Product Service

Choose certainty.
Add value.

Report On

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

COMMERCIAL-IN-CONFIDENCE

FCC ID: OXC844300

Document 75926294 Report 01 Issue 1 April 2014

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

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

Document 75926294 Report 01 Issue 1

April 2014

PREPARED FOR

PFK Electronics
488 Umbilo Road
Durban
Kwazulu Natal
4001
South Africa

PREPARED BY

Natalie Bennett
Senior Administrator, Technical Solutions

APPROVED BY

Mark Jenkins
Authorised Signatory

DATED 07 April 2014

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

Product Service

CONTENTS

Product Service

SECTION 1

REPORT SUMMARY

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

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 27 March 2014
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Order Number Date	PE/144574_Rev0 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)

Product Service

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)

Product Service

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……

Supply Voltage:

[ ]	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

Frequency characteristics:

Transmitter Frequency range 433.6 MHz to 434.2 MHz — Channel spacing N/A (if channelized)

Receiver Frequency range (if different) N/A MHz to N/A MHz — Channel spacing N/A (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

Power characteristics:

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

Antenna characteristics:

[ ]	Antenna connector		State impedance …… ohm
[ ]	Temporary antenna connector		State impedance …… ohm
[X]	Integral antenna	State gain	-10 dBi

Modulation characteristics:

[X] Amplitude — [ ] Other

[ ] Frequency Details: OOK

[ ] Phase (GMSK, QSPK etc)

Can the transmitter operate un-modulated? No

ITU Class of emission: ……

Battery/Power Supply

Model name/number	CR1220	Identification/Part number	CR1220
Manufacturer	Standard	Country of Origin	N/A

Ancillaries (if applicable)

Model name/number	……..……	Identification/Part number	……..……
Manufacturer	……..……	Country of Origin	……..……

Extreme conditions:

Maximum temperature	60 ºC	Minimum temperature	0 ºC
Maximum supply voltage	6 V	Minimum supply voltage	4 V

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

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.

Product Service

SECTION 2

TEST DETAILS

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

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.

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.

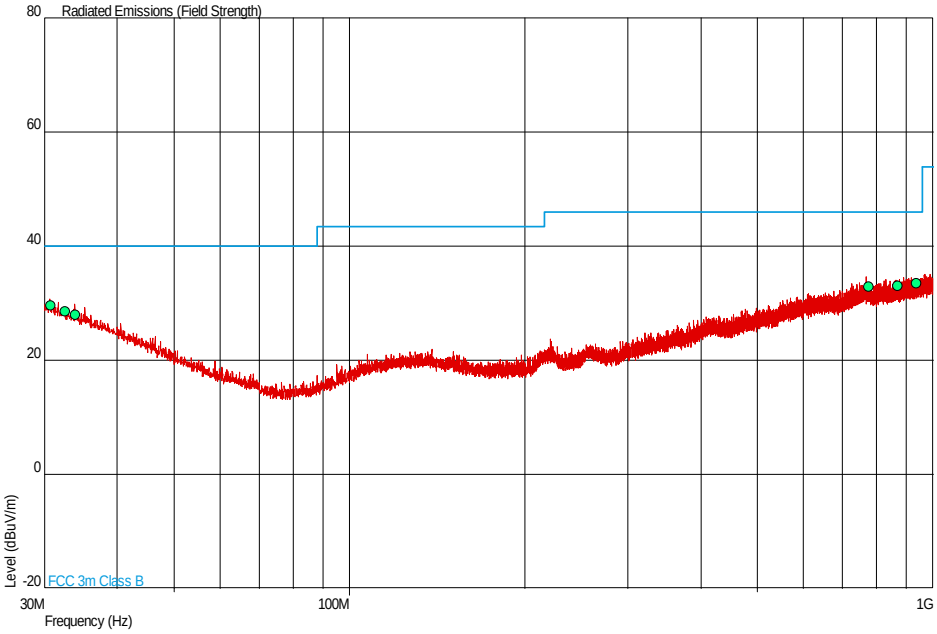
2.1.6 Environmental Conditions

Ambient Temperature	20.4°C
Relative Humidity	39.0%

Product Service

2.1.7 Test Results

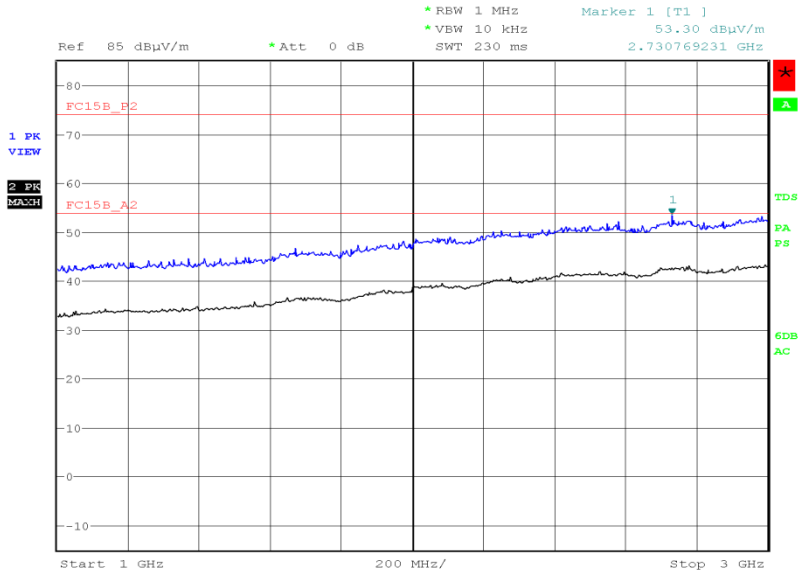
30 MHz to 1 GHz



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

Product Service

1 GHz to 3 GHz



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

Product Service

SECTION 3

TEST EQUIPMENT USED

Product Service

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
Section 2.1 - Radiated Emissions					
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

3.2 MEASUREMENT UNCERTAINTY

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

Test Discipline	MU
Radiated Emissions	30MHz to 1GHz: ± 5.1 dB 1GHz to 40GHz: ± 6.3 dB

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 (Not UKAS Accredited).