



Oct. 06, 2005

AmericanTCB, Inc.
6731 Whittier Avenue, Suite C110
McLean, VA 22101

Subject: Certification Testing in accordance with FCC CFR 47, Part 15, Subpart B - Scanning Receivers Operating in the Frequency Band 0.495 to 999.99 MHz (excluding cellular bands).

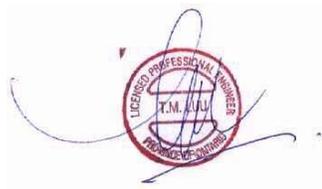
Product: VHF/UHF Dual Band FM Transceiver
Model No.: IC-P7A
FCC ID: AFJ286900

Dear Sir/Madam

As appointed agent for **ICOM Incorporated**, we would like to submit the application for FCC certification of the above product. Please review all files uploaded to AmericanTCB electronic filing site.

If you have any queries, please do not hesitate to contact us.

Yours truly,



Tri Minh Luu, P. Eng.,
V.P., Engineering

FC
31040/SIT

VCI
C-1376

Canada
46390-2049

NVLAP
200093-0

IT
00-034

BSMI
SL2-IN-E-1119R



3000 Bristol Circle,
Oakville, Ontario,
Canada L6H 6G4

Tel.: (905) 829-1570
Fax.: (905) 829-8050

Website: www.ultratech-labs.com
Email: vic@ultratech-labs.com



3000 Bristol Circle,
Oakville, Ontario,
Canada L6H 6G4

Tel.: (905) 829-1570
Fax.: (905) 829-8050

Website: www.ultratech-labs.com
Email: vic@ultratech-labs.com

Oct. 06, 2005

Icom America, Inc.
2380 116th Ave. N.E.
Bellevue, Washington 98004
USA

Attn.: Mr. Masaaki Takahashi

Subject: Certification Testing in accordance with FCC 47 CFR, Part 15, Subpart B Scanning Receivers Operating in the frequency band 0.495 to 999.99 MHz (excluding cellular bands).

Product: VHF/UHF Dual Band FM Transceiver
Model: IC-P7A
FCC ID: AFJ286900

Dear Mr. Takahashi,

The product sample has been tested in accordance with **FCC 47 CFR, Part 15, Subpart B - Scanning Receivers Operating in the Frequency Band 0.495 to 999.99 MHz (excluding cellular bands)**, and the results and observation were recorded in the engineering report, Our File No.: ICOM-117F15SRX.

Enclosed you will find copy of the engineering report. If you have any queries, please do not hesitate to contact us.

Yours truly,

Tri Minh Luu, P.Eng
Vice President - Engineering

Encl.

ENGINEERING TEST REPORT



VHF/UHF Dual Band FM Transceiver Model No.: IC-P7A

FCC ID: AFJ286900

Applicant:

ICOM Incorporated
1-1-32, Kamiminami, Hirano-ku
Osaka, Japan, 547-0003

Tested in Accordance With

**Federal Communications Commission (FCC)
47 CFR, Part 15, Subpart B
Scanning Receivers Operating in the Frequency Band 0.495 to 999.99 MHz
(excluding cellular bands)**

UltraTech's File No.: ICOM-117F15SRX

This Test report is Issued under the Authority of
Tri M. Luu, Professional Engineer,
Vice President of Engineering
UltraTech Group of Labs

Date: Oct. 06, 2005



Report Prepared by: Tri Luu

Tested by: William Truong, EMI/RFI Technician

Issued Date: Oct. 06, 2005

Test Dates: Oct. 02-06, 2005

- *The results in this Test Report apply only to the sample(s) tested, and the sample tested is randomly selected.*
- *This report must not be used by the client to claim product endorsement by NVLAP or any agency of the US Government.*

UltraTech

3000 Bristol Circle, Oakville, Ontario, Canada, L6H 6G4
Tel.: (905) 829-1570 Fax.: (905) 829-8050

Website: www.ultratech-labs.com, Email: vic@ultratech-labs.com, Email: tri@ultratech-labs.com



TABLE OF CONTENTS

EXHIBIT 1.	SUBMITTAL CHECK LIST.....	3
EXHIBIT 2.	INTRODUCTION	4
2.1.	SCOPE	4
2.2.	RELATED SUBMITTAL(S)/GRANT(S).....	4
2.3.	NORMATIVE REFERENCES	4
EXHIBIT 3.	PERFORMANCE ASSESSMENT	5
3.1.	CLIENT INFORMATION	5
3.2.	EQUIPMENT UNDER TEST (EUT) INFORMATION	5
3.3.	EUT'S TECHNICAL SPECIFICATIONS	6
3.4.	LIST OF EUT'S PORTS	6
3.5.	ANCILLARY EQUIPMENT	6
3.6.	DRAWING OF TEST SETUP	7
EXHIBIT 4.	EUT OPERATING CONDITIONS AND CONFIGURATIONS DURING TESTS.....	2
4.1.	CLIMATE TEST CONDITIONS.....	2
4.2.	OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TEST SIGNALS	2
EXHIBIT 5.	SUMMARY OF TEST RESULTS.....	7
5.1.	LOCATION OF TESTS	7
5.2.	APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS	7
5.3.	MODIFICATIONS REQUIRED FOR COMPLIANCE.....	7
EXHIBIT 6.	MEASUREMENTS, EXAMINATIONS & TEST DATA FOR EMC EMISSIONS	8
6.1.	TEST PROCEDURES.....	8
6.2.	MEASUREMENT UNCERTAINTIES	8
6.3.	MEASUREMENT EQUIPMENT USED.....	8
6.4.	AC POWER LINE CONDUCTED EMISSIONS [§ 15.107(A)].....	9
6.4.1.	<i>Limits</i>	9
6.4.2.	<i>Method of Measurements</i>	9
6.4.3.	<i>Test Equipment List</i>	9
6.4.4.	<i>Photos of test Setup</i>	9
6.4.5.	<i>Test Data</i>	10
6.5.	RECEIVER ANTENNA POWER SPURIOUS/HARMONIC CONDUCTED EMISSIONS [§15.111(A)]	12
6.5.1.	<i>Limits</i>	12
6.5.2.	<i>Method of Measurements</i>	12
6.5.3.	<i>Test Equipment List</i>	12
6.5.4.	<i>Test Arrangement</i>	13
6.5.5.	<i>Test Data</i>	14
6.6.	RECEIVER SPURIOUS/HARMONIC RADIATED EMISSIONS [§ 15.109(A)]	17
6.6.1.	<i>Limits</i>	17
6.6.2.	<i>Method of Measurements</i>	17
6.6.3.	<i>Test Equipment List</i>	18
6.6.4.	<i>Photos of test Setup</i>	18

ULTRATECH GROUP OF LABS

3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4
Tel.: 905-829-1570, Fax. : 905-829-8050

File #: ICOM-117F15SRX

Oct. 06, 2005

All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

6.6.5.	Test Data	19
6.7.	RADIATED EMISSIONS FROM CLASS B UNINTENTIONAL RADIATORS (DIGITAL DEVICES) [§ 15.109(A)]	22
6.7.1.	Limits	22
6.7.2.	Method of Measurements	22
6.7.3.	Test Equipment List	23
6.7.4.	Photos of test Setup	23
6.7.5.	Test Data	24
6.8.	REQUIREMENTS FOR SCANNING RECEIVERS [47 CFR 15.121]	26
6.8.1.	FCC Rules	26
6.8.2.	Declaration for Compliance with FCC §15.121	28
6.9.	SCANNING RECEIVERS CELLULAR BAND REJECTION [47 CFR 15.121(B)]	29
6.9.1.	Limits	29
6.9.2.	Method of Measurements	29
6.9.3.	Test Equipment List	30
6.9.4.	Test Data	30
EXHIBIT 7.	MEASUREMENT UNCERTAINTY	32
7.1.	LINE CONDUCTED EMISSION MEASUREMENT UNCERTAINTY	32
7.2.	RADIATED EMISSION MEASUREMENT UNCERTAINTY	33

