APPLICATION FOR FCC CERTIFICATION
BZ5MX20U
MODULATOR INPUT
20 WATT UHF TRANSLATOR

EXHIBIT 1 PAGE 4

AUDIO FREQUENCY RESPONSE
REFERENCE 50Hz AT 0dB INTO 600 OHMS

	MODULATION	
FREQUENCY(Hz)	50%	100%
50	0	0
100	-1.49	-1.36
400	+1.50	+1.50
1000	+1.86	+2.23
5000	+6.98	+9.55
10000	+11.76	+14.73
15000	+14.52	+17.57

Tabulated below are the audio harmonic distortion measurements.

AUDIO HARMONIC DISTORTION LEVEL (%)

	MODULATION	
FREQUENCY(Hz)	50%	100%
50	3.11	1.31
100	2.97	1.27
400	2.99	1.28
1000	2.93	1.26
5000	2.90	1.25
10000	*	1.26
15000	*	1.24

* Distortion measurements above 7.5kHz at 50% modulation levels are impractical.

The output noise level (FM measured as prescribed in the band of 50 to 15000Hz) was 55dB below the level representing ± 25kHz frequency swing.

The system noise output (AM) in the same band was 50dB below the level representing 100% amplitude modulation.

The output noise measurement had to be performed with the visual carrier operative because of the translator's common visual/aural amplifiers.

PART 74.750(d)(2):
The modulator of this translator will accept audio from the microwave television translator relay station in one of two possible ways. First, when the microwave signal carries the audio at a separation of 4.5MHz, it will be passed through the translator's modulator multiplexed on the video. Frequency spacing, deviation, and other characteristics including distortion are therefore determined solely by the originating television station.

The sound carrier deviation was monitored while the frequency vs. temperature measurements were taken, see Exhibit 4a. The equipment meets the ± 1kHz requirement.

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EXHIBIT 4a

FREQUENCY DRIFT VS. TEMPERATURE
M369 MODULATOR

DEGREES C	MEASURED LO FREQUENCY(MHz)	DEVIATION(Hz)	DEVIATION(%)
+50	651,241,054	-10,693	-0.001642
+40	651,244,998	- 6,749	-0.001036
+30	651,249,389	- 2,358	-0.000362
+25	651,251,747	0	+0.0000
+20	651,254,160	+ 2,413	+0.000371
+10	651,258,449	+ 6,702	+0.001029
00	651,262,385	+10,638	+0.001633
-10	651,265,375	+13,628	+0.002093
-20	651,267,175	+15,428	+0.002369
-30	651,266,810	+15,063	+0.002313

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EXHIBIT 8

Power requirements for the 20 Watt UHF Translator were determined as follows:

1. The translator's visual power meter measures the peak visual power by reading the average levels of a detected sample of the output. The meter is calibrated by multiplying the above visual power reading by 168%. The visual metering circuitry has a negligible response to the aural power due to the large (>10MHz) detector bandwidth. When the detector bandwidth is this large, the detector does not peak detect the intercarrier beat product.

2. The aural power is measured by reading the peak level of the detected 4.5MHz intercarrier product. The level of this product has a direct correspondence to the aural power and is independent of the visual power as long as the peak visual power exceeds the aural power. This is always true for normal operation.

BZ5MX20U
POWER MEASUREMENTS

MEASURED VISUAL POWER NOTE 1	MEASURED AURAL POWER NOTE 2	SUPPLY CURRENT TO OUTPUT DEVICES VISUAL ONLY NOTE 3	SUPPLY CURRENT TO OUTPUT DEVICES VISUAL & AURAL NOTE 3
12.5 WATTS	2.0 WATTS	2.9 AMPS	2.9 AMPS

NOTE 1: Measured on the Model 43 Bird Wattmeter with the visual carrier modulated by the standard synchronizing signal at 75% of peak amplitude and the aural carrier disabled.

NOTE 2: Measured on the Model 43 Bird Wattmeter with the visual carrier disabled.

NOTE 3: The voltage across the output devices on all models is +28 volts. The output devices are operated Class A.

