

REPORT ON THE CERTIFICATION TESTING OF A
ROCHFORD THOMPSON
RTE8000 RFID FULL PAGE READER
WITH RESPECT TO
THE FCC RULES CFR 47, PART 15.225
INTENTIONAL RADIATOR SPECIFICATION





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REPORT ON THE CERTIFICATION TESTING OF A ROCHFORD THOMPSON RTE8000 RFID FULL PAGE READER WITH RESPECT TO THE FCC RULES CFR 47, PART 15.225 INTENTIONAL RADIATOR SPECIFICATION

TEST DATE:	21 st – 22 nd May 2007

TESTED BY	' :		<u> </u>	D WINSTANLEY
APPROVED	BY:			J CHARTERS RADIO SECTION LEADER
DATE:		19 th July 2007		
Distribution:				
Copy Nos:	1.	Rochford Thompson		
	2	FCC EVALUATION LABORATORIES		

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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.

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PURPOSE OF TEST:	Certification, Class II Permissive Change				
TEST SPECIFICATION:	FCC RULES CFR 47, Part 15.225				
TEST RESULT:	Compliant to Specification				
EQUIPMENT UNDER TEST:	RTE8000 RFID Full Page Reader				
EQUIPMENT SERIAL No:	5RL10881				
EQUIPMENT TYPE:	Inductive Reader				
PRODUCT USE:	Full Page Passport Reader				
CARRIER EMISSION:	170.22 μV/m @ 30m				
ANTENNA TYPE:	Integral				
ALTERNATIVE ANTENNA:	Not Applicable				
FREQUENCY OF OPERATION:	13.56 MHz				
CHANNEL SPACING:	Not Applicable				
NUMBER OF CHANNELS:	1				
FREQUENCY GENERATION:	SAW Resonator [] Crystal []	Synthesiser [X]			
MODULATION METHOD:	Amplitude [] Digital []	Angle [X]			
POWER SOURCE(s):	+110Vac				
TEST DATE(s):	21 st – 22 nd May 2007				
ORDER No(s):	3662				
APPLICANT:	Rochford Thompson				
ADDRESS:	The Votec Centre Hambridge Lane Newbury Berkshire RG14 5NT				
TESTED BY:		D WINSTANLEY			
APPROVED BY:		J CHARTERS RADIO SECTION LEADER			

TULRTFPRV2

FCC IDENTITY:



APPLICANT'S SUMMARY

EQUIPM	MENT UNDER TEST (EUT):	RTE8000 RFID Full Page Reader			
EQUIPM	MENT TYPE:	Inductive Reader			
SERIAL	NUMBER OF EUT:	5RL10881			
PURPO	SE OF TEST:	Certification, Class	II Permi	ssive Change	
TEST SI	PECIFICATION(s):	FCC RULES CFR	47, Part	15.225	
TEST R	ESULT:	COMPLIANT	Yes No	[X] []	
APPLIC	ANT'S CATEGORY:	MANUFACTURER IMPORTER DISTRIBUTOR TEST HOUSE AGENT		[X] [] [] []	
APPLIC	ANT'S ORDER No(s):	3662			
APPLIC	ANT'S CONTACT PERSON(s):	Mr R Edwards			
	E-mail address:	roger.edwards@rte	.co.uk		
APPLIC	ANT:	Rochford Thompso	n		
	ADDRESS:	The Votec Centre Hambridge Lane Newbury Berkshire RG14 5NT			
	TEL:	+44 (0) 1635 580 6	66		
	FAX:	+44 (0) 1635 369 4	0		
MANUF	ACTURER:	Rochford Thompso	n		
EUT(s)	COUNTRY OF ORIGIN:	United Kingdom			
TEST LA	ABORATORY:	TRL Compliance Lt	td		
UKAS A	CCREDITATION No:	0728			
TEST D	ATE(s)	21 st – 22 nd May 200	07		
TEST R	EPORT No:	RU1330/7598			

