

## **Exhibit 11 Occupied Bandwidth**

### **2.1049 MEASUREMENTS REQUIRED: OCCUPIED BANDWIDTH.**

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be maintained under the following conditions as applicable: (Added 74-113, 3/25/74)

### **73.44 AM TRANSMISSION SYSTEM EMISSION LIMITATIONS.**

(a) The emissions of stations in the AM service shall be attenuated in accordance with the requirements specified in paragraph (b) of this section. Emissions shall be measured using a properly operated and suitable swept-frequency RF spectrum analyzer using a peak hold duration of 10 minutes, no video filtering, and a 300 Hz resolution bandwidth, except that a wider resolution bandwidth may be employed above 11.5 kHz to detect transient emissions. Alternatively, other specialized receivers or monitors with appropriate characteristics may be used to determine compliance with the provisions of this section, provided that any disputes over measurement accuracy are resolved in favor of measurements obtained by using a calibrated spectrum analyzer adjusted as set forth above. (Revised 89-118, 6/30/90)

(b) Emissions 10.2 kHz to 20 kHz removed from the carrier must be attenuated at least 25 dB below the unmodulated carrier level, emissions 20 kHz to 30 kHz removed from the carrier must be attenuated at least 35 dB below the unmodulated carrier level, emissions 30 kHz to 60 kHz removed from the carrier must be attenuated at least  $[5 + 1 \text{ dB/kHz}]$  below the unmodulated carrier level, and emissions between 60 kHz and 75 kHz of the carrier frequency must be attenuated at least 65 dB below the unmodulated carrier level. Emissions removed by more than 75 kHz must be attenuated at least  $43 + 10 \log (\text{Power in watts})$  or 80 dB below the unmodulated carrier level, whichever is the lesser attenuation, except for transmitters having power less than 158 watts, where the attenuation must be at least 65 dB below carrier level. (Revised 89-118, 6/30/90)

(c) Should harmful interference be caused to the reception of other broadcast or non-broadcast stations by out of band emissions, the licensee may be directed to achieve a greater degree of attenuation than specified in paragraphs (a) and (b) of this section. (Added 82-26, 2/19/82)

(d) Measurements to determine compliance with this section for transmitter type acceptance are to be made using signals sampled at the output terminals of the transmitter when operating into an artificial antenna of substantially zero reactance. Measurements made of the emissions of an operating station are to be made at ground level approximately 1 kilometer from the center of the antenna system. When a directional antenna is used, the carrier frequency reference field strength to be used in order of preference shall be: (Added 82-26, 2/19/82)

(1) The measured non-directional field strength. (Added 82-26, 2/19/82)  
(2) The RMS field strength determined from the measured directional radiation pattern. (Added 82-26, 2/19/82)

(3) The calculated expected field strength that would be radiated by a non-directional antenna at the station authorized power. (Added 82-26, 2/19/82)

(e) Licensees of stations complying with the ANSI/EIA-549-1988, NRSC-1 AM Preemphasis/Deemphasis and Broadcast Transmission Bandwidth Specifications (NRSC-1), prior to June 30, 1990 or from the original commencement of operation will, until June 30, 1994, be considered to comply with paragraphs (a) and (b) of this section, absent any reason for the Commission to believe otherwise. Such stations are waived from having to make the periodic measurements required in § 73.1590(a)(6) until June 30, 1994. However, licensees must make measurements to determine compliance with paragraphs (a) and (b) of this section upon receipt of an Official Notice of Violation or a Notice of Apparent Liability alleging noncompliance with those provisions, or upon specific request by the Commission.

### **73.128 AM STEREOPHONIC BROADCASTING.**

(b) The FCC does not specify the composition of the transmitted stereophonic signal. However, The following limitations on the transmitted wave must be met to insure compliance with the

occupied bandwidth limitations, compatibility with AM receivers using envelope detectors, and any applicable international agreements to which the United States FCC is a party:

(1) The transmitted wave must meet the occupied bandwidth specifications of § 73.44 under all possible conditions of program modulation. Compliance with requirement shall be demonstrated either by the following specific modulation tests or other documented test procedures that are to be fully described in the application for type acceptance and the transmitting equipment instruction manual. (See § 2.983(d)(8) and (j)).

(i) Main channel (L + R) under all conditions of amplitude modulations for the stereophonic system but not exceeding amplitude modulation on negative peaks of 100%.

(ii) Stereophonic subchannel (L - R) modulated with audio tones of the same amplitude at the transmitter input terminals as in paragraph (b)(i) of this section but with the phase of either the L or R channel reversed.

(iii) Left and Right Channel only, under all conditions of modulation for the stereophonic system in use but not exceeding amplitude modulation on negative peaks of 100%.

### **Broadcast Electronics Response**

The following emission measurements were made on AM-5E transmitter to determine compliance with this section. The description of the modulation input signal, the test procedure used for the measurement, and the spectrum plot for each of the different conditions are included. Spectrum measurements were made by spectrum analysis using HP 3585 spectrum analyzer using an RF sample obtained from a capacitive RF voltage divider probe connected at the output terminals of the AM-5E transmitter operating into a resistive dummy load. A 1 MHz notch filter placed in the sample line. This reduced the signal to noise level. For placement of the notch filter see Exhibit 11B. See Exhibit 11E for the Frequency Response of the Capacitive divider RF pick up with the notch filter installed.

The settings used on the spectrum analyzer were:

- a. 300 Hz resolution bandwidth
- b. 50 and 200 kHz per horizontal division
- c. 10dB per vertical division
- d. Reference: carrier peak
- e. Peak Hold: 10 minute duration, minimum
- f. Video filter bandwidth: 30 kHz (100 x resolution bandwidth)
- g. Center frequency: 1000 kHz

(2) **STEREOPHONIC MODULATION CONDITION**

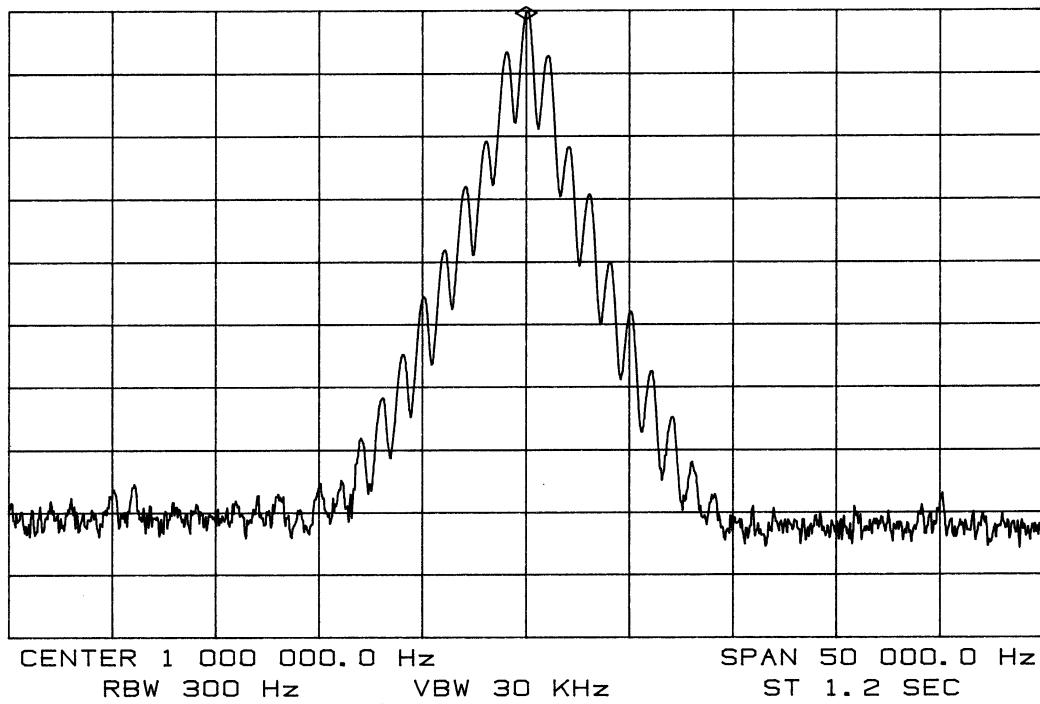
- (a) See Exhibit 11A-5000 at 5000 watts power level, Exhibit 11A-500 at 500 watts power level, and Exhibit 11A-25 at 25 watts power level; (50 kHz and 200 kHz horizontal span) for 100% modulation of stereophonic sub-channel (L-R) by 1,000 Hz audio tone input signal. See Exhibit 11B for Test Procedure (FCC Rule: 2.947, 2.1041).

