

ERICSSON



October 7, 1994

Federal Communications Commission
Authorization & Evaluation Division
7435 Oakland Mills Road
Columbia, Maryland 21046

Attention: Equipment Authorization Branch

Subject: Type Acceptance for FCC ID: AXATR-307-A

Gentleman,

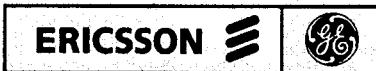
Ericsson GE Mobile Communications Inc. requests Type Acceptance for the following Base Station transceiver. This transceiver will operate in the 406-430 MHz range, and is capable of operating in either conventional or trunked mode. This base station is the low split of previously Type Accepted FCC ID: AXATR-307-A2.

Since the transmitter and receiver utilize common printed circuit boards, a single identifier is used for both.

Sincerely,

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

John P. Rothgeb
Specialist Regulatory Programs
Telephone: (804) 528-7476
Fax: (804) 948-



ERICSSON GE MOBILE COMMUNICATIONS INC.
LYNCHBURG, VIRGINIA

THIS CHECK IS IN FULL PAYMENT OF THE ACCOUNT STATED ON VOUCHER WHICH ACCOMPANIED IT. AND THE PAYEE ACCEPTS IT AS SUCH BY ENDORSEMENT.

66-35

09-02-94

No. 908189

本埠水本埠水本埠水本埠水 425.00

WACHOVIA

WACHOVIA BANK OF NORTH CAROLINA, N.A.

FEDERAL COMMUNICATIONS COMMISSION

TO THE ORDER OF ACRI-UNASSIGNED

0000908189 053100355010450 037796

W40-2100

VOUCHER NO. A29-
02-02-74

IN CORRESPONDENCE WRITE
TO THE ADDRESS BELOW AND
REFER TO THE NUMBER
ABOVE.



ERICSSON GE MOBILE COMMUNICATIONS INC.
LYNCHBURG, VIRGINIA 24502

No. 908189

中等教育/理科/数学/几何/平面几何

APPROVED FOR PAYMENT

P.W. #148 (1-92)

DETACH BEFORE DEPOSITING CHECK

YOUR INVOICE REFERENCE	INVOICE DATE	INVOICE AMOUNT	ADJUSTMENTS			DISCOUNT	NET AMOUNT PAYABLE
			TAX	TRANSPORTATION	PRICE OR EXTENSION		
CTA LTD 8-083764		42500					42500

SENDER: <ul style="list-style-type: none"> • Complete items 1 and/or 2 for additional services. • Complete items 3, and 4a & b. • Print your name and address on the reverse of this form so that we can return this card to you. • Attach this form to the front of the mailpiece, or on the back if space does not permit. • Write "Return Receipt Requested" on the mailpiece below the article number. • The Return Receipt will show to whom the article was delivered and the date delivered. 		I also wish to receive the following services (for an extra fee): <ol style="list-style-type: none"> 1. <input type="checkbox"/> Addressee's Address 2. <input type="checkbox"/> Restricted Delivery <p>Consult postmaster for fee.</p>
3. Article Addressed to: Wholesale Lockbox Shift Supervisor Federal Communications Commission c/o Mellon Bank, Three Mellon Bank 525 William Penn Way 27th Floor, Room 153-2713 Pittsburg, PA 15259		4a. Article Number <hr/>
		4b. Service Type <input type="checkbox"/> Registered <input type="checkbox"/> Insured <input type="checkbox"/> Certified <input type="checkbox"/> COD <input type="checkbox"/> Express Mail <input type="checkbox"/> Return Receipt for Merchandise
		7. Date of Delivery <hr/>
5. Signature (Addressee) <hr/> 6. Signature (Agent)		8. Addressee's Address (Only if requested and fee is paid) <hr/>

PS Form 3811, December 1991 *U.S. GPO: 1993-352-714 DOMESTIC RETURN RECEIPT

Thank you for using Return Receipt Service.

Is your RETURN ADDRESS completed on the reverse side?

ST OFFICE TO ADDRESSEE



EF921185018US

MAILING COPY

(POSTAL USE ONLY)

INTERNATIONAL MENTS ONLY		P.O. ZIP	Day of Delivery	Flat Rate Envelope	Delivery Attempt	Time	Employee Signature
			Next: <input type="checkbox"/> Second: <input type="checkbox"/>	Postage	Mo. <input type="checkbox"/> Day <input type="checkbox"/>	AM <input type="checkbox"/> PM <input type="checkbox"/>	
Business Papers		Date In		\$ <input type="checkbox"/>	Delivery Attempt	Time	Employee Signature
Merchandise		Mo. <input type="checkbox"/> Day <input type="checkbox"/>	12 Noon <input type="checkbox"/> 3 PM <input type="checkbox"/>		Mo. <input type="checkbox"/> Day <input type="checkbox"/>	AM <input type="checkbox"/> PM <input type="checkbox"/>	
is forms and rcial invoice may red. b 273 and ional Mail Manual		Time in AM <input type="checkbox"/> PM <input type="checkbox"/>	Military <input type="checkbox"/> 2nd Day <input type="checkbox"/> 3rd Day <input type="checkbox"/>	Return Receipt	Date of Delivery	Time	Employee Signature
		Weight	Int'l Air or a Country Code	C.O.D.	Mo. <input type="checkbox"/> Day <input type="checkbox"/>	AM <input type="checkbox"/> PM <input type="checkbox"/>	
		No Delivery Weekend <input type="checkbox"/>	Accepted Signature	Total Payment & Rate	Signature of Addressee or Agent X		
				\$ <input type="checkbox"/>	Name - Please Print X		

MER USE ONLY

ID OF PAYMENT: Mail Corporate Acct. No.	<input type="checkbox"/> WAIVER OF SIGNATURE (Domestic Only): I wish delivery to be made without obtaining the signature of the addressee or the addressee's agent (if in the judgement of the delivery employee, the article can be left in a secure location) and I authorize the delivery employee to sign that the shipment was delivered and understand that the signature of the delivery employee will constitute valid proof of delivery.		
Agency Acct. No. or Service Acct. No.	NO DELIVERY <input type="checkbox"/> WEEKEND <input type="checkbox"/> HOLIDAY Customer Signature		

John P. Rothgeb
Ericsson GE Mobile Communications
Mountain View Road - Room 2669
Lynchburg, Virginia 24502

Wholesale Lockbox Shift Supervisor
Federal Communications Commission
c/o Mellon Bank, Three Mellon Bank
525 William Penn Way
27th Floor, Room 153-2713
Pittsburg, PA 15259

PLEASE PRESS HARD

YOU ARE MASTERS OF YOUR DESTINY



ERICSSON



September 26, 1994

Federal Communications Commission
Equipment Approval Services
PO Box 358315
Pittsburgh, Pennsylvania 15251-5315

Subject: Enclosed check for Type Acceptance follows:

<u>FCC ID</u>	<u>Fee</u>
AXATR-307-A	\$425

A handwritten signature in black ink.

John P. Rothgeb
Specialist Regulatory Programs
Room 2669
Tel. (804) -528-7476
Fax no. (804) -948-6510

Enclosures: check
Filing for Equipment Approval Branch

FCC FORM 731

APPLICATION FOR EQUIPMENT AUTHORIZATION

For
FCC
use
only

See 47 CFR 1.1103 for FEE TYPE CODES and FEES, and paragraph C of the attached instructions.

SECTION I - ALL ITEMS IN THIS SECTION MUST BE COMPLETED

APPLICANT'S FULL BUSINESS NAME

ERICSSON GE MOBILE COMMUNICATIONS, INC.

APPLICANT'S MAILING ADDRESS (Line 1) (Maximum 35 characters)

MOUNTAIN VIEW ROAD

APPLICANT'S MAILING ADDRESS (Line 2) (if required) (Maximum 35 characters)

CITY

LYNCHBURG

STATE OR COUNTRY (if foreign address)	ZIP CODE	COMPLETE FCC IDENTIFIER: GRANTEE CODE			EQUIPMENT PRODUCT CODE (14 characters maximum)
VIRGINIA	24502	A	X	A	TR-307-A

Enter in Column (A) the correct Fee Type Code for the service for which you are applying. Fee Type Codes may be found in FCC Fee Filing Guides and paragraph C of attached instructions. 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).

	(A)	(B)	(C)	
(1)	FEE TYPE CODE	FEE MULTIPLE	FEE DUE FOR FEE TYPE CODE IN COLUMN (A)	FOR FCC USE ONLY
	E F T	0 0 0 1	\$ 425.00	

SECTION II - Use only when you are requesting concurrent actions which result in a requirement to list more than one Fee Type Code.

	(A) FEE TYPE CODE	(B) FEE MULTIPLE	(C) FEE DUE FOR FEE TYPE CODE IN COLUMN (A)	FOR FCC USE ONLY
(2)		0 0 0 1	\$	
(3)		0 0 0 1	\$	
(4)		0 0 0 1	\$	
ADD ALL AMOUNTS SHOWN IN COLUMN C, LINES (1) THROUGH (4), AND ENTER THE TOTAL HERE. THIS AMOUNT SHOULD EQUAL YOUR ENCLOSED REMITTANCE. 				TOTAL AMOUNT REMITTED WITH THIS APPLICATION OR FILING \$ 425.00 FOR FCC USE ONLY

(5) NAME AND TITLE OF PERSON AT ABOVE ADDRESS FOR CONTACT, OR TO RECEIVE GRANT (THIS ITEM MUST BE COMPLETED):

JOHN P. ROTHGEB, SPECIALIST REGULATORY PROGRAMS

FCC REMITTANCE ADVICE

PAGE NO. 1 OF 1

SPECIAL USE

FCC USE ONLY

(Read instructions carefully BEFORE proceeding.)

PAYOR INFORMATION

(1) FCC ACCOUNT NUMBER 8 0 4 5 2 8 7 4 7 6	Did you have a number prior to this? Enter it.	(2) TOTAL AMOUNT PAID (dollars and cents) \$ 425 • 00
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(3) PAYOR NAME (If paying by credit card, enter name exactly as it appears on your card)

ERICSSON GE MOBILE COMMUNICATIONS INC.

(4) STREET ADDRESS LINE NO. 1
MOUNTAIN VIEW ROAD

(5) STREET ADDRESS LINE NO. 2

(6) CITY LYNCHBURG	(7) STATE VA	(8) ZIP CODE 24502
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(9) DAYTIME TELEPHONE NUMBER (Include area code) (804) 528-7476	(10) COUNTRY CODE (if not U.S.A.)
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ITEM #1 INFORMATION

(11A) NAME OF APPLICANT, LICENSEE, REGULATEE, OR DEBTOR		FCC USE ONLY	
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(12A) FCC CALL SIGN/OTHER ID AXATR-307-A	(13A) ZIP CODE	(14A) PAYMENT TYPE CODE E F T	(15A) QUANTITY 1	(16A) FEE DUE FOR PAYMENT TYPE CODE IN BLOCK 14 \$ 425.00
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(17A) FCC CODE 1	(18A) FCC CODE 2	
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(19A) ADDRESS LINE NO. 1	(20A) ADDRESS LINE NO. 2	(21A) CITY/STATE OR COUNTRY CODE
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ITEM #2 INFORMATION

(11B) NAME OF APPLICANT, LICENSEE, REGULATEE, OR DEBTOR		FCC USE ONLY	
---	--	--------------	--

(12B) FCC CALL SIGN/OTHER ID	(13B) ZIP CODE	(14B) PAYMENT TYPE CODE	(15B) QUANTITY	(16B) FEE DUE FOR PAYMENT TYPE CODE IN BLOCK 14
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(17B) FCC CODE 1	(18B) FCC CODE 2	
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(19B) ADDRESS LINE NO. 1	(20B) ADDRESS LINE NO. 2	(21B) CITY/STATE OR COUNTRY CODE
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CREDIT CARD PAYMENT INFORMATION

(22) MASTERCARD/VISA ACCOUNT NUMBER:	EXPIRATION DATE:	
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Mastercard: EXPIRATION DATE:

Visa

(23) I hereby authorize the FCC to charge my VISA or Mastercard for the service(s)/authorization(s) herein describe.

AUTHORIZED SIGNATURE

DATE

10-10-94

SECTION III		Bureau Use Only		
1.(a) INSTEAD OF APPLICANT, FCC IS AUTHORIZED TO MAIL ORIGINAL GRANT TO (See instructions): Firm name, number, street, city, state, and ZIP Code		LI DN DM RG Code Reviewer		
(b) NAME AND TITLE OF PERSON AT ABOVE ADDRESS TO RECEIVE GRANT:				
2. INFORMATION CONTACT, IF DIFFERENT FROM ITEM 5, PAGE 1 (See instructions): Firm name, contact person, number, street, city, state, and ZIP Code				
3.(a) TELEPHONE NUMBER (include area code and extension - USA ONLY): (804) 528-7476		3.(b) FAX NUMBER (include area code and extension - USA ONLY): (804) 948-6510		
4. Does this application include a request for confidentiality for any portion(s) of the data contained in this application pursuant to 47 CFR 0.459 of the Commission's Rules? (See instructions)		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
5. Does the applicant desire the Commission to defer grant of this application pursuant to 47 CFR 0.457(d)(1)(ii)? (See instructions)		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
6. 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				
7.(a) Kind of equipment: Base Station Transceiver		(b) Equipment will be operated under FCC Rule Part(s): 90		
8. Application is for (Check ONE box only): <input checked="" type="checkbox"/> 1 Original equipment <input type="checkbox"/> 2 Change in identification of presently authorized equipment * <input type="checkbox"/> 3 Class II permissive change or modification of presently authorized equipment		9.(a) FCC ID before change in identification: NA (b) Grant date of FCC ID in 9(a) above: NA		
* If box 2 is checked, complete items 9(a) and (b).				
10. EQUIPMENT SPECIFICATIONS:				
(a) Frequency range in MHz	(b) Rated RF power output in watts	(c) Frequency tolerance %, Hz, ppm	(d) Emission designator	(e) Microprocessor model number
403-430 MHz	45-90 Watts	+1 ppm	16K0F3E 15K0F2D 15K0F2B 16K0F1D 16K0F1E	NA
11. Type of equipment tested: <input type="checkbox"/> Production		<input checked="" type="checkbox"/> Pre-Production	<input type="checkbox"/> Prototype	
12.(a) Is the equipment, or section(s) thereof, subject to more than one equipment authorization? If YES, complete items 12(b), (c), (d), or (e) as appropriate.				
(b) Additional equipment authorization(s) required for equipment: <input type="checkbox"/> Certification <input type="checkbox"/> Type Acceptance <input type="checkbox"/> Type Approval <input type="checkbox"/> Notification				
(c) Granted FCC ID or FCC ID listed on RX or RX section application: NA		(d) Granted FCC ID or FCC ID listed on TX or TX section application: NA		(e) Granted FCC ID or FCC ID listed on other device application: NA

APPLICANT:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-307-A

EXHIBIT LIST

<u>EXHIBIT</u>	<u>PARA. REF.</u>	<u>DESCRIPTION</u>
1	2.909 (d)	Certification of Data
2	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-B	2.983 (d) (10-12)	Circuit and Device Descriptions
8	2.985 (a)	RF Power Output
9A-E	2.987 (a, b, d)	Modulation Characteristics
10A-E	2.989 (c, d, i) (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 with cover removed to show component board.
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-307-A

EXHIBIT LIST

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

APPLICANT:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-307-A

CERTIFICATION OF DATA

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



NAME: _____
David Bing
POSITION: Sr. Technical Leader - Base Stations
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.

