



**M. Flom Associates, Inc. - Global Compliance Center**

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D E C L A R A T I O N   O F   C O N F O R M I T Y

of

RECEIVER MODEL: CTX-A9

FCC ID: CICCTX-A9

to

FEDERAL COMMUNICATIONS COMMISSION

Part 15(B)  
(New)

DATE OF REPORT: December 14, 2001

ON THE BEHALF OF THE APPLICANT:

Kelvin Hughes Limited

AT THE REQUEST OF:

P.O. V139928/B5

Kelvin Hughes Limited  
New North Rd.  
Hainault, Ilford  
Essex IG6 2UR, England

Attention of:      David A. Hannah, Chief Engineer  
                          Dave Everson, Coordinator  
                          dave.everson@kelvinhughes.co.uk  
                          Phone: 011 81 500 1020   FAX: 011 44 208 559 8524

SUPERVISED BY:

  
Morton Flom, P. Eng.

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*Required information per ISO/IEC Guide 25-1990, paragraph 13.2:*

a) TEST REPORT

b) Laboratory: M. Flom Associates, Inc.  
(FCC: 31040/SIT) 3356 N. San Marcos Place, Suite 107  
(Canada: IC 2044) Chandler, AZ 85225

c) Report Number: d01c0026

d) Client: Kelvin Hughes Limited  
New North Rd.  
Hainault, Ilford  
Essex 1G6 2UR, England

e) Identification: CTX-A9  
FCC ID: CICCTX-A9  
Description: "S" Band Radar

f) EUT Condition: Not required unless specified in individual tests.

g) Report Date: December 14, 2001  
EUT Received: October 2001

h, j, k): As indicated in individual tests.

i) Sampling method: No sampling procedure used.

l) Uncertainty: In accordance with MFA internal quality manual.

m) Supervised by:

n) Results: The results presented in this report relate only to the item tested.

o) Reproduction: This report must not be reproduced, except in full, without written permission from this laboratory.

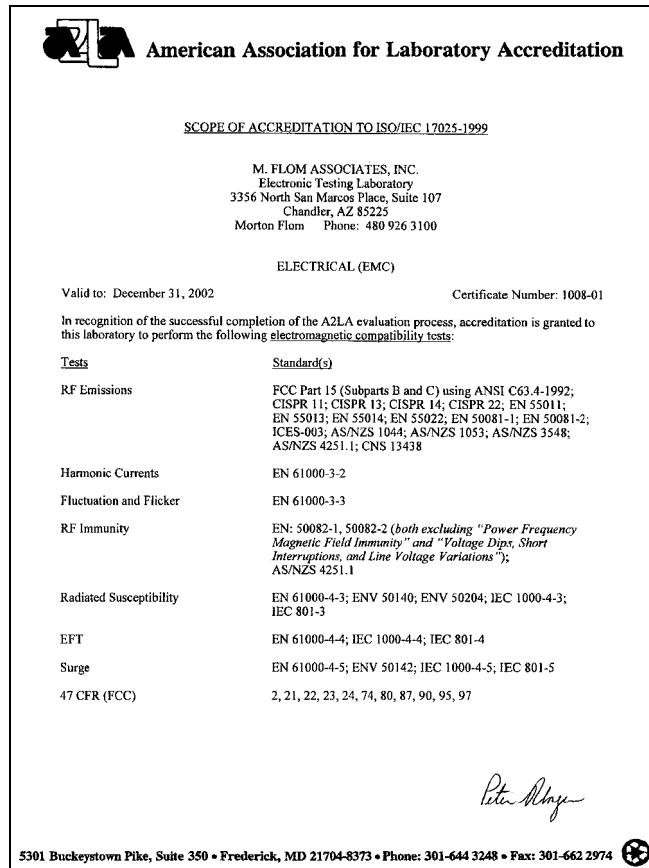


Morton Flom, P. Eng.

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M. Flom Associates, Inc. is accredited by the American Association for Laboratory Accreditation (A2LA) as shown in the scope below.



"This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this report have been determined in accordance with the laboratory's terms of accreditation unless stated otherwise in the report."

Should this report contain any data for tests for which we are not accredited, or which have been undertaken by a subcontractor that is not A2LA accredited, such data would not be covered by this laboratory's

A2LA

accreditation.

