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**FCC PART 90 AND
IC RSS-119 (ISSUE 11), RSS-GEN (ISSUE 4)
450-470MHz UHF PORTABLE
RADIATED EMISSIONS TEST REPORT**

APPLICANT	MOTOROLA SOLUTIONS, INC.
	8000 WEST SUNRISE BLVD FT. LAUDERDALE FL 33322-9947 USA
FCC ID	AZ489FT4926
IC MODEL	109U-89FT4926
MODEL NUMBERS	CLS1410, CU1413BKV4BA
PRODUCT DESCRIPTION	UHF TRANSCEIVER
STANDARD APPLIED	CFR 47 Part 90, RSS-119 (Issue 11), RSS-GEN (Issue-4)
DATE SAMPLE RECEIVED	5/29/2015
DATE TESTED	6/1/2015
TESTED BY	Cory Leverett
APPROVED BY	Sid Sanders

Report Number	Version Number	Description	Issue Date
1075AUT15TestReport	Rev1	Initial Issue	6/3/215
1075AUT15TestReport	Rev2	Updated Report	6/22/215
1075AUT15TestReport	Rev3	Updated Report	6/25/215

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WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.**

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GENERAL REMARKS

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

Summary

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:



Cory Leverett
Engineering Project Manager

Date: 6/3/2015

Applicant: MOTOROLA SOLUTIONS, INC.
FCC ID: AZ489FT4926
IC: 109U-89FT4926
Report: M\MOTO SOL_AZ4\1075AUT15\1075AUT15TestReport.docx

GENERAL INFORMATION

EUT Specification

EUT Description	UHF TRANSCEIVER
FCC ID	AZ489FT4926
IC	109U-89FT4926
Model Number	CLS1410, CU1413BKV4BA
Operating Frequency	450 – 470 MHz
Test Frequencies	450, 460, 470MHz
Modulation	FM
EUT Power Source	☐ 110–120Vac/50– 60Hz
	☐ DC Power 12V
	☒ Battery Operated Exclusively
Test Item	☐ Prototype
	☒ Pre-Production
	☐ Production
Type of Equipment	☐ Fixed
	☐ Mobile
	☒ Portable
Test Conditions	The temperature was 26°C with a relative humidity of 50%.
Revision History to the EUT	None
Test Exercise	The EUT was placed in continuous transmit mode.
Applicable Standards	ANSI C63.4 – 2014 / TIA 603-D:2010, FCC CFR 47 Part 90, IC RSS-119 (i11), IC RSS-GEN (i4) Test Site validated to ANSI C63.4 - 2009
Test Facility	Timco Engineering Inc. 849 NW State Road 45 Newberry, FL 32669 USA.

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TEST REPORT SUMMARY

Rule Part No.	Scope of Work	Status Pass/Fail/NA
2.1053 , Part 90.210 , RSS-119 , RSS-GEN	Field Strength Spurious Emissions	Pass

TEST PROCEDURE

Radiation Interference: The test procedure used was the substitution method, using a Rohde & Schwarz – EMI test receiver. The bandwidth (RBW) of the spectrum receiver was 100 kHz up to 1 GHz and 1 MHz above 1 GHz with an appropriate sweep speed. The VBW above 1 GHz was 3 MHz. The analyzer was calibrated in dB above a microvolt at the output of the antenna.

FIELD STRENGTH OF SPURIOUS EMISSIONS

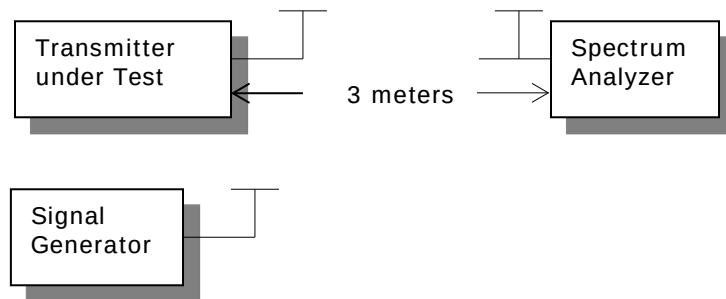
Rule Parts. No.: Part 2.1053, RSS-GEN 6.13

