

**Test Report (pdf copy)
FCC Testing of the
Vandal resistant Door Panel
for
Paxton Access**

Document number 11117/TR/3

Project number B0913

Author: *S. Mohammed*
Mr S Mohammed, BEng
EMC Engineer

Checked: *M Render*
M Render, BSc, PhD, MIET
Laboratory Manager

Approved:
M Render, BSc, PhD, MIET
Laboratory Manager

Issue	Description	Issue by	Date
3	Issue Three	MR	14th June 2013

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This test reports relates only to the unit(s) tested

**A BIS
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Notified Body
No 1892**

Consultancy



York EMC Services (2007) Ltd
THE UNIVERSITY of York
Heslington
York
YO10 5DD
UK

Tel: +44 (0)1904 324440
Fax: +44 (0)1904 324434
Email: enquiry@yorkemc.co.uk
www.yorkemc.co.uk

Registered in England and Wales
Company Reg No. 6048589
VAT Reg No. GB 647 2055 41

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1 Introduction

Name and address of laboratory: York EMC Services Ltd
Three Lane Ends Business Centre
Methley Road
Castleford
West Yorkshire
WF10 1PN
UKAS testing laboratory N° 1574

Name and address of client: Mr Brett Glass
Paxton Access Ltd
Paxton House
Home Farm Road
Brighton
East Sussex
BN1 9HU

Test Firm Registration Number: 91064
FCC FRN 0018780064

The test results contained in this test report relate only to the unit(s) tested.

Equipment under test Vandal Resistant door Panel
Manufacturer Paxton Access Ltd
Product name Vandal Resistant door Panel
Model Number 337-937-US
No. tested of each item One

Customer supplied test plan ref. N/A
Date of receipt of EUT 13th May 2013
Method of receipt Brought by carrier
Date(s) of test(s) 13th, 14th May 2013
Date(s) when EUT was out of laboratory's control None
Method of disposal Awaiting disposal
Personnel witnessing tests The tests were carried out on an unwitnessed basis
Any other relevant information: None

2 Test Specification

2.1 Environment

The Vandal Resistant Door Panel device is used to enable controlled door access.

2.2 Relevant standards

Test Standard	Relevant Section	Class/limit	Test Order
Title 47 of the CFR Part 15C:2008 & ANSI C63.4:2003	47 CFR Part15 C Section 15.209 Test standard: ANSIC63.4:2003**	Radiated spurious emissions, 9kHz to 1GHz*.	1,2,4&5
	47 CFR Part 15C Section 15.207 Test standard: ANSIC63.4:2003**	Mains conducted emissions, 150kHz to 30MHz	3
	ANSI C63.10 section 6.9.1	Transmitter 20dB Bandwidth Part 15.215(c)	6

Note 1: Only the tests listed were required by the customer.

3 Test Results

3.1 Mains conducted emissions, 150kHz to 30MHz

Mode of operation	Description	Mode No.
	Call set up between Door Panel and monitor. 125KHz transceiver operating modulated with >50% amplitude modulation	1

Test standard	Test description	Class/limit
47 CFR Part 15C Section 15.207 Test standard: ANSIC63.4:2003**	Mains conducted emissions, 150kHz to 30MHz	As specified in Section 15.209

Results	Mode	Figure	Frequency Range	Result	Comments
	1	C01	150kHz to 30MHz	Pass	None

Note 1: The graphical data can be found in Appendix 1.

Note 2: There were no quasi peak or average results within 10dB of the limit line.

Modifications	Required for this test	Modification state
	None	0

3.2 Radiated spurious emissions, 9kHz to 1GHz

Mode of operation	Description	Mode No.
	Call set up between Door Panel and monitor. 125KHz transceiver operating modulated with >50% amplitude modulation	1

Test standard	Test description	Class/limit
47 CFR Part15 C Section 15.209 Test standard: ANSIC63.4:2003**	Radiated emissions	As specified in Section 15.209

