



Product Service

**Choose certainty.
Add value.**

Report On

FCC Testing of the
ip.access Ltd
237B 3G S8 Access Point

COMMERCIAL-IN-CONFIDENCE

FCC ID: QGGIPA237B

Document 75912614 Report 01 Issue 2

May 2011



Product Service

TÜV SÜD Product Service Ltd, Octagon House, Concorde Way, Segensworth North,
Fareham, Hampshire, United Kingdom, PO15 5RL
Tel: +44 (0) 1489 558100. Website: www.tuvps.co.uk

COMMERCIAL-IN-CONFIDENCE

REPORT ON

FCC Testing of the
ip.access Ltd
237B 3G S8 Access Point

Document 75912614 Report 01 Issue 2

May 2011

PREPARED FOR

ip.access Ltd
Building 2020
Cambourne Business Park
Cambourne
CB23 6DW

PREPARED BY

N Bennett
Senior Administrator

APPROVED BY

M Jenkins
Authorised Signatory

DATED

09 May 2011

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

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: Parts 15 B. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

G Lawler





CONTENTS

Section		Page No
1	REPORT SUMMARY	3
1.1	Introduction	4
1.2	Brief Summary of Results	5
1.3	Application Form	6
1.4	Product Information	7
1.5	Test Conditions	8
1.6	Deviations From the Standard	8
1.7	Modification Record	8
2	TEST DETAILS	9
2.1	Radiated Emissions (Enclosure Port)	10
2.2	Conducted Emissions (AC Power Port)	14
3	TEST EQUIPMENT USED	19
3.1	Test Equipment Used	20
3.2	Measurement Uncertainty	21
4	ACCREDITATION, DISCLAIMERS AND COPYRIGHT	22
4.1	Accreditation, Disclaimers and Copyright	23



Product Service

SECTION 1

REPORT SUMMARY

FCC Testing of the
ip.access Ltd
237B 3G S8 Access Point



1.1 INTRODUCTION

The information contained in this report is intended to show verification of the ip.access Ltd 237B 3G S8 Access Point to the requirements of FCC CFR 47 Part 15B.

Objective	To perform FCC 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 Ltd
Model Number(s)	nano3G 237B
Serial Number(s)	000295-0000024652
Software Version	SR1.2.0 - 491.8.0
Hardware Version	B
Number of Samples Tested	1
Test Specification/Issue/Date	FCC CFR 47 Part 15B: 2010
Incoming Release Date	Declaration of Build Status 03 February 2011
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Order Number Date	PO26016 28 January 2011
Start of Test	20 February 2011
Finish of Test	22 March 2011
Name of Engineer(s)	G Lawler
Related Document(s)	ANSI C63.4 : 2003



Product Service

1.2 BRIEF SUMMARY OF RESULTS

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

Configuration 1 - PoE Supply						
Section	Spec Clause	Test Description	Mode	Mod State	Result	Base Standard
2.1	15.109	Radiated Emissions (Enclosure Port)	Idle	0	Pass	ANSI C63.4
2.2	15.107	Conducted Emissions (AC Power Port)	Idle	0	Pass	ANSI C63.4

Configuration 2 - 9 V DC PSU						
Section	Spec Clause	Test Description	Mode	Mod State	Result	Base Standard
2.1	15.109	Radiated Emissions (Enclosure Port)	Idle	0	Pass	ANSI C63.4
2.2	15.107	Conducted Emissions (AC Power Port)	Idle	0	Pass	ANSI C63.4

N/A – Not Applicable



1.3 APPLICATION FORM

APPLICANT'S DETAILS			
COMPANY NAME :	ip.access Ltd		
ADDRESS :	2020 Cambourne Business Cambourne Cambridge CB23 6DW		
NAME FOR CONTACT PURPOSES :	Costa Panayi		
TELEPHONE NO: 01954 713721	FAX NO:	01954 713799	
	E-MAIL:	costa.panayi@ipaccess.com	

