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# Report On

FCC and IC Testing of the
Hyperian Global Limited
USB Stick

COMMERCIAL-IN-CONFIDENCE

Document 75923713 Report 01 Issue 1 September 2013

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**REPORT ON**

FCC and IC Testing of the
Hyperian Global Limited
USB Stick

Document 75923713 Report 01 Issue 1

September 2013

**PREPARED FOR**

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**PREPARED BY**

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EMC Engineer

**APPROVED BY**

**J Adams**
Authorised Signatory

**DATED** 05 September 2013

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 B and ICES-003 Issue 5. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

J Tuckwell

UKAS TESTING 0141

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**SECTION 1**

**REPORT SUMMARY**

FCC and IC Testing of the
Hyperian Global Limited
USB Stick

## 1.1 INTRODUCTION

The information contained in this report is intended to show verification of the Hyperian Global Limited, USB Stick to the requirements of FCC CFR 47 Part 15B and ICES-003.

| | |
|---|---|
| Objective | To perform FCC and IC Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out. |
| Manufacturer | Hyperian Global Limited |
| Part Number(s) | THNU2EL00PL07 |
| Serial Number(s) | Not Serialised (75923713_TSR0001) |
| Software Version | Not Supplied |
| Hardware Version | Controller ET6FL6UT2267B |
| Number of Samples Tested | One |
| Test Specification/Issue/Date | FCC CFR 47 Part 15B: 2012<br>ICES-003: Issue 5: 2012 |
| Incoming Release<br>Date | Declaration of Build Status<br>05 August 2013 |
| Disposal<br>Reference Number<br>Date | Held Pending Disposal<br>Not Applicable<br>Not Applicable |
| Order Number<br>Date | TV130730<br>30 July 2013 |
| Start of Test | 16 August 2013 |
| Finish of Test | 16 August 2013 |
| Name of Engineer(s) | J Tuckwell |
| Related Document(s) | ANSI 63.4: 2003 |

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## 1.2 BRIEF SUMMARY OF RESULTS

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

| Configuration 1 - USB | | | | | | | |
|---|---|---|---|---|---|---|---|
| Section | Spec Clause | | Test Description | Mode | Mod State | Result | Base Standard |
| | FCC Pt 15 B | ICES-003 | | | | | |
| 2.1 | 15.107 | 6.1 | Conducted Emissions (AC Power Port) | Active | 0 | Pass | ANSI 63.4 |
| 2.2 | 15.109 | 6.2 | Radiated Emissions (Enclosure Port) | Active | 0 | Pass | ANSI 63.4 |

## 1.3 DECLARATION OF BUILD STATUS

| MAIN EUT | |
|---|---|
| MANUFACTURING DESCRIPTION | USB Stick |
| MANUFACTURER | Hyperian Global Limited |
| TYPE | 8GB USB 2.0 HIGH SPEED 480Mbit/sec USB compatible |
| PART NUMBER | THNU2EL00PL07 |
| SERIAL NUMBER | Not supplied |
| HARDWARE VERSION | Controller ET6FL6UT2267B |
| SOFTWARE VERSION | Not supplied |
| HIGHEST INTERNALLY GENERATED FREQUENCY | Not supplied |
| TECHNICAL DESCRIPTION (a brief description of the intended use and operation) | Flash drive for use with PC. Insertion via USB port. |
| **BATTERY/POWER SUPPLY** | |
| MANUFACTURING DESCRIPTION | Speedform Usb Fitted With Toshiba Flash Drive |
| MANUFACTURER | TOSHIBA |
| TYPE | 8GB USB 2.0 |
| PART NUMBER | Not supplied |
| VOLTAGE | Not supplied |
| COUNTRY OF ORIGIN | CHINA |

**Signature** Held on File at TUV SUD

**Date** 05 August 2013

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 SÜD 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 Hyperian Global Limited, USB Stick as shown in the photograph below. A full technical description can be found in the manufacturer's documentation.