1-31-2000

1 KHz 100% L-R  
Stereo 5kW AMSE  
Notch Filter installed

REF -17.0 dBm  
10 dB/DIV

MARKER 1 000 000.0 Hz  
RANGE -15.0 dBm  
-17.4 dBm



**Exhibit 11A-5000**

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1-31-2000

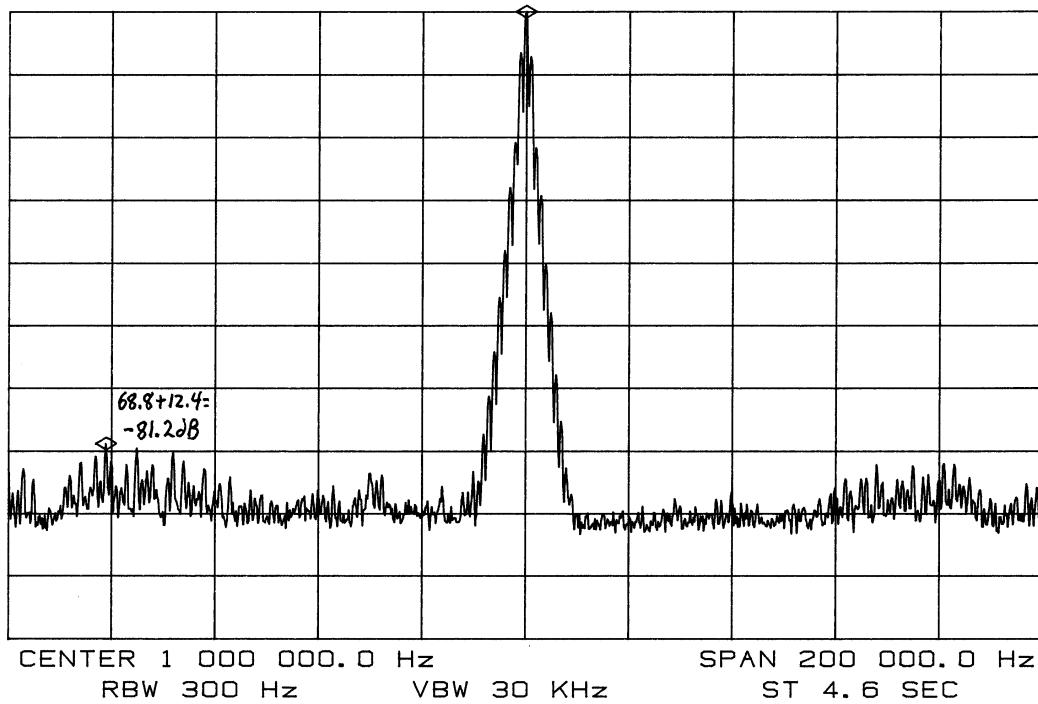
1 KHz 100% L-R

Stereo 3Kw AM-5E  
Notch Filter installed

REF -16.8 dBm  
10 dB/DIV

OFFSET -81 000.0 Hz  
RANGE -15.0 dBm

-68.8 dB



**Exhibit 11A-5000**

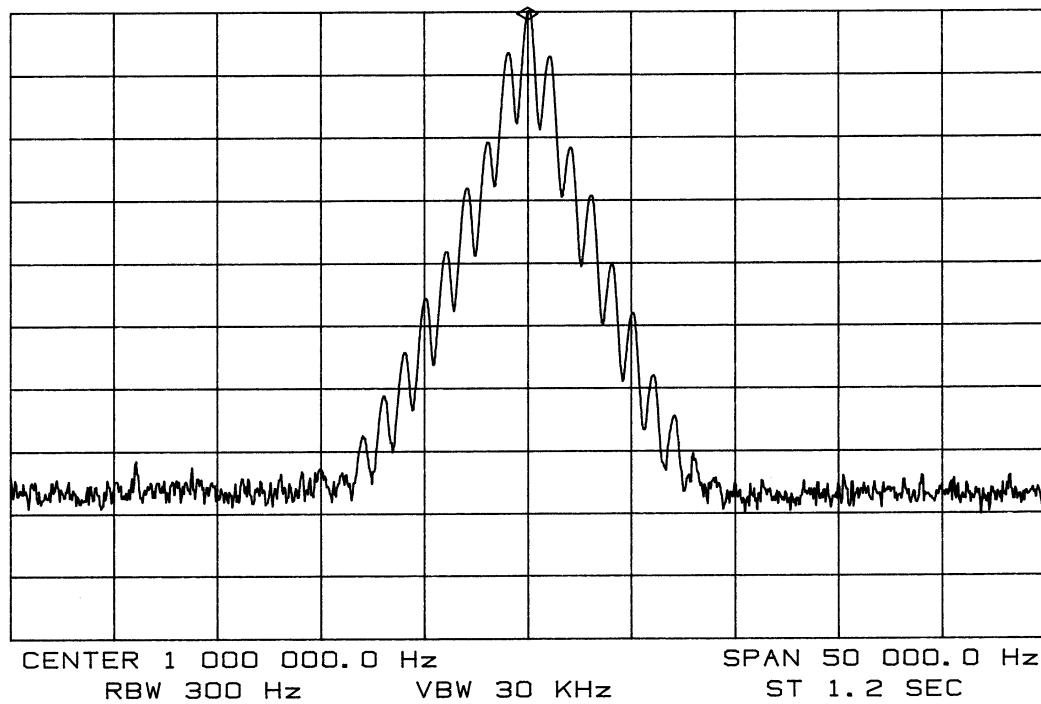
**2 of 2**

1-31-2000

1KHz 100% L-R  
500W AM-SE Stereo  
Notch Filter Installed

REF -27.4 dBm  
10 dB/DIV

MARKER 1 000 000.0 Hz  
RANGE -15.0 dBm -27.7 dBm



**Exhibit 11A-500**

**1 of 2**

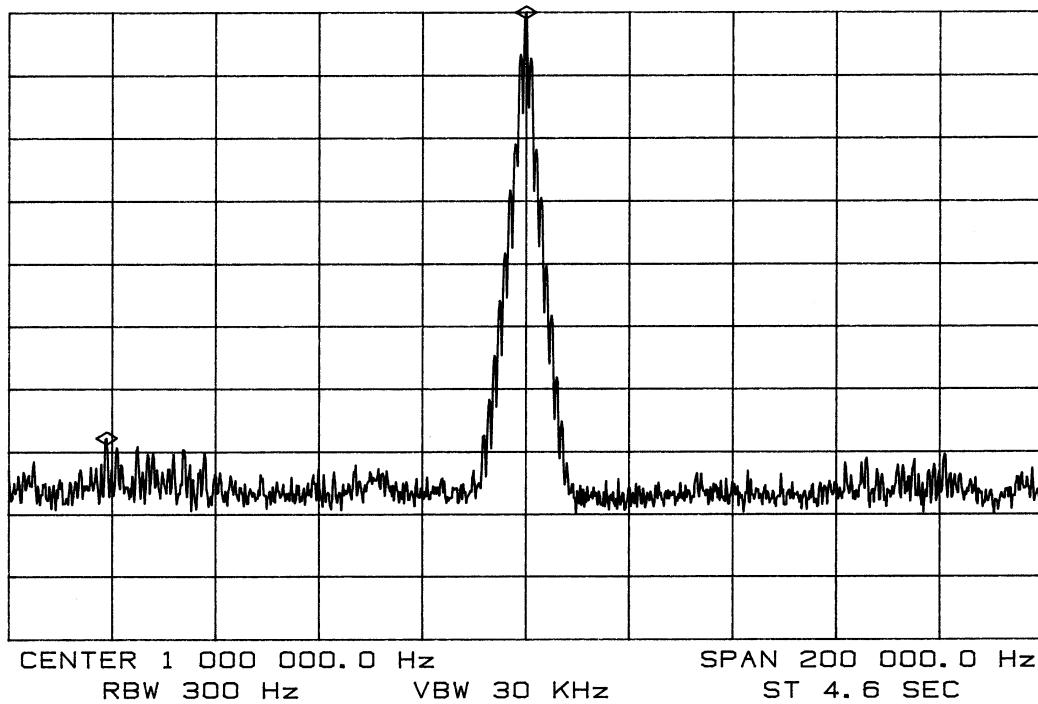
1-31-2000

1 KHz 100% L-R  
Stereo 500W AN-SE  
Notch Filter Installed

REF -27.2 dBm  
10 dB/DIV

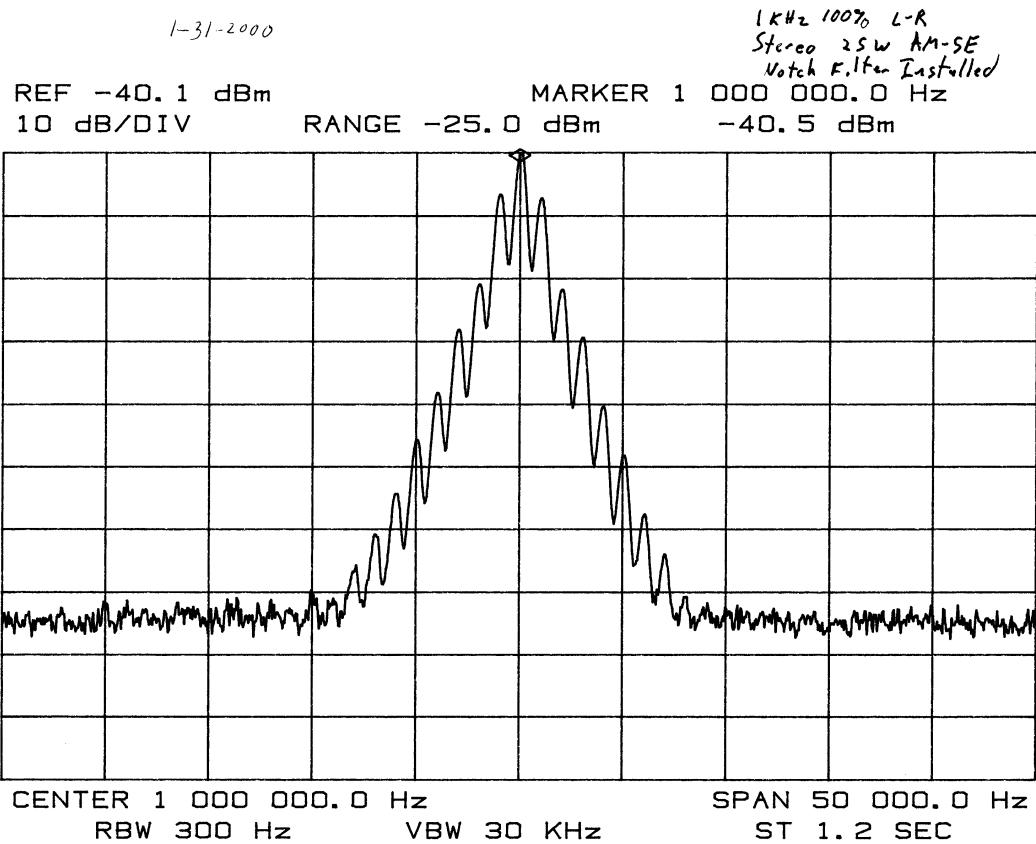
OFFSET -81 000.0 Hz  
RANGE -15.0 dBm

-67.8 dB



**Exhibit 11A-500**

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**Exhibit 11A-25**

