1160-1210

Station	Main Studio	Freq	Power	Date
WBQN	Barceloneta, PR	1160	1 kW/DA-2	1/14/76
WCOV	Montgomery, AL	1160	1/10 kW/DA-2	10/26/64
WJJD	Chicago, IL	1160	50 kW	4/17/46
NEW	Red Deer, AB	1170	10/5 kW/DA-2	12/21/71
NEW	Chatboro, PQ	1170	5 kW/DA-D	1/28/65
CFNS	Saskatoon, Sask.	1170	1 kW/DA-1	12/20/51
CMAR	Artemisa, Pinar Del Rio	1170	0.25 kW	
NEW	Diamondale, MI	1170	1 kW/DA-D	11/16/79
KFNW	Fargo, ND	1170	10 kW/DA-D	10/5/77
KCBQ	San Diego, CA	1170	5/50 kW/DA-2	10/28/68
KJNP	North Pole, AK	1170	50 kW/DA-N	1/28/70
KLOK	San Jose, CA	1170	5/50 kW/DA-2	10/19/79
KLOK	San Jose, CA	1170	5/10 kW/DA-2	2/60
KPUG	Bellingham, WA	1170	5/10 kW/DA-N	7/7/76
KPUG	Bellingham, WA	1170	1 kW/DA-1	2/24/48
KPUG	Bellingham, WA	1170	1/5 kW/DA-2	5/27/65
KSTT	Davenport, IA	1170	1 kW/DA-2	3/11/48
KVOO	Tulsa, OK	1170	50 kW/DA-N	6/28/67
WBRW	Somerville, NJ	1170	0.5 kW/DA-D	6/28/67
WCOV	Montgomery, AL	1170	1/10 kW/DA-2	9/22/48
WHLW	Lakewood, NJ	1170	5 kW/DA-D	12/23/70
WJMQ	Norfolk, MA	1170	1 kW/DA-D	10/19/79
WJMQ	Norfolk, MA	1170	0.5 kW/DA-D	5/12/77
WLBH	Mattoon, IL	1170	5 kW/DA-D	10/1/75
WRTT	Vernon, CT	1170	1 kW/DA-2	10/19/79
WVLC	Orleans, MA	1170	1 kW/DA-D	6/5/74
WWLE	Cornwall, NY	1170	1 kW/DA-D	3/27/70

1160-1210

Station	Main Studio	Freq	Power	Date
WWVA	Wheeling, WV	1170	50 kW/DA-N	3/41
KOFI	Kalispell, MT	1180	10 kW/DA-N	12/28/67
WKKE	Pearl, MS	1180	10/0.5 kW/DA-N	6/30/81
CFSL	Weyburn, Sask.	1190	5/10 kW/DA-N	12/28/67
CHTN	Charlottetown, PEI	1190	10 kW/DA-N	11/8/74
CJMR	Mississauga, ON	1190	10 kW/DA-D	4/11/80
NEW	Winnipeg, MB	1190	10 kW/DA-2	4/28/66
NEW	Jackson, MN	1190	5 kW/DA-D	11/16/79
NEW	Springfield, TN	1190	0.25 kW/DA-D	8/22/80
KAYQ	Kansas City, MO	1190	0.25/1 kW/DA-N	10/28/67
KEX	Portland, ME	1190	50 kW/DA-1	4/1/47
KEZY	Anaheim, CA	1190	1/5 kW/DA-N	5/8/74
KEZY	Anaheim, CA	1190	1 kW/DA-1	5/17/57
KHAD	DeSoto, MO	1190	5 kW/DA-D	2/10/77
KLIF	Dallas, TX	1190	5/50 kW/DA-2	8/26/70
KLIF	Dallas, TX	1190	1/50 kW/DA-2	4/9/58
KRDS	Tolleson, AZ	1190	0.25/5 kW/DA-2	9/27/78
KRDS	Tolleson, AZ	1190	0.25/10 KW/DA-2	9/28/66
KRJZ	Beloit, KS	1190	2.5 kW/DA-D	10/26/79
WANN	Annapolis, MD	1190	10 kW/DA-D	12/63
WAVS	Fort Lauderdale, FL	1190	5 kW/DA-D	10/26/70
WBMJ	San Juan, PR	1190	5/10 kW/DA-1	5/28/68
WGCA	Chattanooga, TN	1190	10 kW/DA-2	9/25/70
WGCA	Chattanooga, TN	1190	10 kW/DA-D	11/10/71
WLIB	New York, NY	1190	10 kW/DA-1	2/16/77
WOWO	Fort Wayne, IN	1190	50 kW/DA-N	3/45
WRIP	Chattanooga, TN	1190	50 kW/DA-D	12/28/67

1160-1210

Station	Main Studio	Freq	Power	Date
WSML	Graham, NC	1190	0.5 kW/DA-D	3/27/70
WSNW	Seneca, SC	1190	5 kW/DA-D	10/26/65
WWWW	Rio Piedras, PR	1190	0.5 kW/DA-2	1/24/62
NEW	Knoxville, TN	1190	10 kW/DA-D	9/28/67
NEW	Colorado Springs, CO	1190	50 kW/DA-D	4/29/69
XENJ	Villa de Guadalupe, Nuevo Leon	1190	0.5/1 kW/DA-N	8/27/65
XEWK	Anaheim-Fullerton, CA	1190	5 kW/DA-N	9/16/57
CFFB	Frobisher, NWT	1200	0.25 kW	10/28/68
CFFB	Frobisher, NWT	1210		11/8/82
KGYN	Guymon, OK	1210	10 kW/DA-N	3/22/71
WHOY	Salinas, PR	1210	1/5 kW/DA-2	10/26/79
WKNX	Saginaw, MI	1210	10 kW/DA-D	8/18/58

WBQN

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WBQN — Main Studio: Barceloneta, Puerto Rico

Frequency: 1160 kHz — Power: 1 kW

Notification List No. 1667 — Date: January 14, 1976 — Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:
North Latitude: 18° 26' 22"
West Longitude: 66° 33' 07"

ANTENNA CHARACTERISTICS

Authorized for Daytime and Nighttime operation. (DA-2)
Number of elements: 3
Type of elements: Series-excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	NW(#3)	C(#1)	SW(#2)
HEIGHT ABOVE INSULATORS:	All towers 200' (84.9°)		
NIGHT PHASING:	+92.9°	0°	+155.7°
NIGHT FIELD RATIO:	0.40	1.00	0.57
DAY PHASING:	+92.0°	0°	+147.7°
DAY FIELD RATIO:	0.41	1.00	0.57

SPACING AND ORIENTATION: Tower #2 is spaced 141.3' (60°) on a line bearing 229° true from tower #1. Tower #3 is spaced 252' (107°) on a line bearing 321° true from tower #1.

GROUND SYSTEM: 120-212' equally spaced copper radials plus a 24' square ground screen about each tower. Radials are shortened and and bonded to a transverse strap along intersections between towers. Centers of systems are bonded together.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	189.6 mv/m	258.9 mv/m	199.2 mv/m
Night	190.7 mv/m	272.7 mv/m	200.3 mv/m

(Cont'd)

DAYTIME MODIFIED PATTERN AUGMENTATION

Azimuth of Maximum Augmentation	Augmented Radiation E_2	Span of Augmentation From - To
286.5°	9.00 mv/m	266.5° - 306.5°

Note: This notification concerns an increase in power from 0.25 kW.

CTR NO 30120A4

WBQN

WILLIS C. BEECHER
CONSULTING ENGINEER
WASHINGTON, D. C.

RMS (std.) = 200.3 MV/M
RMS (th.) = 190.7 MV/M
RSS (th.) = 272.7 MV/M

Standard Pattern

NULL
George Town
706 mi.

HIDE
240 mi.

30 20 MV/M 10 100 200 MV/M 300

321° T
No. 3 0.40 ∠ 92.9°
107°
49° T
h = 200'
G = 84.9° No. 1 1 ∠ 0°
60°
No. 2 0.57 ∠ 155.7°

18° 26' 22.5", 66° 33' 07"

Figure 8
Nighttime Standard
Horizontal Radiation Pattern
Angel M. Rivera
WBQN, Barceloneta, Puerto Rico
1160 KHz 1000 Watts U, DA-2
June 1975

MADE IN U. S. A.

POLAR CO-ORDINATE

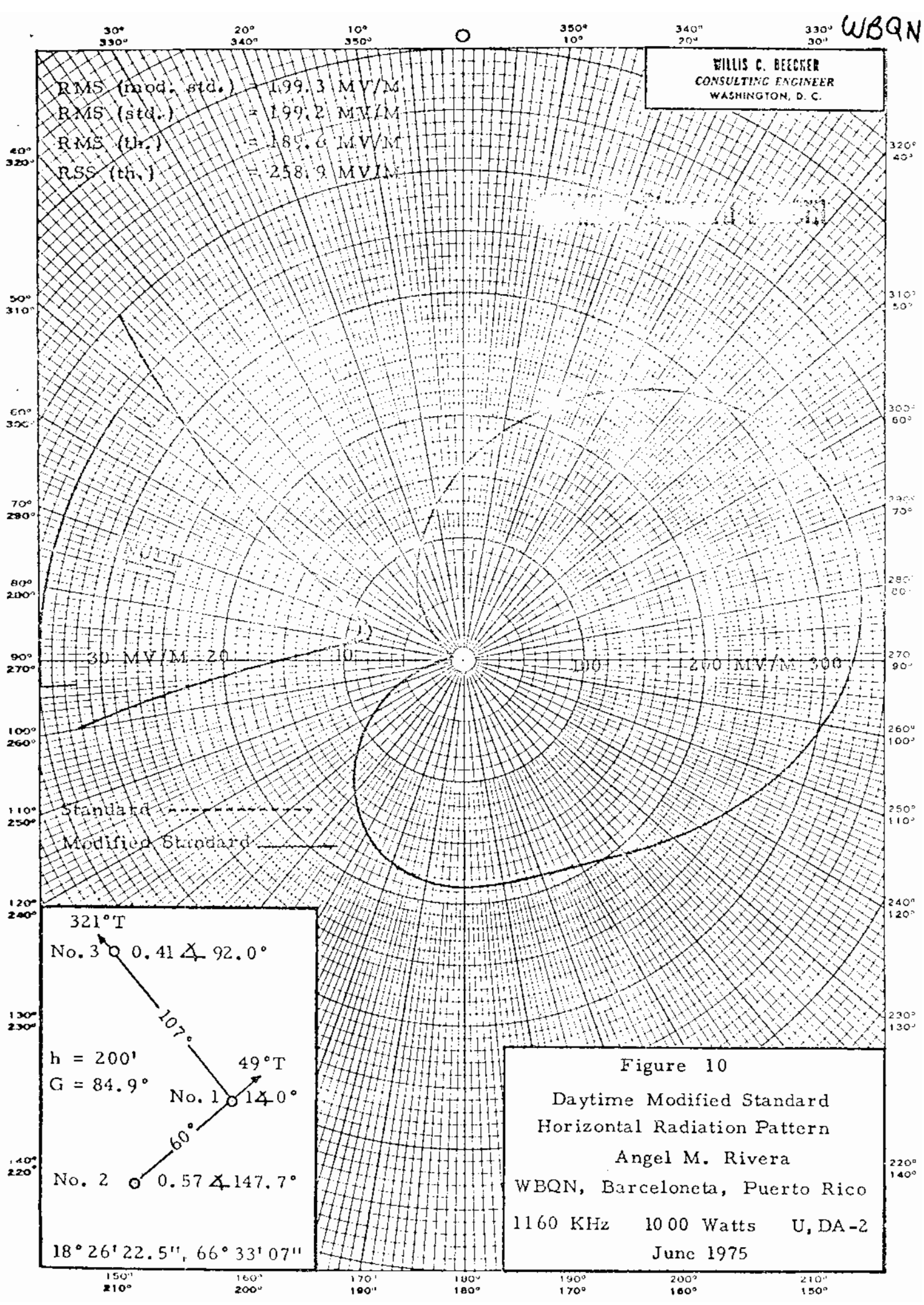


Figure 10

Daytime Modified Standard
Horizontal Radiation Pattern

Angel M. Rivera

WBQN, Barceloneta, Puerto Rico

1160 KHz 1000 Watts U, DA-2

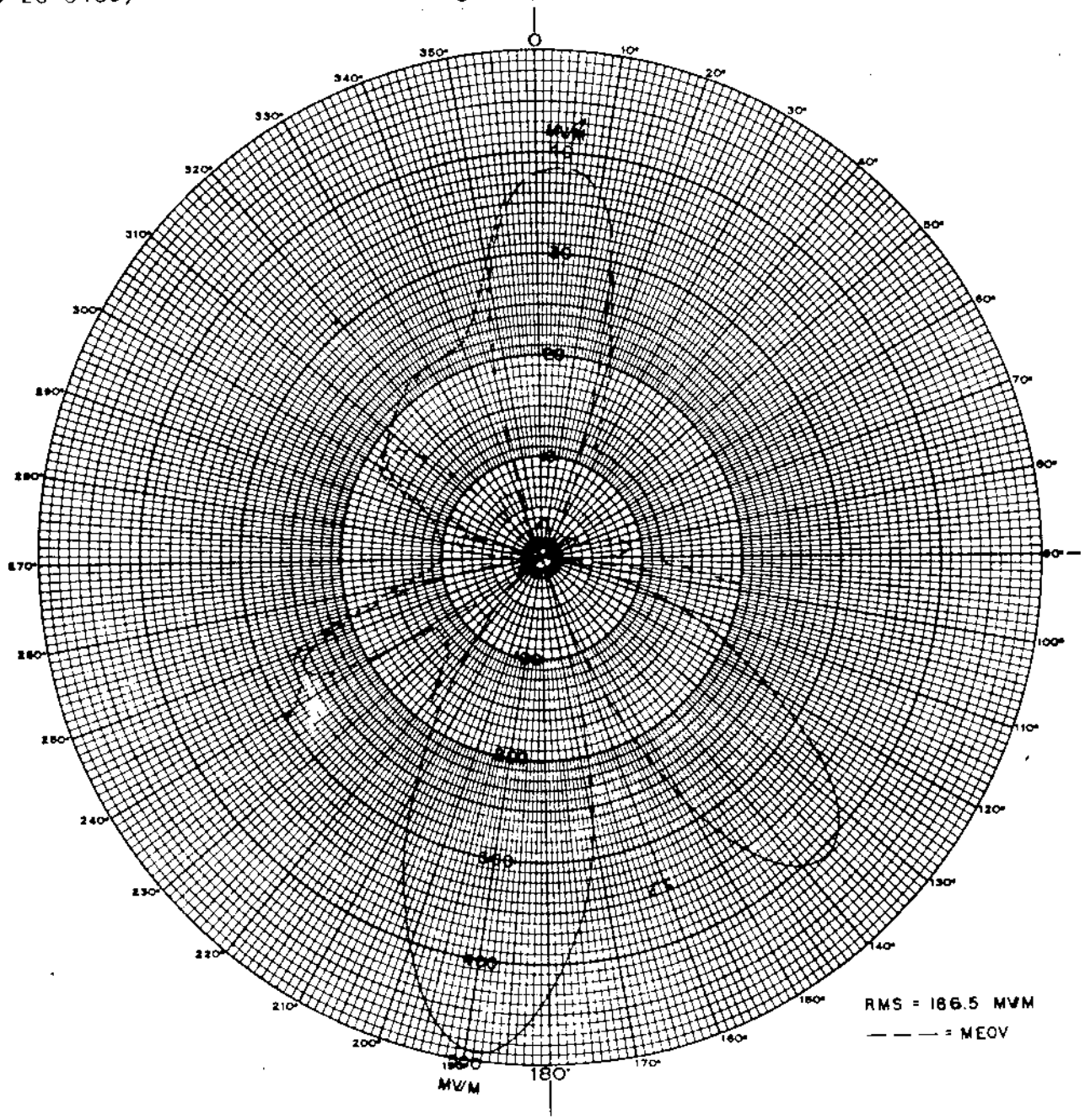
June 1975

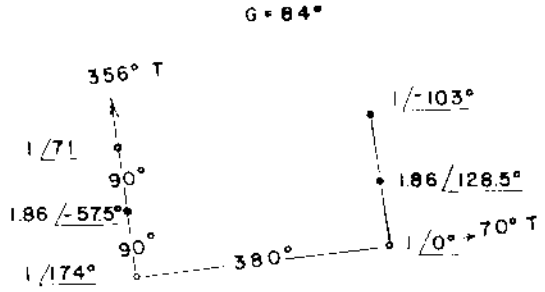
WCOV

Proposed Night
(10-26-64ct)

Station WCOV
Montgomery, Alabama

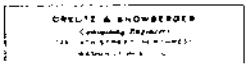
1kw,10kw-LS,DA-2,U
1170 kc





North Latitude 32° 27' 16"
West Longitude 86° 17' 21"

FIGURE 1
NIGHT-TIME HORIZONTAL PATTERN
SOUTHERN BROADCASTING COMPANY, INC.
RADIO STATION WCOV
MONTGOMERY, ALABAMA
1170KC 10KW DAY 1 KW NIGHT DA-2
OCTOBER 1964



FCC File No. BP-15312
Accepted 10-15-64 Amended

Station WCOV
Montgomery, Alabama

1170 kc

DESCRIPTION SHEET | Station WJJD, Chicago, Illinois | 50kw, DA-1, L-KSL, 1160 KC

5/3/46

BP-16453 APPL. 11-30-64 CHG. XMTR LOC. TO 42° 02' 30" N 87° 51' 57" W 3-8-65 CP CHG. LOC.

Station WJJD — Main Studio Chicago, Illinois

Power 50kw — Frequency 1160 kilocycles

Authorized April 17, 1946

Location: North Latitude NL 42° 02' 30"

West Longitude WL 87° 50' 30" 51 57

Antenna:

Authorized for operation limited to KSL

Two elements, Self-supporting vertical.

Tower:	Northwest	Southeast
Height above insulators:	278'	215'
Spacing:	212'	90°
Phasing:	0°	-111°
Field Ratio:	1.0	0.49

Ground System: 90 radials 212 feet long about base of each tower.

Orientation: On a line bearing 135° true.

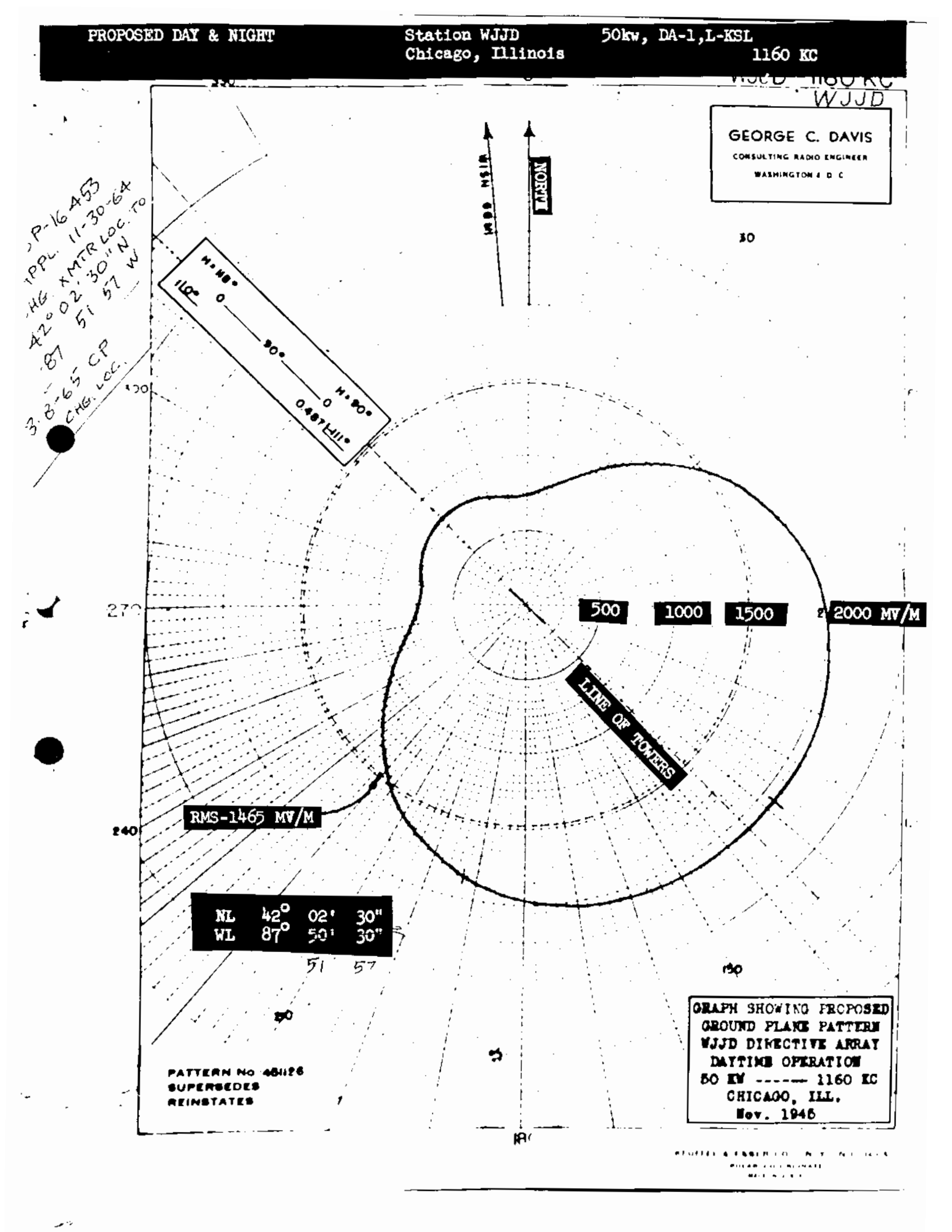
Predicted effective field 1485 mv/m (210 for 1 kw).

PROPOSED DAY & NIGHT | Station WJJD, Chicago, Illinois | 50kw, DA-1, L-KSL | 1160 KC

WJJD

GEORGE C. DAVIS
CONSULTING RADIO ENGINEER
WASHINGTON 4, D. C.

BP-16453
TPPL. 11-30-64
CHG. XMTR LOC. TO
42° 02' 30" N
87 51 57 W
3-8-65 CP
CHG. LOC.



PATTERN NO 48126
SUPERSEDES
REINSTATES

GRAPH SHOWING PROPOSED GROUND PLANE PATTERN WJJD DIRECTIVE ARRAY DAYTIME OPERATION 50 KW ------ 1160 KC CHICAGO, ILL. Nov. 1946

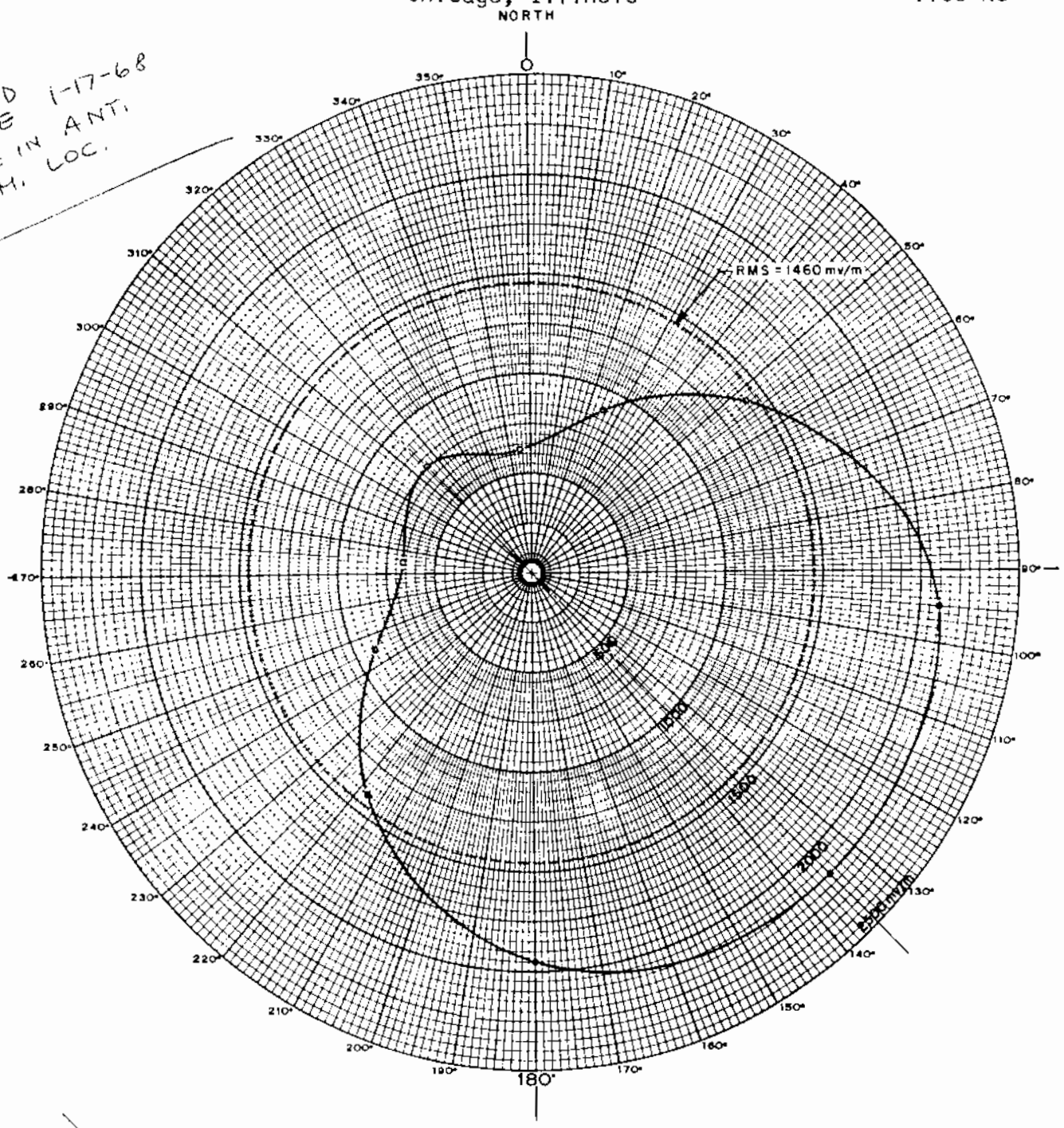
WJJD

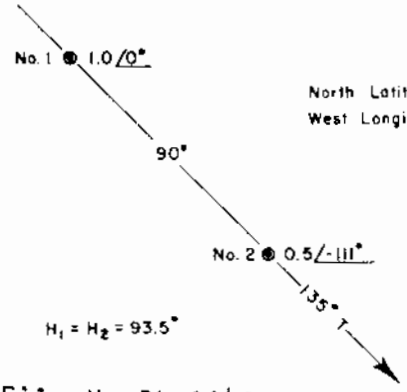
Measured Day & Night
(1-30-67ct)

Station WJJD
Chicago, Illinois

50kw, DA-1, U
1160 kc

GRANTED 1-17-68
LICENSE
CHANGE IN ANT.
TRANSM. LOC.





North Latitude 42° 02' 30"
West Longitude 87° 51' 57"

FIGURE 7
HORIZONTAL RADIATION PATTERN
DA OPERATION
PLOUGH BROADCASTING COMPANY, INC.
WJJD 50 KW-L, DA 1160 KC
CHICAGO, ILLINOIS

Prepared by
Lohnes and Culver Washington, D. C.
September, 1966

FCC File No. BL-11495
Accepted 1-3-67

Station WJJD
Chicago, Illinois

1160 kc

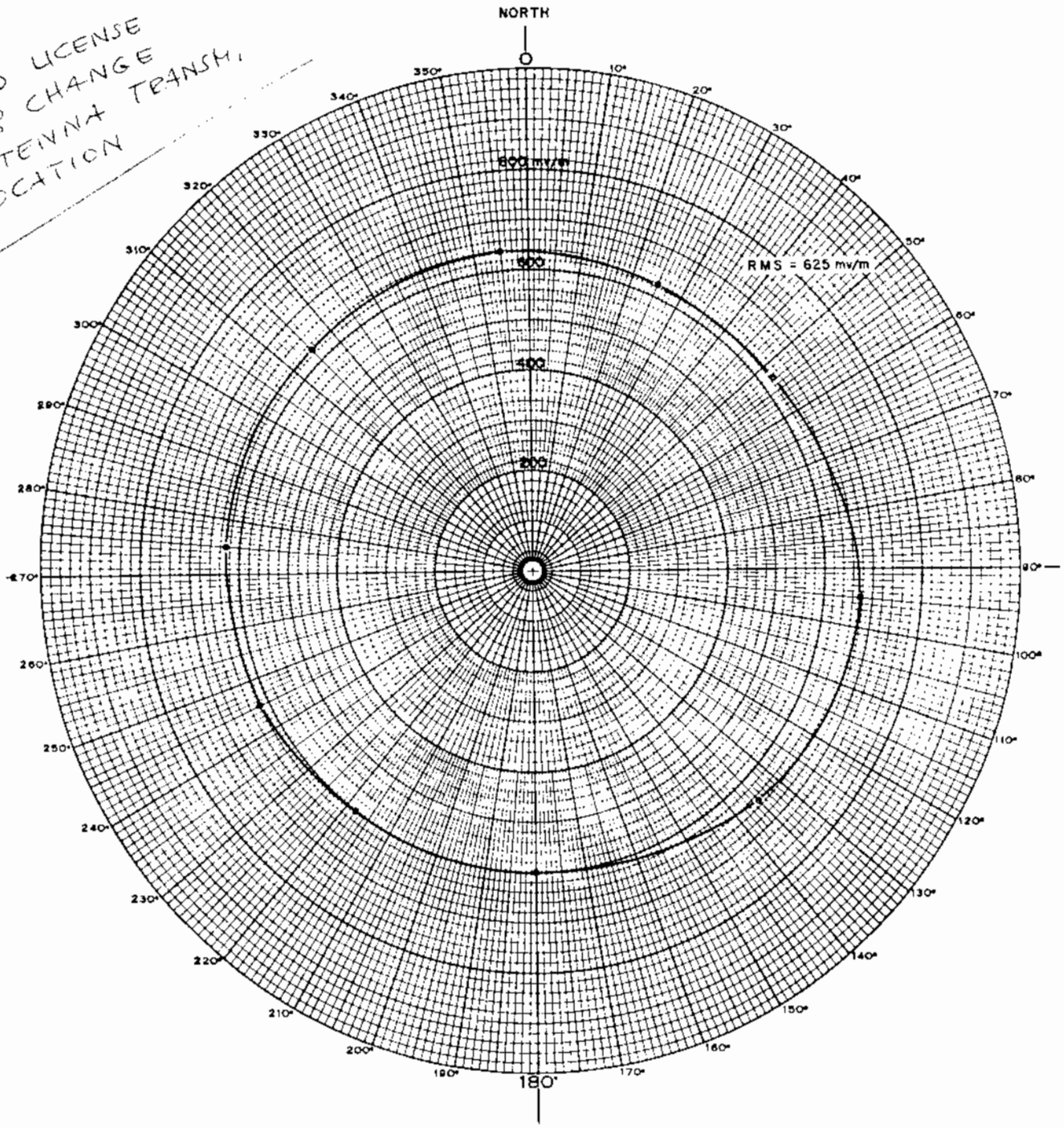
WJJD

Measured Non-DA
(1-30-67ct)

Station WJJD
Chicago, Illinois

50kw, DA-1, U
1160 kc

GRANTED LICENSE
1-17-68 CHANGE
IN ANTENNA TRANSM.
LOCATION



North Latitude 42°02'30"
West Longitude 87°51'57"

FIGURE 6
HORIZONTAL RADIATION PATTERN
NON-DA OPERATION
PLOUGH BROADCASTING COMPANY, INC.
WJJD 50 KW-L, DA 1160 KC
CHICAGO, ILLINOIS

Prepared by
Lohnes and Culver Washington, D. C.
September, 1966

FCC File No. BL-11495
Accepted 1-3-67

Station WJJD
Chicago, Illinois

1160 kc

PROJECT #11101

DESCRIPTION SHEET - DIRECTIONAL ANTENNA

STATION: NEW MAIN STUDIO: RED DEER, ALBERTA

FREQUENCY: 1170 kHz POWER: 10 kW DAY 5 kW NIGHT CLASS: II

NOTIFICATION LIST NO: 285 DATE: December 21, 1971.

GEOGRAPHICAL LOCATION: Latitude 52° 08' 56" North
Longitude 113° 51' 30" West

ANTENNA CHARACTERISTICS:

Mode of Operation: DA-2

Number of Elements: 3 (Three)

Type of Elements: Guyed steel towers, uniform cross-section, base insulated for series feed

Tower	#1(South)	#2(Centre)	#3(North)
Height above base insulator:	160'(68.6°)	160'(68.6°)	160'(68.6°)
Overall height:	165'	165'	165'
Day Field Ratio:	1.0	.92	--
Day Phasing:	0°	-160°	--
Night Field Ratio:	.610	1.0	.560
Night Phasing:	+127°	0°	-128°

GROUND SYSTEM: 120 equally spaced radials per tower of No. 10 B & S gauge bare soft copper wire, buried approximately 8". Length of radials 336' (0.4 wavelength) with the exception of those joined along the common chords.

SPACING AND ORIENTATION OF TOWERS:

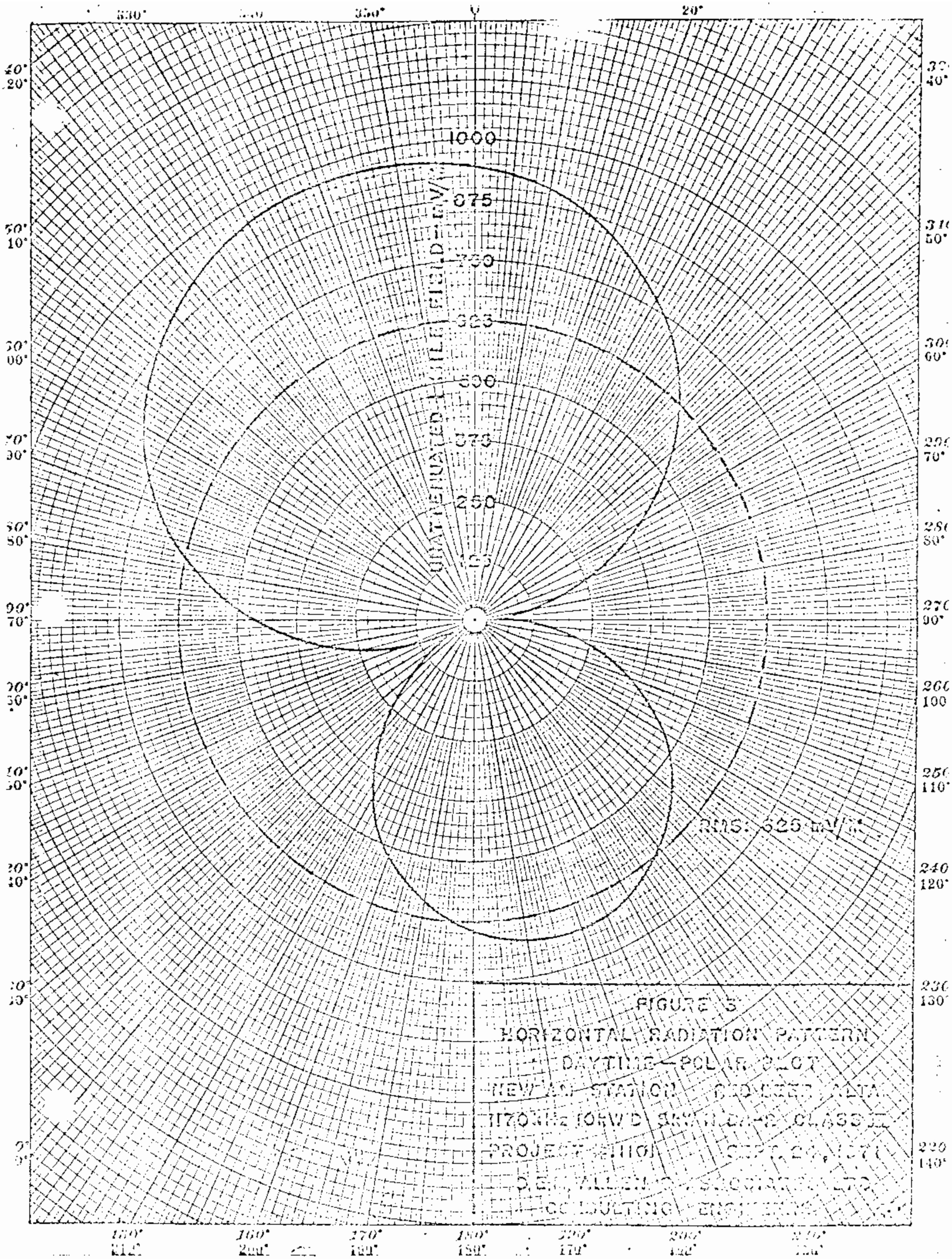
The towers are equally spaced on a line bearing 343°. The spacing between the towers is 210' (90°).

PREDICTED EFFECTIVE NIGHT FIELD:

440 mV/m at 1 mile for 5 kW
197 mV/m at 1 mile for 1 kW

PREDICTED EFFECTIVE DAY FIELD:

625 mV/m at 1 mile for 10 kW
197 mV/m at 1 mile for 1 kW


1000
875
750
625
500
375
250
125
RMS: 625 mV/m
FIGURE 5
HORIZONTAL RADIATION PATTERN
DAYTIME—POLAR PLOT

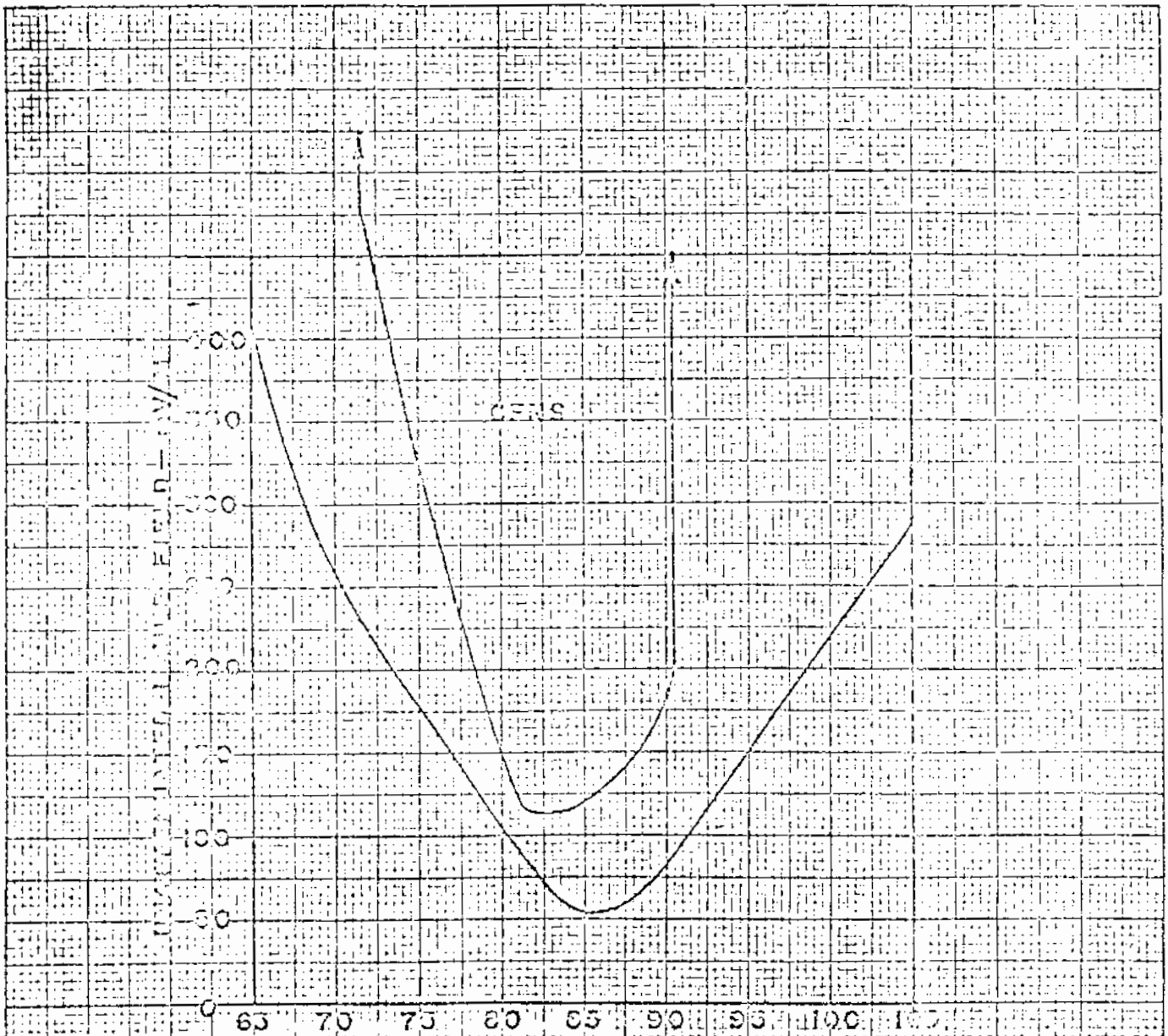


FIGURE 4
HORIZONTAL RADIATION PATTERN
DAYTIME—EXPANDED PLOT
NEW AM STATION [illegible]
1170 KHz 10 KW D DRW NDA-2 CLASS II
PROJECT #1101 SEPTEMBER 2, 1971
DEAN ALDEN & ASSOCIATES, INC.
CONSULTING ENGINEERS

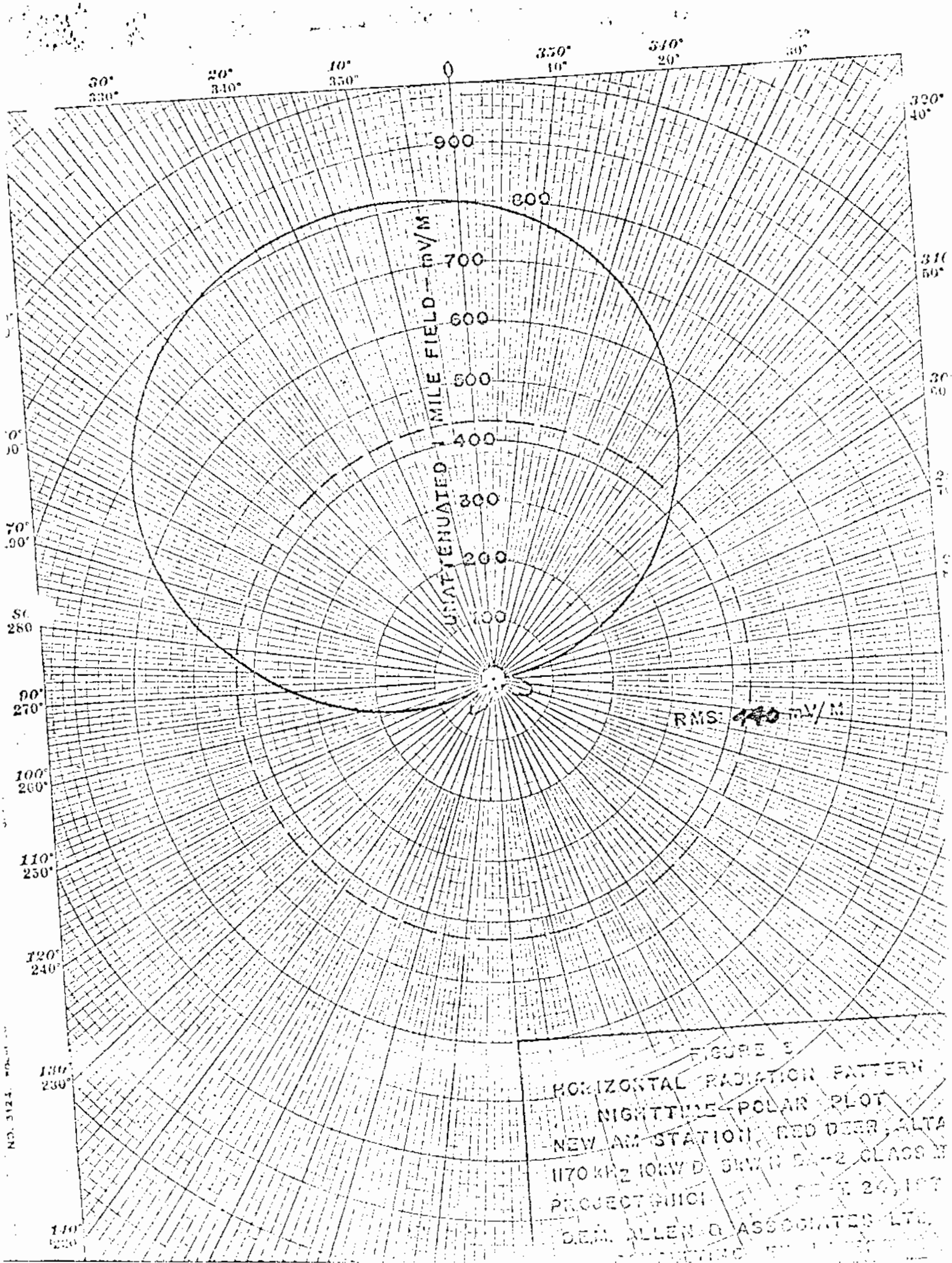


FIGURE 3

HORIZONTAL RADIATION PATTERN

NIGHTTIME - POLAR PLOT

NEW AM STATION, RED DEER, ALTA

1170 kHz 10kW D 5kW N DA-2 CLASS B

PROJECT #1101 SEPT. 20, 1977

D.E.R. ALLEN & ASSOCIATES LTD.

K&E 10 X 10 TO ½ INCH 46 1323
7 X 10 INCHES
KEUFFEL & ESSER CO.

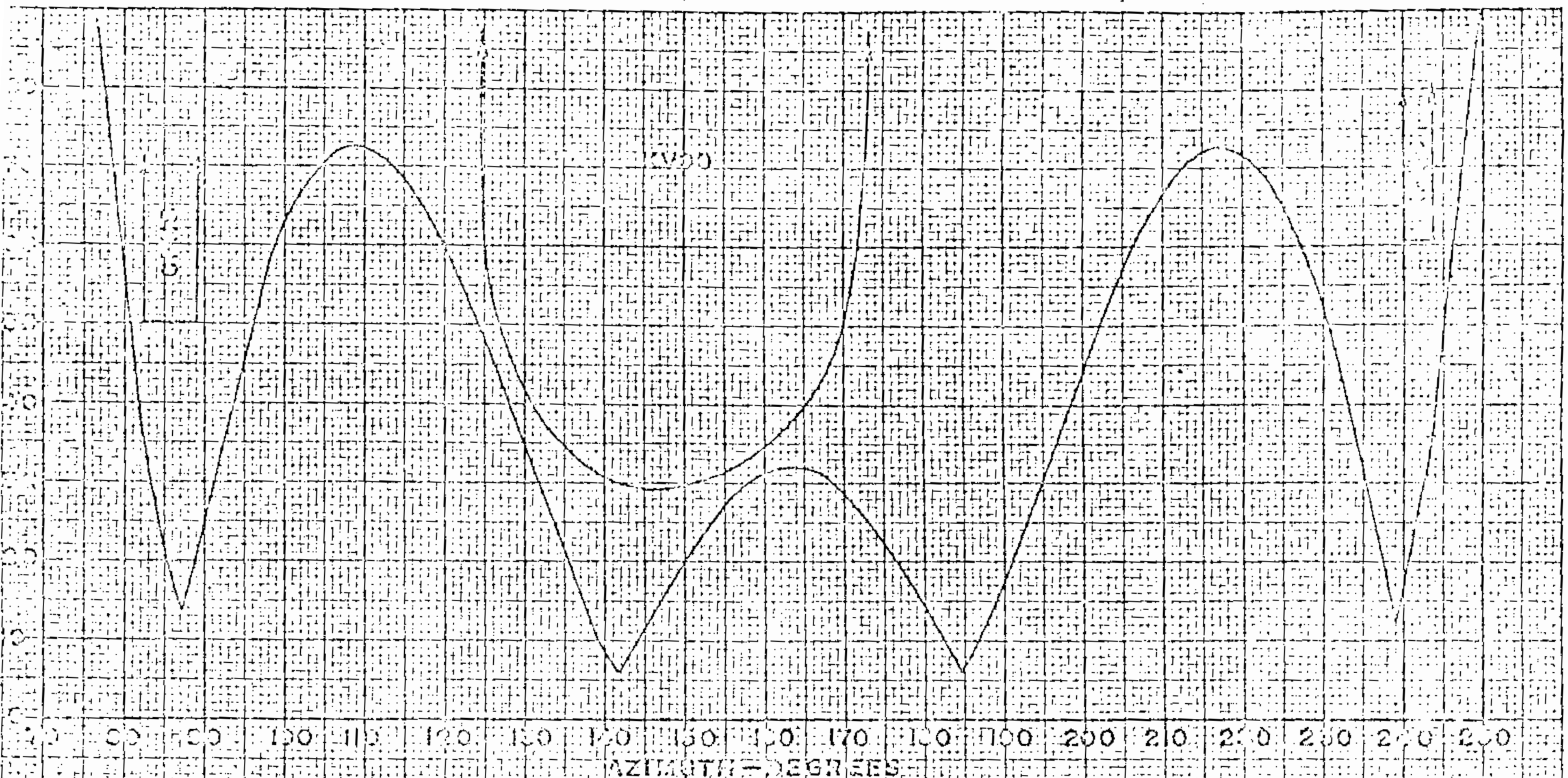


FIGURE 3

HORIZONTAL RADIATION PATTERN

NIGHTTIME — EXPANDED PLOT

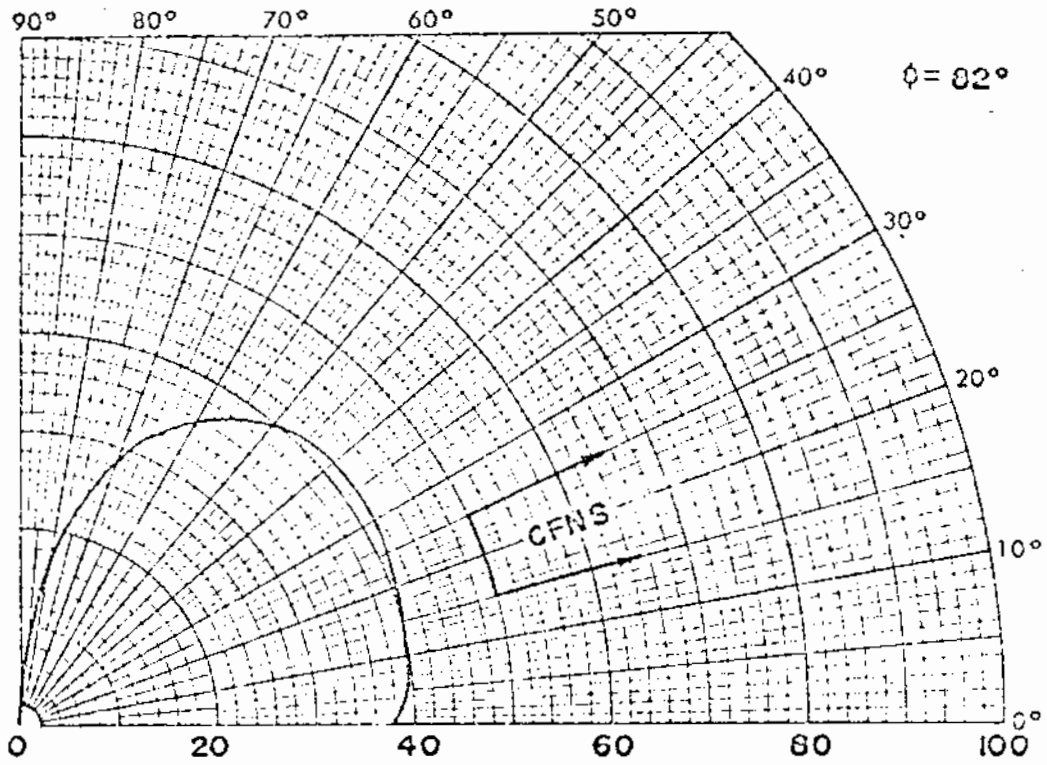
NEW AM STATION [illegible] ALA.

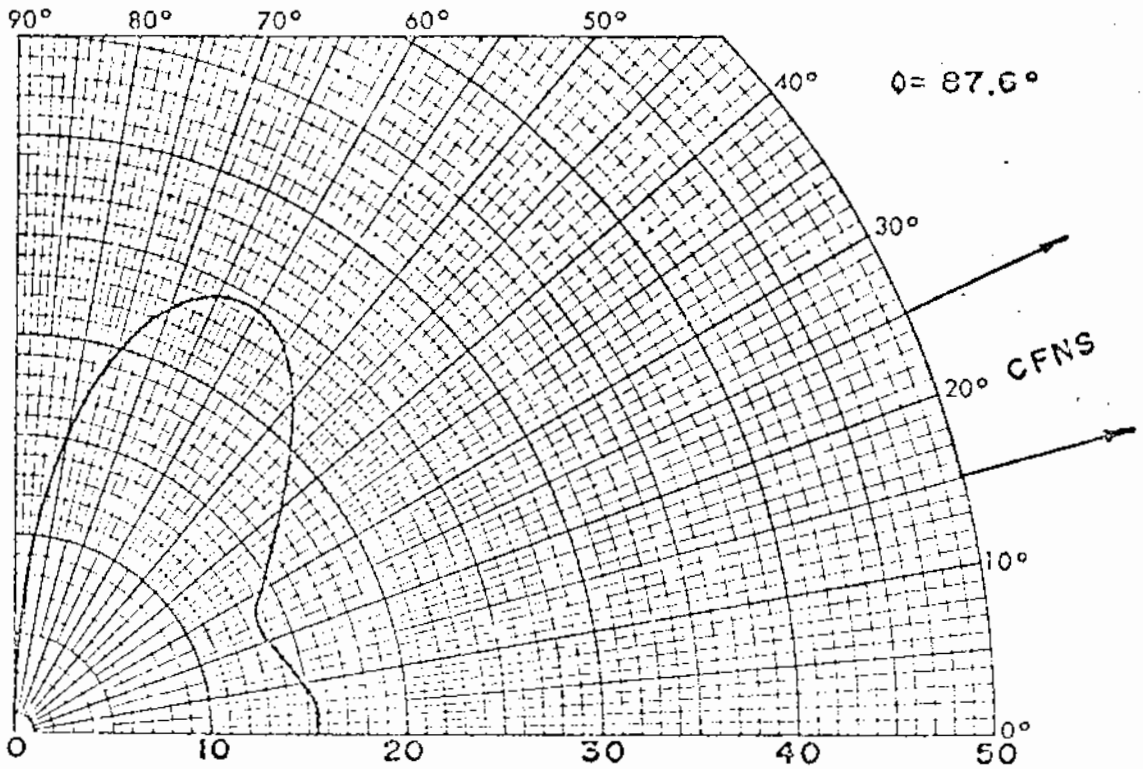
1170 kHz 10 kW D 5 kW N DA-2 CLASS II

PROJECT [illegible]

D. E. L. ALLEN & ASSOCIATES [illegible]

CONSULTING ENGINEERS





VERTICAL RADIATION PATTERNS

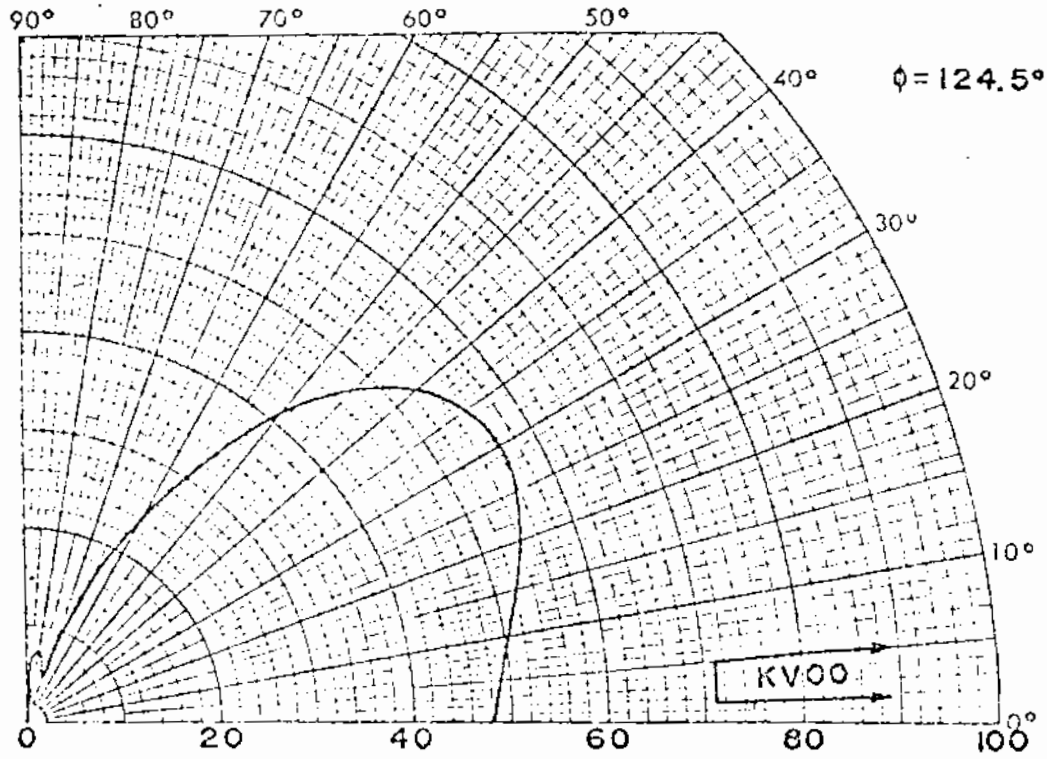
FIGURE 7

NEW AM STATION RED DEER, ALBERTA 1170KHz 10KW D 5KW N DA-2 CLASS II

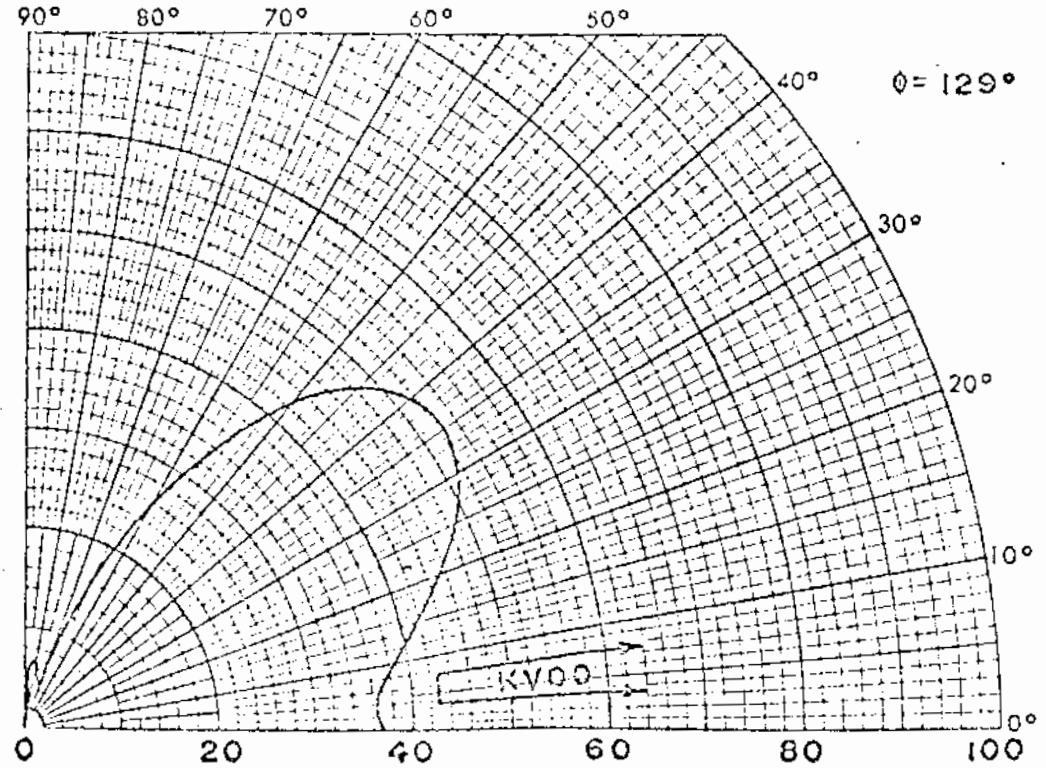
PROJECT #11101 SEPTEMBER 24, 1971

H.E.M. ALLEN & ASSOCIATES LTD.

CONSULTING ENGINEERS



UNATTENUATED (MV/M) I MILE FIELD



UNATTENUATED (MV/M) I MILE FIELD

VERTICAL RADIATION PATTERNS

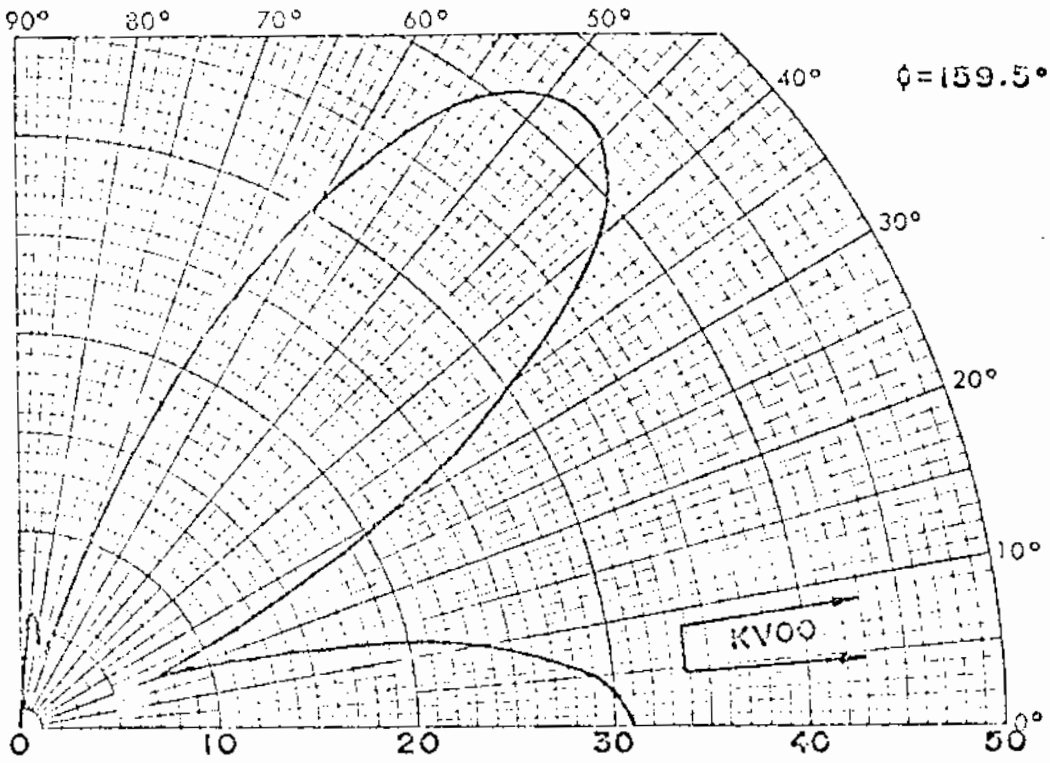
FIGURE 8

NEW AM STATION RED DEER, ALTA. 1170kHz 10kW D 5kW N DA-2 CLASS II

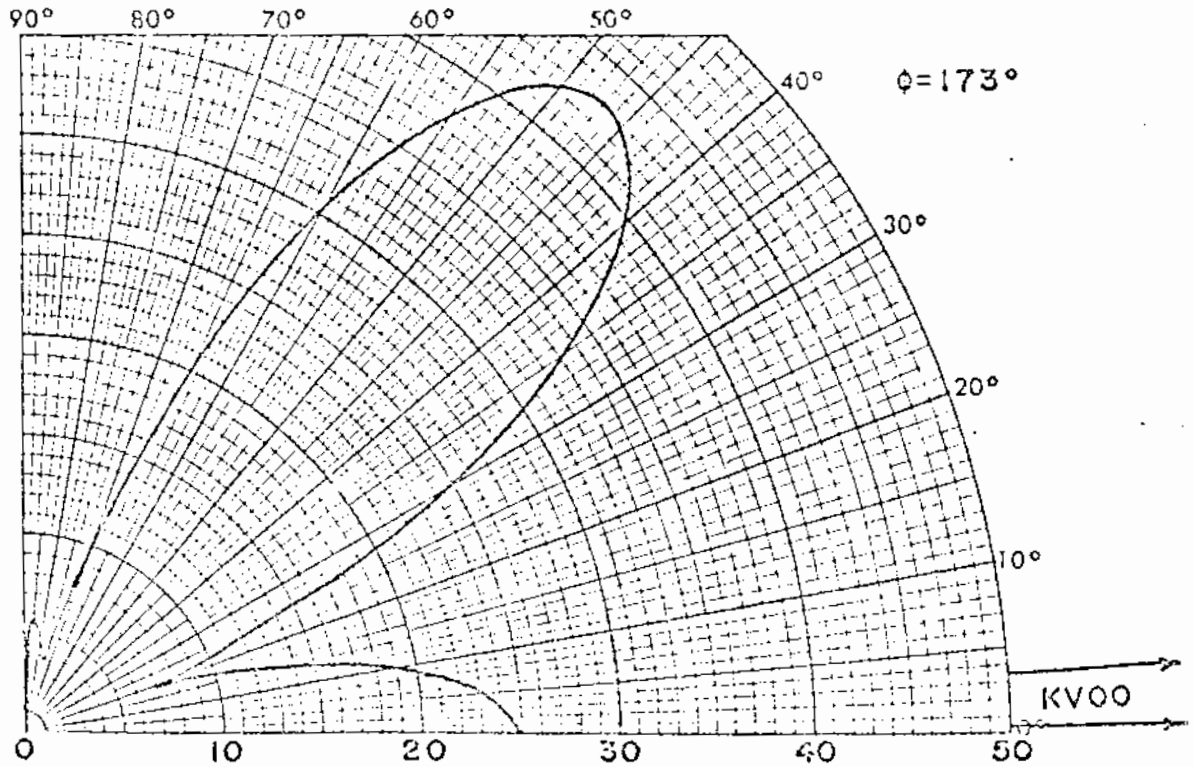
PROJECT #11101 SEPTEMBER 24, 1971

D.E.M. ALLEN & ASSOCIATES LTD.

CONSULTING ENGINEERS



UNATTENUATED (MV/M) 1 MILE FIELD



UNATTENUATED (MV/M) 1 MILE FIELD

VERTICAL RADIATION PATTERNS

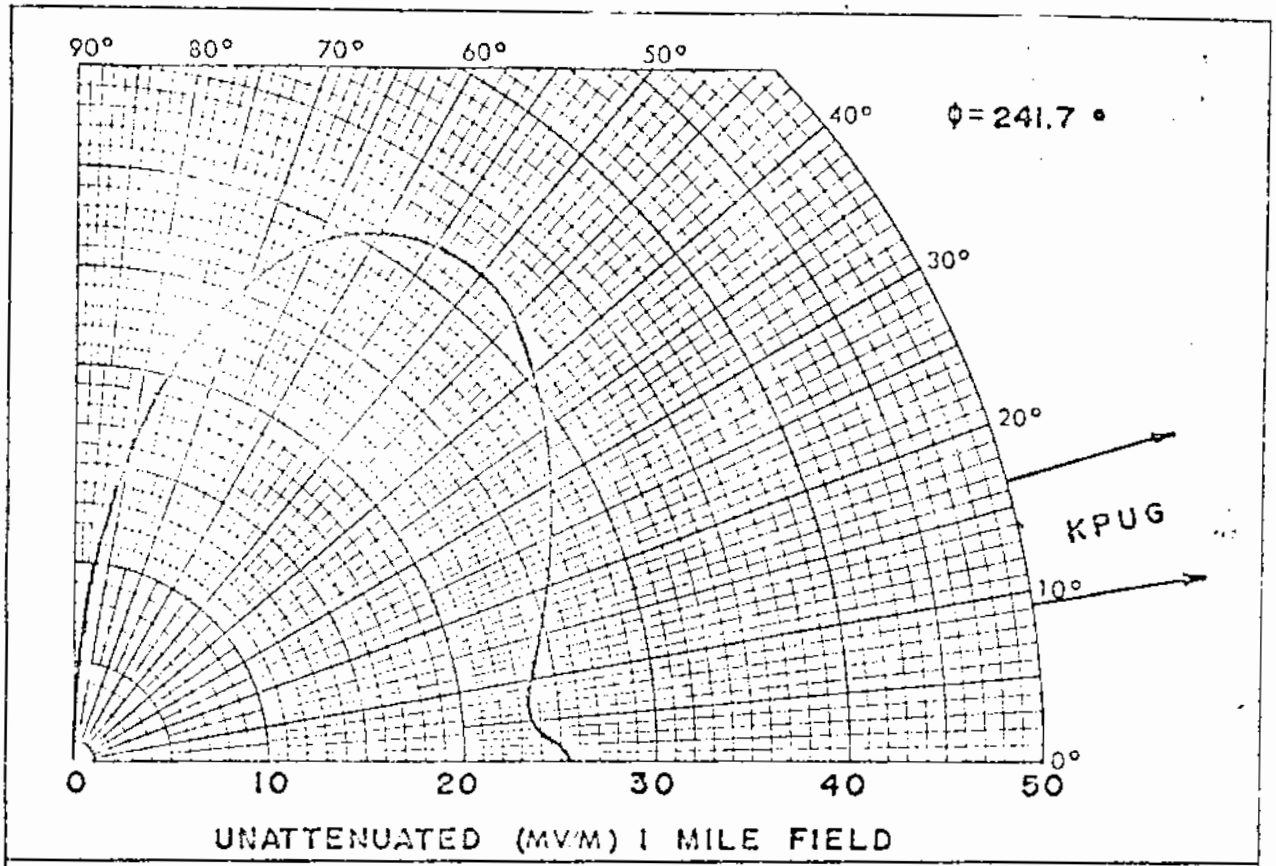
FIGURE 9

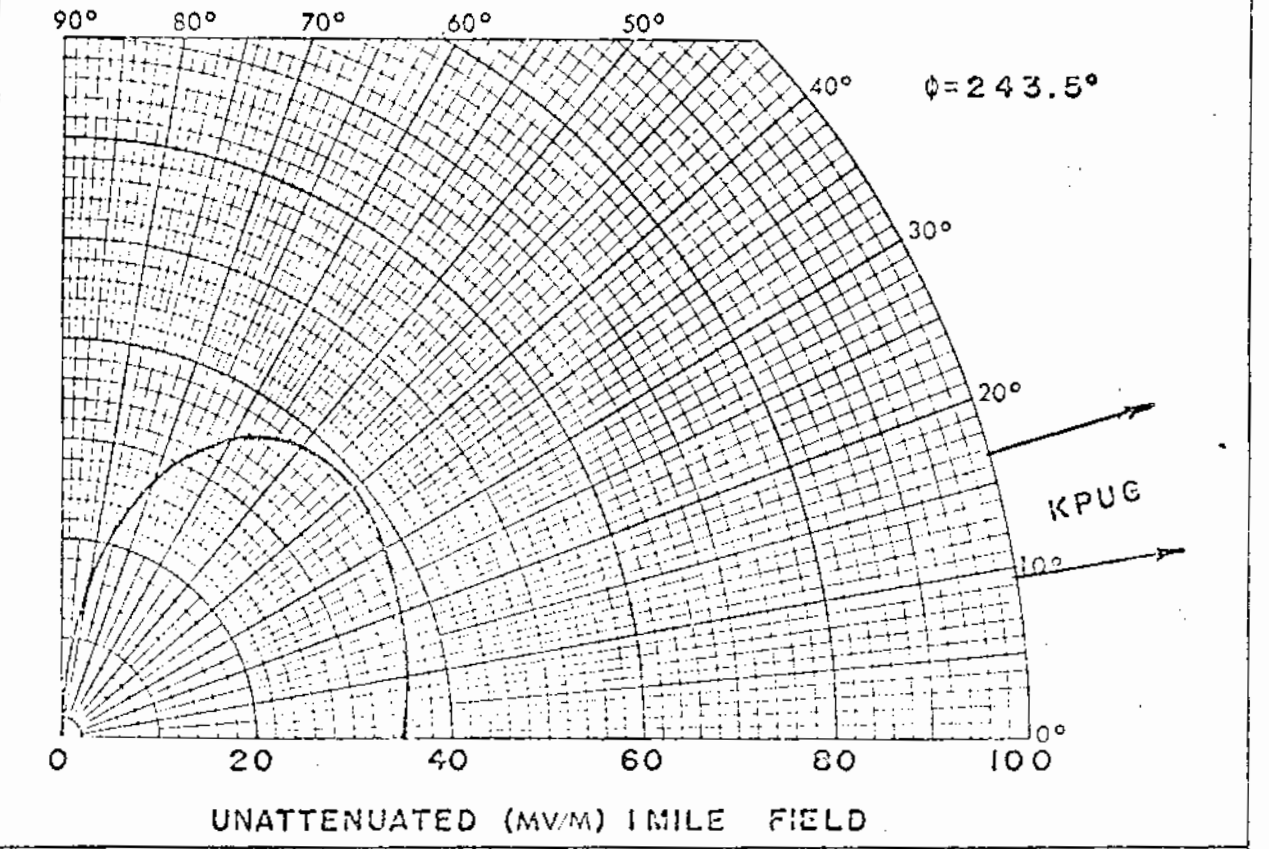
NEW AM STATION RED DEER, ALTA 1170kHz 10kW D 5kW N DA-2 CLASS II

PROJECT #1101 SEPTEMBER 24, 1971

D.E.M. ALLEN & ASSOCIATES LTD.

CONSULTING ENGINEERS





VERTICAL RADIATION PATTERNS

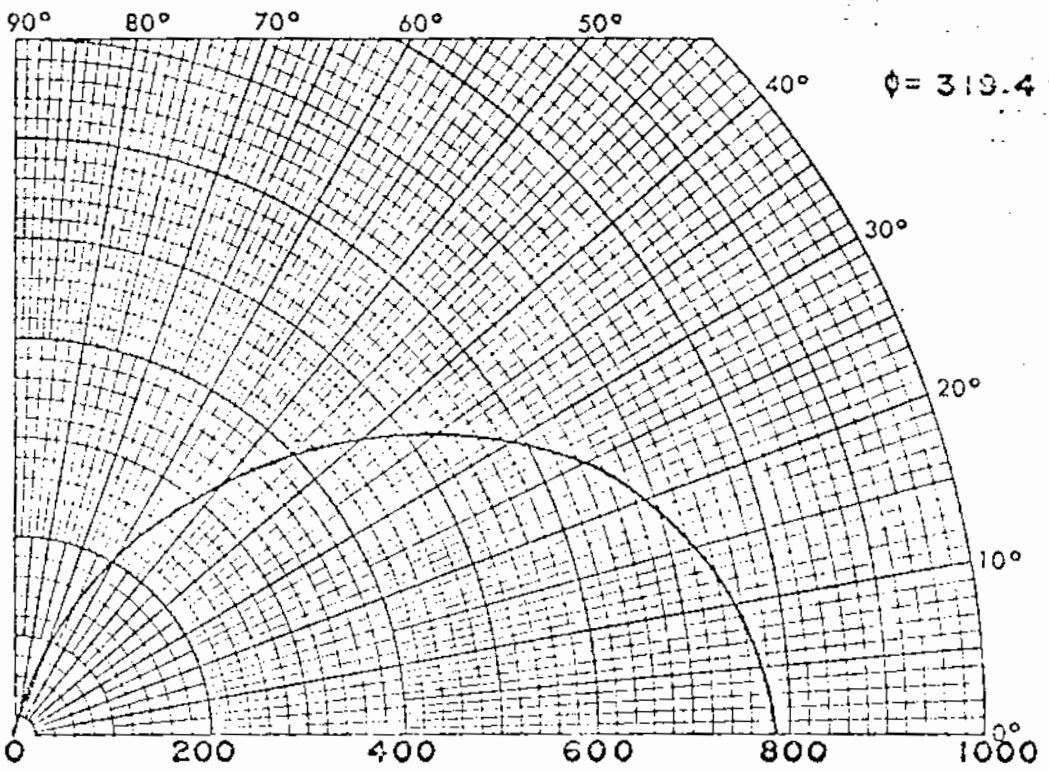
FIGURE 10

NEW AM STATION REDDEER, ALTA. 1170kHz 10kW D SRVN DA-2 CLASS II

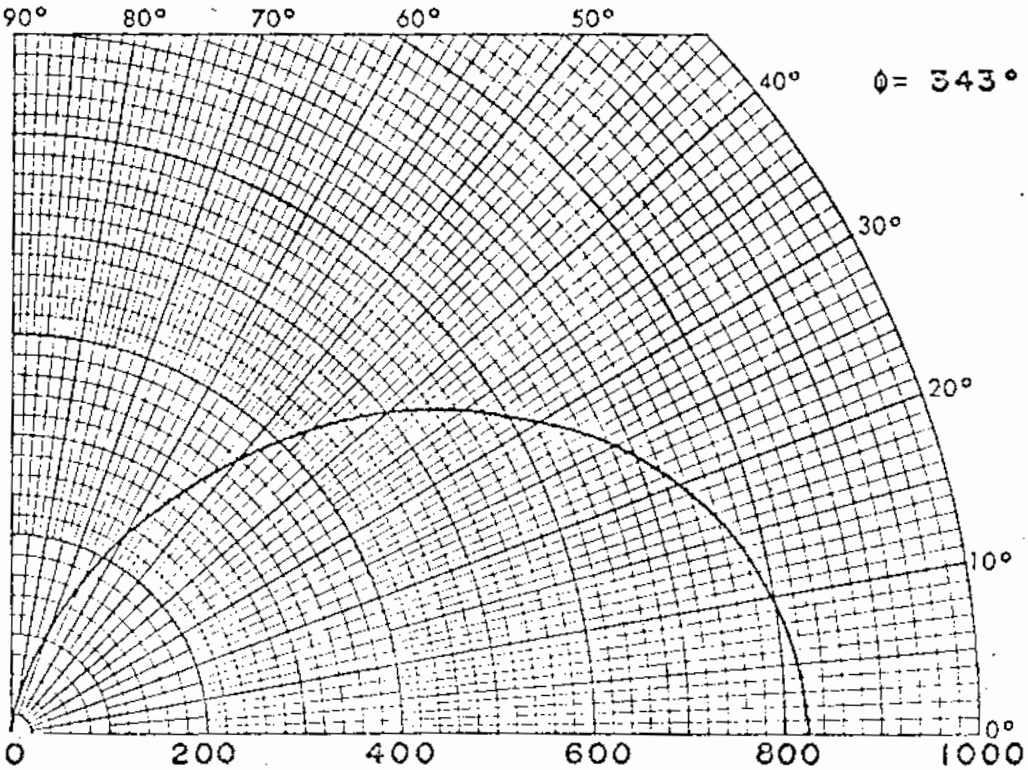
PROJECT #11101 SEPTEMBER 24, 1971

D.E.M. ALLEN & ASSOCIATES LTD.

CONSULTING ENGINEERS



UNATTENUATED (MV/M) I MILE FIELD



UNATTENUATED (MV/M) I MILE FIELD

VERTICAL RADIATION PATTERNS

FIGURE II

NEW AM STATION RED DEER, ALTA. 1170 kHz 10kW D 5kW N DA-2 CLASS II
PROJECT #11101 SEPTEMBER 24, 1971

D.E.M. ALLEN & ASSOCIATES LTD.
CONSULTING ENGINEERS

#193

DESCRIPTION SHEET (1-28-65ct) | New Station Chatboro, P.Q. | 5kw,DA-D,D,Class II 1170 kc

DESCRIPTION SHEET - OMNIDIRECTIONAL ANTENNA

STATION CALL:	NEW
MAIN STUDIO:	Chatboro, P.Q.
FREQUENCY:	1170 Kc/s
POWER:	5 Kilowatts
CLASS:	II
TIME:	Day Only

Notification List No. 193 Date: December 18, 1964.

GEOGRAPHICAL LOCATION OF THE ANTENNA SYSTEM:

North Latitude: 45° 37' 46"
West Longitude: 74° 28' 28"

ANTENNA CHARACTERISTICS:

HEIGHT:	217 feet (90 degrees)
TYPE OF ELEMENT:	Square, uniform cross-section, guyed, base insulated, series fed, no top loading, with FM antenna mounted on tower.
GROUND SYSTEM:	120 radials, 336 feet long (0.4 of a wavelength) equiangularly spaced, of 10 B&S bare softdrawn copper wire buried at a depth of 8 inches.
EXPECTED EFFICIENCY:	190 mv/m at 1 mile for 1 Kw of 425 mv/m at 1 mile for 5 Kw.

:CT 26-51

CFNS

FOREIGN CHBD, SASKATOON, SASK. 1 KW, U, DA-1 1170 KC
DAY & NIGHT 12/20/51G

ANTENNA DESCRIPTION 70802

Station: CHBD Main Studio: Saskatoon, Sask.

Power: 1kw Freq: 1170 kc. Class: II

Location: Latitude: 52° 6' 49" N

Longitude: 106° 33' 38" W

Antenna: Directional Day and Night

3 Elements 107° (Electrical) High

Tower:	1(N)	2 (Centre)	3(S)
Height above insulators:	250'	250'	250'
Spacing:	90° (212.5')	0	90° (212.5')
Phasing:	75° Lead	180° Lead	75° Lag
Field Ratio:	1	1.976	1

Ground System: 120 Radials 310' long about each tower.

Predicted Effective Field: 190 mv/m@1m

Orientation: The three elements are in a straight line having an azimuth of 10°

Oficina Interamericana de Radio (OIR)
OIR/NARBA 1159 Canada/C.1228
La Habana. 26. XI. 51.-

Date Oct. 26/51 Drawn
Scale Appr. by
WO-339-7

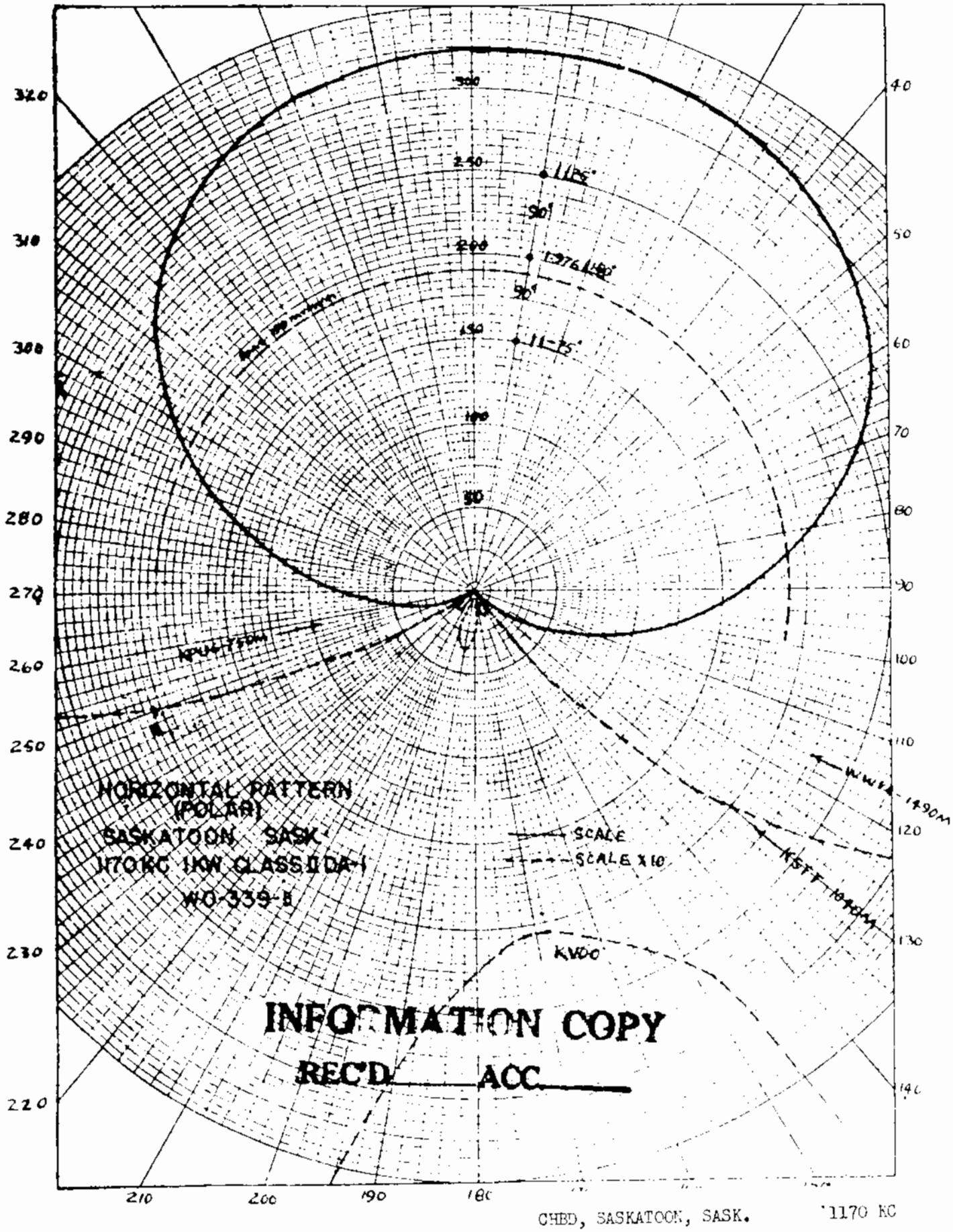
CFNS

FOREIGN
DAY & NIGHT

CHBD, SASKATOON, SASK.
12/20/51G

1 KW, U, DA-1

1170 KC



CHBD, SASKATOON, SASK. 1170 KC

NARBA 622 CUBA / C 39 1170 CMAR

1.

Official Cuny
Recd 2/7/47

UBICACIÓN:

22° 48' 45.7" N.
82° 46' 38.8" W.

Finca "ARREU", a 200 metros al N.W. de la ciudad de ARTEMISA, Provincia de Pinar del Río, Cuba.

INDICATIVO:

C.M.A.R.

FRECUENCIA:

1,170 Kc.

POTENCIA:

0.25 KW., DA., N. - 0.5 KW., D.

CARACTERISTICAS MECANICAS DE LA ANTENA:

a) Número de elementos 2

b) Tipo de construcción . . . . . 2 Torres de acero, iguales de sección cuadrada, autosoportadas, excitadas en serie.

c) Altura sobre el suelo . . . . . 38.1 Metros (125').

d) Orientación de la línea de las Torres . . . . . N. 318° E.

e) Separación . . . . . 64.1 Metros.

CARACTERISTICAS ELECTRICAS:

a) Altura (G) . . . . . 53.5°

b) Separación (S) . . . . . 90°

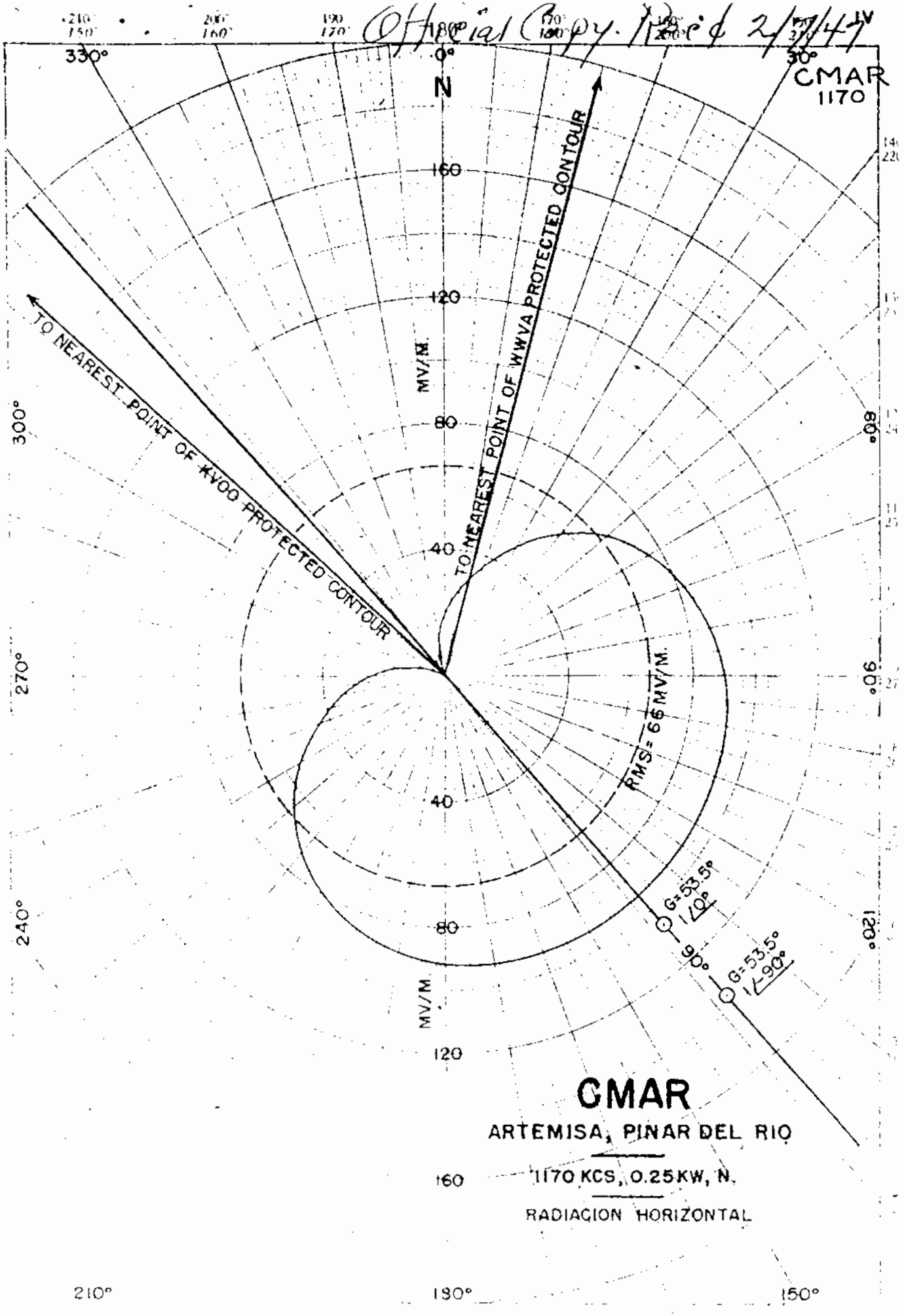
c) Relación de las corrientes (M). 1.0

d) Defasamiento (p) . . . . . Torre S, 90° Atrasada.

e) Eficiencia estimada . . . . . 132 Mv/m. por 1 Kw. radiado

21

Official Copy. Rec'd 2/7/47



1170KHz

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: (NEW)

Main Studio: Diamondale, Michigan

Frequency: 1170 kHz

Power: 1kw Day

Notification List No. 1785

Date: November 16, 1979 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 42° 36' 30"
West Longitude: 84 40' 24"

ANTENNA CHARACTERISTICS

Authorized for Daytime operation. (DA-D)
Number of elements: 2
Type of elements: Series excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	NW(#1)	SE(#2)
HEIGHT ABOVE INSULATORS:	210°	210' (90°)
PHASING:	0°	+91.5°
FIELD RATIO:	1.000	1.000

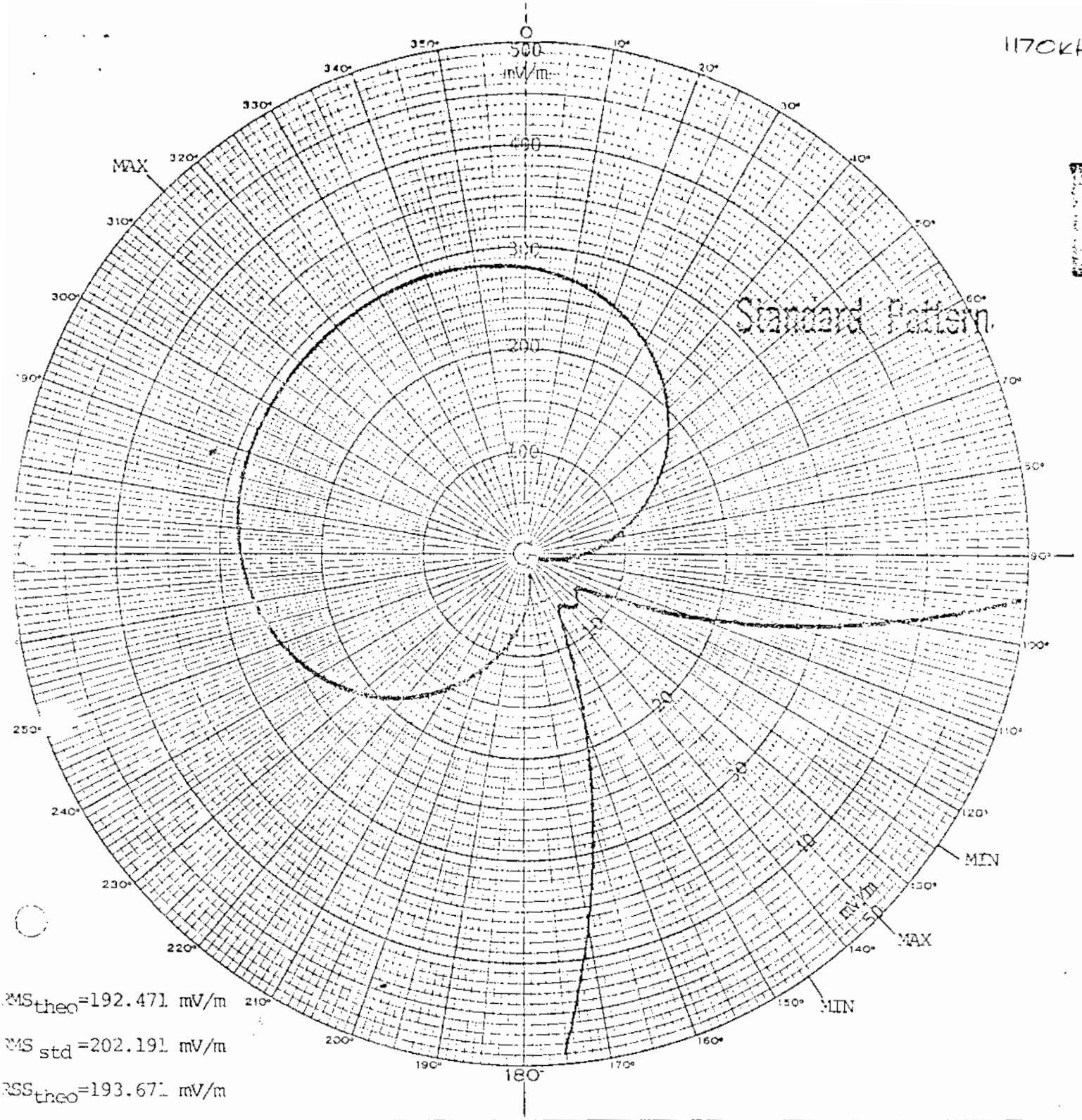
SPACING AND ORIENTATION: Adjacent towers are spaced 210.2' (90°) on a line bearing 135° true.

GROUND SYSTEM: 120 - 210' equally spaced copper radials about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL		STANDARD
	RMS	RSS	RMS
Day	192.471 mv/m	193.671 mv/m	202.191 mv/m

1170kHz



RMS_{theo}=192.471 mV/m

RMS_{std}=202.191 mV/m

RSS_{theo}=193.671 mV/m

TOWER PLACEMENT SKETCH	PATTERN PARAMETERS					FIGURE 6	STATION DATA
	TOWER No.	ELECTRICAL HEIGHT θ°	SPACING S°	PHASING ψ°	FIELD RATIO r		
#1	1	90°	REF.	0°	1.000	PROPOSED DAYTIME STANDARD PATTERN	CALL NEW FREQ 1170 kHz POWER 1 kW TYPE DA-D TIME DAYTIME LAT. N 42°36'30" LONG. W 84°30'24"
90°	2	90°	90°	91.5°	1.000		
#2	3						
135° T.	4					DIMONDALE, MICH.	E. HAROLD MUNN, JR. & ASSOCIATES, INC. COLDWATER, MICH.
	5					$\theta^{\circ} = 0^{\circ}$	
	6						

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KFNW — Main Studio: Fargo, North Dakota

Frequency: 1170 kHz — Power: 10 kw

Notification List No. 1752 — Date: October 5, 1977 — Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:
North Latitude: 46° 48' 07"
West Longitude: 96° 52' 58"

ANTENNA CHARACTERISTICS

Authorized for Daytime operation. (DA-D)
Number of elements: 2
Type of elements: Series excited, uniform cross-section, guyed, vertical steel towers.

	NW(#1)	SE(#2)
TOWER:		
HEIGHT ABOVE INSULATORS:	390' (167°)	210' (90°)
PHASING:	0°	+90°
FIELD RATIO:	1.0	0.55

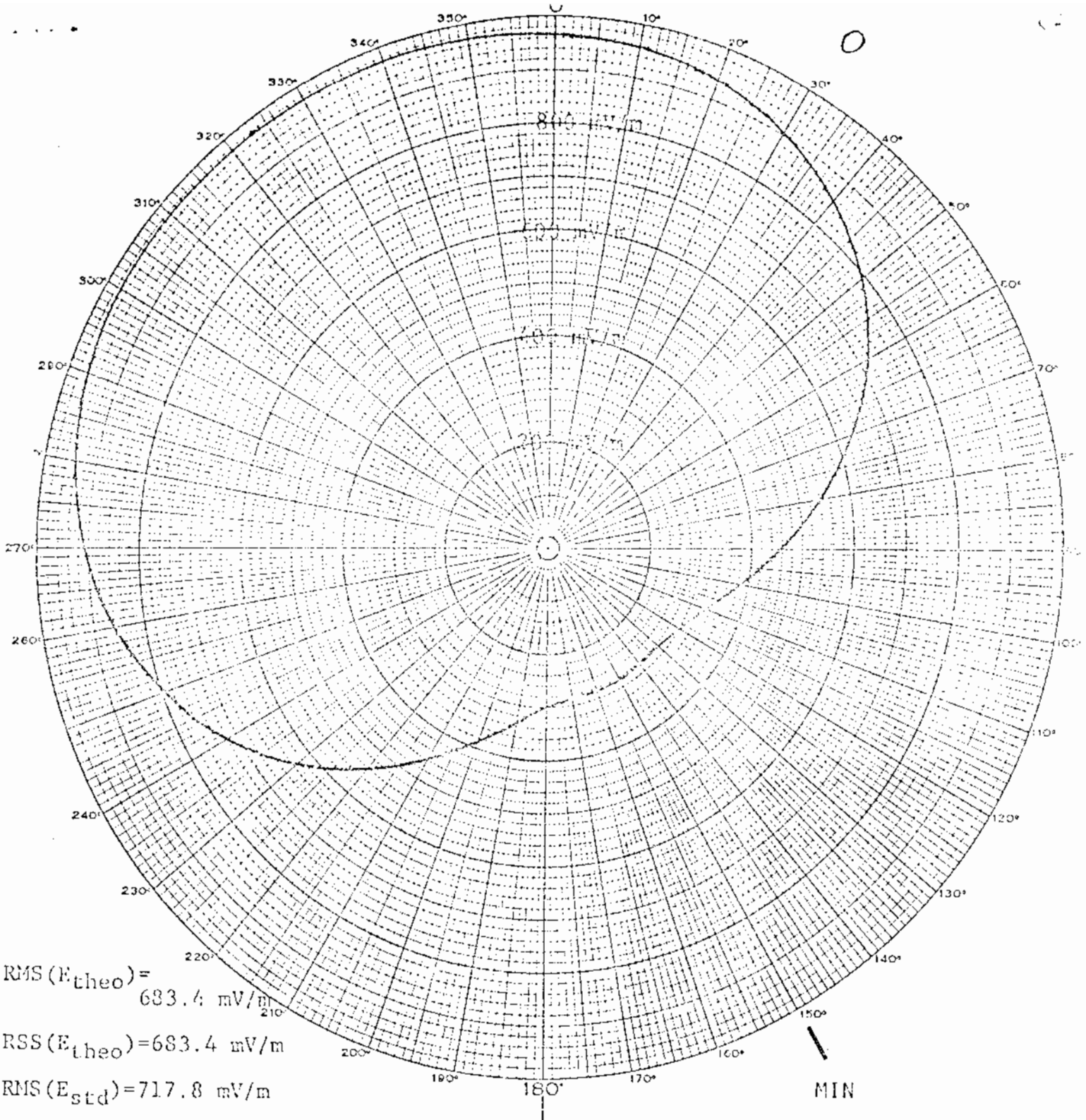
SPACING AND ORIENTATION: Towers are spaced 210.25' 90° on a line bearing 150° true.

GROUND SYSTEM: 120 - 210' to 280' equally spaced copper radials plus 120 - 50' interspaced radials about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers. Centers of system are bonded together.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

THEORETICAL		STANDARD
RMS	RSS	RMS
683.4 mv/m	683.4 mv/m	717.8 mv/m

This notification concerns a change in the proposed operation from 1kw, omnidirectional antenna.



$RMS(E_{theo})$ = 683.4 mV/m

$RSS(E_{theo})$ = 683.4 mV/m

$RMS(E_{std})$ = 717.8 mV/m

TOWER PLACEMENT SKETCH	PATTERN PARAMETERS					FIGURE 5	STATION DATA
#1 90° #2 150°	TOWER	ELECTRICAL HEIGHT	SPACING	PHASING	FIELD RATIO	PROPOSED STANDARD RADIATION PATTERN KFNW NOVEMBER, 1975	CALL KFNW FREQ 1170 kHz POWER 10 kW TYPE DA-D TIME DAYTIME LAT. 46°48'07" LONG. 96°52'58"
	1	167		0	1.0		
	2	90		90	0.55		
	3						
	4						
	5						
	6						
	DAYTIME OPERATION ☑ NIGHTTIME OPERATION ☐					θ^0 = 0	E. HAROLD MUNN, JR. & ASSOCIATES, INC. COLDWATER, MICH.

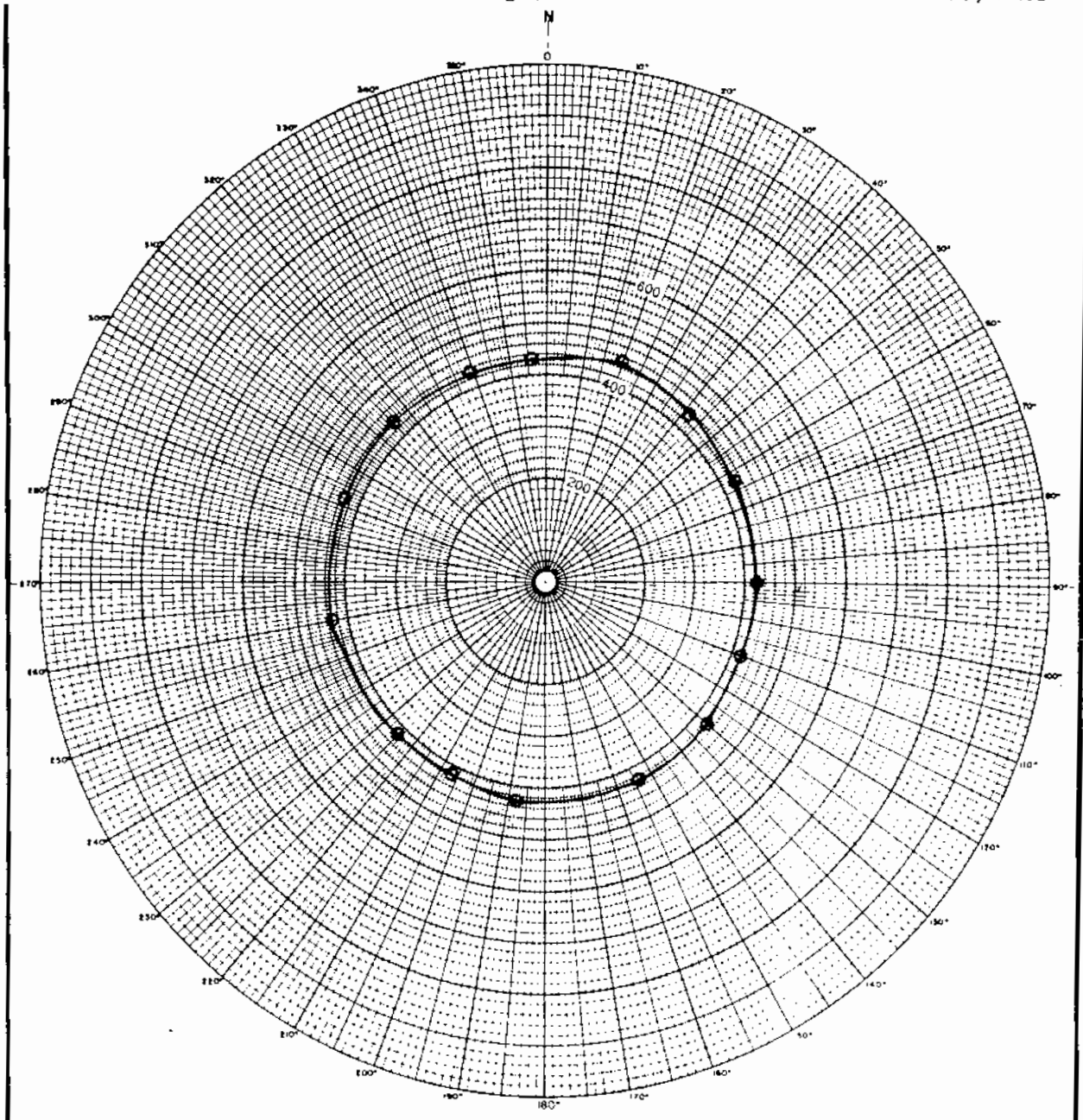
BL 12106
GR(3-3-70) Lic. Cov. change Nighttime Directional Ant. Patt.

KCBQ

Measured Non-DA
(10-28-68ct)

Station KCBQ
San Diego, California

5kw, 50kw-LS, DA-2, U
1170 kc



E_{RMS} = 428 MV/M

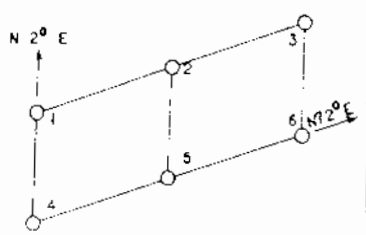
LATITUDE 32° 50' 21.7"

LONGITUDE 116° 59' 31.4"

CHARLES E. BRENNAN
CONSULTING RADIO ENGINEERS
MILWAUKEE, WISCONSIN

ANTENNA PARAMETERS

ALL θ's = 85.5°



TOWER 5 USED FOR NON DIRECTIONAL MEASUREMENTS (5 KW)

680715

FIGURE 2

MEASURED NON-DIRECTIONAL PATTERN
RADIO STATION KCBQ
SAN DIEGO, CALIFORNIA

1170 KC

50KW-LS, 5KW N DA-2U

FCC File No. BL-12106
Accepted 10-1-68

Station KCBQ
San Diego, California

1170 kc

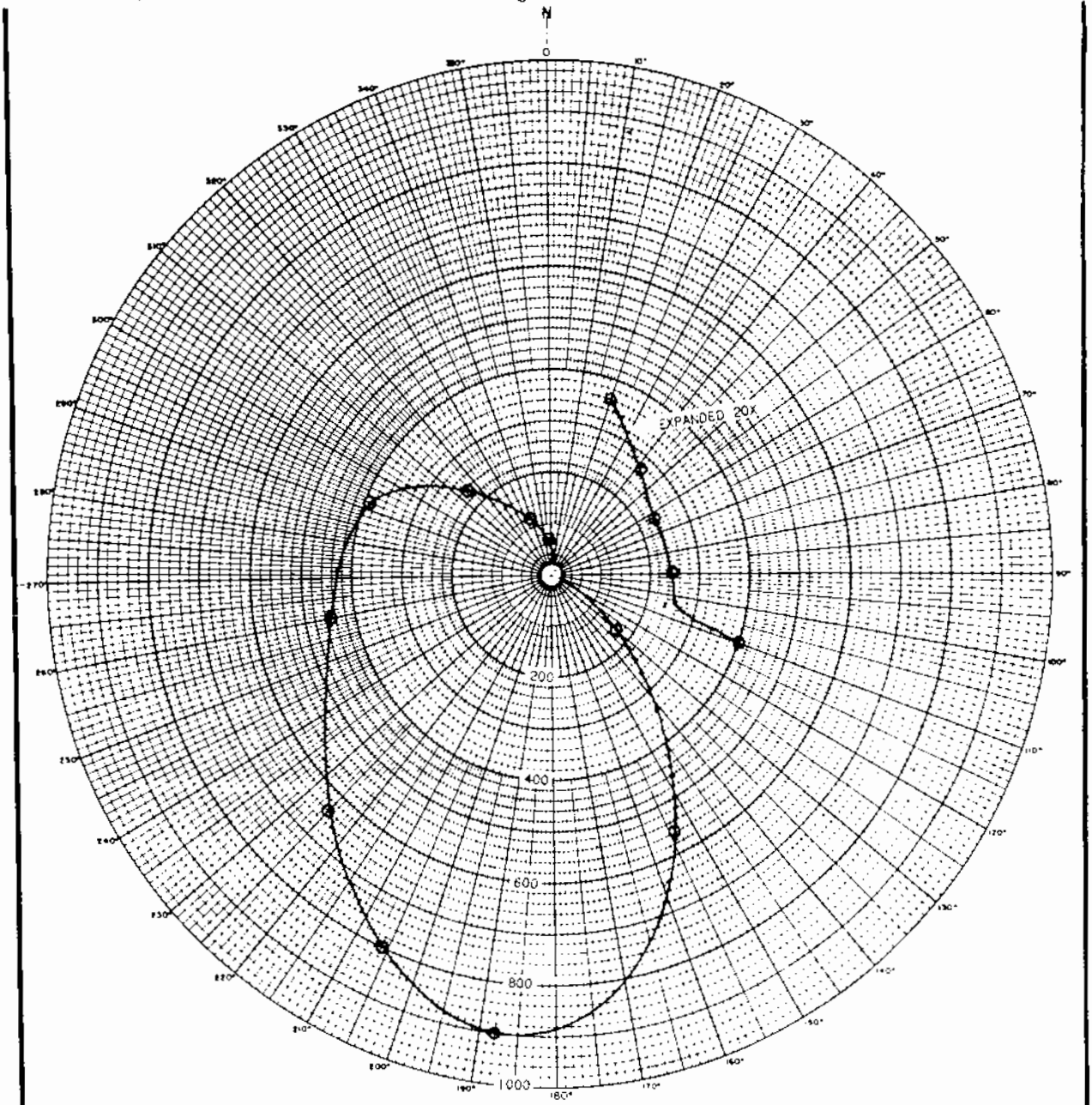
BL 12106
GR(3-3-70) Lic. Cov. Change of Nighttime Directional Ant. Patt.