USB Stick

### 1.4.2 Test Configuration

Configuration 1: USB

The EUT was configured in accordance with FCC CFR 47 Part 15B and ICES-003.

### 1.4.3 EUT Cable / Port Identification

| Port | Max Cable Length specified | Usage | Type | Screened | Configuration and Mode (if different) |
|---|---|---|---|---|---|
| None | Not Applicable | Not Applicable | Not Applicable | Not Applicable | Not Applicable |

### 1.4.4 Modes of Operation

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

Mode 1 - The EUT was pluged into to laptop and SDELETE software was used to exercise the EUT by writing data continuously to it.

## 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 by 5V DC via a 110V AC powered Laptop supply.

Without formally knowing the internal clock frequency and having been informed that this device is a USB 2 Device the following assumptions have been made;
That is, construction is typical of a USB 2 Device and thus the device will probably use a Crystal oscillator to produce the device's main 12 MHz clock signal that controls the device's data output through a phase-locked loop. An internal operating frequency of 12MHz will necessitate radiated emissions testing up to 1GHz

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Industry Canada Accreditation
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## 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.

| Modification State | Description of Modification still fitted to EUT | Modification Fitted By | Date Modification Fitted |
|---|---|---|---|
| 0 | As supplied by the customer | Not Applicable | Not Applicable |

# SECTION 2

# TEST DETAILS

FCC and IC Testing of the
Hyperian Global Limited
USB Stick

## 2.1 CONDUCTED EMISSIONS (AC POWER PORT)

### 2.1.1 Specification Reference

FCC CFR 47 Part 15B: Clause 15.107
ICES-003: Clause 6.1

### 2.1.2 Equipment Under Test

USB Stick, S/N: Not Serialised (75923713_TSR0001)

### 2.1.3 Date of Test and Modification State

16 August 2013 - 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

### 2.1.6 Environmental Conditions

| | 16 August 2013 |
|---|---|
| Ambient Temperature | 20°C |
| Relative Humidity | 56% |
| Atmospheric Pressure | 1012mbar |

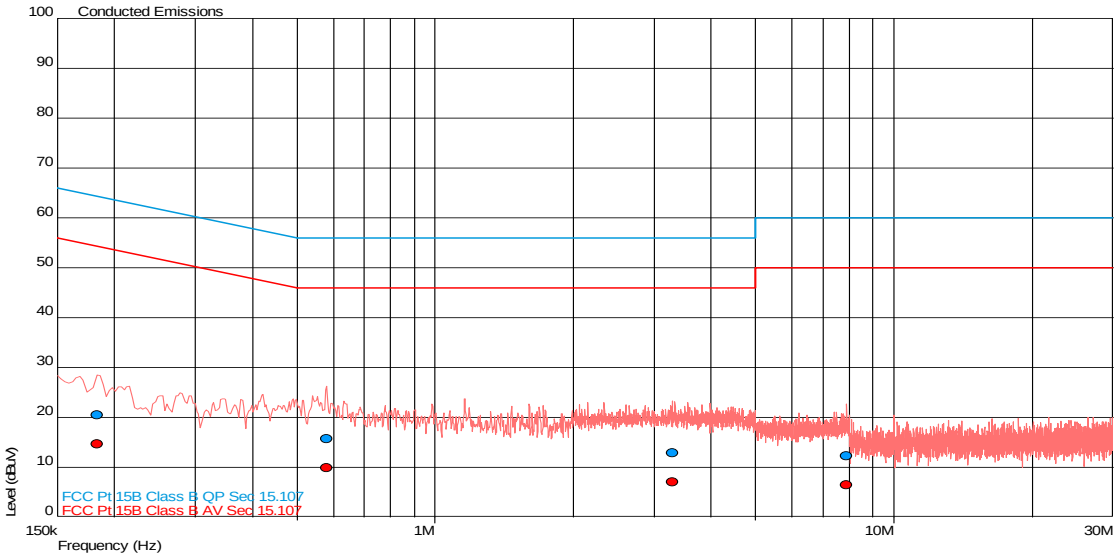
### 2.1.7 Test Results

For the period of test the EUT met the requirements of FCC CFR 47 Part 15B and ICES-003 for Conducted Emissions (AC Power Port).