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EQUIPMENT TEST / EXAMINATIONS REQUIRED

1.	TEST/EXAMINATION	RULE PART	DETECTOR	APPLICABILITY
	Intentional Emission Frequency:	15.225(a)	Quasi-Peak	Yes
	Intentional Emission Field Strength:	15.225(a)	Quasi-Peak	Yes
	Intentional Emission Band Occupancy:	12.255(e)	Peak	Yes
	Intentional Emission ERP (mW):	-	-	No
	Spurious Emissions – Conducted:	15.207	Quasi-Peak Average	Yes
	Spurious Emissions – Radiated <1000MHz:	15.209	Quasi-Peak	Yes
	Spurious Emissions – Radiated >1000MHz:	15.209	Average	Yes
	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:	Full Page Passport R	teader
3.	Duty Cycle:		<100 %
4.	Maximum transmitter bit or pulse rate and level:		847.5kbps
5.	Temperatures:	Ambient (Tnom)	20°C
6.	Supply Voltages:	Vnom	+110 Vac
	Note: Vnom voltages are as stated above unless other	rwise shown on the tes	t report page
7.	Equipment Category:	Single channel Two channel Multi-channel	[X] [] []
8.	Channel spacing:	Narrowband Wideband	[] [X]

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TRANSMITTER TESTS

TRANSMITTER SPURIOUS EMISSIONS - RADIATED - PART 15.209

Ambient temperature [X] [X] [X] $20^{\circ}\text{C}(<1\text{GHz})$ 3m measurements <1GHz 55% (<1GHz), Open Area Test Site (OATS) 10m measurements <30MHz = 30m extrapolated from 10m

Supply voltage Channel number +110Vac

	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 - 0.490MHz								
0.490MHz - 1.750MHz								
1.705Mhz - 30.0MHz								
30MHz - 88MHz	40.7 54.3 55.0 66.7 67.8	20.41 21.14 19.43 22.37 24.48	0.99 1.16 1.17 1.23 1.22	12.2 6.1 5.9 5.1 5.2	33.6 28.4 26.5 28.7 30.9	- - - -	47.86 26.30 21.13 27.23 35.07	100 100 100 100 100
88MHz - 216MHz	108.50 120.00 122.05 135.60 149.15 162.70 176.30 189.85 203.40 216.95 240.00 366.10	23.43 22.56 19.55 23.58 28.00 30.25 28.38 30.40 31.68 29.09 27.50 24.55	1.47 1.57 1.56 1.62 1.70 1.75 1.82 1.90 1.92 2.01 2.10 2.55	10.70 11.57 11.59 11.50 10.60 10.00 9.00 8.10 8.10 9.10 10.30 14.30	35.6 35.7 32.7 36.7 40.3 42.0 39.2 40.4 41.7 40.2 39.9 41.4	-	60.25 60.95 43.15 68.39 103.51 125.89 91.20 104.71 121.62 102.33 98.85 117.49	150 150 150 150 150 150 150 150 150 150
216MHz - 960MHz								
960MHz - 1GHz								
1GHz - 5GHz								
	0.009M	Hz to 0.4	90MHz		2400/F(kł	Hz) @ 30	0m	
	0.490M	Hz to 1.7	05MHz		24000/F(kl	Hz) @ 30	m	
	1.705	MHz to 30	0MHz		30µ\	//m @ 30	m	
Limita	30M	Hz to 88N	ИНz		100µ∖	//m @ 3	m	
Limits	88MI	Hz to 216	MHz		150µ\	//m @ 3	m	
	216M	Hz to 960	OMHz		200µ\	//m @ 3	m	
	9601	MHz to 10	GHz		500µ∖	//m @ 3	m	
	1G	Hz to 5G	Hz		500µ∖	//m @ 3	m	

See next page for notes and test method:

RU1330/7598 Page 7 of 37 Notes:

- Results quoted are extrapolated as indicated
- 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 from 10m to 30m, as per Part 15.31f
- Measurements >1GHz @ 1m as per Part 15.31f(1)
 Receiver detector >1GHz = CISPR, Quasi-Peak, 120kHz bandwidth
- Receiver detector >1GHz = Peak Hold, 1MHz resolution bandwidth
- New batteries used for battery powered products.
- Emissions 20 dB's below the limit were not necessarily recorded.
- 10 For emissions below 30MHz the measuring receiver automatically compensates for the loss due to the antenna factor of the loop antenna. This loss is 20 dB's across the measurement range 9kHz to 30MHz.
- For emissions below 30MHz the cable losses are assumed to be negligible. 11

Test Method:

- As per Radio Noise Emissions, ANSI C63.4: 2003
- Measuring distances as Notes 1 to 4 above
- EUT 0.8 metre above ground plane 3
- 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.

EUT orientation in three orthagonal planes.

Maximum results recorded.

The test equipment used for the Transmitter Spurious Emissions - Radiated - Part 15.209 tests 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
RECEIVER	ROHDE & SCHWARZ	ESHS 10	841429/012	UH187	х
RECEIVER	ROHDE & SCHWARZ	ESVS 10	825892/003	UH04	х
RANGE 1	TRL	3 METRE	N/A	UH06	x
RANGE 1	TRL	10 METRE	N/A	UH07	х
BILOG ANTENNA	YORK	CBL611/A	1618	UH191	х

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TRANSMITTER TESTS

TRANSMITTER INTENTIONAL EMISSION - RADIATED - Part 15.225

Ambient temperature	=	14°C(<1GHz),	3m measurements @ fc	[X]
Relative humidity	=	67%(<1GHz),	10m measurements @ fc	[X]
Conditions	=	Open Area Test Site (OATS)	30m measurements @ fc	[]
Supply voltage	=	+110Vac	30m extrapolated from 3m	[X]
Channel number	=	1	30m extrapolated from 10m	[X]

FREQ. (MHz)	MEASUREMENT DISTANCE Meters	MEASUREMENT Rx. READING (dBμV/m)	EXTRAP. FACTOR (dB)	FIELD STRENGTH (µV/m)
13.5592	3	83.1	38.48	170.22
13.56592	10	63.7	19.08	170.22
Limit value	@ fc	15,84	·8(μV/m)	
Band occupancy @ -20dBc		f lower	f h	igher
		13.55791 MHz	13.560	056 MHz

See Annex F for band occupancy & Mask compliance plots

Notes:

- 1 Results quoted are extrapolated as indicated
- The 3m 10m extrapolation factor is 19.41dB calculated from the results above. Extrapolation factor 10m - 30m is 19.08dB using the extrapolation factor of 40dB/decade as per 15.31(f)
- 2 Receiver detector @ fc = Quasi Peak 10kHz bandwidth
- 3 When battery powered the EUT was powered with new batteries
- 5 For emissions below 30MHz the measuring receiver automatically compensates for the loss due to the antenna factor of the loop antenna. This loss is 20 dB's across the measurement range 9kHz to 30MHz.
- The results quoted are the maximum seen after the supply voltage was varied between 85% and 115%.
- 7 For emissions below 30MHz the cable losses are assumed to be negligible.

Test Method:

- 1 As per Radio Noise Emissions, ANSI C63.4: 2003
- 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. Horizontal and vertical polarisations, of the receive antenna.

EUT orientation in three orthagonal planes.

