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# Report On

FCC and Industry Canada Testing of the  
Sepura plc STP8040 Portable Tetra Radio

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FCC ID: XX6STP8040  
IC ID: 8739A-STP8000

Document 75908190 Report 03 Issue 4

March 2010



Product Service

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**REPORT ON**

FCC and Industry Canada Testing of the  
Sepura plc STP8040 Portable Tetra Radio

Document 75908190 Report 03 Issue 4

March 2010

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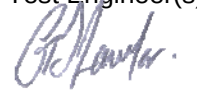
09 March 2010

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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 and RSS-Gen. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);



G Lawler

**This test report has been issued to Issue 4 to correct typographical errors.**





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## **SECTION 1**

### **REPORT SUMMARY**

FCC and Industry Canada Testing of the  
Sepura plc STP8040 Portable Tetra Radio



## 1.1 INTRODUCTION

The information contained in this report is intended to show verification of the Sepura plc, STP8040 Portable Tetra Radio to the requirements of FCC CFR 47 Part 15B and RSS-Gen.

|                               |                                                                                                                                                                         |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Objective                     | To perform FCC and Industry Canada Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out. |
| Manufacturer                  | Sapura plc                                                                                                                                                              |
| Model Number(s)               | STP8040 Portable Tetra Radio                                                                                                                                            |
| Serial Number(s)              | 2PN000219VA                                                                                                                                                             |
| Software Version              | -                                                                                                                                                                       |
| Hardware Version              | Production                                                                                                                                                              |
| Number of Samples Tested      | One                                                                                                                                                                     |
| Test Specification/Issue/Date | FCC CFR 47 Part 15B: 2007<br>RSS-Gen: Issue 2: 2007                                                                                                                     |
| Incoming Release Date         | Declaration of Build Status<br>10 December 2009                                                                                                                         |
| Disposal                      | Held Pending Disposal                                                                                                                                                   |
| Reference Number              | Not Applicable                                                                                                                                                          |
| Date                          | Not Applicable                                                                                                                                                          |
| Order Number                  | 315350/T0201                                                                                                                                                            |
| Date                          | 19 November 2009                                                                                                                                                        |
| Start of Test                 | 04 January 2009                                                                                                                                                         |
| Finish of Test                | 04 January 2009                                                                                                                                                         |
| Name of Engineer(s)           | G Lawler                                                                                                                                                                |
| Related Document(s)           | ANSI 63.4: 2003                                                                                                                                                         |

Testing in this report is referenced to FCC CFR 47 Part 15: 2009. At the time of testing the 2009 version was not on our Schedule of Accreditation, the clauses tested have been assessed against the 2007 version and there are no changes to the testing performed therefore the testing meets the requirements of the 2009 version.



## 1.2 BRIEF SUMMARY OF RESULTS

A brief summary of results for each configuration, in accordance with FCC CFR 47 Part 15B and RSS-Gen is shown below.

| Configuration 1 - Mono Console & Handset Base Console |             |     |                                     |                                     |           |        |               |
|-------------------------------------------------------|-------------|-----|-------------------------------------|-------------------------------------|-----------|--------|---------------|
| Section                                               | Spec Clause |     | Test Description                    | Mode                                | Mod State | Result | Base Standard |
|                                                       | FCC         | IC  |                                     |                                     |           |        |               |
| 2.1                                                   | 15.109      | 4.9 | Radiated Emissions (Enclosure Port) | Idle                                | 0         | Pass   | ANSI 63.4     |
|                                                       |             |     |                                     | 460.025MHz<br>Receive/GPS Listening | 0         | Pass   |               |
|                                                       | 15.107      |     | Conducted Emissions (AC Power Port) |                                     |           | N/A    | ANSI 63.4     |
|                                                       |             |     |                                     |                                     |           | N/A    |               |

