

C2PC Test Report

Prepared for: BK Technologies, Inc

Model: BKR9000

Description: Multi-Band Portable Radio VHF/UHF/700/800

FCC ID:K95BKR9000-2

ISED ID: 2116A-BKR90002

To

FCC_Part 22, 74, 80, 90
ISED_RSS-119 issue 12 (May 2015)

Date of Issue: March 21, 2025

On the behalf of the applicant:

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Attention of:

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All results contained herein relate only to the sample tested.

Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	3/29/2025	Greg Corbin	Original Document
2.0	5/27/2025	Greg Corbin	Corrected missing (-) sign in table on page 10, 23.3 dBm is -23.3 dBm

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Test Result Summary

Specification		Test Name	Pass, Fail, N/A	Comments
FCC	ISED			
2.1046 90.205(s) 22.565(a) 74.461 80.215	RSS-119_5.4	Carrier Output Power (Conducted)	Pass	
2.1051 90.210 22.359(a) 74.462(c) 80.211(f)(3)	RSS-119_5.8.3	Unwanted Emissions (Transmitter Conducted)	Pass	
2.1051 90.210 22.359(a) 74.462(c) 80.211(f)(3)	RSS-119_5.8.3	Field Strength of Spurious Radiation	Pass	

Statements of conformity are reported as:

- Pass - the measured value is below the acceptance limit, *acceptance limit = test limit*.
- Fail - the measured value is above the acceptance limit, *acceptance limit = test limit*.

ANAB

Compliance Testing, LLC, has been accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to the joint ISO-ILAC-IAF Communiqué dated January 2009).

The tests results contained within this test report all fall within our scope of accreditation, unless noted below.

Please refer to <http://www.compliancetesting.com/labscope.html> for current scope of accreditation.



FCC Site Reg. #349717

IC Site Reg. #2044A-2

Test and Measurement Data

All tests and measurement data shown were performed in accordance with FCC Rules and Regulations, Volume II, Part 2, Subpart J, Sections 2.947, 2.1033(c), 2.1041, 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, ANSI C63.26-2015, FCC Part 22, Part 74, Part 80, Part 90, RSS-119 and RSS-GEN.

Standard Test Conditions and Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing.

In accordance with ANSI/TIA 603C, and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104°F) unless the particular equipment requirements specified testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Environmental Conditions		
Temp (°C)	Humidity (%)	Pressure (mbar)
22.0 – 24.5	26.7 – 29.7	970.2 – 983.5

Measurement results, unless otherwise noted, are worst-case measurements.

EUT Description

Model: BKR-9000

Description: Multi-Band Portable Radio VHF/UHF/700/800

Firmware: 6.5.10.42

Software: 5.10.38f

DSP: 5.10.28

Serial Number: Test Radio

PMN: BKR9000-2

HVIN: BKR9000-2

Additional Information:

This test report contains test data to support a Class II Permissive Change due to part end of life notice.

The power amplifier chip in the transmitter circuit was replaced due to end of life of current part.

Discontinued P/N: TA8210D

New P/N: TA9210D

The manufacturer has attested that the specifications for the replacement part are similar, that the parts are pin for pin compatible, that there were no changes to the PCB layout and that the output power remained the same.

The EUT is a portable land mobile radio operating in the VHF, UHF, 700, 800 MHz bands.

The EUT contains the following pre-certified module.

Manufacturer	Module	FCC ID	ISED ID
Texas Instruments	WIFI and BT Module WL18DBMOD	Z64-WL18DBMOD	451I-WL18DBMOD

This module contains 2.4 GHz and 5 GHz WIFI bands and 2.4 GHz Bluetooth as noted below.

Band	Frequency Range (MHz)	Modulation
2.4 GHz WIFI	2412 - 2462	802.11b : DSSS 802.11 g/n : OFDM
2.4 GHz Bluetooth	2402 - 2480	Bluetooth BR (1Mbps: GFSK) Bluetooth EDR (2 Mbps: π /4-DQPSK)
2.4 GHz BT LE	2402 - 2480	Bluetooth LE (GFSK)
UNII-1	5150 - 5250	WLAN 11a/n HT20/HT40
UNII-3	5725 - 5850	802.11a/n: OFDM

EUT Operation during Tests

The EUT is battery powered with the nominal voltage set to 7.2 vdc.

The output power was set to maximum for all tests.

The test frequencies are listed in Table 1.

1 frequency was selected for each band.

