

BK Radio, Inc.
FCC Certification Application
GMH 5992X

May 30, 2000

MEASUREMENT/TECHNICAL REPORT

COMPANY NAME: **BK Radio, Inc.**

MODEL: **GMH 5992X**

FCC ID: **K95GMH599**

DATE: **May 30, 2000**

This report concerns (check one): Original grant X
Class II change _____

Equipment type: **VHF FM Transceiver**

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? yes _____ No X

If yes, defer until: _____
date

N.A. agrees to notify the Commission by N.A.
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Report prepared by:

United States Technologies, Inc.
3505 Francis Circle
Alpharetta, GA 30004

Phone Number: (770) 740-0717
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TABLE OF CONTENTS

AGENCY AGREEMENT

SECTION 1

GENERAL INFORMATION

- 1.1 Product Description
- 1.2 Related Submittal(s)

SECTION 2

TESTS AND MEASUREMENTS

- 2.1 Configuration of Tested EUT
- 2.2 Test Facility
- 2.3 Test Equipment
- 2.4 Modifications
- 2.5 Antenna Description
- 2.6 RF Power Output
- 2.7 Modulation Characteristics
- 2.8 Occupied Bandwidth
- 2.9 Spurious Emissions at Antenna Terminals
- 2.10 Field Strength of Spurious Radiation
- 2.11 Frequency Stability

SECTION 3

LABELING INFORMATION

SECTION 4

BLOCK DIAGRAM(S)/ SCHEMATIC(S)

SECTION 5

PHOTOGRAPHS

SECTION 6

DETAILED RF TECHNICAL INFORMATION

SECTION 7

USER'S MANUAL

LIST OF FIGURES AND TABLES

FIGURES

- 1) Test Configuration
- 2) Photograph(s) for Spurious Emissions
- 3) RF Power Output
- 4) Modulation Characteristics
- 5) Occupied Bandwidth
- 6) Spurious Emissions at Antenna Terminals

TABLES

- 1) EUT and Peripherals
- 2) Test Instruments
- 3) RF Power Output
- 4) Field Strength of Spurious Emissions

SECTION 1

GENERAL INFORMATION

GENERAL INFORMATION

1.1 Product Description

The Equipment Under Test (EUT) is a BK Radio, Inc., Model GMH 5992X. The EUT is a VHF FM mountable transceiver which operates from 136.0 to 174.0 MHz in 1.25 kHz steps.

The unit is manufactured by the following company:

BK Radio Inc.
C/O RELM Communications Inc.
7505 Technology Drive
West Melbourne, FL 32904

1.2 Related Submittal(s)/Grant(s)

The EUT will be used with part of a system to send/receive data. The transceiver presented in this report will be used with other like transceivers.

The EUT is subject to the following authorizations:

- a) Certification as a transmitter as specified by Parts 22, 74, 80, 90 and 97.

The information contained in this report is presented for the certification authorization(s) for the EUT.

SECTION 2

TESTS AND MEASUREMENTS

TEST AND MEASUREMENTS

2.1 Configuration of Tested System

Prepared in accordance with the requirements of the FCC Rules and Regulations Part 2. All measurements are peak unless stated otherwise. The video filter associated with the spectrum analyzer was off throughout the evaluation process. Interconnecting cables were manipulated as necessary to maximize emissions. A block diagram of the tested system is shown in Figure 1. Test configuration photographs for spurious and fundamental emissions are shown in Figure 2.

The sample used for testing was received by U.S. Technologies on April 4 in good condition.

2.2 Test Facility

Unless otherwise stated, testing was performed at US Tech's measurement facility at 3505 Francis Circle, Alpharetta, GA. This site has been fully described and submitted to the FCC, and accepted in their letter marked 31040/SIT. Additionally this site has also been fully described and submitted to Industry Canada (IC), and has been approved under file number IC2982.

