



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:

A handwritten signature in black ink, reading 'Morton Flom P. Eng.', is positioned above the printed name.

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 IG6 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:



Morton Flom, P. Eng.





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.

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

 <p>THE AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION</p> <p>ACCREDITED LABORATORY</p> <p>A2LA has accredited</p> <p>M. FLOM ASSOCIATES, INC. Chandler, AZ</p> <p>for technical competence in the field of</p> <p>Electrical (EMC) Testing</p> <p>The accreditation covers the specific tests and types of tests listed on the agreed scope of accreditation. This laboratory meets the requirements of ISO/IEC 17025 - 1999 "General Requirements for the Competence of Testing and Calibration Laboratories" and any additional program requirements in the identified field of testing. Testing and calibration laboratories that comply with this International Standard also operate in accordance with ISO 9001 or ISO 9002.</p> <p>Presented this 2nd day of March, 2001.</p>  <p>Peter Mlynar President For the Accreditation Council Certificate Number 1008.01 Valid to December 31, 2002</p> <p>For tests or types of tests to which this accreditation applies, please refer to the laboratory's Electrical (EMC) Scope of Accreditation</p>	 <p>American Association for Laboratory Accreditation</p> <p><u>SCOPE OF ACCREDITATION TO ISO/IEC 17025:1999</u></p> <p>M. FLOM ASSOCIATES, INC. Electronic Testing Laboratory 3356 North San Marcos Place, Suite 107 Chandler, AZ 85223 Morton Flom Phone: 480 926 3100</p> <p>ELECTRICAL (EMC)</p> <p>Valid to: December 31, 2002 Certificate Number: 1008-01</p> <p>In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following <u>electromagnetic compatibility tests</u>:</p> <table border="0"> <thead> <tr> <th>Tests</th> <th>Standard(s)</th> </tr> </thead> <tbody> <tr> <td>RF Emissions</td> <td>FCC Part 15 (Subparts B and C) using ANSI C63.4-1992; CISPR 11; CISPR 13; CISPR 14; CISPR 22; EN 55011; EN 55013; EN 55014; EN 55022; EN 50081-1; EN 50081-2; ICES-003; AS/NZS 1044; AS/NZS 1053; AS/NZS 3548; AS/NZS 4251.1; CNS 13438</td> </tr> <tr> <td>Harmonic Currents</td> <td>EN 61000-3-2</td> </tr> <tr> <td>Fluctuation and Flicker</td> <td>EN 61000-3-3</td> </tr> <tr> <td>RF Immunity</td> <td>EN: 50082-1, 50082-2 (both excluding "Power Frequency Magnetic Field Immunity" and "Voltage Dips, Short Interruptions, and Line Voltage Variations"); AS/NZS 4251.1</td> </tr> <tr> <td>Radiated Susceptibility</td> <td>EN 61000-4-3; ENV 50140; ENV 50204; IEC 1000-4-3; IEC 801-3</td> </tr> <tr> <td>EFT</td> <td>EN 61000-4-4; IEC 1000-4-4; IEC 801-4</td> </tr> <tr> <td>Surge</td> <td>EN 61000-4-5; ENV 50142; IEC 1000-4-5; IEC 801-5</td> </tr> <tr> <td>47 CFR (FCC)</td> <td>2, 21, 22, 23, 24, 74, 80, 87, 90, 95, 97</td> </tr> </tbody> </table> <p></p> <p>5301 Buckeystown Pike, Suite 350 • Frederick, MD 21704-8373 • Phone: 301-644 3248 • Fax: 301-662 2974</p>	Tests	Standard(s)	RF Emissions	FCC Part 15 (Subparts B and C) using ANSI C63.4-1992; CISPR 11; CISPR 13; CISPR 14; CISPR 22; EN 55011; EN 55013; EN 55014; EN 55022; EN 50081-1; EN 50081-2; ICES-003; AS/NZS 1044; AS/NZS 1053; AS/NZS 3548; AS/NZS 4251.1; CNS 13438	Harmonic Currents	EN 61000-3-2	Fluctuation and Flicker	EN 61000-3-3	RF Immunity	EN: 50082-1, 50082-2 (both excluding "Power Frequency Magnetic Field Immunity" and "Voltage Dips, Short Interruptions, and Line Voltage Variations"); AS/NZS 4251.1	Radiated Susceptibility	EN 61000-4-3; ENV 50140; ENV 50204; IEC 1000-4-3; IEC 801-3	EFT	EN 61000-4-4; IEC 1000-4-4; IEC 801-4	Surge	EN 61000-4-5; ENV 50142; IEC 1000-4-5; IEC 801-5	47 CFR (FCC)	2, 21, 22, 23, 24, 74, 80, 87, 90, 95, 97
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"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 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 IG6 2UR, England

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2.911:
2.1033(b)(6)

TECHNICAL REPORT

MANUFACTURER:

Kelvin Hughes Limited
New North Rd.
Hainault, Ilford
Essex IG6 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
- x 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