NAME: _____
Hamlet Sarokhanian
POSITION: Manager - DLMR Base Station Transceiver
DATE: 10-10-94

APPLICANT:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-307-A

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 403 MHz to 430 MHz frequency band. The transmitter consists of a solid-state synthesizer-exciter and power amplifier. The RF power output is adjustable from 45-90 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: 16KOF3E, 15KOF2D, 15KOF2B, 16KOF1D, 16KOF1E

(2) Frequency Range and Frequency Stability: 403-430 MHz \pm 1.5 ppm

(3) Range of Operating Power: 45-90 Watts

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: 90 Watt Tx

Input Maximum	400 Watts
Output Maximum	90 Watts

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

Collector Voltage	13.4 Volts DC
Collector Current	29 Amps DC

APPLICANT:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-307-A

FUNCTION OF ACTIVE CIRCUIT DEVICES

SCHEMATIC DESIGNATION	DEVICE	FUNCTION	GE DRAWING NO.
<u>Power Amp 19D902797G6 & G11</u>			
Q2	Transistor	RF Final Amp	344A4134P1
Q3	Transistor	RF Final Amp	344A4134P1
Q1	Transistor	RF Driver	344A3948P1
U1	RF IC	RF Preamp	19A705457P2
U7	RF Module	RF Gain Block	344A3907P1
U100	IC	Voltage Regulator	19A705532P2
U3	IC	Linear Op-Amp	19A701789P4
Q4	Transistor	DC Switch	19A700076P2
Q5	Transistor	DC Amp	19A700076P2
Q203	Transistor	DC Amp	19A700055P1
Q7	Transistor	RF Pre-Amp	19A701940P1
<u>Tx Synthesizer Module 19D02780G6</u>			
U201	RF IC	RF Buffer	19A705927P1
U202	RF IC	RF Buffer	344A3907P1
U203	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
U401	IC	PreScaler	19A149944P201
U402	IC	Synthesizer	19B800902P5
Q801	Transistor	RF Amp	19A704708P2
Q802	Transistor	RF Amp	19A704708P2
Q803	Transistor	Multiplier	19A704708P2
Q705	Transistor	DC Switch	19A700076P2
Q706	Transistor	DC Switch	19A700076P2

APPLICANT:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-307-A

FUNCTION OF ACTIVE CIRCUIT DEVICES

SCHEMATIC DESIGNATION	DEVICE	FUNCTION	GE DRAWING NO.
<u>Rx Synthesizer Module 19D902781G3</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
Q9	Transistor	DC Switch	19A700076P2
Q10	Transistor	DC Switch	19A700076P2
Q11	Transistor	DC Switch	19A700076P2
Q12	Transistor	Linear Amp	19A700076P2
Q13	Transistor	Linear Amp	19A700076P2
Q14	Transistor	RF Amp	19A704708P2
Q15	Transistor	RF Amp	19A704708P2
Q16	Transistor	Multiplier	19A704708P2
U2	IC	RF Amp	19A705927P1
U3	IC	RF Amp	19A705927P1
U4	IC	RF Amp	19A705927P1
U5	IC	Prescaler	19A149944P201
U6	IC	Synthesizer	19B800902P5
U8	IC	Linear Amp	19A702293P3
U9	IC	Linear Amp	19A702293P3
U10	IC	Logic	19A703471P120
U12	IC	Logic	19A703483P302
U13	IC	Logic	19A703483P302
U14	IC	Analog Gate	19A702705P4
U15	IC	+ Voltage Regulator	19A704971P8
U16	IC	+ Voltage Regulator	19A704971P10
Y1	IC	TCXO Module	19B801351P12
<u>Rx Front End Module 19D902782G11</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
Q7	Transistor	Linear Amp	19A700059P2
Q8	Transistor	RF Amp	344A3058P1
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-307-A

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 19D902590G3</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.
AXATR-307-A

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 19D902590G3 (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:
ERICSSON GE MOBILE COMMUNICATIONS INC.

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CIRCUIT DIAGRAMS

<u>DRAWING NUMBER</u>	<u>DESCRIPTION</u>
19D903635 (sh1-3)	Interconnection Block Diagram
19D903622 (sh1-2)	Power Amplifier Schematic Diagram
19D903363 (sh1-3)	Tx Synthesizer, Exciter Schematic Diagram
19D902907 (sh1-6)	System Board Schematic Diagram
19D904091 (sh1-3)	Rx Synthesizer, Ref Osc Schematic Diagram
19D903498	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 (sh1-5)	Crystal Oscillator Purchase Part Drawing

APPLICANT:
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DRAFT INSTRUCTION BOOK

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

See attached draft instruction book.

APPLICANT:
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FCC ID NO.
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ALIGNMENT PROCEDURE

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	HP436A
Frequency Counter	HP5386A
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 UHF 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

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 UHF system.

The oscillator module is located in the receive synthesizer. The module is a quartz crystal controlled oscillator with temperature compensation providing ± 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 ± 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 out-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.

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CIRCUIT & DEVICE DESCRIPTIONS

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.

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.

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.

The high speed data filter is a GMSK filter used to filter the 9600 baud NRZ signalling used by the GETC.

APPLICANT:
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RF POWER OUTPUT

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

AXATR-307-A 90 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 HP436A power meter.

APPLICANT:
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MODULATION CHARACTERISTICS

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
Exhibit 9E	Data Filter Response

Equipment used was:

Hewlett Packard Modulation Analyzer	HP8901A
Hewlett Packard Audio Analyzer	HP8903B
Hewlett Packard Power Meter	HP436A
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.

TRANSMITTER AUDIO FREQUENCY RESPONSE
AXATR-307-A

09/13/94

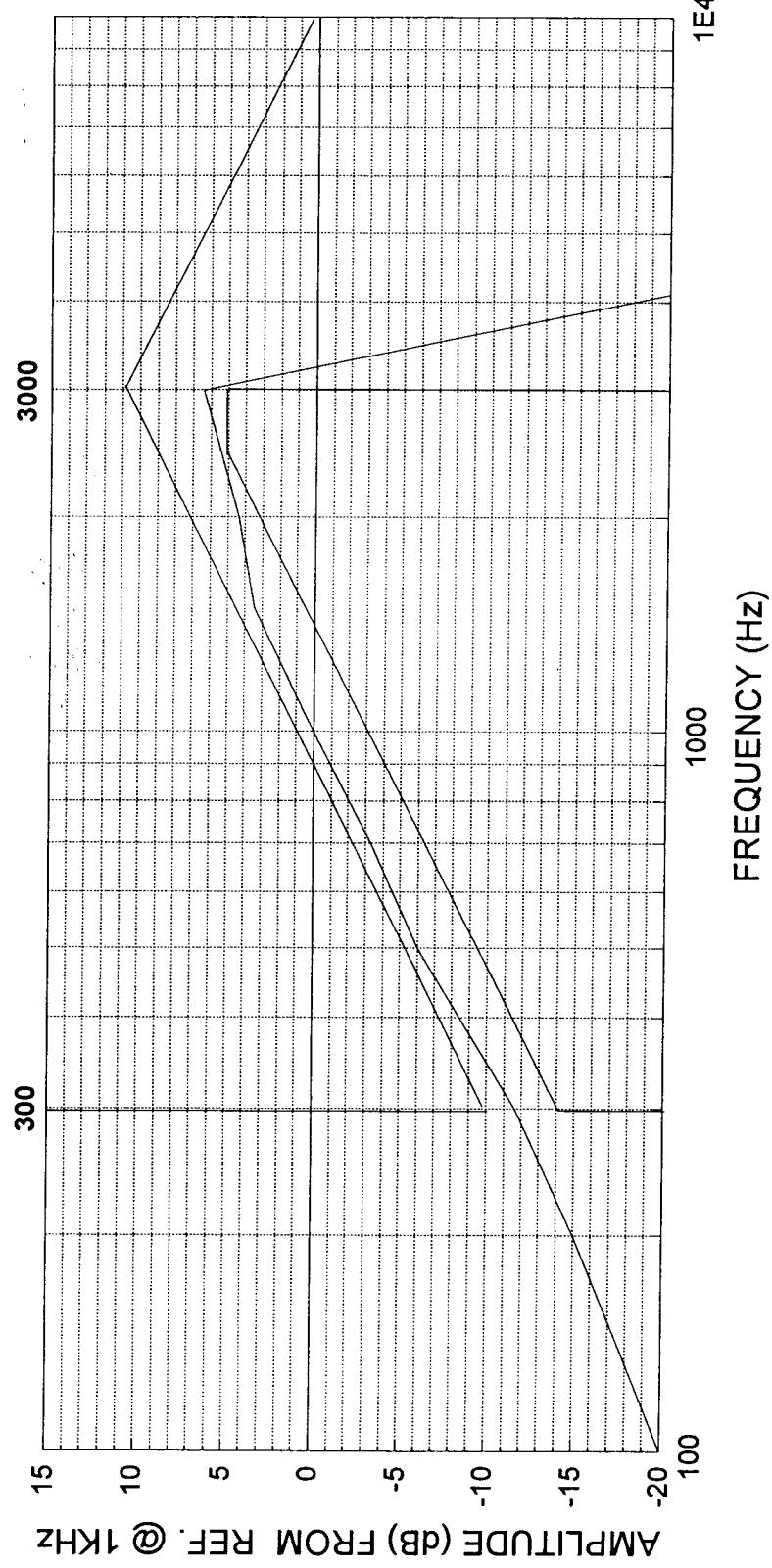


EXHIBIT # 9B

POST LIMITING FILTER
AXATR-307-A

09/13/94

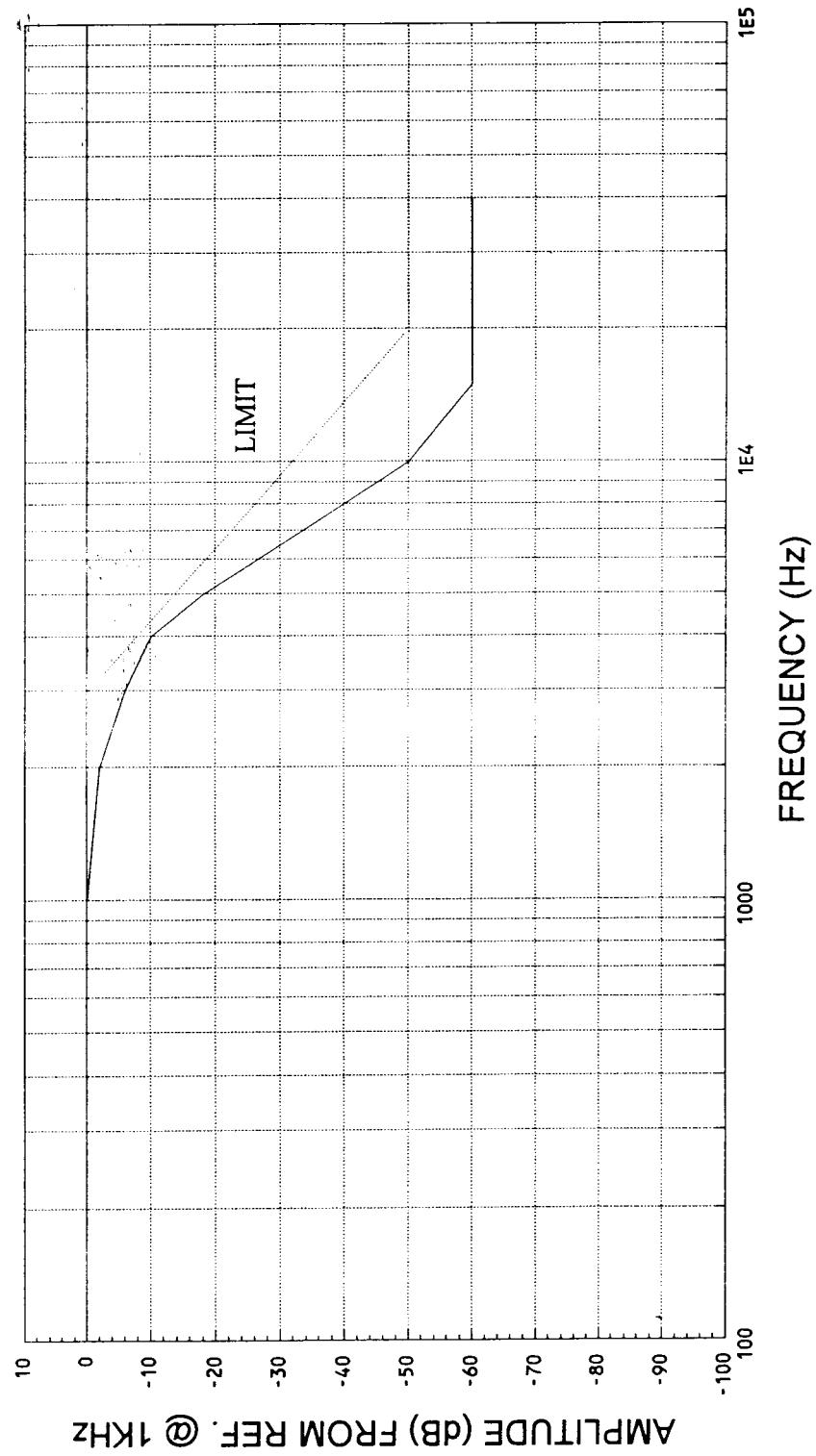
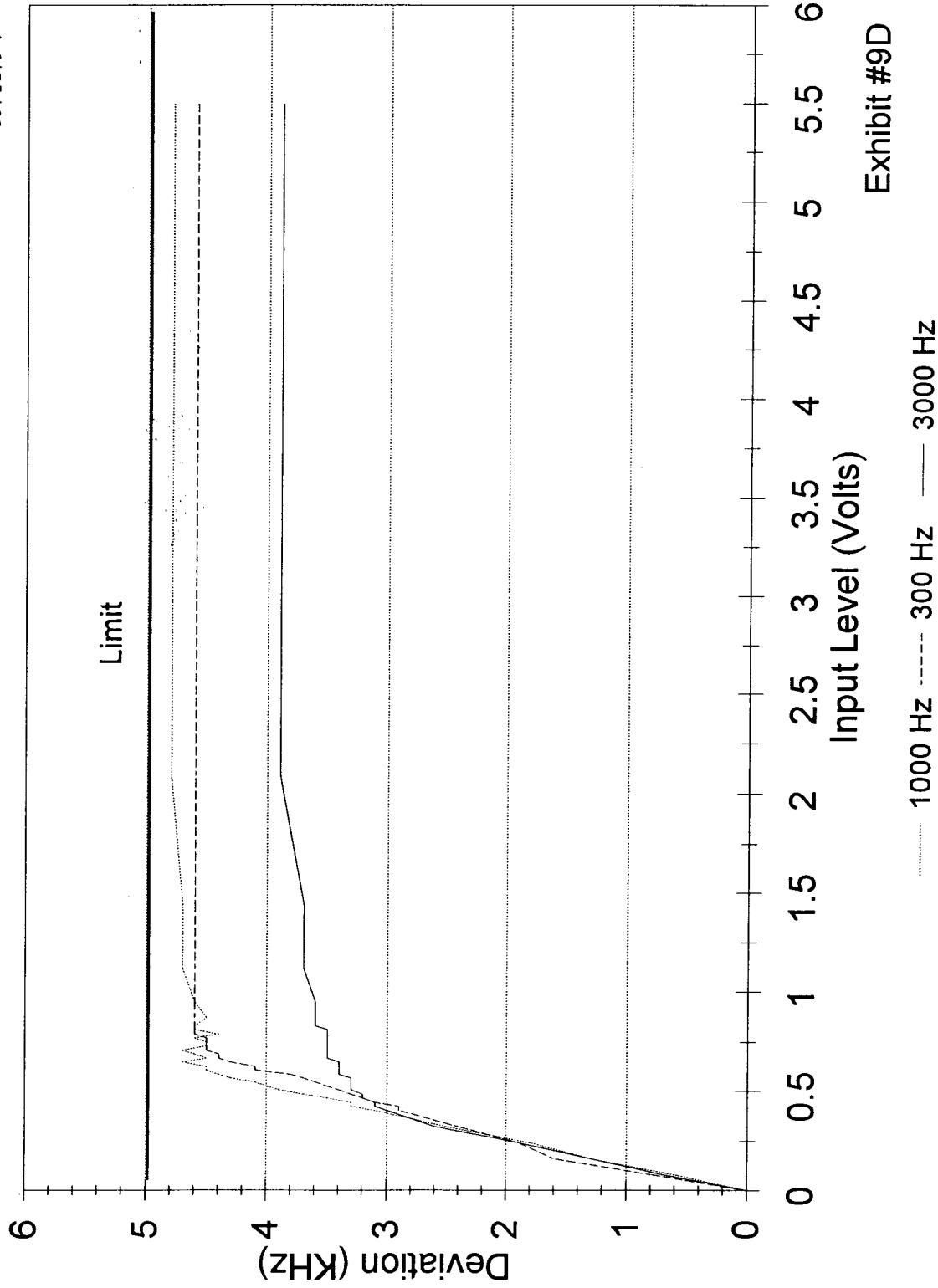