EXHIBIT 1. SUBMITTAL CHECK LIST

Annex No.	Exhibit Type	Description of Contents	Quality Check (OK)
--	Test Report	Exhibit 1: Submittal check lists Exhibit 2: Introduction Exhibit 3: Performance Assessment Exhibit 4: EUT Operation and Configuration during Tests Exhibit 5: Summary of test Results Exhibit 6: Measurement Data Exhibit 7: Measurement Uncertainty Exhibit 8: Measurement Methods	OK
1	Test Setup Photos	Radiated Emissions Test Setup Photos	OK
2	External Photos of EUT	External EUT Photos	OK
3	Internal Photos of EUT	Internal EUT Photos	OK
4	Cover Letters	Cover Letter for Certification Request. Letter from the Applicant to appoint Ultratech to act as an agent Letter from the Applicant to request for Confidentiality Filing	OK
5	Attestation Statements	Manufacturer Attestation Letter Part 2.1033(b)(10) for Scanning Receiver	OK
6	ID Label/Location Info	ID Label Location of ID Label	OK
7	Block Diagrams	Block Diagram	OK
8	Schematic Diagrams	Schematic	OK
9	Operational Description	IC-P7A Circuit Description	OK
10	RF Exposure Info	N/A	N/A
11	Users Manual	Instruction Manual	OK

ULTRATECH GROUP OF LABS

3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4
Tel.: 905-829-1570, Fax: : 905-829-8050

File #: ICOM-117F15SRX

Oct. 06, 2005

All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

EXHIBIT 2. INTRODUCTION

2.1. SCOPE

Reference:	FCC Part 15, Subpart B, Sections 15.107, 15.109, 15.111 & 15.121
Title:	Code of Federal Regulations (CFR), Title 47, Telecommunication, Part 15
Purpose of Test:	To gain FCC Certification Authorization for Scanning Receivers Operating in 0.495 to 999.99 MHz (excluding cellular bands) Band.
Test Procedures:	Both conducted and radiated emissions measurements were conducted in accordance with American National Standards Institute ANSI C63.4 - American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
Environmental Classification:	Commercial, industrial or business environment.

2.2. RELATED SUBMITTAL(S)/GRANT(S)

None.

2.3. NORMATIVE REFERENCES

Publication	YEAR	Title
FCC CFR Parts 0-15	2005	Code of Federal Regulations – Telecommunication
ANSI C63.4	2004	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
CISPR 22 +A1 EN 55022	2003-04-10 2004-10-14 2003	Limits and Methods of Measurements of Radio Disturbance Characteristics of Information Technology Equipment
CISPR 16-1-1	2003	Specification for radio disturbance and immunity measuring apparatus and methods. Part 1-1: Measuring Apparatus
CISPR 16-2-1	2003	Specification for radio disturbance and immunity measuring apparatus and methods. Part 2-1: Conducted disturbance measurement
CISPR 16-2-3	2003	Specification for radio disturbance and immunity measuring apparatus and methods. Part 2-3: Radiated disturbance measurement

ULTRATECH GROUP OF LABS

3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4
Tel.: 905-829-1570, Fax: : 905-829-8050

File #: ICOM-117F15SRX

Oct. 06, 2005

All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

EXHIBIT 3. PERFORMANCE ASSESSMENT

3.1. CLIENT INFORMATION

APPLICANT	
Name:	ICOM Incorporated
Address:	1-1-32, Kamiminami Hirano-ku, Osaka Japan, 547-003
Contact Person:	Mr. Takashi Aoki Phone #: +81-66-793-5302 Fax #: +81-66-793-0013 Email Address: export@icom.co.jp

MANUFACTURER	
Name:	ICOM Incorporated
Address:	1-1-32, Kamiminami Hirano-ku, Osaka Japan, 547-0003
Contact Person:	Mr. Takashi Aoki Phone #: +81-66-793-5302 Fax #: +81-66-793-0013 Email Address: export@icom.co.jp

3.2. EQUIPMENT UNDER TEST (EUT) INFORMATION

The following information (with the exception of the Date of Receipt) has been supplied by the applicant.

Brand Name:	ICOM Incorporated
Product Name:	VHF/UHF Dual Band FM Transceiver
Model Name or Number:	IC-P7A
Serial Number:	0000104
Type of Equipment:	Scanning Receivers
Accessories:	(1) Icom AC/DC Power Supply, Model BC-145LA, IN: 120V 60Hz, 28W, OUT: 16 Vdc, 1A, S/N: 48-16-1000D. The DC output cable was looped around a ferrite bead for 4 turns nearest to the DC output connector. (2) Icom Desktop Charger, Model BC-164, IN: 12-16Vdc S/N: 0000005 (3) Icom Li-Ion Rechargeable battery pack, Model BP-243, 3.7V 1800 mAh.
Power input source:	3.7 Vdc Battery

3.3. EUT'S TECHNICAL SPECIFICATIONS

RECEIVER	
Equipment Type:	Portable
Power Supply Requirement:	3.7 Vdc Battery
Operating Frequency Range:	0.495 to 999.99 MHz (excluding cellular bands)
RF Input Impedance:	50 Ohms

3.4. LIST OF EUT'S PORTS

Port Number	EUT's Port Description	Number of Identical Ports	Connector Type	Cable Type (Shielded/Non-shielded)
1	Antenna Connector	1	SMA	N/A
2	MIC/SP	1	SP/MIC jack	Shielded

3.5. ANCILLARY EQUIPMENT

The EUT was tested while connected to the following representative configuration of ancillary equipment necessary to exercise the ports during tests:

Ancillary Equipment # 1	
Description:	Speaker Microphone
Brand name:	ICOM
Model Name or Number:	HM-75A
Serial Number:	N/A
Cable Type:	Shielded

3.6. DRAWING OF TEST SETUP

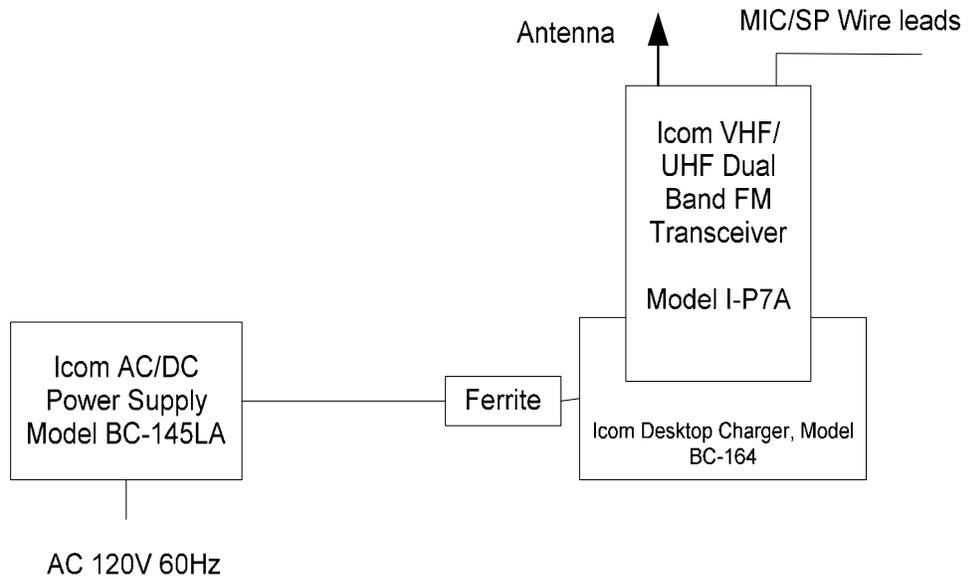


EXHIBIT 4. EUT OPERATING CONDITIONS AND CONFIGURATIONS DURING TESTS

4.1. CLIMATE TEST CONDITIONS

The climate conditions of the test environment are as follows:

Temperature:	21°C
Humidity:	51%
Pressure:	102 kPa
Power input source:	3.7 Vdc Battery

4.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TEST SIGNALS

Operating Modes:	The receiver was operated in the normal intended mode during testing
Special Test Software:	None
Special Hardware Used:	None
Receiver Test Antenna:	The EUT's was tested with its antenna attached for radiated emissions.

Receiver Test Signals	
Frequency Band(s):	0.495 to 999.99 MHz (excluding cellular bands)
Test Frequency(ies): (Near lowest, near middle & near highest frequencies in the frequency range of operation.)	30, 443.82 and 960 MHz

EXHIBIT 5. SUMMARY OF TEST RESULTS

5.1. LOCATION OF TESTS

All of the measurements described in this report were performed at Ultratech Group of Labs located in the city of Oakville, Province of Ontario, Canada.

