

**R051-24-10-100197-3/A Ed. 0**

**RADIO Measurement  
Technical Report**

**Standard to apply:  
FCC Part 15  
EN 302 208**

**Equipment under test:  
INTEGRATED UHF RFID READER**

**Company:  
PSION TEKLOGIX**

**DISTRIBUTION: Mr BARRY**

**Company: PSION TEKLOGIX**

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			Name	Visa	Name	Visa
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**PRODUCT:** INTEGRATED UHF RFID READER

**Reference / model:** UHF-CA3-AC1-GPRS (CE)  
UHF-CA3-AC5-GPRS (FCC)

**MANUFACTURER:** PSION TEKLOGIX

**COMPANY SUBMITTING THE PRODUCT:**

**Company:** PSION TEKLOGIX

**Address:** 135 rue René Descartes  
Parc de la Duranne  
13591 AIX EN PROVENCE  
FRANCE

**Responsible:** Mr BARRY

**DATE(S) OF TEST:** 15 February 2010

**TESTING LOCATION:** EMITECH ATLANTIQUE laboratory at ANGERS (49) FRANCE  
EMITECH ATLANTIQUE open area test site in LA POUEZE (49) FRANCE  
Registration Number by FCC: 101696/FRN: 0006 6490 08

**TESTED BY:** L. BERTHAUD

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## **1. INTRODUCTION**

This report presents the results of radio measurements carried out on the following equipment: INTEGRATED UHF RFID READER, in accordance with normative reference.

## **2. PRODUCT DESCRIPTION**

Class: B (residential environment)

Utilization: PDA with WiFi, Bluetooth, GPRS and RFID functions.

Antenna type: incorporated antennas

Power level, frequency range and channels characteristics are not user adjustable.

## **3. NORMATIVE REFERENCE**

The standards and testing methods related throughout this report are those listed below. They are applied on the whole test report even though the extensions (version, date and amendment) are not repeated.

FCC Part 15 (2008)	Code of Federal Regulations Title 47 - Telecommunication Chapter 1 - Federal Communications Commission Part 15 - Radio frequency devices Subpart C - Intentional Radiators
ANSI C63.4 (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.
EN 302 208-1	V 1.2.1 (2008-04) Part 1: Technical characteristics and test methods
EN 302 208-2	V 1.2.1 (2008-04) Electromagnetic compatibility and Radio spectrum Matters (ERM); Radio Frequency Identification Equipment operating in the band 865 MHz to 868 MHz with power levels up to 2 W; Part 2: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive.

#### **4. TEST METHODOLOGY**

Radio performance tests procedures given in FCC part 15:

- Paragraph 33: frequency range of radiated measurements
- Paragraph 35: measurement detector functions and bandwidths
- Paragraph 209: radiated emission limits; general requirements

Radio performance tests procedures given in EN 302 208-1:

- Paragraph 8.5: Transmitter spurious emissions (radiated by the cabinet and the structure)

**5. TESTS RESULTS SUMMARY**

Test procedure	Description of test	Criteria respected ?				Comment
		Yes	No	NAp	NAs	
FCC Part 15.209	RADIATED EMISSION LIMITS; GENERAL REQUIREMENTS	X				<i>Note</i>
EN 302 208-2	TX SPURIOUS EMISSIONS (RADIATED)	X				<i>Note</i>

NAp: Not Applicable

NAs: Not Asked

*Note: the aim of the test is to check the transmission intermodulation of the equipment function of different transmitters.*

**6. RADIATED EMISSION LIMITS; GENERAL REQUIREMENTS**

**Standard:** FCC Part 15

**Test procedure:** § 209

**Test equipment:**

TYPE	BRAND	EMITECH NUMBER
Test receiver	Rohde & Schwarz ESVS 10	1219
Biconical antenna	Hewlet Packard 11966 C	0728
Log periodic antenna	Rohde & Schwarz HL 223	1999
Double ridged guide antenna	Electrometrics EM 6961	1204
Spectrum analyzer	Rohde & Schwarz FSP40	4088
Open area test site	EMITECH	1274
Preamplifier 1 to 18 GHz	DBS Microwave DB97-1852	2648
High pass filter	Micro-tronics HPM11630	6609
Variac	Dereix R213	1419

**Test set up:**

The system is tested in an open area test site (OATS).