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GENERAL INFORMATION

Part 2.948:

(a)(b) DESCRIPTION OF MEASUREMENT FACILITIES:

FILE: 31040/SIT

A description of the measurement facilities was filed with the Commission and was found to be in compliance with the requirements of Section 2.948, by letter dated March 13, 2000. All pertinent changes will be reported to the Commission by up-date prior to March 2003.

(b)(4) SUPPORTING STRUCTURES:

SKETCH - ATTACHED EXHIBITS

(b)(5)(6) TEST INSTRUMENTATION:

LIST - SEE EXHIBITS

2.925: IDENTIFICATION OF AN AUTHORIZED DEVICE:

DRAWING - SEE EXHIBITS

LOCATION OF LABEL - SEE PHOTOS

NAME AND ADDRESS OF APPLICANT:

Kelvin Hughes Limited  
New North Rd.  
Hainault, Ilford  
Essex 1G6 2UR, England

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2.911:  
2.1033(b)(6)

TECHNICAL REPORT

MANUFACTURER:

Kelvin Hughes Limited  
New North Rd.  
Hainault, Ilford  
Essex 1G6 2UR, England

TRADE NAME:

Kelvin Hughes LTD

FCC ID:

CICCTX-A9

MODEL NO:

CTX-A9

PHOTOGRAPHS:

SEE LIST OF EXHIBITS

DUT DESCRIPTION:

This unit Passes

15.31: MEASUREMENT STANDARD & PROCEDURE:

- IEEE STANDARD 187 WAS USED AS A GUIDE.
- FCC MEASUREMENT PROCEDURE MP-1
- ANSI 63.4 (1992/2000) "Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz."

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EXPOSITORY STATEMENT

1. NUMBER OF BANDS = 1
2. NUMBER OF CHANNELS = 1
3. TUNING RANGE, MHz = 3040 to 3060
4. OSCILLATOR RANGE, MHz = 3100 to 4200
5. I.F., MHz = 60
6. BLOCK DIAGRAM = ATTACHED
7. For cellular receiver only, the radio transceiver meets the requirements of FCC Bulletin OET 53 ("Cellular System Mobile Stations-Land-System Compatibility Specification."). See attached affidavit.

15.203: ANTENNA REQUIREMENT:

- The antenna is permanently attached to the EUT
- The antenna uses a unique coupling
- The EUT must be professionally installed
- The antenna requirement does not apply

SUPERVISED BY:

  
Morton Flom, P. Eng.

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NAME OF TEST: Receiver Spurious Emissions (Radiated)

SPECIFICATION:

15.109: Radiated Interference Limits  
 15.33: Frequency Range of Radiated Measurements  
 80.217: Suppression of Interference Aboard Ships

GUIDE: See measurement procedure below

TEST CONDITIONS: Standard Temperature & Humidity

TEST EQUIPMENT: As per attached page

SEARCH ANTENNAS:

100 Hz -	50 MHz:	Emco 3301B Active Rod
10 kHz -	32 MHz:	Singer 94593-1 Loop
25 MHz -	300 MHz:	Emco 3109 Biconical
200 MHz -	1 GHz:	Aprel 2001 Log Periodic
1 GHz -	18 GHz:	Emco 3115 Horn
10 GHz -	40 GHz:	Emco 3116 Horn with HP11970A Mixer

MEASUREMENT PROCEDURE

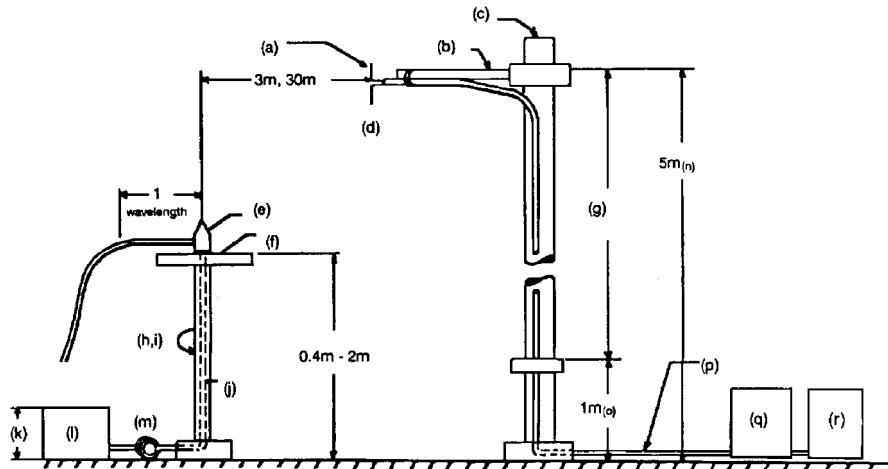
1. At first, bench tests were performed to locate the spurious emissions at the antenna terminals.
2. In the field, tests were conducted over the range shown, The test sample was set up on a wooden turntable above ground, and at a distance of three meters from the antenna connected tot he Spectrum Analyzer.
3. In order to obtain the maximum response at each frequency, the turntable was rotated, and the search antenna was raised and lowered. The EUT was also adjusted for maximum response. Tests were conducted in Horizontal & Vertical polarization modes.
4. The field strength was calculated from:

$$E \mu V/m @ 3 m = \frac{\text{Log}_{10}^{-1}(\text{dB}\mu V + \text{A.F.} + \text{C.L.})}{20}$$

5. MEASUREMENT RESULTS: Attached for "Worst Case" conditions.

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RADIATED TEST SETUP

## NOTES:

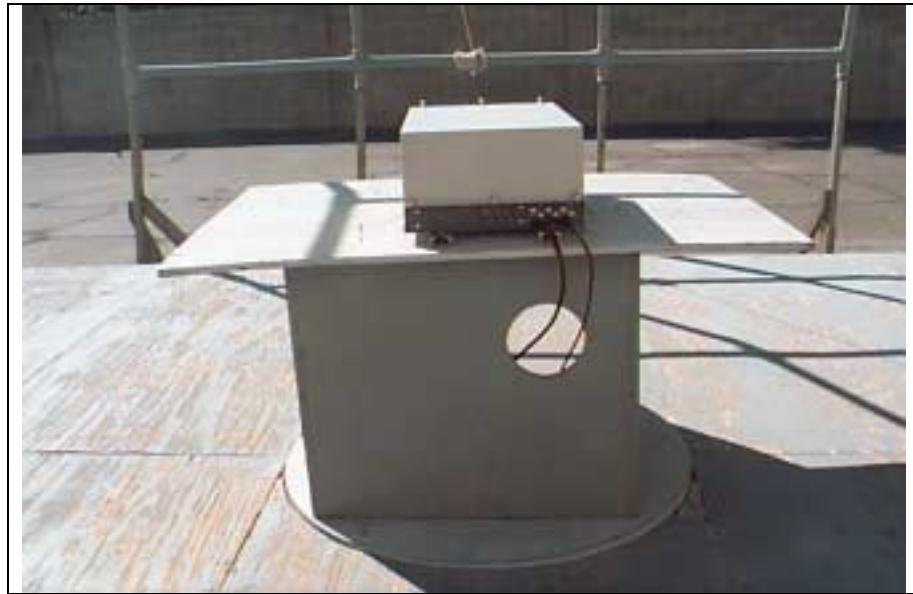
- (a) Search Antenna - Rotatable on boom
- (b) Non-metallic boom
- (c) Non-metallic mast
- (d) Adjustable horizontally
- (e) Equipment Under Test
- (f) Turntable
- (g) Boom adjustable in height.
- (h) External control cables routed horizontally at least one wavelength.
- (i) Rotatable
- (j) Cables routed through hollow turntable center
- (k) 30 cm or less
- (l) External power source
- (m) 10 cm diameter coil of excess cable
- (n) 25 cm (V), 1 m-7 m (V, H)
- (o) 25 cm from bottom end of 'V', 1m normally
- (p) Calibrated Cable at least 10m in length
- (q) Amplifier (optional)
- (r) Spectrum Analyzer

Asset	Description (as applicable)	s/n	Cycle	Last Cal
Per ANSI C63.4-1992/2000 Draft, 10.1.4				
<u>TRANSDUCER</u>				
i00088	EMCO 3109-B 25MHz-300MHz	2336	12 mo.	Sep-01
i00089	Aprel 2001 200MHz-1GHz	001500	12 mo.	Sep-01
i00103	EMCO 3115 1GHz-18GHz	9208-3925	12 mo.	Sep-01
i00065	EMCO 3301-B Active Monopole	2635	12 mo.	Sep-01
<u>AMPLIFIER</u>				
i00028	HP 8449A	2749A00121	12 mo.	Mar-01
<u>SPECTRUM ANALYZER</u>				
i00029	HP 8563E	3213A00104	12 mo.	Aug-01
i00033	HP 85462A	3625A00357	12 mo.	May-01
i00048	HP 8566B	2511AD1467	6 mo.	May-01
<u>MISCELLANEOUS</u>				
Microphone				
Antenna				
All Ports Terminated				

