REPORT ON THE CERTIFICATION TESTING OF A STANLEY SECURITY SOLUTIONS EUROPE Ltd ADMIN READERS AC571 & AC572 WITH RESPECT TO THE FCC RULES CFR 47, PART 15.209 May 2007 INTENTIONAL RADIATOR SPECIFICATION

TEST REPORT NO: RU1357/7981

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REPORT ON THE CERTIFICATION TESTING OF A STANLEY SECURITY SOLUTIONS EUROPE Ltd ADMIN READERS AC571 & AC572 WITH RESPECT TO THE FCC RULES CFR 47, PART 15.209 May 2007 INTENTIONAL RADIATOR SPECIFICATION

AC571 TEST DATE: 17th – 24th September 2008

AC572 TEST DATE: 21st – 25th June 2007

TESTED BY: Daniel Winstanley Digitally signed by Daniel Winstanley DN: CN = Daniel Winstanley, C = <n Reason: I am the author of this document Date: 2008.10.13 09:54:11 +01'00' D. WINSTANLEY

APPROVED BY: John Charters Digitally signed by John Charters DN: CN = John Charters, C = GB, O = TRL Compliance Ltd Reason: I am approving this document Date: 2008.10.13 10:20:50 +01'00' J. CHARTERS RADIO SECTION LEADER

DATE: 13th October 2008

Distribution:

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CONTENTS

Notes:

1. Component failure during test — YES [X] / NO [ ]
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.

TRL Compliance
part of TRAC global

CERTIFICATE OF CONFORMITY & COMPLIANCE

FCC IDENTITY:	OQL-R-AM
PURPOSE OF TEST:	Certification
TEST SPECIFICATION:	FCC RULES CFR 47, Part 15.209 May 2007
TEST RESULT:	Compliant to Specification
EQUIPMENT UNDER TEST:	AC571 AC572
ITU: EMISSION CODE:	36k5A1D
EQUIPMENT TYPE:	Inductive Reader
PRODUCT USE:	Access Control
CARRIER EMISSION:	AC571 1.46 µV/m @ 300m AC572 1.46 µV/m @ 300m
ANTENNA TYPE:	Integral
ALTERNATIVE ANTENNA:	Not applicable
FREQUENCY OF OPERATION:	133.3 kHz
CHANNEL SPACING:	Wideband
NUMBER OF CHANNELS:	1
FREQUENCY GENERATION:	SAW Resonator [ ] Crystal [X] Synthesiser [ ]
MODULATION METHOD:	Amplitude [X] Digital [ ] Angle [ ]
POWER SOURCE(s):	+4.5Vdc (Via USB)
TEST DATE(s):	AC571 17th – 24th September 2008 AC572 21st – 25th June 2007
ORDER No(s):	4500000500 & 4500011391
APPLICANT:	Stanley Security Solutions Europe Limited
ADDRESS:	1 Park Gate Close Bredbury Stockport SK6 2SZ

TESTED BY: Daniel Winstanley — Digitally signed by Daniel Winstanley DN: CN = Daniel Winstanley, C = <n Reason: I am the author of this document Date: 2008.10.13 09:53:59 +01'00' — D. WINSTANLEY

APPROVED BY: John Charters — Digitally signed by John Charters DN: CN = John Charters, C = GB, O = TRL Compliance Ltd Reason: I am approving this document Date: 2008.10.13 10:21:08 +01'00' — J. CHARTERS RADIO SECTION LEADER

TRAC testing regulatory and compliance

APPLICANT'S SUMMARY

EQUIPMENT UNDER TEST (EUT):	AC571 AC572
EQUIPMENT TYPE:	Inductive Reader
PURPOSE OF TEST:	Certification
TEST SPECIFICATION(s):	FCC RULES CFR 47, Part 15.209 May 2007
TEST RESULT:	COMPLIANT Yes [X] No [ ]
APPLICANT'S CATEGORY:	MANUFACTURER [X] IMPORTER [ ] DISTRIBUTOR [ ] TEST HOUSE [ ] AGENT [ ]
APPLICANT'S ORDER No(s):	4500000500 & 4500011391
APPLICANT'S CONTACT PERSON(s):	Mr P Lucas
E-mail address:	PLucas@stanleyworks.com
APPLICANT:	Stanley Security Solutions Europe Limited
ADDRESS:	1 Park Gate Close Bredbury Stockport SK6 2SZ
TEL:	+44 (0) 161 406 3418
FAX:	+44 (0) 161 406 9957
EUT(s) COUNTRY OF ORIGIN:	United kingdom
TEST LABORATORY:	TRL Compliance Ltd
UKAS ACCREDITATION No:	0728
TEST DATE(s):	AC571 17th – 24th September 2008 AC572 21st – 25th June 2007
TEST REPORT No:	RU1357/7981
TRL WORKS ORDER No(s):	AC571 RU1508 AC572 RU1357

EQUIPMENT TEST / EXAMINATIONS REQUIRED

1.

TEST/EXAMINATION	RULE PART	DETECTOR	APPLICABILITY
Intentional Emission Frequency:	15.209(a)	Average	Yes
Intentional Emission Field Strength:	15.209(a)	Average	Yes
Intentional Emission Band Occupancy:	15.215(c)	Peak	Yes
Intentional Emission ERP (mW):	-	-	No
Spurious Emissions – Conducted:	15.207	Quasi Peak Average	Yes
Spurious Emissions – Radiated <1000MHz:	15.209	Quasi Peak Average	Yes
Spurious Emissions – Radiated >1000MHz:	-	-	No
Maximum Frequency of Search:	15.33	-	Yes
Antenna Arrangements Integral:	15.203	-	Yes
Antenna Arrangements External Connector:	15.204	-	Yes
Restricted Bands:	15.205	-	Yes
Extrapolation Factor:	15.31(f)	-	Yes

2. Product Use: Access Control

3. Emission Designator: 36k5A1D

4. Duty Cycle: <100%

5. Transmitter bit or pulse rate and level: 4800bps

6. Temperatures: Ambient (Tnom) 13^{o}C

7. Supply Voltages: Vnom +4.5Vdc(Via USB)

Note: Vnom voltages are as stated above unless otherwise shown on the test report page