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EXHIBIT 9

ATTENUATION VS. FREQUENCY

MODULATING FREQUENCY REF=VISUAL CARRIER(MHz)	UPPER SIDEBAND	FCC LIMIT(dB)	LOWER SIDEBAND	FCC LIMIT(dB)
+0.2	0	Reference	-	-
-0.5	-0.5		-	-
+0.5	-0.1		-	-
+1.25	-0.3		-20	>-20
+2.0	-0.4		-36	>-20
+2.5	-0.4		-40	>-20
+3.0	-0.3		-42	>-20
+3.5	-0.3		-42	>-20
+3.58	-0.2		-44	>-42
+4.1	-0.3		-46	>-20
+4.18	-0.2		-46	>-20
+4.75	-20	>-20	-50	>-20
+5.0	-20	>-20	-50	>-20
+6.0	-50	>-20	-50	>-20
+7.0	-50	>-20	-50	>-20
+8.0	-50	>-20	-50	>-20
+9.0	-50	>-20	-50	>-20
+10.0	-50	>-20	-50	>-20

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EXHIBIT 10a

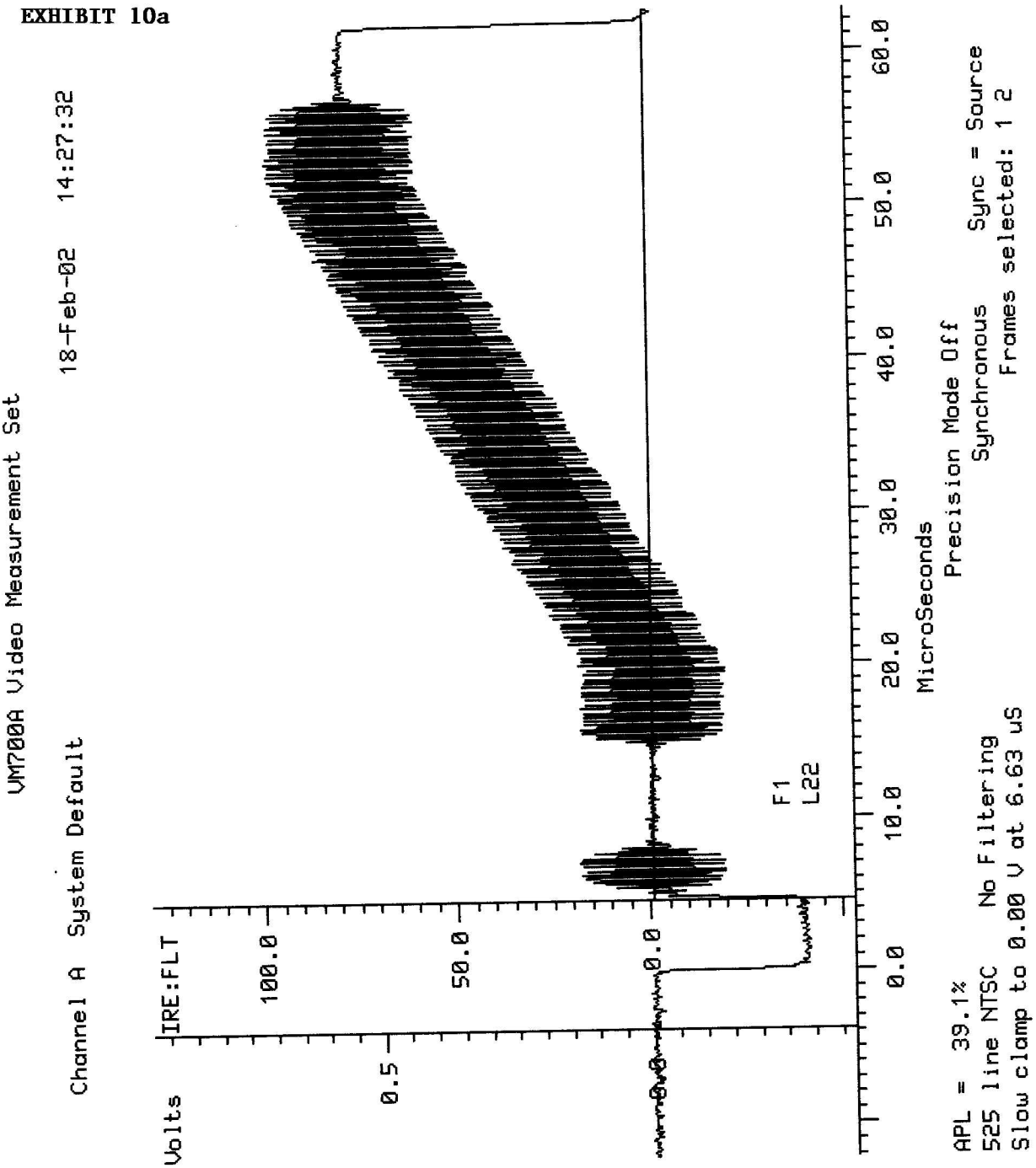

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EXHIBIT 10b

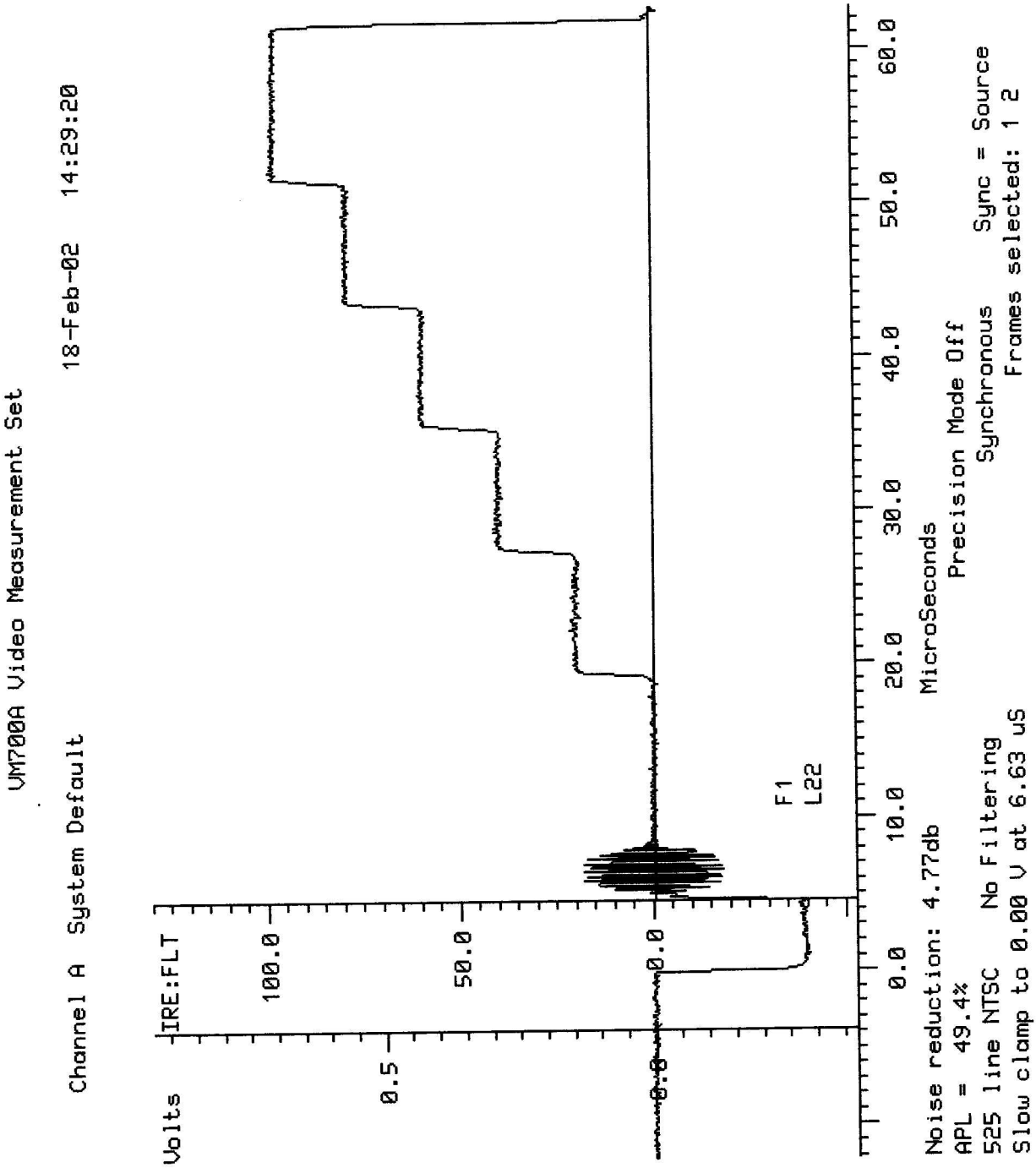

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EXHIBIT 10c