N/A – Not Applicable



## 1.3 DECLARATION OF BUILD STATUS

|                                                                                      |                                     |           |           |                |
|--------------------------------------------------------------------------------------|-------------------------------------|-----------|-----------|----------------|
| <b>MAIN EUT</b>                                                                      |                                     |           |           |                |
| <b>MANUFACTURING DESCRIPTION</b>                                                     | Tetra Mobile/Gateway terminal       |           |           |                |
| <b>MANUFACTURER</b>                                                                  | Sepura                              |           |           |                |
| <b>TYPE</b>                                                                          | STP8040 Portable Tetra Radio UW     |           |           |                |
| <b>PART NUMBER</b>                                                                   | n/a                                 |           |           |                |
| <b>SERIAL NUMBER</b>                                                                 | 2PN000219VA                         |           |           |                |
| <b>HARDWARE VERSION</b>                                                              | Production                          |           |           |                |
| <b>SOFTWARE VERSION</b>                                                              | -                                   |           |           |                |
| <b>TRANSMITTER OPERATING RANGE</b>                                                   | 407MHz to 473MHz                    |           |           |                |
| <b>RECEIVER OPERATING RANGE</b>                                                      | 407MHz to 473MHz                    |           |           |                |
| <b>COUNTRY OF ORIGIN</b>                                                             | UK                                  |           |           |                |
| <b>INTERMEDIATE FREQUENCIES</b>                                                      | 69.25MHz                            |           |           |                |
| <b>ITU DESIGNATION OF EMISSION</b>                                                   | 25K0Q1D                             |           |           |                |
| <b>HIGHEST INTERNALLY GENERATED FREQUENCY</b>                                        | Fc (TX)x4/3 MHz or Fc (RX)+69.25MHz |           |           |                |
| <b>OUTPUT POWER (W or dBm)</b>                                                       | 10 Watts                            |           |           |                |
| <b>FCC ID</b>                                                                        | XX6STP8040                          |           |           |                |
| <b>INDUSTRY CANADA ID</b>                                                            | 8739A-STP8000                       |           |           |                |
| <b>TECHNICAL DESCRIPTION (a brief description of the intended use and operation)</b> | Tetra Mobile/Gateway terminal       |           |           |                |
| <b>ANCILLARIES (if applicable)</b>                                                   |                                     |           |           |                |
| <b>MANUFACTURING DESCRIPTION</b>                                                     | Handset                             | RSM       | Fist Mic  | Hands-free kit |
| <b>MANUFACTURER</b>                                                                  | ADI                                 | ADI       | ADI       | ADI            |
| <b>TYPE</b>                                                                          |                                     |           |           |                |
| <b>PART NUMBER</b>                                                                   | 300 00061                           | 300-00444 | 300 00062 | 300 00085      |
| <b>SERIAL NUMBER</b>                                                                 |                                     |           |           |                |
| <b>COUNTRY OF ORIGIN</b>                                                             | Taiwan                              | Taiwan    | Taiwan    | Taiwan         |
| <b>ANCILLARIES (if applicable)</b>                                                   |                                     |           |           |                |
| <b>MANUFACTURING DESCRIPTION</b>                                                     | Console                             | Console   | HBC       | AIU            |
| <b>MANUFACTURER</b>                                                                  | Sapura                              | Sapura    | Sapura    | Sapura         |
| <b>TYPE</b>                                                                          | Standard                            | Colour    |           |                |
| <b>PART NUMBER</b>                                                                   | 300 00149                           | 300 00771 | 300 00669 | 300 00217      |
| <b>SERIAL NUMBER</b>                                                                 |                                     |           |           |                |
| <b>COUNTRY OF ORIGIN</b>                                                             | UK                                  | UK        | UK        | UK             |

Signature

Date

10 December 2009

Declaration of Build Status Serial Number 75908190

Note: This document has been prepared to enable manufacturers with no mechanism for producing their own Declaration of Build Status, to declare the build state of the equipment submitted for test.

No responsibility will be accepted by TÜV Product Service as to the accuracy of the information declared in this document by the manufacturer.



## 1.4 PRODUCT INFORMATION

### 1.4.1 Technical Description

The Equipment Under Test (EUT) was a Sepura plc, STP8040 Portable Tetra Radio as shown in the photograph below. A full technical description can be found in the manufacturer's documentation.



Equipment Under Test



#### 1.4.2 Test Configuration

##### Configuration 1: Stand Alone Powered

The EUT was configured as a standalone item and powered via a 7.4 V battery.

The EUT was configured in accordance with FCC CFR 47 Part 15B and RSS-Gen.

#### 1.4.3 EUT Cable / Port Identification

| Port   | Max Cable Length specified | Usage           | Type      | Screened |
|--------|----------------------------|-----------------|-----------|----------|
| Signal | 1.0m                       | Fist Microphone | Multicore | No       |

#### 1.4.4 Modes of Operation

Modes of operation of each EUT during testing were as follows:

Mode 1 - Idle

Mode 2 - 460.025MHz Receive/GPS Listening/GPS Listening\*

\* The customer has stated that the worst case for Receive Emissions would be with the EUT in GPS listening mode rather than GPS Receive.



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## **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, test laboratories or an open test area as appropriate.

The EUT was powered via a 7.4 V battery.

FCC Accreditation  
90987 Octagon House, Fareham Test Laboratory

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

## **1.6 DEVIATIONS FROM THE STANDARD**

No deviations from the applicable test standards or test plan were made during testing.

## **1.7 MODIFICATION RECORD**

No modifications were made to the EUT during testing.



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## **SECTION 2**

### **TEST DETAILS**

FCC and Industry Canada Testing of the  
Sepura plc STP8040 Portable Tetra Radio



Product Service

**2.1 RADIATED EMISSIONS (ENCLOSURE PORT)****2.1.1 Specification Reference**

FCC CFR 47 Part 15B, Clause 15.109  
RSS-Gen, Clause 4.9

**2.1.2 Equipment Under Test**

STP8040 Portable Tetra Radio, S/N: 2PN000219VA

**2.1.3 Date of Test and Modification State**

04 January 2009 - Modification State 0

**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 Method and Operating Modes**

The test was applied in accordance with the test method requirements of ANSI 63.4.

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 1 - Mode 1  
                          - Mode 2