8. Equipment Category:
   Single channel [X]
   Two channel [ ]
   Multi-channel [ ]

9. Channel spacing:
   Narrowband [ ]
   Wideband [X]

TRANSMITTER TESTS

TRANSMITTER SPURIOUS EMISSIONS – RADIATED – PART 15.209 – AC571

Ambient temperature	=	17°C(<1GHz)	1m measurements <30MHz	[X]
Relative humidity	=	64% (<1GHz),	3m measurements <30MHz	[X]
Conditions	=	Open Area Test Site (OATS)	30m extrapolated from 3m	[X]
Supply voltage	=	+4.5Vdc (Via USB)	300m extrapolated from 1m	[X]
Channel number	=	1	300m extrapolated from 3m	[X]
			3m measurements >1GHz	[X]

AC571	FREQ. (MHz)	MEAS. Rx. (dBµV)	CABLE LOSS (dB)	ANT FACT. (dB/m)	FIELD STRENGTH (dBµV/m)	EXTRAP. FACTOR (dB)	FIELD STRENGTH (µV/m)	LIMIT (µV/m)
0.009MHz - 0.49MHz								Note 11
0.49MHz - 1.705MHz								Note 11
1.705MHz - 30MHz								Note 11
30MHz - 88MHz	44.00	23.68	1.03	10.49	35.2	-	57.54	100
	48.00	25.42	1.10	8.58	35.1	-	56.88	100
	50.10	29.15	1.11	7.74	38.0	-	79.43	100
	62.40	28.23	1.18	4.99	34.4	-	52.48	100
	66.05	30.78	1.23	4.99	37.0	-	70.79	100
	66.30	30.98	1.23	4.99	37.2	-	72.44	100
	69.00	32.43	1.21	5.16	38.8	-	87.09	100
	73.95	27.24	1.27	5.69	34.2	-	51.28	100
	76.00	31.94	1.27	5.99	39.2	-	91.20	100
88MHz - 216MHz	110.25	15.71	1.49	11.40	28.6	-	26.91	150
	116.25	15.99	1.54	11.47	29.0	-	28.18	150
	133.05	19.12	1.58	11.30	32.0	-	39.81	150
	192.05	31.20	1.90	8.50	41.6	-	120.22	150
	200.30	21.21	1.92	8.67	31.8	-	38.90	150
216MHz - 960MHz	240.05	14.06	2.10	10.84	27.0	-	22.38	200
	264.10	16.45	2.20	12.95	31.6	-	38.02	200
	300.40	12.28	2.34	12.98	27.6	-	23.98	200
	336.10	20.55	2.40	13.95	36.9	-	69.98	200
	384.05	11.79	2.61	15.30	29.7	-	30.55	200
	399.02	15.70	2.66	15.94	34.3	-	51.88	200
	576.05	5.48	3.29	18.53	27.3	-	23.17	200
960MHz - 1GHz								Note 11

Limits	0.009 MHz to 0.49 MHz	2400/f(kHz) µV/m @ 300m
	0.49 MHz to 1.705 MHz	24000/f(kHz) µV/m @ 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

The test equipment used for the Transmitter Spurious Emissions – Radiated – Part 15.209 tests are shown on page 9.

TRANSMITTER TESTS

TRANSMITTER SPURIOUS EMISSIONS – RADIATED – PART 15.209 – AC572

Ambient temperature	=	24°C(<1GHz)	1m measurements <30MHz	[X]
Relative humidity	=	65% (<1GHz),	3m measurements <30MHz	[X]
Conditions	=	Open Area Test Site (OATS)	30m extrapolated from 1m	[X]
Supply voltage	=	+4.5Vdc (Via USB)	30m extrapolated from 3m	[X]
Channel number	=	1	300m extrapolated from 1m	[X]
			300m extrapolated from 3m	[X]
			3m measurements >1GHz	[X]

AC572	FREQ. (MHz)	MEAS. Rx. (dBµV)	CABLE LOSS (dB)	ANT FACT. (dB/m)	FIELD STRENGTH (dBµV/m)	EXTRAP. FACTOR (dB)	FIELD STRENGTH (µV/m)	LIMIT (µV/m)
0.009MHz - 0.49MHz								Note 11
0.49MHz - 1.705MHz								Note 11
1.705MHz - 30MHz								Note 11
30MHz - 88MHz	44.00	22.70	1.00	10.70	34.4	-	52.48	100
	48.00	21.32	1.08	8.60	31.0	-	35.48	100
	49.10	23.80	1.10	8.10	33.0	-	44.67	100
	49.85	25.19	1.11	7.70	34.0	-	50.12	100
	63.05	27.75	1.20	5.05	34.0	-	50.12	100
	64.05	27.08	1.22	5.10	33.4	-	46.77	100
	65.15	26.38	1.22	5.00	32.6	-	42.66	100
	66.05	27.68	1.22	5.00	33.9	-	49.54	100
	66.80	27.18	1.22	5.10	33.5	-	47.32	100
	80.00	26.59	1.31	7.00	34.9	-	55.59	100
88MHz - 216MHz	96.05	23.52	1.38	9.30	34.2	-	51.28	150
	144.05	13.50	1.70	11.00	26.2	-	20.42	150
	199.90	20.08	1.92	7.90	29.9	-	31.26	150
	202.60	21.98	1.92	8.10	32.0	-	39.81	150
216MHz - 960MHz	223.50	19.99	2.06	9.35	31.4	-	37.15	200
	228.30	19.92	2.08	9.60	31.6	-	38.02	200
	234.90	12.47	2.09	9.94	24.5	-	16.78	200
	240.15	14.50	2.10	10.30	26.9	-	22.13	200
	288.15	9.36	2.24	12.90	24.5	-	16.78	200
960MHz - 1GHz								Note 11

Limits	0.009 MHz to 0.49 MHz	2400/f(kHz) µV/m @ 300m
	0.49 MHz to 1.705 MHz	24000/f(kHz) µV/m @ 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

The test equipment used for the Transmitter Spurious Emissions – Radiated – Part 15.209 tests are shown on page 9.

