



R041-12-104857-3A - DM / CV-CHB

## EVALUATION OF HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS

According to the standard(s):

EN 50364:2010

Equipment under test:

Terminal EP10-HF


Company:

PSION

Diffusion: Mr FORNIER

(Company: PSION)

Number of pages: 10 including 1 annex

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*NAME OF THE EQUIPMENT UNDER TEST (E.U.T.)* : Terminal EP10-HF

*Serial number* : /

*P/N* : /

*Software version* : /

*MANUFACTURER'S NAME* : PSION

*APPLICANT'S ADDRESS:*

*Company* : PSION

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FRANCE

*Person(s) present during the tests* : Mr FORNIER

*Responsible* : Mr FORNIER

*DATE(S) OF TESTS* : September, from 10<sup>th</sup> to 13<sup>th</sup> of 2012

*TESTS LOCATION(S)* : Emitech Grand Sud Laboratory in VENDARGUES (34)

*TESTS SUPERVISOR(S)* : None

*TESTS OPERATOR(S)* : David MONTAULON

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## 1. INTRODUCTION

This report presents the results of the measurements performed on **Terminal EP10-HF** in order to verify the compliance of this product with the European standard EN 50364:2001 which requirements are derived from the European recommendation 99/519/EC

## 2. REFERENCE DOCUMENT(S)

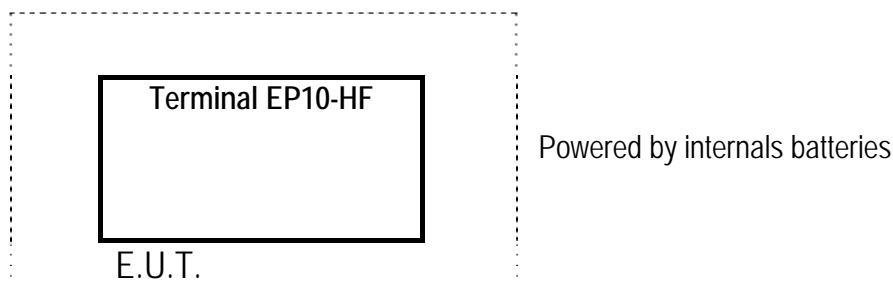
EN 50364:2001	Limitation of human exposure to electromagnetic fields from devices operating in the frequency range 0Hz to 10GHz, used in Electronic Article Surveillance (EAS), Radio Frequency Identification (RFID) and similar applications.
EN 50357:2001	Evaluation of human exposure to electromagnetic fields from devices used in Electronic Article Surveillance (EAS), Radio Frequency Identification (RFID) and similar applications.
Recommendation 99/519/EC of 12 July 1999	Limitation of exposure of the general public to electromagnetic fields.

## 3. EQUIPMENT UNDER TEST CONFIGURATION

Cycle and operating mode during emission tests: Permanent emission mode without modulation.

Equipment modifications applied during tests: No

## 4. EQUIPMENT UNDER TEST CONFIGURATION SCHEME



**5. SUMMARY OF TEST RESULTS**

Tests designation	Results satisfying?	Comments
Specially average measurement	YES	
Measurement of limb and contact currents	YES	

N.P.: Not Performed.

N.A.: Not Applicable.

- **In emission:**

Sample subject to the test complies with prescriptions of the standard(s) EN 50364:2010 according to limits, specified in this test report.

**6. SPACIALLY AVERAGE MEASUREMENT***Temperature (°C): 24.5**Humidity (%HR): 66**Pressure (hPa): 997***Standard:** EN 50364:2010**Test method:** EN 50357:2001

The Derived Reference Levels are based on spatially averaged values over the entire body of the exposed individual. The measurement was performed to verify the compliance of the EUT with the derived reference levels in the frequencies of interest.

The fundamental frequency of emission of EUT is 13.56MHz. The compliance with radio standard EN 300 330 imposes that harmonics are low and spurious much lower, in consequence all the records are performed at fundamental frequency.

Moreover the type of tested equipment emits a near field inductive field and electric component of the electro-magnetic field is lower than in plane wave.

So only H field is taken into account in the measurements and the SAR (\*) calculated with this value will be an overvaluation of the actual SAR (\*) (see § 4.2.2 of the EN 50357).

The limit defined for H field is 73mA/m at 13.56MHz.

*(\*) Specific Absorption Rate*

**Test configuration according to table 1 of the standard:** Figure 2i

**Test equipment list:**

CATEGORY	BRAND	TYPE	N° EMITECH
Antenna	Boucle	7.5 cm	2464
Shielded enclosure	RAY PROOF	C.GS3	1123
Spectrum analyzer	Hewlett Packard	HP 8590L	2001

**Results:** See Board in annex: H = 1.22dBµA/m

## 7. MEASUREMENT OF LIMB AND CONTACT CURRENTS

Temperature (°C): 24.5

Humidity (%HR): 66

Pressure (hPa): 997

**Standard:** EN 50364:2010

**Test method:** EN 50357:2001

Body current measurements under consideration are those defined by ICNIRP with frequencies up to 110 MHz.

