

ERICSSON



October 31, 1991

Authorization and Evaluation Division  
FCC Laboratory  
7435 Oakland Mills Road  
Columbia, Maryland 21046

Attention: Equipment Authorization Branch

Subject: Type Acceptance Application for the following Transceiver:  
FCC ID AXATR-197-A2

Gentlemen:

Ericsson GE Mobile Communications Inc. requests a grant of Authorization for the subject equipment.

The Base Station Transceiver submitted in this filing operates in the 136 Mhz to 174 Mhz frequency range and is part of our new Master III Station product line.

The Station will be capable of both Trunking and Digital Voice Guard operation as indicated by Exhibit 10E.

The transmitters and receivers utilize common circuitry in part, so a single identifier will be used for both.

Sincerely,

A handwritten signature in black ink.

John P. Rothgeb  
Specialist, Regulatory Programs  
Telephone: (804) 528-7476

FEDERAL COMMUNICATIONS COMMISSION  
FEE PROCESSING FORM

FOR  
FCC  
USE  
ONLY

Please read instructions on back of this form before completing it. Section I MUST be completed. If you are applying for concurrent actions which require you to list more than one Fee Type Code, you must also complete Section II. This form must accompany all payments. Only one Fee Processing Form may be submitted per application or filing. Please type or print legibly. All required blocks must be completed or application/filing will be returned without action.

SECTION I

APPLICANT NAME (Last, first, middle initial)

Ericsson GE Mobile Communications Inc.

MAILING ADDRESS (Line 1) (Maximum 35 characters - refer to Instruction (2) on reverse of form)

Mountain View Road

MAILING ADDRESS (Line 2) (If required) (Maximum 35 characters)

CITY

Lynchburg,

STATE OR COUNTRY (if foreign address)	ZIP CODE	CALL SIGN OR OTHER FCC IDENTIFIER (if applicable)
Virginia	24502	AXATR-197-A2

Enter in Column (A) the correct Fee Type Code for the service you are applying for. Fee Type Codes may be found in FCC Fee Filing Guides. Enter in Column (B) the Fee Multiple, if applicable. Enter in Column (C) the result obtained from multiplying the value of the Fee Type Code in Column (A) by the number entered in Column (B), if any.

(A)

(B)

(C)

FEE TYPE CODE			
(1)	E	F	T

FEE MULTIPLE (if required)			

FEE DUE FOR FEE TYPE CODE IN COLUMN (A)			
\$ 370.00			

FOR FCC USE ONLY			

SECTION II — To be used only when you are requesting concurrent actions which result in a requirement to list more than one Fee Type Code.

(A)

(B)

(C)

FEE TYPE CODE

FEE MULTIPLE  
(if required)

FEE DUE FOR FEE TYPE  
CODE IN COLUMN (A)

FOR FCC USE ONLY

(2)

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ADD ALL AMOUNTS SHOWN IN COLUMN C, LINES (1)

THROUGH (5), AND ENTER THE TOTAL HERE.

THIS AMOUNT SHOULD EQUAL YOUR ENCLOSED  
REMITTANCE.

TOTAL AMOUNT REMITTED  
WITH THIS APPLICATION  
OR FILING

\$ 370.00

FOR FCC USE ONLY

FCC FORM  
731FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554  
APPLICATION FOR EQUIPMENT AUTHORIZATIONApproved by OMB  
3060-0057  
Expires 4/30/92  
See reverse for information  
regarding public burden estimate

FCC ID: A X A TR-197-A2		FOR FCC FEE STAFF USE		
2.(a) Applicant's FULL business name Ericsson GE Mobile Communications Inc.		Receipt Date		
(b) Applicant's COMPLETE mailing address (Number, street, or P.O. Box, city, state, ZIP code) Mountain View Road Lynchburg, VA 24502				
(c) Name and title of person at above address to receive grant (SEE INSTRUCTIONS) John P. Rothgeb, Specialist, Regulatory Programs				
3. Has a request for confidentiality been filed for any portion(s) of the data contained in this application pursuant to Section 0.459 of the Commission's rules, or has a waiver of any sections of the Commission's rules been filed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Fee Control Number		
4. Kind of equipment authorization requested (Check ONE box only) <input type="checkbox"/> Certification <input checked="" type="checkbox"/> Type Acceptance <input type="checkbox"/> Type Approval <input type="checkbox"/> Notification		Fee Type		
5.(a) Name and title of information contact, if different than 2(c) above James W. Williams, Senior Staff Engineer		Fee Amount		
(b) Telephone Number Area code Number Extension (USA ONLY) 804 948-6101		ID SEQ		
6. Application is for (Check ONE box only) <input checked="" type="checkbox"/> 1 Original Equipment <input type="checkbox"/> 2 Change in identification <input type="checkbox"/> 3 Modification If box 2 or 3 checked, answer question 9 below		For Processing, Bureau Use Only		
7. EQUIPMENT SPECIFICATIONS Frequency range MHz		Rated RF power output watts	Frequency tolerance %, Hz, ppm	Emission designator
136-174 MHz		50-125 Watts	+1.5 ppm	16KOF3E 15KOF2D 15KOF2B 15KOF1D 15KOF1E
10. FCC ID listed on other simultaneously filed application(s)		11.(a) Type of Equipment tested: <input type="checkbox"/> Production <input checked="" type="checkbox"/> Pre-production <input type="checkbox"/> Prototype (b) Testing Company, if different than 2(a) above: N/A		
N/A		12. Is the equipment or section(s) thereof subject to more than one equipment authorization? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, give type(s) below N/A		
APPLICANT CERTIFICATION				
I certify that I am authorized to sign for the applicant and that all the statements in this application and in the exhibits attached hereto are true and correct to the best of my knowledge and belief. If I am an agent authorized to complete, and sign this application on behalf of the applicant, a copy of such authorization, signed by the applicant, is attached hereto.				
I further certify that, if the applicant is not the actual manufacturer of the equipment listed herein, appropriate arrangements have been made with the manufacturer to assure that production units of this equipment bearing the name and FCC IDENTIFIER listed in this application will continue to comply with the Commission's requirements.				
Applicant's full business name <u>Ericsson GE Mobile Communications Inc.</u> (Must agree with name in Item 2(a))				
 <input checked="" type="checkbox"/> Written signature of authorized signer				
<u>John P. Rothgeb</u> <input checked="" type="checkbox"/> Typed/printed name of authorized signer				
<u>Specialist, Regulatory Programs</u> <input checked="" type="checkbox"/> Title of authorized signer				
<u>Now 1, 1991</u> <input checked="" type="checkbox"/> Date (Month, Day, Year)				

ERICSSON



October 31, 1991

Federal Communications Commission  
Equipment Approval Services  
P.O. Box 358315  
Pittsburgh, Pennsylvania 15251-5315

Subject: Enclosed is a check for Type Acceptance as follows:

FCC ID

AXATR-197-A2

FEE

\$370

A handwritten signature in black ink, appearing to read "John P. Rothgeb".

John P. Rothgeb  
Specialist, Regulatory Projects  
Room 2667  
Tel. (804) 528-7476

ENCLOSURES: check  
Filing for Equipment Authorization Branch

APPLICANT:  
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.  
AXATR-197-A2

EXHIBIT LIST

<u>EXHIBIT</u>	<u>PARA. REF.</u>	<u>DESCRIPTION</u>
1	2.909 (d)	Certification of Data
2A, B	2.983 (c) (d, 1-5)	Technical Description of Equipment
3A-D	2.983 (d) (6)	Function of Active Circuit Devices
4	2.983 (d) (7)	Circuit Diagrams
5	2.983 (d) (8)	Instruction Book (Draft)
6	2.983 (d) (9)	Alignment Procedure
7A-E	2.983 (d) (10-12)	Circuit and Device Descriptions
8	2.985 (a)	RF Power Output
9A-D	2.987 (a, b, d)	Modulation Characteristics
10A-E	2.989 (c, d, 1) (h)	Occupied Bandwidth
11A-I	2.991, 2.993	Spurious Emissions
12A-C	2.995 (a, b, d)	Frequency Stability
13	2.983 (f)	Identification Plate
14A	2.983 (g)	Front View of Station mounted showing top to bottom identification of assemblies: power amplifier, transceiver shelf and AC power supply.
14B	2.983 (g)	Side view of station showing location of FCC nameplate.
14C	2.983 (g)	Rear view of station rack configuration.
14D	2.983 (g)	Power amplifier assembly with cover open to show components and solid casting construction for RF shielding.
14E	2.983 (g)	Typical mounting for power amplifier accessories (if used), Top: antenna relay, Center: harmonic filter, Bottom: circulator.
14F	2.983 (g)	Exciter/synthesizer module with cover removed to show components and solid casting for RF shielding.
14G	2.983 (g)	System control module with cover removed to show components and solid casting for RF shielding.
14H	2.983 (g)	Switch mode supply module with cover removed to show components and solid casting for RF shielding.

