Report On

FCC Part 15B and Industry Canada Testing of the
IP Access
2G (EDGE) BTS Nano Base Station (850MHz)

COMMERCIAL-IN-CONFIDENCE

FCC ID: QGGKU02ZZR
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REPORT ON

FCC Part 15B and Industry Canada Testing of the
IP Access
2G (EDGE) BTS Nano Base Station (850MHz)

Document 75903461 Report 03 Issue 1

June 2006

PREPARED FOR

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PREPARED BY

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Authorised Signatory

DATED 26 June 2008

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

Test Engineer(s);

S Hartley

UKAS TESTING 0141

Product Service

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Product Service

SECTION 1

REPORT SUMMARY

FCC Part 15B and Industry Canada Testing of the
IP Access
2G (EDGE) BTS Nano Base Station (850MHz)

Product Service

1.1 INTRODUCTION

The information contained in this report is intended to show verification of the IP Access 2G (EDGE) BTS Nano Base Station (850MHz) to the requirements of FCC CFR 47 Part 15B: 2006 and Industry Canada RSS-Gen: 2005.

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	IP Access
Model Number(s)	165D
Serial Number(s)	00073853
Software Version	168a007_v142b7d26
Hardware Version	XA
Number of Samples Tested	1
Test Specification/Issue/Date	FCC CFR 47 Part 15B: 2006 Industry Canada RSS-Gen: 2005
Incoming Release Date	Not Formally Released 02 June 2008
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Order Number Date	PO17918 20 March 2008
Start of Test	07 June 2008
Finish of Test	08 June 2008
Name of Engineer(s)	S C Hartley

Product Service

1.2 BRIEF SUMMARY OF RESULTS

A brief summary of results in accordance with FCC CFR 47 Part 15B: 2006 and Industry Canada RSS-Gen: 2005, is shown below.

Configuration 1 - As supplied							
Section	Spec Clause		Test Description	Mode	Mod State	Result	Base Standard
	Part 15B: 2006	RSS-Gen					
2.1	15.109	6.0	Radiated Emissions (Enclosure Port)	RX Idle	0	Pass	FCC CFR 47 Part 15: 2006
				RX Qual		N/A	
2.2	15.107	7.2.2	Conducted Emissions (AC Power Port)	RX Idle	0	Pass	FCC CFR 47 Part 15: 2006
				RX Qual		N/A	

N/A – Not Applicable

Product Service

1.3 DECLARATION OF BUILD STATUS

MAIN EUT			
MANUFACTURING DESCRIPTION	850M NanaBTS		
MANUFACTURER	Ip Access		
TYPE	165D		
PART NUMBER	165D		
SERIAL NUMBER	00073853		
HARDWARE VERSION	XA		
SOFTWARE VERSION	168a007_v142b7d26		
TRANSMITTER OPERATING RANGE	869MHz- 894MHz		
RECEIVER OPERATING RANGE	824MHz – 849MHz		
COUNTRY OF ORIGIN	Mexico		
INTERMEDIATE FREQUENCIES	170.6MHz		
ITU DESIGNATION OF EMISSION			
HIGHEST INTERNALLY GENERATED FREQUENCY	894MHz		
OUTPUT POWER (W or dBm)	23dBm		
FCC ID	QGGKU02ZZR		
INDUSTRY CANADA ID	4644A-KU02ZZR		
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	Base Station		
BATTERY/POWER SUPPLY			
MANUFACTURING DESCRIPTION	External DC PSU 109A for BTS		
MANUFACTURER	PPI		
TYPE	PSU109A		
PART NUMBER	PSU109A		
VOLTAGE	48V DC		
COUNTRY OF ORIGIN	China		
MODULES (if applicable)			
MANUFACTURING DESCRIPTION			
MANUFACTURER			
TYPE			
POWER			
FCC ID			
COUNTRY OF ORIGIN			
INDUSTRY CANADA ID			
EMISSION DESIGNATOR			
DHSS/FHSS/COMBINED OR OTHER			
ANCILLARIES (if applicable)			
MANUFACTURING DESCRIPTION			
MANUFACTURER			
TYPE			
PART NUMBER			
SERIAL NUMBER			
COUNTRY OF ORIGIN			

