1380

Station	Main Studio	Freq	Power	Date
NEW	Calgary, AB	1380	50/25 kW/DA-2	8/29/80
CFDA	Victoriaville, QU	1380	10 kW/DA-2	6/4/76
CFDA	Victoriaville, QU	1380	1 kW/DA-N	1/27/72
CHLR	Moncton, NB	1380	10 kW/DA-N	6/12/81
CHLR	Moncton, NB	1380	10 kW/DA-1	2/20/80
CKLC	Kingston, ON	1380	10 kW/DA-2	2/5/73
CKLC	Kingston, ON	1380	5/10 kW/DA-2	2/22/71
CKPC	Brantford, ON	1380	10 kW/DA-2	5/15/70
NEW	Oromocto, ON	1380	10 kW/DA-1	6/28/68
KATO	Safford, AZ	1380	0.5/5 kW/DA-N	12/29/66
KKZZ	Lancaster, CA	1380	1 kW/DA-D	8/16/55
KCIM	Carroll, IA	1380	1 kW/DA-2	1/12/54
KCKO	Millwood, WA	1380	2.5/5 kW/DA-2	7/10/80
KCNW	Fairway, KS	1380	1/5 kW/DA-2	11/2/79
KFCB	Redfield, SD	1380	0.5 kW/DA-D	10/18/62
KGMS	Sacramento, CA	1380	5 kW/DA-D	11/2/79
KGMS	Sacramento, CA	1380	5 kW/DA-N	11/2/79
KGMS	Sacramento, CA	1380	1 kW/DA-2	9/30/57
KGMS	Sacramento, CA	1380	0.5 kW/DA-2	4/22/59
KLIZ	Brainerd, MN	1380	5 kW/DA-N	4/28/65
KMUS	Muskogee, OK	1380	0.5 kW	7/2/48
KOTA	Rapid City, SD	1380	5 kW/DA-N	5/1/44
KRKO	Everett, WA	1380	5 kW/DA-N	9/11/58
KSRV	Ontario, OR	1380	1 kW/DA-N	11/8/50
KSWO	Lawton, OK	1380	1 kW	8/3/45
KTOM	Salinas, CA	1380	5 kW/DA-2	12/16/55

1380

Station	Main Studio	Freq	Power	Date
KUDL	Fairway, KS	1380	0.5/5 kW/DA-2	4/22/60
KWK	Saint Louis, MO	1380	1/5 kW/DA-2	7/20/76
KWK	Saint Louis, MO	1380	5 kW/DA-N	9/62
KWK	Saint Louis, MO	1380	1/5 kW/DA-2	1/12/78
WAMS	Wilmington, DE	1380	1/5 kW/DA-3	8/17/59
WAMS	Wilmington, DE	1380	1 kW/DA-1	7/22/50
WAOK	Atlanta, GA	1380	5 kW/DA-N	9/14/48
WAWZ	Zarephath, NJ	1380	5 kW/DA-2	3/2/51
WBBX	Portsmouth, NH	1380	1 kW/DA-N	4/60
WBEL	South Beloit, IL	1380	5 kW/DA-N	12/29/65
WBEL	South Beloit, IL	1380	5 kW/DA-2	5/15/56
WBIC	New Bern-James City, NC	1380	5 kW/DA-N	1/12/77
WBNX	New York, NY	1380	5 kW/DA-1	9/12/40
WBZI	Brazil, IN	1380	0.5 kW/DA-D	1/29/60
WDAT	Ormond Beach, FL	1380	2.5 kW/DA-2	5/76
WDAT	Ormond Beach, FL	1380	2.5/5 kW/DA-2	9/8/76
WIZO	Franklin, TN	1380	5 kW/DA-D	3/19/76
WKKE	Asheville, NC	1380	1/5 kW/DA-N	1/7/52
WLCY	St. Petersburg, FL	1380	5 kW/DA-N	8/14/74
WMEE	Fort Wayne, IN	1380	5 kW/DA-2	3/72
WOWW	Naugatuck, CT	1380	0.5/5 kW/DA-2	9/9/69
WPHM	Port Huron, MI	1380	5 kW/DA-2	10/2/74
WPKO	Waverly, OH	1380	1 kW/DA-D	6/28/54
WPLB	Greenville, MI	1380	0.5/1 kW/DA-N	9/16/65
WSYB	Rutland, VT	1380	5/1 kW/DA-N	3/21/69
WTOB	Winston-Salem, NC	1380	1 kW/DA-1	9/18/50

1380

Station	Main Studio	Freq	Power	Date
WTVR	Richmond, VA	1380	5 kW/DA-2	8/10/77
WTVR	Richmond, VA	1380	5 kW/DA-N	5/41
WYNK	Baton Rouge, LA	1380	5 kW/DA-D	7/29/70
NEW	St. Louis, MO	1380	5 kW/DA-2	11/17/65
KWK	St. Louis, MO	1380	5 kW/DA-N	1/28/66

1380KHz

PROJECT #10717

DESCRIPTION SHEET - DIRECTIONAL ANTENNA

STATION: NEW

MAIN STUDIO: Calgary, Alberta

FREQUENCY: 1380 kHz

POWER: 50 kW D/25 kW N CLASS: III

NOTIFICATION LIST NO: 398

DATE: August 29, 1980

GEOGRAPHICAL LOCATION:

Latitude 50° 54' 04" North
Longitude 114° 12' 40" West

ANTENNA CHARACTERISTICS

Mode of Operation: DA-2
Number of Elements: 4 (Four)
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:	178' (90°)	178' (90°)	178' (90°)	178' (90°)
Overall Height:	183'	[illegible]	183'	183'
Day Field Ratio:	1.0	1.0	0.5	- -
Day Phasing:	Ref.	-89°	135°	- -
Night Field Ratio:	.431	1.0	1.0	.431
Night Phasing	Ref.	-123.5°	104.5°	-18.6°
Spacing:	Ref.	178.3' (90°)	356.6' (180°)	534.9' (270°)
Orientation:	Ref.	39.5°	39.5°	39.5°

GROUND SYSTEM: 120 equally spaced radials per tower of No. 10 B & S gauge bare soft copper wire, buried approximately 8". Maximum length of radials is 285' (0.4 wavelength) with the exception of those joined along the common chords.

PROTECTED RADIATIVE FIELD:

Nighttime: 1030 mV/m at 1 mile for 25 kW
207 mV/m at 1 mile for 1 kW

Daytime: 1358 mV/m at 1 mile for 50 kW
192 mV/m at 1 mile for 1 kW

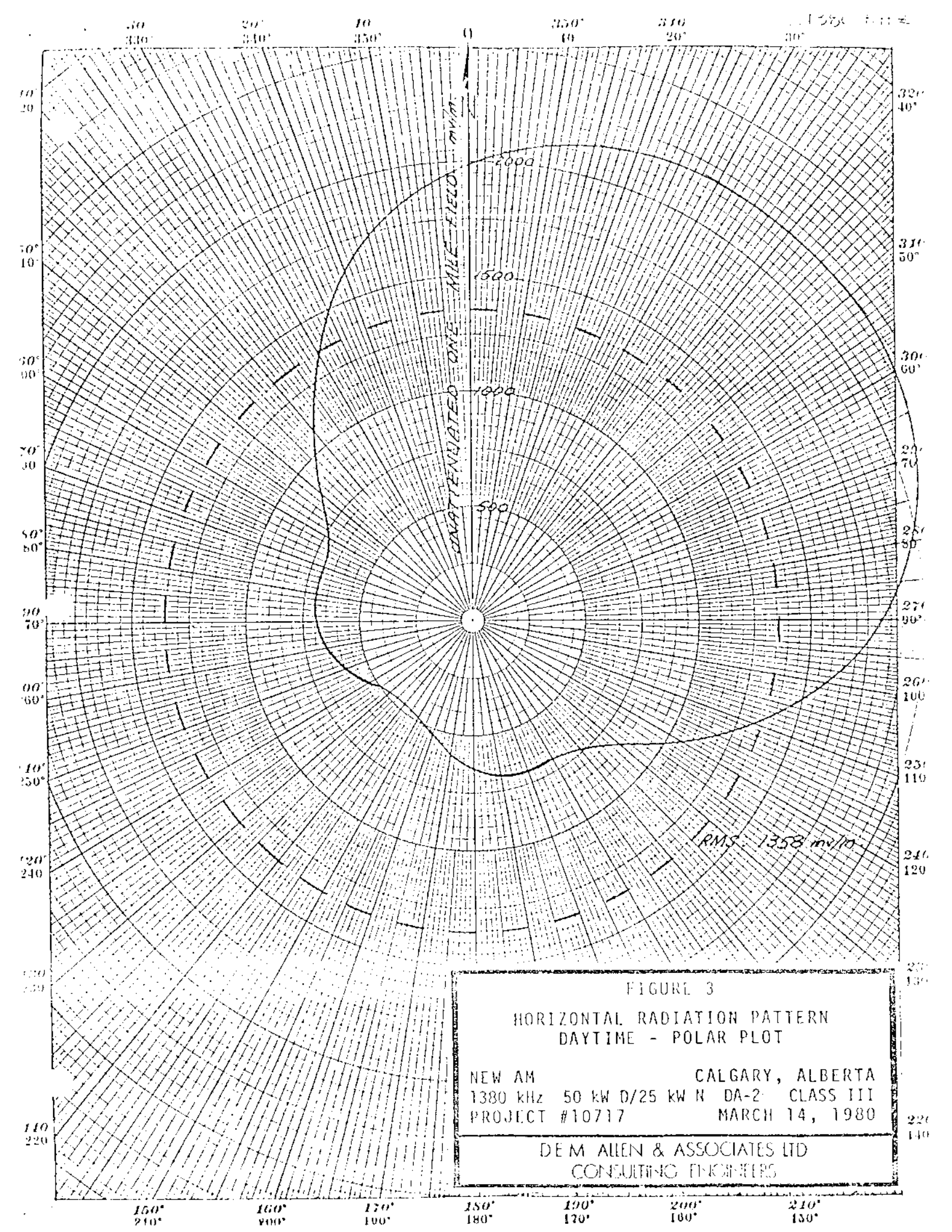


FIGURE 3

HORIZONTAL RADIATION PATTERN
DAYTIME - POLAR PLOT

NEW AM — CALGARY, ALBERTA
1380 kHz 50 kW D/25 kW N DA-2 CLASS III
PROJECT #10717 — MARCH 14, 1980

D E M ALLEN & ASSOCIATES LTD
CONSULTING ENGINEERS

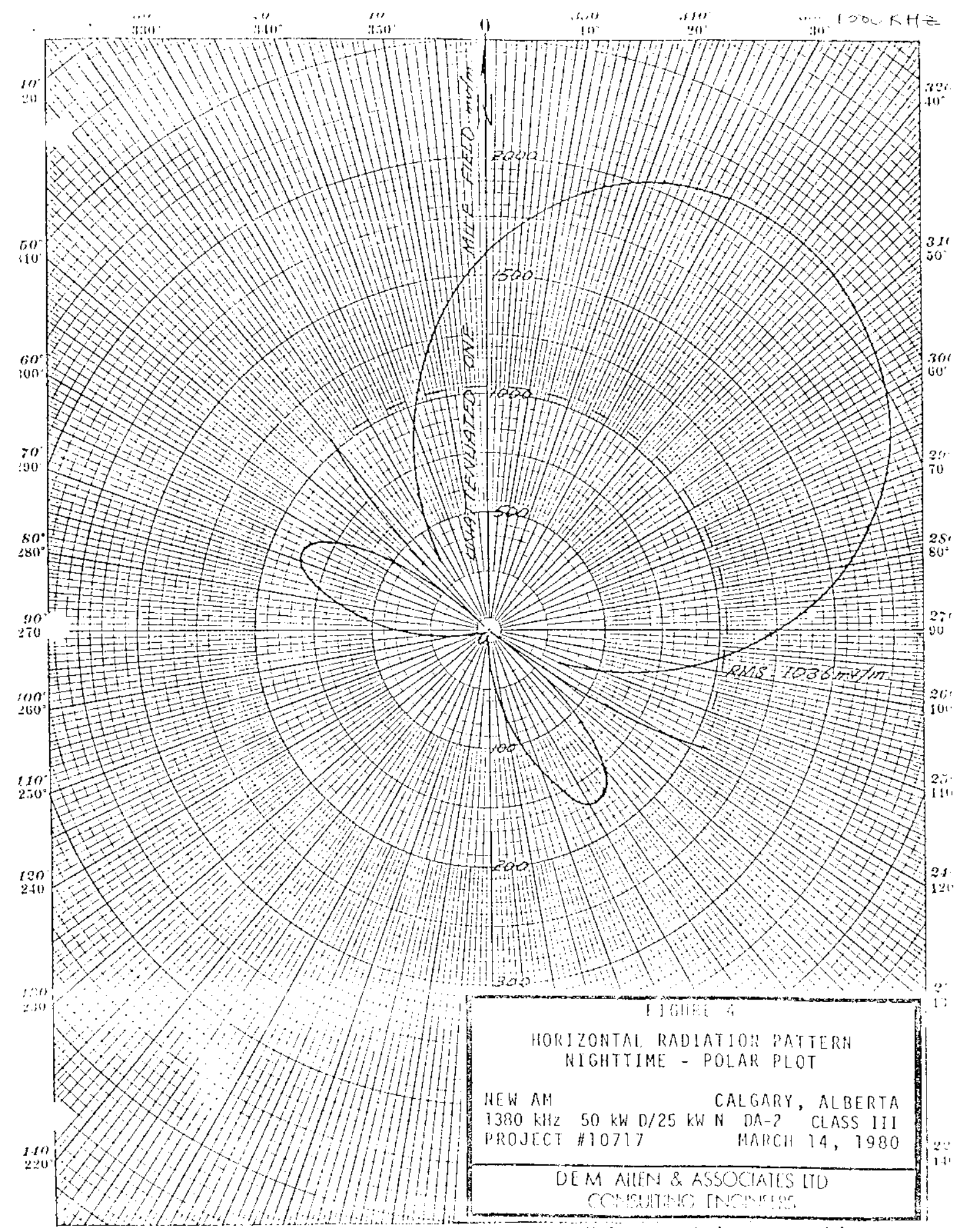
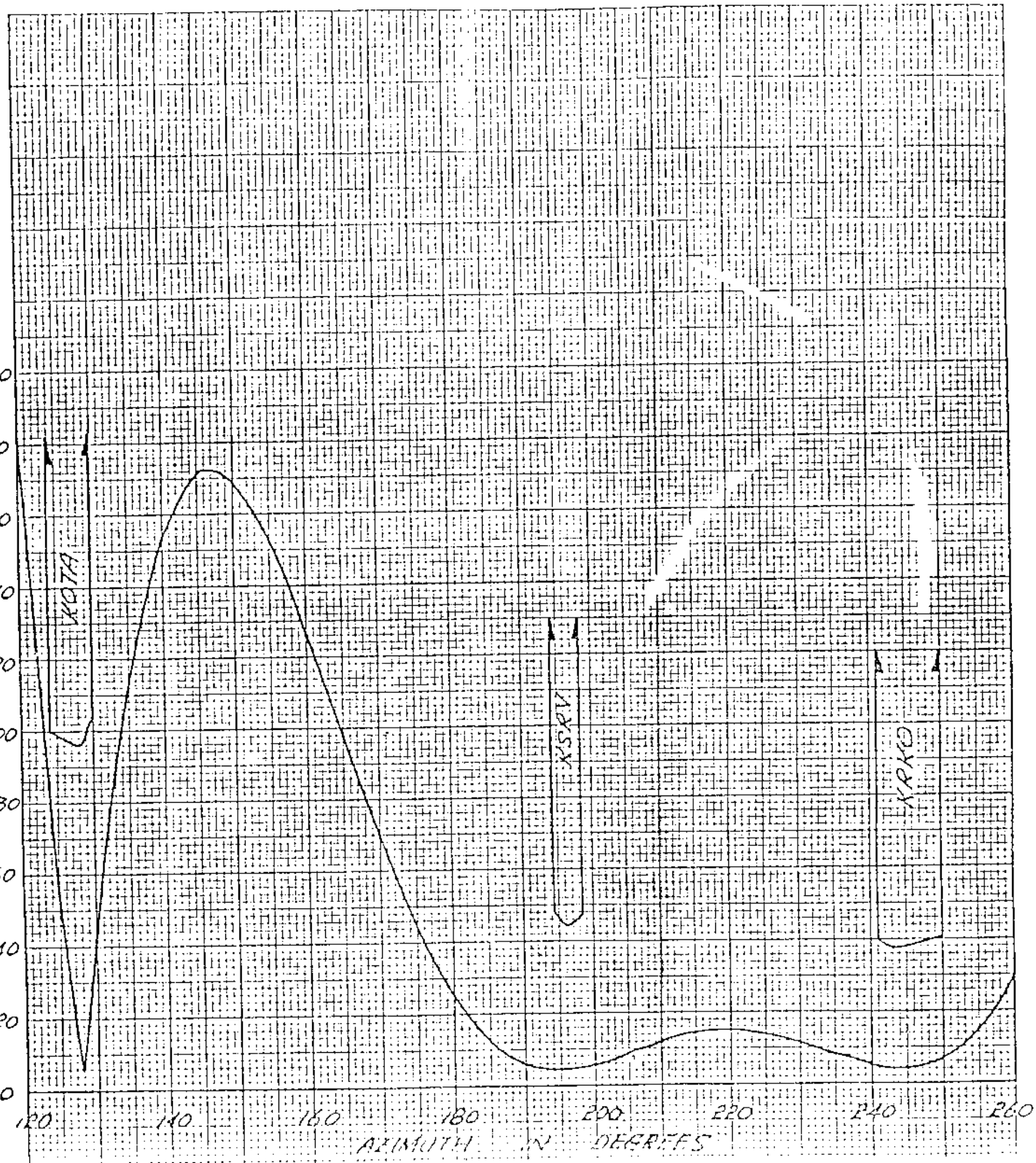


FIGURE 4

HORIZONTAL RADIATION PATTERN
NIGHTTIME - POLAR PLOT

NEW AM — CALGARY, ALBERTA
1380 kHz 50 kW D/25 kW N DA-2 CLASS III
PROJECT #10717 — MARCH 14, 1980

D E M ALLEN & ASSOCIATES LTD
CONSULTING ENGINEERS



46 1323

KEUFFEL & ESSER CO. MADE IN U.S.A. 10 X 10 TO ½ INCH 7 X 10 INCHES

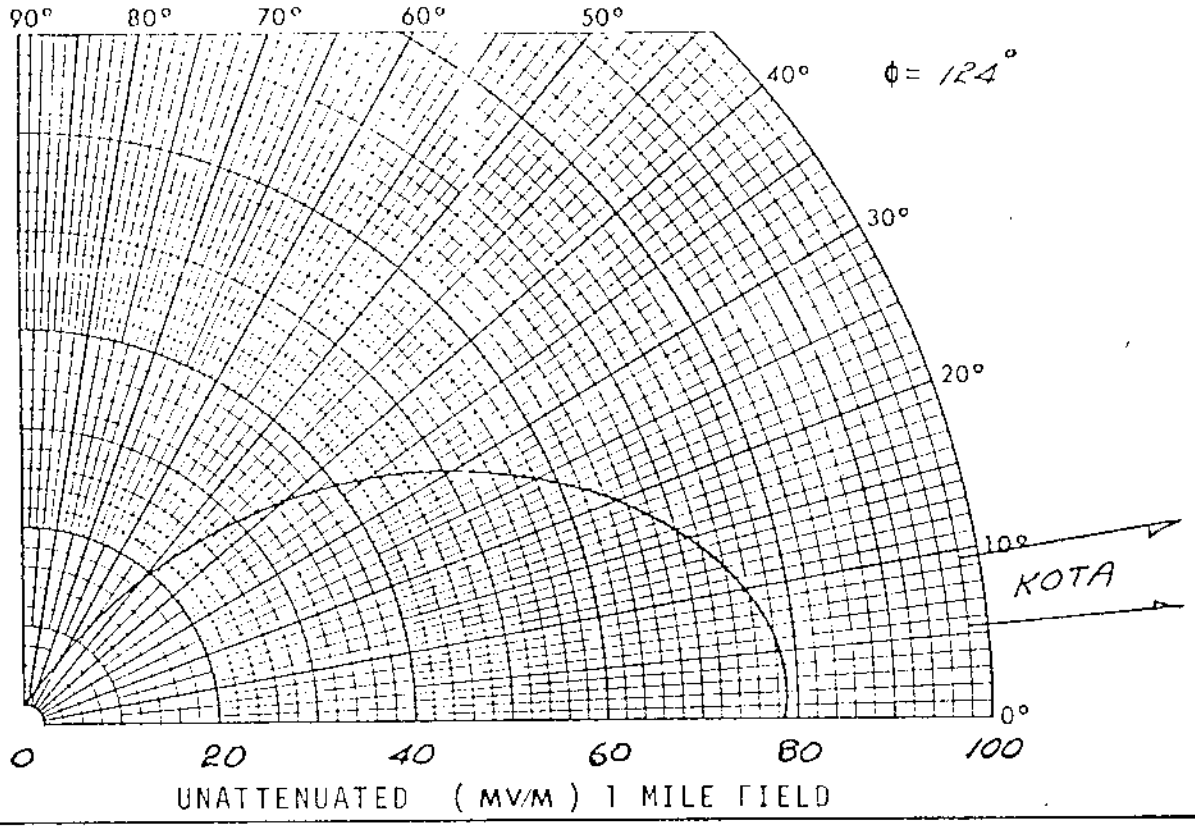
FIGURE 5

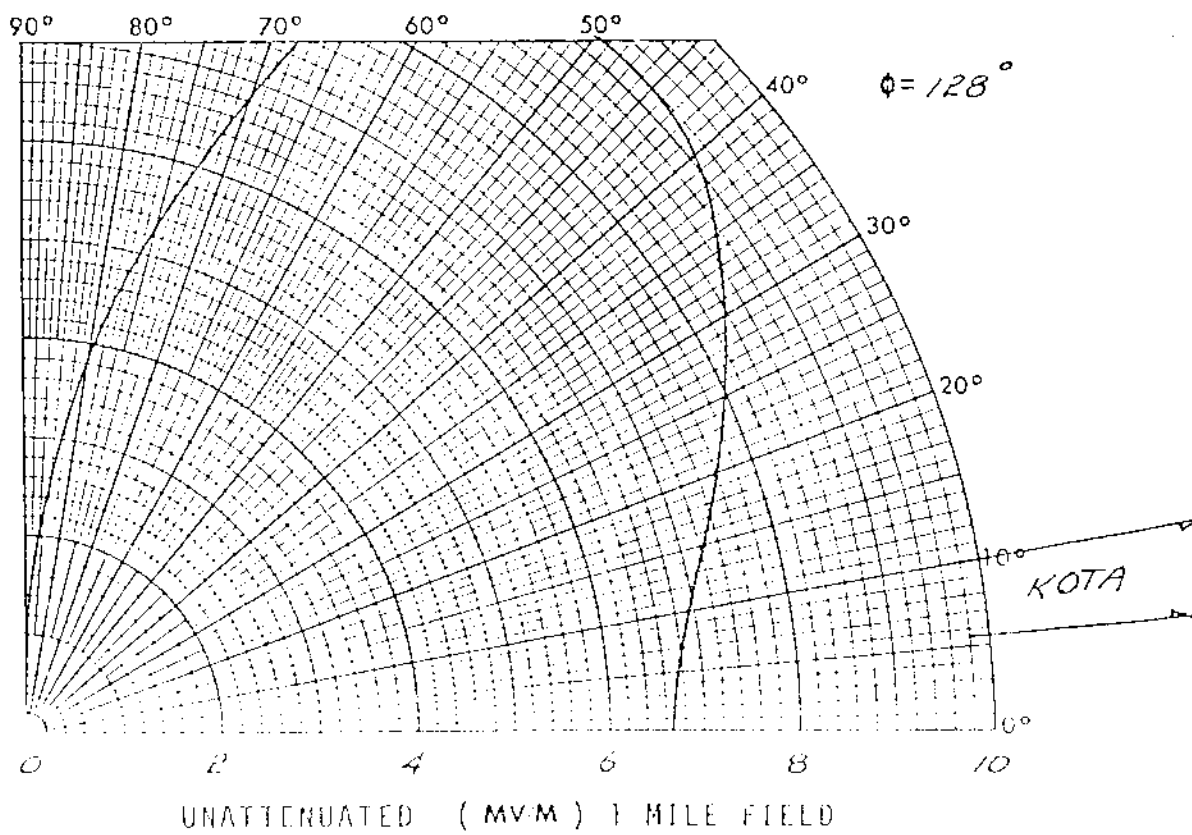
HORIZONTAL RADIATION PATTERN
NIGHTTIME - EXPANDED PLOT

NEW AM CALGARY, ALBERTA
1380 kHz 50 kW D/25 kW N DA-2 CLASS III
PROJECT #10717 MARCH 14, 1980

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

1380 KHz





VERTICAL RADIATION PATTERNS

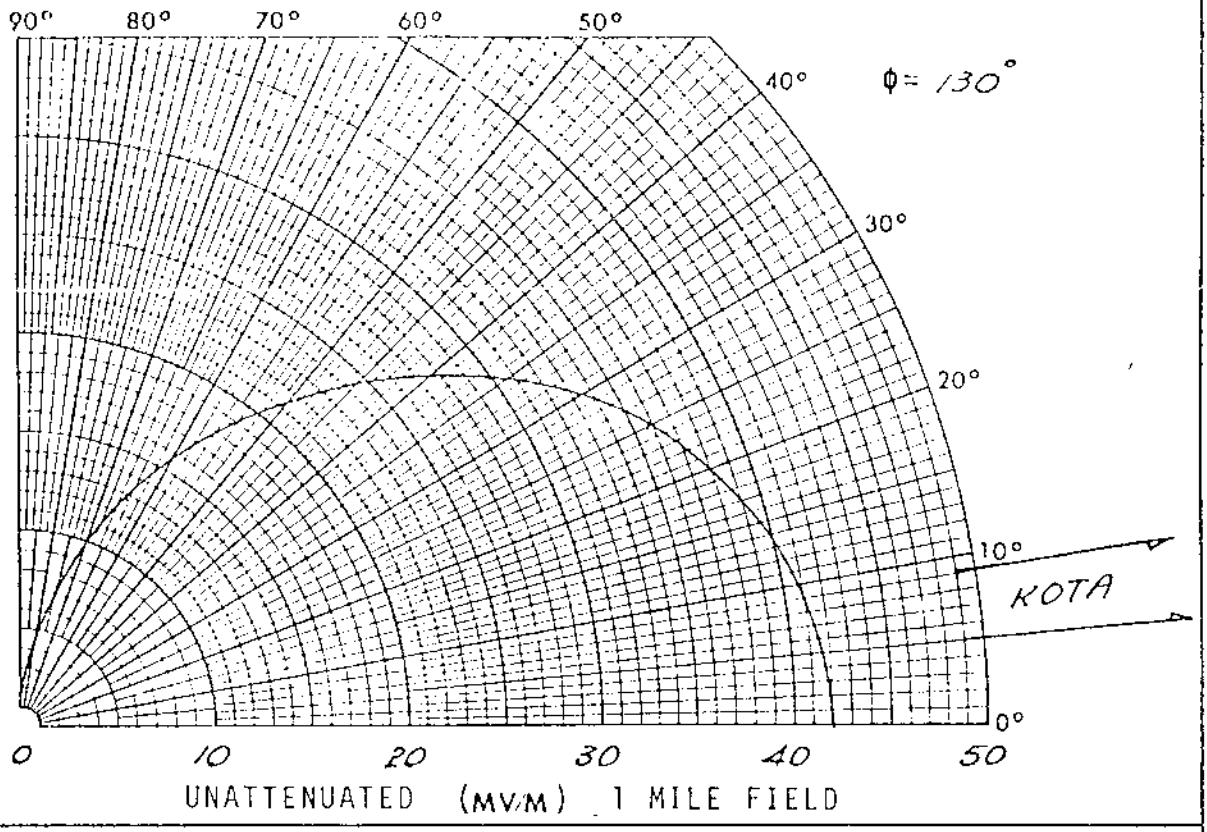
FIGURE 6

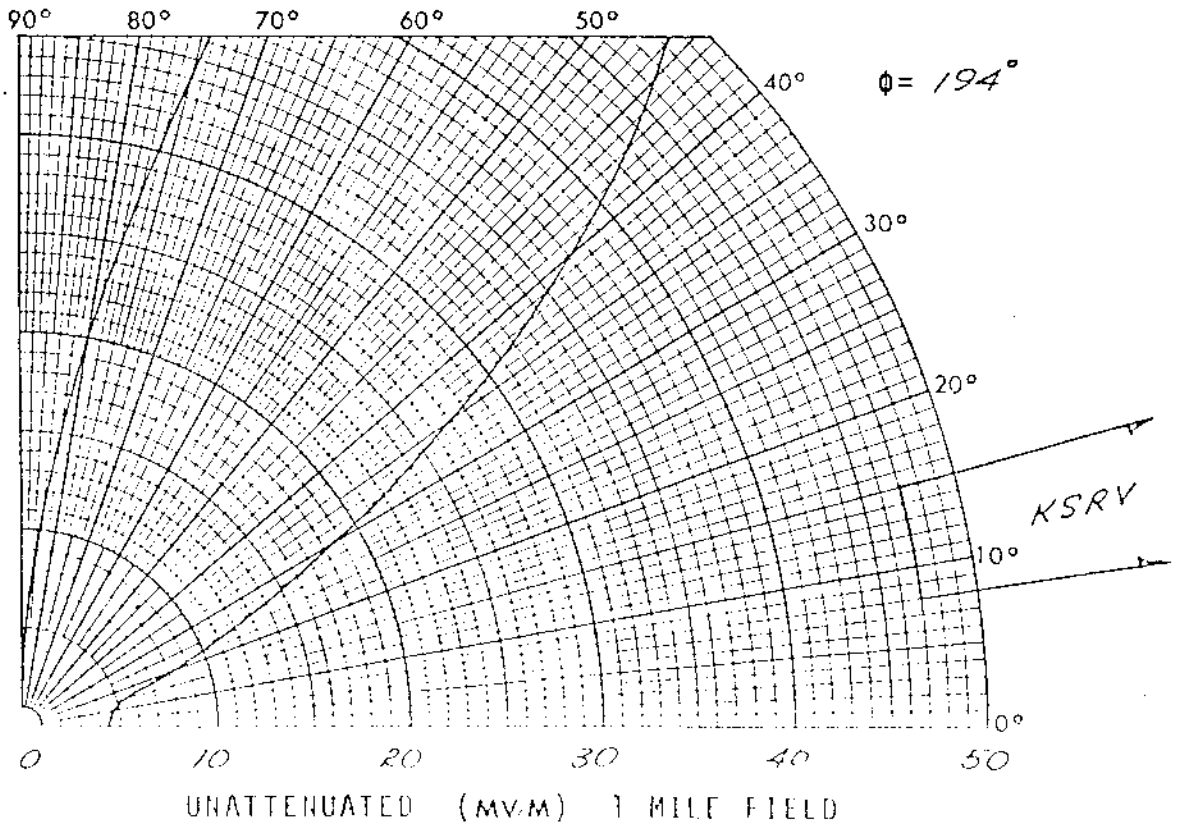
NEW AM
1380 kHz 50 kW D/25 kW N DA-2
PROJECT #10717

CALGARY, ALBERTA
CLASS III
MARCH 14, 1980

D.L.M. ALLEN & ASSOCIATES LTD., CONSULTING ENGINEERS

1380 KHz





VERTICAL RADIATION PATTERNS

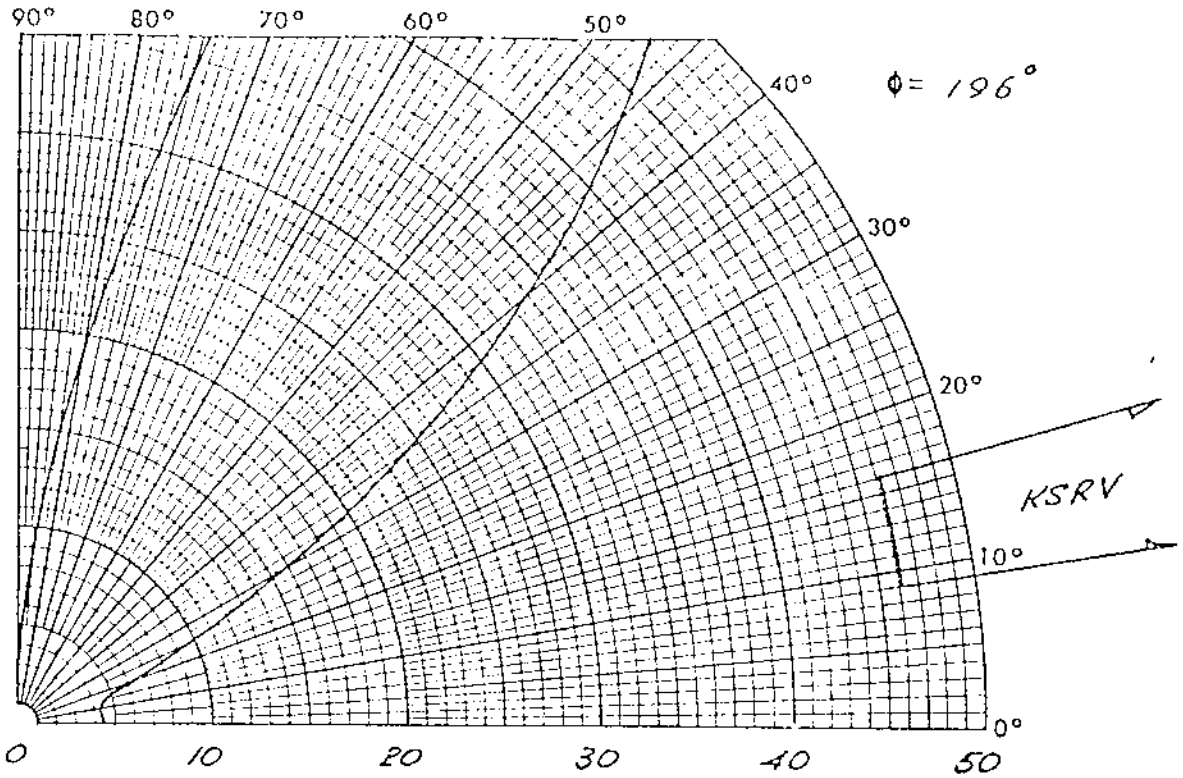
FIGURE 7

NEW AM
1380 kHz 50 kW D/25 kW N DA-2
PROJECT #10717

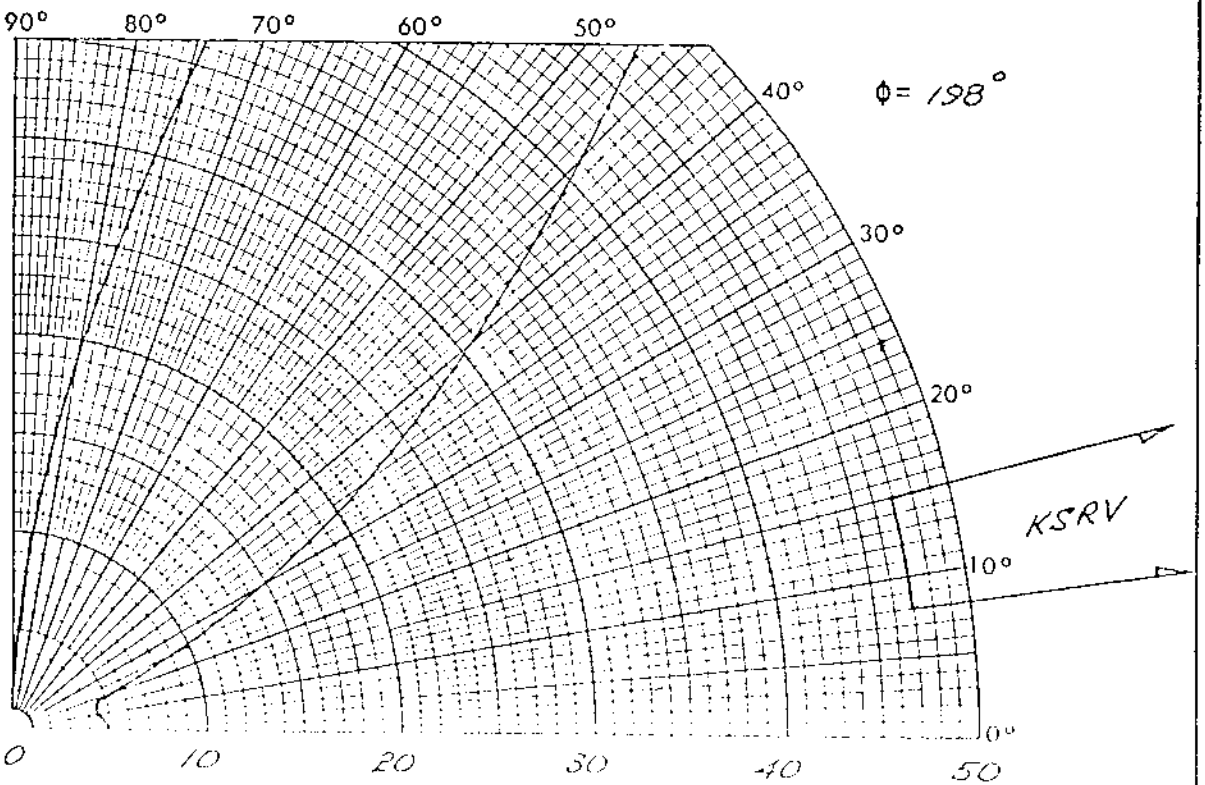
CALGARY, ALBERTA
CLASS III
MARCH 14, 1980

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

1380 KHz



UNATTENUATED (MV/M) 1 MILE FIELD



UNATTENUATED (MV/M) 1 MILE FIELD

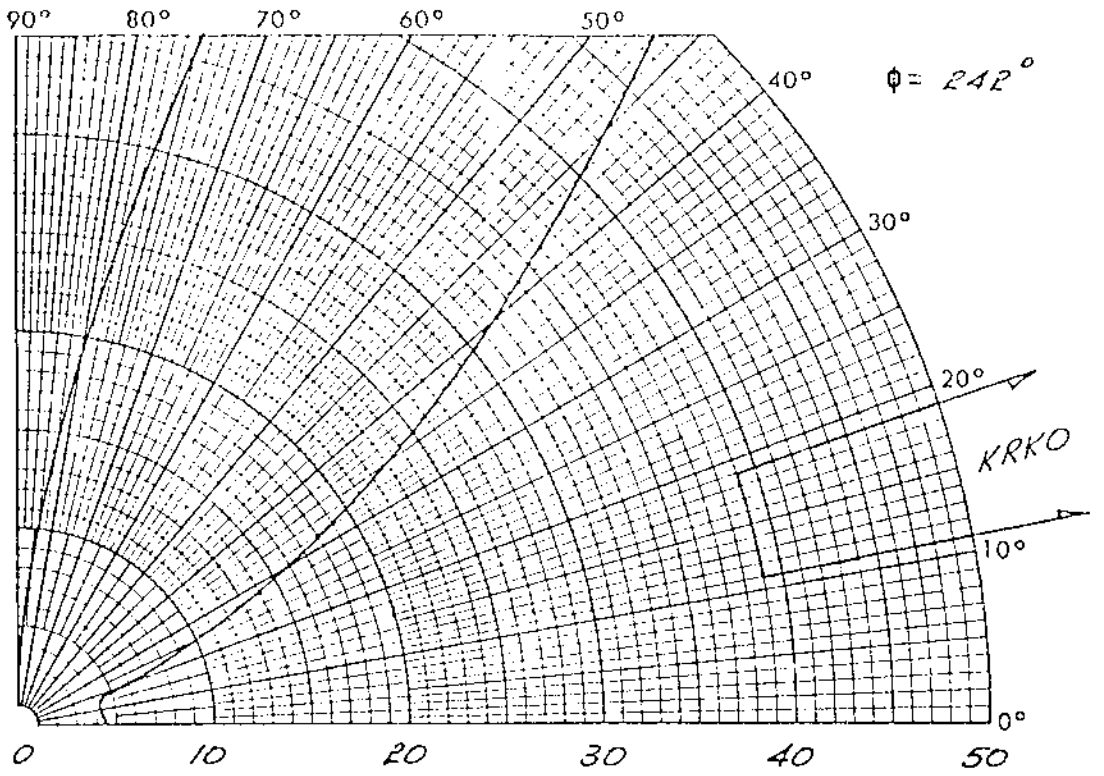
VERTICAL RADIATION PATTERNS

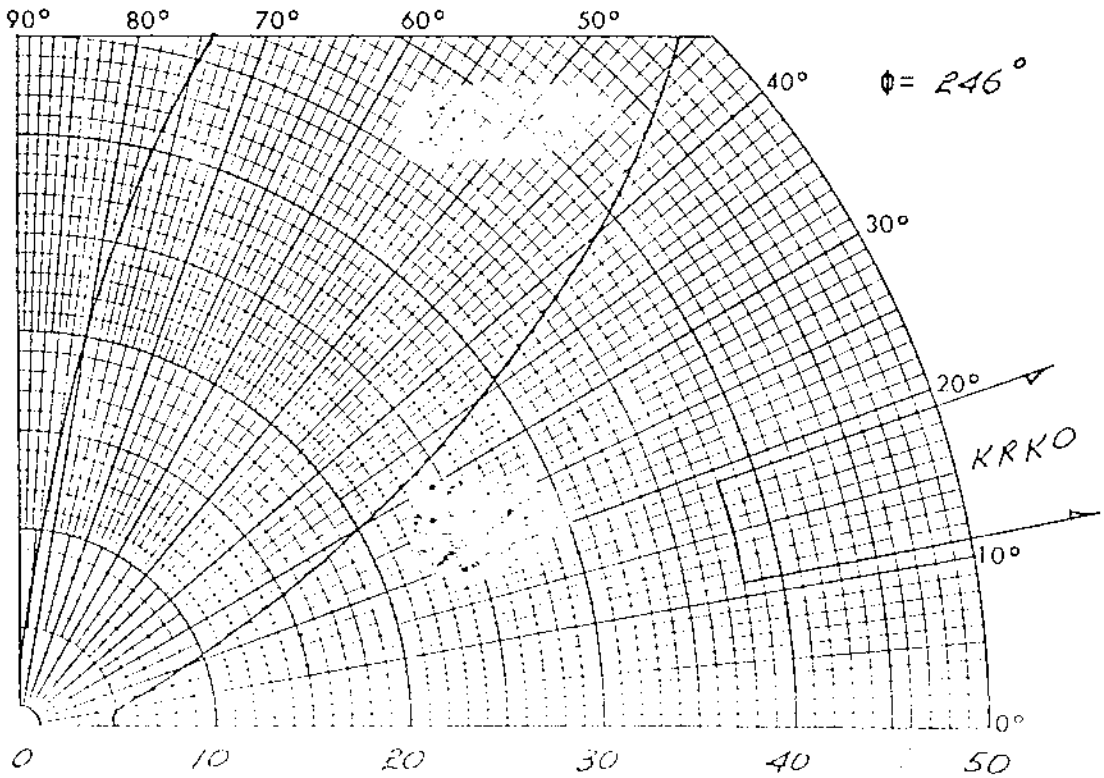
FIGURE 8

NEW AM
1380 kHz 50 kW D/25 kW N DA-2
PROJECT #10717

CALGARY, ALBERTA
CLASS III
MARCH 14, 1980

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





VERTICAL RADIATION PATTERNS

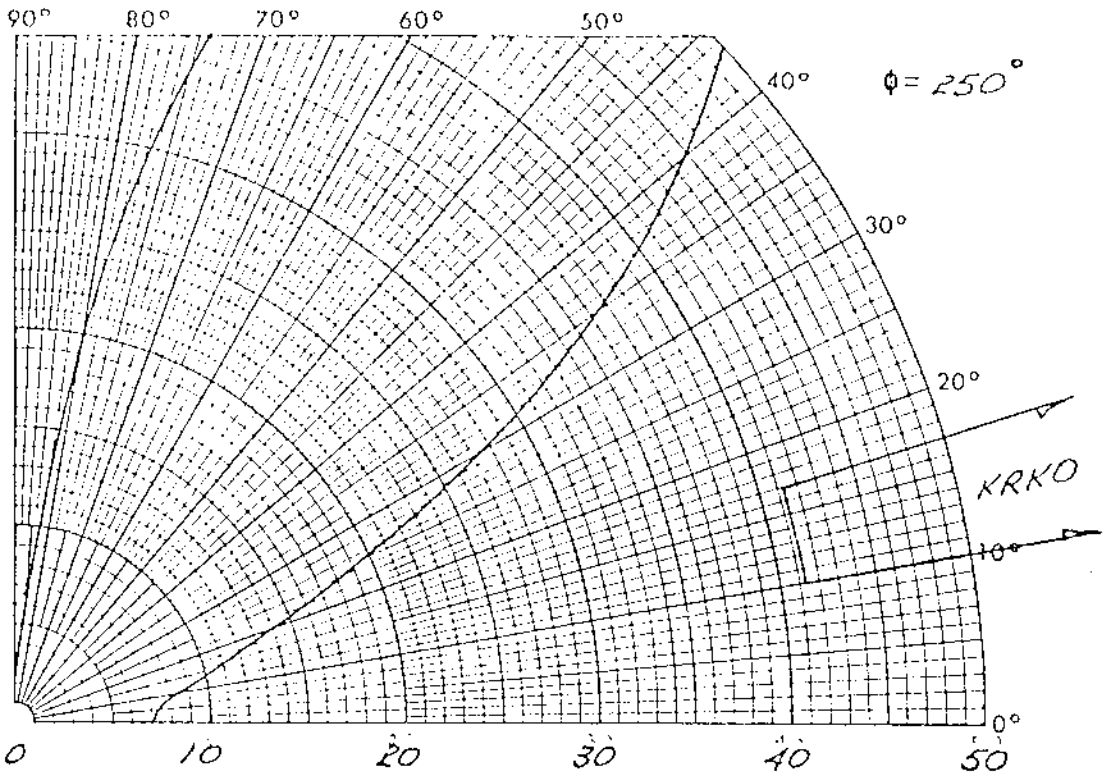
FIGURE 9

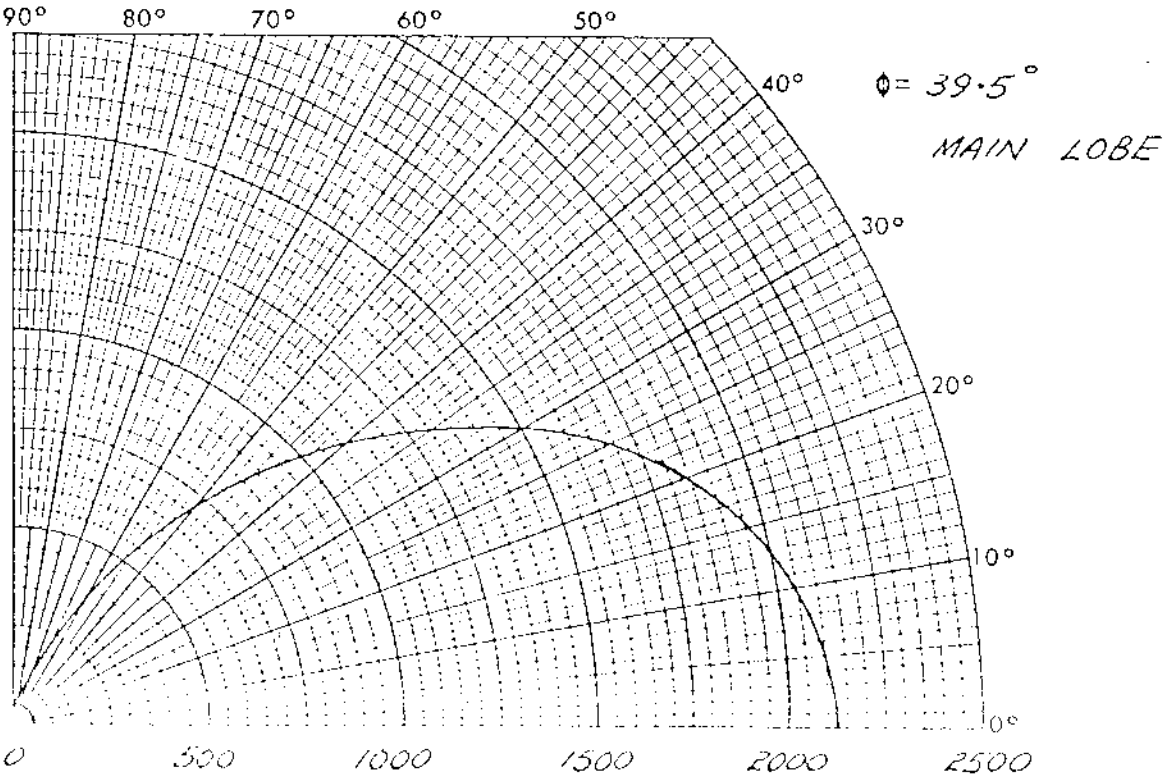
NEW AM
1380 kHz 50 kW D/25 kW N DA-2
PROJECT #10717

CALGARY, ALBERTA
CLASS III
MARCH 14, 1980

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

1380 kHz





VERTICAL RADIATION PATTERNS

FIGURE 10

NEW AM
1380 kHz 50 kW D/25 kW N DA-2
PROJECT #10717

CALGARY, ALBERTA
CLASS III
MARCH 14, 1980

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

CFDA

I - DESCRIPTION DU SYSTEME A ANTENNE DIRECTIONNELLE

1. LETTRES D'APPEL: CFDA.

2. EMPLACEMENT: Victoriaville, Qué.

3. FREQUENCE: 1380 KHz.

4. PUISSANCE: 10 KW jour et nuit.

5. CLASSE: III.

6. NOTIFICATION NO: 355 DATE: June 4, 1976

7. COORDONNEES: Latitude nord: 46° 09' 27"

Longituxe ouest: 72° 01' 58"

8. SYSTEME D'ANTENNE:

a) Fonctionnement: directionnel AD-2.

b) Type: trois (3) éléments à section triangulaire, haubanés et alimentés en série.

c) Mise à la terre: 120 fils #10 espacés également, d'une longueur équivalente à 0.4λ avec courroies d'interconnexion, le tout enfoui à environ 3" sous la surface.

9. MATS D'ANTENNE:

		#1 (SO)	#2 (C)	#3 (NE)
Orientation (Az):		Ref.	35.0°	35.0°
Hauteur au-dessus de l'isolateur:		91.0°	91.0°	91.0° (180')
Espacement:		Ref.	70°	140°
Phasage:	Jour:	0.0°	-113.0°	-
	Nuit:	100.0°	0.0°	-100.0°
Rapport d'intensité de champ:	Jour:	1.000	0.660	-
	Nuit:	0.450	1.000	0.600

10. EFFICACITE REQUISE:

a) Jour: 595.1 mV/m à 1 mille pour 10 KW.

198.3 mV/m à 1 mille pour 1 KW.

b) Nuit: 600.9 mV/m à 1 mille pour 10 KW.

192.9 mV/m à 1 mille pour 1 KW.

YVES R. HAMEL
INGENIEUR-CONSEIL

CFDA

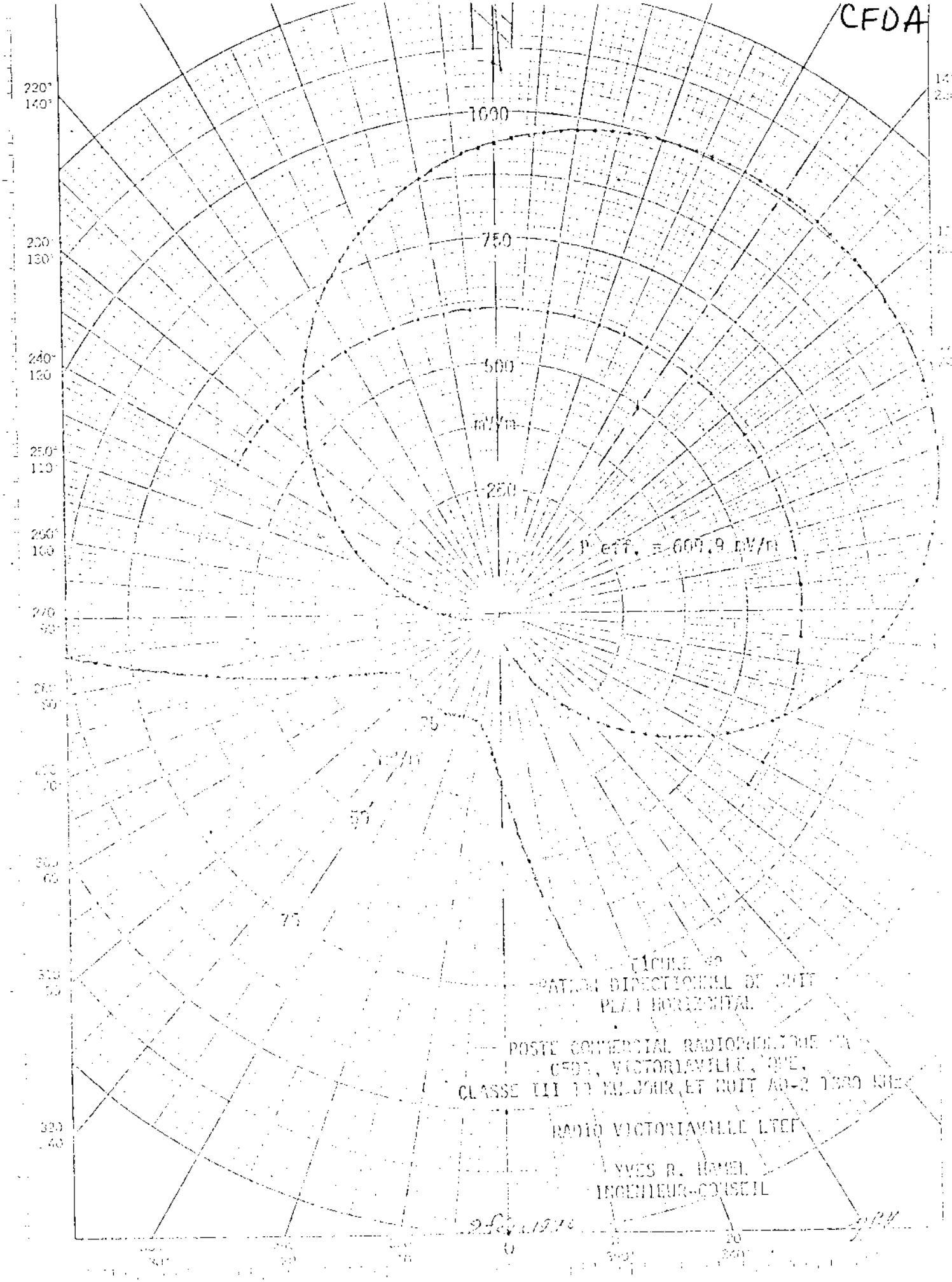


FIGURE #2
RADIATION DIRECTIONNELLE DE JOUR
PLAN HORIZONTAL

POSTE COMMERCIAL RADIODIFFUSION
CFDA, VICTORIAVILLE, QUE.
CLASSE III 10 KILOWATTS JOUR ET NUIT AM-2 1280 KHz

RADIO VICTORIAVILLE LTEE

YVES B. HAMEL
INGENIEUR-CONSEIL

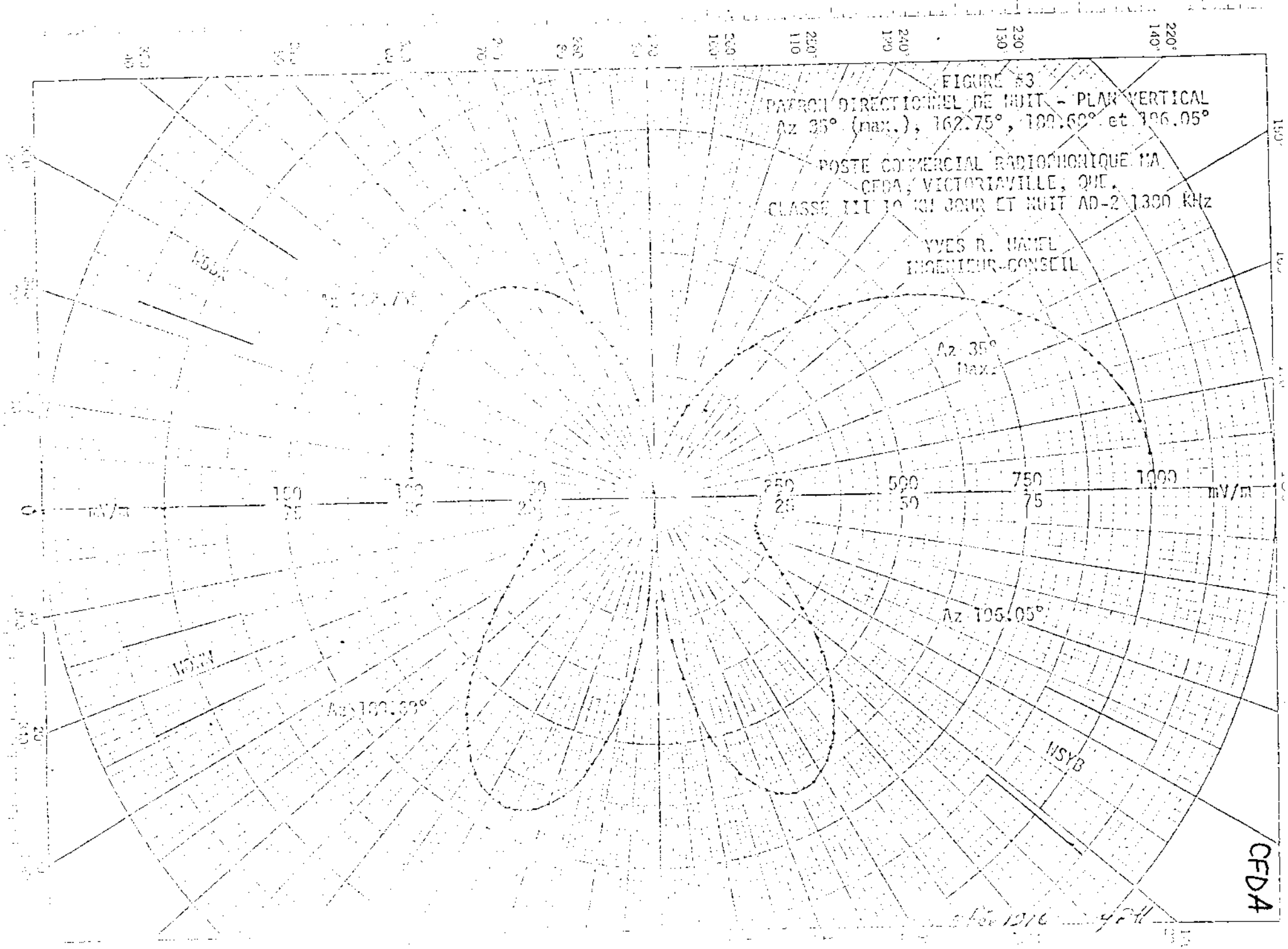


FIGURE #3
PATRON DIRECTIONNEL DE NUIT - PLAN VERTICAL
Az 35° (max.), 162.75°, 199.60° et 306.05°
POSTE COMMERCIAL RADIOPHONIQUE MA
CFDA, VICTORIAVILLE, QUE.
CLASSE III 10 KW JOUR ET NUIT AD-2 1380 KHz
YVES R. MAHEL
INGENIEUR-CONSEIL
Az 35°
Max.
Az 162.75°
Az 199.60°
Az 306.05°
MSYA
MSYB
MSYC
MSYD
250
500
750
1000
mV/m
CFDA

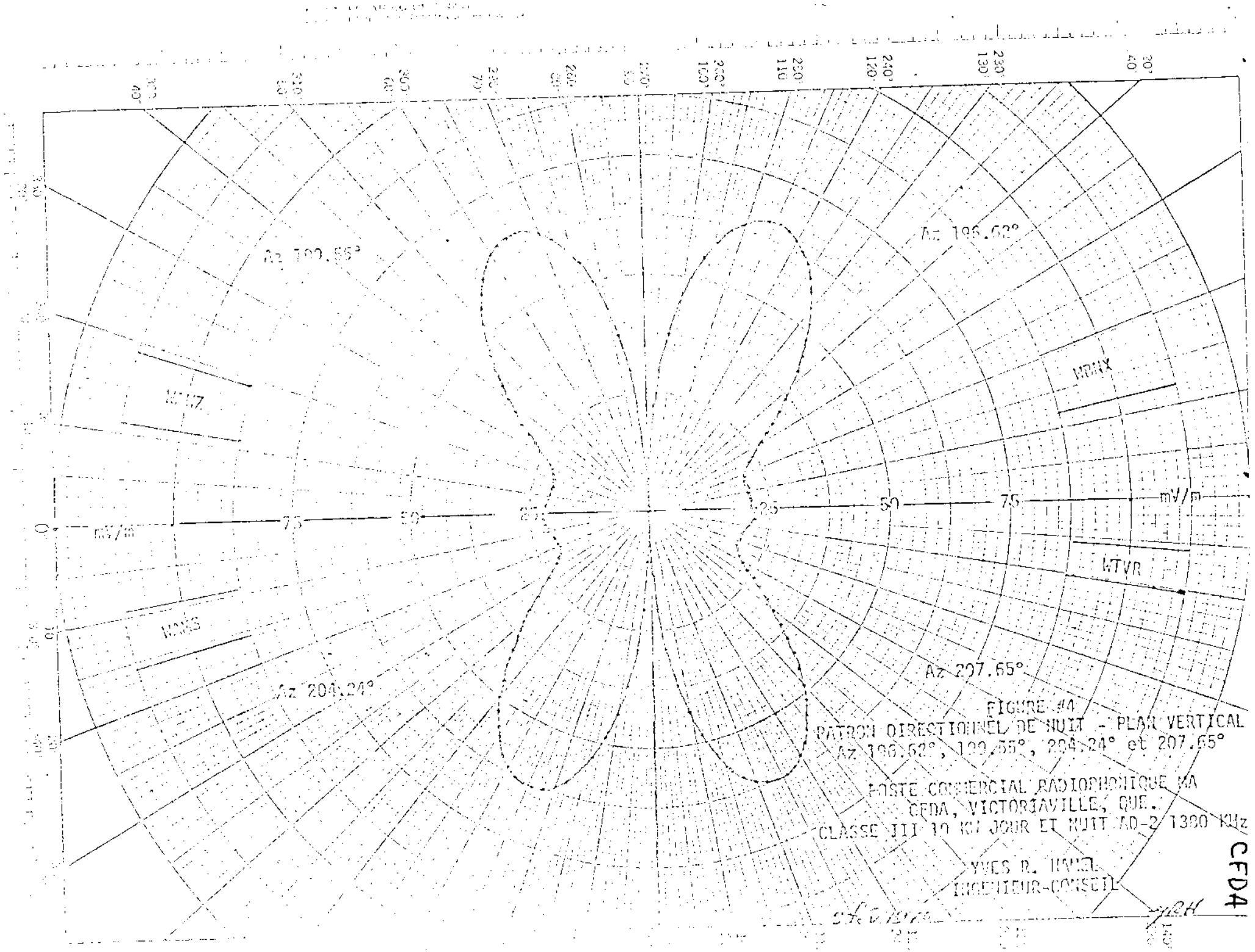
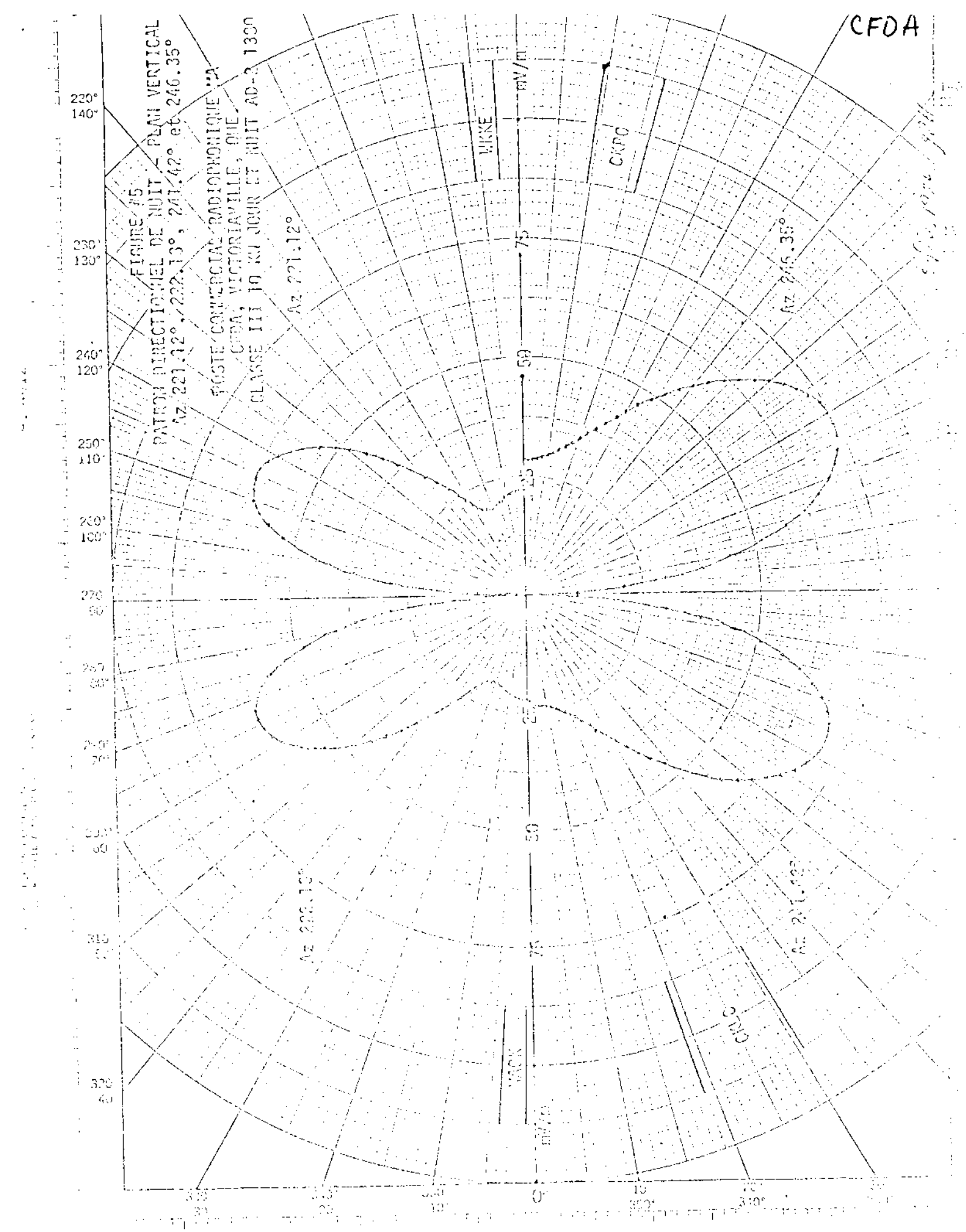


FIGURE #4
PATRON DIRECTIONNEL DE NUIT - PLAN VERTICAL
Az 196.62°, 199.55°, 204.24° et 207.65°

POSTE COMMERCIAL RADIOPHONIQUE MA
CFDA, VICTORIAVILLE, QUE.
CLASSE III 10 KW JOUR ET NUIT AD-2 1380 KHz

YVES R. HOUEL
INGENIEUR-CONSEIL


CFDA
FIGURE #5
PATRON DIRECTIONNEL DE NUIT - PLAN VERTICAL
Az 221.12°, 222.13°, 241.42° et 246.35°
POSTE COMMERCIAL RADIOPHONIQUE "A"
CFDA, VICTORIAVILLE, QUE.
CLASSE III 10 KW JOUR ET NUIT AD-3 1330
WIKE
CKPC
CKLC
Az 221.12°
Az 246.35°
mV/m
75
50
25
0
220°
140°
230°
130°
240°
120°
250°
110°
260°
100°
270
90
280
80
290
70
300
60
310
50
320
40
330
30
340
20
350
10
0°

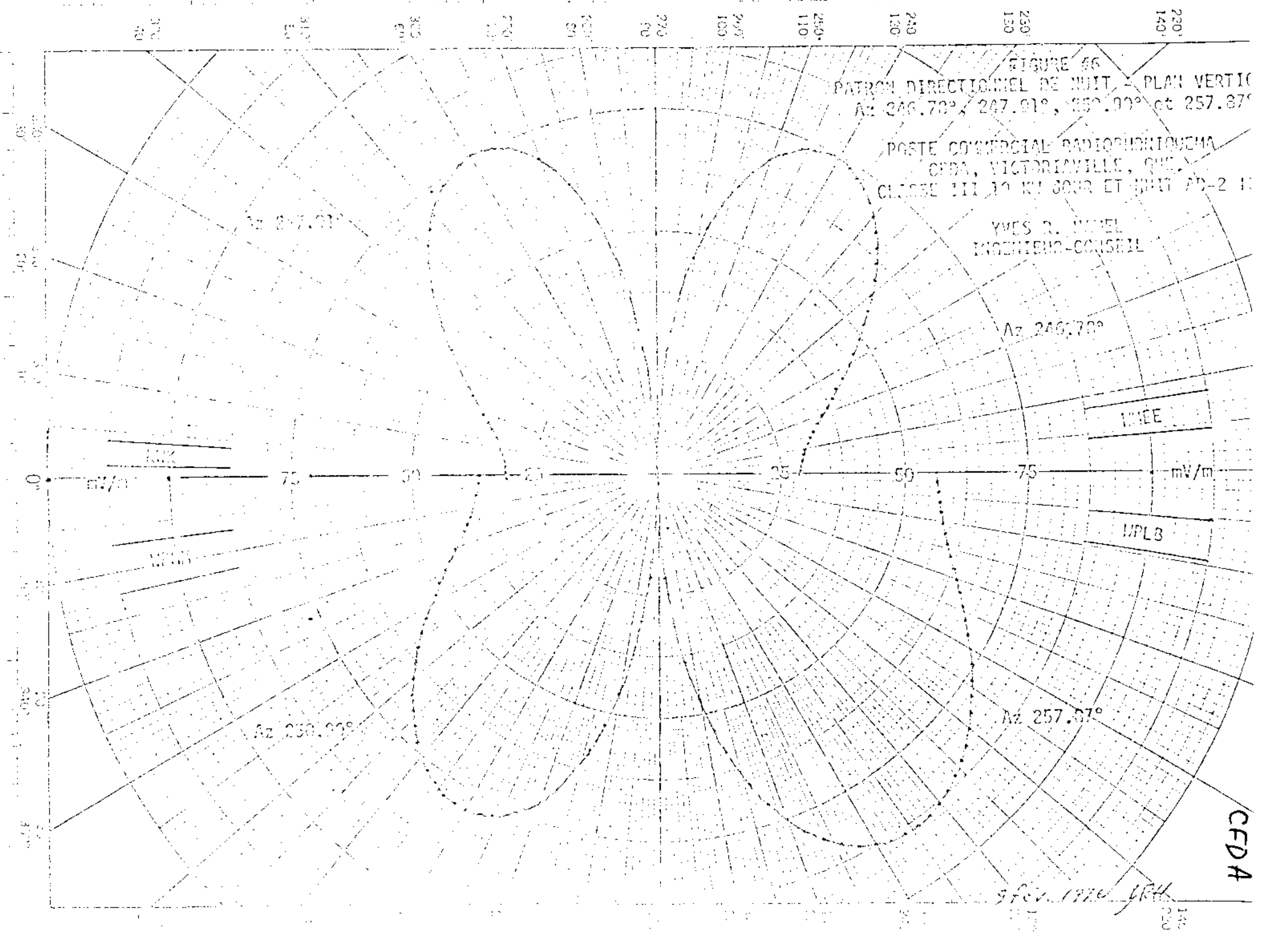


FIGURE 46
PATRON DIRECTIONNEL DE NUIT - PLAN VERTIC
Az 246.78°, 247.91°, 250.99° et 257.87
POSTE COMMERCIAL RADIOPHONIQUE MA
CLASSE III 10 KW JOUR ET NUIT AD-2
YVES R.
INGENIEUR-CONSEIL
Az 246.78°
Az 257.87°
Az 250.99°
mV/m
25
50
75
0°
CFDA

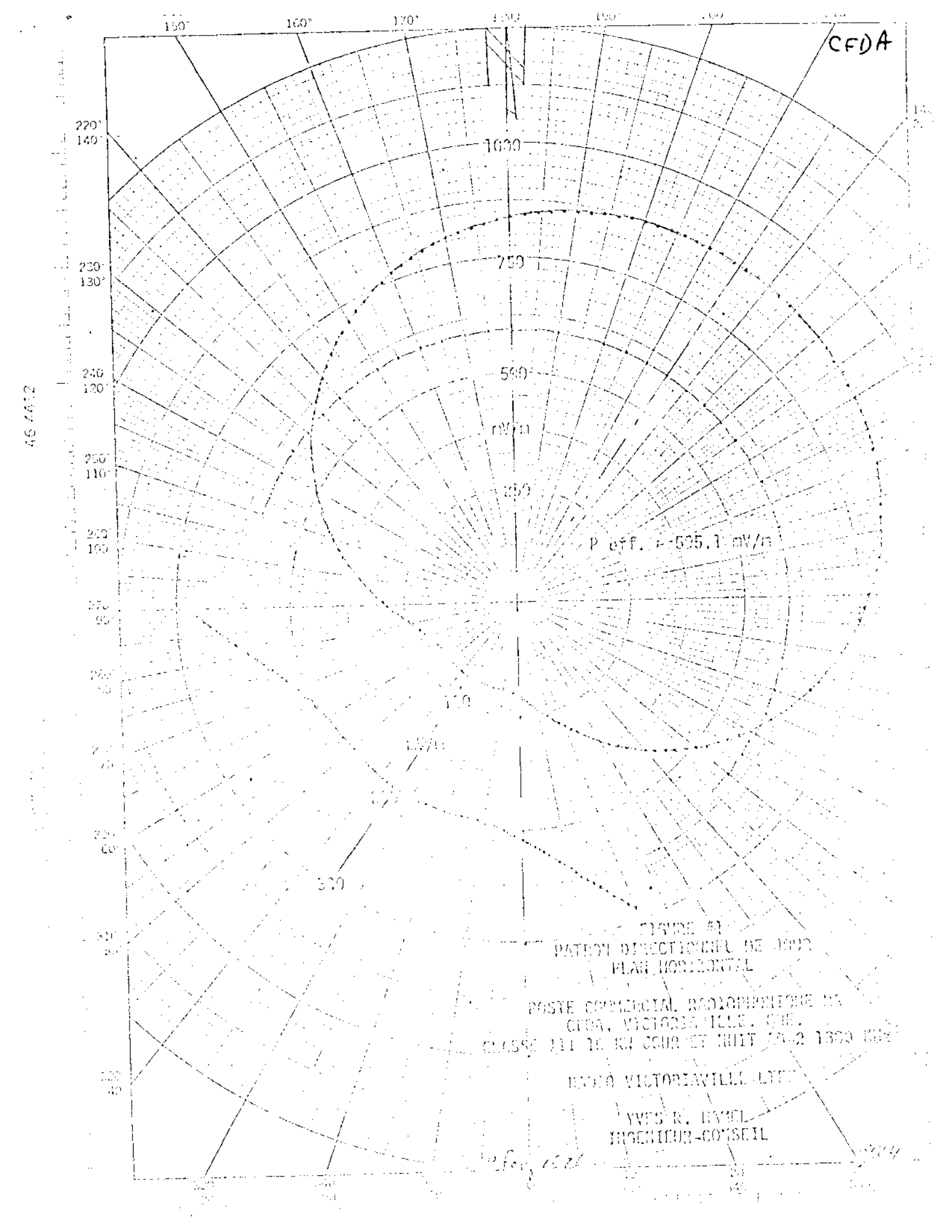


FIGURE #1
PATRON DIRECTIONNEL DE JOUR
PLAN HORIZONTAL

POSTE COMMERCIAL RADIODIFFUSION INC
CJOB, VICTORIAVILLE, QUE.
CLASSE III 10 KW JOUR ET NUIT 1540-2 1360 KHz

RADIO VICTORIAVILLE LTEE

YVES R. DUVAL
INGENIEUR-CONSEIL

CFDA

CORRECTED

DESCRIPTION SHEET

Station: CFDA — Main Studio: Victoriaville, Quebec

Power: 1 Kw. — Frequency: 1380 Kc. Class: III

Notification List 286 — Date: January 27, 1972.

Location:

North Latitude: 46° 02' 25"

West Longitude: 72° 01' 03"

Antenna: Mode of Operation: Directional night-time only. (DA-N)

Elements:

Two triangular, uniform cross-section, guyed, insulated from ground, series fed, no top loading.

Tower:	#1 (N.E.)	#2 (S.W.)
Height above insulators:	200' (101°)	200' (101°)
Spacing:	178' (90°) between towers	
Phasing:	0	+95° lead
Field Ratio:	1.0	1.35

Orientation: Azimuth 27° 19' 43"

Ground System: 120 equally spaced radials extending to a maximum distance of 235' and bonded together on a line equi-distant from the two towers. Radials are #10 B&S bare copper wire buried approximately 8 inches.

Predicted effective field: Day: (omnidirectional) 197 mv/m at 1 mile for 1 Kw.

Night: 193 mv/m at 1 mile for 1 Kw.

Note: This notification concerns only corrections to the orientation of the towers, the geographical coordinates, night-time RMS and provides complete vertical patterns.

CFDA

Proposed Night
(7-29-70ct)

Station CFDA
Victoriaville, Quebec

1kw, DA-N, U, Class III
1380 kc

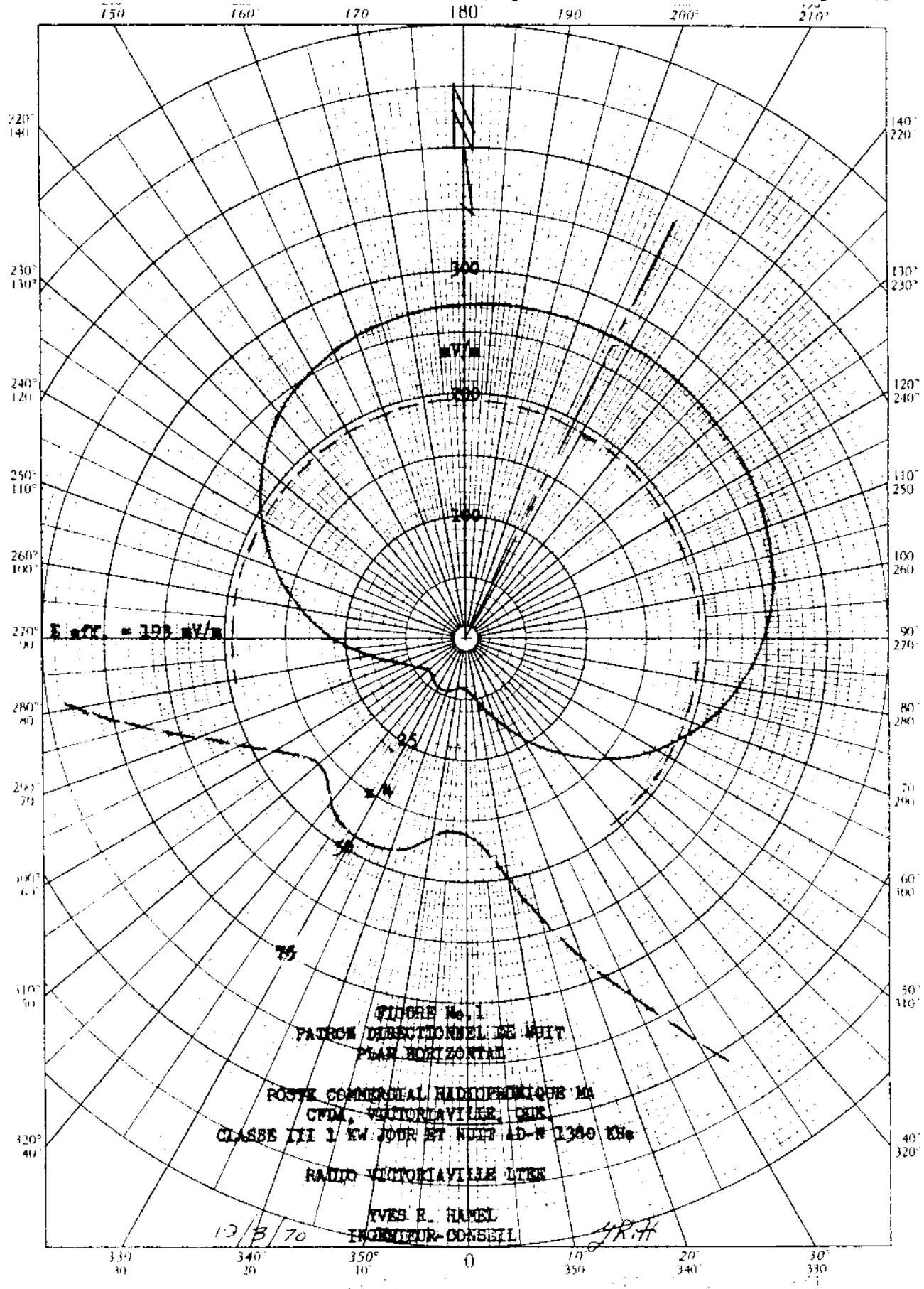


FIGURE No. 1
PATRON DIRECTIONNEL DE NUIT
PLAN HORIZONTAL

POSTE COMMERCIAL RADIOPHONIQUE MA
CFDA, VICTORIAVILLE, QUE.
CLASSE III 1 KW JOUR ET NUIT AD-N 1380 KCs

RADIO VICTORIAVILLE LTEE

YVES R. HAMEL
INGENIEUR-CONSEIL

13/8/70

CHLR
1380KHz

I - DESCRIPTION DU SYSTEME A ANTENNE DIRECTIONNELLE

1. INDICATIF D'APPEL: CHLR

2. EMPLACEMENT: Moncton, N.B.

3. FREQUENCE: 1380 KHz

4. PUISSANCE: 10 KW jour et nuit

5. CLASSE: III (illimitée)

6. NOTIFICATION NO: 405 DATE: 1e 12 juin 1981

7. COORDONNEES: Latitude nord: 46° 08' 47"
Longitude ouest: 64° 48' 02"

8. SYSTEME D'ANTENNE:

a) Fonctionnement: directionnel AD-N.

b) Type: deux (2) éléments à section triangulaire, haubanés et alimentés en série.

c) Mise à la terre: 120 fils No.10 par élément, d'une longueur équivalente à 0.4λ, espacés également avec courroies d'interconnexion, le tout enfoui à environ 8 pouces sous la surface.

9. MATS D'ANTENNE:

		No.1 (SO)	No.2 (NE)
Orientation (Az):		0°	75°
Hauteur au-dessus de l'isolateur:		68.2°	68.2° (135.0')
Espacement:		0°	152.7° (302.5')
Phasage:	Nuit:	0°	-37.0°
Rapport d'intensité de champ:	Nuit:	1.000	0.900

10. EFFICACITE PREVUE:

a) Jour: 585.0 mV/m à 1 mille pour 10 KW
185.0 mV/m à 1 mille pour 1 KW

b) Nuit: 584.3 mV/m à 1 mille pour 10 KW
184.8 mV/m à 1 mille pour 1 KW

YVES R. HAMEL
INGENIEUR-CONSEIL

CHLK
1380KHz
DA-N

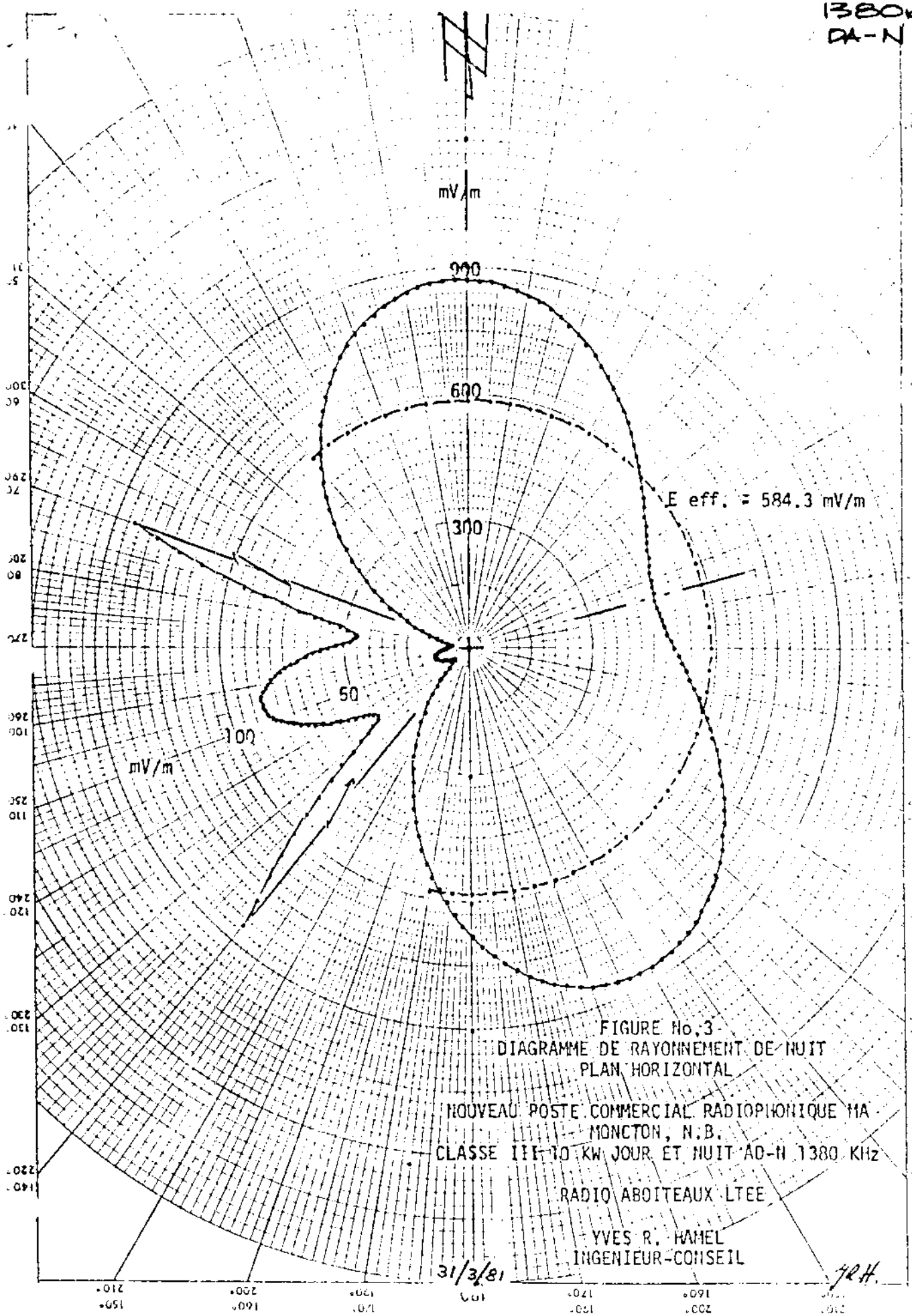


FIGURE No.3
DIAGRAMME DE RAYONNEMENT DE NUIT
PLAN HORIZONTAL

NOUVEAU POSTE COMMERCIAL RADIOPHONIQUE MA
MONCTON, N.B.
CLASSE III-10 KW JOUR ET NUIT AD-N 1380 KHz

RADIO ABOITEAUX LTEE

YVES R. HAMEL
INGENIEUR-CONSEIL

31/3/81

YRH.

NEW
CHUR

I - DESCRIPTION DU SYSTEME A ANTENNE DIRECTIONNELLE

1. LETTRES D'APPEL: (nouveau poste)

2. EMPLACEMENT: Moncton, N.B.

3. FREQUENCE: 1380 KHz.

4. PUISSANCE: 10 KW jour et nuit.

5. CLASSE: III (U).

6. NOTIFICATION NO: 394 DATE: February 20, 1980

7. COORDONNEES: Latitude nord: 46° 03' 57"

Longitude ouest: 64° 51' 46"

8. SYSTEME D'ANTENNE:

a) Fonctionnement: directionnel AD-1.

b) Type: deux (2) éléments à section triangulaire, haubanés et alimentés en série.

c) Mise à la terre: 120 fils #10 espacés également, d'une longueur équivalente à 0.4λ avec courroies d'interconnexion, le tout enfoui à environ 8 pouces sous la surface.

9. MATS D'ANTENNE:

	#1 (S.O.)	#2 (N.E.)
Orientation (Az):	Réf.	60.0°
Hauteur au-dessus de l'isolateur:	90.9°	90.9° (180.0')
Espacement:	Réf.	90.0° (178.3')
Phasage:	0.0°	-88.0°
Rapport d'intensité de champ:	1.000	0.900

10. EFFICACITE PREVUE: 604.9 mV/m à 1 mille pour 10 KW.

191.3 mV/m à 1 mille pour 1 KW.

YVES R. HAMEL
INGENIEUR-CONSEIL
3772, AVENUE KENT
MONTREAL, QUE. H3S 1N3

5/1/79

YRH

~~NEW~~
CHUR

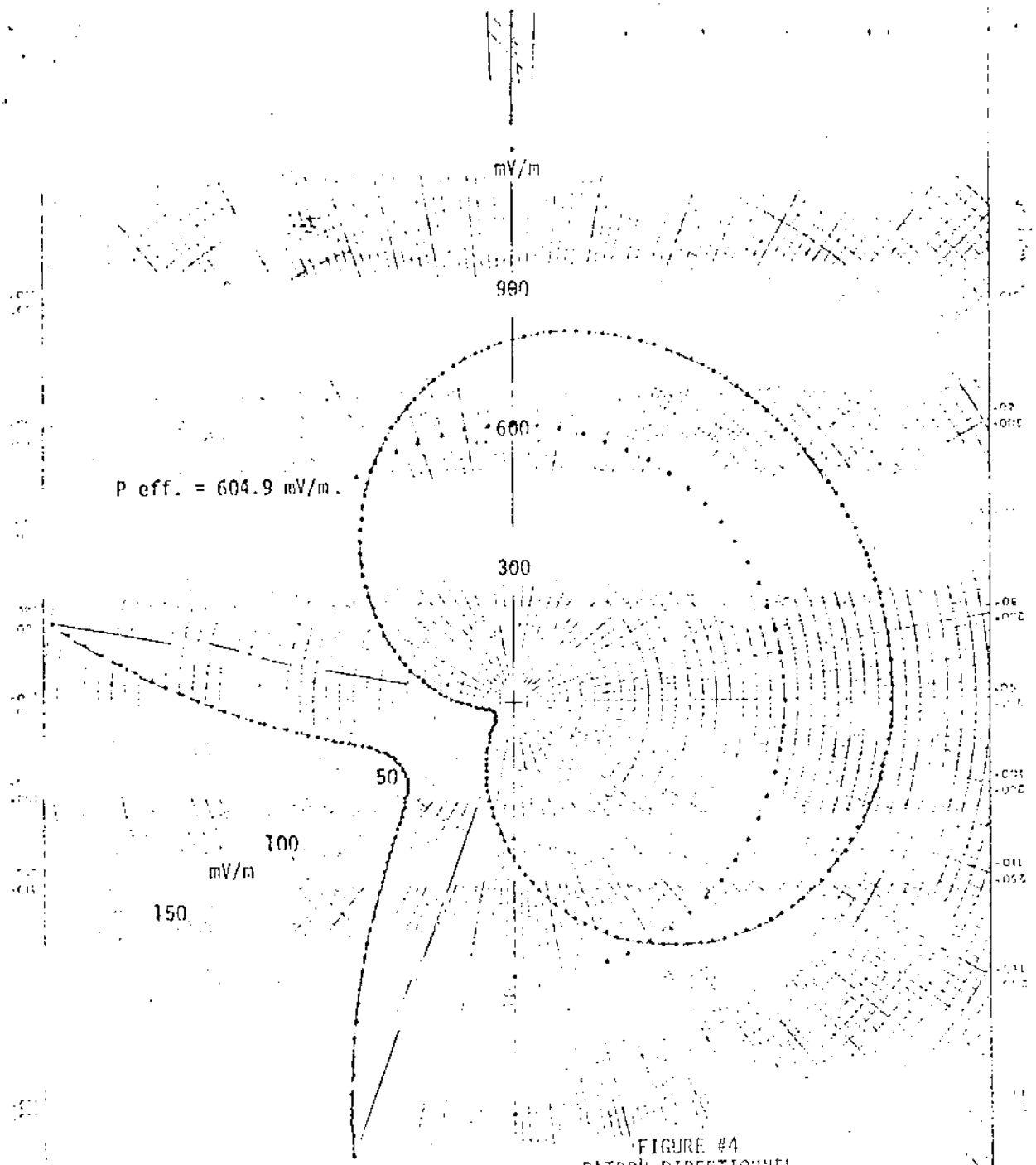


FIGURE #4
PATRON DIRECTIONNEL
PLAN HORIZONTAL

POSTE COMMERCIAL RADIOPHONIQUE MA
MONCTON, N.B.
CLASSE III 10 KW JOUR ET NUIT AD-1 1380 KHz

YVES R. HANEL
INGENIEUR-CONSEIL

5/11/79.

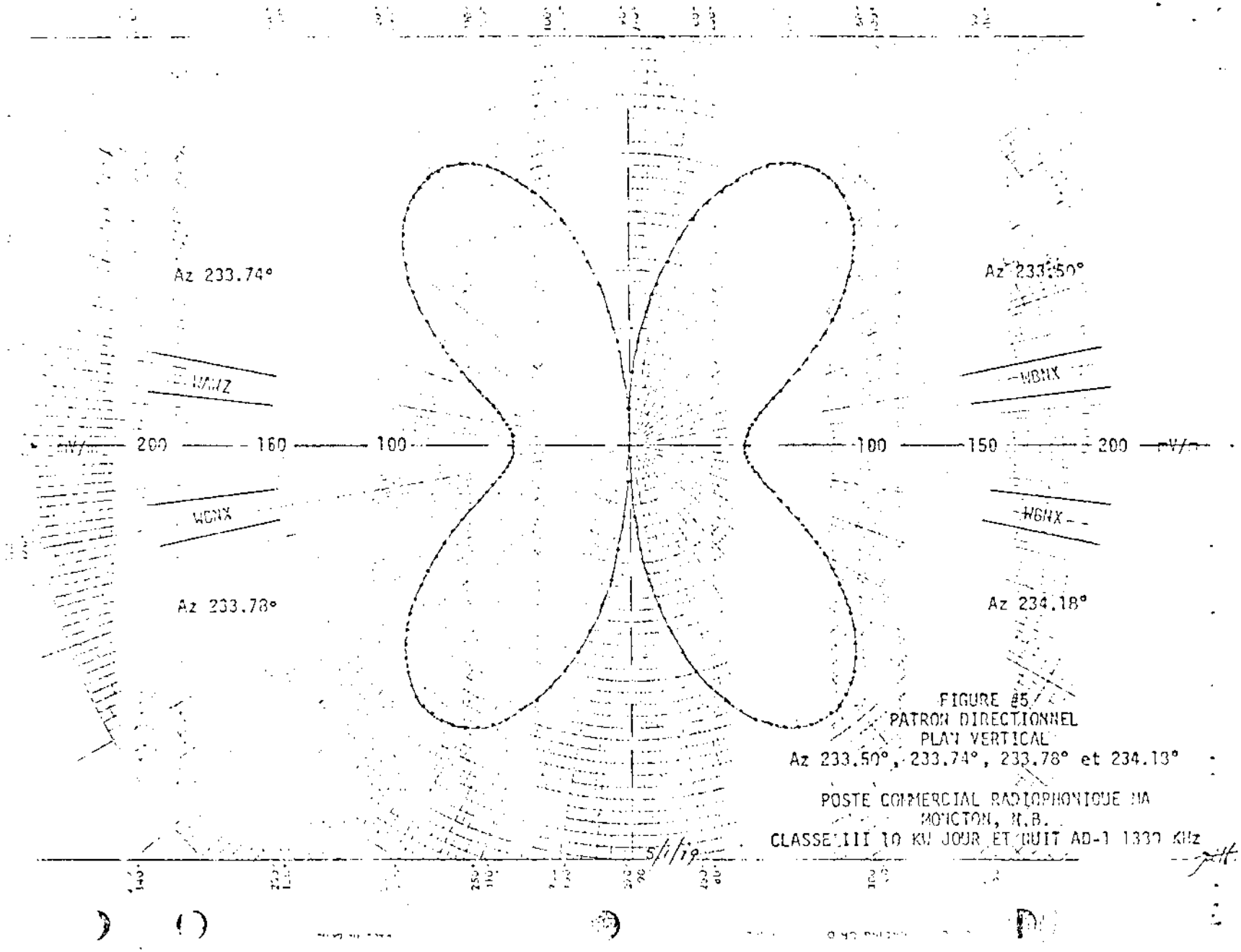


FIGURE #5
PATRON DIRECTIONNEL
PLAN VERTICAL
Az 233.50°, 233.74°, 233.78° et 234.18°

POSTE COMMERCIAL RADIOPHONIQUE CHA
MONCTON, N.B.
CLASSE III 10 KW JOUR ET NUIT AD-1 1330 KHz

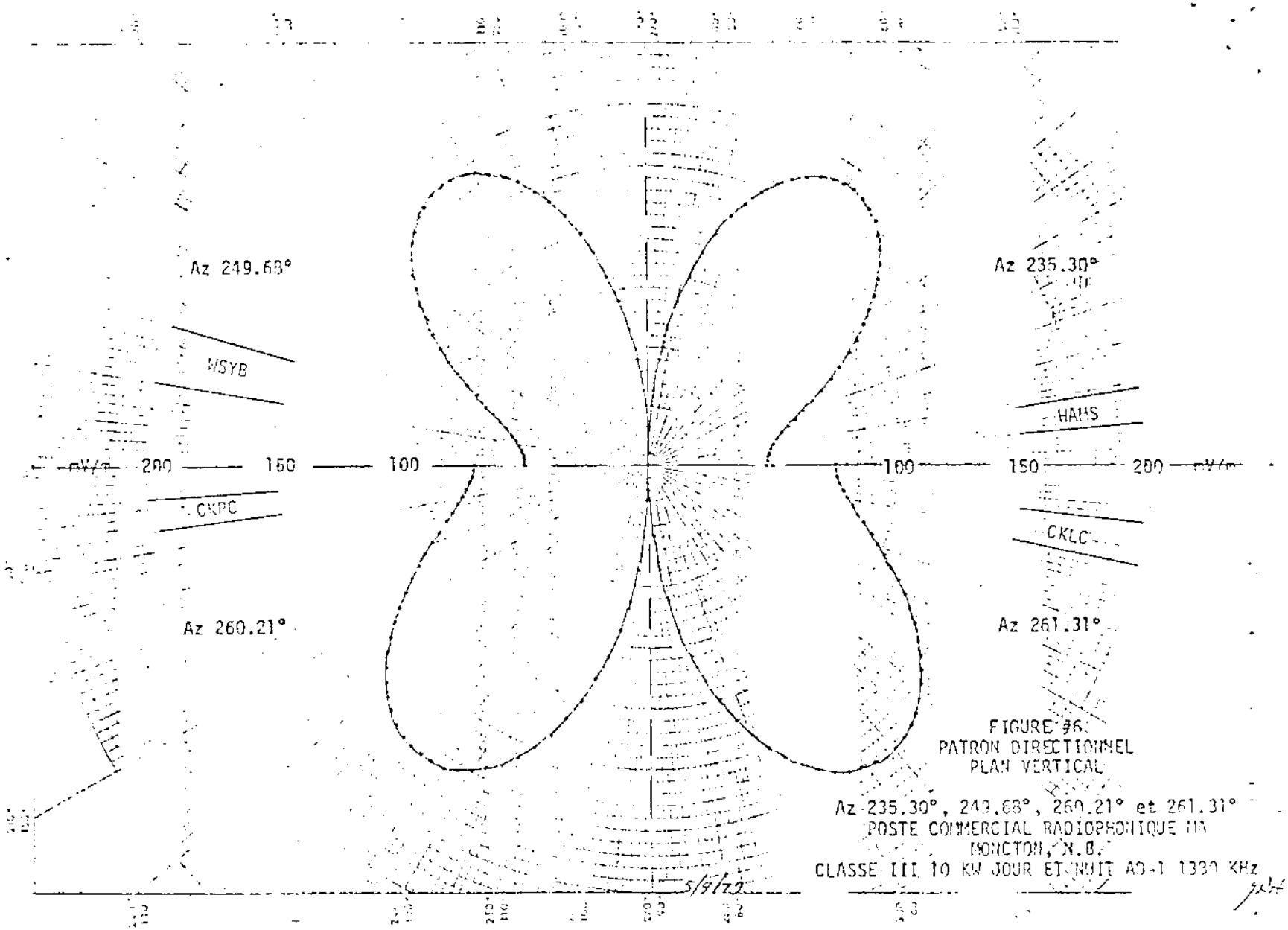


FIGURE #6
PATRON DIRECTIONNEL
PLAN VERTICAL

Az 235.30°, 249.68°, 260.21° et 261.31°
POSTE COMMERCIAL RADIOPHONIQUE MA
MONCTON, N.B.
CLASSE III 10 KW JOUR ET NUIT AO-1 1330 KHz

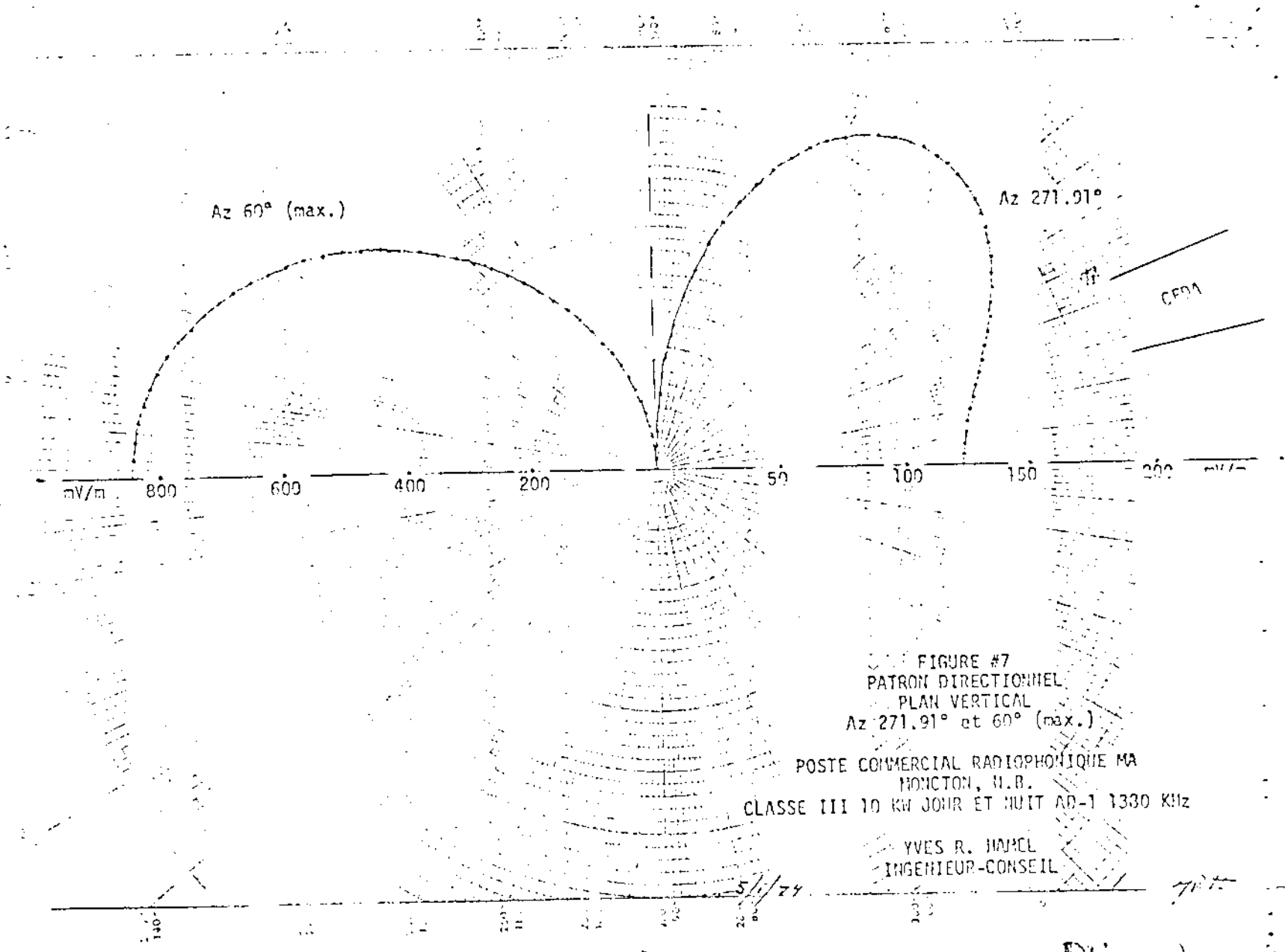


FIGURE #7
PATRON DIRECTIONNEL
PLAN VERTICAL
Az 271.91° et 60° (max.)

POSTE COMMERCIAL RADIOPHONIQUE MA
MONCTON, N.B.
CLASSE III 10 KW JOUR ET NUIT AD-1 1330 KHz

YVES R. JUNCAL
INGENIEUR-CONSEIL

5/4/74

~~CFCW~~
CHCR

I - DESCRIPTION DU SYSTEME A ANTENNE DIRECTIONNELLE

1. LETTRES D'APPEL: (nouveau poste)

2. EMPLACEMENT: Moncton, N.B.

3. FREQUENCE: 1380 KHz.

4. PUISSANCE: 10 KW jour et nuit.

5. CLASSE: III (U).

6. NOTIFICATION NO: 394 DATE: February 20, 1980

7. COORDONNEES: Latitude nord: 46° 03' 57"

Longitude ouest: 64° 51' 46"

8. SYSTEME D'ANTENNE:

a) Fonctionnement: directionnel AD-1.

b) Type: deux (2) éléments à section triangulaire, haubanés et alimentés en série.

c) Mise à la terre: 120 fils #10 espacés également, d'une longueur équivalente à 0.4λ avec courroies d'interconnexion, le tout enfoui à environ 3 pouces sous la surface.

9. MATS D'ANTENNE:

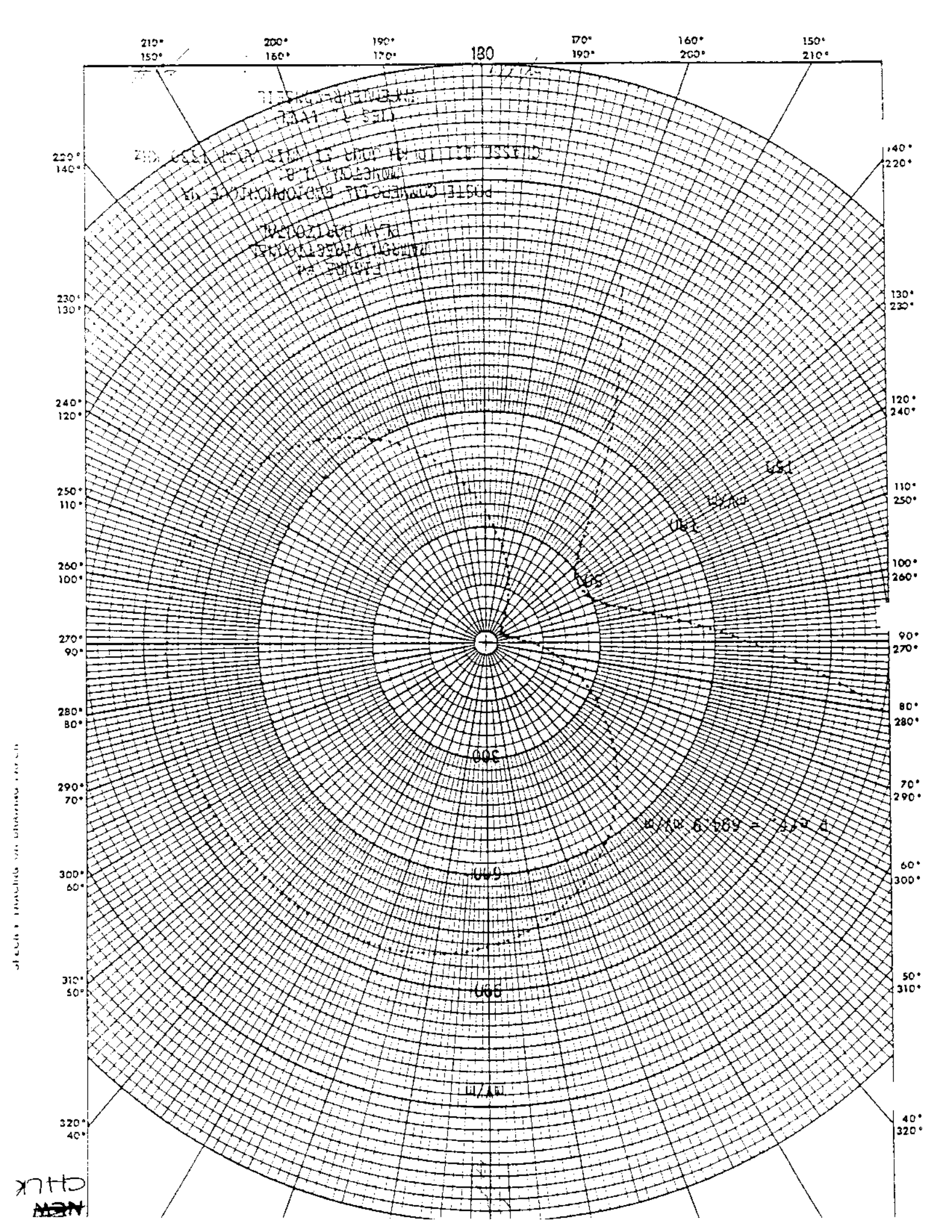
	#1 (S.O.)	#2 (N.E.)
Orientation (Az):	Réf.	60.0°
Hauteur au-dessus de l'isolateur:	90.0°	90.9° (180.0')
Espacement:	Réf.	90.0° (179.3')
Phasage:	0.0°	-88.0°
Rapport d'intensité de champ:	1.000	0.900

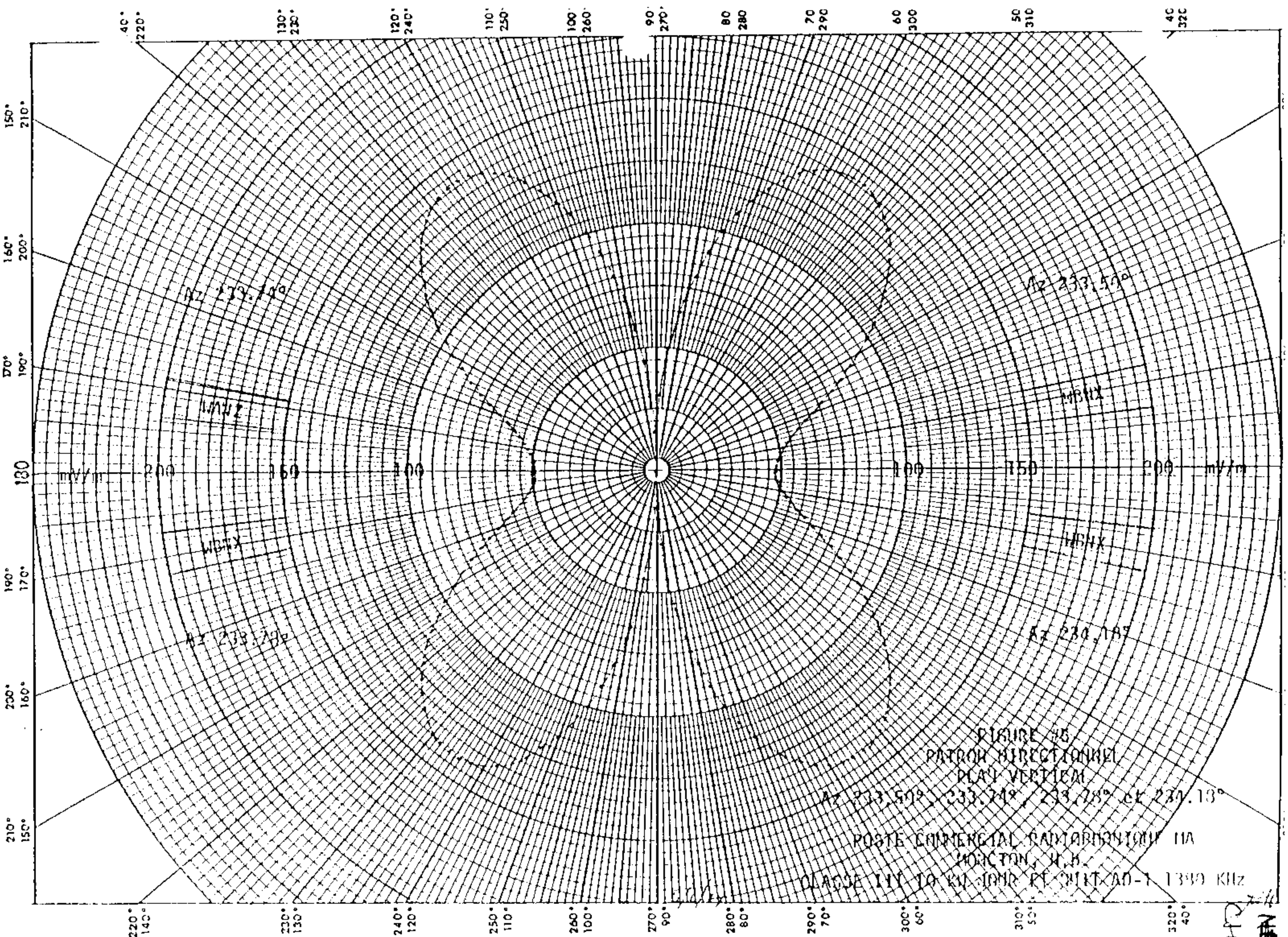
10. EFFICACITE PREVUE: 604.9 mV/m à 1 mille pour 10 KW.