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TEST SETUP: Radiated Emissions  
g01a0003: 2001-Oct-08 Mon 14:25:28  
STATE: 0:General



TEST SETUP: Radiated Emissions  
g01a0004: 2001-Oct-08 Mon 14:25:28  
STATE: 0:General



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NAME OF TEST:

Receiver Spurious Emissions (Radiated)

MEASUREMENT DETAILS

SITE REFERENCE	= 31040/SIT
SPECTRUM SEARCHED	= 0 to 10 x $F_R$
WORST CASE	= V
LIMITS	= 15.109(a) (Attached)
ALL OTHER EMISSIONS	= 20 dB OR MORE BELOW LIMIT

TESTS WERE CONDUCTED WITH:

- a. All controls and switches operated.
- b. Half-wave dipole antenna or manufacturer/applicant supplied antenna.

SAMPLE CALCULATION:

$$\begin{aligned} \text{EMISSION FREQUENCY, MHz} &= 3099.783334 \\ \text{LEVEL} &= \log_{10} \frac{(-59.5 + -5.39)}{20} \\ \text{LEVEL, } \mu\text{V/m} @ 10m &= 507.57 \end{aligned}$$

MEASUREMENT RESULTS	= ATTACHED
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NOTE: WORST CASE OF SCAN AND NON-SCAN MODES REPORTED.

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NAME OF TEST: Receiver Spurious Emissions (Radiated)

RULE 15.109(a) LIMITS:

FREQUENCY, MHz	FIELD STRENGTH μV/m	DISTANCE, m		
			30 - 88	88 - 216
30 - 88	100	3		
88 - 216	150	3		
216 - 960	200	3		
Above 960	500	3		

g01a0177: 2001-Oct-04 Thu 15:36:00

STATE: 0:General

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBuV	@ m	C.F., dB	μV/m @	μV/m @ 1 N.M.
3050.000000	3099.783334	59.5	3	-5.39	507.57	3 ≤0.918
3050.000000	3106.583334	59.17	3	-5.37	489.78	3 ≤0.918
3050.000000	3108.638334	60.33	3	-5.37	559.76	3 ≤0.918
3050.000000	3113.758334	59.67	3	-5.35	520	3 ≤0.918
3050.000000	6188.486334	43.17	3	0.85	158.85	3 ≤0.918
3050.000000	6213.501334	43.17	3	0.89	159.59	3 ≤0.918
3050.000000	6217.191334	44.33	3	0.9	182.6	3 ≤0.918
3050.000000	6220.450334	42.17	3	0.91	142.56	3 ≤0.918

All other emissions in the required measurement range were more than 20 dB below the required limits.

PERFORMED BY:

Doug Noble, B.A.S. E.E.T.

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NAME OF TEST: A/C Powerline Conducted Emissions

SPECIFICATION: FCC: 47 CFR 15.107

GUIDE: IEEE Standard 213

TEST CONDITIONS: S. T. & H.