Notes:

1 Results quoted are extrapolated as indicated.
2 Emissions were searched to: (**x**) 1000MHz inclusive, as per Part 15.33a.
3 Extrapolation factor 22.7dB from 1m to 3m, as measured.
4 Extrapolation factor 80dB from 3m to 300m, as per Part 15.31f.
5 Extrapolation factor 40dB from 3m to 30m, as per Part 15.31f.
6 Measurements >1GHz @ 1m as per Part 15.31f(1).
7 Receiver detector 9kHz – 30MHz = CISPR, Quasi-Peak, 10kHz bandwidth.
Apart From the bands 9kHz-90kHz and 110kHz-490kHz where an average detector is used.
8 Receiver detector 30MHz - 1GHz = CISPR, Quasi-Peak, 120kHz bandwidth.
9 Receiver detector >1GHz = Peak Hold, 1MHz resolution bandwidth.
10 New batteries used for battery powered products.
11 Emissions 20dBs below the limit are not recorded.
12 For emissions below 30MHz cable losses are assumed to be negligible.
13 F(kHz) is the frequency of operation or spurious emission.
14 See Annex G for emissions plot(s) 30MHz 1GHz.

Test Method:

1 As per Radio – Noise Emissions, ANSI C63.4: 2003.
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 >30MHz.
Horizontal and vertical polarisations, of the receive antenna.
EUT orientation in three orthagonal planes. Maximum results recorded.

Test Equipment Use for AC571

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	**X**
RECEIVER	ROHDE & SCHWARZ	ESVS 10	825892/006	UH04	**X**
RANGE 1	TRL	3 METRE	N/A	UH06	**X**
RANGE 1	TRL	10 METRE	N/A	UH07	**X**
ANTENNA	CHASE	CBL6112B	2803	UH93	**X**
RECEIVER	ROHDE & SCHWARZ	ESHS 10	841429/012	UH187	**X**

Test Equipment Use for AC572

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	**X**
RECEIVER	ROHDE & SCHWARZ	ESVS 10	825892/006	UH04	**X**
RANGE 1	TRL	3 METRE	N/A	UH06	**X**
RANGE 1	TRL	10 METRE	N/A	UH07	**X**
RECEIVER	ROHDE & SCHWARZ	ESHS 10	841429/012	UH187	**X**
ANTENNA	YORK	CBL611/A	1618	UH191	**X**

TRANSMITTER TESTS

TRANSMITTER INTENTIONAL EMISSION – RADIATED – Part 15.209 –AC571

Ambient temperature	=	17°C(<1GHz),	1m measurements <30MHz	[X]
Relative humidity	=	58%(<1GHz),	3m measurements <30MHz	[X]
Conditions	=	Open Area Test Site (OATS)	30m measurements @ fc	[ ]
Supply voltage	=	+4.5Vdc (Via USB)	300m extrapolated from 1m	[X]
Channel number	=	1	300m extrapolated from 3m	[X]

FREQ. (kHz)	MEASUREMENT DISTANCE (Meters)	MEASUREMENT Rx. READING (dBµV/m)	EXTRAPOLATION FACTOR (dB)	FIELD STRENGTH (µV/m)
133.3	1	106.0	102.7	1.46
133.3	3	83.3	80	1.46
Limit value @ fc		**18.05 µV/m @ 300m**		

Notes:
1 Results quoted are extrapolated as indicated.
2 Receiver detector @ fc = Average, 200 Hz bandwidth.
3 When battery powered the EUT was powered with new batteries.
4 For emissions below 30MHz the receiver automatically compensates for the loss due to the antenna factor of the loop antenna. This loss is 20 dBs across the measurement range 9kHz – 30MHz.
5 For emissions below 30MHz the cable loss are assumed to be negligible.
6 Peak Emissions were found to be less than or equal to the average limit and were therefore deemed to comply with 15.35(b).
7 The test results quoted are the maximum seen after the supply voltage was varied between 85% and 115% of Vnom.

Test Method:
1 As per Radio – Noise Emissions, ANSI C63.4: 2003.
2 Measuring distances 1m and 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.
Horizontal and vertical polarisations, of the receive antenna > 30 MHz.
EUT orientation in three orthogonal planes. Maximum results recorded.

The test equipment used for the AC571 Transmitter Intentional Emission – Radiated – Part 15.209 test is shown below:

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	**X**
RANGE 1	TRL	3 METRE	N/A	UH06	**X**
RANGE 1	TRL	10 METRE	N/A	UH07	**X**
RECEIVER	ROHDE & SCHWARZ	ESHS 10	841429/012	UH187	**X**

TRANSMITTER TESTS

TRANSMITTER INTENTIONAL EMISSION – RADIATED – Part 15.209 – AC572

Ambient temperature	=	13^{o}C(<1GHz),	1m measurements <30MHz	[X]
Relative humidity	=	63%(<1GHz),	3m measurements <30MHz	[X]
Conditions	=	Open Area Test Site (OATS)	30m measurements @ fc	[ ]
Supply voltage	=	+4.5Vdc (Via USB)	300m extrapolated from 1m	[X]
Channel number	=	1	300m extrapolated from 3m	[X]

FREQ. (kHz)	MEASUREMENT DISTANCE (Meters)	MEASUREMENT Rx. READING (dBµV/m)	EXTRAPOLATION FACTOR (dB)	FIELD STRENGTH (µV/m)
133.3	1	106.0	102.7	1.46
133.3	3	83.3	80	1.46
Limit value @ fc		**18.05 µV/m @ 300m**		
Band occupancy @ -20 dBc		**f lower**	**f higher**	
		114.5705 kHz	151.1089 kHz	

See spectrum analyser plot – Annex E

Notes:

1 Results quoted are extrapolated as indicated.
2 Receiver detector @ fc = Average, 200 Hz bandwidth.
3 When battery powered the EUT was powered with new batteries.
4 For emissions below 30MHz the receiver automatically compensates for the loss due to the antenna factor of the loop antenna. This loss is 20 dBs across the measurement range 9kHz – 30MHz.
5 For emissions below 30MHz the cable loss are assumed to be negligible.
6 Peak Emissions were found to be less than or equal to the average limit and were therefore deemed to comply with 15.35(b).
7 The test results quoted are the maximum seen after the supply voltage was varied between 85% and 115% of Vnom.

