

TEST REPORT NO: EU1065/1894

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REPORT ON THE
CERTIFICATION TESTING OF A
REILOR INC
RECEIVER
STAYWELL 51 LARGE ELECTRONIC SECURITY DOG DOOR
WITH RESPECT TO
THE FCC CFR47 15.107 15.109 UNINTENTIONAL
RADIATOR SPECIFICATION

TEST DATE: 26TH AUGUST 1998

TESTED BY:

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Notes:		
Component failure during test	YES	☐
	NO	☒

All measurement uncertainty calculations detailed in this report are carried out in accordance with DEF STAN 00-26, Issue 2 for a confidence 95% confidence level.

APPLICANT'S SUMMARY

EQUIPMENT UNDER TEST (EUT):	STAYWELL 51 LARGE ELECTRONIC DOG DOOR
EQUIPMENT TYPE:	SUPER REGENERATIVE RECEIVER
SERIAL NUMBER OF EUT:	A 0459 0798
PURPOSE OF TEST:	FCC CERTIFICATION
TEST SPECIFICATION:	FCC CFR47 15.107 15.109
RESULT OF TEST:	COMPLIANT YES [X] NO []
CATEGORY OF APPLICANT:	(a) MANUFACTURER [X] (b) IMPORTER [] (c) DISTRIBUTOR [X] (d) AGENT []
APPLICANT'S ORDER NO:	4650
APPLICANT CONTACT PERSON:	ALASTAIR REID
APPLICANT: ADDRESS:	REILOR LIMITED 175-a, 9 TH AVENUE RUNNEMEDE NJ 08078 USA TEL: + 609 939 5155 FAX: + 609 939 6655
MANUFACTURER: ADDRESS:	REILOR LIMITED ASTRA BUSINESS CENTRE ROMAN WAY PRESTON PR2 5AP TEL: +44 1772 793793 FAX: +44 1772 797877
EUT (S) COUNTRY OF ORIGIN:	UNITED KINGDOM
TEST LABORATORY:	TRL EMC Ltd
NAMAS ACCREDITATION NO:	0728
DATE OF TEST:	26 TH AUGUST 1998
TEST REPORT NO:	EU1065

EQUIPMENT TEST CONDITIONS

1.

EQUIPMENT SERIAL/MODEL NUMBER	CHANNEL NUMBER	RX NOMINAL FREQUENCY MHz	TESTS REQUIRED	REMARKS
A 0459 0798	1	433.9	FULL	N/A

2. Equipment category:
- Single channel [X]
 Two Channel []
 Multi-channel []
3. Supply voltages:
- (Rx) Vnom = 12V
 Vmin = N/A
 Vmax = N/A
4. Temperatures:
- Tnom = (See Test)
 Tmin = N/A
 Tmax = N/A
5. Maximum Bit Rate:
- bps = 1000bps

DESCRIPTION OF RECEIVER DEVICE ID NO:

Type:	SUPER REGENERATIVE RECEIVER
Model:	STAYWELL 51 LARGE ELECTRONIC SECURITY DOG DOOR
Carrier Frequency:	433.92 MHz
Local Oscillator:	433.92 MHz
Modulation:	AMPLITUDE MODULATION
Class of Emission:	10K0M1DEN
No. of Channels:	ONE
Utilisation:	LOW POWER TELECOMMAND
Antenna:	FIXED (INTEGRAL)
Alternative Antenna:	NONE - AS PER RULE 15.203

THE FOLLOWING TESTS ARE REQUIRED

RECEIVER TESTS

Receiver A.C. Mains Conducted Emissions (15.107a) [X]

Receiver Spurious Emissions (Radiated) - (15.109a) [X]

Notes:

Not Applicable

SAMPLE CALCULATIONS

1. Radiated Emissions

Frequency (MHz)	Rx Level (dBµV)	Distance Correction Factor 1m to 3.0m (dB)	Corrected Rx Level @ 3.0m (dBµV)	Antenna and cable correction factors (dB)	Field Strength @ 3.0m (dBµV/m)
32.45	10.3	N/A	N/A	17.6	27.9
127.65	-4.28	N/A	N/A	13.5	9.22

2. A.C. Supply Conducted Emissions

Frequency (MHz)	Rx Level (dBµV)	LISN and cable correction factors (dB)	Field Strength (dBµV)
23.3	23.3	0.8	24.1
25.2	25.3	1.35	26.65

RECEIVER TESTS

RECEIVER A.C. SUPPLY CONDUCTED EMISSIONS - (RULE 15.107a)

Ambient Temperature = 18°C (<1GHz), 23°C (>1GHz)
Relative Humidity = 62% (<1GHz), 52% (>1GHz)
Conditions = Laboratory
Supply Voltage = Nominal
Channel Number = 1

FREQUENCY (MHz)	Rx LEVEL (dB μ V)	LIMIT (dB μ V)
12.1	23.3	48
18.5	22.5	48
25.2	25.8	48
28.1	26.0	48

All other emissions less than noise floor.

