

	<b>ESTECH Co., Ltd.</b> Rm 1015, World Venture Center II, 426-5 Gasan-dong, Guncheon-gu, Seoul, 158-803, Korea	  		<b>Electromagnetic Interference Test Report</b>
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## Test Report for FCC

Report Number		ESTF150706-008		
Applicant	Company name	UTOFOS WIRELESS Co., Ltd.		
	Address	152-848 #601 Kolon Science Valley 187-10, Guro3dong Gurogu, Seoul, Korea		
	Telephone	82-2-2025-0500		
Product	Product name	GeoTrack		
	Model name.	Panic	Manufacturer	UTOFOS WIRELESS Co., Ltd.
	Serial No.	NONE	Country of origin	KOREA
Test date	2007-6-20 ~ 2007-6-28	Date of issue	2007-06-28	
Testing location	ESTECH. Co., Ltd. 97-1 Hoiuk-Ri Majang-Myon, Icheon-city, KyungKi-Do, Korea			
Standard	FCC PART 15.231 Subpart C(2006) , ANSI C 63.4 2003			
Test item	<input checked="" type="checkbox"/> Conducted Emission	<input type="checkbox"/> Class A	<input checked="" type="checkbox"/> Class B	Test result
	<input checked="" type="checkbox"/> Radiated Emission	<input type="checkbox"/> Class A	<input checked="" type="checkbox"/> Class B	Test result
Measurement facility registration number	94696			
Tested by	Senior Engineer M.J.Song 			
Reviewed by	Engineering Manager J.M.Yang 			
Abbreviation	OK, Pass = Passed, Fail = Failed, N/A = not applicable			
<p>* Note</p> <ul style="list-style-type: none"> <li>- This test report is not permitted to copy partly without our permission</li> <li>- This test result is dependent on only equipment to be used</li> <li>- This test result based on a single evaluation of one sample of the above mentioned</li> </ul>				



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**Electromagnetic  
Interference  
Test Report**

## Contents

1. Laboratory Information .....	3
2. Description of EUT .....	4
3. Test Standards .....	5
4. Measurement condition .....	6
5. Measurement of radiated emission .....	8
5.1 Measurement equipment .....	8
5.2 Environmental conditions .....	8
5.3 Test data .....	9
6. Measurement of Occupied Bandwidth.....	10
6.1 Measurement equipment .....	10
6.2 Measurement result .....	10
6.3 Test data .....	11
7. Photographs of test setup .....	12
8. Photographs of EUT .....	14

	<b>ESTECH Co., Ltd.</b> Rm 1015, World Venture Center II, 426-5 Gasan-dong, Geumcheon-gu, Seoul, 158-803, Korea	   	<b>Electromagnetic Interference Test Report</b>
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## 1. Laboratory Information

### 1.1 General

This EUT (Equipment Under Test) has been shown to be capable of compliance with the applicable technical standards and is tested in accordance with the measurement procedures as indicated in this report.

ESTECH Lab attests to accuracy of test data. All measurement reported herein were performed by ESTECH Co., Ltd.

ESTECH Lab assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

### 1.2 Test Lab.

Corporation Name : ESTECH Co. Ltd

Head Office : Rm 1015, World Venture Center II, 426-5, Gasan-dong, Geumcheon-gu, Seoul, Korea  
(Safety & Telecom. Test Lab)

EMC Test Lab : 58-1 Osan-Ri, GaNam-Myon, YeoJoo-Gun, KyungKi-Do, Korea  
97-1 Hoiuk-Ri Majang-Myon, Icheon-city, KyungKi-Do, Korea

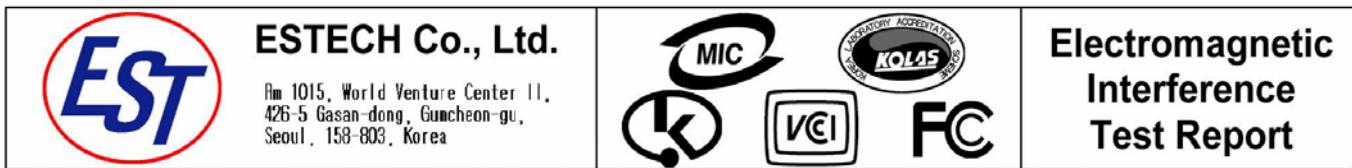
### 1.3 Official Qualification(s)