KCBQ

Measured Night
(10-28-68ct)

Station KCBQ
San Diego, California

5kw, 50kw-LS, DA-2, U
1170 kc



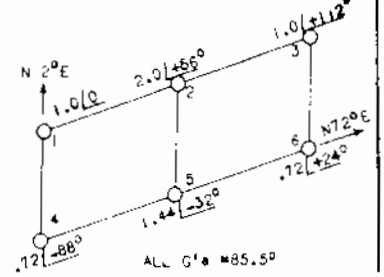
E_{RMS} = 428 mV/M

LATITUDE: 32° 50' 21.7"

LONGITUDE: 116° 59' 31.4"

CHARLES E. BRENNAN
CONSULTING RADIO ENGINEERS
MILWAUKEE, WISCONSIN

ANTENNA PARAMETERS



680715 FIGURE 3

RADIO STATION KCBQ
SAN DIEGO, CALIFORNIA

MEASURED NIGHTTIME RADIATION PATTERN

1170 KC 50KA-LS, 5KA N DA-2U

FCC File No. BL-12106
Accepted 10-1-68

Station KCBQ
San Diego, California

1170 kc

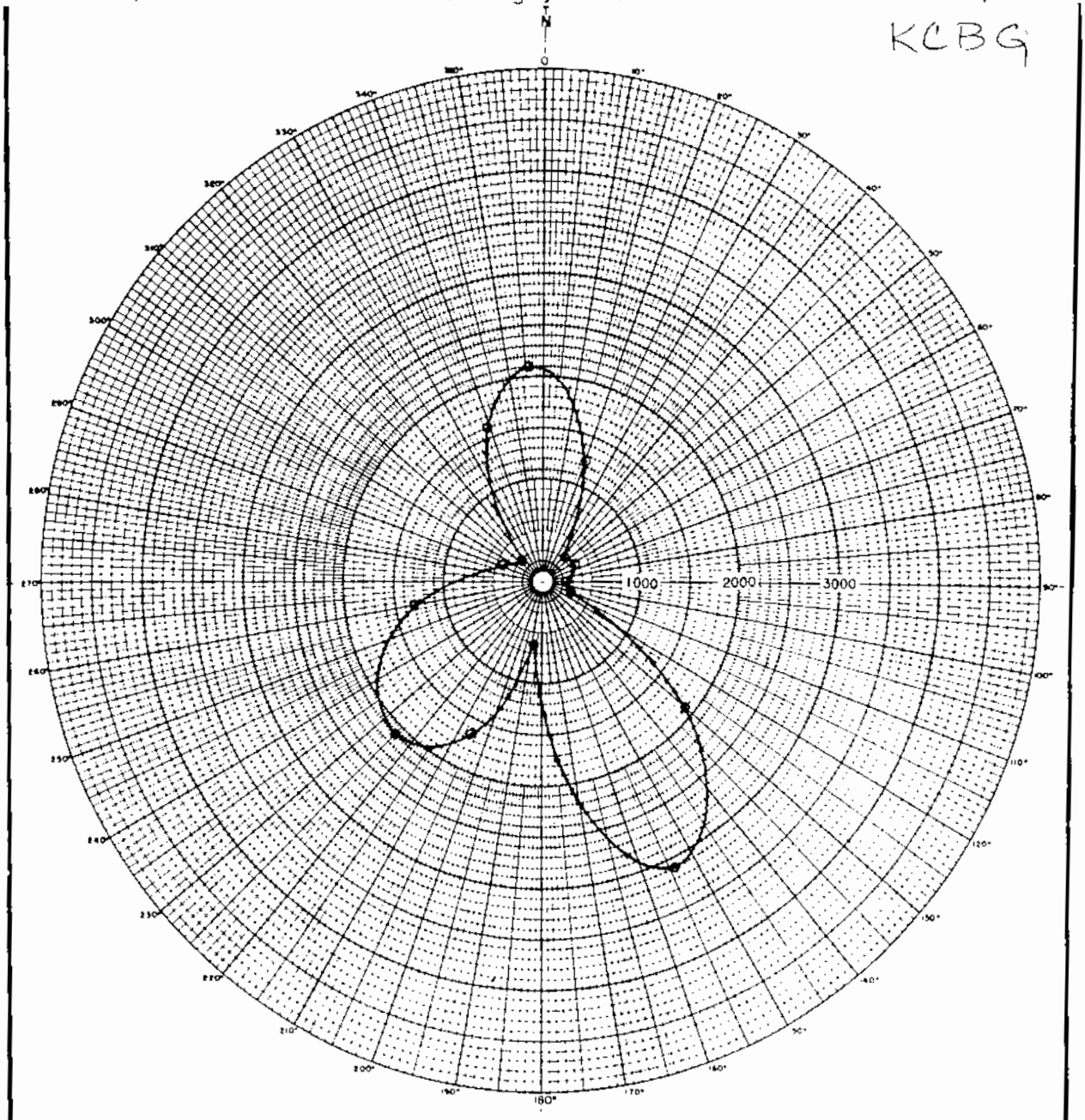
BL 12106
GR (3-3-70) Lic. Cov change of Nighttime Directional ANT. PATTERN

Measured Day
(10-28-68ct)

Station KCBQ
San Diego, California

5kw, 50kw-LS, DA-2, U
1170 kc

KCBQ



E_{RMS} = 1501 MV/M

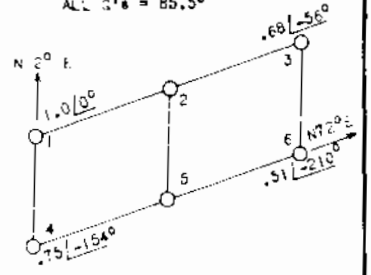
LATITUDE 32° 50' 21.7"

LONGITUDE 116° 59' 31.4"

CHARLES E. BRENNAN
CONSULTING RADIO ENGINEERS
MILWAUKEE, WISCONSIN

ANTENNA PARAMETERS

ALL θ's = 85.5°



TOWERS 2 AND 5 NOT USED DAYTIME

680715

FIGURE 4

MEASURED DAYTIME RADIATION PATTERN

RADIO STATION KCBQ
SAN DIEGO, CALIFORNIA

1170 KC

50KW-LS, 5KW N DA-2U

FCC File No. BL-12106
Accepted 10-1-68

Station KCBQ
San Diego, California

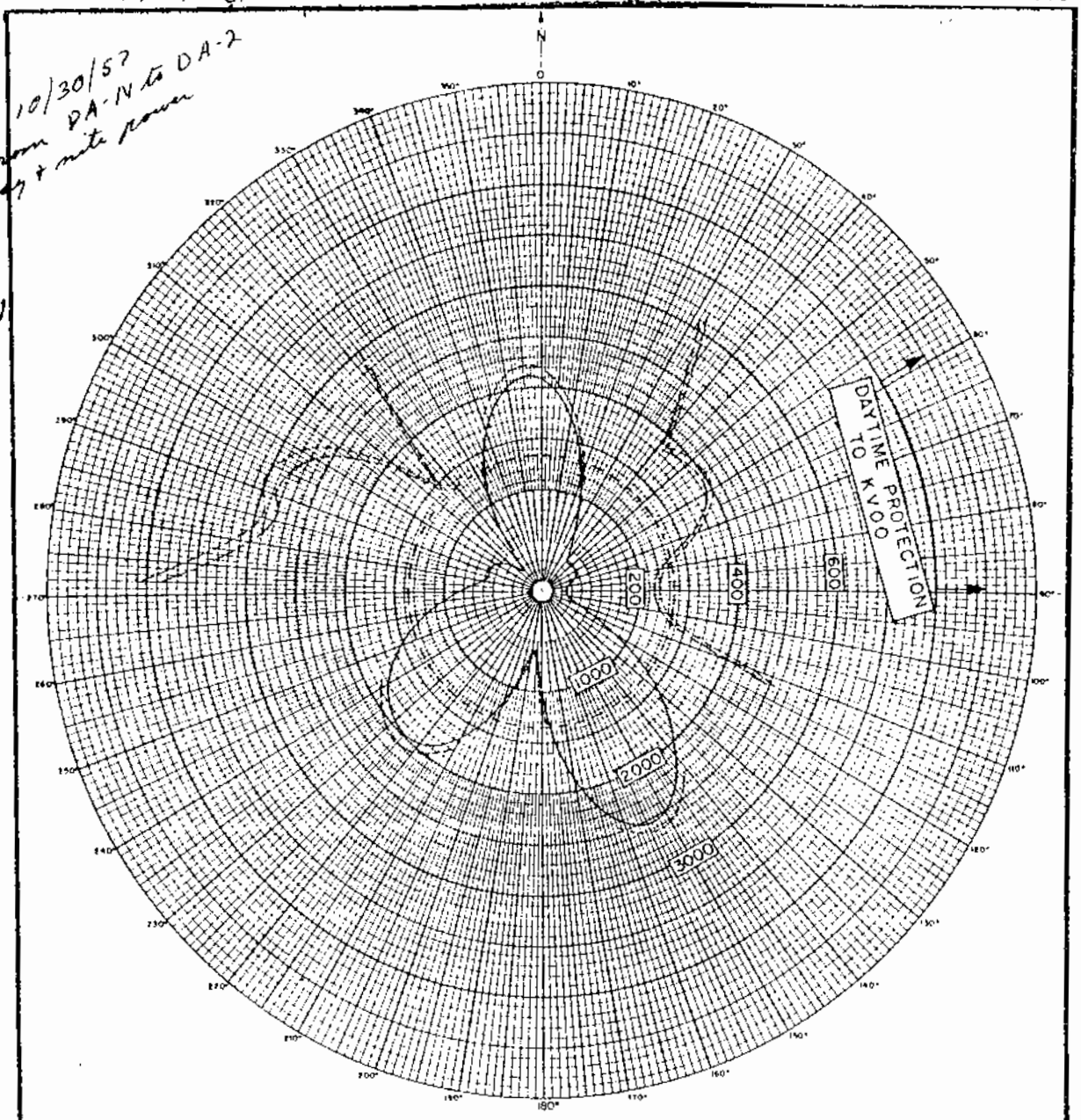
1170 kc

KCBQ

PROPOSED DAY (6/17/57g) | Station KCBQ San Diego, California | 5kw,50kw-LS, DA-2,U 1170 KC

Granted CP 10/30/57 to change from DA-N to DA-2 & increase day + nite power

Granted CP 9-12-58 to replace expired CP



E_{RMS} = 1343 MV/M

LATITUDE: 32° 50' 23.2"
LONGITUDE: 116° 59' 28.5"

JOHN H. MULLANEY
CONSULTING RADIO ENGINEERS
WASHINGTON, D. C.

ANTENNA PARAMETERS

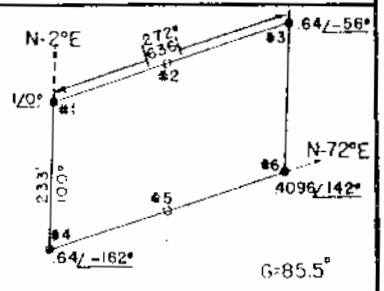


FIGURE 4

DAYTIME HORIZONTAL POLAR PATTERN

RADIO STATION KCBQ SAN DIEGO, CAL

1170 KC 5KW, 50KW-LS, DA-2,U

FCC File No. BP-10,729
Accepted 6/12/57 (Docket #11980)

KCBQ
San Diego, California 1170 KC

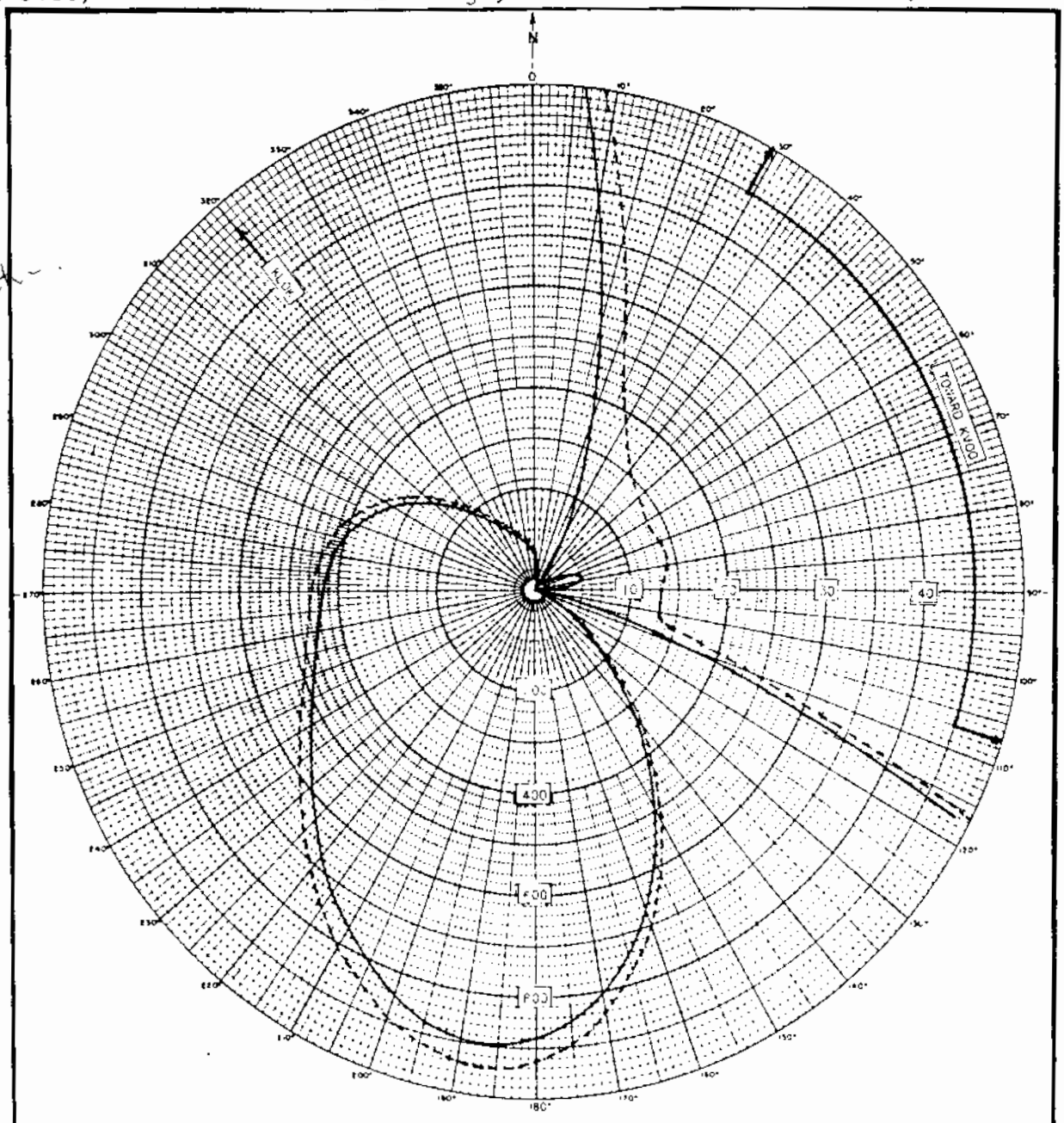
KCBQ

Proposed Night
(12-22-64ct)

Station KCBQ
San Diego, California

5kw,50kw-LS,DA-2,U
1170 kc

BP-16413
2-16-67
GRANTED
CP
to change
nighttime
directional
pattern.



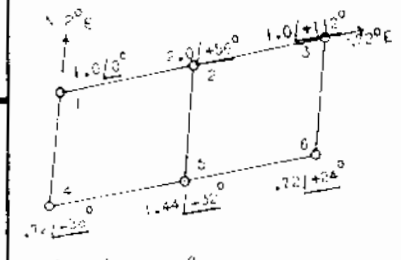
E_{RMS} = 428 mv/m

LATITUDE 32° 50' 24.7"

LONGITUDE 117° 09' 31.4"

CHARLES E. BRENNAN
CONSULTING RADIO ENGINEERS
MILWAUKEE, WISCONSIN

ANTENNA PARAMETERS



641012

FIGURE 3

RADIO STATION KCBQ
SAN DIEGO, CALIFORNIA

PROPOSED NIGHTTIME HORIZONTAL
RADIATION PATTERN

1170 KC 5KW,50KW-LS,DA-2,U

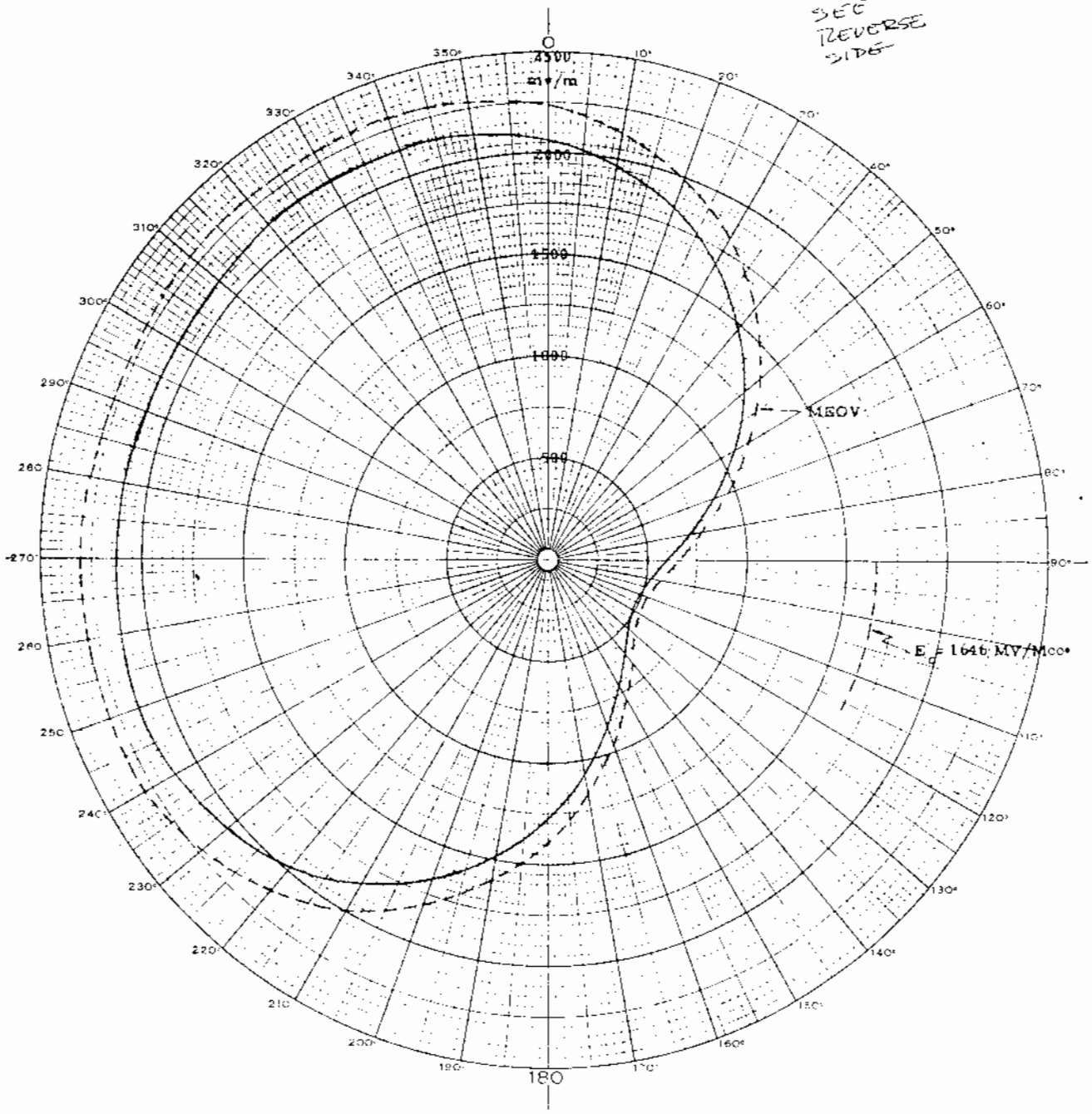
FCC File No. BP-16413
Accepted 12-9-64

Station KCBQ
San Diego, California

1170 kc

KJNP

SEE REVERSE SIDE



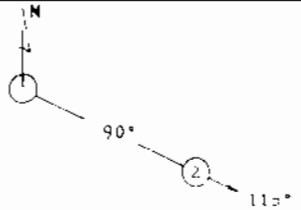
TOWER PLACEMENT SKETCH	PATTERN PARAMETERS								STATION DATA
	TOWER NO.	ELECTRICAL HT. THETA	TOWER ORIENTATION	SPACING	PHASING	HOR. DIRECT. FIELD	FIELD RATIO	SLEV. ANGLE	ELEVATION PATT.	CALL KJNP FREQUENCY 1170 kc POWER 50 kw TIME OF OPERATION U TYPE OF OPERATION DA-N SYSTEM TOWERS 1 ANTENNA TOWERS 2 [illegible] 120 [illegible] 210 [illegible] 24x24 64 45 34 147 19 26
	1	180	0	0	0		1.35	0	1646	
	2	180	115	90	70		1.00			
	3									
	4									
	5									
								50		[illegible] 690729

FIG. 3.0

HORIZONTAL PLANE PATTERN

RADIO PRAYER LEAGUE, INC.
KJNP NORTH POLE, ALASKA
1170 kHz 50 kw DA-N

CARL E. SMITH
CONSULTING RADIO ENGINEERS
CLEVELAND, OHIO 44141
690731

KLOK

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station : KLOK Main Studio: San Jose, California

Frequency : 1170 KHz Power : 5 kW Night 50 kW Day

Notification : 1781 Date : Oct. 19, 1979 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:
North Latitude: 37 18 41
West Longitude: 121 48 58

ANTENNA CHARACTERISTICS

Authorized for Nighttime and Daytime operation.(DA-2)
Number of elements: 3
Type of elements : Series excited,uniform cross-section, guyed vertical steel towers.

TOWER :	W(#1)	C(#2)	E(#3)				
HEIGHT ABOVE INSULATORS :	220'	220'	220' (94°)				
NIGHT PHASING :	267°	0°	93°				
NIGHT FIELD RATIO:	1.0	1.92	1.0				
DAY PHASING :	0°	155	-145				
DAY FIELD RATIO :	1.0	1.0	1.3				

SPACING AND ORIENTATION : Adjacent towers in a row are spaced 257' (110°) on a line bearing 70° true.

GROUND SYSTEM : 120 - 160' to 220' equally spaced copper radials plus a 48' x 48' square ground screen about each tower. Radials are shortened and bonded to transverse copper strap along intersections between towers.

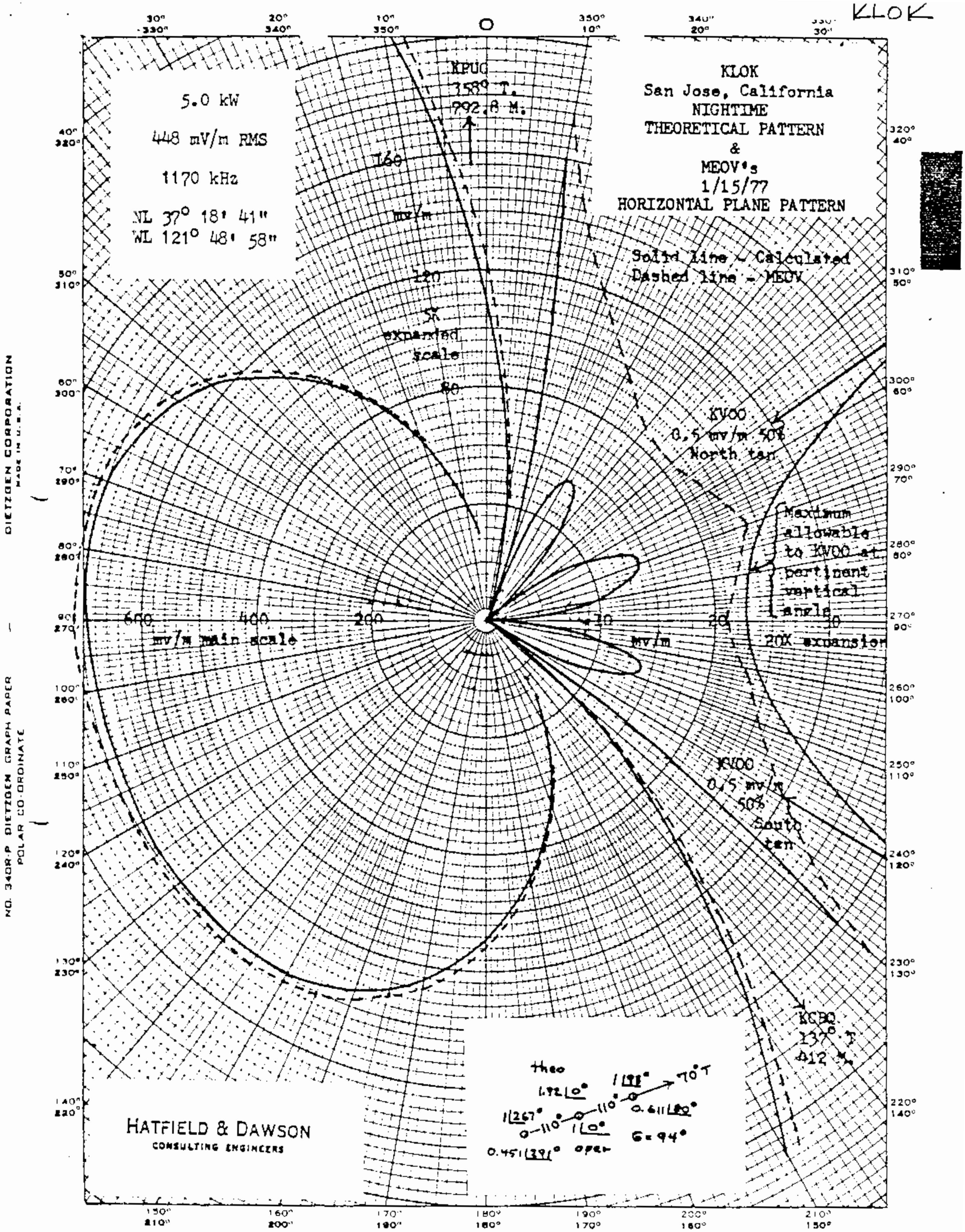
PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL		STANDARD
	RMS	RSS	RMS
Day 1/	1428 mv/m		
Night	448 mv/m	mv/m	470.0 mv/m

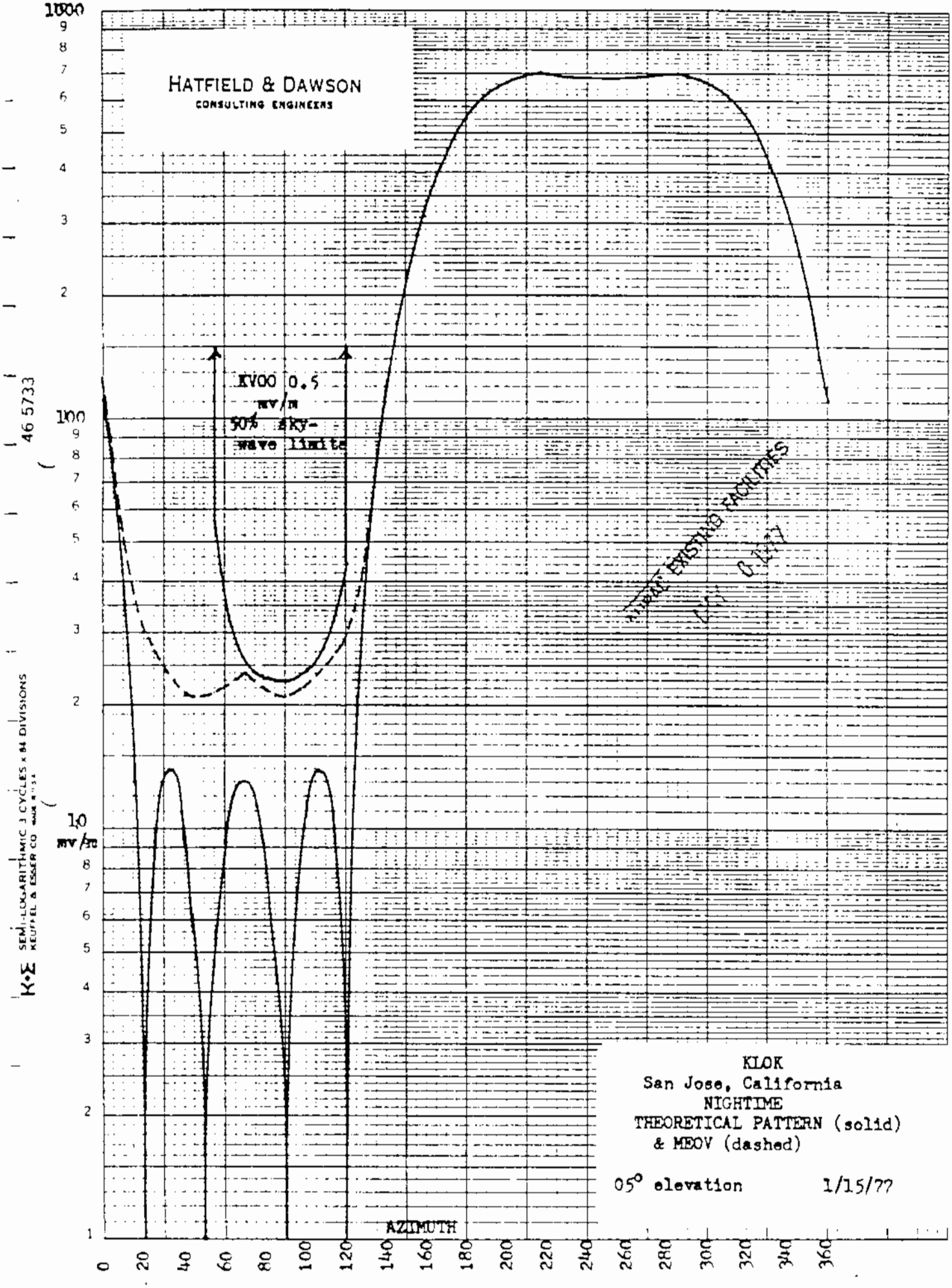
Note: Please retain the Daytime directional antenna radiation pattern notified for Station KLOK in United States Change List Number 1313 dated March 26, 1969 and attach to this Revised Description Sheet and Nighttime pattern. This notification concerns only a change in the Nighttime operation of the station with Daytime operation continued as previously notified.

CTR NO

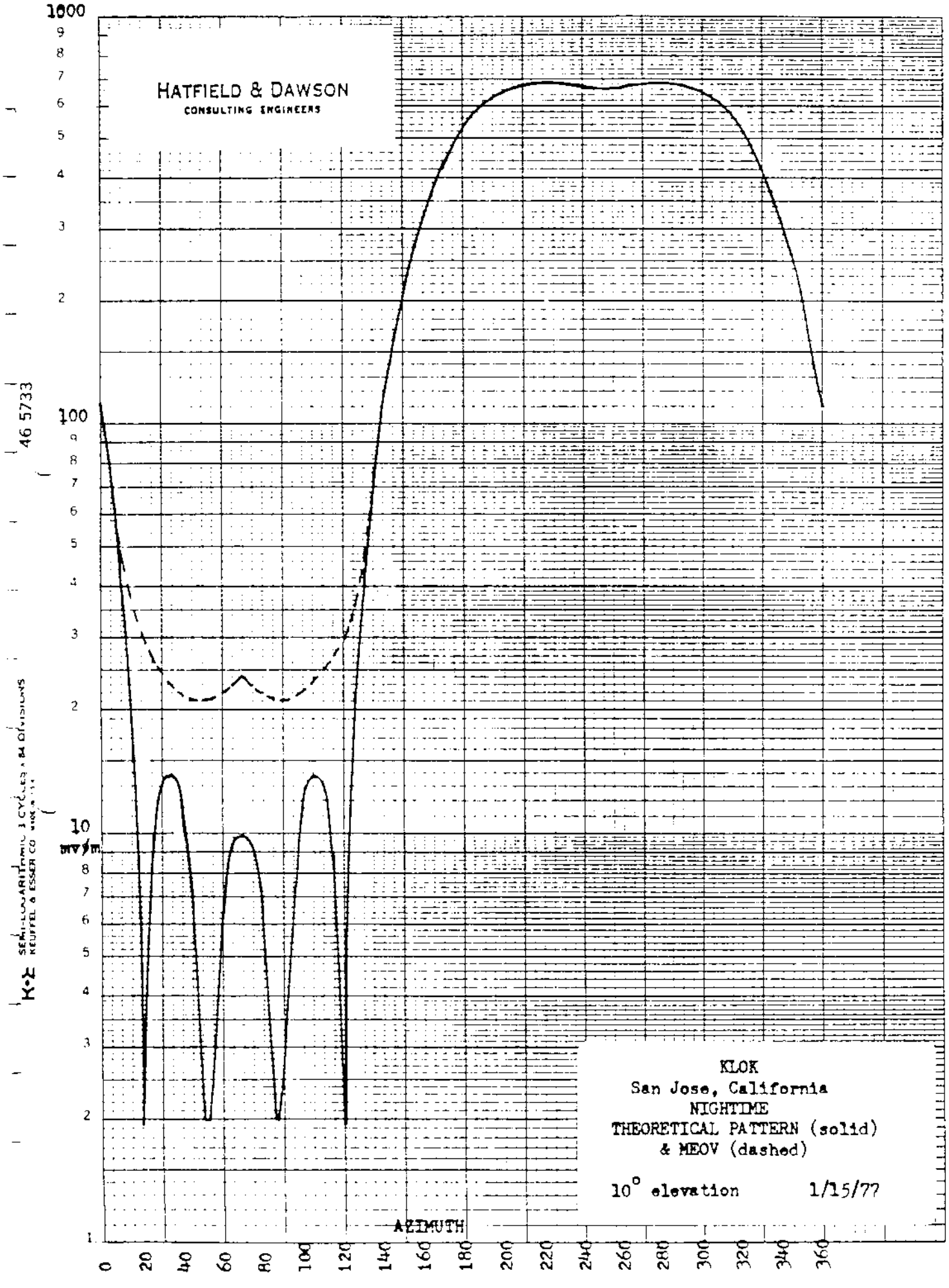
KLOK


5.0 kW
448 mV/m RMS
1170 kHz
NL 37° 18' 41"
WL 121° 48' 58"
KLOK
San Jose, California
NIGHTIME
THEORETICAL PATTERN
&
MEOV's
1/15/77
HORIZONTAL PLANE PATTERN
KPUG
358° T.
792.8 M.
Solid line - Calculated
Dashed line - MEOV
160
mv/m
120
5X
expanded
scale
80
KVOO
0.5 mv/m 50%
North tan
Maximum
allowable
to KVOO at
pertinent
vertical
angle
600
400
200
mv/m main scale
10
20
30
mv/m
20X expansion
KVOO
0.5 mv/m
50%
South
tan
KCBQ
137° T
412 M.
theo
1.92 |0°
1 |98°
70° T
1 |267°
110°
110°
0.611 |80°
1 |0°
0.451 |391°
open
G = 94°
HATFIELD & DAWSON
CONSULTING ENGINEERS
NO. 340R-P DIETZGEN GRAPH PAPER
POLAR CO-ORDINATE
DIETZGEN CORPORATION
MADE IN U.S.A.

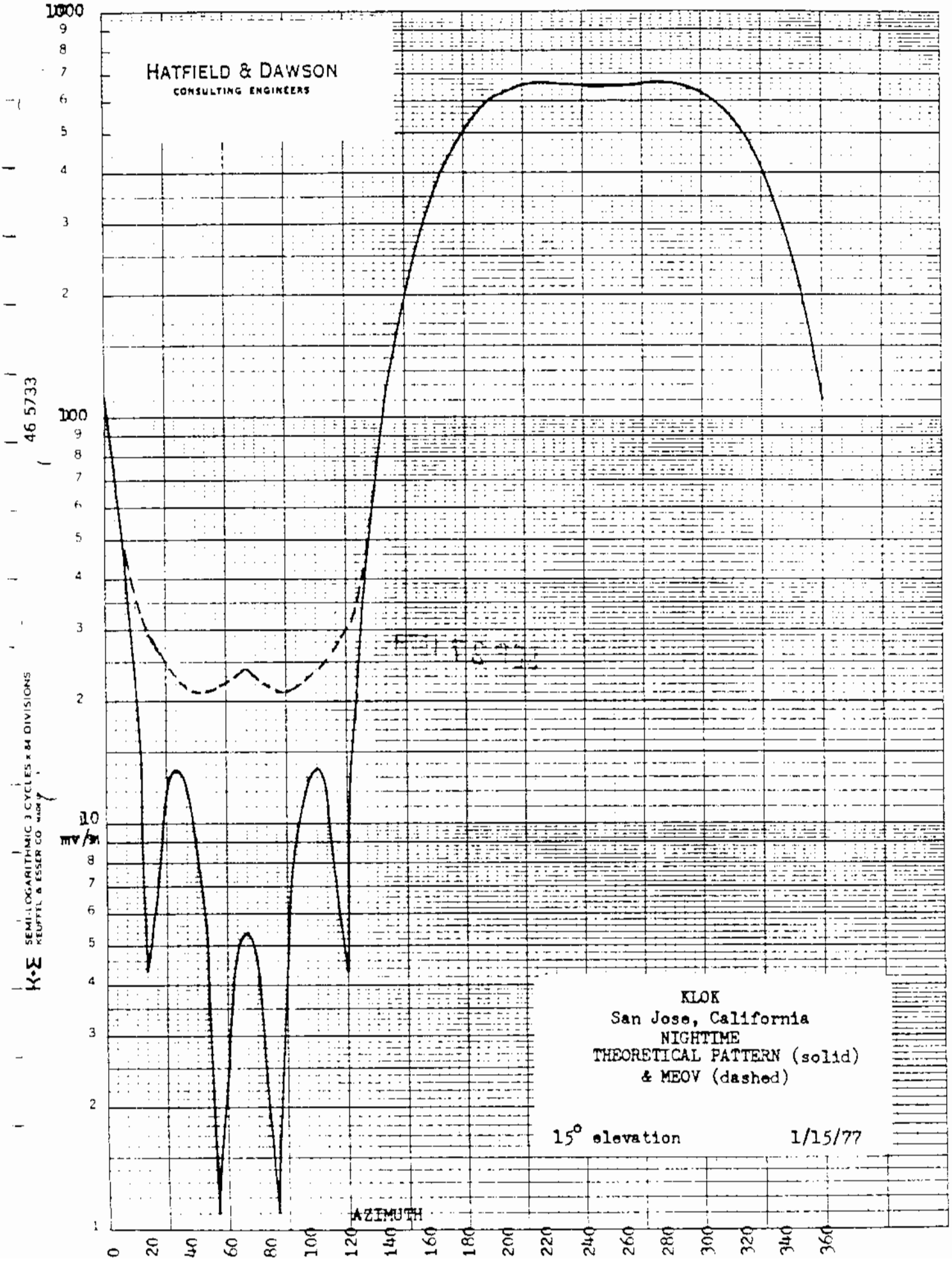
KLOK


HATFIELD & DAWSON
CONSULTING ENGINEERS
1000
100
10
mv/m
KVOO 0.5 mv/m 50% sky-wave limit
AUGMENTED EXISTING FACILITIES
AZIMUTH
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
360
KLOK
San Jose, California
NIGHTIME
THEORETICAL PATTERN (solid)
& MEOV (dashed)
05° elevation
1/15/77
46 5733
K+E SEMI-LOGARITHMIC 3 CYCLES x 84 DIVISIONS
KEUFFEL & ESSER CO

KLOK


HATFIELD & DAWSON
CONSULTING ENGINEERS
1000
100
10
mv/m
46 5733
K-Z
SEMI-LOGARITHMIC 3 CYCLES x 84 DIVISIONS
KEUFFEL & ESSER CO
AZIMUTH
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
360
KLOK
San Jose, California
NIGHTIME
THEORETICAL PATTERN (solid)
& MEOV (dashed)
10° elevation
1/15/77

KLOK


HATFIELD & DAWSON
CONSULTING ENGINEERS
1000
100
10
mv/m
46 5733
SEMI-LOGARITHMIC 3 CYCLES x 84 DIVISIONS
KEUFFEL & ESSER CO
AZIMUTH
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
360
KLOK
San Jose, California
NIGHTIME
THEORETICAL PATTERN (solid)
& MEOV (dashed)
15° elevation
1/15/77

KLOK

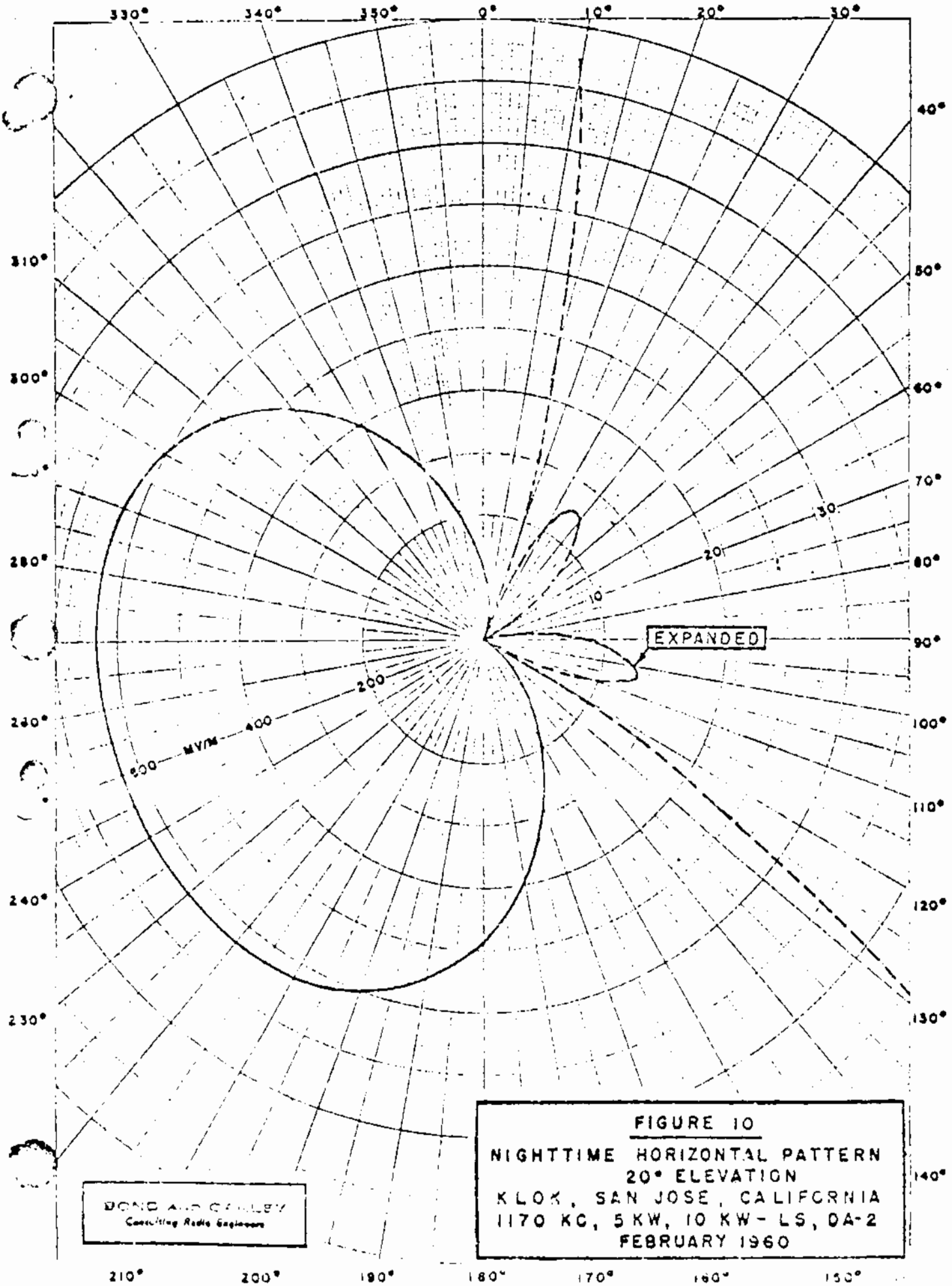


FIGURE 10

NIGHTTIME HORIZONTAL PATTERN
20° ELEVATION
KLOK, SAN JOSE, CALIFORNIA
1170 KC, 5 KW, 10 KW-LS, DA-2
FEBRUARY 1960

BOND AND CRAWLEY
Consulting Radio Engineers

KLOK

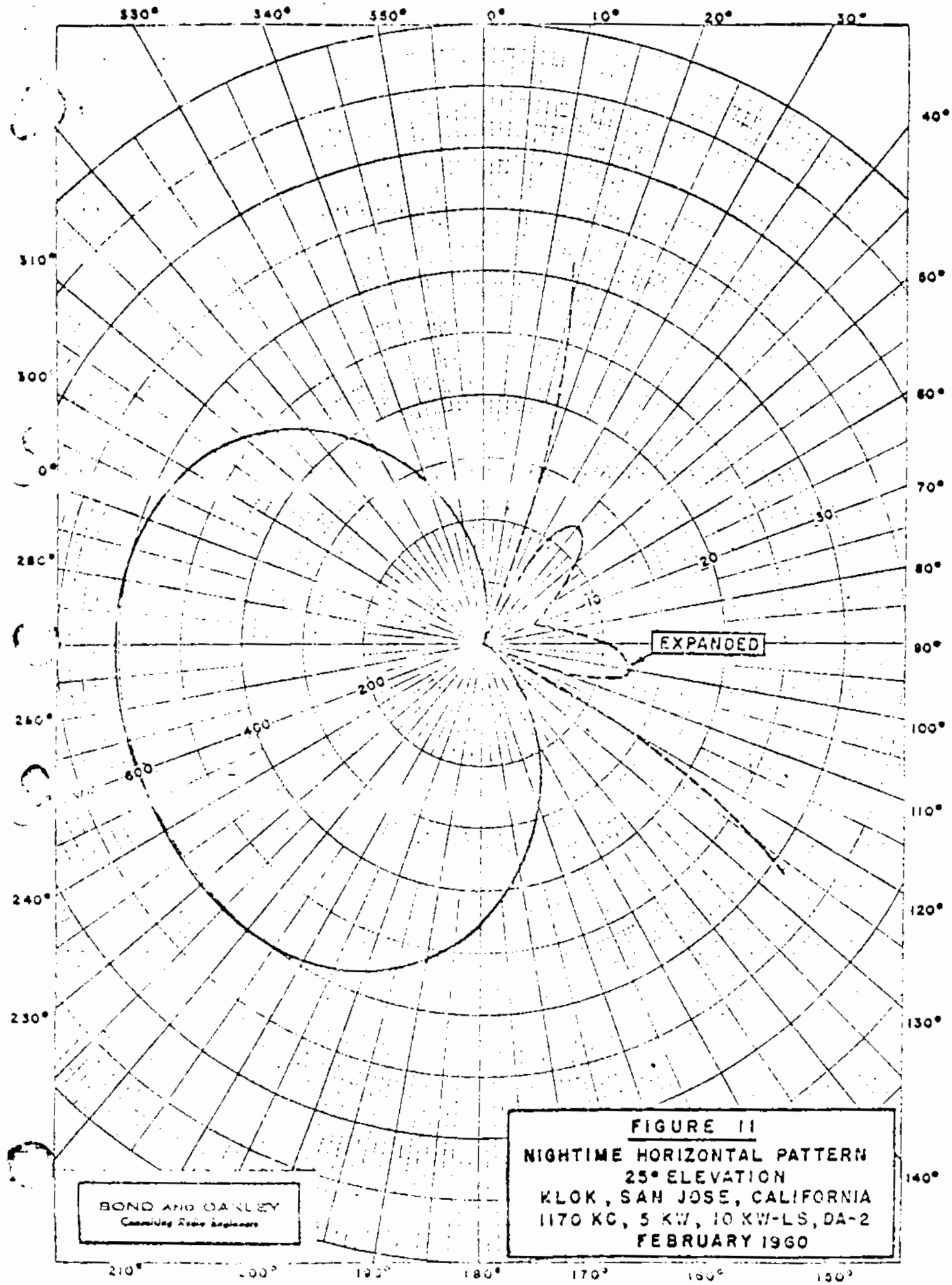


FIGURE 11

NIGHTIME HORIZONTAL PATTERN
25° ELEVATION
KLOK, SAN JOSE, CALIFORNIA
1170 KC, 5 KW, 10 KW-LS, DA-2
FEBRUARY 1960

KLOK

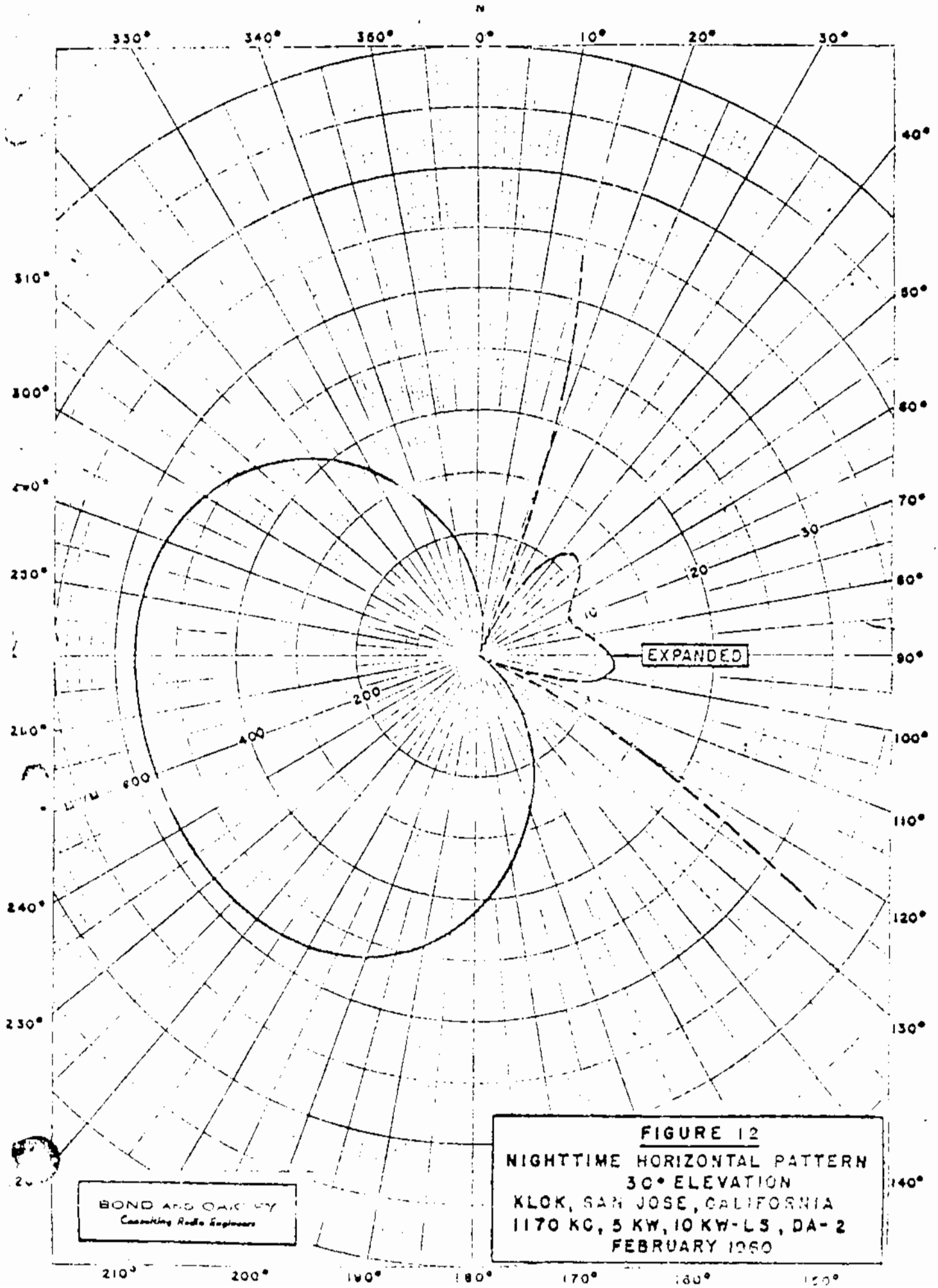


FIGURE 12

NIGHTTIME HORIZONTAL PATTERN
30° ELEVATION
KLOK, SAN JOSE, CALIFORNIA
1170 KC, 5 KW, 10 KW-LS, DA-2
FEBRUARY 1960

KLOK

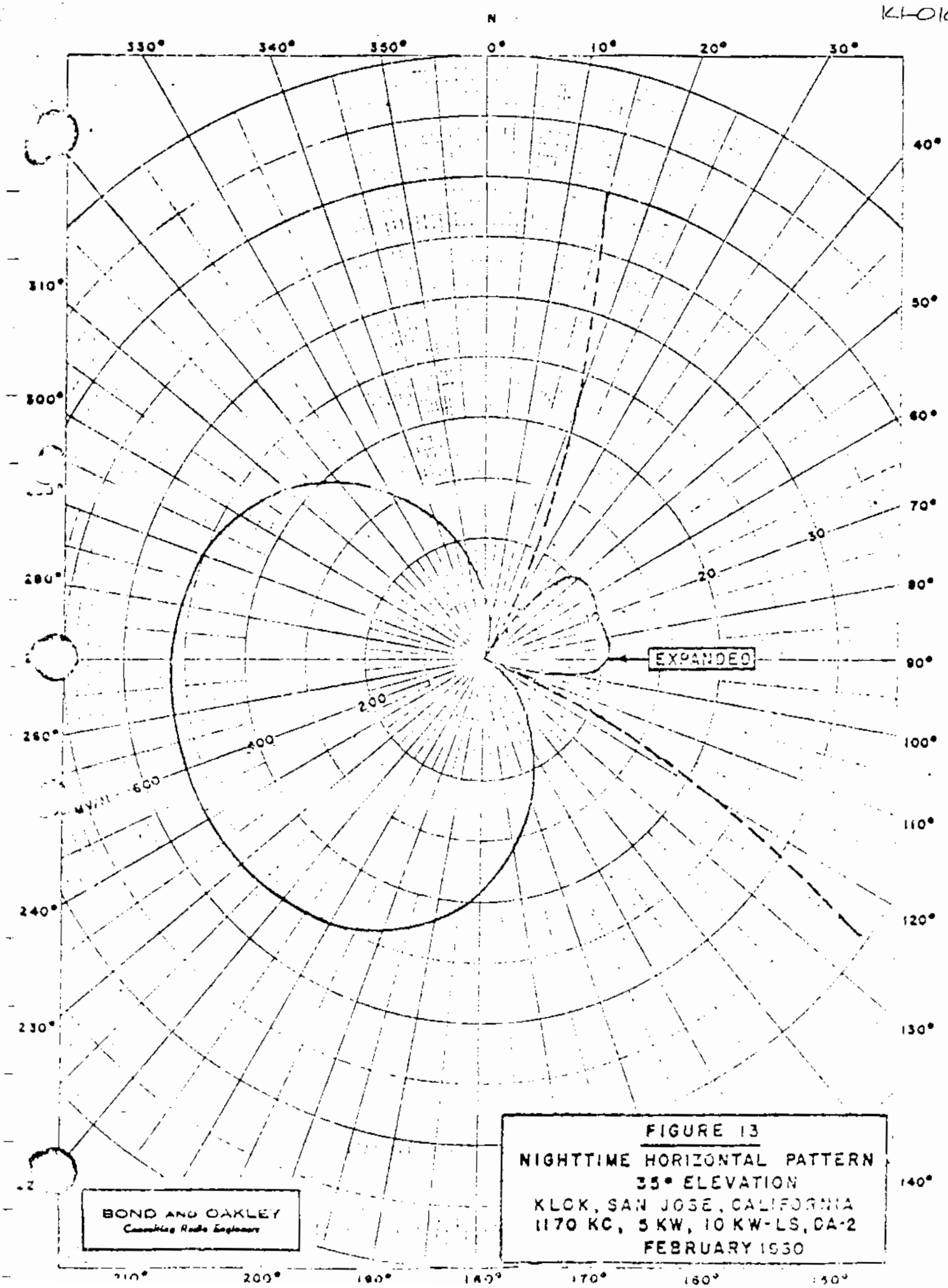


FIGURE 13

NIGHTTIME HORIZONTAL PATTERN
35° ELEVATION
KLOK, SAN JOSE, CALIFORNIA
1170 KC, 5 KW, 10 KW-LS, DA-2
FEBRUARY 1950

BOND AND OAKLEY
Consulting Radio Engineers

KLOK

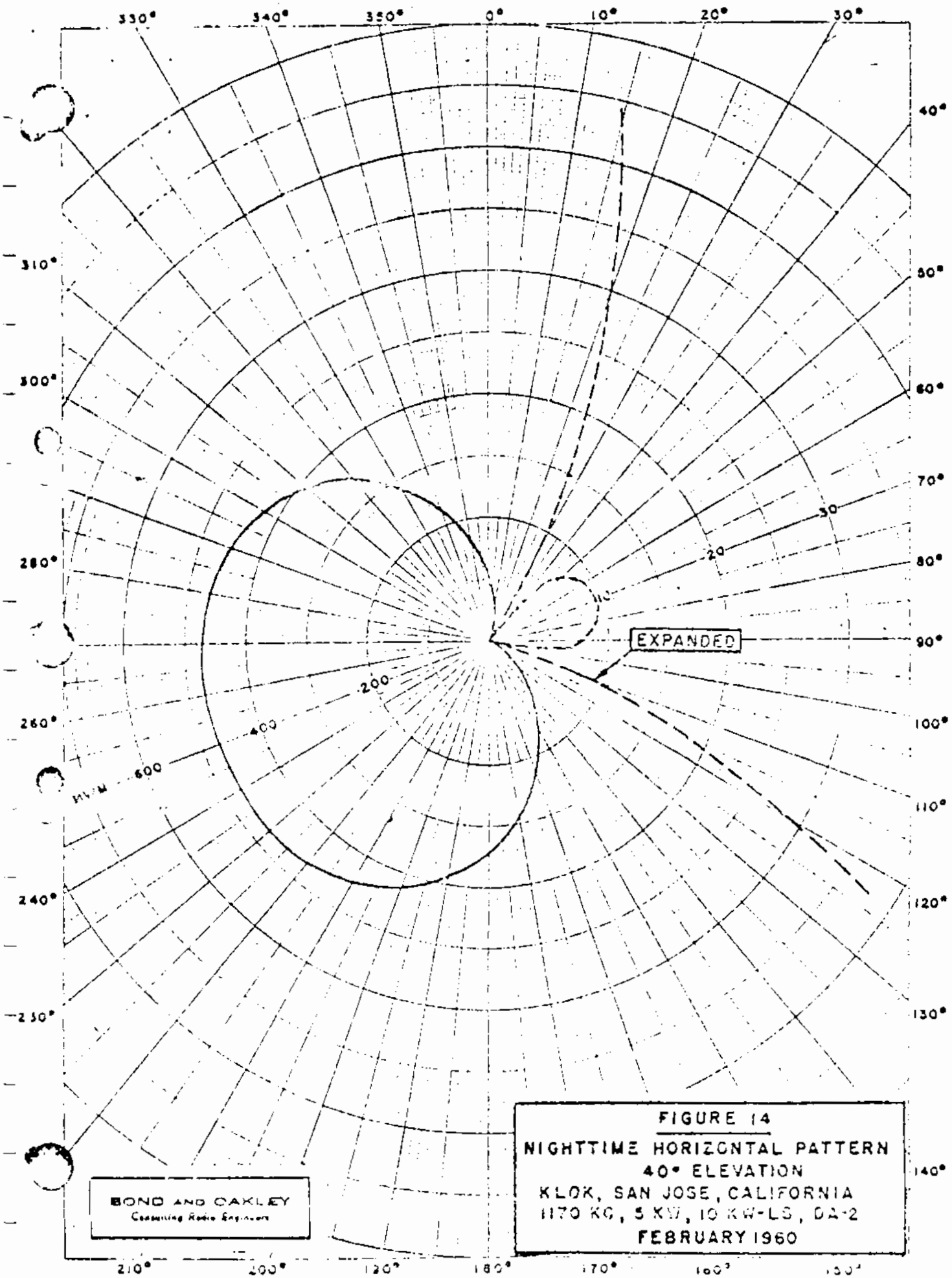


FIGURE 14

NIGHTTIME HORIZONTAL PATTERN
40° ELEVATION
KLOK, SAN JOSE, CALIFORNIA
1170 KC, 5 KW, 10 KW-LS, DA-2
FEBRUARY 1960

BOND AND OAKLEY
Consulting Radio Engineers

KLOK

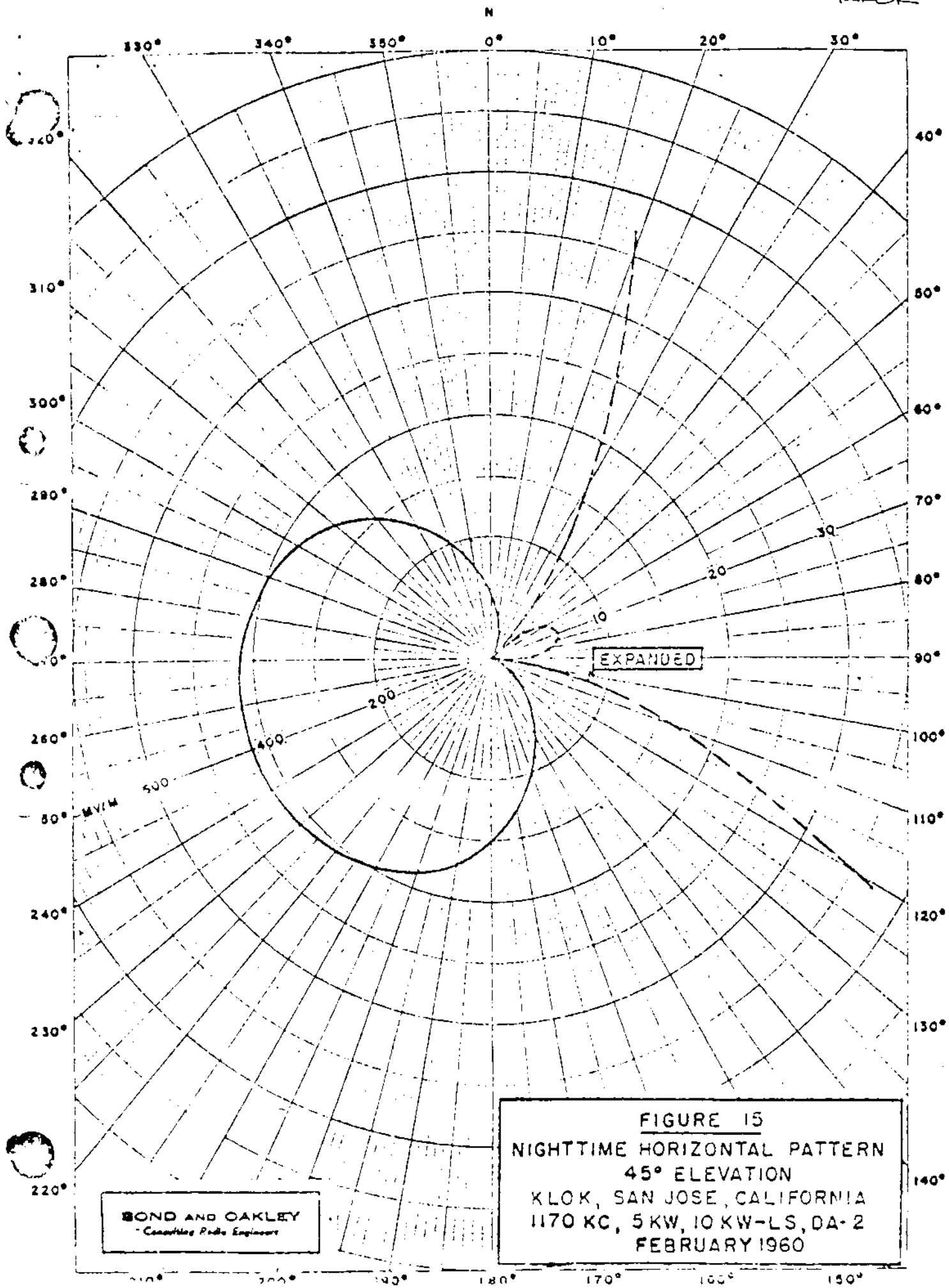


FIGURE 15

NIGHTTIME HORIZONTAL PATTERN

45° ELEVATION

KLOK, SAN JOSE, CALIFORNIA

1170 KC, 5 KW, 10 KW-LS, DA-2

FEBRUARY 1960

BOND AND OAKLEY

Consulting Radio Engineers

KLOK

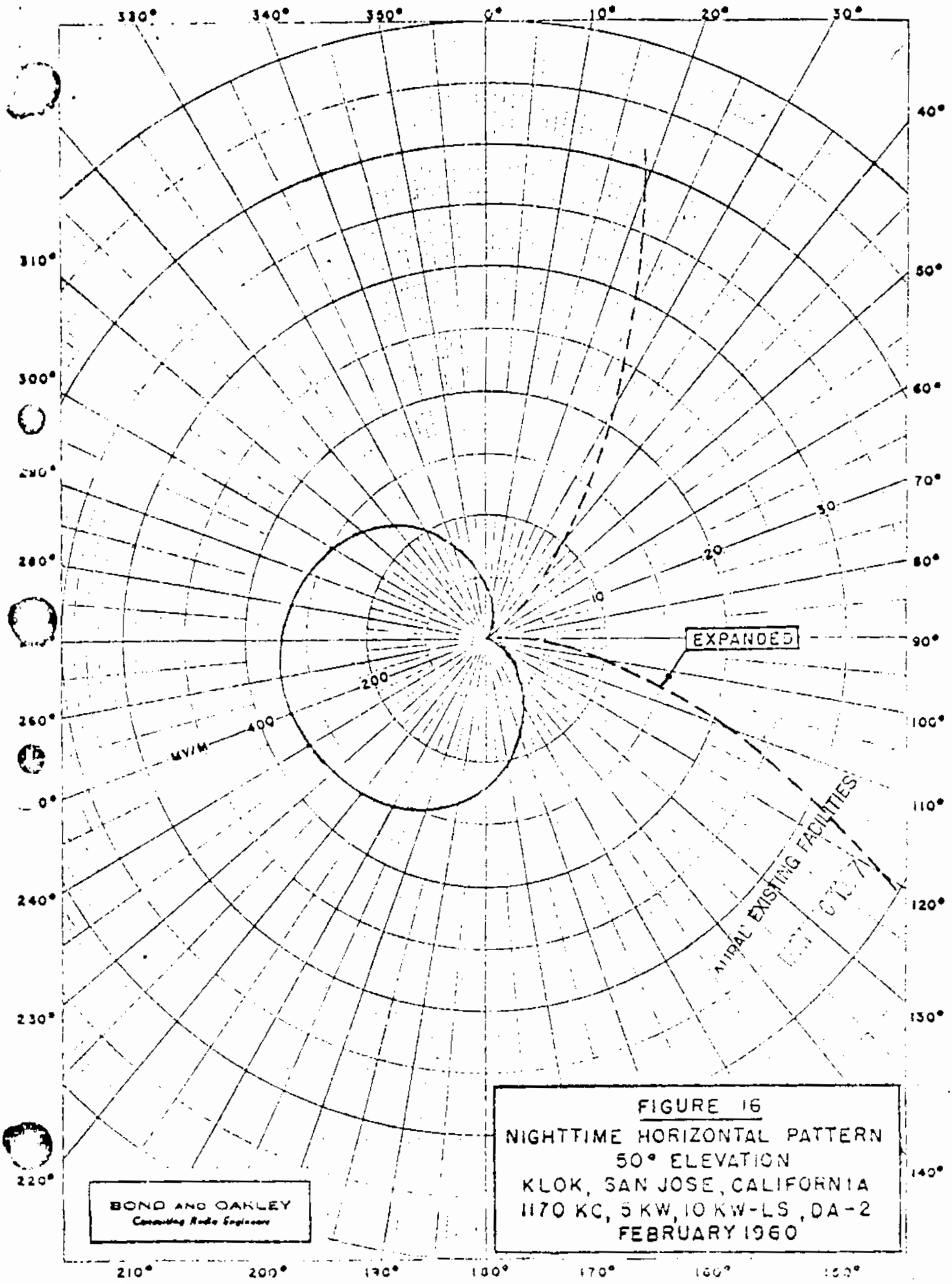


FIGURE 16

NIGHTTIME HORIZONTAL PATTERN
50° ELEVATION
KLOK, SAN JOSE, CALIFORNIA
1170 KC, 5 KW, 10 KW-LS, DA-2
FEBRUARY 1960

KLOK

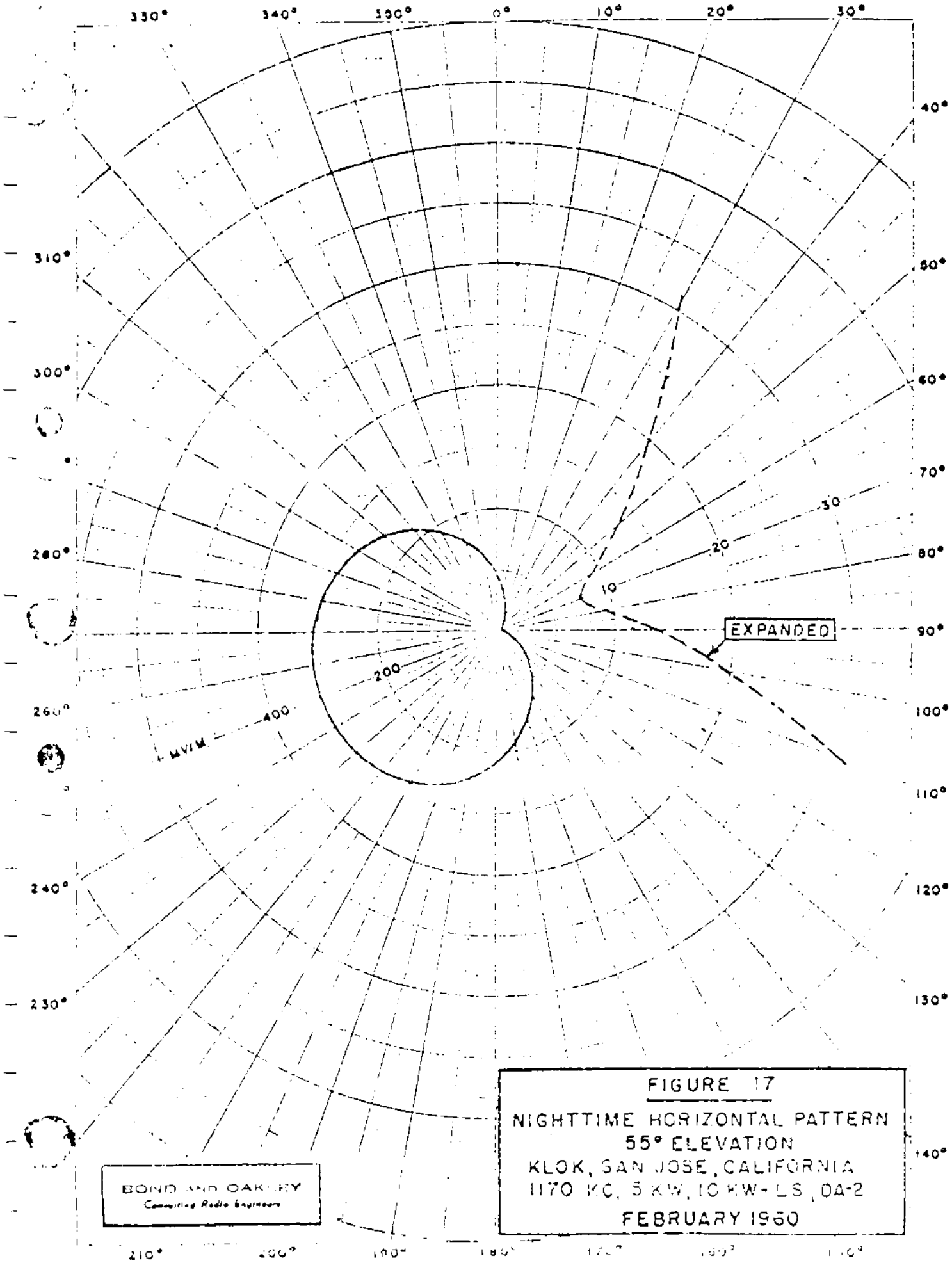


FIGURE 17

NIGHTTIME HORIZONTAL PATTERN
55° ELEVATION
KLOK, SAN JOSE, CALIFORNIA
1170 KC, 5 KW, 10 KW-LS, DA-2
FEBRUARY 1960

KLOK

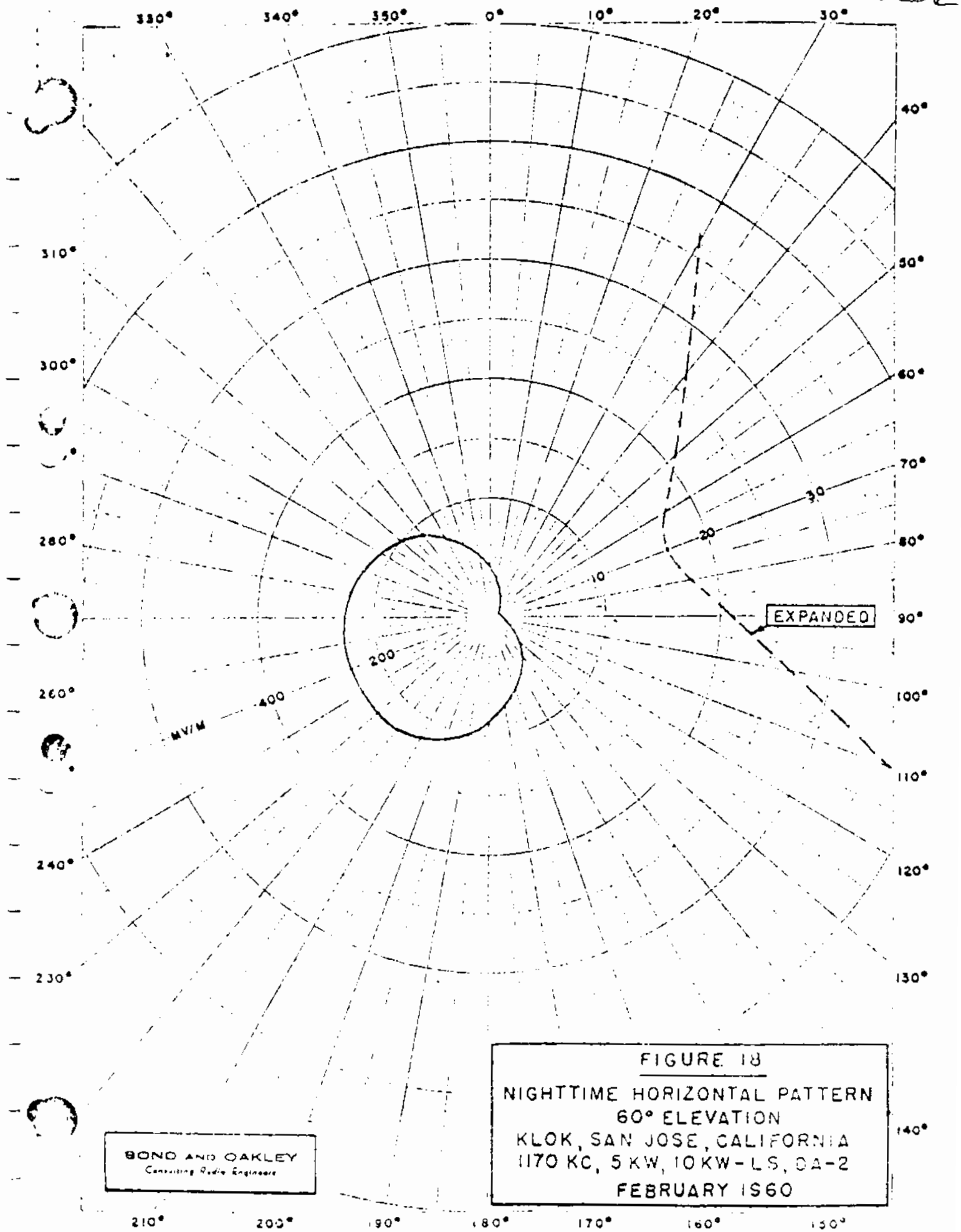


FIGURE 18

NIGHTTIME HORIZONTAL PATTERN
60° ELEVATION
KLOK, SAN JOSE, CALIFORNIA
1170 KC, 5 KW, 10 KW-LS, DA-2
FEBRUARY 1960

BOND AND OAKLEY
Consulting Radio Engineers

KLOK

Measured Day
(10-26-70ct)

Station KLOK
San Jose, California

5kw, 50kw-LS, DA-2, U
1170 kc

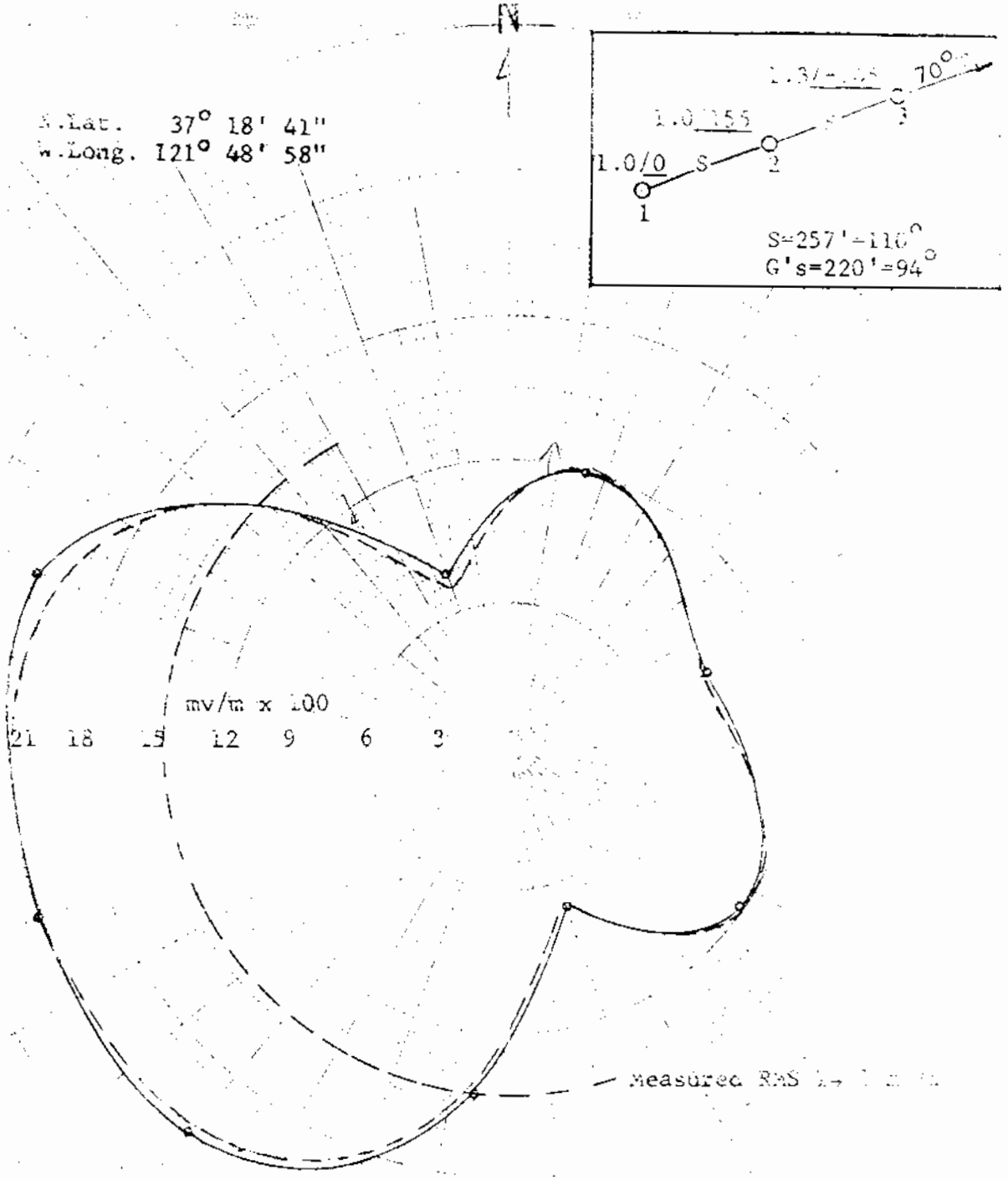


FIG. 2

MEASURED DAYTIME HORIZONTAL RADIATION
KLOK 1170 KC 50.0 KW-D 5.0 KW-N DA-2
SAN JOSE, CALIFORNIA

Moffet Associates Inc., Consulting Engineers, San Carlos, Calif.

FCC File No.BL-12749
Accepted 10-14-70

Station KLOK
San Jose, California

1170 kc

KLOK

Measured Non-DA
(10-26-70ct)

Station KLOK
San Jose, California

5kw, 50kw-LS, DA-2, U
1170 kc

N.Lat. 37° 18' 41"
W.Long. 121° 48' 58"

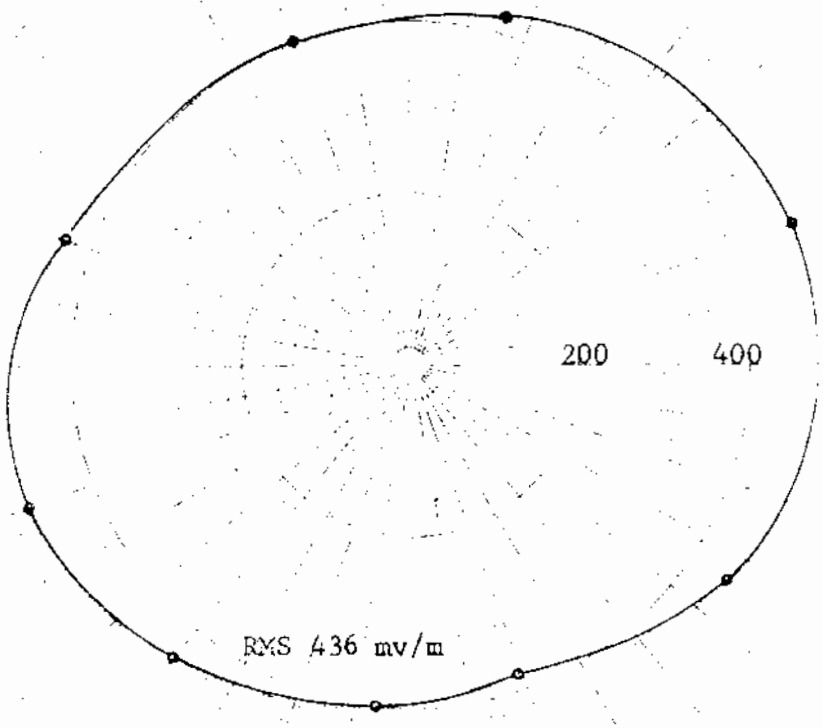


Fig. 1

MEASURED NON-DIRECTIONAL HORIZONTAL RADIATION
KLOK 1170 KC 50.0 KW-D 5.0 KW-N DA-2
SAN JOSE, CALIFORNIA

A.E. Towne Associates, Radio Engineering Consultants, San Carlos, Calif.

FCC File No. BL-12749
Accepted 10-14-70

Station KLOK
San Jose, California

1170 kc

KLOK

Proposed Day
(1-29-68ct)

Station KLOK
San Jose, California

5kw, 50kw-LS, DA-2, U
1170 kc

BP 17904 Granted (3-26-69) CP to change to 5kw, 50 kw-LS, DA-2, U and make changes in daytime DA pattern

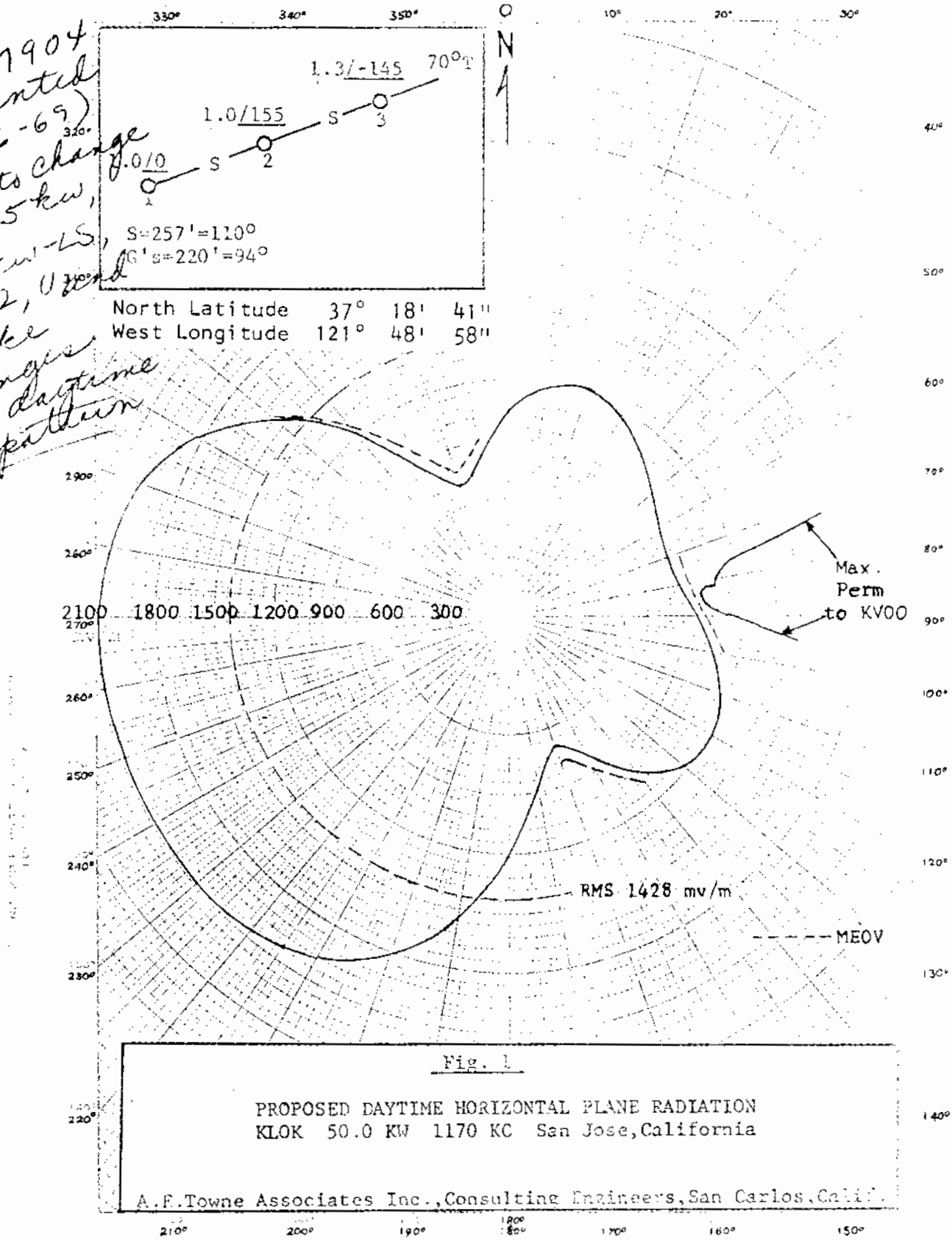


Fig. 1

PROPOSED DAYTIME HORIZONTAL PLANE RADIATION
KLOK 50.0 KW 1170 KC San Jose, California

A.F.Towne Associates Inc., Consulting Engineers, San Carlos, Calif.

FCC File No. BP-17904
Accepted 1-15-68

Station KLOK
San Jose, California

1170 kc

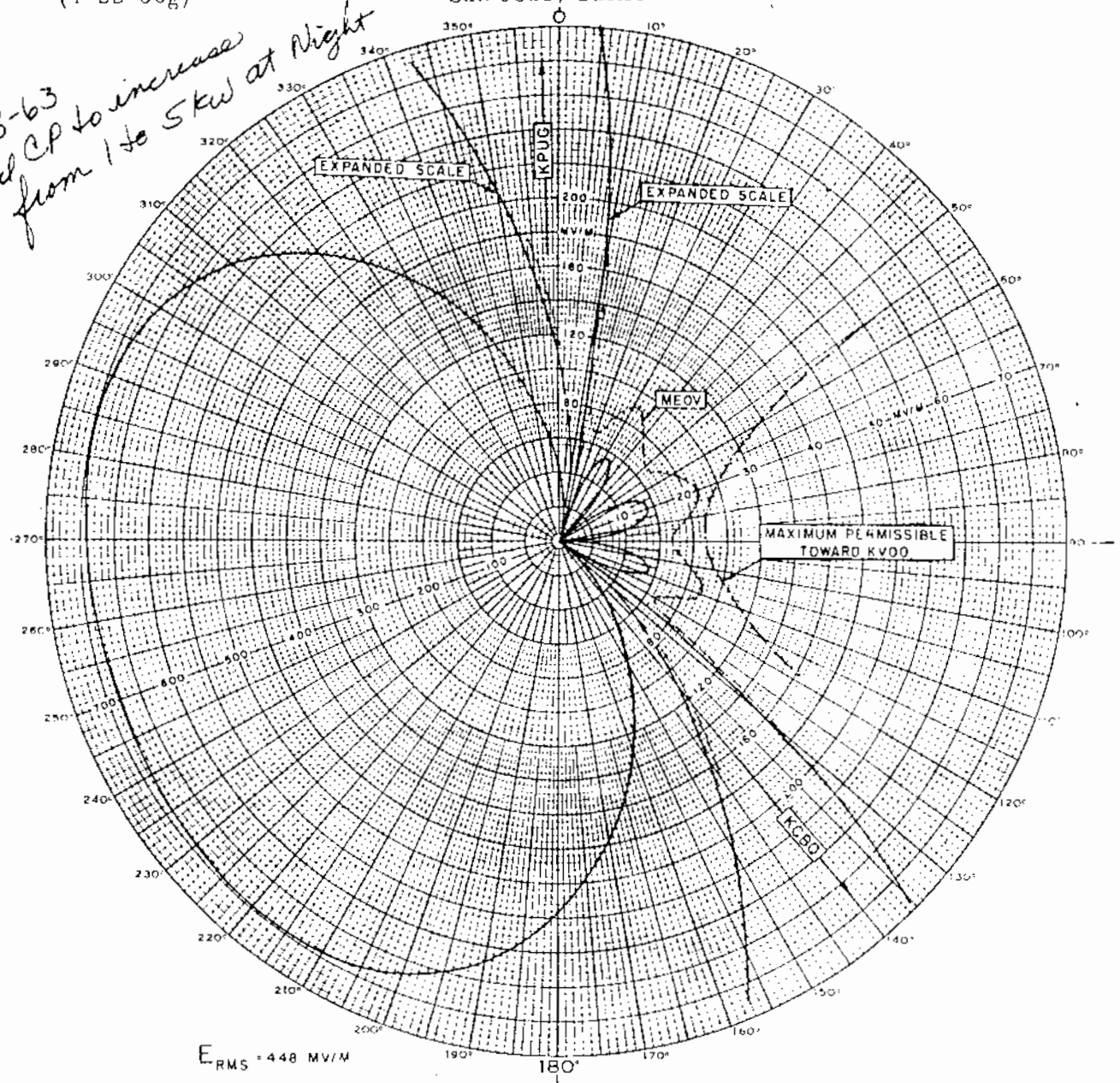
KLOK

PROPOSED NIGHT
(4-22-60g)

Station KLOK
San Jose, California

5kw, 10kw-LS, DA-2,U
1170 KC

6-18-63
Granted CP to increase
power from 1 to 5 kw at Night



E_{RMS} = 448 MV/M

SITE:
121° 48' 58" W
37° 18' 41" N

H = 94'

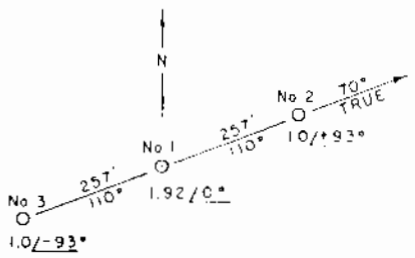


FIGURE 6

PROPOSED NIGHTTIME PATTERN
HORIZONTAL FIELD INTENSITY AT ONE MILE
KLOK, SAN JOSE, CALIFORNIA - 1170 KC - 5 KW
FEBRUARY 1960

BOND AND OAKLEY
Consulting Radio Engineers

FCC File No. BP-14028
Accepted 4-8-60

KLOK
San Jose, California

1170 KC

KLOK

Measured Night
(4-24-64ct)

Station KLOK
San Jose, California

5kw, 10kw-LS, DA-2, U
1170 kc

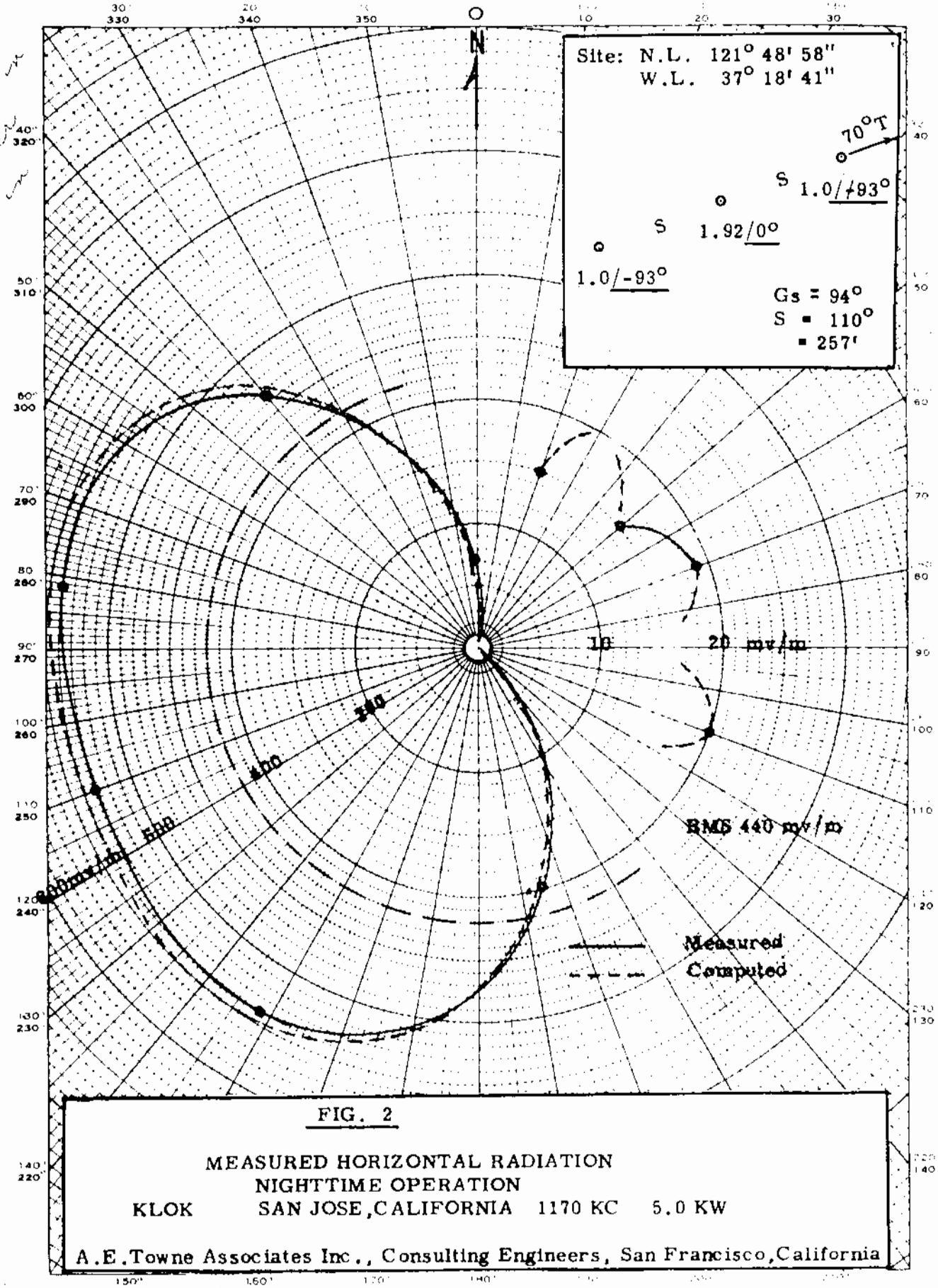


FIG. 2

MEASURED HORIZONTAL RADIATION
NIGHTTIME OPERATION
KLOK SAN JOSE, CALIFORNIA 1170 KC 5.0 KW

A.E. Towne Associates Inc., Consulting Engineers, San Francisco, California

FCC File No. BL-10498
Accepted 4-6-64

Station KLOK
San Jose, California

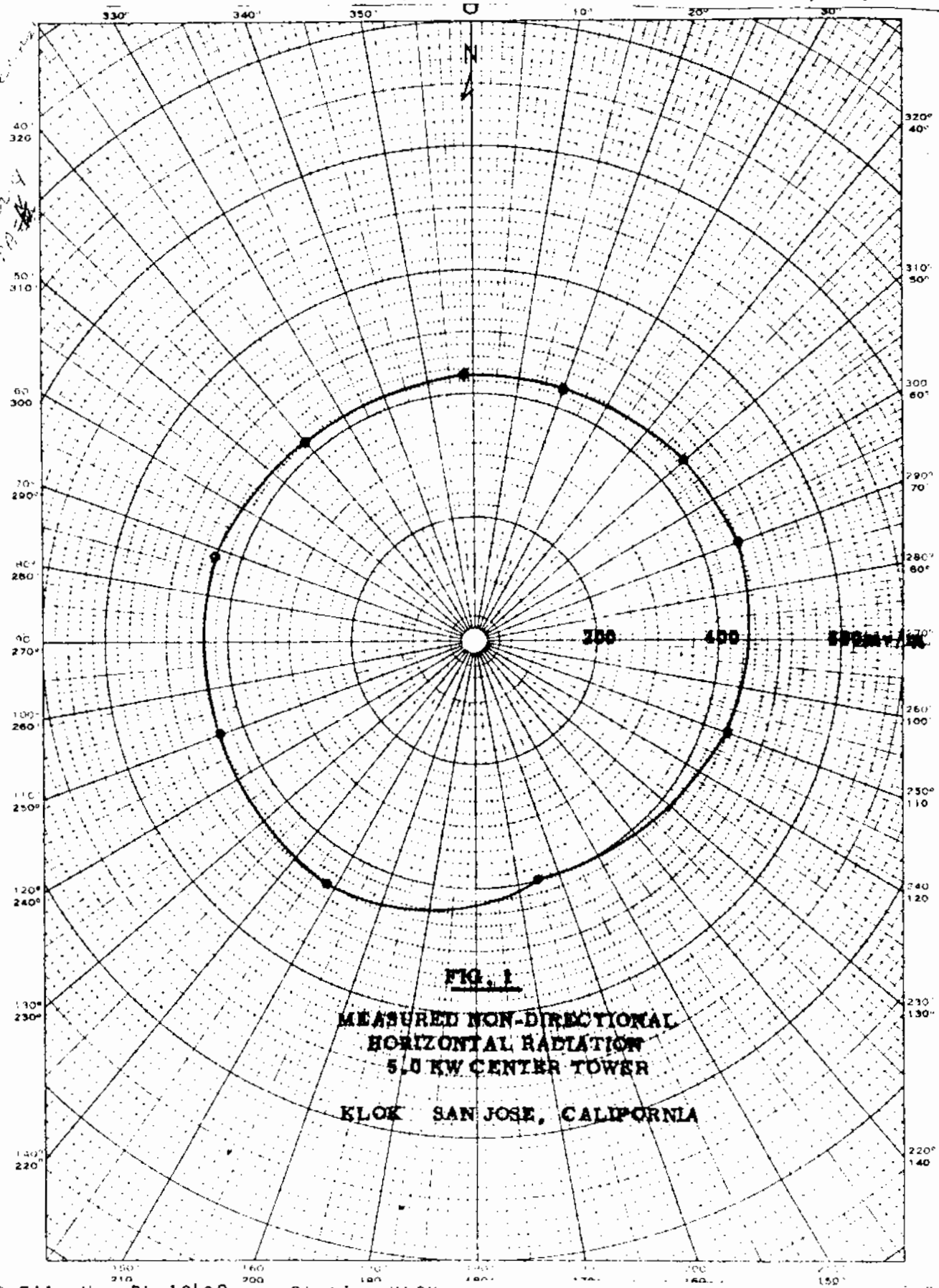
1170 kc

KLOK

Measured Non-DA
(4-24-64ct)

Station KLOK
San Jose, California

5kw, 10kw-LS, DA-2, U
1170 kc



EUGENE DIETZGEN CO. MADE IN U.S.A.

NO. 340R-P DIETZGEN GRAPH PAPER POLAR CO-O DATE

FIG. 1

MEASURED NON-DIRECTIONAL
HORIZONTAL RADIATION
5.0 KW CENTER TOWER

KLOK SAN JOSE, CALIFORNIA

FCC File No. BL-10498
Accepted 4-6-64

Station KLOK
San Jose, California

1170 kc

KPUG

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KPUG — Main Studio: Bellingham, Washington

Frequency: 1170 kHz — Power: 5 kW Night 10 kW Day

Notification List No. 1692 — Date: July 7, 1976 — Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:
North Latitude: 48° 46' 34"
West Longitude: 122° 26' 21"

ANTENNA CHARACTERISTICS

Authorized for Nighttime operation. (DA-N)
Number of elements: 3
Type of elements: Series excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	NW(#2)	C(#1)	SE(#3)
HEIGHT ABOVE INSULATORS:	215'	215'	215' (92.1°)
PHASING:	-99.00°	0°	+101.00°
FIELD RATIO:	0.510	1	0.480

SPACING AND ORIENTATION: Adjacent towers are spaced 158' (67.66°) on a line bearing 110° true.

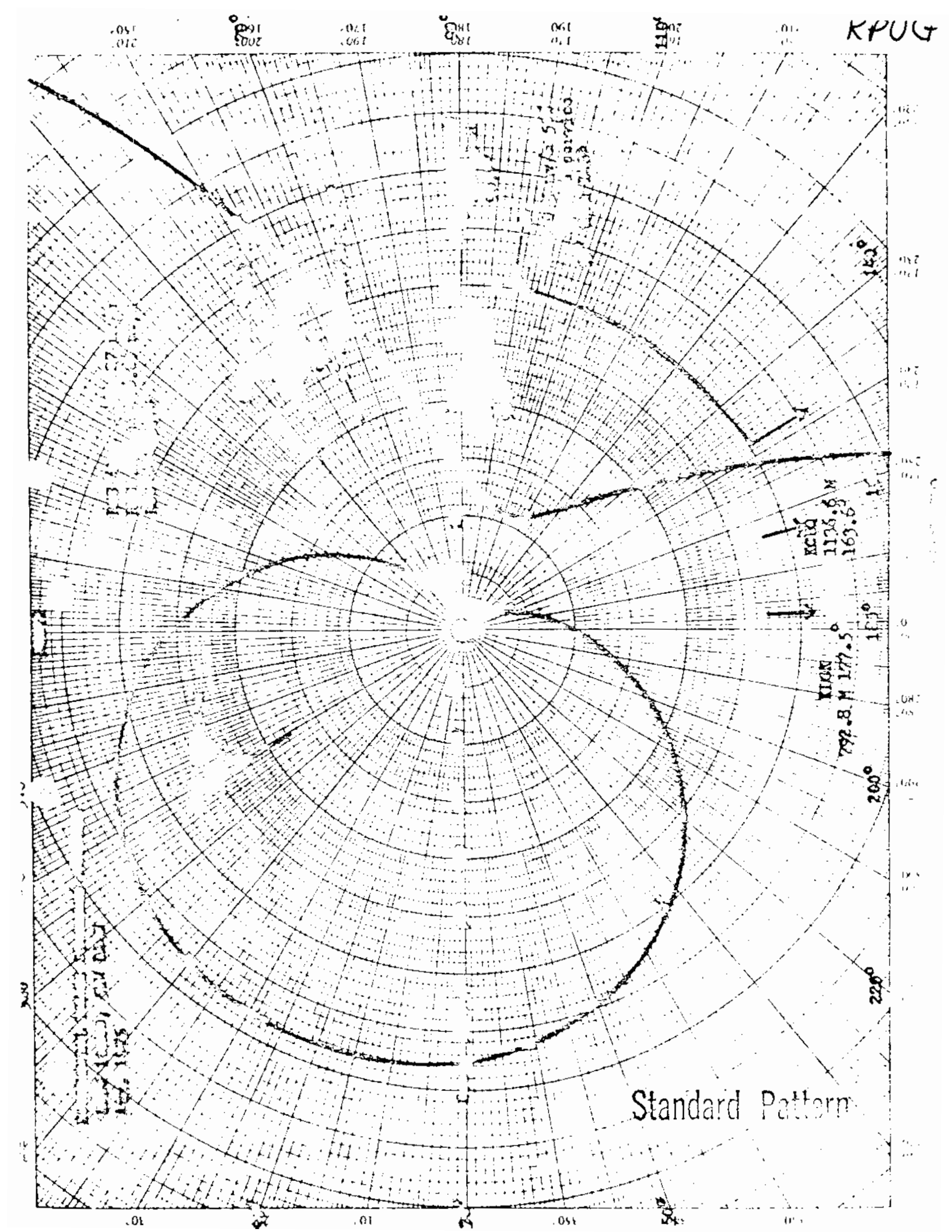
GROUND SYSTEM: 120-210' equally spaced copper radials plus a 20' square ground screen about each tower. Radials are shortened and bonded to transverse straps along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RAIED POWER:

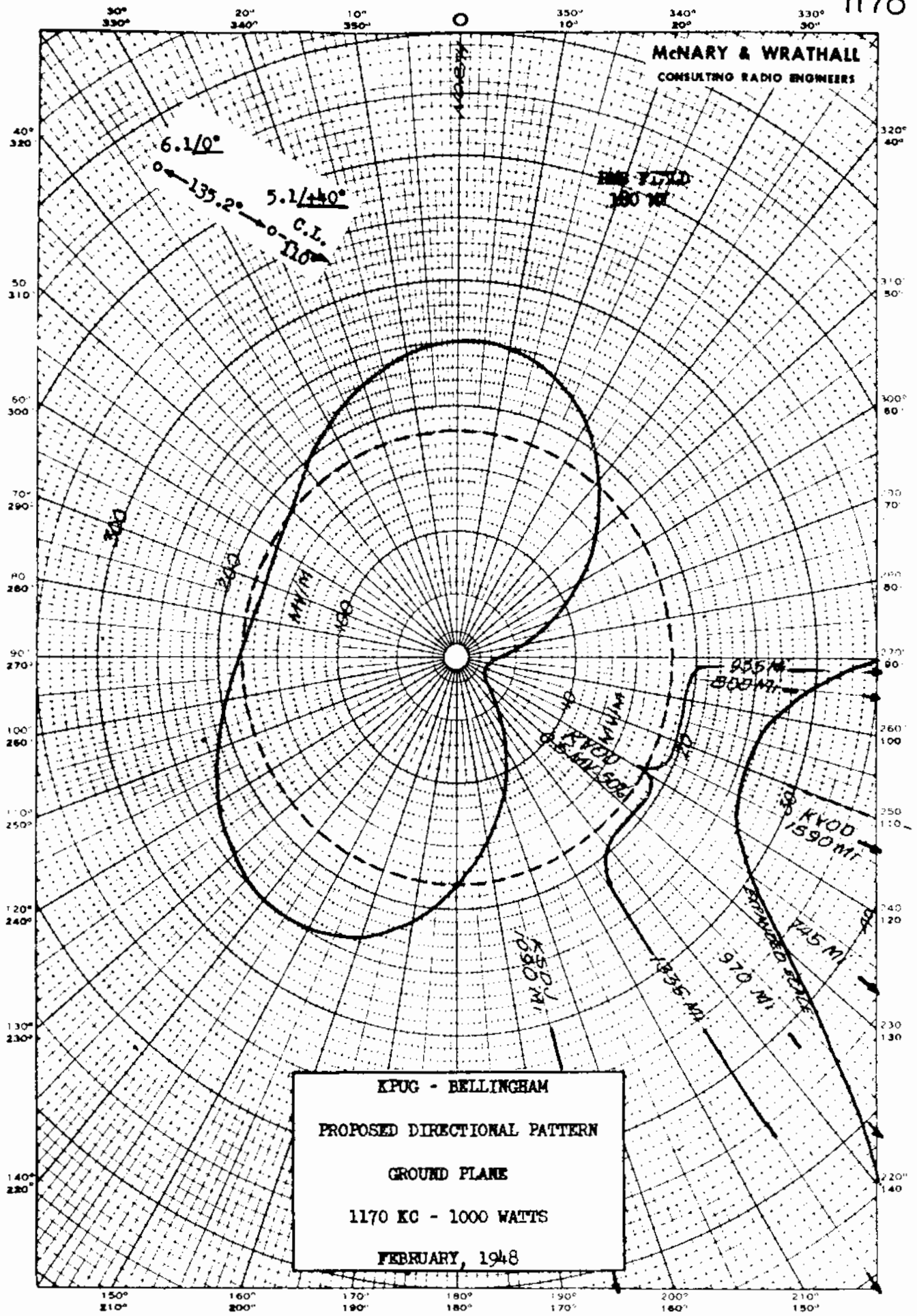
	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	615 mv/m	---	---
Night	444.27 mv/m	485.74 mv/m	466.69 mv/m

Note: This notification concerns increases in Daytime and Nighttime powers and changes in the directional antenna system.

