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March 8, 1996

MAR - 8 1996

BY HAND

William F. Caton, Acting Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, D.C. 20554

Re: Oral Ex Parte Presentation; IB Docket No. 95-91; GEN Docket No. 90-357

Dear Mr. Caton:

On March 7, 1996, representatives of the Digital Audio Radio ("DAR") Caucus of the Electronic Industries Association/Consumer Electronics Manufacturers Association ("EIA/CEMA") met with individuals from the Mass Media Bureau, International Bureau, and Office of Engineering and Technology. Representing the Caucus were Ralph Justus, Director of Engineering, EIA/CEMA, John D. Casey, Marketing Manager, Denon Electronics, and the undersigned.

The purpose of the meeting was to provide, as the Commission's staff had requested, a briefing on the ongoing assessment of various DAR technologies. Attached is a photocopy of transparencies that were used to conduct the briefing.

021

In accordance with Section 1.1206(a) of the Commission's rules, two copies of this material are being submitted for inclusion in the public record. Please contact me if you have any questions.

Sincerely,

Marc Berejka

Marc Berejka

Enclosures
cc (w/enclosures): Roy J. Stewart
Keith Larson
Saul Shapiro
Bruce Romano
Dennis Williams
James Burtle
Gordon W. Godfrey
Robert Greenberg
William Ball
Larry Olson
Steven D. Selwyn
Michael J. Marcus
David Means
Daniel Stanks

EIA/CEMA DAR CAUCUS
Briefing on DAR

Ralph Justus
Director of Engineering
EIA/CEMA

John D. Casey
Marketing Manager
Denon Electronics

Overview

* Introduce Roles, Players and Goals
* System Testing Status
* Laboratory Test Results
* Implications for Implementation
* Subcommittee Status
* Implementation Concerns
* Options & Commission Activity

EIA/CEMA Role in DAR

* CE Manufacturers
* Digital Audio
* Market Trends
* Potential
* Industry Growth

Subcommittees Formation & Roles

* EIA/CEMA DAR Subcommittee
* NRSC DAB Subcommittee
* EIA/CEMA CE Manufacturers DAR Caucus
* System Proponents:
    AT&T, AT&T/Amati, Eureka-147, USA Digital Radio (Gannett, CBS, Group W), VOA/JPL

Laboratory Test Results

* audio quality
* impairment performance
* compatibility

"Hard Questions" To Proponents

* IBOC-to-host interference (main & subcarrier)
* D-to-D and A-to-D interference (1st & 2nd adjacent)
* D-to-A interference (1st & 2nd adjacent)
* audio quality
* multibpath performance
* reacquisition
* subcarrier protection
* L-band spectrum & implementation in US

