

Is your RETURN ADDRESS completed on the reverse side?

SENDER: Complete items 1 and 2 when additional services are desired; and complete items 3 and 4.
Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☐ Show to whom delivered, date, and addressee's address. (Extra charge)
2. ☐ Restricted Delivery. (Extra charge)

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

4. Article Number

Type of Service:
☐ Registered ☐ Insured
☐ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature - Addressee
X

6. Signature - Agent
X

7. Date of Delivery

8. Addressee's Address (ONLY if requested and fee paid)

Thank you for using Return Receipt Service

PS Form 3811, Mar. 1988 U.S.G.P.C. 1986-212-885 DOMESTIC RETURN RECEIPT



MB016886958

ORIGIN		Date In:	Postage	
Post Office ZIP Code	Time In: A M PM		\$	
Initials of Receiving Clerk	Weight lbs. oz	FEES	Return Receipt \$	
			C.O.D. \$	
ACCEPTANCE				
<input type="checkbox"/> Next Day Delivery or <input type="checkbox"/> Second Day Delivery <input type="checkbox"/> By 12 Noon or <input type="checkbox"/> By 3:00 PM <input type="checkbox"/> Express Mail Military Service <input type="checkbox"/> International Express Mail Country Code		Total Postage & Fees \$		
Express Mail Corporate Account No.:		Federal Agency Account No.:		
FROM:				
Jhon P. Rothgeb Specialist - Regulatory Programs Ericsson GE Mobile Communications Inc. Mountain View Road - Room 2669 Lynchburg, Virginia 24502				

For Postal Use

DESTINATION	Date of Delivery	Time of Delivery	A M PM
X Signature of Addressee or Agent			
DELIVERY WAS ATTEMPTED	Date:	Time	A M PM
Signature of Delivery Employee	2.		
1.			
Waiver of Signature and Indemnity (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. SIGNED:	

MAILING LABEL-Service Analysis & Proof of Delivery

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

For Customer Use

Label 11-B (July 1988)

Press Hard. You Are Making 4 Copies

Remove The Backing Sheet To Expose Adhesive Before Applying The Label To Your Package



OBILE COMMUNICATIONS INC.
HBURG, 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
531

10-29-93

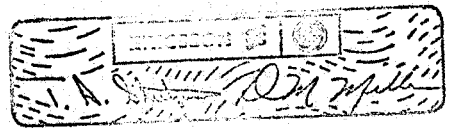
No. 861932

*****370DOLLARS AND 00 CENTS

\$370.00

ORTH CAROLINA, N.A.

COMMUNICATIONS COMMISSION



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0000861932 0531003551010450 037796



November 10,1993

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

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

<u>FCC ID</u>	<u>FEE</u>
AXATR-329-A2	\$370

A handwritten signature in black ink, appearing to read "John P. Rothgeb", is written over the typed name.

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

ENCLOSURES: check
Filing for Equipment Authorization Branch

FEDERAL COMMUNICATIONS COMMISSION
FEE PROCESSING FORM



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 85 characters - refer to Instruction (2) on reverse of form)

Mountain View Road

MAILING ADDRESS (Line 2) (if required) (Maximum 85 characters)

CITY

Lynchburg

STATE OR COUNTRY (if foreign address)

Virginia

ZIP CODE

24502

CALL SIGN OR OTHER FCC IDENTIFIER (if applicable)

AXATR-329-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	FEE MULTIPLE (if required)	FEE DUE FOR FEE TYPE CODE IN COLUMN (A)	FOR FCC USE ONLY									
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E	F	T										
\$	370.00											

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									
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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.												
<table><tr><td colspan="2">TOTAL AMOUNT REMITTED WITH THIS APPLICATION OR FILING</td></tr><tr><td>\$</td><td>370.00</td></tr></table>			TOTAL AMOUNT REMITTED WITH THIS APPLICATION OR FILING		\$	370.00	FOR FCC USE ONLY					
TOTAL AMOUNT REMITTED WITH THIS APPLICATION OR FILING												
\$	370.00											

FCC FORM 731		FEDERAL COMMUNICATIONS COMMISSION Washington, DC 20554		Approved by OMB 3060-0057 Expires 4/30/92 See reverse for information regarding public burden estimate.	
APPLICATION FOR EQUIPMENT AUTHORIZATION					
1. FCC ID: A X A		(a) Grantee Code		(b) Equipment Product Code (14 characters, maximum) TR-329-A2	
2.(a) Applicant's FULL business name Ericsson GE Mobile Communications, Inc.				FOR FCC FEE STAFF USE	
(b) Applicant's COMPLETE mailing address (Number, street, or P.O. Box, city, state, ZIP code) Mountain View Road Lynchburg, Va. 24502				Receipt Date	
(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 Hamlet Sarokhanian, Senior Technical Leader				Fee Amount	
(b) Telephone Number (USA ONLY) 804 948 6246				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				LI CODE Reviewer	
Frequency range MHz	Rated RF power output watts	Frequency tolerance % Hz ppm	Emission designator	DN	DM RG
851-870 MHz	50-100 Watts	+1.0 ppm	16K0F3E 14K0F3E 15K0F2D 13K0F2D 15K0F2B 13K0F2B 16K0F1D 15K0F1D 16K0F1E 15K0F1E		
10. FCC ID listed on other simultaneously filed application(s) N/A				8.(a) Kind of Equipment Station Transceiver	
11.(a) Type of Equipment tested: <input type="checkbox"/> Production <input checked="" type="checkbox"/> Pre-production <input type="checkbox"/> Prototype				(b) Equipment operated under FCC Rules Part(s) 90	
(b) Testing Company, if different than 2(a) above: N/A				9.(a) FCC ID before change or modification 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				(b) Grant date of FCC ID in 9(a) above 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 Ericsson GE Mobile Communications, Inc. (Must agree with name in Item 2(a))					
John P. Rothgeb					
Written signature of authorized signer			Typed/printed name of authorized signer		
Specialist, Regulatory Programs					
Title of authorized signer			Date (Month, Day, Year)		

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-E	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-I	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 module showing front and solid casting for RF shielding.
14G	2.983 (g)	Exciter/synthesizer module with cover removed to show component board.
14H	2.983 (g)	System control module with cover removed to show components and solid casting for RF shielding.
14I	2.983 (g)	Switch mode supply module with cover removed to show components and solid casting for RF shielding.

EXHIBIT LIST

<u>EXHIBIT</u>	<u>PARA. REF.</u>	<u>DESCRIPTION</u>
14J	2.983 (g)	Receiver front end module with cover to show solid casting for RF shielding.
14K	2.983 (g)	Receiver front end module with cover removed to show component board.
14L	2.983 (g)	Receiver IF module with cover removed to show components and solid casting for RF shielding.
14M	2.983 (g)	Receiver synthesizer module with cover to show solid casting for RF shielding.
14N	2.983 (g)	Receiver synthesizer module with cover removed to show component board.
14O	2.983 (g)	Power amplifier showing 800 MHz buffer amplifier location.
14P	2.983 (g)	800 MHz buffer amplifier removed to show component board.
14Q	2.983 (g)	Typical nameplate location when mounted in cabinet.

APPLICANT:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-329-A2

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:

Consulting 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.

NAME:

Neil Leitch

POSITION:

Manager, Radio Design

DATE:

ERICSSON



November 10, 1993

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

Attention; Equipment Authorization Branch

Subject; Type Acceptance Application for FCC ID: AXATR-329-A2

Gentlemen,

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

The Station transceiver submitted in this filing operates in the 851-870 Mhz frequency range. This base station is capable of operation in both conventional, trunked and digital voice guard modes as shown in Exhibit 10E. Additionally, this station will operate in the NPSPAC 866 -869 MHz range and meets the requirements for operation in that frequency range.

The transmitter and receiver utilize common printed circuit boards, so a single identifier will be used for both.

Sincerely,

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

APPLICANT:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-329-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 851 MHz to 870 MHz frequency band. The transmitter consists of a solid-state synthesizer-exciter and power amplifier. The RF power output is adjustable from 50-100 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, 14KOF3E, 13KOF2D, 13KOF2B, 15KOF1D, and 15KOF1E.

(2) Frequency Range and Frequency Stability: 851-870 MHz ± 1.0 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: 100 Watt Tx

Input Maximum	400 Watts
Output Maximum	100 Watts

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

100 Watts

Collector Voltage	26.8 Volts DC
Collector Current	12 Amps DC

APPLICANT:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-329-A2

FUNCTION OF ACTIVE CIRCUIT DEVICES

SCHEMATIC DESIGNATION	DEVICE	FUNCTION	GE DRAWING NO.
<u>Power Amp. 19D901841G3</u>			
Power Amplifier Board Sub-Assembly 19D901807G3			
Q1	Transistor	RF Pre-Amp	19A703479P1
Q2	Transistor	RF Pre-Amp	19A703480P4
Q3	Transistor	RF Pre-Amp	19A705125P1
Q4	Transistor	RF Pre-Amp	19A705125P2
Q5	Transistor	RF Pre-Amp	19A705125P2
Power Control Board Sub-Assembly 19D901803G3			
U1	IC	Multiplexer	19A700029P36
U2	IC	Linear Op-Amp	19A701789P2
U3	IC	DC Amplifier	19A702939P2
Q1	Transistor	DC Amplifier	19A705125P2
Q2	Transistor	DC Switch	19A703480P4
Q3	Transistor	DC Switch	19A705125P1
Q4	Transistor	DC Switch	19A705125P2
Q5	Transistor	DC Switch	19A705125P2
Q6	Transistor	DC Amplifier	19A705125P1
Q7	Transistor	DC Switch	19A705125P2
Q8	Transistor	DC Switch	19A705125P2
Power Control Board Sub-Assembly 19D801803G3			
U1	IC	DC Regulator	19A704971P10
U2	IC	RF Pre-Amp	19A705926P1
Q1	Transistor	DC Switch	19A700075P2
Q2	Transistor	DC Switch	19A149542P2
Q3	Transistor	RF Amplifier	19A705924P1
PA Buffer Board Sub-Assembly			
Q1	Transistor	DC Switch	19A700076P2
Q2	Transistor	DC Switch	19A149542P2
Q3	Transistor	RF Amplifier	19A705924P1
U1	IC	DC Regulator	19A704971P10
U2	IC	RF MMIC Amplifier	19A705926P1

APPLICANT:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-329-A2

FUNCTION OF ACTIVE CIRCUIT DEVICES

<u>SCHEMATIC DESIGNATION</u>	<u>DEVICE</u>	<u>FUNCTION</u>	<u>GE DRAWING NO.</u>
<u>Tx Synthesizer Module 19D02780G5</u>			
U201	RF IC	RF Buffer	19A705927P1
U202	RF IC	RF Buffer	344A3907P1
U203	RF IC	RF Buffer	19A705927P1
U1	RF IC	RF Oscillator	19A705537P2
Q301	Transistor	Linear Amp	19A149542P2
Q302	Transistor	Linear Amp	19A700076P2
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	19A702293P3
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	19A704971P8
U302	IC	Linear Amp	19A116297P7
U401	IC	PreScaler	19A149944P201
U402	IC	Synthesizer	19B800902P5
Q705	Transistor	DC Switch	19A700076P2
U901	RF IC	RF Buffer	19A705927P1
U903	RF IC	RF Buffer	19A705927P1
U902	IC	Prescaler	RYT102217
U403	IC	Linear Amp	19A702293P3

APPLICANT:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-329-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
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 19D902782G5</u>			
Q1	Transistor	RF Amp	344A3058P1
Q2	Transistor	Linear Amp	19A700059P2
Q20	Transistor	RF Amp	344A3058P1
Q40	Transistor	DC Switch	19A700076P2
Q21	Transistor	Linear Amp	19A700059P2
Q8	Transistor	RF Amp	344A3058P1
U40	IC	Linear Amp	19A704125P1
Q41	Transistor	DC Switch	19A700076P2
U20	IC	RF Amp	344A907P1
<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-329-A2

FUNCTION OF ACTIVE CIRCUIT DEVICES

SCHEMATIC DESIGNATION	DEVICE	FUNCTION	GE DRAWING NO.
<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	Linear 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-329-A2

FUNCTION OF ACTIVE CIRCUIT DEVICES

SCHEMATIC DESIGNATION	DEVICE	FUNCTION	GE DRAWING NO.
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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:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-329-A2

CIRCUIT DIAGRAMS

<u>DRAWING NUMBER</u>	<u>DESCRIPTION</u>	
19D903635 (sh1-3)	Interconnection	Block Diagram
19D904747 (sh1-3)	Tx Synthesizer, Exciter	Schematic Diagram
19D902907 (sh1-6)	System Board	Schematic Diagram
19D904745 (sh1-4)	Rx Synthesizer, Ref Osc	Schematic Diagram
19D904935	Receiver Front End	Schematic Diagram
19D904734 (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
188D5267	Power Amp 100W	Schematic Diagram
19D902060	Power Control Board	Schematic Diagram
19D902062	GE MARC PA	Schematic Diagram
188D5056	800 MHz Buffer Amplifier	Schematic Diagram

APPLICANT:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-329-A2

DRAFT INSTRUCTION BOOK

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

See attached draft instruction book.

APPLICANT:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-329-A2

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	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 800 MHz 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.

APPLICANT:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-329-A2

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 800 MHz system.

The oscillator module is located in the receive synthesizer. The module is a quartz crystal controlled oscillator with temperature compensation providing ± 1.0 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 trimmer capacitor for frequency setability of less than ± 0.1 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 harmonic filter (part of the isolater assembly) which follows the final amplifier output to suppress harmonics of the carrier frequency.

APPLICANT:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-329-A2

CIRCUIT & DEVICE DESCRIPTIONS

The PA is totally encased in a shielded enclosure. 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 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 high speed data filter is a GMSK filter used to filter the 9600 baud NRZ signalling used by the GETC.

APPLICANT:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-329-A2

RF POWER OUTPUT

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

AXATR-329-A2 100 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:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-329-A2

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
Exhibit 9F	Modulation Versus Modulation Input voltage NPSPAC

Equipment used was:

Hewlett Packard Modulation Analyzer	HP8901A
Hewlett Packard Audio Analyzer	HP8903A
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.

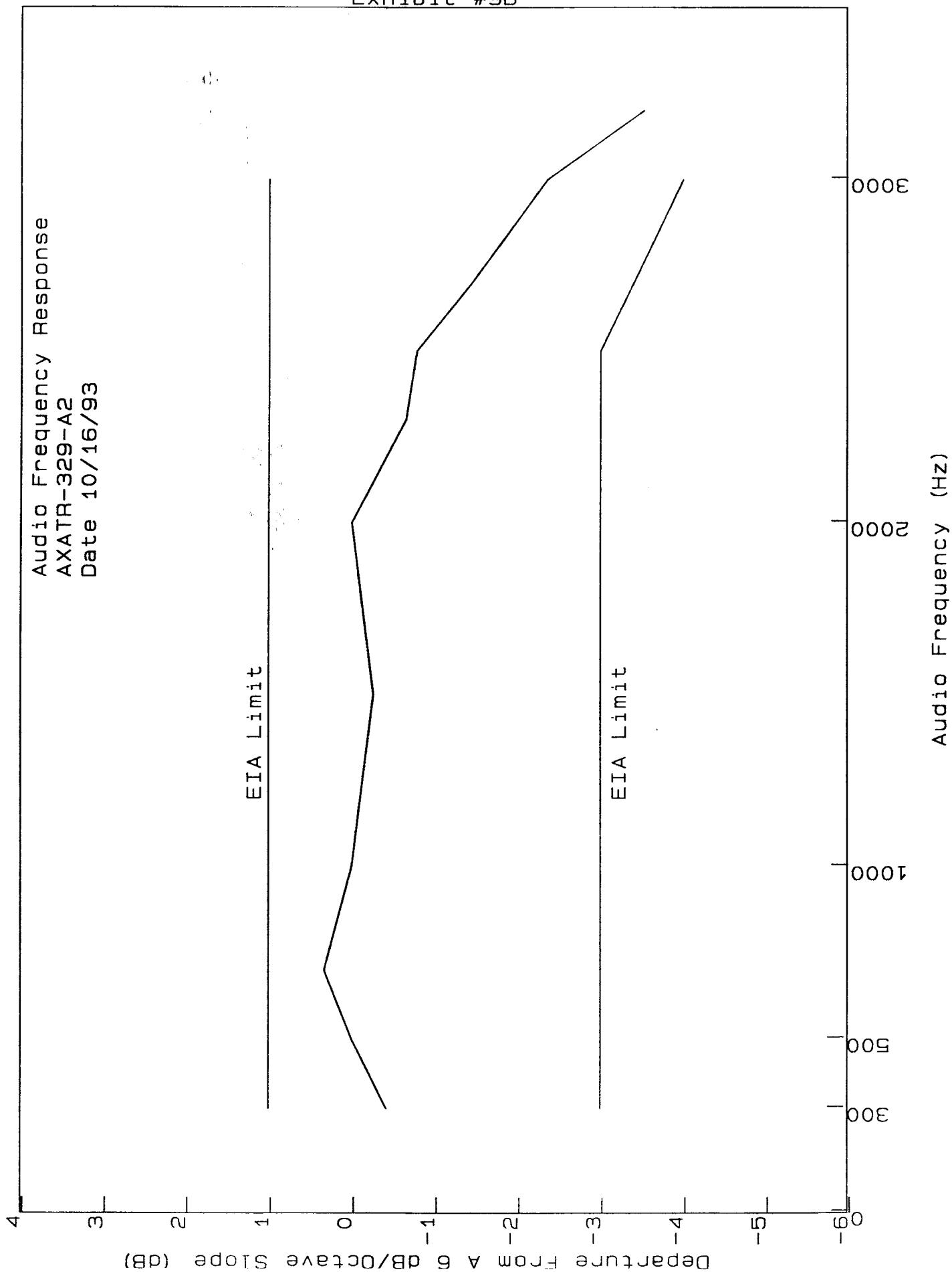
* Post Limiter Filter Response Measurement Procedure

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.

