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# Report On

FCC Testing of the  
PFK Electronics SWDS Dealer Remote  
In accordance with FCC CFR 47 Part 15B

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FCC ID: OXC844300

Document 75926294 Report 01 Issue 1

April 2014



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COMMERCIAL-IN-CONFIDENCE

**REPORT ON**

FCC Testing of the  
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**PREPARED FOR**

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**Mark Jenkins**  
Authorised Signatory

**DATED**

07 April 2014

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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 Part 15B. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

G Lawler



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## **SECTION 1**

### **REPORT SUMMARY**

FCC Testing of the  
PFK Electronics SWDS Dealer Remote  
In accordance with FCC CFR 47 Part 15B



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## 1.1 INTRODUCTION

The information contained in this report is intended to show verification of the FCC Testing of the PFK Electronics SWDS Dealer Remote to the requirements of FCC CFR 47 Part 15B.

|                                |                                                                                                                                                     |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Objective                      | To perform FCC Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out. |
| Manufacturer                   | PFK Electronics                                                                                                                                     |
| Model Number(s)                | 844300                                                                                                                                              |
| Serial Number(s)               | 5                                                                                                                                                   |
| Number of Samples Tested       | 1                                                                                                                                                   |
| Test Specification/Issue/Date  | FCC CFR 47 Part 15B (2013)                                                                                                                          |
| Incoming Release Date          | Application Form<br>27 March 2014                                                                                                                   |
| Disposal Reference Number Date | Held Pending Disposal<br>Not Applicable<br>Not Applicable                                                                                           |
| Order Number Date              | PE/144574_Rev0<br>26 March 2014                                                                                                                     |
| Start of Test                  | 1 April 2014                                                                                                                                        |
| Finish of Test                 | 1 April 2014                                                                                                                                        |
| Name of Engineer(s)            | G Lawler                                                                                                                                            |
| Related Document(s)            | ANSI C63.4 (2003)                                                                                                                                   |



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## 1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC CFR 47 Part 15B is shown below.

| Section | Spec Clause | Test Description   | Result | Comments/Base Standard |
|---------|-------------|--------------------|--------|------------------------|
| Idle    |             |                    |        |                        |
| 2.1     | 15.109      | Radiated Emissions | Pass   | ANSI C63.4 (2003)      |



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## 1.3 APPLICATION FORM

| APPLICANT'S DETAILS                  |                                                                |
|--------------------------------------|----------------------------------------------------------------|
| COMPANY NAME :                       | PFK Electronics.....                                           |
| ADDRESS :                            | 488 Umbilo Road, Durban, Kwazulu Natal, 4001 South Africa..... |
| NAME FOR CONTACT PURPOSES :          | ..Harvey Bowler                                                |
| TELEPHONE NO: ...+27 31 2747200..... | FAX NO: +27 312054324.....                                     |
| E-MAIL:                              | ...Harveyb@pfk.co.za.....                                      |

