



July 19, 1996

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

Attention: Equipment Authorization Branch

Subject: Modification of Type Acceptance for FCC ID: AXATR-197-A2

Members of the Commission,

Ericsson Inc. request Modification of Type Acceptance for the following Mobil Station Transceiver. This transceiver will operate in the 136-174 MHz range, and is capable of operating in either conventional or trunked mode. We are requesting Emission Designator 11K0FE be added to the existing grant of Type Acceptance for narrowband 12.5 KHz operation. Data to support this request is enclosed. Occupied Bandwidth, Modulation Limiting and Transient Frequency Behavior plots were taken per Pt. 90.210, 90.211, and 90.214 respectively.

If additional information is required, please contact me at the numbers listed below.

Sincerely,

A handwritten signature in black ink, appearing to read "Bryan McWatters".

Bryan McWatters,
Staff Specialist
(804)948-6110
Fax: (804) 948-6510



Certificate Number FM 11374EUSA

Ericsson Inc.
Private Radio Systems
Mountain View Road
Lynchburg, Virginia 24502

Telephone: (804) 528-7000

ERICSSON REGULATORY GROUP
1 MOUNTAIN VIEW RD.
LYNCHBURG, VA. 24502

1093

68-25 228
510

Pay to the
Order of **FEDERAL COMMUNICATIONS COMMISSION**

\$ 45.00

Forty five Dollars

Dollars

Central Fidelity
National Bank
Lynchburg, Virginia 24504

For W.D. of ID-IR-AT

Signed

⑆051000253⑆ 791170024 1093

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PHONE

Bryan McWatters
Ericsson Inc.
Mountain View Road
Lynchburg, VA 24502

TO: (PLEASE PRINT)

PHONE

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

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NOV 1993



July 19, 1996

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

Subject: Enclosed check for Modification of Type Acceptance:

FCC ID

FEE

AXATR-197-A2

\$45

A handwritten signature in black ink, appearing to read "Bryan McWatters".

Bryan McWatters,
Staff Specialist
Room 2630
(804)948-6110
Fax: (804) 948-6510

Enclosures: check
Filing for Equipment Approval Branch



Certificate Number FM 11374EUSA

Ericsson Inc.
Private Radio Systems
Mountain View Road
Lynchburg, Virginia 24502

Telephone: (804) 528-7000

FCC FORM 731
APPLICATION FOR EQUIPMENT AUTHORIZATION

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 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)

VIRGINIA

ZIP CODE

24502

COMPLETE FCC IDENTIFIER:

GRANTEE CODE

A

X

A

EQUIPMENT PRODUCT CODE (14 characters maximum)

TR-197-A2

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)

FEE TYPE CODE			FEE MULTIPLE				FEE DUE FOR FEE TYPE CODE IN COLUMN (A)	FOR FCC USE ONLY	
(1)	E	A	T	0	0	0	1	\$ 45.00	

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			
\$ 45.00			FOR FCC USE ONLY

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

BRYAN McWATTERS, STAFF SPECIALIST

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	
(b) NAME AND TITLE OF PERSON AT ABOVE ADDRESS TO RECEIVE GRANT:				RG	
2. INFORMATION CONTACT, IF DIFFERENT FROM ITEM 5, PAGE 1 (See instructions): Firm name, contact person, number, street, city, state, and ZIP Code				Code	
				Reviewer	
3.(a) TELEPHONE NUMBER (include area code and extension - USA ONLY):			3.(b) FAX NUMBER (include area code and extension - USA ONLY):		
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) ☐ Yes ☒ 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) ☐ Yes ☒ No					
6. Kind of equipment authorization requested (check ONE box only): ☐ Certification ☒ Type Acceptance ☐ Type Approval ☐ Notification					
7.(a) Kind of equipment: MOBIL STATION TRANSCEIVER			(b) Equipment will be operated under FCC Rule Part(s): 22, 74, 80, 90		
8. Application is for (Check ONE box only): ☐ 1 Original equipment ☐ 2 Change in identification of presently authorized equipment * ☒ 3 Class II permissive change or modification of presently authorized equipment * If box 2 is checked, complete items 9(a) and (b).				9.(a) FCC ID before change in identification:	
				(b) Grant date of FCC ID in 9(a) above:	
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	
136-174 MHz	50-125 Watts	+ 1.5 PPM	16KOF3E 15KOF1D 15KOF1E 15KOF2B 15KOF2D 11KOF3E		
11. Type of equipment tested: ☒ Production ☐ Pre-Production ☐ Prototype					
12.(a) Is the equipment, or section(s) thereof, subject to more than one equipment authorization? ☐ Yes ☒ No If YES, complete items 12(b), (c), (d), or (e) as appropriate.					
(b) Additional equipment authorization(s) required for equipment: ☐ Certification ☐ Type Acceptance ☐ Type Approval ☐ Notification					
(c) Granted FCC ID or FCC ID listed on RX or RX section application:		(d) Granted FCC ID or FCC ID listed on TX or TX section application:		(e) Granted FCC ID or FCC ID listed on other device application:	

(b) Mailing address number, street city, state and ZIP code	(c) Telephone No. (Area code and number): (USA ONLY)
	(d) FAX No. (Area code and number): (USA ONLY)

14. APPLICANT ANTI-DRUG ABUSE CERTIFICATION:

14. **APPLICANT ANTI-DRUG ABUSE CERTIFICATION.**
By checking **yes**, the applicant certifies that, in the case of an individual applicant, he or she is not subject to a denial of federal benefits, that includes FCC benefits, pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 853(a), or, in the case of a non-individual applicant (e.g. corporation, partnership or other unincorporated association), no party to the application is subject to a denial of federal benefits, that includes FCC benefits, pursuant to that section. For the definition of a "party" for these purposes, see 47 CFR 1.2002(b). ☒ Yes ☐ No

15. **APPLICANT CERTIFICATION:**

15. **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 the applicant is not the actual manufacturer of the equipment listed herein, appropriate arrangements have been made with the manufacturer to ensure that production units of this equipment bearing the FCC IDENTIFIER listed in this application will continue to comply with the Commission's requirements. If an agent has been authorized to sign this application it is understood that the applicant remains responsible for all statements herein.

▲ Written signature of authorized signer

7/18/96

▲ Date (Month, Day, Year)

BRYAN McWATTERS

▲ Typed/printed name of authorized signer

STAFF SPECIALIST
▲ Title of authorized signer

16.(a) AGENT CERTIFICATION:

16.(a) AGENT CERTIFICATION:
I certify that I am authorized to sign this application on behalf of the applicant. A copy of the authorization will be submitted upon request by the FCC. It is understood that the FCC reserves the right to contact the applicant at any time.

