



M. Flom Associates, Inc. - Global Compliance Center

3356 North San Marcos Place, Suite 107, Chandler, Arizona 85225-7176

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Transmitter Certification

of

FCC ID: SCSUX300

Model: UX300

to

Federal Communications Commission

Rule Part 15.239 and Confidentiality

Date of report: July 31, 2004

On the Behalf of the Applicant:

UniKit Electronics Corporation

At the Request of:

P.O.: N.A. 4/5/2004

UniKit Electronics Corporation
#121 - 3823 Henning Drive
Burnaby, BC V5C6P3 Canada

Attention of:

Nima Ahrari, General Manager
(604) 298-3305; FAX: -3390
direct: (604) 293-2233
nima.ahrari@unikit.com

Supervised by:

A handwritten signature in black ink, appearing to read "D. Lee".

David E. Lee,
Compliance Test Manager

List of Exhibits

(FCC **Certification** (Transmitters) - Revised 9/28/98)

Applicant: UniKit Electronics Corporation

FCC ID: SCSUX300

By Applicant:

1. Letter of Authorization
2. Confidentiality Request: 0.457 And 0.459
4. Identification Drawings, 2.1033(c)(11)
5. Photographs, 2.1033(c)(12)
6. Documentation: 2.1033(c)
 - (3) User Manual
 - (9) Tune Up Info
 - (10) Schematic Diagram
 - (10) Circuit Description
 - Block Diagram
 - Parts List
 - Active Devices

By M.F.A. Inc.:

- A. Testimonial & Statement of Certification

The Applicant has been cautioned as to the following:**15.21 Information to the 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.

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2.1046(a)	RF Power Output (Radiated)	6
2.1053(a)	Field Strength of Spurious Radiation	7

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

a)

Test Report

b) Laboratory:
(FCC: 31040/SIT)
(Canada: IC 2044)

M. Flom Associates, Inc.
3356 N. San Marcos Place, Suite 107
Chandler, AZ 85225

c) Report Number:

d0470071

d) Client:

UniKit Electronics Corporation
#121 - 3823 Henning Drive
Burnaby, BC V5C6P3 Canada

e) Identification:

UX300
FCC ID: SCSUX300

EUT Description:

Low Power Broadcast FM

f) EUT Condition:

Not required unless specified in individual tests.

g) Report Date:

July 31, 2004

EUT Received:

April 10, 2004

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:



David E. Lee,
Compliance Test Manager

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.

**Standard Test Conditions
and
Engineering Practices**

Except as noted herein, the following conditions and procedures were observed during the testing:

In accordance with ANSI C63.4-1992/2000 Draft, section 6.1.9, and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104 °F) unless the particular equipment requirements specify testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Prior to testing, the EUT was tuned up in accordance with the manufacturer's alignment procedures. All external gain controls were maintained at the position of maximum and/or optimum gain throughout the testing.

Measurement results, unless otherwise noted, are worst-case measurements.

Page Number

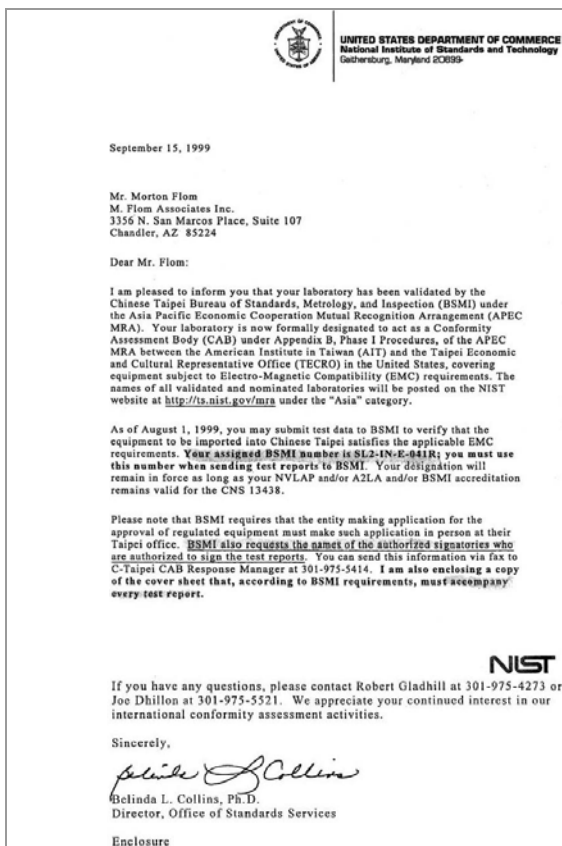
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A2LA

"A2LA has accredited M. Flom Associates, Inc. Chandler, AZ for technical competence in the field of Electrical Testing. 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."

