690-720

Station	Main Studio	Freq	Power	Date
CBF	Montreal, QU	690	50 kW/ND	2/7/75
CBU	Vancouver, BC	690	50 kW/DA-1	3/28/68
CBU	Vancouver, BC	690	10 kW/DA-1	12/20/51
CFRG	Gravelbourg, Sask.	690	5 kW/DA-N	2/7/75
CMBC	Havana, CU	690	50 kW/DA-1	7/13/53
KEOS	Flagstaff, AZ	690	0.5/1 kW/DA-2	2/28/67
KEYR	Terrytown, NE	690	1 kW/DA-D	5/27/60
KGGF	Dallas, TX	690	5/10 kW/DA-D	1/11/51
KHEY	El Paso, TX	690	10 kW/DA-2	8/26/70
KTCR	Minneapolis, MN	690	0.5 kW/DA-D	10/24/58
KUSD	Vermillion, SD	690	1 kW/DA-D	9/13/50
KZEY	Tyler, TX	690	1 kW/DA-D	5/8/61
WADS	Ansonia, CT	690	1 kW/DA-D	9/28/79
WADS	Ansonia, CT	690	0.5 kW/DA-D	8/16/55
WAGO	Oshkosh, WI	690	0.25 kW/DA-D	10/30/63
WAPE	Jacksonville, FL	690	10/25 kW/DA-N	7/24/63
WTIX	New Orleans, LA	690	5/10 kW/DA-2	8/23/63
WTIX	New Orleans, LA	690	5 kW/DA-2	12/15/60
WXUR	Media, PA	690	0.5 kW/DA-D	6/62
WVOK	Birmingham, AL	690	50 kW/DA-D	7/19/56
WYIS	Phoenixville, PA	690	0.5 kW/DA-D	10/27/77
XETRA	Mexico, DF	690	50 kW/DA-N	2/27/51
XETRA	Tijuana, Baja, CA	690	50 kW/DA-2	8/27/65
WLW	Cincinnati, OH	700	50 kW/U	2/23/55
CFRG	Gravelbourg, Sask.	710	5 kW	10/31/55
CIPC	Port-Cartier, QU	710	1 kW/DA-1	5/30/74
CJOX	Grand Bank, NF	710	1 kW/DA-1	1/29/64

690-720

Station	Main Studio	Freq	Power	Date
CJRN	Niagara Falls, ON	710	2.5/5 kW/DA-2	11/29/68
CJSP	Leamington, ON	710	10 kW/DA-D	11/29/66
CJSP	Leamington, ON	710	5 kW/DA-D	6/28/63
CJSP	Leamington, ON	710	1 kW/DA-D	8/24/62
CKVM	Ville Marie, QU	710	1/10 kW/DA-N	8/22/61
NEW	Clarenville, NF	710	10 kW/DA-1	8/9/74
KAPZ	Bald Knob, AR	710	0.25 kW/DA-D	5/16/80
KEEL	Shreveport, LA	710	5/50 kW/DA-2	3/16/77
KERE	Denver, CO	710	5 kW/DA-1	5/20/54
KFIA	Carmichael, CA	710	0.25 kW/DA-1	3/29/78
KGNC	Dallas, TX	710	10 kW/DA-2	6/21/46
KIRO	Seattle, WA	710	50 kW/DA-N	9/15/77
KMPC	Beverly Hills, CA	710	10 kW	1/31/45
KMPC	Beverly Hills, CA	710	10/50 kW/DA-N	3/21/45
KURV	Edinburg, TX	710	1/0.25 kW/DA-N	2/52
KURV	Edinburg, TX	710	0.5/1 kW/DA-N	3/26/52
WDSM	Superior, WI	710	5 kW/DA-1	6/6/49
WDSM	Superior, WI	710	5/10 kW/DA-N	3/29/78
NEW	St. Matthews, SC	710	1 kW/DA-D	12/17/74
WEGG	Rose Hill, NC	710	0.25 kW/DA-D	11/29/68
WGBS	Miami, FL	710	50 kW/DA-2	10/75
WHB	Kansas City, MO	710	5/10 kW/DA-2	1/22/71
WKRG	Mobile, AL	710	0.5/1 kW/DA-N	5/16/49
WOR	New York, NY	710	50 kW/DA-1	11/29/68
WQBX	Blacksburg, VA	710	10 kW/DA-D	7/26/78
WQBX	Blacksburg, VA	710	5 kW/DA-D	10/28/67
WQKI	Saint Matthews, SC	710	1 kW/DA-D	2/27/76

690-720

Station	Main Studio	Freq	Power	Date
NEW	Carmichael, CA	710	0.25 kW/DA-1	12/8/76
NEW	Tracy, CA	710	0.5 kW/DA-1	4/22/60
WZOO	Asheboro, NC	710	1 kW/DA-D	10/28/67
NEW	Graham, NC	710	10 kW/DA-D	10/28/66
NEW	Red Springs, NC	710	5 kW/DA-D	2/28/67
NEW	Tupelo, MS	710	5 kW/DA-D	9/26/68
NEW	Las Vegas, NV	710	10/50 kW/DA-N	8/28/64
KDWN	Las Vegas, NV	710	10/50 kW/DA-N	11/6/74
KTEE	Idaho Falls, ID	710	10/50 kW/DA-2	7/29/64

CBF

OMNIDIRECTIONAL ANTENNA DESCRIPTION SHEET

STATION: CBF

MAIN STUDIO: Montreal, Que.

POWER : 50 KW

FREQUENCY : 690 KHz, Class I-A

NOTIFICATION LIST NOS: 338

DATE : February 7, 1975.

GEOGRAPHICAL LOCATION: North ~~Latitude:~~ $45^{\circ}25'42''$
West Longitude: $73^{\circ}26'58''$

ANTENNA CHARACTERISTICS

MODE OF OPERATION : ND

NUMBER OF ELEMENTS : One

TYPE OF ELEMENTS : Uniform cross-section, guyed steel tower, base insulated for series feed, sectionalized, with top-loading

HEIGHT ABOVE INSULATORS : 575', 145°

GROUND SYSTEM : 180 equally spaced radials of No. 10 B&S base copper wire, buried approximately 8" deep, 600 ft. long except those bonded along the common cord between the tower and CBM's tower 2; plus a counterpoise at the tower.

PREDICTED EFFECTIVE FIELD: 1800 mV/m for 50 KW (DAY)

1600 mV/m for 50 KW (NIGHT)#

\# Radiation maintained approximately at level specified by adjustment of actual input power to antenna.

CBF
690

Air Services
Telecommunications Division

CANADA

DEPARTMENT OF TRANSPORT
OTTAWA

DESCRIPTION SHEET - OMNIDIRECTIONAL ANTENNA

Station Call: CBF

Main Studio: Montreal, Quebec.

Frequency: 690 Kc/s.

Power: 50 Kw.

Class: I-A

Time: U

Notification Reference: NARBA Annex 3

Geographical Location:

North Latitude: 45° 49' 13"

West Longitude: 73° 17' 50"

Antenna Characteristics:

Height: 585 ft. 155 degrees

Expected Efficiency: 1685 mv/m at 1 mi. for 50 Kw.

or: 238 mv/m at 1 mi. for 1 Kw.

Ground System:

120 Radials, space 3°, running out to a maximum length of 585 feet.

Type of Element:

Steel tower of uniform square cross-section, insulated, guyed.

November 19, 1952

FREE SPACE DIMENSIONS

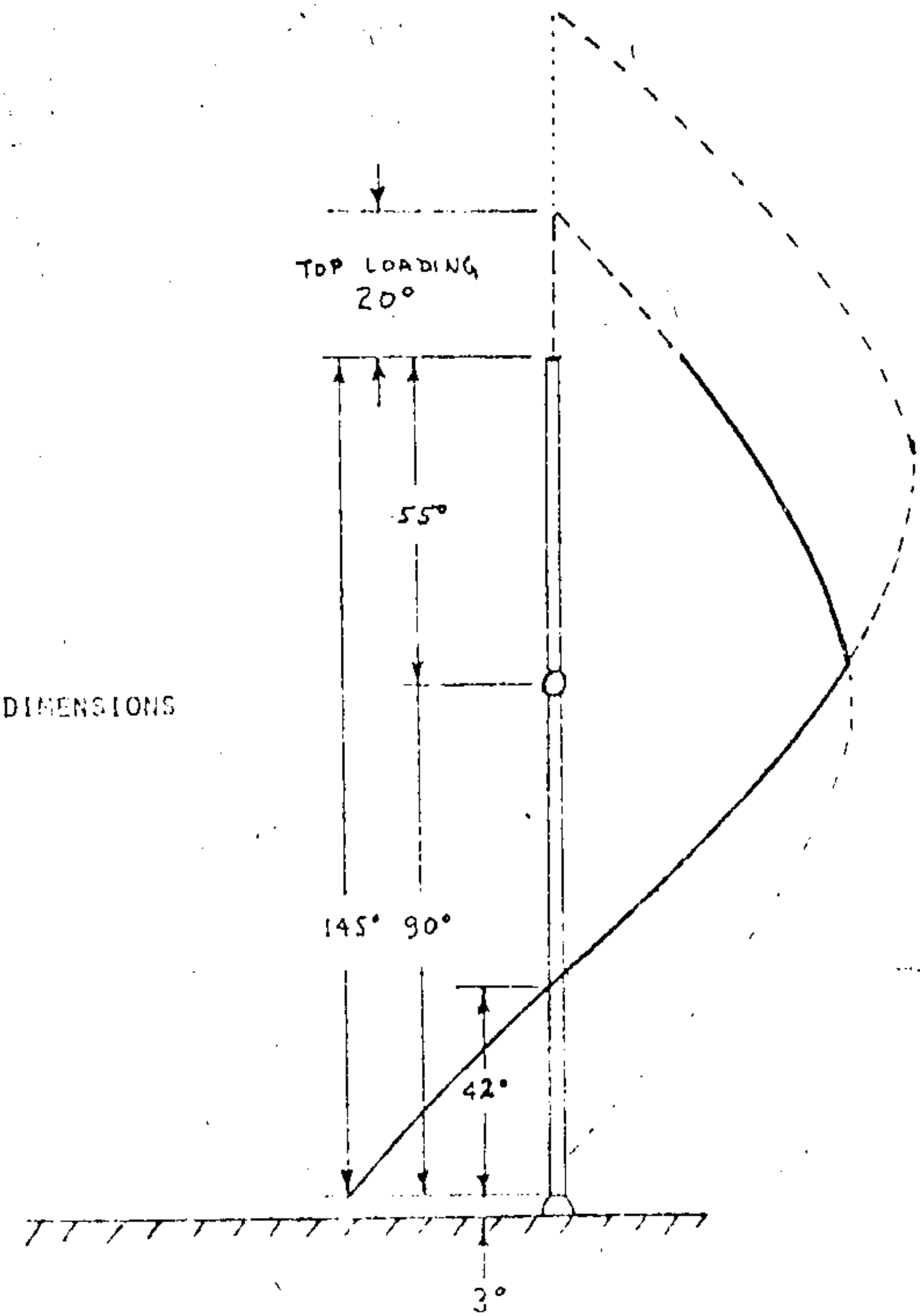


FIGURE 1.
PROPOSED PARAMETERS
CBF - 690 KHZ

Rev. 1

TABLE 1

CBF PARAMETERS DIMENSIONS (Free Space Values)

Total height	Above insulator:	145°
	Above ground :	148°
Current reversal point	Above insulator.	42°
	Above ground :	45°
Height of sectionalizing insulator	Above insulator:	90°
	Above ground :	93°
Velocity factor		0.90
Top loading		20°
Base insulator height		3°
Base resistance (Model measurement)		15 ohms

Relative field (at elevation angle $^{\circ}$) (optimum theoretical design):

θ	$f(\theta)$	θ	$f(\theta)$
0	1.0	50	-0.076667081
5	0.978643930	55	-0.139710928
10	0.946451944	60	-0.176440828
15	0.818808294	65	-0.186401310
20	0.693917227	70	-0.178420028
25	0.551795872	75	-0.150204332
30	0.403121953	80	-0.106005720
35	0.258119797	85	-0.056374064
40	0.125639551	90	0
45	0.012529287		

Rev. 1

...4

CBU

Description Sheet
(3-28-68ct)

Station CBU
Vancouver, B. C.

50kw,DA-1,U,Class II
690 kc

DESCRIPTION SHEET

Station: CBU

Main Studio: Vancouver, B.C.

Frequency: 690 kc/s

Power: 50 kw

Time: Unlimited

Class: II

Notification List No.: 239

Date: February 2[illegible], 1968

Geographic Location - 49° 08' 15" North Latitude
123° 12' 00" West Longitude

ANTENNA SYSTEM: Mode of Operation: DA-1

Elements - Four guyed elements, uniform cross-section, base insulated and series fed. With top loading using upper portion of guys.

TOWERS:	No. 1	No. 2	No. 3	No. 4
HEIGHT OVER INSULATORS:	196'	196'	196'	196'
ELECTRICAL HEIGHT: (with top loading)	60°	60°	60°	60°
OVERALL HEIGHT:	200'	200'	200'	200'
PHASING:	0°	-34.4°	-141.2°	-175°
RATIO:	1.0	0.557	0.452	0.250
SPACING:	Ref.	175.0°	285.0°	445.236°
ORIENTATION:	Ref.	290.0°	260.0°	271.334°

GROUND SYSTEM: The ground system shall consist of 120 radial per tower No. 10 AWG, bare soft-drawn copper wire, uniformly spaced, depth 8 inches approximately. The ground system is equivalent to a 0.4 wave-length system.

PREDICTED EFFECTIVE FIELD: 1245 mv/m at one mile for 50 kw
(176 mv/m at one mile for 1 kw)

DESCRIPTION SHEET

Station: CBU

Main Studio: Vancouver, B.C.

Frequency: 690 kc/s

Power: 50 kw

Time: Unlimited

Class: II

Notification List No.: 229.

Date: July 31, 1967.

Geographic Location - 49° 08' 15" North Latitude
123° 12' 00" West Longitude

ANTENNA SYSTEM: Mode of Operation: DA-1

Elements - Four guyed elements, uniform cross-section, base insulated and series fed. With top loading using upper portion of guys.

TOWERS:	No. 1	No. 2	No. 3	No. 4
HEIGHT OVER INSULATORS:	196'	196'	196'	196'
ELECTRICAL HEIGHT: (with top loading)	60°	60°	60°	60°
OVERALL HEIGHT:	200'	200'	200'	200'
PHASING:	0°	-40.0°	-135°	-175°
RATIO:	1.0	0.500	0.500	0.250
SPACING:	Ref.	175.0°	285.0°	445.236°
ORIENTATION:	Ref.	290.0°	260.0°	271.334°

GROUND SYSTEM: The ground system shall consist of 120 radial per tower No. 10 AWG, bare soft-drawn copper wire, uniformly spaced, depth 8 inches approximately. The ground system is equivalent to a 0.4 wave-length system.

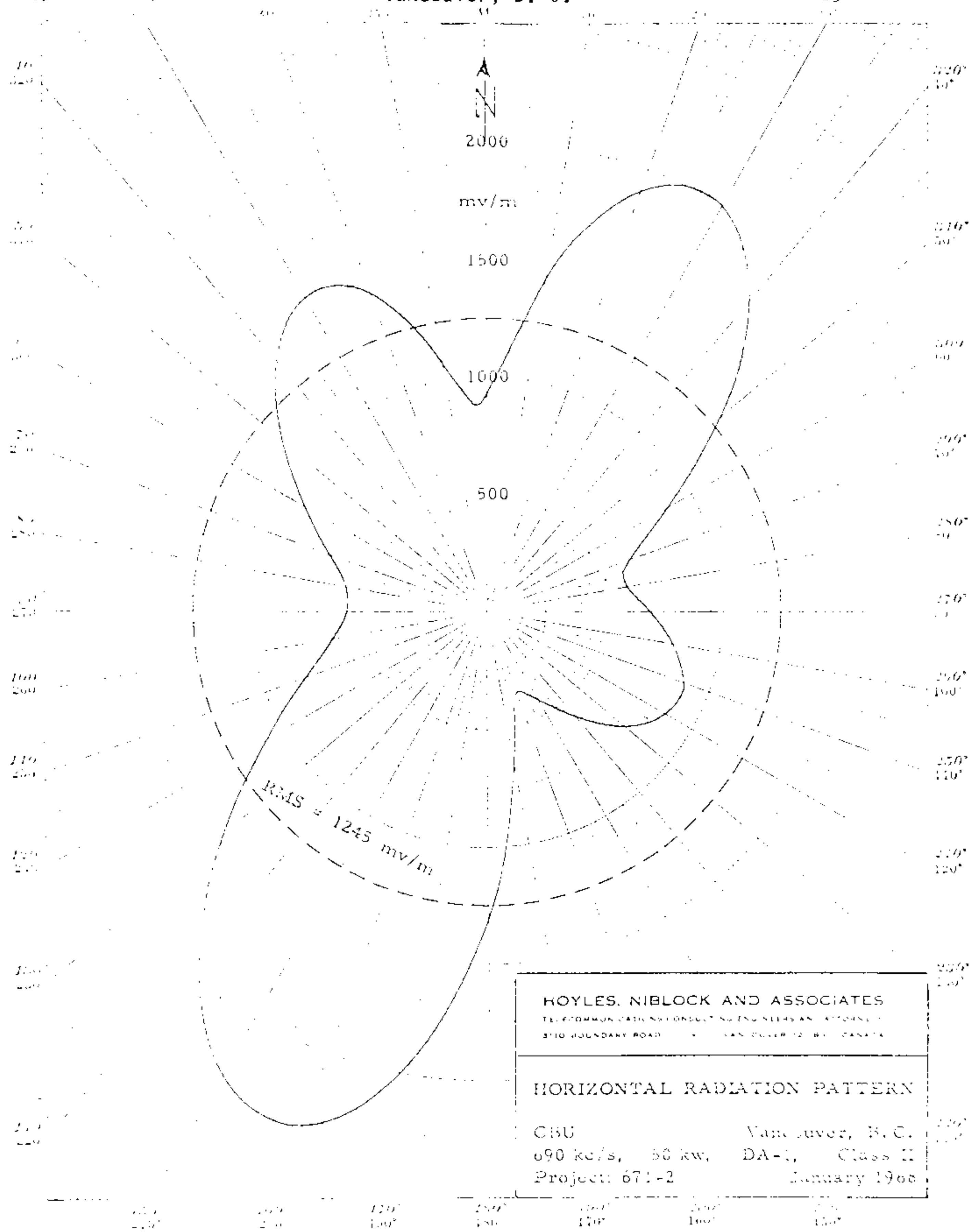
PREDICTED EFFECTIVE FIELD: 1245 mv/m at one mile for 50 kw
(176 mv/m at one mile for 1 kw)

CBU

Proposed Day & Night
(3-28-68ct)

Station CBU
Vancouver, B. C.

50kw,DA-1,U,Class II
690 kc



HOYLES, NIBLOCK AND ASSOCIATES

HORIZONTAL RADIATION PATTERN

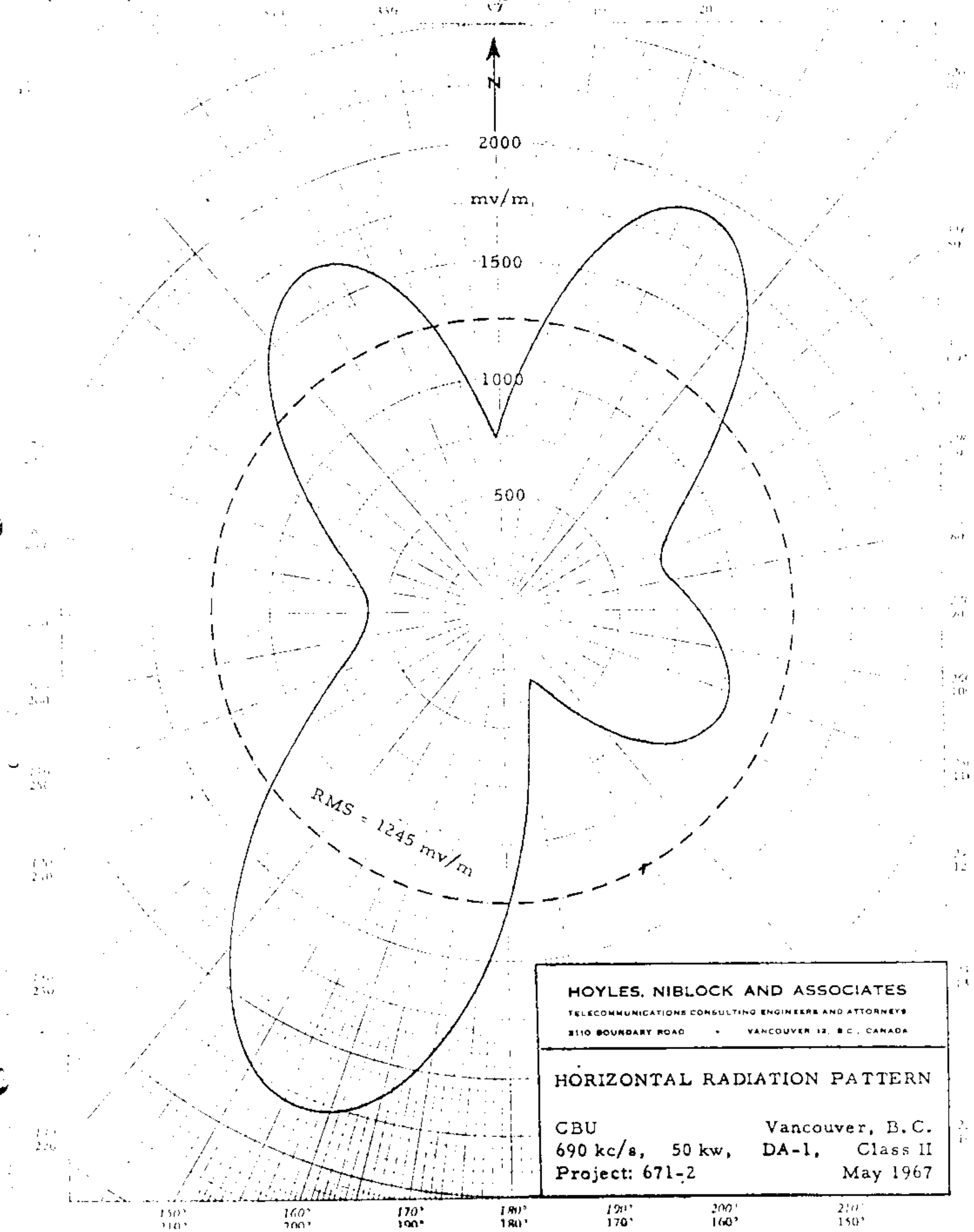
CBU Vancouver, B.C.
690 kc/s, 50 kw, DA-1, Class II
Project: 671-2 January 1968

CBU

Proposed Day & Night
(8-28-67ct)

Station CBU
Vancouver, B. C.

50kw,DA-1,U,Class II
690 KC



HOYLES, NIBLOCK AND ASSOCIATES

TELECOMMUNICATIONS CONSULTING ENGINEERS AND ATTORNEYS

3110 BOUNDARY ROAD • VANCOUVER 12, B.C., CANADA

HORIZONTAL RADIATION PATTERN

CBU Vancouver, B.C.
690 kc/s, 50 kw, DA-1, Class II
Project: 671-2 May 1967

FOREIGN NEW, VANCOUVER, B.C. 10 KW, U, DA-1 VANCOUVER, B.C. 690 KC
DAY & NIGHT 12/20/51G CBU

CANADIAN BROADCASTING CORPORATION 70791
ENGINEERING DIVISION MONTREAL
TITLE: DIRECTIONAL ANTENNA
10 kw. 690 kc. Vancouver, B.C. Date: Feb 8, 1951

Description of Array

Station: Main Studio: Vancouver, B. C.

Power: 10kW. Frequency: 690 kc/s Class: II Operation DA-1.

Location: Lulu Island, British Columbia

North Latitude: 49° 08' 37"

West Longitude: 123° 06' 38"

Antenna:

Mode of operation: Series Fed - 2 Elements
1) self supporting, tapered, insulated
2) guyed, constant cross-section, insulated.

Tower	North		South
Height above insulator	404'		404' (106°)
Spacing:		218' (54.8°)	
Phasing:	0°		135°
Field Radio	2.3		1

Ground System: 120 radials per tower, maximum length 400 feet. Radials joined along line between towers.