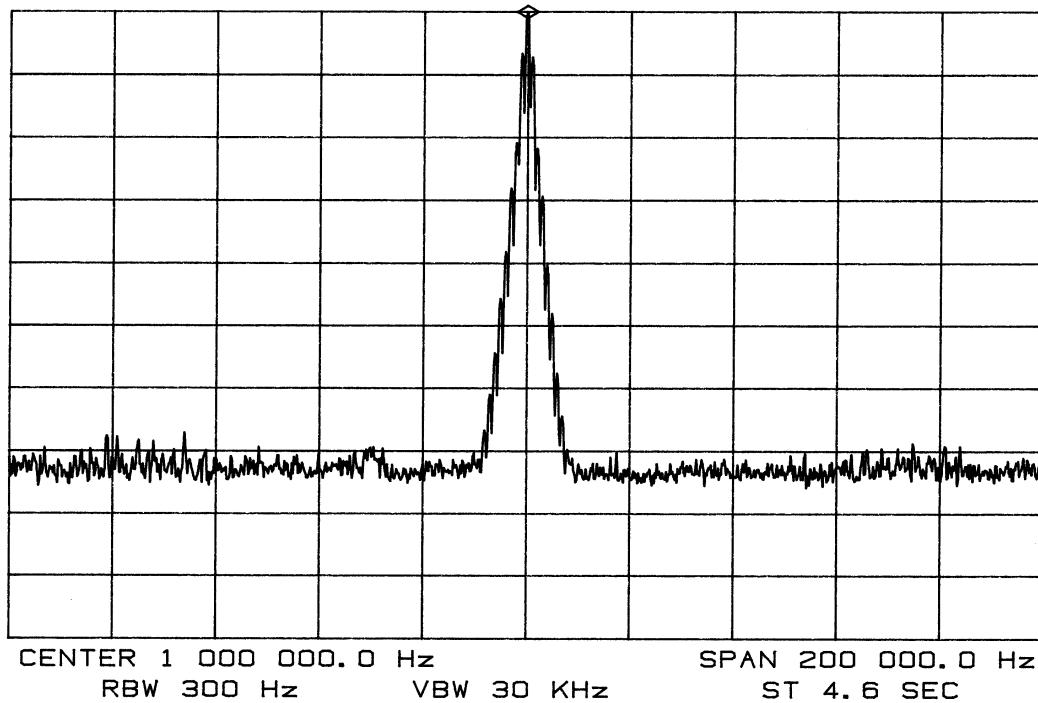
**1 of 2**

1-31-2000

1 kHz 100% L-R  
Stereo 25W AM-SE  
Notch Filter Installed

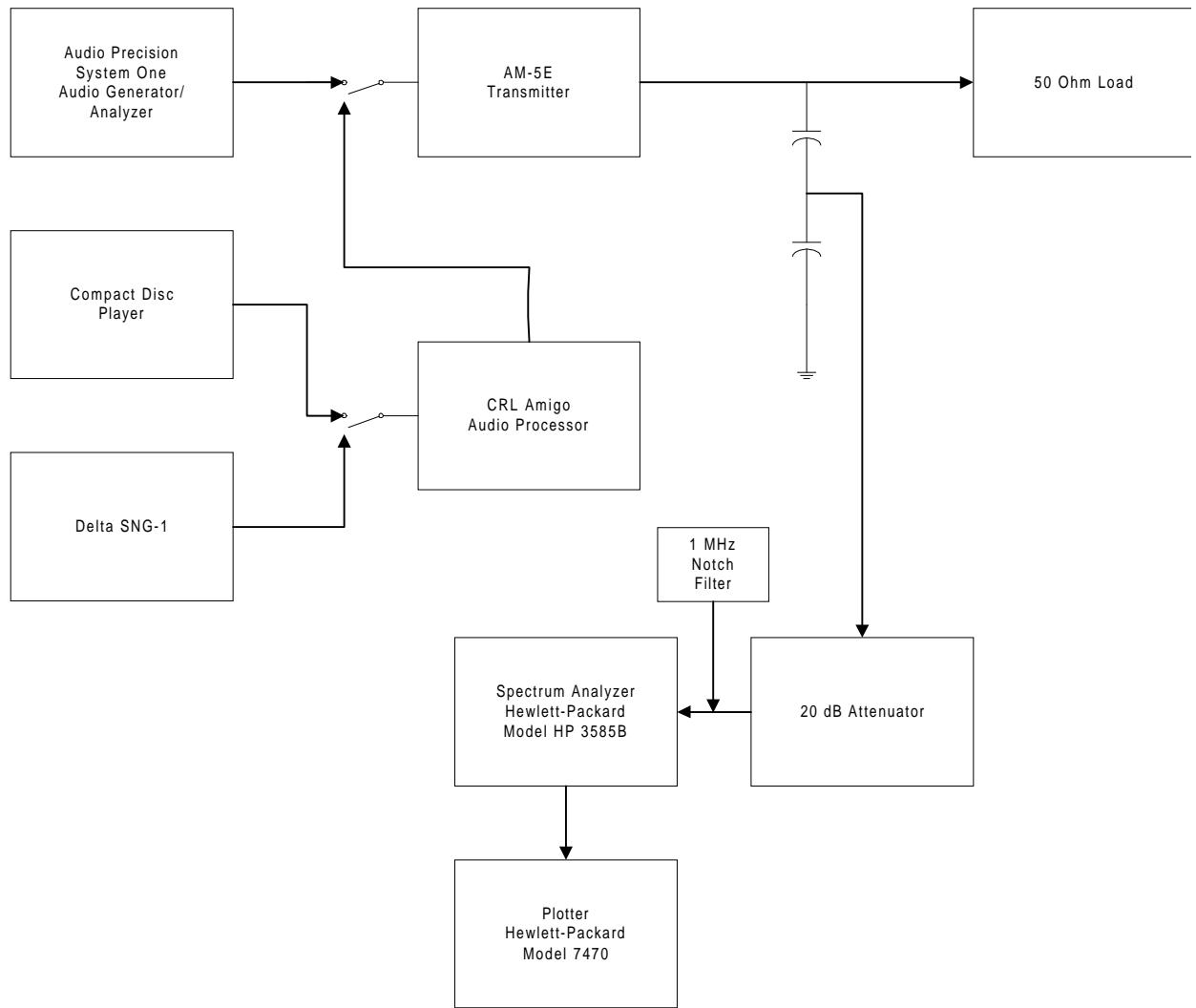
REF -40.2 dBm  
10 dB/DIV

MARKER 1 000 000.0 Hz  
RANGE -25.0 dBm  
-40.2 dBm



**Exhibit 11A-25**

**2 of 2**



**Exhibit 11B**

(b) See Exhibit 11C-5000 at 5000 watts power level, Exhibit 11C-500 at 500watts power level, and Exhibit 11C-25 at 25 watts power level; (50 kHz and 200 kHz horizontal span) for +125% and -95% peak modulation of Main channel (L+R) and  $\pm 100\%$  peak (stereo enhanced) modulation of Subchannel (L-R) by pulsed USASI stereo noise to simulate program material using Delta SNG stereo noise generator. The bandwidth of the input signal was altered by an audio processor unit (CRL Amigo AM) which complies with the NRSC-1 frequency response and pre-emphasis standard. See Exhibits 11B for Test Procedure (FCC Rule: 2.947, 2.1041).