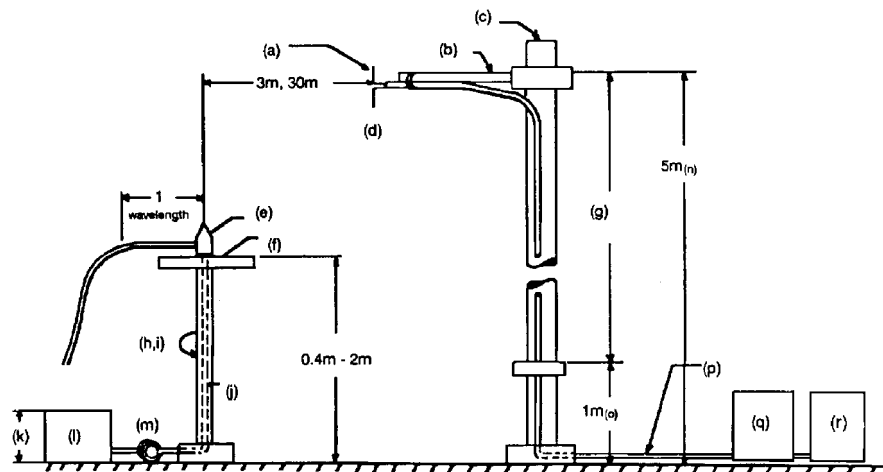
1. At first, bench tests were performed to locate the spurious emissions at the antenna terminals.
2. In the field, tests were conducted over the range shown, The test sample was set up on a wooden turntable above ground, and at a distance of three meters from the antenna connected tot he Spectrum Analyzer.
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:

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

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:

EMISSION FREQUENCY, MHz = 3099.783334

LEVEL = $\text{Log}_{10}^{-1} \left(\frac{-59.5 + -5.39}{20} \right)$

LEVEL, $\mu\text{V/m}$ @ 10m = 507.57

MEASUREMENT RESULTS = ATTACHED

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 $\mu\text{V/m}$	DISTANCE, m
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	$\mu\text{V/m}$	@ m	$\mu\text{V/m}$ @ 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.

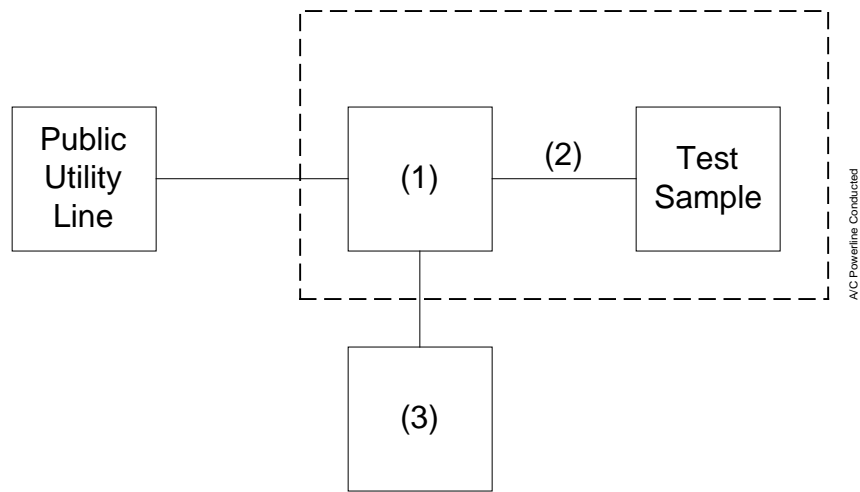
PAGE NO. 11 of 17.
NAME OF TEST: A/C Powerline Conducted Emissions
SPECIFICATION: FCC: 47 CFR 15.107
GUIDE: IEEE Standard 213
TEST CONDITIONS: S. T. & H.
TEST EQUIPMENT: As per attached page

MEASUREMENT PROCEDURE

1. A test sample was connected to the Public Utility lines through a LISN Ailtech Model 94641-1 (50 μ H).
2. A reference level of 250 μ 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	Description (as applicable)	s/n	Cycle	Last Cal
<small>Per ANSI C63.4-1992/2000 Draft, 10.1.4</small>				
(1)	<u>LINE IMPEDANCE STABILIZATION NETWORK</u>			
i00077	Singer 91221-1 (5 μ H)	0396	12 mo.	
i00155	Eaton 94641-1 (50 μ H)	178	12 mo.	Sep-01
i00167	Ailtech 94641-1 (50 μ H)	0103	12 mo.	
(2)	<u>SCREEN ROOM</u>			
i00169	Lindgren 22-2/2-0	3861	N/A	none
i00170	Lindgren LG170	4999		
(3)	<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

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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