Test Method:

1 As per Radio – Noise Emissions, ANSI C63.4: 2003.
2 Measuring distances 1m and 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.
Horizontal and vertical polarisations, of the receive antenna > 30 MHz.
EUT orientation in three orthogonal planes. Maximum results recorded.

The test equipment used for the AC572 Transmitter Intentional Emission – Radiated – Part 15.209 test is shown below:

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	**X**
RANGE 1	TRL	3 METRE	N/A	UH06	**X**
RANGE 1	TRL	10 METRE	N/A	UH07	**X**
RECEIVER	ROHDE & SCHWARZ	ESHS 10	841429/012	UH187	**X**
SPECTRUM ANALYSER	ROHDE & SCHWARZ	FSU 46	20034	UH281	**X**

TRANSMITTER TESTS

TRANSMITTER CONDUCTED EMISSIONS – AC POWER LINE Part 15.207 – AC572

Ambient temperature = 23^{o}C(<1GHz),
Relative humidity = 63%(<1GHz),
Conditions = Power Line Laboratory
Supply voltage = 110V AC
Supply Frequency = 60Hz

SIGNIFICANT EMISSIONS

FREQUENCY (MHz)	MEASUREMENT RECEIVER READING (dBµV)	DETECTOR	CONDUCTOR (L or N)	LIMIT (dBµV)
0.150	52.54	Quasi Peak	Neural	66.00
0.175	55.60	Quasi Peak	Live	64.72
0.190	46.90	Quasi Peak	Live	64.04
0.230	42.99	Quasi Peak	Neutral	62.45
0.235	50.57	Quasi Peak	Live	62.27
0.240	44.05	Quasi Peak	Live	62.10
0.295	44.99	Quasi Peak	Live	60.38
0.355	40.62	Quasi Peak	Live	58.84
0.470	26.83	Average	Live	19.68

Notes:
1 See attached plot in Annex F.
2 EUT tested with and with out tag present.
3 Worst case value for each frequency recorded.
4 Only emissions within 20 dB of the limit are recorded.

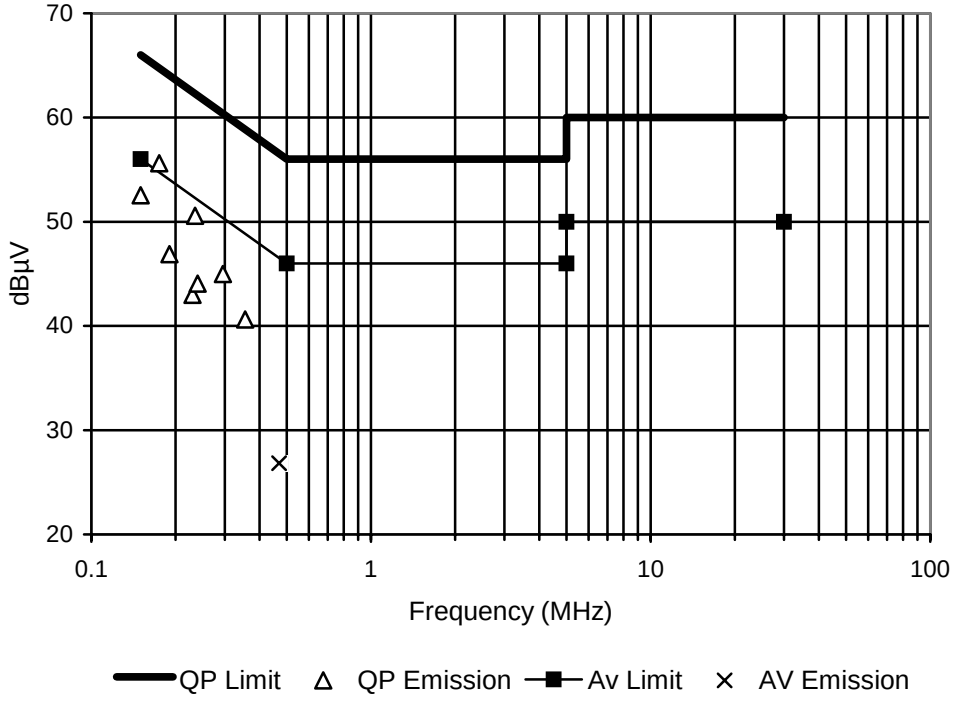
Test Method:
1 As per Radio – Noise Emissions, ANSI C63.4: 2003.

The test equipment used for the Transmitter Conducted Emissions – AC Power Line Part 15.207 test was:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
RECEIVER	ROHDE & SCHWARZ	ESHS 10	830051/001	UH03	**X**
LISN/AMN	ROHDE & SCHWARZ	ESH3-Z5	8407 31/015	UH195	**X**

POWER LINE CONDUCTION EMISSIONS

Limits Part 15.207
(Levels below the limit are only displayed if
within 20dB of the limit)

