

MFA **M. Flom Associates, Inc. - Global Compliance Center**
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C E R T I F I C A T I O N

of

RECEIVER MODEL: IC-R2

FCC ID: AFJIC-R2

to

FEDERAL COMMUNICATIONS COMMISSION

Part 15(B)
(New)

DATE OF REPORT: November 5, 1999

ON THE BEHALF OF THE APPLICANT:

Icom Incorporated

AT THE REQUEST OF:

P.O. UPS 10/25/99

Icom America, Inc.
2380 - 116th Ave. N. E.
P.O. C-90029
Bellevue, Washington 98009-9029

Attention of:

Masaaki Takahashi, Product Development Manager
(800) 872-4266; (425) 454-8155; FAX: -1509

SUPERVISED BY:




William H. Graff, Director
of Engineering

TABLE OF CONTENTS


<u>RULE</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
2.948	Description of Measurement Facilities	1
15.121 (b)	Scanning Receiver	6

PAGE NO. 1 of 7.

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: d99b0018
- d) Client: Icom America, Inc.
2380 - 116th Ave. N. E.
P.O. C-90029
Bellevue, Washington 98009-9029
- e) Identification: IC-R2
FCC ID: AFJIC-R2
Description: Scanning Receiver
- f) EUT Condition: Not required unless specified in individual tests.
- g) Report Date: November 5, 1999
EUT Received: October 25, 1999
- 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: 
William H. Graff, Director
of Engineering
- 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.

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



THE AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION

ACCREDITED LABORATORY

A2LA has accredited


M. FLOM ASSOCIATES, INC.
Chandler, AZ

for technical competence in the field of

Electrical (EMC) 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 Guide 25-1990 "General Requirements for the Competence of Calibration and Testing Laboratories" (equivalent to relevant requirements of the ISO 9000 series of standards) and any additional program requirements in the identified field of testing.

Presented this 24th day of November, 1998.



Pete Almy
President
For the Accreditation Council
Certificate Number 1008.01
Valid to December 31, 2000

For tests or types of tests to which this accreditation applies, please refer to the laboratory's Electrical (EMC) Scope of Accreditation.



American Association for Laboratory Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC GUIDE 25:1996 AND EN 45001

M. FLOM ASSOCIATES, INC.
Electronic Testing Laboratory
3156 North San Marcos Place, Suite 107
Chandler, AZ 85224-1571
Morton Flom Phone: 402 926 2100

ELECTRICAL (EMC)

Valid to: December 31, 2000 Certificate Number: 1008-01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following **electromagnetic compatibility** tests:

Tests	Standards
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; FCC Part 18; ICES 003; AS/NZS 1044; AS/NZS 1033; AS/NZS 3548; AS/NZS 4251.1
RF Immunity	EN 50082-1; EN 50082-2; AS/NZS 4251.1
Radiated Susceptibility	EN 61000-4-3; ENV 50140; ENV 50204; IEC 1000-4-3; IEC 801-3
ESD	EN 61000-4-2; IEC 1000-4-2; IEC 801-2
SFT	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
ET CFR (FCC)	2, 21, 22, 23, 24, 74, 80, 87, 90, 95, 97

Pete Almy

3361 Buckeystown Pike, Suite 350 • Frederick, MD 21784-4307 • Phone: 301 664 3288 • Fax: 301 662 2974

"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.

PAGE NO.

3 of 7.

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 3, 1997. All pertinent changes will be reported to the Commission by up-date prior to March 2000.

(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:

Icom Incorporated
1-6-19 Kamikurazukuri
Hirano-ku
Osaka, Japan 547

PAGE NO. 4 of 7.
2.911:
2.1033(b) (6)

TECHNICAL REPORT

MANUFACTURER:

Applicant

TRADE NAME:

ICOM

FCC ID:

AFJIC-R2

MODEL NO:

IC-R2

PHOTOGRAPHS:

SEE LIST OF EXHIBITS

15.31: MEASUREMENT STANDARD & PROCEDURE:

- IEEE STANDARD 187 WAS USED AS A GUIDE.
- FCC MEASUREMENT PROCEDURE MP-1
- FCC RULE PART 15(B) (NEW)

PAGE NO.

5 of 7.

EXPOSITORY STATEMENT

1. NUMBER OF BANDS = 3
2. NUMBER OF CHANNELS = N/A
3. TUNING RANGE, MHz = 30 to 823.995
849 to 868.995
894 to 960
4. OSCILLATOR RANGE, MHz = 296.7 to 693.3
5. I.F., MHz = 266.7
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:



William H. Graff, Director
of Engineering

PAGE NO. 6 of 7.

