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FCC PART 15 SUBPART B CLASS B

TEST REPORT

Applicant	**YAESU MUSEN CO., LTD.**
Address	**TENNOZU PARKSIDE BUILDING 2-5-8 HIGASHI-SHINAGAWA, SHINAGAWA-KU, TOKYO140-0002JAPAN**
FCC ID	**K6620523X50**
Model Number	FTM-3200DR
Product Description	AMATEUR MOBILE RADIO -SCNNING RECEIVER
Date Sample Received	12/17/2015
Date Tested	01/07/2016
Tested By	Christian Pawlak
Approved By	Sid Sanders
Test Results	☒ PASS ☐ FAIL

Report Number	Version Number	Description	Issue Date
2666BUT15TestReport.docx	Rev1	Initial Issue	1/21/2016

Table of Contents

GENERAL REMARKS

The attached report shall not be reproduced except in full without the written permission of Timco Engineering Inc.

The test results only relate to the item tested.

SUMMARY OF TESTING RESULTS

The device under test does:

☒ Fulfill the general approval requirements as identified in this test report
☐ Not fulfill the general approval requirements as identified in this test report

ATTESTATIONS

This equipment has been tested in accordance with the standards identified in this test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025: 2005 requirements.

I attest that the necessary measurements were made, under my supervision, at:

Timco Engineering Inc.
849 NW State Road 45
Newberry, FL 32669

Authorized Signatory Name:

Christian Pawlak
Engineering Project Manager

Date: 01/20/2016

TABLE OF CONTENTS

FCC PART RULES

Applicable Rule(s)	Pt 15.109

ICES RULES

Applicable Rule(s)	ICES-003 § 6.2

TABLE OF CONTENTS

EUT SPECIFICATION

EUT DESCRIPTION	AMATEUR MOBILE RADIO -SCNNING RECEIVER
REQUIREMENTS	CFR 47 FCC Pt 15.109, RSS-GEN(i4)
FCC ID	K6620523X50
MODEL NUMBER	FTM-3200DR
TEST FREQUENCIES	NA
EUT POWER SOURCE	☐ 110–120Vac/50– 60Hz
	☒ DC Power
	☐ Battery Operated Exclusively
TEST ITEM	☐ Prototype
	☐ Pre-Production
	☒ Production
TYPE OF EQUIPMENT	☐ Fixed
	☒ Mobile
	☐ Portable
MODIFICATIONS TO EUT:	☒ No ☐ Yes (explanation below)
TEST MODE DESCRIPTION	
MEASUREMENT STANDARDS	**FCC Part 15, RSS-GEN** **ANSI C63.4-2014(Test Procedures)**
TEST FACILITIES	**Timco Engineering Inc. located at 849 NW State Road 45 Newberry, FL 32669 USA.**
LABORATORY TEST CONDITION	Temperature: 24-26ºC Relative humidity: 50-65%

TEST RESULTS SUMMARY

FCC Part 15.109, ICES § 6.2	Pass

TABLE OF CONTENTS

RADIATED SPURIOUS EMISSIONS

RULES PART NO.:FCC PART 15.109 & ICES-003 § 6.2

REQUIREMENTS:

Frequency MHz	Limits
30 – 88	40.0 dBµV/m measured @ 3 meters
88 – 216	43.5 dBµV/m measured @ 3 meters
216 – 960	46.0 dBµV/m measured @ 3 meters
Above 960	54.0 dBµV/m measured @ 3 meters

Method of Measurement for Radiated Emissions:
The test procedure used for radiated emissions is described ANSI C63.4 using a spectrum analyzer. The resolution bandwidth used was 100 kHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna. All cable loss and antenna factors were calibrated to provide plots with correction factors applied to results using the formula and example described below. The video bandwidth of the analyzer was always greater than or equal to the resolution bandwidth, and a peak detector with max hold was used

The unit under test was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The table used for radiated measurements is capable of continuous rotation. When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and verticals planes. The frequency was scanned from 30 MHz to 2.0 GHz... The EUT was measured in three parts of the tunable band of EUT and (3) orthogonal planes when necessary.

Radiated Emissions Test Setup:
EUT setup and arrangement was completed as described in ANSI C63.4.
Exploratory measurements were taken following different peripheral placement and cable manipulations as described in ANSI C63.4. A photo is provided of the Test setup to record the exact peripheral equipment and cable manipulation arrangement found to produce the highest possible level of radiated emissions.

TABLE OF CONTENTS

Formula of Conversion Factors:

The field strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBµV) to the antenna correction factor supplied by the antenna manufacturer plus the coax loss. The antenna correction factors are stated in terms of dB. The gain of the preselector was accounted for in the spectrum analyzer meter reading.

Field Strength Correction Factor Conversion Example:

Freq (MHz)	Meter Reading	+ ACF	+CL	= FS
33	20 dBµV	+ 10.36 dB/m	+0.40 dB	=30.76 dBµV/m @ 3m

TABLE OF CONTENTS

RADIATED EMISSIONS TEST DATA:

The following plots represent the maximum emissions found when taking final measurements following the procedure described in ANSI C63.4. The final measurements were preceded by taking exploratory measurements described in ANSI C63.4. The plots include the limit line for radiated emissions as required by FCC part 15.109 & ICES-003 § 6.2.

Emission Frequency MHz	Meter Reading dBuV	Antenna Polarity	Coax Loss dB	Correction Factor dB/m	Field Strength dBuV/m	Margin dB
35.79	9.05	V	0.68	13.38	23.11	16.09
66.79	8.70	V	0.97	6.02	15.69	24.31
95.41	8.45	V	1.15	10.74	20.34	22.84
133.56	12.49	V	1.33	13.77	27.59	15.91
168.32	13.55	H	1.48	15.84	30.87	12.63
220.84	11.95	H	1.70	10.52	24.17	21.83
309.02	9.89	H	2.05	14.64	26.58	19.42
688.98	9.12	H	3.03	21.18	33.33	12.67

Results Meet Requirements

TABLE OF CONTENTS

TEST EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
Antenna: Biconnical Chamber	Eaton Chamber	94455-1	1057	11/18/15	11/18/17
Antenna: Log-Periodic Chamber	Electro-Metrics	LPA-25	1122	07/14/15	07/14/17
LISN	Electro-Metrics	ANS-25/2	2604	07/15/15	07/15/17
LISN (Primary)	Electro-Metrics	EM-7820	2682	05/08/15	05/08/17
3-Meter Semi-Anechoic Chamber	Panashield	N/A	N/A	01/05/16	03/01/16
Antenna: Double-Ridged Horn/ETS Horn 2	ETS-Lindgren	3117	00041534	02/25/15	02/25/17
EMI Test Receiver R & S ESIB 40 Screen Room	Rohde & Schwarz	ESIB 40	100274	08/12/14	08/12/16
Software: Field Strength Program	Timco	N/A	Version 4.0	12/12/99	12/12/99
EMI Test Receiver R & S ESU 40 Chamber	Rohde & Schwarz	ESU 40	100320	03/11/14	03/11/16

*EMI RECEIVER SOFTWARE VERSION

The receiver firmware used was version 4.43 Service Pack 3

TABLE OF CONTENTS