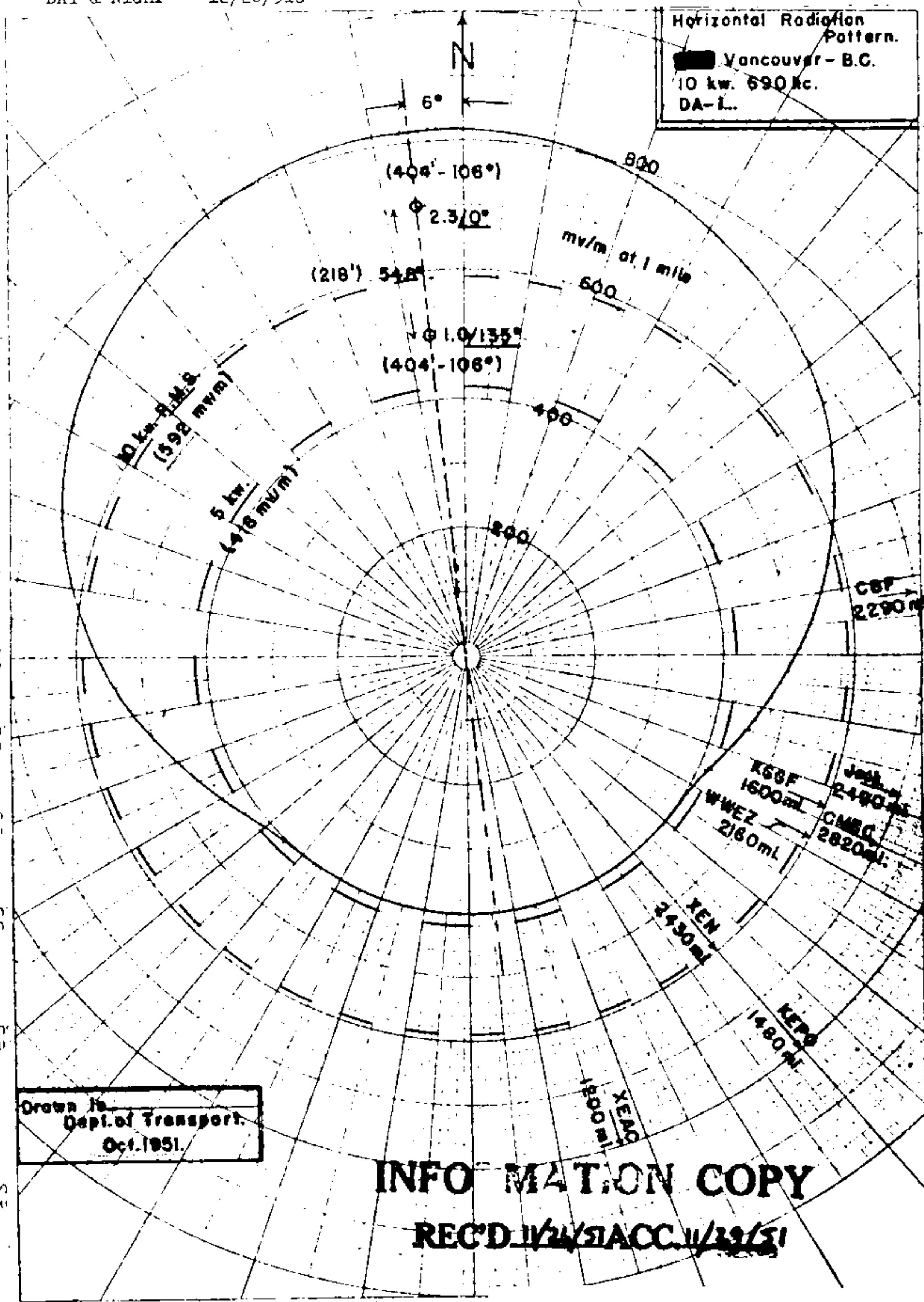
Predicted Effective Field: 592 mv/m at one mile.

Orientation: Center line of towers along a line bearing N6°W.

Information Copy
Rec'd 11/26/51 ACC. 11/29/51.

CBW
VANCOUVER B.C.

FOREIGN NEW, VANCOUVER, B.C. 10KW, U, DA-1 690 KC
DAY & NIGHT 12/20/51G



NEW, VANCOUVER, B.C. 690 KC

PROJECT #10307-B

CFRG

DESCRIPTION SHEET - DIRECTIONAL ANTENNA

STATION: CFRG

STATION LOCATION: Gravelbourg, Sask.

FREQUENCY: 690 kHz

5 kW CLASS II

NOTIFICATION LIST NO: 338

DATE: February 7, 1975.

GEOGRAPHICAL LOCATION: Latitude 49° 52' 16" North
Longitude 106° 28' 19" West

ANTENNA CHARACTERISTICS:

Mode of Operation: DA-N

Number of Elements: 4 (Four)

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

Tower:	#1(NW)	#2(NE)	#3(SW)	#4(SE)
Height above Base Insulator:	290'(73.2°)	290'	290'	290'
Overall Height:	295'	295'	295'	295'
Night Field Ratio:	.95	.85	1.0	1.0
Night Phasing:	0°	93°	116°	-154°
Orientation:	Reference	80.5°T	230°T	155.5°T
Spacing:	Reference	356.6'(90°)	356.6'(90°)	186.2'(47°)

GROUND SYSTEM: 120 equally spaced radials per tower of No.10 B & S gauge bare soft copper wire, buried approximately 8". Length of radials 570' (0.4 wavelength) with the exception of those joined along the common chords.

Predicted Effective Night Field:

400 mV/m at 1 mile for 5 kW
179 mV/m at 1 mile for 1 kW

Predicted Effective Day Field:

410 mV/m at 1 mile for 5 kW
183 mV/m at 1 mile for 1 kW

December 15, 1973

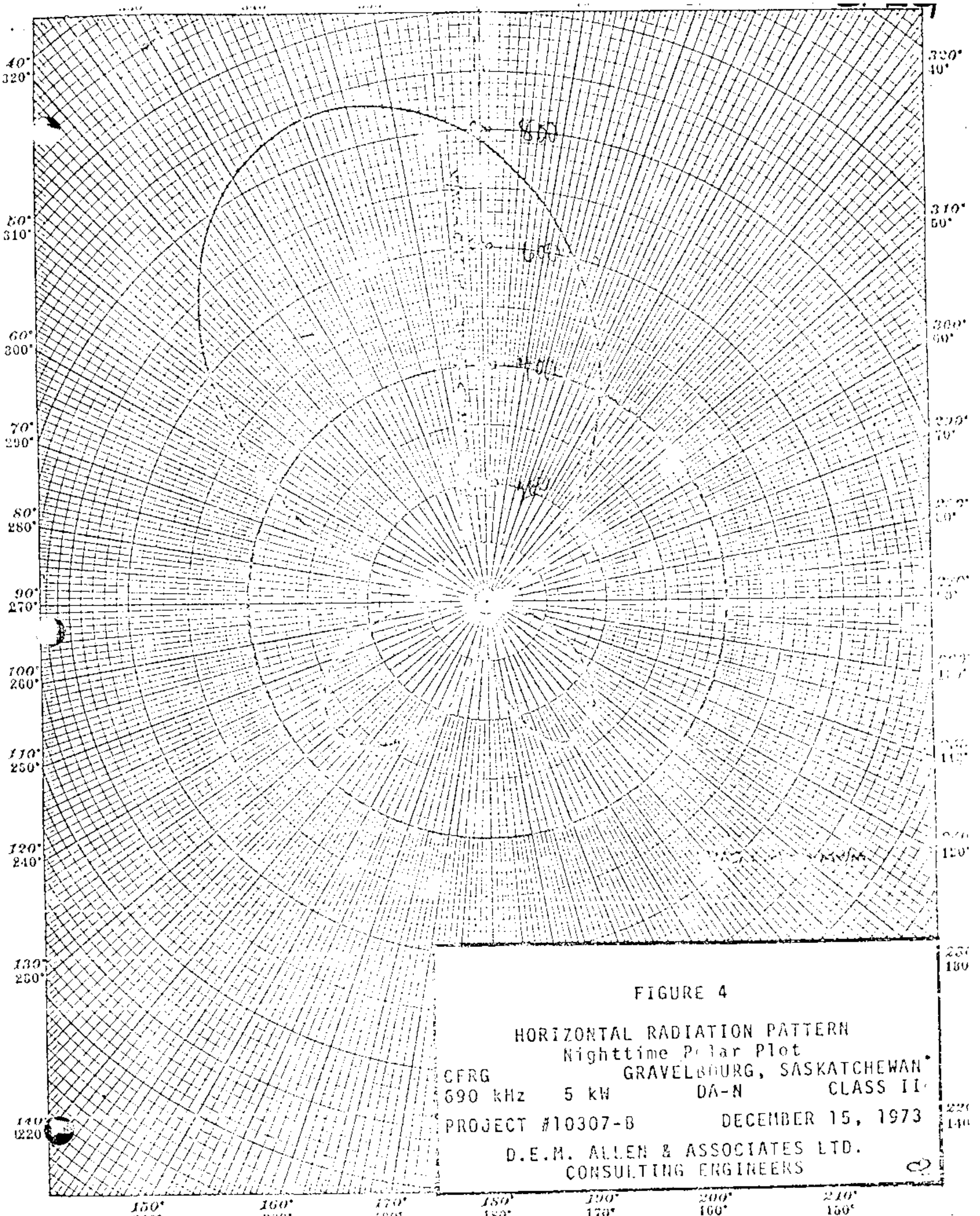


FIGURE 4

HORIZONTAL RADIATION PATTERN
Nighttime Polar Plot

CFRG GRAVELBOURG, SASKATCHEWAN
690 kHz 5 kW DA-N CLASS II

PROJECT #10307-B DECEMBER 15, 1973

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

FIGURE 5

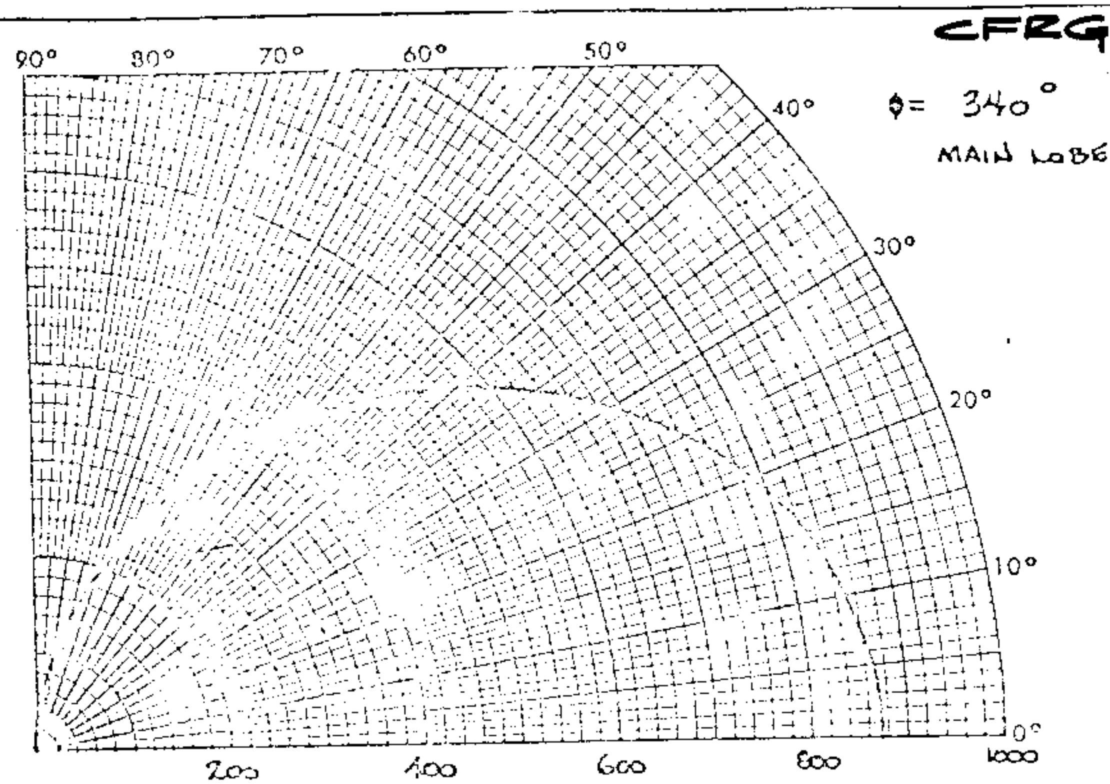
HORIZONTAL RADIATION PATTERN
Nighttime Expanded Plot

CFRG GRAVELBOURG, SASKATCHEWAN
690 kHz 5 kW DA-N CLASS II

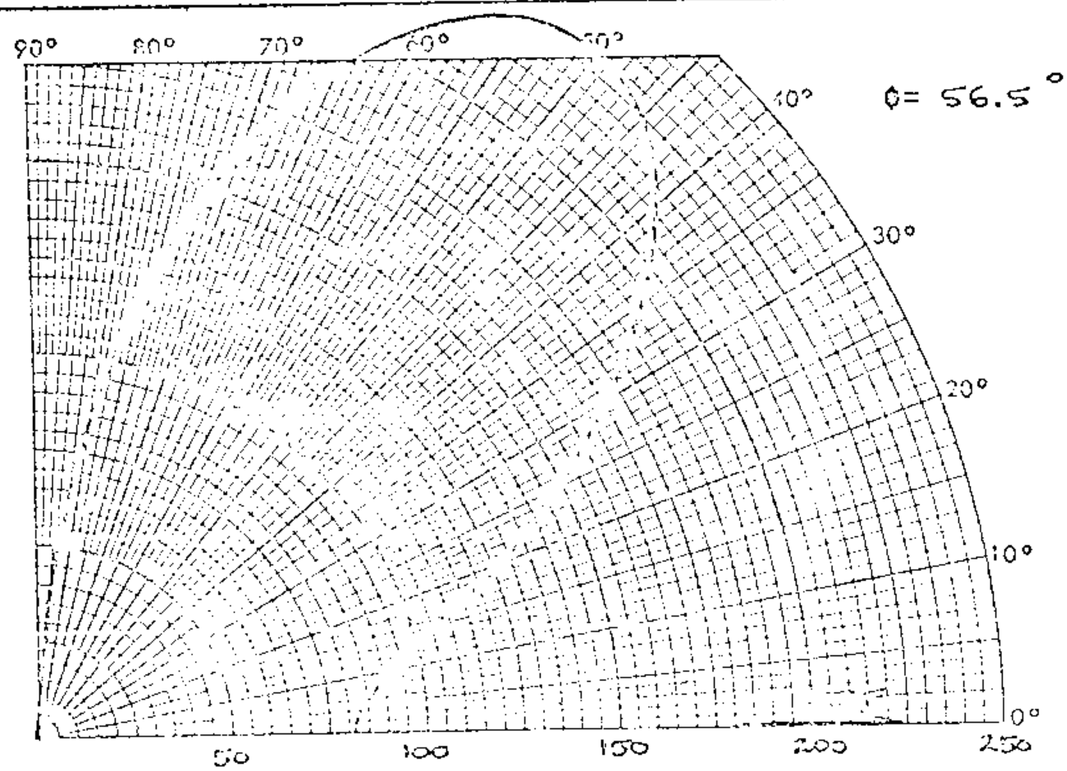
PROJECT #10307-B DECEMBER 15, 1973

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

CFKG



UNATTENUATED(MV/M)1 MILE FIELD

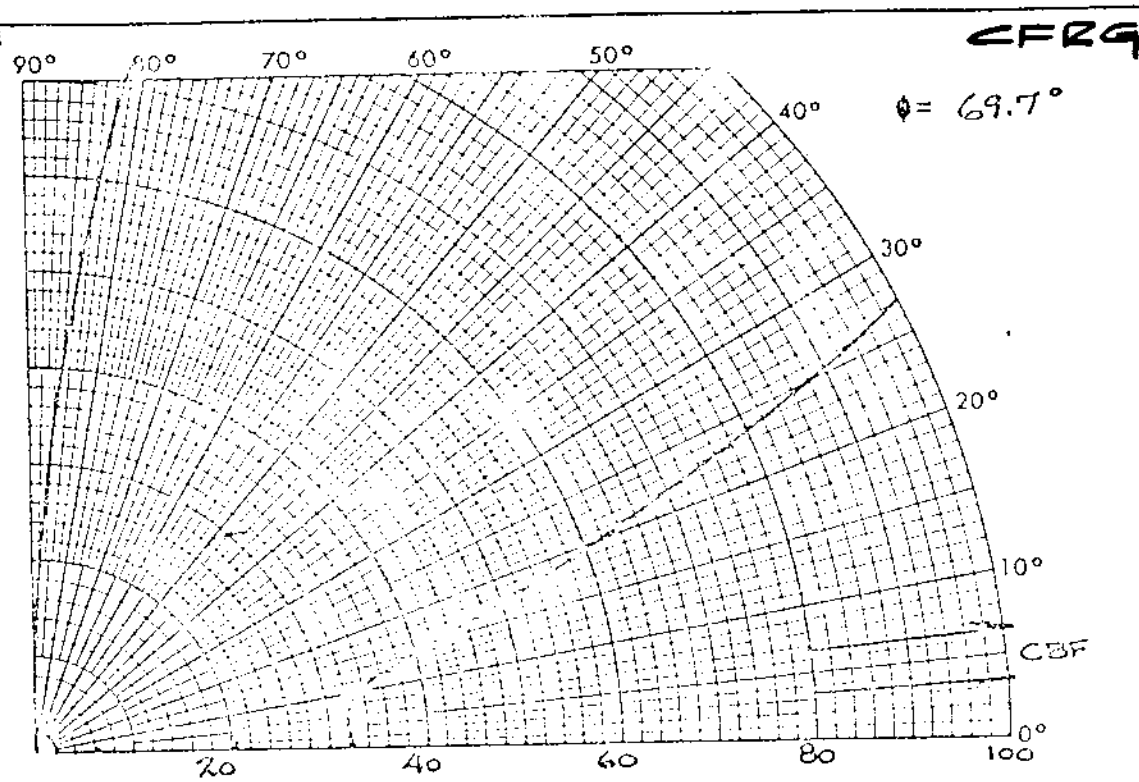


UNATTENUATED (MV/M) 1 MILE FIELD

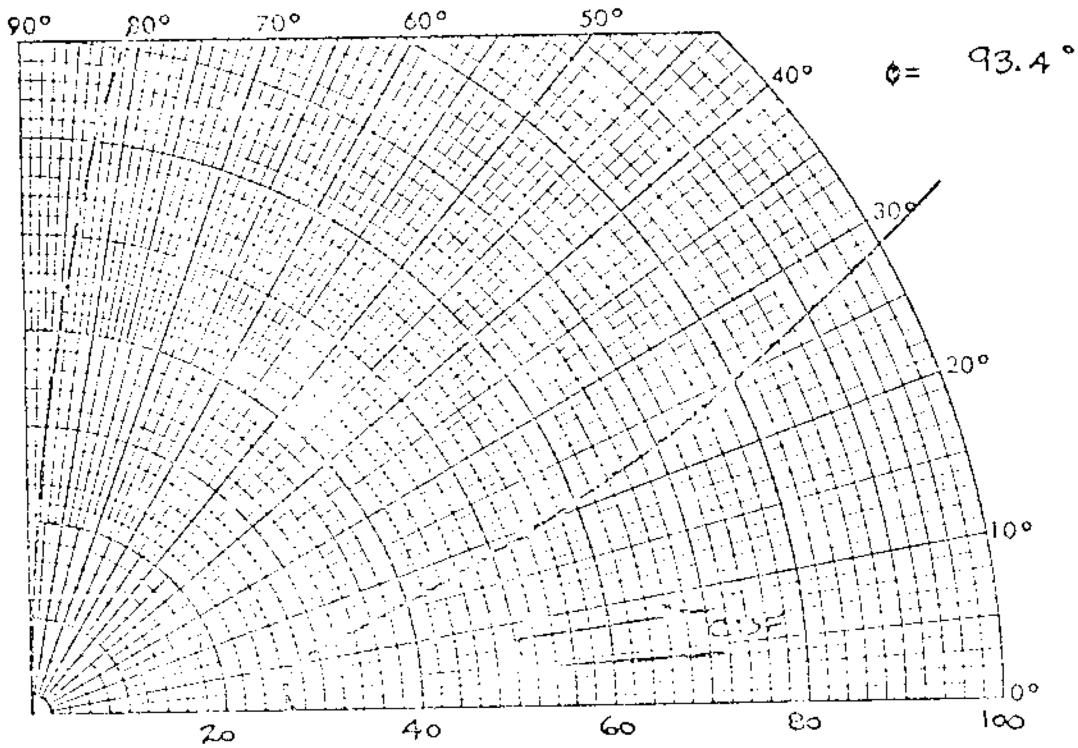
VERTICAL RADIATION PATTERNS

FIGURE 6

CFRG GRAVELBOURG, SASKATCHEWAN
690 kHz 5 kW DA-N CLASS II
PROJECT #10307-B DECEMBER 15, 1973
D.E.M. ALLEN & ASSOCIATES LTD. CONSULTING ENGINEERS



UNATTENUATED (MV/M) 1 MILE FIELD



UNATTENUATED (MV/M) 1 MILE FIELD

VERTICAL RADIATION PATTERNS

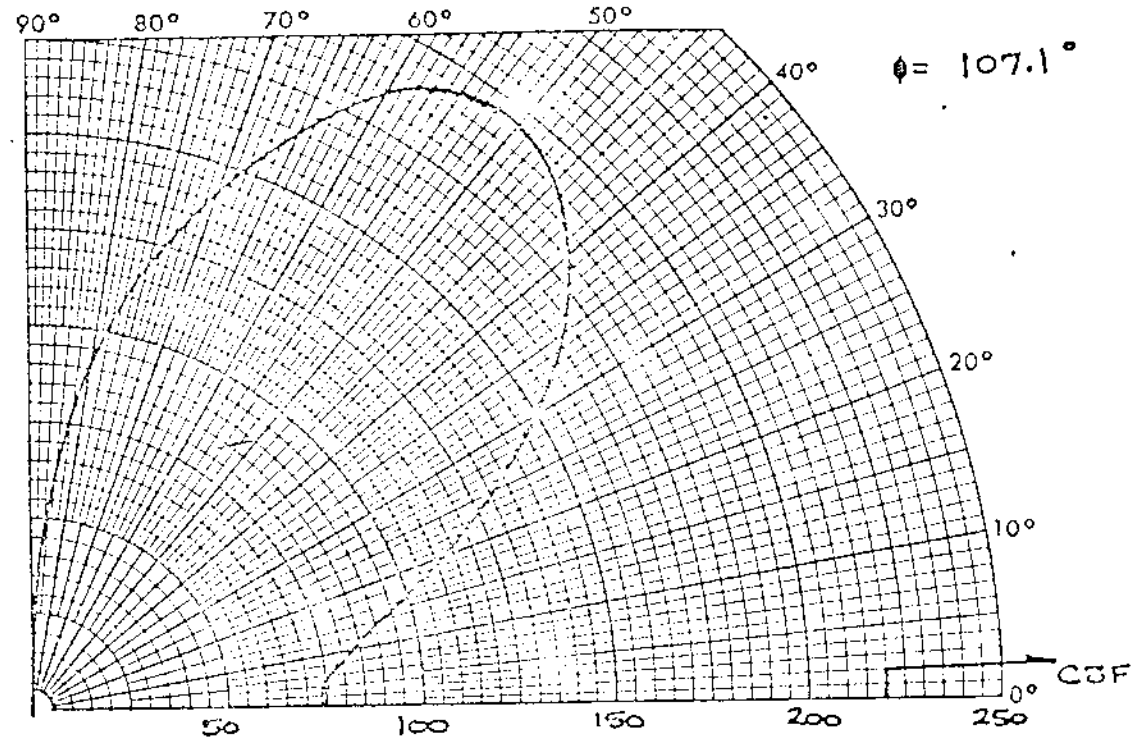
FIGURE 7

CFRG
690 kHz 5 kW DA-N
PROJECT #10307-B

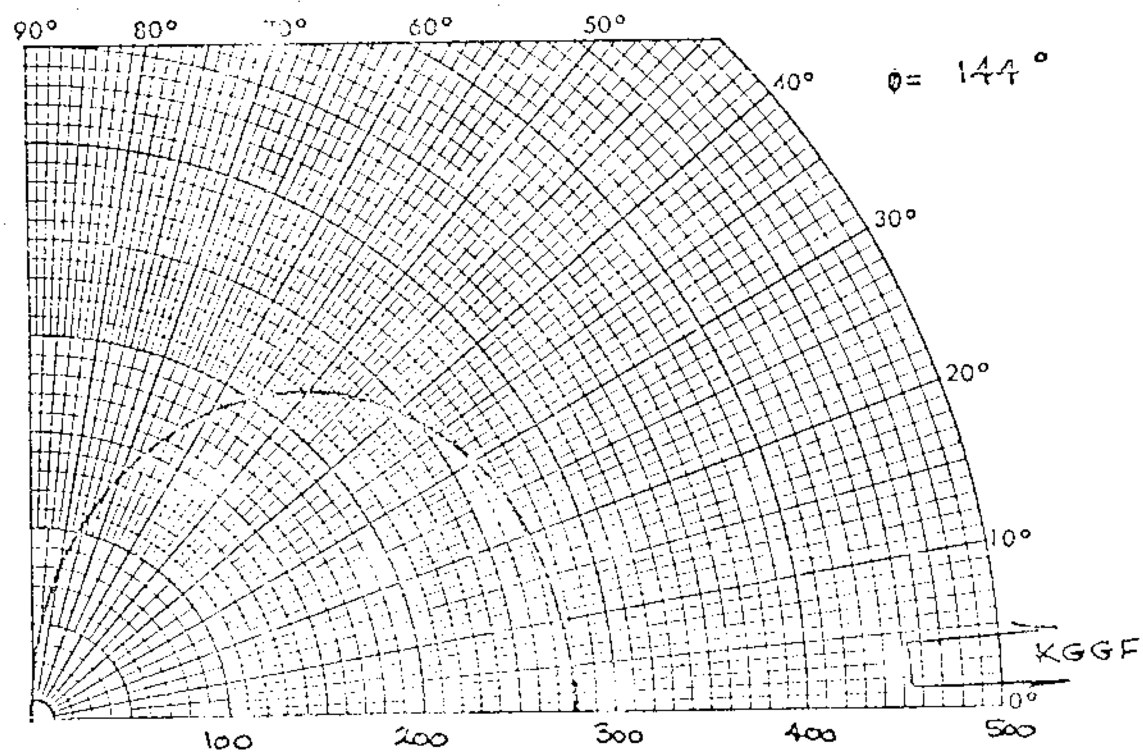
GRAVELBOURG, SASKATCHEWAN
CLASS II
DECEMBER 15, 1973

