Report On

EMC Testing of the
Datawind
Pocket Surfer 2

COMMERCIAL-IN-CONFIDENCE

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REPORT ON

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December 2007

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6th December 2007

This report has been up-issued to Issue 2 to correct typographical errors.

Product Service

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SECTION 1

REPORT SUMMARY

EMC Testing of the
Datawind
Pocket Surfer 2

Product Service

1.1 INTRODUCTION

The information contained in this report is intended to show verification of the Datawind Pocket Surfer 2 to the requirements of FCC 47 CFR Part 15B: 2006.

Objective	To perform Electromagnetic Compatibility (EMC) Qualification Approval Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	Datawind
Model Number(s)	Pocket Surfer 2
Serial Number(s)	P3140729x0023xxx (the serial number can be found only through standard factory installed firmware, or by opening the unit)
Software Version	1.0.106 or newer (factory unit), 1.0.94 (initial units)
Hardware Version	DW-RC04_D54
Number of Samples Tested	One
Test Specification/Issue/Date	FCC 47 CFR Part 15B: 2006
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Start of Test	18th October 2007
Finish of Test	19th October 2007
Name of Engineer(s)	A Guy P J Harrison
Related Document(s)	ANSI C63.4: 2003 FCC: DA 00-705: 2000

1.2 BRIEF SUMMARY OF RESULTS

A brief summary of results, in accordance with FCC 47 CFR Part 15B: 2006, is shown below.

Configuration 1 - Operating with AC Charger attached				
Section	Spec Clause	Test Description	Result	Base Standard
2.1	15.109	Radiated Emissions (Enclosure Port)	Pass	
2.2	15.107	Conducted Emissions (AC Power Port)	Pass	

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1.3 DECLARATION OF BUILD STATUS

MAIN EUT	
MANUFACTURING DESCRIPTION	Mobile Internet Browser
MANUFACTURER	DATAWIND
TYPE	Pocket Surfer 2
PART NUMBER	DW-RC04
SERIAL NUMBER	P3140729x0023xxx (the serial number can be found only through standard factory installed firmware, or by opening the unit)
HARDWARE VERSION	DW-RC04_D54
SOFTWARE VERSION	1.0.106 or newer (factory unit), 1.0.94 (initial units)
TRANSMITTER OPERATING RANGE	GSM 850,900,1800, 1900
RECEIVER OPERATING RANGE	GSM 850,900,1800, 1900, GPS
INTERMEDIATE FREQUENCIES	See data of SIM340 GSM/GPRS module
HIGHEST INTERNALLY GENERATED FREQUENCY	288MHz – CPU PLL,
OUTPUT POWER (W or dBm)	33dBm @ 850/900MHZ , 30dBm @ 1800/1900MHz (Std. GSM bands)
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	The device makes use of an embedded GPRS modem to connect to a proxy server. Making use of proprietary technology is able to browse the internet web pages at speeds comparable to LAN connected computers, while using only a fraction of the bandwidth (standard GSM/GPRS bandwidth). It also renders web pages in format similar to laptop/desktop PCs as opposed to other small format devices that reformat the web pages (like phones or blackberry devices).
BATTERY/POWER SUPPLY	
MANUFACTURING DESCRIPTION	Soft pack Li-Poly with electronic protection circuit (Overcharge, Overload, Under voltage)
MANUFACTURER	Power Long
TYPE	
PART NUMBER	PL4324137
VOLTAGE	3.7V
SERIAL NUMBER	Not Serialised
ANCILLARIES (if applicable)	
MANUFACTURING DESCRIPTION	Wall Plug charging adapter (in 100-240V, 50/60Hz; out 5VDC, 1A)
MANUFACTURER	Kuantech
TYPE	
PART NUMBER	KSAA0500100W1xx (xx = US, UK, AU)
SERIAL NUMBER	Not Serialised

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 BABT/TÜV Product Service as to the accuracy of the information declared in this document by the manufacturer.

