

TEST REPORT NO: RL1147/6611
COPY NO:
ISSUE NO: 1
FCC ID: MF3019174

**REPORT ON THE CERTIFICATION TESTING OF A
C A BLATCHFORD & SONS LTD
ADAPTIVE LIMB
WITH RESPECT TO
THE FCC RULES CFR 47, PART 15.109, 15.209 & 15.249
INTENTIONAL RADIATOR SPECIFICATION**

TEST DATE: 21st and 22nd JANUARY 2002

TESTED BY: I FORSHAW

APPROVED BY: S HAYES
MANAGER EMC
DIVISION

DATE:

Distribution:

- Copy Nos:
1. C A BLATCHFORD & SONS LTD
 2. FCC EVALUATION LABORATORIES
 3. TRL EMC

THIS DOCUMENT MAY BE REPRODUCED ONLY IN ITS ENTIRETY AND WITHOUT CHANGE

CONTENTS

	PAGE
CERTIFICATE OF CONFORMITY & COMPLIANCE	3
APPLICANT'S SUMMARY	4
EQUIPMENT TEST / EXAMINATIONS REQUIRED	5
TEST RESULTS / SAMPLE CALCULATIONS	6-11

ANNEX

PHOTOGRAPHS	A
PHOTOGRAPH No. 1: Test site with TX/RX	
PHOTOGRAPH No. 2: Equipment General View	
PHOTOGRAPH No. 3: TX/RX RF PCB track side	
PHOTOGRAPH No. 4: TX/RX RF PCB component side	
APPLICANT'S SUBMISSION OF DOCUMENTATION LIST	B
BAND OCCUPANCY PLOT	C

Notes:

- | | | | |
|----|--|-----|-------------------------------------|
| 1. | Component failure during test | YES | <input type="checkbox"/> |
| | | NO | <input checked="" type="checkbox"/> |
| 2. | If Yes, details of failure: | | |
| 3. | The facilities used for the testing of the product contained 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: MF3019174

PURPOSE OF TEST: FCC CERTIFICATION

TEST SPECIFICATION: FCC RULES CFR 47, Part 15.109, 15.209 & 15.249

TEST RESULT: COMPLIANT TO SPECIFICATION

EQUIPMENT UNDER TEST: ADAPTIVE LIMB

EQUIPMENT SERIAL No: NOT APPLICABLE

ITU: EMISSION CODE: 75K0F1D

EQUIPMENT TYPE: ADAPTIVE LIMB, REMOTE CONTROL TRANSCEIVER

PRODUCT USE: DATA TRANSMISSION, TELEMETRY, TELECOMMAND OF AN ADAPTIVE LIMB

CARRIER EMISSION: 18407.7 μ V/m @ 3 metres

ANTENNA TYPE: FIXED

ALTERNATIVE ANTENNA: NONE AS PER PART 15.203

BAND OF OPERATION: 914 MHz \pm 75kHz

CHANNEL SPACING: NARROWBAND

NUMBER OF CHANNELS: 1 (ONE)

FREQUENCY GENERATION: SAW Resonator [] Crystal [X] Synthesiser []

MODULATION METHOD: Amplitude [] Digital [X] Angle []

POWER SOURCE(s): +9V DC, INTEGRAL BATTERY

TEST DATE(s): 21st AND 22nd JANUARY 2002

ORDER No(s): PR39211

APPLICANT: C A BLATCHFORD & SONS LTD

ADDRESS: LISTER ROAD
BASINGSTOKE
HAMPSHIRE
G22 4AH

TESTED BY: _____ I FORSHAW

APPROVED BY: _____ S HAYES
MANAGER EMC
DIVISION

APPLICANT'S SUMMARY

EQUIPMENT UNDER TEST (EUT):	ADAPTIVE LIMB
EQUIPMENT TYPE:	ADAPTIVE LIMB, REMOTE CONTROL TRANSCIEVER
SERIAL NUMBER OF EUT:	NOT APPLICABLE
PURPOSE OF TEST:	FCC CERTIFICATION
TEST SPECIFICATION(s):	FCC RULES CFR 47, Part 15.109, 15.209 & 15.249
TEST RESULT:	COMPLIANT Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
APPLICANT'S CATEGORY:	MANUFACTURER <input checked="" type="checkbox"/> IMPORTER <input type="checkbox"/> DISTRIBUTOR <input type="checkbox"/> TEST HOUSE <input type="checkbox"/> AGENT <input type="checkbox"/>
APPLICANT'S ORDER No(s):	PR39211
APPLICANT'S CONTACT PERSON(s):	Mr ANDY SYKES
E-mail address:	andys@blatchford.co.uk
APPLICANT:	C A BLATCHFORD & SONS LTD
ADDRESS:	LISTER ROAD BASINGSTOKE HAMPSHIRE G22 4AH
TEL:	+44 01256 316600
FAX:	+44 01256 316711
EUT(s) COUNTRY OF ORIGIN:	UNITED KINGDOM
TEST LABORATORY:	TRL EMC LTD
UKAS ACCREDITATION No:	0728
TEST DATE(s)	21 st AND 22 nd JANUARY 2002
TEST REPORT No:	RL1147/6611