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

CFRG



UNATTENUATED(MV/M) 1 MILE FIELD

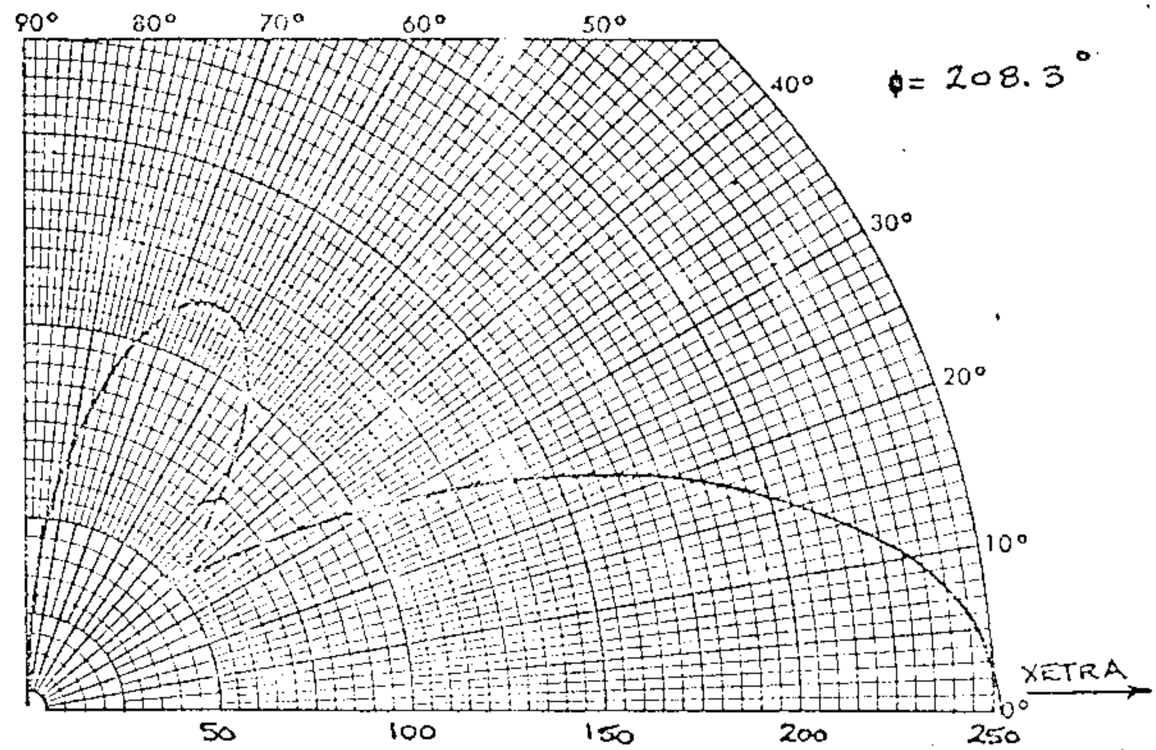


UNATTENUATED (MV/M) 1 MILE FIELD

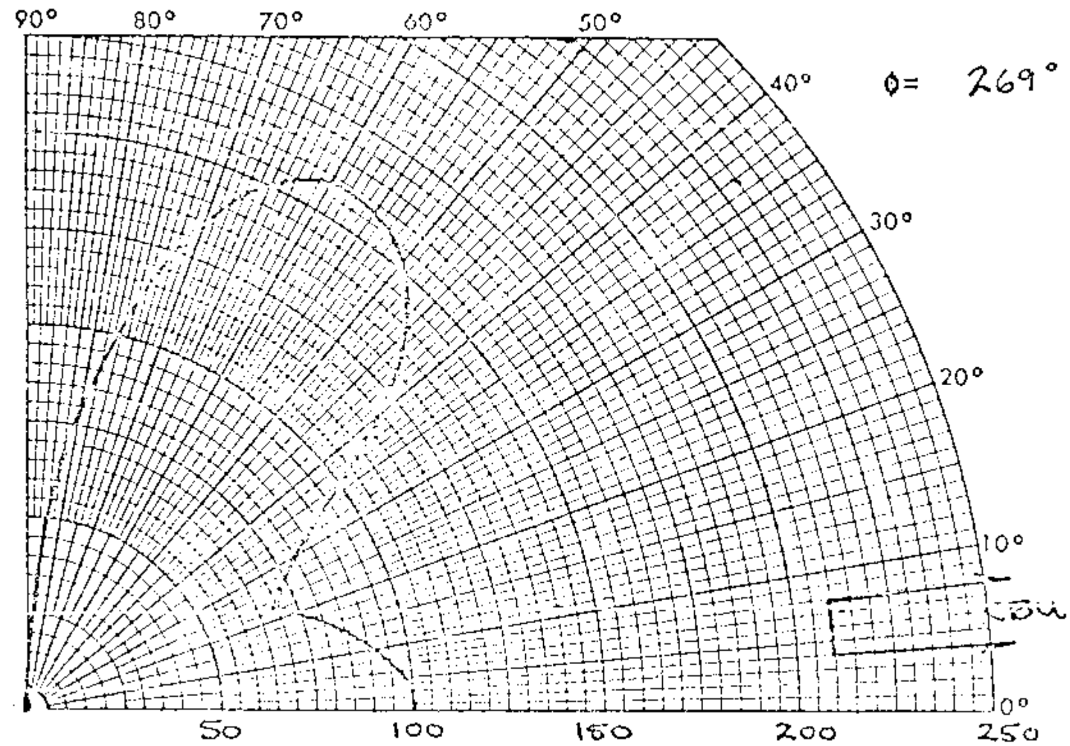
VERTICAL RADIATION PATTERNS

FIGURE 8

CFRG GRAVELBOURG, SASKATCHEWAN
690 kHz 5 KW DA-N CLASS II
PROJECT #10307-B DECEMBER 15, 1973
D.E.M. ALLEN & ASSOCIATES LTD., CONSULTING ENGINEERS



UNATTENUATED (MV/M) 1 MILE FIELD



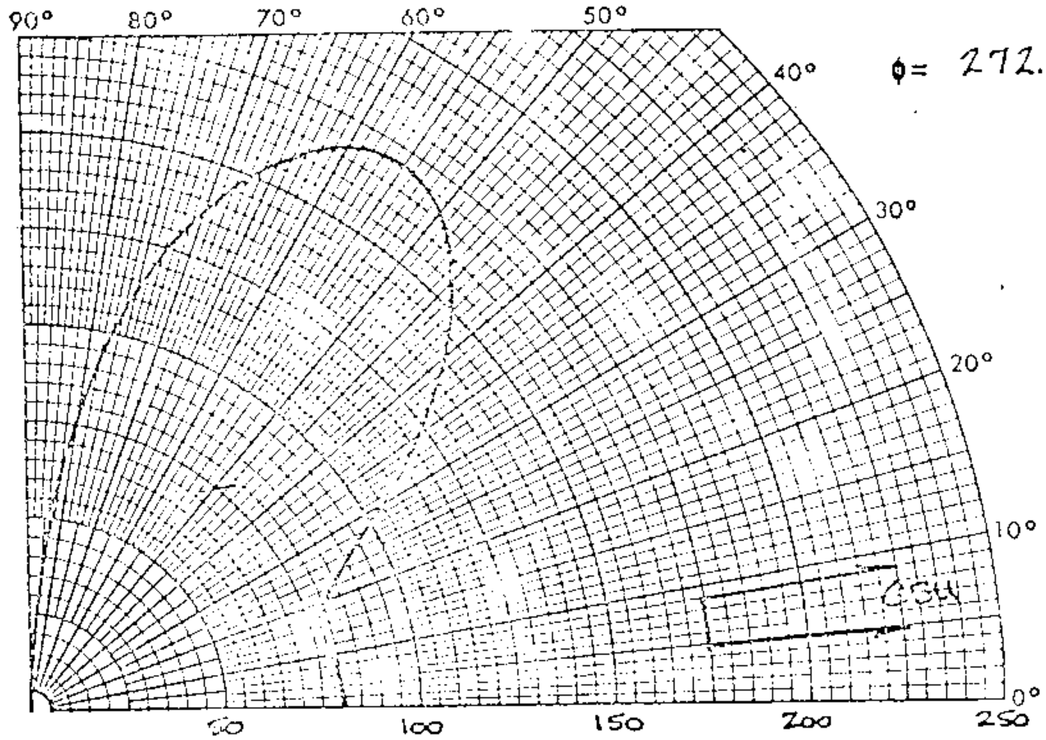
UNATTENUATED(MV/M)1 MILE FIELD

VERTICAL RADIATION PATTERNS

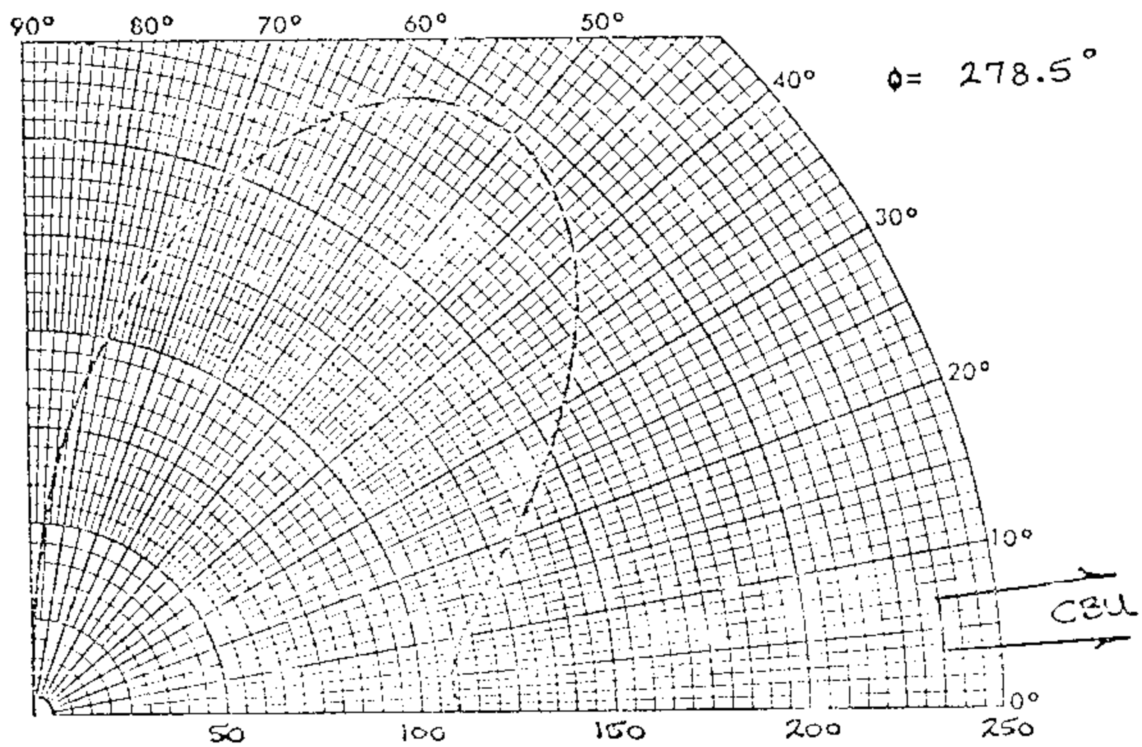
FIGURE 9

CFRG GRAVELBOURG, SASKATCHEWAN
690 kHz 5 kW DA-N CLASS II
PROJECT #10307-B DECEMBER 15, 1973
D.E.M. ALLEN & ASSOCIATES LTD., CONSULTING ENGINEERS

CFRG



UNATTENUATED (MV/M) 1 MILE FIELD



UNATTENUATED(MV/M) 1 MILE FIELD

VERTICAL RADIATION PATTERNS

FIGURE 10

CFRG GRAVELBOURG, SASKATCHEWAN
690 kHz 5 kW DA-N CLASS II
PROJECT #10307-B DECEMBER 15, 1973
D.E.M. ALLEN & ASSOCIATES LTD., CONSULTING ENGINEERS

Cuba

CMBC

93695

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: CMBC

Main Studio: Havana, Cuba

Frequency: 690 kc

Received: July 13, 1953 Class: I-C

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM: North Latitude: 23° 07' 50"
West Longitude: 82° 16' 47"

ANTENNA CHARACTERISTICS

Authorized for Day and Night operation. (DA-1)

Number of elements: Three

Type of elements: Series-fed, uniform cros-section, guyed vertical steel towers.

TOWER:	S.(#1)	W.(#2)	N.(#3)
HEIGHT ABOVE INSULATORS:	320'	320'	320'

SPACING AND ORIENTATION: The towers are located at the vertices of a triangle. With the South (#1) tower as a reference, the west(#2) tower is spaced 90° on a line bearing 315° true and the north(#3) tower is spaced 180° are on a line bearing true north.

PHASING:	0°	+90°	+45°
FIELD RATIO:	1.0	0.55	0.60

Predicted effective Field: 1343 mv/m (at rated power)

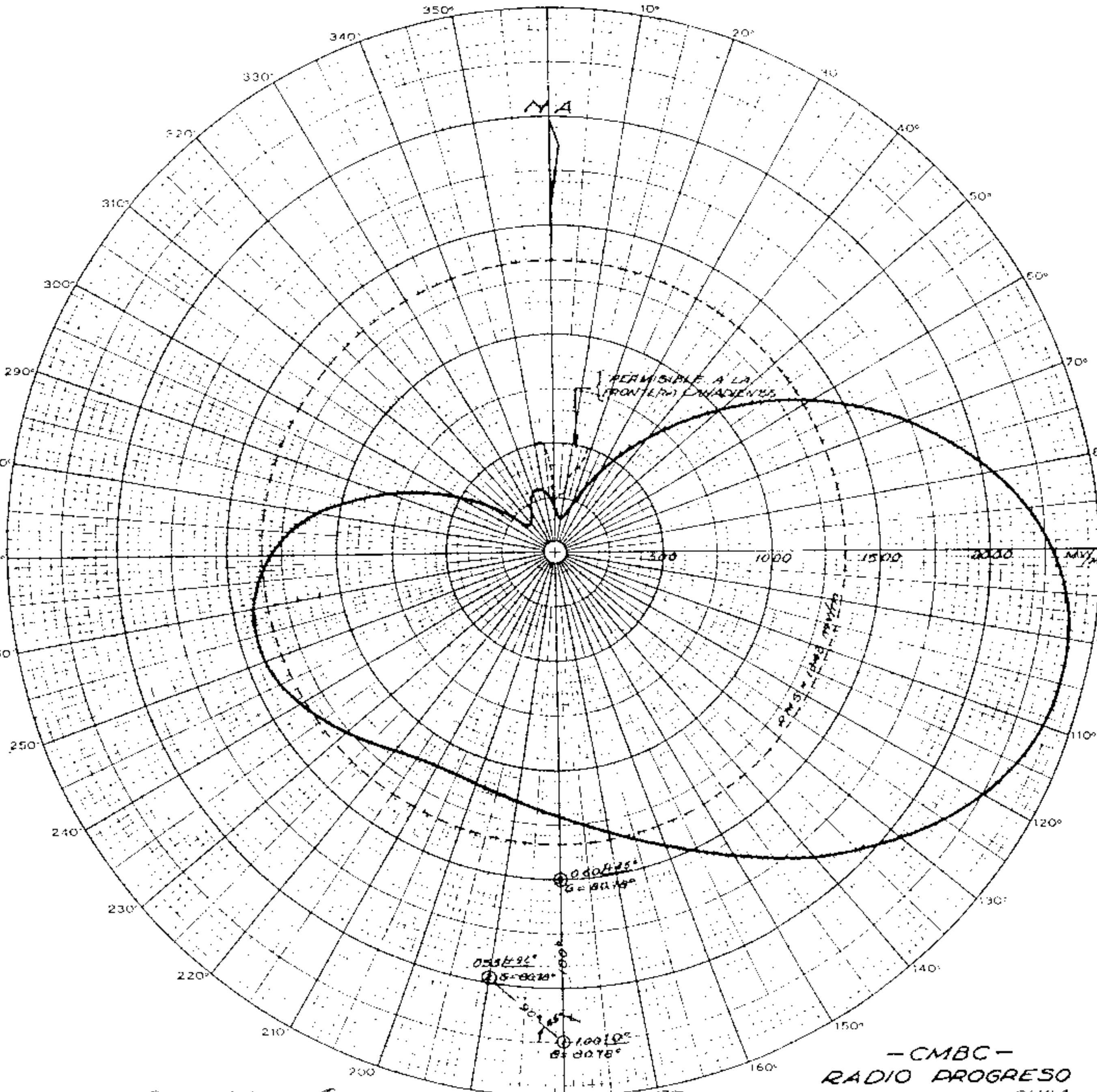
FCC NOTE:

This pattern supplements the particulars for this station set forth in Annex 3 to the North American Regional Broadcasting Agreement, Washington, D. C. 1950.

Cuba

~~CMBX~~
CMBC

PROPOSED ~~CMBX~~, HAVANA, CUBA 50KW, DA-1 690 kc
DAY & NIGHT (9/9/53)



-CMBC-
RADIO PROGRESO
CUBA,
DA-1

SMITH PRACTICAL RADIO INSTITUTE
CLEVELAND OHIO

POLAR CO-ORDINATE

Carlos Estrada Castro
CARLOS ESTRADA CASTRO
ING. ELECTRICISTA

CMBC, HAVANA, CUBA

690 kc

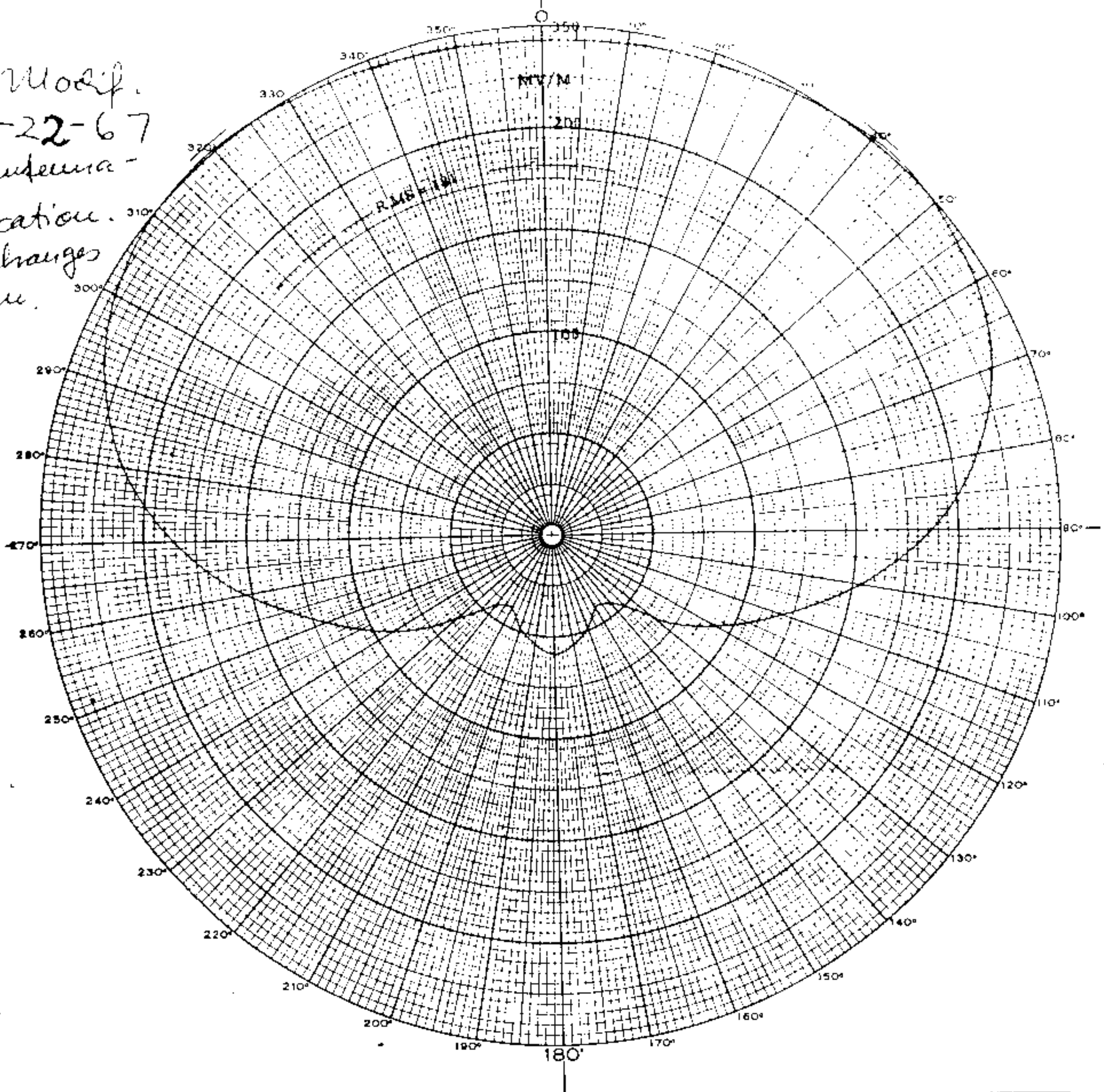
KVNA KEOS

Proposed Day (2-28-67)

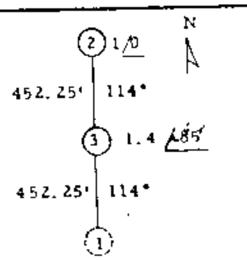
Station KEOS
Flagstaff, Arizona

690 kc

Granted Modif. of CP 3-22-67 to change Antenna-transm. location and make changes in DA system.



TOWER PLACEMENT SKETCH	PATTERN PARAMETERS	STATION DATA



TOWER No.	ELECTRICAL HEIGHT G°	TRUE TOWER ORIENTATION φ°	SPACING S°	PHASING ψ°	HORIZONTAL FIELD mv/m E	FIELD RATIO F
1	Not used Daytime					
2	70	0	0	0	104.5	1.0
3	70	180	114°	85	146.5	1.4
4						
5						
6						
7						
8						
9						
10						

DAYTIME OPERATION ☒ NIGHTTIME OPERATION ☐

ELEV. ANG. θ°	ELEVATION RMS FIELD mv/m E_θ
0	181
10	
20	
30	
40	
50	
60	
70	
80	
E_r	mv/m
E_s	mv/m

STATION DATA	
CALL	KEOS
FREQUENCY	690 kc
POWER	0.5 N/1D kw
TIME OF OPERATION	U
TYPE OF OPERATION	DA-2
DAYTIME TOWERS	#2 & #3
NIGHTTIME TOWERS	#1 & #2
NO. RADIALS PER TOWER	120
LENGTH OF RADIALS	350 ft.
GROUND SCREEN DIMENSION	24 x 24
LAT.	35° 11' 50"
LONG.	111° 37' 02"
IBM CARDS	660314
PATTERN No.	660706

CARL E. SMITH
Consulting Radio Engineers

FIG. 3 A-1
HORIZONTAL PATTERN DAYTIME
PLATEAU BROADCASTING, INC.
Flagstaff, Arizona
690 kc 0.5 N/1D DA-2 U

FCC File No. BMP-11994
Accepted 2-23-67

Station KEOS
Flagstaff, Arizona

690 kc

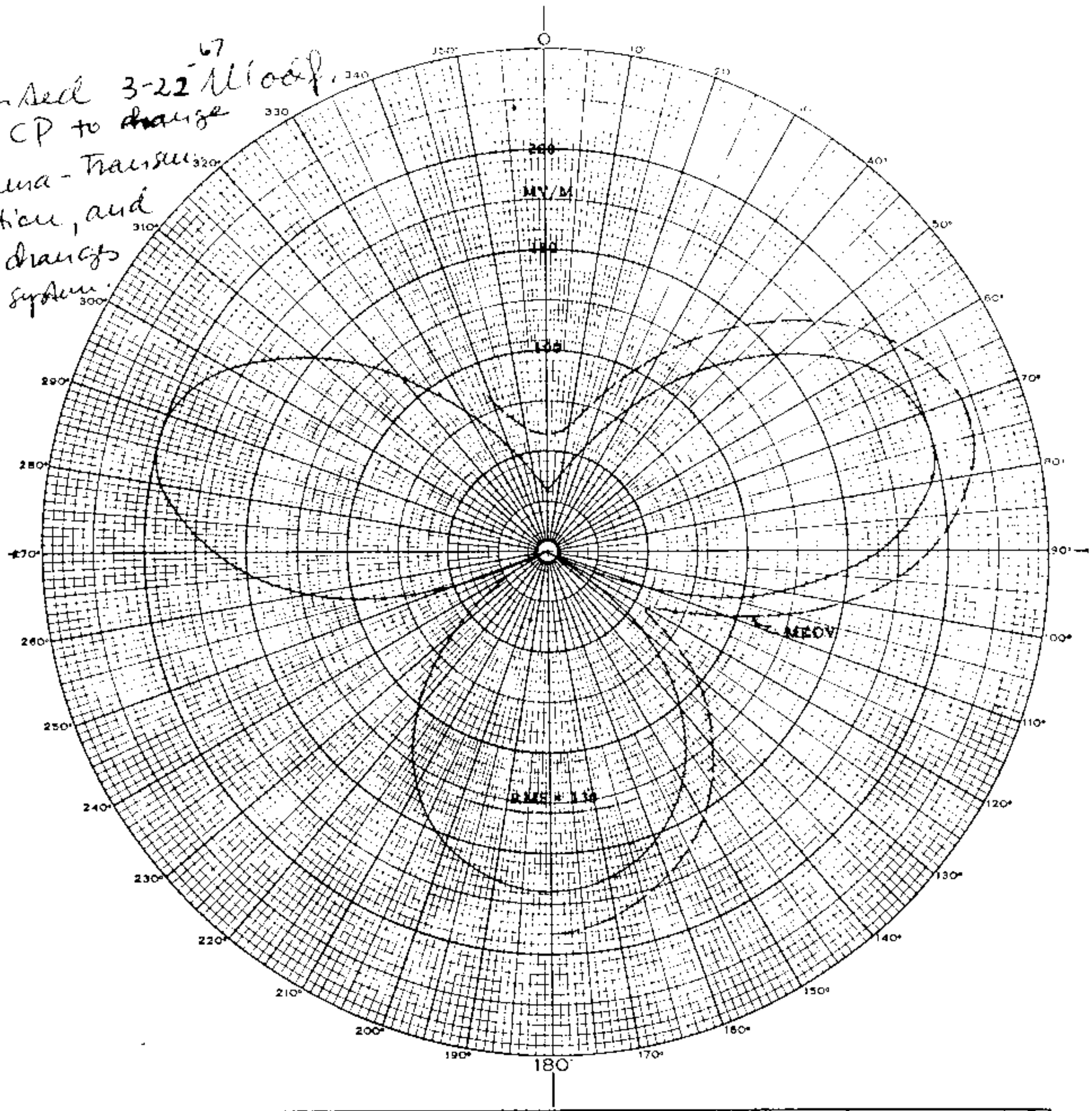
KVNA KEOS

Proposed Night
(2-28-67ct)

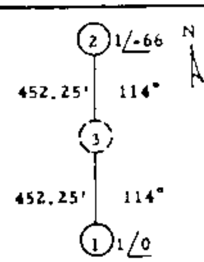
Station KEOS
Flagstaff, Arizona

500w,1kw-LS,DA-2,U
690 kc

Granted 3-22-67 Modif. of CP to change Antenna-Transm. location, and make changes in DA system.