| EQUIPMENT INFORMATION                                                         |                             |                                         |                             |
|-------------------------------------------------------------------------------|-----------------------------|-----------------------------------------|-----------------------------|
| Model name/number                                                             | SWDS Dealer Remote          | Identification/Part number              | ...844 300.....             |
| Hardware Version                                                              | 1                           | Software Version                        | 4                           |
| Manufacturer                                                                  | PFK Electronics PTY (Ltd.)  | Country of Origin                       | South Africa                |
| FCC ID                                                                        | OXC844300                   | Industry Canada ID                      | .....N/A.....               |
| Technical description (a brief description of the intended use and operation) |                             |                                         |                             |
| .....Single Button Remote Transmitter.....                                    |                             |                                         |                             |
| <u>Supply Voltage:</u>                                                        |                             |                                         |                             |
| [ ]                                                                           | AC mains                    | State AC voltage .....                  | V and AC frequency ..... Hz |
| [ ]                                                                           | DC (external)               | State DC voltage .....                  | V and DC current ..... A    |
| [ X ]                                                                         | DC (internal)               | State DC voltage 3                      | V and Battery type 2xCR1220 |
| <u>Frequency characteristics:</u>                                             |                             |                                         |                             |
| Transmitter Frequency range 433.6 MHz to 434.2 MHz                            |                             | Channel spacing N/A<br>(if channelized) |                             |
| Receiver Frequency range N/A MHz to N/A MHz<br>(if different)                 |                             | Channel spacing N/A<br>(if channelized) |                             |
| Designated test frequencies:                                                  |                             |                                         |                             |
| Bottom: 433.6 MHz                                                             |                             | Middle: 433.9 MHz                       | Top: 434.2 MHz              |
| Intermediate Frequencies : ..... MHz                                          |                             |                                         |                             |
| Highest Internally Generated Frequency :                                      |                             | 433.9 MHz                               |                             |
| <u>Power characteristics:</u>                                                 |                             |                                         |                             |
| Maximum transmitter power 0.01 W                                              |                             | Minimum transmitter power               |                             |
| ..... W                                                                       |                             | (if variable)                           |                             |
| [ ]                                                                           | Continuous transmission     |                                         |                             |
| [ X ]                                                                         | Intermittent transmission   | State duty cycle – average 50%          |                             |
| If intermittent, can transmitter be set to continuous transmit test mode? Yes |                             |                                         |                             |
| <u>Antenna characteristics:</u>                                               |                             |                                         |                             |
| [ ]                                                                           | Antenna connector           | State impedance ..... ohm               |                             |
| [ ]                                                                           | Temporary antenna connector | State impedance ..... ohm               |                             |
| [ X ]                                                                         | Integral antenna            | State gain<br>-10 dBi                   |                             |
| <u>Modulation characteristics:</u>                                            |                             |                                         |                             |
| [ X ]                                                                         | Amplitude                   | [ ] Other                               |                             |
| [ ]                                                                           | Frequency                   | Details: OOK                            |                             |
| [ ]                                                                           | Phase                       | (GMSK, QSPK etc)                        |                             |
| Can the transmitter operate un-modulated? No                                  |                             |                                         |                             |
| ITU Class of emission: .....                                                  |                             |                                         |                             |
| <u>Battery/Power Supply</u>                                                   |                             |                                         |                             |
| Model name/number                                                             | CR1220                      | Identification/Part number              | CR1220                      |
| Manufacturer                                                                  | Standard                    | Country of Origin                       | N/A                         |
| <u>Ancillaries (if applicable)</u>                                            |                             |                                         |                             |
| Model name/number                                                             | .....                       | Identification/Part number              | .....                       |
| Manufacturer                                                                  | .....                       | Country of Origin                       | .....                       |
| <u>Extreme conditions:</u>                                                    |                             |                                         |                             |
| Maximum temperature                                                           | 60 °C                       | Minimum temperature                     | 0 °C                        |
| Maximum supply voltage                                                        | 6 V                         | Minimum supply voltage                  | 4 V                         |



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I hereby declare that I am entitled to sign on behalf of the applicant and that the information supplied is correct and complete.

Signature :      Held on File at TUV SUD  
Name :            Harvey Bowler  
Position held :   Customer Technical Support Manager  
Date :            27 March 2014



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## **1.4 PRODUCT INFORMATION**

### **1.4.1 Technical Description**

The Equipment Under Test (EUT) was a PFK Electronics SWDS Dealer Remote. A full technical description can be found in the manufacturer's documentation.

## **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.

The EUT was powered from a 3 V Battery supply.

FCC Measurement Facility Registration Number  
90987 Octagon House, Fareham Test Laboratory

## **1.6 DEVIATIONS FROM THE STANDARD**

No deviations were made to the test standard during testing.

## **1.7 MODIFICATION RECORD**

Modification 0 - No modifications were made to the test sample during testing.



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## **SECTION 2**

### **TEST DETAILS**

FCC Testing of the  
PFK Electronics SWDS Dealer Remote  
In accordance with FCC CFR 47 Part 15B



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## **2.1 RADIATED EMISSIONS**

### **2.1.1 Specification Reference**

FCC CFR 47 Part 15B, Clause 15.109

### **2.1.2 Equipment Under Test and Modification State**

844300 S/N: 5 - Modification State 0

### **2.1.3 Date of Test**

1 April 2014

### **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 Procedure**

A test environment and testing arrangement meeting the specification of ANSI C63.4 was used during all testing. The Equipment Under Test (EUT) was set upon a non-conducting platform at an elevation of 80 cm above a horizontal reference ground plane. The EUT was set upon a non-conducting platform during testing. When frequencies less than 18 GHz were measured; the EUT elevation was 80 cm above the horizontal reference ground plane.