EQUIPMENT TEST / EXAMINATIONS REQUIRED

1.	TEST/EXAMINATION	RULE PART	COMMENT	APPLICABILITY
	Intentional Emission Frequency:	15.249	Quasi – Peak Detector	Applicable
	Intentional Emission Field Strength:	15.249	Quasi – Peak Detector	Applicable
	Intentional Emission Band Occupancy:	15.249	Quasi – Peak Detector	Applicable
	Spurious Emissions – Conducted	15.207	Not Applicable	Not Applicable
	Receiver Spurious Emissions – Radiated :	15.109	Quasi – Peak Detector	Applicable
	Transmitter Spurious Emissions – Radiated :	15.209	Quasi – Peak Detector	Applicable
	Maximum Frequency of Search:	15.33	Up to 10 GHz	Applicable
	Antenna Arrangements Integral:	15.203	Antenna Permanently Attached	Applicable
	Antenna Arrangements External Connector:	15.204	Not Applicable	Not Applicable
	Restricted Bands	15.205	FC 914MHz	Not Applicable
	Extrapolation Factor	15.31(f)	9.5dB from 1m-3m	Applicable
2.	Product Use:	DATA TRANSMISSION, TELEMETRY, TELECOMMAND OF AN ADAPTIVE LIMB		
3.	Emission Designator:	75K0F1D		
4.	Duty Cycle:	23	%	
5.	Transmitter bit or pulse rate:	9600	bps	
6.	Temperatures:	Ambient (Tnom)	(SEE TEST)	
7.	Supply Voltages:	Vnom	+9.0V DC	
	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	[X]	
		Wideband	[]	

RECEIVER TESTS

RECEIVER SPURIOUS EMISSIONS – RADIATED – PART 15.109

Ambient temperature	=	9°C (<1GHz), 9°C (>1GHz)	3m measurements <1GHz	[X]
Relative humidity	=	68% (<1GHz), 68% (>1GHz)	1m measurements >1GHz	[X]
Conditions	=	Open Area Test Site (OATS)	3m extrapolated from 1m	[]
Supply voltage	=	Nom 12V		
Channel number	=	1		

	FREQ. (MHz)	MEAS. Rx. (dBµV)	CABLE LOSS (dB)	ANT FACTOR	FIELD STRENGTH (dBµV/m)	EXTRAP. FACTOR (dB)	FIELD STRENGTH (µV/m)
30MHz - 88MHz	NO SIGNIFICANT EMISSION DETECTED						
88MHz - 216MHz	190.95	13.7	1.90	8.60	24.2	N/A	16.2
216MHz - 960MHz	625.8	7.40	4.30	18.70	30.4	N/A	33.1
960MHz - 1GHz	NO SIGNIFICANT EMISSION DETECTED						
1GHz - 10GHz	1.829	16.6	1.0	27.0	44.6	9.5	56.9
Limits	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 10GHz		500µV/m @ 3m				

Notes:

- 1 Results quoted are extrapolated as indicated
- 2 Emissions were searched to: 10GHz inclusive, as per Part 15.33a
- 3 Extrapolation factor 9.5dB from 1m to 3m, as per Part 15.31f
- 4 Measurements >1GHz @ 1m as per Part 15.31f(1)
- 5 Receiver detector <1GHz = CISPR, Quasi-Peak, 120kHz bandwidth
- 6 Receiver detector >1GHz = Peak Hold, 1MHz resolution bandwidth
- 7 New batteries used for battery powered products.

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.
Horizontal and vertical polarisations, of the receive antenna.
EUT orientation in three orthogonal planes.
Maximum results recorded.