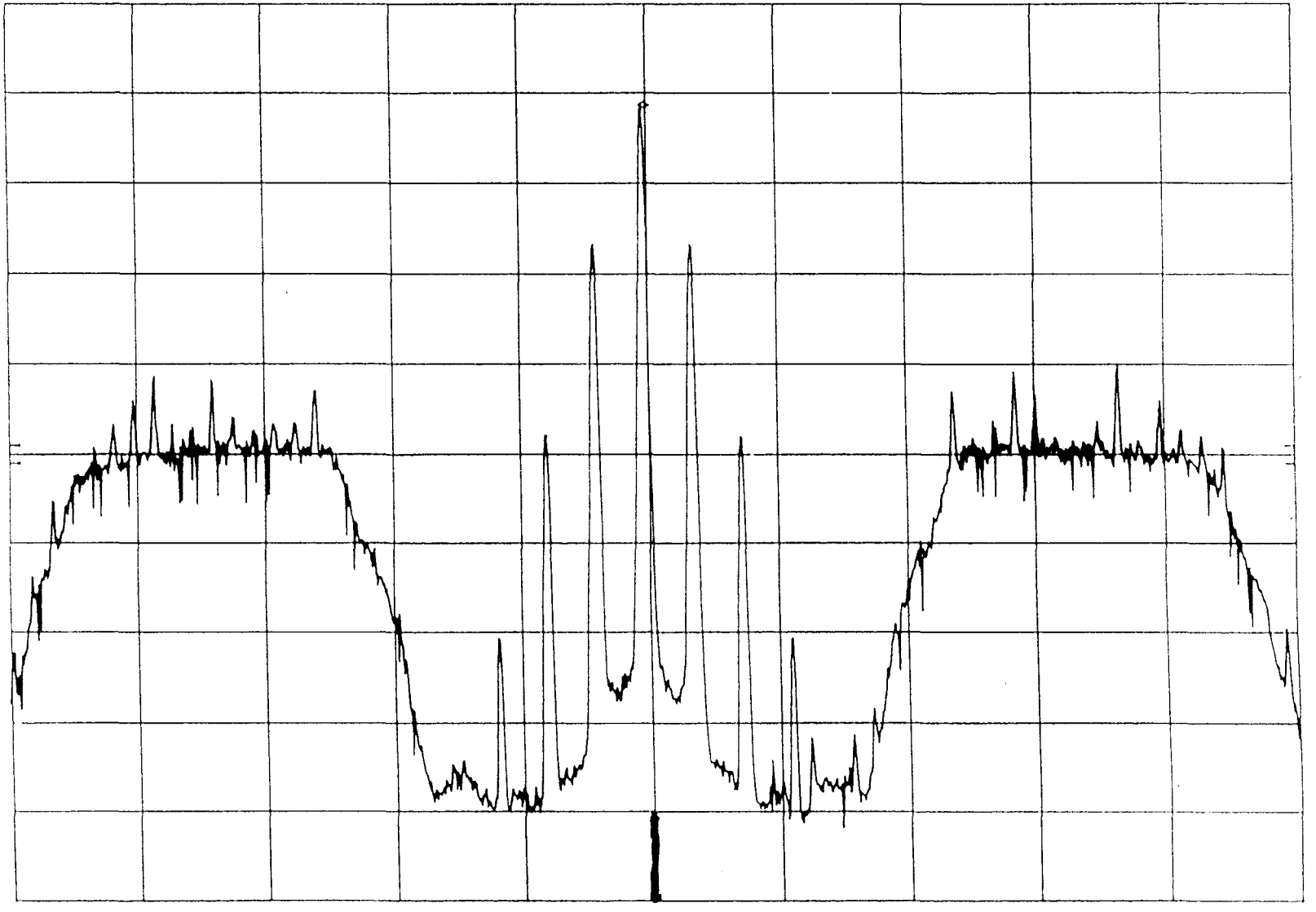
USADR FM1 3/17/95 12:01

MKR 94.099 0 MHz

EIA REF 0.0 dBm ATTEN 10 dB

-11.30 dBm

10 dB/

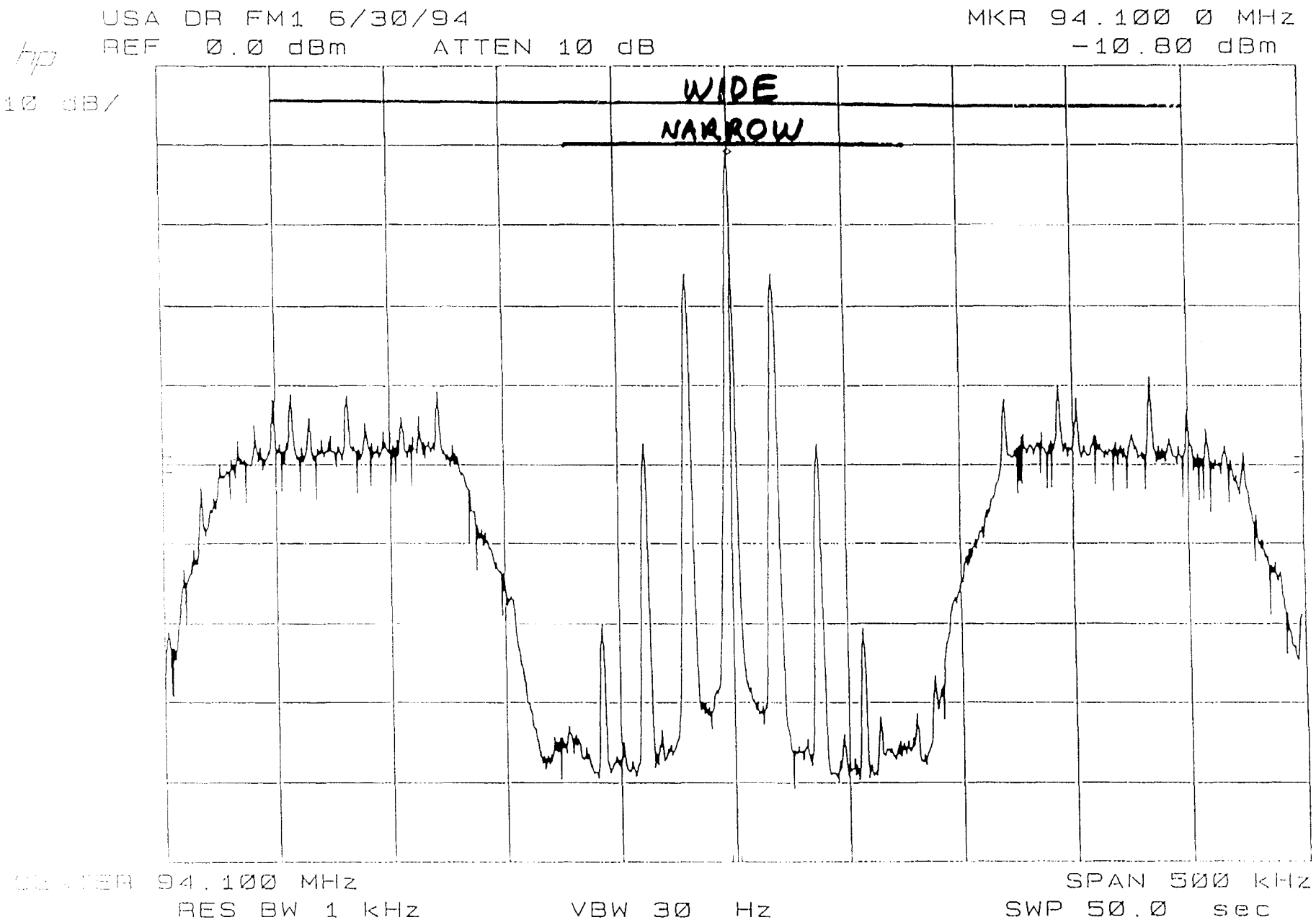


CENTER 94.100 MHz

SPAN 500 kHz

RES BW 1 kHz VBW 30 Hz

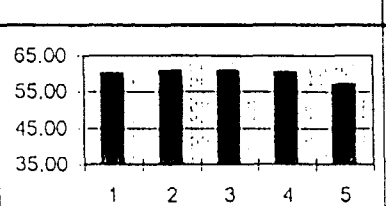
SWP 50.0 sec

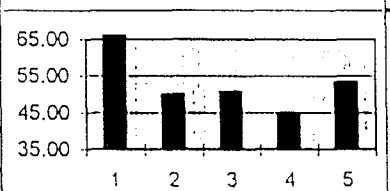

USA DR FM1 6/30/94
MKR 94.100 0 MHz
REF 0.0 dBm
ATTEN 10 dB
-10.80 dBm
10 dB/
WIDE
NARROW
CENTER 94.100 MHz
SPAN 500 kHz
RES BW 1 kHz
VBW 30 Hz
SWP 50.0 sec

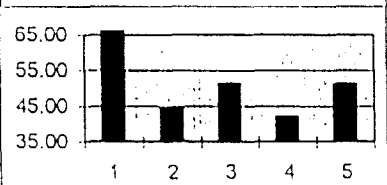
TEST L2 IBOC TO HOST ANALOG OBJECTIVE
STRONG SIGNAL LEVEL

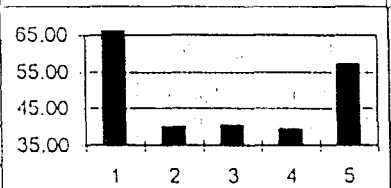
RECEIVER	PROPONENT	S/N RATIO MEASUREMENT CdB RMS	S/N RATIO MEASUREMENT CdB WEIGHTED
#1 DELCO	REF ANALOG	60.00	50.50
	DSB	60.70	50.50
	LSB	60.70	50.50
	FM-1	60.30	50.50
	FM-2	57.00	48.80
#2 DENON	REF ANALOG	68.00	62.30
	DSB	50.00	40.20
	LSB	50.70	41.00
	FM-1	44.90	33.20
	FM-2	53.40	42.50
#3 PANASONIC	REF ANALOG	67.50	57.10
	DSB	44.20	33.60
	LSB	51.20	41.00
	FM-1	42.00	29.70
	FM-2	51.00	40.00
#4 PIONEER	REF ANALOG	66.00	61.00
	DSB	40.00	29.60
	LSB	40.20	29.90
	FM-1	39.20	27.50
	FM-2	57.00	45.60
#5 FORD	REF ANALOG	65.20	55.70
	DSB	64.00	54.00
	LSB	64.00	55.00
	FM-1	62.70	52.20
	FM-2	59.30	48.90

