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Report On

EMC Testing of the
McMurdo, A Division of Signature Industries
Fastfind PLB 200 & PLB 210

COMMERCIAL-IN-CONFIDENCE

FCC ID: KLS-PLB-3 & KLS-PLB-3-GPS
Industry Canada ID: IC: 6913A-FF200PL & IC: 6913A-FF210PL

Document 75904389 Report 07 Issue 4 February 2009

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REPORT ON

EMC Testing of the
McMurdo, A Division of Signature Industries
Fastfind PLB 200 & PLB 210

Document 75904389 Report 07 Issue 4

February 2009

PREPARED FOR

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DATED 09 February 2009

This report has been up issued to Issue 4 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);

A Guy

Product Service

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SECTION 1

REPORT SUMMARY

EMC Testing of the
McMurdo, A Division of Signature Industries
Fastfind PLB 200 & PLB 210

Product Service

1.1 INTRODUCTION

The information contained in this report is intended to show verification of the McMurdo, A Division of Signature Industries Fastfind PLB 200 & PLB 210 to the requirements of FCC CFR 47 Part 15B: 2006 and RSS-Gen Issue 3: 2007.

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	Signature Industries
Model Number	Fastfind 200/210
Serial Number(s)	1
Software Version	1.1.165
Hardware Version	B
Number of Samples Tested	1
Test Specification/Issue/Date	FCC CFR 47 Part 15B: 2006 RSS-Gen Issue 3: 2007
Incoming Release Date	Declaration of Build Status 22 October 2008
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Order Number Date	PC0003427 24 July 2008
Start of Test	06 December 2008
Finish of Test	06 December 2008
Name of Engineer(s)	A Guy
Related Document(s)	ANSI 63.4: 2003

Product Service

1.2 BRIEF SUMMARY OF RESULTS

A brief summary of results in accordance with FCC CFR 47 Part 15B and RSS-Gen Issue 3, is shown below.

Configuration 1 - Fast Find Pocket PLB							
Section	Spec Clause		Test Description	Mode	Mod State	Result	Base Standard
	FCC	RSS-Gen					
2.1	15.109	6(a)	Radiated Emissions (Enclosure Port)	Standby	0	Pass	ANSI 63.4
				Active		N/A	
	15.107	7.2.2	Conducted Emissions (AC Power Port)	Standby		N/A	ANSI 63.4
				Active		N/A	

N/A – Not Applicable.

Product Service

1.3 DECLARATION OF BUILD STATUS

MAIN EUT	
MANUFACTURING DESCRIPTION	Personal Locator Beacon (PLB)
MANUFACTURER	Signature Industries
TYPE	PLB
PART NUMBER	Fastfind 200/210
SERIAL NUMBER	1
HARDWARE VERSION	B
SOFTWARE VERSION	1.1.165
TRANSMITTER OPERATING RANGE	121.5 MHz and 406.037 MHz
RECEIVER OPERATING RANGE	N/A
COUNTRY OF ORIGIN	United Kingdom
INTERMEDIATE FREQUENCIES	N/A
ITU DESIGNATION OF EMISSION	3K20A3X & 16K0G1D
HIGHEST INTERNALLY GENERATED FREQUENCY	406.037MHz
OUTPUT POWER (W or dBm)	121MHz = 20dBm, 406.037MHz = 36.5dBm
FCC ID	KLS-PLB-3 & KLS-PLB-3-GPS
INDUSTRY CANADA ID	IC: 6913A-FF200PL & IC: 6913A-FF210PL
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	Personal Locator Beacon (PLB) for last resort safeguard against any life threatening incidents that may occur anywhere in the world. The PLB will provide emergency communication, on land or at sea.
BATTERY/POWER SUPPLY	
MANUFACTURING DESCRIPTION	Lithium Battery Pack
MANUFACTURER	Varta
TYPE	Lithium Manganese Dioxide
PART NUMBER	CR 2/3 AH
VOLTAGE	6V
COUNTRY OF ORIGIN	Not Known

Signature	Held on File
Date	22 October 2008
D of B S Serial No	75904389/01

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 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 the McMurdo, A Division of Signature Industries Fastfind PLB 210 as shown in the photograph below. The PLB 200 is a customer's declared variant. A full technical description can be found in the manufacturers documentation.

