TEST REPORT NO: RU1207/6654

COPY NO: 2

ISSUE NO: 1

FCC ID: OE5S823

REPORT ON THE CERTIFICATION TESTING OF A
GROUP 4 TECHNOLOGY Ltd
S823
WITH RESPECT TO
THE FCC RULES CFR 47, PART 15.225 June 2005
INTENTIONAL RADIATOR SPECIFICATION

TEST DATE: 4th October 2005 – 10th October 2005

TESTED BY: John Charters — Digitally signed by John Charters DN: CN = John Charters, C = GB, O = TRL Compliance Ltd Reason: I am the author of this document Date: 2005.12.05 14:10:29 Z — J CHARTERS

APPROVED BY: Peter Green — Digitally signed by Peter Green DN: CN = Peter Green, C = GB Reason: I am approving this document Date: 2005.12.05 14:18:57 Z — P GREEN EMC PRODUCT MANAGER

DATE: 5th December 2005

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1. GROUP 4 TECHNOLOGY Ltd
2. FCC EVALUATION LABORATORIES
3. TRL EMC

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FS 21805 0728

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.

CERTIFICATE OF CONFORMITY & COMPLIANCE

FCC IDENTITY:	OE5S823					
PURPOSE OF TEST:	Certification					
TEST SPECIFICATION:	FCC RULES CFR 47, Part 15.225 June 2005					
TEST RESULT:	Compliant to Specification					
EQUIPMENT UNDER TEST:	S823					
EQUIPMENT SERIAL No:	4000-4562					
ITU: EMISSION CODE:	165KA1D					
EQUIPMENT TYPE:	RFID Proximity Reader					
PRODUCT USE:	Access Control					
CARRIER EMISSION:	26.22 µV/m @ 30m					
ANTENNA TYPE:	Integral					
ALTERNATIVE ANTENNA:	Not Applicable					
FREQUENCY OF OPERATION:	13.56MHz					
CHANNEL SPACING:	Wideband					
NUMBER OF CHANNELS:	1					
FREQUENCY GENERATION:	SAW Resonator	[ ]	Crystal	[ ]	Synthesiser	[X]
MODULATION METHOD:	Amplitude	[X]	Digital	[ ]	Angle	[ ]
POWER SOURCE(s):	+12Vdc					
TEST DATE(s):	4th October 2005 – 10th October 2005					
ORDER No(s):	PUR69294					
APPLICANT:	Group 4 Technology Ltd					
ADDRESS:	New Challenge House International Drive Tewkesbury Gloucester GL20 8UQ					

TESTED BY: John Charters — Digitally signed by John Charters DN: CN = John Charters, C = GB, O = TRL Compliance Ltd Reason: I am the author of this document Date: 2005.12.05 14:11:05 Z — J CHARTERS

APPROVED BY: Peter Green — Digitally signed by Peter Green DN: CN = Peter Green, C = GB Reason: I am approving this document Date: 2005.12.05 14:19:16 Z — P GREEN, EMC PRODUCT MANAGER

APPLICANT'S SUMMARY

EQUIPMENT UNDER TEST (EUT):	S823
EQUIPMENT TYPE:	RFID Proximity Reader
SERIAL NUMBER OF EUT:	4000-4562
PURPOSE OF TEST:	Certification
TEST SPECIFICATION(s):	FCC RULES CFR 47, Part 15.225 June 2005
TEST RESULT:	COMPLIANT Yes [X] No [ ]
APPLICANT'S CATEGORY:	MANUFACTURER [X] IMPORTER [ ] DISTRIBUTOR [ ] TEST HOUSE [ ] AGENT [ ]
APPLICANT'S ORDER No(s):	PUR69294
APPLICANT'S CONTACT PERSON(s):	Mr E Porter
E-mail address:	eric.porter@g4tec.com
APPLICANT:	Group 4 Technology Ltd
ADDRESS:	New Challenge House International Drive Tewkesbury Gloucester GL20 8UQ
TEL:	+44 (0) 1684 850977
FAX:	+44 (0) 1684 294845
EUT(s) COUNTRY OF ORIGIN:	United Kingdom
TEST LABORATORY:	TRL EMC
UKAS ACCREDITATION No:	0728
TEST DATE(s)	4th October 2005 – 10th October 2005
TEST REPORT No:	RU1207/6654

EQUIPMENT TEST / EXAMINATIONS REQUIRED

1.

