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FCC PART 90 AND IC RSS-119, RSS-GEN TEST REPORT

APPLICANT	RELM WIRELESS CORP. - BK RADIO
	7100 TECHNOLOGY DRIVE WEST MELBOURNE, FLORIDA 32904 USA
FCC ID	K95 KNGM400
IC CERTIFICATION	2116A-KNGM400
MODEL NUMBER	KNG-M400
PRODUCT DESCRIPTION	MOBILE UHF DIGITAL RADIO
DATE SAMPLE RECEIVED	10/28/2010
DATE TESTED	11/3/2010
TESTED BY	Nam Nguyen
APPROVED BY	Richard Block
TIMCO REPORT NO.	2355AT10TestReport.doc
TEST RESULTS	☒ PASS ☐ FAIL

**THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL
WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.**



Certificate # 0955-01

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GENERAL REMARKS

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

The test results relate only to the items tested.

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.



Testing Certificate # 0955-01

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:

Richard Block
Compliance Engineer

Date: December 7, 2010

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GENERAL INFORMATION
DUT Specification

DUT Description	MOBILE UHF DIGITAL RADIO
FCC ID	K95 KNGM400
IC Certification	2116A-KNGM400
Model Number	KNG-M400
Serial Number	N/A
Operating Frequency	380.0 to 470.0 MHz
Test Frequencies	(410.0, 425.0, and 470.0) MHz
Type of Emission	16K0F3E/11K0F3E/8K10F1E/8K10F1D
Modulation	FM
DUT Power Source	☐ 110-120Vac/50- 60Hz
	☒ DC Power 13.4V
	☐ 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%.
Modification to the DUT	None
Test Exercise	The DUT was placed in continuous transmit mode.
Applicable Standards	ANSI/TIA 603-C:2004, FCC CFR 47 Part 90, IC RSS-119, RSS-GEN
Test Facility	Timco Engineering Inc. at 849 NW State Road 45 Newberry, FL 32669 USA.

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TEST PROCEDURES

Radiation Interference: The test procedure used was ANSI/TIA 603-C:2004 using an Agilent spectrum receiver with pre-selector. 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 micro volt at the output of the antenna.

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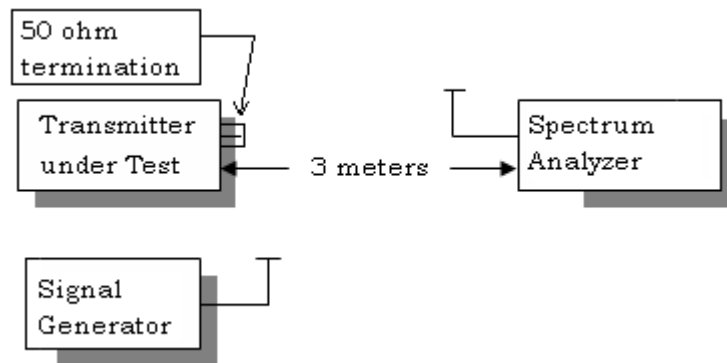
FIELD STRENGTH OF SPURIOUS EMISSIONS

Rule Parts. No.: FCC Part 2.1053, RSS-GEN 4.9

Requirements: 25kHz Channel Spacing = 60dBc (for 50 Watts)

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-C:2004 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:



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Test Data:

High Power

TF	EF	Ant Polarity	dB below carrier
410.00	820.00	V	78.93
	1230.00	V	89.48
	1640.00	V	96.49
	2050.00	V	94.75
	2460.00	V	89.25
	2870.00	V	99.77
	3280.00	V	96.53
	3690.00	V	101.84
	4100.00	V	94.73

Low Power

TF	EF	Ant Polarity	dB below carrier
410.00	820.00	V	75.13
	1230.00	V	90.58
	1640.00	V	86.69
	2050.00	V	87.75
	2460.00	V	86.15
	2870.00	V	92.77
	3280.00	V	94.23
	3690.00	V	91.74
	4100.00	V	94.03

High Power

TF	EF	Ant Polarity	dB below carrier
425.00	850.00	V	85.5
	1275.00	V	92.96
	1700.00	V	84.67
	2125.00	V	84.40
	2550.00	V	92.54
	2975.00	V	88.12
	3400.00	V	84.45
	3825.00	V	91.83
	4250.00	V	93.76