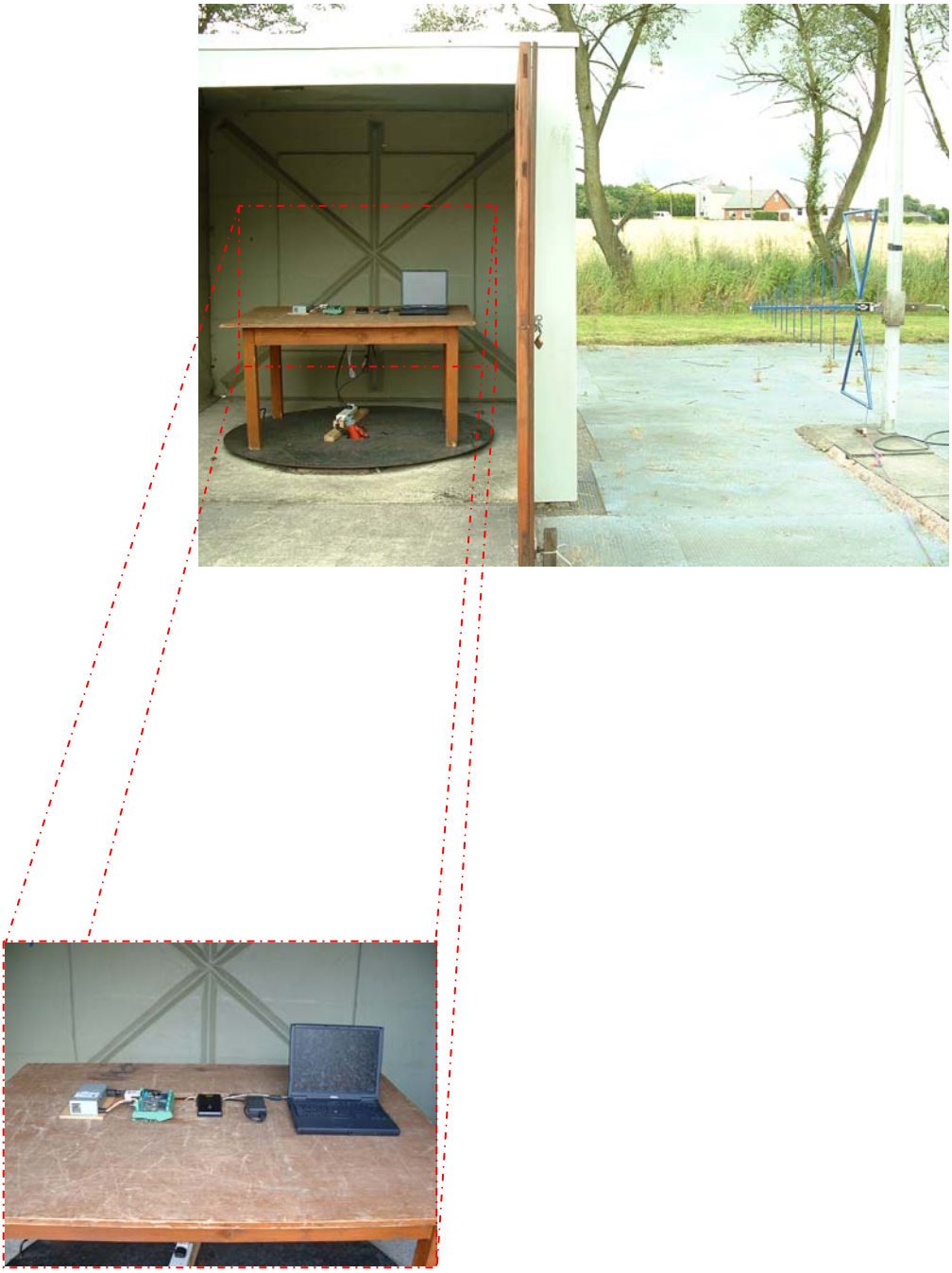


ANNEX A

PHOTOGRAPHS

PHOTOGRAPH No. 1 **TEST SETUP – AC571**

PHOTOGRAPH No. 2 **TEST SETUP – AC572**



PHOTOGRAPH No. 3 **TRANSMITTER TOP OVERVIEW**

AC571

AC572

PHOTOGRAPH No. 4 **TRANSMITTER BOTTOM OVERVIEW**

AC571

AC572

PHOTOGRAPH No. 5 **TRANSMITTER BOTTOM OVERVIEW NO COVER**

AC571

AC572

ANNEX B

APPLICANT'S SUBMISSION OF DOCUMENTATION LIST

APPLICANT'S SUBMISSION OF DOCUMENTATION LIST

a.	TCB	-	APPLICATION	[X]
		-	FEE	[X]
b.	AGENT'S LETTER OF AUTHORISATION	-		[X]
c.	MODEL(s) vs IDENTITY	-		[X]
d.	ALTERNATIVE TRADE NAME DECLARATION(s)	-		[X]
e.	LABELLING	-	PHOTOGRAPHS	[X]
		-	DECLARATION	[ ]
		-	DRAWINGS	[X]
f.	TECHNICAL DESCRIPTION	-		[X]
g.	BLOCK DIAGRAMS	-	Tx	[X]
		-	Rx	[ ]
		-	PSU	[ ]
		-	AUX	[ ]
h.	CIRCUIT DIAGRAMS	-	Tx	[X]
		-	Rx	[ ]
		-	PSU	[ ]
		-	AUX	[ ]
i.	COMPONENT LOCATION	-	Tx	[X]
		-	Rx	[ ]
		-	PSU	[ ]
		-	AUX	[ ]
j.	PCB TRACK LAYOUT	-	Tx	[X]
		-	Rx	[ ]
		-	PSU	[ ]
		-	AUX	[ ]
k.	BILL OF MATERIALS	-	Tx	[X]
		-	Rx	[ ]
		-	PSU	[ ]
		-	AUX	[ ]
l.	USER INSTALLATION / OPERATING INSTRUCTIONS	-		[X]

ANNEX C

MEASUREMENT UNCERTAINTY

Radio Testing – General Uncertainty Schedule

All statements of uncertainty are expanded standard uncertainty using a coverage factor of 1.96 to give a 95% confidence where no required test level exists.

[1] Adjacent Channel Power

Uncertainty in test result = **1.86dB**

[2] Carrier Power

Uncertainty in test result (Equipment - TRLUH120) = **2.18dB**
Uncertainty in test result (Equipment – TRL05) = **1.08dB**
Uncertainty in test result (Equipment – TRL479) = **2.48dB**

[3] Effective Radiated Power

Uncertainty in test result = **4.71dB**

[4] Spurious Emissions

Uncertainty in test result = **4.75dB**

[5] Maximum frequency error

Uncertainty in test result (Equipment - TRLUH120) = **119ppm**
Uncertainty in test result (Equipment – TRL05) = **0.113ppm**
Uncertainty in test result (Equipment – TRL479) = **0.265ppm**

[6] Radiated Emissions, field strength OATS 14kHz-18GHz Electric Field

Uncertainty in test result (14kHz – 30MHz) = **4.8dB**, Uncertainty in test result (30MHz – 1GHz) = **4.6dB**, Uncertainty in test result (1GHz-18GHz) = **4.7dB**