NAME OF TEST: Scanning Receivers and Frequency Converters Used With Scanning Receivers

SPECIFICATION: FCC: 47 CFR 15.121(b)

GUIDE: See Measurement Procedure Below

TEST CONDITIONS: S. T. & H.

TEST EQUIPMENT: As per attached page

GUIDE: 47 CFR 15.121(b): Except as provided in paragraph (c) of this section, scanning receivers shall reject any signals from Cellular Radiotelephone Service frequency bands that are 38 dB or higher based upon a 12 dB SINAD measurement, which is considered the threshold where a signal can be clearly discerned from any interference that may be present.

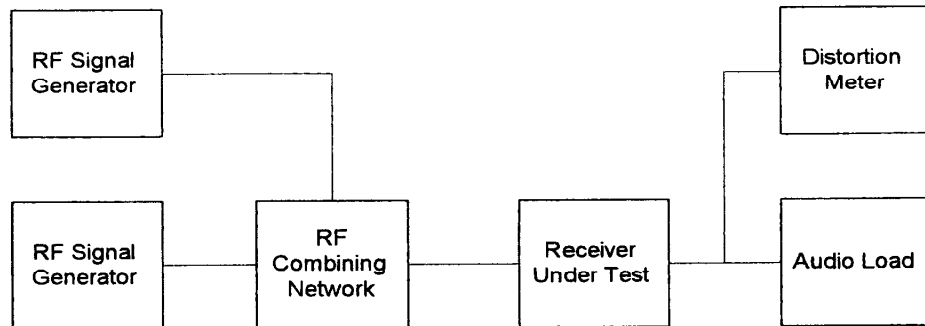
WARNING: MODIFICATION OF THIS DEVICE TO RECEIVE CELLULAR RADIOTELEPHONE SERVICE SIGNALS IS PROHIBITED UNDER FCC RULES AND FEDERAL LAW.

MEASUREMENT PROCEDURE

1. A search for all potential spurious responses was begun by setting a signal generator at a level of -47 dBm to each of three frequencies in the subscriber transmit and base transmit bands.
2. The EUT was then set to scan across it's entire receive band. The most sensitive of each spurious response was noted.
3. The equipment was connected as illustrated. A second radio frequency signal generator (unwanted signal source) was connected to the appropriate matching network.
4. In absence of the unwanted signal, the standard input signal was applied to the combining network. Its level was varied to obtain reference sensitivity. This level is P_{REF} .
5. The level of wanted input signal was increased by 3dB.
6. A high-level unwanted input signal, modulated with 400 Hz at 60% of the maximum permissible frequency deviation was connected to the combining network.
7. The unwanted signal frequency was varied over a range from 824-849 and 869-894 MHz, to search for degradation of the SINAD. When a response was found, the frequency of the unwanted signal was adjusted to maximize the degradation.
8. At the frequency of each spurious response the level of unwanted input signal was varied until the standard SINAD value obtained. The frequency of the unwanted signal and its level was recorded as P_{SPUR} .
9. Calculate the spurious response rejection for each frequency concerned as follows:

$$\text{Spurious Response Rejection} = P_{SPUR} - P_{REF}$$

SCANNING RECEIVER:



TEST RESULTS:

DISPLAYED FREQUENCY	IMAGE FREQUENCY	P _{REF} (dBm)	P _{SPUR} (dBm)	REJECTION (dB)
10.840	544.24	-108	-37	71
23.305	556.705	-110	-38	72
35.70	569.170	-114	-16	98
340.00	873.4	-108	-32	76
350.285	883.685	-108	-36	72
360.570	893.97	-111	-38	73
370.00	903.4	-112	-30	82
380.10	913.5	-112	-28	84
290.6	824	-103	-51	52
302.6	841	-113	-57	56
314.6	848	-110	-59	51
335.6	869	-111	-37	74
347.6	881	-111	-35	76
359.6	893	-114	-37	77

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of Engineering

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.

LIMITS: RULE 15.109(a): RECEIVER RADIATED EMISSION LIMITS

FREQUENCY, MHz	FIELD STRENGTH, $\mu\text{V}/\text{m}$	DISTANCE, m
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

LIMITS: RULE 15.111: RECEIVER CONDUCTED EMISSION LIMITS

The power at the antenna terminal at any frequency within the range of measurements shall not exceed 2.0 nanowatts.

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 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 **CERTIFICATION** (RECEIVERS) - REVISED 9/28/98)

APPLICANT: Icom Incorporated

EQUIPMENT: IC-R2
AFJIC-R2