- AC Powerline Conducted Emissions were performed in UltraTech's shielded room, 16'(L) by 12'(W) by 12'(H).
- Radiated Emissions were performed at the Ultratech's 3-10 TDK Semi-Anechoic Chamber situated in the Town of Oakville, province of Ontario. This test site been calibrated in accordance with ANSI C63.4, and found to be in compliance with the requirements of Sec. 2.948 of the FCC Rules. The descriptions and site measurement data of the Oakville 3-10 TDK Semi-Anechoic Chamber has been filed with FCC office (FCC File No.: 31040/SIT 1300B3) and Industry Canada office (Industry Canada File No.: IC2049-1). Last Date of Site Calibration: June. 20, 2005.

5.2. APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS

FCC Part 15, Subpart B	Test Requirements	Compliance (Yes/No)
15.107(a), Class B	AC Power Line Conducted Emissions Measurements	Yes
15.111(a)	Receiver Antenna Power Conducted Emissions for Non-Integral Antenna Port	Yes
15.109(a)	Radiated Emissions from Scanning Receivers & Class B Digital Device	Yes
15.121	Requirements for Scanning Receivers	Yes

5.3. MODIFICATIONS REQUIRED FOR COMPLIANCE

None.

EXHIBIT 6. MEASUREMENTS, EXAMINATIONS & TEST DATA FOR EMC EMISSIONS

6.1. TEST PROCEDURES

Please refer to Ultratech Test Procedures, File# ULTR-P001-2004 and for Test Procedures.

6.2. MEASUREMENT UNCERTAINTIES

The measurement uncertainties stated were calculated in accordance with requirements of UKAS Document LAB 34 with a confidence level of 95%. Please refer to Exhibit 6 for Measurement Uncertainties.

6.3. MEASUREMENT EQUIPMENT USED

The measurement equipment used complied with the requirements of the Standards referenced in the Methods & Procedures ANSI C63.4 and CIPSR 16-1-1.

6.4. AC POWER LINE CONDUCTED EMISSIONS [§ 15.107(a)]

6.4.1. Limits

The equipment shall meet the limits of the following table:

Frequency of emissions (MHz)	Class B Conducted Limit (dBµV)		Measuring Bandwidth
	Quasi-Peak	Average	
0.15 to 0.5	66 to 56*	56 to 46*	RBW = 9 kHz VBW ≥ 9 kHz for QP VBW = 1 Hz for Average
0.5 to 5	56	46	
5 to 30	60	50	

* Decreasing linearly with logarithm of frequency

6.4.2. Method of Measurements

Refer to Ultratech Test Procedures ULTR-P001-200 & ANSI C63.4 for method of measurements.

6.4.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
EMI Receiver System/Spectrum Analyzer with built-in Amplifier	Hewlett Packard	HP 8546A	3520A00248	9KHz-5.6GHz, 50 Ohms
Transient Limiter	Hewlett Packard	11947A	--	9 kHz – 200 MHz 10 dB attenuation
L.I.S.N.	EMCO	3825/2	--	9 kHz – 200 MHz 50 Ohms / 50 µH
12'x16'x12' RF Shielded Chamber	RF Shielding	--	--	--

6.4.4. Photos of test Setup

Please refer to Photos #1 and 2 in Annex 1 for details of test setup

6.4.5. Test Data

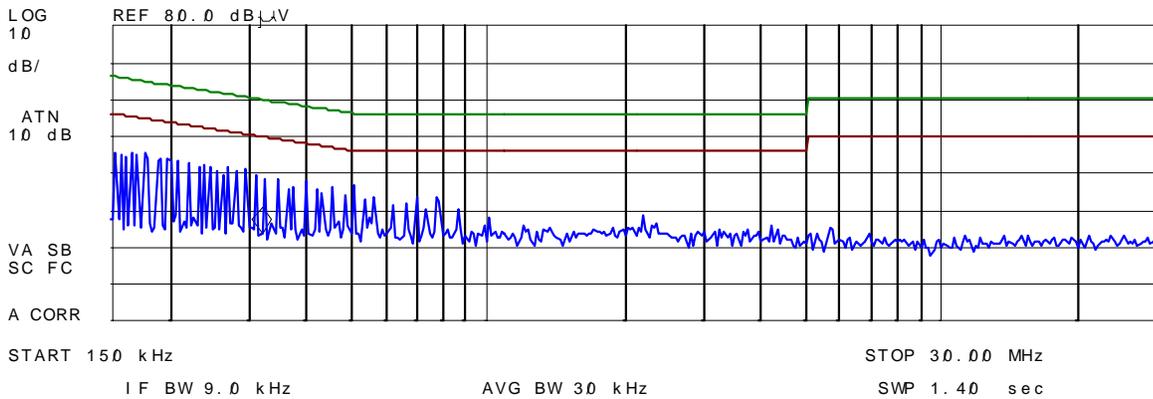
Conforms. Please refer to the Plots below for test results.

UltraTech Group of Labs		Plot #1. AC POWER LINE CONDUCTED EMISSIONS MEASUREMENT PLOT			
Applicant: ICOM America	Detector: <input checked="" type="checkbox"/> PEAK <input checked="" type="checkbox"/> QUASI-PEAK <input checked="" type="checkbox"/> AVERAGE			Temp: 21°C	Humidity: 19%
Product: UHF and VHF Scanning Receiver	Line Tested: 1	Line Voltage: 120VAC	Test Tech: Sumeet	Test Date: Sept 30, 2005	
Model: IC-P7A	Standard: FCC Part 15 Class B	Comments:			

hp

Signal	Freq (MHz)	PK Amp	QP Amp	AV Amp	QP Δ L1
1	0.156735	45.2	39.4	16.8	-26.3
2	0.321525	39.8	33.0	14.2	-26.7
3	0.564180	35.7	28.0	18.7	-28.0

ACTV DET: PEAK
 MEAS DET: PEAK QP AVG
 MKR 320 kHz
 23.69 dB μ V

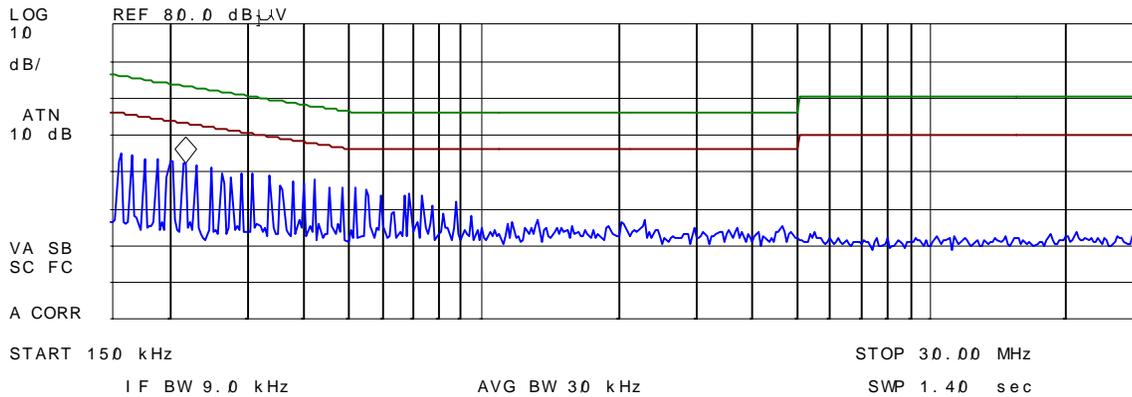


UltraTech Group of Labs		Plot #2. AC POWER LINE CONDUCTED EMISSIONS MEASUREMENT PLOT			
Applicant: ICOM America		Detector: <input checked="" type="checkbox"/> PEAK <input checked="" type="checkbox"/> QUASI-PEAK <input checked="" type="checkbox"/> AVERAGE		Temp: 21°C	Humidity: 19%
Product: UHF and VHF Scanning Receiver		Line Tested: 2	Line Voltage: 120VAC	Test Tech: Sumeet	Test Date: Sept 30, 2005
Model: IC-P7A		Standard: FCC Part 15 Class B		Comments:	

hp

Signal	Freq (MHz)	PK Amp	QP Amp	AV Amp	QP Δ L1
1	0.152213	45.9	39.2	16.8	-26.7
2	0.220125	42.6	36.5	15.2	-26.4
3	0.325600	40.0	32.8	14.5	-26.9