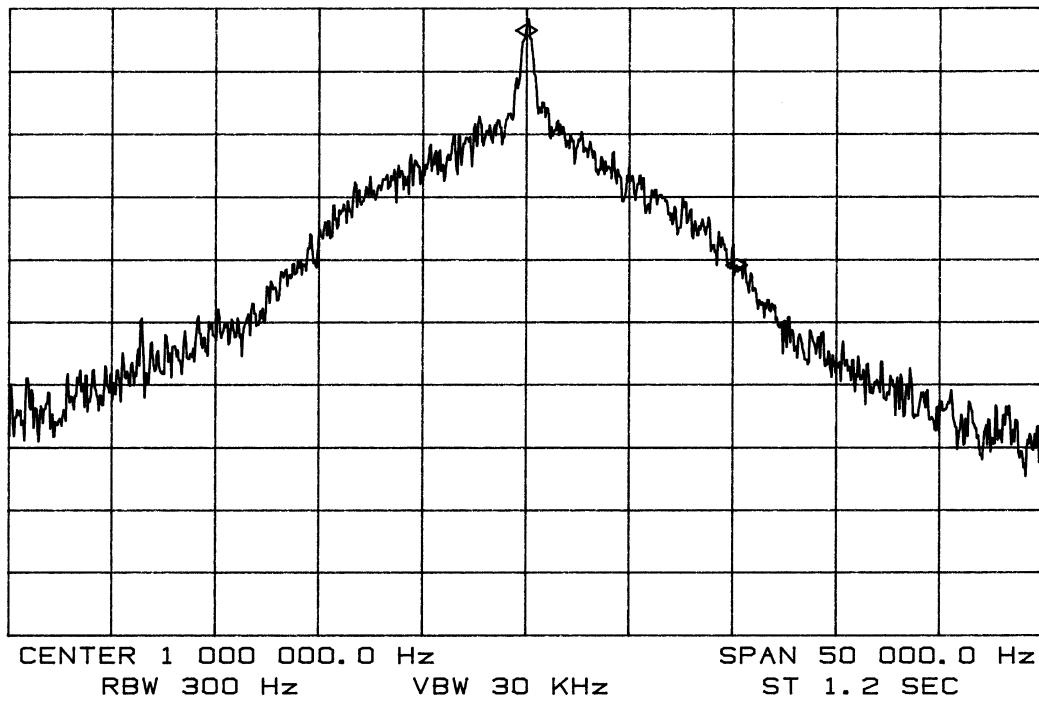
1-31-2000

Noise 1252  
Stereo SWR AM-SE  
Notch Filter Installed

REF -10.5 dBm  
10 dB/DIV

OFFSET 10 200.0 Hz  
RANGE -10.0 dBm

-37.4 dB



**Exhibit 11C-5000**

1 of 2

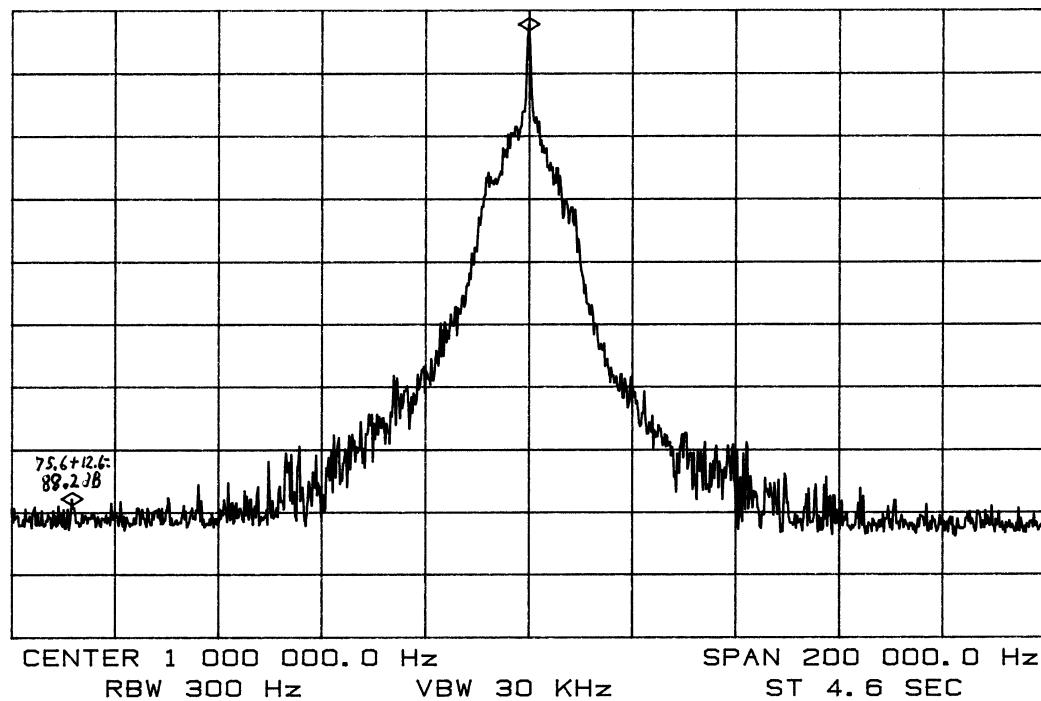
1-31-2000

Noise 1258  
Stereo 5ew AM-SE  
Notch Filter installed

REF -10.5 dBm  
10 dB/DIV

OFFSET -88 200.0 Hz  
RANGE -10.0 dBm

-75.6 dB



**Exhibit 11C-5000**

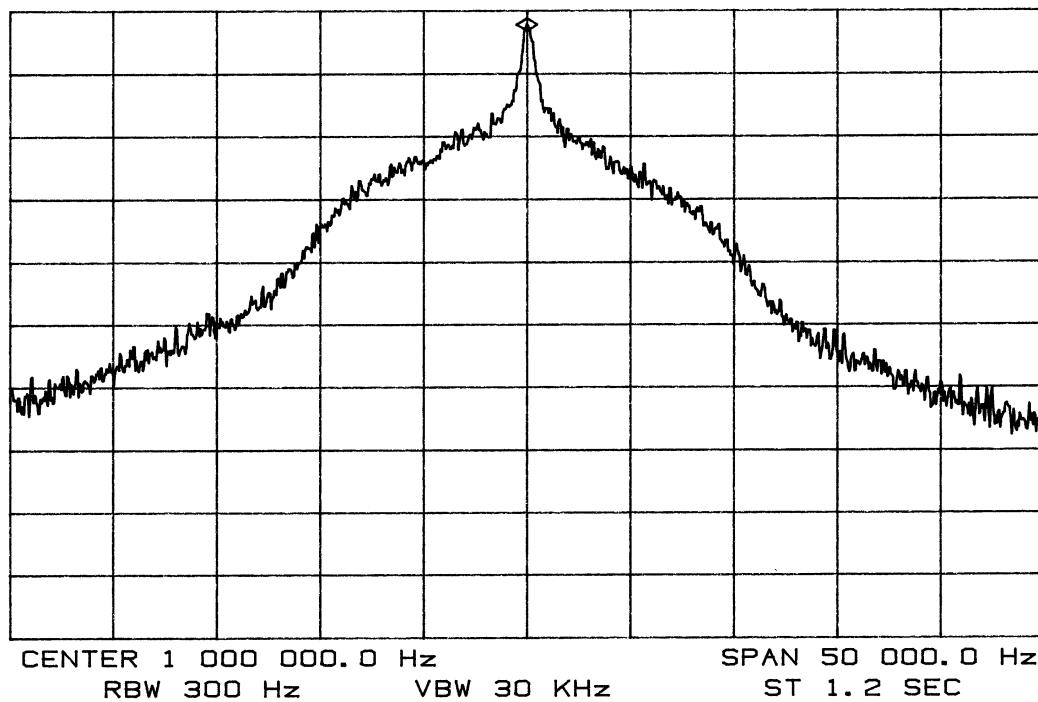
2 of 2

2-1-2000

No. 50 125%  
Stereo 500W AMSE  
Notch Filter Installed

REF -20.0 dBm  
10 dB/DIV

MARKER 1 000 000.0 Hz  
RANGE -20.0 dBm  
-22.2 dBm



**Exhibit 11C-500**

1 of 2

2-1-2000

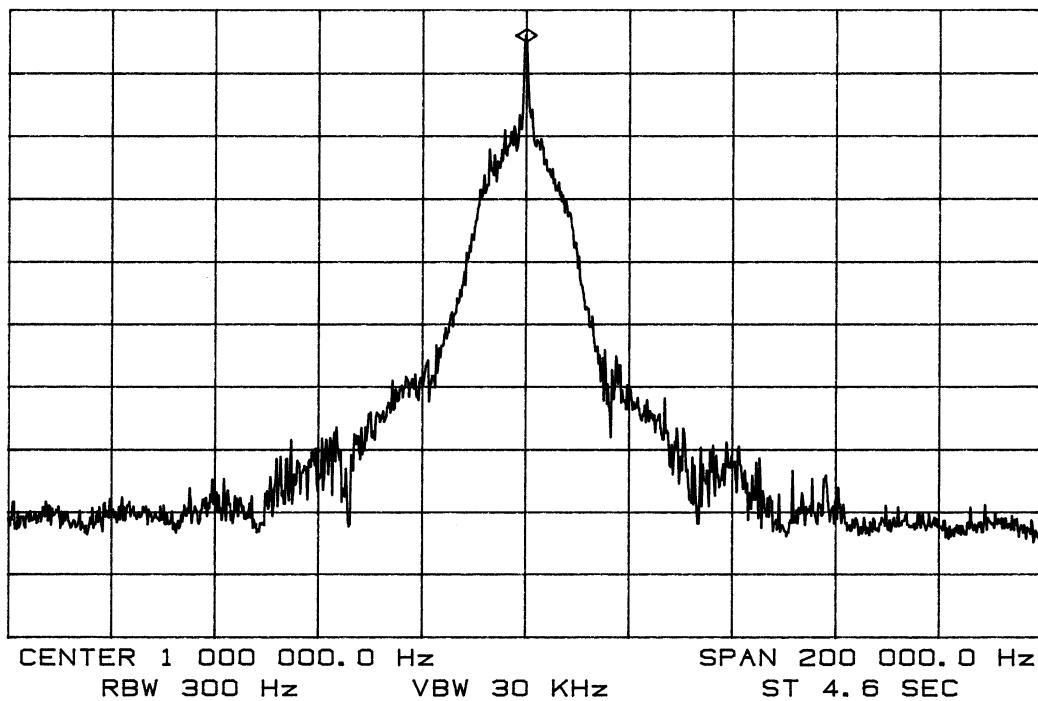
Noise 125%

Stereo 500W AM-SE

Notch Filter Installed

REF -20.0 dBm  
10 dB/DIV

OFFSET .0 Hz  
RANGE -20.0 dBm .4 dB



**Exhibit 11C-500**

2 of 2

2-2-2000

Noise Stereo  
25W AM-5E  
Notch Filter Installed

REF -35.0 dBm  
10 dB/DIV

MARKER 1 000 000.0 Hz  