Low Power

TF	EF	Ant Polarity	dB below carrier
425.00	850.00	V	77.4
	1275.00	H	88.46
	1700.00	V	82.17
	2125.00	V	84.70
	2550.00	V	91.54
	2975.00	V	96.22
	3400.00	V	93.25
	3825.00	V	90.43
	4250.00	V	93.06

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HIGH POWER

TF	EF	Ant Polarity	dB below carrier
470.00	940.00	V	76.13
	1410.00	V	95.34
	1880.00	V	96.26
	2350.00	V	86.66
	2820.00	V	95.56
	3290.00	V	94.07
	3760.00	V	89.33
	4230.00	V	100.58
	4700.00	V	100.88

LOW POWER

TF	EF	Ant Polarity	dB below carrier
470.00	940.00	V	69.63
	1410.00	V	97.64
	1880.00	V	90.26
	2350.00	V	82.66
	2820.00	V	95.36
	3290.00	V	95.77
	3760.00	V	92.43
	4230.00	V	95.78
	4700.00	H/V	NF

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RECEIVER RADIATED SPURIOUS EMISSIONS

Receiver data as shown below is not part of the FCC certification process. Per FCC Rules Part 15.101(b), the receiver is subject to verification.

The data shown below is part of the IC Certification process only.

Rule Parts. No.: RSS-GEN 4.10, 6

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

TEST DATA:

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity	Coax Loss dB	Correction Factor dB/m	Field Strength dBuV/m	Margin dB
410.0	320.00	5.6	H	1.12	15.00	21.72	24.28
410.0	320.00	8.0	V	1.12	14.70	23.82	22.18
410.0	640.00	10.5	V	1.64	19.60	31.74	14.26
410.0	640.00	13.9	H	1.64	19.90	35.44	10.56
410.0	960.00	7.9	H	2.04	23.60	33.54	20.46
410.0	960.00	15.5	V	2.04	22.80	40.34	13.66
425.0	335.00	4.8	V	1.14	14.55	20.49	25.52
425.0	335.00	8.7	H	1.14	14.85	24.69	21.32
425.0	670.00	6.3	V	1.67	20.50	28.47	17.53
425.0	670.00	6.4	H	1.67	20.70	28.77	17.23
425.0	1,005.00	10.7	H	2.10	27.60	40.40	13.60
425.0	1,005.00	15.0	V	2.10	27.60	44.70	9.30
440.0	350.00	3.9	H	1.15	15.00	20.05	25.95
440.0	350.00	4.3	V	1.15	14.60	20.05	25.95
440.0	700.00	5.0	V	1.70	20.60	27.30	18.70
440.0	700.00	5.3	H	1.70	21.00	28.00	18.00
440.0	1,050.00	8.6	H	2.14	27.64	38.38	15.62
440.0	1,050.00	13.5	V	2.14	27.64	43.28	10.72

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EMC EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
3-Meter Semi-Anechoic Chamber	Panashield	N/A	N/A	Listed 3/10/10	3/10/12
AC Voltmeter	HP	400FL	2213A14499	CAL 3/23/09	3/23/11
Antenna: Dipole Kit	Electro-Metrics	TDA-30/1-4	153	CHAR 6/10/09	6/10/11
Frequency Counter	HP	5385A	3242A07460	CAL 5/26/09	5/26/11
Hygro-Thermometer	Extech	445703	0602	CAL 1/30/09	1/30/11
Modulation Analyzer	HP	8901A	3435A06868	CAL 5/26/09	5/26/11
Digital Multimeter	Fluke	FLUKE-77-3	79510405	CAL 5/18/09	5/18/11
Analyzer Tan Tower Preamplifier	HP	8449B-H02	3008A00372	CAL 11/21/09	11/21/11
Analyzer Tan Tower Quasi-Peak Adapter	HP	85650A	3303A01690	CAL 11/22/09	11/22/11
Analyzer Tan Tower RF Preselector	HP	85685A	3221A01400	CAL 11/21/09	11/21/11
Analyzer Tan Tower Spectrum Analyzer	HP	8566B Opt 462	3138A07786 3144A20661	CAL 11/24/09	11/24/11
Temperature Chamber	Tenney Engineering	TTRC	11717-7	CHAR 4/25/10	4/25/12

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