Product Service

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was a Datawind Pocket Surfer 2 as shown in the photograph below. A full technical description can be found in the Manufacturers documentation.

Equipment Under Test

Product Service

1.4.2 Test Configuration

Configuration: Operating with AC Charger attached

The EUT was configured in accordance with FCC 47 CFR Part 15B: 2006.

1.4.3 Modes of Operation

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

Mode 1 - 850 Idle.

Mode 2 - 1900 Idle.

Information on the specific test modes utilised are detailed in the test procedure for each individual test.

Product Service

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.

FCC Accreditation
90987 Octagon House, Fareham Test Laboratory

The EUT was powered from via an AC 230V charger.

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.

Product Service

SECTION 2

TEST DETAILS

EMC Testing of the
Datawind
Pocket Surfer 2

Product Service

2.1 RADIATED EMISSIONS (ENCLOSURE PORT)

2.1.1 Specification Reference

FCC 47 CFR Part 15B: 2006

2.1.2 Equipment Under Test

Pocket Surfer 2

2.1.3 Date of Test

18th October 2007

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 C63.4.

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

- Configuration Operating with AC Charger attached - Mode 850 Idle
  - Mode 1900 Idle

2.1.6 Environmental Conditions

Ambient Temperature	19°C
Relative Humidity	43%
Atmospheric Pressure	1031mbar

Product Service

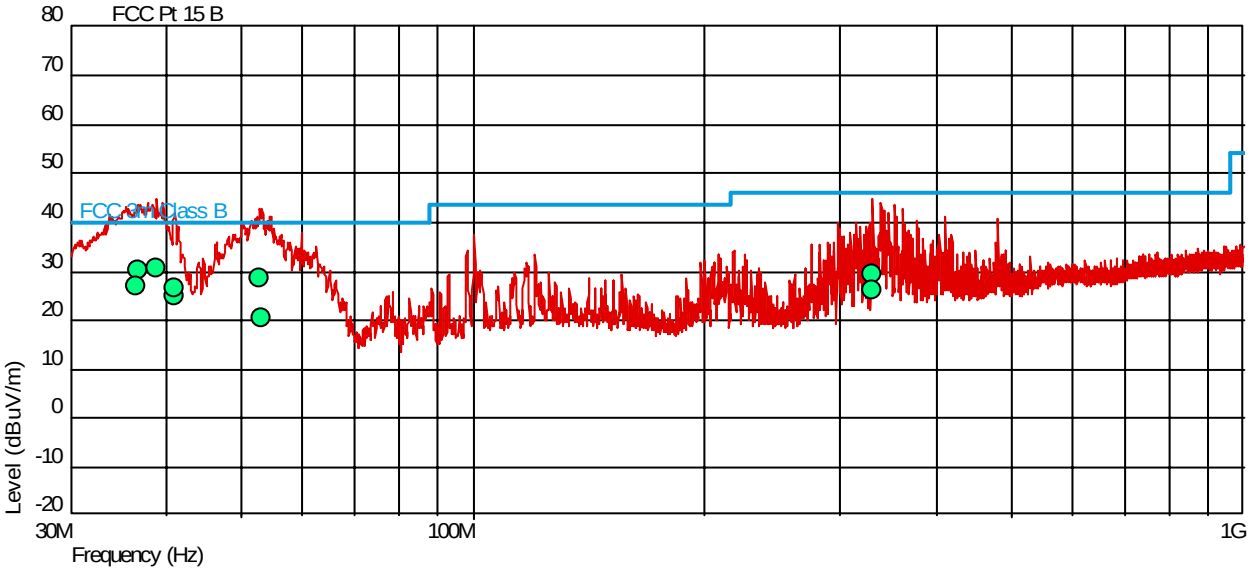
2.1.7 Test Results

For the period of test the EUT met the requirements of FCC Part 15B: 2006 for Radiated Emissions (Enclosure Port).

The test results are shown below.

