R041-07-103831-8A - RG / AD

This report cancels and replace report R041-07-103831-8A Ed0

RADIO TEST REPORT

According to the standard(s):

FCC part 15: 02/2006
and
RSS-210: 06/2007

Equipment under test:

RFID Module HF-AM1-G2
FCC ID: GM3HFAM1G2
IC: 2739D-HFAM1G2
Company:

PSION TEKLOGIX

Diffusion: Mr PORTE (Company: PSION TEKLOGIX)

Number of pages: 18 including 1 annex

Ed.	Date	Modified page(s)	Written by Name / Visa	Technical verification and Quality approval Name / Visa
1	5-Oct-07	9,11 to 13 and 15	Regis GONZALEZ	Olivier HEYER

Duplication of this report is only permitted for an integral photographic facsimile. It includes the number of pages referenced above. This document is the result of testing a specimen or a sample of the product submitted. It does not imply an assessment of the conformity of the whole production of the item tested.

NAME OF THE EQUIPMENT UNDER TEST (E.U.T.)	:	RFID Module HF-AM1-G2
Serial number	:	None
Part number	:	None
Software Version	:	None
MANUFACTURER'S NAME	:	PSION TEKLOGIX

APPLICANT'S ADRESS:

Company	:	PSION TEKLOGIX
Adress	:	135 rue de la Duranne BP 421000 13591 AIX EN PROVENCE CEDEX 3 FRANCE
Person(s) present during the tests	:	Mr PORTE
Responsible	:	Mr PORTE

DATE(S) OF TESTS	:	15th of June, 2007 and 10th, 11th and 12th of July, 2007
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 : 6290
TESTS SUPERVISOR(S)	:	None
TESTS OPERATOR(S)	:	Regis GONZALEZ

CONTENTS

1. INTRODUCTION

This document submits the results of Electromagnetic Compatibility tests performed on the equipment RFID Module HF-AM1-G2 (denominated hereafter E.U.T.: equipment under test) according to document(s) listed below.
Worst case configuration is used between WAP-C, WAP-S and with or without docking station.
Bluetooth is active but not tested.
RFID module already tested (FCC ID : RJPRDHC-0202N0-0X).

2. REFERENCE DOCUMENT(S)

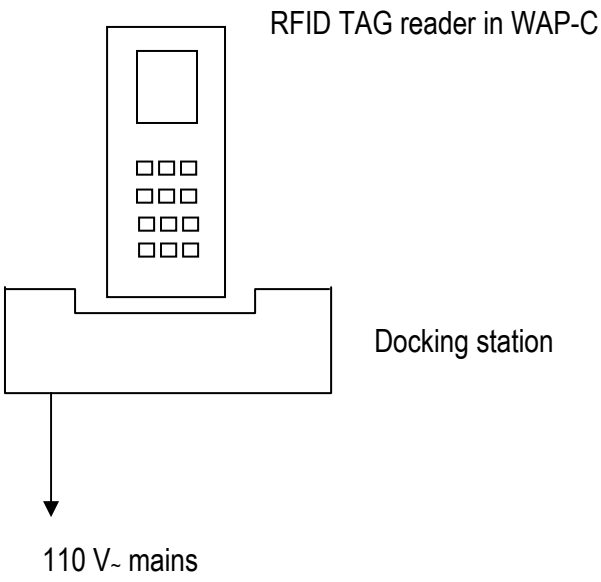
RSS-210 Issue 7 (June 2007)	Low-power – Licence exempt Radiocommunication devices (all frequency bands): category 1 equipment
FCC Part 15 (February 2006)	Code of Federal Regulations Title 47 – Telecommunications Chapter 1 – Federal Communications Commision Part 15 – Radio frequency devices Subpart C – Intentional Radiators
RSS-Gen Issue 2 (June 2007)	General requirements and information for the Certification of radiocommunication 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

Product description:

IC: 2739D-HFAM1G2
FCC ID: GM3HFAM1G2
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: 5 Vdc (stand alone) or mains voltage (with docking)
Power level and frequency range are not user adjustable

