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# Report On

FCC and Industry Canada Testing of  
The Psion Teklogix Ikon + MorphoRapID 1100 accessory

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FCC ID: GM37505BTSDCMH25

IC ID: 2739D-7505BSHC

Document 75905098 Report 01 Issue 1

November 2008



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**REPORT ON**

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The Psion Teklogix Ikon + MorphoRapID 1100 accessory

Document 75905098 Report 01 Issue 1

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**PREPARED FOR**

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**APPROVED BY**

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Authorised Signatory

**DATED**

27 November 2008

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**ENGINEERING STATEMENT**

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47: Parts 15 C and Industry Canada RSS-210. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer;

J Holcombe





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## **SECTION 1**

### **REPORT SUMMARY**

FCC and Industry Canada Testing of  
The Psion Teklogix Ikon + MorphoRapID 1100 accessory



## 1.1 INTRODUCTION

The information contained in this report is intended to show verification of the The Psion Teklogix Ikon + MorphoRapID 1100 accessory to the requirements of FCC CFR 47 Part 15C: 2006 and Industry Canada RSS-210: 2007.

Objective	To perform FCC and Industry Canada Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	Psion Teklogix
Model Number(s)	7505 + MorphoRapID 1100
Serial Number(s)	CH0FA8110071
Software Version	C
Hardware Version	B
Number of Samples Tested	1
Test Specification/Issue/Date	FCC CFR 47 Part 15C: 2006 Industry Canada RSS-210: 2007
Incoming Release Date	Declaration of Build Status 20 November 2008
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Order Number Date	502543 7 November 2008
Start of Test	20 November 2008
Finish of Test	20 November 2008
Name of Engineer(s)	J Holcombe



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**1.2 BRIEF SUMMARY OF RESULTS**

A brief summary of results in accordance with FCC CFR 47 Part 15C: 2006 and Industry Canada RSS-210: 2007 is shown below.

Configuration 1 - The Psion Teklogix Ikon + MorphoRapID 1100 accessory						
Section	Spec Clause	IC Spec Clause	Test Description	Mode	Mod State	Result
2.1	15.205, 15.247(d), 15.209	A8.5	Radiated Emissions (Enclosure Port)	Tx WIFI Middle Channel	0	Pass



## 1.3 DECLARATION OF BUILD STATUS

MAIN EUT	
MANUFACTURING DESCRIPTION	HSDPA/UMTS/EDGE/GSM, WiFi & BT Handheld terminal with fingerprint reader accessory
MANUFACTURER	Psion Teklogix
TYPE	7505 + MorphoRapID 1100
PART NUMBER	7505 + MorphoRapID 1100
SERIAL NUMBER	CH0FA8110071
HARDWARE VERSION	B
SOFTWARE VERSION	C
TRANSMITTER OPERATING RANGE	North American bands: 850 band: 824.2 – 848.8 MHz; 1900 band: 1850.2 - 1909.8 MHz; 802.11b/g WiFi (2400 – 2483.5MHz); BT (2402-2480MHz) EU bands: 900 band: 880 MHz - 915 MHz; 1800 band: 1710 MHz - 1785 MHz; 2100 band: 1920 MHz - 1980 MHz;
RECEIVER OPERATING RANGE	North American bands: 850 band: 869.2 – 893.8 MHz; 1900 band: 1930.2 - 1989.8 MHz; 802.11b/g WiFi (2400 – 2483.5MHz); BT (2402-2480MHz) EU bands: 900 band: 925 MHz - 960 MHz; 1800 band: 1805 MHz - 1880 MHz; 2100 band: 2110 MHz - 2170 MHz
COUNTRY OF ORIGIN	Canada
INTERMEDIATE FREQUENCIES	
ITU DESIGNATION OF EMISSION	850 band: 248KGXW; 250KG7W; 4M18F9W; 1.9 band: 250KGXW; 242KG7W; 4M20F9W; 802.11: 17M3G1D BT: 876KFXD
HIGHEST INTERNALLY GENERATED FREQUENCY	624MHz
OUTPUT POWER (W or dBm)	850 band: 2W / 1.04W / 0.334 W ERP 1900 band: 0.589 W / 0.373 W / 0.164 W EIRP 802.11 band: 80 mW cond. BT band: 2.5 mW cond.
FCC ID	GM37505BTSDCMH25
INDUSTRY CANADA ID	2739D-7505BSHC
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	The product is a handheld terminal that will be used by law enforcement agencies to read fingerprints and compare with remote records, in real-time.