APPLICANT:  
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.  
AXATR-197-A2

EXHIBIT LIST

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<u>EXHIBIT</u>	<u>PARA. REF.</u>	<u>DESCRIPTION</u>
14I	2.983 (g)	Receiver front end module with cover removed to show components and solid casting for RF shielding.
14J	2.983 (g)	Receiver IF module with cover removed to show components and solid casting for RF shielding.
14K	2.983 (g)	Receiver synthesizer module with cover removed to show reference oscillator, components and solid casting for RF shielding.
14L	2.983 (g)	Typical nameplate location when mounted in cabinet.

APPLICANT:  
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## **CERTIFICATION OF DATA**

The technical data contained in this application has been taken under my supervision and is certified true and correct. My qualifications are:

BSEE with 31 years of experience in design engineering organization.

NAME J. W. Williams  
POSITION: Senior Staff Engineer  
DATE

I certify that this application was made at my direction. The data and statements made herein are to the best of my knowledge true and accurate.

APPLICANT:  
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.  
AXATR-197-A2

DESCRIPTION

2.983 (c) The transceiver is being prepared for quantity production.

2.983 (d) This MASTR III Station Transmitter is a synthesizer controlled, direct FM modulated transmitter designed to operate in the 136 MHz to 174 MHz frequency band. The transmitter consists of a solid-state synthesizer-exciter and power amplifier. The RF power output is adjustable from 50-125 Watts.

Options available as follows:

- A. Type 90/99 Tone Encoder
- B. DTMF Encoder
- C. Remote Alarm
- D. GE\*STAR
- E. 9600 Baud Data
- F. Channel Guard
- G. Digital Channel Guard

(1) Type of Emission: 16K0F3E, 15K0F2D, 15K0F2B, 15K0F1D, 15K0F1E

(2) Frequency Range and Frequency Stability: 136-174 MHz  $\pm$  1.5 ppm

(3) Range of Operating Power:

The power amplifier consists of broadband, fixed-tuned power IC's and transistor stages.

The RF power output is regulated by sensing variations in the forward power that is fed to the antenna from the final RF power amplifier and adjusting the voltage on the earlier stage to hold the forward power constant.

(4) Maximum Power Ratings: 125 Watt Tx

Input Maximum	400 Watts
Output Maximum	125 Watts

(5) Final Amplifier Voltage and Current in normal operation:  
(Power rated is for two devices in the output stage.)

125 Watts

Collector Voltage	13.8 Volts DC
Collector Current	29 Amps DC

APPLICANT:  
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.  
AXATR-197-A2

**FUNCTION OF ACTIVE CIRCUIT DEVICES**

<u>SCHEMATIC DESIGNATION</u>	<u>DEVICE</u>	<u>FUNCTION</u>	<u>GE DRAWING NO.</u>
<u><b>Power Amp 19D902797G21</b></u>			
Q102	Transistor	RF Final Amp	19A149632P1
Q103	Transistor	RF Final Amp	19A149632P1
Q101	Transistor	RF Driver	19A134340P4
U101	RF IC	RF Preamp	19A705326
U102	RF Module	RF Gain Block	19A705326P1
U100	IC	Voltage Regulator	19A705532P2
U201	IC	Linear Amp	19A701789P4
Q201	Transistor	DC Switch	19A700076P2
Q202	Transistor	DC Switch	19A700076P2
Q203	Transistor	DC Switch	19A700055P1
<u><b>Tx Synthesizer Module 19D02780G1</b></u>			
Q201	Transistor	RF Amp	344A3061P1
U203	RF IC	RF Buffer	19A705927P1
U202	RF IC	RF Buffer	19A705927P1
U201	RF IC	RF Buffer	19A705927P1
Q1	FET	RF Oscillator	19A702524P2
Q101	Transistor	DC Switch	19A700076P2
Q102	Transistor	DC Switch	19A700076P2
Q301	Transistor	Linear Amp	19A134577P2
Q302	Transistor	Linear Amp	19A700059P2
Q401	Transistor	RF Amp	19A704708P2
Q501	Transistor	DC Switch	19A700076P2
Q701	Transistor	DC Switch	19A700076P2
Q702	Transistor	DC Switch	19A700076P2
Q703	Transistor	DC Switch	19A700076PD2
Q704	Transistor	DC Switch	19A700076PD2
U501	IC	Linear Amp	344A3070P1
U502	IC	Analog Gate	19A702705P4
U601	IC	Linear Amp	19A116297P7
U701	IC	Logic	19A703483P302
U702	IC	Logic	19A703471P120
U705	IC	Logic	19A703483P302
U301	IC	+ Voltage Regulator	19A704971P9
U302	IC	Linear Amp	19A116297P7
U303	IC	- Voltage Regulator	19A704491P7

APPLICANT:  
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FCC ID NO.  
AXATR-197-A2

## FUNCTION OF ACTIVE CIRCUIT DEVICES

<u>SCHEMATIC DESIGNATION</u>	<u>DEVICE</u>	<u>FUNCTION</u>	<u>GE DRAWING NO.</u>
<u>Rx Synthesizer Module 19D902781G1</u>			
Q1	FET	Oscillator	19A702524P2
Q2	Transistor	DC Switch	19A700076P2
Q3-6	Transistor	DC Switch	19A700076P2
Q7	Transistor	DC Switch	19A700076P2
Q8	Transistor	DC Switch	19A700059P2
U1	IC	RF Amp	19A149986P1
U2	IC	RF Amp	19A149986P1
U3	IC	RF Amp	19A149986P1
U4	IC	RF Amp	19A149986P1
U5	IC	Prescaler	19A149944P201
U6	IC	Synthesizer	19B800902P5
U7	IC	Analog Gate	344A3152P1
U8	IC	Linear Amp	19A702293P3
U11	IC	PAL	344A3401G1
U15	IC	+ Voltage Regulator	19A704971P8
U16	IC	+ Voltage Regulator	19A704971P10
Y1	IC	TCXO Module	19B801351P12
<u>Rx Front End Module 19D902782G1</u>			
Q1	Transistor	RF Amp	344A3058P1
Q2	Transistor	Linear Amp	19A700059P2
Q3	Transistor	RF Amp	19A704708P3
Q4	Transistor	Linear Amp	19A700059P2
Q5	Transistor	DC Switch	19A700076P2
Q6	Transistor	DC Switch	19A700076P2
U1	IC	Linear Amp	19A704125P1
<u>Rx IF Module 19D902783G1</u>			
U1	IC	RF Amp	19A705927P1
U2	IC	RF Amp	19A705927P1
U3	IC	IF Amp/DET	19A149980P2
U4	IC	Linear Amp	19A704125P1
U5	IC	Linear Amp	19A704125P1

APPLICANT:  
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.  
AXATR-197-A2

FUNCTION OF ACTIVE CIRCUIT DEVICES

<u>SCHEMATIC DESIGNATION</u>	<u>DEVICE</u>	<u>FUNCTION</u>	<u>GE DRAWING NO.</u>
<u>Rx IF Module 19D902783G1 (Continued)</u>			
Q1	Transistor	RF Buffer	19A704708P2
Q2	Transistor	RF Buffer	19A704708P2
Q3	Transistor	DC Switch	19A700076P2
Q4-5	Transistor	DC Switch	19A700076P2
U6	IC	Linear Amp	19A701789P4
U7	IC	Linear Amp	19A701789P4
U8	IC	+ Voltage Regulator	19A704971P11
<u>System Control Module 19D902590G2</u>			
Q2	Transistor	Switch	19A700076P2
Q3	FET	Gate	19A703795P1
Q5	Transistor	Switch	19A700059P2
Q7	Transistor	Switch	19A700059P2
Q8	Transistor	Switch	19A700059P2
Q9	Transistor	Switch	19A700076P2
Q10	Transistor	Switch	19A700076P2
Q11	Transistor	RF Amp	19A700059P2
Q12	Transistor	RF Amp	19A700059P2
U1	Microprocessor	System Control	10A705982P101
U2	Digital IC	Address Latch	19A703471P302
U3	Digital IC	Address Decoder	19A703471P120
U4	Digital IC	Read Only Memory	344A3307G1
U5	Digital IC	RAM	19A705603P5
U6	Digital IC	Address Latch	19A703952P102
U7	Digital IC	8 Bit Latch	19A704380P319
U8	Digital IC	Selector	19A702705P5
U9	Linear Amp	Buffer	19A704883P2
U10	Liner Amp	Filter	19A704883P2
U11	Linear Amp	Gain	19A116297P7
U12	Digital IC	Selector	19A702705P5
U13	Linear Amp	Gain	19A704883P2
U14	Digital IC	Multiplexer	19A702705P3
U15	Digital IC	Multiplexer	19A702705P3
U16	Linear Amp	Filter	19A704883P2
U17-A	Line Amp	DIF Amp	19A704883P2
U17-B	Line Amp	Buffer	19A704883P2
U17-C	Line Amp	Filter	19A704883P2
U17-D	Line Amp	Gain	19A704883P2
U18	Digital IC	D-F/F	19A704380P302