Results	Mode	Figure	Frequency Range	Result	Comments
	1	M01	9kHz to 30MHz	N/A	Chamber result (See Note 2)
		R01	30MHz to 1GHz	N/A	Chamber result (See Note 2)
		M02	9kHz to 30MHz	Pass	Open Area Test Site Result
		R02	30MHz to 1GHz	Pass	Open Area Test Site Result

Frequency (MHz)	Polarity (H/V)	Height (m)	Angle (degrees)	Detector Type	Meas distance (m)	E field @ spec distance (dBuV/m)	E field Limit (dBuV/m)	Margin (dB)	Result
0.125	Perp	1	0	QP	10	32.5	84.7	-52.2	Compliant

9kHz- 30MHz OATS results, normalised to 10m distance, Carrier Frequency.

No further emissions below 30MHz were detected that were within 20dB of the specification limit.

Frequency (MHz)	Polarity (H/V)	Height (m)	Angle (degrees)	Detector Type	Meas distance (m)	E field @ spec distance (dBuV/m)	E field Limit (dBuV/m)	Margin (dB)	Result
36.420	V	1	0	QP	3	16.9	40.0	-23.1	Compliant
37.380	V	1	0	QP	3	22.1	40.0	-17.9	Compliant
200.460	V	1	37	QP	3	21.9	43.5	-21.6	Compliant
250.020	V	1	315	QP	3	28.7	46.0	-17.3	Compliant
270.000	V	1	298	QP	3	29.9	46.0	-16.1	Compliant
272.880	V	1	27	QP	3	31.0	46.0	-15.0	Compliant
274.260	V	1	0	QP	3	30.5	46.0	-15.5	Compliant
343.680	V	1	0	QP	3	33.0	46.0	-13.0	Compliant
375.000	V	1	0	QP	3	28.4	46.0	-17.6	Compliant
391.500	V	1	0	QP	3	29.2	46.0	-16.8	Compliant
621.000	V	1	0	QP	3	27.3	46.0	-18.7	Compliant

30MHz- 1GHz OATS results, 3m distance

Det = detector, QP = Quasi-Peak

Pol = position of receive antenna, below 30MHz perp = loop antenna plane perpendicular to equipment under test. Above 30MHz, V = Vertical, H = horizontal

*Test receiver reading (voltage dB μ V) before the addition of cable loss and antenna factors as stated in section 15.20

Method of Measuring the Maximum Emission Value

Frequency range 9kHz to 30MHz:

- 1) The screened loop antenna was mounted 1m above the ground plane with the loop parallel to the apparatus under test.
- 2) The apparatus under test was first rotated 360 degrees using the OATS automated turntable and the maximum field strength noted.
- 3) The screened loop antenna was then rotated 90 degrees to a perpendicular orientation.
- 4) The apparatus was rotated 360 degrees and the maximum field strength measured and recorded.
- 5) The maximum of the two field strengths measured was noted as the test result.

Frequency range 30MHz to 1000MHz:

- 1) The apparatus under test was placed on a polystyrene block 80cm above the ground plane.
- 2) The measurement antenna mast was placed 3m from the boundary of the apparatus under test.
- 3) The measurement antenna was set to 1m height and vertical polarity.
- 4) The apparatus was rotated 360 degrees and the maximum value of the field measured and recorded.
- 5) The antenna polarity was then changed to horizontal.
- 6) The turntable was rotated 360 degrees and the maximum value of the field measured and recorded.
- 7) The antenna was raised and lowered between 1m and 4m in both polarities and the maximum value of the emission measured and recorded.
- 8) The maximum value measured during this procedure was recorded as the test result.

Measurements below 30MHz were made at 10m and the limit extrapolated from 300m to 10m distance.
For the specified measurement distance of 10m the correction will be:

$$\text{Correction} = 40 \cdot \log(300/10) = 59\text{dB}$$

**Test receiver reading (voltage dB μ V) before the addition of cable loss and antenna factors at 10m as stated in section 15.209.

***According to section 15.209 of Part 15, in the frequency range 0.009MHz to 0.490MHz the limit is calculated as:

$$\text{Limit } (\mu\text{V/m}) = 2400 / F(\text{kHz}):$$

At 125 kHz (the transmit frequency of the EUT) the limit at 300m is: $2400/125 = 19.2 = 25.66 \text{ dB}\mu\text{V/m} +$ correction of 59dB (10m distance) =84.7dB μ V/m limit.