Conducted output power, conducted spurious emissions and radiated emissions were recorded to show that there was no change in radio performance from the original certification.

Table 1 – Frequency Range, Modulation Type and Emission Designators

Frequency Band (MHz)	FCC, ISED	Test Frequency (MHz)	12.5k FM	P25 Phase 1 C4FM	P25 Phase 2 H-CPM
FCC (Part 90) 150.8 -174 (Part 22) 152.03 – 158.07 (Part 74) 161.625 – 161.775 (Part 80) 157.2 – 157.425 (Part 80) 161.8 – 162.025	FCC, ISED	161.625	11K0F3E	8K10F1E 8K10F1D	8K10F1W
ISED 138 – 174					
FCC (Part 90) 406.1 – 430 (Part 90) 450 – 470 (Part 90) 470- 512 (Part 90 EF) 380 - 406 (Part 90 EF) 512 – 520 (Part 22) 454.025 – 459.650 (Part 74) 450 – 451 (Part 74) 455 – 456 (Part 74) 470 – 488 (Part 80) 457.5375 – 467.825	FCC, ISED	420	11K0F3E	8K10F1E 8K10F1D	8K10F1W
ISED 406.1 – 430 450 - 470	FCC, ISED	459.65	11K0F3E	8K10F1E 8K10F1D	8K10F1W

FCC (Part 90) 769 - 775 (Part 90) 799 - 805	FCC, ISED	769.025	11K0F3E	8K10F1E 8K10F1D	8K10F1W
ISED 768 - 776 798 - 806	FCC, ISED	799.025	11K0F3E	8K10F1E 8K10F1D	8K10F1W
FCC (FCC) 806 - 815 (FCC) 851 - 860	FCC, ISED	810.025	11K0F3E	8K10F1E 8K10F1D	8K10F1W
ISED 806 - 824 851 - 869	FCC, ISED	859.975	11K0F3E	8K10F1E 8K10F1D	8K10F1W

Antenna Gain

Model	Frequency Range (MHz)		Gain (dBi)
BKR0813	VHF	136 – 174	-6 to -4
BKR0892	VHF	136 – 174	0
	700 / 800 Band	769 - 870	2
BKR0893-148-E	VHF	136 – 174	-8 to -4
	UHF	380 - 520	-5 to 0
	700 / 800 Band	763 - 870	-1 to 1
BKR0893-148-E20	VHF	136 – 174	-9 to -5
	UHF	380 - 520	-5 to 0
	700 / 800 Band	763 - 870	-1 to 1

Accessories:				
Qty	Description	Manufacturer	Model	S/N
1	Battery, Li-ion Rechargeable	BK	BKR0102	N/A
1	Battery Charger	BK	BKR0300	N/A
1	ITE Power Supply for BKR0300	Leader Electronics	MU12B8120100-A1	N/A
1	Battery Eliminator	BK	N/A	N/A
!	PTT Microphone	BK	BKR0204	N/A
1	Antenna	BK	BKR0813	N/A
1	Antenna	BK	BKR0892-180	N/A
1	Antenna	BK	BKR0893-148-E	N/A
1	Antenna	BK	BKR0893-148-E20	N/A

	Cables: None
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	Modifications: None
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Carrier Output Power (Conducted)

Engineer: Greg Corbin

Test Date: 3/19/2025

Measurement Procedure

The Equipment Under Test (EUT) was connected to a spectrum analyzer through a 30 dB Power attenuator. All cable and attenuator losses were input into the spectrum analyzer as a reference level offset to ensure accurate readings were obtained.

CW output power was recorded with peak detector set to max hold.

Manufacturer Rated Power =VHF= 6 watts (37.782 dBm)

Manufacturer Rated Power =UHF= 5 watts (36.99 dBm)

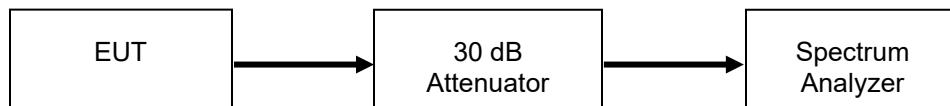
Manufacturer Rated Power =700 band= 3 watts (34.771 dBm)

Manufacturer Rated Power =800 band= 3 watts (34.771 dBm)

ISED RSS-119 Output Power Limit = ± 1 dB of manufacturer rated power.