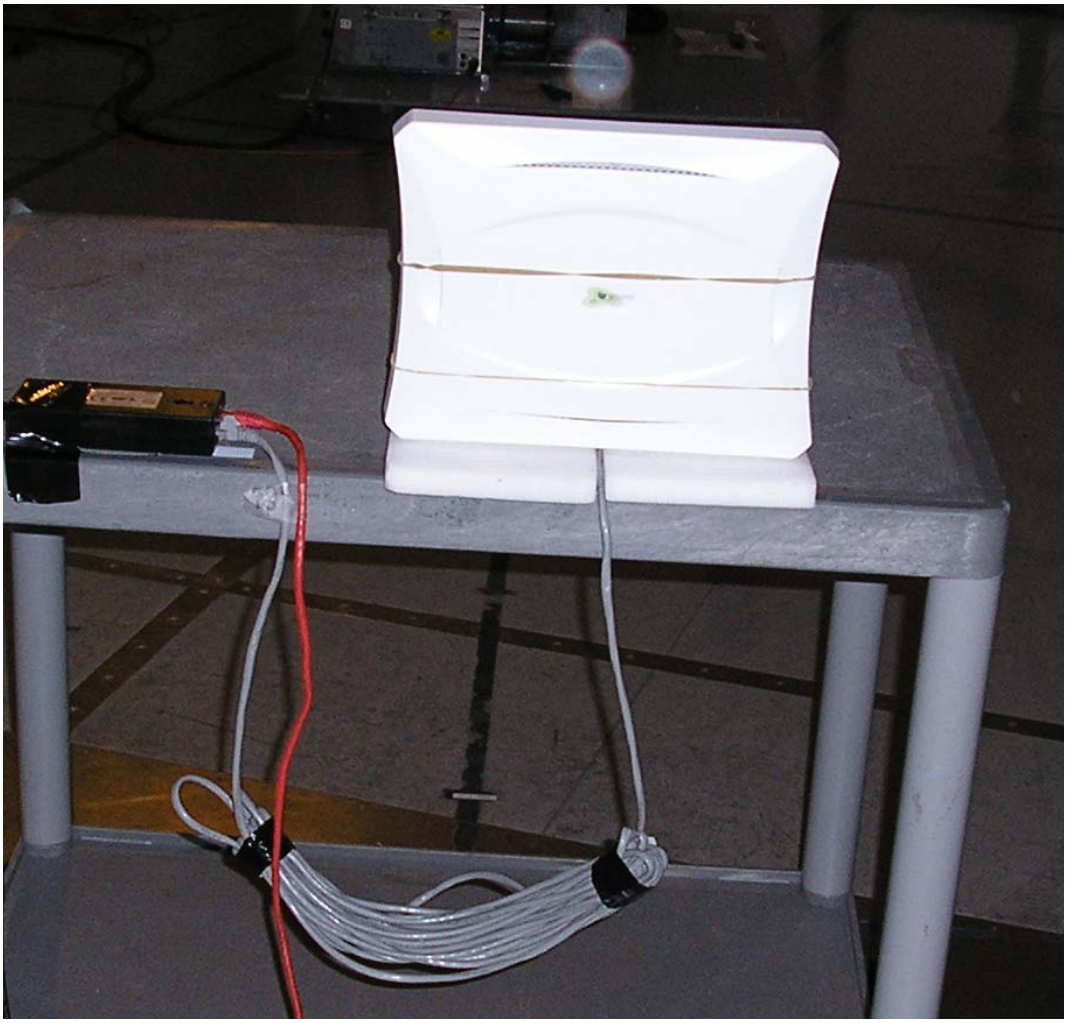
Signature Completed Electronically
Date: 17 June 2008
Declaration of Build Status Serial Number: 75903461/01

Product Service

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was a IP Access 2G (EDGE) BTS Nano Base Station (850MHz) 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 1: As supplied

The EUT was configured in accordance with FCC CFR 47 Part 15B: 2006 and Industry Canada RSS-Gen: 2005.

1.4.3 Modes of Operation

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

Mode 1 – Rx Idle (The EUT was set to Receive mode with the External Hub switched Off)
Mode 2 - RX Qual

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

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 from a 120V, 60Hz AC Mains supply.