The test results are shown below.

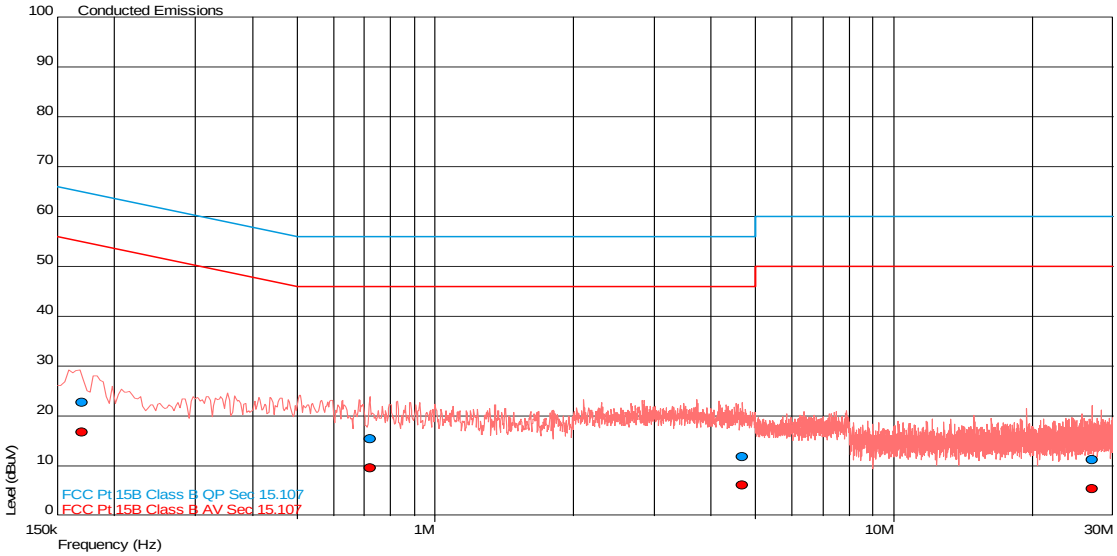
Configuration 1 - Mode 1

Live Line Results




| Frequency (MHz) | QP Level (dBµV) | QP Limit (dBµV) | QP Margin (dBµV) | AV Level (dBµV) | AV Limit (dBµV) | AV Margin (dBµV) |
|---|---|---|---|---|---|---|
| 0.183 | 20.5 | 64.3 | -43.9 | 14.7 | 54.3 | -39.6 |
| 0.580 | 15.8 | 56.0 | -40.2 | 9.9 | 46.0 | -36.1 |
| 3.288 | 12.9 | 56.0 | -43.1 | 7.0 | 46.0 | -39.0 |
| 7.881 | 12.3 | 60.0 | -47.7 | 6.5 | 50.0 | -43.5 |

## Neutral Line Results




| Frequency (MHz) | QP Level (dBµV) | QP Limit (dBµV) | QP Margin (dBµV) | AV Level (dBµV) | AV Limit (dBµV) | AV Margin (dBµV) |
|---|---|---|---|---|---|---|
| 0.170 | 22.7 | 65.0 | -42.3 | 16.8 | 55.0 | -38.2 |
| 0.720 | 15.5 | 56.0 | -40.5 | 9.6 | 46.0 | -36.4 |
| 4.676 | 11.9 | 56.0 | -44.1 | 6.2 | 46.0 | -39.8 |
| 27.037 | 11.3 | 60.0 | -48.7 | 5.4 | 50.0 | -44.6 |

