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UHF RADIO TEST REPORT

RADIATED EMISSIONS ONLY

PER FCC PART 90 AND RSS-119

APPLICANT	BK Radio C/O Relm Communications
ADDRESS	7100 Technology Drive West Melbourne, FL 32904
FCC ID	K95KNGP400
IC Label	IC: 2116A-KNGP400
MODEL NUMBER	KNGP400
PRODUCT DESCRIPTION	UHF Two Way Radio
DATE SAMPLE RECEIVED	August 11, 2008
DATE TESTED	August 15, 2008
TESTED BY	Nam Nguyen
APPROVED BY	Mario de Aranzeta
TIMCO REPORT NO.	1209ZUT8TestReport.PDF
TEST RESULTS	☒ PASS ☐ FAIL

ACCREDITED
Certificate # 0955-01

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ATTESTATION

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

Certificate #0955-01

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

I attest that the necessary measurements were made by me or under my supervision, at Timco Engineering, Inc. located at 849 N.W. State Road 45, Newberry, Florida 32669 USA.

Authorized by: Mario de Aranzeta

Signature: On File

Function: Lab Supervisor / Engineer

Date: August 18, 2008

REPORT SUMMARY

Disclaimer	The test results relate only to the items tested.
Purpose of Test	To demonstrate the DUT in compliance with FCC CFR 47, Part 90 radiated spurious emissions requirements for UHF radios. To demonstrate the DUT in compliance with IC RSS-119 radiated spurious emissions requirements for UHF radios.
Test Standards	ANSI/TIA 603-C: 2004, FCC CFR 47 Part 90 ANSI C63.4: 2003, RSS-119, FCC Pt 15.109
Related Approval	There is no significant emission for receiver portion.

TEST ENVIRONMENT AND TEST SETUP

Test Facility	RF output power and radiated emission were conducted by Timco Engineering Inc. located at 849 NW State Road 45, Newberry, FL 32669 USA
Laboratory Test Condition	The temperature was 26°C with a relative humidity of 50%.
Deviation from the standards	No deviation
Modification to the DUT	No modification was made.
Test Exercise (software etc.)	The DUT was placed in continuous transmitting mode of operation.
System Setup	Stand alone device.

DUT DESCRIPTION

Manufactured by	BK Radio
Product Description	UHF 2-Way Radio
FCC ID	K95KNGP400
IC Label	IC: 2116A-KNGP400
M/N	KNGP400
Family M/Ns	N/A
S/N	N/A
Operating Freq	380 ~ 470 MHz
Max. Output Pwr	5.7 Watts
Bandwidth	12.5 kHz, 25 kHz
Emission Designator(s)	8K10F1E, 8K10F1D, 11K0F3E, 16K0F3E
Modulation	FM
Power Source	Rechargeable battery, 10.8 VDC
Test Item	Preproduction
Type of DUT	Portable
Antenna Spec	Detachable

TEST EQUIPMENT

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
Analyzer Tan Tower Spectrum Analyzer	HP	8566B Opt 462	3138A07786 3144A20661	CAL 12/7/07	12/7/09
Analyzer Tan Tower RF Preselector	HP	85685A	3221A01400	CAL 12/7/07	12/7/09
Analyzer Tan Tower Quasi-Peak Adapter	HP	85650A	3303A01690	CAL 12/8/07	12/8/09
Analyzer Tan Tower Preamplifier	HP	8449B-H02	3008A00372	CAL 12/8/07	12/8/09
Antenna: Biconnical	Electro-Metrics	BIA-25	1171	CAL 4/29/07	4/29/09
Antenna: Double-Ridged Horn	Electro-Metrics	RGA-180	2319	CAL 12/29/06	12/29/08
Termaline Wattmeter	Bird Electronic Corporation	611	16405	CAL 7/16/07	7/16/09

TEST PROCEDURE

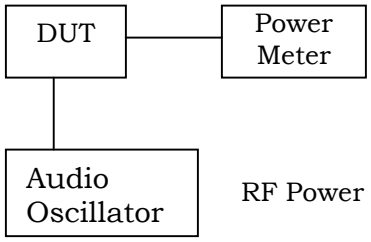
(As applicable)