FCC Accreditation
90987 Octagon House, Fareham Test Laboratory

Industry Canada Accreditation
2932B-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.

Product Service

SECTION 2

TEST DETAILS

FCC Part 15B and Industry Canada Testing of the
IP Access
2G (EDGE) BTS Nano Base Station (850MHz)

2.1 RADIATED EMISSIONS (ENCLOSURE PORT)

2.1.1 Specification Reference

FCC Part 15B: 2006, Clause 15.109
Industry Canada RSS-Gen: 2005, Clause 6.0

2.1.2 Equipment Under Test

2G (EDGE) BTS Nano Base Station (850MHz), S/N: 00073853

2.1.3 Date of Test and Modification State

07 and 08 June 2008 - 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 FCC CFR 47 Part 15: 2006.

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

Configuration 1 - Mode 1

2.1.6 Environmental Conditions

	07 June 2008	08 June 2008
Ambient Temperature	19°C	19°C
Relative Humidity	40%	52%
Atmospheric Pressure	1017mbar	1019mbar

Product Service

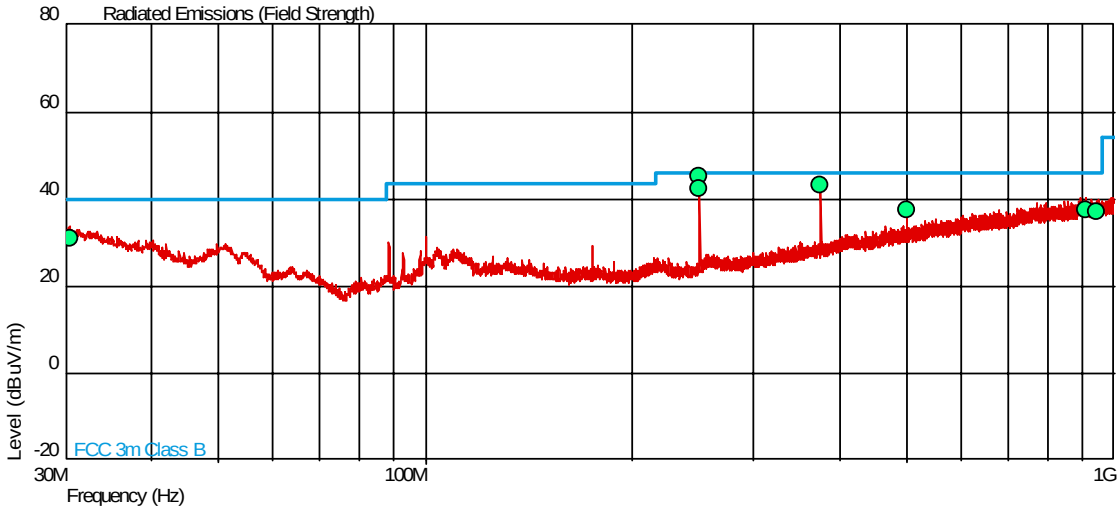
2.1.7 Test Results

For the period of test the EUT met the requirements of FCC Part 15B: 2006 and Industry Canada RSS-Gen: 2005 for Radiated Emissions (Enclosure Port).

The test results are shown below.

Configuration 1 - Mode 1

30MHz to 1GHz



Frequency (MHz)	QP Level		QP Limit		QP Margin		Angle(Deg)	Height(m)	Polarity
	dBuV/m	uV/m	dBuV/m	uV/m	dBuV/m	uV/m			
30.440	30.9	35.1	40.0	100.0	-9.1	64.9	23	1.00	Vertical
250.000	45.3	184.0	46.0	200.0	-0.7	16.0	342	1.00	Horizontal
250.000	42.3	130.3	46.0	200.0	-3.7	69.7	0	1.00	Vertical
374.993	43.0	141.3	46.0	200.0	-3.0	58.7	142	1.00	Horizontal
500.000	37.7	76.7	46.0	200.0	-8.3	123.3	138	1.00	Horizontal
910.644	37.3	73.3	46.0	200.0	-8.7	126.7	265	1.00	Vertical
945.718	37.3	73.3	46.0	200.0	-8.7	126.7	89	1.00	Horizontal