## 2.2 RADIATED EMISSIONS (ENCLOSURE PORT)

### 2.2.1 Specification Reference

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

### 2.2.2 Equipment Under Test

USB Stick, S/N: Not Serialised (75923713_TSR0001)

### 2.2.3 Date of Test and Modification State

16 Auguest 2013 - Modification State 0

### 2.2.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

### 2.2.5 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

### 2.2.6 Environmental Conditions

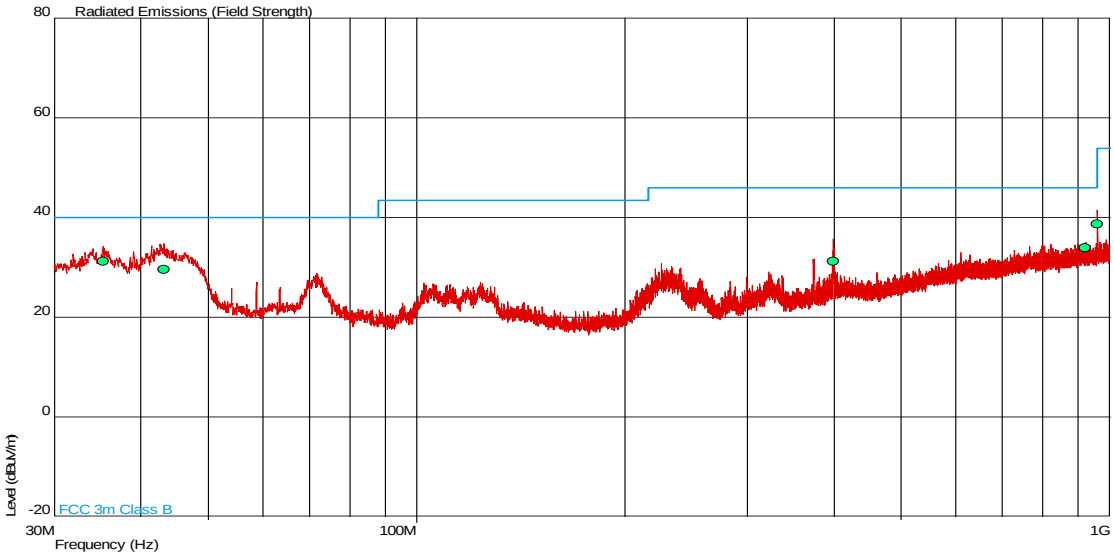
| | 16 August 2013 |
|---|---|
| Ambient Temperature | 2.32°C |
| Relative Humidity | 53% |
| Atmospheric Pressure | 1012mbar |

### 2.2.7 Test Results

For the period of test the EUT met the requirements of FCC CFR 47 Part 15B and ICES-003 for Radiated Emissions (Enclosure Port).

The test results are shown below.

Configuration 1 - Mode 1




| Frequency (MHz) | QP Level (dBµV/m) | QP Limit (dBµV/m) | QP Margin (dBµV/m) | Angle(Deg) | Height(m) | Polarity |
|---|---|---|---|---|---|---|
| 35.287 | 31.3 | 40.0 | -8.7 | 107 | 1.00 | Vertical |
| 43.241 | 29.6 | 40.0 | -10.4 | 17 | 1.00 | Vertical |
| 398.697 | 31.2 | 46.0 | -14.8 | 248 | 1.00 | Horizontal |
| 922.449 | 34.0 | 46.0 | -12.0 | 264 | 2.71 | Horizontal |
| 959.957 | 38.7 | 46.0 | -7.3 | 0 | 1.00 | Horizontal |