Notes:

1. Measurements were taken using 50 Ω /50 μ H LISN
2. Receiver detector quasi peak, 10kHz bandwidth.
3. See sample calculation on page 6.

Test Method

As per RF emissions ANSI C63.4:1992
EUT 0.8 metres above ground plane

Test Equipment Used

Full description given in Annex B. TRLUH03, TRLUH05, TRLUH21.

Measurement Uncertainty

± 1.2 dB

RECEIVER SPURIOUS EMISSIONS (RADIATED) - (RULE 15.109a)

Ambient Temperature = 18°C (<1GHz), 23°C (<1GHz)
Relative Humidity = 62% (<1GHz), 52°C (>1GHz)
Conditions = Open Area Test Site
Supply Voltage = Nominal
Channel Number = 1

Frequency (MHz)	Rx Level @ 3m (dBµV/m)	1m to 3.0m (dB)	Rx Level @ 1m (dBµV/m)	Limit @ 3m (dBµV/m)
32.45	28.7	NIL	n/a	39
36.45	22.9	NIL	n/a	39
40.5	20.1	NIL	n/a	39
44.55	19.2	NIL	n/a	39
48.65	16.9	NIL	n/a	39
52.7	18.2	NIL	n/a	39
60.8	26.6	NIL	n/a	39
72.95	23.1	NIL	n/a	39
127.65	19.3	NIL	n/a	43.5

All other emissions less than noise floor.

1. Measurements < 1GHz @ 3m, as per Rule 15.109a.
2. Measurements >1GHz @ 1m, as per Rule 15.31f.
3. Extrapolation factor, as per Rule 15.31f, 20dB/Decade.
4. Receiver Detector < 1GHz = CISPR, Quasi-Peak, 120kHz Bandwidth
5. Receiver Detector > 1GHz = Peak Hold, 100kHz Resolution Bandwidth
6. Sample Calculations, see Page 6.
7. Search to 4.5GHz as per Rule 15.33a1/15.33b1

Test Method

As per RF emissions ANSI C63.4:1992

Measuring distances as per notes 1 & 2 above

EUT 1 metre above ground plane

Emissions maximised by rotation of EUT on an automatic turntable, raising/lowering the antenna between 1m & 4m in horizontal and vertical polarisations, with worst case results recorded

Test Equipment Used

Full description given in Annex B.

TRLUH04, TRLUH06, TRLUH16, TRLUH17, TRLUH72, TRLUH93.

Measurement Uncertainty

± 4.0dB

Cohered?

ANNEX B

TEST EQUIPMENT LIST

Instruments	Supplier	Type No	Serial No	EMC No
ESD GUN	SCHAFFNER	NSG 435	258	TRLUH 01
SIGNAL GENERATOR	MARCONI	2022D	119164/030	TRLUH 02
TEST RECEIVER	ROHDE AND SCHWARZ	ESHS10	830051/001	TRLUH 03
TEST RECEIVER	ROHDE AND SCHWARZ	ESVS10	825892/06	TRLUH 04
ARTIFICIAL MAINS NETWORK	ROHDE AND SCHWARZ	ESH3-Z5	863906/018	TRLUH 05
RANGE 1 (3M)	TRL	N/A	N/A	TRLUH 06
RANGE 2 (10M)	TRL	N/A	N/A	TRLUH 07
		MOVED TO LONG	GREEN	TRLUH 08
FAST TRANSIENT BURST GENERATOR	SCHAFFNER	NSG 1025	390	TRLUH09
ESHS10 PRINTER LEAD	ROHDE AND SCHWARZ	N/A	N/A	TRLUH 10
EVS10 PRINTER LEAD	ROHDE AND SCHWARZ	N/A	N/A	TRLUH 11
LISN REMOTE LEAD		N/A	N/A	TRLUH 12
AR ISOTROPIC FIELD MONITOR FM 1000	EMV	FM 1000	12379	TRLUH 13
PRINTER	PANASONIC	KX-P1123		TRLUH 14