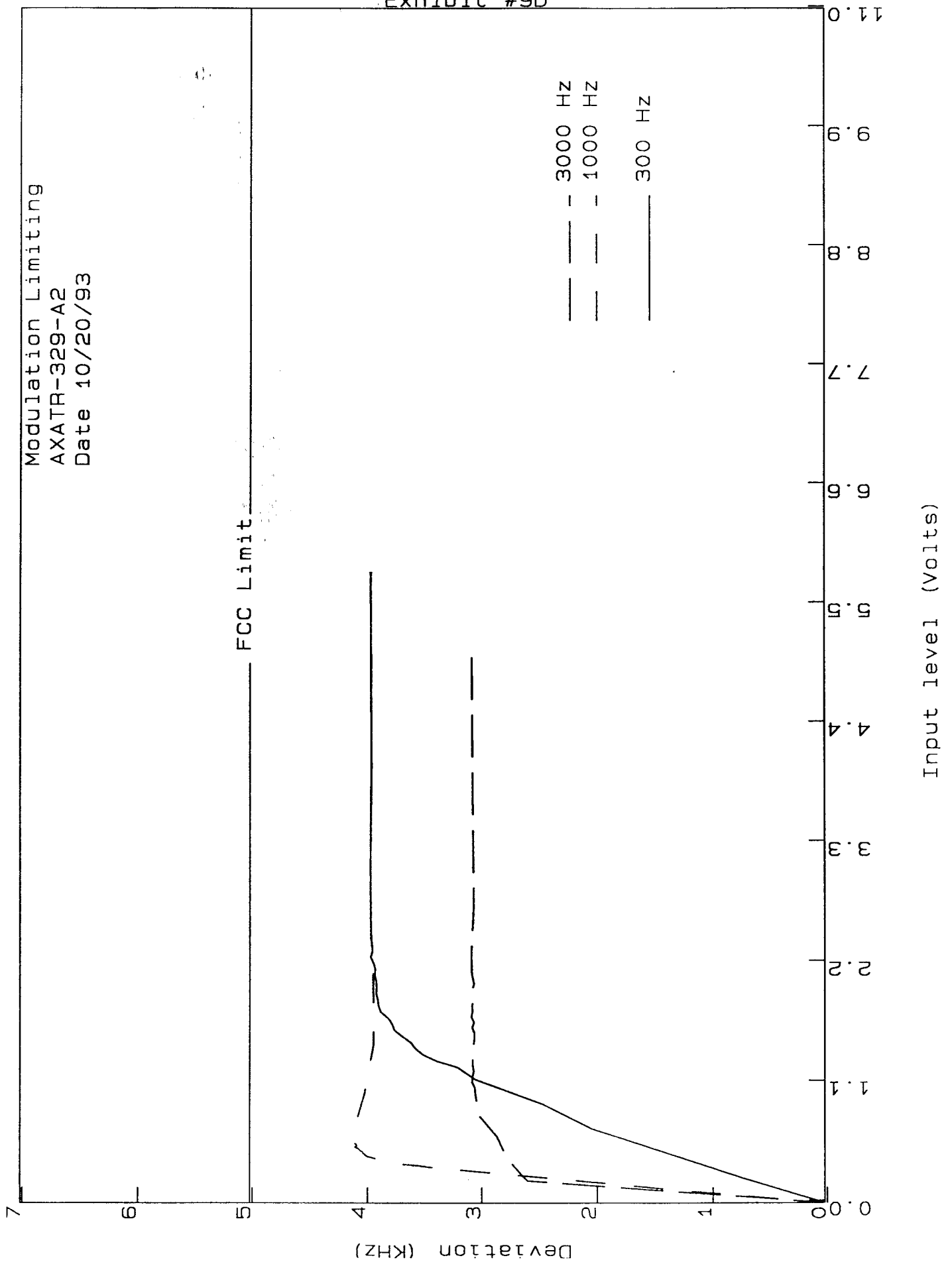
Connect HP audio analyzer to the microphone input.

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.

Audio Frequency Response
AXATR-329-A2
Date 10/16/93



Modulation Limiting
AXATR-329-A2
Date 10/20/93



POST LIMITING FILTER
AXATR-329-A2

10/27/93

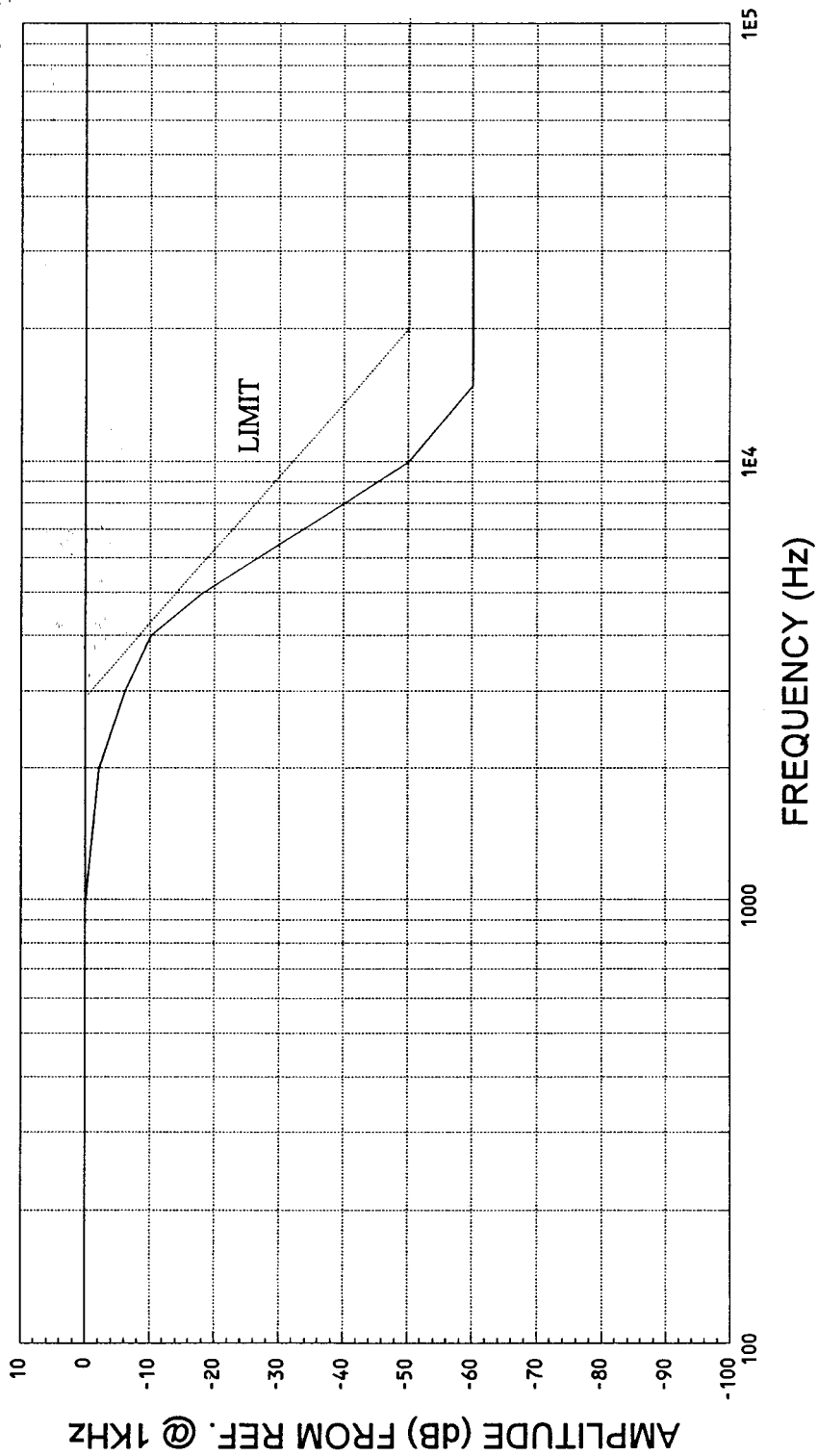


EXHIBIT # 9C

DATA FILTER RESPONSE
9600 BAUD HIGH SPEED
AXATR-329-A2

11/1/93

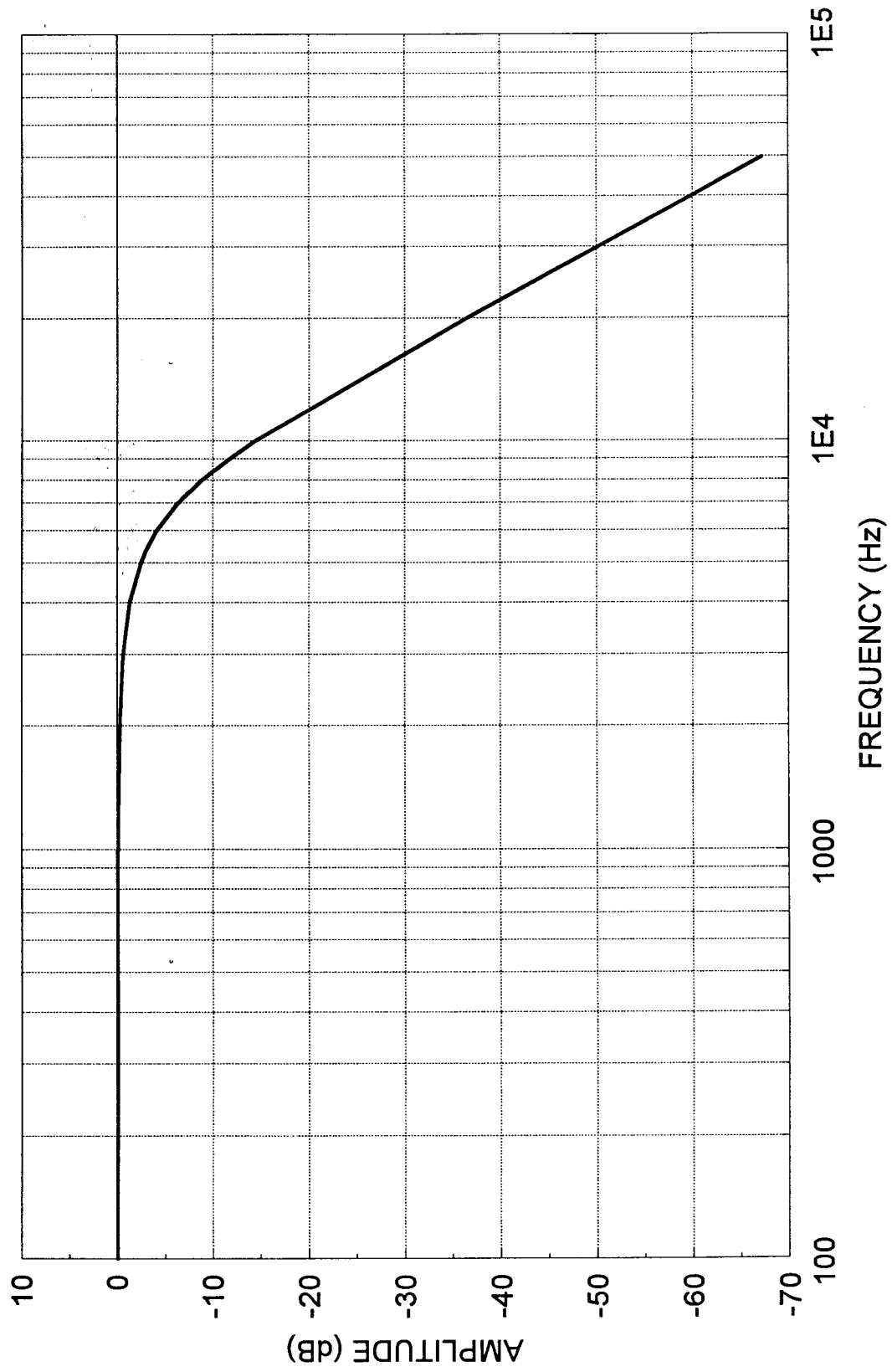
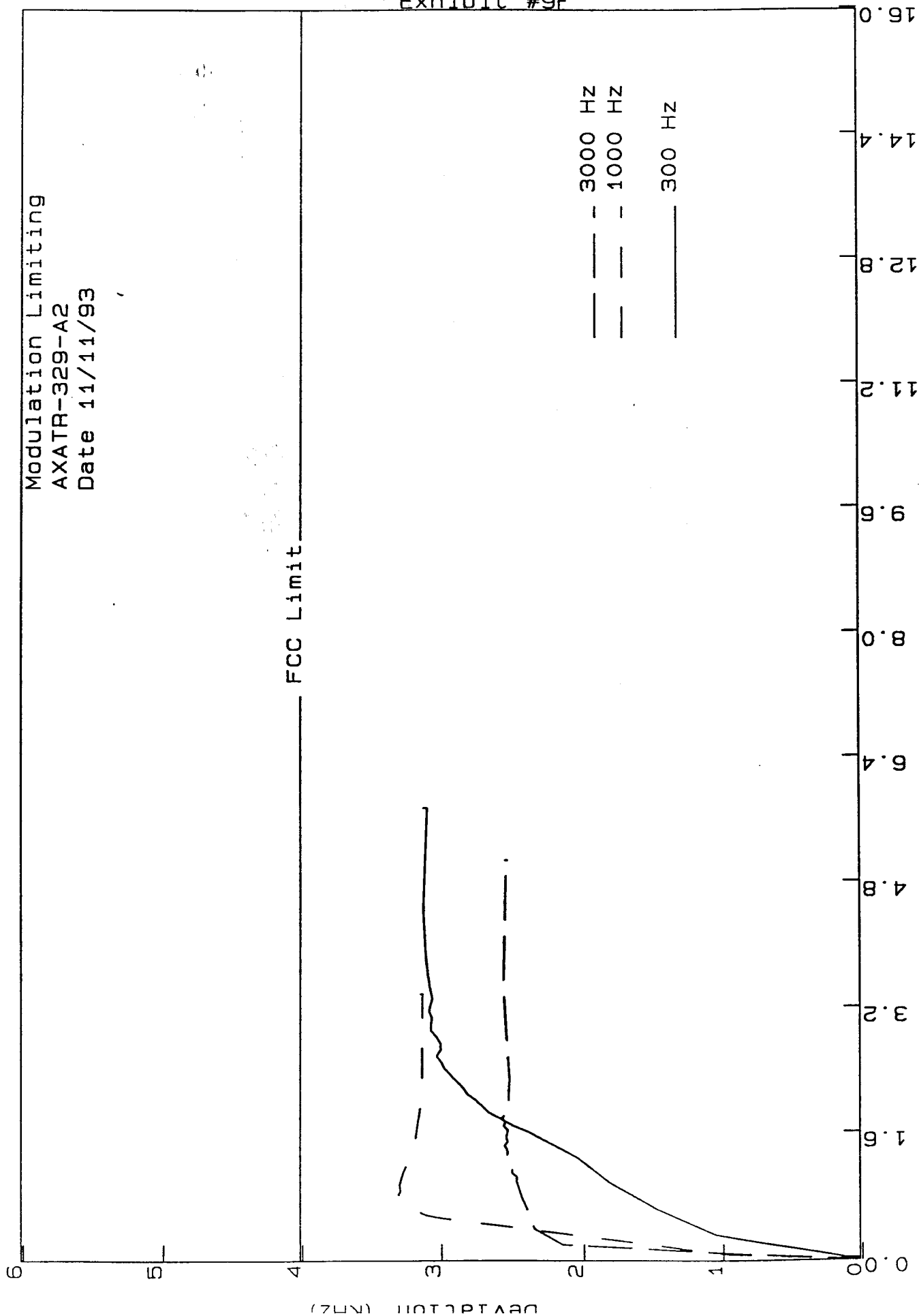


EXHIBIT # 9E

Modulation Limiting
 AXATR-329-A2
 Date 11/11/93

FCC Limit



APPLICANT:
ERICSSON GE MOBILE COMMUNICATIONS INC.

EXHIBIT 10A
FCC ID NO.
AXATR-329-A2

OCCUPIED BANDWIDTH

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

Exhibit 10B	Modulated with 2500 Hz.
Telephony	Bn = $2M + 2DK$ [where $M = 3000$ Hz, $D = 5000$ Hz, and $K = 1$ (assumed)] Bn = 16000 Hz, Emission Designator = 16K0F3E
Exhibit 10C	Modulated with DTMF Digit 3, (1477/697 Hz).
Telemetry	Bn = $2M + 2DK$ [where $M = 2500$ Hz, $D = 5000$ Hz, and $K = 1$ (assumed)] Bn = 15000 Hz, Emissions Designator = 15K0F2D.
Exhibit 10D	Modulated with GE*STAR ID #100 (Manchester Encoding 1600 Hz).
Telegraphy	Bn = $2M + 2DK$ [where $M = 2500$ Hz, $D = 5000$ Hz, and $K = 1$ (assumed)] Bn = 15000 Hz, Emissions Designator = 15K0F2B.
Exhibit 10E	Modulated with Pseudorandom Data 9600 Baud.
Digital	Bn = $2(B/2) + 2DK$ [where $B = 9600$ Bd, $D = 3200$ Hz, and $K = 1$ (assumed)]
Data,	
Direct FM	Bn = 16000 Hz, Emissions Designator = 16K0F1D (Data Transmission) 16K0F1E (Digital Voice).
Exhibit 10F	Modulated with 2500 Hz.
Telephony	Bn = $2M + 2DK$ [where $M = 3000$ Hz, $D = 4000$ Hz, and $K = 1$ (assumed)] Bn = 14000 Hz, Emission Designator = 14K0F3E
Exhibit 10G	Modulated with DTMF Digit 3, (1477/697 Hz).
Telemetry	Bn = $2M + 2DK$ [where $M = 2500$ Hz, $D = 4000$ Hz, and $K = 1$ (assumed)] Bn = 13000 Hz, Emissions Designator = 13K0F2D.
Exhibit 10H	Modulated with GE*STAR ID #100 (Manchester Encoding 1600 Hz).
Telegraphy	Bn = $2M + 2DK$ [where $M = 2500$ Hz, $D = 4000$ Hz, and $K = 1$ (assumed)] Bn = 13000 Hz, Emissions Designator = 13K0F2B.
Exhibit 10I	Modulated with Pseudorandom Data 9600 Baud.
Digital	Bn = $2(B/2) + 2DK$ [where $B = 9600$ Bd, $D = 2700$ Hz, and $K = 1$ (assumed)]
Data,	
Direct FM	Bn = 15000 Hz, Emissions Designator = 15K0F1D (Data Transmission), 15K0F1E (Digital Voice).

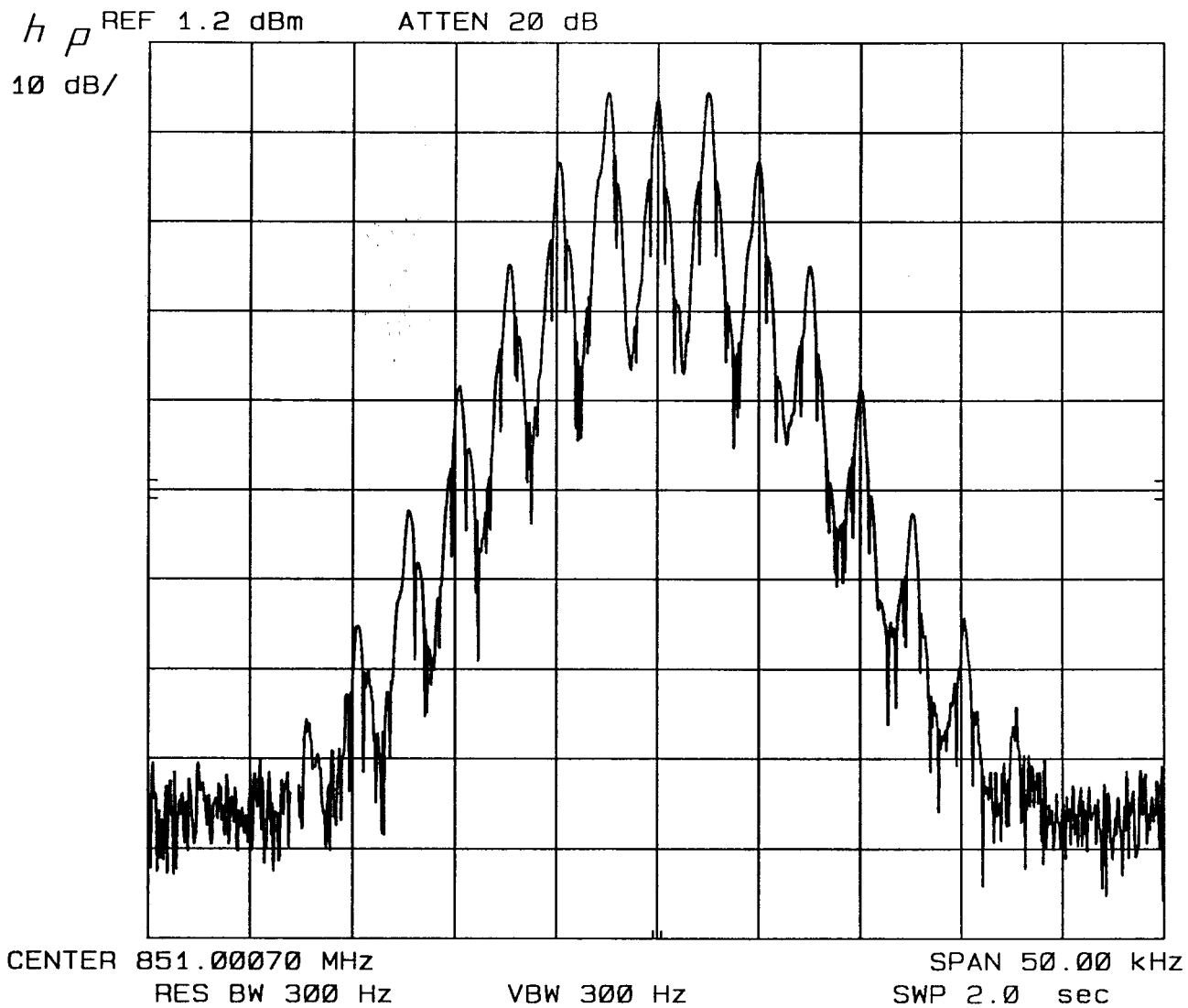
APPLICANT: Ericsson GE Mobile Communications Inc.

