



## ***Electromagnetic Compatibility***

**Test of:** Tracker Immobiliser

**Model Number:** TRACKM8 T2002

**Applicant:** Interactive Projects

**Test Type:** Type Test for 433MHz receiver compliance

**Test Specification:** FCC CFR47, parts 15.109 for unintentional radiators.

**SGS Serial Number:** DUR42760/01/EMC/ST/04

**Date of Receipt:** 26<sup>th</sup> November 2004

**Date of Test(s):** 30<sup>th</sup> November 2004 to 16<sup>th</sup> December 2004

**Date of Issue:** 6<sup>th</sup> January 2004

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**Test Engineer**

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**1. Client Information**

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**2. Details Of Test Laboratory**

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### 3. Equipment Under Test (EUT)

#### 3.1 Identification Of EUT

<b>Model Number:</b>	TRACKM8 T2002
<b>Unique Identifier:</b>	Not Supplied
<b>Description of EUT:</b>	Tracker Immobiliser
<b>Highest Internal Clock Frequencies:</b>	1.6 GHz
<b>Supply Voltage:</b>	12V – 24V
<b>Classification:</b>	B
<b>Accessories Supplied:</b>	None

### 4. Test Specification, Methods and Procedures

#### 4.1 Test Specification(s)

Specification(s)	Title
FCC CFR 47 : October 2003 Parts 15.109	Code Of Federal Regulations

#### 4.2 Purpose Of Test

To perform the relevant tests and assess the product for compliance with the above specification. Certification to be obtained based on this report and modular approval of the GSM and 433 MHz unintentional radiator.

#### **4.3 Methods and Procedures**

The standards listed on the previous page refer to the following tests: -

CFR 47 Clause	Test
15.109	Radiated Emissions

**5. Deviations or Exclusions from the Test Specifications**

There were no deviations from the test specifications.

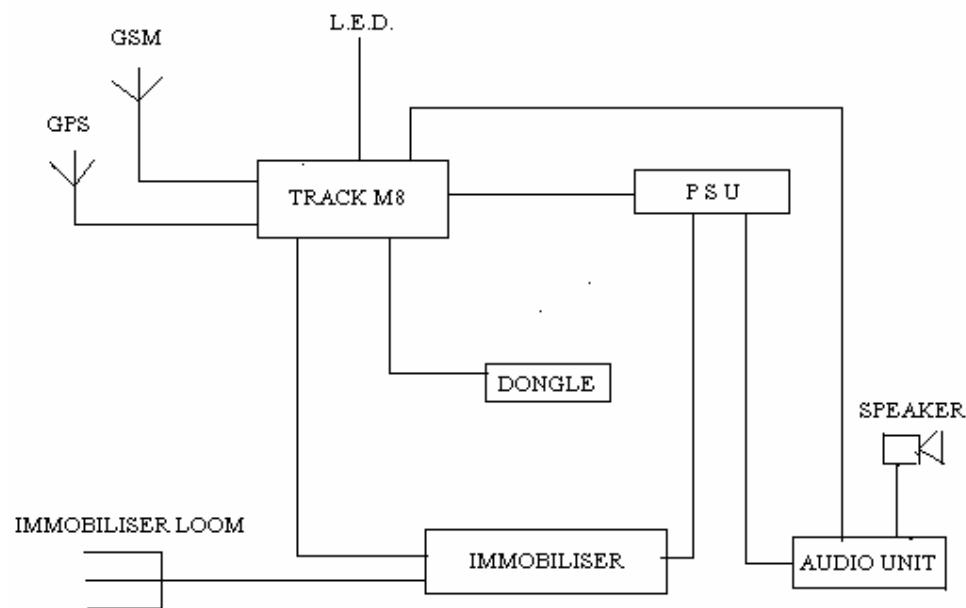
## 6. Operation of the EUT During Testing / Configuration and Peripherals

### 6.1 Operation of EUT during testing.

Refer to individual test results sections for details of EUT operation during testing.

### 6.2 Configuration and Peripherals

The following configuration was used for testing:



The immobiliser loom was terminated open circuit and the PSU (Power Supply Unit) was not part of the EUT.

## 7. Test Results

### 7.1 General Comments

The test methods used are referred to in the individual test results sections of this test report.

### 7.2 Modifications Made to the EUT

No modifications were made to the EUT during the testing process.

However prior to testing a Wurth Elektronik ferrite was placed on the audio cable with 1 turn. The ferrite part number was 74271132.

