Product Service

Choose certainty.
Add value.

Report On

RF Exposure Assessment of the
EDTracker Ltd
EDTDGL001 EDTracker Wireless Dongle

FCC ID: 2AKV8-000002

Document 75938172 Report 08 Issue 1 April 2017

TÜV SÜD Product Service, Octagon House, Concorde Way, Segensworth North,
Fareham, Hampshire, United Kingdom, PO15 5RL
Tel: +44 (0) 1489 558100. Website: www.tuv-sud.co.uk

REPORT ON

RF Exposure Assessment of the
EDTracker Ltd
EDTDGL001 EDTracker Wireless Dongle

Document 75938172 Report 08 Issue 1

April 2017

PREPARED FOR

EDTracker Ltd
16 Woodhurst Lane
Wokingham
Berkshire
RG41 1JQ
UK

PREPARED BY

David Guyett-Smith
Chief Engineer - Technical Solutions

APPROVED BY

Matthew Russell
Authorised Signatory

DATED 11 April 2017

Product Service

CONTENTS

s

Product Service

SECTION 1

REPORT SUMMARY

RF Exposure Assessment of the
EDTracker Ltd
EDTDGL001 EDTracker Wireless Dongle

1.1 INTRODUCTION

The information contained in this report is intended to show verification of the RF Exposure Assessment of the EDTracker Ltd EDTDGL001 EDTracker Wireless Dongle to the requirements of the applied test specifications.

Objective	To perform RF Exposure Assessment to determine the Equipment Under Test's (EUT's) compliance of the applied rules.
Applicant	EDTracker Ltd
Manufacturer	EDTracker Ltd
Manufacturing Description	EDTracker Wireless Dongle
Model Number(s)	EDTDGL001
Test Specification/Issue/Date	EN 62311:2008 CFR 47 Pt1.1310

1.2 REGIONAL REQUIREMENTS

The table below shows the regional requirements that are referenced in this test report. A full list of the requirements is shown in Annex A.

Report Reference	Regional Requirement
EU	EN 62311:2008
FCC	CFR 47 Pt1.1310

1.3 PRODUCT INFORMATION

1.3.1 Technical Description

The Equipment under test was an EDTracker Ltd EDTDGL001 EDTracker Wireless Dongle. A full technical description can be found in the manufacturer's documentation.

All reported calculations were carried out on the relevant information supplied for the EDTDGL001 EDTracker Wireless Dongle to demonstrate compliance with the applied test specification(s). The sample assessed was found to comply with the requirements of the applied rules.

1.3.2 Supported Features

The following radio access technologies and frequency bands are supported by the equipment under test.

Radio Access Technology	2.4 GHz SRD
Frequency Band	2403-2481

1.3.3 Antennas

The following antennas are supported by the equipment under test.

No.	Model	Gain (dBi)
1	2.4 GHz	5

1.4 BRIEF SUMMARY OF RESULTS

The wireless device described within this report has been shown to be capable of compliance with the basic restrictions related to human exposure to electromagnetic fields for both General Public and Occupational. The calculations shown in this report were made in accordance with the procedures specified in the applied test specification(s).

Required Compliance Boundary (m)	
Occupational	General Population
0.2	0.2

Table 1 – Compliance Boundary Results

Regional Requirement	Calculated RF exposure level at compliance boundary of 0.2 m					
	S Field (W/m^2)		E Field (V/m)		H Field (A/m)	
	Result	Limit	Result	Limit	Result	Limit
EU	0.3146	50.0000	10.8904	137.0000	0.0289	0.3600
FCC*	0.0315	5.0000	N/A	N/A	N/A	N/A

* Requirement and Result in mW/cm^2

Table 2 – Occupational Results

The calculations show that the EUT complies with the occupational exposure levels described in the EN 62311:2008 and CFR 47 Pt1.1310 at the point of investigation, 0.2 m.

Regional Requirement	Calculated RF exposure level at compliance boundary of 0.2 m					
	S Field (W/m^2)		E Field (V/m)		H Field (A/m)	
	Result	Limit	Result	Limit	Result	Limit
EU	0.3146	10.0000	10.8904	61.0000	0.0289	0.1600
FCC*	0.0315	1.0000	N/A	N/A	N/A	N/A

* Requirement and Result in mW/cm^2

Table 3 – General Population Results

The calculations show that the EUT complies with the occupational exposure levels described in the EN 62311:2008 and CFR 47 Pt1.1310 at the point of investigation, 0.2 m.

