EMC Test Report

Prepared for:	BT
Manufacturer:	Comtrend
Product Name:	Powerline Ethernet Adapter
Model No:	PowerGrid 902
Test Standards:	EN 55022:2006 + A1:2007 Telecommunications Port Conducted Emissions & Radiated Emissions only.

2667

Tested at: Blackwood Compliance Laboratories

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Test Report Issue Date: 01 May 2009

Tested by: Phil Mantle
I am the author of this document
Test Engineer

Approved by: John Davies
I am approving this document
Technical Management

Contents

Section 1: Overview

Section 1.1: General

This test report contains details of testing carried out on samples submitted to the Blackwood Compliance Laboratories for an assessment against Electromagnetic Compatibility (EMC) standards in accordance with an agreed Test Plan.

This test report relates only to the specific items detailed in Section 1.3 and Section 2 as Equipment Under Test (EUT). The results given in this report relate only to the tests, configurations, operation modes and arrangements of the EUT as defined within this report.

The results contained in this test report do not relate to any Auxiliary Equipment (AE) which has been used to exercise, monitor and/or provide suitable loading for the EUT. AE, where applicable, is also detailed in Section 2.

Deviations from, additions to, or exclusions from the standard test method and, where applicable, information on specific test conditions, or where tests are not covered by our UKAS Accreditation schedule, are stated in the Results Summary Table in Section 3.1.

Fully testing to a harmonised standards as listed in the Official Journal is the equivalent of the *EMC Assessment* and this gives a *presumption of conformity* to the EMC Directive 2004/108/EC. The customer is advised to keep up to date with changes to standards in the Official Journal which may affect the compliance of the product.

Opinions and interpretations where given in this test report are outside of the scope of our UKAS Accreditation.

Section 1.2: Customer Details

This test report was prepared for:

BT
B29 G20 Adastral Park
Ipswich
IP5 3RE

Section 1.3: Equipment Under Test (EUT)

The equipment under test was a 230VAC powered ethernet to powerline adapter. It provides high quality data transmission for high-speed networking and allows users to extend a local area network via existing power lines.

Section 2: Details relating to the Equipment Under Test

Test Start Date: 28th April 2009
Test Completed Date: 29th April 2009

Section 2.1: Equipment Under Test (EUT)

Product Name:	Powerline Ethernet Adapter
Manufacturer:	Comtrend
Description:	Power Line Ethernet Adapter with Filter.
Model No:	PowerGrid 902
Part No:	724303-024
Serial No:	08081010545A
Build State:	Production
Condition:	Good/working
Software Version:	N/A

Section 2.2: Auxiliary Equipment (AE)

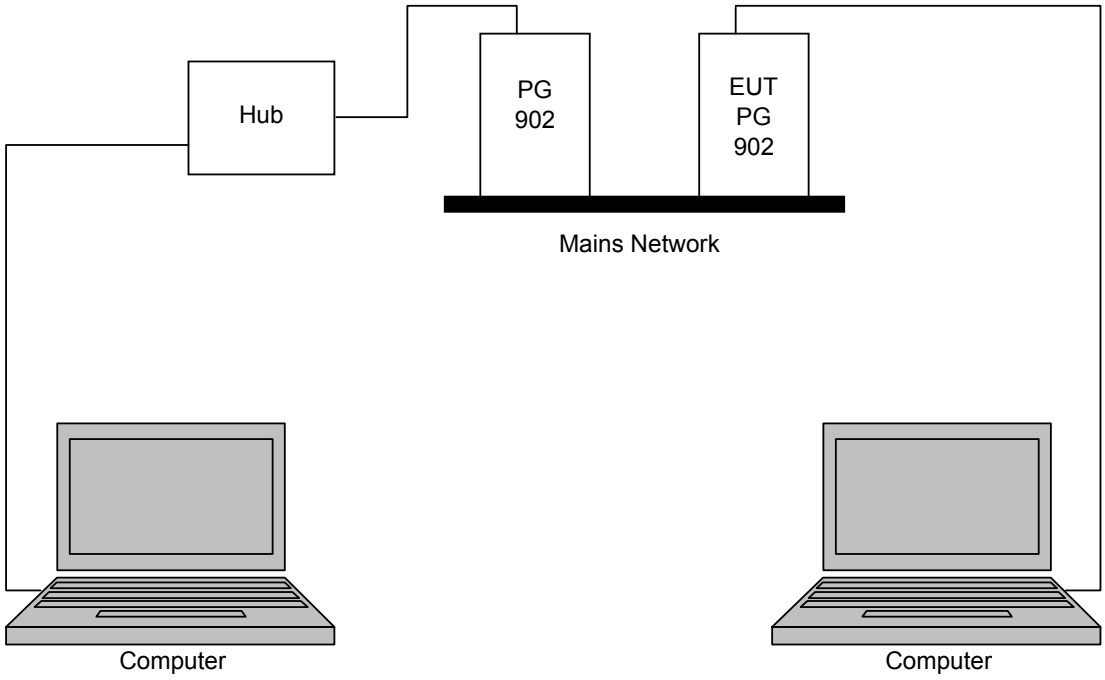
Product Name:	Powerline Ethernet Adapter
Manufacturer:	Comtrend
Description:	Power Line Ethernet Adapter with Filter.
Model No:	PowerGrid 902
Serial No:	08081010545B