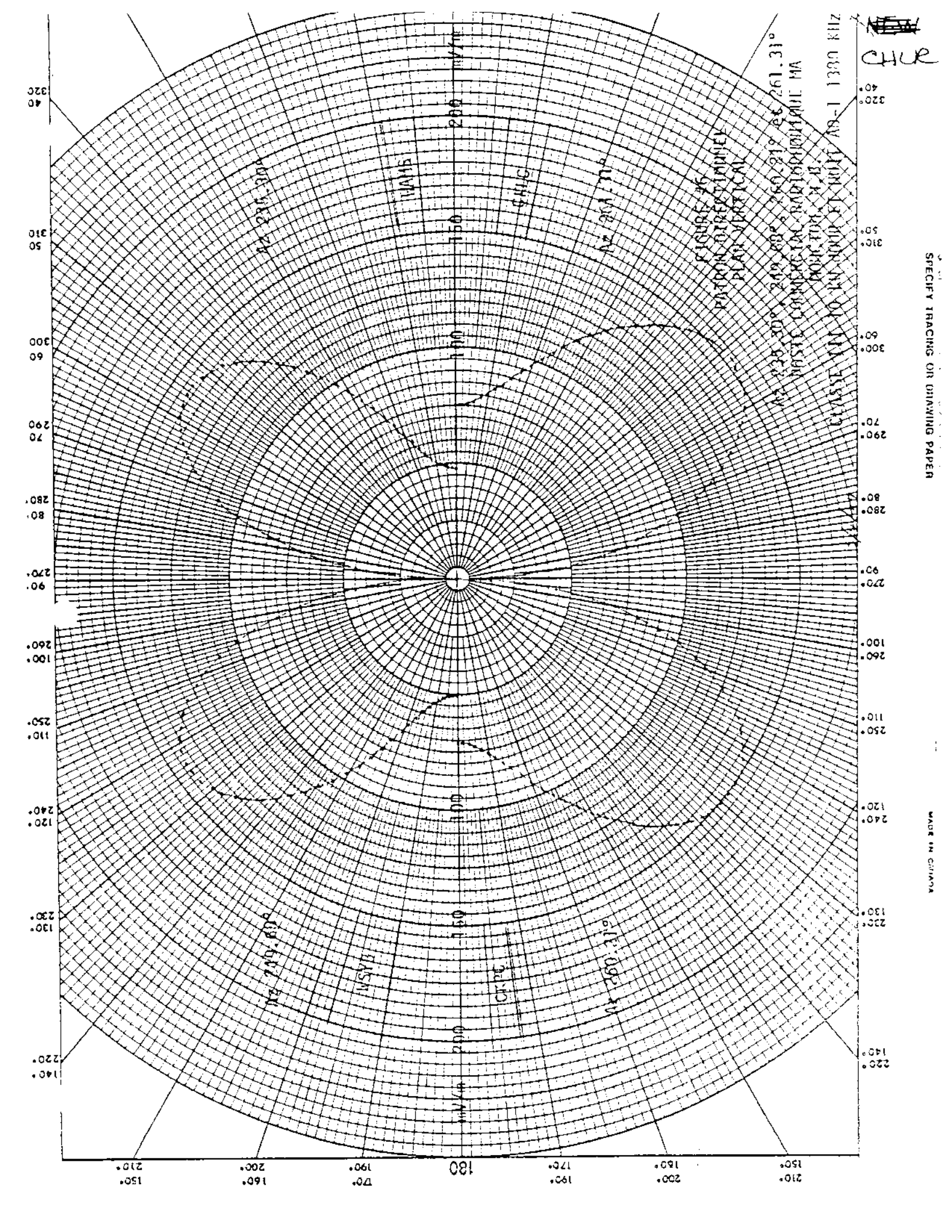
191.3 mV/m à 1 mille pour 1 KW.

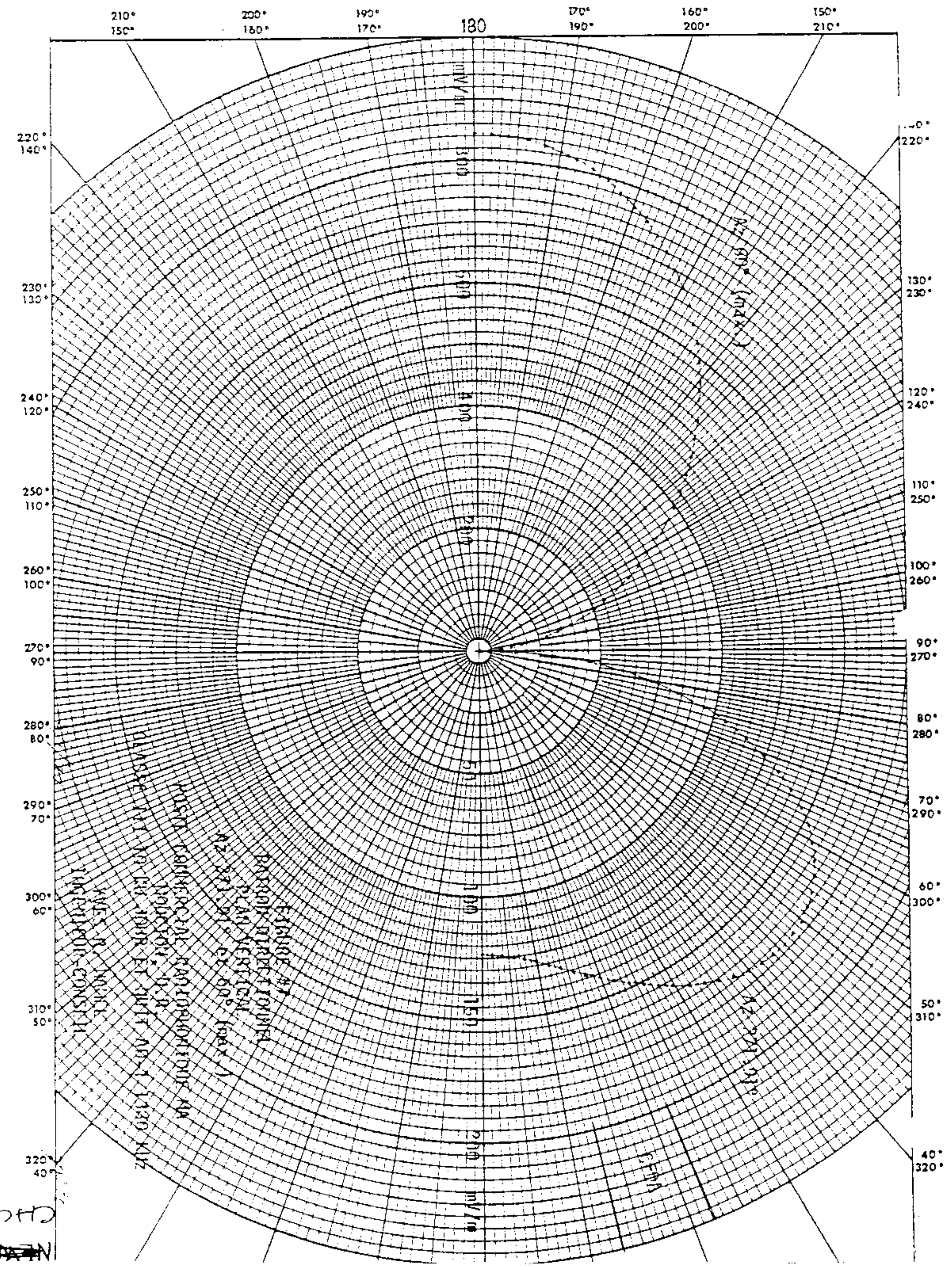
YVES R. HAMEL
INGENIEUR-CONSEIL
3772, AVENUE KENT
MONTREAL, QUE. H3S 1N3

5/1/79


180
210°
150°
200°
160°
190°
170°
170°
190°
160°
200°
150°
210°
140°
220°
130°
230°
120°
240°
110°
250°
100°
260°
90°
270°
80°
280°
70°
290°
60°
300°
50°
310°
40°
320°




CHUR
FIGURE 26
PATTERN DIRECTIONALITY
PLAN (VERTICAL)
BASIC CURRENT RADIATION UNIT MA
AS-1 1330 kHz
SPECIFY TRACING OR DRAWING PAPER
MADE IN CANADA


180
mV/m
300
400
200
50
100
150
AZ 60° (max.)
AZ 271.91°
FIGURE #7
PATRON DIRECTIONNEL
PLAN VERTICAL
AZ 271.91° ET 60° (max.)
POSTE COMMERCIAL RADIOPHONIQUE AM
INGENIEUR-CONSEIL

CKLC

TABLE 1

ANTENNA DESCRIPTION SHEET

STATION CALL:	CKLC
MAIN STUDIO:	KINGSTON, ONTARIO
FREQUENCY:	1380 kHz
POWER:	10 kW
CLASS:	III
MODE:	DA-2
TIME:	UNLIMITED
NOTIFICATION LIST NO.:	394 — DATE: February 5, 1973.
GEOGRAPHICAL LOCATION:	Latitude: 44° 12' 36" North Longitude: 76° 25' 05" West
ARRAY CHARACTERISTICS:	Four guyed steel towers of uniform cross section; base insulated, series fed; no top loading

TOWER NUMBER:	1 N	2 NC	3 SC	4 S
HEIGHT ABOVE INSULATOR:	179'	179'	179'	179'(90.3°)
DAY FIELD RATIO:	1.00	1.52	1.00	-
DAY PHASE:	-119°	0°	119°	-
NIGHT FIELD RATIO:	1.00	2.24	2.05	0.72
NIGHT PHASE:	-140.8°	0°	141.7°	-75.8°
SPACING:	0°	90° 178.1'	180° 356.2'	270° 534.3'
ORIENTATION:	[illegible]	165°	165°	165°

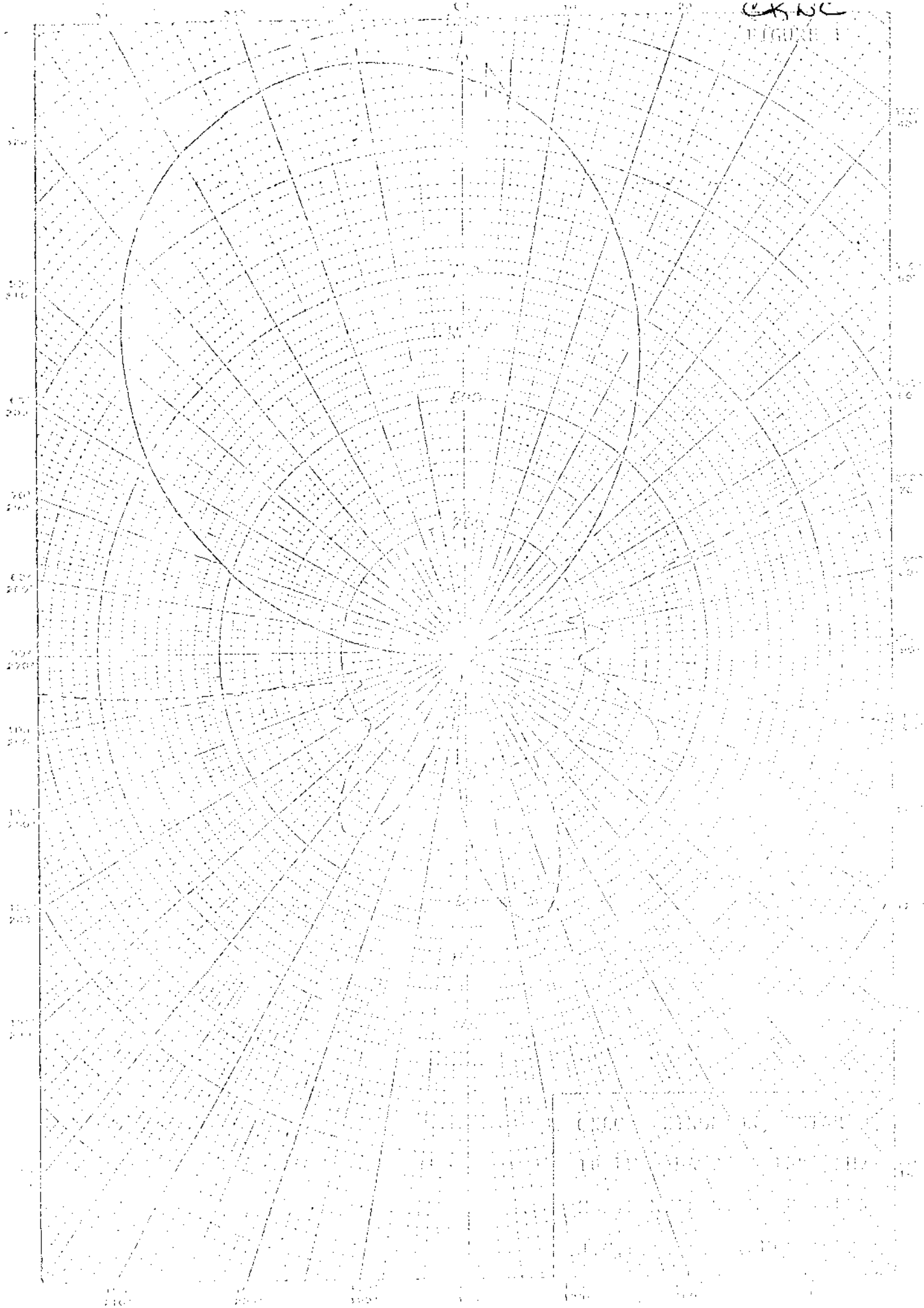
GROUND SYSTEM: 120 equally spaced copper radial wires per tower, buried 6" - 12" deep, of average length 285'(0.[illegible]λ), excluding [illegible] the common [illegible].

[illegible]: [illegible]

[illegible]

CKNC

FIGURE 1

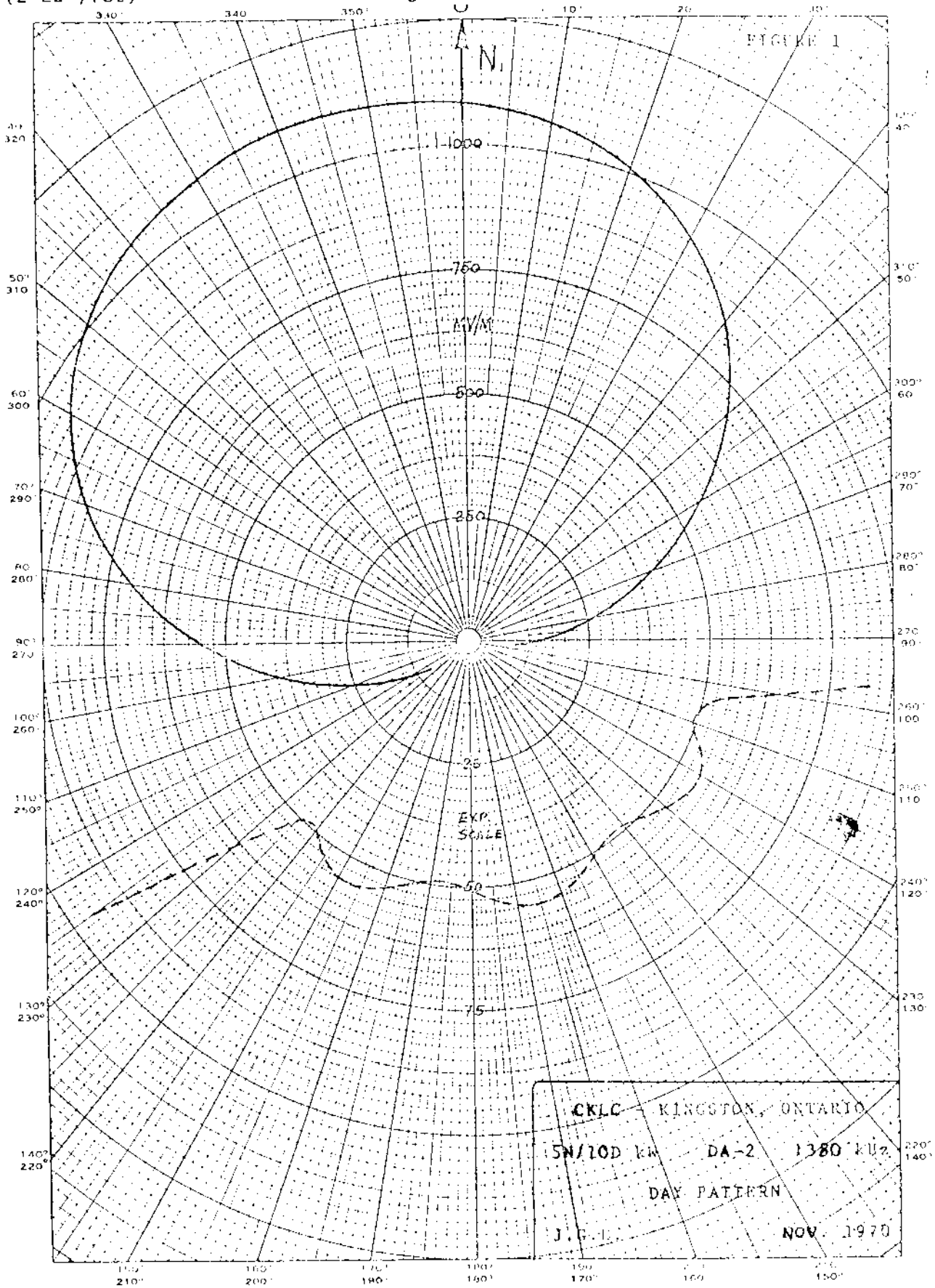


CKLC

Proposed Day
(2-22-71ct)

Station CKLC
Kingston, Ontario

5kw,10kw-LS,DA-2,U,Class III
1380 kc



STATION: CKPC MAIN STUDIO: Brantford, Ontario Ontario

FREQUENCY: 1380 POWER: 10,000 Class: III

GEOGRAPHICAL LOCATION OF ANTENNA SYSTEM: North Latitude: 43° - 03' - 05"
West Longitude: 80° - 18' - 50"
Notification List No. 269 Dated: May 15, 1970.

ANTENNA CHARACTERISTICS

Mode of Operation: DA/2
Number of elements: 5
Type of elements: Guyed, uniform cross-section, series fed, not top loading.

TOWERS:	# 1 (N)	# 2 (NC)	# 3 (C)	# 4 (SC)	# 5 (S)
HEIGHT OVER INSULATORS:	200'(100°)	210'(105°)	200'(100°)	118'(60°)	118'(60°)
OVERALL HEIGHT:	210'	220'	210'	123'	123'

ORIENTATION: Towers # 1, 2, 3 & 4 on a line bearing 174° TRUE

Tower # 5 is offset 7.0° from line of towers at a spacing 270° from # 1 tower. The offset angle is 7° west of the line of towers.

	(Ref.)				
SPACING:	0	179'(90°)	358'(180°)	537'(270°)	537'(270°)
PHASING: (Day)	0	+158.5	+324	Not used	+107.5
FIELD RATIO: (Day)	1.0	1.73	1.73	Not used	0.700
PHASING: (Night)	0	+142.5	+287.7	+71.2	Not used
FIELD RATIO: (Night)	1.00	2.41	2.41	1.00	Not used

GROUND SYSTEM:
120 radials per tower 0.4 wavelengths long, buried 3" below grade

PREDICTED EFFECTIVE FIELD: Day: 568 mv/m @ 1 mile for 10 Kw.
(179.5 mv/m @ 1 mile for 1 Kw.

Night: 562 mv/m @ 1 mile for 10 Kw.
(177.5 mv/m @ 1 mile for 1 Kw.

CONSULTANT: D. B. Williamson, P. Eng.,

Note: To this description sheet and night-time radiation patterns attach the horizontal day-time radiation pattern submitted previously with Notification List No. 127.

#127

CKPC

DESCRIPTION SHEET (9-13-60g)

Station CKPC 10kw, DA-2,U, Class III
Brantford, Ontario, Canada 1380 KC

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: CKPC Main Studio: Brantford, Ontario

Frequency: 1380 kcs. Power: 10,000 watts Class: III

Notification List No. 127 Date: November 28, 1958.

GEOGRAPHICAL LOCATION OF ANTENNA SYSTEM:

North Latitude: 43° 03' 05''
West Longitude: 80° 18' 50''

ANTENNA CHARACTERISTICS

Mode of Operation: DA/2
Number of elements: 5
Type of elements: guyed, uniform cross-section, series fed, no top loading

TOWERS:	#1 (N)	#2	#3	#4	#5
HEIGHT OVER INSULATORS:	179' (90°)	179' (90°)	179' (90°)	118' (60°)	118' (60°)
OVERALL HEIGHT:	189'	189'	189'	128'	128'
SPACING:	(Reference) 0	179' (90°)	358' (180°)	537' (270°)	537' (270°)
PHASING: (Day)	0	∠168.5	∠324	Not Used	∠107.5
FIELD RATIO: (Day)	1.0	1.73	1.73	Not Used	0.700
PHASING: (Night)	∠144.4	-73.1	∠73.1	-144.4	Not Used
FIELD RATIO: (Night)	1.00	2.41	2.41	1.00	Not Used

GROUND SYSTEM: 120 radials per tower 0.4 wavelengths long, buried 8" below grade.

PREDICTED EFFECTIVE FIELD: Day: 568 mv/m @ 1 mile for 10 KW.
(179.5 mv/m @ 1 mile for 1 KW.)

Night: 562 mv/m @ 1 mile for 10 KW.
(177.5 mv/m @ 1 mile for 1 KW.)

ORIENTATION: Towers #1, 2, 3 & 4 on a line bearing 354° True.

Tower #5 is offset 7° from line of towers at a spacing 270° from #1 Tower. The offset angle is 7° West of the line of towers.

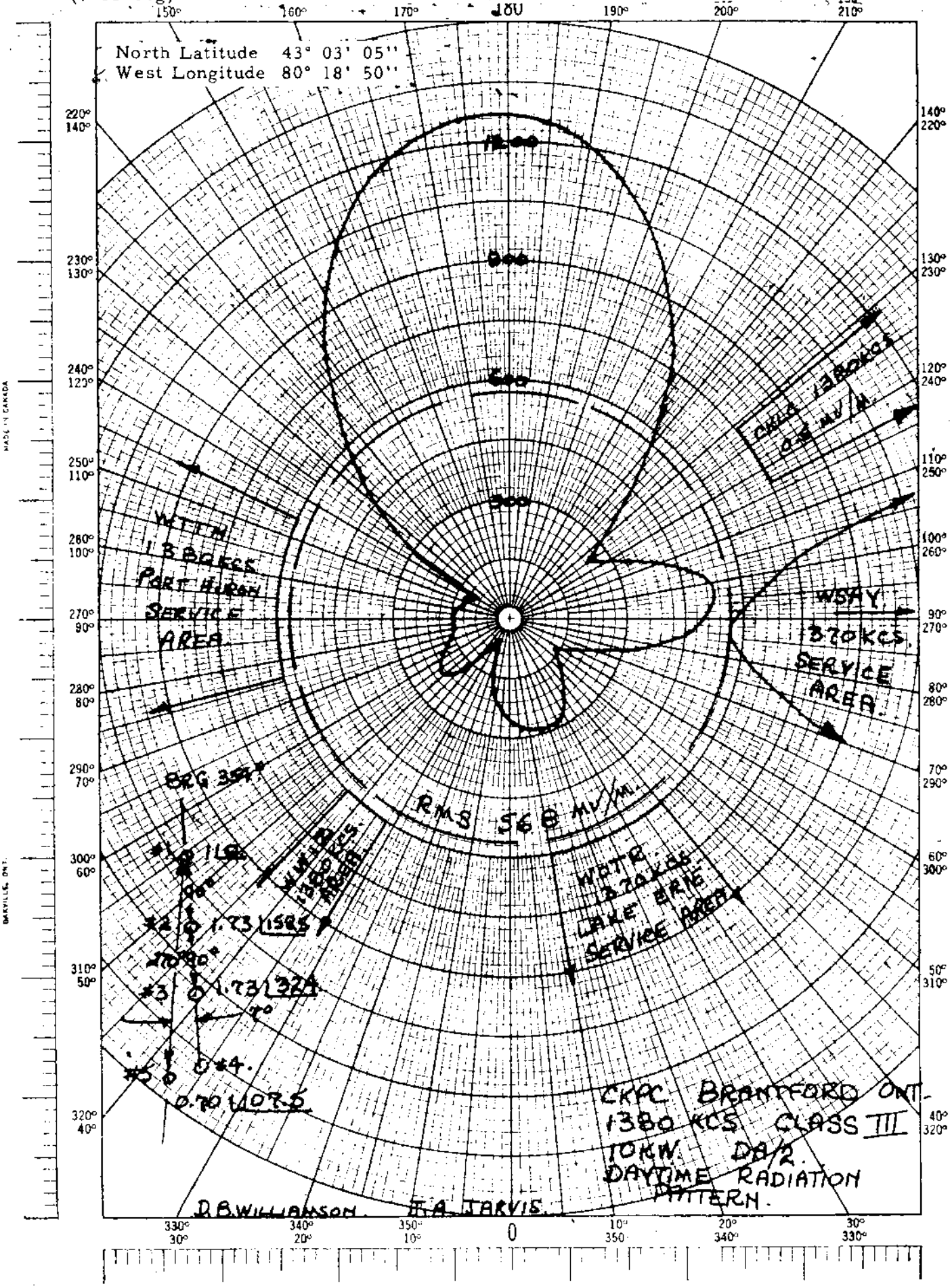
Note: Please retain nighttime radiation patterns notified for CKPC Brantford, Ontario in Canadian Change List No. 127 dated November 28, 1958 and attach to this revised Description Sheet and Daytime pattern.

CKPC

#127

PROPOSED DAY
(9-13-60g)

Station CKPC 10kw, DA-2,U, Class III
Brantford, Ontario, Canada 1380 KC



G9-31
POLAR CO-ORDINATE
MADE IN CANADA

CANADIAN CHARTS AND SUPPLIES, LTD.
OAKVILLE, ONT.

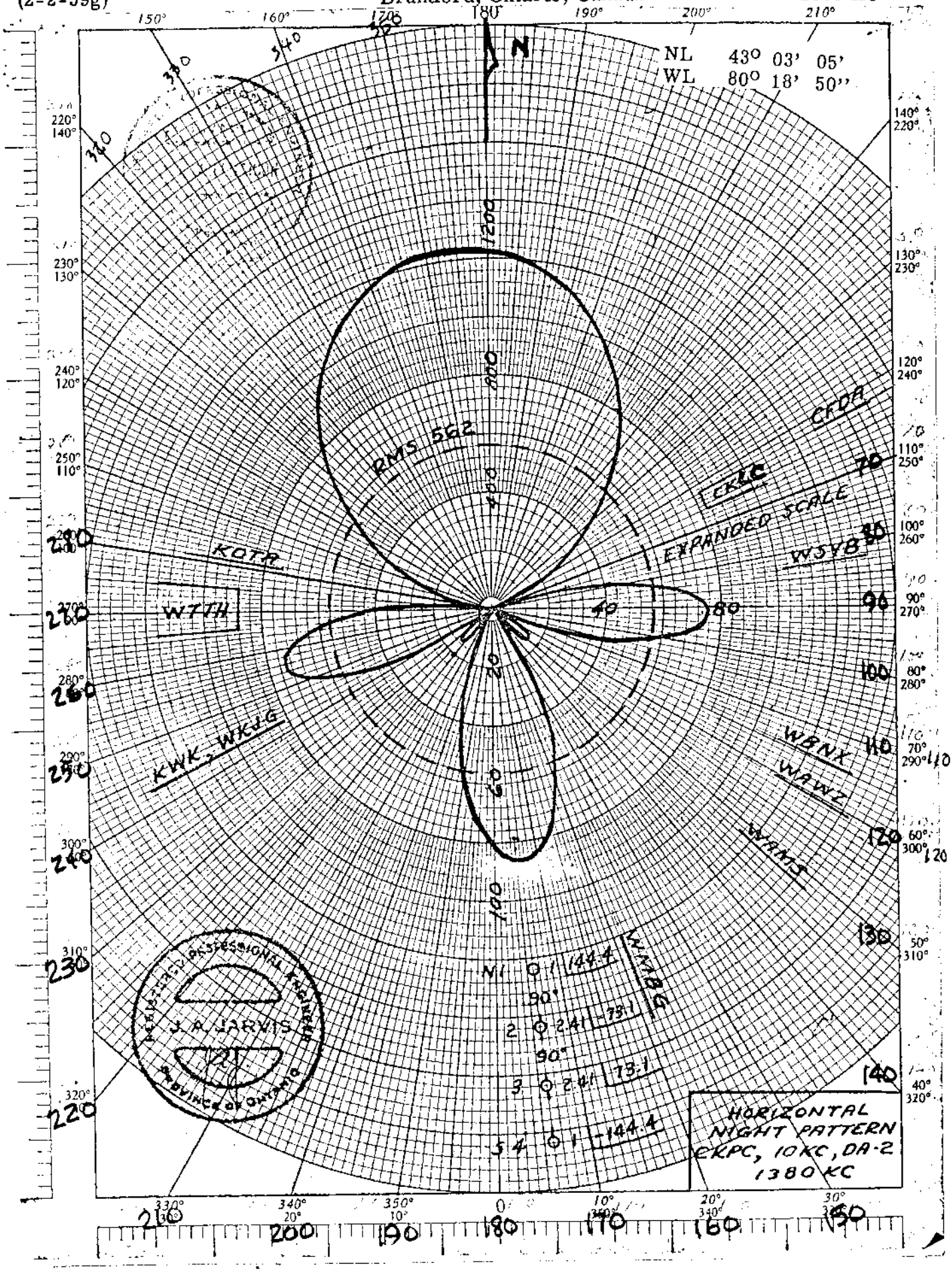
127

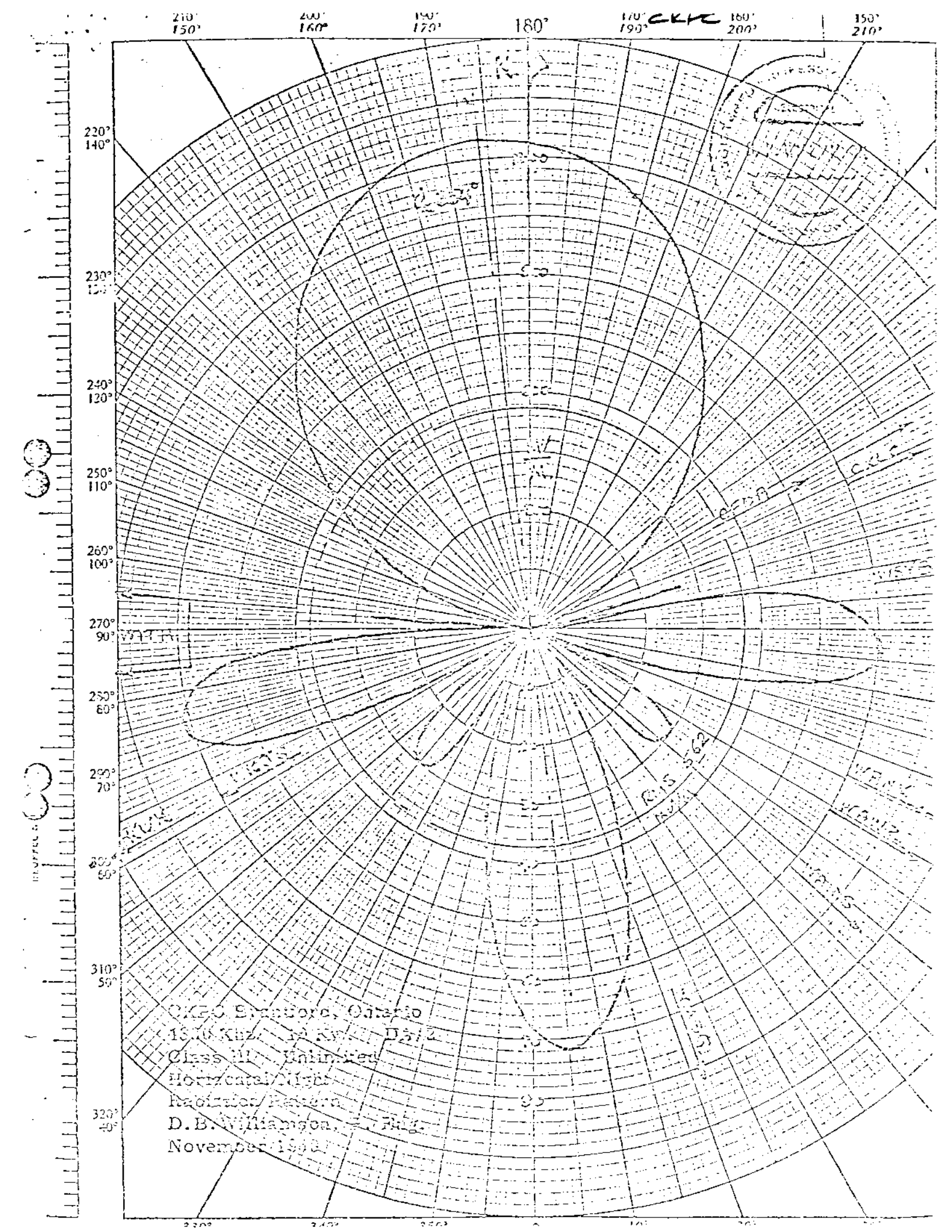
CKPC

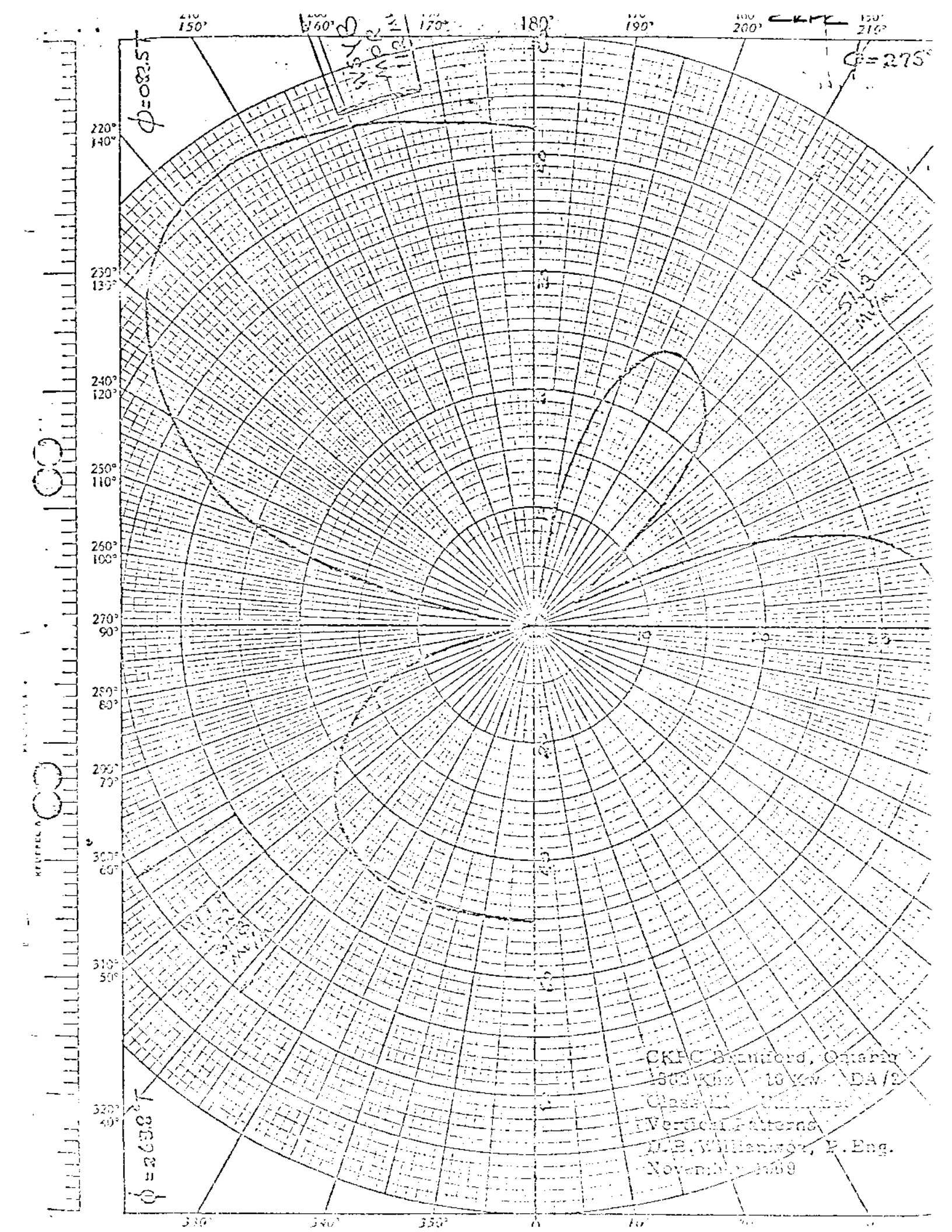
PROPOSED NIGHT
(2-2-59g)

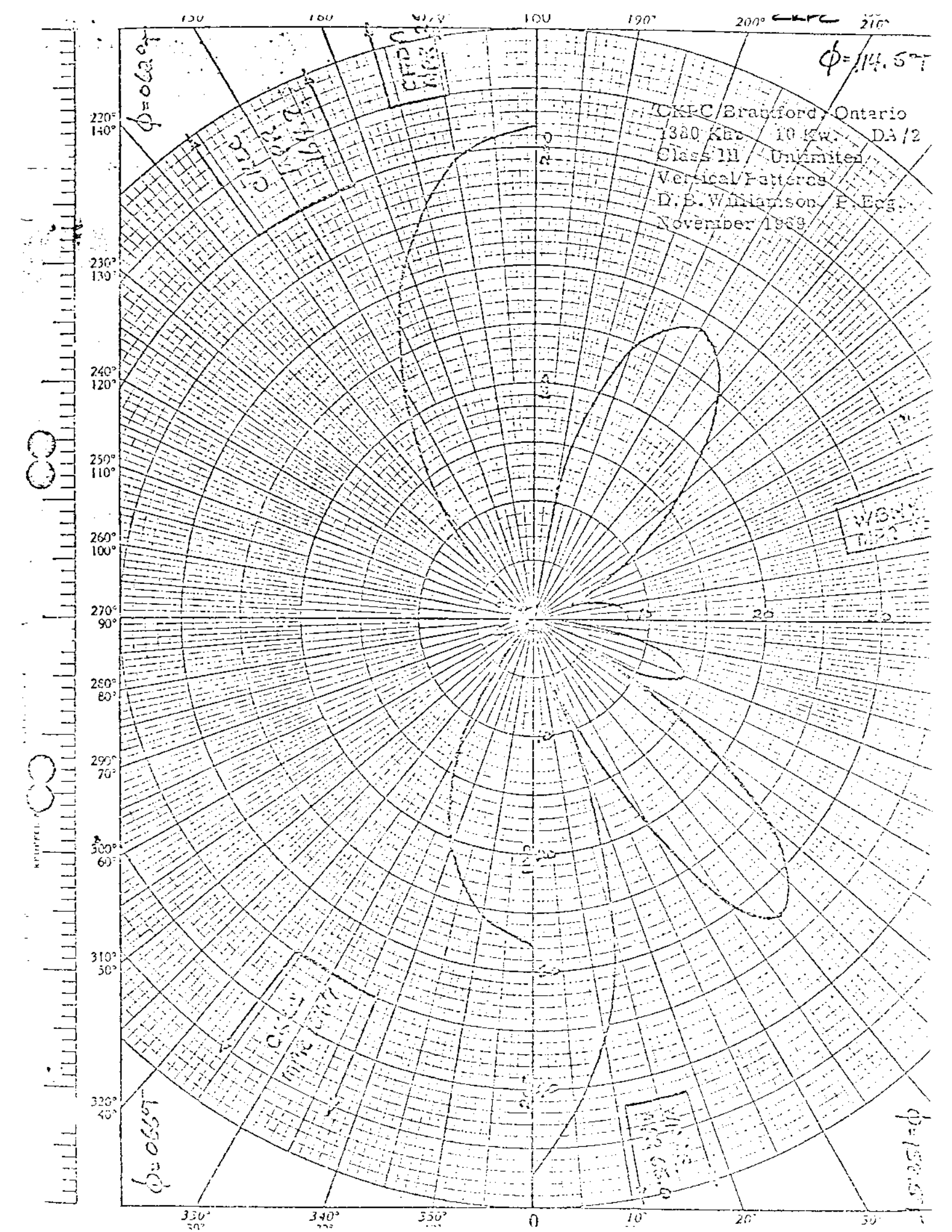
Station CKPC
Brantford, Ontario, Canada

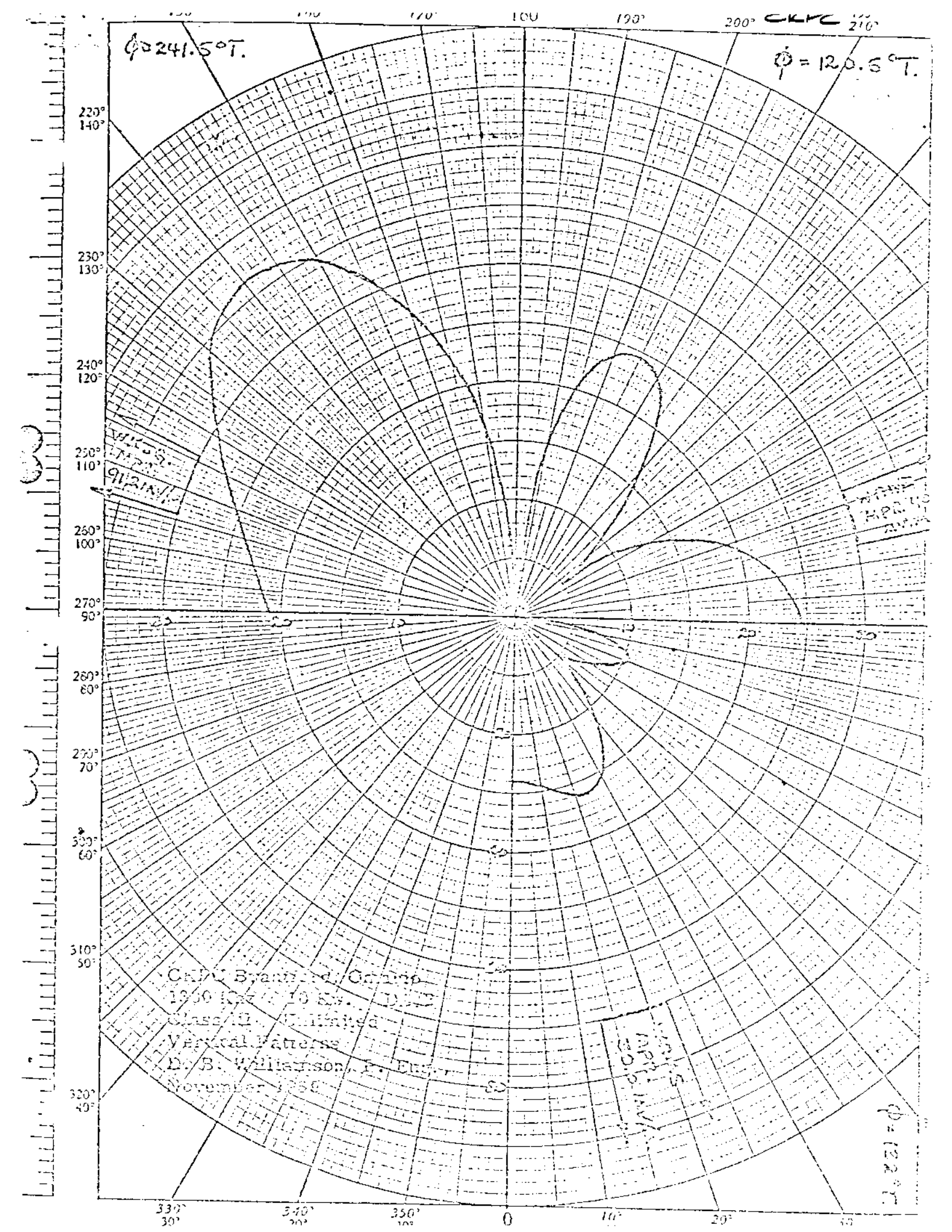
10kw, DA-2,U, Class III
1380 KC




180°
CKPC
Orillia, Ontario
Class III Unlimited
Horizontal Pattern
Radiation Pattern
D.B. Williamson
November 1968


CKPC
Φ=275°
Φ=085°
Φ=265°
150°
160°
170°
180°
190°
200°
210°
220°
140°
230°
130°
240°
120°
250°
110°
260°
100°
270°
90°
280°
80°
290°
70°
300°
60°
310°
50°
320°
40°
330°
340°
350°
0
10
20
30
40
CKPC Brantford, Ontario
DA/2
Vertical Pattern
J.E. Williamson, P.Eng.
November 1969


CKPC/Brantford, Ontario
1380 Kcs. 10 Kw. DA/2
Class III / Unlimited
Vertical Patterns
D. B. Williamson, P. Engr.
November 1969
220° 140°
230° 130°
240° 120°
250° 110°
260° 100°
270° 90°
280° 80°
290° 70°
300° 60°
310° 50°
320° 40°
330° 30°
340° 20°
350° 10°
0
10°
20°
30°


CKPC
ϕ = 241.5° T.
ϕ_1 = 120.5° T.
220° 140°
230° 130°
240° 120°
250° 110°
260° 100°
270° 90°
280° 80°
290° 70°
300° 60°
310° 50°
320° 40°
330° 30°
340° 20°
350° 10°
0
10°
20°
CKPC Brantford, Ontario
1960 kc/s 10 kw. D
Class II Limited
Vertical Patterns
D. B. Williamson, P. Eng.
November 1960

Section 2 - TECHNICAL DETAILS

2.4 Directional Antenna Description Sheet

Station: New | Main Studio: Oromocto, New Brunswick

Frequency: 1380 KHz | Power: 10 Kw | Class: III

Notification List No: 243 | Date: June 18, 1968.

Geographical Location of the Antenna System:

North Latitude: 45° 53' 17" N.
West Longitude: 66° 34' 55" W.

Antenna Characteristics:

Mode of Operation: DA-1
Number of Elements: 4
Type of Elements: Guyed, uniform cross section, base insulated, series fed. No top loading.

TOWER:	No. 1	No. 2	No. 3	No. 4
HEIGHT ABOVE INSULATORS:	147'(75°)	147'	147'	147'
OVERALL HEIGHT:	150'	150'	150'	150'
SPACING:	Reference	176.5'(90°)	320'(163°)	235'(120°)
BEARING:	0°	132°	85.8°	53°
PHASING:	0°	-155°	-221°	-66°
FIELD RATIO:	1	1.25	1.39	1.1

ORIENTATION: The towers are in a parallelogram configuration with the line joining towers No. 1 and No. 2 on Azimuth 132° and the line joining towers No. 1 and No. 4 on Azimuth 53°.

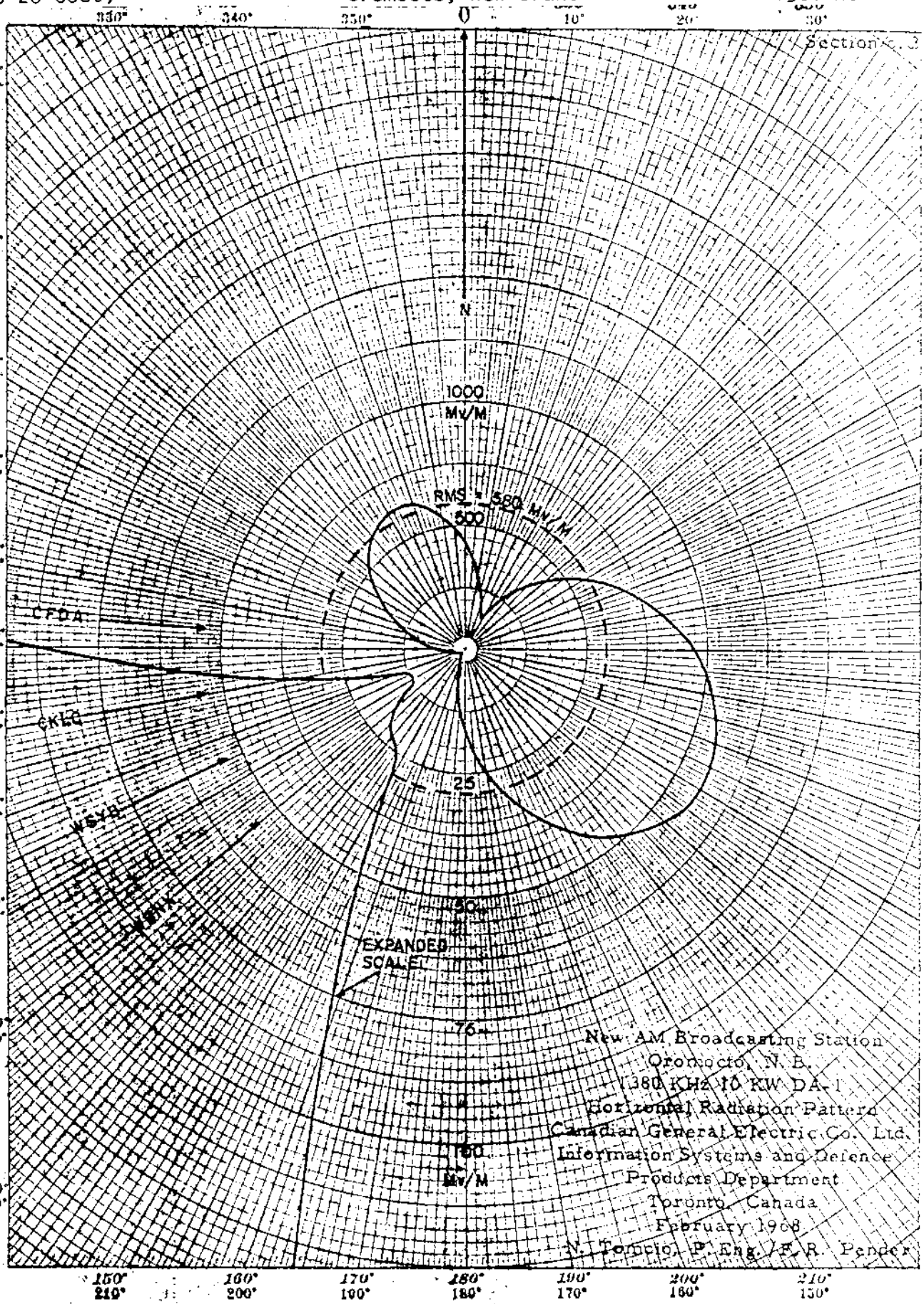
GROUND SYSTEM: 120 radials per tower of No. 10 AWG soft copper wire. Radials from each tower bonded to No. 4 AWG bus wire running midway between towers.

PREDICTED EFFECTIVE FIELD: 580 mv/m (RMS)
(183 mv/m for 1 Kw)

Proposed Day&Night
(6-28-68ct)

New Station
Oromocto, New Brunswick

10kw,DA-1,U,Class III
1380 kc



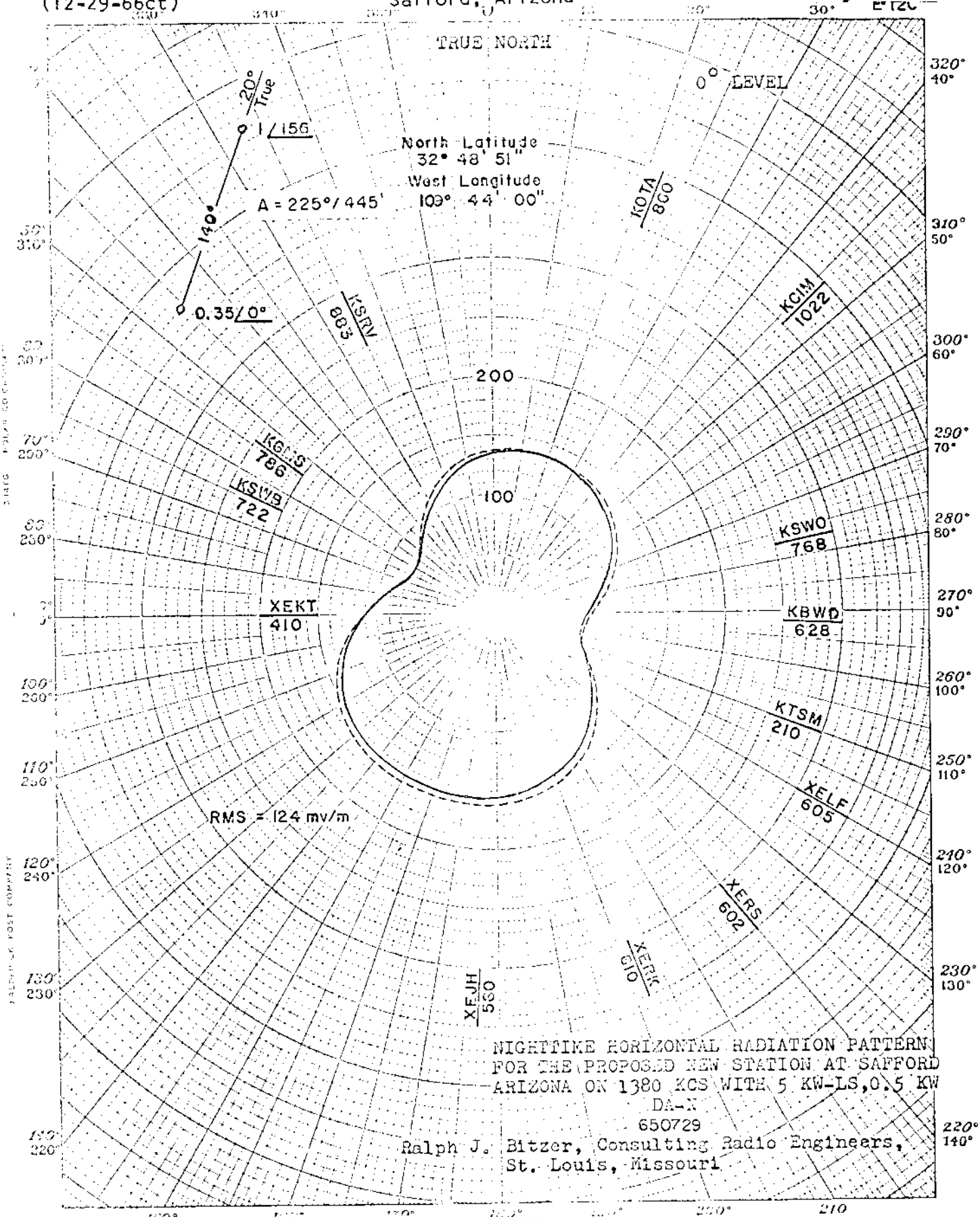
New AM Broadcasting Station
Oromocto, N. B.
1380 KHz 10 KW DA-1
Horizontal Radiation Pattern
Canadian General Electric Co. Ltd.
Information Systems and Defence
Products Department
Toronto, Canada
February 1968
N. Tomcio, P. Eng. / E. R. Pender

KATO

Proposed Night
(12-29-66ct)

Station KATO
Safford, Arizona

500w, 5kw-LS, DA-N, U
1380 kc



NIGHTTIME HORIZONTAL RADIATION PATTERN
FOR THE PROPOSED NEW STATION AT SAFFORD
ARIZONA ON 1380 KCS WITH 5 KW-LS, 0.5 KW
DA-N
650729

Ralph J. Bitzer, Consulting Radio Engineers,
St. Louis, Missouri

FCC File No. BP-16980
Accepted 12-14-66 Amended

Station KATO
Safford, Arizona

1380 kc

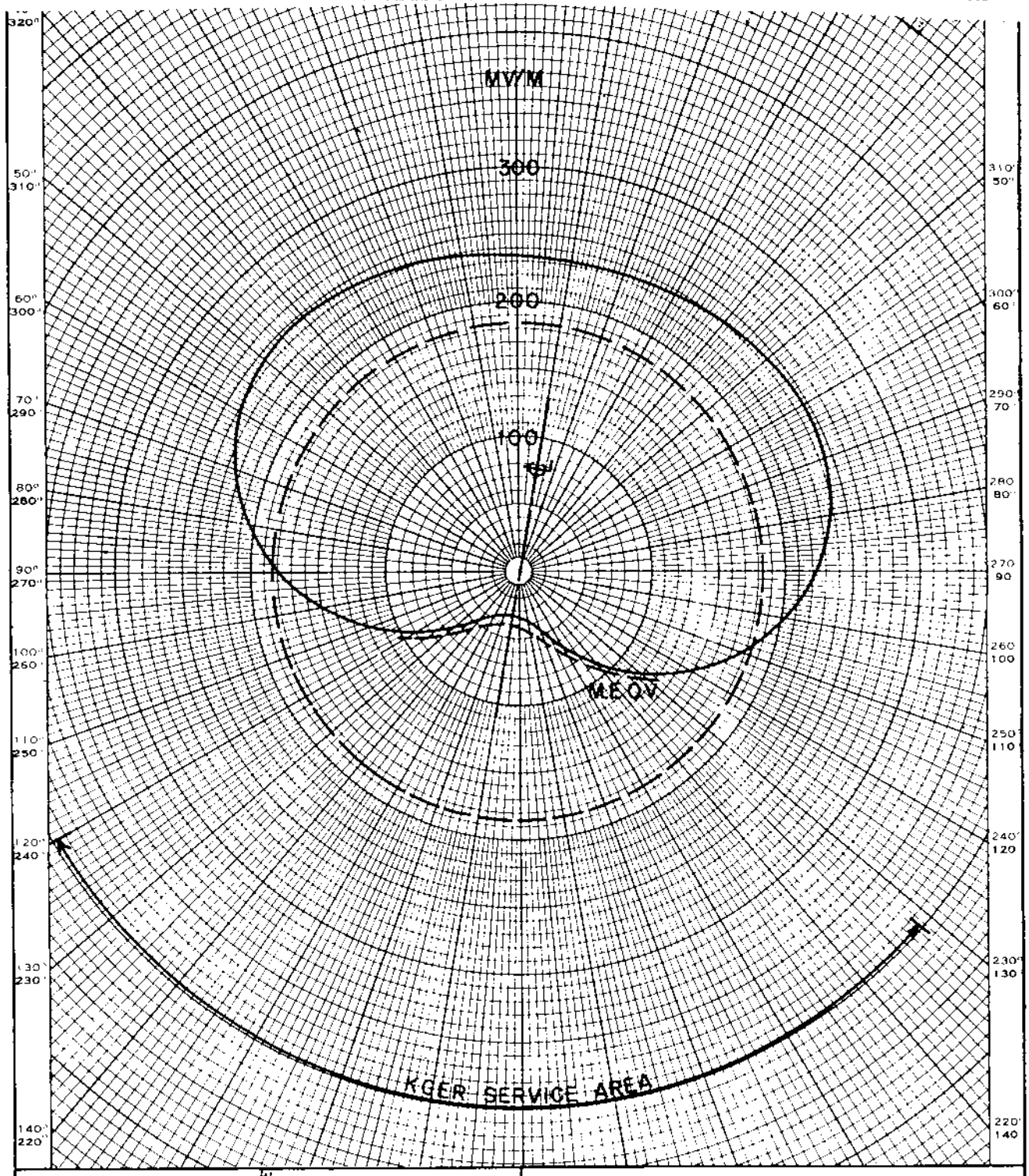
KK22 ' ~~KBVM~~

PROPOSED DAY
(8/16/55G)

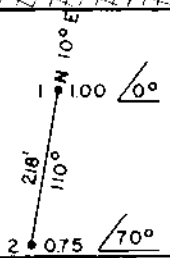
BROCAW BROADCASTING COMPANY
LANCASTER, CALIFORNIA

1KW
DA-D, D

1380 KC



N. LAT. 34° 42' 43"
W. LONG. 118° 10' 34"



G=90°

RMS=185 MV/M

ROBERT L. HAMMETT
CONSULTING RADIO ENGINEER

NEW RADIO STATION
1380 KC, 1 KW, DA-D

HORIZONTAL RADIATION PATTERN
DAYTIME

UNATTENUATED FIELD INTENSITY

AT ONE MILE

FILE NO. BP-9913 (Amended) ACCEPTED 7/27/55 FCC

BROCAW BCG. CO.
Lancaster, California 1380 KC

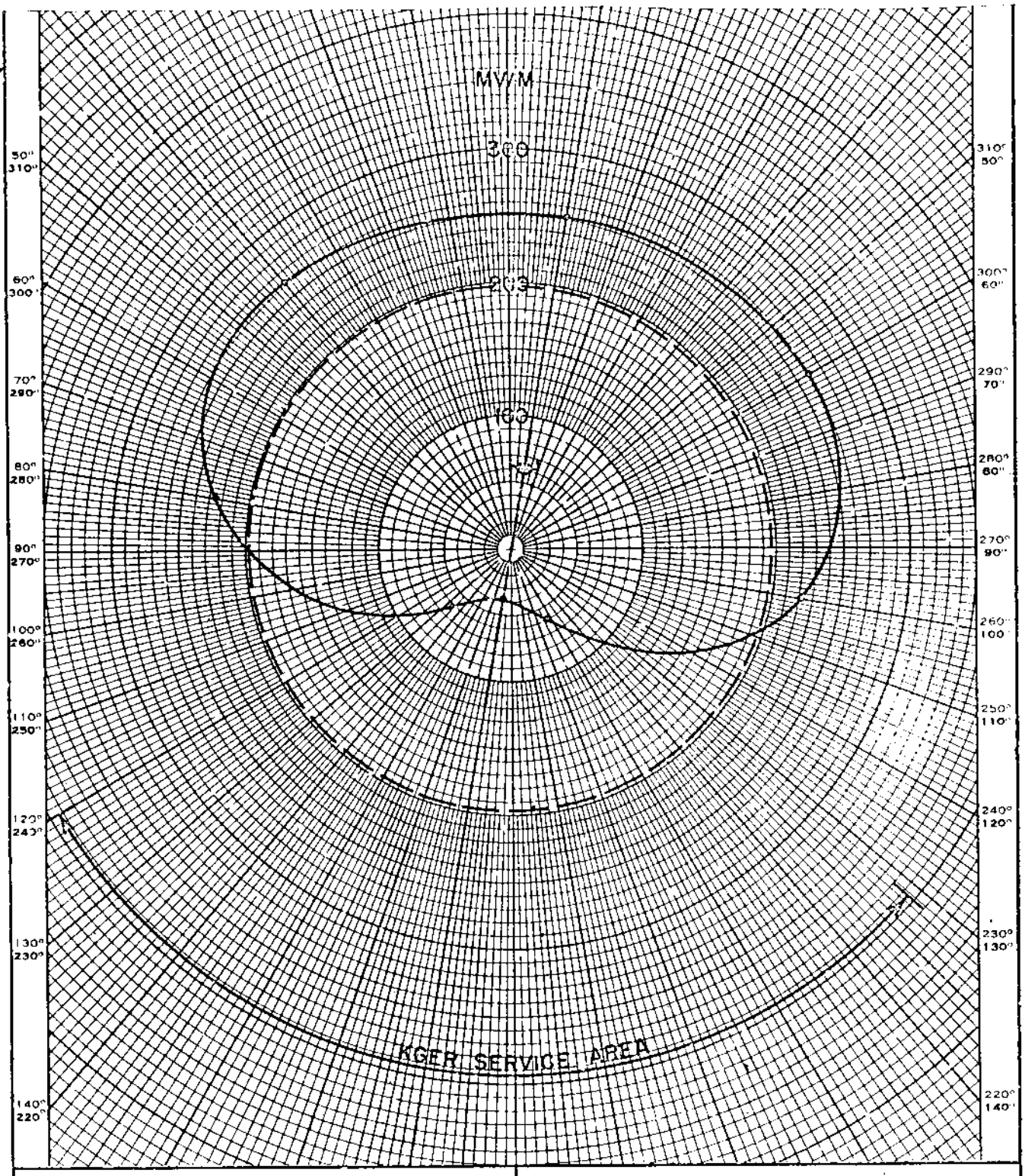
KK22 ~~KBVM~~

MEASURED
DAY (9-14-56g)

STATION K B V M 1 KW, DA-D, D
Lancaster, California

1380 KC

Limited license
11/7/57



N. LAT. 34° 42' 43"
W. LONG. 118° 10' 34"

1 1.00 /0°

N 10° E

218'

110°

2 0.75 /70°

G = 90°

RMS = 198 MV/M

ROBERT L. HAMMETT
CONSULTING RADIO ENGINEER

RADIO STATION KBVM
1380 KC, 1 KW, DA-D

MEASURED HORIZONTAL RADIATION PATTERN DAYTIME

UNATTENUATED FIELD INTENSITY
AT ONE MILE

FCC File
BL-6282

Accepted 9-4-56

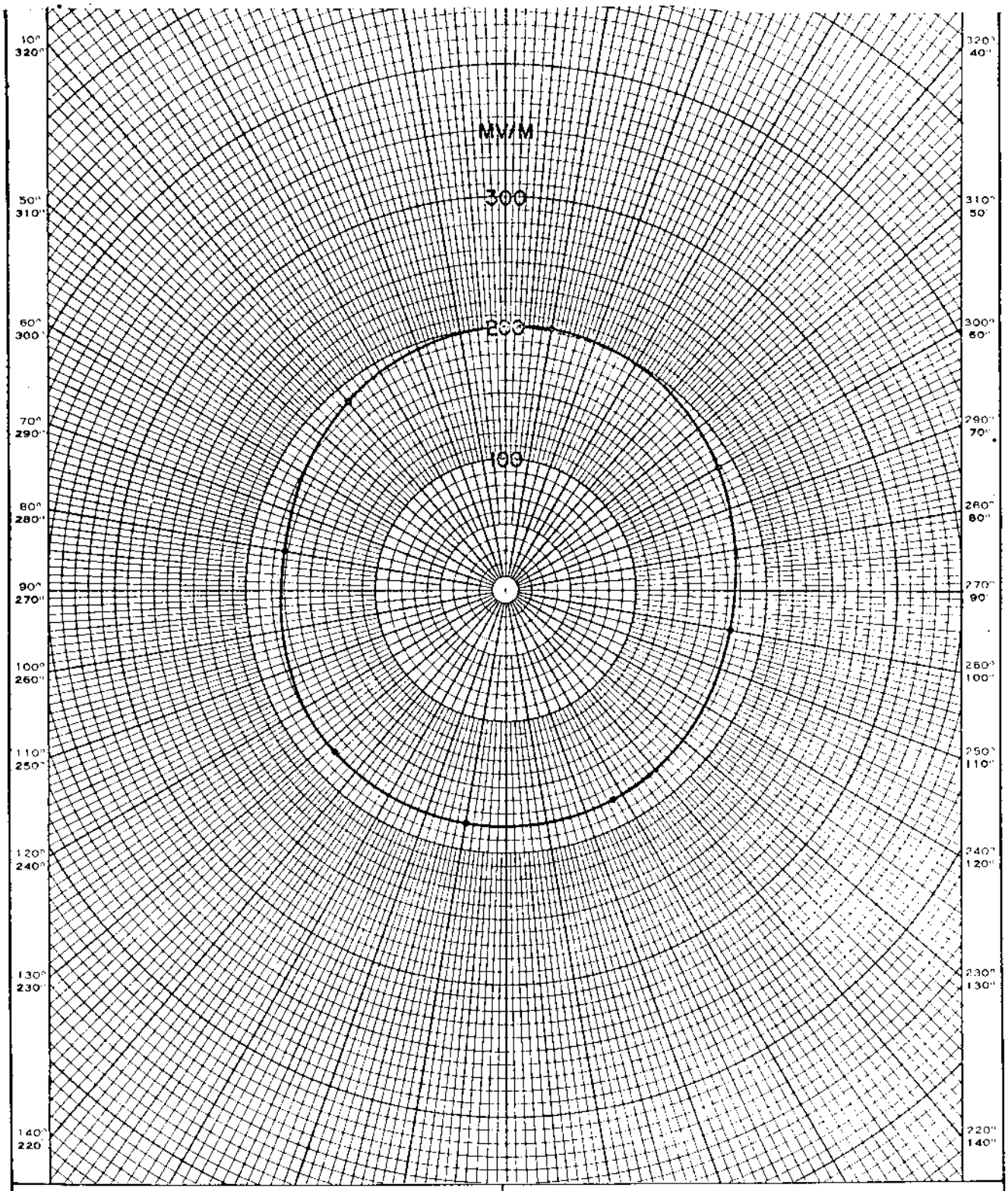
Station KBVM
Lancaster, California

1380 KC

KKLZ KBVM

MEASURED NON-DA(9-14-56g) STATION K B V M LANCASTER, CALIF. 1 KW, DA-D, D 1380 KC

granted license 11/7/57



N. LAT. 34° 42' 43"
W. LONG. 118° 10' 34"

G = 90d

RMS = 184 MV/M

MEASURED HORIZONTAL RADIATION PATTERN NON-DIRECTIONAL

UNATTENUATED FIELD INTENSITY AT ONE MILE

ROBERT L. HAMMETT
CONSULTING RADIO ENGINEER
SAN FRANCISCO

RADIO STATION KBVM
1380 KC, 1 KW, DA-D
LANCASTER, CALIFORNIA

FCC File
BL-6282

Accepted 9-4-56

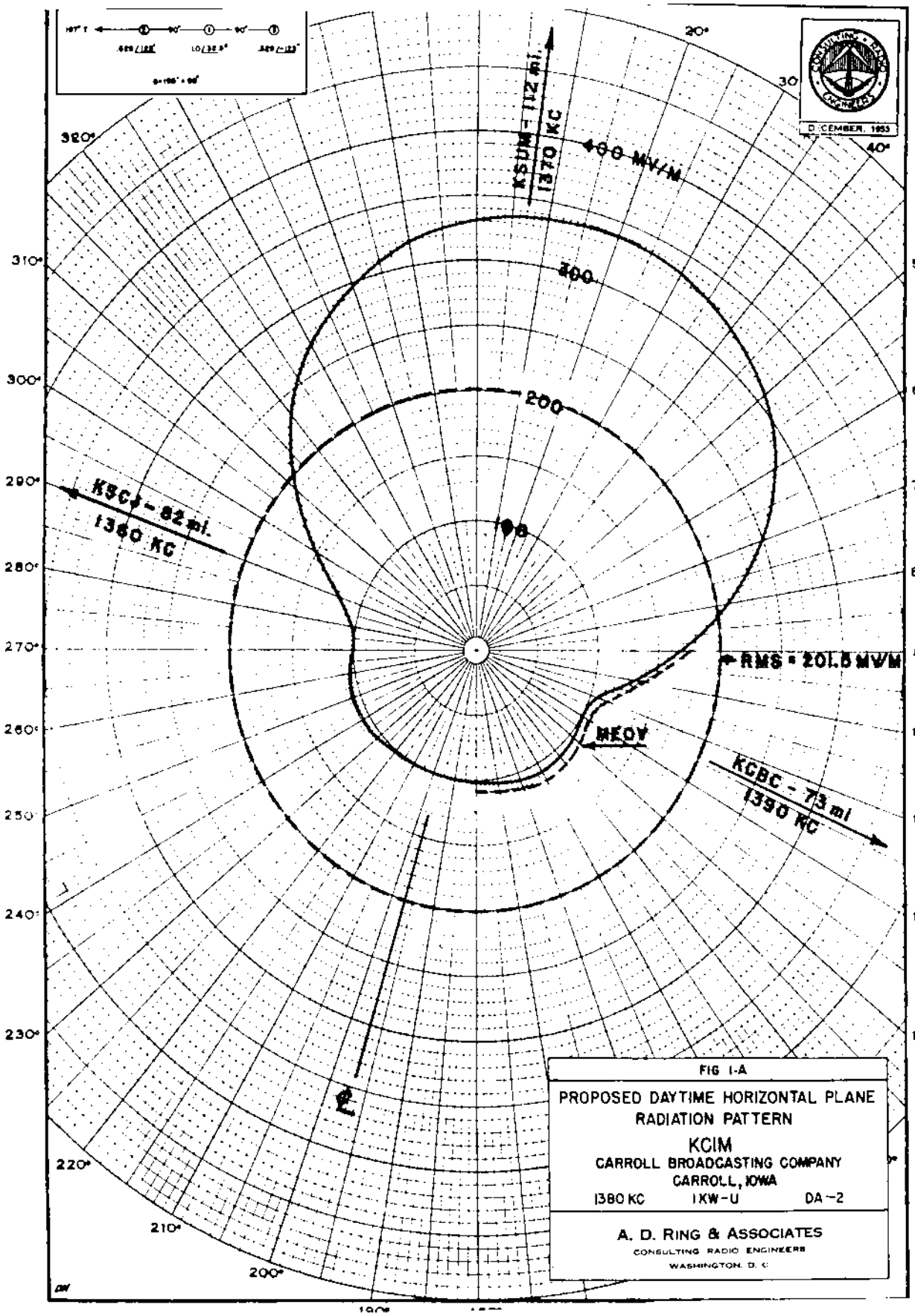
560716

Station KBVM
Lancaster, Calif.

FIGURE 9B
1380 KC

KCIM

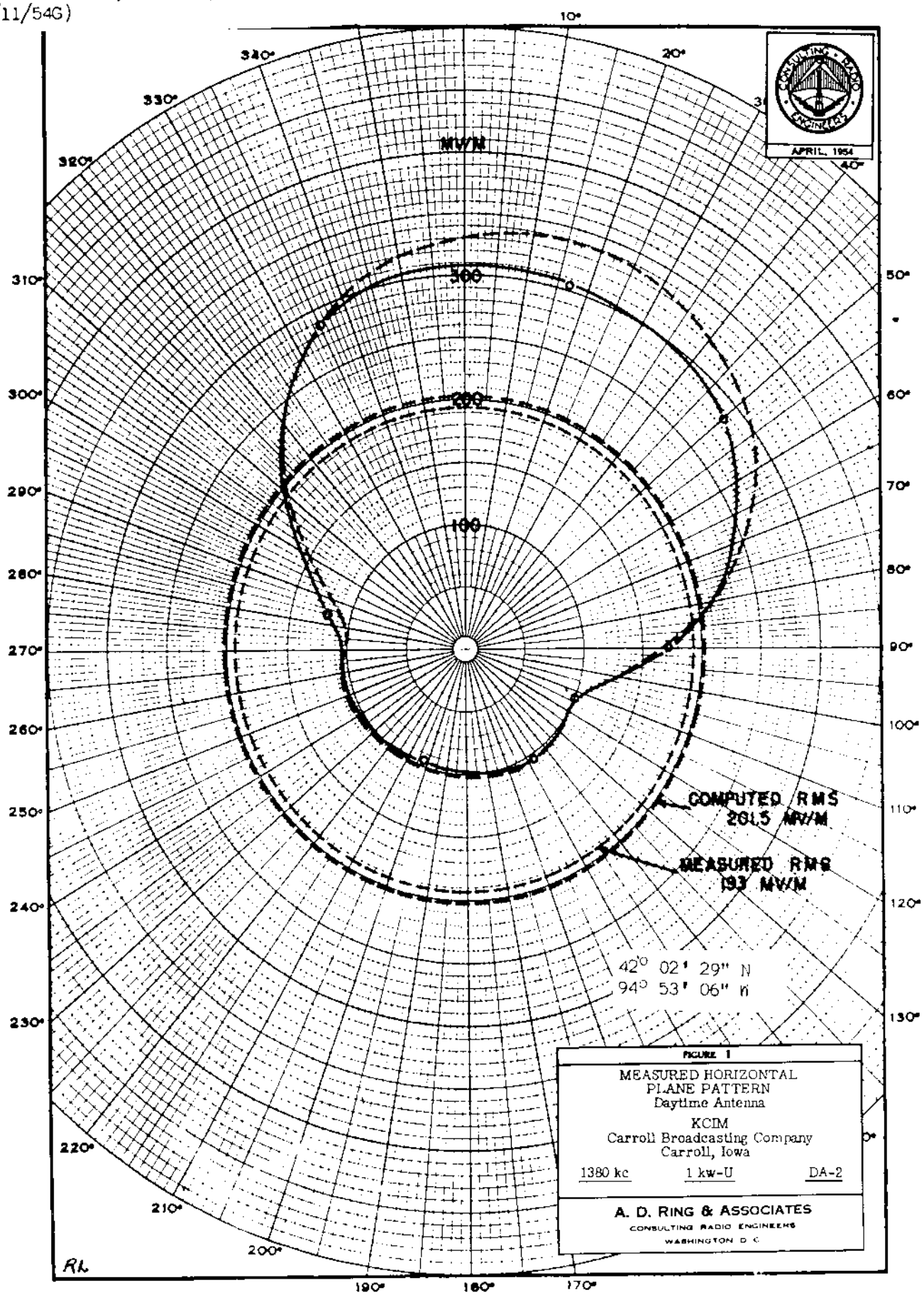
PROPOSED KCIM, CARROLL, IOWA 1KW, U, DA-2 1380 kc
DAY (1/12/54G)



FCC FILE NO. Bp-8978 Amended Accepted 12/22/53 KCIM, CARROLL, IOWA 1380 kc

KCIM

MEASURED DAY (6/11/54G) KCIM, CARROLL, IOWA 1KW, U, DA-2 1380 kc



FCC File No. BL-5305 Accepted 5/19/54 KCIM, Carroll, Iowa 1380 k

POLAR CO-ORDINATE NO. 15 HP CLEVELAND INSTITUTE OF RADIO ELECTRONICS
MADE IN U.S.A. CLEVELAND OHIO

KCIM

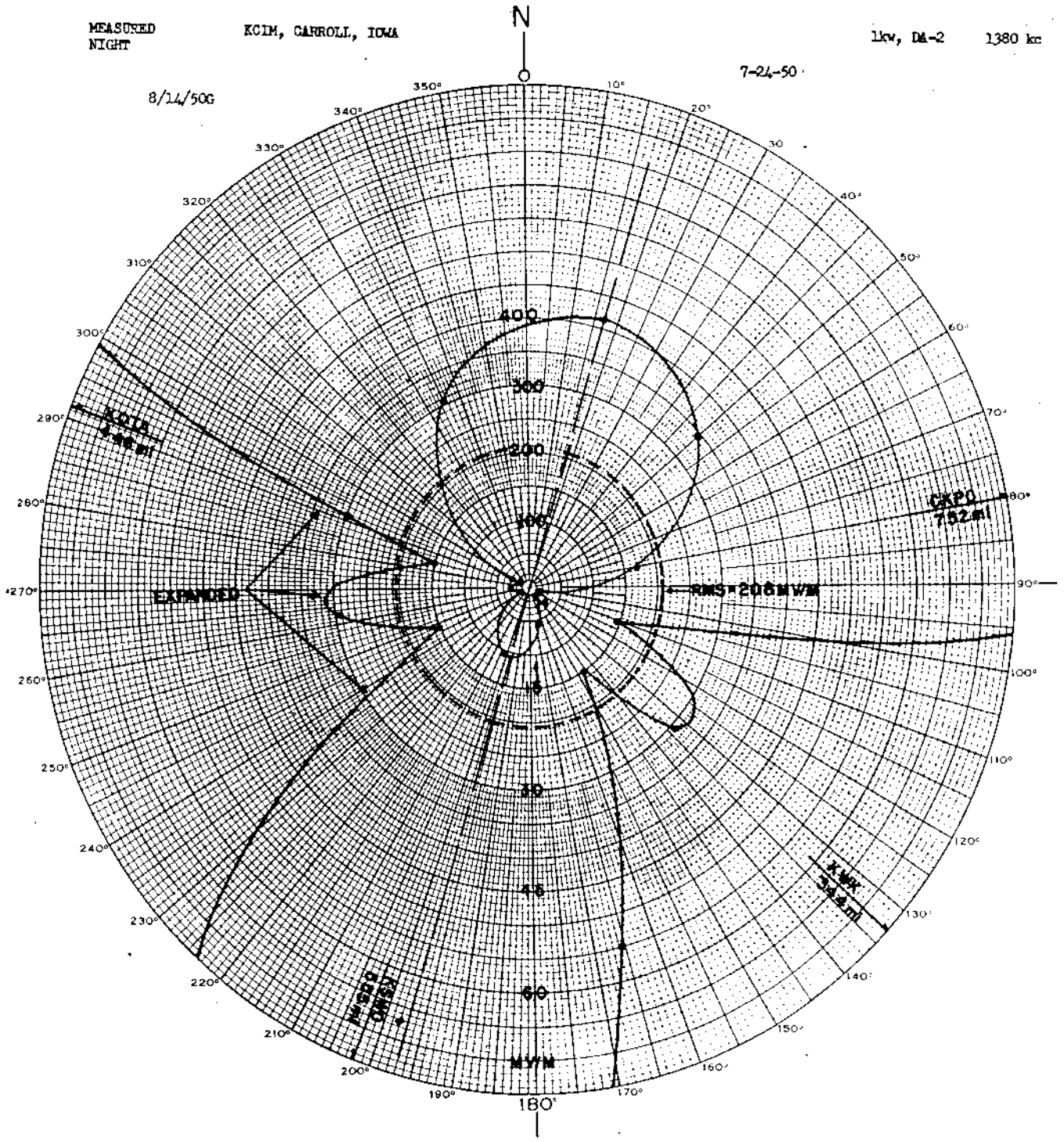
MEASURED
NIGHT

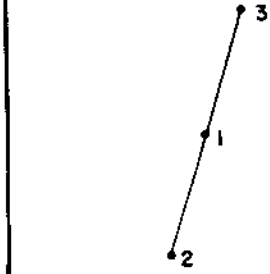
KCIM, CARROLL, IOWA

1kw, DA-2 1380 kc

8/14/50G

7-24-50





LATITUDE 42° 02' 29"			
LONGITUDE 94° 53' 06"			
ANTENNA	1	2	3
G	99°	99°	99°
FIELD RATIO	1.000	.556	.556
PHASE	-2.5°	149°	-149°
SPACING	0	90°	90°
AZIMUTH	0	197°	17°

MEASURED
HORIZONTAL PLANE PATTERN
NIGHT

KCIM

CARROLL, IOWA

1380KC _____ 1-KW-DA2

LLOYD R. AMOO
Consulting Radio Engineer

KCIM, Carroll, Iowa 1380 kc

KCIM

PROPOSED NIGHT — NEW, CARROLL, IOWA (Carroll Bg. Co.) — 9-15-49 — 1kw, DA-2

CARROLL, IOWA-1380 KC-1KW NIGHT

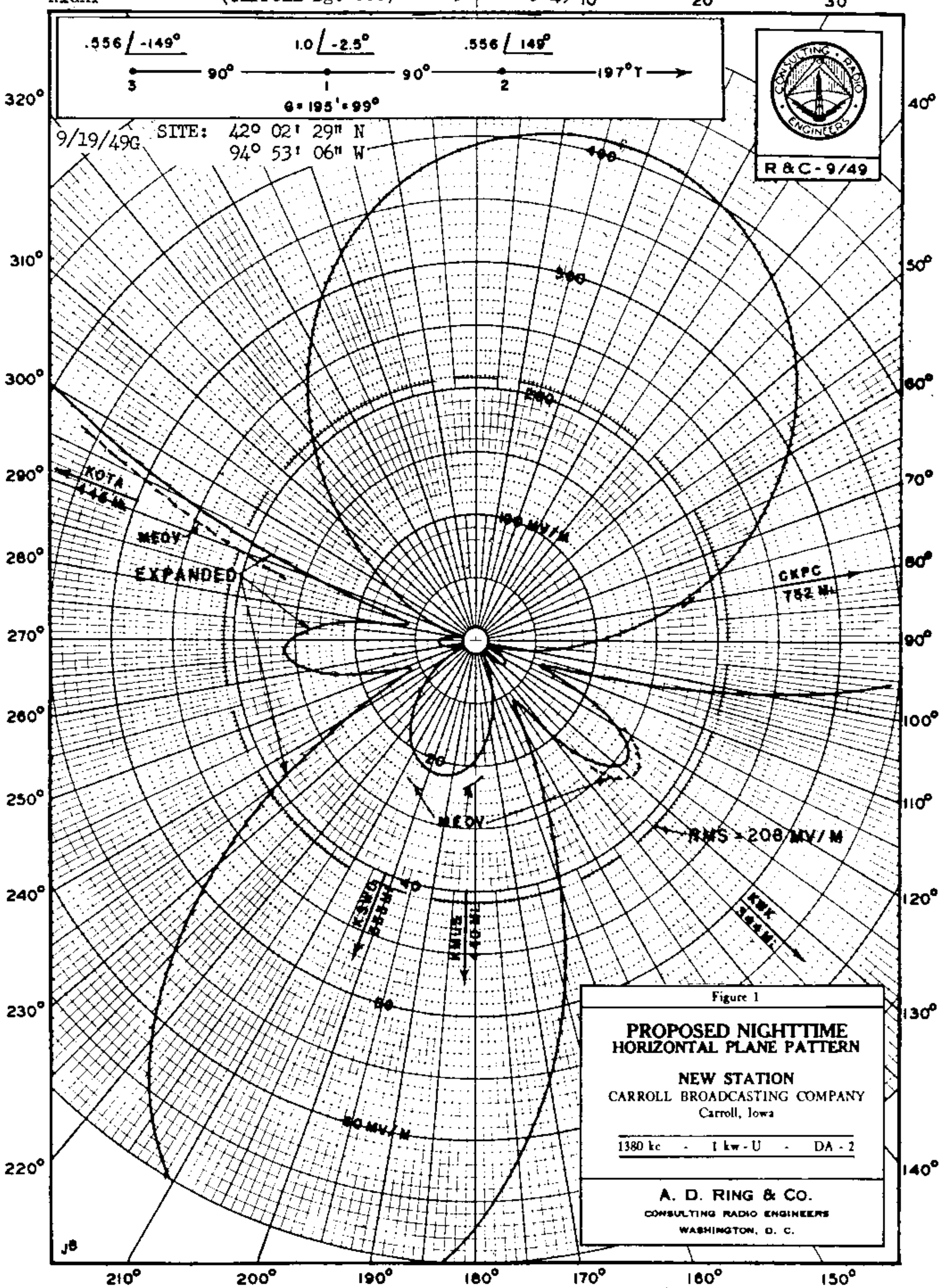


Figure 1

PROPOSED NIGHTTIME HORIZONTAL PLANE PATTERN

NEW STATION
CARROLL BROADCASTING COMPANY
Carroll, Iowa

1380 kc - 1 kw - U - DA - 2

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

New, Carroll, Iowa 1380 kc

KCKO
1380kHz

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KCKO

Main Studio: Millwood, Washington

Frequency: 1380 kHz

Power: 2.5kw Night 5kw Day

Notification List No. 1787

Date: July 10, 1980 Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 47° 37' 48"
West Longitude: 117° 20' 34"

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:	S(#1)	C(#2)	N(#3)
HEIGHT ABOVE INSULATORS:	203'	203'	203' (102.5°)
NIGHT PHASING:	0°	+233.0°	+106.0°
NIGHT FIELD RATIO:	1.0	1.36	1.0
DAY PHASING:	—	0	+280°
DAY FIELD RATIO:	—	1.0	0.45

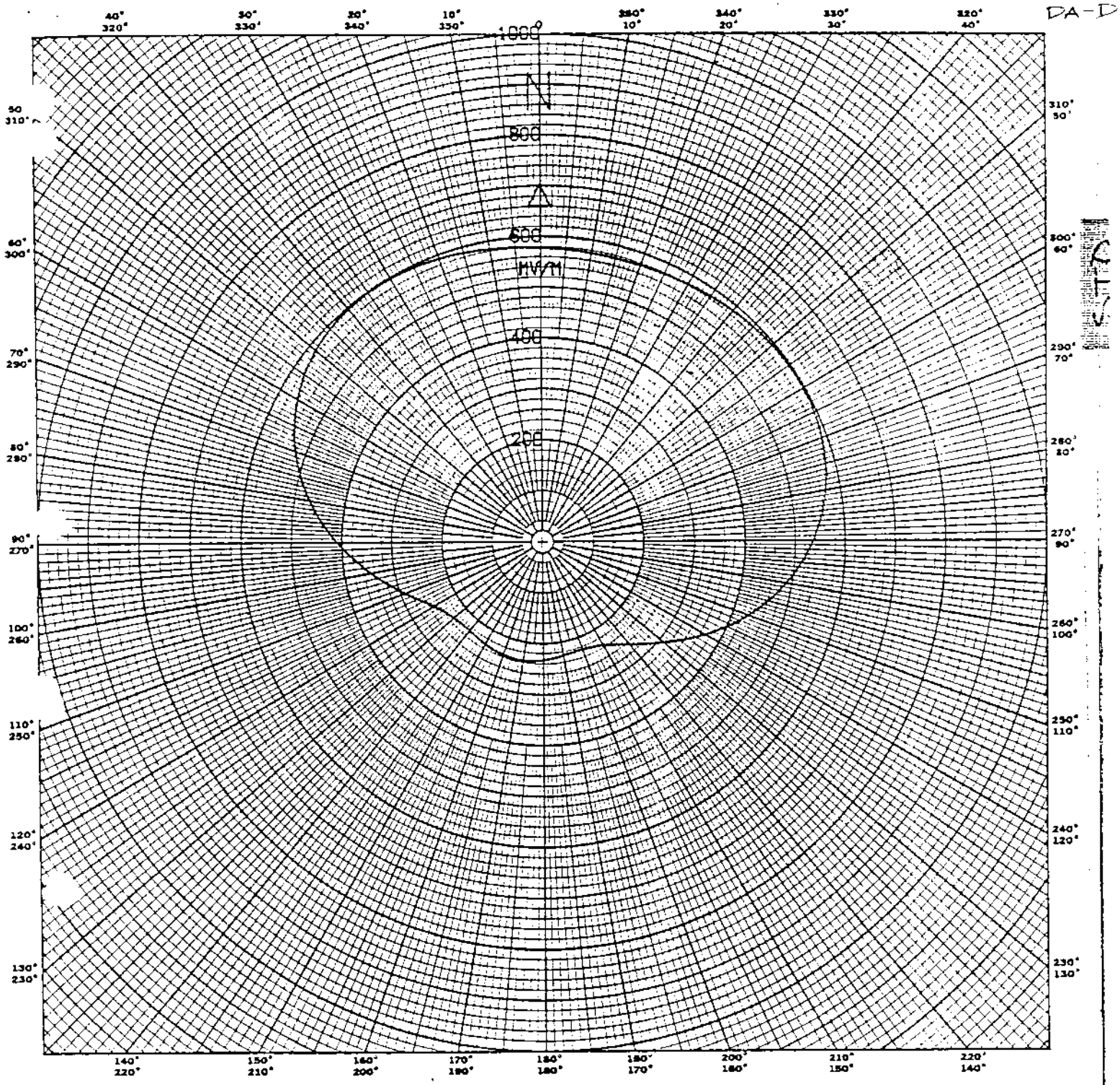
SPACING AND ORIENTATION: Adjacent t owers in a row are spaced 228' (115°) on a line bearing 12° true.

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

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
435.30 mv/m	429.21 mv/m	457.28 mv/m
329.12 mv/m	352.89 mv/m	345.72 mv/m

KCKQ
1380KHz
DA-D

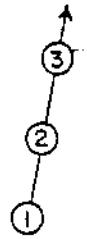


HATFIELD & DAWSON
CONSULTING ELECTRICAL ENGINEERS
3525 STONE WAY N.
SEATTLE, WASHINGTON 98103

RADIO STATION KSZE
MILLWOOD, WASHINGTON

5/78 Figure E-1

PROPOSED DAYTIME DIRECTIONAL ANTENNA
STANDARD PATTERN

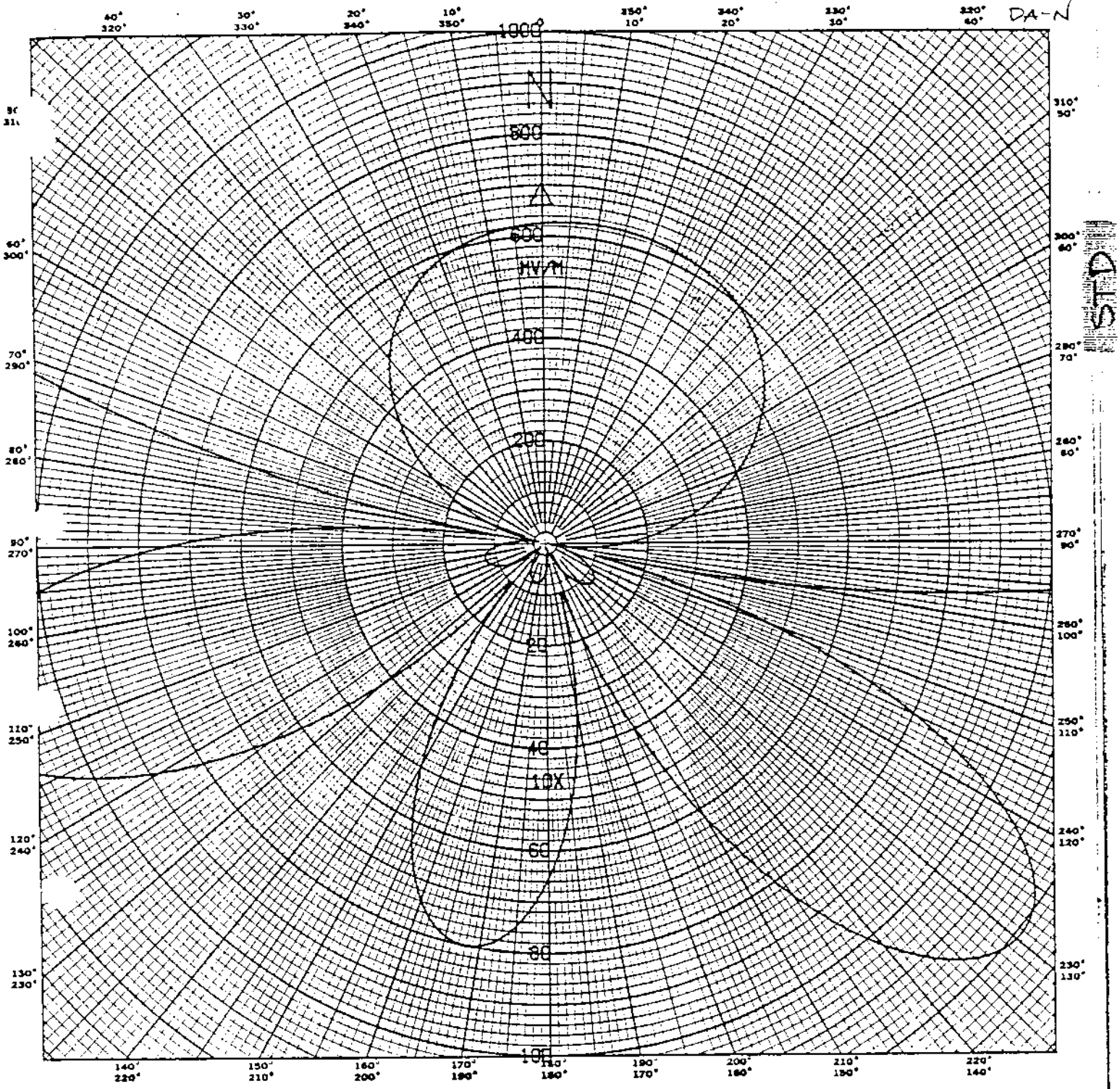


1380 kHz. 5 kw. D, 2.5 kw. N DA-2
RMS theo = 435.2968 mv/m
RMS std = 457.2787 mv/m
RSS = 429.21 mv/m I = 391.4058 mv/m

#	F	ϕ	S	ϕ	G
1	unused in daytime pattern				
2	1.0	0	0	0	all
3	0.45	280.0	115.0	12.0	102.5°

SITE ~~47 36 58 I 117 20 32~~
47° 37' 48" x 117° 20' 34"

1380kHz DA-N



HATFIELD & DAWSON
CONSULTING ELECTRICAL ENGINEERS
3525 STONE WAY N.
SEATTLE, WASHINGTON 98103

RADIO STATION KEZE
MILLWOOD, WASHINGTON

5/78 Figure E-2

PROPOSED NIGHTIME DIRECTIONAL ANTENNA
STANDARD PATTERN

1380 kHz. 5 kw. D, 2.5 kw. N DA-2
RMS theo = 329.1217 mv/m
RMS std = 345.7213 mv/m
RSS = 352.8918 mv/m X = 179.8596 mv/m

#	F	∅	S	∅	G
1	1.0	0	0	0	all
2	1.36	233.0	115.0	12.0	102.5°
3	1.0	106.0	230.0	12.0	

SITE ~~47 36 58~~ I ~~117 20 58~~
47°37'48" x 117° 20' 34"

KCNW
1380kHz

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KCNW — Main Studio: Fairway, Kansas

Frequency: 1380 kHz — Power: 1kw Night 5kw Day

Notification List No. 1783 — Date: November 2, 1979 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM: North Latitude: 38° 58' 34" West Longitude: 94° 42' 37"

ANTENNA CHARACTERISTICS

Authorized for Daytime and Nighttime operation. (DA-2)
Number of elements: 6
Type of elements: Series excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	SW(#1)	SC(#2)	C(#3)	NC(#4)	N(#5)	NE(#6)
HEIGHT ABOVE INSULATORS:	201'	201'	201'	201'	201'	201' (101.53°)
NIGHT PHASING:	-47.1°	+177.6°	0°	-153.6°	+15.3°	-117.6°
NIGHT FIELD RATIO:	0.187	0.657	1	0.879	0.613	0.135
DAY PHASING:	-3°	+178°	-10.3°	-178.6°	+3°	---
DAY FIELD RATIO:	0.201	0.604	1.12	1.054	1.0	---

SPACING AND ORIENTATION: SW(#1), SC(#2), C(#3), NC(#4) and N(#5) towers in a row are spaced 198' (100°) on a line bearing 35° true. With the SW(#1) tower as reference the NE(#6) tower is spaced 264'(133.5°) on a line bearing 79.6° true.

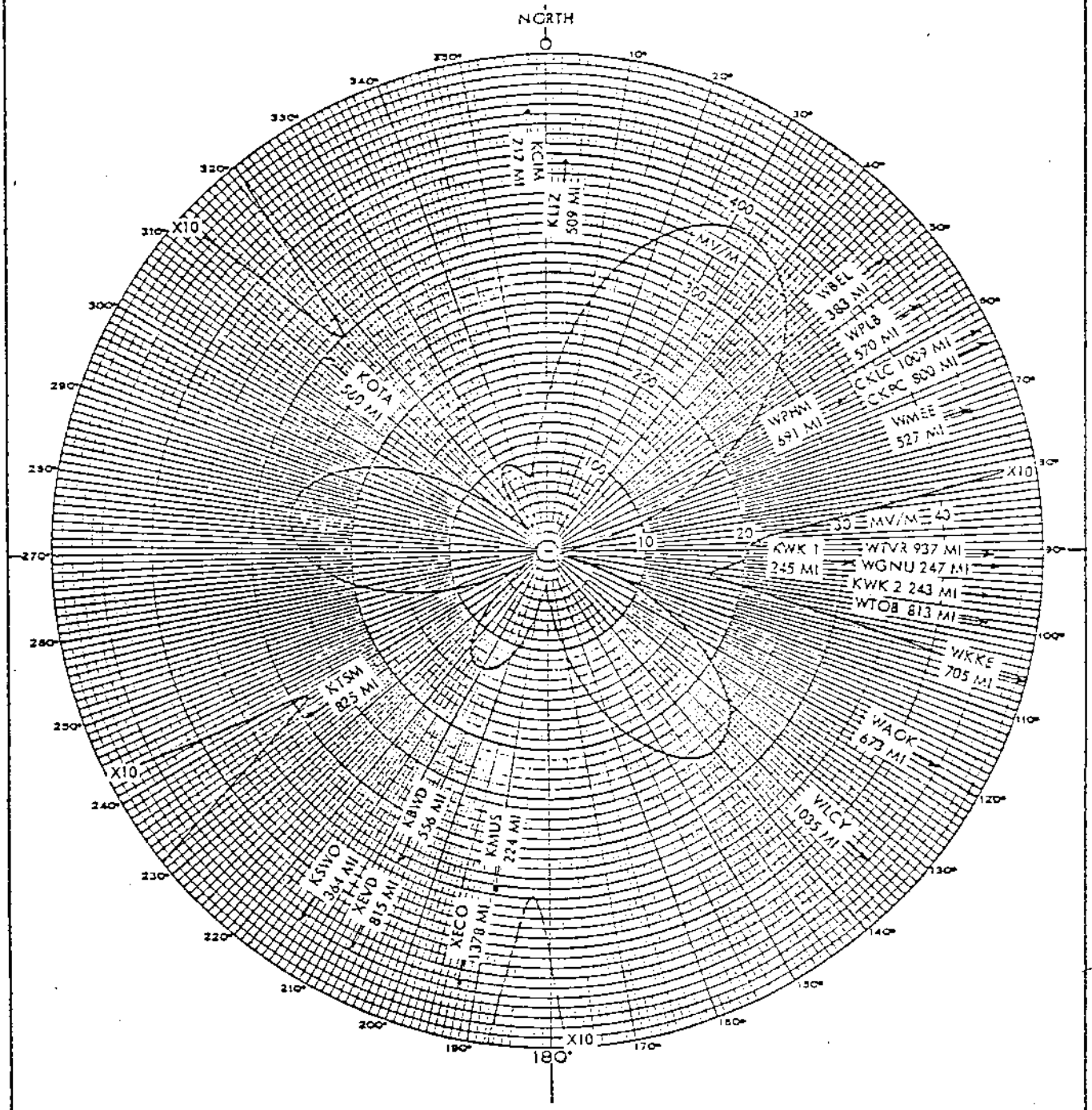
GROUND SYSTEM: 120-200' (except the NE(#6) tower 120-180') equally spaced copper radials plus a 48' square ground screen about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	436 mv/m		
Night	178.0 mv/m	580.0 mv/m	187.5 mv/m

Note: Please retain the Daytime directional antenna radiation pattern notified for Station KUDL in United States Change List Number 894 dated February 1, 1961, 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.

1380KHz



N. LAT. 38°58' 34"
W. LONG. 94°42' 37"

KCNW

$G_{1,2,3,4,5,6}$ = 101° = 201 FT

RMS_{STD} = 187.5 MV/M
RMS_{THEO} = 178.0 MV/M
E_{RSS} = 580.0 MV/M

0.613 /153° ⑤

0.879 /-153.6° ④

1 /0° ③

0.657 /177.6° ②

0.187 /-47.1° ① ⑥ 0.135 /-117.6°

TOWER LOCATIONS RELATIVE TO TOWER 1

TOWER	AZIMUTH	DISTANCE
2	N 35°E	100° 198 FT
3	35°	200° 396
4	35°	300° 594
5	35°	400° 792
6	79.6°	1335° 264

PROPOSED STANDARD — HORIZONTAL RADIATION NIGHTTIME

UNATTENUATED FIELD INTENSITY AT ONE MILE

HAMMETT & EDISON, INC.
CONSULTING ENGINEERS
SAN FRANCISCO

RADIO STATION KUDL
1380 KHZ, 1 KW, 5 KW-LS, DA-2
FAIRWAY, KANSAS

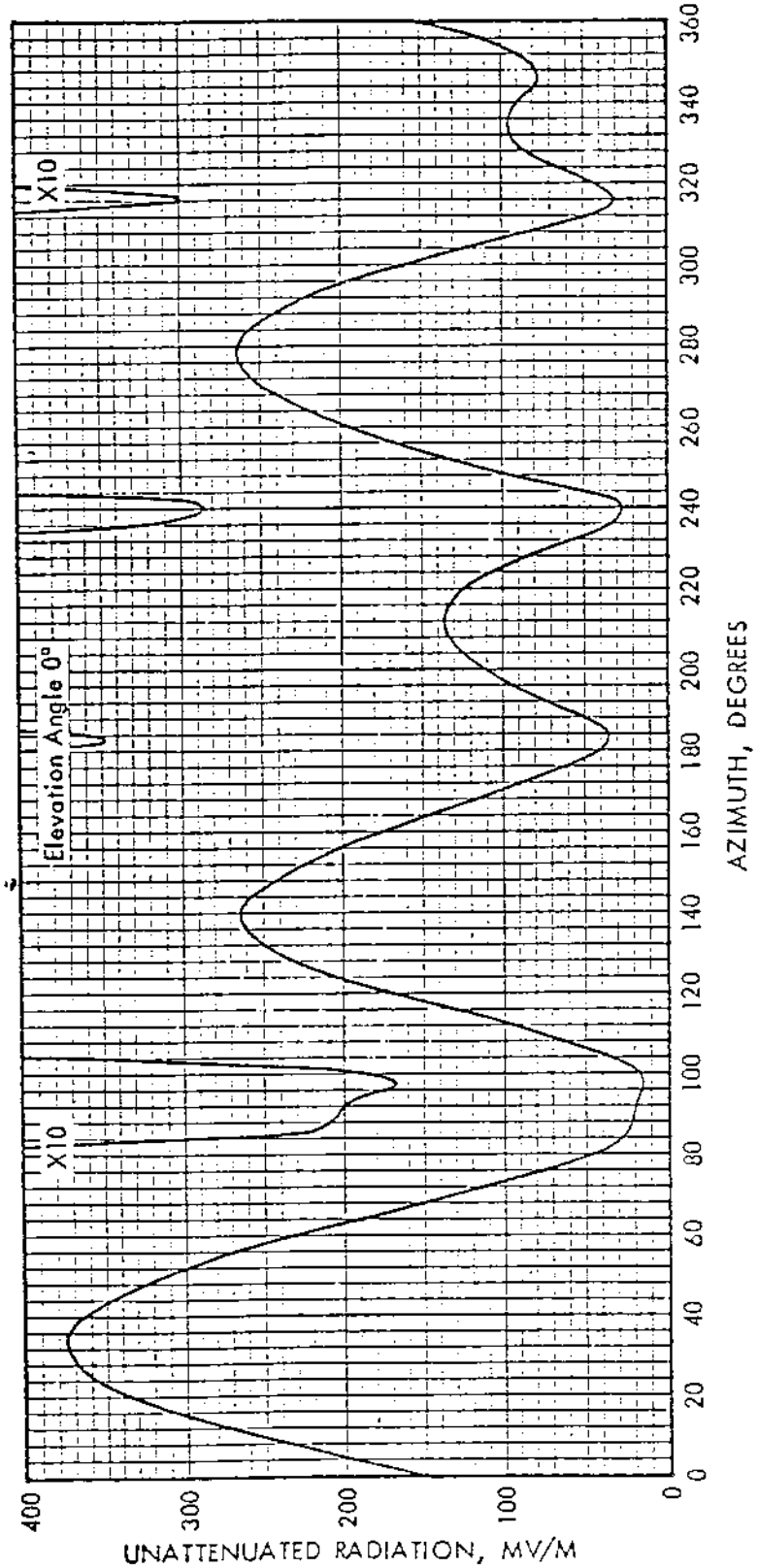
7606112

FIGURE 4A

KLNN
1380kHz

RADIO STATION KUDL

CALCULATED NIGHTTIME STANDARD RADIATION



Hammett & Edison, Inc.
Consulting Engineers

760611.2

FIGURE 4B

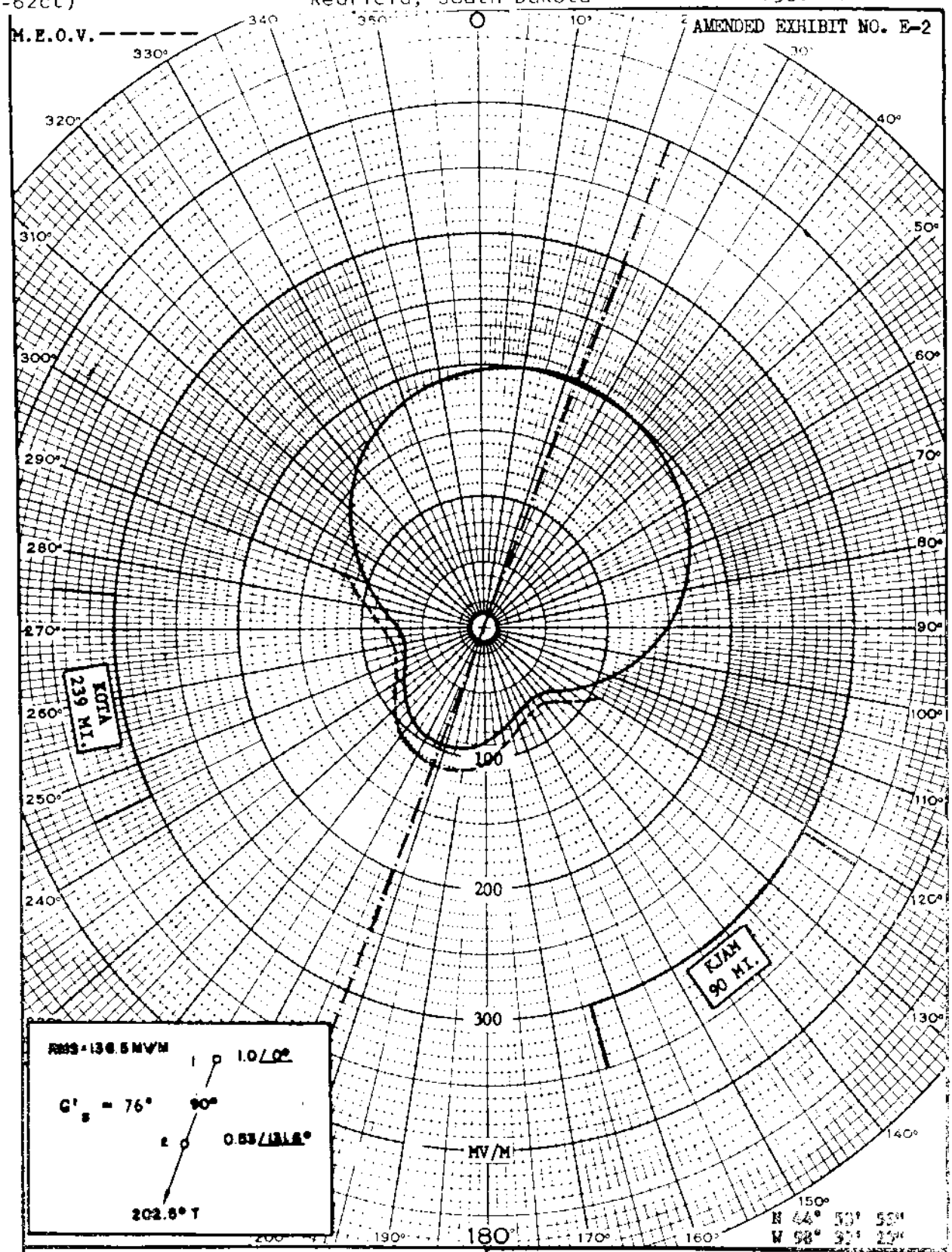
KFCB

Proposed Day
(11-29-62ct)

Station KFCB
Redfield, South Dakota

500w,DA-D,D
1380 kc

1-10-62 granted MCP w/ changes in A Pattern.