MIC : Granted Accreditation from Ministry of Information & Communication for EMC, Safety and Telecommunication

KOLAS : Accredited Lab By Korea Laboratory Accreditation Schema base on CENELEC requirements

FCC : Filed Laboratory at Federal Communications Commission

VCCI : Granted Accreditation from Voluntary Control Council for Interference from ITE



## 2. Description of EUT

### 2.1 Summary of Equipment Under Test

Product name : GeoTrack

Model Number : Panic

Serial Number : NONE

Manufacturer : UTOFOS WIRELESS Co., Ltd.

Country of origin : KOREA

Rating : INPUT : 3V dc(BATTERY)

Receipt Date : 2007-04-17

EUT Type : RF Remote Control

Output Power : <1mW

Freq. Range : 315.04 MHz

Oscillator(s) : 315MHz

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### 3. Test Standards

#### Test Standard : FCC PART 15 (2006)

This Standard sets out the regulations under which an intentional, unintentional, or incidental radiator may be operated without an individual license. It also contains the technical specifications, administrative requirements and other conditions relating to the marketing of Part 15 devices.

#### Test Method : ANSI C 63.4 (2003)

This standard sets forth uniform methods of measurement of radio-frequency (RF) signals and noise emitted from both unintentional and intentional emitters of RF energy in the frequency range 9 kHz to 40 GHz. Methods for the measurement of radiated and AC power-line conducted radio noise are covered and may be applied to any such equipment unless otherwise specified by individual equipment requirements. These methods cover measurement of certain devices that deliberately radiate energy, such as intentional emitters, but does not cover licensed transmitters. This standard is not intended for certification/approval of avionic equipment or for industrial, scientific, and medical (ISM) equipment. These methods apply to the measurement of individual units or systems comprised of multiple units

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## 4. Measurement Condition

### 4.1 EUT Operation.

- \* The EUT was in the following operation mode during all testing
- \* The operational conditions of the EUT was determined by the manufacturer according to the typical use of the EUT with respect to the expected highest level of emission
- \* The EUT is a one-channel wireless transmitter operating at 300MHz