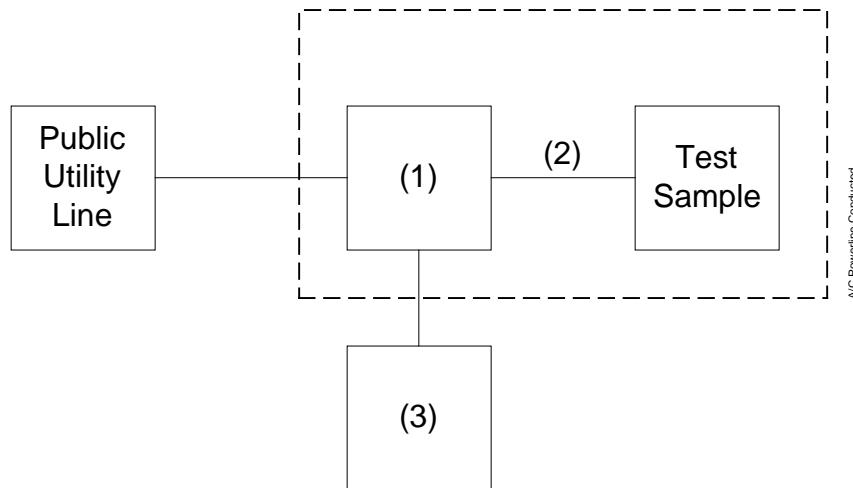
TEST EQUIPMENT: As per attached page

MEASUREMENT PROCEDURE

1. A test sample was connected to the Public Utility lines through a LISN Ailtech Model 94641-1 (50  $\mu$ H).
2. A reference level of 250  $\mu$ V was set on the Spectrum Analyzer. The spectrum was searched over the range of 450 kHz to 30 MHz.
3. All other emissions were 20 dB or more below limit.
4.    The test sample used a charger.  
x The test sample does not use a charger.
5. Measurement Results: Attached.

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AC POWERLINE CONDUCTED MEASUREMENTS

Asset (as applicable)	Description	s/n	Cycle	Last Cal
Per ANSI C63.4-1992/2000 Draft, 10.1.4				
(1) LINE IMPEDANCE STABILIZATION NETWORK				
i00077	Singer 91221-1 (5 $\mu$ H)	0396	12 mo.	
i00155	Eaton 94641-1 (50 $\mu$ H)	178	12 mo.	Sep-01
i00167	Ailtech 94641-1 (50 $\mu$ H)	0103	12 mo.	
(2) SCREEN ROOM				
i00169	Lindgren 22-2/2-0	3861	N/A	none
i00170	Lindgren LG170	4999		
(3) SPECTRUM ANALYZER				
i00029	HP 8563E	3213A00104	12 mo.	Aug-01
i00033	HP 85462A	3625A00357	12 mo.	May-01
i00048	HP 8566B	2511AD1467	6 mo.	May-01

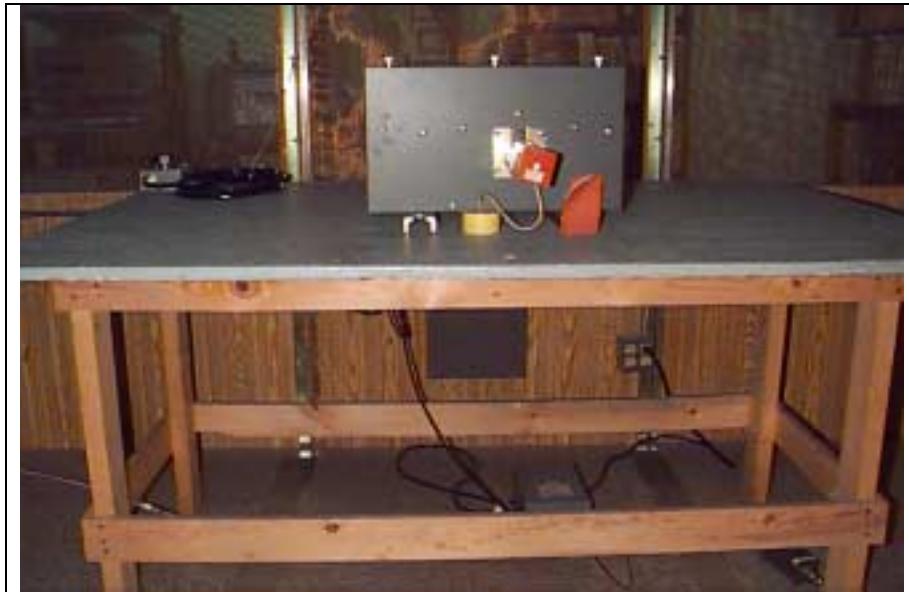
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TEST SETUP: A/C Powerline Conducted Emissions