1GHz to 5GHz

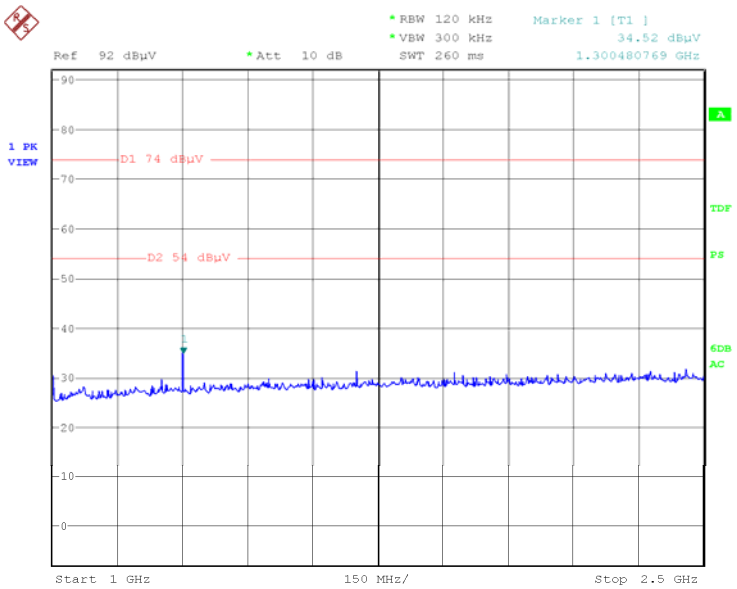
Frequency GHz	Antenna Polarisation	Antenna Height cm	EUT Arc Deg	Result Peak dBµV/m	Result Average dBµV/m	Peak Limit dBµV/m	Average Limit dBµV/m	Pass/Fail
1.300	Vertical	100	155	41.9	35.9	74.0	54.0	Pass
1.500	Horizontal	100	51	39.2	30.7	74.0	54.0	Pass

No other emissions were detected above the system noise floor which was 20dB below the litit line.

