

FCC PART 22, 74, 80 & 90 TYPE APPROVAL EMI MEASUREMENT AND TEST REPORT

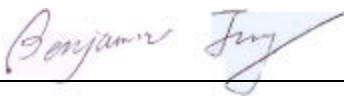

For

BK Radio Inc.

7100 Technology Drive
West Melbourne, FL 32904

FCC ID: K95DPH51

2003-05-15

This Report Concerns: <input checked="" type="checkbox"/> Permissive Class II Change	Equipment Type: VHF Portable Two-way Radio
Test Engineer: Benjamin Jin 	
Report No.: R0304232	
Test Date: 2003-05-06	
Reviewed By: Hans Mellberg 	
Prepared By: Bay Area Compliance Laboratory Corporation 230 Commercial Street Sunnyvale, CA 94085 Tel: (408) 732-9162 Fax: (408) 732 9164	

Note: This test report is specially limited to the above client company and the product model only. It may not be duplicated without prior written consent of Bay Area Compliance Laboratory Corporation. This report **must not** be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

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1 - GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Applicant:	BK Radio Inc.
Product Description:	VHF Portable Two-way Radio
Product Name:	DPH51
FCC ID:	K95DPH51
Serial Number:	None
Transmitter Frequency:	148~174MHz
Maximum Output Power:	6.02W
Dimension:	2.5" L x 1.5"W x 13"H approximately
Power Supply:	BK Radio Battery Charger, M/N: LAA0342
Applicable Standard	FCC CFR 47, Part 22, 74, 80 & 90

1.2 Objective

This type approval report is prepared on behalf of *BK Radio Inc.* in accordance with Part 2, Subpart J, Part 15, Subparts A and B, Part 22 Subpart H, Part 74, Part 80 and Part 90 of the Federal Communication Commissions rules.

The objective of the manufacturer is to demonstrate compliance with FCC rules for Spurious Radiated Emission, for a Permissive Class II application. The difference between the original application and this PC2 is that The original device, with M/N: DPH5102X has an enclosure made of metal. The PC2 device, with M/N: DPH5102S has the enclosure made of Lexan plasitc. Only the enclosure material has been change. The electrical parts, printed circuit board assemblies, and interconnection scheme will remain the same as the metal case model.

1.3 Related Submittal(s)/Grant(s)

This Class II permissive change device was originally granted on 3/14/2003. Please refer to BACL report R0304232 for the original test. The original device, with M/N: DPH5102X has an enclosure made of metal. The PC2 device, with M/N: DPH5102S has the enclosure made of Lexan plasitc.

1.4 Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part J as well as the following individual parts:

Part 15 – Unintentional
Part 22 – Public Mobile Service
Part 74 – Auxiliary and Special Broadcast Services
Part 80 – Stations in the Maritime Service
Part 90 – Private Land Mobile Radio Service

Applicable Standards: TIA EIA 137-A, TIA EIA 98-C, TIA/EIA-603, ANSI 63.4-1992, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratory, Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

1.5 Test Facility

The Open Area Test site used by Bay Area Compliance Laboratory Corporation to collect radiated and conducted emission measurement data is located in the back parking lot of the building at 230 Commercial Street, Sunnyvale, California, USA.

Test site at Bay Area Compliance Laboratory Corporation has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports has been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997 and Article 8 of the VCCI regulations on December 25, 1997. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-1992.

The Federal Communications Commission and Voluntary Control Council for Interference has the reports on file and is listed under FCC file 31040/SIT 1300F2 and VCCI Registration No.: C-1298 and R-1234. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratory Corporation is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (NVLAP). The scope of the accreditation covers the FCC Method - 47 CFR Part 15 - Digital Devices, CISPR 22: 1997, and AS/NZS 3548: Electromagnetic Interference - Limits and Methods of Measurement of Information Technology Equipment test methods under NVLAP Lab Code 200167.