4. EQUIPMENT UNDER TEST CONFIGURATION SCHEME



5. SUMMARY OF TEST RESULTS

Tests designation	Results satisfying?	Comments
Conducted emissions - section 15.207 & table 2 of RSS-Gen	YES.	
Radiated emissions - section 15-209 (below 30MHz) & table 3 of RSS-210	YES	
Radiated emissions - section 15-209 (above 30MHz) & table 2 of RSS-210	YES	
Field strength - section 15-225 & A 2.6 of RSS-210	YES	
Frequency tolerance - section 15.225 & A 2.6. of RSS-210	NP	(1)

N.P.: Not Performed. N.A.: Not Applicable.
(1) RFID module already tested (FCC ID: RJPRDHC-0202N0-0X)

- In emission:

Sample subject to the test complies with prescriptions of the standard(s) FCC part 15: 02/2006 and RSS-210: 06/2007 according to limits specified in this test report.

6. CONDUCTED EMISSIONS – SECTION 15.207 & TABLE 2 OF RSS-Gen

Standard: FCC part 15: 02/2006 / RSS-210: 06/2007

Test method: ANSI C63.4:2003

Test configuration:

Tested cable(s)	Measure with	E.U.T. height
Mains 110 Vac/60 Hz-WAP color/50 Ohms load	L.I.S.N.	80 cm

Frequency band	Tested cable(s)	Resolution bandwidth	Video bandwidth	Detection mode
150kHz-1MHz	Mains 110Vac/60Hz-WAP color/50 Ohms load	10KHz	30kHz	Peak/Average
1MHz-10MHz	Mains 110Vac/60Hz-WAP color/50 Ohms load	10kHz	30kHz	Peak
10MHz-30MHz	Mains 110Vac/60Hz-WAP color/50 Ohms load	10KHz	30kHz	Peak

Test method deviation: No

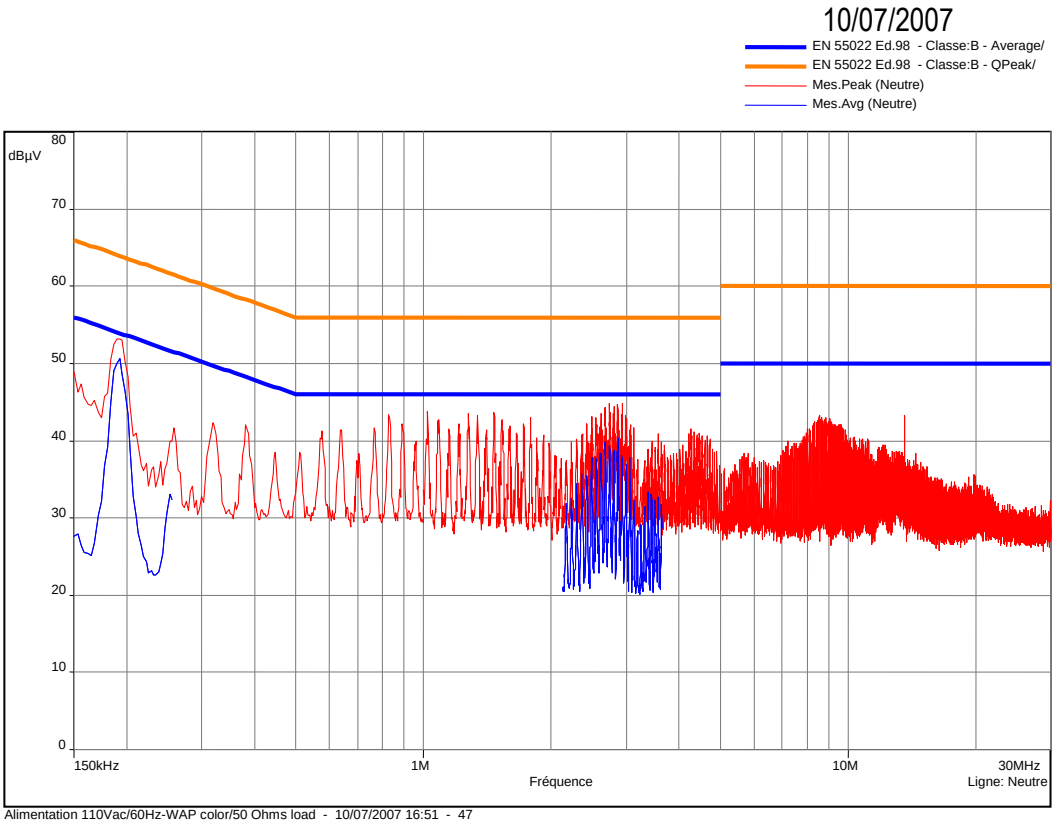
Test equipment list:

CATEGORY	BRAND	TYPE	N° EMITECH
Cable			2724
Cable			2703
LISN	PMM	L3-25	0833
Receiver	Agilent Technologies	E7405A	2161
Shielding enclosure	RAY PROOF	C.GS3	1123
Software	Nexio	BAT EMC v.3.1.7.1	0000
Surges Suppressor	Hewlett Packard	11947A	0239

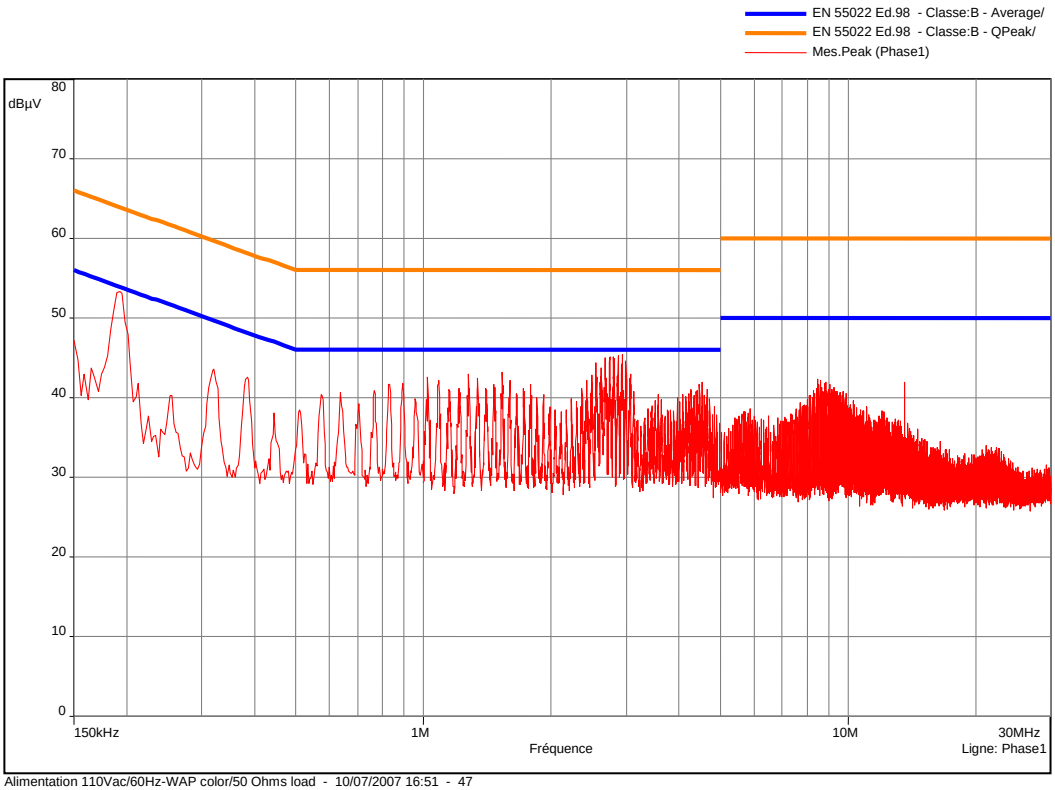
Results: See Graph(s) hereafter. Limits on the graphs are average and quasi-peak limits (upper limit).

HF-AM1-G2 WAP (CE FCC CANADA)

Conducted voltage emission (measurement): Mains 110Vac/60Hz-WAP color/50 Ohms load in peak detection.