Product Name:	Hub
Manufacturer:	BT
Description:	2 Wire DHCP Hub
Model No:	2WIRE
Serial No:	300611017450 R

Product Name:	Laptop Computer
Manufacturer:	Sony
Description:	Laptop Computer
Model No:	PCG-9B3M
Serial No:	28347250 5300410

Product Name:	PC
Manufacturer:	MSI
Description:	Personal Computer
Model No:	MEGA 651
Serial No:	719072 002756

Section 2.3: Configuration Diagram/Photograph of EUT



Section 3: Test Results Summary

Section 3.1: Test Results Summary Table

Test:	Standard:	Test Level/Frequency Range:	Mod.:	Result:
Telecom Port Conducted Emissions	EN 55022:2006 + A1:2007	Class B 150 kHz to 30 MHz	0	Pass
Radiated Emissions	EN 55022:2006 + A1:2007	Class B 30 MHz to 1000 MHz	0	Pass

Mains Port Conducted Emissions not performed at request of customer.

All of the above tests are included on the Blackwood Labs UKAS accreditation schedule (No. 2667), except telecom port conducted emissions.

Mod. (modification status):

0 The EUT was tested as received, i.e. without any modifications.

Section 3.2: Measurement Uncertainty

ISO/IEC 17025:2005 “General requirements for the competence of testing and calibration laboratories” requires measurement uncertainty to be estimated for all testing done.

Measurements Uncertainty for conducted and radiated emissions has been calculated and applied in accordance with CISPR 16-4-2:2003. Measurement Uncertainty has been calculated for all other tests in accordance with UKAS document LAB 34 Edition 1:2002.

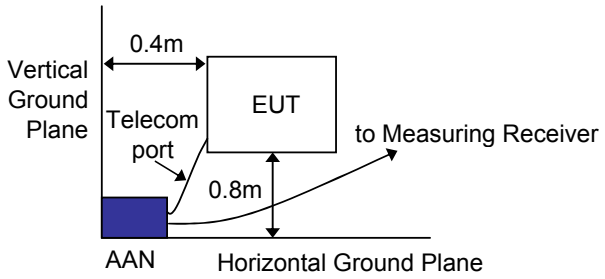
With regard to emissions testing Ulab meets Ucispr meaning that a simple pass or fail is reported.

Section 4: Formal Test Results

Section 4.1: Telecommunications Port Conducted Emissions

Test Standard: EN 55022:2006 + A1:2007
Frequency Range: 150 kHz to 30 MHz
Operation Mode: Transmission of data from one adapter (EUT) to a second adapter by streaming large data file. EUT tested with screened and unscreened RJ45 cables.

Telecommunications Port Conducted Emissions



Test Equipment Used:

8606	Schaffner ISNT400 Coupling / Decoupling Network (CDN)
8593	50Ω to 150Ω Adapter
8508	10m BNC Cable
8513	HP8568B Spectrum Analyser System
8636	HP Conducted Emissions Software

Test Results :

Below are the top recorded worst case telecommunications port conducted emissions when EUT tested with unscreened RJ45 cable:

Mains Voltage:	Port:	Detector:	Frequency (MHz):	Level (dB(μV)):	Limit (dB(μV)):	Margin (dB):	Result:
N/A	LAN	AV	18.24	63.3	64	-0.7	Pass
N/A	LAN	AV	17.67	62.6	64	-1.4	Pass
N/A	LAN	AV	23.27	62.5	64	-1.5	Pass
N/A	LAN	AV	16.24	62.3	64	-1.7	Pass
N/A	LAN	AV	19.64	61.2	64	-2.8	Pass
N/A	LAN	AV	20.17	60.8	64	-3.2	Pass

Deviations from Standard:

The ISNs called up in the 1998 version of EN 55022 were used to perform the testing.