EQUIPMENT INFORMATION			
<u>Equipment designator:</u>			
Model name/number: nano3G S8 Access Point 237B (Bands 2 & 5)			
<u>Supply Voltage:</u>			
<input checked="" type="checkbox"/> []	AC mains	State AC voltage 110 V	and AC frequency 60 Hz
<input checked="" type="checkbox"/> []	POE DC (external)	State DC voltage 48 V	and DC current 0.25 A
[] []	DC (internal)	State DC voltage V	and Battery type
<u>Frequency characteristics:</u>			
Frequency range	869 MHz to 894 MHz	Channel spacing 200 kHz	(if channelized)
	1930 MHz to 1990 MHz		
Designated test frequencies:			
Bottom: 871.4 MHz	Middle: 881.6 MHz	Top: 891.6 MHz	
Bottom: 1932.4 MHz	Middle: 1960.0 MHz	Top: 1987.6 MHz	
<u>Power characteristics:</u>			
Maximum transmitter power	0.02 W	Minimum transmitter power W
		(if variable)	
<input checked="" type="checkbox"/> []	Continuous transmission		
[] []	Intermittent transmission	State duty cycle	
	If intermittent, can transmitter be set to continuous transmit test mode? Y/N		
<u>Antenna characteristics:</u>			
[] []	Antenna connector	State impedance	ohm
[] []	Temporary antenna connector	State impedance	ohm
<input checked="" type="checkbox"/> []	Integral antenna	State gain	2 dBi
<u>Modulation characteristics:</u>			
<input checked="" type="checkbox"/> []	Amplitude	[] []	Other
[] []	Frequency	Details:	
<input checked="" type="checkbox"/> []	Phase		
Can the transmitter operate un-modulated?	No		
ITU Class of emission:	5M00D1W		
<u>Extreme conditions:</u>			
Maximum temperature	40 °C	Minimum temperature	0 °C
Maximum supply voltage V	Minimum supply voltage V

I hereby declare that I am entitled to sign on behalf of the applicant and that the information supplied is correct and complete.

Signature : Held on file at TÜV SÜD Product Service Ltd
 Name : Costa Panayi
 Position held : Mechanical Design and Approvals Engineer
 Date : 03 February 2011

TÜV SÜD Product Service Ltd formally certifies that the manufacturer's declaration as typed out in this report, is a true and accurate record of the original received from the applicant.



1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was a ip.access Ltd 237B 3G S8 Access Point. A full technical description can be found in the manufacturers documentation.

1.4.2 Test Configuration

Configuration 1: PoE Supply

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

The EUT was configured to operate in Idle Mode, via a Power Over Ethernet Power Supply Unit, and an external Laptop PC, running PUTTY software.

Configuration 2: 9 V DC PSU

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

The EUT was configured to operate in Idle Mode, from an AC – DC Power Supply Adaptor, and an external Laptop PC, running PUTTY software.

1.4.3 EUT Cable / Port Identification

Port	Max Cable Length specified	Usage	Type	Screened
AC Power (for POE Inserter)	2m	Mains Lead	3 core	No
Signal	<100m (total length from source)	Signal/Power Lead	Cat 5	No
DC Power POE	<100m (total length from source)	Signal/Power Lead	Cat 5	No
DC Power	<3m	Power Cable	2 core	No

1.4.4 Modes of Operation

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

Mode 1 - 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, test laboratories or an open test area as appropriate.

The EUT was powered from a 9 V DC PSU or POE supply.

FCC Accreditation
90987 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 Testing of the
ip.access Ltd
237B 3G S8 Access Point



Product Service

2.1 RADIATED EMISSIONS (ENCLOSURE PORT)

2.1.1 Specification Reference

FCC CFR 47 Part 15B: Clause 15.109

2.1.2 Equipment Under Test

237B 3G S8 Access Point, S/N: 000295-0000024652

2.1.3 Date of Test and Modification State

21 February to 21 March 2011 - 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 C63.4.

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

Configuration 1 - Mode 1

Configuration 2 - Mode 1

2.1.6 Environmental Conditions

	21 February 2011	21 March 2011
Ambient Temperature	20.2°C	19.9°C
Relative Humidity	33%	34%
Atmospheric Pressure	1008mbar	1031mbar