TEST/EXAMINATION	RULE PART	DETECTOR	APPLICABILITY
Intentional Emission Frequency:	15.225	Quasi-Peak	Yes
Intentional Emission Field Strength:	15.225	Quasi-Peak	Yes
Intentional Emission Band Occupancy:	15.255	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: Access/control RFID

3. Emission Designator: 165KA1D

4. Duty Cycle: <100%

5. Transmitter bit or pulse rate and level: 106bps

6. Temperatures: Ambient (Tnom) $12^{o}C$

7. Supply Voltages: Vnom +12Vdc

   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

Ambient temperature	=	12^{o}C(<1GHz)	3m measurements <1GHz	[X]
Relative humidity	=	50% (<1GHz),	10m measurements <30MHz	[X]
Conditions	=	Open Area Test Site (OATS)	30m extrapolated from 10m	[X]
Supply voltage	=	+12Vdc		
Channel number	=	1		

	FREQ. (MHz)	MEAS. Rx. (dBµV)	CABLE LOSS (dB)	ANT FACT.	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	21.60	0.7	12.00	34.3	-	51.88	100
88MHz - 216MHz	94.45	25.60	1.10	9.40	36.1	-	63.83	150
	162.75	23.47	1.48	9.25	34.2	-	51.28	150
	176.30	26.01	1.54	8.55	36.1	-	63.83	150
	189.85	24.80	1.60	8.20	34.6	-	53.70	150
	203.45	29.87	1.63	8.60	40.1		101.16	150
216MHz - 960MHz	217.00	34.25	1.70	8.15	44.1	-	160.32	200
	244.15	31.61	1.84	11.45	44.9	-	175.79	200
	257.70	28.48	1.92	12.60	43.0	-	141.25	200
	271.25	26.86	1.94	12.50	41.3	-	116.14	200
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 from 10m to 30m, as per Part 15.31f
5 Measurements >1GHz @ 1m as per Part 15.31f(1)
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 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.
11 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 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.
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 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	
RECEIVER	ROHDE & SCHWARZ	ESVS 10	825892/003	UH04	**X**
RANGE 1	TRL	3 METRE	N/A	UH06	**X**
AE, LOOP, Z2, 9kHz - 30MHz	ROHDE & SCHWARZ	HFH2	881058 - 53	07	**X**
BILOG ANTENNA	CHASE	CBL6112	2129	UH93	**X**
SPECTRUM ANALYSER	MARCONI	2386/2380	152076/004	UH120	

TRANSMITTER TESTS

TRANSMITTER INTENTIONAL EMISSION – RADIATED – Part 15.225 June 2005

Ambient temperature	=	12°C(<1GHz),	3m measurements @ fc	[X]
Relative humidity	=	600%(<1GHz),	10m measurements @ fc	[X]
Conditions	=	Open Area Test Site (OATS)	30m measurements @ fc	[ ]
Supply voltage	=	+12Vdc	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)
13.5623	3	51.6	25.38	20.46
13.5623	10	45.3	19.08	20.46
Limit value @ fc		**15,848(µV/m)**		
Band occupancy @ spurious limit value		**f lower**	**f higher**	
		13.4813 MHz	13.6463 MHz	

See spectrum analyser plot – Annex C

Notes:

1 Results quoted are extrapolated as indicated
2 The 3m – 10m extrapolation factor is 6.3dB 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.
6 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 June 2005 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	**X**
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	3 METRE	N/A	UH06	**X**
RANGE 1	TRL	10 METRE	N/A	UH07	**X**
AE, LOOP, Z2, 9kHz - 30MHz	ROHDE & SCHWARZ	HFH2	881058 - 53	07	
BILOG ANTENNA	CHASE	CBL6112	2129	UH93	
SPECTRUM ANALYSER	MARCONI	2386/2380	152076/004	UH120	

TRANSMITTER TESTS

TRANSMITTER EMISSIONS – FREQUENCY TOLERANCE Part 15.225 (c)

Ambient temperature = 20°C
Relative humidity = 69%

Fc @ Vnom Tnom = 13.562300MHz

TEMPERATURE	VOLTAGE	FREQUENCY MHz	DEVIATION kHz	LIMIT kHz
-20°C	+12Vdc	13.562520	-0.22	±1.356
+50°C	+12Vdc	13.562240	-0.06	±1.356

TEMPERATURE	VOLTAGE	FREQUENCY MHz	DEVIATION kHz	LIMIT kHz
+20°C	+10.2Vdc	13.562400	-0.01	±1.356
+20°C	+13.8Vdc	13.562280	-0.02	±1.356

Notes:
1 One hour was allowed for temperature stabilisation.