Additional Comments:

None

Below are the top recorded worst case telecommunications port conducted emissions when EUT tested with screened RJ45 cable:

Mains Voltage:	Port:	Detector:	Frequency (MHz):	Level (dB(μV)):	Limit (dB(μV)):	Margin (dB):	Result:
N/A	LAN	AV	0.912	56.8	64	-7.2	Pass
N/A	LAN	AV	23.15	50.2	64	-13.8	Pass
N/A	LAN	AV	22.42	49.5	64	-14.5	Pass
N/A	LAN	AV	23.52	49.2	64	-14.8	Pass
N/A	LAN	AV	25.60	49.1	64	-14.9	Pass
N/A	LAN	AV	19.44	45.4	64	-18.6	Pass

Deviations from Standard:

None

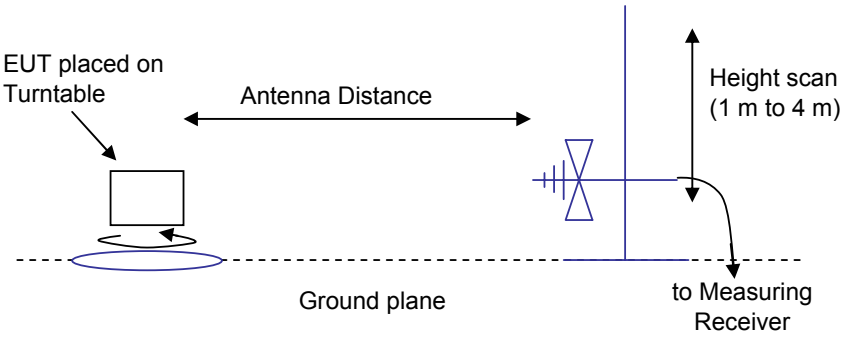
Additional Comments:

Voltage measurements were made with 150 ohm connected between the screen of the cable and the ground plane, as in C.1.2 of EN 55022.

Section 4.2: Radiated Emissions

Test Standard: EN 55022:2006 + A1:2007
Frequency Range: 30 MHz to 1000 MHz
Operation Mode: Transmission of data from one adapter (EUT) to a second adapter by streaming large data file. EUT tested with screened and unscreened RJ45 cables.

Maximisation of Radiated Emissions on OATS



Test Equipment Used:

8551	Rainford Anechoic Chamber
8515	Chase CBL6111 Bilog Antenna
-	Associated Cables
8513	HP8568B Spectrum Analyser System
8637	HP Radiated Emissions Pre-scan Software
8516	10m Open Area Test Site (OATS)
8623	Schaffner CBL6143 Bilog Antenna
8660	EMCO 1051 Mast
8617	Gigatronix LMR400 30m N-type cable
8647	HP Radiated Emissions OATS Software

Test Results:

Below are the top six recorded worst case radiated emissions when EUT tested with screened RJ45 cable:

Antenna Polarisation:	Antenna Distance (m):	Detector:	Frequency (MHz):	Level (dB(μV/m)):	Limit (dB(μV/m)):	Margin (dB):	Result:
V	10	QP	124.99	24.92	30	-5.08	Pass
V	10	QP	30.46	23.19	30	-6.81	Pass
V	10	QP	36.69	21.99	30	-8.01	Pass
V	10	QP	47.81	21.33	30	-8.67	Pass
V	10	QP	37.83	20.17	30	-9.83	Pass
V	10	QP	42.14	17.74	30	-12.26	Pass

Deviations from Standard:

None

Additional Comments:

None

Below are the top six recorded worst case radiated emissions when EUT tested with unscreened RJ45 cable:

Antenna Polarisation:	Antenna Distance (m):	Detector:	Frequency (MHz):	Level (dB(μV/m)):	Limit (dB(μV/m)):	Margin (dB):	Result:
V	10	QP	125.01	27.96	30	-2.04	Pass
V	10	QP	30.60	23.37	30	-6.63	Pass
V	10	QP	47.81	22.41	30	-7.59	Pass
V	10	QP	36.77	21.28	30	-8.72	Pass
V	10	QP	37.55	21.21	30	-8.79	Pass
V	10	QP	42.09	19.31	30	-10.69	Pass