APPLICANT:  
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.  
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FUNCTION OF ACTIVE CIRCUIT DEVICES

<u>SCHEMATIC DESIGNATION</u>	<u>DEVICE</u>	<u>FUNCTION</u>	<u>GE DRAWING NO.</u>
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System Control Module 19D902590G2 (Continued)

U19	Digital IC	Watch Dog	19A149895P1
U20	Digital IC	Inverter	19A716180P575
U21	Digital IC	Inverter	19A703483P104
U22	Digital IC	Inverter	344A3039P201
U24	Digital IC	D-F/F	19A705980P101
U25	Digital IC	8 Bit Latch	19A703471P116
U26	Digital IC	Inverter	19A116180P575
U27	A-D	A-D	19A705979P101
U28	Digital IC	D-F/F	19A704380P302
U29	Counter	Clock Generator	19A149466P301
U30	Linear Amp	Filter	19A704883P2
U31	Linear Amp	Gain	19A704384P4
U32	Digital IC	Multiplexer	19A702705P3
U33	Multiplexer	Selector	19A702705P3
U34	Digital IC	I/O Expansion	19A705991P101
U35	Digital IC	Level Control	344A3041P201
U36	Digital IC	Level Control	344A3041P201
U37	Linear Amp	Gain	19A704883P2
U37-C	Linear Amp	Filter	19A704883P2
U40	Digital Amp	Inverter	19A116180PP575
U41	Digital IC	Inverter	19A700176P101

Interface Board 19D902975G1

Q102	Transistor	Switch	19A705953P1
Q103, Q104	Transistor	Switch	19A700023P2
Q108	Transistor	Current Gain	19A700023P2
Q109	Transistor	Switch	19A700054P1
U101	Linear IC	Opto-Coupler	19A705952P1
U102	Linear IC	Opto-Coupler	19A705952P1
U103	Transistor	Switch	19A705953P1
U104	Linear IC	Audio PA	19A701630P1
U105	Digital IC	Shift Register	19A703987P21
U106	Digital IC	Shift Register	19A703987P24
U107	Digital IC	Decoder	19A704445P1
U108	Digital IC	Pot	19S705180P2
U109	Digital IC	Logic	19A703483P11
U110-1	Linear IC	Buffer	19A701789P1
U110-2	Linear IC	Gain	19A701789P1
Q110-3	Linear IC	Driver	19A701789P1
Q110-4	Linear IC	Comparator	19A701789P1

APPLICANT:  
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FCC ID NO.  
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**CIRCUIT DIAGRAMS**

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<u>DRAWING NUMBER</u>	<u>DESCRIPTION</u>	
19D903635 (sh1-3)	Interconnection	Block Diagram
Figure 1	Power Amplifier	Block Diagram
19D902798	Power Amplifier	Schematic Diagram
19D903622 (sh1-3)	Tx Synthesizer, Exciter	Schematic Diagram
19D902907 (sh1-6)	System Board	Schematic Diagram
19D903621 (sh1-3)	Rx Synthesizer, Ref Osc	Schematic Diagram
19D902505	Receiver Front End	Schematic Diagram
19D902504 (sh1,2)	Receiver IF	Schematic Diagram
19D902977 (sh1,2)	Interface Board	Schematic Diagram
Figure 2	Crystal Oscillator	Outline Drawing
19B801351	Crystal Oscillator	Purchase Part Drawing

APPLICANT:  
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**DRAFT INSTRUCTION BOOK**

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2.983 (d) (8)      **Instruction Book (Draft)**

See attached draft instruction book.

APPLICANT:  
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.  
AXATR-197-A2

### ALIGNMENT PROCEDURE

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#### RADIO TUNING PROCEDURE

##### 1.0 SCOPE

This document outlines the procedure for transmitter turn-on and frequency set.

##### 2.0 TEST EQUIPMENT

Audio Oscillator	HP201C
RF Power Meter	HP435A
Frequency Counter	RACAL-DANA 9919
Modulation Meter	HP8901A
Power Meter	Bird 6154
RS-232 Computer Terminal	IBM Compatible with "MDIA" software

##### 3.0 TURN-ON PROCEDURE

The system board loads the transmit and receive frequency code to the Tx and Rx synthesizer boards of the VHF station.

Upon power up or reset, the microcontroller loads the receive synthesizer with 32 bits of serial data that sets the local oscillator to the desired frequency. A fault indication is provided by the receive synthesizer and sampled by the microcontroller. If the synthesizer is not locked onto frequency (fault flag true) the microcontroller will initiate another load sequence until lock occurs.

Upon a PTT, the microcontroller loads the transmit synthesizer with 32 bits of serial data that sets the transmit carrier to the proper frequency. A fault indication is provided by the transmit synthesizer and sampled by the microcontroller. If the synthesizer is not locked onto frequency, the microcontroller will not key the RF power amplifier, and will initiate another load sequence until lock occurs. It should be noted that the power amplifier will not be keyed as long as the synthesizer is unlocked.

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**CIRCUIT & DEVICE DESCRIPTIONS**

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2.983 (d) (10-11)

**(10) Oscillator and Other Frequency Stabilizing Circuit Descriptions:**

**Reference Oscillator**

The reference oscillator is a self-contained high stability reference generator which supplies 12.8 MHz to transmitter and receiver synthesizers in the VHF system.

The oscillator module is located in the receive synthesizer. The module is a quartz crystal controlled oscillator with temperature compensation providing  $\pm 1.5$  ppm over a wide temperature range. Measured performance for temperature and supply voltage is shown in Exhibit 12. Reference for the transmitter is coupled from the receive synthesizer module by an external coax cable. The oscillator is supplied by an outside vendor (TOYCOM). The vendor catalogue and our purchase part drawing are shown in Exhibit 4.

The oscillator frequency is adjusted by a multi-turn piston trimmer capacitor for frequency setability of less than  $\pm 0.3$  ppm.

**(11) Circuits or Devices Employed for Suppression of Spurious Radiation:**

The transmit synthesizer board uses a casting on top and bottom side of the board. A lowpass filter is used to reject our-of-band spurious frequencies of the exciter output stage at J2. Tuned circuits are utilized in the input and output of the final amplifier along with a lowpass filter following the final amplifier output to suppress harmonics of the carrier frequency.

The PA is totally encased in a casted housing with fingerstock shields. Power and control leads exit and enter through bulkhead feedthrough capacitors. RF enters and exits through bulkhead RF connectors.

**Circuits or Devices Employed for Limiting Modulation:**

The audio processing circuitry has three high gain integrated circuit audio amplifiers with appropriate feedback. The first stage (U1A) of the limiter and post limiter filters provides preemphasized gain and limiting. Amplitude limiting of the audio occurs when diodes conduct and produce 100% feedback, thereby amplitude limiting the input signal.

Active filters provide 18 dB per octave attenuation beginning at 2.8 kHz for post limiter filtering. Measured characteristics are shown in Exhibit 9.

APPLICANT:  
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**CIRCUIT & DEVICE DESCRIPTIONS**

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**2.983 (d) (12) GETC Filters:**

The filters on the GETC used to perform wave shaping on the digital and audio signals include the low speed data encode filter, the low speed data decode filter and high speed data filter.