Product Service

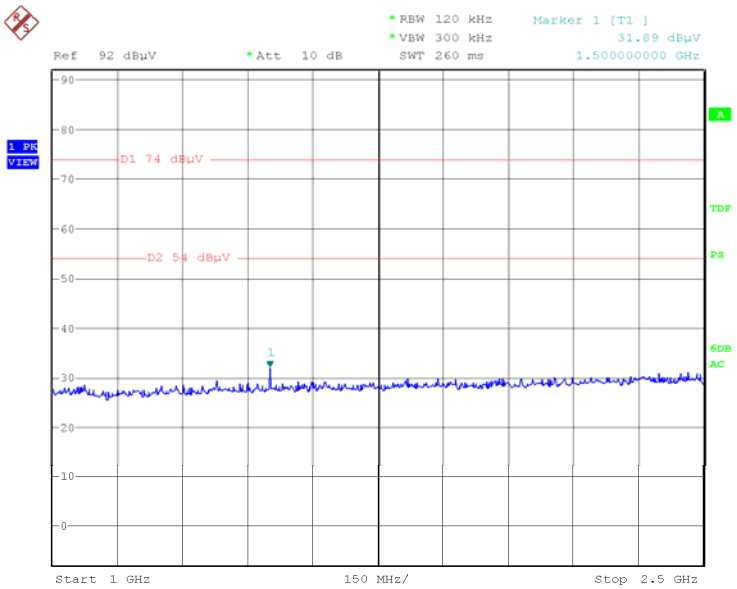
1GHz to 2.5GHz

Vertical Polarisation



Date: 8.JUN.2008 08:33:57

Horizontal Polarisation

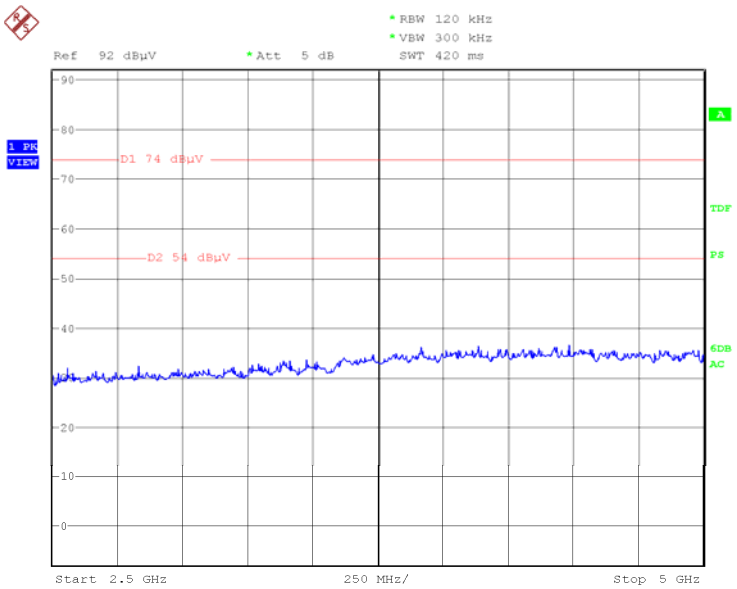


Date: 8.JUN.2008 08:12:40

Product Service

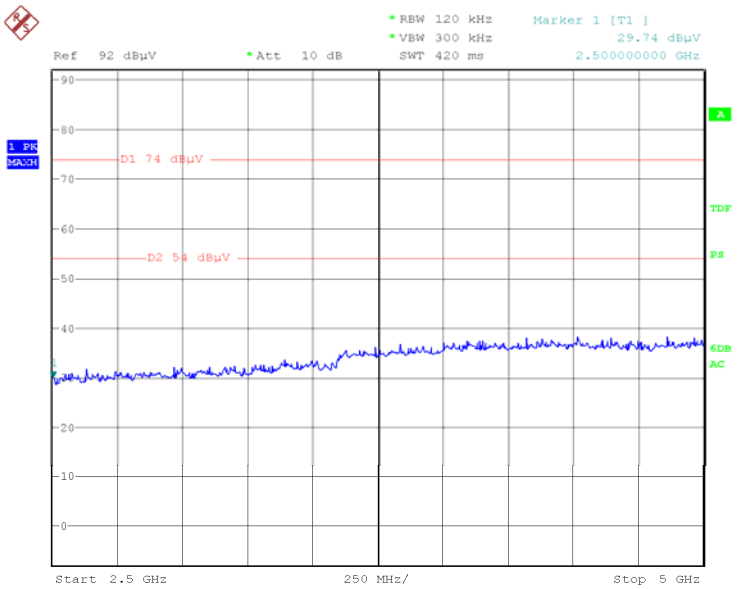
2.5GHz to 5GHz

Vertical Polarisation



Date: 8.JUN.2008 08:38:34

Horizontal Polarisation



Date: 8.JUN.2008 08:15:21

2.2 CONDUCTED EMISSIONS (AC POWER PORT)

2.2.1 Specification Reference

FCC Part 15B: 2006, Clause 15.107
Industry Canada RSS-Gen: 2005, Clause 7.2.2

2.2.2 Equipment Under Test

2G (EDGE) BTS Nano Base Station (850MHz), S/N: 00073853

2.2.3 Date of Test and Modification State

07 and 08 June 2008 - 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 FCC CFR 47 Part 15: 2006.