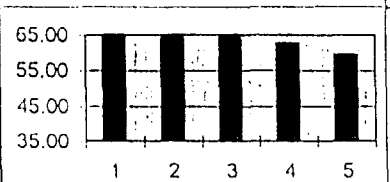
RMS S/N



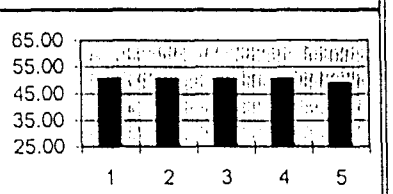


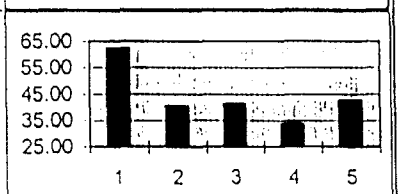


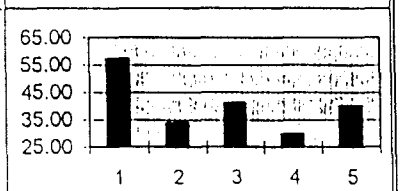


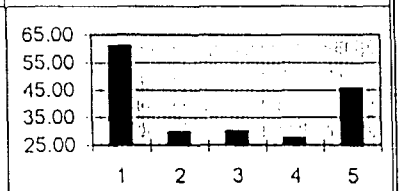


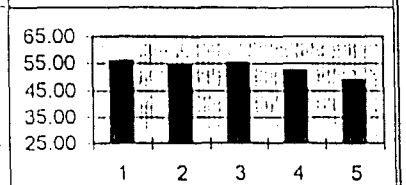
WEIGHTED S/N



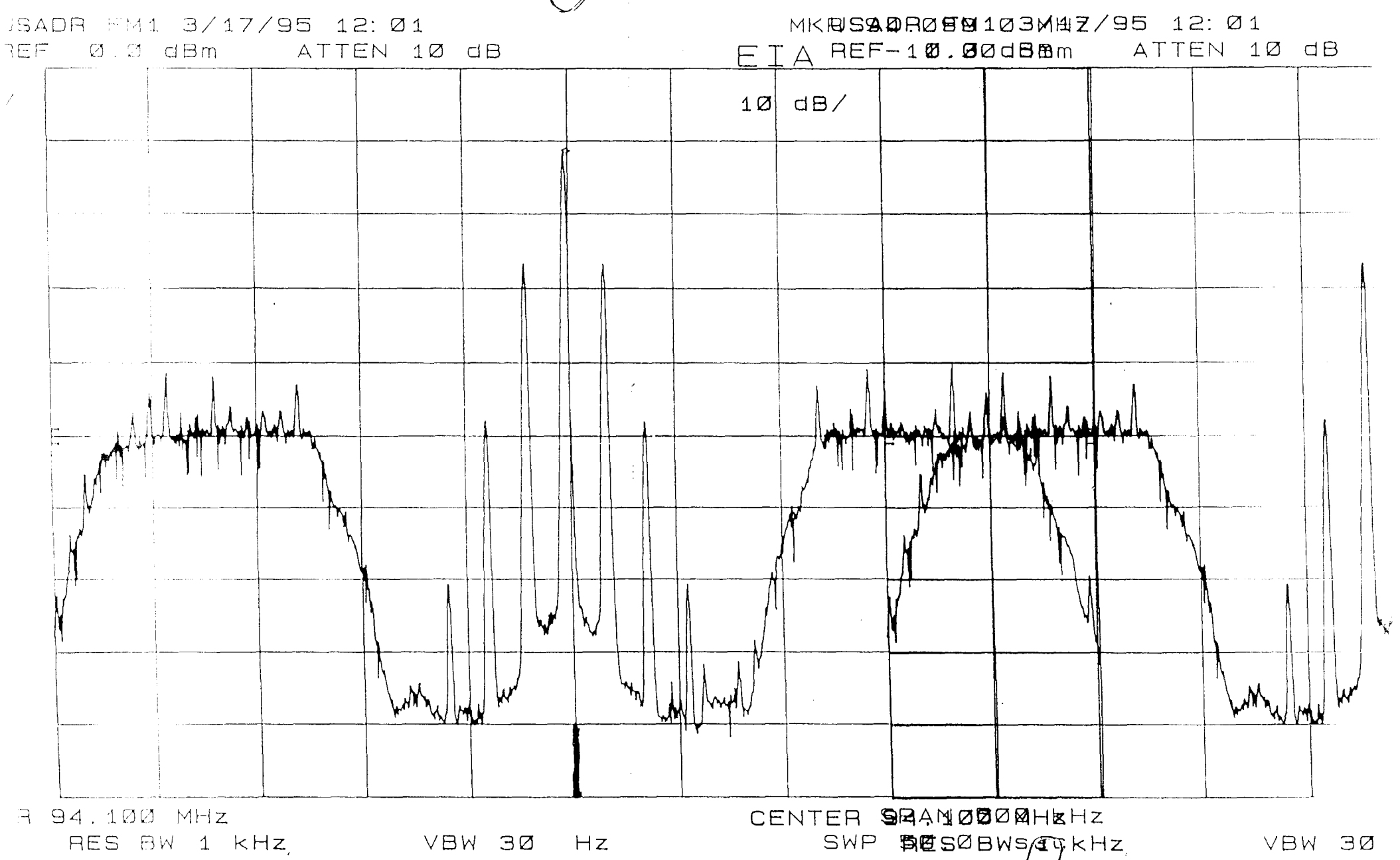








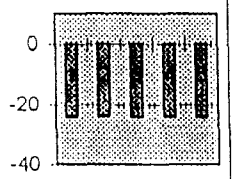
	LEGEND
1	REF ANALOG
2	DSB
3	LSB
4	FM-1
5	FM-2

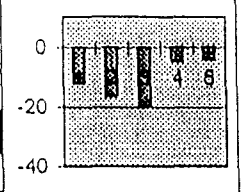

USADR FM1 3/17/95 12: 01
REF 0.0 dBm ATTEN 10 dB
MKR USADR FM1 3/17/95 12: 01
ETA REF-10.00dBm ATTEN 10 dB
10 dB/
R 94.100 MHz
RES BW 1 kHz VBW 30 Hz
CENTER 94.100 MHz
SPAN 1000 kHz
SWP 50 SOBWs 10 kHz VBW 30