FCC ID NO. AXATR-329-A2

OCCUPIED BANDWIDTH

Modulation Sideband Spectrum

Measured Per EIA RS-152-B



Referenced to the Unmodulated Carrier
Modulated with 2500Hz Voice

Analyzer: Vertical = 10 dB/Div.

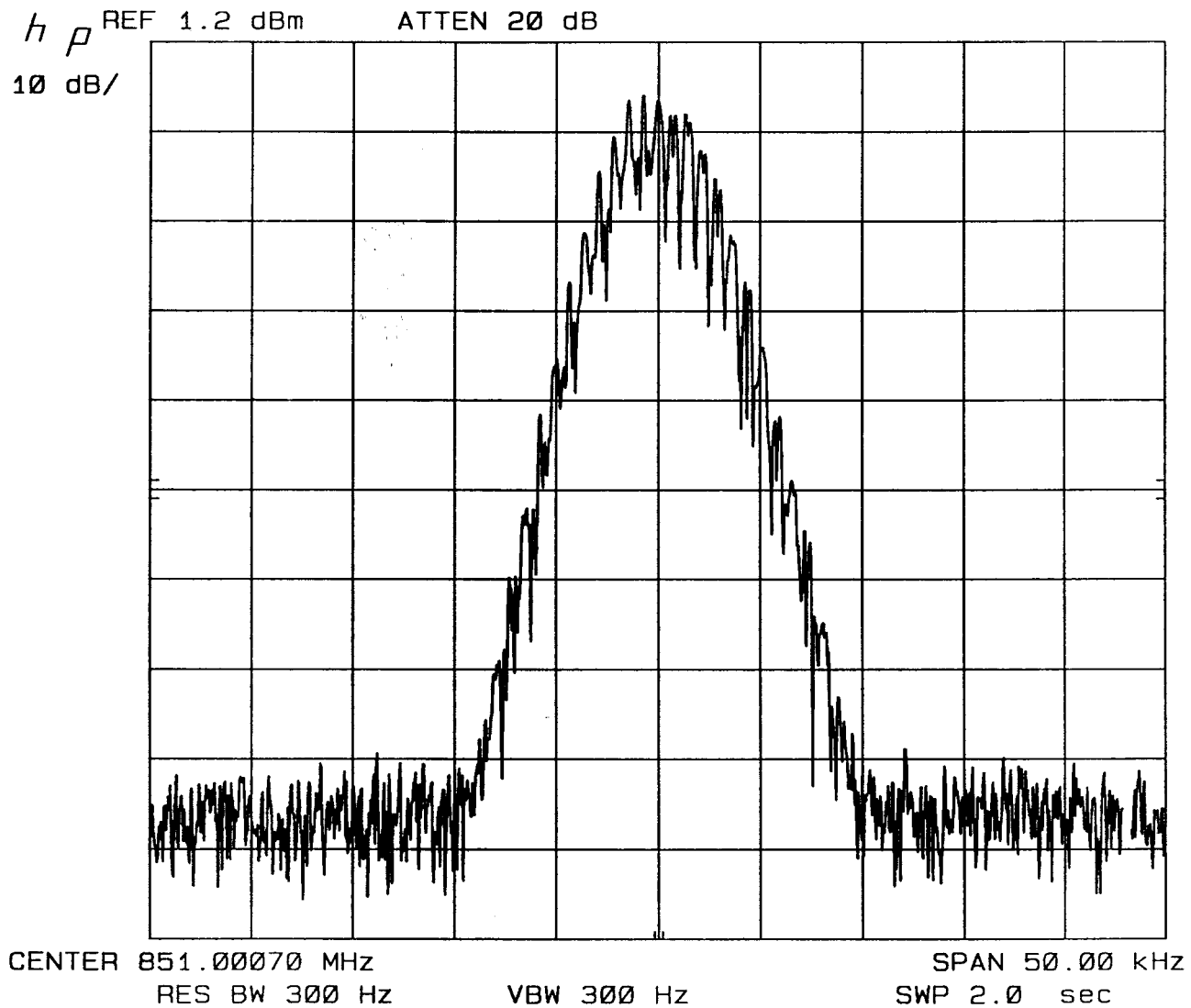
APPLICANT: Ericsson GE Mobile Communications Inc.

FCC ID NO. AXATR-329-A2

OCCUPIED BANDWIDTH

Modulation Sideband Spectrum

Measured Per EIA RS-152-B



Referenced to the Unmodulated Carrier

Modulated with DTFM Digital 3

Analyzer: Vertical = 10 dB/Div.

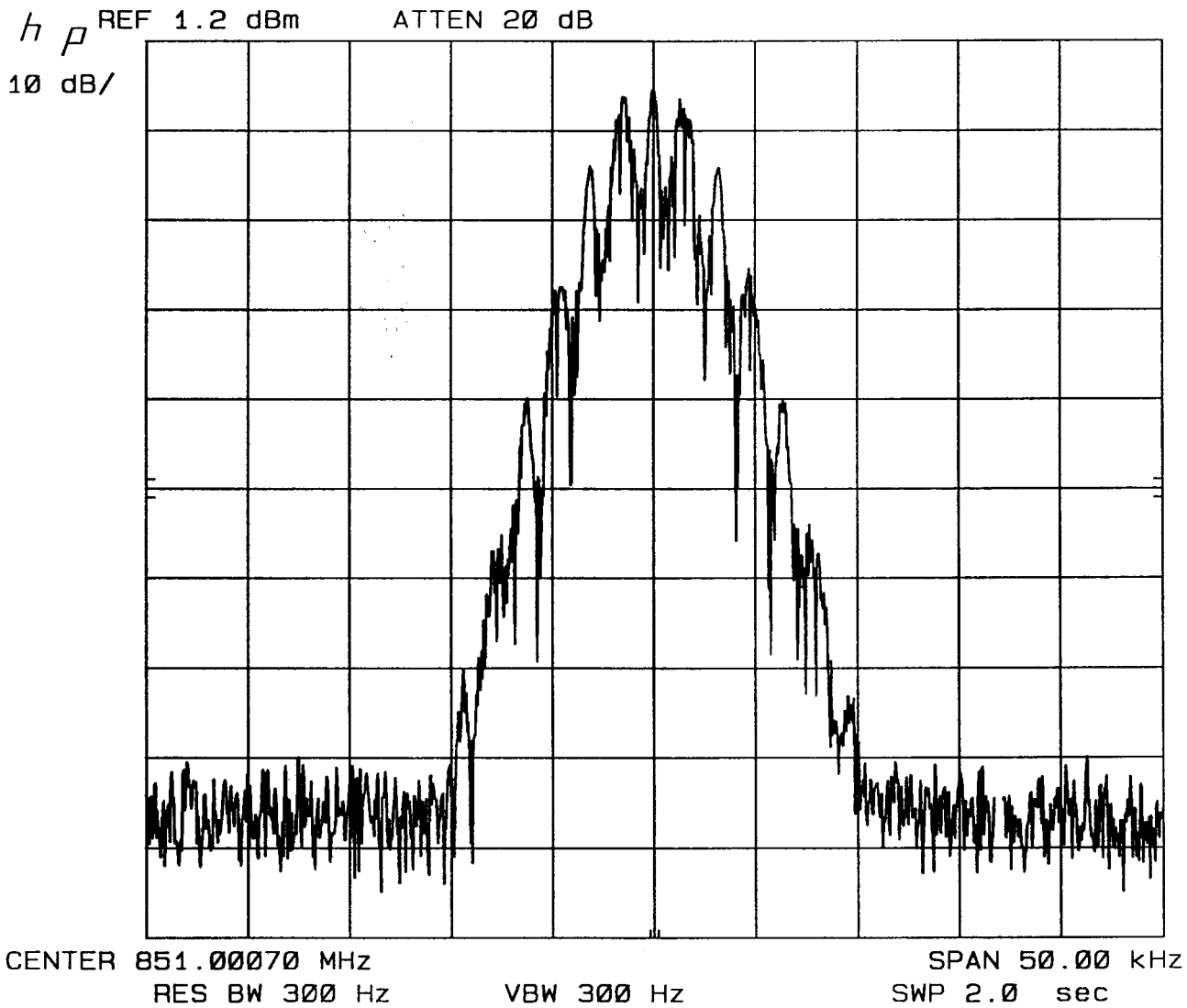
APPLICANT: Ericsson GE Mobile Communications Inc.

FCC ID NO. AXATR-329-A2

OCCUPIED BANDWIDTH

Modulation Sideband Spectrum

Measured Per EIA RS-152-B



Referenced to the Unmodulated Carrier

Modulated with GE*STAR ID CODE #100

Analyzer: Vertical = 10 dB/Div.

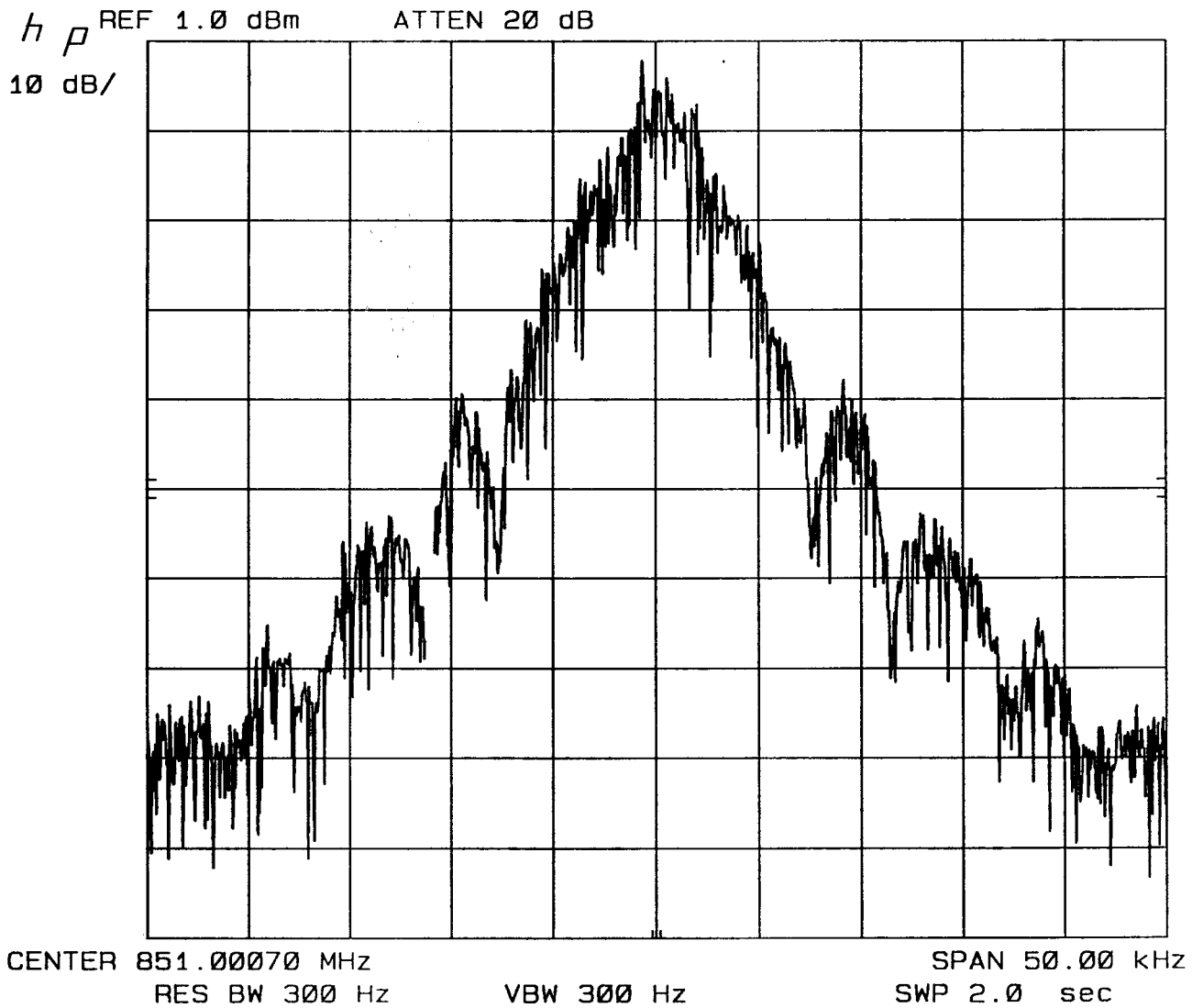
APPLICANT: Ericsson GE Mobile Communications Inc.

FCC ID NO. AXATR-329-A2

OCCUPIED BANDWIDTH

Modulation Sideband Spectrum

Measured Per EIA RS-152-B



Referenced to the Unmodulated Carrier
Modulated with 9600 Baud Data @ 3 KHz Dev.

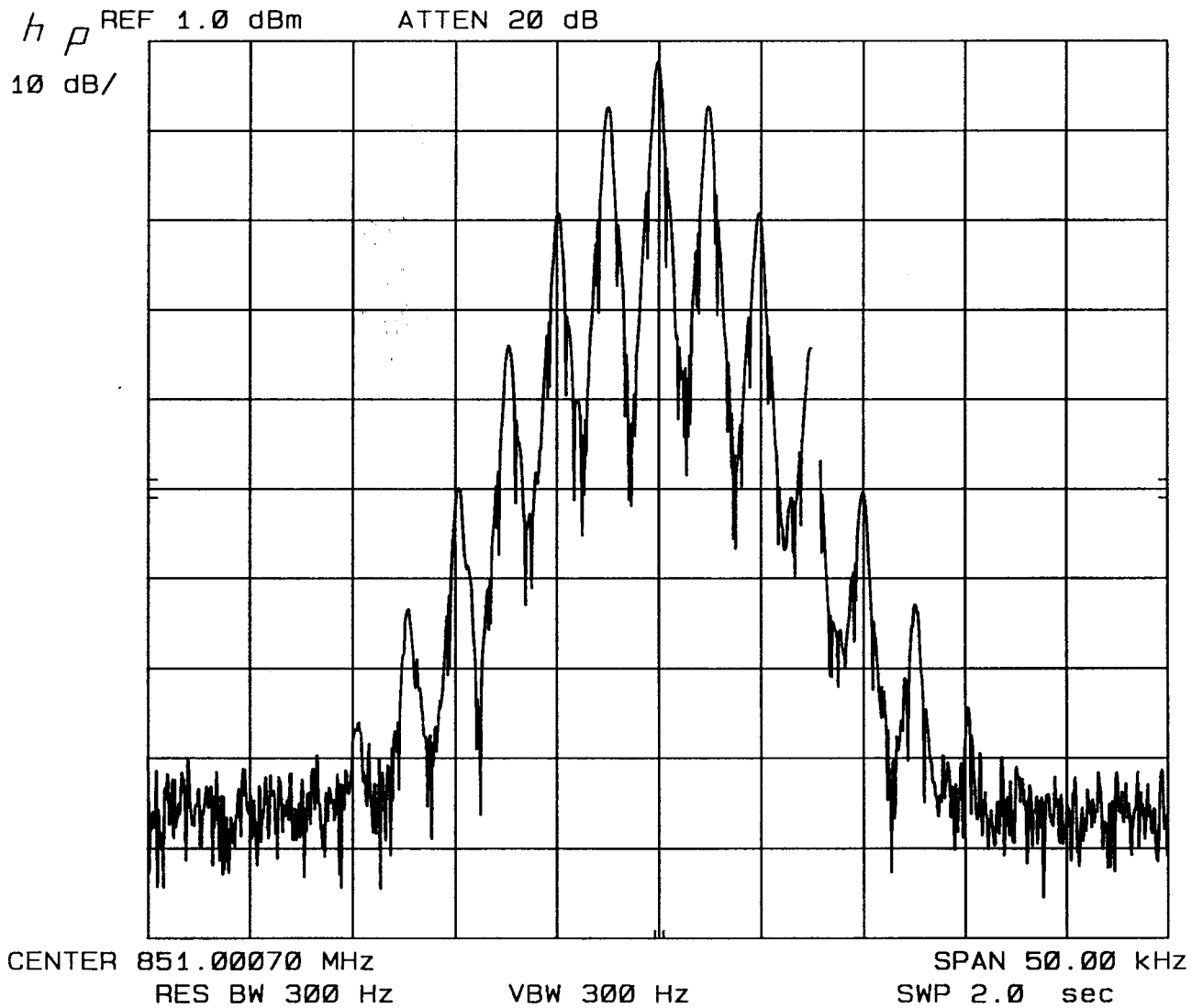
Analyzer: Vertical = 10 dB/Div.

APPLICANT: Ericsson GE Mobile Communications Inc.

OCCUPIED BANDWIDTH

Modulation Sideband Spectrum

Measured Per EIA RS-152-B



Referenced to the Unmodulated Carrier
Modulated with 2500Hz @ 2.4KHz Dev.

Analyzer: Vertical = 10 dB/Div.

