# FCC and Industry Canada Testing of the BCF Technology Ltd Scanner Duo-Scan: Go Plus, Model: DSGC02 In accordance with FCC 47 CFR Part 15B and ICES-003

Product Service

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Prepared for: BCF Technology Ltd
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Phoenix Crescent
Strathclyde Business Park
Bellshill
ML4 3NJ
UNITED KINGDOM

FCC ID: 2AL6R-DSGC02
IC: 22758-DSGC01

## COMMERCIAL-IN-CONFIDENCE

Date: October 2017
Document Number: 75940062-06 | Issue: 02

| RESPONSIBLE FOR | NAME | DATE | SIGNATURE |
|---|---|---|---|
| Project Management | Natalie Bennett | 16 October 2017 | |
| Authorised Signatory | Andy Lawson | 16 October 2017 | |

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD Product Service document control rules.

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 47 CFR Part 15B and ICES-003. The sample tested was found to comply with the requirements defined in the applied rules.

| RESPONSIBLE FOR | NAME | DATE | SIGNATURE |
|---|---|---|---|
| Testing | Graeme Lawler | 16 October 2017 | |

FCC Accreditation
UK0010 Octagon House, Fareham Test Laboratory

Industry Canada Accreditation
IC2932B-1 Octagon House, Fareham Test Laboratory

EXECUTIVE SUMMARY
A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15B: 2016 and ICES-003: 2016 for the tests detailed in section 1.3.



TÜV SÜD Product Service
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# Contents

# 1 Report Summary

## 1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

| Issue | Description of Change | Date of Issue |
|---|---|---|
| 1 | First Issue | 18 September 2017 |
| 2 | To amend the Industry Canada ID number. | 16 October 2017 |

**Table 1**

## 1.2 Introduction

| | |
|---|---|
| Applicant | BCF Technology Ltd |
| Manufacturer | BCF Technology Ltd |
| Model Number(s) | DSGC02 |
| Serial Number(s) | Not Serialised (75940062-TSR0001) |
| Hardware Version(s) | PBA-PP520_REV_B |
| Software Version(s) | b04616d47050f71e21b3b62eb02eb13f26e4ff20 (CE/FCC test SW) |
| Number of Samples Tested | 1 |
| Test Specification/Issue/Date | FCC 47 CFR Part 15B: 2016<br>ICES-003: 2016 |
| Order Number<br>Date | 33986<br>01-August-2017 |
| Date of Receipt of EUT | 21-August-2017 |
| Start of Test | 05-September-2017 |
| Finish of Test | 05-September-2017 |
| Name of Engineer(s) | Graeme Lawler |
| Related Document(s) | ANSI C63.4: 2014 |

## 1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 15B and ICES-003 is shown below.

| Section | Specification Clause | | Test Description | Result | Comments/Base Standard |
|---|---|---|---|---|---|
| | Part 15B | ICES-003 | | | |
| Configuration: Idle | | | | | |
| 2.1 | 15.109 | 6.2 | Radiated Emissions | Pass | ANSI C63.4 |