TOWER PLACEMENT SKETCH



PATTERN PARAMETERS

TOWER No	ELECTRICAL HEIGHT G°	TRUE TOWER ORIENTATION $\phi°$	SPACING S°	PHASING $\psi°$	HORIZONTAL FIELD mv/m E	FIELD RATIO F
1	70	0	0	0		1.0
2	70	0	228	-66		1.0
3	70	Not Used				
4						
5						
6						
7						
8						
9						
10						

DAYTIME OPERATION ☐ NIGHTTIME OPERATION ☐

ELEV ANGLE $\theta°$	ELEVATION RMS FIELD mv/m E_θ
0	130
10	
20	
30	
40	
50	
60	
70	
80	
E_r =	mv/m
P_r =	kw

STATION DATA

CALL	KEOS
FREQUENCY	690 kc
POWER	0.5 N/1 D kw
TIME OF OPERATION	U
TYPE OF OPERATION	DA-2
DAYTIME TOWERS	2 & 3
NIGHTTIME TOWERS	1 & 2
No RADIALS PER TOWER	120
LENGTH OF RADIALS	350 ft
GROUND SCREEN DIMENSION	24'x24'
LAT.	35° 11' 50"
LONG.	111° 37' 02"
SUPERSEDES	
PATTERN No	660707

FIG. 3 B

HORIZONTAL PATTERN NIGHTTIME

CARL E. SMITH
Consulting Radio Engineers

PLATEAU BROADCASTING, INC.
Flagstaff, Arizona
690 kc 0.5 N/1D DA-2 U

FCC File No. BMP-11994
Accepted 2-23-67

Station KEOS
Flagstaff, Arizona

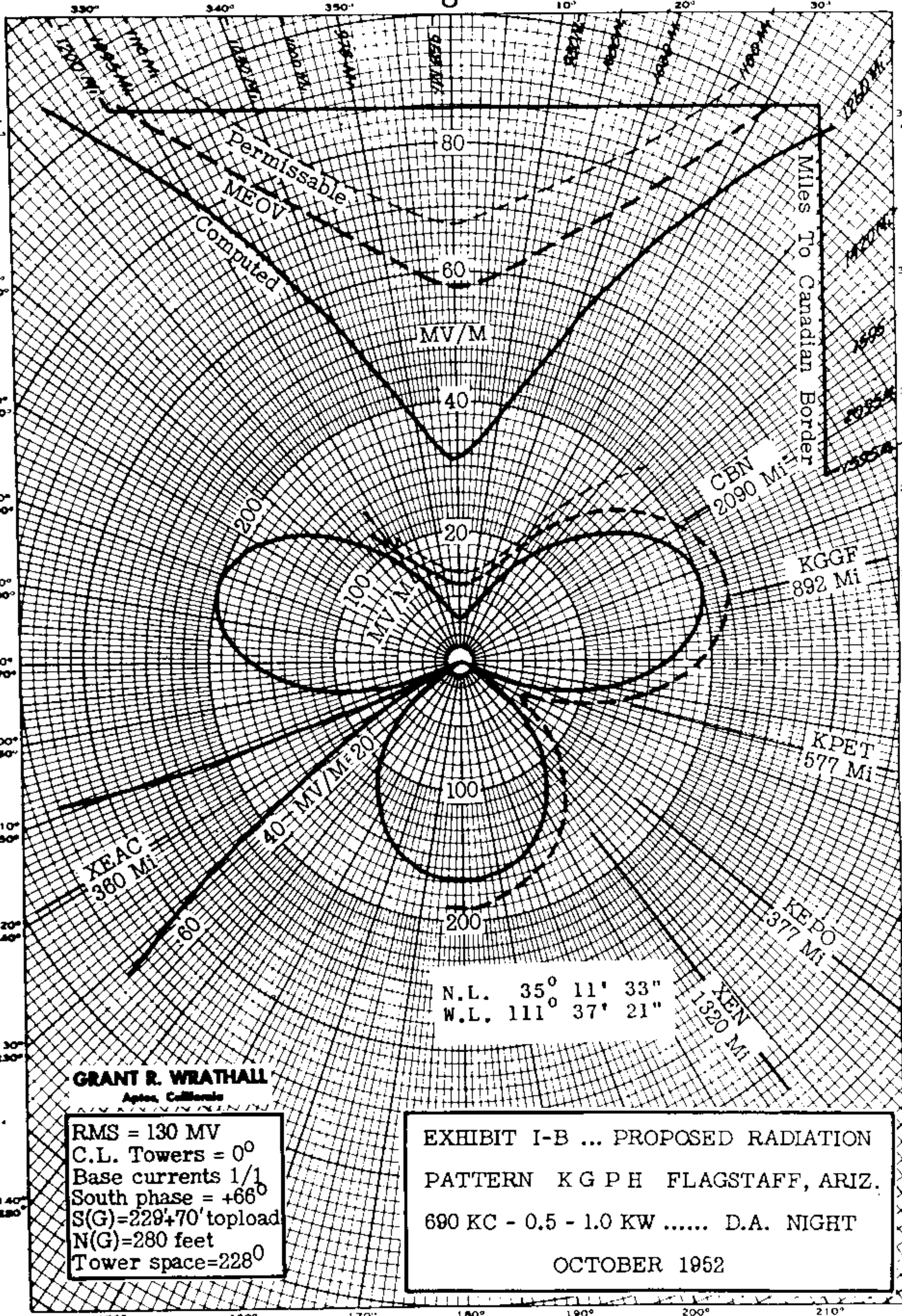
690 kc

PROPOSED ~~KGPH~~, FLAGSTAFF, ARIZ. 500W, 1KW-LS, U, DA-~~N~~ Z 690 KC KEOS
NIGHT 11/12/52G

2-13-64 app. accepted to change from 1290 to 690, 500w, 1kw-LS, DA-N, U and change transmitter site

APPL. GR CP 5-4-66

10/17/68 CP FORFEITED EPL(BP-16026)



APPL RECD 10/24/52 ACC 10/30/52 BP--8040

KGPH, FLAGSTAFF, ARIZ. 690 KC

KVNA

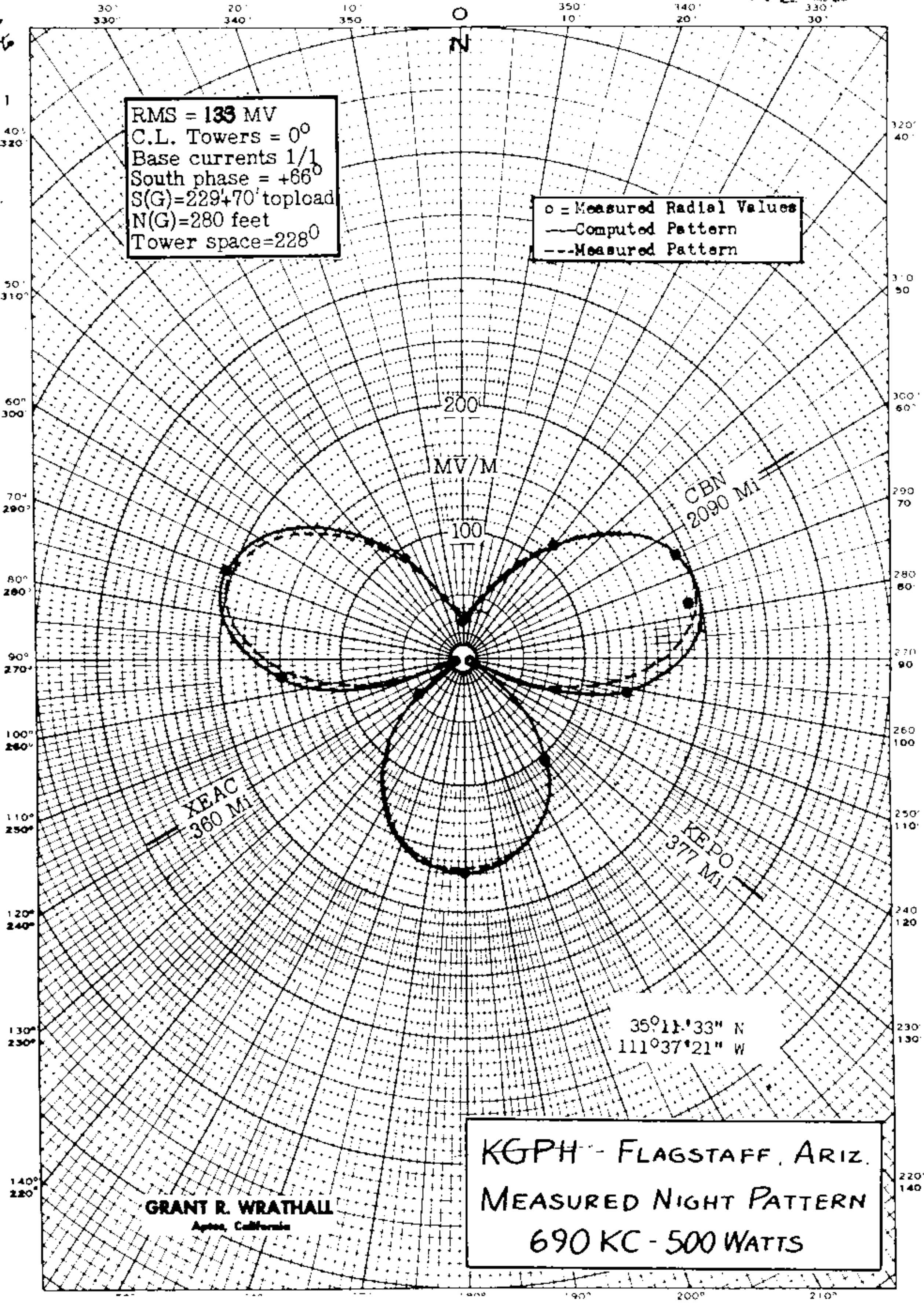
MEASURED
NIGHT (8/3/53G)

~~KGPH~~, FLAGSTAFF, ARIZONA 500W,1KW-LS, U, DA-~~N~~ 2

690 kc

KEOS

2-13-64
application and to
change from 1290 to
690, 500w, 1Kw-LS,
DA-N, U & change
transmitter site



FCC File No. BL-5069 Accepted 7/28/53 KGPH, FLAGSTAFF, ARIZONA 690 kc

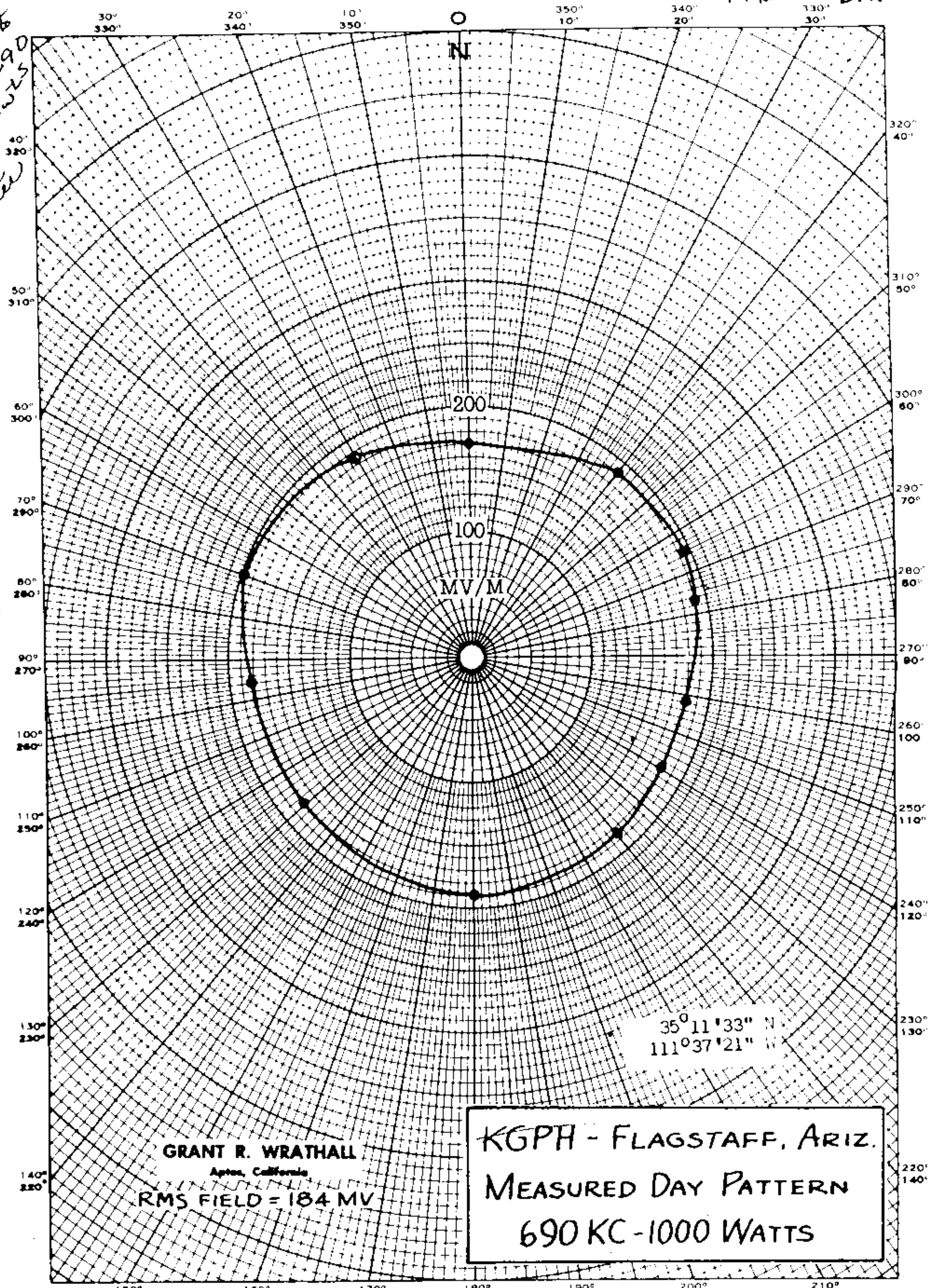
KVNA

MEASURED DAY (8/3/53G) ~~KGPH,~~ FLAGSTAFF, ARIZONA 500W,1KW-LS, U, DA-~~N~~ Z 690 kc

KEOS DAY

2-13-64 app accepted to change from 1290 to 690, 500w, 1kw LS DA-N, U and change transmitter site

APPL GR. 5-A-



FCC File No. BL-5069 Accepted 7/28/53 KGPH, FLAGSTAFF, ARIZONA 690 kc

Terrytown, Neb.

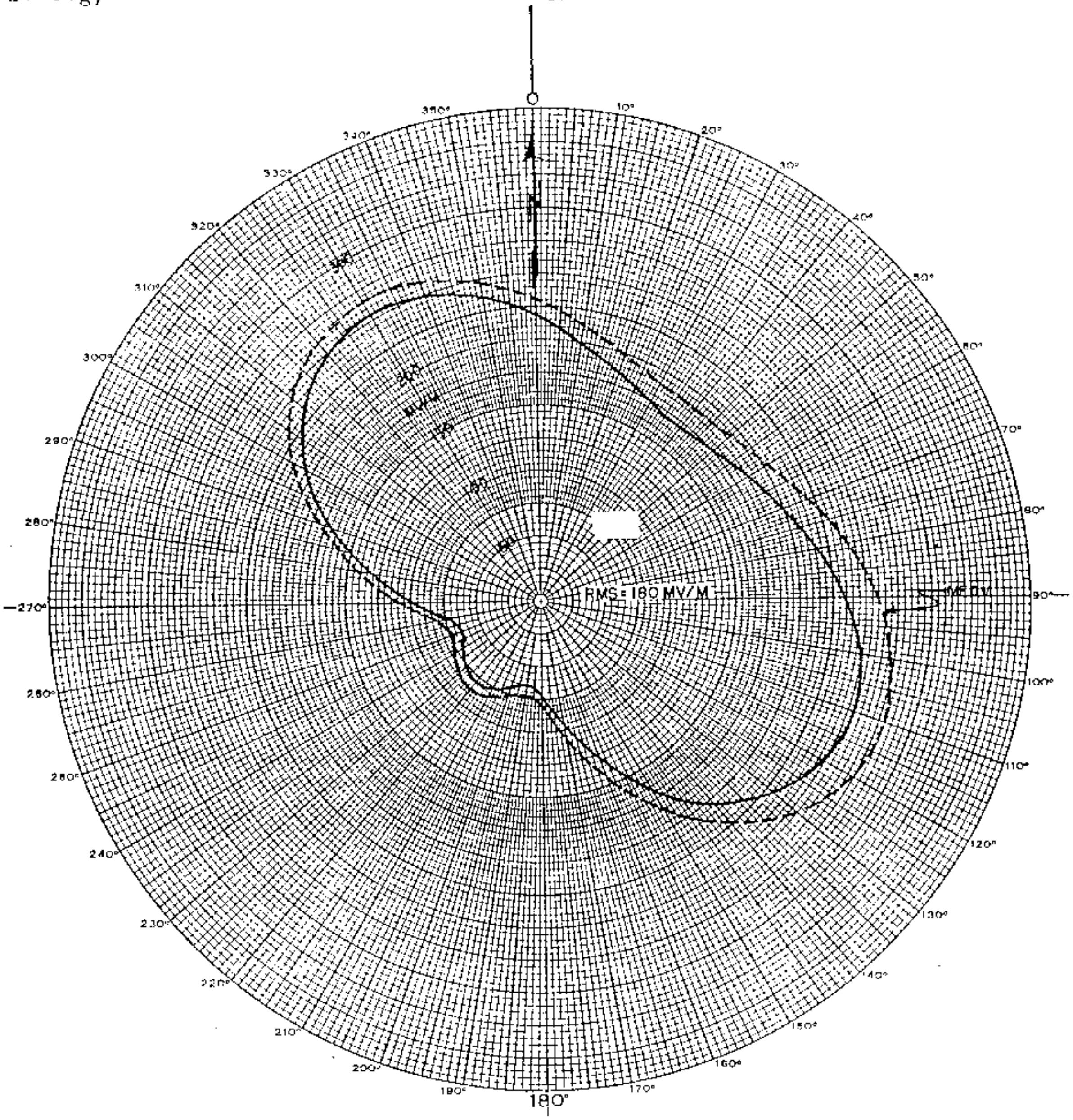
KEYR

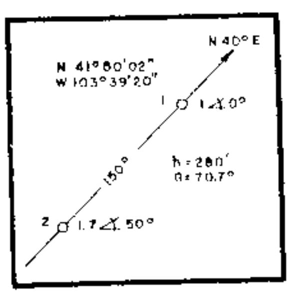
PROPOSED DAY
(5-27-60g)

New; Terry Carpenter, Inc.
Terrytown, Nebraska

1kw, DA-D,D
690 KC

10-12-60





PAGE, CREUTZ, STEEL & WALDSCHMITT
Consulting Engineers
WASHINGTON 5, D. C.

FIGURE 7
CALCULATED HORIZONTAL
RADIATION PATTERN
TERRY CARPENTER, INC.
TERRYTOWN, NEBRASKA
690 KC 1 KW D, DA-D
MAY 1960

FCC File No. BP-12957
Accepted 5-25-60 (Amended)

Terry Carpenter, Incorporated
Terrytown, Nebraska

690 KC

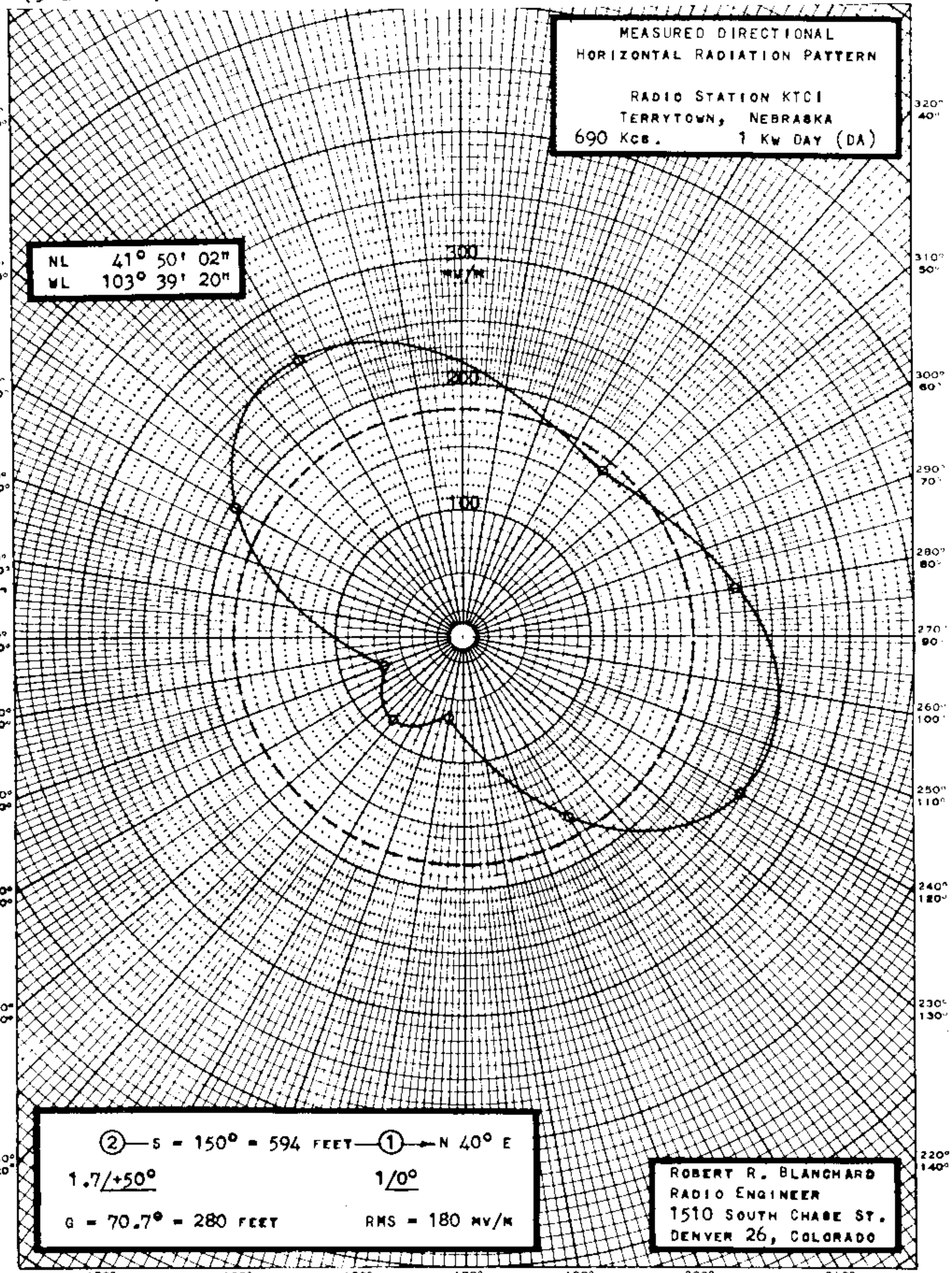
KEYR

MEASURED DAY
(9-20-61ct)

Station KTCI
Terrytown, Nebraska

1kw,DA-D,D
690 kc

Granted
for new station
9-7-61



FCC File No.BL-8563
Accepted 8-18-61

Station KTCI
Terrytown, Nebraska

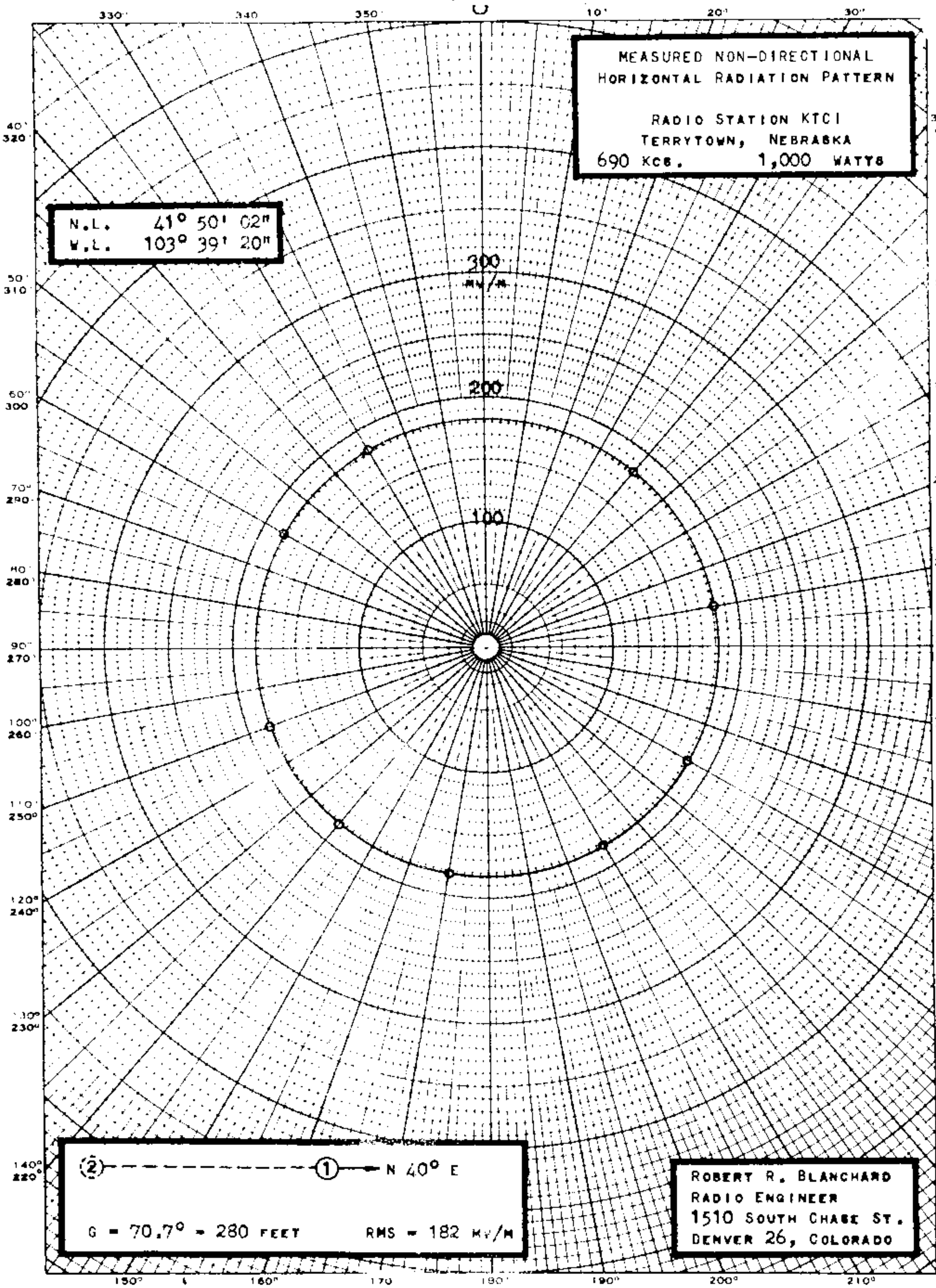
690 kc

KEYR

MEASURED NON-DA
(9-20-61ct)