TEST EQUIPMENT LIST

Instrument	Supplier	Type No	Serial No	EMC No
AR 50A220 AMP	EMV	50A 220	N/A	TRLUH 15
MAST CABLE	TRL	N/A	N/A	TRLUH 16
WALL TO RECEIVER CABLE	TRL	N/A	N/A	TRLUH 17
LONG CABLE	TRL	N/A	N/A	TRLUH 18
HELMHOLTZ AMP	TRL	N/A	N/A	TRLUH 19
AR ISOTROPIC FIELD PROBE	EMV	FP1000	12386	TRLUH 20
BNC LEAD LISN			N/A	TRLUH 21
BNC LEAD ABSORBING CLAMP MDS21			N/A	TRLUH 22
LOOP ANTENNA	ROHDE AND SCHWARZ	HFH2-22	892246/023	TRLUH 23
OSCILLOSCOPE	R & S	BECKMAN 9302	3010064	TRLUH 24
TEM CELL	TRL	N/A	N/A	TRLUH 25
4M ANTENNA MAST	SCHAFFNER	N/A	N/A	TRLUH 26
DI POLE	TRL	N/A	N/A	TRLUH 27
LOG PERIODIC ANTENNA		UHALP 9108		TRLUH 28
BI-CONE ANTENNA BALUN ELEMENTS		VHBA 9123		TRLUH 29
COUPLING CLAMP	SCHAFFNER	CDN 125	272	TRLUH 30

TEST EQUIPMENT LIST

Instruments	Supplier	Type No	Serial No	EMC No
HELMHOLZ COILS	TRL	N/A	N/A	TRLUH 31
CLAMP		MDS21	N/A	TRLUH 32
FUNCTION GENERATOR	RS TG210	THURLBY THANDAR	TG 210	TRLUH 33
VARIABLE TRANSFORMER	RS	8A	207-914	TRLUH 34
GPIB ADAPTER MODULE	MARCONI			TRLUH 35
286 COMPUTER'S PRINTER LEAD				TRLUH 36
25W AMPLIFIER	EMV	25W1000 M7	12567	TRLUH 37
FIBRE OPTIC CABLE FC1015	TRL	N/A	N/A	TRLUH 38
SHEET C101 COPPER	MERSEY METALS	N/A	N/A	TRLUH 39
				TRLUH 40
MULTIMETER	R.S COMPS.	M3004	M3270006	TRLUH 41
COMBINATION WAVE GENERATOR	SCHAFFNER	CWG4-100	931520	TRLUH 42
SURGE GENERATOR	HAFELEY	N/A	N/A	TRLUH 43
COUPLING FILTER	HAFELEY	FP6/1-3	FP6-1/3-080612-02-85	TRLUH 44

TEST EQUIPMENT LIST

Instruments	Supplier	Type No	Serial No	EMC No
TEST SYSTEM CONTROL UNIT BURST TESTER	HAFELEY	PB1	PB-080743 -06-86	TRLUH 45
IMPULSE TESTER	HAFELEY	PU12	PU12-080550 -04-84	TRLUH 46
286 COMPUTER	PC CITY	VICTOR		TRLUH 47
KEYBOARD FOR RECEIVER	N/A	N/A	N/A	TRLUH 48
KEYBOARD FOR RECEIVER	N/A	N/A	N/A	TRLUH 49
CAMCORDER	PANASONIC	NVM C 20	IOHA00893 CAMERA	TRLUH 50 TRL 232
CAMCORDER MONITOR	PANASONIC	DM2 1454	37B12000332	TRLUH 51
DC POWER SUPPLY	ISO-TECH	IPS303D	9462063	TRLUH52
INTERSERIES ADAPTOR KIT	RS	N/A	N/A	TRLUH 53
CAMCORDER	PANASONIC	NV-R50	E3MD01650	TRLUH 54
BAROMETER	STAIGER	N/A	N/A	TRLUH 55
ESD GUN	SCHAFFNER	NSG431	1194	TRLUH 56
TEMPERATURE & HUMIDITY METER	PAINT TEST	5065	43197	TRLUH 57
VOLTAGE PROBE	TRL EMC	N/A	N/A	TRLUH 58
IEC 801-6 JIG	TRL	CDN801-M2	N/A	TRLUH 59
IEC 801-6 JIG	TRL	CDN801-M2	N/A	TRLUH 60
IEC 801-6 JIG	TRL	CDN801-M3	N/A	TRLUH 61
IEC 801-6 JIG	TRL	CDN801-M3	N/A	TRLUH 62
CURRENT PROBE	COMTEST	9145-1	946612	TRLUH 63
INJECTION PROBE	COMTEST	9144-1N	935709	TRLUH 64