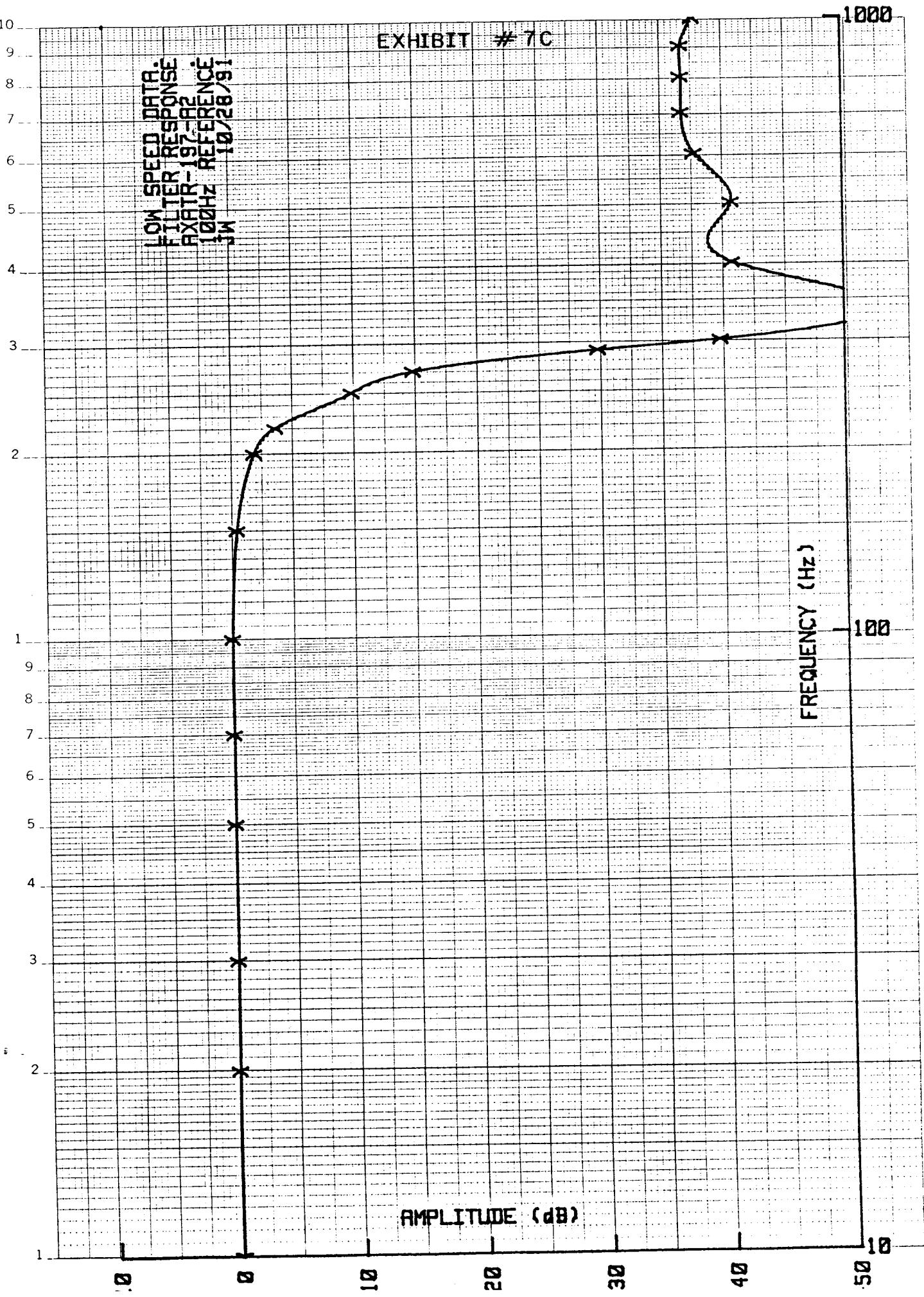
The low speed data encode filter is used to smooth out the subaudible signalling generated by the GETC. This filter characteristic is depicted in Exhibit 7D.

The low speed data decode filter is used to low pass the subaudible signalling and eliminate voice audio in order that the low speed data can be detected by the microcomputer. The characteristics of this filter are identical to the low speed data encode filter and depicted in Exhibit 7D.

The high speed data filter is a GMSK filter used to filter the 9600 baud NRZ signalling used by the GETC. The amplitude and phase response is depicted in Exhibits 7D and 7E.

46 5130

KoE SEMI-LOGARITHMIC 2 CYCLES .1:10 DIVISIONS  
KEUFFEL & ESSER CO. MADE IN U.S.A.



46 5813

**K-E** SEMI-LOGARITHMIC 3 CYCLES  $\times$  140 DIVISIONS  
KEUFFEL & ESSER CO. MADE IN U.S.A.

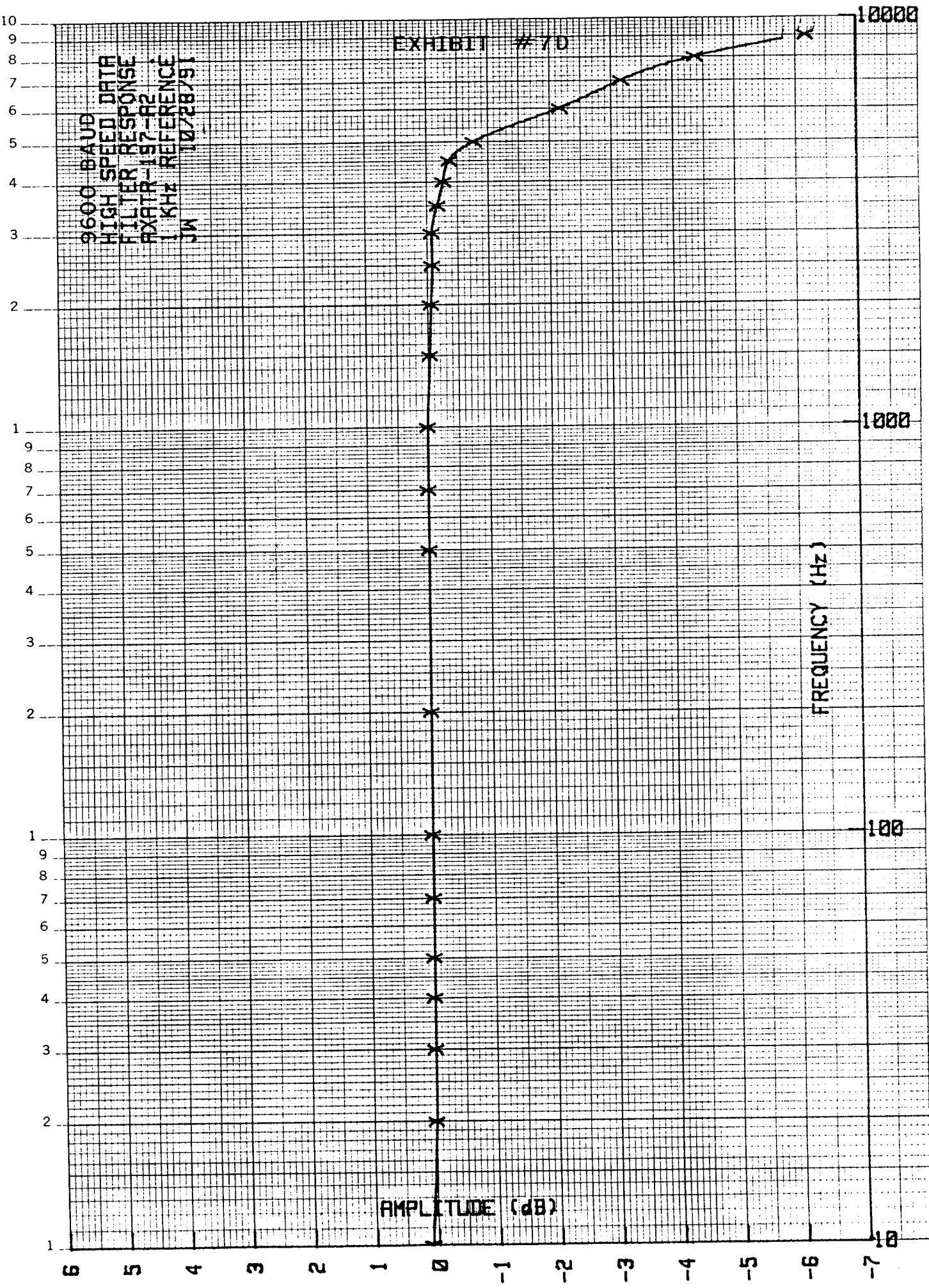
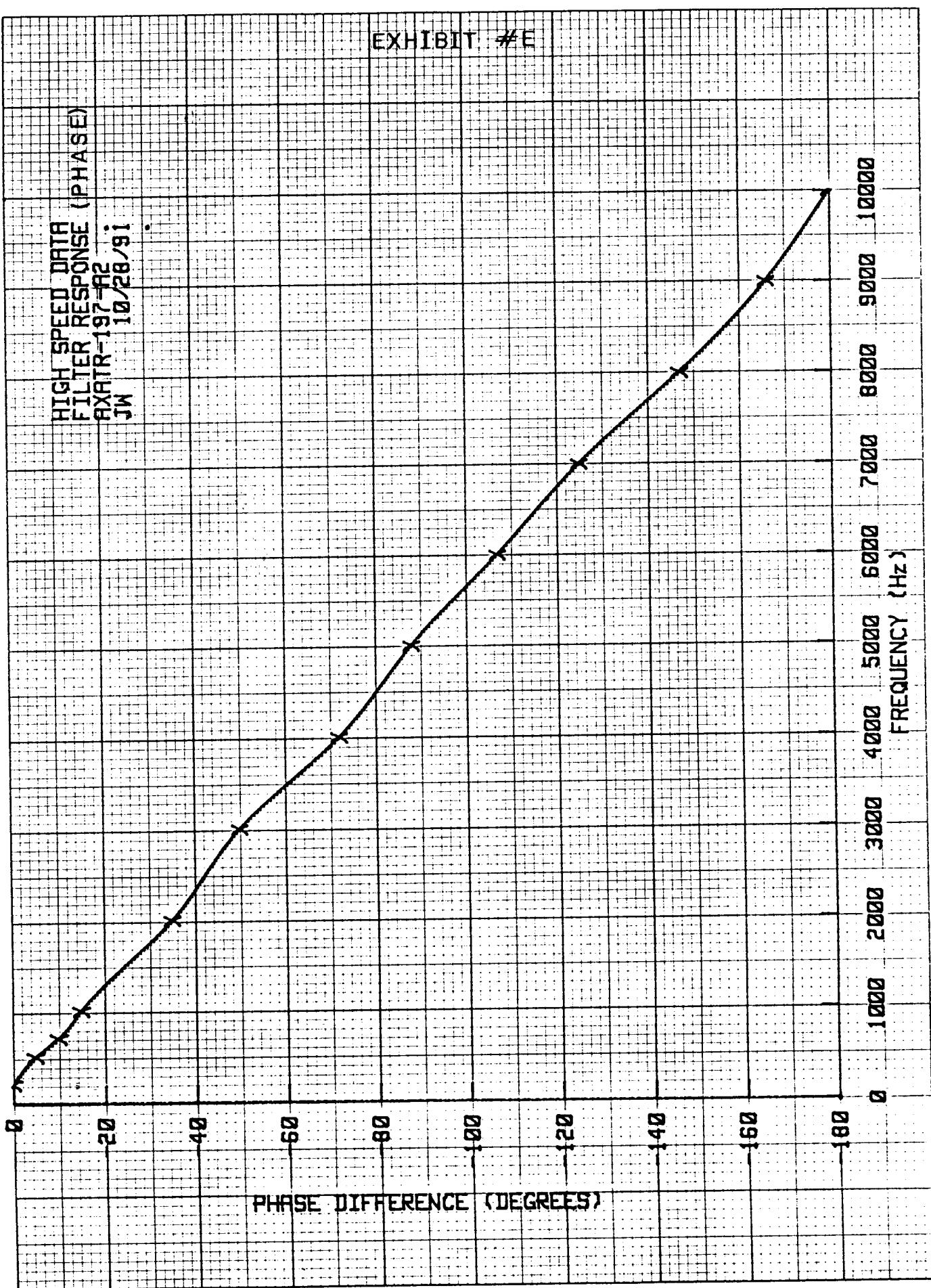