ACTV DET: PEAK
 MEAS DET: PEAK QP AVG
 MKR 220 kHz
 42.39 dB μ V



6.5. RECEIVER ANTENNA POWER SPURIOUS/HARMONIC CONDUCTED EMISSIONS [§15.111(a)]

6.5.1. Limits

Receivers that operate (tune) in the frequency range 30 to 960 Mhz and CB receivers that provides terminals for the connection of an external antenna may be tested to demonstrate compliance with the provisions of @ 15.109 with the antenna terminals shielded and terminated with a resistive termination equal to the impedance specified for the antenna, provided these receivers also comply with the following:- *With the receiver antenna terminal connected to a resistive termination equal to the impedance specified or employed for the antenna, the power at the antenna terminal at frequency within the range from 30 Mhz to 5th harmonic of the highest frequency shall not exceed 2.0 nanowatts (or -57 dBm @ 50 Ohm).*

6.5.2. Method of Measurements

Refer to Ultratech Test Procedures ULTR-P001-200 & ANSI C63.4 for method of measurements.

The spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 - 108	1000
108 – 500	2000
500 -1000	5000
Above 1000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower

6.5.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Spectrum Analyzer/ EMI Receiver	Rohde & Schawrz	FSEK20/B4/B21	834157/005	9 kHz – 40 GHz with external mixer
RF Signal Generator	Hewlett Packard	HP 83752B	3610A00457	0.01 – 20 GHz

ULTRATECH GROUP OF LABS

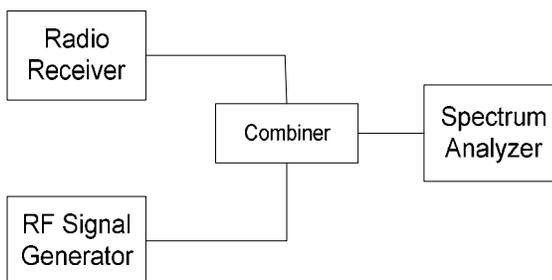
3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4
Tel.: 905-829-1570, Fax.: 905-829-8050

File #: ICOM-117F15SRX

Oct. 06, 2005

All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

6.5.4. Test Arrangement



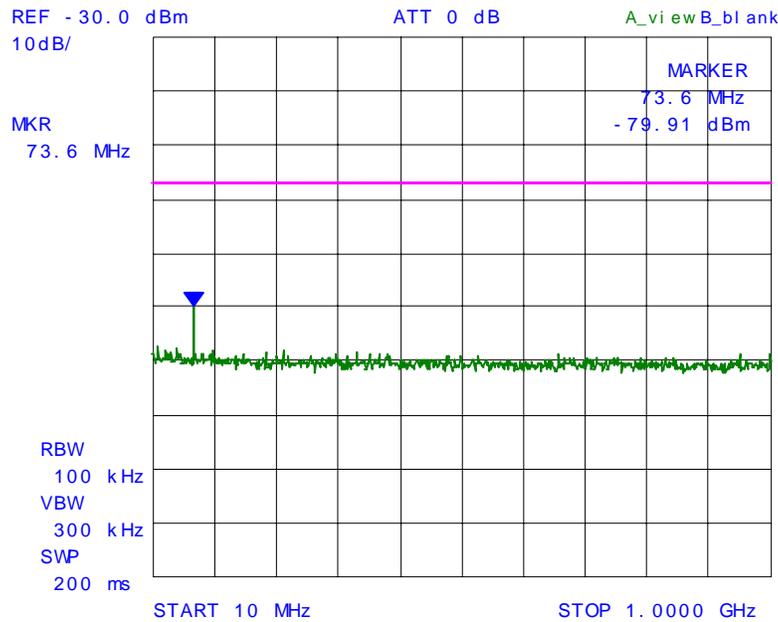
6.5.5. Test Data

Conforms. Please refer to Plot # 3 through # 5 for detailed measurement data.

Remark: The FCC compliance requirements are exempted for receiver operating below 30 MHz and above 960 MHz. Therefore, tests will be performed at the receiver channel frequency of 30 MHz, 443.82 MHz and 960 MHz.

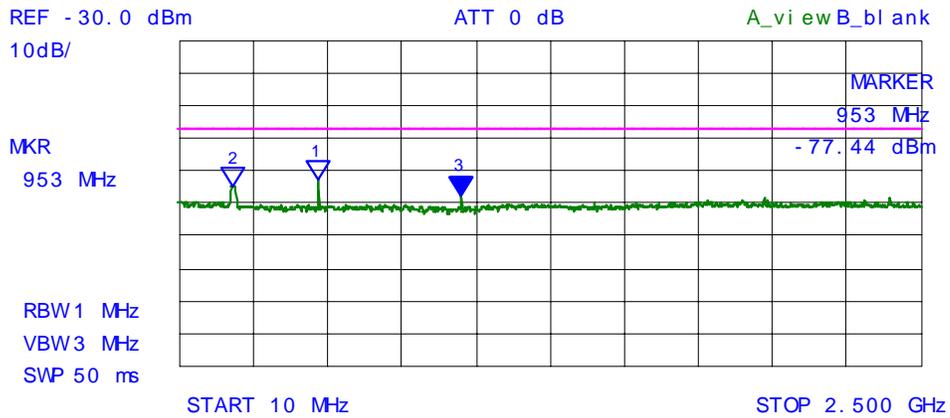
6.5.5.1. Plot # 3 – Receiver Conducted Emissions @ 30 MHz

The emissions were scanned from 30 MHz to 1.0 GHz and all emissions within 20 dB below the limits were recorded.



6.5.5.2. Plot # 3 – Receiver Conducted Emissions @ 443.82 MHz

The emissions were scanned from 30 MHz to 2.5 GHz and all emissions within 20 dB below the limits were recorded.

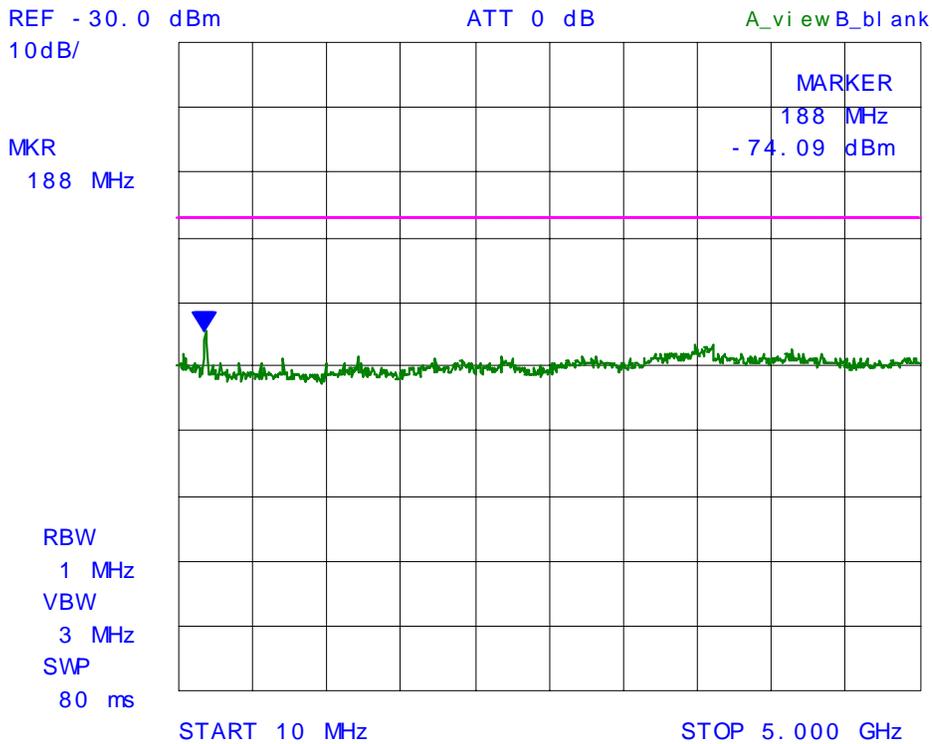


*** Multi Marker List ***

No. 1:	472 MHz	-72.94 dBm	A
No. 2:	188 MHz	-74.53 dBm	A
No. 3:	953 MHz	-77.44 dBm	A
No. 4:			
No. 5:			
No. 6:			
No. 7:			
No. 8:			

6.5.5.3. Plot # 3 – Receiver Conducted Emissions @ 960 MHz

The emissions were scanned from 30 MHz to 5 GHz and all emissions within 20 dB below the limits were recorded.