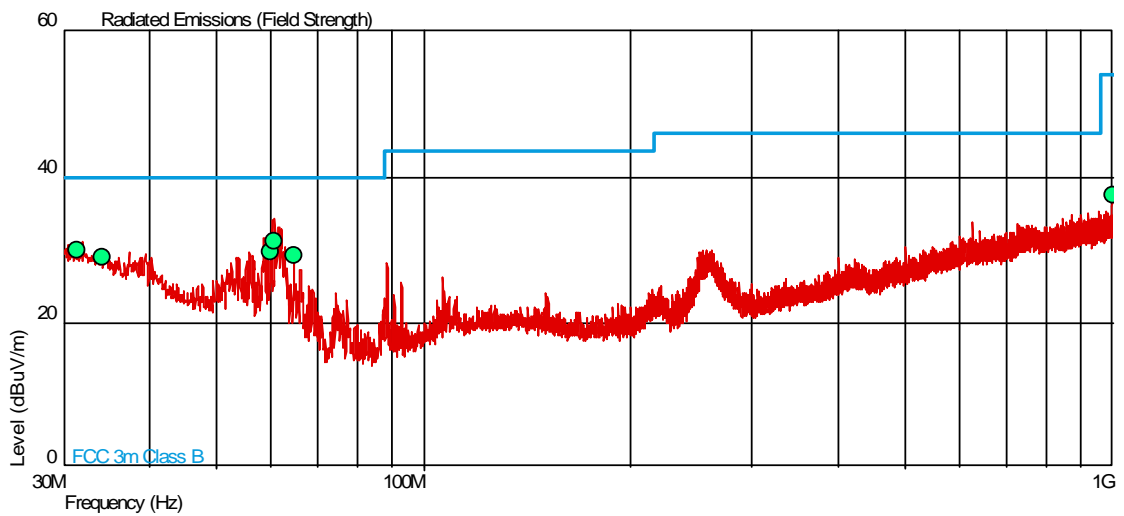
2.1.7 Test Results

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

The test results are shown below.

Configuration 1 - Mode 1

30MHz to 1GHz

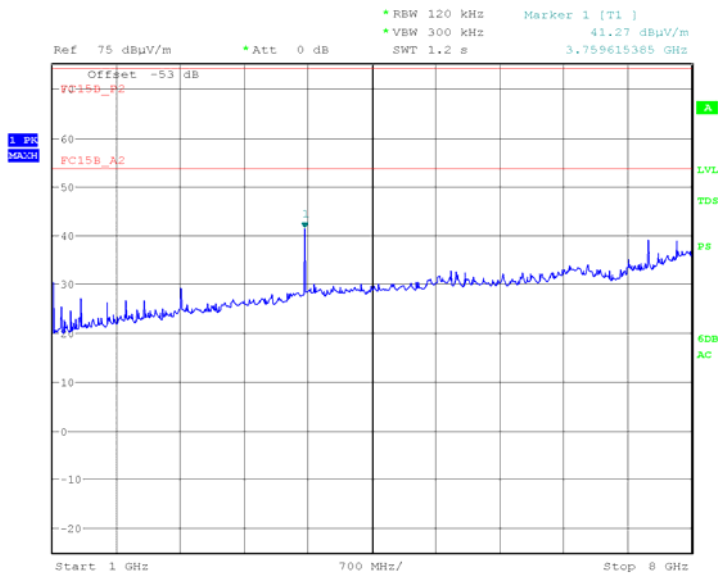


Frequency (MHz)	QP Level (dBµV/m)	QP Level (uV/m)	QP Limit (dBµV/m)	QP limit (uV/m)	QP Margin (dBµV/m)	QP Margin (uV/m)	Angle (deg)	Height (m)	Polarity
31.397	29.8	30.9	40.0	100	-10.2	-69.1	360	1.00	Vertical
34.067	28.8	27.5	40.0	100	-11.2	-72.5	28	1.00	Vertical
60.119	29.5	29.9	40.0	100	-10.5	-70.1	360	1.00	Vertical
60.834	31.2	36.3	40.0	100	-8.8	-63.7	86	1.00	Vertical
64.782	29.0	28.2	40.0	100	-11.0	-71.8	23	1.00	Vertical
1000.000	37.5	75.0	54.0	500	-16.5	-425.0	82	1.09	Vertical