Note 1: The graphical data can be found in Appendix 2, the crosses on the plot relate to the final quasi peak value.

Note 2: Chamber measurements (scans) were first performed to obtain the radiated frequency data. The worse case frequencies were then measured on an Open Area Test Site (OATS).

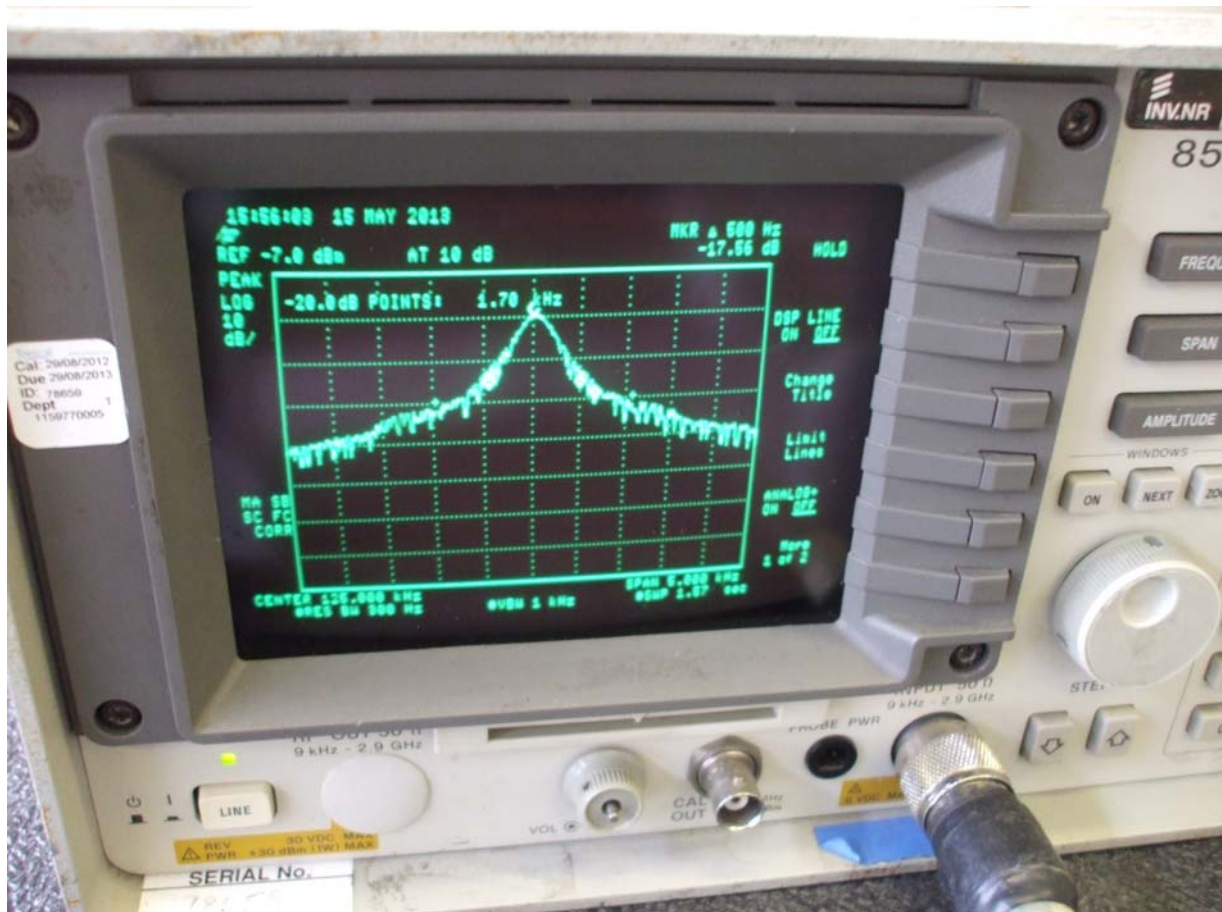
Modifications	Required for this test	Modification state
	None	0