SECTION 2

TEST DETAILS

2.1 RATIONALE FOR ASSESSMENT OF THE RF EXPOSURE

The aim of the assessment report is to evaluate the compliance boundary for a set of given input power(s) according to the basic restrictions (directly or indirectly via compliance with reference levels) related to human exposure to radio frequency electromagnetic fields.
The chosen assessment method to establish the compliance boundary in the far-field region is the reference method as defined in the relevant specifications.

The RF exposure assessment is based upon the following criteria:

The EDTDGL001 EDTracker Wireless Dongle operates with the following transmitters active on the antenna ports shown in Section 1.3.3. For each transmitter, the Radio Access Technology (RAT), EIRP inclusive of antenna gain and duty cycle, gain of the antenna and lowest frequency of operation are shown as they contribute to the calculation of S Field, E field and H field values according to the following formulas.

The power flux (S Field):

$$S = \frac{PG_{(\theta,\phi)}}{4\pi r^2}$$

The electric field strength (E Field):

$$E = \frac{\sqrt{30PG}_{(\theta,\phi)}}{r}$$

The magnetic field strength (H Field):

$$H = \frac{E}{\eta_o}$$

Where:

P = Average Power (W)
G = Antenna Gain (dBi)
r = Distance (cm) or (m)
η_o = 377

2.2 TEST RESULT DETAILS

The frequencies shown in the tables below have been chosen based on the lowest possible frequency that the EUT can transmit.

Antenna Port	Tx No.	Ant No.	RAT	EIRP (W)	Duty Cycle (%)	Gain (dBi)	Frequency (MHz)	RF Exposure Level at compliance boundary of 0.2 m		
								S Field (W/m^2)	E Field (V/m)	H Field (A/m)
1	1	1	2.4 GHz SRD	0.158	20	5	2403.2	0.3146	10.8904	0.0289

Table 4 – Occupational Transmitter Summary

Antenna Port	Tx No.	Ant No.	RAT	EIRP (W)	Duty Cycle (%)	Gain (dBi)	Frequency (MHz)	RF Exposure Level at compliance boundary of 0.2 m		
								S Field (W/m^2)	E Field (V/m)	H Field (A/m)
1	1	1	2.4 GHz SRD	0.158	20	5	2403.2	0.3146	10.8904	0.0289

Table 5 – General Population Transmitter Summary

SECTION 3

DISCLAIMERS AND COPYRIGHT

3.1 DISCLAIMERS AND COPYRIGHT

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

Product Service

ANNEX A

REGIONAL REQUIREMENTS

Frequency Range (MHz)	Power Density (W/m^2)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)
0.065 - 1	-	610	1.6/f
1 - 10	-	610/f	1.6/f
10 - 400	10	61	0.162
400 - 2000	f/40	3*f^0.5	0.008*f^0.5
2000 - 300000	50	137	0.36

Table A.1 – EN 62311:2008 Occupational Limits

Frequency Range (MHz)	Power Density (W/m^2)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)
0.003 - 0.15	-	87	5
0.15 - 1	-	87	0.73/f
1 - 10	-	87/f^0.5	0.73/f
10 - 400	2	28	0.073
400 - 2000	f/200	1.375*f^0.5	0.0037*f^0.5
2000 - 300000	10	61	0.16

Table A.2 – EN 62311:2008 General Population Limits

Frequency Range (MHz)	S Field (mW/cm^2)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)
0 - 0.3	-	-	-
0.3 - 3	100	614	1.63
3 - 30	900/f^2	1842/f	4.89/f
30 - 300	1	61.4	0.163
300 - 1500	f/300	-	-
1500 - 100000	5	-	-

Table A.3 – CFR 47 Pt1.1310 Occupational Limits

Frequency Range (MHz)	S Field (mW/cm^2)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)
0 - 0.3	-	-	-
0.3 - 3	100	614	1.63
3 - 30	180/f^2	824/f	2.19/f
30 - 300	0.2	27.5	0.073
300 - 1500	f/1500	-	-
1500 - 100000	1	-	-

Table A.4 – CFR 47 Pt1.1310 General Population Limits