**2.1.6 Environmental Conditions**

04 January 2009

Ambient Temperature 16°C

Relative Humidity 29%

Atmospheric Pressure 1013mbar

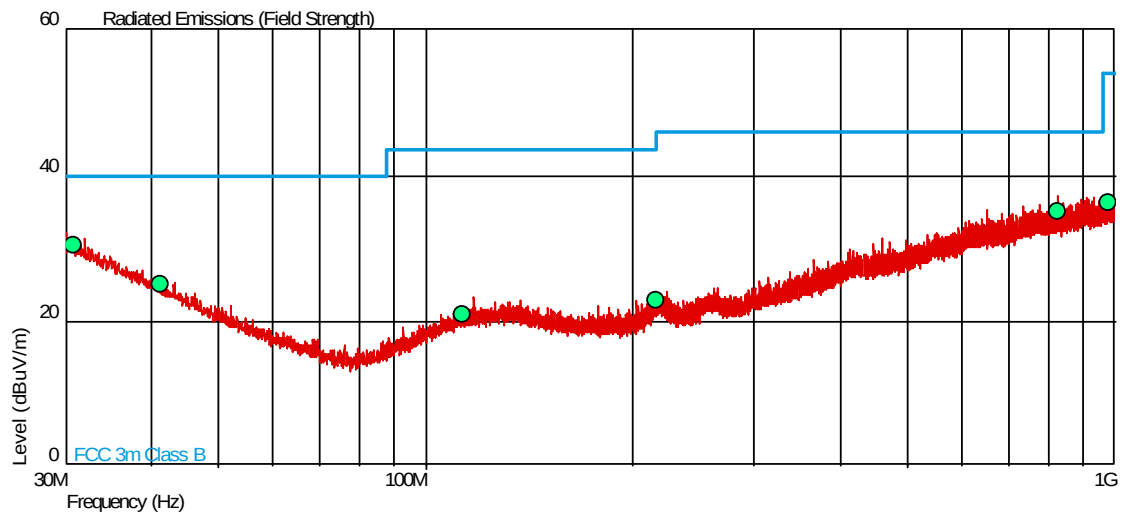


### 2.1.7 Test Results

For the period of test the EUT met the requirements of FCC CFR 47 Part 15B and RSS-Gen for Radiated Emissions (Enclosure Port).

The test results are shown below.

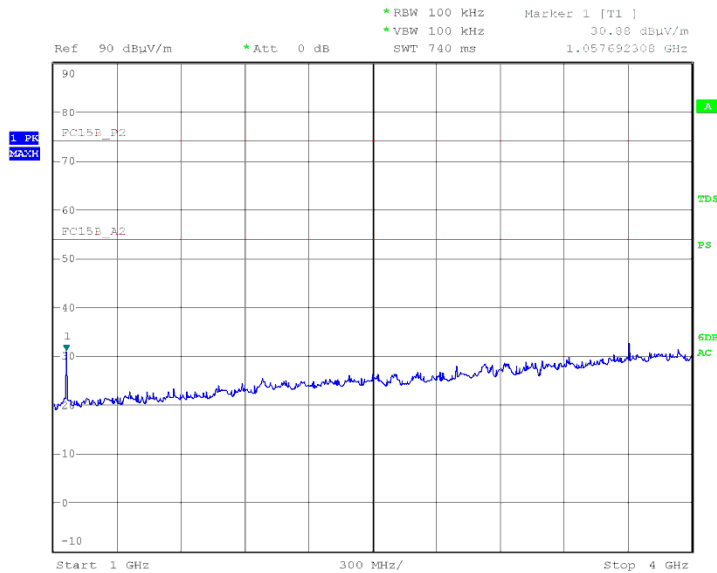
#### Configuration 1 - Mode 1



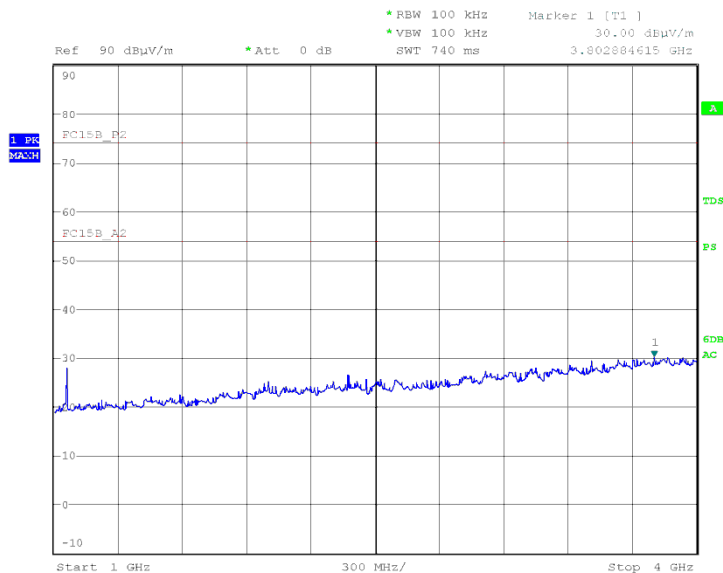
| Frequency (MHz) | QP Level (dBuV/m) | QP Level (uV/m) | QP Limit (dBuV/m) | QP Limit (uV/m) | QP Margin (dBuV/m) | QP Margin (uV/m) | Angle (deg) | Height (m) | Polarity   |
|-----------------|-------------------|-----------------|-------------------|-----------------|--------------------|------------------|-------------|------------|------------|
| 30.741          | 30.4              | 33.1            | 40.0              | 100             | -9.6               | 66.9             | 1           | 1.00       | Vertical   |
| 41.191          | 25.0              | 17.8            | 40.0              | 100             | -15.0              | 82.2             | 1           | 1.00       | Vertical   |
| 113.183         | 20.9              | 11.1            | 43.5              | 150             | -22.6              | 138.9            | 1           | 1.00       | Horizontal |
| 215.468         | 22.9              | 14.0            | 43.5              | 150             | -20.6              | 136.0            | 1           | 1.00       | Vertical   |
| 826.538         | 34.9              | 55.6            | 46.0              | 200             | -11.1              | 144.4            | 1           | 1.00       | Horizontal |
| 978.691         | 36.2              | 64.6            | 54.0              | 501             | -17.8              | 436.4            | 1           | 1.00       | Horizontal |