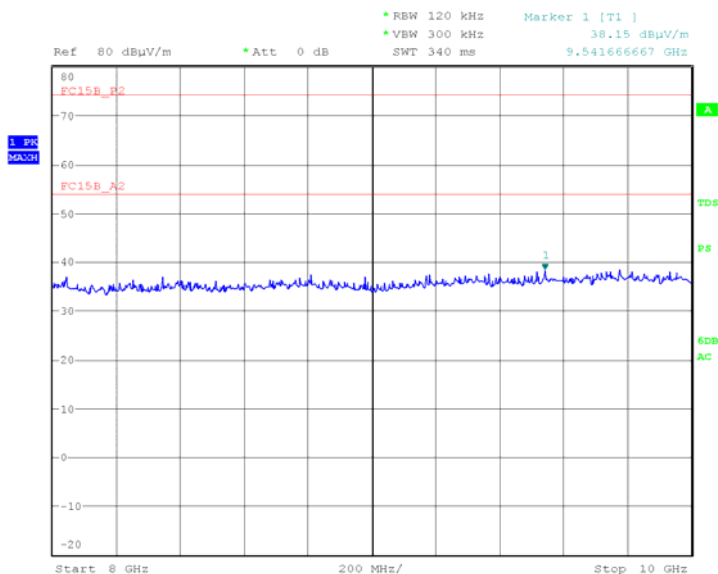
Product Service

1GHz to 8GHz



Date: 16.FEB.2011 19:05:32

8GHz to 10GHz



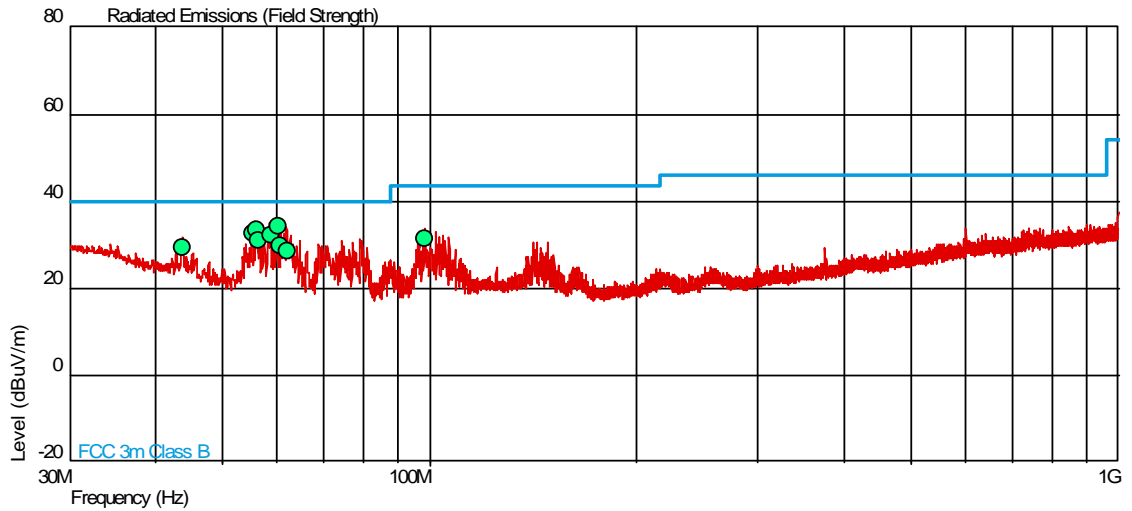
Date: 16.FEB.2011 19:10:07



Product Service

Configuration 2 - Mode 1

30MHz to 1GHz



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
43.779	29.5	29.9	40.0	100	-10.5	-70.1	52	1.02	Horizontal
55.303	32.6	42.7	40.0	100	-7.4	-57.3	45	1.00	Vertical
55.986	33.7	48.4	40.0	100	-6.3	-51.6	24	1.00	Vertical
56.538	31.2	36.3	40.0	100	-8.8	-63.7	360	1.00	Vertical
58.702	32.3	41.2	40.0	100	-7.7	-58.8	20	1.43	Vertical
60.224	34.1	50.7	40.0	100	-5.9	-49.3	59	1.00	Vertical
60.833	30.0	31.6	40.0	100	-10.0	-68.4	51	1.00	Vertical
62.010	28.7	27.2	40.0	100	-11.3	-72.8	309	1.13	Vertical
98.454	31.3	36.7	43.5	150	-12.2	-113.3	72	1.00	Vertical



Product Service

2.2 CONDUCTED EMISSIONS (AC POWER PORT)

2.2.1 Specification Reference

FCC CFR 47 Part 15B: Clause 15.107

2.2.2 Equipment Under Test

237B 3G S8 Access Point, S/N: 000295-0000024652

2.2.3 Date of Test and Modification State

20 February to 22 March 2011 – 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 C63.4.

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

Configuration 1 - Mode 1

Configuration 2 - Mode 1

2.2.6 Environmental Conditions

	20 February 2011	22 March 2011
Ambient Temperature	20.5°C	21.8°C
Relative Humidity	31%	32%
Atmospheric Pressure	1012mbar	1037mbar