EXHIBIT #E



APPLICANT:  
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.  
AXATR-197-A2

**RF POWER OUTPUT**

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2.985 (a) The RF power measured at the output terminals:

AXATR-197-A2 125 Watts

The measurement was made per EIA RS-152B using the following equipment:

Radio Frequency 50 ohm load attached to the output terminal through directional coupler P-910-20. The power is measured on a HP435A power meter.

APPLICANT:  
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### MODULATION CHARACTERISTICS

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Reference Paragraph 2.987 (a, b, d) the frequency and amplitude response to audio inputs measured per EIA RS-152B, Paragraph 7.3 are shown on the following sheets.

Exhibit 9B	Audio Frequency Response
Exhibit 9C	Post Limiter Frequency Response *
Exhibit 9D	Modulation Versus modulation Input Voltage

Equipment used was:

Hewlett Packard Modulation Analyzer	HP8901A
Hewlett Packard Audio Analyzer	HP8903B
Hewlett Packard Power Meter	HP435A
Weinschel Power Attenuator	49-30-34

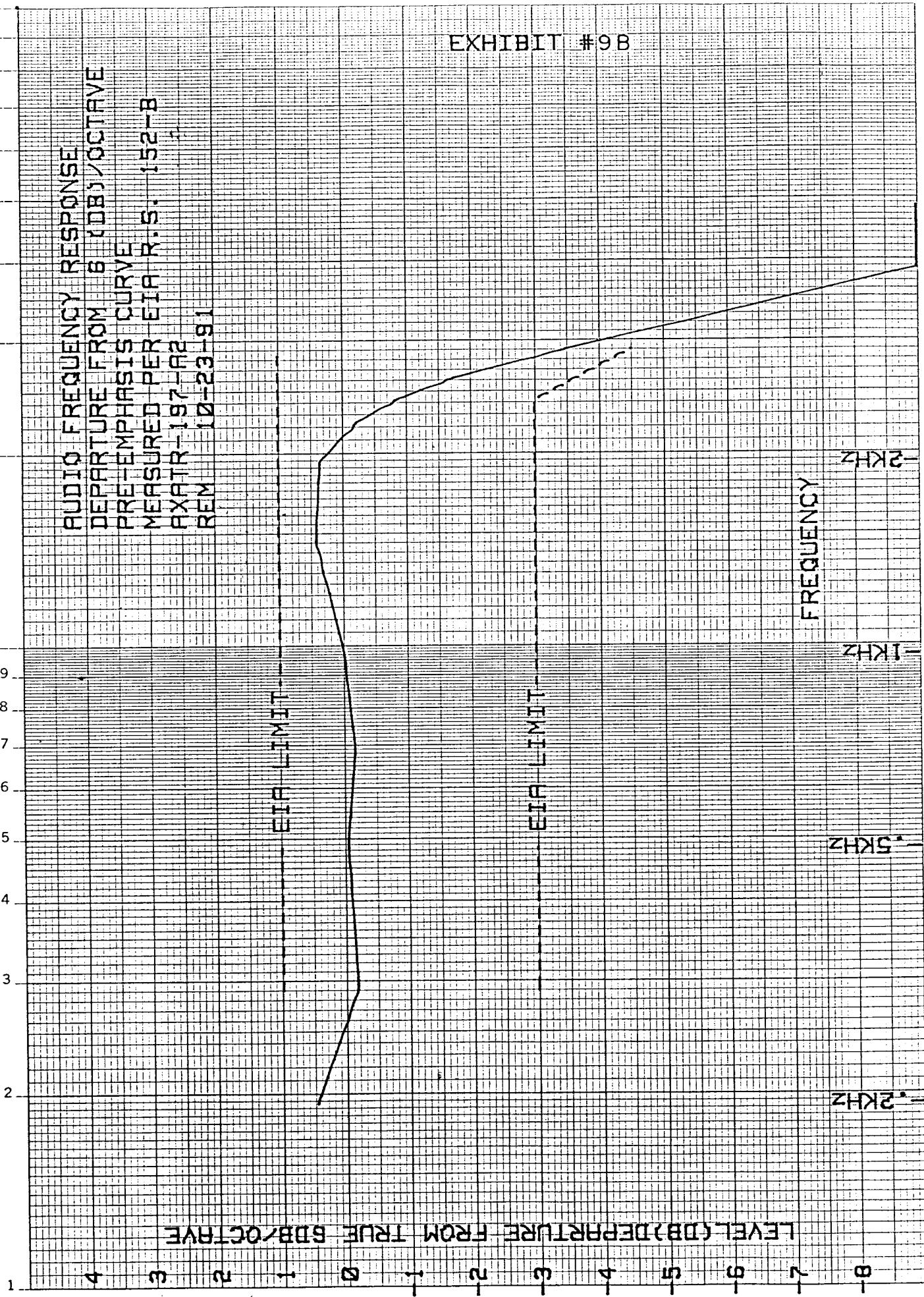
At those modulation frequencies at which the transmitter is not capable of producing 30% of system deviation, audio response is calculated from measurement of input voltage producing a lesser deviation.