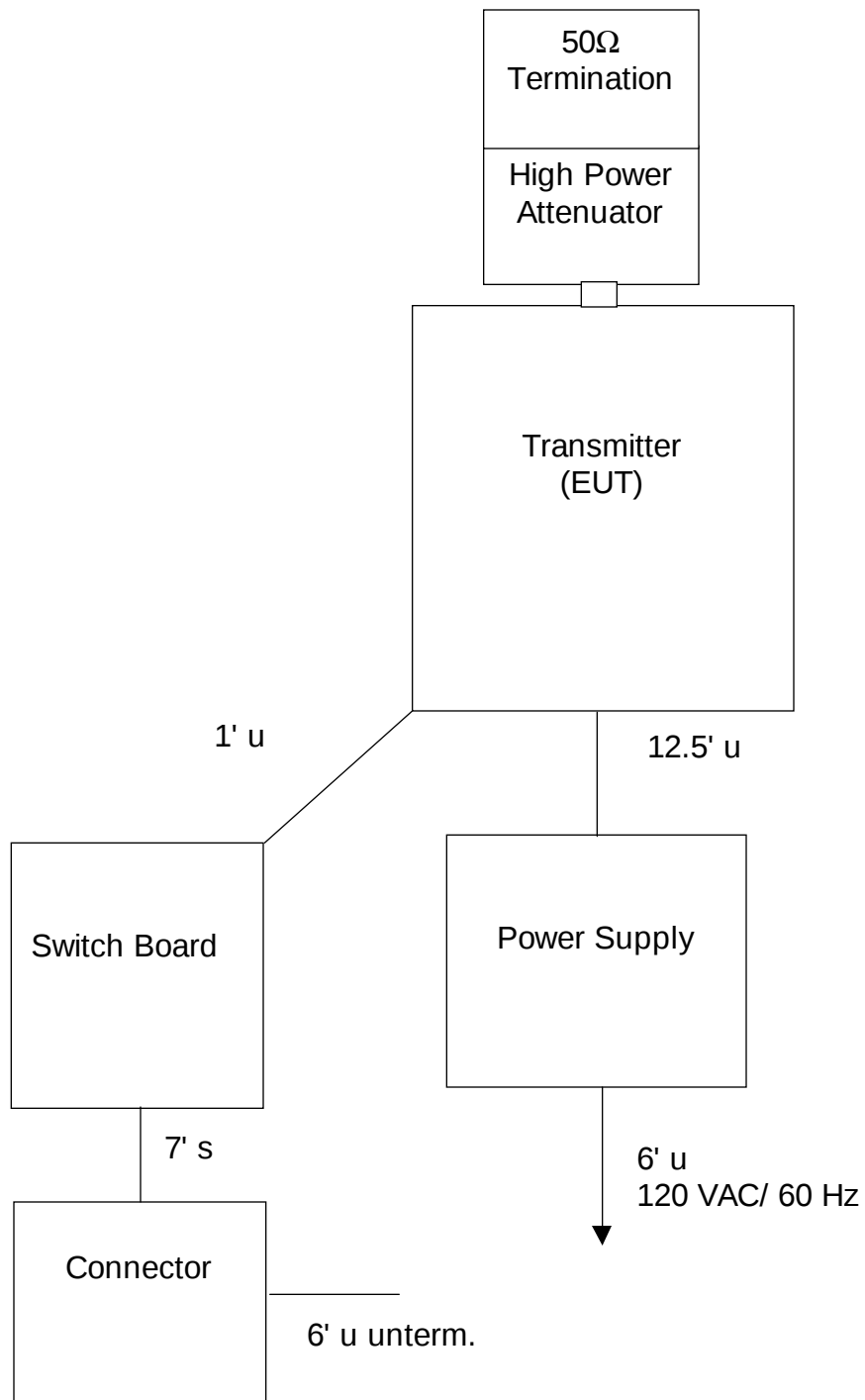
2.3 Test Equipment

Table 2 describes test equipment used to evaluate this product.

2.4 Modifications

No modifications were made by US Tech, to bring the EUT into compliance with FCC limits for the transmitter portion of the EUT.