CTR NO 30891A4


KPUG
Standard Pattern

Rec'd 2-17-48 NIGHT P-3653 KPUG 1170



KPUG

MEASURED NIGHT&DAY

KPUG, BELLINGHAM, WASH. License 2-24-48 1kw,DA1 1170 kc

3/9/490

1/0° — 135.2° — .80/35° — 110°T

Height - 215'

LAT. 48° 46' 35" N
LONG. 122° 26' 20" W

J. B. HATFIELD
CONSULTING RADIO ENGINEER
958 35TH AVENUE
SEATTLE 22, WASHINGTON

300 MV/M
200
100
50
10
50 MV/M
T TOWERS

KPUG MEASURED
HORIZONTAL RADIATION PATTERN
1170 K.C. BELLINGHAM, WASH. 1 KW.
RMS= 187 MV/M

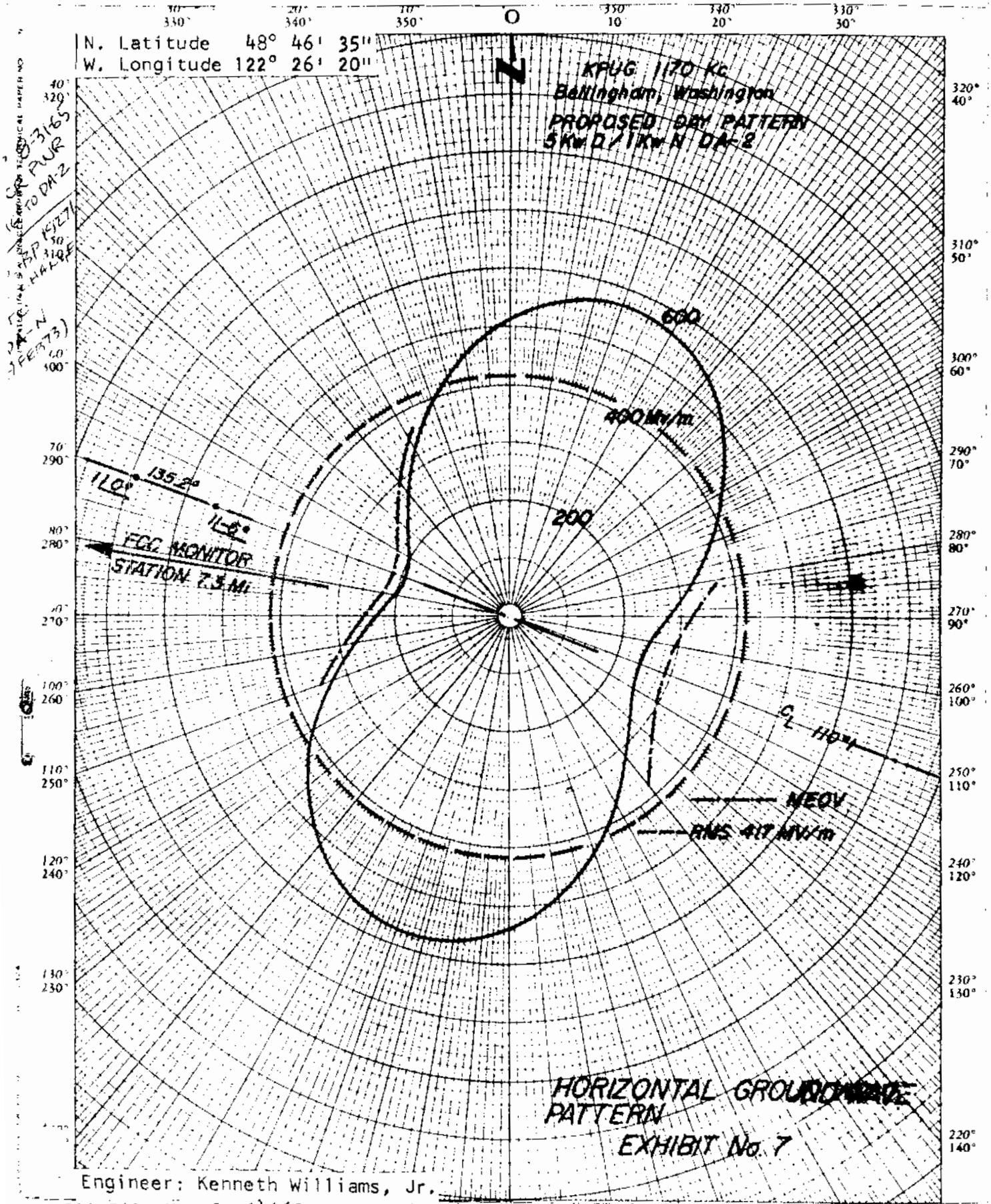
o = RADIAL MEASUREMENTS
× = CROSS RADIAL

KPUG

Proposed Day
(5-27-65ct)

Station KPUG
Bellingham, Washington

1kw, 5kw-LS, DA-2, U
1170 kc



Engineer: Kenneth Williams, Jr.

FCC File No. BP-14162
Accepted 5-3-65 Amended

Station KPUG
Bellingham, Washington

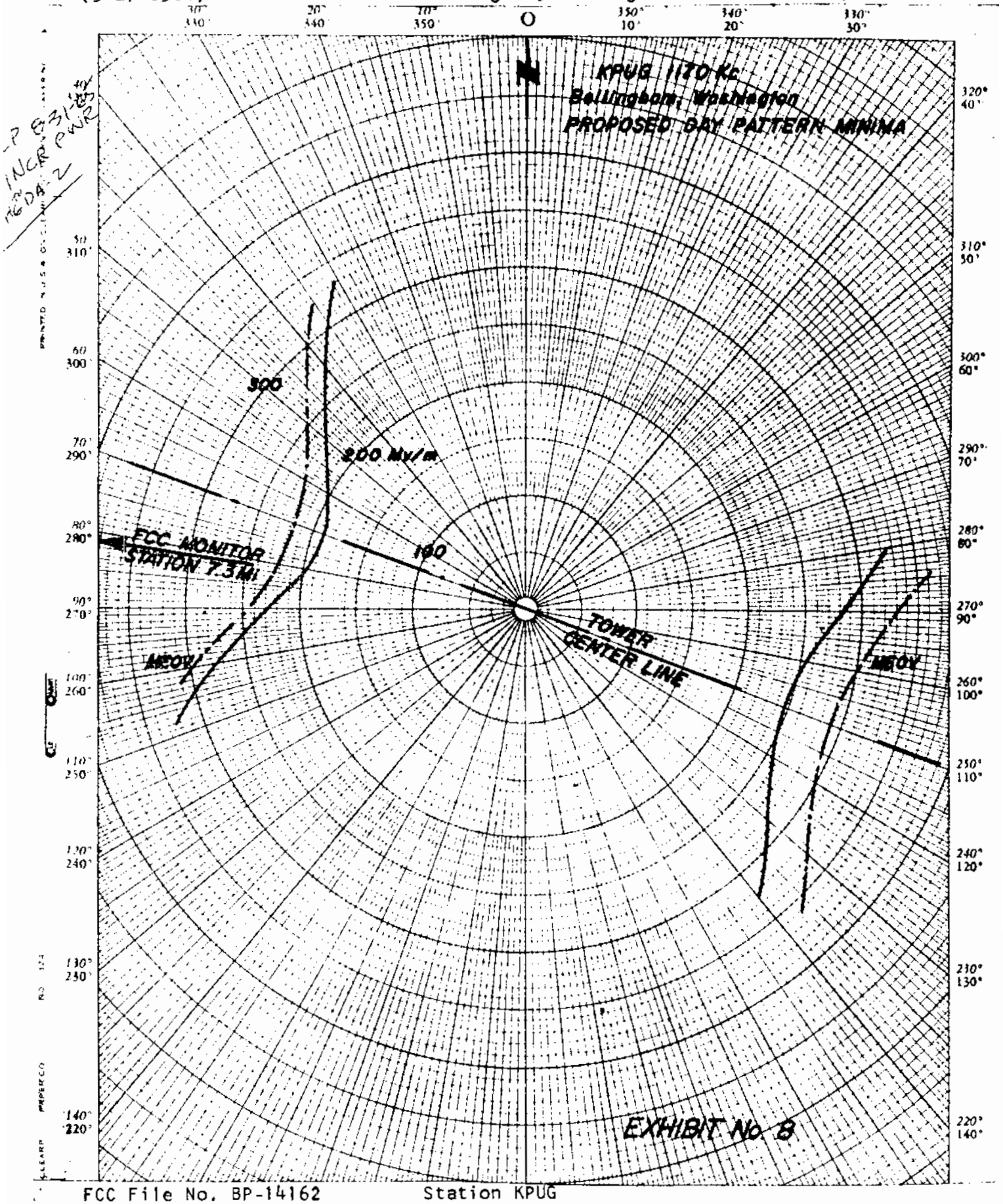
1170 kc

KPUG

Proposed Day Nulls
(5-27-65ct)

Station KPUG
Bellingham, Washington

1kw,5kw-LS,DA-2,U
1170 kc



FCC File No. BP-14162
Accepted 5-3-65 Amended

Station KPUG
Bellingham, Washington

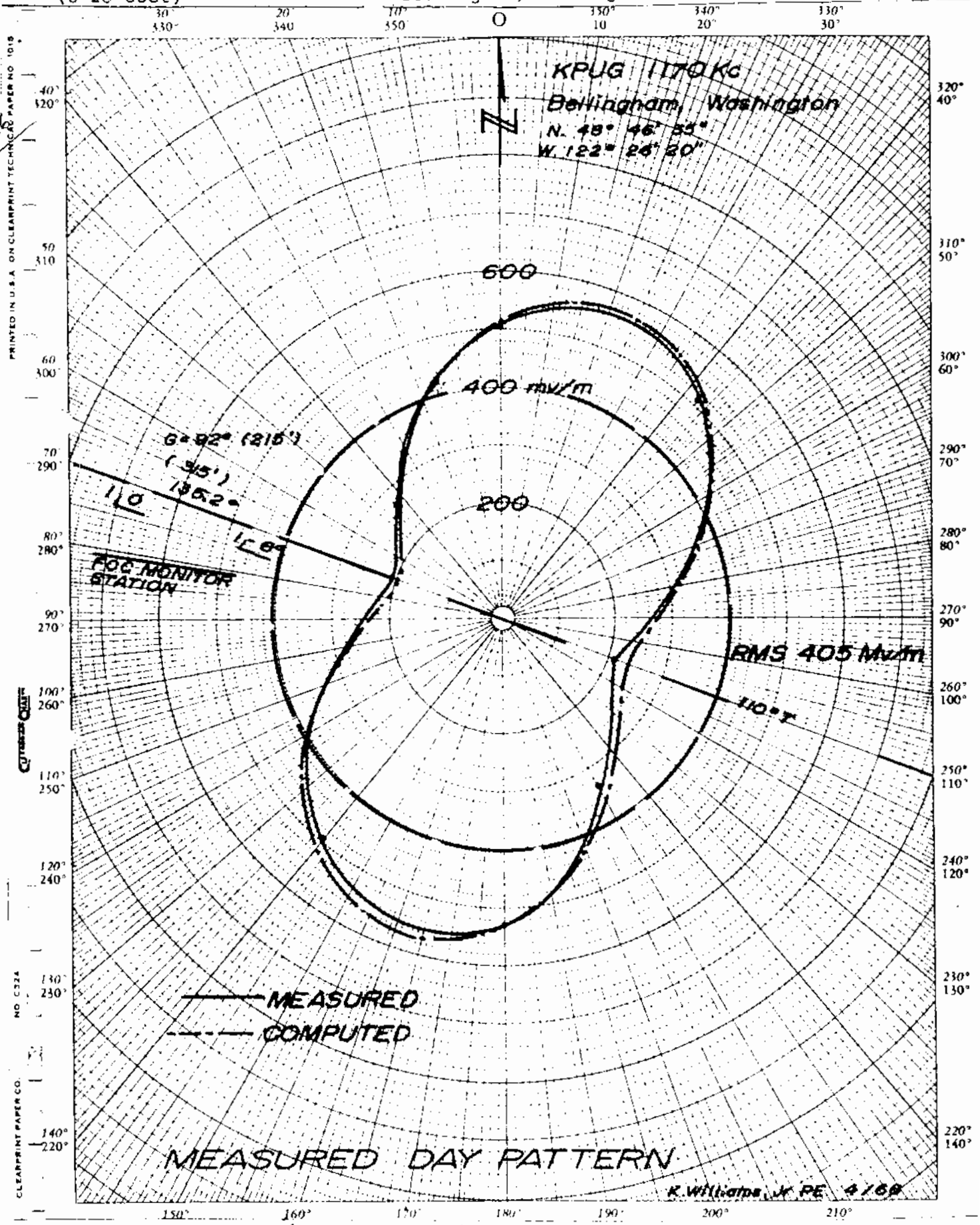
1170 kc

KPUG

Measured Day
(6-28-66ct)

Station KPUG
Bellingham, Washington

1kw, 5kw-LS, DA-2, U
1170 kc



FCC File No. BL-11316
Accepted 6-13-66

Station KPUG
Bellingham, Washington

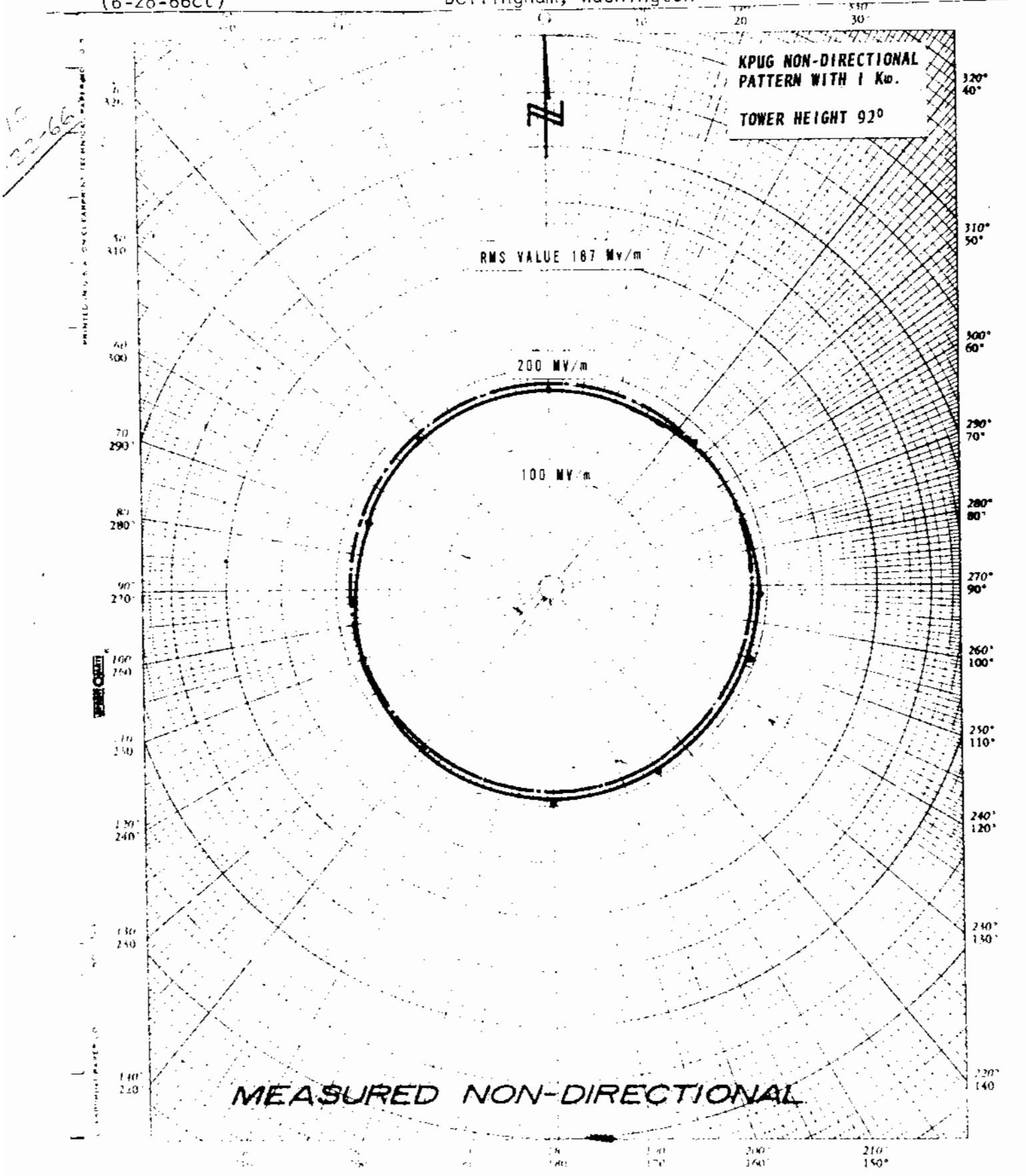
1170 kc

KPUG

Measured Non-DA
(6-28-66ct)

Station KPUG
Bellingham, Washington

1kw, 5kw-LS, DA-2, U
1170 kc



FCC File No. BL-11316
Accepted 6-13-66

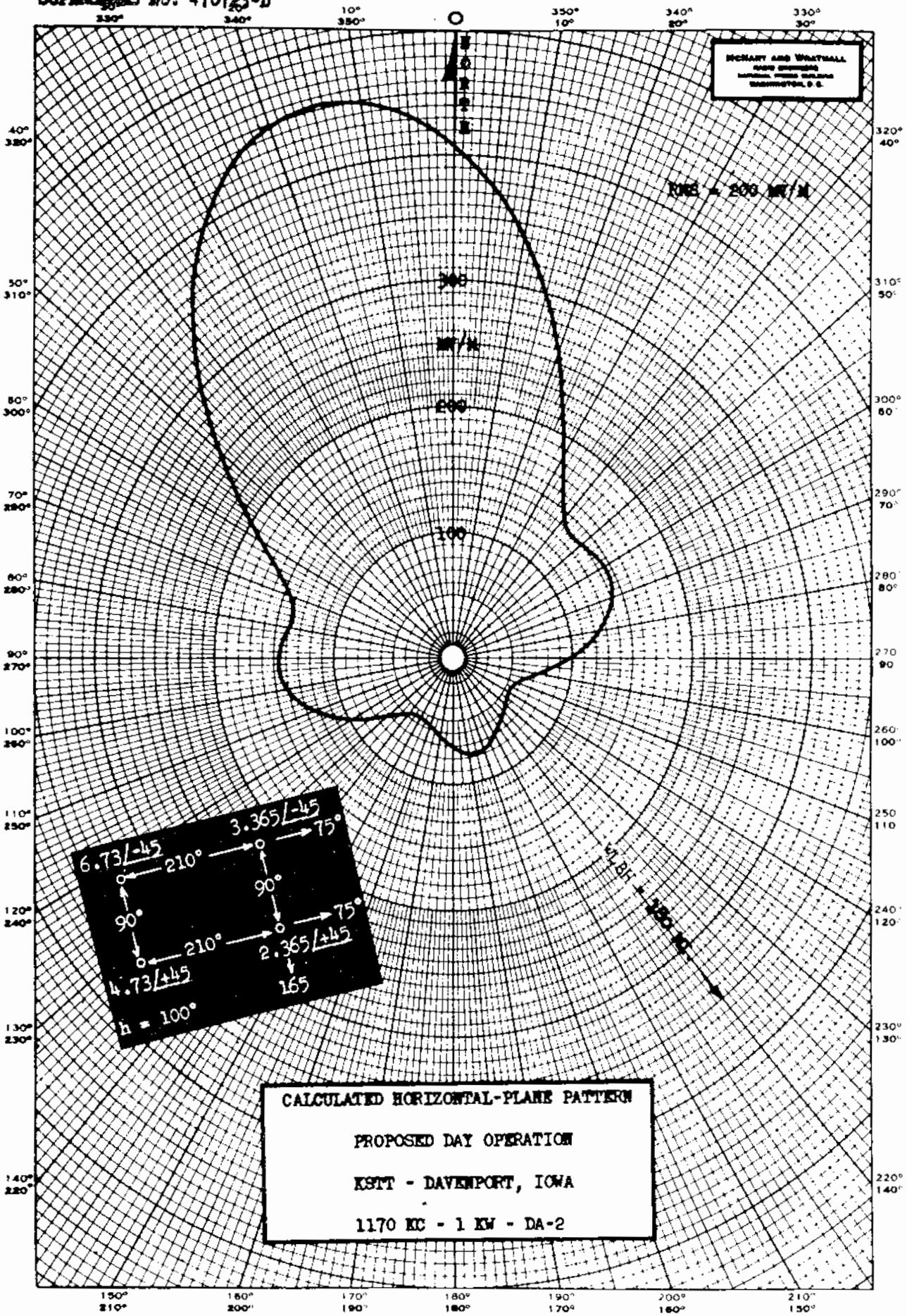
Station KPUG
Bellingham, Washington

1170 kc

3/11/48G

PATTERN NO. 480209-B
SUPERSEDES NO. 470723-D

KSTT
1-532-9 1170



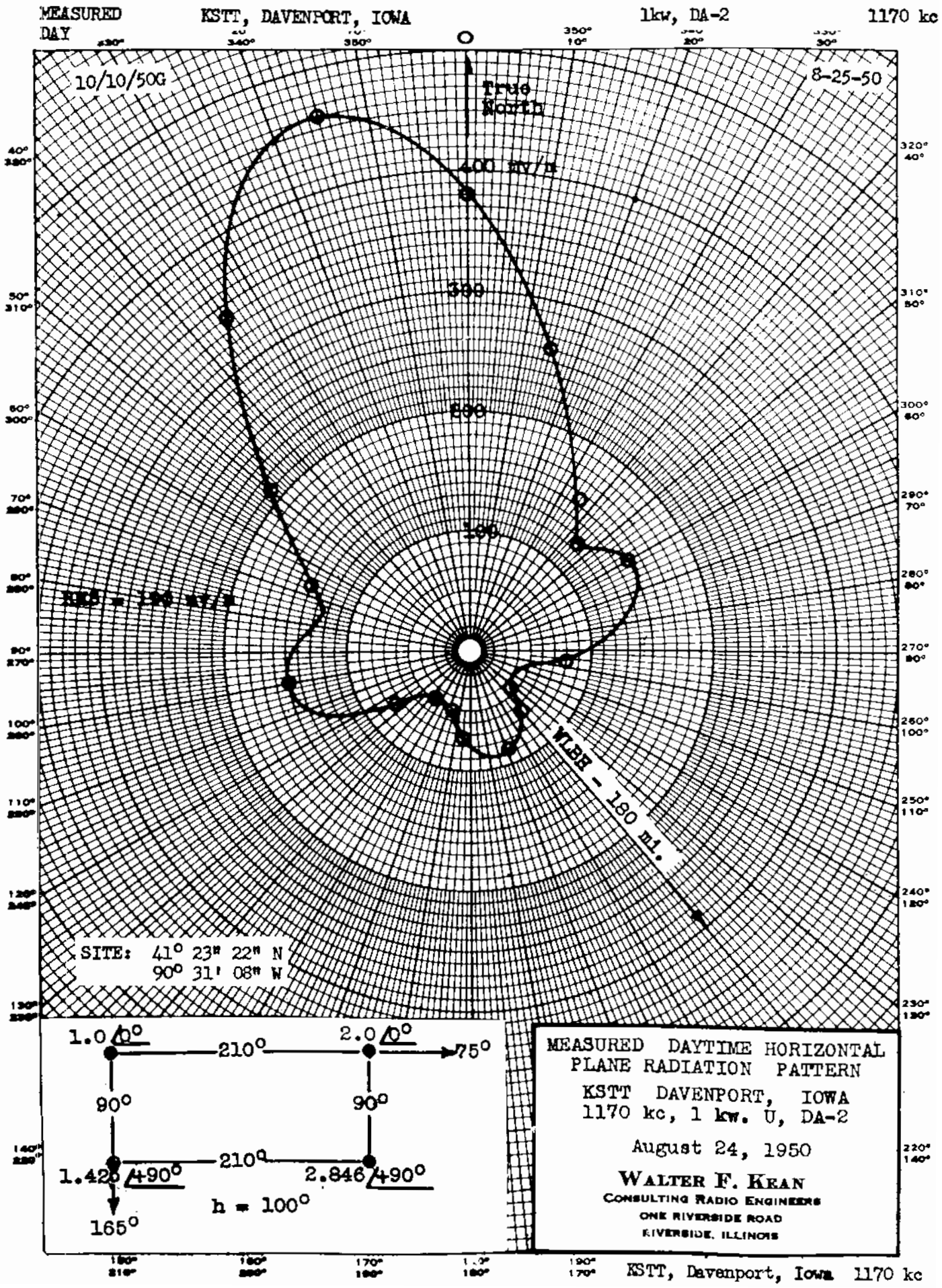
CALCULATED HORIZONTAL-PLANE PATTERN

PROPOSED DAY OPERATION

KSTT - DAVENPORT, IOWA

1170 KC - 1 KW - DA-2

KSTT

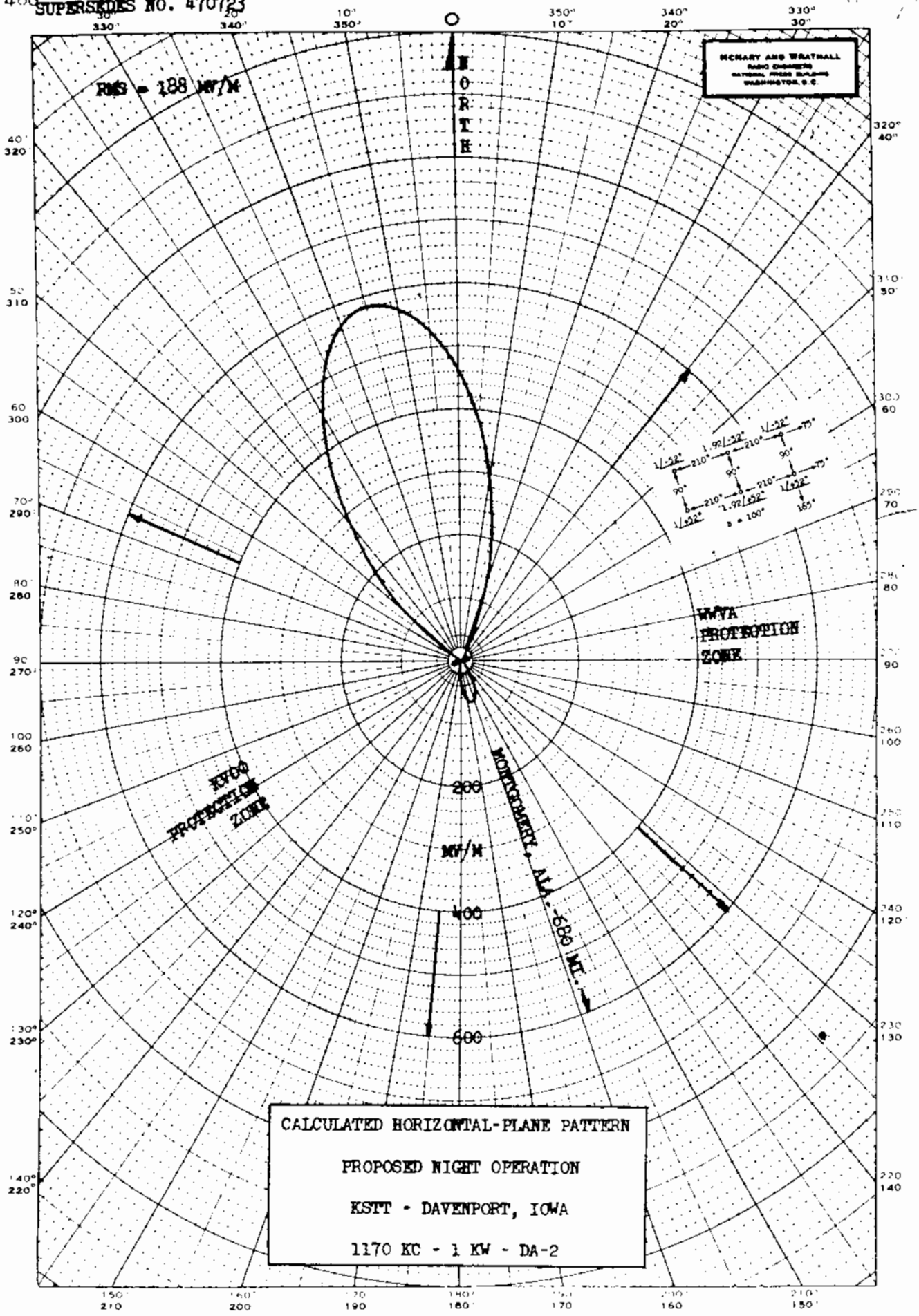


KSTT, Davenport, Iowa 1170 kc

3/11/48

PATTERN NO. 480209
SUPERSEDES NO. 470723

KSTT
1170



CALCULATED HORIZONTAL-PLANE PATTERN

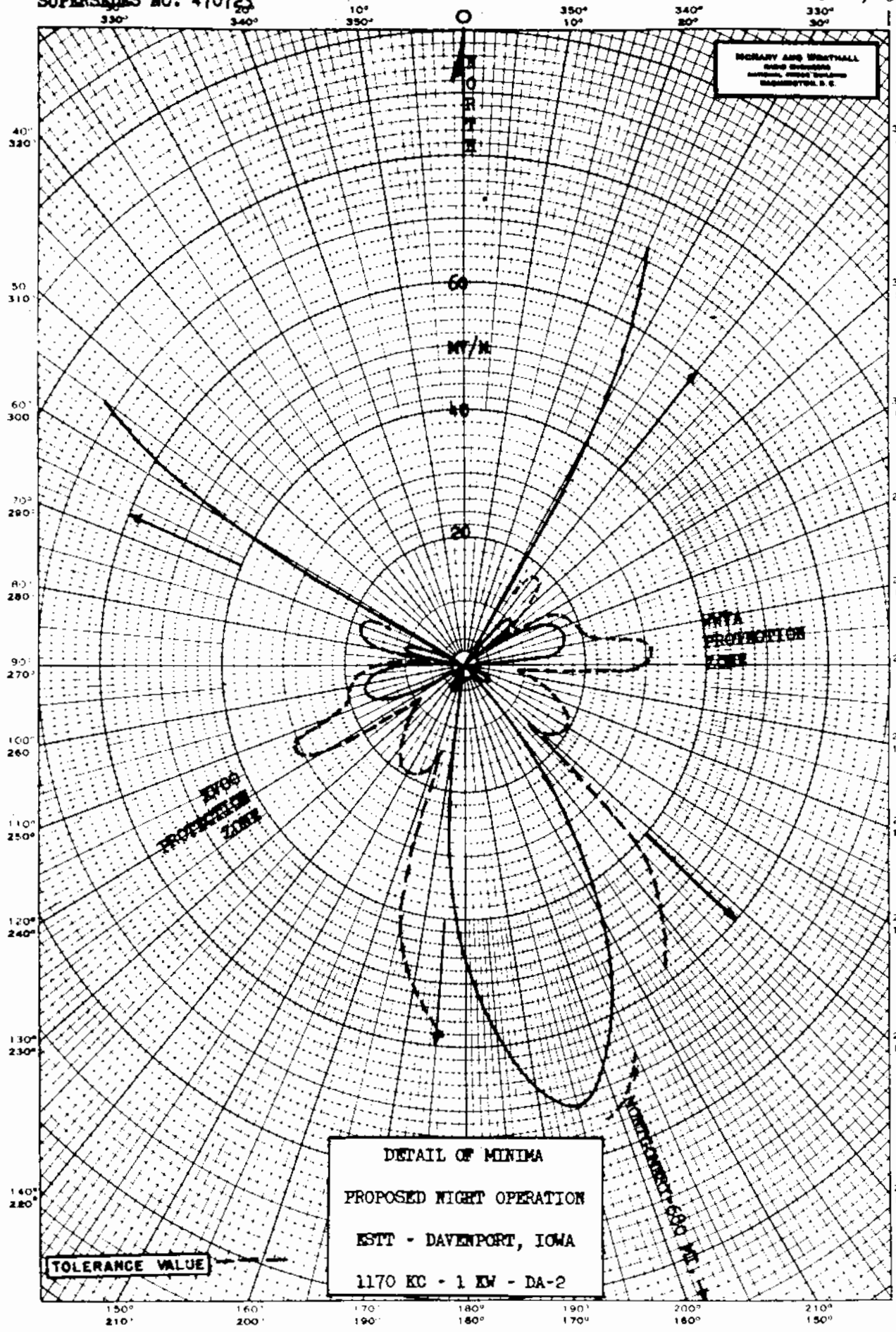
PROPOSED NIGHT OPERATION

KSTT - DAVENPORT, IOWA

1170 KC - 1 KW - DA-2

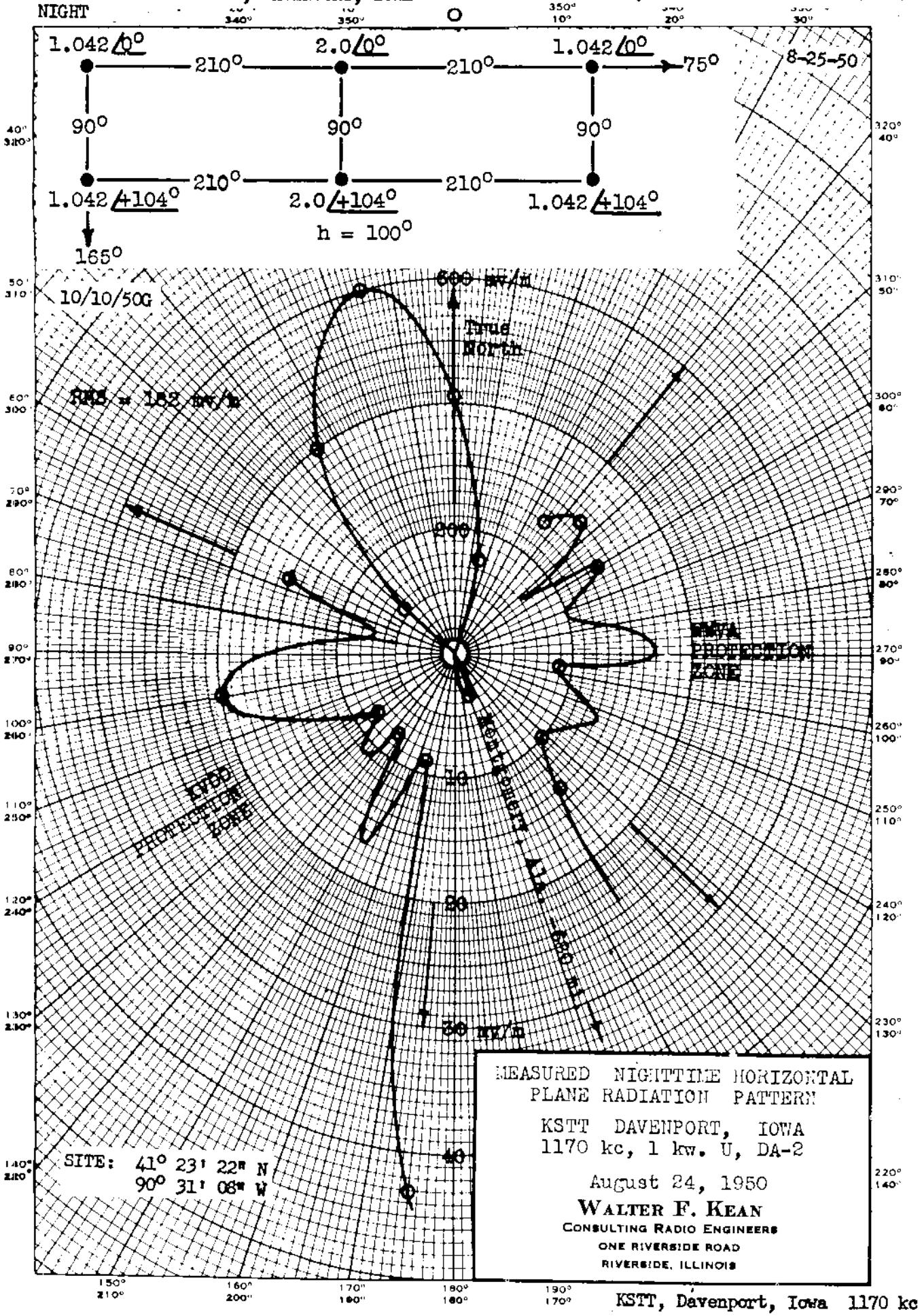
3/11/48G PATTERN NO. 480209-A
SUPERSEDES NO. 470723

KSTT
3-8309 Orig
1170



KSTT

MEASURED NIGHT — KSTT, DAVENPORT, IOWA — 1kw, DA-2 — 1170 kc

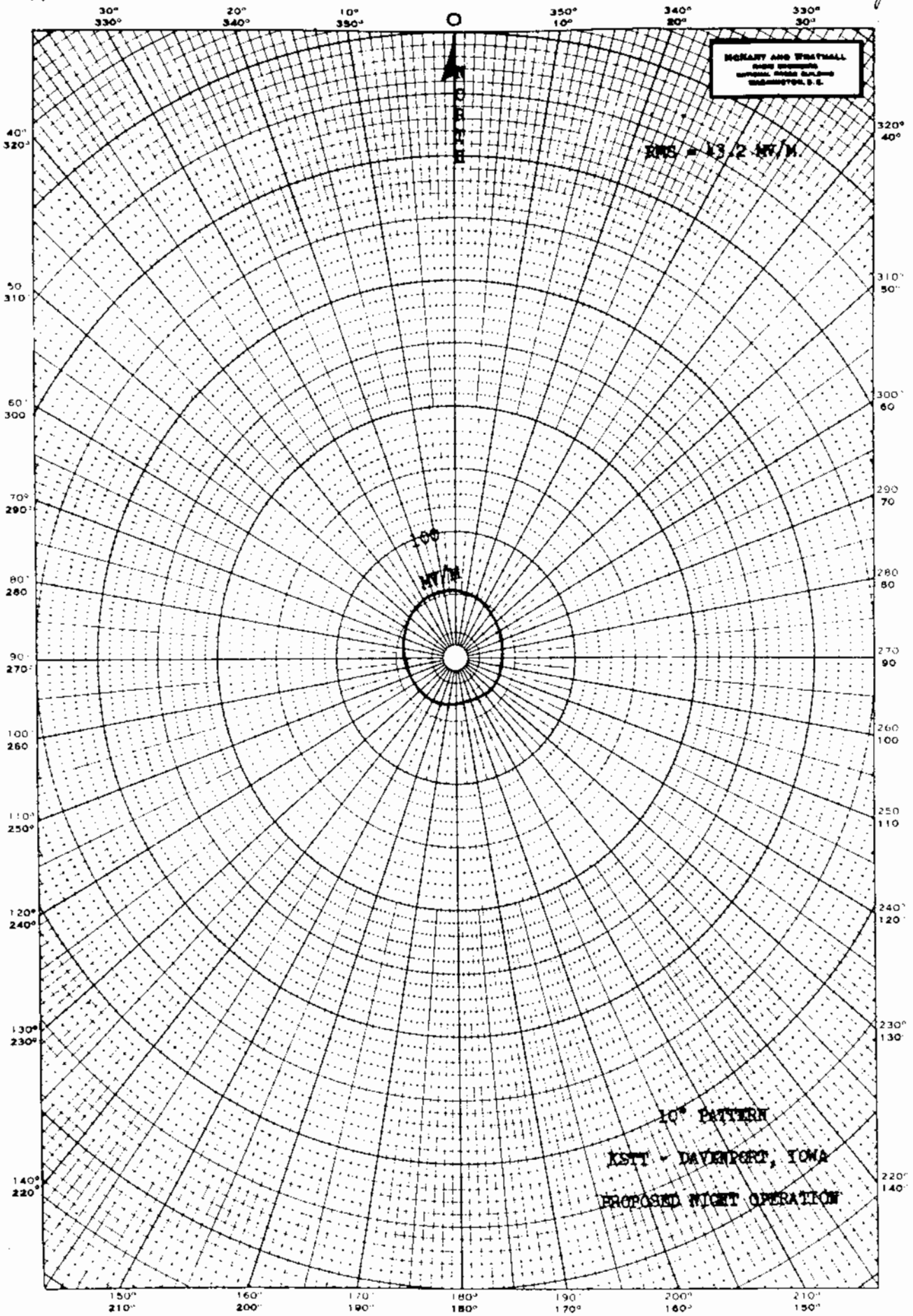


KSTT, Davenport, Iowa 1170 kc

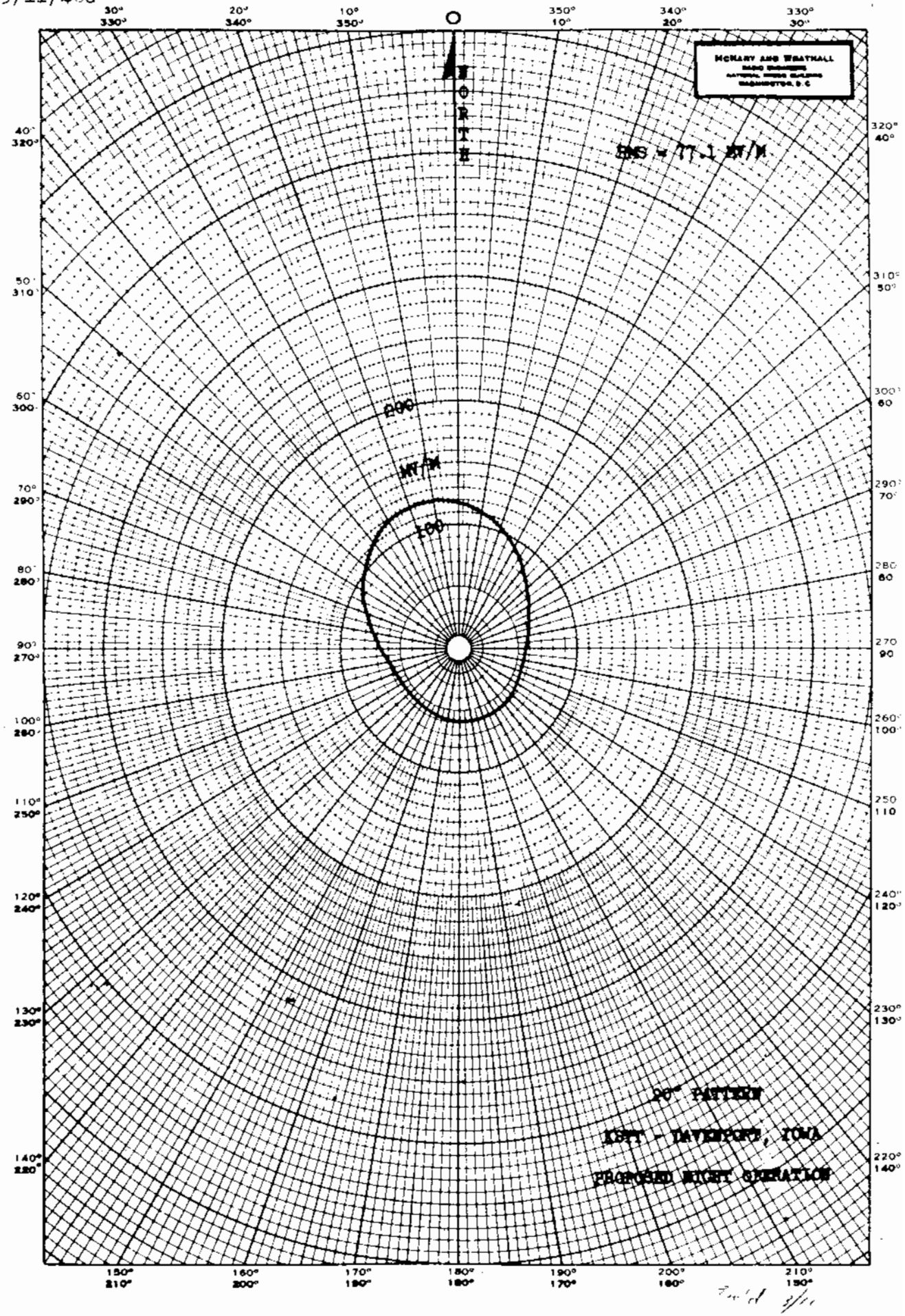
KSTT

3/11.48G

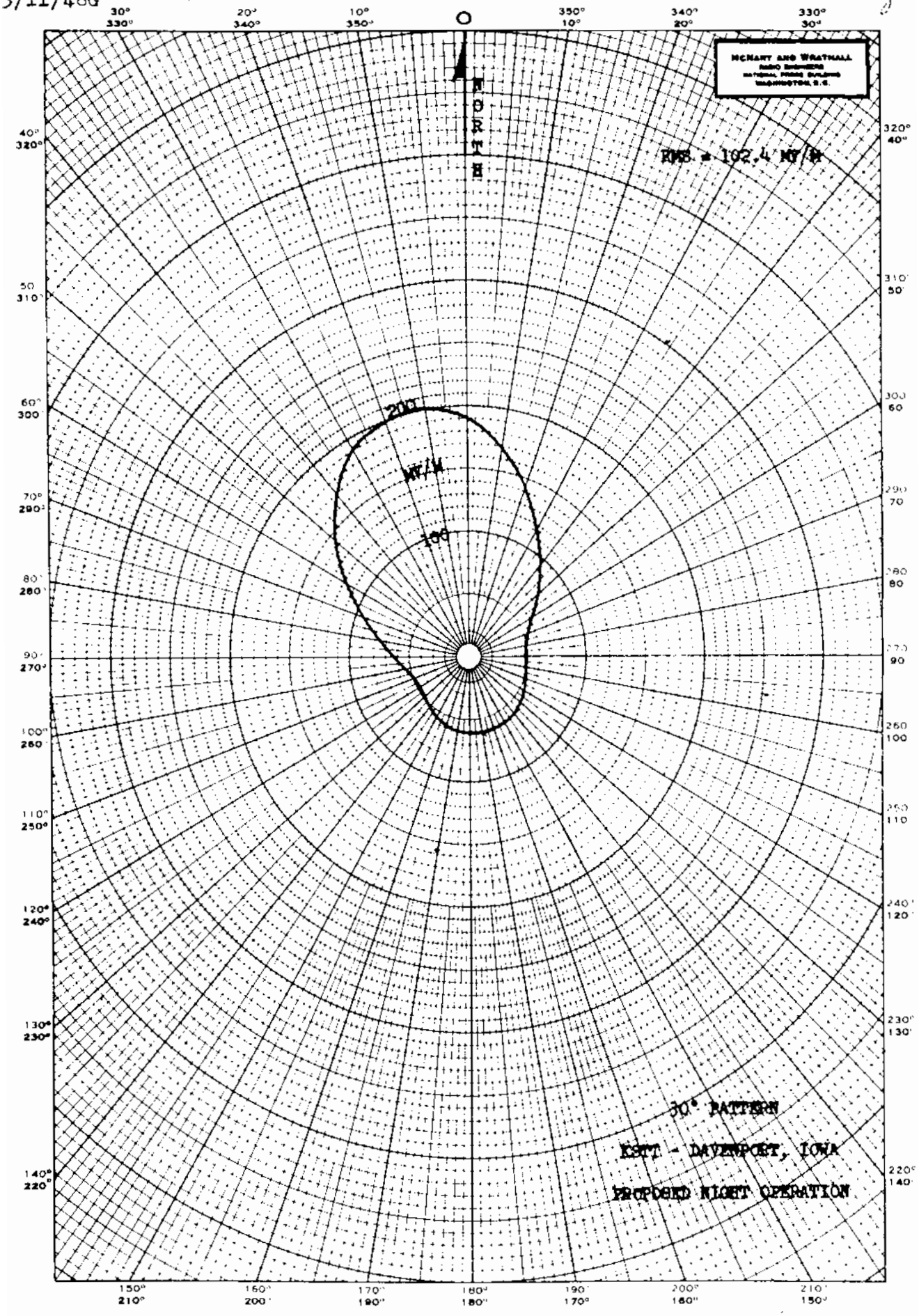
11-8309 ay.



3/11/48G

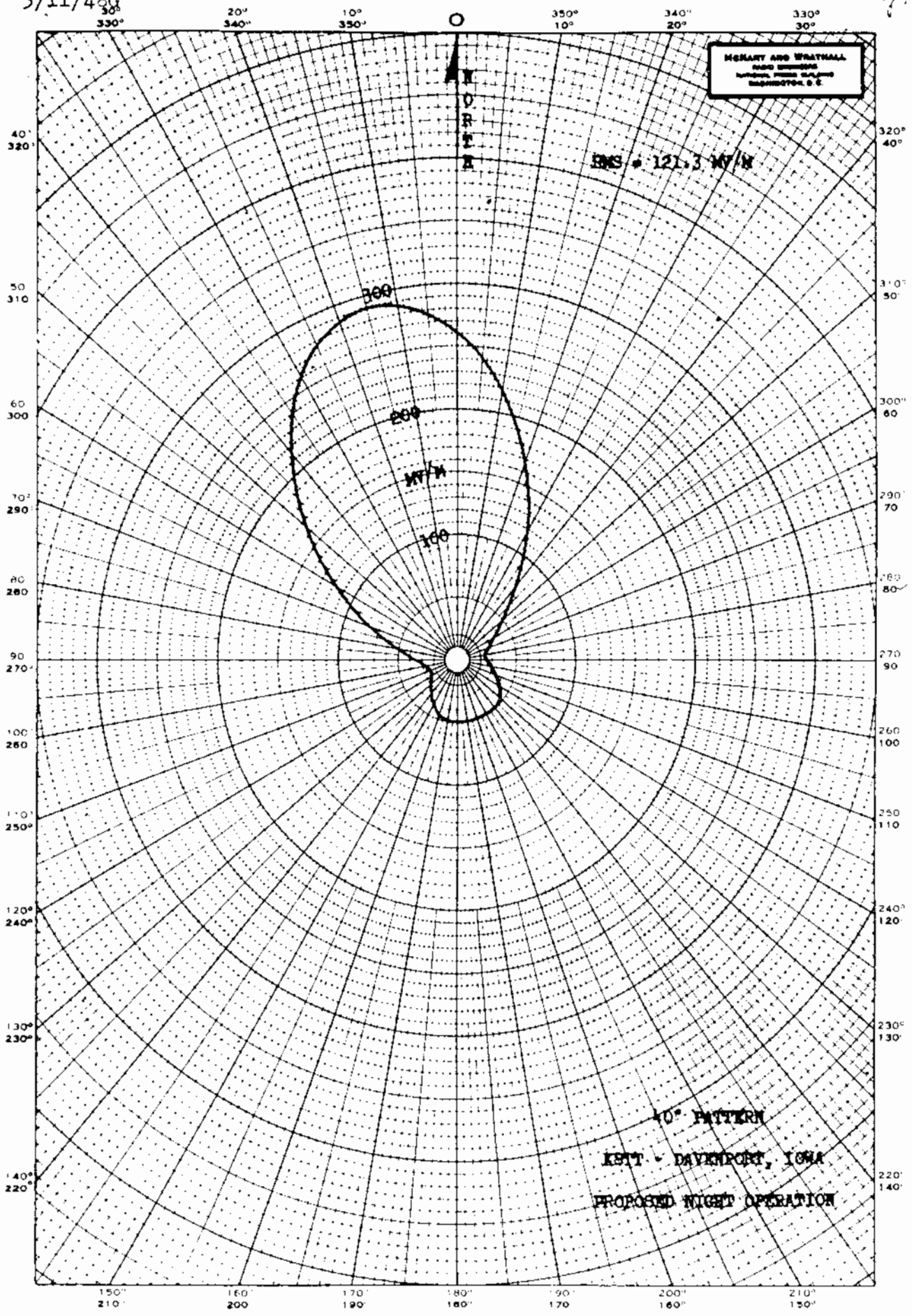

McNARY AND WEATHALL
RMS = 77.1 MV/M
200
MV/M
100
20° PATTERN
KSTT - DAVENPORT, IOWA
PROPOSED NIGHT OPERATION

3/11/48G


McNARY AND WRATHALL
RADIO ENGINEERS
NATIONAL PRESS BUILDING
WASHINGTON, D.C.
NORTH
RMS = 102.4 MV/M
200
MV/M
100
30° PATTERN
KSTT - DAVENPORT, IOWA
PROPOSED NIGHT OPERATION

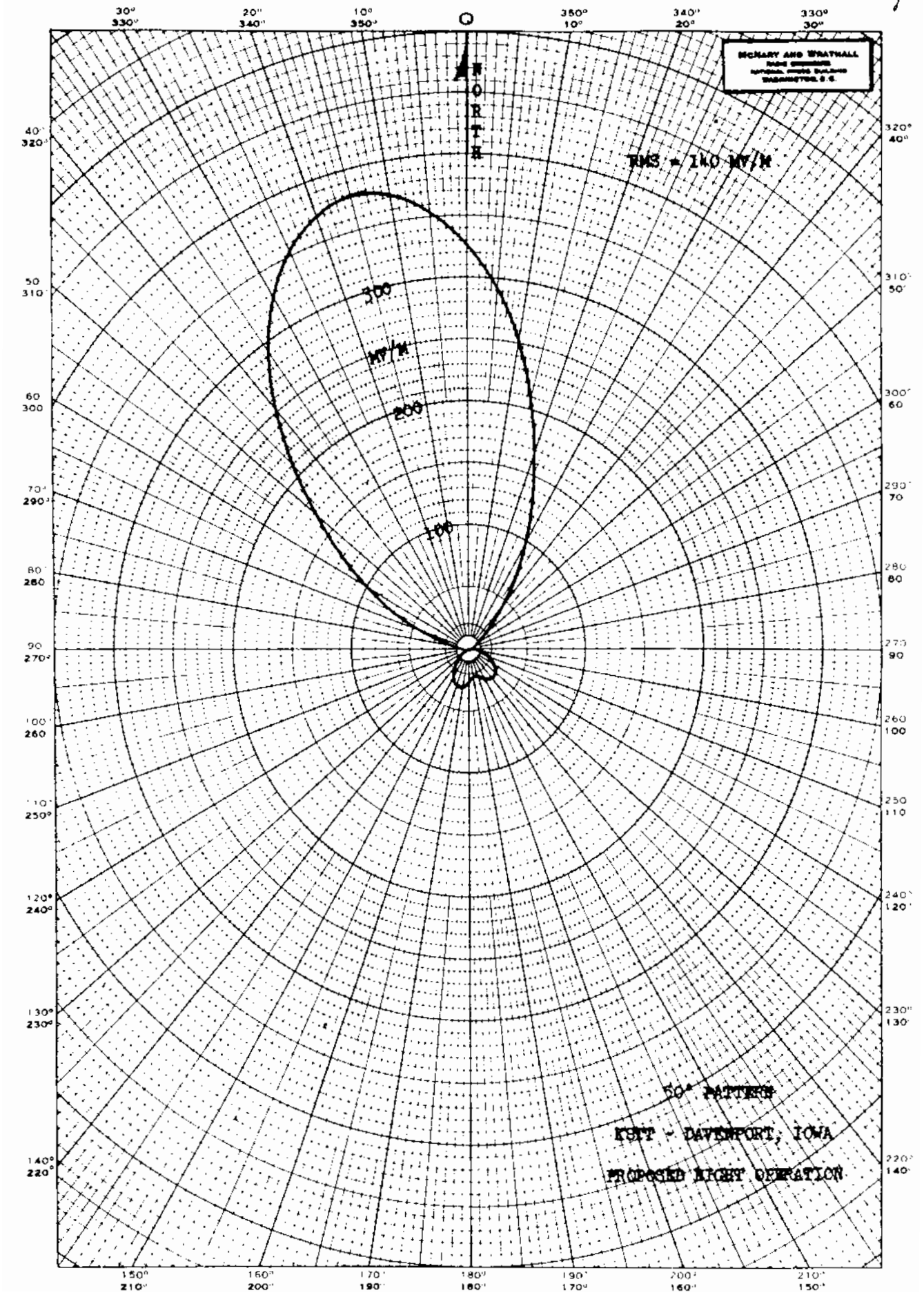
3/11/48G

B-8309 Bx.

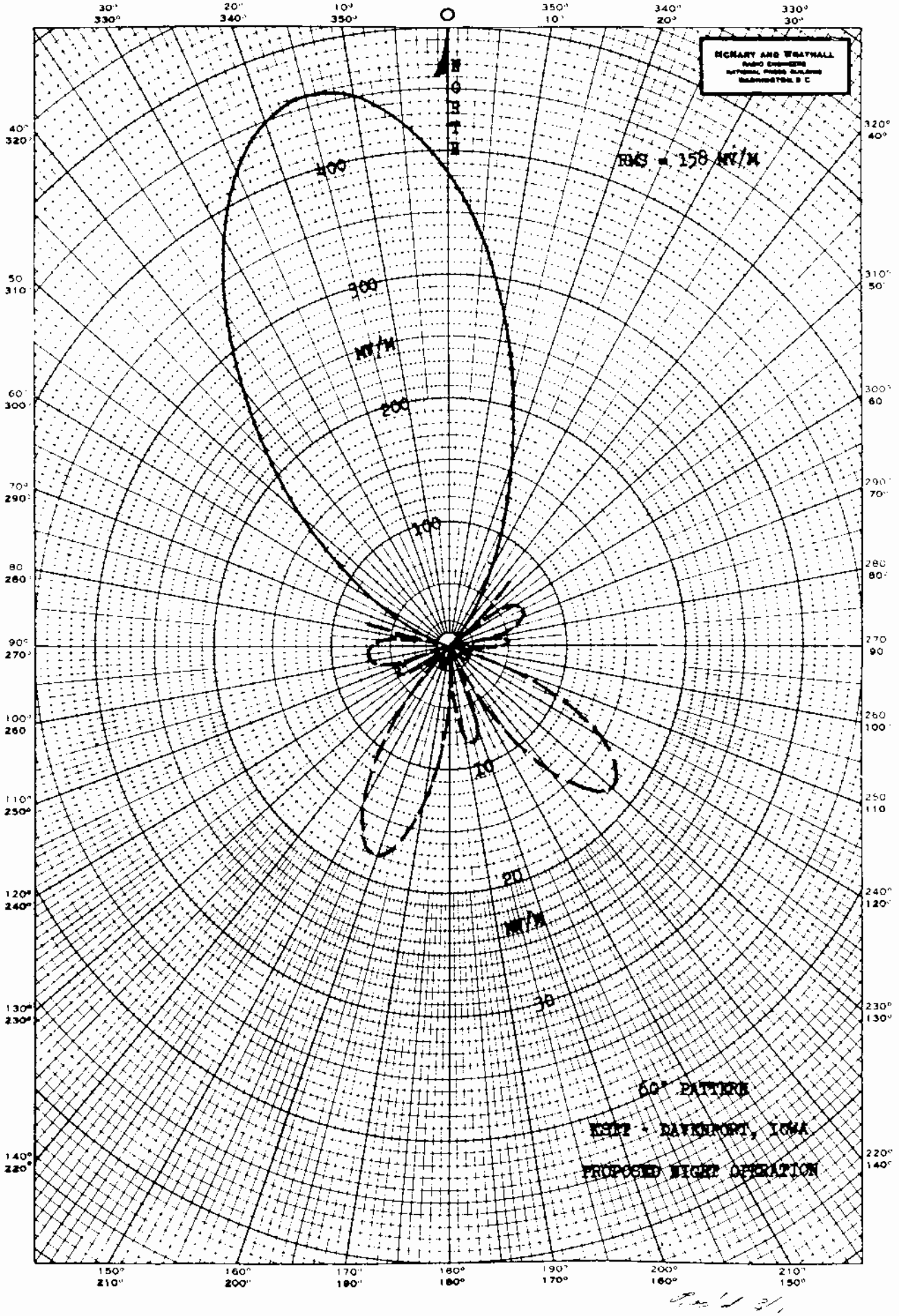


3/11/48G

P-8309 adj

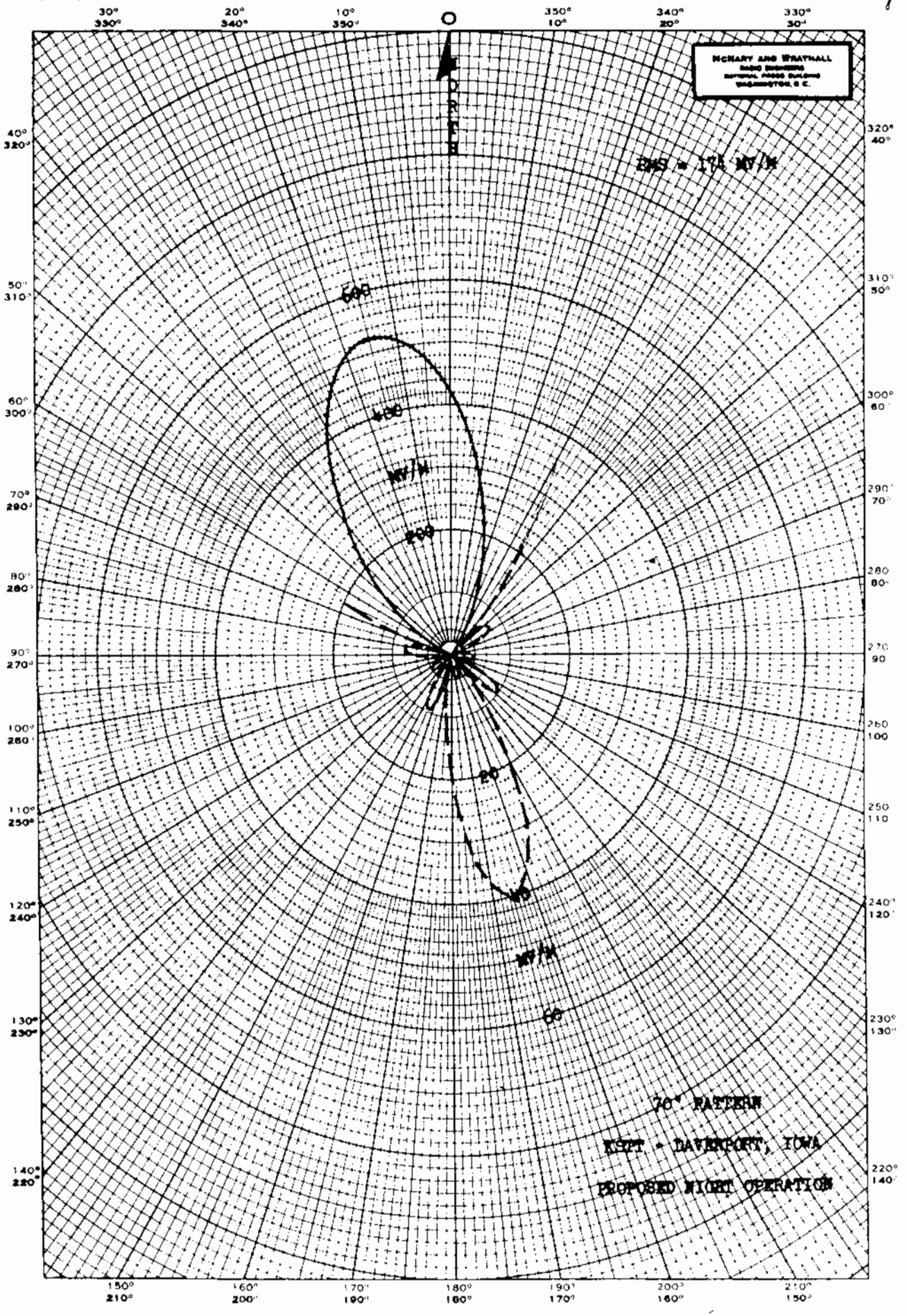


3/11/48


HENRY AND WEATHALL
RADIO ENGINEERS
NATIONAL PRESS BUILDING
WASHINGTON, D. C.
NORTH
RMS = 158 MV/M
100
200
MV/M
100
20
20
MV/M
30
60° PATTERN
KSTT - DAVENPORT, IOWA
PROPOSED NIGHT OPERATION

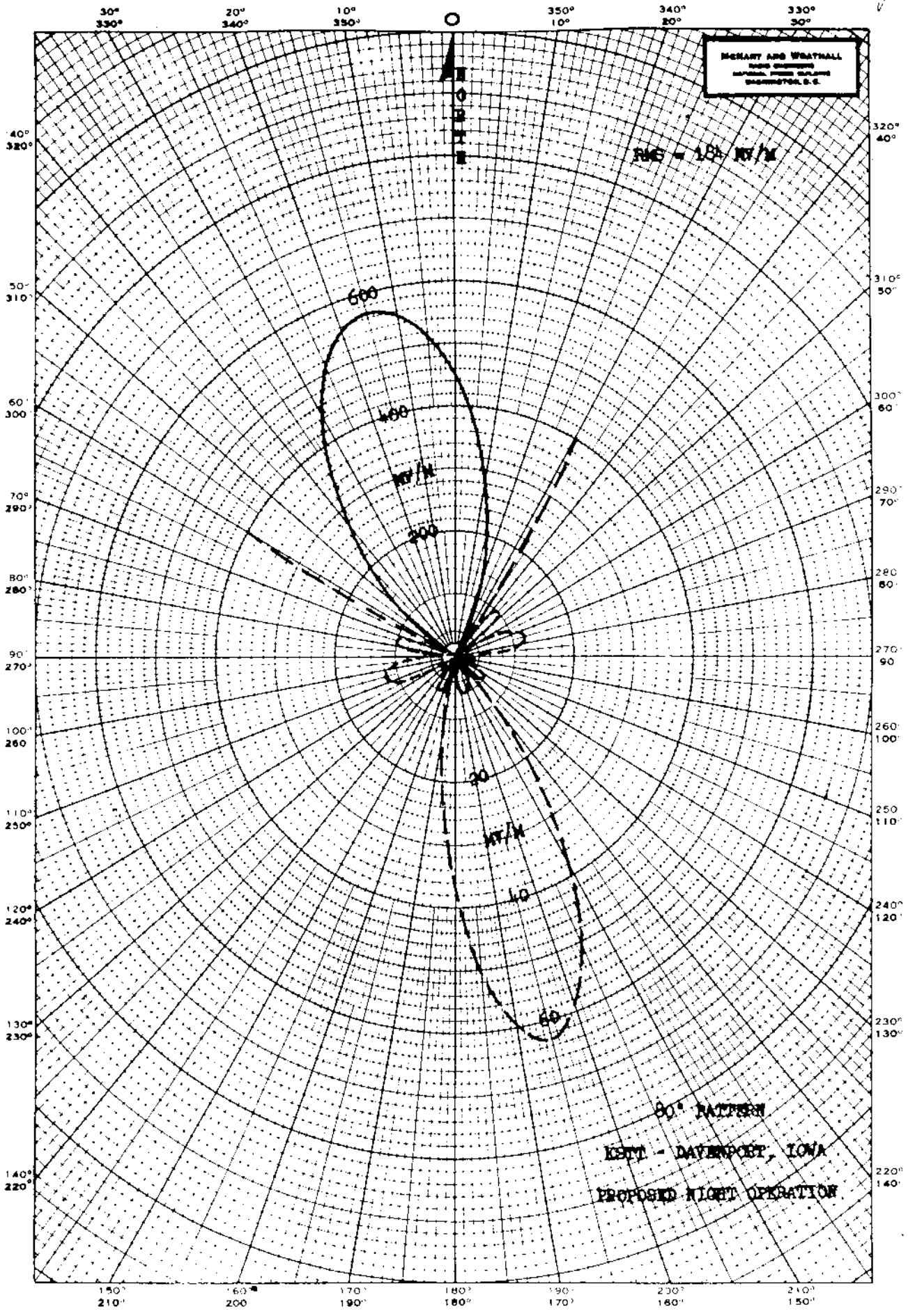
3/11/48G

5-8309 Orig.

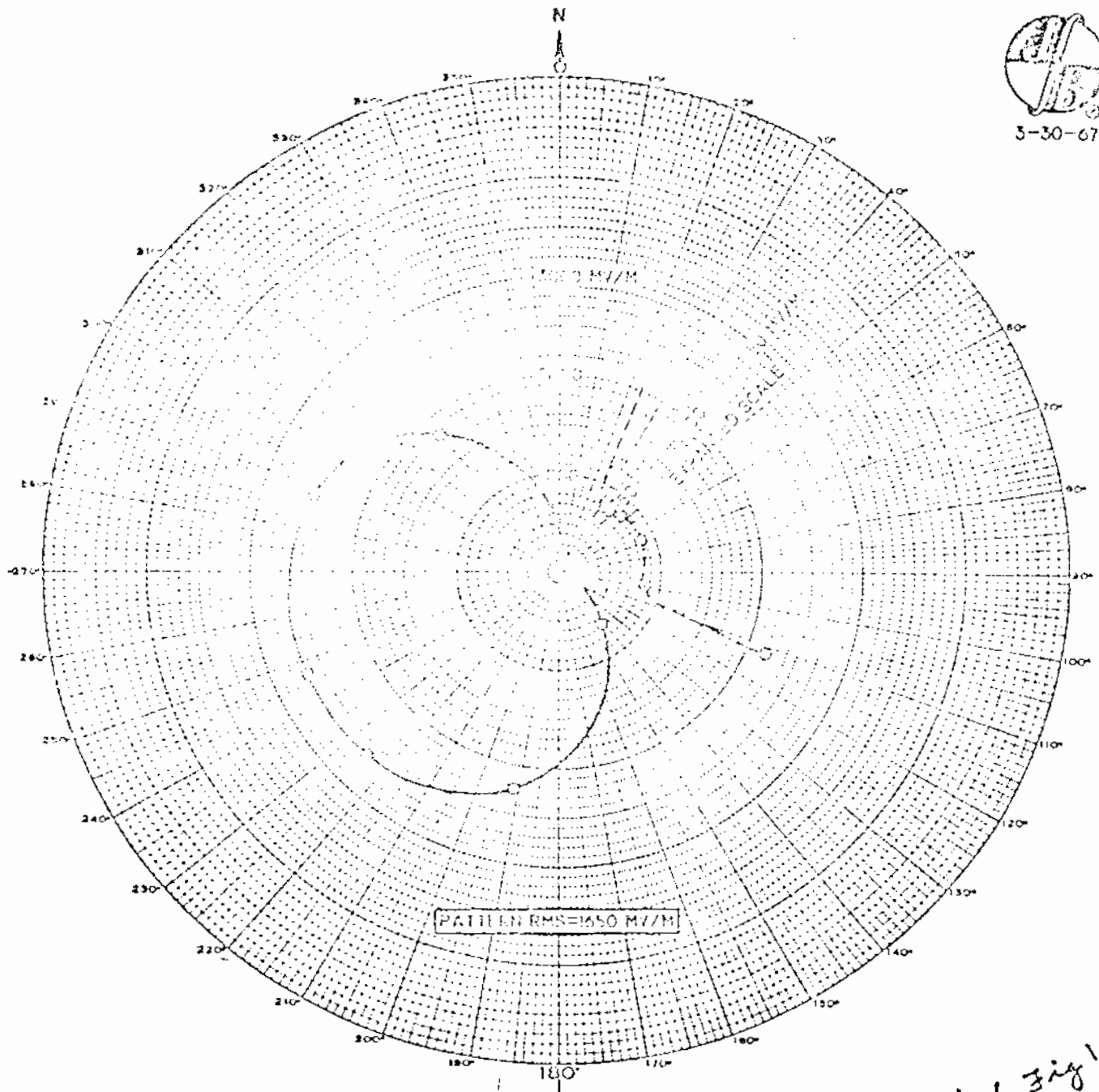


3/11/48G

V-8309 Orig



KVOO



5-30-67

N 67.5° E

90° #2

90° #1

#3

	TOWER #1	TOWER #2	TOWER #3
THEORETICAL:	1.0∠0°	0.5∠96°	0.5∠-96°
OPERATING:	1.0∠0°	0.51∠+100°	0.51∠-103°

COORDINATES: N 36° 08' 49" W 95° 48' 27"

← not in agreement with Fig 1, p ii

FIG. 10
MEASURED DIRECTIONAL HORIZONTAL RADIATION PATTERN

KVOO 1170 KC 50 KW DA-N

SOUTHWESTERN SALES CORP.
TULSA, OKLAHOMA

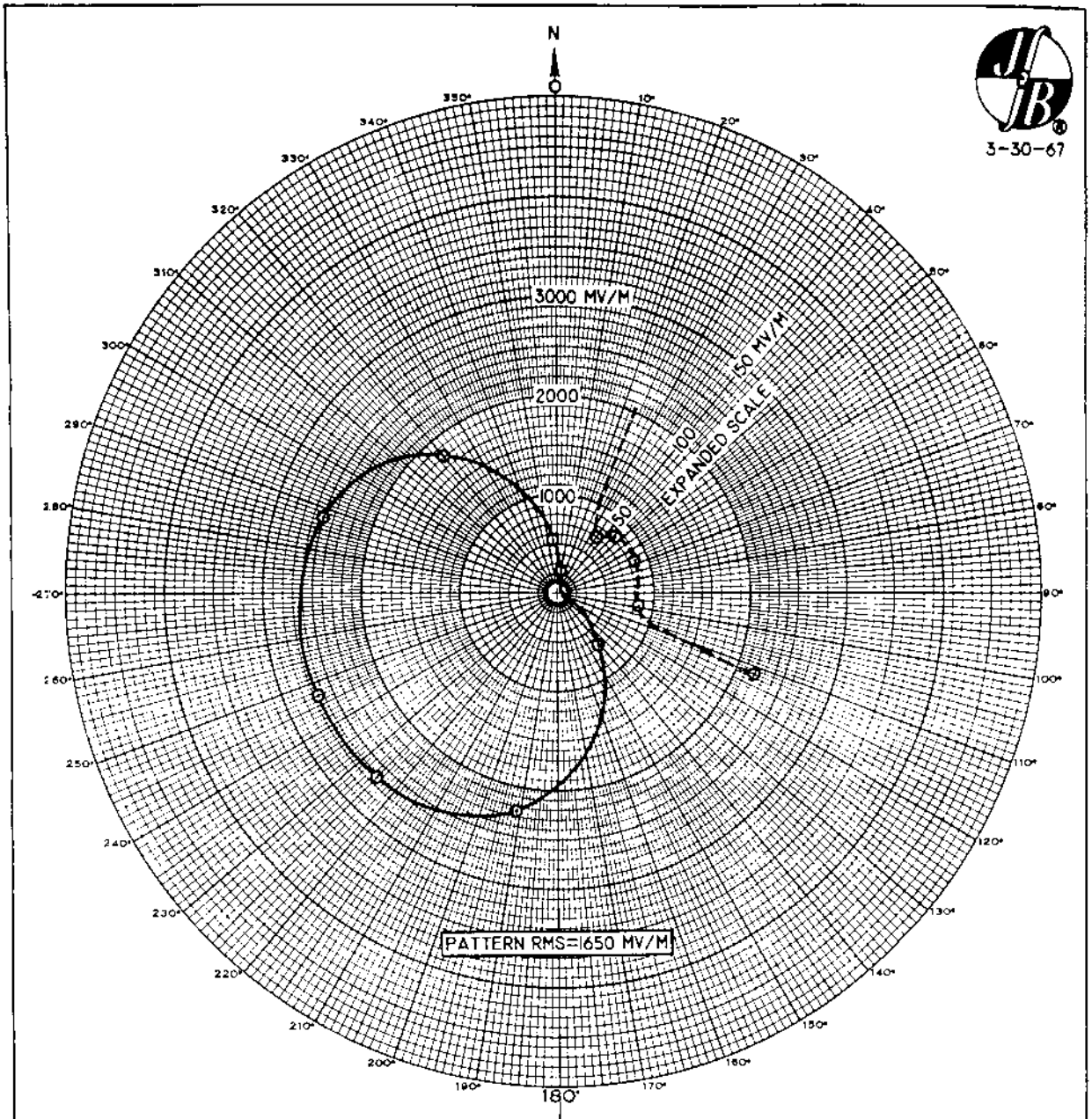
BZ-6425

KVOO

Measured Night
(6-28-67ct)

Station KVOO
Tulsa, Oklahoma

50kw,DA-N,U
1170 kc



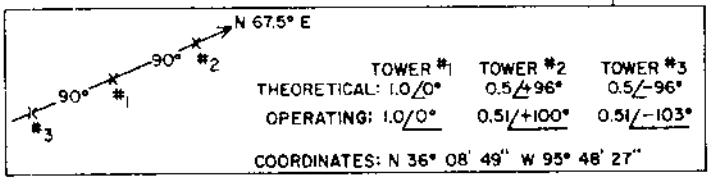


FIG. 10
MEASURED DIRECTIONAL HORIZONTAL RADIATION PATTERN

KVOO 1170 KC 50 KW DA-N

SOUTHWESTERN SALES CORP
TULSA, OKLAHOMA

FCC File No.BZ-6425
Accepted 6-6-67

Station KVOO
Tula, Oklahoma

1170 kc

KVOO

Measured Non-DA
(6-28-67ct)

Station KVOO
Tulsa, Oklahoma

50kw, DA-N, U
1170 kc

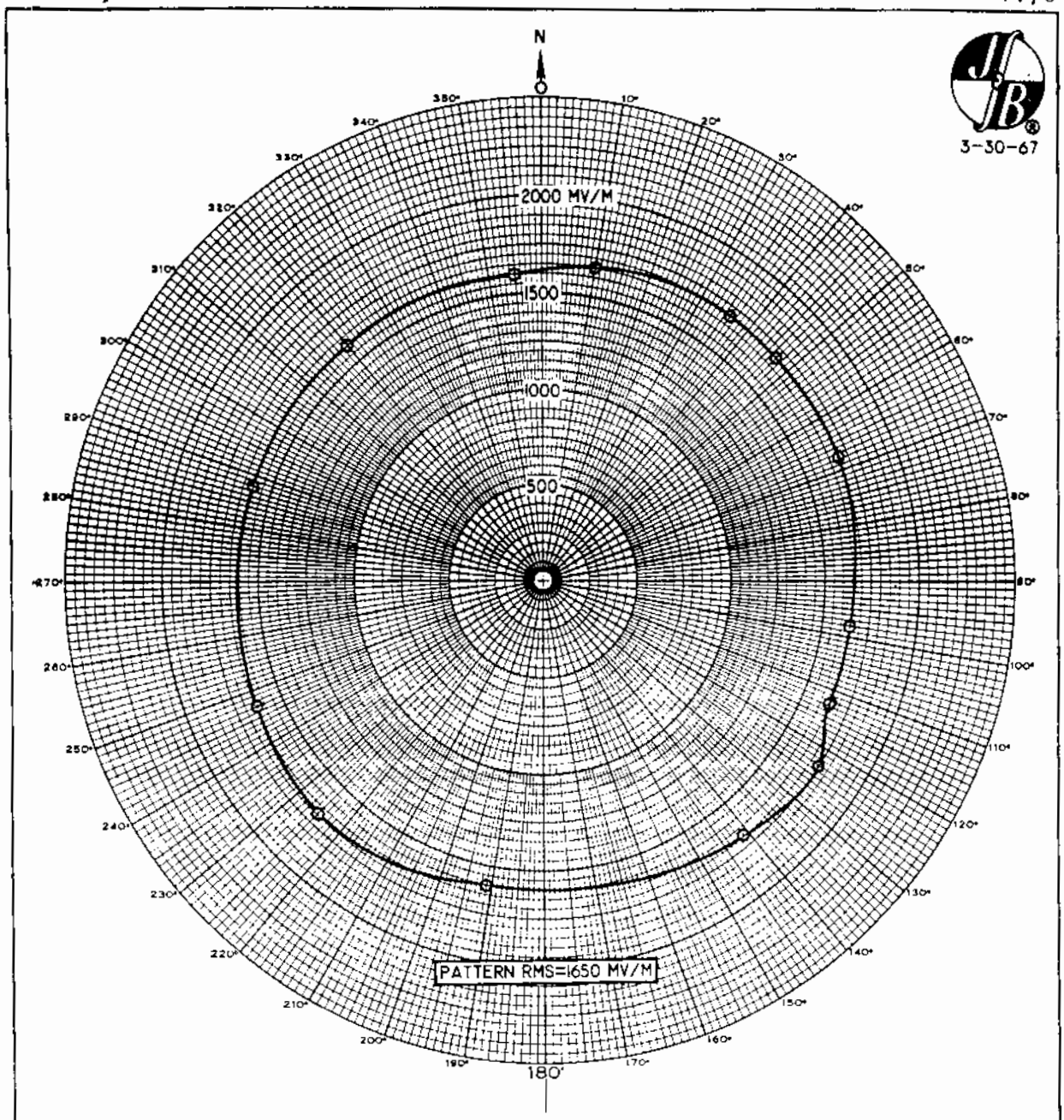


FIG. 9
MEASURED NON-DIRECTIONAL HORIZONTAL RADIATION PATTERN

KVOO 1170KC 50KW DA-N

SOUTHWESTERN SALES CORP
TULSA, OKLAHOMA

FCC File No. BZ-6425
Accepted 6-6-67

Station KVOO
Tulsa, Oklahoma

1170 kc

36-08-49
95 48 27

9/8/48 G

ND 249/kw
1760 M/m

KVOO
1170

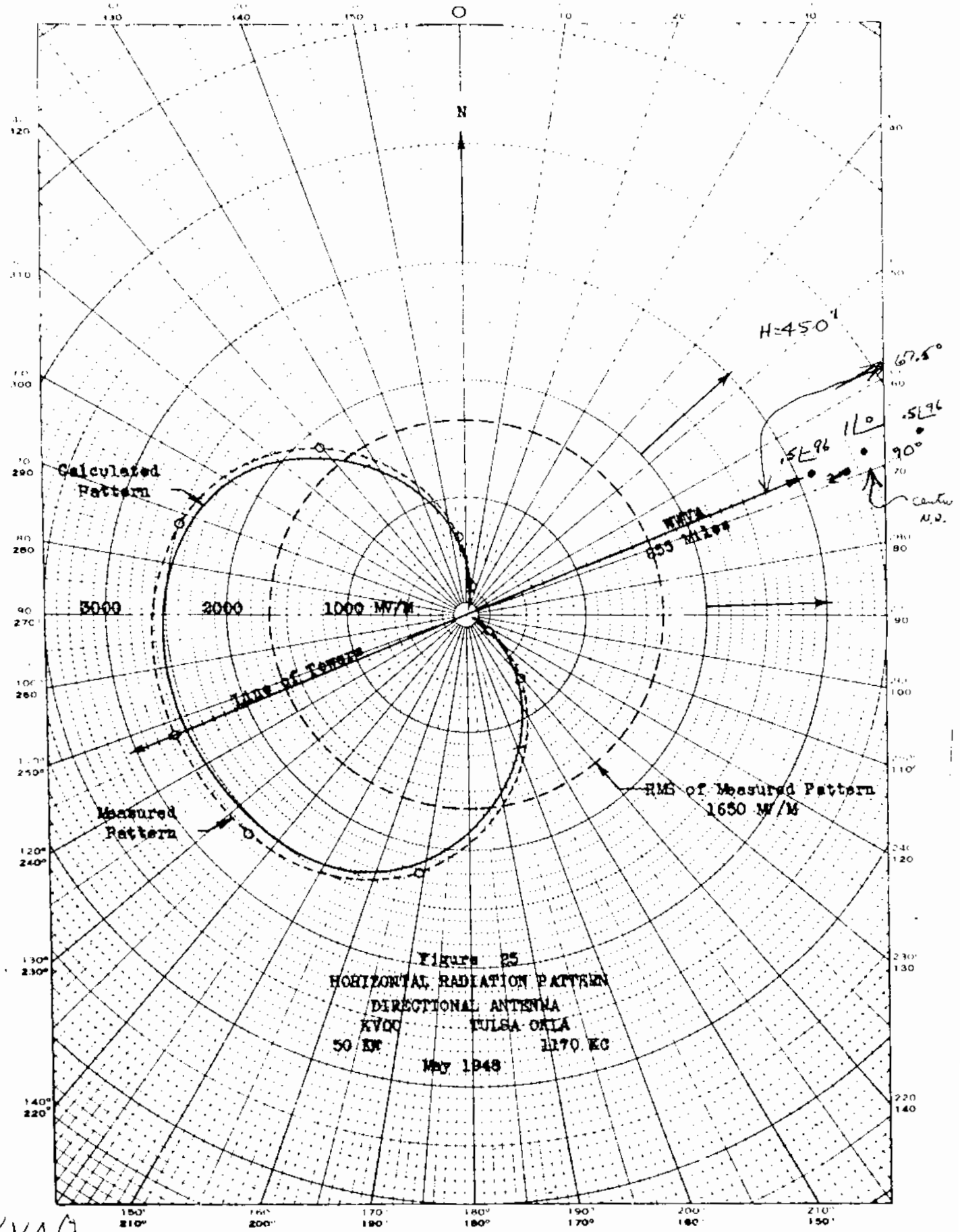


Figure 25
HORIZONTAL RADIATION PATTERN
DIRECTIONAL ANTENNA
KVOO TULSA OKLA
50 KW 1170 KC
May 1948

KVOO

KVOO
1170

9/8/48 C

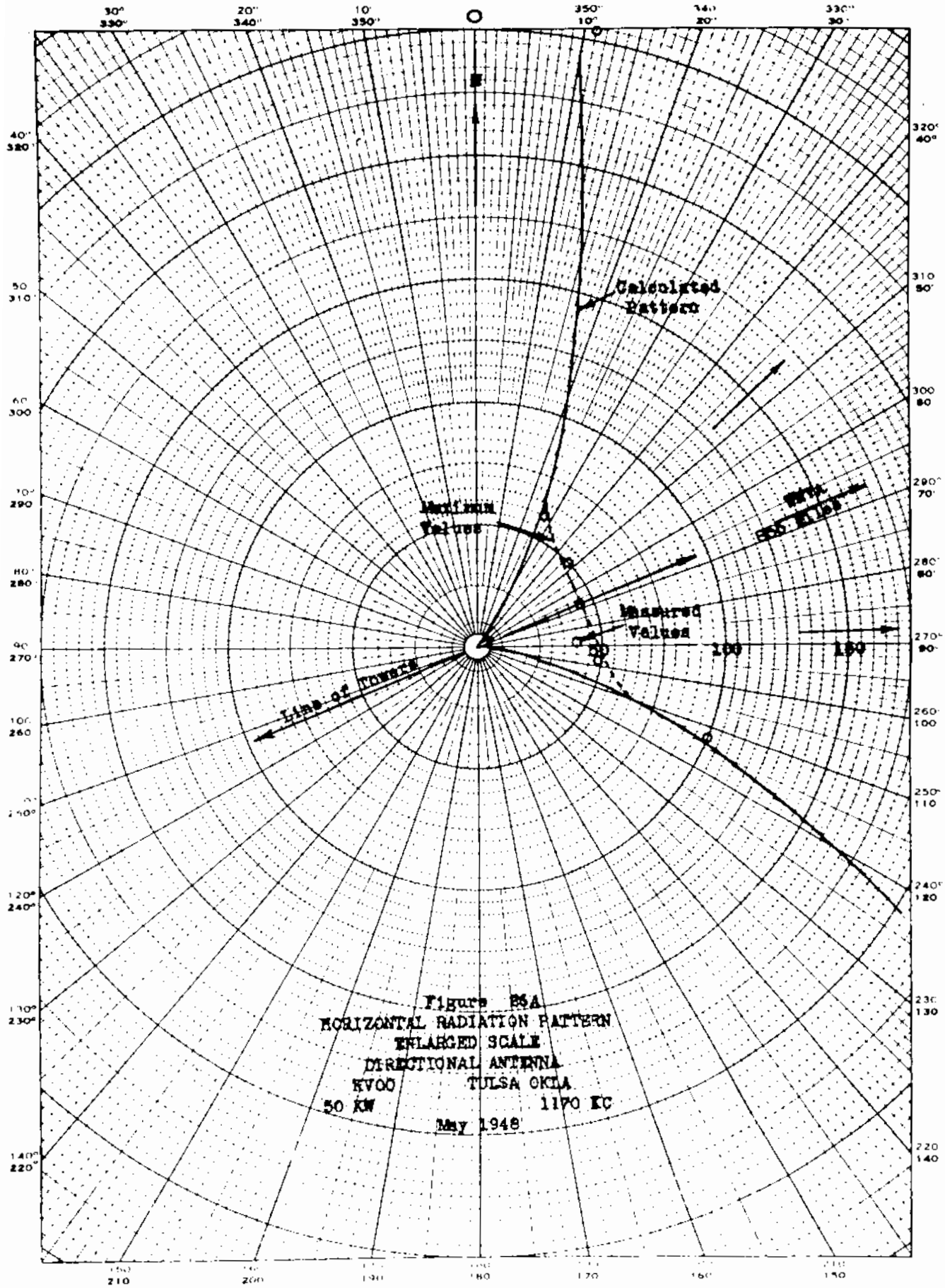


Figure 89A
HORIZONTAL RADIATION PATTERN
ENLARGED SCALE
DIRECTIONAL ANTENNA
KVOO TULSA OKLA.
50 KW 1170 KC
May 1948

BP 17505
GR (2-12-70) Appl for CP for new station

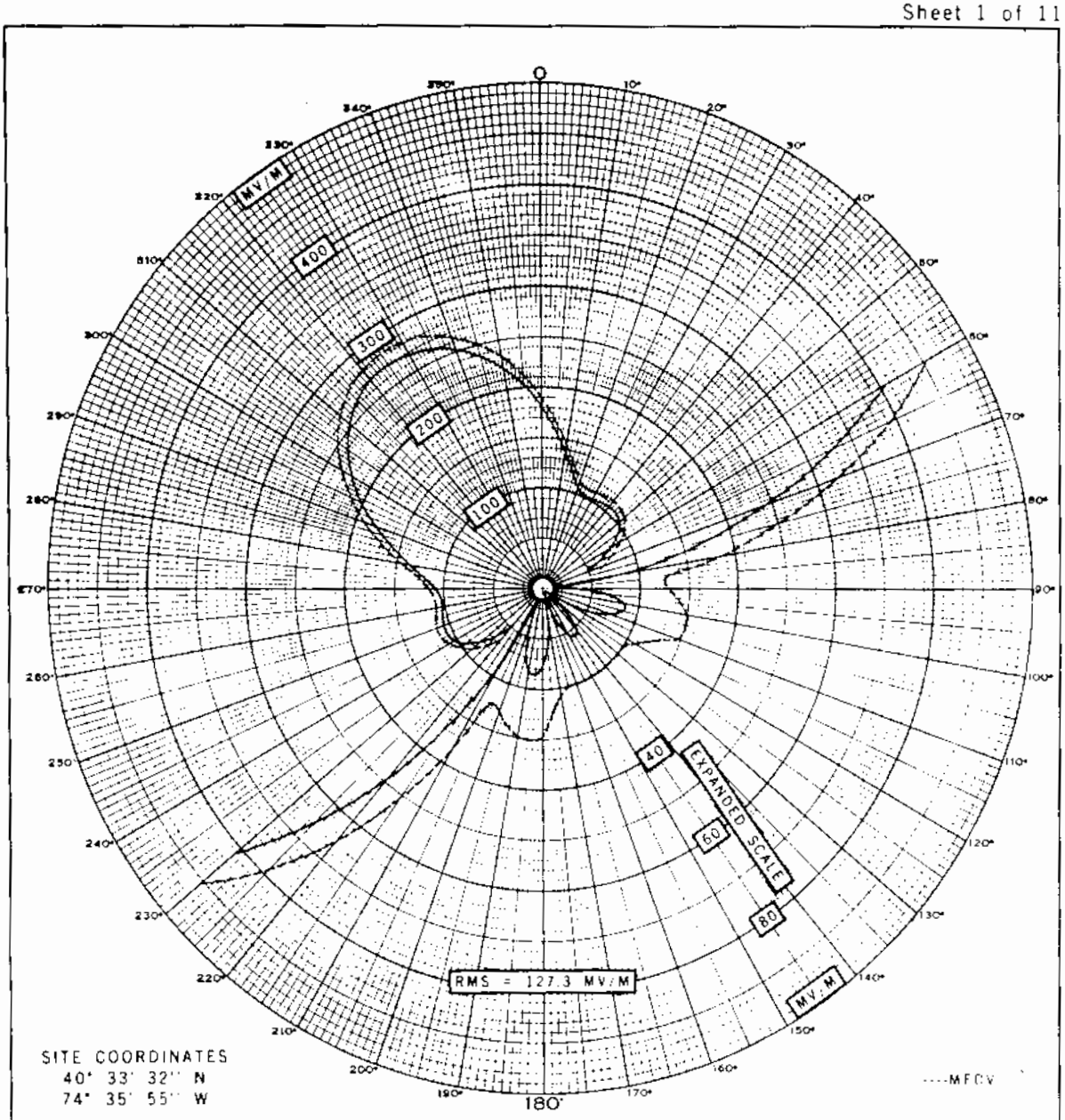
WBRW

Proposed Day
(6-28-67ct)

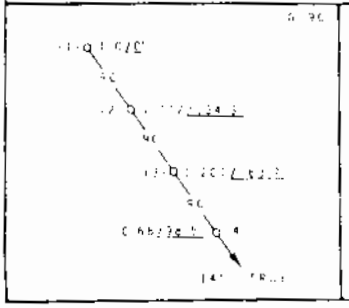
New; Somerset Valley Bcstg Co.
Somerville, New Jersey

500w, DA-D, D
1170 kc

Figure 7
Sheet 1 of 11



CALCULATED HORIZONTAL PLANE RADIATION PATTERN



SOMERSET VALLEY
BROADCASTING COMPANY
SOMERVILLE, NEW JERSEY

1170 KHZ
0.5 KW D DA
PATTERN No. 670505

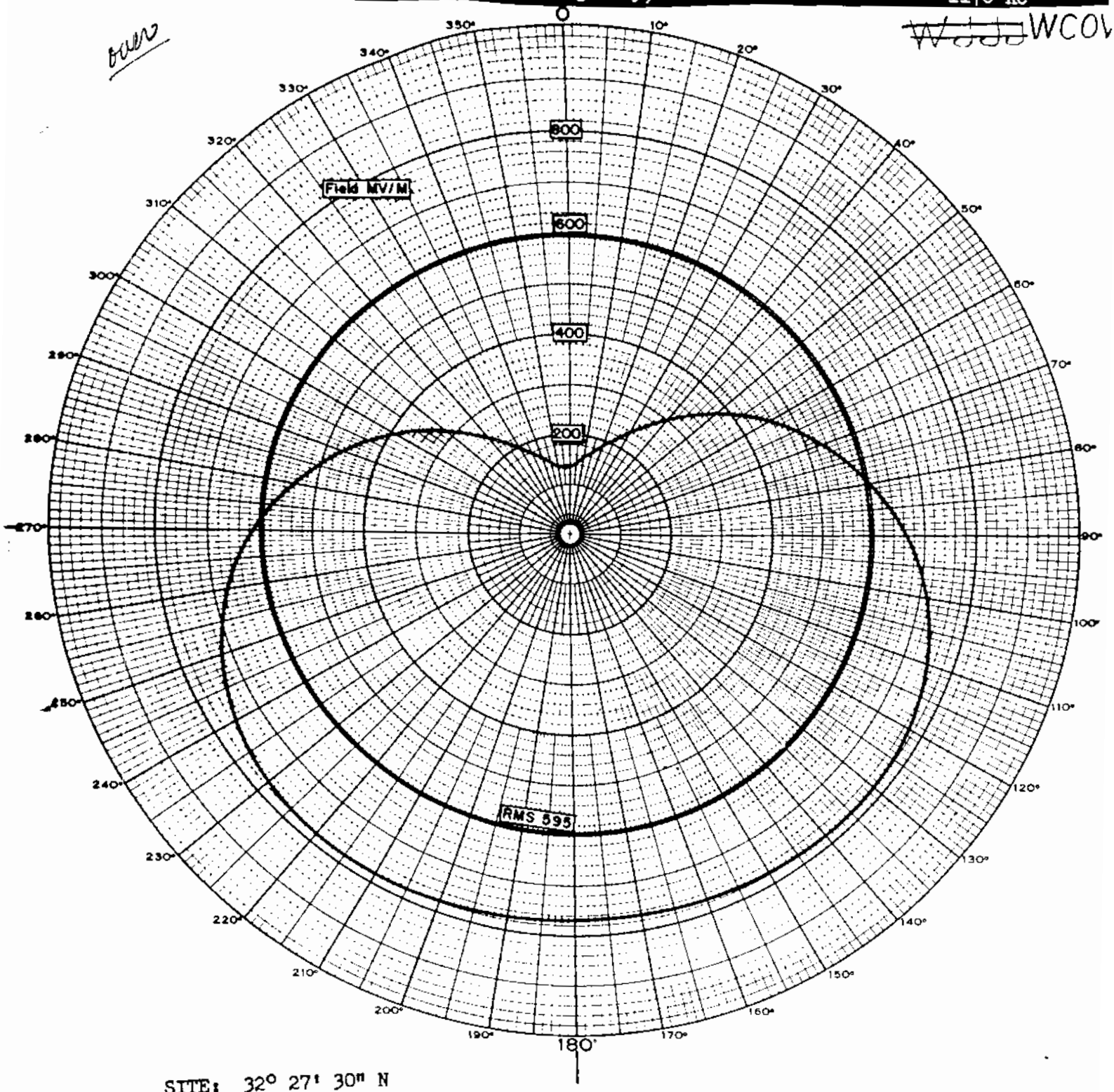
FCC File No. BP-17505
Accepted 6-13-67 Amended

New; Somerset Valley Bcstg Co.
Somerville, New Jersey

1170 kc

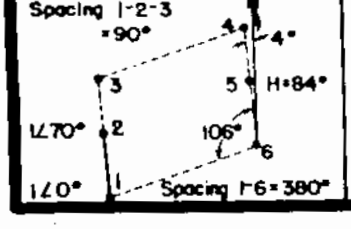
PROPOSED DAY | Station WCOV, Montgomery, Alabama | 1kw, 10kw-LS, DA-2, U, 1170 KC

~~WJDB~~ WCOV



SITE: 32° 27' 30" N
86° 17' 27" W

SOUTHERN BROADCASTING CO.
MONTGOMERY, ALABAMA



PROPOSED

DIRECTIONAL ANTENNA PATTERN

Figure 3
Series 4703270

1170 KC

10000 WATTS

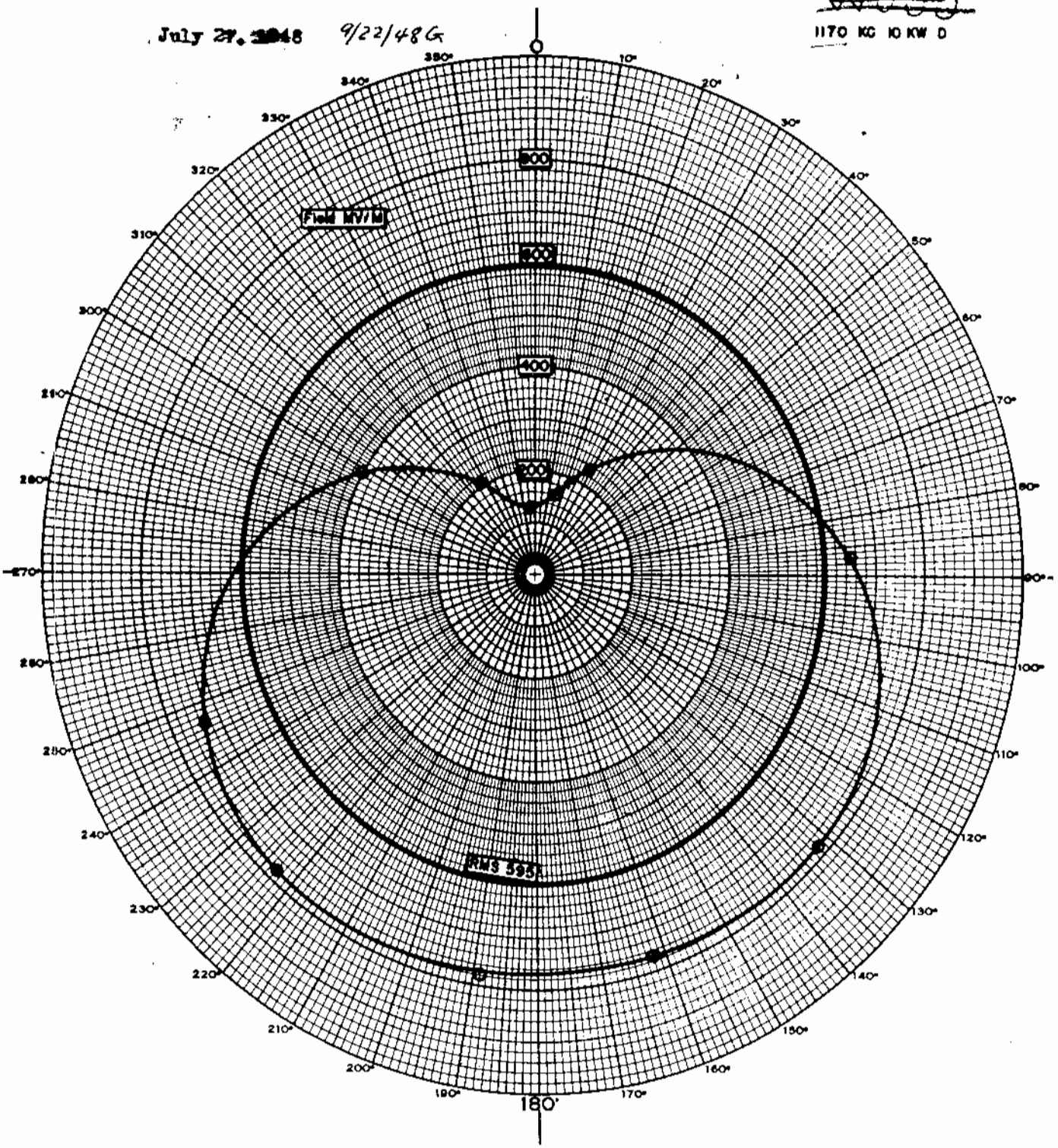
DAY

FRANK H. McINTOSH
Consulting Radio Engineer
Washington, D.C.

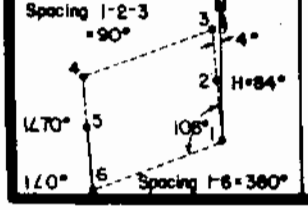
WCOV

1170 KC 10 KW D

July 27, 1948 9/22/48G



STATION WJJJ
MONTGOMERY, ALABAMA



MEASURED

DIRECTIONAL ANTENNA PATTERN

FIGURE 6A
SERIES 480721C

1170 KC

10000 WATTS

DAY

FRANK H. Mc INTOSH
Consulting Radio Engineer
Washington, D.C.

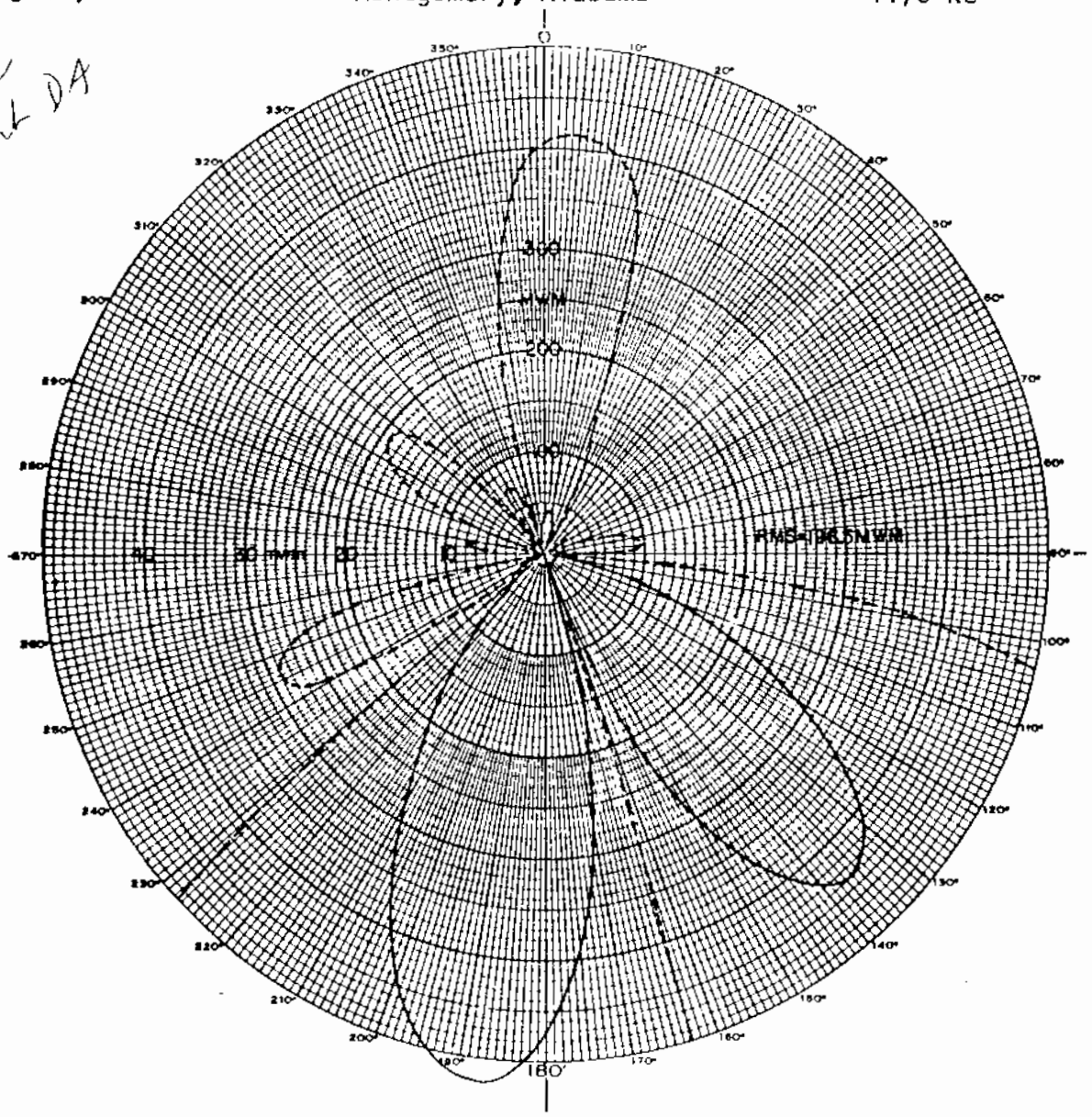
WCOV

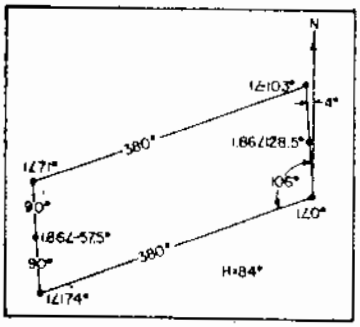
Proposed Night
(5-25-62ct)

Station WCOV
Montgomery, Alabama

1kw, 10kw-LS, DA-2, U
1170 kc

32- 10-20-64
granted CP to
change in night DA





North Latitude 32° 27' 16"
West Longitude 86° 17' 21"

FIGURE D1

CALCULATED NIGHTTIME HORIZONTAL PLANE PATTERN

WCOV - MONTGOMERY, ALABAMA

1170KC 10KW-D, 1KW-N, DA-2

MARCH 1962

DREUTZ & SNOWBERGER
Consulting Engineers
724 - 14TH STREET, NORTHWEST
WASHINGTON 5, D. C.