Tx Freq. Range : 315MHz  $\pm$ 100KHz

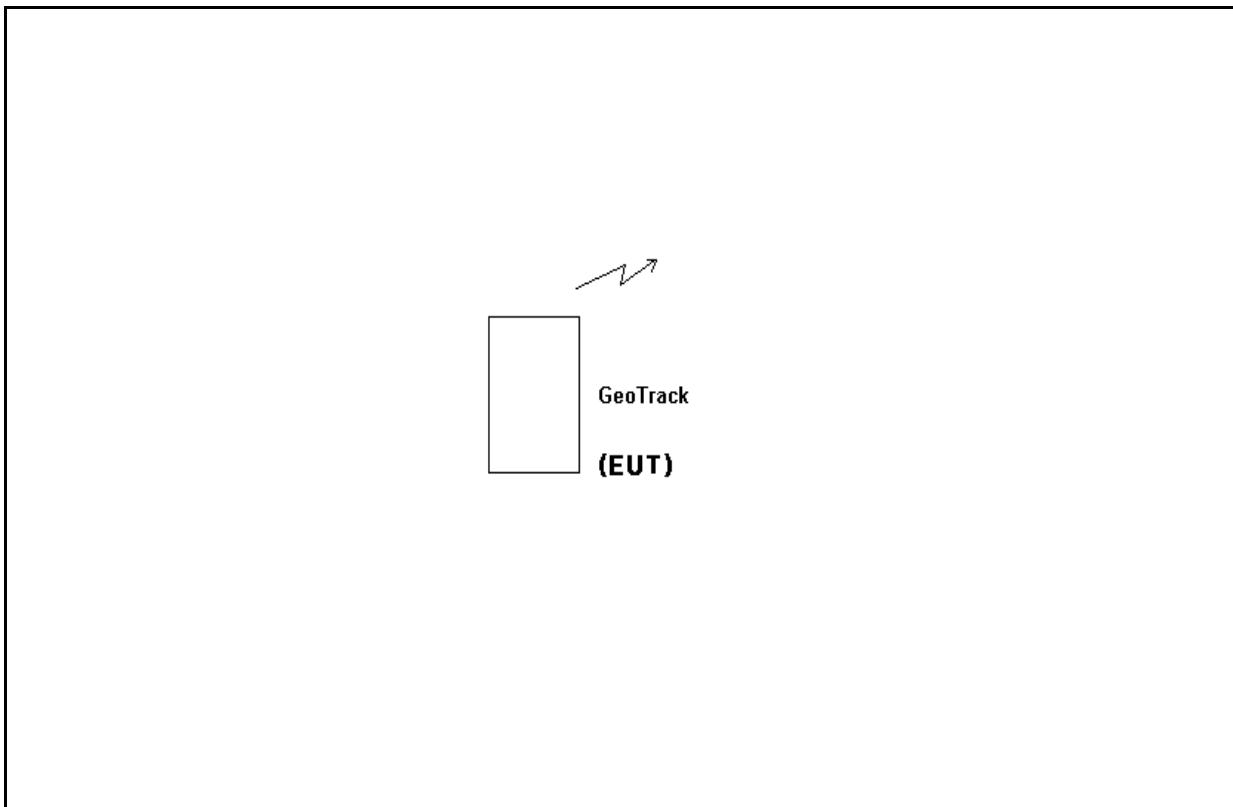
Oscillator(s) : 315MHz

No. of Channels : 1

Antenna : Built-in internal looped antenna on-board

Power Consumption : 3V DC

### 4.2 Configuration and Peripherals





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#### 4.3 EUT and Support equipment

## 4.4 Cable Connecting

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## 5. Measurement of radiated disturbance

Above 30 MHz Electric Field strength was measured in accordance with FCC Part 15 (2006) & ANSI C 63.4 (2003). The test setup was made according to FCC Part 15 (2006) & ANSI C 63.4 (2003) on an open test site, which allows a 3m distance measurement. The EUT was placed in the center of wooden turntable. The height of this table was 0.8m. The measurement was conducted with both horizontal and vertical antenna polarization. The turntable has fully rotated. For further description of the configuration refer to the picture of the test set-up.

### 5.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
TEST Receiver	ESVS10	Rohde & Schwarz	838562/002	2008. 1. 23
Spectrum Analyzer	R3261C	ADVANTEST	61720116	2008. 4. 20
LogBicon Antenna	VULB 9160	S/B	3107	2008. 5. 22
Amplifier	8447F	HP	2805A02972	2008. 6. 26
Spectrum Analyzer	8563E	HP	3623A05297	2008. 3. 06
PREAMPLIFIER	8449B	HP	3008A00581	2008. 3. 06
Turn Table	2087	EMCO	2129	-
Antenna Mast	2070-01	EMCO	9702-203	-
ANT Mast Controller	2090	EMCO	1535	-
HORN ANTENNA	BBHA 9120 D	Schwarzbeck	352	2008.06.05
Turn Table Controller	2090	EMCO	1535	-

### 5.2 Environmental Condition

Test Place : Open site(3m)  
 Temperature (°C) : 29°C  
 Humidity (%) : 64%



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# Electromagnetic Interference Test Report

### 5.3 Test data 30MHz ~ 3.5GHz Radiated Emissions

Measurement Distance : 3 m

H : Horizontal, V : Vertical

1. The EUT were investigated at X,Y,Z Axis and the worst-case is reported
2. According to section 15.231(b), compliance with the limits in the above table may be
  - based on the use of measurement instrumentation with a CISPR quasi-peak detector.
3. The EUT was tested with a new battery
4. There was no found radiated emission above 1000Mhz

### Remark

Fund. Freq.(MHz)	F/S ( $\mu$ V/m)	F/S Spurious( $\mu$ V/m)
40.66 ~ 40.70	2250	225
70 ~ 130	1250	125
130 ~ 174	1250 ~ 3750	125 ~ 375
174 ~ 260	3750	375
260 ~ 470	3750 ~ 12500	375 ~ 1250
470 & above	12500	1250

6. These frequencies fall under restricted bands according to §15.205. The field strength of emissions at these frequencies does not exceed the limits specified in § 15.205

## 6. Occupied Bandwidth Measurement

According to §15.231(c) The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. Bandwidth is determined at the points 20dB down from the modulated carrier.