Test Method:
1 EUT was placed inside the environmental chamber and temperature adjusted accordingly.
2 The AC power was varied from an external ac power supply.
3 Frequency was recorded on the spectrum analyzer.

TRANSMITTER TESTS

TRANSMITTER CONDUCTED EMISSIONS – AC POWER LINE Part 15.207

Ambient temperature	=	20°C(<1GHz),
Relative humidity	=	69%(<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)
13.56	48.11	Average	Live	50
27.125	35.21	Average	Live	50

Notes:
1 See attached plot in annex E
2 Scans were performed in both Live and Neutral lines. Worst case emissions are recorded in the table above.
3 Emissions below 10dB's were not necessarily recorded.

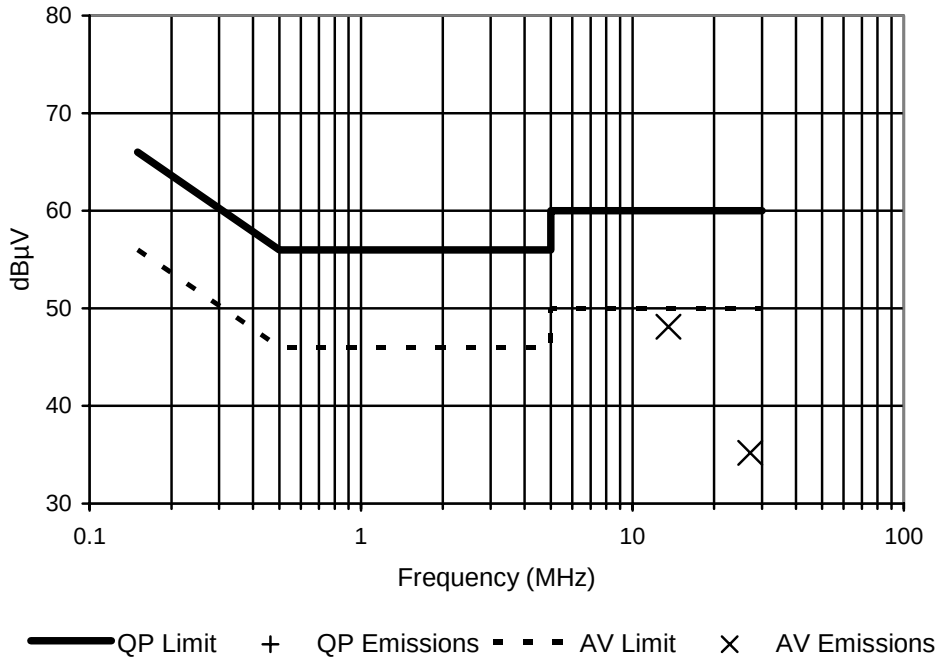
Test Method:
1 As per Radio – Noise Emissions, ANSI C63.4: 2003

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	ESHS20	837960/003	237	
LISN / AMN	ROHDE & SCHWARZ	ESH3-Z5	83746/010	289	
RECEIVER	ROHDE & SCHWARZ	ESHS10	844077/019	353	
RECEIVER	ROHDE & SCHWARZ	ESHS 10	830051/001	UH03	**X**
LISN/AMN	ROHDE & SCHWARZ	ESH3-Z5	863906/018	UH05	**X**
SPECTRUM ANALYSER	MARCONI	2386/2380	152076/004	UH120	