Configuration Operating with AC Charger attached - Mode 850 Idle

30MHz to 1GHz



Final Result

Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	QP Level (uV/m)	QP Limit (uV/m)	QP Margin (uV/m)	Angle (Degree)	Height (m)	Polarity
36.592	27.0	40.0	-13.0	22.4	100.0	77.6	303.5	1.00	Horizontal
36.710	30.3	40.0	-9.7	32.7	100.0	67.3	0.3	1.00	Vertical
38.816	30.5	40.0	-9.5	33.5	100.0	66.5	47.3	1.00	Vertical
40.999	26.7	40.0	-13.3	21.6	100.0	78.4	146.6	1.00	Vertical
41.002	24.9	40.0	-15.1	17.6	100.0	82.4	225.6	1.00	Horizontal
52.904	28.5	40.0	-11.5	26.6	100.0	73.4	90.3	1.00	Vertical
52.975	20.4	40.0	-19.6	10.5	100.0	89.5	359.6	1.00	Horizontal
329.323	25.9	46.0	-20.1	19.7	200.0	180.3	170.9	1.00	Vertical
329.435	29.4	46.0	-16.6	29.5	200.0	170.5	226.5	1.00	Horizontal

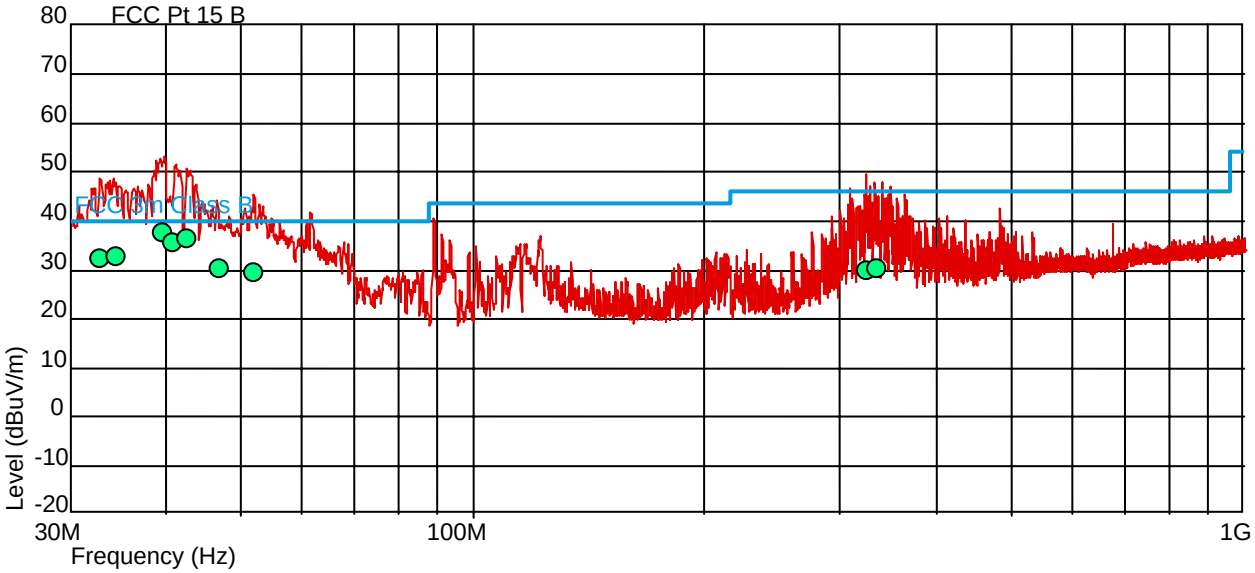
1GHz to 5GHz

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

Product Service

Configuration Operating with AC Charger attached - Mode 1900 Idle

30MHz to 1GHz



Final Result

Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	QP Level (uV/m)	QP Limit (uV/m)	QP Margin (uV/m)	Angle (Degree)	Height (m)	Polarity
32.625	31.9	40.0	-8.1	39.4	100.0	60.6	182.5	1.00	Vertical
34.110	32.4	40.0	-7.6	41.7	100.0	58.3	87.8	1.00	Vertical