Alimentation 110Vac/60Hz-WAP color/50 Ohms load - 10/07/2007 16:51 - 47



Alimentation 110Vac/60Hz-WAP color/50 Ohms load - 10/07/2007 16:51 - 47

Class: B of the standard

7. RADIATED EMISSIONS - SECTION 15-209 AND TABLE 2.3 OF RSS-210

a) Radiated emissions (below 30MHz)

Standard: FCC part 15: 02/2006 /RSS-210: 06/2007

Test method: ANSI C63.4:2003

Test configuration:

Frequency band	Tested side	Resolution bandwidth	Video bandwidth	Detection mode	E.U.T. height
9kHz-35kHz	Front side	100Hz	300Hz	Peak	80cm
35kHz-75kHz	Front side	100Hz	300Hz	Peak	80cm
75kHz-150kHz	Front side	100Hz	300Hz	Peak	80cm
150kHz-240kHz	Front side	10kHz	30kHz	Peak	80cm
240kHz-500kHz	Front side	10kHz	30kHz	Peak	80cm
500kHz-1.1MHz	Front side	10kHz	30kHz	Peak	80cm
1.1MHz-2.4MHz	Front side	10kHz	30kHz	Peak	80cm
2.4MHz-5.5MHz	Front side	10kHz	30kHz	Peak	80cm
5.5MHz-12.5MHz	Front side	10kHz	30kHz	Peak	80cm
12.5MHz-30MHz	Front side	10kHz	30kHz	Peak	80cm

Test method deviation:

Ed1

Measurements are made in peak detection instead of average mode:

- 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 theorical conversion using an extrapolation factor of 20dB / decade (worst case).

Test equipment list:

CATEGORY	BRAND	TYPE	N° EMITECH
Antenna	Electro-Metrics	ALR-25	0263
Cable			2702
Cable			2704
Cable			2711
Cable		N-5m	2898
Preamplifier	Miteq	AU-1447	3199
Receiver	Agilent Technologies	E7405A	2161
Shielded enclosure	Ray Proof	C.GS3	1123

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

b) Radiated emissions (above 30MHz)

Standard: FCC part 15: 02/2006 / RSS-210: 06/2007

Test method: ANSI C63.4:2003

Test configuration:

Frequency band	Configuration	Resolution bandwidth	Video bandwidth	Detection mode	E.U.T. height
30MHz-200MHz	Back side (pre-measurement in semi anechoic chamber)	100kHz	300kHz	Peak	80cm
200MHz-1GHz	Back side (pre-measurement in semi anechoic chamber)	100kHz	300kHz	Peak	80cm
30MHz-1GHz	Open area measurement	120kHz	300kHz	Quasi peak	80cm

Test method deviation: No

Measuring distance: 3 meters

Test equipment list:

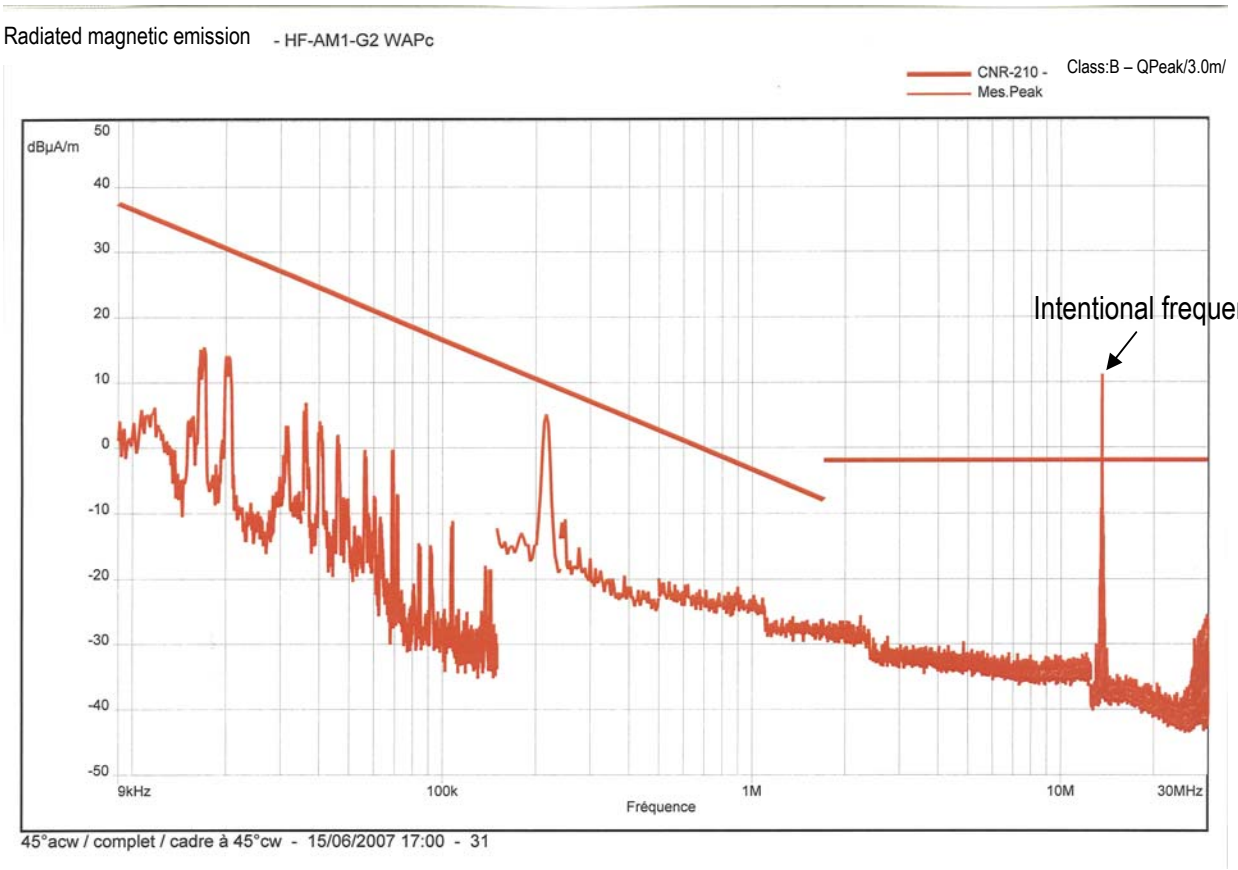
CATEGORY	BRAND	MODEL NUMBER	N° EMITECH
Antenna	Electro-Metrics	BIA-30HF	0824
Cable		N-17m	3620
Log-periodic antenna	Rohde & Schwarz	HL223	3126
OATS	Emitech	Salinelles	3482
Receiver	Rohde & Schwarz	ESVS10	3211

Results: See Graph(s) (indoor pre-measurements) and Board(s) hereafter

HF-AM1-G2 WAP (CE FCC CANADA)

Ed1 | Radiated magnetic emission: 45°acw – peak detection - Distance : 3m

15/06/2007



Ed1 | Limit indicated on this plot is calculated with 20 dB/decade extrapolation factor and 51.5 dB conversion factor.

$L = 20 \log(Ls) - 51.5 + 40$ (F<490 kHz)

$L = 20 \log(Ls) - 51.5 + 20$ (F>490 kHz)