POWER LINE CONDUCTION EMISSIONS

Part 15.207



ANNEX A

PHOTOGRAPHS

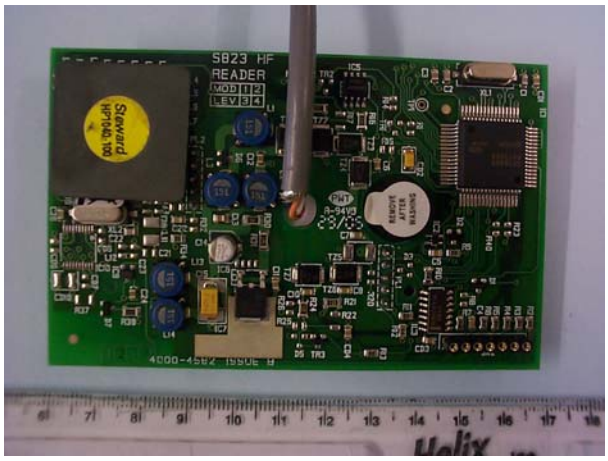
PHOTOGRAPH No. 1 **TEST SETUP**

PHOTOGRAPH No. 2 **TRANSMITTER FRONT VIEW**

PHOTOGRAPH No. 3 **TRANSMITTER REAR VIEW**

PHOTOGRAPH No. 4 **TRANSMITTER PCB TRACK SIDE**

PHOTOGRAPH No. 5 **TRANSMITTER PCB COMPONENT SIDE**



PHOTOGRAPH No. 6 **ANTENNA PCB TRACK SIDE**

PHOTOGRAPH No. 7 **ANTENNA PCB COMPONENT SIDE**

ANNEX B

APPLICANT'S SUBMISSION OF DOCUMENTATION LIST

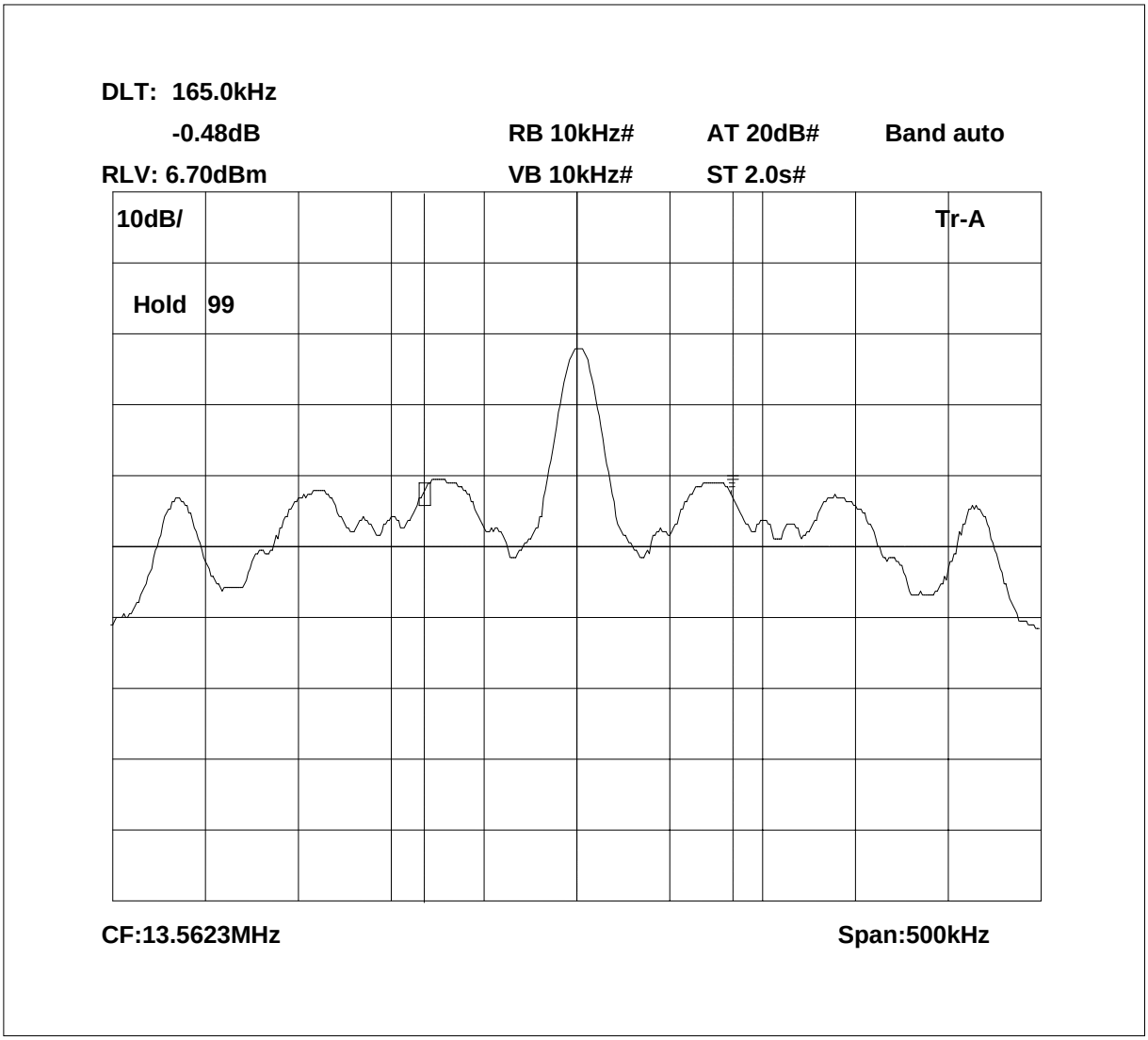
APPLICANT'S SUBMISSION OF DOCUMENTATION LIST