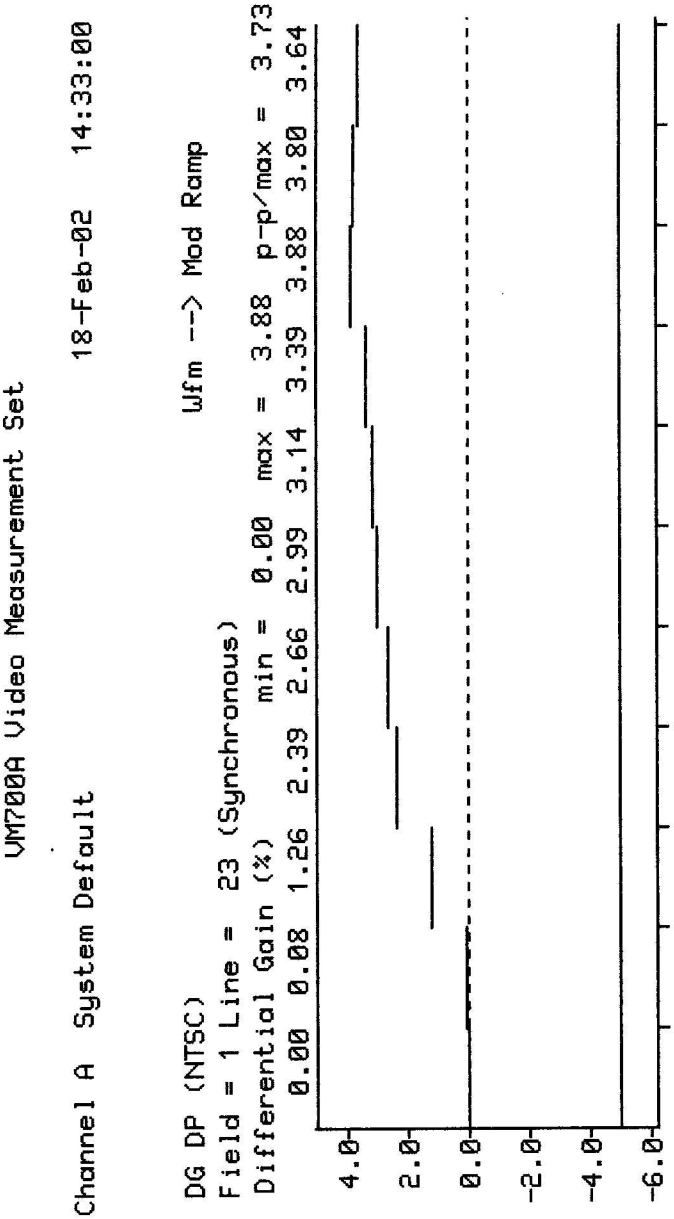

EXHIBIT 10d

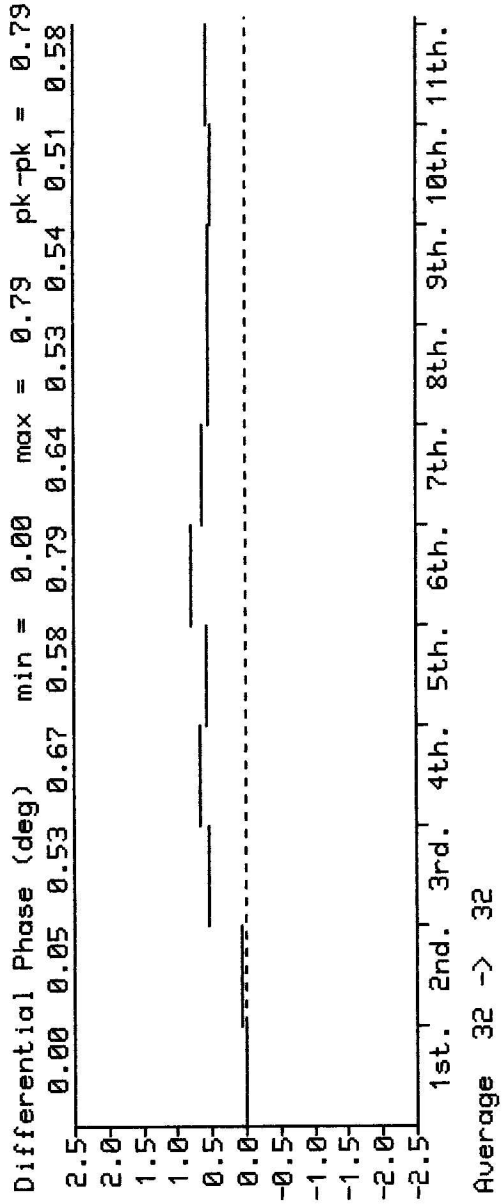

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EXHIBIT 11a

OVERALL GROUP DELAY

FREQUENCY(MHz)	OVERALL DELAY (nS)
0.20	0 (Reference)
0.40	-40
0.60	-30
0.80	-20
1.00	-10
1.20	-30
1.40	+20
1.60	0
1.80	-10
2.00	0
2.20	+10
2.40	-10
2.60	+10
2.80	0
3.00	-40
3.20	-60
3.40	-100
3.58	-165
3.80	-250
4.00	-280
4.18	-300