Power Line Conducted Interference

The procedure used was ANSI 63.4-2003 using a 50uH LISN. Both lines were observed with the DUT transmitting. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

RF Power Output

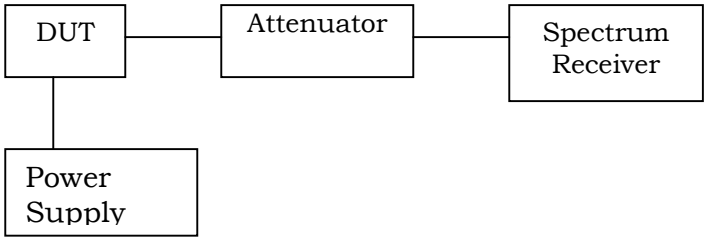
The RF power output was measured at the antenna feed point using a peak power meter. A 50-ohm, resistive wattmeter was connected to the RF output connector. With a nominal battery voltage, and the transmitter properly adjusted the RF output measures:



RF Power Output Test Setup

Spurious Emissions At Antenna Terminals (Conducted)

The carrier was modulated 100%. The spectrum was scanned from 0.4 to at least the 10th harmonic of the fundamental. Above 1 GHz the resolution bandwidth was 1 MHz and the VBW = 3 MHz and the span to 50 MHz. The measurements were made in accordance with standard ANSI/TIA-603-C: 2004



Radiation Interference

The test procedure used was ANSI/TIA-603-C: 2004 and ANSI C63.4-2003 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 microvolt at the output of the antenna.

Modulation Characteristic

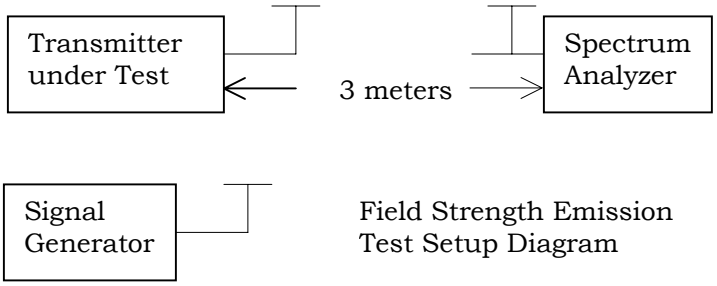
Audio frequency response
The audio frequency response was measured in accordance with ANSI/TIA 603-C: 2004.

Audio Low Pass Filter
The audio low pass filter for voice-modulated equipment was measured in accordance with ANSI/TIA 603-C: 2004.

Audio Input versus modulation
The audio input level needed for a particular percentage of modulation was measured in accordance with ANSI/TIA 603-C: 2004. Curves are provided for audio input frequencies of 300, 1000, and 3000 Hz.

Frequency Stability
The frequency stability was measured per ANSI/TIA 603-C: 2004.

Field Strength of Spurious Emissions
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.



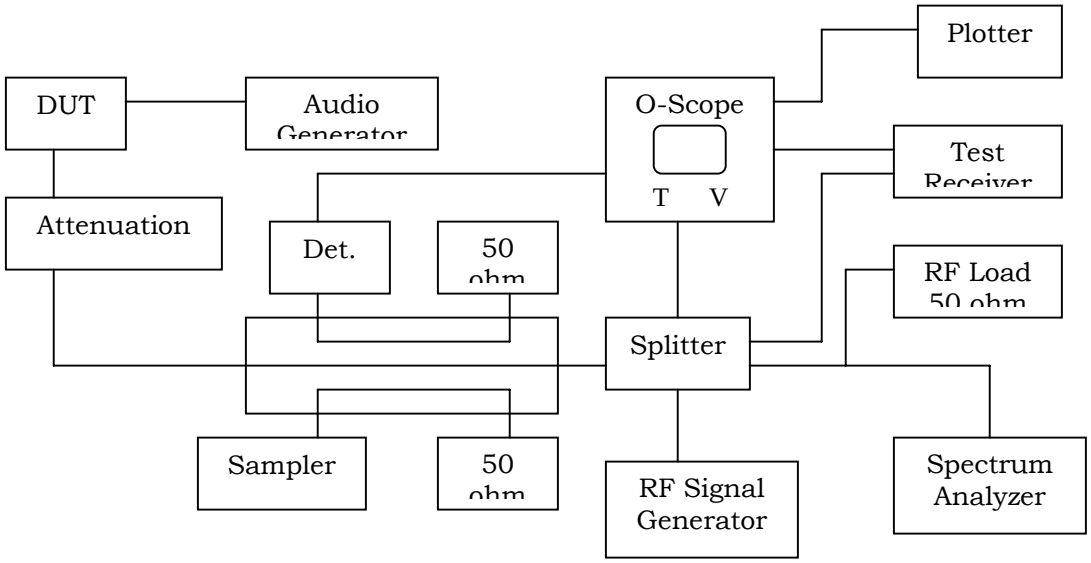
Field Strength Emission Test Setup Diagram