▲ Written signature of authorized agent

▲ Date (Month, Day, Year)

▲ Typed/printed name and title of authorized agent

▲ Business name of authorized agent

(b) Agent address number, street city, state and ZIP code	(c) Telephone No. (Area code and number): (USA ONLY)
	(d) FAX No. (Area code and number): (USA ONLY)

NOTICE TO INDIVIDUALS REQUIRED BY THE PRIVACY ACT OF 1974 AND THE PAPERWORK REDUCTION ACT OF 1980

The solicitation of personal information requested in this form is authorized by the Communications Act of 1934, as amended. The Commission will use the information provided in this form to evaluate the equipment, to maintain a computer database of authorized equipment, and to determine whether grant of this application is in the public interest. In reaching that determination, or for law enforcement purposes, it may become necessary to refer personal information contained in this form to another government agency. All information provided in this form will be available for public inspection, unless otherwise determined pursuant to 47 CFR, Section 0.459; 5 U.S.C. Section 552. If information requested in this form is not provided, processing of the application may be delayed or the application may be returned without action pursuant to the Commission's Rules. Your response is required to obtain the requested equipment authorization. THE FOREGOING NOTICE IS REQUIRED BY THE PRIVACY ACT OF 1974, P.L. 93-579, DECEMBER 31, 1974, 5 U.S.C. 552a(e)(3), AND THE PAPERWORK REDUCTION ACT OF 1980, P.L. 96-511, DECEMBER 11, 1980, 44 U.S.C. 3507.

Public reporting burden for this collection of information is estimated to vary from 18 hours to 30 hours per response, with an average of 24 hours per response, including time for reviewing instructions, searching existing data sources, gathering information and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any aspect of this collection of information, including suggestions for reducing this burden, to Federal Communications Commission, AMD-PIRS, Records Management Division, Washington, DC 20554, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Paperwork Reduction Project (3060-0057), Washington, DC 20503.

APPLICANT:
ERICSSON INC

FCC ID NO.:
AXATR-197-A2

EXHIBIT LIST

<u>Exhibit No.</u>	<u>Par. Ref. (FCC Part 2)</u>	<u>Description</u>
9E	2.987 (a, b, d)	Modulation Characteristics
10E-E1	2.989 (c, d, i) (h)	Occupied Bandwidth
15B1-E2	90.214	Transient Frequency Behavior

Exhibit 9A

MODULATION CHARACTERISTICS

Ref. Par. 2.987 (a, b, d) the frequency and amplitude response to audio inputs measured per TIA/EIA 603 are shown on the following sheets:

136-174 MHz

Exhibit 9E: Modulation Versus Modulation Input Voltage (12.5 KHz)

Equipment used was:

Marconi Instruments Ltd. FM/AM Modulation Meter TF2300B
Hewlett Packard Audio Signal Generator 204D
Hewlett Packard Distortion Analyzer 333A

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.

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EXHIBIT 10A-2

OCCUPIED BANDWIDTH

(FOR 12.5 KHz CHANNELIZATION)

Method of Measurement Per Data on Occupied Bandwidth is presented in the form of a spectrum analyzer plot which illustrates the transmitter sidebands. A plot is taken of the carrier sideband modulated with a 2500 Hz tone at a level 16 dB greater than that required to produce 50 percent modulation. (The spectrum analyzer grid indicates the reference level of the carrier unmodulated in all exhibits.)

Exhibits 10E & 10F
Telephony

$B_n = 2M + 2DK$ where

$M = 3000 \text{ Hz}$

$D = 2500 \text{ Hz}$

$K = 1 \text{ (assumed)}$

$B_n = 11000 \text{ Hz}$

Therefore, Emission Designator = 11K0F3E

Deviation (KHz)