The horizontal reference ground plane encompasses a turntable which is used to adjust the azimuth of the EUT. An antenna positioner is used to elevate the measuring antenna above the horizontal reference ground plane whereby the antenna elevation is adjustable between 1 m and 4 m.

Exploratory radiated emissions measurements were made by azimuth emissions searches over a range of 0° and 360°. These exploratory radiated emissions measurements were made using a peak detector over a frequency range of 30 MHz to 2 GHz, with the measuring antenna in both vertical and horizontal polarizations.

At least six of the greatest peak emissions, frequency positions were selected from the exploratory radiated emissions measurements for further evaluation as final measuring points.

To ascertain the azimuth and measuring antenna polarization that yields the highest peak emission level, each final measurement frequency was investigated by continuous azimuth emissions searching with the measuring antenna in both vertical and horizontal polarizations. For each final measurement frequency, the respective peak emission azimuth and measuring antenna polarization was used during a measuring antenna elevation search from 1 m to 4 m. Each final measurement frequency was then measured with the EUT azimuth, measuring antenna height and polarization that yielded the greatest peak emission level.



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Final measurement points over the frequency range of 30 MHz to 1 GHz were measured using a quasi-peak detector. Final measurement points over the frequency range of 1 GHz and 3 GHz were measured using peak and average methods. Peak measurements were made using a peak detector with 1 MHz resolution and video bandwidths. Average measurements were made using a resolution bandwidth of 1 MHz and a video bandwidth of 10 Hz.

All final measurements were assessed against the Class B emission limits in Clause 15.109 of FCC CFR 47 FCC Part 15B.

#### **2.1.6 Environmental Conditions**

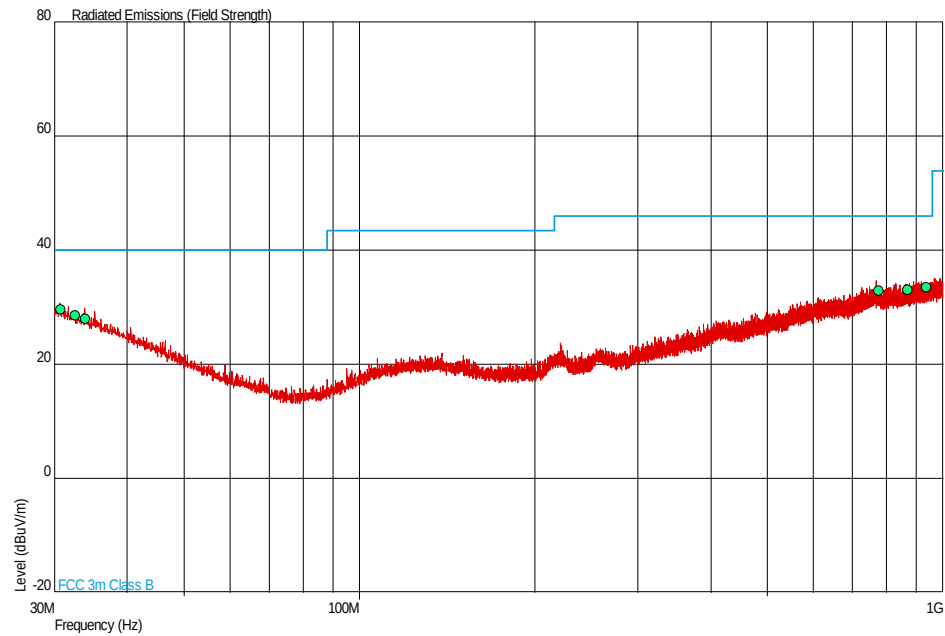
|                     |        |
|---------------------|--------|
| Ambient Temperature | 20.4°C |
| Relative Humidity   | 39.0%  |



