

Marstech Limited

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TEST REPORT

REPORT DATE: 18 March 1998

REPORT NO: 98084D

CONTENTS: See Table of Contents

SUBMITTOR: BCB Voice Systems Inc.
240 Riviera Drive
Markham, Ontario
L3R 5M1 CANADA

SUBJECT: Model No: TT150
FCC ID: NE8TT150

TEST SPECIFICATION: FCC Part 15 Unintentional Radiator, Class "B" Digital Computing Device & Industry Canada ICES-003
Test Procedure(s) MP-4, ANSI C63.4
NOTE: Tests Conducted Are "Type" Tests.

TESTED WITH: Host Computer COMPAQ, Model DESKPRO 3030 (38633M), Serial D215HBV30596, FCC ID CNT75MBD7; Colour Monitor DAYTEK, Model DT-1536A, Serial DV96TDO4501, FCC ID EWBOC15AB01; Printer FUJITSU, Model M3349A, Serial 96955, FCC ID C9S69NDP009A2; Keyboard COMPAQ, Model Enhanced Keyboard, Serial 135*11619573A346*, FCC ID ACJ8D7109232; Mouse COMPAQ, Model MUS95, Serial 1SG67C1E14104, FCC ID EMJMUJJ; BCB Foot Switch, Model FS11936; SONY Unidirectional Microphone, Model F-V300P; Associated Cables and Cords

DATE SAMPLE RECEIVED: 4 March 1998

DATE TESTED: 4 & 12 March 1998

RESULTS: Equipment tested complies with referenced specification.

ALTERATIONS: None

Tested by:

Original signed by:
Jim Sims

Approved by:

Ed. Chang

Ed. Chang
Edward Chang

for

Robert G. Marshall, P. Eng.

Date:

2 March 1999

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TECHNICAL REPORT - FCC 2.1033(b)

Applicant

BCB Voice Systems Inc.
240 Riviera Drive
Markham, Ontario
L3R 5M1 CANADA

FCC Identifier

NE8TT150

Manufacturer

BCB Voice Systems Inc.
240 Riviera Drive
Markham, Ontario
L3R 5M1 CANADA

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B Description of Circuit Functions	2.1033(b)(4)	Exhibit B Exhibit B(1)-1 to -3
C Block Diagram Schematic Diagram	2.1033(b)(5)	Exhibit C Exhibit C(1)-1 Exhibit C(2)-1 to -16
D Report of Measurements Device Measured Test Facility Test Results/Methods and Equipment	2.1033(b)(6)	Exhibit D Exhibit D(1) Exhibit D(2) Exhibit D(3)-1 to -8
E Photographs Label Equipment	2.1033(b)(7)	Exhibit E Exhibit E(1)-1 to -2 Exhibit E(2)-1 to -2

EXHIBIT D

(FCC Ref. 2.1033(b)(6))

"Report of Measurements"

MARSTECH LIMITED

EXHIBIT D(1)

DEVICE MEASURED

(FCC Ref. 2.1033(b)(6))

APPLICANT:

BCB Voice Systems Inc.
240 Riviera Drive
Markham, Ontario
L3R 5M1 CANADA

MANUFACTURER:

BCB Voice Systems Inc.
240 Riviera Drive
Markham, Ontario
L3R 5M1 CANADA

FCC IDENTIFIER:

NE8TT150

TRADE NAME:

BCB

MODEL NUMBER:

TT150

SERIAL NO.:

Not Marked

Marstech Limited
11 Kelfield Street
Etobicoke, Ontario
M9W 5A1 CANADA

TECHNICIANS:
Jim Sims - Com-Serve Corp.
Edward Chang - Marstech Ltd.

for Ed. Chang.
Robert G. Marshall, P. Eng.

Date: 2 March 1999.