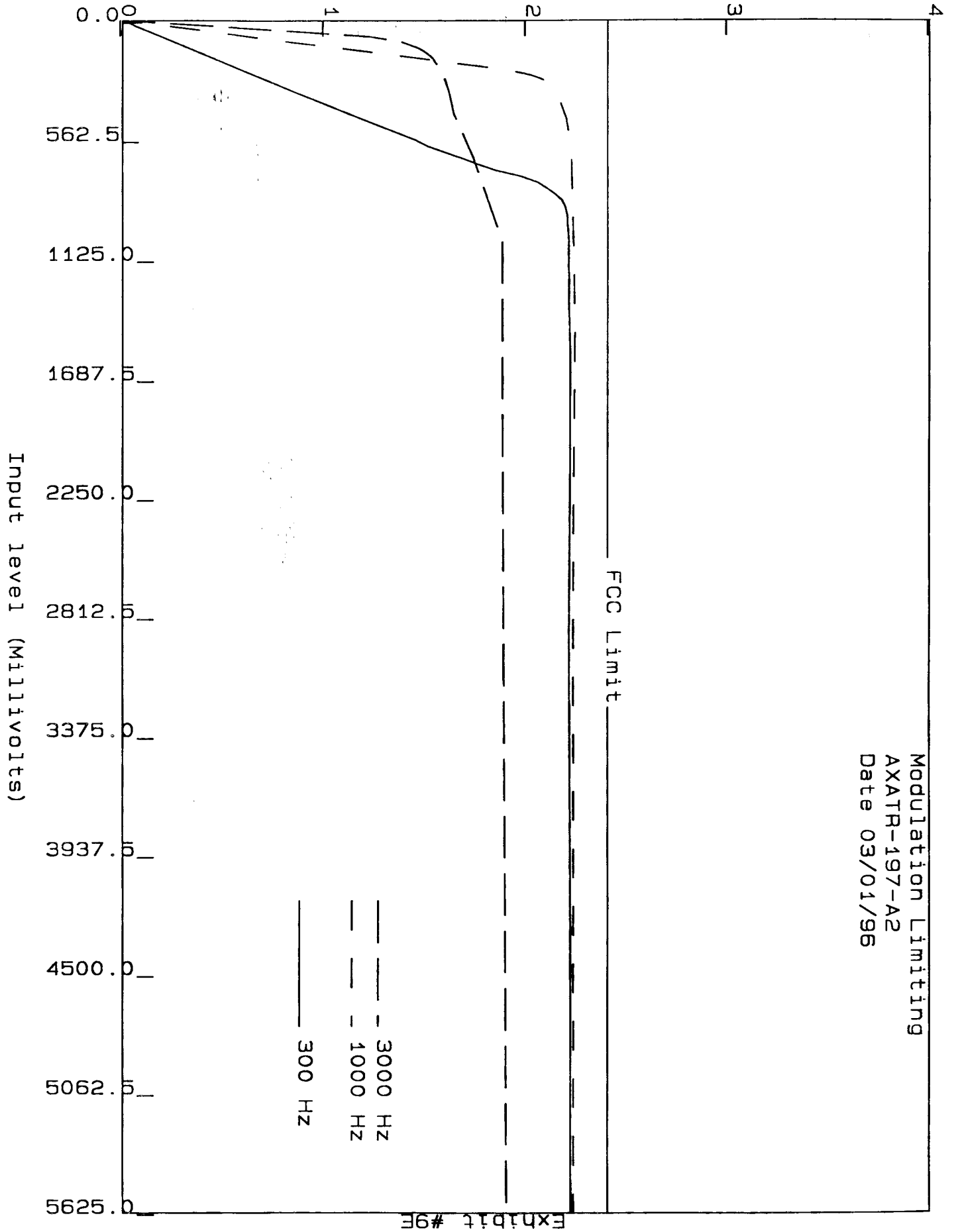


Exhibit #9F

APPLICANT:
ERICSSON INC

FCC ID NO.:
AXATR-197-A2

EXHIBIT 10A

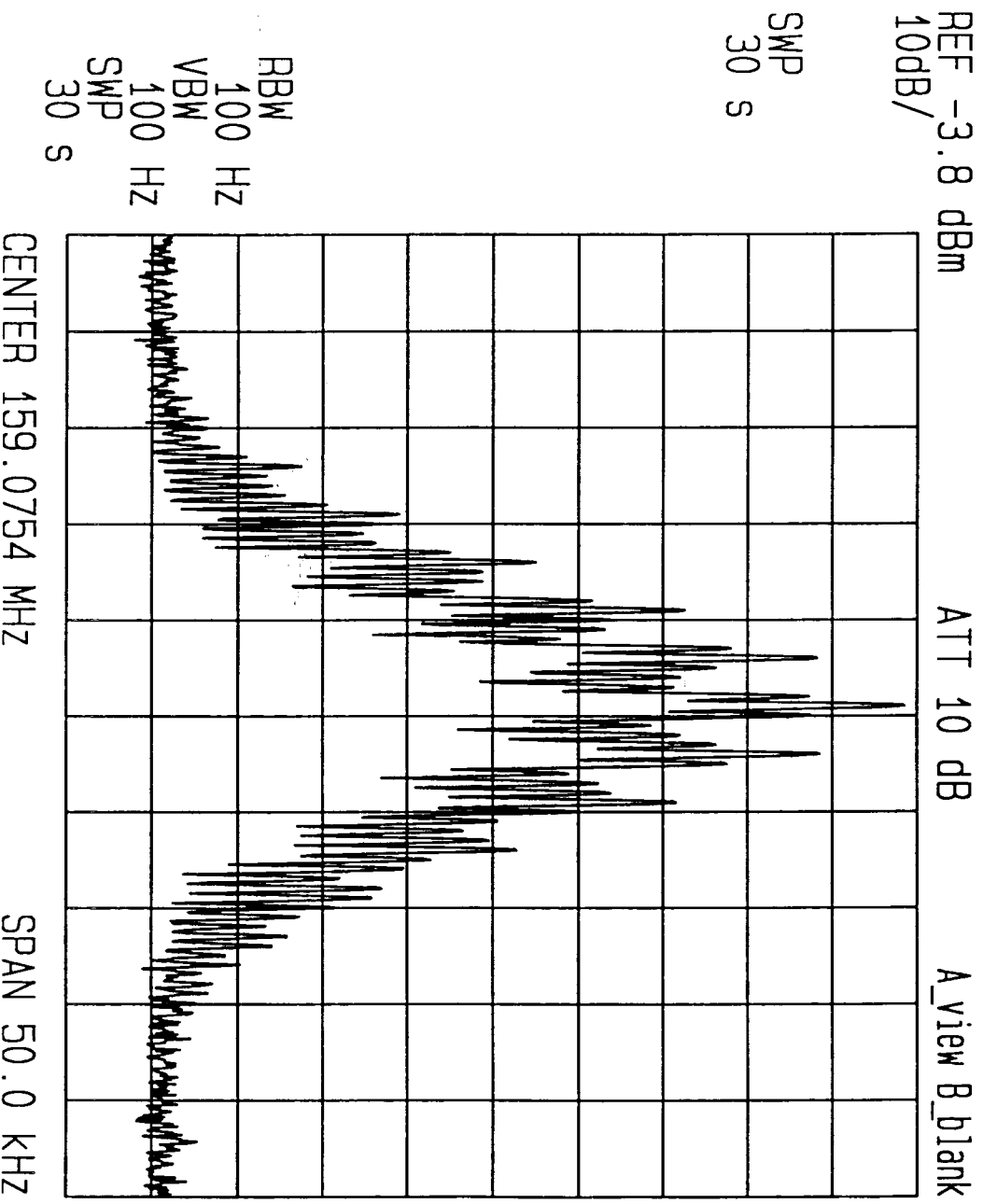
OCCUPIED BANDWIDTH

Per 2.989 (c, 1) the measurements were made per TIA/EIA 603.

159.0754 Mhz

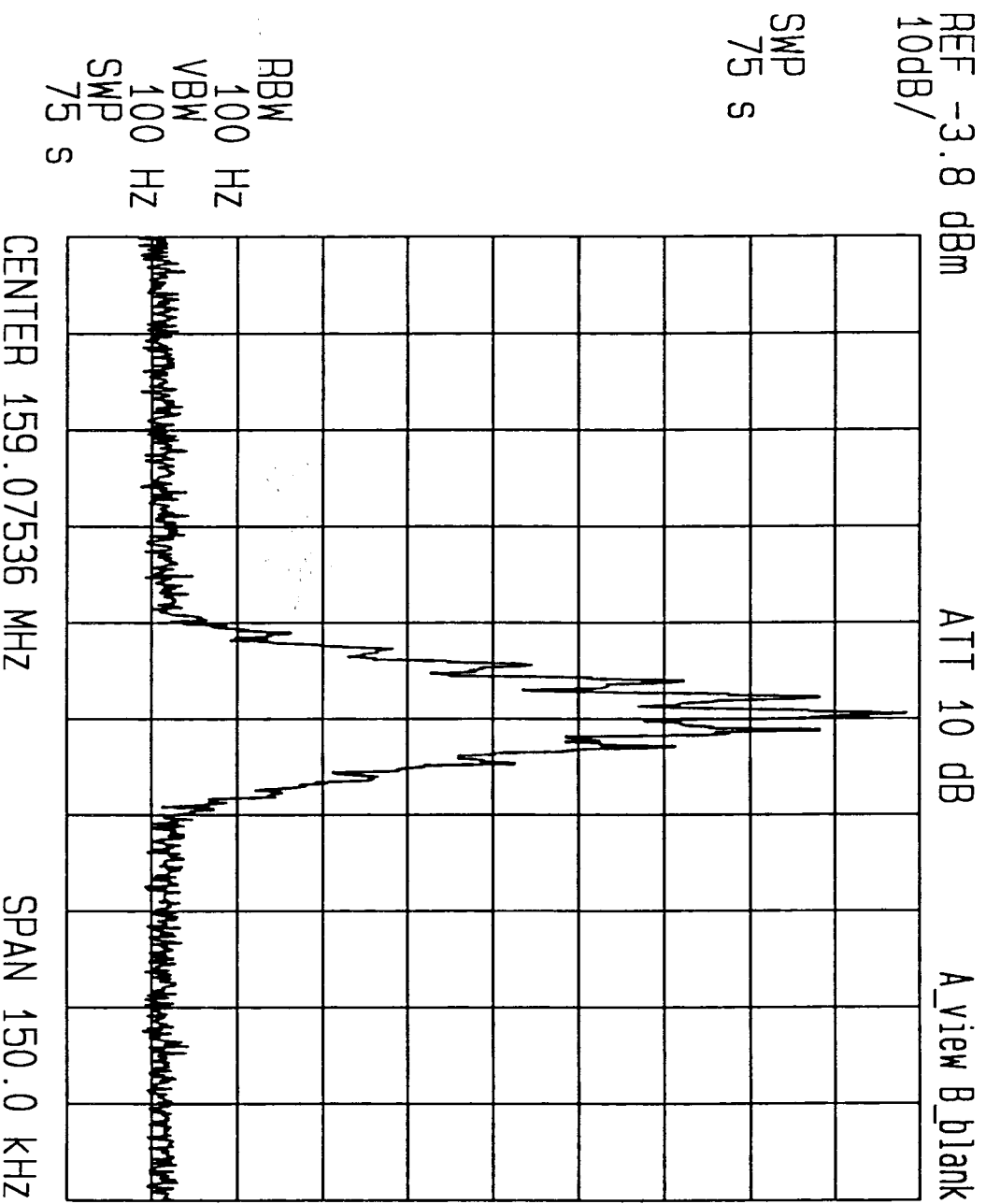
EXHIBIT #10E & 10E1 - 11K0F3E (12.5 KHz)