EXHIBIT # 9C

Modulation Limiting

AXATR-307-A

09/13/94



DATA FILTER RESPONSE
9600 BAUD HIGH SPEED
AXATR-307-A

09/13/94

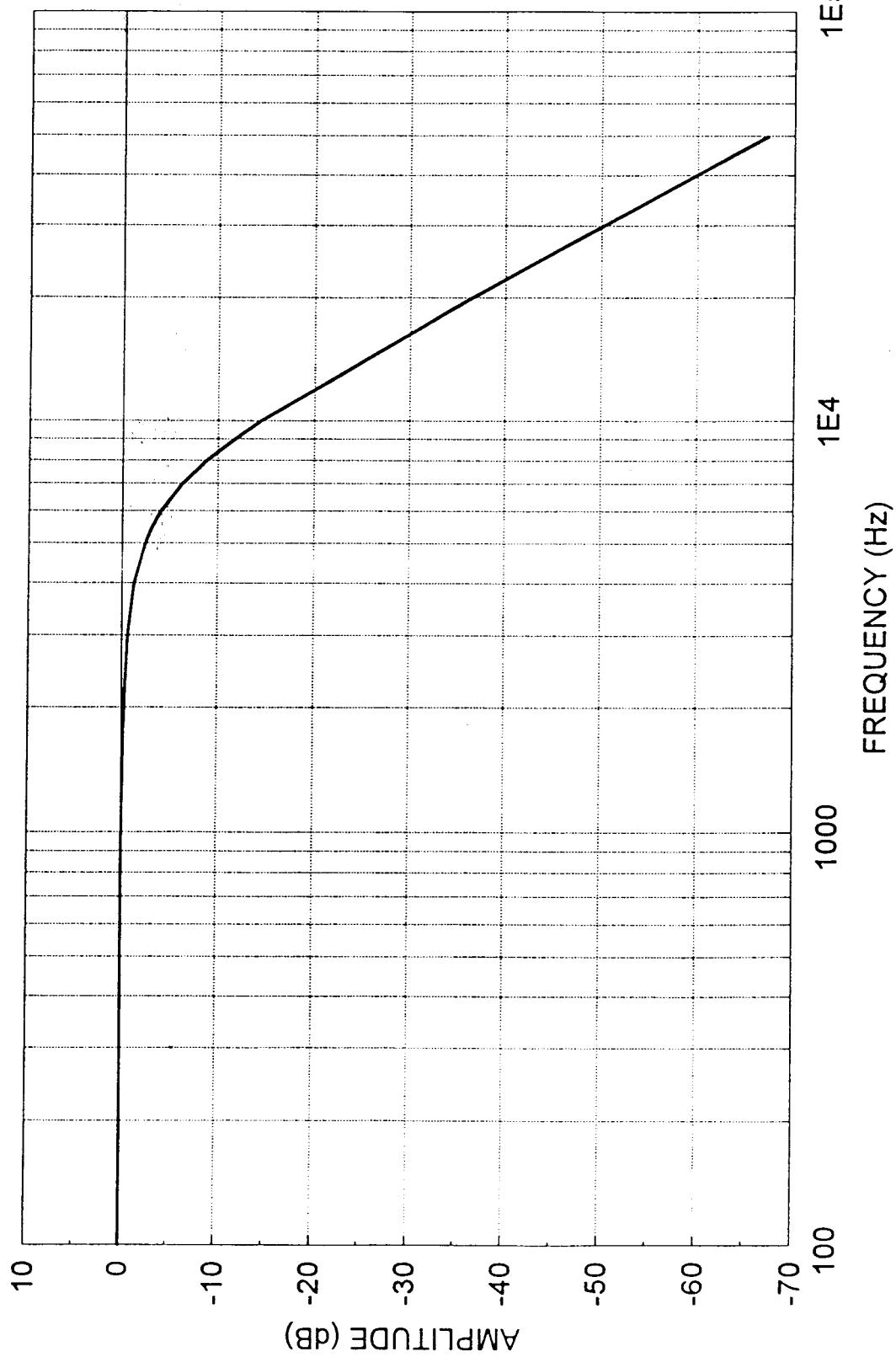


EXHIBIT # 9E

EXHIBIT 10A

APPLICANT:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-307-A

OCCUPIED BANDWIDTH

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-10E modulated sideband spectrum.

Therefore, Emission Designator = 16K0F3E

Therefore, Emission Designator = 15K0F2D

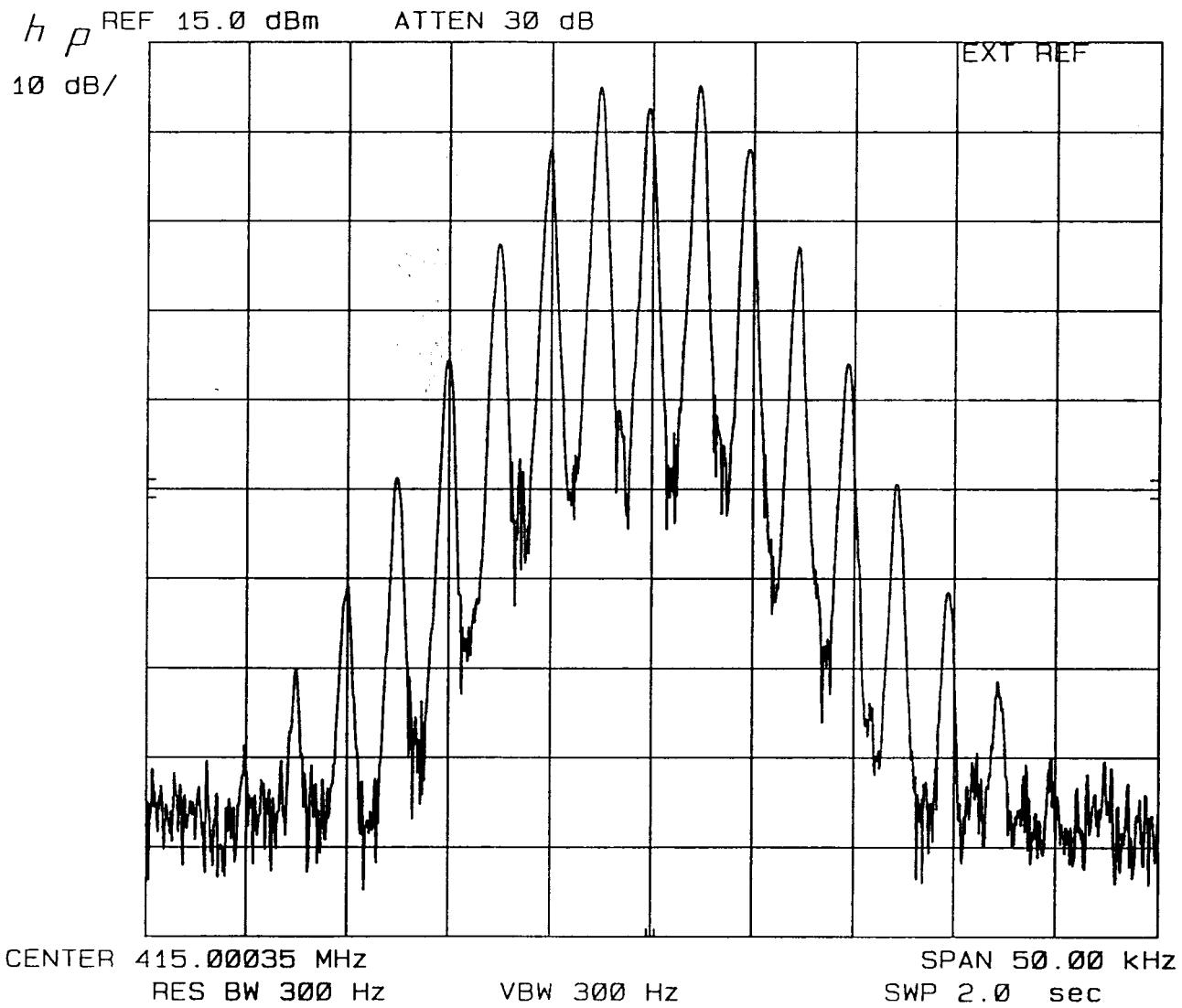
—n

Therefore, Emission Designators = 16K0F1D (Data Transmission)

OCCUPIED BANDWIDTH

Modulation Sideband Spectrum

Measured Per EIA RS-152-B



Referenced to the Unmodulated Carrier
Modulated with 2500 Hz @ 3KHz Dev.

Analyzer: Vertical = 10 dB/Div.

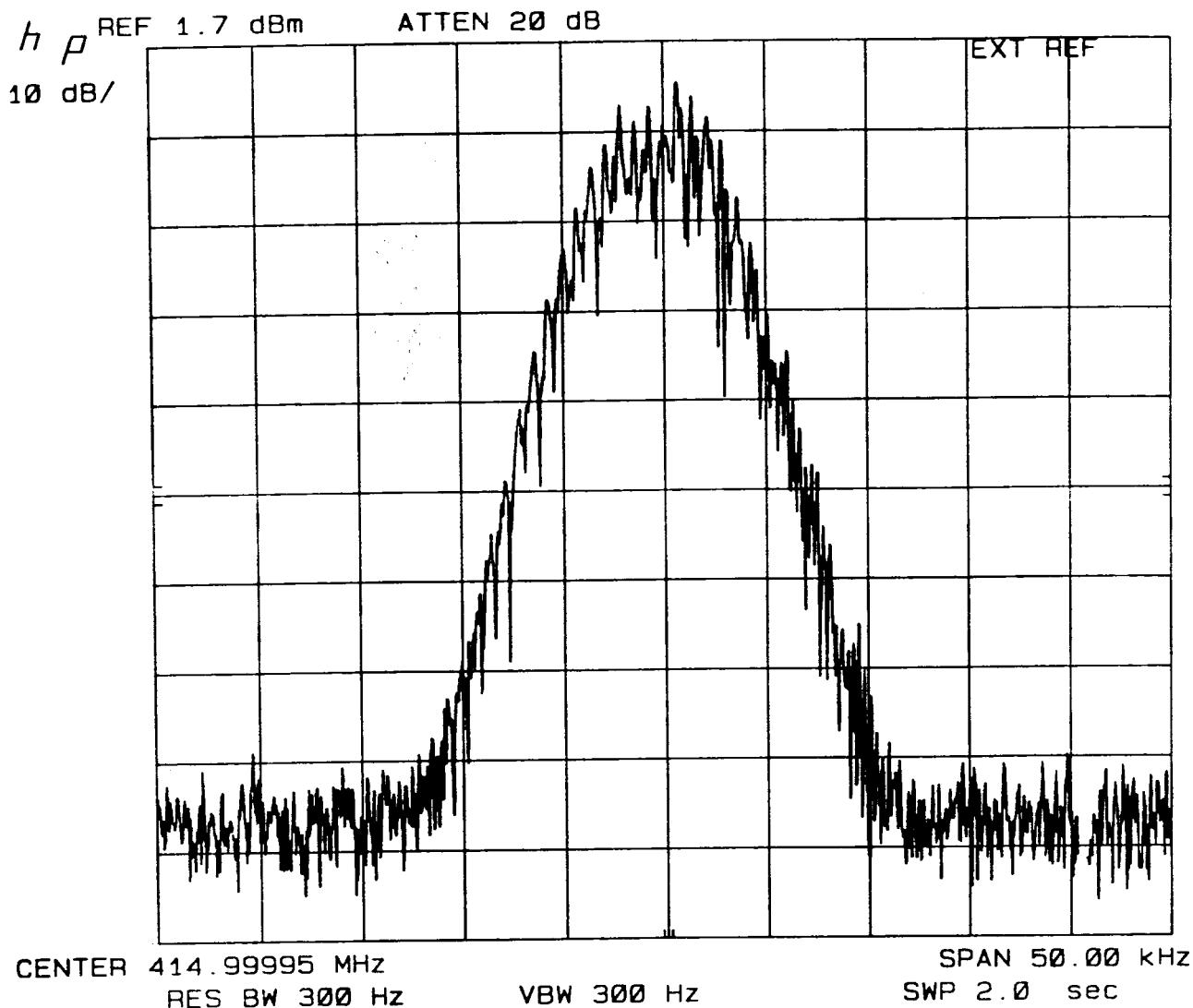
APPLICANT: Ericsson GE Mobile Communications Inc.

EXHIBIT 10C

FCC ID NO. AXATR-307-A

OCCUPIED BANDWIDTH

MODULATION Sideband Spectrum

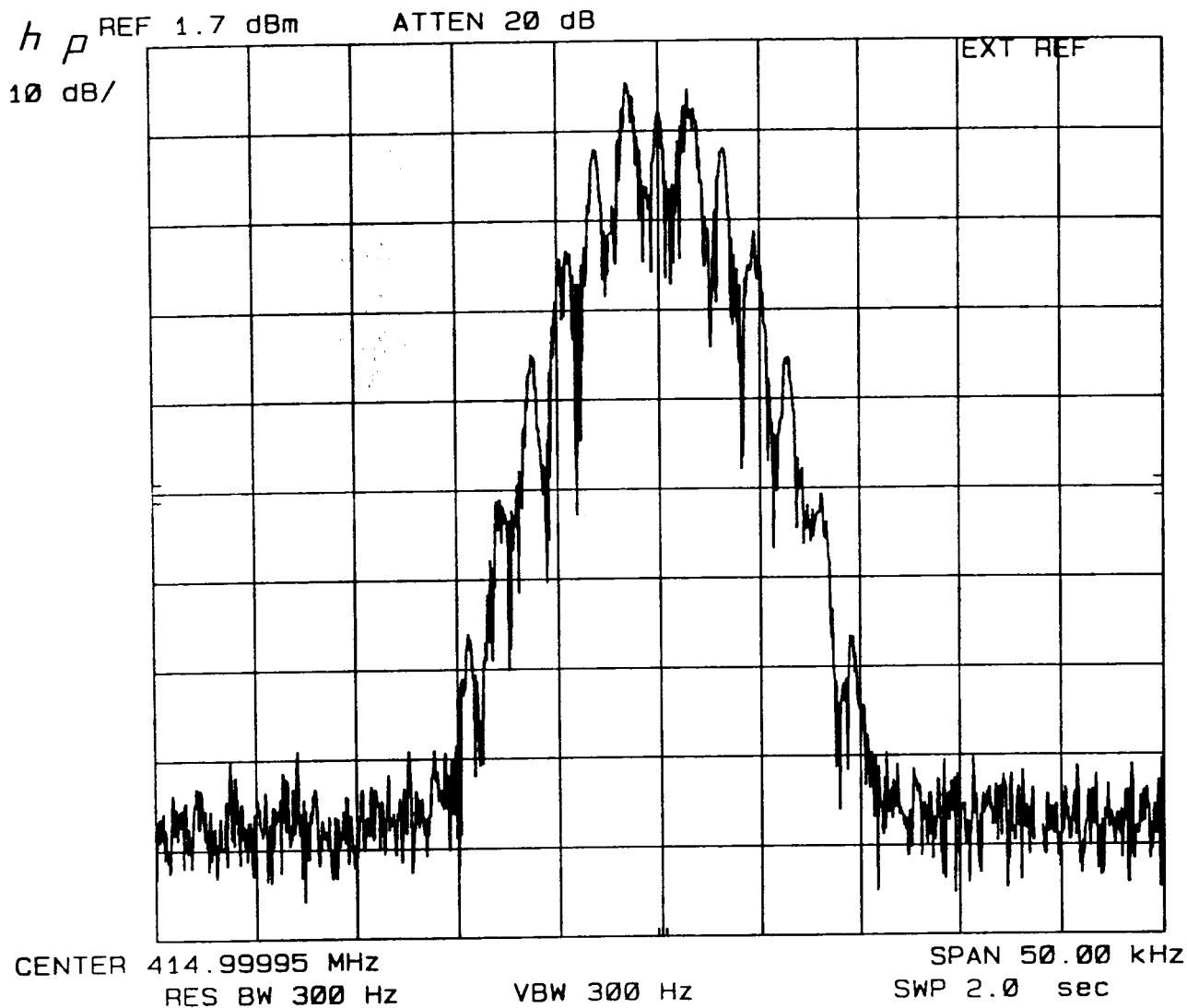


Referenced to the Unmodulated Carrier
Modulated with DTMF Digital 3 @ 3Khz Dev.

Analyzer: Vertical = 10 dB/Div.

OCCUPIED BANDWIDTH

Modulation Sideband Spectrum



Referenced to the Unmodulated Carrier

Modulated with GE*STAR ID CODE #100

Analyzer: Vertical = 10 dB/Div.

APPLICANT: Ericsson GE Mobile Communications Inc.