COMMERCIAL RADIO EQUIPMENT CO.
Radio Engineering Consultants
WASHINGTON D C

PROPOSED HORIZONTAL RADIATION PATTERN
REDFIELD, SOUTH DAKOTA
1380KC, 500 W-D, DA
Victoria Broadcasting System
OCTOBER 18, 1962

FCC File No.BMP-10490
Accepted 11-14-62 Amended

Station KFCB
Redfield, South Dakota

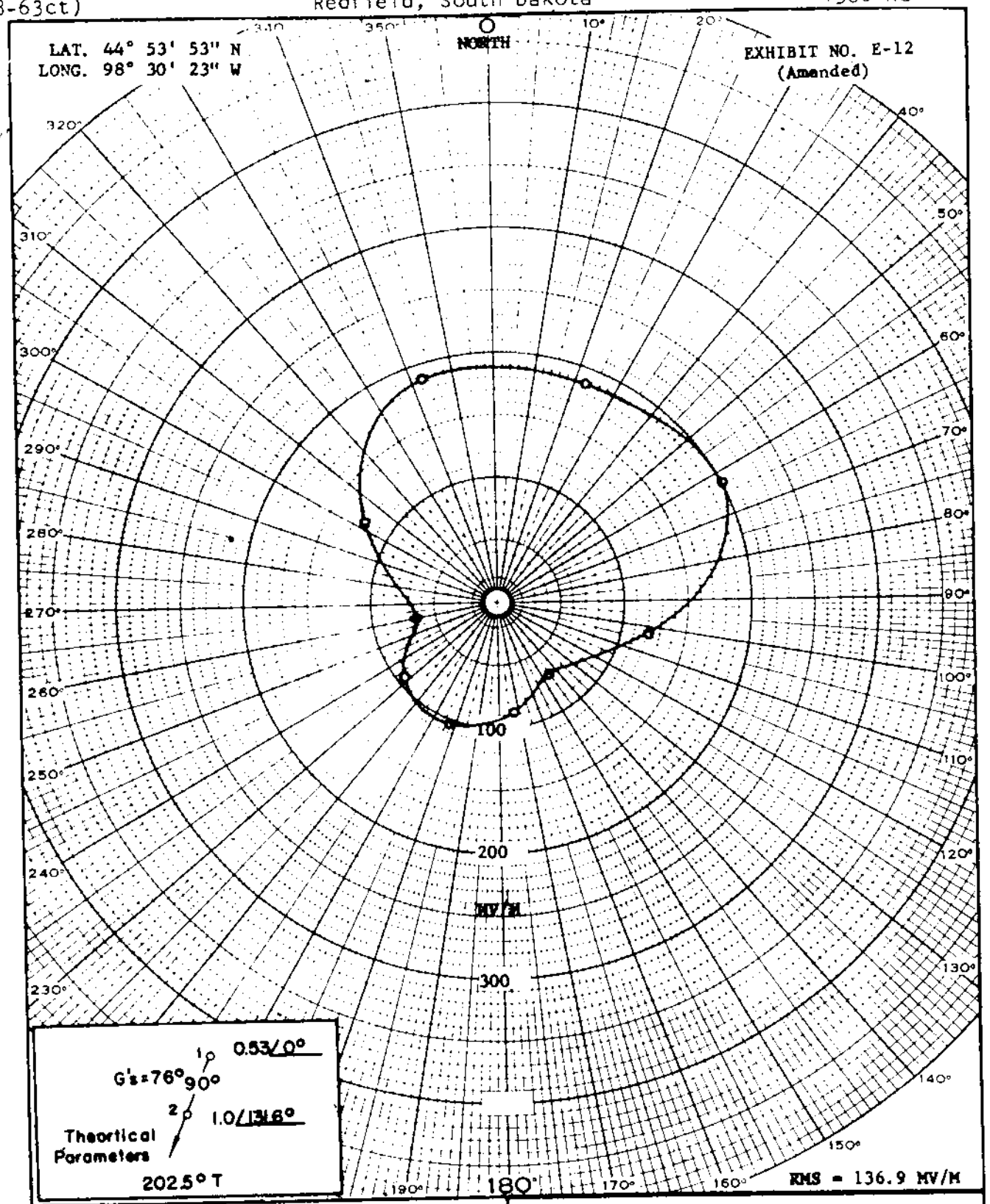
1380 kc

KFCB

Measured Day
(5-28-63ct)

Station KFCB
Redfield, South Dakota

500w,DA-D,D
1380 kc



COMMERCIAL RADIO EQUIPMENT CO.
Radio Engineering Consultants
WASHINGTON D C

MEASURED DAYTIME PATTERN
KFCB, REDFIELD, SOUTH DAKOTA
1380 KC, 500 W-D, DA
NOVEMBER 1962

FCC File No.BL-9835
Accepted 3-21-63

Station KFCB
Redfield, South Dakota

1380 kc

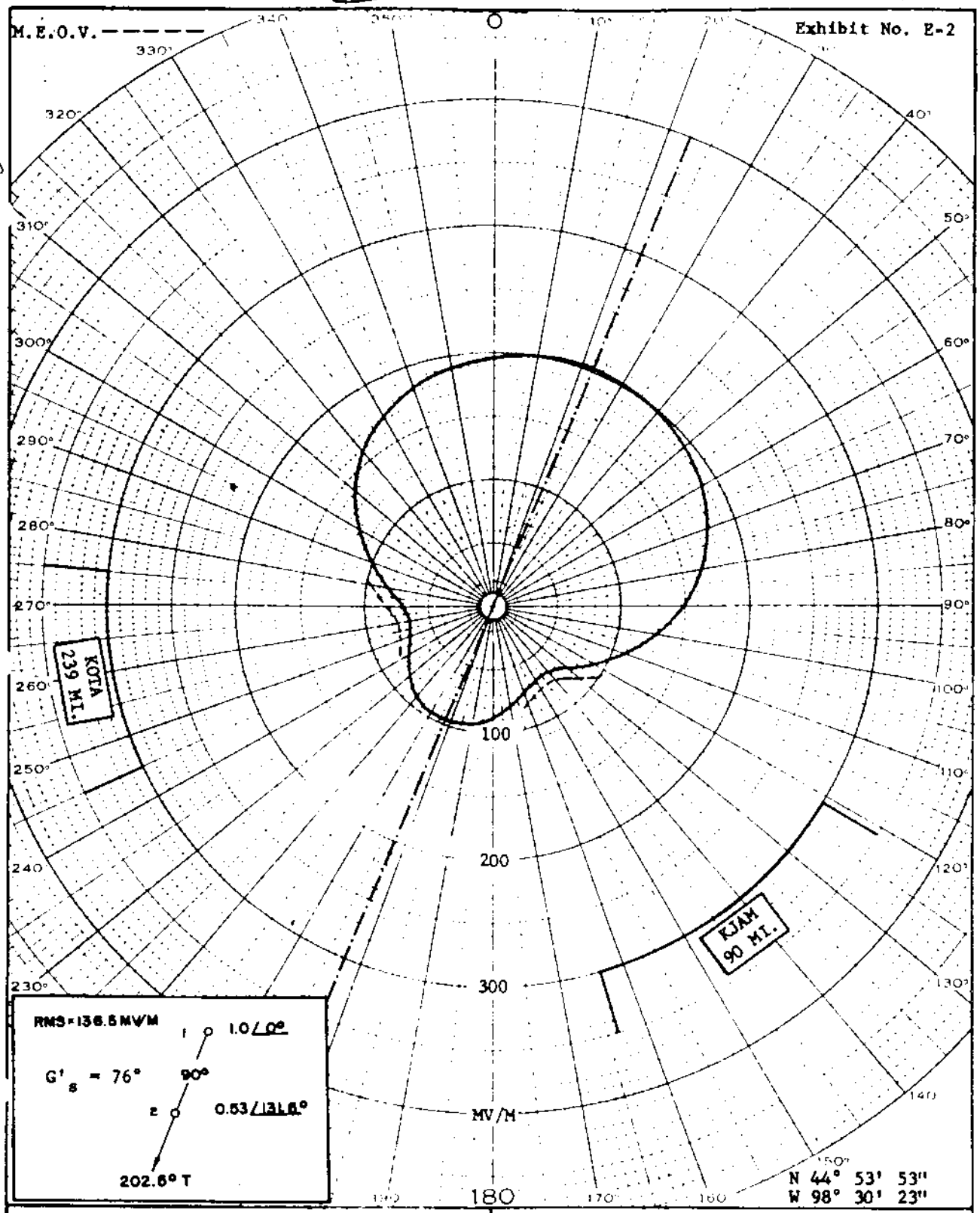
KFCB

Proposed Day
(4-27-62ct)

New; Victoria Broadcasting System
Redfield, South Dakota

500w,DA-D,D
1380 kc

6-5-62
granted opto
w/ Amendment



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

PROPOSED NEW STATION
REDFIELD, SOUTH DAKOTA
1380 KC, 500 W-D, DA
Victoria Broadcasting System
March 12, 1962

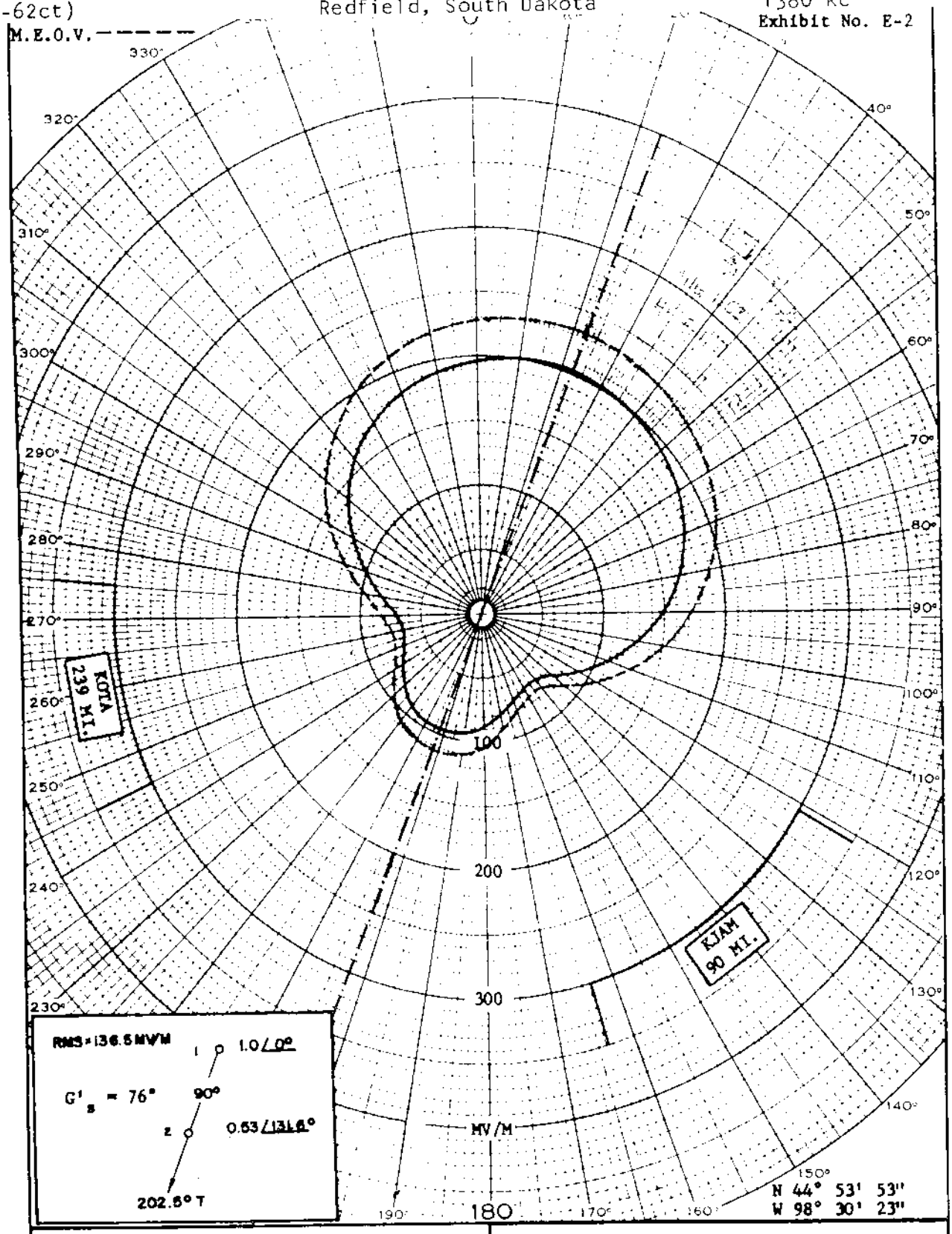
FCC File No.BP-14366 New; Victoria Broadcasting System
Accepted 4-19-62 Amended Redfield, South Dakota 1380 kc

KFCB

Proposed Day
(9-27-62ct)

Station KFCB
Redfield, South Dakota

500w,DA-D,D
1380 kc
Exhibit No. E-2



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

PROPOSED HORIZONTAL RADIATION PATTERN
REDFIELD, SOUTH DAKOTA
1380KC, 500 W-D, DA
Victoria Broadcasting System
August 6, 1962

FCC File No.BMP-10490
Accepted 8-31-62

Station KFCB
Redfield, South Dakota

1380 kc

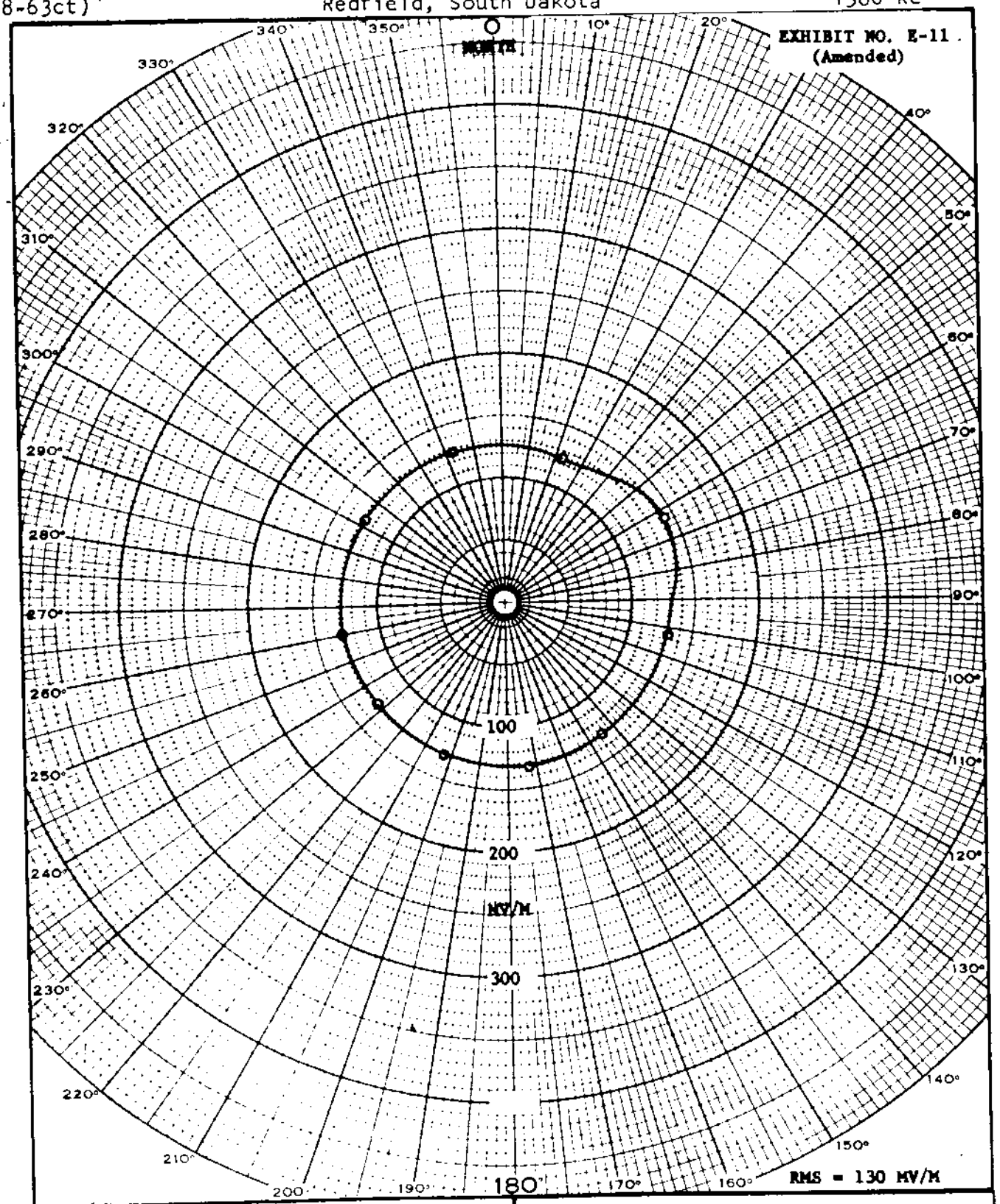
KFCB

Measured Non-DA
(5-28-63ct)

Station KFCB
Redfield, South Dakota

500w,DA-D,D
1380 kc

1-63 amend lic. or new AM station



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

MEASURED NON-DIRECTIONAL RADIATION
KFCB No. 1 TOWER, 1380 KC, 500 W
REDFIELD, SOUTH DAKOTA
NOVEMBER, 1962

FCC File No.BL-9835
Accepted 3-21-63

Station KFCB
Redfield, South Dakota

1380 kc

KGMS
1380 kHz

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KGMS

Main Studio: Sacramento, California

Frequency: 1380 kHz

Power: 5kw Night 5kw Day

Notification List No. 1783

Date: November 2, 1979 Class: III

GEOGRAPHICAL LOCATION OF THE CENTERS OF THE DAYTIME AND NIGHTTIME ANTENNA SYSTEMS:

Daytime		Nighttime	
North Latitude:	38° 30' 26"	North Latitude:	38° 33' 19"
West Longitude:	121° 34' 46"	West Longitude:	121° 10' 51"

DAYTIME 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:	NE(#1)	C(#2)	SW(#3)
HEIGHT ABOVE INSULATORS:	293'	293'	293' (148°)
DAY PHASING:	-124.9°	+0.422°	+124.9°
DAY FIELD RATIO:	1.0	1.456	0.734

SPACING AND ORIENTATION: Adjacent towers in a row are spaced 178.2' (90°) on a line bearing 220° true.

GROUND SYSTEM: 120 - 250' to 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 RMS	THEORETICAL RSS	STANDARD RMS
Day	500.8 mv/m	612.4 mv/m	526.1 mv/m
Night	480.0 mv/m	1027.28 mv/m	504.72 mv/m

KGMS
1380kHz

NIGHTTIME ANTENNA CHARACTERISTIC

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

TOWER:	E(#1)	EC(#2)	WC(#3)	W(#4)
HEIGHT ABOVE INSULATORS:	340'	340'	340'	340' (171.7°)
NIGHT PHASING:	0.0°	+197.7°	+36.5°	+241.9°
NIGHT FIELD RATIO:	1.0	2.34	1.98	0.68

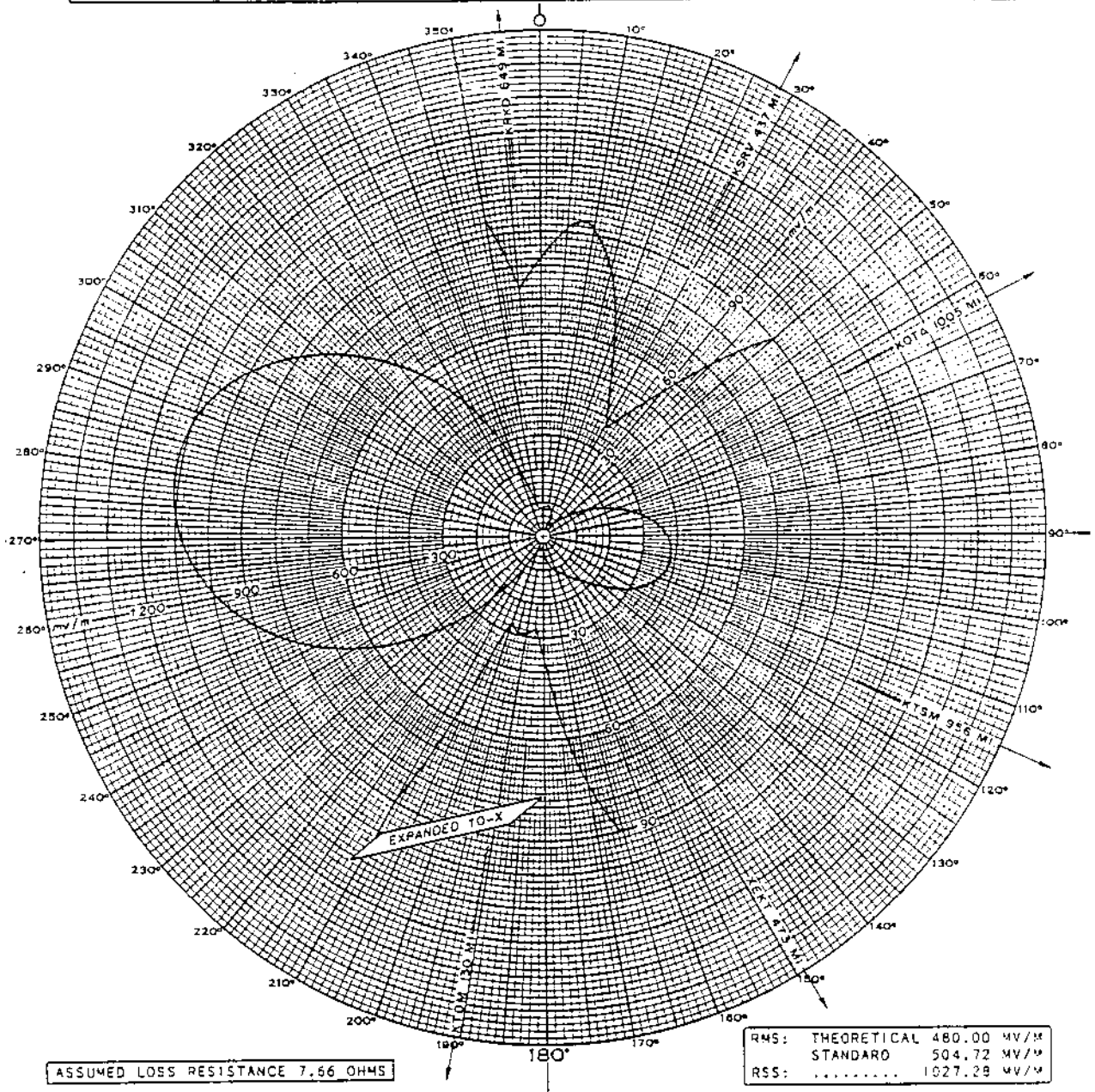
SPACING AND ORIENTATION: With the east (#1) tower as reference the east center (#2) tower is spaced 196' (99.2°) on a line bearing 282.8° true, the west center (#3) tower is spaced 377' (190.6°) on a line bearing 281° true and the west (#4) tower is spaced 566.6 (286.2°) on a line bearing 280.7° true.

GROUND SYSTEM: 120 - 225' equally spaced copper radials about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers.

KGMS
1380KHZ
DA-N

POLAR COORDINATE MADE IN U.S.A. NO. 15 HP CLEVELAND INSTITUTE OF RADIO ELECTRONICS CLEVELAND OHIO

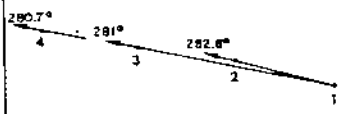
PROPOSED NIGHTTIME PATTERN



RMS:	THEORETICAL	480.00	MV/M
	STANDARD	504.72	MV/M
RSS:	.....	1027.28	MV/M

ASSUMED LOSS RESISTANCE 7.66 OHMS

TOWER PLACEMENT SKETCH



STANDARD HORIZONTAL PLANE

TOWER No.	ELECTRICAL HEIGHT c°	TRUE TOWER ORIENTATION β°	SPACING s°	PHASING ψ°	HORIZONTAL FIELD mv/m E	FIELD RATIO F	ELEV. ANGLE θ°	ELEVATION RMS FIELD mv/m E_θ
1	171.7	0.0	0.0	0.0		1.00	0	
2	171.7	282.8	99.2	197.9		2.34	10	
3	171.7	281.0	190.6	36.5		1.98	20	
4	171.7	280.7	286.2	241.9		0.68	30	
5							40	
6							50	
7							60	
8							70	
9							80	
10							E_1° mv/m	

DAYTIME OPERATION ☐ NIGHTTIME OPERATION ☒ R_o = ohms

STATION DATA

CALL	KGMS
FREQUENCY	1380 kc
POWER	50 kw
TIME OF OPERATION	
TYPE OF OPERATION	DA-N
DAYTIME TOWERS	
NIGHTTIME TOWERS	4
No RADIALS PER TOWER	
LENGTH OF RADIALS	° ft
GROUND SCREEN DIMENSION	
LAT.	38° 33' 19"
LONG.	121° 10' 51"
SUPERSEDES	
PATTERN No.	

CECIL LYNCH, CONSULTING ENGINEER
MODESTO, CALIFORNIA

RADIO STATION KGMS
SACRAMENTO, CALIFORNIA

FIGURE 17

AMENDED APRIL 1978 TO SPECIFY CHANGE IN ANTENNA HEIGHT ONLY

KGMS

GRANTED 11/12/57

PROPOSED DAY
(10/11/57g)

Station KGMS 1kw, DA-2,U
Sacramento, California 1380 KC

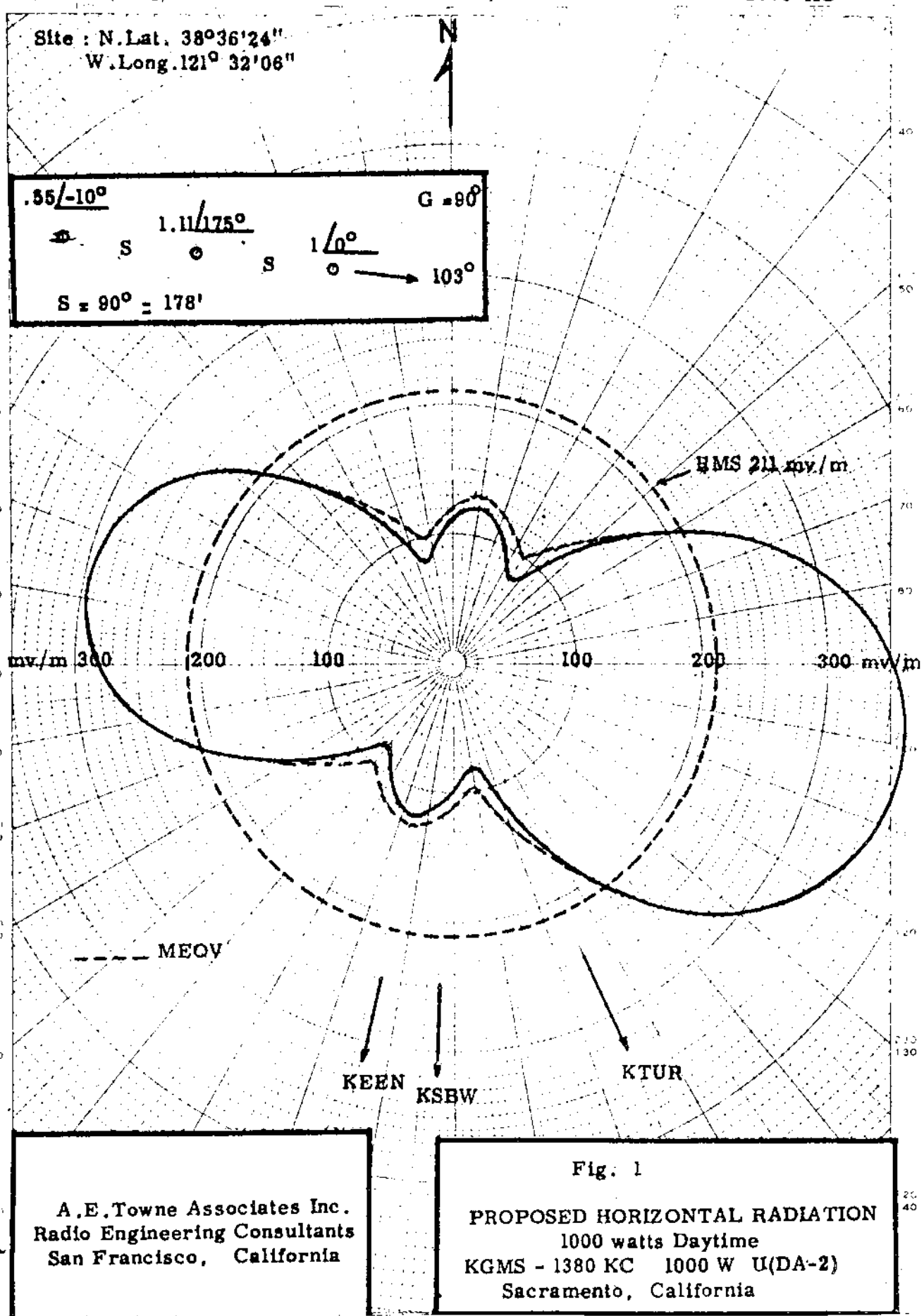


Fig. 1

PROPOSED HORIZONTAL RADIATION
1000 watts Daytime
KGMS - 1380 KC 1000 W U(DA-2)
Sacramento, California

A.E.Towne Associates Inc.
Radio Engineering Consultants
San Francisco, California

FCC File No. BP-11,560
Accepted 9/30/57

KGMS
Sacramento, California 1380 KC

Transmitter CP (11/12/58) for mod. of day DA pattern

KGMS

MEASURED DAY
(4-22-59g)

Station KGMS
Sacramento, California

1kw, DA-2,U
1380 KC

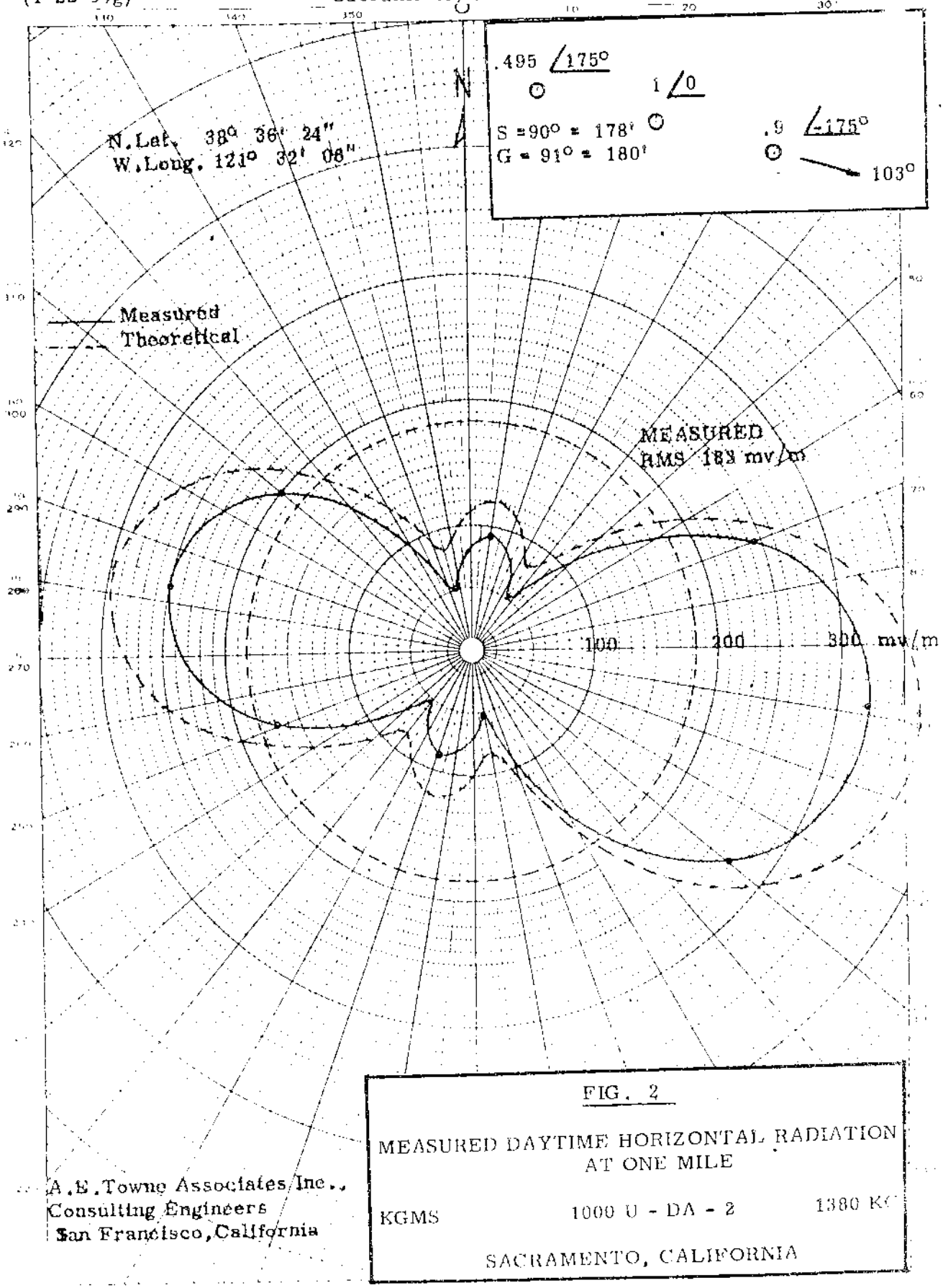


FIG. 2

MEASURED DAYTIME HORIZONTAL RADIATION
AT ONE MILE

KGMS 1000 U - DA - 2 1380 KC

SACRAMENTO, CALIFORNIA

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

FCC File No. BL-7390
Accepted 4-3-59

KGMS
Sacramento, California 1380 KC

LIC. GRANTED 6-3-59

KGMS

PROPOSED NIGHT STATION KGMS
~~MAY~~ (3-20-56g) SACRAMENTO, CALIF.

1 KW
DA-2, U
1380 KC

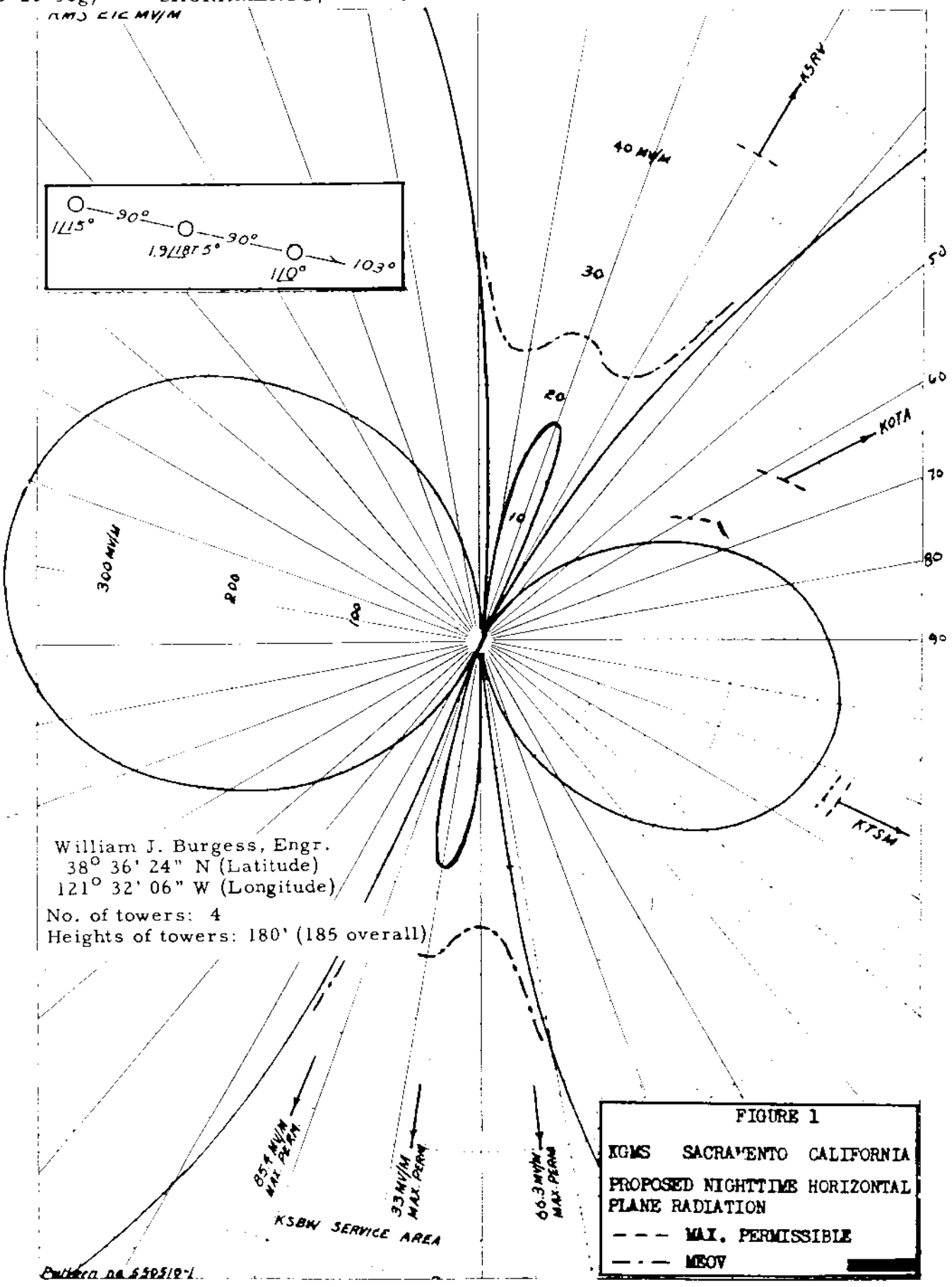


FIGURE 1

KGMS SACRAMENTO CALIFORNIA

PROPOSED NIGHTTIME HORIZONTAL PLANE RADIATION

- - - MAX. PERMISSIBLE

— · — MEOV

FCC File No. BP-9186 (Amended) Accepted 3-13-56 KGMS, Sacramento, Calif. 1380 KC

granted license 3/24/57

KGMS

MEASURED NIGHT
(2/25/57g)

Station KGMS
Sacramento, California

1KW, DA-2, U
1380 KC

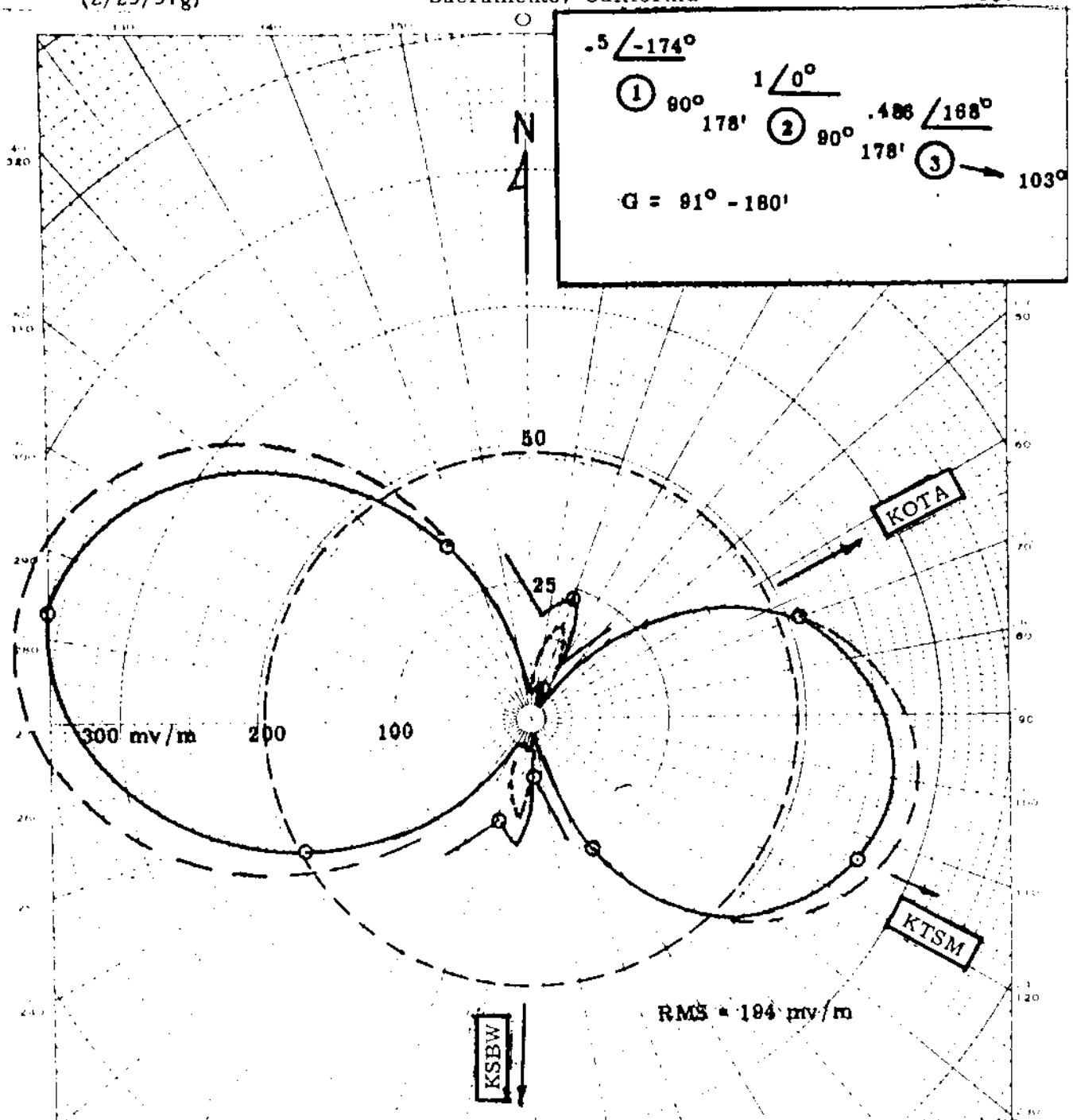


FIG. 1

KGMS MEASURED NIGHTTIME DIRECTIONAL FIELD AT ONE MILE

1000 WATTS SACRAMENTO 1380 KC

——— measured
— — — calculated

Nulls - expanded scale

Coordinates: 38 - 36 - 24
121 - 32 - 06

A. E. TOWNE ASSOC., INC.

FCC File No. BL-6516
Accepted 1/24/57

KGMS
Sacramento, California

1380 KC

KGMS

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

Station KGMS
Sacramento, California

1kw, DA-2,U
1380 KC

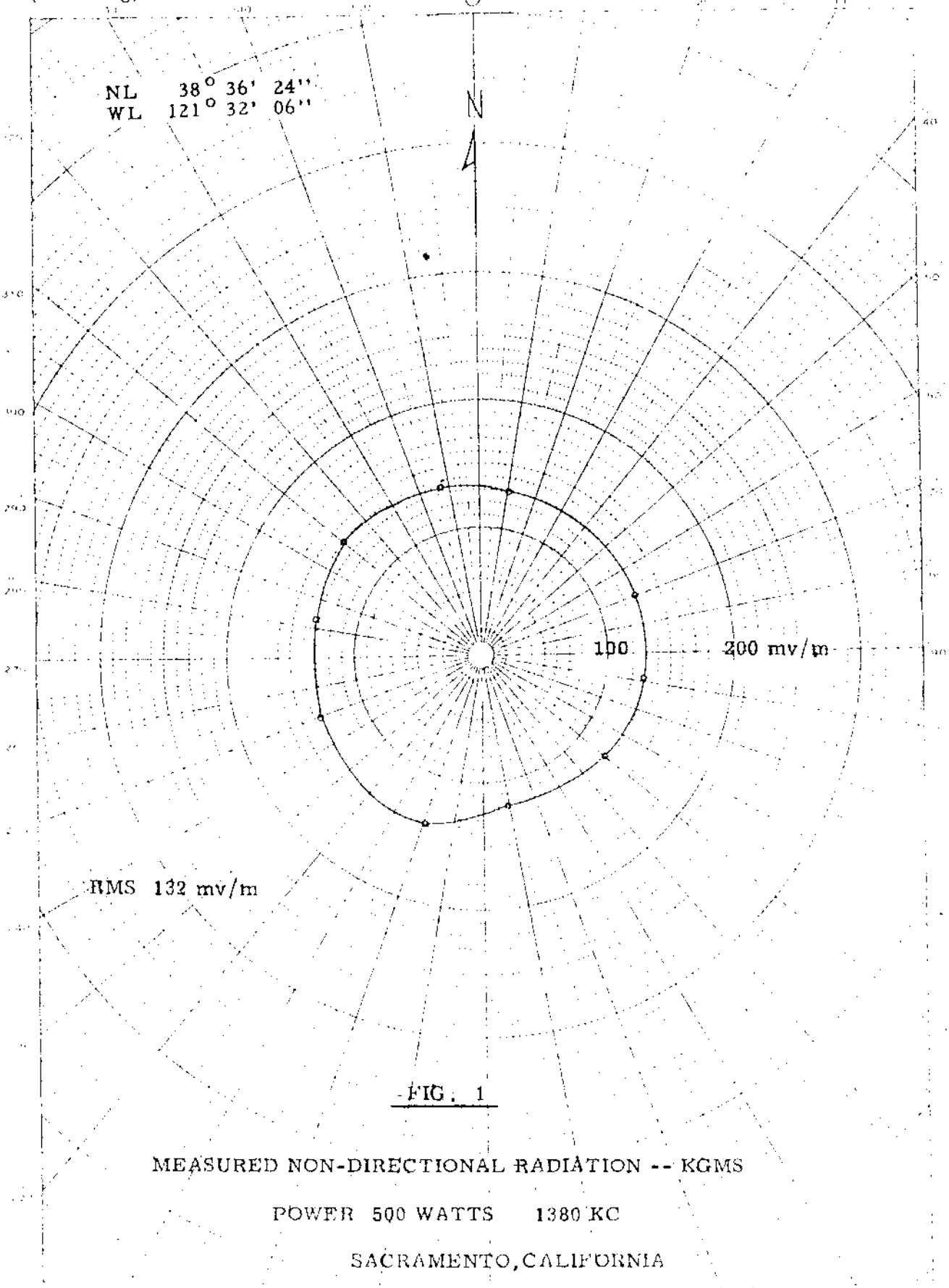


FIG. 1

MEASURED NON-DIRECTIONAL RADIATION -- KGMS

POWER 500 WATTS 1380 KC

SACRAMENTO, CALIFORNIA

FCC File No. BL-7390
Accepted 4-3-59
granted 6·3·59

KGMS
Sacramento, California

1380 KC

KLIZ

Proposed Night
(4-28-65ct)

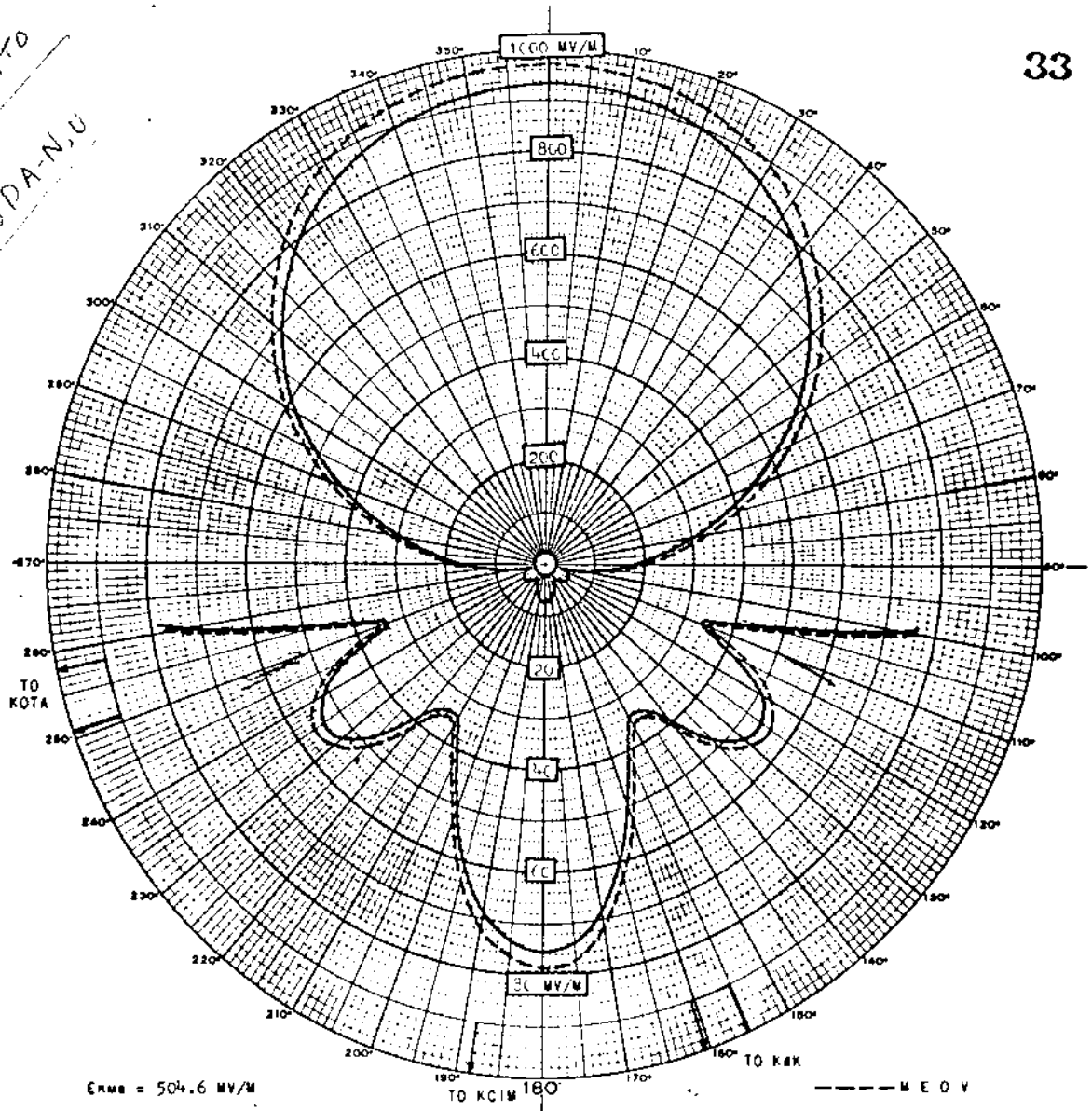
Station KLIZ
Brainerd, Minnesota

5kw,DA-N,U
1380 kc

POLAR CO-ORDINATE — CLEVELAND INSTITUTE OF RADIO ELECTRONICS

BP-15140
DOCK. 14958
3-3-65 APPL. TO
REVIEW OF DEC, TO
DENY
APPL. 6-9-65
CHG 1 KW, D TO 5 KW DA-N, U

33



TOWER PLACEMENT SKETCH	PATTERN PARAMETERS									STATION DATA
N-0°-E #2 0.5/-127.4° #1 0.922/3.8° #3 0.5/127.4°	TOWER No.	ELECTRICAL HEIGHT θ°	TRUE TOWER ORIENTATION β°	SPACING S°	PHASING K°	HORIZONTAL FIELD (mv/mi) f	FIELD RATIO r	ELEV. ANGLE θ°	ELEVATION RMS FIELD (mv/m) fθ	CALL KLIZ FREQUENCY 1380 kc POWER 5.0 kw TIME OF OPERATION NIGHT TYPE OF OPERATION DA-N, U DAYTIME TOWERS #1 NIGHTTIME TOWERS #2 & #3 No RADIALS PER TOWER 120 LENGTH OF RADIALS 90 - 178 ft GROUND SCREEN DIMENSION 24 X 24 ft LAT N 46° 20' 00" LONG W 94° 10' 18" SUPERSEDES PATTERN No.
	1	192	------	------	+3.8	------	0.922	0		
	2	91	0	90	+127.4	------	0.500	10		
	3	91	180	90	+127.4	------	0.500	20		
	4							30		
	5							40		
	6							50		
	7							60		
	8							70		
	9							80		
	10							E_1=504.6 mv/m		
	DAYTIME OPERATION ☐ NIGHTTIME OPERATION ☒							E_2= 2.5 mv/m		

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

FIGURE 3A
PROPOSED NIGHTTIME HORIZONTAL PLANE PATTERN
RADIO STATION KLIZ
BRAINERD, MINN.
1380 KC 5KW, DA-N, U

FCC File No. BP-15140
Accepted 3-3-65

Station KLIZ
Brainerd, Minnesota

1380 kc

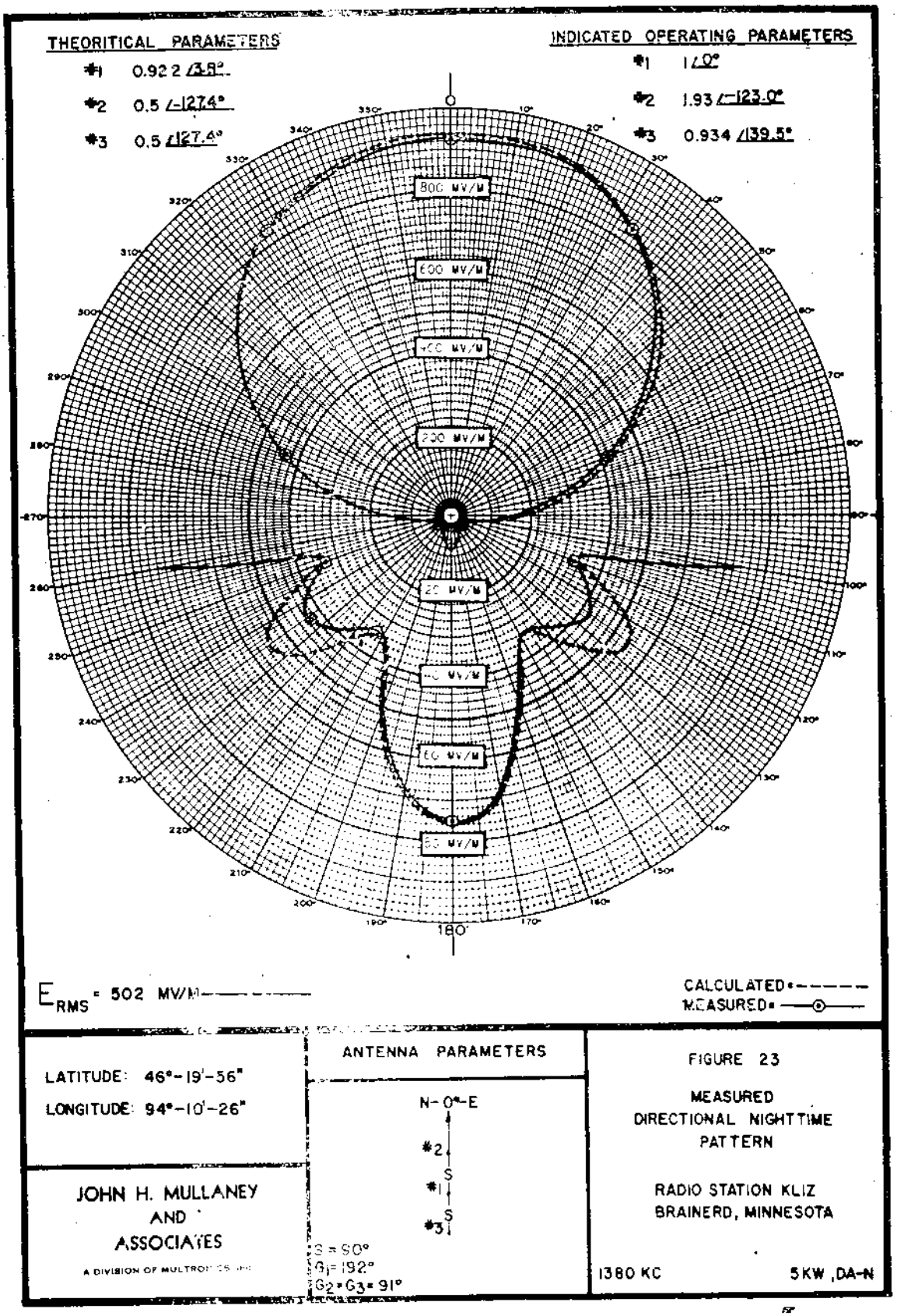
KLIZ

Measured Night
(7-28-66ct)

Station KLIZ
Brainerd, Minnesota

5kw,DA-N,U
1380 kc

-11342
c 10-4-66



FCC File No. BL-11342
Accepted 7-1-66

Station KLIZ
Brainerd, Minnesota

1380 kc

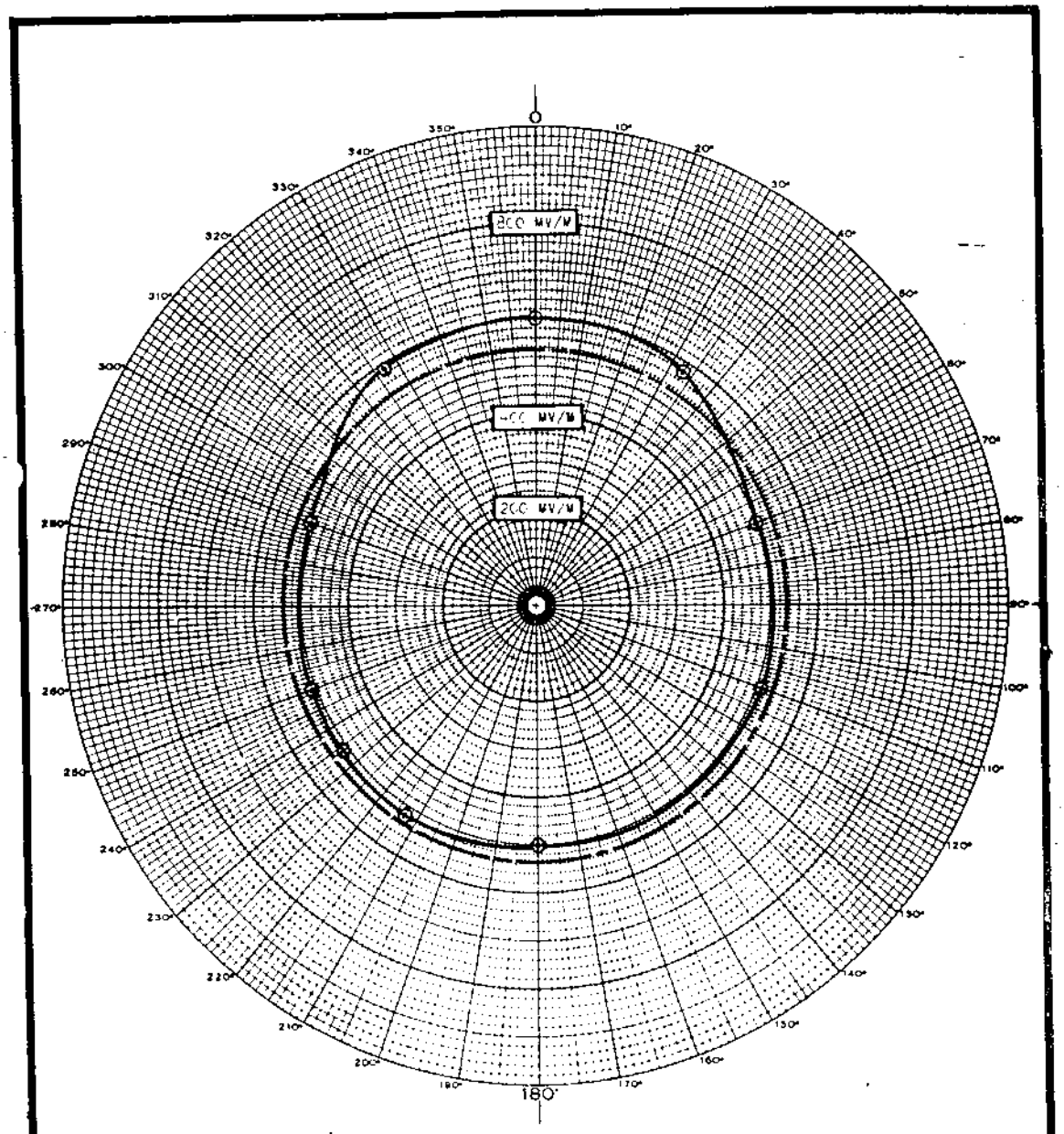
KLIZ

Measured Non-DA
(7-28-66ct)

Station KLIZ
Brainerd, Minnesota

5kw, DA-N, U
1380 kc

BL 11342
-1C 10-4-66



LATITUDE: 46°-19'-56" LONGITUDE: 94°-10'-26"	ANTENNA PARAMETERS	FIGURE 22 MEASURED NON DIRECTIONAL PATTERN
JOHN H. MULLANEY AND ASSOCIATES A DIVISION OF MULTRONICS, INC	TOWER #1 (CENTER TOWER)	RADIO STATION KLIZ BRAINERD, MINNESOTA 1380KC 5 KW, DA-N

FCC File No. BL-11342
Accepted 7-1-66

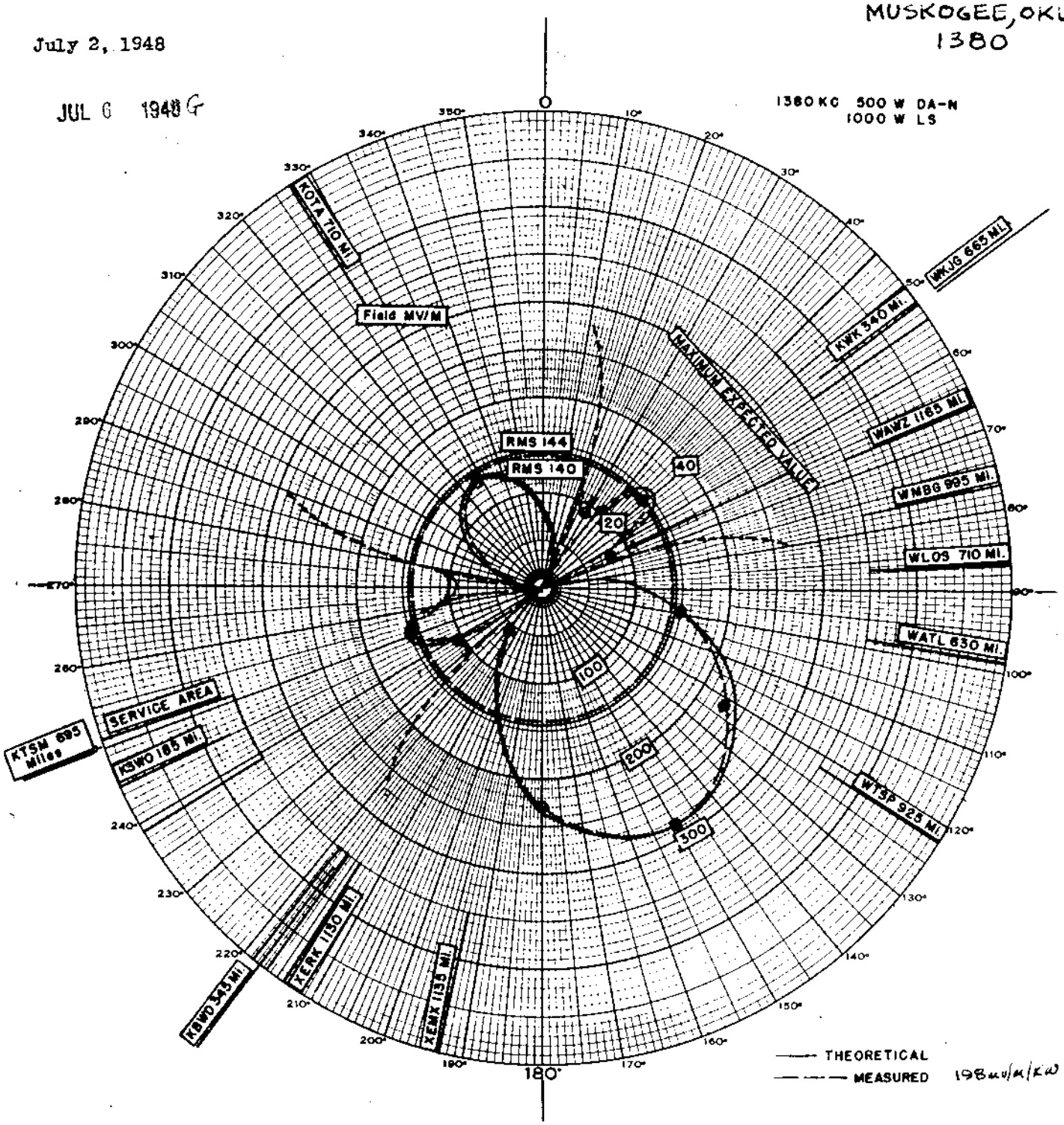
Station KLIZ
Brainerd, Minnesota

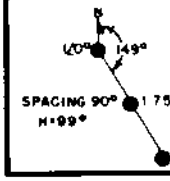
1380 kc

KMUS
MUSKOGEE, OKLA.
1380

July 2, 1948

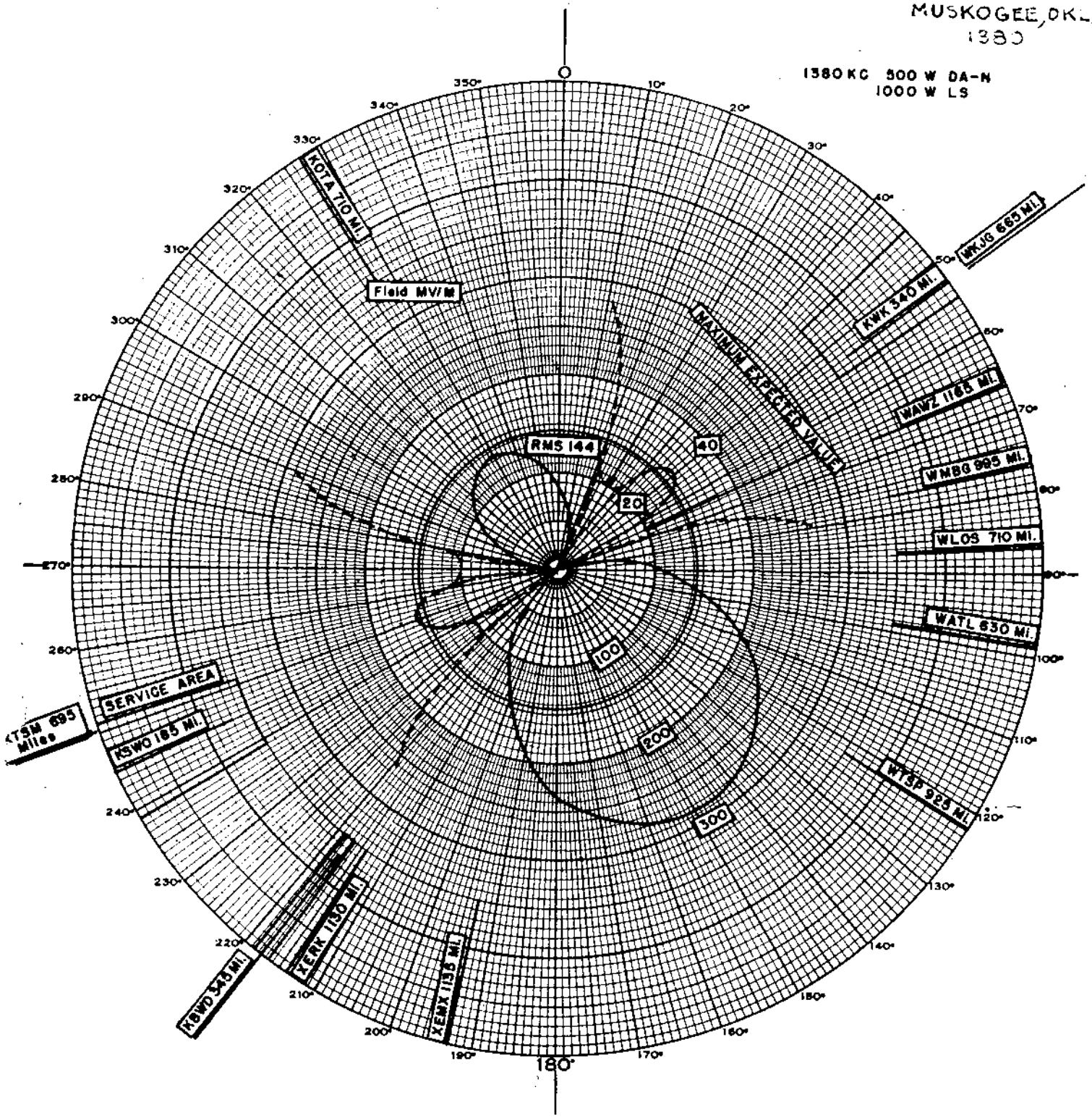
JUL 6 1948 G

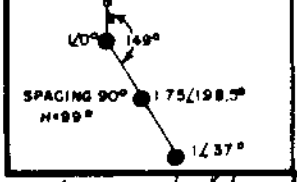


THE EASTERN OKLAHOMA BROADCASTING CORP. MUSKOGEE, OKLAHOMA		Figure 6 Series 480630W 1380 KC 500 WATTS NIGHT
	DIRECTIONAL ANTENNA PATTERN	FRANK H. McINTOSH *Consulting Radio Engineer* Washington, D.C.

KMUS
MUSKOGEE, OKL.
1380

1380 KC 500 W DA-N
1000 W LS



THE EASTERN OKLAHOMA BROADCASTING CORP. MUSKOGEE, OKLAHOMA		Figure 1 Series 460421W
		1380 KC 500 WATTS NIGHT
	PROPOSED DIRECTIONAL ANTENNA PATTERN	FRANK H. McINTOSH *Consulting Radio Engineer* Washington, D.C.

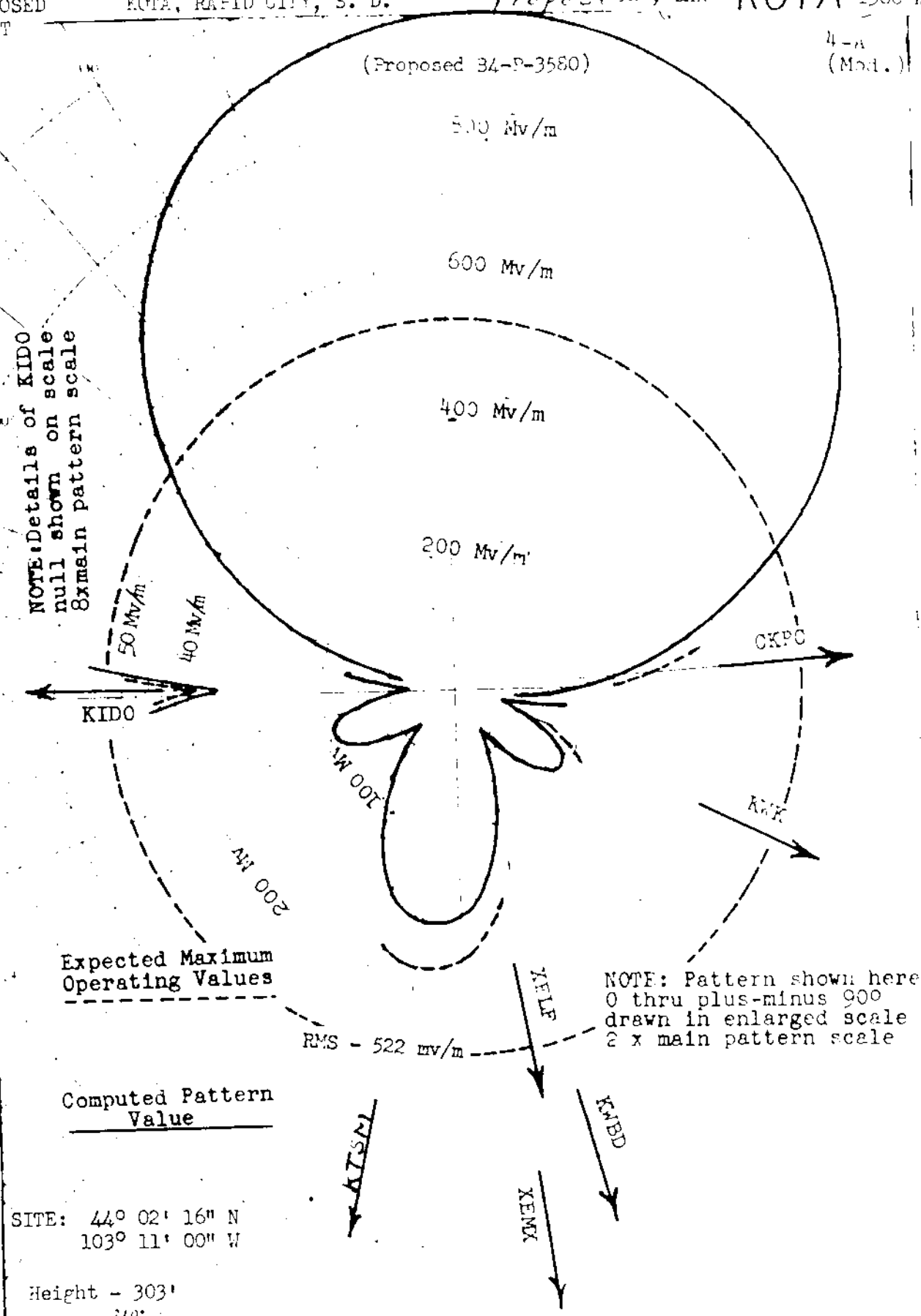
Amendment Rec'd. 4-22-48 BMP-3209

PROPOSED NIGHT

KOTA, RAPID CITY, S. D.

Proposed 5KW, DAN KOTA 1380 kc

4-A (Mod.)



SITE: 44° 02' 16" N
103° 11' 00" W

Height - 303'

210°

1/-135.6° - 100° - 1.697/4.18° - 100° - 1/135.6° -- 188°T
(198')

KOBH - 1380 Kc.

COMMERCIAL RADIO EQ

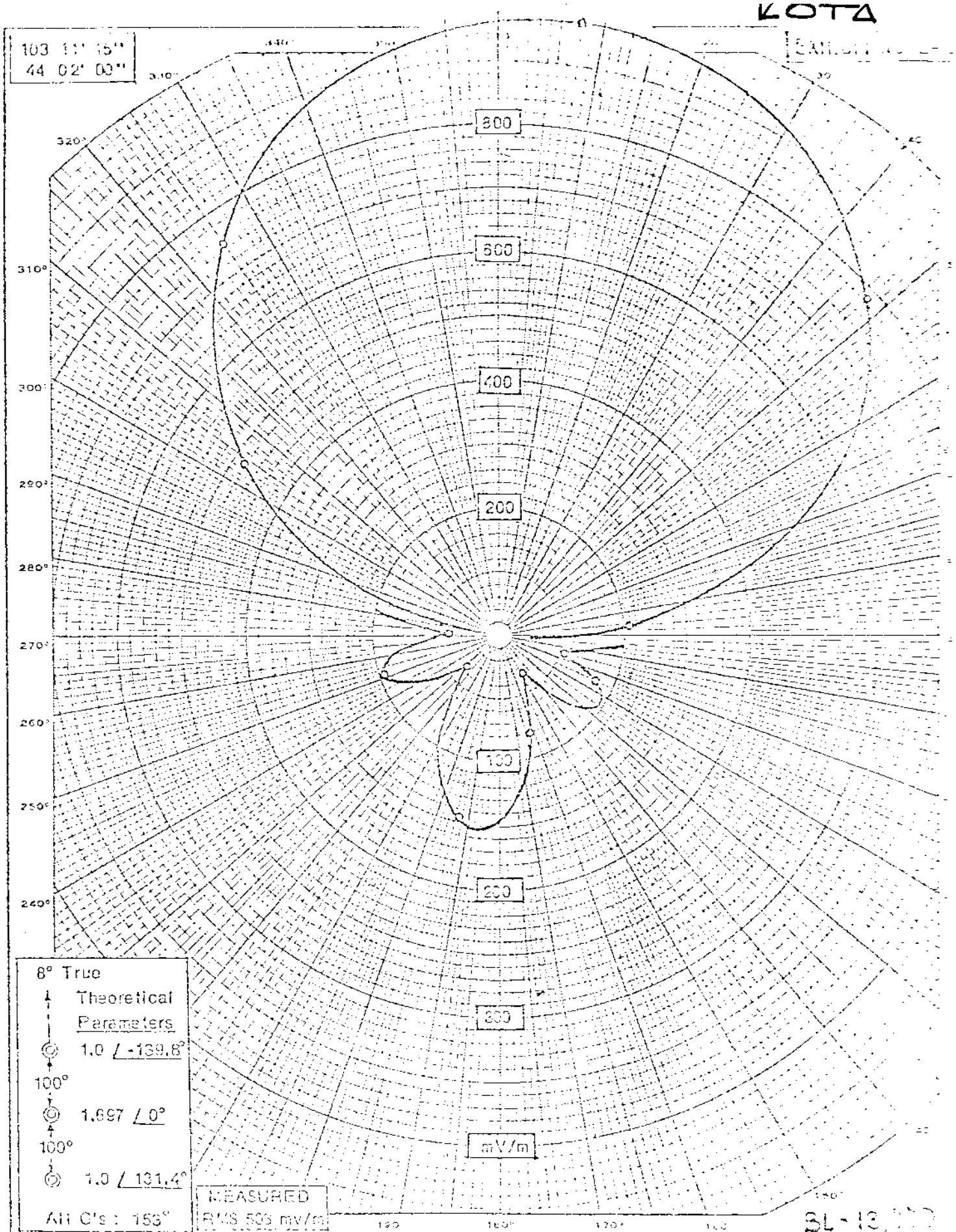
5/2/44 ELD

Shown

KOTA, Rapid City, S. D. 1380 kc

KOTA

103 11' 15"
44 02' 00"



8° True

Theoretical Parameters

1.0 / -139.8°

100°

1.697 / 0°

100°

1.0 / 131.4°

All C's : 153°

MEASURED
RMS 503 mV/m

SL-13

1380 KHz 5kw-U DA-N

MEASURED NIGHTTIME DIRECTIONAL PATTERN

KOTA, RAPID CITY, SOUTH DAKOTA

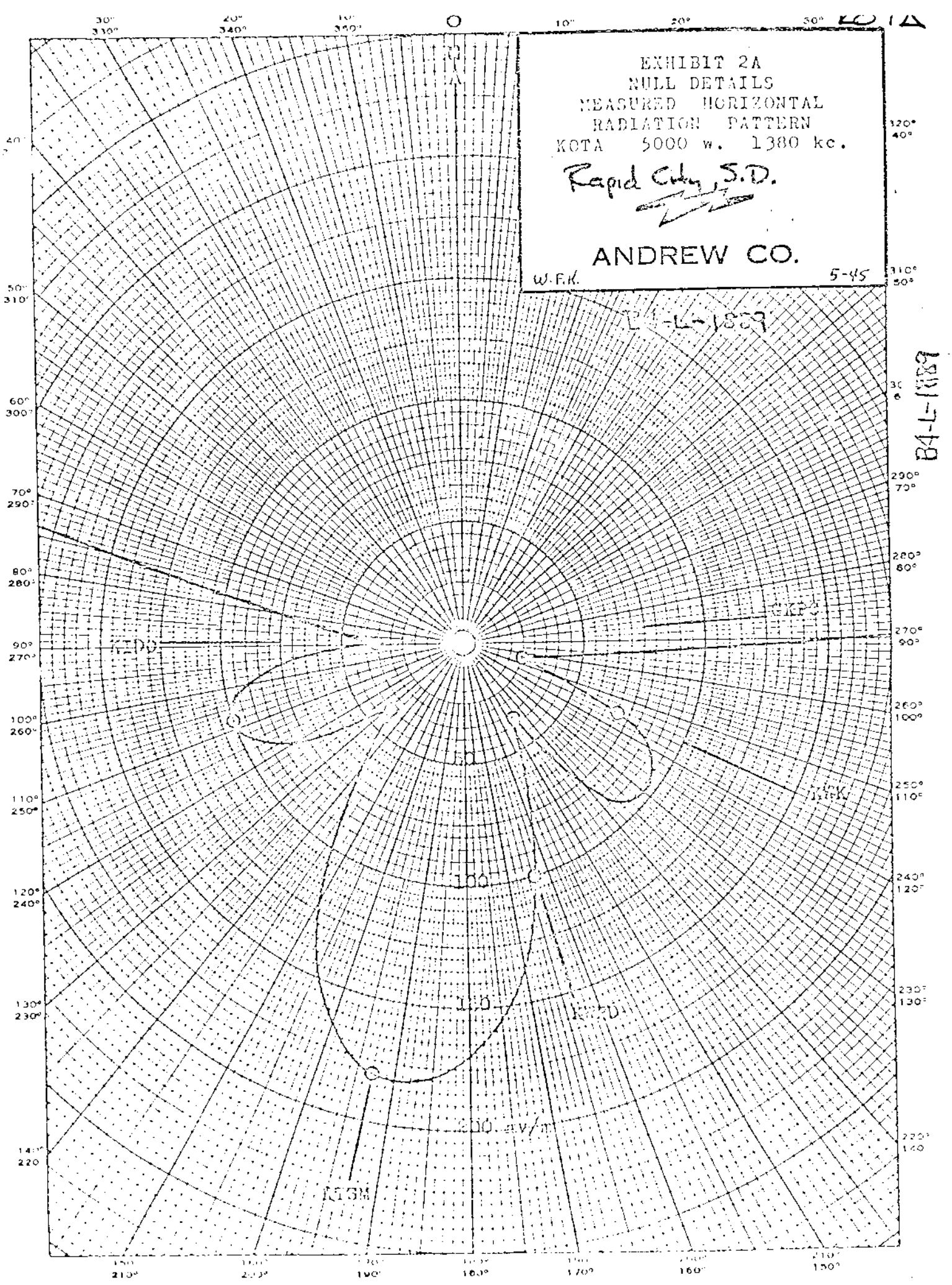
EDWARD F. LORENTZ & ASSOCIATES
Consulting Radio Engineers
Washington, D.C.

EXHIBIT 2A
NULL DETAILS
MEASURED HORIZONTAL
RADIATION PATTERN
KOTA 5000 w. 1380 kc.
Rapid City, S.D.

ANDREW CO.

W.F.K. 5-45

B4-L-1869



KRKO

PROPOSED NIGHT
(9-11-58g)

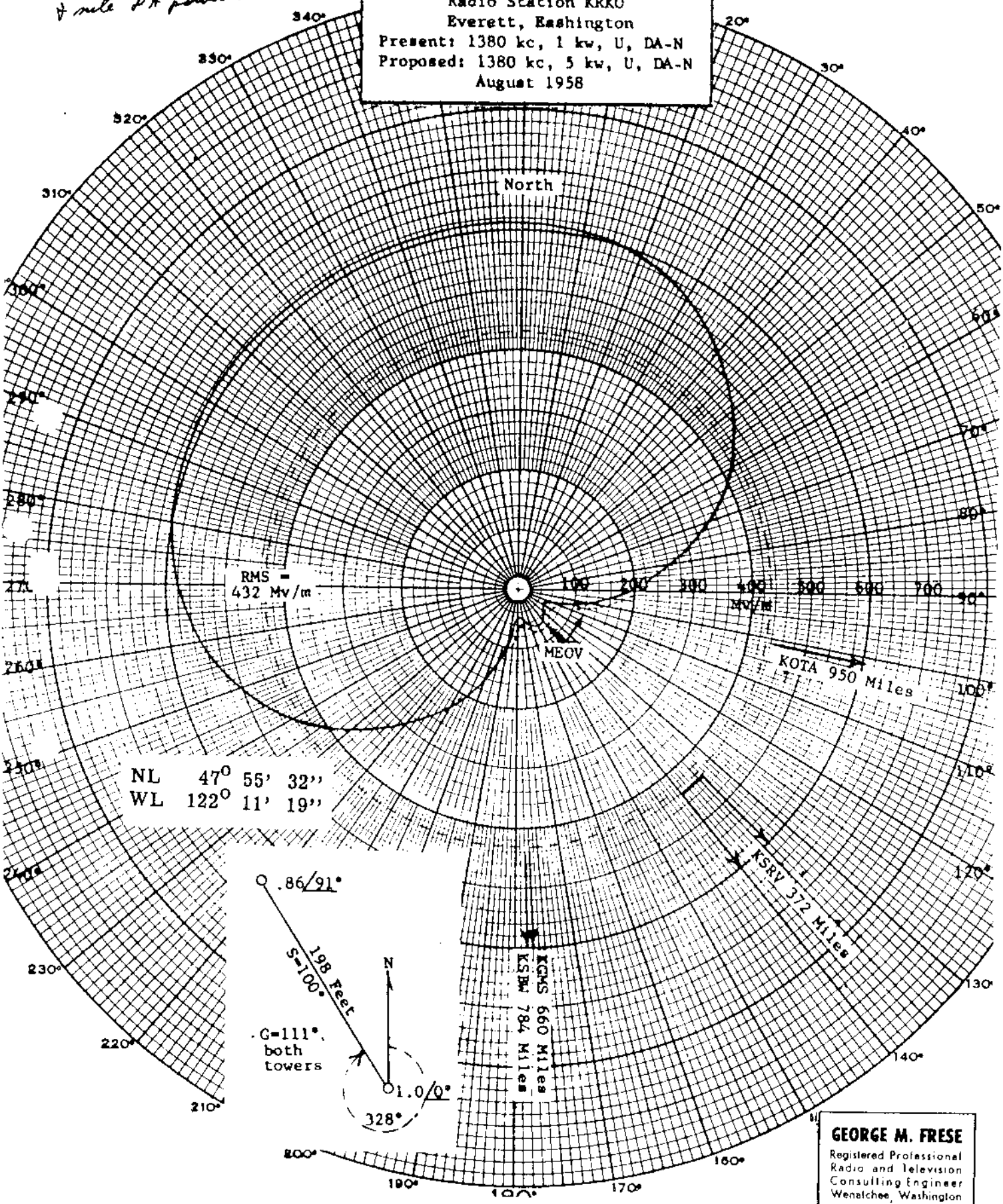
Station KRKO
Everett, Washington

5kw, DA-N,U
1380 KC

Granted CP 12/10/58 for increase in day non-DA & mile DA power to 5 KW

Exhibit #1b
HORIZONTAL RADIATION PATTERN

Radio Station KRKO
Everett, Washington
Present: 1380 kc, 1 kw, U, DA-N
Proposed: 1380 kc, 5 kw, U, DA-N
August 1958



GEORGE M. FRESE
Registered Professional Radio and Television Consulting Engineer
Wenatchee, Washington

KRKO.

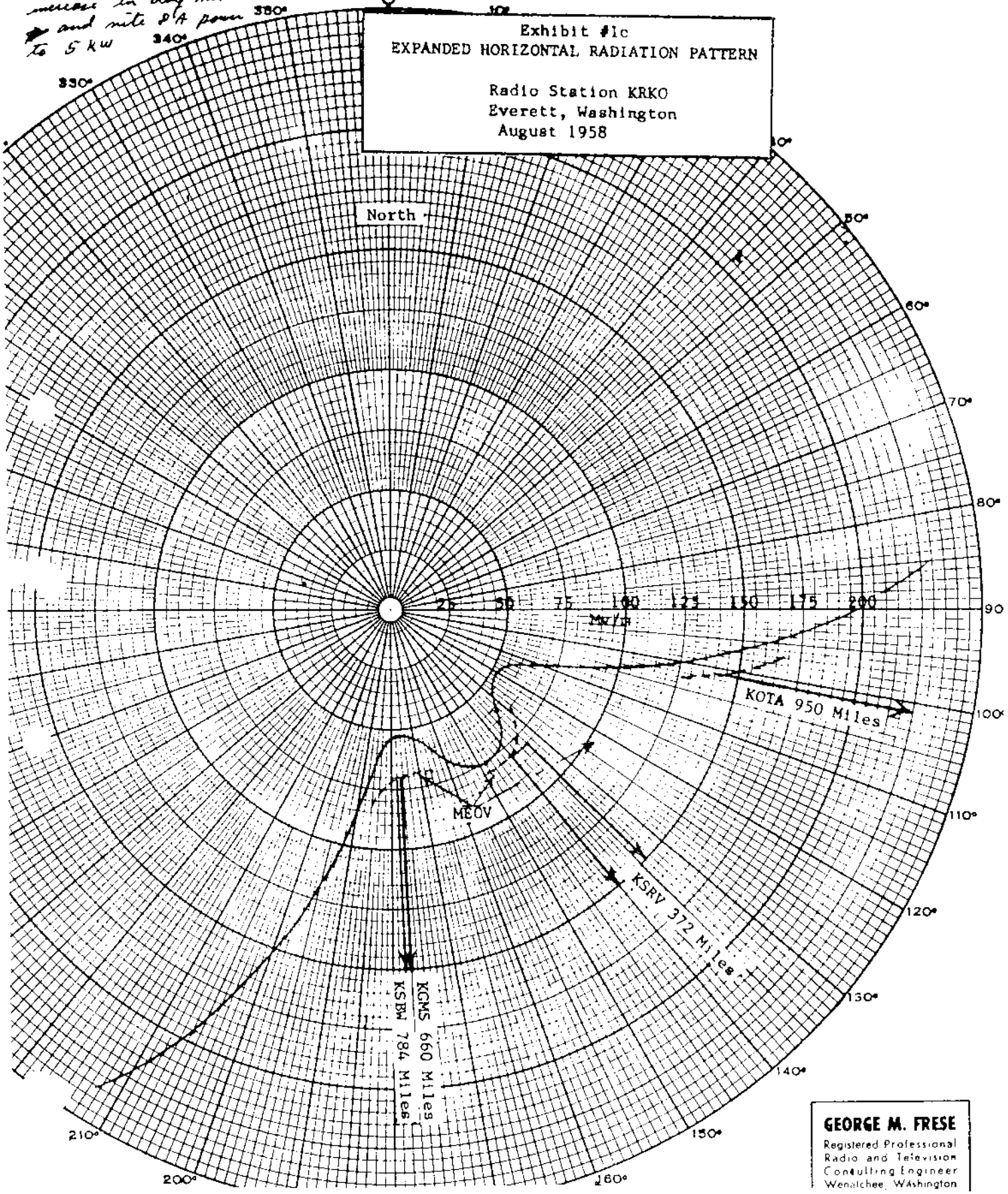
PROPOSED NIGHT NULLS
(9-11-58g)

Station KRKO 5kw, DA-N,U
Everett, Washington 1380 KC

Granted CP 12/10/58 for increase in day non-DA and nite DA power to 5 kw

Exhibit #1c
EXPANDED HORIZONTAL RADIATION PATTERN

Radio Station KRKO
Everett, Washington
August 1958



GEORGE M. FRESE
Registered Professional
Radio and Television
Consulting Engineer
Wenatchee, Washington

FCC File No. BP-11,505
Accepted 9-4-58 Amended

KRKO
Everett, Washington 1380 KC

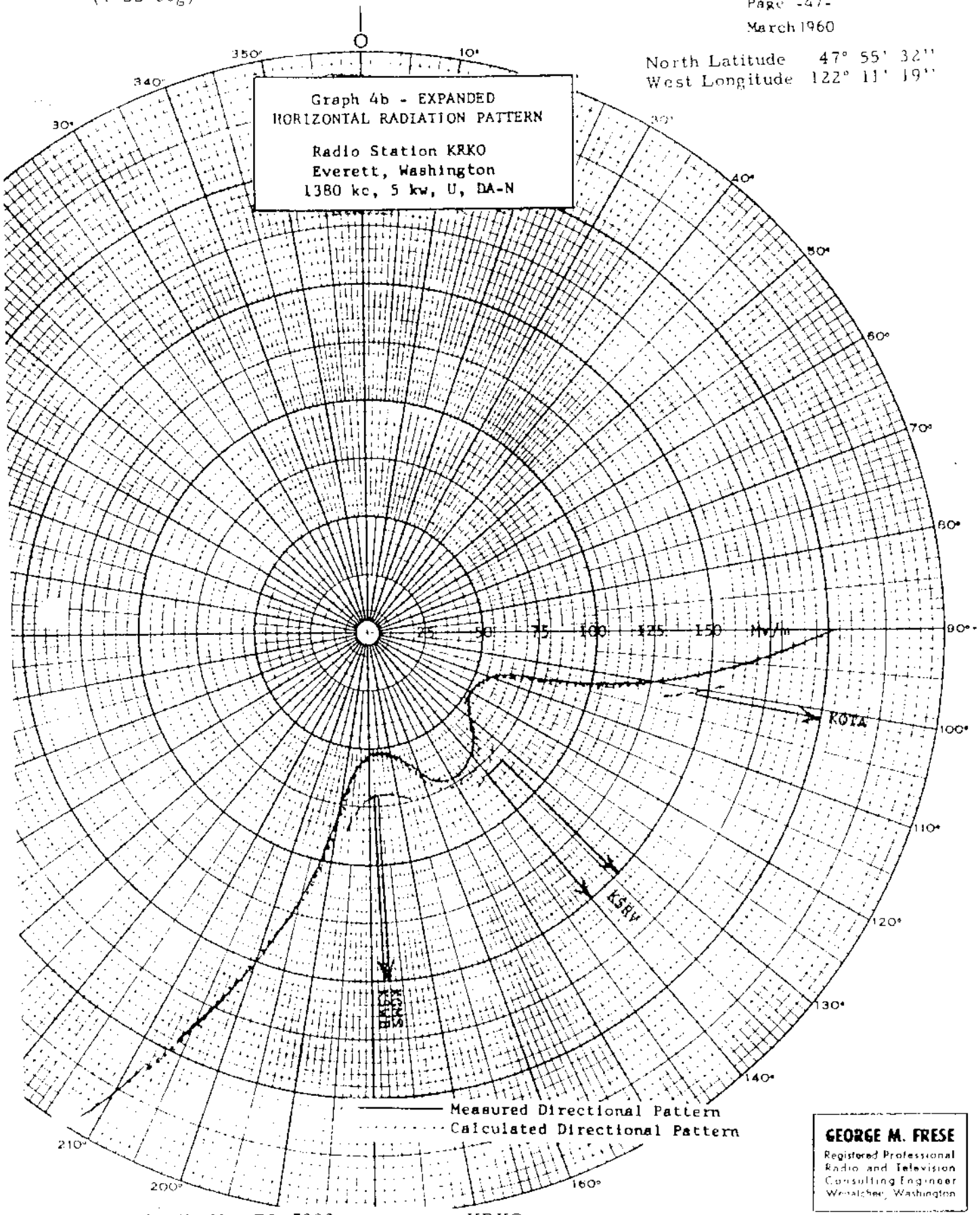
KRKO

MEASURED NIGHT NULLS
(4-22-60g)

Station KRKO
Everett, Washington

5kw, DA-N,U
1380 KC
Page -47-
March 1960

North Latitude 47° 55' 32"
West Longitude 122° 11' 19"



GEORGE M. FRESE
Registered Professional
Radio and Television
Consulting Engineer
Wenatchee, Washington

FCC File No. BL-7822
Accepted 4-15-60

KRKO
Everett, Washington

1380 KC

KRKO

MEASURED NIGHT
(4-22-60g)

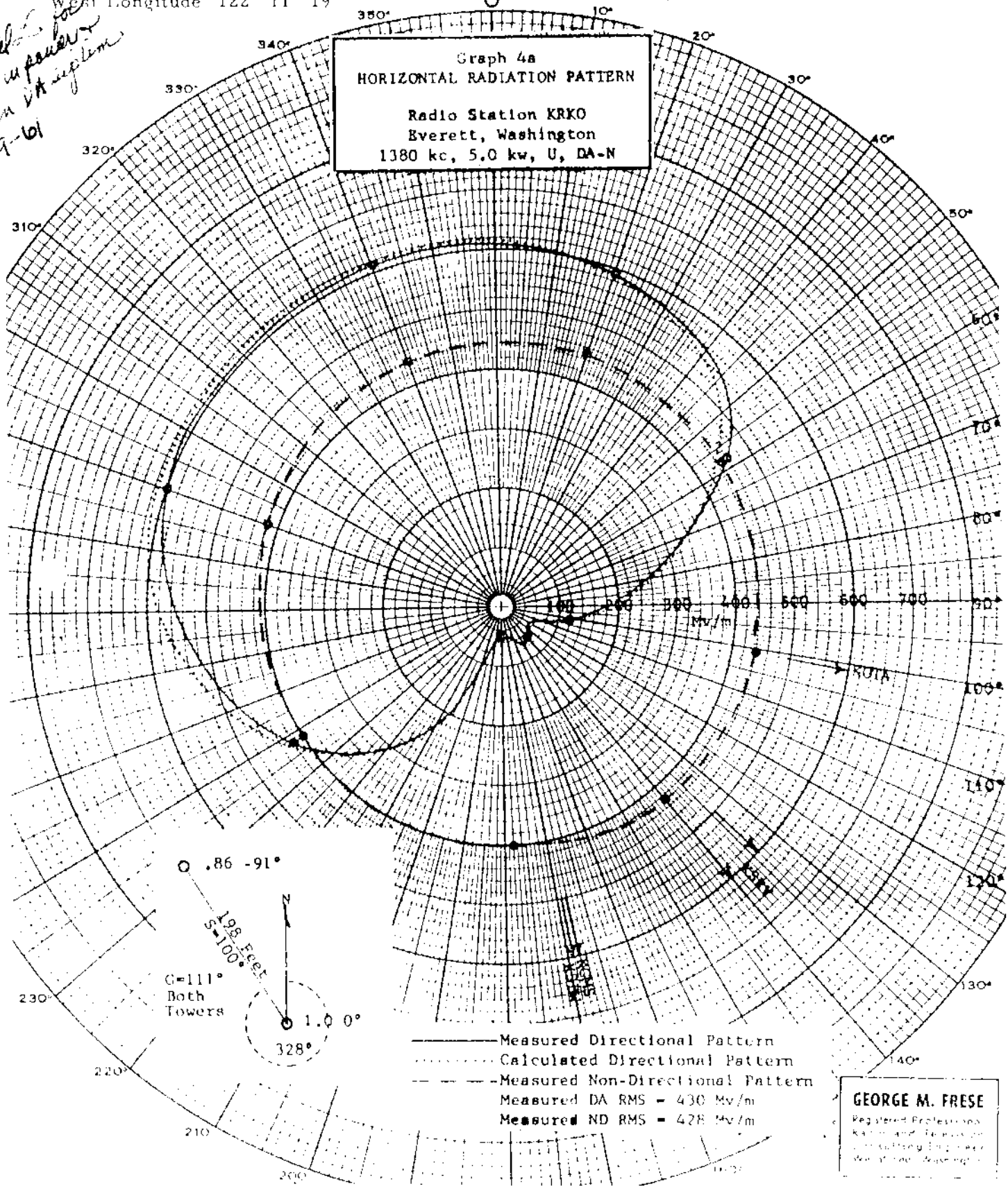
Station KRKO
Everett, Washington

5kw, DA-N,U
1380 KC

March 1960

North Latitude 47° 55' 32"
West Longitude 122° 11' 19"

Granted for decrease in power & change in DA system 5-19-61



GEORGE M. FRESE
Registered Professional
Radio and Television
Consulting Engineer
Washington, D.C.

FCC File No. BL-7882
Accepted 4-15-60

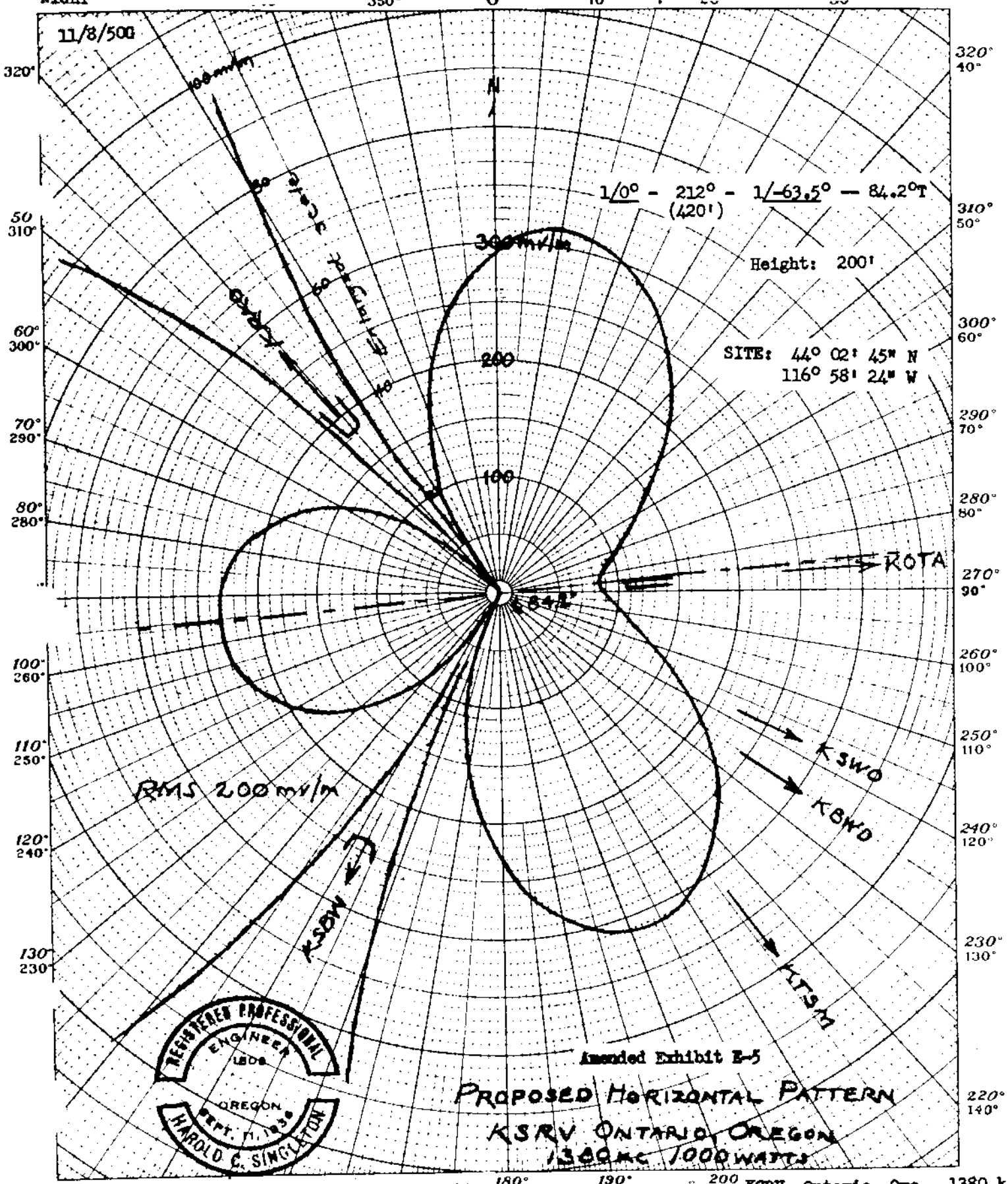
KRKO
Everett, Washington

1380 KC

KSRV

PROPOSED NIGHT — KSRV, ONTARIO, ORE. — 1kw, DA-N — 1380 kc

11/8/50G



REGISTERED PROFESSIONAL ENGINEER — OREGON — Sept. 11, 1938 — HAROLD C. SINGLETON

Amended Exhibit E-5

PROPOSED HORIZONTAL PATTERN
KSRV ONTARIO, OREGON
1380 Kc 1000 WATTS

AMENDMENT RECD 10/24/50 ACC 11/3/50 BP-6859

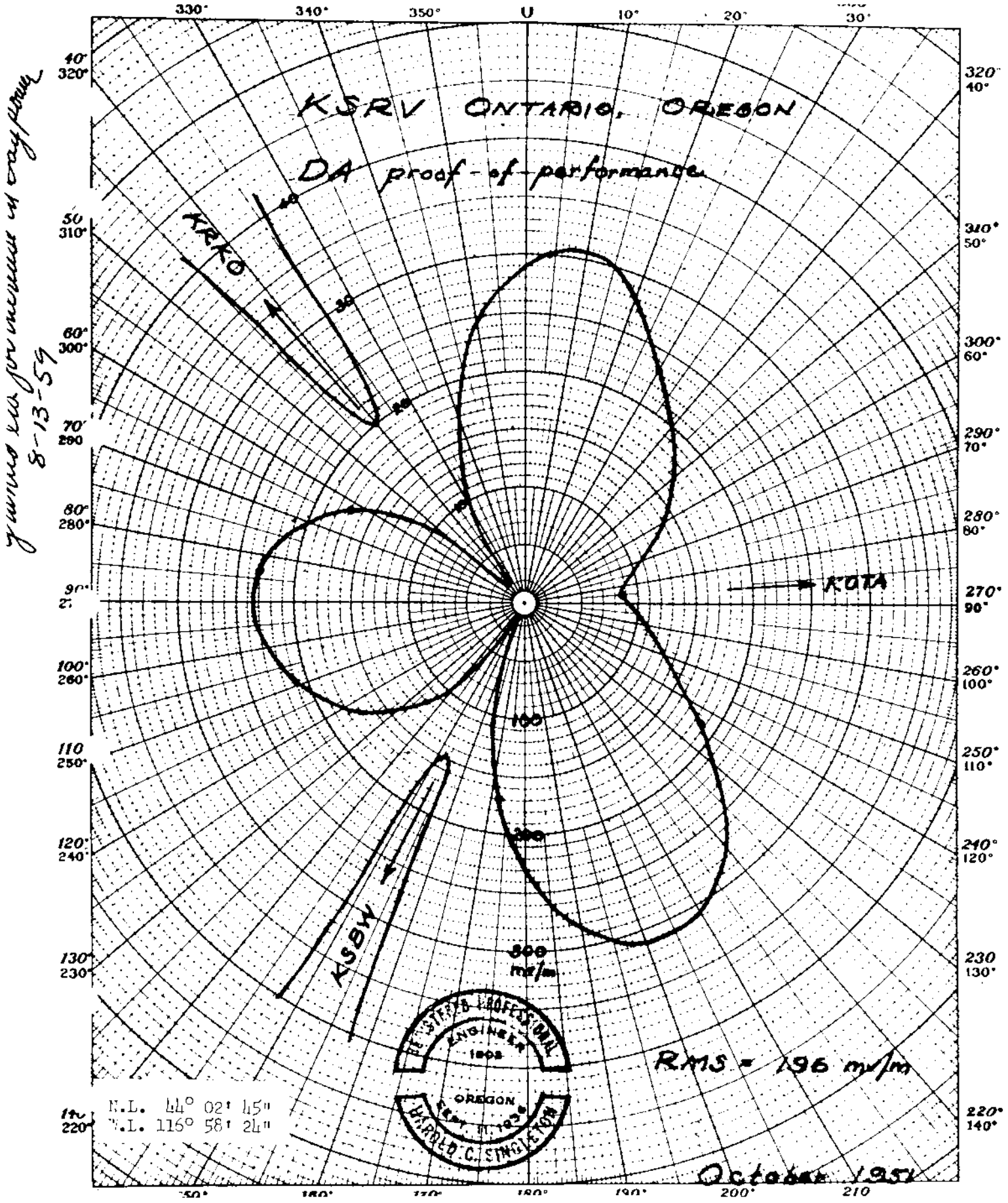
KSRV, Ontario, Ore. 1380 k

OCTOBER 1950

Granted CP 12/10/58 for increase in non DA - day to 5 KW

KSRV

MEASURED NIGHT KSRV, ONTARIO, OREGON 3/5/52G 1 KW, U, DA-N 1380 KC



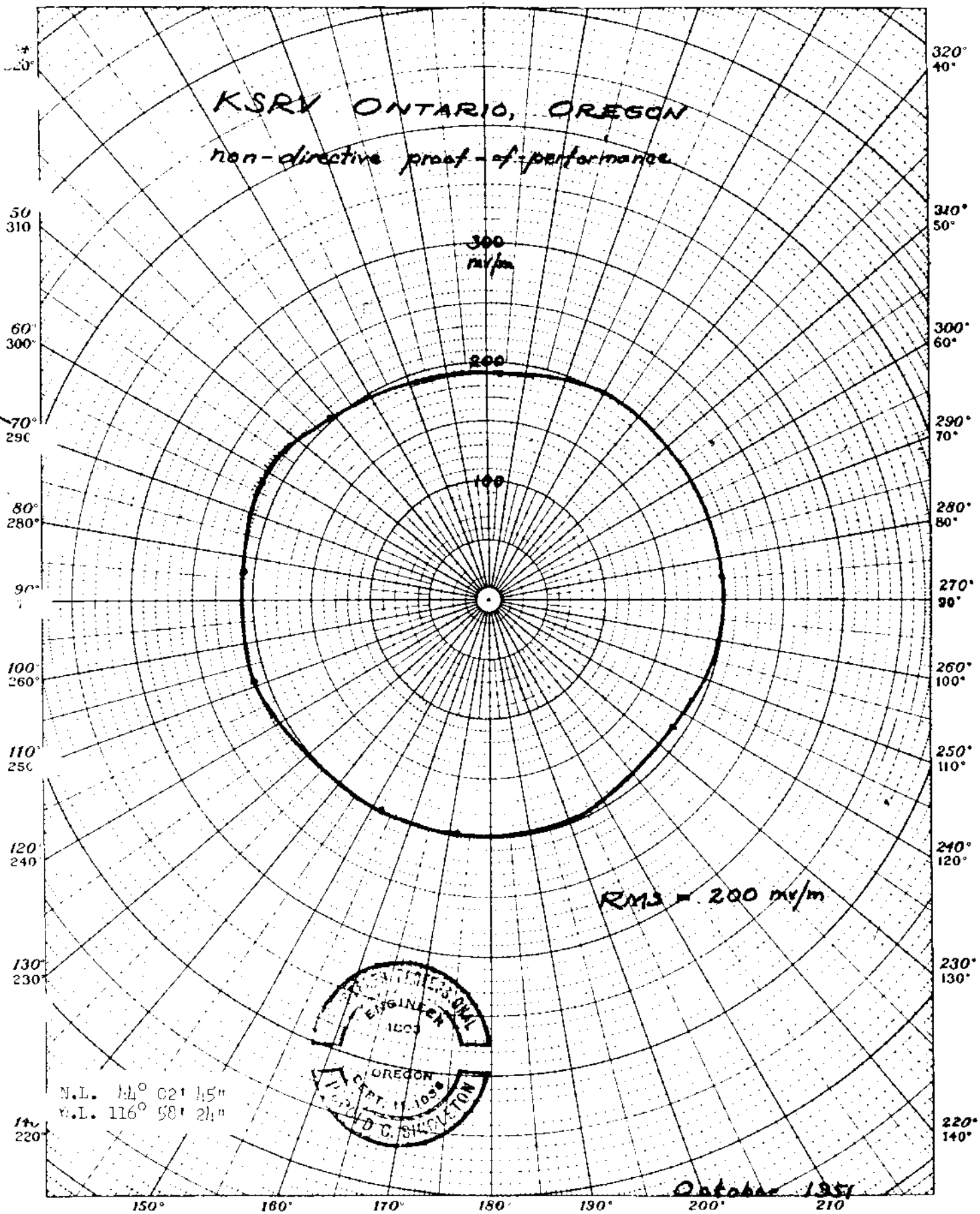
Granted CP for increase in day power 8-13-59

APPL RECD 2/11/52 ACC 2/11/52 BL-4537 KSRV, ONTARIO, OREGON 1380 KC

Granted CP 12/10/58 for increase in day - Now DA power to 5 KW

KSRV

MEASURED KSRV, ONTARIO, OREGON 1 KW, U, DA-N 1380 KC
DAY (NON-DA) 3/5/52G

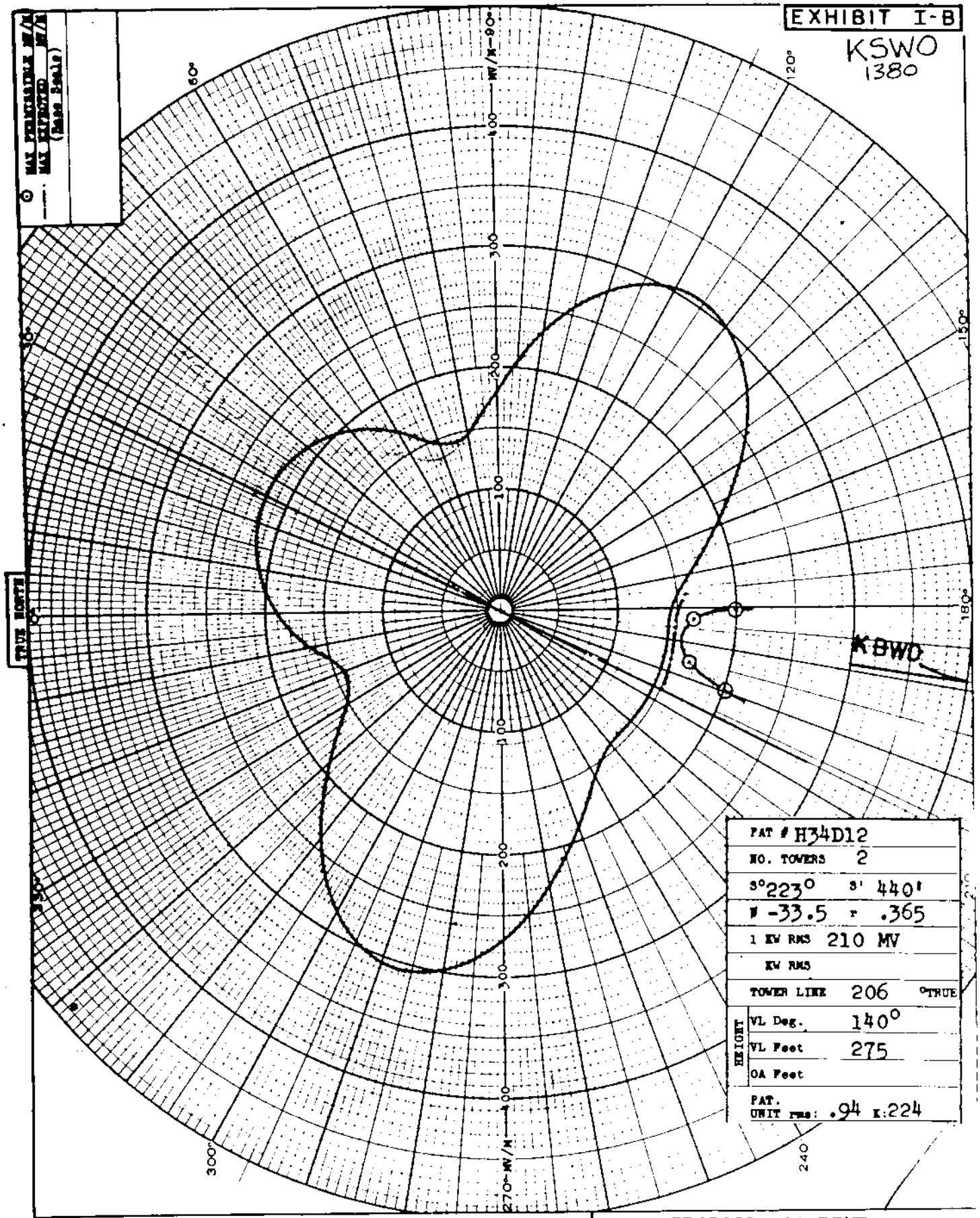


APPL RECD 2/11/52 ACC 2/11/52 BL-4537 KSRV, ONTARIO, OREGON 1380 KC

KSWO

EXHIBIT I-B

KSWO
1380



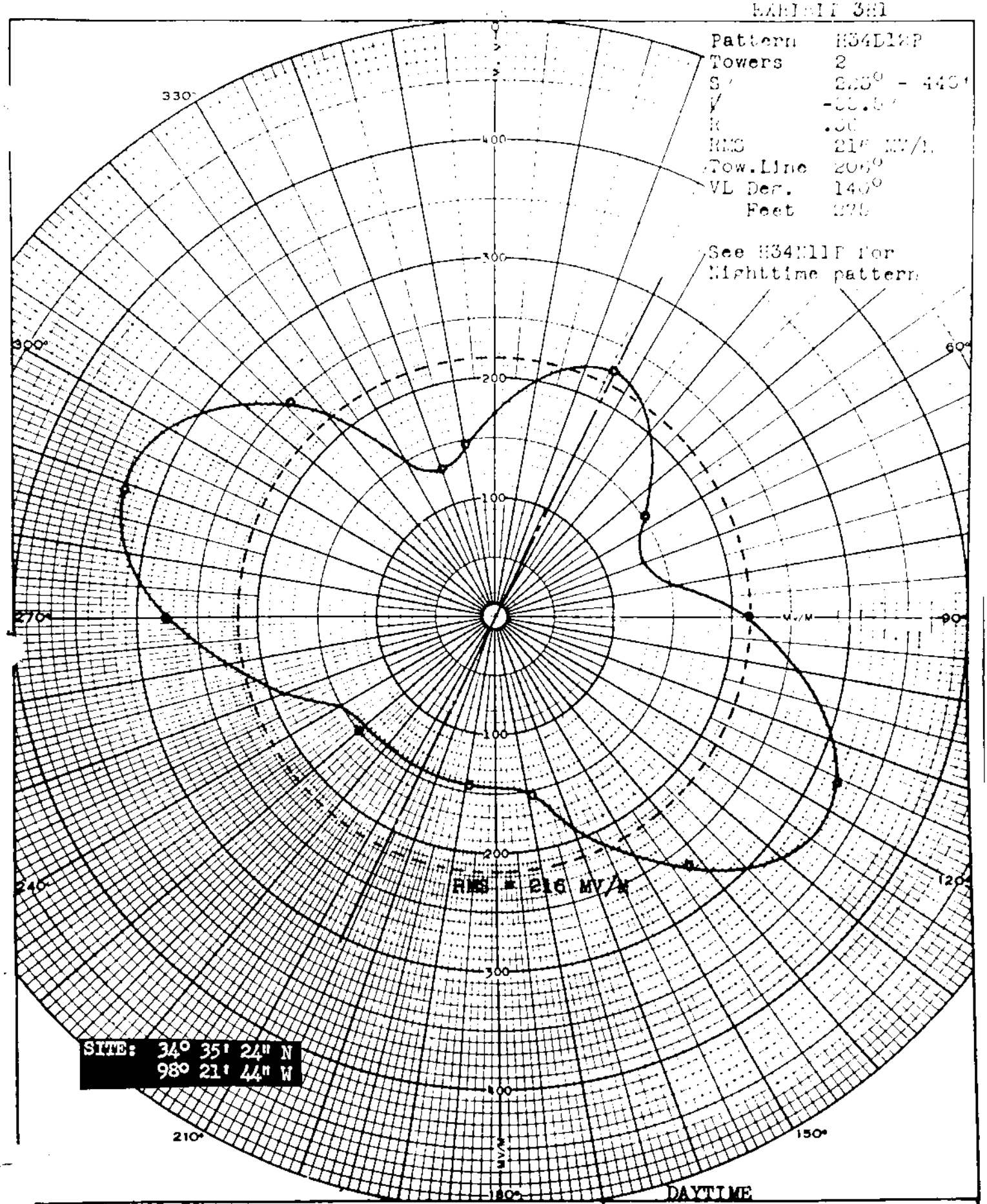
PAT #	H34D12
NO. TOWERS	2
S° 223°	S' 440'
W -33.5	r .365
1 KW RMS	210 MV
KW RMS	
TOWER LINE	206 °TRUE
HEIGHT VL Deg.	140°
HEIGHT VL Feet	275
HEIGHT OA Feet	
PAT. UNIT rms:	.94 K:224

COMMERCIAL RADIO EQUIPMENT CO.