Certificate Number: **2152-01**



NIST

I am pleased to inform you that your laboratory has been validated by the Chinese Taipei Bureau of Standards, Metrology and Inspection (BSMI) under the Asia Pacific Economic Cooperation Mutual Recognition Agreement (APEC MRA). Your laboratory is now formally designated to act as a Conformity Assessment Body (CAB) under Appendix B, Phase I Procedures, of the APEC MRA between the American Institute in Taiwan (AIT) and the Taipei Economic and Cultural Representative Office (TECRO) in the United States, covering equipment subject to Electro-Magnetic Compatibility (EMC) requirements. The names of all validated and nominated laboratories will be posted on the NIST website at <http://ts.nist.gov/mra> under the 'Asia' category."

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List of General Information Required for Certification

In Accordance with FCC Rules and Regulations,
Volume II, Part 2 and to 15.239

Sub-part 2.1033**(c)(1): Name and Address of Applicant:**

UniKit Electronics Corporation
#121 - 3823 Henning Drive
Burnaby, BC V5C6P3 Canada

Manufacturer:

UniKit Electronics Corporation
#121 - 3823 Henning Drive
Burnaby, BC V5C6P3 Canada

(c)(2): FCC ID:

SCSUX300

Model Number:

UX300

(c)(3): Instruction Manual(s):

Please see attached exhibits

(c)(4): Type of Emission:

200KF3E

(c)(5): Frequency Range, MHz:

106.7 to 107.9

(c)(6): Power Rating,:☐ Switchable☐ Variable

250 uV/m

☒ N/A**(c)(7): Maximum Power Rating:**

250 uV/m

DUT Results:Passes ☒ xFails ☐

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Subpart 2.1033 (continued)

(c)(8): Voltages & currents in all elements in final RF stage, including final transistor or solid-state device:

Collector Current, A	=	per manual
Collector Voltage, Vdc	=	per manual
Supply Voltage, Vdc	=	5.0

(c)(9): **Tune-Up Procedure:**

Please see attached exhibits

(c)(10): **Circuit Diagram/Circuit Description:**

Including description of circuitry & devices provided for determining and stabilizing frequency, for suppression of spurious radiation, for limiting modulation and limiting power.

Please see attached exhibits

(c)(11): **Label Information:**

Please see attached exhibits

(c)(12): **Photographs:**

Please see attached exhibits

(c)(13): **Digital Modulation Description:**

☐ Attached Exhibits
☒ N/A

(c)(14): **Test and Measurement Data:**

Follows

Page Number 6 of 10. AMENDED August 4, 2004

Name of Test: RF Power Output (Radiated)

Specification: 47 CFR 2.1046(a)

Measurement Procedure (Radiated)

1. The EUT was placed on an open-field site and its radiated field strength at a known distance was measured by means of a spectrum analyzer. Equivalent loading was calculated from the equation $P_t = ((E \times R)^2 / 49.2)$ watts, where $R = 3m$.
2. Measurement accuracy is ± 1.5 dB.

Test Equipment

Asset	Description	s/n	Cycle	Last Cal
Transducer				
i00088	EMCO 3109-B 25MHz-300MHz	2336	12 mo.	Sep-03
X i00089	Apriel 2001 200MHz-1GHz	001500	12 mo.	Sep-03
X i00103	EMCO 3115 1GHz-18GHz	9208-3925	12 mo.	Jan-04
Amplifier				
X i00028	HP 8449A	2749A00121	12 mo.	May-04
Spectrum Analyzer				
X i00029	HP 8563E	3213A00104	12 mo.	May-04
X i00033	HP 85462A	3625A00357	12 mo.	Aug-03
Substitution Generator				
X i00067	HP 8920A Communication TS	3345U01242	12 mo.	Oct-03
i00207	HP 8753D Network Analyzer	3410A08514	12 mo.	Jul-04

Measurement Results

g0460006: 2004-Jun-09 Wed 08:25:00

State: 2:High Power

Ambient Temperature: 23°C \pm 3°C

Amps Mode:

Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV/m	CF, dB	Calc, Meter, dBuV/m	uV/m @ 3m
106.700000	106.709000	34.71	13.02	47.73	249.9
107.500000	107.517500	34.59	13.09	47.68	249.8