Equipment Under Test

Product Service

1.4.2 Test Configuration

Configuration 1: Fast Find Pocket PLB

The EUT was configured in accordance with FCC CFR 47 Part 15B and RSS-Gen Issue 3.

1.4.3 Modes of Operation

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

Mode 1 - Standby

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 an internal battery supply.

FCC Accreditation
90987 Octagon House, Fareham Test Laboratory

Industry Canada Accreditation
IC2932B-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

EMC Testing of the
McMurdo, A Division of Signature Industries
Fastfind PLB 200 & PLB 210

2.1 RADIATED EMISSIONS (ENCLOSURE PORT)

2.1.1 Specification Reference

FCC CFR 47 Part 15B, Clause 15.109
RSS-Gen Issue 3, Clause 6(a)

2.1.2 Equipment Under Test

Fastfind PLB 210, S/N: 1

2.1.3 Date of Test and Modification State

06 December 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 ANSI 63.4.

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

Configuration 1 - Mode 1

2.1.6 Environmental Conditions

	06 December 2008
Ambient Temperature	18 - 19.5°C
Relative Humidity	33 - 35%
Atmospheric Pressure	1011mbar

Product Service

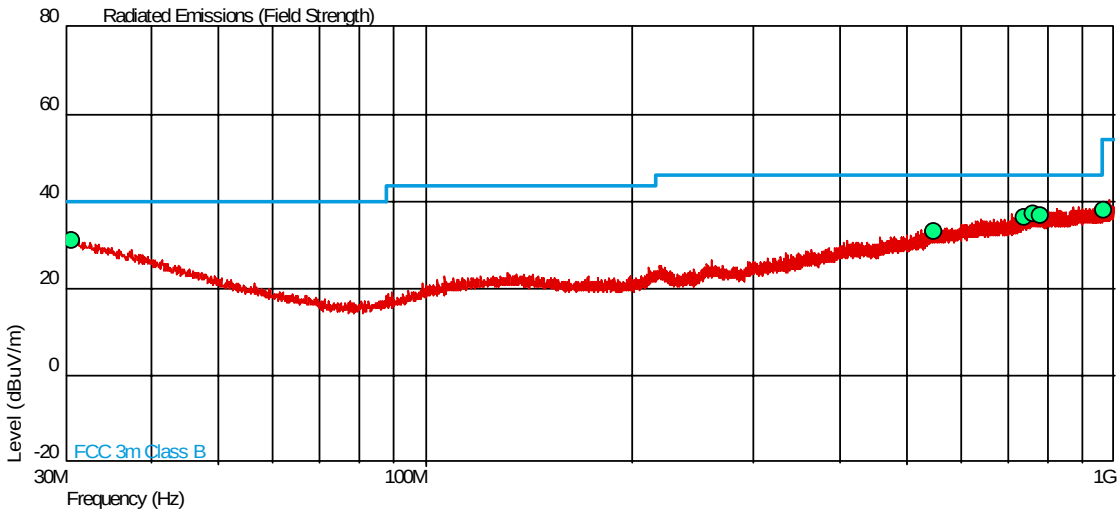
2.1.7 Test Results

For the period of test the EUT met the requirements of FCC CFR 47 Part 15B and RSS-Gen Issue 3 for Radiated Emissions (Enclosure Port).

The test results are shown below.