Product Service

1GHz to 4GHzVertical

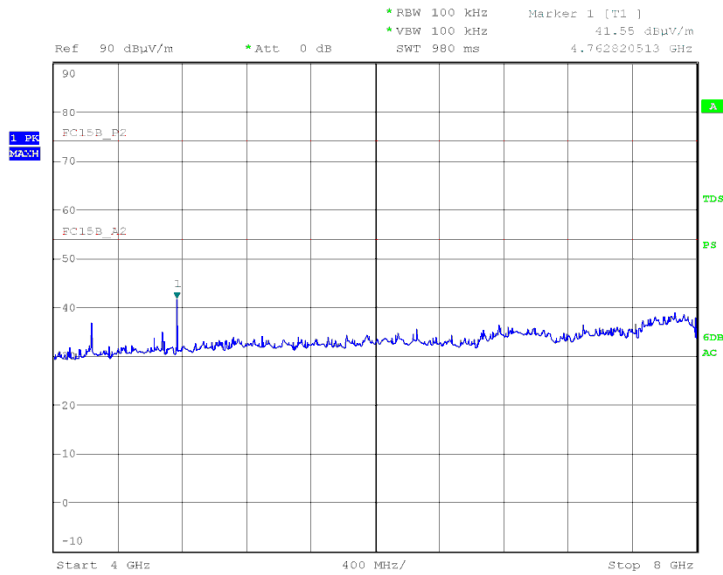
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Horizontal

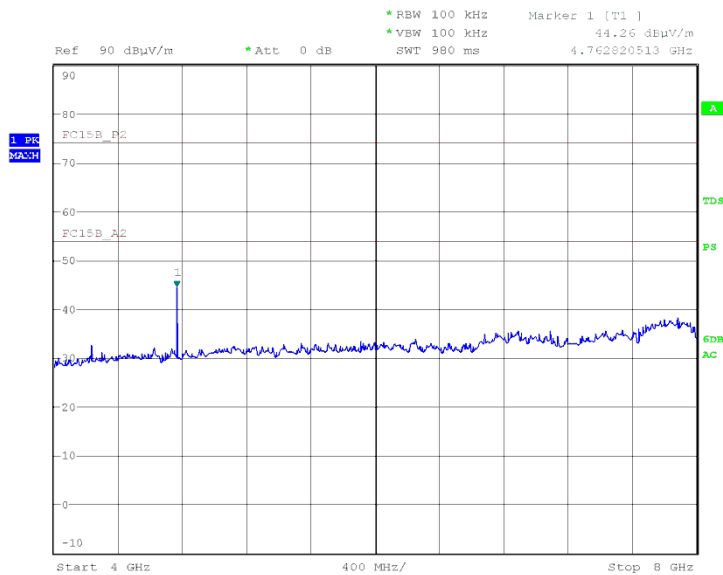
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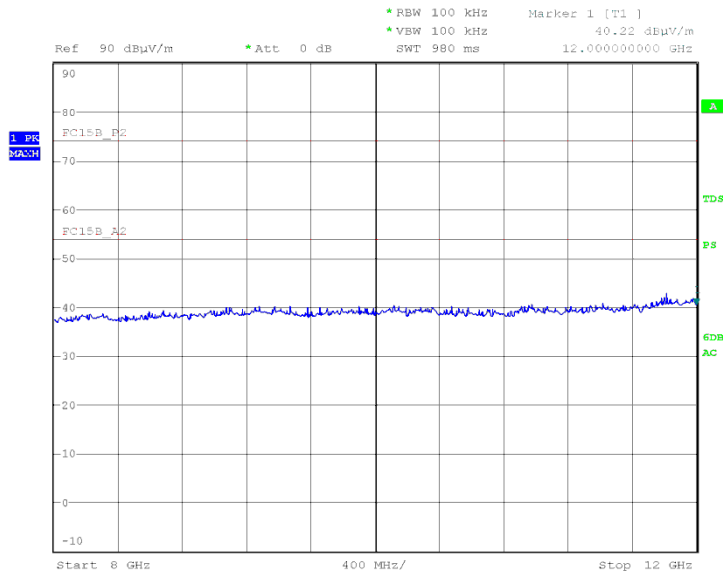
Product Service