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EXHIBIT 11b

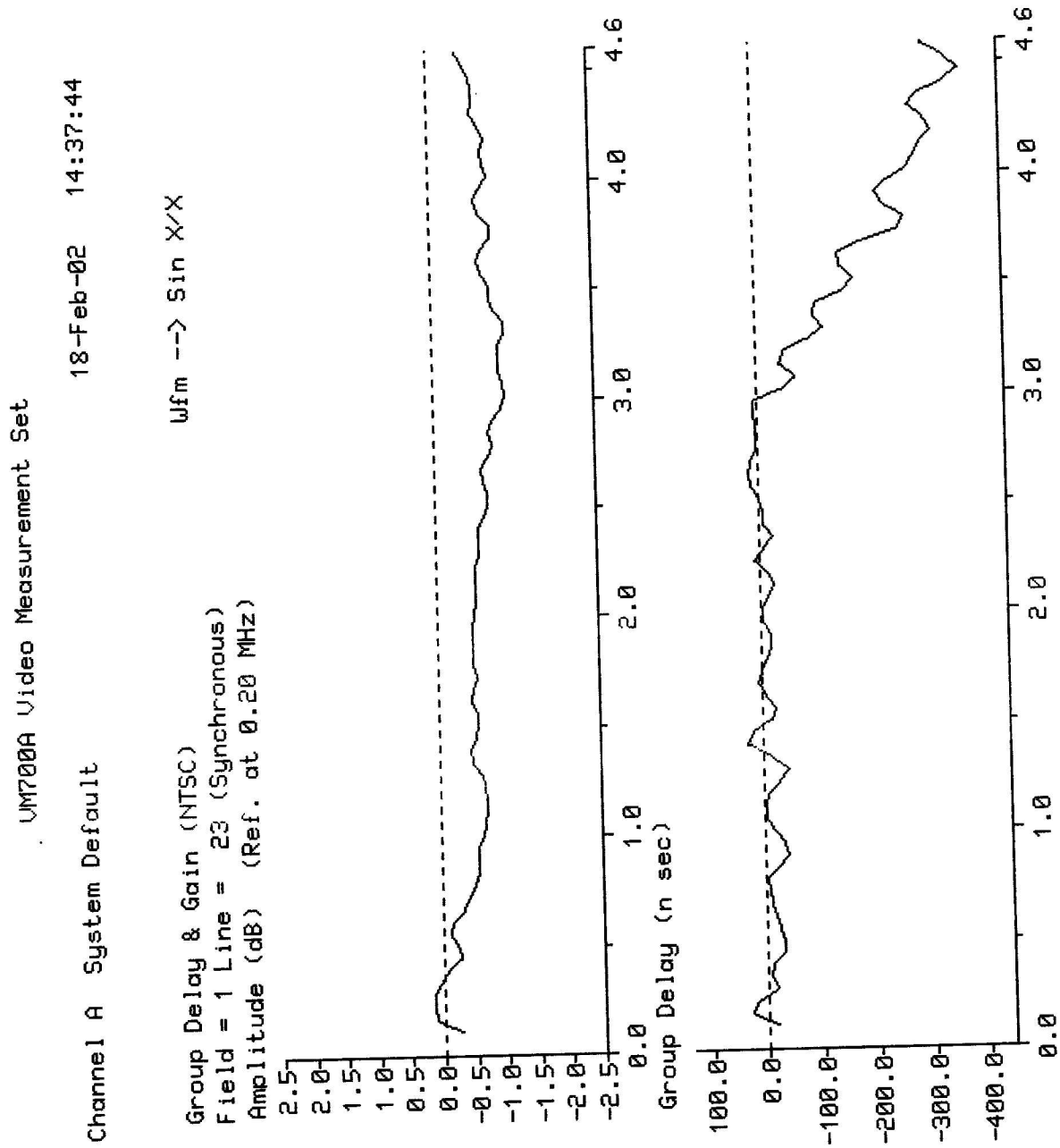
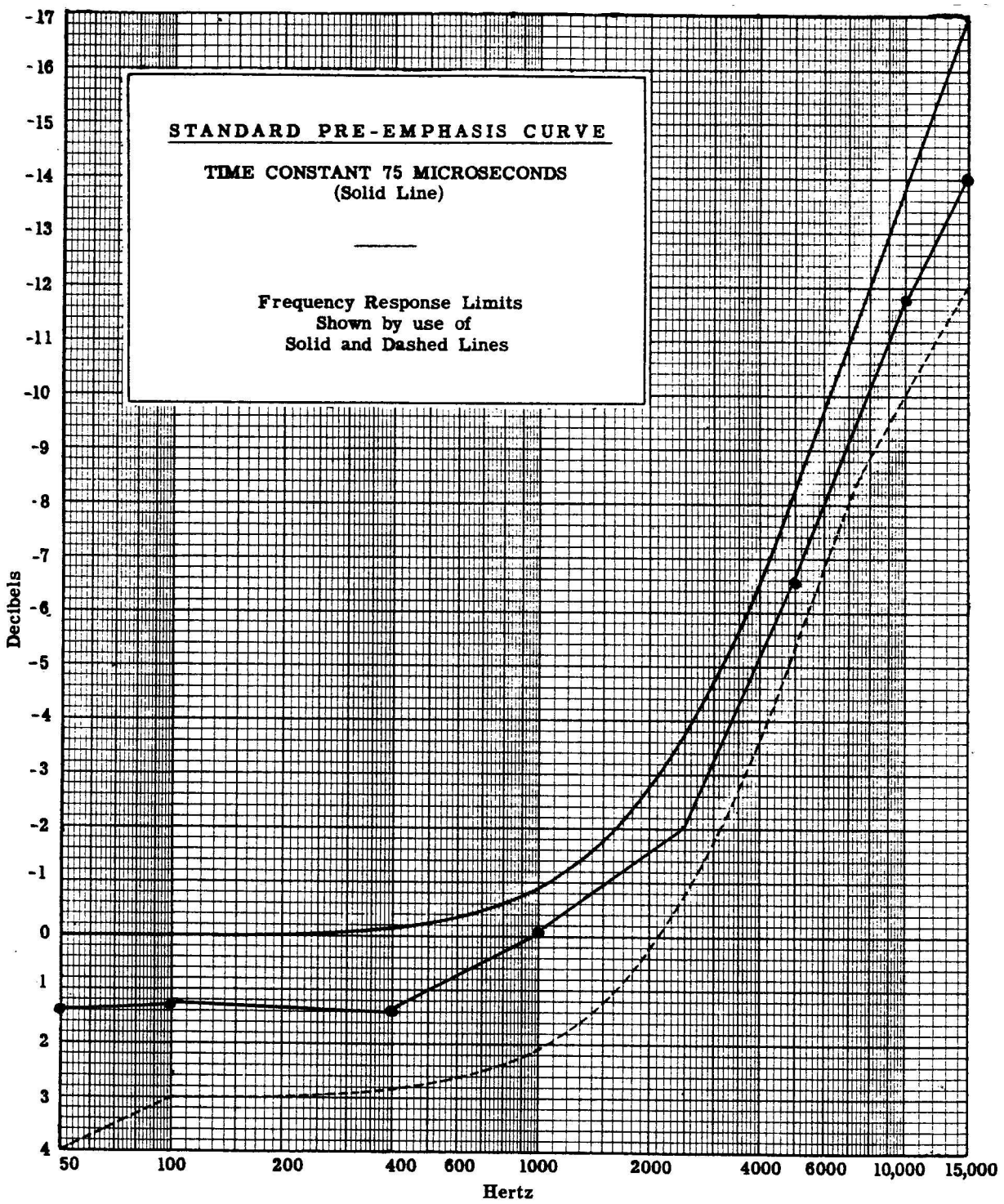