ERICSSON INC.
OCCUPIED BANDWIDTH
Modulation Sideband Spectrum
ID NO. AXATR-197-A2



Reference: Unmodulated Carrier
Modulated with K8
2500 Hz Audio per 2.989 (c) (1)

ERICSSON INC.
OCCUPIED BANDWIDTH
Modulation Sideband Spectrum
ID NO. AXATR-197-A2



Reference: Unmodulated Carrier
Modulated with K8
2500 Hz Audio per 2.989 (c) (1)

EXHIBIT 10E1

APPLICANT:
ERICSSON INC

FCC ID NO.:
AXATR-197-A2

EXHIBIT 15A

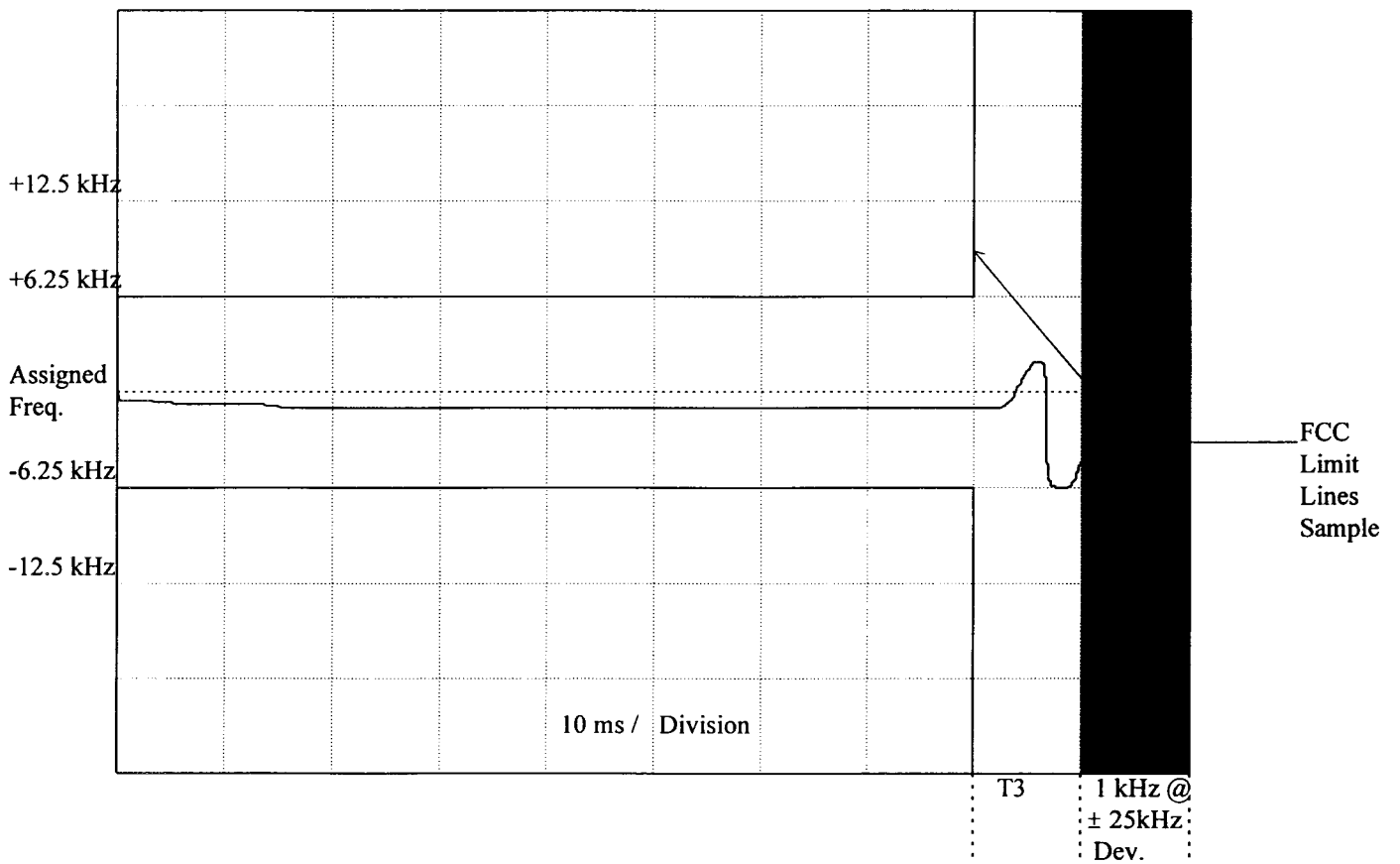
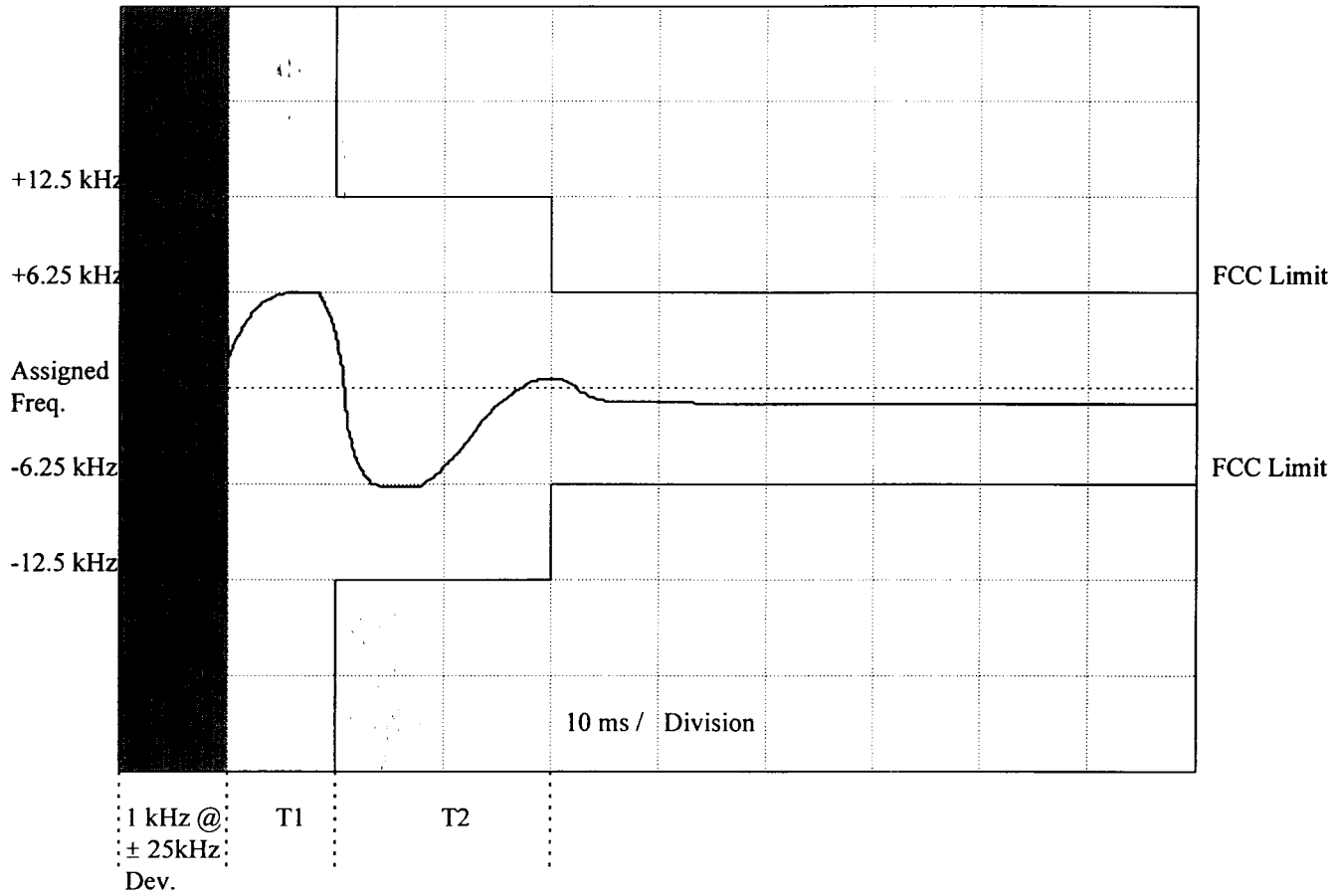
TRANSIENT FREQUENCY BEHAVIOR