39.210	37.3	40.0	-2.7	73.3	100.0	26.7	298.5	1.00	Vertical
40.566	35.3	40.0	-4.7	58.2	100.0	41.8	286.4	1.00	Vertical
42.285	36.0	40.0	-4.0	63.1	100.0	36.9	8.9	1.00	Vertical
46.457	29.8	40.0	-10.2	30.9	100.0	30.9	8.3	1.00	Vertical
51.444	29.1	40.0	-10.9	28.5	100.0	71.5	359.8	1.00	Vertical
321.937	29.4	46.0	-16.6	29.5	200.0	170.5	142.2	1.00	Horizontal
331.882	29.9	46.0	-16.1	31.3	200.0	168.7	286.2	1.10	Horizontal

1GHz to 10GHz

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

Product Service

2.2 CONDUCTED EMISSIONS (AC POWER PORT)

2.2.1 Specification Reference

FCC 47 CFR Part 15B: 2006

2.2.2 Equipment Under Test

Pocket Surfer 2

2.2.3 Date of Test

19th October 2007

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 C63.4.

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

- Configuration Operating with AC Charger attached - Mode 850 Idle
  - Mode 1900 Idle

2.2.6 Environmental Conditions

Ambient Temperature	20.2°C
Relative Humidity	33%
Atmospheric Pressure	1029mbar

Product Service

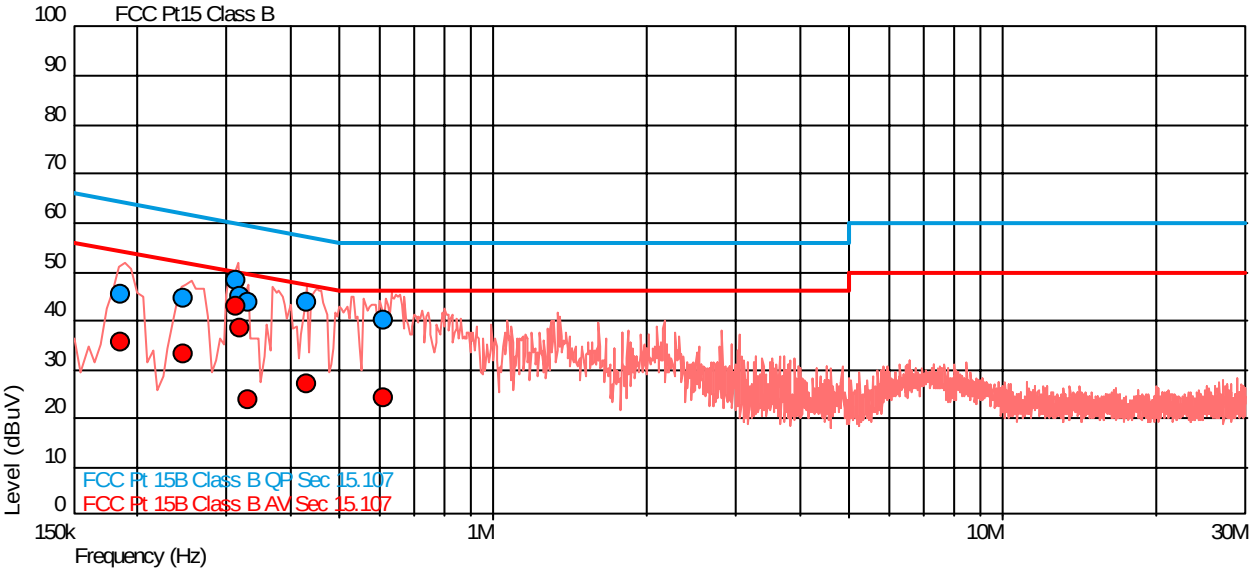
2.2.7 Test Results

For the period of test the EUT met the requirements of FCC 47 CFR Part 15B: 2006 for Conducted Emissions (AC Power Port).

The test results are shown below.