FEDERAL COMMUNICATIONS COMMISSION

7435 Oakland Mills Road
Columbia, MD 21046
Telephone: 301-725-1585 (ext-218)
Facsimile: 301-344-2050

September 23, 1997

IN REPLY REFER TO
31040/SIT
1300F2

Electrohome Electronics Ltd
809 Wellington Street, North
Kitchener, Ontario N2G 4J6, Canada

Attention: Gerry Gallagher

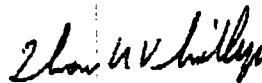
Re: Measurement facility located at Roseville
(3 meter site)

Gentlemen:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The description has, therefore, been placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in conjunction with applications for certification or notification under Parts 15 or 18 of the Commission's Rules. Our list will also indicate that the facility complies with the radiated and AC line conducted test site criteria in ANSI C63.4-1992. Please note that this filing must be updated for any changes made to the facility, and at least every three years the data on file must be certified as current.

Per your request, the above mentioned facility has been also added to our list of those who perform these measurement services for the public on a fee basis. This list is published periodically and is also available on the Laboratory's Public Access Link as described in the enclosed Public Notice.

Sincerely,



Thomas W. Phillips
Electronics Engineer
Customer Service Branch

RESULTS

RADIATED:

The BCB Voice Systems Inc., Audio Processing PCB, Model TT150, **MEETS** the limits for a Class "B" Digital (Computing) Device pursuant to the rules and test procedures of the Federal Communications Commission CFR47 Part 15 and Industry Canada ICES-003.

The highest emission found was 138 μ V/M @ 331.60MHz which was within the 200 μ V/M limit.

LIMITS:	30 to 88 MHz	100 μ V/M
	88 to 216 MHz	150 μ V/M
3	216 to 960 MHz	200 μ V/M
Metres	Above 960 MHz	500 μ V/M

CONDUCTED:

The BCB Voice Systems Inc., Audio Processing PCB, Model TT150, **MEETS** the limits for a Class "B" Digital (Computing) Device pursuant to the rules and test procedures of the Federal Communications Commission CFR 47 Part 15 and Industry Canada ICES-003.

The highest emission found was 28.84 μ V (29.2 μ V/M) @ 27.82MHz which was within the 250 μ V limit.

LIMITS:	450 K Hz to 1.705 M Hz	250 μ V
	1.705 M Hz to 30 M Hz	250 μ V

SYSTEM DESCRIPTION

The BCB Voice Systems Inc., Model TT150, is an audio processing PCB, made to be installed into an IBM compatible PC, standard bus slot.

The TT150 PCB combines real-time audio compression "on the fly" with voice E-mail, recording, playback and live chat software enabling PC users to treat their voice as data. The TT150 sound card may be used in combination with the "PC Talk" software suite. The TT150 is also capable of playing and recording sound files with generic DOS and/or Windows software on a PC based platform. The sound PC card is made to be installed into a standard IBM compatible PC bus backplane. It has facilities for the connection of stereo speakers and a microphone.

For the purpose of conducting the required FCC/IC EMI tests, the TT150 audio processing PCB was installed into an IBM compatible PC, and in turn connected to a fully configured micro computer system. Special software was employed that allowed for the normal processing of audio signals by the TT150.

TEST PROCEDURE

RADIATED:

All tests were performed in accordance with FCC/MP-4, & ANSI C63.4.

The BCB Voice Systems Inc., Model TT150, was connected together with a host computer, colour video display monitor, microphone, telephone headset, keyboard, mouse, foot switch and printer as described on the "Title and System Description" pages. The system was arranged in a typical configuration of use and placed on top of a one metre non-conducting turntable as per ANSI C63.4. All of the system parts were connected together with cables that are sold with each piece or generic cables purchased for the specific connection involved. Several different equipment placements were tried so as to establish the worst normal case of equipment positioning. In this case the BCB Voice Systems Inc. sound card, installed into the Compaq host computer, video display monitor, telephone headset, keyboard, mouse and printer were placed on top of the turntable. The BCB remote control foot switch was placed at the bottom of the test table. All of the cables and cords were moved about so as to create the highest level of EMI. Special software was employed in order that the BCB Voice Systems Inc. TT150 was processing audio signals/data in a worst case normal manner. This internal test program allowed for the transmission of sound signals on all applicable I/O cables including the telephone headset. The system was also tested in the quiescent mode of operation. The turntable was rotated through 360 degrees.

A preliminary radio frequency scan was performed on the system to determine the worst case cable and equipment configuration. The attached results represent the system configuration maximized for worst case emissions in each frequency band. Please refer to the System Description.