RANGE -25.0 dBm -36.4 dBm

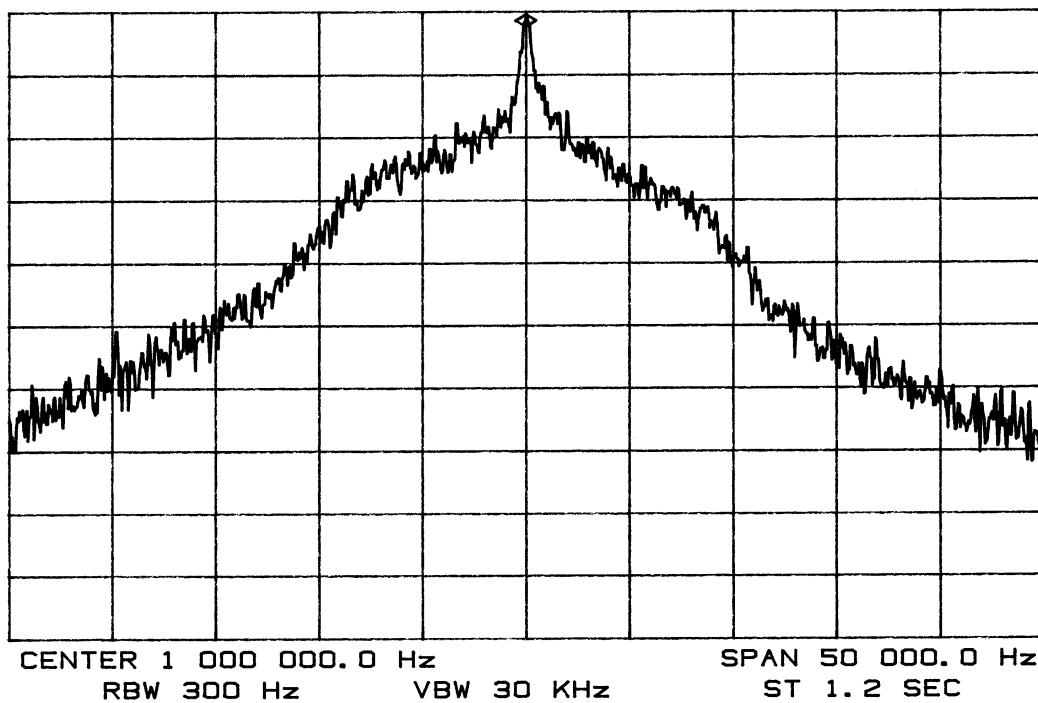


Exhibit 11C-25

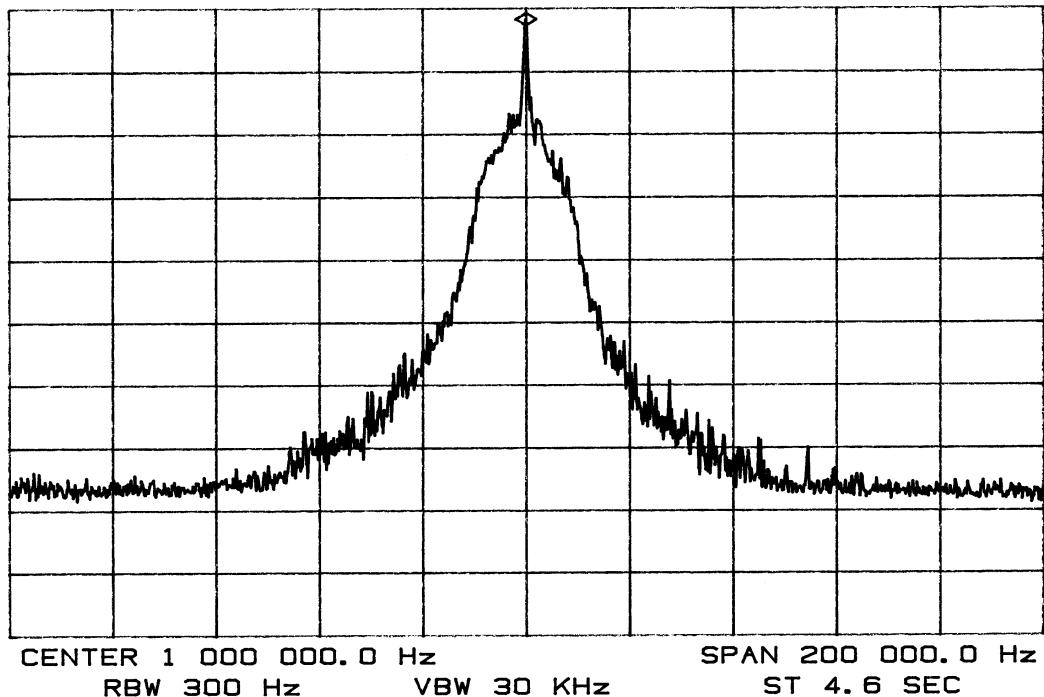
1 of 2

2-2-2000

Noise Stereo  
25W AM-SE  
Notch Filter Installed

REF -35.0 dBm  
10 dB/DIV

MARKER 1 000 000.0 Hz  
RANGE -25.0 dBm -36.7 dBm



**Exhibit 11C-25**

**2 of 2**

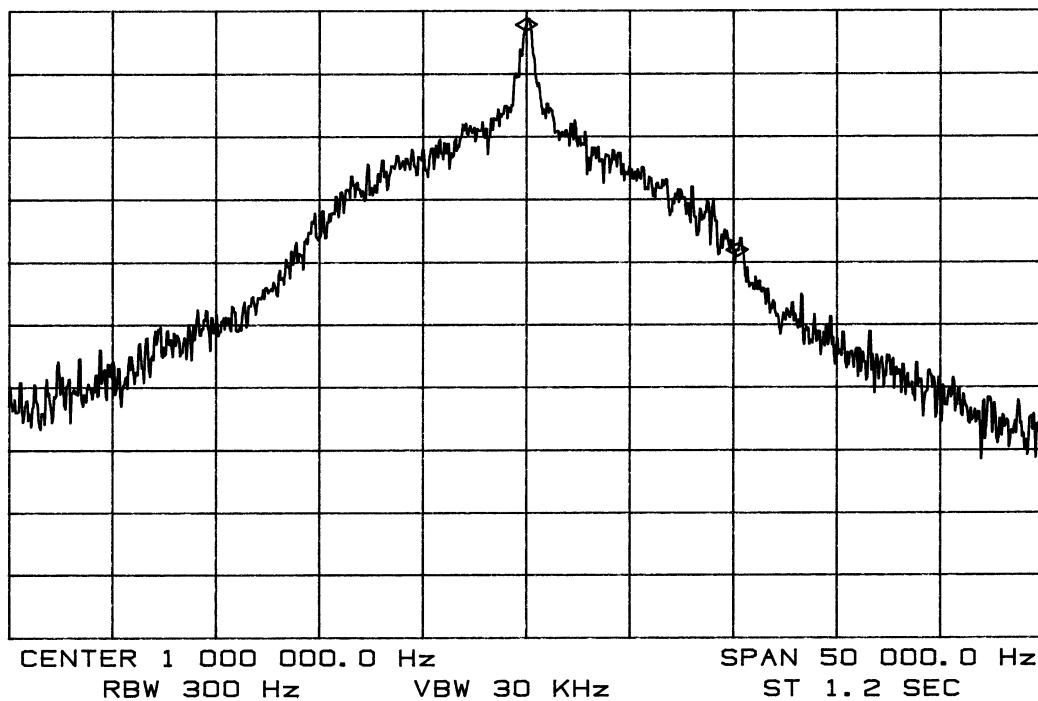
(c) See Exhibit 11D-5000 at 5000 watts power level, Exhibit 11D-500 at 500 watts power level, and Exhibit 11D-25 at 25 watts power level; (50 kHz and 200 kHz horizontal span) for +125% and -95% peak modulation of Main channel (L+R) and  $\pm 100\%$  peak (stereo enhanced) modulation of Subchannel (L-R) by a representative pop music format material (10 minutes). The bandwidth of the input signal was altered by an audio processor unit (CRL Amigo AM) which complies with the NRSC-1 frequency response and pre-emphasis standard. See Exhibit 11B for Test Procedure (FCC Rule: 2.947, 2.1041).