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BATTERY/POWER SUPPLY	
MANUFACTURING DESCRIPTION	5000mAh (18.5Wh) Battery Pack
MANUFACTURER	Psion Teklogix
TYPE	CH3000
PART NUMBER	1081236
VOLTAGE	3.7V
COUNTRY OF ORIGIN	China

**Signature**

**Date**

20 November 2008

**D of B S Serial No**

001

Note: This document has been prepared to enable manufacturers with no mechanism for producing their own Declaration of Build Status, to declare the build state of the equipment submitted for test.

No responsibility will be accepted by TÜV Product Service as to the accuracy of the information declared in this document by the manufacturer.





## 1.4 PRODUCT INFORMATION

### 1.4.1 Technical Description

The Equipment Under Test (EUT) was the Psion Teklogix Ikon + MorphoRapID 1100 accessory as shown in the photographs below. A full technical description can be found in the Manufacturer's documentation.



Front View  
Equipment Under Test



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Rear View  
Equipment Under Test



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#### 1.4.2 Test Configuration

##### Configuration 1: The Psion Teklogix Ikon + MorphoRapID 1100 accessory

The EUT was configured in accordance with FCC CFR 47 Part 15C: 2006 and Industry Canada RSS-210: 2007.

#### 1.4.3 Modes of Operation

Modes of operation of each EUT during testing were as follows:

Mode 1 - Tx WIFI Middle Channel, Bluetooth TX Middle Channel, GSM Middle Channel registered on GSM 1900 and finger print scanner active.

Initially the EUT was set to Tx in WIFI Band middle channel. All other Tx's to be idle.

A measurement of the peak power for both modulation schemes (B and G) was made. For formal testing the worst case peak power was used which was discovered to be 802.11 (b).

During formal spurious emissions testing the EUT was transmitting on full power, on centre channel Bluetooth and Wi-Fi. The finger print scanner is scanning for finger prints and the GSM module is registered to GSM 1900 Middle channel. GSM 1900 was chosen over GSM 850 by the client, as both bands use the same main oscillator.



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## 1.5 TEST CONDITIONS

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated in a shielded enclosure, test laboratories or an open test area as appropriate.

The EUT was powered via a Lithium Ion cell 3.7V 5000mAh DC.

FCC Site ID :  
90987 Octagon House, Fareham Test Laboratory

Industry Canada Site ID :  
IC2932B-1 Octagon House, Fareham Test Laboratory

## 1.6 DEVIATIONS FROM THE STANDARD

Limited testing; The selected channels used during testing were restricted to

Tx WIFI Middle Channel,  
Bluetooth TX Middle Channel,  
GSM Middle Channel registered on GSM 1900

## 1.7 MODIFICATION RECORD

No modifications were made to the EUT during testing.



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## **SECTION 2**

### **TEST DETAILS**

FCC and Industry Canada Testing of  
The Psion Teklogix Ikon + MorphoRapID 1100 accessory



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## **2.1 RADIATED EMISSIONS (ENCLOSURE PORT)**

### **2.1.1 Specification Reference**

FCC CFR 47 Part 15C: 2006, Clause 15.209, 15.247(d), 15.205  
Industry Canada RSS-210: 2007, Clause A8.5

### **2.1.2 Equipment Under Test**

The Psion Teklogix Ikon + MorphoRapID 1100 accessory, S/N: CH0FA8110071

### **2.1.3 Date of Test and Modification State**

20 November 2008 - Modification State 0

### **2.1.4 Test Equipment Used**

The major items of test equipment used for the above tests are identified in Section 3.1.