Configuration Operating with AC Charger attached - Mode 850 Idle

Live Line Results



Final Result

Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.186	45.4	64.2	-18.8	35.5	54.2	-18.7
0.246	44.5	61.9	-17.4	33.3	51.9	-18.6
0.314	48.1	59.9	-11.8	43.0	49.9	-6.8
0.318	45.0	59.8	-14.8	38.5	49.8	-11.3
0.330	43.7	59.4	-15.7	23.6	49.4	-25.8
0.430	43.6	57.2	-13.7	27.2	47.2	-20.0
0.611	40.2	56.0	-15.8	24.0	46.0	-22.0

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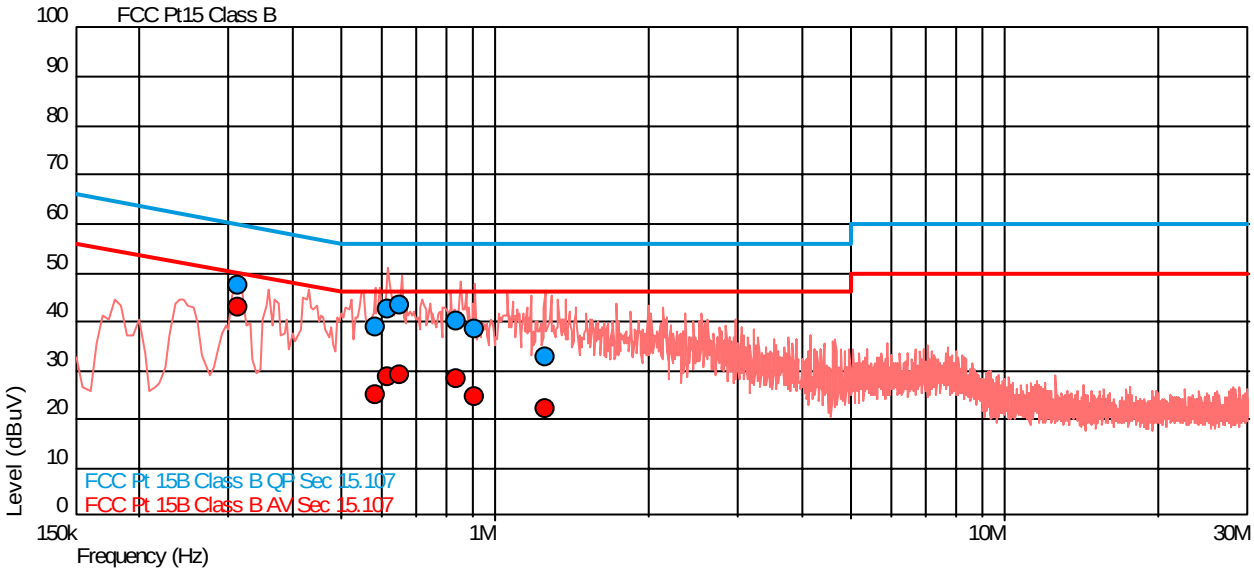
Neutral Line Results