RADIO ENGINEERING CONSULTANTS

KANSAS CITY WASHINGTON, D.C. HOLLYWOOD

PATTERN:	PROPOSED DAYTIME
FOR:	KSWO, LAWTON, OKLA.
POWER:	1 KW FREQ: 1380 KC
DATE:	AUG. 3, 1945 BY: KMH



COMMERCIAL RADIO EQUIPMENT CO.

RADIO ENGINEERING CONSULTANTS

KANSAS CITY WASHINGTON, D.C. HOLLYWOOD

DAYTIME

PATTERN PROOF OF PERFORMANCE

FOR KSWO, LAWTON OKLA.

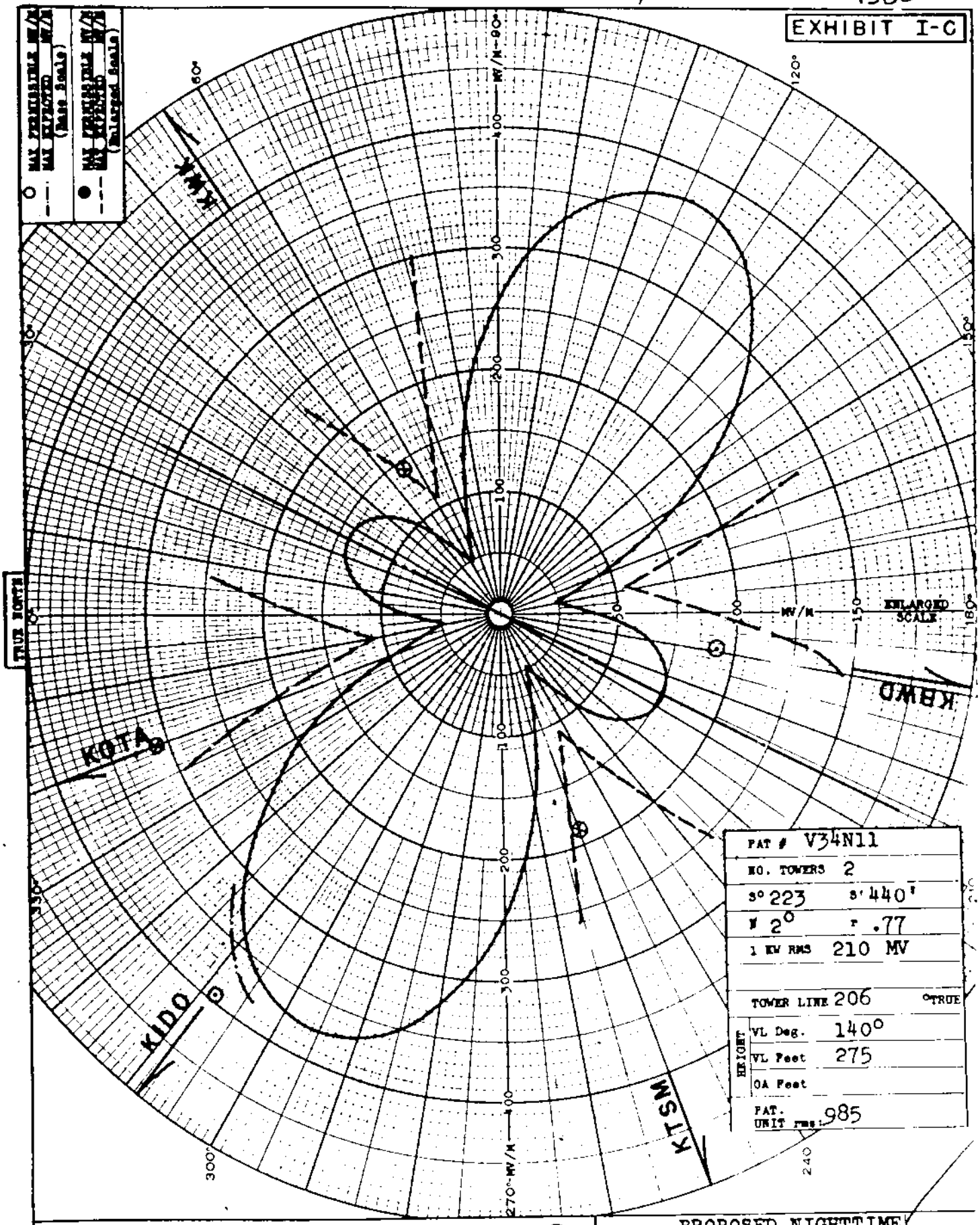
POWER 1 KW DA FREQ 1380 KC

DATE March 29, 1947 BY KMH

P-4,5r

KSWO
1380

EXHIBIT I-C

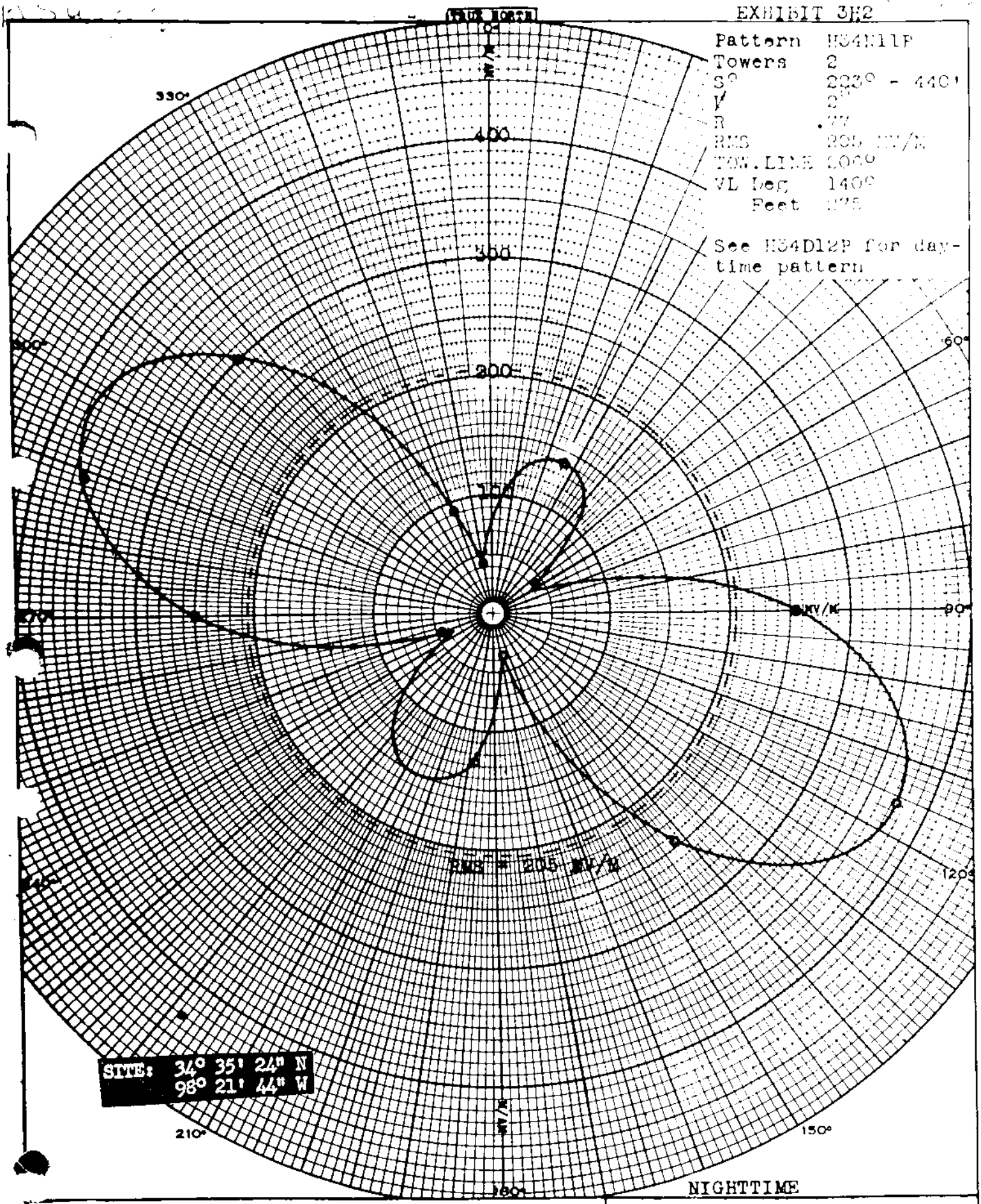


PAT #	V34N11
NO. TOWERS	2
S° 223	S' 440'
W 2°	r .77
1 KW RMS	210 MV
TOWER LINE	206 °TRUE
HEIGHT VL Deg.	140°
HEIGHT VL Feet	275
HEIGHT OA Feet	
PAT. UNIT rms:	985

COMMERCIAL RADIO EQUIPMENT CO.
RADIO ENGINEERING CONSULTANTS
KANSAS CITY WASHINGTON, D.C. HOLLYWOOD

PATTERN: PROPOSED NIGHTTIME
FOR: KSWO, LAWTON, OKLA.
POWER: 1 KW FREQ: 1380 KC
DATE: AUG. 3, 1945 BY: KMH

EXHIBIT 3H2



Pattern	H54N11P
Towers	2
S°	223° - 440'
V	2"
R	.77
RMS	205 MV/M
TOW. LINE	200°
VL Deg	140°
Feet	175

See H54D12P for daytime pattern

NIGHTTIME

COMMERCIAL RADIO EQUIPMENT CO.

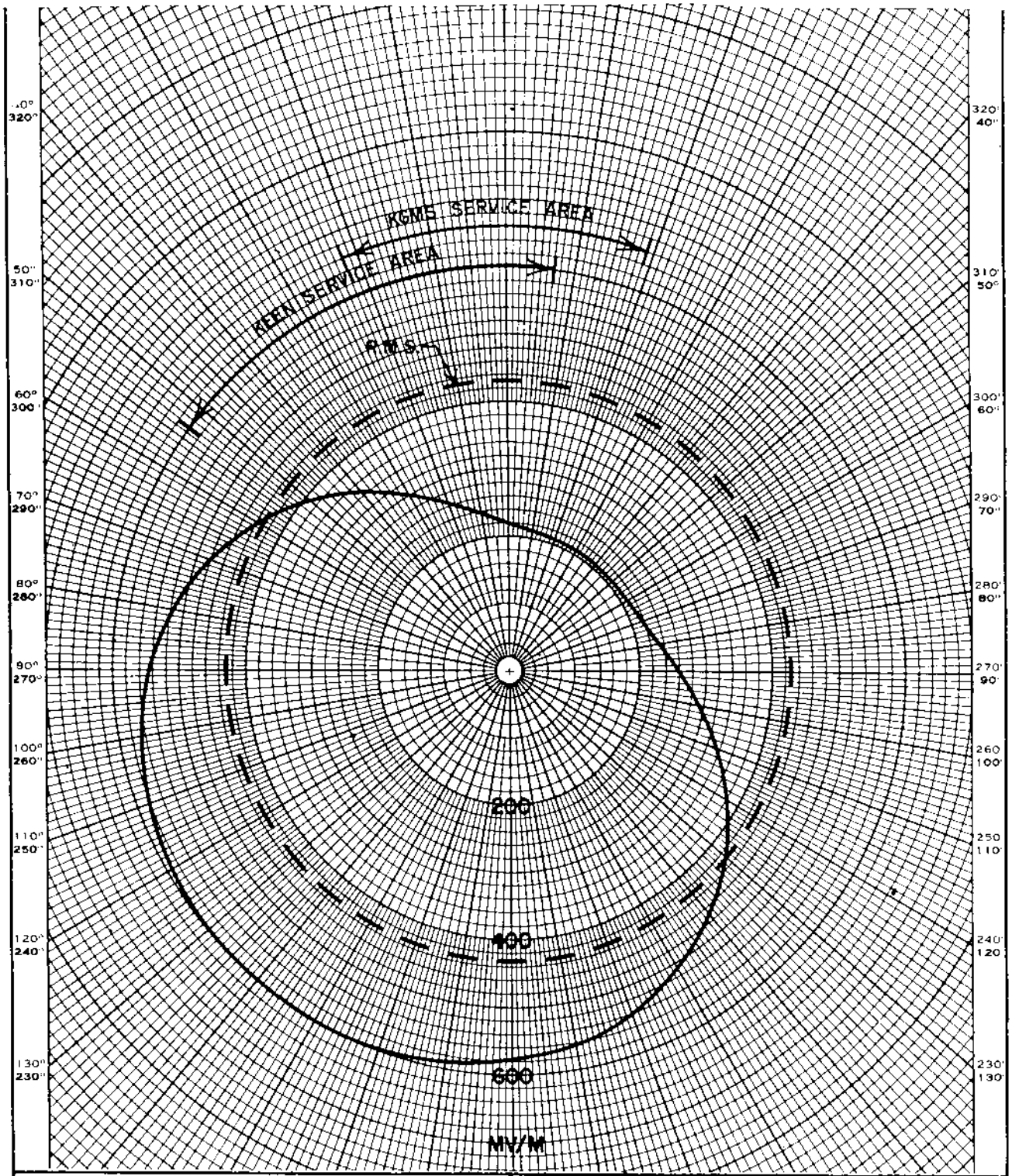
RADIO ENGINEERING CONSULTANTS

KANSAS CITY WASHINGTON, D. C. HOLLYWOOD

PATTERN:	PROOF OF PERFORMANCE
FOR:	KSWO, LAWTON OKLA.
POWER:	1 KW DA FREQ: 1380 KC
DATE:	March 25, 1947 BY: KMH

17

PROPOSED STATION KSBW 5 KW
DAY 1/12/56G SALINAS, CALIF. DA-2, U 1380 KC



N. LAT. 36° 41' 59"
W. LONG. 121° 37' 32"

1 ● N 36°E 1.00 ∠0°

149' 73°

G = 90° 2 ● 0.50 ∠105° RMS = 432 MV/M

ROBERT L. HAMMETT
CONSULTING RADIO ENGINEER

RADIO STATION KSBW
1380 KC, 5 KW, DA-2

HORIZONTAL RADIATION PATTERN
DAYTIME

UNATTENUATED FIELD INTENSITY
AT ONE MILE

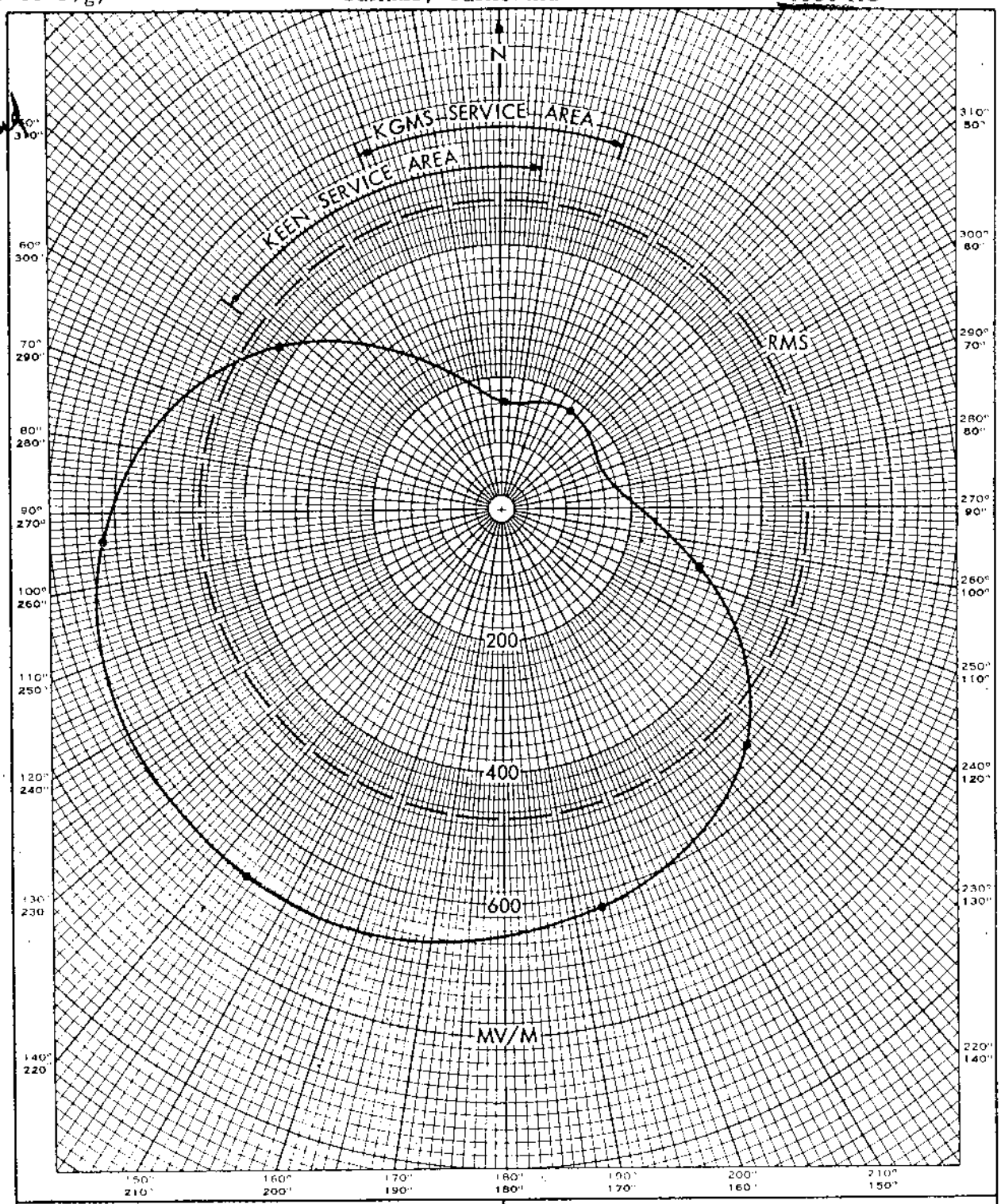
File No. BP-9288 Accepted 12/16/55 ~~KSBW~~, Salinas, Calif. 1380 KC
KTOM

MEASURED DAY
(6-16-59g)

Station KSBW
Salinas, California

5kw, DA-2, U
1380 KC

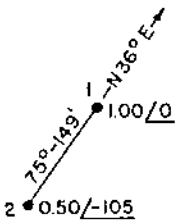
(-6-59 granted increase to 5kw range to DA-2 and change in coord.



N. LAT 36° 41' 49"
W. LONG 121° 37' 22"

G=90°

RMS=470 MV/M



MEASURED HORIZONTAL RADIATION PATTERN DAYTIME

UNATTENUATED FIELD INTENSITY AT ONE MILE

590123

FIGURE 11B

HAMMETT & EDISON
CONSULTING RADIO ENGINEERS
SAN FRANCISCO

RADIO STATION KSBW
1380 KC, 5 KW, DA-2
SALINAS, CALIFORNIA

FCC File No. BL-7482
Accepted 6-2-59

~~KSBW~~ KTOM
Salinas, California

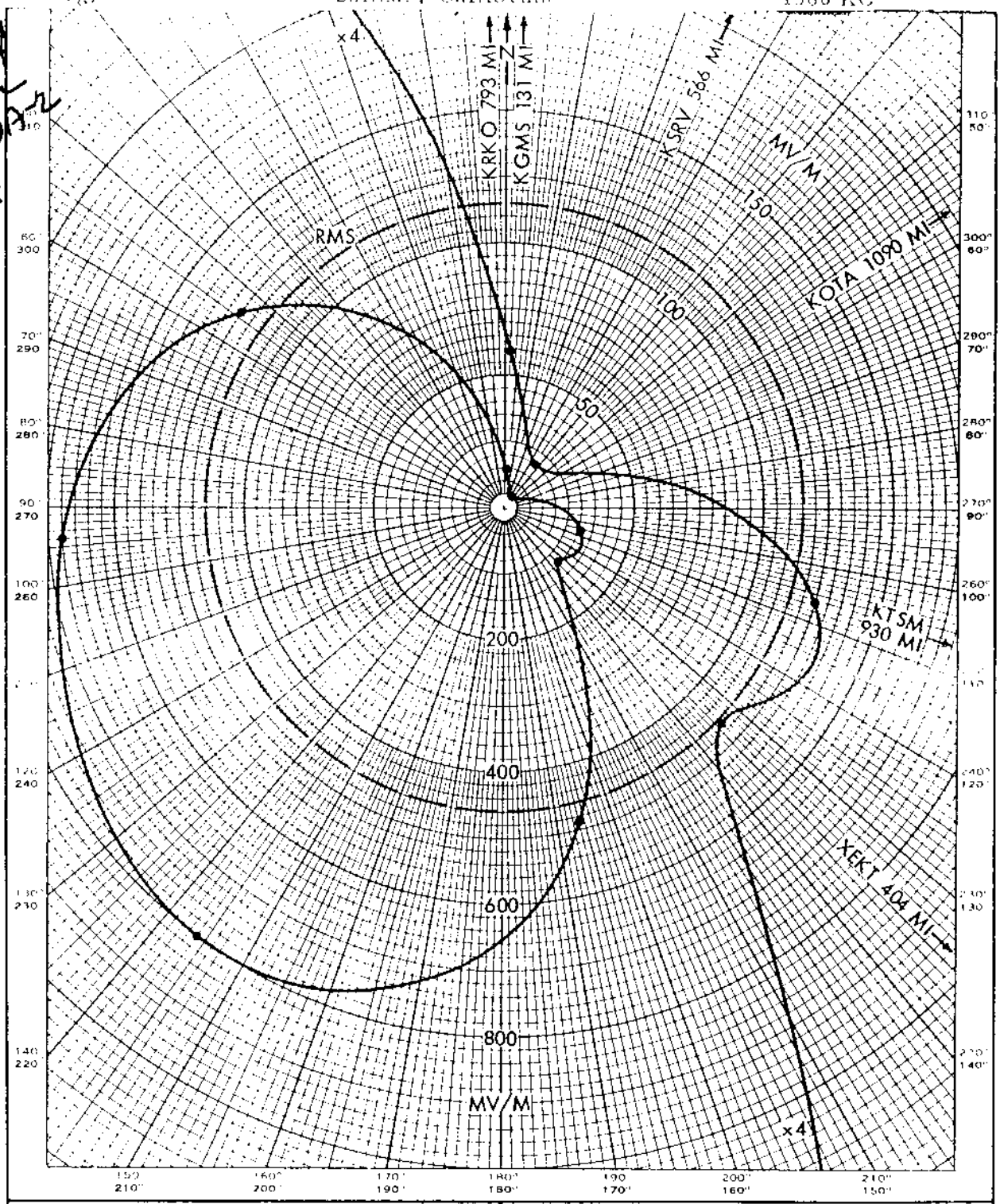
1380 KC

MEASURED NIGHT
(6-16-59g)

Station KSBW
Salinas, California

5kw, DA-2, U
1380 KC

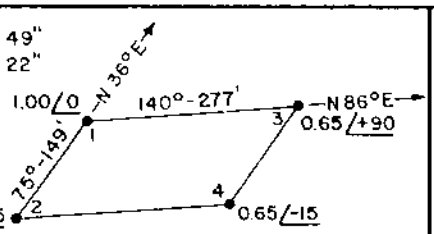
11-6-59 Granted
Mlaax in power
5 KW, change to DA-2
change coord.



N.LAT 36° 41' 49"
W.LONG 121° 37' 22"

G=90°

RMS=461MV/M



MEASURED
HORIZONTAL RADIATION PATTERN
NIGHTTIME

UNATTENUATED FIELD INTENSITY
AT ONE MILE

590123

FIGURE 11C

HAMMETT & EDISON
CONSULTING RADIO ENGINEERS
SAN FRANCISCO

RADIO STATION KSBW
1380 KC, 5 KW, DA-2
SALINAS, CALIFORNIA

FCC File No. BL-7482
Accepted 6-2-59

~~KSBW~~ KTOM
Salinas, California

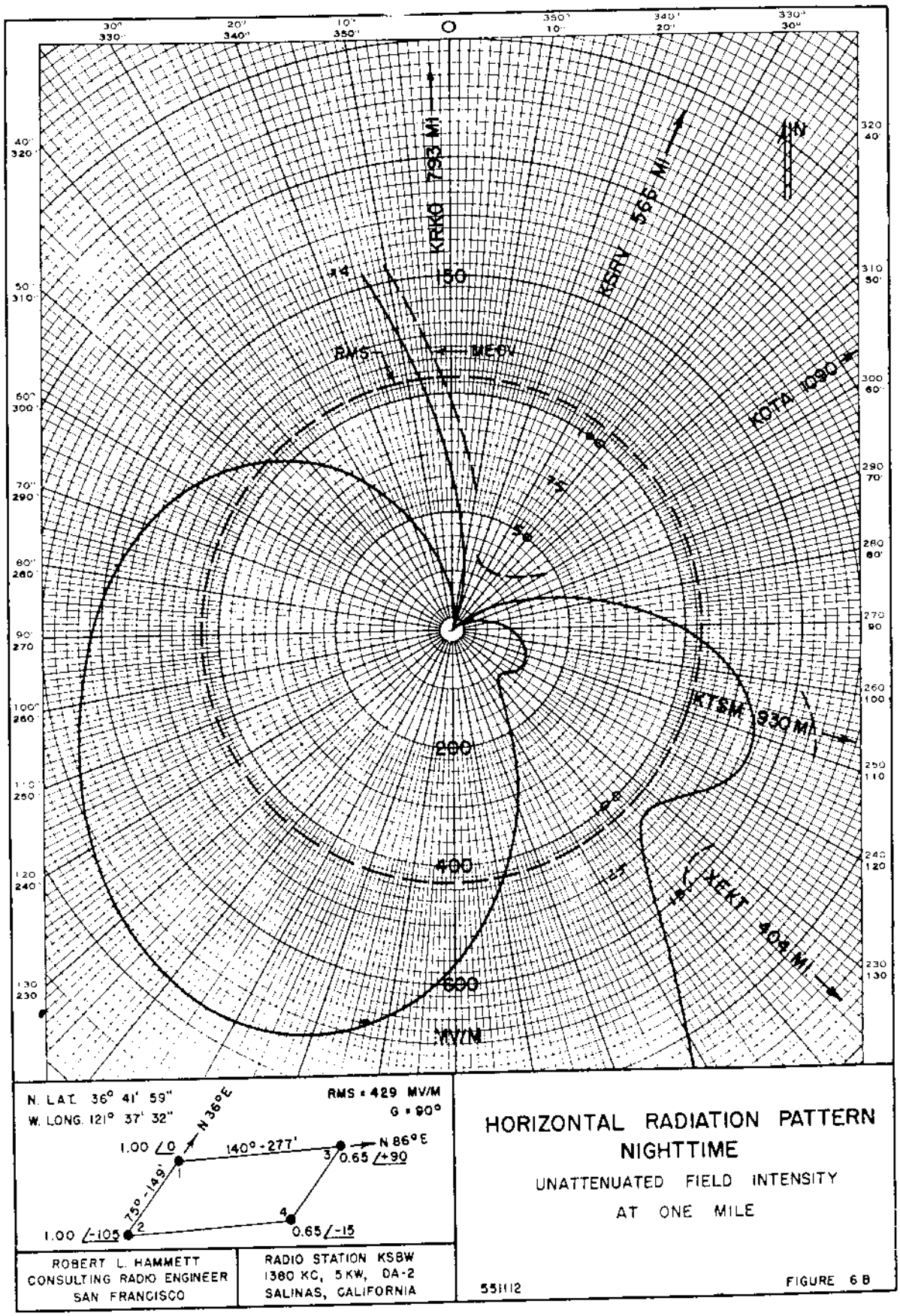
1380 KC

PROPOSED
NIGHT 1/12/56G

STATION KSBW
SALINAS, CALIF.

5 KW
DA-2, U

1380 KC



File No. BP-9288

Accepted 12/16/55

~~KSBW~~ KTOM, Salinas, Calif.

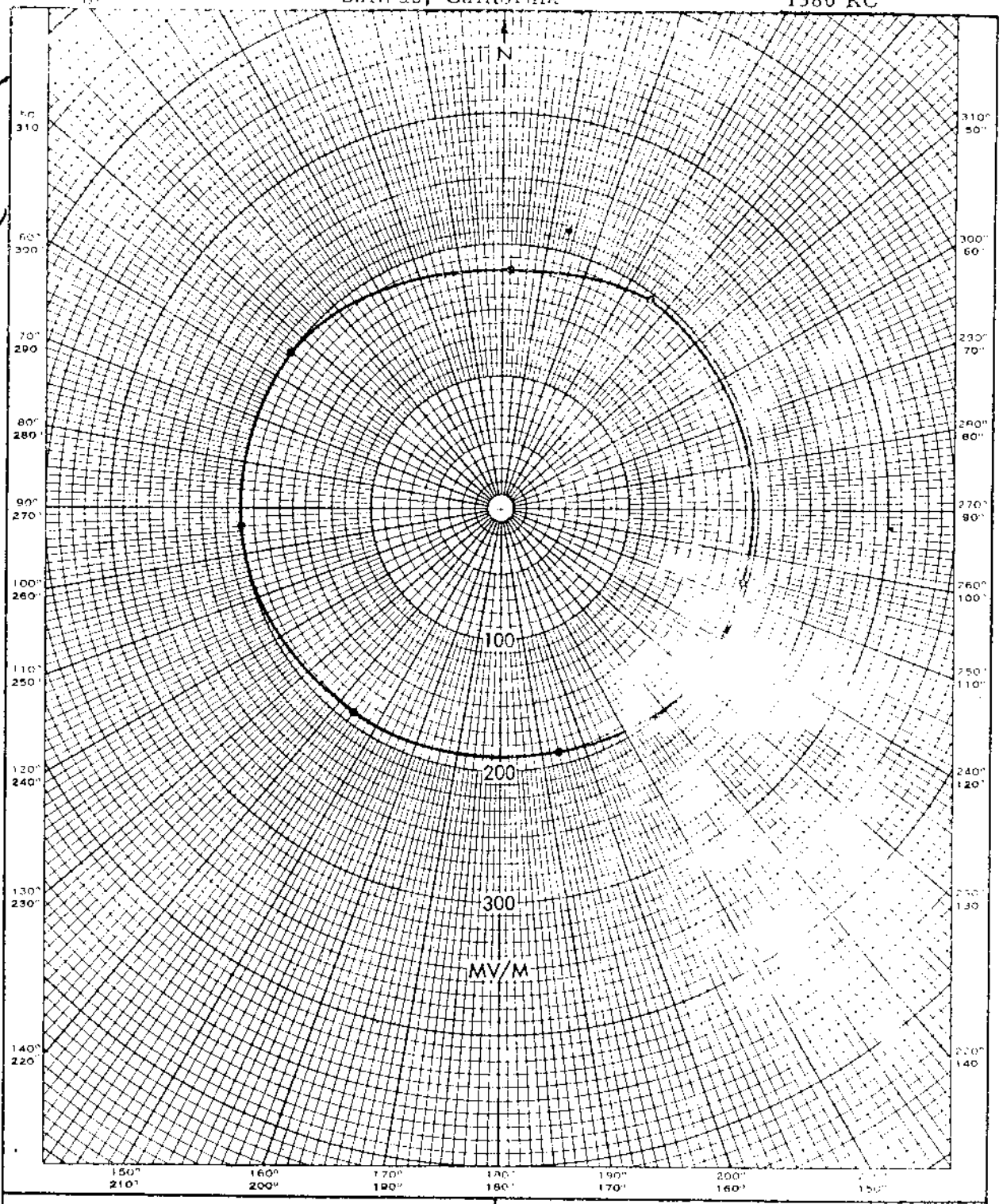
1380 KC.

MEASURED NON-DA
(6-16-59g)

Station KSBW
Salinas, California

5kw, DA-2, U
1380 KC

Granted license
to increase in pr
1 kW, change to
DA-2 + change
coord: 11-6-59



N. LAT 36° 41' 49"
W. LONG 121° 37' 22"

G=90°

RMS=194 MV/M

TOWER 2 EXCITED, TOWERS 1, 3, AND 4 DETUNED

MEASURED
HORIZONTAL RADIATION PATTERN
1KW NON-DIRECTIONAL TEST

UNATTENUATED FIELD INTENSITY
AT ONE MILE

590123

FIGURE 11A

HAMMETT & EDISON CONSULTING RADIO ENGINEERS SAN FRANCISCO	RADIO STATION KSBW 1380 KC, 5 KW, DA-2 SALINAS, CALIFORNIA

FCC File No. BL-7482
Accepted 6-2-59

~~KSBW~~ KTOM
Salinas, California

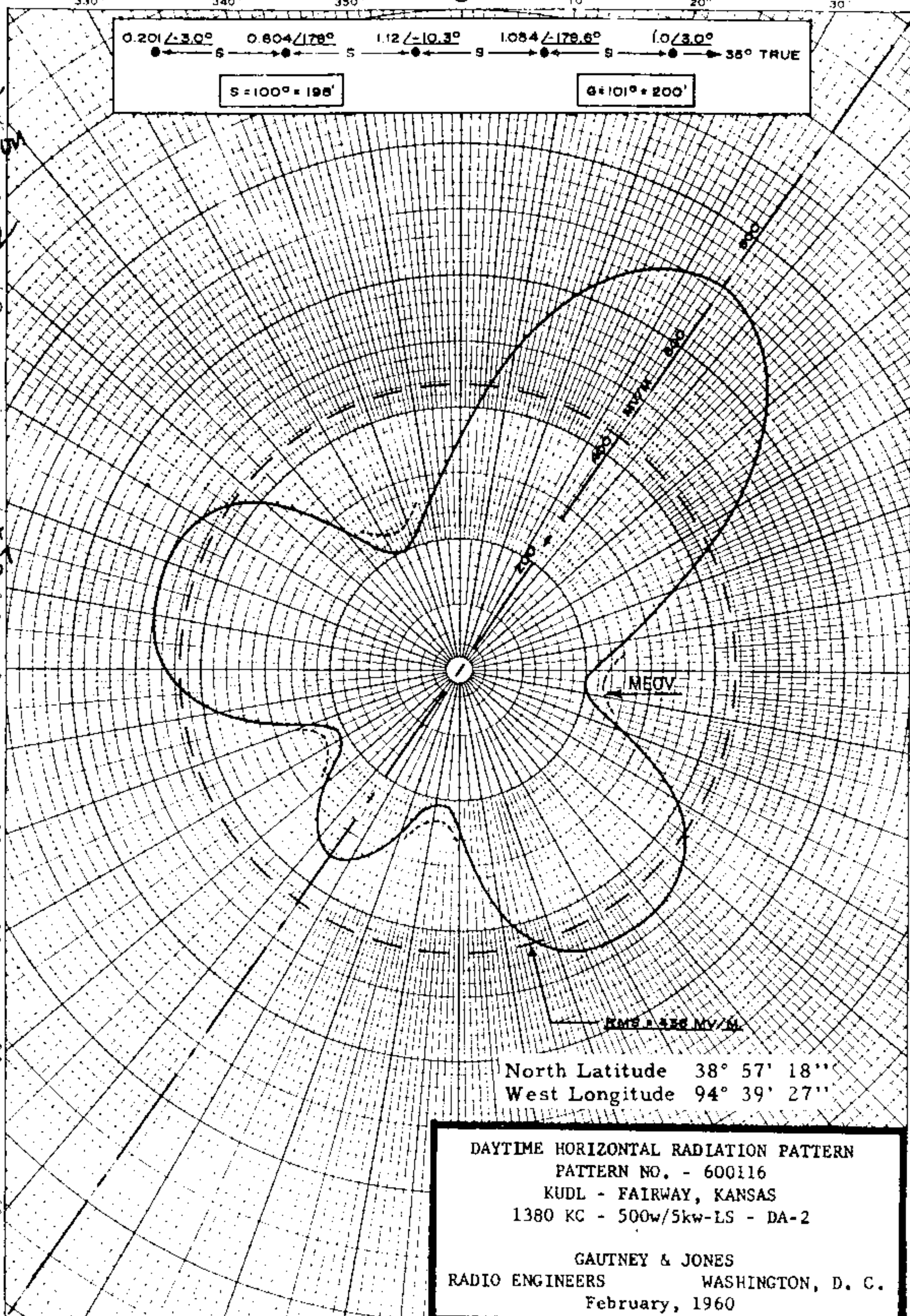
1380 KC

KUDL

PROPOSED DAY
(4-22-60g)

Station KUDL
Fairway, Kansas

500w, 5kw-LS, DA-2,U
1380 KC



-14-61 granted CP for change of location Fairway, Kan. and install DA-2

66-10/25/61 application for MCP new coordinates 38-58-35 94-41-54

13-CT 5-25-62 amend to NL 38-58-34 WL 94-42-37

-28-62 granted mod. of CP to change of trans. loc. NL 38-58-34 WL 94-42-37

FCC File No. BP-12879
Accepted 4-20-60 (Amended)

KUDL
Fairway, Kansas

1380 KC

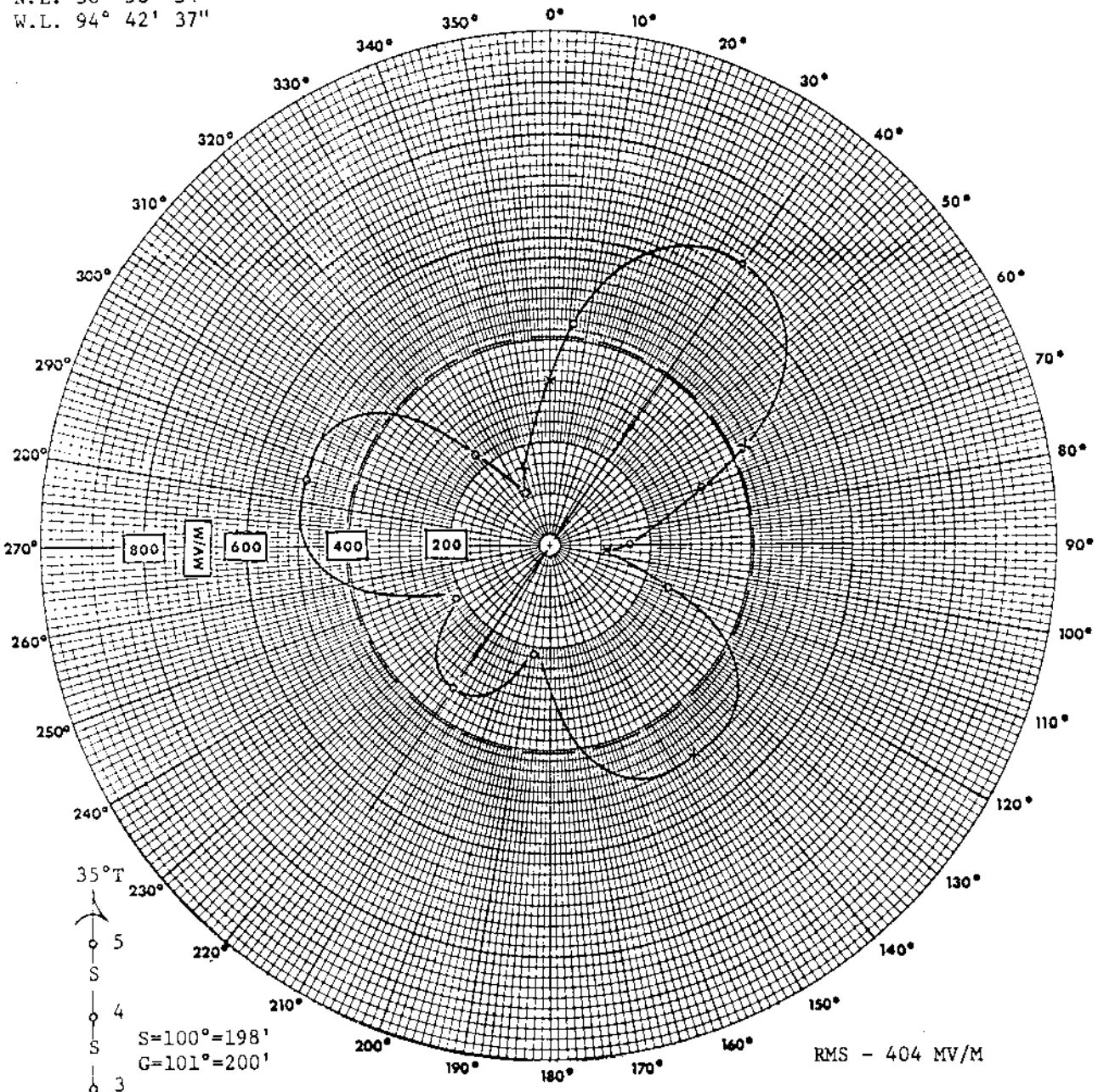
KUDL

Measured Day
(8-28-67ct)

Station KUDL
Fairway, Kansas

500w, 5kw-LS, DA-2, U
1380 kc

N.L. 38° 58' 34"
W.L. 94° 42' 37"



35°T

5
S
4
S
3
S
2
S
1

S=100°=198'
G=101°=200'

RMS - 404 MV/M

		Measured	Theorical
#1	0.286/-26°	0.201/-6°
#2	0.611/+172°	0.604/+175°
#3	1.271/-12°	1.12/-13.3°
#4	1.146/+173°	1.054/+178.4°
#5	1.0/0°	1.0/0°

MEASURED DAYTIME DIRECTIONAL PATTERN
KUDL - FAIRWAY, KANSAS
1380 KC - 0.5 KW/5 KW-LS - DA-2

APRIL, 1967

Gautney & Jones
Consulting Radio Engineers

FCC File No. BZ-6504
Accepted 8-21-67

Station KUDL
Fairway, Kansas

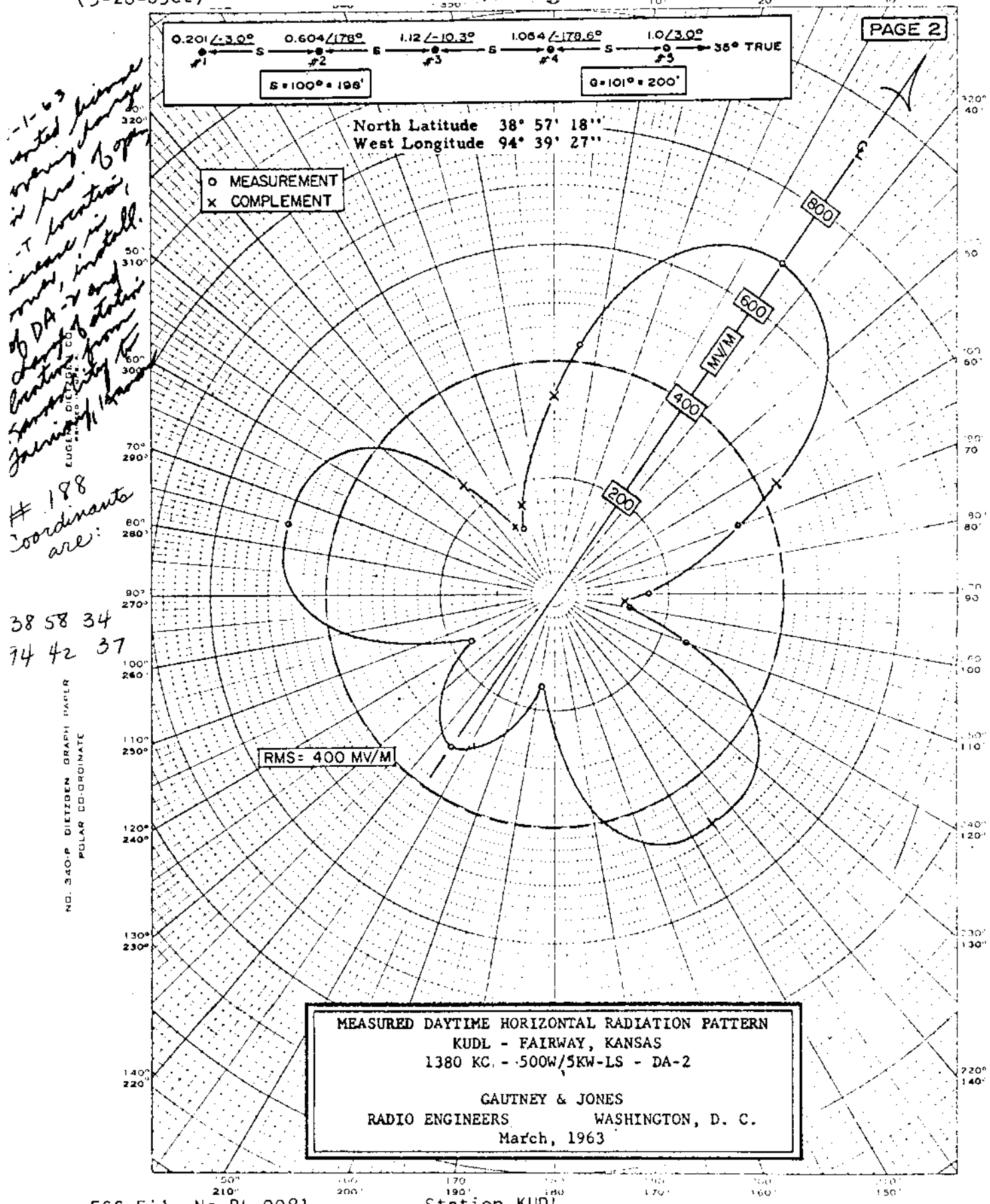
1380 kc

KUDL

Measured Day
(5-28-63ct)

Station KUDL
Fairway, Kansas

500w, 5kw-LS, DA-2, U
1380 kc



FCC File No. BL-9981
Accepted 5-17-63

Station KUDL
Fairway, Kansas

1380 kc

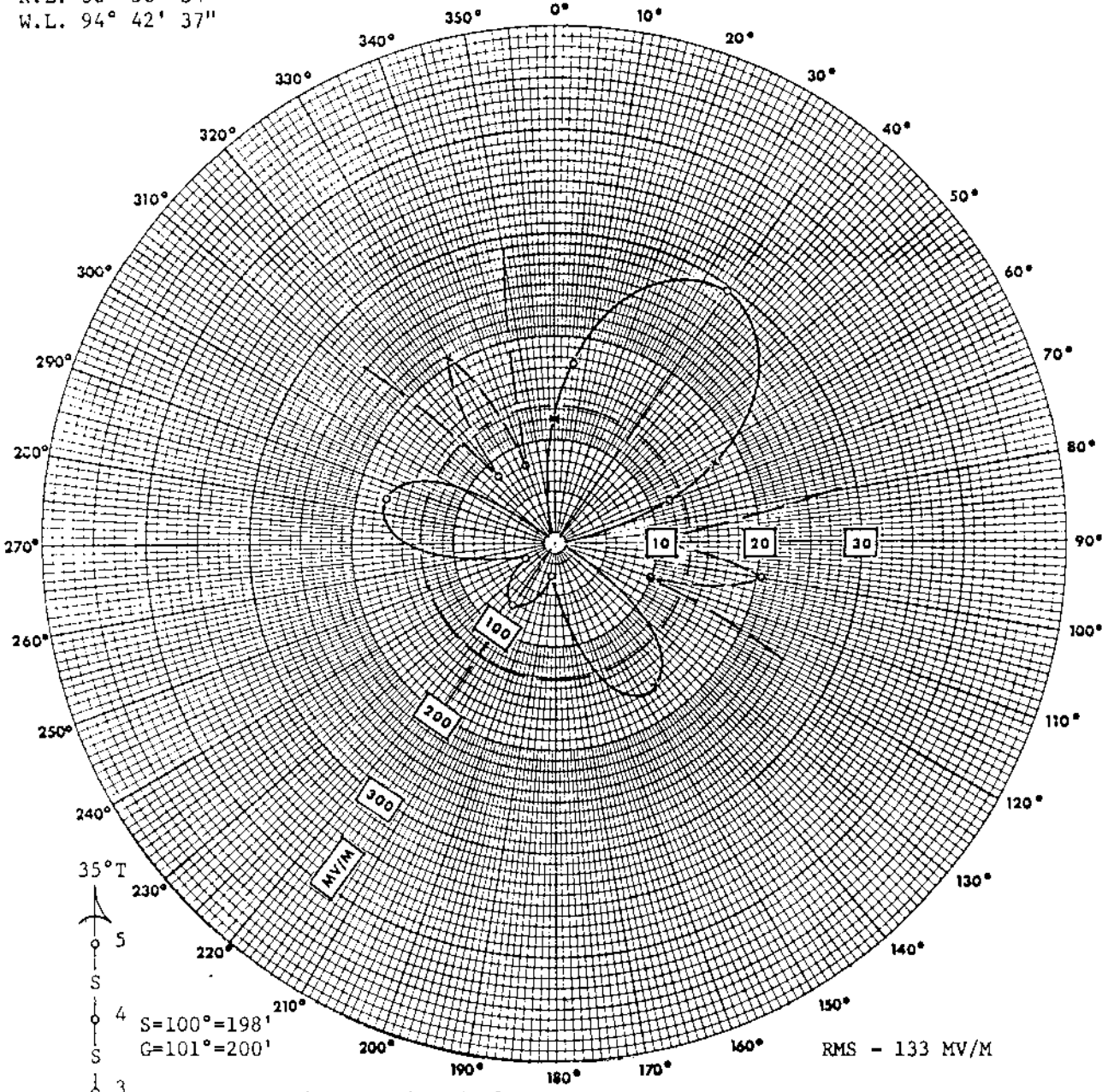
KUDL

Measured Night
(8-28-67ct)

Station KUDL
Fairway, Kansas

500w, 5kw-LS, DA-2, U
1380 kc

N.L. 38° 58' 34"
W.L. 94° 42' 37"



35°T

S=100°=198'
G=101°=200'

RMS - 133 MV/M

	Measured	Theorical
#1	0.139/+82°	0.156/+149.4°
#2	0.676/-23.5°	0.706/-22.3°
#3	1.03/+159°	1.016/+160°
#4	1.0/0°	1.0/0°
#5	0.661/-178°	0.598/+173.4°

MEASURED NIGHTTIME DIRECTIONAL PATTERN
KUDL - FAIRWAY, KANSAS
1380 KC - 0.5 KW/5 KW-LS - DA-2

APRIL, 1967

Gautney & Jones
Consulting Radio Engineers

FCC File No. BZ-6504
Accepted 8-21-67

Station KUDL
Fairway, Kansas

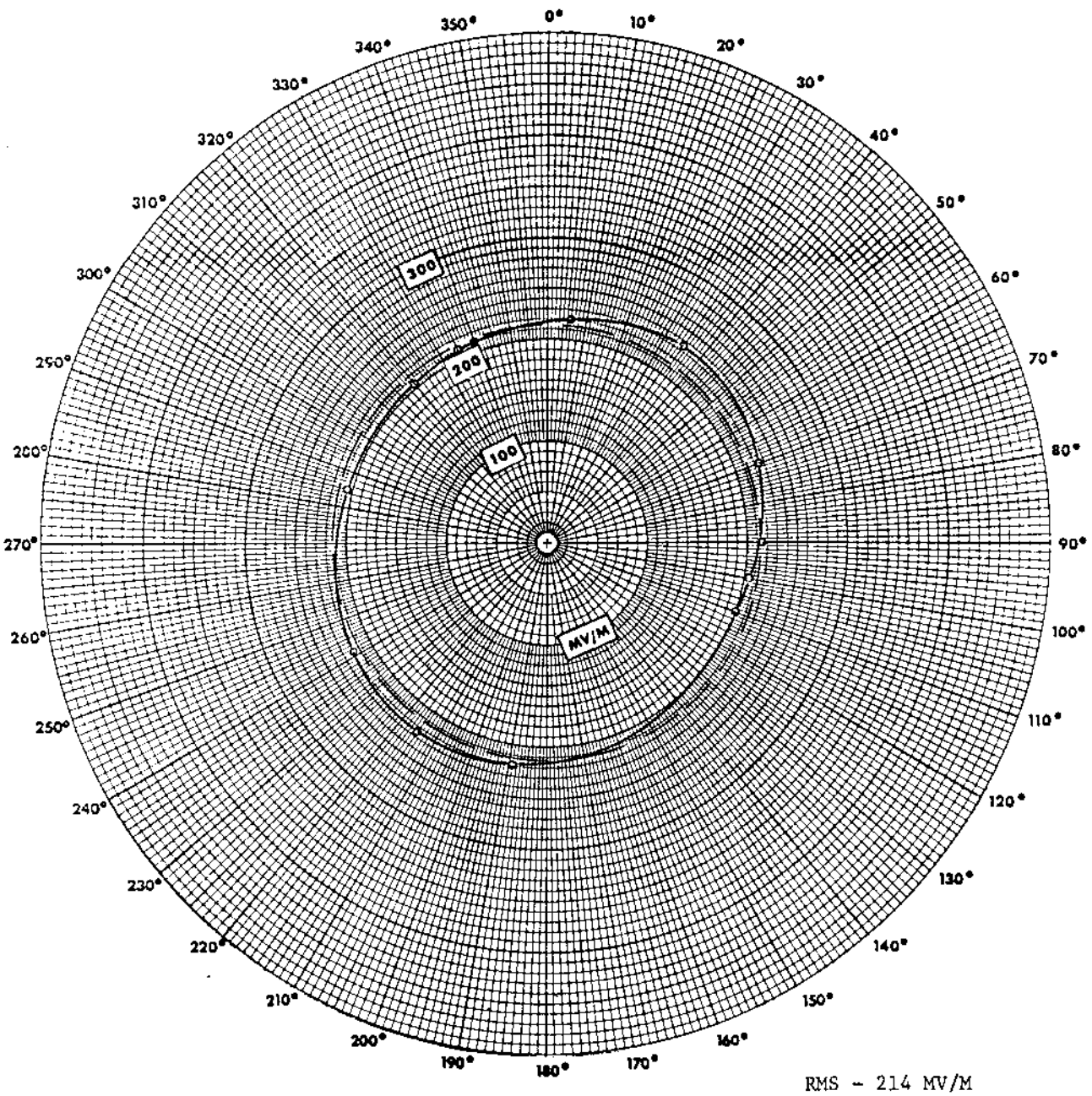
1380 kc

KUDL

Measured Non-DA
(8-28-67ct)

Station KUDL
Fairway, Kansas

500w, 5kw-LS, DA-2, U
1380 kc



RMS - 214 MV/M

MEASURED NON-DIRECTIONAL PATTERN
KUDL - FAIRWAY, KANSAS
1380 KC - 0.5 KW/5 KW-LS - DA-2

APRIL, 1967

GAUTHEY & JOHNS
CONSULTING RADIO ENGINEERS

FCC File No. BZ-6504
Accepted 8-21-67

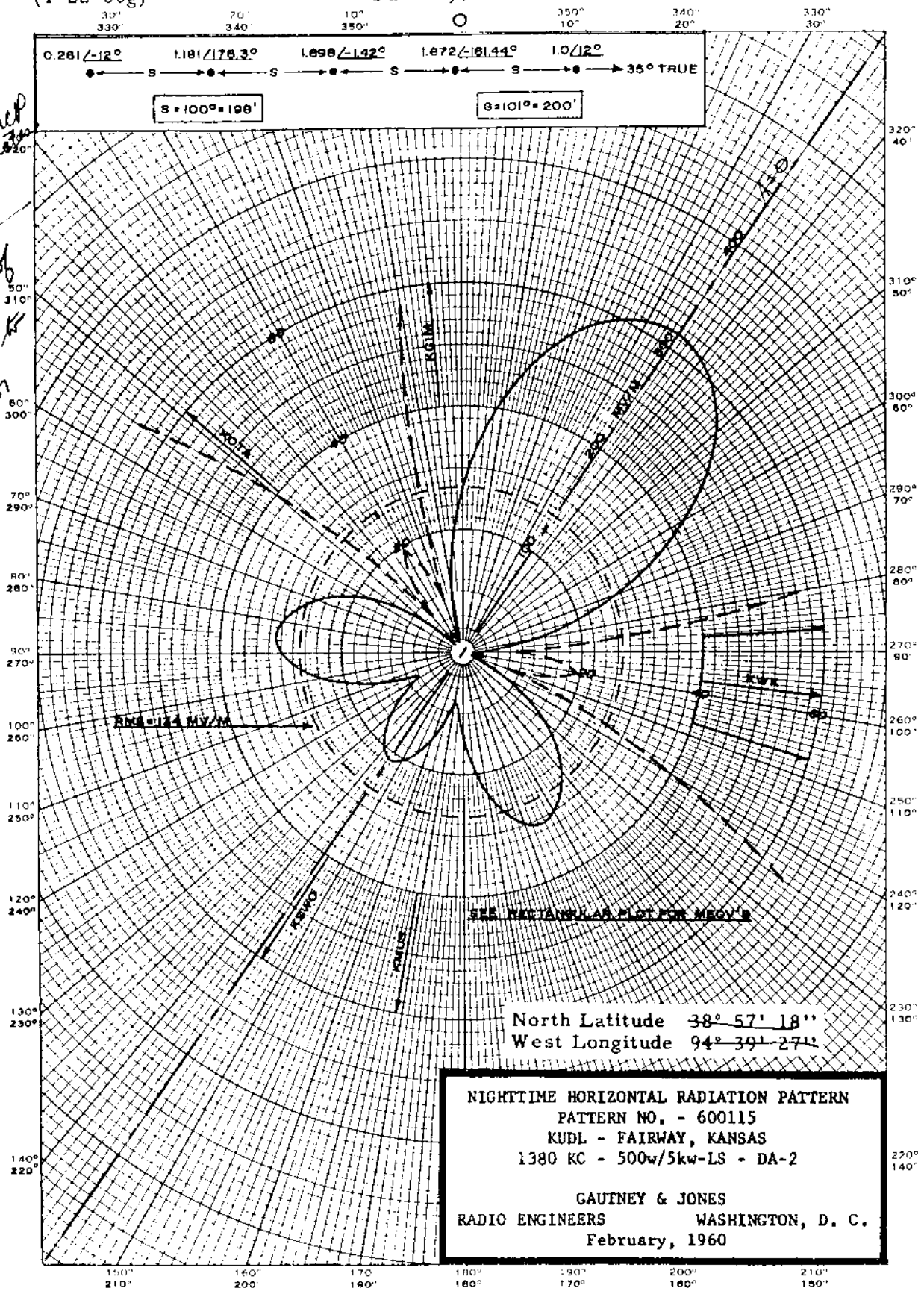
Station KUDL
Fairway, Kansas

1380 kc

PROPOSED NIGHT
(4-22-60g)

Station KUDL
Fairway, Kansas

500w, 5kw-LS, DA-2,U
1380 KC



North Latitude ~~38° 57' 18"~~
West Longitude ~~94° 39' 27"~~

NIGHTTIME HORIZONTAL RADIATION PATTERN
PATTERN NO. - 600115
KUDL - FAIRWAY, KANSAS
1380 KC - 500w/5kw-LS - DA-2

GAUTNEY & JONES
RADIO ENGINEERS WASHINGTON, D. C.
February, 1960

FCC File No. BP-12879
Accepted 4-20-60 (Amended)

KUDL
Fairway, Kansas

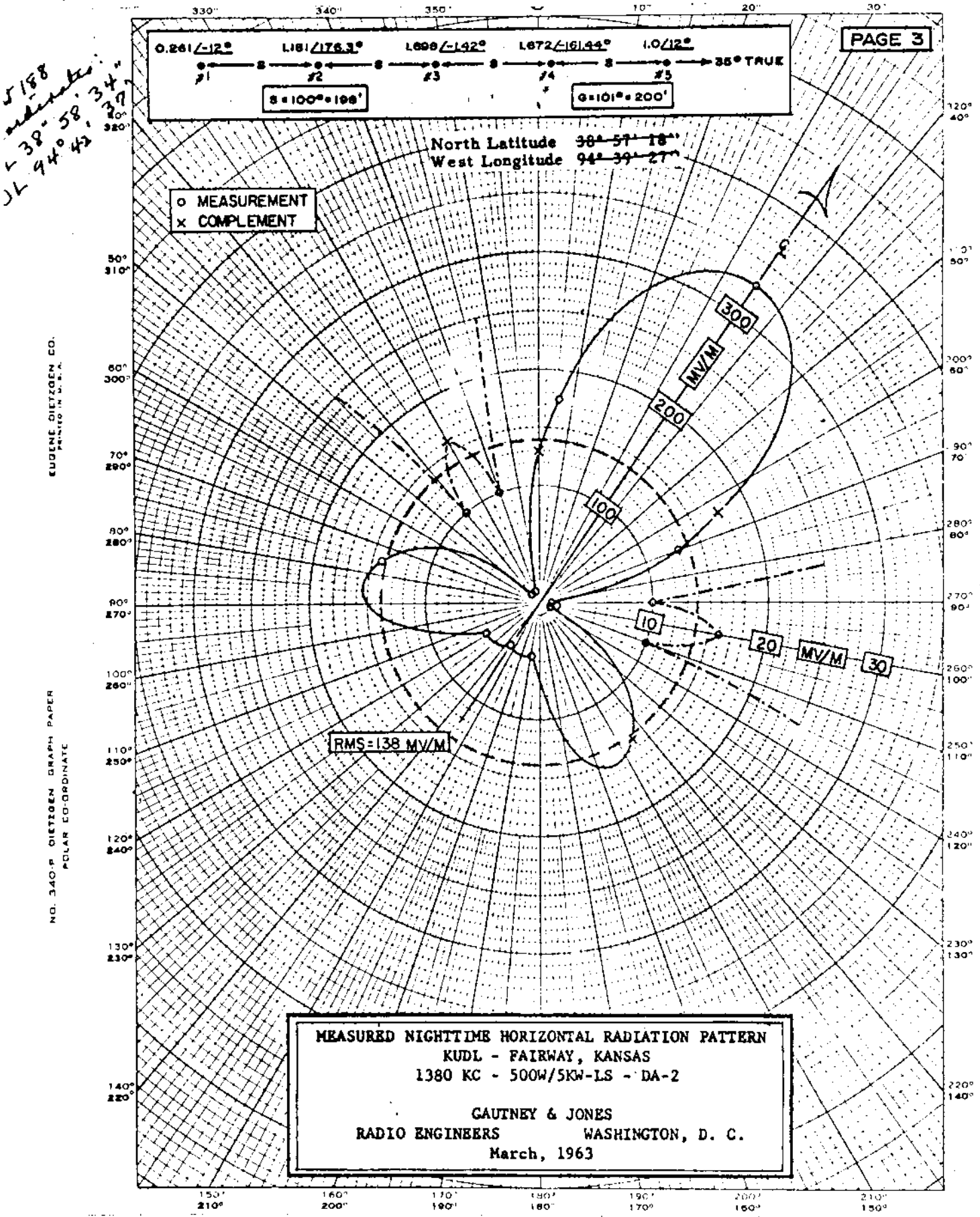
1380 KC

KUDL

Measured Night
(5-28-63ct)

Station KUDL
Fairway, Kansas

500w,5kw-LS,DA-2,U
1380 kc



MEASURED NIGHTTIME HORIZONTAL RADIATION PATTERN
KUDL - FAIRWAY, KANSAS
1380 KC - 500W/5KW-LS - DA-2

GAUTNEY & JONES
RADIO ENGINEERS WASHINGTON, D. C.
March, 1963

FCC File No.BL-9981
Accepted 5-17-63

Station KUDL
Fairway, Kansas

1380 kc

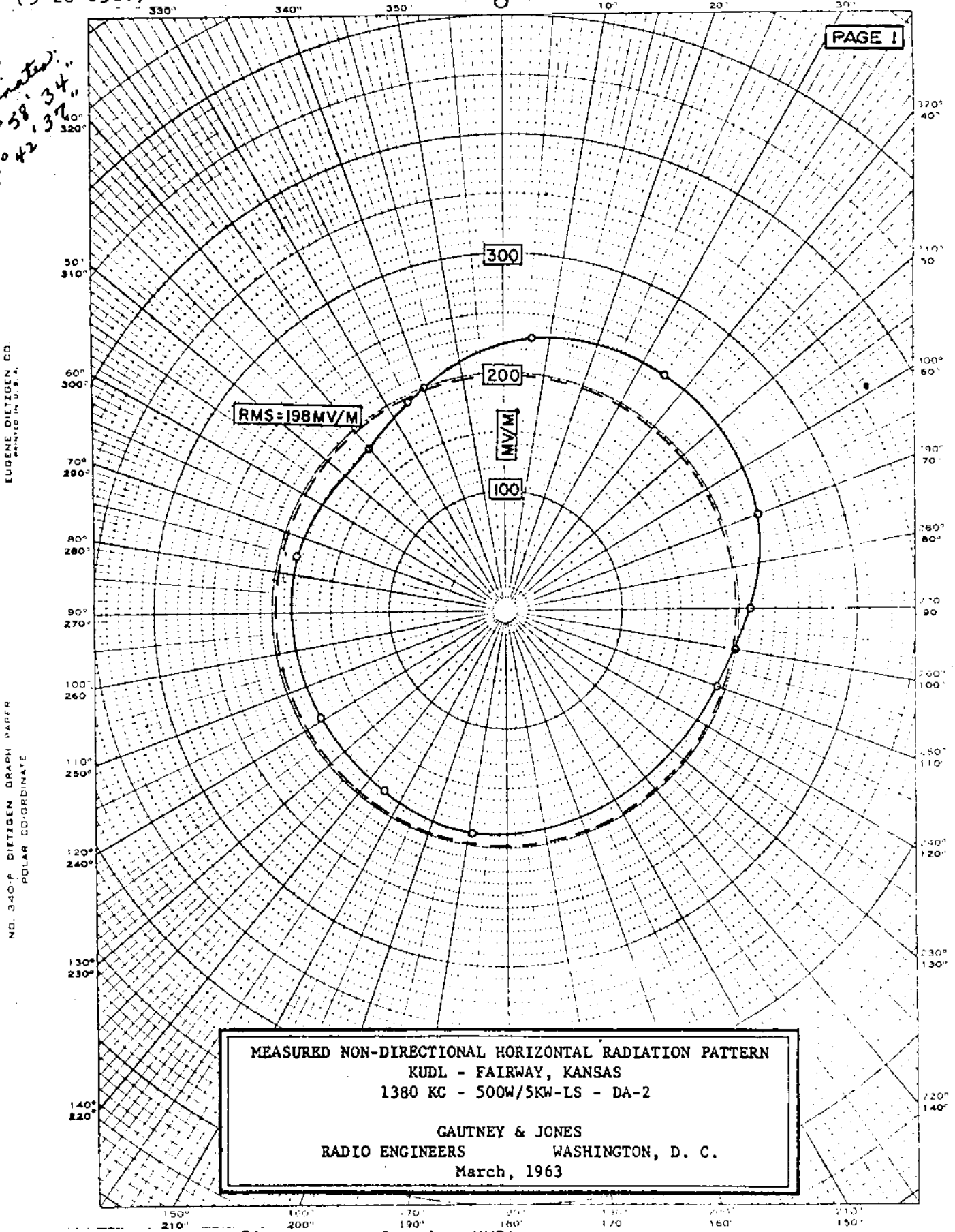
KUDL

Measured Non-DA
(5-28-63ct)

Station KUDL
Fairway, Kansas

500w, 5kw-LS, DA-2, U
1380 kc

#188
coordinates
JL 38°58' 34"
JL 94°42' 37"



MEASURED NON-DIRECTIONAL HORIZONTAL RADIATION PATTERN
KUDL - FAIRWAY, KANSAS
1380 KC - 500W/5KW-LS - DA-2

GAUTNEY & JONES
RADIO ENGINEERS WASHINGTON, D. C.
March, 1963

FCC File No. BL-9981
Accepted 5-17-63

Station KUDL
Fairway, Kansas

1380 kc

KWK

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KWK — Main Studio: Saint Louis, Missouri

Frequency: 1380 kHz — Power: 1 kW Night 5 kW Day

Notification List No. 1694 — Date: July 20, 1976 — Class: III

GEOGRAPHICAL LOCATION OF THE CENTERS OF THE DAY AND NIGHT ANTENNA SYSTEMS:

Daytime				Nighttime			
North Latitude	38°	44'	58"	North Latitude	38°	31'	30"
West Longitude	90°	09'	49"	West Longitude	90°	14'	19"

Authorized for Daytime and Nighttime operation (DA-2).

Nighttime Antenna Characteristics

Number of elements: 4
Type of elements: Series excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	NW(#3)	SW(#1)	NE(#4)	SE(#2)
HEIGHT ABOVE INSULATORS:	393'	393'	393'	393' (200°)
NIGHT PHASING:	-103.6°	0°	-99.1°	+4.5°
NIGHT FIELD RATIO:	0.7750	1	0.5760	0.7431

SPACING AND ORIENTATION: The towers are located at the vertices of a parallelogram the long sides of which are 435.75' (220°) in length on a line bearing 92° true. The short sides are 257.5' (130°) in length on a line bearing 325° true.

NIGHTTIME GROUND SYSTEM: 120-300' 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.

Daytime Antenna Characteristics

Number of elements: 3
Type of elements: Series excited, uniform cross-section, guyed, vertical steel towers.

(Cont'd)

KWK

TOWER:	SW(#2)	C(#1)	NE(#3)
HEIGHT ABOVE INSULATORS:	320'	320'	320' (161°)
DAY PHASING:	-148.48°	0°	+89°
DAY FIELD RATIO:	0.5281	1	0.4028

SPACING AND ORIENTATION: The towers are located in a row spaced 188.3' (95°) on a line bearing 20° true.

DAYTIME GROUND SYSTEM: 120-250' equally spaced copper radials plus a 30' radius elevated ground screen about each tower. Radials are shortened and bonded to transverse straps along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

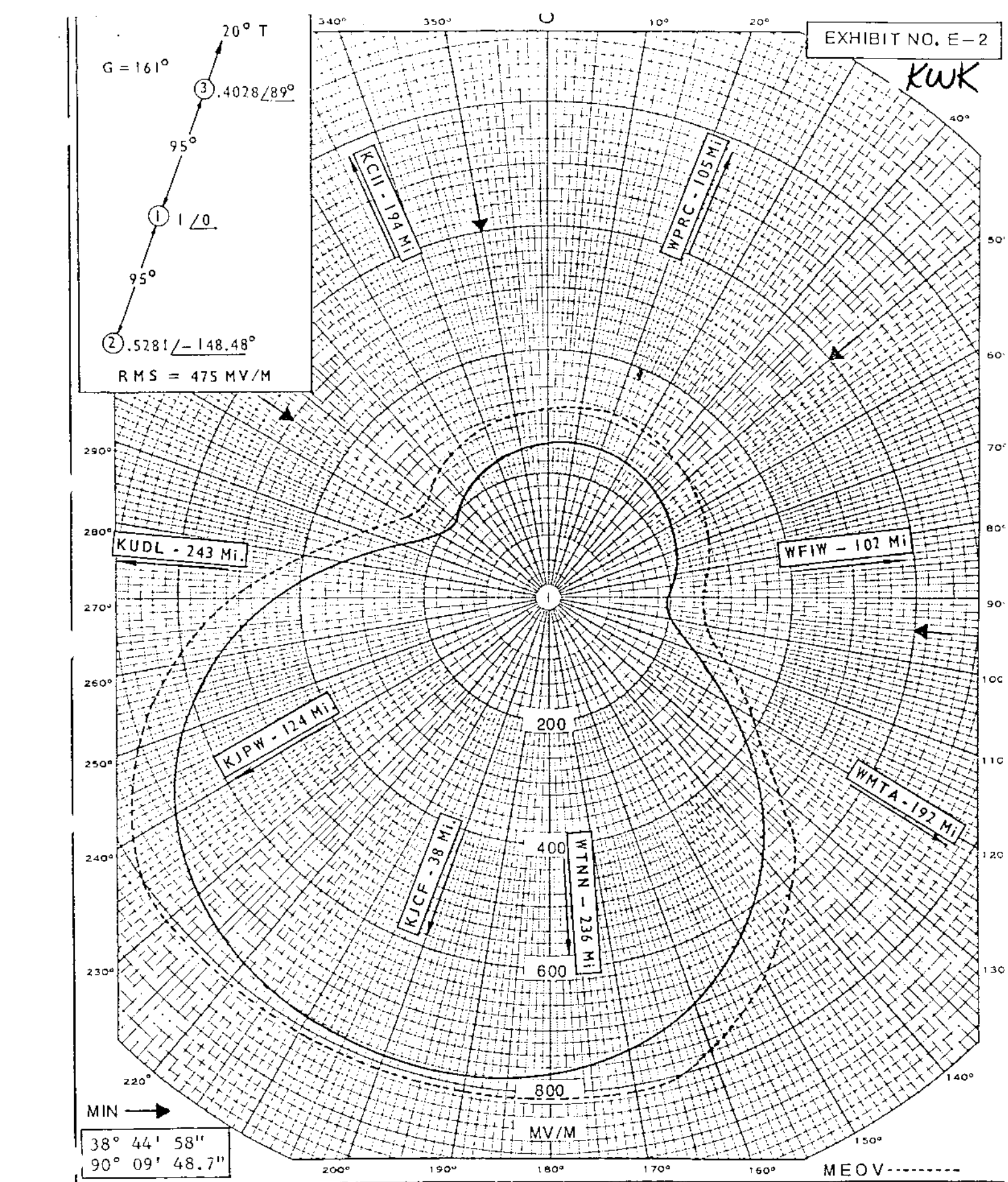
	THEORETICAL		STANDARD
	RMS	RSS	RMS
Day 1/	475 mv/m	-	-
Night	250.9 mv/m	318.6 mv/m	262.8 mv/m

1/ By adjustment of input power.

CTR NO 30619A6

EXHIBIT NO. E-2

KWK

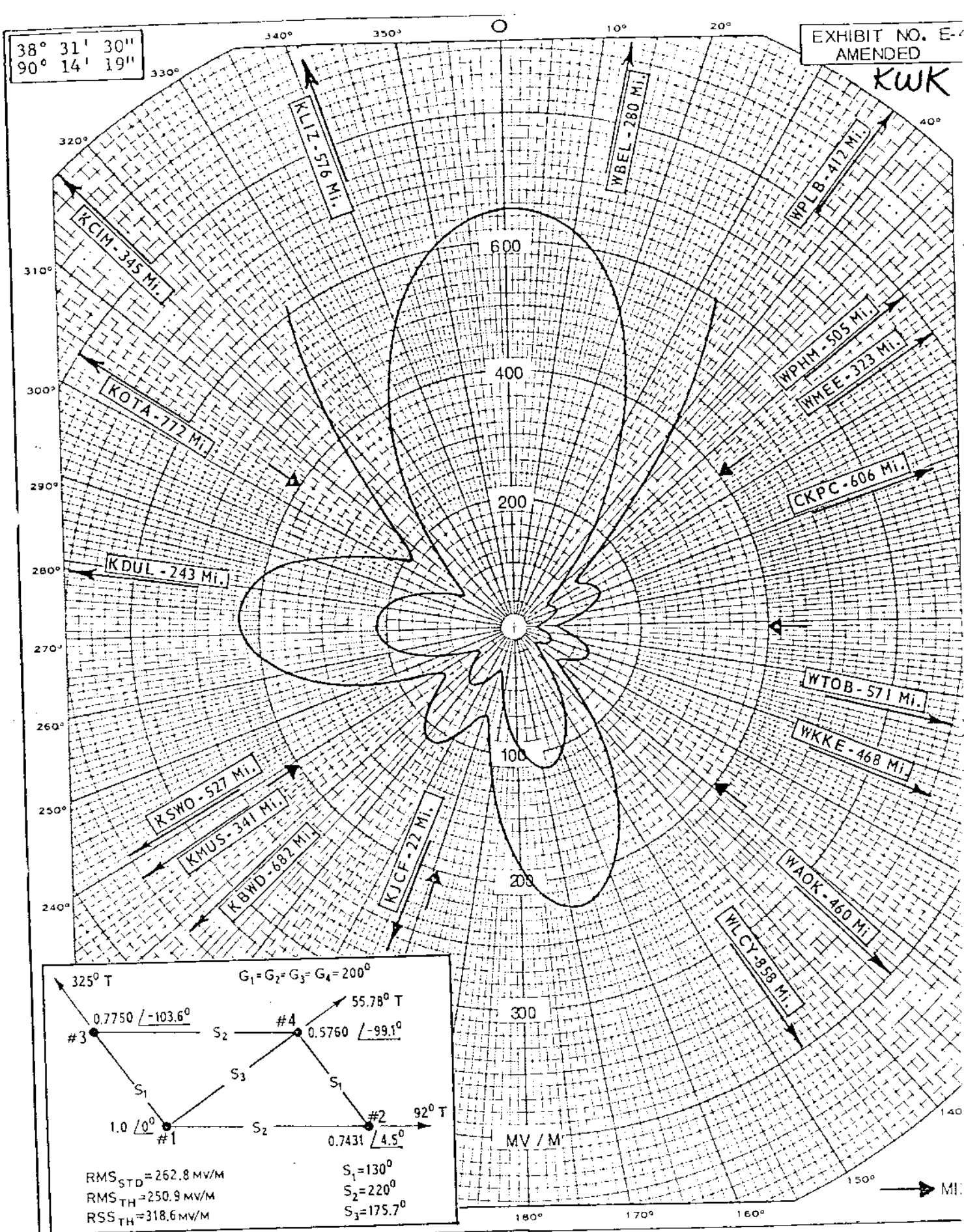


EDWARD F. LORENTZ & ASSOCIATES
CONSULTING RADIO ENGINEERS
WASHINGTON, D.C.

PROPOSED DAYTIME DIRECTIONAL
ANTENNA HORIZONTAL PATTERN

KWK, ST. LOUIS, MISSOURI
1380 KHz, 5 KW-D/ 1 KW-N, DA-2

6/7



EDWARD F. LORENTZ & ASSOCIATES
CONSULTING RADIO ENGINEERS
WASHINGTON, D.C.

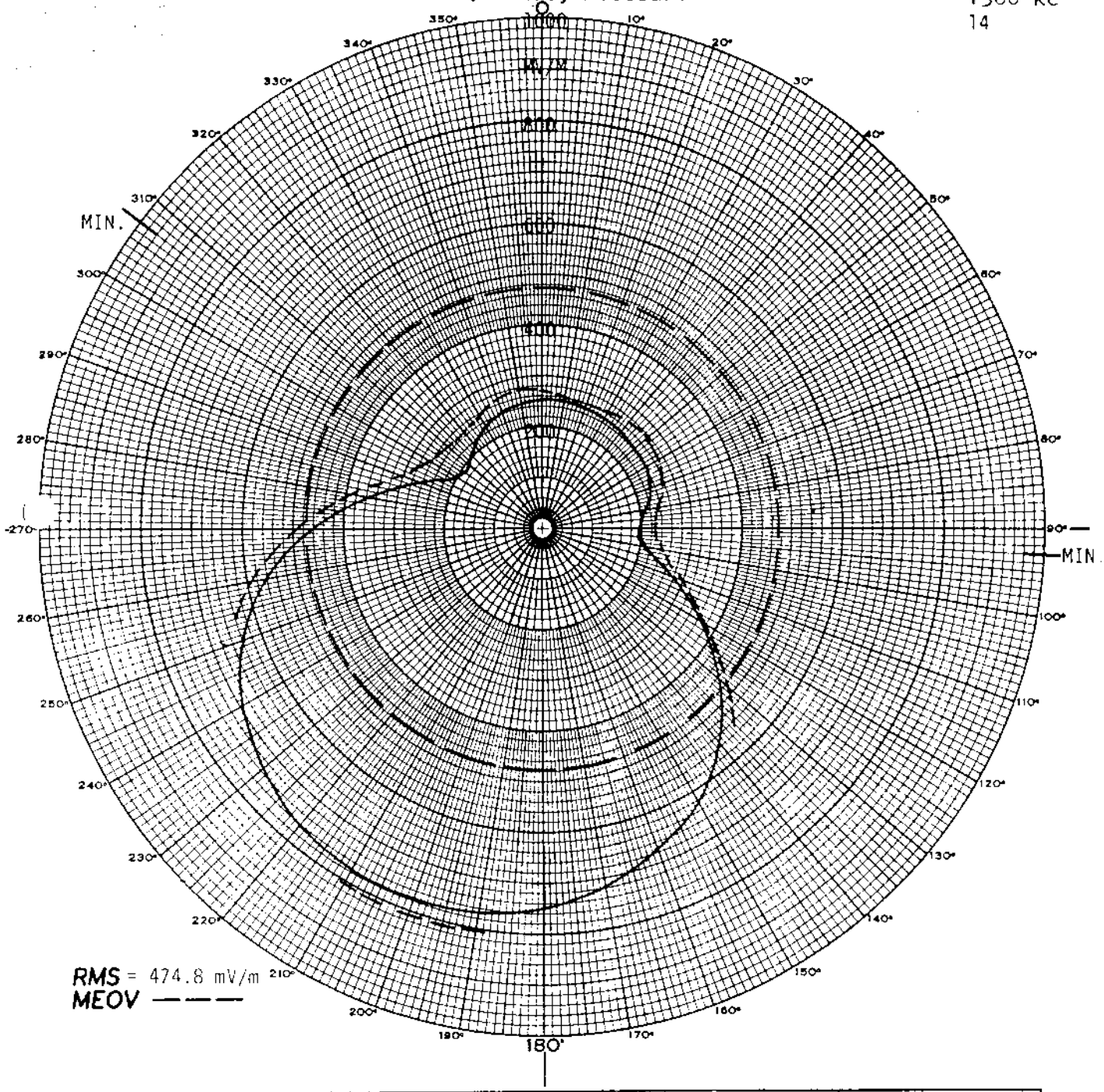
PROPOSED NIGHTTIME
STANDARD HORIZONTAL PATTERN
KWK, ST. LOUIS, MISSOURI
1380 KHz, 5 KW-D / 1 KW-N, DA-2

KWK

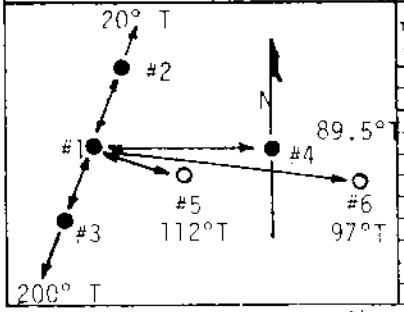
Proposed Day
(4-29-70ct)

Station KWK
St. Louis, Missouri

5kw, DA-2, U
1380 kc
14



TOWER PLACEMENT SKETCH	PATTERN PARAMETERS	FIGURE A-3	STATION DATA



TOWER No.	ELECTRICAL HEIGHT θ°	SPACING s°	PHASING ψ°	FIELD RATIO F
1	197°	0	-78.2	0.908
2	180°	95°	0.0	1.000
3	180°	95°	+156.0	0.570
4	197°	210°	-9.0	0.095
5				
6				
7				
8				
9				
10				

DAYTIME OPERATION ☐ NIGHTTIME OPERATION ☐

PROPOSED DAYTIME PATTERN

θ°

CALL NEW
FREQ 1380 kHz
POWER 5.0 kw
TYPE DA-2
TIME DAY
LAT. N-38-44-58
LONG. W-90-09-48.7

E.H.MUNN, JR.
RADIO ENGINEER
COLDWATER, MICH.

FCC File No. BMP-12964
Accepted 4-10-70

Station KWK
St. Louis, Missouri

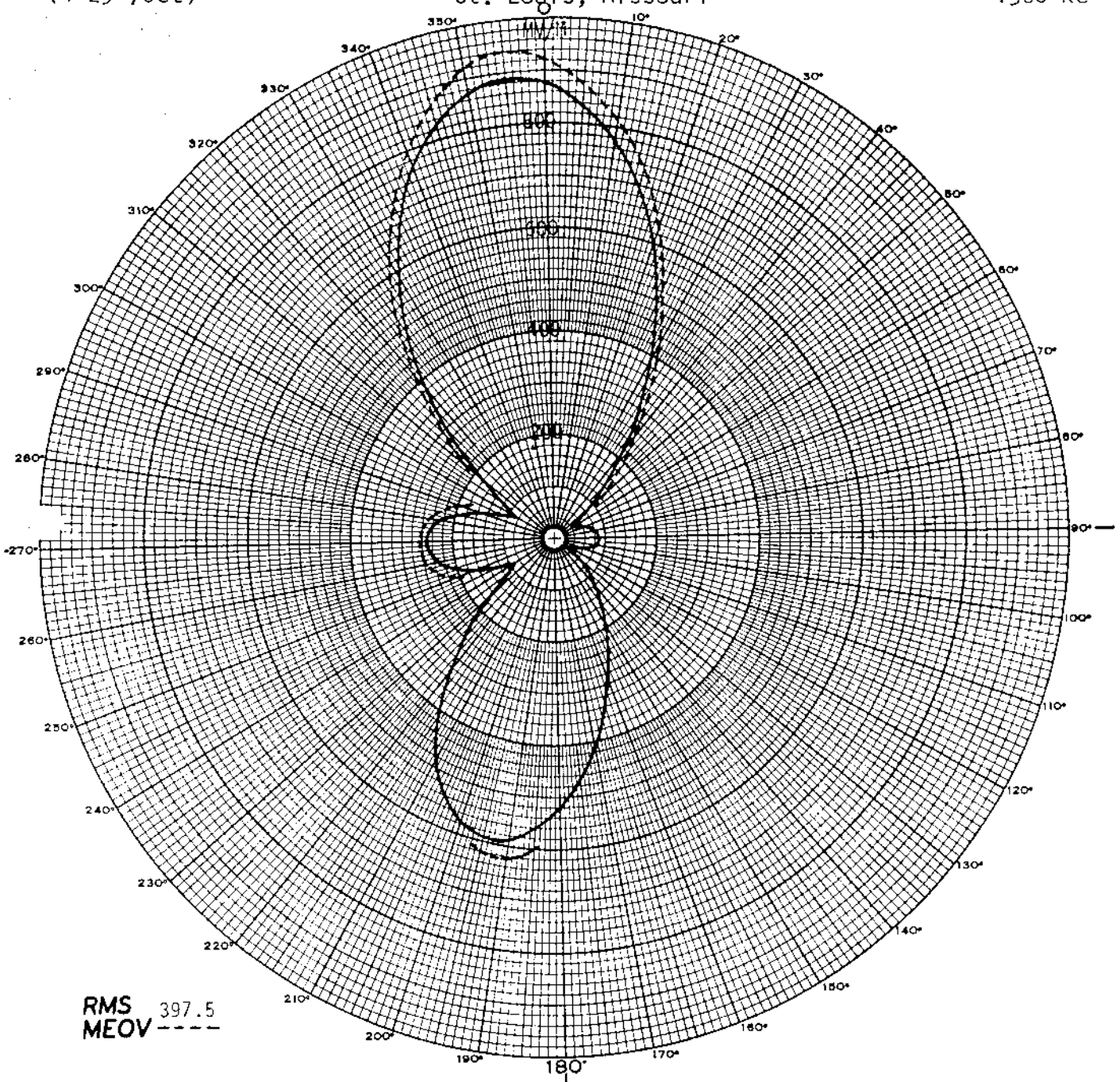
1380 kc

KWK

Proposed Night
(4-29-70ct)

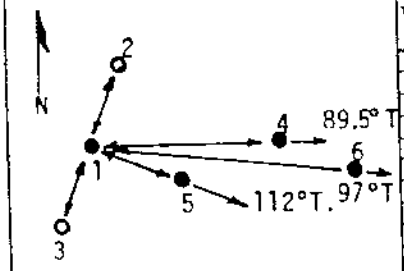
Station KWK
St. Louis, Missouri

5kw, DA-2, U
1380 kc



RMS 397.5
MEOV ----

TOWER PLACEMENT SKETCH	PATTERN PARAMETERS	FIGURE B-5-A	STATION DATA



TOWER No.	ELECTRICAL HEIGHT δ°	SPACING ś°	PHASING ψ°	FIELD RATIO f
1	197	Ref	0.0	1.000
2	180	95	--	--
3	180	95	--	--
4	197	210	0.5	0.815
5	197	110	82.0	0.500
6	180	314.5	82.5	0.410
7				
8				
9				
10				

DAYTIME OPERATION ☐ NIGHTTIME OPERATION ☒

NIGHTTIME POLAR PATTERN, VICTORY BROADCASTING CO., INC.

0° ELEVATION

θ° 0°

CALL NEW
FREQ 1380 kHz
POWER 5 Kw
TYPE DA-2
TIME NIGHT
LAT. N-38-44-58
LONG W-90-09-48.7

E.H.MUNN, JR.
RADIO ENGINEER
COLDWATER, MICH.

FCC File No. BMP-12964
Accepted 4-10-70

Station KWK
St. Louis, Missouri

1380 kc

KWK

Proposed Night
(6-28-63ct)

Station KWK
St. Louis, Missouri

5kw,DA-N,U
1380 kc

BP-15834
f-12-65 APP.
(SMLS, EO) TO
HG KMTR SITE

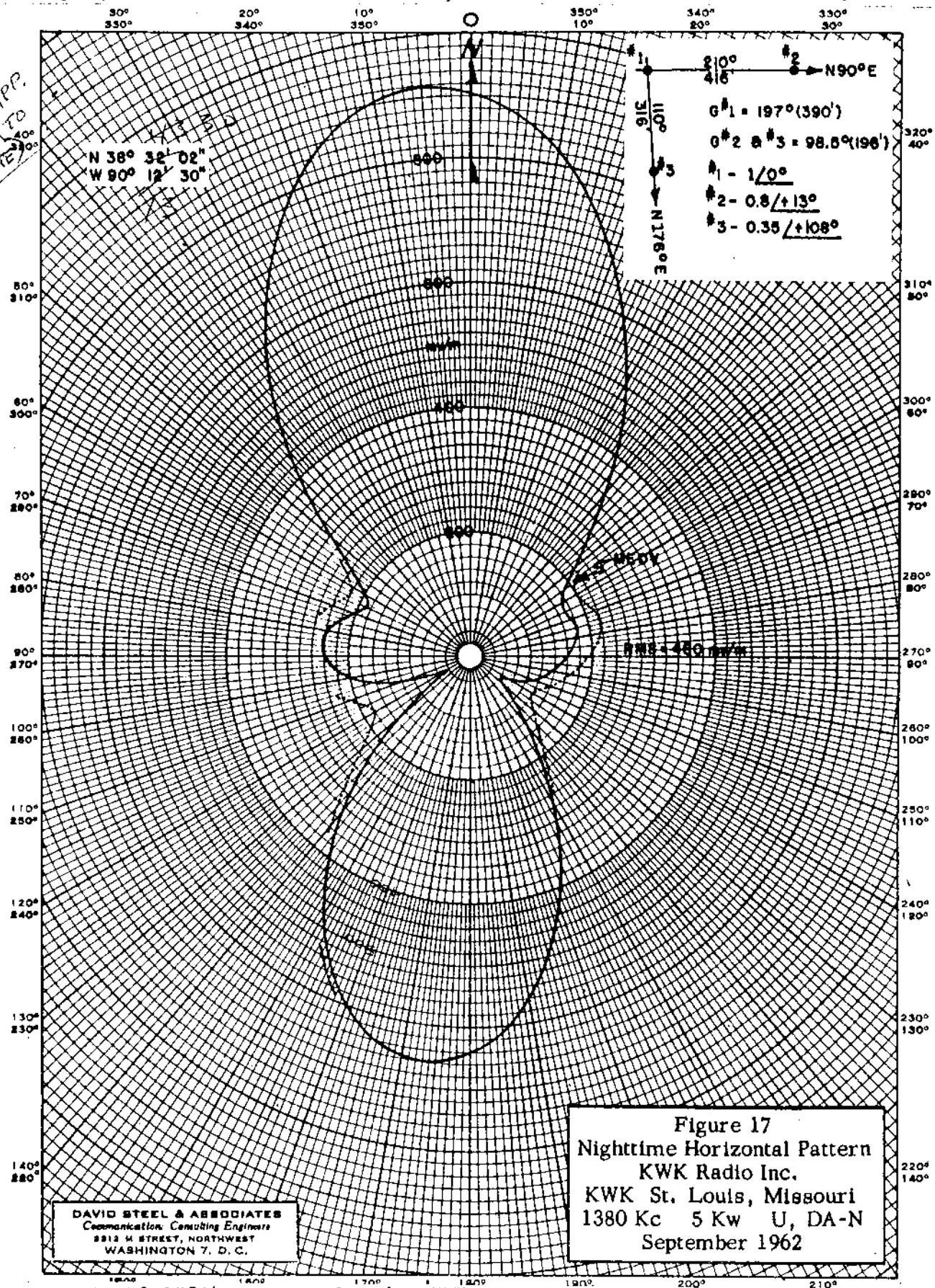


Figure 17
Nighttime Horizontal Pattern
KWK Radio Inc.
KWK St. Louis, Missouri
1380 Kc 5 Kw U, DA-N
September 1962

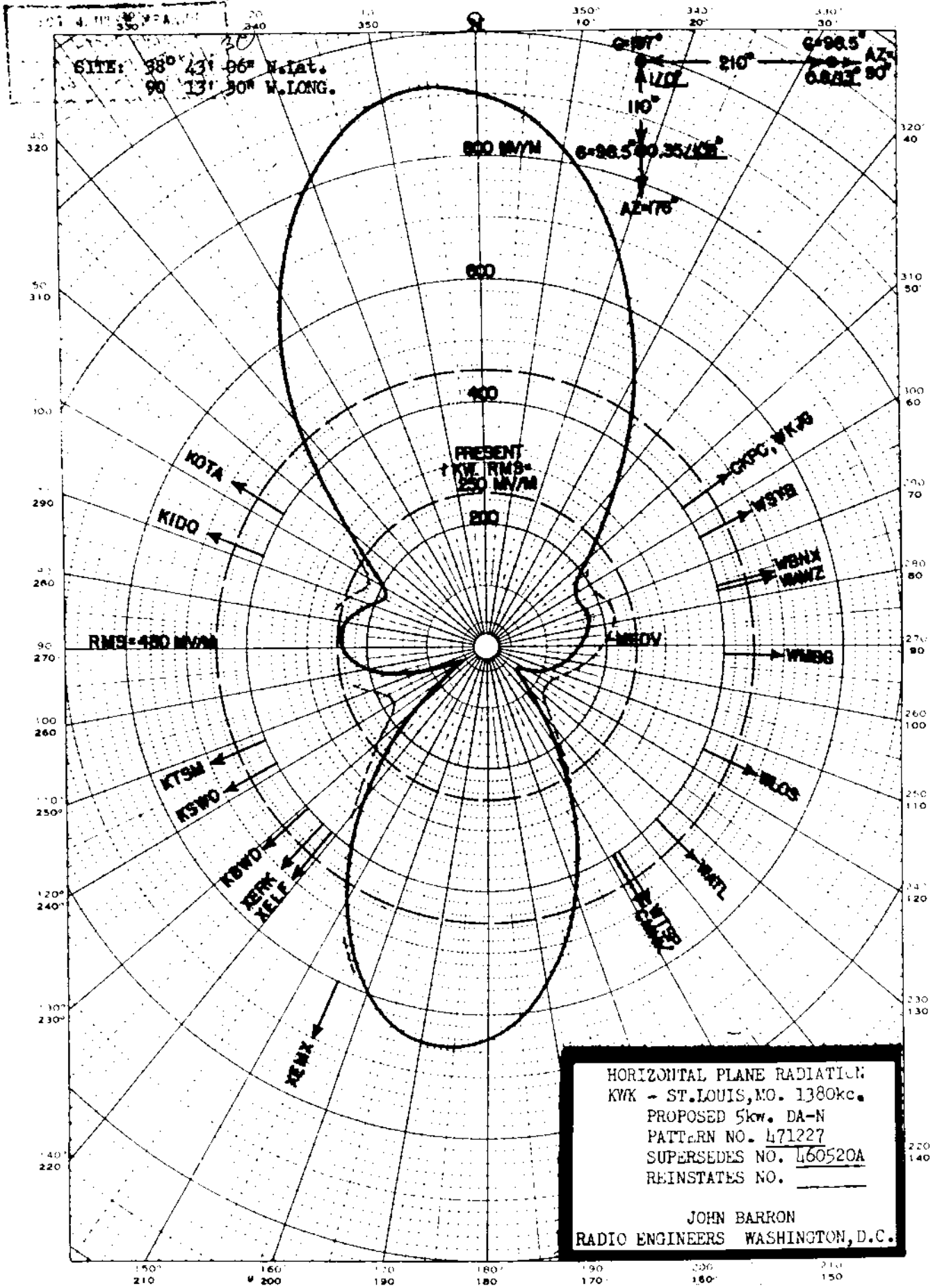
FCC File No. BP-15834
Accepted

Station KWK
St. Louis, Missouri

1380 kc

KWK
1380

PROPOSED NIGHT KWK ST. LOUIS, MO. 11/5/46 5kw, DAN 1380kc



HORIZONTAL PLANE RADIATION
KWK - ST.LOUIS, MO. 1380kc.
PROPOSED 5kw. DA-N
PATTERN NO. 471227
SUPERSEDES NO. 460520A
REINSTATES NO. _____

JOHN BARRON
RADIO ENGINEERS WASHINGTON, D.C.

KWK

Measured Night
(3-30-63ct)

Station KWK
St. Louis, Missouri

5kw, DA-N, U
1380 kc

BZ-4851
4-12-65 APPL. DISMISSED (TO DETERMINE OPER. PWR.)

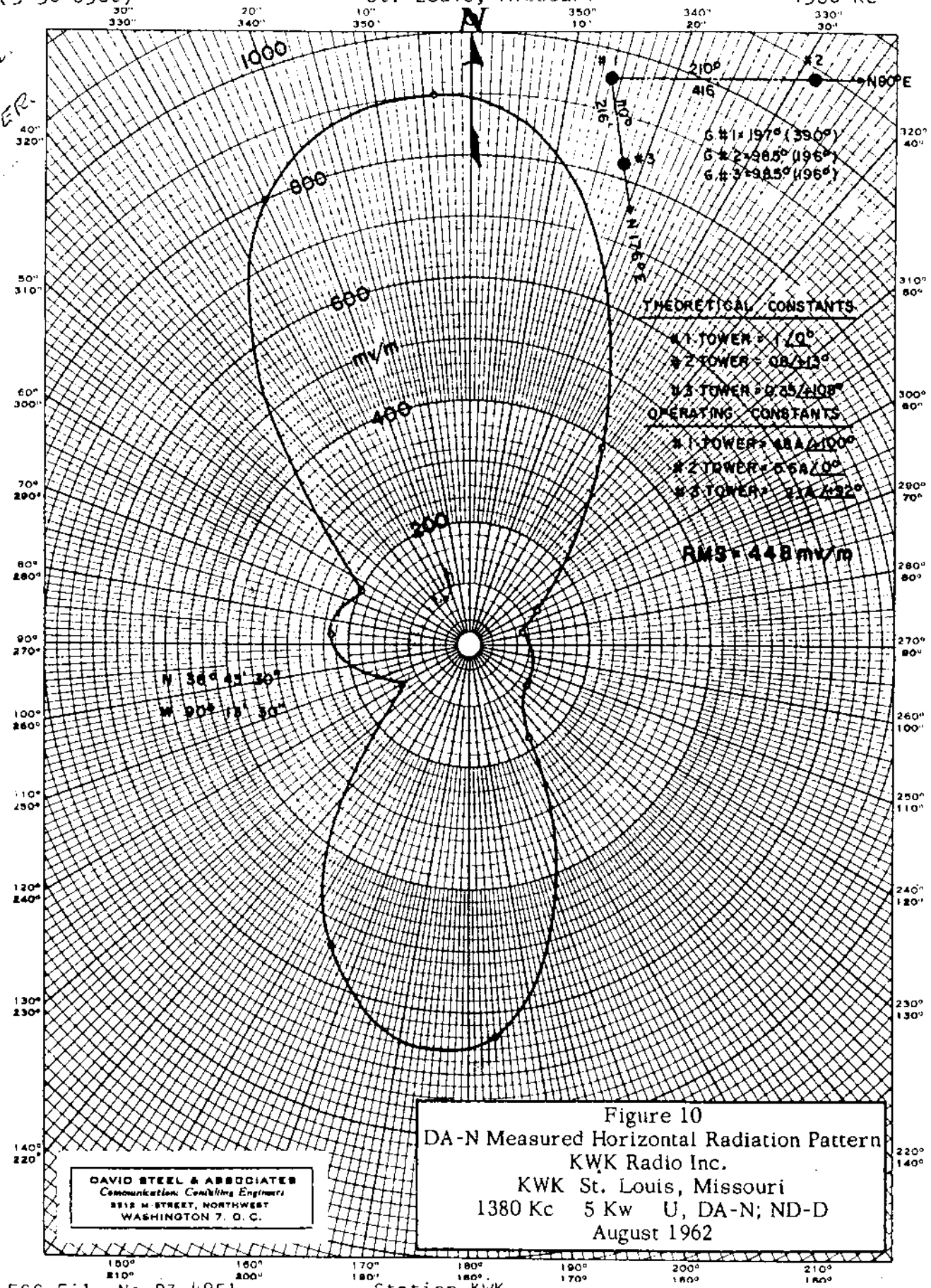


Figure 10
DA-N Measured Horizontal Radiation Pattern
KWK Radio Inc.
KWK St. Louis, Missouri
1380 Kc 5 Kw U, DA-N; ND-D
August 1962

FCC File No. BZ-4851
Accepted 3-20-63

Station KWK
St. Louis, Missouri

1380 kc

KWK

Measured Non-DA
(3-30-63ct)

Station KWK
St. Louis, Missouri

5kw,DA-N,U
1380 kc

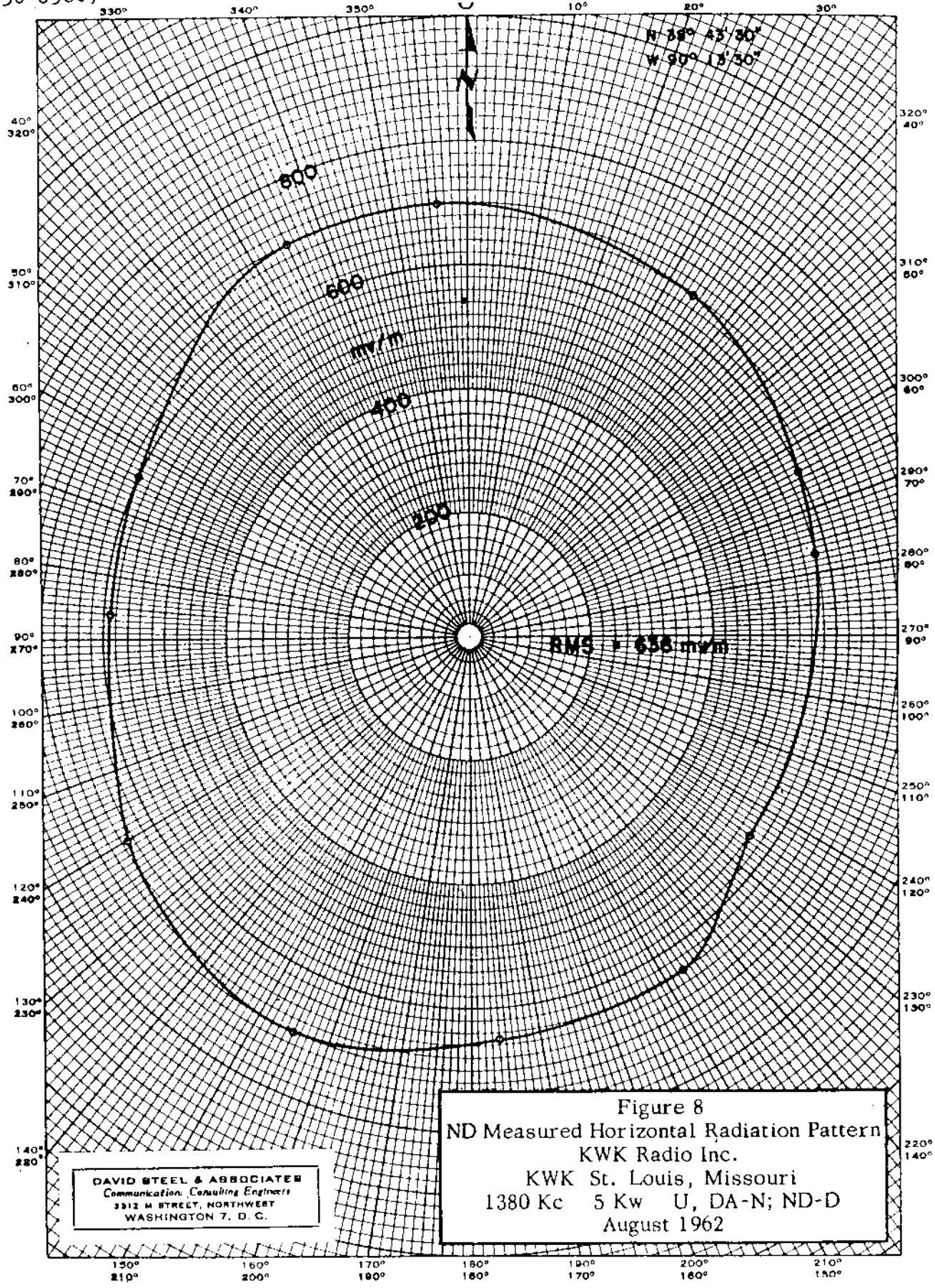


Figure 8
ND Measured Horizontal Radiation Pattern
KWK Radio Inc.
KWK St. Louis, Missouri
1380 Kc 5 Kw U, DA-N; ND-D
August 1962

FCC File No. BZ-4851
Accepted 3-20-63

Station KWK
St. Louis, Missouri

1380 kc

SUPPLEMENTAL
DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KWK

Main Studio: Saint Louis, Missouri

Frequency: 1380 kHz

Power: 1kw Night 5kw Day

Notification List No. 1765

Date: January 12, 1978 Class: III

GEOGRAPHICAL LOCATION OF THE
CENTER OF THE NIGHTTIME ANTENNA SYSTEM:

North Latitude: 38° 31' 27"
West Longitude: 90° 14' 17"

Authorized for Day and Night operation (DA-2).

Note: Please retain the description sheet and directional antenna radiation patterns notified for station KWK in United States Change List Number 1694, dated July 20, 1976 and attach to this supplemental Description Sheet. This notification is for the purpose of indicating only a correction in the geographical coordinates of the center of the nighttime antenna system.