### 6.1 Test instruments and measurement setup

The spectrum analyzer is set to as following.

- . RBW= 10KHz
- . VBW= 10KHz
- . Span= 200kHz
- . Sweep= suitable duration based on the EUT specification.

#### 20dB Bandwidth Test Instruments

Description	Model	Serial Number
Spectrum Analyzer	E4407B	US40241281
RF Cable	Length: 10cm	–
–Spectrum Analyzer <=> EUT	Loss: 0.3dB	–

### 6.2 Measurement results

EUT		MODEL	Panic
MODE	FSK	ENVIRONMENTAL CONDITION	25 °C, 40%RH
INPUT POWER	DC 3V		

CHANNEL	Channel Frequency (MHz)	Bandwidth at 20dB below(kHz)	Limit (kHz)	PASS/FAIL
1	310	46.7	< 787.5	PASS



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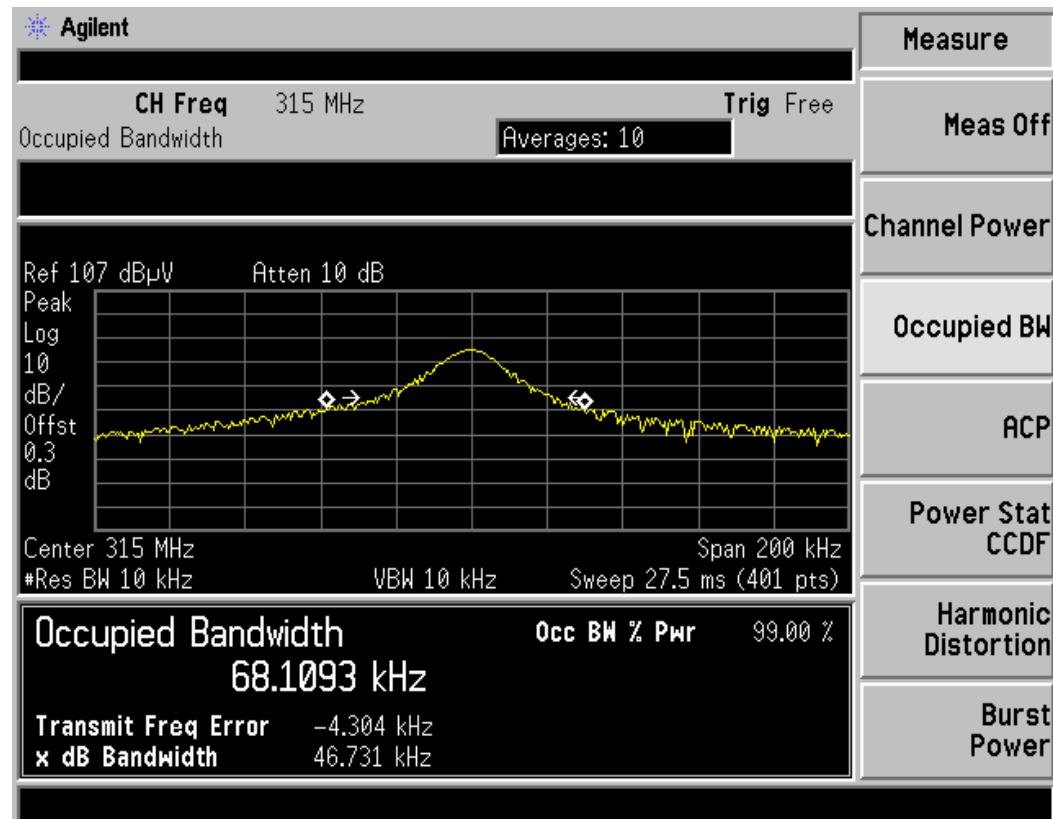
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Interference  
Test Report

## 6.3 Trace data

20dB bandwidth





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Interference  
Test Report**

## 7. Photographs of test setup

### 7.1 Setup for Radiated Test : 30 ~ 1000 MHz

[ Front ]



[ Rear ]





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## 7.2 Setup for Radiated Test :Above 1000 MHz

[ Front ]





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## 8. Photographs of EUT

[ Front ]



[ Rear ]

