TEST REPORT NO: RU1014/3961

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FCC ID: K68ND2585

REPORT ON THE SUPPLEMENTARY MEASUREMENTS AT A DISTANCE OF 10 METRES OF A Radiodection Ltd. Wireline DataSonde WITH RESPECT TO THE FCC RULES CFR 47, PART 15.209 INTENTIONAL RADIATOR SPECIFICATION

TEST DATE: 13th AUGUST 2002

TESTED BY: JOHN CHARTERS Digitally signed by JOHN CHARTERS DN: cn=JOHN CHARTERS, o=TRL COMPLIANCE SERVICES, c=US Date: 2002.08.15 08:44:31 Z ---------- J CHARTERS

APPROVED BY: Peter Green Digitally signed by Peter Green DN: cn=Peter Green, o=TRL Compliance, c=GB Date: 2002.08.15 08:49:23 -08'00' ---------- P GREEN PRINCIPAL ENGINEER

DATE: 15th August 2002

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CONTENTS

Notes:

1. Component failure during test — YES [ ] NO [X]
2. If Yes, details of failure:
3. The facilities used for the testing of the product contain in this report are FCC Listed.
4. The contents of the attached applicants declarations and other supplied information are not covered by the scope of this laboratory's UKAS or FCC accreditations' and is provided in good faith.

APPLICANT'S SUMMARY

EQUIPMENT UNDER TEST (EUT):	Wireline DataSonde
EQUIPMENT TYPE:	10/ND 2585 Wireline DataSonde
SERIAL NUMBER OF EUT:	Engineering Sample
PURPOSE OF TEST:	Certification
TEST SPECIFICATION(s):	FCC RULES CFR 47, Part 15.209
TEST RESULT:	COMPLIANT Yes [X] No [ ]
APPLICANT'S CATEGORY:	MANUFACTURER [ ] IMPORTER [ ] DISTRIBUTOR [ ] TEST HOUSE [ ] AGENT [ ]
APPLICANT'S ORDER No(s):	9186
APPLICANT'S CONTACT PERSON(s):	Mr Keith Jones
E-mail address:	Keith.jones@radiodetection.com
APPLICANT:	Radiodection Ltd.
ADDRESS:	Western Drive Bristol BS14 0AZ United Kingdom
TEL:	01179 886433
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MANUFACTURER:	Radiodection Ltd.
EUT(s) COUNTRY OF ORIGIN:	United Kingdom
TEST LABORATORY:	TRL EMC
UKAS ACCREDITATION No:	0728
TEST DATE(s)	13th AUGUST 2002
TEST REPORT No:	RU1014/3961

TRANSMITTER TESTS

TRANSMITTER SPURIOUS EMISSIONS – RADIATED – PART 15.209

Ambient temperature	=	20°C(<1GHz)	10m measurements <1GHz	[X]
Relative humidity	=	55% (<1GHz),	1m measurements >1GHz	[ ]
Conditions	=	Open Area Test Site (OATS)	3m extrapolated from 1m	[ ]
Supply voltage	=	+24Vdc		
Channel number	=	1		

	FREQUENCY (MHz)	FIELD STRENGTH (dBµV/m)	EXTRAP. FACTOR (dB)	FIELD STRENGTH (µV/m)	LIMIT (µV/m)
0.009MHz - 0.490MHz	0.06758 0.10134	0.4 20.6	59 59	0.00118 0.01202	35.5 23.6
0.490MHz - 1.750MHz					
1.750MHz - 30MHz					
30MHz - 88MHz					
88MHz - 216MHz					
216MHz - 960MHz					
960MHz - 1GHz					
1GHz - 5GHz					

Limits	0.009MHz to 0.490MHz	2400/F(kHz) @ 300m
	0.490MHz to 1.705MHz	24000/F(kHz) @ 30m
	1.705MHz to 30MHz	30µV/m @ 30m
	30MHz to 88MHz	100µV/m @ 3m
	88MHz to 216MHz	150µV/m @ 3m
	216MHz to 960MHz	200µV/m @ 3m
	960MHz to 1GHz	500µV/m @ 3m
	1GHz to 5GHz	500µV/m @ 3m

See next page for notes and test method.

Notes:

1 Results quoted are extrapolated as indicated
2 Emissions were searched to: (**x**) 1000MHz inclusive, as per Part 15.33a
3 Extrapolation factor 9.5dB from 1m to 3m, as per Part 15.31f
4 Extrapolation factor 59 from 10to 300m, as per Part 15.31f
5 Measurements >1GHz @ 1m as per Part 15.31f(1)
Receiver detector <30Mz = CISPR, Quasi-Peak, 10kHz bandwidth apart from 9kHz-90kHz and 110kHz-490kHz were Average detector was used at per Part15.31d
6 Receiver detector >1GHz = CISPR, Quasi-Peak, 120kHz bandwidth
7 Receiver detector >1GHz = Peak Hold, 1MHz resolution bandwidth
8 New batteries used for battery powered products.
9 Emissions below 20dBs of the limits are not recorded
10 For emissions below 30MHz, the loss due to the antenna factor of the loop antenna is automatically compensated for by the measuring receiver. This loss is 20dB's across the measurement range 9kHz to 30MHz.
11 For emissions below 30MHz the cable losses are assumed to be negligible.

Test Method:

1 As per Radio – Noise Emissions, ANSI C63.4: 1992
2 Measuring distances as Notes 1 to 4 above
3 EUT 0.8 metre above ground plane
4 Emissions maximised by rotation of EUT, on an automatic turntable.
Raising and lowering the receiver antenna between 1m & 4m(above 30MHz only).
Horizontal and vertical polarisations, of the receive antenna.
EUT orientation in three orthogonal planes.
Maximum results recorded.