### **2.1.5 Test Method and Operating Modes**

The test was applied in accordance with the test method requirements of FCC CRF 47 Part 15: 2006 and Industry Canada RSS-210: 2007

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 1 - Mode 1

### **2.1.6 Environmental Conditions**

20 November 2008

Ambient Temperature 19°C

Relative Humidity 49%

Atmospheric Pressure 998mbar



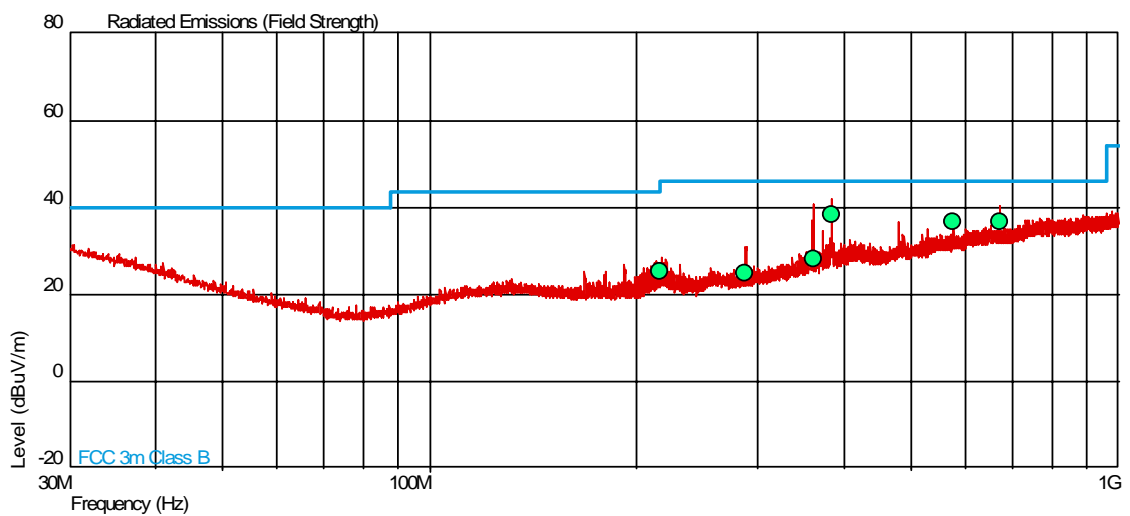
**2.1.7 Test Results**

For the period of test the EUT met the requirements of FCC CFR 47 Part 15C: 2006 and Industry Canada RSS-210: 2007 for Radiated Emissions (Enclosure Port).

The test results are shown below.

Configuration 1 - Mode 1

30MHz to 1GHz



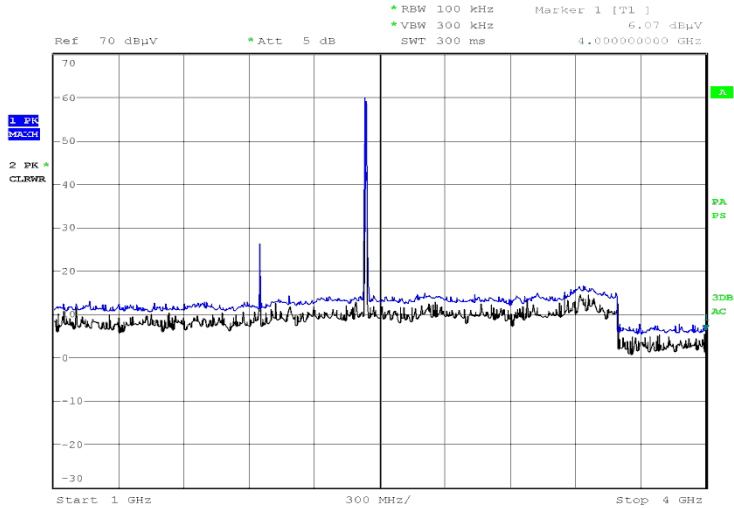
Frequency (MHz)	QP Level (dBuV/m)	QP Level (uV/m)	QP Limit (dBuV/m)	QP Limit (uV/m)	QP Margin (dBuV/m)	QP Margin (uV/m)	Angle (Deg)	Height (m)	Polarity
216.289	25.5	18.8	46.0	200	-20.5	181.2	51	1.00	Vertical
287.632	24.8	17.4	46.0	200	-21.2	182.6	93	1.00	Horizontal
360.139	28.1	25.4	46.0	200	-17.9	174.6	75	1.00	Horizontal
383.814	38.2	81.3	46.0	200	-7.8	118.7	292	1.00	Horizontal
575.948	36.5	66.8	46.0	200	-9.5	133.2	151	1.00	Vertical
672.151	36.6	67.6	46.0	200	-9.4	132.4	273	1.00	Horizontal