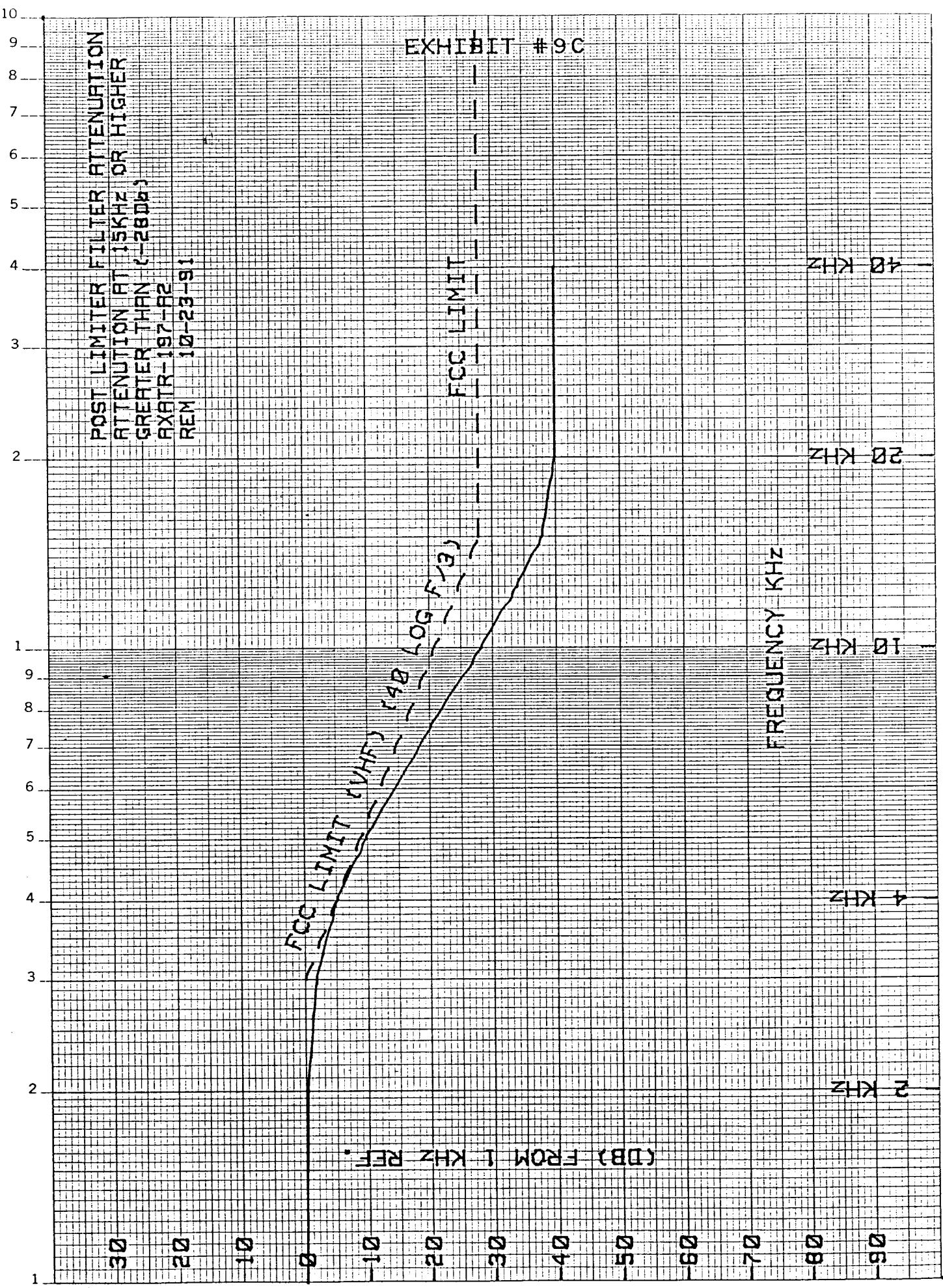
\* Post Limiter Filter Response Measurement Procedure

1. Adjust transmitter deviation according to tune-up procedure.
2. Disconnect internal microphone and any input to the external microphone input.
3. Connect Hewlett Packard modulation analyzer to transmitter output through directional coupler.  
Connect HP audio analyzer to the microphone input.  
Connect HP audio analyzer to the audio output of modulation analyzer.
4. Apply 13.8 volts to the power input and key the transmitter.
5. Set the frequency of the HP audio analyzer to 1 kHz. Increase the output voltage until the transmitter is deviating 3 kHz.
6. Measure the audio output voltage. This is the reference voltage.
7. Keeping the HP audio analyzer output level constant, sweep the frequency from 10 kHz to over 50 kHz. Record the output voltage versus frequency.
8. Plot 20 log (audio output level/reference voltage) versus frequency normalized to a 6 dB per octave curve.

AUDIO FREQUENCY RESPONSE  
DEPARTURE FROM TRUE 6 DB/OCTAVE  
PRE-EMPHASIS CURVE EIA R.S. 152-3  
MEASURED PER  
PXRTR-197-R2  
REM 10-23-91

EXHIBIT #9B





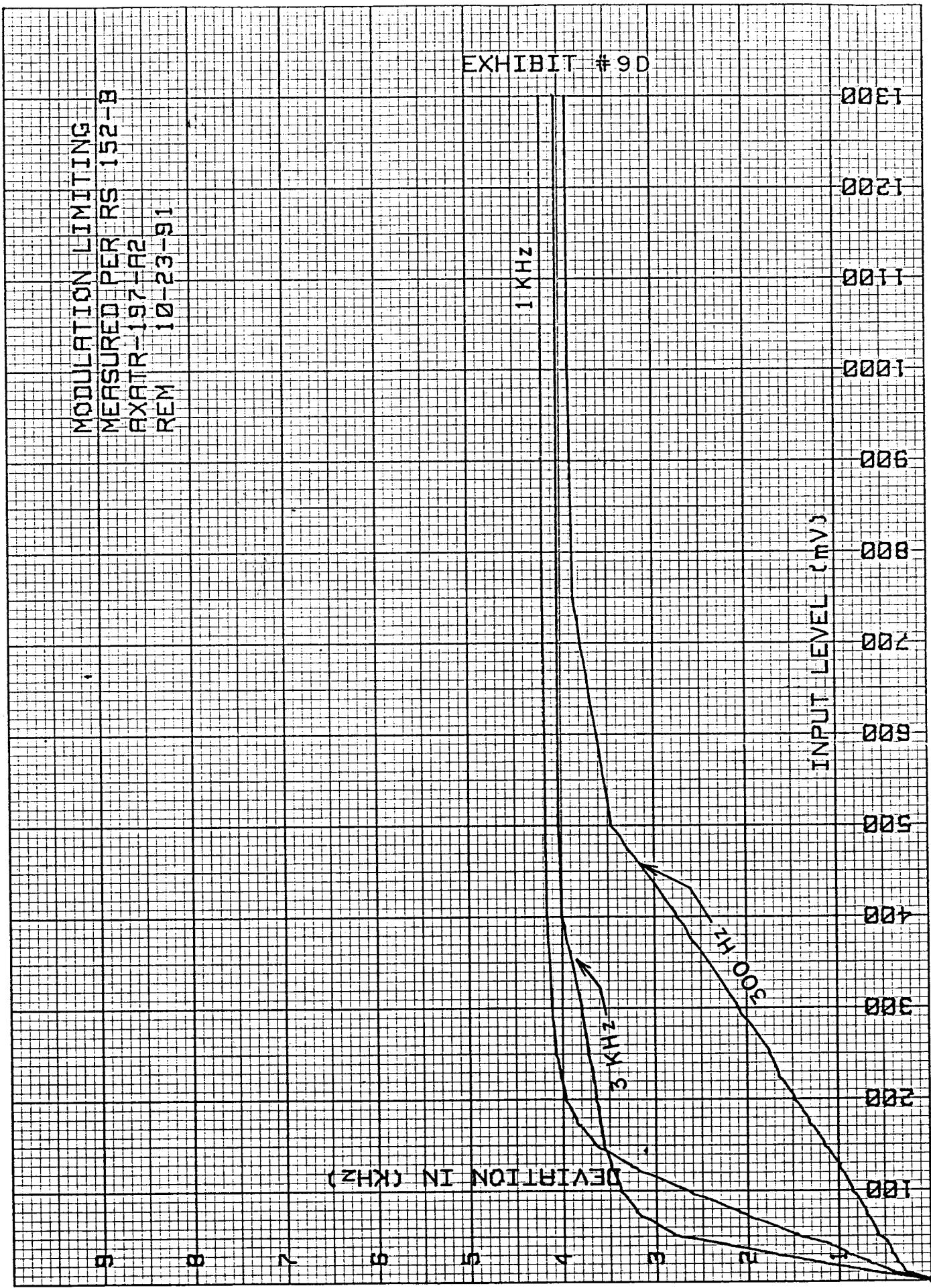


EXHIBIT 10A

APPLICANT:  
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.  
AXATR-197-A2

OCCUPIED BANDWIDTH

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Per 2.989 (c, 1) the measurements were made per EIA RS-152B, Paragraph 17.3.1, were used to obtain the results in Exhibits 10B-10G.