The test equipment used for the Receiver Spurious Emissions – Radiated – Part 15.109 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	X
SPECTRUM ANALYSER	TEKTRONIX	2756P	B010109	164	X
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	X
BILOG ANTENNA	SCHAFFNER	CBL6112B	2761	431	X
RECEIVER	ROHDE & SCHWARZ	ESHS 10	830051/001	UH03	
RECEIVER	ROHDE & SCHWARZ	ESVS 10	825892/003	UH04	
RANGE 1	TRL	3 METRE	N/A	8B	X
RANGE 1	TRL	3 METRE	N/A	UH06	
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 SPURIOUS EMISSIONS – RADIATED – PART 15.209

Ambient temperature = 9°C (<1GHz), 9°C (>1GHz) 3m measurements <1GHz [X]
 Relative humidity = 68% (<1GHz), 68% (>1GHz) 1m measurements >1GHz [X]
 Conditions = Open Area Test Site (OATS) 3m extrapolated from 1m []
 Supply voltage = Nom 12V
 Channel number = 1

	FREQ. (MHz)	MEAS. Rx. (dBµV)	CABLE LOSS (dB)	ANT FACTOR	FIELD STRENGTH (dBµV/m)	EXTRAP. FACTOR (dB)	FIELD STRENGTH (µV/m)
30MHz - 88MHz	NO SIGNIFICANT EMISSIONS DETECTED						
88MHz - 216MHz	190.95	13.7	1.90	8.60	24.2	N/A	16.2
216MHz - 960MHz	625.8	7.40	4.30	18.70	30.4	N/A	33.1
960MHz - 1GHz	NO SIGNIFICANT EMISSIONS DETECTED						
1GHz - 10GHz	1.829	16.6	1.0	27.0	44.6	9.5	56.9
Limits	1.705 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 10GHz		500µV/m @ 3m				

Notes:

- Results quoted are extrapolated as indicated
- Emissions were searched to: 10GHz inclusive, as per Part 15.33a
- Extrapolation factor 9.5dB from 1m to 3m, 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.

Test Method:

- As per Radio – Noise Emissions, ANSI C63.4: 1992
- Measuring distances as Notes 1 to 4 above
- EUT 0.8 metre above ground plane
- 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 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	X
SPECTRUM ANALYSER	TEKTRONIX	2756P	B010109	164	X
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	X
BILOG ANTENNA	SCHAFFNER	CBL6112B	2761	431	X
RECEIVER	ROHDE & SCHWARZ	ESHS 10	830051/001	UH03	
RECEIVER	ROHDE & SCHWARZ	ESVS 10	825892/003	UH04	
RANGE 1	TRL	3 METRE	N/A	8B	X
RANGE 1	TRL	3 METRE	N/A	UH06	
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 INTENTIONAL EMISSION – RADIATED – Part 15.249

Ambient temperature	=	8°C(<1GHz),	3m measurements @ fc	[X]
Relative humidity	=	71%(<1GHz),	10m measurements @ fc	[]
Conditions	=	Open Area Test Site (OATS)	30m measurements @ fc	[]
Supply voltage	=	9V DC	30m extrapolated from 3m	[]
Channel number	=	1	30m extrapolated from 10m	[]

FREQ. (MHz)	MEASUREMENT Rx. READING (dBμV)	CABLE LOSS (dB)	ANT FACTOR	FIELD STRENGTH (dBμV/m)	EXTRAP. FACTOR (dB)	FIELD STRENGTH (μV/m)
914.53	58.6	6.2	20.5	85.3	N/A	18407.7
Limit		914.53MHz		50,000μV/m		@3m

Band occupancy @ spurious limit value	f lower	f higher
	914.13 MHz	914.90 MHz

See spectrum plot – Annex C

- Notes:**
- 1 Results quoted are extrapolated as indicated
 - 2 Receiver detector @ fc = Quasi -Peak 120kHz
 - 3 Sample calculation, see page 6

- 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.
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 15.249 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	X
BILOG ANTENNA	SCHAFFNER	CBL6112B	2761	431	X
RECEIVER	ROHDE & SCHWARZ	ESHS 10	830051/001	UH03	
RECEIVER	ROHDE & SCHWARZ	ESVS 10	825892/003	UH04	
RANGE 1	TRL	3 METRE	N/A	8B	X
RANGE 1	TRL	3 METRE	N/A	UH06	
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	