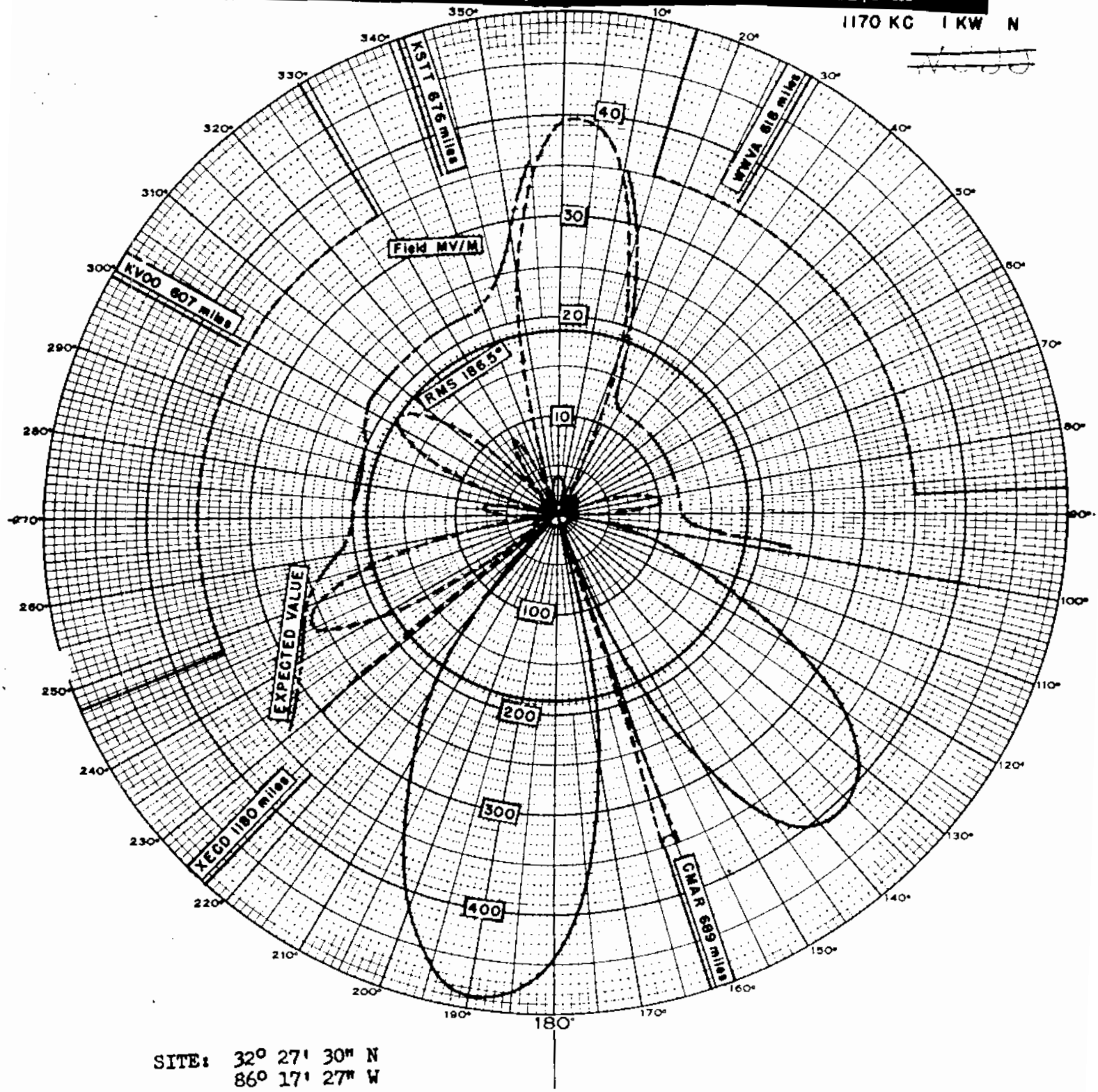
FCC File No. BP-15312
Accepted 5-4-62 Amended

Station WCOV
Montgomery, Alabama

1170 kc

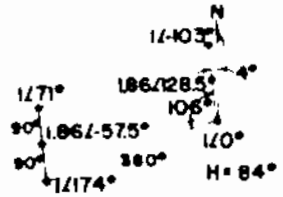
PROPOSED NIGHT | Station WCOV, Montgomery, Alabama | 1kw, 10kw-LS, DA-2, U | 1170 KC

WCOV



SITE: 32° 27' 30" N
86° 17' 27" W

SOUTHERN BROADCASTING CO.
MONTGOMERY, ALABAMA



PROPOSED

DIRECTIONAL ANTENNA PATTERN

Figure 1
Series 470326C

1170 KC
1000 WATTS
NIGHT

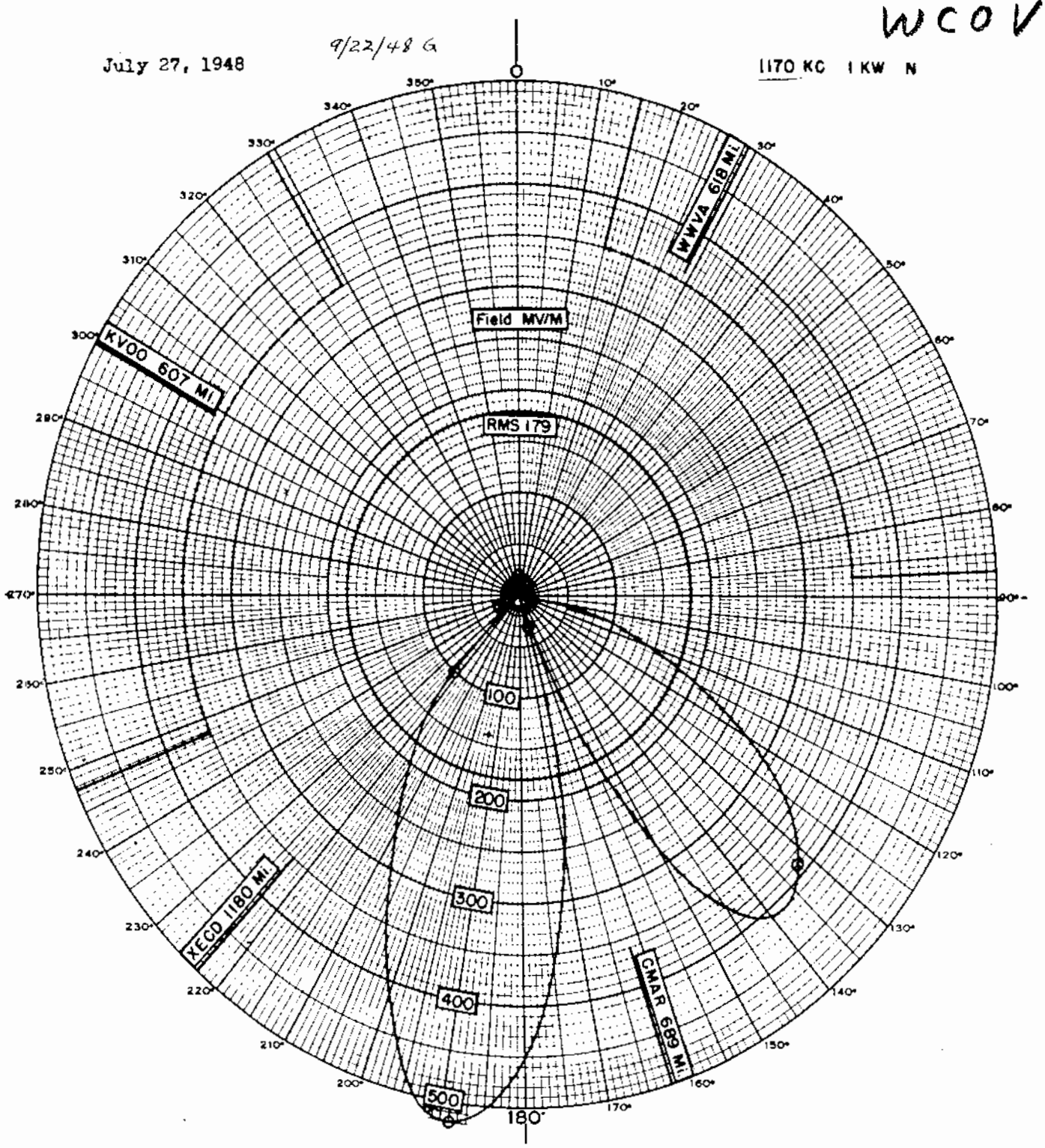
FRANK H. McINTOSH
Consulting Radio Engineer
Washington, D.C.

~~WJJJ~~
WCOV

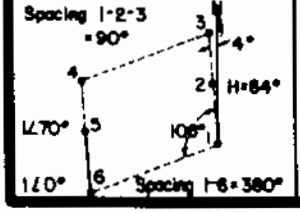
July 27, 1948

9/22/48 G

1170 KC 1 KW N



STATION WJJJ
MONTGOMERY, ALABAMA



MEASURED

DIRECTIONAL ANTENNA PATTERN

FIGURE 68
SERIES 480721C

1170 KC
1000 WATTS
NIGHT

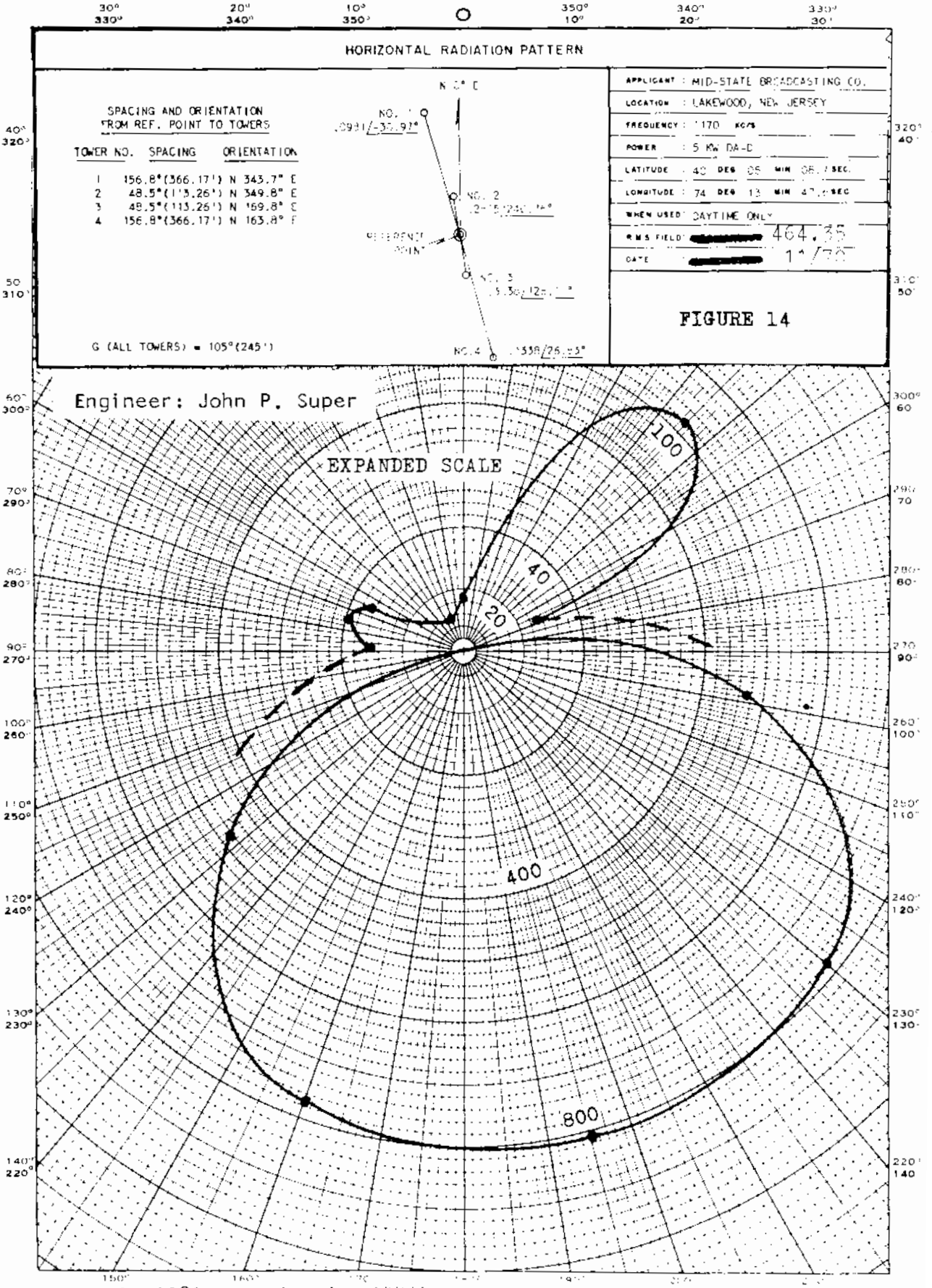
FRANK H. Mc INTOSH
Consulting Radio Engineer
Washington, D.C.

WHLW

Measured Day
(12-23-70ct)

Station WHLW
Lakewood, New Jersey

5kw, DA-D, D
1170 kc



FCC File No. BL-12813
Accepted 12-8-70

Station WHLW
Lakewood, New Jersey

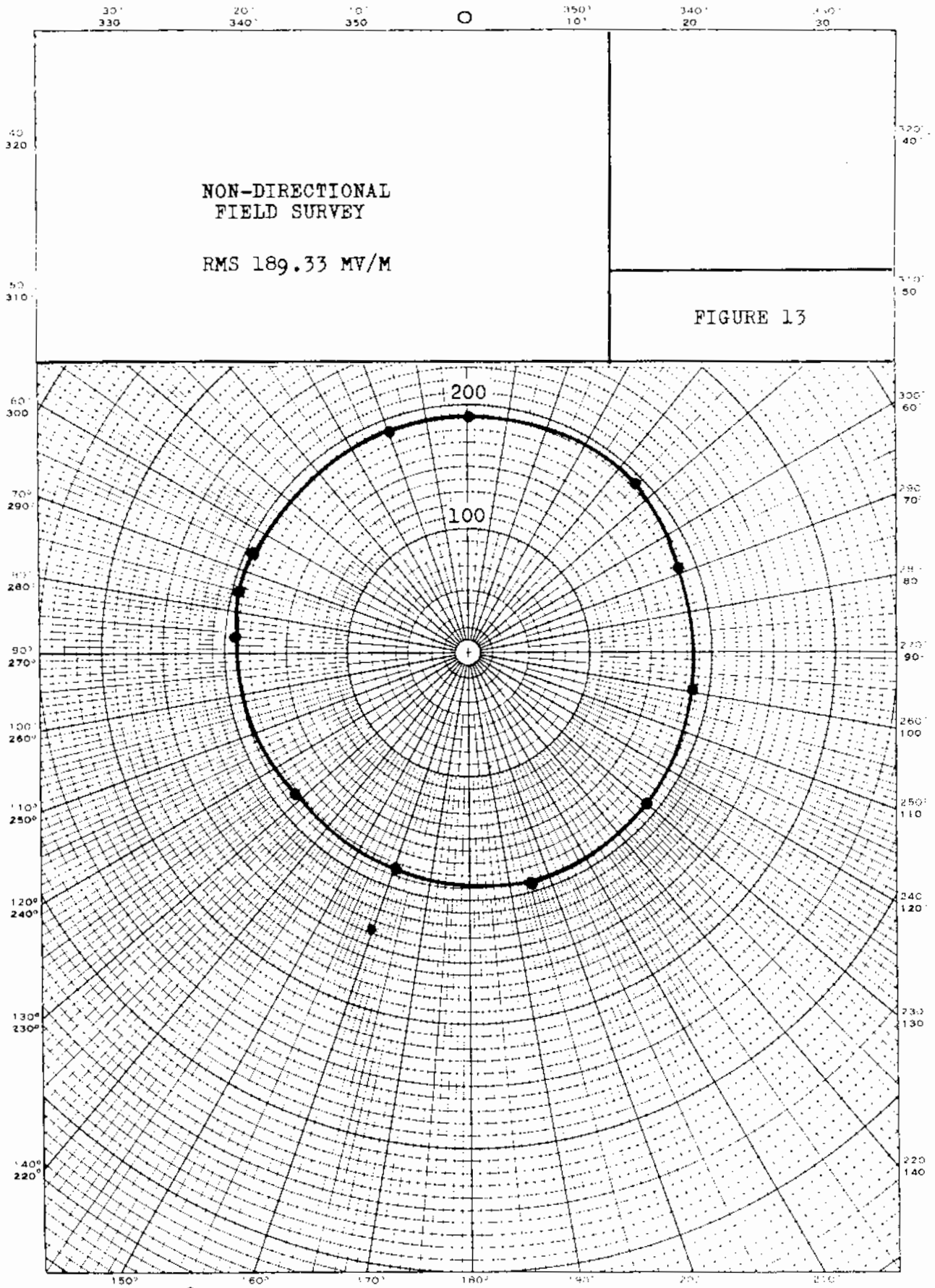
1170 kc

WHLW

Measured Non-DA
(12-23-70ct)

Station WHLW
Lakewood, New Jersey

5kw, DA-D, D
1170 kc



FCC File No.BL-12813
Accepted 12-8-70

Station WHLW
Lakewood, New Jersey

1170 kc

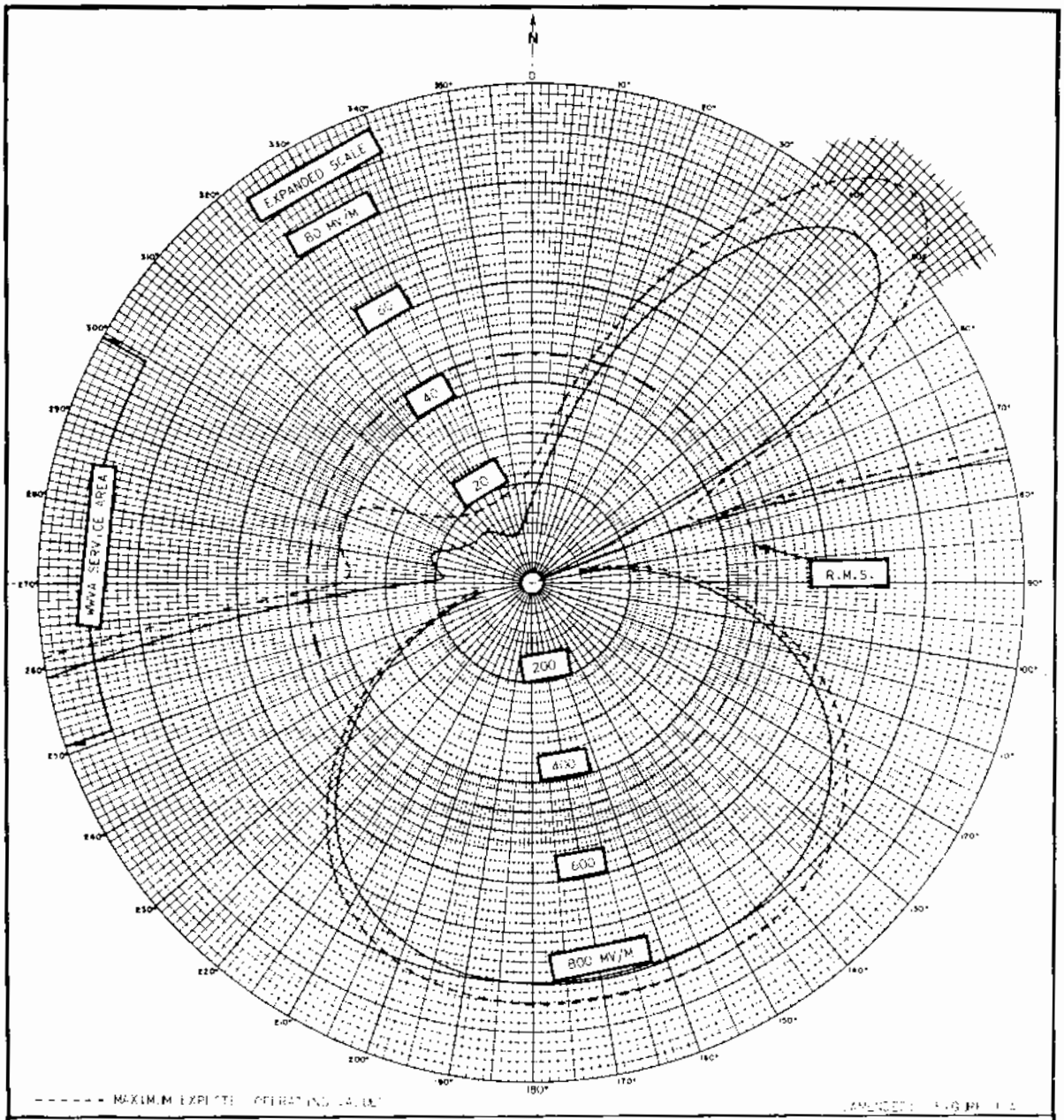
BP-17087
CER(2-12-70) Appl. for CP for new station

WHLW

Proposed Day
(8-22-69ct)

New; Mid-State Broadcasting Co.,
Lakewood, New Jersey

5kw, DA-D, D
1170 kc

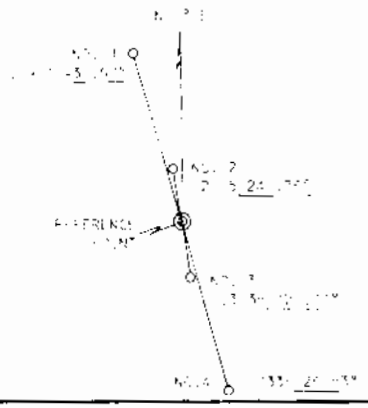


HORIZONTAL RADIATION PATTERN

SPACING AND ORIENTATION
FROM REF. POINT TO TOWER

TOWER NO.	SPACING	ORIENTATION
1	56.5° (366.17)	N 44.[illegible] E
2	48.5° (315.25)	N 36.[illegible] E
3	48.5° (315.25)	N [illegible] E
4	56.5° (366.17)	N [illegible] E

G (ALL TOWERS) = 175 (245°)



APPLICANT	MID-STATE BROADCASTING CO.
LOCATION	LAKEWOOD, NEW JERSEY
FREQUENCY	1170 KC/S
POWER	5 KW DA-D
LATITUDE	40 DEG 05 MIN 45 SEC
LONGITUDE	74 DEG 15 MIN 42.5 SEC
WHEN USED	DAYTIME ONLY
RMS FIELD	650 MV/M
DATE	AUG 1969

SILLIMAN, MOFFET & KOWALSKI
CONSULTING RADIO ENGINEERS
WASHINGTON, D.C.

FCC File No. BP-17087
Accepted 8-12-69 Amended

New; Mid-State Broadcasting Co.
Lakewood, New Jersey

1170 kc

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station : WJMQ Main Studio: Norfolk, Massachusetts

Frequency : 1170 KHz Power : ____ Night 1 kW Day ___

Notification : 1781 Date : Oct. 19, 1979 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude:	42	05	32
West Longitude:	71	18	13

ANTENNA CHARACTERISTICS

Authorized for Daytime operation. (DA-D)
Number of elements: 2
Type of elements : Series excited, uniform cross-section, guyed, vertical steel towers.

TOWER :	NW(#2)	SE(#1)					
HEIGHT ABOVE INSULATORS :	210'	210'(90°)					
DAY PHASING :	-32	0°					
DAY FIELD RATIO :	0.87	1.0					

SPACING AND ORIENTATION : Towers in a row are spaced 376' (161°) on a line bearing 279° true.

GROUND SYSTEM : 120 - 210' equally spaced copper radials about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers. Centers of system are bonded together.

WJMQ

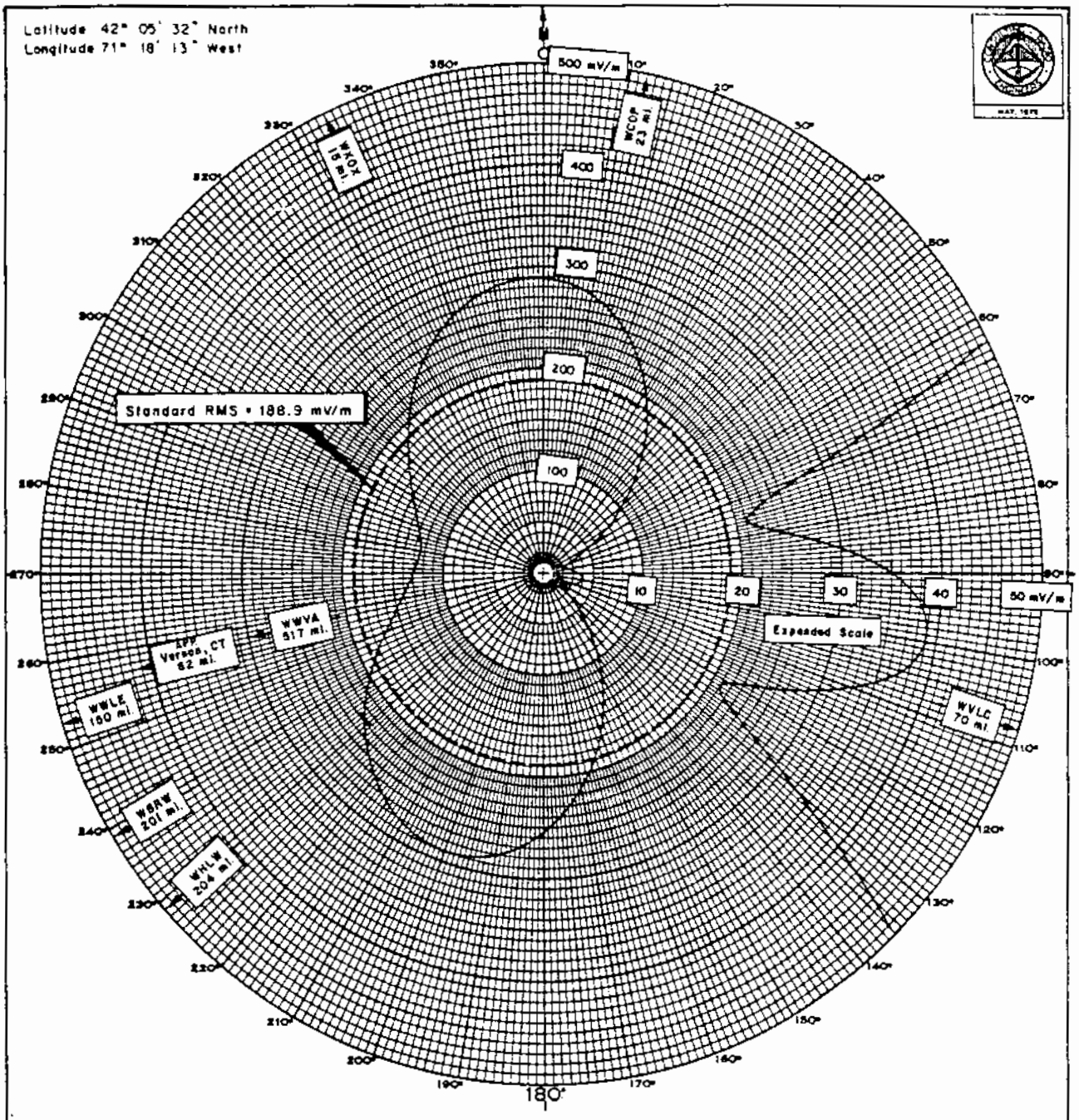
PREDICTED EFFECTIVE FIELDS AT RATED POWER:

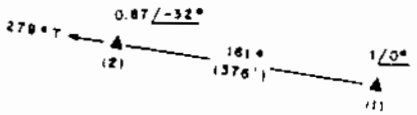
	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	179.8 mv/m	196.0 mv/m	188.9 mv/m

Note:

CTR NO

WJMQ





D = 210° + 90°
THEORETICAL RMS = 179.8 mV/m
STANDARD RMS = 188.9 mV/m
RSS = 196.0 mV/m

FIGURE 1

PROPOSED STANDARD HORIZONTAL PLANE RADIATION PATTERN

STATION WJMQ
NORFOLK COUNTY BROADCASTING COMPANY, INC.
NORFOLK, MASSACHUSETTS

PRES. 1170 kHz	0.5 kW	Day - DA
PROP. 1170 kHz	1 kW	Day - DA

A. D. RING & ASSOCIATES
CONSULTING RADIO ENGINEERS
WASHINGTON, D. C.

DIRECTIONAL ANTENNA DESCRIPTION SHEET

WJMQ

Station: (New)

Main Studio: Norfolk, Massachusetts

Frequency: 1170 kHz

Power: 0.5 kW

Notification List No. 1733

Date: May 12, 1977

Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 42° 05' 32"
West Longitude: 71° 18' 13"

ANTENNA CHARACTERISTICS

Authorized for Daytime operation. (DA-D)
Number of elements: 2
Type of elements: Series excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	NW(#2)	SE(#1)
HEIGHT ABOVE INSULATORS:	210'	210' (90°)
PHASING:	-32	0°
FIELD RATIO:	0.87	1.0

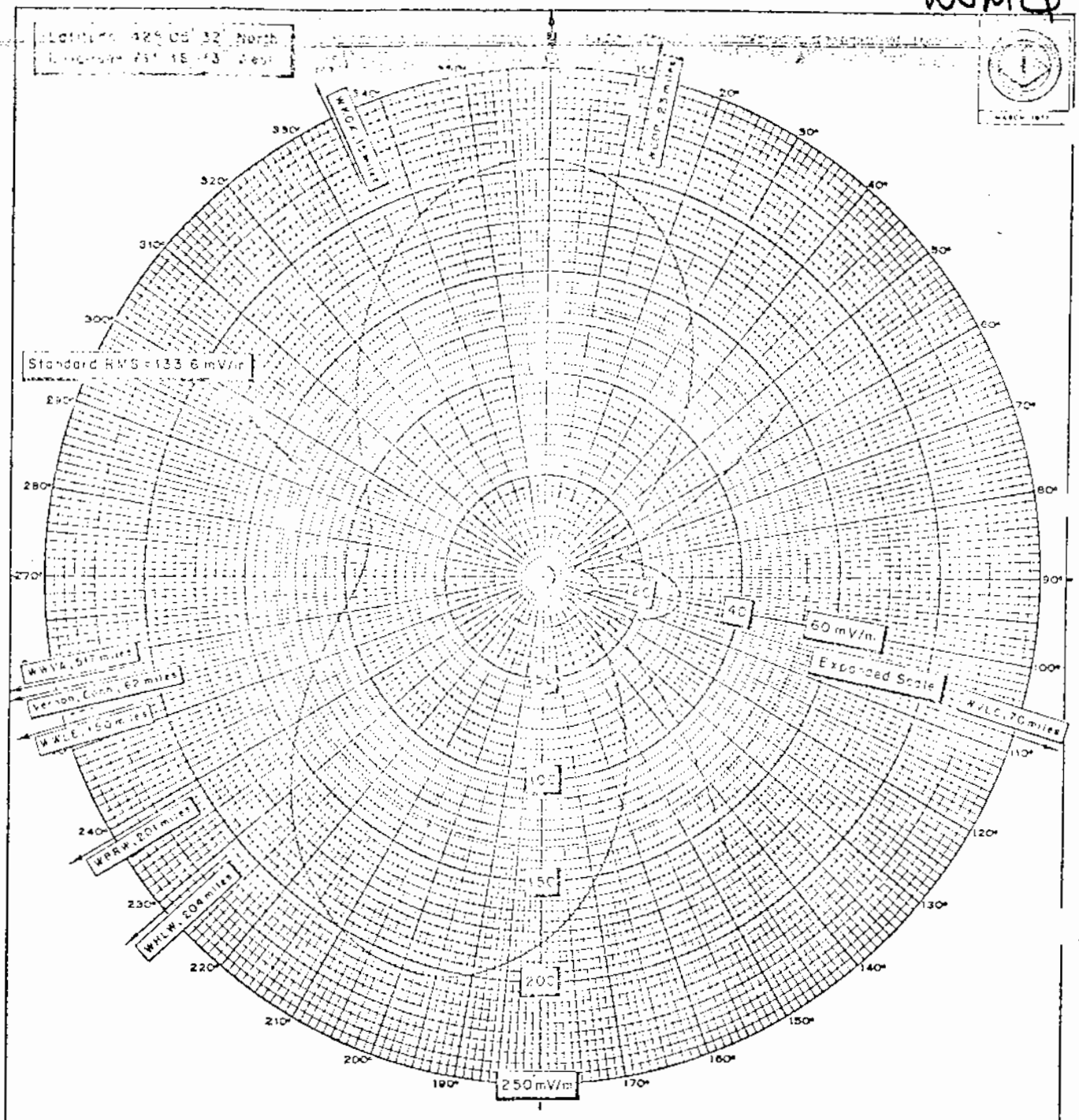
SPACING AND ORIENTATION: Towers are spaced 376' (161°) on a line bearing 279° true.

GROUND SYSTEM: 120-210' euqally spaced copper radials about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers. Centers of system are bonded together.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

THEORETICAL		STANDARD
RMS	RSS	RMS
127.1 mv/m	138.6 mv/m	133.6 mv/m

WJMQ



279° True
0.87/-32°
(2)
161°
(376')
17Ω°
(1)

G=210°=90°
THEORETICAL RMS = 127.1 mV/m
STANDARD RMS = 133.6 mV/m
RSS = 138.6 mV/m

Figure 1 (Amendment A)

PROPOSED HORIZONTAL PLANE
RADIATION PATTERN

NEW STANDARD BROADCAST STATION
NORFOLK COUNTY BROADCASTING COMPANY, INC.
NORFOLK, MASSACHUSETTS

1170 kHz | 500 Watts | Day-DA

A. D. RING & ASSOCIATES
CONSULTING RADIO ENGINEERS
WASHINGTON, D. C.

WLBH

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WLBH Main Studio: Mattoon, Illinois

Frequency: 1170 kHz Power: 5 kW

Notification List No. 1652 Date: October 1, 1975 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:
North Latitude: 39° 31' 05"
West Longitude: 88° 22' 15"

ANTENNA CHARACTERISTICS

Authorized for Daytime operation. (DA-D)
Number of elements: 4
Type of elements: Series-excited, uniform cross-section, guyed, vertical steel towers.

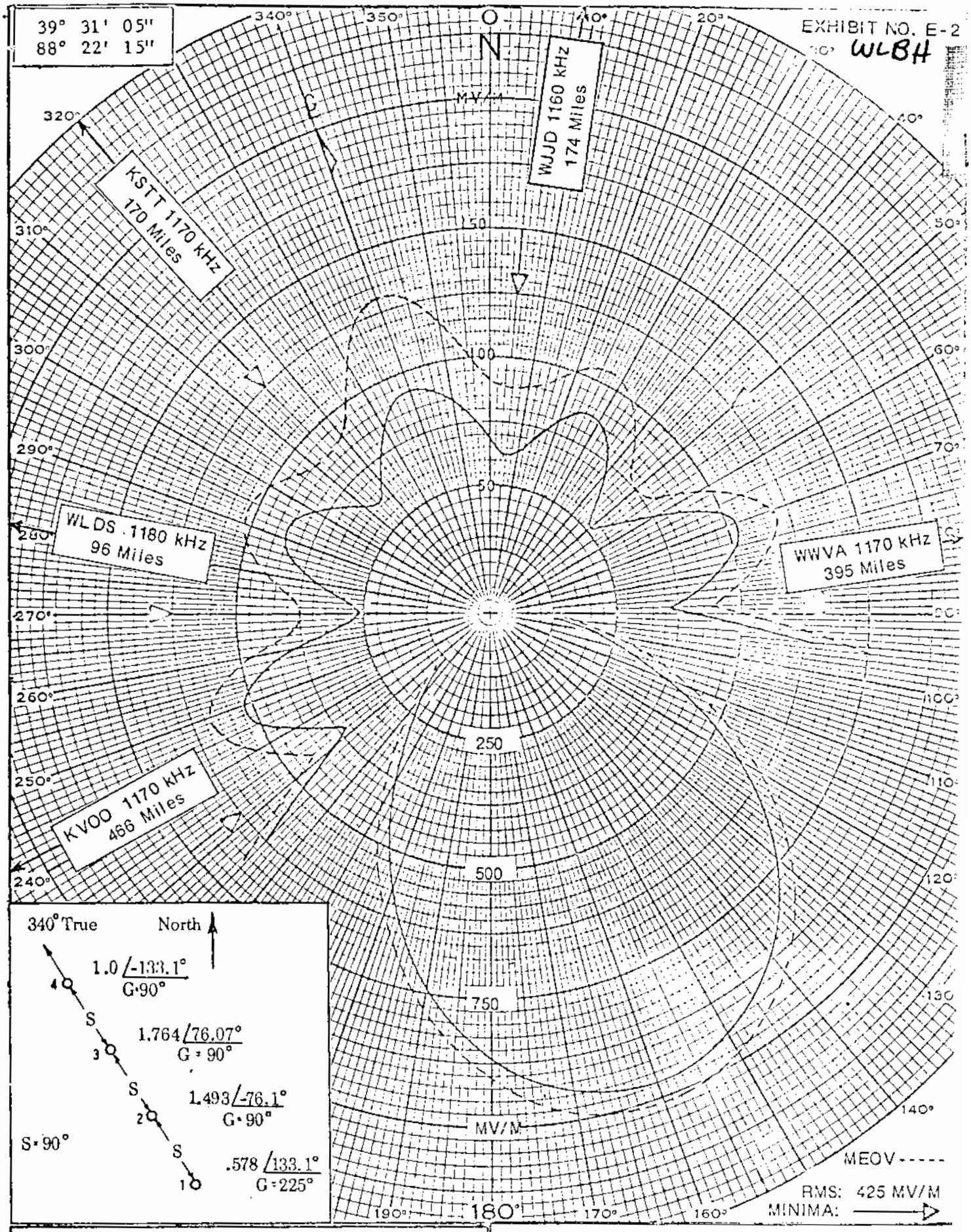
TOWER:	NW(#4)	NC(#3)	SC(#2)	SE(#1)
HEIGHT ABOVE INSULATORS:	210'	210'	210'(90°)	517'(225°)
NIGHT PHASING:	-133.1°	+76.07°	-76.1°	+133.1°
NIGHT FIELD RATIO:	1.0	1.764	1.493	0.578

SPACING AND ORIENTATION: Adjacent elements are spaced 210'(90°) on a line bearing 340° true.

GROUND SYSTEM: 120-210' equally spaced copper radials plus a 48' square ground screen about each tower. Radials are shortened and bonded to transverse straps along intersections between towers.

Predicted effective Field: 425 mv/m at rated power.

Note: This notification concerns only changes in meovs of radiation in the directional antenna pattern.



EDWARD F. LORENTZ & ASSOCIATES
Consulting Radio Engineers
Washington, D.C.

HORIZONTAL RADIATION PATTERN
RADIO STATION WLBH
MATTOON, ILLINOIS

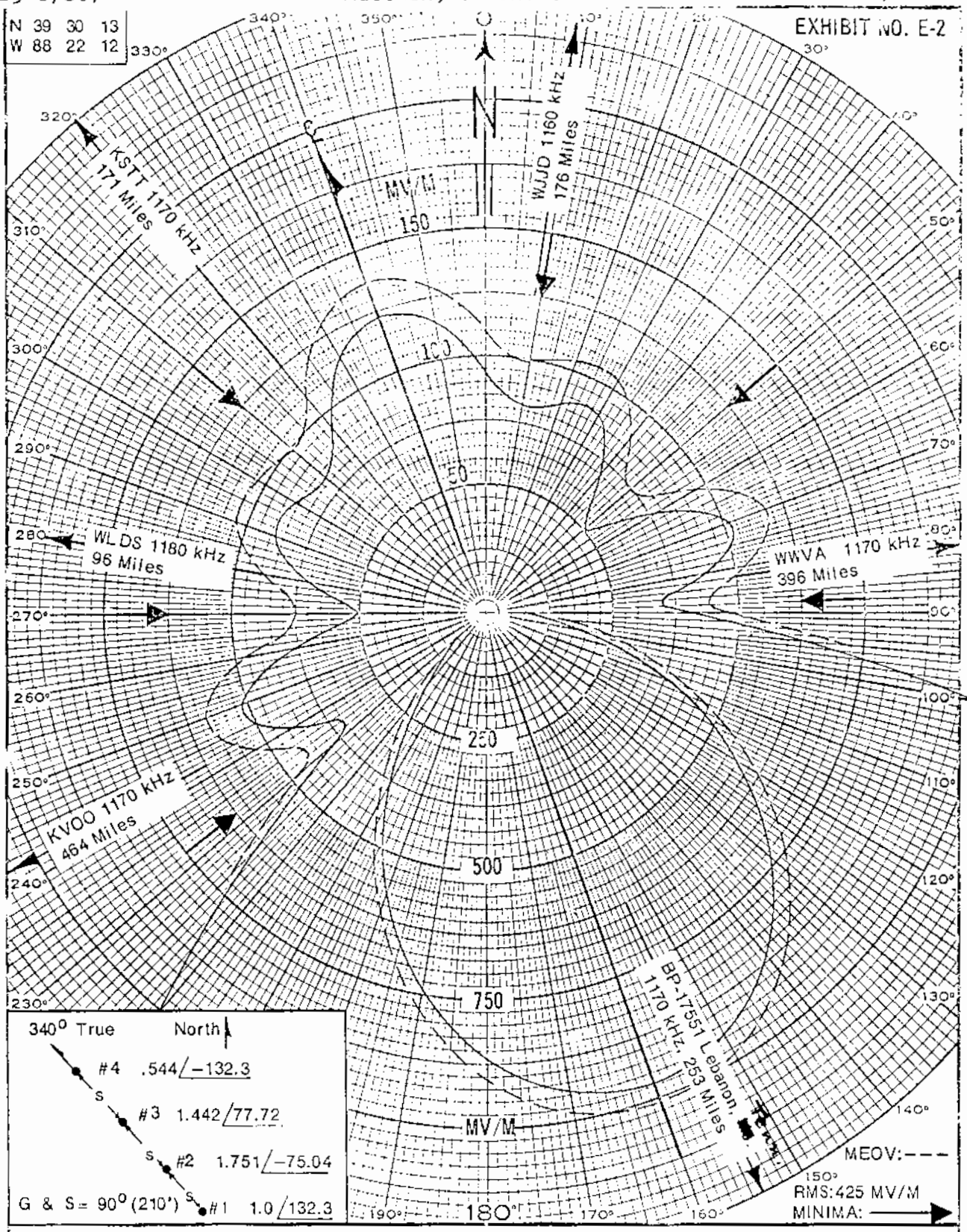
1170 kHz 5 KW, DA-D 12/7

WLBH

Proposed Day
(5-25-67ct)

Station WLBH
Mattoon, Illinois

5kw, DA-D, D
1170 kc



COMMERCIAL RADIO EQUIPMENT CO.
Radio Engineering Consultants
WASHINGTON, D. C.

HORIZONTAL RADIATION PATTERN
RADIO STATION WLBH
MATTOON, ILLINOIS
1170 kHz 5 KW, DA-D

3 67

FCC File No. BP-17684
Accepted 5-15-67

Station WLBH
Mattoon, Illinois

1170 kc

WLBH

DIRECTIONAL INVERSE FIELD INTENSITY

1170 Khz 5000 w, DA-D

July 1974

WLBH

Mattoon Illinois

Tabulation:

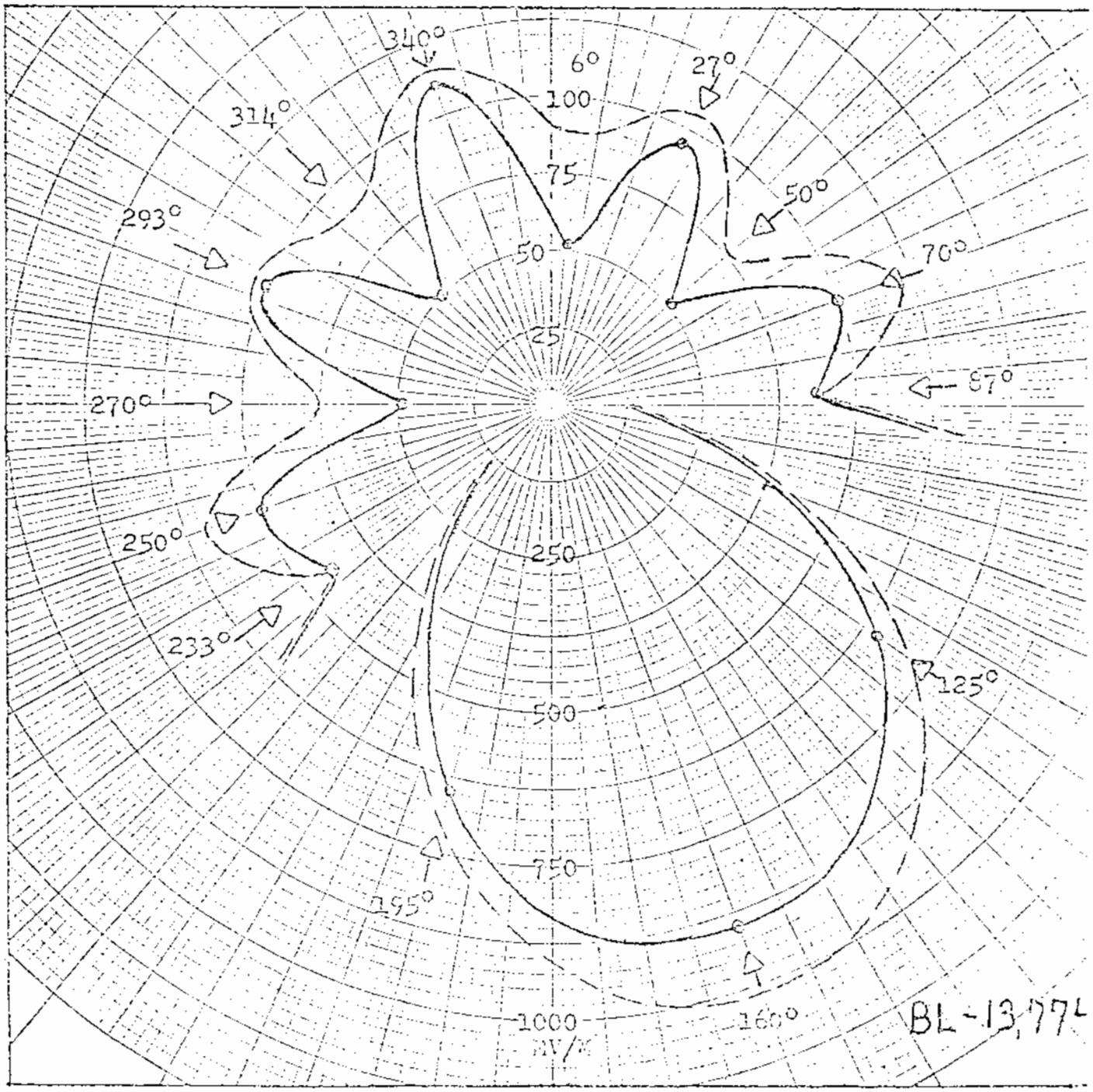
Directional field intensities at 1 mile, mv/m.

Radial	Measured	Pattern	MEOV	Radial	Measured	Pattern	MEOV
6°	52	62.8	87.6	195°	650	660	705
27°	95	86.8	104.6	233°	88	70.7	88
50°	52	52.2	74.2	250°	100	103.6	118
70°	100	103.6	118	270°	48	52.2	74.2
87°	87	70.7	88	293°	100	86.8	104.6
125°	650	660	705	314°	50	62.8	87.6
160°	900	969.8	1011	340°	110	92.9	114

$E_{r.m.s.}$ = 408.4 mv/m

Polar Graph

Measured values ——— MEOV. values - - -



BL-13,774

WRTT

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station : (NEW) Main Studio: Vernon, Connecticut

Frequency : 1170 KHz Power : _____ Night 1 kW Day ___

Notification : 1781 Date : Oct. 19, 1979 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude:	41	52	38
West Longitude:	72	28	43

ANTENNA CHARACTERISTICS

Authorized for Daytime operation. (DA-2)
Number of elements: 3
Type of elements : Series excited, uniform cross-section, guyed vertical steel towers.

TOWER :	(S)#1	M(#2)	#3(N)	_____	_____	_____	
HEIGHT ABOVE INSULATORS :	190'	190'	190'	___	_____	_____	
DAY PHASING :	0°	138.2°	-94.3°	_____	_____	_____	
DAY FIELD RATIO :	1.0	1.89	1.06	_____	_____	_____	

SPACING AND ORIENTATION : The towers in a row are spaced 210.2' (90°) on a line bearing 349° True.

GROUND SYSTEM : 120 - 210' to _____' equally spaced copper radials plus 120 - 50' interspaced radials about each tower. Radials are shortened and bonded to a copper strap which is bonded to the main station.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	201.8 mv/m	266.7 mv/m	212.1 mv/m
Night	_____ mv/m	_____ mv.m	_____ mv/m

Note:

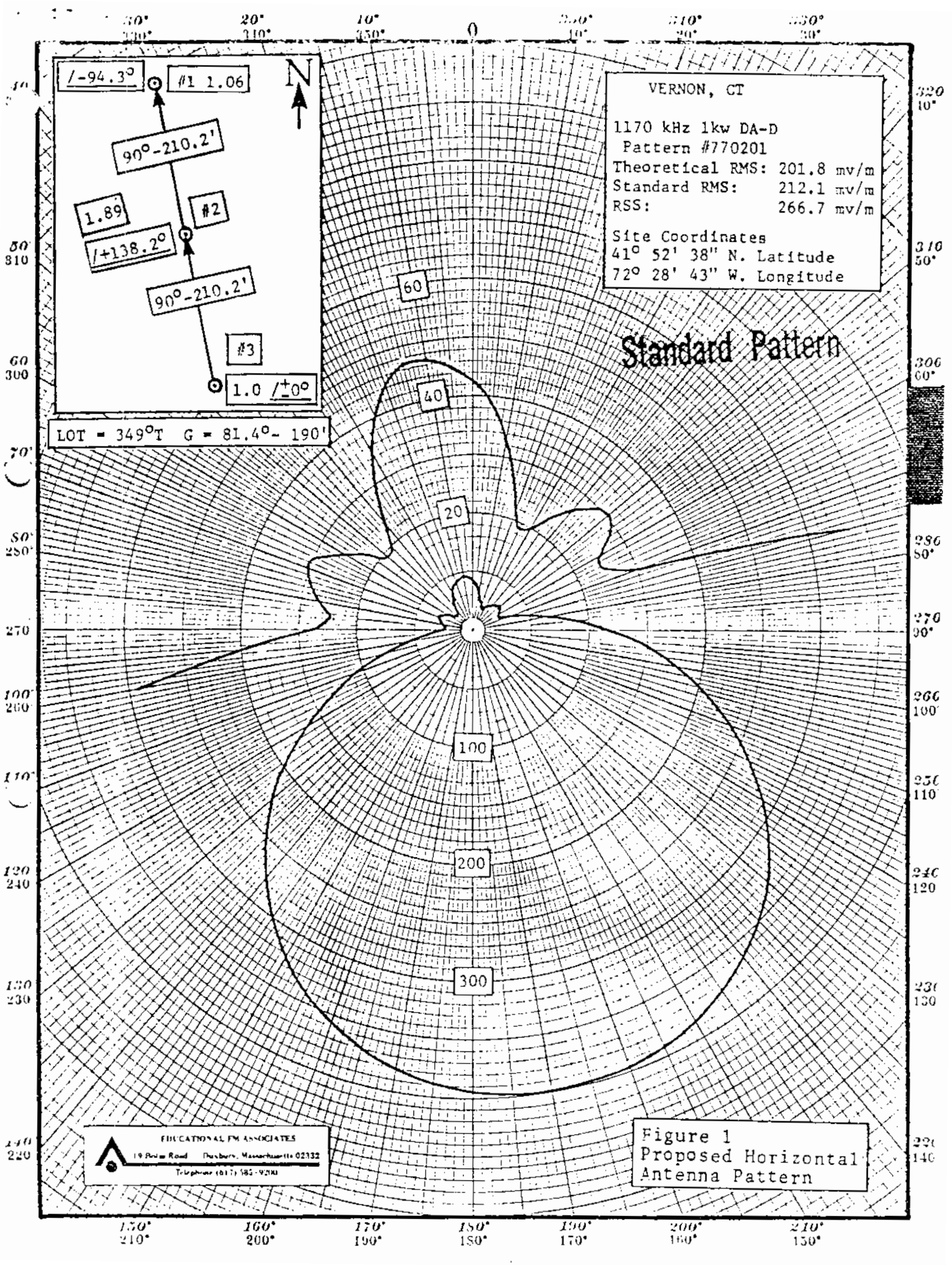


Figure 1
Proposed Horizontal
Antenna Pattern

WVLC

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WVLC | Main Studio: Orleans, Massachusetts

Frequency: 1170 kHz | Power: 1 kW

Notification List No. 1583 | Date: June 5, 1974 | Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:
North Latitude: 41° 46' 50"
West Longitude: 70° 00' 37"

ANTENNA CHARACTERISTICS

Authorized for Daytime operation. (DA-D)
Number of elements: 2
Type of elements: Series-excited, uniform cross-section, guyed, vertical steel towers.

	NW(#2)	SE(#1)
TOWER:		
HEIGHT ABOVE INSULATORS:	340'(145.5°)	210'(90°)
PHASING:	+90°	0°
FIELD RATIO:	1.2	1.0

SPACING AND ORIENTATION: Elements are spaced 210.3' (90°) on a line bearing 308° true.

GROUND SYSTEM: 120-200' equally spaced copper radials plus a 24' square ground screen about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers.

Predicted effective Field: 204 mv/m at rated power.

Note: This notification concerns changes in the height of tower #2, predicted effective field, and theoretical and M.E.O.V's of radiation.

WVLC

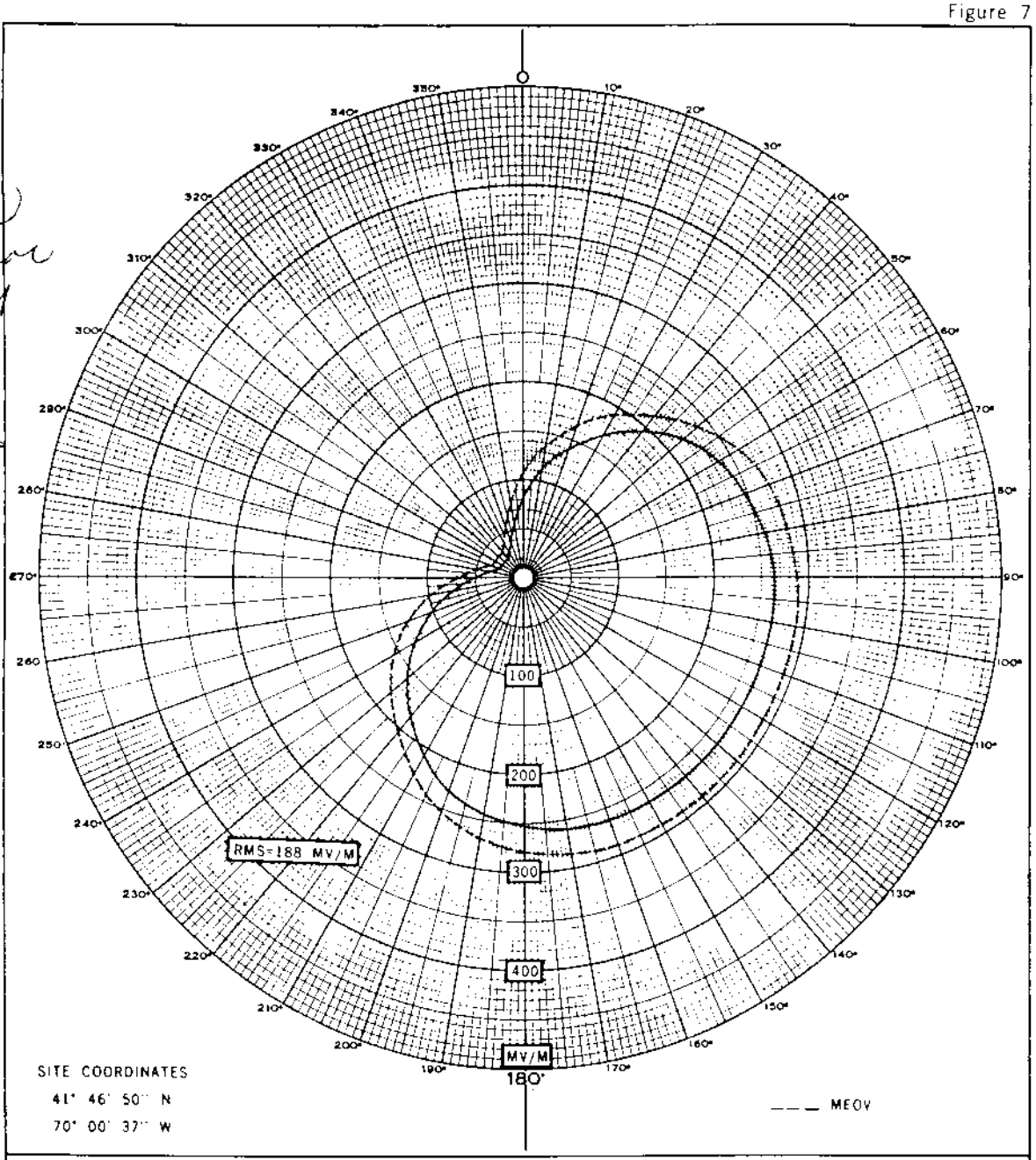
Proposed Day
(1-30-67ct)

New; Seashore Broadcasting Co., Inc.
Orleans, Massachusetts

1kw, DA-D, D
1170 kc

Figure 7

BP-17483
Granted
3/11/69
application
for CP for
a new AM
broadcast
station



CALCULATED HORIZONTAL PLANE RADIATION PATTERN

308° TRUE
(2) 1 2/90°
90°
(1) 1 0/0°
G=90°-210°

SEASHORE BROADCASTING CO., INC.
ORLEANS, MASSACHUSETTS

Jules Cohen & Associates
Consulting Electronics Engineers

1170 KC/S
10 KW D DA
Pattern No 661010

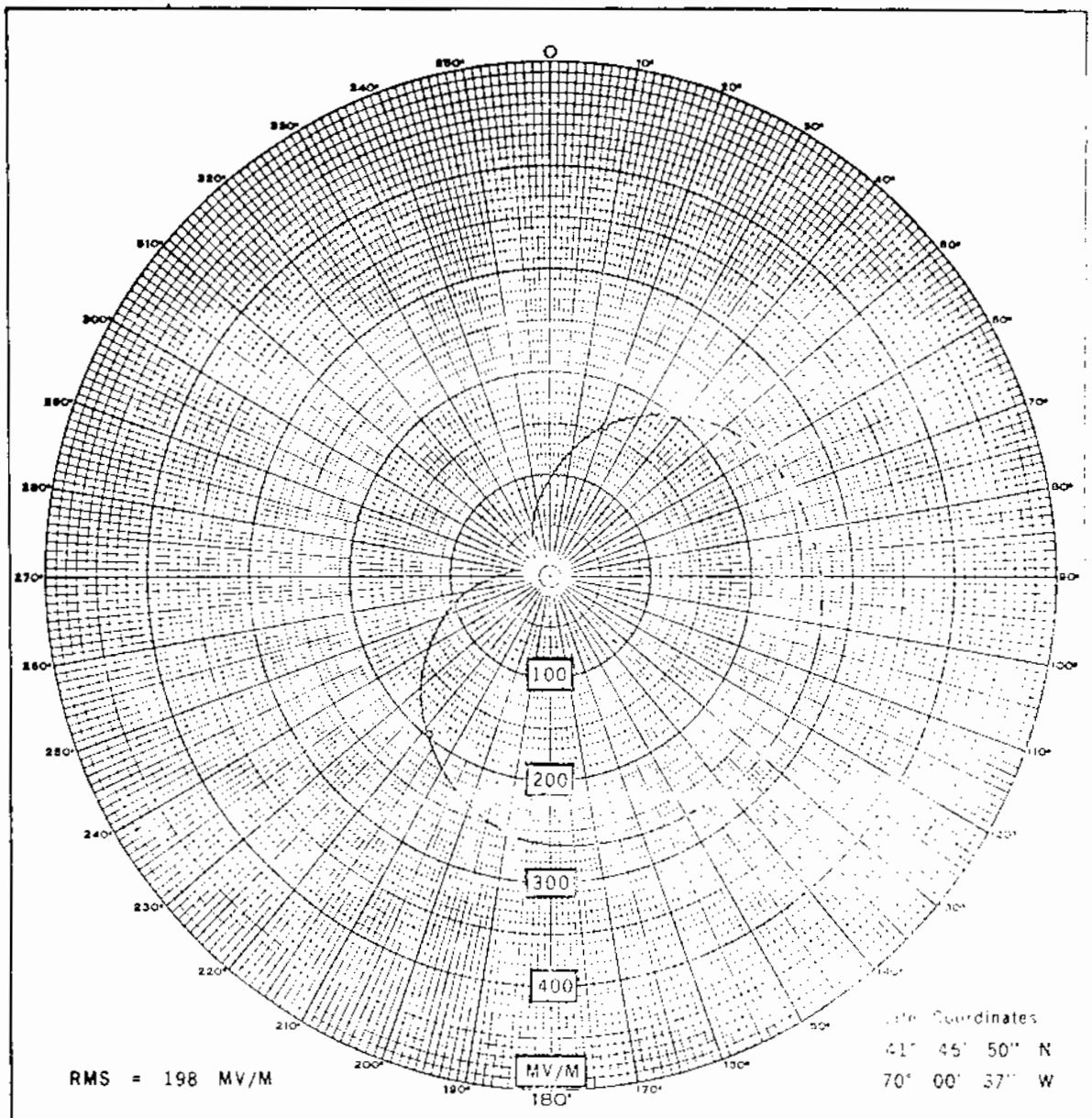
FCC File No. BP-17483
Accepted 1-5-67

New; Seashore Broadcasting Co., Inc.
Orleans, Massachusetts

1170 kc

Measured Day
(7-29-70ct)

Station WVLC
Orleans, Massachusetts



MEASURED HORIZONTAL PLANE DIRECTIONAL RADIATION PATTERN

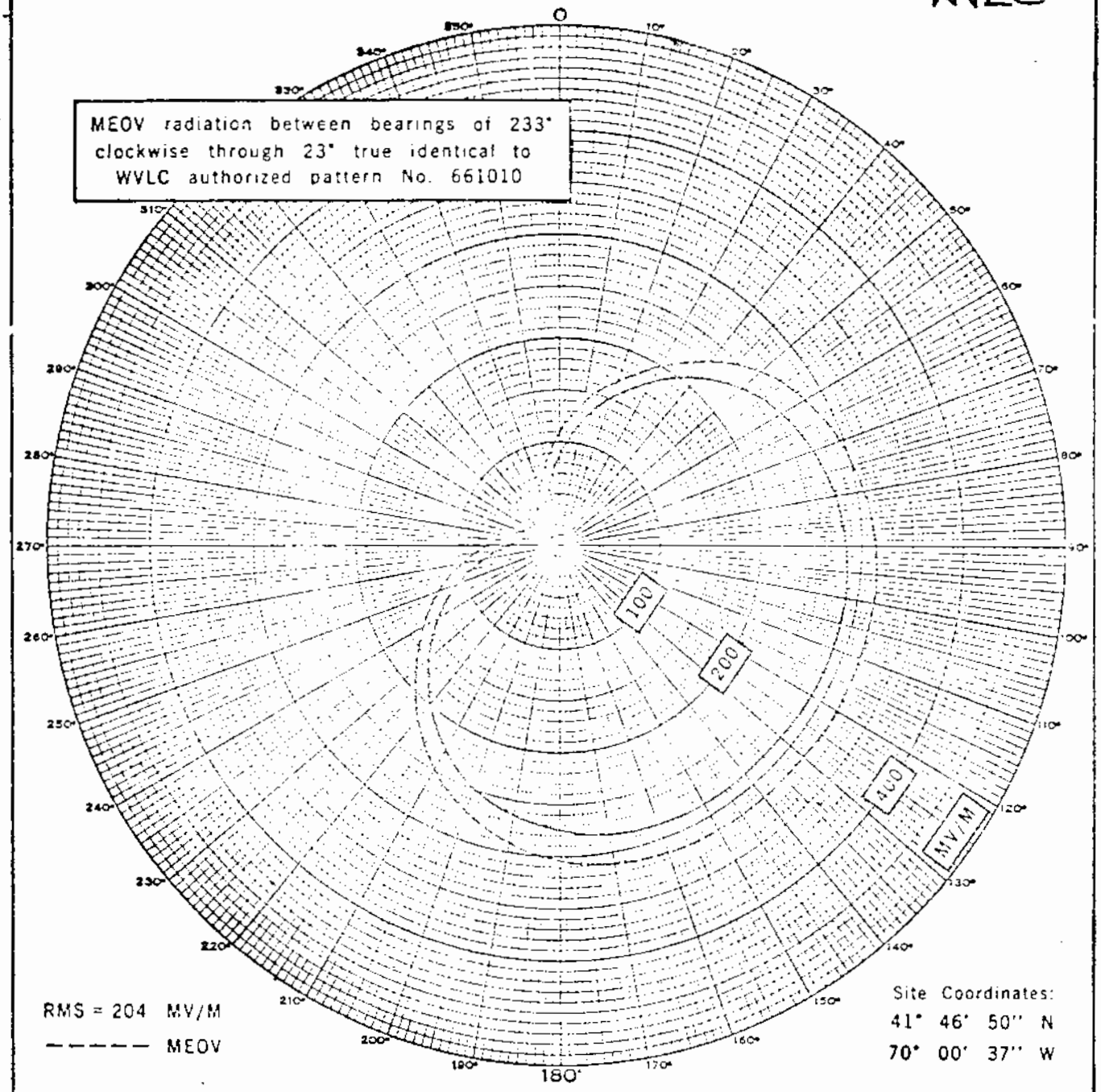
308° TRUE (2) 1.2/90° 90° (1) 1.0/0° G=90°=210°	SEASHORE BROADCASTING CO., INC. ORLEANS, MASSACHUSETTS	1170 KHZ 1.0 KW D DA
	Jules Cohen & Associates Consulting Electronics Engineers	MARCH 1970

FCC File No.BL-12645
Accepted 7-1-70

Station WVLC
Orleans, Massachusetts

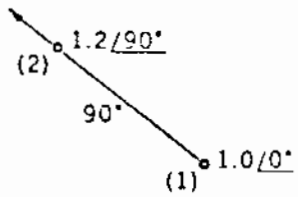
1170 kc

WVLC



CALCULATED HORIZONTAL PLANE DIRECTIONAL RADIATION PATTERN

308° TRUE



G1 = 90°
G2 = 145.5°

SEASHORE BROADCASTING CO., INC.

ORLEANS, MASSACHUSETTS

Jules Cohen & Associates
Consulting Electronics Engineers

RADIO STATION WVLC
1170 KHZ
1.0 KW D DA

Pattern No. 740111

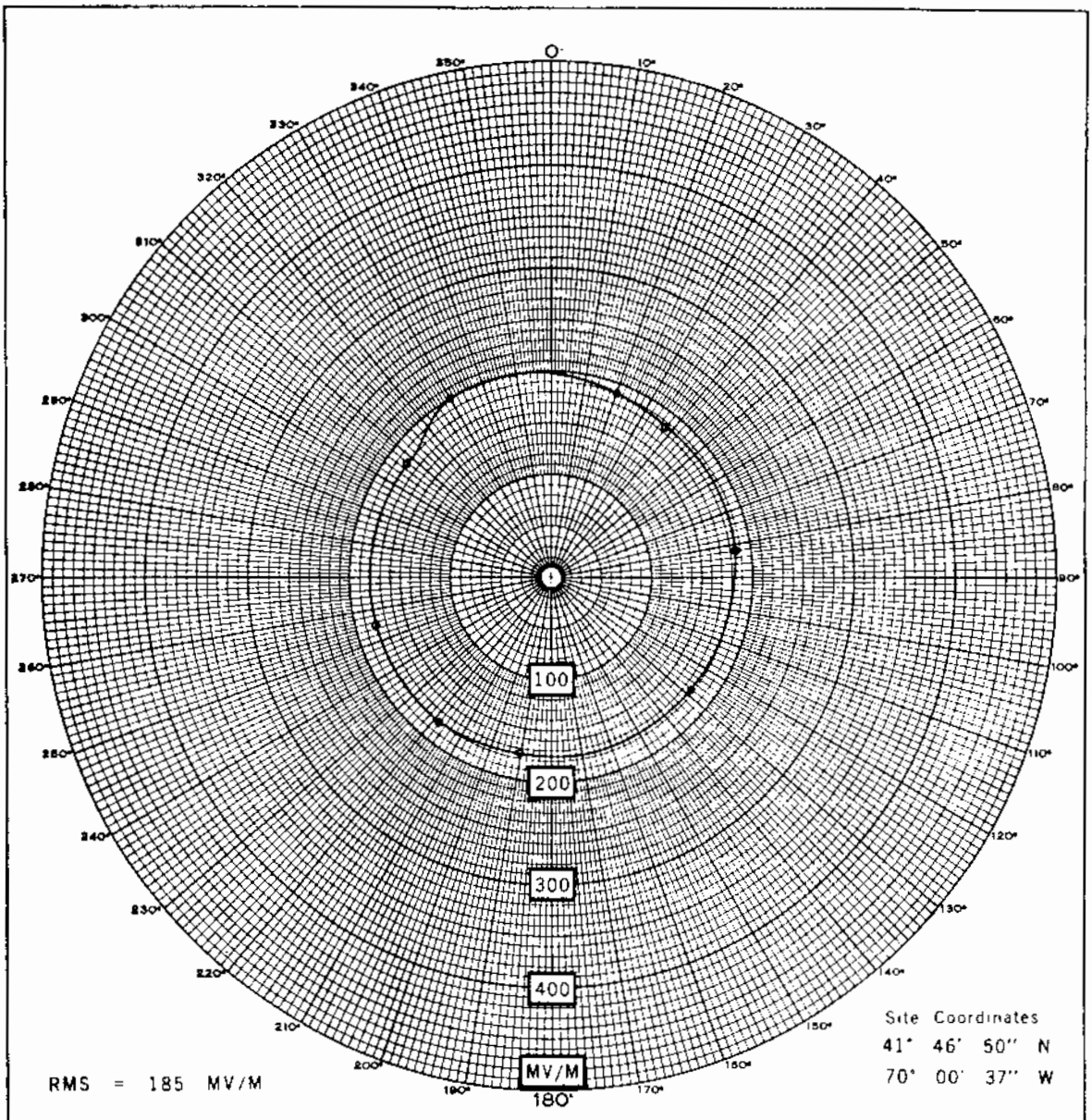
SEE REVERSE SIDE

WVLC

Measured Non-DA
(7-29-70ct)

Station WVLC
Orleans, Massachusetts

1kw, DA-D, D
1170 kc
Figure 9



MEASURED NONDIRECTIONAL HORIZONTAL PLANE RADIATION PATTERN

Southeast tower driven; Northwest tower isolated.	SEASHORE BROADCASTING CO., INC. ORLEANS, MASSACHUSETTS	1170 KHZ 1.0 KW D DA
	Jules Cohen & Associates Consulting Electronics Engineers	MARCH 1970

WWLE

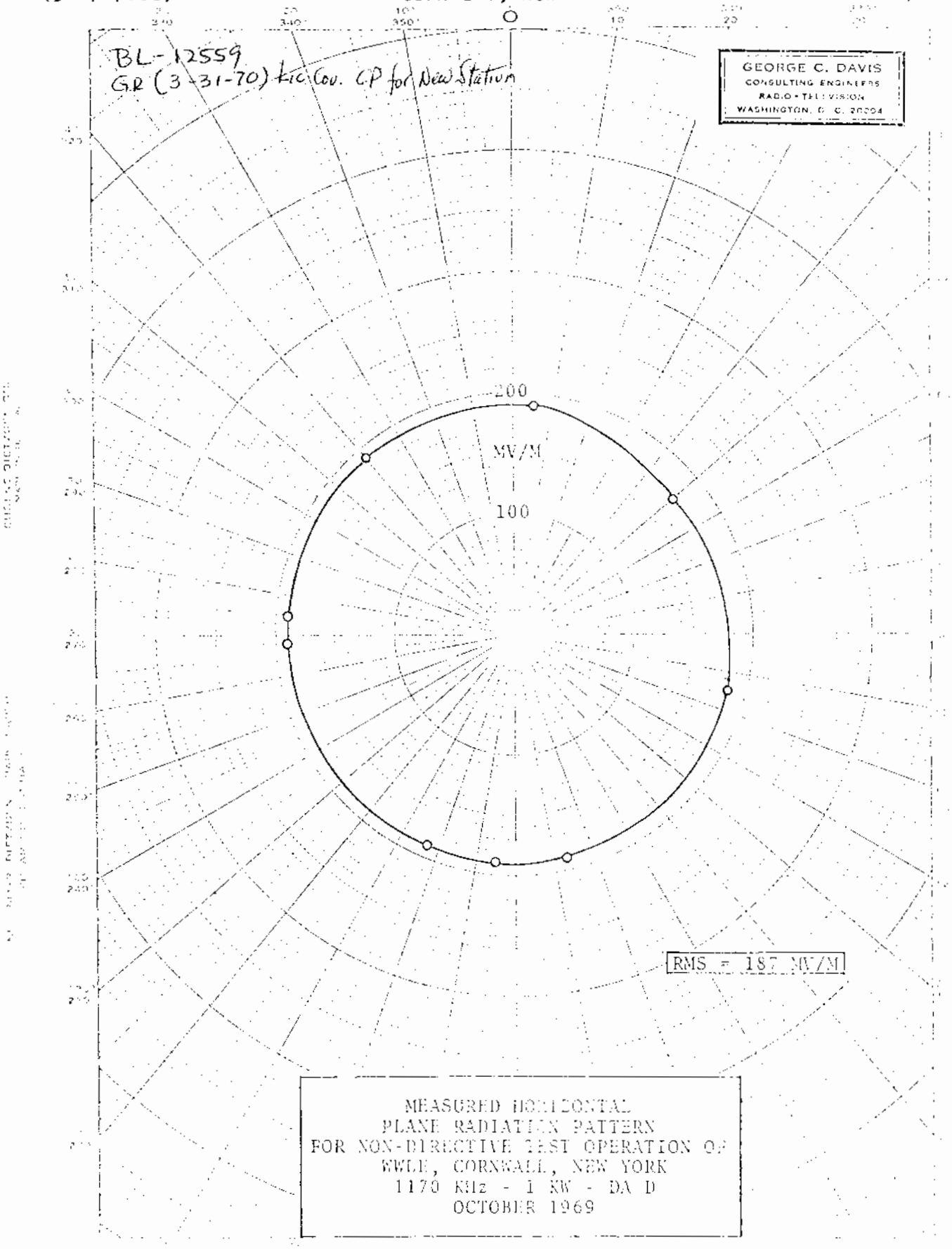
Measured Non-DA
(3-27-70ct)

Station WWLE
Cornwall, New York

1kw, DA-D, I
1170 k

BL-12559
G.R (3-31-70) kic Cov. C.P for New Station

GEORGE C. DAVIS
CONSULTING ENGINEERS
RADIO • TELEVISION
WASHINGTON, D. C. 20004



MEASURED HORIZONTAL
PLANE RADIATION PATTERN
FOR NON-DIRECTIVE TEST OPERATION OF
WWLE, CORNWALL, NEW YORK
1170 KHz - 1 KW - DA D
OCTOBER 1969

FCC File No.BL-12559
Accepted 3-20-70

Station WWLE
Cornwall, New York

1170 I

WWLE

Measured Day
(3-27-70ct)

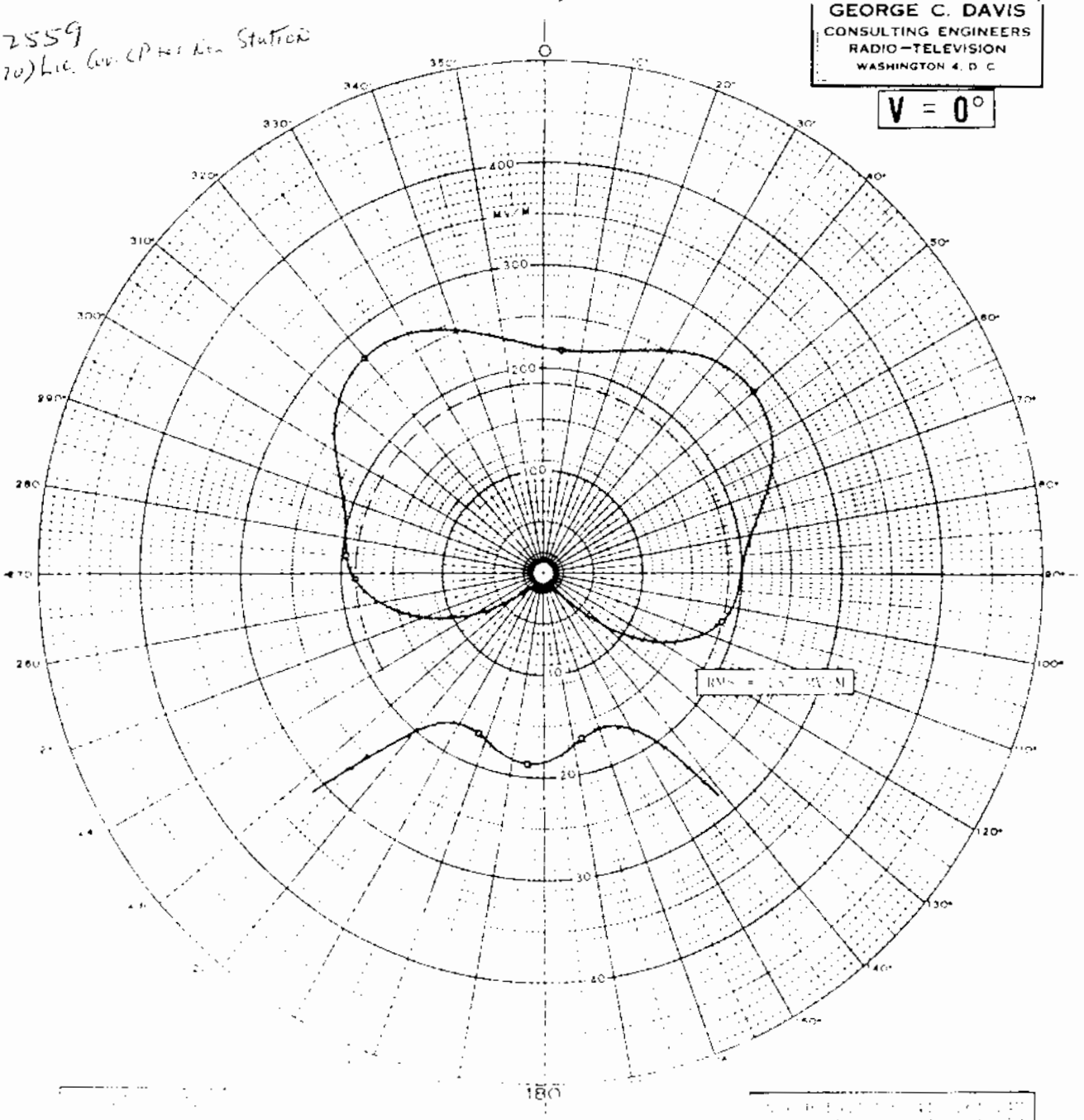
Station WWLE
Cornwall, New York

1kw, DA-D, D
1170 kc

BL 12559
GA (3-31-70) Lic. Cov. CP for New Station

GEORGE C. DAVIS
CONSULTING ENGINEERS
RADIO—TELEVISION
WASHINGTON 4, D. C.

V = 0°



FCC File No. BL-12559
Accepted 3-20-70

Station WWLE
Cornwall, New York

1170 k

WWLE

Proposed Day
(11-28-67ct)

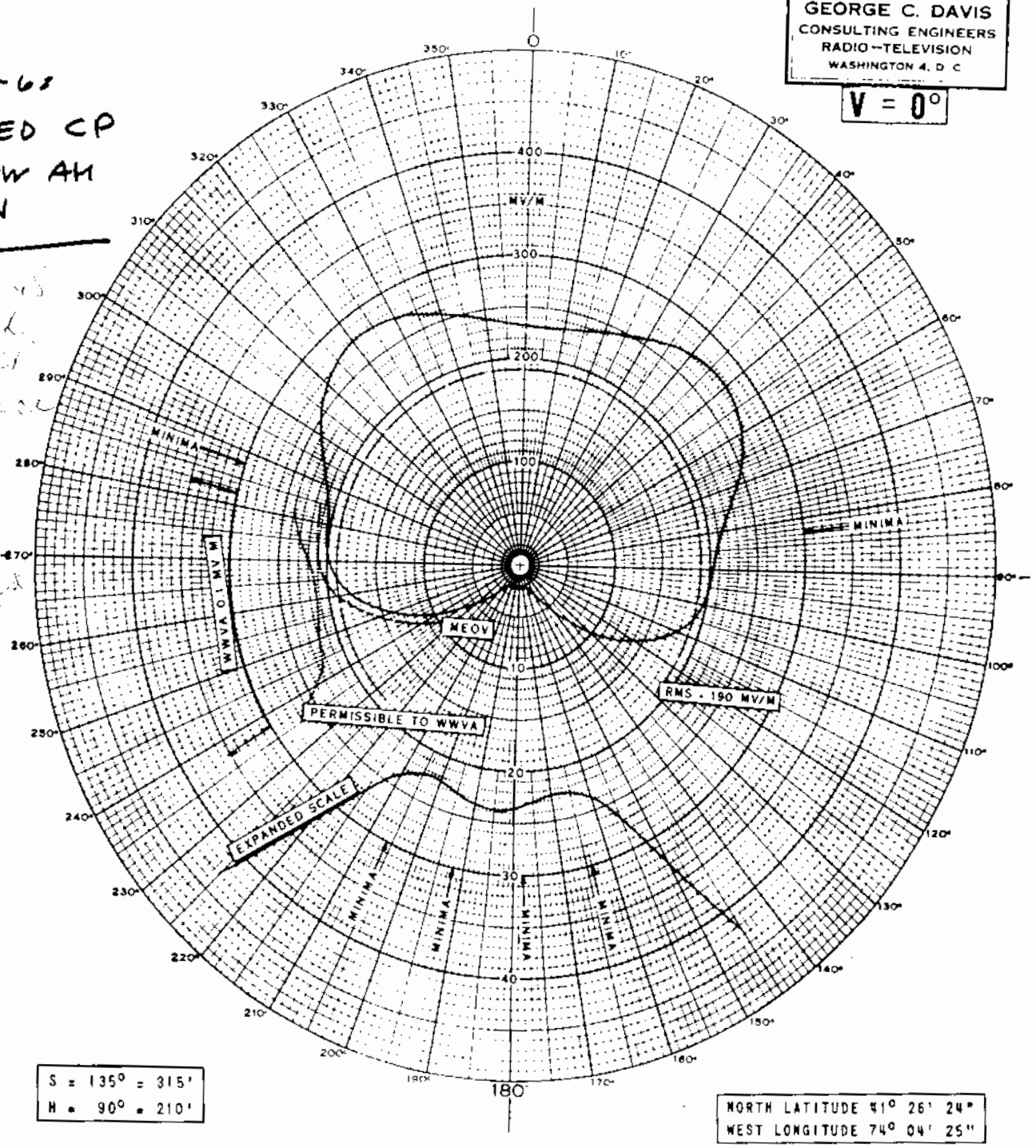
New; Radio Cornwall
Cornwall, New York

1kw, DA-D, D
1170 kc

GEORGE C. DAVIS
CONSULTING ENGINEERS
RADIO—TELEVISION
WASHINGTON 4, D. C.

V = 0°

6-10-68
GRANTED CP
FOR NEW AM
STATION



S = 135° = 315'
H = 90° = 210'

NORTH LATITUDE 41° 26' 24"
WEST LONGITUDE 74° 04' 25"

N 185°E — 4 — 135° — 3 — 135° — 2 — 135° — 1

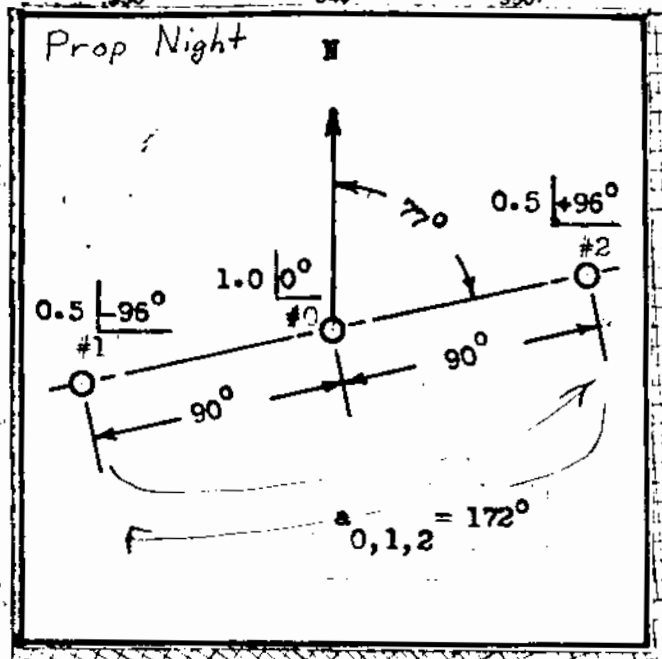
629/309° 594/250° 113/195° 1.0/0°

COMPUTED HORIZONTAL
PLANE RADIATION PATTERN
FOR THE PROPOSED DAYTIME OPERATION OF
RADIO CORNWALL
CORNWALL, NEW YORK
1170 KHz. - 1 KW - DA-D
SEPTEMBER 1967

FCC File No. BP-17504
Accepted 11-16-67 Amended

New; Radio Cornwall
Cornwall, New York

1170 kc



1000 2000 3000 MV/M

HORIZONTAL RADIATION PATTERN
PROPOSED DIRECTIONAL ANTENNA

WWVA WHEELING, W. VA.
50 KW 1170 KC

Jansky and Bailey Washington, D.C.
March 1941

PATTERN NO - 410315
SUPERSEDES - 390916
REINSTATES -

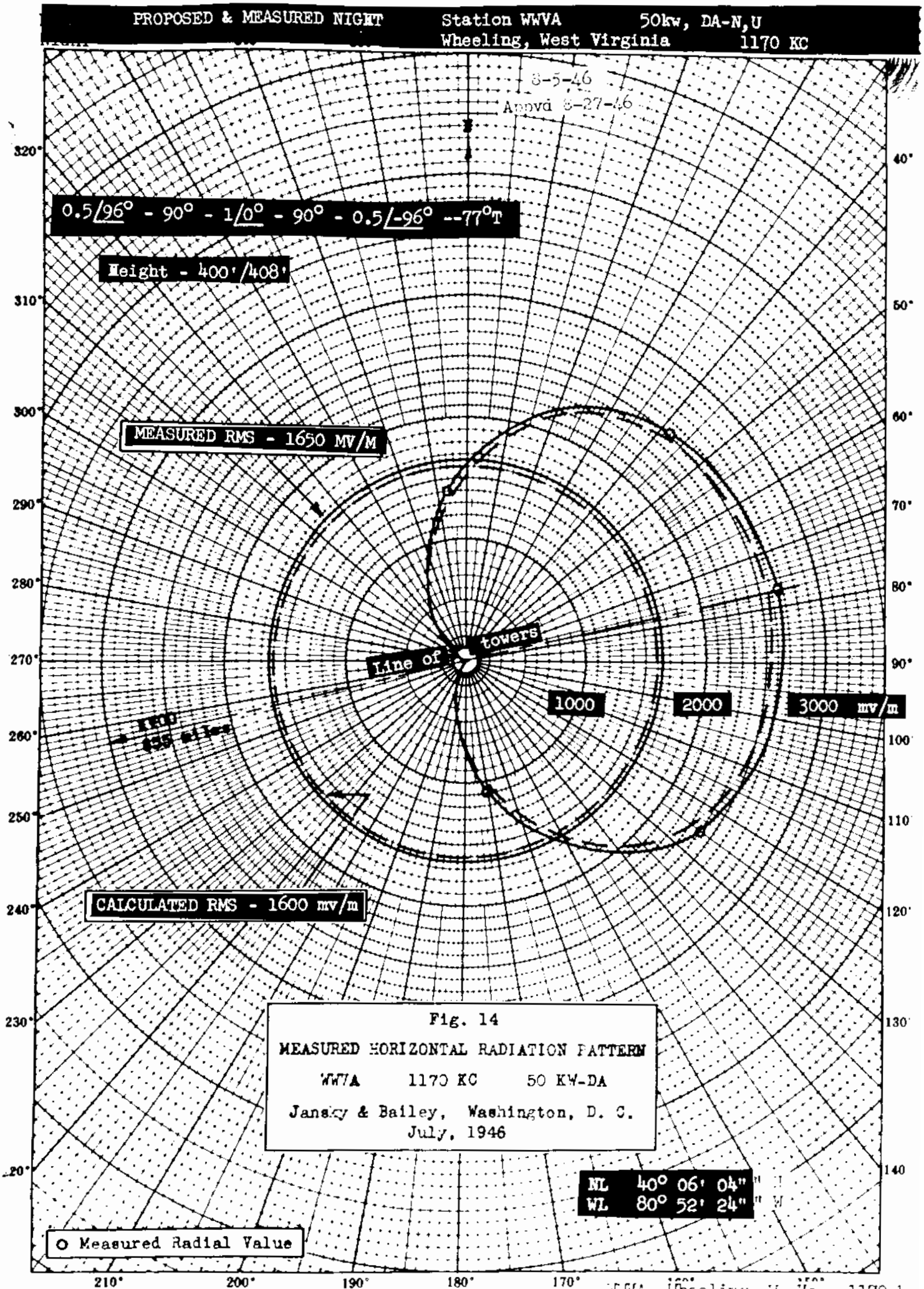


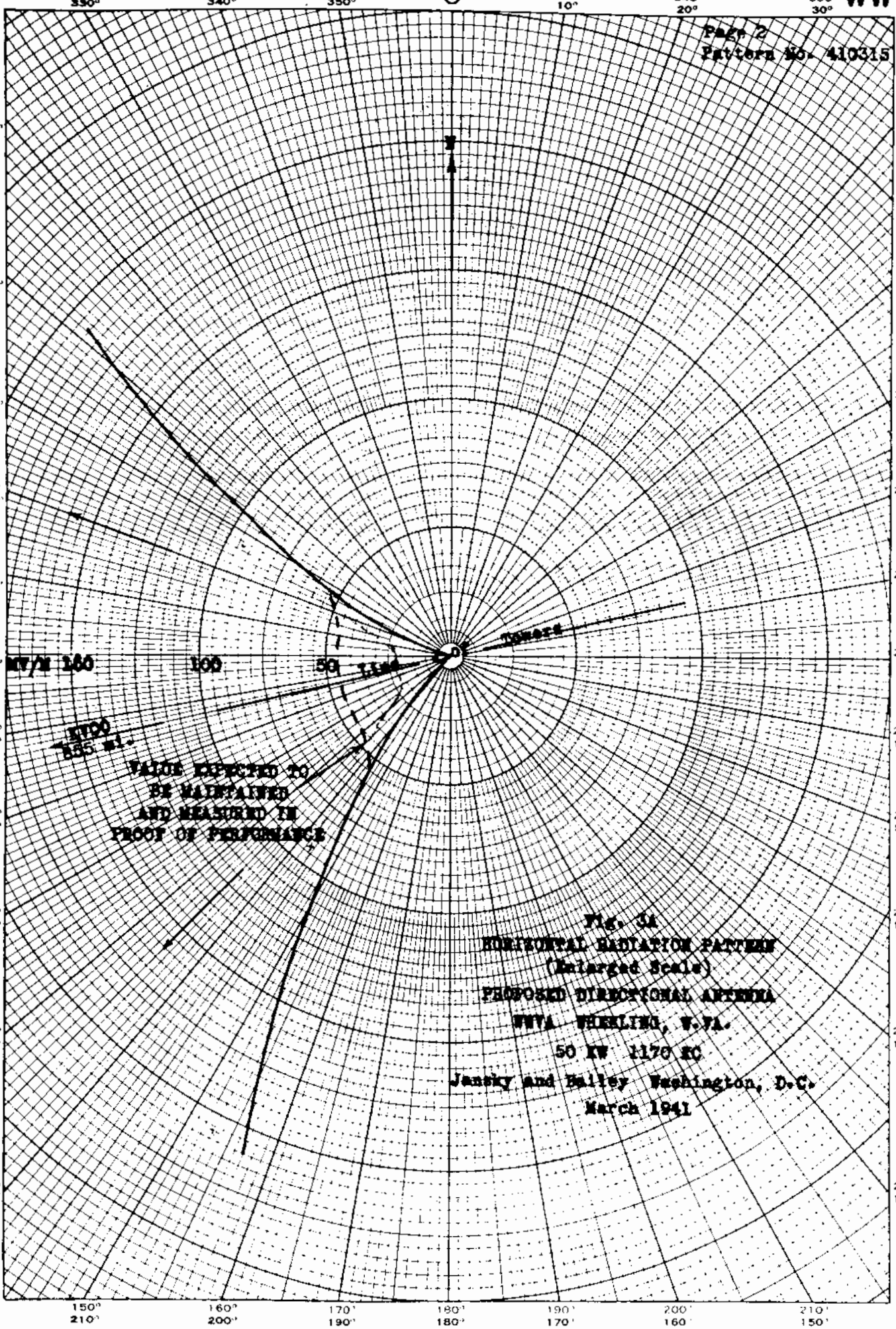
Fig. 14

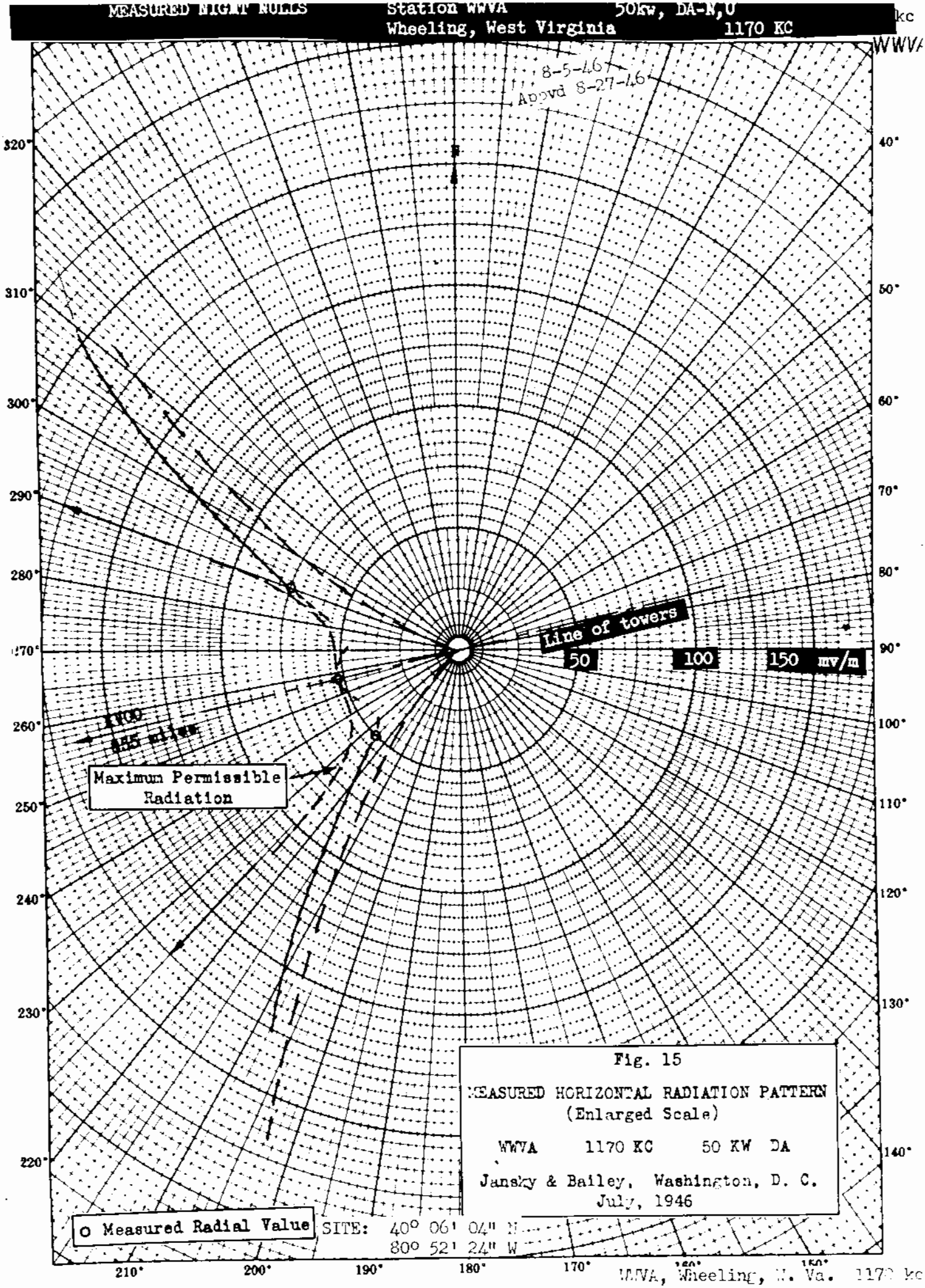
MEASURED HORIZONTAL RADIATION PATTERN

WWVA 1170 KC 50 KW-DA

Jansky & Bailey, Washington, D. C.
July, 1946

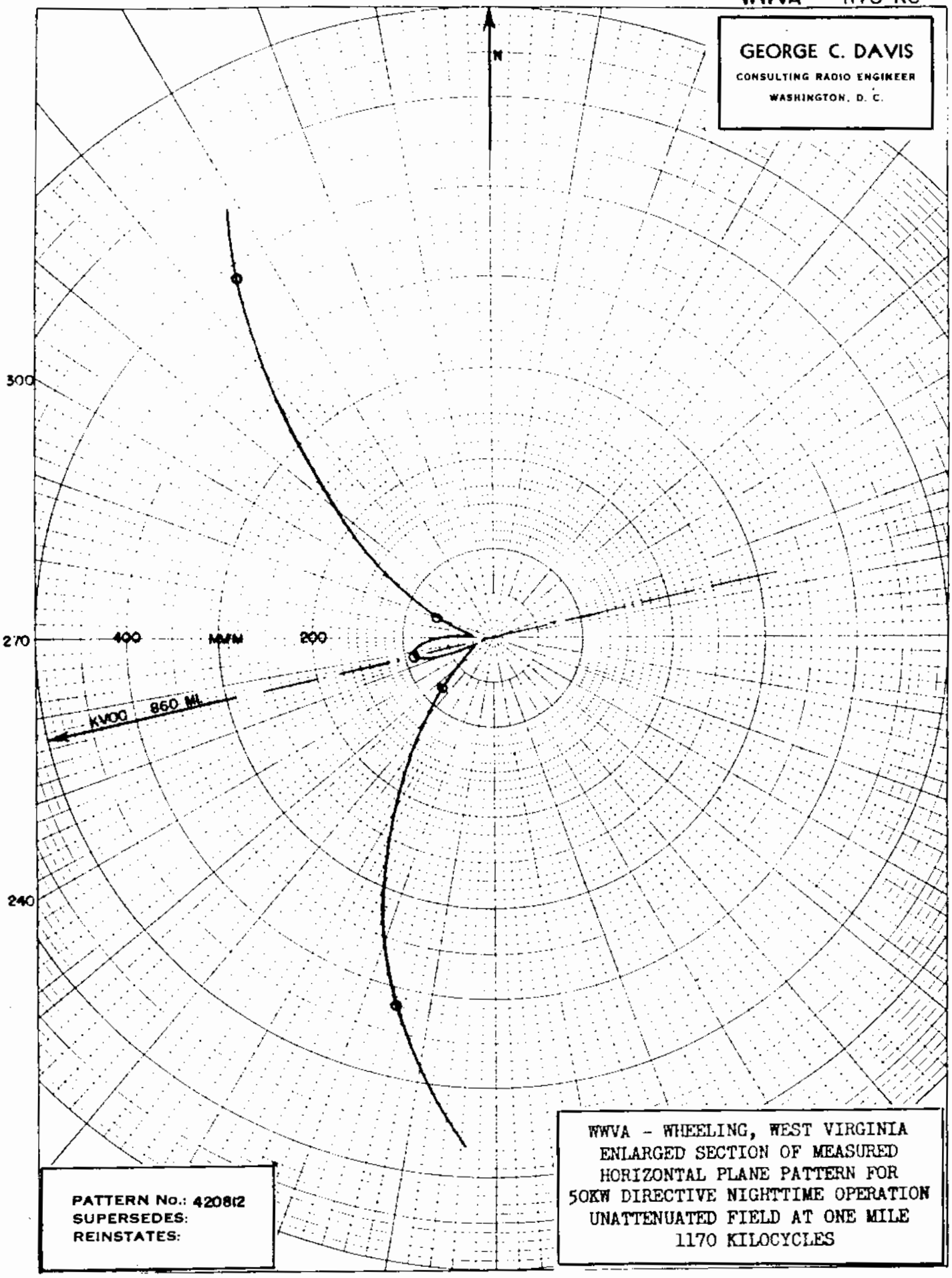
WWVA, Wheeling, W. Va. 1170 k




MEASURED NIGHT NULLS
Station WWVA 50kw, DA-N,U
Wheeling, West Virginia 1170 KC
kc
WWVA
8-5-46
Appvd 8-27-46
320°
310°
300°
290°
280°
270°
260°
250°
240°
230°
220°
40°
50°
60°
70°
80°
90°
100°
110°
120°
130°
140°
210°
200°
190°
180°
170°
Line of towers
50
100
150 mv/m
1100
455 miles
Maximum Permissible Radiation
Fig. 15
MEASURED HORIZONTAL RADIATION PATTERN
(Enlarged Scale)
WWVA 1170 KC 50 KW DA
Jansky & Bailey, Washington, D. C.
July, 1946
O Measured Radial Value
SITE: 40° 06' 04" N
80° 52' 24" W
WWVA, Wheeling, W. Va. 1170 kc

WWVA 1170 KC

GEORGE C. DAVIS
CONSULTING RADIO ENGINEER
WASHINGTON, D. C.

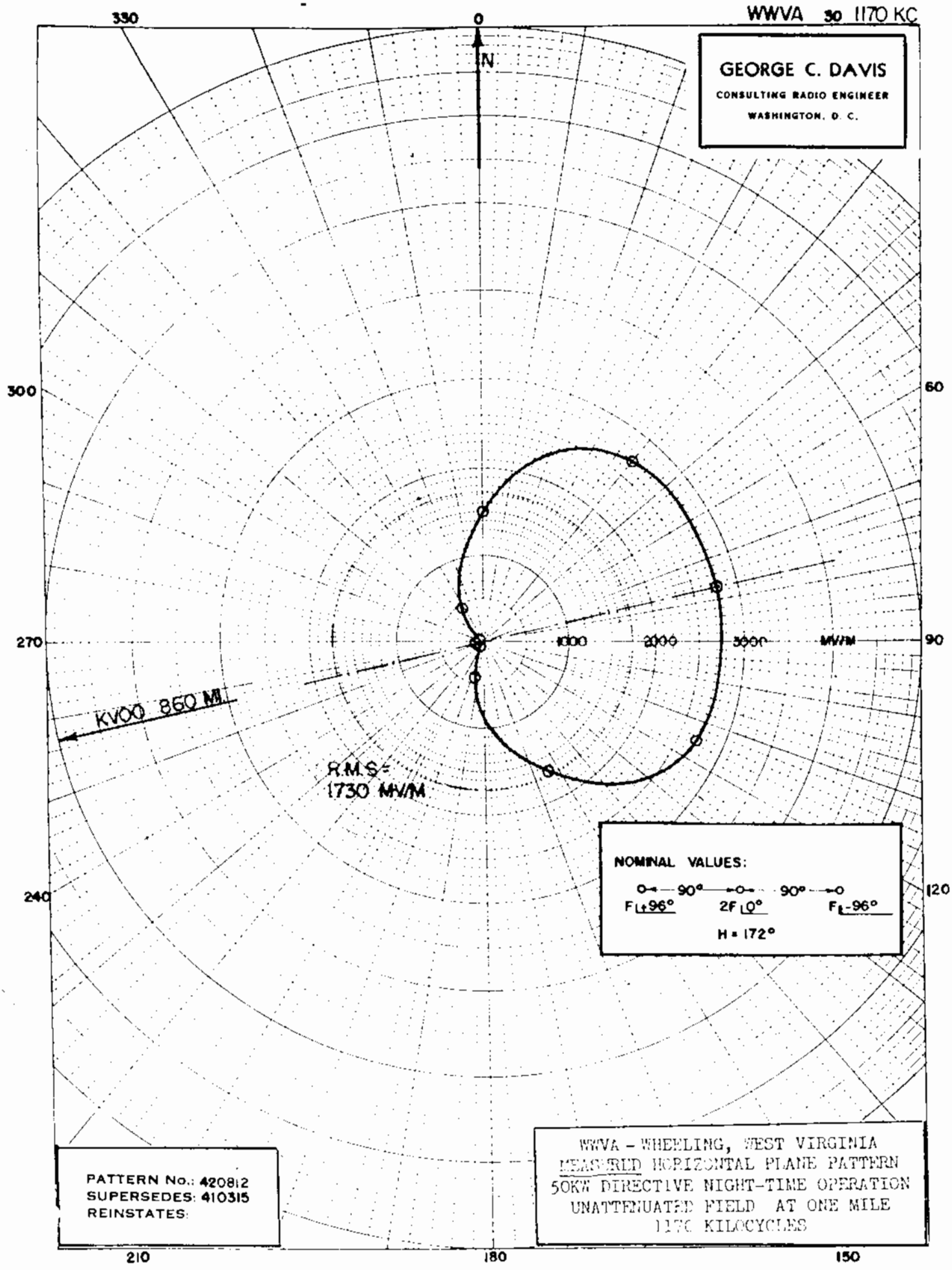


PATTERN No.: 420812
SUPERSEDES:
REINSTATES:

WWVA - WHEELING, WEST VIRGINIA
ENLARGED SECTION OF MEASURED
HORIZONTAL PLANE PATTERN FOR
50KW DIRECTIVE NIGHTTIME OPERATION
UNATTENUATED FIELD AT ONE MILE
1170 KILOCYCLES

KEUFFEL & ESSER CO. N. Y. NO. 3478

WWVA 30 1170 KC



GEORGE C. DAVIS
CONSULTING RADIO ENGINEER
WASHINGTON, D. C.