2-1-2000

Music Noise 1258  
Stereo 510V A.M.S.E  
Notch Filter Installed

REF -35.0 dBm  
10 dB/DIV

OFFSET 10 200.0 Hz  
RANGE -25.0 dBm -35.9 dB



**Exhibit 11D-5000**

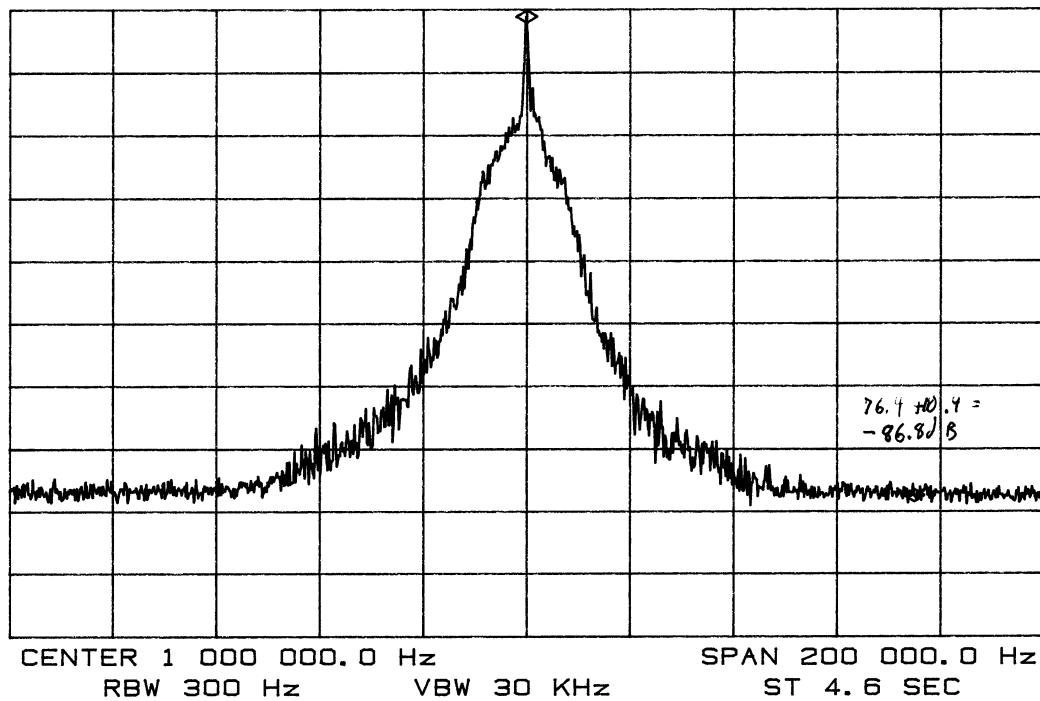
**1 of 2**

2-1-2000

Music Noise 125%  
Stereo ~~AM-SE~~ 5Kw  
Notch Filter Installed

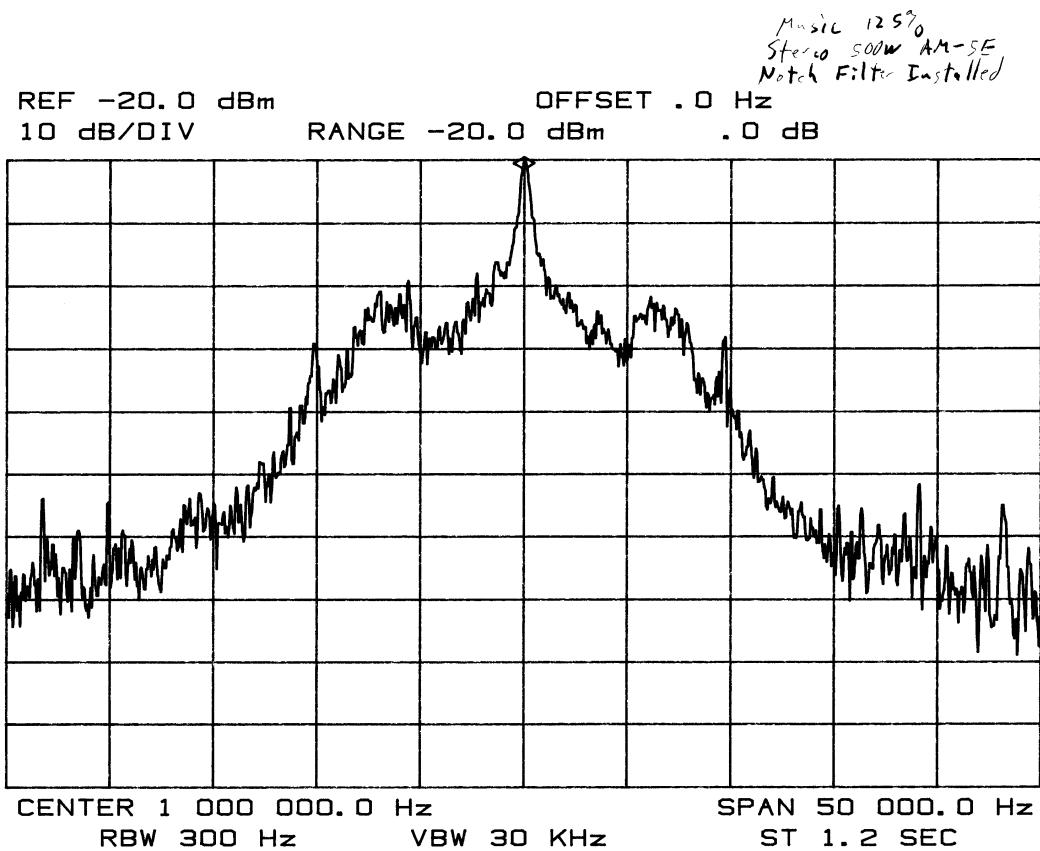
REF -35.0 dBm  
10 dB/DIV

OFFSET 75 000.0 Hz  
RANGE -25.0 dBm -76.4 dB



**Exhibit 11D-5000**

**2 of 2**



**Exhibit 11D-500**

1 of 2

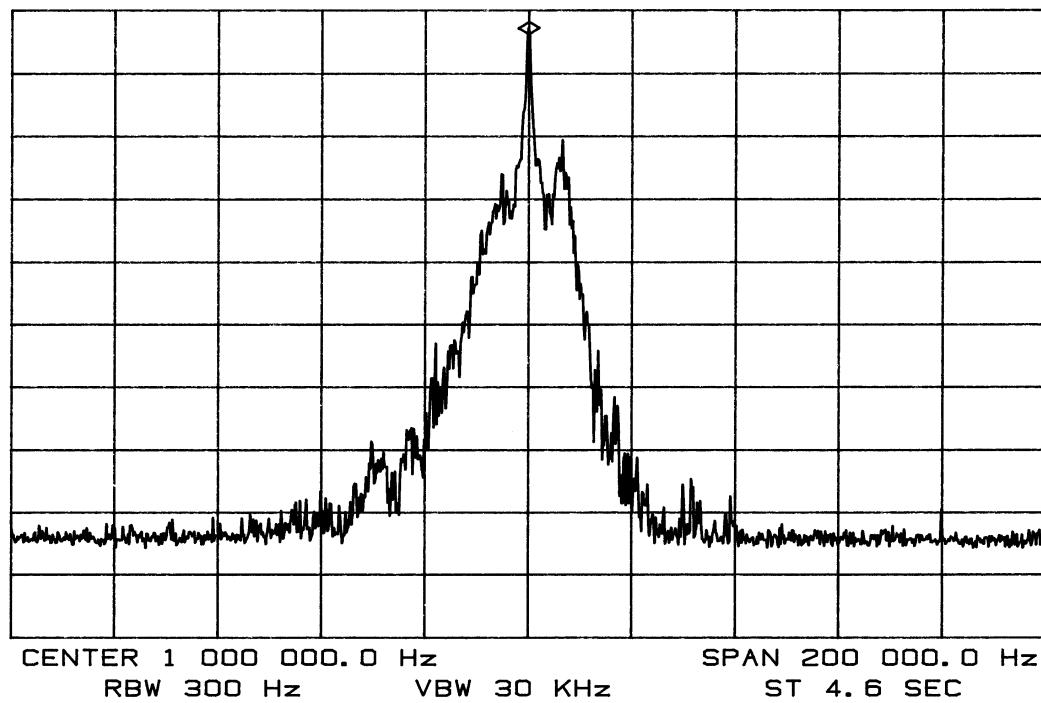