Station KTCI
Terrytown, Nebraska

1kw,DA-D,D
690 kc

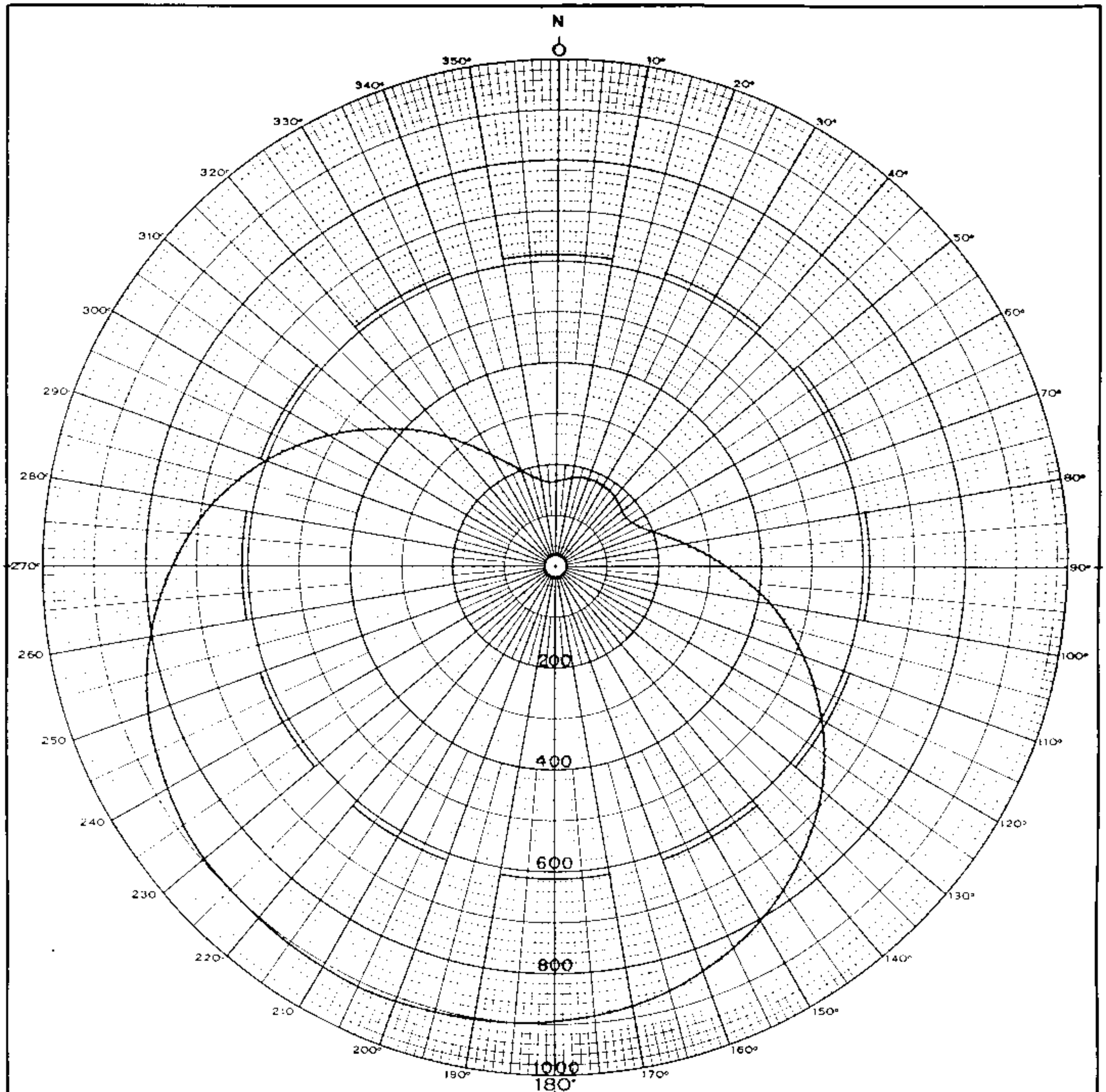


FCC File No.BL-8563
Accepted 8-18-61

Station KTCI
Terrytown, Nebraska

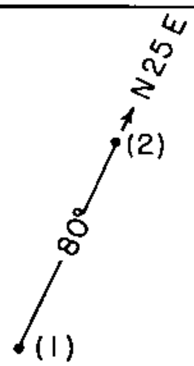
690 kc

KGGF
690



R.M.S. = 613 MV/M

PATTERN 460722-D



Nº	I	ψ
(1)	0.70	0°
(2)	1.00	+110°

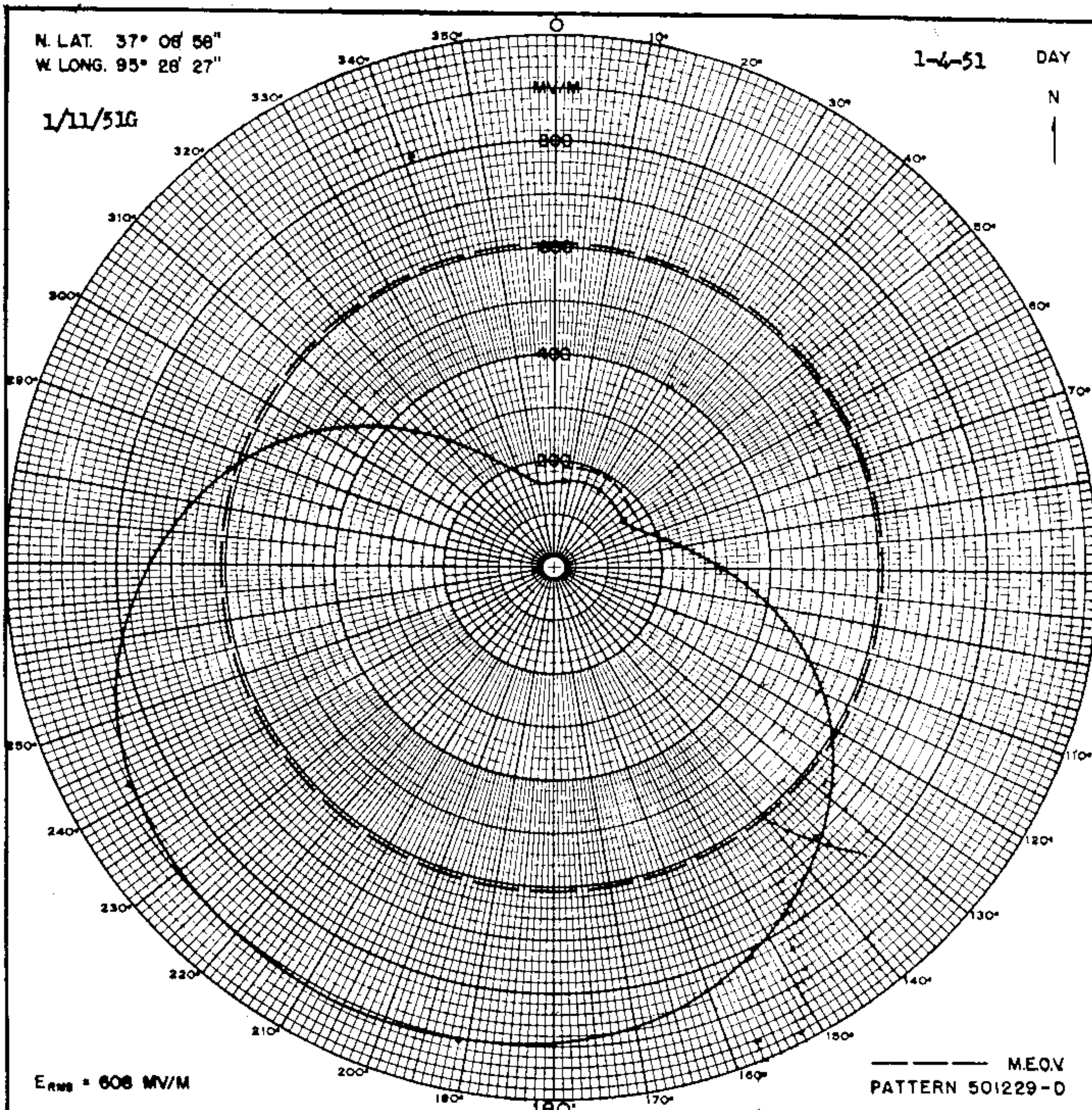
ALL G'S = 90°

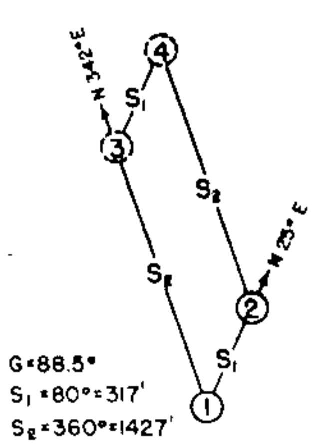
A. EARL CULLUM, JR.
CONSULTING RADIO ENGINEERS
DALLAS TEXAS

RADIO STATION KGGF
PROPOSED 690 KC 10 KW DA-D
FIGURE 5A

KGGF

MEASURED DAY KGGF, COFFEYVILLE, KANS. 5kw, 10kw-LS, DA-2 690 kc





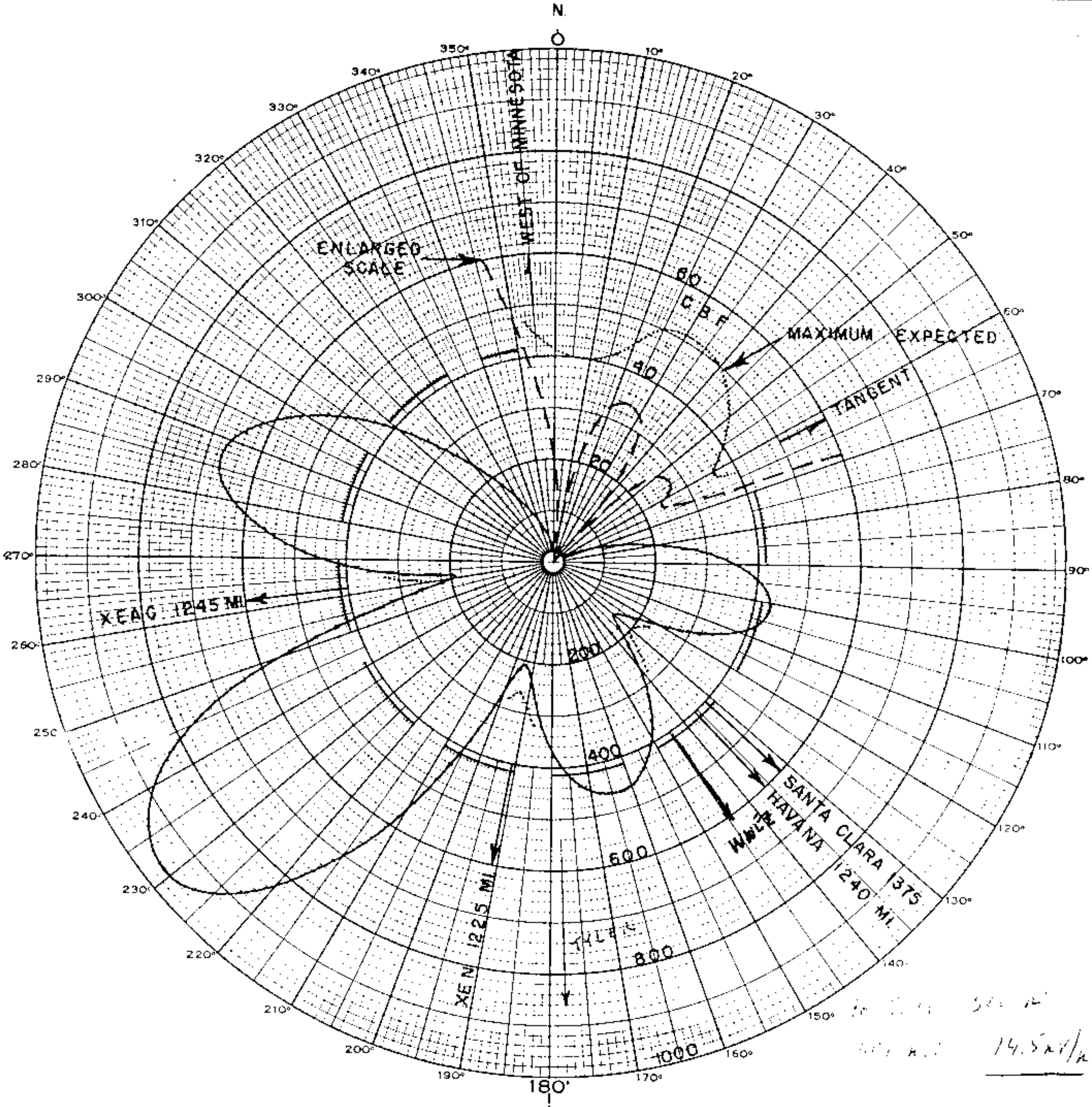
PATTERN BASED ON FIELD INTENSITY MEASUREMENTS

RADIO STATION KGGF
COFFEYVILLE, KANSAS
690 KC 5 KW 10 KW-LS DA-2

A. EARL CULLUM, JR.
CONSULTING RADIO ENGINEERS

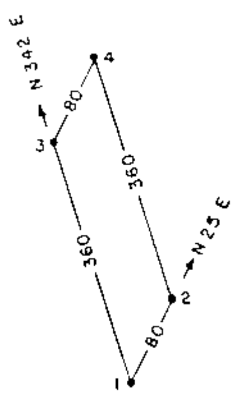
501229 FIGURE 2B

KGGF
690



R.M.S. = 413 MV/M

PATTERN 460722-N



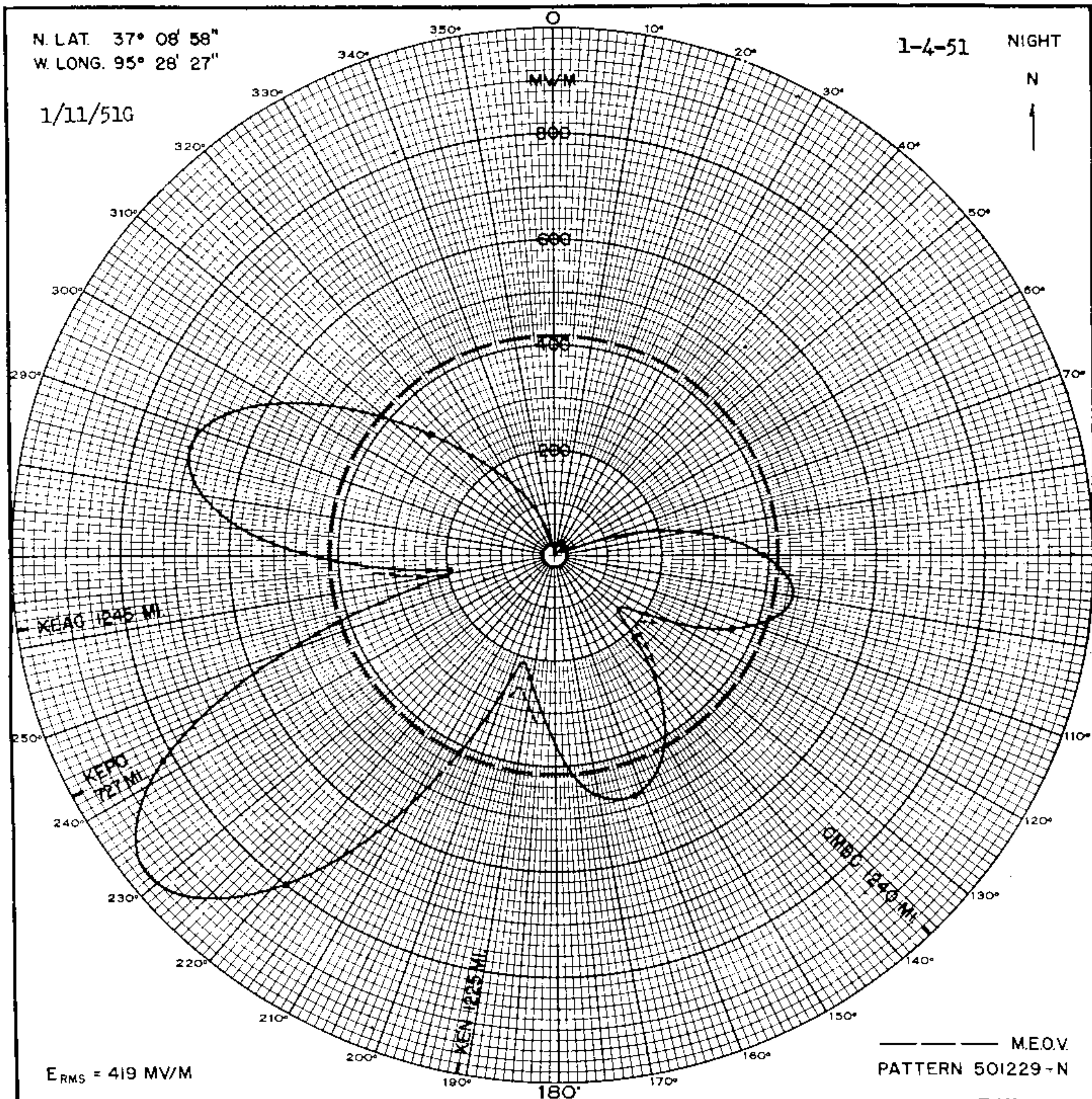
Nº	I	ψ
(1)	1.00	0°
(2)	1.00	+104°
(3)	0.65	+125°
(4)	0.65	+229°

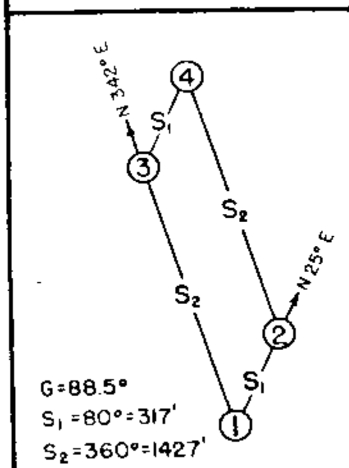
ALL G'S = 90°

A. EARL CULLUM, JR.
CONSULTING RADIO ENGINEERS
DALLAS TEXAS

RADIO STATION KGGF
PROPOSED 690 KC 5 KW DA-N
FIGURE 6A

MEASURED NIGHT KGGF, COFFEYVILLE, KANS. 5kw, 10kw-LS, DA-2 690 kc





PATTERN BASED ON FIELD INTENSITY MEASUREMENTS

RADIO STATION KGGF
COFFEYVILLE, KANSAS
690 KC 5 KW 10 KW-LS DA-2

A. EARL CULLUM, JR.
CONSULTING RADIO ENGINEERS

501229 FIGURE 2C

KHEY

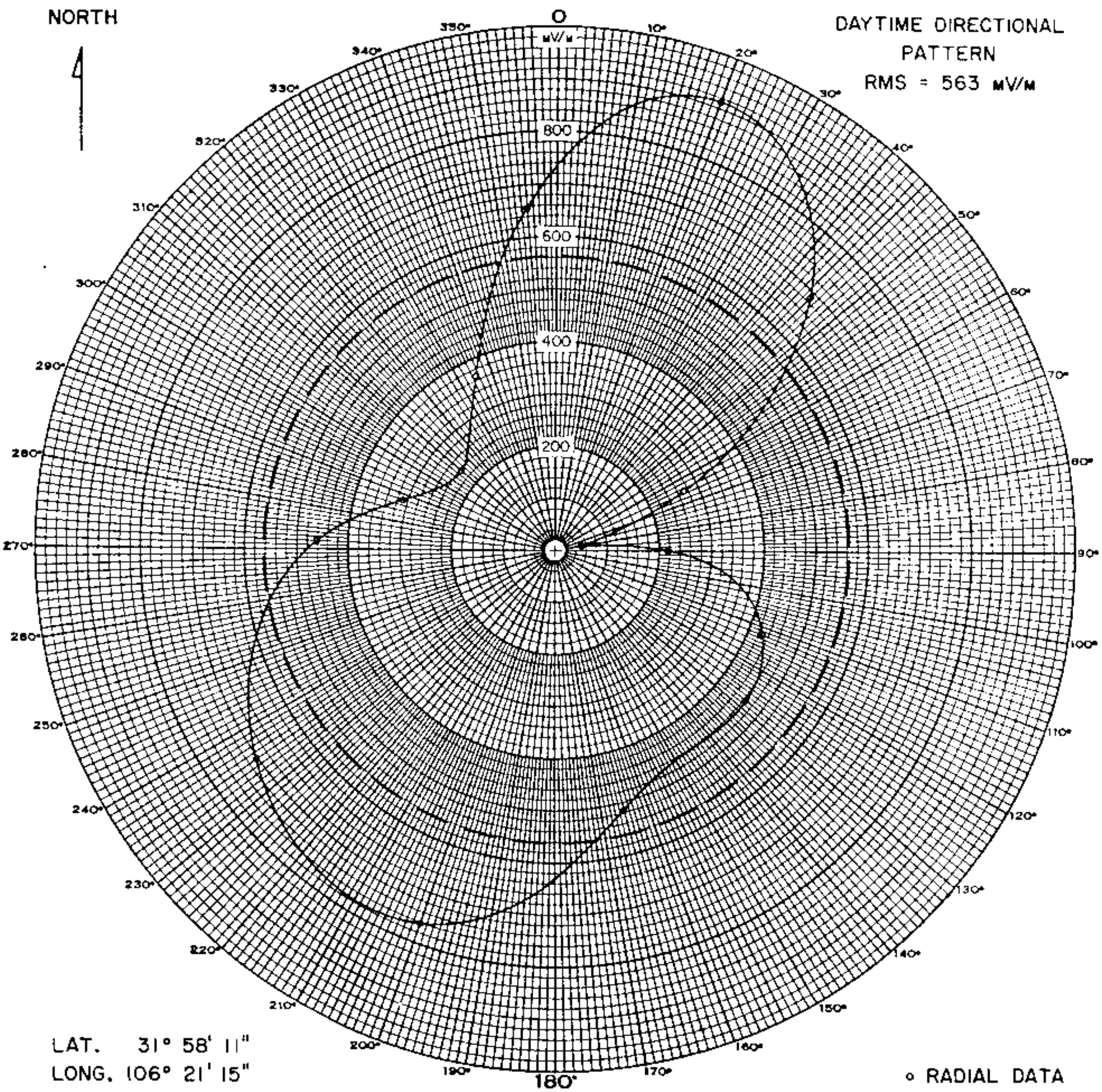
Measured Day
(8-26-70ct)

Station KHEY
El Paso, Texas

SEE REVERSE SIDE

10kw,DA-2,U
690 kc

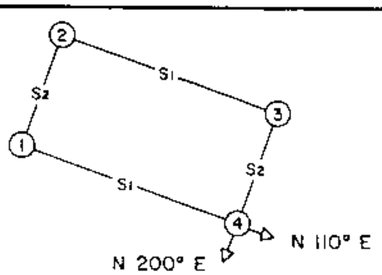
NORTH



DAYTIME DIRECTIONAL PATTERN
RMS = 563 MV/M

LAT. 31° 58' 11"
LONG. 106° 21' 15"

∘ RADIAL DATA



S1 = 752.4' = 190°
S2 = 396.0' = 100°
G = 350.0' = 90°

ANTENNA PARAMETERS

TOWER	THEORETICAL FIELD	THEORETICAL PHASE	OBSERVED FIELD	OBSERVED PHASE
W(1)	0.300	214.2°	0.300	-145.0°
N(2)	1.000	0.0°	1.000	0.0°
E(3)	0.500	15.0°	0.500	16.0°
S(4)	0.300	98.7°	0.300	99.0°