EXHIBIT 12 MODEL NUMBER: BZ5MX20U

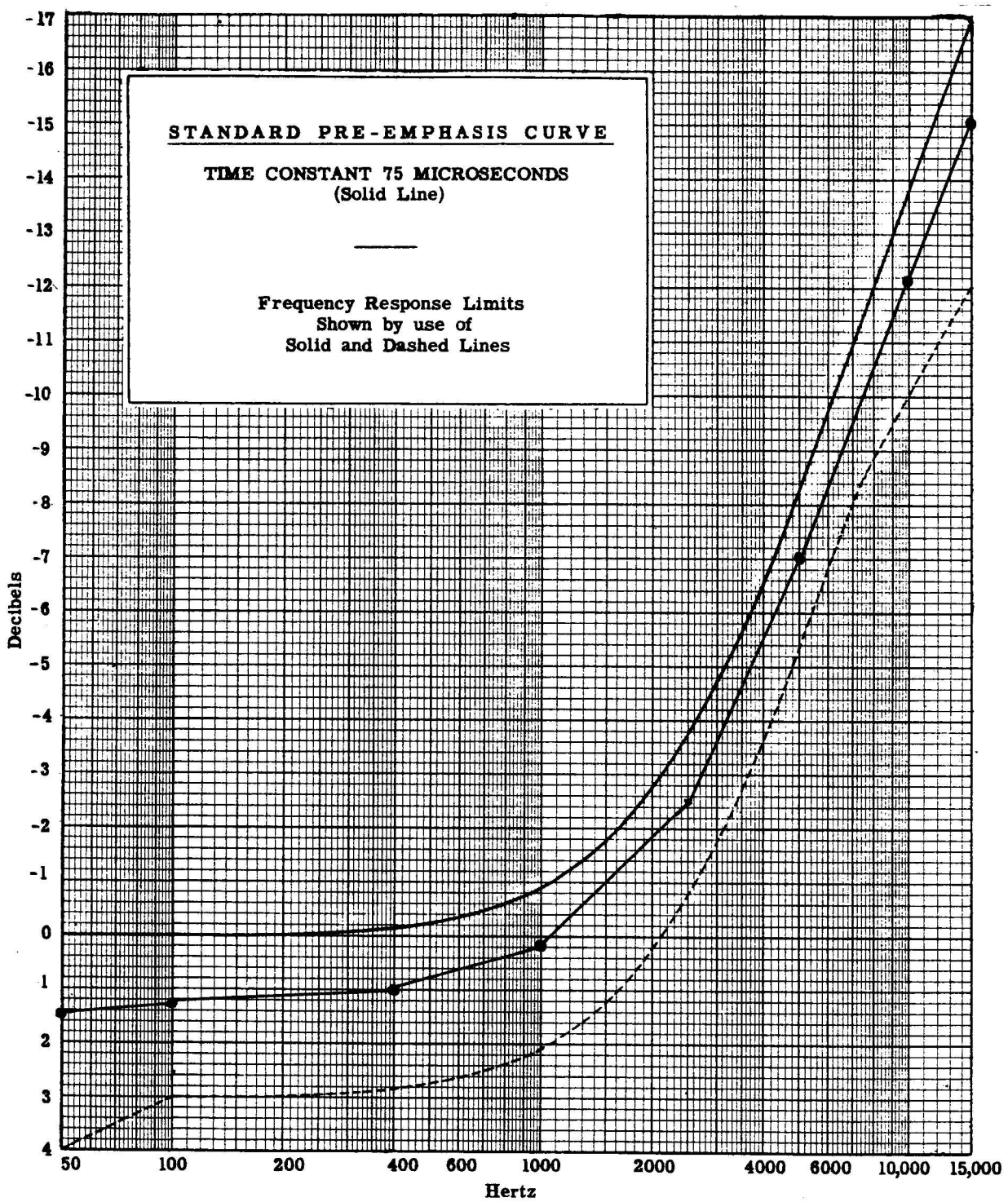
AUDIO FREQUENCY RESPONSE 50 % MODULATION



Reference 50 Hz; 0dB = 1.5 dB

EXHIBIT 13 MODEL NUMBER: BZ5MX20U

AUDIO FREQUENCY RESPONSE 100 % MODULATION



Reference 50 Hz; 0dB = 1.5dB