### 7.3 Summary of Test Results

CFR 47 Clause	Test	Result
15.109	Radiated Emissions	Complied

#### **Result**

In the configuration tested, the EUT complies with the requirements of Clauses 15.109 of CFR 47 : October 2003.

Full details of all tests can be found in the test results section of this report.

## 7.4 Radiated Emissions Test Results

<b>CFR Clause</b>	15.109
<b>Limits</b>	Class B, 15.109 (a)
<b>Frequency Range</b>	30 MHz – 10 GHz

### Operating Mode

The compliance test was performed whilst the EUT was switched on with a supply voltage of 12V. Pre-tests were performed with the supply voltage of 12v and 24 V however no significant difference was observed with the measurements.

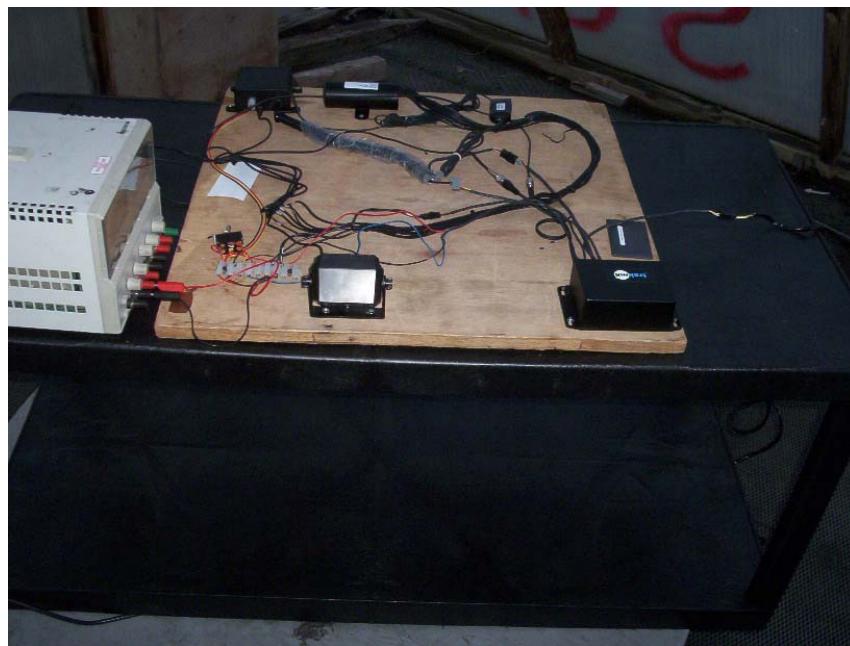
### Test Results

The tables indicate the compliance measurement when the measurements are performed on the open area test site at 3 m for the worst case emissions. Quasi Peak measurements were performed for frequencies below 1 GHz.

No EUT emissions were observed above 1 GHz. Measurements were performed up to 10 GHz.

**Worse Case Emissions**

Frequency (MHz)	3m Quasi Peak Measurement (dB $\mu$ V/m)	3m Limit (dB $\mu$ V/m)	Antenna Polarity (H/V)
65.440	17.5	40.0	V
130.914	37.2	43.5	V
161.768	15.8	43.5	V
196.397	42.8	43.5	V
130.930	36.6	43.5	H
163.664	27.8	43.5	H
196.397	40.4	43.5	H
261.869	37.2	46.0	H

**Radiated Emissions Test Configuration**

**Radiated Emissions Environmental Conditions**

<b>Power Supply</b>	12V
<b>Temperature</b>	10°C
<b>Relative Humidity</b>	30%
<b>Barometric Pressure</b>	981mb

**Radiated Emissions Measurement Uncertainties**

<b>Frequency</b>	± 200kHz
<b>Amplitude</b>	± 4.6dB

The uncertainties stated are calculated in accordance with the requirements of UKAS with a confidence level of 95%.

**Test Equipment Used**

Equipment Type	Model Number	Last Calibration Date	Calibration Interval
Receiver	HP EMC set	15 <sup>th</sup> August 2004	1 year
Antennas	Chase VBA. 606	22 <sup>nd</sup> July 2004	1 year
Antennas	EMCO 3146	17 <sup>th</sup> August 2004	1 year
Pre-amplifier	ZHL 1042J	19 <sup>th</sup> March 2004	1 year
Antennas	EMCO 6502	4 <sup>th</sup> August 2004	1 year
Check Equip	CNE	-	-
Antenna	EMCO 3115	20 <sup>th</sup> July 2004	1 year
Software	Open Site HP85879	-	-
Software	Oats, Oats 2, Oats 3	-	-