Configuration 1 - Mode 1

30MHz to 1GHz (Combined Polarity)



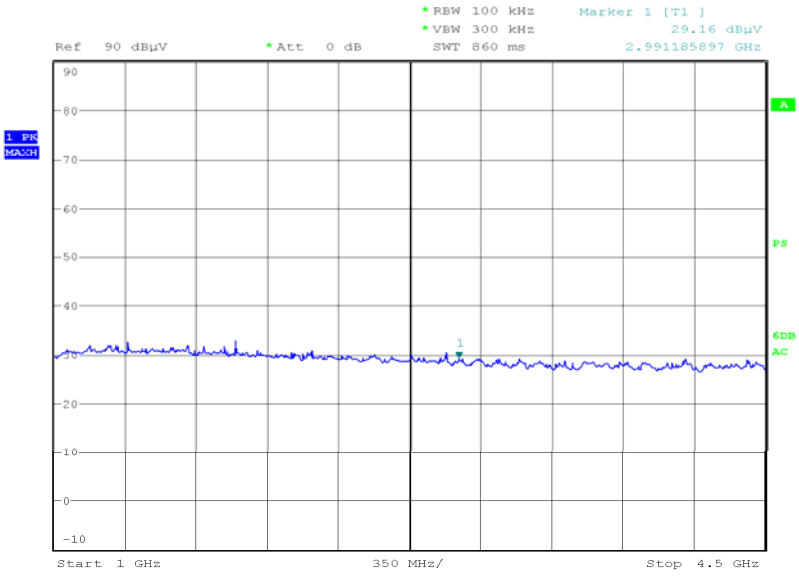
Frequency (MHz)	QP Level (dBuV/m)	QP Level (uV/m)	QP Limit (dBuV/m)	QP Limit (uV/m)	QP Margin (dBuV/m)	QP Margin (uV/m)	Angle (Deg)	Height (m)	Polarity
30.584	31.0	35.5	40.0	100.0	-9.0	.64.5	360	1.00	Horizontal
548.981	33.1	45.2	46.0	200.0	-12.9	-154.8	48	1.00	Horizontal
740.659	36.2	64.5	46.0	200.0	-9.8	-135.5	63	1.00	Horizontal
763.356	37.2	72.4	46.0	200.0	-8.8	-127.6	62	1.00	Vertical
782.681	36.8	69.2	46.0	200.0	-9.2	-130.8	335	1.00	Vertical
964.818	38.0	79.4	54.0	500.0	-16.0	-420.6	122	1.00	Vertical

1GHz to 18GHz

No emissions were detected within 20dB or the Peak limit and 10dB of the Average limit for Radiated emissions.

1GHz to 4.5GHz

Vertcal



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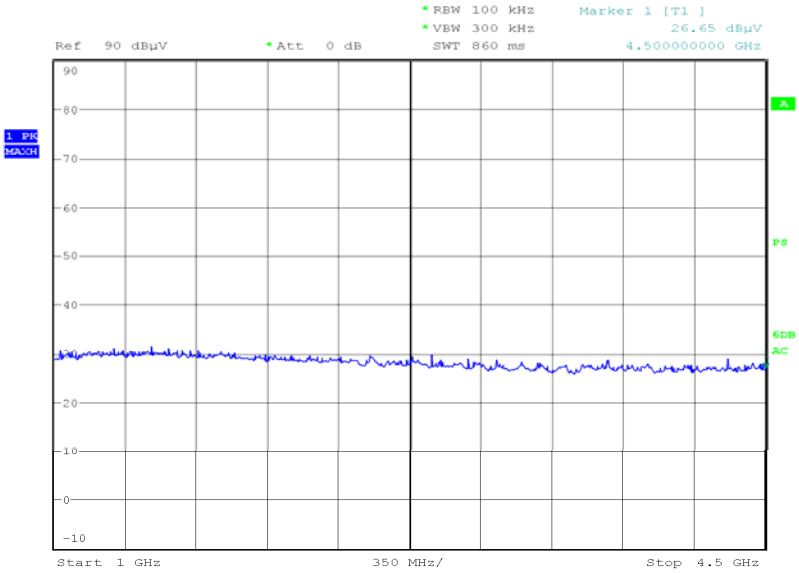