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)	-		[ ]
e.	LABELLING	-	PHOTOGRAPHS	[ ]
		-	DECLARATION	[X]
		-	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

BANDWIDTH PLOT

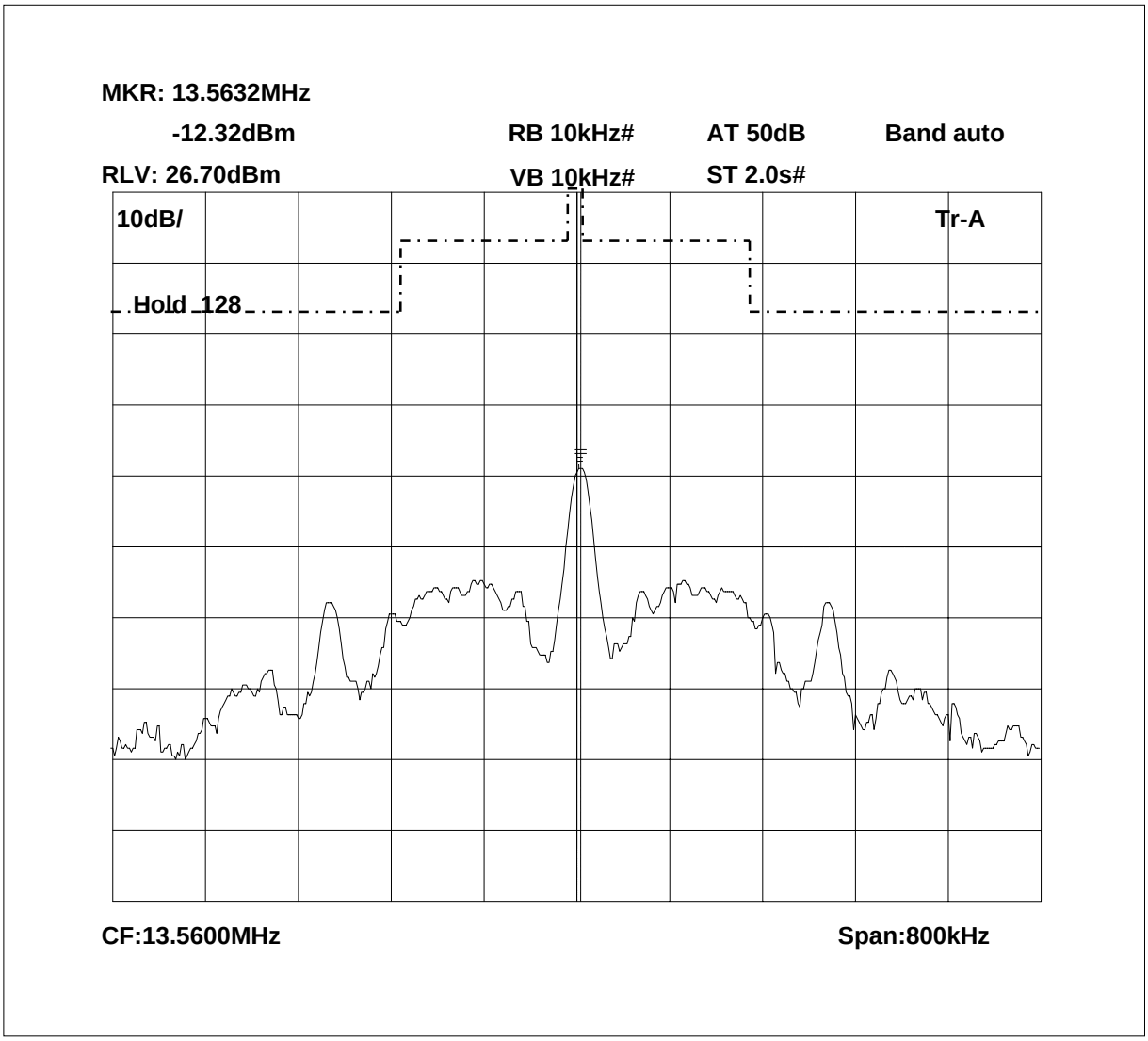
BANDWIDTH PLOT



fl	=	13.48130 MHz
fh	=	13.64630 MHz
Occupied bandwidth	=	165.0 kHz

ANNEX D

MASK COMPLIANCE


MKR: 13.5632MHz
-12.32dBm
RB 10kHz#
AT 50dB
Band auto