Deviations from Standard:

None

Additional Comments:

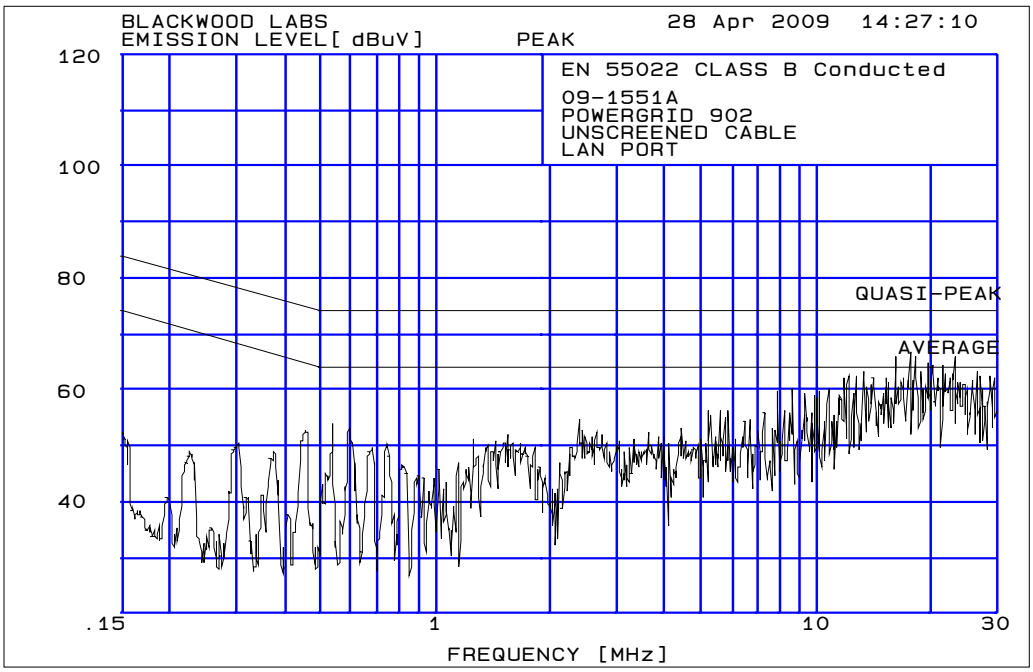
None

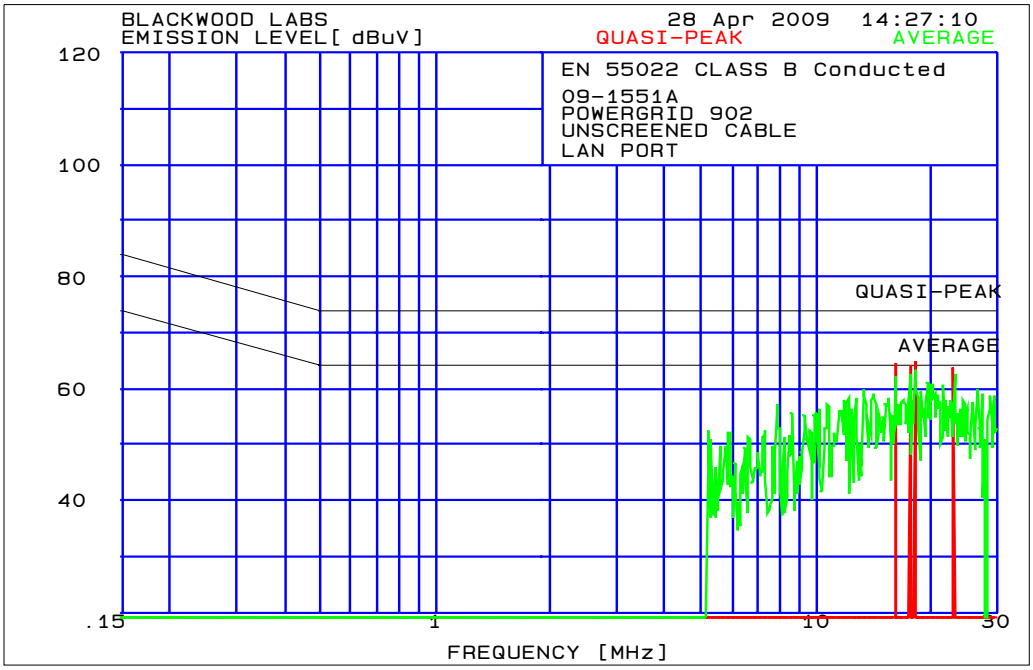
Section 5: List of Abbreviations

EUT:	Equipment Under Test
AE:	Auxiliary Equipment (i.e. equipment connected to the EUT)
PK:	Peak Measurement Detector
QP:	Quasi-Peak Measurement Detector
AV:	Average Measurement Detector
L:	Live Terminal
N:	Neutral Terminal
V:	Vertical Polarisation
H:	Horizontal Polarisation

