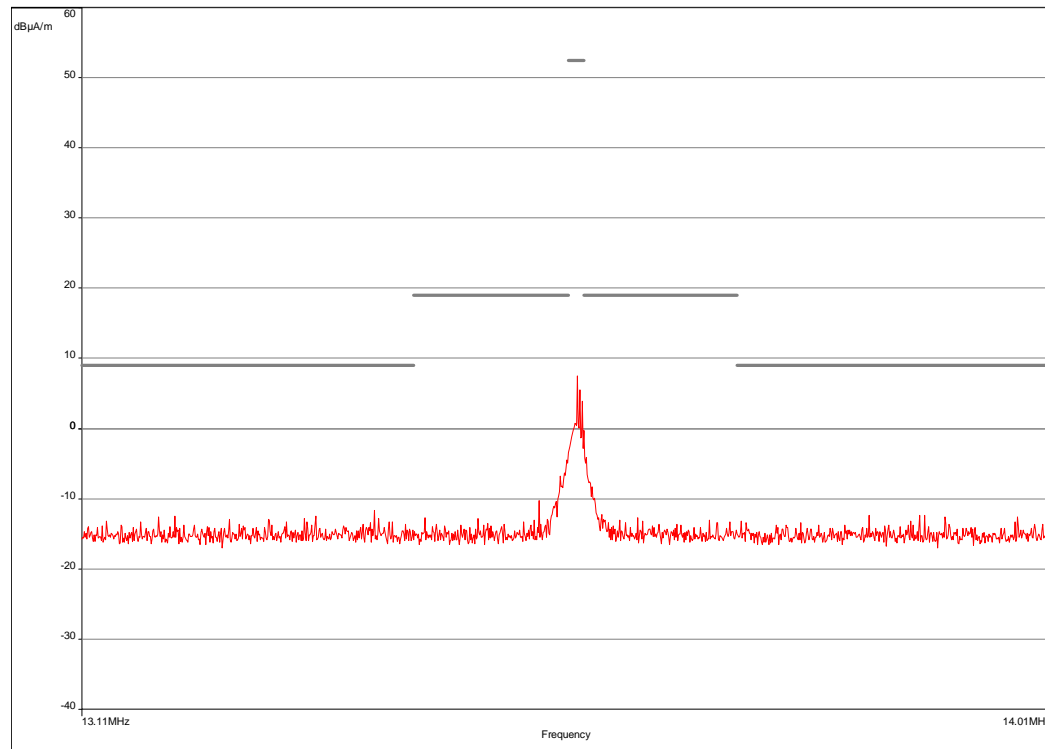
## Radiated magnetic field emission (measurement)

EMI1010

Carrier / 90°

Frequency : 13.11 MHz - 14.01 MHz (Analyzer mode)  
 Settings: RBW: 10 kHz, VBW: 30 kHz, Holding time: 1 ms/Pt, sweep count 10  
 Polarisation : Circulaire  
 Distance: 3 m

— RADIO/FCC Part.15 (13.56MHz) - Class:em - QCrête/3.0m/  
 — Mes.Peak



Carrier / 90° - 11/18/2010 10:33 - 1010

Date: 18/11/2010

Technician: DM

Detection:  
 Peak

T (°C): 22.5  
 H (%): 33  
 P (hpa): 996

Modification(s) during test:

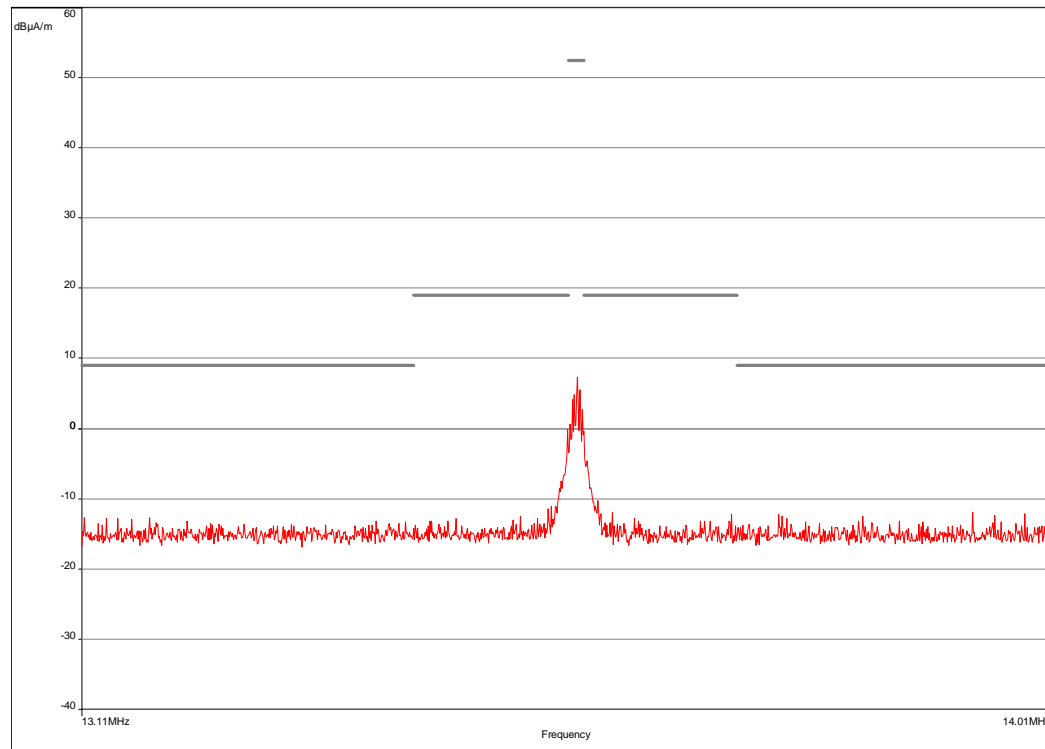
## Radiated magnetic field emission (measurement)

EMI1011

Carrier / 45°

Frequency : 13.11 MHz - 14.01 MHz (Analyzer mode)  
 Settings: RBW: 10 kHz, VBW: 30 kHz, Holding time: 1 ms/Pt, sweep count 10  
 Polarisation : Circulaire  
 Distance: 3 m

— RADIO/FCC Part.15 (13.56MHz) - Class:em - QCrête/3.0m/  
 — Mes.Peak



Carrier / 45° - 11/18/2010 10:39 - 1011

Date: 18/11/2010

Technician: DM

Detection:  
 Peak

T (°C): 22.5

H (%): 33

P (hpa): 996

Modification(s) during test:



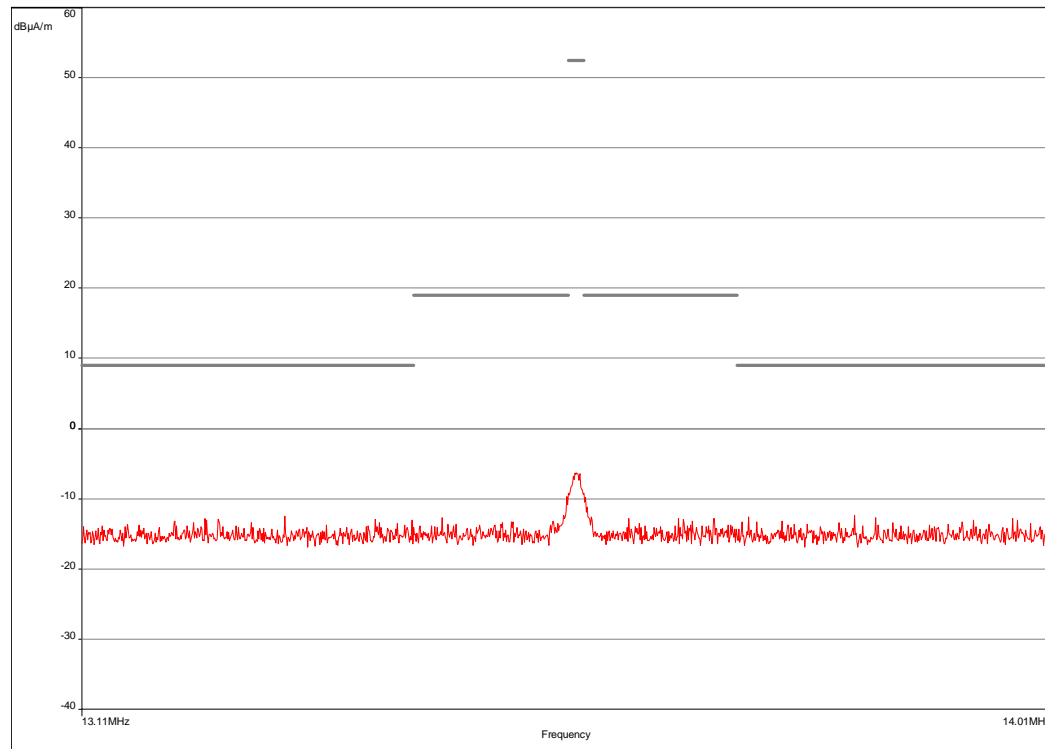
## Radiated magnetic field emission (measurement)