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1GHz to 4GHz

Horizontal and Vertical

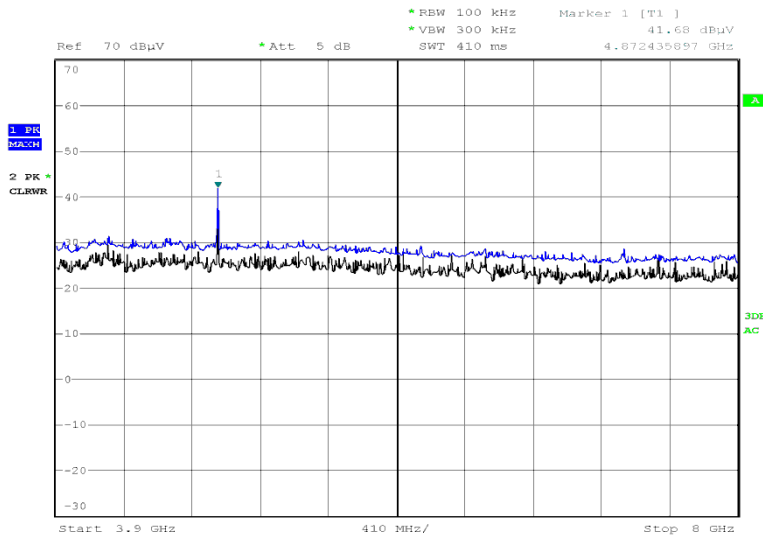


Date: 20.NOV.2008 12:36:59

The smaller emission shown above was due to the Basestation Controller which was RF linked to the EUT. The larger amplitude emission was the intentional Tx frequency of the EUT. Both emissions were therefore not measured and hence not presented in the Table of Results shown on Page 17.