NOMINAL VALUES:

90° 90°

F_L+96° 2F 0° F_L-96°

H = 172°

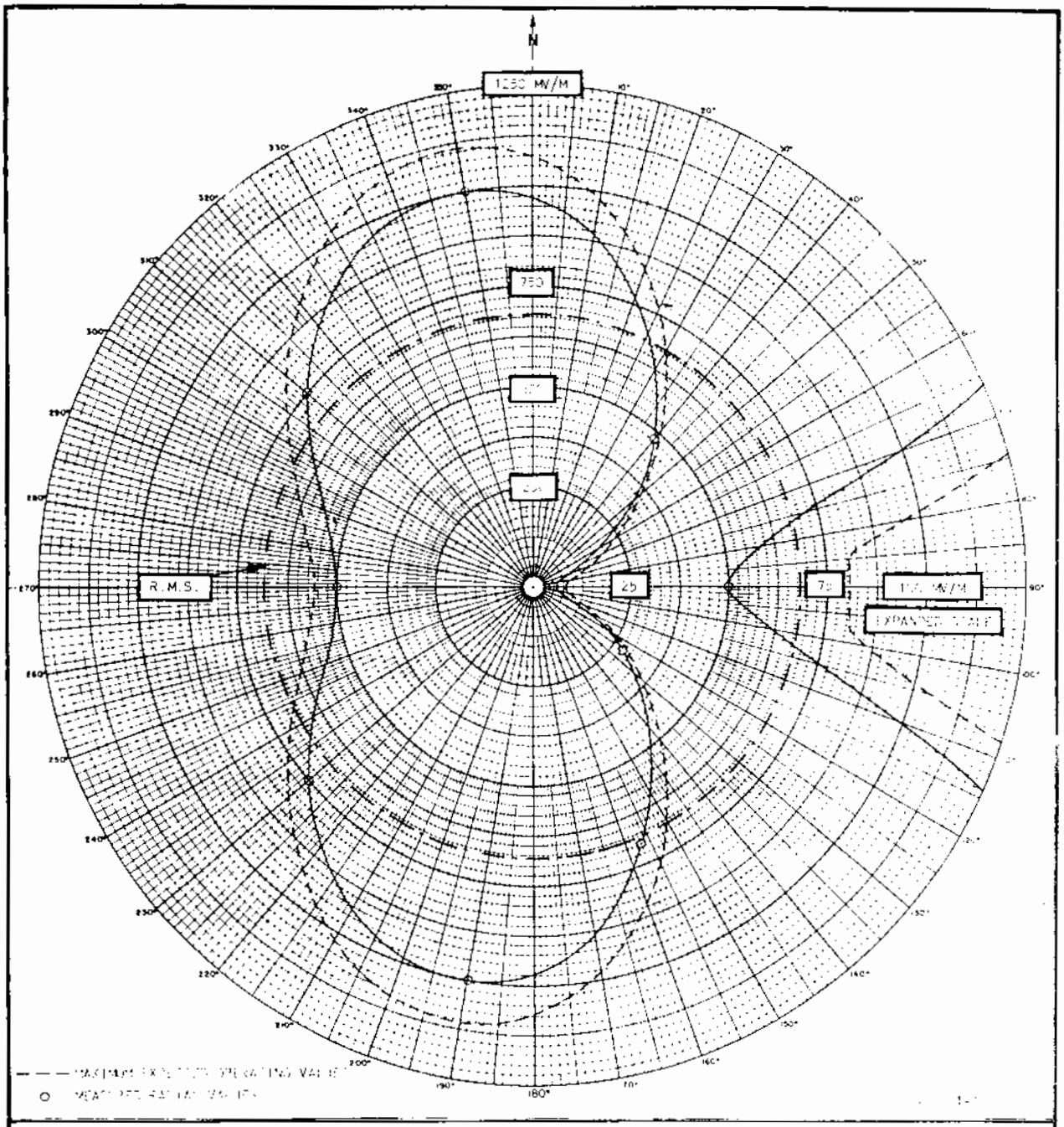
PATTERN No.: 420812
SUPERSEDES: 410315
REINSTATES:

WWVA - WHEELING, WEST VIRGINIA
MEASURED HORIZONTAL PLANE PATTERN
50KW DIRECTIVE NIGHT-TIME OPERATION
UNATTENUATED FIELD AT ONE MILE
1170 KILOCYCLES

Measured Night
(12-28-67ct)

Station KOFI
Kalispell, Montana

KOFI
10kw,DA-N,U
1180 kc



HORIZONTAL RADIATION PATTERN

APPLICANT
LOCATION
FREQUENCY 1180 KC/S
POWER
LATITUDE DEG MIN SEC
LONGITUDE DEG MIN SEC
HRS OPER
RMS FIELD
DATE

SILLIMAN, MOFFET & KOWALSKI
CONSULTING RADIO ENGINEERS
WASHINGTON, D.C.

FCC File No.BL-11797
Accepted 11-2-67

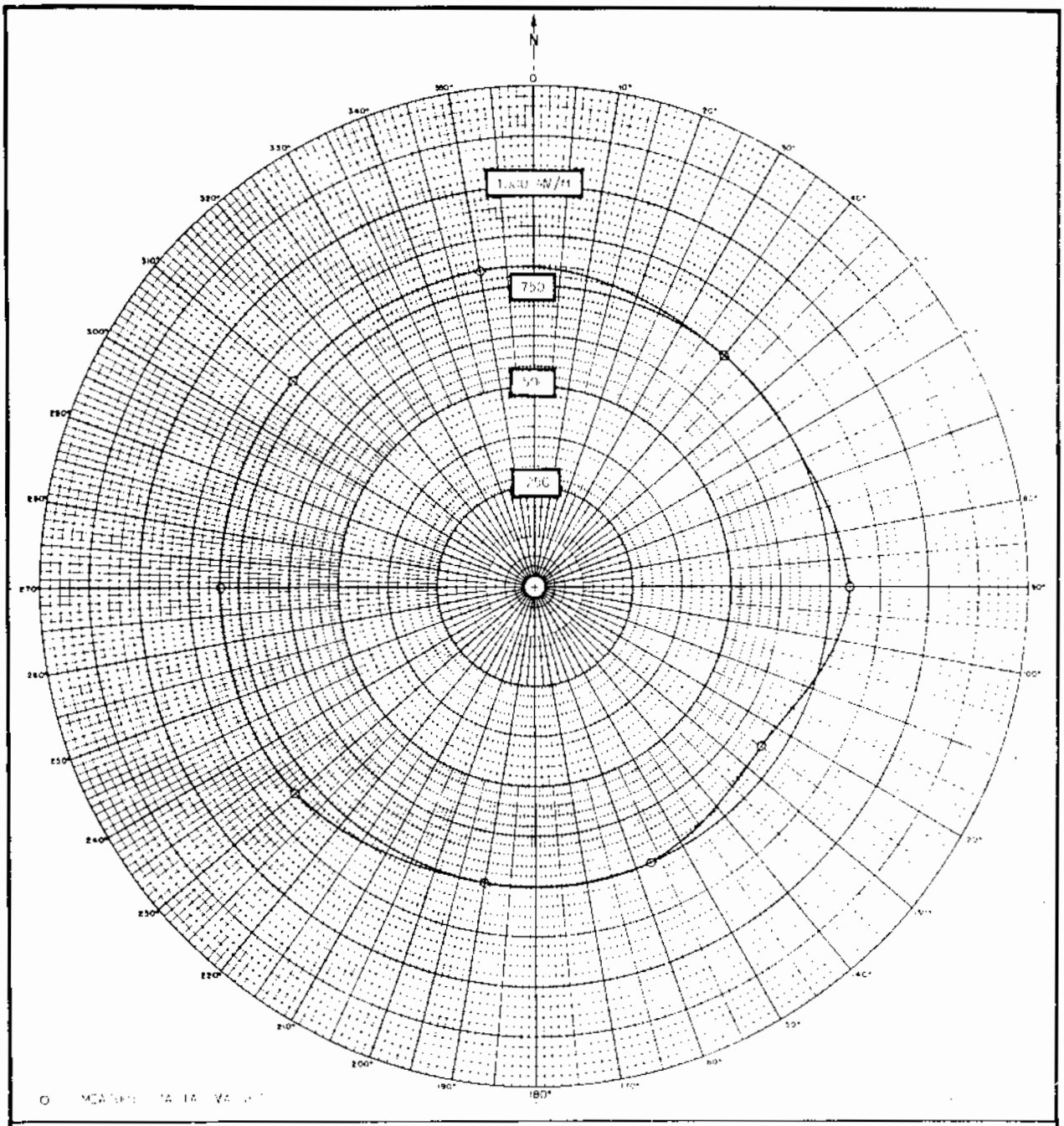
Station KOFI
Kalispell, Montana

1180 kc

Measured Non-DA
(12-28-67ct)

Station KOFI
Kalispell, Montana

KOFI
10kw, DA-N, U
1180 kc



HORIZONTAL RADIATION PATTERN

NON-DIRECTIONAL SURVEY

APPLICANT
LOCATION
FREQUENCY 1180 KCS
POWER
LATITUDE DEG MIN SEC
LONGITUDE DEG MIN SEC
WHEN USED
RMS FIELD
DATE

SILLIMAN, MOFFET & KOWALSKI
CONSULTING RADIO ENGINEERS
WASHINGTON, D.C.

FCC File No. BL-11797
Accepted 11-2-67

Station KOFI
Kalispell, Montana

1180 kc

KOFI

Proposed Night
(12-22-64ct)

Station KOFI
Kalispell, Montana

10kw,DA-N,U
1180 kc

-P 6-17-66

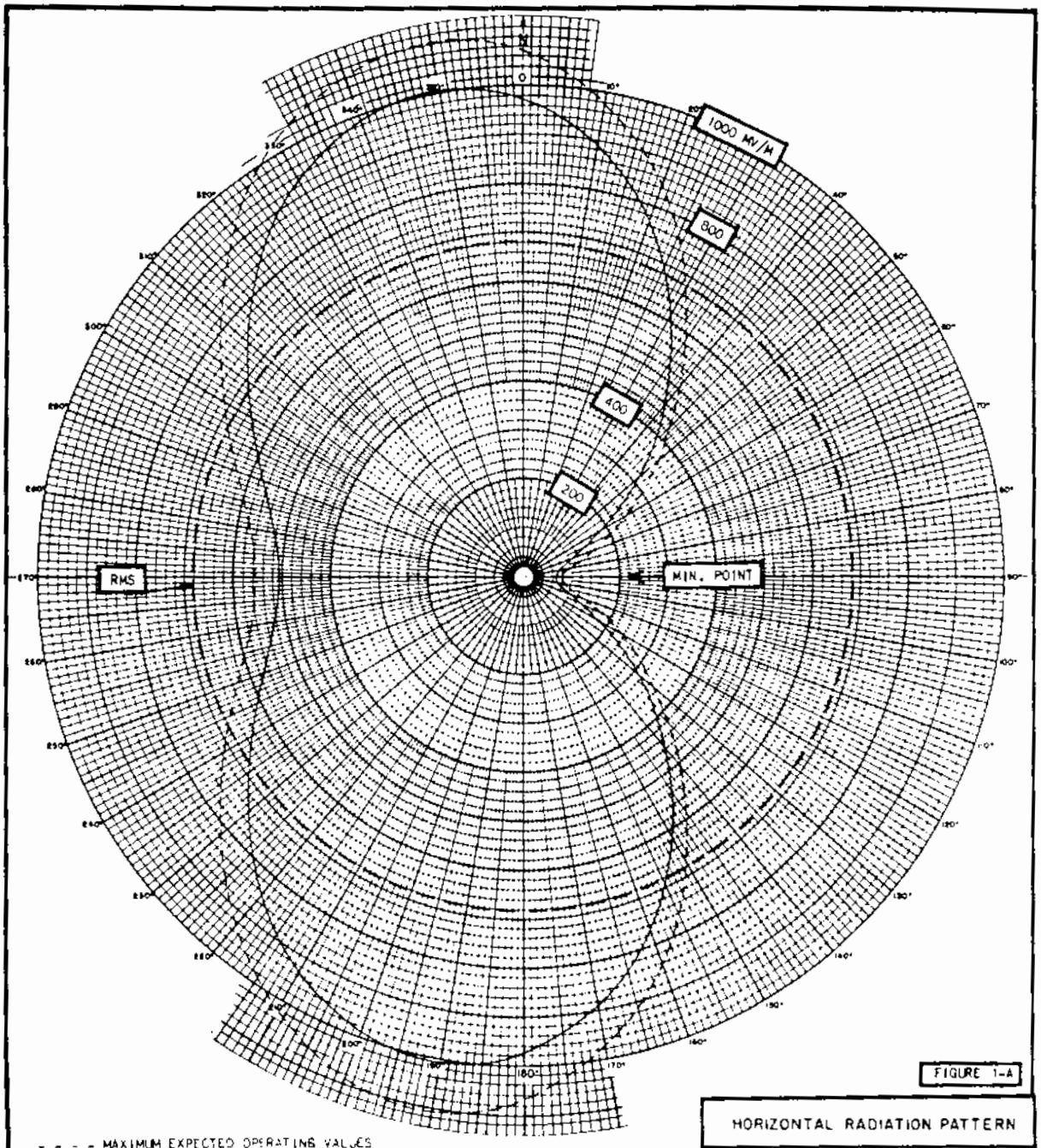


FIGURE 1-A

- - - - MAXIMUM EXPECTED OPERATING VALUES

HORIZONTAL RADIATION PATTERN

APPLICANT	KOFI
LOCATION	KALISPELL, MONTANA
FREQUENCY	180 KC/S
POWER	10,000 WATTS
LATITUDE	48 DEG 11 MIN. 52 SEC.
LONGITUDE	114 DEG 15 MIN. 03 SEC.
WHEN USED	NIGHTTIME
RMS FIELD	681.1 MV/M
DATE	SEPTEMBER 1964

SILLIMAN, MOFFET & KOWALSKI
CONSULTING RADIO ENGINEERS
WASHINGTON, D.C.

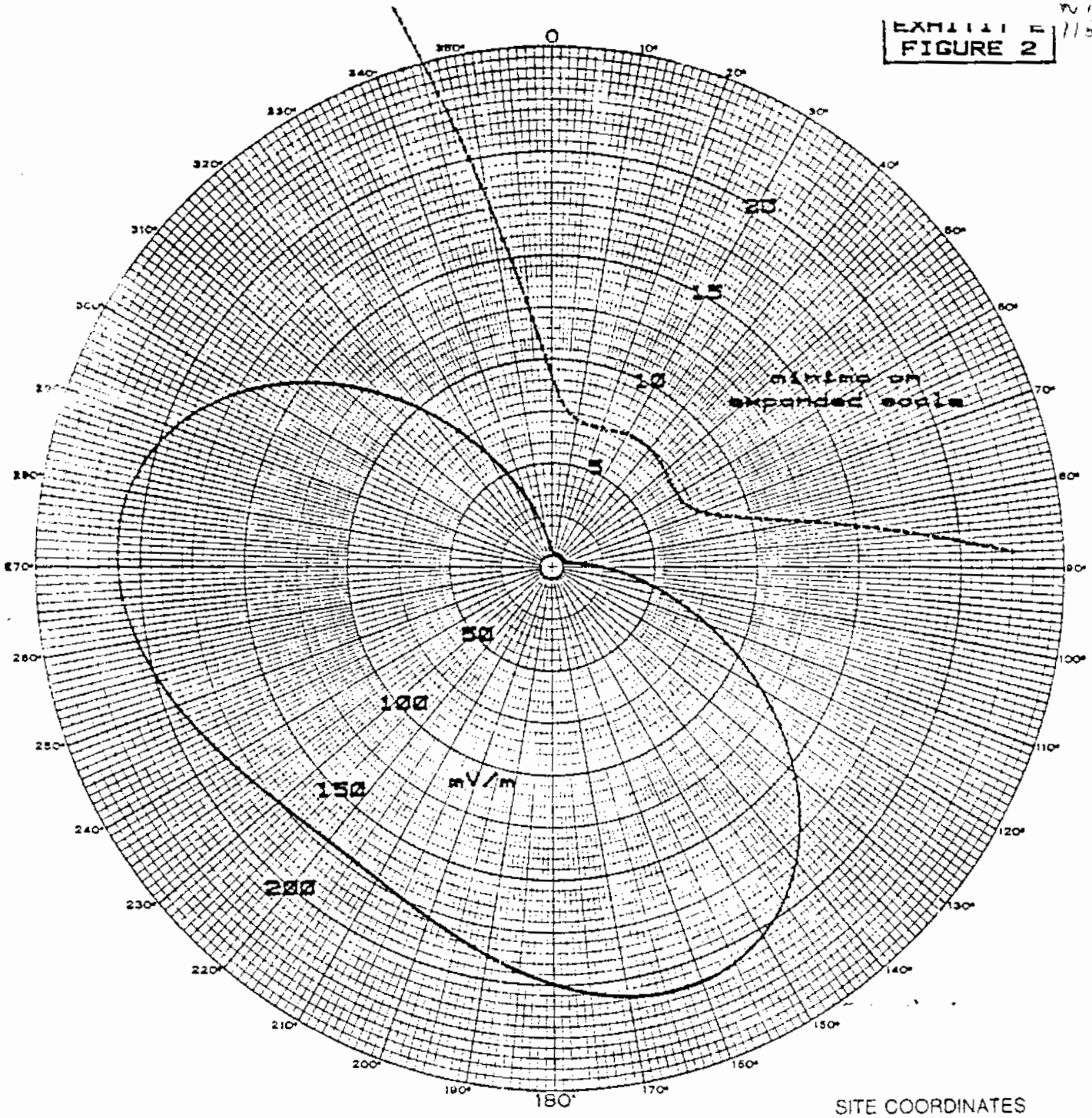
FCC File No. BP-16369
Accepted 12-1-64

Station KOFI
Kalispell, Montana

1180 kc

EXHIBIT E
FIGURE 2

WKKE
1180 KHz



SITE COORDINATES

N 32-17-43
W 90-06-54

ANTENNA PARAMETERS

3 TOWERS .5 KW.

THEO. RMS, mV/m 133.23
THEO. K(L), mV/m 62
THEO. RSS, mV/m 123.03
FCC 'Q' @ H-PLANE 6

TOWER #	FIELD	PHASE	ORIENT.	SPACING	HEIGHT	TOP-LOADING
1	1	0	0	0	76	14
2	1.59	67.9	37.5	120	76	14
3	.64	135.7	37.5	240	76	14

MID SOUTH MEDIA INC.
1180KHZ 10KW-D .5KW-N-DA
PEARL MISSISSIPPI

REVISED 8-30-81

WKKE

Olvie E Sisk
Box 567
Fulton Ms 38843

CFSL

Station CFSL
Weyburn, Saskatchewan

5kw, 10kw-LS, DA-N, U, Class II
1190 kc

DESCRIPTION SHEET - DIRECTIONAL ANTENNA

STATION: CFSL — Main Studio: Weyburn, Saskatchewan

Frequency: 1190 kHz — Power: 10 kw Day/ 5 kW Night

Notification List: 234 — Date: November 15, 1967

GEOGRAPHICAL LOCATION: Latitude: 49° 27' 57" North
Longitude: 103° 50' 33" West

ANTENNA CHARACTERISTICS:

Mode of Operation: DA-N
Number of Elements: Four (4)
Type of Elements: Guyed Steel towers, uniform cross-section, base insulated for series feed.

TOWER:	#1 South	#2 South-Centre	#3 North-Centre	#4 North
HEIGHT ABOVE BASE INSULATOR:	200' (87°)	200' (87°)	200' (87°)	200' (87°)
OVERALL HEIGHT:	205'	205'	205'	205'
FIELD RATIO:	1.0	2.48	2.48	1.0
PHASING:	0°	+203.5°	+49.5°	+252°

GROUND SYSTEM: 120 equally spaced radials per tower of No. 10 B & S gauge bare copper wire, buried approximately 8". Length of radials 331' (0.4 wavelength) with the exception of those joined along the common chords.

SPACING AND ORIENTATION OF TOWERS: The towers are on a line bearing 12° East of True North. Spacing between #1 and #2 towers and between #2 and #3 towers is 184' (80°). Spacing between #3 and #4 towers is 179.4' (78°)

PREDICTED EFFECTIVE FIELDS:

Day: 592 mv/m at 1 mile for 10 kW
187 mv/m at 1 mile for 1 kW

Night: 492 mv/m at 1 mile for 5 kW
220 mv/m at 1 mile for 1 kW

D. E. M. ALLEN, P. ENG. BROADCAST CONSULTING ENGINEER.

Description Sheet
(1-30-67ct)

Station CFSL
Weyburn, Saskatchewan

2.5KW/
~~2.5KW~~ 10kw-LS,DA-N,U,ClassII
1190 kc

DIRECTIONAL ARRAY - DESCRIPTION SHEET

STATION : CFSL MAIN STUDIO : Weyburn, Sask.

FREQUENCY : 1190 KHz POWER : 10 D / (2.5) N

CLASS : II MODE : DA - N

Notification List No.: 220 Date : December 20, 1966

GEOGRAPHICAL LOCATION OF THE ANTENNA SYSTEM : 49° 37' 48" N. Lat.
103° 48' 30" W. Long.

ANTENNA CHARACTERISTICS :

No. of Elements : 3
Type : Square, uniform cross-section, guyed, base insulated, series fed, no top loading.

Tower :	#1 (S)	#2 (C)	#3 (N)
Height above Insulator:		195 ft. (85°)	
Overall Height:		200 ft.	
Spacing :	168 ft. (73°) Betw. adj. towers		
Phasing :	+ 148°	0°	-148°
Field Ratio :	0.555	1.000	0.555
Orientation :	2.5° East of True N.		

Ground System : 120 equally spaced radials per tower and extending to the limits of the property. The radials have an average length of 331 ft. (0.4 wavelength) and consist of #10 AWG bare, soft-drawn copper wire buried approximately 8 inches in ground.

Expected Efficiency :

DAY - 595 mV/m @ 1 mile for 10 Kw radiated, or
188.5 mV/m @ 1 mile for 1 Kw radiated;

NIGHT - 260 mV/m @ 1 mile for 2.5 Kw radiated, or
165 mV/m @ 1 mile for 1 Kw radiated.

CFSL

Proposed Night
(12-28-67ct)

Station CFSL
Weyburn, Saskatchewan

5kw, 10kw-LS, DA-N, U, Class II
1190 kc

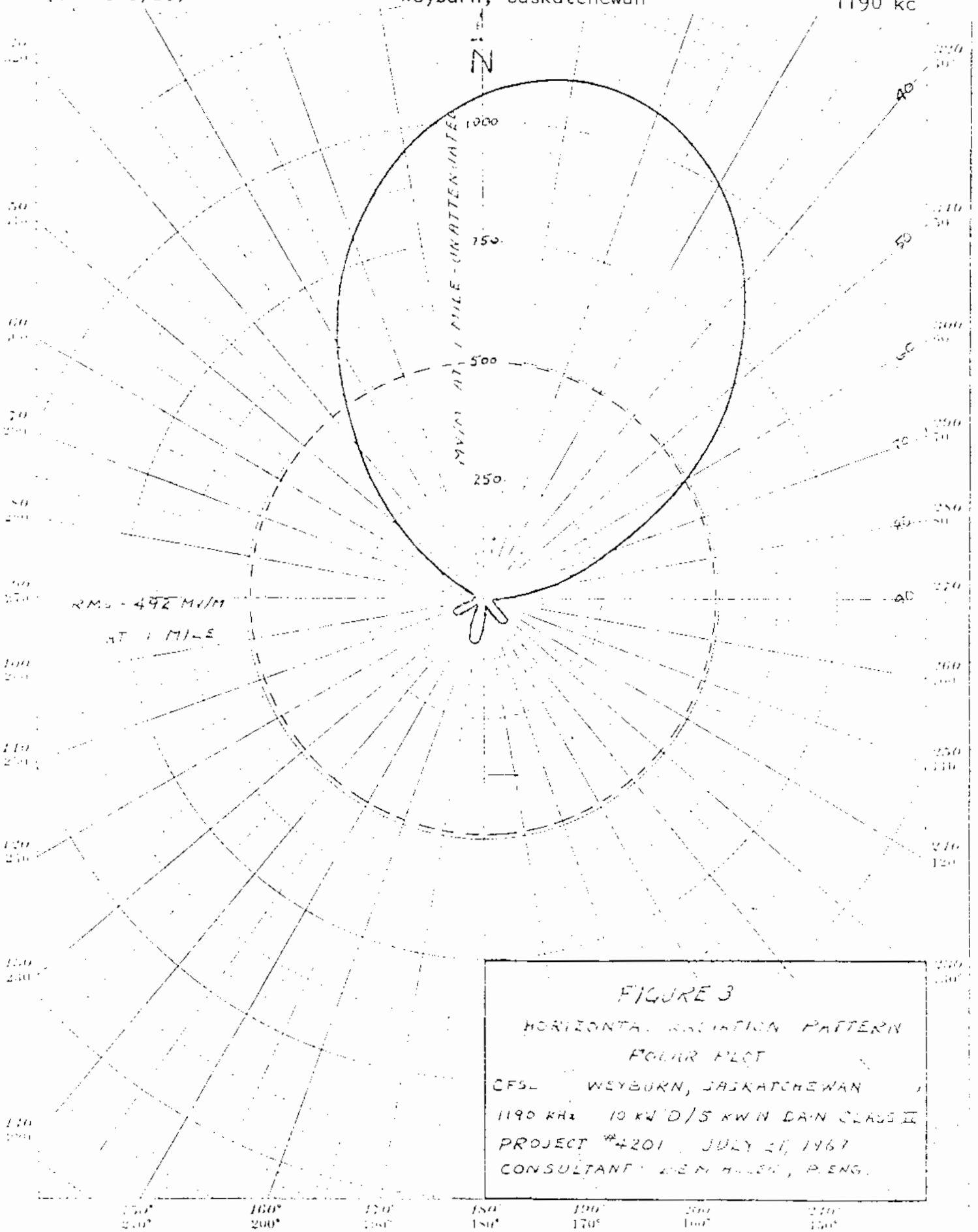


FIGURE 3

HORIZONTAL RADIATION PATTERN
POLAR PLOT

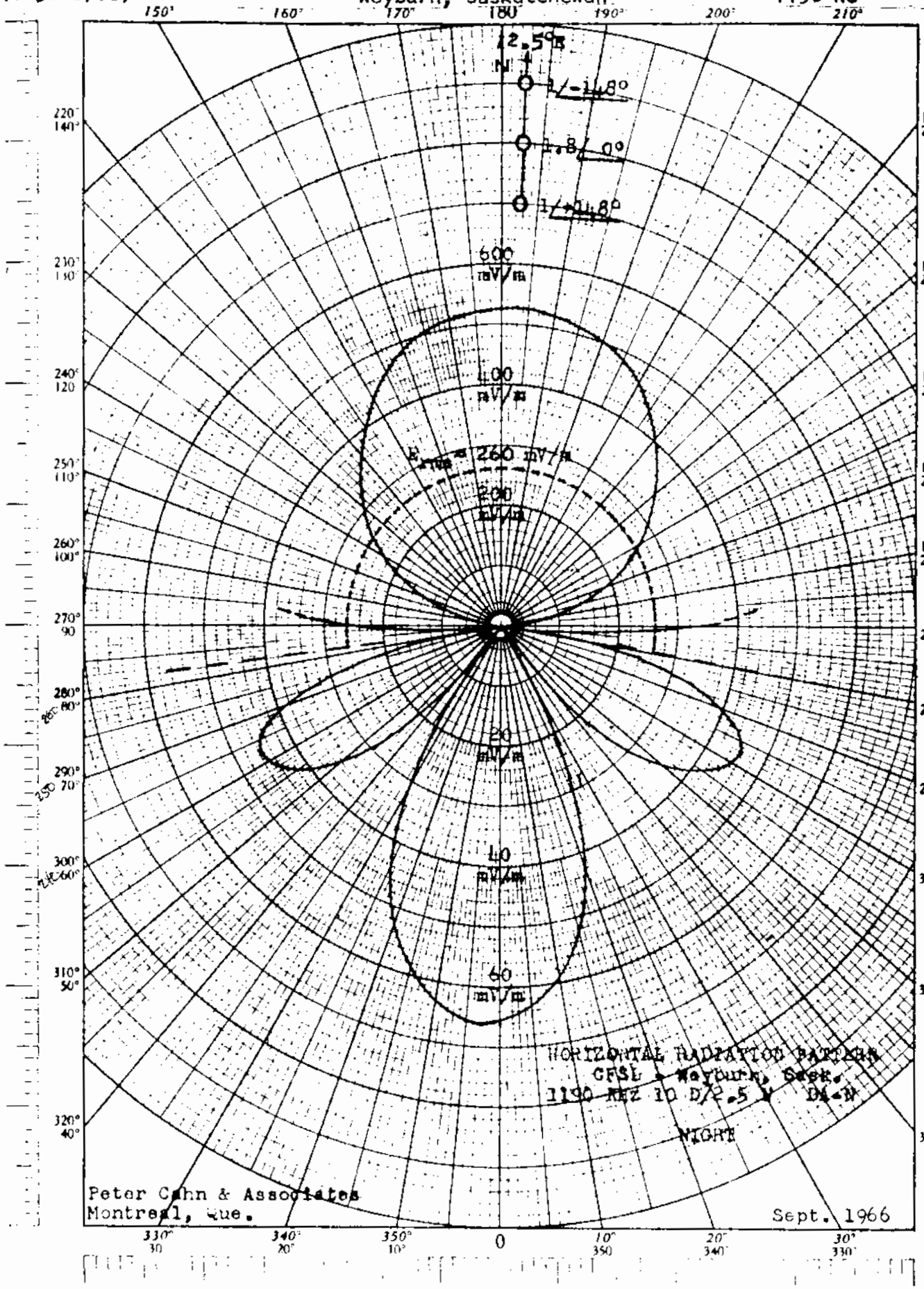
CFSL WEYBURN, SASKATCHEWAN
1190 KHz 10 KW D/5 KW N DA-N CLASS II
PROJECT #4201 JULY 21, 1967
CONSULTANT: [illegible], P.ENG.

CFSL

Proposed Night
(1-30-67ct)

Station CFSL
Weyburn, Saskatchewan

250w, 10kw-LS, DA-N, U, ClassII
1190 kc



K&E POLAR COORDINATE 46 4417

Proposed Night Nulls
(12-28-67ct)

Station CFSL 5kw, 10kw-LS, DA-N, U, Class II
Weyburn Saskatchewan 1190 kc

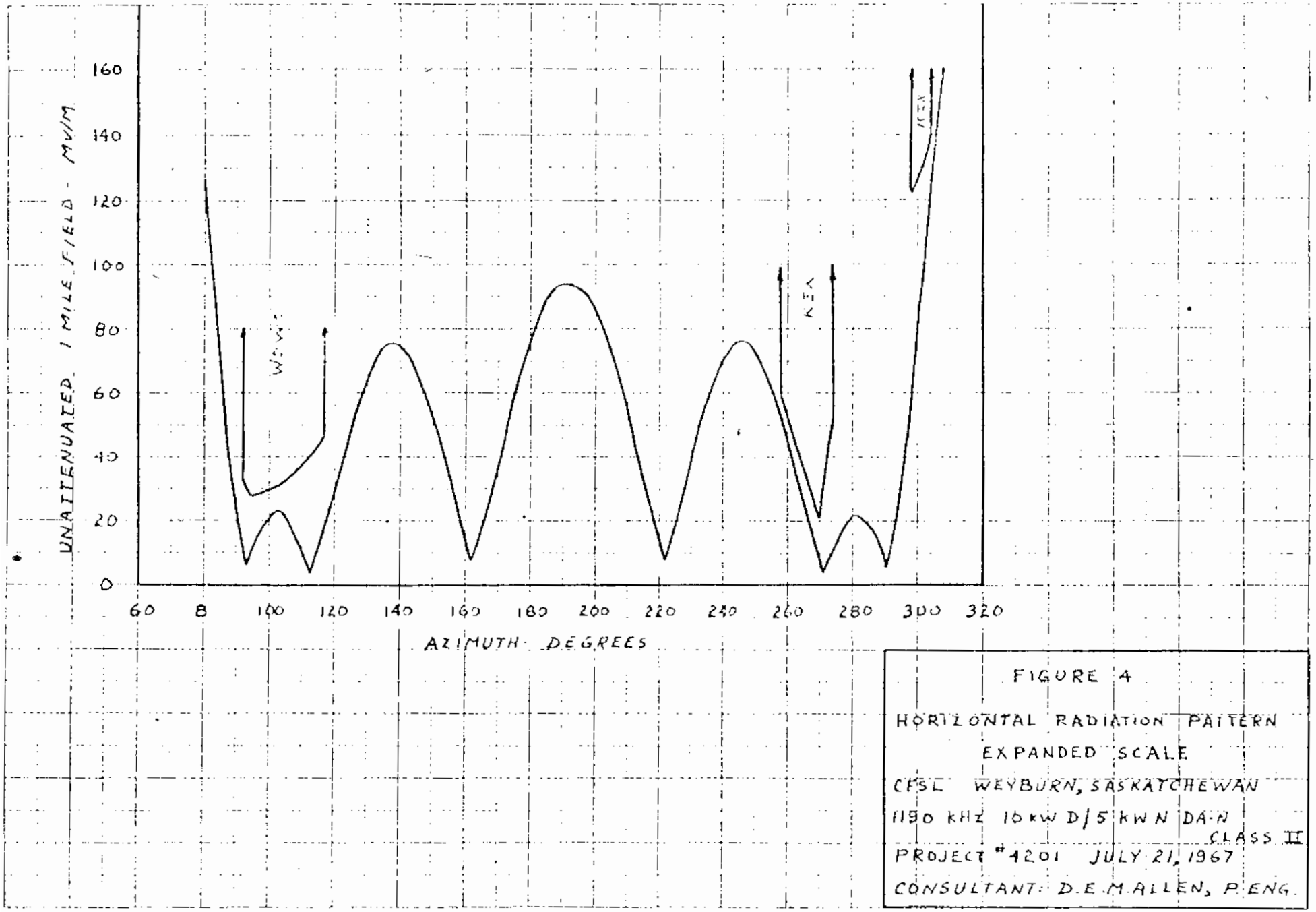


FIGURE 4

HORIZONTAL RADIATION PATTERN
EXPANDED SCALE
CFSL WEYBURN, SASKATCHEWAN
1190 kHz 10 kW D/5 kW N DA-N
CLASS II
PROJECT #4201 JULY 21, 1967
CONSULTANT: D.E.M.ALLEN, P.ENG.

CFSL

CHTN

DIRECTIONAL ANTENNA DESCRIPTION SHEET

STATION: CHTN MAIN STUDIO: CHARLOTTETOWN P.E.I.

POWER: 10 KW FREQUENCY: 1190 KHZ CLASS II

NOTIFICATION LIST NO: 333 DATE: November 8, 1974.

GEOGRAPHICAL LOCATION: North Latitude 46° 11' 22"
West Longitude 63° 09' 54"

ANTENNA CHARACTERISTICS

MODE OF OPERATION: DA-N

ANTENNA CHARACTERISTICS: Three element, uniform cross-section, guyed steel tower; base insulated for series feed, no top loading.

TOWERS:	No. 1	No. 2	No. 3
HEIGHT ABOVE INSULATORS:	138' (60°)	138'	138'
OVERALL HEIGHT:	143'	143'	143'
FIELD RATIO:	.50	1.00	.50
PHASING:	80°	0°	-80°
SPACING:	Ref.	1000° (230')	200° (460')
ORIENTATION:	Ref.	70°	70°

GROUND SYSTEM: 120 equiangularly spaced radials extend from the base of each tower to a maximum distance of 330 feet (0.4 wavelength) and bonded along the common chord. Ground wires are No. 10B and S soft drawn copper wire, buried 8" in the ground.

PREDICTED EFFECTIVE FIELD: 570 mV/m for 10 KW (Day and Night)

RCA LIMITED
REVISED OCTOBER 1974

CJMR

ANTENNA DESCRIPTION SHEET

DIRECTIONAL DA-D

Station Call	C J M R
Location	Mississauga, Ontario.
Frequency	1190 khz
Power	10,000 watts
Class	II
Time	Day

Notification Reference List No. 395 April 11, 1980

Geographical Coordinates Lat 43°27'29", Lon 79°45'18"

Array Characteristics Four elements, guyed, uniform cross section, base insulated, series feed. Height 197 feet or 85.7 degrees. No top load.

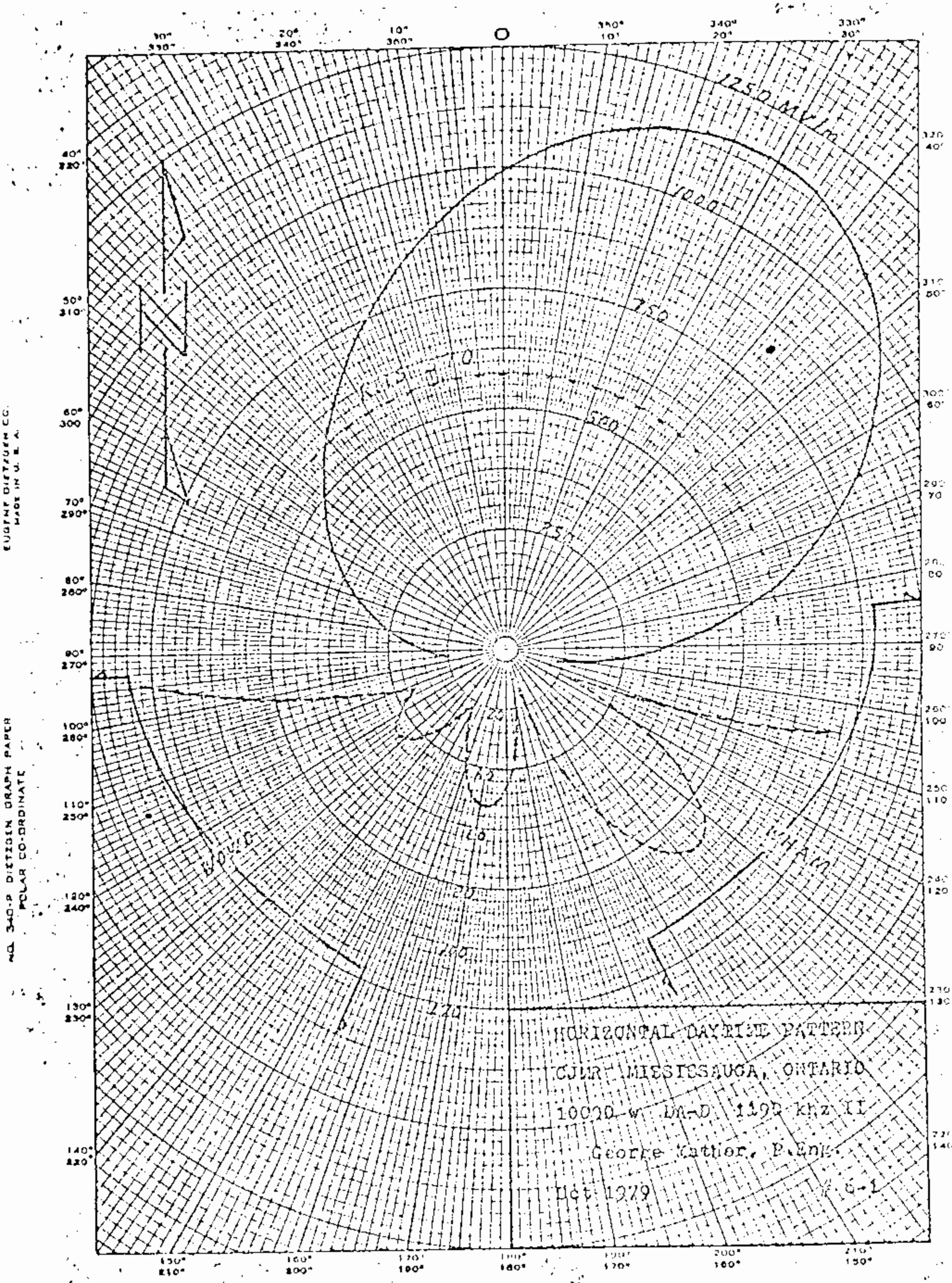
Tower		One	Two	Three	Four
spacing		ref.	137.1° 315'	161.6° 371.4'	85.7° 197'
bearing		ref.	320°	352°	050°
Day	R	1.000	0.950	0.893	0.940
	ø	000°	-056°	-154°	-098°

Ground System 120 radials per tower, #10 AWG bare, soft copper wire, spaced uniformly, buried approximately 8 inches. Radials bonded along lines between towers and bonded to soft copper strap at tower bases. Maximum length 315 feet

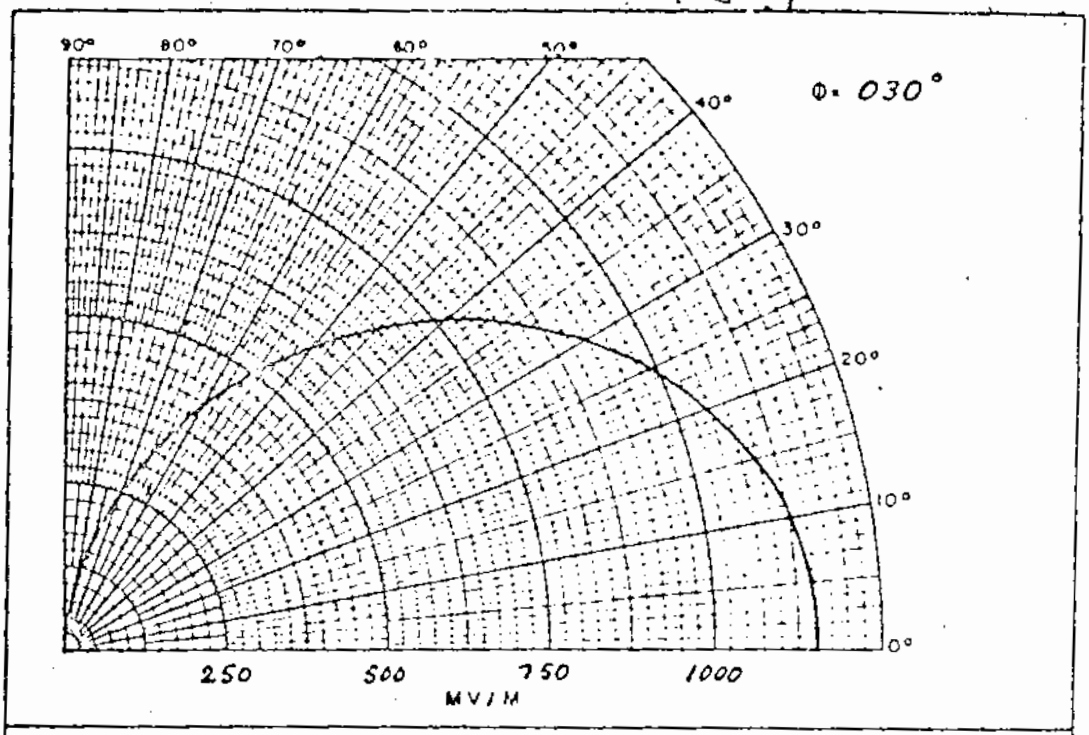
Predicted RMS 570 mv/m at 1 mile for 10 kw
180 mv/m at 1 mile for 1 kw

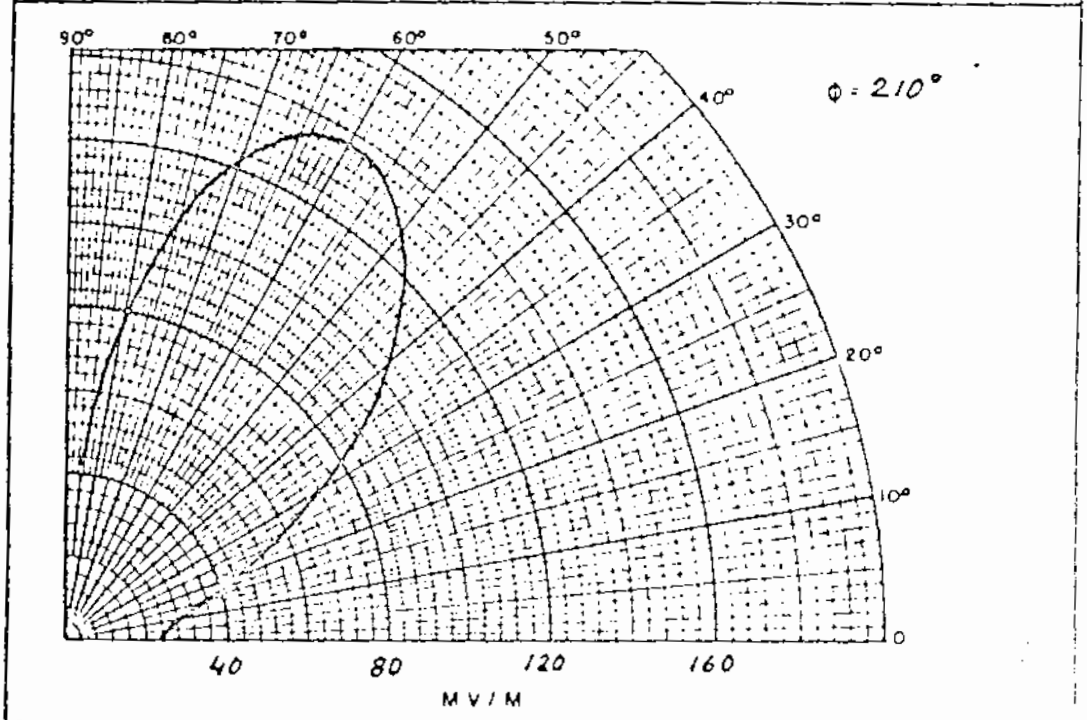
Oct 1979 # 5

CJMK


1250 MV/m
1000
750
500
250
HORIZONTAL DAYTIME PATTERN
CJMR MISSISSAUGA, ONTARIO
10000 w DA-D 1190 khz II
George Mather, P.Eng.
Oct 1979
F 6-1
NO. 340-P DIETZGEN GRAPH PAPER
POLAR CO-ORDINATE
EUGENE DIETZGEN CO.
MADE IN U. S. A.

CJMR





POLAR CO-ORDINATE

VERTICAL RADIATION PATTERNS

CJMR MISSISSAUGA, ONTARIO
10000 w DA-D 1190 khz II
George Mather, P.Eng.

Oct 1979

7

#210

TABLE 1

ANTENNA DESCRIPTION SHEET

STATION CALL: NEW

MAIN STUDIO LOCATION: WINNIPEG, MANITOBA

FREQUENCY: 1190 kc/s

POWER: 10 kW

CLASS: II

MODE: DA-2

SCHEDULE: UNLIMITED

NOTIFICATION LIST NO.: 210 DATE: March 15, 1966

GEOGRAPHICAL LOCATION: Latitude: 49° 44' 07" North
Longitude: 97° 11' 36" West

ARRAY CHARACTERISTICS: Four guyed steel towers of uniform cross section; base insulated, series fed; no top loading.

TOWER:	#1 NORTH	#2 N.C.	#3 S.C.	#4 SOUTH
HEIGHT ABOVE INSULATOR:	200'(87.2°)	200'	200'	200'
SPACING:	reference	275'(120°)	550'(240°)	825'(360°)
TRUE BEARING:	reference	192°	192°	192°
DAY CURRENT RATIO:	1.00	1.00	0.36	not used
DAY PHASE:	0°	125°	-110°	
NIGHT CURRENT RATIO:	1.00	2.675	2.675	1.00
NIGHT PHASE:	0°	144°	-73°	71°

GROUND SYSTEM: 120 uniformly spaced radials per tower of #10 AWG soft copper wire buried approximately 8" below grade. Radials are of average length 0.40λ(330') except those joined along the common chords.

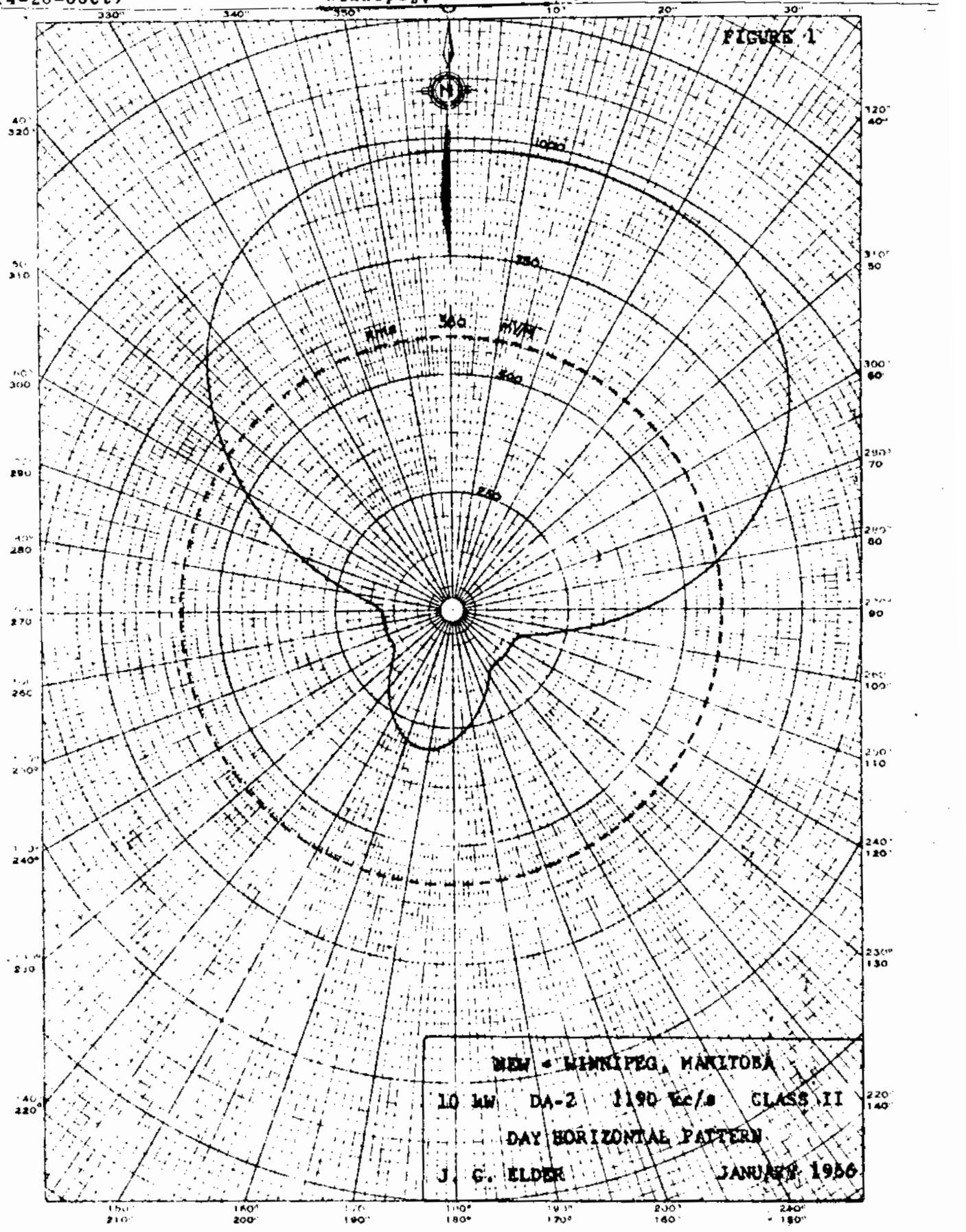
PREDICTED EFFICIENCY:
DAY 184 mV/m for 1 kW
580 mV/m for 10 kW
NIGHT 180 mV/m for 1 kW
569 mV/m for 10 kW

#210

Proposed Day
(4-28-66ct)

New Station
Winnipeg, Manitoba

10kw, DA-2, U, Class, II
1190 kc

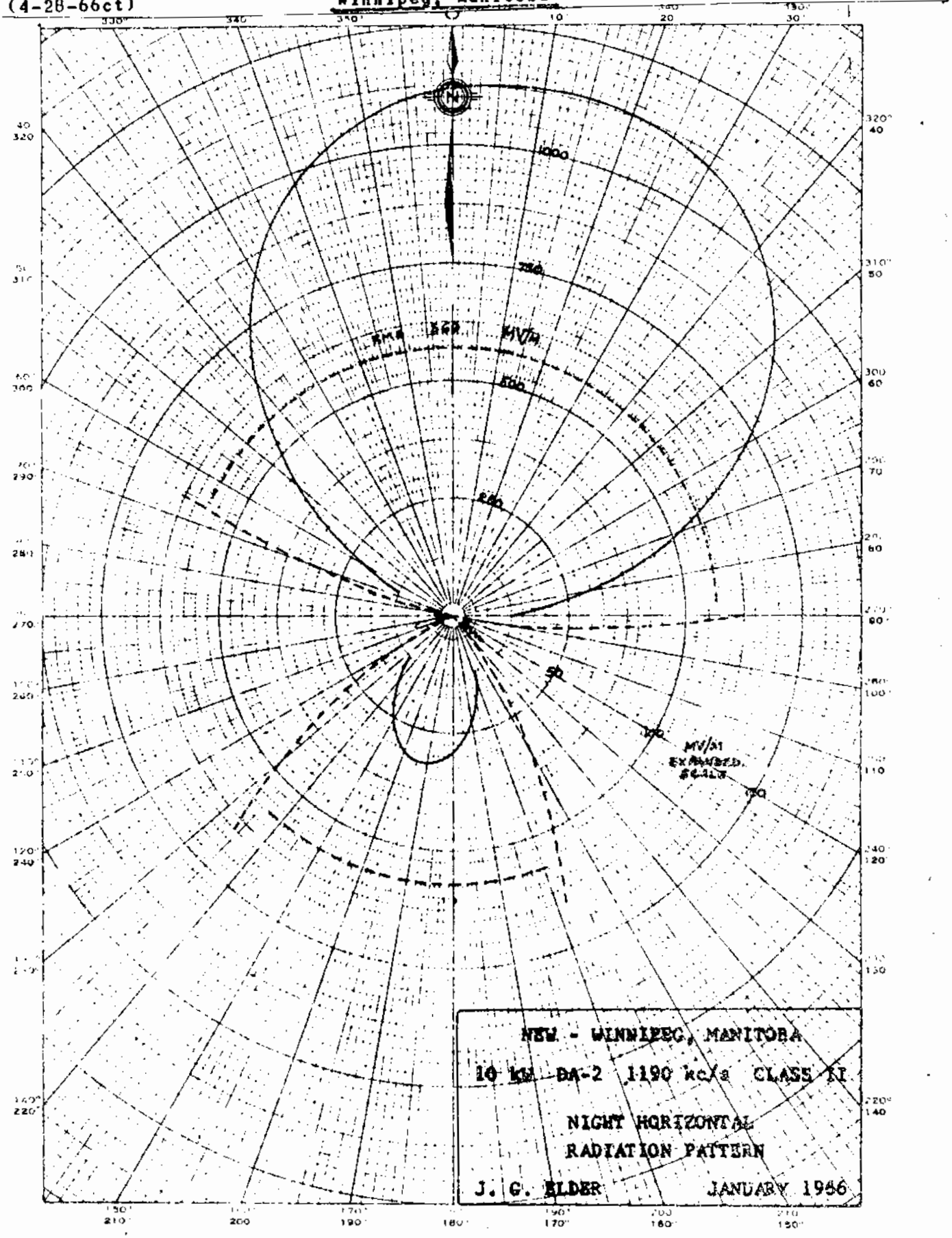


F-10

Proposed Night
(4-28-66ct)

New Station
Winnipeg, Manitoba

10kw,DA-2,U,Class II
1190 kc



NEW - WINNIPEG, MANITOBA

10 KW DA-2 1190 kc/s CLASS II

NIGHT HORIZONTAL
RADIATION PATTERN

J. G. ELDER JANUARY 1966

1190 kHz

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: NEW

Main Studio: Jackson, Minnesota

Frequency: 1190 kHz

Power: 5kw Day

Notification List No. 1785

Date: November 16, 1979 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 43° 31' 45"
West Longitude: 95° 00' 02"

ANTENNA CHARACTERISTICS

Authorized for Daytime operation. (DA-D)
Number of elements: 4
Type of elements: Series excited, uniform cross-section, guyed, vertical steel towers.

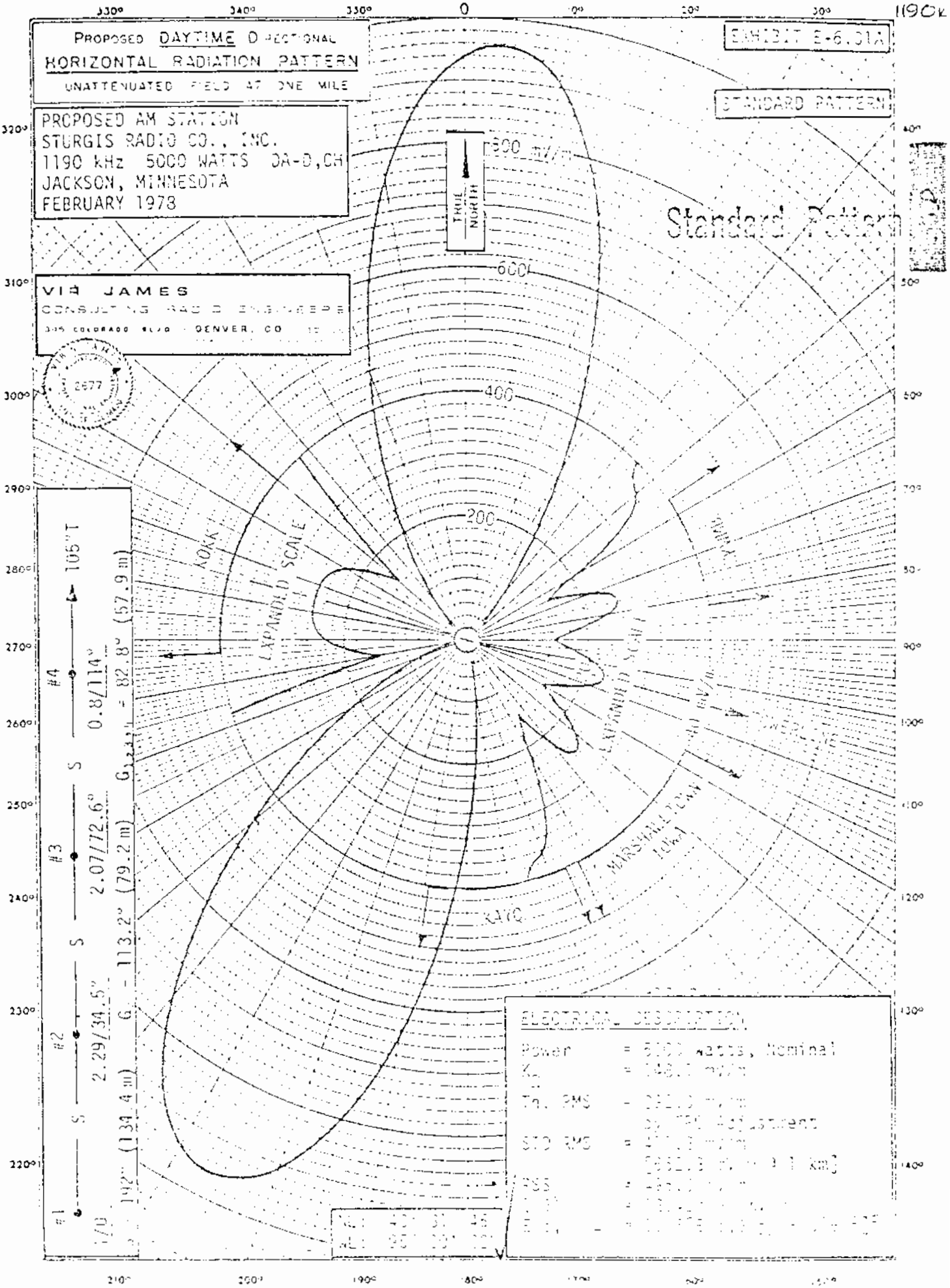
TOWERS:	W(#1)	WC(#2)	EC(#3)	E(#4)
HEIGHT ABOVE INSULATORS:	190' (82.8°)	260' (113.2°)	190' (82.8°)	190' (82.8°)
DAY PHASING:	0°	34.5°	72.6°	114.0°
DAY FIELD RATIO:	1.0	2.29	2.07	0.8

SPACING AND ORIENTATION: Adjacent towers in a row are spaced 440.8' (192°) on a line bearing 105° true.

GROUND SYSTEM: 120 - 208.3' equally spaced copper radials plus 120 - 49.2' interspaced radials about each tower.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	392 mv/m	495 mv/m	411.8 mv/m


PROPOSED DAYTIME DIRECTIONAL
HORIZONTAL RADIATION PATTERN
UNATTENUATED FIELD AT ONE MILE
EXHIBIT E-6.01A
STANDARD PATTERN
PROPOSED AM STATION
STURGIS RADIO CO., INC.
1190 kHz 5000 WATTS DA-D,CH
JACKSON, MINNESOTA
FEBRUARY 1978
1190K
Standard Pattern
VIR JAMES
CONSULTING RADIO ENGINEERS
DENVER, CO
600 mV/m
400
200
TRUE NORTH
EXPANDED SCALE
#1
#2
#3
#4
105°T
0.8/114°
2.07/72.6°
2.29/34.5°
142° (134.4 m)
G = 113.2° (79.2 m)
G = 82.8° (57.9 m)
ELECTRICAL DESCRIPTION
Power = 5000 watts, Nominal

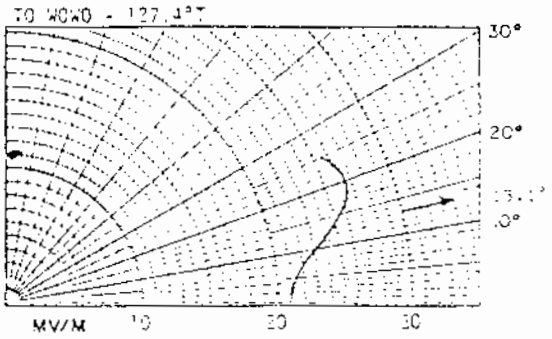
STANDARD PATTERN

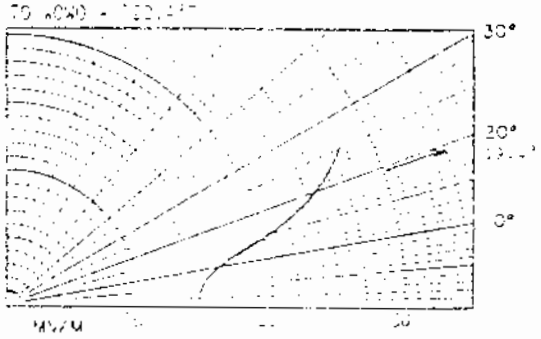
EXHIBIT E-5.02A

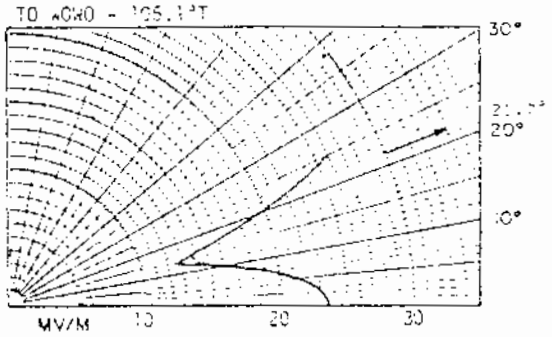
1190KHz

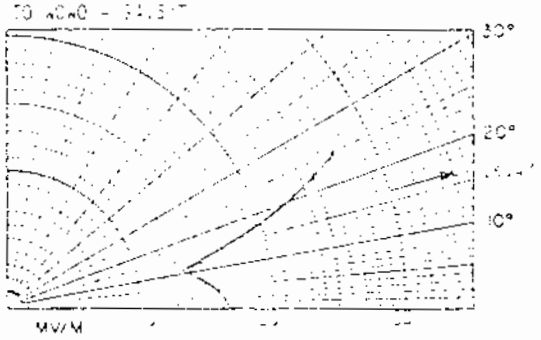
CALCULATED VERTICAL SECTIONS
UNATTENUATED FIELD AT ONE MILE

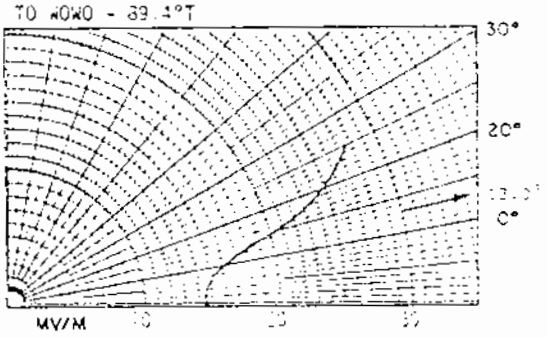
PROPOSED AM STATION
STURGIS RADIO CO., INC.
1130 KHz 5000 WATTS DA-D,CH
JACKSON, MINNESOTA
FEBRUARY 1978

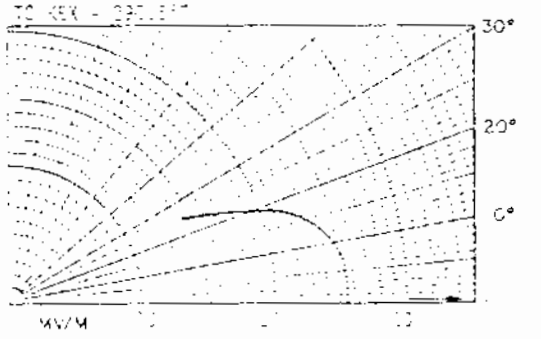


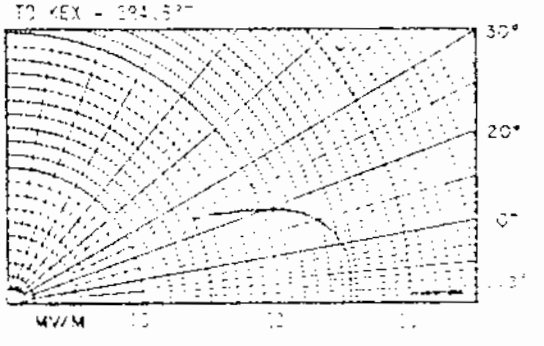


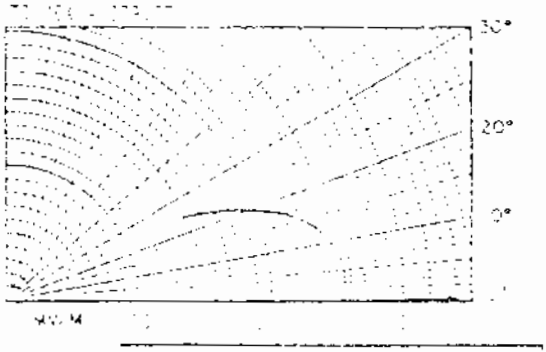












1190KHZ
SPRINGFIELD, TENN

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: NEW

Main Studio: Springfield, Tennessee

Frequency: 1190 kHz

Power: 0.25kw Day

Notification List No. 1788

Date: August 22, 1080 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 36° 31' 00"
West Longitude: 86° 53' 30"

ANTENNA CHARACTERISTICS

Authorized for Daytime operation. (DA-D)
Number of elements: 2
Type of elements: Series excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	S(#1)	N(#2)
HEIGHT ABOVE INSULATORS:	190'	190' (82.7°)
DAY PHASING:	0°	+90°
DAY FIELD RATIO:	1	0.450

SPACING AND ORIENTATION: Towers in a row are spaced 206.8'(90°) on a line bearing 0° true.

GROUND SYSTEM: 120 - 207' equally spaced copper radials plus 120 - 50' interspaced radials about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers.

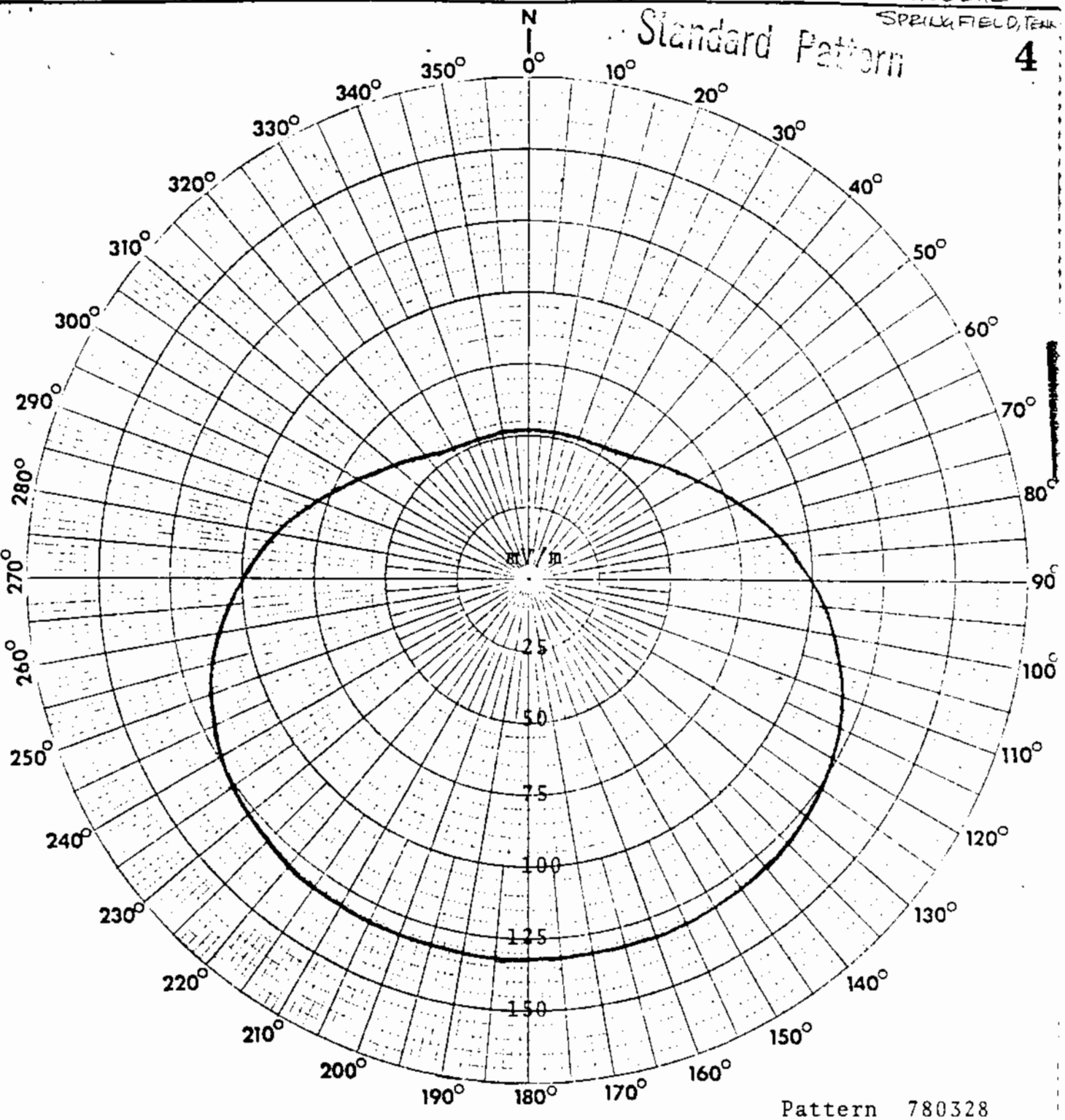
PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	95.0 mv/m		99.9 mv/m

1190 KHz
SPRINGFIELD, TENN.

Standard Pattern

4



Pattern 780328

STANDARD HORIZONTAL PLANE PATTERN	
N. Lat. 36°31'00" W. Lng. 86°53'30" Theo RMS 95.0 mV/m Theo RSS 95.0 mV/m Mult. 86.6 mV/m FCC 'Q' 6.00	N-0°-E 0.45/90° #2 S=90°=206.8' 1.00/0° #1 G=82.7°=190'

EXHIBIT E-1 FIGURE 1

FRED HARRON

PROPOSED DAYTIME STANDARD PATTERN

1190 kHz. - SPRINGFIELD, TENNESSEE

B. SCOTT BAXTER
AND ASSOCIATES
P. O. BOX 415
BRENTWOOD, TENN. 37027

(82.756°)

KAYQ

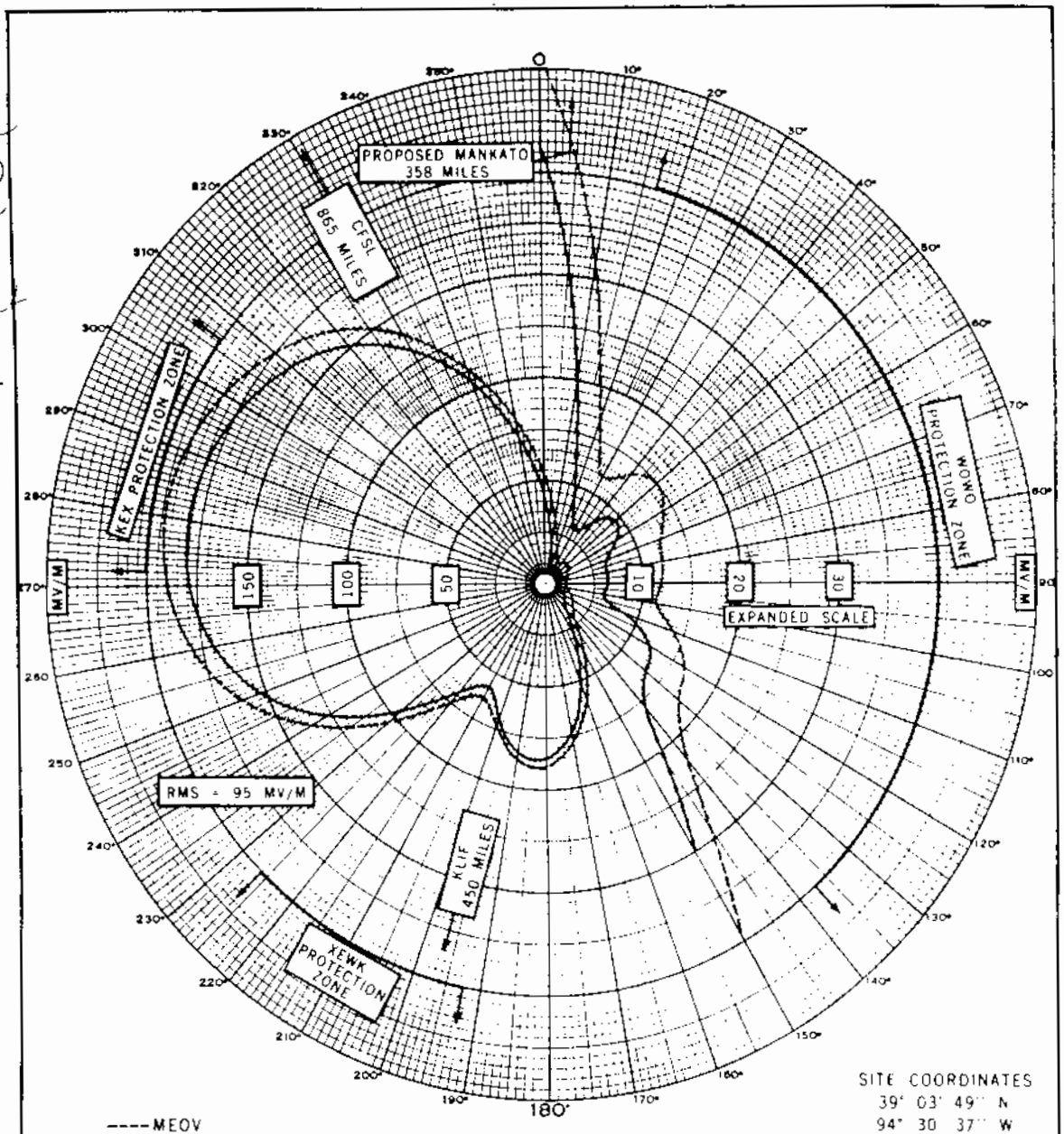
Proposed Night
(10-28-67ct)

New; Broadcasting, Inc.
Kansas City, Missouri

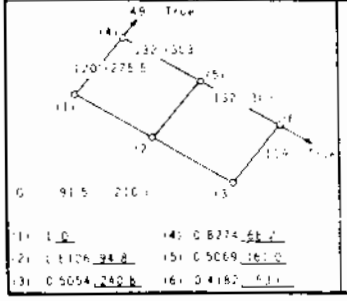
250w,1kw-LS,DA-N,U
1190 kc

Figure 7
Sheet 1 of 14

BP-14486
Granted
12-9-69)
for a
new AM
broadcast
station



PROPOSED NIGHTTIME HORIZONTAL PLANE RADIATION PATTERN



BROADCASTING, INC.

KANSAS CITY, MISSOURI

Jules Cohen & Associates

Consulting Electronics Engineers

1190 KHZ

0.25 KW 1 KW LS U DA N

JULY 1967

AMENDED PATTERN
6/20/06

FCC File No.BP-14486
Accepted 10-23-67 Amended

New; Broadcasting, Inc.
Kansas City, Missouri

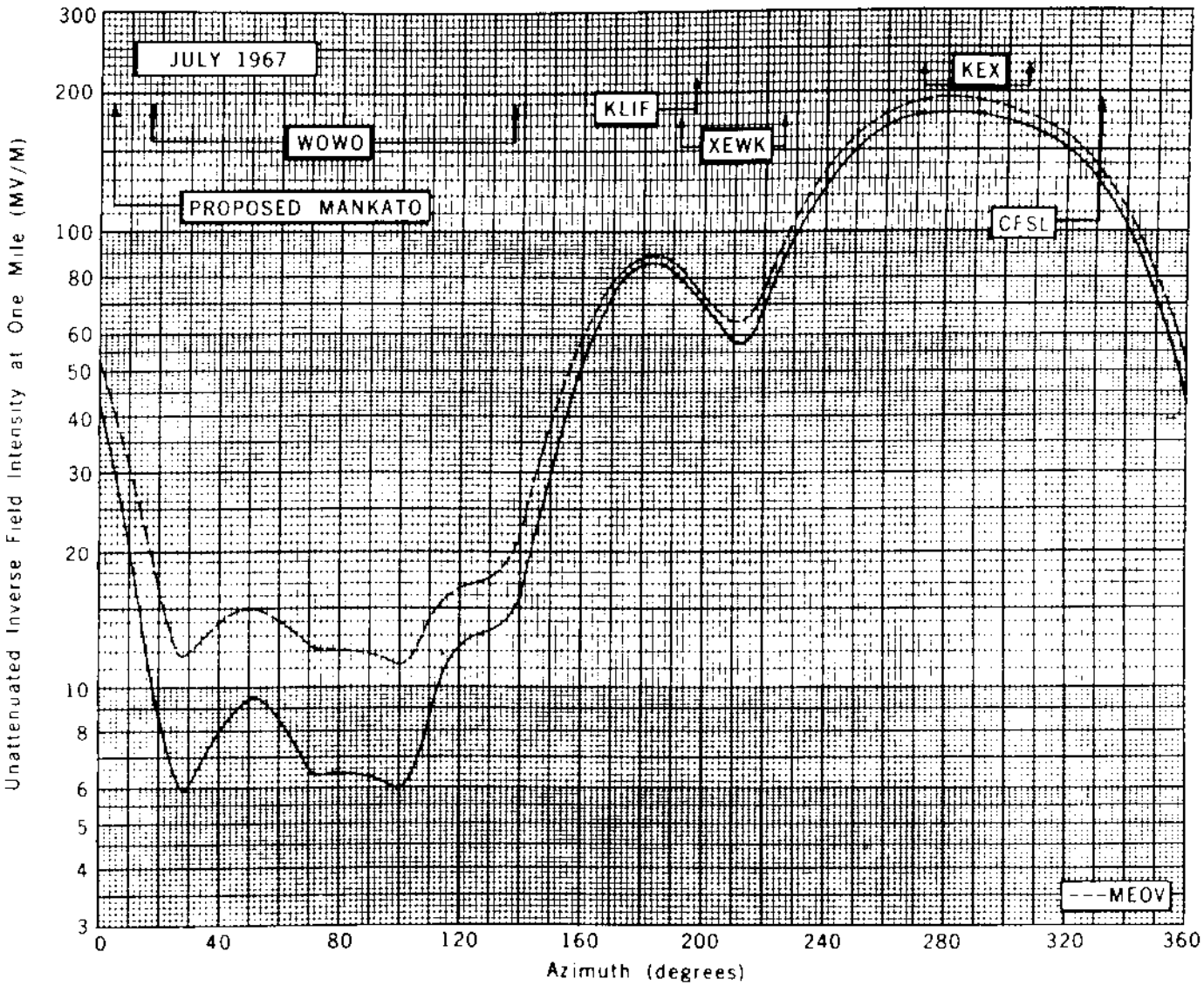
1190 kc

Proposed Night Nulls
(10-28-67ct)

New; Broadcasting, Inc.
Kansas City, Missouri

250w,1kw-LS,DA-N,U
1190 kc

BP-14486 Granted 12/9/69
for new AM broadcast station



PROPOSED NIGHTTIME RADIATION PATTERN AT VERTICAL ANGLE OF 0 DEGREES

BROADCASTING, INC. KANSAS CITY, MISSOURI

1190 KHZ 0.25 KW, 1 KW-LS U DA-N

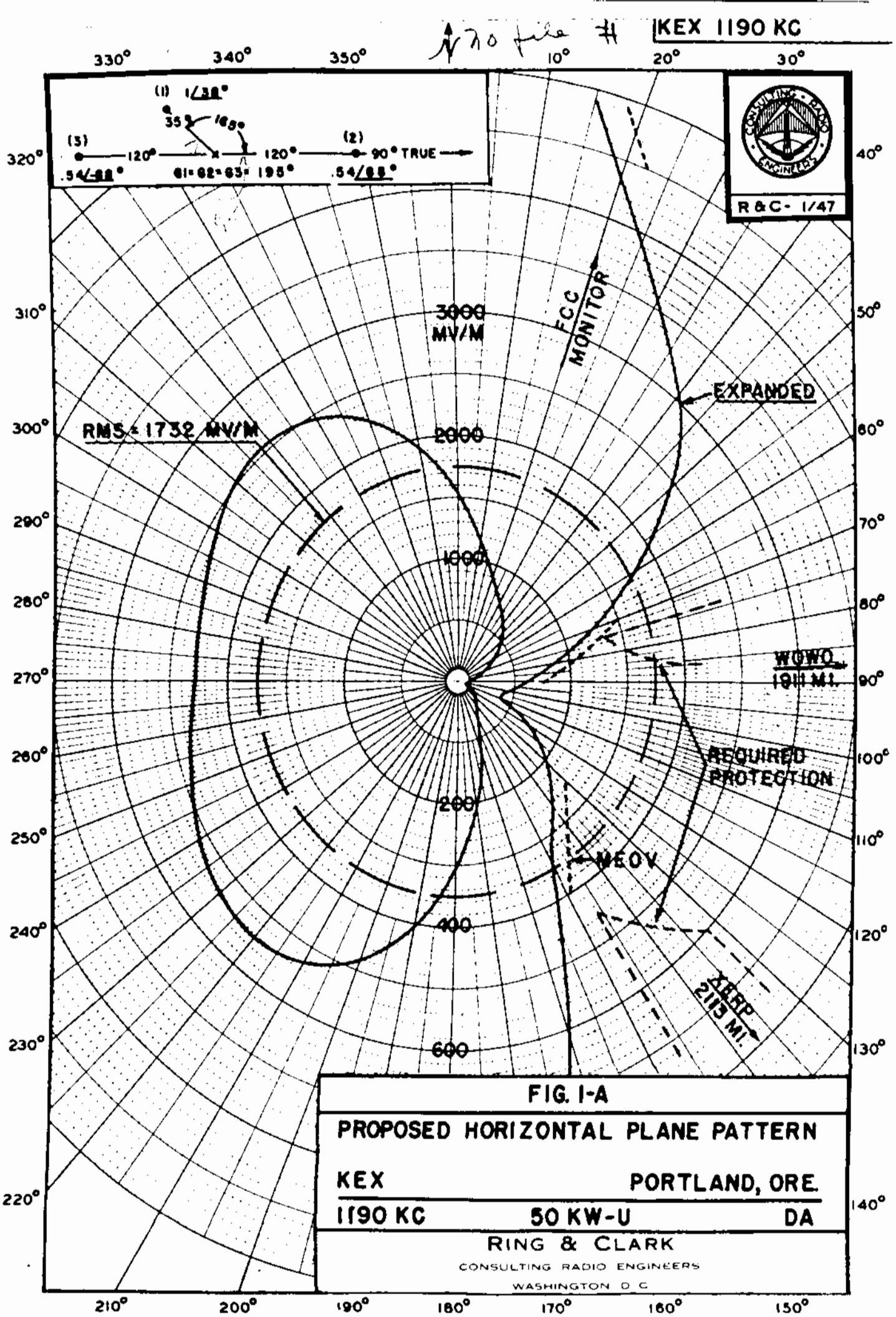
FCC File No.BP-14486
Accepted 10-23-67 Amended

New; Broadcasting, Inc.
Kansas City, Missouri

1190 kc

Figure 7
Sheet 2 of 14

KAYDEW


KEX 1190 KC
N 70 file #
330° 340° 350° 10° 20° 30°
320° 40°
310° 50°
300° 60°
290° 70°
280° 80°
270° 90°
260° 100°
250° 110°
240° 120°
230° 130°
220° 140°
210° 200° 190° 180° 170° 160° 150°
(1) 1/38°
35½ 165°
(3) 120° 120° (2) 90° TRUE
.54/88° 61° 62° 63° 195° .54/88°
CONSULTING RADIO ENGINEERS
R&C- 1/47
3000 MV/M
2000
1000
200
400
600
FCC MONITOR
EXPANDED
RMS = 1732 MV/M
WOWO 1911 MI.
REQUIRED PROTECTION
MEOV
KERR 2113 MI.
FIG. 1-A
PROPOSED HORIZONTAL PLANE PATTERN
KEX PORTLAND, ORE.
1190 KC 50 KW-U DA
RING & CLARK
CONSULTING RADIO ENGINEERS
WASHINGTON D C

APR 8 1948 G

License 4-5-48

KEX - 1190 KC - 50 kw-U

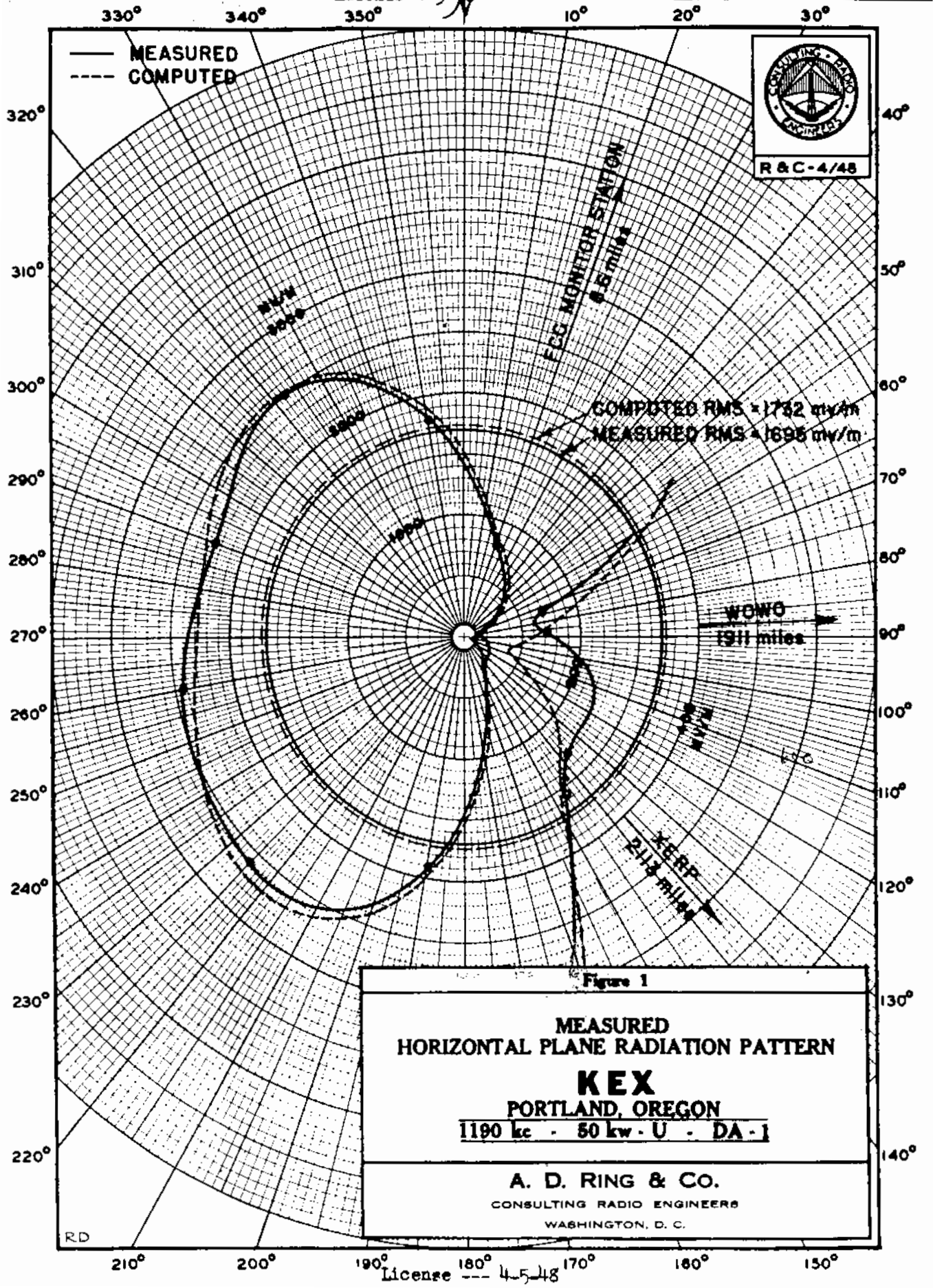


Figure 1

MEASURED HORIZONTAL PLANE RADIATION PATTERN

KEX

PORTLAND, OREGON

1190 kc - 50 kw - U - DA-1

A. D. RING & CO.

CONSULTING RADIO ENGINEERS

WASHINGTON, D. C.

RD

License --- 4-5-48

KEZY

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KEZY — Main Studio: Anaheim, California

Frequency: 1190 kHz — Power: 1 kW Night 5 kW Day

Notification List No. 1579 — Date: May 8, 1974 — Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:
North Latitude: 33° 51' 48"
West Longitude: 117° 48' 51"

ANTENNA CHARACTERISTICS

Authorized for Nighttime operation. (DA-N)
Number of elements: 4
Type of elements: Series-excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	SW(#4)	SC(#3)	NC(#2)	NE(#1)
HEIGHT ABOVE INSULATORS:	250'	250'	250'	250' (109°)
PHASING:	-99.5°	+53.74°	-153.24°	0°
FIELD RATIO:	1.0	2.777	2.777	1.0

SPACING AND ORIENTATION: Adjacent elements are spaced 183.7' (80°) on a line bearing 223° true.

GROUND SYSTEM: 120-180' to 200' equally spaced copper radials plus a 32' square ground screen about each tower. Radials are shortened and bonded to transverse straps along intersections between towers.

Predicted effective Night Field: 208 mv/m at rated power.

Predicted effective Day Field: (omnidirectional) 391 mv/m at rated power by adjustment of input power.

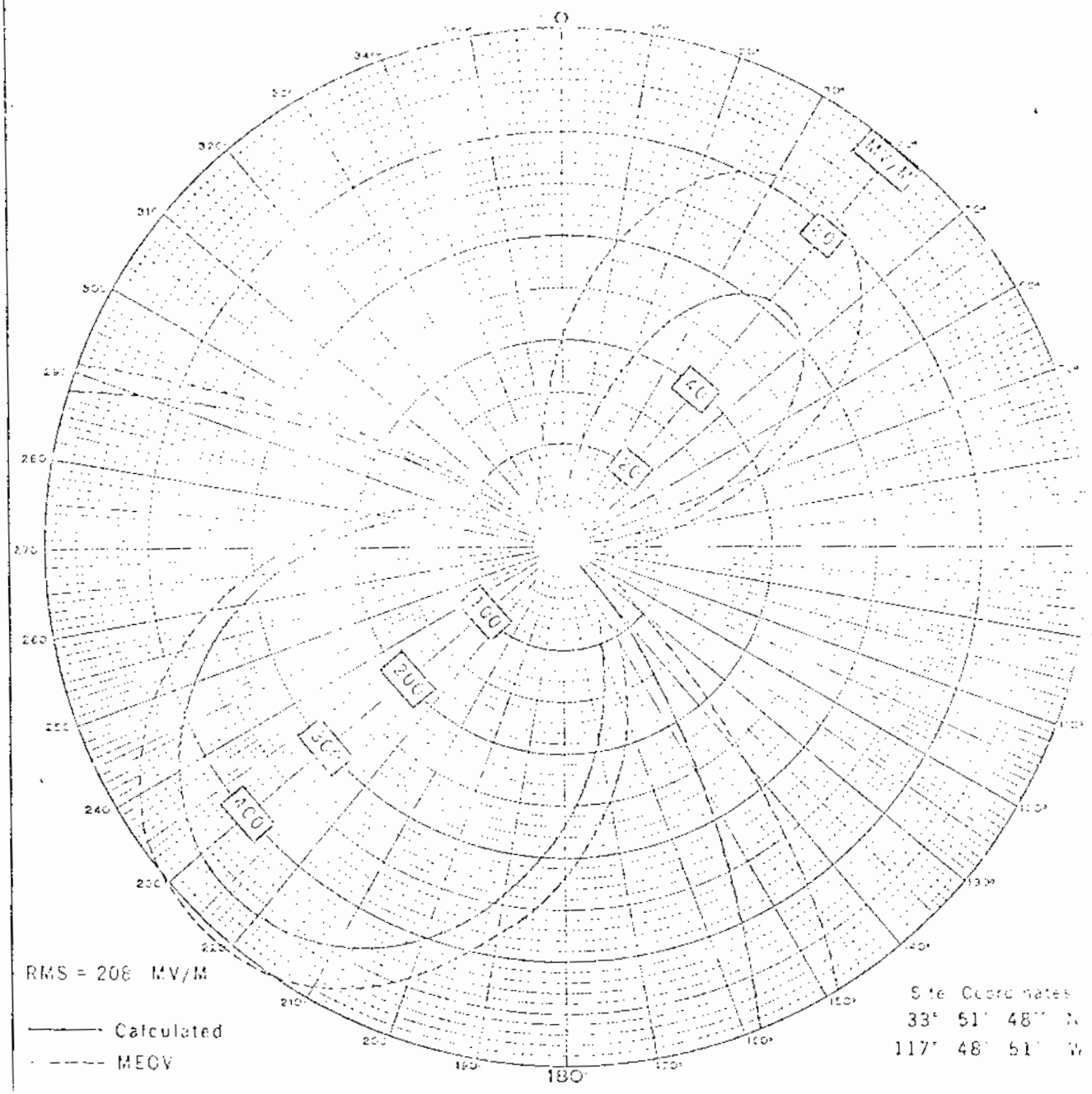
Note: This notification concerns only a change in the Nighttime operation of the station with Daytime operation continued as previously notified.

CTR NO 30894A5

KEZT

Figure 3

Sheet 1 of



CALCULATED HORIZONTAL PLANE DIRECTIONAL RADIATION PATTERN

S = SC

θ = 108°

KEZY RADIO INC.