ANNEX A
PHOTOGRAPHS

PHOTOGRAPH No. 1

TEST SITE WITH TX/RX

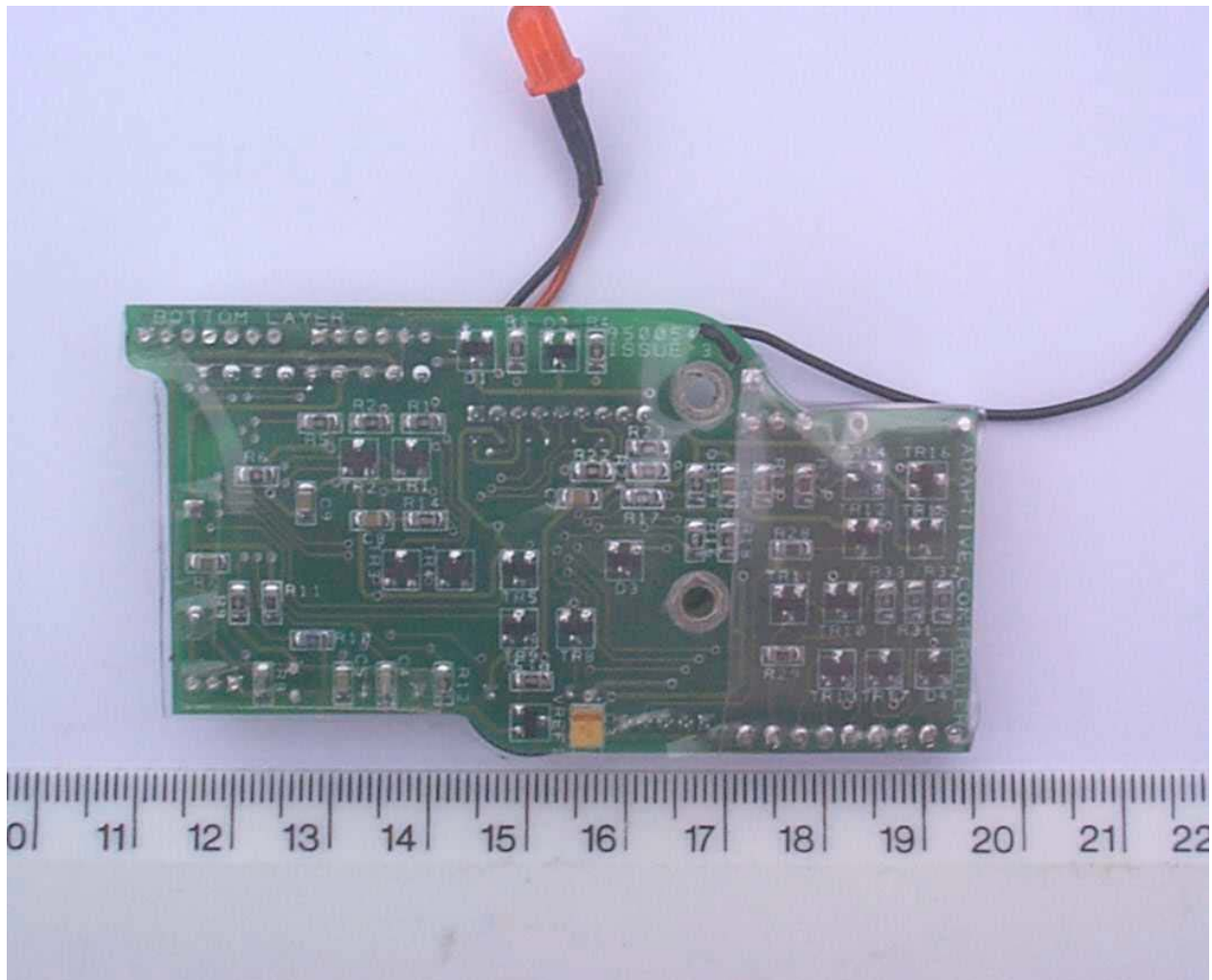


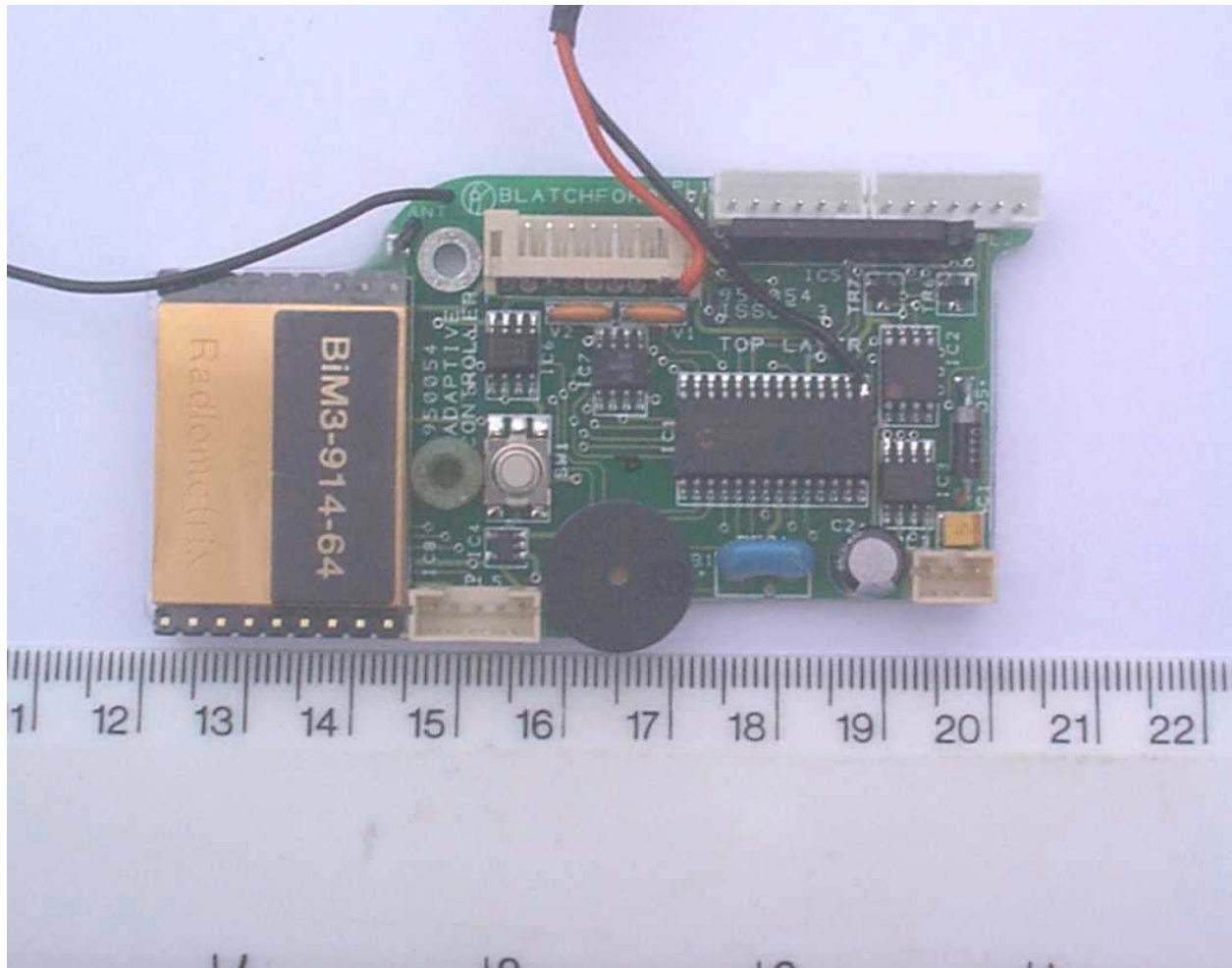
PHOTOGRAPH No. 2 **GENERAL PHOTOGRAPH OF THE EQUIPMENT**



PHOTOGRAPH No. 3

TX/RX RF PCB TRACK 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)	-		[X]
e.	LABELLING	-	PHOTOGRAPHS	[X]
		-	DECLARATION	[X]
		-	DRAWINGS	[X]
f.	TECHNICAL DESCRIPTION	-		[X]
g.	BLOCK DIAGRAMS	-	Tx	[X]
		-	Rx	[X]
		-	PSU	[]
		-	AUX	[]
h.	CIRCUIT DIAGRAMS	-	Tx	[X]
		-	Rx	[X]
		-	PSU	[]
		-	AUX	[]
i.	COMPONENT LOCATION	-	Tx	[X]
		-	Rx	[X]
		-	PSU	[]
		-	AUX	[]
j.	PCB TRACK LAYOUT	-	Tx	[X]
		-	Rx	[X]
		-	PSU	[]
		-	AUX	[]
k.	BILL OF MATERIALS	-	Tx	[X]
		-	Rx	[X]
		-	PSU	[]
		-	AUX	[]
l.	USER INSTALLATION / OPERATING INSTRUCTIONS	-		[X]

ANNEX C
BAND OCCUPANCY PLOT

BAND OCCUPANCY PLOT