The tests were conducted at a distance of three (3) metres with the receiving antennas in both the horizontal and vertical planes at each emission frequency.

EQUIPMENT:

Advantest R3261A Spectrum Analyzer
Anritsu 2601 A Spectrum Analyzer
Setting: BW: 100 KHz or 120 KHz (Q.P)
Hewlett-Packard RF generator Model 8640 B with 002 dblr.
A.H. Systems biconical antenna..... 20 MHz - 330 MHz
A.H. Systems log periodic antenna..... 300 MHz - 1.8 GHz
Eaton dipole antennas; T1, T2, T3..... 25 MHz - 1.0 GHz
CDI Roberts dipole antennas; T1 T2 T3 T4.. 25 MHz - 1.0 GHz

NOTE: The Anritsu 2601 A spectrum analyzer and the Advantest R3261A spectrum analyzer are calibrated annually and this equipment is only used by qualified technicians and only for the purpose of EMI measurements. The three metre test range has been carefully evaluated to the ANSI C63.4, and will be re-measured for reflections and losses every three years. (FCC OET/55)

RADIATED EMISSION RESULTS

BW: 100/120 KHz

Span: 05 to 50 MHz

TEST #	FREQ. MHz	LEVEL μ V	ANT. TYPE (PZ)	ANT. FACT.	F.S. μ V/M	LIMIT μ V/M	DIFF. TO LIMIT; dB
01	36.85	14.3	B/C V	3.7	52.9	100	-5.53
02	55 - 75	11.9	B/C V	4.3	51.2	100	-5.82
03	73.52	15.9	B/C V	4.1	65.2	100	-3.72
04	110.52	16.3	B/C V	4.6	75.0	150	-6.02
05	138.12	8.2	B/C H	5.9	48.4	150	-9.83
06	184.16	10	B/C H	7.5	75.0	150	-6.02
07	226.5	9.5	B/C H	8.1	77.0	200	-8.30
08	331.6	10	L/P H	13.8	138.0	200	-3.22
09	424.8	8.9	L/P H	9.1	81.0	200	-7.85
10	516.2	5	L/P H	13.1	65.5	200	-9.70

NOTE:

The attached table of results represent a worst case **general** configuration with regards to cable placement and turntable positioning. It should however be noted that each individual emission of note was separately evaluated, and when required dipole antennas were used to more accurately measure the field strength.

TEST PROCEDURE

CONDUCTED:

All tests were performed in accordance with Industry Canada ICES-003.

The BCB Voice Systems Inc., Model TT150, was connected together with a host computer, video display monitor, microphone, telephone headset, keyboard, mouse and printer as described on the "Title and System Description" pages. The system was arranged in a typical configuration of use and placed on top of a one metre non-conducting test table as per ANSI C63.4. All of the system parts were connected together with cables that are sold with each piece or generic cables purchased for the specific connection involved. Several different equipment placements were tried so as to establish the worst normal case of equipment positioning. In this case the BCB Voice Systems Inc. sound card with host computer, video display monitor, microphone, telephone headset, keyboard, mouse and printer were placed on top of the test table in a manner which would allow normal operation. All of the cables and cords were moved about so as to create the highest level of EMI. Special software was employed in order that the BCB Voice Systems TT150 was processing audio signals/data in a worst case normal manner. This internal test program allowed for the transmission and recording of sound signals on all applicable I/O cables including the telephone headset. The system was also tested in the quiescent mode of operation.

The power supply cord for the host computer was connected to a 50 micro-henry line impedance stabilization network (LISN). The RF voltages on each side of the power line were coupled to the input of a spectrum analyzer and recorded. See the attached results.

All conducted measurements were performed with the LISN correctly grounded to the floor of the enclosure. The incoming power lines were filtered and stabilized.