WAWZ

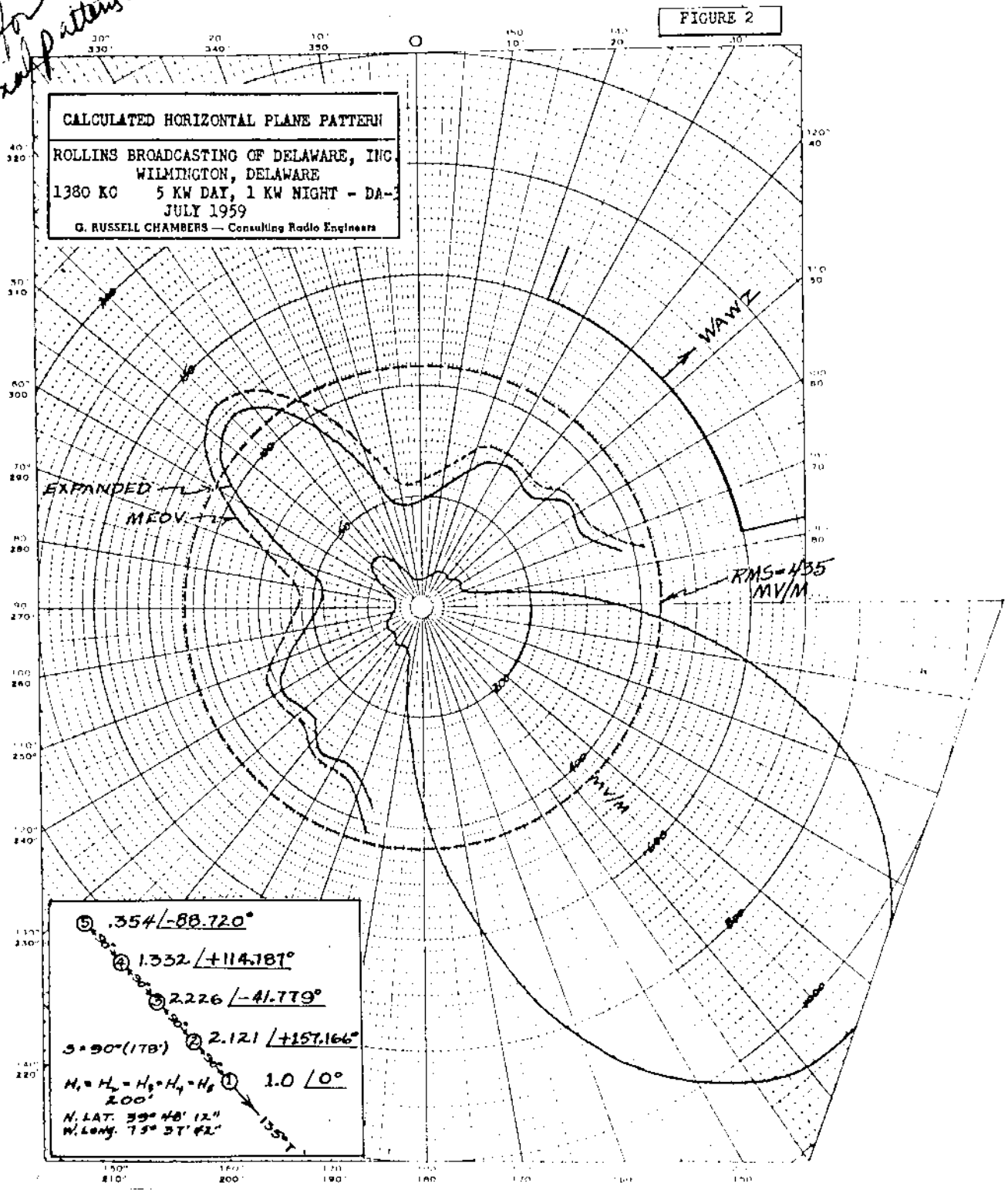
* PROPOSED DAY
(9-4-59g)

Station WAMS 1kw,5kw-LS,DA-3,U
Wilmington, Delaware 1380 KC

* To be used when WAWZ - Zarapeth, New Jersey is operating and WBNX - New York, New York is silent.

3-15-61 granted CP for 3 A directional patterns.

FIGURE 2



FCC File No. BMP-8653
Accepted 8-17-59

WAMS
Wilmington, Delaware 1380 KC

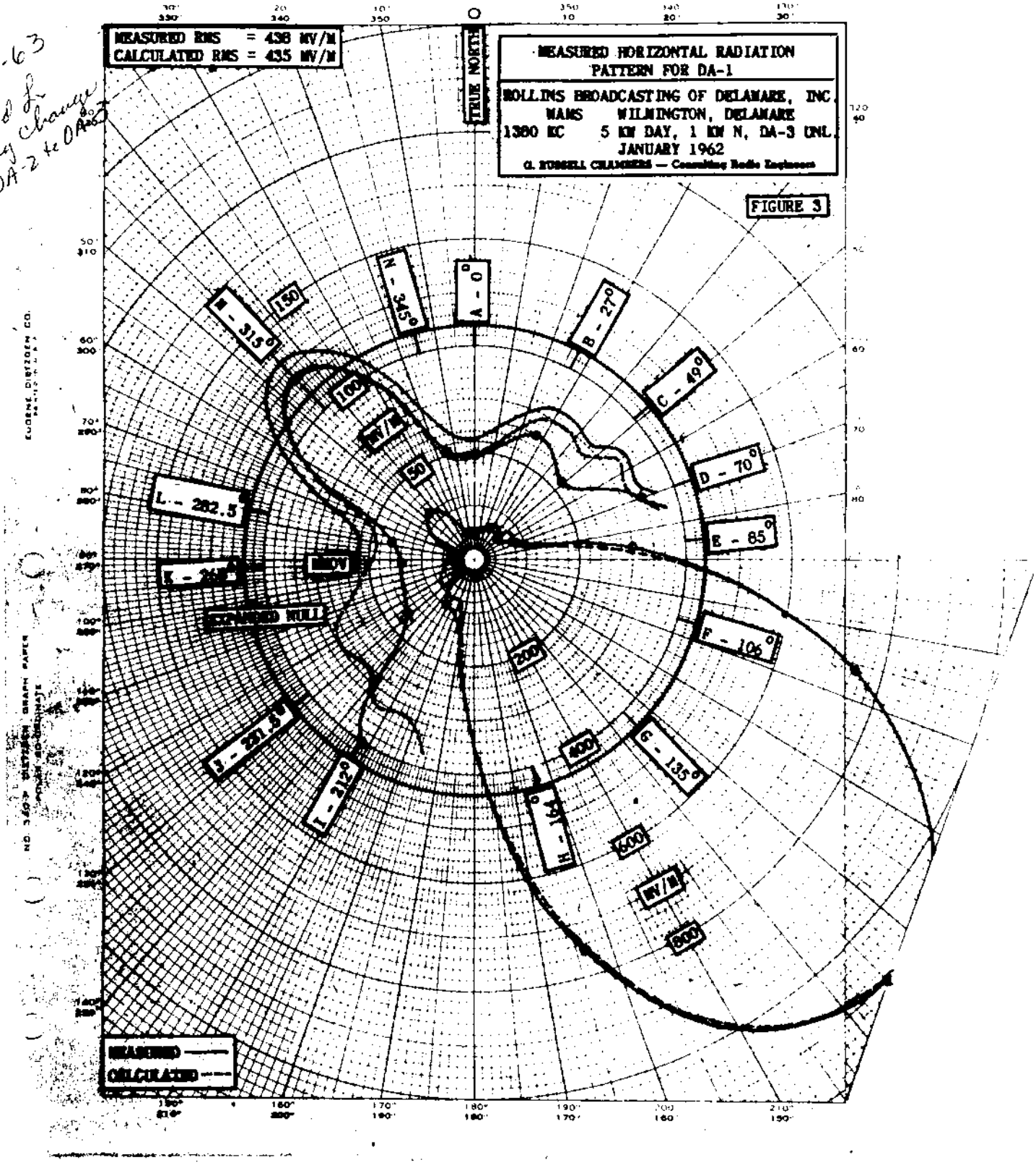
WAMS

Measured Day
(4-27-62ct)

Station WAMS
Wilmington, Delaware

1kw, 5kw-LS, DA-3, U
1380 kc

4-18-63
started for
evening change
from DA-2 to DA-3



FCC File No. BL-9147
Accepted 4-18-62

Station WAMS
Wilmington, Delaware

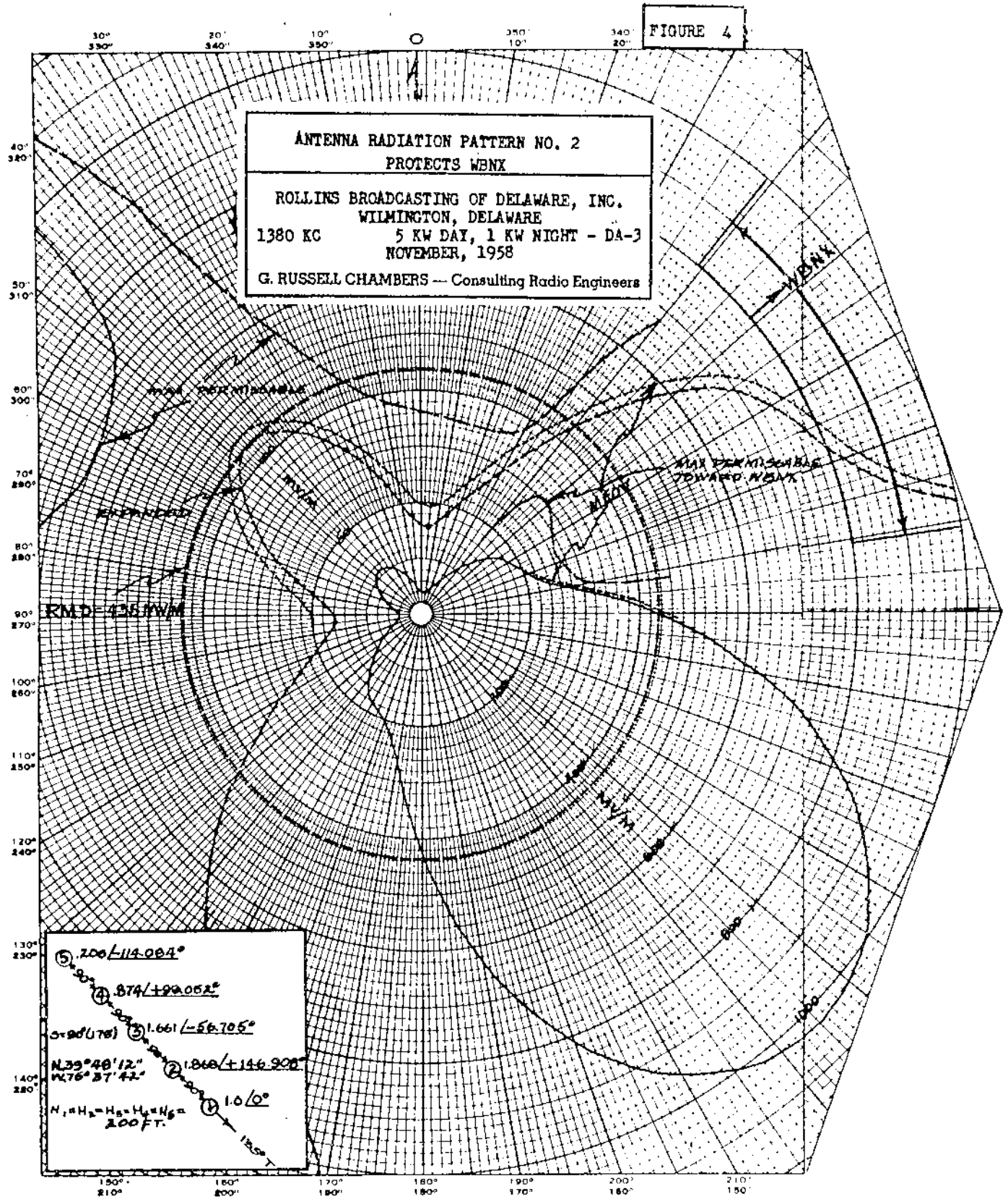
1380 kc

PROPOSED DAY (Protects WBNX) (1-8-59g)

Station WAMS
Wilmington, Delaware

1kw, 5kw-LS, DA-~~3~~ 2, U
1380 KC

FIGURE 4



FCC File No. BP-11601
Accepted 12-29-58 Amended

WAMS
Wilmington, Delaware

1380 KC

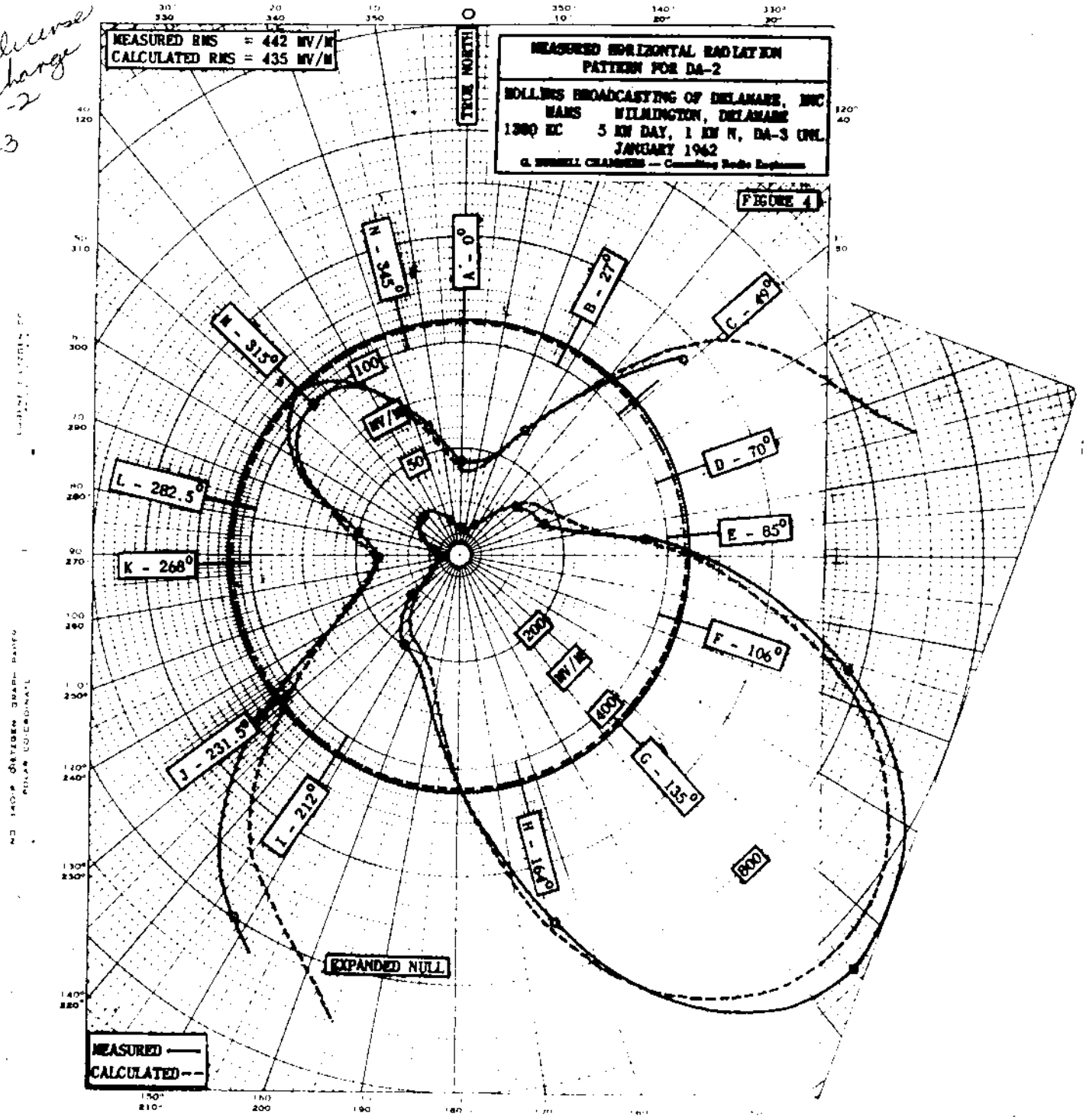
WAMS

Measured Day
(4-27-62ct)

Station WAMS
Wilmington, Delaware

1kw,5kw-LS,DA-3,U
1380 kc

4-18-63
granted license
covering change
from DA-2
to DA-3



FCC File No.BL-9147
Accepted 4-18-62

Station WAMS
Wilmington, Delaware

1380 kc

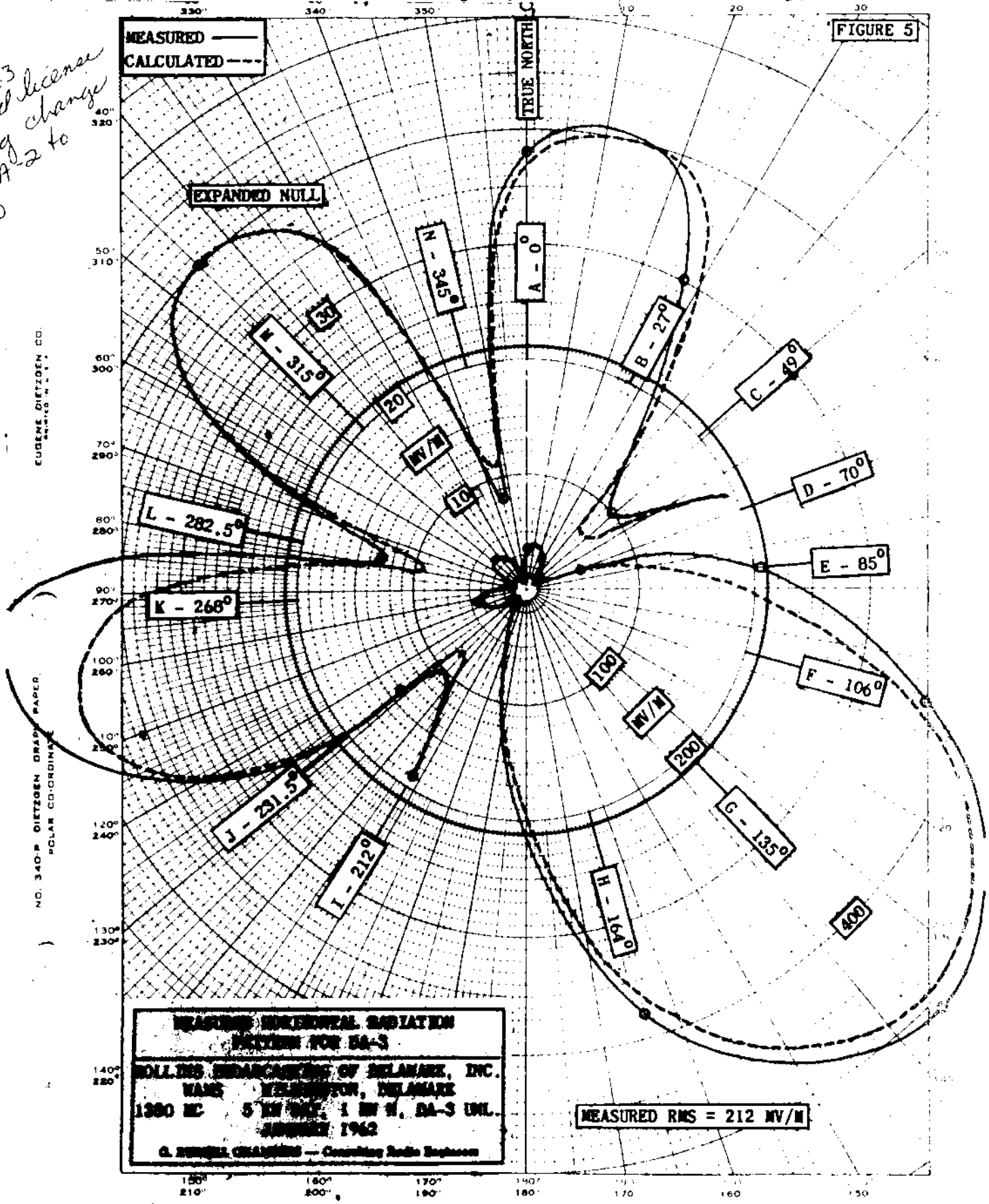
WAMS

Measured Night
(4-27-62ct)

Station WAMS
Wilmington, Delaware

1kw,5kw-LS,DA-3,U
1380 kc

4-18-63 granted license covering change from DA-2 to DA-3



FCC File No.BL-9147
Accepted 4-18-62

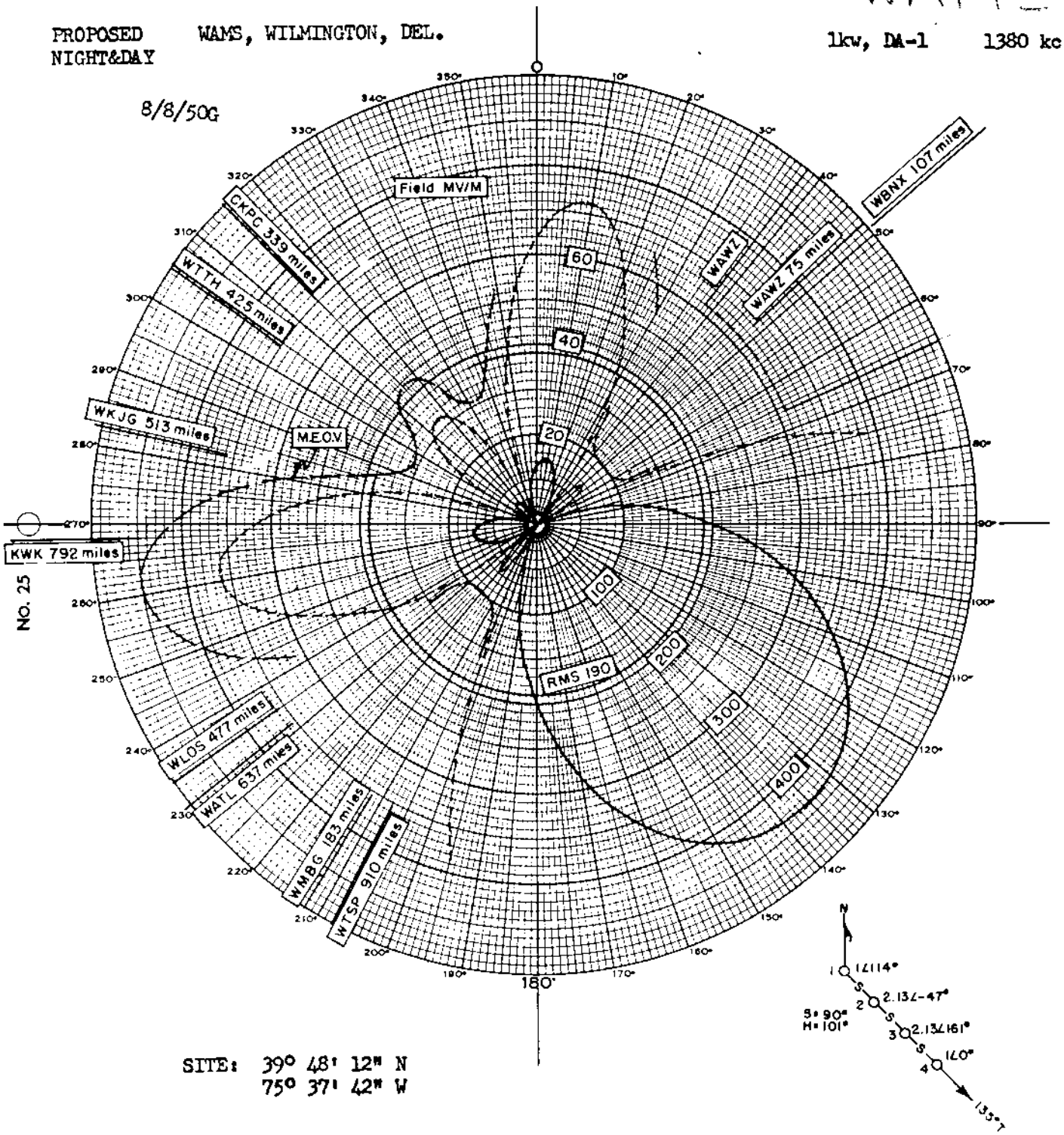
Station WAMS
Wilmington, Delaware

1380 kc

WAMS

PROPOSED NIGHT&DAY WAMS, WILMINGTON, DEL. 1kw, DA-1 1380 kc

8/8/50G



No. 25

SITE: 39° 48' 12" N
75° 37' 42" W

STATION WAMS WILMINGTON, DELAWARE	Figure 1 Series 0500705 1380 KC 1000 WATTS DA-1
DIRECTIONAL ANTENNA PATTERN	McINTOSH & INGLIS *Consulting Radio Engineers* Washington, D.C.

AMENDMENT RECD 7-20-50 ACC 7-21-50 BML-1362 WAMS, Wilmington, Del. 1380 kc

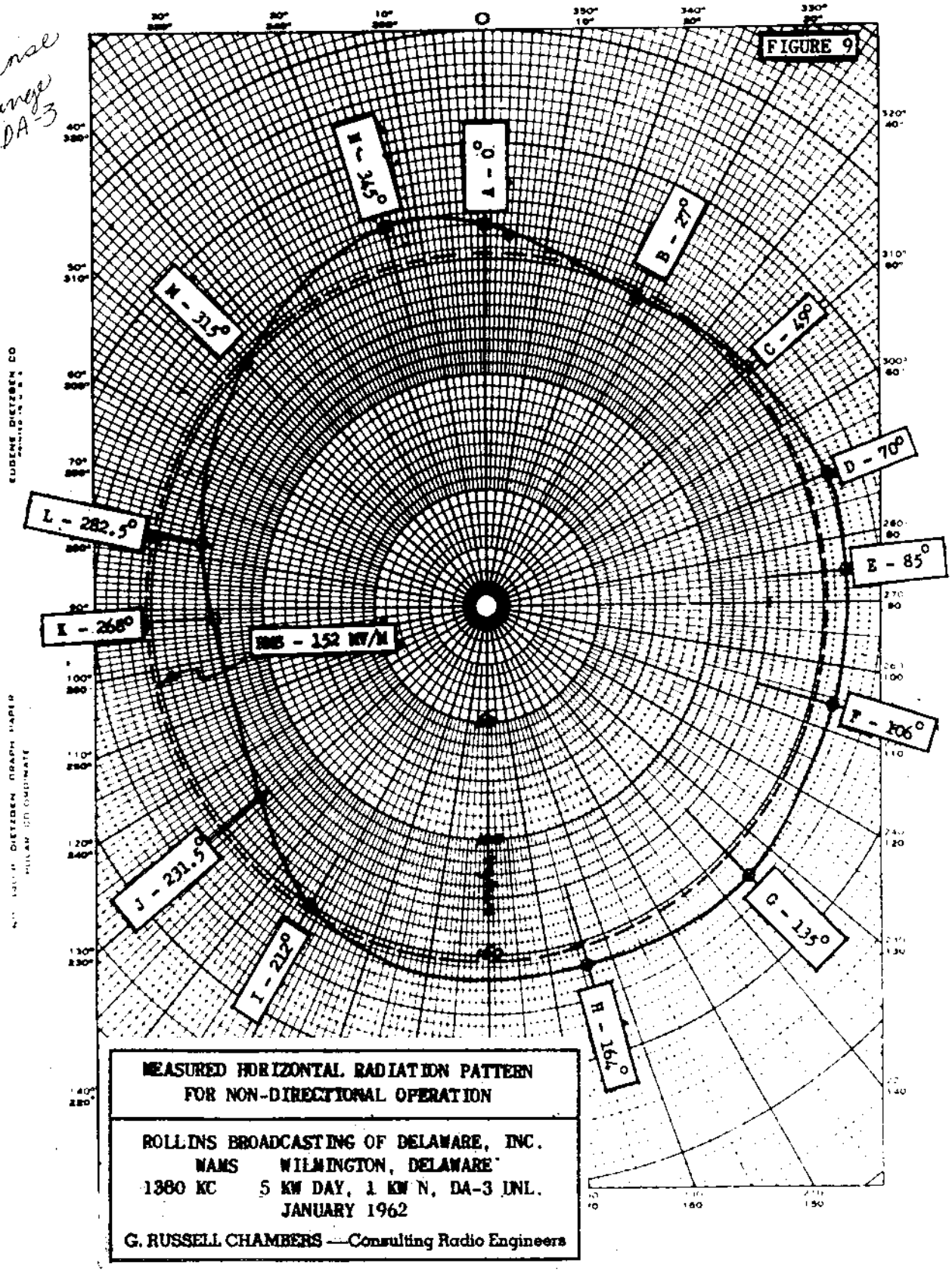
WAMS

Measured Non-DA
(4-27-62ct)

Station WAMS
Wilmington, Delaware

1kw,5kw-LS,DA-3,U
1380 kc

18-63 vested license verify change from DA-2 to DA-3



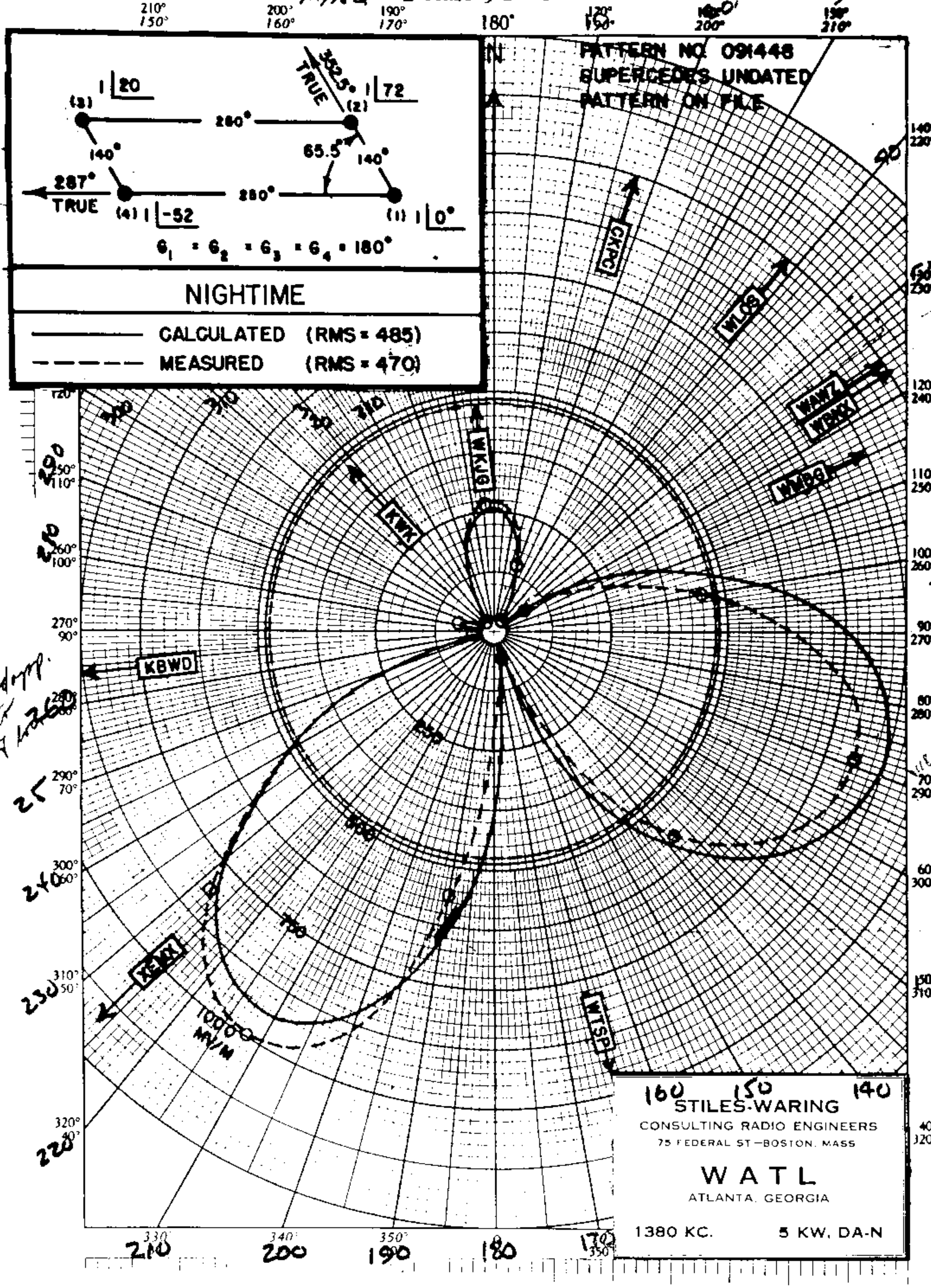
FCC File No.BL-9147
Accepted 4-18-62

Station WAMS
Wilmington, Delaware

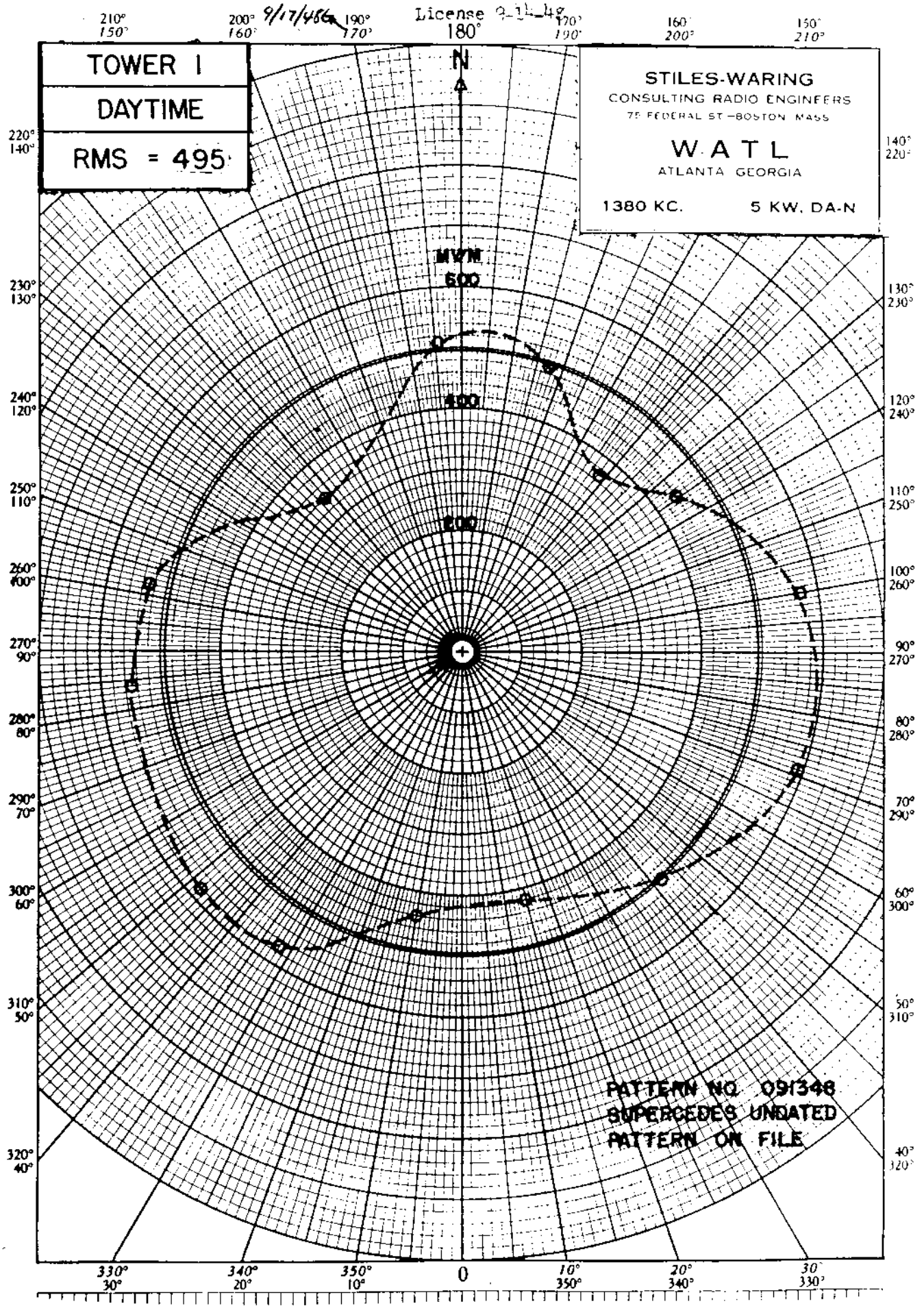
1380 kc

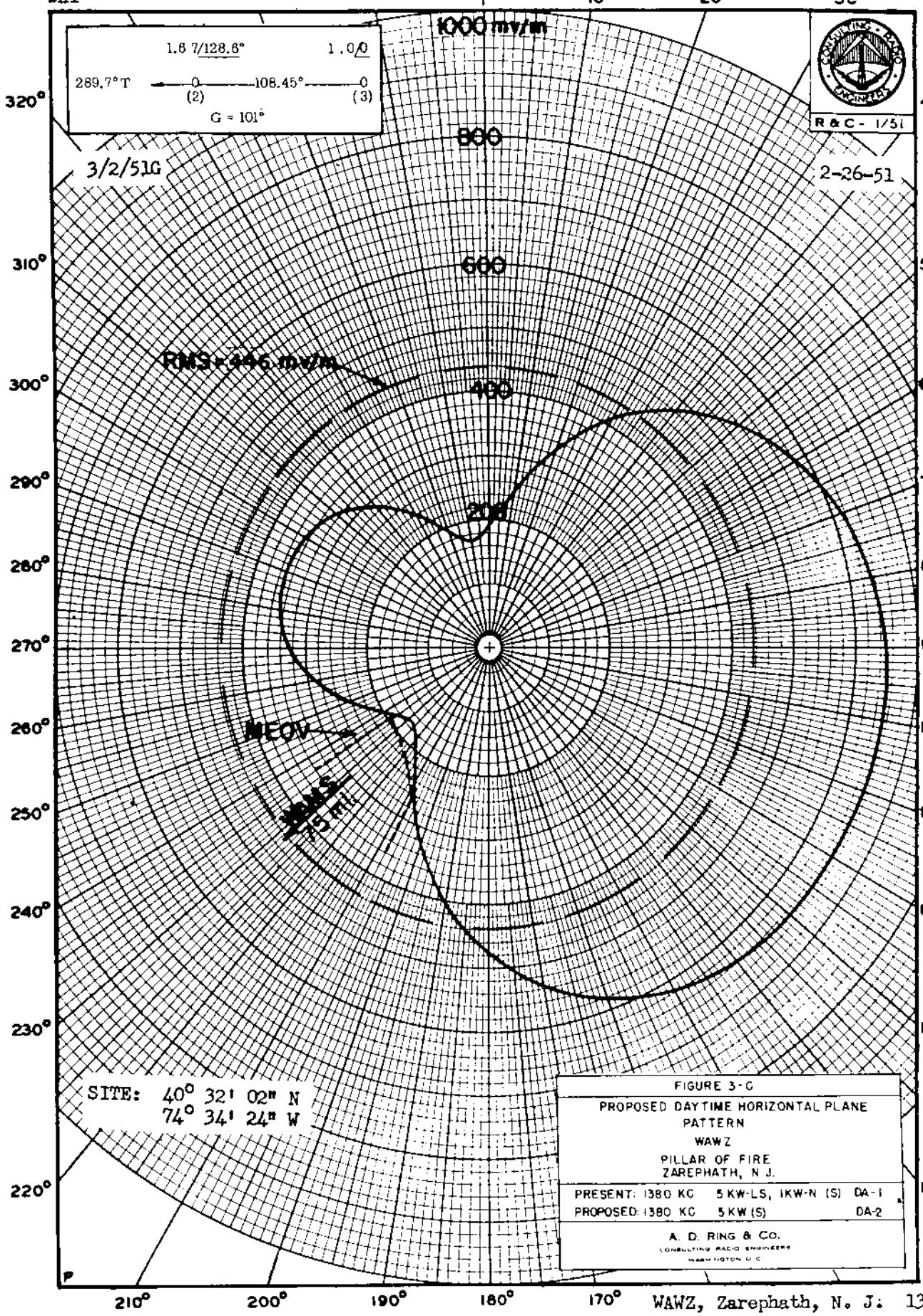
WAOK ~~WATL~~ 1380

License 9-14-48



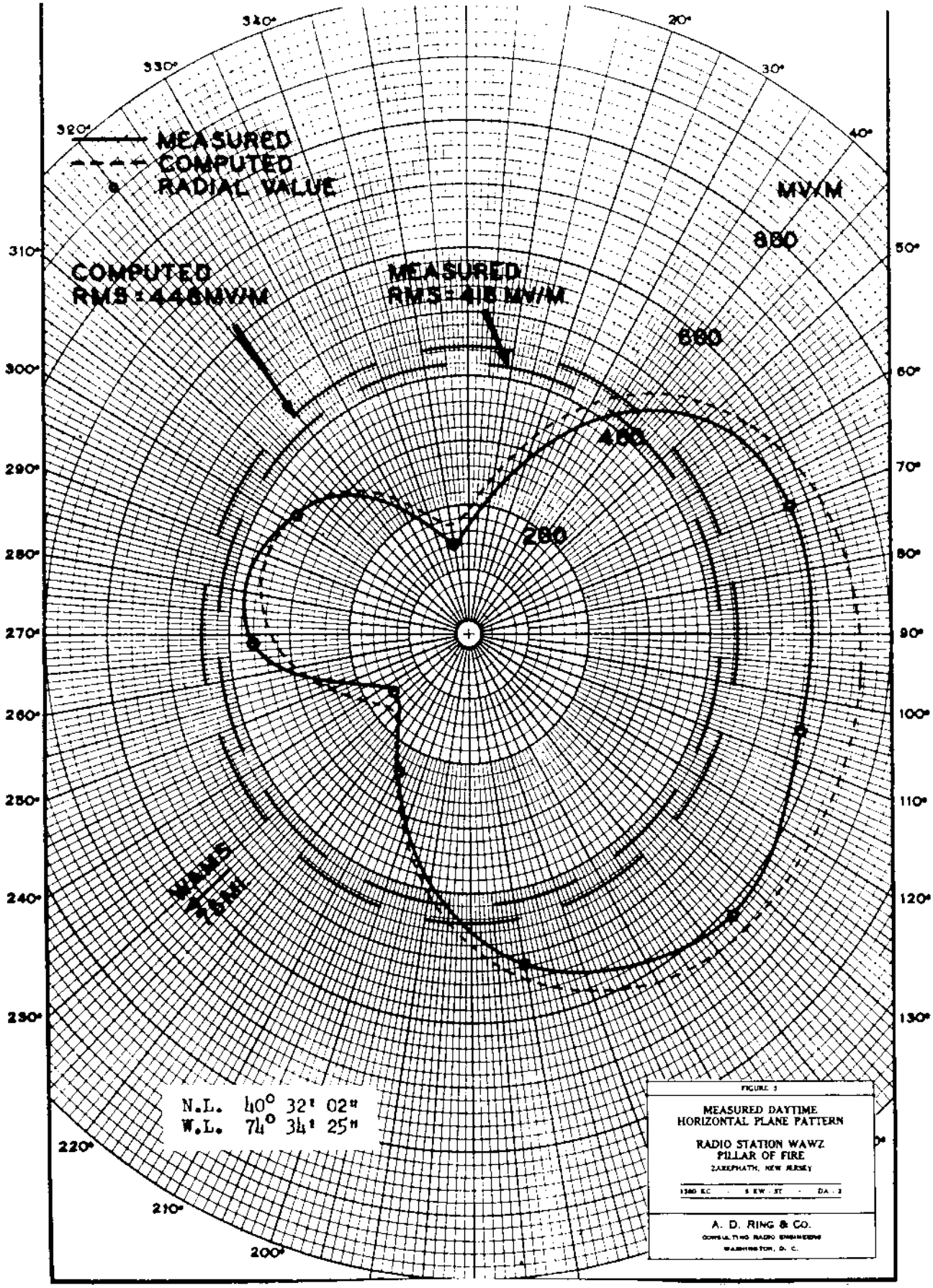
WAOK ~~WATL~~
1380




PROPOSED DAY
WAWZ, ZAREPHATH, N. J.
5kw(S), DA-2
1380 kc
1.6 7/128.6°
1.0/0
289.7°T
0
108.45°
0
(2)
(3)
G = 101°
1000 mv/m
800
600
400
200
RMS=446 mv/m
MEOV
3/2/51G
2-26-51
R & C - 1/51
SITE: 40° 32' 02" N
74° 34' 24" W
FIGURE 3-C
PROPOSED DAYTIME HORIZONTAL PLANE PATTERN
WAWZ
PILLAR OF FIRE
ZAREPHATH, N J.
PRESENT: 1380 KC 5 KW-LS, 1KW-N (S) DA-1
PROPOSED: 1380 KC 5 KW (S) DA-2
A. D. RING & CO.
CONSULTING RADIO ENGINEERS
WASHINGTON D. C.
WAWZ, Zarephath, N. J. 1380 kc

WAWZ

MEASURED DAY | WAWZ, ZAREPHATH, N. J. 3/19/52G | 5 KW, ST, DA-2 | 1380 KC



APPL RECD 2/8/52 ACC 3/14/52 BL-4670 | WAWZ, ZAREPHATH, N. J. | 1380 KC

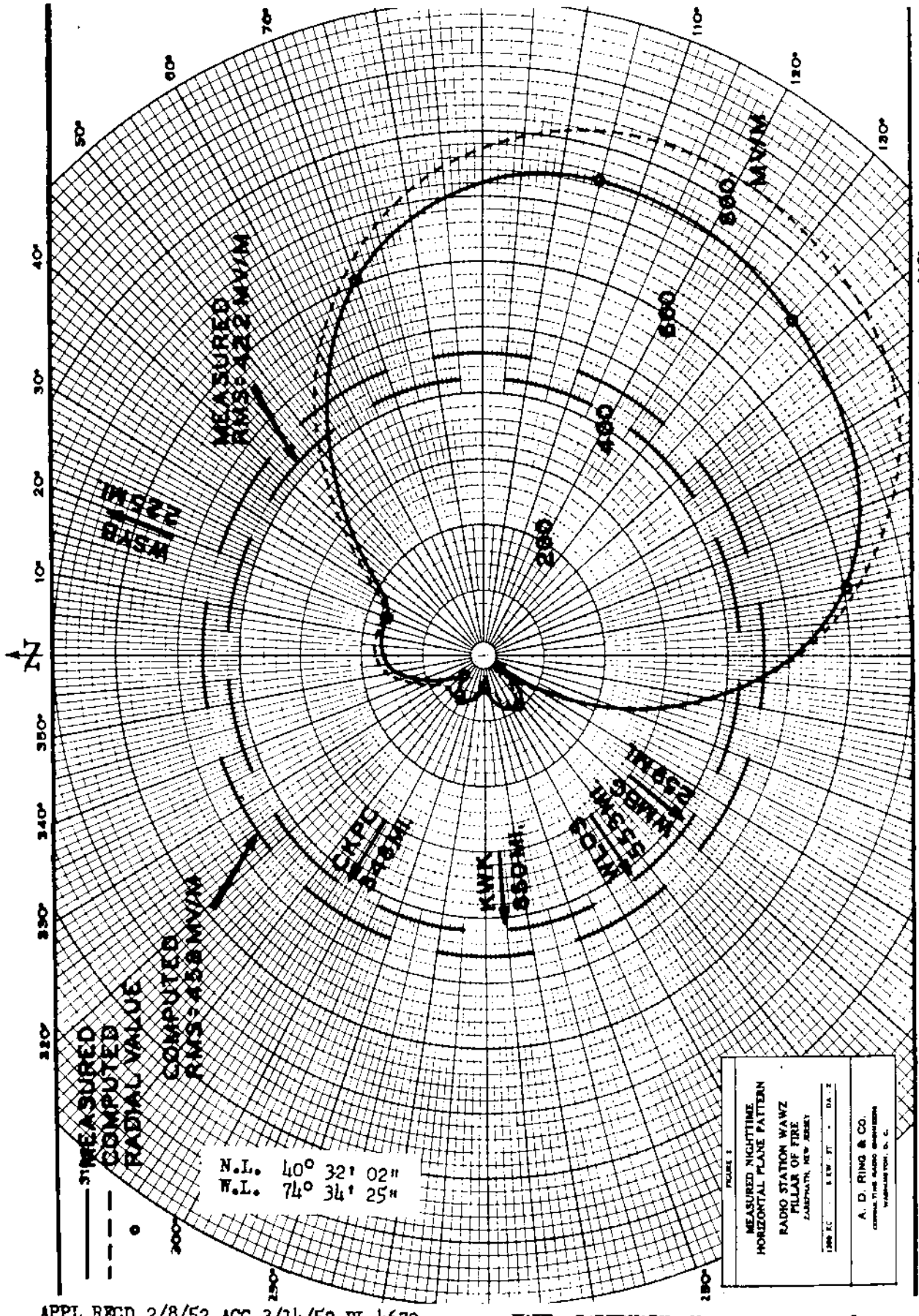
WAWZ

MEASURED NIGHT

WAWZ, ZAREPHATH, N.J.
3/19/52G

5 KW, ST, DA-2

1380 KC

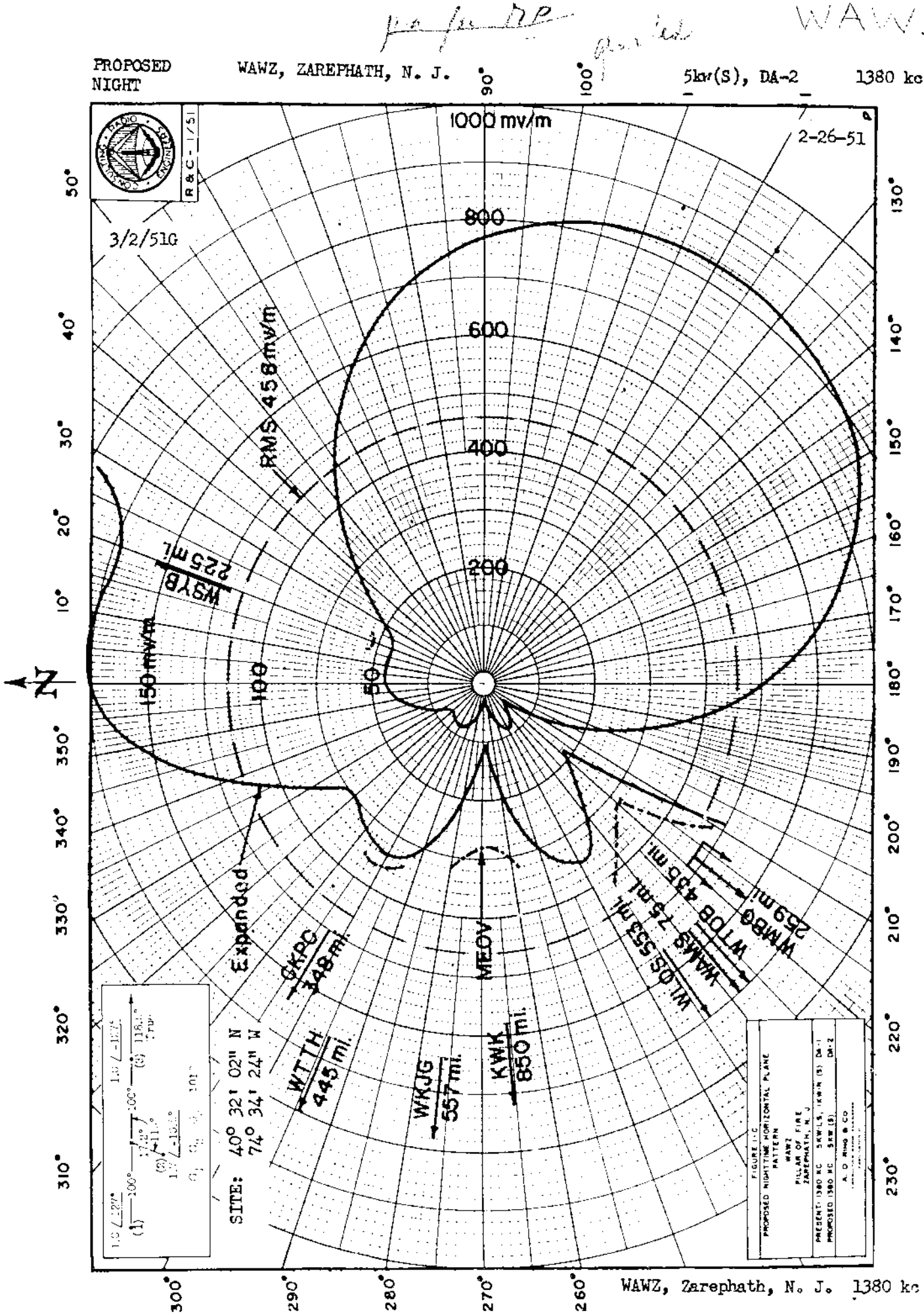


D. RING & CO - 1/52 - 1000

APPL RECD 2/8/52 ACC 3/14/52 BL-4670

WAWZ, ZAREPHATH, N. J.

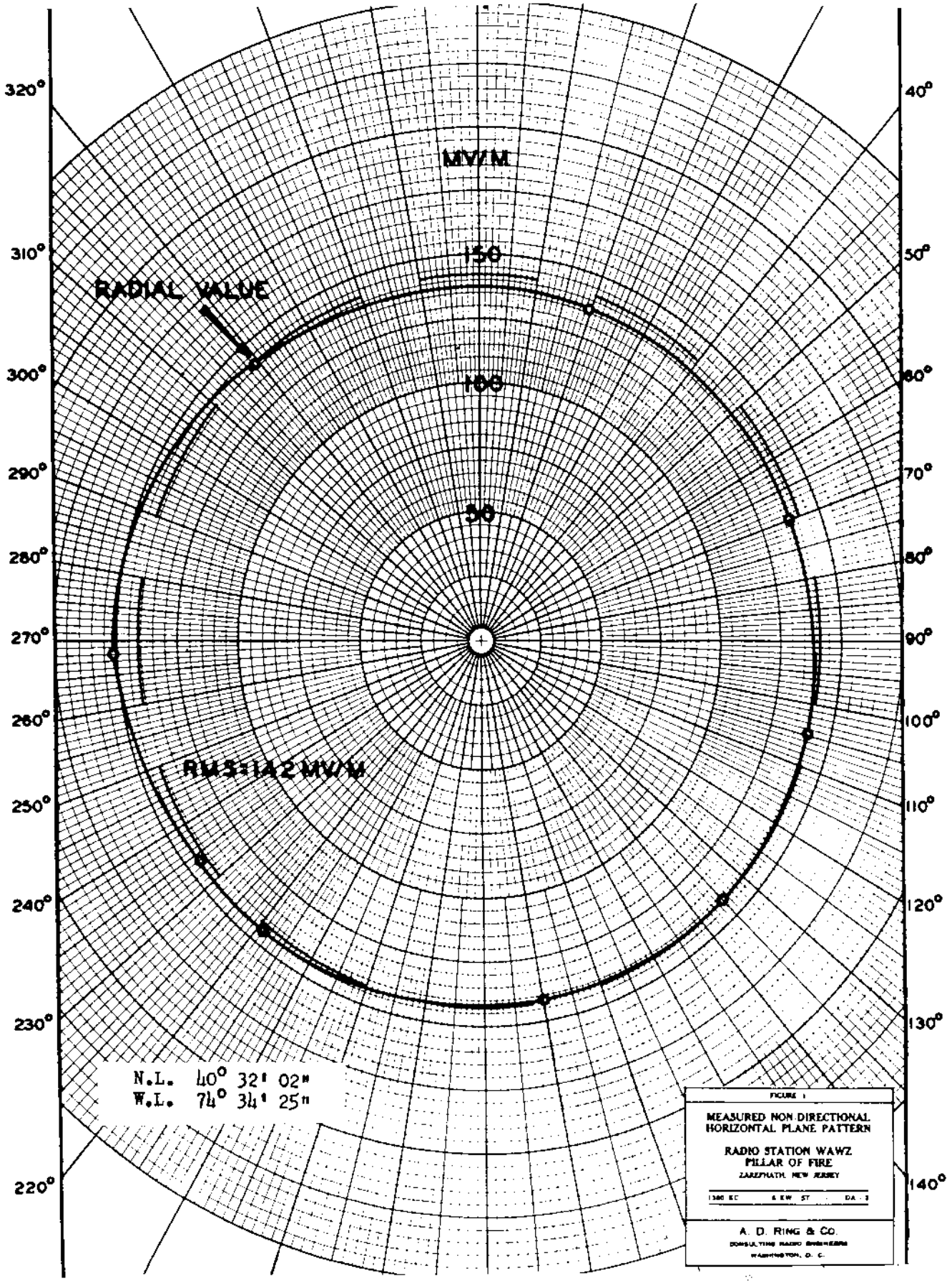
1380 KC



WAWZ, Zarephath, N. J. 1380 kc

WAWZ

MEASURED NON-DA | WAWZ, ZAREPHATH, N. J. 3/19/52G | 5 KW, ST, DA-2 | 1380 KC



APPL RECD 2/8/52 ACC 3/14/52 BL-4670 | WAWZ, ZAREPHATH, N. J. | 1380 KC

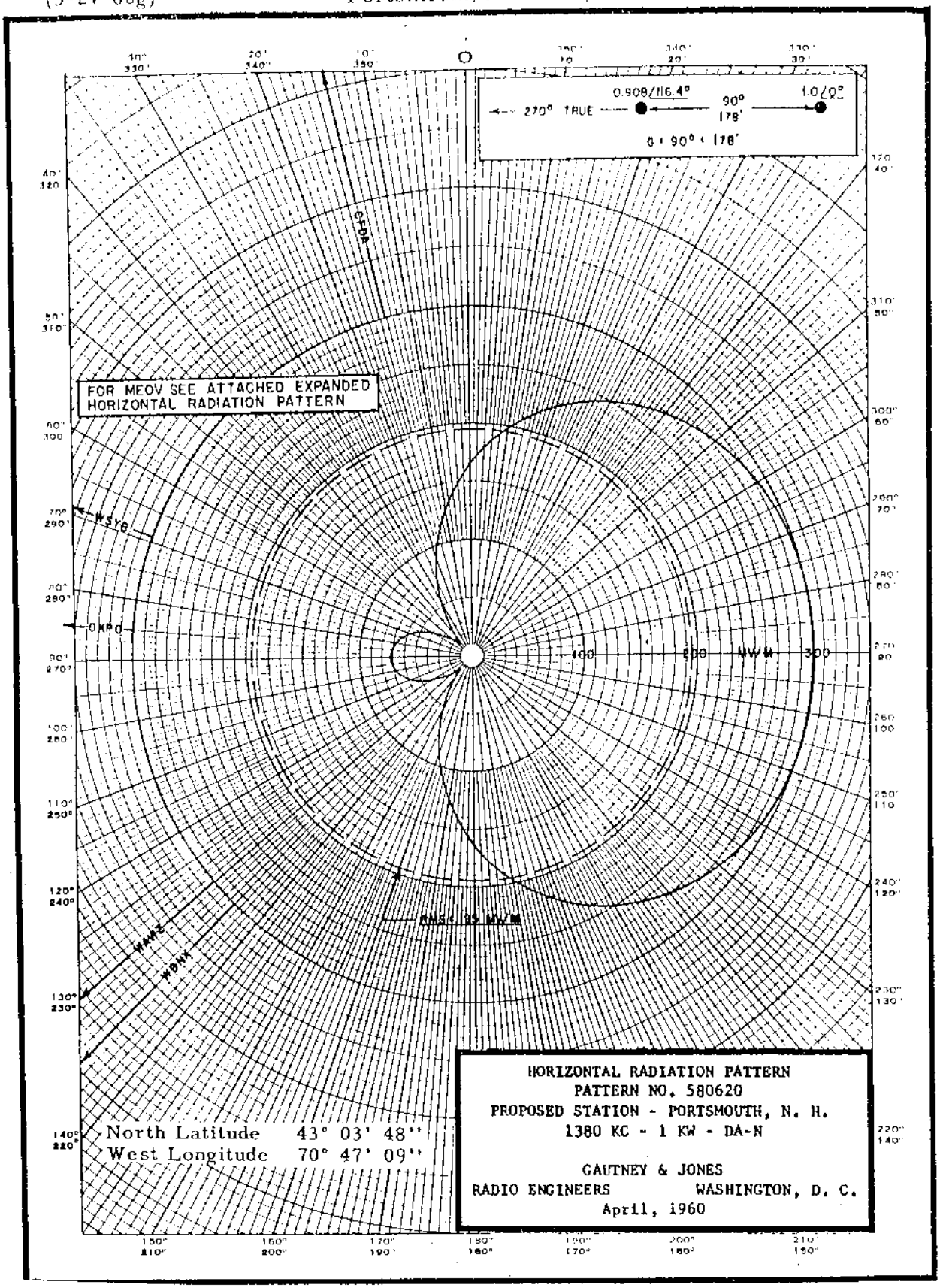
Portsmouth, NH

WBBX

PROPOSED NIGHT (5-27-60g)

New; Seacoast Bcstng. Corp. Portsmouth, New Hampshire

1kw, DA-N,U 1380 KC



FCC File No. BP-12487
Accepted 5-17-60 (Amended)

Seacoast Broadcasting Corporation
Portsmouth, New Hampshire 1380 KC

6-15-60 Granted for one year.
4-24-61 Granted for one year subject

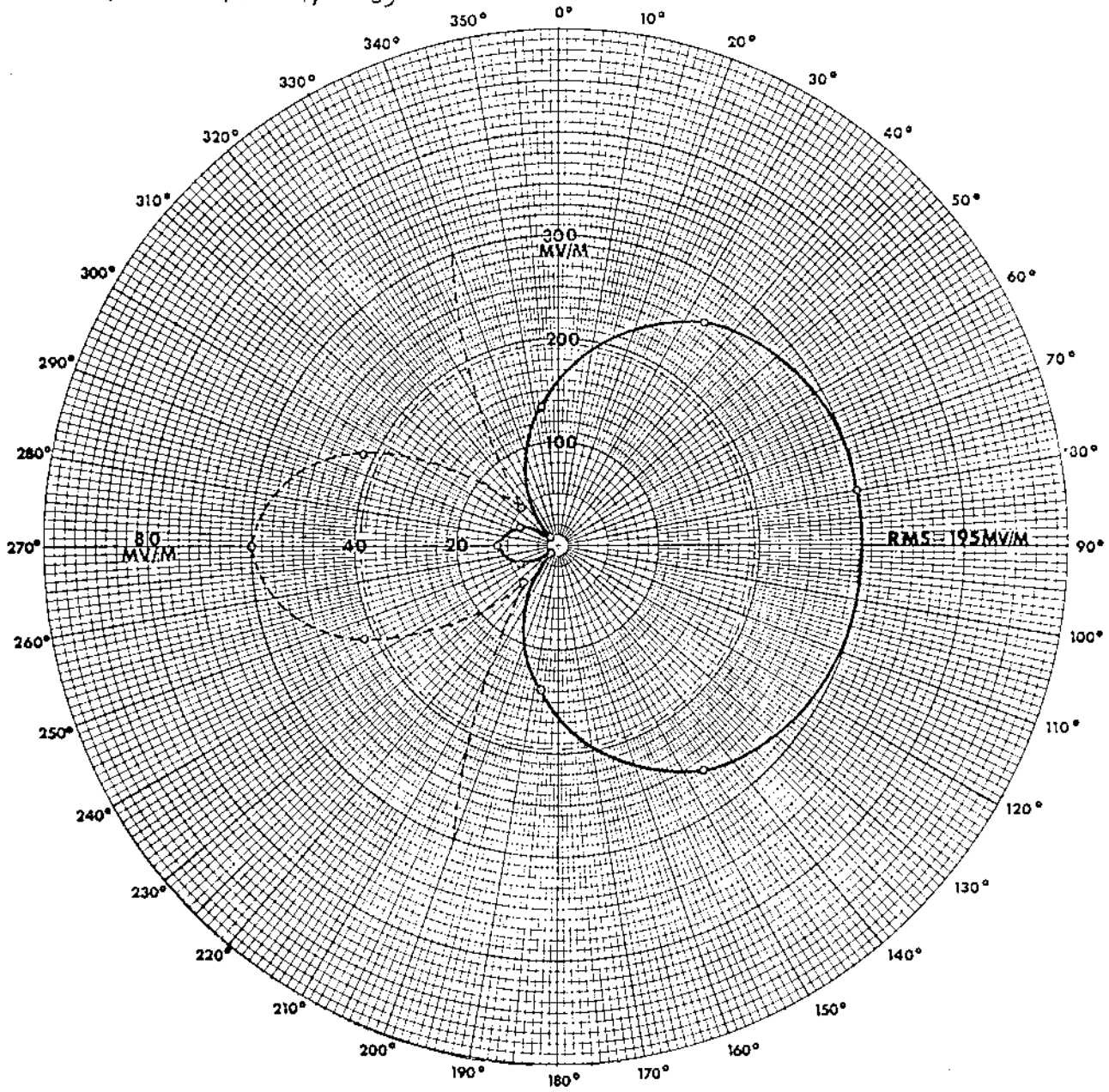
WBBX

Measured Night
(5-28-68ct)

Station WBBX
Portsmouth, New Hampshire

1kw, DA-N, U
1380 kc

North Latitude 43° 03' 48"
West Longitude 70° 47' 09"



270° ←	0.908 ∠116.4°	THEORETICAL	S	1.0 ∠0° →
	1.0 ∠109.5°	MEASURED		1.0 ∠0°

S=90°=178' G=90°=178'

GAUTNEY & JONES
CONSULTING RADIO ENGINEERS

MEASURED NIGHTTIME DIRECTIONAL RADIATION
WBBX - PORTSMOUTH, NEW HAMPSHIRE
1380 KC - 1 KW - DA-N

AUGUST, 1967

GAUTNEY & JONES—CONSULTING ENGINEERS

FCC File No. BZ-6822
Accepted 5-15-68

Station WBBX
Portsmouth, New Hampshire

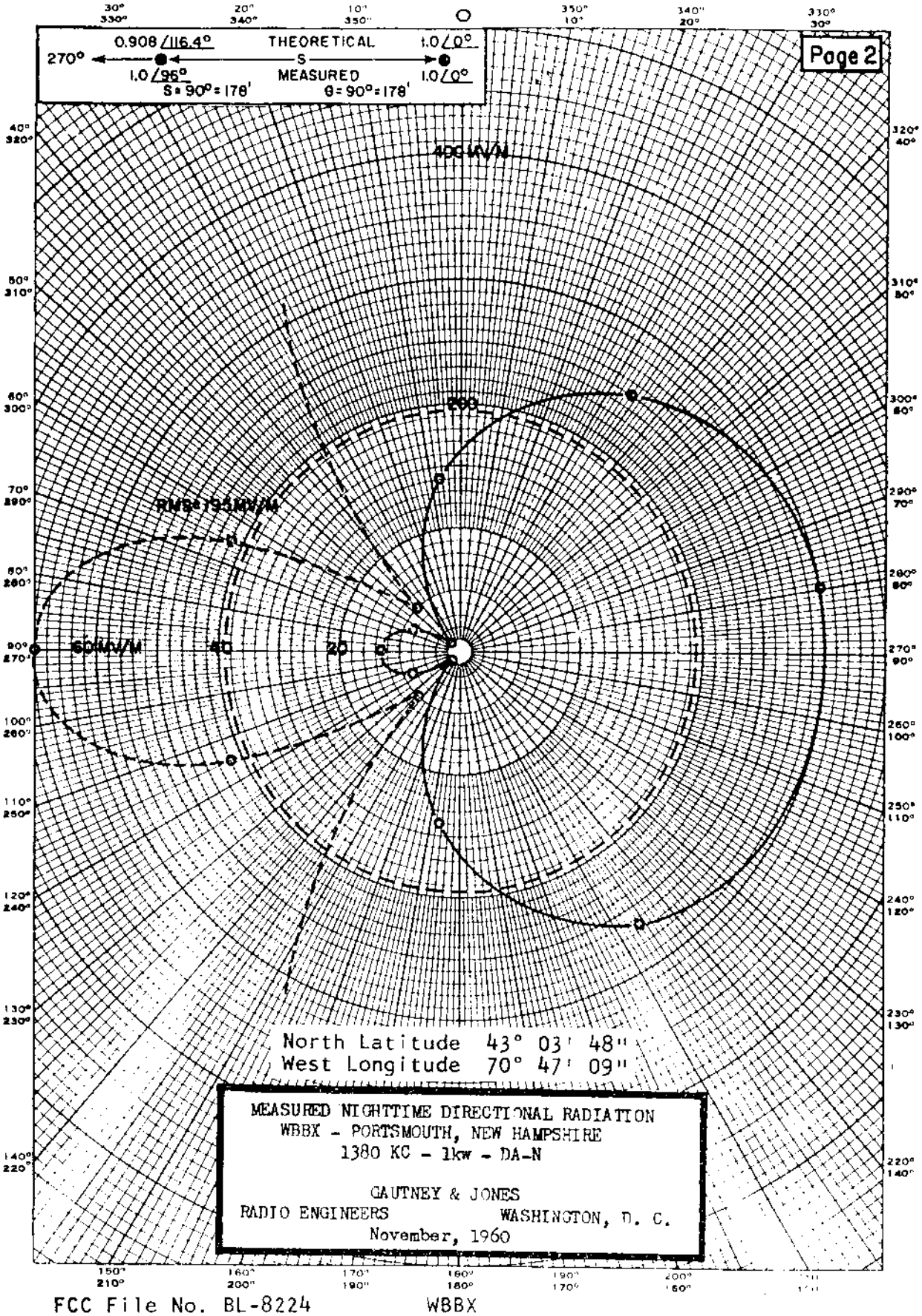
1380 kc

WBBX

MEASURED NIGHT (2-17-61g)

Station WBBX Portsmouth, New Hampshire

1kw, DA-N,U 1380 KC



FCC File No. BL-8224
Accepted 1-31-61

WBBX
Portsmouth, New Hampshire 1380 KC

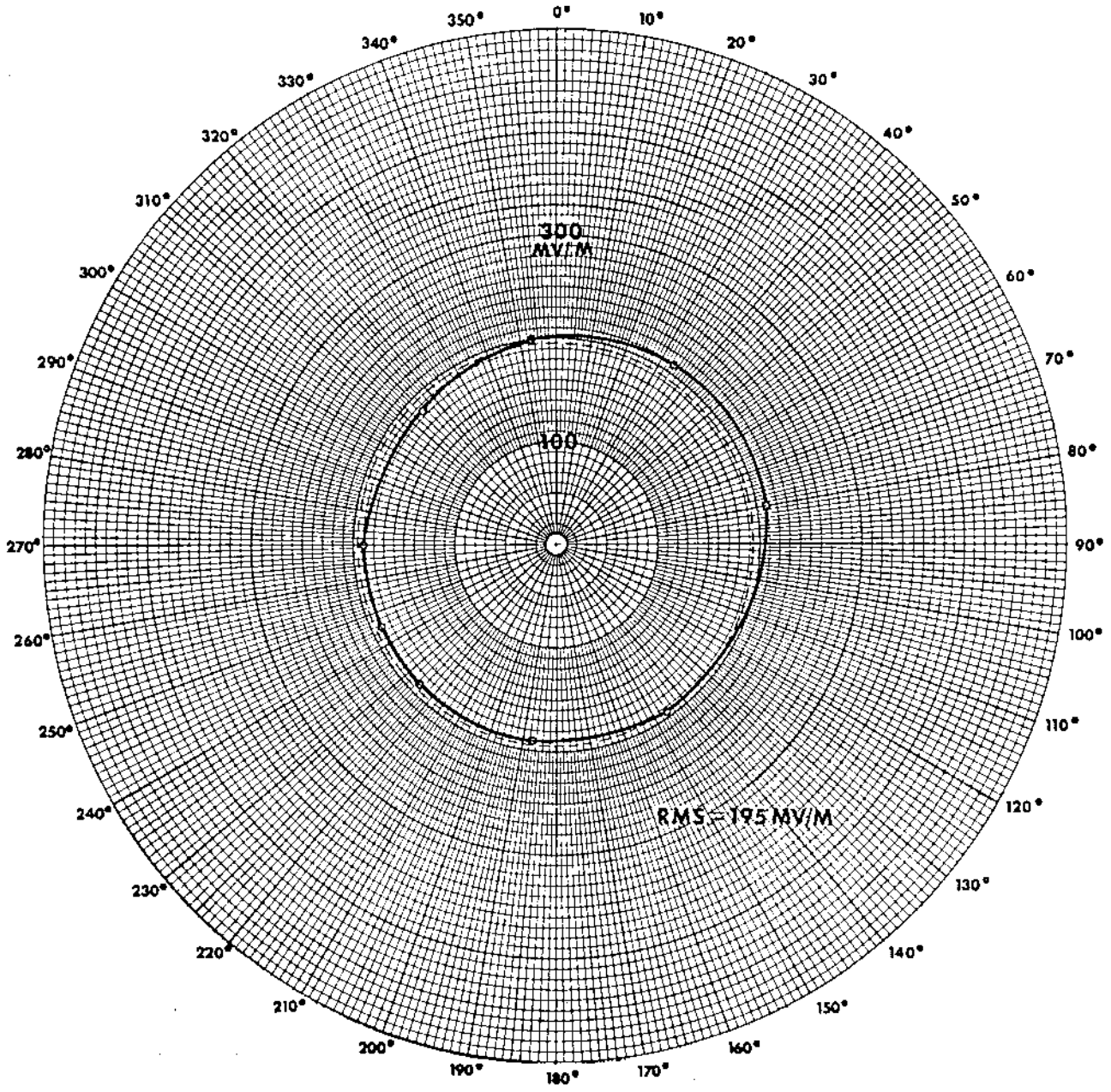
2-24-61 granted & file w/ this

WBBX

Measured Non-DA
(5-28-68ct)

Station WBBX
Portsmouth, New Hampshire

1kw, DA-N, U
1380 kc



GAUTNEY & JONES
CONSULTING RADIO ENGINEERS

MEASURED DAYTIME NON-D RADIATION
WBBX - PORTSMOUTH, NEW HAMPSHIRE
1380 KC - 1 KW - DA-N

AUGUST, 1967

GAUTNEY & JONES - CONSULTING ENGINEERS

FCC File No. BZ-6822
Accepted 5-15-68

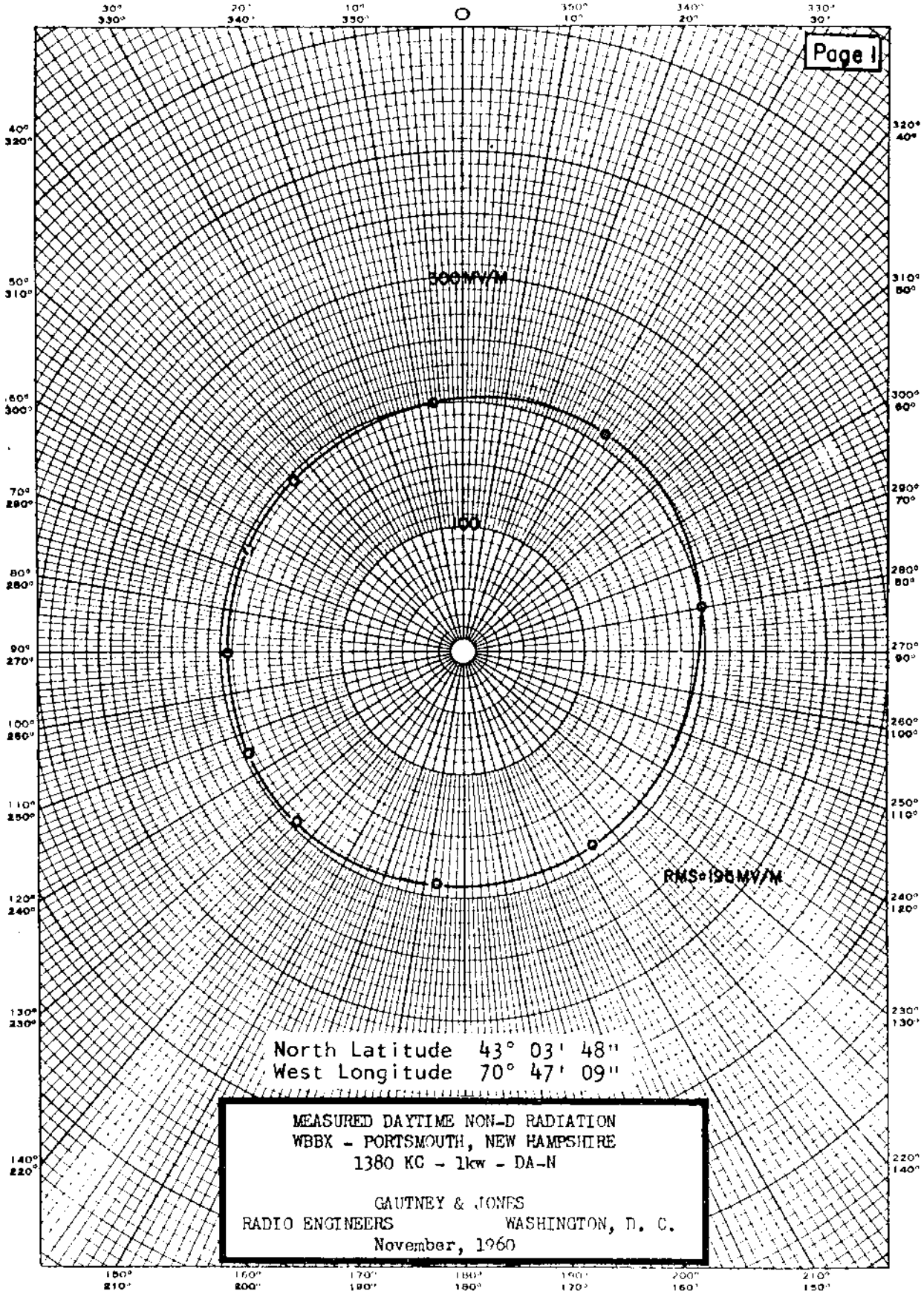
Station WBBX
Portsmouth, New Hampshire

1380 kc

WBBX

MEASURED NON-DA (2-17-61g)

Station WBBX 1kw, DA-N,U
Portsmouth, New Hampshire 1380 KC



FCC File No. BL-8224
Accepted 1-31-61

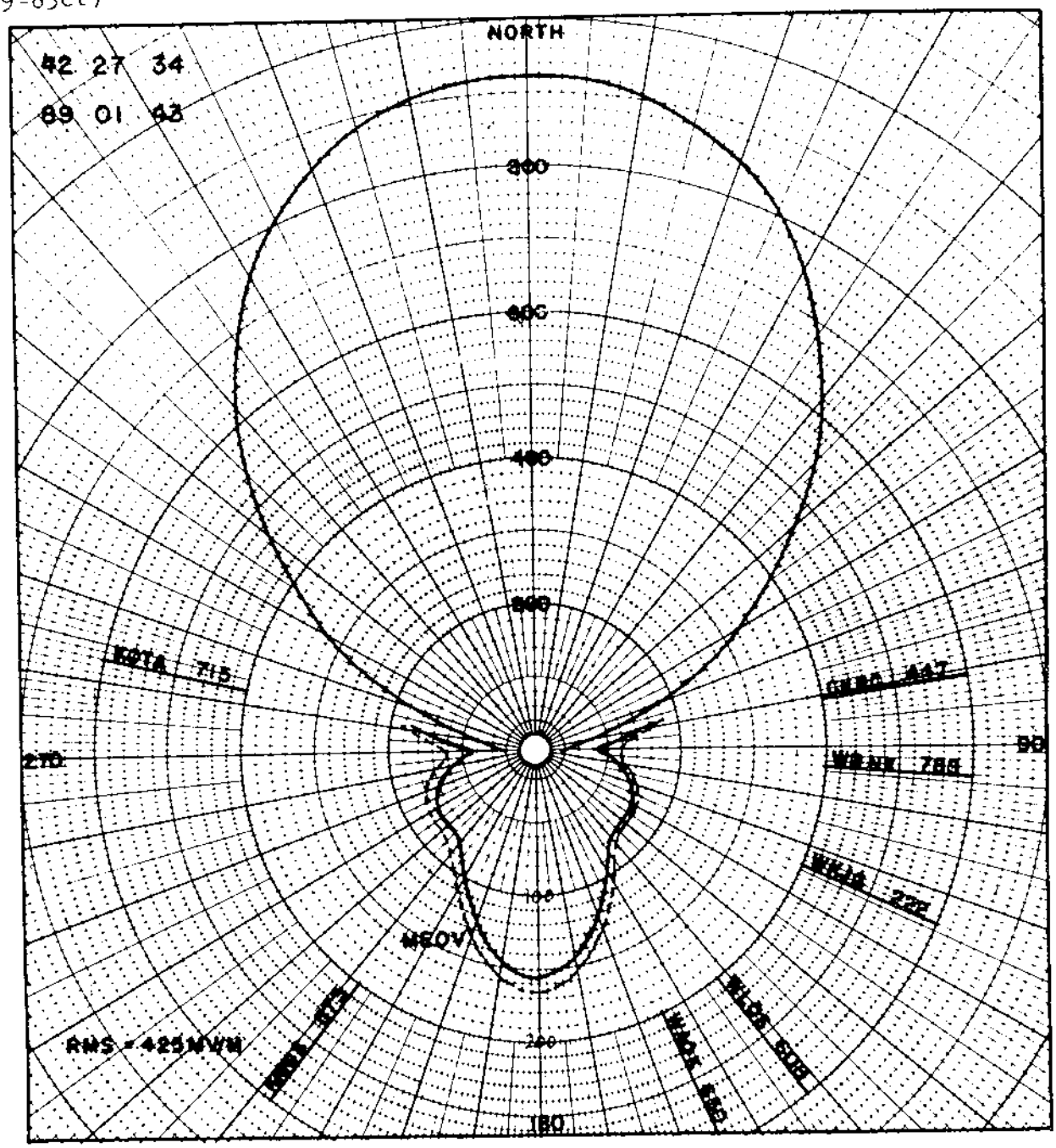
WBBX
Portsmouth, New Hamsphire 1380 KC

WBEL

Proposed Night
(12-29-65ct)

Station WBEL
South Beloit, Illinois

5kw,DA-N,U
1380 kc



0°T		
4	1.000 / 0°	S = 90°
S		
3	1.672 / 150.8°	H_1 = 178°
S		
2	1.155 / -61.75°	$H_{2,3,4}$ = 92°
S		
1	0.290 / 88°	

WBEL
NIGHT RADIATION PATTERN
1380 KC 5 KW
SOUTH BELOIT, ILLINOIS

ROBERT A. JONES
CONSULTING ENGINEERS
LA GRANGE, ILLINOIS

FCC File No.BMP-11646
Accepted 11-17-65

Station WBEL
South Beloit, Illinois

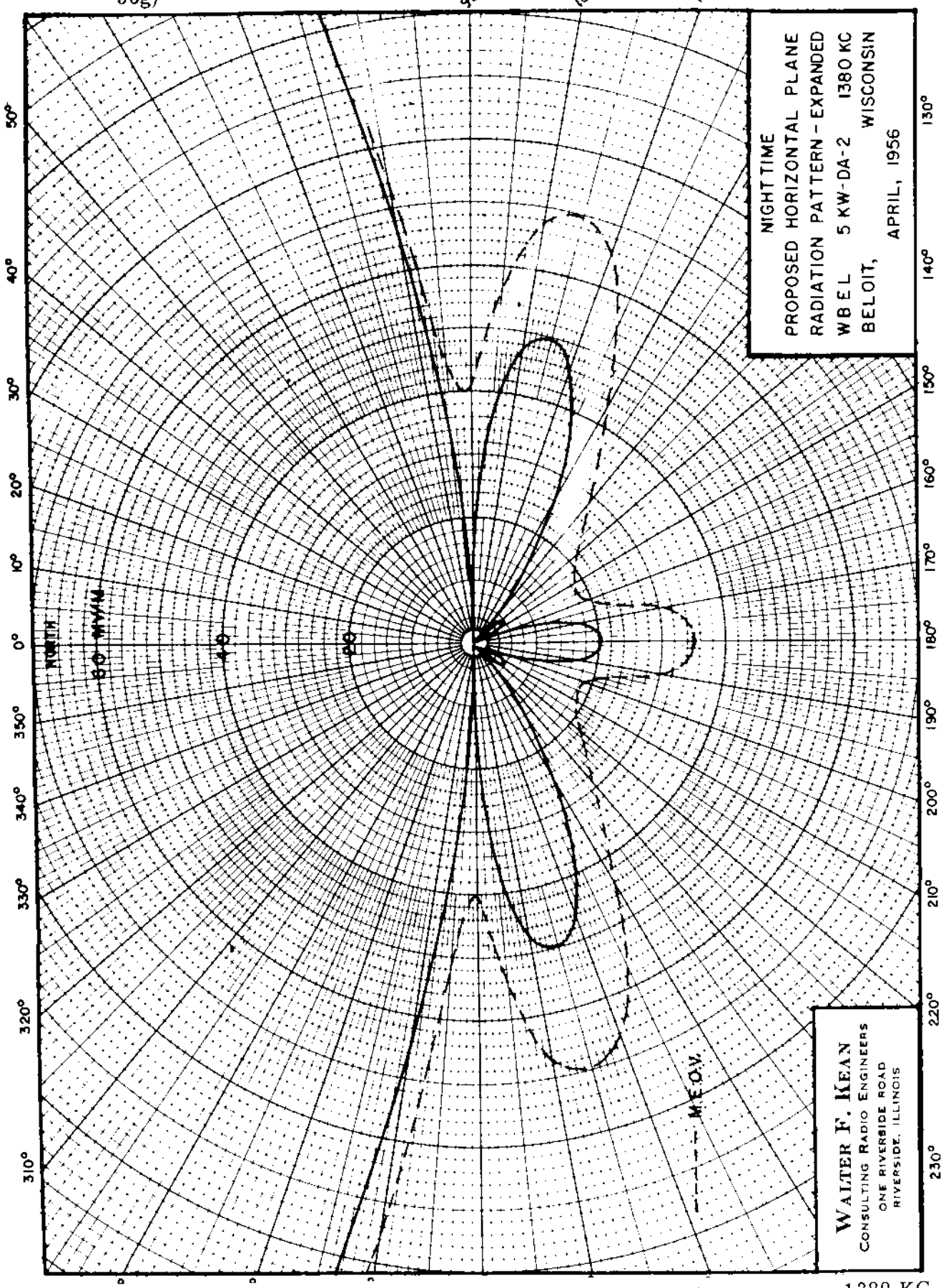
1380 kc

5/15/57 amended application to specify South Beloit, Ill. as location for proposed station

WBEL

PROPOSED NIGHT STATION WBEL 5 KW
NULLS (5/15/56g) S. BELOIT, ~~WISC.~~ ILL. DA-2, U 1380 KC

granted CP 5/27/57 to change from DA-D to DA-2 & to move to S. Beloit, Ill.



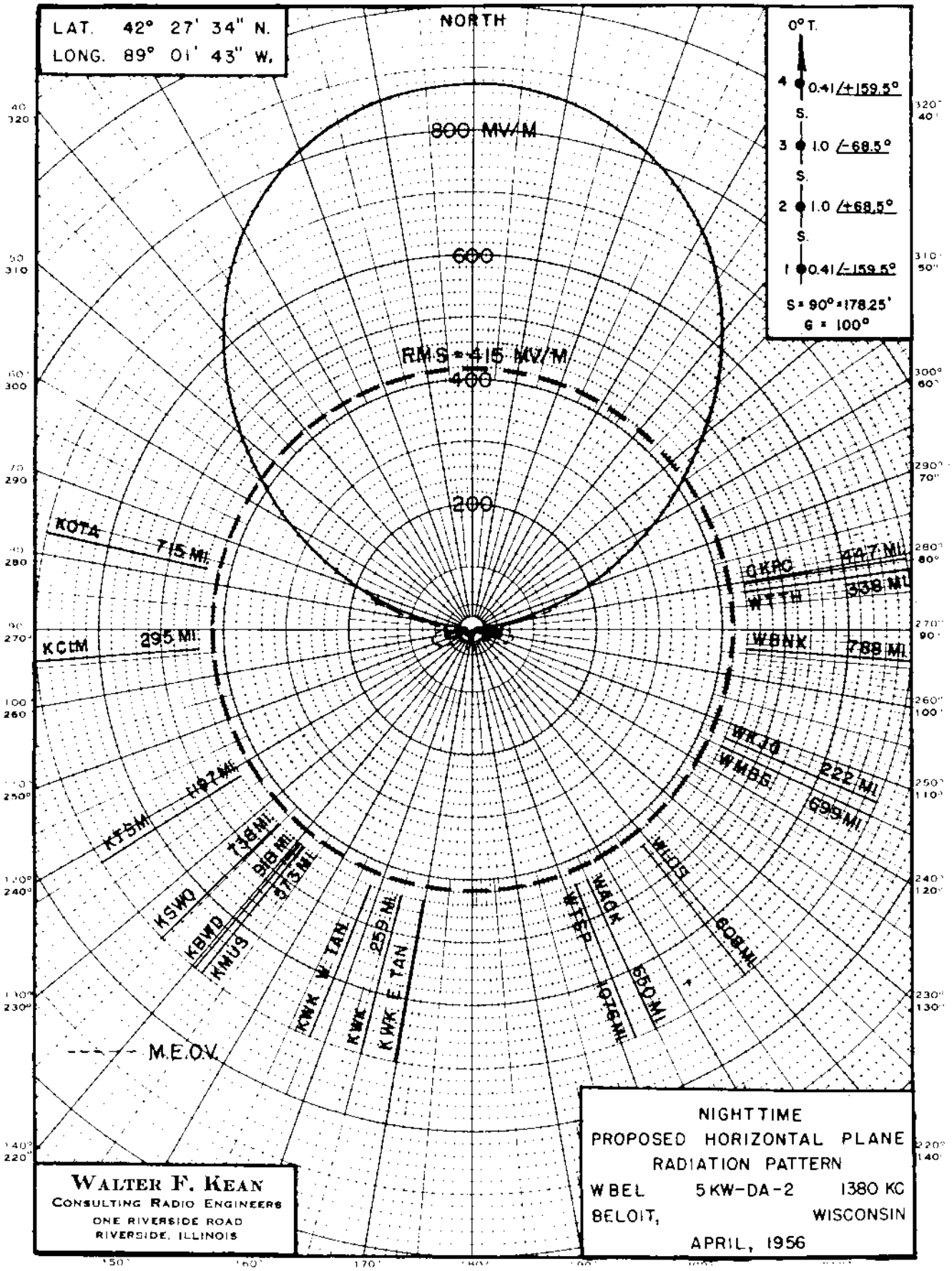
FCC File No. BP-10,531 Accepted 5-2-56 WBEL, Beloit, Wisc. 1380 KC

5/15/57 amended application to specify South Beloit Ill. as location for proposed station

WBEL

PROPOSED STATION WBEL 5 KW
NIGHT (5/15/56g) S. ~~BELOIT~~, ~~WIS~~C. IL DA-2, U 1380 KC

granted CP 12/7/57 change from A-D to DA-2 to move to Beloit Ill.



FCC File No. BP-10,531 Accepted 5-2-56 WBEL, Beloit, Wisconsin 1380 KC

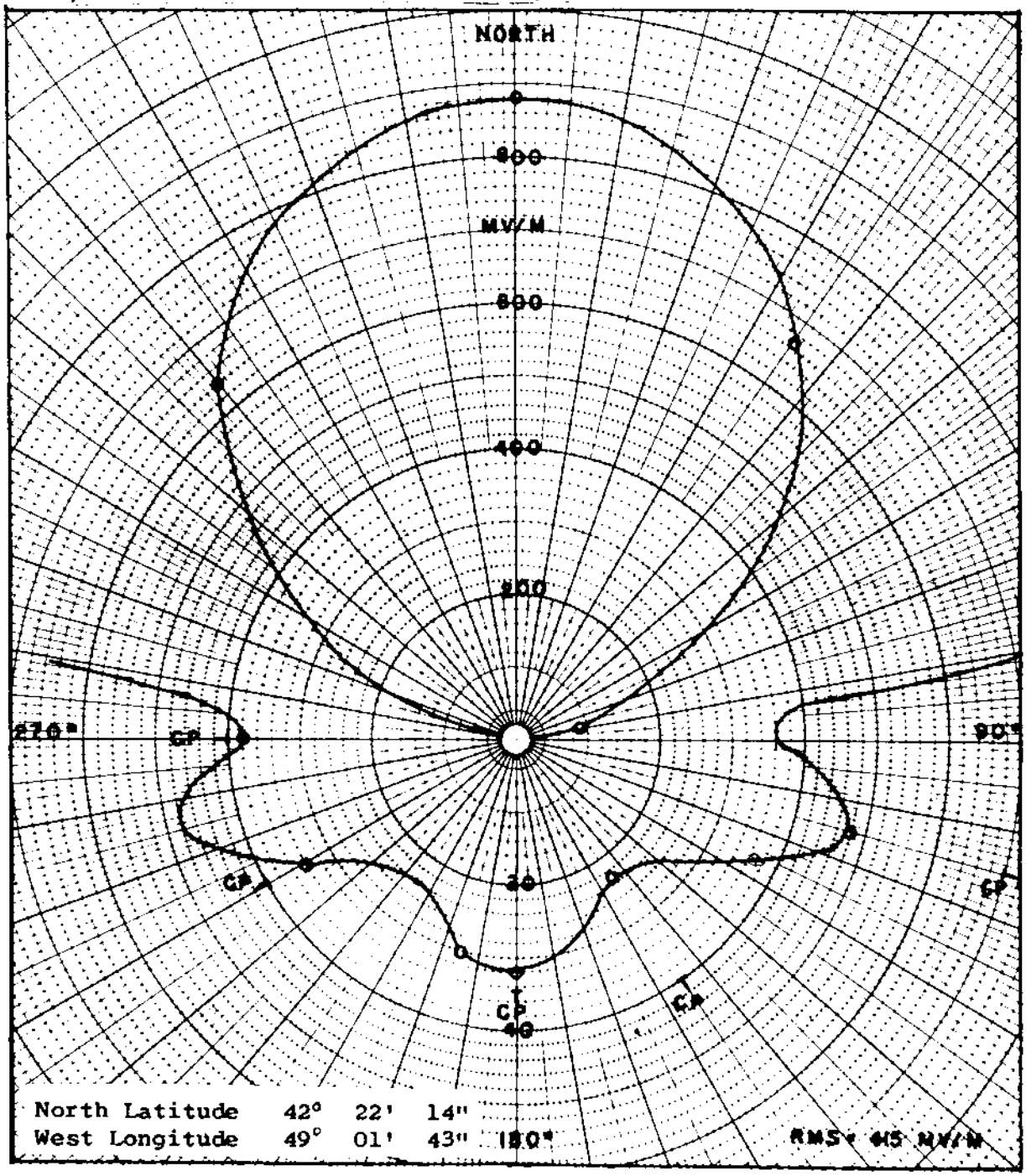
WBEL

Measured Night
(5-27-66ct)

Station WBEL
South Beloit, Illinois

5kw, DA-N, U
1380 kc

BL-11266
LIC 11-9-66



	THEO.	MEAS.
4	0.41 /-46.7	0.52 /80
		S = 90°
3	1.00 /91	1.00/-139
		G_1 = 177°
2	1.00 /-132	0.96 /0
		$G_{2,3,4}$ = 91°
1	0.445 /0	0.104 /135

0°T

MEASURED NIGHT PATTERN
WBEL 5 KW DA-N 1380 KC
SOUTH BELOIT, ILLINOIS

ROBERT A. JONES
CONSULTING ENGINEERS
LA GRANGE, ILLINOIS

FCC File No. BL-11266
Accepted 5-2-66

Station WBEL
South Beloit, Illinois

1380 kc

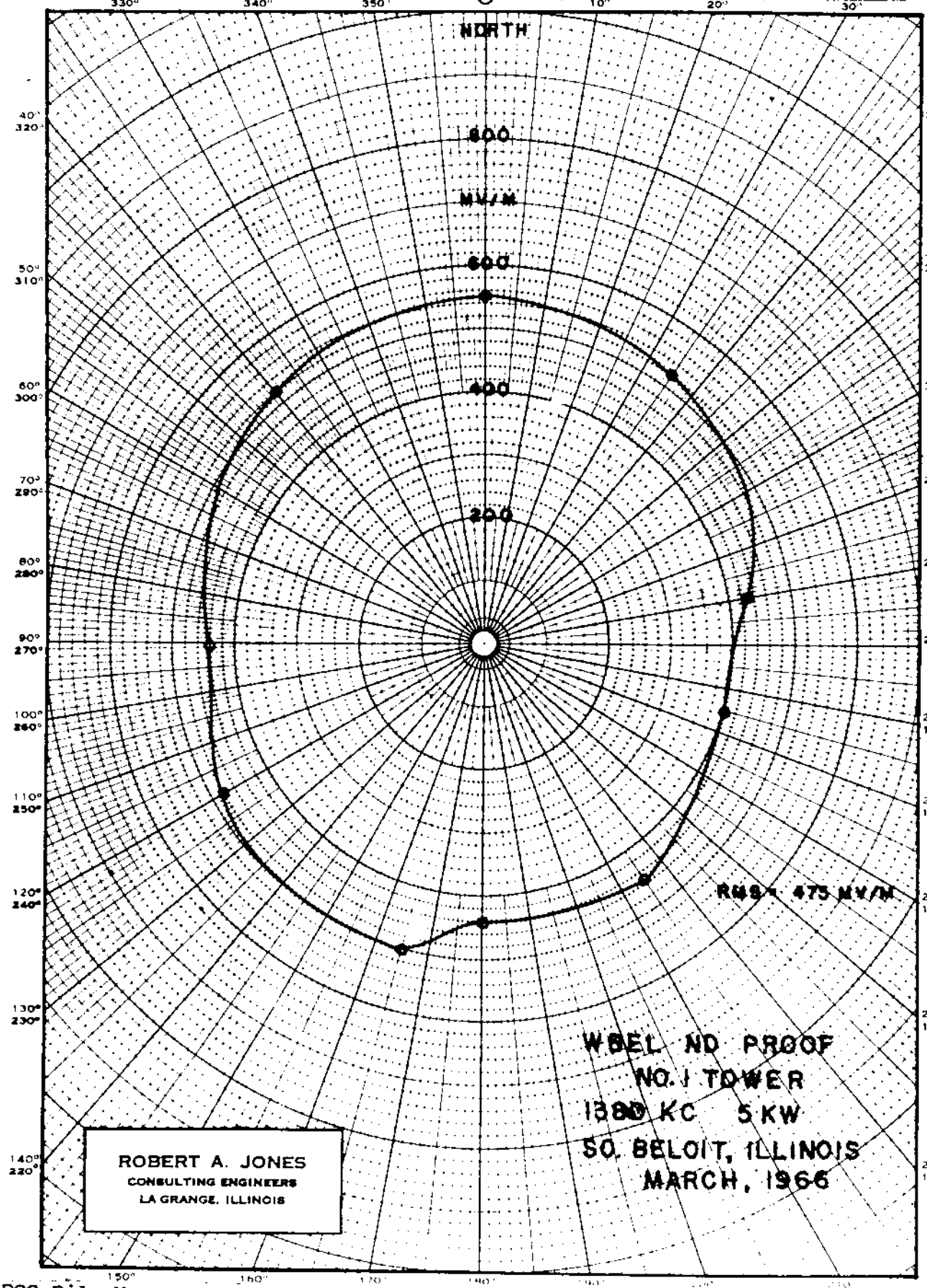
WBEL

Measured Non-DA
(5-27-66ct)

Station WBEL
South Beloit, Illinois

5kw,DA-N,U
1380 kc

BL11266
IC 11-9-66



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

NO. 340-P DIETZGEN GRAPH PAPER POLAR CO-ORDINATE

FCC File No. BL-11266
Accepted 5-2-66

Station WBEL
South Beloit, Illinois

1380 kc

WBIC

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WBIC

Main Studio: New Bern-James City, N. Caroli

Frequency: 1380 kHz

Power: 5 kW

Notification List No. 1716

Date: January 12, 1977

Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 35° 09' 40"
West Longitude: 77° 05' 52"

ANTENNA CHARACTERISTICS

Authorized for Nighttime operation. (DA-N)
Number of elements: 4
Type of elements: Towers #2, #3 and #4 are series excited, uniform cross-section, guyed, vertical steel towers. Tower #1 is a sectionalized, folded unipole, steel tower. During directional operation, the top section is isolated to produce an effective electrical height of 200°. During omnidirectional operation top and bottom sections are connected by relay to produce an effective electrical height of 225°. (*)

TOWER:	NW(#4)	SW(#3)	SE(#2)	NE(#1)
HEIGHT ABOVE INSULATORS:	396'	396'	396'(200°)	445'(*)
PHASING:	+127.130°	+5.40°	-120.99°	0°
FIELD RATIO:	0.963	1.033	0.981	1

SPACING AND ORIENTATION: From tower #1, tower #2 is spaced 142.756' (72.106°) on a line bearing 172.912° true, tower #3 is spaced 202.503' (102.284°) on a line bearing 212.922° true, and tower #4 is spaced 130.518' (65.925°) on a line bearing 256.885° true.

GROUND SYSTEM: 120-180' 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 system are bonded together.

(Cont'd)

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	612.7 mv/m	- mv/m	- mv/m
Night	568 mv/m	958.522 mv/m	596.401 mv/m

Note: This notification concerns a change to add new nighttime operation with the proposed Daytime operation continued as previously notified.

CTR NO 30669A3

WBIC

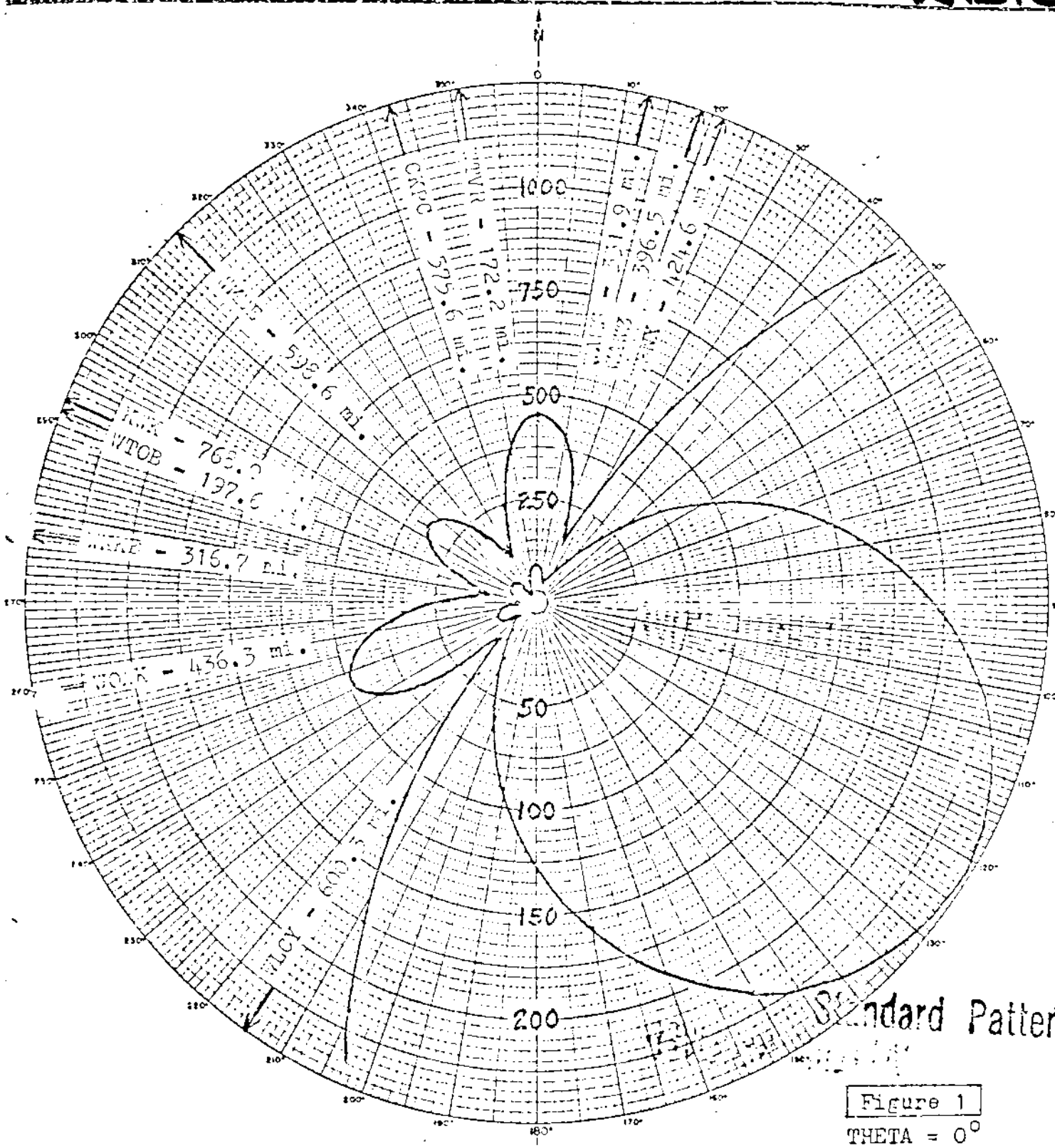
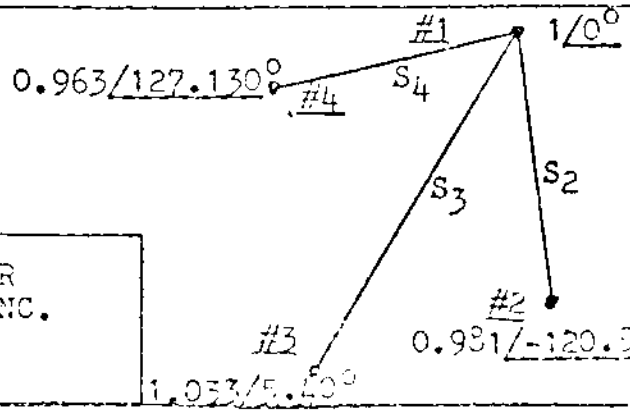


Figure 1
THETA = 0°



S_2 = 72.106° at 172.912°
S_3 = 102.284° at 212.922°
S_4 = 65.925° at 256.885°

LAWRENCE DEHR
ASSOCIATES, INC.