PREPARED BY
THE FIRM OF A. EARL CULLUM, JR.
CONSULTING ENGINEERS

RADIO STATION KHEY
690 kHz 10 kW DA-2
700404 FIGURE 2B

FCC File No.BL-12693
Accepted 8-12-70

Station KHEY
El Paso, Texas
690 kc

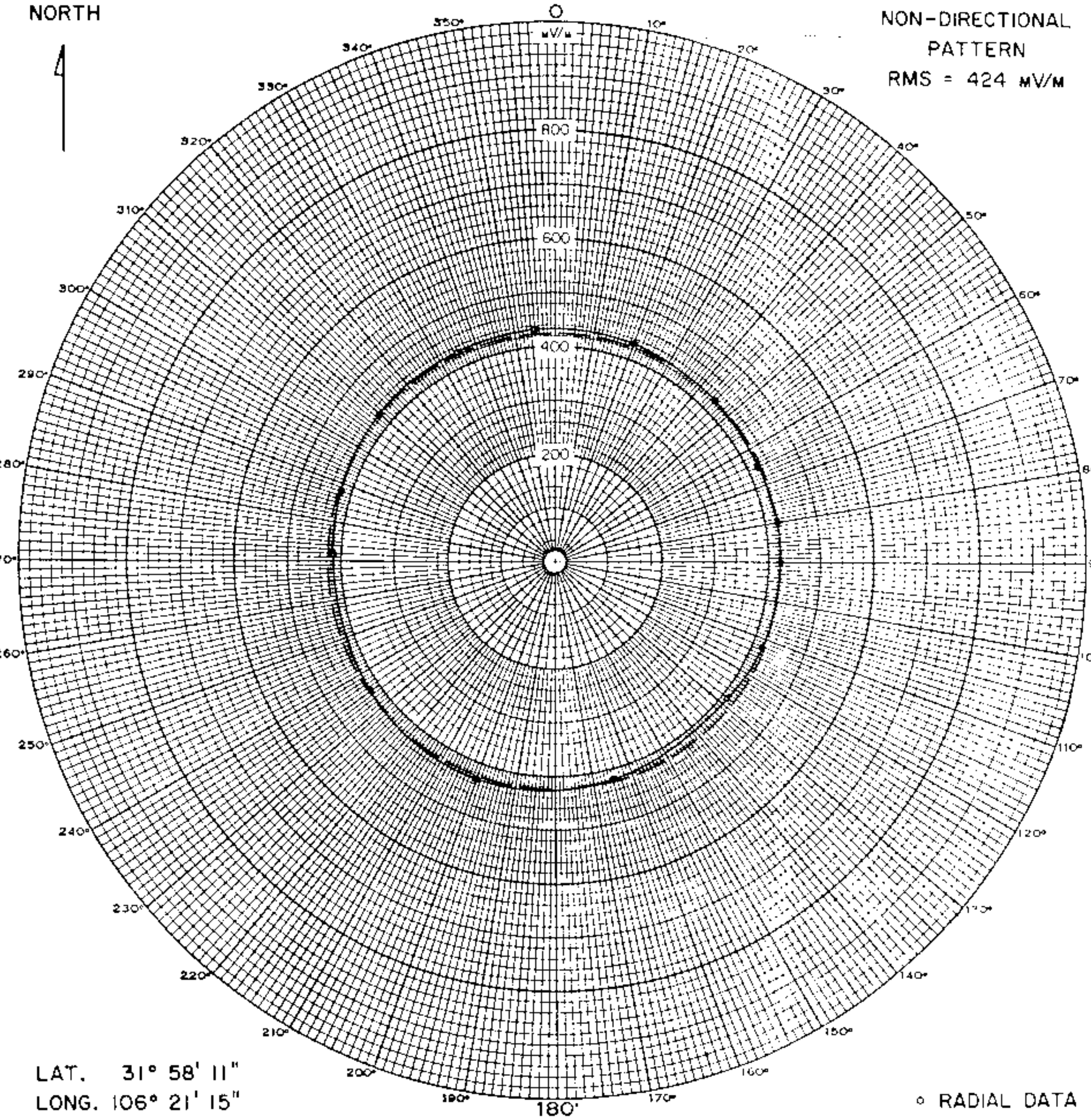
Station KHEY
El Paso, Texas

SEE REVERSE SIDE

KHEY
10kw,DA-2,U
690 kc

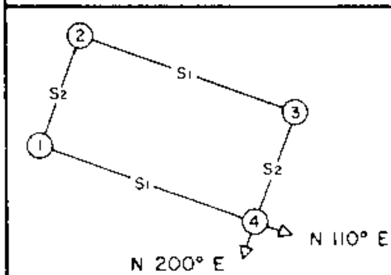
NORTH

NON-DIRECTIONAL
PATTERN
RMS = 424 mV/m



LAT. 31° 58' 11"
LONG. 106° 21' 15"

∘ RADIAL DATA



S_1 = 752.4' = 190°
S_2 = 396.0' = 100°
G = 350.0' = 90°

NON-DIRECTIONAL OPERATION

TOWER	OPERATION
W (1)	DETUNED
N (2)	SERIES FED
E (3)	DETUNED
S (4)	DETUNED

PREPARED BY
THE FIRM OF A. EARL CULLUM, JR.
CONSULTING ENGINEERS

RADIO STATION KHEY
690 kHz 10 kW DA-2
700404 FIGURE 2A

(SEE REVERSE SIDE)

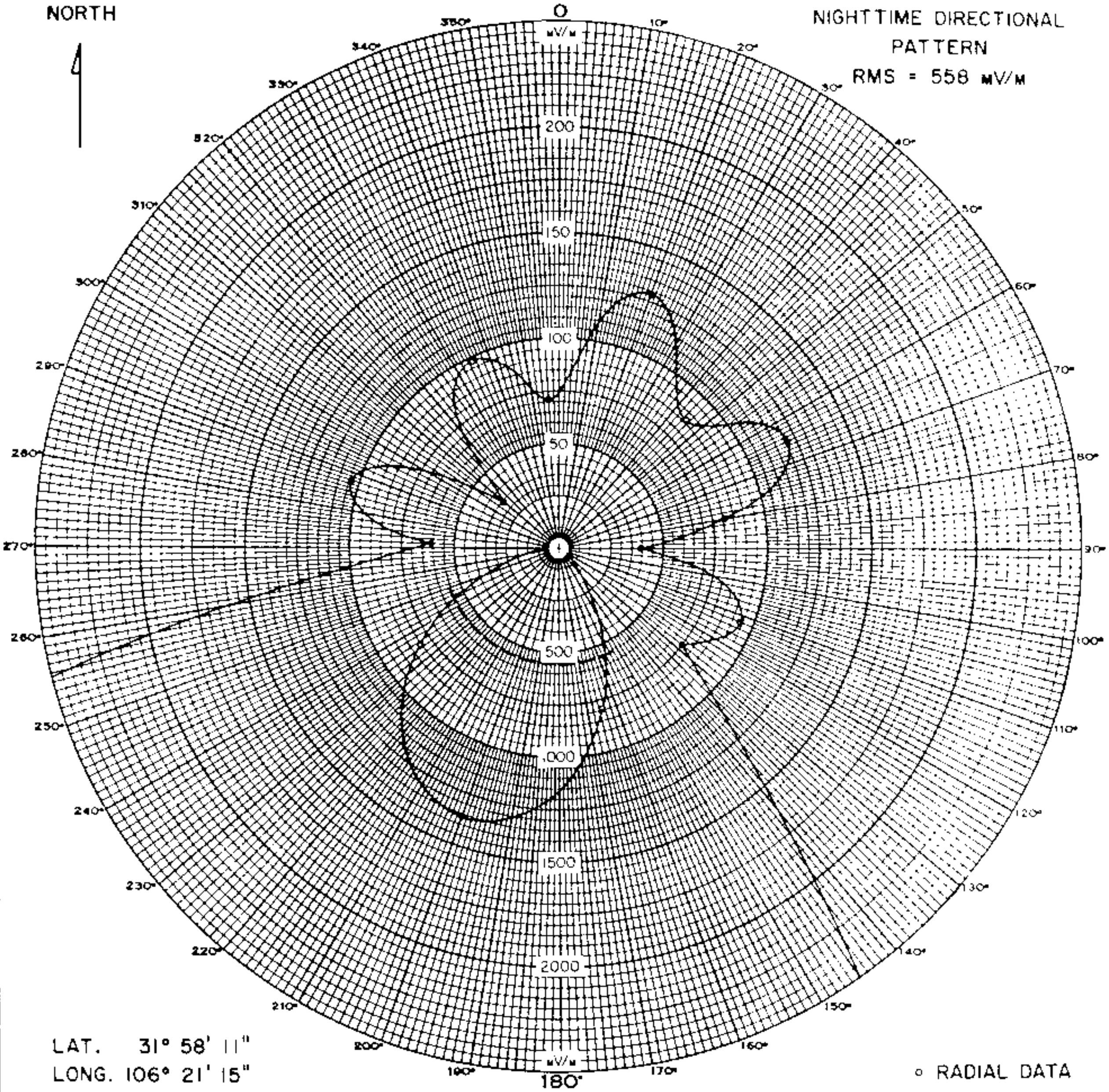
Measured Night
(8-26-70ct)

Station KHEY
El Paso, Texas

KHEY
10kw, DA-2, U
690 kc

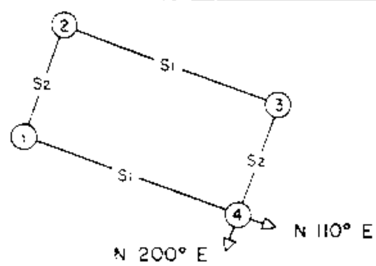
NORTH

NIGHTTIME DIRECTIONAL PATTERN
RMS = 558 mV/m



LAT. 31° 58' 11"
LONG. 106° 21' 15"

o RADIAL DATA



S1 = 752.4' = 190°
S2 = 396.0' = 100°
G = 350.0' = 90°

ANTENNA PARAMETERS

TOWER	THEORETICAL FIELD	THEORETICAL PHASE	OBSERVED FIELD	OBSERVED PHASE
W (1)	0.850	−86.0°	1.000	0.0°
N (2)	1.000	0.0°	1.180	86.0°
E (3)	0.900	0.0°	1.040	85.0°
S (4)	0.765	−86.0°	0.900	0.0°

PREPARED BY
THE FIRM OF A. EARL CULLUM, JR.
CONSULTING ENGINEERS

RADIO STATION KHEY
690 kHz 10 kW DA-2
700404 FIGURE 2C

FCC File No. BL-12693
Accepted 8-12-70

Station KHEY
El Paso, Texas

690 kc

KHEY

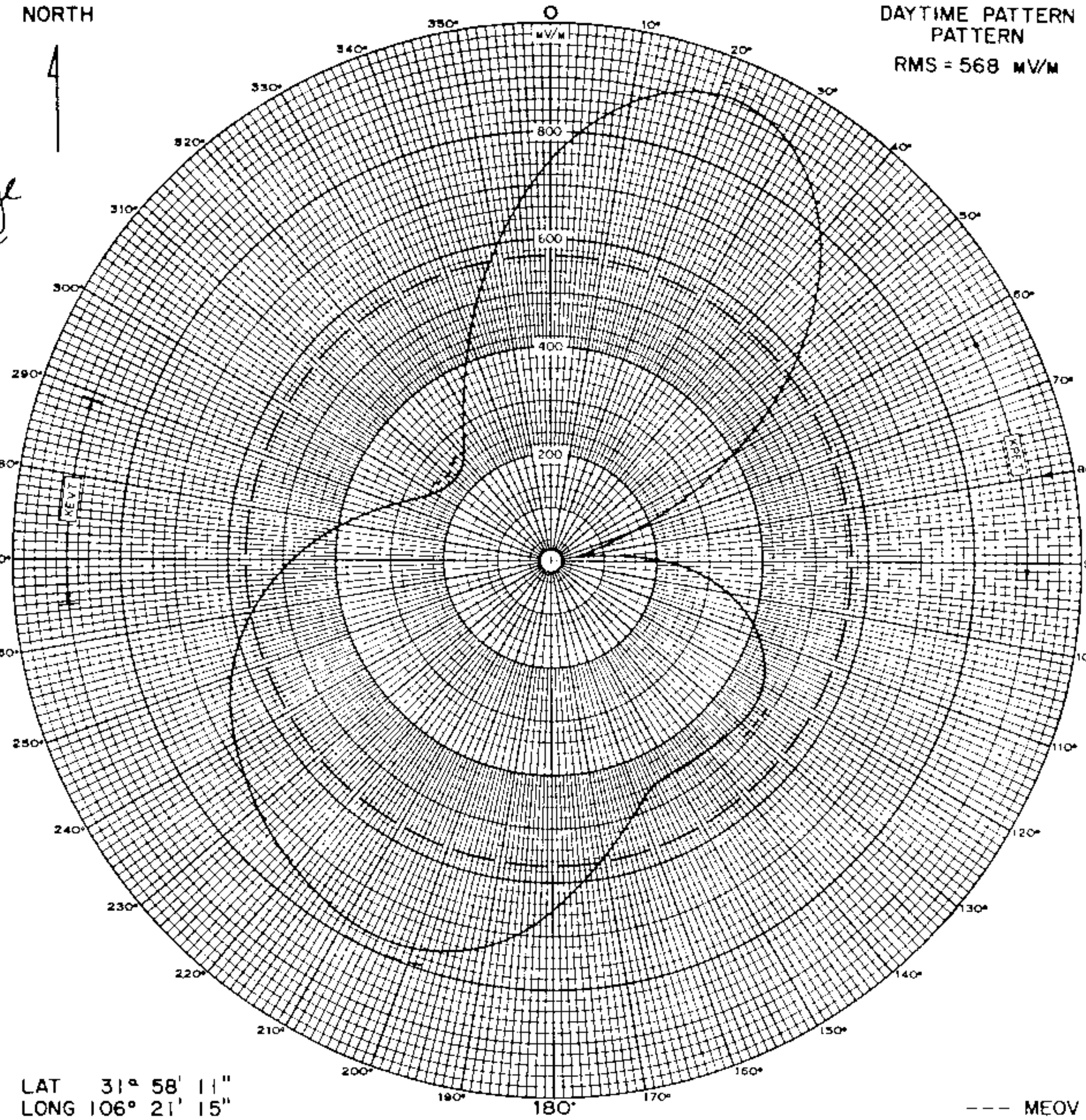
Proposed Day (4-29-68ct)	Station KHEY El Paso, Texas	10kw,DA-2,U 690 kc

12-18-68
BP-17960
Granted
app. for
CP to change
site & make
changes in
directional
antenna
patterns

SEE
REVERSE
SIDE

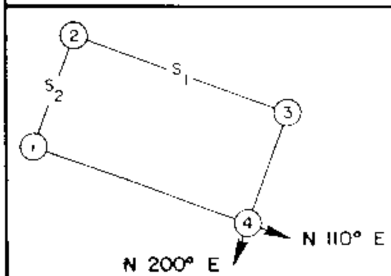
NORTH

DAYTIME PATTERN
PATTERN
RMS = 568 MV/M



LAT 31° 58' 11"
LONG 106° 21' 15"

--- MEOV



S_1 = 752.4' = 190°
S_2 = 396.0' = 100°
G = 356.2' = 90°

THEORETICAL PARAMETERS

TOWER	FIELD	PHASE
1	0.3	214.2°
2	1.0	0.0°
3	0.5	15.5°
4	0.3	98.7°

PREPARED BY
THE FIRM OF A. EARL CULLUM, JR.
CONSULTING ENGINEERS

RADIO STATION KHEY
690 kHz 10 kW DA-2
670925.2 FIGURE 4B

FCC File No.BP-17960 Accepted 4-23-68	Station KHEY El Paso, Texas	690 kc

KHEY

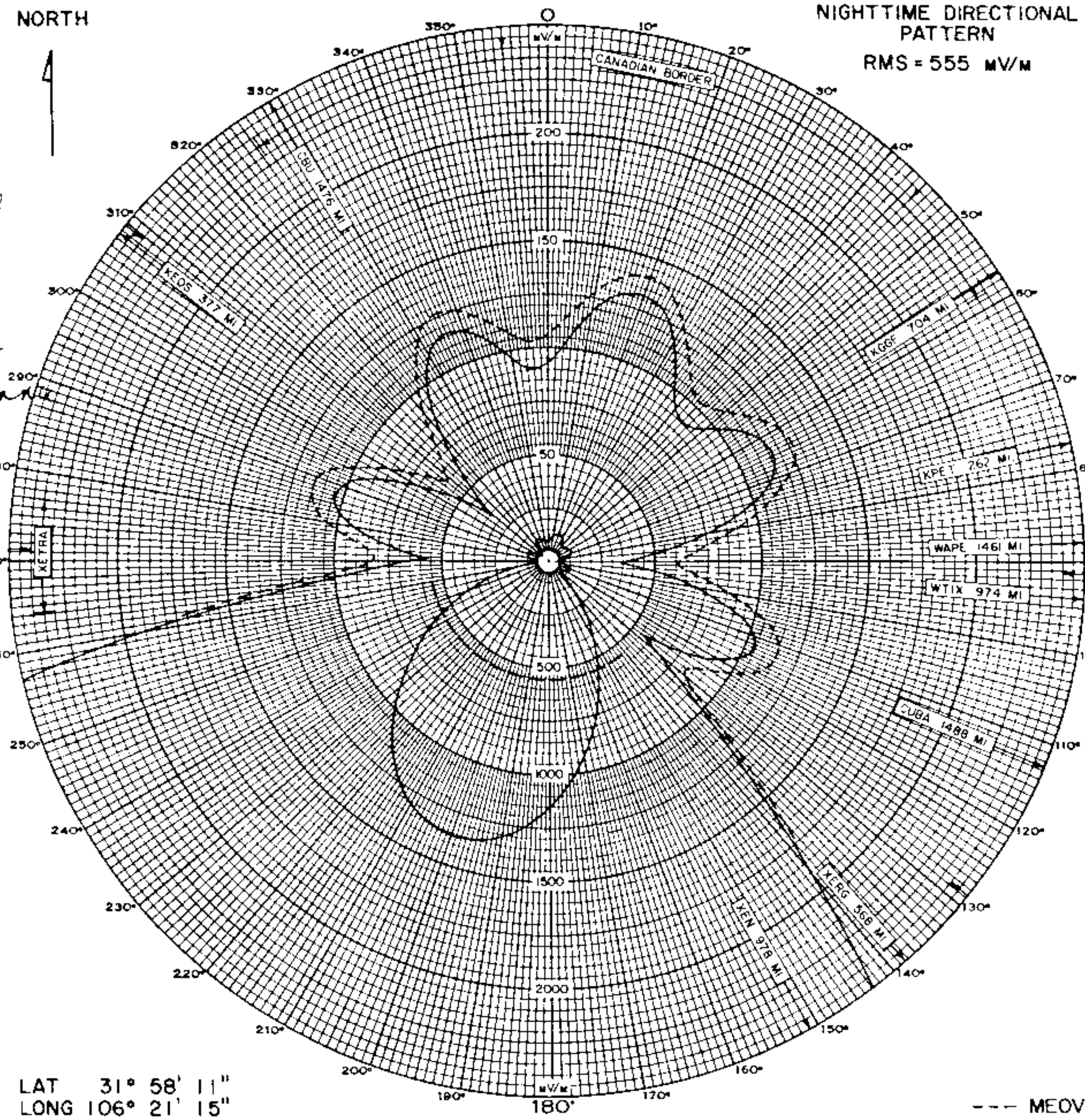
Proposed Night
(4-29-68ct)

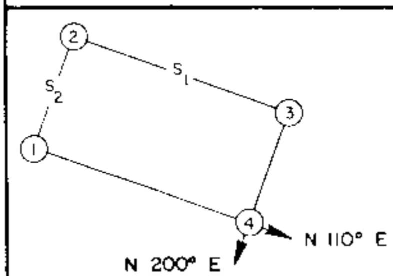
Station KHEY
El Paso, Texas

10kw,DA-2,U
690 kc

12-18-68
BP-17960
Granted
pp. for
p to change
ite &
nake
hanges
n direct-
onal antenna
patterns.

SEE
REVERSE
SIDE





S_1 = 752.4' = 190°
S_2 = 396.0' = 100°
G = 356.2' = 90°

THEORETICAL PARAMETERS

TOWER	FIELD	PHASE
1	0.850	-86.0°
2	1.000	0.0°
3	0.900	0.0°
4	0.765	-86.0°

PREPARED BY
THE FIRM OF A. EARL CULLUM, JR.
CONSULTING ENGINEERS

RADIO STATION KHEY
690 kHz 10 kW DA-2
670925.3 FIGURE 4B

FCC File No.BP-17960
Accepted 4-23-68

Station KHEY
El Paso, Texas

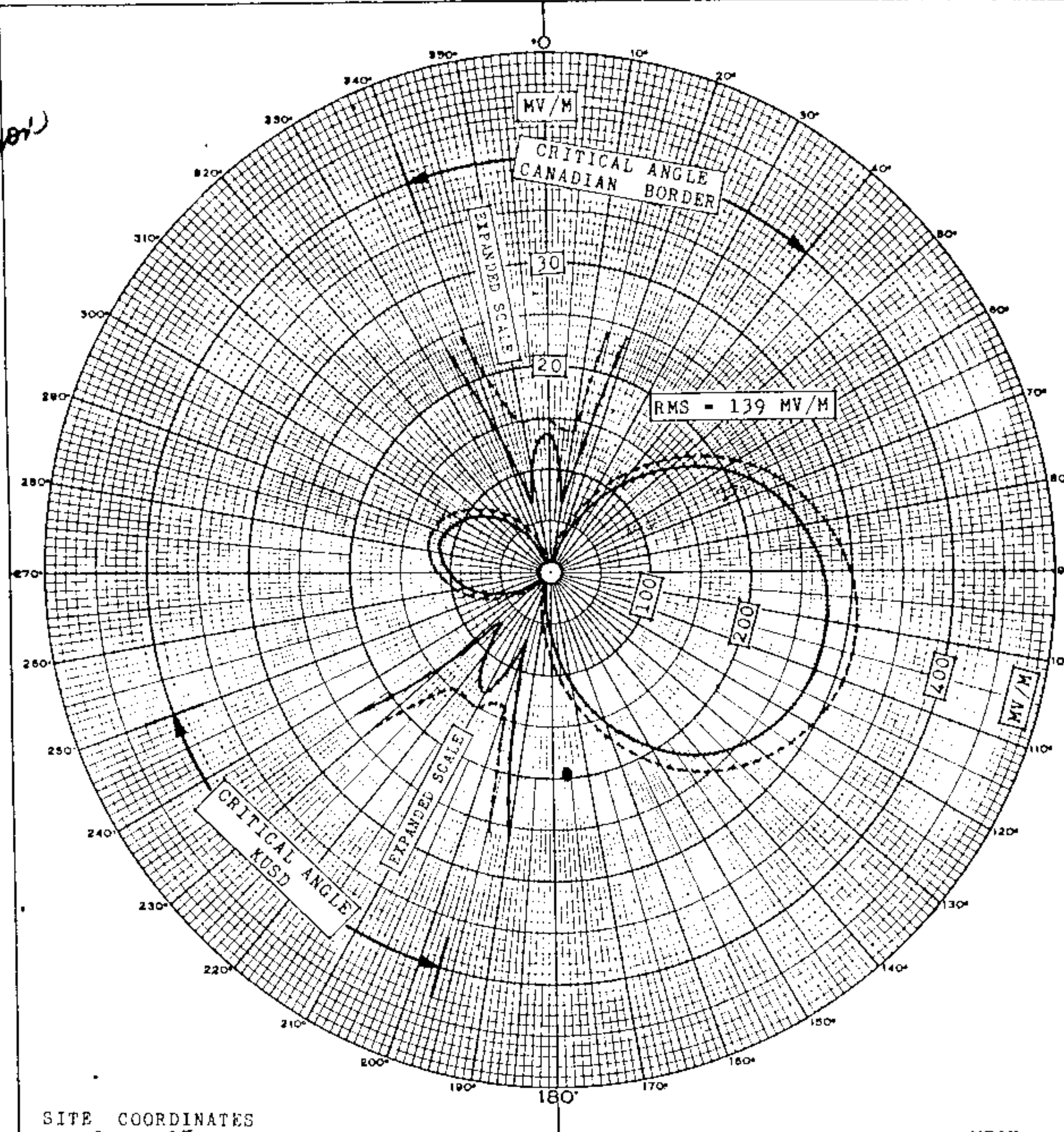
690 kc

KTCR

PROPOSED DAY (10-24-58g) | New; Hennepin B/C Associates Minneapolis, Minnesota | 500w, DA-D,D 690 KC

over

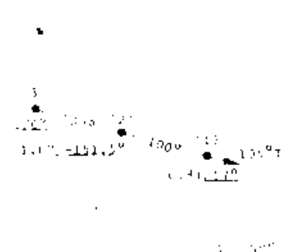
3-22-61 granted CP for new station



SITE COORDINATES
45° 01' 25" N
93° 22' 50" W

---MEOV

PROPOSED HORIZONTAL PLANE RADIATION PATTERN



HENNEPIN BROADCASTING ASSOCIATES
MINNEAPOLIS, MINNESOTA

Vandivere and Cohen
Consulting Electronic Engineers

PROPOSED OPERATION
690 KC
0.5 KW D DA
SEPTEMBER, 1958

FCC File No. BP-12416
Accepted 10-21, 1958

Hennepin Broadcasting Associates
Minneapolis, Minnesota 690 KC

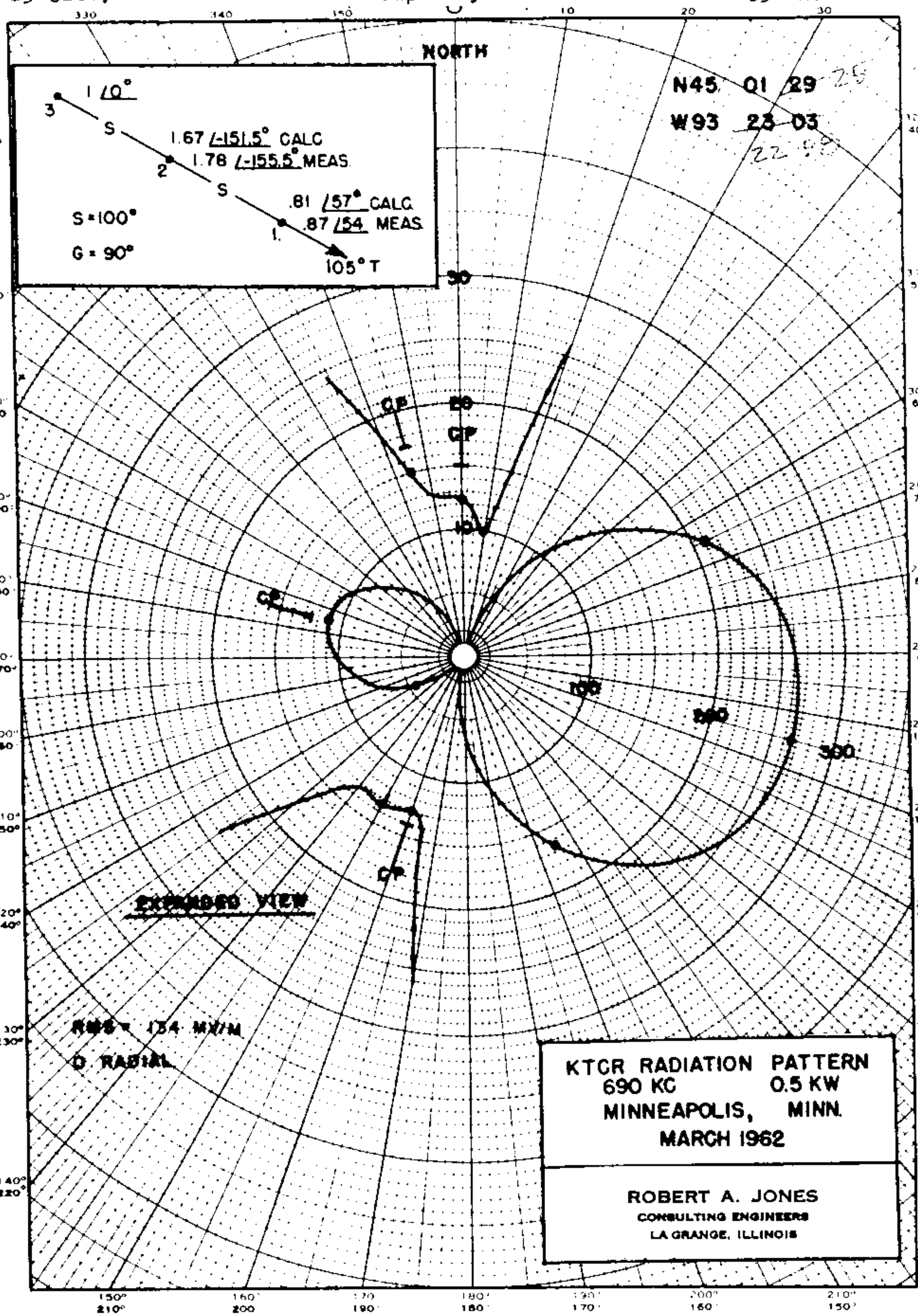
KTCR

Measured Day
(5-25-62ct)