PER PT 90.214 USING EIA/TIA 603, THE FOLLOWING MEASUREMENTS WERE MADE:

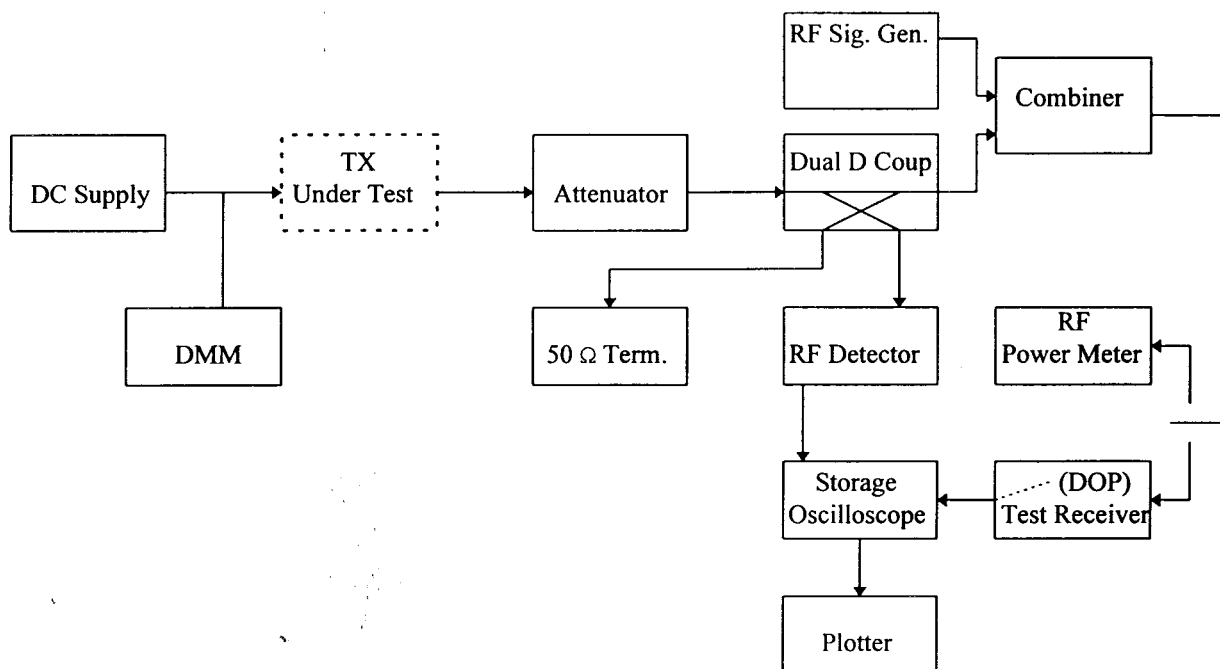
EXHIBIT NO.	FREQUENCY	CHANNEL BANDWIDTH
15B1,B2	159.0752	12.5 KHz
15C1,C2	159.0752	12.5 KHz
15D1,D2	159.0752	25 KHz
15E1,E2	159.0752	25 KHz

The Measurements taken are representative of the entire frequency band.