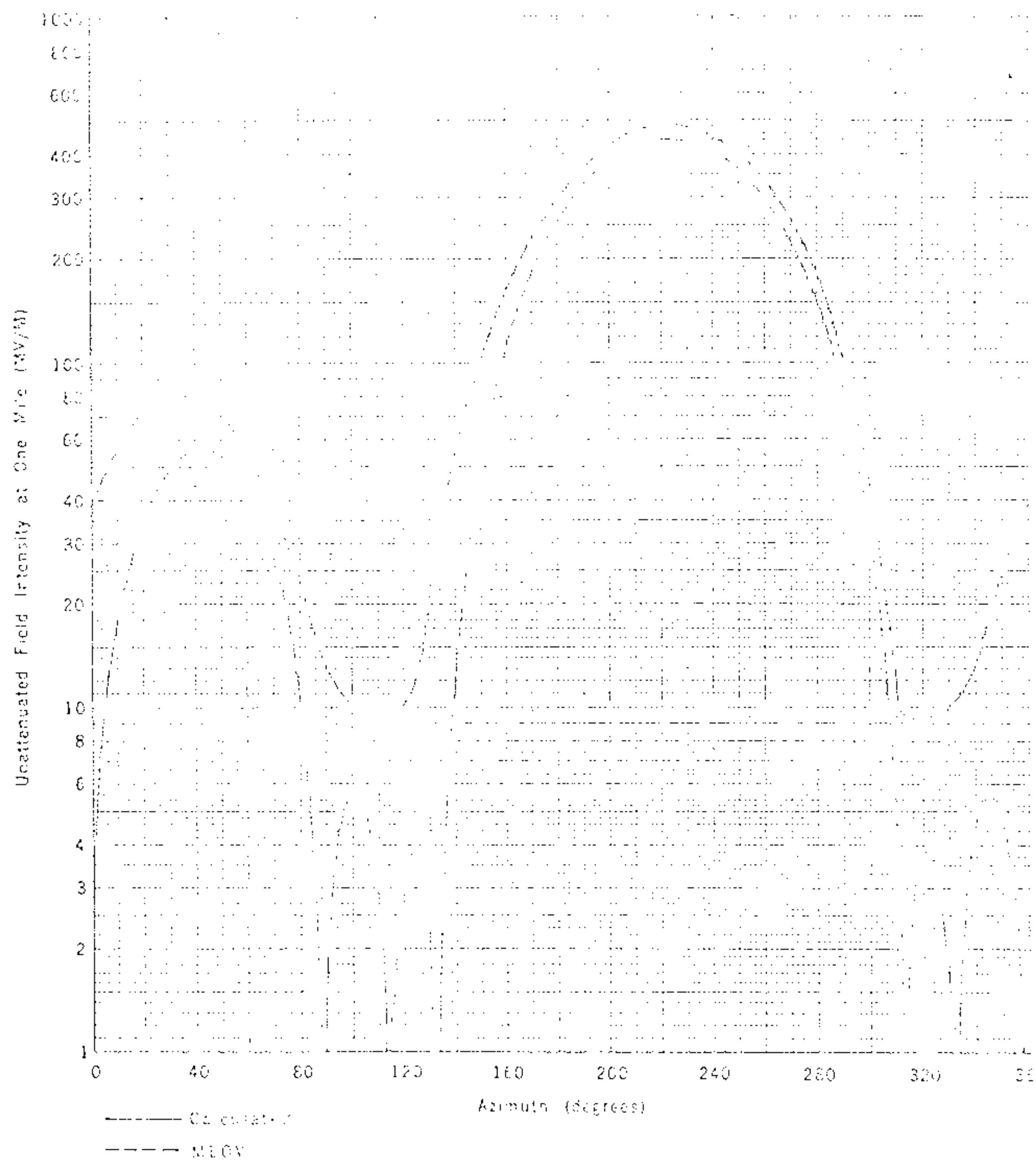
RADIO STATION

KEZY

Figure 3
Sheet 2 of 2

FEBRUARY 1978

KEZY

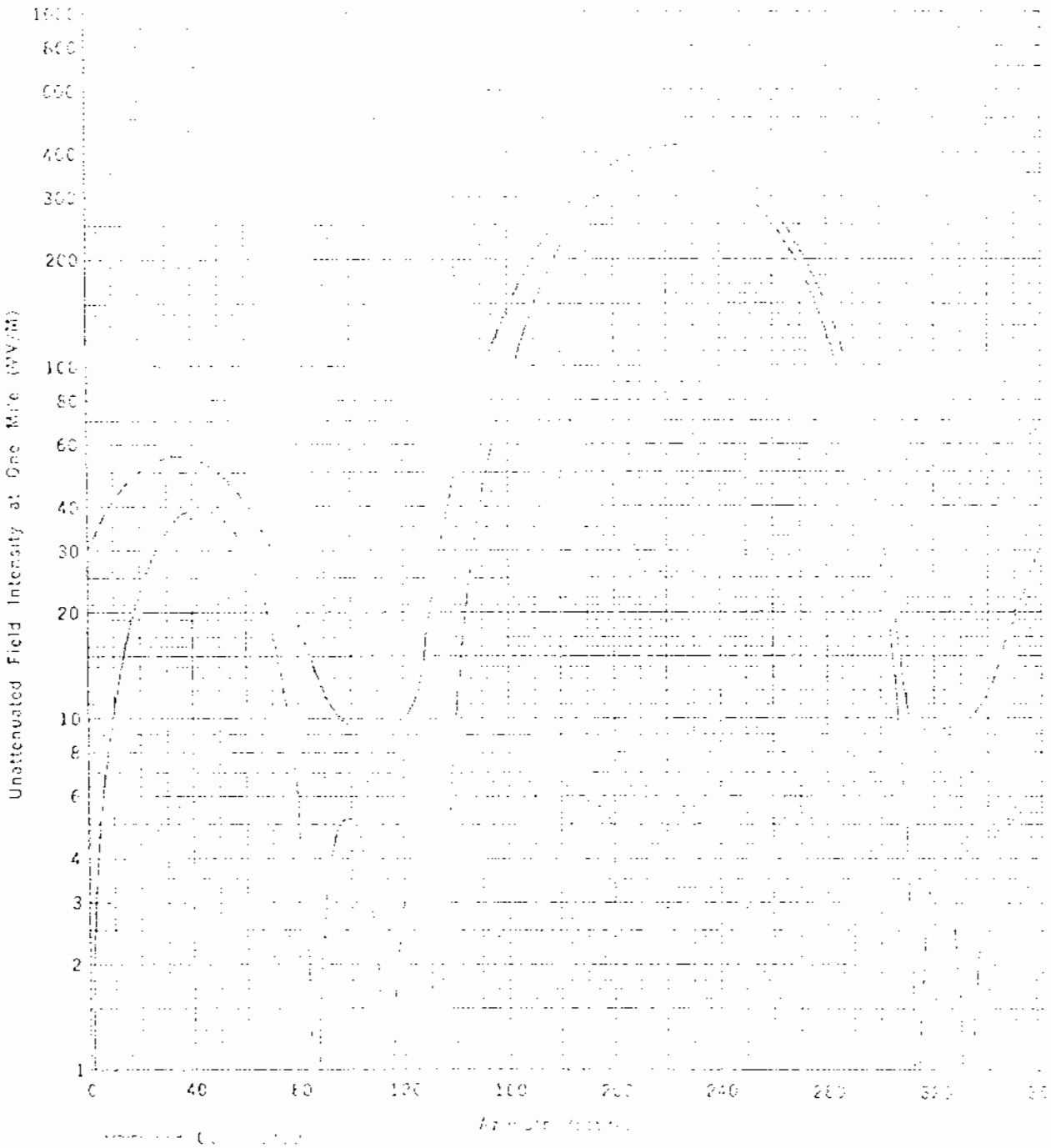


PROPOSED [illegible] RADIATION PATTERN

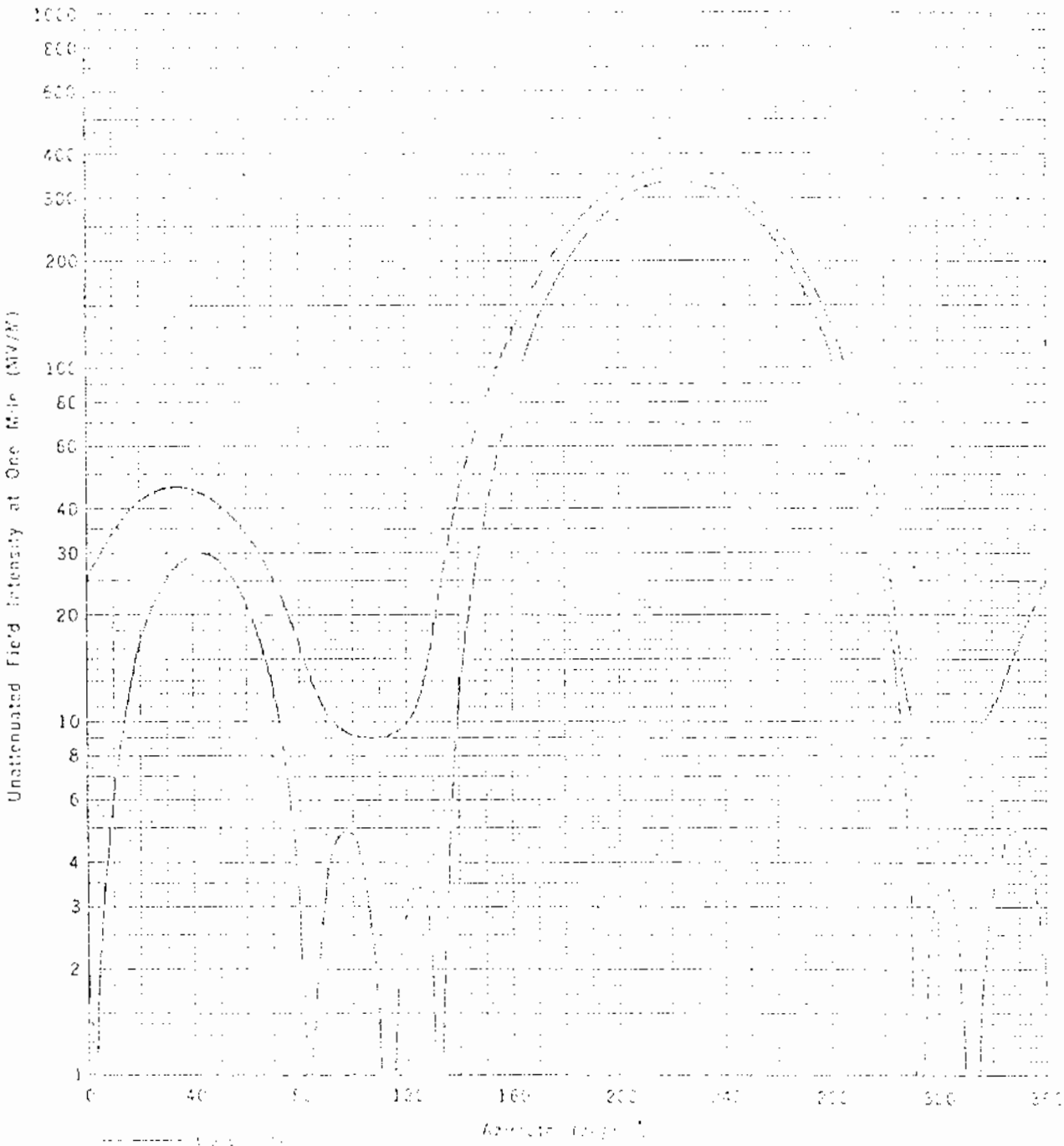
[illegible]


Unattenuated Field Intensity at One Mile (mV/M)
400
300
200
100
80
60
40
30
20
10
8
6
4
3
2
1
0
40
80
120
160
200
240
280
320
360

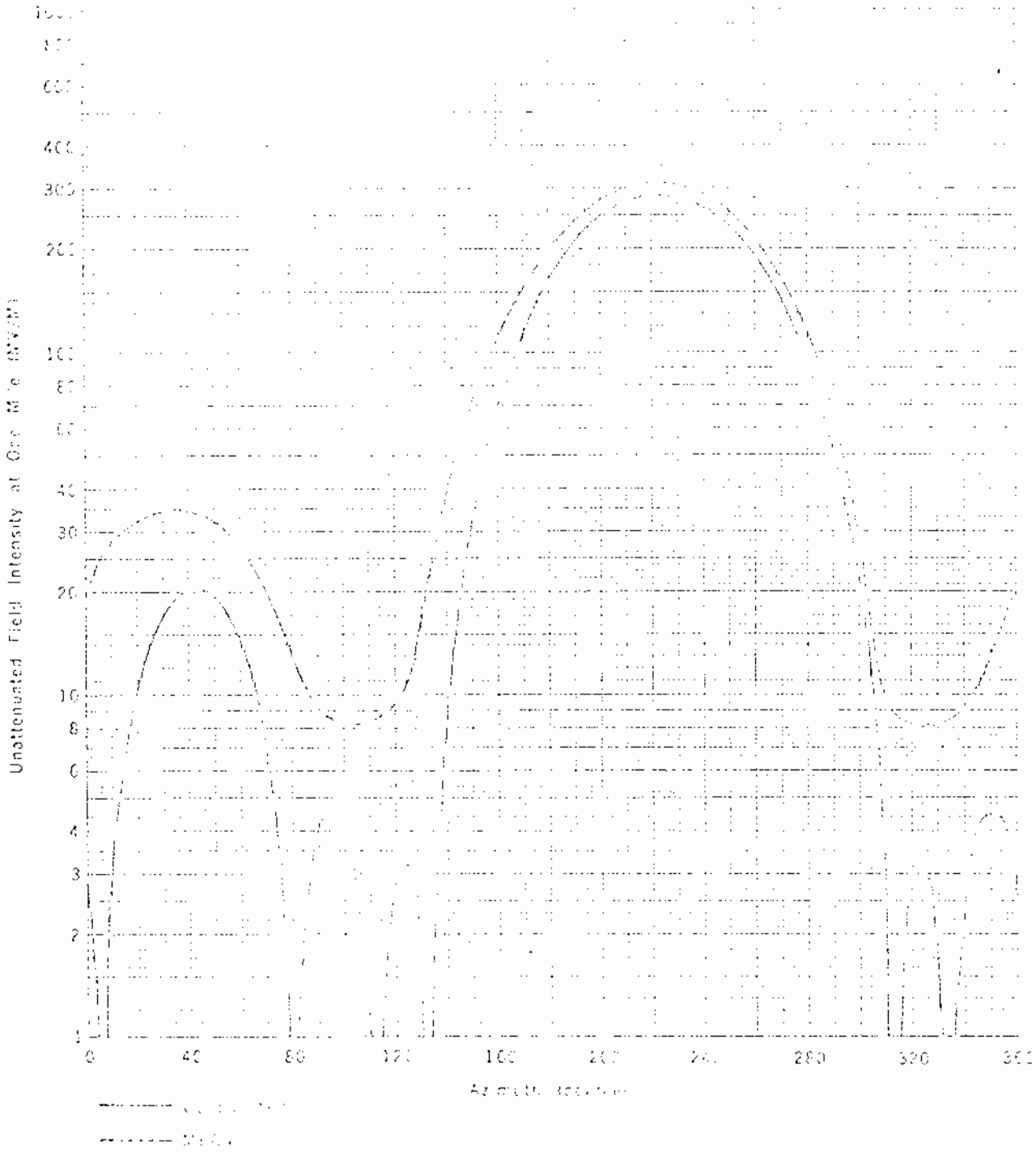
KEZT


Unattenuated Field Intensity at One Mile (mV/M)
1000
600
500
400
300
200
100
80
60
40
30
20
10
8
6
4
3
2
1
0
40
80
120
160
200
240
280
320
360

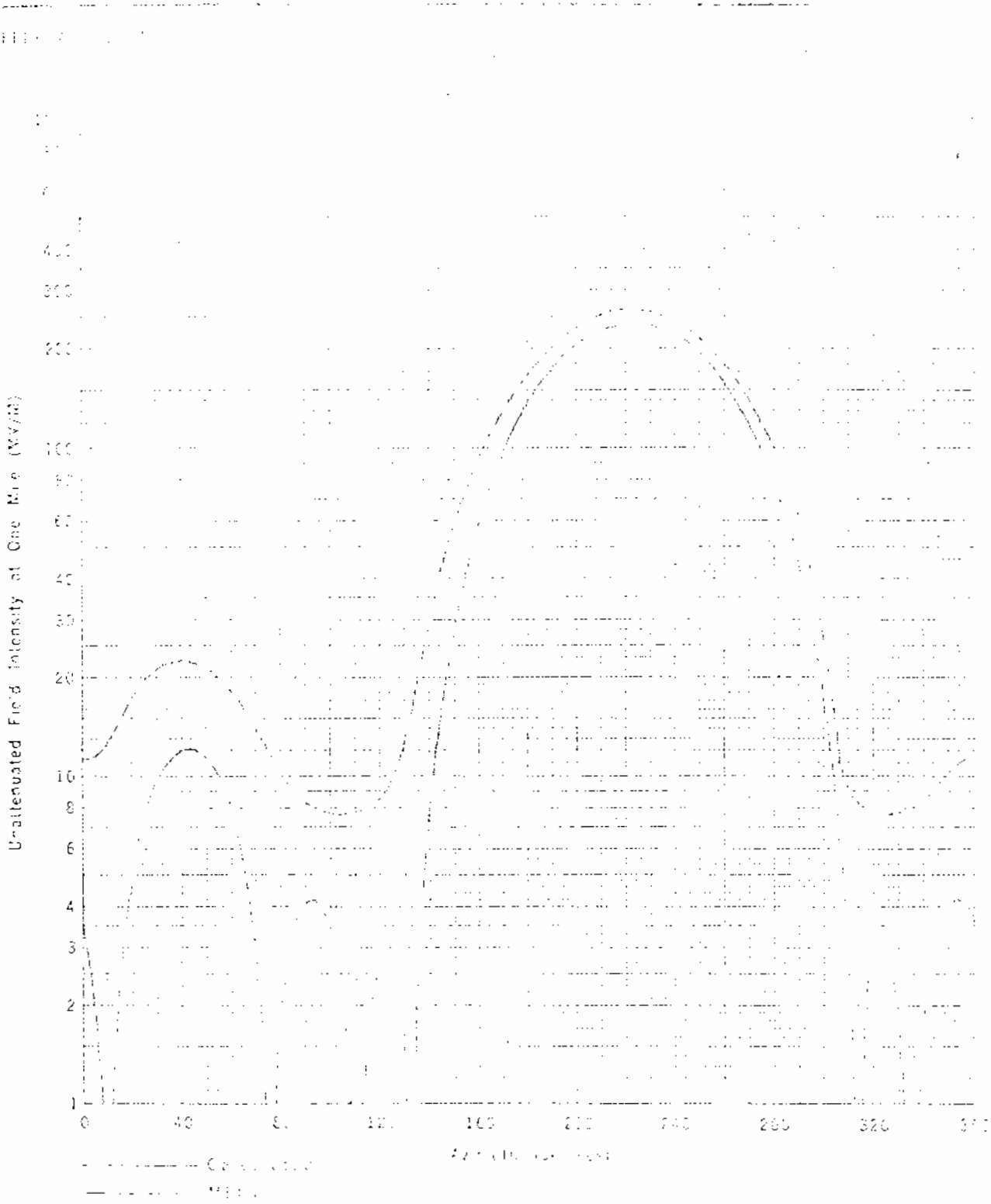
KEZT


1000
800
600
400
300
200
100
80
60
40
30
20
10
8
6
4
3
2
1
0
40
120
160
200
240
280
320
360
Unattenuated Field Intensity at One Mile (MV/M)

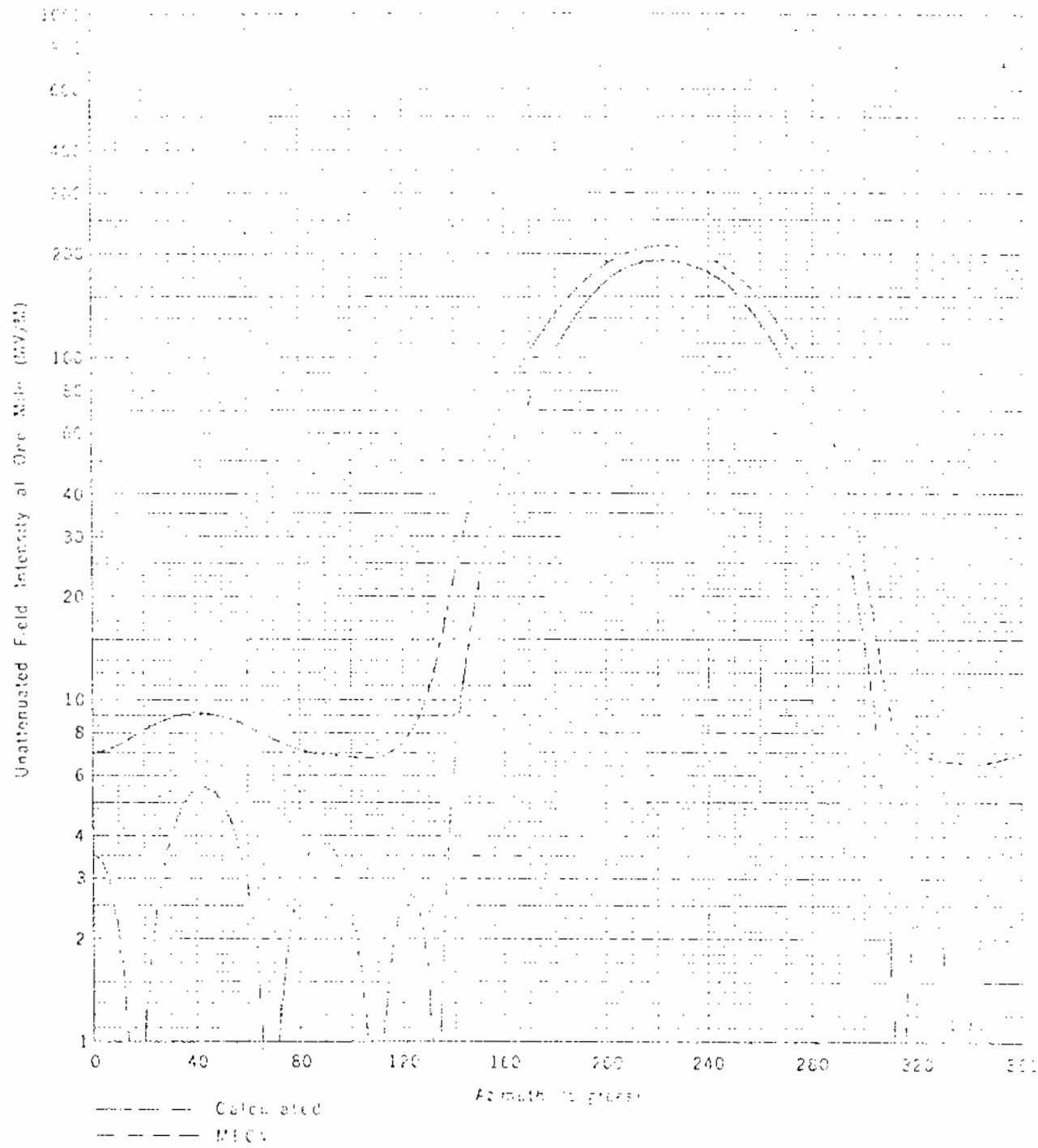
KEET


Unattenuated Field Intensity at One Mile (mV/m)
100
80
60
40
30
20
10
8
6
4
3
2
1
0
40
80
120
160
200
240
280
320
360

KE27

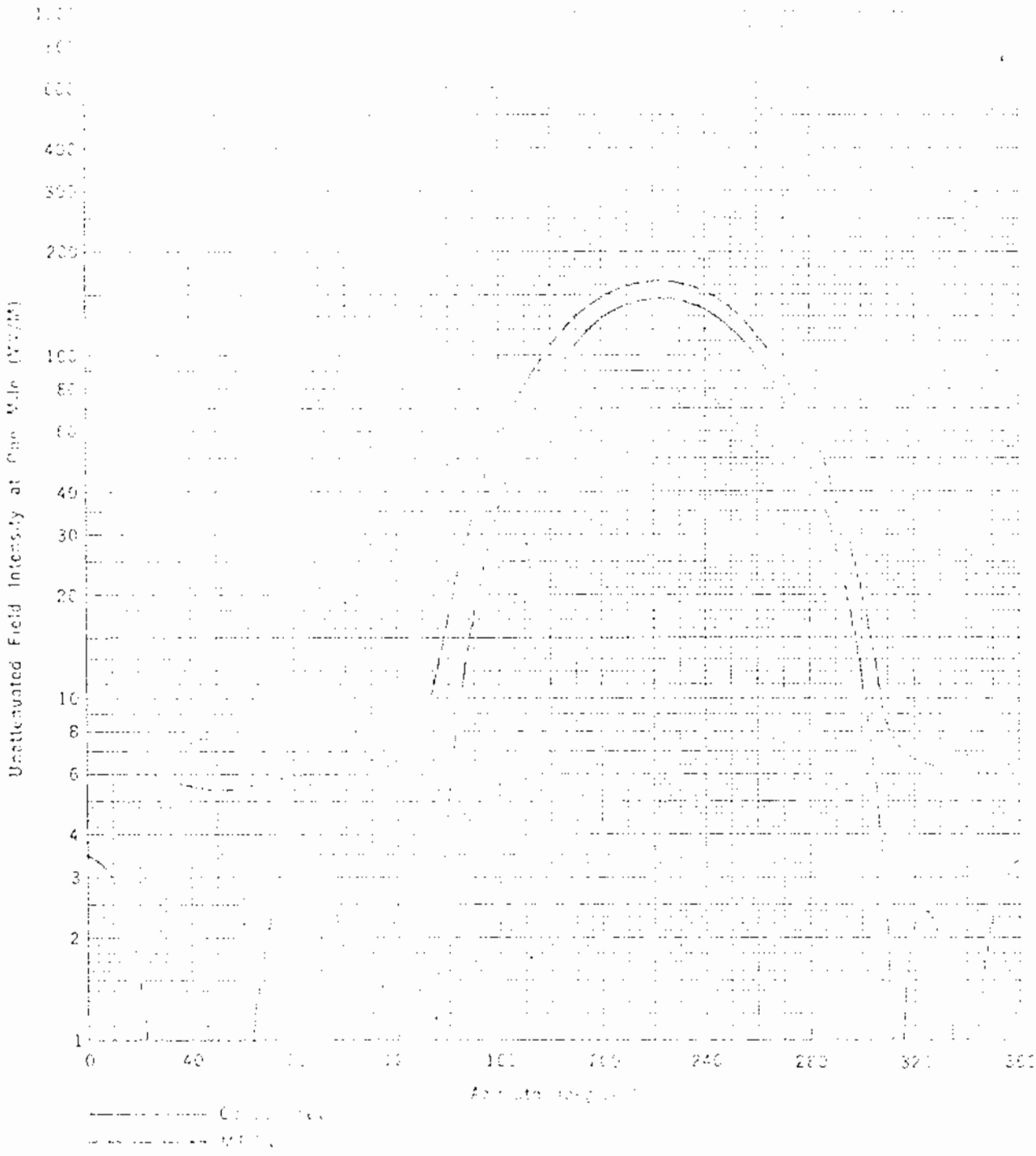

Unattenuated Field Intensity at One Mile (mV/m)
400
300
200
100
80
60
50
40
30
20
10
8
6
4
3
2
1
0
40
80
120
160
200
240
280
320
360

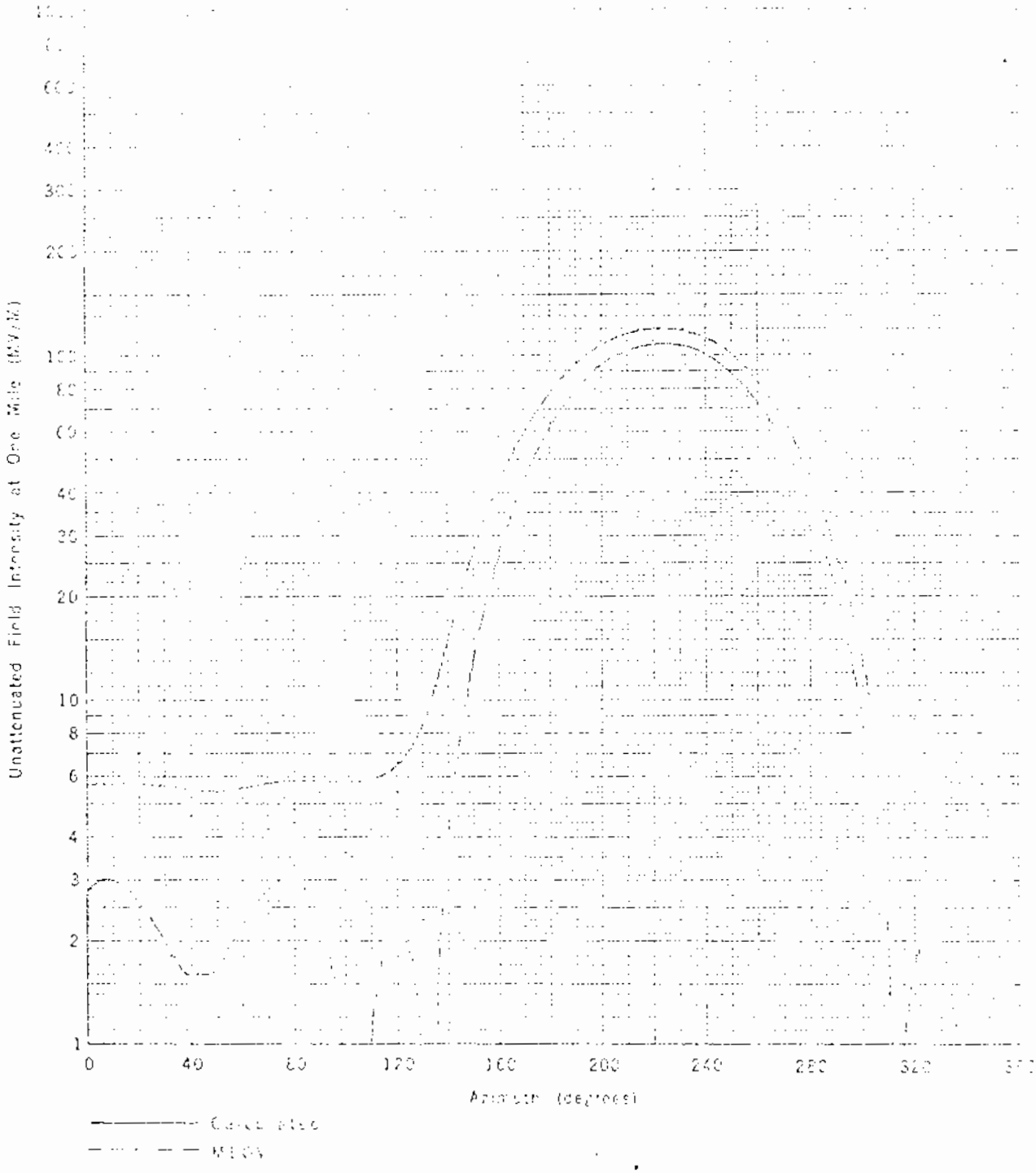
KEZT



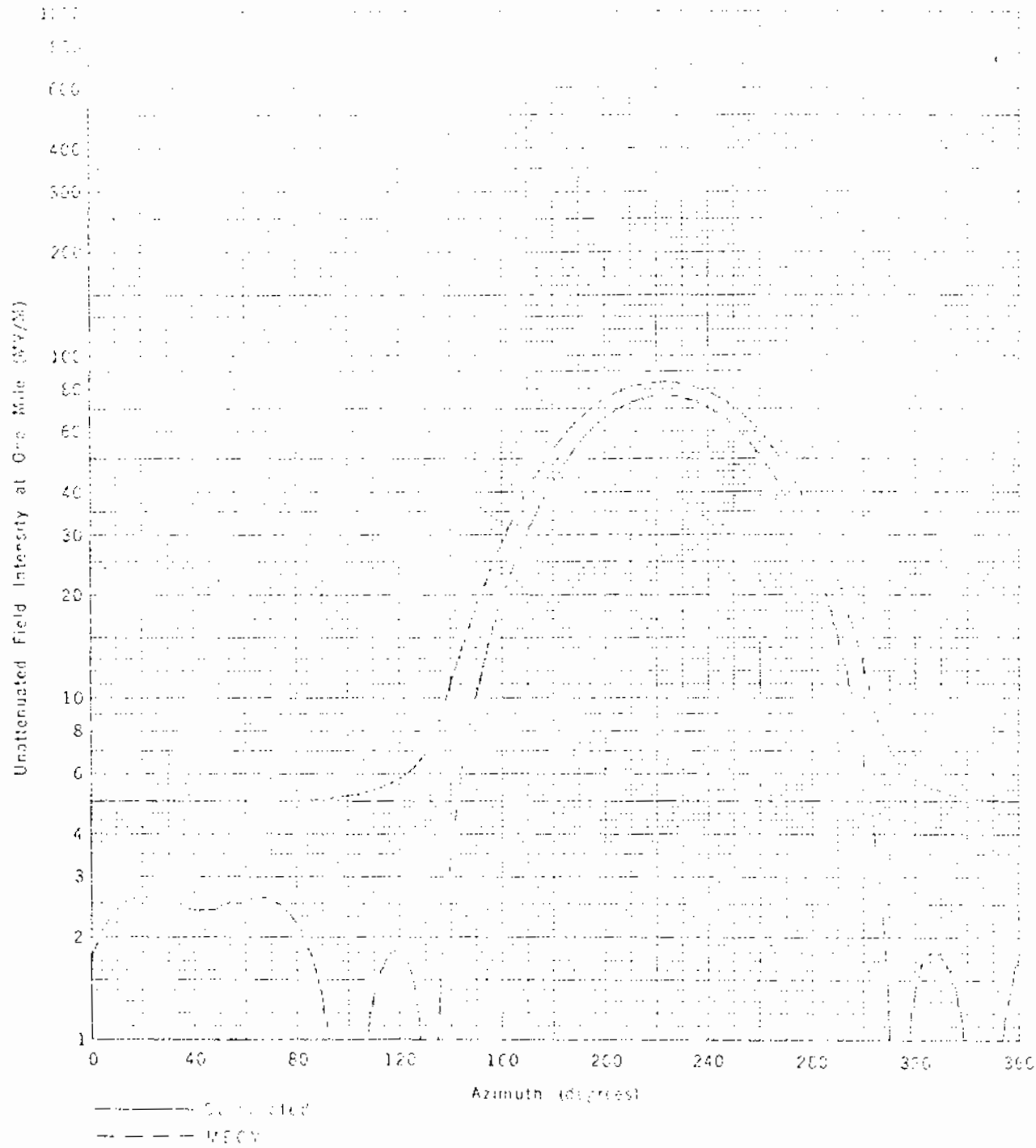
PROPOSED DIRECTIONAL RADIATION PATTERN
AT NIGHT

KE27


Unattenuated Field Intensity at
1000
800
600
400
300
200
100
80
60
49
30
20
10
8
6
4
3
2
1
0
40
240
280
320
360

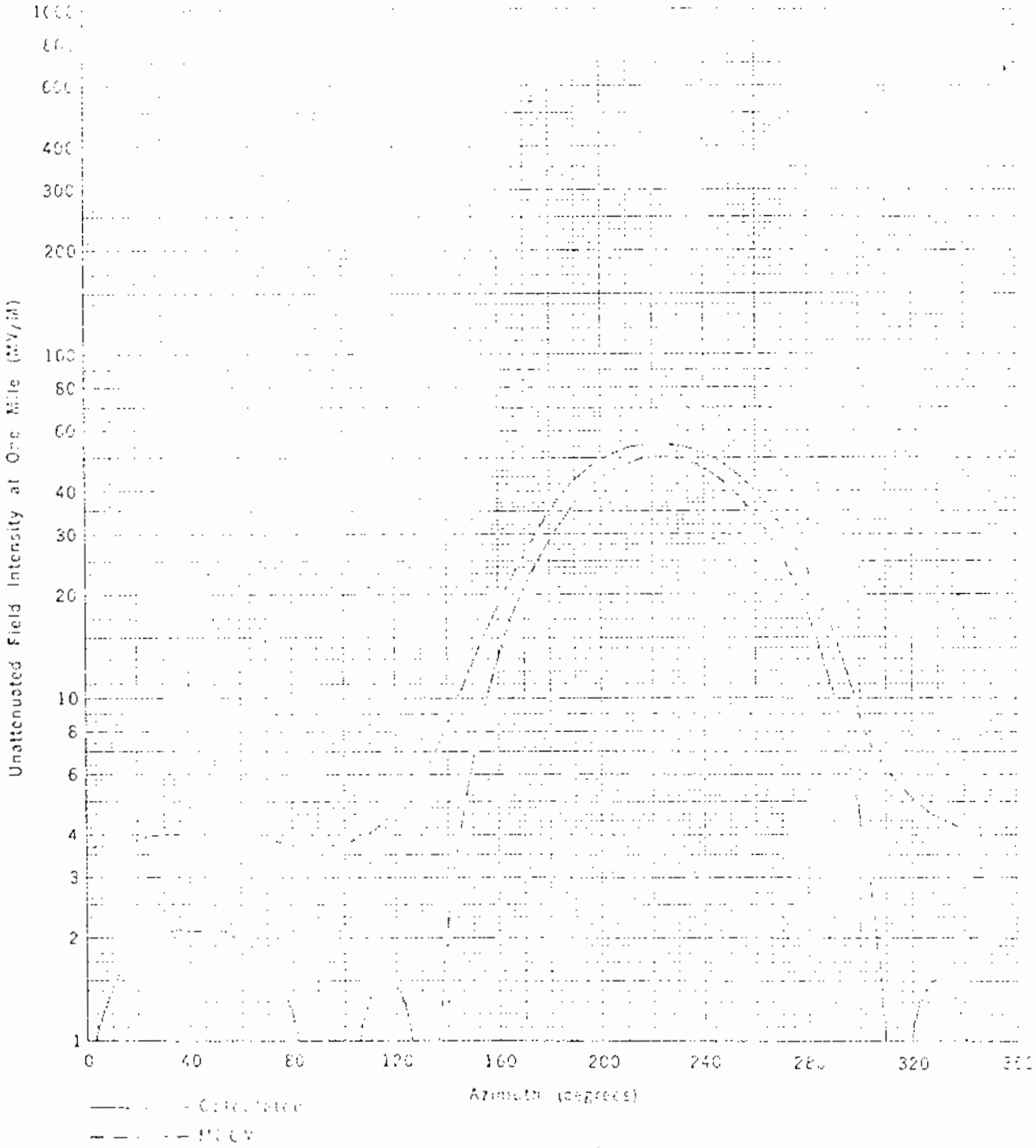


PROPOSED NIGHTTIME RADIATION PATTERN



PROPOSED DIRECTIONAL RADIATION PATTERN

DECEMBER 1974



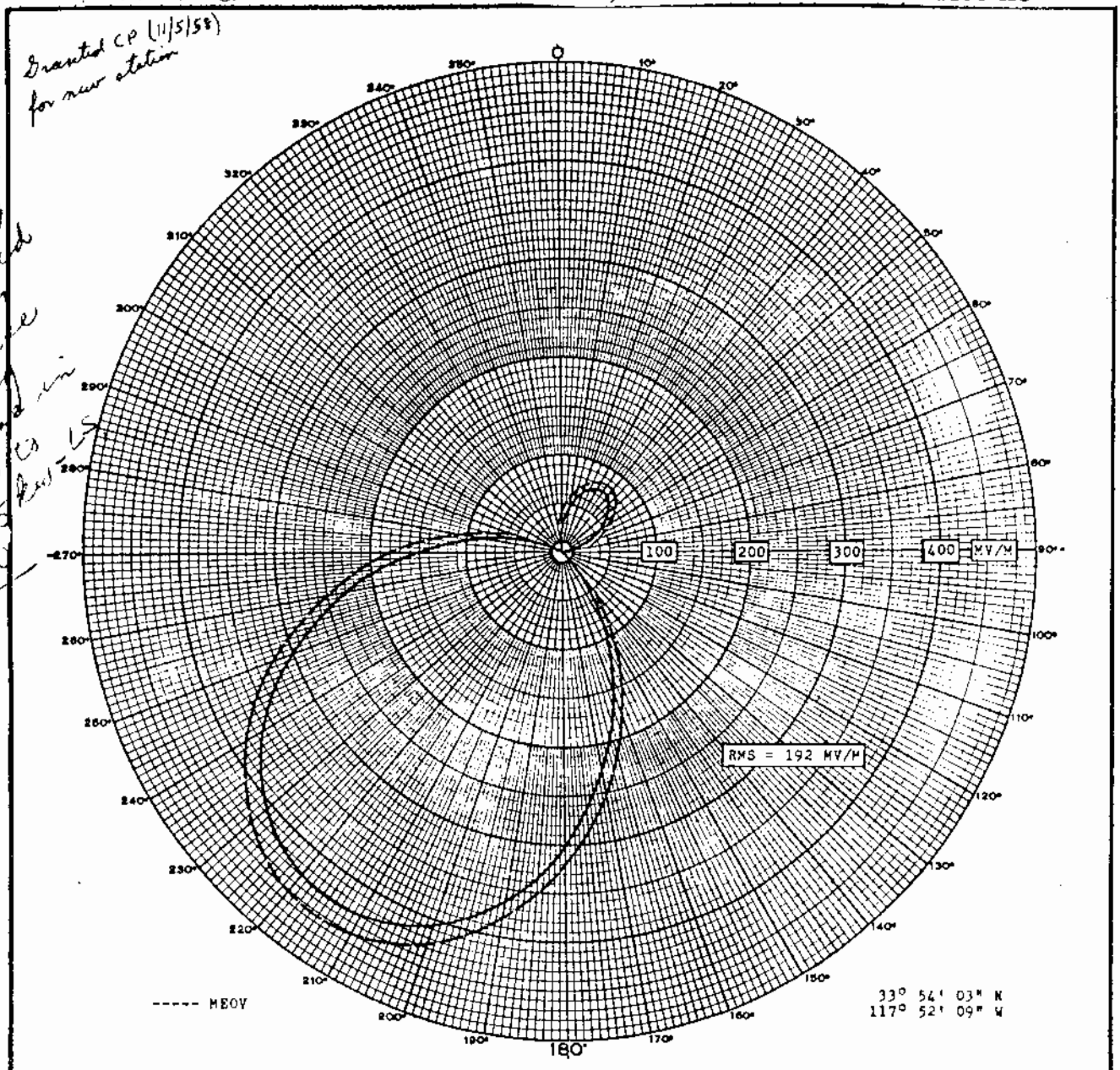
PROPOSED DIRECTIONAL RADIATION PATTERN

Anaheim, Calif. KEZY

PROPOSED NIGHT & DAY (5/17/57g) | Radio Orange County, Anaheim, California | 1kw, DA-1,U, 1190 KC

Granted CP (11/5/58) for new station

-R. APPL. 4-6-66 1/5-5, DA-N BL-11384 Granted 5-5-66 License ... Power ... DA-N, U



PROPOSED HORIZONTAL PLANE RADIATION PATTERN

θ = 109°
1.0/54° (1)
80°
2.8/-102.1° (2)
80°
(3) 2.8/102.1°
80°
(4) 1.0/-54°
215° TRUE

RADIO ORANGE COUNTY, INC.
ANAHEIM-FULLERTON, CALIFORNIA

VANDIVERE, COHEN and WEARN
CONSULTING ELECTRONIC ENGINEERS
WASHINGTON, D. C.

PROPOSED OPERATION
1190 KC
1 KW, U, DA-1
MARCH, 1957

FCC File No. BP-11,236
Accepted 5/2/57
BP 16641

Radio Orange County
Anaheim, California
1190 KC

1012

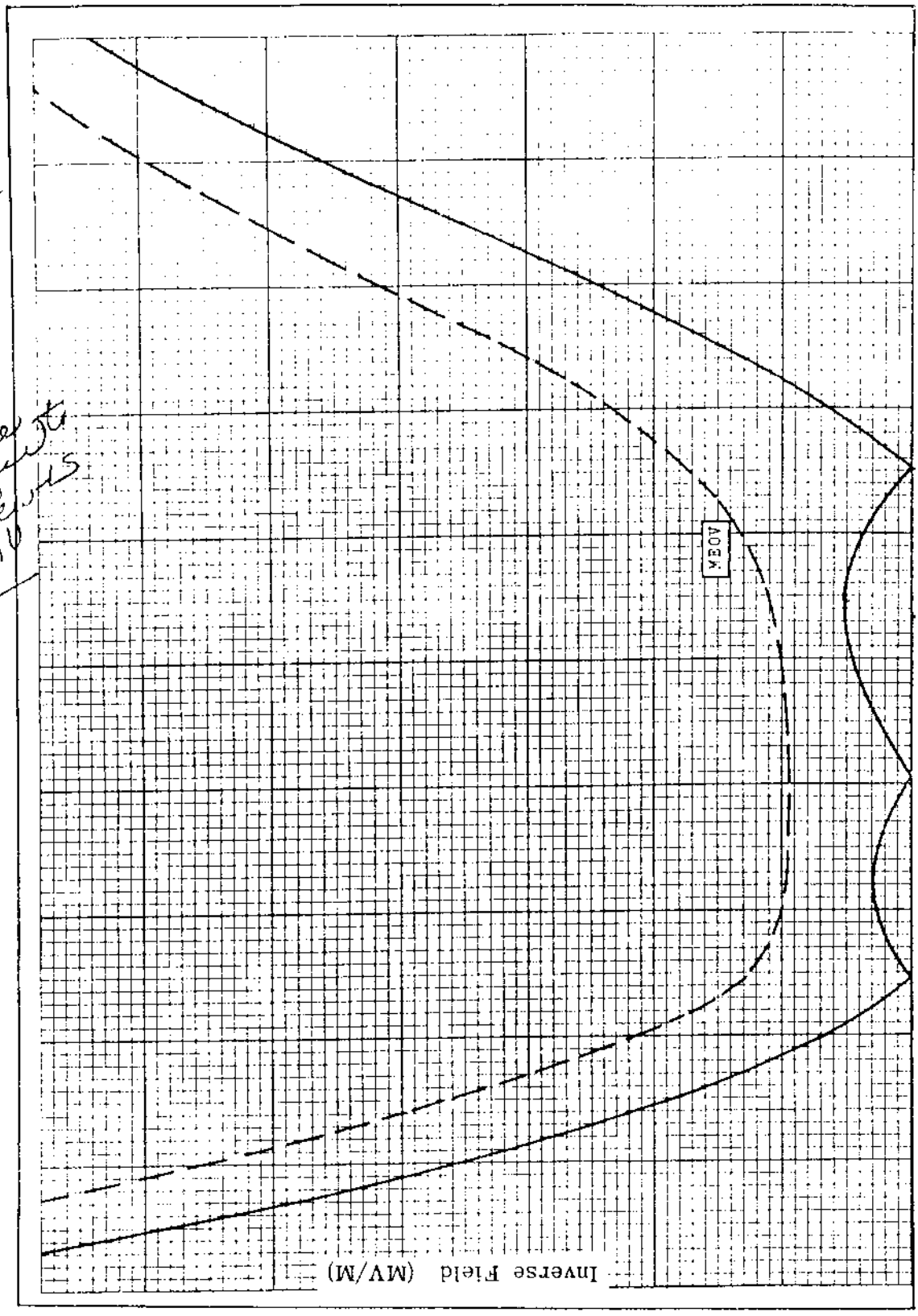
Anaheim, California KEZY

PROPOSED DA-1 NULLS
(5/17/57g)

Radio Orange County
Anaheim, California

1kw, DA-1,U
1190 KC

granted CP 11/5/58 for new station
SR. APPL. 4-6-66
(5 LS, DA-N
BL-11384 Granted (5-5-69) License covering increase in power to 1 kW, 5 kW DA-N, U



NULL DETAILS OF PROPOSED HORIZONTAL PLANE RADIATION PATTERN
RADIO ORANGE COUNTY, INC.
ANAHEIM-FULLERTON, CALIFORNIA

VOID

FCC File No. BP-11,236
Accepted 5/2/57
BP-10 641

Radio Orange County
Anaheim, California

1190 KC

KEZY

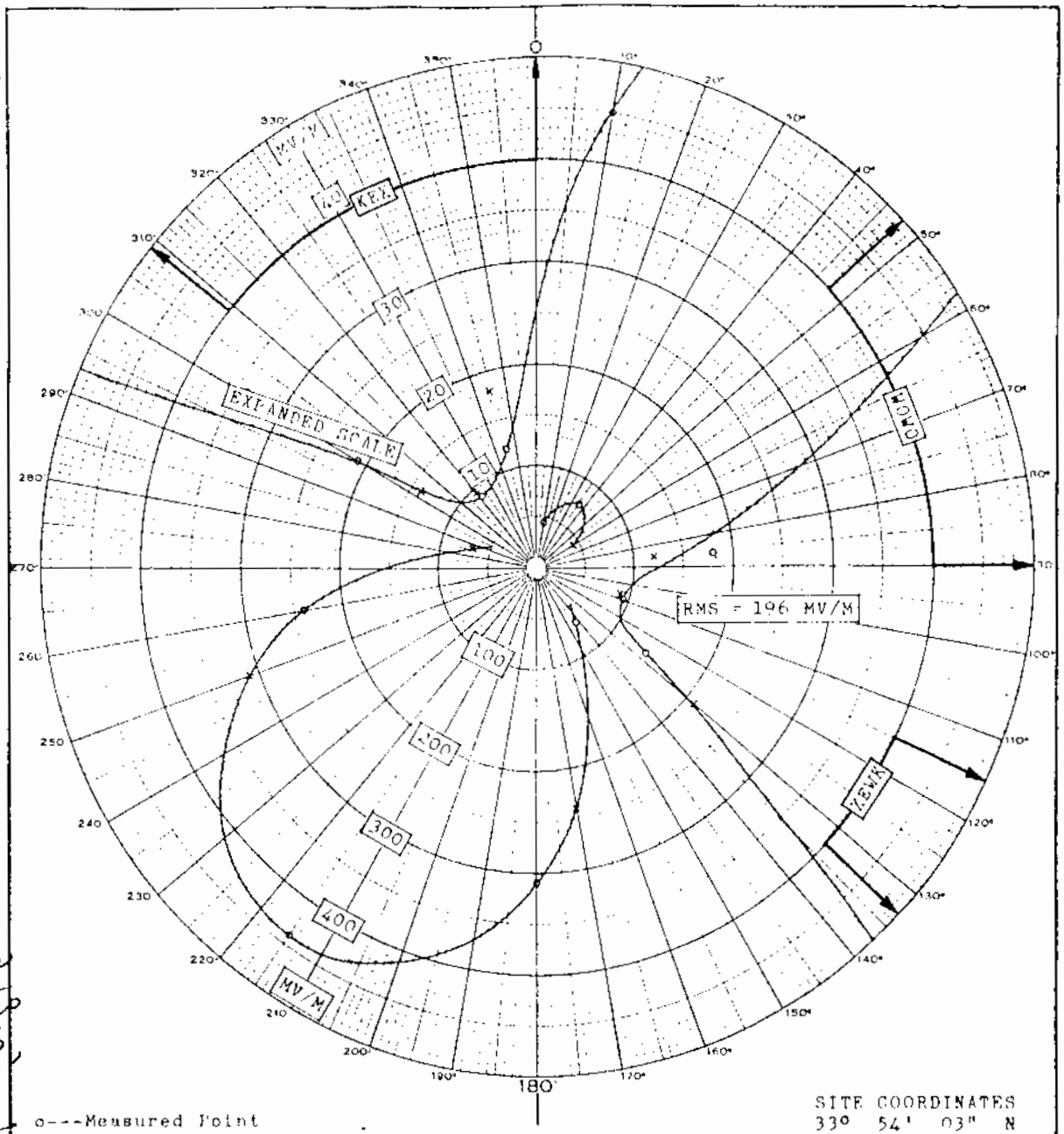
MEASURED DAY & NIGHT (8-8-59g)

Station KEZY
Anaheim, California

1kw, DA-1, U
1190 KC

GR. APPL. 4-6-66 1/5 LS. DA-N granted for new station, 2-1-59

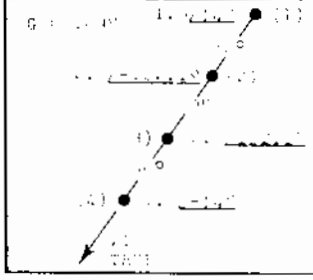
BL-11384 Granted (5-5-69) license covering increase in power to 1kw, 5kw-LS, DA-N, U.



o---Measured Point
x---Symmetry Point

SITE COORDINATES
33° 54' 03" N
117° 52' 00" W

MEASURED DIRECTIONAL FIELD PATTERN



Consulting Electronic Engineers

BASIC STATION KEZY
1190 KC
1 KW U DA-1
MAY, 1959

FCC File No. BL-7562
Accepted 7-27-59

KEZY
Anaheim, California

1190 KC

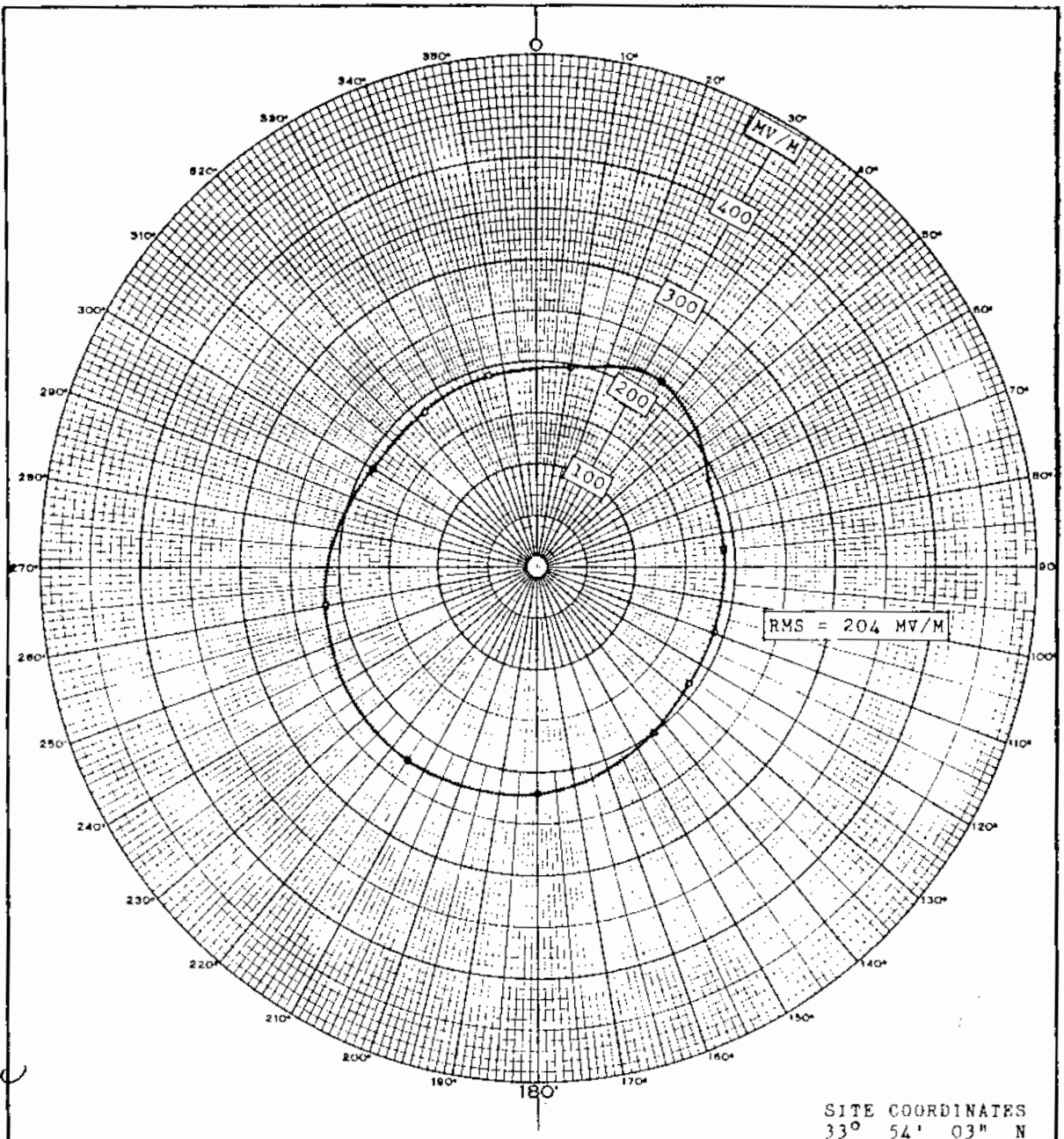
MEASURED NON-DA
(8-8-59g)

Station KEZY
Anaheim, California

1kw, DA-1, U
1190 KC

GR. APPL. 4-6-66 1/5 LS, DA-N

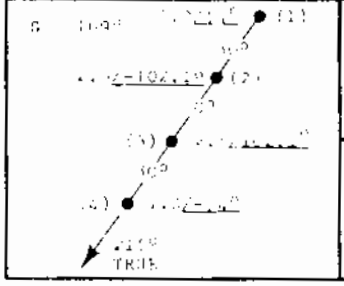
granted for new station 12-1-59



SITE COORDINATES
33° 54' 03" N
117° 52' 09" W

BL-11384 Granted (5-5-69) license covering increase in power to 1 kw, 5 kw-LS, DA-N, U

MEASURED NONDIRECTIONAL HORIZONTAL PLANE RADIATION PATTERN



RADIO ORANGE COUNTY, INC.
ANAHEIM, CALIFORNIA

Vandivere and Cohen
Consulting Electronic Engineers

RADIO STATION KEZY
1190 KC
1.0 KW U DA-1
MAY, 1959

FCC File No. BL-7562
Accepted 7-27-59

KEZY
Anaheim, California

1190 KC

KHAD

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KHAD Main Studio: DeSoto, Missouri

Frequency: 1190 kHz Power: 5 kW

Notification List No. 1720 Date: February 10, 1977 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:
North Latitude: 38° 08' 22"
West Longitude: 90° 32' 32"

ANTENNA CHARACTERISTICS

Authorized for Daytime operation. (DA-D)
Number of elements: 2
Type of elements: Series excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	#1(SW)	#2(NE)
HEIGHT ABOVE INSULATORS:	180'	180' (80°)
PHASING:	0°	+110°
FIELD RATIO:	1.0	0.905

SPACING AND ORIENTATION: Towers are spaced 169.9' (74°) on a line bearing 50° true.

GROUND SYSTEM: 120-200' equally spaced copper radials about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL		STANDARD
	RMS	RSS	RMS
Day	426.994 mv/m	481.177 mv/m	448.565 mv/m

Note: This notification concerns only an increase in power from 1 kW.

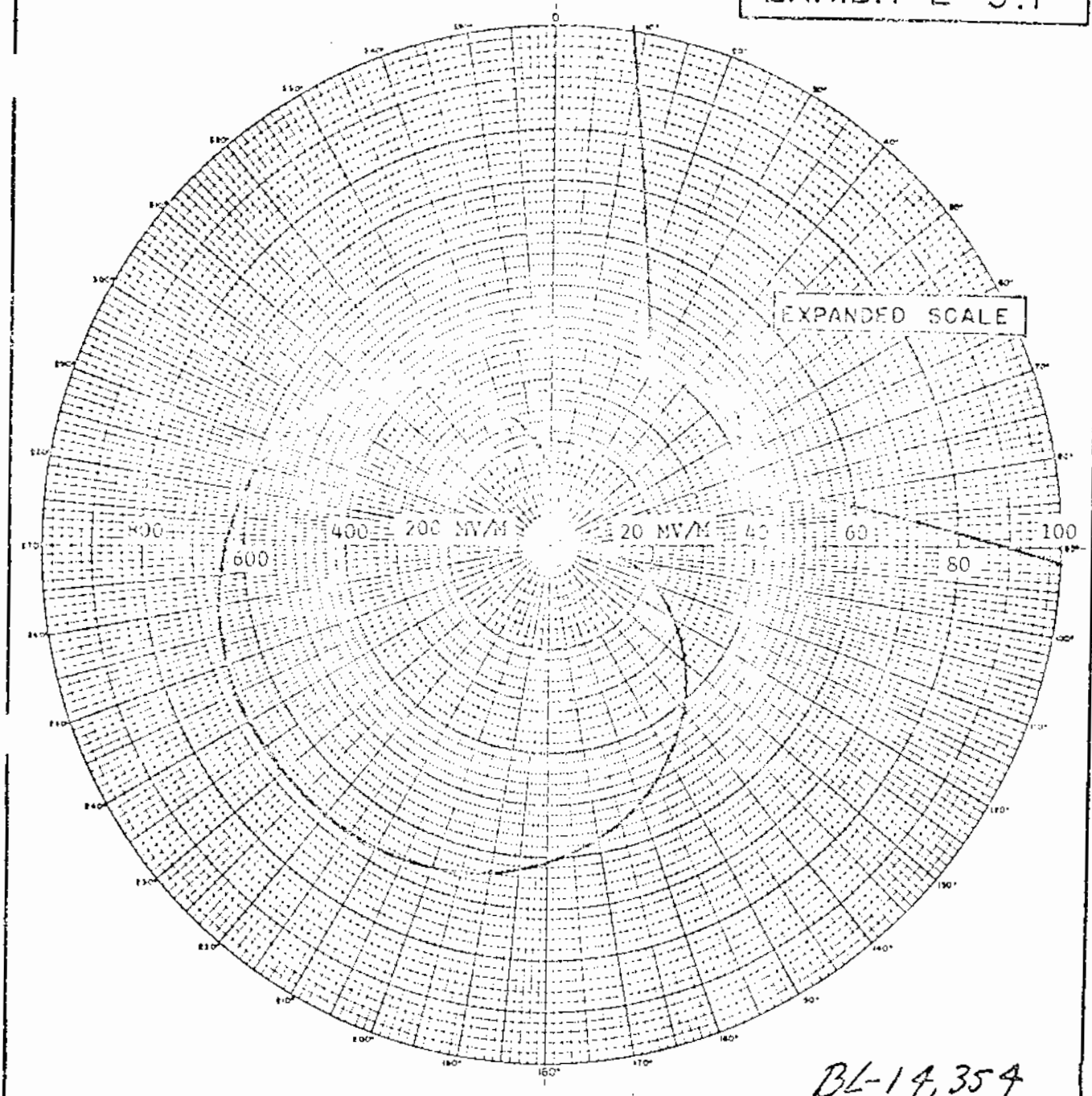
Standard Pattern

KHAD

TRUE BEARING - DEGREES

EXHIBIT E-5.1

STD. DAY



BL-14,354

KHAD

STANDARD HORIZONTAL RADIATION PATTERN

K-FACTOR 356.768 mv/m
THEO RMS 426.994 mv/m
THEO RSS 481.177 mv/m
Q FACTOR 13.416
STD RMS 448.565 mv/m
ELEC H'T 80 DEGREES
185 FEET

50°
0.905/110° 0
74°(169.9 FEET)
0
1.0/0°

APPLICANT DeSoto B'd Co., Inc.
LOCATION DeSoto, MO
FREQUENCY 1190 kcs
POWER 5 KW
LATITUDE 38 DEG 08 MIN 22 SEC
LONGITUDE 90 DEG 32 MIN 32 SEC
DATA USED Daytime
DATE May 1976

ROBERT L. MIERS
CONSULTING RADIO ENGINEER
ROLLA, MISSOURI 65401

KHAD

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KHAD — Main Studio: DeSoto, Missouri

Frequency: 1190 kHz — Power: 5 kW

Notification List No. 1720 — Date: February 10, 1977 — Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:
North Latitude: 38° 08' 22"
West Longitude: 90° 32' 32"

ANTENNA CHARACTERISTICS

Authorized for Daytime operation. (DA-D)
Number of elements: 2
Type of elements: Series excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	#1(SW)	#2(NE)
HEIGHT ABOVE INSULATORS:	180'	180' (80°)
PHASING:	0°	+110°
FIELD RATIO:	1.0	0.905

SPACING AND ORIENTATION: Towers are spaced 169.9' (74°) on a line bearing 50° true.

GROUND SYSTEM: 120-200' equally spaced copper radials about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL		STANDARD
	RMS	RSS	RMS / RMS
Day	426.994 mv/m	481.177 mv/m	448.565 mv/m

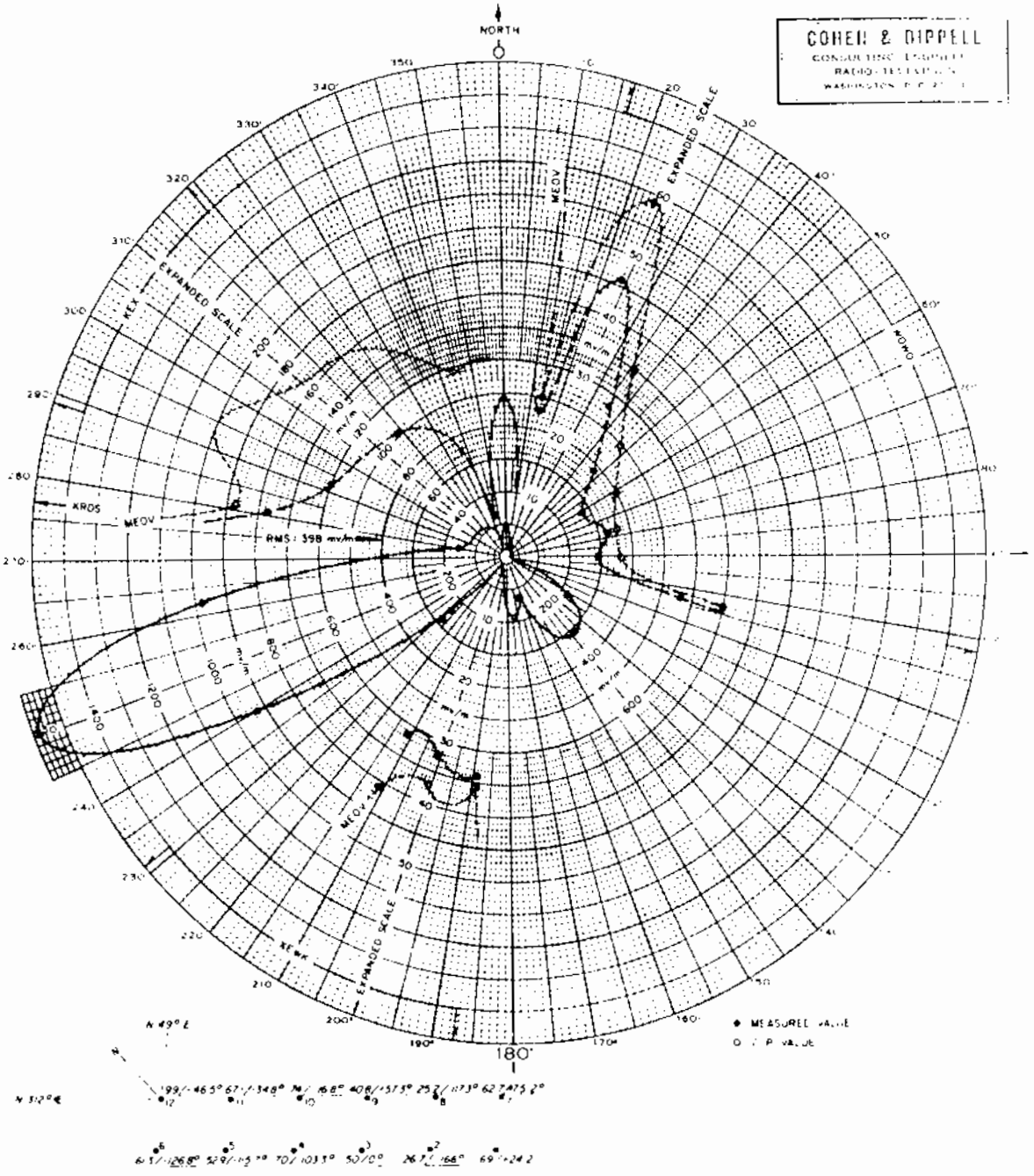
Note: This notification concerns only an increase in power from 1 kW.

KLIF

Measured Night
(8-26-70ct)

Station KLIF
Dallas, Texas

5kw, 50kw-LS, DA-2, U
1190 kc



FCC File No.BL-12692
Accepted 8-12-70

Station KLIF
Dallas, Texas

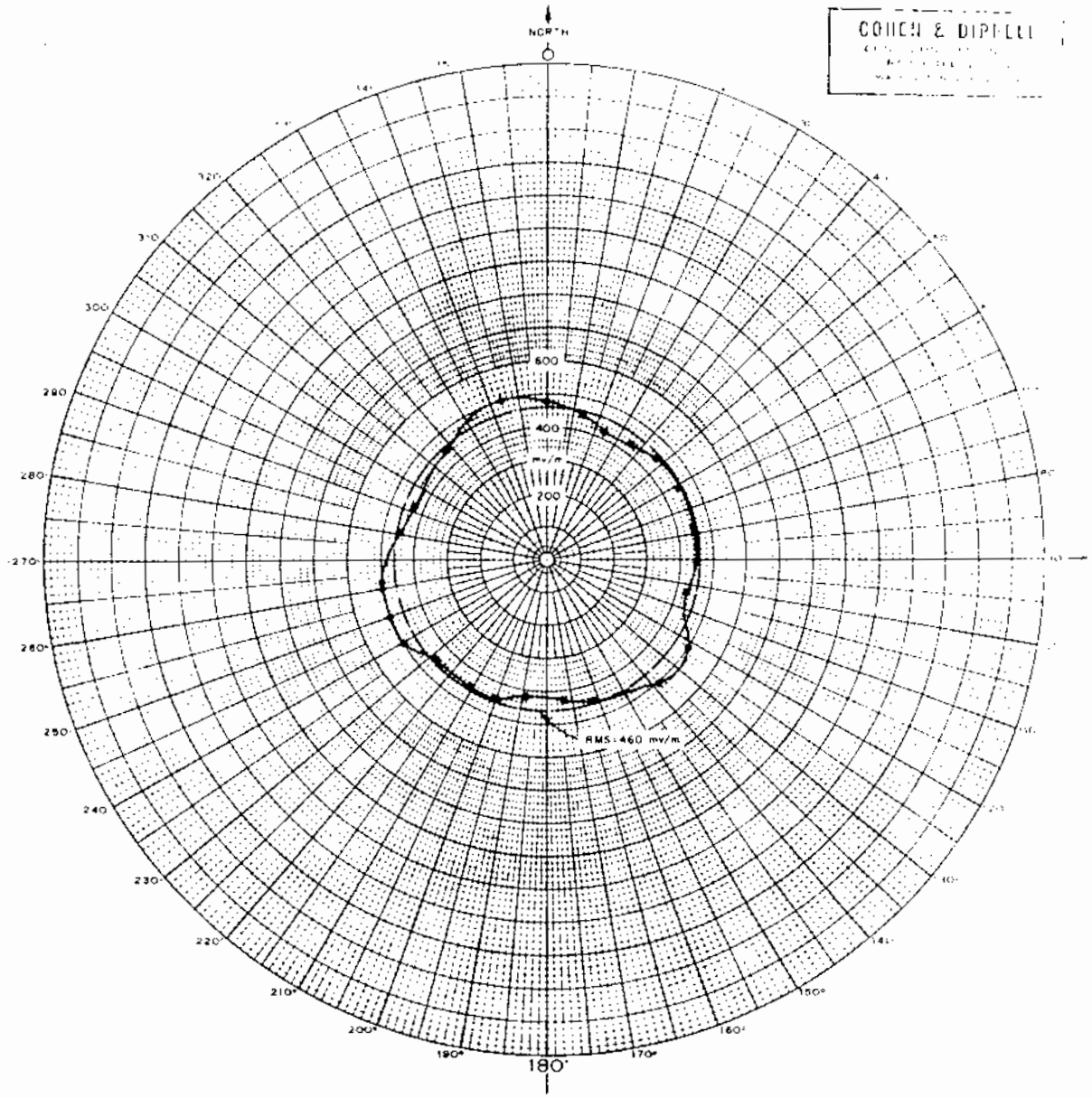
1190 kc

KLIF

Measured Non-DA
(8-26-70ct)

Station KLIF
Dallas, Texas

5kw, 50kw-LS, DA-2, U
1190 kc



FCC File No. BL-12692
Accepted 8-12-70

Station KLIF
Dallas, Texas

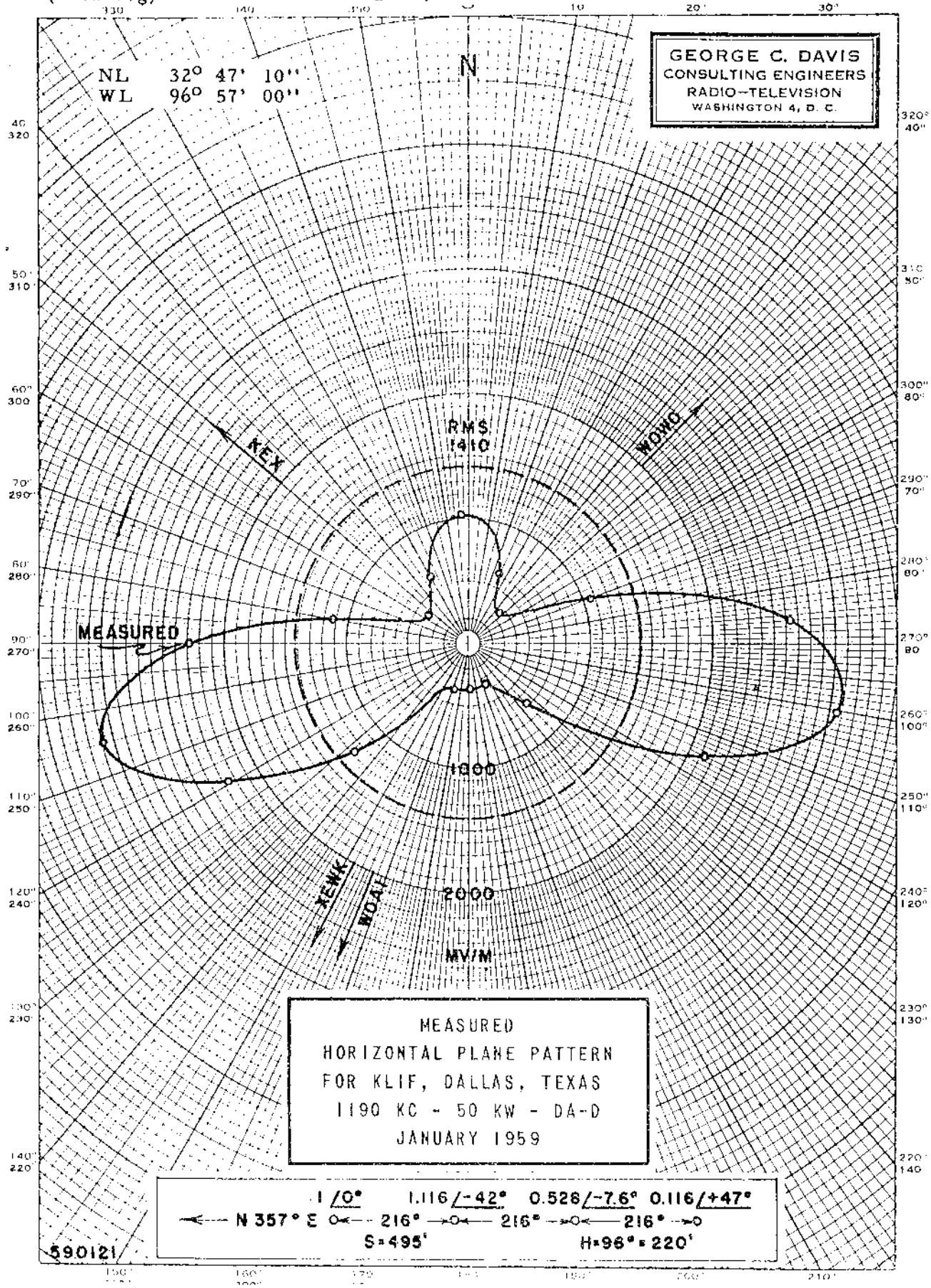
1190 kc

KLIF

MEASURED DAY
(4-22-59g)

Station KLIF
Dallas, Texas

50kw, DA-2,U
1190 KC



FCC File No. BL-7392
Accepted 3-26-59

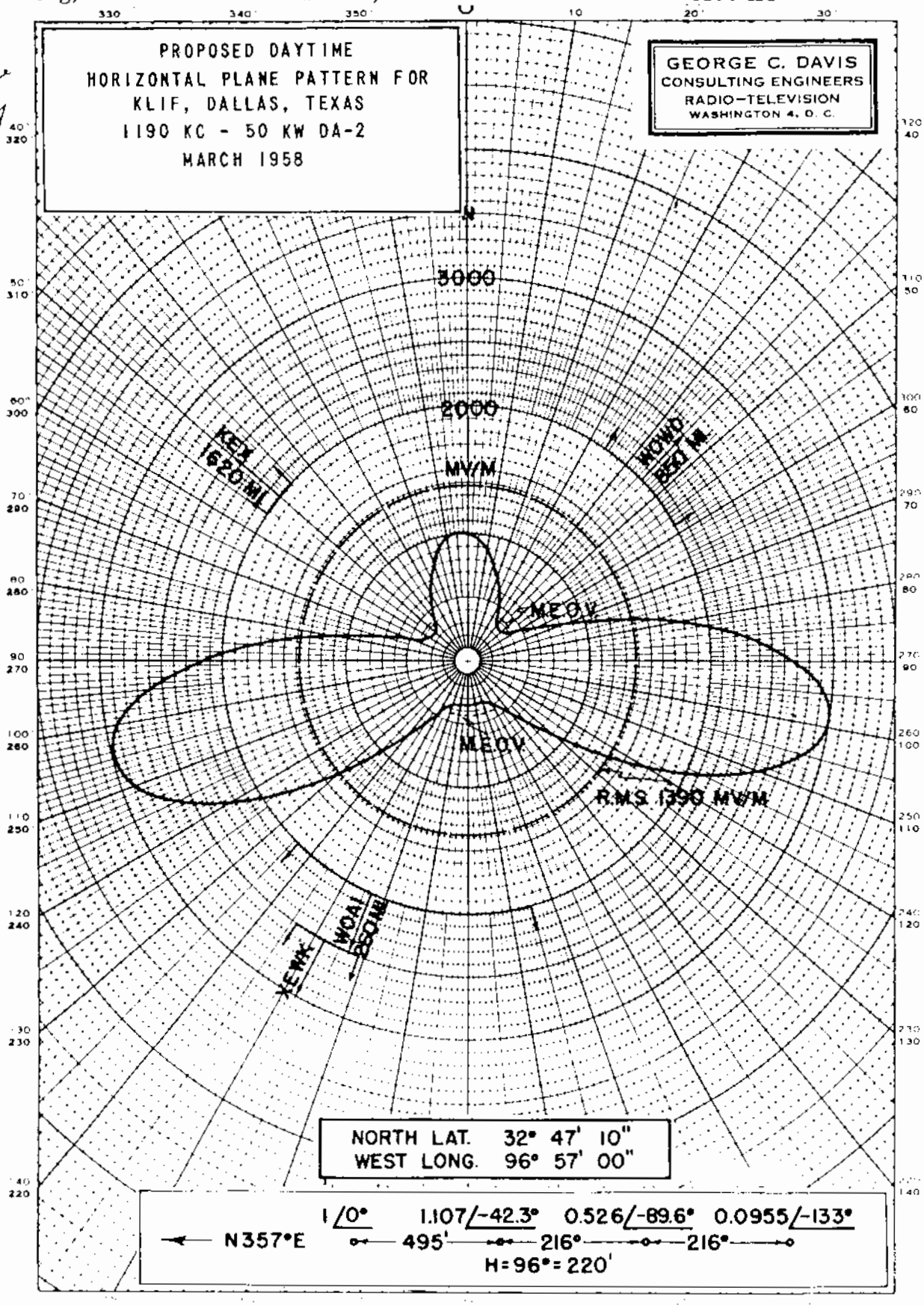
KLIF
Dallas, Texas

1190 KC

KLIF

PROPOSED DAY (4-9-58g) | Station KLIF Dallas, Texas | 1kw,50kw-LS, DA-2,U 1190 KC

granted increase 3/21/58 in Day A power



FCC File No. BP-9054 Accepted 3-26-58 (Amended) | KLIF Dallas, Texas | 1190 KC

KLIF

Proposed Night
(10-28-67ct)

Station KLIF
Dallas, Texas

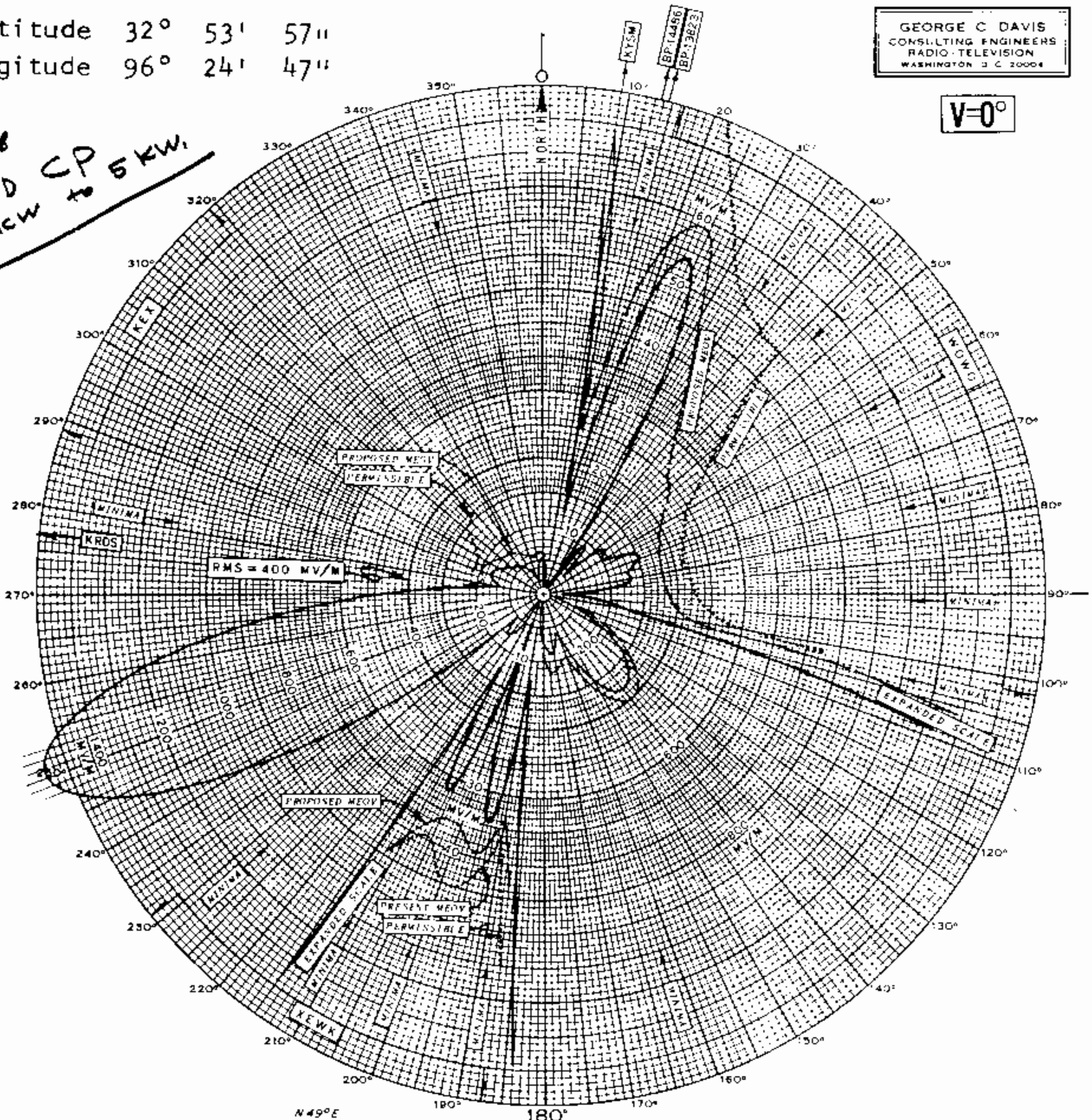
5kw,50kw-LS,DA-2,U
1190 kc

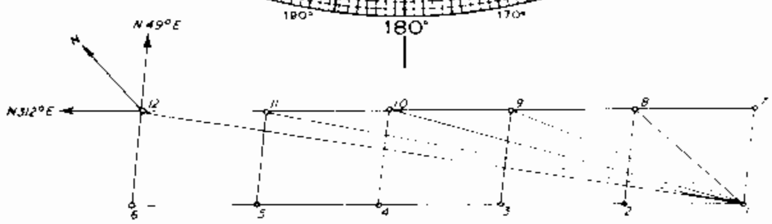
North Latitude 32° 53' 57"
West Longitude 96° 24' 47"

GEORGE C DAVIS
CONSULTING ENGINEERS
RADIO · TELEVISION
WASHINGTON D C 20004

V=0°

2-21-68
GRANTED CP
FROM 1kw to 5kw.





	HEIGHT	FIELD RATIO	SPACING	ORIENT	PHASING
1	87.2	1	0		
2	87.2	2.12	[illegible]	[illegible]	[illegible]
3	87.2	2.824	429	[illegible]	[illegible]
4	[illegible]	1.165	[illegible]	[illegible]	[illegible]
5	87.2	[illegible]	[illegible]	[illegible]	[illegible]
6	87.2	1.44	[illegible]	[illegible]	[illegible]
7	87.2	1	65	49	[illegible]
8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	87.2	[illegible]	[illegible]	[illegible]	[illegible]
10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	87.2	[illegible]	[illegible]	[illegible]	[illegible]

COMPUTED HORIZONTAL PLANE RADIATION PATTERN
FOR THE PROPOSED NIGHTTIME OPERATION OF
KLIF, DALLAS, TEXAS
1190 KHz - 5/50 KW - DA-2 U
JULY 1967

FCC File No.BP-14367
Accepted 10-25-67 Amended

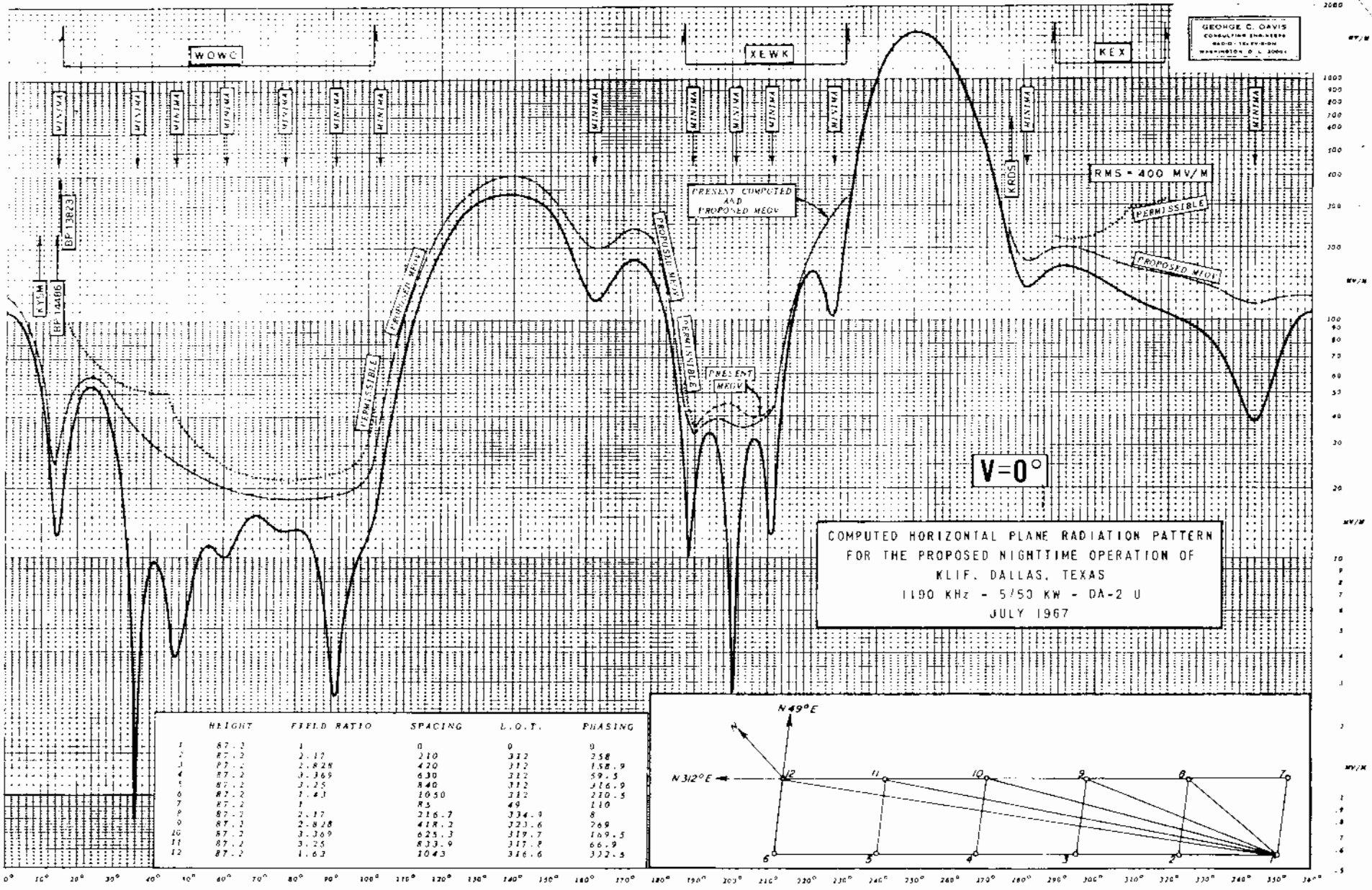
Station KLIF
Dallas, Texas

1190 kc

Proposed Night Nulls
(10-28-67ct)

Station KLIF
Dallas, Texas

5kw, 50kw-LS, DA-2, U
1190 kc



COMPUTED HORIZONTAL PLANE RADIATION PATTERN
FOR THE PROPOSED NIGHTTIME OPERATION OF
KLIF, DALLAS, TEXAS
1190 KHz - 5/50 KW - DA-2 U
JULY 1967

	HEIGHT	FEED RATIO	SPACING	L.O.T.	PHASING
1	87.2	1	0	0	0
2	87.2	2.17	210	332	358
3	87.2	2.828	420	332	358.9
4	87.2	3.369	630	332	59.5
5	87.2	3.25	840	332	316.9
6	87.2	1.63	1050	332	220.5
7	87.2	1	85	49	110
8	87.2	2.17	216.7	334.8	8
9	87.2	2.828	418.2	323.6	269
10	87.2	3.369	625.3	319.7	169.5
11	87.2	3.25	833.9	317.8	66.9
12	87.2	1.63	1043	316.6	332.5

FCC File No. BP-14367
Accepted 10-25-67 Amended

Station KLIF
Dallas, Texas

1190 kc

PROPOSED
NIGHT

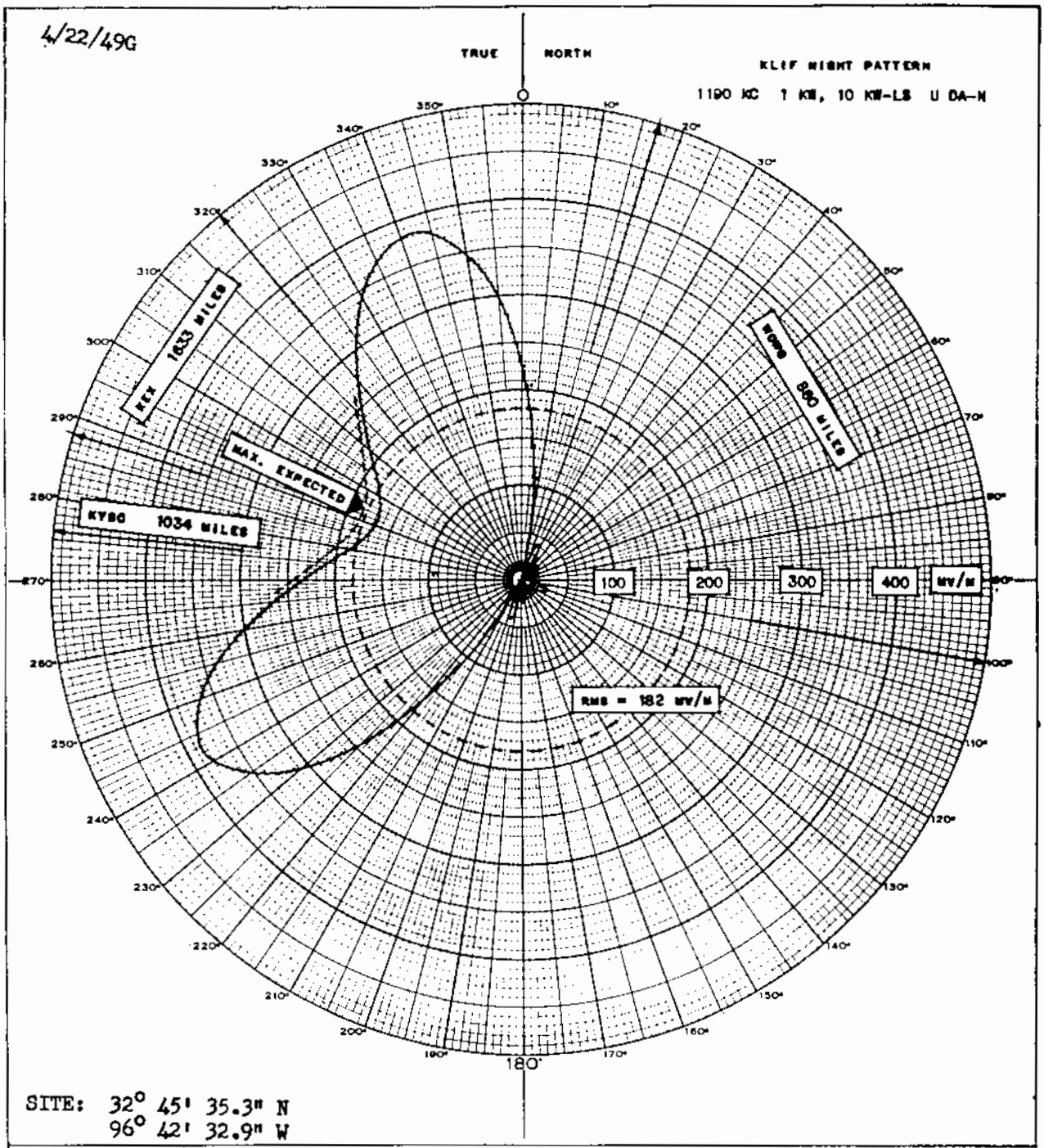
KLIF, OAK CLIFF, TEX.

1-50 LS DA-2
~~1kw, 10kw-LS, DAN~~

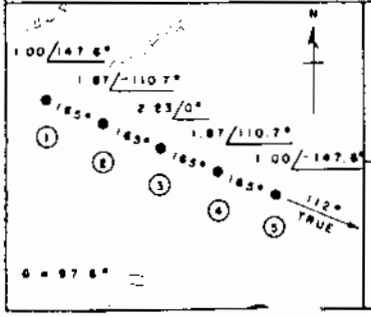
FIGURE 6

KLIF

1190kc



CALCULATED HORIZONTAL PLANE RADIATION PATTERN FOR NIGHTTIME OPERATION



TRINITY BROADCASTING CORPORATION
OAK CLIFF TEXAS

WELDON & CARR
CONSULTING RADIO ENGINEERS
WASHINGTON DC DALLAS TEXAS

PROPOSED KLIF OPERATION
OAK CLIFF TEXAS

1190 KC 1 KW, 10 KW-LS U DA-N
W 490126 A

P-6467 AMENDED 4-15-49

KLIF, Oak Cliff, Tex. 1190 kc

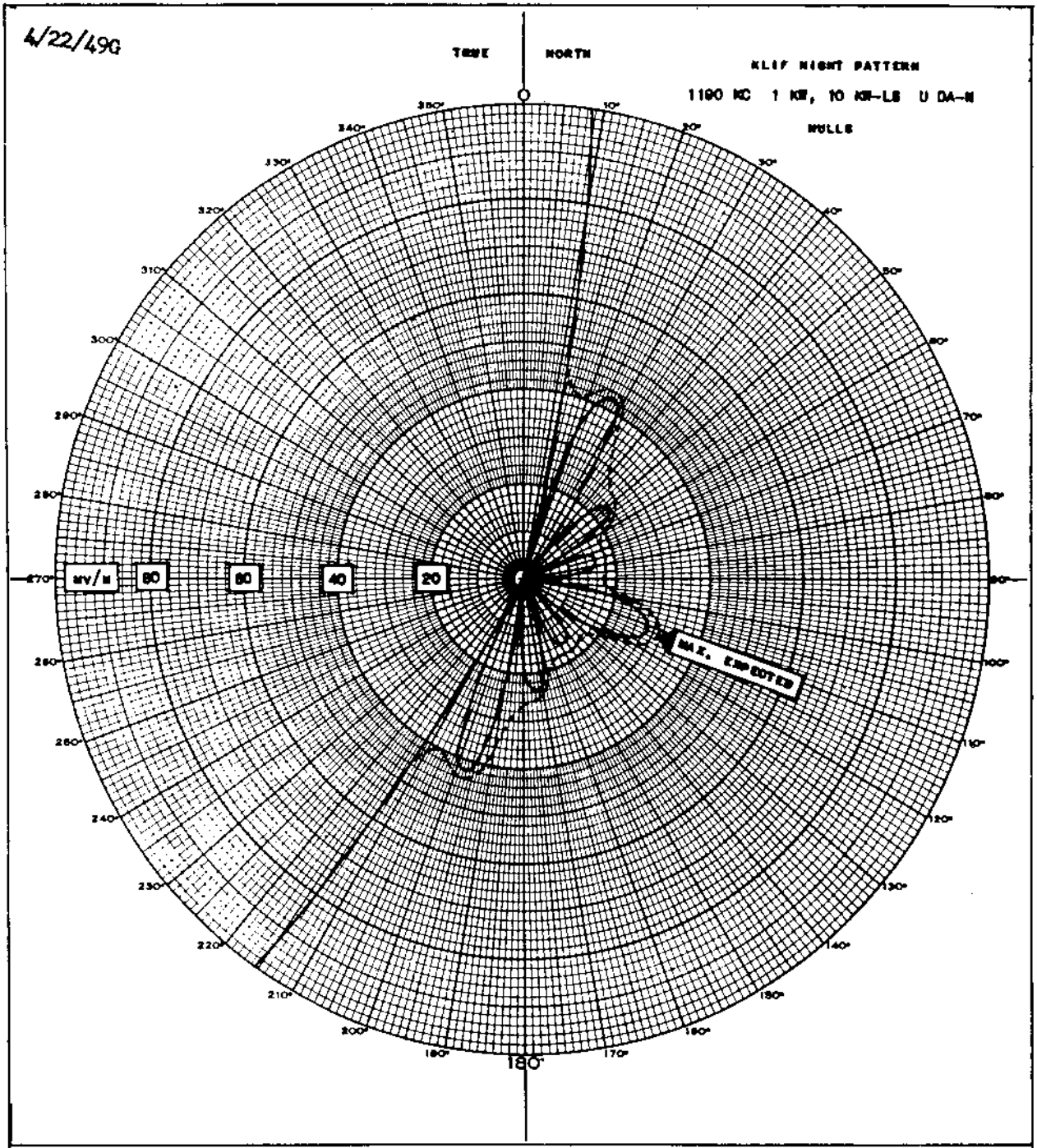
KLIF

PROPOSED NIGHT NULLS

KLIF, OAK CLIFF, TEX.

1-50 LS DA-2
~~1kw,10kw-LS,DAN~~ FIGURE 6

1190kc



CALCULATED HORIZONTAL PLANE RADIATION PATTERN FOR NIGHTTIME OPERATION

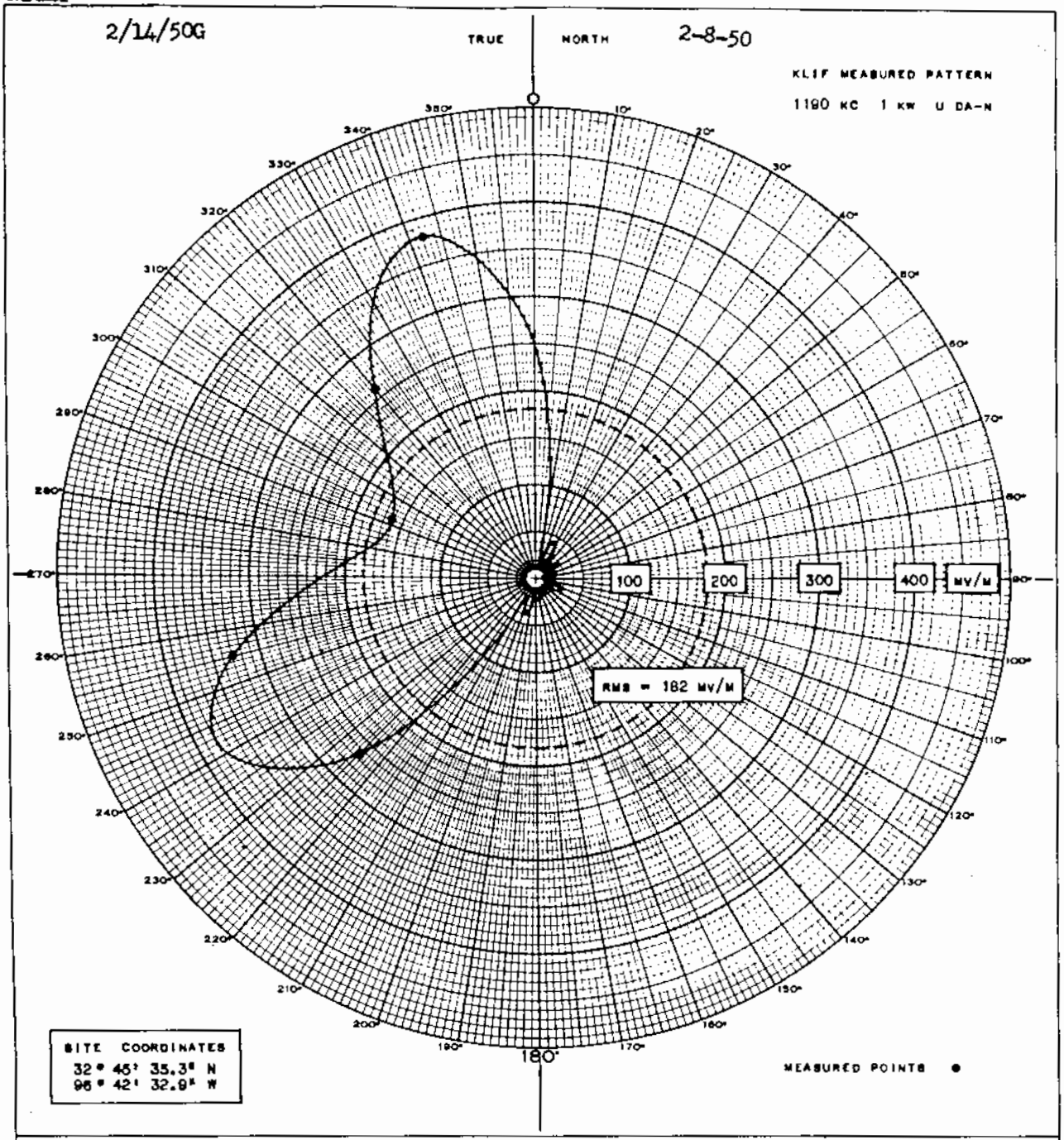
SITE: 32° 45' 35.3" N 96° 42' 32.9" W DETAIL IN NULLS	TRINITY BROADCASTING CORPORATION OAK CLIFF TEXAS WELDON & CARR CONSULTING RADIO ENGINEERS WASHINGTON DC DALLAS TEXAS	PROPOSED KLIF OPERATION OAK CLIFF TEXAS 1190 KC 1 KW, 10 KW-LS U DA-N W 490126 B

P-6467 Amended 4-15-49

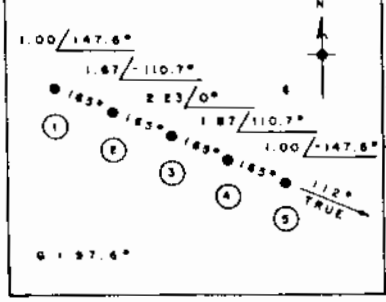
KLIF

MEASURED NIGHT KLIF, OAK CLIFF, TEX. ~~1kc, DAN~~ 1190 kc

1-50 LS DA-2 FIGURE 8



MEASURED HORIZONTAL PLANE RADIATION PATTERN FOR NIGHTTIME OPERATION



TRINITY BROADCASTING CORPORATION

WELDON & CARR
CONSULTING RADIO ENGINEERS
WASHINGTON D.C. DALLAS TEXAS

KLIF
OAK CLIFF TEXAS
1190 KC 1 KW U DA-N
W 500119 B

KLIF, Oak Cliff, Tex. 1190

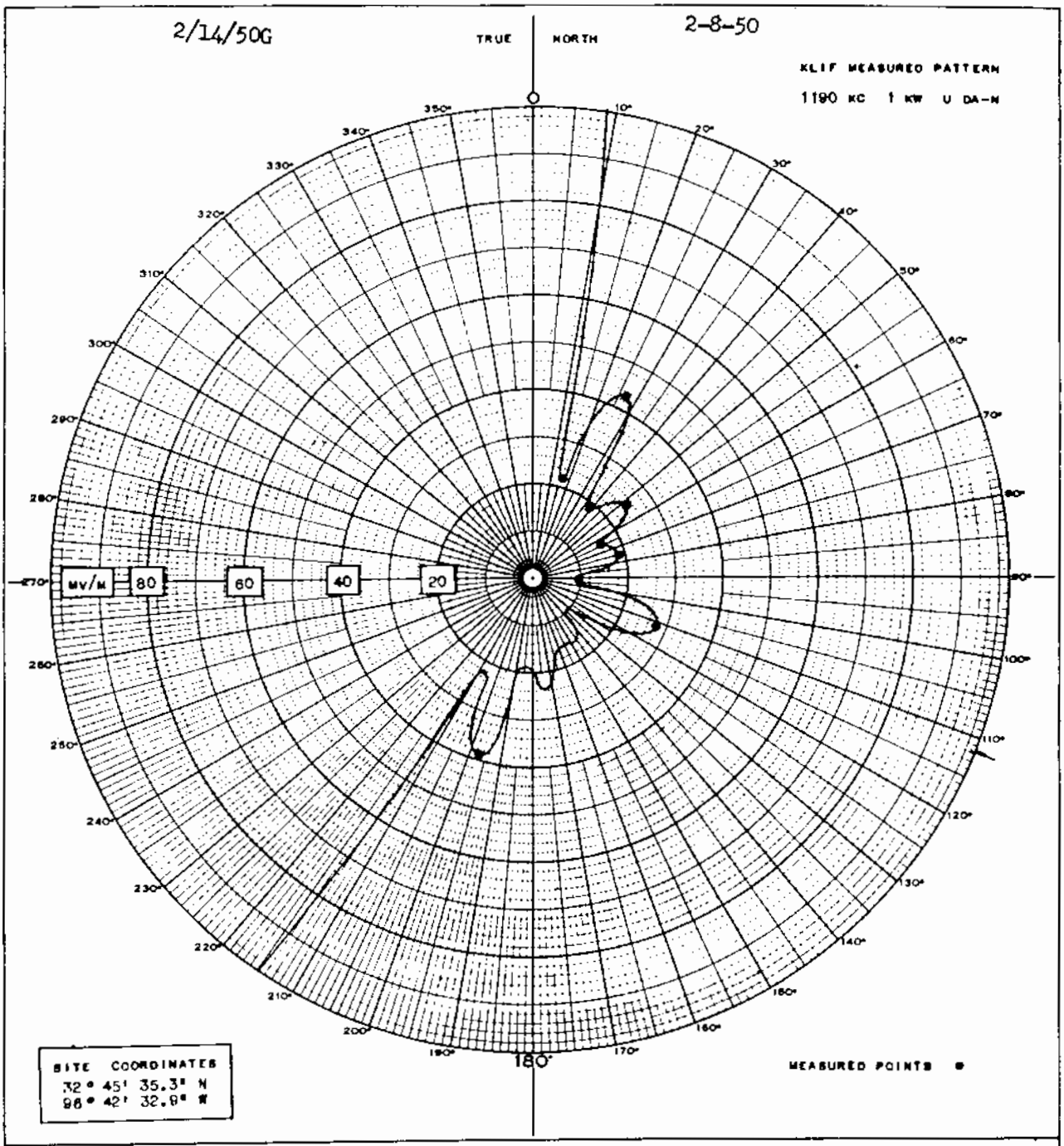
KLIF

MEASURED NIGHT NULLS

KLIF, OAK CLIFF, TEX.

~~1kw, DAN~~ 1190 k

1-50 LS DA-2 FIGURE 9



MEASURED HORIZONTAL PLANE RADIATION PATTERN FOR NIGHTTIME OPERATION

DETAILS IN NULLS	TRINITY BROADCASTING CORPORATION	KLIF OAK CLIFF TEXAS 1190 KC 1 KW U DA-N W 500119 A
	JELDON & CARR CONSULTING RADIO ENGINEERS WASHINGTON D.C. DALLAS TEXAS	

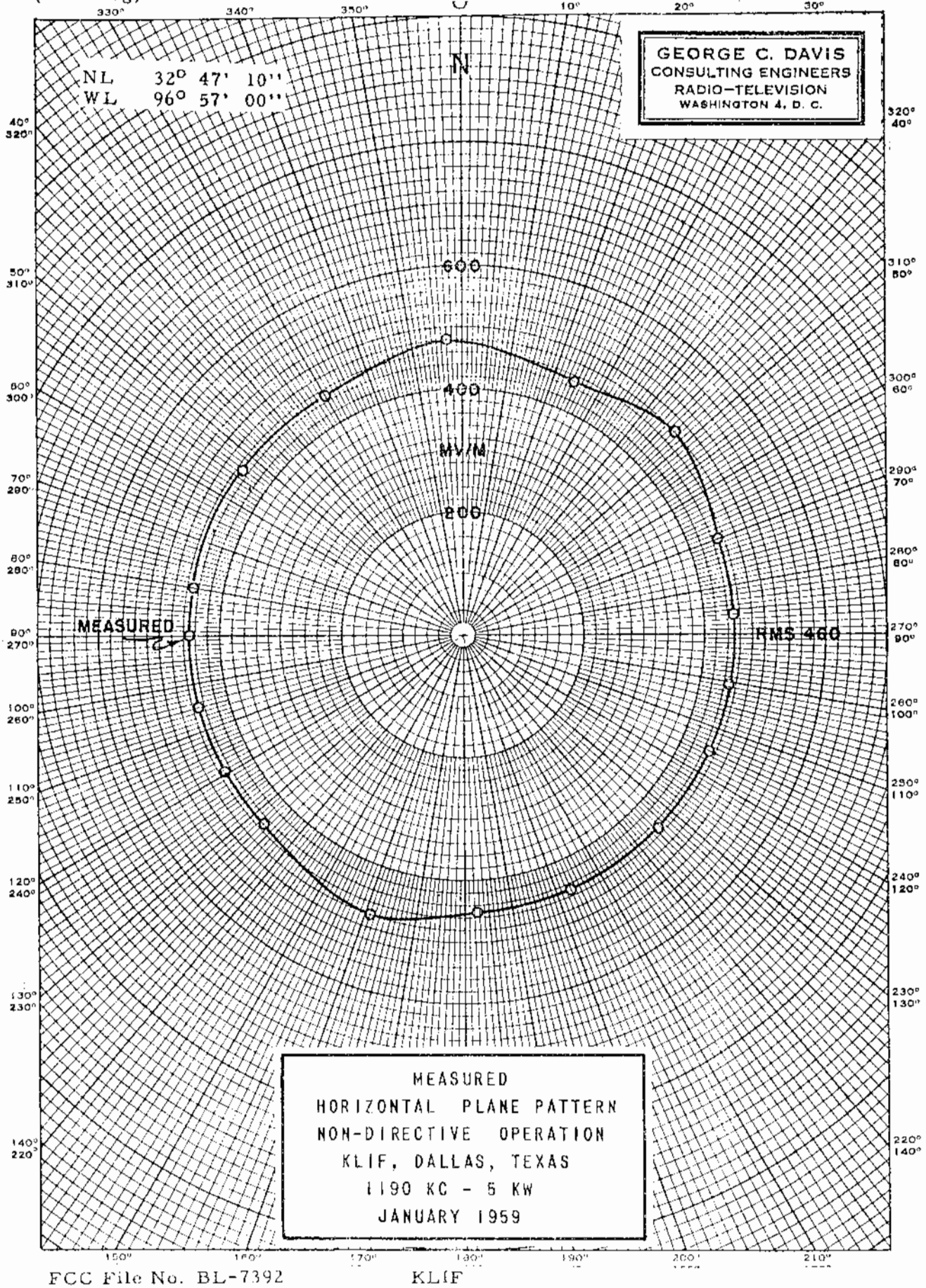
KLIF, Oak Cliff, Tex. 1190

KLIF

MEASURED NON-DA
(4-22-59g)

Station KLIF
Dallas, Texas

50kw, DA-2,U
1190 KC



FCC File No. BL-7392
Accepted 3-26-59

KLIF
Dallas, Texas

1190 KC

KRDS

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station : KRDS

Main Studio: Tolleson, Arizona

Frequency : 1190 kHz

Power : 0.25 kW Night - 5 kW Day

Notification List No. 1779

Date : September 27, 1978 Class: II

GEORGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude:	33°	26'	42"
West Longitude:	112°	15'	54"

ANTENNA CHARACTERISTICS

Authorized for Daytime and Nighttime operation (DA-2)
Number of elements: 4
Type of elements : Series excited, uniform cross-section, guyed, vertical steel towers.

TOWER :	C(#1)	SE(#4)	NE(#3)	SE(#2)
HEIGHT ABOVE INSULATORS	205	205	205	205 (89.3°)
NIGHT PHASING:	0°	---	---	0°
NIGHT FIELD RATIO:	1.0	---	---	0.9
DAY PHASING:	0°	+73°	-120°	---
DAY FIELD RATIO:	1	0.51	0.68	---

SPACING AND ORIENTATION: With the C(#1) tower as reference the SW(#4) tower is spaced 310' (135°) on a line bearing 230° true, the NE(#3) tower is spaced 310' (135°) on a line bearing 50° true, and the SE(#2) tower is spaced 448' (195.1°) on a line bearing 135° true.

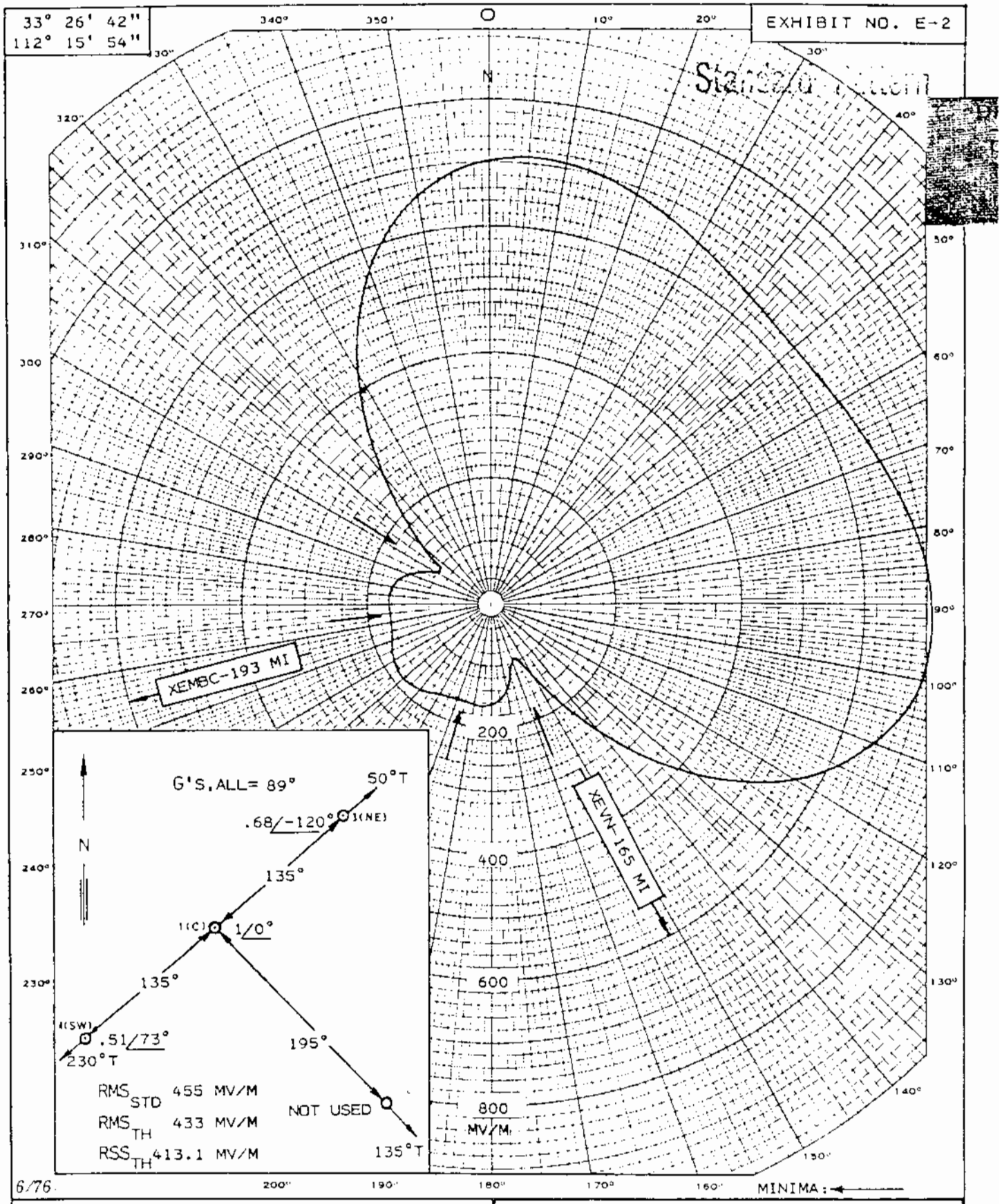
GROUND SYSTEM: 120-200' equally spaced copper radials about each tower. Radials are shortened and bonded to transverse straps along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL		STANDARD
	RMS	RSS	RMS
DAY	433 mV/m	413.1 mV/m	455 mV/m
NIGHT	87.5 mV/m		

NOTE: Please retain the Nighttime directional antenna radiation pattern notified for Station (New) in United States Change List Number 854 dated March 23, 1960 and attached to this Revised Description Sheet and Daytime pattern. This notification concerns only a change in the Daytime operation of the station with Nighttime operation continued as previously notified.

KRDS



EDWARD F. LORENTZ & ASSOCIATES
Consulting Radio Engineers
Washington, D.C.

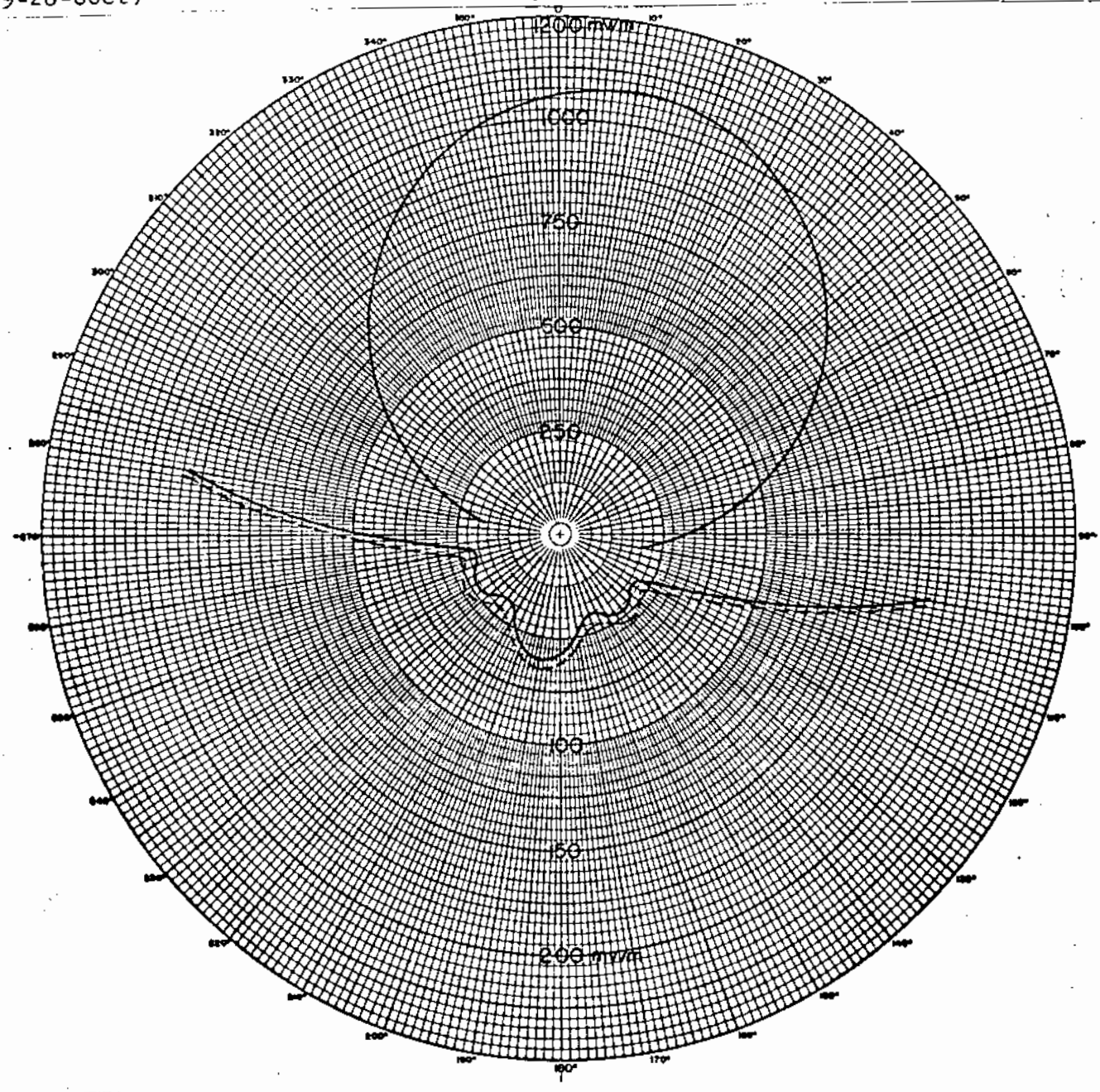
PROPOSED DAYTIME HORIZONTAL
STANDARD PATTERN
RADIO STATION KRDS
TOLLESON, ARIZONA
1190 KHZ 5 KW-D, 0.25 KW-N, DA-2, U
SOUTHWESTERN BROADCASTERS, INC.