RLV: 26.70dBm
VB 10kHz#
ST 2.0s#
10dB/
Tr-A
Hold 128
CF:13.5600MHz
Span:800kHz

ANNEX E

POWER LINE EMISSIONS

Powerline Conduction

04 Oct 2005 14:37

150kHz - 30MHz

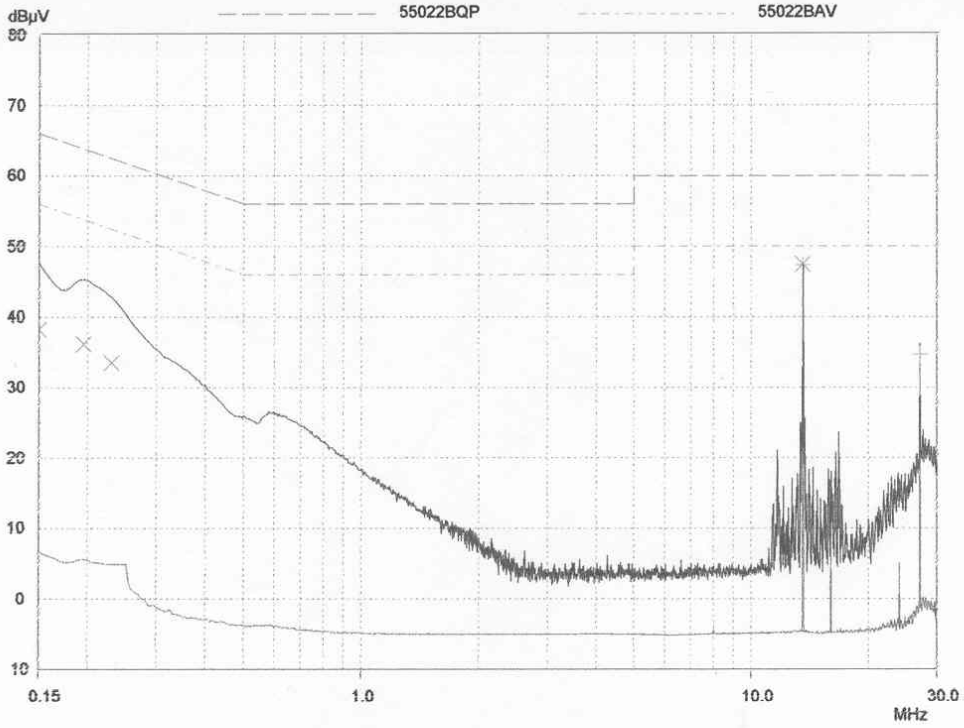
EUT:	S823
Manuf:	Group4
Op Cond:	LISN UH195, cable UH21 & Receiver UH03
Operator:	J Charters
Test Spec:	EN55022 Class B (or Variant)
Comment:	Neitral110V
	with ferrite on cable