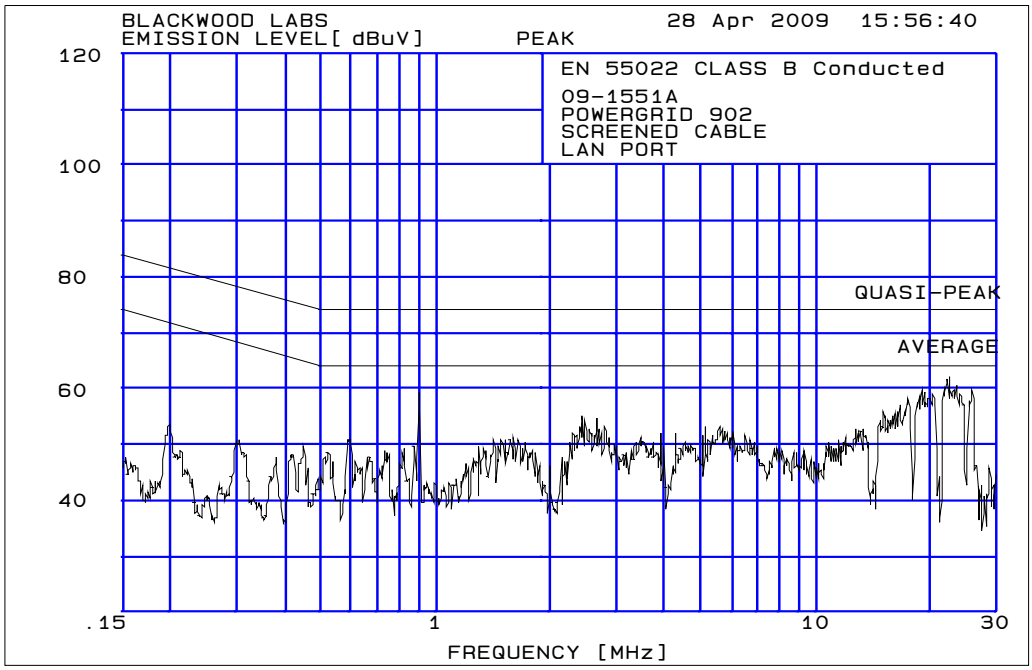
Annex A: Graphical Results

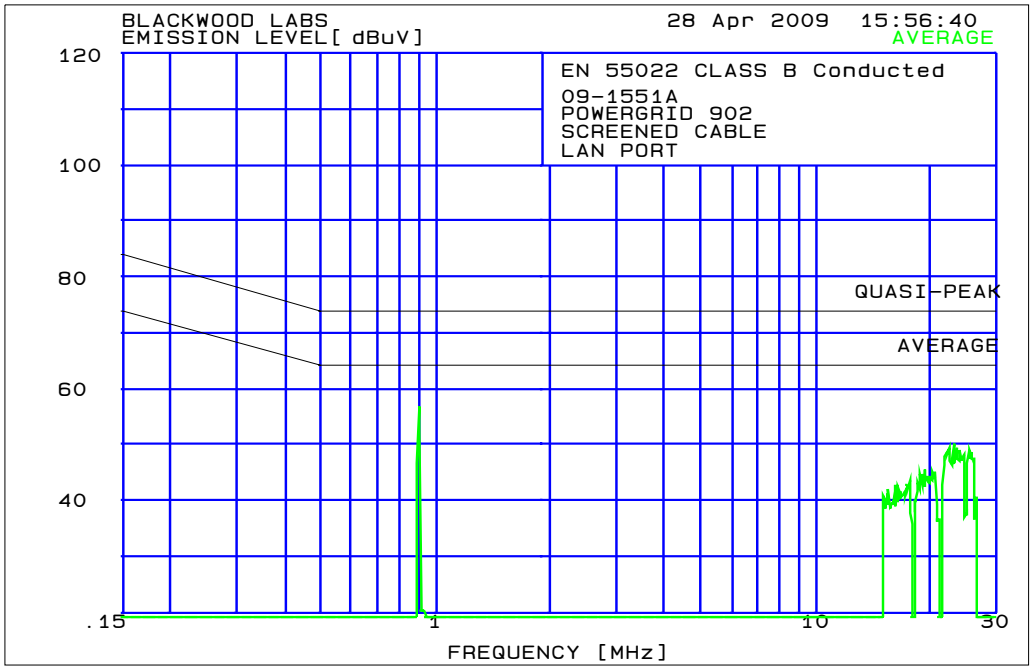
Graph 1: Telecommunications Port Conducted Emissions (Unscreened Cable)