**Table 2**

Product Service

## 1.4 Declaration of Build Status

| MAIN EUT | | | |
|---|---|---|---|
| **MANUFACTURING DESCRIPTION** | Swine Ultrasound Scanner | | |
| **MANUFACTURER** | BCF Technology Ltd | | |
| **MODEL NAME/NUMBER** | Duo-Scan:Go Plus - DSGC02 | | |
| **PART NUMBER** | DSG-SCANNER-C PLUS | | |
| **SERIAL NUMBER** | DSGC0200002 | | |
| **HARDWARE VERSION** | PBA-PP520_REV_B | | |
| **SOFTWARE VERSION** | b04616d47050f71e21b3b62eb02eb13f26e4ff20 (CE/FCC test SW) | | |
| **TRANSMITTER FREQUENCY OPERATING RANGE (MHz)** | 2412MHz-2462MHz, 5150MHz-5250MHz | | |
| **RECEIVER FREQUENCY OPERATING RANGE (MHz)** | 2412MHz-2462MHz, 5150MHz-5250MHz | | |
| **COUNTRY OF ORIGIN** | United Kingdom | | |
| **INTERMEDIATE FREQUENCIES** | N/A | | |
| **EMISSION DESIGNATOR(S): (i.e. G1D, GXW)** | G1D | | |
| **MODULATION TYPES:** (i.e. GMSK, QPSK) | BPSK | | |
| **HIGHEST INTERNALLY GENERATED FREQUENCY** | 180MHz | | |
| **OUTPUT POWER (W or dBm)** | 18 dBm | | |
| **FCC ID** | FCC ID: 2AL6R-DSGC02 | | |
| **INDUSTRY CANADA ID** | IC: 22758-DSGC01 | | |
| **TECHNICAL DESCRIPTION** (a brief description of the intended use and operation) | The product is a Swine Ultrasound Scanner used in the veterinary industry for scanning pigs, sheep or goats. The product contains a Texas Instruments pre-approved 2.4 GHz and 5 GHz WLAN module which is FCC and Industry Canada certified and this is used to communicate to a commercial smart phone or tablet.<br>The scanner is a compact handheld unit with a built in ultrasound probe and uses certified Li-ion batteries. | | |
| **BATTERY/POWER SUPPLY** | | | |
| **MANUFACTURING DESCRIPTION** | Lithium ion rechargeable battery pack - 3.7V/1800mAh | | |
| **MANUFACTURER** | Shenzhen BAK Technology Co.,Ltd | | |
| **TYPE** | Lithium ion rechargeable battery pack | | |
| **PART NUMBER** | 103450AR2-1S-3M | | |
| **VOLTAGE** | 3.7V (Nominal) | | |
| **COUNTRY OF ORIGIN** | China | | |
| **MODULES (if applicable)** | | | |
| **MANUFACTURING DESCRIPTION** | WiLink™ 8 industrial dual band, 2x2 MIMO Wi-Fi®, Bluetooth® & BLE module | | |
| **MANUFACTURER** | TI | | |
| **TYPE** | WL1837MOD | | |
| **POWER** | 18 dBm | | |
| **FCC ID** | FCC ID: Z64-WL18DBMOD | | |
| **COUNTRY OF ORIGIN** | USA | | |
| **INDUSTRY CANADA ID** | IC: 451I-WL18DBMOD | | |
| **EMISSION DESIGNATOR** | G1D | | |
| **DHSS/FHSS/COMBINED OR OTHER** | OFDM: MCS0 | | |
| **ANCILLARIES (if applicable)** | | | |
| **MANUFACTURING DESCRIPTION** | | | |
| **MANUFACTURER** | | | |
| **TYPE** | | | |
| **PART NUMBER** | | | |
| **SERIAL NUMBER** | | | |
| **COUNTRY OF ORIGIN** | | | |

I hereby declare that the information supplied is correct and complete.

Name: Fabrizio Gaudenzi Position held: Lead Design Engineer
Date: 12/09/2017

## 1.5 Product Information

### 1.5.1 Technical Description

The product is a Swine Ultrasound Scanner used in the veterinary industry for scanning pigs, sheep or goats. The product contains a Texas Instruments pre-approved 2.4 GHz and 5 GHz WLAN module which is FCC and Industry Canada certified and this is used to communicate to a commercial smart phone or tablet.

The scanner is a compact handheld unit with a built-in ultrasound probe and uses certified Li-ion batteries.

## 1.6 Deviations from the Standard

No deviations from the applicable test standard were made during testing.

## 1.7 EUT Modification Record

The table below details modifications made to the EUT during the test programme.
The modifications incorporated during each test are recorded on the appropriate test pages.

| Modification State | Description of Modification still fitted to EUT | Modification Fitted By | Date Modification Fitted |
|---|---|---|---|
| Serial Number: Not Serialised (75940062-TSR0001) | | | |
| 0 | As supplied by the customer | Not Applicable | Not Applicable |

**Table 3**

## 1.8 Test Location

TÜV SÜD Product Service conducted the following tests at our Fareham Test Laboratory.

| Test Name | Name of Engineer(s) | Accreditation |
|---|---|---|
| Configuration: Idle | | |
| Radiated Emissions | Graeme Lawler | UKAS |

**Table 4**

Office Address:

Octagon House
Concorde Way
Segensworth North
Fareham
Hampshire
PO15 5RL
United Kingdom

# 2 Test Details

## 2.1 Radiated Emissions

### 2.1.1 Specification Reference

FCC 47 CFR Part 15B, Clause 15.109
ICES-003, Clause 6.2

### 2.1.2 Equipment Under Test and Modification State

DSGC02, S/N: Not Serialised (75940062-TSR0001) - Modification State 0

### 2.1.3 Date of Test

05-September-2017

### 2.1.4 Test Method

The test was performed in accordance with ANSI C63.4, clause 8.