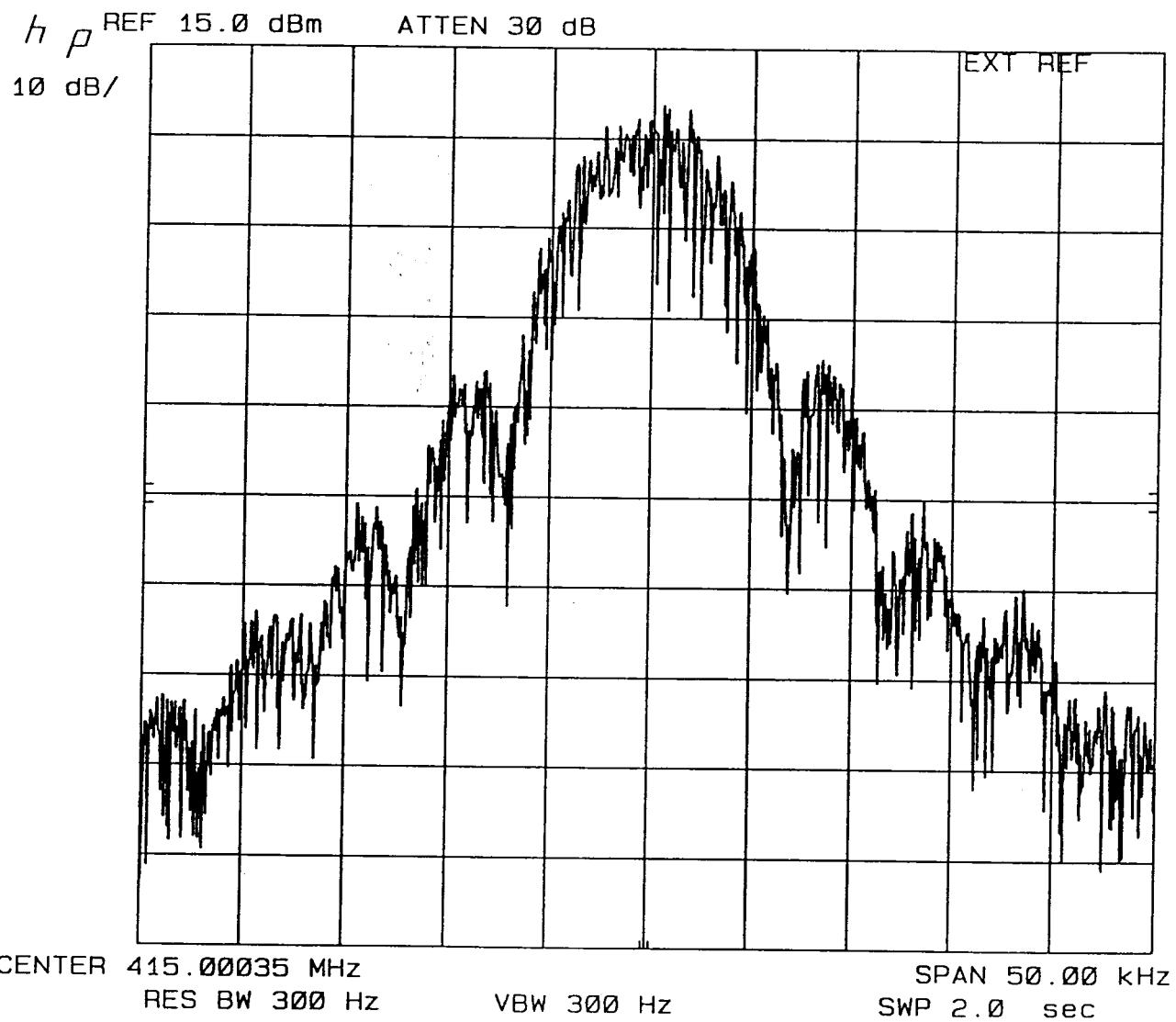
EXHIBIT 10E

FCC ID NO. AXATR-307-A

OCCUPIED BANDWIDTH

Modulation Sideband Spectrum

Measured Per EIA RS-152-B



Referenced to the Unmodulated Carrier
Modulated with Pseudorandom Data 9600 Baud
Analyzer: Vertical = 10 dB/Div.

APPLICANT:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-307-A

SPURIOUS EMISSIONS

Reference 2.991 spurious emissions at the antenna terminals (conducted) when properly loaded with an appropriate artificial antenna were measured per EIA RS-152B, Paragraph 4.3.

Results are as shown in the following Exhibits:

<u>Exhibit</u>	<u>Carrier Frequency</u>
11B	403 MHz, 45 Watts
11C	403 MHz, 90 Watts
11D	430 MHz, 45 Watts
11E	430 MHz, 90 Watts

Equipment used was:

Hewlett Packard Spectrum Analyzer 8566B.

Reference 2.993 field strength of spurious radiations was measured on our three meter range. The site and equipment are described in the site description and attenuation measurements for the Ericsson/GE three meter radiation site #2 filed with the FCC in Columbia, Maryland, in November of 1990. The measurement procedure is per EIA RS-152B, but done on a three meter test site. Results are shown on the following Exhibits:

<u>Exhibits</u>	<u>Carrier Frequency</u>
11F	403 MHz, 45 Watts
11G	403 MHz, 90 Watts
11H	430 MHz, 45 Watts
11I	430 MHz, 90 Watts

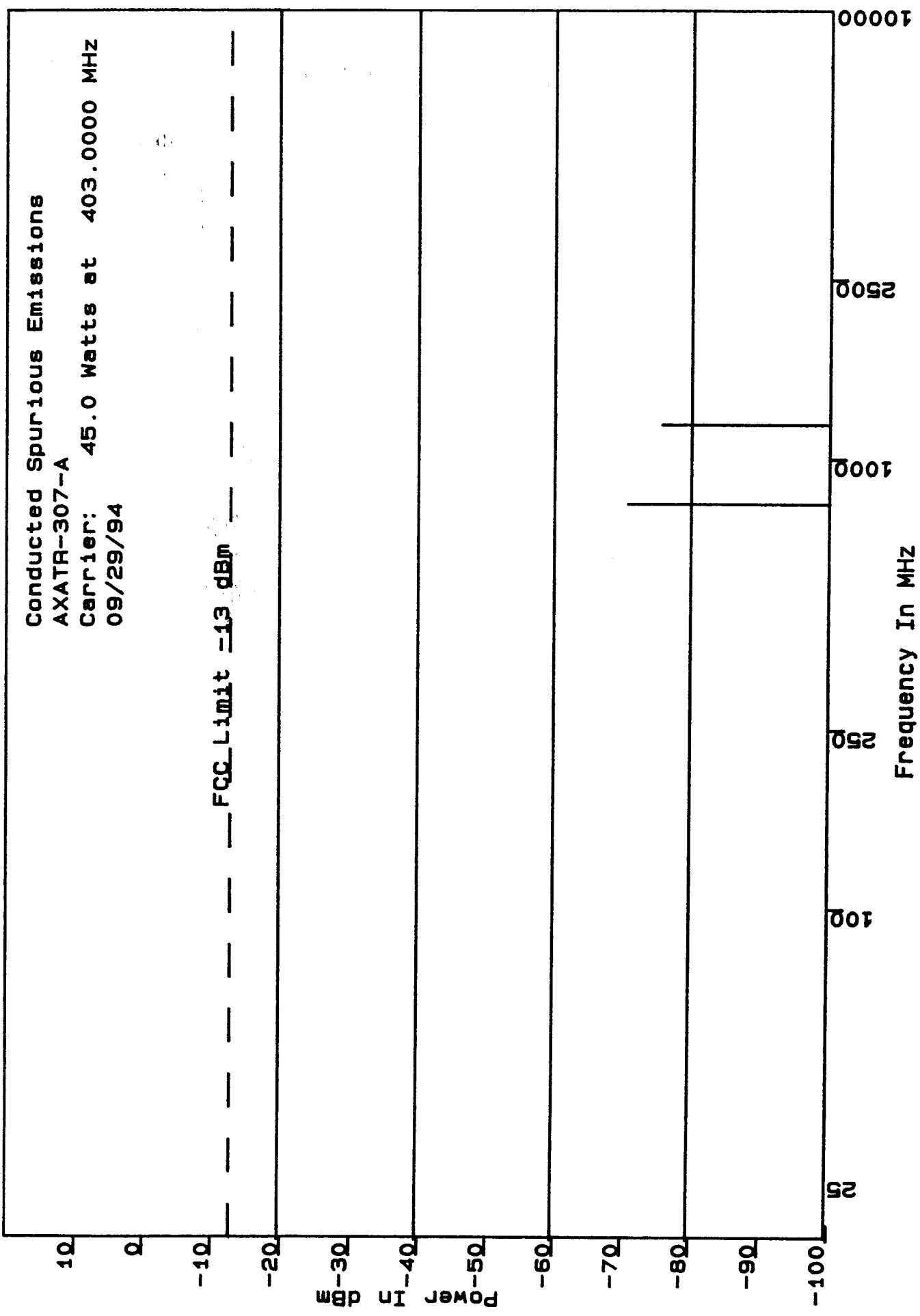


EXHIBIT #10

Conducted Spurious Emissions
AXATR-307-A
Carrier: 90.0 Watts at 403
09/29/94

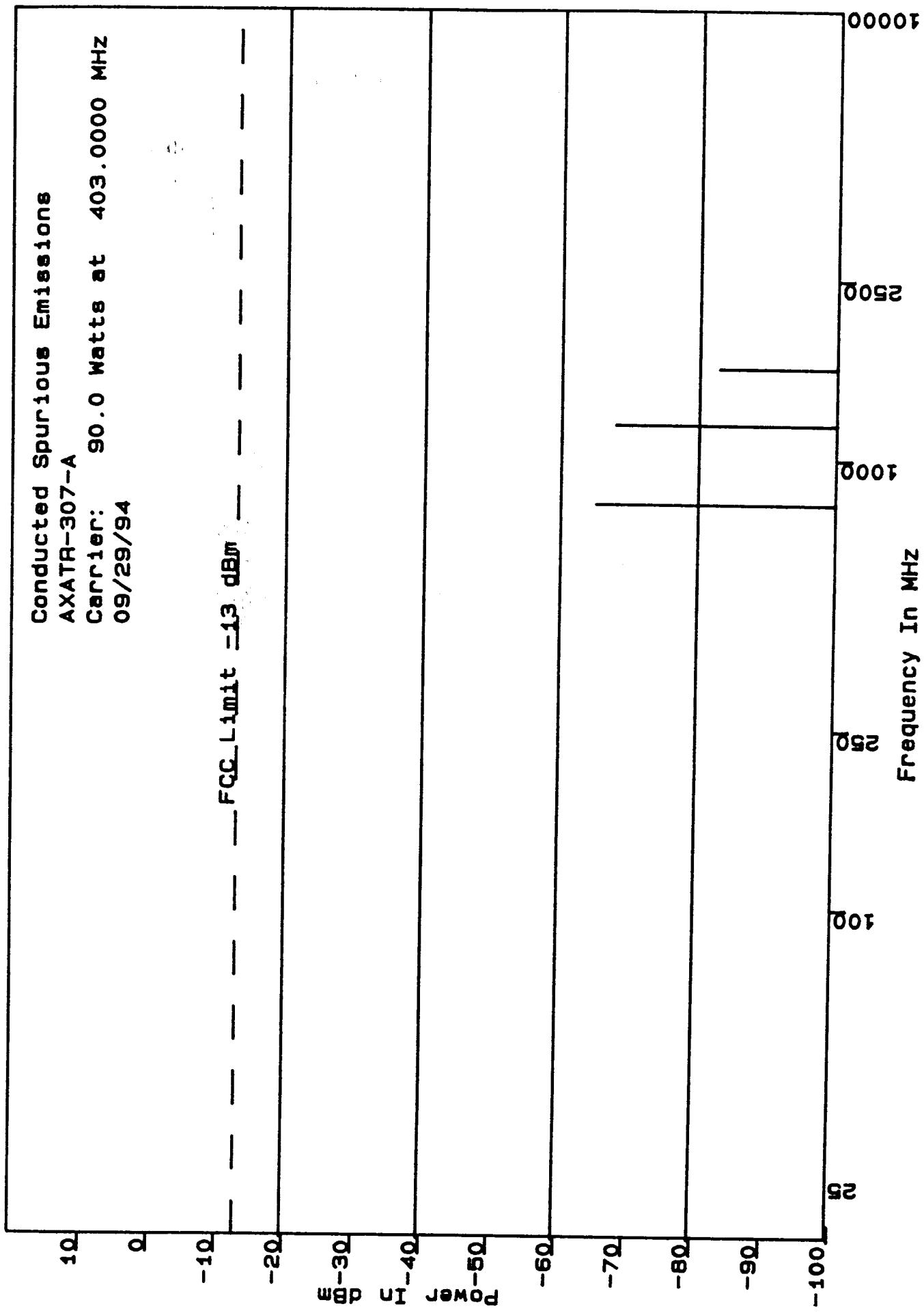


Exhibit #11D

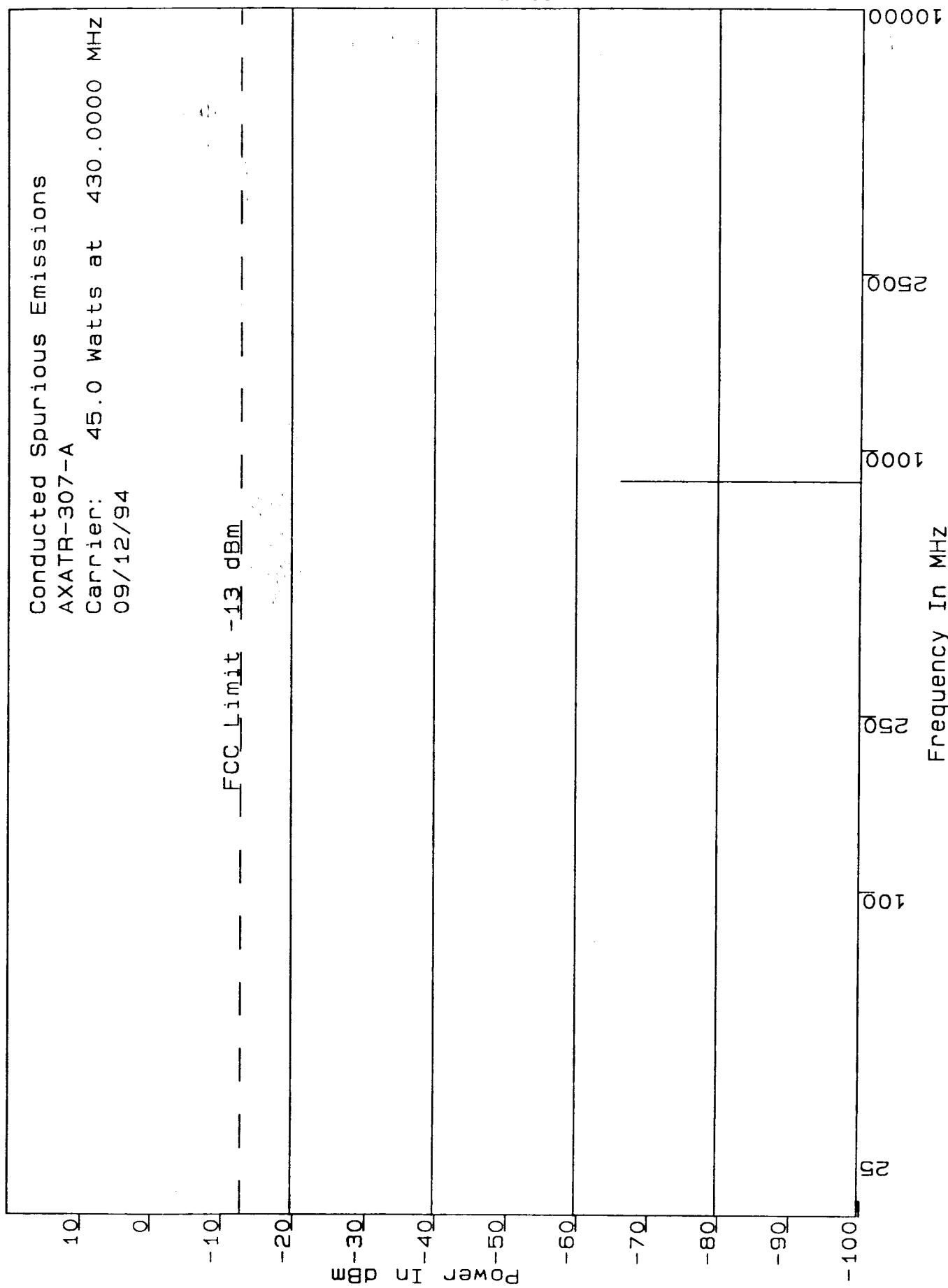
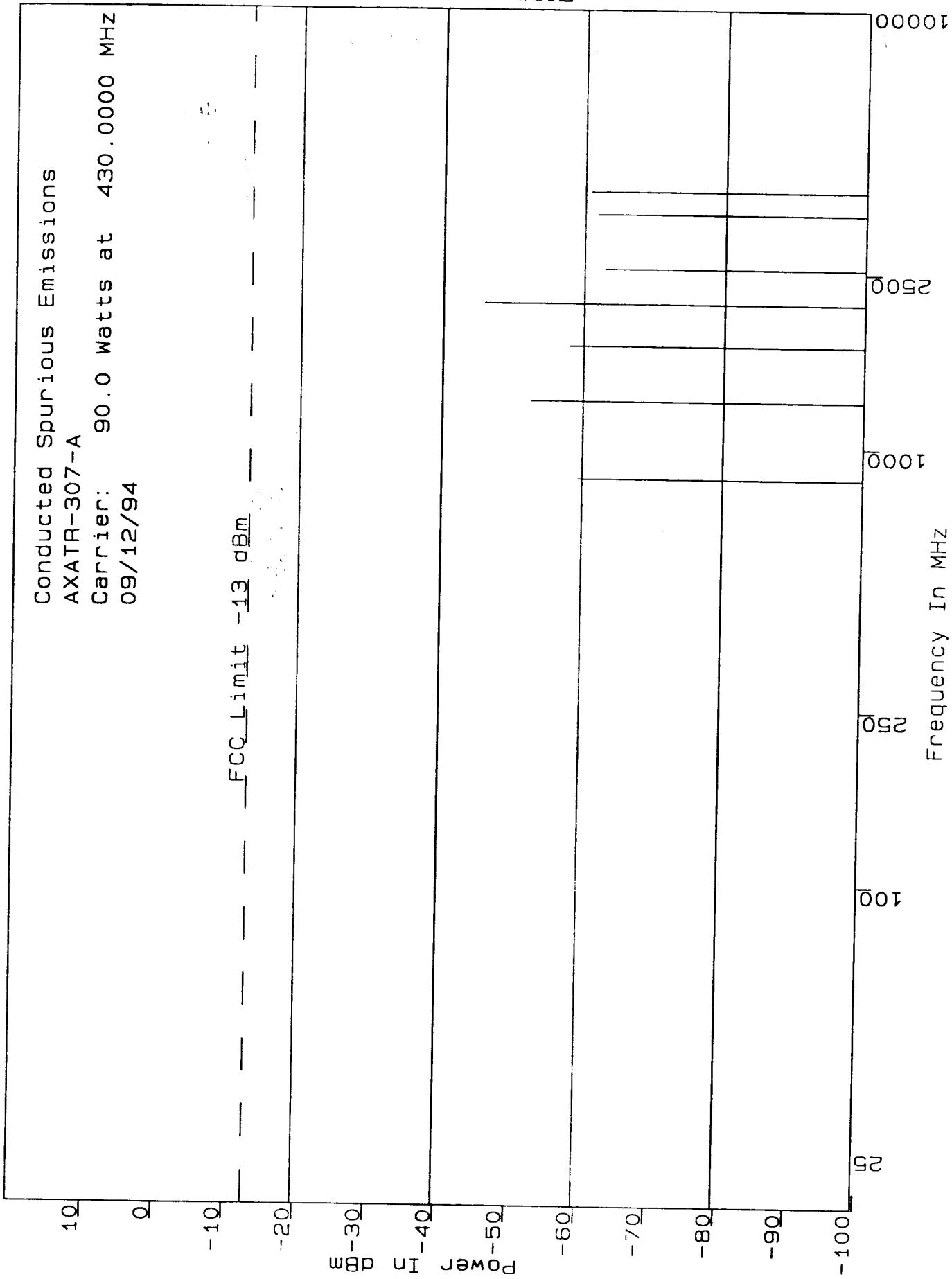
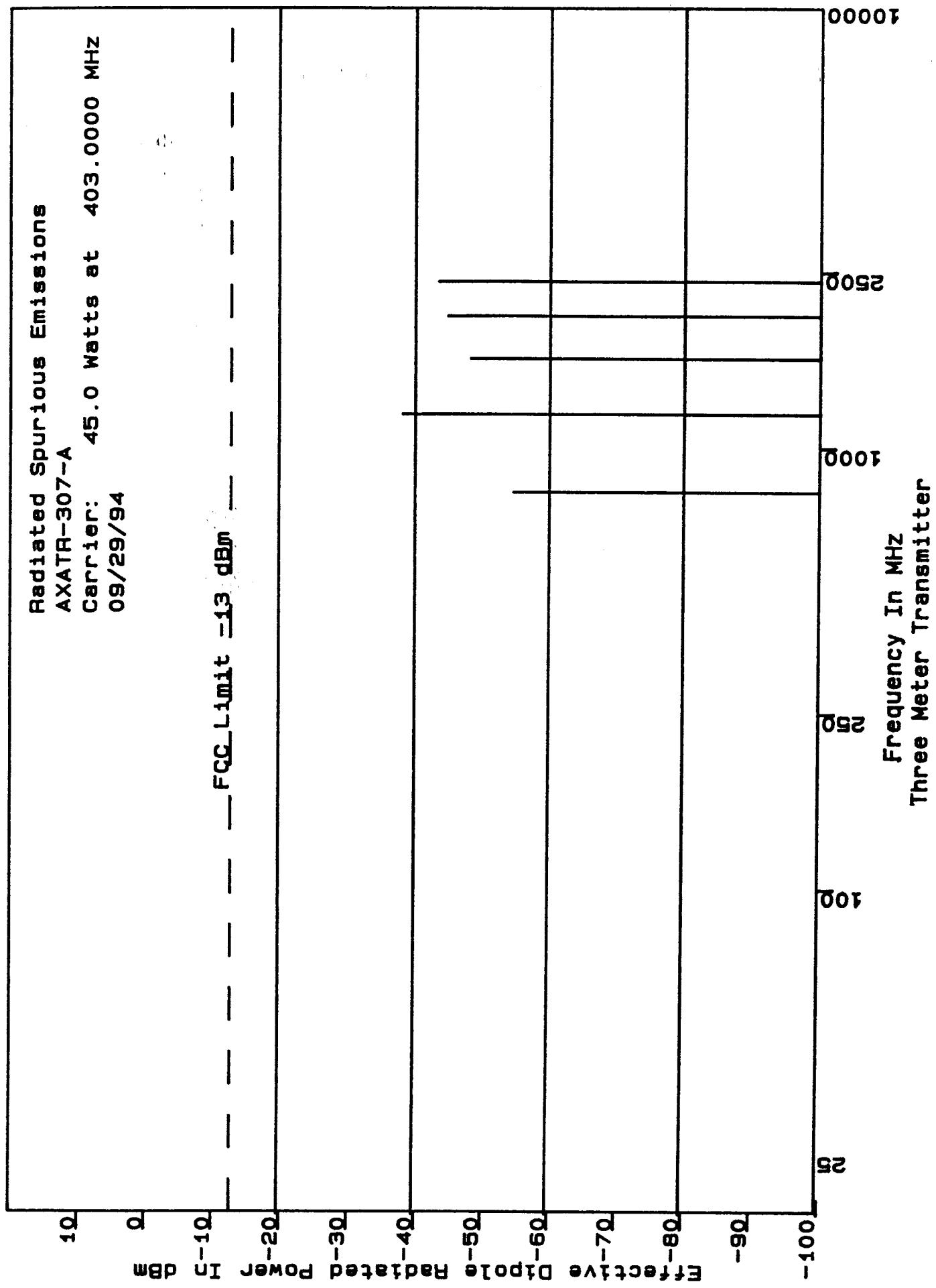