The test equipment used for the Transmitter Spurious Emissions – Radiated – Part 15.209 tests is shown overleaf:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
AE, LOOP, Z2, 9kHz - 30MHz	ROHDE & SCHWARZ	HFH2	881058 - 53	07	
HORN ANTENNA	EMCO	3115	9010-3580	138	
HORN ANTENNA	EMCO	3115	9010-3581	139	
SPECTRUM ANALYSER	TEKTRONIX	2756P	B010109	164	
BICONE ANTENNA	CHASE	BBA9106	N/A	193	
ANTENNA, LOG PERIODIC 300MHz – 1GHz	CHASE	UPA6108	1061	203	
RECEIVER	ROHDE & SCHWARZ	ESHS20	837960/003	237	
ANTENNA, BICONE 20MHz - 300MHz	CHASE	VBA6106A	1193	251	
BILOG ANTENNA	CHASE	CBL6112	2098	274	
RECEIVER	ROHDE & SCHWARZ	ESVS10	837948/003	317	
RECEIVER	ROHDE & SCHWARZ	ESVS10	844594/003	352	
RECEIVER	ROHDE & SCHWARZ	ESHS10	844077/019	353	
V / UHF RECEIVER 20MHz - 1GHz	ROHDE & SCHWARZ	ESVS 20	838804 / 005	415	
BILOG ANTENNA	SCHAFFNER	CBL6112B	2761	431	
RECEIVER	ROHDE & SCHWARZ	ESHS 10	830051/001	UH03	**X**
RECEIVER	ROHDE & SCHWARZ	ESVS 10	825892/003	UH04	
RANGE 1	TRL	10 METRE	N/A	UH07	**X**
AE, LOOP, Z2, 9kHz - 30MHz	ROHDE & SCHWARZ	HFH2	881058 - 53	07	**X**
BILOG ANTENNA	CHASE	CBL6112	2129	UH93	
SPECTRUM ANALYSER	MARCONI	2386/2380	152076/004	UH120	

TRANSMITTER TESTS

TRANSMITTER INTENTIONAL EMISSION – RADIATED – Part 15.209

Ambient temperature	=	20°C(<1GHz),	3m measurements @ fc	[ ]
Relative humidity	=	55%(<1GHz),	10m measurements @ fc	[X]
Conditions	=	Open Area Test Site (OATS)	30m measurements @ fc	[ ]
Supply voltage	=	+24Vdc	30m extrapolated from 3m	[ ]
Channel number	=	1	300m extrapolated from 10m	[X]

FREQ. (kHz)	MEASUREMENT Rx. READING (dBµV/m)	EXTRAPORLATION FACTOR (dB)	FIELD STRENGTH (µV/m)
33.78	52.1	59	0.452
Limit value @ fc		**71.0µV/m**	

Notes:

1 Results quoted are extrapolated as indicated
2 Receiver detector @ fc = Average 10kHz bandwidth
3 When battery powered the EUT was powered with new batteries
4 For emissions below 30MHz, the loss due to the antenna factor of the loop antenna is Automatically compensated for by the measuring receiver. This loss is 20dB's across the measurement range 9kHz to 30MHz.
5 For emissions below 30MHz the cable losses are assumed to be negligible.

Test Method:

1 As per Radio – Noise Emissions, ANSI C63.4: 1992
2 Measuring distances 3m
3 EUT 0.8 metre above ground plane
4 Emissions maximised by rotation of EUT, on an automatic turntable.
Raising and lowering the receiver antenna between 1m & 4m(above 30MHz only).
Horizontal and vertical polarisations, of the receive antenna.
EUT orientation in three orthogonal planes.
Maximum results recorded

The test equipment used for the Transmitter Intentional Emission – Radiated – Part 15.209 tests is shown overleaf:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
AE, LOOP, Z2, 9kHz - 30MHz	ROHDE & SCHWARZ	HFH2	881058 - 53	07	
HORN ANTENNA	EMCO	3115	9010-3580	138	
HORN ANTENNA	EMCO	3115	9010-3581	139	
SPECTRUM ANALYSER	TEKTRONIX	2756P	B010109	164	
BICONE ANTENNA	CHASE	BBA9106	N/A	193	
ANTENNA, LOG PERIODIC 300MHz – 1GHz	CHASE	UPA6108	1061	203	
RECEIVER	ROHDE & SCHWARZ	ESHS20	837960/003	237	
ANTENNA, BICONE 20MHz - 300MHz	CHASE	VBA6106A	1193	251	
BILOG ANTENNA	CHASE	CBL6112	2098	274	
RECEIVER	ROHDE & SCHWARZ	ESVS10	837948/003	317	
RECEIVER	ROHDE & SCHWARZ	ESVS10	844594/003	352	
RECEIVER	ROHDE & SCHWARZ	ESHS10	844077/019	353	
V / UHF RECEIVER 20MHz - 1GHz	ROHDE & SCHWARZ	ESVS 20	838804 / 005	415	
BILOG ANTENNA	SCHAFFNER	CBL6112B	2761	431	
RECEIVER	ROHDE & SCHWARZ	ESHS 10	830051/001	UH03	**X**
RECEIVER	ROHDE & SCHWARZ	ESVS 10	825892/003	UH04	
RANGE 1	TRL	10 METRE	N/A	UH07	**X**
AE, LOOP, Z2, 9kHz - 30MHz	ROHDE & SCHWARZ	HFH2	881058 - 53	07	**X**
BILOG ANTENNA	CHASE	CBL6112	2129	UH93	
SPECTRUM ANALYSER	MARCONI	2386/2380	152076/004	UH120	

ANNEX A

PHOTOGRAPHS

PHOTOGRAPH No. 1 **TEST SETUP**