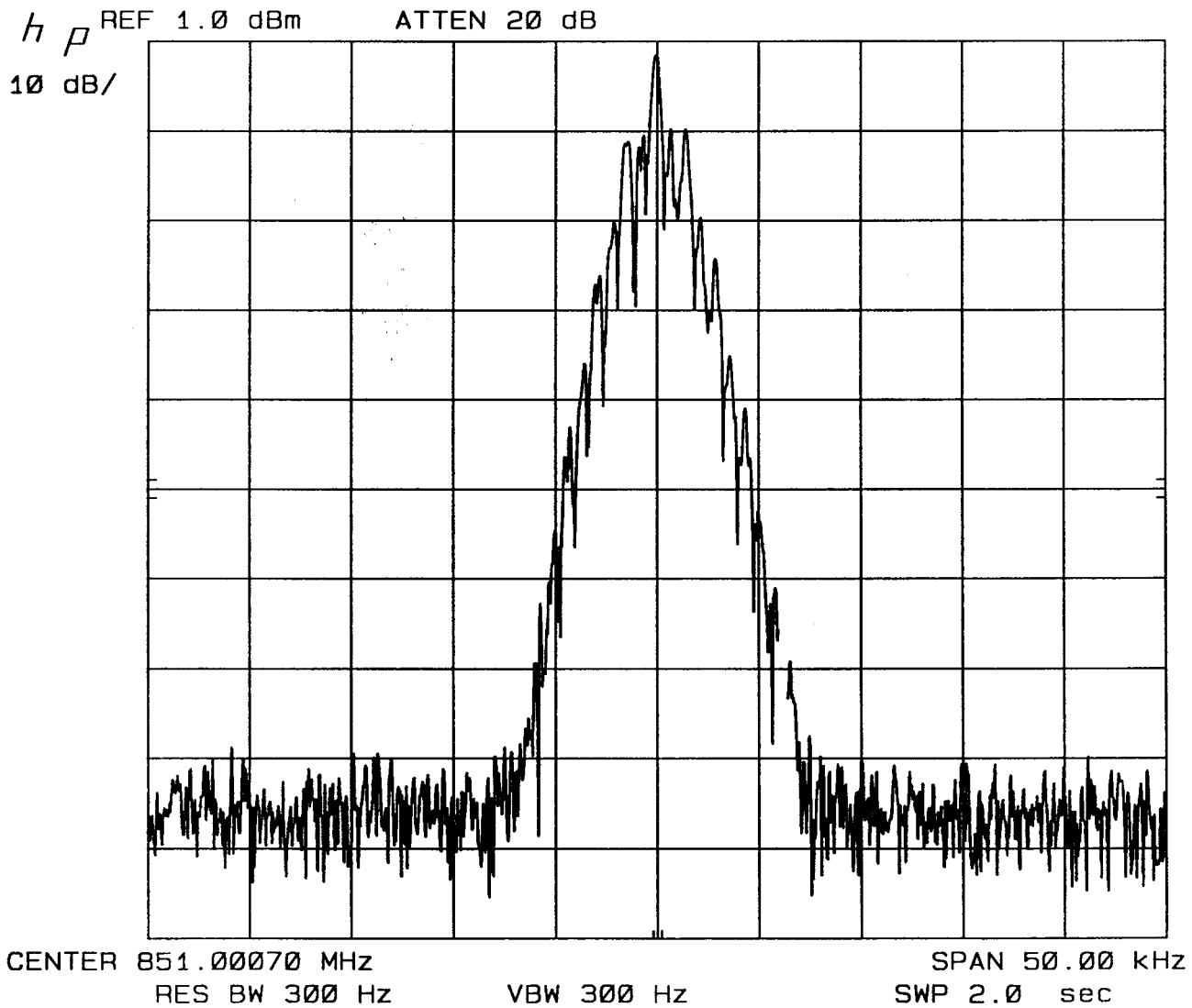
APPLICANT: Ericsson GE Mobile Communications Inc.

FCC ID NO. AXATR-329-A2

OCCUPIED BANDWIDTH

Modulation Sideband Spectrum

Measured Per EIA RS-152-B



Referenced to the Unmodulated Carrier
Modulated with DTMF Digital 3 @ 2.4KHz Dev.

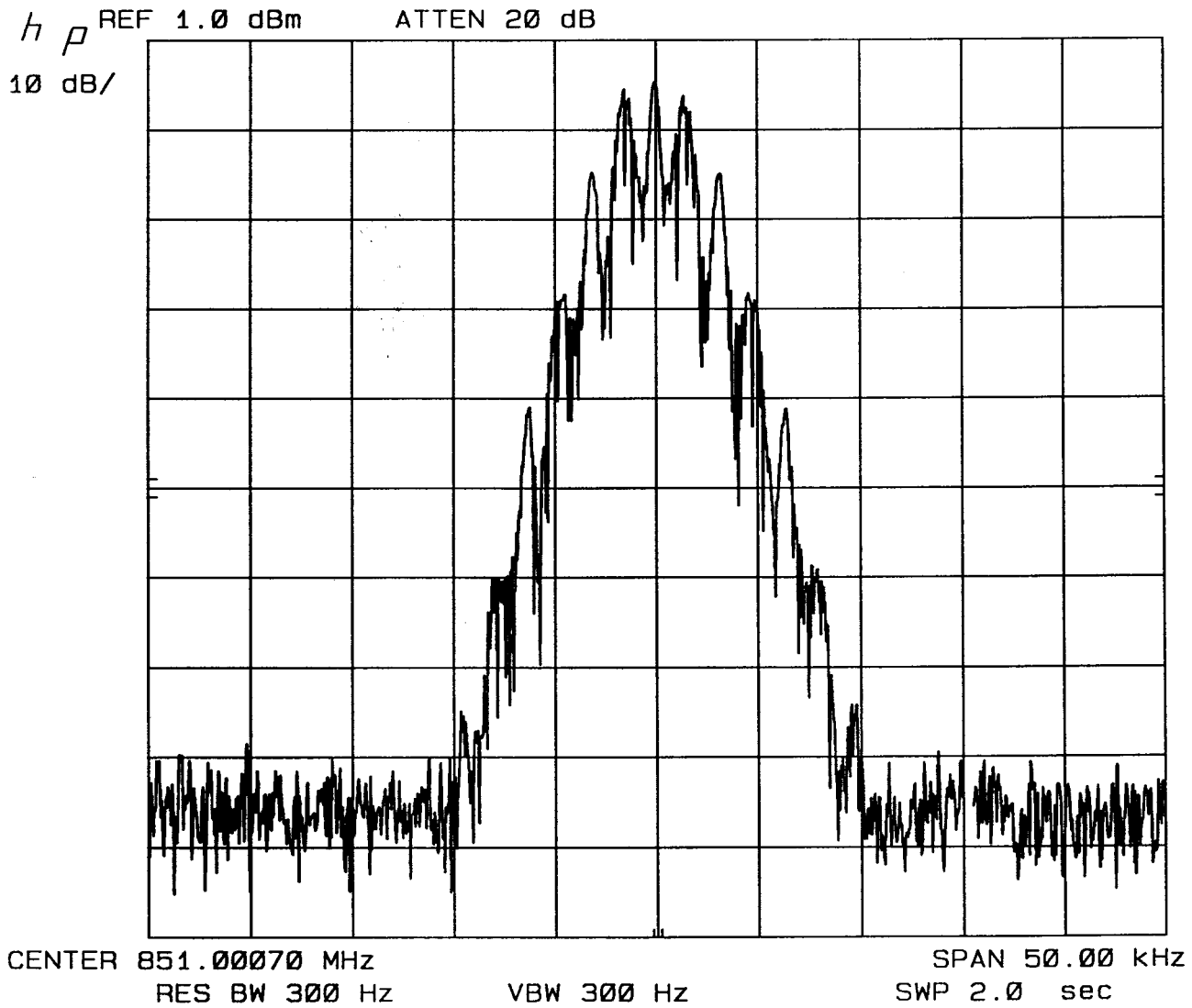
Analyzer: Vertical = 10 dB/Div.

APPLICANT: Ericsson GE Mobile Communications Inc.

OCCUPIED BANDWIDTH

Modulation Sideband Spectrum

Measured Per EIA RS-152-B



Referenced to the Unmodulated Carrier

Modulated with GEXSTAR ID CODE #100

Analyzer: Vertical = 10 dB/Div.

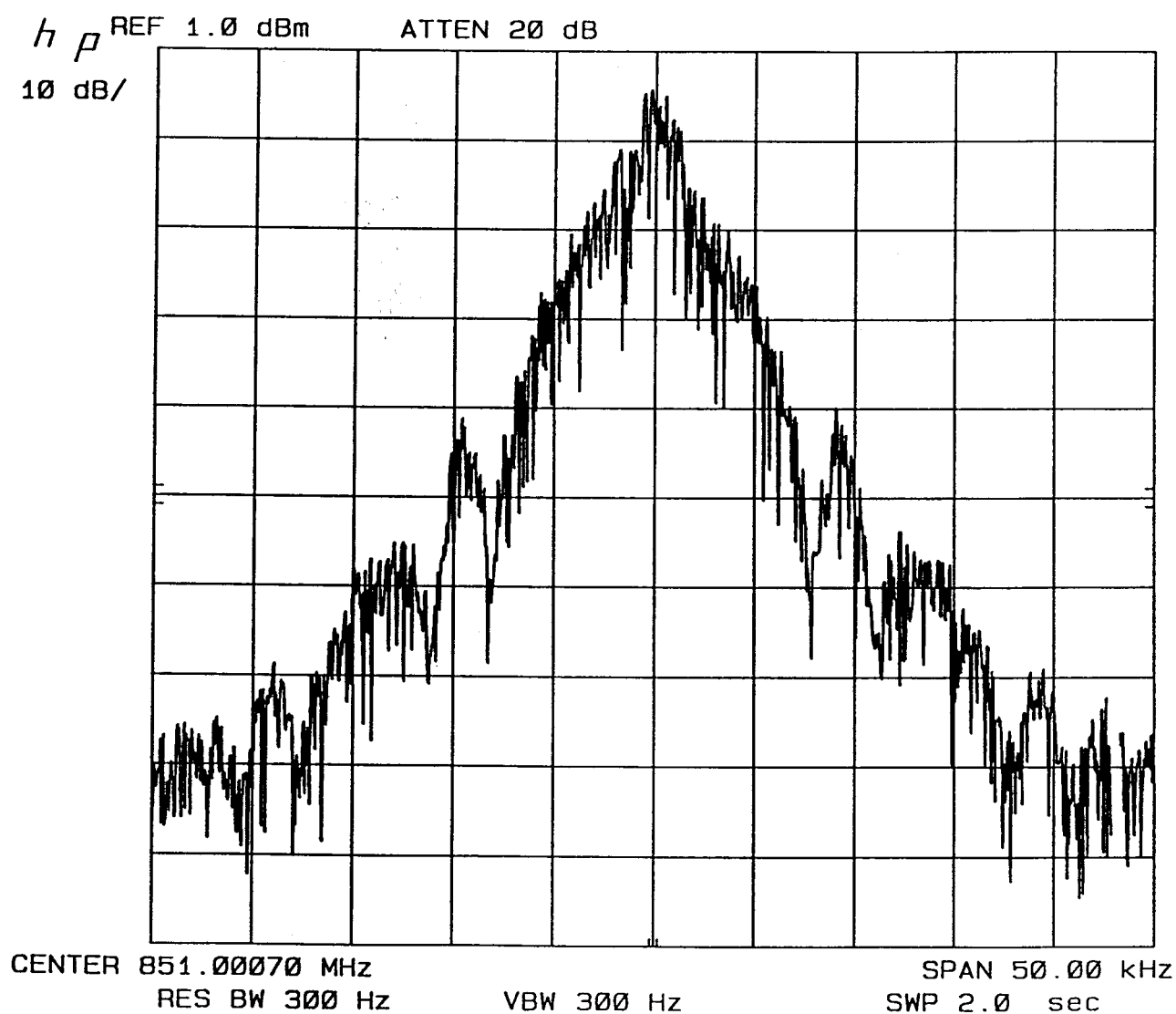
APPLICANT: Ericsson GE Mobile Communications Inc.

FCC ID NO. AXATR-329-A2

OCCUPIED BANDWIDTH

Modulation Sideband Spectrum

Measured Per EIA RS-152-B



Referenced to the Unmodulated Carrier
Modulated with 9600 Baud Data @ 2.4KHz

Analyzer: Vertical = 10 dB/Div.

APPLICANT:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-329-A2

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:

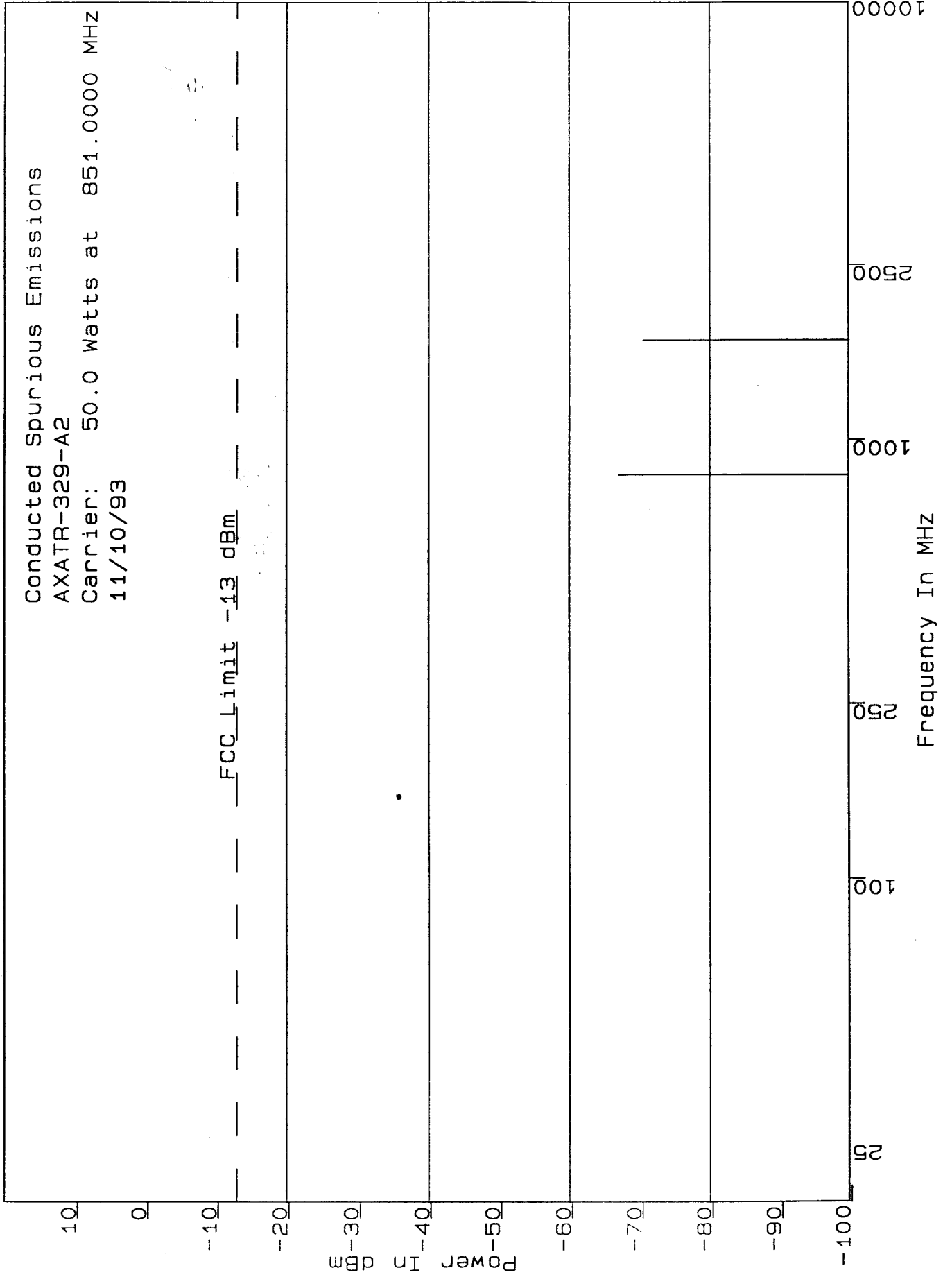
<u>Exhibit</u>		<u>Carrier Frequency</u>
11B	AXATR-329-A2	851 MHz, 50 Watts
11C	AXATR-329-A2	851 MHz, 100 Watts
11D	AXATR-329-A2	870 MHz, 50 Watts
11E	AXATR-329-A2	870 MHz, 100 Watts

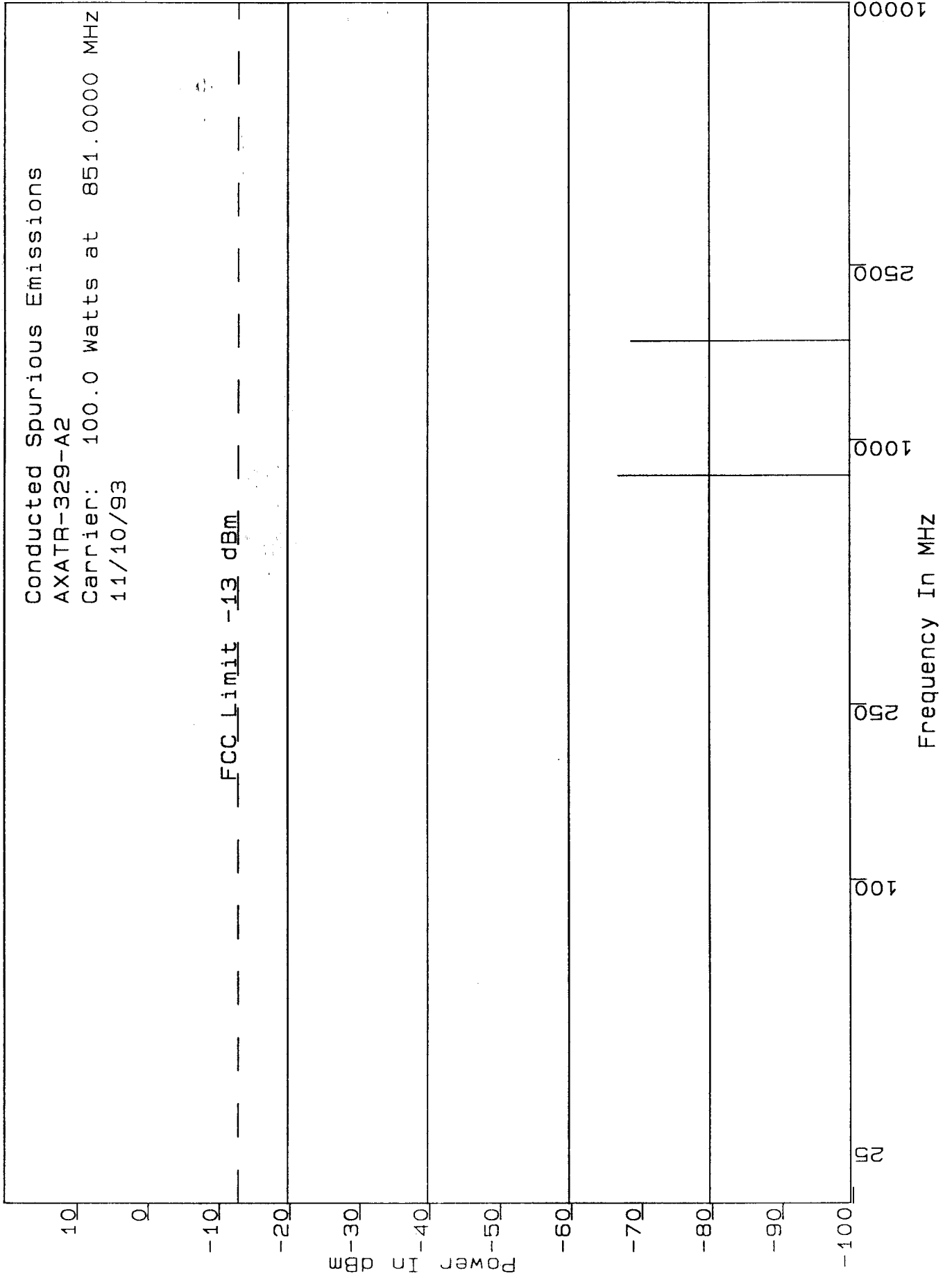
Equipment used was:

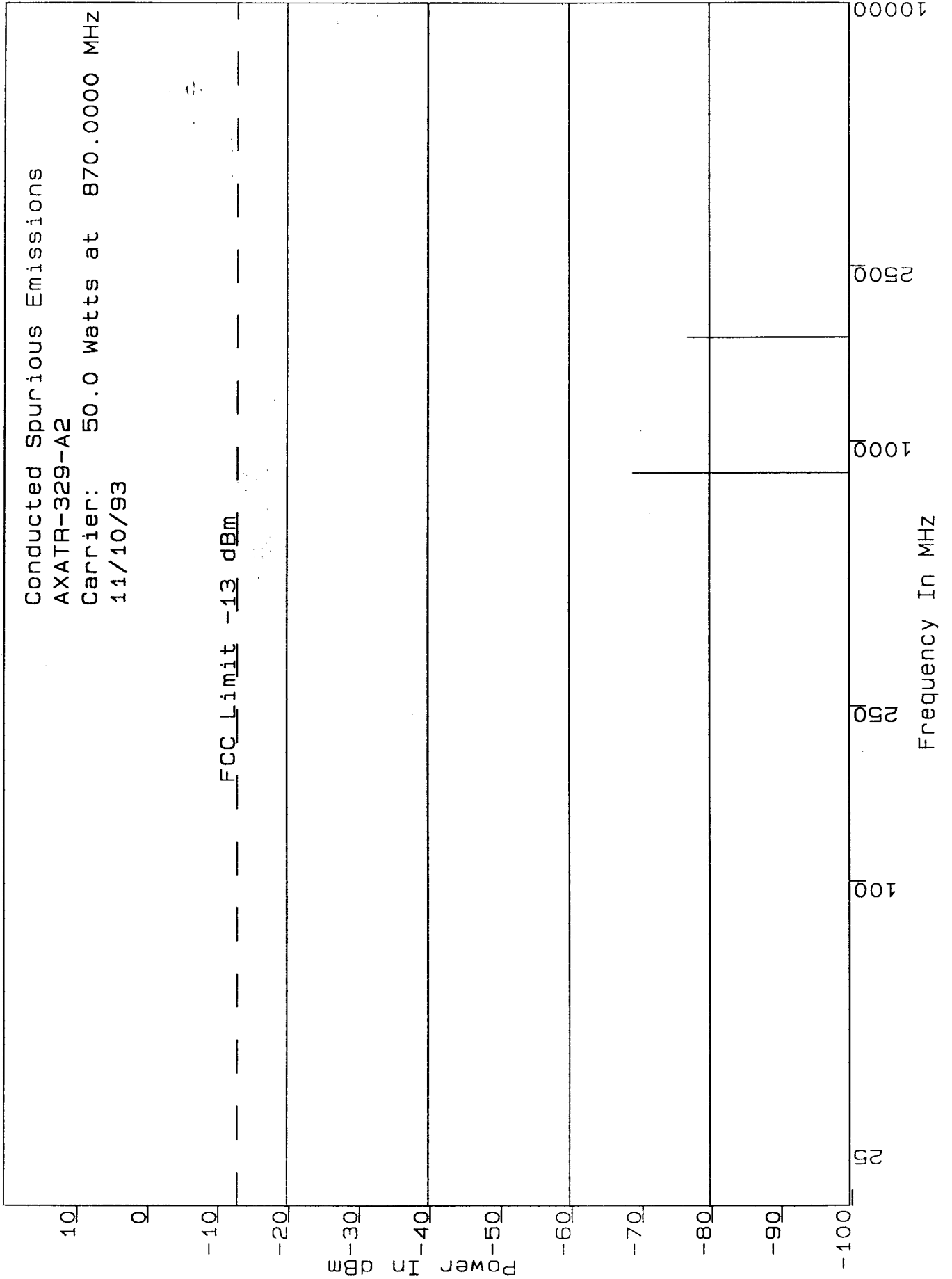
Hewlett Packard Spectrum Analyzer 8566B.

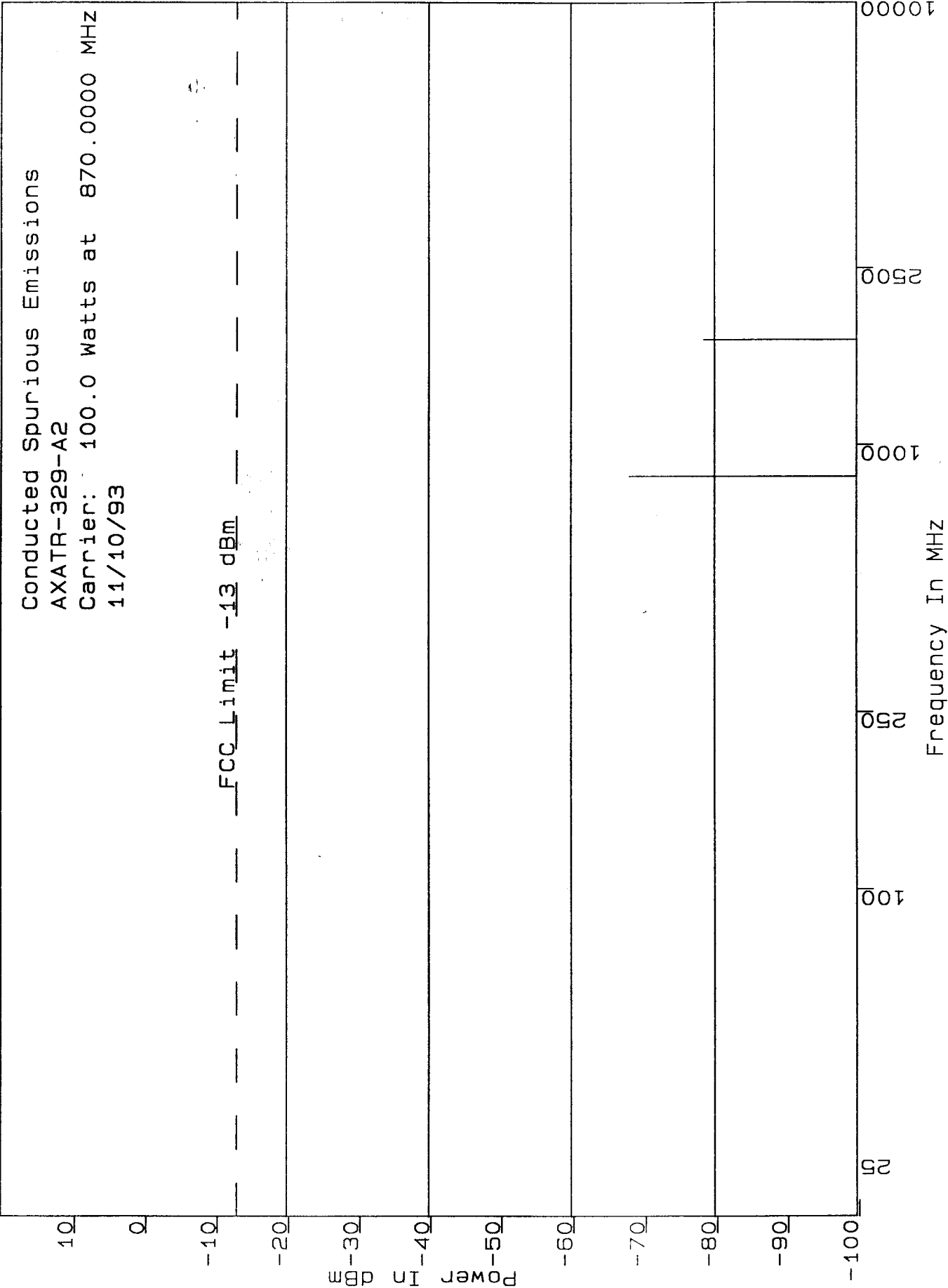
Reference 2.993 field strength of spurious radiations was measured on our three meter range. The site and equipment are described in the site description and attenuation measurements for the Ericsson/GE three meter radiation site #2 filed with the FCC in Columbia, Maryland, in November of 1990. The measurement 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	AXATR-329-A2	851 MHz, 50 Watts
11G	AXATR-329-A2	851 MHz, 100 Watts
11H	AXATR-329-A2	870 MHz, 50 Watts
11I	AXATR-329-A2	870 MHz, 100 Watts







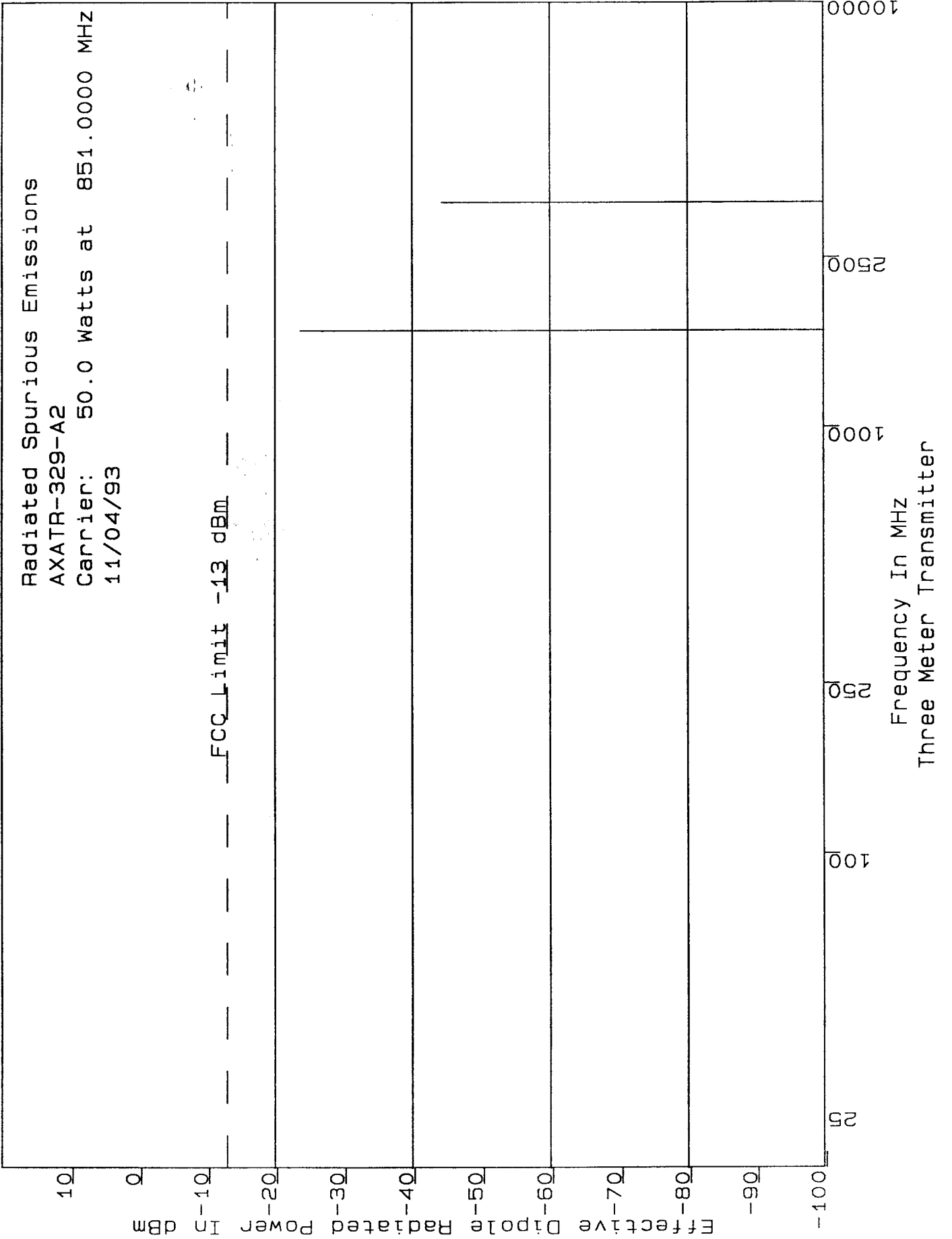


Radiated Spurious Emissions

AXATR-329-A2

Carrier: 50.0 Watts at 851.0000 MHz
11/04/93

FCC Limit -13 dBm



Radiated Spurious Emissions

AXATR-329-A2

Carrier: 100.0 Watts at 851.0000 MHz
11/04/93

FCC Limit -13 dBm

Frequency In MHz
Three Meter Transmitter

25 100 250 1000 2500 10000

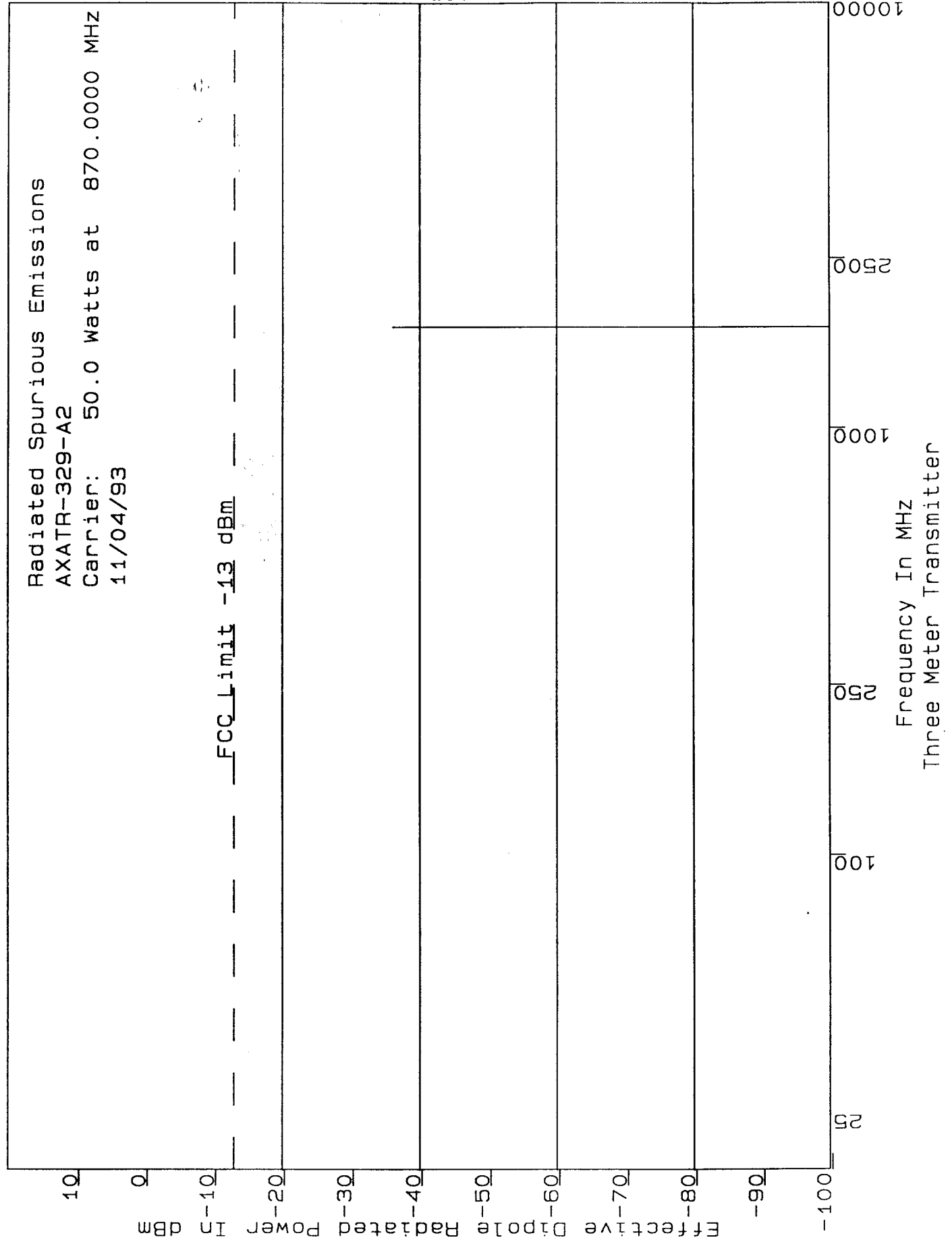
Effective Radiated Power In dBm
-100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10

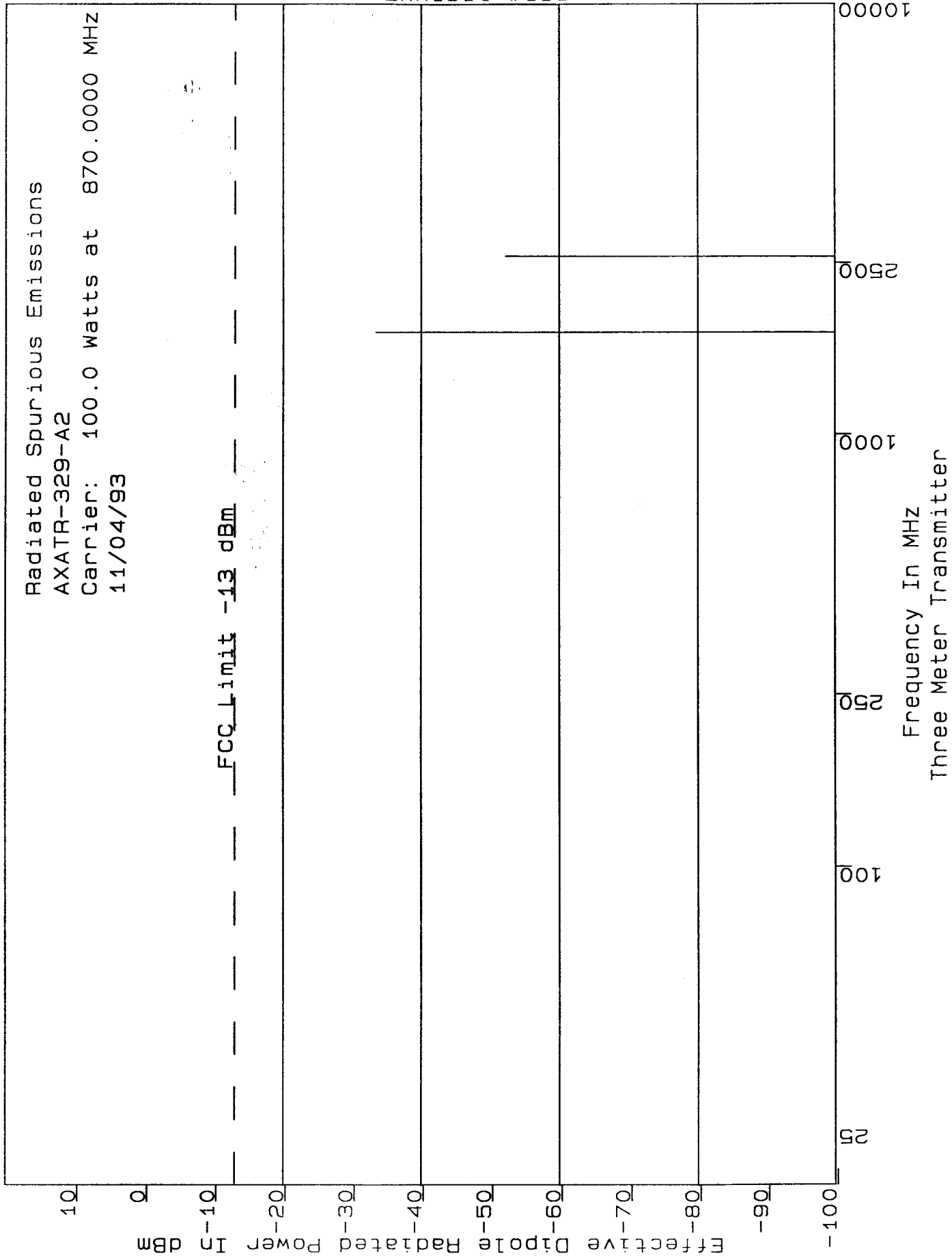
Radiated Spurious Emissions

AXATR-329-A2

Carrier: 50.0 Watts at 870.0000 MHz
11/04/93

FCC Limit -13 dBm





APPLICANT:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-329-A2

FREQUENCY STABILITY

Paragraph 2.995 (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
Hewlett Packard Voltmeter	Model 3478A
Thermotron Temperature Chamber	Model 2800