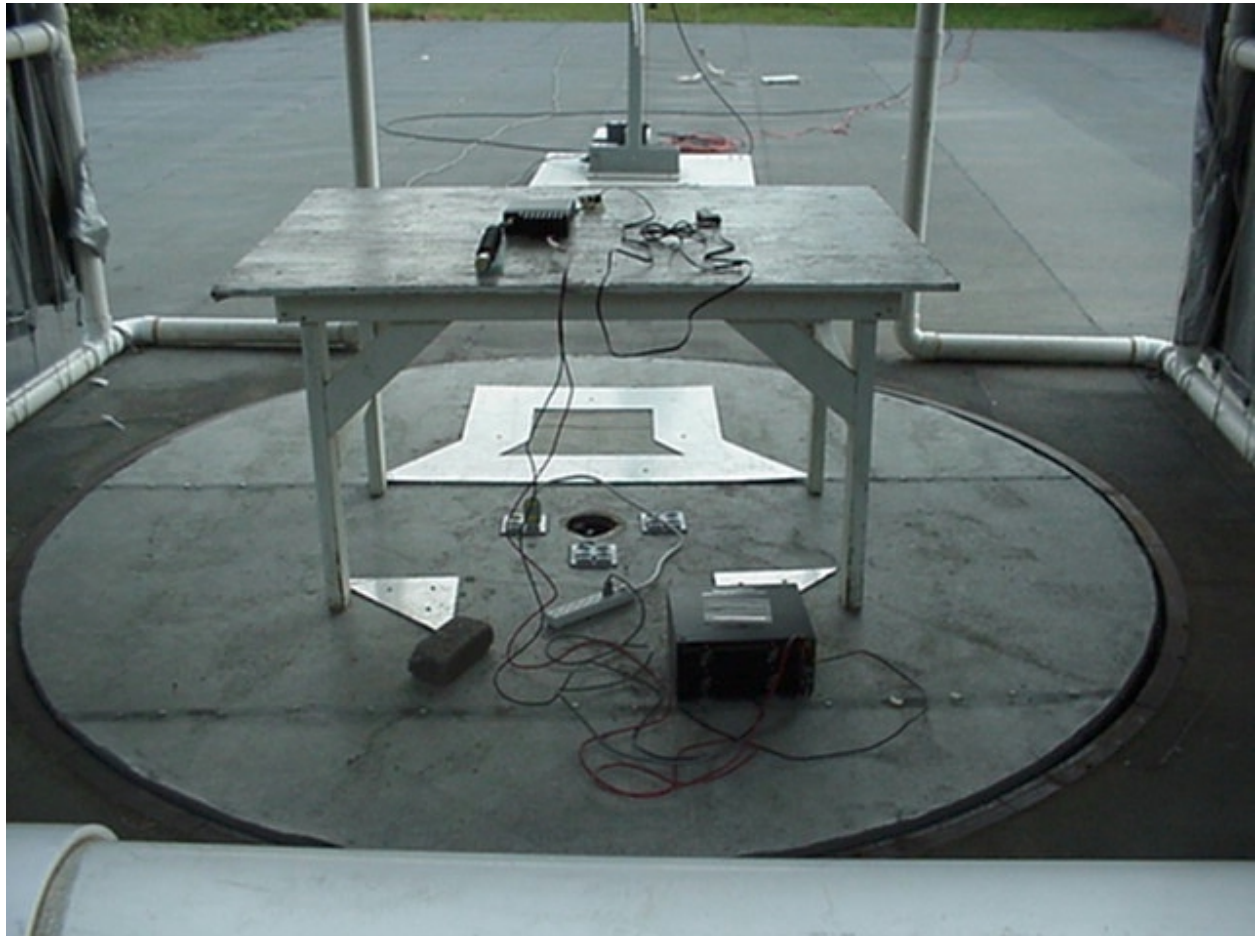
FIGURE 1
TEST CONFIGURATION



Test Date: April 20, 2000 – April 21, 2000
UST Project: 00-0141
Customer: BK Radio, Inc.
Model: GMH 5992X

FIGURE 2a

Photograph(s) for Spurious Emissions (Front)



Test Date: April 20, 2000 – April 21, 2000
UST Project: 00-0141
Customer: BK Radio, Inc.
Model: GMH 5992X

FIGURE 2b

Photograph(s) for Spurious Emissions (Back)



TABLE 1**EUT and Peripherals**

PERIPHERAL MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID:	CABLES P/D
Transmitter (EUT) BK Radio, Inc.	GMH 5992X	ENG9951003	K95GMH599 (Pending)	12.5 ' u
Switch Board BK Radio, Inc.	None	None	None	1'u
Connector BK Radio, Inc.	None	None	None	7's 6'u unterm
High Power Attenuator Weinchel Engineering	48-30-33	AL3246	None	
Power Supply Astron	VS-35 M	Unknown	None	6'u 120 VAC/60Hz
Termination Component General, Inc.	CFT-15 BM	None	None	