The test unit is placed on a rotating table, 0.8 m from a ground plane. Zero degree azimuth correspond to the front of the equipment under test.

**Frequency range:** from 30 MHz to harmonic 10 ( $F_{\text{carrier}} \leq 1 \text{ GHz}$ )

**Detection mode:** Quasi-peak or average ( $F < 1 \text{ GHz}$ )  
Peak ( $F > 1 \text{ GHz}$ )

**Bandwidth:** 120 kHz ( $F < 1 \text{ GHz}$ )  
1 MHz ( $F > 1 \text{ GHz}$ )

**Distance of antenna:** 3 meters

**Antenna height:** 1 to 4 meters

**Antenna polarization:** vertical and horizontal (only the highest level is recorded)

**Equipment under test operating condition:**

The equipment is blocked in continuous GPRS transmission mode, at the highest output power which the transmitter is intended to operate. The Bluetooth, WiFi and RFID transmission modes are also transmitting continuously.

In addition, the equipment is in battery charging mode.

**Results:**

Ambient temperature (°C): 21  
Relative humidity (%): 42

Power source: 115 Va.c through a variac + battery in charging mode

Not any intermodulation spurious has been detected.

*Note: any spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported.*

**Applicable limits:** see § 15.209 of FCC Part 15 standard.

**Test conclusion:**

RESPECTED STANDARD



**7. TRANSMITTER SPURIOUS EMISSIONS (RADIATED)**

**Standard:** EN 302 208-2

**Test procedure:** EN 302 208-1 § 8.5  
 § 8.5.2.2

**Test equipments used:**

TYPE	MANUFACTURER	EMITECH NUMBER
Test receiver ESVS 10	Rohde & Schwarz	1219
Spectrum analyzer FSP40	Rohde & Schwarz	4088
Biconical antenna HP 11966C	Hewlett Packard	0728
Log periodic antenna HL 223	Rohde & Schwarz	1999
Open site	Emitech	1274
Multimeter 77-2	Fluke	0812
Antenna RGA-60	Electrometrics	1204
Variac R213	Dereix	1419
Low-noise amplifier 1 – 18 GHz	ALC	2648
High pass filter HPM 11630	Micro-Tronics	6609
Meteo station AB888	Oregon Scientific	1539

**Measurement conditions:**

The measure applies to outdoor test site from 25 MHz to 12.75 GHz.

We used the substitution method.

The test antennas have been oriented in the two polarizations (vertical and horizontal), we have recorded only the highest level.

Measuring distance between the equipment and the test antenna is 10 m for frequencies below 50 MHz and 3 m for frequencies above 50 MHz.

Height support of the equipment: 1.5 m.

Resolution bandwidth:

25 MHz ≤ F < 1000 MHz: 120 kHz (Quasi-Peak)  
 1000 MHz ≤ F: 1 MHz (Peak)

**Test operating condition of the equipment:**

The equipment is blocked in continuous GPRS transmission mode at the highest output power which the transmitter is intended to operate. The Bluetooth, Wifi and RFID transmission modes are also transmitting continuously.

In addition, the equipment is in battery charging mode.

**Results:**

Ambient temperature (°C): 21  
Relative humidity (%): 42  
Power supply: 230 Va.c through a variac + battery in charging mode.

Sample N° 1

Not any intermodulation spurious has been detected.

*Note: Any spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported.*

**Measurement uncertainty:**

F < 62.5 MHz:	± 4.4 dB
62.5 MHz ≤ F ≤ 1 GHz:	± 2.6 dB
F > 1 GHz:	± 4.1 dB

**Test conclusion:**

RESPECTED STANDARD

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

## ANNEX: PHOTOS OF THE EQUIPMENT UNDER TEST

GENERAL VIEW