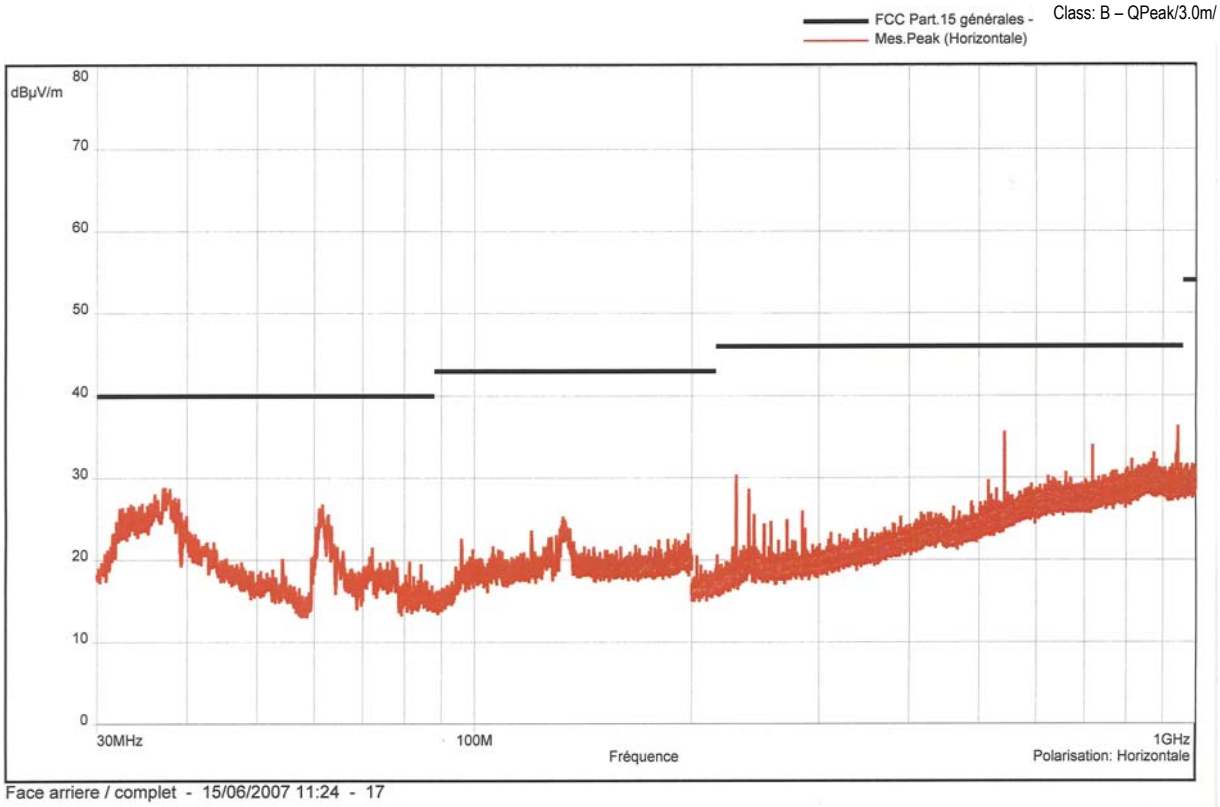
with L : limit of this graph (in dBµA/m) and Ls : limit of the standard (in µV/m)

For a 40 dB/decade extrapolation factor, please add 40 dB on graph limit below 490 kHz and 20 dB above.

HF-AM1-G2 WAP (CE FCC CANADA)