4GHz to 8GHzVertical

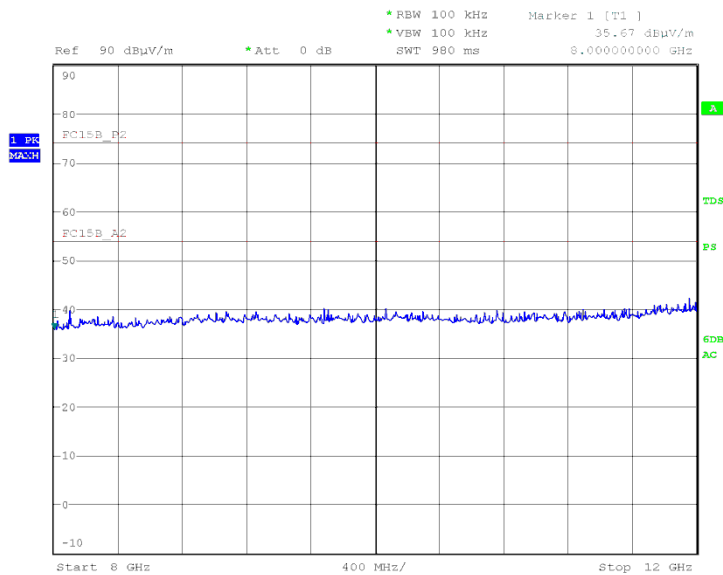
Date: 4.JAN.2010 19:09:42

Horizontal

Date: 4.JAN.2010 19:41:24

8GHz to 12GHzVertical

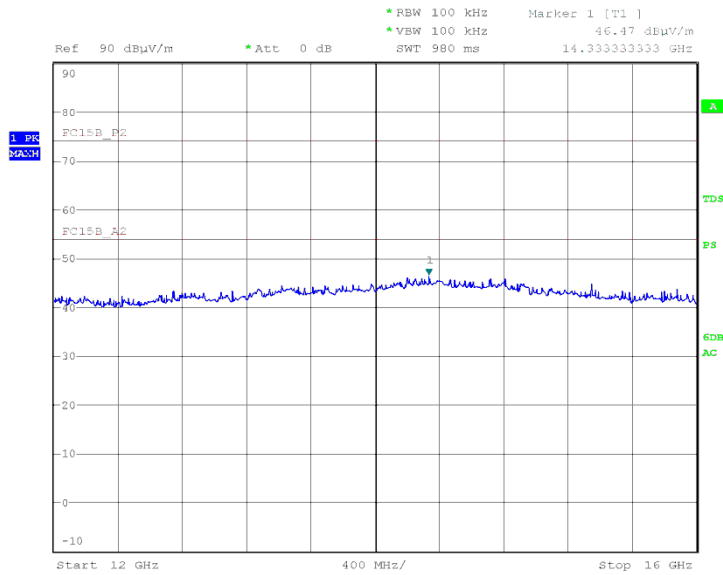
Date: 4.JAN.2010 20:08:17

Horizontal

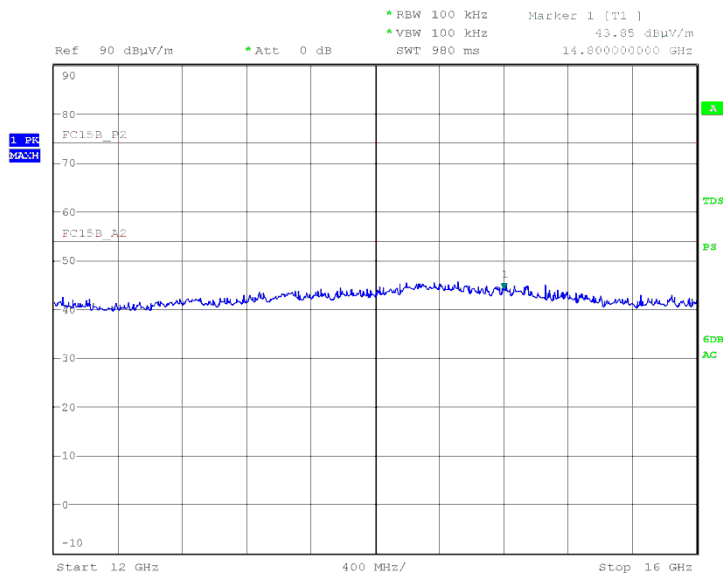
Date: 4.JAN.2010 20:16:18



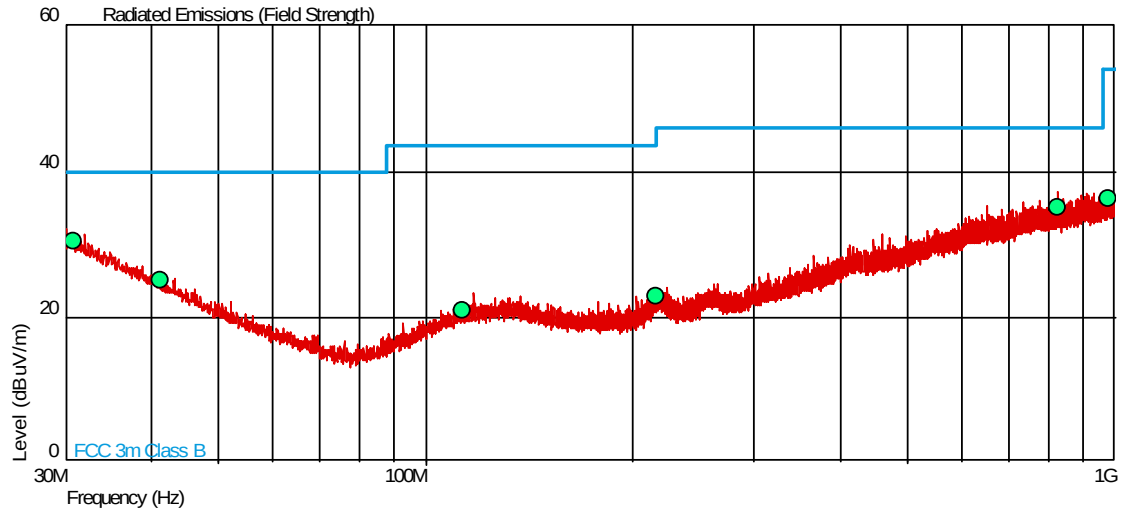
Product Service

12GHz to 14GHzVertical

Date: 4.JAN.2010 20:11:58

Horizontal

Date: 4.JAN.2010 20:15:02

Configuration 1 - Mode 2

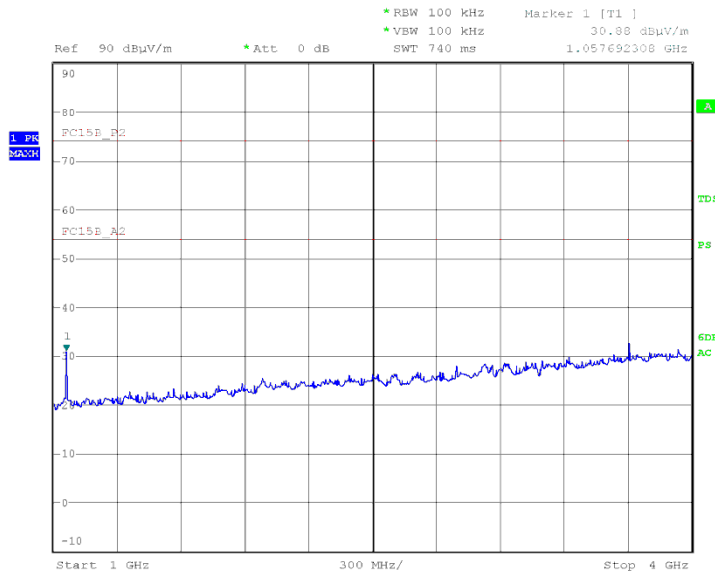
| Frequency (MHz) | QP Level (dBuV/m) | QP Level (uV/m) | QP Limit (dBuV/m) | QP Limit (uV/m) | QP Margin (dBuV/m) | QP Margin (uV/m) | Angle (deg) | Height (m) | Polarity   |
|-----------------|-------------------|-----------------|-------------------|-----------------|--------------------|------------------|-------------|------------|------------|
| 30.741          | 30.4              | 33.1            | 40.0              | 100             | -9.6               | 66.9             | 1           | 1.00       | Vertical   |
| 41.191          | 25.0              | 17.8            | 40.0              | 100             | -15.0              | 82.2             | 1           | 1.00       | Vertical   |
| 113.183         | 20.9              | 11.1            | 43.5              | 150             | -22.6              | 138.9            | 1           | 1.00       | Horizontal |
| 215.468         | 22.9              | 14.0            | 43.5              | 150             | -20.6              | 136.0            | 1           | 1.00       | Vertical   |
| 826.538         | 34.9              | 55.6            | 46.0              | 200             | -11.1              | 144.4            | 1           | 1.00       | Horizontal |
| 978.691         | 36.2              | 64.6            | 54.0              | 501             | -17.8              | 436.4            | 1           | 1.00       | Horizontal |