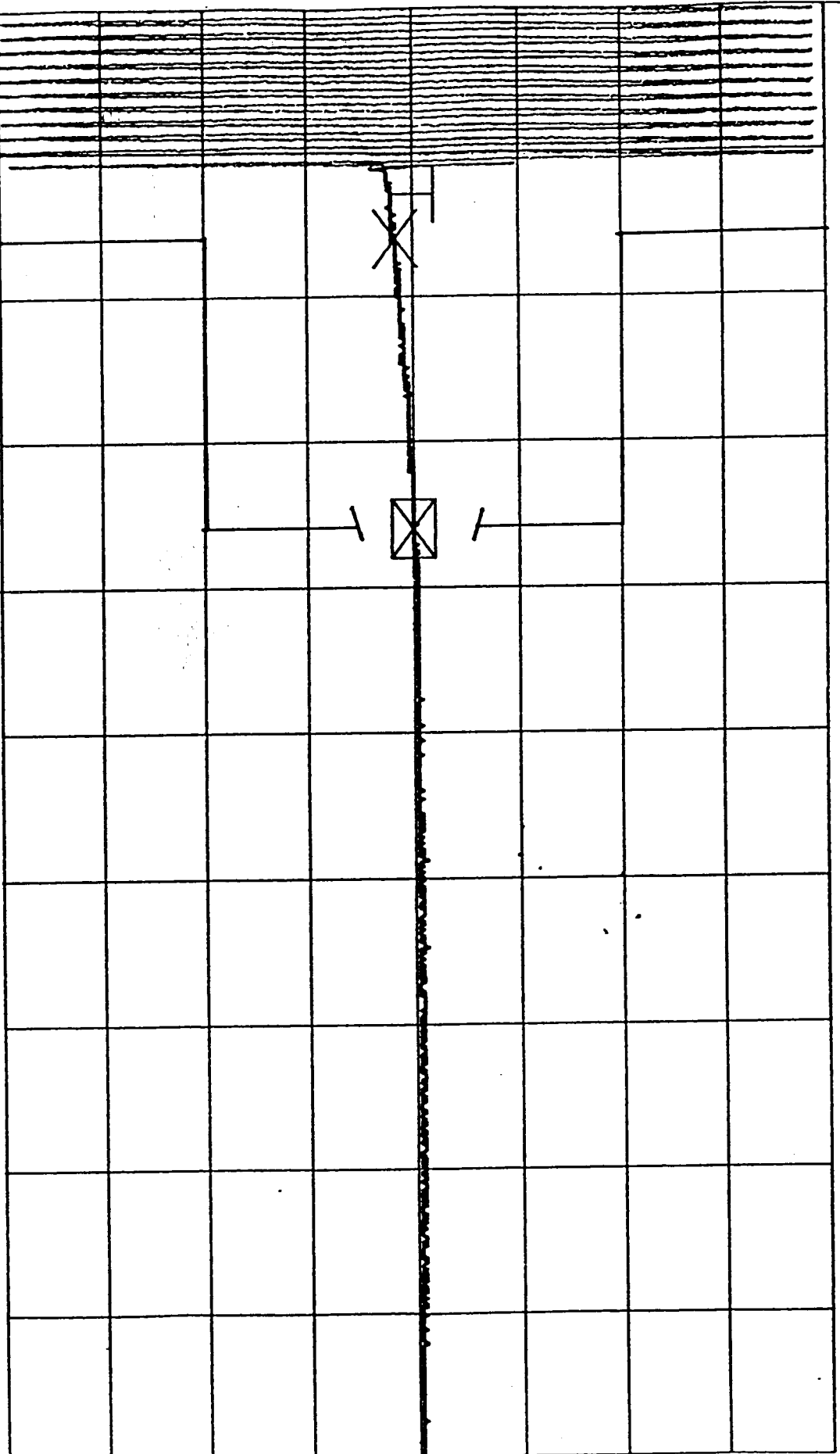
LIST OF EQUIPMENT	
HP 778D DUAL DIRECTIONAL COUPLER TEKTRONIX 2232 OSCILLOSCOPE HP 8901A MODULATION ANALYZER HP 8482A POWER SENSOR KEITHLY 179 TRMS DIGITAL MULTIMETER NARDA ATTENUATORS	HP432A RF DETECTOR HP8657A SIGNAL GENERATOR HP436A POWER METER 6261 DC POWER SUPPLY TEKTRONIX HC100 PLOTTER MINICIRCUITS 15542 ZFRSC-2050

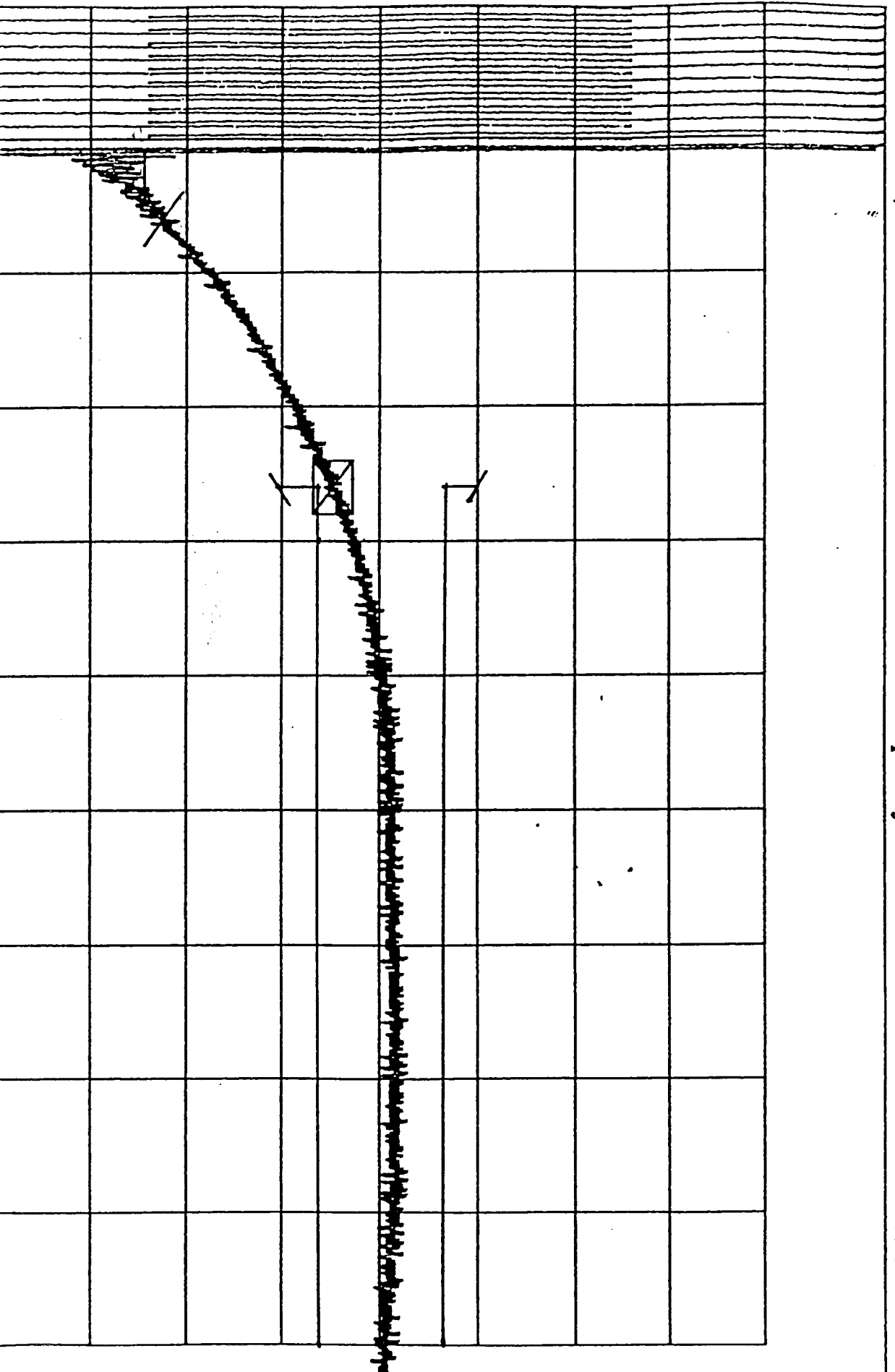


Transient Frequency Behavior Measurement Per TIA/EIA 603.