Maximum results recorded

The test equipment used for the Transmitter Intentional Emission – Radiated – Part 15.225 tests 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
RECEIVER	ROHDE & SCHWARZ	ESHS 10	841429/012	UH187	х
RANGE 1	TRL	3 METRE	N/A	UH06	х
RANGE 1	TRL	10 METRE	N/A	UH07	х

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TRANSMITTER TESTS

TRANSMITTER CONDUCTED EMISSIONS - AC POWER LINE Part 15.207

Ambient temperature = $20^{\circ}C(<1GHz)$, Relative humidity = 55%(<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 (dΒμV)
0.195	35.30	Average	Neutral	53.82
0.200	39.76	Average	Live	53.61
0.265	41.18	Average	Live	51.27
0.330	40.53	Average	Live	49.45
0.395	40.20	Average	Live	47.96
0.460	39.79	Average	Neutral	46.69
0.530	43.43	Average	Live	46.00
0.595	40.65	Average	Live	46.00
0.655	34.15	Average	Neutral	46.00
0.730	42.20	Average	Live	46.00
0.790	38.24	Average	Neutral	46.00
0.855	38.79	Average	Neutral	46.00
1.125	27.67	Average	Live	46.00
1.260	32.15	Average	Live	46.00
1.380	26.68	Average	Neutral	46.00
13.56	58.51	Average	Live	50.00
13.56*	1.04	Average	Live	50.00
27.12	43.39	Average	Live	50.00

Notes: 1 See attached plot

Test Method: 1 As per Radio – Noise Emissions, ANSI C63.4: 1992

2 * Dummy antenna fitted as per

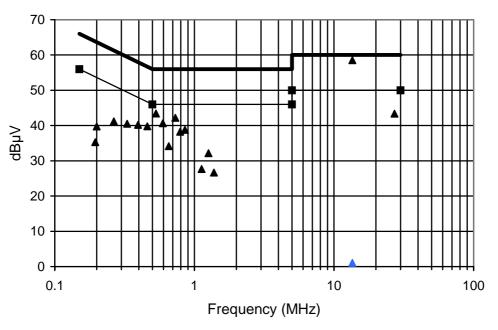
The test equipment used for the Transmitter Conducted Emissions – AC Power Line Part 15.207 test was:

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-Z5.813.5	8407 31/015	UH195	х

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POWER LINE CONDUCTION EMISSIONS

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



- —QP Limit
- —**■** Av Limit

- ◆ QP Emission
- ▲ AV Emission
- AV Emission Dummy Antenna

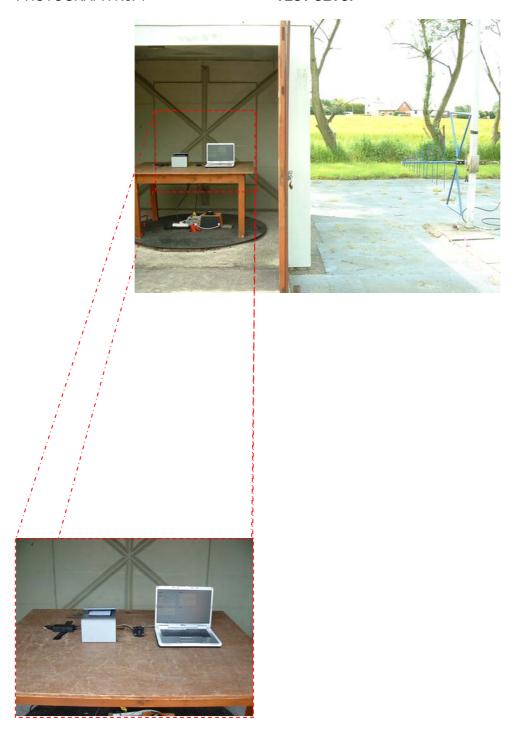
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ANNEX A PHOTOGRAPHS