3.3 Transmitter 20dB Bandwidth

Mode of operation	Description	Mode No.
	Call set up between Door Panel and monitor. 125KHz transceiver operating modulated with >50% amplitude modulation.	1

Test standard	Transmitter 20dB Bandwidth	Class/limit
47 CFR Part 15C Section 15.207 Test standard: ANSIC63.4:2003**	1.70kHz	As specified in Section 15.209

Results	Mode	Result	Comments
	1	Pass	None



Modifications	Required for this test	Modification state
	None	0

4 Summary

4.1 Emissions

FCC Rule	Title 47 Code of Federal Regulations (47 CFR) – Telecommunications – Part 15 Radio Frequency Devices, Subpart C, Intentional Radiators
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Basic Standard	Class/limit	Result
47 CFR Part15 C Section 15.209 Test standard: ANSIC63.4:2003**	Radiated spurious emissions, 9kHz to 1GHz*.	Pass
47 CFR Part 15C Section 15.207 Test standard: ANSIC63.4:2003**	Mains conducted emissions, 150kHz to 30MHz	Pass
ANSI C63.10 section 6.9.1	Transmitter 20dB Bandwidth Part 15.215(c)	Pass

Note 1: Only the tests listed were required by the customer.

4.2 Compliance statement

The Vandal Resistant Door Panel, as tested, was shown to meet the requirements of the tests listed in 4.1 of this report.

5 Appendices

5.1 Appendix 1 Mains conducted emissions, 150kHz to 30MHz

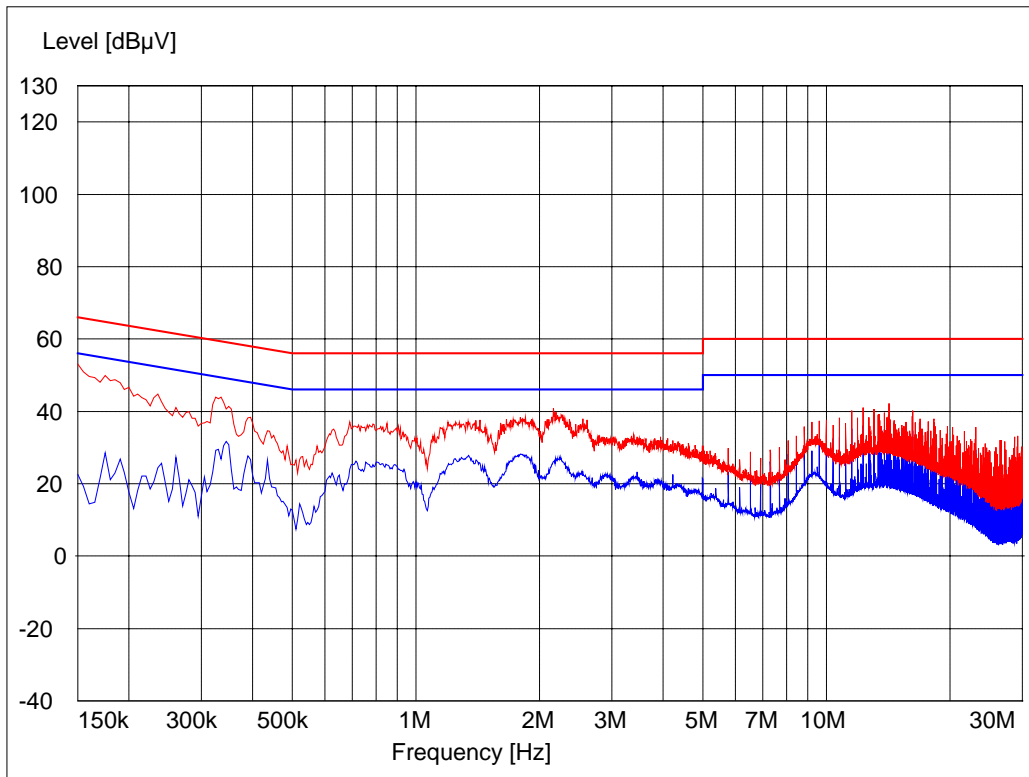


Figure 5.1.1, 150kHz-30MHz, mains conducted emissions

Key:

Red limit line is the quasi peak detector limit.