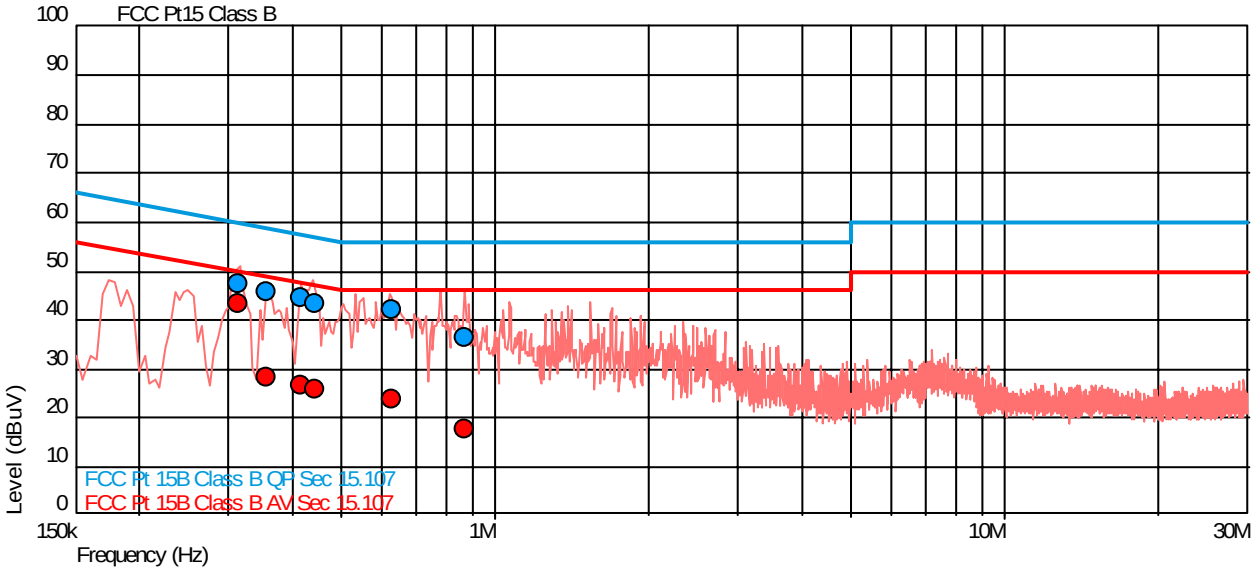
Final Result

Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.314	47.3	59.9	-12.5	43.0	49.9	-6.9
0.581	38.6	56.0	-17.4	25.1	46.0	-20.9
0.617	42.6	56.0	-13.4	28.6	46.0	-17.4
0.650	43.5	56.0	-12.5	29.1	46.0	-16.9
0.841	40.2	56.0	-15.8	28.2	46.0	-17.8
0.915	38.3	56.0	-17.7	24.7	46.0	-21.3
1.251	32.9	56.0	-23.1	22.1	46.0	-23.9