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

Configuration 1 - Mode 1

2.2.6 Environmental Conditions

	07 June 2008	08 June 2008
Ambient Temperature	19°C	19°C
Relative Humidity	40%	52%
Atmospheric Pressure	1017mbar	1019mbar

Product Service

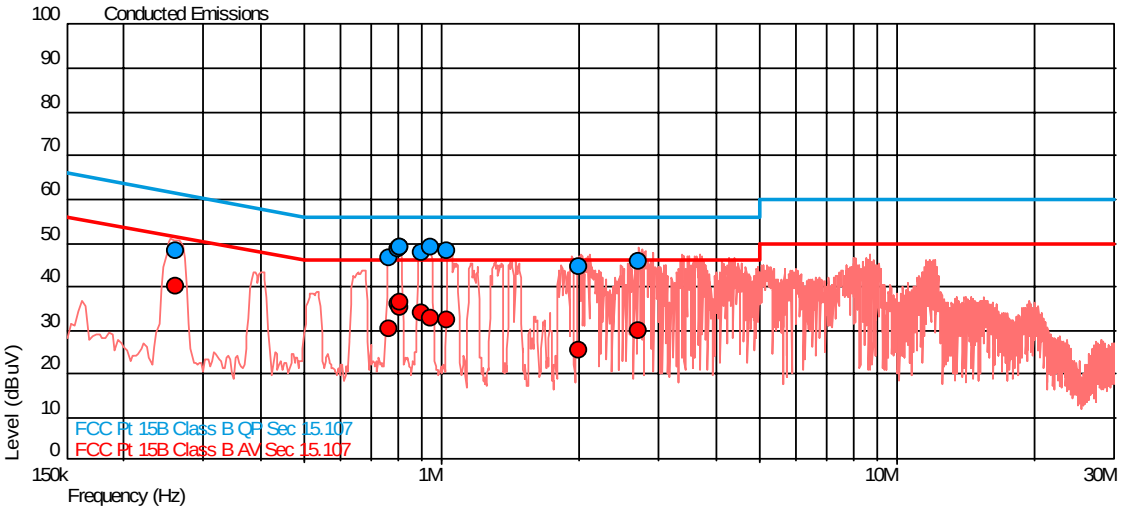
2.2.7 Test Results

For the period of test the EUT met the requirements of FCC Part 15B: 2006 and Industry Canada RSS-Gen: 2005 for Conducted Emissions (AC Power Port).

The test results are shown below.

Configuration 1 - Mode 1

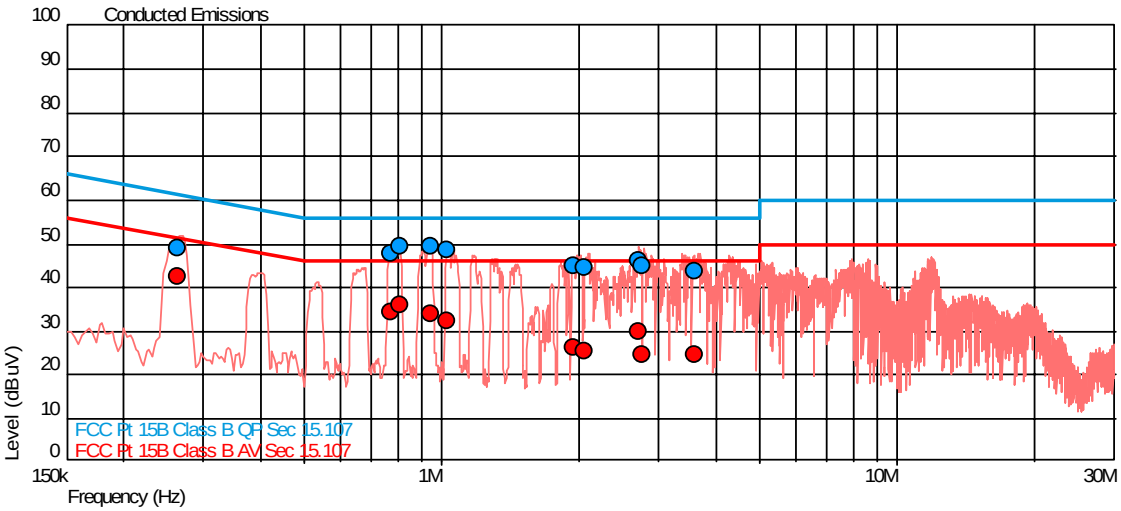
Live Line



Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.261	48.0	61.4	-13.4	39.9	51.4	-11.5
0.769	46.7	56.0	-9.3	30.3	46.0	-15.7
0.799	48.5	56.0	-7.5	35.9	46.0	-10.1
0.807	48.8	56.0	-7.2	36.2	46.0	-9.8
0.810	48.8	56.0	-7.2	35.2	46.0	-10.8
0.905	47.9	56.0	-8.1	34.0	46.0	-12.0
0.947	49.1	56.0	-6.9	32.8	46.0	-13.2
1.029	48.2	56.0	-7.8	32.4	46.0	-13.6
1.995	44.3	56.0	-11.7	25.6	46.0	-20.4
2.703	45.8	56.0	-10.2	29.9	46.0	-16.1