Station KTCR
Minneapolis, Minnesota

500w,DA-D,D
690 kc

5-9-62
Granted L



FCC File No.BL-9248
Accepted 5-14-62

Station KTCR
Minneapolis, Minnesota

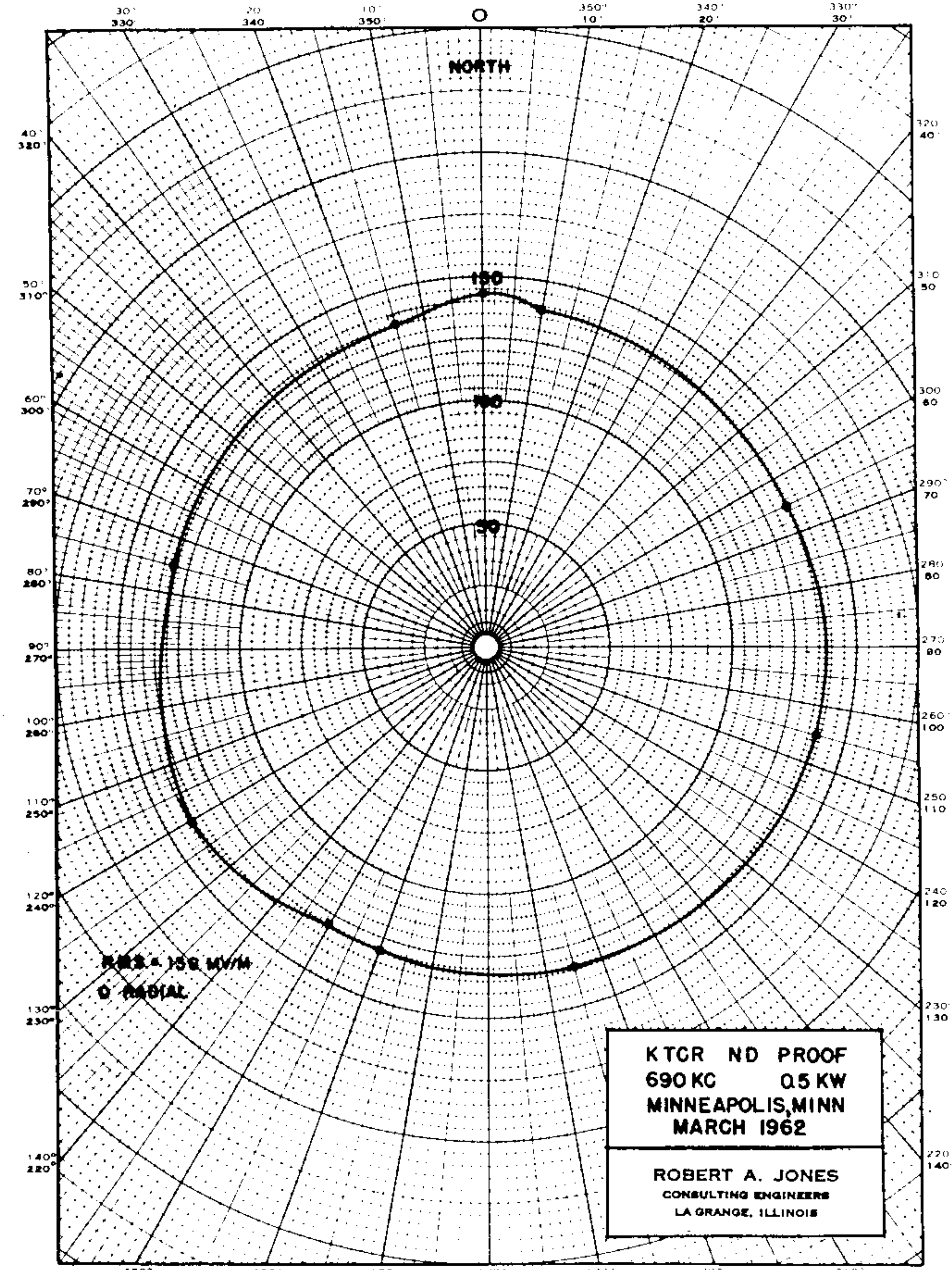
690 kc

KTCR

Measured Non-DA
(5-25-62ct)

Station KTCR
Minneapolis, Minnesota

500w,DA-D,D
690 kc



FCC File No.BL-9248
Accepted 5-14-62

Station KTCR
Minneapolis, Minnesota

690 kc

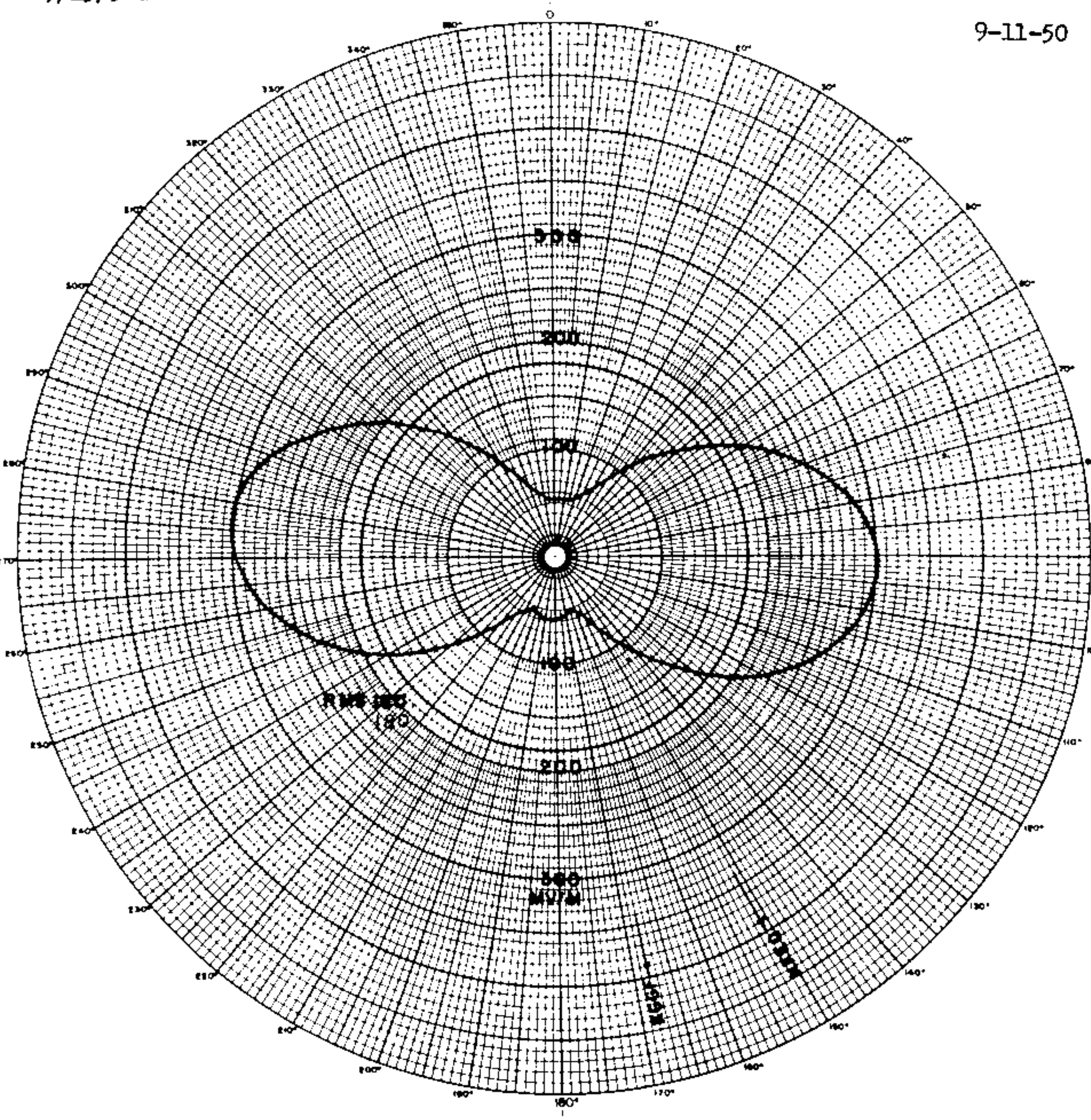
KUSD

PROPOSED DAYTIME	KUSD, VERMILLION, S. DAK.	1kw, DA-D	690 kc

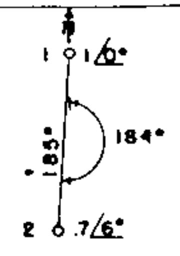
9/13/50G

APP. 2

9-11-50



ANTENNA PARAMETERS



Tower	Electrical Height	True Tower Orientation	Spacing	Phasing	Horizontal Field mv/m	Field Ratio	Elev. Angle	Elevation RMS Field mv/m
1	75	0					0	
2	75	184	185	6	180	.7	10	
							20	
							30	
							40	
							50	
							60	
							70	
							80	

Glenn D. Gillett And Associates
Consulting Radio Engineers
National Press Building
Washington, D.C.

RADIO STATION KUSD
VERMILLION, SOUTH DAKOTA
1KW DAYTIME 690 KC.

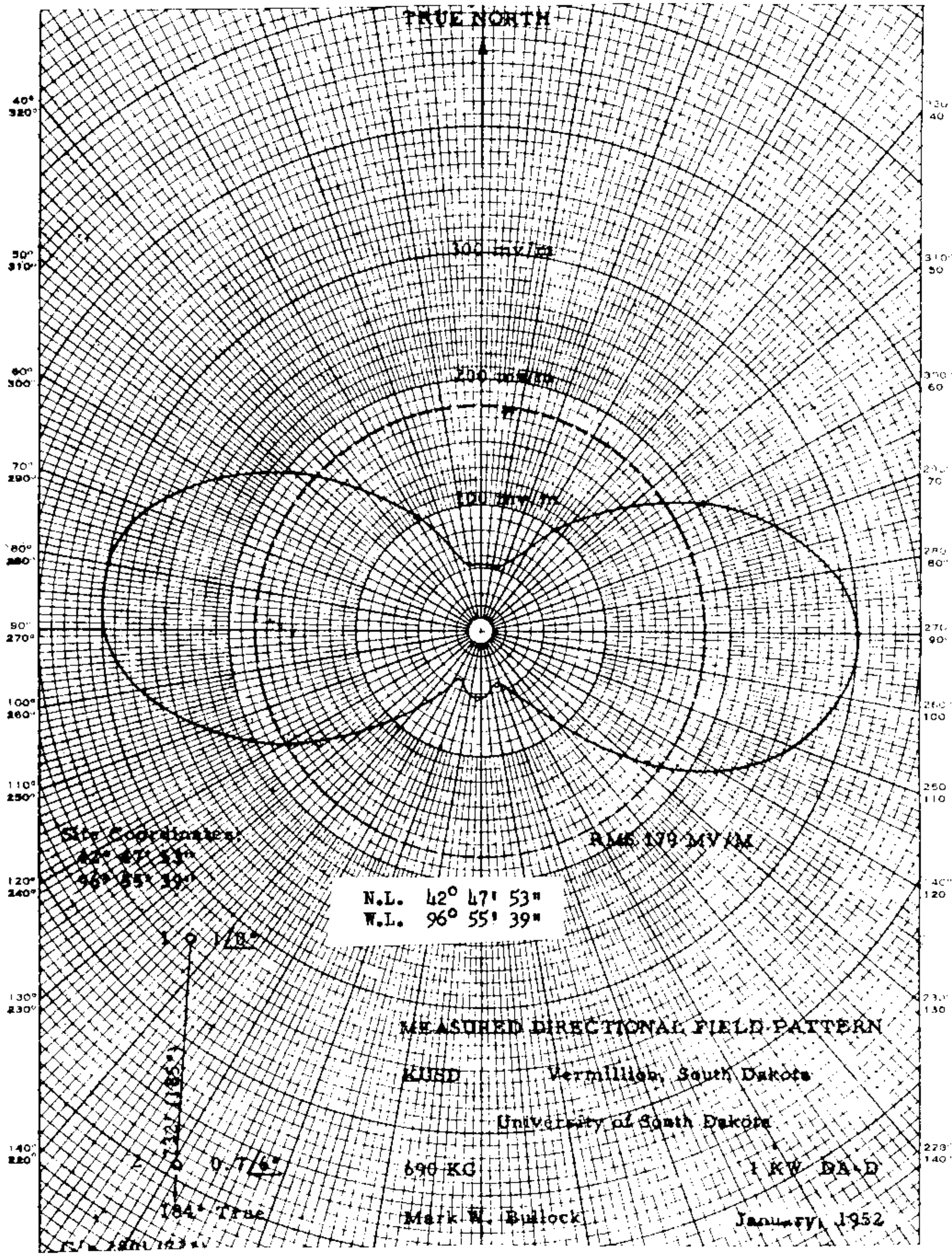
HORIZONTAL RADIATION PATTERN

Latitude 42° 47' 53"
Longitude 96° 55' 39"
Pattern No. 500825

KUSD, Vermillion, S. Dak. 690 k

KUSD

MEASURED DAY KUSD, VERMILLION, S. DAK. 3/19/52G 1 KW, DAY, DA 690 KC



APPL RECD 2/25/52 ACC 3/18/52 BL-4684 KUSD, VERMILLION, S. DAK. 690 KC

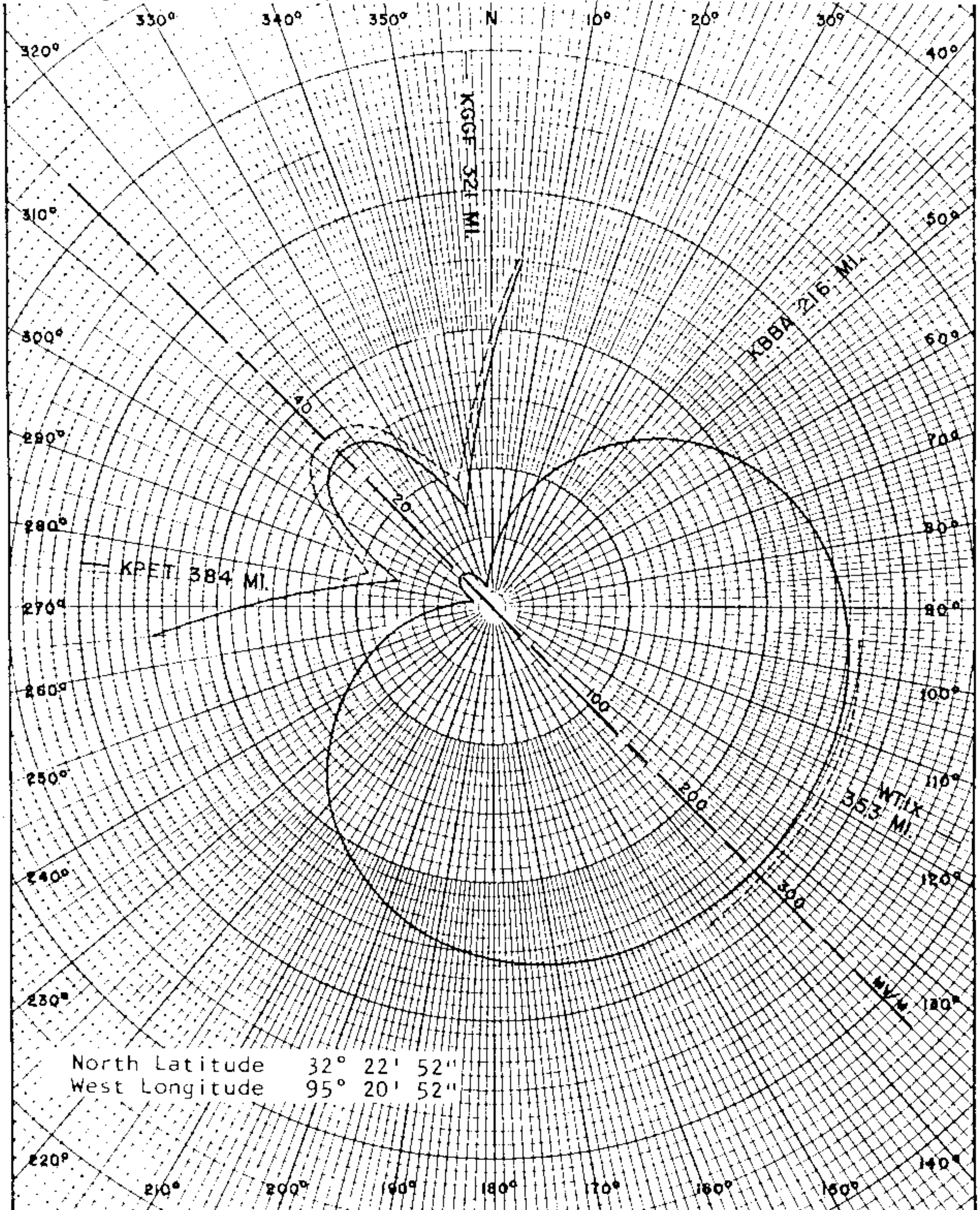
KZEY

7-29-64 granted CP for 1kw DA-D

PROPOSED DAY
(5-8-61g)

Station KZEY
Tyler, Texas

1kw, DA-D,D
690 KC



S-90°-356.6'

G'S = 70.6° = 280'

(2) 0.9∠102°

S

1∠0° (1)

N135°E

RMS=182 MV/M

-- MEOV

J. G. ROUNTREE
CONSULTING ENGINEER
P. O. BOX 9044
AUSTIN 17, TEXAS

TYLER BROADCASTING COMPANY
TYLER, TEXAS
690 KC, 1 KW, DA-D

601220

FIGURE 3A

FCC File No. BP-14702
Accepted 4-11-61

KZEY
Tyler, Texas

690 KC

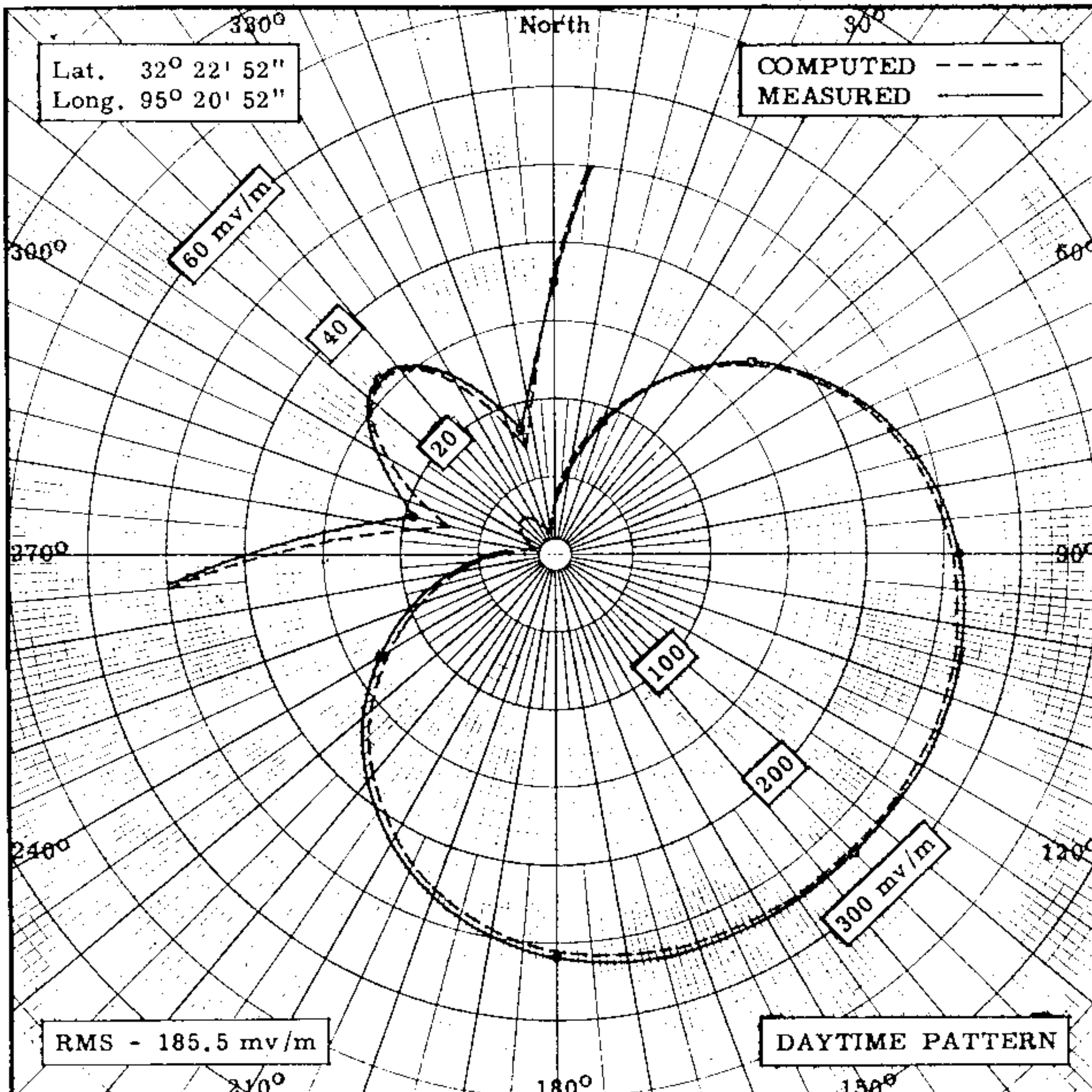
KZEY

Measured Day
(3-26-65ct)

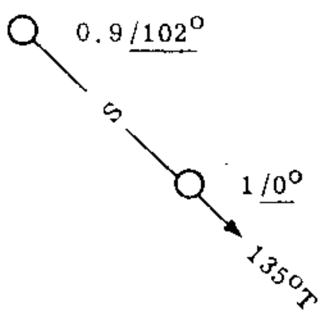
Station KZEY
Tyler, Texas

1kw,DA-D,D
690 kc

BL-10792
GR.LIC 5-19-65
INCR.PWR
CHG.DA



Theoretical



S - 90° - 356.6'
G's - 70.6° - 280'

RADIO STATION KZEY
TYLER, TEXAS

MEASURED DIRECTIONAL
HORIZONTAL PLANS RADIATION PATTERN
690 KC 1000 WATTS

110264-3

FIGURE 3

MERL SAXON
CONSULTING RADIO ENGINEER
LUFKIN, TEXAS

FCC File No. BL-10792
Accepted 3-10-65

Station KZEY
Tyler, Texas

690 kc

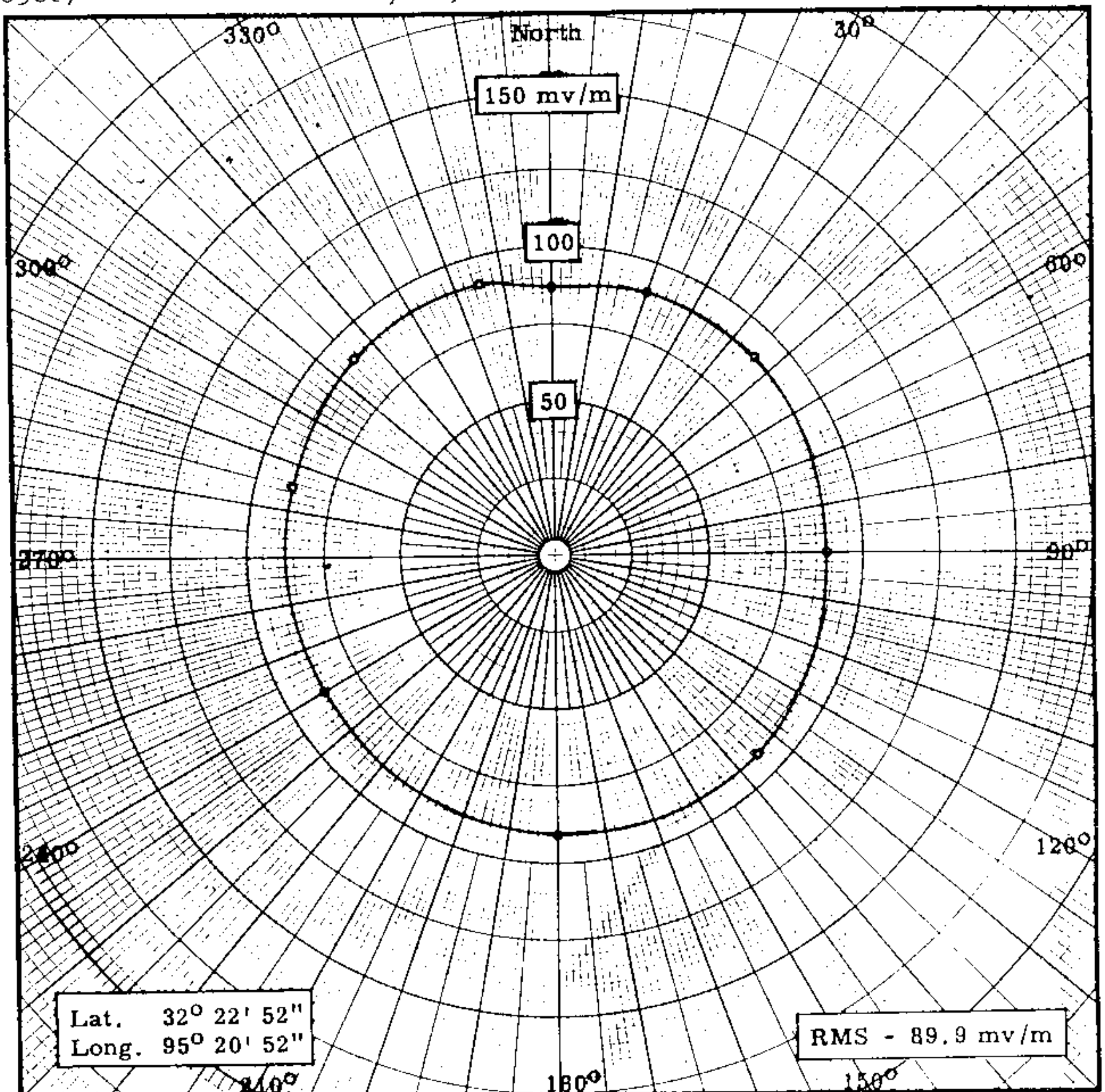
KZEY

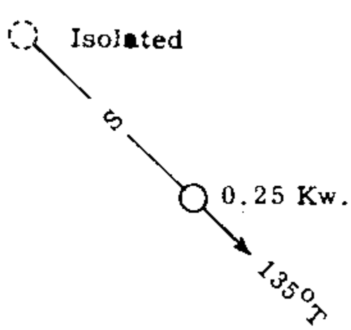
Measured Non-DA
(3-26-65ct)

Station KZEY
Tyler, Texas

1kw,DA-D,D
690 kc

BL-10792
LIC 5-19-65
INCR. PWR
CHG. DA.