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PHOTOGRAPH No. 1

TEST SETUP



PHOTOGRAPH No. 2 RF MODULE TOP VIEW



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PHOTOGRAPH No. 3

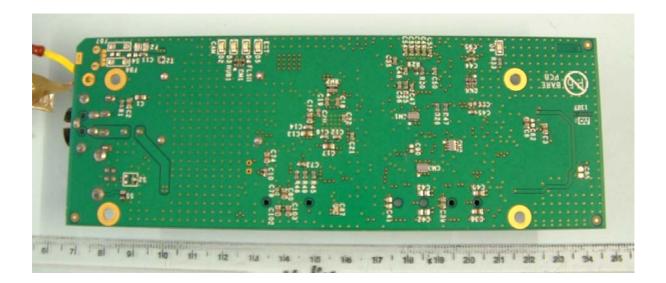
RF MODULE BOTTOM VIEW



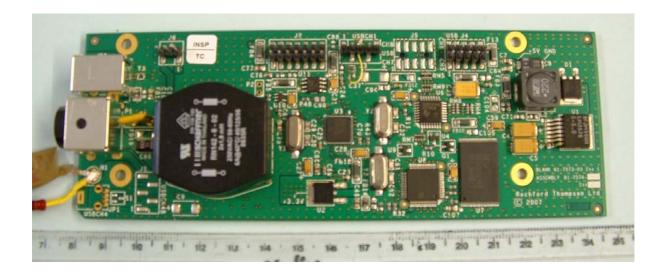
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PHOTOGRAPH No. 4

HUB PCB TRACK SIDE

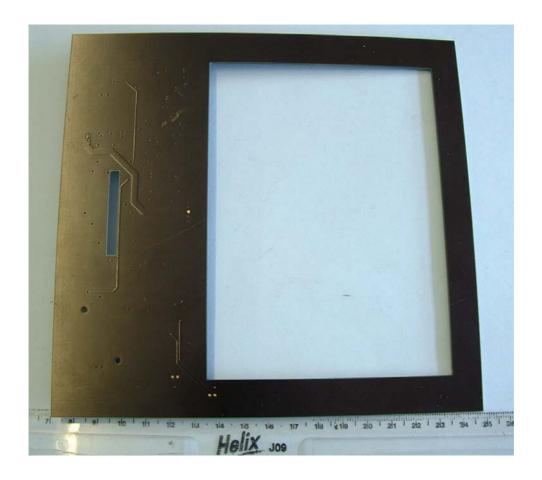


PHOTOGRAPH No. 5 HUB PCB COMPONENT SIDE



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PHOTOGRAPH No. 6 ANTENNA PCB TRACK SIDE



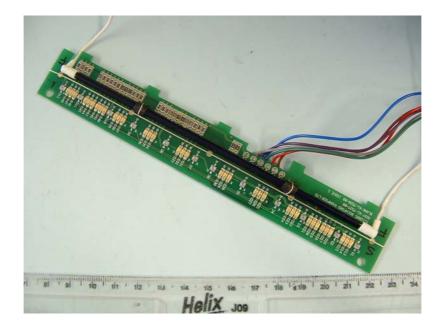
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PHOTOGRAPH No. 7 ANTENNA PCB COMPONENT SIDE RF MODULE MOUNTED



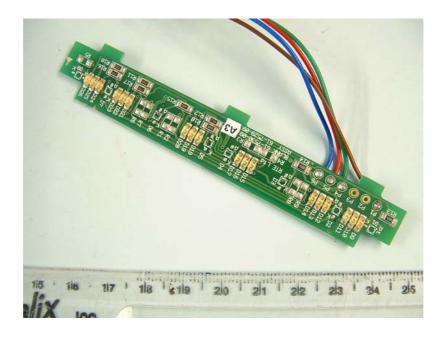
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PHOTOGRAPH No. 8 LONG ILLUMINATION PCB COMPONENT SIDE



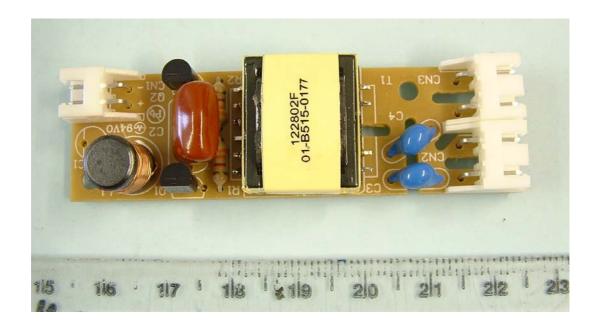
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PHOTOGRAPH No. 9 SHORT ILLUMINATION PCB COMPONENT SIDE