EMI1012

Carrier / 0°

Frequency : 13.11 MHz - 14.01 MHz (Analyzer mode)  
 Settings: RBW: 10 kHz, VBW: 30 kHz, Holding time: 1 ms/Pt, sweep count 10  
 Polarisation : Circulaire  
 Distance: 3 m

— RADIO/FCC Part.15 (13.56MHz) - Class:em - QCrête/3.0m/  
 — Mes.Peak



Carrier / 0° - 11/18/2010 10:43 - 1012

Date: 18/11/2010

Technician: DM

Detection:  
 Peak

T (°C): 22.5

H (%): 33

P (hpa): 996

Modification(s) during test:

# 8. FREQUENCY TOLERANCE – SECTION 15.225

Standard: FCC part 15 Subpart C 15.225 (07/2008)

Test method: FCC part 15 Subpart C 15.225 (07/2008)

Test configuration: A near field probe detects field near equipment (relative measurement).

Resolutions:

Frequency	Resolution bandwidth	Video bandwidth
13.56MHz	3Hz	10Hz

Test method deviation: E.U.T. is powered by 6Vdc power voltage by an external source.

Test equipment list:

CATEGORY	BRAND	TYPE	N° EMITECH	CAL DATE	DUE DATE
Antenna	Emitech	3.5 cm	4653	-	-
Climatic enclosure	Secasi	SM600C	1670	10/10/08	09/12/10
Multimeter	Agilent	U1252A	6138	15/10/08	14/12/10
Power supply	KIKUSUI	PCR2000L	0800	-	-
Spectrum analyser	Agilent Technologies	E4440A	5824	19/04/10	18/06/10

Standard limits: +/- 0.01% of the operating frequency

Results: See Board(s) below

E.U.T. operating mode: with modulation

Temperature		Power supply	Measured Frequency (MHz)	Frequency tolerance (kHz)	Limit (kHz)
Normal condition	20°C Humidity 31%	6Vdc	13.560146	-	+/-1.35606
		6.9Vdc	13.560148	+0.002	
		5.1Vdc	13.560146	0.000	
Extreme condition	-30°C	6Vdc	13.560212	+0.066	
		6.9Vdc	13.560214	+0.068	
		5.1Vdc	13.560214	+0.068	
	-20°C	6Vdc	13.560164	+0.018	
		6.9Vdc	13.560163	+0.017	
		5.1Vdc	13.560161	+0.015	
	+50°C	6Vdc	13.560082	-0.064	
		6.9Vdc	13.560082	-0.064	
		5.1Vdc	13.560083	-0.063	

N.P.: Not Performed.

## 9. OCCUPIED BANDWIDTH – CNR-Gen § 4.6

Standard: CNR-Gen § 4.6

Test method: CNR-Gen § 4.6

Test configuration: A near field probe detects field near equipment (relative measurement).