RADIO STATION WGSE
NEW BERN, NORTH CAROLINA
PROPOSED NIGHT PATTERN
1380 Kc. 5 KW. DA-N

PROPOSED DAY & NIGHT | Station WBNX New York, New York | 5kw, DA-1,S-WAWZ 1380 KC

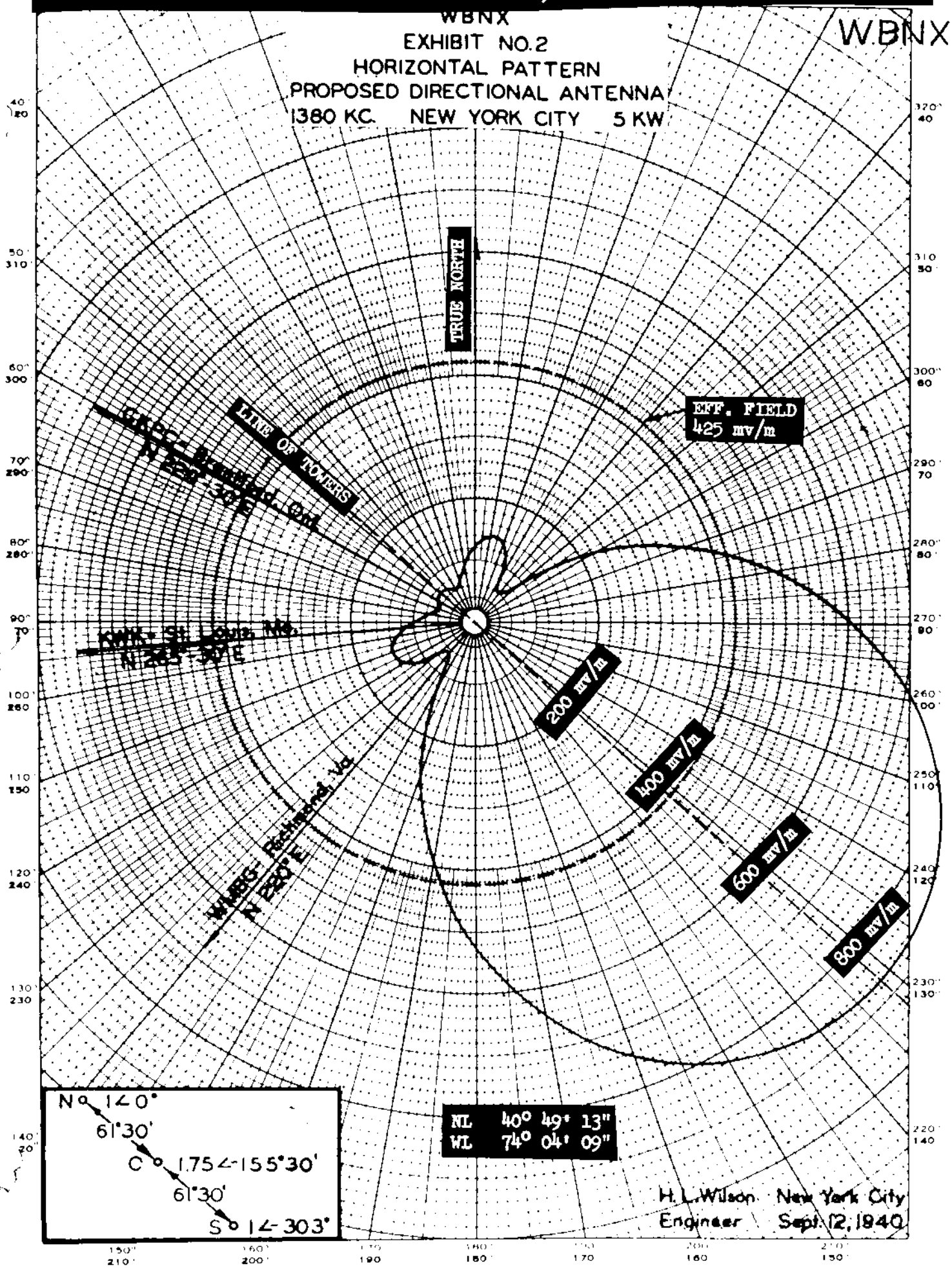
WBNX

EXHIBIT NO. 2

HORIZONTAL PATTERN

PROPOSED DIRECTIONAL ANTENNA

1380 KC. NEW YORK CITY 5 KW

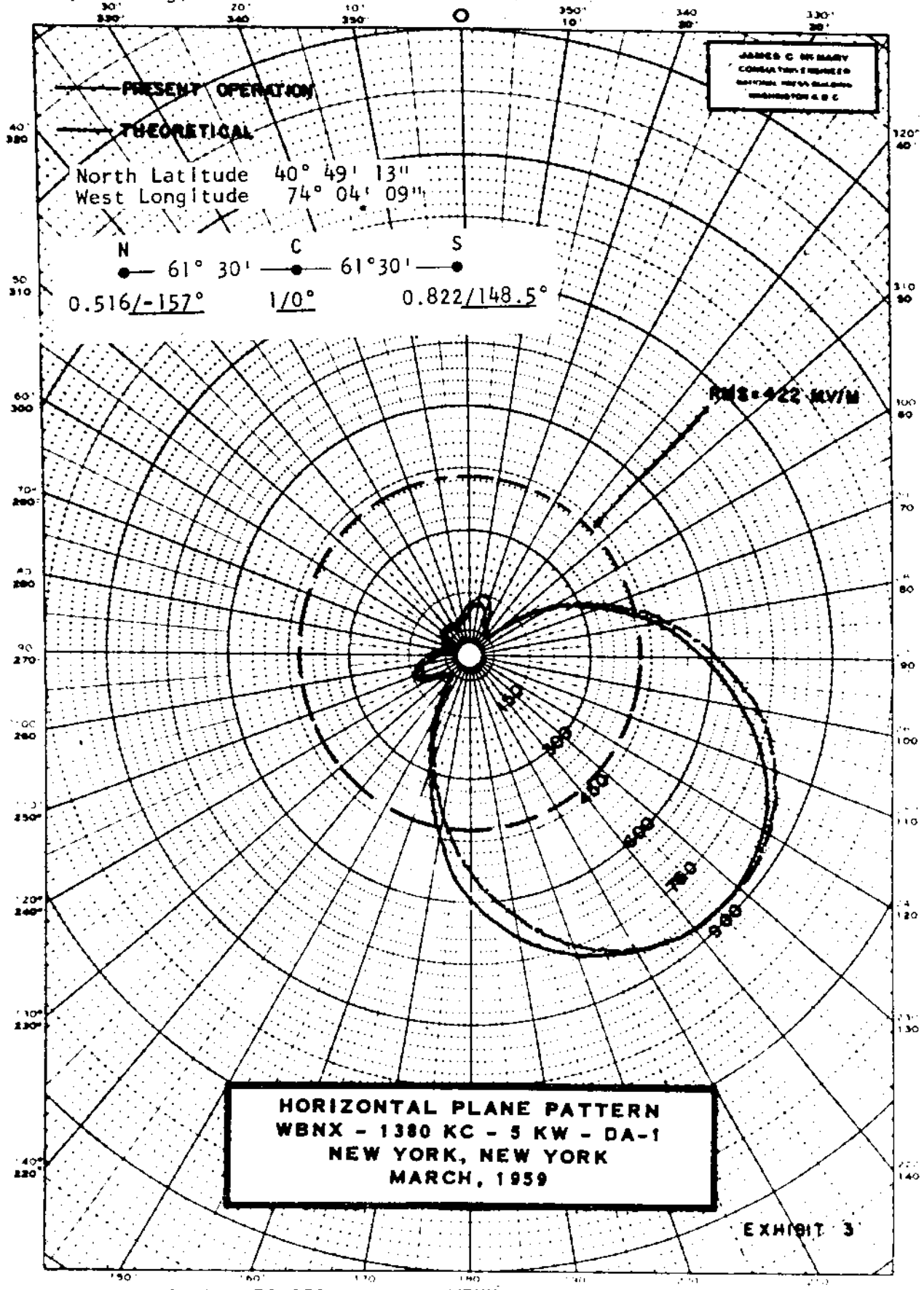


WBNX

MEASURED DAY & NIGHT
(4-10-61g)

Station WBNX
New York, New York

5kw, DA-1,U
1380 KC



FCC File No. BS-250

WBNX
New York, New York

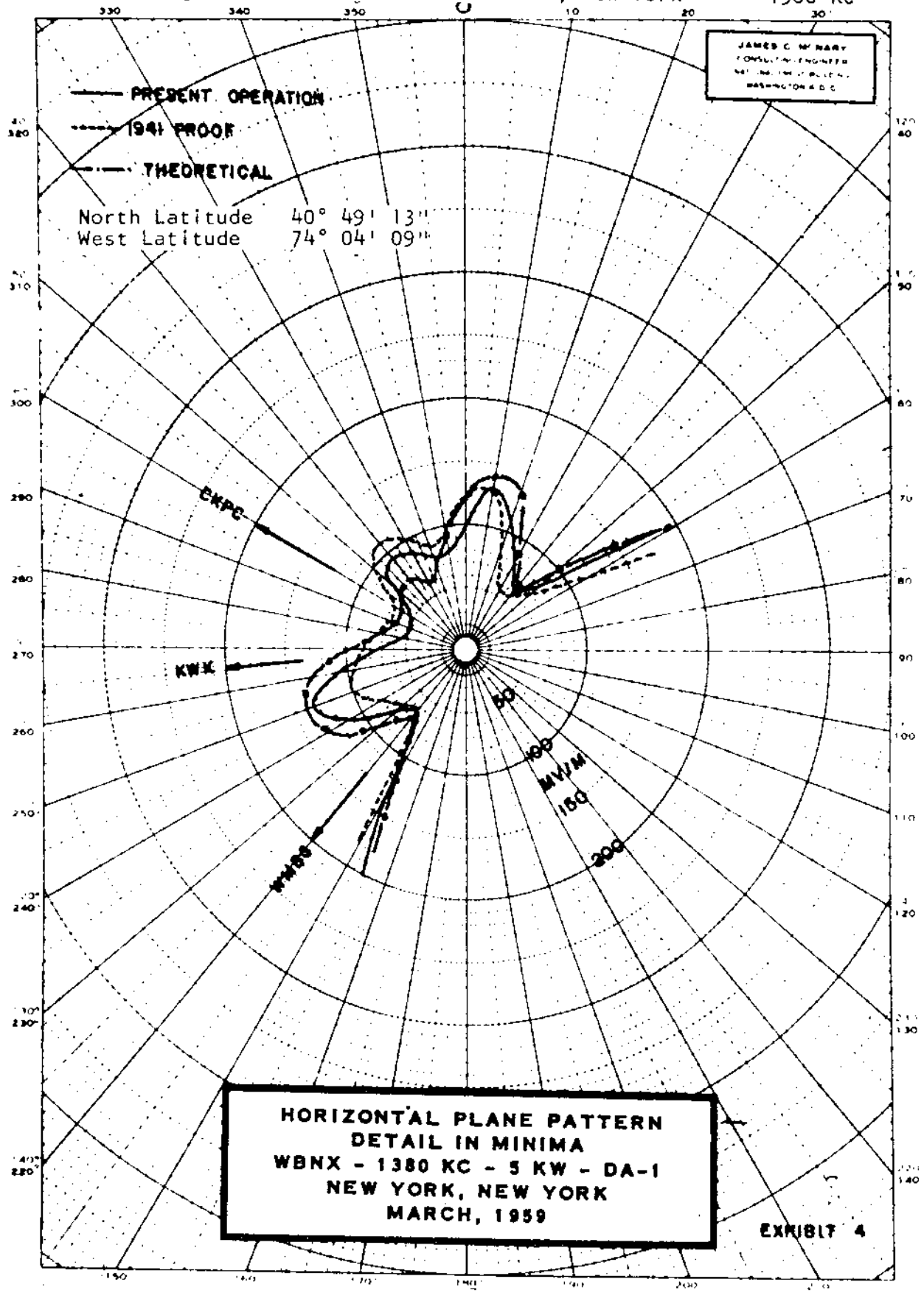
1380 KC

WBNX

MEASURED DAY & NIGHT NULLS
(4-10-61g)

Station WBNX
New York, New York

5kw, DA-1,U
1380 KC



HORIZONTAL PLANE PATTERN
DETAIL IN MINIMA
WBNX - 1380 KC - 5 KW - DA-1
NEW YORK, NEW YORK
MARCH, 1959

EXHIBIT 4

FCC File No. BS-250

WBNX
New York, New York

1380 KC

WBNX
1380

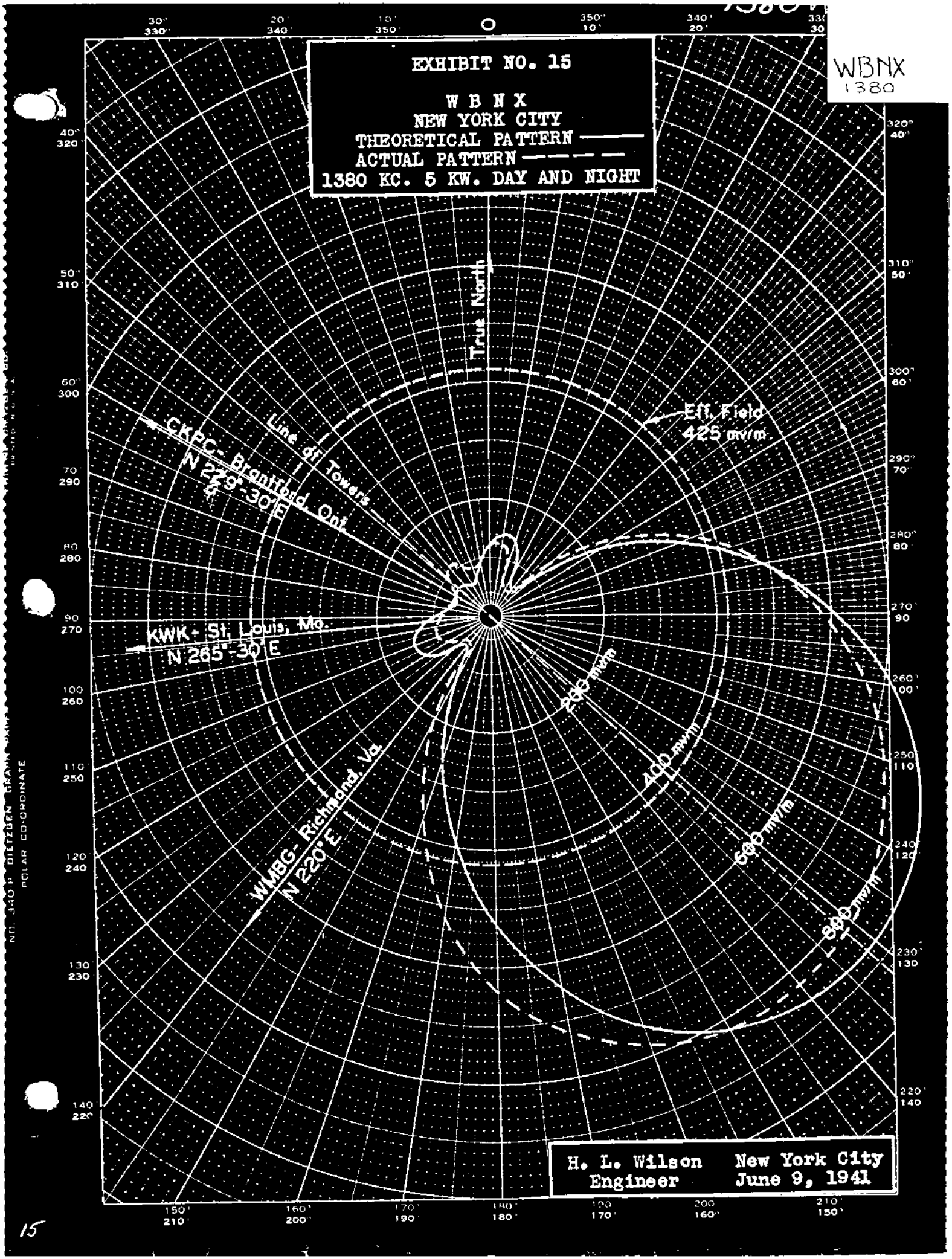


EXHIBIT NO. 15
W B N X
NEW YORK CITY
THEORETICAL PATTERN
ACTUAL PATTERN
1380 KC. 5 KW. DAY AND NIGHT
True North
Line of Towers
CKPC- Brantford, Ont.
N 279°-30' E
KWK - St. Louis, Mo.
N 265°-30' E
WMBG- Richmond, Va.
N 220° E
Eff. Field
425 mv/m
200 mv/m
400 mv/m
600 mv/m
800 mv/m
H. L. Wilson
Engineer
New York City
June 9, 1941

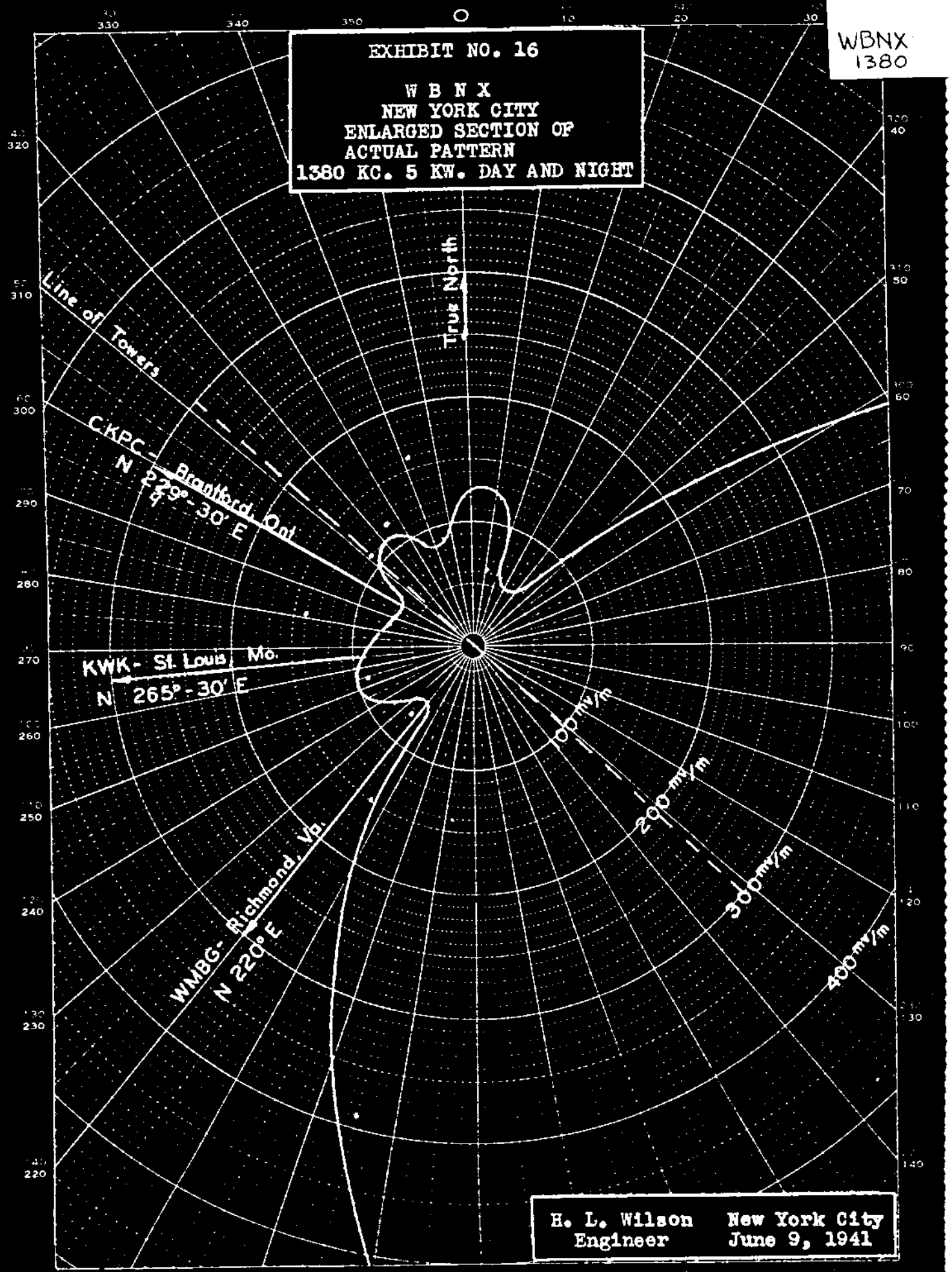
15

1380 KC

WBNX
1380

EXHIBIT NO. 16

W B N X
NEW YORK CITY
ENLARGED SECTION OF
ACTUAL PATTERN
1380 KC. 5 KW. DAY AND NIGHT



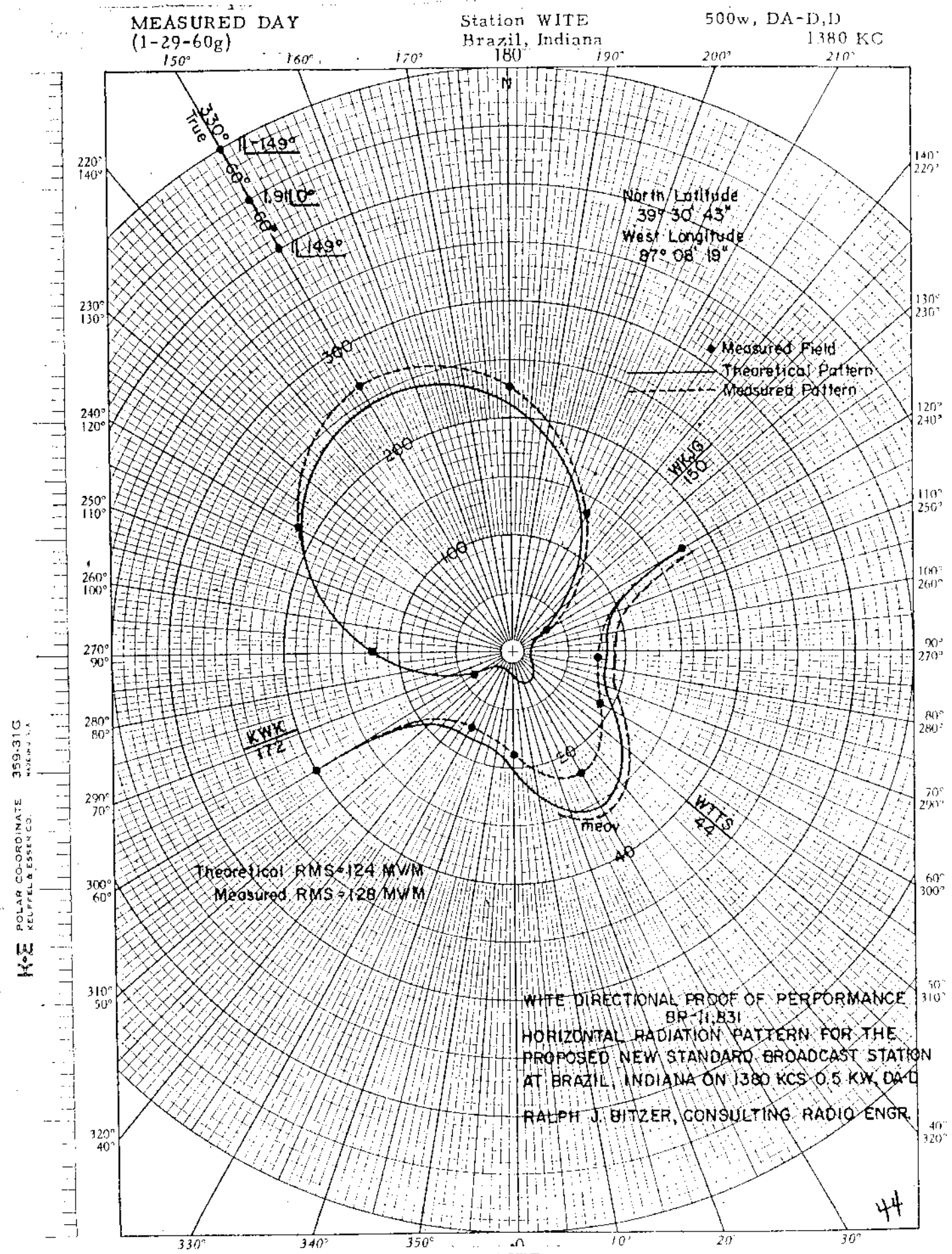
H. L. Wilson
Engineer

New York City
June 9, 1941

15

WBZI

granted 4-5-17-60



FCC File No. BL-7764
Accepted 1-5-60

WITE
Brazil, Indiana

1380 KC

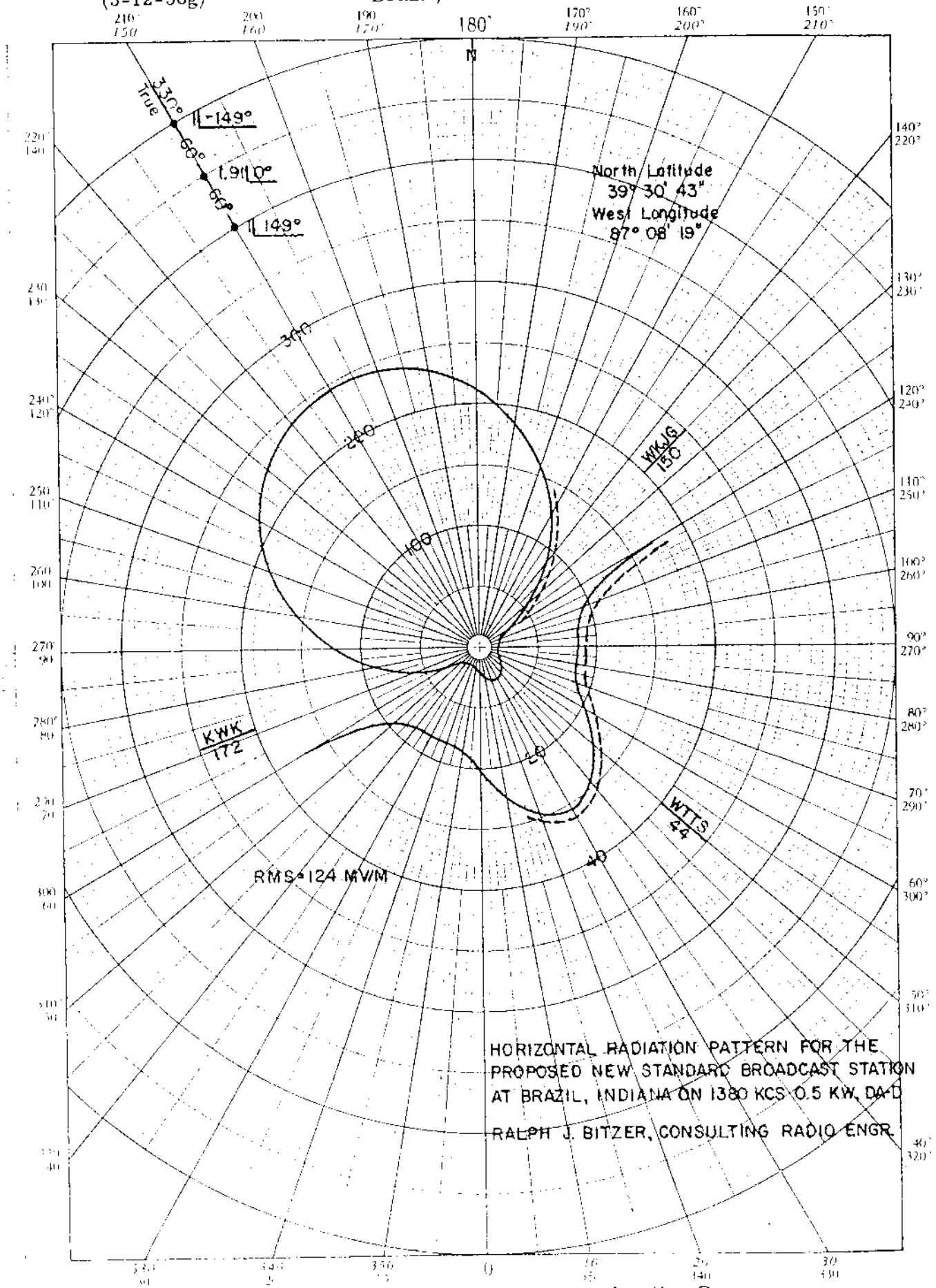
Brazil, Indiana.

WBZI

PROPOSED DAY
(3-12-58g)

New; Quad Cities B/Cstng. Co.
Brazil, Indiana

500w, DA-D,D
1380 KC



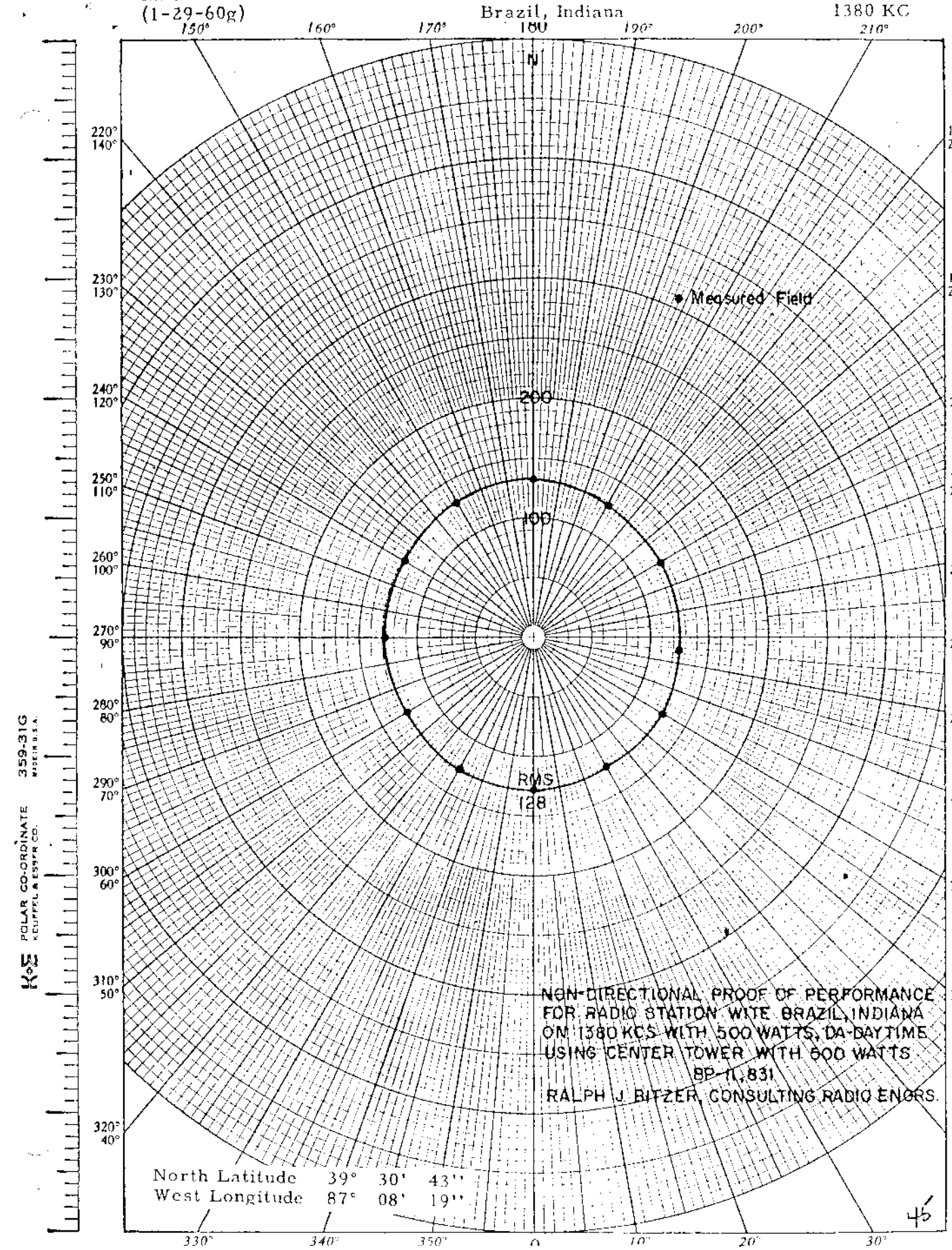
FCC File No. BP-11,831
Accepted 2-27-58

Quad Cities Broadcasting Co.
Brazil, Indiana

1380 KC

WBZ1

granted 8 - 3-11-60

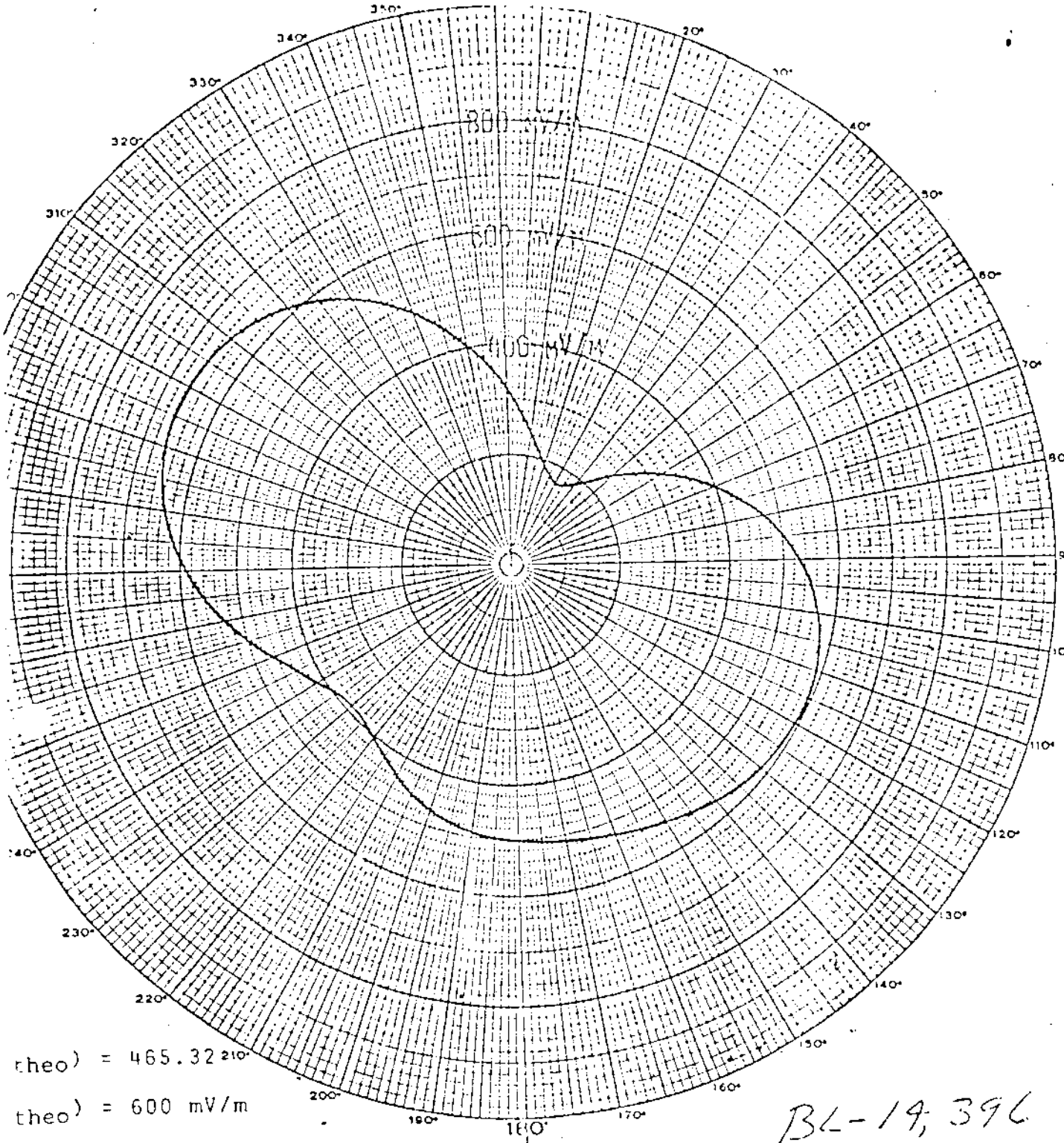


FCC File No. BL-7764
Accepted 1-5-60

WITE
Brazil, Indiana

1380 KC

WDAT



theo) = 465.32

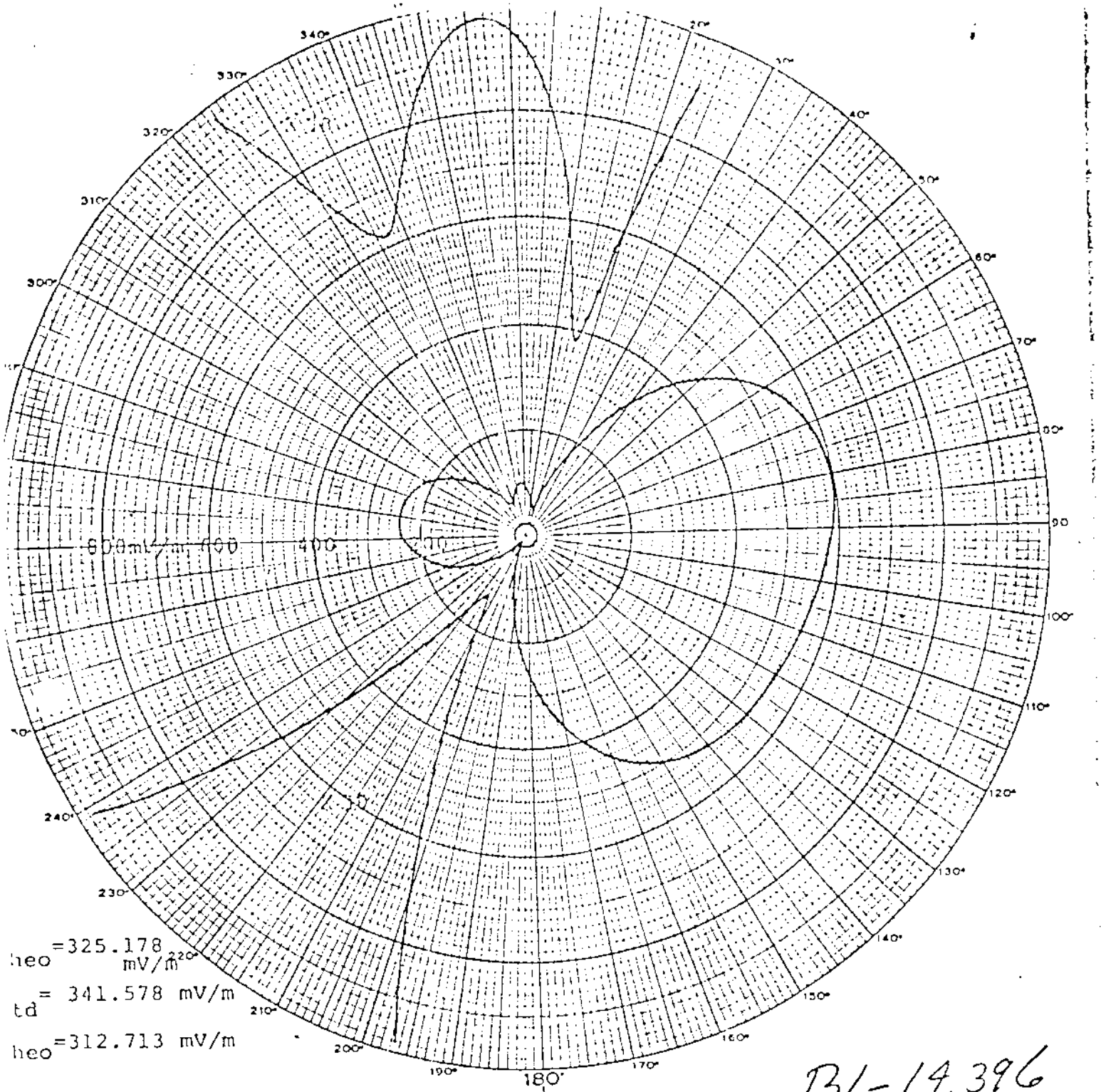
theo) = 600 mV/m

std) = 488.848 mV/m

BL-19,396

TOWER PLACEMENT SKETCH	PATTERN PARAMETERS					FIGURE 8	STATION DATA
	TOWER No	ELECTRICAL HEIGHT (E)	SPACING (S)	PHASING (φ)	FIELD RATIO (r)	PROPOSED STANDARD RADIATION PATTERN	CALL WDAT
T. #2	2	100.0	0.	0°	1.0		FREQ 1380 kHz
#4-181	3	100.0	112.9	180.0	0.8	APRIL, 1979	POWER 5.0 kW
#3 O—90°●→ 97°T	1	100.0	90.0	180.0	0.4		TYPE DA-2
129.26° T.							TIME DAY
							LAT. 29°16'09"
							LONG. [illegible]
							E. HAROLD MUNN, JR. & ASSOCIATES, INC. COLDWATER, MICH.

WDAT



E_{heo} = 325.178 mV/m

E_{td} = 341.578 mV/m

E_{heo} = 312.713 mV/m

BL-14,396

TOWER PLACEMENT SKETCH	PATTERN PARAMETERS					FIGURE 10	STATION DATA
#1 #2 → 97° T.	TOWER No.	ELECTRICAL HEIGHT (DEGREES)	SPACING (DEGREES)	PHASING (DEGREES)	FIELD RATIO	PROPOSED STANDARD RADIATION PATTERN	CALL WDAT FREQ 1380 kHz POWER 2.5 kW TYPE DA-2 TIME NIGHT LAT. N 29°16'09" LONG. W 81°04'54"
#4	1	100.9	0	0	1.000		
#3	2	100.9	90	-133	0.800		
115° 109.34°	3	100.9	195	-149	0.800		
	4	100.9	281.97	78	0.640		
	5					MAY, 1976	
	6					ORMOND BEACH, FLORIDA	E. HAROLD MUNN, JR. & ASSOCIATES, INC. COLDWATER, MICH.

$\theta^0 = 0$

WDAT

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WDAT — Main Studio: Ormond Beach, Florida

Frequency: 1380 kHz — Power: 2.5 kW Night 5 kW Day

Notification List No. 1701 — Date: September 8, 1976 — Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:
North Latitude: 26 ° 16 ' 09 "
West Longitude: 81 ° 04 ' 54 "

ANTENNA CHARACTERISTICS

Authorized for Daytime and Nighttime operation. (DA-2)
Number of elements: 4
Type of elements: Tower #1, #2 and #3 are series excited, uniform cross-section, guyed, and tower #4 is Shunt excited, Self supporting, tapered, all are vertical steel towers.

TOWER:	W(#1)	WC(#2)	EC(#3)	C(#4)	
HEIGHT ABOVE INSULATORS:	200'	200'	200'	200'	(100.9°)
NIGHT PHASING:	0°	-133°	-149°	+78°	
NIGHT FIELD RATIO:	1	0.800	0.800	0.640	
DAY PHASING:	-144.8°	0°	-162.5°		
DAY FIELD RATIO:	0.3	1.0	0.4		

SPACING AND ORIENTATION: The towers are located at the vertices of a parallelogram the long sides of which are 386.2' (195°) in length on a line bearing 115° true. The short sides are 178.3' (90°) in length on a line bearing 97° true.

GROUND SYSTEM: 120-185' equally spaced copper radials plus 60-50' interspaced radials about each tower. Radials are shortened and bonded to transverse straps along intersections between towers. Centers of system are bonded together.

(Over)

WDAT

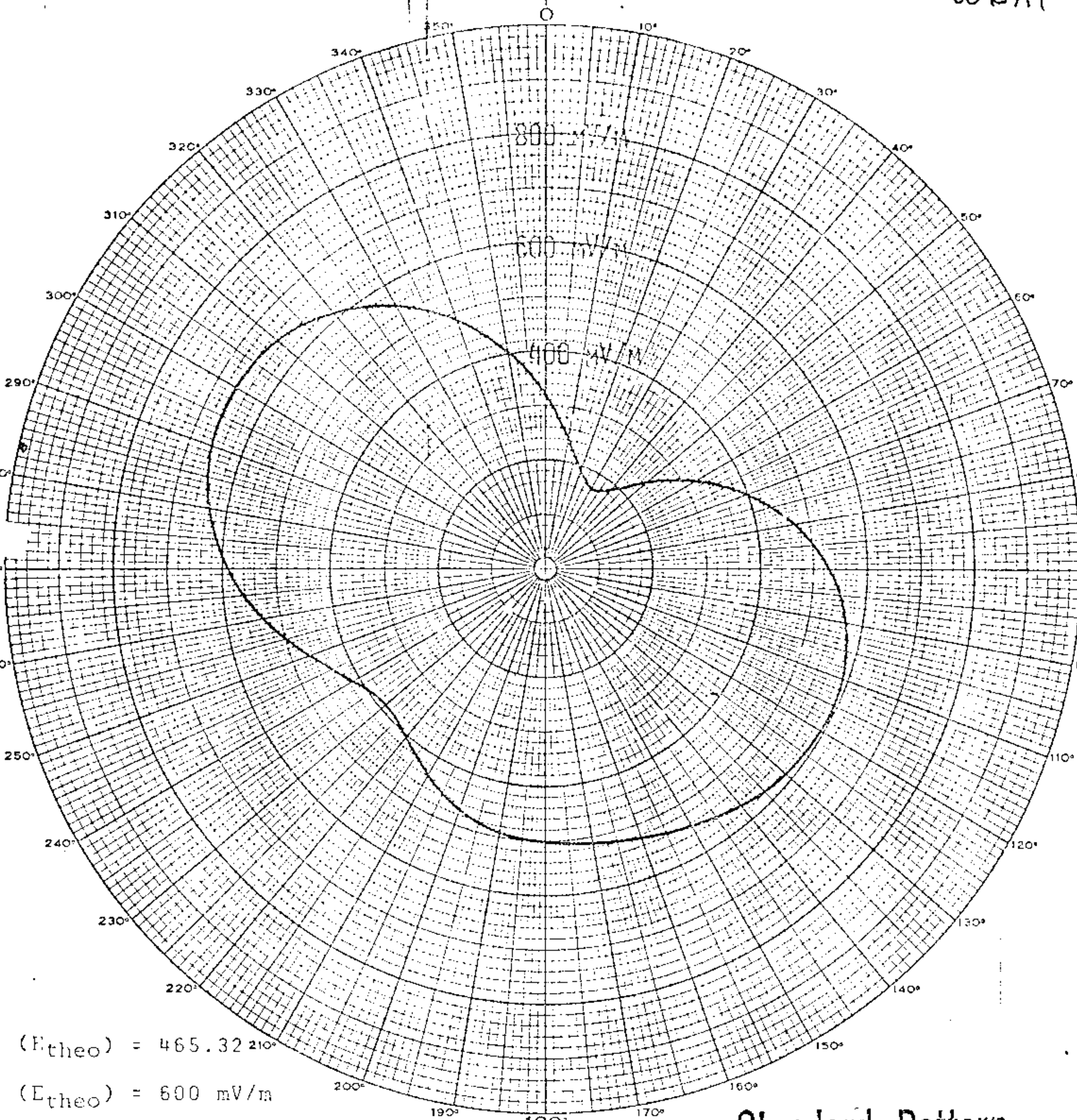
PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	465.32 mv/m	600 mv/m	488.84 mv/m
Night	325.18 mv/m	312.71 mv/m	341.58 mv/m

Note: This notification concerns increases in daytime and nighttime powers.

CTR NO 30052A4

WDAT



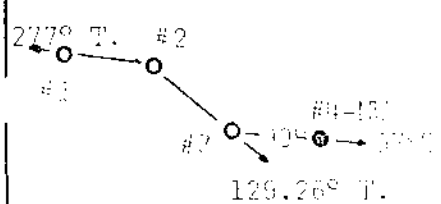
RMS (E_{theo}) = 465.32

RSS (E_{theo}) = 600 mV/m

RMS (E_{std}) = 488.844 mV/m

Standard Pattern

TOWER PLACEMENT SKETCH



PATTERN PARAMETERS

TOWER No	ELECTRICAL HEIGHT G°	SPACING S°	PHASING ψ°	FIELD RATIO F
2	[illegible]	0.	0°	1.0
[illegible]	[illegible]	[illegible]	[illegible]	0.4
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

DAYTIME OPERATION [X] NIGHTTIME OPERATION [ ]

FIGURE 5

PROPOSED STANDARD RADIATION PATTERN

APRIL, 1979

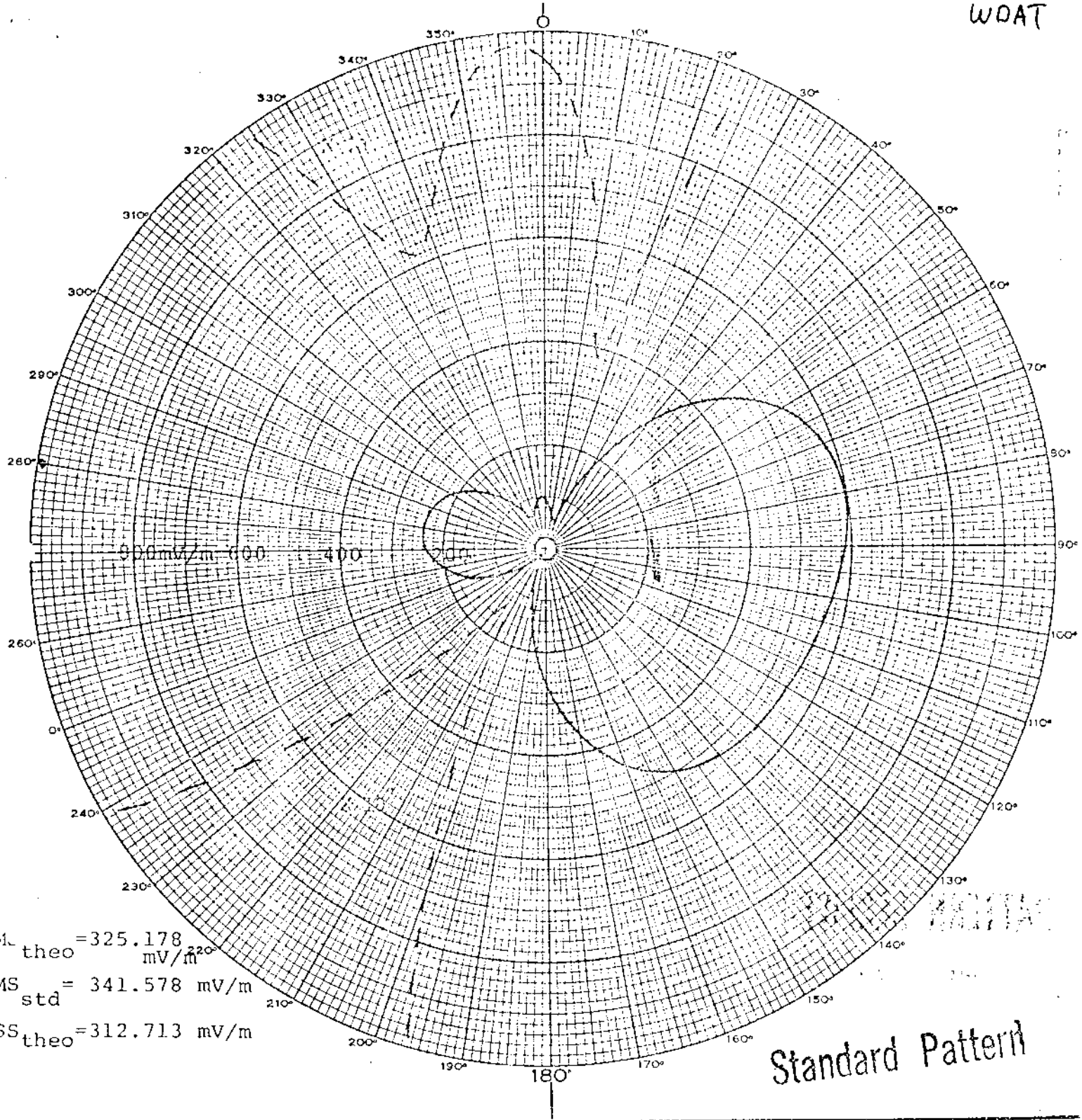
θ°

STATION DATA

CALL WDAT
FREQ 1380 KHz
POWER 5.0 KW
TYPE DA-2
TIME DAY
LAT. [illegible]
LONG. [illegible]

E. HAROLD MUNN, JR. & ASSOCIATES, INC.
COLDWATER, MICH.

WDAT



RMS_{theo} = 325.178 mV/m

RMS_{std} = 341.578 mV/m

RSS_{theo} = 312.713 mV/m

Standard Pattern

TOWER PLACEMENT SKETCH	PATTERN PARAMETERS					FIGURE 8	STATION DATA
#1 #2 → 97° T. #4 #3 115° 109.34°	TOWER No.	ELECTRICAL HEIGHT $\theta°$	SPACING $S°$	PHASING $\psi°$	FIELD RATIO F	PROPOSED STANDARD RADIATION PATTERN MAY, 1976	CALL WDAT FREQ 1380 kHz POWER 2.5 kW TYPE DA-2 TIME NIGHT LAT. N 29°16'09" LONG W 81°04'56"
	1	100.9	0	0	1.000		
	2	100.9	90	-133	0.800		
	3	100.9	195	-149	0.800		
	4	100.9	281.9	78	0.640		
	5						
	6						
	DAYTIME OPERATION ☐ NIGHTTIME OPERATION ☒					$\theta° = 0$	E. HAROLD MUNN, JR. & ASSOCIATES, INC. COLDWATER, MICH.

WIZO

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WIZO

Main Studio: Franklin, Tenneessee

Frequency: 1380 kHz

Power: 5 kW

Notification List No. 1676

Date: March 19, 1976

Class: I

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 35° 54' 22"
West Longitude: 86° 54' 21"

ANTENNA CHARACTERISTICS

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

TOWER:	S(#3)	C(#2)	N(#1)
HEIGHT ABOVE INSULATORS:	180'	180'	180' (90°)
PHASING:	0°	0°	-40
FIELD RATIO:	1.0	1.0	0.6

SPACING AND ORIENTATION: Adjacent elements are spaced 238' (120°) on a line bearing 350° true.

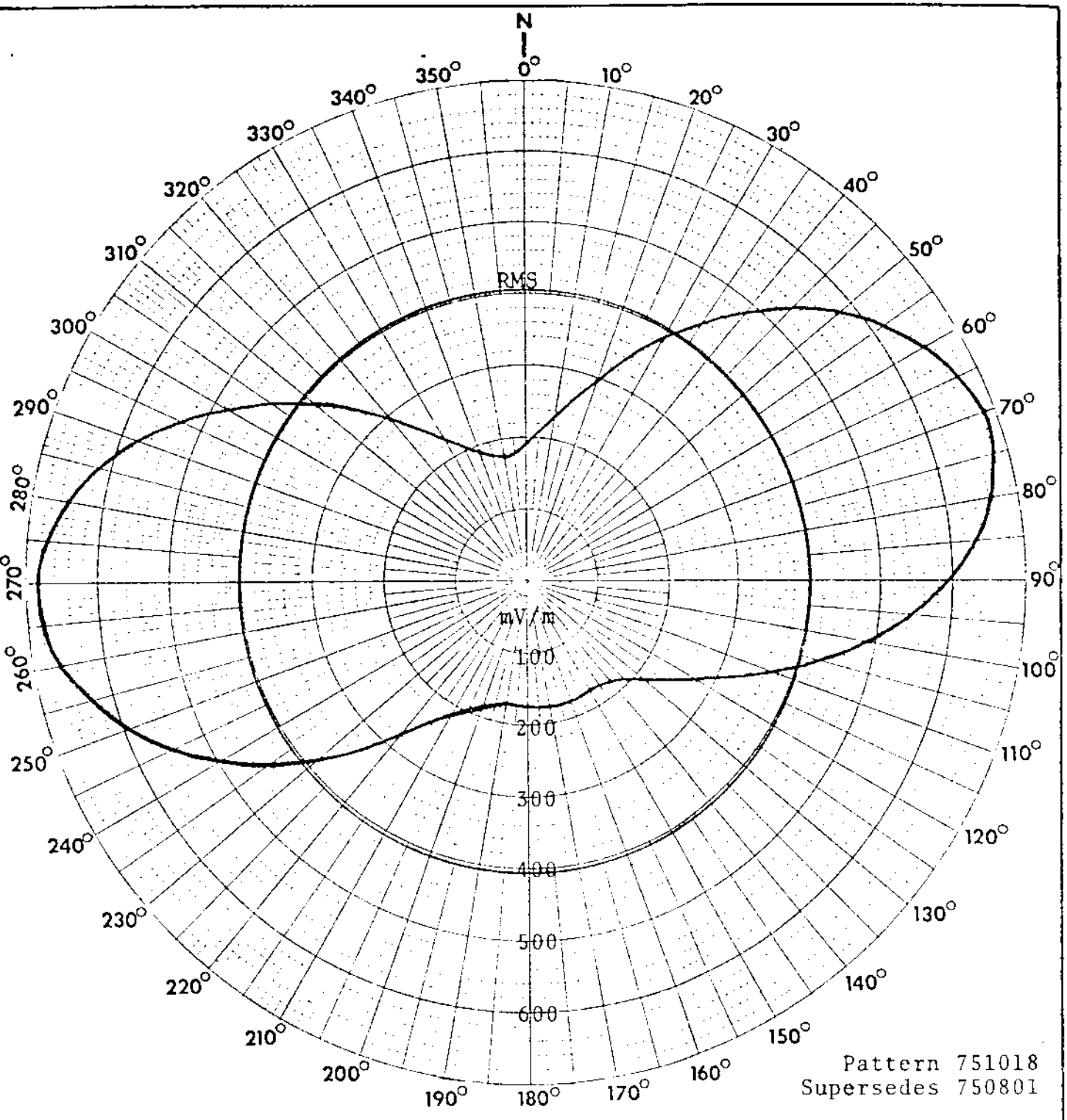
GROUND SYSTEM: 120-175' equally spaced copper radials about each tower. Radials are shortened and bonded to transverse straps along intersections between towers.

PREDICTED EFFECTIVE FIELD AT RATED POWER:

THEORETICAL RMS	RSS	STANDARD RMS
401.7 mv/m	390.6 mv/m	423.0 mv/m

Note: This notification concerns a change to increase power from 1 kW and install a directional antenna system.

WIZO



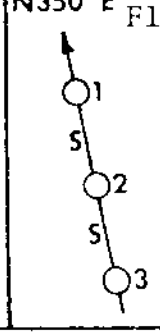
Pattern 751018
Supersedes 750801

STANDARD HORIZONTAL PLANE PATTERN

WIZO FRANKLIN, TN.
1380 kHz. DA-D

N. Lat. 35°54'22"
W. Long. 86°54'21"

Theo.RMS 401.7 mv/m
Std. RMS 423.0 mv/m
Theo.RSS 390.6 mv/m



F1 = 0.6/-40°
F2 = 1.0/0°
F3 = 1.0/0°
S = 120°
All G = 90°

EXHIBIT E, FIGURE 1

HARPETH VALLEY BROADCASTING CO.

PROPOSED DAYTIME PATTERN

Amended October, 1975

B. SCOTT BAXTER
5460 Granny White Pike
Brentwood, Tennessee 37027

WIZO

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WIZO Main Studio: Franklin, Tennessee

Frequency: 1380 kHz Power: 5 kW

Notification List No.: 1701 Date: September 8, 1976 Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:
North Latitude: 35 ° 54 ' 22 "
West Longitude: 86 ° 54 ' 21 "

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(#3)	C(#2)	N(#1)
HEIGHT ABOVE INSULATORS:	180°	180° (90°)	320' (164°)
PHASING:	0°	0°	- 55°
FIELD RATIO:	1.0	1.0	0.6

SPACING AND ORIENTATION: Adjacent towers are spaced 238' (120° on a line bearing 350° true.

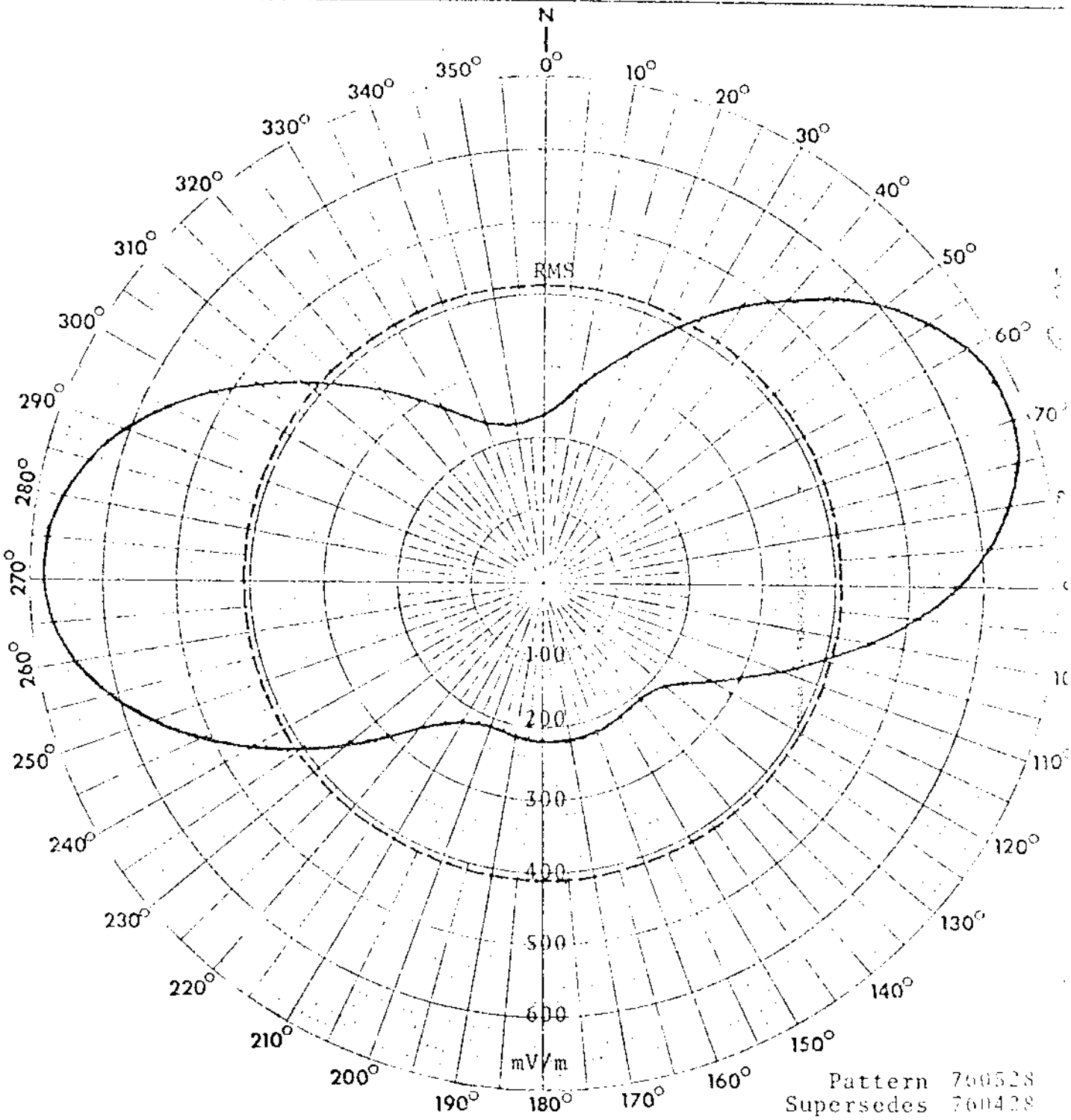
GROUND SYSTEM: 120-175' equally spaced copper radials about each tower. Radials are shortened and bonded to transverse straps along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
412.3 mv/m	396.2 mv/m	433.1 mv/m

This notification concerns minor change in the directional antenna radiation pattern.

WI2O

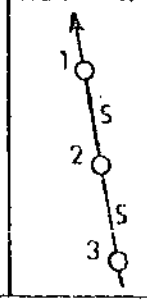


STANDARD HORIZONTAL PLANE PATTERN

WI2O FRANKLIN, TN.
1380 kHz. DA-D
N. Lat. 35°54'22"
W. Long. 86°54'21"

Theo. RMS 412.5 mV/m
Std. RMS 433.1 mV/m
Theo. RSS 496.2 mV/m
FCC 'Q' = 13.12

N350°E



F1=0.6/-55°
F2=1.0/0°
F3=1.0/0°
S = 120°
GI = 164.0°
G2=G3= 90 °

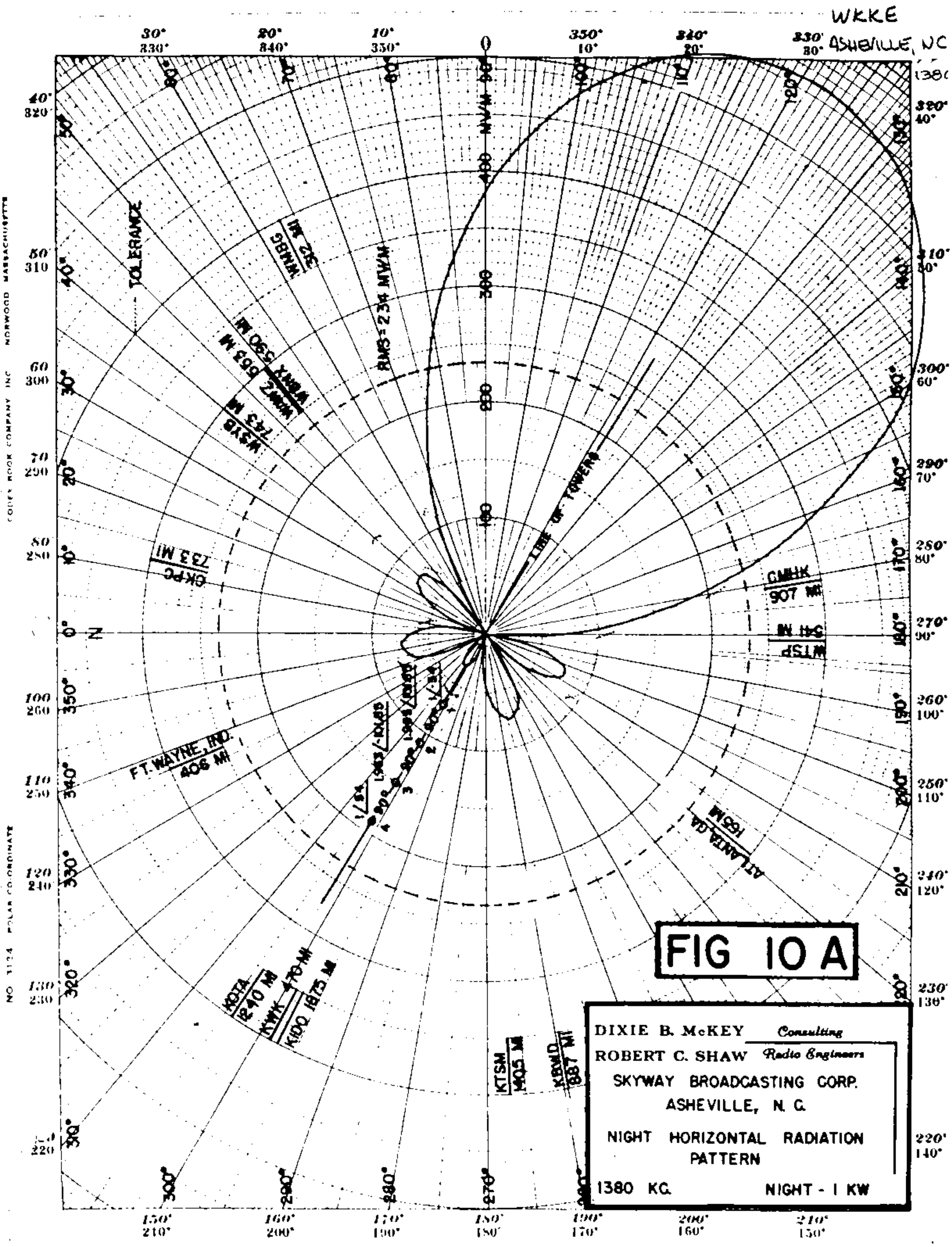
EXHIBIT I, FIGURE II

HARPETH VALLEY BROADCASTING CO.

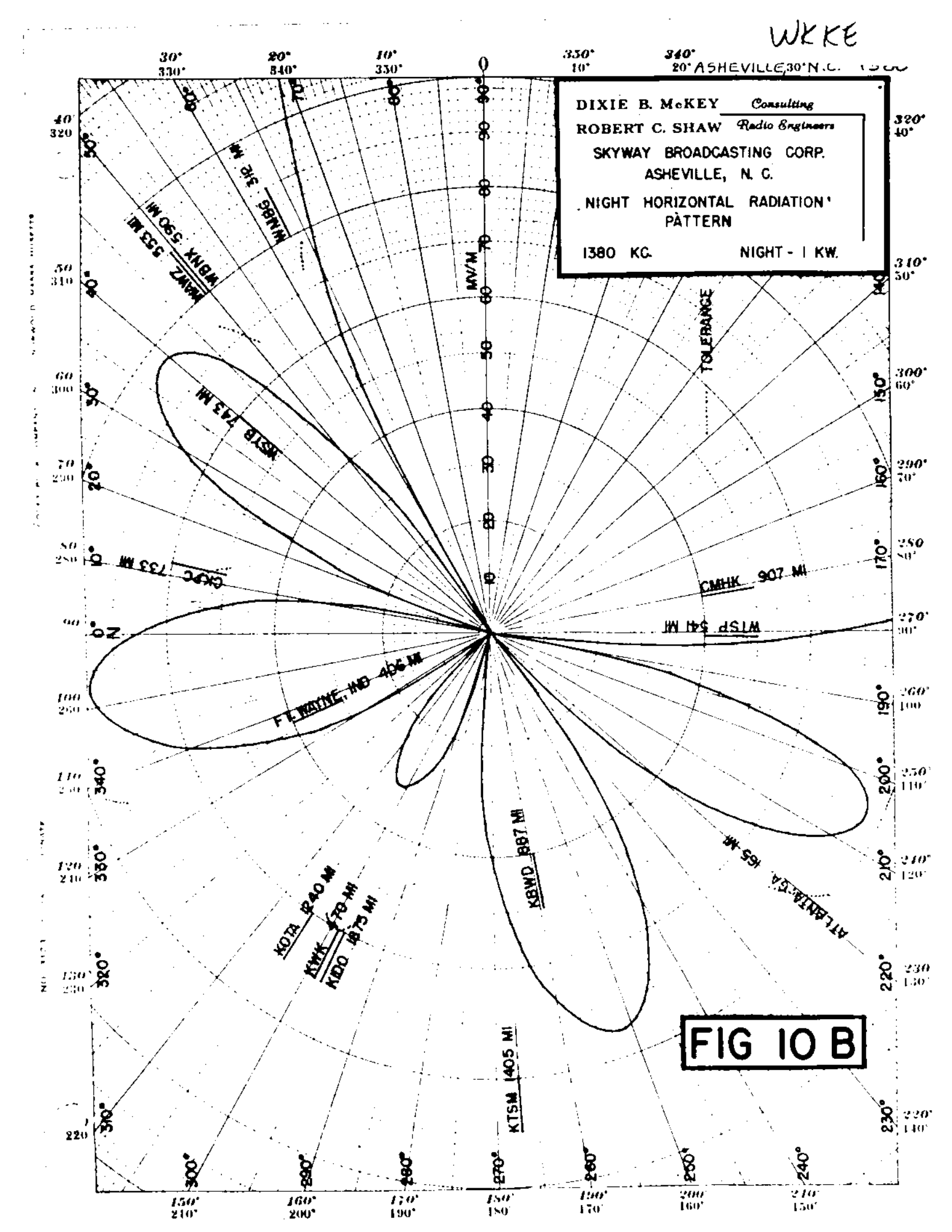
PROPOSED DAYTIME PATTERN

May 28, 1976

B. SCOTT BAXTER
5460 Granny White Pike
Brentwood, Tennessee 37027

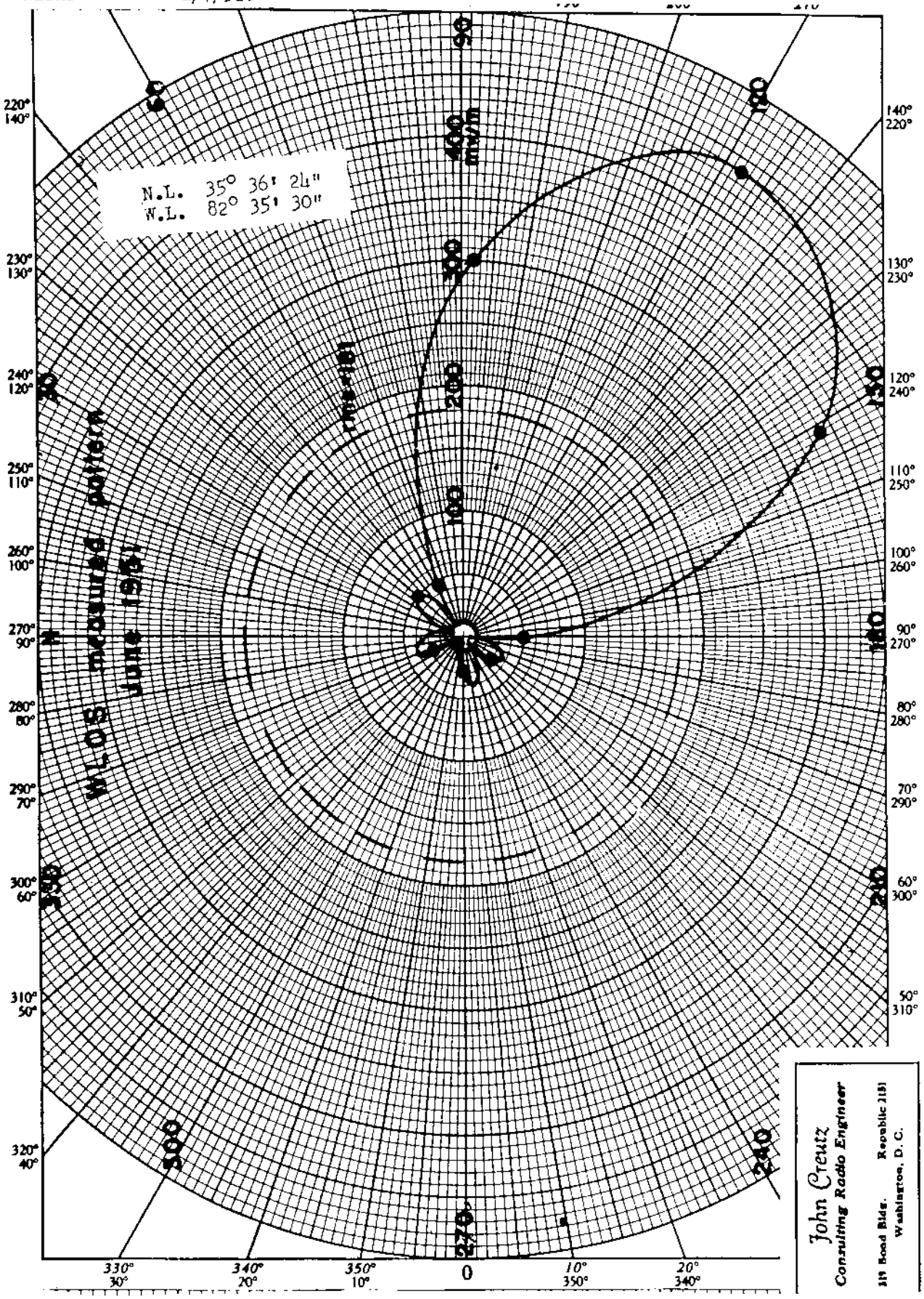

WKKE
ASHEVILLE, NC
FIG 10 A
DIXIE B. McKEY Consulting
ROBERT C. SHAW Radio Engineers
SKYWAY BROADCASTING CORP.
ASHEVILLE, N. C.
NIGHT HORIZONTAL RADIATION PATTERN
1380 KC.
NIGHT - 1 KW
RMS = 234 MV/M
LINE OF TOWERS
TOLERANCE
WNBG 312 MI
WBNX 590 MI
WMRZ 663 MI
WSYB 743 MI
CKPC 733 MI
CMHK 907 MI
WTSP 541 MI
FT. WAYNE, IND. 406 MI
ATLANTA, GA. 165 MI
KOTA 1240 MI
KWK 470 MI
KIDO 1875 MI
KTSM 1405 MI
KBMD 887 MI
MV/M
N
NORWOOD MASSACHUSETTS
CODEX BOOK COMPANY INC
NO 3124 POLAR COORDINATE

WKKE


DIXIE B. McKEY Consulting
ROBERT C. SHAW Radio Engineers
SKYWAY BROADCASTING CORP.
ASHEVILLE, N. C.
NIGHT HORIZONTAL RADIATION PATTERN
1380 KC. NIGHT - 1 KW.
ASHEVILLE, N.C.
MV/M
TOLERANCE
WKKE 743 MI
CKOC 733 MI
WBNX 590 MI
WNBS 312 MI
CMHK 907 MI
WTSP 941 MI
FT. WAYNE, IND. 496 MI
KBWD 887 MI
ATLANTA, GA. 165 MI
KOTA 1240 MI
KWIK 1270 MI
KDO 1875 MI
KTSM 1405 MI
FIG 10 B

WKKE

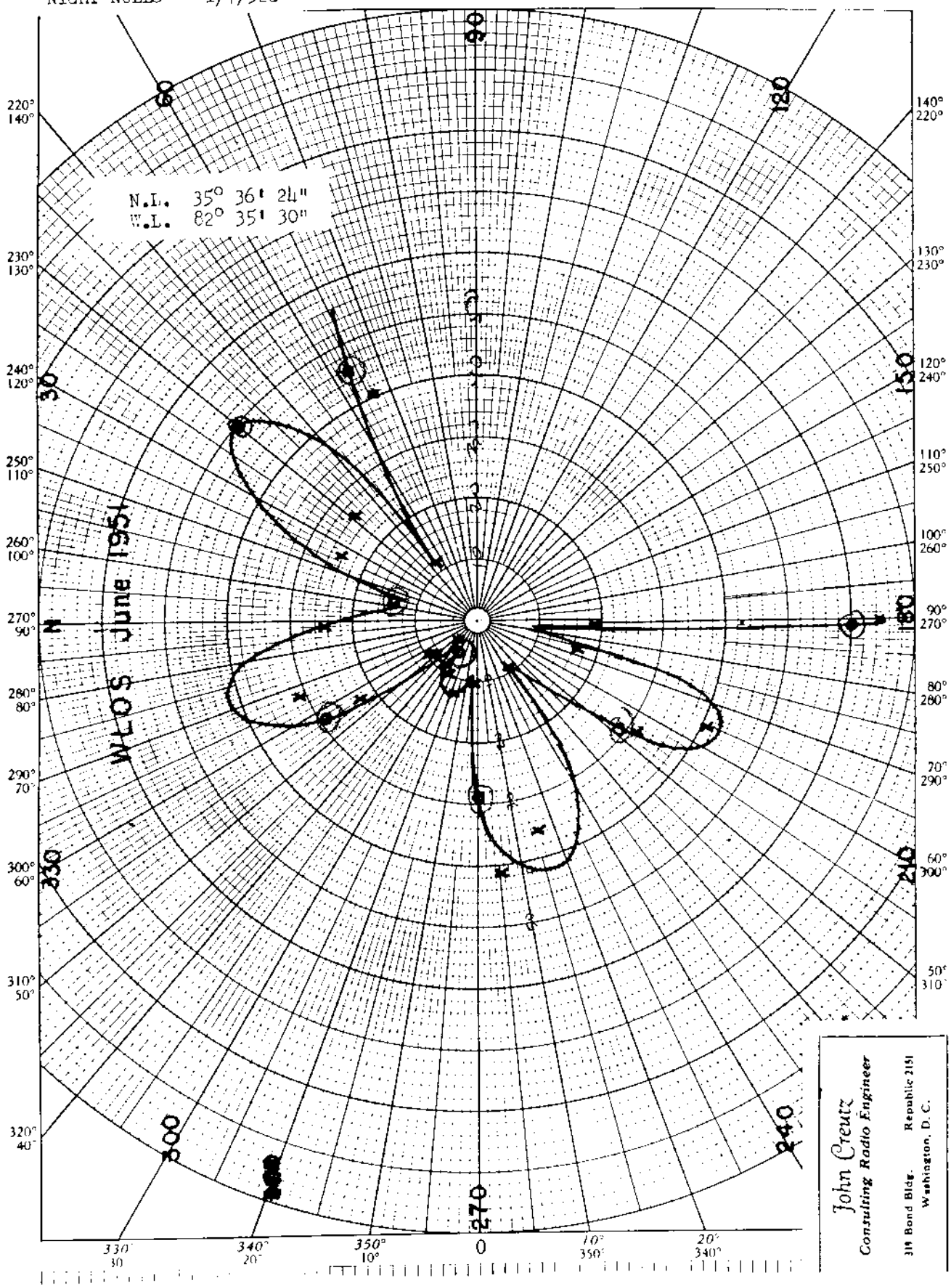
MEASURED NIGHT | WLOS, ASHEVILLE, N.C. 1/7/52G | 1 KW, 5KW-LS, U, DA-N | 1380 KC



RECD FCC 10/31/51 ACC 12/28/51 BZ-3363 WLOS, ASHEVILLE, N. C. 1380 KC

WKKE

MEASURED NIGHT NULLS — WLOS, ASHEVILLE, N.C. 1/7/52G — 1 KW, 5KW-LS, U, DA-N — 1380 KC

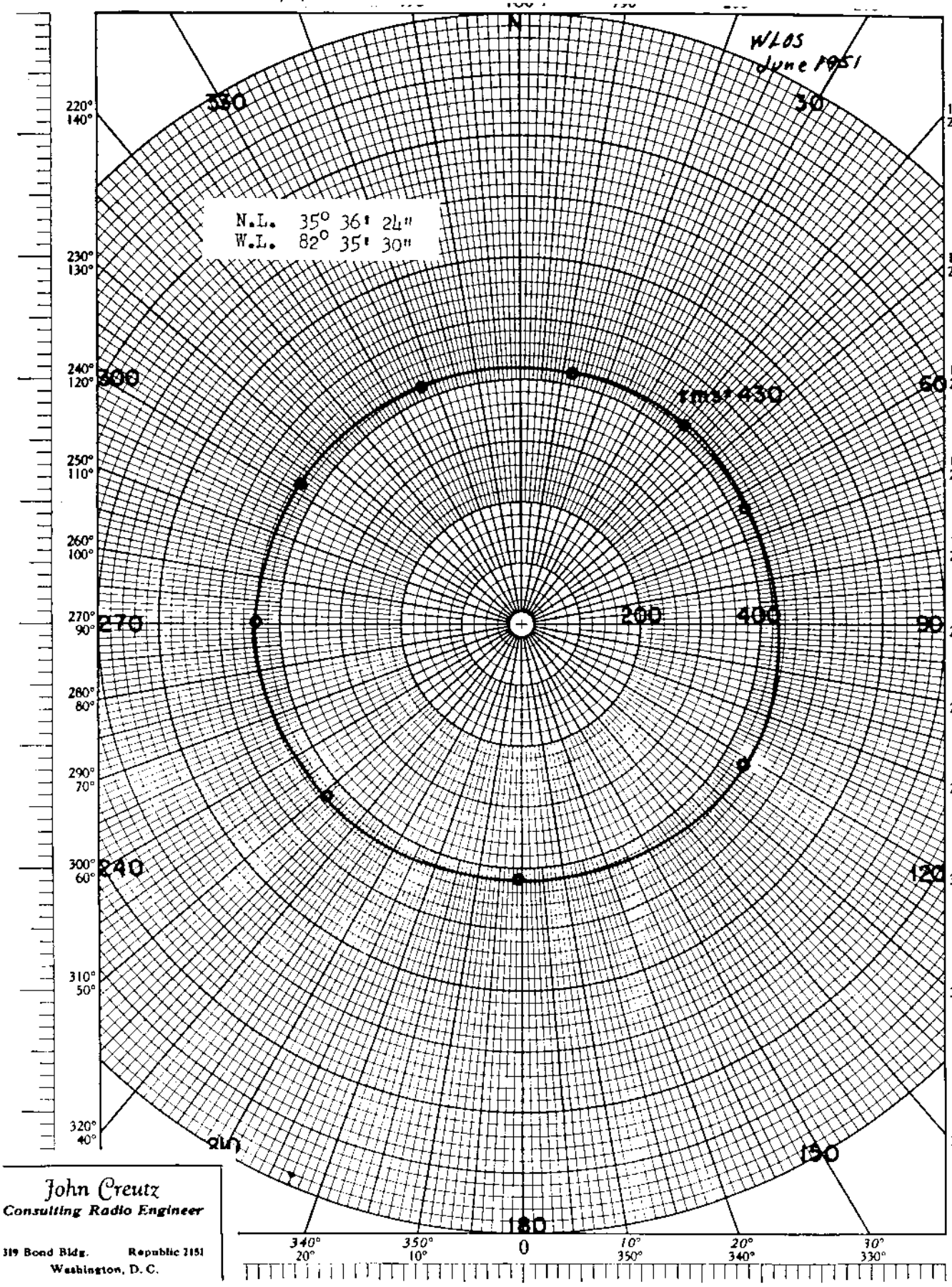


John Creutz
Consulting Radio Engineer
Republic 2151
318 Bond Bldg. Washington, D.C.

RECD FCC 10/31/51 ACC 12/28/51 BZ-3363 — WLOS, ASHEVILLE, N. C. — 1380 KC

WKKE

MEASURED NON-DA | WLOS, ASHEVILLE, N. C. 1/7/52G | 1 KW, 5KW-LS, U, DA-N | 1380 KC



John Creutz
Consulting Radio Engineer
319 Bond Bldg. Republic 2151
Washington, D. C.

RECD FCC 10/31/51 ACC 12/28/51 BZ-3363 | WLOS, ASHEVILLE, N. C. | 1380 KC

WLCY

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WLCY — Main Studio: St. Petersburg, Florida

Frequency: 1380 kHz — Power: 5 kW

Notification List No. 1593 — Date: August 14, 1974 — Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:
North Latitude: 27° 52' 15"
West Longitude: 82° 37' 03"

ANTENNA CHARACTERISTICS

Authorized for Nighttime operation. (DA-N)
Number of elements: 3
Type of elements: End towers are tapered, self-supporting, Center tower is uniform cross-section, guyed.

TOWER:	N(#1)	C(#2)	S(#3)
HEIGHT ABOVE INSULATORS:	178'	445'(225°)	178'(90°)
PHASING:	+85°	+16°	-85°
FIELD RATIO:	1	1.87	1

SPACING AND ORIENTATION: Adjacent elements are spaced 178' (90°) on a line bearing 156° true.

GROUND SYSTEM: 120-178' equally spaced copper radials plus 120-30' interspaced radials about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers.

Predicted effective Night Field: 545 mv/m at rated power.

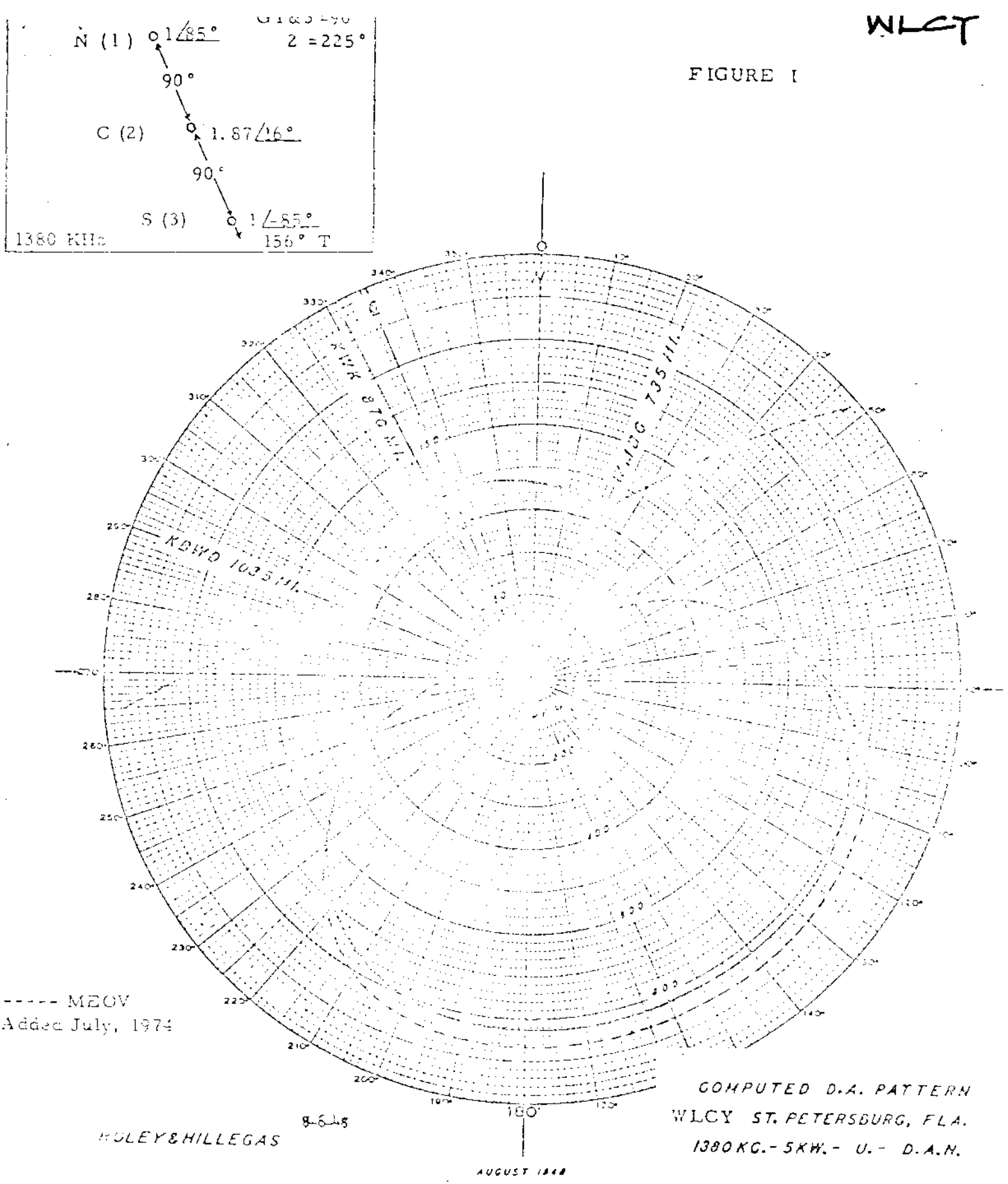
Predicted effective Day Field: (omnidirectional) 610 mv/m at rated power.

Note: This notification concerns only a change to add measv's of radiation to the nighttime directional pattern with Daytime operation continued as previously notified.

CTR NO 30462A4

WLCT

FIGURE 1



----- MEOV
Added July, 1974

COMPUTED D.A. PATTERN
WLCY ST. PETERSBURG, FLA.
1380 KC. - 5 KW. - U. - D.A.N.

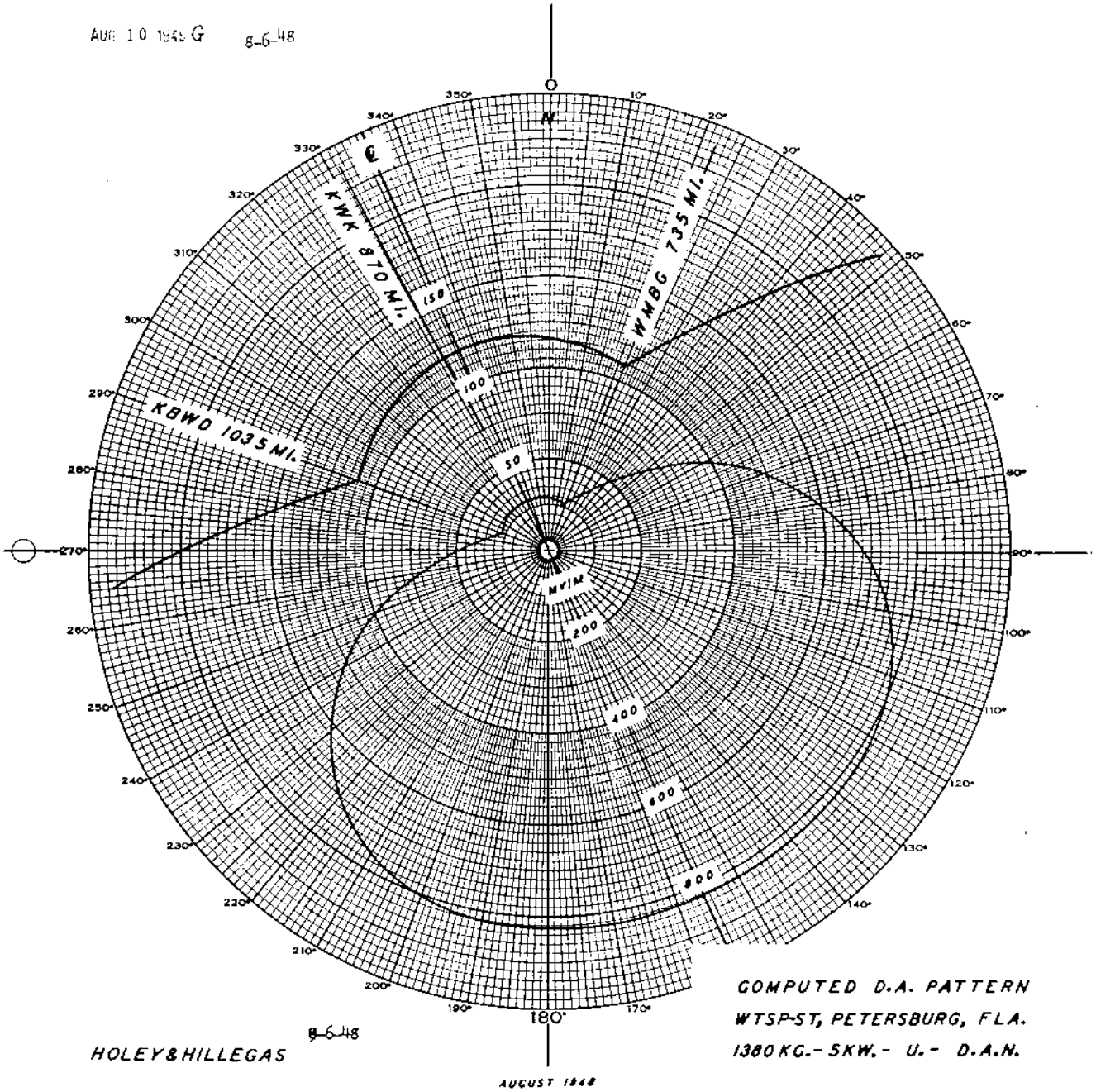
RILEY & HILLEGAS

CHARLES SMITH
WASHINGTON, D. C.

WLCY

1380

AUG 10 1948 G 8-6-48



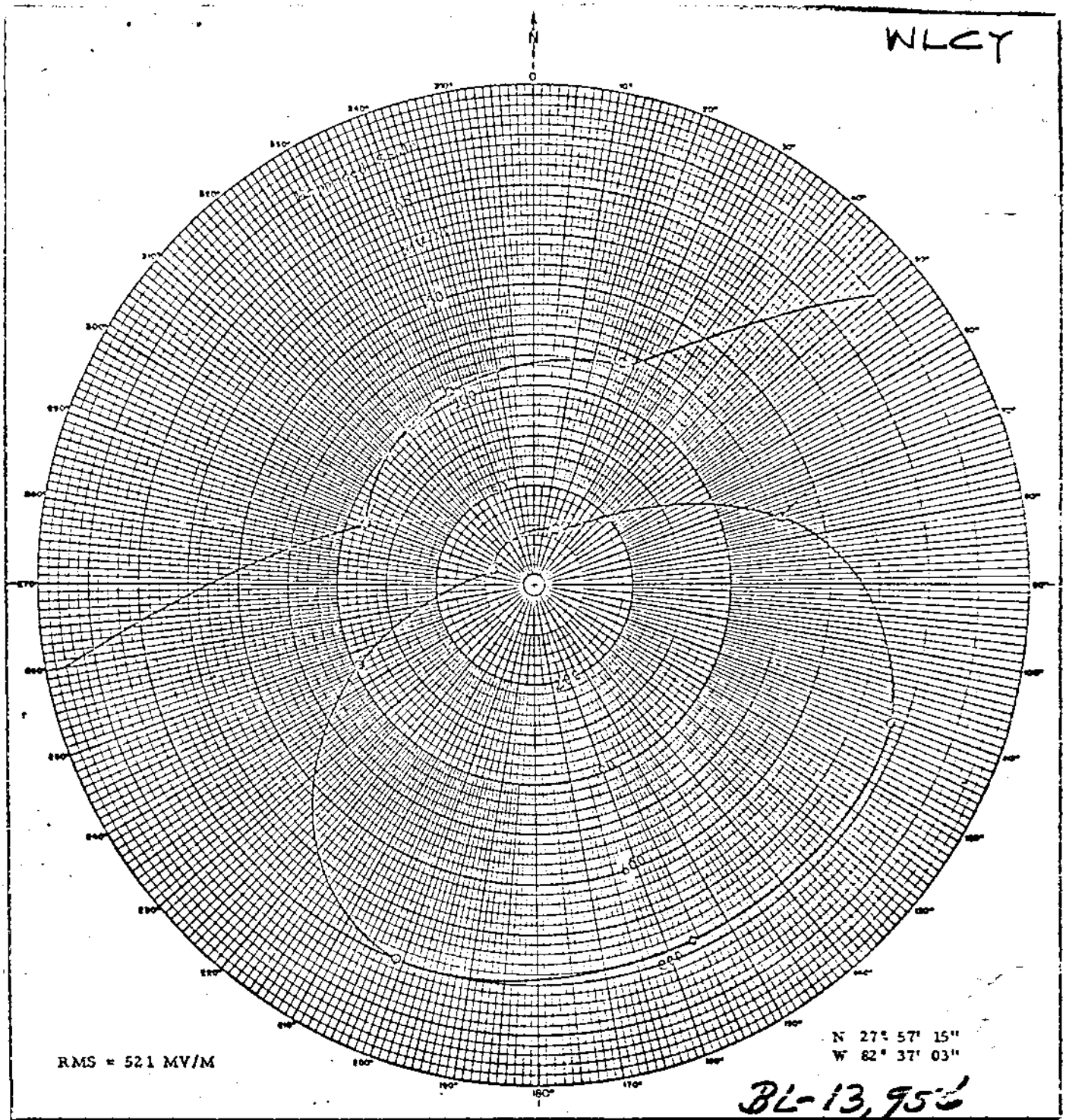
8-6-48

HOLEY & HILLEGAS

COMPUTED D.A. PATTERN
WTSP-ST, PETERSBURG, FLA.
1380 KC.- 5KW.- U.- D.A.N.

AUGUST 1948

WLCY



RMS = 521 MV/M

N 27° 57' 15"
W 82° 37' 03"

BL-13,955

G1 & 3 = 90°
2 = 225°

N (1) .575 /-162°

90°

C (2) 1/0

90°

S (3) .624 /-3°

1380 kHz 156° T

CHARLES SMITH
WASHINGTON, D. C.

FIGURE XI-B

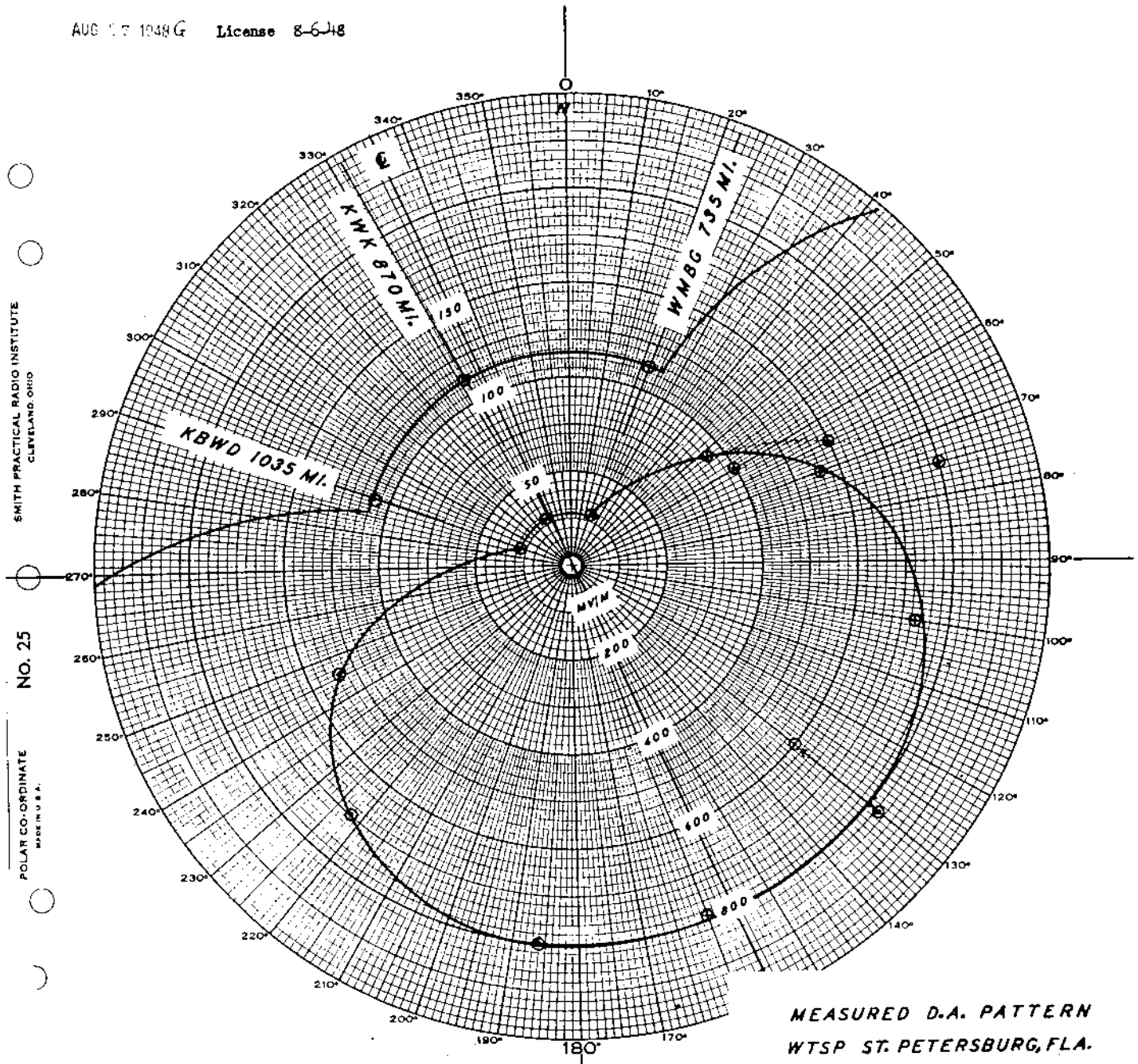
MEASURED DIRECTIONAL NIGHT PATTERN
WLCY, INC.
RADIO STATION WLCY
ST. PETERSBURG, FLORIDA
1380 KHz 5 KW U, DA-N

JULY 1974

WLCY

1550

AUG [illegible] 1948 G License 8-6-48



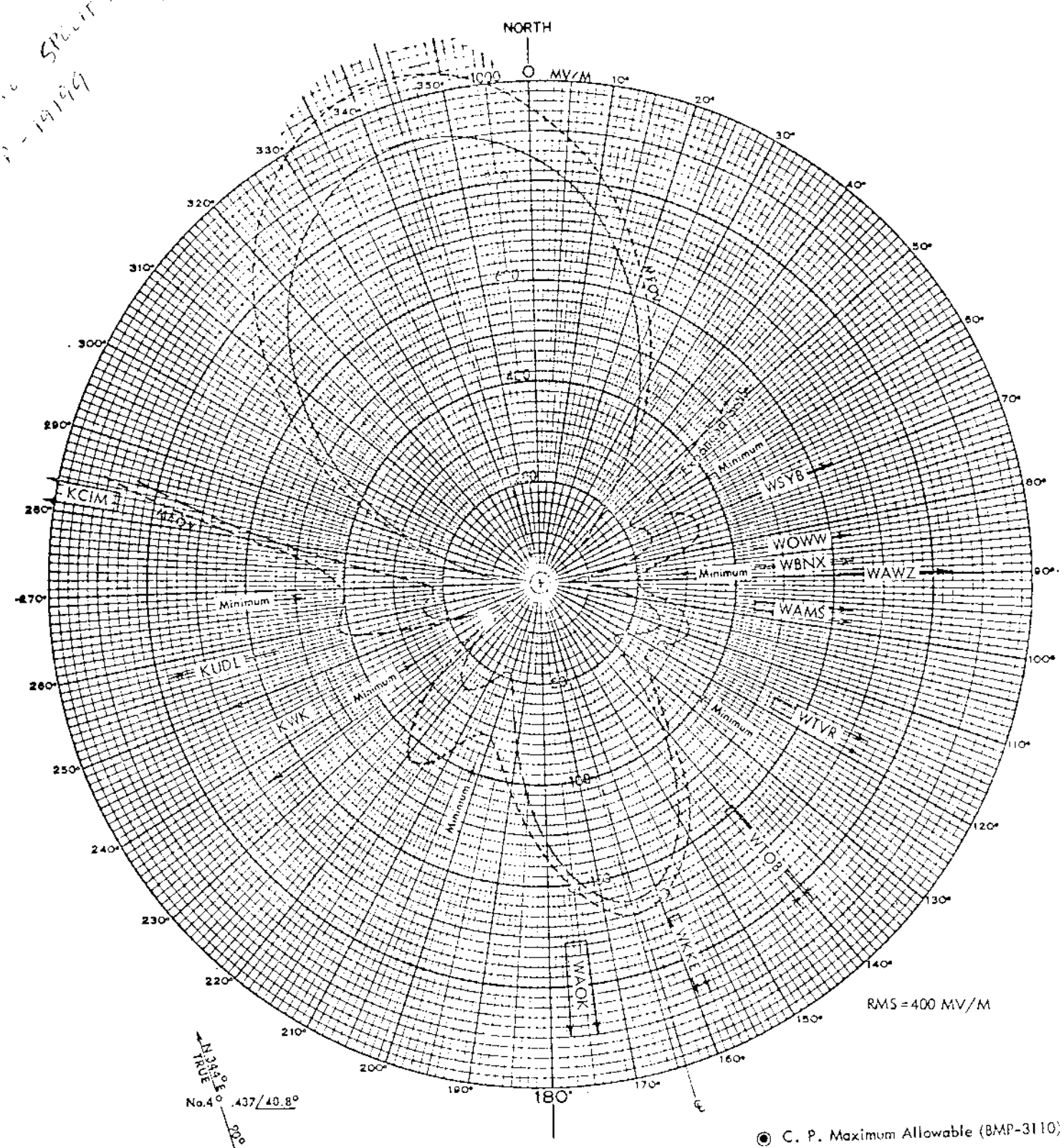
MEASURED D.A. PATTERN
WTSP ST. PETERSBURG, FLA.
1380 KG. - 5 KW. - U - D.A.N.

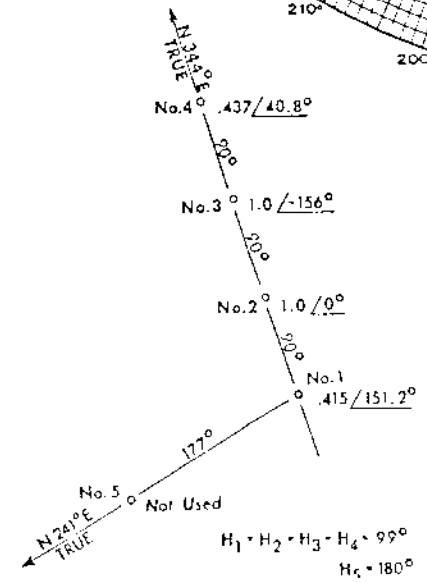
HOLEY & HILLEGAS License 8-6-48

AUGUST 1948

90° = H = 178' 40° 182 end towers
H: 445 (225°) 449' center
[illegible] [illegible]

WMEE





◉ C. P. Maximum Allowable (BMP-3110)

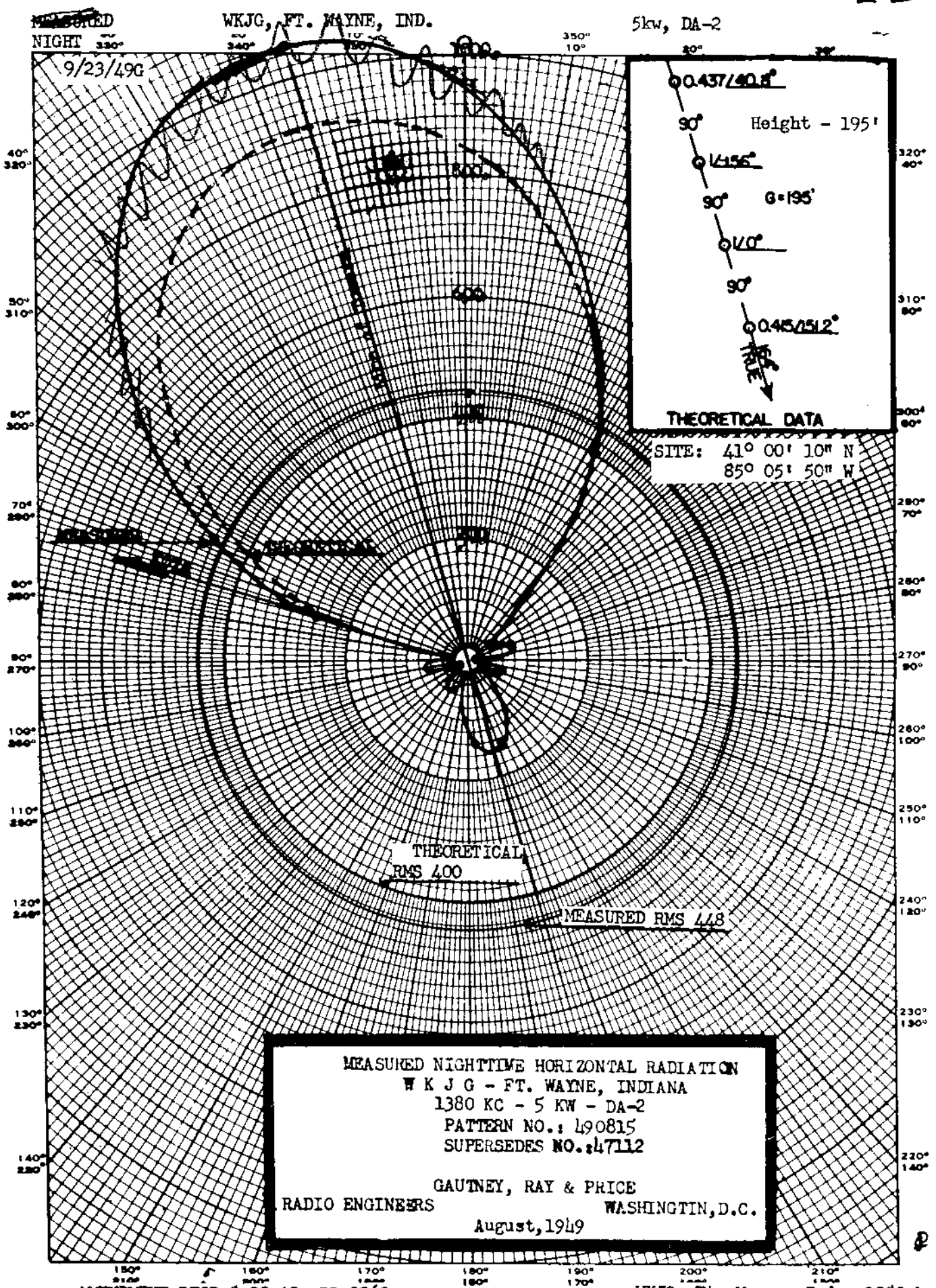
North Latitude 41° 00' 10"
West Longitude 85° 05' 50"

FIGURE 2
NIGHTTIME HORIZONTAL PLANE RADIATION PATTERN
WMEE 5 KW-DA-2 1380 KHz
FORT WAYNE, INDIANA

Prepared by

Lohnes and Culver — Washington, D. C

WMEE



AMENDMENT RECD 8-23-49 BL-2963

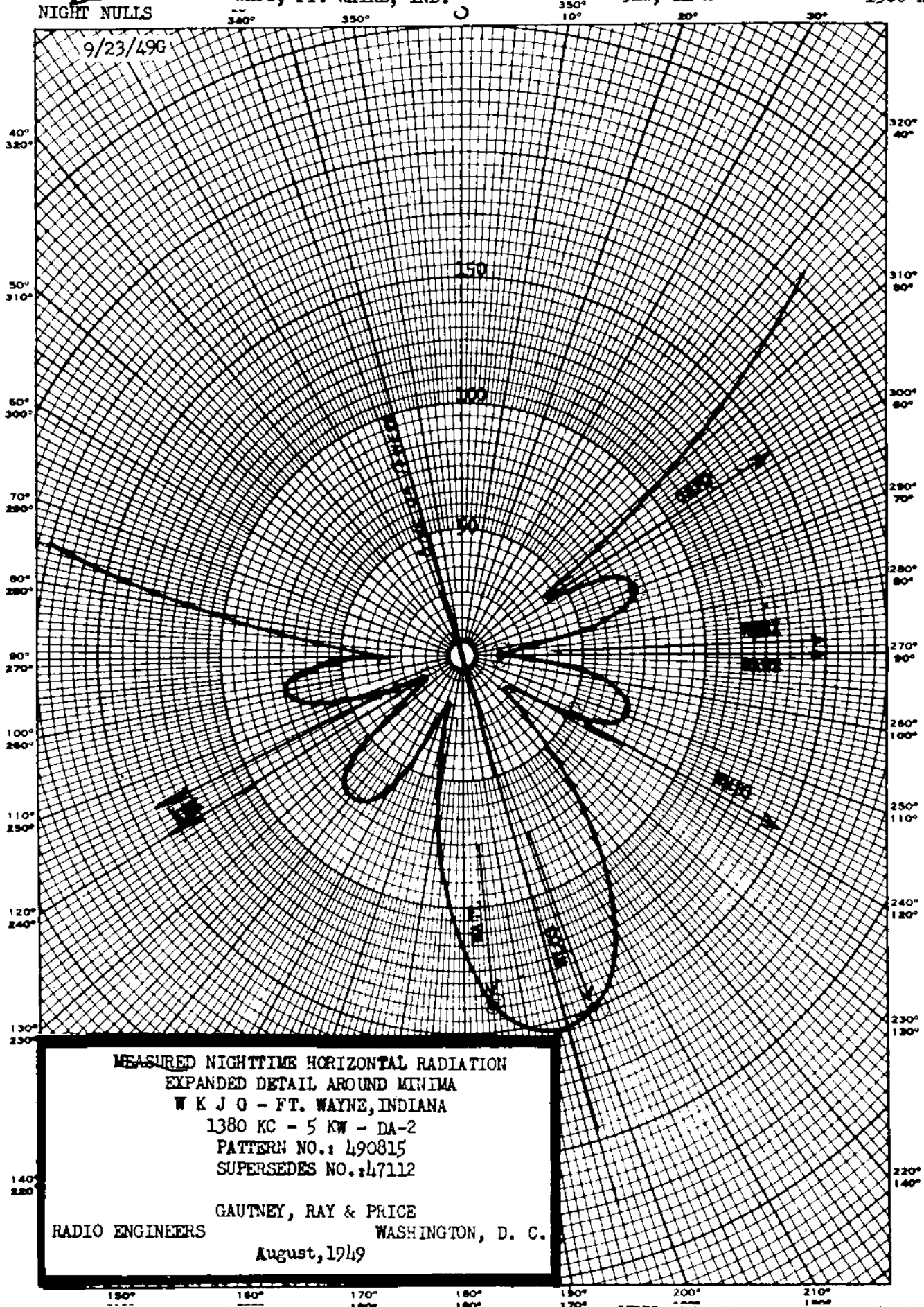
WKJG, Ft. Wayne, Ind. 1380 kc

WMEE

MEASURED
NIGHT NULLS

WKJG, FT. WAYNE, IND. 5kw, DA-2 1380 kc

9/23/49



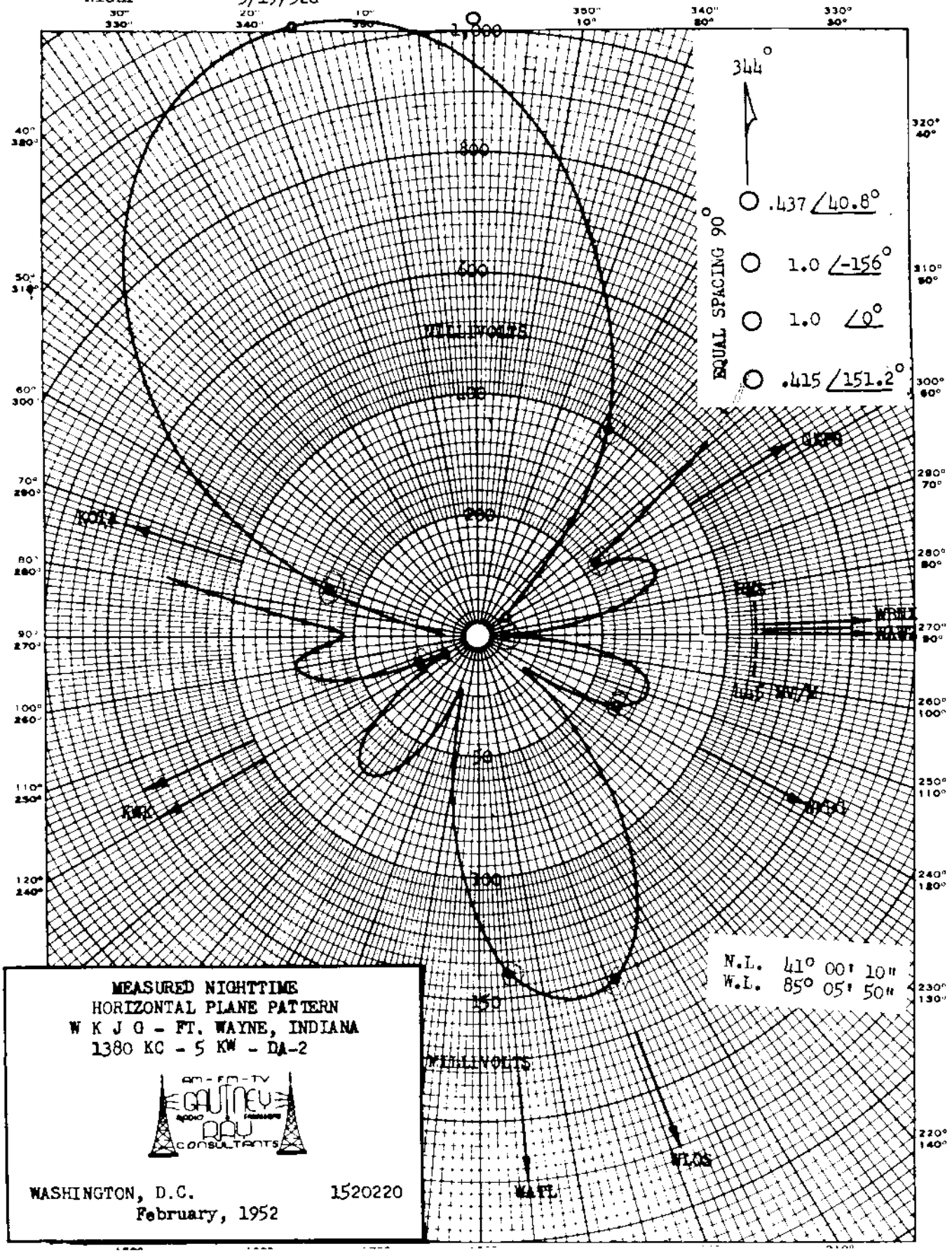
AMENDMENT RECD 8-23-49 BL-2963

WKJG, Ft. Wayne, Ind. 1380 kc

WMEE

MEASURED NIGHT — WKJG, FT. WAYNE, IND. — 5 KW, U, DA-2 — 1380 KC

3/19/52G



MEASURED NIGHTTIME
HORIZONTAL PLANE PATTERN
W K J G - FT. WAYNE, INDIANA
1380 KC - 5 KW - DA-2

am-fm-tv GAUTNEY RAU CONSULTANTS

WASHINGTON, D.C. 1520220
February, 1952

SUPPLEMENTAL INFO RECD 2/28/52 ACC 2/28/52 BL-2963 (Supplemental Information)

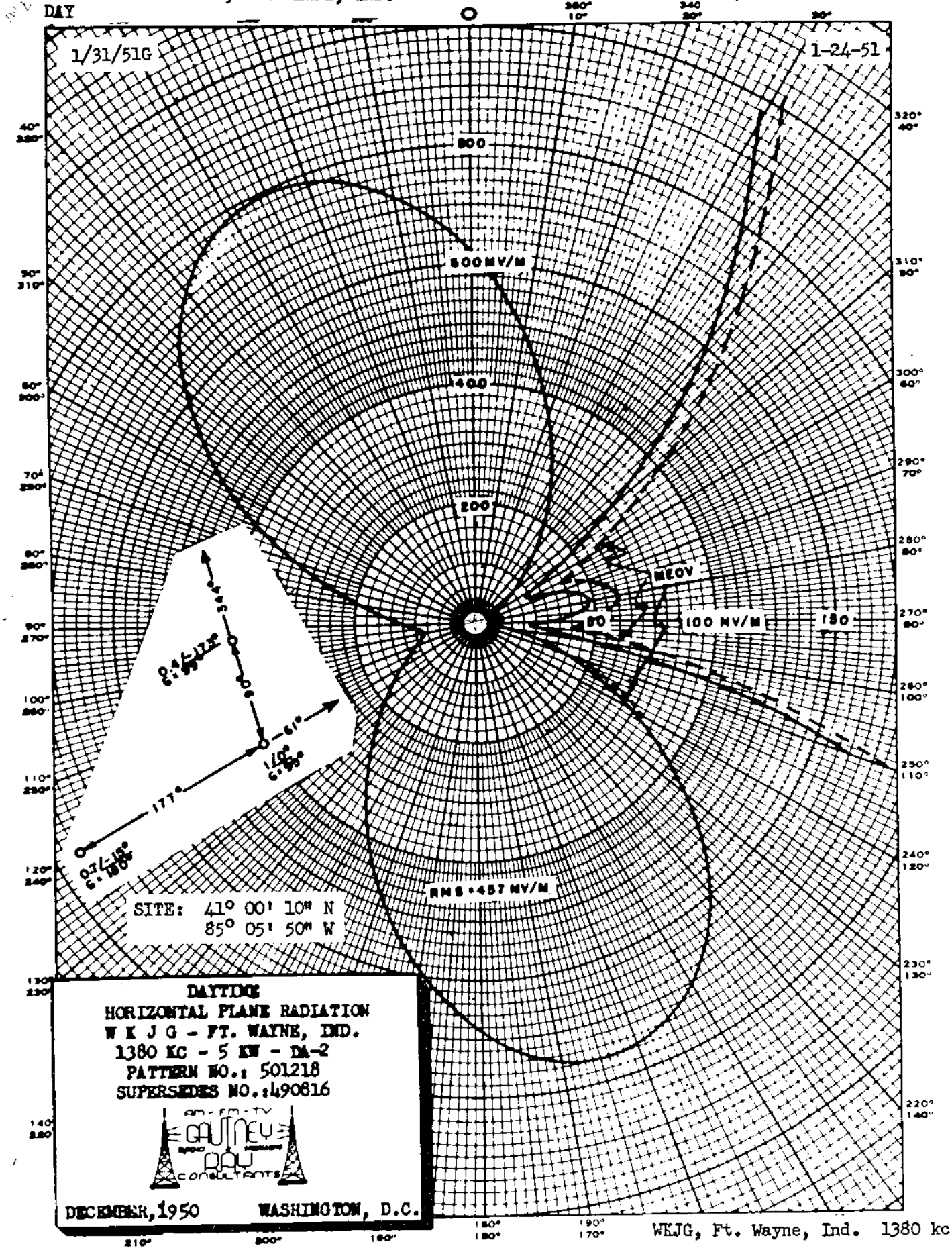
WKJG, FT. WAYNE, IND. 1380 KC

WMEE

PROPOSED DAY — WKJG, FT. WAYNE, IND. — 5kw, DA-2 — 1380 kc

1/31/51G

1-24-51



DAYTIME
HORIZONTAL PLANE RADIATION
W K J G - FT. WAYNE, IND.
1380 KC - 5 KW - DA-2
PATTERN NO.: 501218
SUPERSEDES NO.: 490616

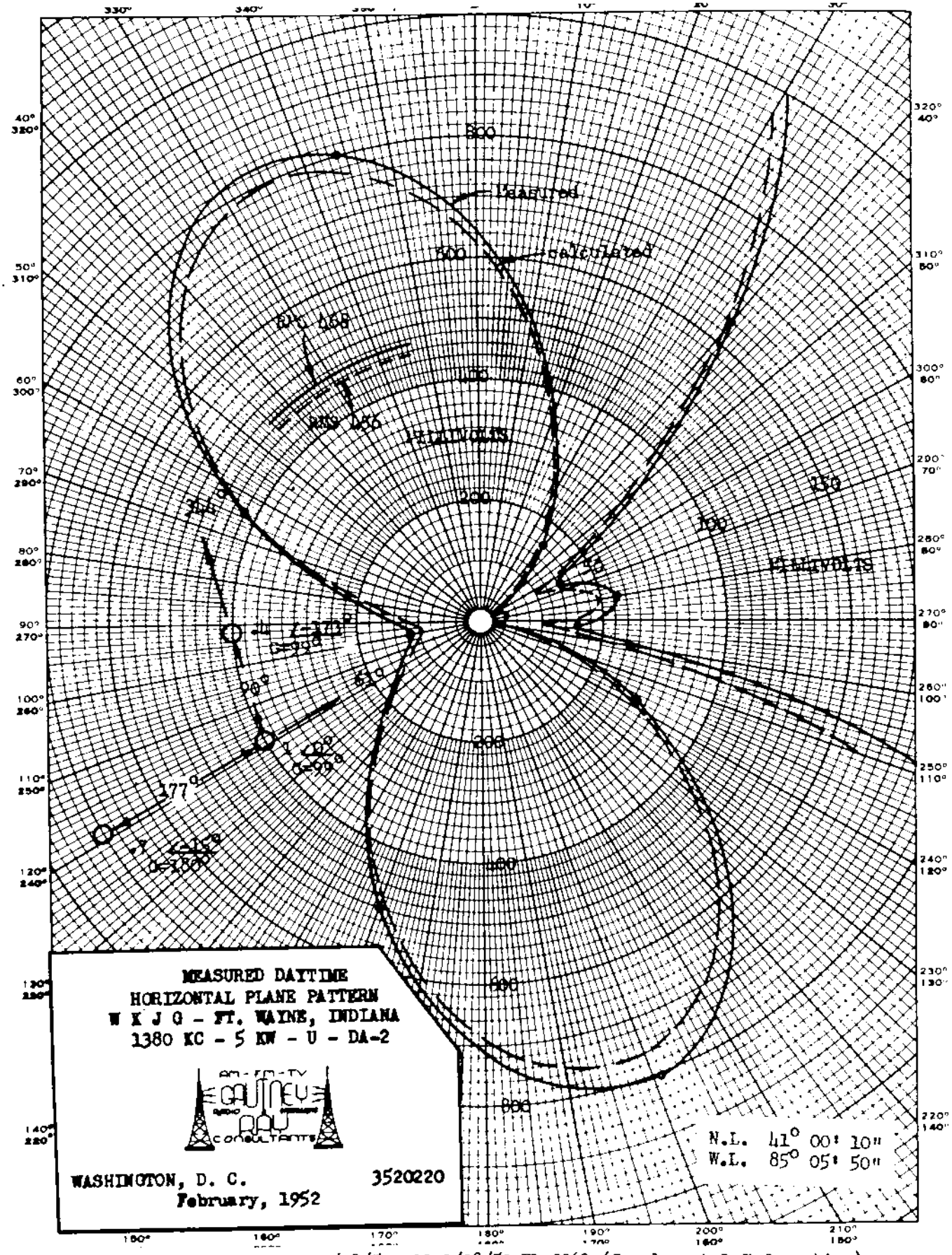
GAUTNEY AAU CONSULTANTS

DECEMBER, 1950 WASHINGTON, D.C.