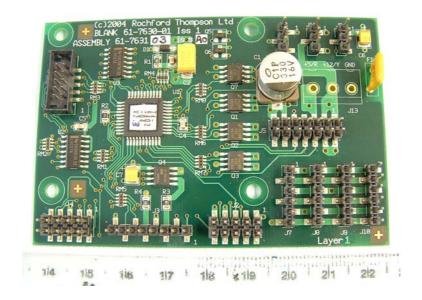
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PHOTOGRAPH No. 10 PSU PCB COMPONENT SIDE



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PHOTOGRAPH No. 11 LIGHTING CONTROL PCB COMPONENT SIDE



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ANNEX B APPLICANT'S SUBMISSION OF DOCUMENTATION LIST

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APPLICANT'S SUBMISSION OF DOCUMENTATION LIST

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

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ANNEX C MEASUREMENT UNCERTAINTY

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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 8.1 \text{GHz} = 3.31 \text{dB} Uncertainty in test result (Equipment TRL479) 8.1 \text{GHz} - 15.3 \text{GHz} = 4.43 \text{dB} Uncertainty in test result (Equipment TRL479) 15.3 \text{GHz} - 21 \text{GHz} = 5.34 \text{dB} Uncertainty in test result (Equipment TRLUH120) Up to 26 \text{GHz} = 3.14 \text{dB}
```

[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

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[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%

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ANNEX D TEST EQUIPMENT CALIBRATION

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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
UH006	3m NSA CAL	TRL	19/01/2007	12	19/01/2008
UH007	10m NSA CAL	TRL	19/01/2007	12	19/01/2008
UH028	Log Periodic Ant	Schwarbeck	28/04/2005	24	28/04/2007