4GHz to 8GHz

Horizontal and Vertical



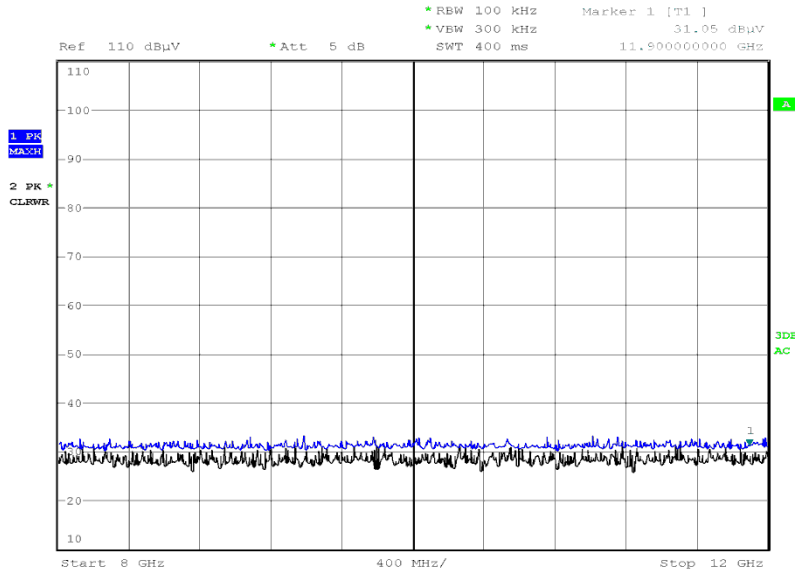
Date: 20.NOV.2008 12:44:22





8GHz to 12GHz

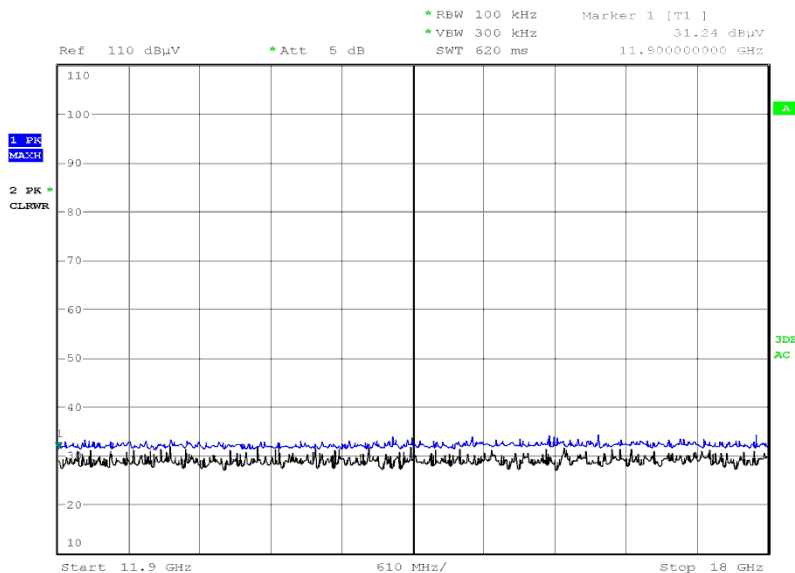
Horizontal and Vertical



Date: 20.NOV.2008 13:49:26

12GHz to 18GHz

Horizontal and Vertical

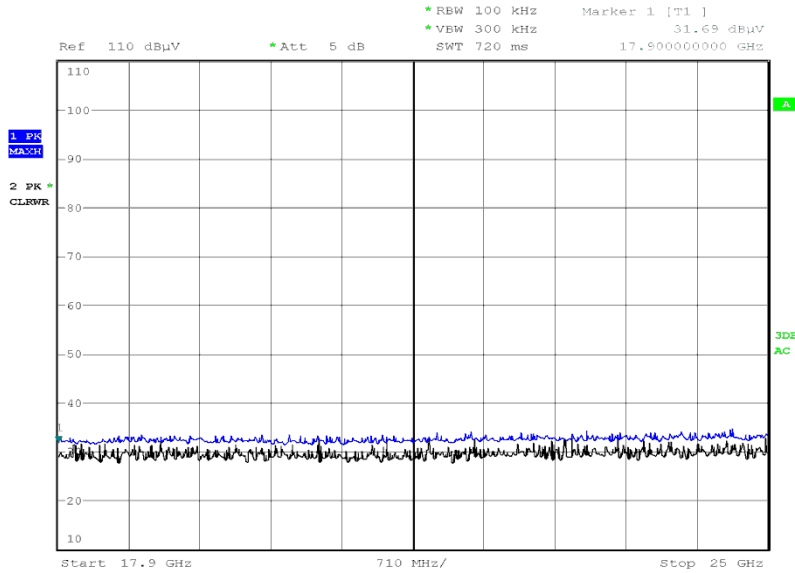


Date: 20.NOV.2008 13:54:34



18GHz to 25GHz

Horizontal and Vertical



Date: 20.NOV.2008 14:12:12

Table of Results for emissions above 1GHz

Frequency MHz	Antenna Polarisation	Antenna Height cm	EUT Arc degrees	Result Peak		Result Average		Limit Peak		Limit Average		Result
				dBμV/m	μV/m	dBμV/m	μV/m	dBμV/m	μV/m	dBμV/m	μV/m	
4873.99	Horizontal	100	245	49.5	298.5	34.4	52.5	74.0	5012	54.0	500	Pass

All other emissions detected were either carriers of the EUT transmitters or of the GSM base station controller and therefore are not presented and should be ignored. No other emissions other than those shown above were detected above the system noise floor.