TEST EQUIPMENT LIST

Instruments	Supplier	Type No	Serial No	EMC No
IMMUNITY ANTENNA	AMPLIFIER RESEARCH	AT1080	15342	TRLUH 65
MAX/MIN HYGROMETER	RS	212-124	66	TRLUH 66
THERMOMETER				
	RS		67	TRLUH 67
	RS		68	TRLUH 68
	RS		69	TRLUH 69
BILOG ANTENNA	CHASE EMC	CBL6111	1519	TRLUH 70
DC POWER SUPPLY	TRL EMC	N/A	N/A	TRLUH 71
E-FIELD PRESCAN CABLE	TRL EMC	N/A	TRLUH72	TRLUH72
ATTENUATOR 6dB, 10W	BIRD	8304-060-N	N/A	TRLUH73
ATTENUATOR 5dB, 75W	BIRD	8308-060-N	N/A	TRLUH74
SIGNAL GENERATOR	MARCONI	2022D	119215/058	TRLUH75
3 PHASE LISN	SCHAFFNER	NSLK8128	164	TRLUH76
100W AMPLIFIER	AMPLIFIER RESEARCH	100W1000M1	16401	TRLUH77
VOLTAGE PROBE	TRL	N/A	N/A	TRLUH78
3 PHASE CDN	TRL	N/A	N/A	TRLUH79
3 PHASE VARIAC	TRL	N/A	N/A	TRLUH80
REFERENCE IMPEDANCE	TRL	N/A	N/A	TRLUH81
NSG 600 MAINFRAME	SCHAFFNER	NSG600	3058	TRLUH82
FAST TRANSIENT PLUG IN	SCHAFFNER	NSG 625	3040	TRLUH83
VOLTAGE DIPS PLUG IN	SCHAFFNER	NSG 603A	342	TRLUH84
ESD GUN	SCHAFFNER	NSG435	1622	TRLUH85
CURRENT INJECTION PROBE	SOLAR ELECTRONICS	9120-1N	956419	TRLUH86
CURRENT INJECTION PROBE	SOLAR ELECTRONICS	9108-1N	956420	TRLUH87

TEST EQUIPMENT LIST

Instruments	Supplier	Type No	Serial No	EMC No
CURRENT INJECTION PROBE	SOLAR ELECTRONICS	9120-1N	956417	TRLUH 88
SIGNAL GENERATOR	MARCONI	2022D	119224/035	TRLUH 89
SPECTRUM ANALYSER	TAKEDA RIKEN	TR4132	33950335	TRLUH 90 was TRL04
ONSITE TEST CABLE	TRL	N/A	N/A	TRLUH 91
ONSITE VOLTAGE PROBE	TRL	N/A	N/A	TRLUH 92
BILOG ANTENNA	CHASE	CBL6112	2006	TRLUH 93
DIRECTIONAL COUPLER	AMPLIFIER RESEARCH	DC3010	17472	TRLUH 94
DIRECTIONAL COUPLER	AMPLIFIER RESEARCH	DC6180	17671	TRLUH 95
RF POWER METER	MARCONI	6960B		TRLUH 96
RF POWER SENSOR	MARCONI	6912	1202	TRLUH 97
COUPLING CLAMP	SCHAFFNER	CDN 125		TRLUH 98
CLAMP METER	LEM-HEME	LH630		TRLUH 99
DC SUPPLY	THANDOR	PL320QMD	044749	TRLUH 100
ESPC RECEIVER	ROHDE AND SCHWARZ	ESPC	843756/007	TRLUH 101
UHF/FM TRANSMITTER	CLEARTONE	CH150 c/w battery charger and spare battery	CG56847	TRLUH 102
100W AMPLIFIER	AMPLIFIER RESEARCH	100W1000M1A	18816	TRLUH 103
75W AMPLIFIER	AMPLIFIER RESEARCH	75A250	18951	TRLUH 104
SIGNAL GENERATOR	MARCONI	2023	112224/040	TRLUH 105
ANECHOIC CHAMBER	MA INSTRUMENTS	MAC 4	CHAMBER 1008 CONTROL UNIT 1024	TRLUH 106
POWER AMPLIFIER 50W	AR	50W1000A	19528	TRLUH 107
RFS CHAMBER	TRL EMC	N/A	N/A	TRLUH 108
3PHASE B-O-B	TRL EMC	N/A	N/A	TRLUH 109