Exhibits 10B-10E show the modulations that have to exist in the system.

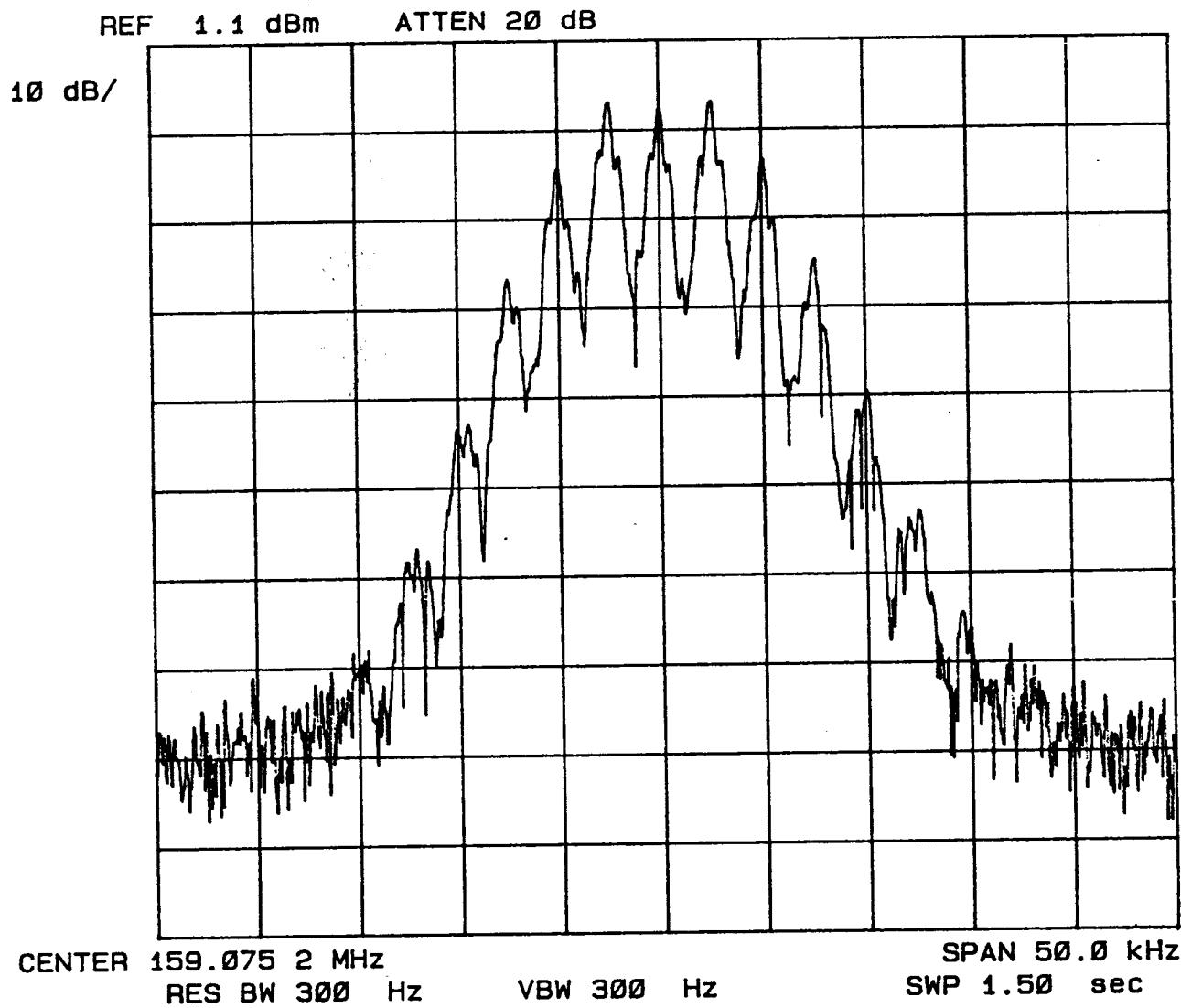
All deviations are set independently of each other per Exhibit 6 and limits and nominal values per Exhibit 7.

APPLICANT: Ericsson GE Mobile Communications Inc.

FCC ID NO. AXATR-197-A2

## OCCUPIED BANDWIDTH

Modulation Sideband Spectrum  
Measured Per EIA RS-152-B



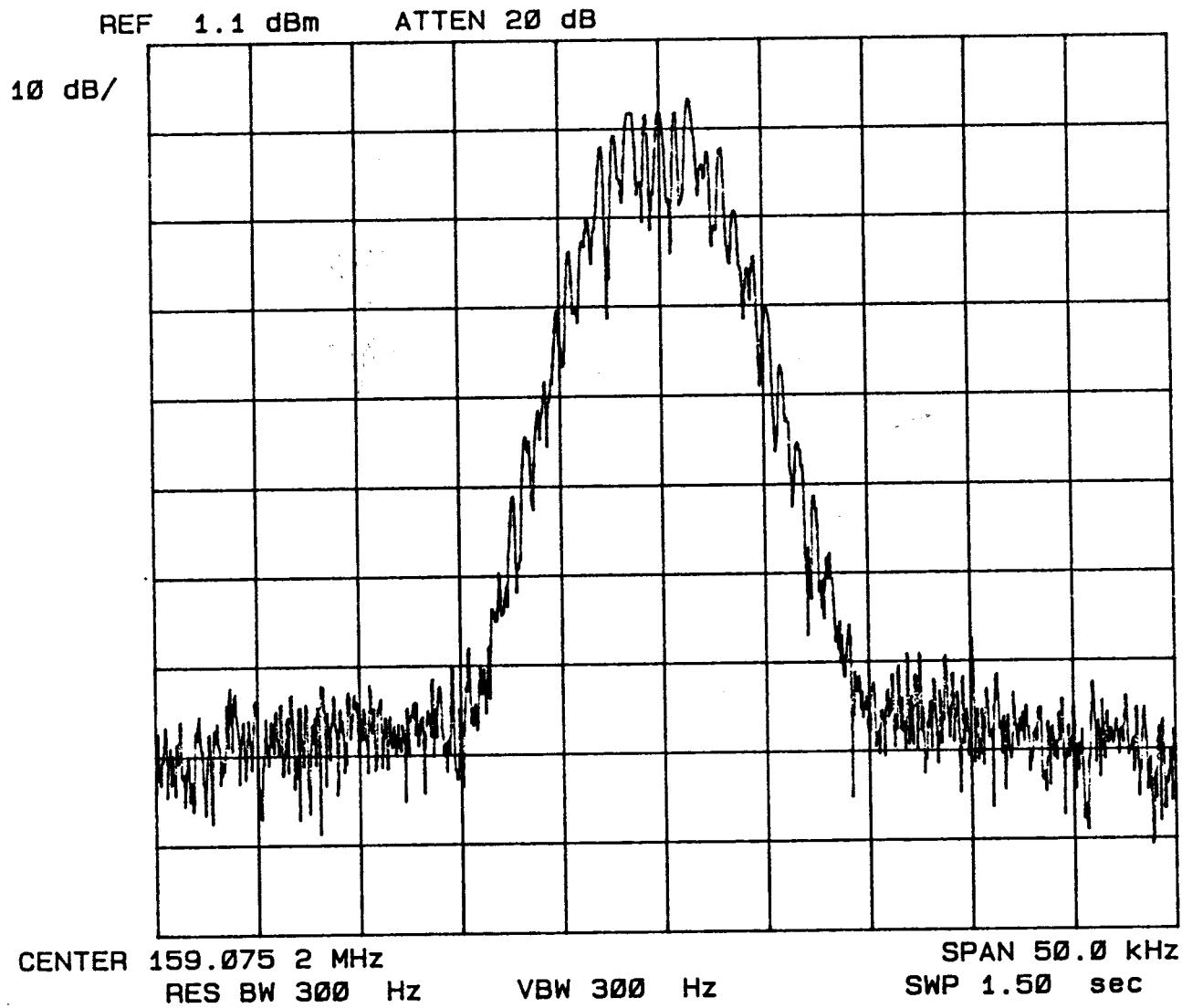
Referenced to the Unmodulated Carrier  
Modulated with 2500 KHz

Analyzer: Vertical = 10 dB/Div.

