RT041-10-100222-1A - OH / CHB

TECHNICAL REPORT

Equipment under test:

WORKABOUT PRO G2 including modules Bluetooth (native) + GPRS RA3030-G2 + WIFI CF-Card RA2041 + RFID UHF-CA3-AC5-GPRS
FCC ID: GM3UHFCA3AC5GPRS
IC ID: 2739D-UHFGPRS

Company:

PSION TEKLOGIX

Diffusion: Mr BARRY **(Company: PSION TEKLOGIX)**

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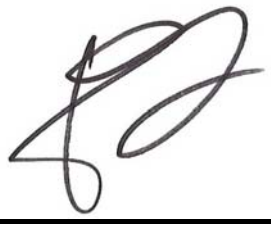
1	10-May-10	Creation	Régis GONZALEZ 	Olivier HEYER 

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NAME OF THE EQUIPMENT UNDER TEST (E.U.T.)	:	WORKABOUT PRO G2 including modules Bluetooth (native) + GPRS RA3030-G2 + WIFI CF-Card RA2041 + RFID UHF-CA3-AC5-GPRS
Serial number	:	None
Part number	:	None
Software Version	:	None
MANUFACTURER'S NAME	:	PSION TEKLOGIX

APPLICANT'S ADRESS:

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DATE(S) OF STUDY	:	May, the 10th of 2010
EXPERT'S NAME	:	Olivier HEYER

CONTENTS

1. INTRODUCTION

This document submits the results of Maximum Permissible Exposure (MPE) calculations performed on the equipment **WORKABOUT PRO G2 including modules Bluetooth (native) + GPRS RA3030-G2 + WIFI CF-Card RA2041 + RFID UHF-CA3-AC5-GPRS**

2. REFERENCE DOCUMENT(S)

Radio test report	R041-10-100222-3A Ed.0 from EMITECH Grand Sud Laboratory R051-24-10-100197-2/A Ed. 0 from EMITECH Atlantique Laboratory
OET Bulletin 65 (Aug 1997)	Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields
FCC Part 1	Practice and procedure
RSS 210 Issue 7	Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment

3. EQUIPMENT UNDER TEST CONFIGURATION

Product description:

FCC ID: GM3UHFCA3AC5GPRS
IC ID: 2739D-UHFGPRS
Utilization: RFID TAG reader
Antenna type: Incorporated antenna
Antenna gain: Unknown
Operating frequencies (worst case) : 902MHz (Rfid), 2402MHz (Bluetooth), 2437MHz (Wifi), 850 and 1900 MHz (GPRS)
Power source: 5 Vdc (stand alone) or mains voltage (with docking)
Power level and frequency range are not user adjustable

4. RADIATED MEASUREMENTS

These results come from EMITECH Grand Sud R041-10-100222-3A Ed.0. and EMITECH Atlantique R051-24-10-100197-2/A Ed. 0 tests reports
Please find below carrier radiated field strength (detail in test report):

Measuring distance: 3 m on Open Aera Test Site

Wifi radiated field strength:

Frequency (MHz)	Polarization	Measure (dBµV/m)
2437	Vertical	100.40
2437	Horizontal	100.40

Bluetooth radiated field strength:

Frequency (MHz)	Polarization	Measure (dBµV/m)
2402	Vertical	92.85
2402	Horizontal	85.25

RFID field strength:

Frequency (MHz)	Polarization	Max Measure (dBµV/m)
902	Vertical & Horizontal	122.1

GPRS 850 field strength:

Frequency (MHz)	Polarization	Measure (dBµV/m)
824	Vertical	83.65
824	Horizontal	86.14

GPRS 1900 field strength:

Frequency (MHz)	Polarization	Measure (dBµV/m)
1880	Vertical	100.24
1880	Horizontal	104.43

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^2)
E = electric field strength (V/m)

When E is measured at 3m, level in dBµV/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^2)
2437.00	1
2402.00	1
902.00	0.60
824.00	0.55
1880.00	1

Combination of MPE must show that ∑ (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/cm²)	Limit (mW/cm²)
2437.00	Vertical	$6.54\ 10^{-4}$	1
2437.00	Horizontal	$6.54\ 10^{-4}$	1

Bluetooth:

Frequency (MHz)	Polarization	MPE Calculation (mW/cm²)	Limit (mW/cm²)
2402.00	Vertical	$11.50\ 10^{-5}$	1
2402.00	Horizontal	$2.00\ 10^{-5}$	1

RFID:

Frequency (MHz)	Polarization	Max MPE Calculation (mW/cm²)	Limit (mW/cm²)
902.00	Vertical & Horizontal	$9.68\ 10^{-2}$	0.6

GPRS 850:

Frequency (MHz)	Polarization	MPE Calculation (mW/cm²)	Limit (mW/cm²)
2462.00	Vertical	$2.89\ 10^{-3}$	0.55
2462.00	Horizontal	$5.12\ 10^{-3}$	0.55

GPRS 1900:

Frequency (MHz)	Polarization	MPE Calculation (mW/cm²)	Limit (mW/cm²)
2462.00	Vertical	$0.63\ 10^{-3}$	1
2462.00	Horizontal	$1.65\ 10^{-3}$	1

Maximum permissive exposure compared to limits

Polarization	∑ Max MPE / Limit	Limit
Vertical	$1.68\ 10^{-1}$	1
Horizontal	$1.73\ 10^{-1}$	1

□□□ End of report □□□