[7] Frequency deviation

Uncertainty in test result = **3.2%**

[8] Magnetic Field Emissions

Uncertainty in test result = **2.3dB**

[9] Conducted Spurious

Uncertainty in test result (Equipment TRL479) Up to 8.1GHz = **3.31dB**
Uncertainty in test result (Equipment TRL479) 8.1GHz – 15.3GHz = **4.43dB**
Uncertainty in test result (Equipment TRL479) 15.3GHz – 21GHz = **5.34dB**
Uncertainty in test result (Equipment TRLUH120) Up to 26GHz = **3.14dB**

[10] Channel Bandwidth

Uncertainty in test result = **15.5%**

[11] Amplitude and Time Measurement – Oscilloscope

Uncertainty in overall test level = **2.1dB**, Uncertainty in time measurement = **0.59%,** Uncertainty in Amplitude measurement = **0.82%**

[11] Power Line Conduction

Uncertainty in test result = **3.4dB**

[12] Spectrum Mask Measurements

Uncertainty in test result = **2.59% (frequency)**
Uncertainty in test result = **1.32dB (amplitude)**

[13] Adjacent Sub Band Selectivity

Uncertainty in test result = **1.24dB**

[14] Receiver Blocking – Listen Mode, Radiated

Uncertainty in test result = **3.42dB**

[15] Receiver Blocking – Talk Mode, Radiated

Uncertainty in test result = **3.36dB**

[16] Receiver Blocking – Talk Mode, Conducted

Uncertainty in test result = **1.24dB**

[17] Receiver Threshold

Uncertainty in test result = **3.23dB**

[18] Transmission Time Measurement

Uncertainty in test result = **7.98%**

ANNEX D

TEST EQUIPMENT CALIBRATION

AC571 TEST DATE: 17th – 24th September 2008

TRL Number	Equipment Type	Manufacturer	Last Cal Calibration	Calibration Period	Due For Calibration
UH003	Receiver	R&S	15/12/2007	12	05/12/2008
UH004	Receiver	R&S	06/11/2007	12	06/11/2008
UH06/07	3m Range ERP CAL	TRL	17/12/2007	12	07/12/2008
UH093	Antenna	Chase	21/05/2007	24	21/05/2009
UH187	Receiver	R&S	12/12/2007	12	12/12/2008
UH195	LISN	R&S	04/01/2008	12	04/01/2009
UH281	Spectrum Analyser	R&S	24/10/2007	12	24/10/2008
L007	Loop Antenna	R&S	22/05/2007	24	22/05/2009