1.6 Test Equipment List

Manufacturer	Description	Model	Serial Number	Cal. Due Date
HP	Spectrum Analyzer	8568B	2517A01610	2003-10-30
HP	Spectrum Analyzer	8593A	29190A00242	2004-05-01
HP	Amplifier	8447E	1937A01054	2004-05-01
HP	Quasi-Peak Adapter	85650A	2521A00718	2004-05-01
Com-Power	Biconical Antenna	AB-100	14012	2004-05-01
Com-Power	LISN	LI-200	12005	2004-03-28
Com-Power	LISN	LI-200	12008	2004-03-28
Com-Power	Log Periodic Antenna	AL-100	16091	2004-05-01
Com-Power	Log Periodic Antenna	AB-900	15049	2004-05-01
Rohde & Schwarz	EMI Test Receiver	ESPI	1147 8007 07	2003-12-03
Agilent	Spectrum Analyzer (9KHz – 40GHz)	8564E	08303	2003-08-01
Agilent	Spectrum Analyzer (9KHz – 50GHz)	8565EC	06042	2004-05-03
HP	Amplifier (1-26.5GHz)	8449B	3147A00400	2004-03-14
A.H.System	Horn Antenna (700MHz-18GHz)	SAS-200/571	261	2004-05-31

*** Statement of Traceability:** Bay Area Compliance Laboratory Corp. certifies that all calibration has been performed using suitable standards traceable to the NATIONAL INSTITUTE of STANDARDS and TECHNOLOGY (NIST).

2 - SYSTEM TEST CONFIGURATION

2.1 Justification

The EUT was configured for testing in a typical fashion (as normally used in a typical application).

The final qualification test was performed with the EUT operating at normal mode.

2.2 Block Diagram

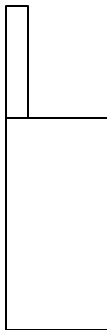
Please refer to Exhibit D.

2.3 Equipment Modifications

No modifications were necessary for the EUT to comply with the applicable limits and requirements.

2.4 Test Setup Block Diagram

The EUT is a standalone device.



EUT

3 - SUMMARY OF TEST RESULTS

FCC RULE	DESCRIPTION OF TEST	RESULT
§ 2.1053 § 22.539 § 74.462 § 80.211 § 90.210	Radiated Spurious Emission	Compliant

4 - RADIATED SPURIOUS EMISSION

4.1 Test Procedure

§2.1053, §22.359, §74.462, §80.211 and §90.210 (25kHz bandwidth only)

4.2 Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = $10 \lg (\text{TXpwr in Watts}/0.001)$ – the absolute level

Spurious attenuation limit in dB = $43 + 10 \text{Log}_{10} (\text{power out in Watts})$

4.3 Test Equipment

CDI B100/200/300 Biconical Antennas
EMCO Bi-logcon Antenna
EMCO 3115 Horn Antenna
HP 8566B Spectrum Analyzer
HP8640 Generator
Non-radiating Load

4.4 Test Result

Low Frequency: -6.9dB at 296.88MHz
Mid Frequency: -6.7dB at 322.88MHz
High Frequency: -5.3dB at 347.2MHz

Primary scan at 148.44MHz (Low CH.)

Indicated		Table	Test Antenna		Substituted		Substitution Antenna		Antenna	Cable	Absolute	Limit	Margin
Frequency	Ampl.	Angle	Height	Polar	Frequency	Level	Half-wavel.	Polar	Gain	Loss	Level	dBm	dB
MHz	dBuV/m	Degree	Meter	H/V	MHz	dBm	cm	H/V	Correction	dB	dBm	dBm	dB
148.44	117.4	330	1.2	v	148.44	38.33	96	v	0	0.3	38.03		
148.44	109.3	0	1.5	h	148.44	26.98	96	h	0	0.3	26.68		
296.88	65.4	190	2.5	v	296.88	-19.4	48	v	0	0.5	-19.9	-13	-6.9
296.88	63.3	150	1.2	h	296.88	-21.9	48	h	0	0.5	-22.4	-13	-9.4
445.32	58.7	0	1.5	v	445.32	-19.8	32	v	0	0.5	-20.3	-13	-7.3
445.32	56.4	45	1.5	h	445.32	-24.3	32	h	0	0.5	-24.8	-13	-11.8
593.76	47.8	150	1.2	v	593.76	-30.5	24	v	0	0.7	-31.2	-13	-18.2
593.76	42.5	180	1.2	h	593.76	-37.4	24	h	0	0.7	-38.1	-13	-25.1
742.2	38.6	270	1.5	v	742.2	-37.5	19	v	0	0.7	-38.2	-13	-25.2
742.2	35.5	310	1.5	h	742.2	-41.2	19	h	0	0.7	-41.9	-13	-28.9