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2.1.7 Test Results

30 MHz to 1 GHz

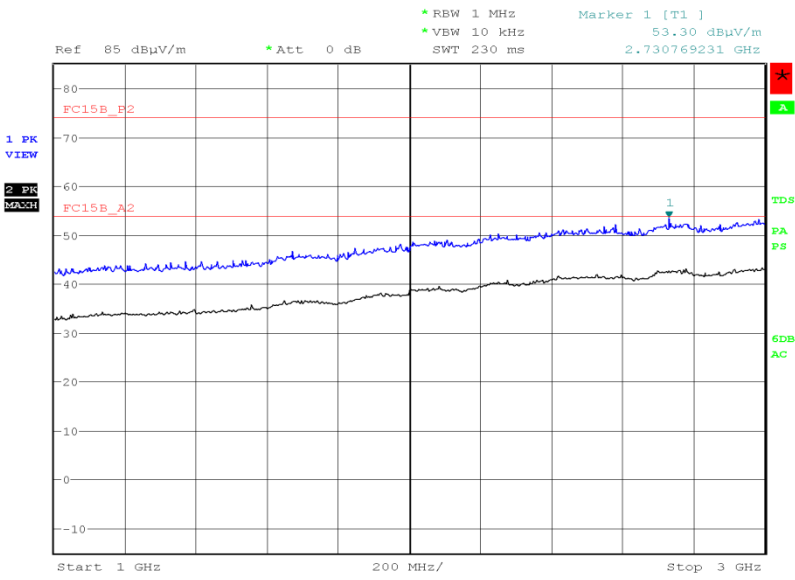


| Frequency (MHz) | QP Level (dBμV/m) | QP Level (μV/m) | QP Limit (dBμV/m) | QP Limit (μV/m) | QP Margin (dBμV/m) | QP Margin (μV/m) | Angle (Deg) | Height (m) | Polarity   |
|-----------------|-------------------|-----------------|-------------------|-----------------|--------------------|------------------|-------------|------------|------------|
| 30.776          | 29.6              | 30.2            | 40.0              | 100             | -10.4              | 69.8             | 225         | 1.00       | Vertical   |
| 32.619          | 28.6              | 26.9            | 40.0              | 100             | -11.4              | 73.1             | 90          | 1.00       | Vertical   |
| 33.880          | 28.0              | 25.1            | 40.0              | 100             | -12.0              | 74.9             | 135         | 1.00       | Vertical   |
| 775.009         | 32.9              | 44.2            | 46.0              | 200             | -13.1              | 155.8            | 315         | 1.00       | Vertical   |
| 869.244         | 33.1              | 45.2            | 46.0              | 200             | -12.9              | 154.8            | 0           | 1.00       | Vertical   |
| 937.920         | 33.6              | 47.9            | 46.0              | 200             | -12.4              | 152.1            | 90          | 1.00       | Horizontal |



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1 GHz to 3 GHz



Date: 1.APR.2014 19:06:52



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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 - Radiated Emissions</b>  |                 |                   |        |                             |                 |
| Antenna (Double Ridge Guide, 1GHz-18GHz) | EMCO            | 3115              | 234    | 12                          | 3-Apr-2014      |
| Screened Room (5)                        | Rainford        | Rainford          | 1545   | 24                          | 10-Jan-2015     |
| Turntable Controller                     | Inn-Co GmbH     | CO 1000           | 1606   | -                           | TU              |
| Antenna (Bilog)                          | Chase           | CBL6143           | 2904   | 24                          | 10-Jun-2015     |
| EMI Test Receiver                        | Rohde & Schwarz | ESU40             | 3506   | 12                          | 22-Oct-2014     |
| 9m RF Cable (N Type)                     | Rhophase        | NPS-2303-9000-NPS | 3791   | -                           | TU              |
| Tilt Antenna Mast                        | maturo GmbH     | TAM 4.0-P         | 3916   | -                           | TU              |
| Mast Controller                          | maturo GmbH     | NCD               | 3917   | -                           | TU              |

TU – Traceability Unscheduled



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### 3.2 MEASUREMENT UNCERTAINTY

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

|                    |                                                            |
|--------------------|------------------------------------------------------------|
| Test Discipline    | MU                                                         |
| Radiated Emissions | 30MHz to 1GHz: $\pm 5.1$ dB<br>1GHz to 40GHz: $\pm 6.3$ dB |



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## **SECTION 4**

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



#### 4.1 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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