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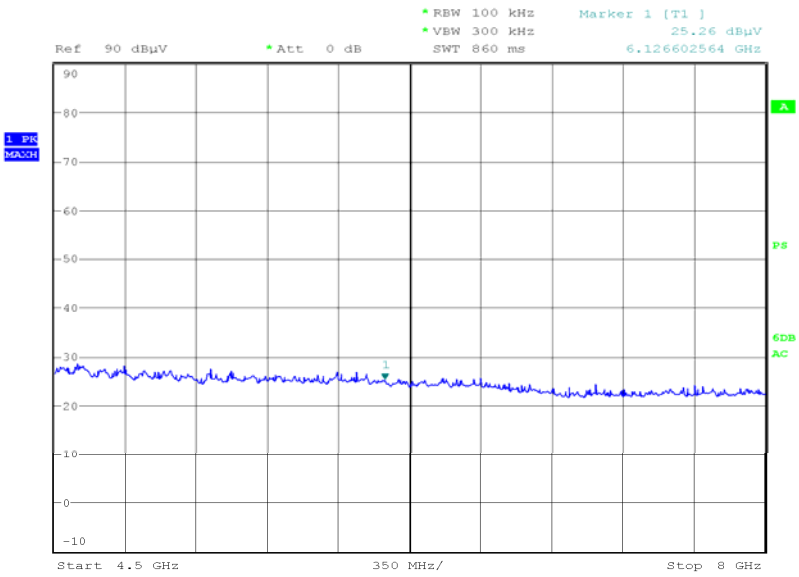
Product Service

4.5GHz to 8GHz

Vertcal



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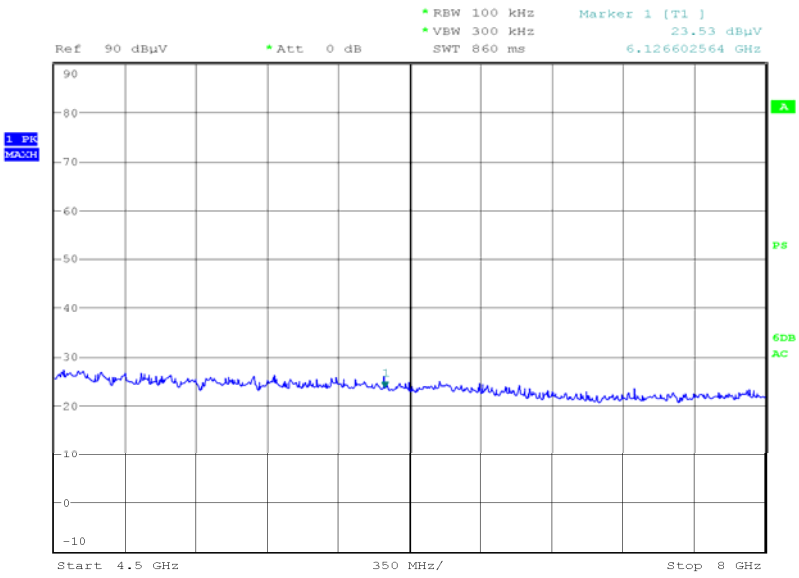
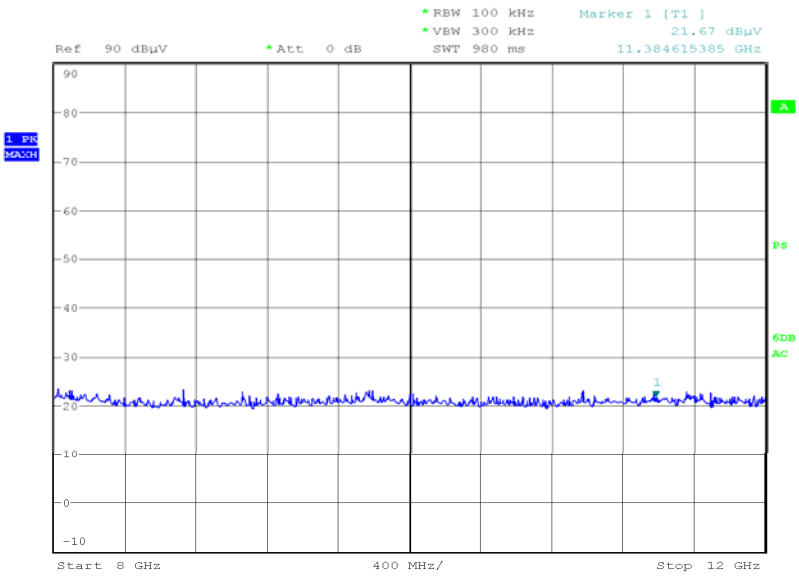