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	150kHz	30MHz	UH21

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



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Powerline Conduction

04 Oct 2005 14:22

150kHz - 30MHz

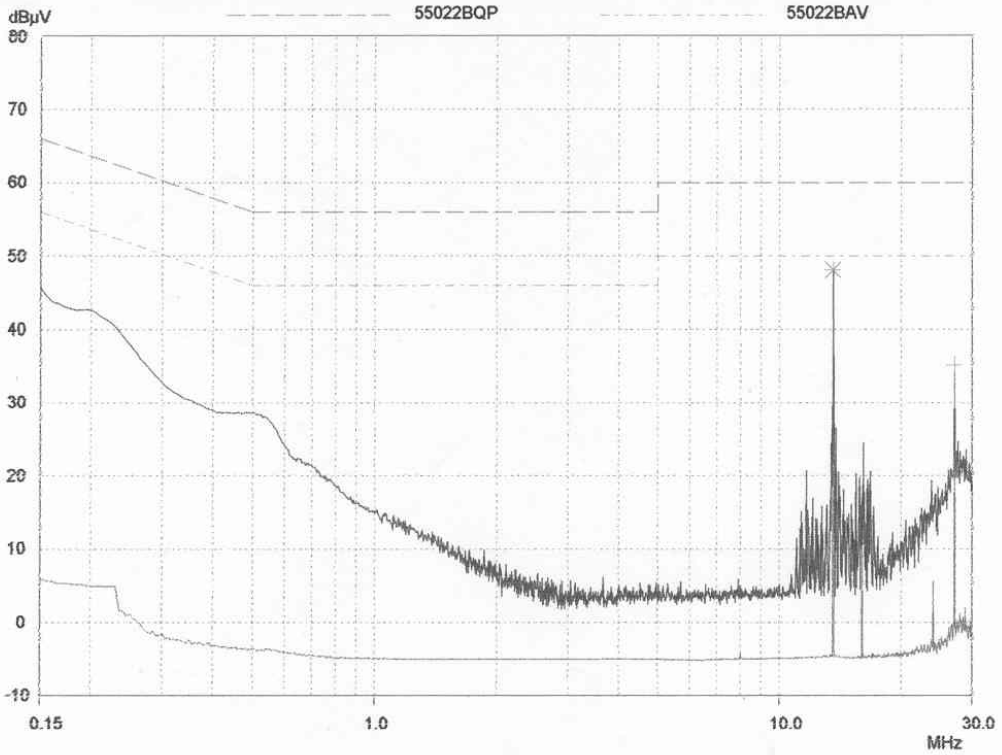
EUT:	S823
Manuf:	Group4
Op Cond:	LISN UH195, cable UH21 & Receiver UH03
Operator:	J Charters
Test Spec:	EN55022 Class B (or Variant)
Comment:	Live 110V with ferrite on cable

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	150kHz	30MHz	UH21

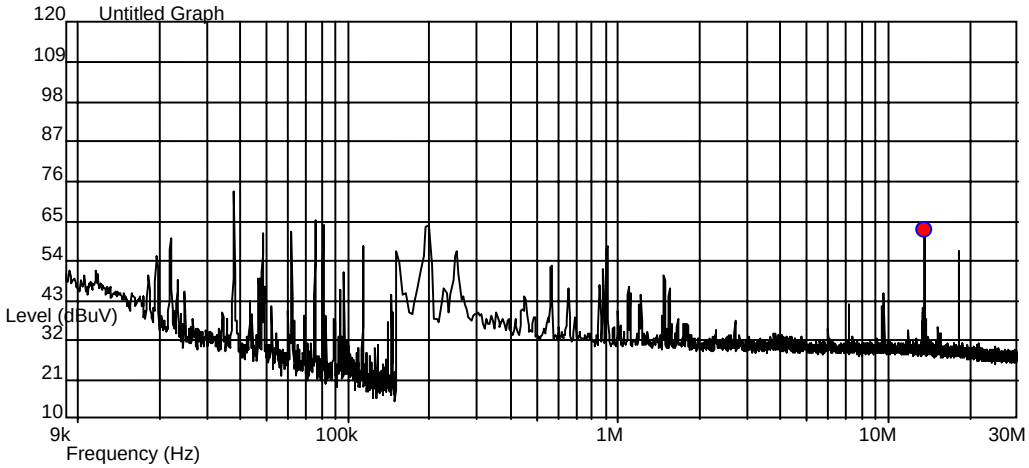
Final Measurement:		
	Detectors:	X QP / + AV
	Meas Time:	2sec
	Subranges:	25
	Acc Margin:	20 dB



PAGE 1

ANNEX F

H FIELD PEAK SCAN



Frequency(Hz)	Level(dBuV)	Height(m)	Polarity	Angle(Deg)	Limit(dBuV)	Margin(dBuV)	Comment	Detector	RBW(Hz)
13.56 M	62.33	0.00	--	0.00	--	--		QP	10.0 k

ANNEX G

E FIELD PRE SCAN

TRL Compliance Services Ltd

04 Oct 2005 11:07

E-Field Radiation (30MHz-1GHz)