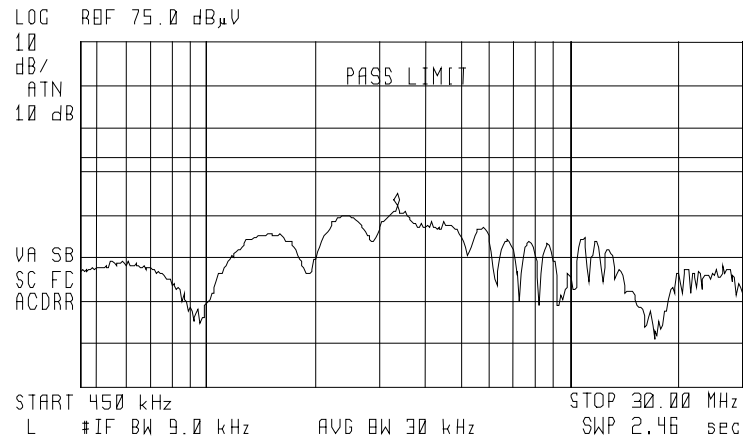
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NAME OF TEST: A/C Powerline Conducted Emissions
g01a0182: 2001-Oct-09 Tue 14:15:00
STATE: 0:General




ACTV DET: PBAK
MEAS DET: PBAK QP AVG
MKR 3.35 MHz
36.92 dBμV



L1 Grounded

PERFORMED BY:


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

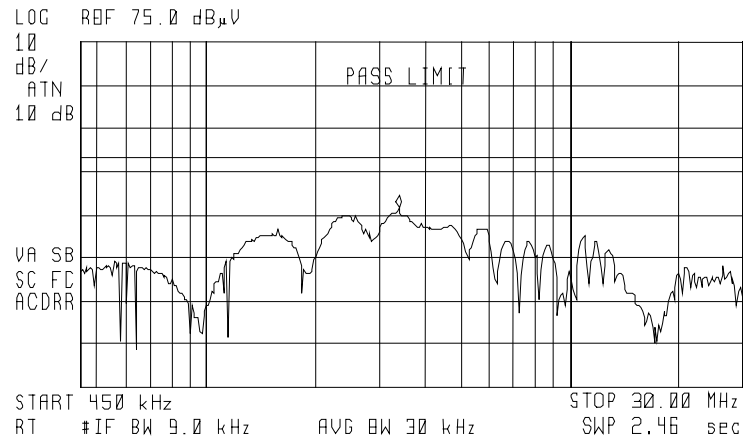
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NAME OF TEST: A/C Powerline Conducted Emissions
g01a0183: 2001-Oct-09 Tue 14:23:00
STATE: 0:General



ACTV DET: PBAK
MEAS DET: PBAK QP AVG
MKR 3.39 MHz
36.68 dBμV



L2 Grounded

PERFORMED BY:

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

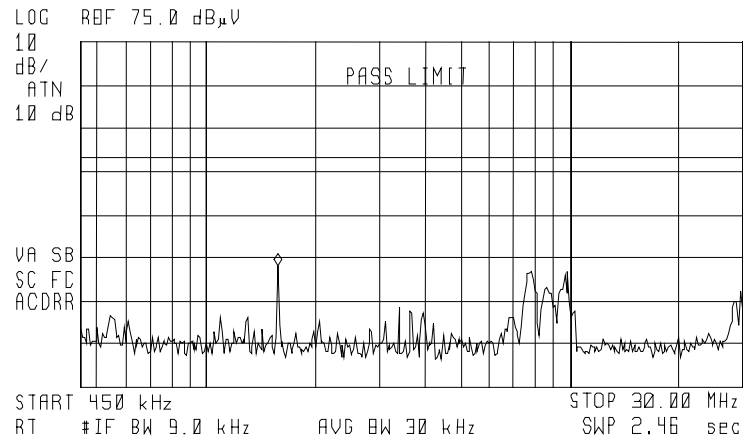
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NAME OF TEST: A/C Powerline Conducted Emissions
 g01a0185: 2001-Oct-09 Tue 14:27:00
 STATE: 0:General




ACTV DET: PBAK
 MEAS DET: PBAK QP AVG
 MKR 1.57 MHz
 23.29 dBμV



L1 Ungrounded

PERFORMED BY:


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

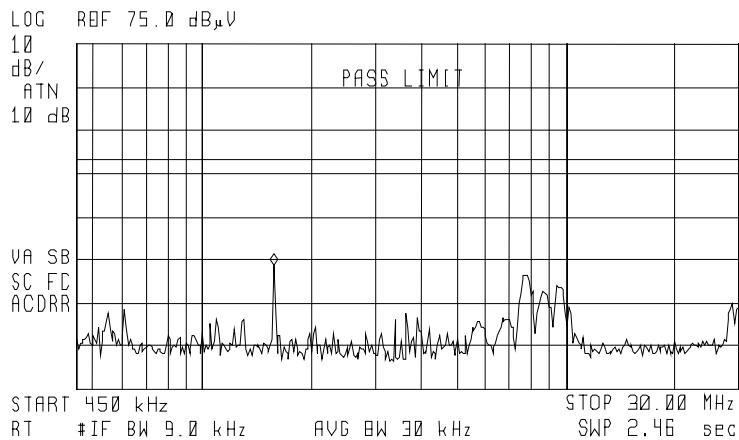
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NAME OF TEST: A/C Powerline Conducted Emissions
 g01a0184: 2001-Oct-09 Tue 14:25:00
 STATE: 0:General



ACTV DET: PBAK
 MEAS DET: PBAK QP AVG
 MKR 1.57 MHz
 23.54 dBμV



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