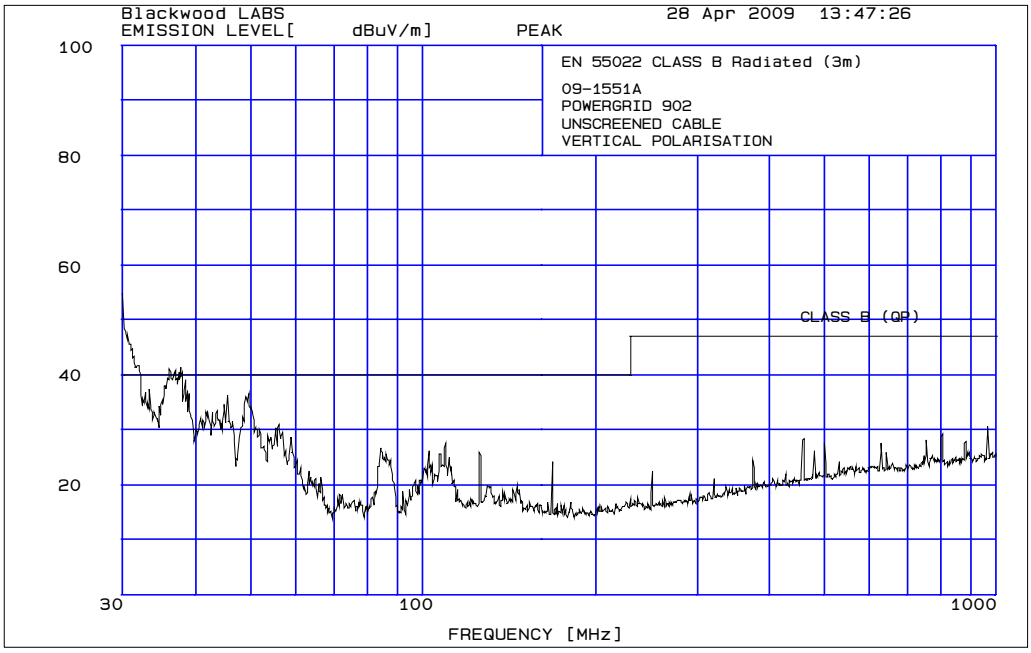


Graph 2: Telecommunications Port Conducted Emissions (Screened Cable)