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Name of Test: Field Strength of Spurious Radiation

Specification: 47 CFR 2.1053(a)

Guide: ANSI/TIA/EIA-603-1992/2001, Paragraph 1.2.12 and Table 16, 47 CFR 22.917

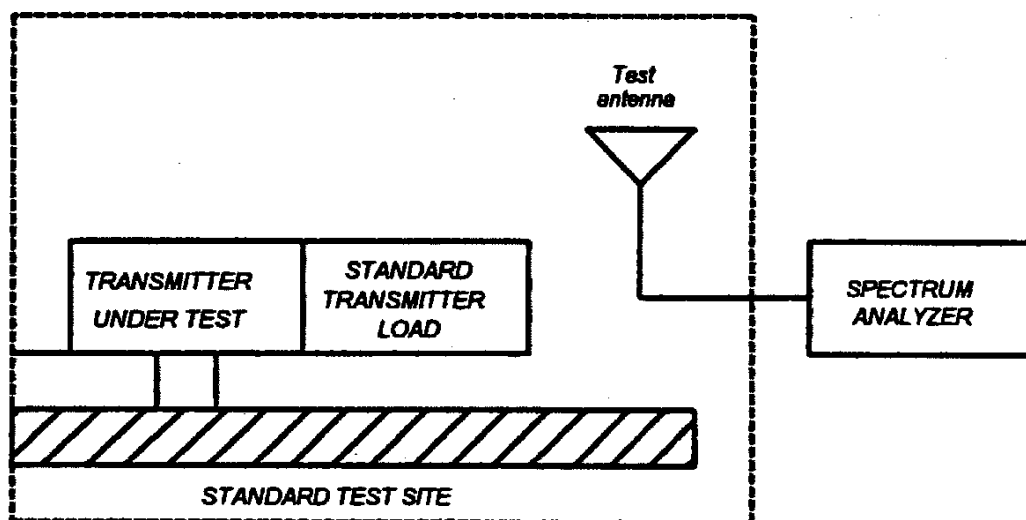
Measurement Procedure

Definition:

Radiated spurious emissions are emissions from the equipment when transmitting into a non-radiating load on a frequency or frequencies which are outside an occupied band sufficient to ensure transmission of information of required quality for the class of communications desired.

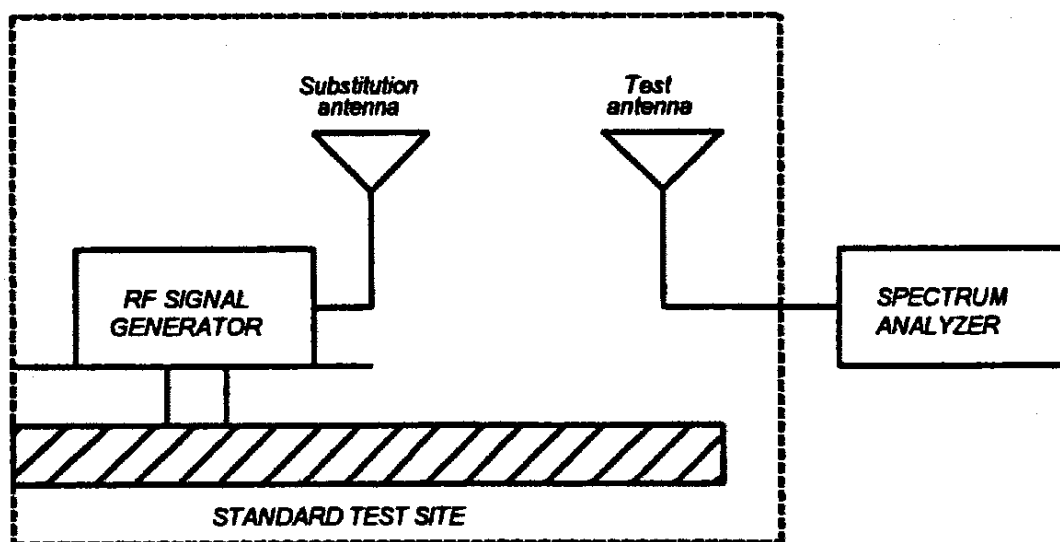
Method of Measurement:

- A) Connect the equipment as illustrated
- B) Adjust the spectrum analyzer for the following settings:
 - 1) Resolution Bandwidth 100 kHz (<1 GHz), 1 MHz (> 1GHz).
 - 2) Video Bandwidth ≥ 3 times Resolution Bandwidth, or 30 kHz (22.917)
 - 3) Sweep Speed ≤ 2000 Hz/second
 - 4) Detector Mode = Mean or Average Power
- C) Place the transmitter to be tested on the turntable in the standard test site. The transmitter is transmitting into a non-radiating load that is placed on the turntable. The RF cable to this load should be of minimum length.