Product Service

Configuration Operating with AC Charger attached - Mode 1900 Idle

Live Line Results

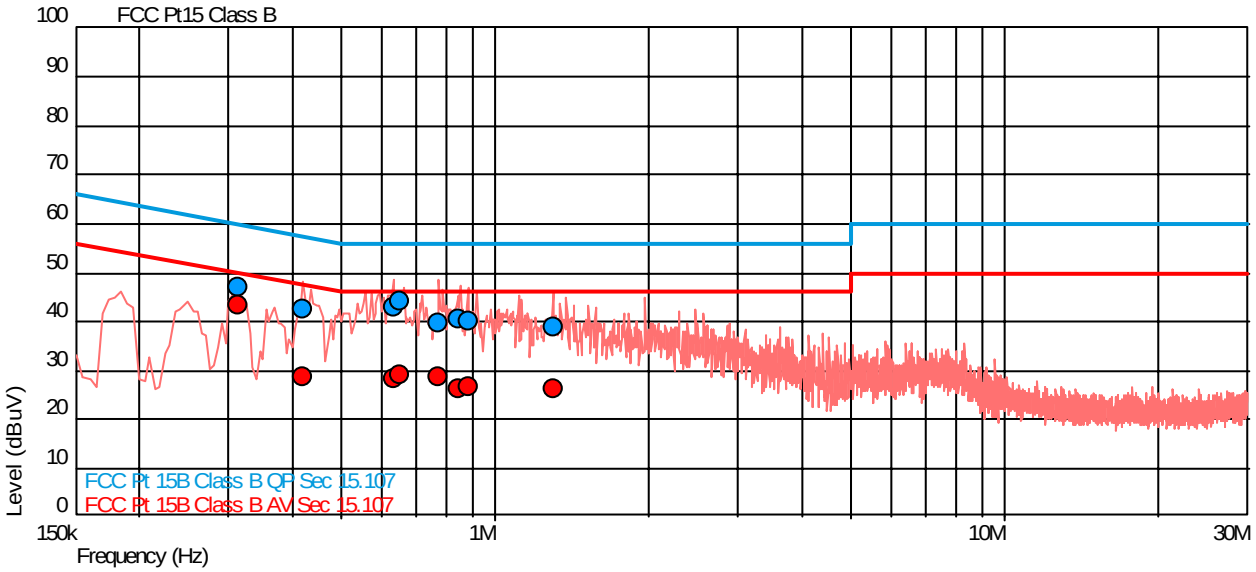


Final Result

Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.313	47.5	59.9	-12.4	43.1	49.9	-6.8
0.356	45.6	58.8	-13.3	28.1	48.8	-20.7
0.417	44.5	57.5	-13.0	26.6	47.5	-20.9
0.443	43.4	57.0	-13.6	25.8	47.0	-21.3
0.625	42.0	56.0	-14.0	23.9	46.0	-22.1
0.873	36.5	56.0	-19.5	17.7	46.0	-28.3

Product Service

Neutral Line Results



Final Result

Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.314	47.0	59.9	-12.9	43.1	49.9	-6.7
0.419	42.4	57.5	-15.0	28.7	47.5	-18.8
0.631	42.9	56.0	-13.1	28.4	46.0	-17.6
0.650	44.0	56.0	-12.0	29.2	46.0	-16.8
0.775	39.6	56.0	-16.4	28.8	46.0	-17.2
0.849	40.4	56.0	-15.6	26.4	46.0	-19.6
0.886	40.1	56.0	-15.9	26.5	46.0	-19.5
1.299	38.7	56.0	-17.3	26.3	46.0	-19.7

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 Number	Calibration Due
Section 2.2 EMC - Conducted Emissions				
3 phase LISN	Rohde & Schwarz	ESH2-Z5	323	25-Nov-2007
Test Receiver	Rohde & Schwarz	ESIB40	1006	21-Apr-2008
Single Phase LISN	Rohde & Schwarz	ESH3-Z5	1674	2-Aug-2008
Antenna (Double Ridge Guide)	EMCO	3115	1711	27-Jul-2008
Transient Limiter	Hewlett Packard	11947A	2377	19-Jun-2008
GSM Test Set	Rohde & Schwarz	CMU 200	2809	30-Jan-2008
Section 2.1 EMC - Radiated Emissions				
Amplifier	Miteq Corp	AMF-3D-001080-18-13P	231	TU
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	29-Jun-2008
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	235	29-Jun-2008
Antenna (Bilog)	Schaffner	CBL6143	287	13-Jan-2008
Dual Power Supply Unit	Thurlby	PL320	288	TU
Communications Tester	Rohde & Schwarz	CMU 200	442	21-Jun-2008
Filter (High Pass, 4GHz)	RLC Electronics	F-100-4000-5-R	564	21-May-2008
Test Receiver	Rohde & Schwarz	ESIB40	1006	21-Apr-2008
Antenna (Double Ridge Guide)	Q-Par Angus Ltd	QSH 180K	1511	TU
Pre-Amplifier	Phase One	PS04-0086	1533	TU
Pre-Amplifier	Phase One	PSO4-0087	1534	TU
Screened Room (5)	Rainford	Rainford	1545	1-Mar-2008
Mast Controller	Inn-Co GmbH	CO 1000	1606	TU
Turntable/Mast Controller	EMCO	2090	1607	TU
Signal Generator	Marconi	2031	2015	18-Nov-2007
Antenna (Bilog)	Chase	CBL6143	2904	10-Nov-2007
Comb Generator	Schaffner	RSG1000	3034	TU
Antenna (DRG Horn)	ETS-LINDGREN	3115	3125	21-Apr-2008
Compliance 3 Emissions	Schaffner	C3e Software V.4.00.00	3274	N/A - Software
High Pass Filter (3GHz)	RLC Electronics	F-100-3000-5-R	3349	13-Apr-2008

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	5.1dB*
Conducted Emissions, LISN	150kHz to 30MHz Amplitude	3.2dB*