Date: 6.DEC.2008 15:11:08

Product Service

8GHz to 12GHz

Vertcal



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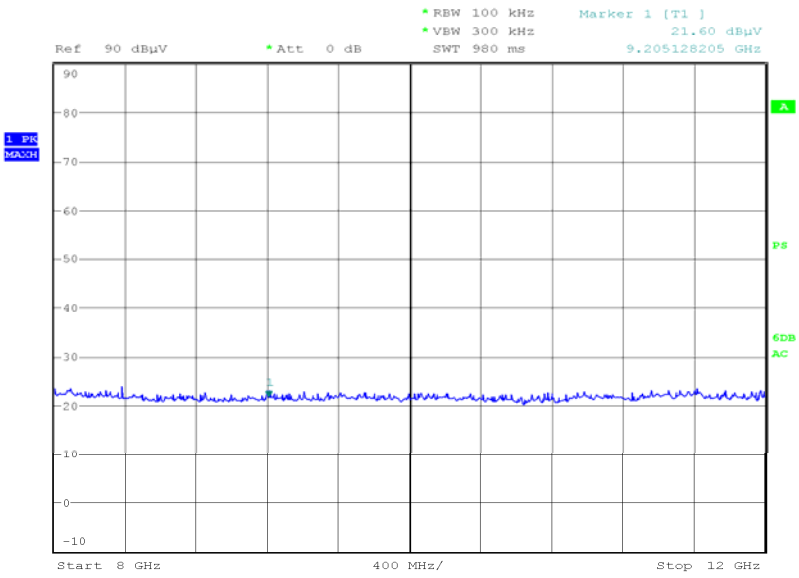

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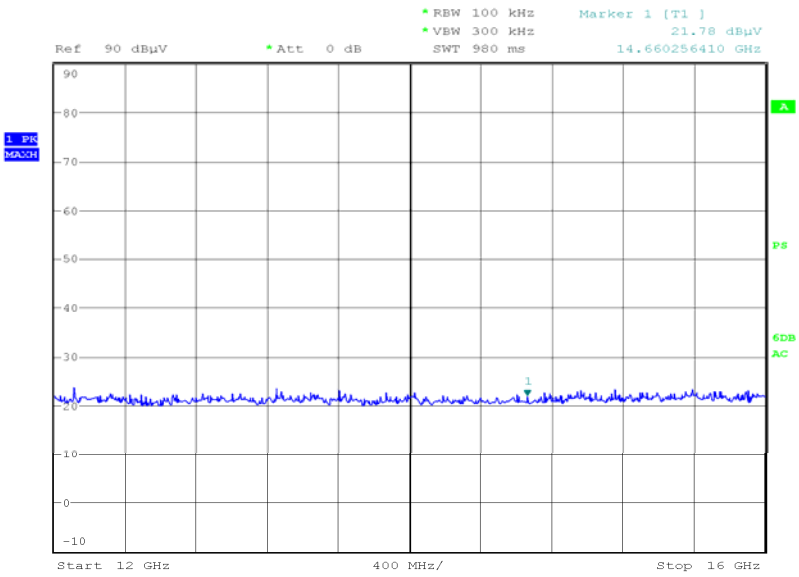
12GHz to 16GHz