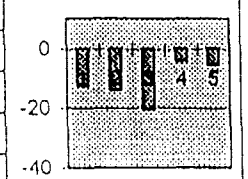
LOWER SECOND ADJACENT F-3, F-6, + G-3

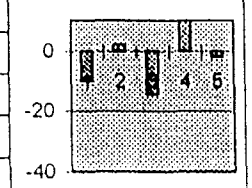
RECEIVER	F-3 D/U	PROPONENT	CD #3 TRACK #	F-6 SCORE	CD-3 TRACK #	G-3 SCORE
#1 DELCO	-24.14	AT&T	2	-1.50	22	-2.30
	-24.05	DSB	1	-0.20	23	-1.10
REFERENCE	-24.20	LSB	3	-0.50	21	-0.70
F3L 45 dB S/N	-24.12	FM-1	4	-1.00	24	-2.10
D/U -24.17 dB	-24.28	FM-2	5	-2.50	25	-3.00
#2 DENON	-11.97	AT&T	7	-3.00	29	-3.00
	-16.51	DSB	6	-3.00	30	-3.00
REFERENCE	-19.71	LSB	8	-1.80	28	-2.80
F3L 45 dB S/N	-4.64	FM-1	9	-3.00	27	-3.00
D/U -24.67 dB	-4.06	FM-2	10	-2.90	26	-3.00
#3 PANASONIC	-12.94	AT&T	12	-1.30	34	-2.70
	-14.18	DSB	13	-2.20	33	-3.00
REFERENCE	-20.45	LSB	11	-1.20	35	-2.10
F3L 45 dB S/N	-4.39	FM-1	14	-3.00	32	-3.00
D/U -22.41 dB	-5.81	FM-2	15	-3.00	31	-2.80
#4 PIONEER	-10.19	AT&T	17	-1.70	39	0.00
	1.95	DSB	18	-3.00	38	0.00
REFERENCE	-14.72	LSB	16	-0.70	40	0.00
F3L 45 dB S/N	9.86	FM-1	19	-3.00	37	0.00
D/U -15.16 dB	-2.06	FM-2	20	-2.40	36	0.00