FREQUENCY Vs TEMPERATURE
AXATR-239-A2

10/15/93

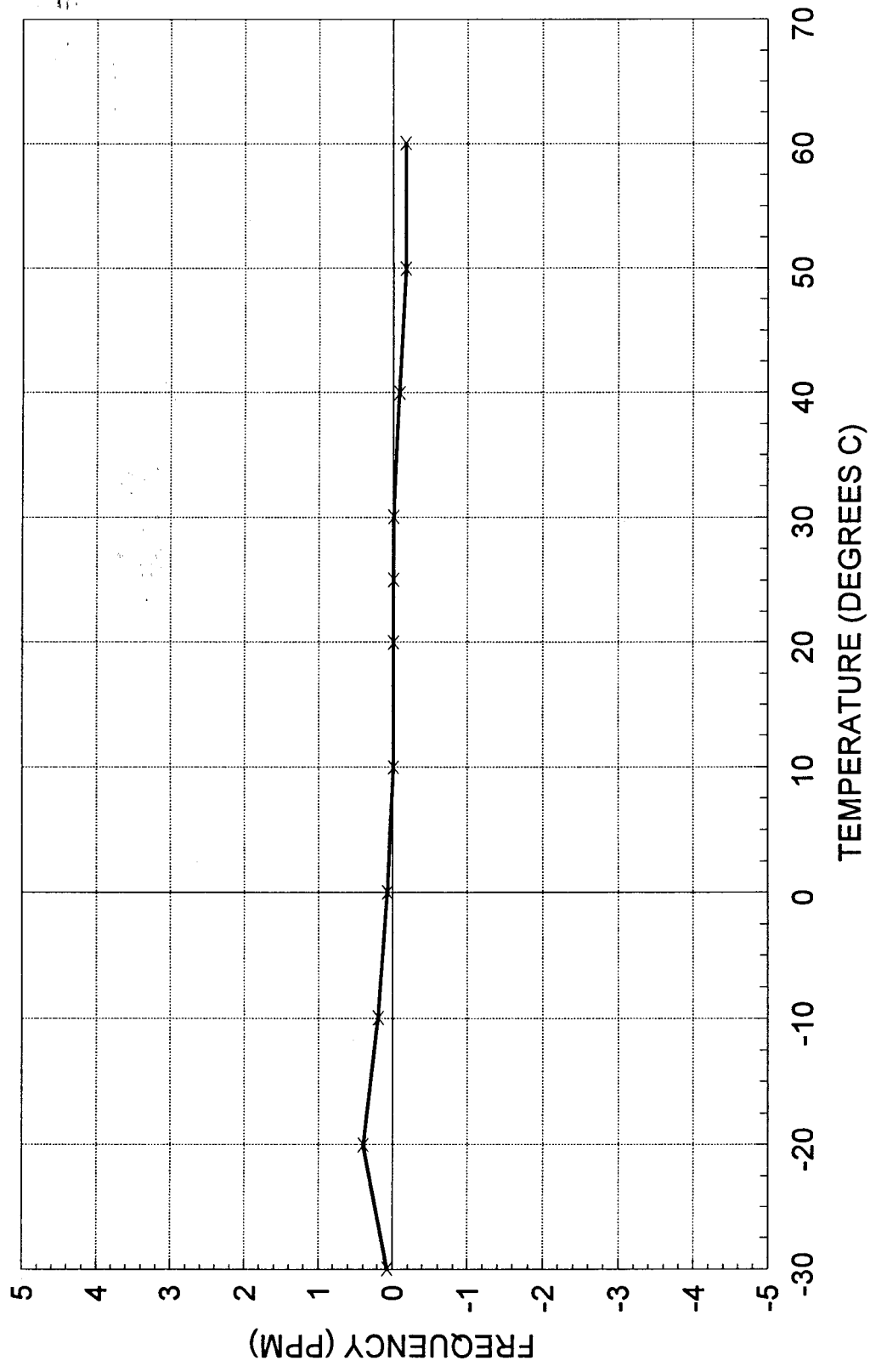


EXHIBIT # 12B

FREQUENCY Vs VOLTAGE
AXATR-329-A2

11/5/93

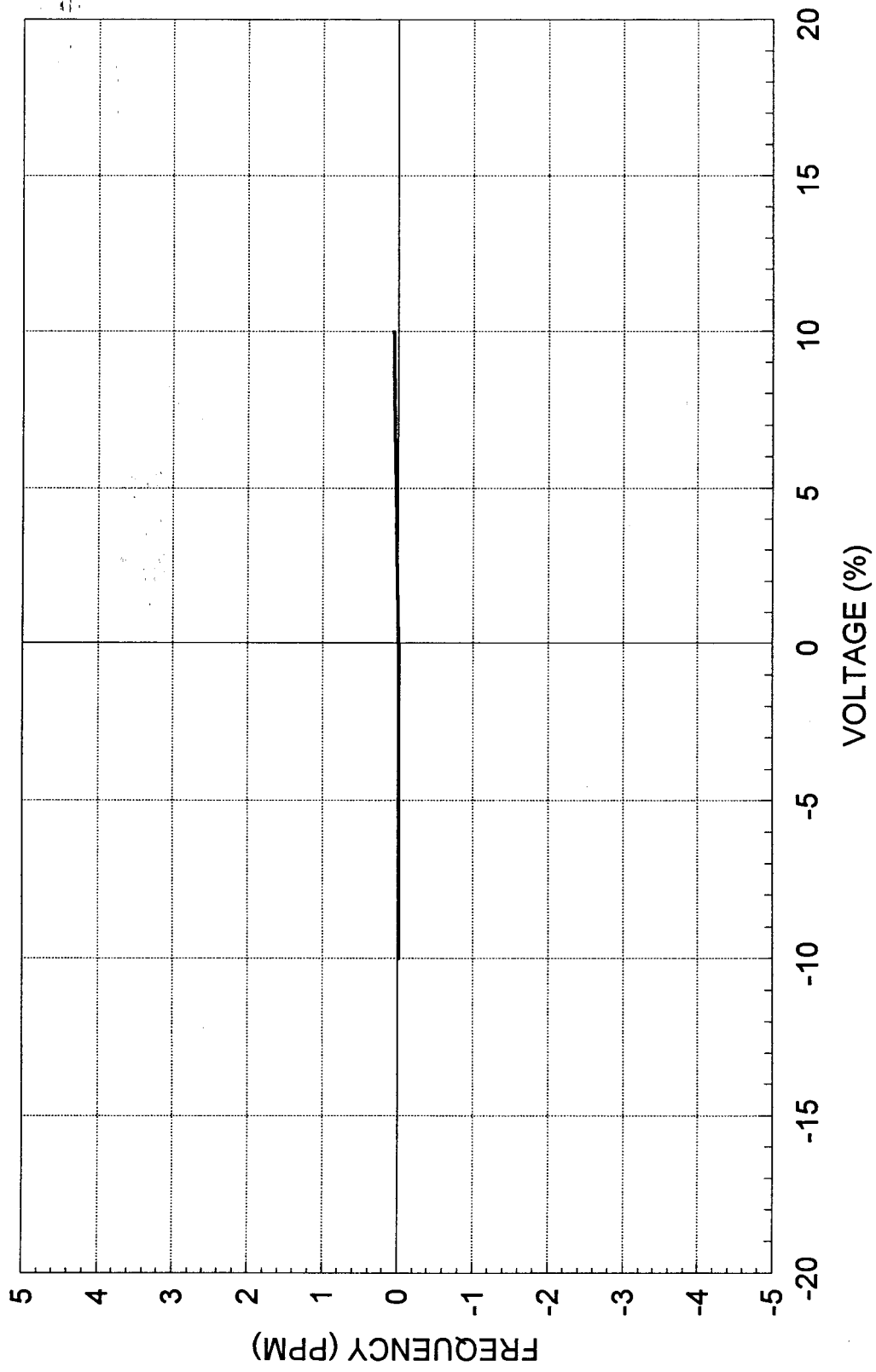


EXHIBIT # 12C

EXHIBIT 13

APPLICANT:
ERICSSON GE MOBILE COMMUNICATIONS INC.