WKJG, Ft. Wayne, Ind. 1380 kc

WMEE

MEASURED DAY | WKJG, FT. WAYNE, IND. 3/19/52G | 5 KW, U, DA-2 | 1380 KC



SUPPLEMENTAL INFO RECD 2/28/52 ACC 2/28/52 BL-2963 (Supplemental Information)

WKJG, FT. WAYNE, IND. 1380 KC

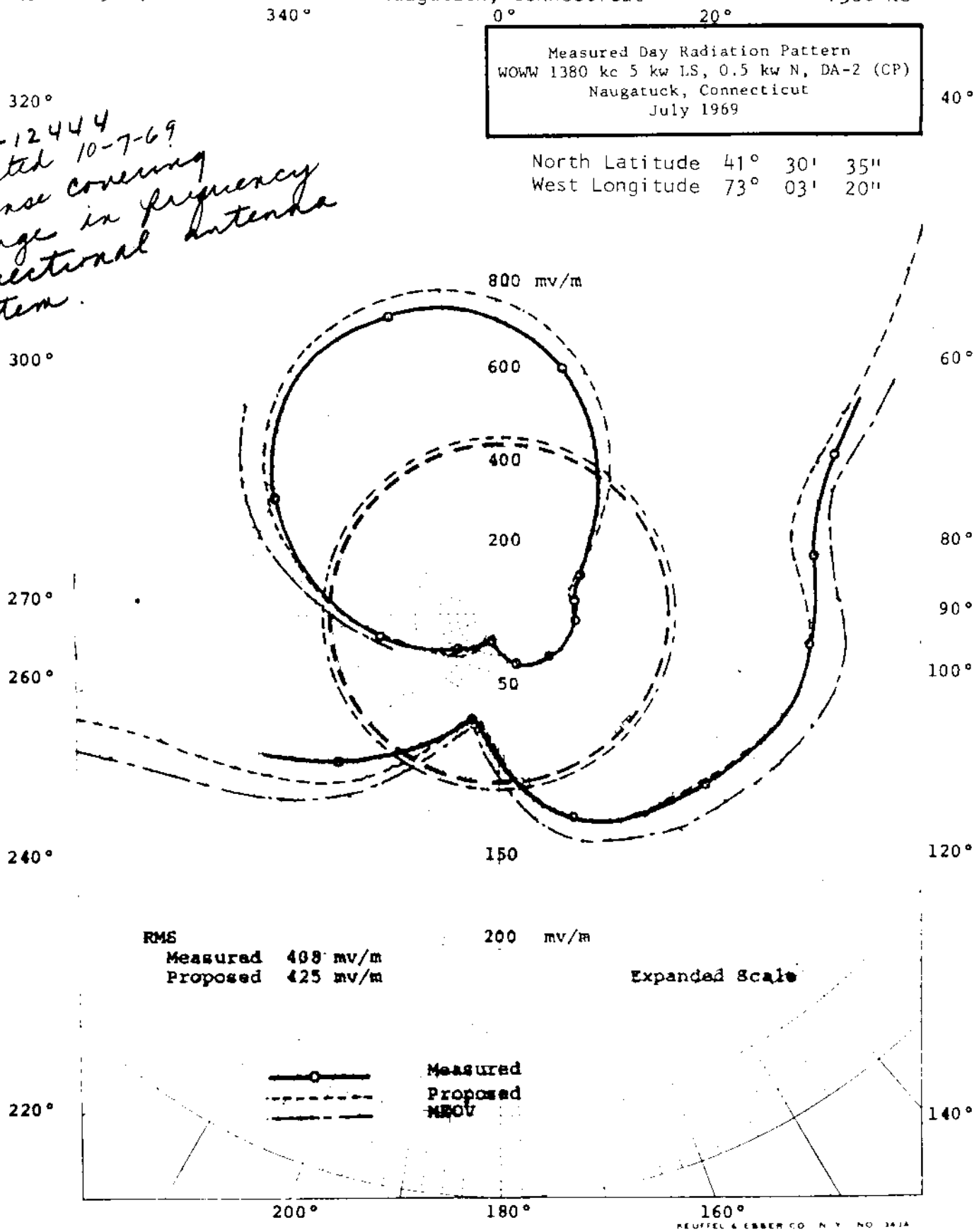
WOWW

Measured Day
(9-26-69ct)

Station WOWW
Naugatuck, Connecticut

500w, 5kw-LS, DA-2, U
1380 kc

BL-12444
Granted 10-7-69
license covering
change in frequency
& directional antenna
system.



Measured Day Radiation Pattern
WOWW 1380 kc 5 kw LS, 0.5 kw N, DA-2 (CP)
Naugatuck, Connecticut
July 1969

North Latitude 41° 30' 35"
West Longitude 73° 03' 20"

RMS
Measured 408 mv/m
Proposed 425 mv/m

REUFFEL & ESSER CO. N. Y. NO. 341A

MALARKEY, TAYLOR & ASSOCIATES

FCC File No. BL-12444
Accepted 9-9-69

Station WOWW
Naugatuck, Connecticut

1380 kc

WOWW

Measured Night
(9-26-69ct)

Station WOWW
Naugatuck, Connecticut

500w, 5kw-LS, DA-2, U
1380 kc

BL-12444 10/7/69
Granted covering increase in equipment directional antenna system

Measured Night Radiation Pattern
WOWW 1380 kc 5 kw LS, 0.5 kw N, DA-2 (CP)
Naugatuck, Connecticut
July 1969

Amended Pattern

North Latitude 41° 30' 35"
West Longitude 73° 03' 20"

Expanded scales

RMS=124 mV/m

Measured
Proposed
MEOV

FCC File No. BL-12444
Accepted 9-9-69

Station WOWW
Naugatuck, Connecticut

1380 kc

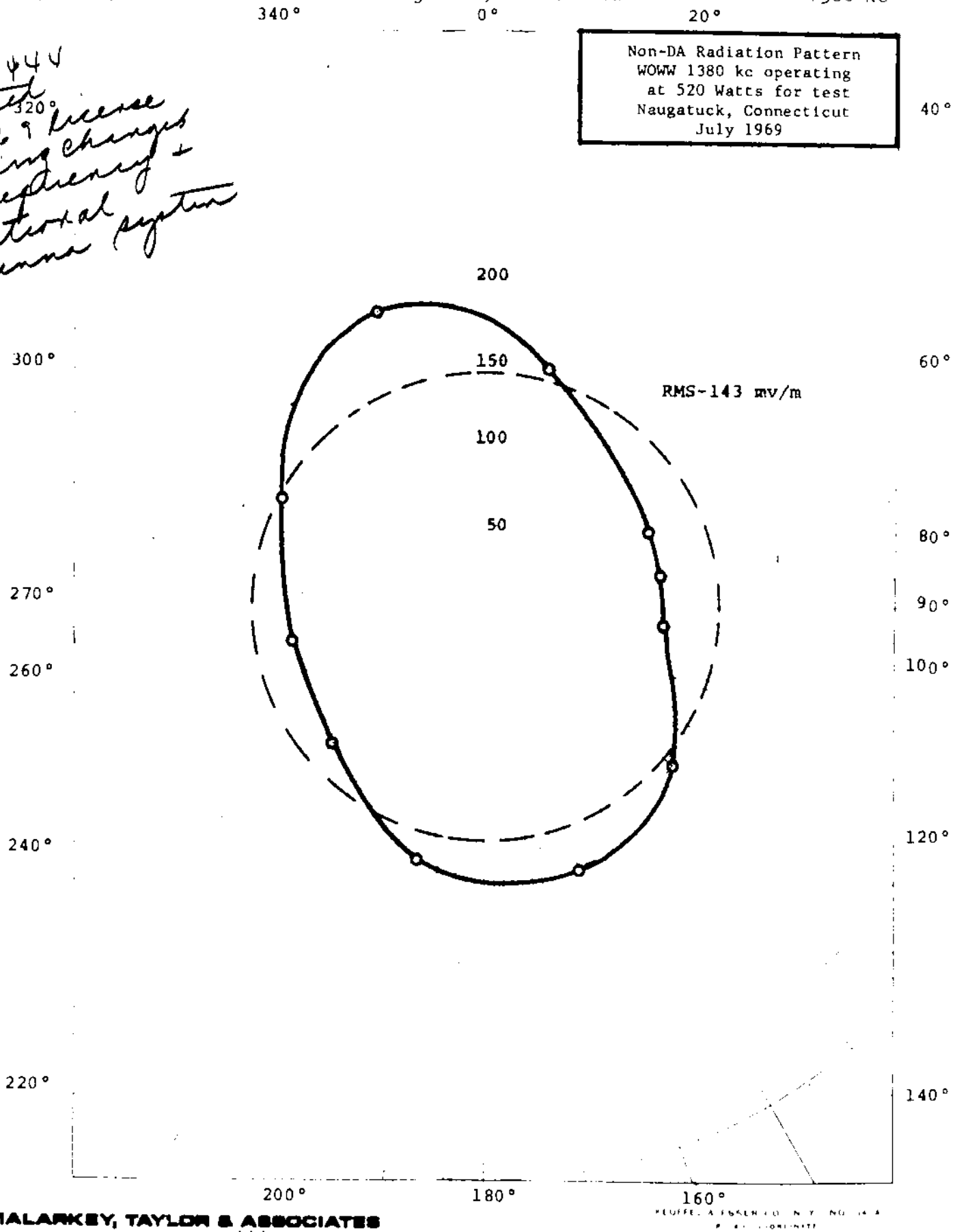
WOWW

Measured Non-DA
(9-26-69ct)

Station WOWW
Naugatuck, Connecticut

500w,5kw-LS,DA-2,U
1380 kc

BL-12444
granted
9-7-69 license
covering changes
in frequency +
directional system
antenna system



Non-DA Radiation Pattern
WOWW 1380 kc operating
at 520 Watts for test
Naugatuck, Connecticut
July 1969

MALARKEY, TAYLOR & ASSOCIATES

FCC File No.BL-12444
Accepted 9-9-69

Station WOWW
Naugatuck, Connecticut

1380 kc

WOWW

Proposed Day
(10-26-65ct)

Station WOWW
Naugatuck, Connecticut

500w,5kw-LS,DA-2,U
1380 kc

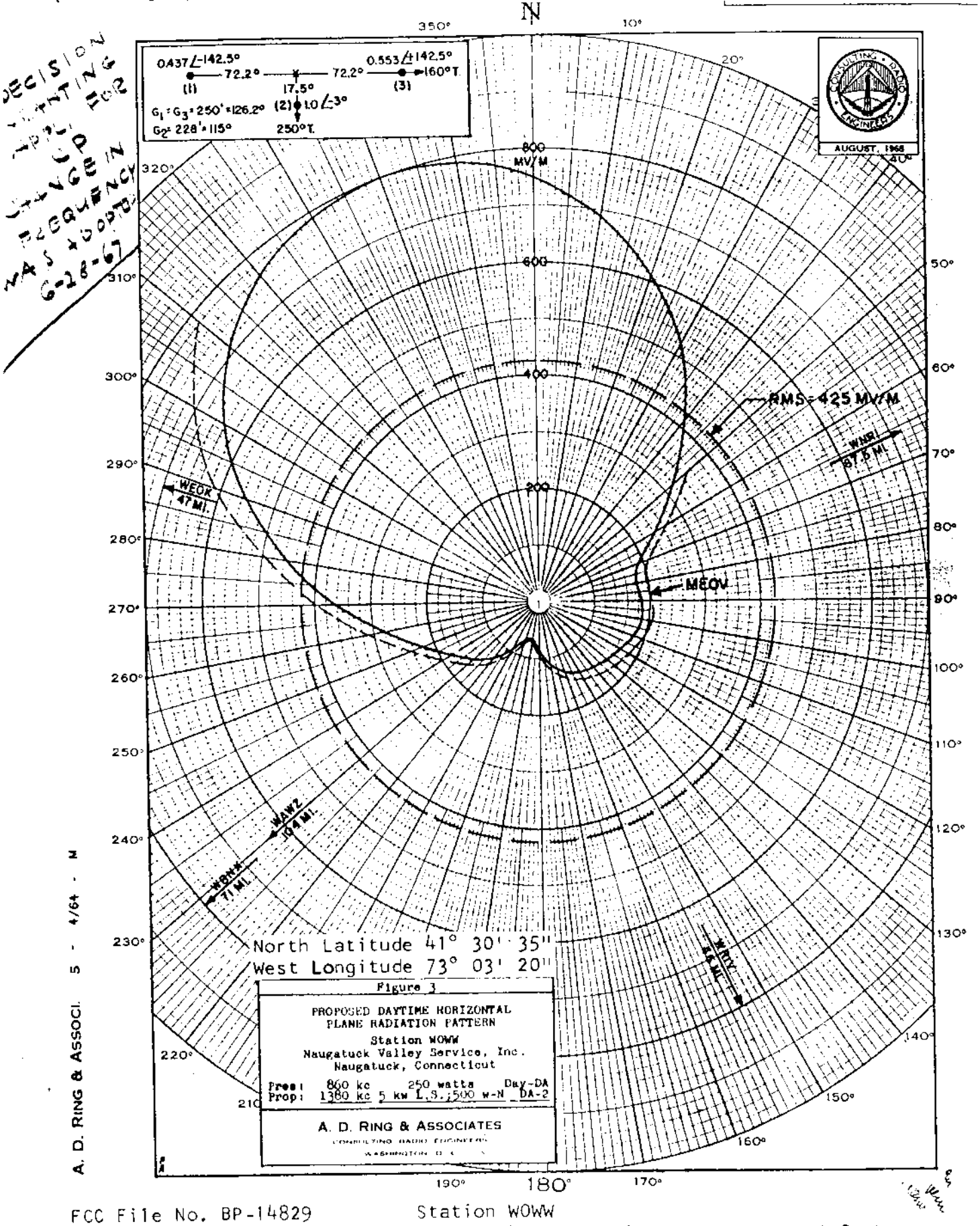


Figure 3

PROPOSED DAYTIME HORIZONTAL PLANE RADIATION PATTERN
Station WOWW
Naugatuck Valley Service, Inc.
Naugatuck, Connecticut

Pres:	860 kc	250 watts	Day-DA
Prop:	1380 kc	5 kw L.S.;500 w-N	DA-2

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

A. D. RING & ASSOCI. 5 - 4/64 - M

DECISION PENDING FOR AMPLIFICATION OF CHANGE IN FREQUENCY AS PROPOSED 6-26-67

FCC File No. BP-14829
Accepted 10-15-65 Amended

Station WOWW
Naugatuck, Connecticut

1380 kc

WOWW

Proposed Night
(10-26-65ct)

Station WOWW
Naugatuck, Connecticut

500w, 5kw-LS, DA-2, U
1380 kc

REVISION
GRANTING
APPL. FOR
UP
CHANGE IN
FREQUENCY
WAS
ADOPTED
6-28-67

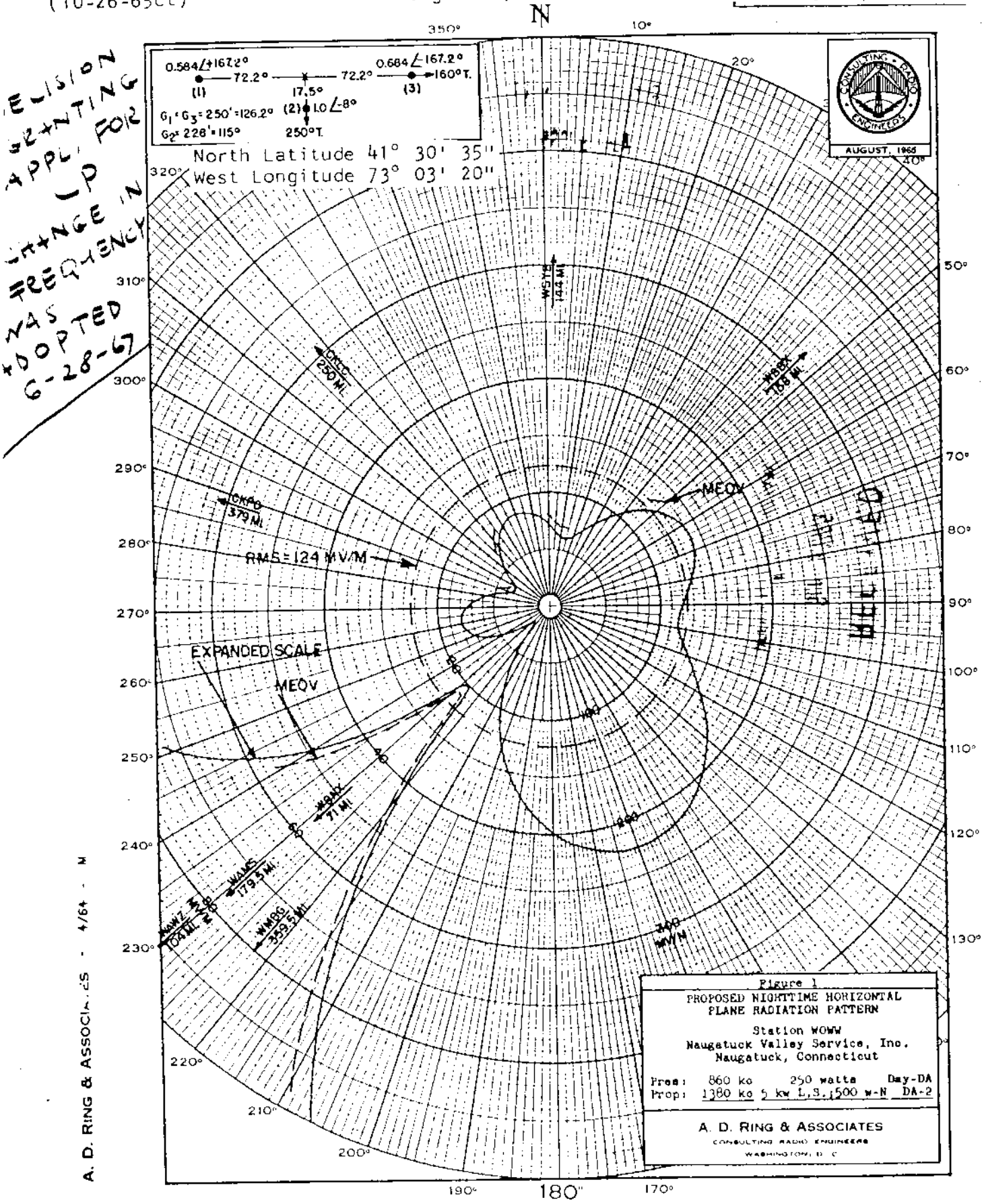


Figure 1
PROPOSED NIGHTTIME HORIZONTAL PLANE RADIATION PATTERN

Station WOWW
Naugatuck Valley Service, Inc.
Naugatuck, Connecticut

Pres: 860 kc 250 watts Day-DA
Prop: 1380 kc 5 kw L.S.;500 w-N DA-2

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

A. D. RING & ASSOCIATES - 4/64 - M

FCC File No. BP-14829
Accepted 10-15-65 Amended

Station WOWW
Naugatuck, Connecticut

1380 kc

WPHM

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WPHM — Main Studio: Port Huron, Michigan

Frequency: 1380 kHz — Power: 5 kW

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

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:
North Latitude: 42° 51' 50"
West Longitude: 82° 29' 40"

ANTENNA CHARACTERISTICS

Authorized for Daytime and Nighttime operation. (DA-2)
Number of elements: 7
Type of elements: Series-excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	#1	#2	#3	#4	#5	#6	#7
HEIGHT ABOVE INSULATORS:	All Towers 200' (101°)						
NIGHT PHASING:	-218.6°	-71.19°	+73.89°	+218.6°	---	---	---
NIGHT FIELD RATIO:	0.3810	1.0	0.9853	0.3810	---	---	---
DAY PHASING:	-127.5°	+3.67°	+122.5°	---	-122.5°	+9.27°	+127.5
DAY FIELD RATIO:	1.0	1.654	1.0	---	1.0	1.474	1.0

SPACING AND ORIENTATION: Nighttime adjacent tower #1, #2, #3 and #4 are spaced 177.9' (90°) on a line bearing 168° true.

Daytime towers #1, #2, #3, #5, #6 and #7 are located in two rows with three towers per row.

Adjacent towers in a row are spaced 177.9' (90°) on a line bearing 168° true. End towers in each row forming the remaini side of the parallelogram are spaced 346' (175°) on a line bearing 78° true.

GROUND SYSTEM: 120-178' equally spaced copper radials plus a 24' square ground screen about each tower. Radials are shortened and bonded to transverse straps along intersections between tower

Predicted effective Night Field: 424 mv/m at rated power.

Predicted effective Day Field: 424 mv/m at rated power.

(Cont'd.)

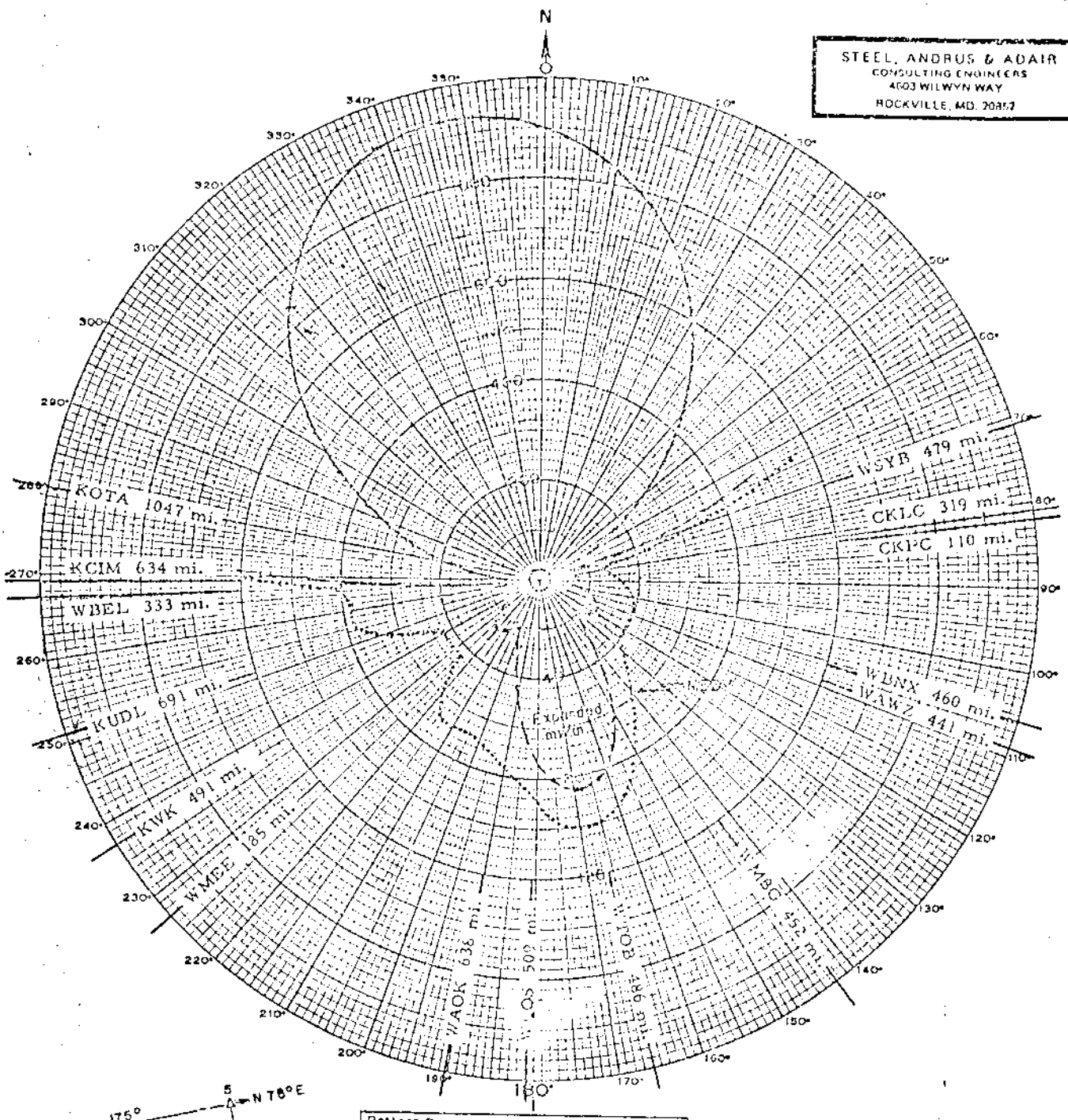
WPHM

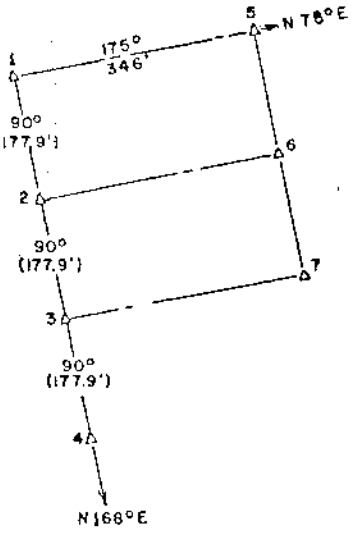
Note: Please retain the Daytime directional antenna radiation pattern notified for station WTTH (now WPHM) in United States Change List Number 986 dated November 28, 1962 and attach to this Revised Description Sheet and Nighttime patterns. This notification concerns only changes in the meovs of radiation in the Nighttime operation of the station with Daytime operation continued as previously notified.

CTR NO 30532A3

WPHM

STEEL, ANDRUS & ADAIR
CONSULTING ENGINEERS
4803 WILWYN WAY
ROCKVILLE, MD. 20852





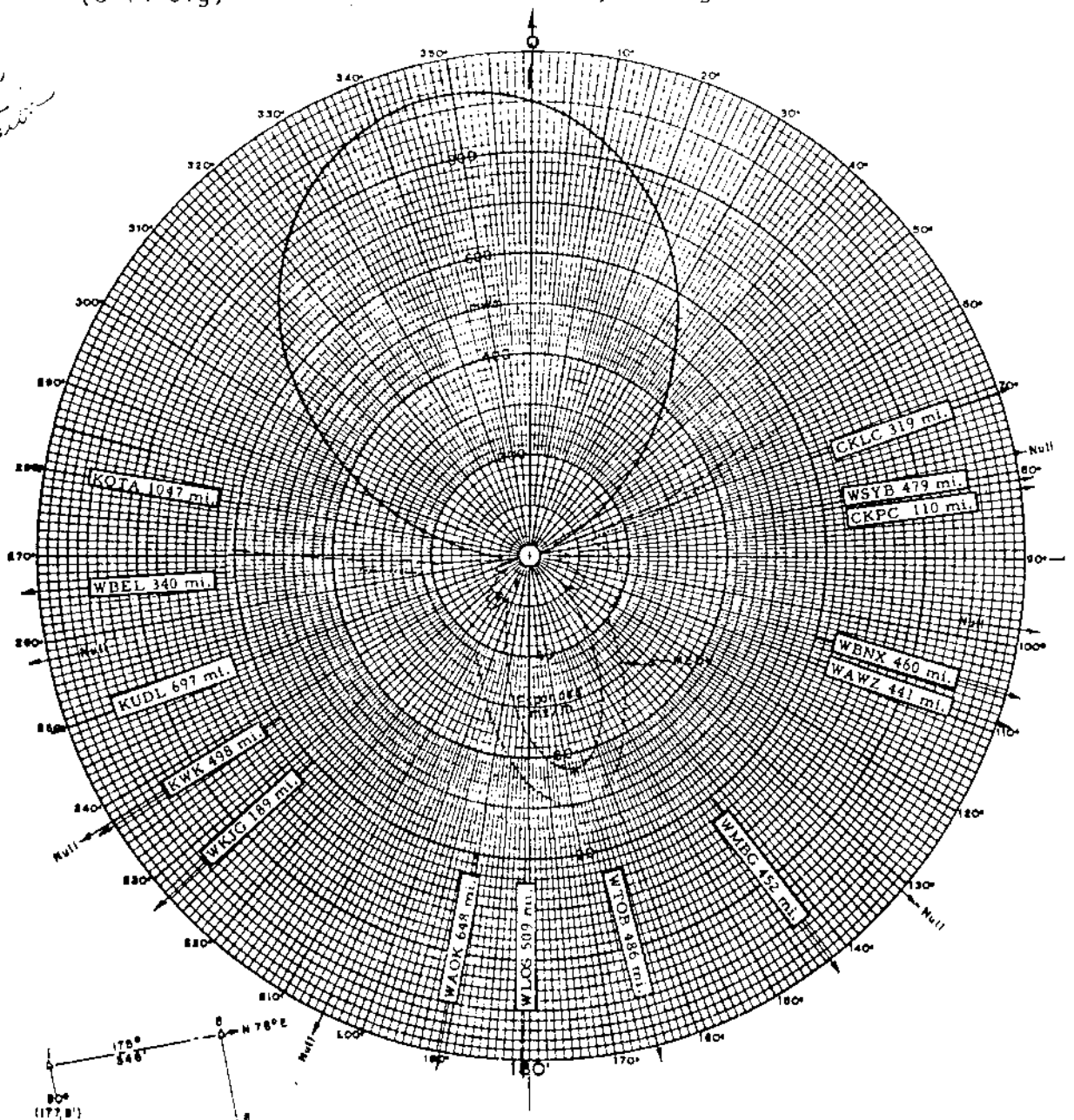
Pattern RMS = 424 Mv/m			
N 42° 51' 50"		W 82° 29' 40"	
Nighttime Operation			
Tower No.	Field Ratio	Phasing	Tower Height
1	.3810	-218.6°	101° (200')
2	1.0000	-71.19°	101° (200')
3	.9853	+73.89°	101° (200')
4	.3810	+218.6°	101° (200')
5	Not	Used	101° (200')
6	Not	Used	101° (200')
7	Not	Used	101° (200')

FIGURE 1
THEORETICAL NIGHTTIME HORIZONTAL
RADIATION PATTERN
WPHM PORT HURON, MICHIGAN
1380KHz 5KW DA-2 U
JANUARY 1974

~~WTTH~~
WPHM

PROPOSED NIGHT
(6-14-61g)

Station WTTH 5kw, DA-2,U
Port Huron, Michigan 1380 KC



Pattern RMS= 424 Mv/m			
N 42° 51' 40"		W 82° 28' 40"	
Nighttime Operation			
Tower No.	Field Ratio	Phasing	Tower Height
1	.3910	-218.6°	101° (200')
2	1.0000	-71.19°	101° (200')
3	.8863	+73.69°	101° (200')
4	.3810	+218.6°	101° (200')
5	Not	Used	101° (200')
6	Not	Used	101° (200')
7	Not	Used	101° (200')

Figure 2A
Proposed Nighttime Horizontal
Radiation Pattern
WTTH Port Huron, Michigan
Present: 1380Kc, 1Kw, DA-1, U
Proposed: 1380Kc, 5Kw, DA-2, U
April 1961

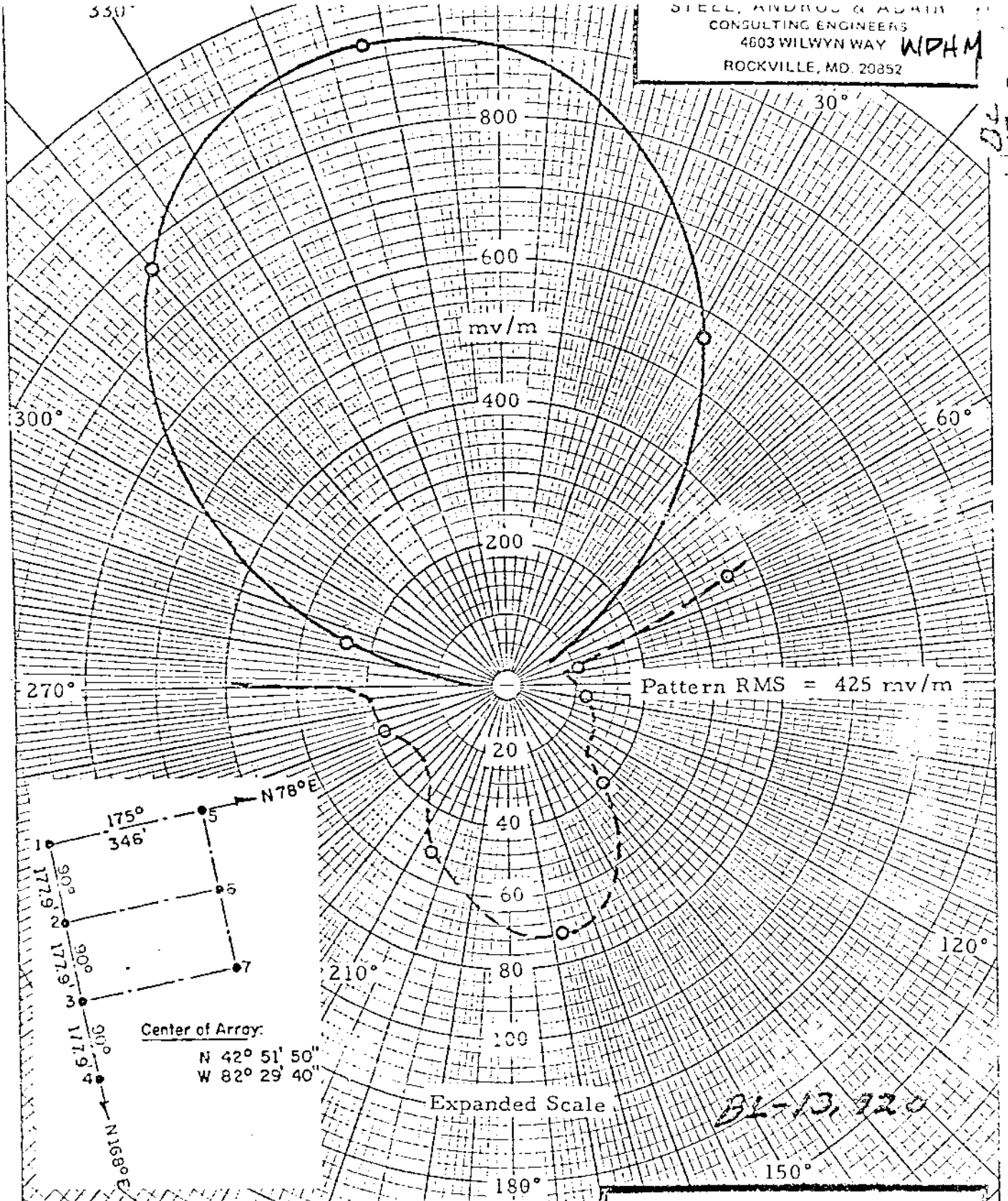
GREUTZ, STEEL & SNOWBERGER
Consulting Engineers
1519 K STREET, NORTHWEST
WASHINGTON 6, D. C.

FCC File No. BP-12312
Accepted 5-10-61 (Amended)

WTTH
Port Huron, Michigan 1380 KC

STEEL, ANDROS & ADAIR
CONSULTING ENGINEERS
4603 WILWYN WAY
ROCKVILLE, MD. 20852

WPHM



NIGHTTIME OPERATION

Tower no.	Calculated Field Ratio	Calculated Phase	Operating Base Current Ratio	Operating Phase
1	0.381	-218.6°	0.393	-140.5°
2	1.0	-71.9°	1.0	0°
3	0.9853	+73.89°	1.115	+158.5°
4	0.381	+218.6°	0.508	-81.5°
5,6 & 7	Not Used			

Figure 9
Measured Nighttime
Horizontal Radiation Pattern
WPHM Port Huron, Michigan
1380 KHz 5 KW DA-2 U
December 1974

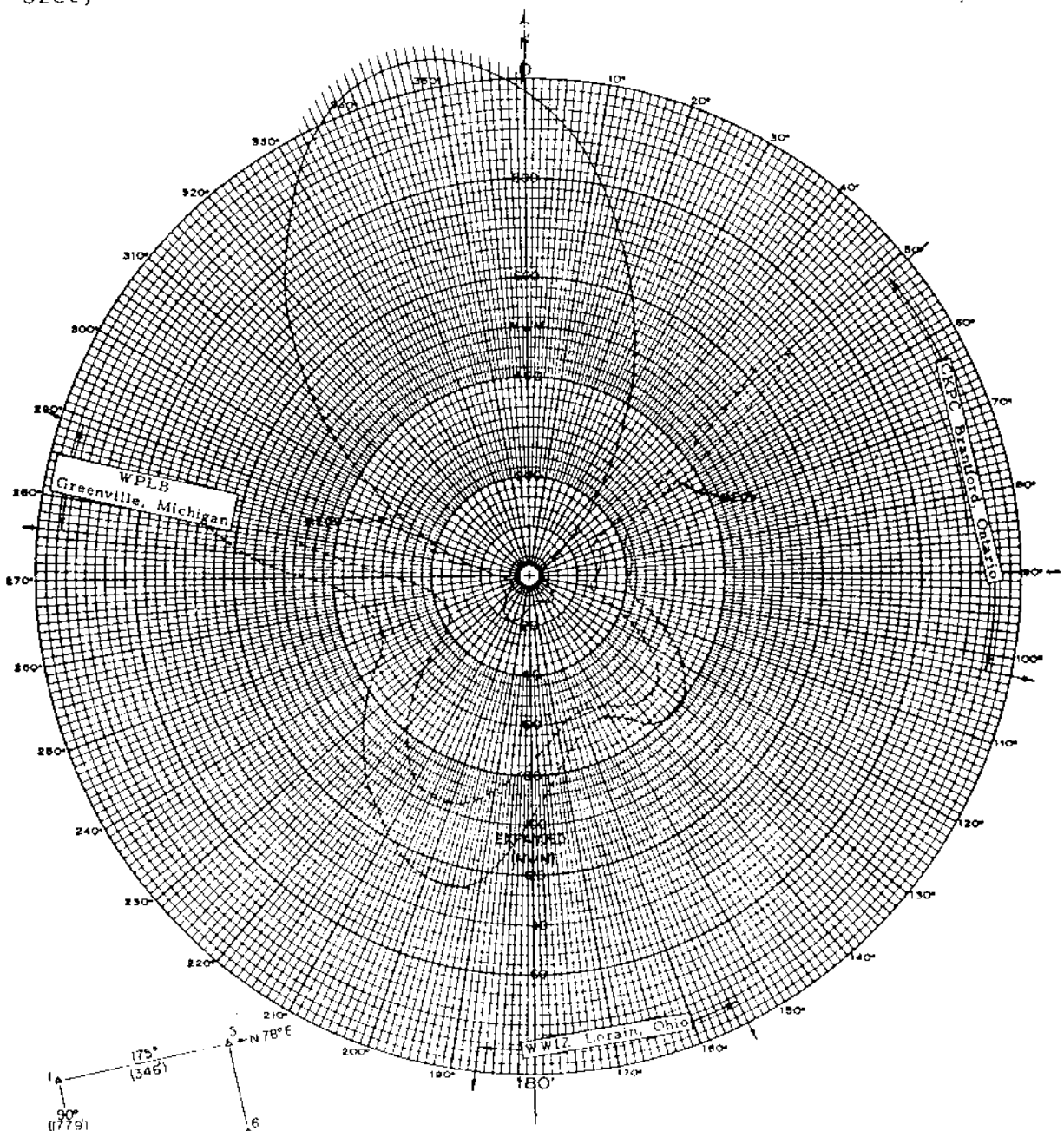
WPHM ~~WTTH~~

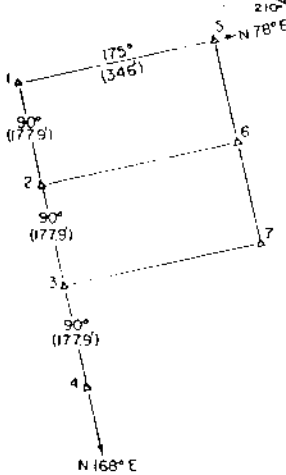
Proposed Day
(9-27-62ct)

Station WTTH
Port Huron, Michigan

5kw, DA-2, U
1380 kc

11-20-62
Inserted MCP
w/ changes in DA
pattern





Pattern RMS = 424 Mv/m			
N 42° 51' 50"		W 82° 29' 40"	
Daytime Operation			
Tower No	Field Ratio	Phasing	Tower Height
1	1.00	-127.5°	101° (200')
2	1.654	+38.7°	101° (200')
3	1.00	+122.5°	101° (200')
4	Not Used		
5	1.00	-122.5°	101° (200')
6	1.474	+92.7°	101° (200')
7	1.00	+127.5°	101° (200')

DAVID STEEL & ASSOCIATES
Communications Consulting Engineers
1413 H STREET, NORTHWEST
WASHINGTON 7, D. C.

Figure 2
Proposed Daytime Horizontal
Radiation Pattern
WTTH Port Huron, Michigan
1380 Kc 5 Kw DA-2 U
August 1962

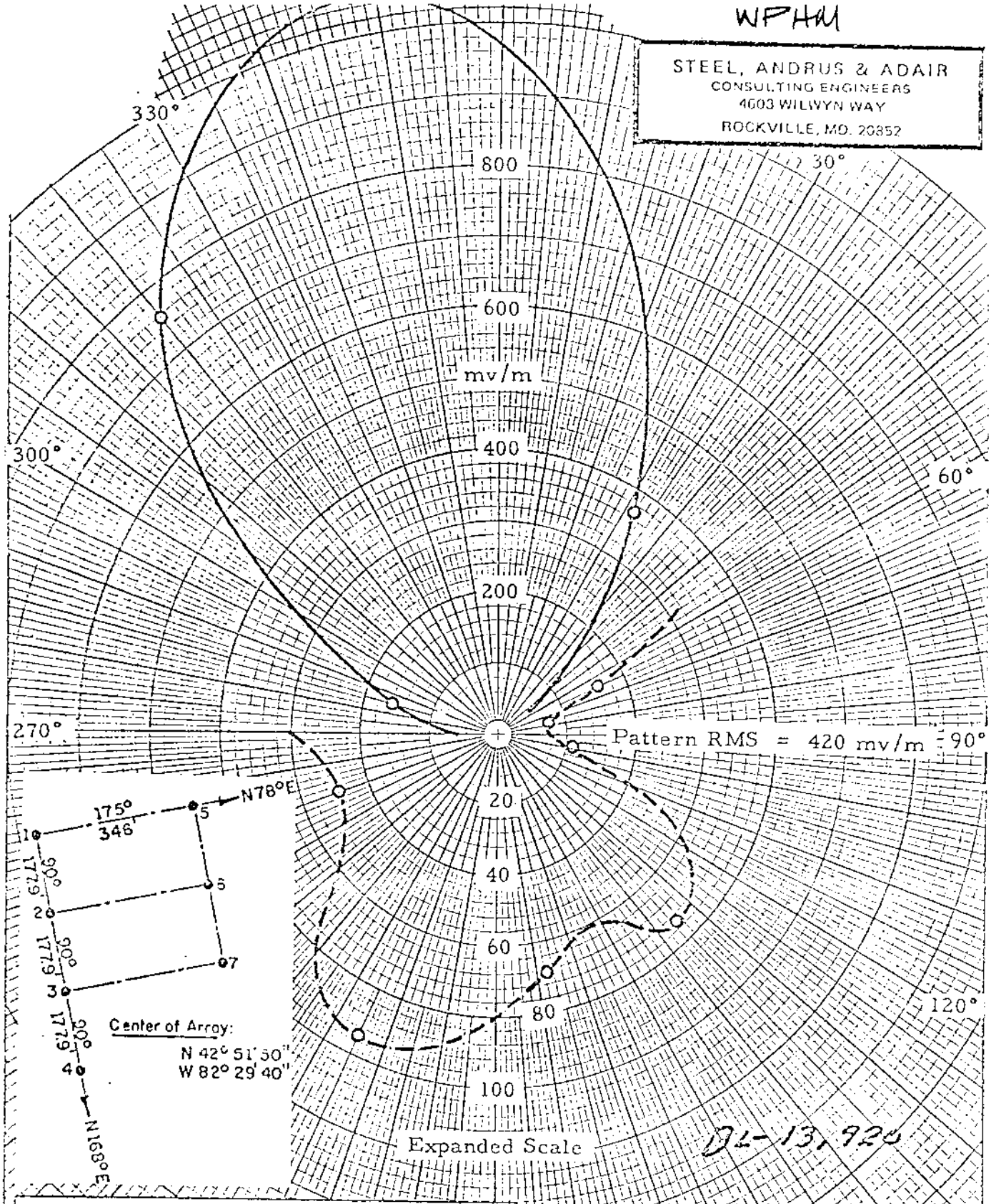
FCC File No. BMP-10532
Accepted 9-13-62

Station WTTH
Port Huron, Michigan

1380 kc

WPHM

STEEL, ANDRUS & ADAIR
CONSULTING ENGINEERS
4603 WILWYN WAY
ROCKVILLE, MD. 20852



DAYTIME OPERATION

Tower No.	Calculated Field Ratio	Calculated Phase	Operating Base Current Ratio	Operating Phase
1	1.0	-127.5°	.457	-125.5°
2	1.654	+3.67°	1.0	0°
3	1.0	+122.5°	.783	+127.5°
4		Not	Used	
5	1.0	-122.5°	.391	-128°
6	1.474	+9.27°	.870	-1.3°
7	1.0	+127.5°	.739	+108°

DL-13,926

Figure 8
Measured Daytime
Horizontal Radiation Pattern
WPHM Port Huron, Michigan
1380 KHz 5 KW DA-2 U
December 1974

~~WTTH~~ WPHM

Measured Non-DA
(4-30-63ct)

Station WTTH
Port Huron, Michigan

5kw, DA-2, U
1380 kc

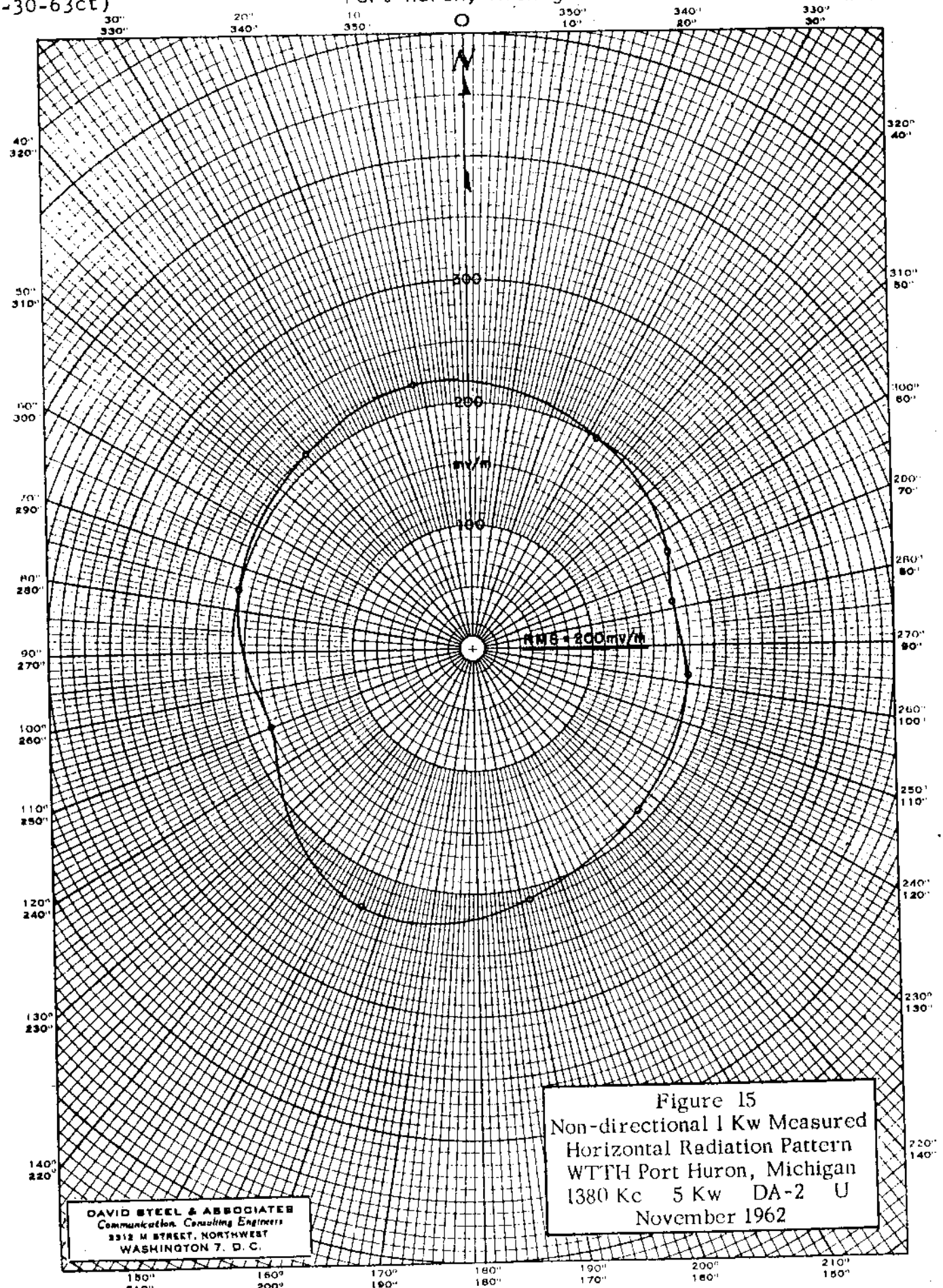


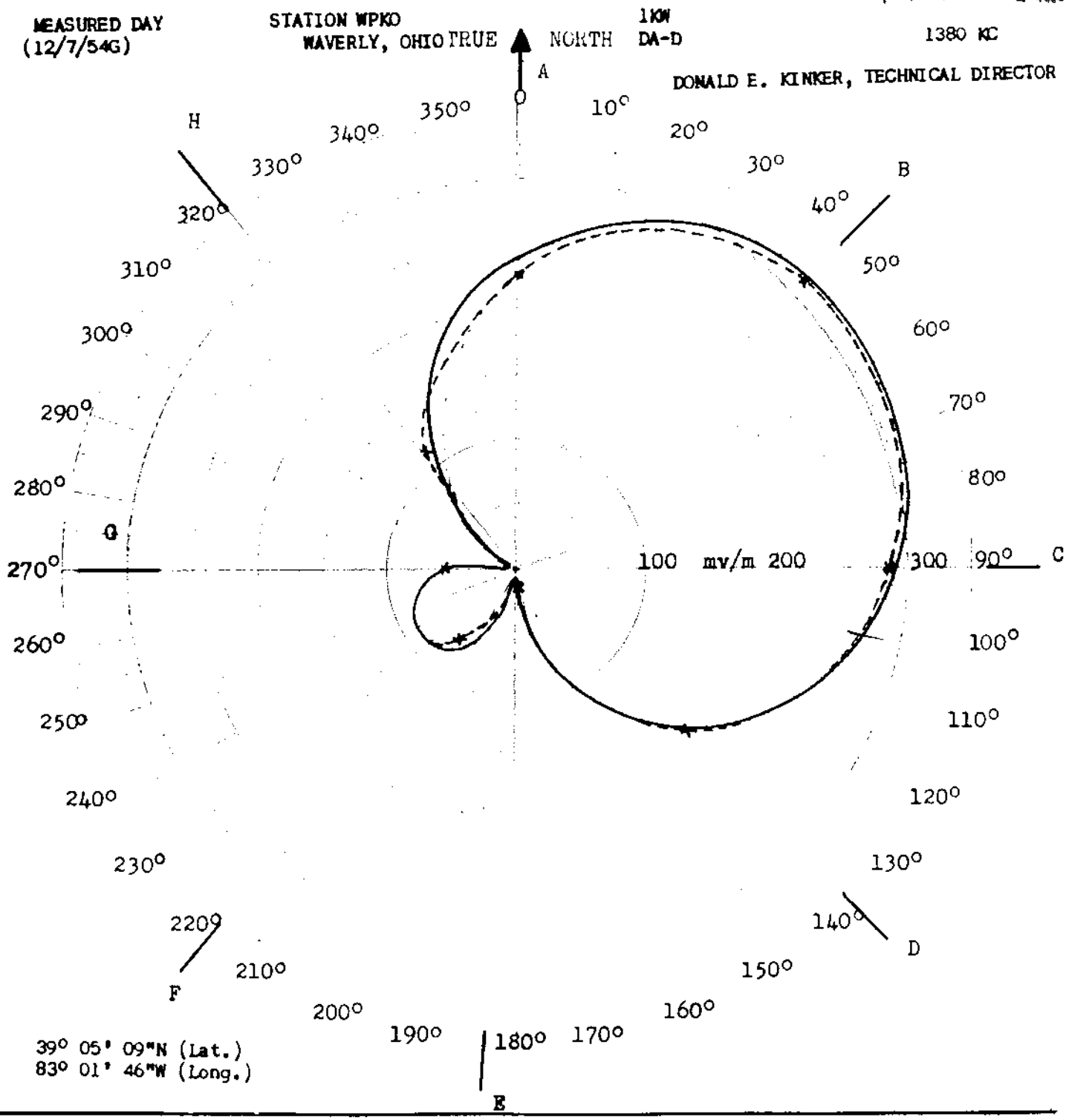
Figure 15
Non-directional 1 Kw Measured
Horizontal Radiation Pattern
WTTH Port Huron, Michigan
1380 Kc 5 Kw DA-2 U
November 1962

FCC File No. BL-9908
Accepted 4-12-63

Station WTTH
Port Huron, Michigan

1380 kc

WPKO



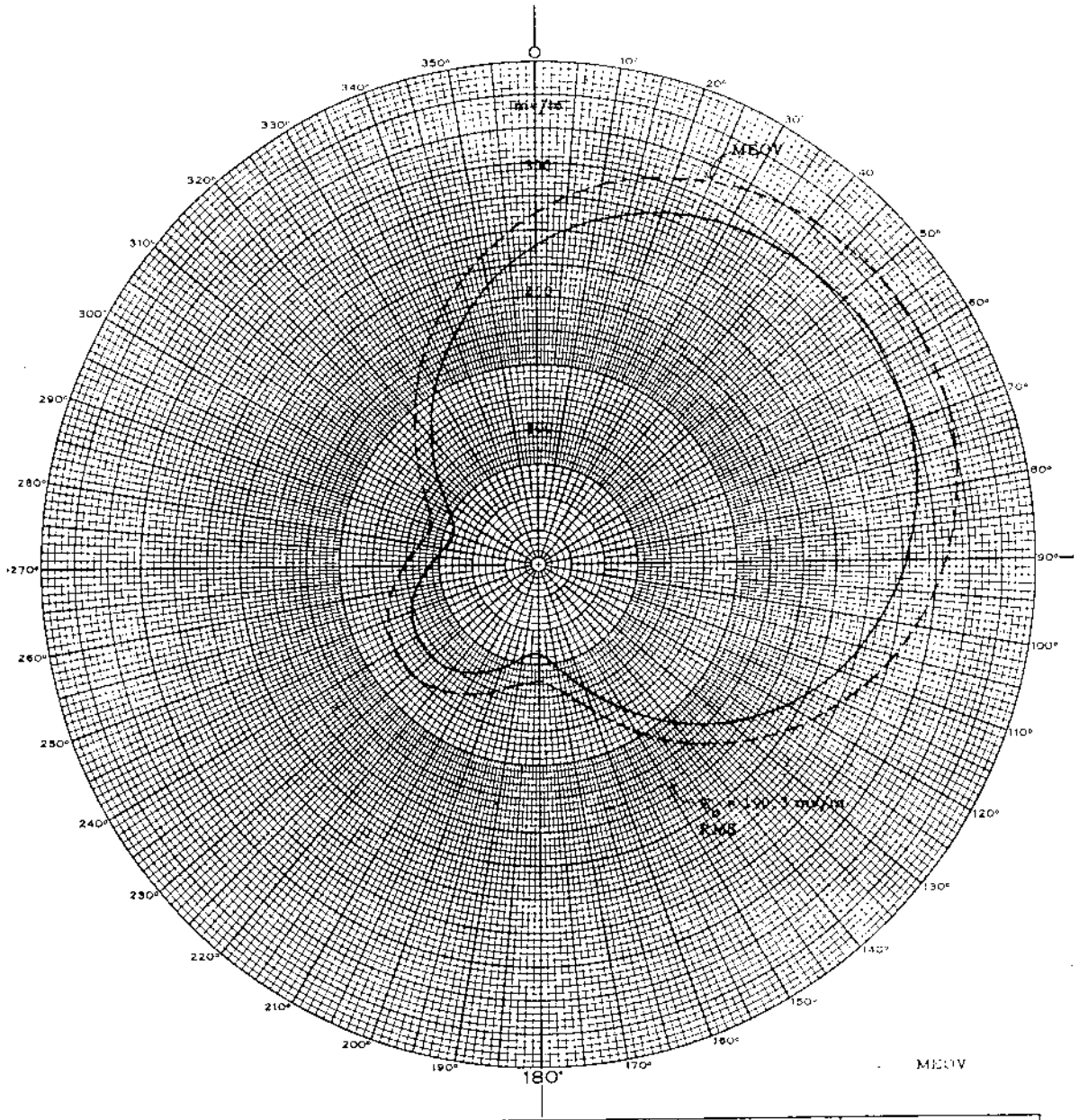
Theoretical RMS 192
Measured RMS 185

——— Calculated
- - - - - Measured
x Radial

Directional Horizontal
Plane Pattern
WPKO
Waverly, Ohio
1380 KC 1 KW DA-D

Figure 6

FILE NO. BL-5381 ACCEPTED 6/28/54 WPKO, WAVERLY, OHIO 1380 KC



TOWER PLACEMENT SKETCH	PATTERN PARAMETERS								STATION DATA
55.5° 2 60° 1	TOWER No.	ELECTRICAL HEIGHT (degrees)	TRUE TOWER ORIENTATION (degrees)	SPACING (degrees)	PHASING (degrees)	HORIZONTAL FIELD (mv/m)	FIELD RATIO (f)	ELEV. ANGLE (degrees)	ELEVATION RMS FIELD (mv/m)
	1	90	0	0	0		1.0	0	190.3
	2	90	55.5	60	-144		1.4	10	
	3							20	
	4							30	
	5							40	
	6							50	
	7							60	
	8							70	
	9							80	
	10							E_d (mv/m)	
	DAYTIME OPERATION X NIGHTTIME OPERATION ☐							d_1 1.0 mi	

CALL	WPKO
FREQUENCY	1380 kc
POWER	1.0 kw
TIME OF OPERATION	Day
TYPE OF OPERATION	DA-2
DAYTIME TOWERS	1, 2
NIGHTTIME TOWERS	-
NO. RADIALS PER TOWER	
LENGTH OF RADIALS	ft
GROUND SCREEN DIMENSION	
LAT.	39° 05' 09"
LONG.	83° 01' 46"
CONSTRUCTION PERMIT NO.	530602
LICENSE NO.	700907

FIG. 2.1

HORIZONTAL PATTERN

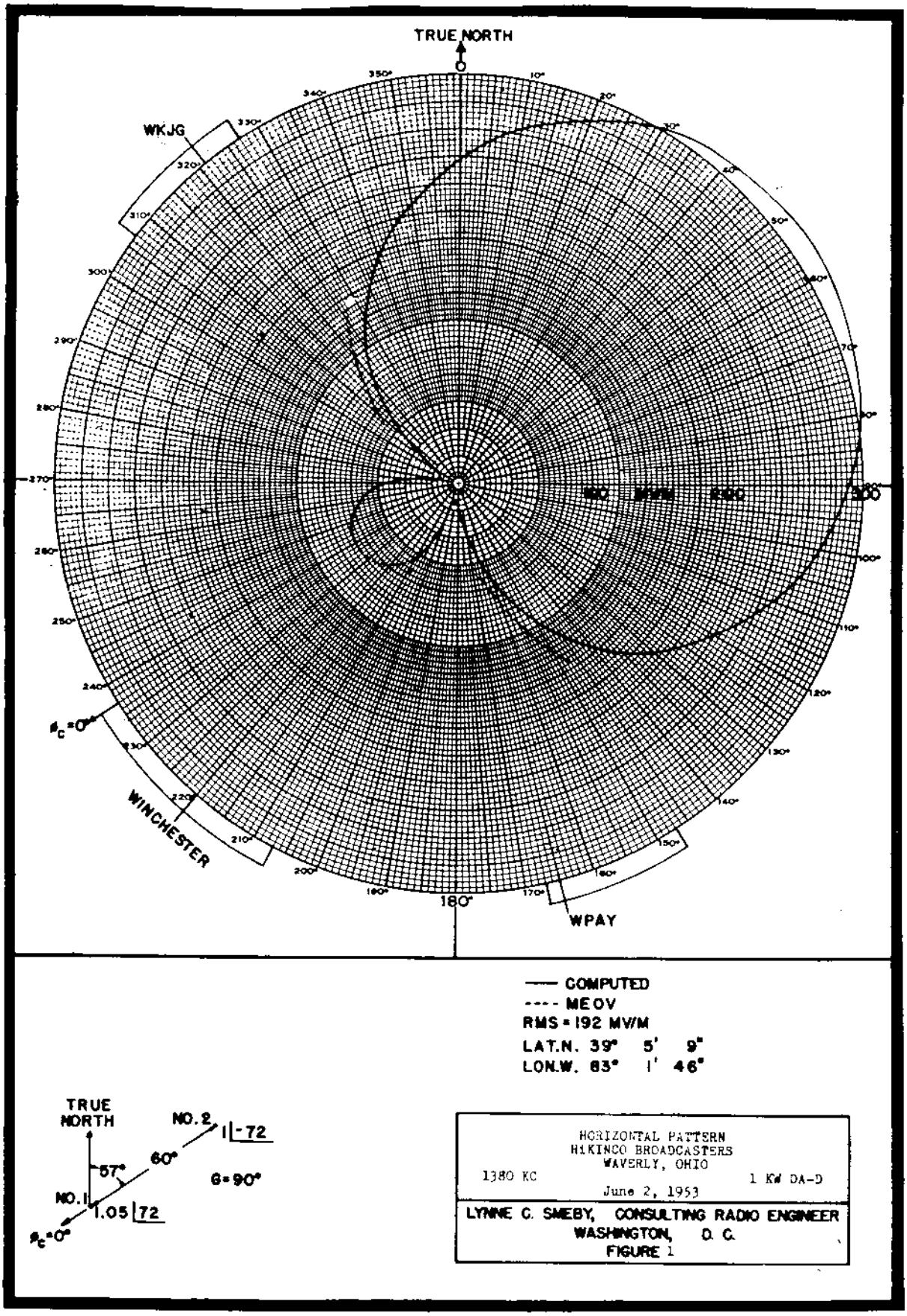
Carl E. Smith
Consulting Radio Engineers

Radio Station WPKO
Waverly, Ohio
1380 kHz 1 kw DA-D

WPKO

Station WPKO

PROPOSED DAY (8/3/53G) HI-KIN-CO BROADCASTERS, WAVERLY, OHIO 1KW,D,DA-A 1380 kc



HORIZONTAL PATTERN
HI-KIN-CO BROADCASTERS
WAVERLY, OHIO
1380 KC 1 KW DA-D
June 2, 1953
LYNNE C. SMEBY, CONSULTING RADIO ENGINEER
WASHINGTON, D. C.
FIGURE 1

FCC FILE NO. BP-8614, amended Accepted 6/19/53, HI-KIN-CO, WAVERLY, OHIO 1380 kc

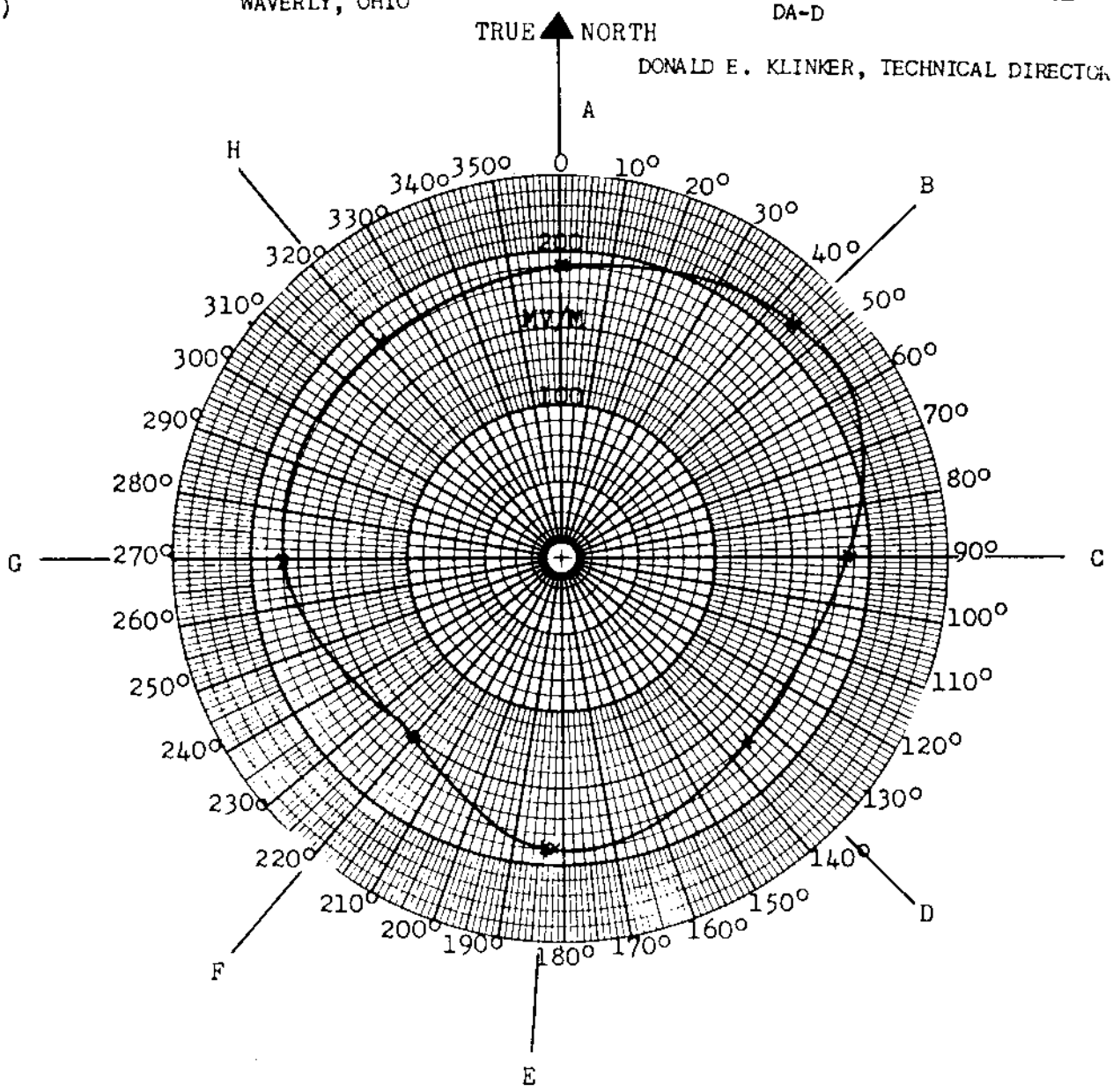
WPKO

MEASURED NON-DIRECTIONAL
(12/7/54G)

STATION WPKO
WAVERLY, OHIO

1KW
DA-D

1380 KC



39° 05' 09"N (Lat.)
83° 01' 46"W (Long.)

Theoretical RMS 192
Measured RMS 184

——— Measured
X Radial

Non-Directional Horizontal
Plane Pattern
WPKO
Waverly, Ohio
1380 KC 1 KW DA-D
Figure 5

FILE NO. BL-5381 ACCEPTED 6/28/54

WPKO, WAVERLY, OHIO 1380 KC

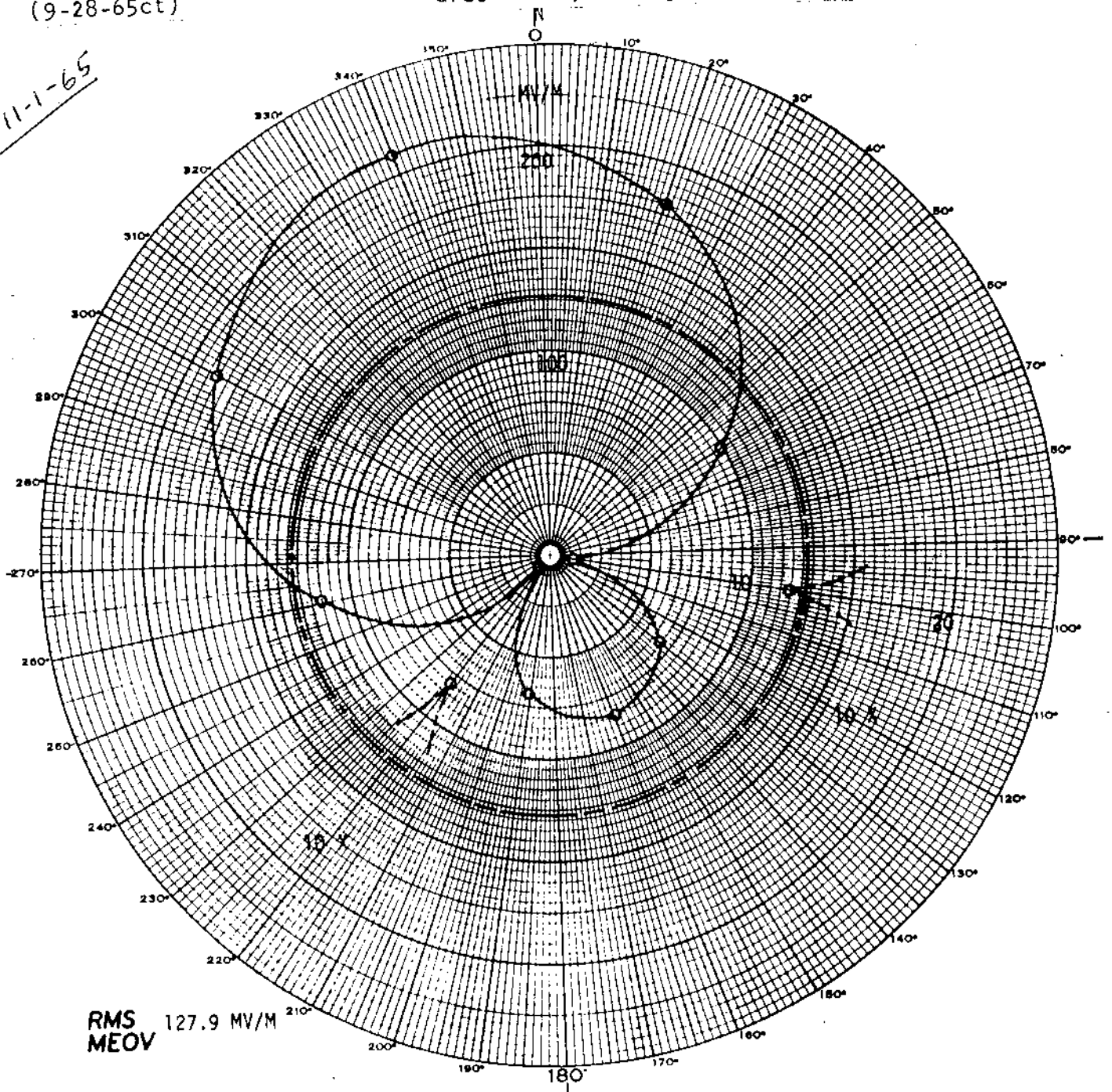
WPLB

Measured Night
(9-28-65ct)

Station WPLB
Greenville, Michigan

500w, 1kw-LS, DA-N, U
1380 kc

-ic 11-1-65



RMS 127.9 MV/M
MEOV

TOWER PLACEMENT SKETCH	PATTERN PARAMETERS	FIGURE 4	STATION DATA
340° T. No. 1 0.7885/ 0° G=75.7° 100° No. 2 1.0/120°	TOWER No. / ELECTRICAL HEIGHT / SPACING / PHASING / FIELD RATIO 1 2 3 4 5 6 7 8 9 10 DAYTIME OPERATION ☐ NIGHTTIME OPERATION ☐	MEASURED PATTERN NIGHTTIME DIRECTIONAL MAY - 1965 θ°	CALL WPLB FREQ 1380 Kc/S POWER 0.5/1 LS TYPE DA-N TIME NIGHT LAT. 43-09-18 LONG. 85-15-25 E.H.MUNN, JR. RADIO ENGINEER COLDWATER, MICH.

FCC File No. BL-11025
Accepted 9-16-65

Station WPLB
Greenville, Michigan

1380 kc

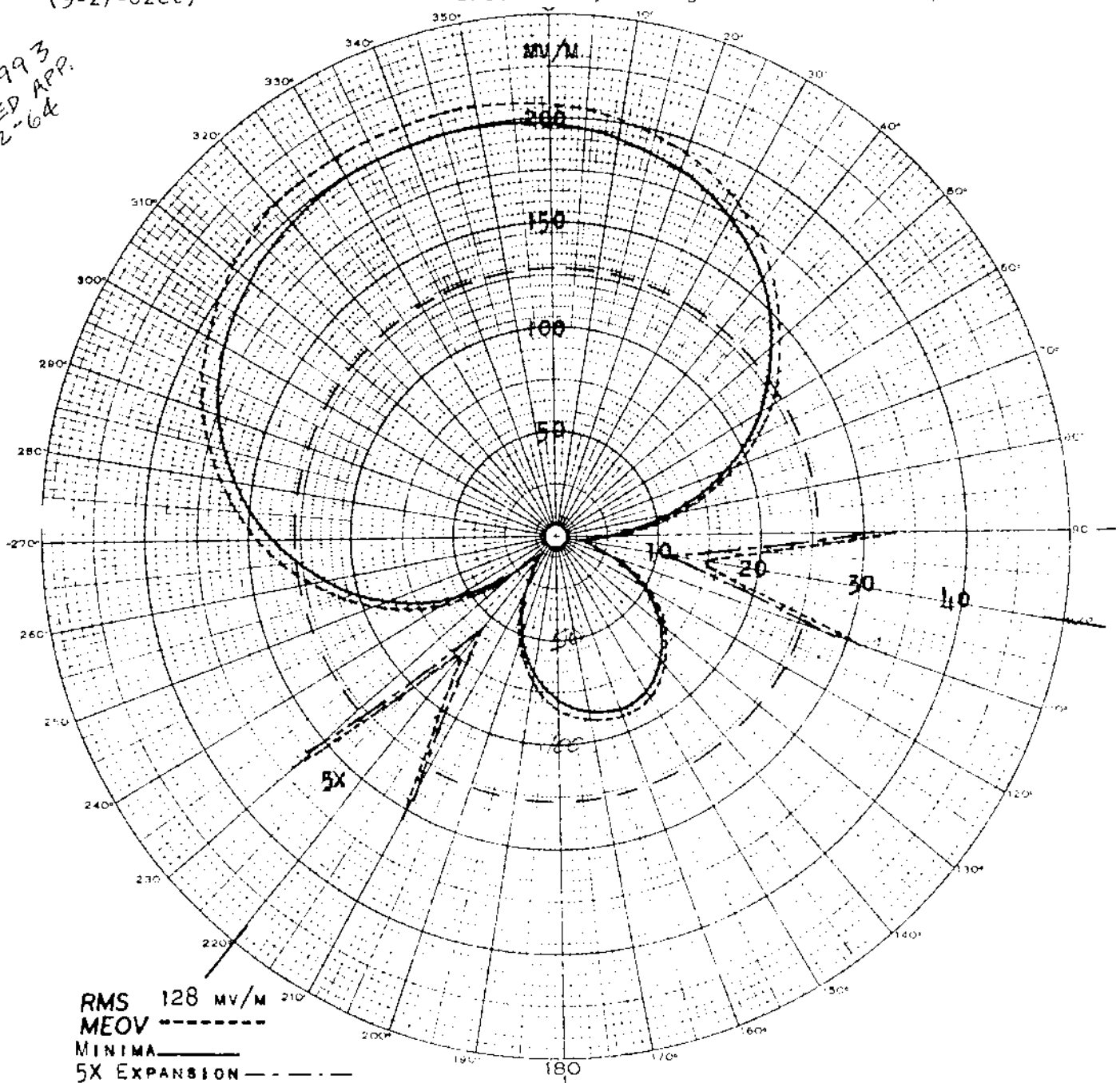
WPLB

Proposed Night
(9-27-62ct)

Station WPLB
Greenville, Michigan

500w, 1kw-LS, DA-N, U
1380 kc

-14993
GRANTED APP.
12-22-64



TOWER PLACEMENT SKETCH	PATTERN PARAMETERS	FIGURE A, P-3	STATION DATA
340° T. G= 75.7 No. 1 ○ 1/ 0° 100° No. 2 ○ 0.9/130°	Tower No. / Electrical Height / Spacing / Phasing / Field Ratio	PROPOSED NIGHT DIRECTIONAL FOR W P L 8 θ° 0	CALL WPLB FREQ 1380 KC POWER 0.5 KW TYPE DA-N TIME NIGHT LAT. 43-09-18 LONG. 85-15-25 E.H.MUNN, JR. RADIO ENGINEER COLDWATER, MICH.

FCC File No.BP-14993
Accepted 8-30-62 Amended

Station WPLB
Greenville, Michigan

1380 kc

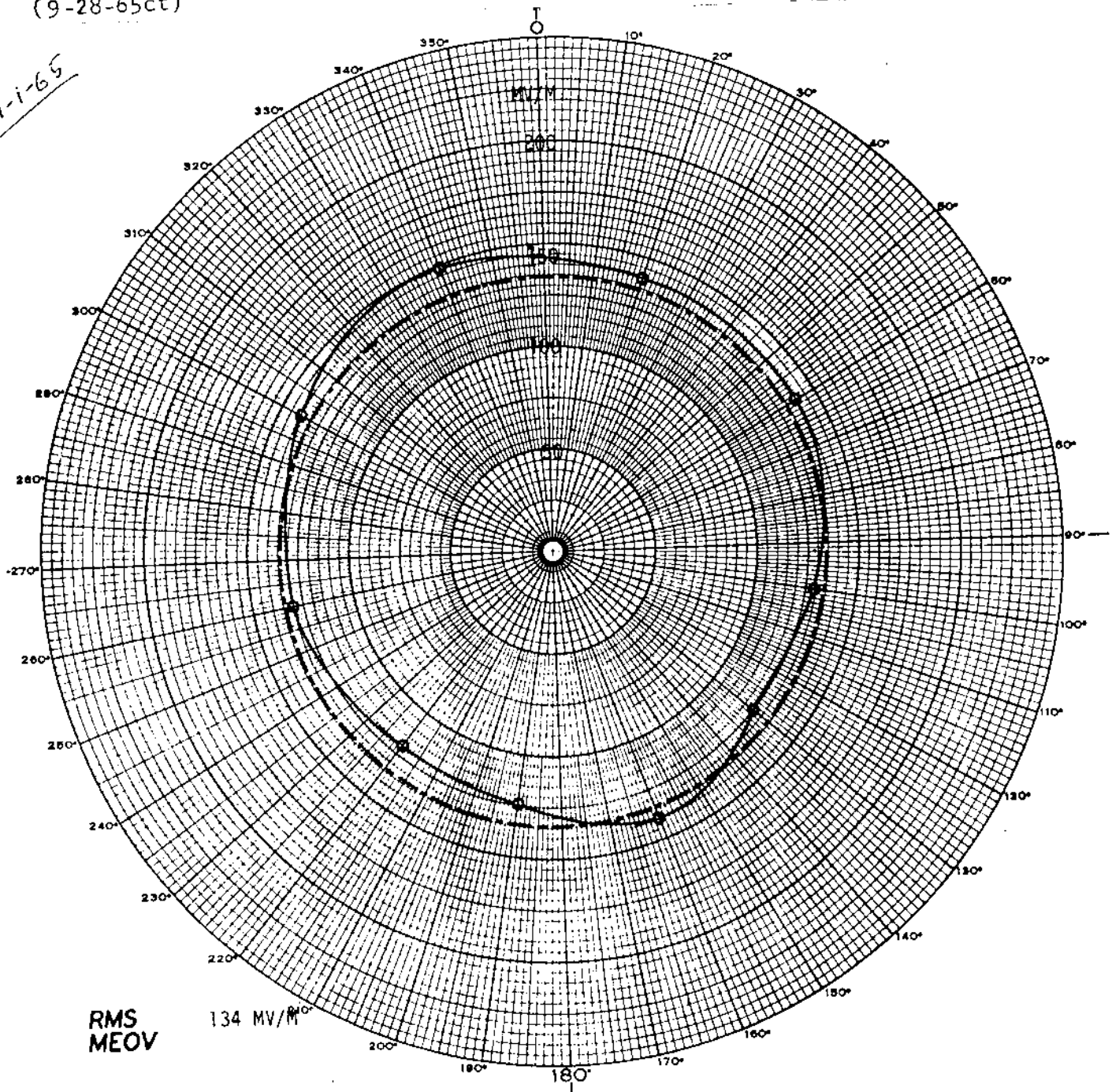
WPLB

Measured Non-DA
(9-28-65ct)

Station WPLB
Greenville, Michigan

500w, 1kw-LS, DA-N, U
1380 kc

-C 11-1-65



TOWER PLACEMENT SKETCH	PATTERN PARAMETERS	FIGURE 3	STATION DATA
340° T. No. 1 ○ 1/0° G=75.7° 100° No. 2 □ (not used	TOWER No. / ELECTRICAL HEIGHT θ° / SPACING d° / PHASING ψ° / FIELD RATIO F 1 2 3 4 5 6 7 8 9 10 DAYTIME OPERATION ☐ NIGHTTIME OPERATION ☐	MEASURED NORTH TOWER RADIATION APRIL - 1965 0.5 Kw POWER θ°	CALL WPLB FREQ 1380 Kc/S POWER 0.6/1 LS TYPE DA-N TIME DAY-TEST LAT. 43-09-18 LONG. 85-15-25 E.H.MUNN, JR. RADIO ENGINEER COLDWATER, MICH.

FCC File No. BL-11025
Accepted 9-16-65

Station WPLB
Greenville, Michigan

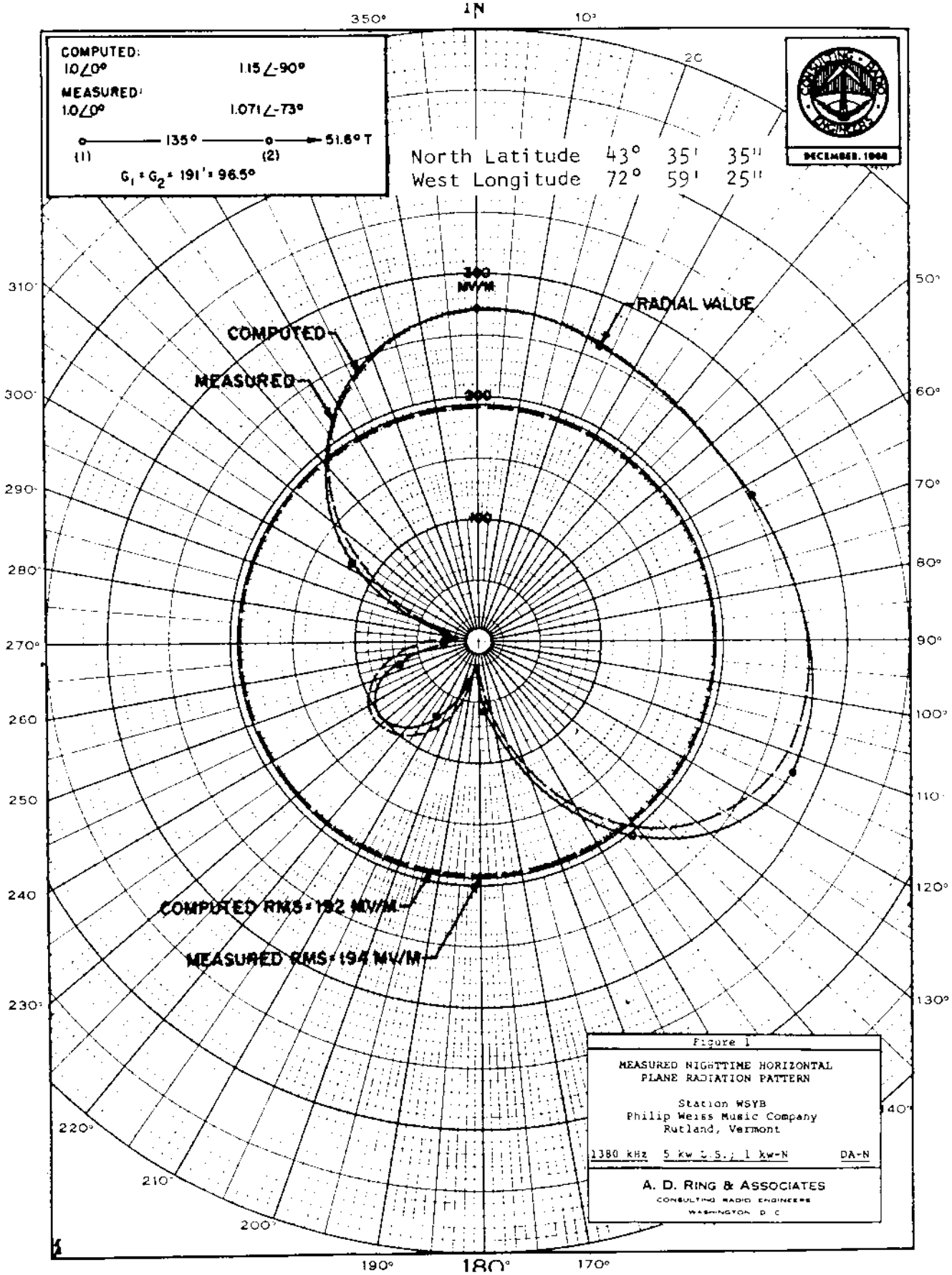
1380 kc

WSYB

Measured Night
(3-28-69ct)

Station WSYB
Rutland, Vermont

1kw, 5kw-LS, DA-N, U
1380 kc



A. D. RING ASSOCIATES - 4/64 - N

FCC File No. BZ-7148
Accepted 3-21-69

Station WSYB
Rutland, Vermont

1380 kc

WSYB

Measured Non-DA
(3-28-69ct)

Station WSYB
Rutland, Vermont

1kw,5kw-LS,DA-N,U
1380 kc

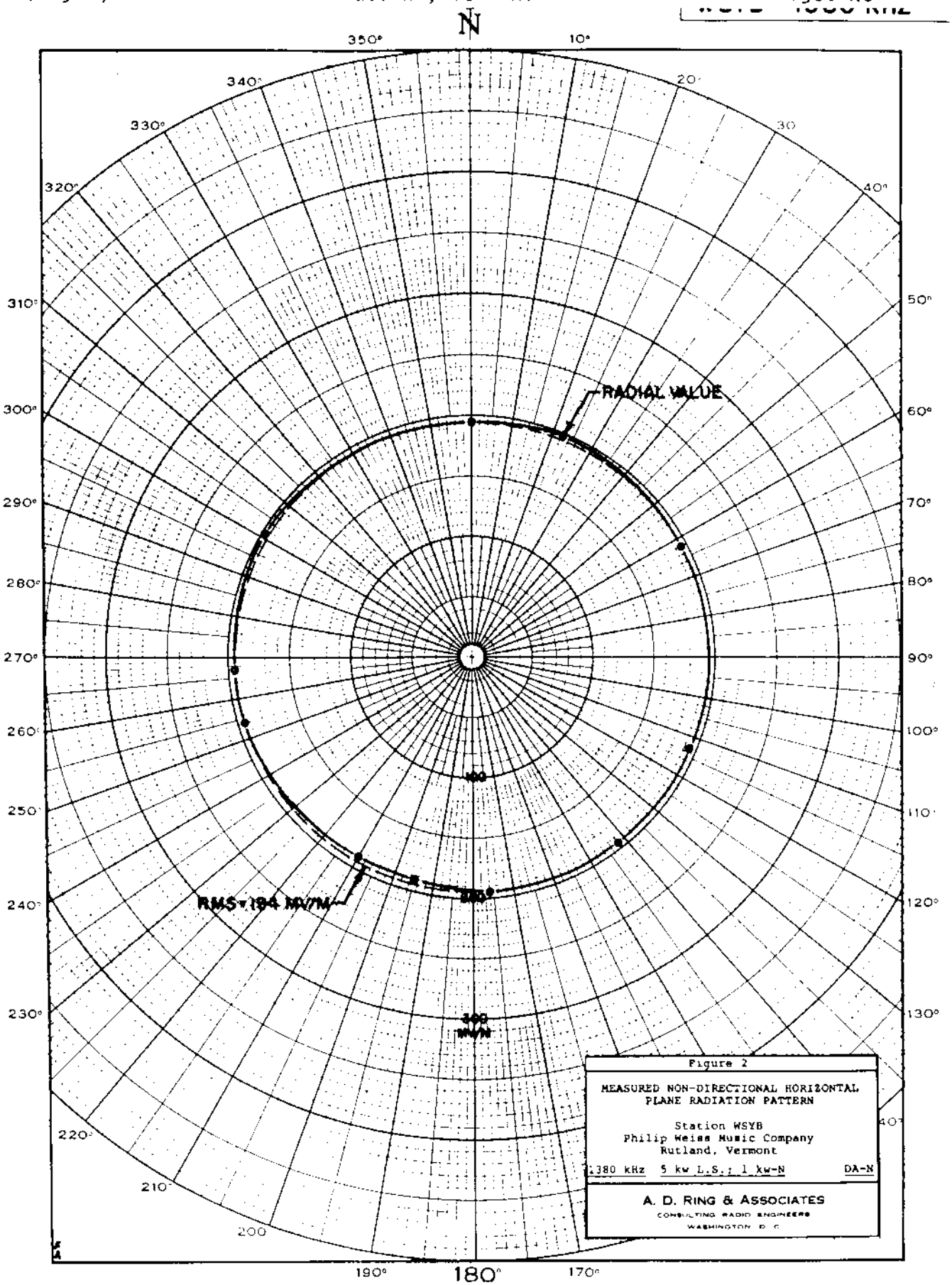


Figure 2

MEASURED NON-DIRECTIONAL HORIZONTAL PLANE RADIATION PATTERN

Station WSYB
Philip Weiss Music Company
Rutland, Vermont

1380 kHz 5 kw L.S.; 1 kw-N DA-N

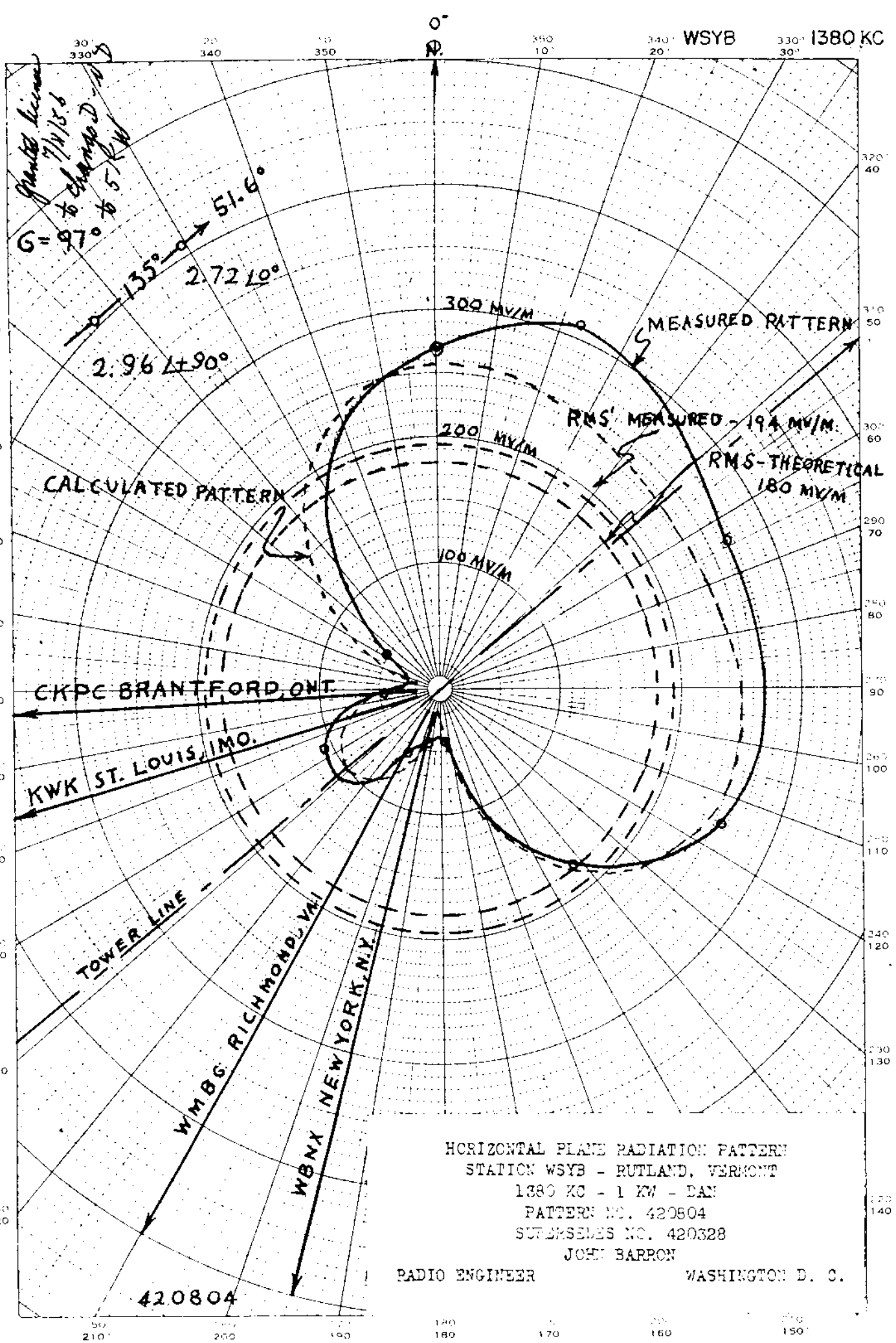
A. D. RING & ASSOCIATES
CONSULTING RADIO ENGINEERS
WASHINGTON D. C.

A. D. RING ASSOCIATES - 4/64 - M

FCC File No.BZ-7148
Accepted 3-21-69

Station WSYB
Rutland, Vermont

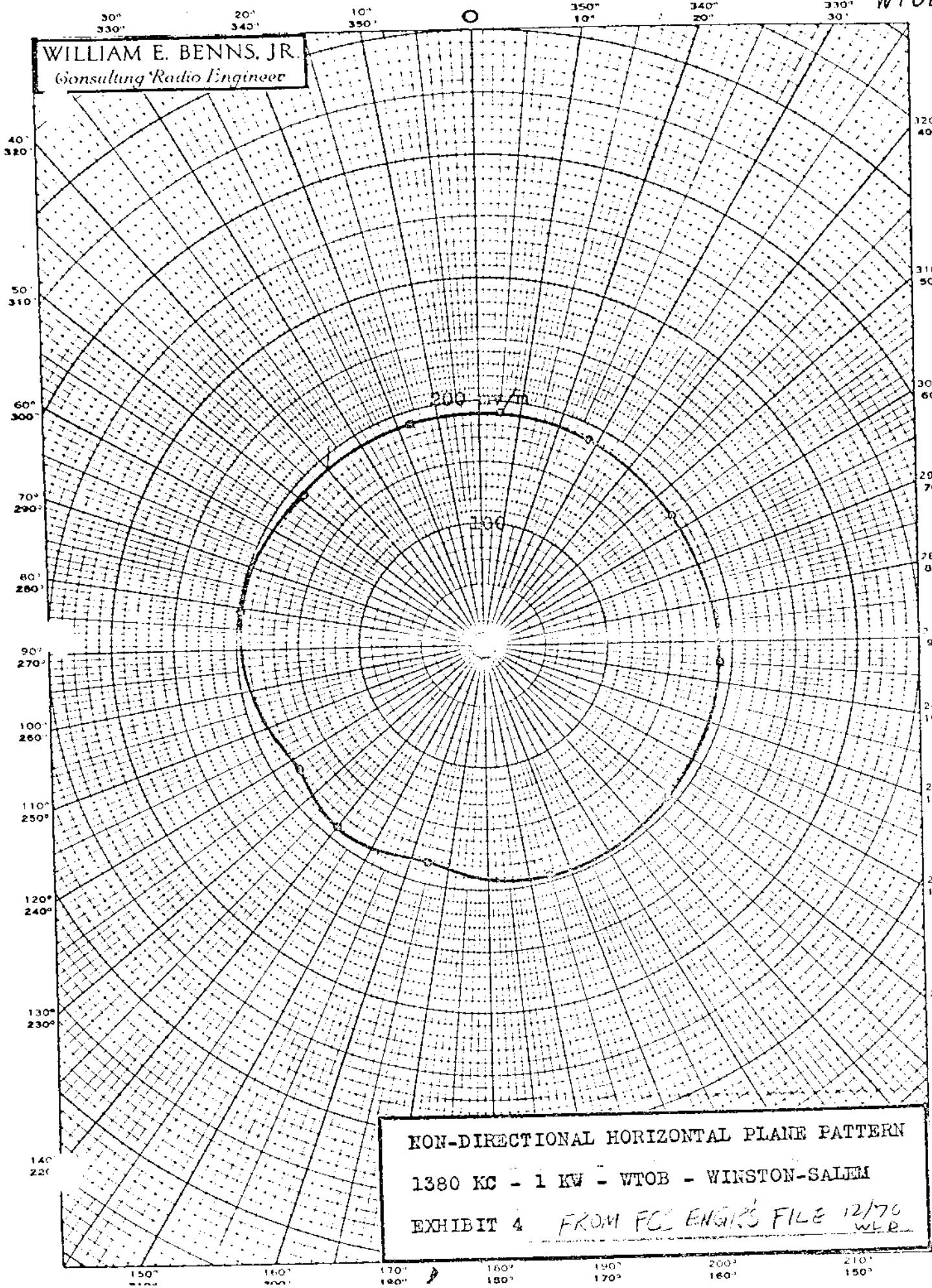
1380 kc



HORIZONTAL PLANE RADIATION PATTERN
STATION WSYB - RUTLAND, VERMONT
1380 KC - 1 KW - DAN
PATTERN NO. 420804
SUPERSEDES NO. 420328
JOHN BARRON
RADIO ENGINEER WASHINGTON D. C.

WTOB

WILLIAM E. BENNS, JR.
Consulting Radio Engineer



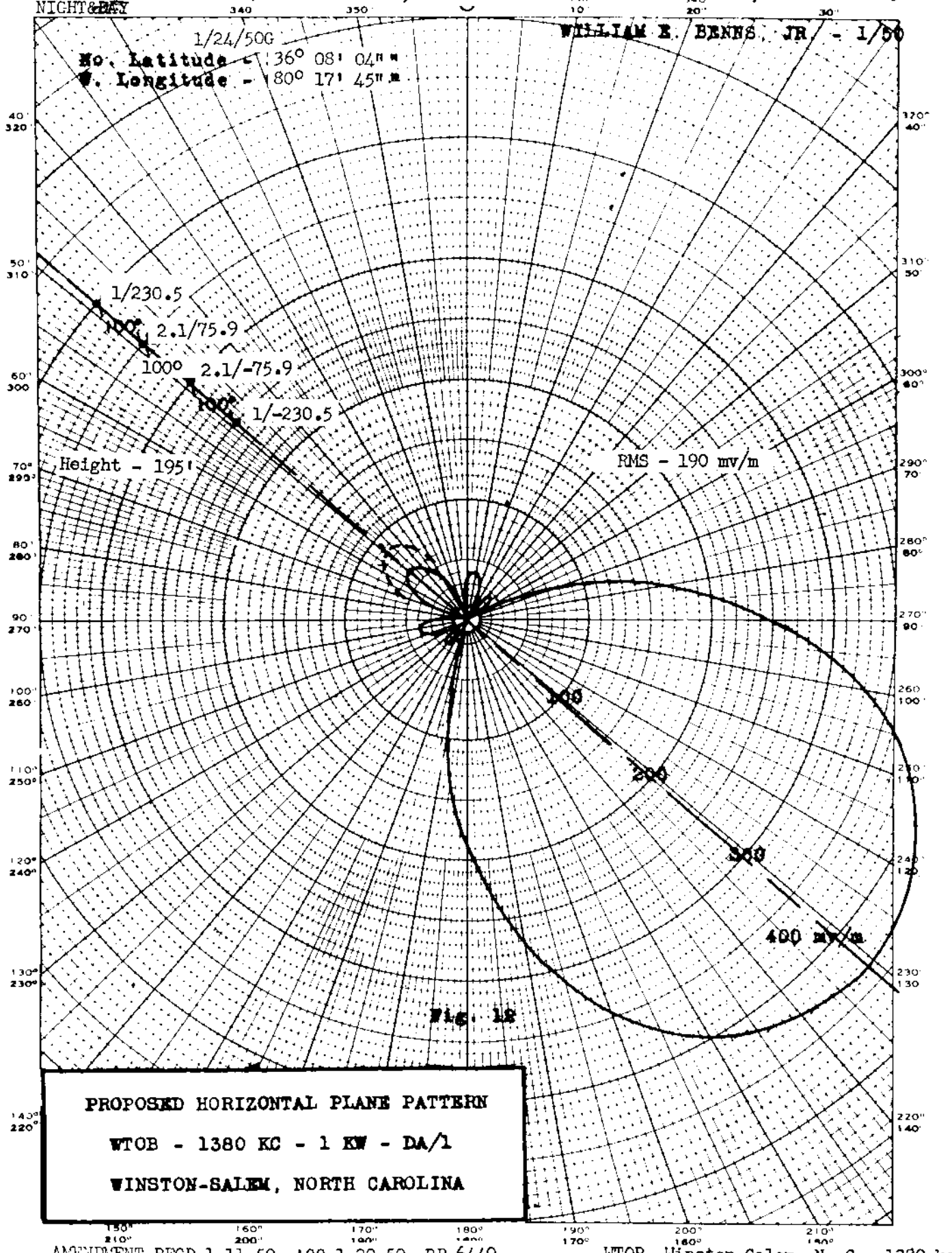
NON-DIRECTIONAL HORIZONTAL PLANE PATTERN

1380 KC - 1 KW - WTOB - WINSTON-SALEM

EXHIBIT 4 FROM FCC ENGR'S FILE 12/70 WLB

WTOB

PROPOSED NIGHT&~~DAY~~ WTOB, WINSTON-SALEM, N. C. 1kw,DA-1 1380 kc



PROPOSED HORIZONTAL PLANE PATTERN

WTOB - 1380 KC - 1 KW - DA/1

WINSTON-SALEM, NORTH CAROLINA

AMENDMENT RECD 1-11-50 ACC 1-20-50 BP-6449

WTOB, Winston-Salem, N. C. 1380 kc

WTOB

PROPOSED NIGHT&DAY NULLS

WTOB, WINSTON-SALEM, N. C.