2-1-2000

Music 125%  
Stereo 500W AM-5E  
Notch Filter Installed

REF -20.0 dBm  
10 dB/DIV

OFFSET .0 Hz  
RANGE -20.0 dBm

-9.9 dB



**Exhibit 11D-500**

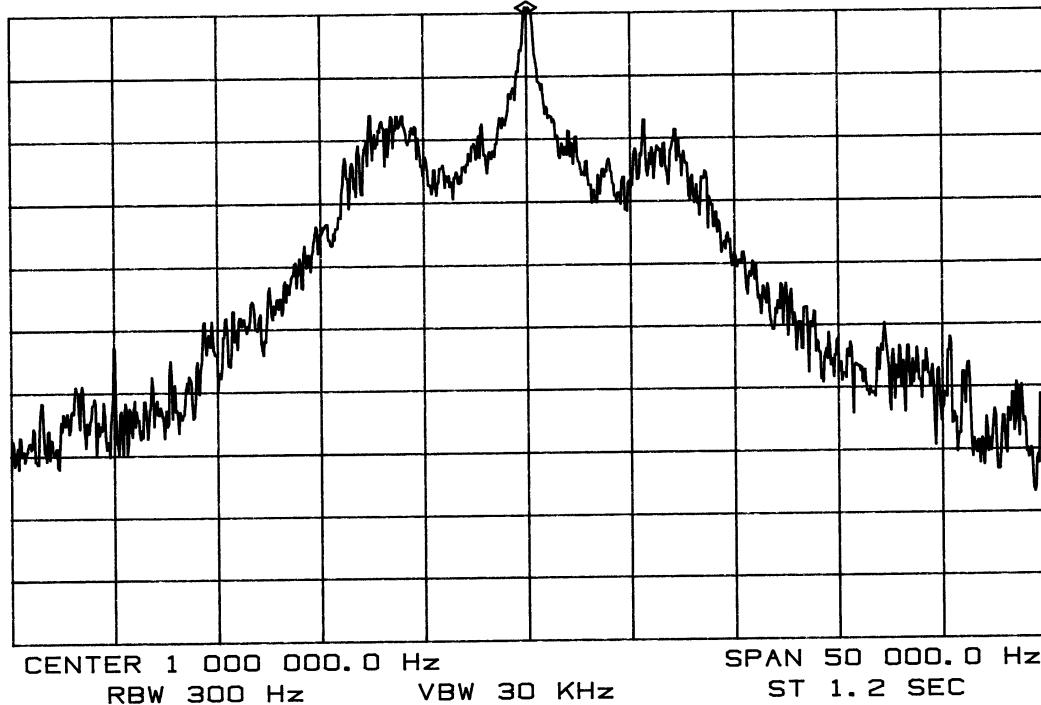
**2 of 2**

2-1-2000

Music 1258  
Stereo 25W AM-SE  
Notch Filter Installed

REF -35.0 dBm  
10 dB/DIV

OFFSET .0 Hz  
RANGE -25.0 dBm -13.6 dB



**Exhibit 11D-25**

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2-1-2000

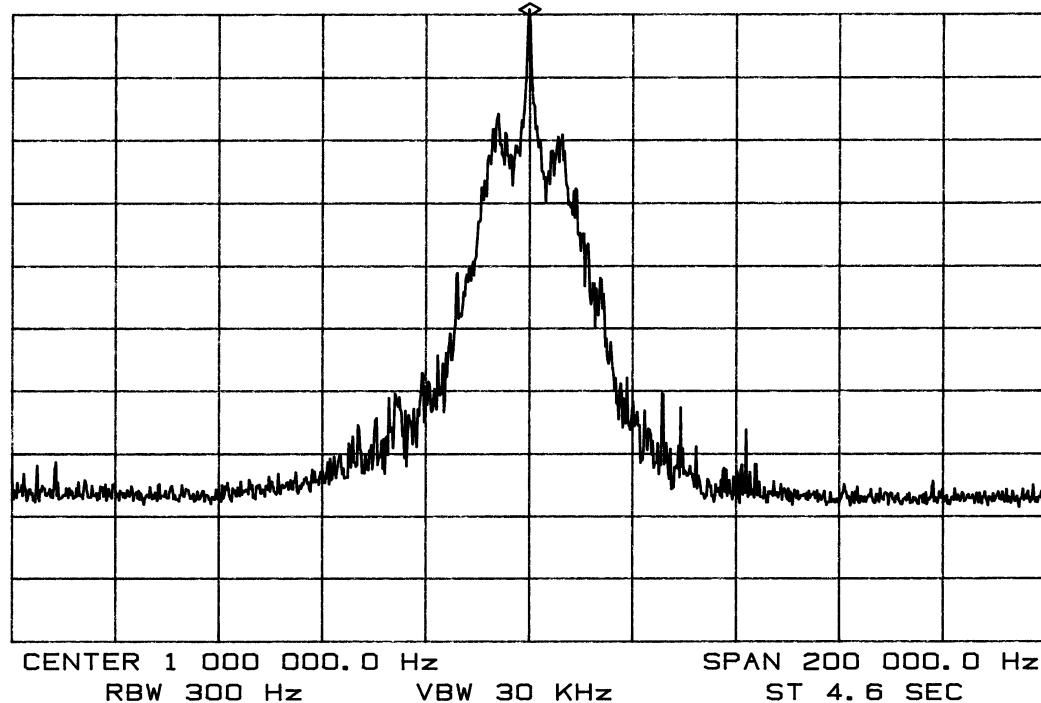
Music 125%  
Stereo 25W AM-SF  
Notch Filter Installed