FCC ID NO.
AXATR-329-A2

IDENTIFICATION NAMEPLATE

ERICSSON GE

COMB:
SER#: 7654321



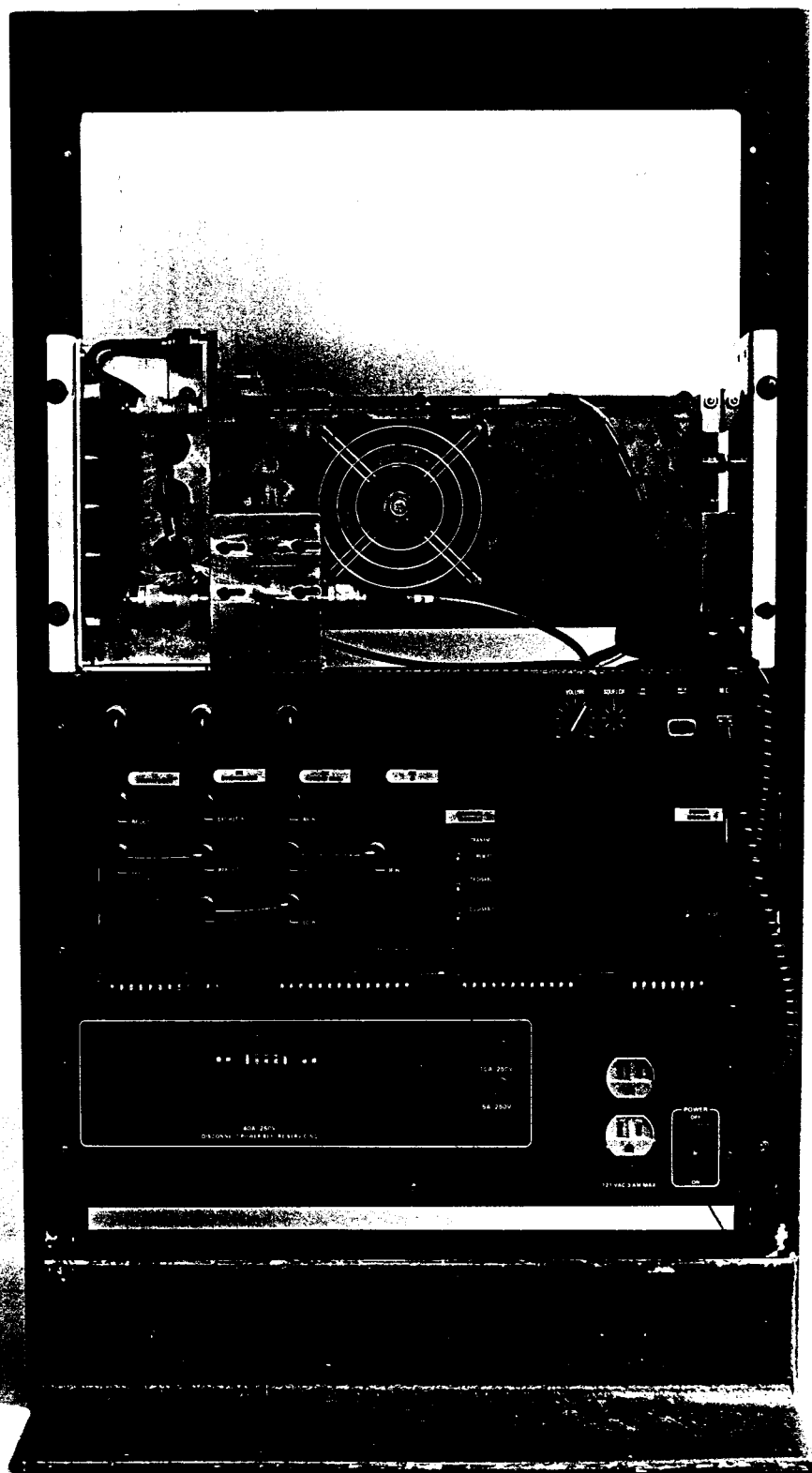
FCC ID: AXATR-329-A2

DOC:
INPUT:
120/240 VAC Single Phase 60 HZ
9/5 A 1100 W

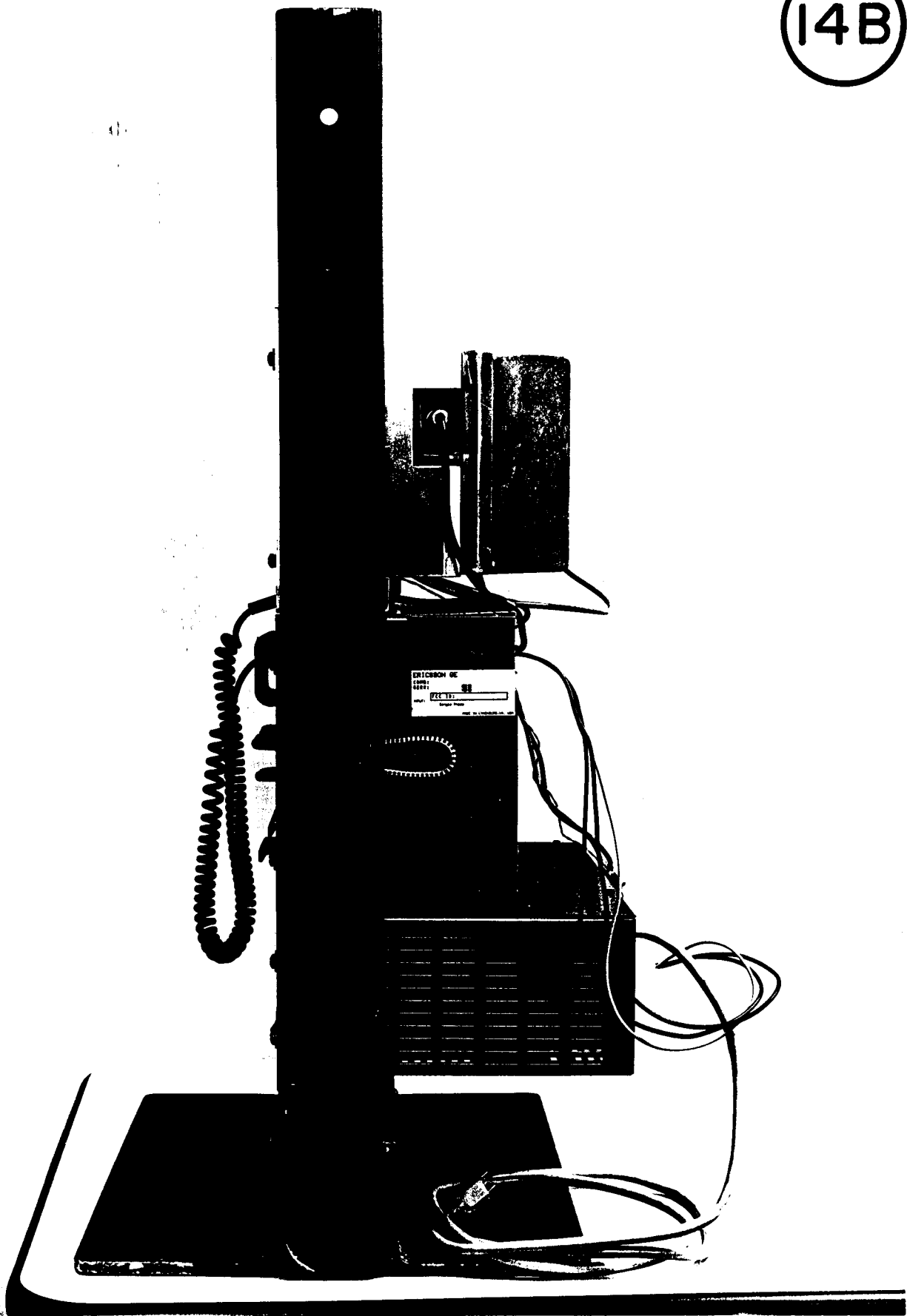
91432

MADE IN LYNCHBURG, VA. USA

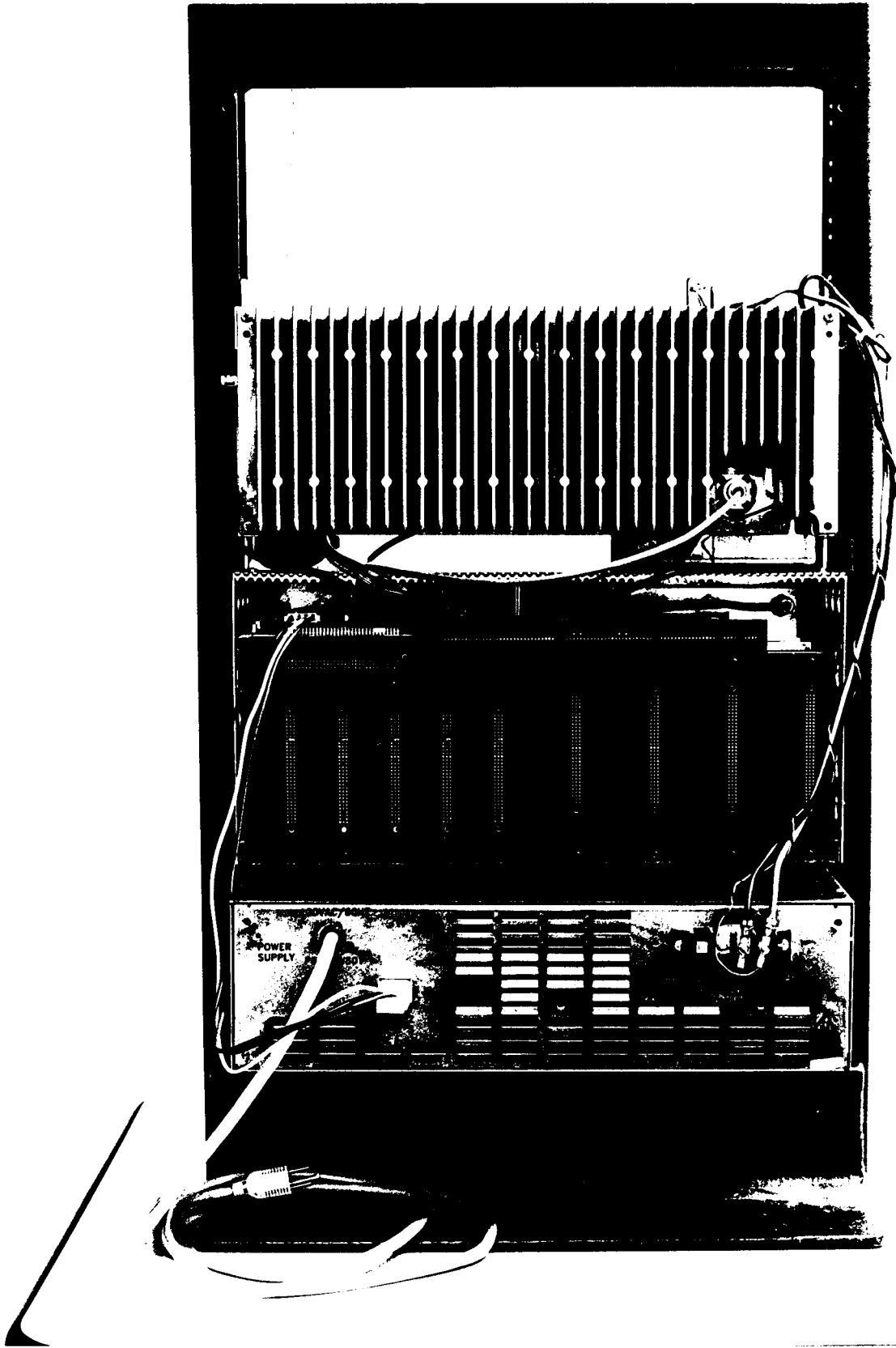
14A



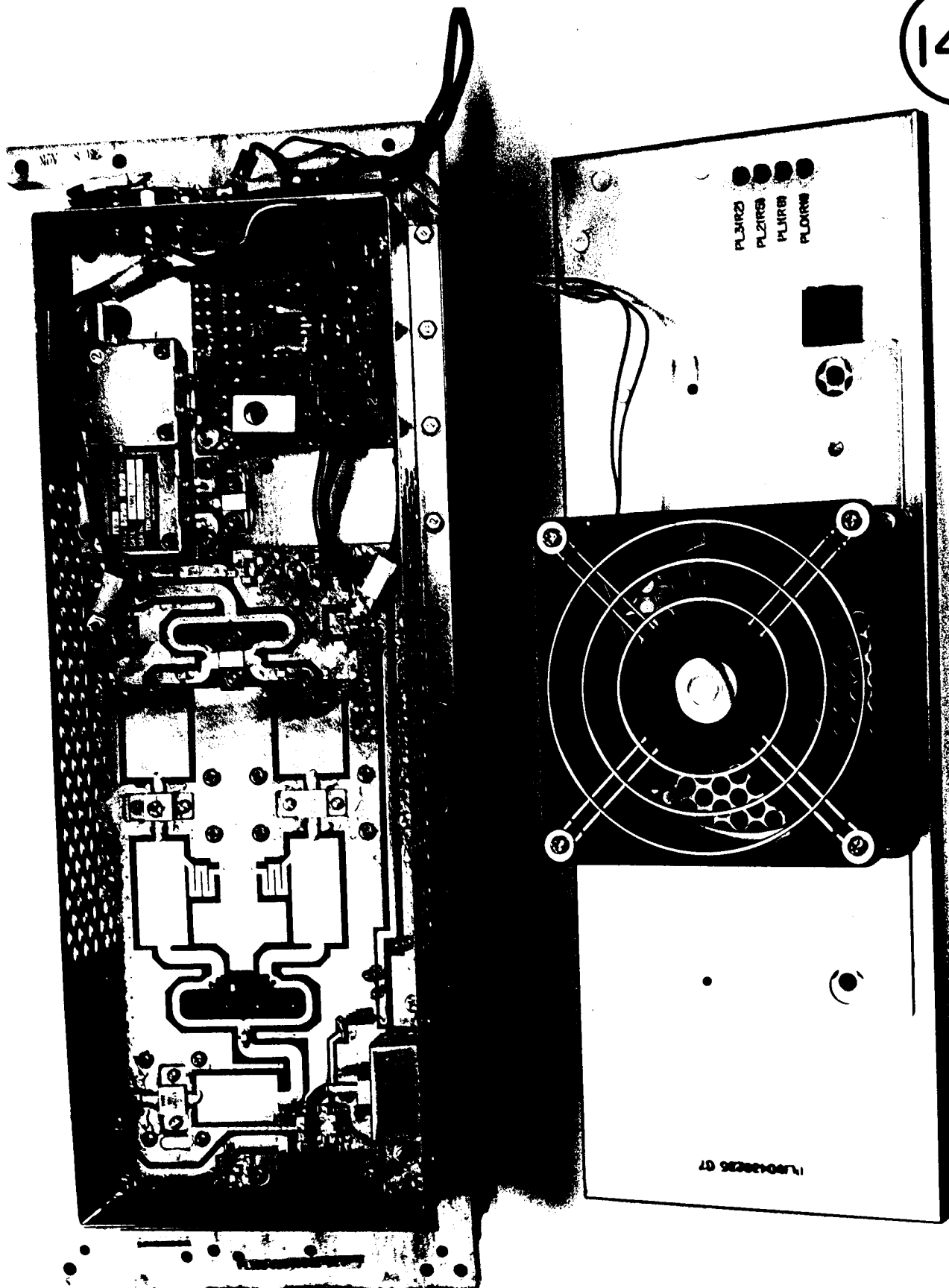
14B



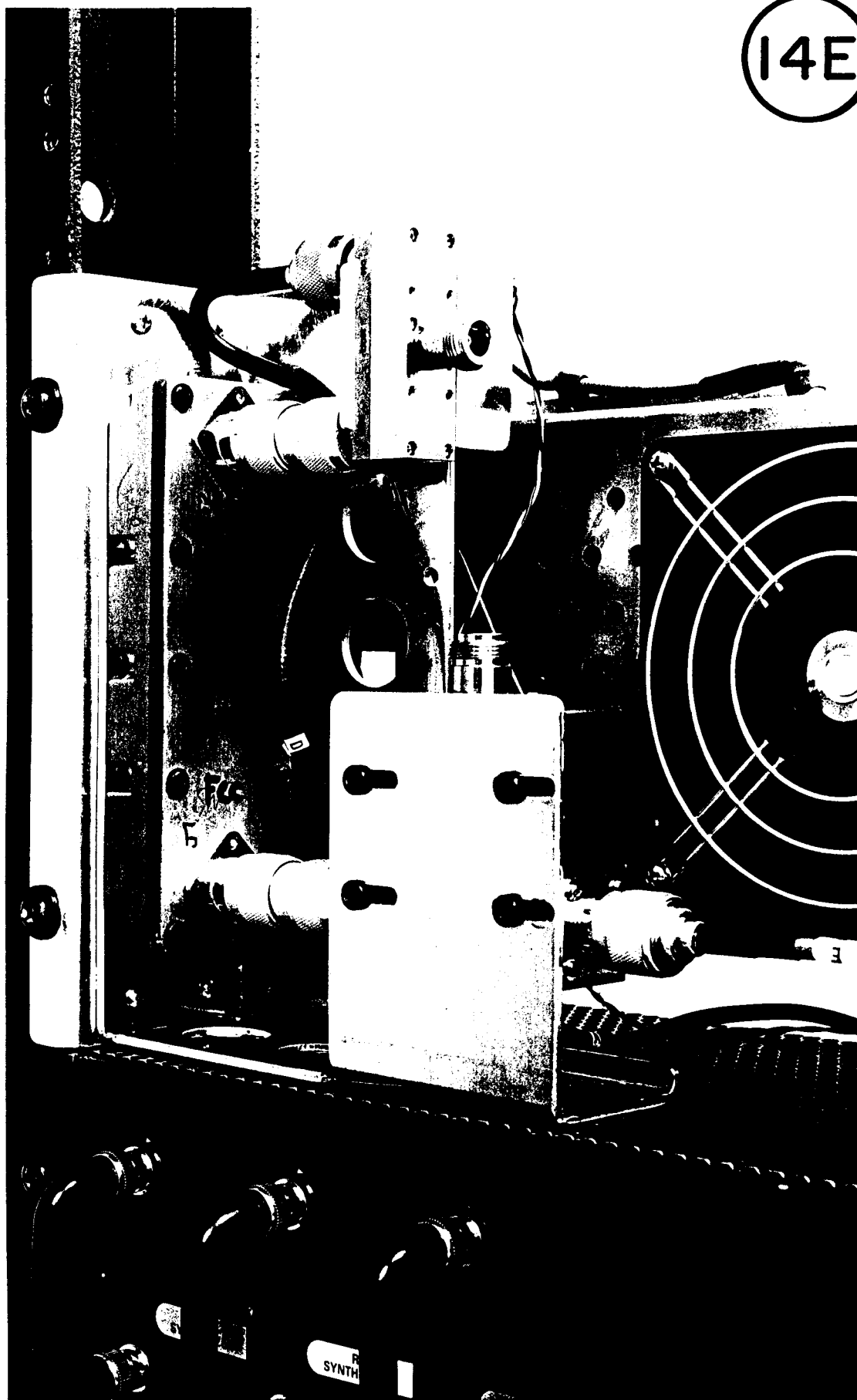
14C



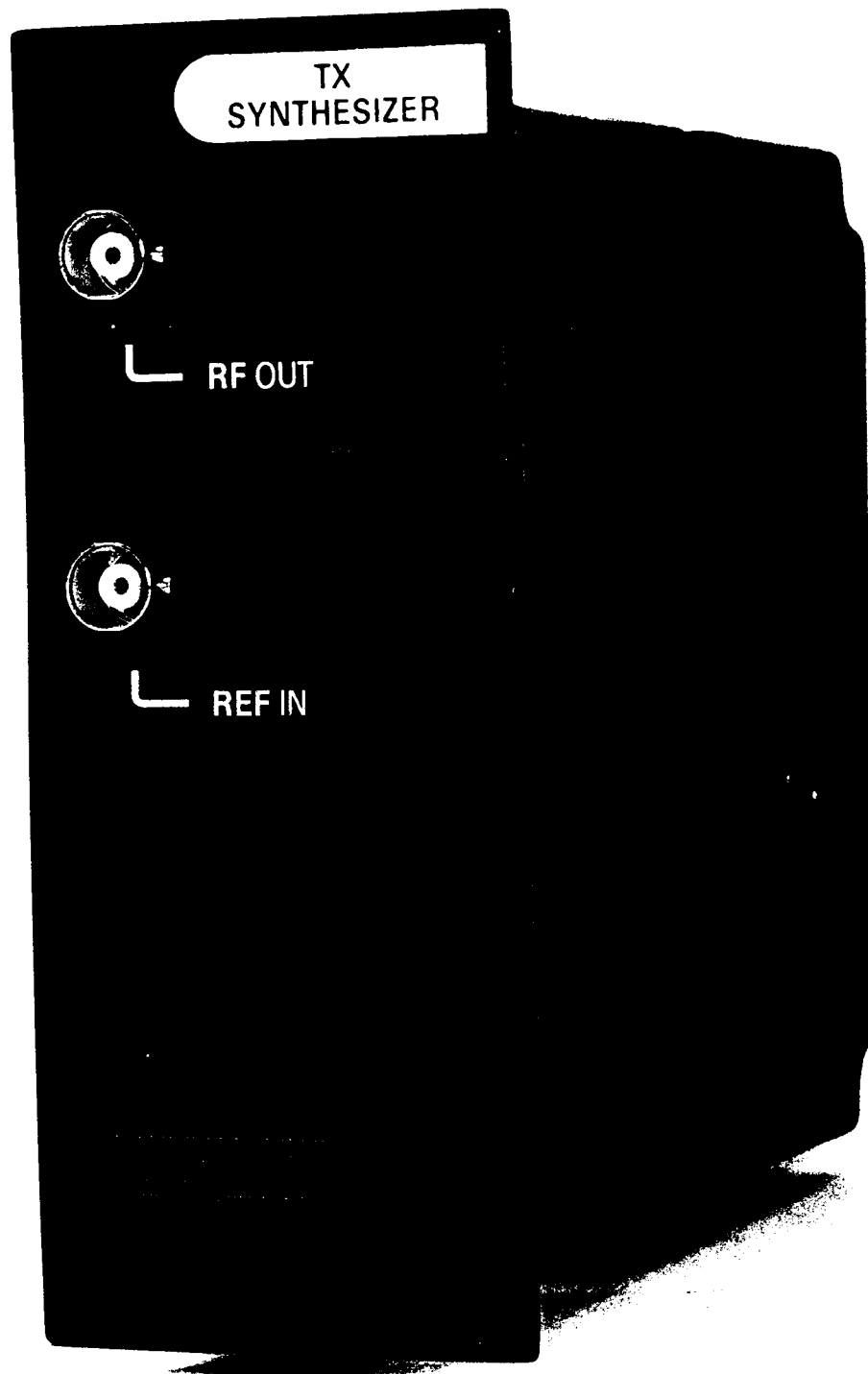
14D

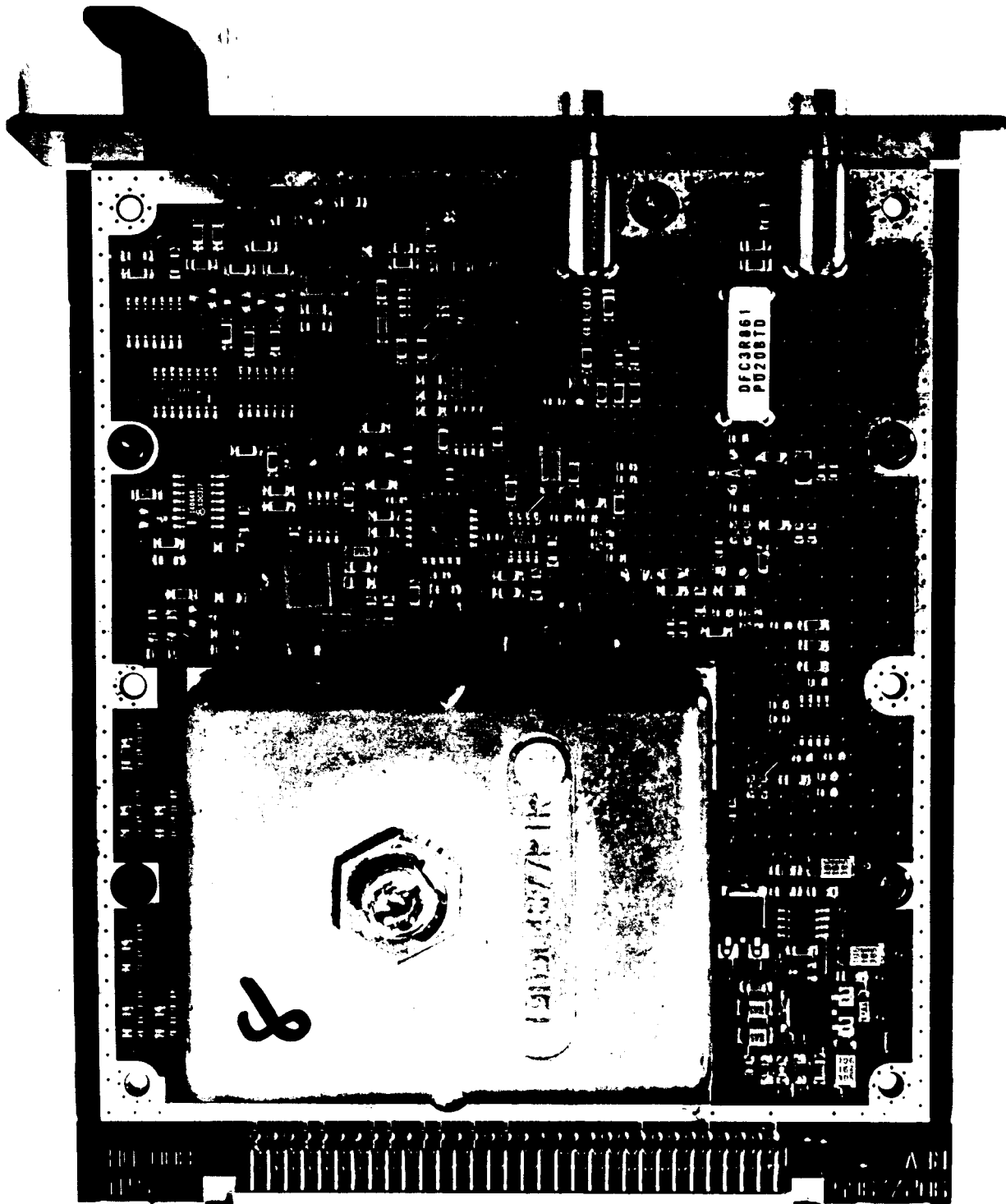


14E



14F





030102

14H

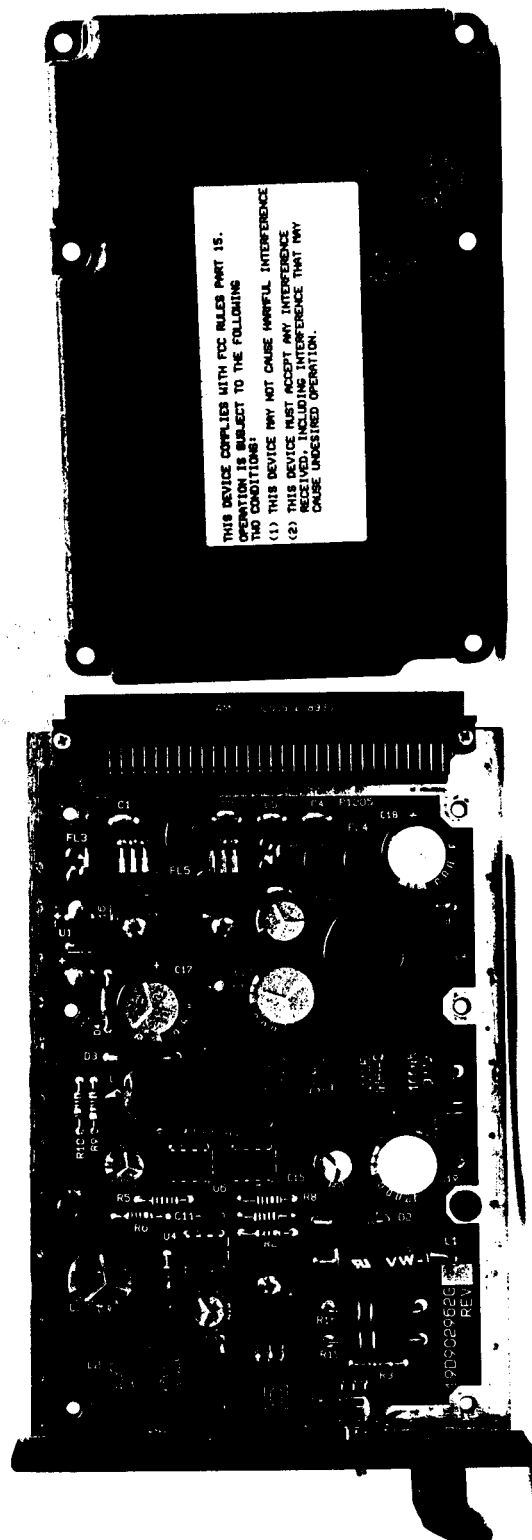
THIS DEVICE COMPLIES WITH FCC RULES PART 15.
OPERATION IS SUBJECT TO THE FOLLOWING
TWO CONDITIONS:

- (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE
- (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE
RECEIVED, INCLUDING INTERFERENCE THAT MAY
CAUSE UNDESIRABLE OPERATION.