6.6. RECEIVER SPURIOUS/HARMONIC RADIATED EMISSIONS [§ 15.109(a)]

6.6.1. Limits

The equipment shall meet the limits of the following table:

Test Frequency Range (MHz)	Class B Limits @ 3 m (dB μ V/m)	EMI Detector Used	Measuring Bandwidth (kHz)
30 – 88	40.0	Quasi-Peak	RBW = 120 kHz, VBW \geq 120 kHz
88 – 216	43.5	Quasi-Peak	RBW = 120 kHz, VBW \geq 120 kHz
216 – 960	46.0	Quasi-Peak	RBW = 120 kHz, VBW \geq 120 kHz
Above 960	54.0	Average	RBW = 1 MHz, VBW \geq 1 Hz

6.6.2. Method of Measurements

Refer to Ultratech Test Procedures ULTR-P001-200 & ANSI C63.4 for method of measurements.

The spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 - 108	1000
108 – 500	2000
500 -1000	5000
Above 1000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower

6.6.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Spectrum Analyzer/ EMI Receiver	Rohde & Schawrz	FSEK20/B4/B21	834157/005	9 kHz – 40 GHz with external mixer
Microwave Amplifier	Hewlett Packard	HP 83017A		1 GHz to 26.5 GHz
Biconilog Antenna	EMCO	3143	1029	20 MHz to 2 GHz
Horn Antenna	EMCO	3155	9701-5061	1 GHz – 18 GHz
Horn Antenna	EMCO	3160-09	..	18 GHz – 26.5 GHz
Horn Antenna	EMCO	3160-10	..	26.5 GHz – 40 GHz
Mixer	Tektronix	118-0098-00	..	18 GHz – 26.5 GHz
Mixer	Tektronix	119-0098-00	..	26.5 GHz – 40 GHz

6.6.4. Photos of test Setup

Please refer to Photos # 3, 4 and 5 in Annex 1 for details of test setup

6.6.5. Test Data

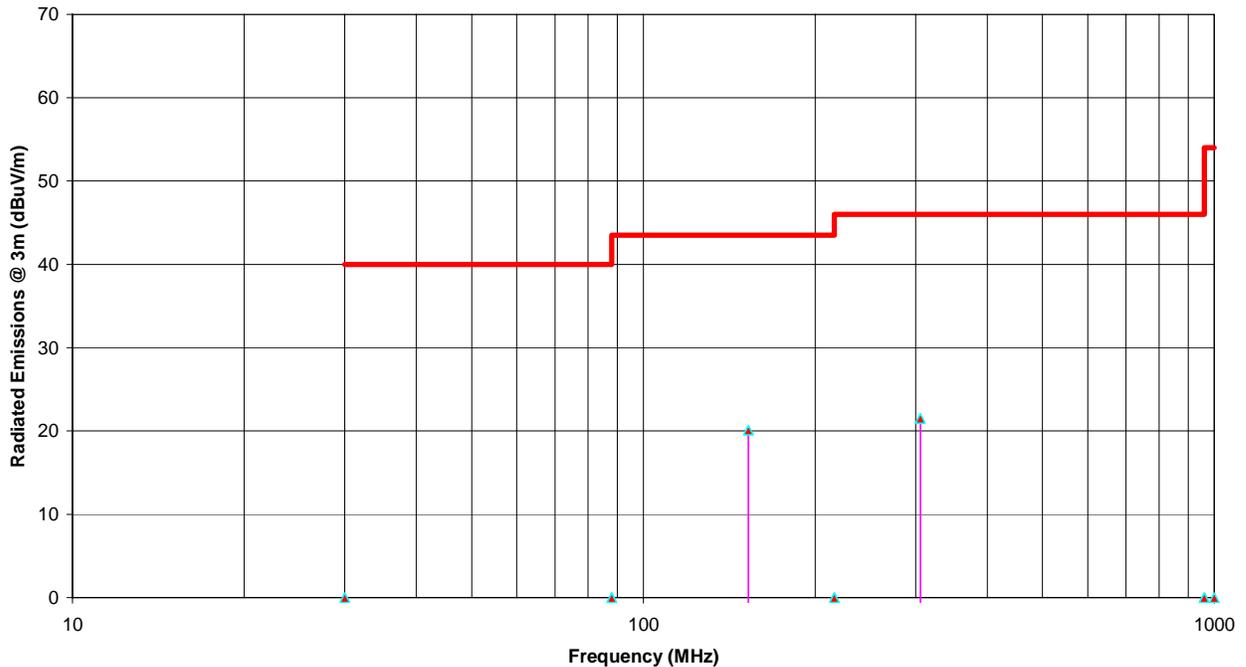
Remark: The FCC compliance requirements are exempted for receiver operating below 30 MHz and above 960 MHz. Therefore, tests will be performed at the receiver channel frequency of 30 MHz, 443.82 MHz and 960 MHz.

6.6.5.1. Near Lowest Frequency (30 MHz)

FREQUENCY (MHz)	E-FIELD @3m (dBuV/m)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT @3m (dBuV/m)	MARGIN (dB)	PASS/FAIL
152.68	20.1	PEAK	V	43.5	-23.4	PASS
305.36	21.5	PEAK	V	46.0	-24.5	PASS

The emissions were scanned from 30 MHz to 1 GHz and all emissions within 30 dB below the limits were recorded.

Radiated Emissions Measurements @ 3m OFTS
 Icom VHF/UHF Dual Band FM Transceiver, Model: IC-P7A, FCC ID: AFJ286900
 Receiver's Frequency: 30 MHz

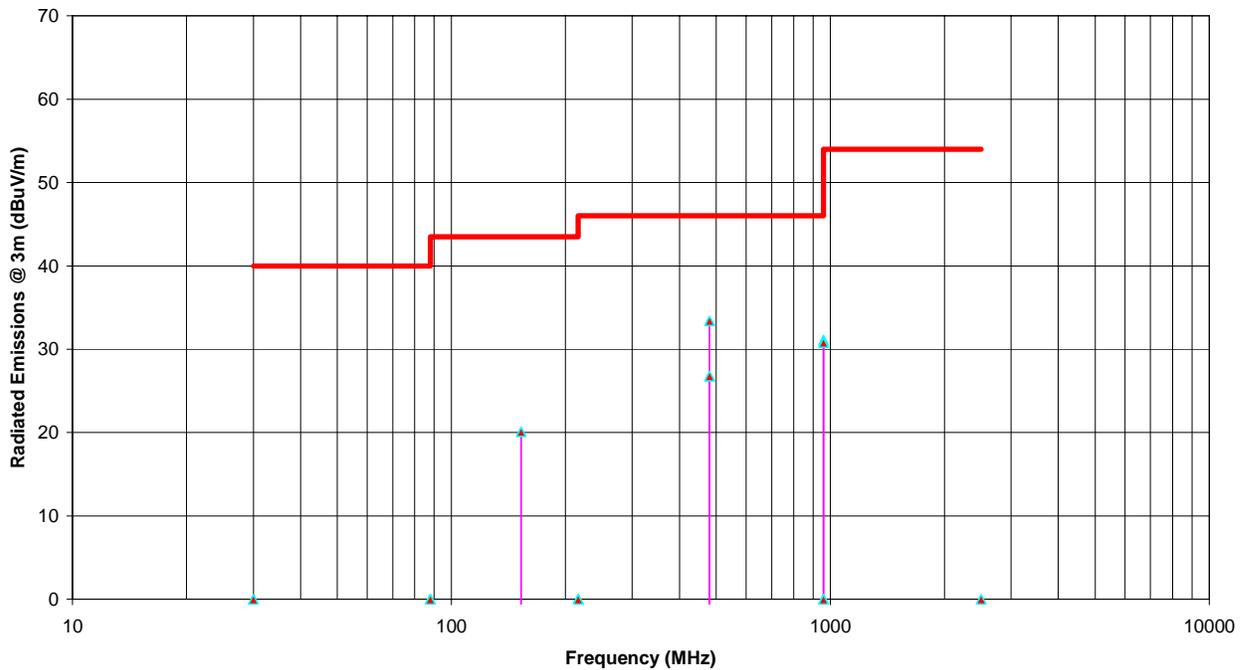


6.6.5.2. Near Middle Frequency (443.82 MHz)

FREQUENCY (MHz)	E-FIELD @3m (dBuV/m)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT @3m (dBuV/m)	MARGIN (dB)	PASS/FAIL
152.68	20.1	PEAK	V	43.5	-23.4	PASS
480.15	33.4	PEAK	V	46.0	-12.6	PASS
480.15	26.8	PEAK	H	46.0	-19.2	PASS
960.30	31.1	PEAK	V	54.0	-22.9	PASS
960.30	30.8	PEAK	H	54.0	-23.2	PASS

The emissions were scanned from 30 MHz to 2.5 GHz and all emissions within 30 dB below the limits were recorded.