Requirements:

12.5 kHz Channel Spacing = $50 + 10\log(1) = 50$ dBc

METHOD OF MEASUREMENT: The tabulated data shows the results of the radiated field strength emissions test. The spectrum was scanned from 30 MHz to at least the tenth harmonic of the fundamental. This test was conducted per ANSI/TIA 603-D: 2010 using the substitution method. Measurements were made at the test site of TIMCO ENGINEERING, INC. located at 849 NW State Road 45, Newberry, FL 32669.

Test Setup Diagram:



Test Data:

Low End of the Band

Emission Frequency (MHz)	Power Mode	ERP Power Output (dBm)	ERP Power Output (Watts)	FCC Requirement dB	Bandwidth - BW - kHz
450.00	Hi	30.65	1.16	50.65	12.50
Emission Frequency (MHz)	Ant. Polarity		Below Carrier (dBc)	Margin	
106.82	V		91.97	41.32	
315.38	V		81.75	31.1	
526.68	V		88	37.35	
900.00	V		82.64	31.99	
1,350.00	H		78.68	28.03	
1,800.00	H		64.62	13.97	
2,250.00	H		65.14	14.49	
2,700.00	H		70.97	20.32	
3,150.00	H		69.55	18.9	
3,600.00	V		66.42	15.77	
4,050.00	V		65.28	14.63	
4,500.00	H		73.6	22.95	

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Field Strength of Spurious Emissions

Middle of the Band:

Emission Frequency (MHz)	Power Mode	ERP Power Output (dBm)	ERP Power Output (Watts)	FCC Requirement dB	Bandwidth - BW - kHz
460.00	Hi	32.01	1.59	52.01	12.50
Emission Frequency (MHz)	Ant. Polarity		Below Carrier (dBc)	Margin	
106.82	V		96.68	44.67	
382.62	V		85.2	33.19	
518.00	V		88.5	36.49	
920.00	V		83.55	31.54	
1,380.00	H		81.74	29.73	
1,840.00	V		67.65	15.64	
2,300.00	H		75.57	23.56	
2,760.00	V		73.31	21.3	
3,220.00	H		72.93	20.92	
3,680.00	V		73.21	21.2	
4,140.00	V		72.42	20.41	
4,600.00	H		83.56	31.55	

High End of Band:

Emission Frequency (MHz)	Power Mode	ERP Power Output (dBm)	ERP Power Output (Watts)	FCC Requirement dB	Bandwidth - BW - kHz
470.00	Hi	33.33	2.15	53.33	12.50
Emission Frequency (MHz)	Ant. Polarity		Below Carrier (dBc)	Margin	
106.82	V		98.86	45.53	
393.12	V		85.99	32.66	
518.47	V		94.64	41.31	
940.00	V		85.21	31.88	
1,410.00	H		85.65	32.32	
1,880.00	H		75.71	22.38	
2,350.00	H		76.94	23.61	
2,820.00	H		77.25	23.92	
3,290.00	H		75.07	21.74	
3,760.00	V		70.94	17.61	
4,230.00	V		73.81	20.48	
4,700.00	H		78.89	25.56	

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EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
Antenna: Biconnical Chamber	Eaton Chamber	94455-1	1057	06/14/13	06/14/15
Antenna: Log-Periodic Chamber	Eaton	96005	1243	05/31/13	11/31/15
Antenna: Passive Loop	EMC Test Systems	EMCO 6512	9706-1211	06/14/12	06/14/15
3-Meter Semi-Anechoic Chamber	Panashield	N/A	N/A	12/31/13	12/31/15
Ant: Double-Ridged Horn/ETS Horn 1 Ch	ETS-Lindgren Chamber	3117	00035923	06/13/14	06/13/16
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

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