Two types of current are mentioned:

- Limb current.
- Contact current.

Both limb and contact current arise from a person touching a metallic object isolated from the ground and charged by electromagnetic field or a charged person isolated from the ground and touching a grounded metallic object.

The limb current is set to prevent excessive SAR (\*) in the wrists, elbows, ankle and knees. The limit is 45mA for the relevant frequency.

The contact current is set to prevent the risk of shock, or burn from light contact of the fingers with the external object. The limit of contact current is 20mA for the relevant frequency.

The limb and contact current assume different contact impedance.

(\*) *Specific Absorption Rate*

### Test equipment list:

CATEGORY	BRAND	TYPE	N° EMITECH
Measurement clamp	FCC	F-80	2535
Shielded enclosure	RAY PROOF	C.GS3	1123
Spectrum analyzer	Hewlett Packard	HP 8590L	2001

**Results:** See Board in annex 1:

H (limbs) = 0.06mA

H (contact) = 0.02mA

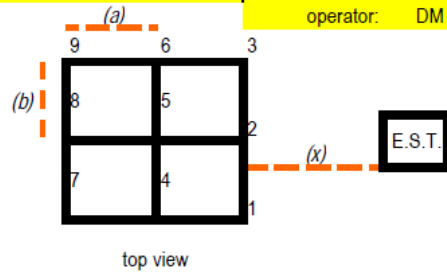
□□□ End of report – 1 annex to be forwarded □□□

**ANNEX:  
RESULTS BOARD(S)  
AND PHOTOGRAPH(S)**

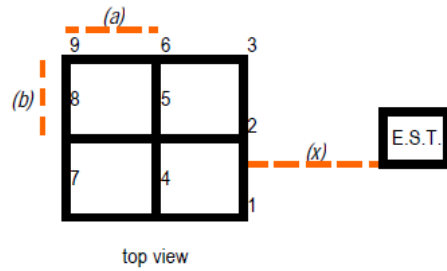


<b>PSION</b>	<b>EP10-HF</b>	<b>041-12-104857</b>	<b>25/09/2012</b>
Test configuration :	2i	distance (x) :	0.7
		(a)=(b)=0,15m	
Equipment height (m) :	0.8		
			T 24.5
			Hr 66
			Pa 997
			operator: DM

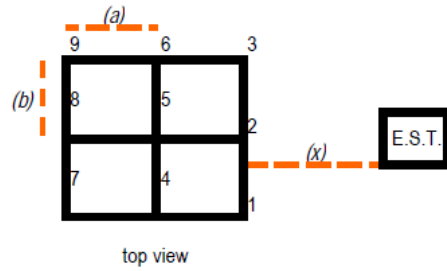
point	measure (dBuV)	field (mA/m)
1	60	2.630
2	65	4.677
3	57	1.862
4	48	0.661
5	50	0.832
6	46	0.525
7	40	0.263
8	41	0.295
9	38	0.209



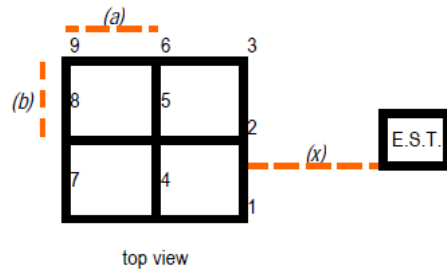
point	measure (dBuV)	field (mA/m)
1	57	1.862
2	65	4.677
3	57	1.862
4	48	0.661
5	52	1.047
6	48	0.661
7	39	0.234
8	42	0.331
9	41	0.295



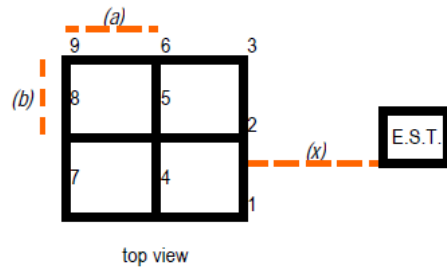
point	measure (dBuV)	field (mA/m)
1	47	0.589
2	51	0.933
3	48	0.661
4	43	0.372
5	43	0.372
6	42	0.331
7	36	0.166
8	39	0.234
9	37	0.186



point	measure (dBuV)	field (mA/m)
1	37	0.186
2	40	0.263
3	39	0.234
4	35	0.148
5	37	0.186
6	36	0.166
7	33	0.117
8	34	0.132
9	33	0.117



point	measure (dBuV)	field (mA/m)
1	30	0.083
2	31	0.093
3	30	0.083
4	28	0.066
5	30	0.083
6	30	0.083
7	27	0.059
8	28	0.066
9	27	0.059



Spatially averaged measure:	value (mA/m)	limit (mA/m)	
	1.22	73	
Measure in arm:	measure (dBuV)	current (mA)	limit (mA)
	48	0.06	20
Measure in ankle:	39	0.02	20

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

Terminal EP10-HF

<p>E.U.T. Photograph(s)</p>	
<p>E.U.T. marking plate</p>	