F-3 D/U dB

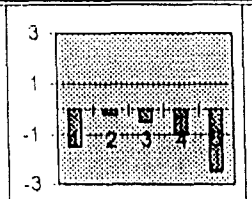


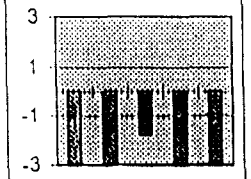


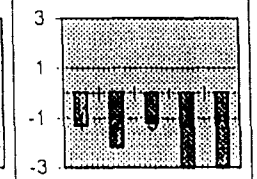


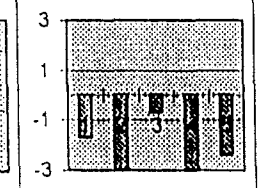


F-6 SCORE

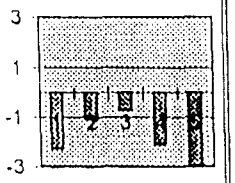


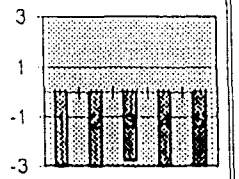


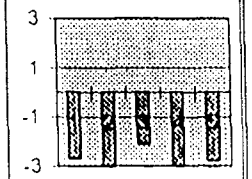


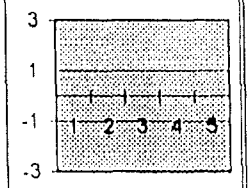


G-3 URBAN SLOW SCORE





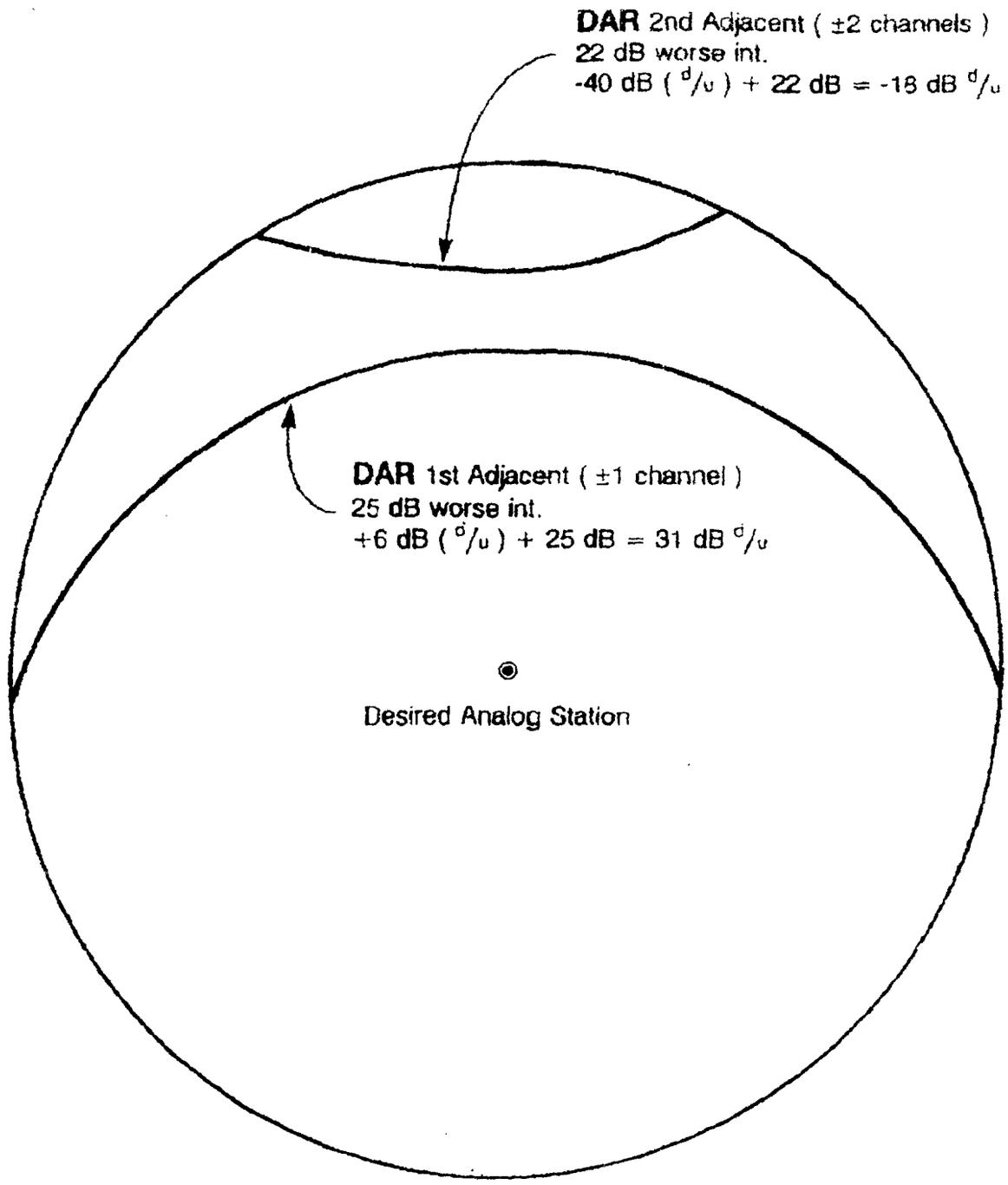




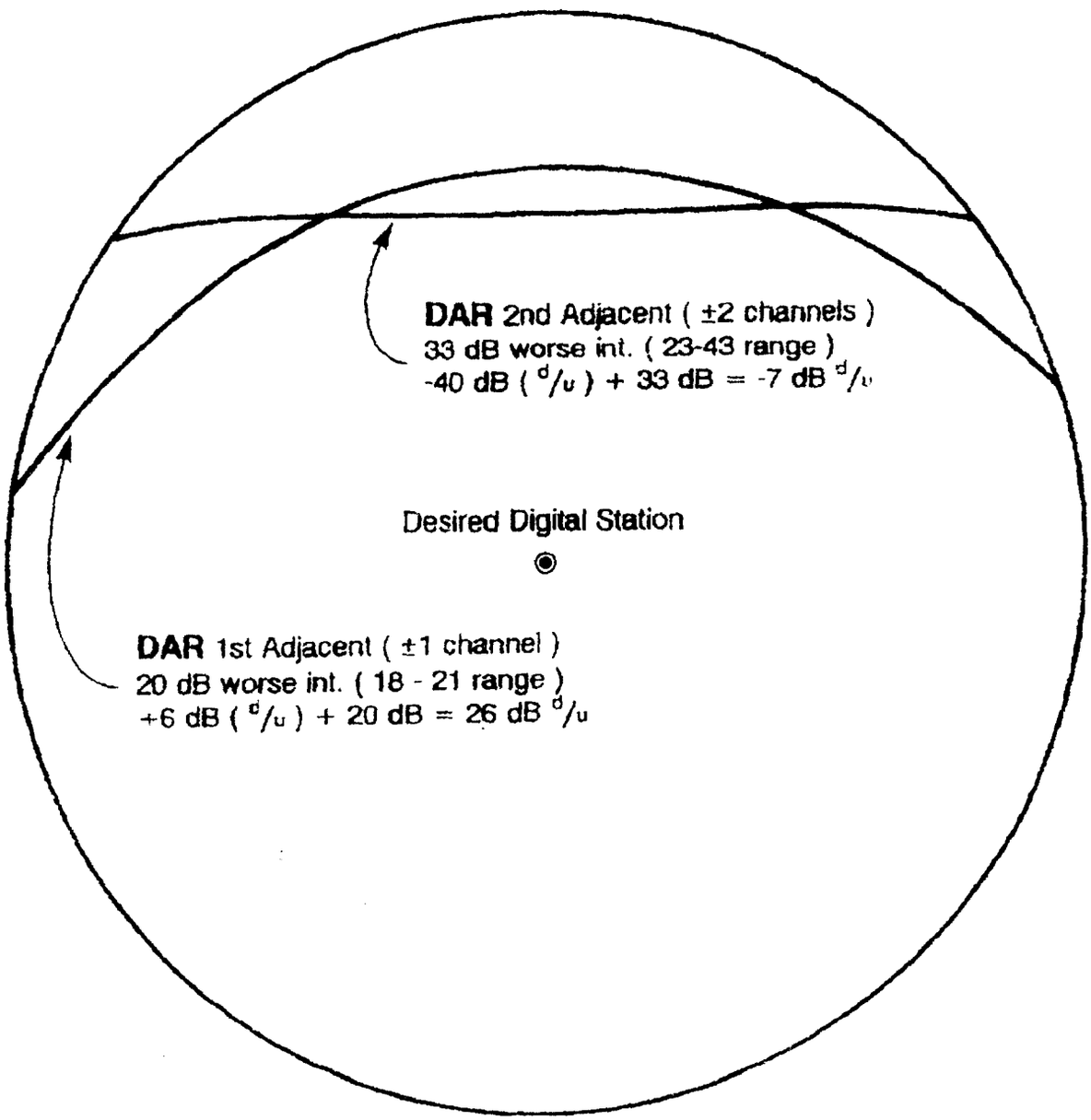
LEGEND	
1	AT&T
2	DSB
3	LSB
4	FM-1
5	FM-2

Audio Demonstration -- 2nd Adjacent

[Calibration]	Reference	Test
0----------15s	----------30s	----------45s
Reference check of test receiver	FM-to-FM D/U @ S/N=45 dB with U_{SLOW} multipath HARP	Composite IBOC-to-FM same D/U U_{SLOW} multipath HARP