1kw, DA-1 1380 kc

1/24/50G

WILLIAM E. BENNS, JR. 1/50

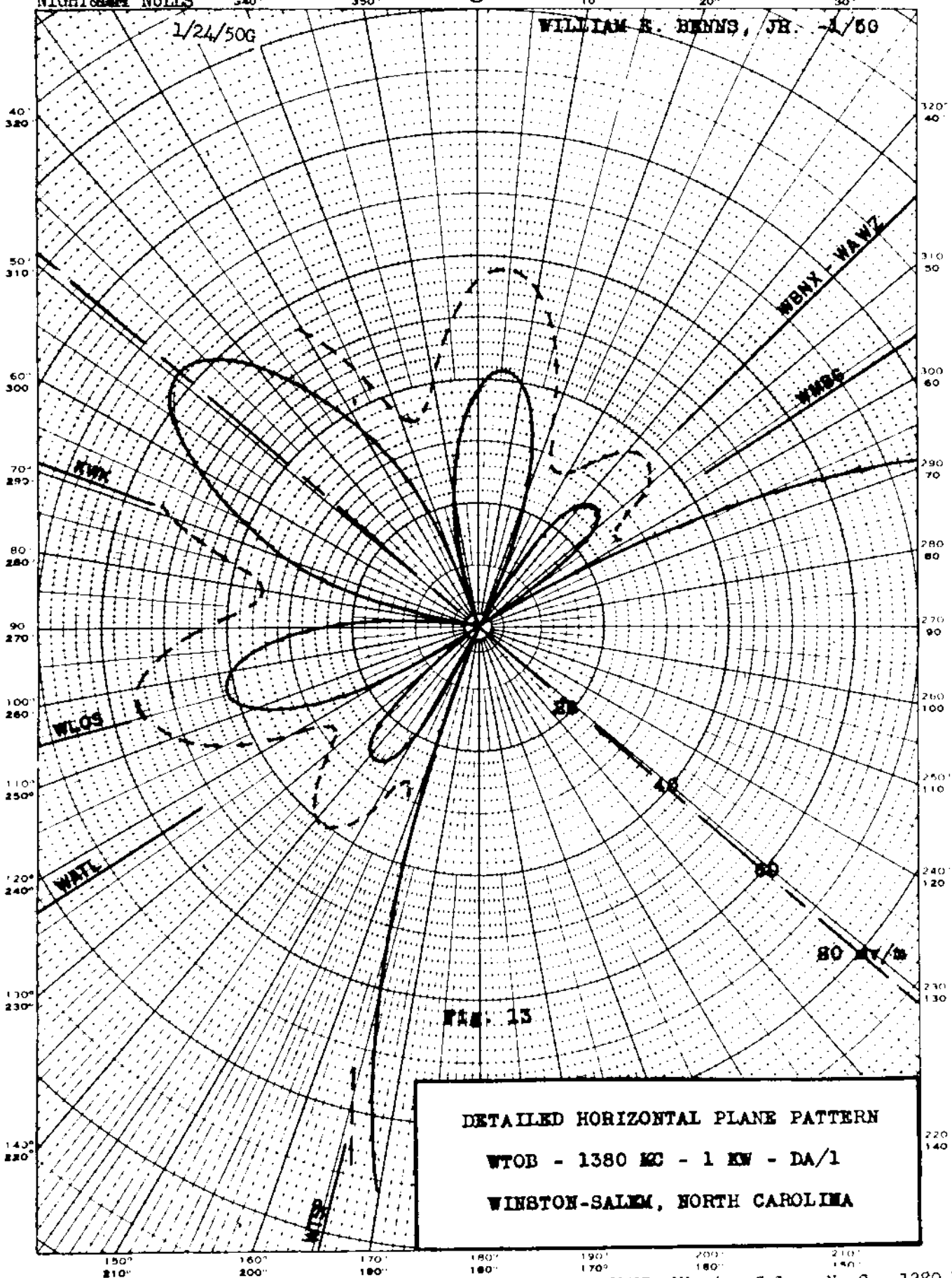


Fig. 13

DETAILED HORIZONTAL PLANE PATTERN

WTOB - 1380 KC - 1 KW - DA/1

WINSTON-SALEM, NORTH CAROLINA

AMENDMENT RECD 1-11-50 ACC 1-20-50 BP-6449

WTOB, Winston-Salem, N. C. 1380 kc

MEASURED NIGHT & DAY NULLS — WTOB, WINSTON-SALEM, N. C. — 1kw, DA-1 — 1380 kc

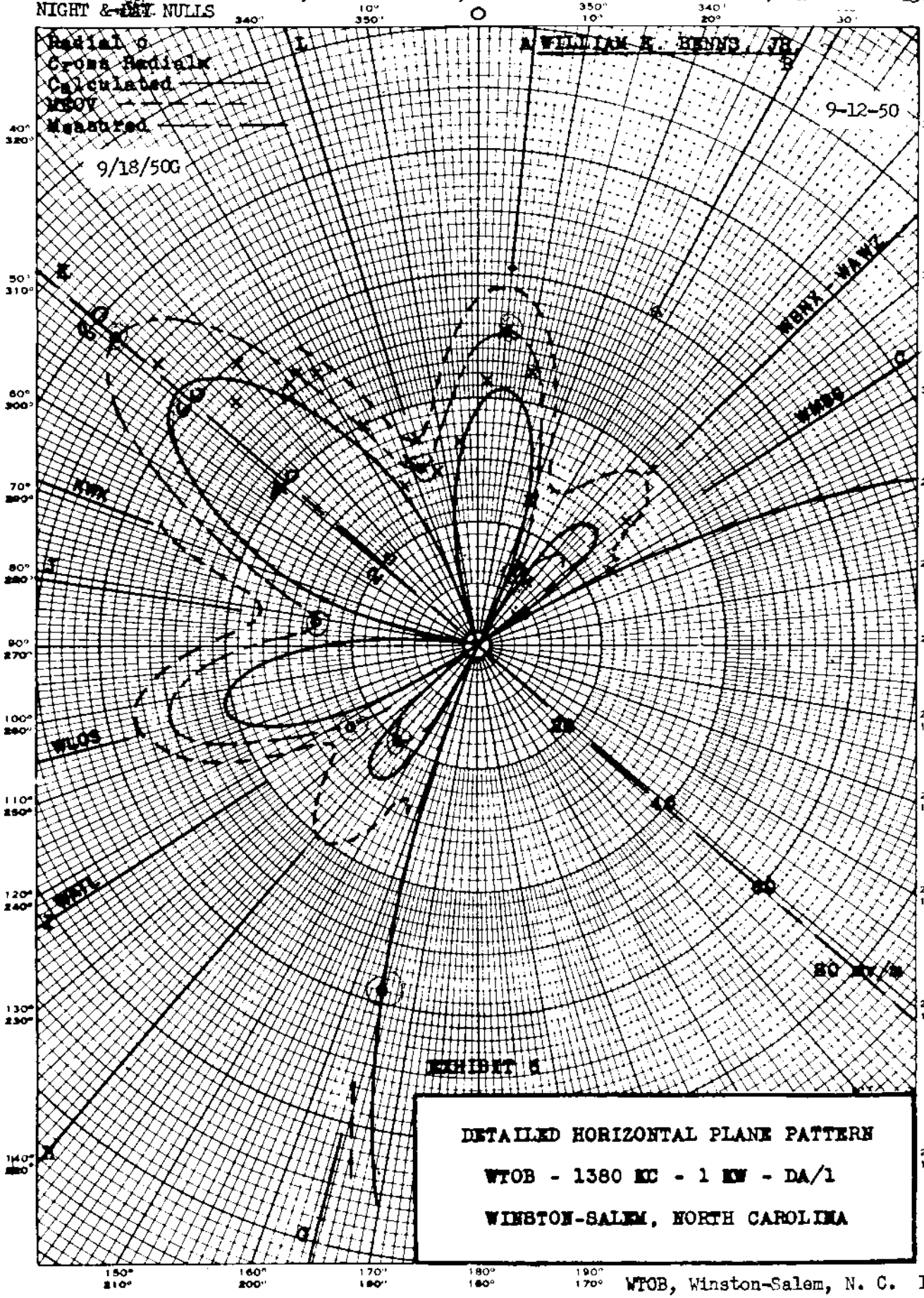


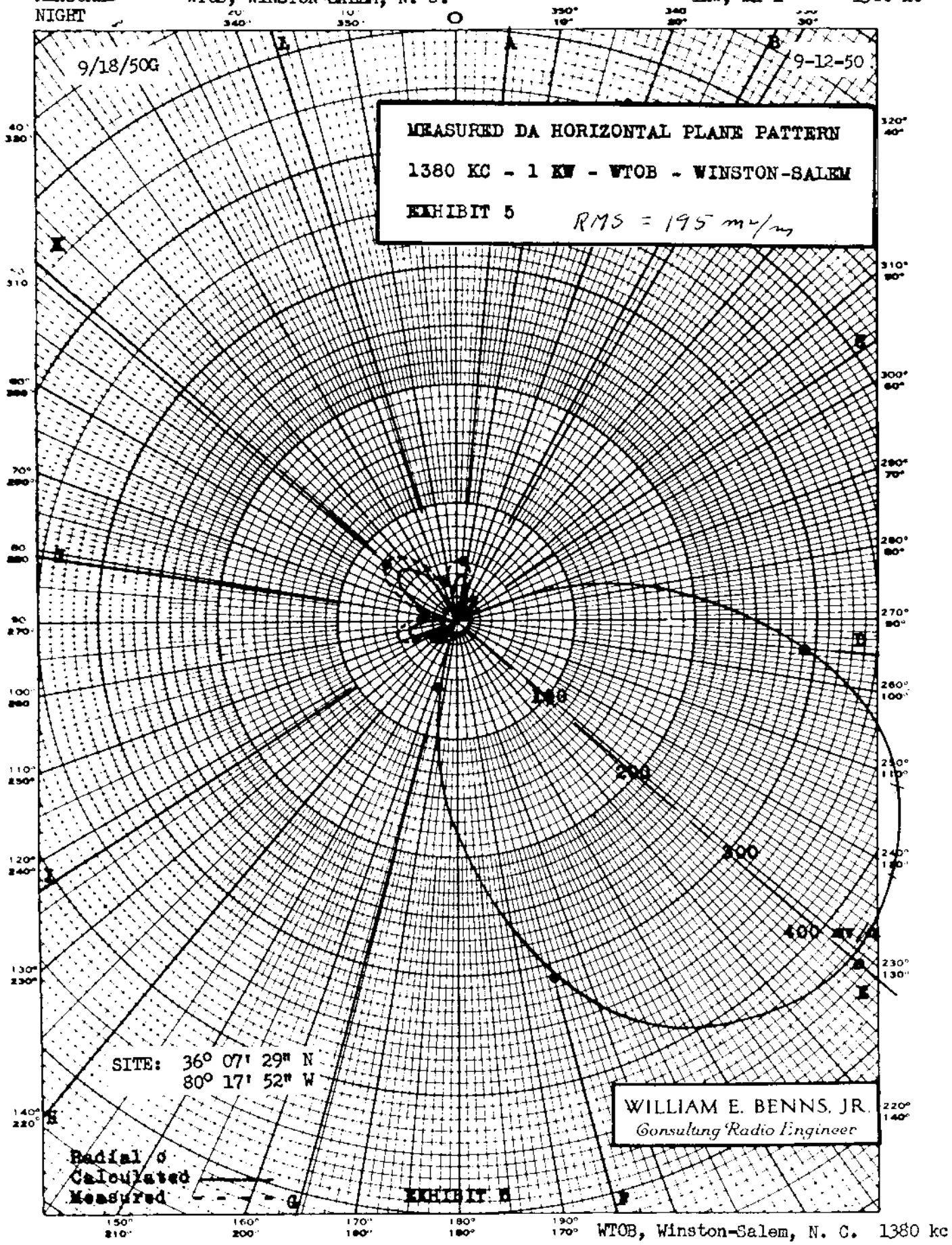
EXHIBIT 6

DETAILED HORIZONTAL PLANE PATTERN

WTOB - 1380 KC - 1 KW - DA/1

WINSTON-SALEM, NORTH CAROLINA

MEASURED NIGHT WTOB, WINSTON-SALEM, N. C. 1kw, DA-1 1380 kc



WTOB, Winston-Salem, N. C. 1380 kc

WTVR

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WTVR — Main Studio: Richmond, Virginia

Frequency: 1380 kHz — Power: 5 kW

Notification List No. 1745 — Date: August 10, 1977 — Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:
North Latitude: 37° 37' 13"
West Longitude: 77° 26' 57"

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(#1)	C(#2)	SE(#3)
HEIGHT ABOVE INSULATORS:	240'	240'	240' (121.2°)
NIGHT PHASING:	+128.1°	0°	-141.9°
NIGHT FIELD RATIO:	0.59	1	0.55
DAY PHASING:	0°	-120°	-
DAY FIELD RATIO:	1	0.30	-

SPACING AND ORIENTATION: Towers #1 and #3 are spaced 356.4' (180°) on a line bearing 136° true. Towers #1 and #2 are spaced 180.2' (91°) on a line bearing 138.1° true.

GROUND SYSTEM: 120-240' equally spaced copper radials plus a 36' square ground screen about each tower. Radials are shortened and bonded to transverse straps along intersections between towers. Centers of system are bonded together.

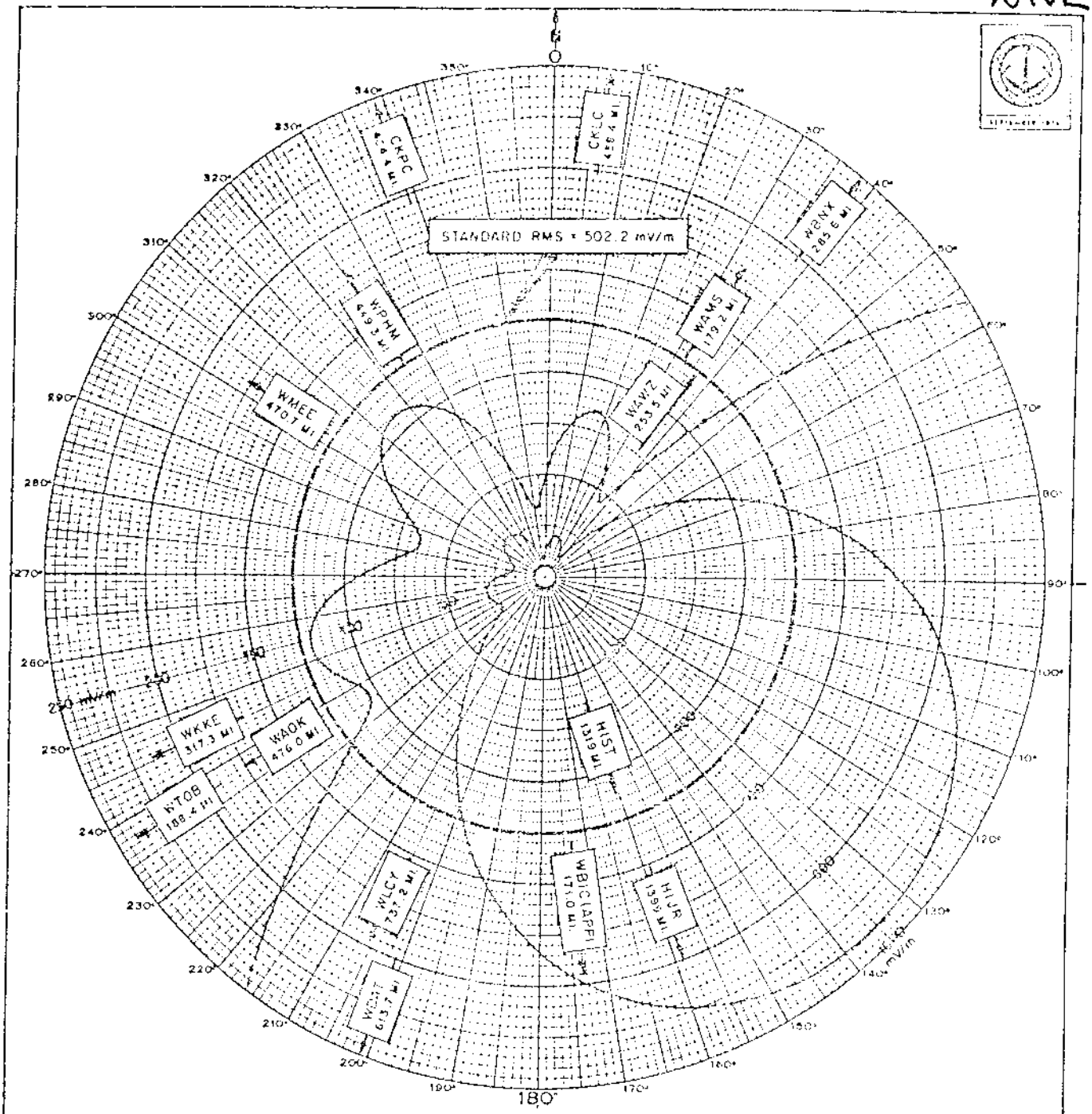
PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	456.9 mv/m	489.1 mv/m	480 mv/m
Night 1/	478 mv/m	648.0 mv/m	502.2 mv/m

1/ By adjustment of input power.

Note: This notification concerns changes in the transmitter location and directional antenna system and radiation patterns.

WTVR



LATITUDE 37° 37' 13" NORTH
LONGITUDE 77° 26' 57" WEST

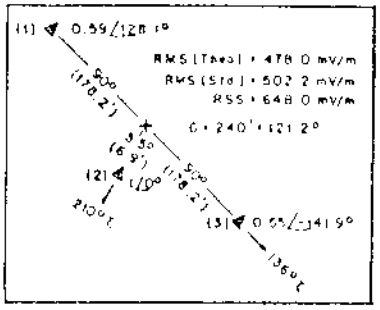


Figure 1

PROPOSED NIGHTTIME HORIZONTAL PLANE STANDARD RADIATION PATTERN

STATION WTVR
ROY H. PARK BROADCASTING OF VIRGINIA, INC.
RICHMOND, VIRGINIA

Pres. 1380 kHz	5 kW	DA-N
Prop. 1380 kHz	5 kW	DA-2

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

FA

WTVR

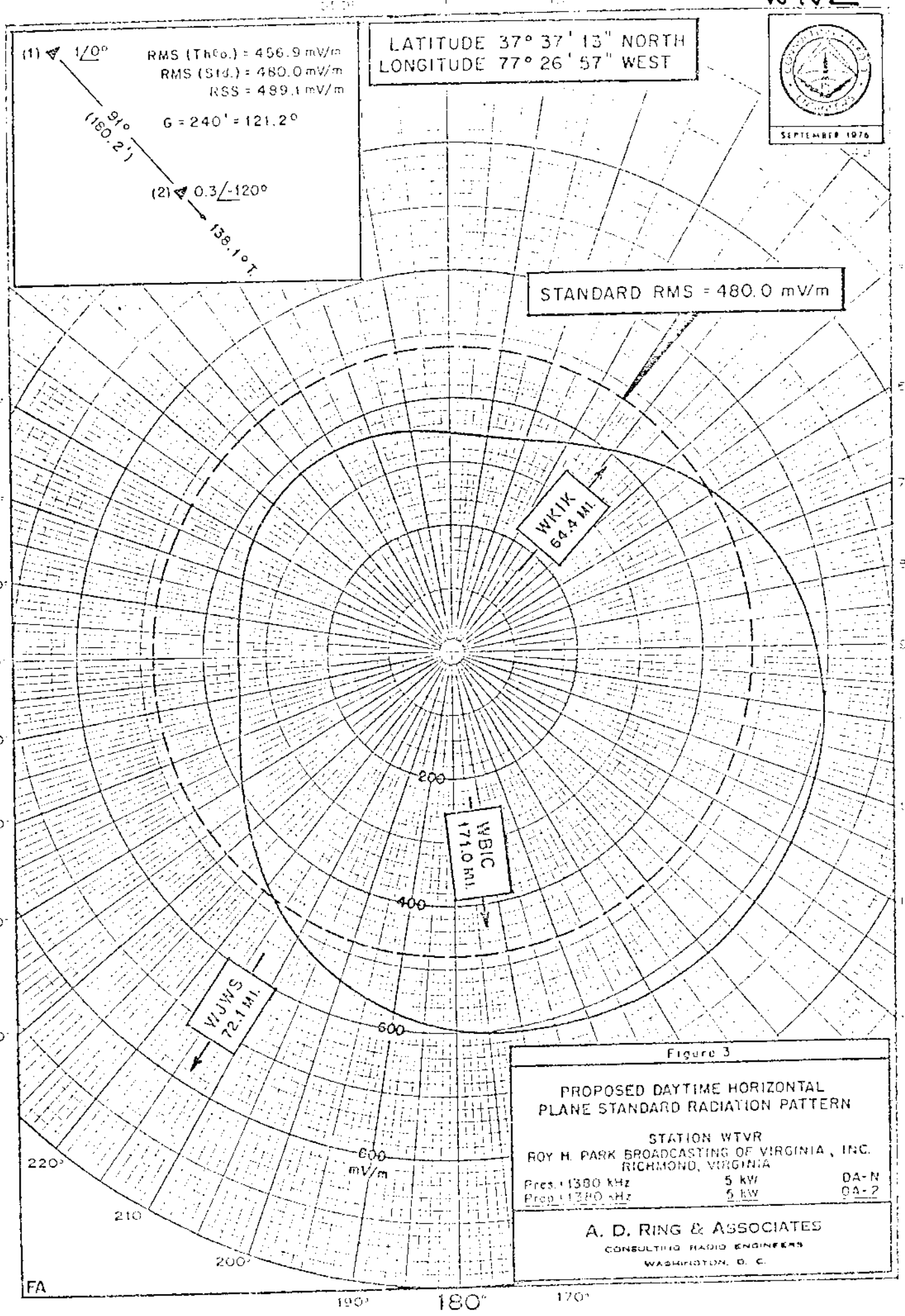


Figure 3

PROPOSED DAYTIME HORIZONTAL PLANE STANDARD RADIATION PATTERN

STATION WTVR
ROY H. PARK BROADCASTING OF VIRGINIA, INC.
RICHMOND, VIRGINIA

Pres. 1380 kHz	5 kW	DA-N
Prop. 1370 kHz	5 kW	DA-2

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

A. D. RING & ASSOCIATES - 4/64 - M

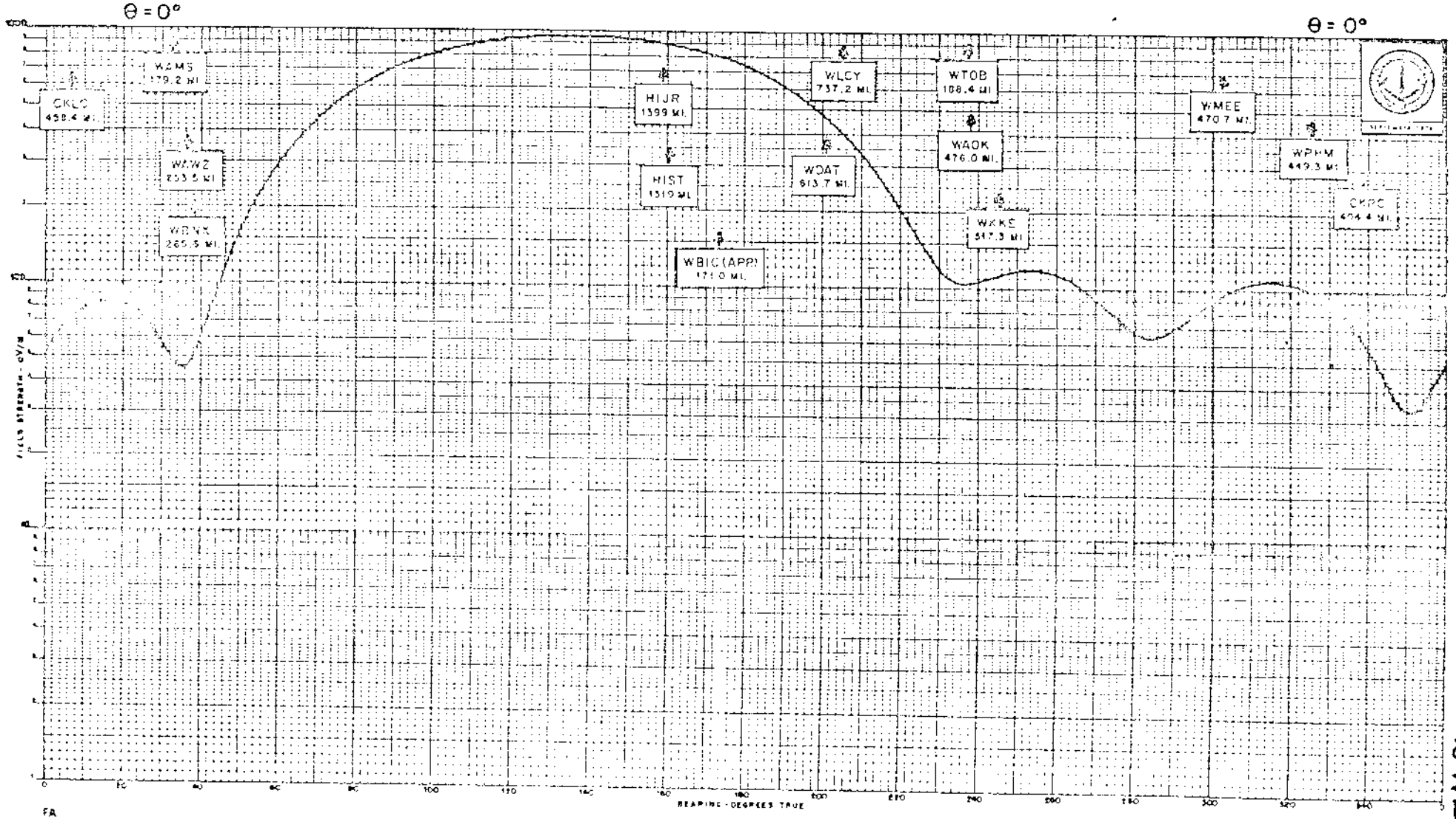

θ = 0°
θ = 0°
WLCY
737.2 MI.
WTOB
188.4 MI.
HIJR
1399 MI.
WMEE
470.7 MI.
WAOK
476.0 MI.
WPHM
449.3 MI.
HIST
1319 MI.
WDAT
613.7 MI.
WKKS
517.3 MI.
WBIC (APP)
171.0 MI.
BEARING - DEGREES TRUE
FA

FIGURE 2A

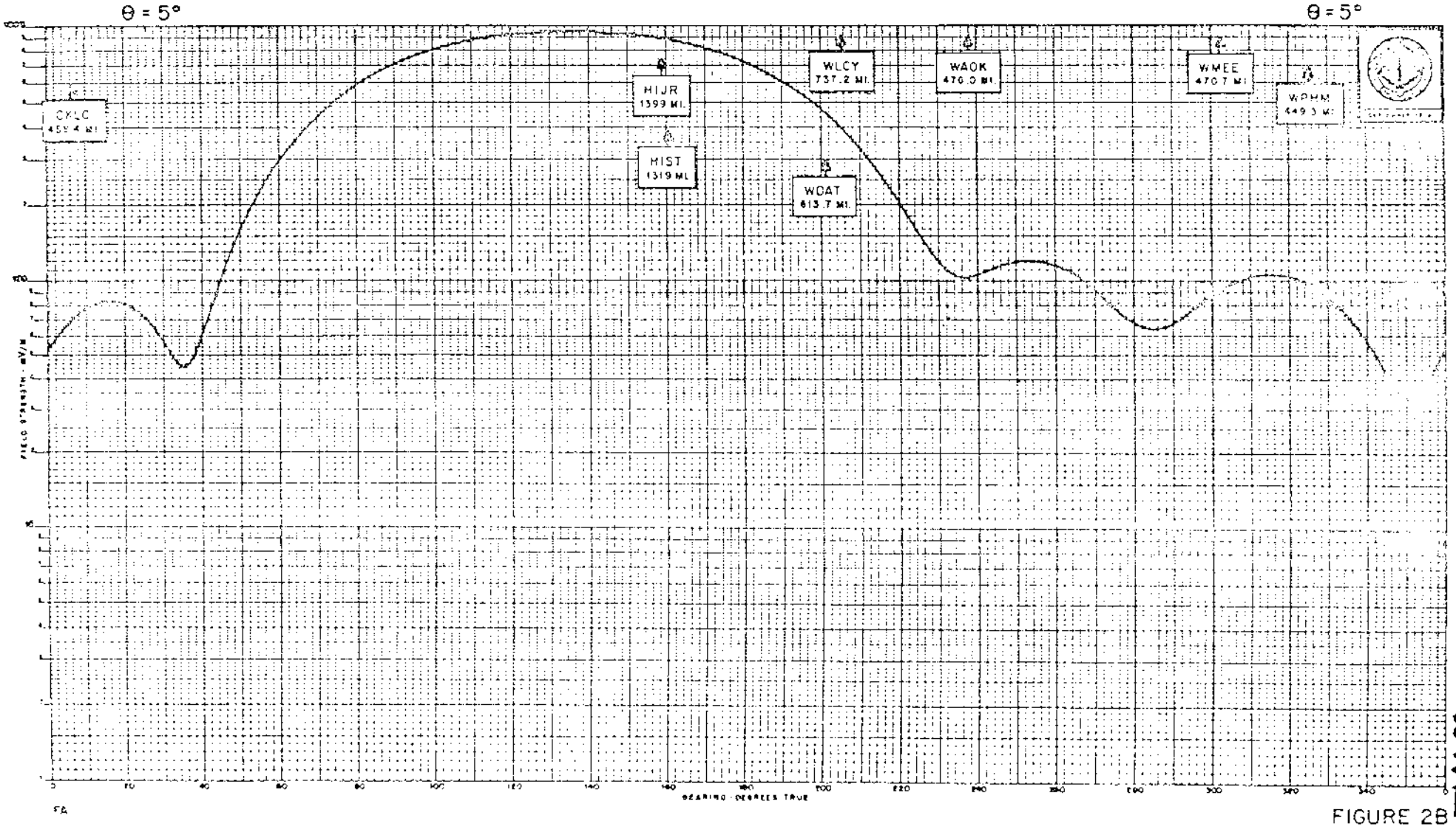

θ = 5°
θ = 5°
CKLC
459.4 MI.
HIJR
1399 MI.
HIST
1319 MI.
WLCY
737.2 MI.
WOAT
613.7 MI.
WAOK
470.0 MI.
WMEE
470.7 MI.
WPHM
449.3 MI.
BEARING - DEGREES TRUE

FIGURE 28

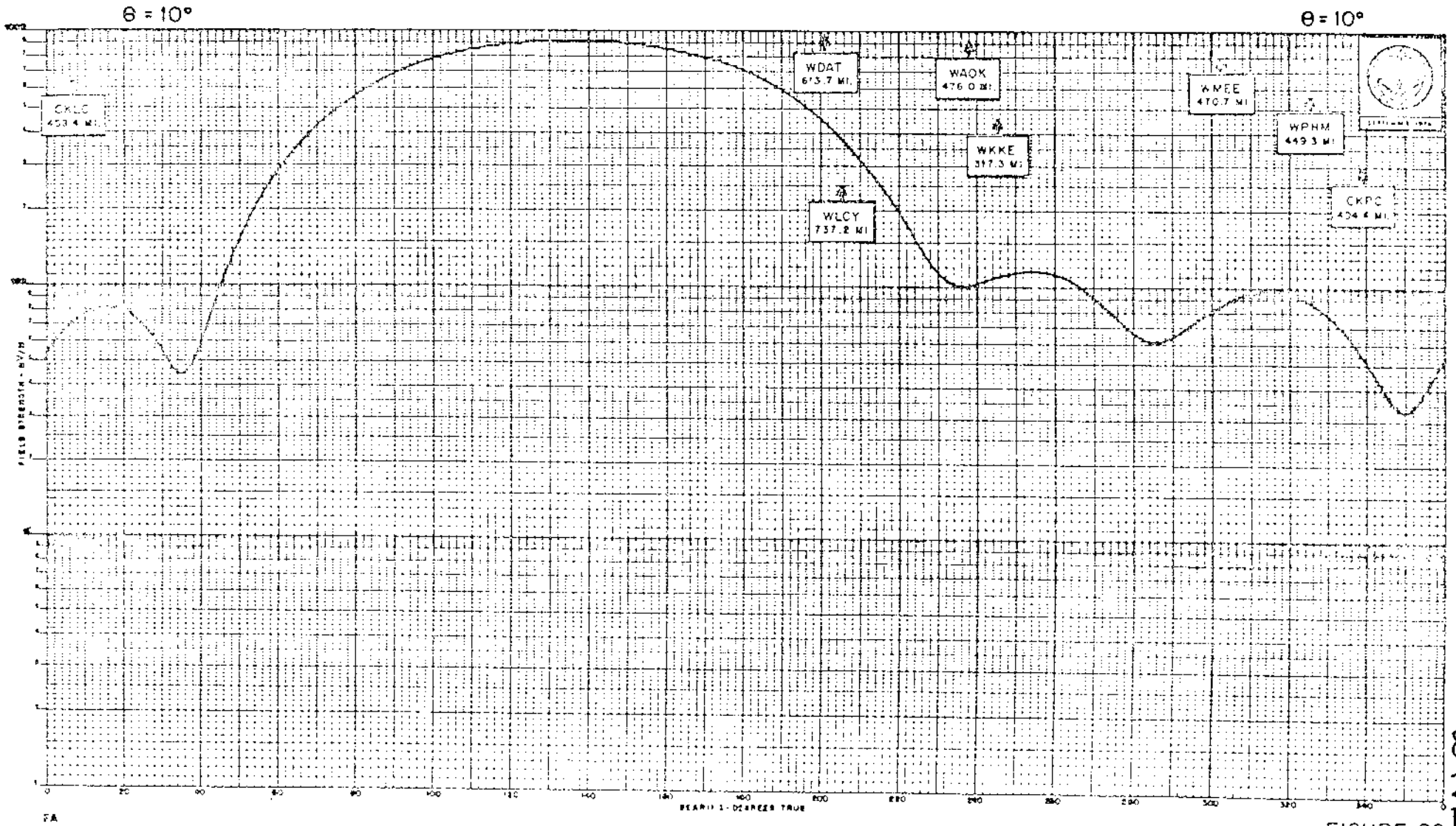
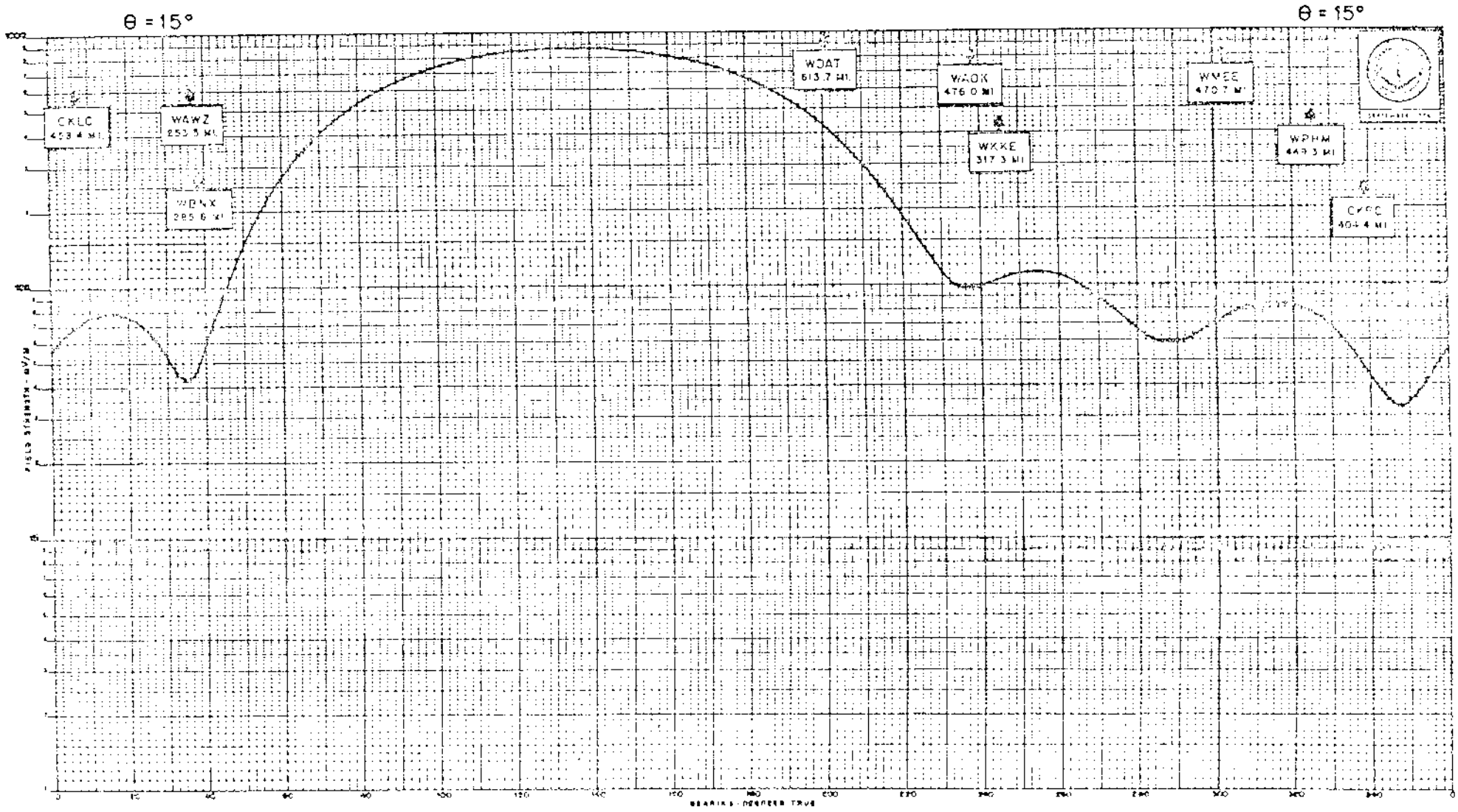


FIGURE 2C

WTVP



FA

FIGURE 2D

WTVR

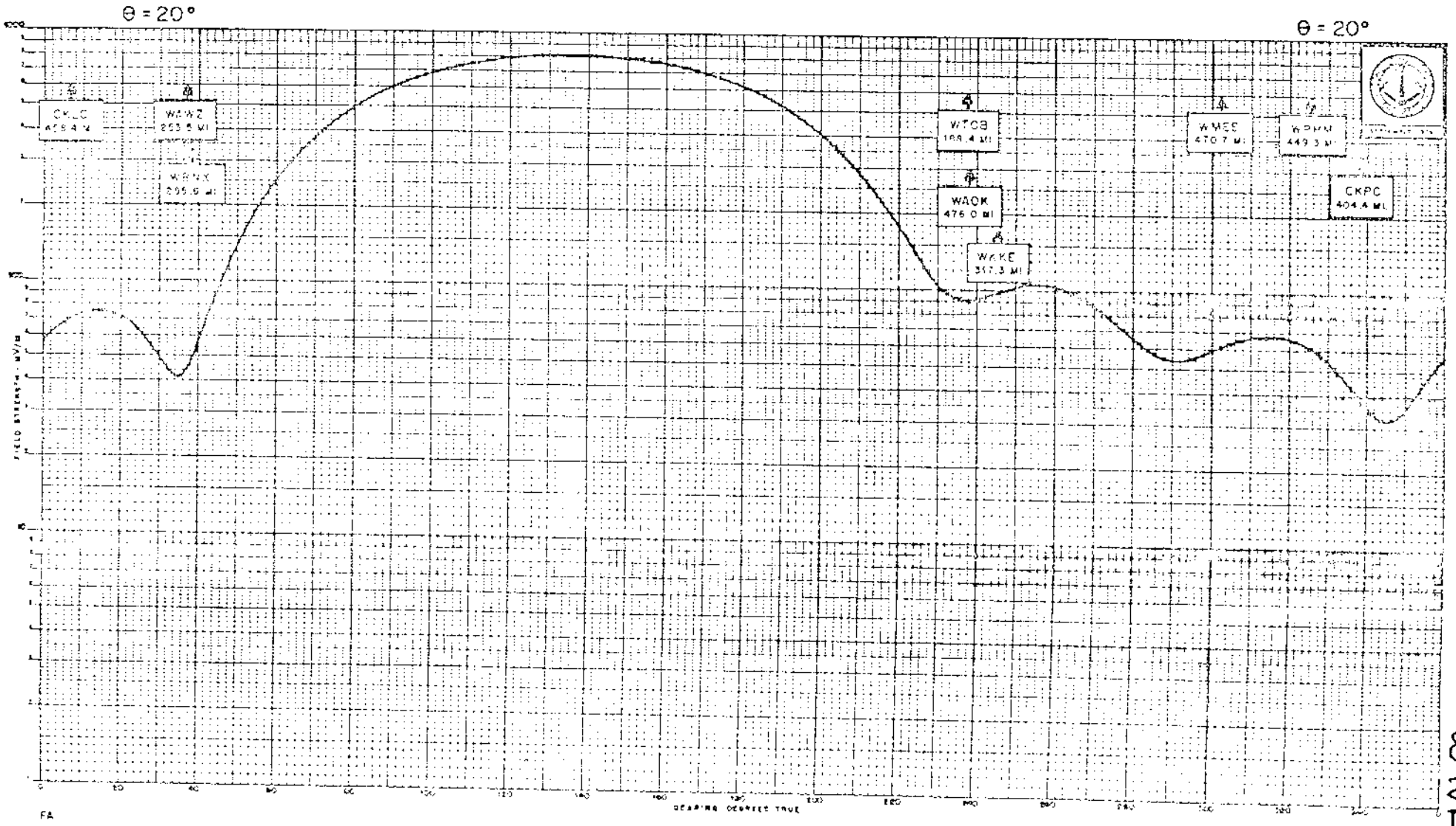
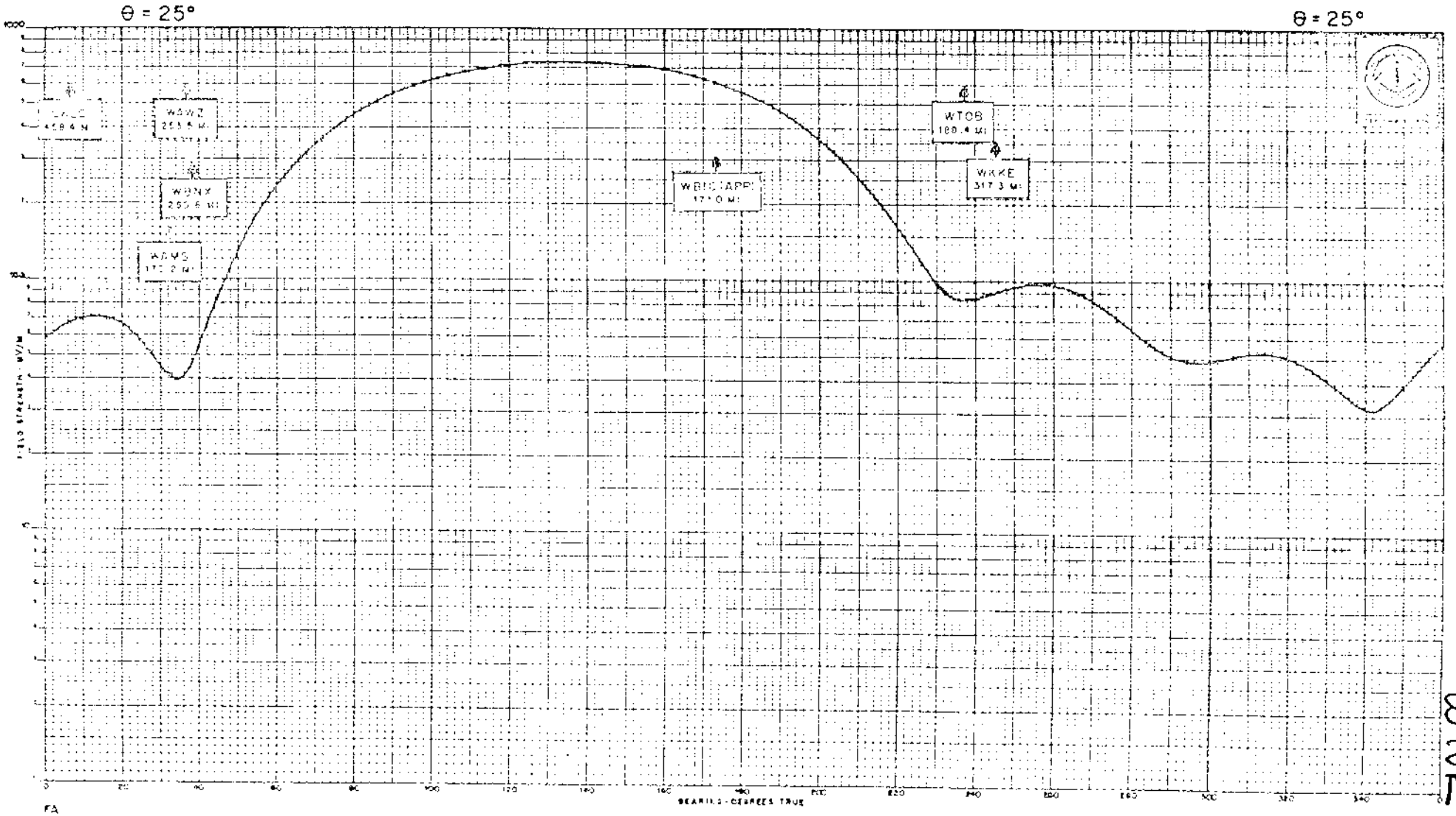
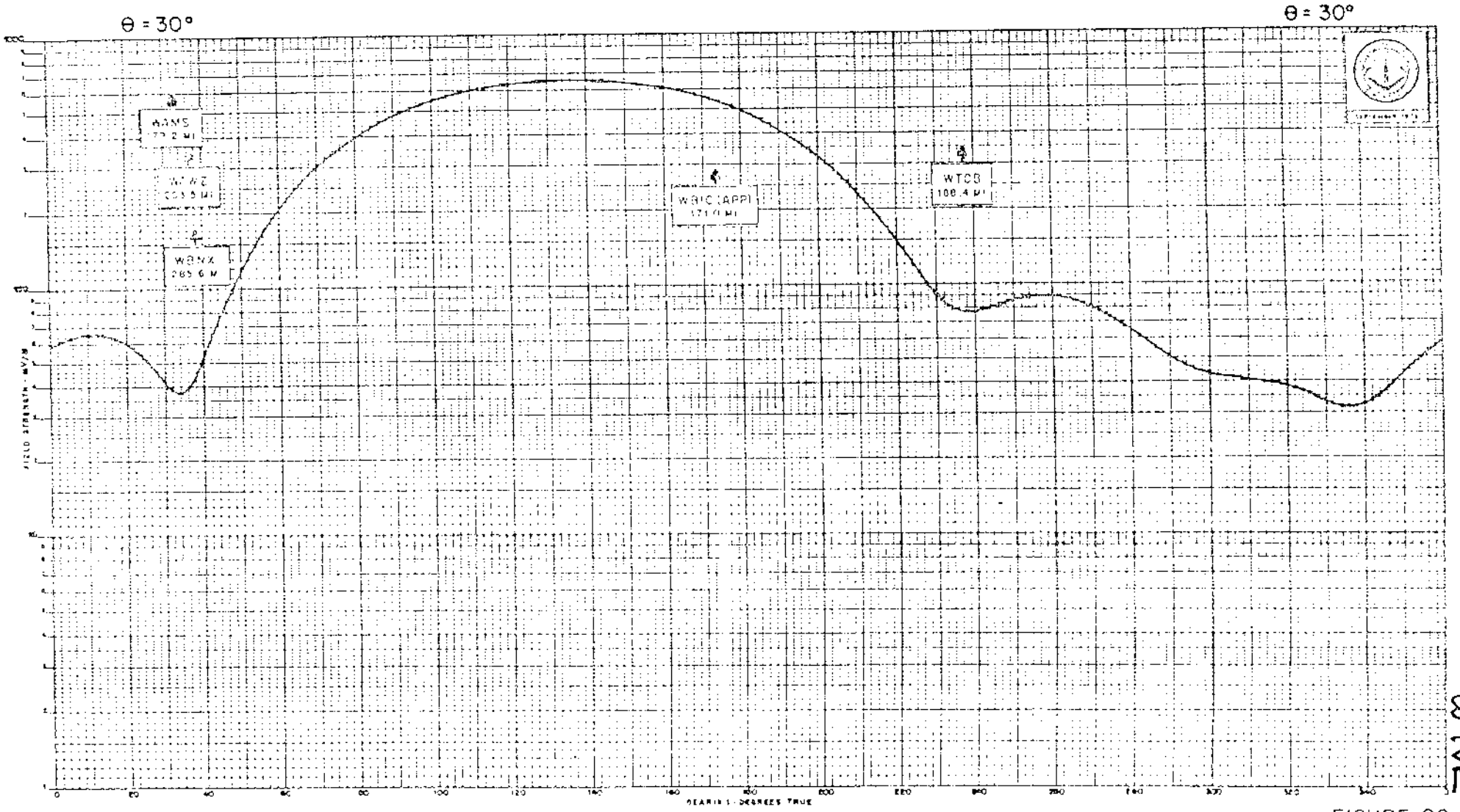

θ = 20°
θ = 20°
CKLC
WAWZ
253.5 MI
WRNX
WTOB
188.4 MI
WAOK
476.0 MI
WKKE
317.3 MI
WMSE
470.7 MI
WPHM
449.3 MI
CKPC
404.4 MI
FIELD STRENGTH, MV/M
BEARING DEGREES TRUE
FA

FIGURE 2E



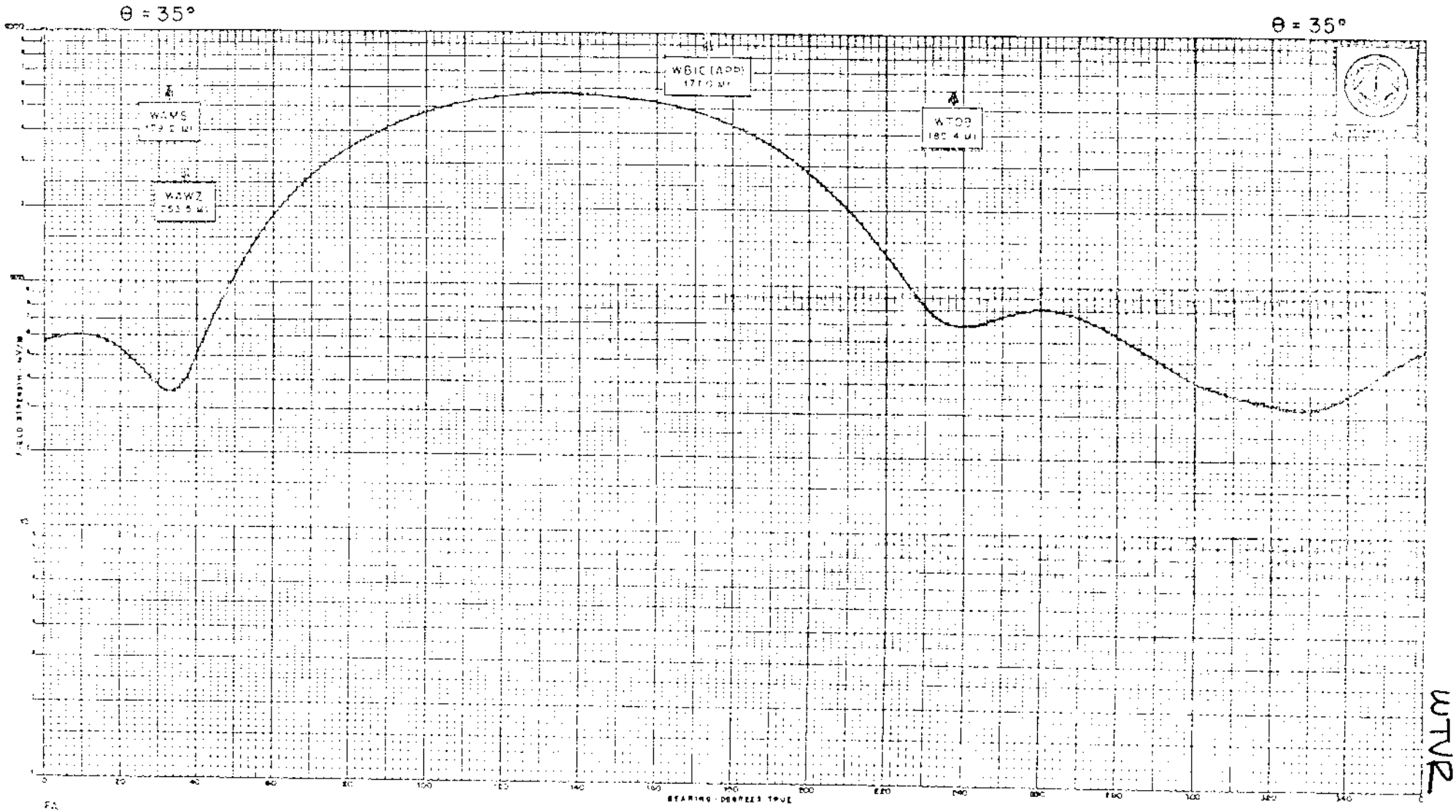
WTVP

FIGURE 2F


θ = 30°
θ = 30°
WTCB
108.4 MI
WBIC (APP)
WBNX
285.6 MI
FIELD STRENGTH - MV/M
BEARING - DEGREES TRUE

FA

FIGURE 2G



WTVR

FIGURE 2H

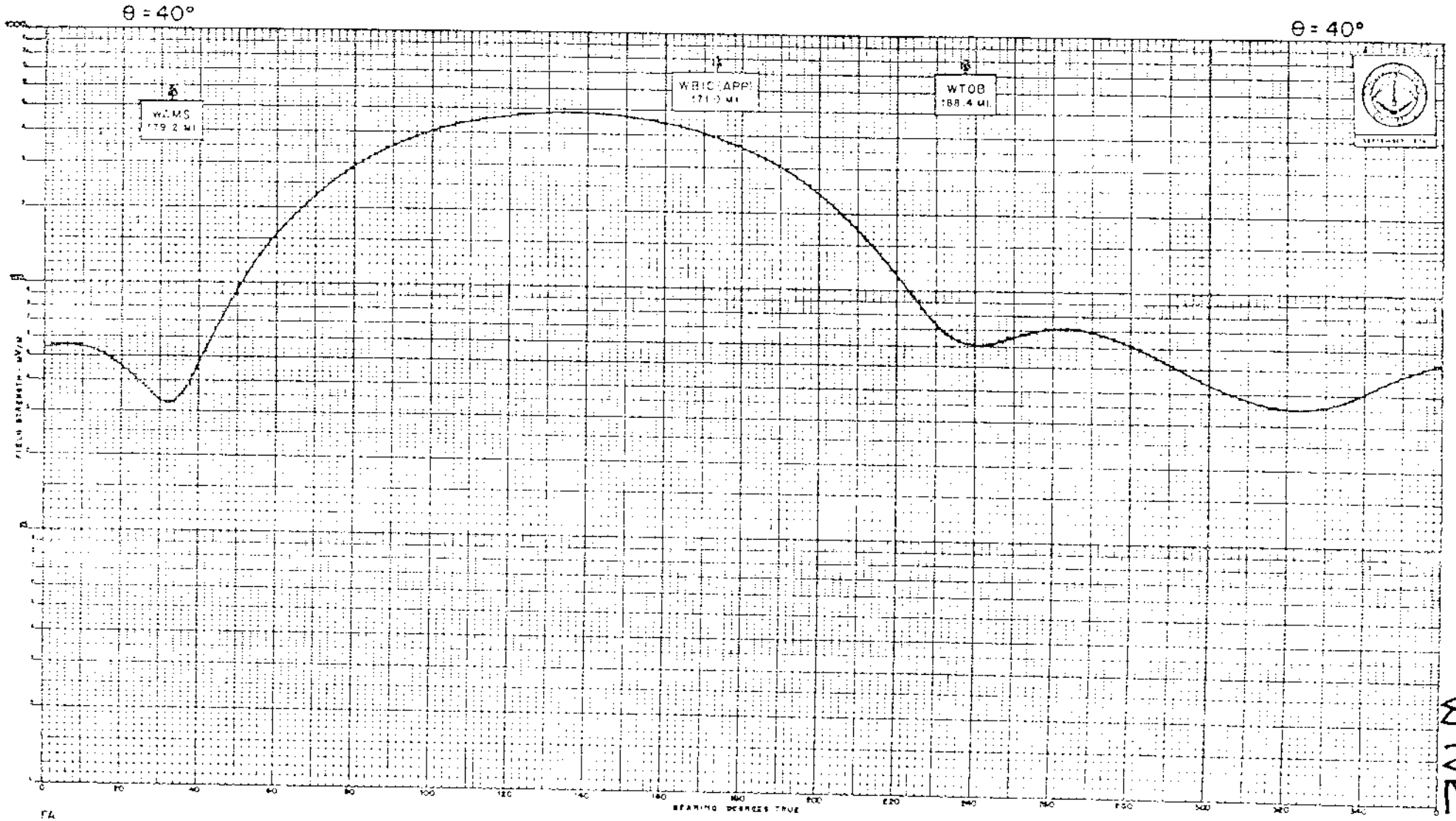
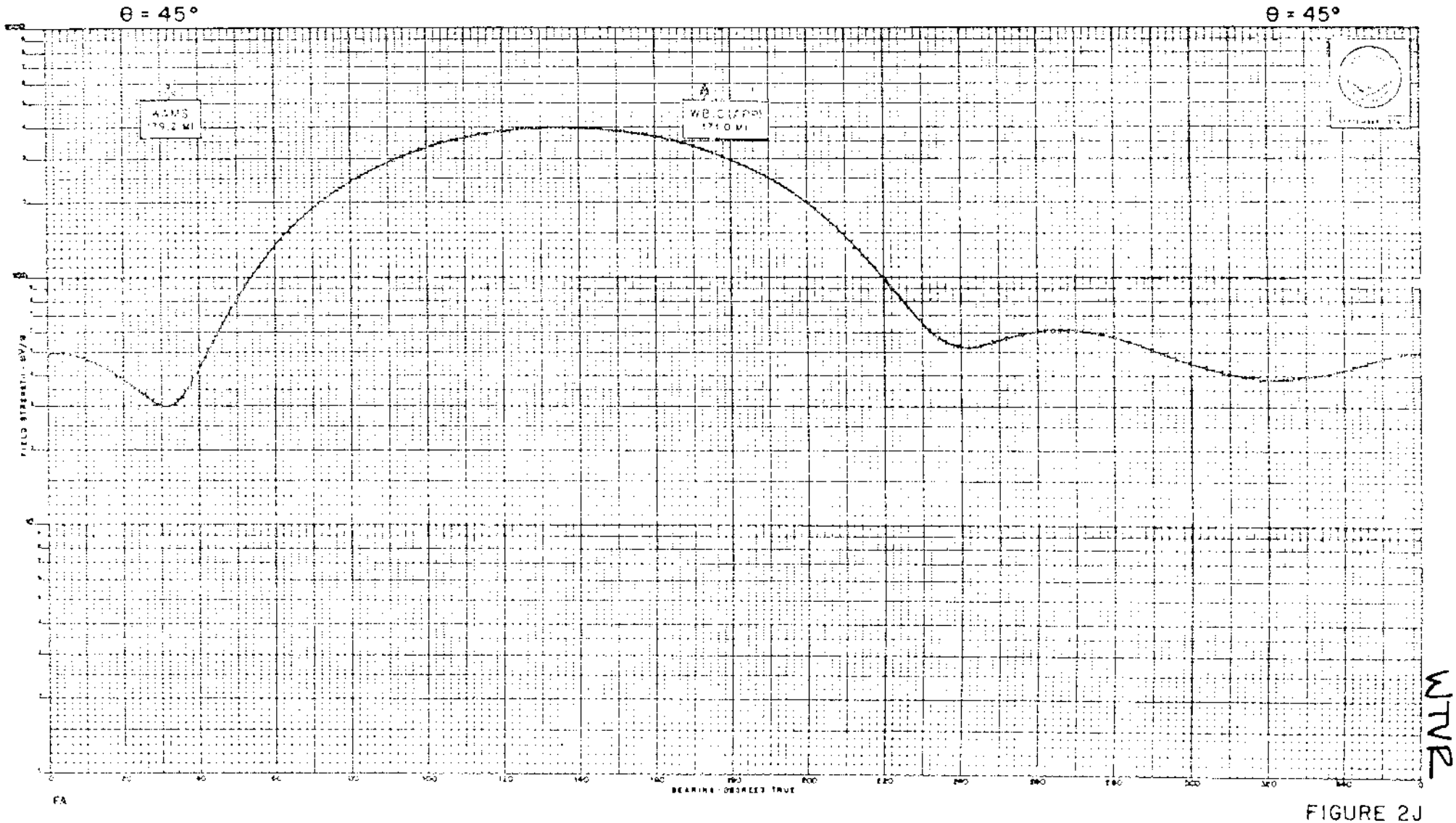

θ = 40°
θ = 40°
WLMS
179.2 MI.
WBIC APPL
171.0 MI.
WTOB
188.4 MI.
FIELD STRENGTH - mV/M
BEARING DEGREES TRUE
FA

FIGURE 21



WTVP

FIGURE 2J

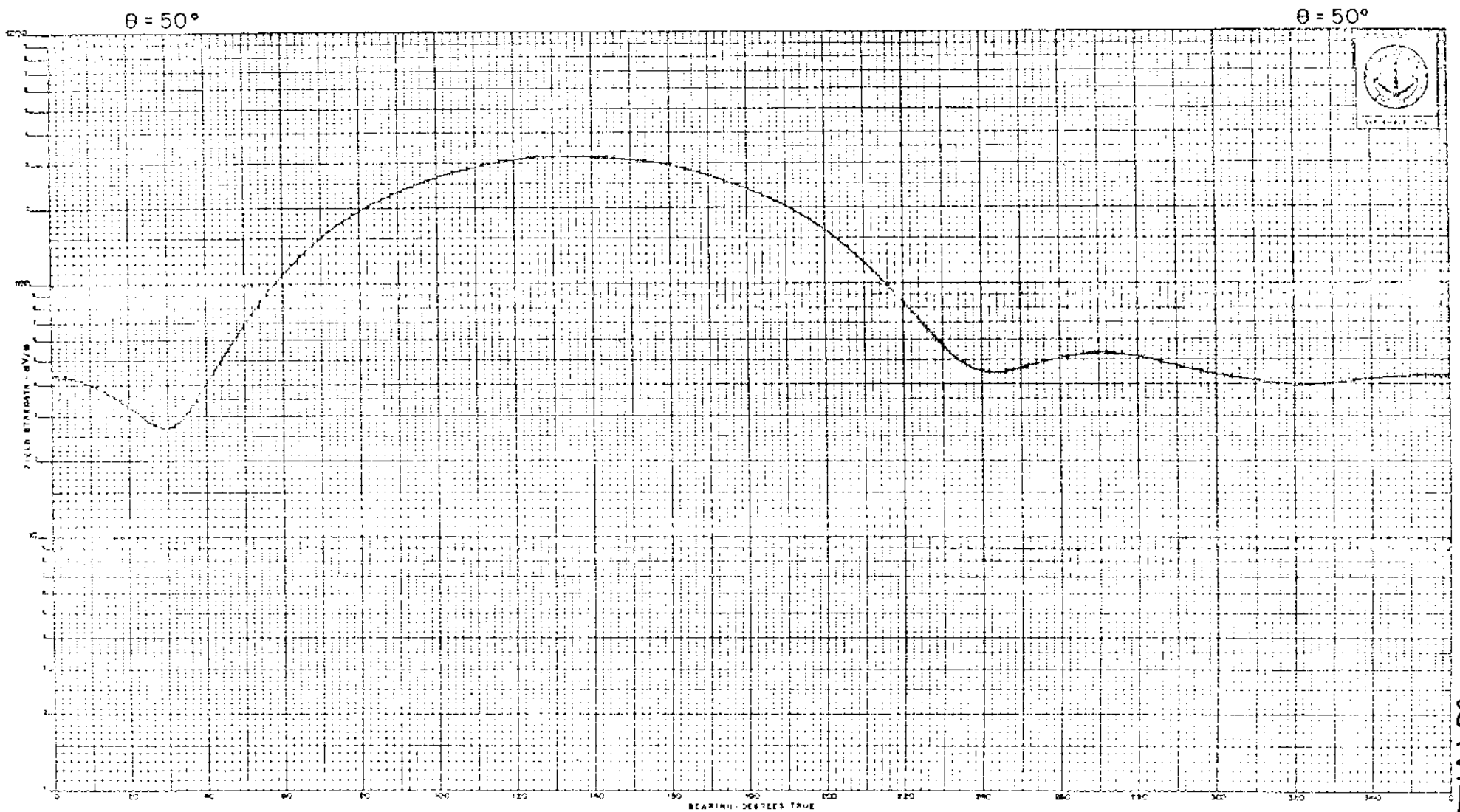


FIGURE 2K

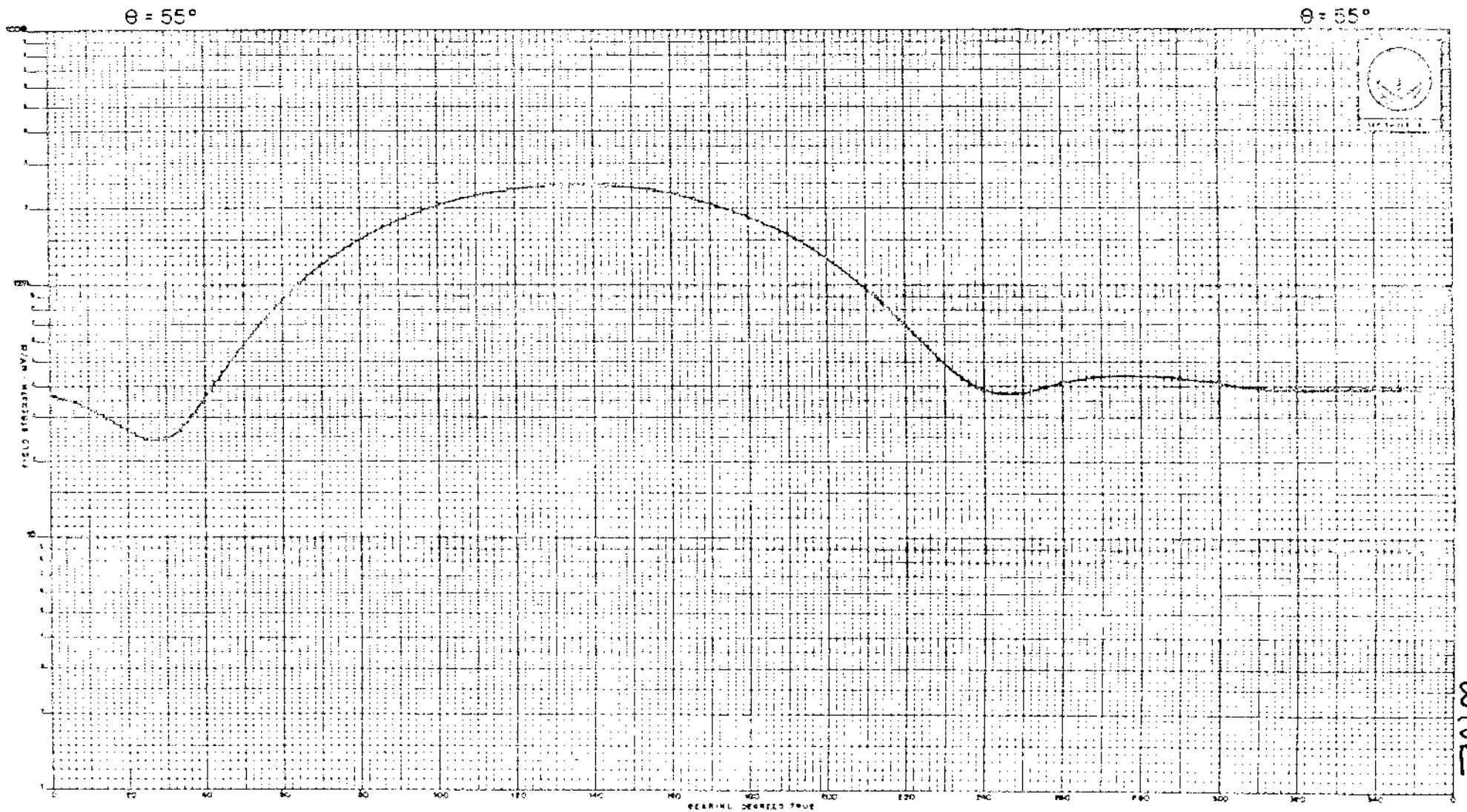
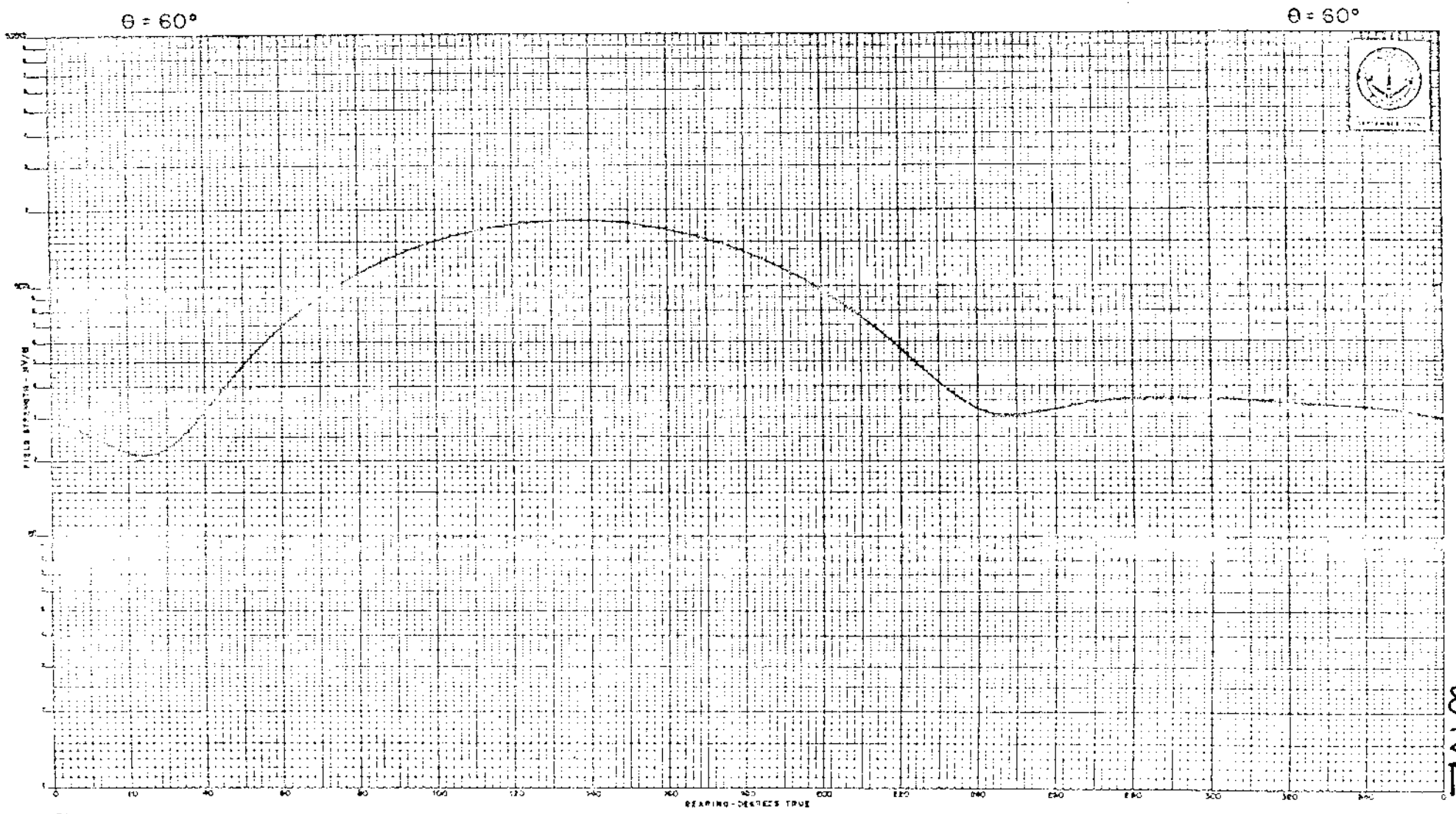


FIGURE 2L

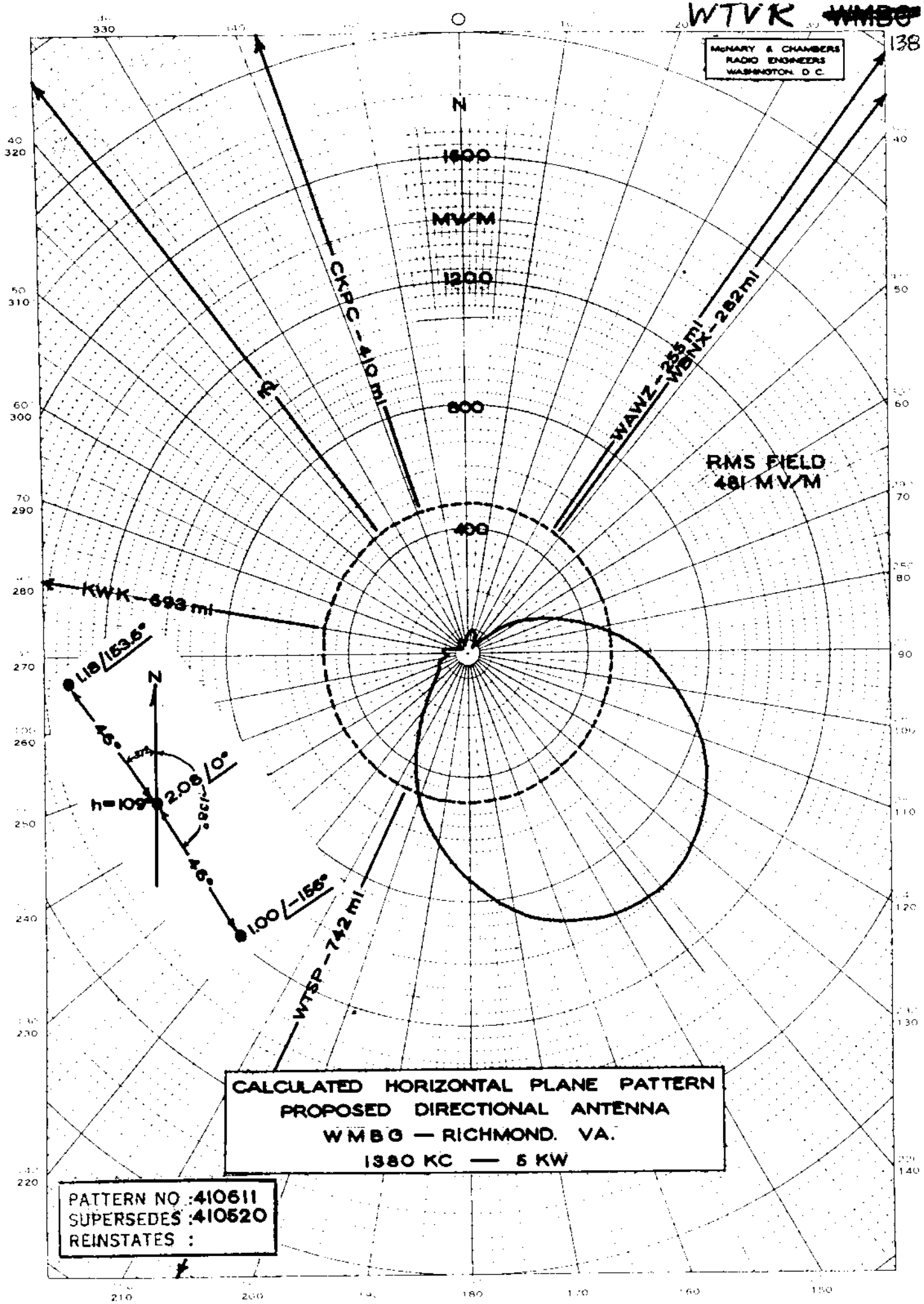


FA

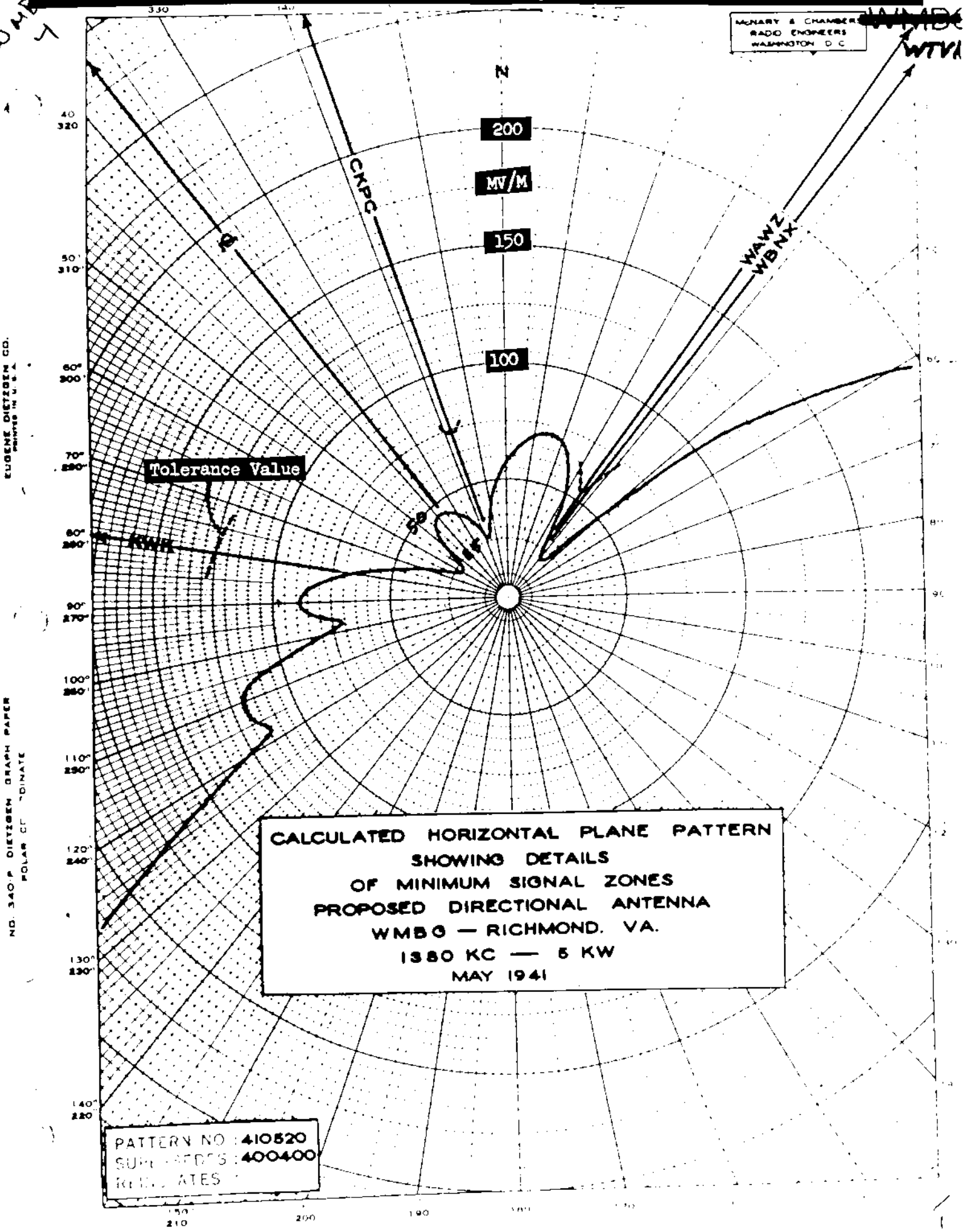
FIGURE 2M

WTVR ~~WMBG~~

138



PROPOSED NIGHT NULLS — Station WMBG — DA-N,U — Richmond, Virginia — 1380 KC



WTVR ~~WMBG~~

MEASURED NIGHT — WMBG, RICHMOND, VA. — 340'8-10-49 350° — 5kw, DAN — 1380 kc

10/10/49G

MEASURED HORIZONTAL PLANE PATTERN

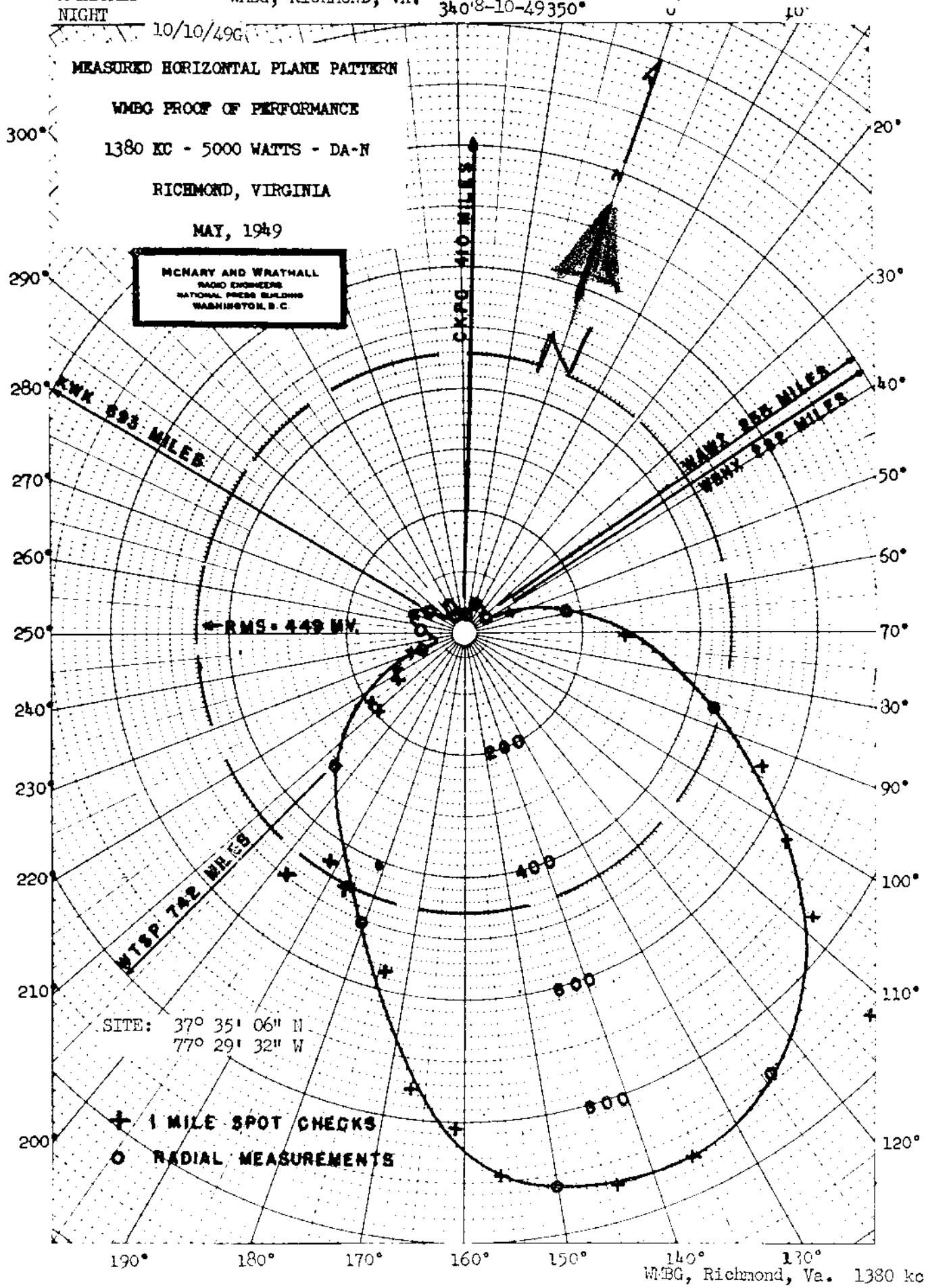
WMBG PROOF OF PERFORMANCE

1380 KC - 5000 WATTS - DA-N

RICHMOND, VIRGINIA

MAY, 1949

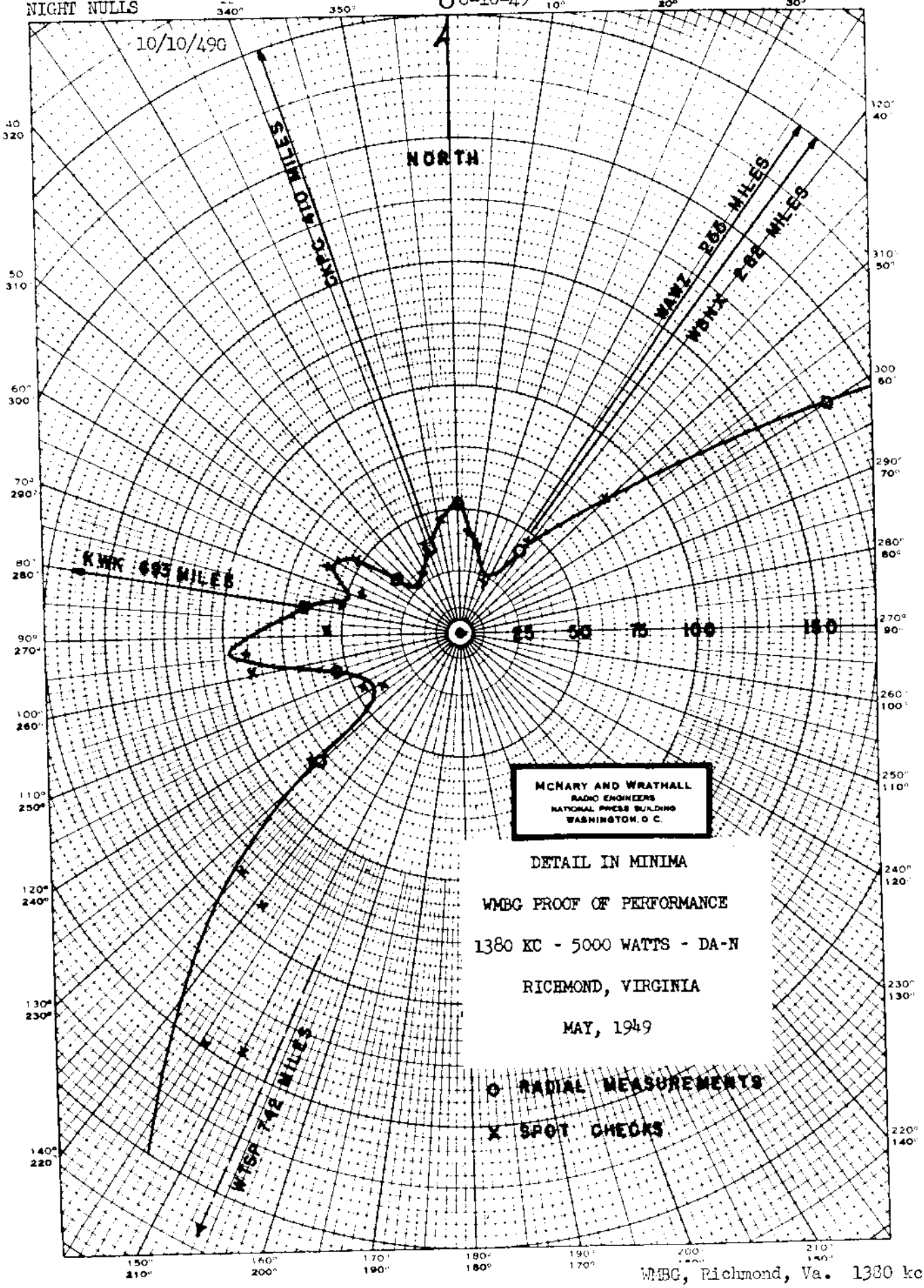
McNARY AND WRATHALL
RADIO ENGINEERS
NATIONAL PRESS BUILDING
WASHINGTON, D.C.



WMBG, Richmond, Va. 1380 kc

WTVR

MEASURED NIGHT NULLS — WMBG, RICHMOND, VA. — 5kw, DAN — 1380 kc



WMBG, Richmond, Va. 1380 kc

SEE REVERSE SIDE

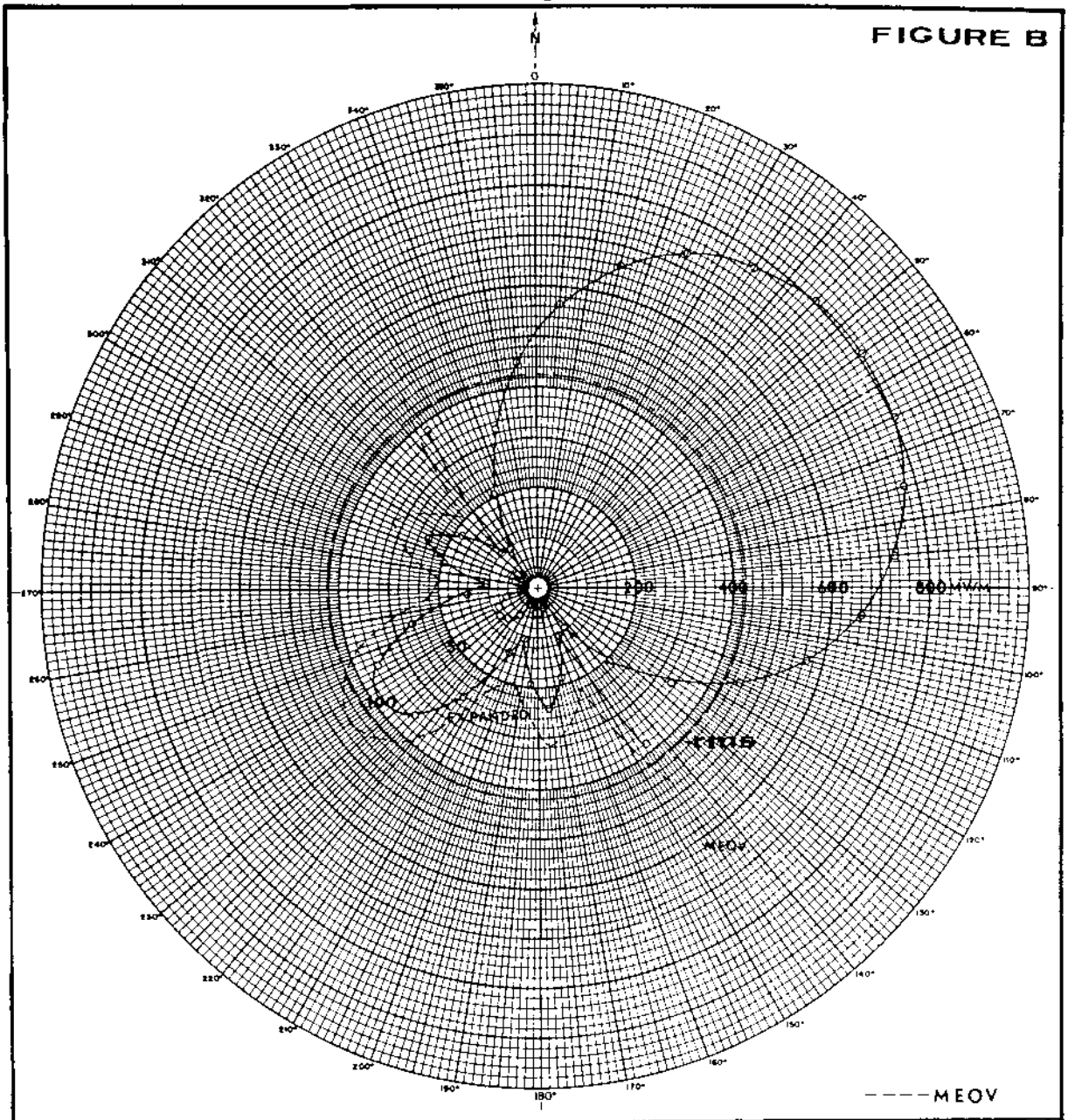
WYNK

Proposed Day
(7-29-70ct)

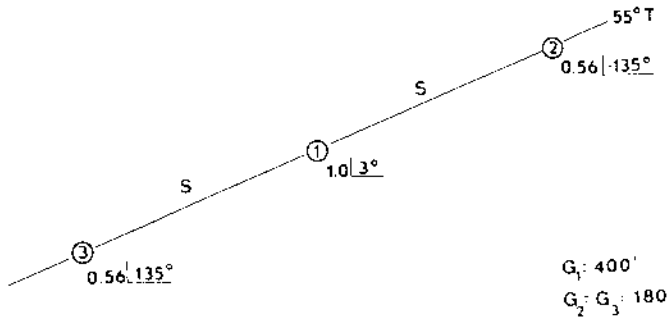
Station WYNK
Baton Rouge, Louisiana

5kw,DA-D,O
1380 kc

FIGURE B



----MEOV



APPLICANT	MISS-LOU BROADCASTING CORP
LOCATION	Baton Rouge,La
FREQUENCY	1380 kHz
POWER	5 kw
LATITUDE	30° 27' 39"
LONGITUDE	91° 13' 23"
WHEN USED	Daytime
RMS FIELD	423mv/m
DATE	700412

William B. Carr
CONSULTING ENGINEER
FORT WORTH, TEXAS

FCC File No.BMP-13032
Accepted 6-29-70

Station WYNK
Baton Rouge, Louisiana

1380 kc

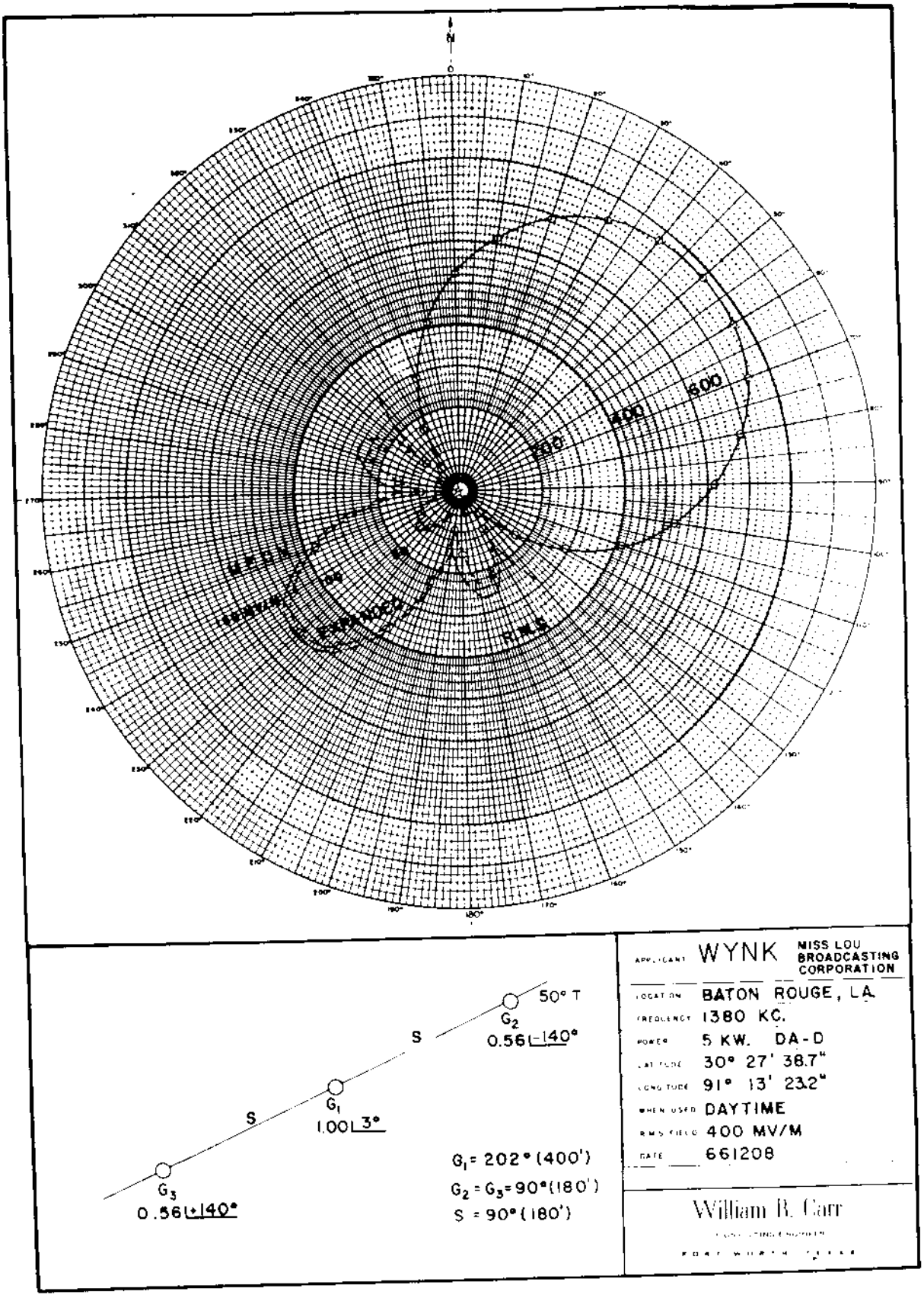
WYNK

Proposed Day
(2-28-67ct)

Station WYNK
Baton Rouge, Louisiana

5kw, DA-D, D
1380 kc

FIGURE "B"



APPLICANT	WYNK MISS LOU BROADCASTING CORPORATION
LOCATION	BATON ROUGE, LA.
FREQUENCY	1380 KC.
POWER	5 KW. DA-D
LATITUDE	30° 27' 38.7"
LONGITUDE	91° 13' 23.2"
HRS. USED	DAYTIME
RMS FIELD	400 MV/M
DATE	661208

William B. Carr
CONSULTING ENGINEER
FORT WORTH, TEXAS

FCC File No. BP-17572
Accepted 2-7-67

Station WYNK
Baton Rouge, Louisiana

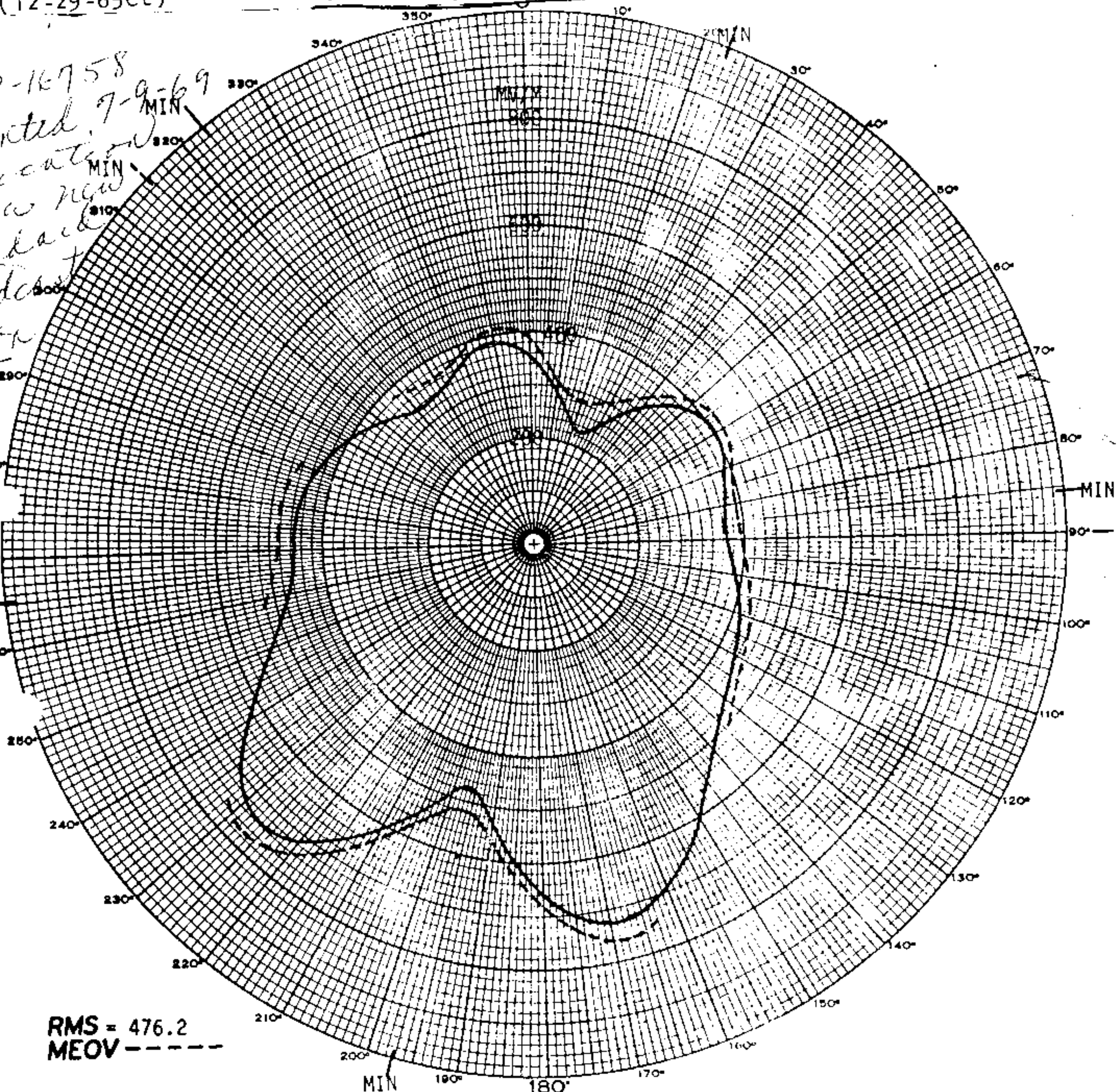
1380 kc

Proposed Day
(12-29-65ct)

New; Victory Bcstg. Co., Inc.
St. Louis, Missouri

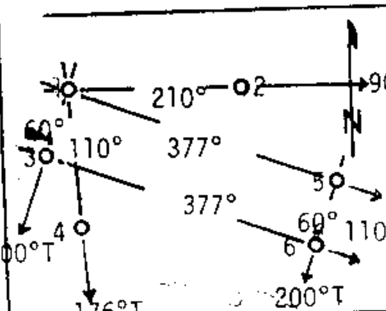
5kw,DA-2,U
1380 kc

BP-16758
Granted 7-9-69
application for a new standard broadcast station



RMS = 476.2
MEOV - - - - -

TOWER PLACEMENT SKETCH



PATTERN PARAMETERS

TOWER No.	ELECTRICAL HEIGHT G°	SPACING S°	PHASING ψ°	FIELD RATIO f
1	197	ref.	0	1.00
2	98.5	not used		
3	180		-64	1.00
4	98.5	not used		
5	75		162	0.2
6	75		98	0.2
7				
8				
9				
10				

DAYTIME OPERATION ☒ NIGHTTIME OPERATION ☐

FIGURE A-3

PROPOSED DAYTIME PATTERN

θ° = 0

STATION DATA

CALL NEW
FREQ 1380 KC/s
POWER 5.0 KW
TYPE DA-2
TIME DAY
LAT. N-38-43-30.6
LONG. W-90-10-31.3

F.H. MUNN, JR.
RADIO ENGINEER
COLDWATER, MICH.

FCC File No. BP-16758
Accepted 11-17-65

New; Victory Bcstg. Co., Inc.
St. Louis, Missouri

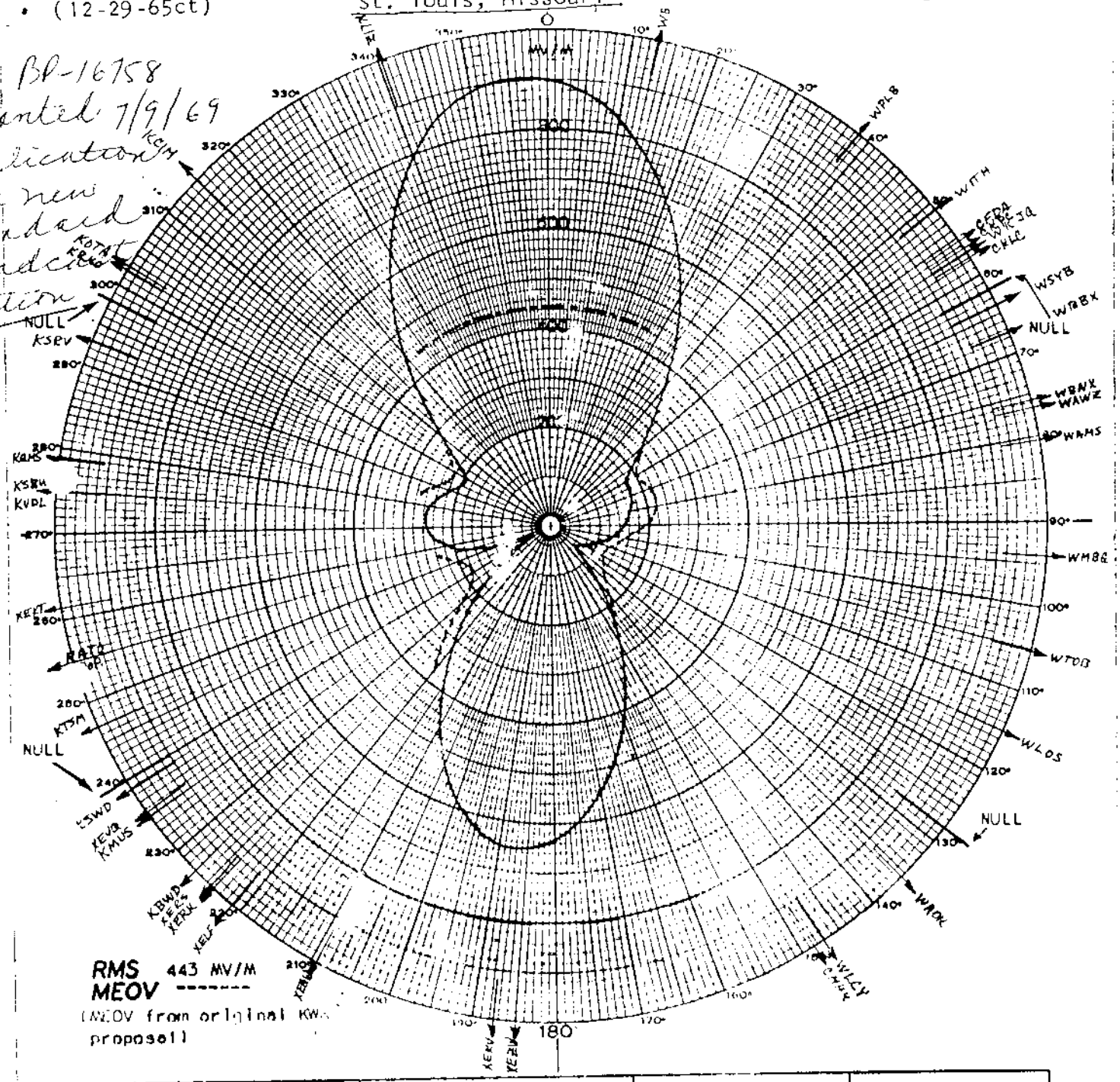
1380 kc

Proposed Night
(12-29-65ct)

New; Victory Bcstg. Co., Inc.
St. louis, Missouri

5kw,DA-2,U
1380 kc

BP-16758
Granted 7/9/69
application
for a new
standard
broadcast
station



RMS 443 MV/M
MEOV --------
(MEOV from original KW-S proposal)

TOWER PLACEMENT SKETCH	PATTERN PARAMETERS	FIGURE 8-5 82	STATION DATA
$G_1 = 107°$; $G_{2,3} = 98.5°$ No. 1 — 1/0° — 210° — No. 3 — 90° — 0.8/13° 110° No. 2 — 0.35/108° — 176°	TOWER No. / ELECTRICAL HEIGHT (E) / SPACING (S) / PHASING (P) / FIELD RATIO (F)	PROPOSED NIGHTTIME COMPUTED PATTERN St. Louis, Mo. Victory B/C Company SHOWING ALLOCATION TO OTHER STATIONS θ° (0)	CALL NEW FREQ 1380 Kc/5 POWER 5 Kw TYPE DA-2 TIME NIGHTTIME LAT. NL38-43-30.6 LONG WL90-10-31.3 E.H.MUNN,JR. RADIO ENGINEER COLDWATER, MICH.

FCC File No.BP-16758
Accepted 11-17-65

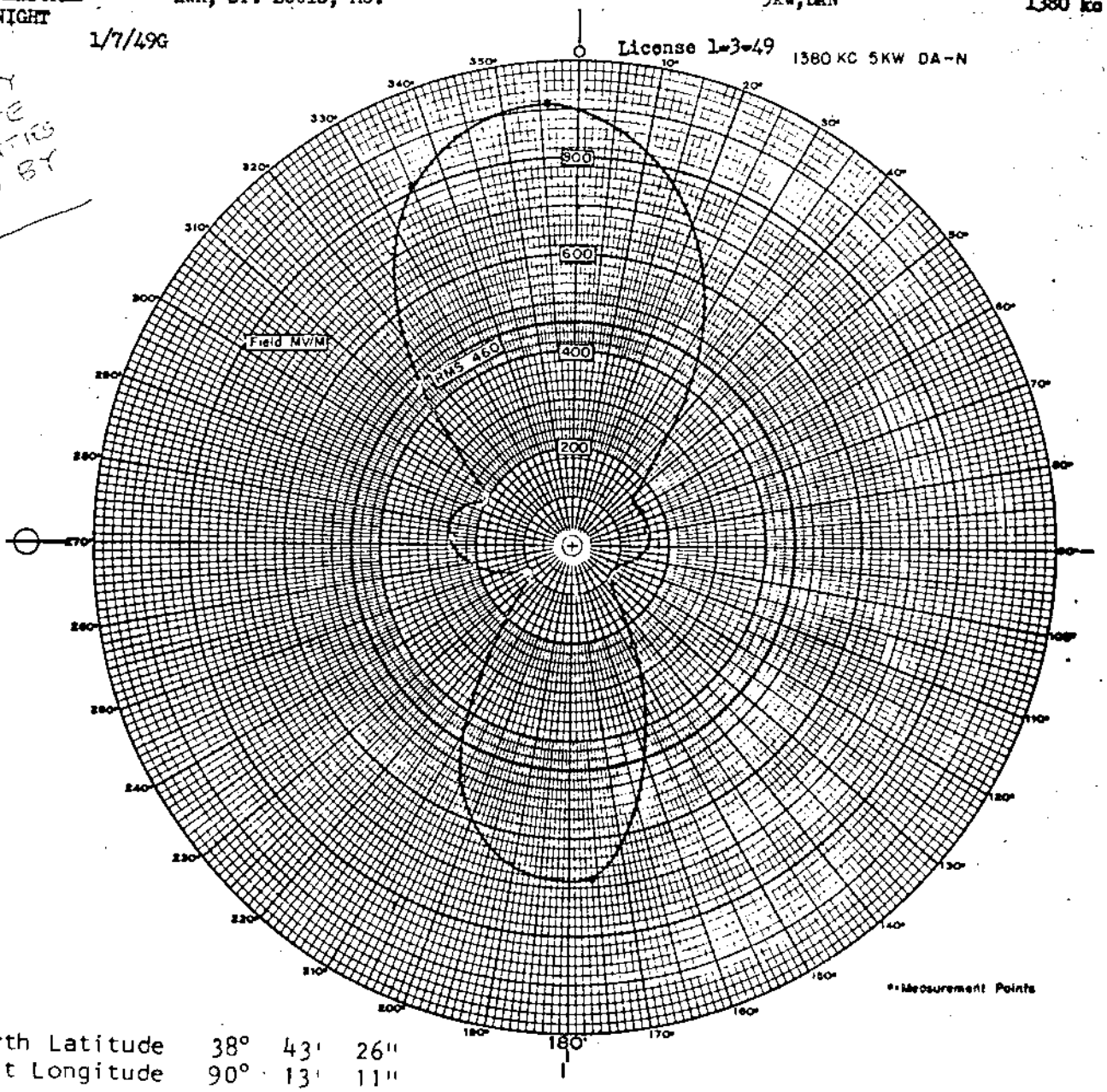
New; Victory Bcstg. Co., Inc.
St. Louis, Missouri

1380 kc

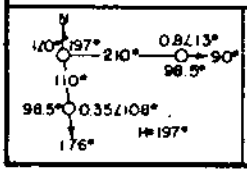
MEASURED NIGHT KWK, ST. LOUIS, MO. 5kw,DAN 1380 kc

1/7/49

2-22-65
INTERIM
AUTHORITY
TO OPERATE
ON FACILITIES
VACATED BY
KWK



North Latitude 38° 43' 26"
West Longitude 90° 13' 11"

STATION KWK ST. LOUIS, MISSOURI		Figure 8 Series C481228
		1380 KC 5000 WATTS NIGHT
	MEASURED DIRECTIONAL ANTENNA PATTERN	FRANK H. McINTOSH *Consulting Radio Engineer* Washington, D.C.