TEST EQUIPMENT LIST

Instruments	Supplier	Type No	Serial No	EMC No
THERMOMETER /BAROMETER	RS	RS 206-2892	110	TRLUH 110
THERMOMETER /BAROMETER	RS	RS 206-2892	111	TRLUH 111
RF SENSOR	TRL EMC	N/A	N/A	TRLUH 112
CDN - 25WAY D	MEB	S25	12397	TRLUH 113
CDN - 3WIRE	MEB	M3	12869	TRLUH 114
CDN - COAX	MEB	S1/50	12270	TRLUH 115
CDN - 9 WAY D	MEB	S9	12352	TRLUH 116
CDN - 3 WIRE	MEB	M3	12868	TRLUH 117
RF SENSOR	TRL EMC	N/A	N/A	TRLUH 118
RF SENSOR	TRL EMC	N/A	N/A	TRLUH 119
SPECTRUM ANALYSER	MARCONI	2386/2380	152089/009 152076/044	TRLUH 120
ATTENUATOR 6dB	BIRD	8308-060-N	N/A	TRLUH 121
OSCILLOSCOPE	TEKTRONIX	TDS520B	B020491	TRLUH 122
BOW TIE ANTENNA	MA	NA	NA	TRLUH 123
DIRECTIONAL COUPLER	AMPLIFIER RESEARCH	DC2600	20706	TRLUH 124
DIRECTIONAL COUPLER	AMPLIFIER RESEARCH	DC6180	20736	TRLUH 125
POWER SENSOR	MARCONI	6924	951206/002	TRLUH 126
POWER METER	MARCONI	6960B	237034/001	TRLUH 127
POWER METER	MARCONI	6960B	237036/001	TRLUH 128
POWER SENSOR	MARCONI	6924	951206/006	TRLUH 129
CURRENT PROBE	AH SYSTEMS	BCP-200/529	101	TRLUH 130
POWER SENSOR	MARCONI	6912	955135/004	TRLUH 131
POWER METER	MARCONI	6960B	237034/019	TRLUH 132
LOOP ANTENNA	TRL EMC	UH133	NA	TRLUH 133
CURRENT PROBE	AH SYSTEMS	BCP-200/529	104	TRLUH 134
CDN M2	MEB	M2	12109	TRLUH 135
9125 CAL JIG	COMTEST	9125-1	UH136	TRLUH 136
TACHOMETER	RS COMPONENTS	N/A	153910	TRLUH 137

TEST EQUIPMENT LIST

[illegible]

ANNEX C

LIST OF APPLICANT'S SUBMISSION OF DOCUMENTATION

8.	REGULATORY (NOTIFIED) BODY	-	APPLICATION	[X]
		-	FEE	[X]
9.	LETTER OF AUTHORISATION			[X]
10.	QUESTIONNAIRE			[X]
11.	TRADE NAME DECLARATION (S)			[X]
12.	LABELLING	-	PHOTOGRAPHS	[X]
		-	DECLARATION	[X]
		-	DRAWINGS	[X]
13.	TECHNICAL DESCRIPTION			[X]
14.	BLOCK DIAGRAMS	-	Rx	[X]
		-	PSU	[]
		-	AUX	[]
15.	CIRCUIT DIAGRAMS	-	Rx	[X]
		-	PSU	[]
		-	AUX	[]
16.	COMPONENT LOCATION	-	Rx	[X]
		-	PSU	[]
		-	AUX	[]
17.	PCB TRACK LAYOUT	-	Rx	[X]
		-	PSU	[]
		-	AUX	[]
18.	BILL OF MATERIALS	-	Rx	[X]
		-	PSU	[]
		-	AUX	[]
19.	USER INSTALLATION/OPERATING INSTRUCTIONS			[X]



Super Regenerative Radio Receiver

RR3 - 433.92

Part List

REF	Description			Geometry
R1	78K	+/-2%		
R3	1.5K	+/-2%		
R4	171K	+/-1%		
R5	10K	+/-2%		
R6	5.08K	+/-1%		
R7	4.7K	+/-2%		
R8	1K	+/-2%		
R9	56K	+/-1%		
R10	56K	+/-1%		
R11	56K	+/-1%		
R12	750K	+/-2%		
R17	53.5K	+/-1%		
R30	120K	+/-1%		
C2	1.8pF	+/- 0.25pF	50V	08.05
C3	220pF	+/-5%	50V	08.05
C5	33pF	+/-5%	50V	08.05
C6	3.3pF	+/- 0.25pF	50V	08.05
C7	390pF	+/-5%	50V	08.05
C8	3.9pF	+/- 0.25pF	50V	08.05
C9	2.2uF	+/-20%	7V	CT5E
C10	10nF	+/-10%	50V	08.05
C11	100nF	-20+80%	25V	08.05
C12	33pF	+/-5%	50V	08.05
C13	3.3nF	+/-10%	50V	08.05
L2	10uH	+/-10%		3.2X2.5
T1		BFS17P		SOT 23
T2		BFS17P		SOT 23
IC1		LM 2904		SO8

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25/25