Blue limit line is the average detector limit.

Red data trace is peak detector data.

Blue data trace is average detector data.

5.2 Appendix 2 Radiated spurious emissions, 9kHz to 1GHz

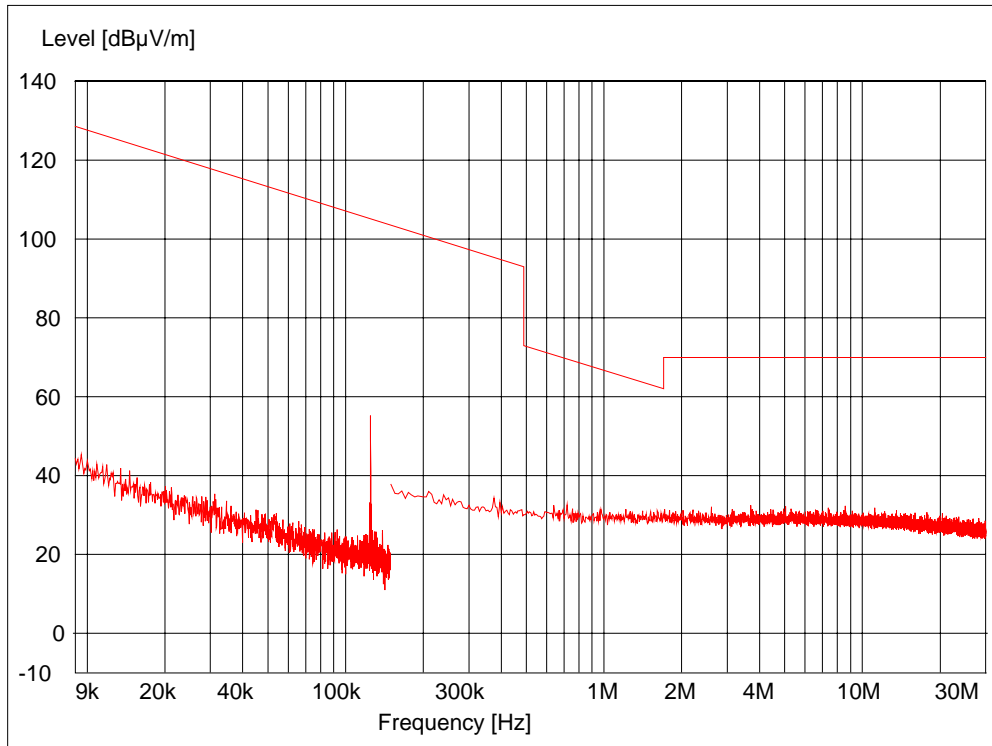


Figure 5.2.1, 9kHz-30MHz, combined parallel and perpendicular chamber plot, 3m

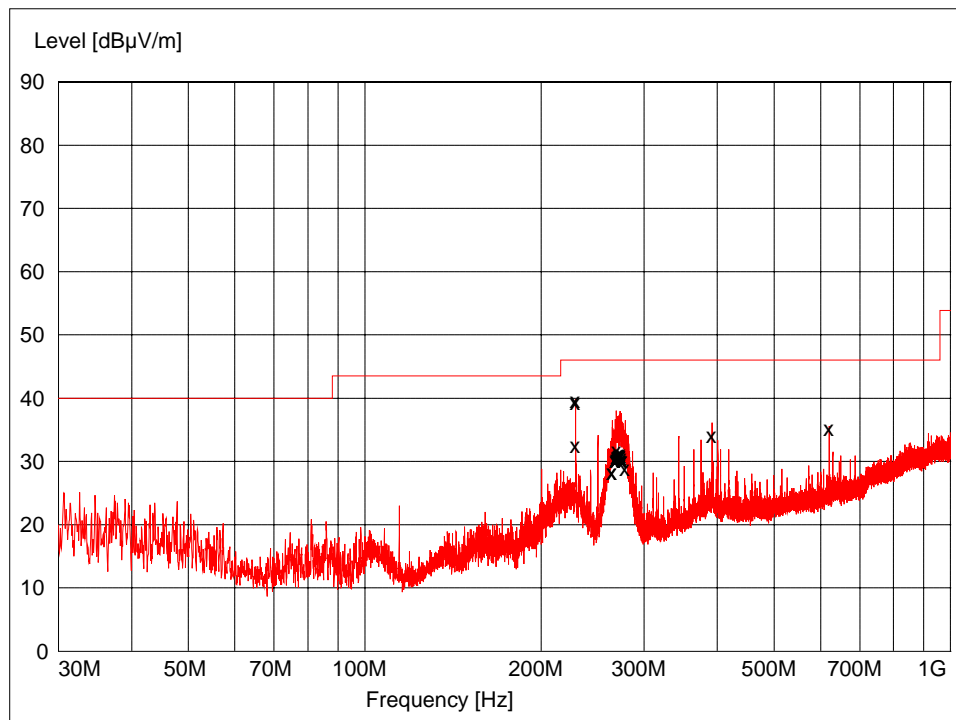


Figure 5.2.2, 30MHz-1GHz, combined parallel and perpendicular chamber plot, 3m

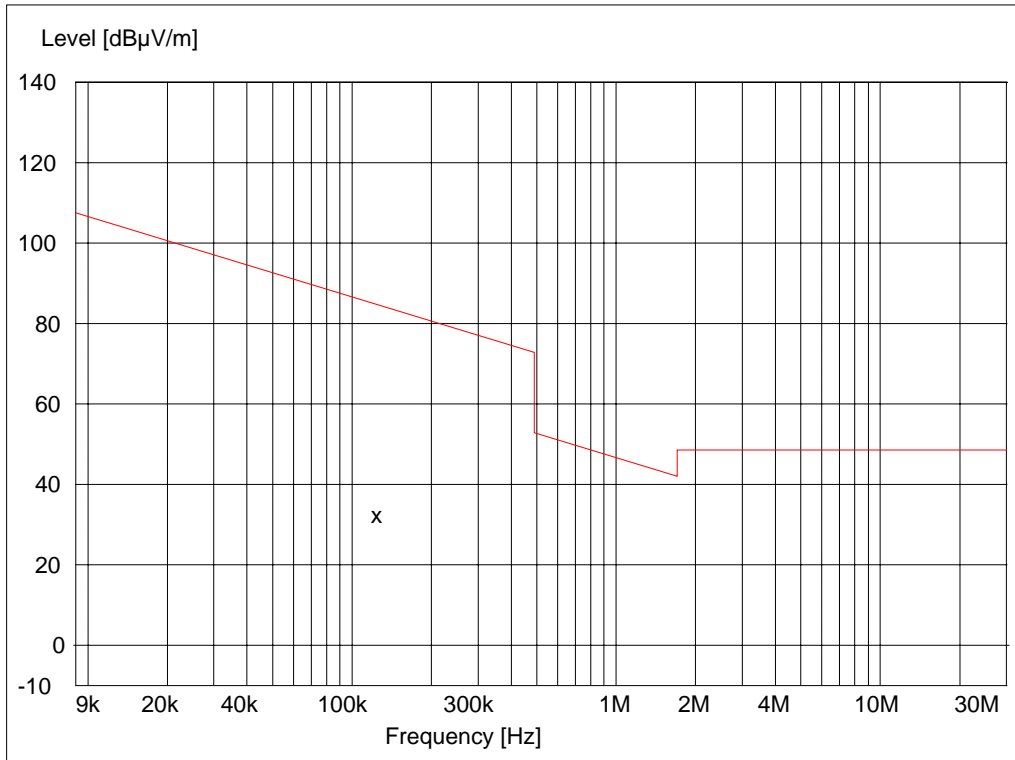


Figure 5.2.3, 9kHz-30MHz, OATS plot, 10m

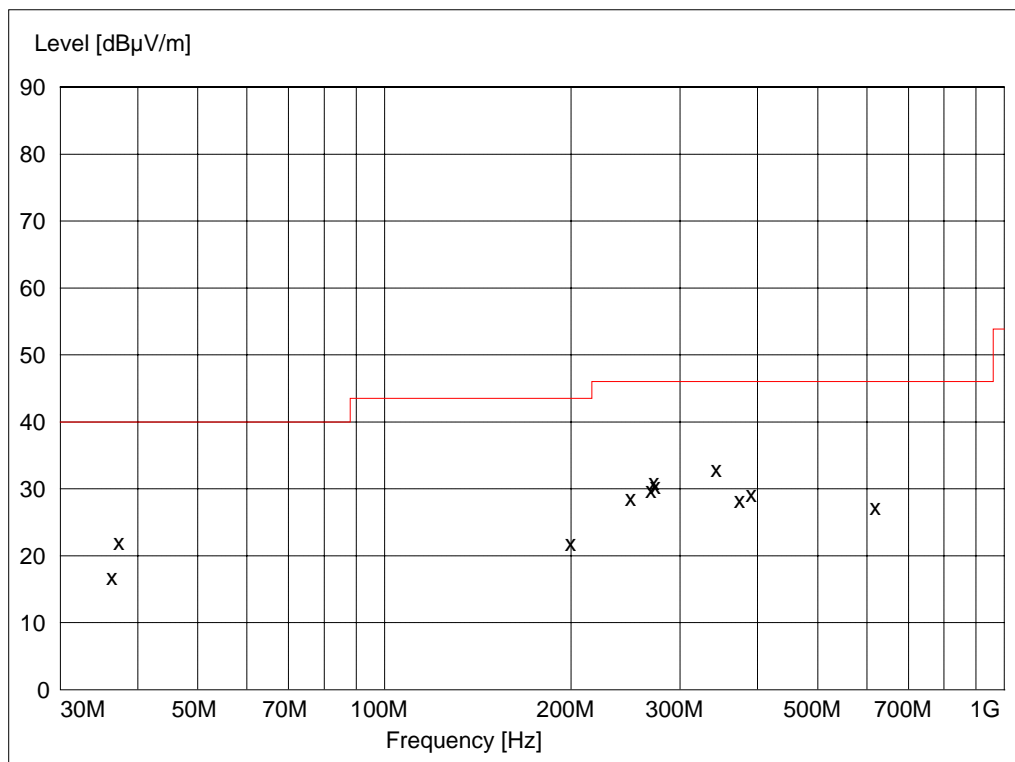


Figure 5.2.4, 30MHz-1GHz, OATS plot, 3m