UH029	Bicone Antenna	Schwarbeck	27/04/2005	24	27/04/2007
UH041	Multimeter	AVOmeter	04/01/2007	12	04/01/2008
UH122	Oscilloscope	Tektronix	07/06/2005	24	07/06/2007
UH132	Power meter	Marconi	10/01/2007	12	10/01/2008
UH162	ERP Cable Cal	TRL	02/01/2007	12	02/01/2008
UH187	Receiver	R&S	11/10/2006	12	11/10/2007
UH191	Bilog Antenna	York	11/08/2006	24	11/08/2008
UH195	LISN	R&S	09/01/2007	12	09/01/2008
UH228	Power Sensor	Marconi	15/01/2007	12	15/01/2008
UH253	1m Cable N type	TRL	07/12/2006	12	07/12/2007
UH254	1m Cable N type	TRL	07/12/2006	12	07/12/2007
UH265	Notch filer	Telonic	11/01/2006	24	11/01/2008
UH269	1m Cable N type	TRL	07/12/2006	12	07/12/2007
UH270	1m Cable N type	TRL	07/12/2006	12	07/12/2007
UH271	1.5m Cable N type	TRL	07/12/2006	12	07/12/2007
UH272	1.5m Cable N type	TRL	07/12/2006	12	07/12/2007
UH273	2m Cable N type	TRL	07/12/2006	12	07/12/2007
UH274	2m Cable N type	TRL	07/12/2006	12	07/12/2007
UH281	Spectrum Analyser	R&S	24/07/2006	12	24/07/2007
L005	CMTA	R&S	10/01/2007	12	10/01/2008
L007	Loop Antenna	R&S	22/05/2007	24	22/05/2009
L138	1-18GHz Horn	EMCO	15/04/2005	24	15/04/2007
L139	1-18GHz Horn	EMCO	03/05/2005	24	03/05/2007
L176	Signal Generator	Marconi	01/03/2007	12	01/03/2008
L193	Bicone Antenna	Chase	12/10/2003	24	12/10/2005
L203	Log Periodic Ant	Chase	21/10/2003	24	21/10/2005
L343	CCIR Noise Filter	TRL	20/09/2006	12	20/09/2007
L426	Temperature Indicator	Fluke	09/01/2007	12	09/01/2008
L479	Analyser	Anritsu	09/01/2007	12	09/01/2008