g01a0009: 2001-Oct-09 Tue 14:29:25

STATE: 0:General



TEST SETUP: A/C Powerline Conducted Emissions

g01a0010: 2001-Oct-09 Tue 14:29:25

STATE: 0:General



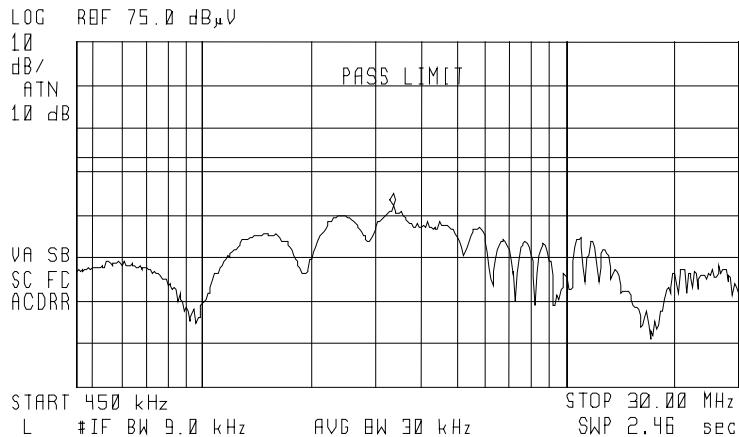
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NAME OF TEST: A/C Powerline Conducted Emissions  
 g01a0182: 2001-Oct-09 Tue 14:15:00  
 STATE: 0:General

[Signature]

ACTV DET: PBAK  
 MEAS DET: PBAK QP AVG  
 MKR 3.35 MHz  
 36.92 dB $\mu$ V



L1 Grounded

PERFORMED BY:


 Doug Noble, B.A.S. E.E.T.

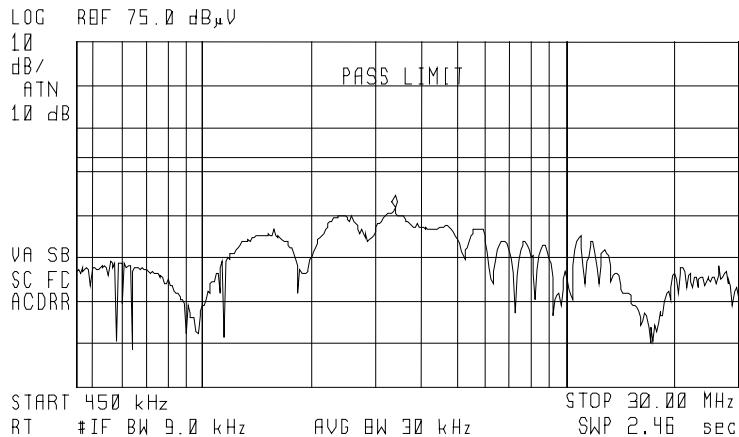
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NAME OF TEST: A/C Powerline Conducted Emissions  
 g01a0183: 2001-Oct-09 Tue 14:23:00  
 STATE: 0:General

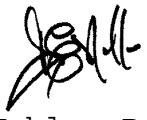
[Signature]

ACTV DET: PBAK  
 MEAS DET: PBAK QP AVG  
 MKR 3.39 MHz  
 36.68 dB $\mu$ V



L2 Grounded

PERFORMED BY:


 Doug Noble, B.A.S. E.E.T.

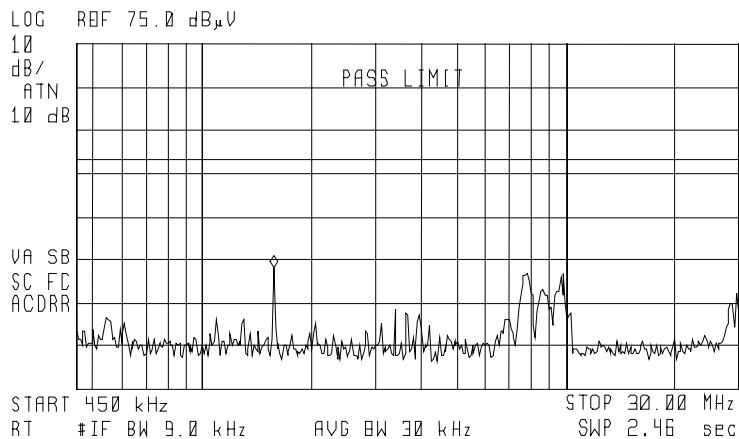
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NAME OF TEST: A/C Powerline Conducted Emissions  
 g01a0185: 2001-Oct-09 Tue 14:27:00  
 STATE: 0:General

[Signature]

ACTV DET: PBAK  
 MEAS DET: PBAK QP AVG  
 MKR 1.57 MHz  
 23.29 dB $\mu$ V



L1 Ungrounded

PERFORMED BY:



Doug Noble, B.A.S. E.E.T.