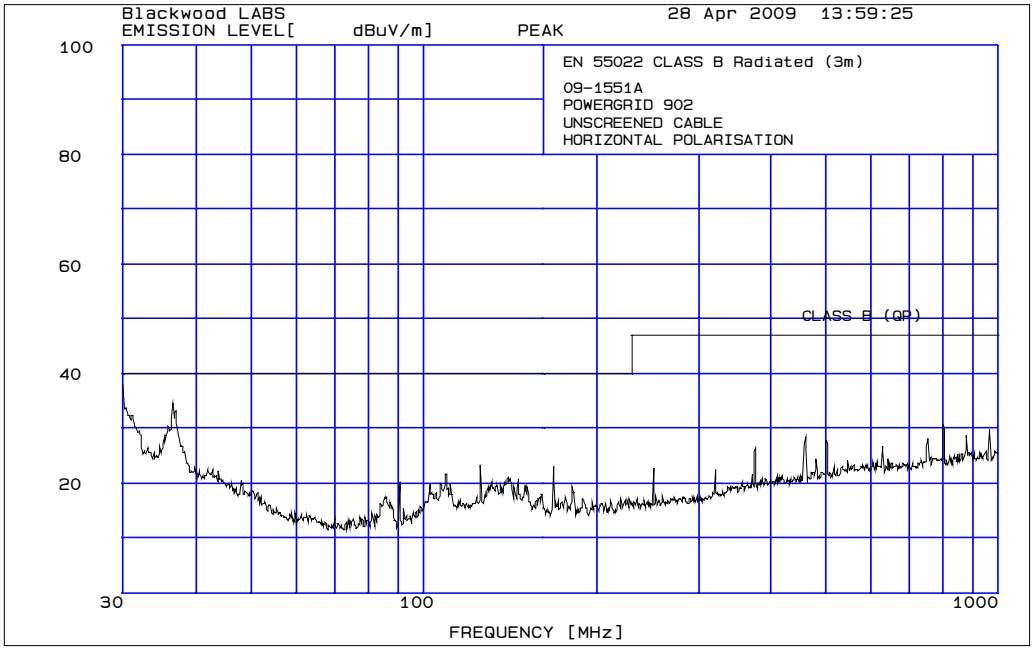




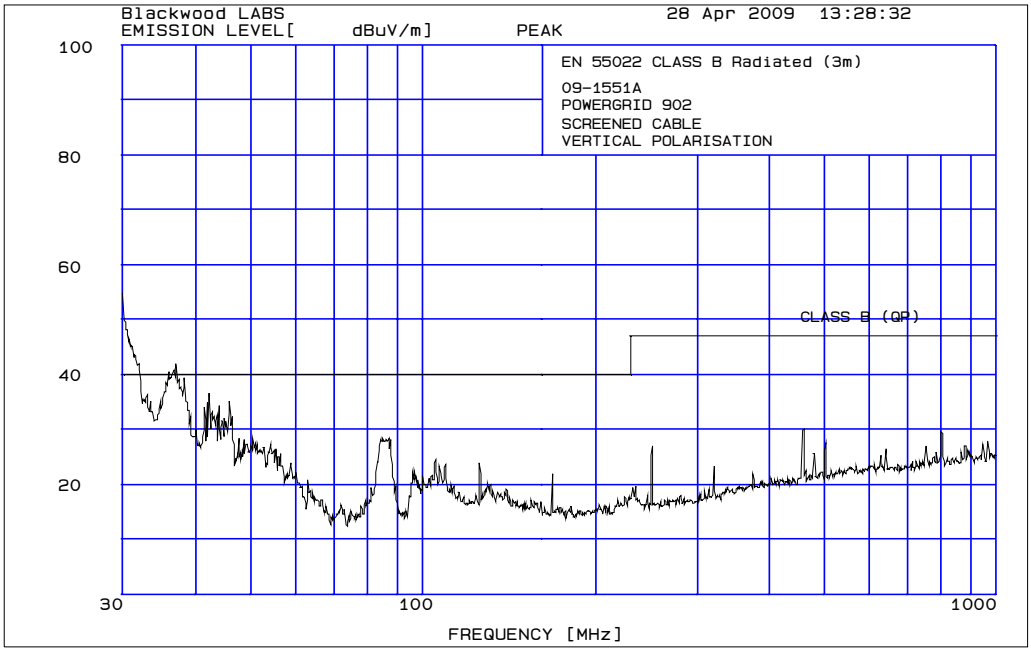
Graph 3: Radiated Emissions Vertical Polarisation (Unscreened Cable)



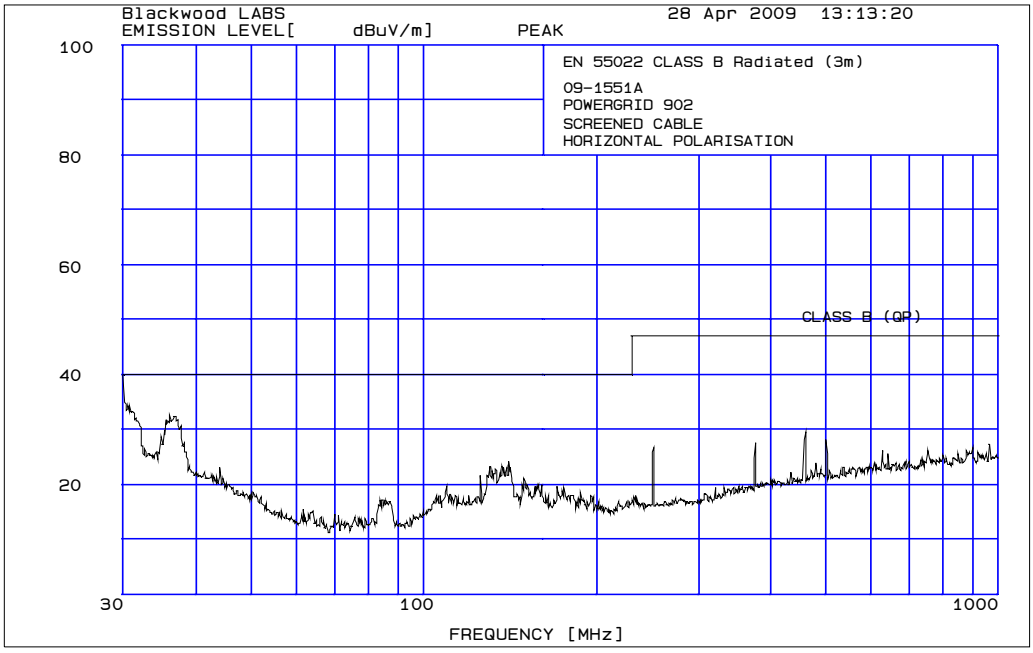
Graph 4: Radiated Emissions Horizontal Polarisation (Unscreened Cable)