Product Service

Neutral Line



Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.264	48.9	61.3	-12.4	42.7	51.3	-8.6
0.774	47.9	56.0	-8.1	34.4	46.0	-11.6
0.810	49.3	56.0	-6.7	36.1	46.0	-9.9
0.947	49.4	56.0	-6.6	34.0	46.0	-12.0
1.030	48.6	56.0	-7.4	32.4	46.0	-13.6
1.938	44.7	56.0	-11.3	26.0	46.0	-20.0
2.061	44.5	56.0	-11.5	25.2	46.0	-20.8
2.701	46.2	56.0	-9.8	29.9	46.0	-16.1
2.759	45.0	56.0	-11.0	24.6	46.0	-21.4
3.594	43.5	56.0	-12.5	24.7	46.0	-21.3

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 2.2 EMC - Conducted Emissions					
LISN	Rohde & Schwarz	ESH2-Z5	17	12	1-May-2009
LISN (1 Phase)	Chase	MN 2050	336	12	18-Mar-2009
Screened Room (5)	Rainford	Rainford	1545	36	11-Feb-2011
Transient Limiter	Hewlett Packard	11947A	2378	12	19-Jun-2008
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	15-Mar-2009
Section 2.1 EMC - Radiated Emissions					
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	12	29-Jun-2008
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	235	12	29-Jun-2008
Dual Power Supply Unit	Thurlby	PL320	288	-	TU
Pre-Amplifier	Phase One	PS04-0085	1532	-	TU
Pre-Amplifier	Phase One	PS04-0086	1533	-	TU
Screened Room (5)	Rainford	Rainford	1545	36	11-Feb-2011
Mast Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Turntable/Mast Controller	EMCO	2090	1607	-	TU
Filter (High Pass)	RLC Electronics	RLC-F100-1500-S-R	2843	-	TU
Antenna (Bilog)	Chase	CBL6143	2904	24	28-Nov-2009
Signal Generator (10MHz to 40GHz)	Rohde & Schwarz	SMR40	3171	12	11-Jul-2008
Compliance 3 Emissions	Schaffner	C3e Software V.4.00.00	3274	-	N/A - Software
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	15-Mar-2009

TU Traceability Unscheduled

Product Service

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	26MHz to 2.5GHz Test Amplitude	1.4dB†
Conducted Susceptibility	100kHz to 250MHz Amplitude	1.8dB†
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
† In accordance with UKAS Lab 34