# 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 |
|---|---|---|---|---|---|
| **Section 2.1 EMC - Conducted Emissions** | | | | | |
| LISN | Rohde & Schwarz | ESH2-Z5 | 17 | 12 | 01-Aug-2014 |
| Screened Room (5) | Rainford | Rainford | 1545 | 24 | 25-Dec-2013 |
| Transient Limiter | Hewlett Packard | 11947A | 2377 | 12 | 13-Feb-2014 |
| EMI Test Receiver | Rohde & Schwarz | ESU40 | 3506 | 12 | 11-Oct-2013 |
| **Section 2.2 EMC - Radiated Emissions** | | | | | |
| Antenna (Bilog) | Schaffner | CBL6143 | 287 | 24 | 18-Jan-2014 |
| Screened Room (5) | Rainford | Rainford | 1545 | 36 | 25-Dec-2013 |
| Turntable Controller | Inn-Co GmbH | CO 1000 | 1606 | - | TU |
| EMI Test Receiver | Rohde & Schwarz | ESU40 | 3506 | 12 | 11-Oct-2013 |
| 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 | Frequency / Parameter | MU |
|---|---|---|
| Radiated Emissions, Bilog Antenna, AOATS | 30MHz to 1GHz Amplitude | 5.2dB* |
| 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 |

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

* In accordance with CISPR 16-4-2

## SECTION 4

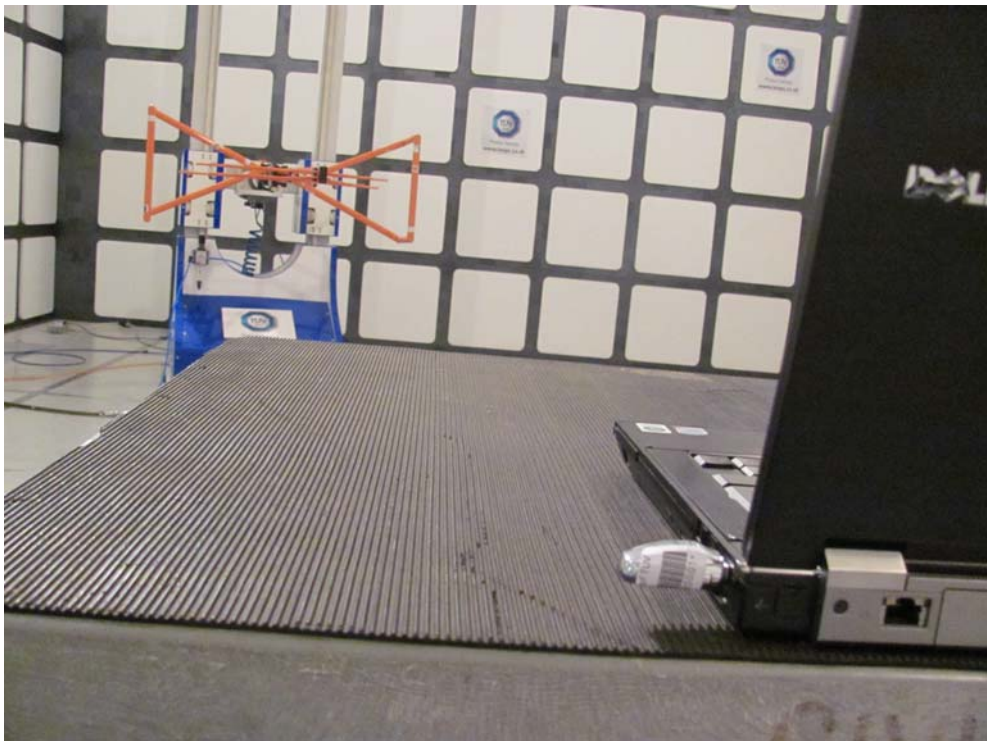
## PHOTOGRAPHS

## 4.1 PHOTOGRAPHS OF EQUIPMENT UNDER TEST (EUT)

USB Stick

## 4.2 TEST SET UP PHOTOGRAPHS

Conducted Emissions (AC Power Port)



Radiated Emissions (Enclosure Port)

## SECTION 5

## ACCREDITATION, DISCLAIMERS AND COPYRIGHT

## 5.1 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.

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