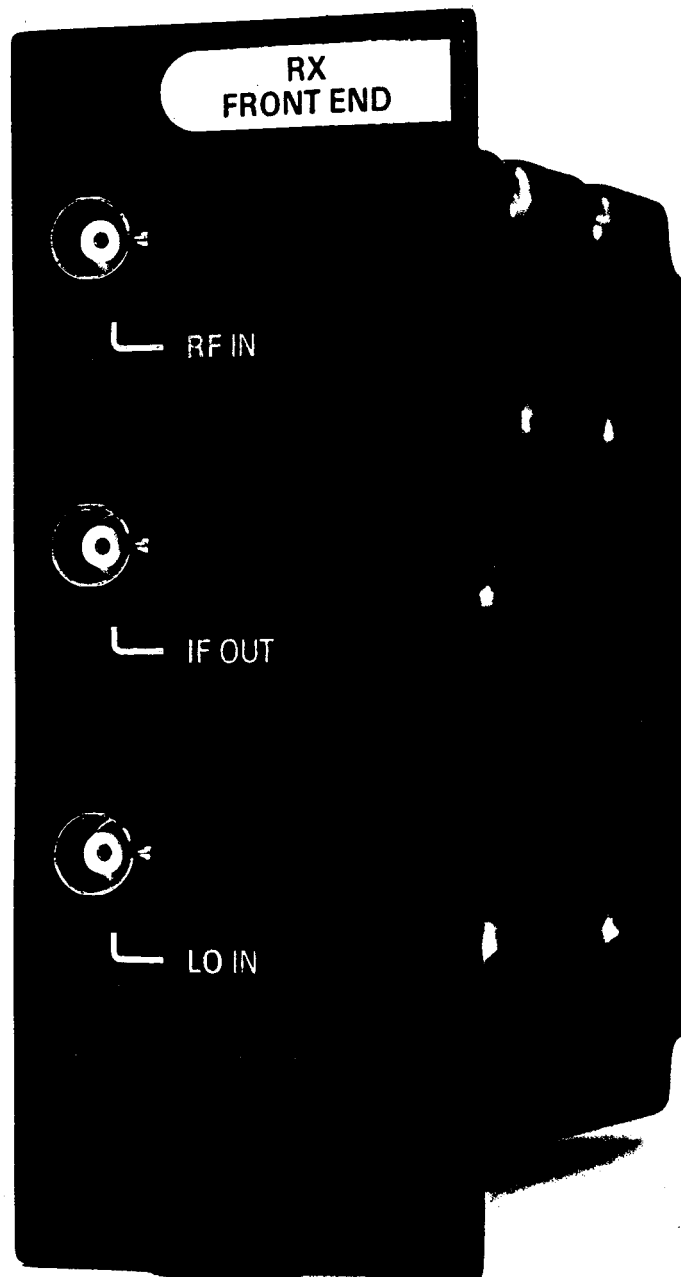
ML 20, ML 25, ML 27 ML 29 ML 30 MIT 014

ANALOG DEVICES
AD92-201
MG-40
Δ9030

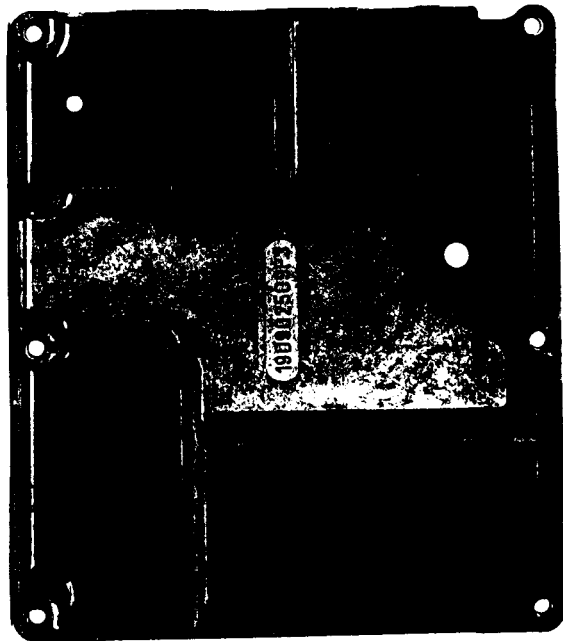
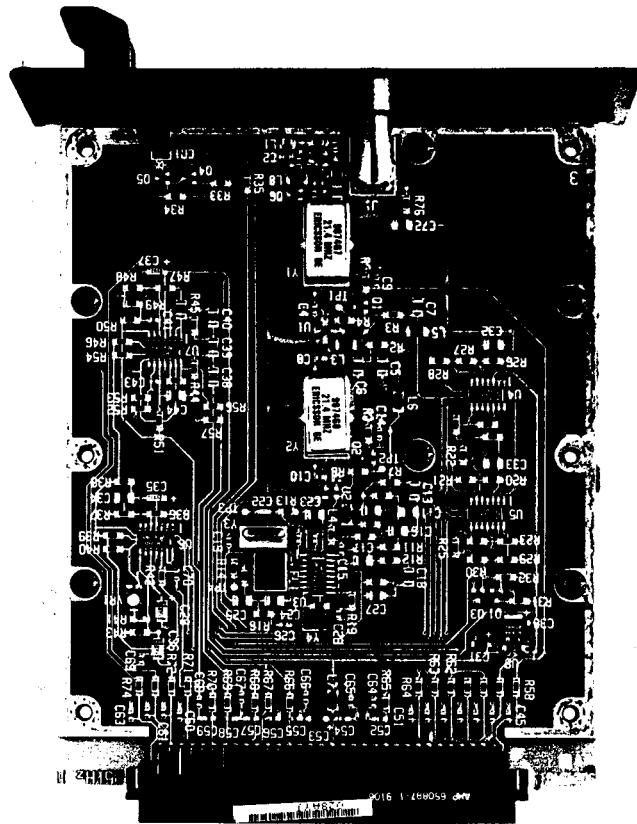
190000667611 REV. 1



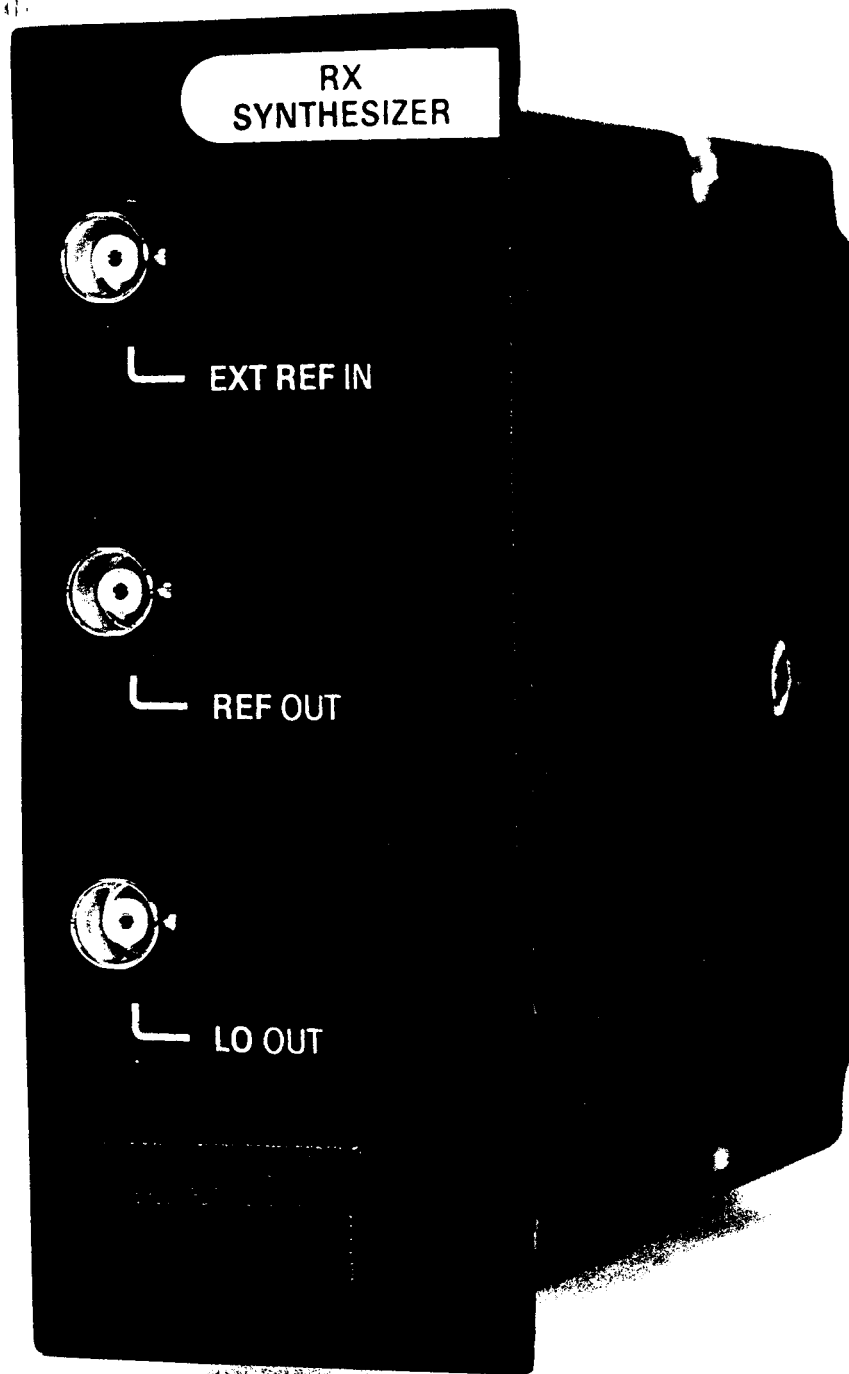
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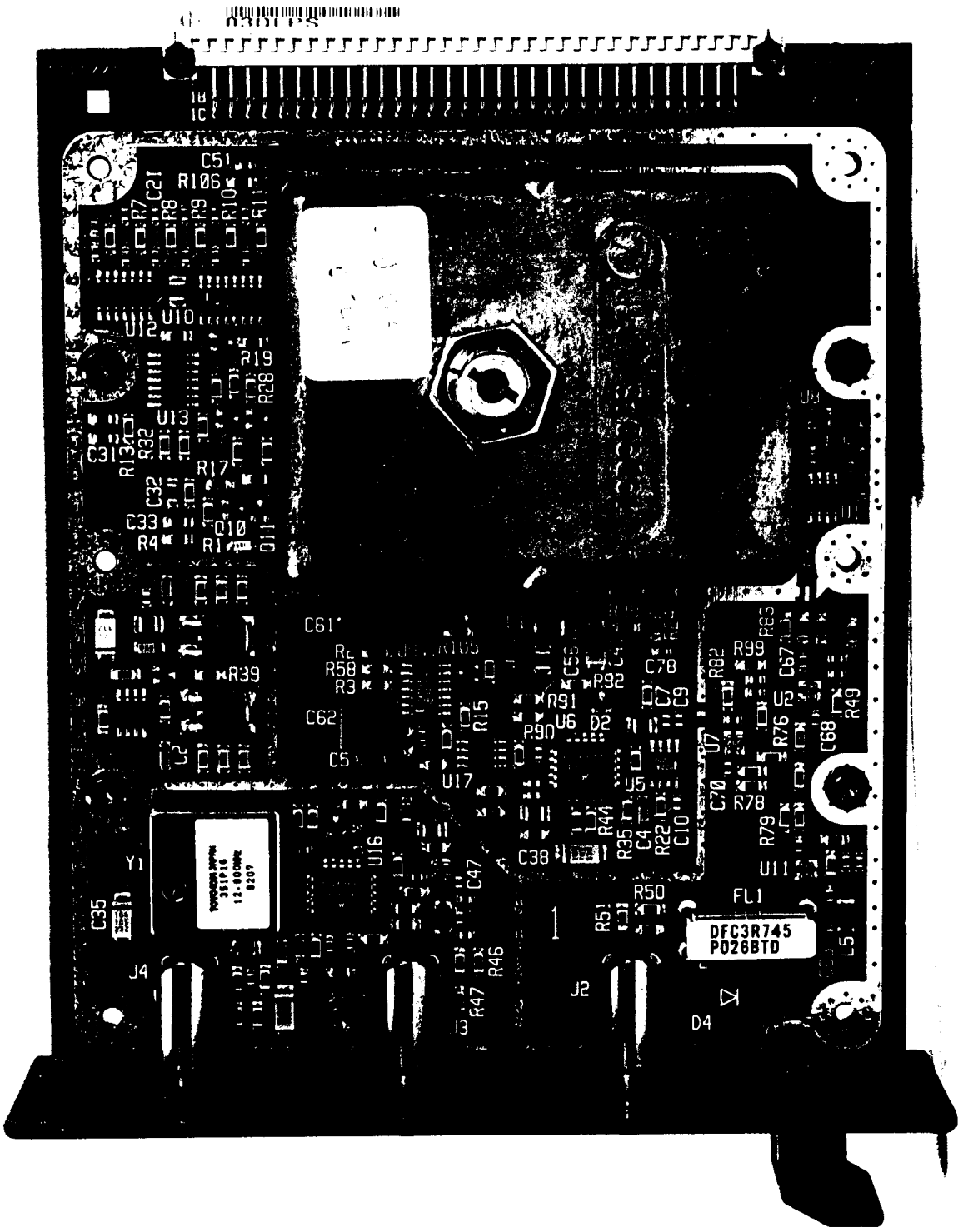


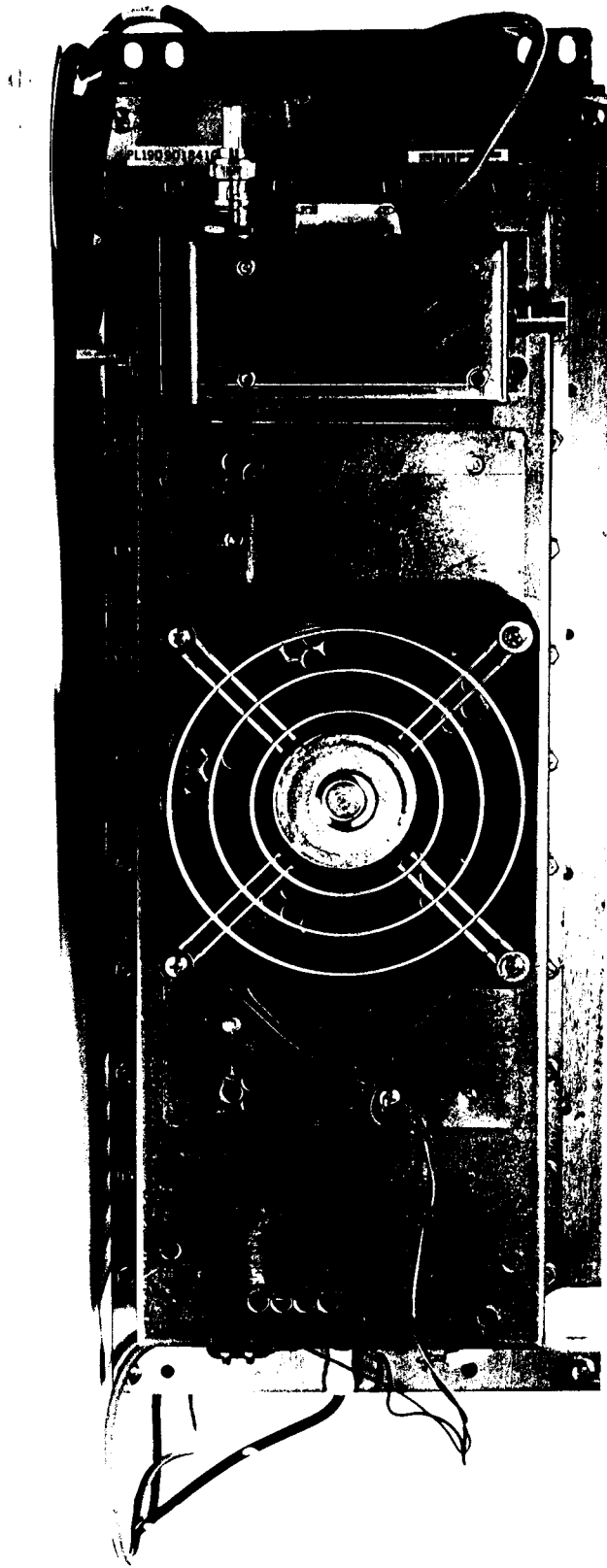
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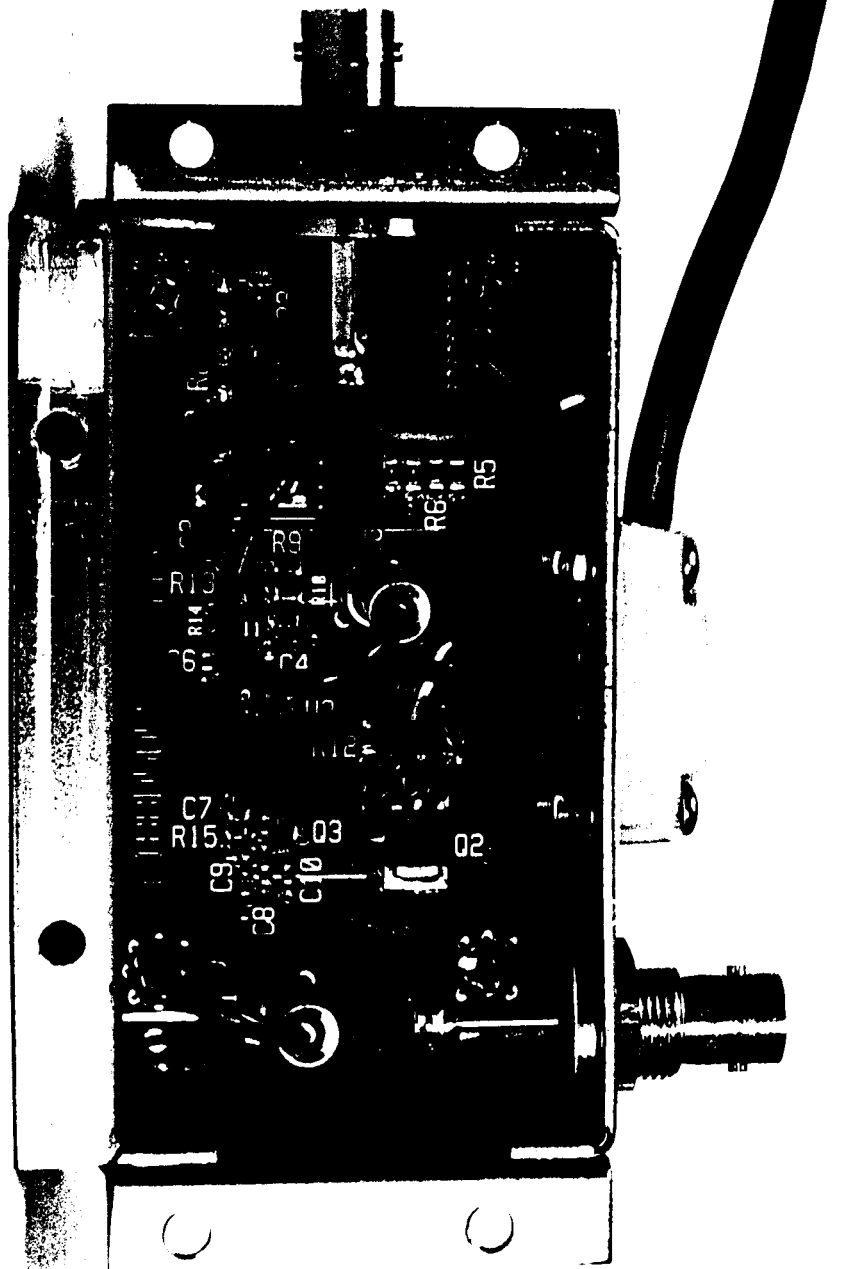
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14P



14Q

