



RT041-12-103246-1A - OH / CHB

## TECHNICAL REPORT

Equipment under test:

**HF AM1 OMNII**  
**FCC ID: GM3HFAM1XT10**  
**IC ID: 2739D-HFA1XT10**


Company:

**PSION**

Diffusion: Mr BONNEFOY

(Company: PSION)

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*NAME OF THE EQUIPMENT UNDER TEST (E.U.T.)* : HF AM1 OMNII

*Serial number* : None

*Part number* : None

*Software Version* : None

*MANUFACTURER'S NAME* : PSION

*APPLICANT'S ADRESS:*

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*DATE(S) OF STUDY* : September, the 13<sup>th</sup> of 2012

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**1. INTRODUCTION**

This document submits the results of Maximum Permissible Exposure (MPE) calculations performed on the equipment **HF AM1 OMNII including modules Bluetooth (native) + GPRS + WIFI + RFID**

**2. REFERENCE DOCUMENT(S)**

<b>Radio test report</b>	R041-12-103246-1A Ed.1 from EMITECH Grand Sud Laboratory
<b>OET Bulletin 65 (Aug 1997)</b>	Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields
<b>FCC Part 1</b>	Practice and procedure
<b>RSS 102 Issue 4</b>	Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)

**3. EQUIPMENT UNDER TEST CONFIGURATION**

<b><u>Product description:</u></b>	FCC ID: GM3HFAM1XT10 IC ID: 2739D- HFA1XT10 Utilization: RFID TAG reader Antenna type: Incorporated antenna Antenna gain: Unknown Operating frequency range: 13.56MHz (Rfid); 2402MHz (Bluetooth); 2457MHz (Wifi); 836.4MHz (GSM); 1860MHz (GSM) Internal highest frequency: 2457MHz Power source: 5 Vdc (stand alone) or mains voltage (with docking) Power level and frequency range are not user adjustable
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**4. RADIATED MEASUREMENTS**

These results come from EMITECH Grand Sud R041-12-103246-1A Ed.1 tests report  
Please find below carrier radiated field strength (detail in test report)

**Measuring distance:** 3 m on Open Area Test Site

**Wifi radiated field strength:**

Frequency (MHz)	Polarization	Measure (dB $\mu$ V/m)
2457	Vertical	108.73
2457	Horizontal	106.83

**Bluetooth radiated field strength:**

Frequency (MHz)	Polarization	Measure (dB $\mu$ V/m)
2402	Vertical	94.24
2402	Horizontal	92.95

**RFID field strength:**

Frequency (MHz)	Polarization	Max Measure (dB $\mu$ V/m)
13.56	Vertical	52.81

**GPRS 850 field strength:**

Frequency (MHz)	Polarization	Measure (dB $\mu$ V/m)
836.95	Vertical	125.31
836.95	Horizontal	123.73

**GPRS 1900 field strength:**

Frequency (MHz)	Polarization	Measure (dB $\mu$ V/m)
1870	Vertical	120.70
1870	Horizontal	120.29

### 5. MAXIMUM PERMISSIBLE EXPOSURE CALCULATIONS

Equipment Under Test is always held farer than 20 cm from the body. Then we have estimate the power density at this distance using OET Bulletin 65 (Aug 1997).

For Wifi and Bluetooth:  $S = \frac{E^2}{3770}$  (1) of OET65

With S = power density (mW/cm<sup>2</sup>)  
E = electric field strength (V/m)

When E is measured at 3m, level in dB $\mu$ V/m must be increased by 23.52 dB when it is considered as far electric field ("plane wave" conditions) to be estimated at 20cm.

### 6. MAXIMUM PERMISSIBLE EXPOSURE LIMITS

The limit for MPE estimation is (general population / uncontrolled exposure):

Frequency (MHz)	Limit for MPE (Power density in mW/cm <sup>2</sup> )
2457.00	1
2402.00	1
13.56	0.98
836.95	0.55
1870.00	1

Combination of MPE must show that  $\sum (MPE/limit)$  is < 1

## 7. MAXIMUM PERMISSIBLE EXPOSURE ESTIMATION

Using equations in §5, we can find following results:

### Wifi:

Frequency (MHz)	Polarization	MPE Calculation (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2457.00	Vertical	$4.45 \cdot 10^{-3}$	1
2457.00	Horizontal	$2.88 \cdot 10^{-3}$	1

### Bluetooth:

Frequency (MHz)	Polarization	MPE Calculation (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2402.00	Vertical	$1.58 \cdot 10^{-4}$	1
2402.00	Horizontal	$1.18 \cdot 10^{-5}$	1

### RFID:

Frequency (MHz)	Polarization	Max MPE Calculation (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
902.00	Vertical	$1.14 \cdot 10^{-8}$	0.98

### GPRS 850:

Frequency (MHz)	Polarization	MPE Calculation (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
836.95	Vertical	$2.03 \cdot 10^{-1}$	$5.50 \cdot 10^{-1}$
836.95	Horizontal	$1.41 \cdot 10^{-1}$	$5.50 \cdot 10^{-1}$

### GPRS 1900:

Frequency (MHz)	Polarization	MPE Calculation (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
1870.00	Vertical	$7.01 \cdot 10^{-2}$	1
1870.00	Horizontal	$6.38 \cdot 10^{-2}$	1

### Maximum permissive exposure compared to limits

Polarization	$\sum$ Max MPE / Limit	Limit
Vertical	0.44	1
Horizontal	0.32	1

□□□ End of report □□□