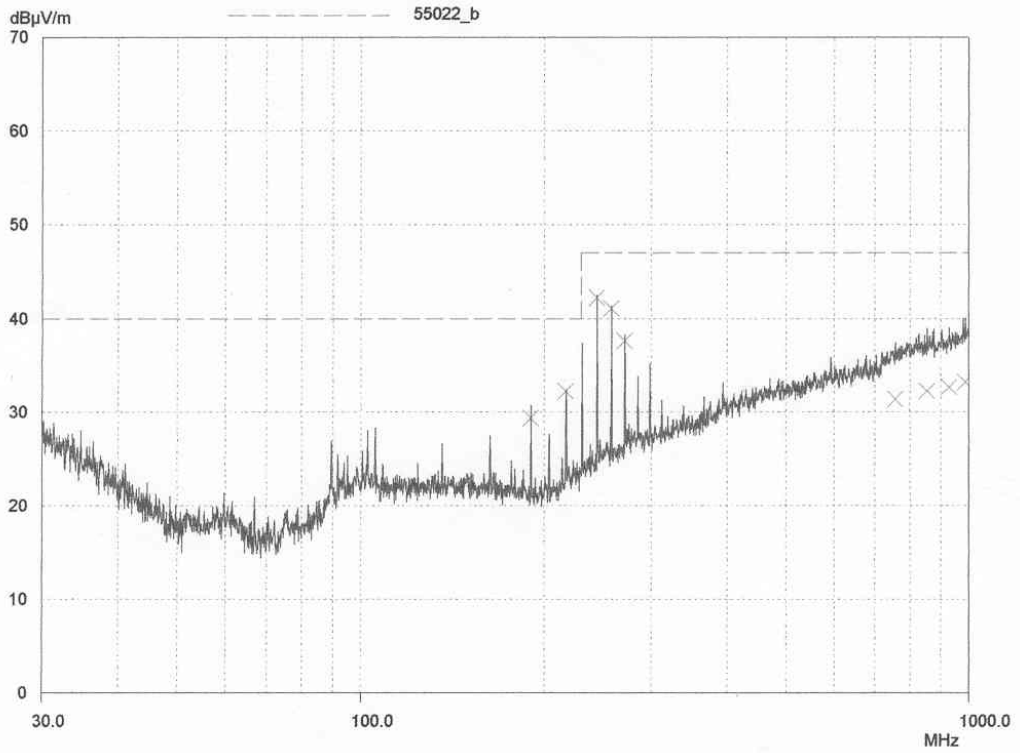
EUT:	S823
Manuf:	Group 4
Op Cond:	Pre scan
Operator:	J Charters
Test Spec:	EN55022
Comment:	horizontal
	ferrite fitted to cable

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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ANNEX H

EQUIPMENT CALIBRATION

TRL Number	Equipment Type	Manufacturer	Last Cal Calibration	Calibration Period	Due For Calibration
UH006	3m Range ERP CAL	TRL	01/03/2005	12	01/03/2006
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	14/12/2004	12	14/12/2005
UH120	Spectrum Analyser	Marconi	15/03/2005	12	15/03/2006
UH122	Oscilloscope	Tektronix	07/06/2005	24	07/06/2007
UH162	ERP Cable Cal	TRL	23/05/2005	12	23/05/2006
UH179	Power Sensor	Marconi	14/12/2004	12	14/12/2005
UH228	Power Sensor	Marconi	17/01/2005	12	17/01/2006
UH253	1m Cable N type	TRL	10/01/2005	12	10/01/2006
UH254	1m Cable N type	TRL	10/01/2005	12	10/01/2006
UH265	Notch filer	Telonic	24/06/2005	12	24/06/2006
L005	CMTA	R&S	22/10/2004	12	22/10/2005
L007	Loop Antenna	R&S	29/03/2005	24	29/03/2007
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	31/01/2005	12	31/01/2006
L193	Bicone Antenna	Chase	12/10/2003	24	12/10/2005
L203	Log Periodic Ant	Chase	21/10/2003	24	21/10/2005
L254	Signal Generator	Marconi	13/12/2004	12	13/12/2005
L280	18GHz Cable	Rosenberger	10/01/2005	12	10/01/2006
L343	CCIR Noise Filter	TRL	07/06/2005	12	07/06/2006
L426	Temperature Indicator	Fluke	14/12/2004	12	14/12/2005
L478	Signal Generator	R&S	19/05/2004	12	19/05/2005
L479	Analyser	Anritsu	05/10/2004	12	05/10/2005
L552	Signal Generator	Agilent	25/04/2005	12	25/04/2006