KRDS

Proposed Day
(9-28-66ct)

Station KRDS
Tolleson, Arizona

250w, 10kw-LS, DA-2, U
1190 kc



HORIZONTAL RADIATION PATTERN

New Tower #4 ⊙ 0.766 /-142°
S = 60°-137.8'
New Tower #3 ⊙ 1.682 / 0°
S = 60°-137.8'
Existing Tower #1 ⊙ 1.0 /142°
N 10° E
S = 194.4° - 448.2'
Towers 90°
Existing Tower # 2 Not Used

APPLICANT	E. O. SMITH
LOCATION	Tolleson, Arizona
FREQUENCY	1190 KC/S
POWER	10 KW-LS, 0.25 KW DA-2
LATITUDE	33 DEG. 26 MIN. 42 SEC.
LONGITUDE	112 DEG. 15 MIN. 54 SEC.
WHEN USED	Daytime
R.M.S. FIELD	555 mv/m
DATE	112465

RALPH J. BITZER
CONSULTING RADIO ENGINEERS
ST. LOUIS, MISSOURI

FCC File No. BP-17053
Accepted 9-8-66

Station KRDS
Tolleson, Arizona

1190 kc

KRDS

MEASURED DAY & NIGHT (1-17-61g)

Station KZON
Tolleson, Arizona

250w, DA-1,U
1190 KC

-23-61 granted for new station

North Latitude 33° 26' 42"
West Longitude 112° 15' 24"

G = 90°

315° true

1/0°

195°

.915/0°

KEX
995 miles

WOWO
1550 miles

KEZY
330 miles

KLIF
880 miles

RMS = 97 mv/m

XEWK
1030 miles

MV/M

70 60 50 40 30 20 10

200 150 100 50

EXHIBIT - N
U.S. ANTENNA FIELD INTENSITY
AT 1 MILE - SHOWING NULL DESIRED
KZON - 1190KC - .25KW-DA
Tolleson -- ARIZONA
Paul Godley-Broadcast Eng. Services

FCC File No. BL-8182
Accepted 12-21-60

KZON
Tolleson, Arizona

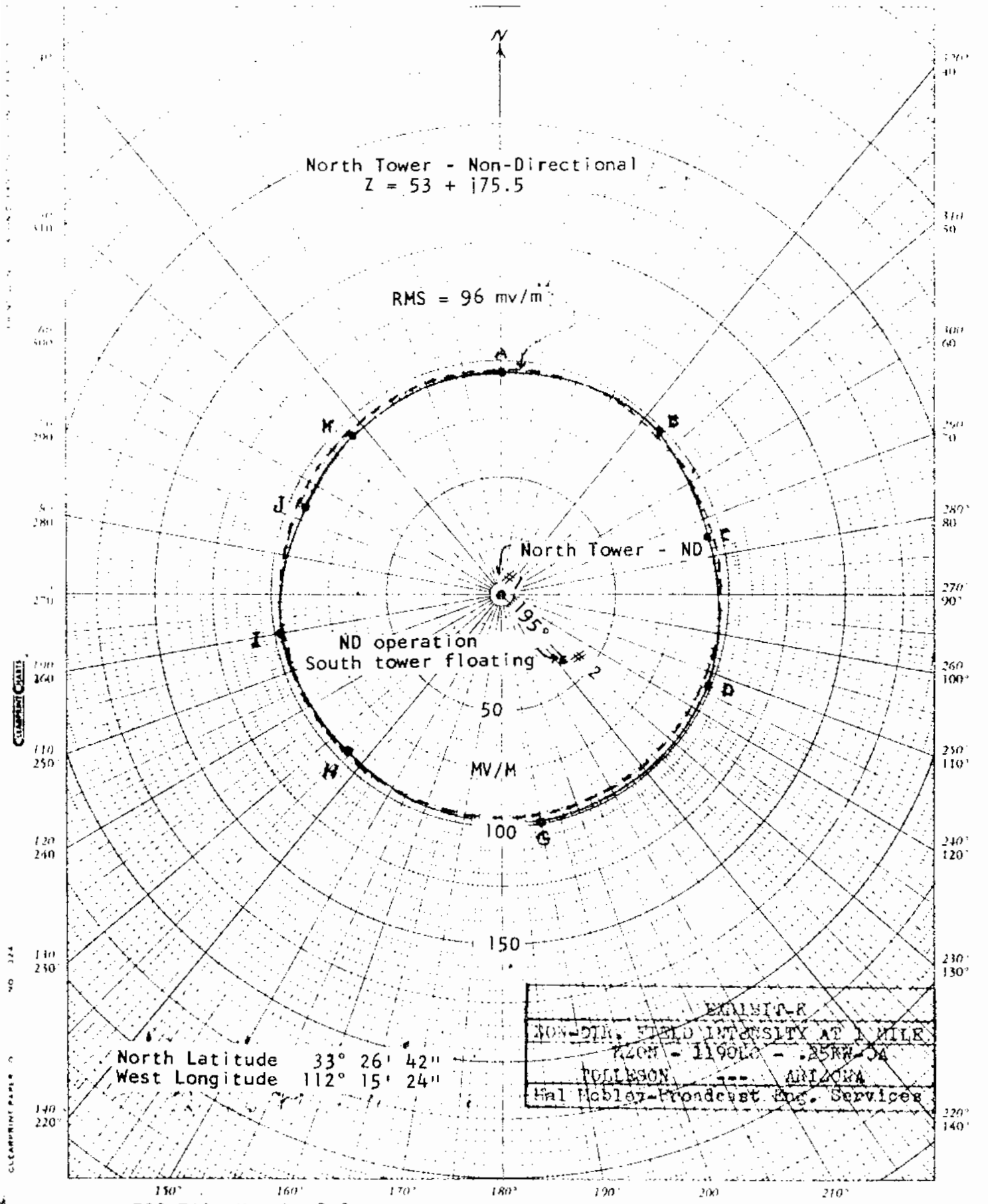
1190 KC

KRDS1

MEASURED NON-DA
(1-17-61g)

Station KZON
Tolleson, Arizona

250w, DA-1,U
1190 KC



North Latitude 33° 26' 42"
West Longitude 112° 15' 24"

FCC File No. BL-8182
Accepted 12-21-60

KZON
Tolleson, Arizona
1190 KC

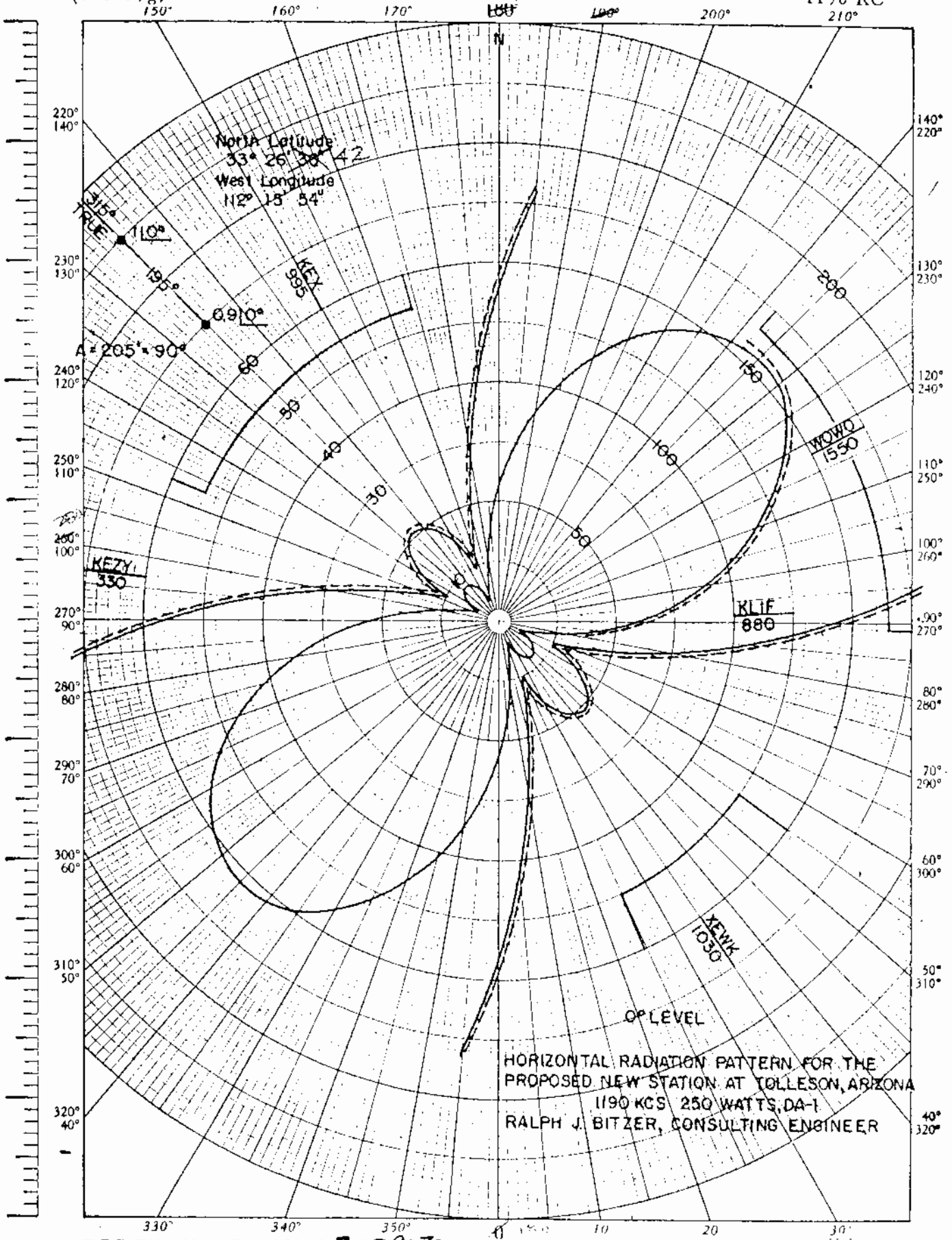
KRDS

Tolleson, Ariz.

PROPOSED DAY & NIGHT (7-8-59g)

New; E. O. Smith
Tolleson, Arizona

250w, DA-1, U
1190 KC



FCC File No. ~~BP-13137~~ BMP 9070
Accepted 6-30-59

E. O. Smith
7-29-60 Tolleson, Arizona

1190 KC

KRJZ

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station : NEW Main Studio: Beloit, Kansas

Frequency 1190 Power : ____ Night 2.5 kW Day

Notification: 1782 Date : October 26, 1979 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:
North Latitude: 39 ° 26 ' 53 "
West Longitude: 98 ° 04 ' 45 "

ANTENNA CHARACTERISTICS

Authorized for Daytime operation. (DA-D)
Number of elements: 2
Type of elements: Series excited, uniform cross-section, guyed, vertical steel towers..

TOWER	W(#1)	E(#2)
HEIGHT ABOVE INSULATORS	180'	180'(78.4°)
DAY PHASING:	0°	106°
DAY FIELD RATIO:	1.0 0	0.88

SPACING AND ORIENTATION: Two towers in a row are spaced 183.7' (80°) on a line bearing 110° true.

GROUND SYSTEM: 120 - 206.7' equally spaced copper radials plus 120 - 49.9' interspaced radials about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS		THEORETICAL RSS		STANDARD RMS	
Day	285	mV/m		mV/m	299.4	mV/m

Note:

EXHIBIT E-6.01A

STANDARD PATTERN

PROPOSED DAYTIME DIRECTIONAL
HORIZONTAL RADIATION PATTERN
UNATTENUATED FIELD AT ONE MILE

PROPOSED AM STATION KRZJ
KRZJ BROADCASTERS
ROBERT D. & MARJORIE M. ZELLMER
1190 kHz 2500 WATTS DA-D,CH
BELOIT, KANSAS
SEPTEMBER 1977

TRUE NORTH

Standard Pattern

NL: 39° 26' 53"
WL: 98° 04' 45"

600 mV/m 400 200 20 40 60 mV/m

TOWER LINE

KAYD

EXPANDED SCALE

BL-791025AR

770924
ELECTRICAL DESCRIPTION

Nom. Power	=	2500 Watts
G's	=	78.4% [54.9 m] (180')
K_Ω	=	232.8 mV/m [TPO Adjust]
Th. RMS	=	285 mV/m @ 1.6 km
Q^2	=	90 mV/m
STD RMS	=	299.4 mV/m @ 1.6 km
	=	481.9 mV/m @ 1.0 km
$E^{\phi\theta}_{STD}$	=	$1.05[(E^{\phi\theta}_{th})^2 + Q^2]^{\frac{1}{2}}$

VIR N. JAMES REGISTERED PROFESSIONAL ENGINEER 2677 STATE OF COLORADO

VIR JAMES
CONSULTING RADIO ENGINEERS
345 COLORADO BLVD. · DENVER, CO · 80206
phone (303) 333-5562

1/0 — 80° — 0.88/106° → 110°T
#1 #2

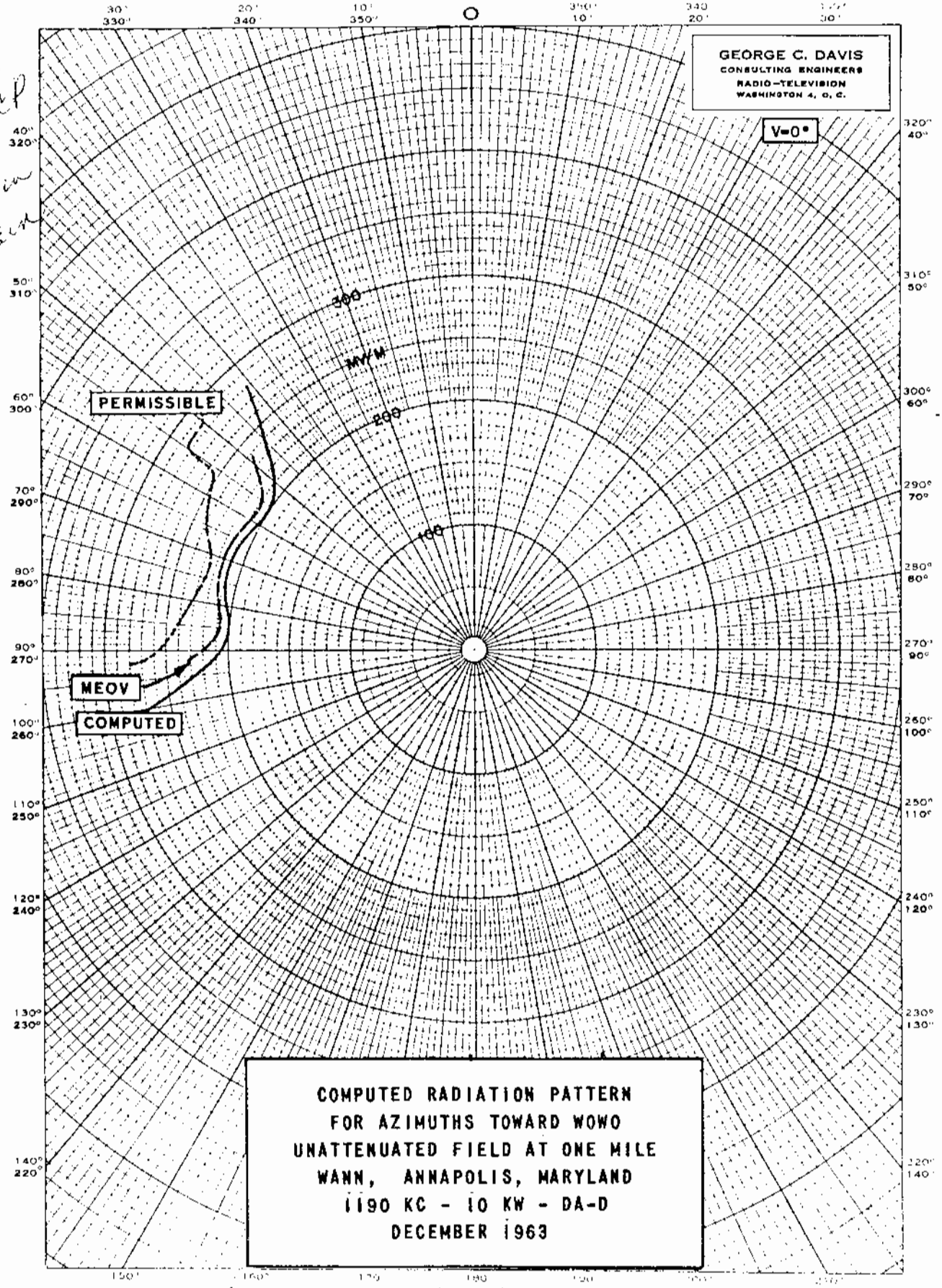
WANN

Proposed Day Nulls
(3-30-64ct)

Station WANN
Annapolis, Maryland

10kw, DA-D, D
1190kc

3-3-64 accepted CP to make changes in DA-pattern



FCC File No. BP-16093
Accepted 3-3-64

Station WANN
Annapolis, Maryland

1190kc

1

WANN

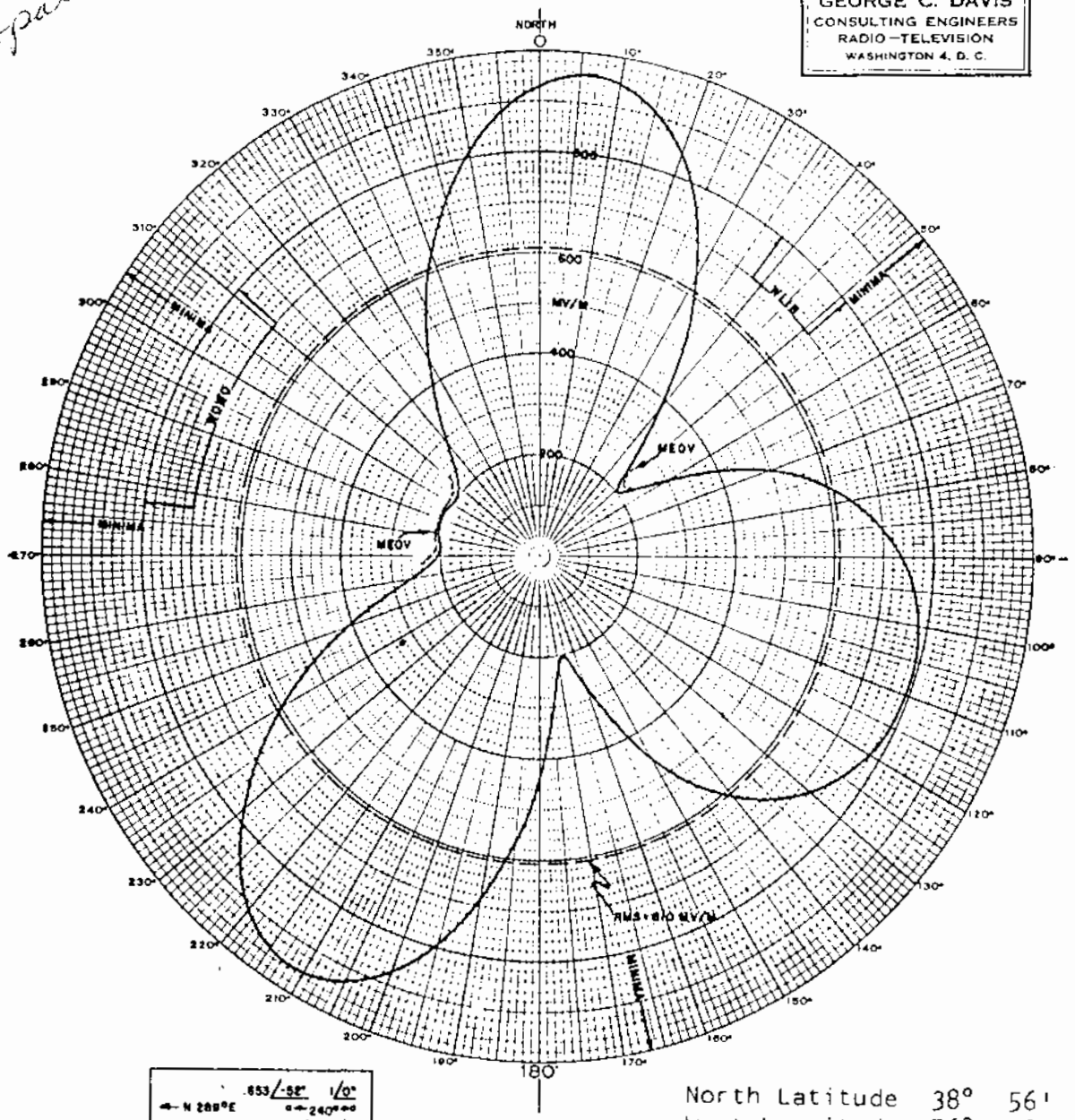
Proposed Day
(3-30-64ct)

Station WANN
Annapolis, Maryland

10kw,DA-D,D
1190kc

3-13-64
Revised CP to change DA pattern

GEORGE C. DAVIS
CONSULTING ENGINEERS
RADIO—TELEVISION
WASHINGTON 4, D. C.



653/-58° 1/0°
N 288°E
240°-60°
H=858°-220'

North Latitude 38° 56' 32"
West Longitude 76° 28' 54"

COMPUTED
HORIZONTAL PLANE PATTERN (MODIFIED)
WANN, ANNAPOLIS, MARYLAND
1190 KC - 10 KW - DA-D
DECEMBER 1963

FCC File No. BP-16093
Accepted 3-3-64

Station WANN
Annapolis, Maryland

1190kc

WANN

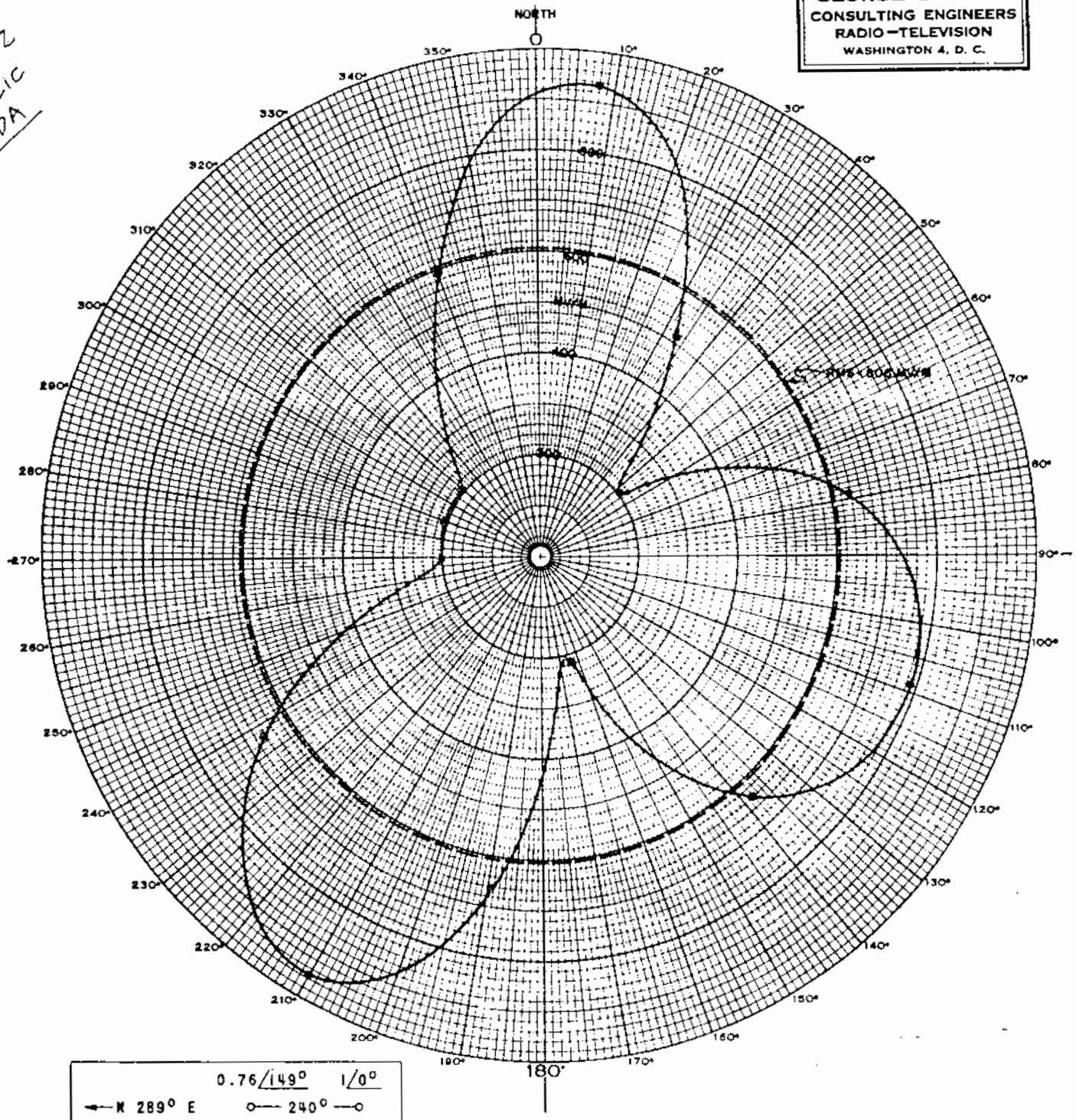
Measured Day
(11-27-64ct)

Station WANN
Annapolis, Maryland

10kw,DA-D,D
1190 kc

GEORGE C. DAVIS
CONSULTING ENGINEERS
RADIO—TELEVISION
WASHINGTON 4, D. C.

BL-10662
3-1-65 LIC
MG. DAY DA



0.76/149° 1/0°
M 289° E 240°
M=95.8°=220'

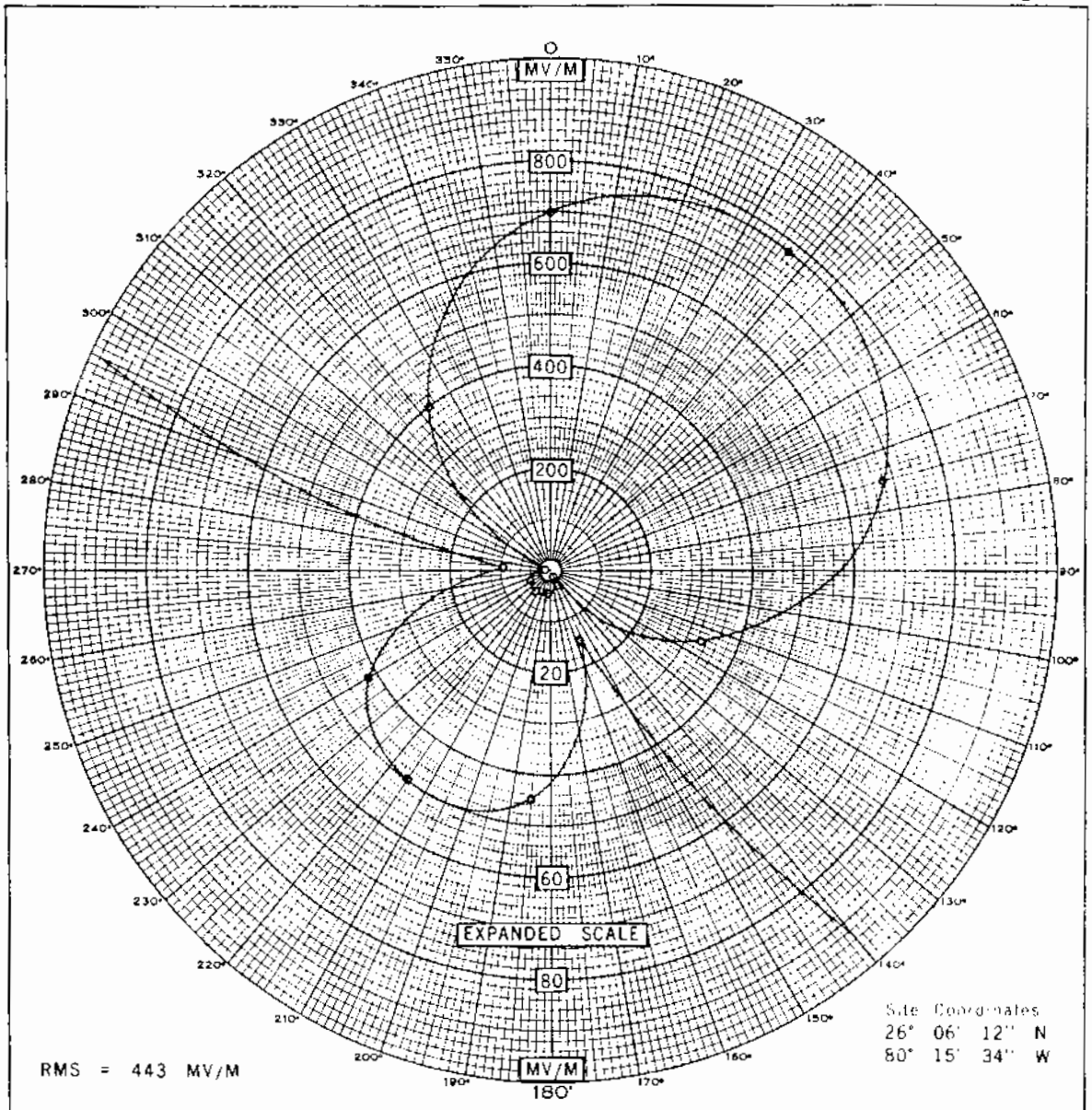
MEASURED
HORIZONTAL PLANE PATTERN
WANN, ANNAPOLIS, MARYLAND
1190 KC - 10 KW - DA-D
MAY 1964

N. Lat 38° 56' 32"
W. Long 76° 28' 54"

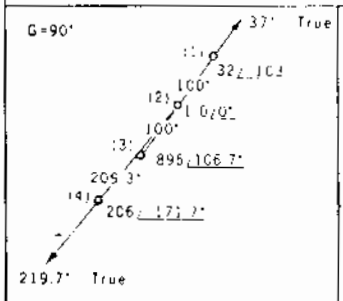
FCC File No. BL-10662
Accepted 11-23-64

Station WANN
Annapolis, Maryland

1190 kc



MEASURED HORIZONTAL PLANE DIRECTIONAL RADIATION PATTERN



LAUDERDALE BROADCAST, INC

FORT LAUDERDALE, FLORIDA

...les Cohen & Associates

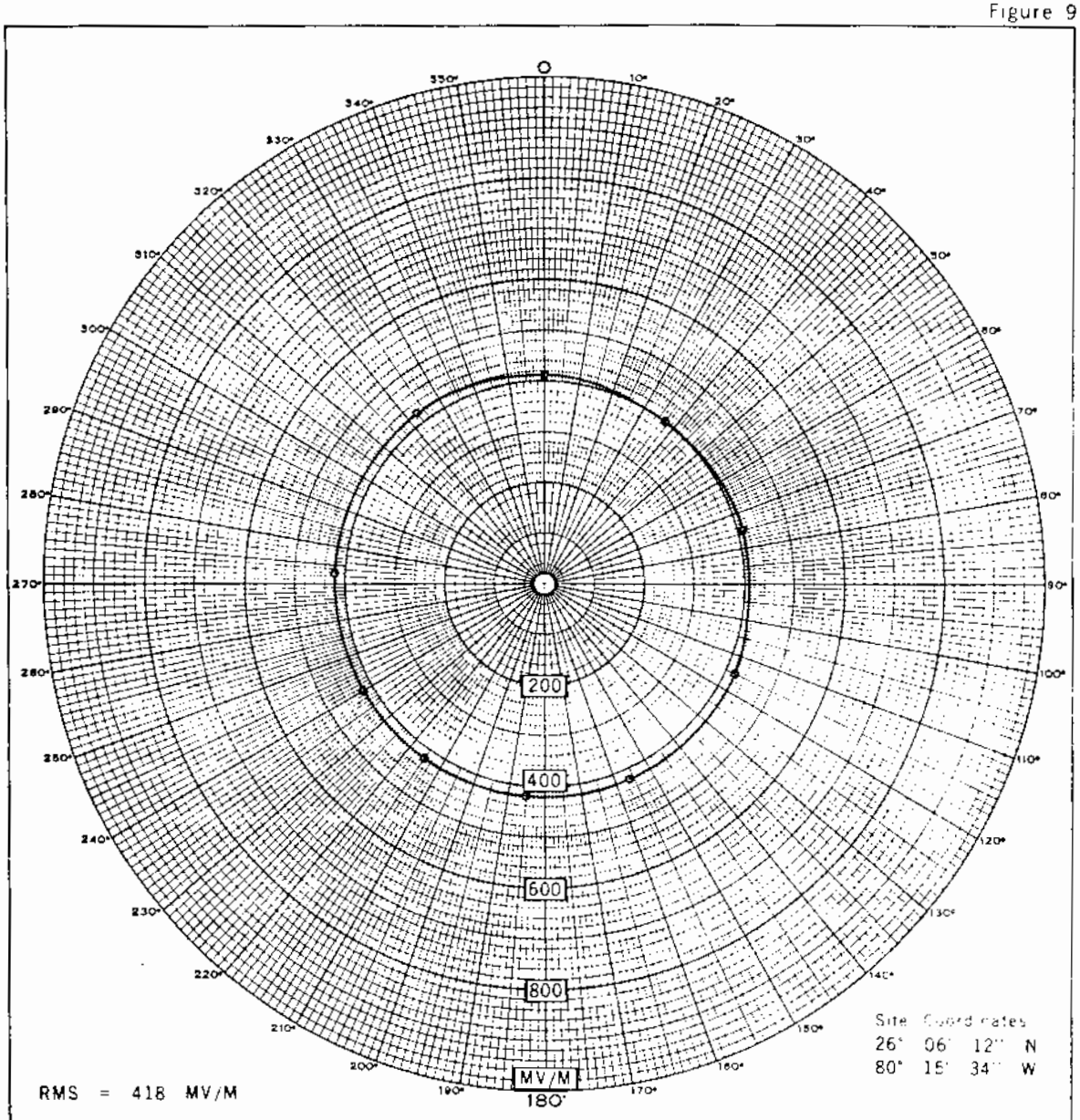
Consulting Electronics Engineers

RADIO STATION WAVS

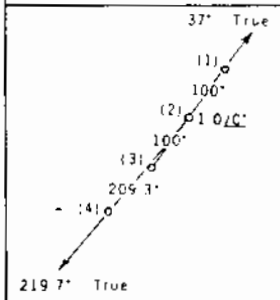
1190 KHZ

5 KW D DA

JULY 1970



MEASURED NONDIRECTIONAL HORIZONTAL PLANE RADIATION PATTERN



LAUDERDALE BROADCAST, INC.

FORT LAUDERDALE, FLORIDA

Jules Cohen & Associates
Consulting Electronics Engineers

RADIO STATION WAVS

1190 KHZ

5 KW D DA

JULY 1970

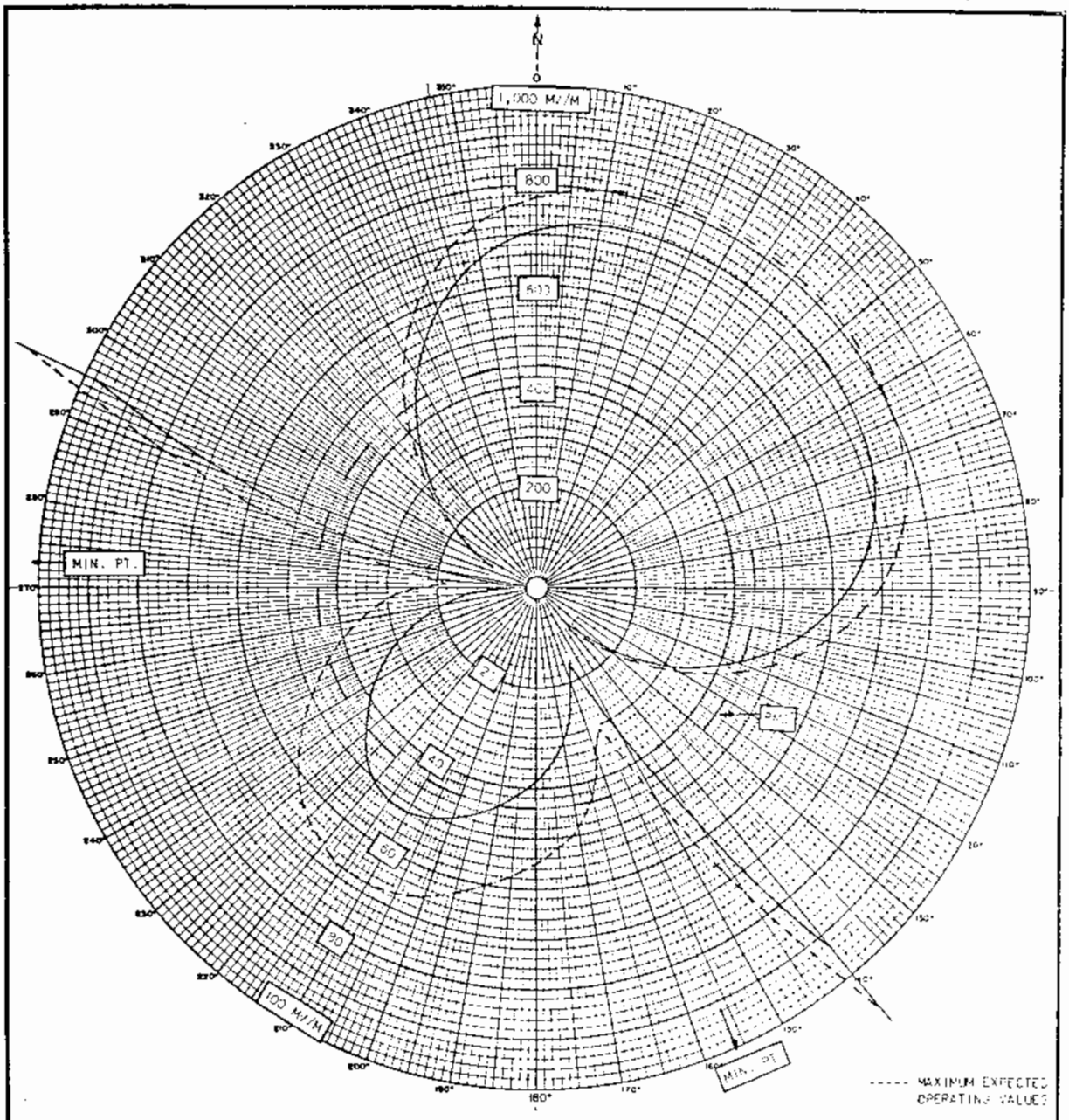
BMP 12843 Gr(12-30-69) To make changes in Directional Antenna System

WAVS

Proposed Day
(12-30-69ct)

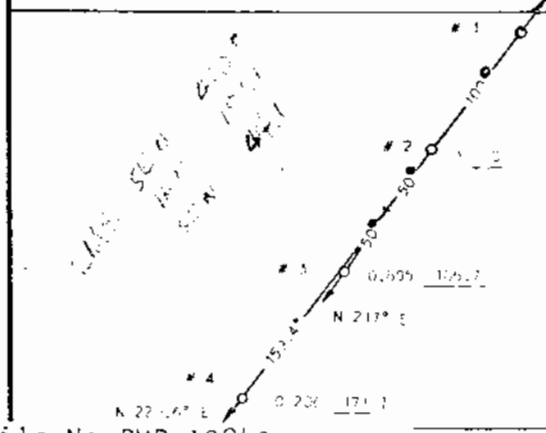
Station WAVS
Fort Lauderdale, Florida

5kw, DA-D, D
1190 kc



HORIZONTAL RADIATION PATTERN

FIGURE 1-A



APPLICANT	LAUDERDALE BROADCAST INC.
LOCATION	FT LAUDERDALE, FLORIDA
FREQUENCY	1190 KC/S
POWER	5 KW
LATITUDE	26 DEG 09 MIN 12 SEC
LONGITUDE	80 DEG 15 MIN 36 SEC
WHEN USED	DAY
RMS FIELD	442.9
DATE	JULY 1969

SILLIMAN, MOFFET & KOWALSKI
CONSULTING RADIO ENGINEERS
WASHINGTON, D.C.

FCC File No. BMP-12843
Accepted 12-17-69

Station WAVS
Fort Lauderdale, Florida

1190 kc

WAVS

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WAVS — Main Studio: Ft. Lauderdale, Florida

Frequencey: 1190 kHz — Power: 5kw Day

Notification List No. 1773 — Date: March 29, 1978 — Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:
North Latitude: 26° 04' 12"
West Longitude: 80° 08' 04"

ANTENNA CHARACTERISTICS

Authorized for Daytime operation (DA-D)
Number of elements: 3
Type of elements: Series excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	S (#2)	C (#1)	N (#3)
HEIGHT ABOVE INSULATORS:	150	150	150 (65.4°)
PHASING:	+98	0	-90
FIELD RATIO:	0.3	1.0	0.7

SPACING AND ORIENTATION: With center (#1) tower as reference, the S (#2) tower is spaced 206' (90°) on a line bearing 190° true and the N (#3) tower is spaced 206' (90°) on a line bearing 348° true.

GROUND SYSTEM: 120 - 206' equally spaced copper radials plus a 24' square ground screen about each tower. Radials are shortened and bonded to transverse straps along intersections between towers. Centers of of systemsare bonded together.

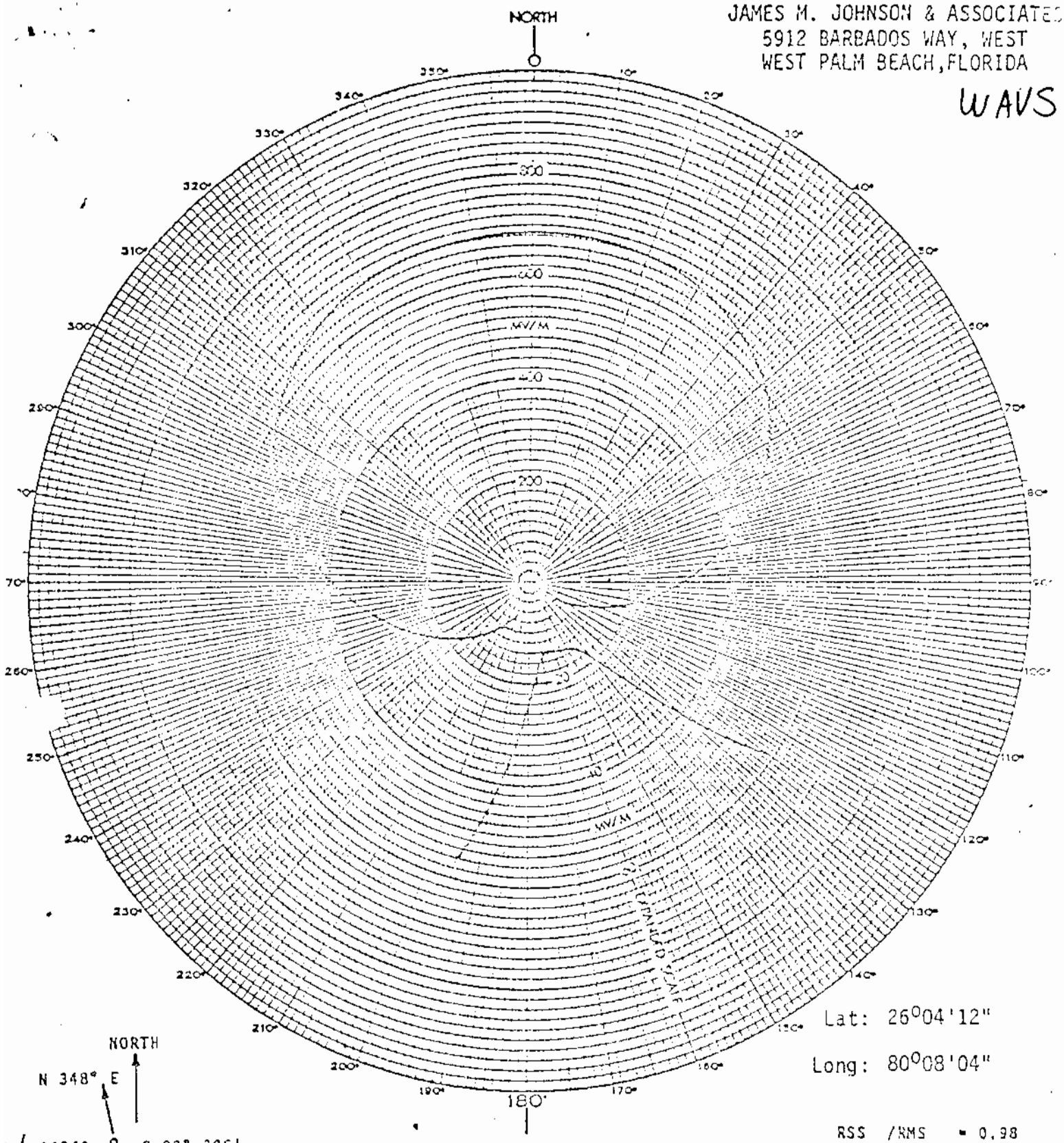
PREDICTED EFFECTIVE FIELDS AT RATED POWER:

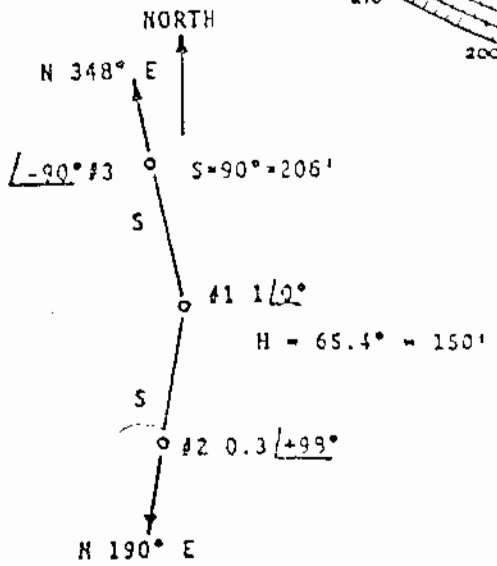
THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
419.5 mv/m	409.3 mv/m	442.9 mv/m

Note: This notification concerns only a change in the Daytime directional radiation pattern and transmitter location.

JAMES M. JOHNSON & ASSOCIATES
5912 BARBADOS WAY, WEST
WEST PALM BEACH, FLORIDA

WAVS





STANDARD RADIATION PATTERN
HORIZONTAL PLANE
FOR THE PROPOSED DAYTIME OPERATION OF
WAVS, FORT LAUDERDALE, FLORIDA
1190 KHz - 5 KW - DA-D
September, 1977

Lat: 26°04'12"

Long: 80°08'04"

RSS th / RMS th = 0.98
RSS th = 409.3 MV/M
RMS th = 419.5 MV/M
RMS std = 442.9 MV/M

WBMJ

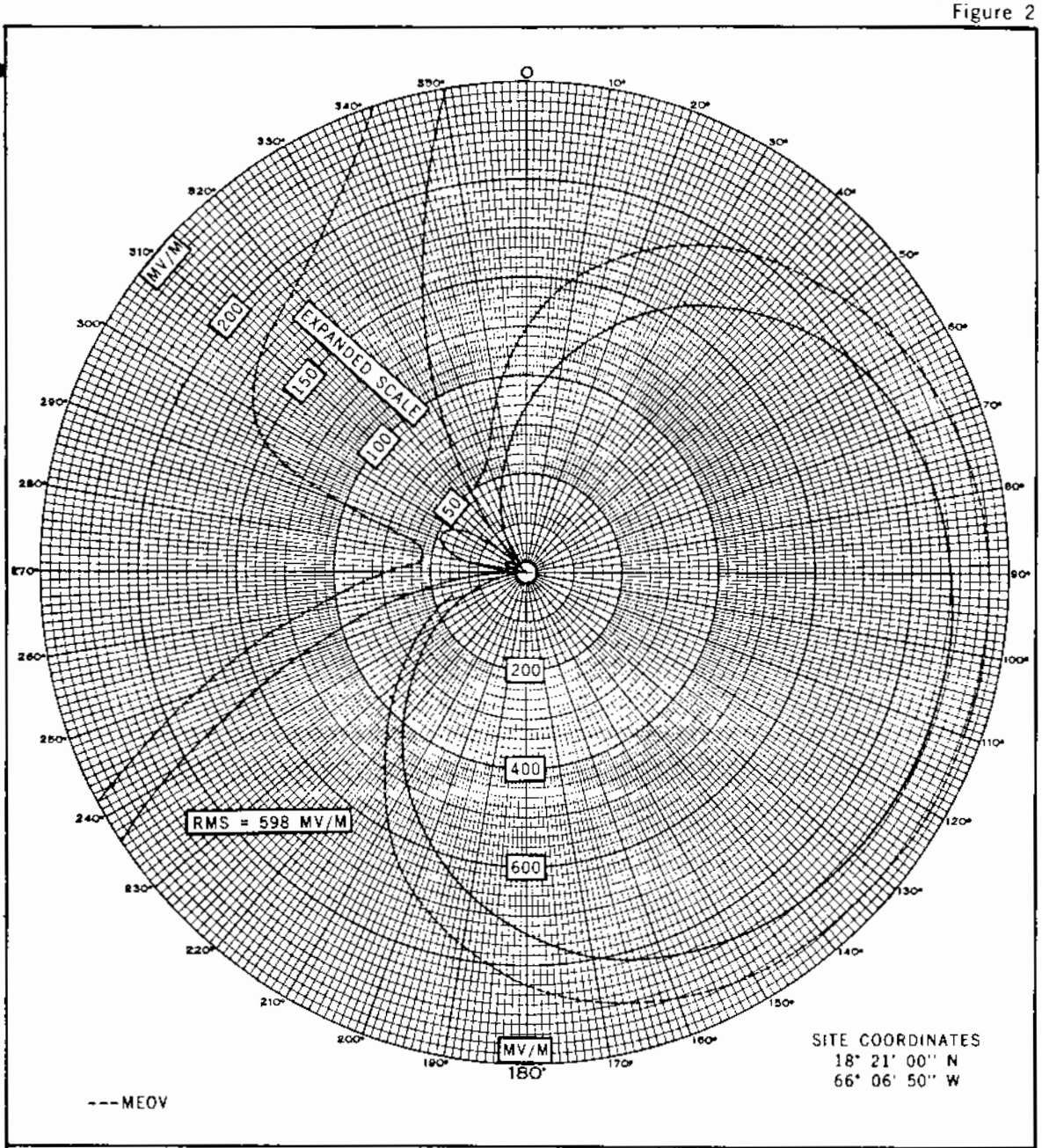
Proposed Day
(5-28-68ct)

Station WBMJ
San Juan, Puerto Rico

5kw, 10kw-LS, DA-1, U
1190 kc

Figure 2

6-27-68
GRANTED
MODIFICATION
OF CP



PROPOSED DAYTIME HORIZONTAL PLANE RADIATION PATTERN

293° TRUE

1.0/104°
(2)
S
(1)
1.0/0°

S = 82° = 188.3'
G = 87° = 200'

MID-OCEAN BROADCASTING CORPORATION

SAN JUAN, PUERTO RICO

Jules Cohen & Associates

Consulting Electronics Engineers

PROPOSED OPERATION

1190 KHZ

5 KW, 10 KW-LS U DA-1

Pattern 680312

FCC File No. BMP-12391
Accepted 4-24-68

Station WBMJ
San Juan, Puerto Rico

1190 kc

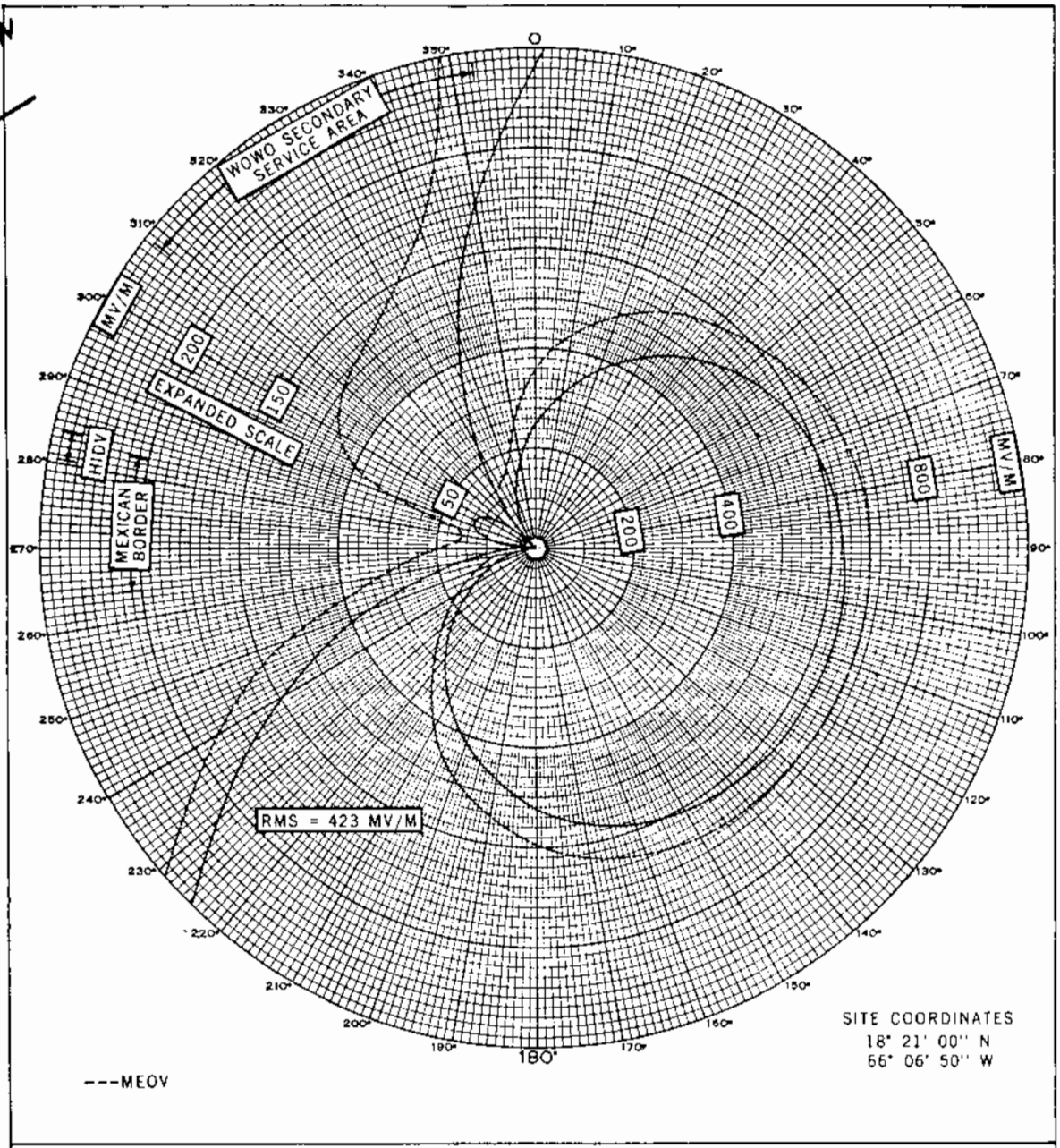
WBMJ

Proposed Night
(5-28-68ct)

Station WBMJ
San Juan, Puerto Rico

5kw,10kw-LS,DA-1,U
1190 kc
Figure 6
Sheet 1 of 14

6-27-68
GRANTED
MODIFICATION
OF CP.



PROPOSED NIGHTTIME HORIZONTAL PLANE RADIATION PATTERN

293° TRUE

1.0/104°

(2)

S

(1)

1.0/0°

S = 82° = 288.3'
G = 87° = 200'

MID-OCEAN BROADCASTING CORPORATION
SAN JUAN, PUERTO RICO

Jules Cohen & Associates
Consulting Electronics Engineers

PROPOSED OPERATION
1190 KHZ
5 KW, 10 KW-LS U DA-1
Pattern 680312

FCC File No. BMP-12391
Accepted 4-24-68

Station WBMJ
San Juan, Puerto Rico

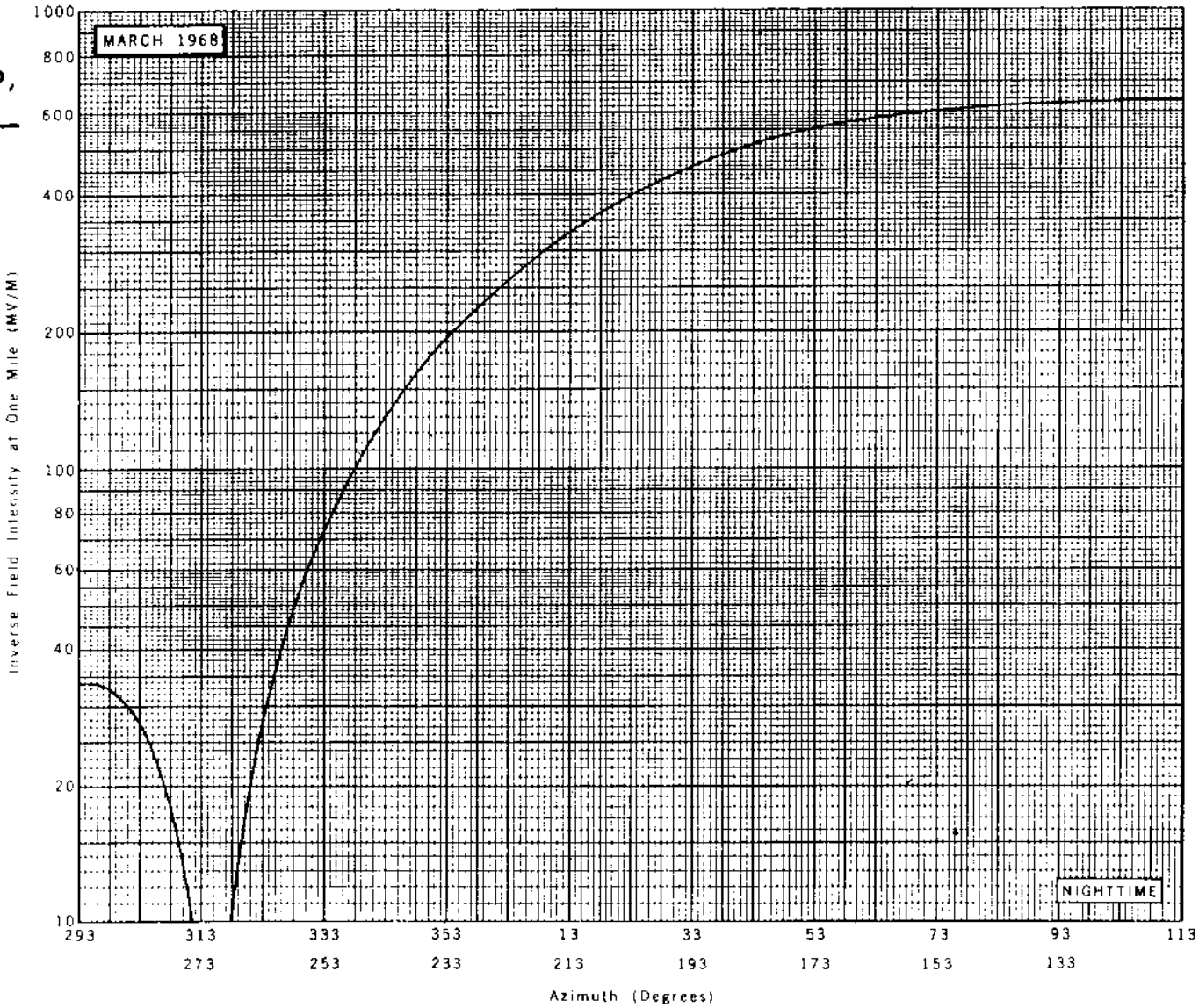
1190 kc

Proposed Night Nulls
(5-28-68ct)

Station WBMJ
San Juan, Puerto Rico

5kw, 10kw-LS, DA-1, U
1190 kc

6-27-68
GRANTED
MODIF. OF CP.



PROPOSED HORIZONTAL PLANE RADIATION PATTERN

1190 KHZ 5 KW, 10 KW-LS U DA-1

FCC File No. BMP-12391
Accepted 4-24-68

Station WBMJ
San Juan, Puerto Rico

1190 kc

Figure 6
Sheet 2 of 14

WBMJ

WBMJ

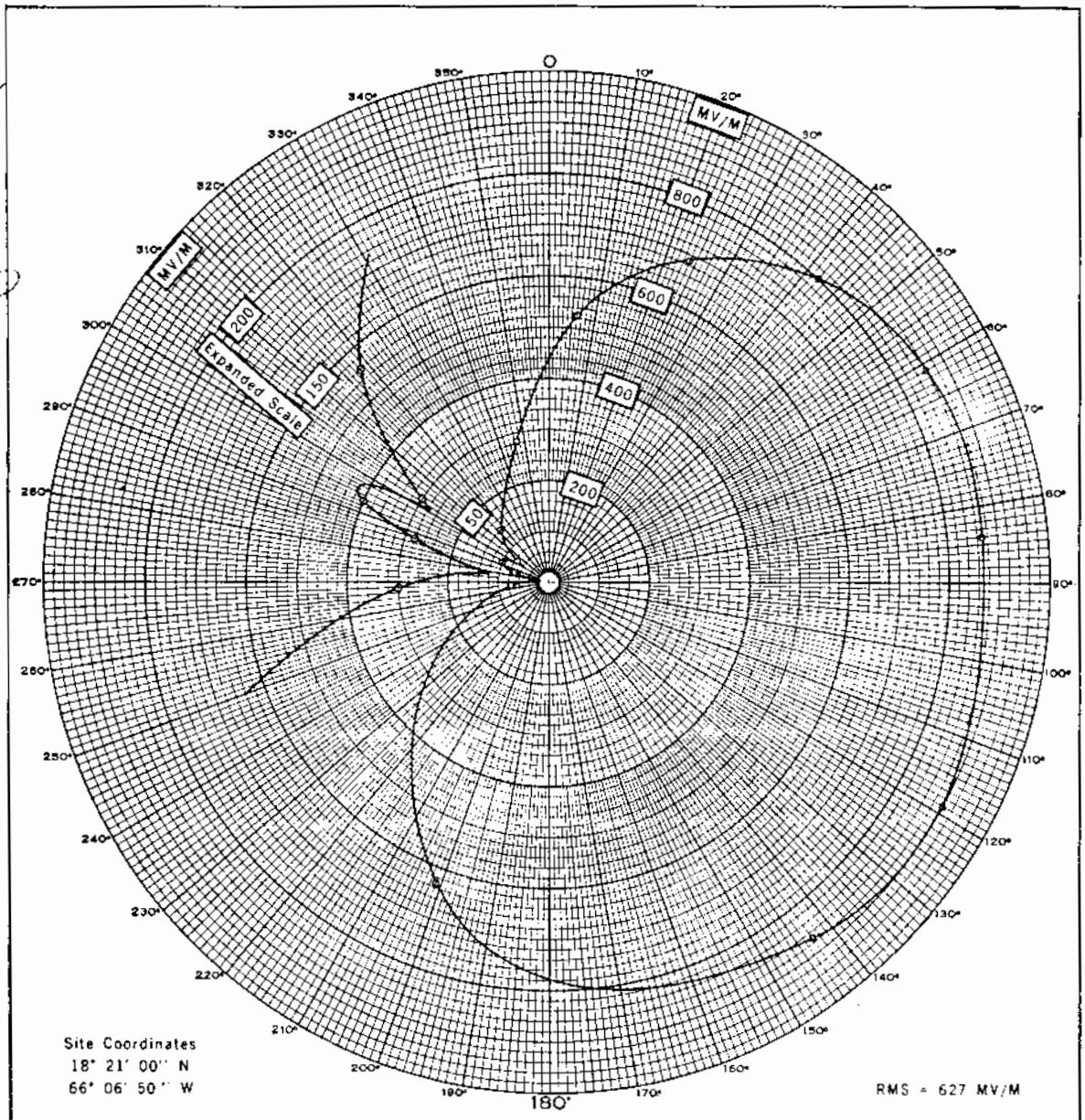
Measured Day
(8-28-68ct)

Station WBMJ
San Juan, Puerto Rico

5kw, 10kw-LS, DA-1, U
1190 kc

Figure 9

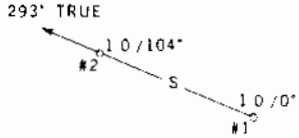
BL-12058
Granted
3-26-69
License
covering
new
station



MEASURED DAYTIME HORIZONTAL PLANE RADIATION PATTERN

S = 82° = 188.3'
G - 87° = 200'

293° TRUE



MID-OCEAN BROADCASTING CORPORATION
SAN JUAN, PUERTO RICO

Jules Cohen & Associates
Consulting Electronics Engineers

RADIO STATION WBMJ
1190 KHZ
5 KW, 10 KW-LS U DA-1
Pattern 680320 D

FCC File No. BL-12058
Accepted 8-19-68

Station WBMJ
San Juan, Puerto Rico

1190 kc

WBMJ

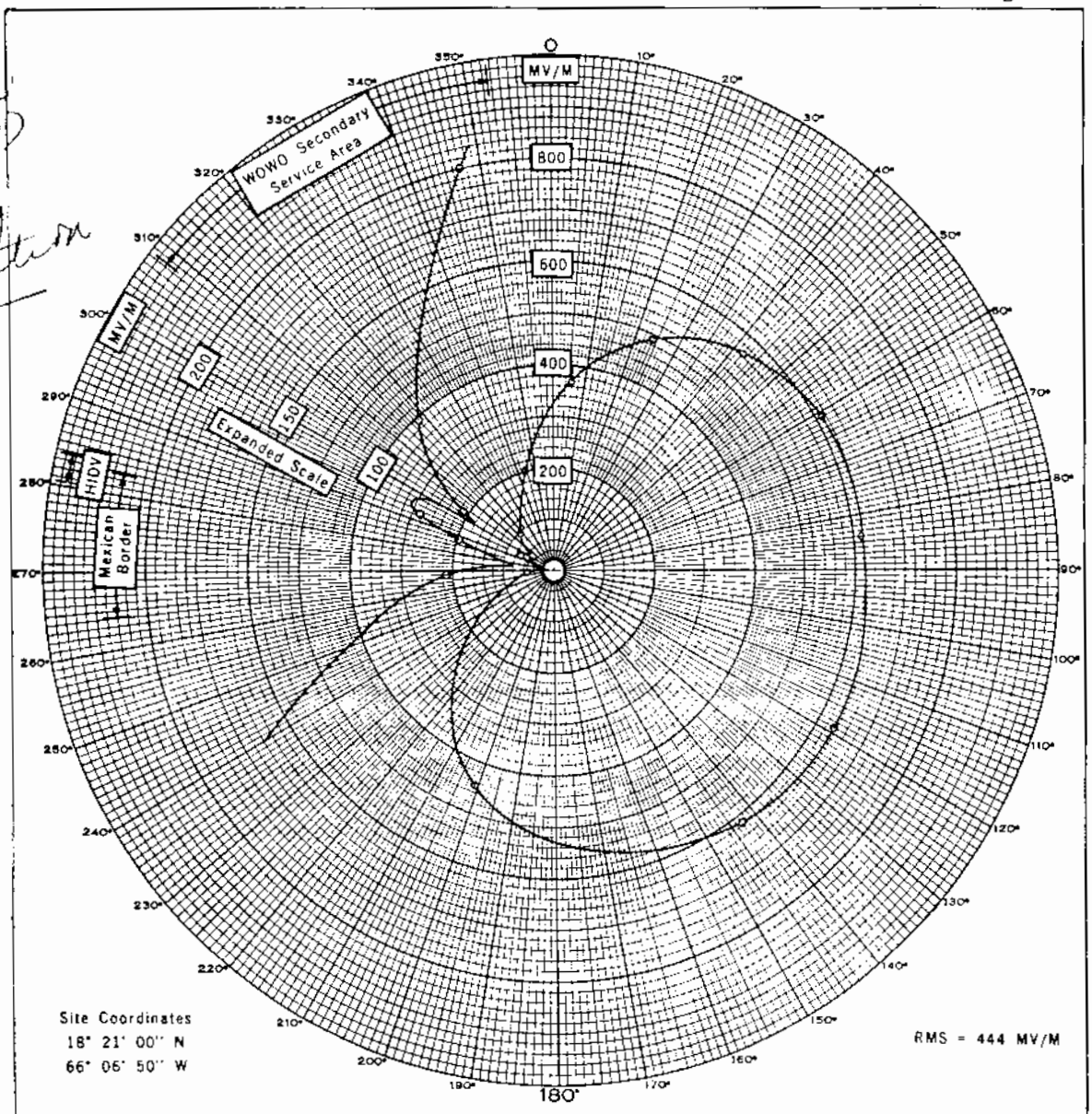
Measured Night
(8-28-68ct)

Station WBMJ
San Juan, Puerto Rico

5kw,10kw-LS,DA-1,U
1190 kc

Figure 11

BL-12058
Granted
(3-26-69)
License
covering
new station



MEASURED NIGHTTIME HORIZONTAL PLANE RADIATION PATTERN

(Adjusted to 5 KW)

S = 82° = 188.3'
G = 87° = 200'

293° TRUE

1.0 ∠104°
#2
S
1.0 ∠0°
#1

MID-OCEAN BROADCASTING CORPORATION
SAN JUAN, PUERTO RICO

Jules Cohen & Associates
Consulting Electronics Engineers

RADIO STATION WBMJ
1190 KHZ
5 KW 10 KW-LS U DA-1
Pattern 680320 N

FCC File No.BL-12058
Accepted 8-19-68

Station WBMJ
San Juan, Puerto Rico

1190 kc

WBMJ

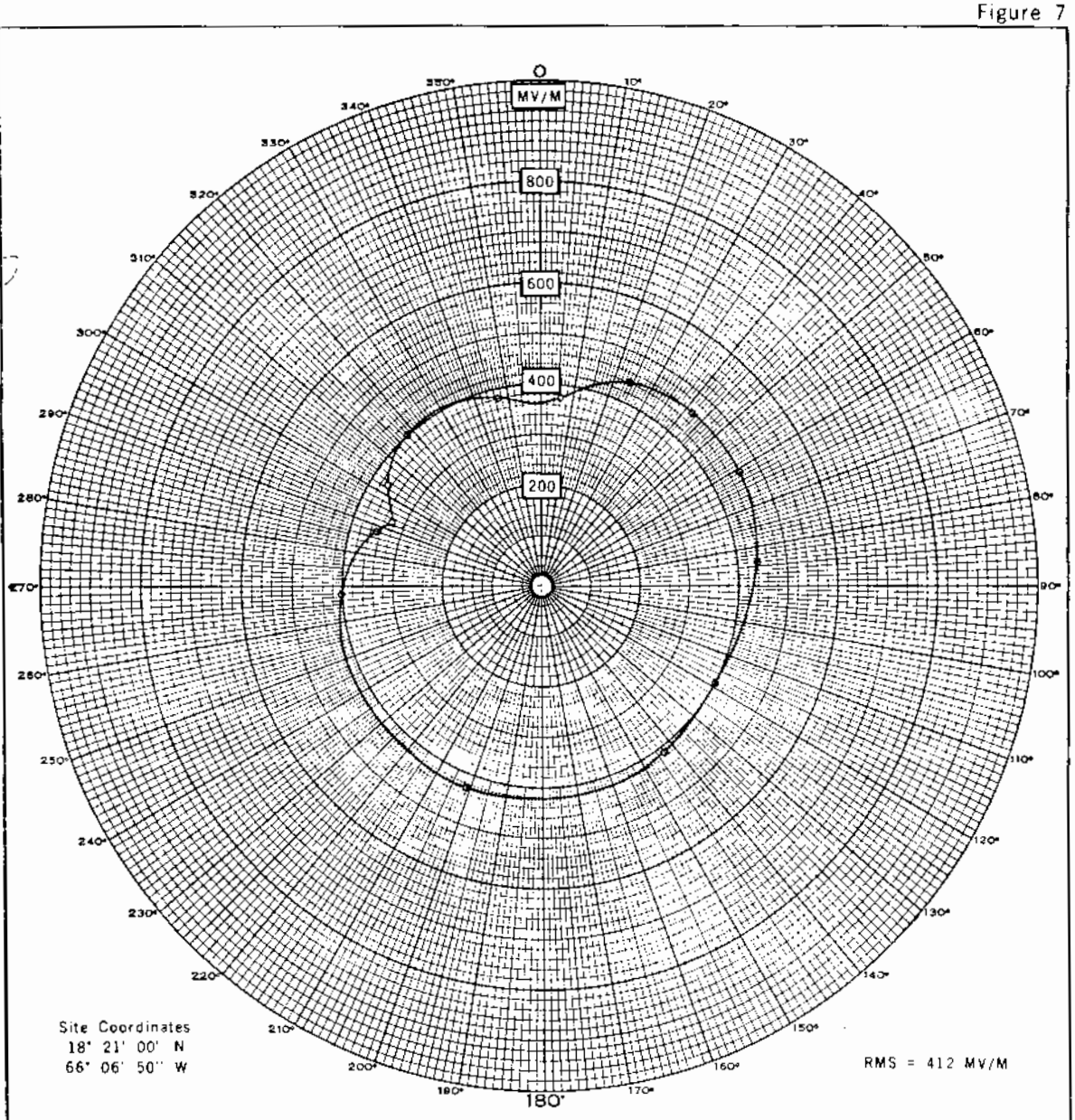
Measured Non-DA
(8-28-68ct)

Station WBMJ
San Juan, Puerto Rico

5kw, 10kw-LS, DA-1, U
1190 kc

BL-12058
Granted
3-26-69
License
covering
new
station

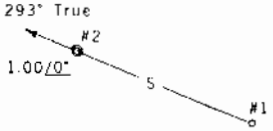
Figure 7



MEASURED NON-DIRECTIONAL HORIZONTAL PLANE RADIATION PATTERN

S= 82° - 188.3'
G = 87° - 200'

293° True



MID-OCEAN BROADCASTING CORPORATION
SAN JUAN, PUERTO RICO

Jules Cohen & Associates
Consulting Electronics Engineers

RADIO STATION WBMJ
1190 KHZ
5 KW, 10 KW-LS U DA 1
Pattern 680320 ND

FCC File No. BL-12058
Accepted 8-19-68

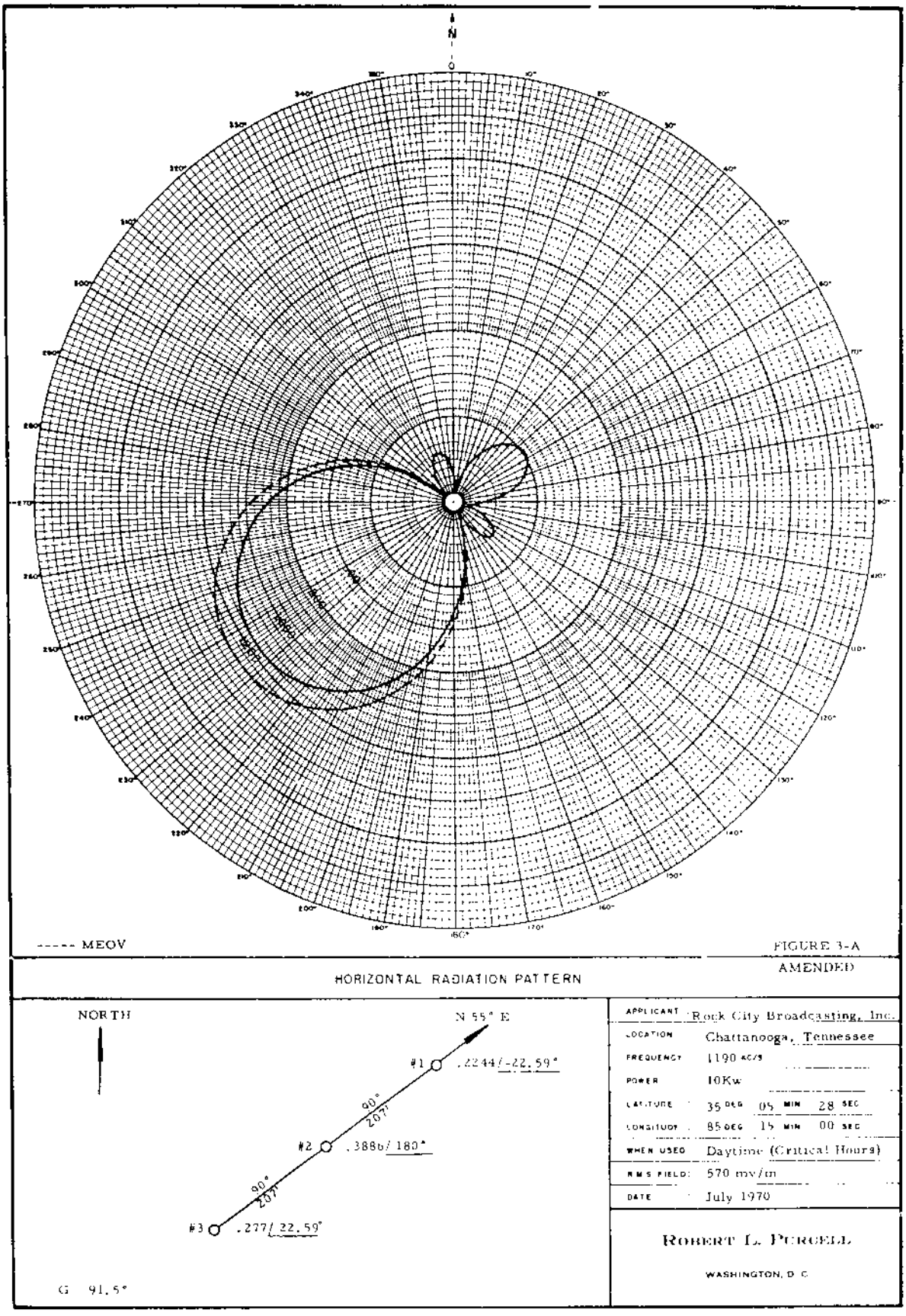
Station WBMJ
San Juan, Puerto Rico

1190 kc

WGCA

Proposed Day (CH)
(9-25-70ct)

New; Rock City Broadcasting, Inc. 10kw,(CH)DA-2,U
Chattanooga, Tennessee 1190 kc



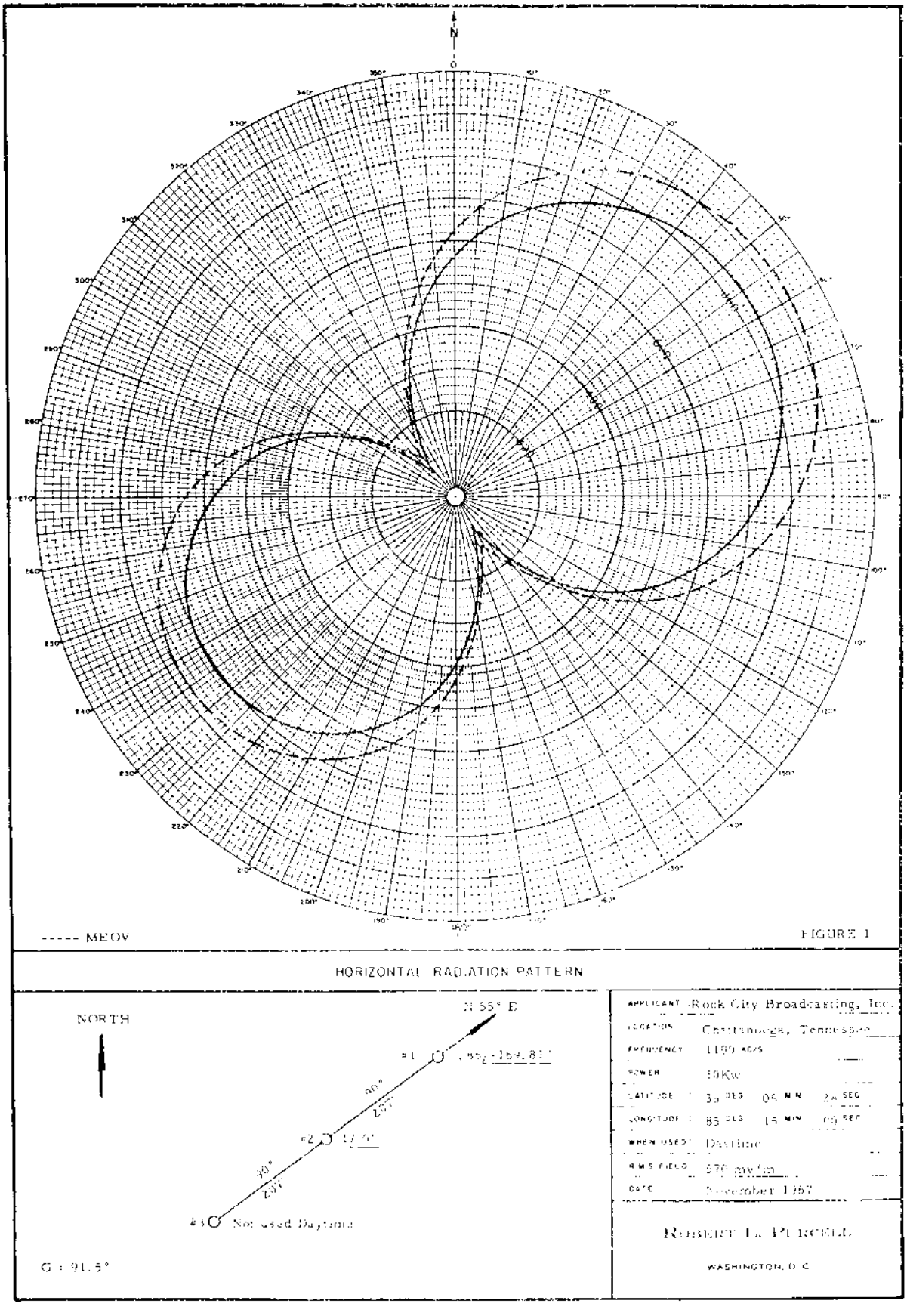
FCC File No.BP-17993
Accepted 9-1-70 Amended

New; Rock City Broadcasting, Inc.
Chattanooga, Tennessee 1190 kc

WGCA

Proposed Day
(3-28-68ct)

New; Rock City Broadcasting, Inc. 10kw,(CH)DA-2,D
Chattanooga, Tennessee 1190 kc



FCC File No.BP-17993
Accepted 3-13-68

New; Rock City Broadcasting, Inc.
Chattanooga, Tennessee 1190 kc

WGCA

Proposed Day (CH)
(3-28-68ct)

New; Rock City Broadcasting, Inc. 10kw,(CH)DA-2,D
Chattanooga, Tennessee 1190 kc

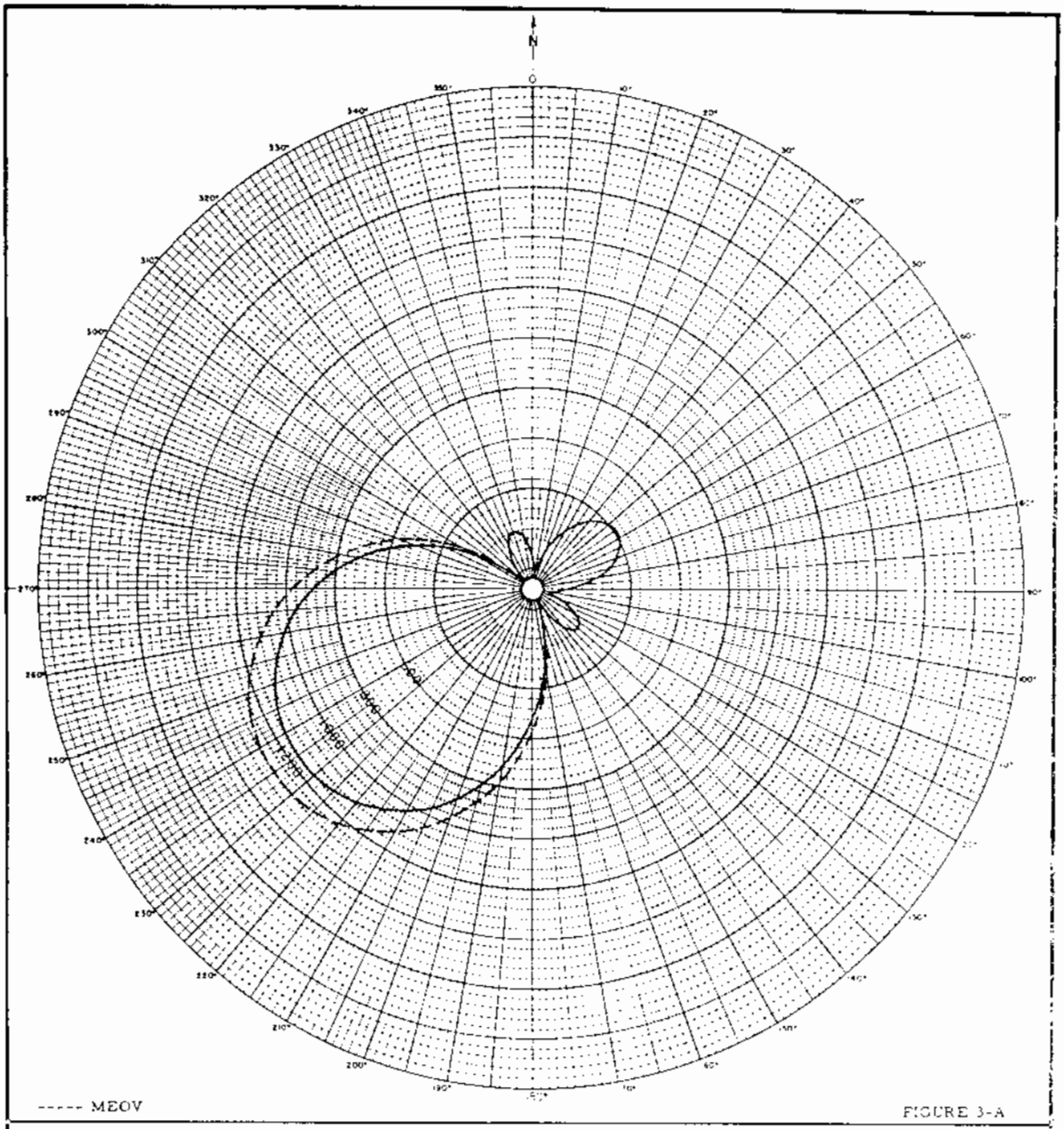
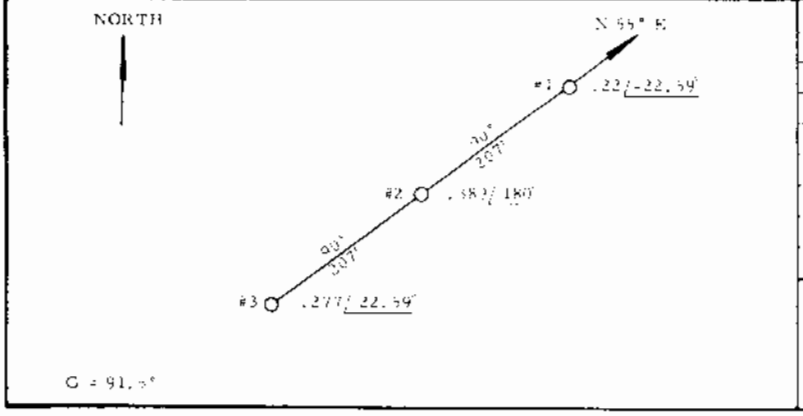


FIGURE 3-A

HORIZONTAL RADIATION PATTERN



APPLICANT	Rock City Broadcasting, Inc.
LOCATION	Chattanooga, Tennessee
FREQUENCY	1190 KCS
POWER	10Kw
LAT. TUDE	35 DEG 05 MIN 38 SEC
LONGITUDE	85 DEG 15 MIN 00 SEC
WHEN USED	Daytime (Critical Hours)
RMS FIELD	570 mv/m
DATE	November 1967

ROBERT L. HEROLD
WASHINGTON D C

FCC File No.BP-17993
Accepted 3-13-68

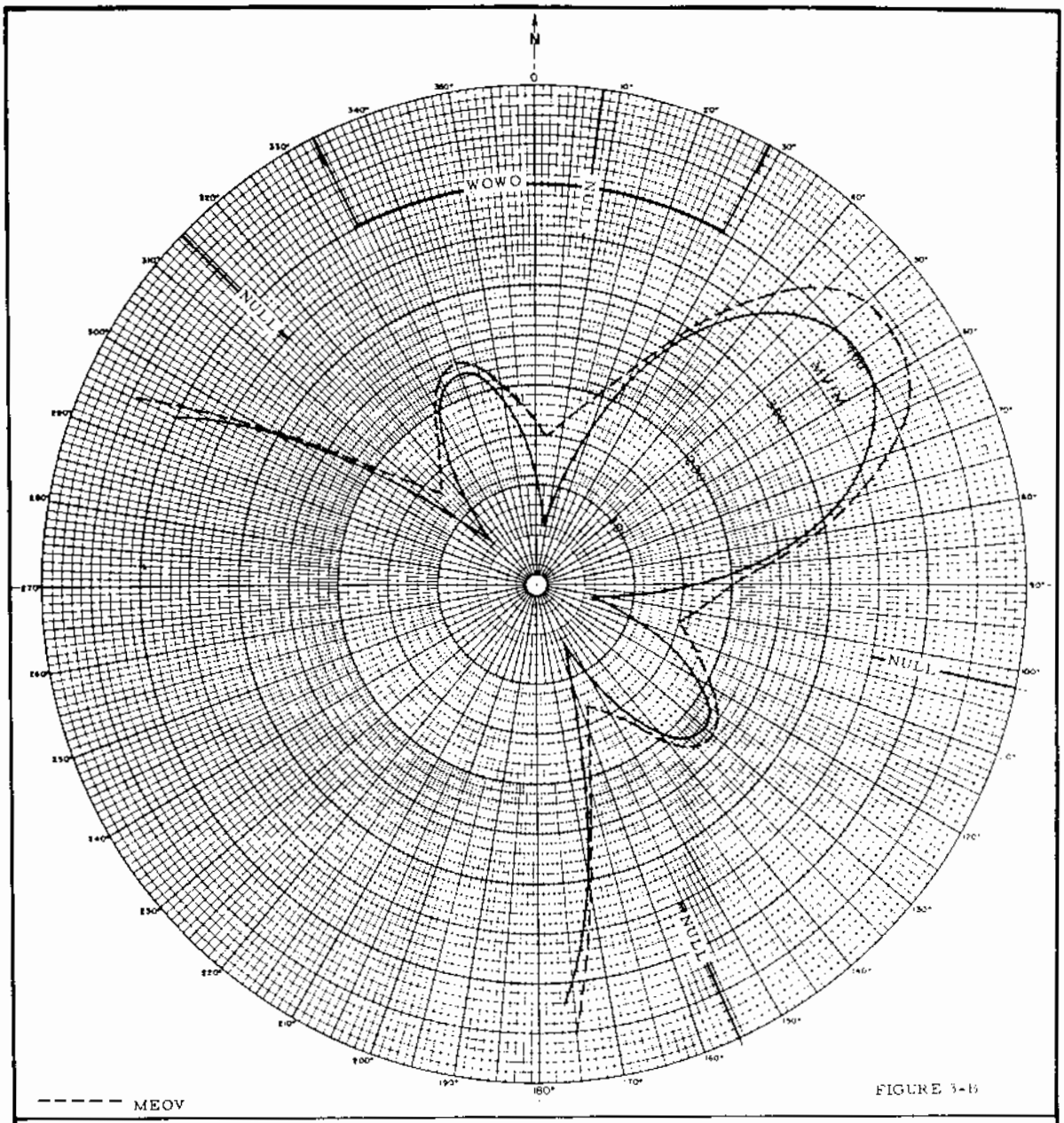
New; Rock City Broadcasting, Inc.
Chattanooga, Tennessee

1190 kc

WGCA

Proposed Day Nulls
(3-28-68ct)

New; Rock City Broadcasting, Inc. 10kw,(CH)DA-2,D
Chattanooga, Tennessee
1190 kc



----- MEOV

FIGURE 3-B

EXPANDED VIEW

ROBERT L. PURCELL
WASHINGTON, D. C.

FCC File No.BP-17993
Accepted 3-13-68

New; Rock City Broadcasting, Inc.
Chattanooga, Tennessee
1190 kc

CHATTANOOGA, TENNESSEE WGCA

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: (new) Main Studio: Chattanooga, Tennessee

Frequency: 1190 kHz Power: 10 kw

Notification List No. 1450 Date: November 10, 1971 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:
North Latitude: 35° 05' 28"
West Longitude: 85° 15' 00"

ANTENNA CHARACTERISTICS

Authorized for Daytime operation. (DA-D)
Number of elements: 2
Type of elements: Series-excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	NE(#1)	SW(#2)	
HEIGHT ABOVE INSULATORS:	210'	210'	(91.5°)
NIGHT PHASING:	-169.81°	0°	
NIGHT FIELD RATIO:	0.85	1.0	

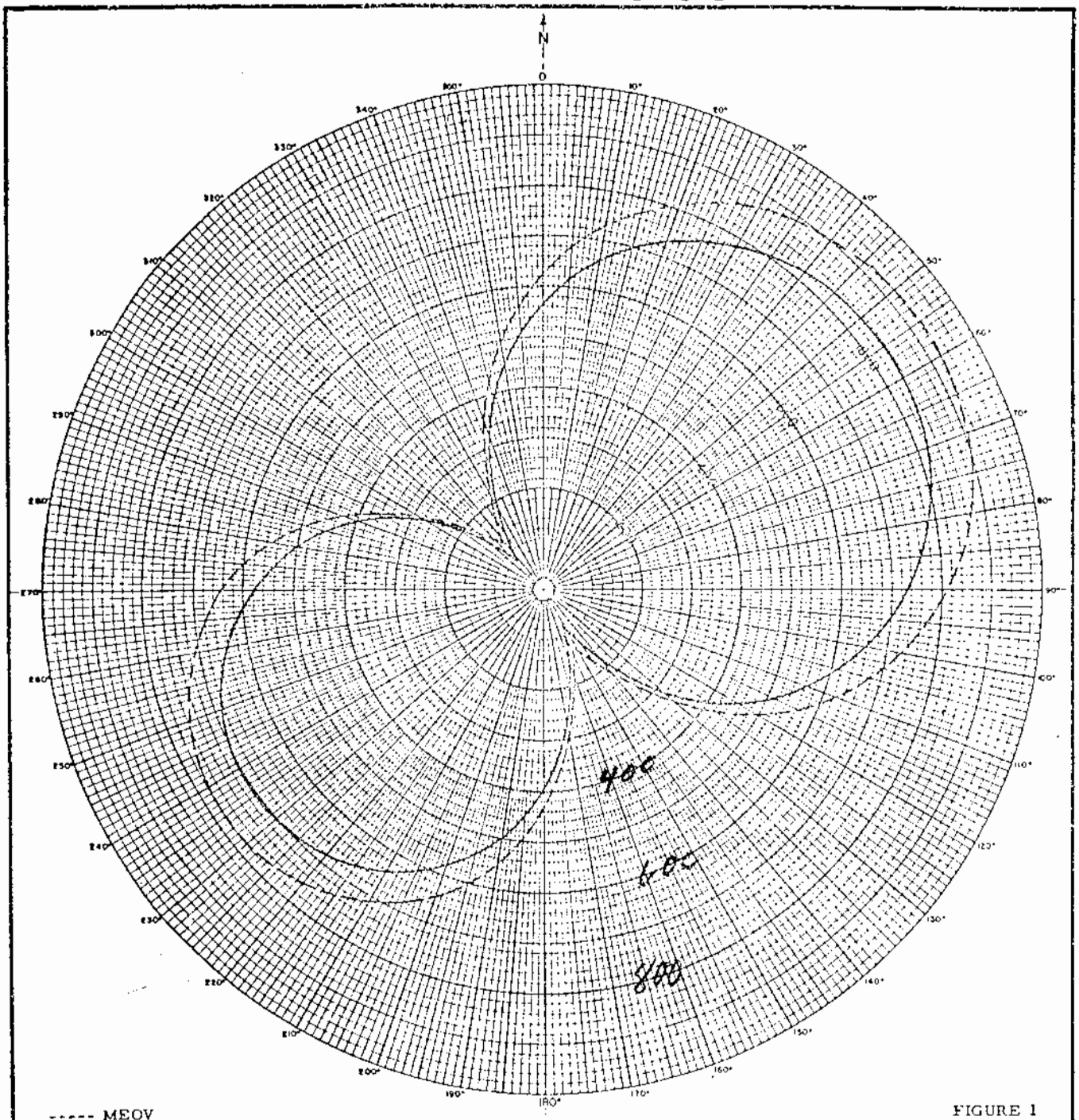
SPACING AND ORIENTATION: Adjacent elements are spaced 207' (90°) on a line bearing 55° true.

GROUND SYSTEM: 120 - 210' equally spaced copper radials plus a 48' square ground screen about each tower. Radials are shortened and bonded to transverse straps along intersections between towers.

Predicted effective Field: 570 mv/m at rated power by adjustment of input power.

WGCA

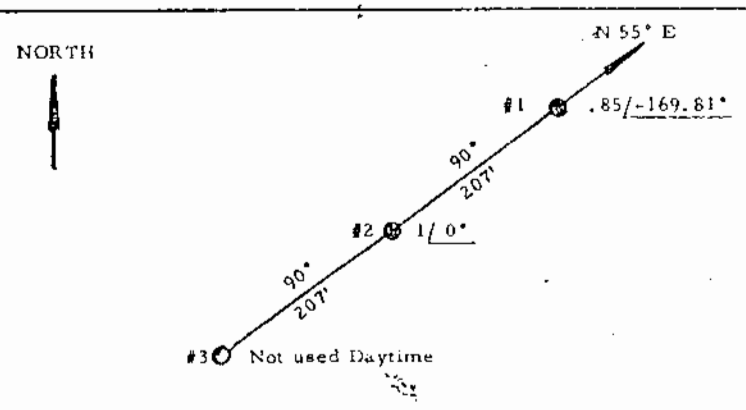
CHATTANOOGA, TENNESSEE



----- MEOV

FIGURE 1

HORIZONTAL RADIATION PATTERN



G = 91.5°

APPLICANT	Rock City Broadcasting, Inc.
LOCATION	Chattanooga, Tennessee
FREQUENCY	1190 KC/S
POWER	10Kw
LATITUDE	35 DEG 05 MIN 28 SEC.
LONGITUDE	85 DEG 15 MIN 00 SEC.
WHEN USED	Daytime
R.M.S. FIELD	570 mv/m
DATE	November 1967

ROBERT L. PURCELL

WASHINGTON, D. C.

WLIB

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WLIB — Main Studio: New York, New York

Frequency: 1190 kHz — Power: 10 kW

Notification List No. 1721 — Date: February 16, 1977 — Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:
North Latitude: 40° 47' 48"
West Longitude: 74° 06' 06"

ANTENNA CHARACTERISTICS

Authorized for Daytime and Nighttime operation. (DA-1, L-WOWO)
Number of elements: 3
Type of elements: Series-excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	W(#3)	C(#2)	E(#1)
HEIGHT ABOVE INSULATORS:	400'	400'	400' (172°)
PHASING:	+211.4°	+107.8°	0°
FIELD RATIO:	3.03	3.04	1.00

SPACING AND ORIENTATION: Adjacent elements are spaced 244' (106°) on a line bearing 280° true.

GROUND SYSTEM: 120-250' equally spaced copper radials plus a 24' square ground screen about each tower. Radials are shortened and bonded to transverse straps along intersections between towers.

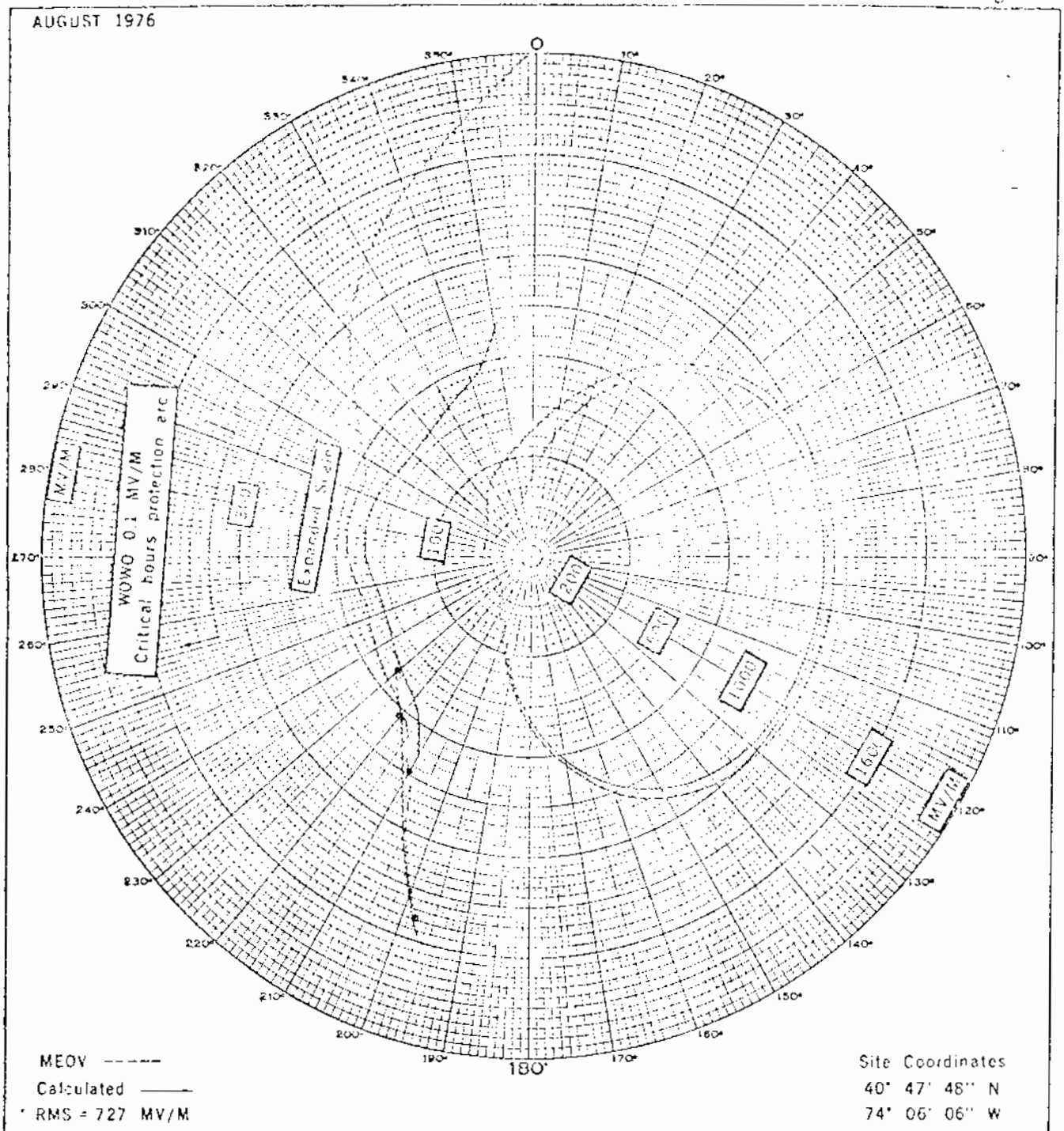
Predicted effective Field: 727 mv/m at rated power.

Note: Please retain the vertical angle directional antenna radiation patterns notified for station WLIB in United States Change List Number 1043 dated January 15, 1964 and attach to this Revised Description Sheet and horizontal pattern. This notification concerns only changes in mecvs of radiation in the directional antenna pattern.

CTR NO 30360A3

WLIB

Figure 1



CALCULATED DIRECTIONAL HORIZONTAL PLANE RADIATION PATTERN

H = 400'

280° True

106°

(3) (2) (1)

(1) 1.00/0°

(2) 3.04/107.8°

(3) 3.03/211.4°

ICBC CORPORATION

NEW YORK, NEW YORK

Jules Cohen & Associates

Consulting Electronics Engineers

RADIO STATION WIIB

1190 KHZ

10 KW DA-1 (L WOWO)

NEW YORK, NEW YORK

WLIB

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WLIB

Main Studio: New York, New York

Frequency: 1190 kHz

Power: 10kw

Notification List No. 1431

Date: June 30, 1971

Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 40° 47' 48"
West Longitude: 74° 06' 06"

ANTENNA CHARACTERISTICS

Authorized for Daytime and Nighttime operation. (DA-1, L-WOWO)
Number of elements: 3
Type of elements: Series-excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	W(#3)	C(#2)	E(#1)
HEIGHT ABOVE INSULATORS:	400'	400'	400' (172°)
PHASING:	+211.4°	+107.8°	0°
FIELD RATIO:	3.03	3.04	1.00

SPACING AND ORIENTATION: Adjacent elements are spaced 244' (106°) on a line bearing 280° true.

GROUND SYSTEM: 120 - 250' equally spaced copper radials plus a 24' square ground screen about each tower. Radials are shortened and bonded to transverse straps along intersections between towers.

Predicted effective Field: 727 mv/m at rated power

Note: Please retain the vertical angle directional antenna radiation patterns notified for Station WLIB in United States Change List Number 1043 dated January 15, 1964 and attach to this Revised Description Sheet and horizontal pattern. This notification concerns only changes in meovs of radiation in the directional antenna pattern.

CTR NO 30360A3

PATTERN No.:
SUPERSEDES:

WOWO-1190

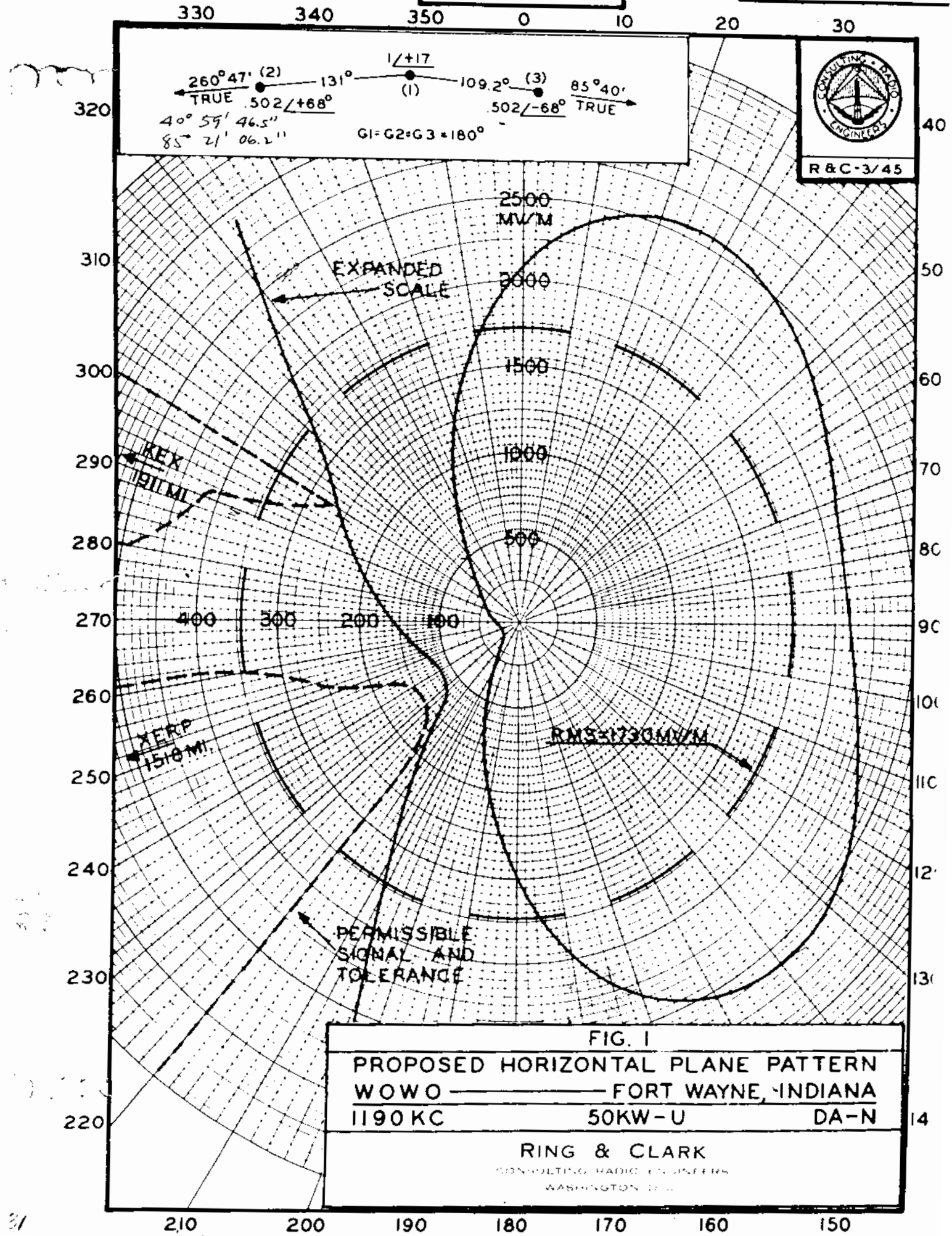


FIG. 1

PROPOSED HORIZONTAL PLANE PATTERN

WOWO ——— FORT WAYNE, INDIANA

1190 KC 50KW-U DA-N

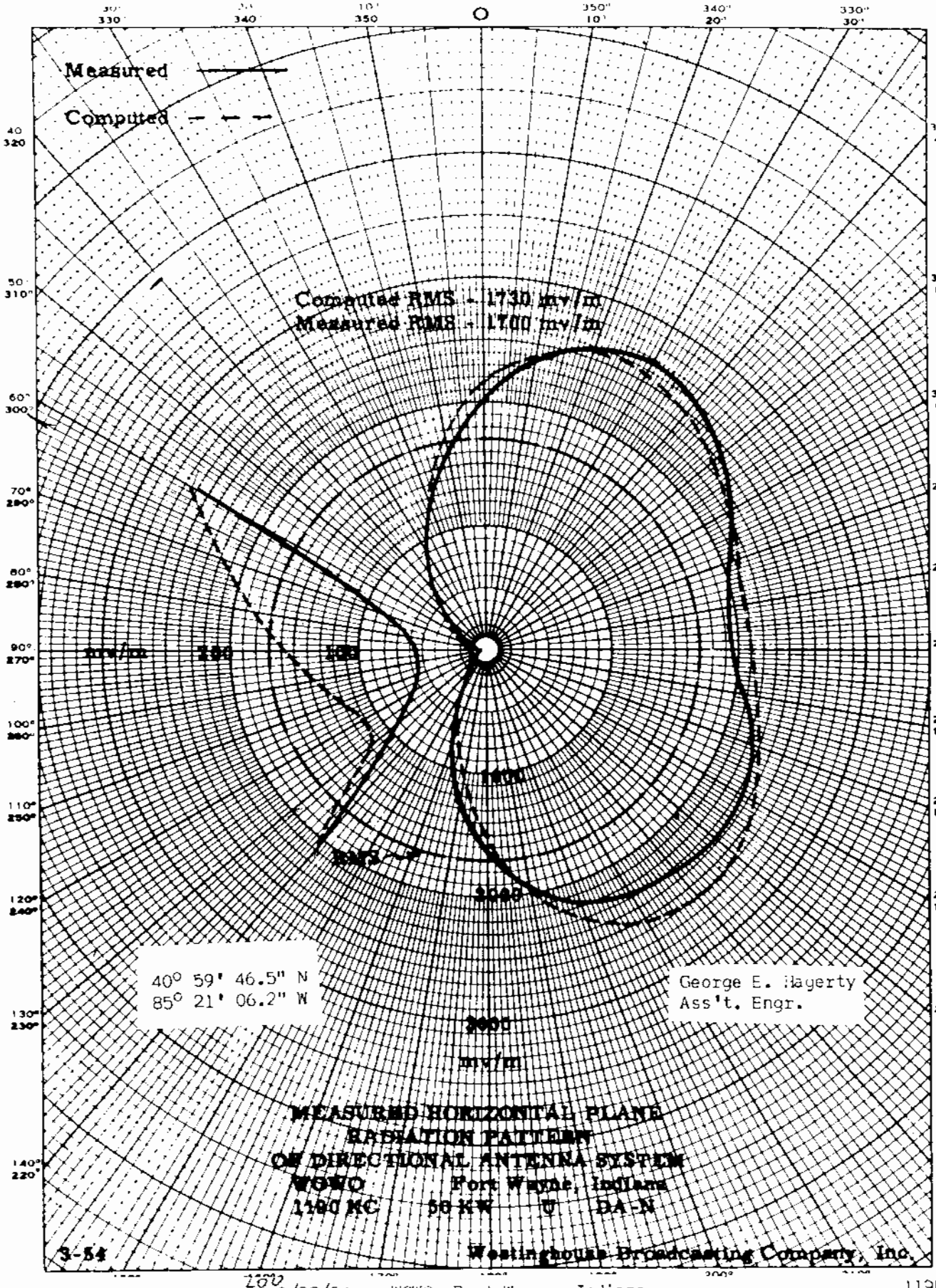
RING & CLARK

CONSULTING RADIO ENGINEERS

WASHINGTON D.C.