FCC Output Power Limit = 7.2 w (20% of manufacturer rated power)

Test Setup



Transmitter Peak Output Power_ CW

FCC ISED	Tuned Frequency		Output Power (dBm)	Output Power (watts)	Result
	MHz				
FCC, ISED	161.6250		37.67	5.848	Pass
FCC, ISED	420.0000		37.05	5.070	Pass
FCC, ISED	459.6500		37.10	5.129	Pass
FCC, ISED	769.0250		34.46	2.793	Pass
FCC, ISED	799.0250		34.55	2.851	Pass
FCC, ISED	810.0250		34.75	2.985	Pass
FCC, ISED	859.9750		34.44	2.780	Pass

Conducted Spurious Emissions

Engineer: Greg Corbin

Test Date: 3/19/2025

Test Procedure

The EUT was connected directly to a spectrum analyzer to verify that the EUT met the requirements for spurious emissions. The resolution bandwidth set for 100 kHz or 1 MHz as required per the rule section and the reference level was adjusted to ensure the system had sufficient dynamic range to measure spurious emissions.

The frequency range from 30 MHz to the 10th harmonic of the fundamental transmitter was observed and plotted.

The conducted spurious emissions were recorded for CW and C4FM modes of operation.

The specification limit was set for -20 dBm for comparison to the emission mask "D" limit.

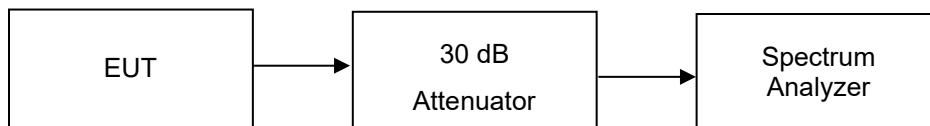
Note: A marker was placed on the fundamental frequency and the highest spurious emission.

For 30 – 1000 MHz, a Peak detector set to max hold was used.

For 1 – 10 GHz an Average detector was used.

The # of trace points was set to 64000.

Test Setup



Conducted Spurious Emissions Summary Test Table_ CW

FCC ISED	Tuned Frequency (MHz)	Spurious Frequency (MHz)	Measured Spurious Level (dBm)	Specification Limit (dBm)	Result
FCC, ISED	161.6250	323.258	-23.3	-20	Pass
FCC, ISED	420.0000	59.206	-24.1	-20	Pass
FCC, ISED	459.6500	46.141	-25.0	-20	Pass
FCC, ISED	769.0250	85.699	-24.2	-20	Pass
FCC, ISED	799.0250	61.403	-23.8	-20	Pass
FCC, ISED	810.0250	60.630	-24.4	-20	Pass
FCC, ISED	859.9750	50.491	-24.1	-20	Pass

Conducted Spurious Emissions Summary Test Table_ C4FM

FCC ISED	Tuned Frequency (MHz)	Spurious Frequency (MHz)	Measured Spurious Level (dBm)	Specification Limit (dBm)	Result
FCC, ISED	161.6250	323.258	-23.9	-20	Pass
FCC, ISED	420.0000	48.232	-24.9	-20	Pass
FCC, ISED	459.6500	61.994	-24.1	-20	Pass
FCC, ISED	769.0250	62.146	-24.2	-20	Pass
FCC, ISED	799.0250	78.924	-24.2	-20	Pass
FCC, ISED	810.0250	63.237	-24.3	-20	Pass
FCC, ISED	859.9750	38.017	-23.5	-20	Pass

Annex A Conducted Spurious Emission

Refer to Annex A for Conducted Spurious Emission plots

Field Strength of Spurious Radiation

Engineer: Greg Corbin

Test Date: 2/21/2023

Test Procedure

The EUT was tested in a semi-anechoic chamber with the turntable set 3m from the receiving antenna. A spectrum analyzer was used to verify that the EUT met the requirements for Radiated Emissions. The EUT was tested by rotating it 360 degrees with the receive antenna in both the vertical and horizontal orientation while raised from 1 to 4 meters to ensure that the signal levels were maximized. All cable and antenna correction factors were input into the spectrum analyzer ensuring an accurate measurement in ERP/EIRP with the resultant power in dBm.

The EUT was set to transmit at maximum power with the RF output terminated in 50 ohms.

Radiated spurious emissions was recorded with the EUT in CW mode and C4FM.

Note: A marker was placed on the fundamental frequency and the highest spurious emission.