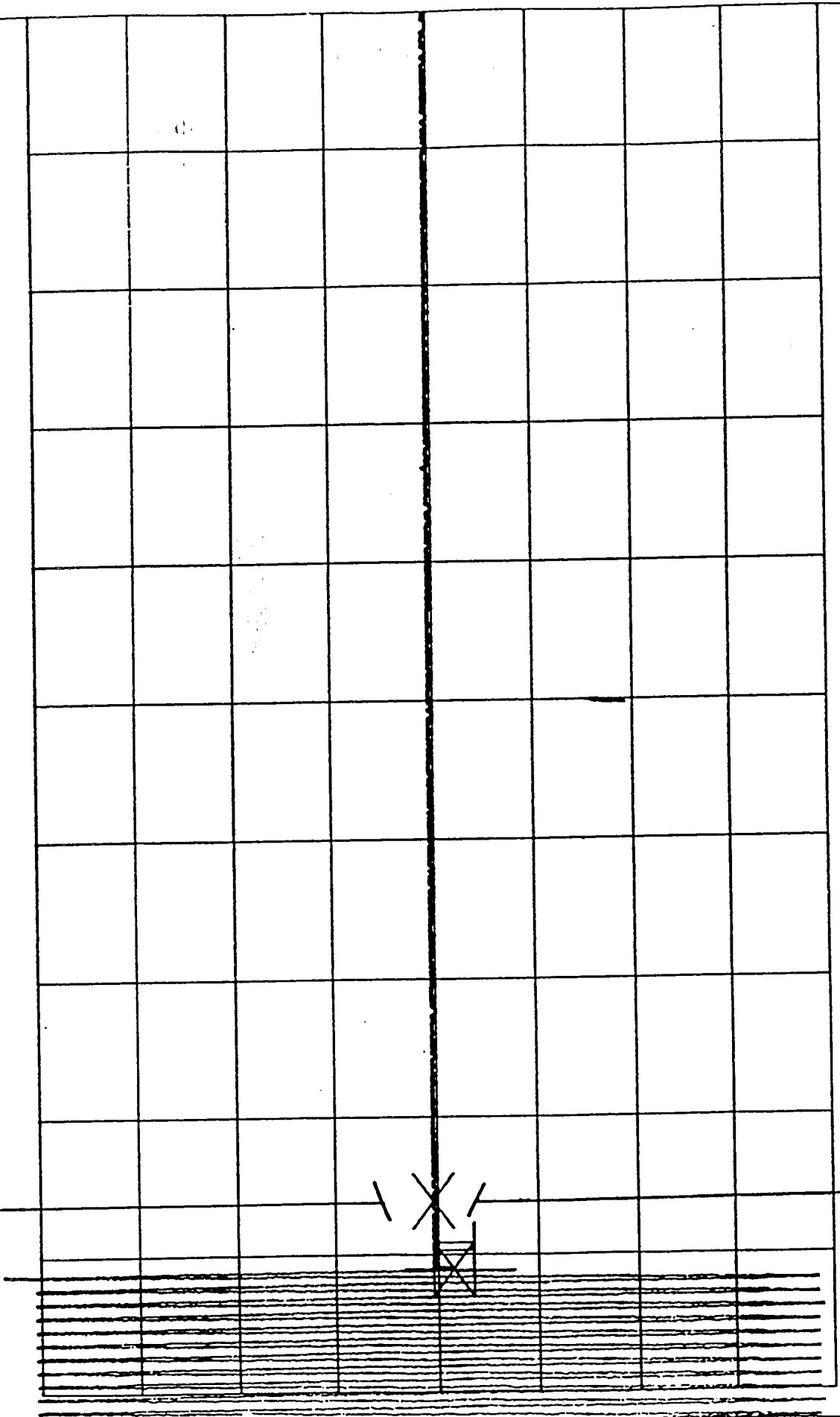


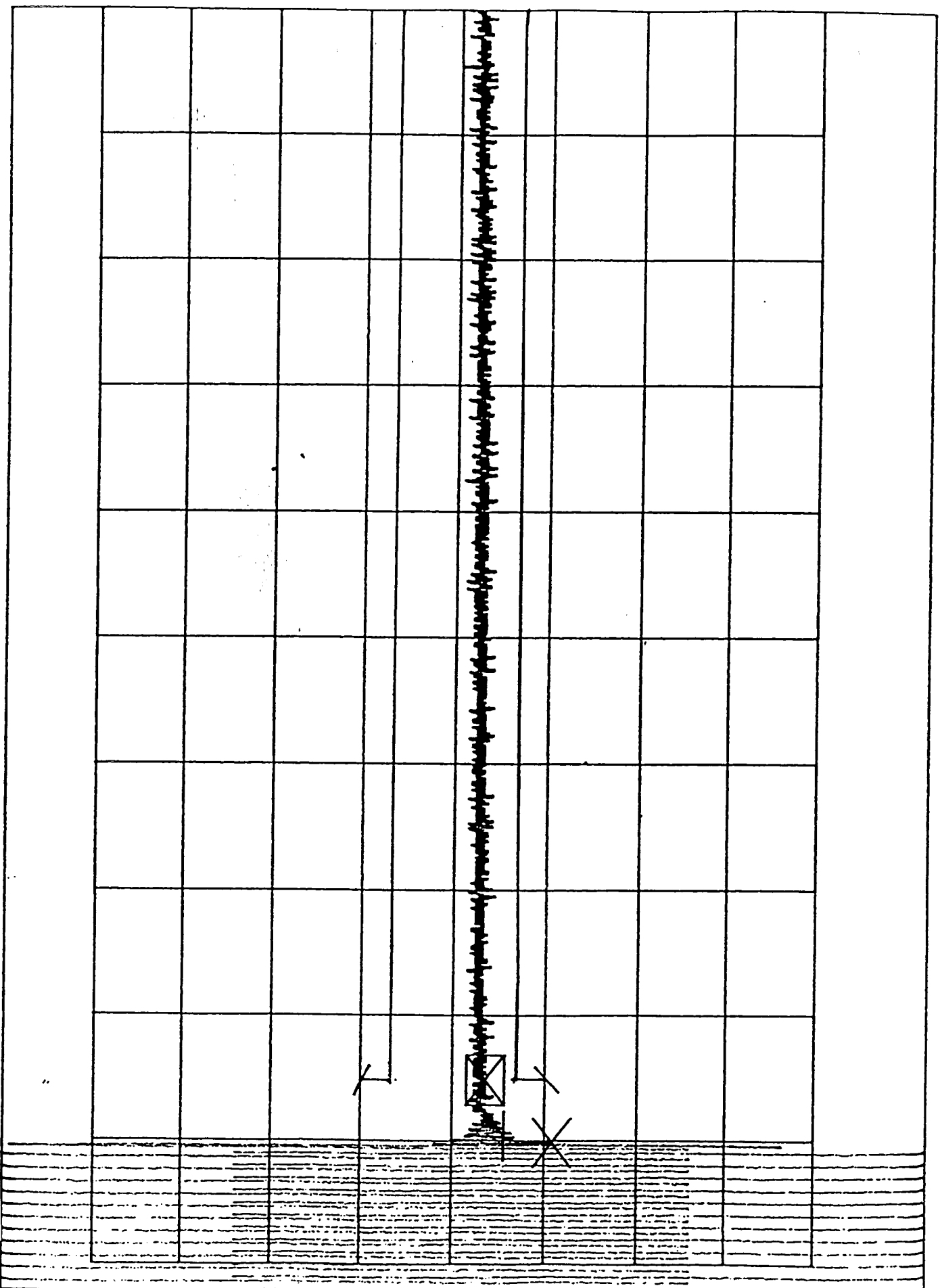
1. Equipment is connected as illustrated above.
2. Connect the test receiver's Demodulator Output Port (DOP) to the vertical input channel of the storage Oscilloscope. Connect the output of the RF detector the external trigger of the oscilloscope. Connect the output of the RF combiner the RF power meter.
3. Set the test receiver to measure FM deviation with the audio bandwidth set at ≤ 50 Hz to $\geq 15,000$ Hz and tune the RF frequency to the transmitter assigned frequency.
4. Set the signal generator to the assigned TX frequency and modulate it with a 1 kHz tone at ± 25 kHz deviation and set its power to -30 dBm.
5. Supply sufficient attenuation via the RF attenuator to provide an input level of 20 dBm or at least 10 dB below the maximum allowed input power to the test receiver.
6. Disconnect the RF power meter and connect the output of the RF combiner network to the input of the test receiver.
7. Set the horizontal sweep rate on the storage oscilloscope to 10 milliseconds per division and adjust the display to continuously view the 1000 Hz tone from the DOP. Adjust the vertical amplitude control of the oscilloscope to display the 1000 Hz at ± 4 divisions vertically centered on the display.
8. Adjust the oscilloscope so it will trigger on an increasing magnitude from the RF peak detector at 1 division from the left side of the display, when the transmitter is turned on. Set the controls to store the display.
9. Turn on the transmitter and observe the stored display. The output at the DOP, due to the change in ratio of power between the signal generator input power and the transmitter output power will, because of the capture effect of the test receiver, produce a change in display: For the first part of the sweep it will show the 1 kHz test signal. Then once the receiver's demodulator has been captured by the transmitter power, the display will show the frequency difference from the assigned frequency to the actual transmitter frequency versus time. The instant when the 1 kHz test signal is completely suppressed (including any capture time due to phasing) is considered to be "t on".
10. To test the transient frequency during the period of "t 3", the transmitter shall be switched on.
11. Adjust the oscilloscope so it will trigger on a decreasing magnitude from the RF peak detector at 1 division from the right side of the display, when the transmitter is turned off. Set the controls to store the display.
12. The transmitter shall be switched off.
13. Observe the display. The trace should remain within the allowed divisions during the period "t 3", according to the specifications in 90.213, 90.214.