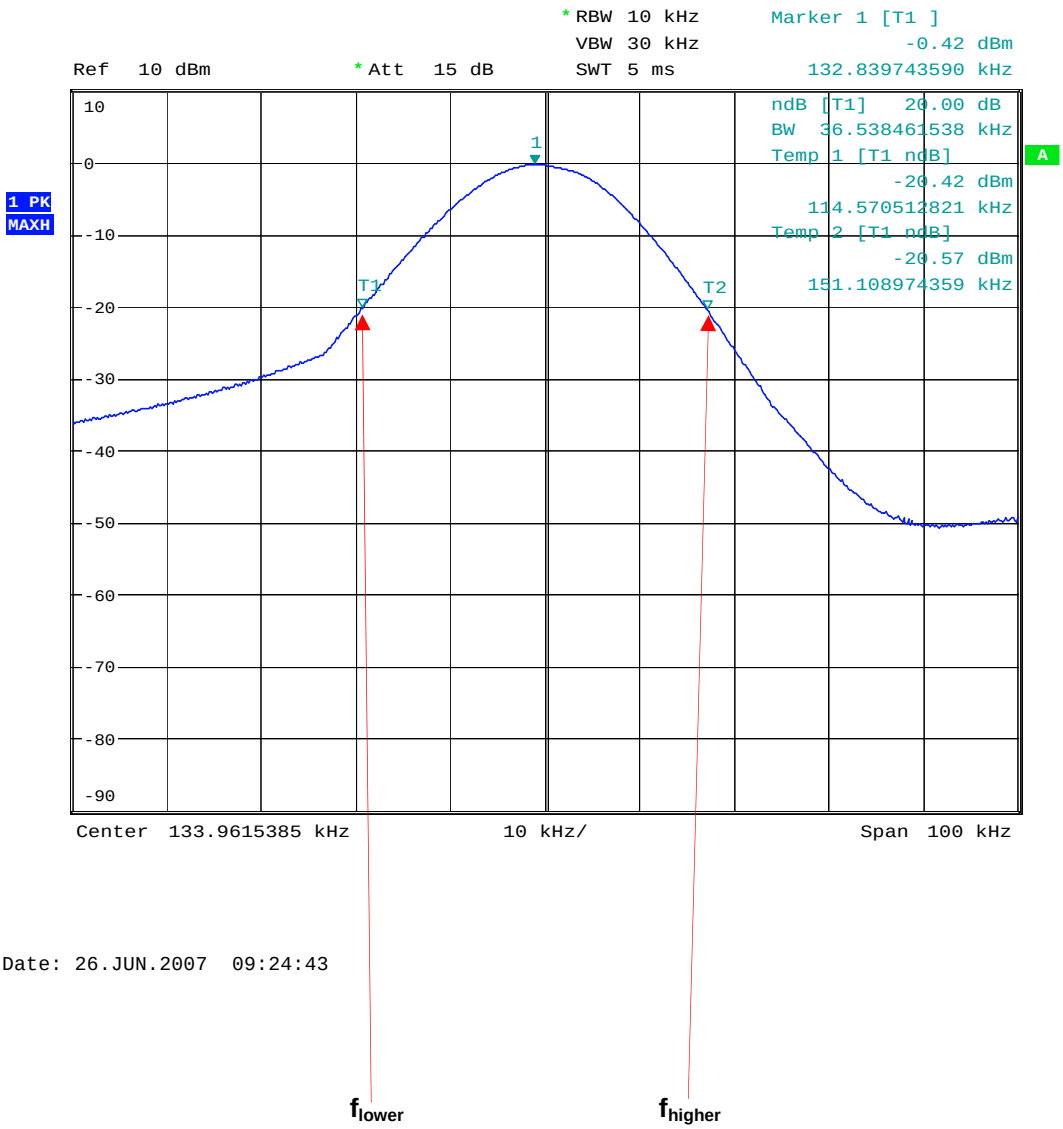
AC572 TEST DATE: 21st – 25th June 2007

TRL Number	Equipment Type	Manufacturer	Last Cal Calibration	Calibration Period	Due For Calibration
UH003	Receiver	R&S	24/07/2006	12	24/07/2007
UH004	Receiver	R&S	11/10/2006	12	11/10/2007
UH06/07	3m Range ERP CAL	TRL	08/12/2006	12	08/12/2007
UH187	Receiver	R&S	11/10/2006	12	11/10/2007
UH191	Antenna	York	11/08/2006	24	11/08/2008
UH195	LISN	R&S	09/01/2007	12	09/01/2008
UH281	Spectrum Analyser	R&S	24/07/2006	12	24/07/2007
L007	Loop Antenna	R&S	22/05/2007	24	22/05/2009

ANNEX E

BANDWIDTH PLOT

BANDWIDTH PLOT



f_{lower}	=	114.5705 kHz
f_{higher}	=	151.1089 kHz
Occupied Bandwidth	=	36.5384 kHz

ANNEX F

EMISSIONS GRAPH(s)

TRL Compliance Services Ltd

17 Sep 2008 09:16

E-Field Radiation (30MHz-1GHz)

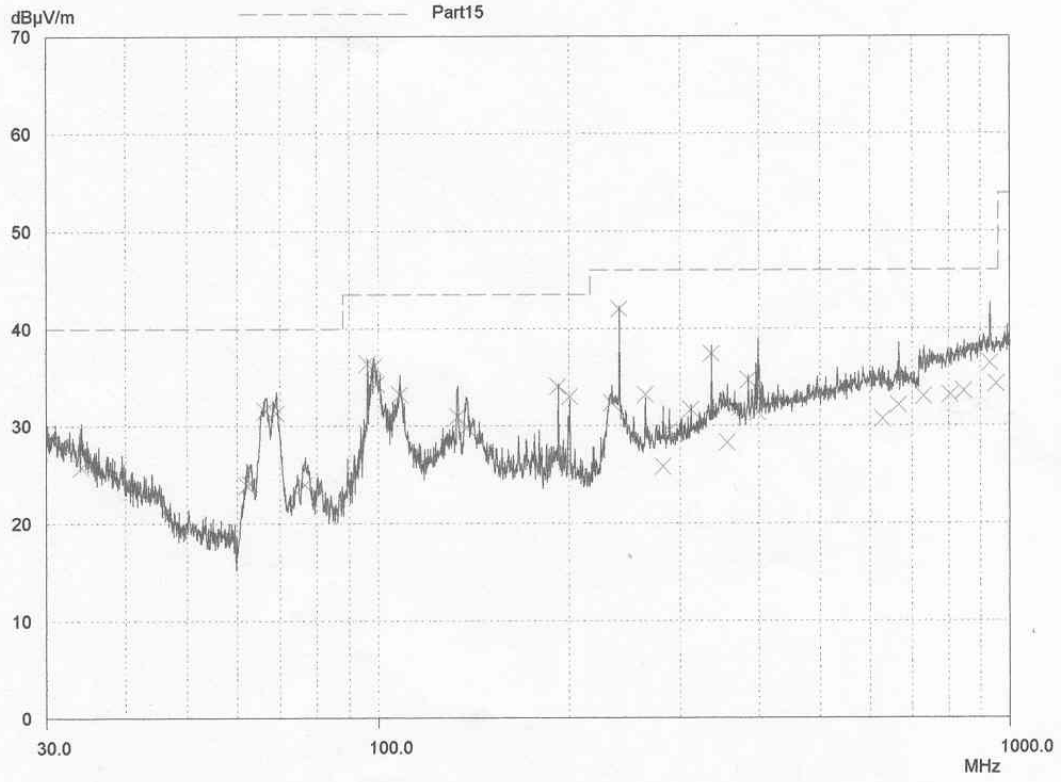
EUT:	USB Admin Reader
Manuf:	Stanley Security Solutions
Op Cond:	Prescan 30MHz - 1000MHz Antenna Horizontal
Operator:	D Winstanley
Test Spec:	Part15
Comment:	EUT on connected to PC. PC connected to control unit/PSU via RS232.
	No Tag Present
Result File:	USB_H.dat : New Measurement

Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
30MHz	1000MHz	50kHz	120kHz	PK	1msec	Auto	ON	60dB

Transducer	No.	Start	Stop	Name
1	21	30MHz	1000MHz	UH72
	22	30MHz	1000MHz	UH93

Final Measurement: Detector: X QP
Meas Time: 2sec
Subranges: 50
Acc Margin: 10 dB



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TRL Compliance Ltd

21 Jun 2007 15:51

E-Field Radiation (30MHz-1GHz)

EUT:	Admin reader
Manuf:	PAC International
Op Cond:	Prescan 30MHz - 1000MHz
Operator:	S Hodgkinson
Test Spec:	Part15
Comment:	Unit in Tx mode ,key present,unit flat on it's base facing Rx antenna. Rx antenna Vertical.
Result File:	~~ADVKEYP~~.dat : New Measurement