WOWO

MEASURED WOWO, Fort Wayne, Indiana 50KW, U, DA-N 1190 kc
NIGHT (6/11/54G)



FCC File No. BL-5310 Accepted 5/28/54 WOWO, Fort Wayne, Indiana 1190 kc

WOWO

MEASURED NON-DA (6/11/54G) WOWO, Fort Wayne, Indiana 50KW, U, DA-N 1190 kc

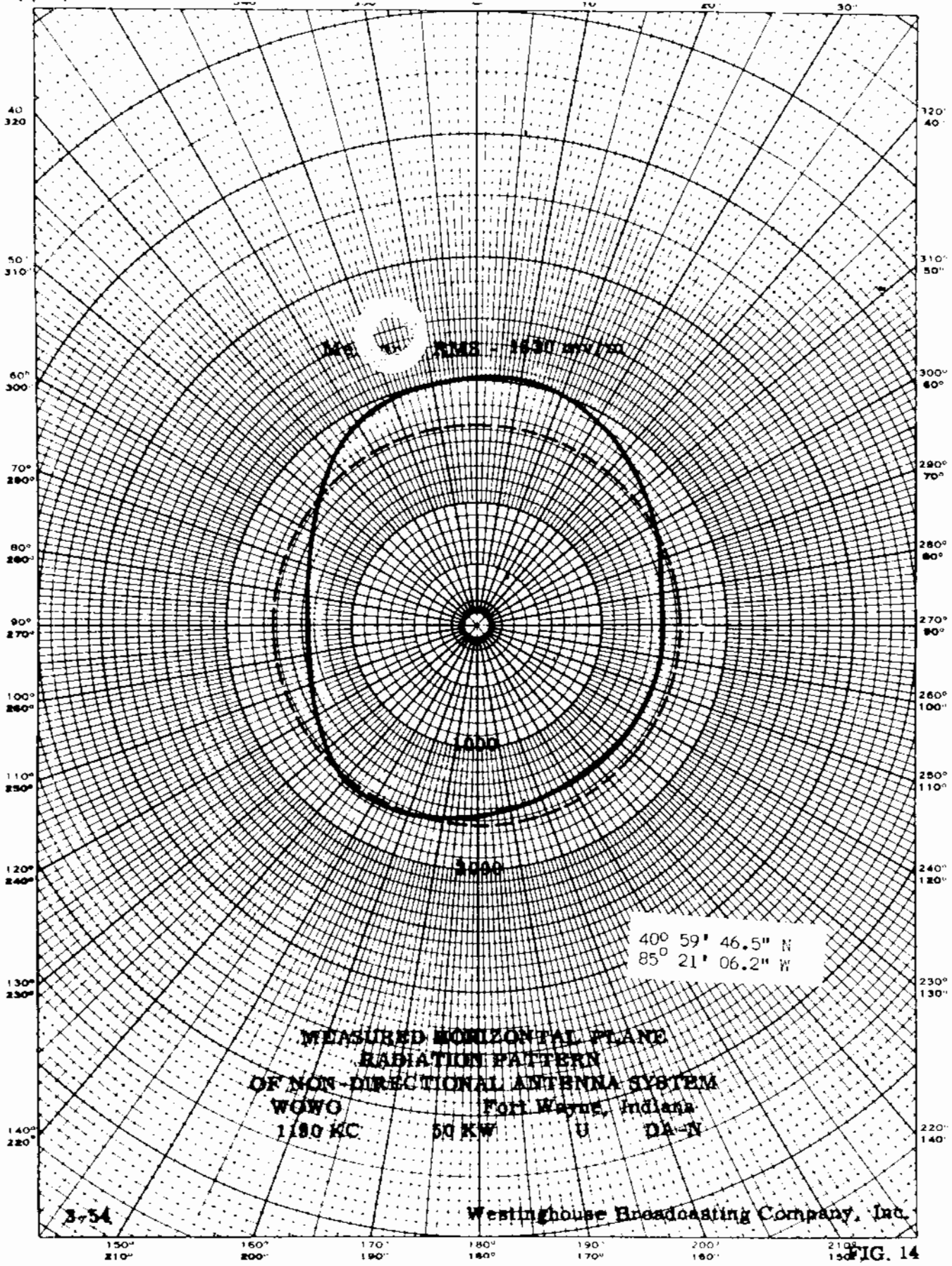


FIG. 14

FCC File No. BL-5310 Accepted 5/28/54 WOWO, Fort Wayne, Indiana 1190 kc

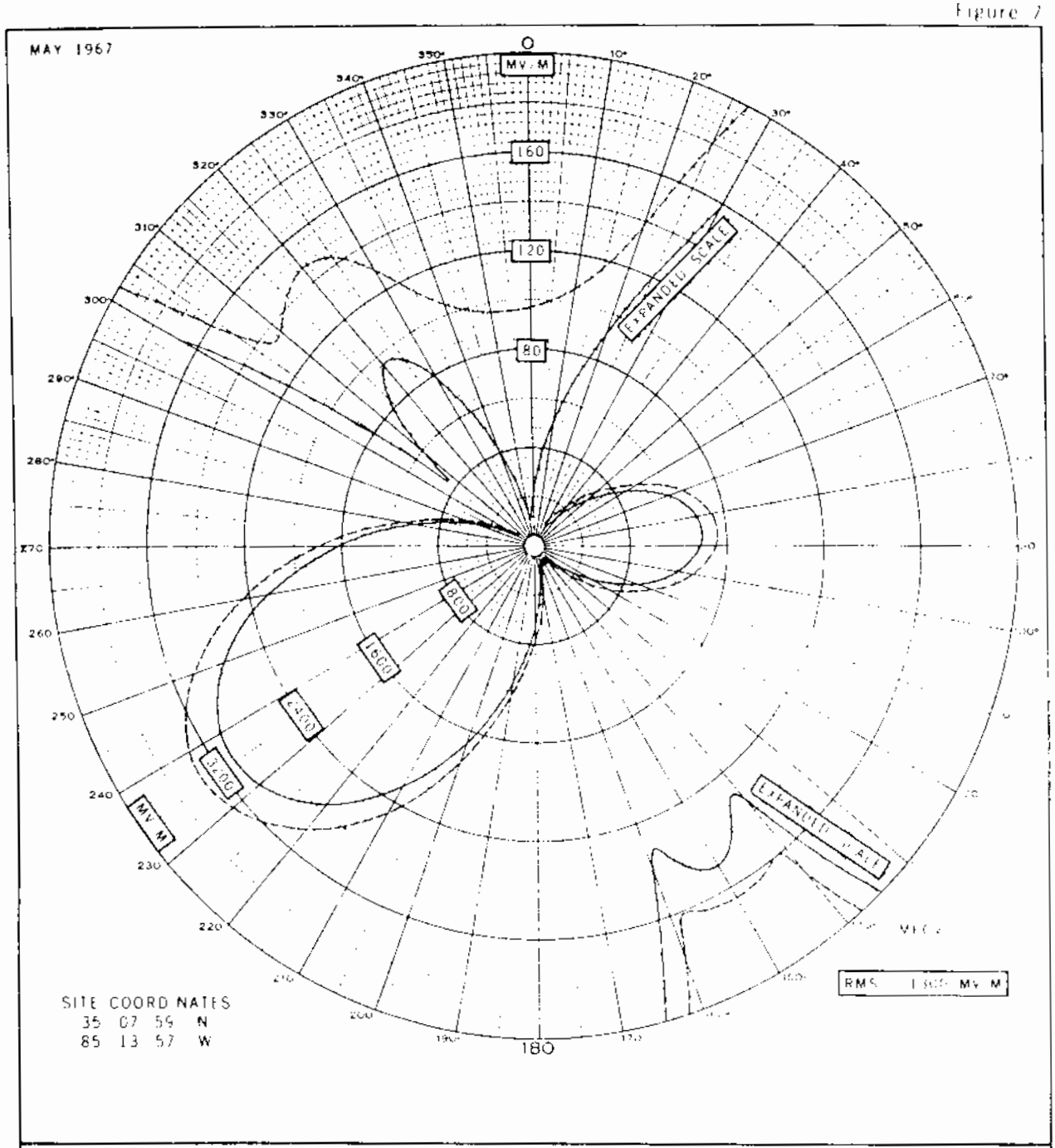
WKIP

Proposed Day
(12-28-67ct)

Station WRIP
Chattanooga, Tennessee

50kw, DA-D, D
1190 kc

Figure 7



PROPOSED HORIZONTAL PLANE RADIATION PATTERN

COLONEL JAY SADOW

CHATTANOOGA TENNESSEE

FCC File No. BP-17792
Accepted 11-8-67

Station WRIP
Chattanooga, Tennessee

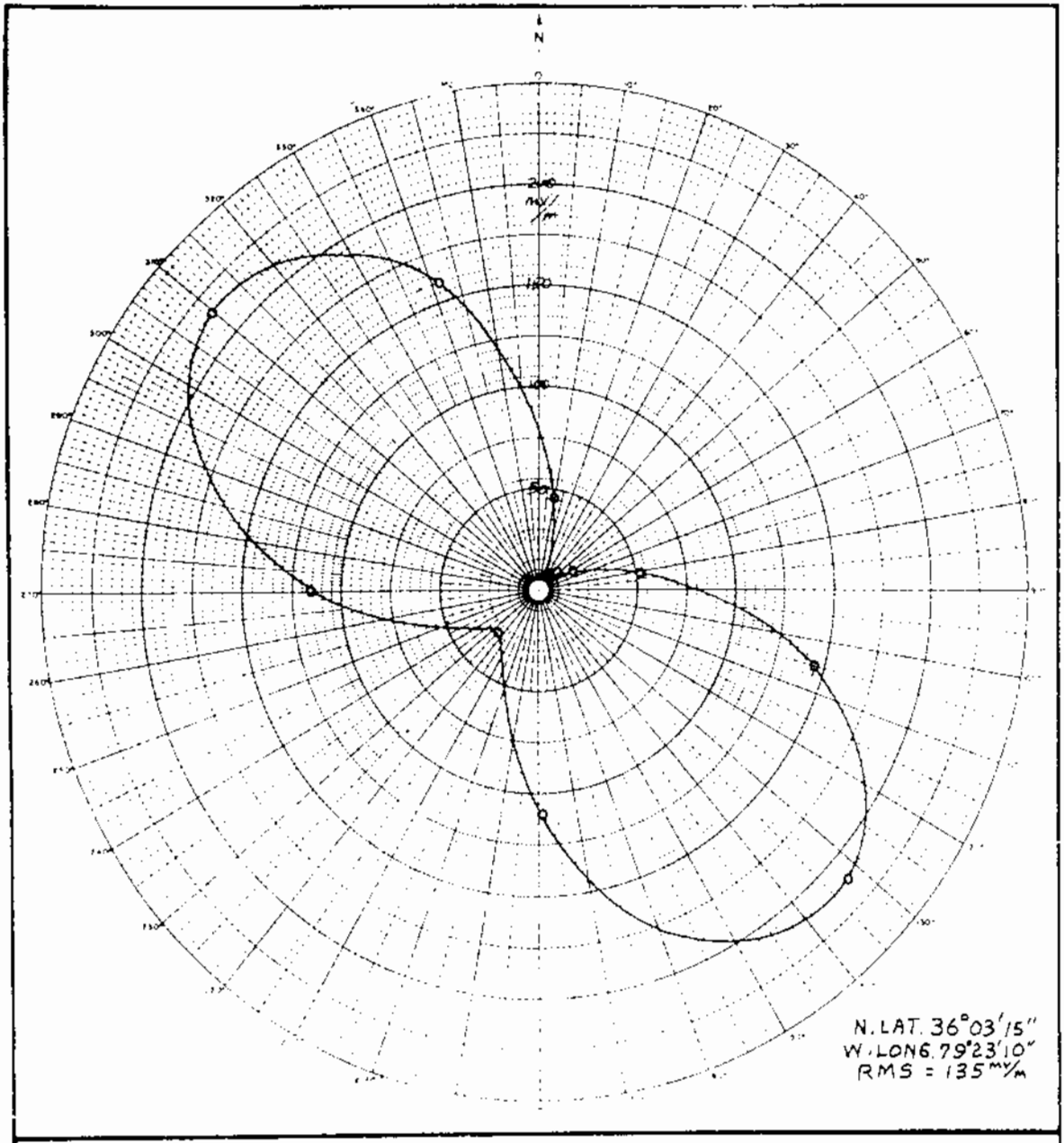
1190 kc

Measured Day
(3-27-70ct)

Station WSML
Graham, North Carolina

SEE REVERSE SIDE

WSML
500w, DA-D, D
1190 kc



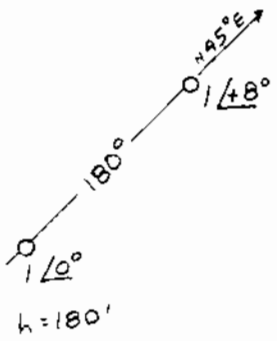


EXHIBIT XIX

MEASURED DIRECTIONAL RADIATION PATTERN
500 WATTS

RADIO STATION WSML 1190 KC DAYTIME DA-DAY
GRAHAM, NORTH CAROLINA

WILLIAM L. FOSS, INC.
Electronic Consultants
WASHINGTON 8, D. C.
927 15th Street N.W. RE. 7-8611

PATTERN NO.
SUPERSEDES
APP.

FCC File No. BL-12538
Accepted 3-11-70

Station WSML
Graham, North Carolina

1190 kc

Measured Non-DA
(3-27-70ct)

Station WSML
Graham, North Carolina

SEE REVERSE SIDE

WSML
500w, DA-D, D
1190 kc

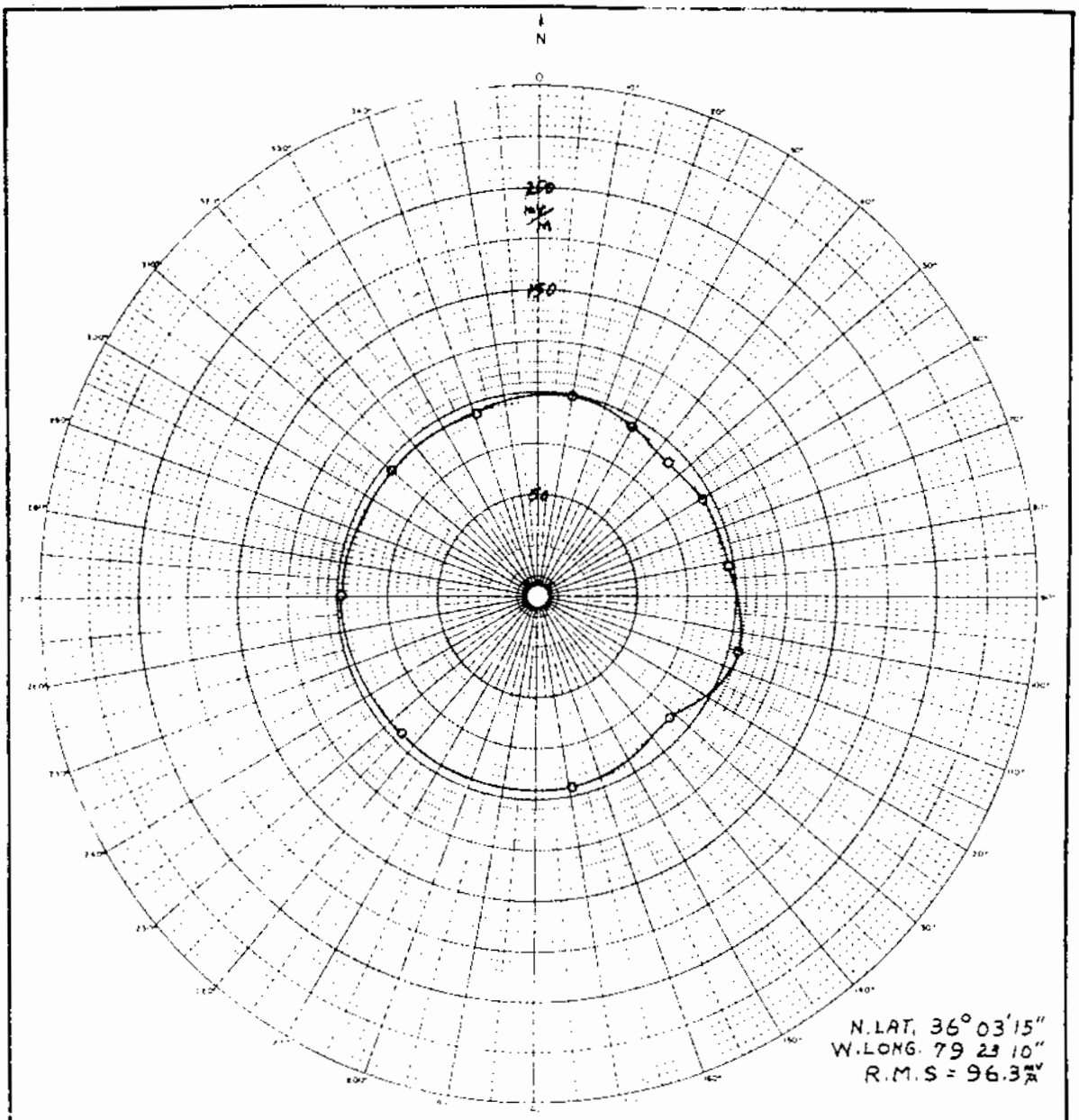


EXHIBIT XVIII

MEASURED NON-DIRECTIONAL RADIATION PATTERN
250 WATTS

RADIO STATION WSML, 1190KC 500 WATTS DA-DAY
GRAHAM, NORTH CAROLINA

WILLIAM L. FOSS, INC.
Electronic Consultants
WASHINGTON 5 D. C.
[illegible] NW RE 1683

PATTERN NO
SUPERSEDES
APP

FCC File No. BL-12538
Accepted 3-11-70

Station WSML
Graham, North Carolina

1190 kc

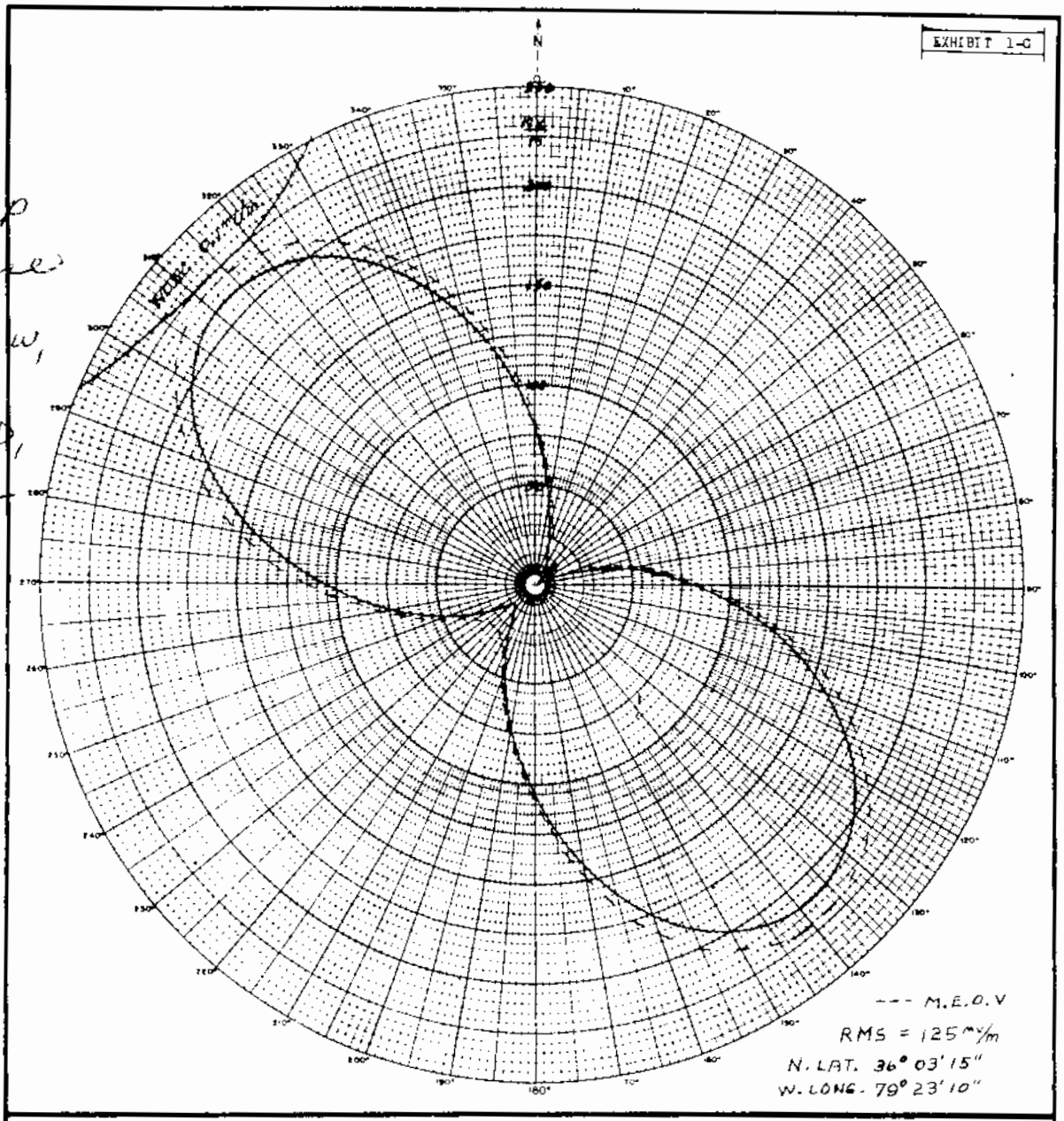
WSML

Proposed Day
(6-28-68ct)

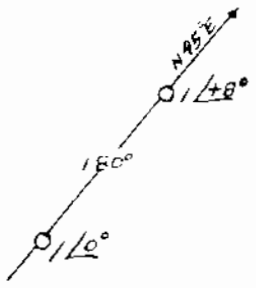
Station WSML
Graham, North Carolina

500w, DA-D, D
1190 kc

BP-18096
Granted
6-9-69 CP
to increase
power
from 250w,
DA-D, D to
500 w, DA-D,
D.



HORIZONTAL RADIATION PATTERN



h = 78.3°

PROPOSED POWER INCREASE FROM
250 WATTS, TO 500 WATTS DA-DAY
1190 KC, GRAHAM, N.C.
Engineers; Robert P. Epperson
2/12/68 Edward M. Deeters

PATTERN NO.
SUPERSEDES
APP

FCC File No. BP-18096
Accepted 6-12-68

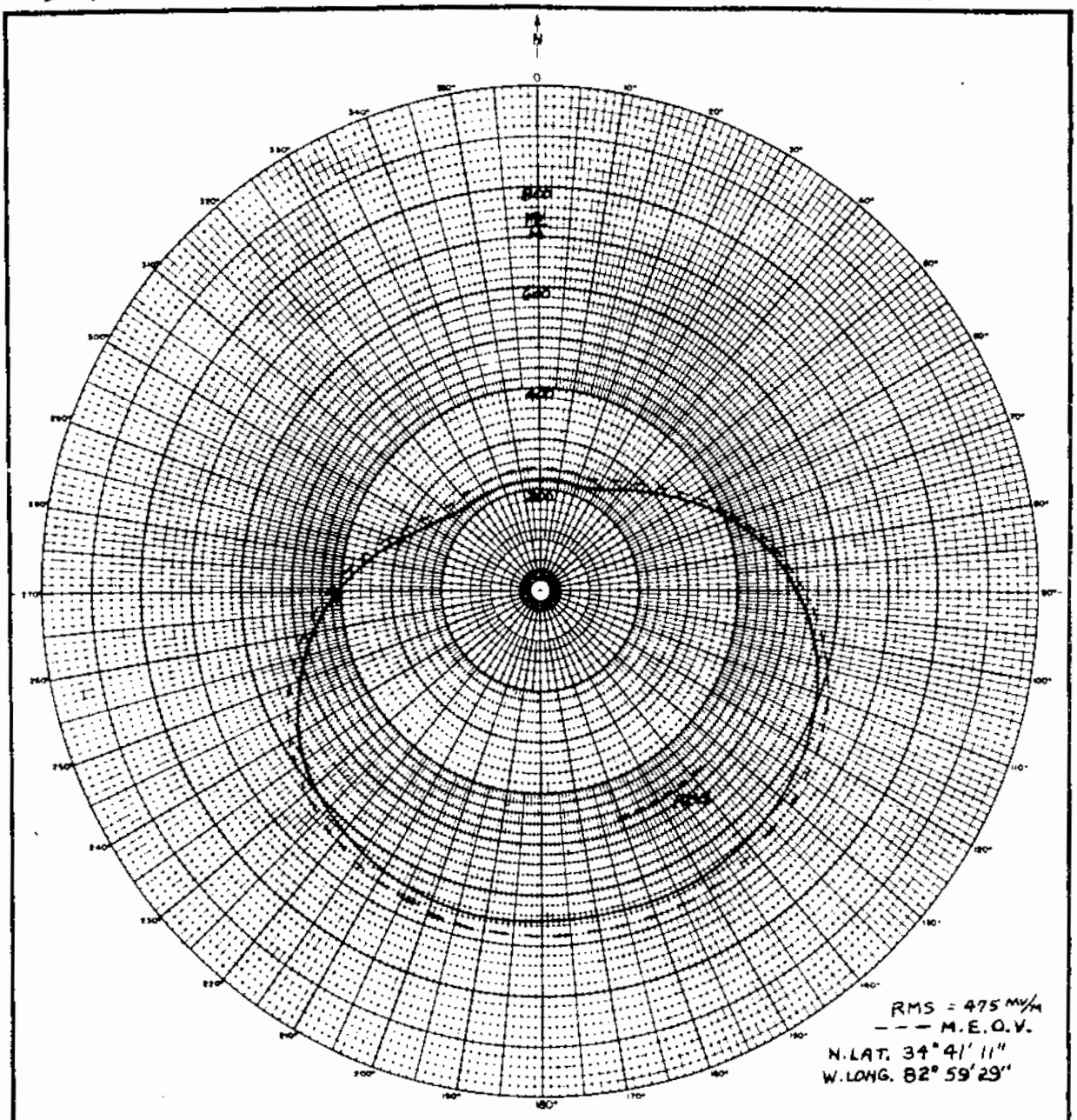
Station WSML
Graham, North Carolina

1190 kc

Proposed Day
(10-26-65ct)

Station WSNW
Seneca, South Carolina

5kw,DA-D,D
1190 kc



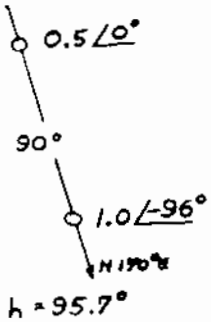


EXHIBIT V
HORIZONTAL RADIATION PATTERN
BLUE RIDGE BROADCASTING CO. INC.
1190 KC 5.0 KW DA-DAY
SENECA, SOUTH CAROLINA.
Engineer: Edward W. Deeters

WILLIAM L. FOSS, INC.
Electronic Consultants
WASHINGTON D. C.

PATTERN NO 4365
SUPERSEDES
APP.

FCC File No. BP-16670
Accepted 9-8-65

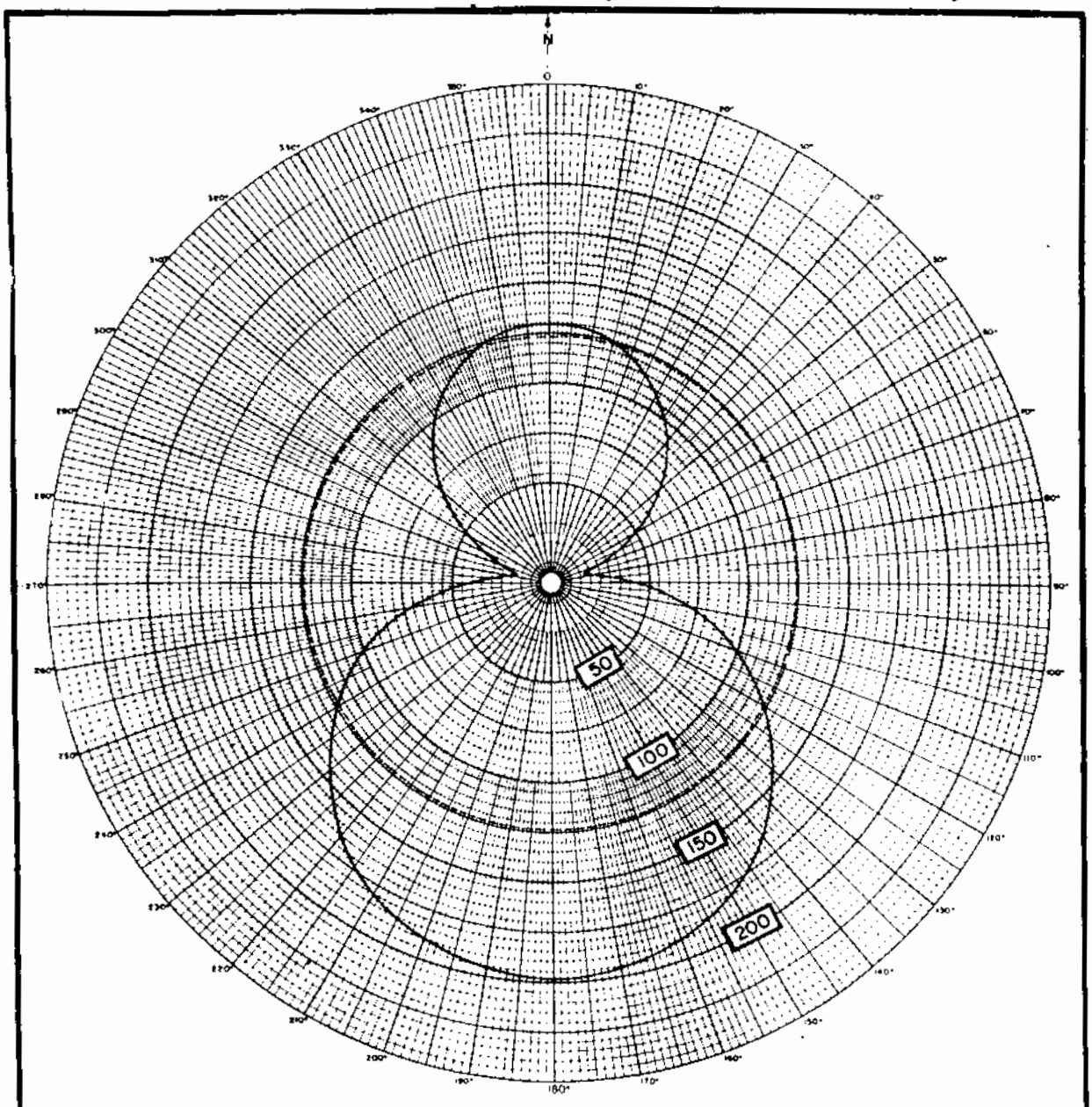
Station WSNW
Seneca, South Carolina

1190 kc

Proposed Day
(1-24-62ct)

Station WWWW
Rio Piedras, Puerto Rico

500w,DA-2,U
1190 kc

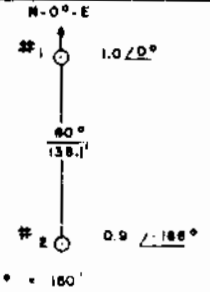


E_{RMS} = 124 MV/M (BY ADJUSTMENT)

LATITUDE: 18° 25' 26.3"
LONGITUDE: 66° 02' 02.3"

JOHN H. MULLANEY AND ASSOCIATES
WASHINGTON, D. C.

ANTENNA PARAMETERS



$\theta_1 = \theta_2$ = 65.3° = 180°

FIGURE 3A
DIRECTIONAL HORIZONTAL PLANE PATTERN (DAYTIME)

RADIO STATION WWWW
RIO PIEDRAS, PUERTO RICO

1190 KC 500 W, DA-2,U

FCC File No.BP-14070
Accepted 1-12-62 Amended

Station WWWW
Rio Piedras, Puerto Rico

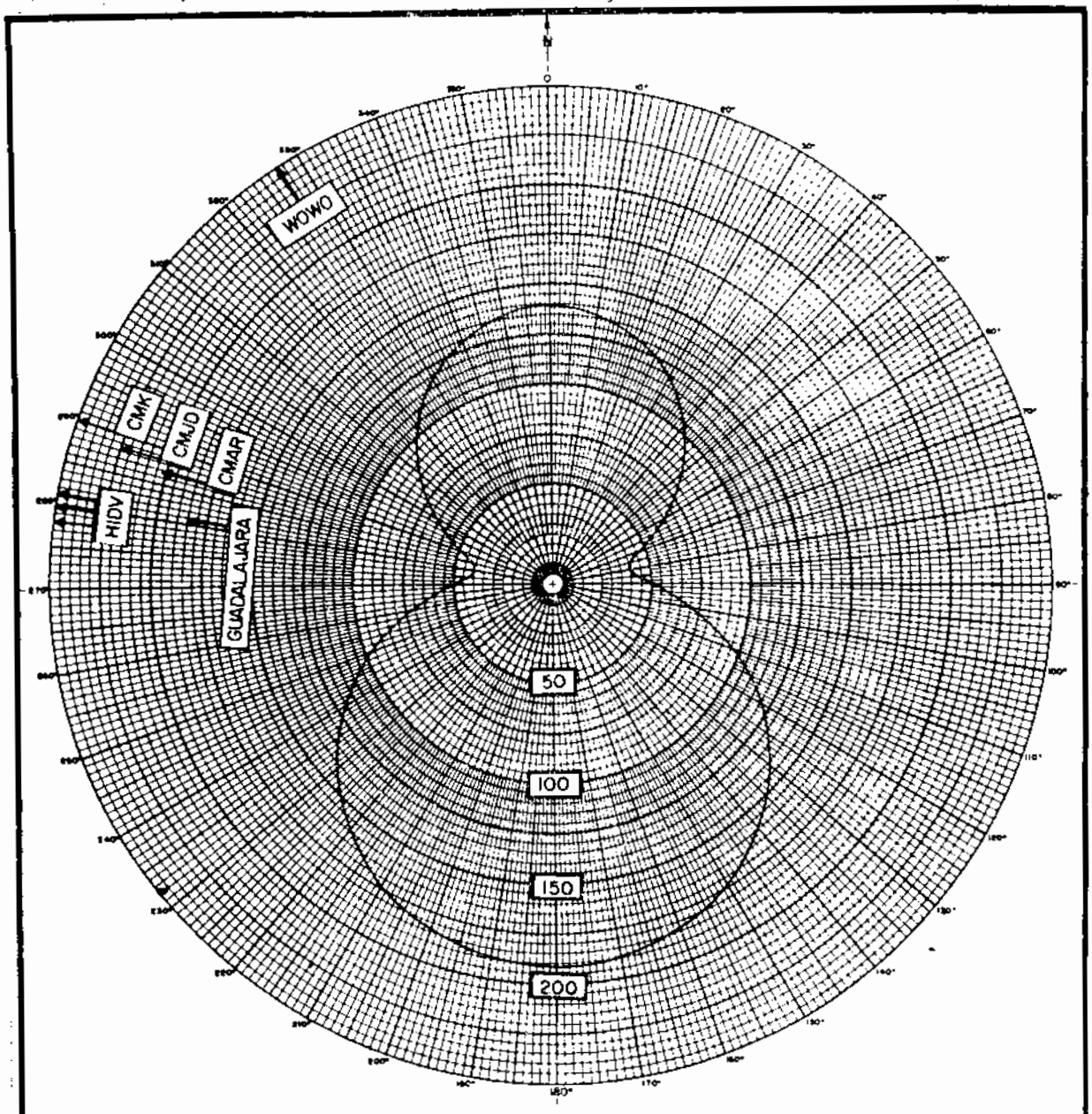
1190 kc

WWWW

Proposed Night
(1-24-62ct)

Station WWWW
Rio Piedras, Puerto Rico

500w,DA-2,U
1190 kc



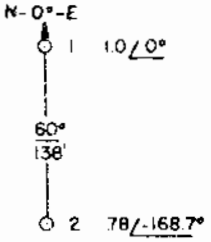
E_{RMS} = 125 MV/M (BY ADJUSTMENT)

LATITUDE: 18° 25' 26.3"

LONGITUDE: 66° 02' 02.3"

JOHN H. MULLANEY
AND
ASSOCIATES
WASHINGTON, D. C.

ANTENNA PARAMETERS



$G_1=G_2=65$ 3°=150'

FIGURE 4A

DIRECTIONAL HORIZONTAL
POLAR PATTERN
NIGHTTIME

RADIO STATION WWWW
RIO PIEDRAS, PUERTO RICO

1190 KC 500 W, DA-2, U

FCC File No.BP-14070
Accepted 1-12-62 Amended

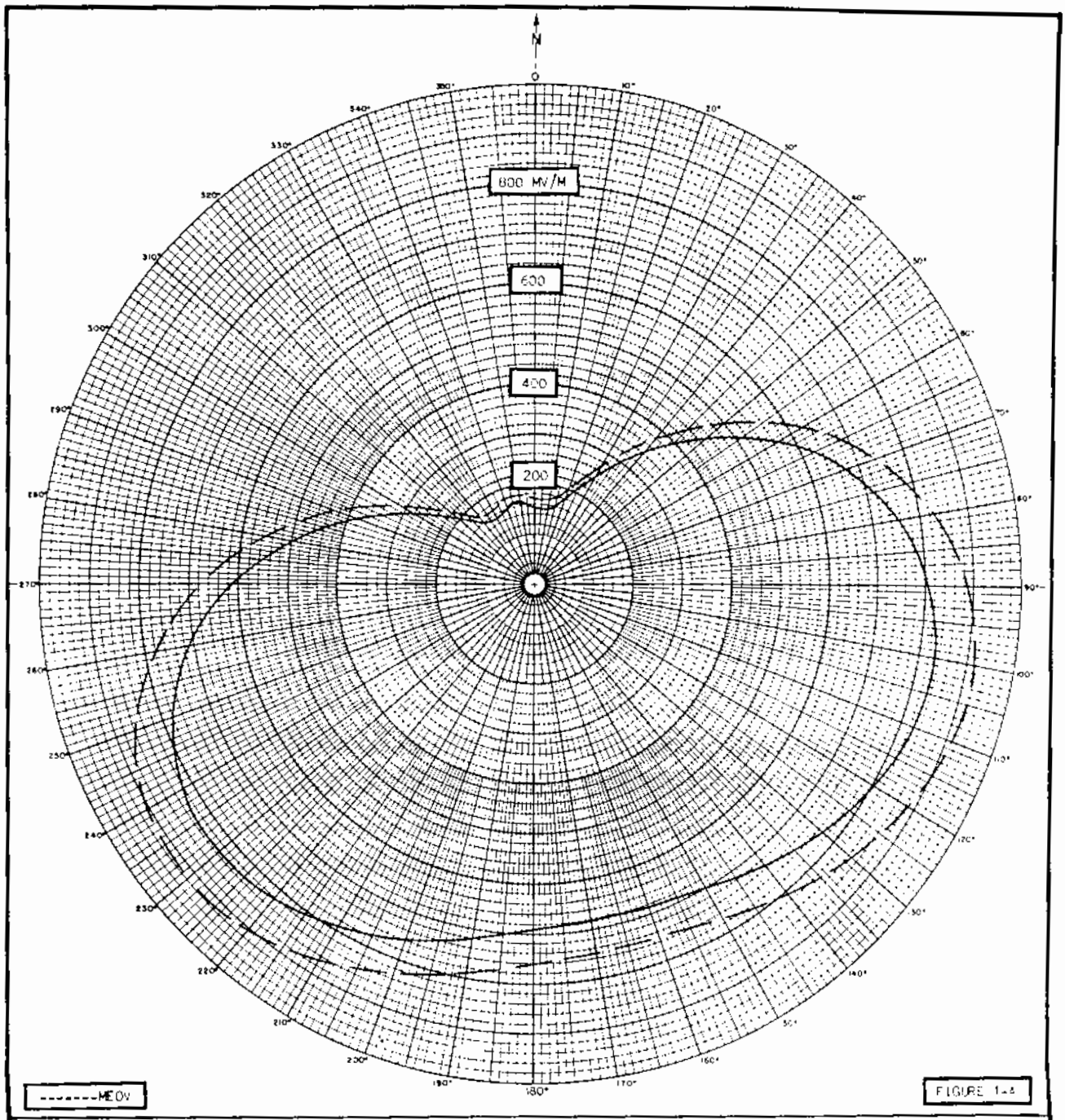
Station WWWW
Rio Piedras, Puero Rico

1190 kc

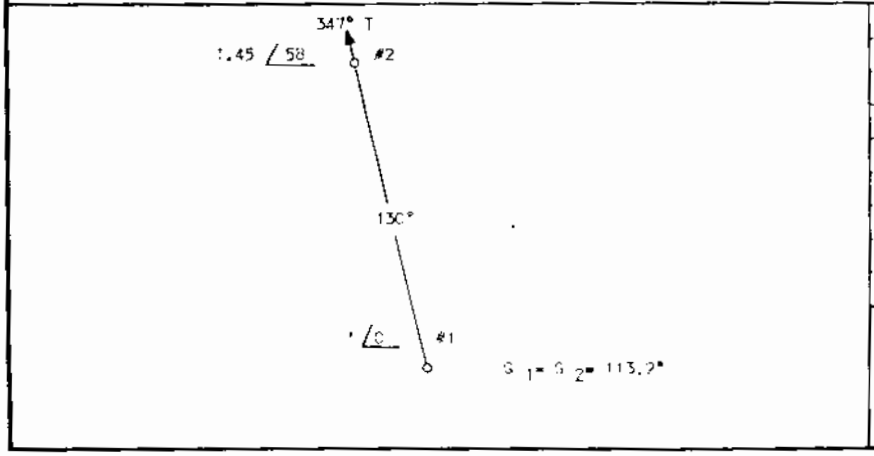
Proposed Day
(9-28-67ct)

New; Tennessee Valley Advertising Agcy.
Knoxville, Tennessee

10kw,DA-D,D
1190 kc



HORIZONTAL RADIATION PATTERN



APPLICANT	TENN. VALLEY ADV'T. AGENCY, INC
LOCATION	KNOXVILLE, TENNESSEE
FREQUENCY	1190 KC/S
POWER	10,000 WATTS
LATITUDE	N 35 DEG 58 MIN 02 SEC
LONGITUDE	83 DEG 57 MIN 29 SEC
WHEN USED	DAYTIME
RMS FIELD	510
DATE	MARCH 1967

SILLIMAN, MOFFET & KOWALSKI
CONSULTING RADIO ENGINEERS
WASHINGTON, D.C.

FCC File No.BP-17692
Accepted 8-30-67

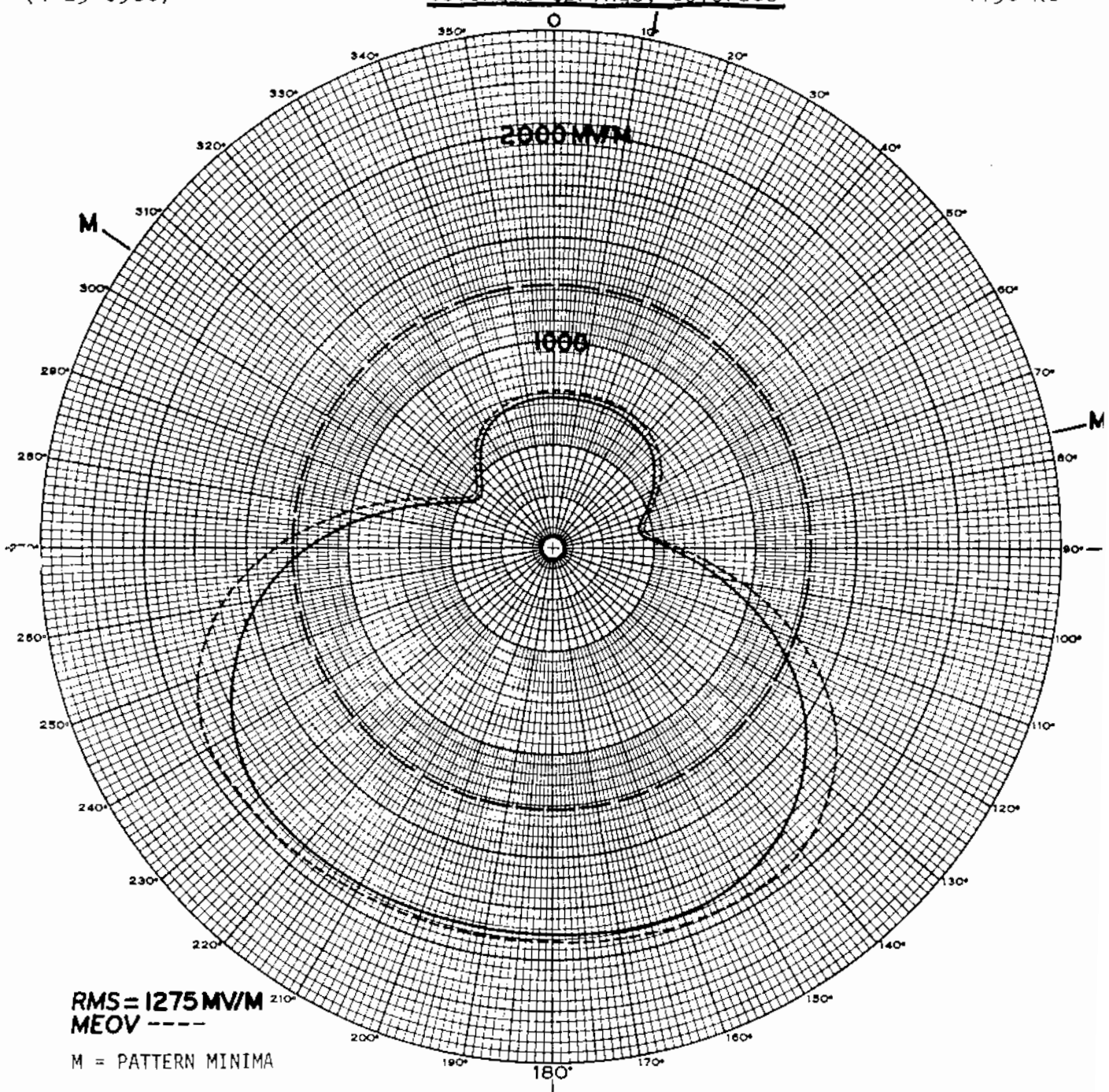
New; Tennessee Valley Advertising Agcy.
Knoxville, Tennessee

1190 kc

Proposed Day
(4-29-69ct)

New; A. V. Bamford
Colorado Springs, Colorado

50kw,DA-D,D
1190 kc



RMS = 1275 MV/M
MEOV ----

M = PATTERN MINIMA

TOWER PLACEMENT SKETCH	PATTERN PARAMETERS	FIGURE 3	STATION DATA
S = 90° 11° T. G = 90° 90° = 206.7' S #3 #2 #1	TOWER No. / ELECTRICAL HEIGHT θ° / SPACING S° / PHASING ψ° / FIELD RATIO r 1: 90° – 0° 1.0 2: 90° 90° 64.6 0.777 3: 90° 180° 166.0 0.641 4–10: DAYTIME OPERATION ☒ NIGHTTIME OPERATION ☐	PROPOSED DAYTIME DIRECTIONAL * * * * * * * COLORADO SPRINGS COLORADO θ° 0°	CALL NEW FREQ 1190 kHz POWER 50 Kw TYPE DA-D TIME DAYTIME LAT. N39-06-17.8 LONG W104-52-35.9 E.H.MUNN,JR. RADIO ENGINEER COLDWATER, MICH.

FCC File No.BP-18467
Accepted 4-21-69

New; A. V. Bamford
Colorado Springs, Colorado

1190 kc

DIRECTIONAL ANTENNA DESCRIPTION SHEET
(Issued July 21, 1965)

Station: XENJ

Main Studio: Villa de Guadalupe, Nuevo Leon

Frequency: 1190 kc/s

Power: 0.5kw Night / 1kw Day

Notification List No. (*)

Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 25° 43' 00"

West Longitude: 100° 19' 00"

ANTENNA CHARACTERISTICS

Authorized for Nighttime operation. (DA-N)
Number of elements: 2
Type of elements: Guyed, vertical steel towers.

TOWER:	Northwest	Southeast	
HEIGHT ABOVE INSULATORS:	210.3'	210.3'	(90°)
PHASING:	0°	-170°	
FIELD RATIO:	1	1	

SPACING AND ORIENTATION: Elements are spaced 172.3' (75°) on a line bearing 293.33° true.

GROUND SYSTEM: 120 - 210.3' equally spaced copper radials about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers.

Predicted effective Night Field: 123.725 mv/m at rated power.

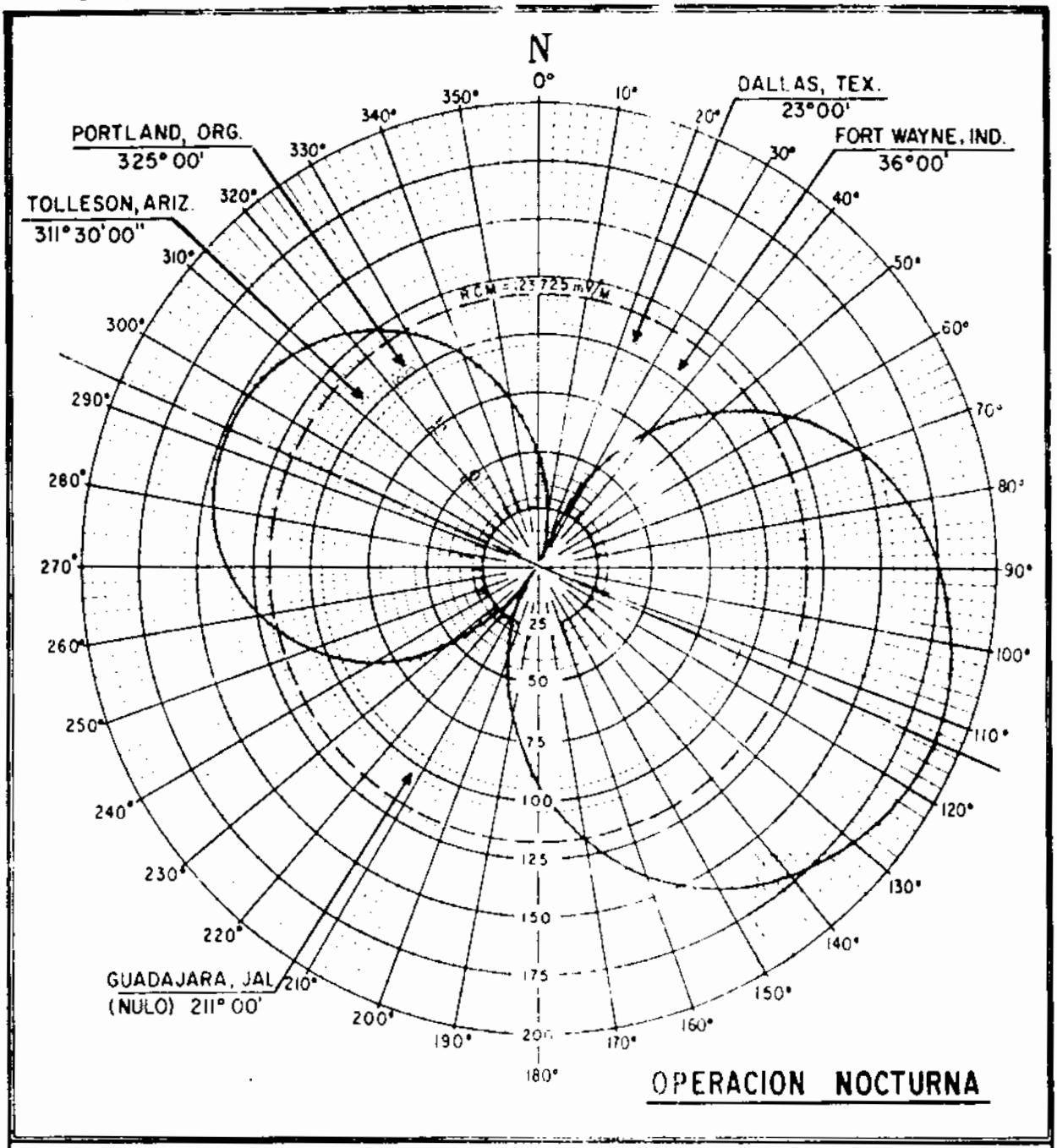
(*) FCC Note: This "supplementary" information corresponds to a change in an existing station assignment concerning which official notification has not been received in the Commission as of July 21, 1965.

XENJ

Proposed Night
(8-27-65ct)

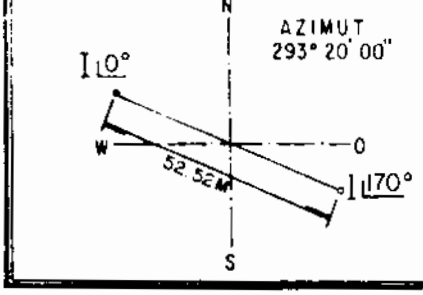
Station XENJ
Villa de Guadalupe, N.L.

500w, 1kw-LS, DA-N, U, Class II
1190 kc



PATRON DE RADIACION HORIZONTAL CALCULADO EN mV/M A 1609 Mts.

ESQUEMA DE LAS TORRES Y SU ORIENTACION CON RESPECTO AL NORTE ASTRONOMICO



RADIODIFUSORA

XENJ

Villa de Guadalupe, N.L.

1190 KHz.
1000 W- DIA
500 W- NOCHE

DISEÑO.
ING. S. PANG BARAJAS.

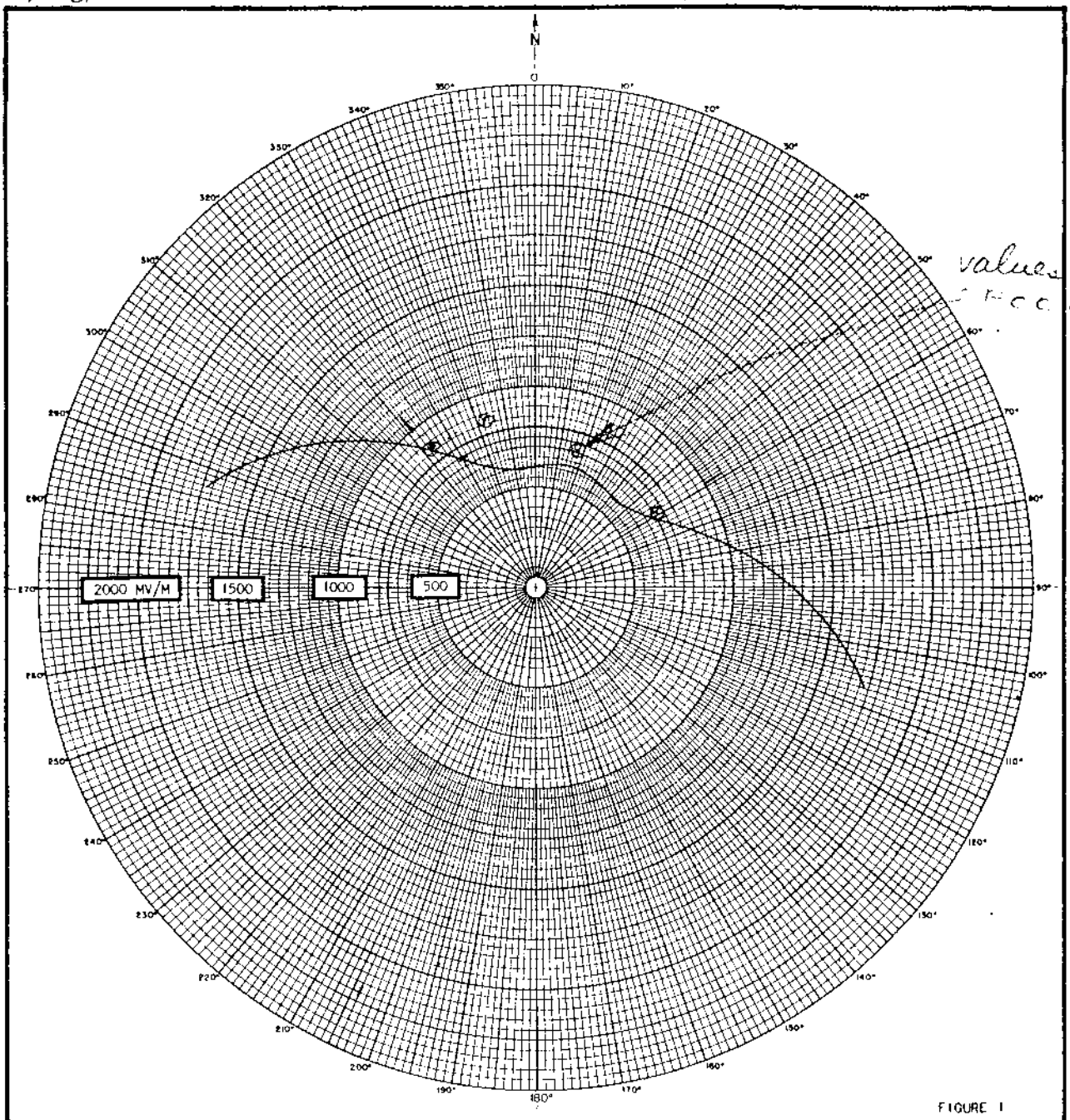
DIBUJO. E. Sesma

~~Anaheim-Fullerton, Cal~~

PROPOSED DA-1 NULLS (9/16/57g)

~~New, Anaheim-Fullerton B/Cing Co., Inc.~~
Anaheim-Fullerton, California

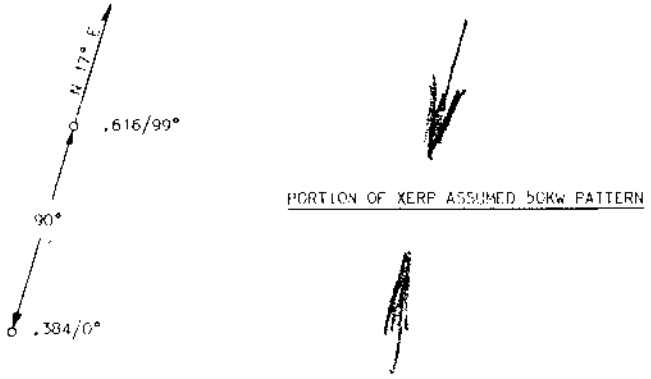
~~1kw, DA-1, U~~
1190 KC



values from FCC

FIGURE 1

HORIZONTAL RADIATION PATTERN



APPLICANT :	
LOCATION :	
FREQUENCY :	1190 KC/S
POWER :	50 KW-U(DA-N)
LATITUDE :	DEG MIN. SEC.
LONGITUDE :	DEG. MIN. SEC.
WHEN USED :	NIGHT
R.M.S FIELD :	1800 MV/M
DATE :	AUGUST 1957

ROBERT M. SILLIMAN & ASSOCIATES
CONSULTING RADIO ENGINEERS
WASHINGTON, D.C.

DESCRIPTION OF ANTENNA SYSTEM

Station Call:	CFFB
Main Studio:	Frobisher, N.W.T.
Frequency:	1200 kHz
Power:	0.25 kW
Mode:	OD
Class:	II
Time:	Day and Night
Notification List No. 246	Date: September 27, 1968.
Geographical Location:	Latitude: 63° 43' 47" N. Longitude: 68° 32' 34" W.
Antenna Height:	150 feet, 66° physical height 95° electrical height with top loading.
Type of Element:	Single guyed, base-insulated tower.
Top Loading:	Umbrella consisting of nine radials extending to skirt which joins guy wires at distance of 90 feet from apex.
Ground System:	90 radials, average length 260 feet (0.32), No. 10 wire, buried.
Expected Efficiency:	90 mV/m at 1 mile for 0.25 kW. 180 mV/m at 1 mile for 1 kW.

DELETE

IFRB Serial No. 1210

FORM FOR THE APPLICATION OF ARTICLE 4 OF THE AGREEMENT

CHARACTERISTICS OF A REGION 2 BROADCASTING STATION IN THE BAND 535 – 1605 kHz

PART I GENERAL INFORMATION

(01) Administration: CANADA Sheet No.: 414 Date: 821108

Assigned frequency (kHz)		(02)	1210
Transmitting station	Name of the station	(03)	FROBISHER BAY
	Call sign.	(04)	CFFB
	Additional Identification	(05)	
	Station class	(06)	
	Operational Status	(07)	
Country		(08)	CAN
Geographical coordinates of the transmitting station		(09)	W N

(11) a) New assignment [ ] b) Modification of characteristic of an assignment recorded in the plan [ ] c) Cancellation of an assignment [X]

(12) Modification under Section 4.2.14 Yes [ ] No [ ]

(13) Date of bringing into service or cessation of operation: 82 09 14 (Year Month Day)

STATION PARAMETERS	DAYTIME OPERATION	NIGHT-TIME OPERATION
Station power (kW)	(21)	(31)
r.m.s. value of radiation for station power (mV/m at 1km)	(25)	(35)
Antenna type	(26)	(36)
Simple vertical antenna electrical height (degrees)	(27)	(37)

(44) Remarks

This station now operating (serial 7241) on 1230kHz

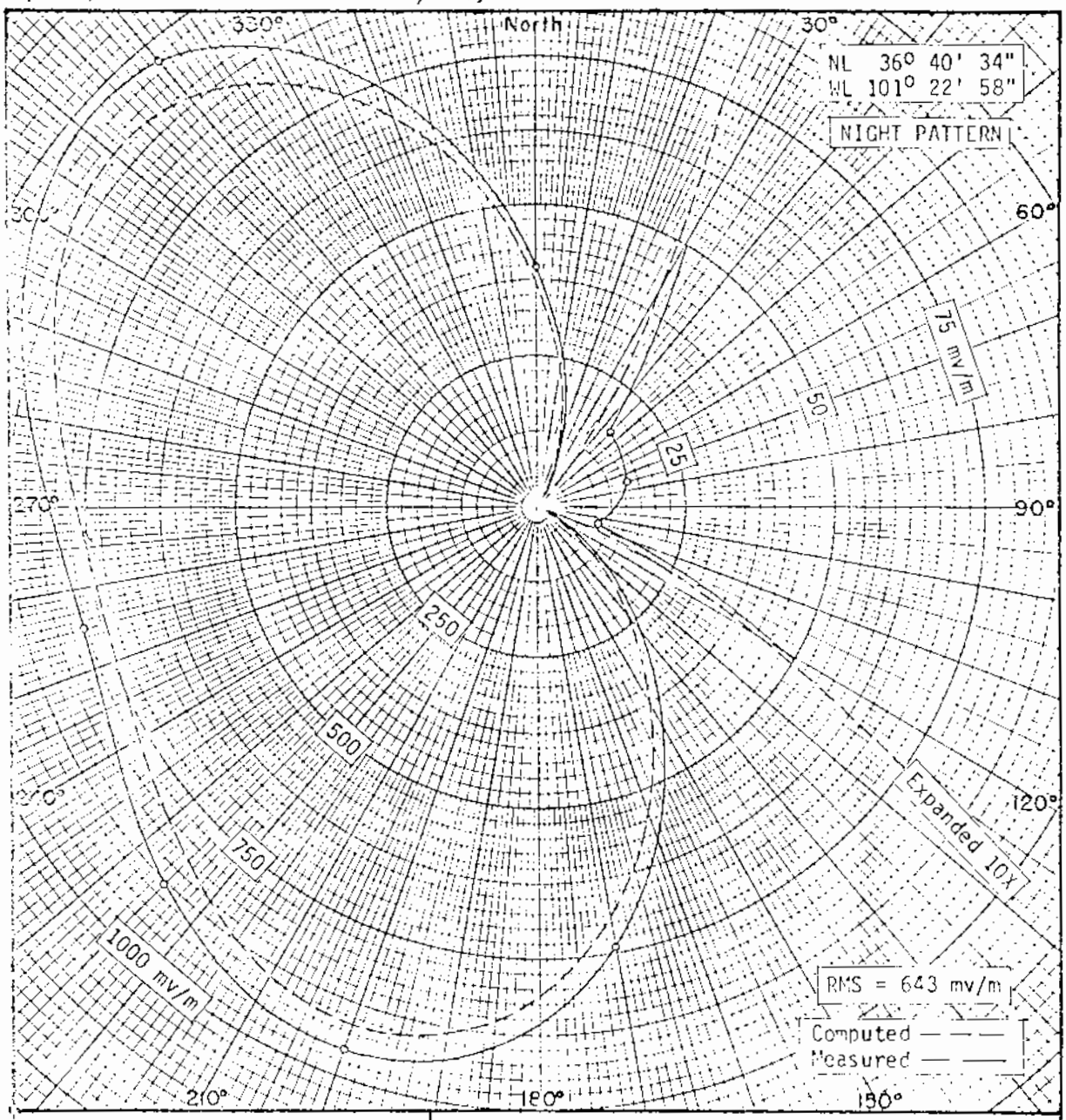
COORDINATION UNDER ARTICLE 4:									
COUNTRY	USA								
IN PROGRESS									
ACCEPTANCE OBTAINED									

KGYN

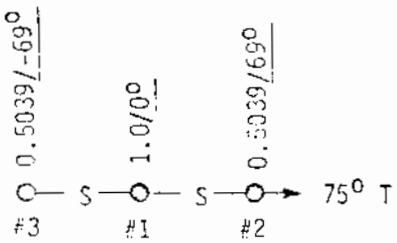
Measured Night
(3-22-71ct)

Station KGYN
Guymon, Oklahoma

10kw, DA-N, U
1210 kc



Theoretical



G = 90° = 203.5'
S = 120° = 271.2'

RADIO STATION KGYN
GUYMON, OKLAHOMA

MEASURED DIRECTIONAL
HORIZONTAL PLANE RADIATION PATTERN
1210 KHZ 10,000 WATTS

122368

FIGURE 2

MERL SAXON
CONSULTING RADIO ENGINEER
LUFKIN, TEXAS

FCC File No.BL-12883
Accepted 3-3-71

Station KGYN
Guymon, Oklahoma

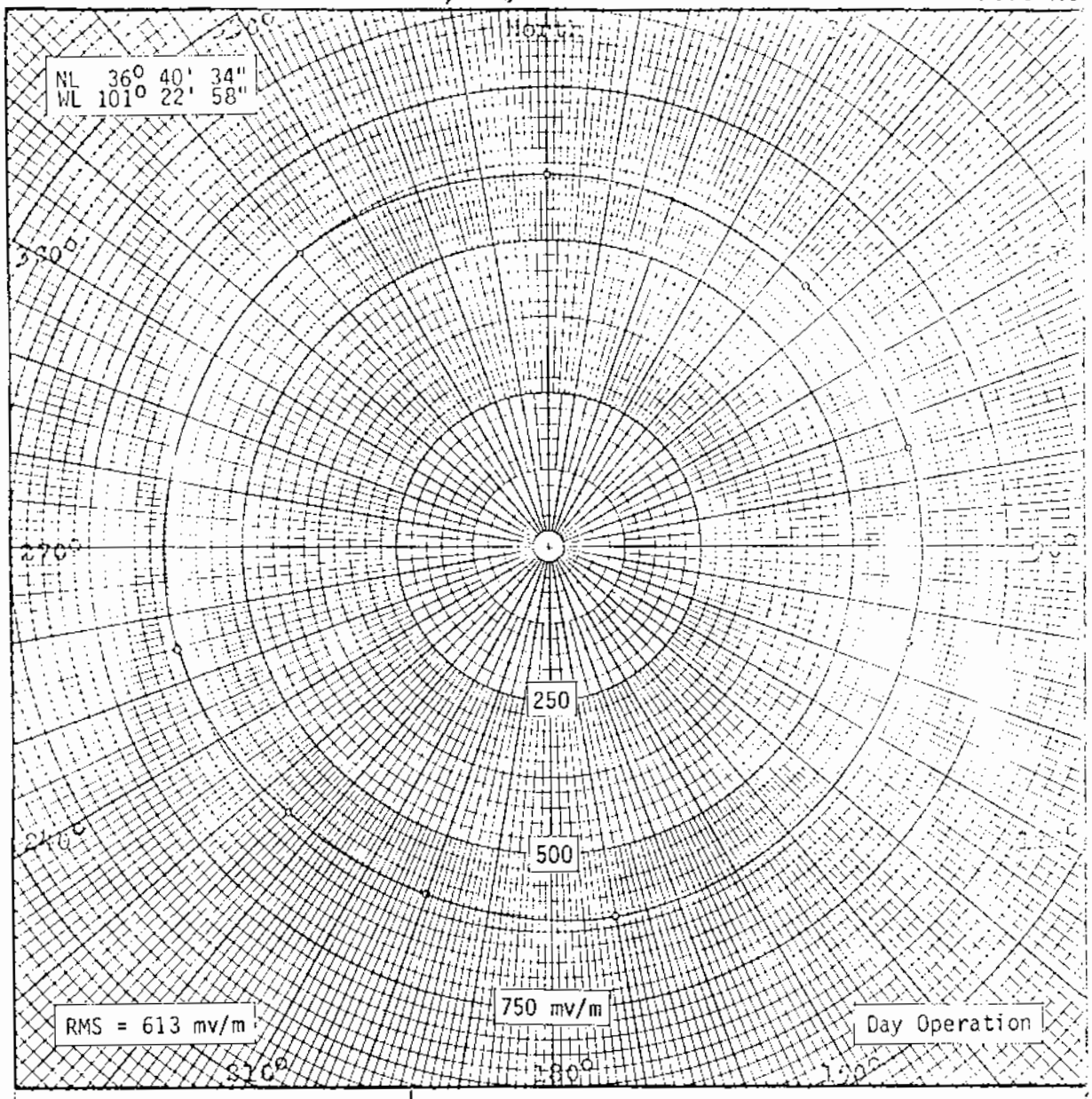
1210 kc

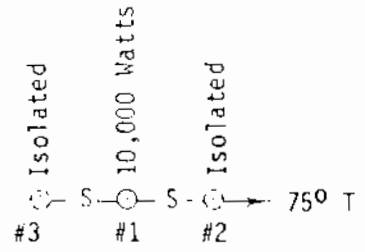
KGYN

Measured Non-DA
(3-22-71ct)

Station KGYN
Guymon, Oklahoma

10kw, DA-N, U
1210 kc





G = 90° = 203.5'
S = 120° = 271.2'

RADIO STATION KGYN
GUYMON, OKLAHOMA

MEASURED NON-DIRECTIONAL
HORIZONTAL PLANE RADIATION PATTERN
1210 KHZ 10,000 WATTS

122368	MERL SAXON CONSULTING RADIO ENGINEER LUFKIN, TEXAS
FIGURE 1	

FCC File No. BL-12883
Accepted 3-3-71

Station KGYN
Guymon, Oklahoma

1210 kc

KGYN

Proposed Night
(6-27-69ct)

Station KGYN
Guymon, Oklahoma

10kw, DA-N, U
1210 kc

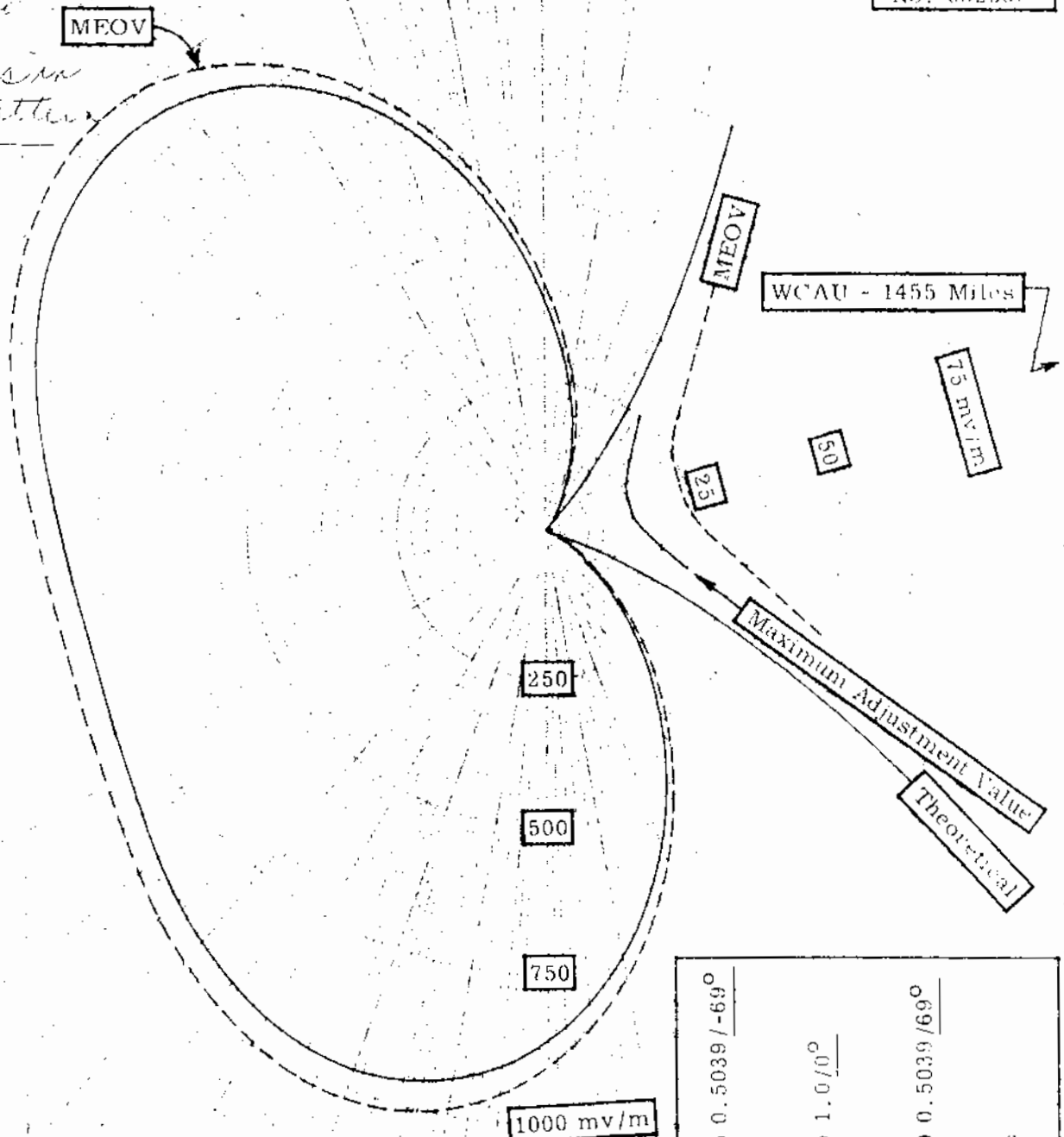
36° 40' 34.2"
NL ~~36° 42' 39"~~
WL ~~101° 27' 12"~~ 101° 22' 57.6"

BMP-12724
Granted
(6-6-69)
Modification
of CP to
make
changes in
DA-N pattern

KGYN - GUYMON, OKLAHOMA
MODIFICATION OF PROPOSED DIRECTIONAL
HORIZONTAL PLANE RADIATION PATTERN
1210 KHZ 10,000 WATTS

RMS - 643 mv/m

Modified
Night Pattern
No. 032569



MERL SAXON
CONSULTING RADIO ENGINEER
LUFKIN, TEXAS

FCC File No. BMP-12724
Accepted 5-28-69

Station KGYN
Guymon, Oklahoma

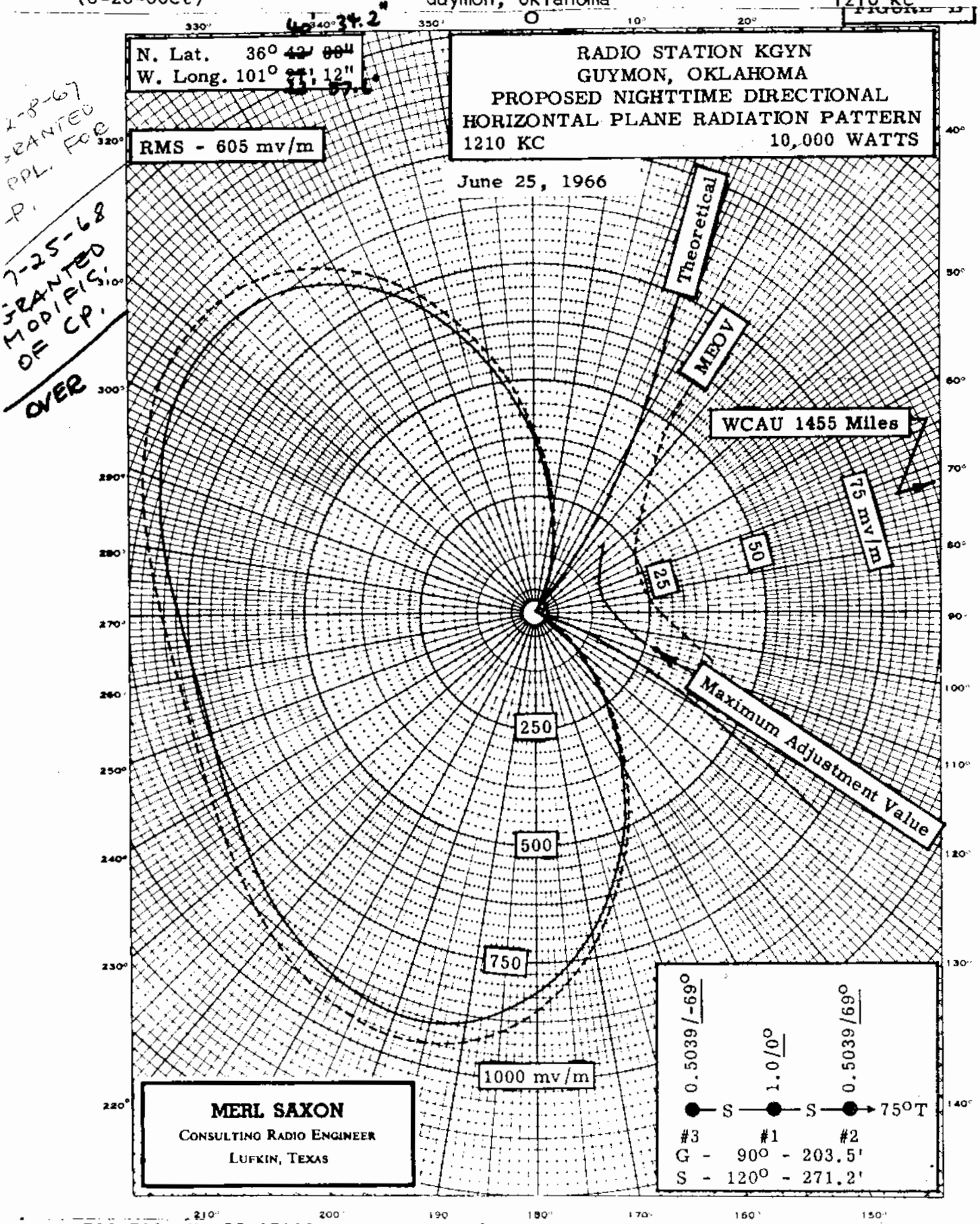
1210 kc

KGYN

Proposed Night
(8-26-66ct)

Station KGYN
Guymon, Oklahoma

DA - 10kw, DA-N, U
1210 kc



1-8-67
GRANTED
PPL. FOR
-P.

7-25-68
GRANTED
MODIFIC.
OF CP.

OVER

FCC File No. BP-17192
Accepted 8-2-66 Amended

Station KGYN
Guymon, Oklahoma

1210 kc

WHOY

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WHOY Main Studio: Salinas, Puerto Rico

Frequency: 1210 KHz Power: 1 kW Night 5 kW Day

Notification List No.: 1782 Date: October 26, 1979 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude:	17°	58'	88"
West Longitude:	66°	18'	14"

ANTENNA CHARACTERISTICS

Authorized for Daytime and Nighttime operation. (DA-2)
Number of elements: 2
Type of elements: Series excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	SW(#1)	NE(#2)
HEIGHT ABOVE INSULATORS:	200'(88.6°).	204'(90.3°)
NIGHT PHASING:	144°	0°
NIGHT FIELD RATIO:	1.1	1.0
DAY PHASING:	136°	0°
DAY FIELD RATIO:	1.6	1.0

SPACING AND ORIENTATION: With the SW tower as reference, the NE tower is spaced 135.5' (60°) on a line bearing 62° true.

GROUND SYSTEM: 120 - 204' equally spaced copper radials plus a 24x4' square ground screen about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers. Centers of system are bonded together.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS		THEORETICAL RSS		STANDARD RMS	
Day	435	mV/m	604	mV/m	457	mV/m
Night	196.6	mV/m	310.6	mV/m	206.6	mV/m

Note: Please retain the nighttime directional antenna radiation pattern notified for Station WHOY in United States Change List Number 1600 dated October 2, 1974 and attach to this supplemental Description Sheet and Daytime pattern. This notification concerns only a change in the Daytime MEOV operation of the station with nighttime operation continued as previously notified.

WHOY

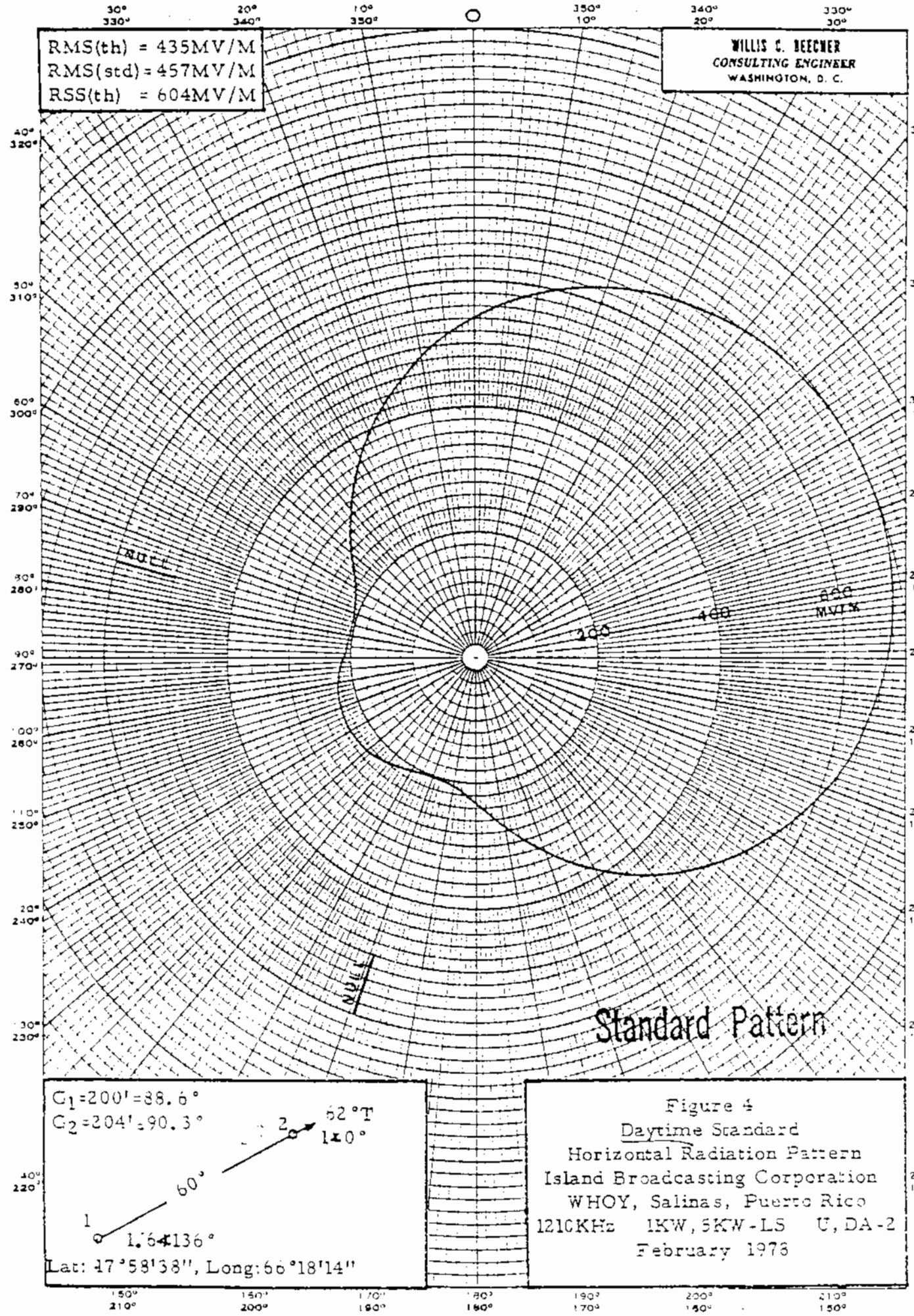


Figure 4
Daytime Standard
Horizontal Radiation Pattern
Island Broadcasting Corporation
WHOY, Salinas, Puerto Rico
1210KHz 1KW, 5KW-LS U, DA-2
February 1978

WHOY

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WHOY — Main Studio: Salinas, Puerto Rico

Frequency: 1210 kHz — Power: 1 kW

Notification List No. 1600 — Date: October 2, 1974 — Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:
North Latitude: 17° 58' 38"
West Longitude: 66° 18' 14"

ANTENNA CHARACTERISTICS

Authorized for Nighttime operation. (DA-N)
Number of elements: 2
Type of elements: Series-excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	SW(#1)	NE(#2)
HEIGHT ABOVE INSULATORS:	200' (88.6°)	204' (90.3°)
PHASING:	+144°	0°
FIELD RATIO:	1.1	1.0

SPACING AND ORIENTATION: Elements are spaced 135.5' (60°) on a line bearing 62° true.

GROUND SYSTEM: 120-204' equally spaced copper radials plus a 24' square ground screen about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL		STANDARD
	RMS	RSS	RMS
Nighttime	196.6 mv/m	310.6 mv/m	206.6 mv/m
Daytime	190 mv/m (tower #2)	---	---

Note: This notification concerns only a change to add new Nighttime operation to the station with Daytime operation continued as previously notified.

CTR NO 30252A3

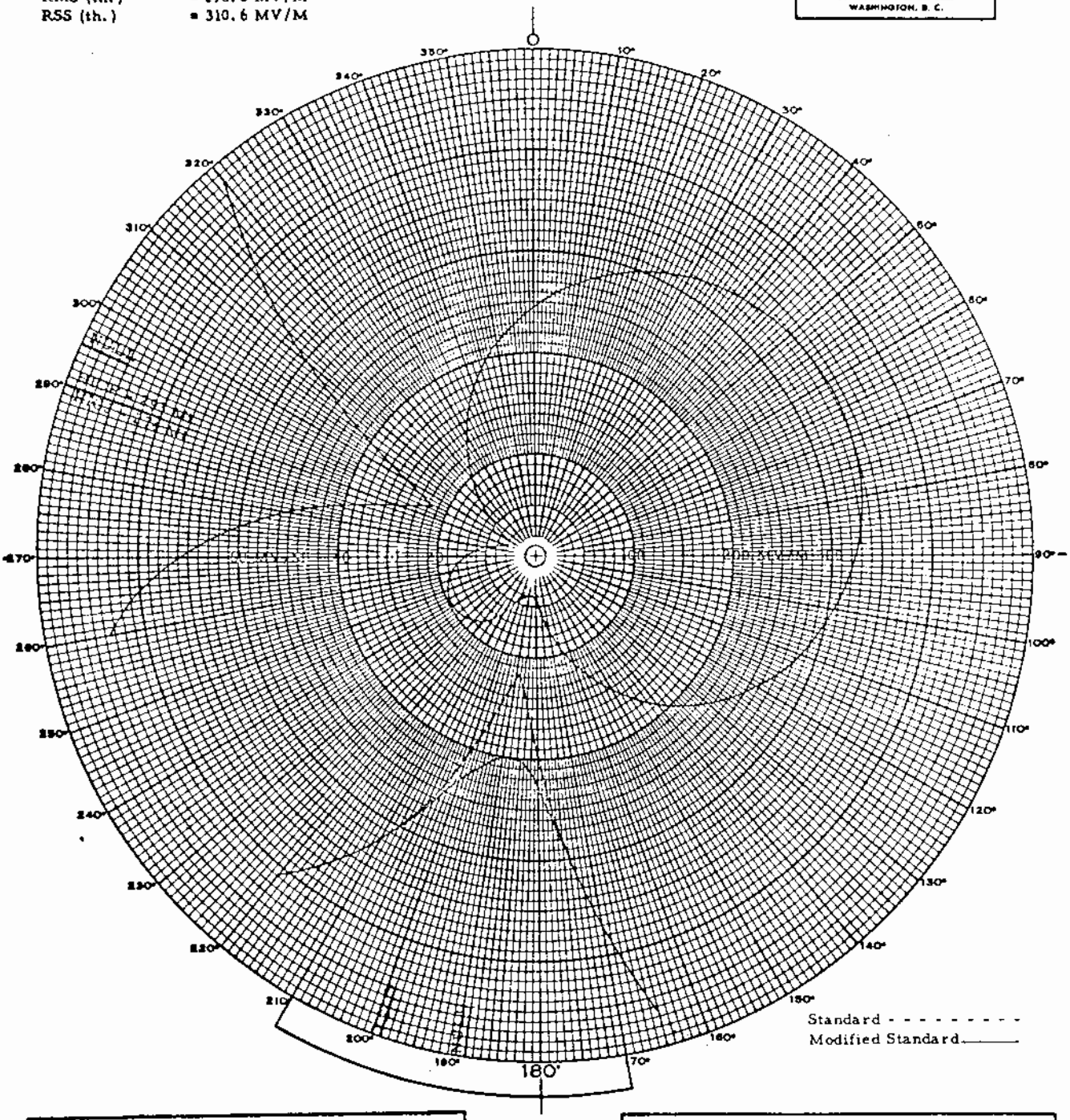
WHOY

Standard Pattern

RMS (mod. std.) = 206.7 MV/M
RMS (std.) = 206.6 MV/M
RMS (th.) = 196.6 MV/M
RSS (th.) = 310.6 MV/M

WILLIS C. BEECHER
CONSULTING ENGINEER
WASHINGTON, D. C.

DA-N



G_1 = 200' = 88.6° 62°T.

G_2 = 204' = 90.3°

2 ∠ 140°

60°

1 1.1 ∠ 144°

Lat: 17° 58' 38" ; Long: 66° 18' 14"

FIGURE 7

CALCULATED NIGHTTIME

MODIFIED STANDARD HORIZONTAL PATTERN

ISLAND BROADCASTING CORPORATION

WHOY, SALINAS, PUERTO RICO

1210 KHz 1 KW U, DA-N

NOVEMBER 1973

WKNX

1210

PROPOSED DAY
(8-18-58g)

Station WKNX
Saginaw, Michigan

10kw, DA-D,D
1210 KC

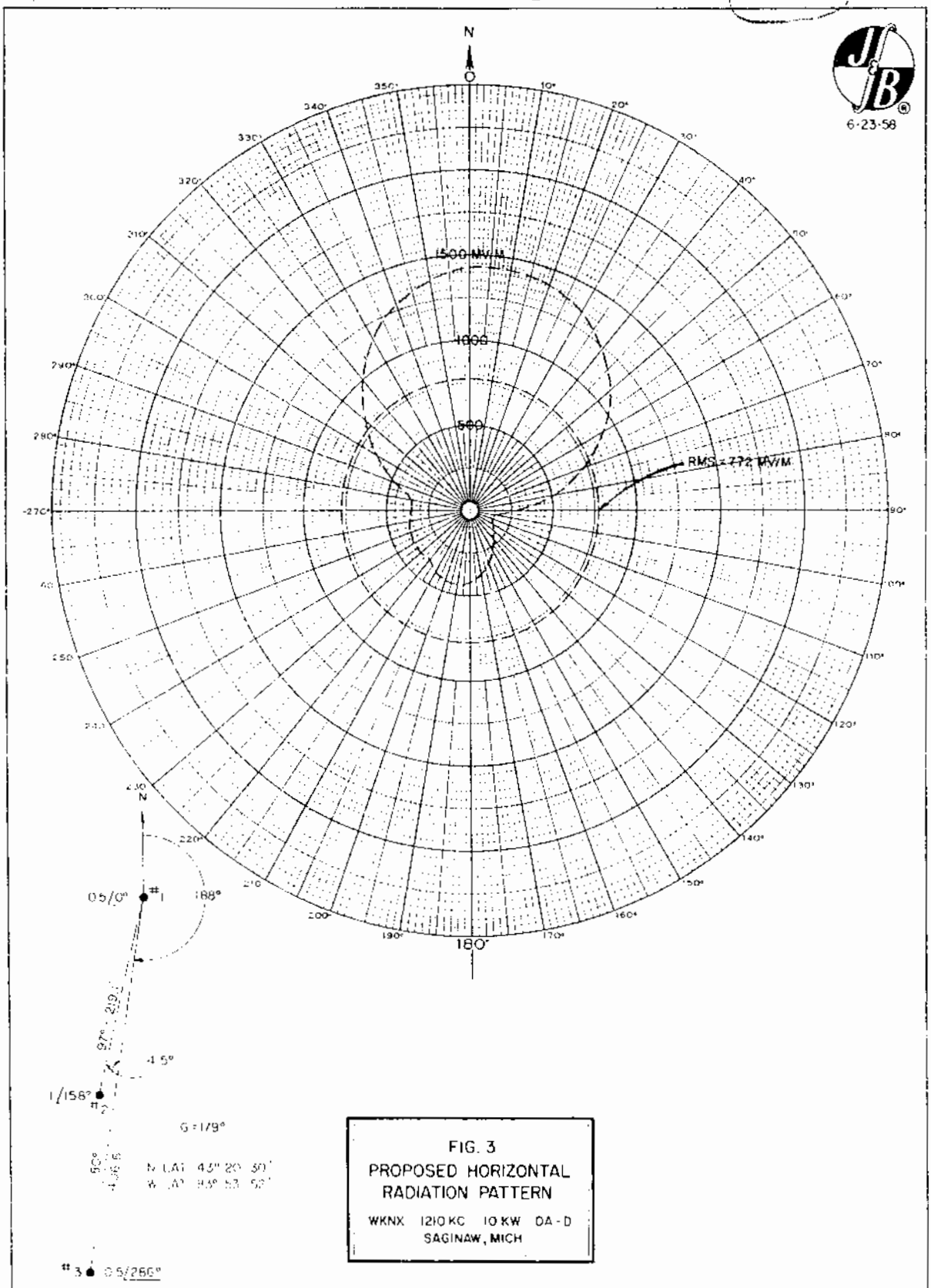


FIG. 3
PROPOSED HORIZONTAL
RADIATION PATTERN
WKNX 1210 KC 10 KW DA-D
SAGINAW, MICH

FCC File No. BP-11735
Accepted 7-25-58

WKNX
Saginaw, Michigan

1210 KC

WKNX
1210

PROPOSED DAY NULLS
(8-18-58g)

Station WKNX
Saginaw, Michigan

10kw, DA-D,D
1210 KC

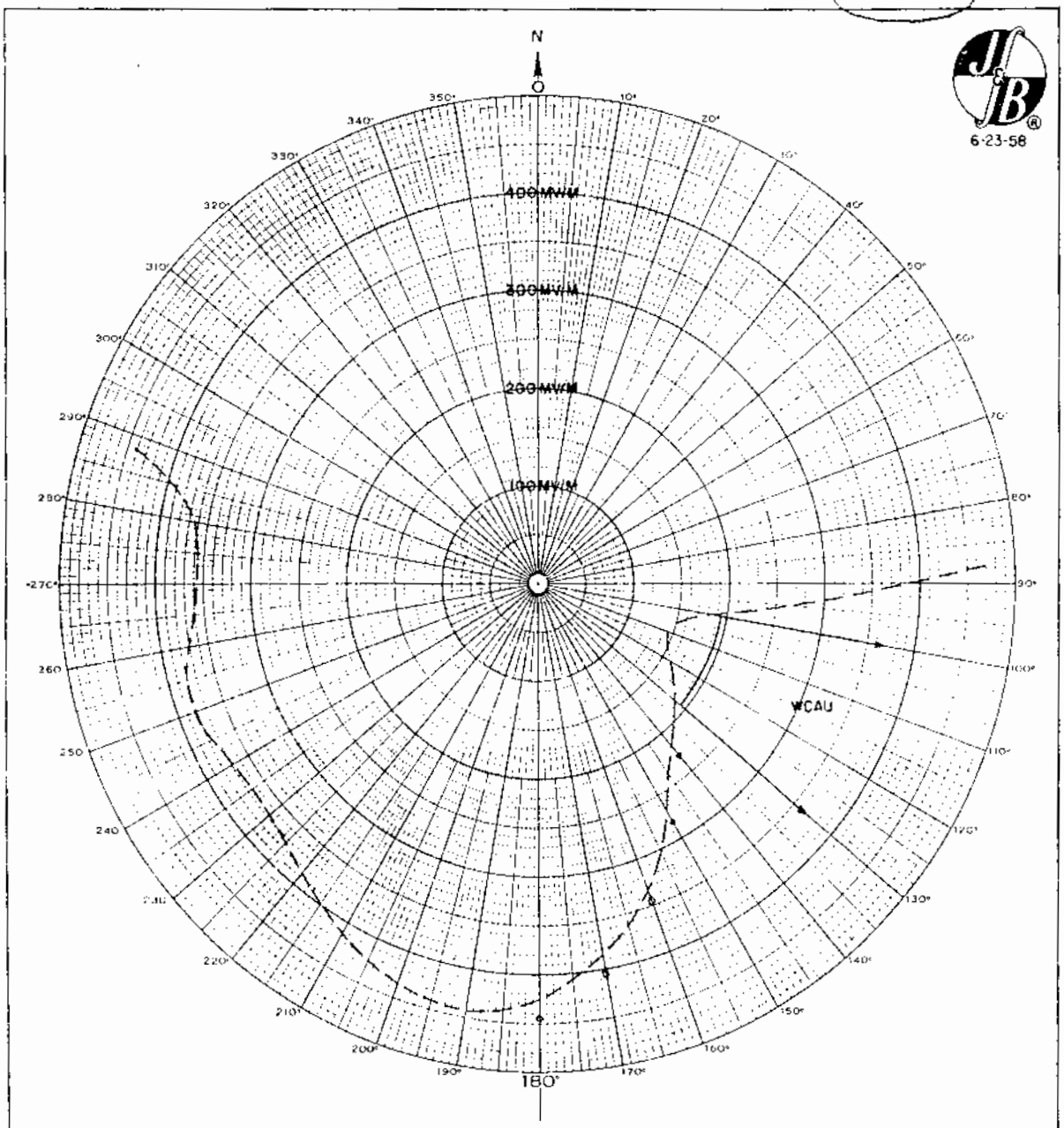


FIG. 4
PROPOSED HORIZONTAL
RADIATION PATTERN (DETAIL)
WKNX 1210 KC 10 KW DA-D
SAGINAW, MICH

FCC File No. BP-11735
Accepted 7-25-58

WKNX
Saginaw, Michigan

1210 KC

WKNX

MEASURED DAY
(1-29-60g)

Station WKNX
Saginaw, Michigan

10kw, DA-D,D
1210 KC

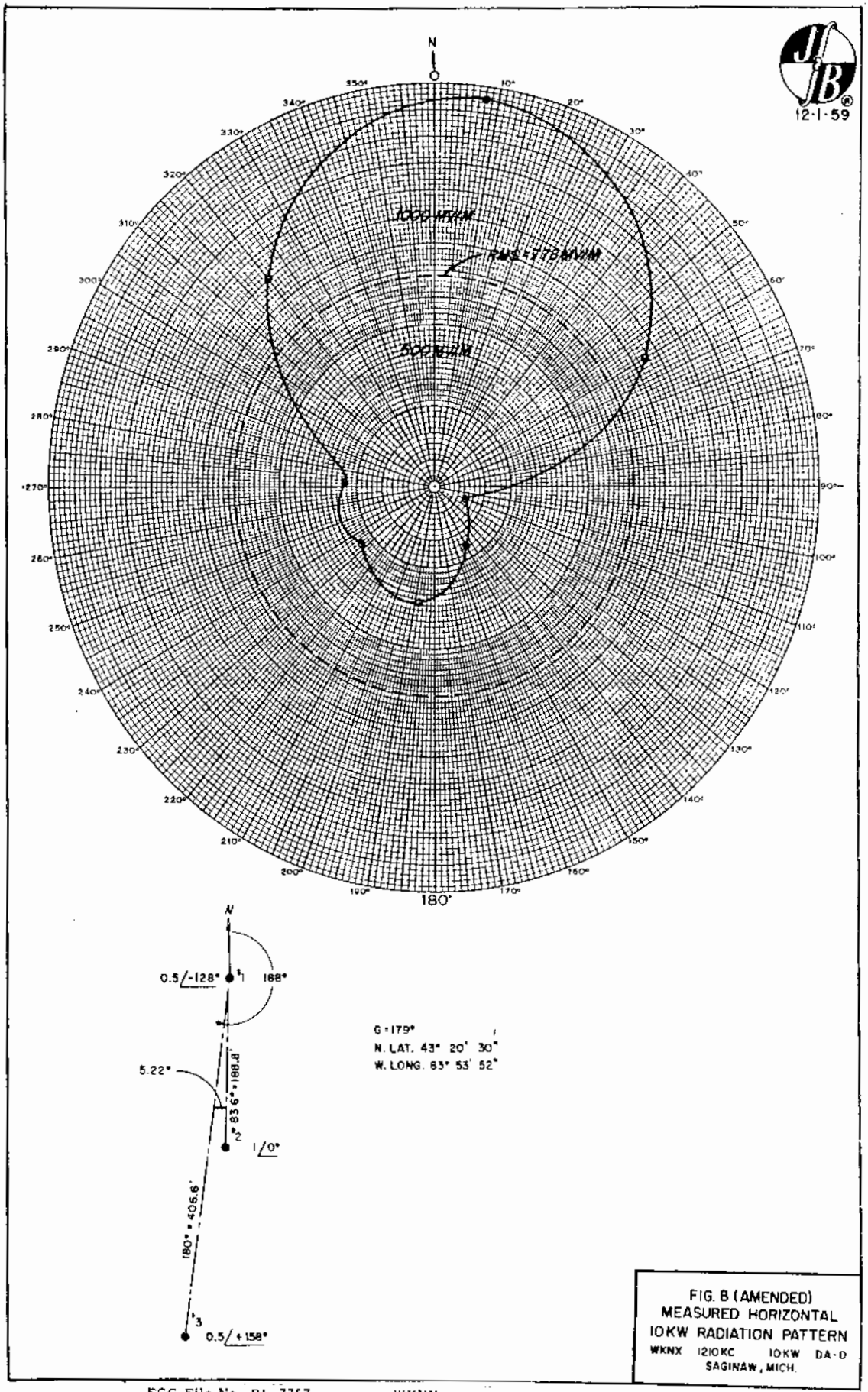


FIG. 8 (AMENDED)
MEASURED HORIZONTAL
10KW RADIATION PATTERN
WKNX 1210KC 10KW DA-D
SAGINAW, MICH.

FCC File No. BL-7757
Accepted 12-30-59

WKNX
Saginaw, Michigan

1210 KC

21

MEASURED NON-DA (1-29-60g) | Station WKNX, Saginaw, Michigan | 10kw, DA-D,D, 1210 KC

North Latitude 43° 20' 30''
West Longitude 83° 53' 52''

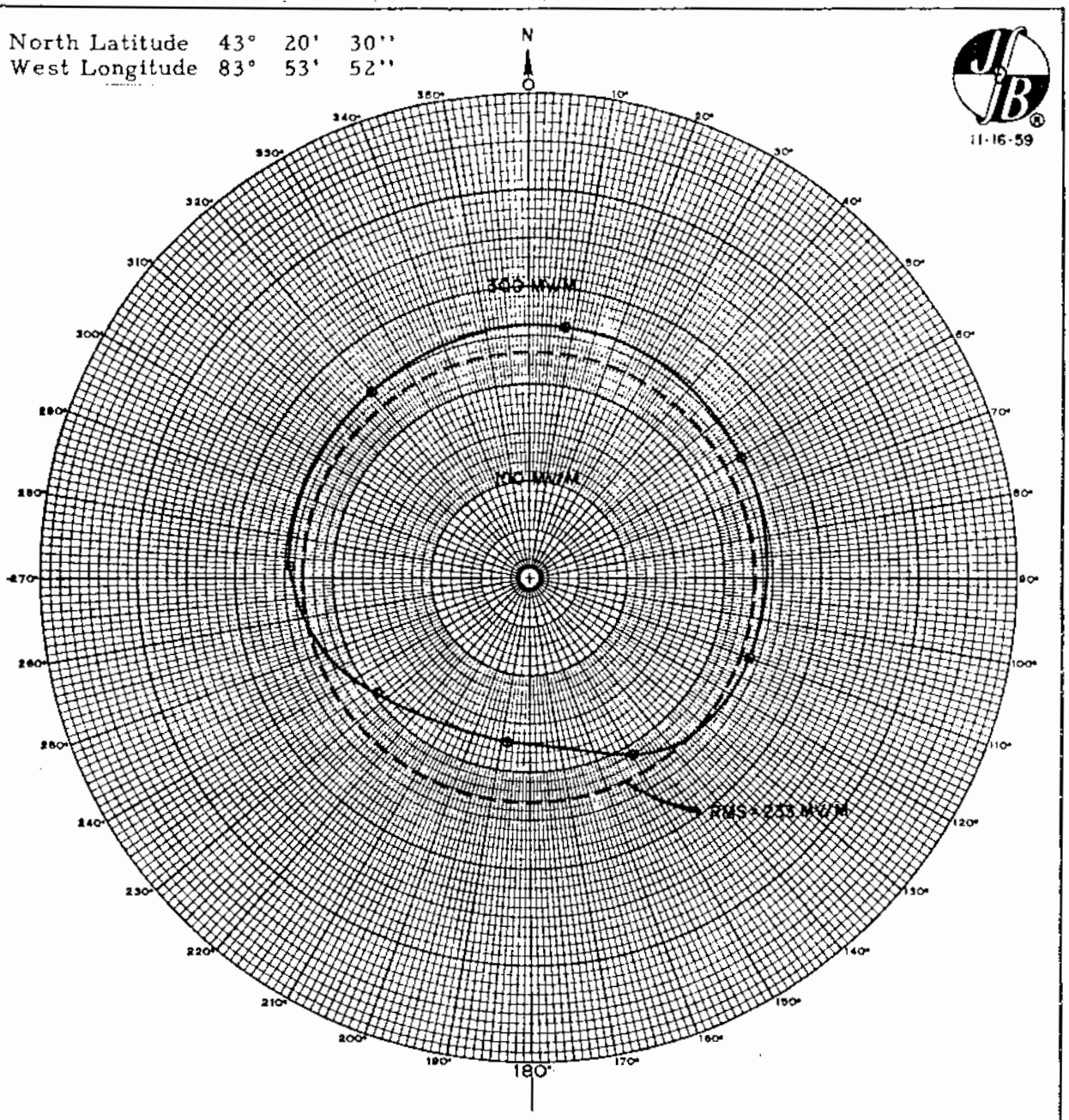


FIG. 7
MEASURED NON-DIRECTIONAL
HORIZONTAL 1 KW RADIATION PATTERN
WKNX 1210 KC 10 KW DA-D
SAGINAW, MICH.

FCC File No. BL-7757
Accepted 12-30-59
WKNX
Saginaw, Michigan
1210 KC