## OCCUPIED BANDWIDTH

Modulation Sideband Spectrum

Measured Per EIA RS-152-B



Referenced to the Unmodulated Carrier

Modulated with DTMF #3 3kHz

Analyzer: Vertical = 10 dB/Div.

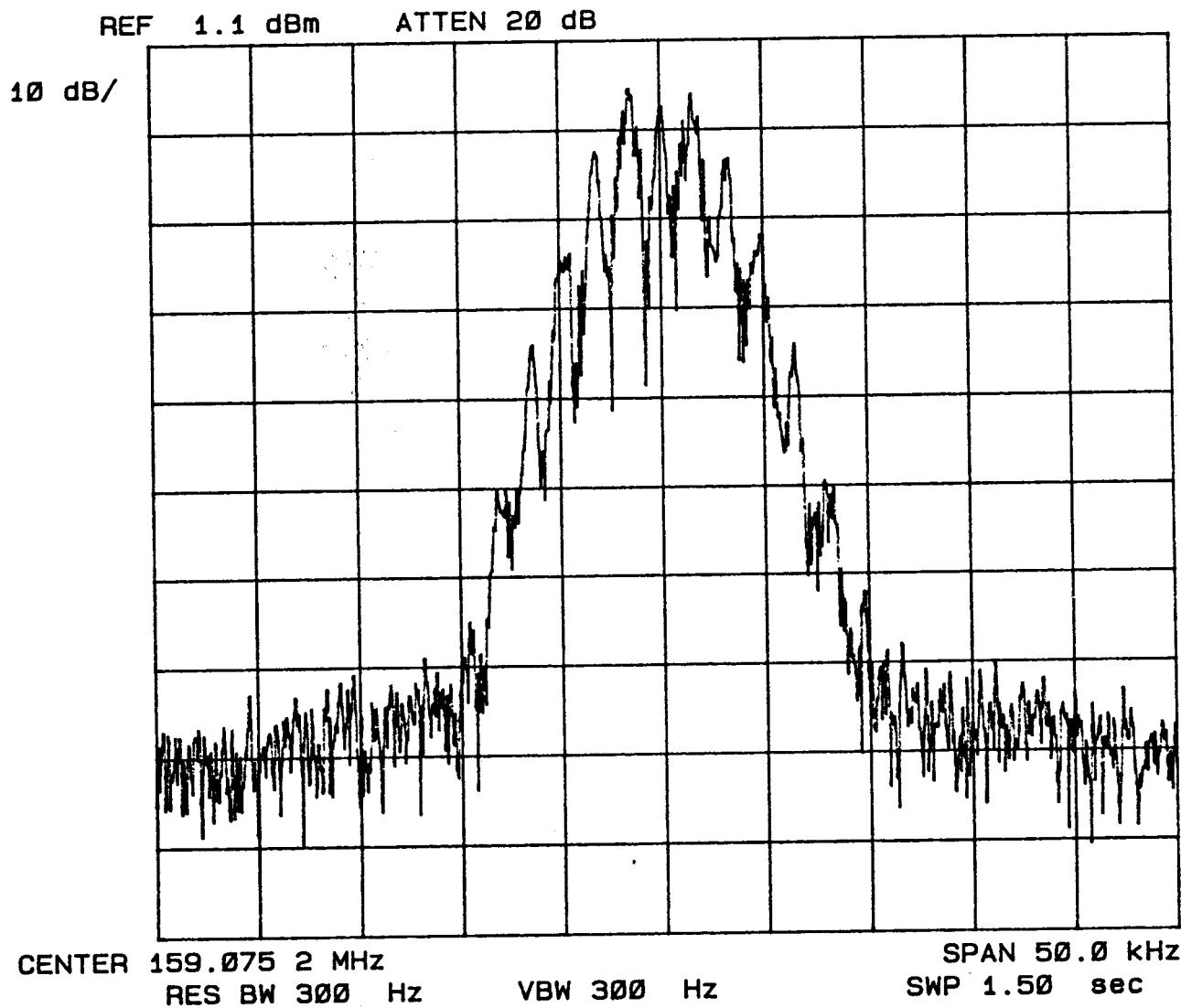
APPLICANT: Ericsson GE Mobile Communications Inc.

FCC ID NO. AXATR-197-A2

## OCCUPIED BANDWIDTH

Modulation Sideband Spectrum

Measured Per EIA RS-152-B



Referenced to the Unmodulated Carrier  
Modulated with GESTAR ID#100 3KHz

Analyzer: Vertical = 10 dB/Div.

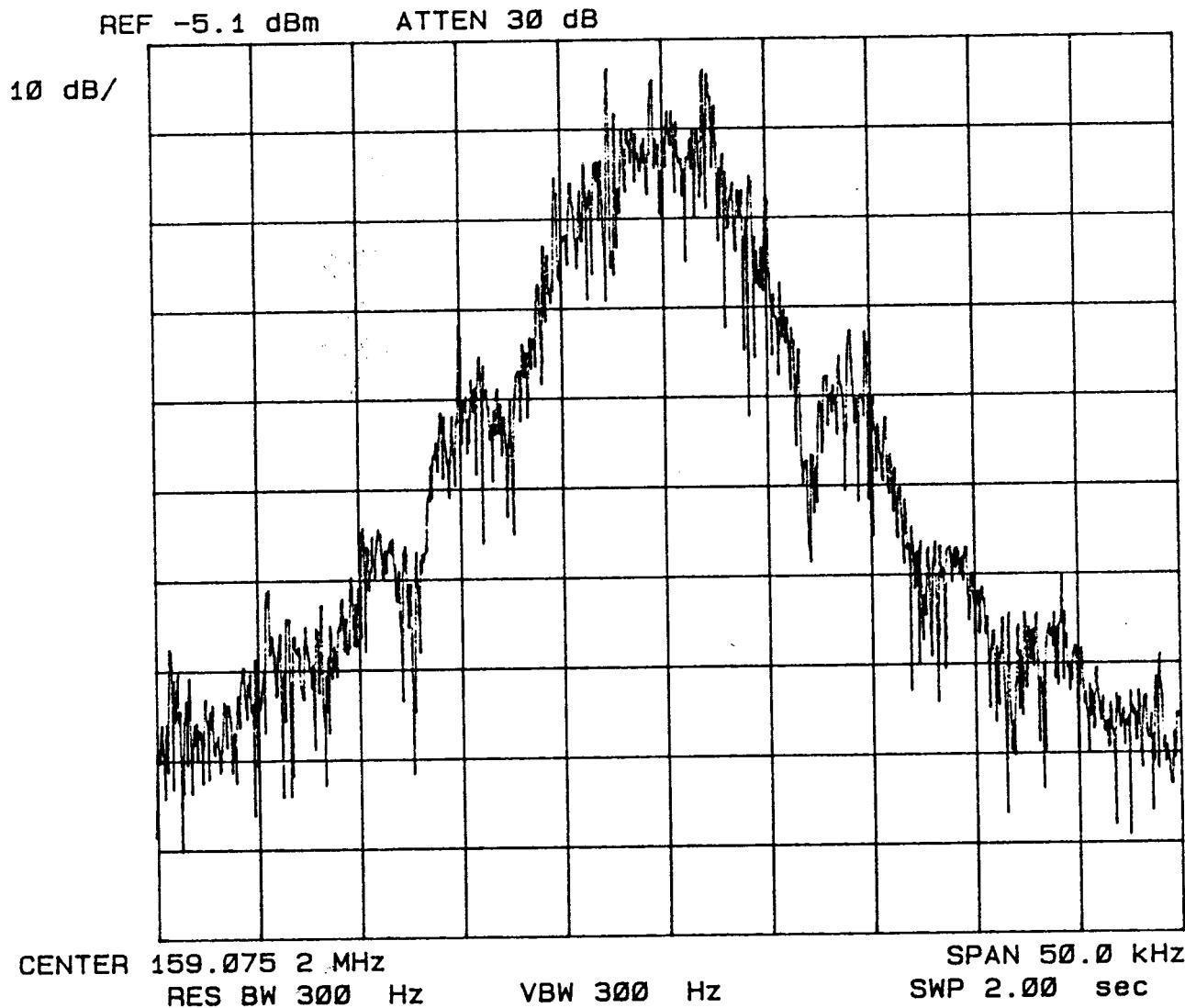
APPLICANT: Ericsson GE Mobile Communications Inc.

FCC ID NO. AXATR-197-A2

## OCCUPIED BANDWIDTH

Modulation Sideband Spectrum

Measured Per EIA RS-152-B



Referenced to the Unmodulated Carrier  
Modulated with 9600 BAUD DATA 3KHz

Analyzer: Vertical = 10 dB/Div.