Product Service

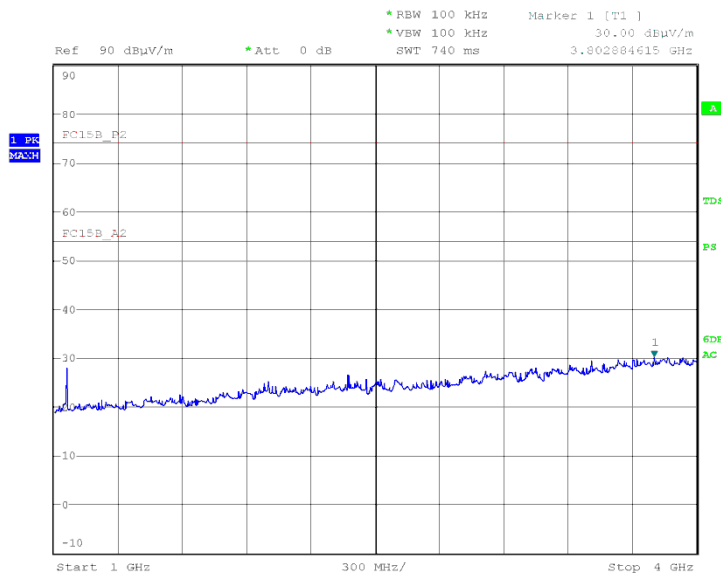
## 1GHz to 4GHz

### Vertical



Date: 4.JAN.2010 19:08:19

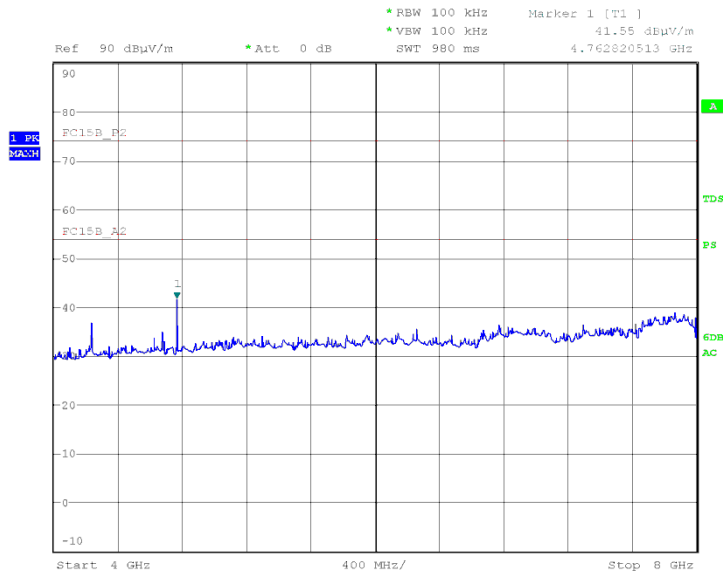
### Horizontal



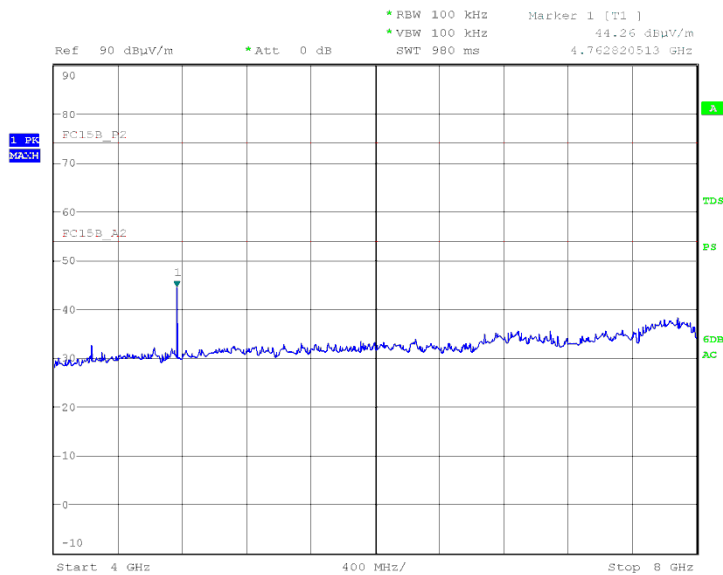
Date: 4.JAN.2010 19:40:01



Product Service

4GHz to 8GHzVertical

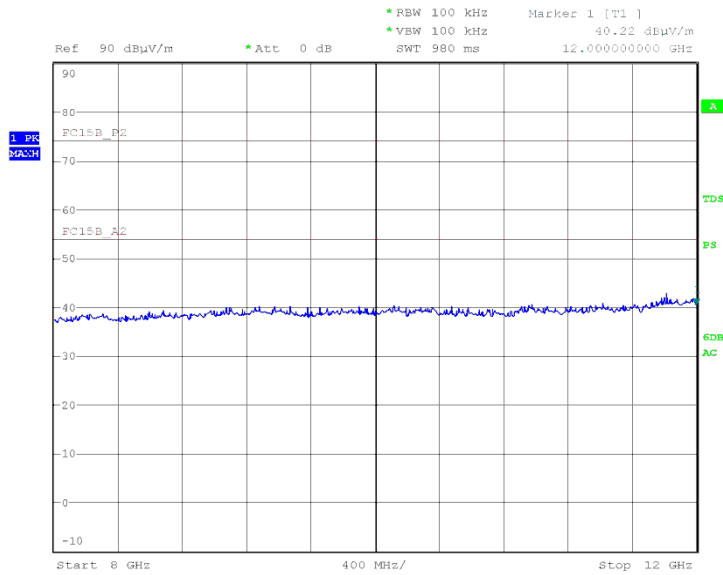
Date: 4.JAN.2010 19:09:42

Horizontal

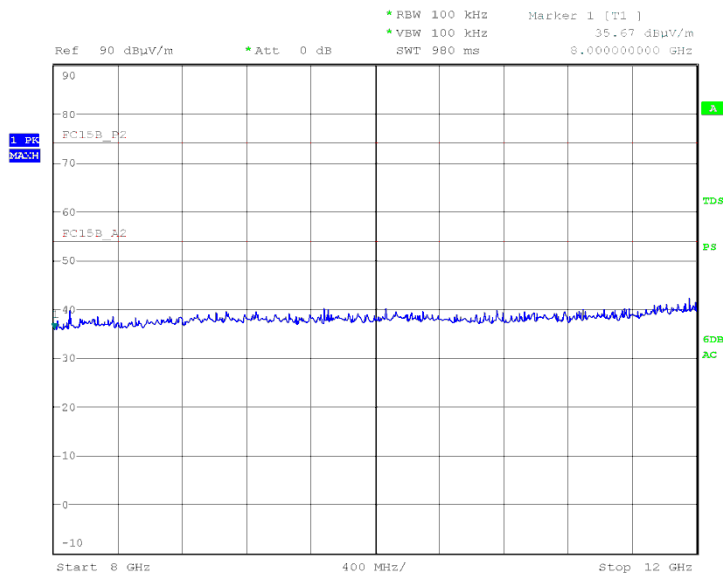
Date: 4.JAN.2010 19:41:24



Product Service

8GHz to 12GHzVertical

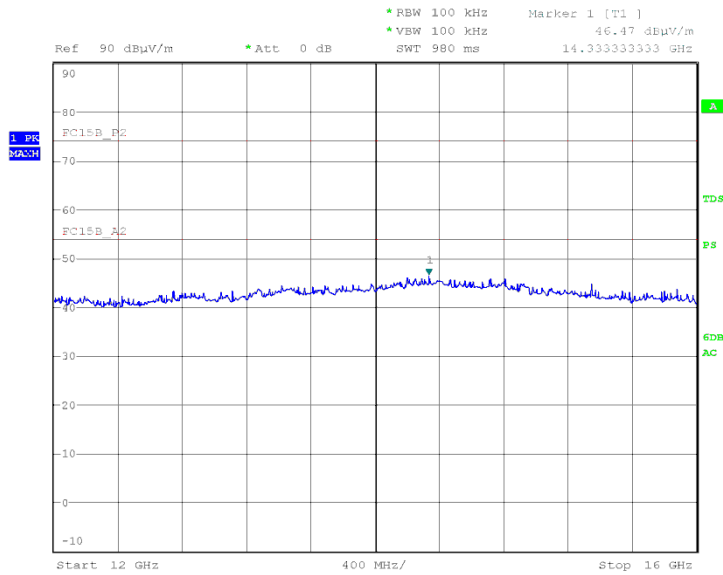
Date: 4.JAN.2010 20:08:17

Horizontal

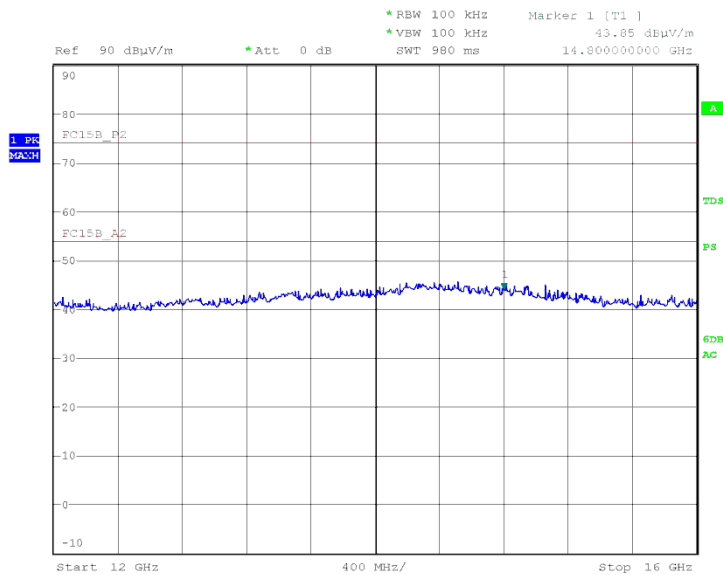
Date: 4.JAN.2010 20:16:18



Product Service

12GHz to 14GHzVertical

Date: 4.JAN.2010 20:11:58

Horizontal

Date: 4.JAN.2010 20:15:02



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 |
|---------------------------------------------|-----------------|------------------------|--------|-----------------------------|-----------------|
| <b>Section 2.1 EMC - Radiated Emissions</b> |                 |                        |        |                             |                 |
| Antenna (Double Ridge Guide, 1GHz-18GHz)    | EMCO            | 3115                   | 234    | 12                          | 12-Oct-2010     |
| Antenna (Bilog)                             | Schaffner       | CBL6143                | 287    | 24                          | 21-Jan-2010     |
| Pre-Amplifier                               | Phase One       | PS04-0085              | 1532   | 12                          | 16-Sep-2010     |
| Pre-Amplifier                               | Phase One       | PS04-0086              | 1533   | 12                          | 17-Sep-2010     |
| Screened Room (5)                           | Rainford        | Rainford               | 1545   | 36                          | 11-Feb-2011     |
| EMI Test Receiver                           | Rohde & Schwarz | ESU40                  | 3506   | 12                          | 1-Sep-2010      |
| 3 GHz High Pass Filter                      | K&L uwave       | 11SH10-3000/X18000-O/O | 3552   | 12                          | 14-Apr-2010     |



### 3.2 MEASUREMENT UNCERTAINTY

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

| Test Discipline                          | Frequency / Parameter                                                                                         | MU     |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------|
| Radiated Emissions, Bilog Antenna, AOATS | 30MHz to 1GHz Amplitude                                                                                       | 5.1dB* |
| Radiated Emissions, Horn Antenna, AOATS  | 1GHz to 40GHz Amplitude                                                                                       | 6.3dB* |
| Conducted Emissions, LISN                | 150kHz to 30MHz Amplitude                                                                                     | 3.2dB* |
| Conducted Emissions, ISN                 | 150kHz to 30MHz Amplitude                                                                                     | 2.1dB  |
| Substitution Antenna, Radiated Field     | 30MHz to 18GHz Amplitude                                                                                      | 2.6dB  |