Exhibit #11E

Conducted Spurious Emissions
AXATR-307-A
Carrier: 90.0 Watts at 430.0000 MHz
09/12/94





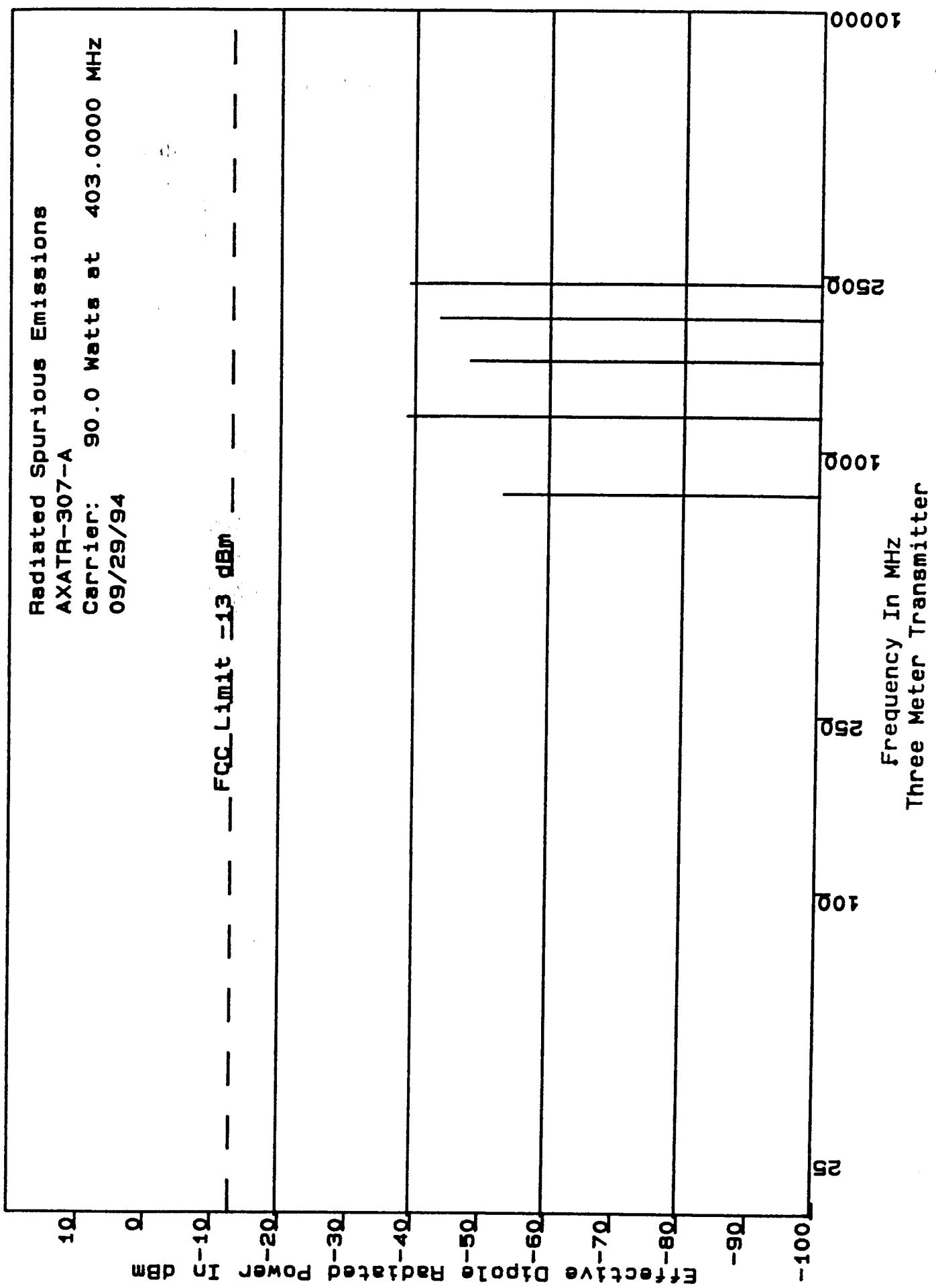


Exhibit #11H

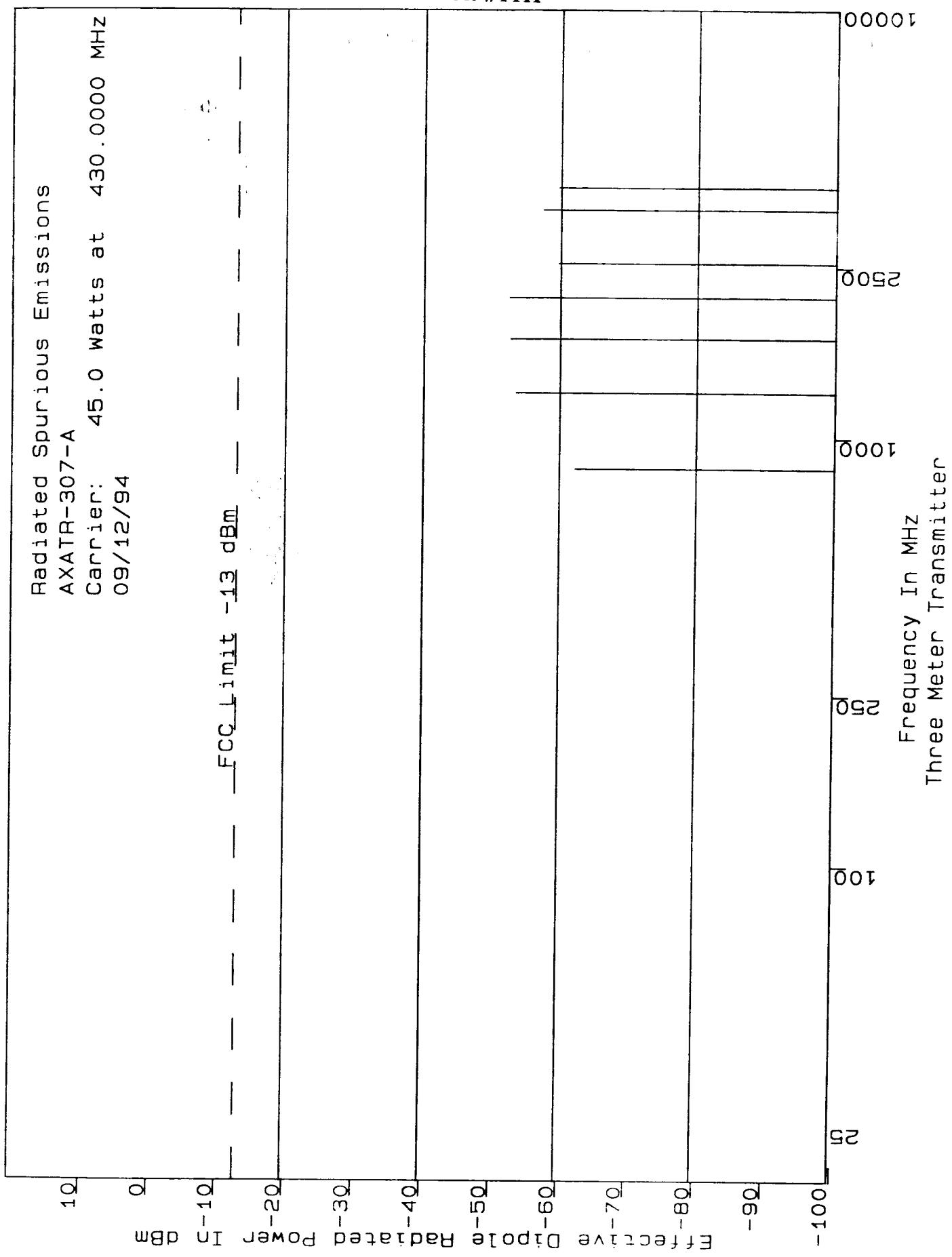
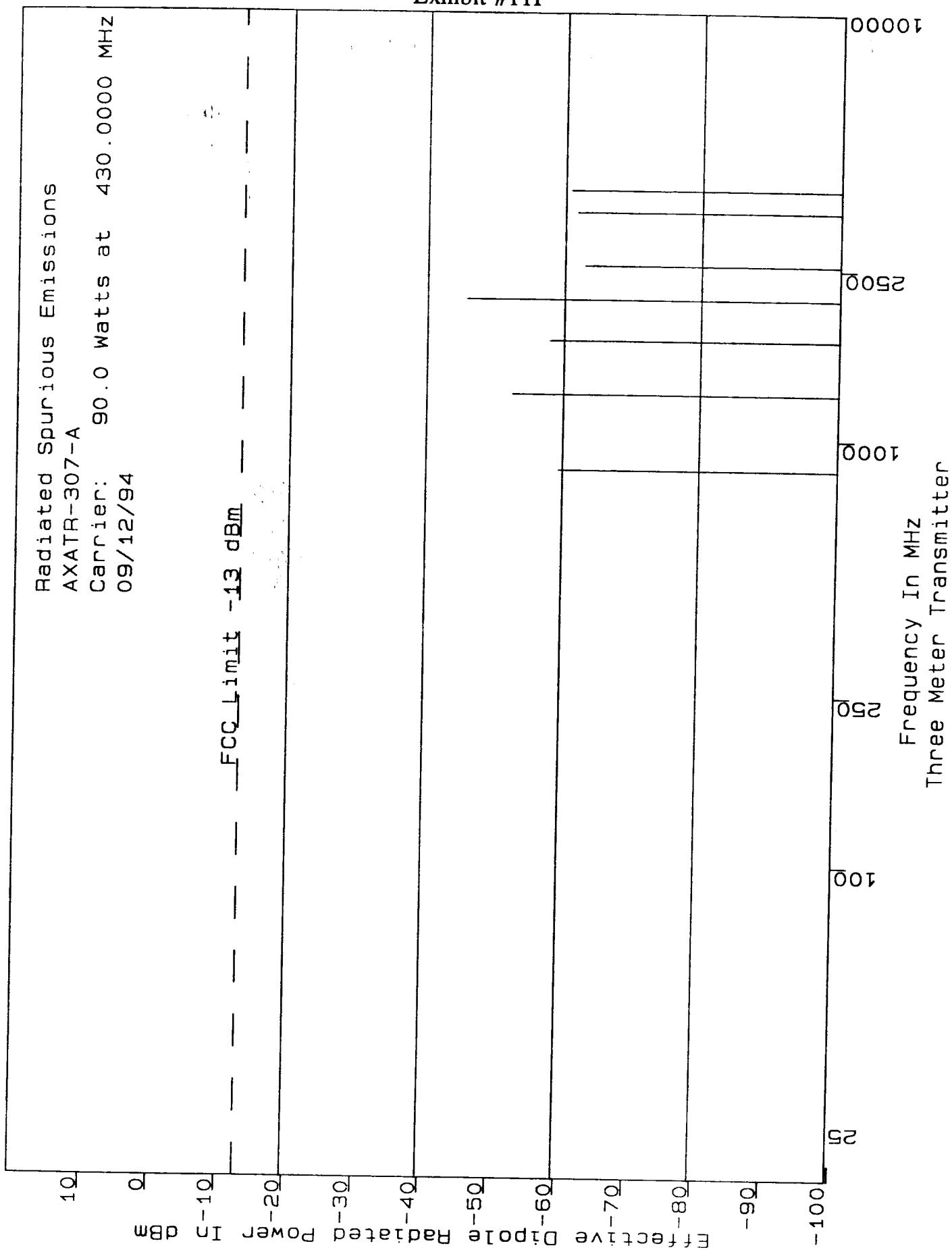


Exhibit #11I

Radiated Spurious Emissions
AXATR-307-A
Carrier: 90.0 Watts at 430.0000 MHz
09/12/94



APPLICANT:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-307-A

FREQUENCY STABILITY

Paragraph (a, 1) (b) (d, 1) variation of output frequency as a result of either temperature or voltage variation is reported in the graphs on the following sheets.