Radiated Emissions Measurements @ 3m OFTS
 Icom VHF/UHF Dual Band FM Transceiver, Model: IC-P7A, FCC ID: AFJ286900
 Receiver's Frequency: 443.82 MHz

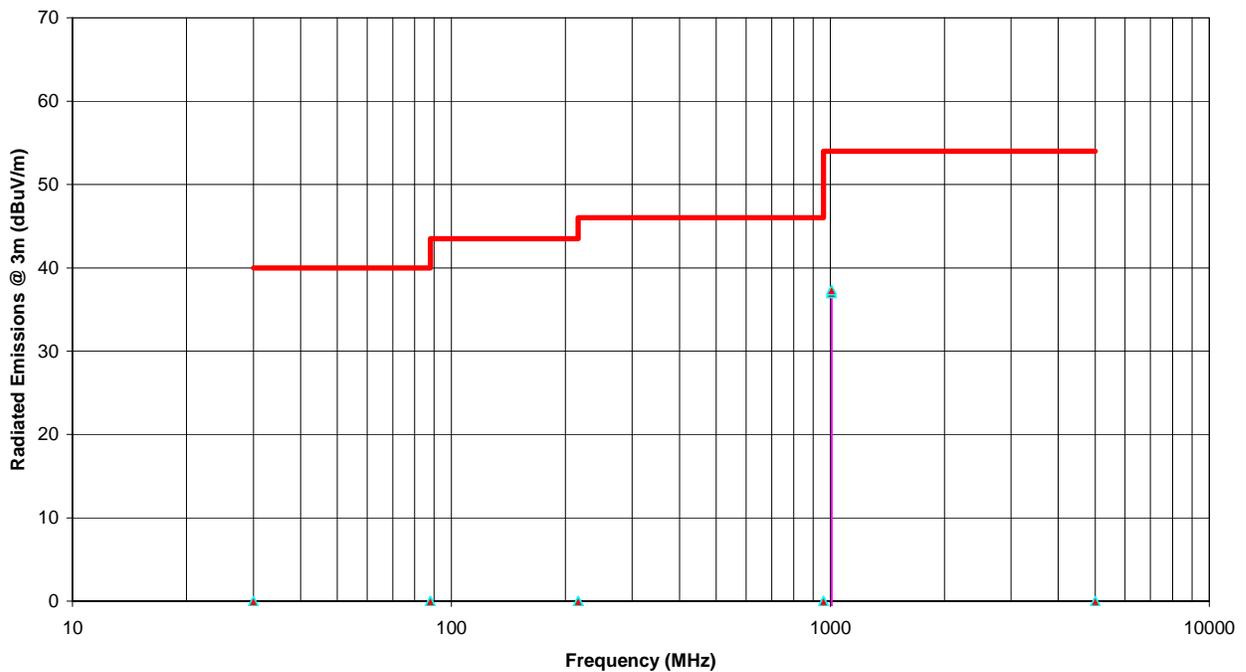


6.6.5.3. Near Highest Frequency (960 MHz)

FREQUENCY (MHz)	E-FIELD @3m (dBuV/m)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT @3m (dBuV/m)	MARGIN (dB)	PASS/FAIL
1006.34	37.0	PEAK	V	54.0	-17.0	PASS
1006.34	37.3	PEAK	H	54.0	-16.7	PASS

The emissions were scanned from 30 MHz to 5 GHz and all emissions within 30 dB below the limits were recorded.

Radiated Emissions Measurements @ 3m OFTS
 Icom VHF/UHF Dual Band FM Transceiver, Model: IC-P7A, FCC ID: AFJ286900
 Receiver's Frequency: 960 MHz



6.7. RADIATED EMISSIONS FROM CLASS B UNINTENTIONAL RADIATORS (DIGITAL DEVICES) [§ 15.109(a)]

6.7.1. Limits

The equipment shall meet the limits of the following table:

Test Frequency Range (MHz)	Class B Limits @3m (dB μ V/m)	EMI Detector Used	Measuring Bandwidth (kHz)
30 – 88	40.0	Quasi-Peak	RBW = 120 kHz, VBW \geq 120 kHz
88 – 216	43.5	Quasi-Peak	RBW = 120 kHz, VBW \geq 120 kHz
216 – 960	46.0	Quasi-Peak	RBW = 120 kHz, VBW \geq 120 kHz
Above 960	54.0	Average	RBW = 1 MHz, VBW \geq 1 Hz

6.7.2. Method of Measurements

Refer to Ultratech Test Procedures ULTR-P001-200 & ANSI C63.4 for method of measurements.

The spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 - 108	1000
108 – 500	2000
500 -1000	5000
Above 1000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower

ULTRATECH GROUP OF LABS

3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4
Tel.: 905-829-1570, Fax.: 905-829-8050

File #: ICOM-117F15SRX

Oct. 06, 2005

All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

6.7.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Spectrum Analyzer/ EMI Receiver	Rohde & Schawrz	FSEK20/B4/B21	834157/005	9 kHz – 40 GHz with external mixer
Microwave Amplifier	Hewlett Packard	HP 83017A		1 GHz to 26.5 GHz
Biconilog Antenna	EMCO	3143	1029	20 MHz to 2 GHz
Horn Antenna	EMCO	3155	9701-5061	1 GHz – 18 GHz
Horn Antenna	EMCO	3160-09	..	18 GHz – 26.5 GHz
Horn Antenna	EMCO	3160-10	..	26.5 GHz – 40 GHz
Mixer	Tektronix	118-0098-00	..	18 GHz – 26.5 GHz
Mixer	Tektronix	119-0098-00	..	26.5 GHz – 40 GHz

6.7.4. Photos of test Setup

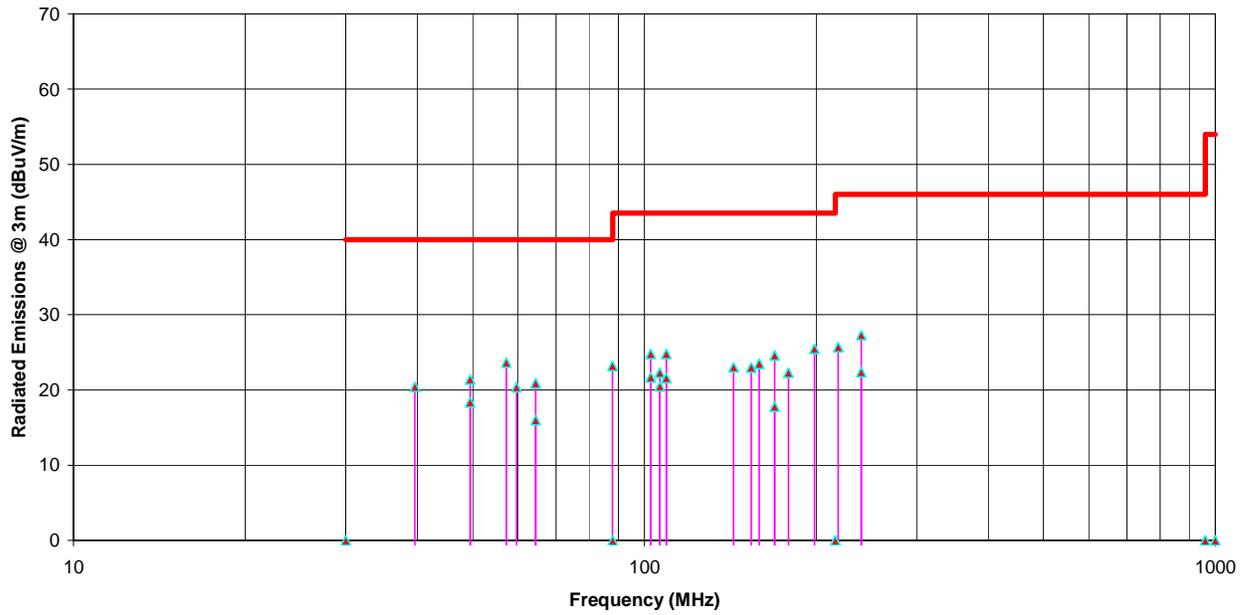
Please refer to Photo # 6 in Annex 1 for details of test setup