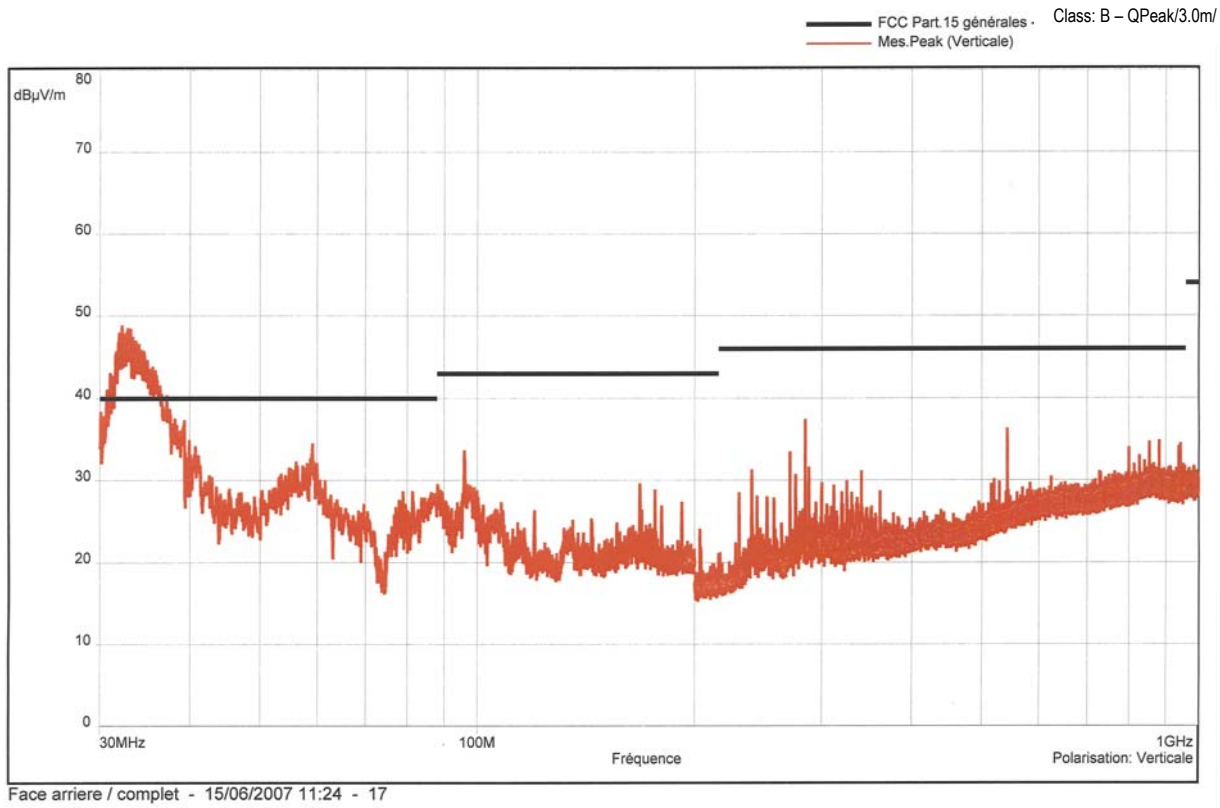
Ed1 | Radiated electric emission (pre-measurement): back side – peak detection - Distance : 3m
15/06/2007

Radiated electric emission - HF-AM1-G2 WAPc



Face arriere / complet - 15/06/2007 11:24 - 17

Radiated electric emission - HF-AM1-G2 WAPc



Face arriere / complet - 15/06/2007 11:24 - 17

Ed1 | Radiated electric emission on Open Area Test Site – Quasi peak detection - Distance: 3m

VERTICAL POLARIZATION

Frequency (MHz)	Azimut (degrees)	Antenna height (cm)	Measure (dBμV/m)	Standard limit (dBμV/m)	Comments
32.22	0	100	19.09	40	C
59.10	0	100	9.32	40	C
95.97	FM Band		34.60	43	(*)
284.75	0	162	25.82	46	C
542.39	0	100	27.98	46	C

C= Compliant NC= Not compliant

HORIZONTAL POLARIZATION

Frequency (MHz)	Azimut (degrees)	Antenna height (cm)	Measure (dBμV/m)	Standard limit (dBμV/m)	Comments
542.39	280	230	24.48	46	C

C= Compliant NC= Not compliant

All other radiated emissions are very lower than limit.
(*) Indoor measurement (semi anechoic chamber): 95.97 MHz: 34 dBμV/m (maximum level measured)

8. OPERATION WITHIN THE BAND 13.110-14.010 MHz - SECTION 15-225 AND A 2.6 OF RSS-210

a) Field strength

Standard: FCC part 15: 02/2006 / RSS-210: 06/2007

Test method: ANSI C63.4:2003

Test configuration:

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

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	MODEL NUMBER	N° EMITECH
Antenna	Electro-Metrics	ALR-25	0263
Cable		N-5m	2898
Cable		N-17m	3620
OATS	Emitech	Salinelles	3482
Preamplifier	MINI-CIRCUITS	RF	1321
Receiver	Agilent Technologies	Agilent E7405A	2161