### 2.1.5 Environmental Conditions

| | |
|---|---|
| Ambient Temperature | 20.7 °C |
| Relative Humidity | 66.0 % |

### 2.1.6 Specification Limits

FCC 47 CFR Part 15, Limit Clause 15.109

| Frequency of Emission (MHz) | Field Strength (µV/m) |
|---|---|
| 30 to 88 | 100.0 |
| 88 to 216 | 150.0 |
| 216 to 960 | 200.0 |
| Above 960 | 500.0 |

ICES-003, Limit Clause 6.2

| Frequency of Emission (MHz) | Quasi-Peak (dBµV/m) |
|---|---|
| 30 to 88 | 40.0 |
| 88 to 216 | 43.5 |
| 216 to 960 | 46.0 |
| 960 to 1000 | 54.0 |

| Frequency of Emission (MHz) | Field Strength (dBµV/m) | |
|---|---|---|
| | Linear Average Detector | Peak Detector |
| Above 1000 | 54.0 | 74.0 |

### 2.1.7 Test Results

Configuration and Mode: Idle

Highest frequency generated or used within the EUT: 5250 MHz
Upper frequency test limit: 30 GHz

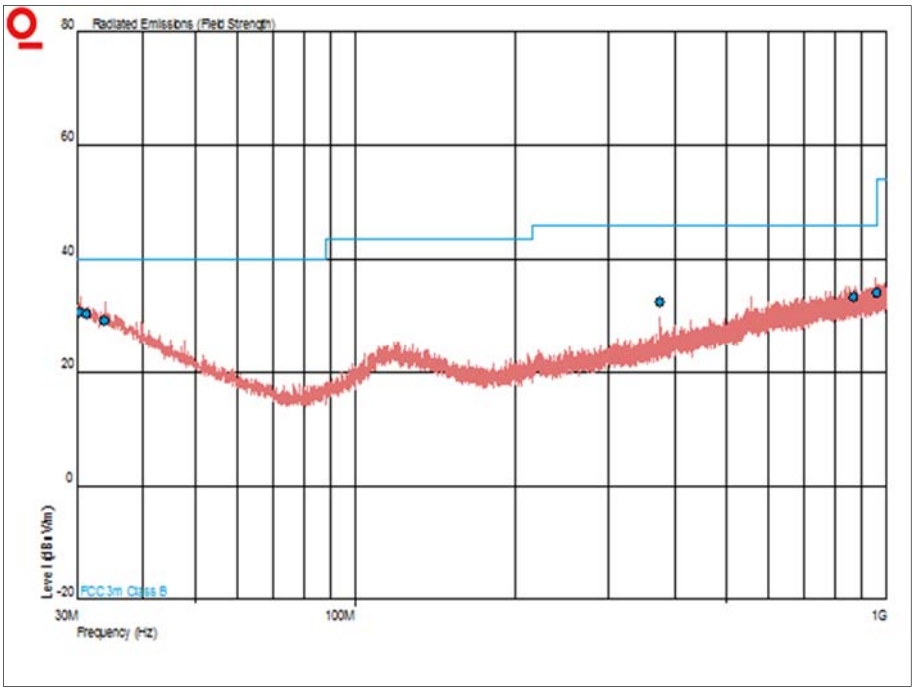


**Figure 1 - 30 MHz to 1 GHz - Horizontal and Vertical**

| Frequency (MHz) | QP Level (dBuV/m) | QP Limit (dBuV/m) | QP Margin (dBuV/m) | Angle(Deg) | Height(m) | Polarity |
|---|---|---|---|---|---|---|
| 30.359 | 30.7 | 40.0 | -9.3 | 42 | 1.00 | Horizontal |
| 31.330 | 30.4 | 40.0 | -9.6 | 360 | 1.00 | Horizontal |
| 33.822 | 29.2 | 40.0 | -10.8 | 84 | 1.00 | Horizontal |
| 374.999 | 32.5 | 46.0 | -13.5 | 299 | 1.00 | Horizontal |
| 867.698 | 33.3 | 46.0 | -12.7 | 0 | 1.00 | Horizontal |
| 960.000 | 34.1 | 46.0 | -11.9 | 360 | 1.00 | Horizontal |