Product Service

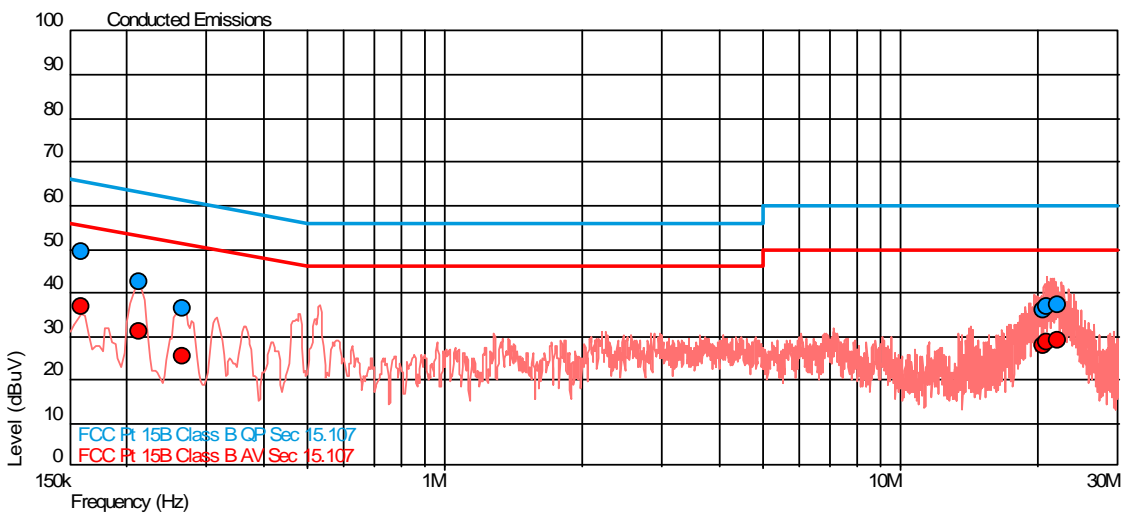
2.2.7 Test Results

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

The test results are shown below.

Configuration 1 - Mode 1

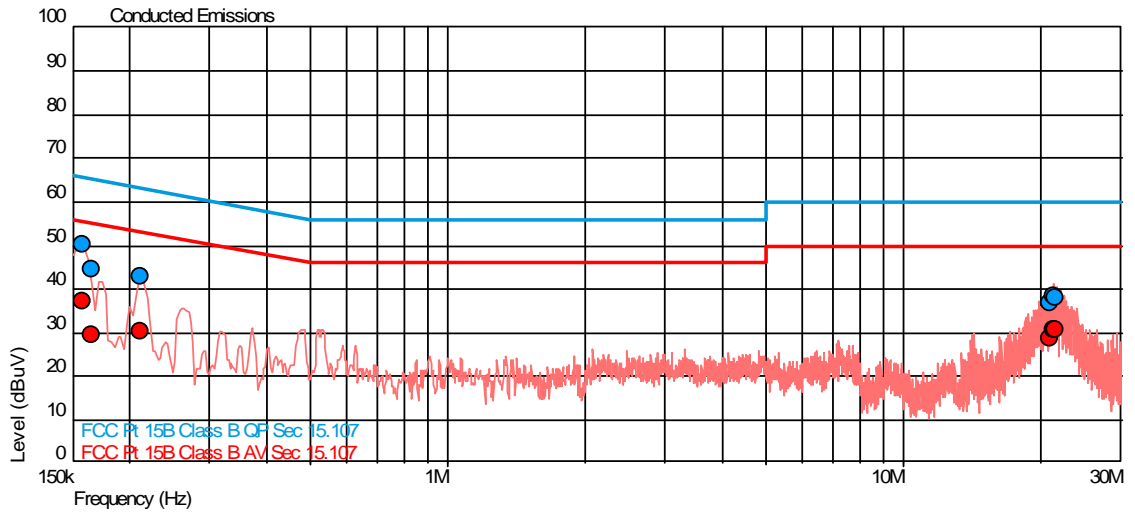
Live Line



Frequency (MHz)	QP Level (dBµV)	QP Limit (dBµV)	QP Margin (dBµV)	AV Level (dBµV)	AV Limit (dBµV)	AV Margin (dBµV)
0.160	49.3	65.5	-16.1	36.8	55.5	-18.7
0.213	42.4	63.1	-20.7	30.9	53.1	-22.1
0.264	36.5	61.3	-24.8	25.4	51.3	-25.9
20.581	35.8	60.0	-24.2	28.0	50.0	-22.0
20.847	36.9	60.0	-23.1	28.7	50.0	-21.3
22.115	37.1	60.0	-22.9	28.9	50.0	-21.1