Vertcal



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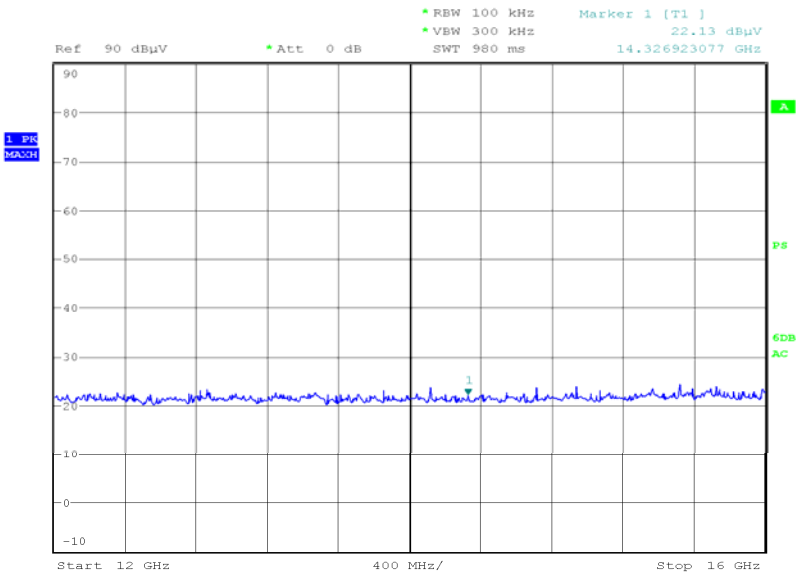

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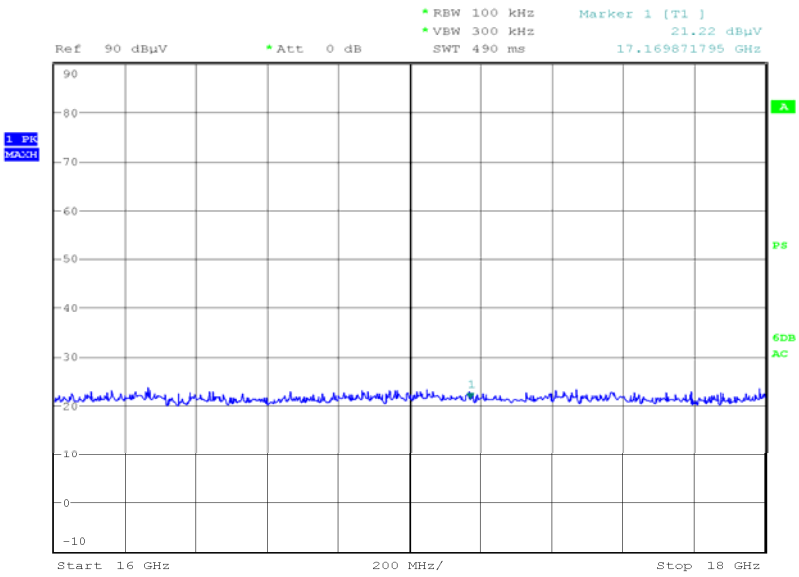
16GHz to 18GHz