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### **SECTION 3**

#### **TEST EQUIPMENT USED**



### 3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
<b>Section 2.1 EMC - Radiated Emissions</b>					
Radio communications Tester	Rohde & Schwarz	CMU 200	39	12	3-Nov-2009
Peak Power Analyser	Hewlett Packard	8990A	107	12	24-Jan-2009
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	12	6-Sep-2009
Antenna (Double Ridge Guide)	Q-Par Angus Ltd	QSH 180K	1511	24	17-Jul-2010
Pre-Amplifier	Phase One	PS04-0085	1532	12	15-Sep-2009
Pre-Amplifier	Phase One	PS04-0086	1533	12	15-Sep-2009
Pre-Amplifier	Phase One	PSO4-0087	1534	12	30-Jul-2009
Screened Room (5)	Rainford	Rainford	1545	36	11-Feb-2011
Signal Generator	Rohde & Schwarz	SMR40	1589	12	30-Oct-2009
Mast Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Turntable/Mast Controller	EMCO	2090	1607	-	TU
Power Sensor	Hewlett Packard	84812A	2743	12	24-Jan-2009
Antenna (Bilog)	Chase	CBL6143	2904	24	28-Nov-2009
High Pass Filter (3GHz)	RLC Electronics	F-100-3000-5-R	3349	12	23-May-2009
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	20-Aug-2009

TU – Traceability Unscheduled



### 3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	Frequency / Parameter	MU
Radiated Emissions, Bilog Antenna, AOATS	30MHz to 1GHz Amplitude	5.1dB*
Radiated Emissions, Horn Antenna, AOATS	1GHz to 40GHz Amplitude	6.3dB*
Conducted Emissions, LISN	150kHz to 30MHz Amplitude	3.2dB*
Conducted Emissions, ISN	150kHz to 30MHz Amplitude	2.1dB
Substitution Antenna, Radiated Field	30MHz to 18GHz Amplitude	2.6dB
Discontinuous Interference	150kHz to 30MHz Amplitude	3.0dB*
Interference Power	30MHz to 300MHz Amplitude	3.0dB*
Radiated E-Field Susceptibility	26MHz to 2.5GHz Test Amplitude	1.4dB†
Conducted Susceptibility	100kHz to 250MHz Amplitude	1.8dB†
DC Input Ripple Immunity	Current Voltage	0.45% 0.91%
Power Frequency Magnetic Field	50Hz/60Hz Amplitude	0.45%
Magnetic Emissions	9kHz to 30MHz Amplitude	3.4dB*
Magnetic Field/Flux iaw EN 50366	10Hz to 400kHz	2.64%
Harmonics and Flicker	The test was applied using proprietary equipment that meets the requirements of EN 61000-3-2 and EN 61000-3-3	—
Mains Voltage Variations and Interrupts	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-11	—
Fast Transient Burst	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-4	—
Electrostatic Discharge	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-2	—
Surge	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-5	—
Vehicle Transients	The test was applied using proprietary equipment that meets the requirements of ISO 7637-1 and 2	—
Compass Safe Distance	Azimuth Accuracy	0.10°

Worst case error for both Time and Frequency measurement 12 parts in 10<sup>6</sup>.