TABLE 2
TEST INSTRUMENTS

TYPE	MANUFACTURER	MODEL	SN.
SPECTRUM ANALYZER	HEWLETT-PACKARD	8593E	3205A00124
SPECTRUM ANALYZER	HEWLETT-PACKARD	8558B	2332A09900
S A DISPLAY	HEWLETT-PACKARD	853A	2404A02387
COMB GENERATOR	HEWLETT-PACKARD	8406A	1632A01519
RF PREAMP	HEWLETT-PACKARD	8447D	1937A03355
RF PREAMP	HEWLETT-PACKARD	8449B	3008A00480
HORN ANTENNA	EMCO	3115	3723
HORN ANTENNA	EMCO	3116	9505-2255
BICONICAL ANTENNA	EMCO	3110	9307-1431
LOG PERIODIC ANTENNA	EMCO	3146	9110-3600
TEMPERATURE CHAMBER	THERMOTRON	SM16	17095
MULTIMETER	FLUKE	85	53710469
PLOTTER	HEWLETT-PACKARD	7475A	2325A65394

2.5 Antenna Description

Antennas are 3rd party sourced. The connector on the EUT is a Mini-UHF.

2.6 RF Power Output (FCC Section 2.1046)

This test was performed by BK Radio, Inc. The EUT was modulated by its own internal sources. The EUT was directly connected to a power meter through suitable attenuation. The measured results are shown in Table 3 and Figure 3.

FCC Minimum Standard

FCC Part 22

None

FCC Part 74.461

Power delivered to antenna must be < 100 Watts

FCC Part 80.215

Maximum power at the input terminal to the antenna is 50 Watts

FCC Part 90.205

Power dependent upon station's antenna HAAT and required service area and may be from 1 to 500 Watts.

TABLE 3
RF POWER OUTPUT

Test Date: April 11, 2000
UST Project: 00-0141
Customer: BK Radio, Inc.
Model: GMH 5992X

Frequency of Fundamental (MHz)	Measurement (Watt)*	FCC Limit (Watt)
136.3	54.7	Varies
155.5	53.0	Varies
173.8	54.6	Varies

Note: Measured with HP436A Power Meter and HP8482A Power Sensor by BK Radio, Inc. The power output may depend upon the intended use of the EUT. For all tests, the EUT was set to near maximum conditions. The EUT requires a FCC license and is programmed for use by local BK Radio Dealers.

Test Results

Reviewed By

Signature: _____ **Name:** Timothy R. Johnson

Figure 3.
RF Power Output

Measurements made with Power Meter, therefore plots have not been provided.

2.7 Modulation Characteristics (FCC Section 2.1047)

Where applicable, the modulation characteristics of the EUT have been supplied by BK Radio, Inc. as stipulated by the following FCC requirements:

- a) Equipment which utilizes voice modulated communication shall show the frequency response of the audio modulating circuit over a range of 100 to 5000 Hz. For equipment which is required to have a low pass filter, the frequency response of the filter, or all of the circuitry installed between the modulation limited and the modulated stage shall be supplied.
- b) Equipment which employs modulation limiting, a curve showing the percentage of modulation versus the modulation input voltage shall be supplied.

FCC Minimum Standard

FCC Part 22

None

FCC Part 74.463

Each new remote pickup broadcast station with a power output in excess of 3 watts shall be equipment with a device which will automatically prevent modulation in excess of the limits. If frequency modulation is employed, the emissions shall conform to the emission requirements of 74.462.

FCC Part 80.213

- (a) When phase of frequency modulation is used in the 156-162 MHz and 216-220 MHz bands, the peak modulation must be maintained between 75 and 100 percent. A frequency deviation of ± 5 kHz is defined as 100 percent peak modulation.
- (b) Transmitters using F3E emission must have a modulation limiter to prevent any modulation over 100 percent
- (d) Ship and coast station transmitters operating in the 156-162 MHz and 216-220 MHz bands must be capable of proper operation with a frequency deviation of ± 5 kHz.
- (e) Coast station transmitters operated in the 156-162 MHz band must be equipped with an audio low-pass filter. The filter must be installed between the modulation limiter and the modulated radio frequency stage. At frequencies between 3 kHz and 20 kHz it must have an attenuation greater than at 1 kHz by at least 60 log (f/3) db. At frequencies above 20 kHz the attenuation must be at least 50 dB greater than at 1 kHz.