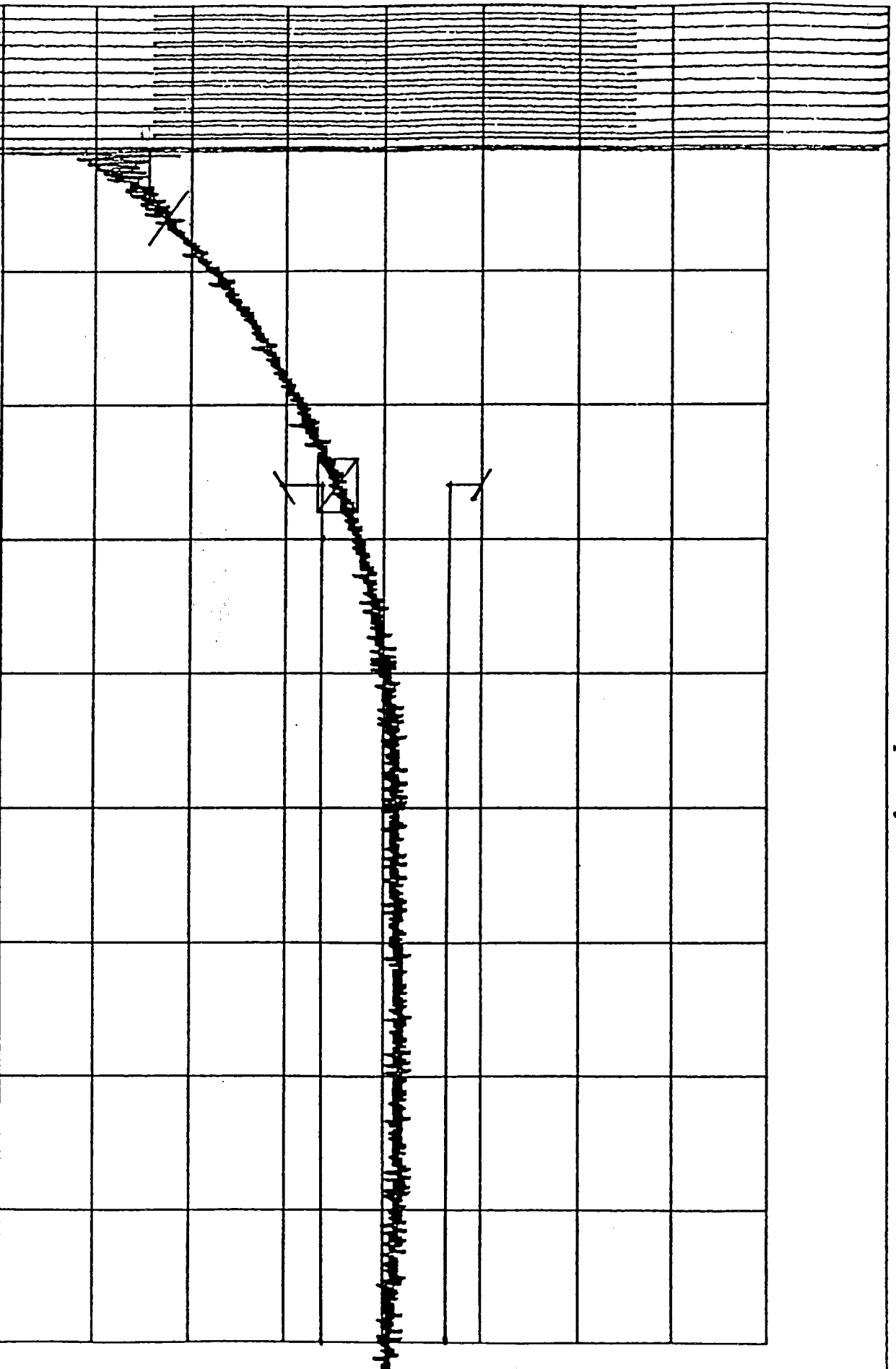




159.0752 MHz / 12.5 kHz Channel Space / Vertical Expanded X10 / Exhibit 15B2







159.0752 MHz / 25 kHz Channel Space / Vertical Expanded X10 / Exhibit 15D2

