



F2 Labs
16740 Peters Road
Middlefield, Ohio 44062
United States of America
www.f2labs.com

MPE REPORT

Manufacturer: PetroPower, LLC
3003 East 37th Street North, Suite 100
Wichita, Kansas 67219 USA

Applicant: Same as Above

Product Name: T-Rex Solar IMU Sensor

Product Description: The product is a solar powered sensor intended to be attached to the surface equipment at an oil well to collect motion data.

Operating Voltage/Freq. of EUT During Testing: 3.7VDC

Model(s): T-Rex Polished Rod Sensor*
**Denotes actual model tested as representative of product family that includes models T-Rex Drive Shaft Sensor and T-Rex Polished Rod Sensor.*

FCC ID: 2BGG6PP12

Testing Commenced: 2024-07-26

Testing Ended: 2024-08-09

Test Results: In Compliance

The EUT complies with the EMC requirements when manufactured identically as the unit tested in this report, including any required modifications. Any changes to the design or build of this unit subsequent to this testing may deem it non-compliant.

Standards:

- KDB447498
- FCC 1.1310



Order No(s): F2P32069A

Applicant: PetroPower, LLC
Model: T-Rex Polished Rod Sensor

Evaluation Conducted by:

Julius Chiller, Senior Wireless Project Engineer

Report Reviewed by:

Ken Littell, Vice President of Operations

F2 Labs
26501 Ridge Road
Damascus, MD 20872
Ph 301.253.4500

F2 Labs
16740 Peters Road
Middlefield, OH 44062
Ph 440.632.5541

F2 Labs
8583 Zionsville Road
Indianapolis, IN 46268
Ph 317.610.0611

This test report may be reproduced in full; partial reproduction only may be made with the written consent of F2 Labs. The results in this report apply only to the equipment tested.



TABLE OF CONTENTS

1	<u>ADMINISTRATIVE INFORMATION</u>
2	<u>SUMMARY OF TEST RESULTS/MODIFICATIONS</u>
3	<u>ENGINEERING STATEMENT</u>
4	<u>EUT INFORMATION AND DATA</u>
5	<u>RF EXPOSURE FOR DEVICE >20cm FROM HUMAN</u>
	➤ <u>FCC</u>



1 ADMINISTRATIVE INFORMATION

1.1 Measurement Location:

F2 Labs in Middlefield, Ohio.

Site description and attenuation data are on file with the FCC's Sampling and Measurement Branch at the FCC Laboratory in Columbia, MD.

1.2 Measurement Procedure:

All measurements were performed according to:

- KDB558074
- FCC 15.247

1.4 Document History

Document Number	Description	Issue Date	Approved By
F2P32069A-03E	First Issue	2024-08-15	K. Littell



2 SUMMARY OF TEST RESULTS

Test Name	Standard(s)	Results
RF Exposure for Device >20cm from Human	KDB447498 FCC 1.1310	Complies

Modifications Made to the Equipment
RF output power was reduced to 3dBm to meet Spurious Emissions requirements.



3 ENGINEERING STATEMENT

This report has been prepared on behalf of PetroPower, LLC to provide documentation for the calculations described herein, based on the measurements taken in supporting Test Reports. This equipment has been tested and calculations were found to comply with KDB447498 and FCC 1.1310. The test results found in this test report relate only to the item(s) tested.



4 EUT INFORMATION AND DATA

4.1 Equipment Under Test:

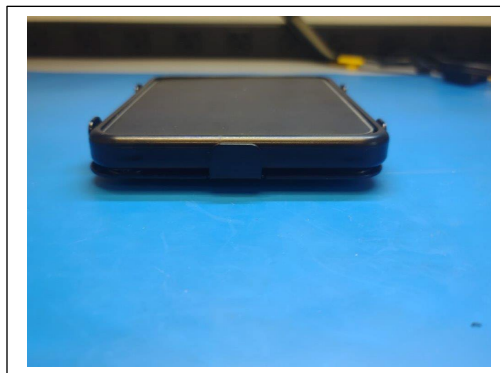
Product: T-Rex Solar IMU Sensor

Model(s): T-Rex Polished Rod Sensor*

**Denotes actual model tested as representative of product family that includes models T-Rex Drive Shaft Sensor and T-Rex Polished Rod Sensor.*

Serial No.: None Specified

FCC ID: 2BGG6PP12



4.2 Trade Name:

PetroPower, LLC

4.3 Power Supply:

3.7 VDC

4.4 Applicable Rules:

- KDB447498
- FCC 1.1310

4.5 Antenna:

Molex 146153 series balanced antenna, 3.2dBi peak gain.

4.6 Accessories:

Device	Manufacturer	Model Number	Serial Number
USB to Serial	FTDI	FTD1232	None Specified
DC Supply*	BK Precision	1685B	346F17303
Computer*	Dell-Latitude	T17G	17XZ4Q2

**Indicates F2 Labs-supplied equipment.*



4.7 Test Item Condition:

The equipment to be tested was received in good condition.

4.8 Testing Algorithm:

EUT was set to transmit a continuous modulated signal on the low, mid and high channels in the 2.4 GHz Bluetooth band. Both 1 Mb and 2 Mb data rates were tested. The highest emissions were recorded in the data tables.



5. RF EXPOSURE FOR DEVICE >20cm FROM HUMAN

5.1 Requirements: Distance used is 20cm

FCC	
Limit:	1mW/cm ²
Formula used for result:	$\frac{E.I.R.P.}{4 \pi R^2}$
Results:	E.I.R.P. = 3.25mW 3.25mW at the 2402 MHz Low Channel (highest) $\frac{3.25mW}{4 \pi R^2} = \frac{3.25mW}{5026.55} = 0.00065mW/cm^2$