Frequency Stability:

Measurement Procedure: Please reference amended KT-140-A filing for Supplemental Report on Oscillator Measurements.

Exhibit 12B
Exhibit 12C

Frequency Versus Temperature
Frequency Versus Voltage

Test Equipment Used:

Hewlett Packard Counter	Model 5386A
Thermotron Temperature Chamber	Model 2800
Hewlett Packard Voltmeter	Model 3478A

FREQUENCY Vs TEMPERATURE
AXATR-307-A

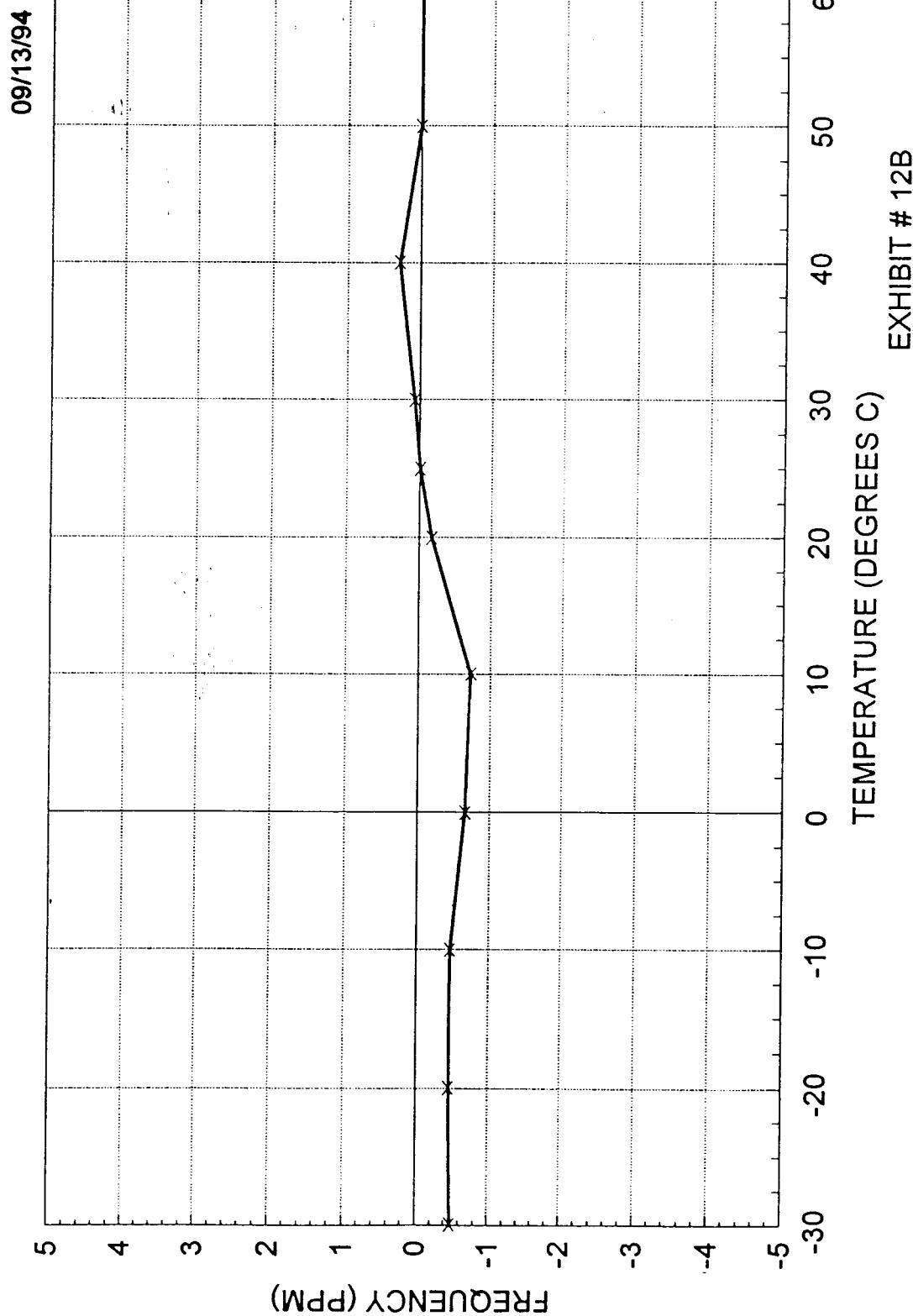


EXHIBIT # 12B

FREQUENCY Vs VOLTAGE
AXATR-307-A

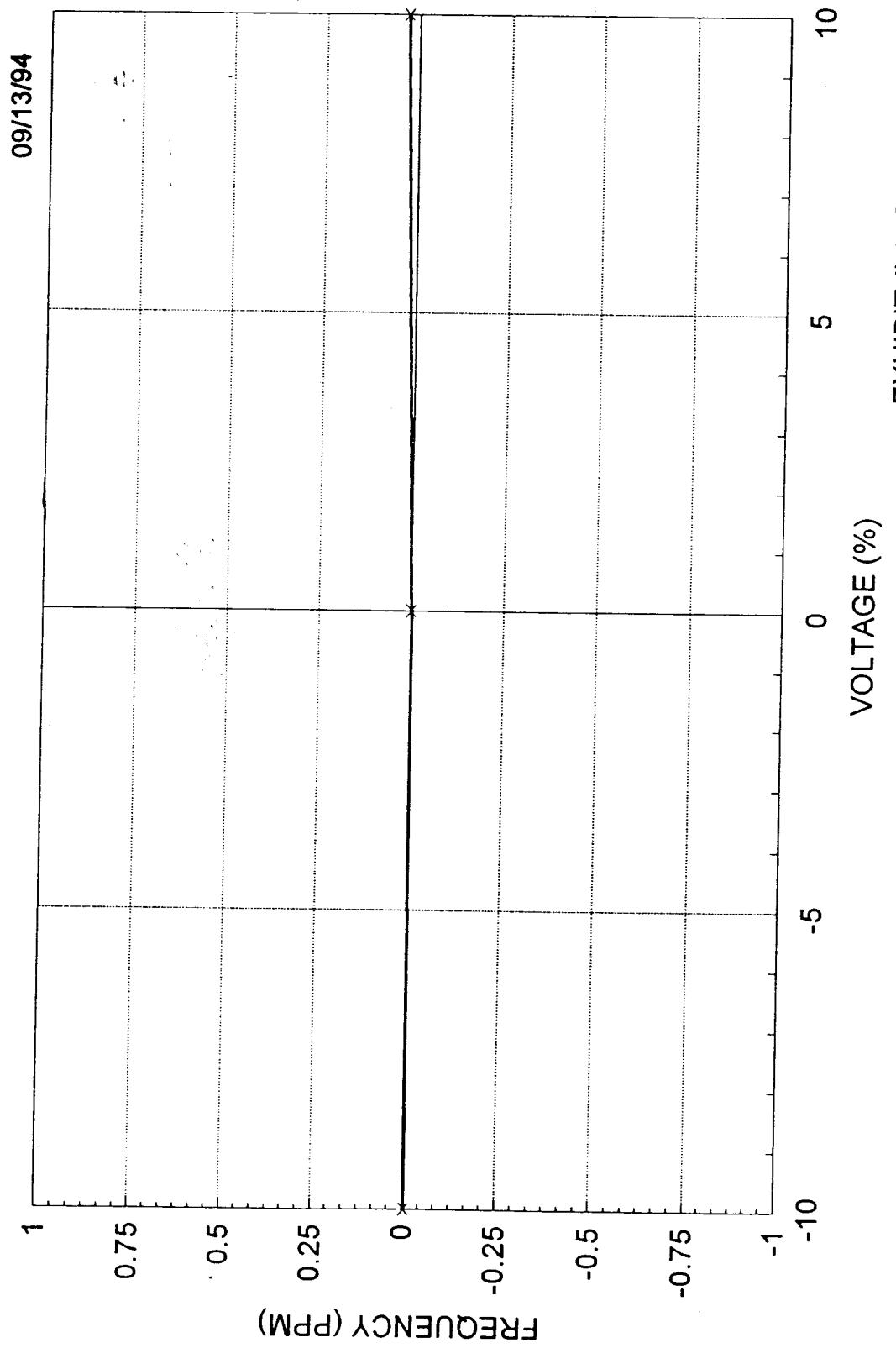
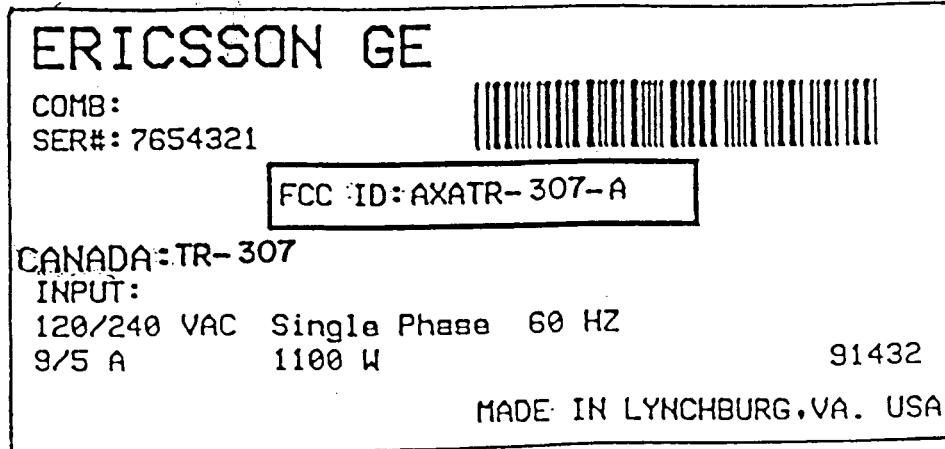


EXHIBIT # 12C

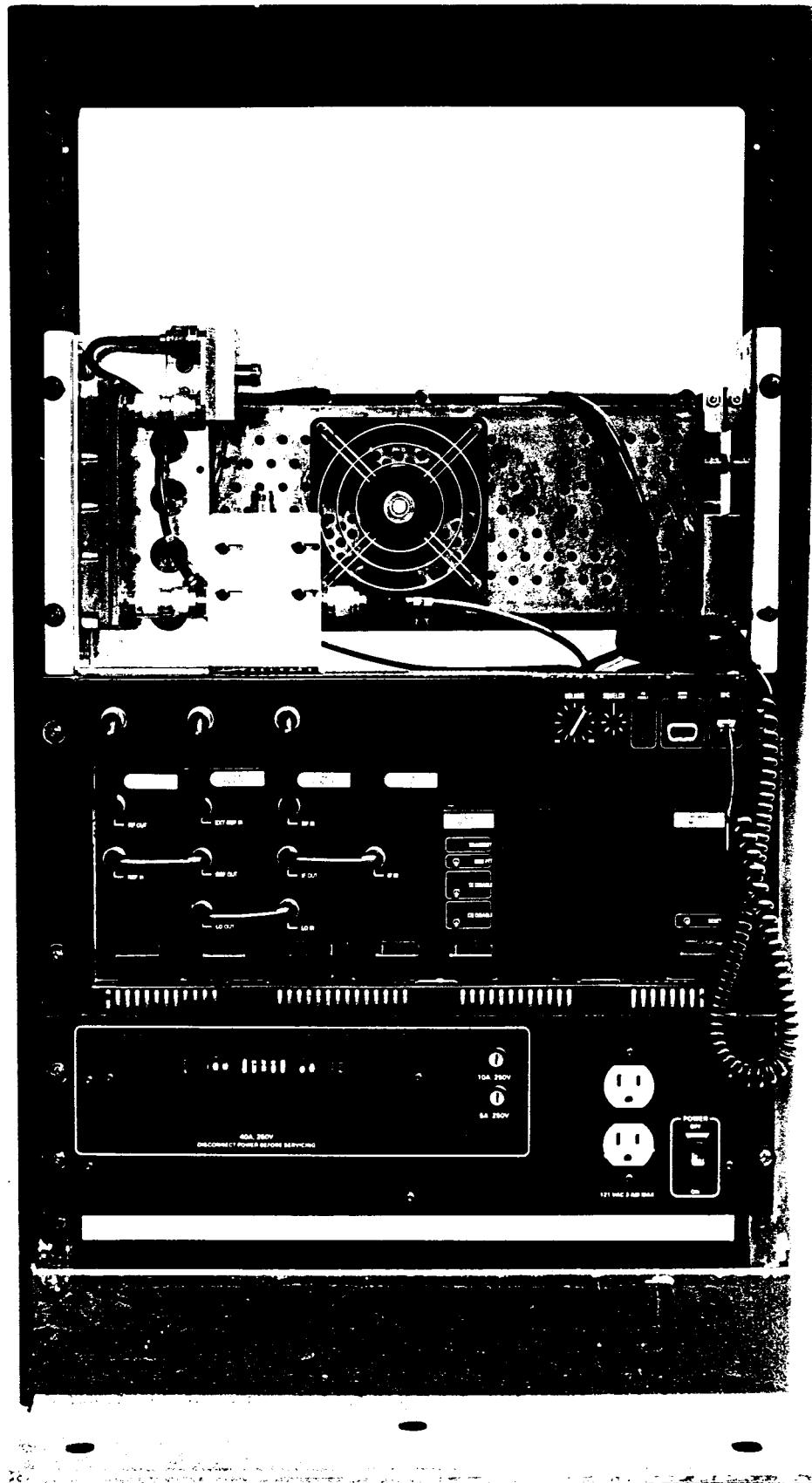
APPLICANT:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-307-A