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

* In accordance with CISPR 16-4

Product Service

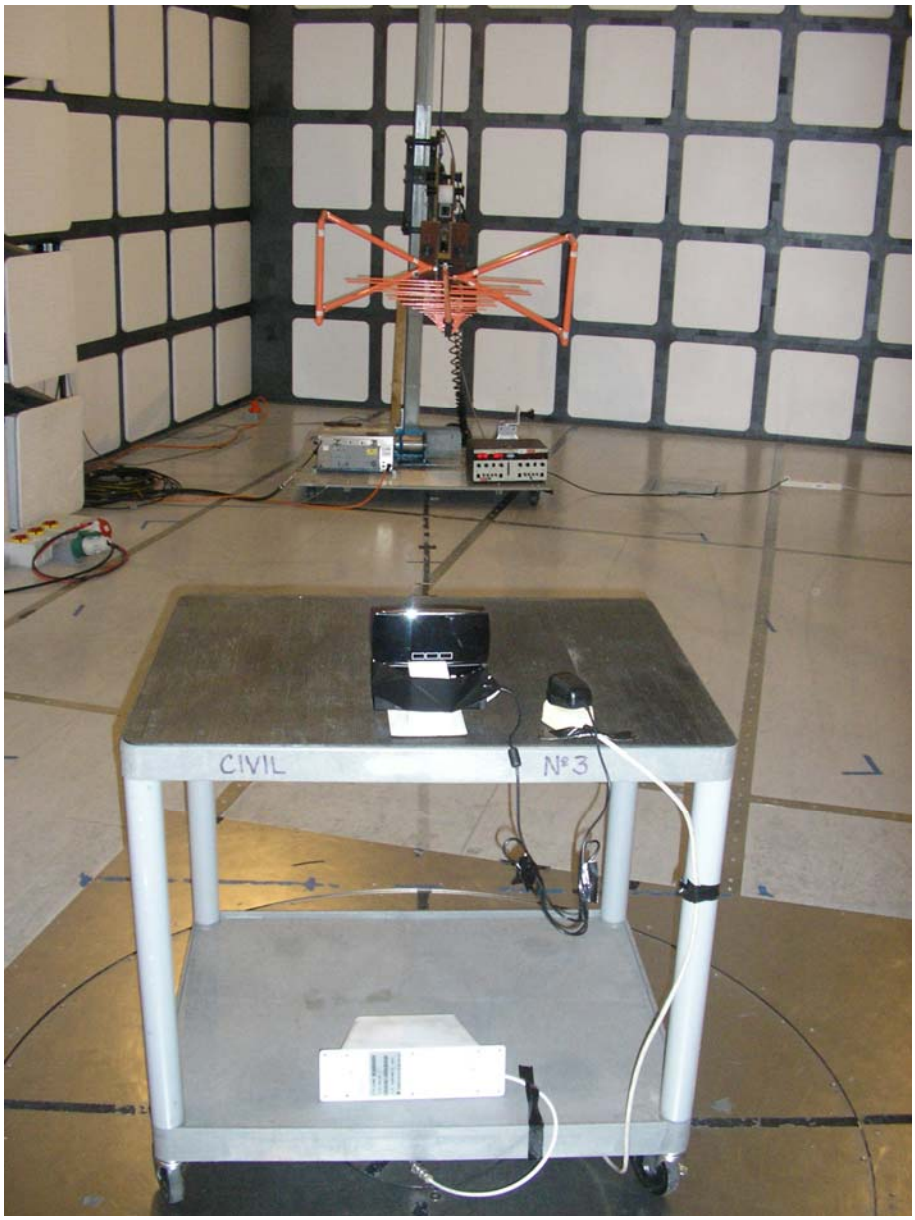
SECTION 4

PHOTOGRAPHS

Product Service

4.1 PHOTOGRAPHS OF EQUIPMENT UNDER TEST (EUT)

Radiated Emissions Test Setup



Radiated Emissions Test Setup

Conducted Emissions Test Setup

Product Service

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.

Results of tests not covered by our UKAS Accreditation Schedule are marked NUA (Not UKAS Accredited).