| Discontinuous Interference               | 150kHz to 30MHz Amplitude                                                                                     | 3.0dB* |
| Interference Power                       | 30MHz to 300MHz Amplitude                                                                                     | 3.0dB* |
| Radiated E-Field Susceptibility          | 10MHz to 6GHz Test Amplitude                                                                                  | 2.0dB† |
| Conducted Susceptibility RF              | 50kHz to 1000MHz Amplitude                                                                                    | 3.1dB• |
|                                          | EM Clamp Method of Test                                                                                       | 1.2dB• |
|                                          | CDN Method of Test                                                                                            | 1.1dB• |
|                                          | BCI Clamp Method of Test                                                                                      | 1.2dB• |
| Conducted Susceptibility LF              | DC to 150kHz                                                                                                  | 1.0%†  |
| Power Frequency Magnetic Field           | 50Hz/60Hz Amplitude                                                                                           | 0.45%  |
| Magnetic Emissions                       | 9kHz to 30MHz Amplitude                                                                                       | 3.4dB* |
| Magnetic Field/Flux iaw EN 50366         | 10Hz to 400kHz                                                                                                | 2.64%  |
| Harmonics and Flicker                    | The test was applied using proprietary equipment that meets the requirements of EN 61000-3-2 and EN 61000-3-3 | —      |
| Mains Voltage Variations and Interrupts  | The test was applied using proprietary equipment that meets the requirements of EN 61000-4-11                 | —      |
| Fast Transient Burst                     | The test was applied using proprietary equipment that meets the requirements of EN 61000-4-4                  | —      |
| Electrostatic Discharge                  | The test was applied using proprietary equipment that meets the requirements of EN 61000-4-2                  | —      |
| Surge                                    | The test was applied using proprietary equipment that meets the requirements of EN 61000-4-5                  | —      |
| Vehicle Transients                       | The test was applied using proprietary equipment that meets the requirements of ISO 7637-1 and 2              | —      |
| Compass Safe Distance                    | Azimuth Accuracy                                                                                              | 0.10°  |

Worst case error for both Time and Frequency measurement 12 parts in  $10^6$ .

\* In accordance with CISPR 16-4-2

† In accordance with UKAS Lab 34

• In accordance with EN61000-4-6



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## **SECTION 4**

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



Product Service

#### 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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