Graph 5: Radiated Emissions Vertical Polarisation (Screened Cable)



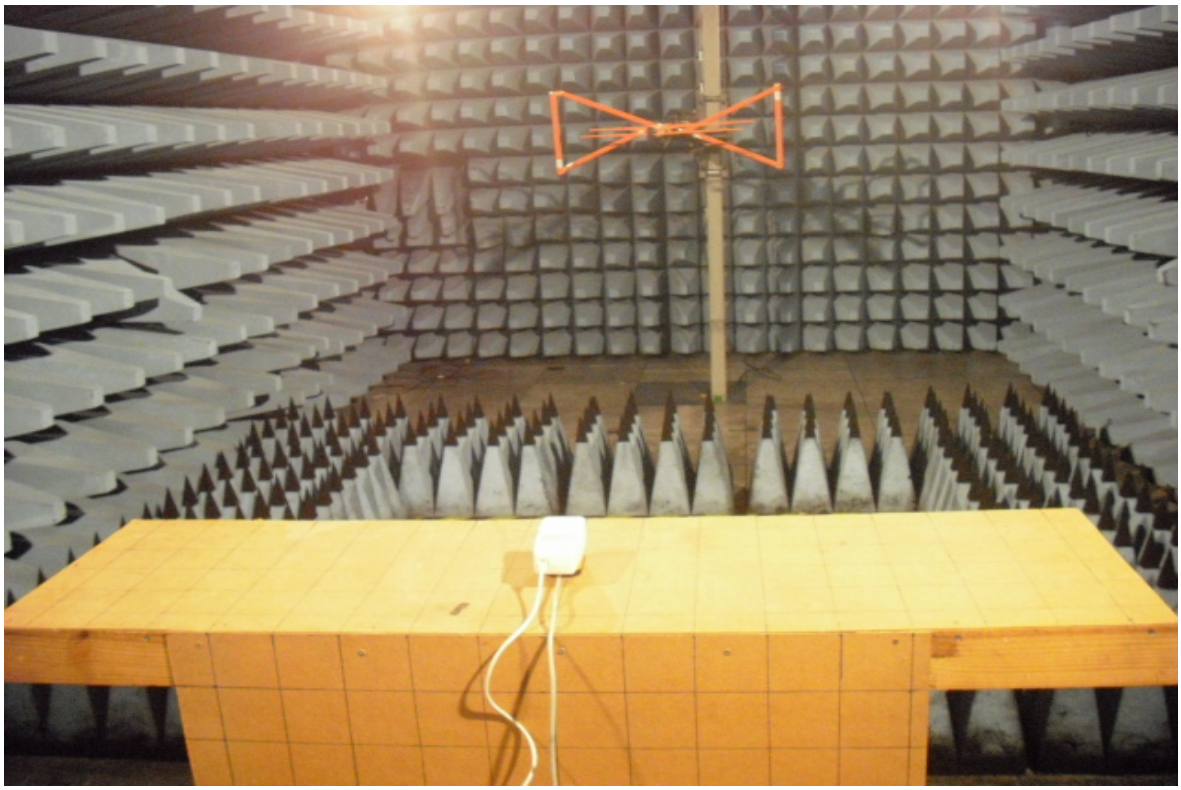
Graph 6: Radiated Emissions Horizontal Polarisation (Screened Cable)



Annex B: Photographs

Photograph 1: Telecommunications Port Conducted Emissions

Photograph 2: Radiated Emissions pre-scan



End of Report