5.3 Appendix 3 EUT test configurations



Photograph 5.3.1 Radiated emissions testing (9kHz to 30MHz), 3m, chamber



Photograph 5.3.2 Radiated emissions testing (30MHz to 1GHz), 3m, chamber



Photograph 5.3.3 Radiated emissions testing (9kHz to 30MHz), 10m, Open Area Test Site



Photograph 5.3.4 Radiated emissions testing (30MHz to 1GHz), 10m, Open Area Test Site



Photograph 5.3.5 Conducted emissions testing (150kHz to 30MHz)

5.4 Appendix 4 Equipment used

Equipment	York EMC Asset No.	Cal Type	Cal date	Cal Period (Months)
R&S ESHS 10 Receiver	79182	UKAS	28th December 2012	12
R&S ESVS 30 Receiver	79183	UKAS	28th August 2012	12
Chase CBL 6112B Bilog Antenna	78708	UKAS	22nd January 2013	12
Chase HLA6120 Loop Antenna	78128	UKAS	12th February 2013	12
R&S LISN	78037	UKAS	24th December 2012	12
HP Analyser	78659	UKAS	29th August 2012	24

5.5 Appendix 5 Customers test equipment used

Equipment	Serial number	Cal status
None	N/A	N/A

5.6 Appendix 6 Modification States

Modification state	Modification
0	As supplied by the customer.

5.7 Appendix 7 Test Report History

Issue	Modification details
1	Original issue of the test report.
2	Amended following comments from TCB.
3	Amended radiated emissions limit.