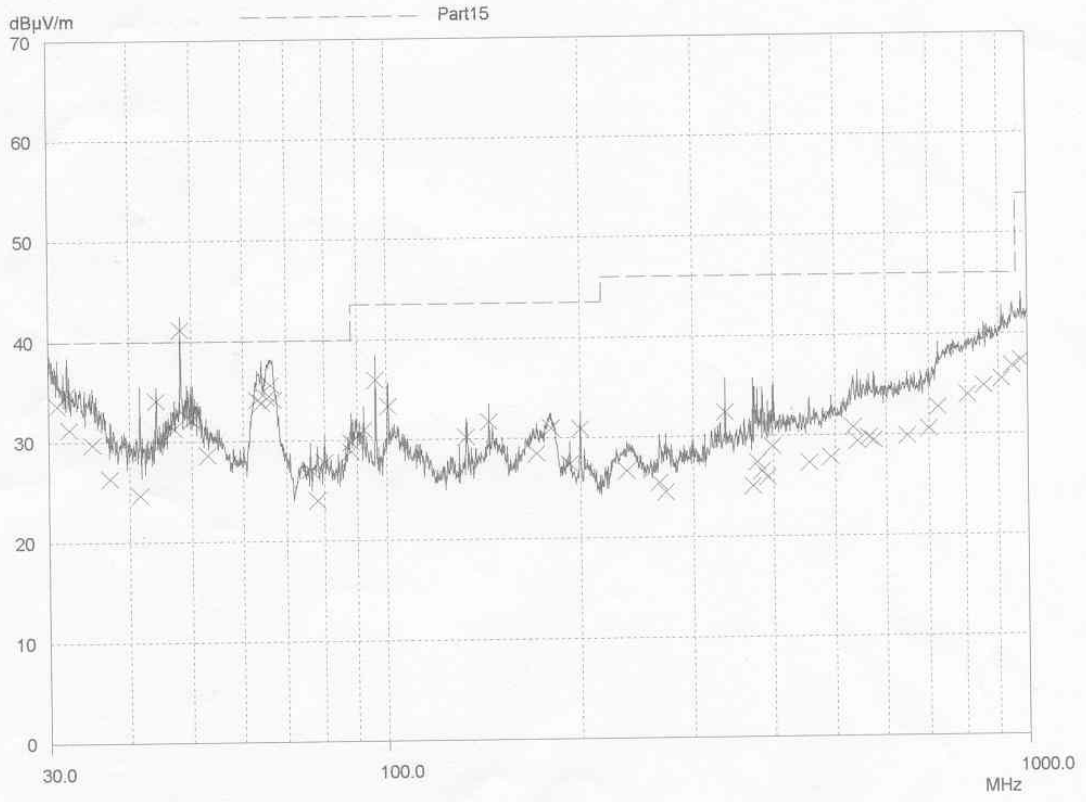
Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
30MHz	1000MHz	50kHz	120kHz	PK	1msec	Auto	ON	60dB

Transducer	No.	Start	Stop	Name
1	21	30MHz	1000MHz	UH72
	22	30MHz	1000MHz	UH191

Final Measurement:

Detector:	X QP
Meas Time:	2sec
Subranges:	50
Acc Margin:	10 dB



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ANNEX F

AC POWERLINE CONDUCTION GRAPH(s)

Powerline Conduction

22 Jun 2007 10:20

150kHz - 30MHz

EUT:	Admin reader
Manuf:	PAC International
Op Cond:	LISN UH05, cable UH21 & Receiver UH187
Operator:	S Hodgkinson
Test Spec:	EN55022 Class B (or Variant)
Comment:	Live Line, 110V, 60Hz
	Unit in Tx mode, no key present, PC & Pwr supply connected.

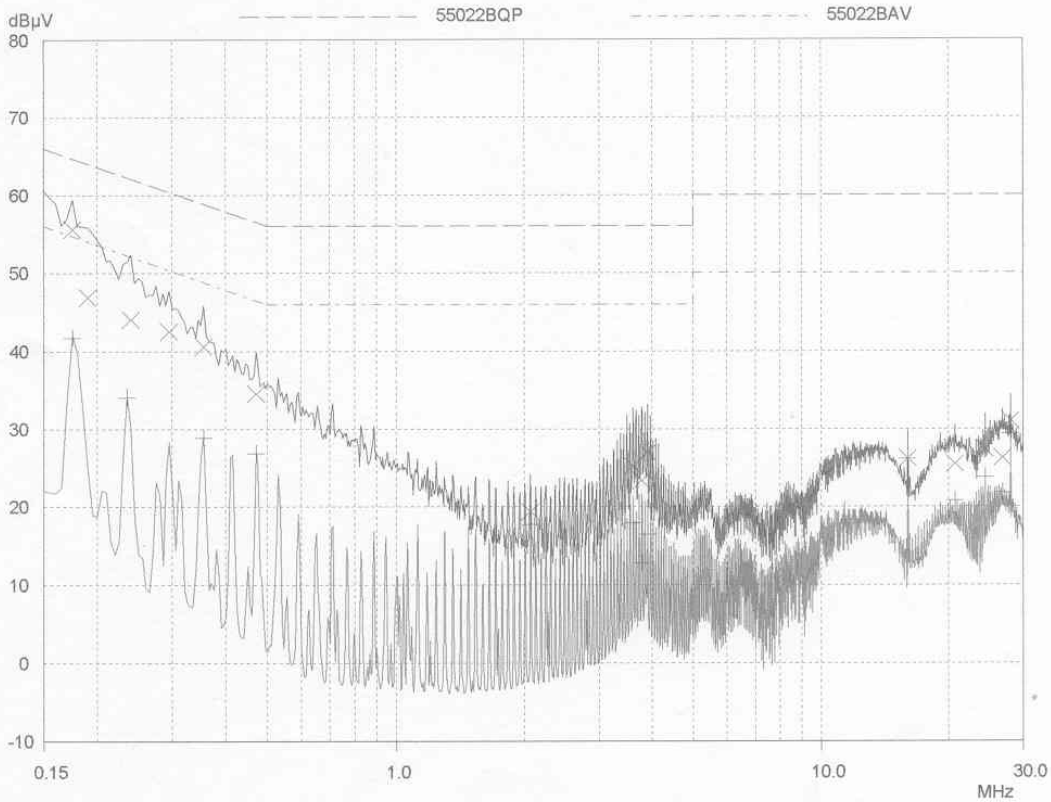
Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150kHz	30MHz	5kHz	10kHz	PK+AV	50msec	Auto	OFF	60dB

Transducer	No.	Start	Stop	Name
	1	10kHz	30MHz	UH21

Final Measurement:

Detectors:	X QP / + AV
Meas Time:	2sec
Subranges:	25
Acc Margin:	20 dB



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