**Table 5 - 30 MHz to 1 GHz**

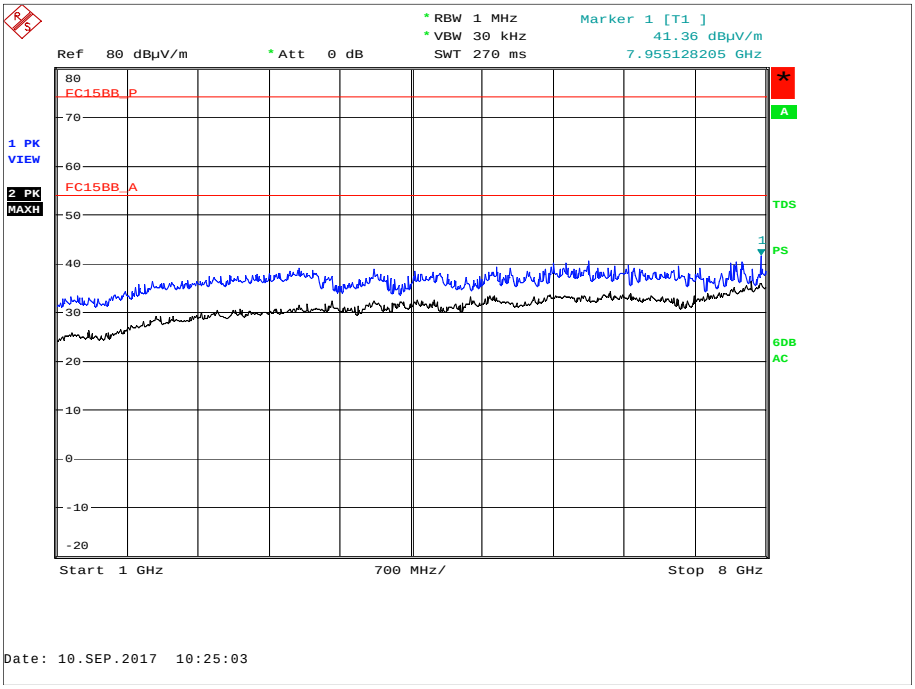


**Figure 2 - 1 GHz to 8 GHz - Horizontal and Vertical**

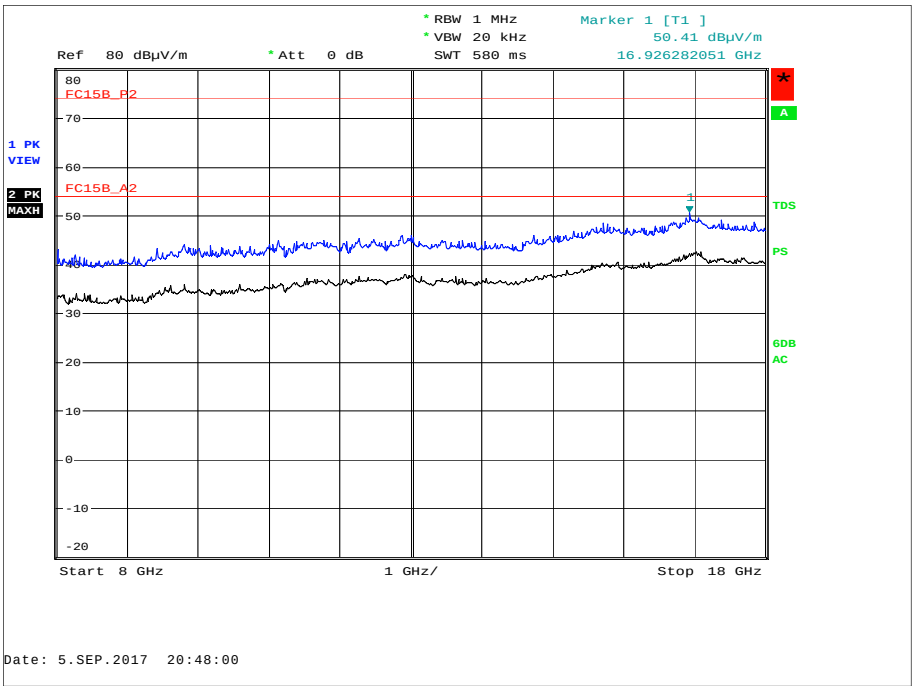


**Figure 3 - 8 GHz to 18 GHz - Horizontal and Vertical**

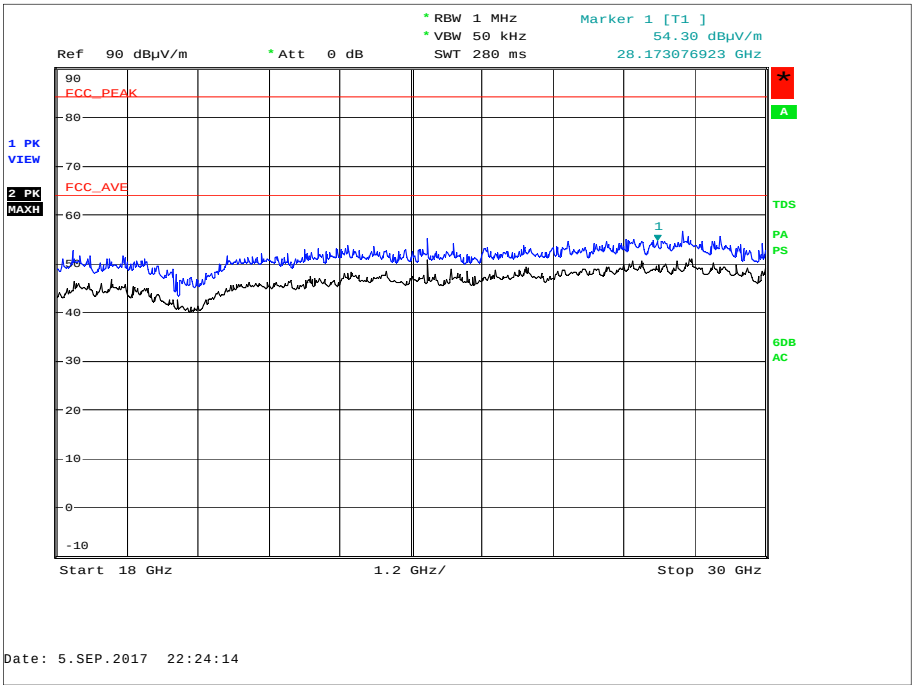


**Figure 4 - 18 GHz to 30 GHz - Horizontal and Vertical**

| Frequency (GHz) | Result (dBµV/m) | | Limit (dBµV/m) | | Margin (dBµV/m) | |
|---|---|---|---|---|---|---|
| | Peak | Average | Peak | Average | Peak | Average |
| * | | | | | | |

**Table 6 - 1 GHz to 30 GHz**

*No emissions were detected within 10 dB of the limit.

### 2.1.8 Test Location and Test Equipment Used

This test was carried out in EMC Chamber 5.

| Instrument | Manufacturer | Type No | TE No | Calibration Period (months) | Calibration Due |
|---|---|---|---|---|---|
| Antenna 18-40GHz (Double Ridge Guide) | Link Microtek Ltd | AM180HA-K-TU2 | 230 | 24 | 12-Feb-2018 |
| Antenna (Bilog) | Schaffner | CBL6143 | 287 | 24 | 18-Apr-2018 |
| Antenna 18-40GHz (Double Ridge Guide) | Q-Par Angus Ltd | QSH 180K | 1511 | 24 | 07-Dec-2018 |
| Pre-Amplifier | Phase One | PS04-0086 | 1533 | 12 | 31-Jul-2018 |
| 18GHz - 40GHz Pre-Amplifier | Phase One | PSO4-0087 | 1534 | 12 | 23-Jan-2018 |