L552	Signal Generator	Agilent	24/07/2006	12	24/07/2007

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ANNEX E EMISSIONS GRAPH(s)

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TRL Compliance Ltd

E-Field Radiation (30MHz-1GHz)

EUT:

RTE8000

Manuf:

Rochford Thompson Prescan 30MHz - 1000MHz

Op Cond: Operator:

D Winstanley

Test Spec:

Part15

Comment:

EUT On TX Perm On. Card in place on screen. PC & PSU on table. 110Vac.

Receive Antenna Horizontal

Result File:

rte-h.dat : New Measurement

Scan Settings

(1 Range)

Frequencies Stdp 1000MHz

Step 50kHz

IF BW 120kHz PK

Receiver Settings Detector

M-Time Atten 1msec

Preamp Auto ON

OpRge 60dB

21 May 2007 10:32

Start 30MHz Transducer

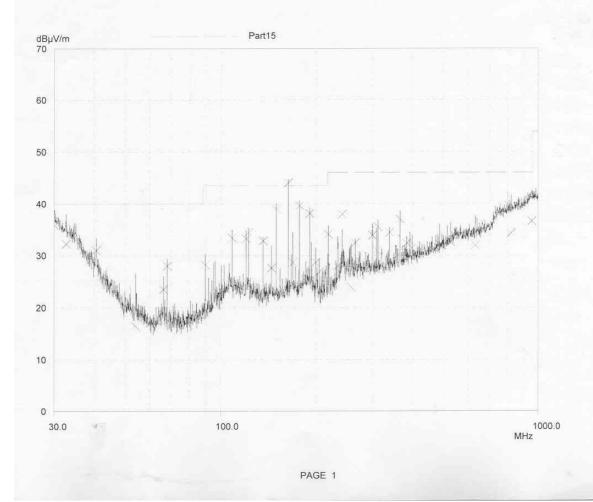
No.

21 22 Start 30MHz 30MHz Stop 1000MHz 1000MHz Name UH72 UH191

Final Measurement:

Detector: Meas Time: Subranges: X QP 2sec 50

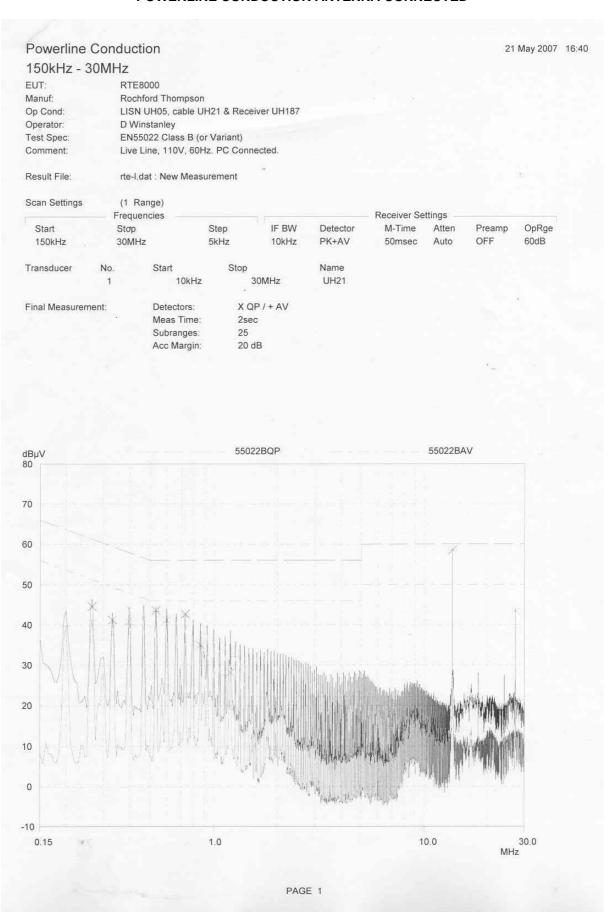
10 dB Acc Margin:



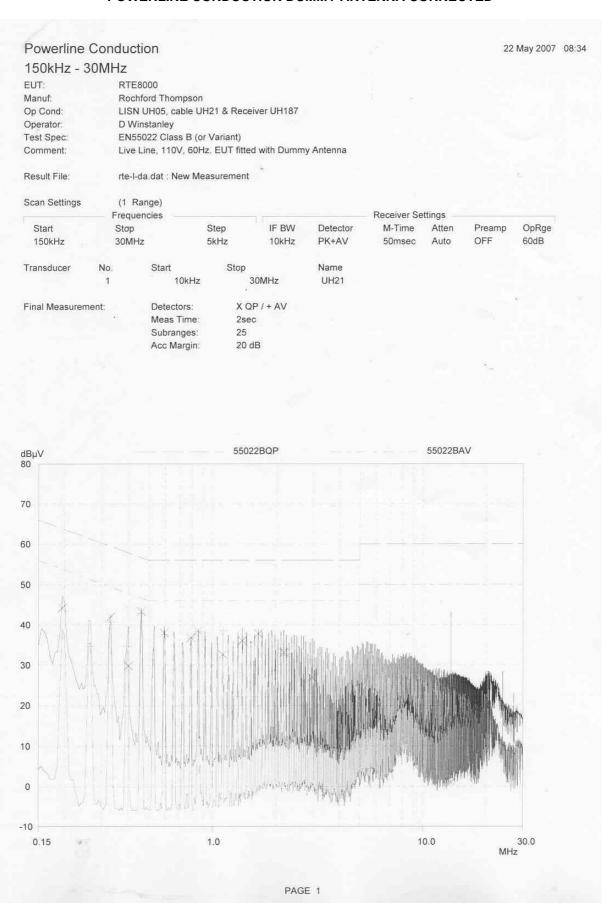
ANNEX F POWERLINE CONDUCTION GRAPH(s)

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POWERLINE CONDUCTION ANTENNA CONNECTED



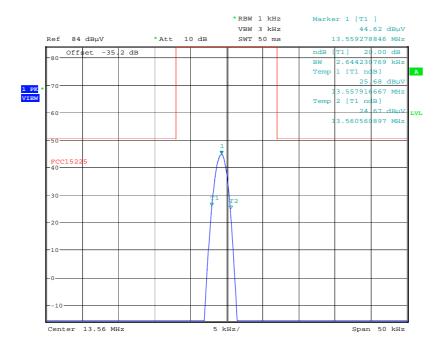
POWERLINE CONDUCTION DUMMY ANTENNA CONNECTED



ANNEX F EMISSIONS MASK COMPLIANCE

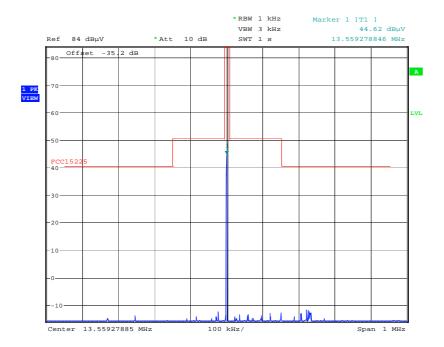
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20 dB Bandwidth & Mask Close in



Date: 24.MAY.2007 16:54:43

Full Mask Compliance



Date: 24.MAY.2007 16:52:53

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