FCC Part 90.205

Transmitters utilizing analog emissions that are equipped with an audio low-pass filter must meet the emission limitations must meet proper emissions mask of 90.210.

Figure 4a.
Modulation Characteristics

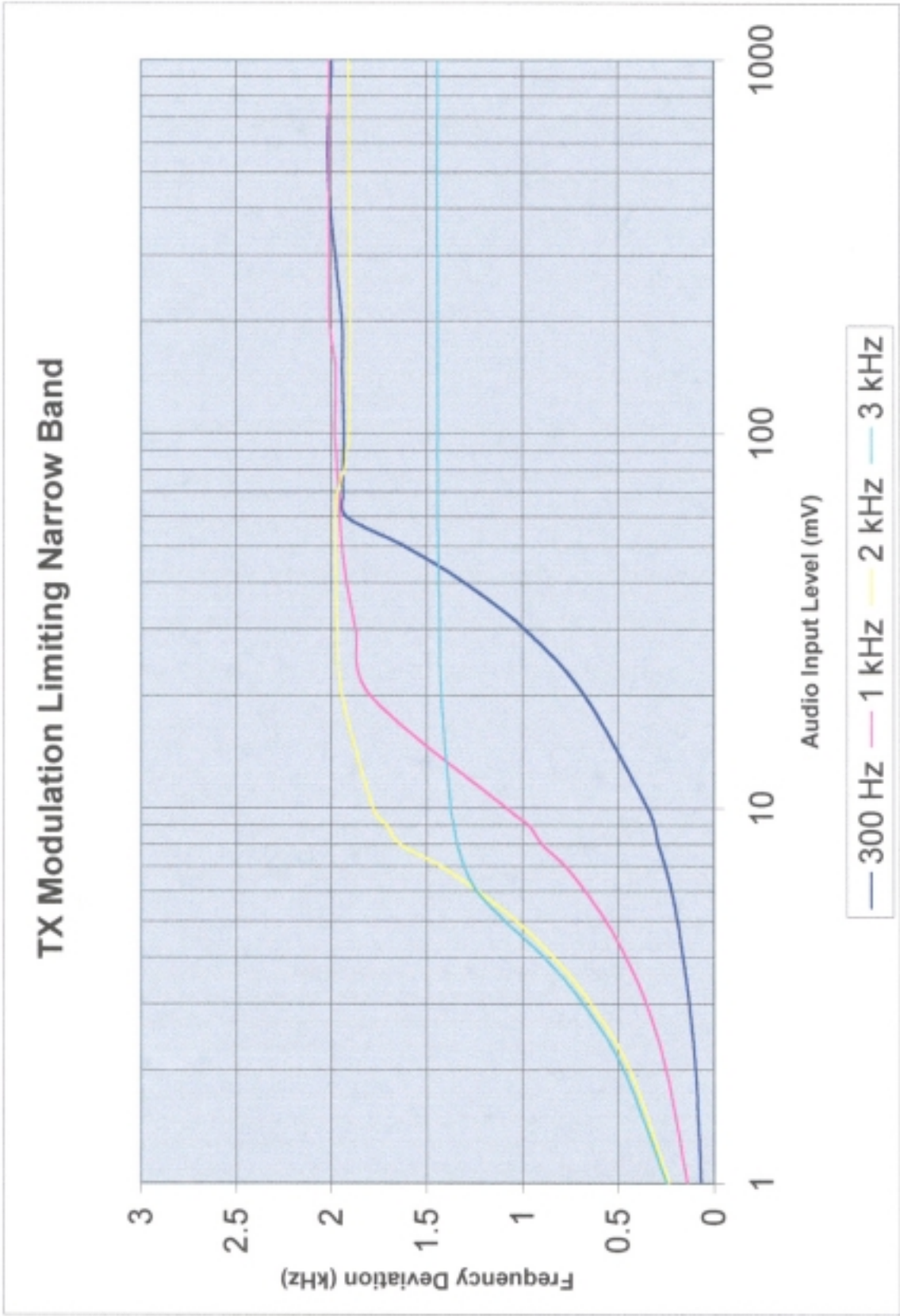


Figure 4b.
Modulation Characteristics

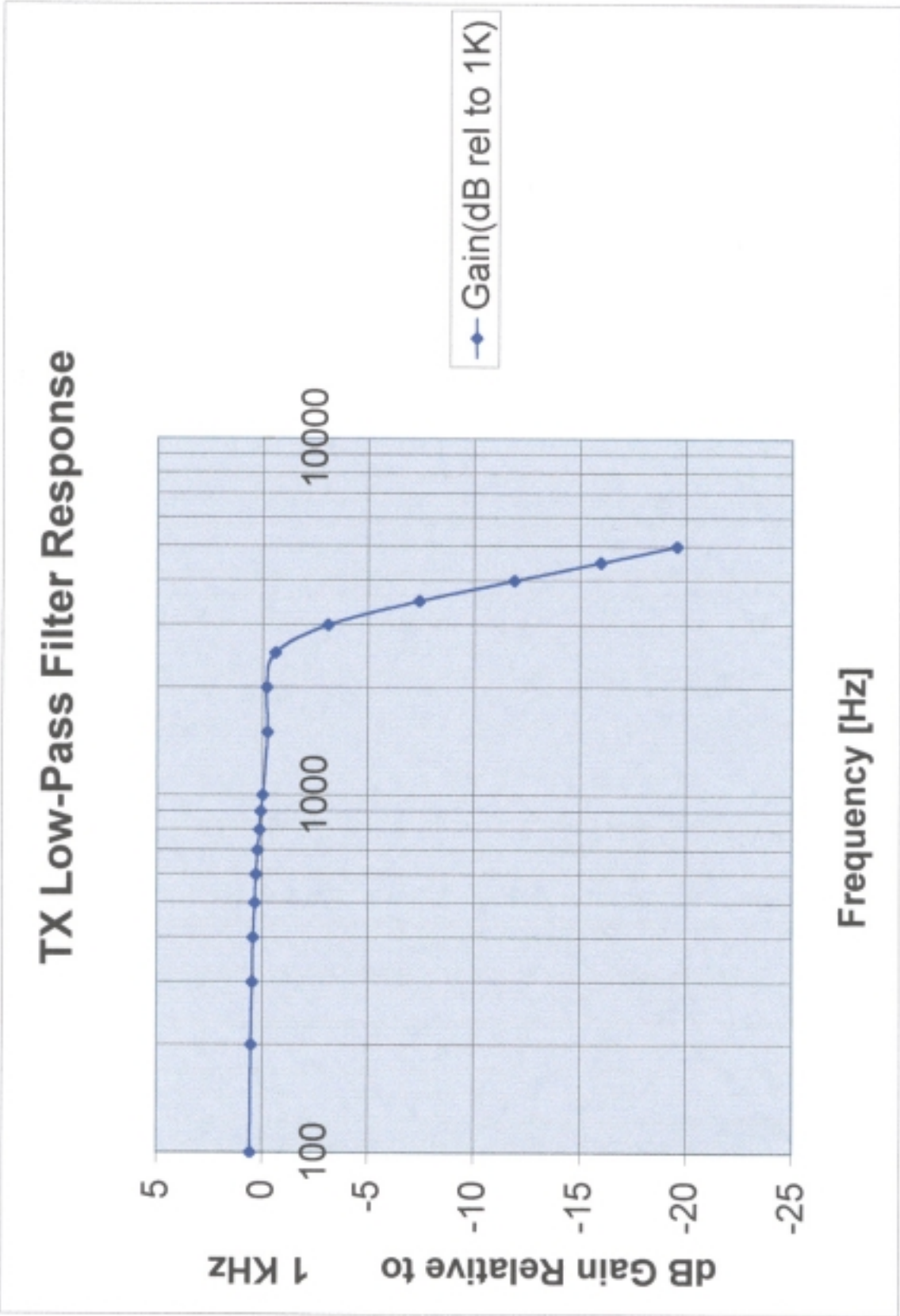


Figure 4c.
Modulation Characteristics