MAXIMUM CLASS C STATION (100 KW / 600 M)
MINIMUM SEPARATION
(No FM Analog Interference)



MAXIMUM CLASS C STATION (100 KW / 600 M)
MINIMUM SEPARATION
(No FM Analog Interference)

Implications for Implementation

* IBOC degradation of host & other A stations
* IBAC spectrum availability
* new band scenario

Subcommittee Status

EIA/CEMA DAR Subcommittee "tangent issues"

- multipath
- receiver characterizations
- subjective assessment report

NRSC DAB Subcommittee

- concerns about "cross comparisons" (IBOC vs. non-IBOC)
- report drafting reference of existing AM/FM?

Field Testing

- Responses From Proponents
- "Modified" Systems

Options

* In-Band
* New Band
* Eureka 147 DAB
* Satellite/Terrestrial
* Spectrum Allocations

Other Concerns

* world-wide system?
* negotiation stalemate?
* satellite/terrestrial
* system standardization?
* consumer confusion

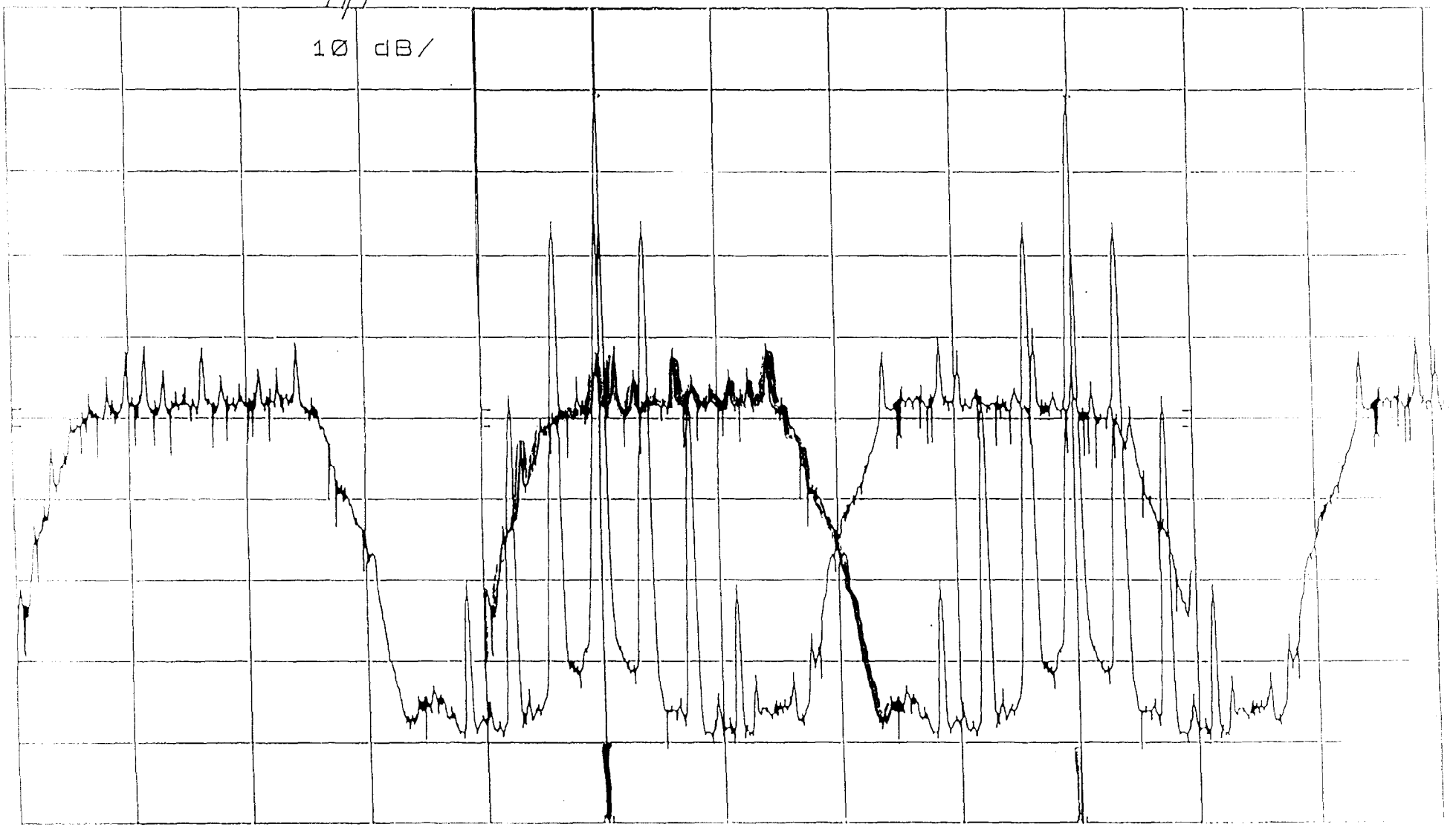
Commission Opportunity

* use EIA/CEMA test data as basis for developing policy
* address all options
* **PUBLIC INTEREST**