| Screened Room (5) | Rainford | Rainford | 1545 | 36 | 20-Dec-2017 |
| Turntable Controller | Inn-Co GmbH | CO 1000 | 1606 | - | TU |
| Cable (N-N, 8m) | Rhophase | NPS-2302-8000-NPS | 3248 | 12 | 02-May-2018 |
| Signal Generator: 10MHz to 20GHz | Rohde & Schwarz | SMR20 | 3475 | 12 | 05-May-2018 |
| EMI Test Receiver | Rohde & Schwarz | ESU40 | 3506 | 12 | 12-Nov-2017 |
| Tilt Antenna Mast | maturo Gmbh | TAM 4.0-P | 3916 | - | TU |
| Mast Controller | maturo Gmbh | NCD | 3917 | - | TU |
| Cable 1503 2M 2.92(P)m 2.92(P)m | Rhophase | KPS-1503A-2000-KPS | 4293 | 12 | 23-Jan-2018 |
| 1GHz to 8GHz Low Noise Amplifier | Wright Technologies | APS04-0085 | 4365 | 12 | 17-Oct-2017 |
| Hygropalm Temperature and Humidity Meter | Rotronic | HP21 | 4410 | 12 | 04-May-2018 |
| Cable (Yellow, Rx, Km-Km 2m) | Scott Cables | KPS-1501-2000-KPS | 4527 | 6 | 04-Nov-2017 |
| Double Ridged Waveguide Horn Antenna | ETS-Lindgren | 3117 | 4722 | 12 | 17-Feb-2018 |

**Table 7**

TU - Traceability Unscheduled

# 3 Measurement Uncertainty

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

| Test Name | Measurement Uncertainty |
|---|---|
| Radiated Emissions | 30 MHz to 1 GHz: ±5.2 dB<br>1 GHz to 40 GHz: ±6.3 dB |

**Table 8**