\* In accordance with CISPR 16-4

† In accordance with UKAS Lab 34



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## **SECTION 4**

### **PHOTOGRAPHS**



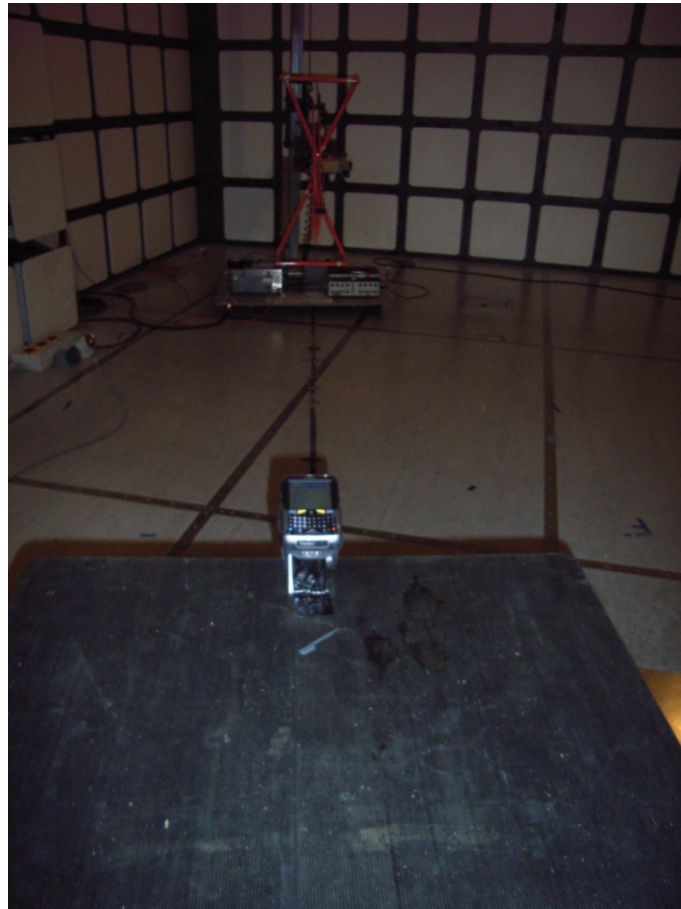
4.1 TEST SET UP PHOTOGRAPHS



Radiated Emissions (Enclosure Port)



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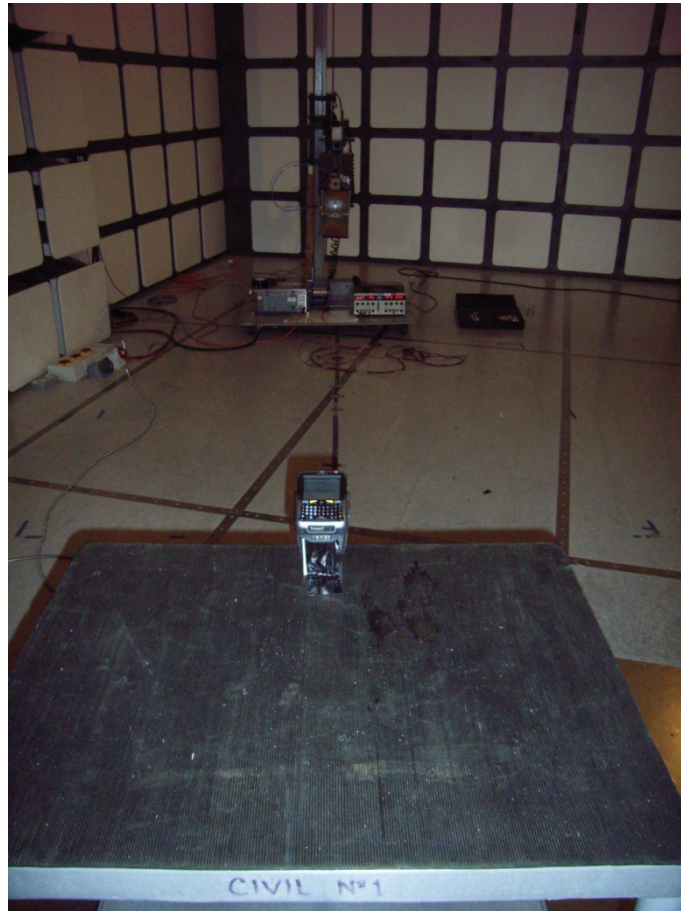


Radiated Emissions (Enclosure Port) 30MHz to 1GHz





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Radiated Emissions (Enclosure Port) Above 1GHz



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## **SECTION 5**

### **ACCREDITATION, DISCLAIMERS AND COPYRIGHT**



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## 5.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



This report relates only to the actual item/items tested.

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation.

Results of tests not covered by our UKAS Accreditation Schedule are marked NUA  
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