Vertcal



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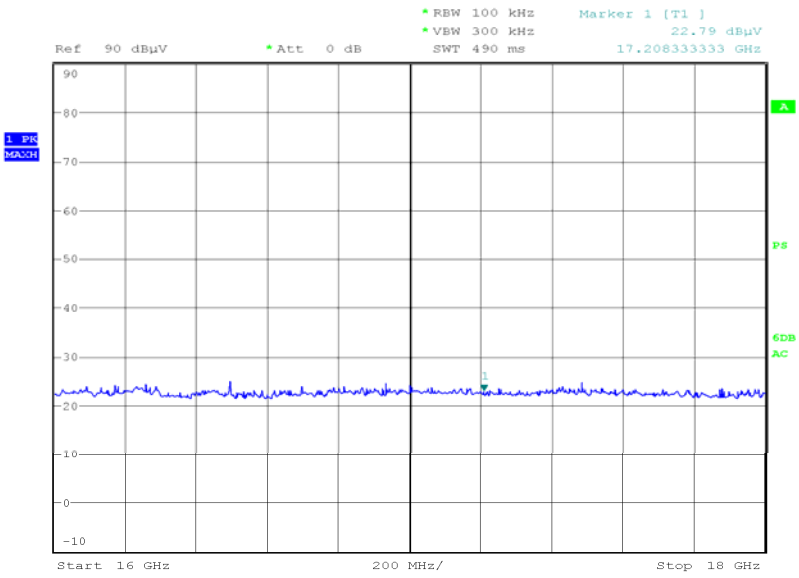

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SECTION 3

TEST EQUIPMENT USED

3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Section 2.1 EMC - Radiated Emissions					
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	12	6-Sep-2009
Dual Power Supply Unit	Thurlby	PL320	288	-	TU
Antenna (Active Loop, 9kHz-30MHz)	Rohde & Schwarz	HFH2-Z2	333	24	10-Jul-2010
Pre-Amplifier	Phase One	PS04-0085	1532	12	15-Sep-2009
Pre-Amplifier	Phase One	PS04-0086	1533	12	15-Sep-2009
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
Antenna (Bilog)	Chase	CBL6143	2904	24	28-Nov-2009
Signal Generator (10MHz to 40GHz)	Rohde & Schwarz	SMR40	3171	12	25-Jul-2009
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	20-Aug-2009

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 10^6.

* In accordance with CISPR 16-4
† In accordance with UKAS Lab 34

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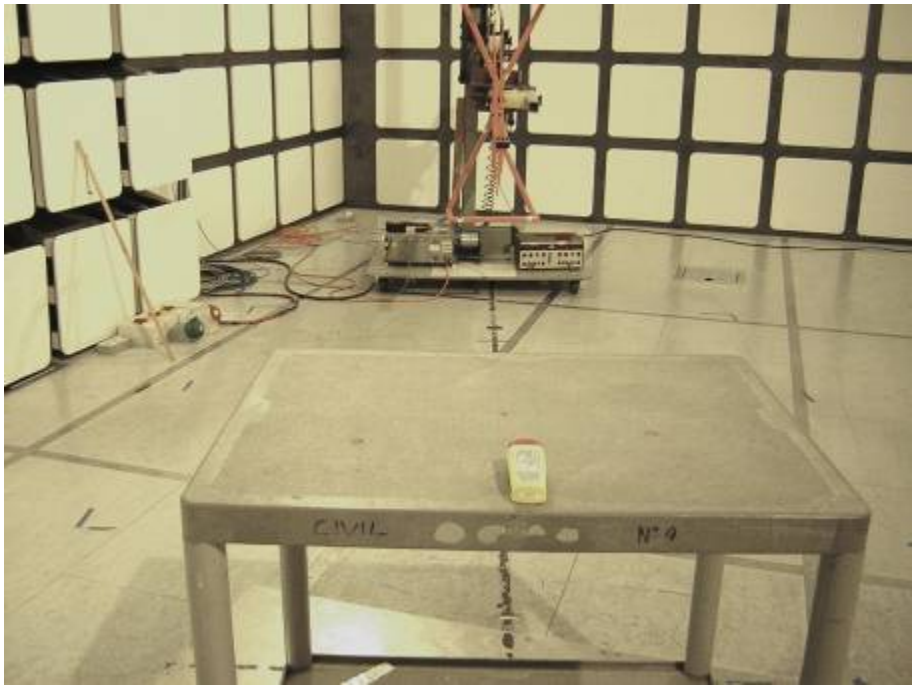
SECTION 4

PHOTOGRAPHS

4.1 TEST SET UP PHOTOGRAPHS



Radiated Emissions

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).