IDENTIFICATION NAMEPLATE

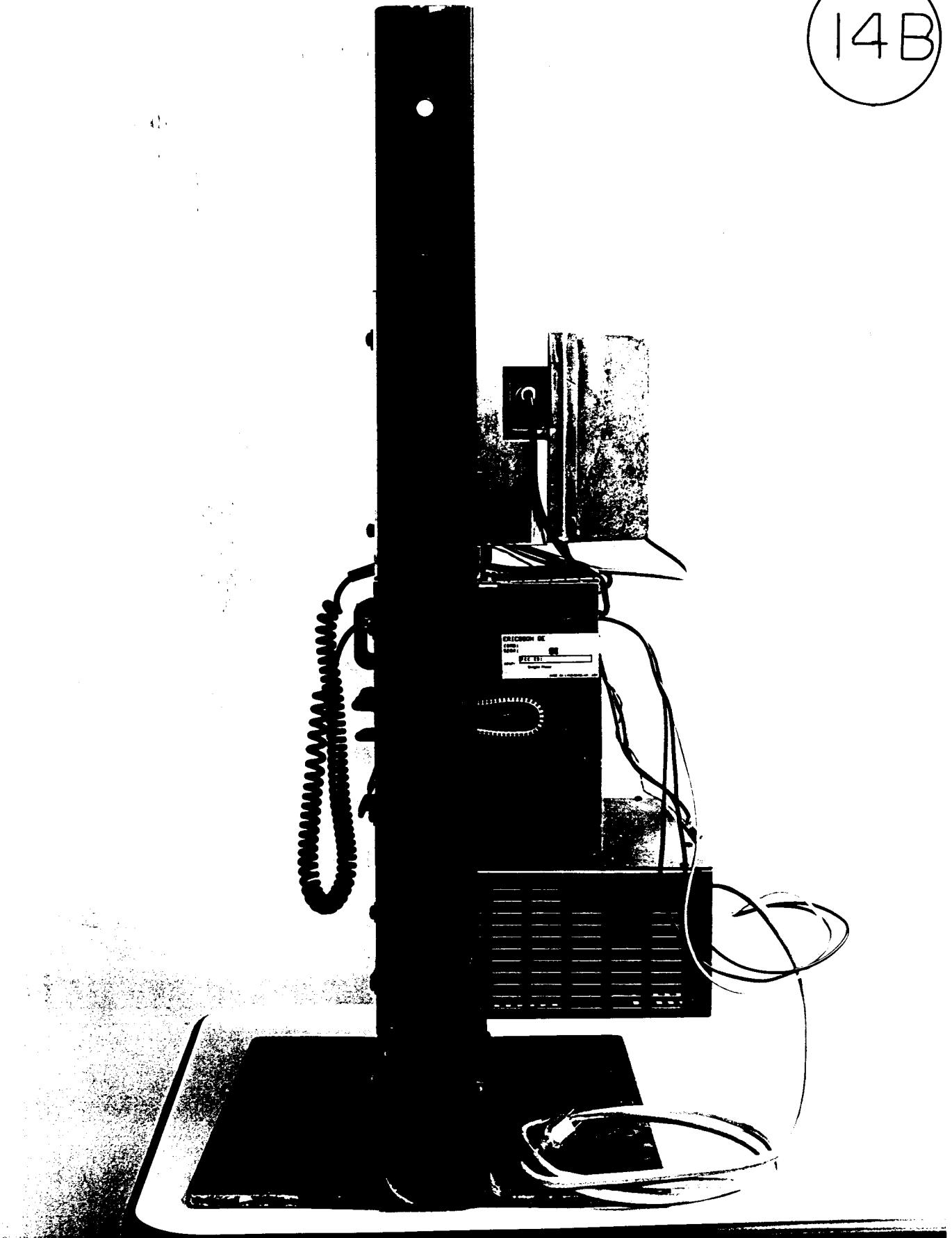


14A



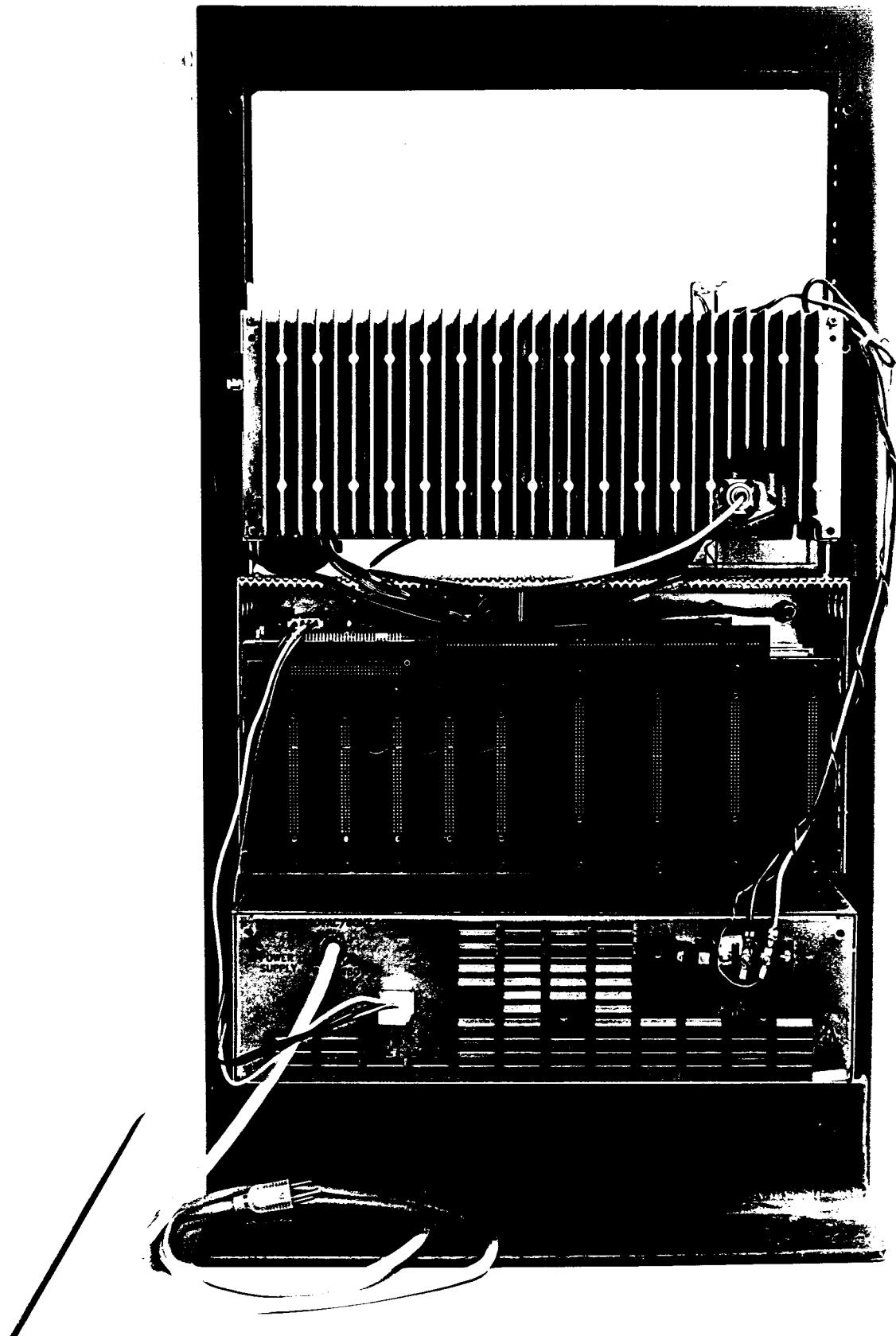
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14B



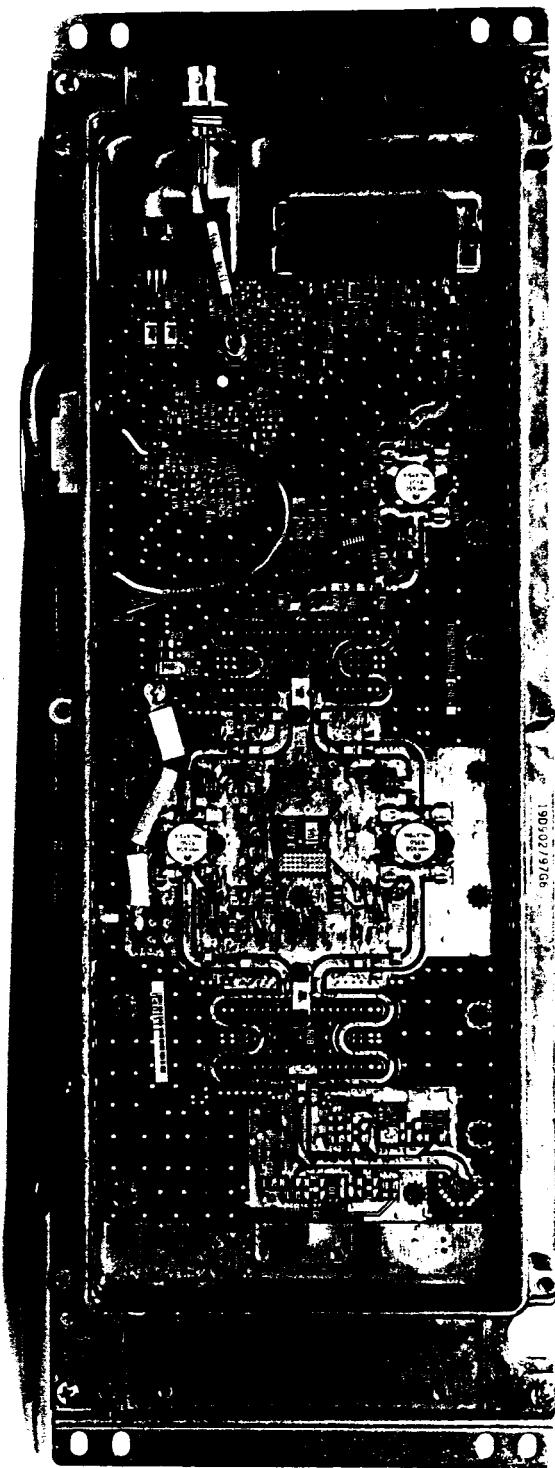
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14C



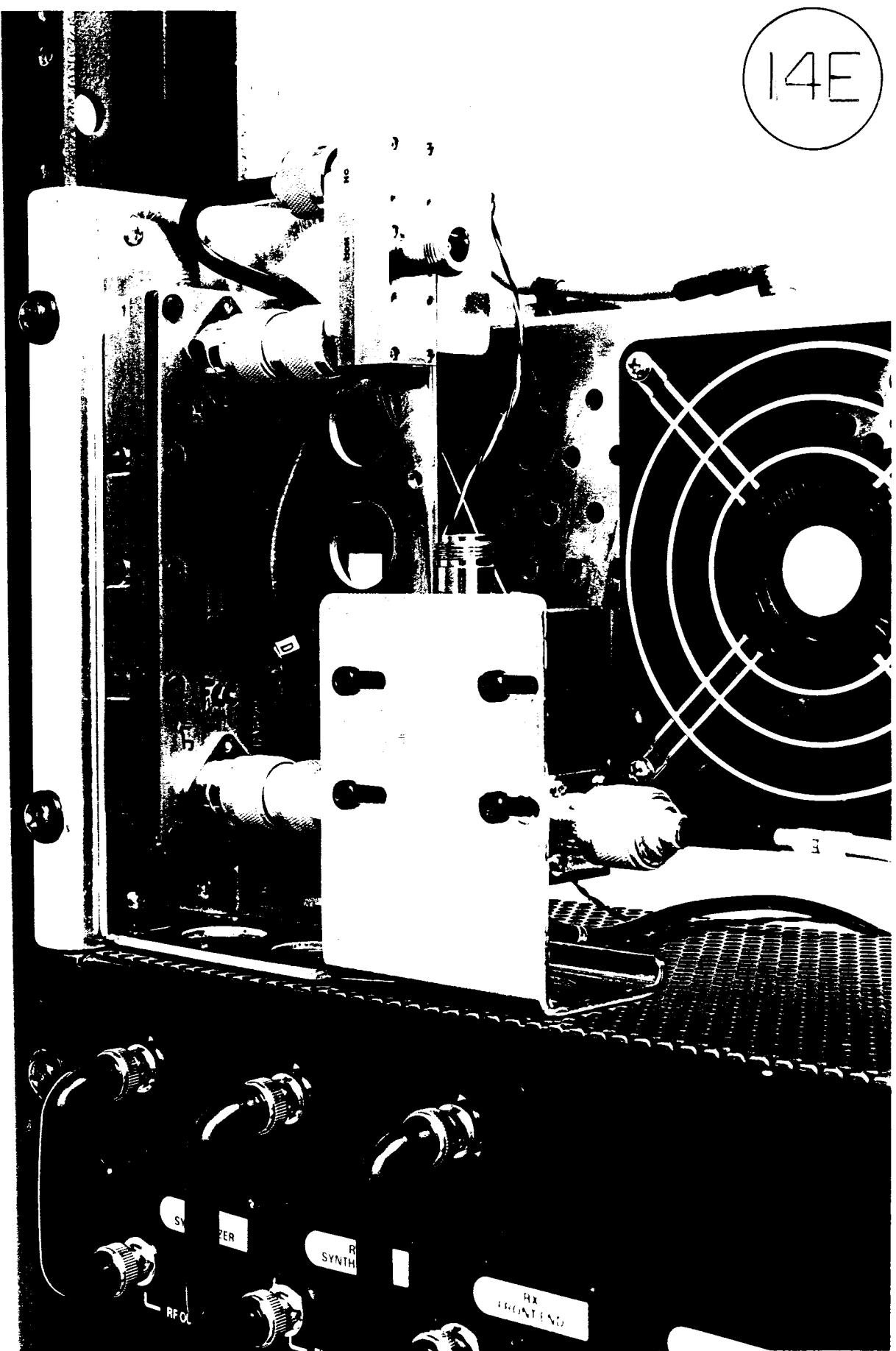
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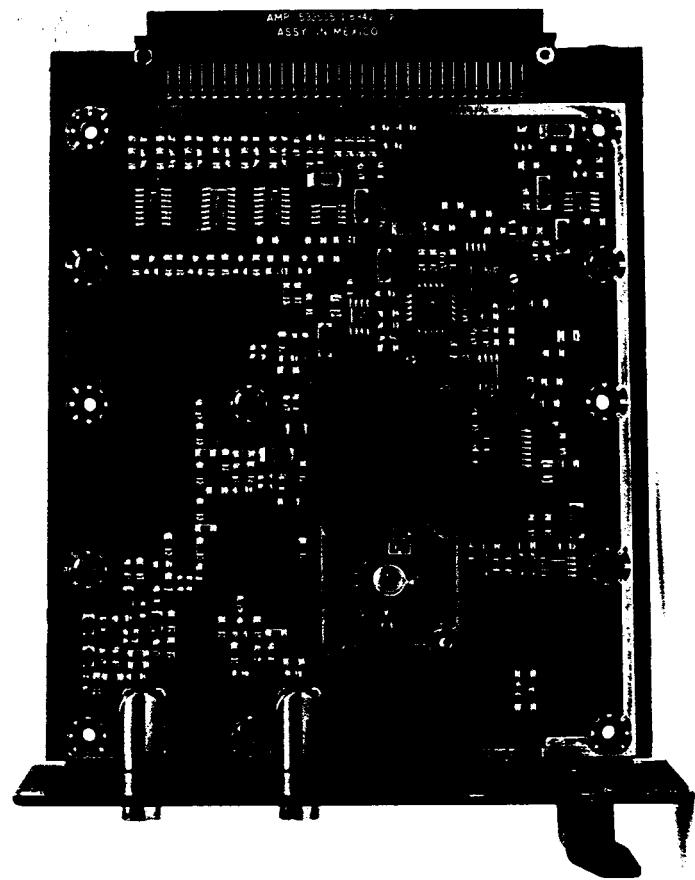
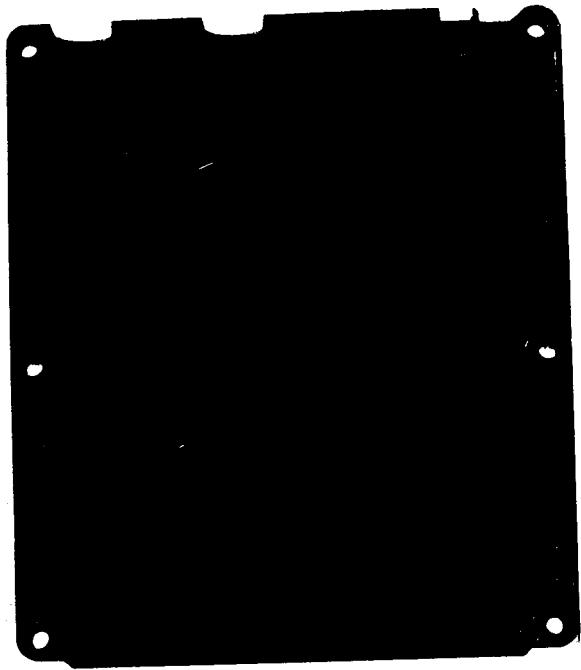
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14E



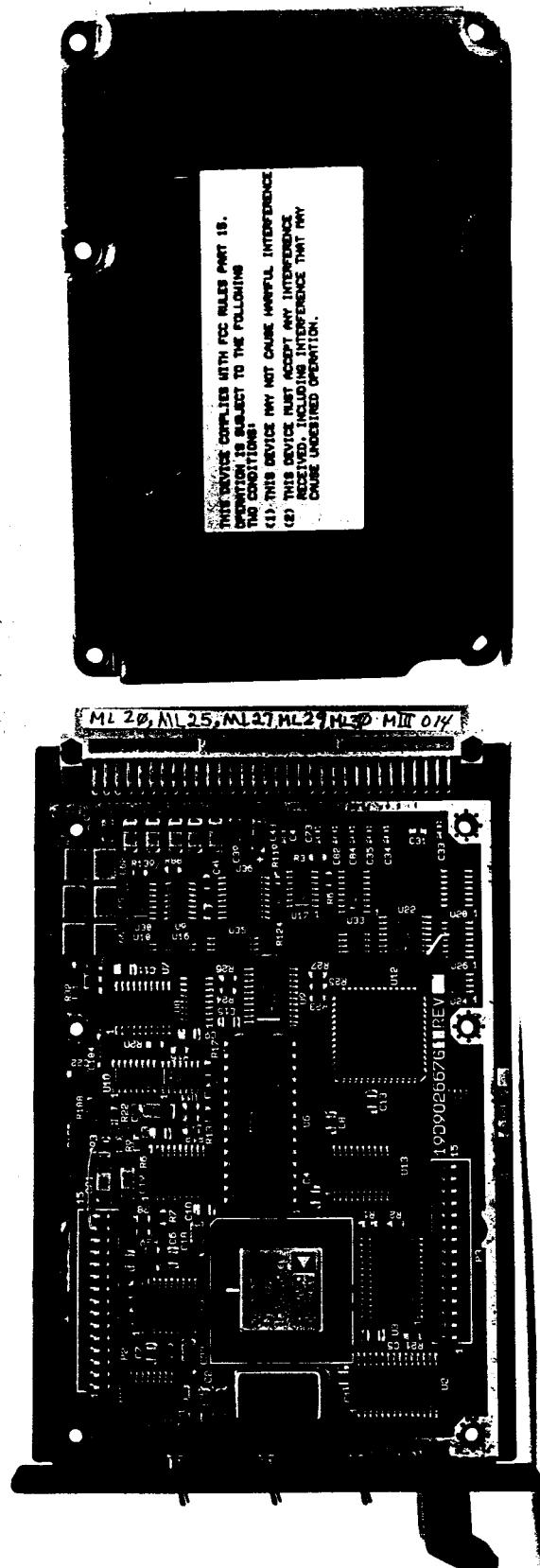
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14F