Neutral Line



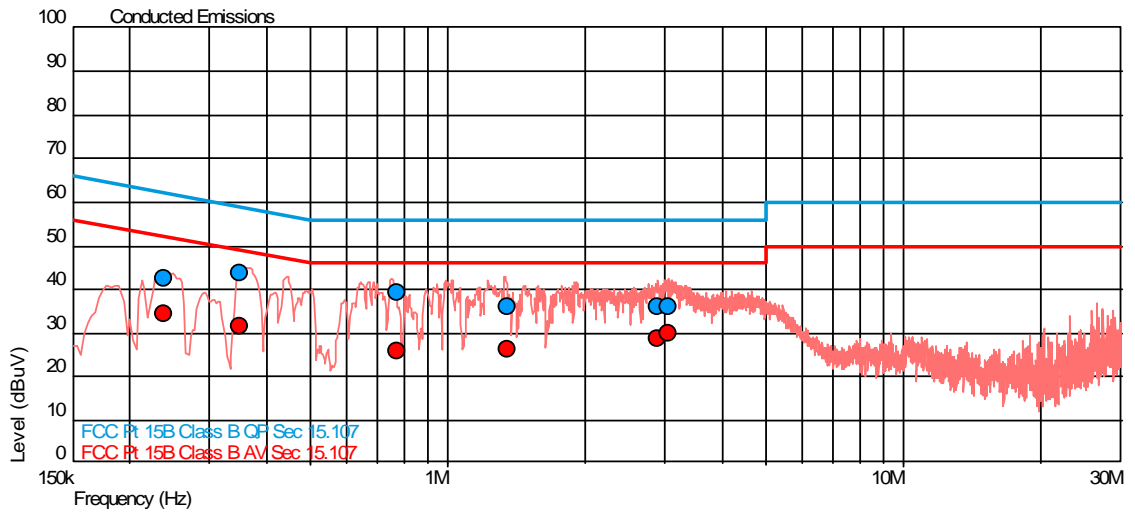
Frequency (MHz)	QP Level (dBμV)	QP Limit (dBμV)	QP Margin (dBμV)	AV Level (dBμV)	AV Limit (dBμV)	AV Margin (dBμV)
0.158	50.3	65.5	-15.3	37.0	55.5	-18.5
0.165	44.6	65.2	-20.6	29.5	55.2	-25.7
0.211	43.0	63.1	-20.1	30.2	53.1	-22.9
20.874	36.9	60.0	-23.1	28.7	50.0	-21.3
21.364	38.6	60.0	-21.4	30.9	50.0	-19.1
21.406	38.1	60.0	-21.9	30.6	50.0	-19.4