Transient Frequency Behavior

The test procedure was ANSI/TIA 603-C: 2004 Para 2.2.19.

- Using the variable attenuator. The transmitter level was set to 40 dB below the test receivers maximum input level,
- Then the transmitter was turned off.
- With the transmitter off the signal generator was set 20dB below the level of the transmitter in the above step, this level will be maintained with the signal generator through-out the test.
- Reduce the attenuation between the transmitter and the RF detector by 30 dB.
- With the levels set as above the transient frequency behavior was observed & recorded.

Transient Frequency Response Test setup



FIELD STRENGTH OF SPURIOUS EMISSIONS (RADIATED)

Rule Parts. No.: Pt 2.1053: Pt 90, RSS-119

Requirements: 50+10log(Po)=50+10log(5.7)=57.6 dB

Test Data: 25 kHz Spacing

25 kHz, 5.7 W

Emission Frequency MHz	Ant. Polarity V/H	dB Below Carrier (dBc)	Emission Frequency MHz	Ant. Polarity V/H	dB Below Carrier (dBc)
380.00	0	0	410.00	0	0
760.00	H	66.92	820.00	H	62.48
1140.00	H	71.27	1230.00	V	72.52
1520.00	H	78.18	1640.00	H	91.60
1900.00	H	84.94	2050.00	H	88.24
2280.00	H	88.34	2460.00	H	86.66
2660.00	H	86.76	2870.00	H	95.92
3040.00	H	90.32	3280.00	H	91.07
3420.00	H	90.63	3690.00	H	93.52
3800.00	H	89.52	4100.00	H	88.41

25 kHz, 5.7 W

Emission Frequency MHz	Ant. Polarity V/H	dB Below Carrier (dBc)	Emission Frequency MHz	Ant. Polarity V/H	dB Below Carrier (dBc)
425.00	0	0	440.00	0	0
850.00	V	71.14	880.00	V	69.9
1275.00	V	70.55	1320.00	V	74.07
1700.00	H	92.01	1760.00	H	92.66
2125.00	H	83.79	2200.00	H	80.02
2550.00	H	88.48	2640.00	H	86.06
2975.00	H	94.56	3080.00	H	87.36
3400.00	H	91.94	3520.00	H	90.28
3825.00	H	*	3960.00	H	82.99
4250.00	H	89.60	4400.00	H	85.00

* - no emissions

25 kHz, 5.7 W

Emission Frequency MHz	Ant. Polarity V/H	dB Below Carrier (dBc)	Emission Frequency MHz	Ant. Polarity V/H	dB Below Carrier (dBc)
455.00	0	0	470.00	0	0
910.00	H	69.92	940.00	V	68.12
1365.00	H	73.71	1410.00	V	73.93
1820.00	H	89.74	1880.00	H	87.65
2275.00	H	80.85	2350.00	H	84.05
2730.00	H	92.71	2820.00	H	89.75
3185.00	H	92.32	3290.00	H	87.56
3640.00	H	89.67	3760.00	H	90.52
4095.00	H	87.51	4230.00	H	89.27
4550.00	H	88.66	4700.00	H	89.27

* No emission