Resolutions:

Frequency	Resolution bandwidth	Video bandwidth
13.56MHz	300Hz	1kHz

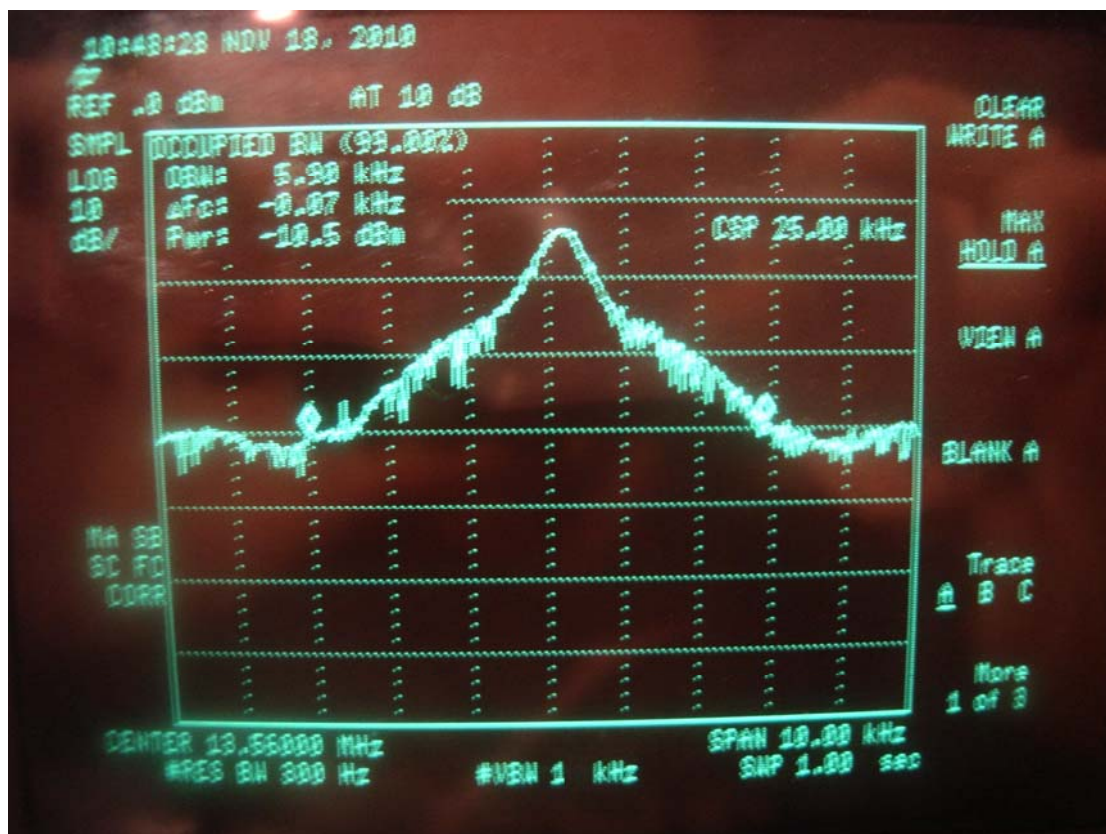
Test method deviation: E.U.T. is powered by 115Vac/60Hz power voltage.

Test equipment list:

CATEGORY	BRAND	TYPE	N° EMITECH	CAL DATE	DUE DATE
Antenna	Emitech	3.5 cm	4653	-	-
Power supply	KIKUSUI	PCR2000L	0800	-	-
Spectrum analyser	Agilent Technologies	E4440A	5824	19/04/10	18/06/10

Standard limits: 14 kHz

Results: Occupied bandwidth = 5.90kHz



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

# **ANNEX: PHOTOGRAPH(S)**

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

BATTLE TAG

<p>E.U.T. marking plate</p>	
<p>E.U.T.</p>	



Radiated electric  
field emission on  
OATS



Frequency tolerance



Occupied bandwidth