Product Service

Configuration 2 - Mode 1

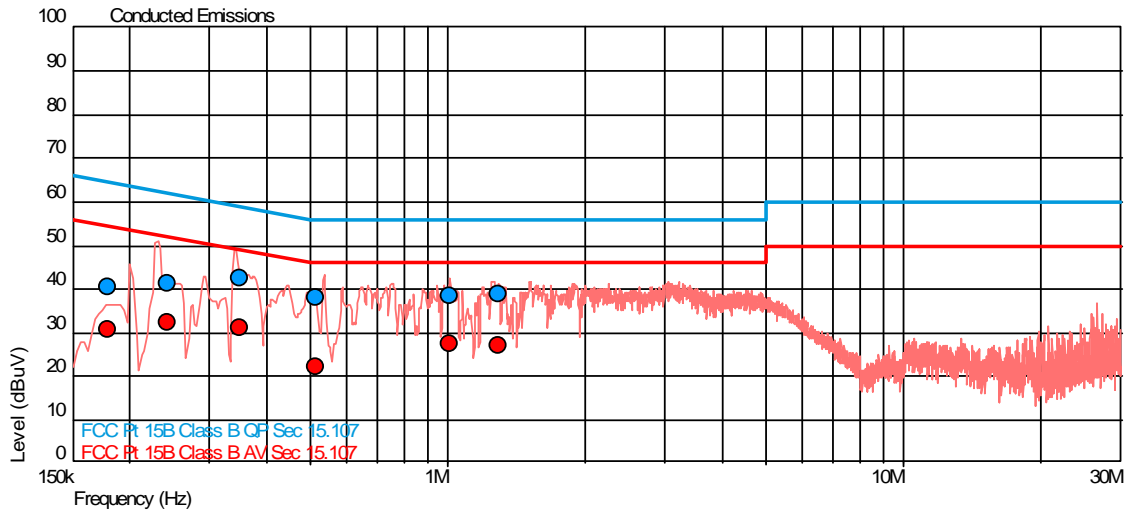
Live Line



Frequency (MHz)	QP Level (dBµV)	QP Limit (dBµV)	QP Margin (dBµV)	AV Level (dBµV)	AV Limit (dBµV)	AV Margin (dBµV)
0.238	42.4	62.2	-19.7	34.2	52.2	-18.0
0.349	43.9	59.0	-15.1	31.5	49.0	-17.5
0.771	39.2	56.0	-16.8	25.7	46.0	-20.3
1.349	36.1	56.0	-19.9	26.1	46.0	-19.9
2.891	35.8	56.0	-20.2	28.6	46.0	-17.4
3.037	36.1	56.0	-19.9	29.7	46.0	-16.3



Neutral Line



Frequency (MHz)	QP Level (dBμV)	QP Limit (dBμV)	QP Margin (dBμV)	AV Level (dBμV)	AV Limit (dBμV)	AV Margin (dBμV)
0.179	40.3	64.5	-24.3	30.6	54.5	-23.9
0.243	41.3	62.0	-20.7	32.3	52.0	-19.6
0.349	42.7	59.0	-16.3	31.2	49.0	-17.8
0.514	38.1	56.0	-17.9	22.0	46.0	-24.0
1.008	38.3	56.0	-17.7	27.5	46.0	-18.5
1.295	38.9	56.0	-17.1	27.2	46.0	-18.8



Product Service

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 - Radiated Emissions					
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	12	12-Nov-2011
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	235	12	12-Nov-2011
Antenna (Bilog)	Schaffner	CBL6143	287	24	19-Jan-2012
Dual Power Supply Unit	Thurlby	PL320	288	-	TU
Antenna (Double Ridge Guide)	Q-Par Angus Ltd	QSH 180K	1511	24	2-Aug-2012
Pre-Amplifier	Phase One	PS04-0086	1533	12	15-Sep-2011
Pre-Amplifier	Phase One	PSO4-0087	1534	12	22-Sep-2011
Screened Room (5)	Rainford	Rainford	1545	24	3-Feb-2014
Antenna (Bilog)	Chase	CBL6143	2904	24	4-Dec-2011
Signal Generator (10MHz to 40GHz)	Rohde & Schwarz	SMR40	3171	12	12-Aug-2011
Amplifier (1 - 8GHz)	Phase One	PS06-0060	3175	12	2-Jul-2011
1m RF Cable sma(m)-sma(m)	Reynolds	262-0248-1000	3453	-	TU
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	9-Sep-2011
3 GHz High Pass Filter	K&L uwave	11SH10-3000/X18000-O/O	3552	12	14-Apr-2011
'3.5mm' - '3.5mm' RF Cable (2m)	Rhophase	3PS-1803-2000-3PS	3703	12	TU
9m RF Cable (N Type)	Rhophase	NPS-2303-9000-NPS	3791	12	10-Aug-2011
Section 2.2 - Conducted Emissions					
LISN (1 Phase)	Chase	MN 2050	336	12	25-Mar-2011
Screened Room (5)	Rainford	Rainford	1545	24	3-Feb-2014
Transient Limiter	Hewlett Packard	11947A	2378	12	22-Jun-2011
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	9-Sep-2011

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*
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†
DC Input Ripple Immunity	Current Voltage	0.45% 0.91%
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 10⁶.

* In accordance with CISPR 16-4

† In accordance with UKAS Lab 34



Product Service

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
(Not UKAS Accredited).

This report must not be reproduced, except in its entirety, without the written permission of
TÜV SÜD Product Service Limited

© 2011 TÜV SÜD Product Service Limited