Primary scan at 161.44MHz (Mid CH.)

Indicated		Table	Test Antenna		Substituted		Substitution Antenna		Antenna	Cable	Absolute	Limit	Margin
Frequency	Ampl.	Angle	Height	Polar	Frequency	Level	Half-wavel.	Polar	Gain	Loss	Level	dBm	dB
MHz	dBuV/m	Degree	Meter	H/V	MHz	dBm	cm	H/V	Correction	dB	dBm	dBm	dB
161.44	118.2	110	1.2	v	161.44	38.35	88	v	0	0.3	38.05		
161.44	109.8	90	1.5	h	161.44	27.46	88	h	0	0.3	27.16		
322.88	65.6	240	2.2	v	322.88	-19.2	44	v	0	0.5	-19.7	-13	-6.7
322.88	63.4	280	1.8	h	322.88	-21.8	44	h	0	0.5	-22.3	-13	-9.3
484.32	58.2	0	1.5	v	484.32	-19.5	29	v	0	0.5	-20	-13	-7
484.32	56.7	45	1.5	h	484.32	-24.3	29	h	0	0.5	-24.8	-13	-11.8
645.76	48.1	170	1.2	v	645.76	-30.6	22	v	0	0.7	-31.3	-13	-18.3
645.72	42.7	130	1.2	h	645.72	-36.2	22	h	0	0.7	-36.9	-13	-23.9
807.2	39.5	0	1.5	v	807.2	-37.1	18	v	0	0.7	-37.8	-13	-24.8
807.2	35.4	310	1.5	h	807.2	-40.9	18	h	0	0.7	-41.6	-13	-28.6

Primary scan at 173.6MHz (High CH.)

Indicated		Table	Test Antenna		Substituted		Substitution Antenna		Antenna	Cable	Absolute	Limit	Margin
Frequency	Ampl.	Angle	Height	Polar	Frequency	Level	Half-wavel.	Polar	Gain	Loss	Level	dBm	dB
MHz	dBuV/m	Degree	Meter	H/V	MHz	dBm	cm	H/V	Correction	dB	dBm	dBm	dB
173.6	116.7	70	1.5	v	173.6	37.85	82	v	0	0.3	37.55		
173.6	108.4	30	1.5	h	173.6	26.41	82	h	0	0.3	26.11		
347.2	64.7	0	2	v	347.2	-17.8	41	v	0	0.5	-18.3	-13	-5.3
347.2	63.2	310	1.8	h	347.2	-21.3	41	h	0	0.5	-21.8	-13	-8.8
520.8	58.4	60	1.5	v	520.8	-20.9	27	v	0	0.5	-21.4	-13	-8.4
520.8	56.1	90	1.2	h	520.8	-25.1	27	h	0	0.5	-25.6	-13	-12.6
694.4	47.5	210	1.2	v	694.4	-30.8	20	v	0	0.7	-31.5	-13	-18.5
694.4	42.3	180	1.5	h	694.4	-38.5	20	h	0	0.7	-39.2	-13	-26.2
868	38.5	250	1.5	v	868	-38.2	16	v	0	0.7	-38.9	-13	-25.9
868	34.7	280	1.2	h	868	-41.8	16	h	0	0.7	-42.5	-13	-29.5