Name of Test: Field Strength of Spurious Radiation (Cont.)

- D) For each spurious measurement the test antenna should be adjusted to the correct length for the frequency involved. This length may be determined from a calibration ruler supplied with the equipment. Measurements shall be made from the lowest radio frequency generated in the equipment to the tenth harmonic of the carrier, except for the region close to the carrier equal to \pm the test bandwidth (see section 1.3.4.4).
- E) For each spurious frequency, raise and lower the test antenna from 1 m to 4 m to obtain a maximum reading on the spectrum analyzer with the test antenna at horizontal polarity. Repeat this procedure to obtain the highest possible reading. Record this maximum reading.
- F) Repeat step E) for each spurious frequency with the test antenna polarized vertically.



- G) Reconnect the equipment as illustrated.
- H) Keep the spectrum analyzer adjusted as in step B).
- I) Remove the transmitter and replace it with a substitution antenna (the antenna should be half-wavelength for each frequency involved). The center of the substitution antenna should be approximately at the same location as the center of the transmitter. At lower frequencies, where the substitution antenna is very long, this will be impossible to achieve when the antenna is polarized vertically. In such case the lower end of the antenna should be 0.3 m above the ground.

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Name of Test:

Field Strength of Spurious Radiation (Cont.)

- J) Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a non-radiating cable. With the antennas at both ends horizontally polarized and with the signal generator tuned to a particular spurious frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output.
- K) Repeat step J) with both antennas vertically polarized for each spurious frequency.
- L) Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps J) and K) by the power loss in the cable between the generator and the antenna and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna.
- M) The levels recorded in step L) are absolute levels of radiated spurious emissions in dBm. The radiated spurious emissions in dB can be calculated by the following:

Radiated spurious emissions dB =

$$10\log_{10}(\text{TX power in watts}/0.001) - \text{the levels in step I)}$$

NOTE: It is permissible that other antennas provided can be referenced to a dipole.

Test Equipment

Asset	Description	s/n	Cycle	Last Cal
Transducer				
	i00088	EMCO 3109-B 25MHz-300MHz	2336	12 mo. Sep-03
X	i00089	April 2001 200MHz-1GHz	001500	12 mo. Sep-03
X	i00103	EMCO 3115 1GHz-18GHz	9208-3925	12 mo. Jan-04
Amplifier				
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Spectrum Analyzer				
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X	i00033	HP 85462A	3625A00357	12 mo. Aug-03
Substitution Generator				
X	i00067	HP 8920A Communication TS	3345U01242	12 mo. Oct-03
	i00207	HP 8753D Network Analyzer	3410A08514	12 mo. Jul-04

Microphone, Antenna Port, and Cabling

Microphone	N	Cable Length	Meters
Antenna Port Terminated	<u>Y</u>	Load	Antenna Gain <u>0dB</u>
All Ports Terminated by Load	<u>Y</u>	Peripheral <u>USB</u>	

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Name of Test: Field Strength of Spurious Radiation

Measurement Results

g0460007: 2004-Jun-09 Wed 08:48:00

STATE: 2:High Power

Ambient Temperature: 23°C ± 3°C

Frequency Tuned, MHz	Frequency Emission, MHz	Calc dBuV/m	uV/m
106.700000	213.407500	47.4	234
106.700000	320.120000	46.1	202
106.700000	426.830000	43.4	148
106.700000	640.255000	28.3	26
106.700000	746.967500	35.8	62
106.700000	853.680000	29.7	31
106.700000	960.392500	35.2	57
106.700000	1067.105000	33.9	49

END OF TEST REPORT

**Testimonial
and
Statement of Certification**

This is to Certify:

1. **That** the application was prepared either by, or under the direct supervision of, the undersigned.
2. **That** the technical data supplied with the application was taken under my direction and supervision.
3. **That** the data was obtained on representative units, randomly selected.
4. **That**, to the best of my knowledge and belief, the facts set forth in the application and accompanying technical data are true and correct.

Certifying Engineer:



David E. Lee,
Compliance Test Manager