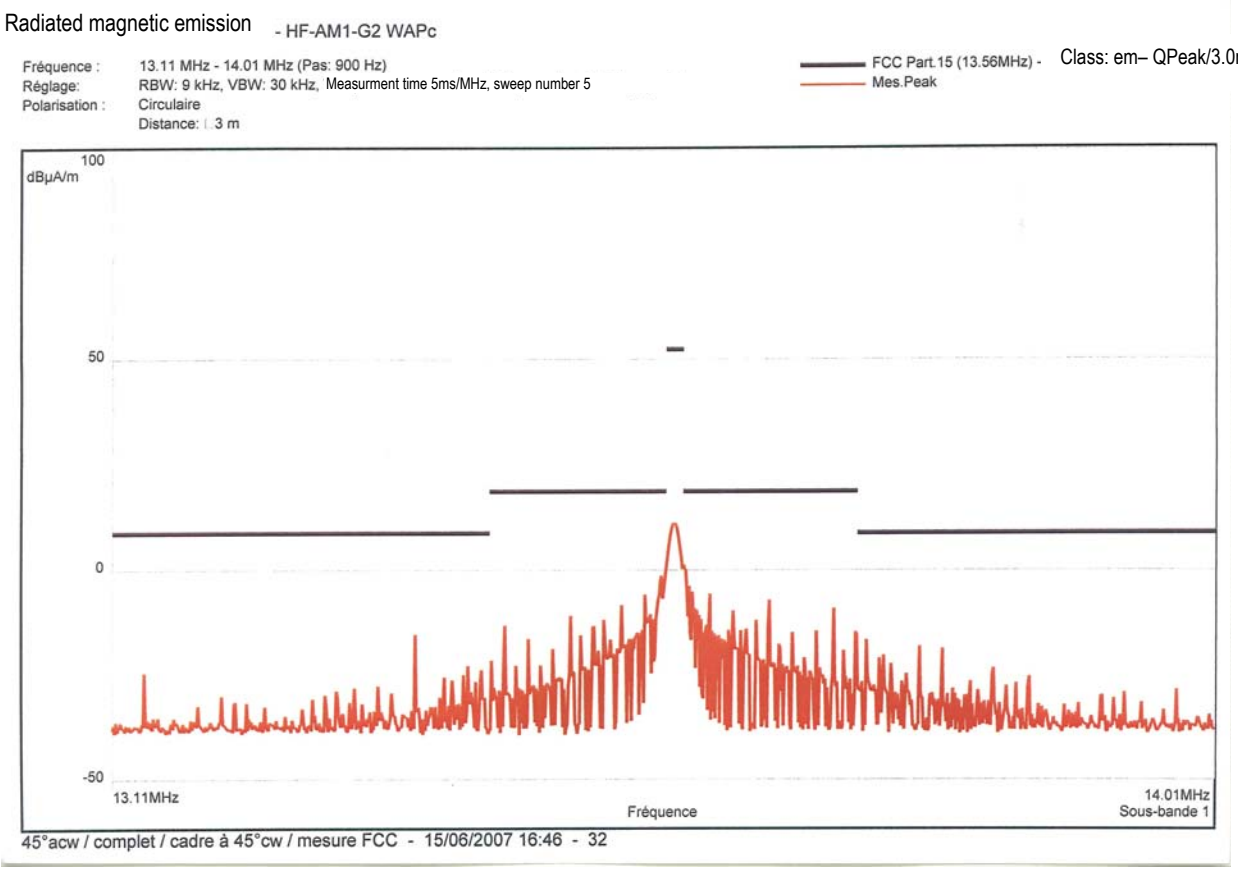
Results: See Graph(s) hereafter.

Carrier measurement at 10m: -8 dBµA/m (≈ 43.5 dBµV/m)
Using an extrapolation factor of 40 dB/decade (as described in section 15.31 (f)), the level is about 23 dBµV/m (15µV/m) for a limit at 15.848 mV/m.

HF-AM1-G2 WAP (CE FCC CANADA)

Radiated magnetic field emission: in peak detection - Distance: 3m

15/06/2007



Ed1 | Limit indicated on this plot is calculated with 20 dB/decade extrapolation factor and 51.5 dB conversion factor.

$$L = 20 \log(Ls) - 51.5 + 20 \quad (F > 490 \text{ kHz})$$

with L : limit of this graph (in dBµA/m) and Ls : limit of the standard (in µV/m)

For a 40 dB/decade extrapolation factor, please add 20 dB on graph limit.

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

ANNEX:
PHOTOGRAPH(S)

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

RFID Module HF-AM1-G2

E.U.T. Photograph(s)	
Radiated electric field emission on OATS	

Conducted emission