6.7.5. Test Data

FREQUENCY (MHz)	E-FIELD @3m (dBuV/m)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT @3m (dBuV/m)	MARGIN (dB)	PASS/ FAIL
39.60	20.4	PEAK	V	40.0	-19.6	PASS
49.50	21.4	PEAK	V	40.0	-18.6	PASS
49.50	18.4	PEAK	H	40.0	-21.6	PASS
57.30	23.7	PEAK	V	40.0	-16.4	PASS
59.70	20.4	PEAK	V	40.0	-19.6	PASS
64.50	20.9	PEAK	V	40.0	-19.1	PASS
64.50	16.0	PEAK	H	40.0	-24.0	PASS
87.90	23.2	PEAK	V	40.0	-16.8	PASS
102.60	21.7	PEAK	V	43.5	-21.8	PASS
102.60	24.8	PEAK	H	43.5	-18.7	PASS
106.50	20.5	PEAK	V	43.5	-23.0	PASS
106.50	22.3	PEAK	H	43.5	-21.2	PASS
109.20	21.6	PEAK	V	43.5	-21.9	PASS
109.20	24.8	PEAK	H	43.5	-18.7	PASS
143.40	23.0	PEAK	V	43.5	-20.5	PASS
153.90	23.0	PEAK	V	43.5	-20.5	PASS
159.00	23.5	PEAK	V	43.5	-20.0	PASS
169.00	24.6	PEAK	V	43.5	-18.9	PASS
169.00	17.8	PEAK	H	43.5	-25.7	PASS
178.70	22.3	PEAK	V	43.5	-21.2	PASS
198.50	25.5	PEAK	V	43.5	-18.0	PASS
218.60	25.7	PEAK	V	46.0	-20.3	PASS
239.60	27.3	PEAK	V	46.0	-18.7	PASS
239.60	22.4	PEAK	H	46.0	-23.6	PASS

The emissions were scanned from 30 MHz to 1000 MHz at 3 Meters distance and all emissions within 20 dB below the limits were recorded.

Radiated Emissions Measurements @ 3m OFTS
Icom VHF/UHF Dual Band FM Transceiver Model: IC-P7A
+ Icom Power Supply Model BC-145La + Icom Desktop Charger Model BC-164
FCC ID: AFJ286900



6.8. REQUIREMENTS FOR SCANNING RECEIVERS [47 CFR 15.121]

6.8.1. FCC Rules

- a. Except as provided in paragraph (c) of this section, scanning receivers and frequency converters designed or marketed for use with scanning receivers, shall:
 - (1) Be incapable of operating (tuning), or readily being altered by the user to operate, within the frequency bands allocated to the Cellular Radiotelephone Service in part 22 of this chapter (cellular telephone bands). Scanning receivers capable of "readily being altered by the user" include, but are not limited to, those for which the ability to receive transmissions in the cellular telephone bands can be added by clipping the leads of, or installing, a simple component such as a diode, resistor or jumper wire; replacing a plug-in semiconductor chip; or programming a semiconductor chip using special access codes or an external device, such as a personal computer. Scanning receivers, and frequency converters designed for use with scanning receivers, also shall be incapable of converting digital cellular communication transmissions to analog voice audio.
 - (2) Be designed so that the tuning, control and filtering circuitry is inaccessible. The design must be such that any attempts to modify the equipment to receive transmissions from the Cellular Radiotelephone Service likely will render the receiver inoperable.
- b. Except as provided in paragraph (c) of this section, scanning receivers shall reject any signals from the Cellular Radiotelephone Service frequency bands that are 38 dB or lower 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.
- c. Scanning receivers and frequency converters designed or marketed for use with scanning receivers, are not subject to the requirements of paragraphs (a) and (b) of this section provided that they are manufactured exclusively for, and marketed exclusively to, entities described in 18 U.S.C. 2512(2), or are marketed exclusively as test equipment pursuant to Sec. 15.3(dd)
- d. Modification of a scanning receiver to receive transmissions from Cellular Radiotelephone Service frequency bands will be considered to constitute manufacture of such equipment. This includes any individual, individuals, entity or organization that modifies one or more scanners. Any modification to a scanning receiver to receive transmissions from the Cellular Radiotelephone Service frequency bands voids the certification of the scanning receiver, regardless of the date of manufacture of the original unit. In addition, the provisions of Sec. 15.23 shall not be interpreted as permitting modification of a scanning receiver to receive Cellular Radiotelephone Service transmissions.
- e. Scanning receivers and frequency converters designed for use with scanning receivers shall not be assembled from kits or marketed in kit form unless they comply with the requirements in paragraph (a) through (c) of this section.

- f. Scanning receivers shall have a label permanently affixed to the product, and this label shall be readily visible to the purchaser at the time of purchase. The label shall read as follows: WARNING: MODIFICATION OF THIS DEVICE TO RECEIVE CELLULAR RADIOTELEPHONE SERVICE SIGNALS IS PROHIBITED UNDER FCC RULES AND FEDERAL LAW.
- (3) ``Permanently affixed" means that the label is etched, engraved, stamped, silkscreened, indelible printed or otherwise permanently marked on a permanently attached part of the equipment or on a nameplate of metal, plastic or other material fastened to the equipment by welding, riveting, or permanent adhesive. The label shall be designed to last the expected lifetime of the equipment in the environment in which the equipment may be operated and must not be readily detachable. The label shall not be a stick-on, paper label.
- (4) When the device is so small that it is not practicable to place the warning label on it, the information required by this paragraph shall be placed in a prominent location in the instruction manual or pamphlet supplied to the user and shall also be placed on the container in which the device is marketed. However, the FCC identifier must be displayed on the device.

6.8.2. Declaration for Compliance with FCC §15.121

- Comply with FCC 121(a)(1) – This Scanning Receiver is incapable of operating (tuning), or readily being altered by the user to operate, within the frequency bands allocated to the Cellular Radiotelephone Service in part 22 of this chapter (cellular telephone bands).

Please refer to manufacturer's declaration for compliance with this Rule.

- Comply with FCC 121(a)(2) – This Scanning Receiver is designed so that the tuning, control and filtering circuitry is inaccessible. The design is such that any attempts to modify the equipment to receive transmissions from the Cellular Radiotelephone Service likely will render the receiver inoperable.

Please refer to manufacturer's declaration for compliance with this Rule.

- Comply with FCC 121(b) – Please refer to the following Section of this Test Report for Scanning Receivers Cellular Band Rejection test.
- Comply with FCC 121(c) – Not applicable.
- Comply with FCC 121(d) – The Users Manual of this Scanning Receiver is provided with the Warning statement as below:

Warning: Changes or modifications not expressly approved by ICOM Incorporated could void the user's authority to operate the equipment.

- Comply with FCC 121(e) – This Scanning Receiver will not be assembled from kits or marketed in kit form.
- Comply with FCC 121(f) – This Scanning Receiver has a label permanently affixed to the product and this label is readily visible to the purchaser at the time of purchase. The label reads as follows: WARNING: MODIFICATION OF THIS DEVICE TO RECEIVE CELLULAR RADIOTELEPHONE SERVICE SIGNALS IS PROHIBITED UNDER FCC RULES AND FEDERAL LAW.