USA DR FM1 6/30/94 USA DR FM1 6/30/94 MKR 94.100 0 MHz MKR 9

REF 0.0 dBm ATTEN 10 dB 0.0 dBm ATTEN 10 dB 0.80 dBm

dB/ 10 dB/

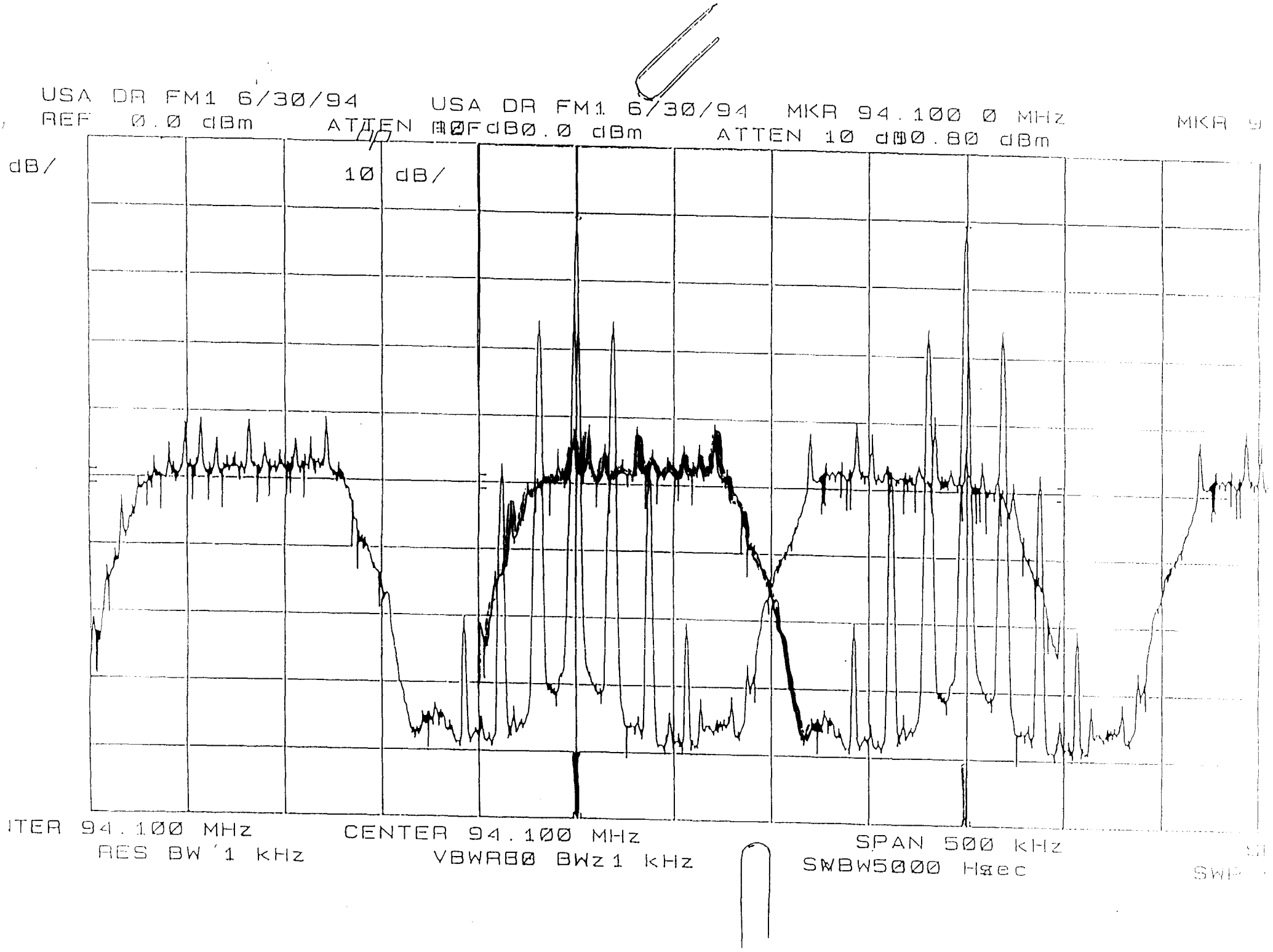


TER 94.100 MHz CENTER 94.100 MHz SPAN 500 kHz S

RES BW 1 kHz VBW 80 BW 1 kHz SWBW 5000 Hz sec SWP

Audio Demonstration -- IBOC-to-Host

Reference	Test
0----------30s	30s----------60s
HARP/ABBA/SPEECH	HARP/ABBA/SPEECH
FM transmitter strong signal	FM with IBOC strong signal


USA DR FM1 6/30/94
REF 0.0 dBm
ATTEN 10 dB
0.0 dBm
USA DR FM1 6/30/94
MKR 94.100 0 MHz
ATTEN 10 dB
0.80 dBm
MKR
dB/
10 dB/
ITER 94.100 MHz
RES BW 1 kHz
CENTER 94.100 MHz
VBW 80 Hz 1 kHz
SPAN 500 kHz
SWBW 5000 Hz
sec
SWP

Audio Demonstration -- IBOC-to-Host

Reference Test

0----------30s----------60s

HARP/ABBA/SPEECH HARP/ABBA/SPEECH

FM transmitter strong signal

FM with IBOC strong signal