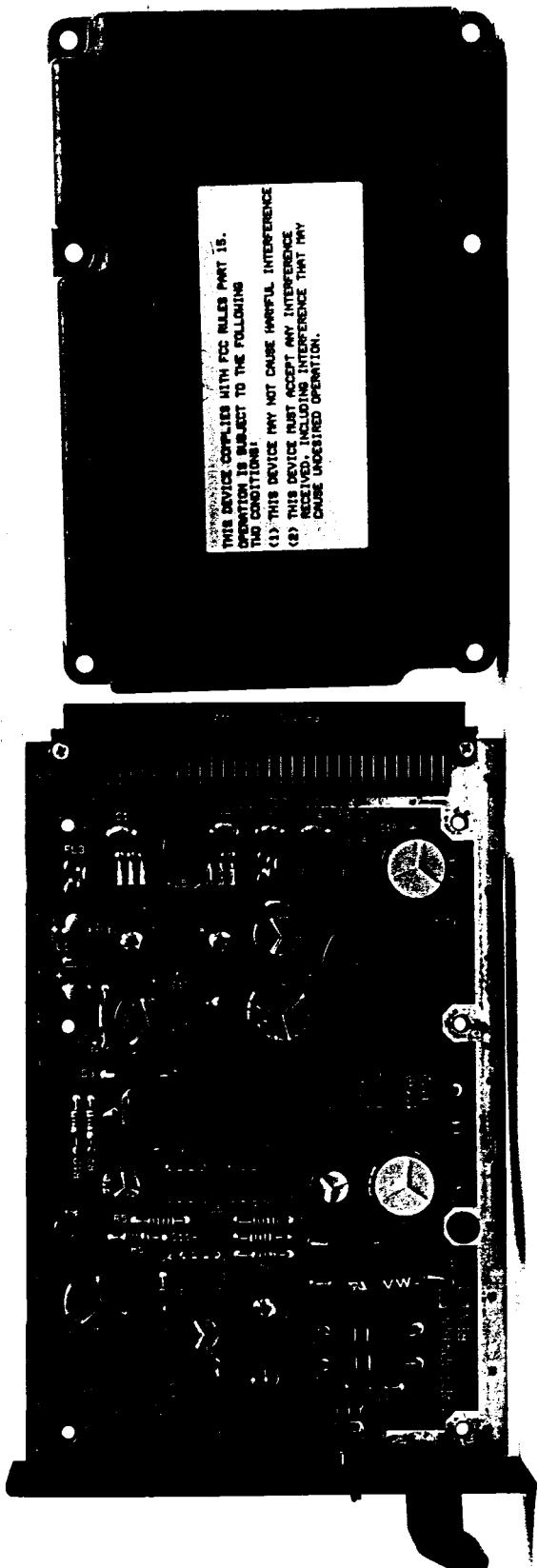


8-2-2

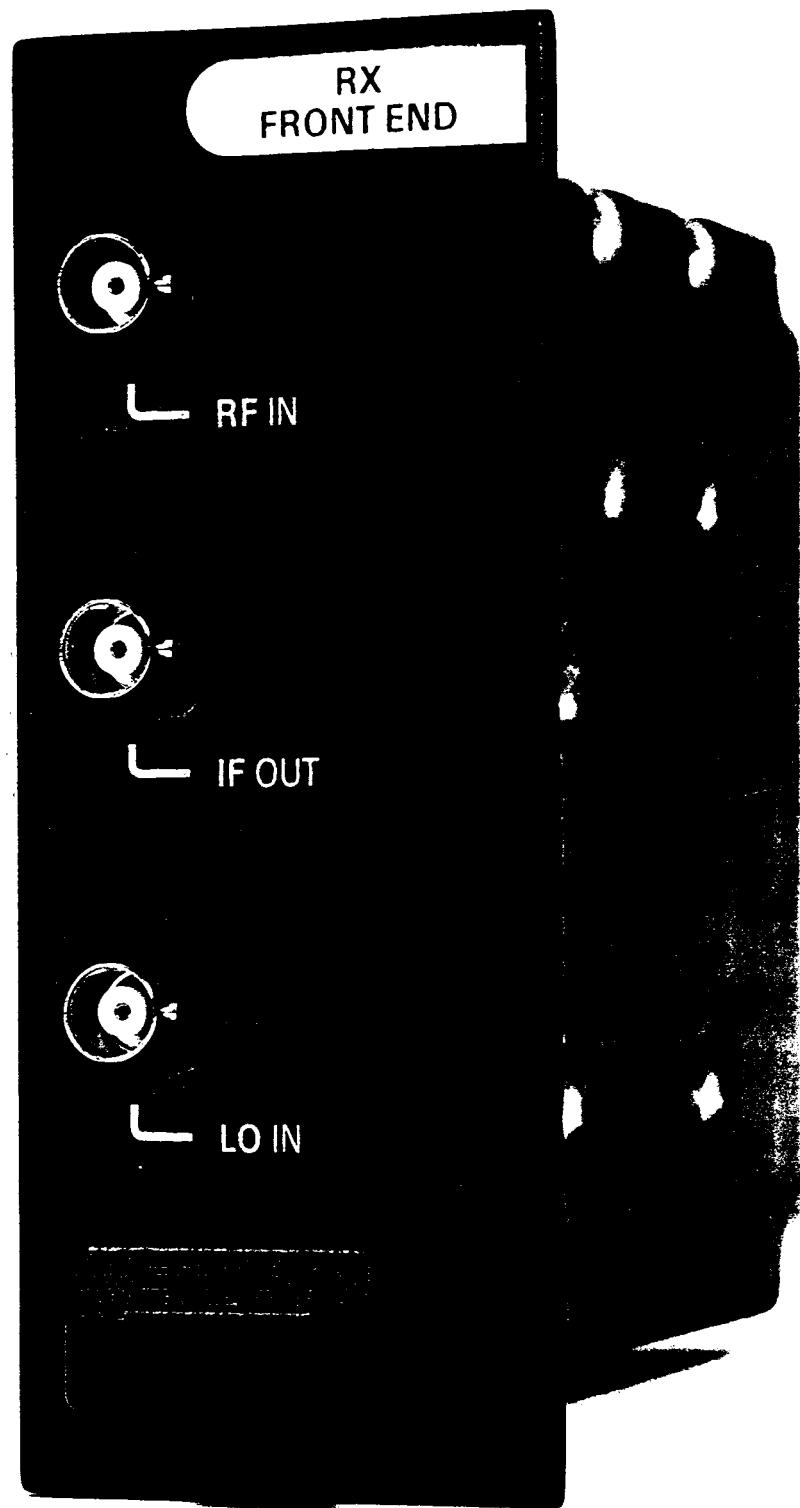
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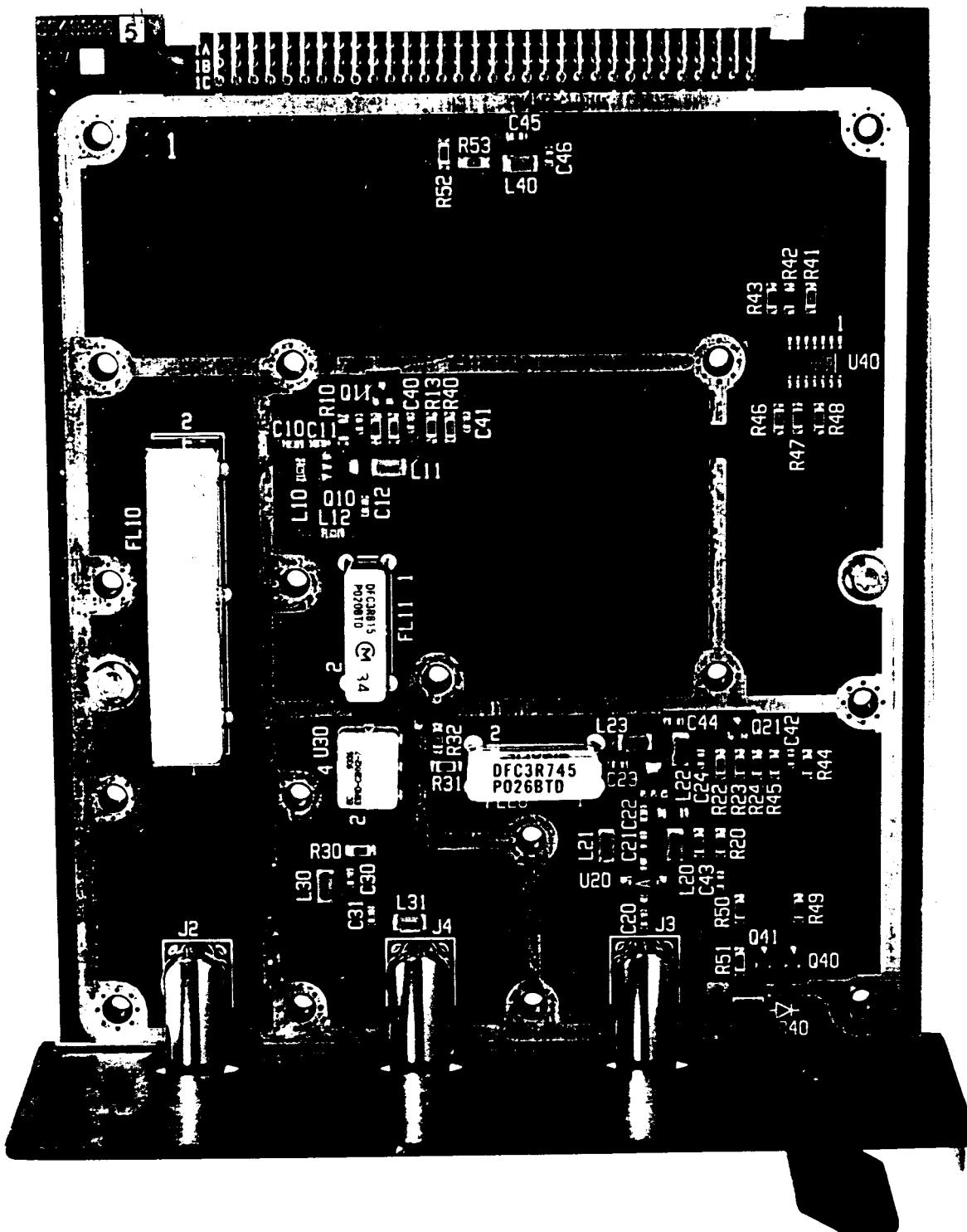
14H



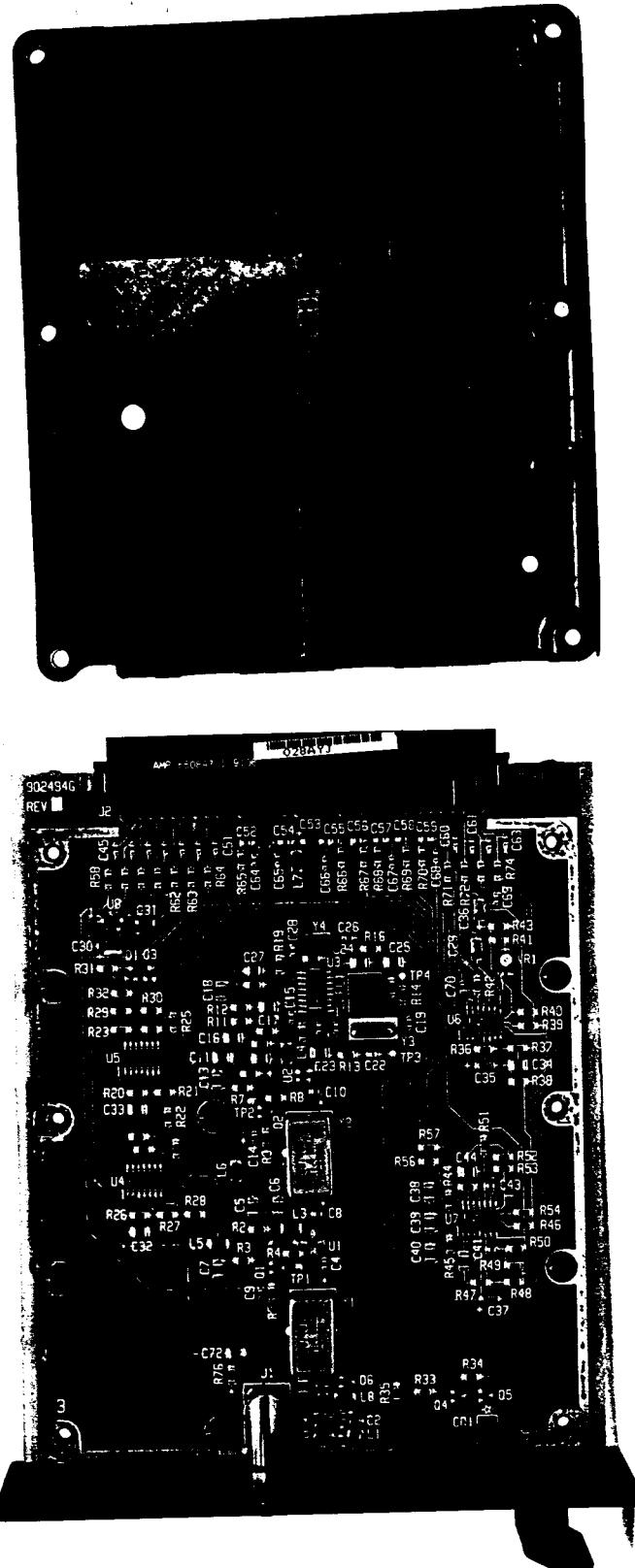
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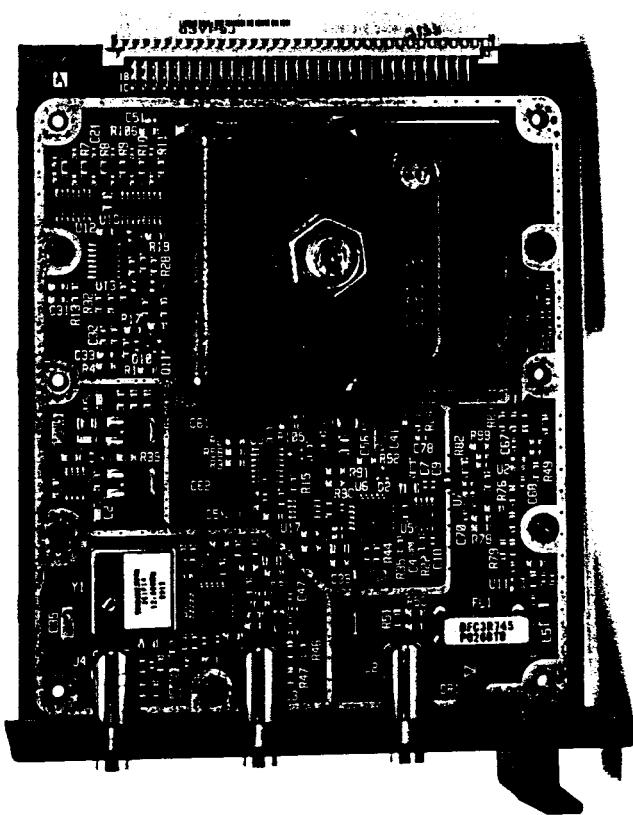
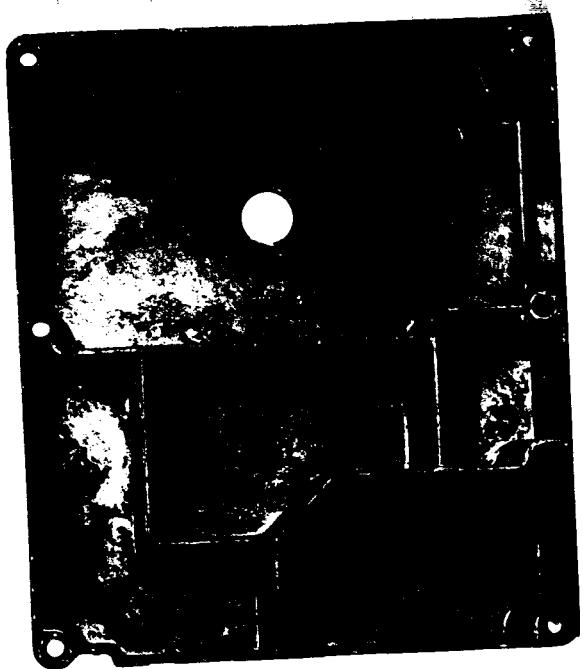
14J



14K

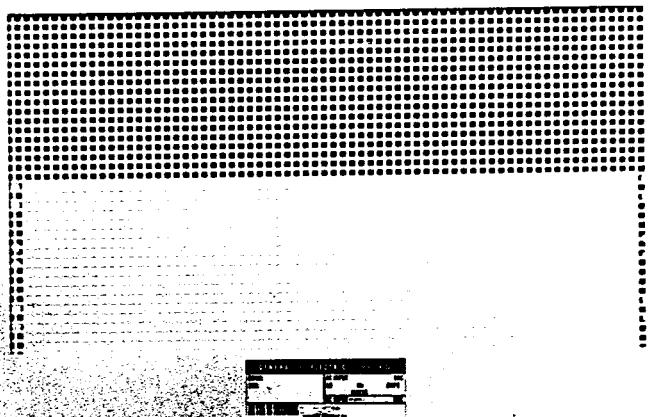


14L



127-2-6

14M



1-29-87-1