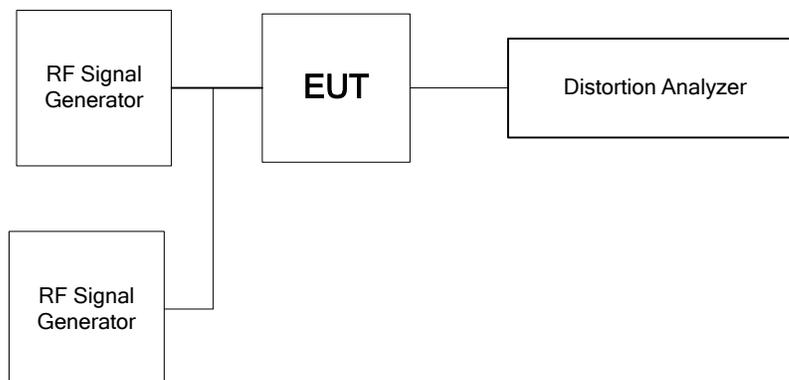
6.9. SCANNING RECEIVERS CELLULAR BAND REJECTION [47 CFR 15.121(b)]

6.9.1. Limits

Except as provided in paragraph (c) of this section, scanning receivers shall reject any signals from the Cellular Radiotelephone Service frequency bands that are 38 dB or lower 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.

6.9.2. Method of Measurements

- (1) Connected the EUT as shown in the following block diagram
- (2) Apply a standard RF signal to the receiver input port
- (3) Adjust the audio output signal of the receiver to it's rated value with the distortion less than 10%
- (4) Adjust the RF Signal Generator Output Power to produce 12 dB SINAD without the audio output power dropping by more than 3 dB
- (5) Repeat step (4) at lowest, middle and highest channel frequencies across all cellular base station band to establish a reference sensitivity level. The reference sensitivity taken was the lowest or worse-case sensitivity for all of the bands.
- (6) Adjust the RF Signal Generator output to a level of +60 dB above the reference sensitivity obtained in step (5)
- (7) Set the Receiver squelch threshold (the signal required to open the squelch) no greater than +20 dB above the reference sensitivity level.
- (8) Put the receiver in a scanning mode and allow it to scan across it's complete receive range
- (9) If the receiver unsquelched or stopped on any frequency, the display frequency is recorded. The signal generator output level was then adjusted until 12 dB SINAD from the receiver was produced. The signal generator level associated with this response was also noted.
- (10) Repeat this procedure for 3 frequencies in the cellular base station transmit band.
- (11) The difference between the signal generator output for any response recorded and reference sensitivity is the rejection ratio



6.9.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Distortion analyzer	Hewlett-Packard	8903E	3514A0146 0	20-100K Hz
RF Signal Generator	Fluke	6061A	4770301	10 kHz – 1050 MHz
RF Signal Generator	Fluke	6061A	5130586	10 kHz – 1050 MHz

6.9.4. Test Data

6.9.4.1. EUT's Operating Mode: FM

EUT's Scanning Frequency Band (MHz)	Cellular Transmitter Test Frequencies (MHz)	RF Input Signal Level @ Cellular Frequencies for 12 dB SINAD (dBm)	Reference Sensitivity dBm	Rejection Ratio (dB)	Maximum Rejection Ratio Limit (dB)
0.495 – 1000	824.04, 836.40, 848.97, 869.04, 882.04, 893.97	-40.0	-123 dBm to -97 dBm	<-57	-38.0
There is no spurious response detected within the above frequency band with the Rejection Ratio of at least -57 dB.					

6.9.4.2. EUT's Operating Mode: AM

EUT's Scanning Frequency Band (MHz)	Cellular Transmitter Test Frequencies (MHz)	RF Input Signal Level @ Cellular Frequencies for 12 dB SINAD (dBm)	Highest Reference Sensitivity dBm	Rejection Ratio (dB)	Maximum Rejection Ratio Limit (dB)
0.495 – 1000	824.04, 836.40, 848.97, 869.04, 882.04, 893.97	-40.0	-100	<-60	-38.0
There is no spurious response detected within the above frequency band with the Rejection Ratio of at least -60 dB.					

6.9.4.3. EUT's Operating Mode: WFM

EUT's Scanning Frequency Band (MHz)	Cellular Transmitter Test Frequencies (MHz)	RF Input Signal Level @ Cellular Frequencies for 12 dB SINAD (dBm)	Highest Reference Sensitivity (dBm)	Rejection Ratio (dB)	Maximum Rejection Ratio Limit (dB)
0.495 – 1000	824.04, 836.40, 848.97, 869.04, 882.04, 893.97	-40.0	-95	<-55	-38.0

There is no spurious response detected within the above frequency band with the Rejection Ratio of at least -55 dB.

EXHIBIT 7. MEASUREMENT UNCERTAINTY

The measurement uncertainties stated were calculated in accordance with the requirements of NIST Technical Note 1297 and LAB 34

7.1. LINE CONDUCTED EMISSION MEASUREMENT UNCERTAINTY

CONTRIBUTION (Line Conducted)	PROBABILITY DISTRIBUTION	UNCERTAINTY (dB)	
		9-150 kHz	0.15-30 MHz
EMI Receiver specification	Rectangular	± 1.5	± 1.5
LISN coupling specification	Rectangular	± 1.5	± 1.5
Cable and Input Transient Limiter calibration	Normal (k=2)	± 0.3	± 0.5
Mismatch: Receiver VRC $\Gamma_1 = 0.03$ LISN VRC $\Gamma_R = 0.8(9 \text{ kHz}) 0.2 (30 \text{ MHz})$ Uncertainty limits $20\text{Log}(1 \pm \Gamma_1 \Gamma_R)$	U-Shaped	± 0.2	± 0.3
System repeatability	Std. deviation	± 0.2	± 0.05
Repeatability of EUT	--	--	--
Combined standard uncertainty	Normal	± 1.25	± 1.30
Expanded uncertainty U	Normal (k=2)	± 2.50	± 2.60

Sample Calculation for Measurement Accuracy in 150 kHz to 30 MHz Band:

$$u_c(y) = \sqrt{\sum_{i=1}^m u_i^2(y)} = \pm \sqrt{(1.5^2 + 1.5^2)/3 + (0.5/2)^2 + (0.05/2)^2 + 0.35^2} = \pm 1.30 \text{ dB}$$

$$U = 2u_c(y) = \pm 2.6 \text{ dB}$$

7.2. RADIATED EMISSION MEASUREMENT UNCERTAINTY

CONTRIBUTION (Radiated Emissions)	PROBABILITY DISTRIBUTION	UNCERTAINTY (\pm dB)	
		3 m	10 m
Antenna Factor Calibration	Normal (k=2)	± 1.0	± 1.0
Cable Loss Calibration	Normal (k=2)	± 0.3	± 0.5
EMI Receiver specification	Rectangular	± 1.5	± 1.5
Antenna Directivity	Rectangular	+0.5	+0.5
Antenna factor variation with height	Rectangular	± 2.0	± 0.5
Antenna phase center variation	Rectangular	0.0	± 0.2
Antenna factor frequency interpolation	Rectangular	± 0.25	± 0.25
Measurement distance variation	Rectangular	± 0.6	± 0.4
Site imperfections	Rectangular	± 2.0	± 2.0
Mismatch: Receiver VRC $\Gamma_1 = 0.2$ Antenna VRC $\Gamma_R = 0.67(Bi) 0.3 (Lp)$ Uncertainty limits $20\text{Log}(1 \pm \Gamma_1 \Gamma_R)$	U-Shaped	+1.1 -1.25	± 0.5
System repeatability	Std. Deviation	± 0.5	± 0.5
Repeatability of EUT		-	-
Combined standard uncertainty	Normal	+2.19 / -2.21	+1.74 / -1.72
Expanded uncertainty U	Normal (k=2)	+4.38 / -4.42	+3.48 / -3.44

Calculation for maximum uncertainty when 3m biconical antenna including a factor of k = 2 is used:

$$U = 2u_c(y) = 2x(+2.19) = +4.38 \text{ dB} \quad \text{And} \quad U = 2u_c(y) = 2x(-2.21) = -4.42 \text{ Db}$$