REF -35.0 dBm  
10 dB/DIV

OFFSET .0 Hz

RANGE -25.0 dBm

-13.7 dB



**Exhibit 11D-25**

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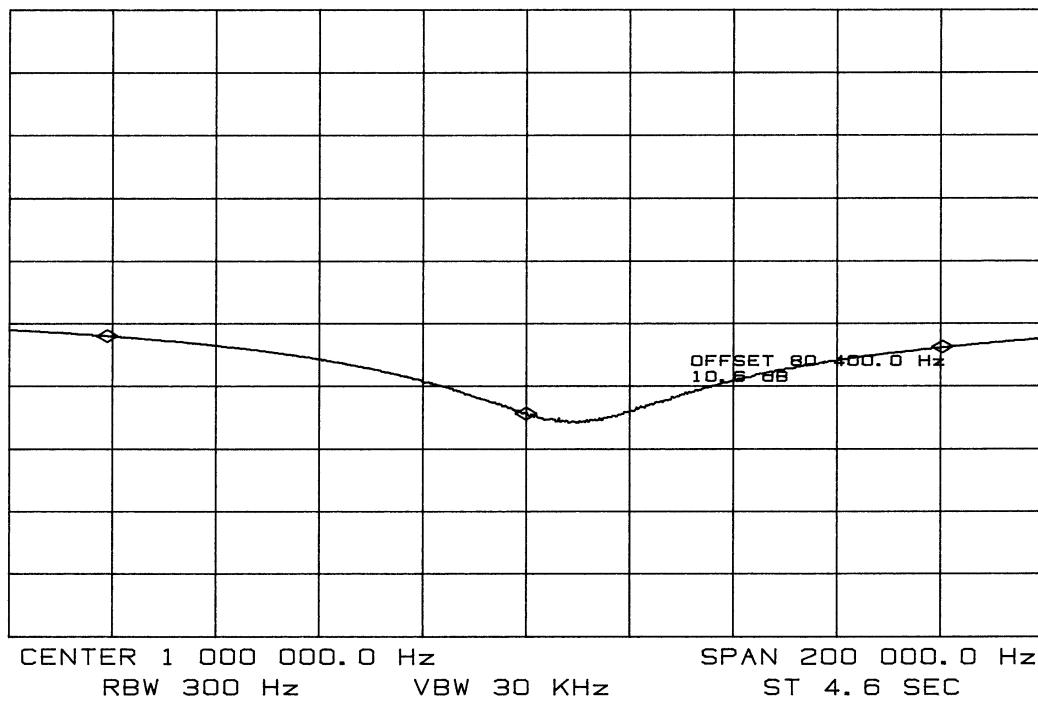
1-31-2000

*Notch Filter and capacitive Divider  
Response*

REF -16.8 dBm  
10 dB/DIV

OFFSET -81 000.0 Hz  
RANGE -15.0 dBm

12.4 dB



**Exhibit 11E**

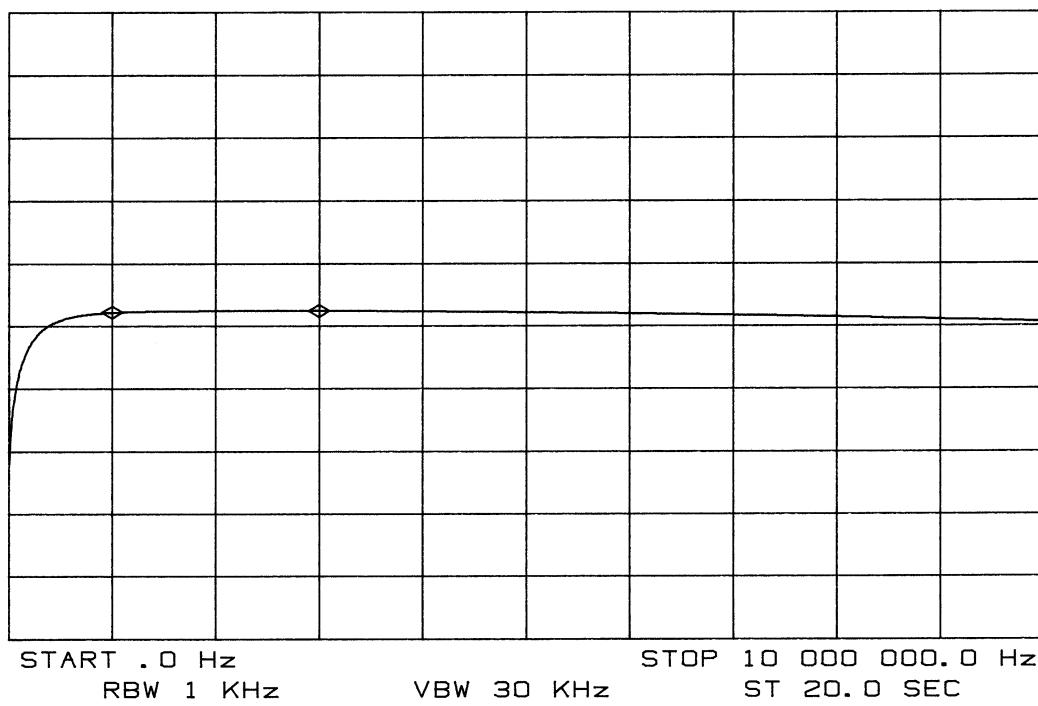
**1 of 3**

1-31-2000

*Capacitive Divider  
Response*

REF -16.8 dBm  
10 dB/DIV

OFFSET 2 000 000.0 Hz  
RANGE -15.0 dBm .2 dB



START .0 Hz  
RBW 1 KHz

VBW 30 KHz

STOP 10 000 000.0 Hz  
ST 20.0 SEC

**Exhibit 11E**

**2 of 3**

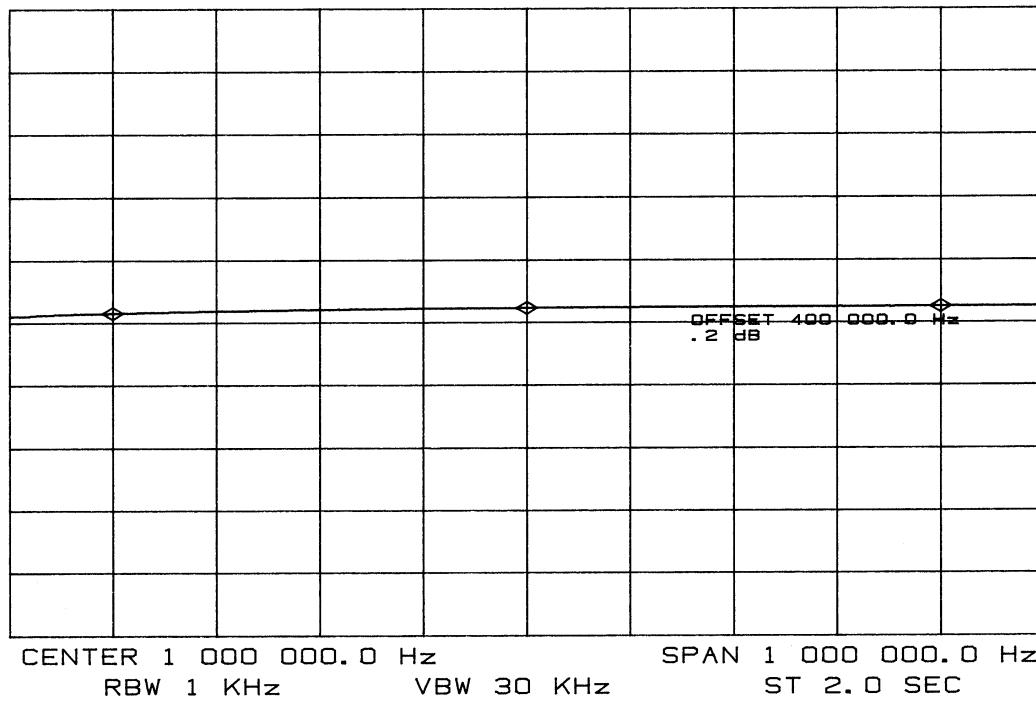
1-31-2000

*Corrective Divider  
Response*

REF -16.8 dBm  
10 dB/DIV

OFFSET -400 000.0 Hz  
RANGE -15.0 dBm

-.8 dB



**Exhibit 11E**

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