Product Service

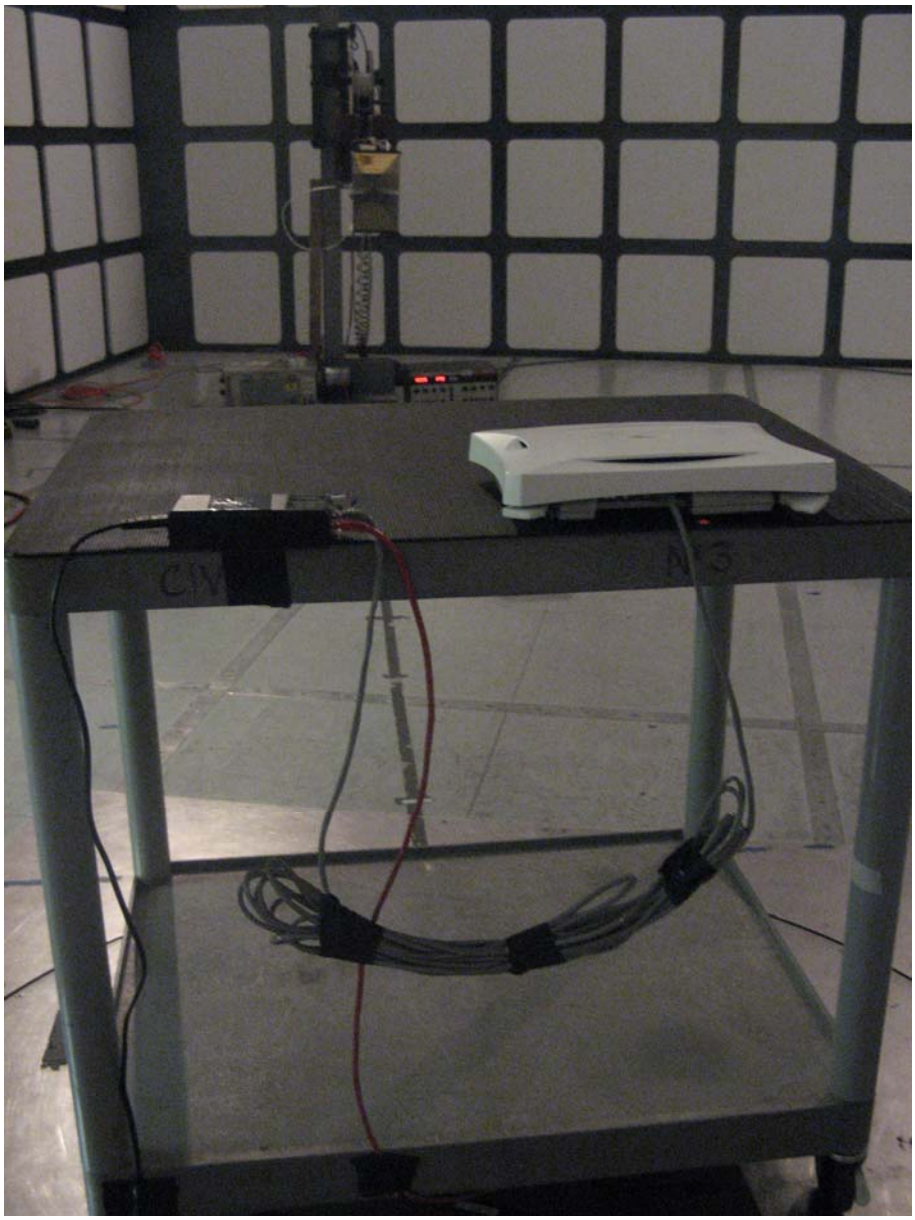
SECTION 4

PHOTOGRAPHS

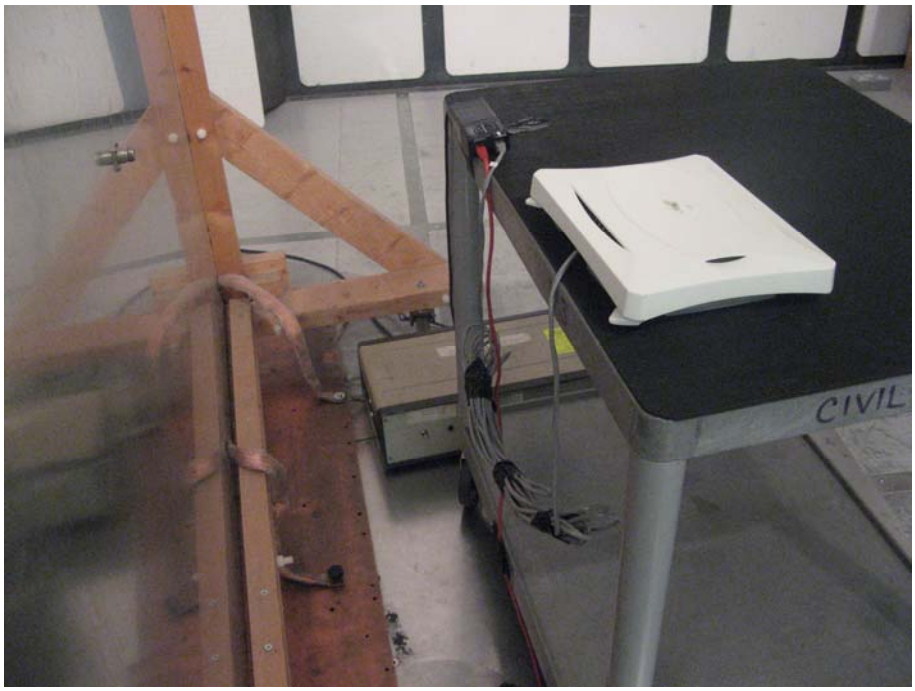
Product Service

4.1 PHOTOGRAPHS OF EQUIPMENT UNDER TEST (EUT)

Radiated Emissions (Enclosure Port) Test Setup



Radiated Emissions (Enclosure Port) 1GHz to 5GHz Test Setup



Conducted Emissions AC Power Port 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).