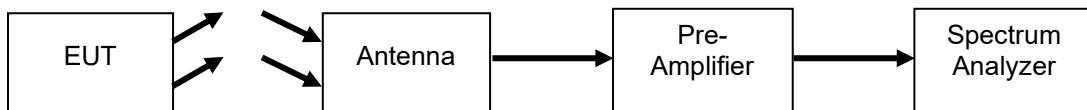
The RBW was set to 100 kHz for measurements below 1 GHz and 1 MHz for measurements above 1 GHz. The VBW was set to 3 times the RBW.

A peak detector set to max hold was used.

The following formula was used for calculating the limits:

For the VHF, UHF, 800 MHz band the radiated spurious limit = $P1 - (50 + 10\log(P2)) = -20\text{dBm}$

Test Setup



Radiated Spurious Emissions Summary Test Table_ CW

FCC ISED	Tuned Frequency (MHz)	Spurious Frequency (MHz)	Measured Spurious Level (dBm)	Specification Limit (dBm)	Result
FCC, ISED	161.6250	9570.0	-45.7	-20	Pass
FCC, ISED	420.0000	7140.0	-45.7	-20	Pass
FCC, ISED	459.6500	9582.1	-45.4	-20	Pass
FCC, ISED	769.0250	9858.3	-46.0	-20	Pass
FCC, ISED	799.0250	7263.8	-46.1	-20	Pass
FCC, ISED	810.0250	9981.2	-44.5	-20	Pass
FCC, ISED	859.9750	7740.3	-44.4	-20	Pass

Radiated Spurious Emissions Summary Test Table_ C4FM

FCC ISED	Tuned Frequency (MHz)	Spurious Frequency (MHz)	Measured Spurious Level (dBm)	Specification Limit (dBm)	Result
FCC, ISED	161.6250	9568.8	-45.6	-20	Pass
FCC, ISED	420.0000	9895.0	-46.0	-20	Pass
FCC, ISED	459.6500	9824.2	-46.0	-20	Pass
FCC, ISED	769.0250	9864.0	-45.4	-20	Pass
FCC, ISED	799.0250	9367.6	-45.7	-20	Pass
FCC, ISED	810.0250	9379.8	-44.6	-20	Pass
FCC, ISED	859.9750	7566.8	-45.3	-20	Pass

Annex B Radiated Spurious Emission

Refer to Annex B for Radiated Spurious Emission plots

Measurement Uncertainty

Measurement Uncertainty for Compliance Testing is listed in the table below.

The reported expanded uncertainty has been estimated at a 95% confidence level (k=2)

Measurement Type	Expanded Uncertainty
Conducted Emissions, AC Powerline	± 3.28 dB
Radiated Emissions_30 – 1000 MHz	± 4.82 dB
Radiated Emissions_1 – 18 GHz	± 5.73 dB
Frequency Error	± 22 Hz
Conducted RF Power	± 0.98 dB
Conducted Spurious Emission	± 2.49 dB
AC Voltage	± 2.3 %
DC Voltage	± 0.12 %
Temperature	± 1.0 deg C
Humidity	± 4.32 %

Test Equipment Utilized

Description	Manufacturer	Model #	CT Asset #	Last Cal Date	Cal Due Date
Bi-Log Antenna	Chase	CBL6111C	i00267	3/5/2024	3/5/2026
Horn Antenna	ARA	DRG-118/A	i00271	8/9/2024	8/9/2026
Temp./humidity/pressure monitor	Omega Engineering	iBTHX-W-5	i00686	1/25/2025	1/25/2026
Spectrum Analyzer	Textronix	RSA5126A	i00424	6/25/2024	6/25/2025
3 Meter Semi-Anechoic Chamber	Panashield	3 Meter Semi-Anechoic Chamber	i00428	7/13/2023	7/13/2026
Voltmeter	Fluke	179	i00488	6/19/24	6/19/25
Attenuator, 30 dB, 50W	Mini-Circuits	BW- N30W50+	i00459	Verified on: 3/19/25	
Spectrum Analyzer	Agilent	PSA E4448A	i00688	10/26/24	10/26/25
Preamplifier	Ervant	SBB-0115034019-2F2F-E3	i00722	Verified on: 6/27/24	
Preamplifier	COM-Power	PAM-103	i00734	Verified on: 12/4/24	

In addition to the above listed equipment standard RF connectors and cables were utilized in the testing of the described equipment. Prior to testing these components were tested to verify proper operation.

END OF TEST REPORT