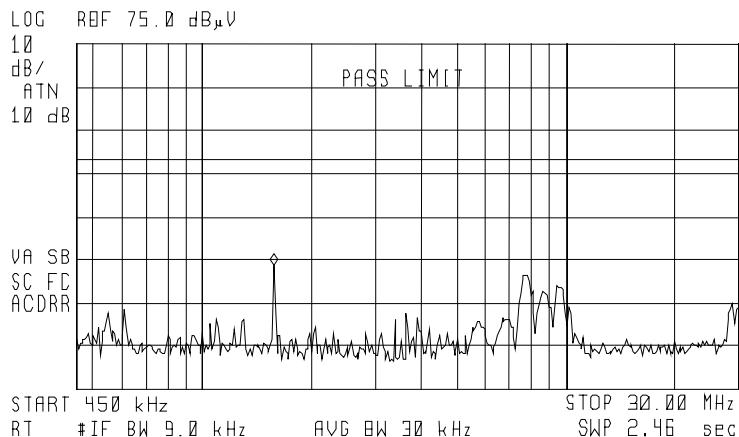
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NAME OF TEST: A/C Powerline Conducted Emissions  
 g01a0184: 2001-Oct-09 Tue 14:25:00  
 STATE: 0:General

[Signature]

ACTV DET: PBAK  
 MEAS DET: PBAK QP AVG  
 MKR 1.57 MHz  
 23.54 dB $\mu$ V



L2 Ungrounded

PERFORMED BY:  
END OF TEST REPORT

Doug Noble, B.A.S. E.E.T.

THE APPLICANT HAS BEEN CAUTIONED AS TO THE FOLLOWING:

15.21 INFORMATION TO USER.

The users manual or instruction manual for an intentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

15.27(a) SPECIAL ACCESSORIES.

Equipment marketed to a consumer must be capable of complying with the necessary regulations in the configuration in which the equipment is marketed. Where special accessories, such as shielded cables and/or special connectors are required to enable an unintentional or intentional radiator to comply with the emission limits in this part, the equipment must be marketed with, i.e. shipped and sold with, those special accessories. However, in lieu of shipping or packaging the special accessories with the unintentional or intentional radiator, the responsible party may employ other methods of ensuring that the special accessories are provided to the consumer, without additional charge.

Information detailing any alternative method used to supply the special accessories for a grant of equipment authorization or retained in the verification records, as appropriate. The party responsible for the equipment, as detailed in § 2.909 of this chapter, shall ensure that these special accessories are provided with the equipment. The instruction manual for such devices shall include appropriate instructions on the first page of text concerned with the installation of the device that these special accessories must be used with the device. It is the responsibility of the user to use the needed special accessories supplied with the equipment.

STATEMENT OF COMPLIANCE

THIS IS TO CERTIFY:

THAT, ON THE BASIS OF THE MEASUREMENTS MADE, THE EQUIPMENT TESTED IS CAPABLE OF COMPLYING WITH THE REQUIREMENTS OF

FCC RULE PART 15, SUBPART B x

FCC RULE PART 15, SUBPART C   

USING ANSI C63.4-1992/2000 Draft IN EFFECT AS OF THIS DATE, UNDER NORMAL OPERATION, WITH THE USUAL MAINTENANCE.

THAT THE DATA CONTAINED HEREIN IS A SUMMARY (WORST CASE) OF THAT OBTAINED ON SEVERAL RANDOMLY-SELECTED PRODUCTION SAMPLES.

THAT THE EQUIPMENT MEETS OR EXCEEDS THE REQUIREMENTS OF PART 15.

LIST OF EXHIBITS  
(FCC DECLARATION OF CONFORMITY - REVISED 9/28/97)

APPLICANT: Kelvin Hughes Limited

EQUIPMENT: CTX-A9  
CICCTX-A9

BY APPLICANT:

1. LETTER OF AUTHORIZATION
2. IDENTIFICATION LABEL DRAWING: 2.1047
  - LABEL
  - LOCATION OF LABEL
  - COMPLIANCE STATEMENT
  - LOCATION OF COMPLIANCE STATEMENT
3. ORIGINAL DESIGN DRAWINGS/SPECIFICATIONS: 2.1075(a)(1)
4. COMPLIANCE INFORMATION STATEMENT: 2.1077(a)

BY M.F.A. INC.

- A. TESTIMONIAL & STATEMENT OF CERTIFICATION
- B. STATEMENT OF QUALIFICATIONS