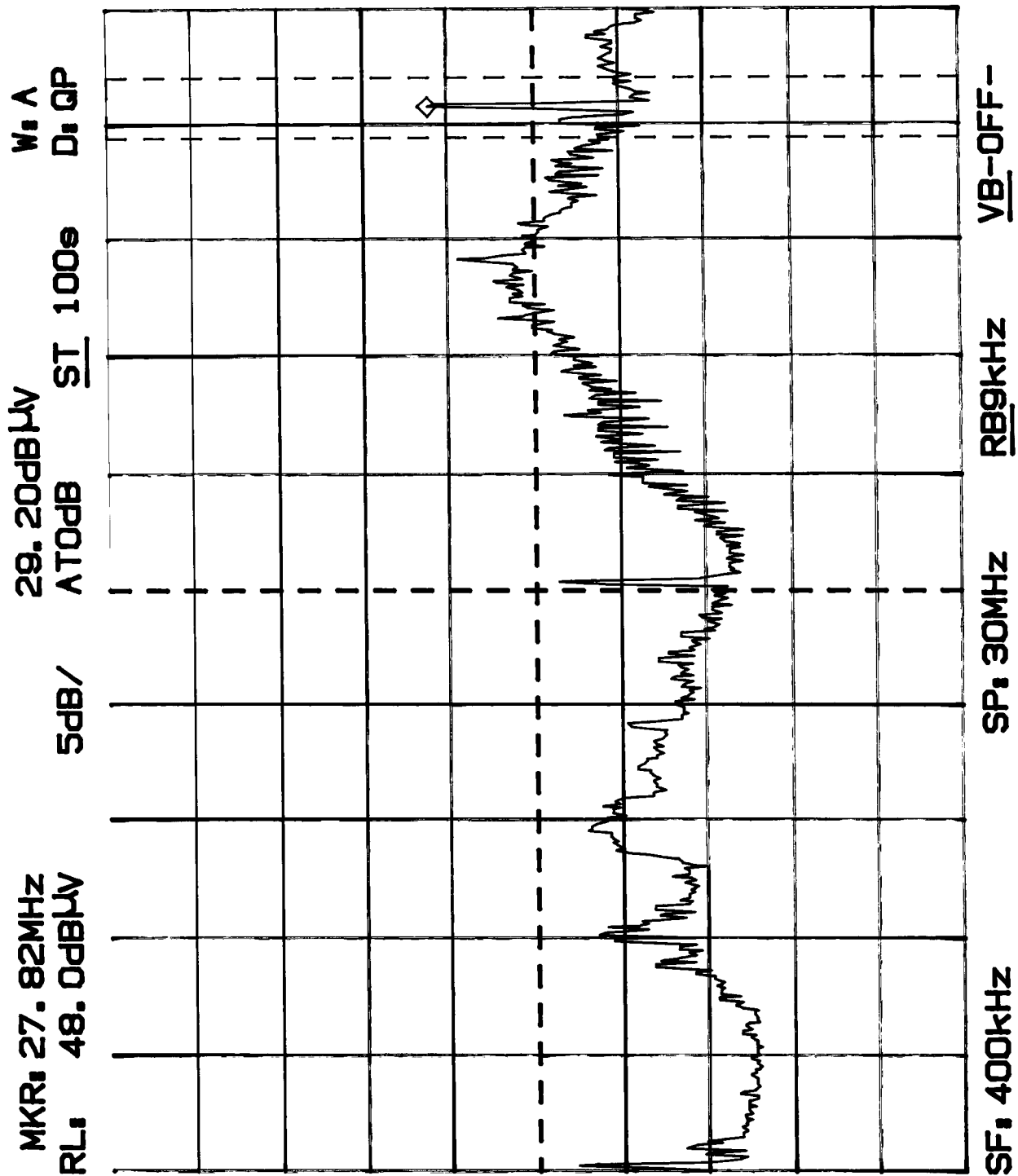
EQUIPMENT:

Anritsu 2601 A Spectrum Analyzer with an H. P. Plotter

Setting: BW: 9 KH (Q.P.)

NOTE: The Anritsu 2601 A spectrum analyzer is calibrated annually and this equipment is only used by qualified technicians and only for the purpose of EMI measurements. This calibration is directly traceable to the National Research Council of Canada (NRC).

POWER LINE CONDUCTED EMISSIONS
MODEL TT150; SIDE: A



POWER LINE CONDUCTED EMISSIONS
MODEL TT150; SIDE: B