S - 90° - 356.6'
G's - 70.6° - 280'

RADIO STATION KZEY
TYLER, TEXAS

MEASURED NON-DIRECTIONAL
HORIZONTAL PLANE RADIATION PATTERN
690 KC 1000 WATTS

110264-2

FIGURE 2

MERL SAXON
CONSULTING RADIO ENGINEER
LUFKIN, TEXAS

FCC File No. BL-10792
Accepted 3-10-65

Station KZEY
Tyler, Texas

690 kc

WADS

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station : WADS Main Studio: Ansonia, Connecticut

Frequency : 690 KHz Power : ____ Night 1 kW Day

Notification : 1780 KHz Date : Sept. 28, 1979 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 41 20 48
West Longitude: 73 06 56

ANTENNA CHARACTERISTICS

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

TOWER	:	N(#1)	S(#2)				
HEIGHT ABOVE INSULATORS	:	280'	280'	(70°)			
PHASING	:	+100°	0°				
FIELD RATIO	:	0.750	1.00				

SPACING AND ORIENTATION : Towers in a row are spaced 357' (90°) on a line bearing 340° true.

GROUND SYSTEM : 120 - 100' to 260' equally spaced copper radials plus ________ - ________' interspaced radials a ________' square ground screen about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers.

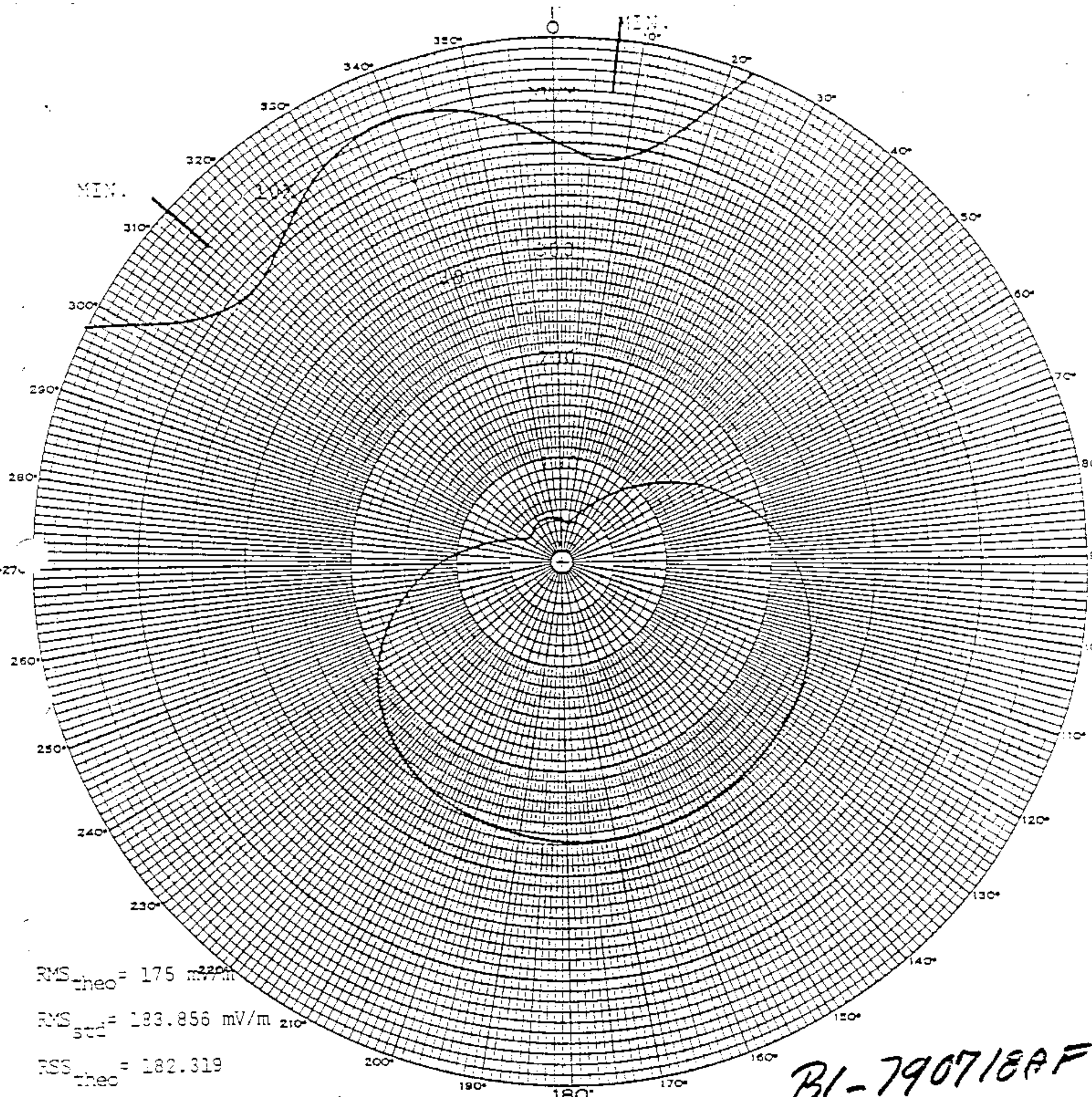
WADS

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	175. mV/m	182.319 mV/m	183.856 mV/m

Note:

WADS



RMS_{theo} = 175 mV/m

RMS_{std} = 183.856 mV/m

RSS_{theo} = 182.319

RSS/RMS = 1.041

BL-790718AF

TOWER PLACEMENT SKETCH

340° T.

No. 2

90°

No. 1

PATTERN PARAMETERS

TOWER No.	ELECTRICAL HEIGHT $G°$	SPACING $S°$	PHASING $\psi°$	FIELD RATIO F
1	70°	–	0°	1.00
2	70°	90°	100°	0.75
3				
4				
5				
6				

DAYTIME OPERATION ☐ NIGHTTIME OPERATION ☐

FIGURE 3A

PROPOSED DAYTIME DIRECTIONAL PATTERN

– –

MARCH – 1976

ANSONIA, CONN.

$\theta°$

STATION DATA

CALL WADS
FREQ 690 kHz
POWER 1 KW
TYPE DA-D
TIME DAYTIME
LAT. N 41-20-[illegible]
LONG. W [illegible]

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

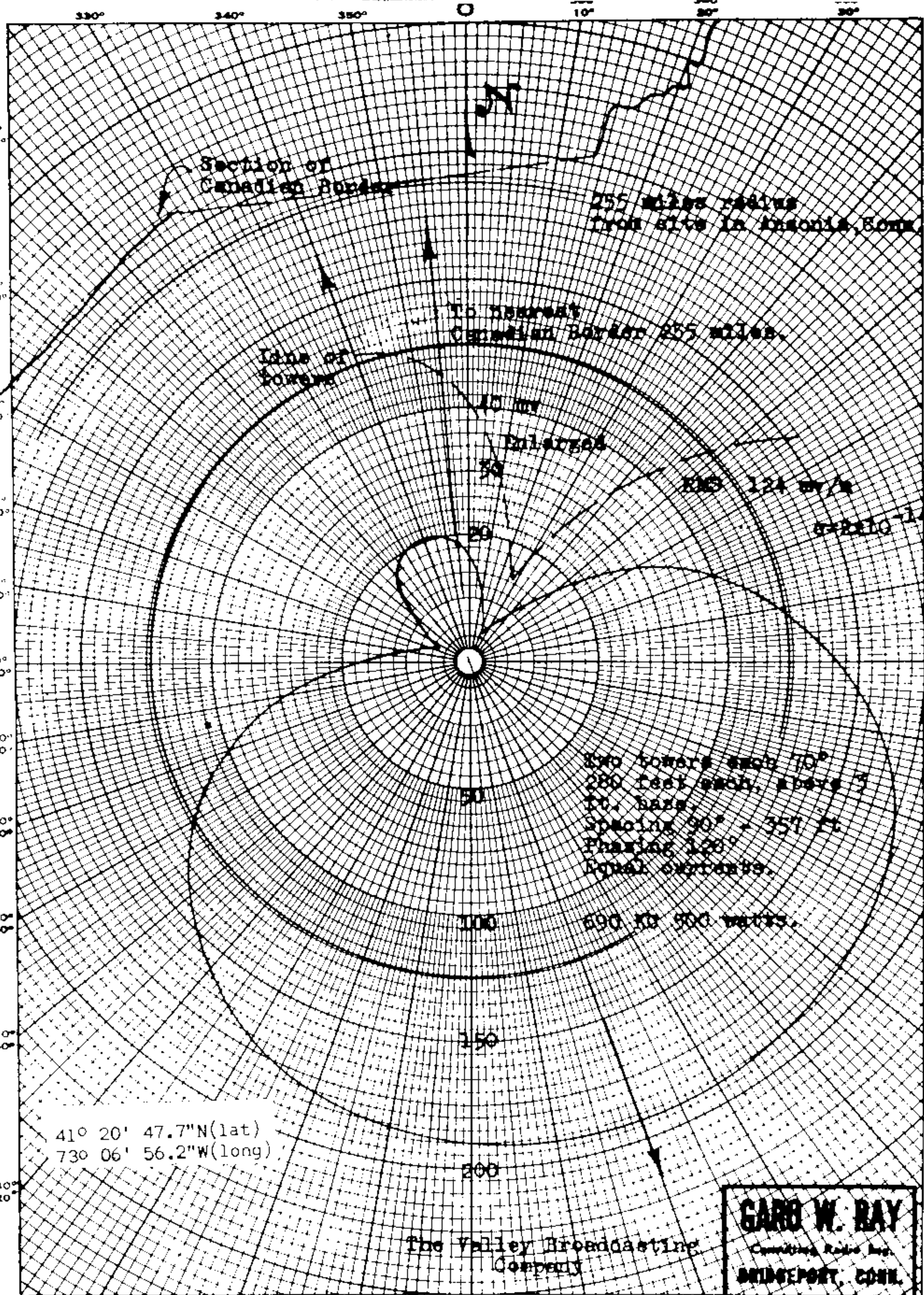
WADS

PROPOSED DAY (8/16/55G)

THE VALLEY BROADCASTING CO.
ANSONIA, CONNECTICUT

500W
DA-D, D

690 KC



FILE NO. BP-9684(Amended)

ACCEPTED 7/27/55 FCC

THE VALLEY BCG. CO.
Ansonia, Connecticut

690 KC

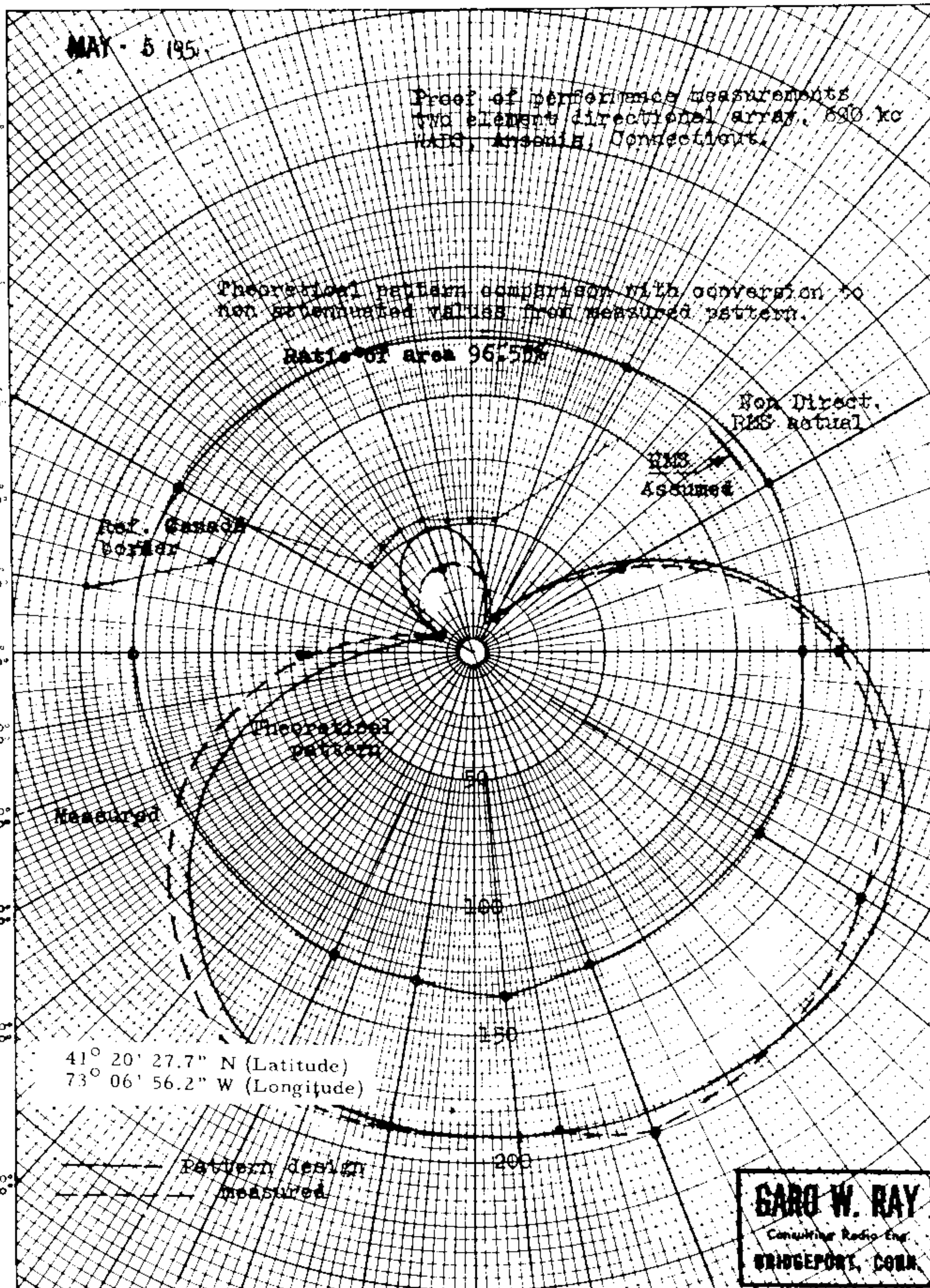
WADS

MEASURED
DAY (5/29/56g)

STATION WADS
ANSONIA, CONN.

500 W
DA-D, D

690 KC

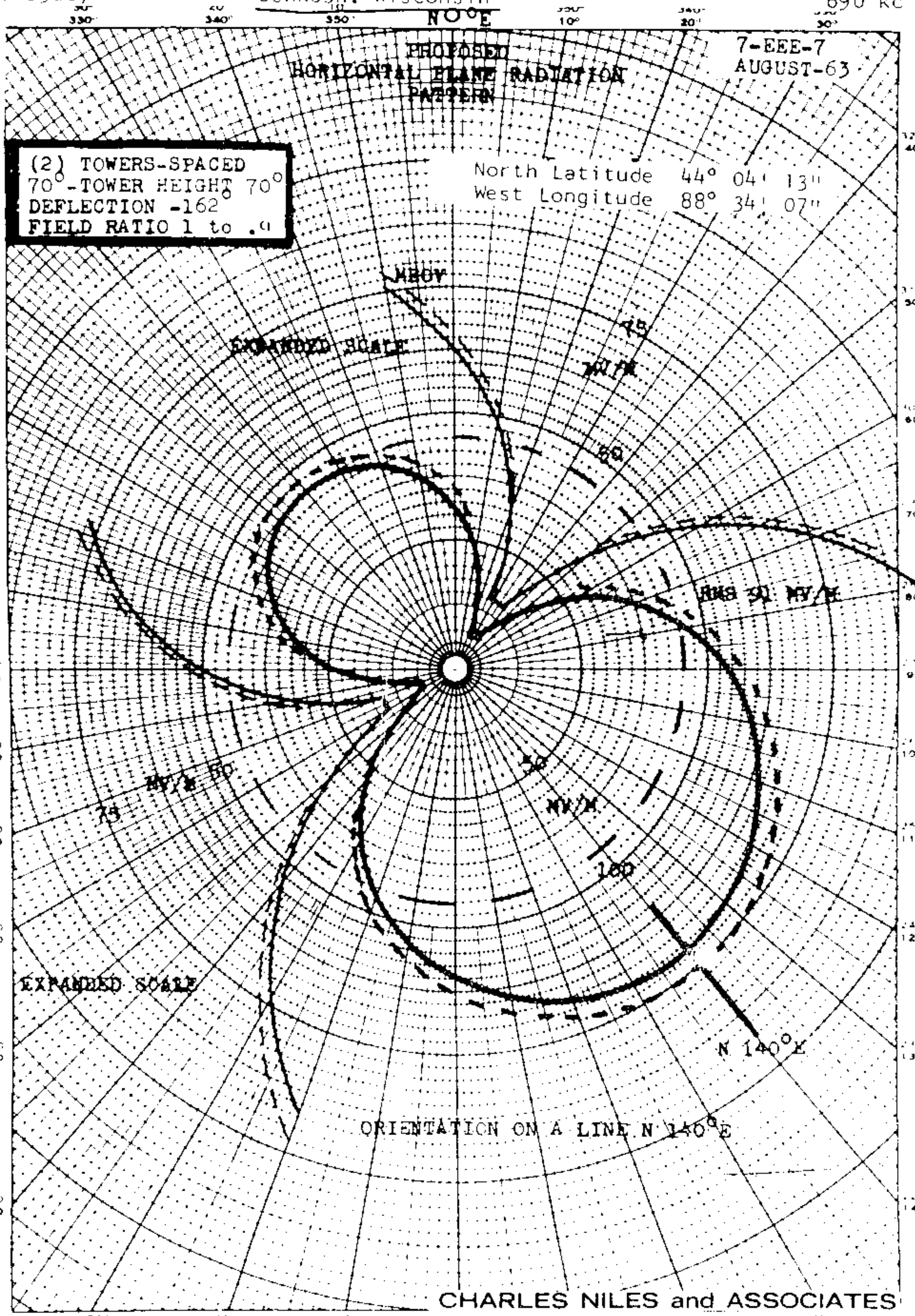


WAGO

Proposed Day
(10-30-63ct)

New; Winnebago Broadcasting Co.
Oshkosh, Wisconsin

250w,DA-D,D
690 kc



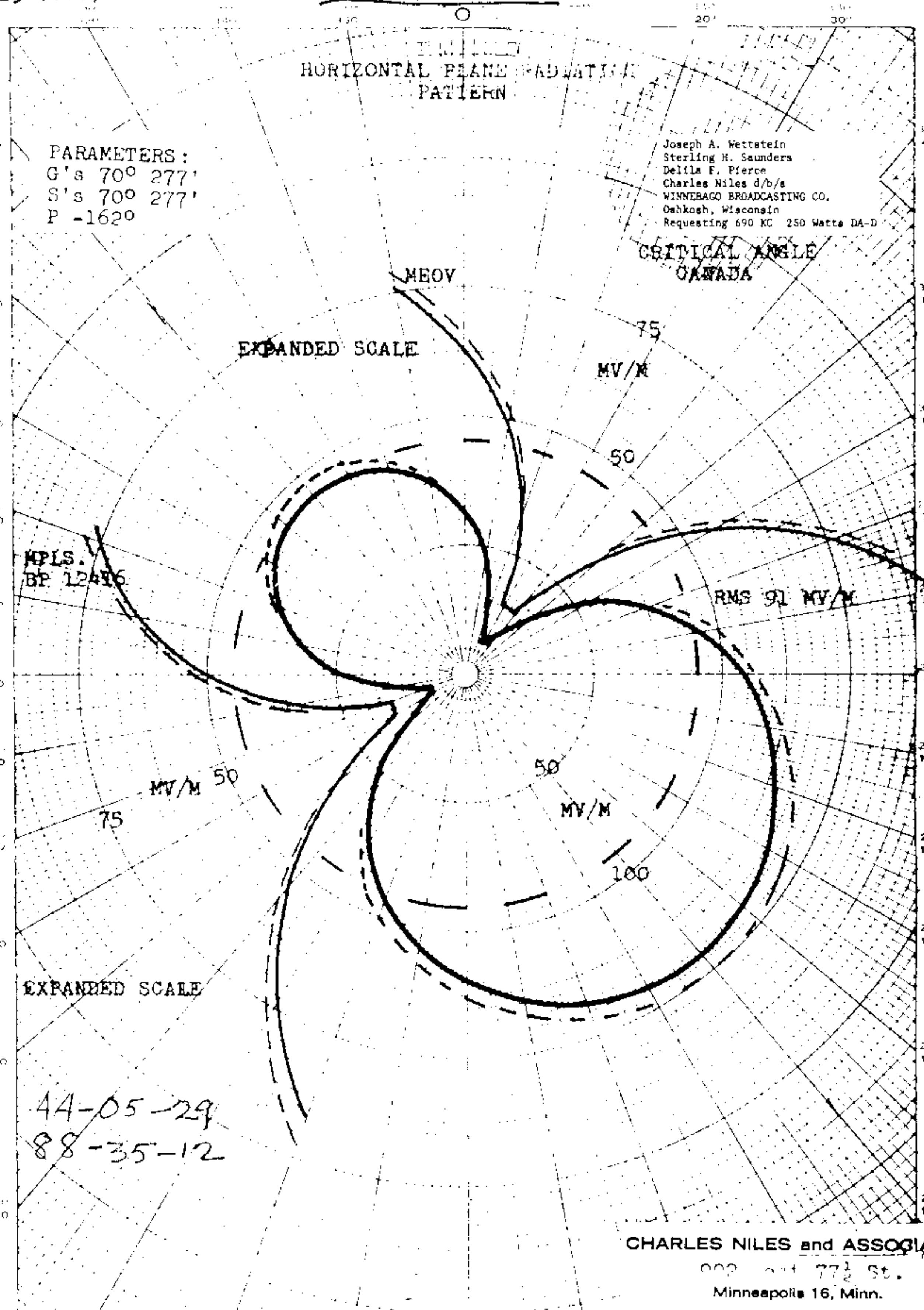
FCC File No.BP-15129 New; Winnebago Broadcasting Co.
Accepted 10-24-63Amended Oshkosh, Wisconsin 690 kc

WAGO

PROPOSED DAY
(10-25-61ct)

New; Winnebago B/C Co.
Oshkosh, Wisconsin

250w,DA-D,D
690 kc



CHARLES NILES and ASSOCIATES
Minneapolis 16, Minn.

FCC File No. 15129
Accepted 10-19-61

New; Winnebago B/C Co.
Oshkosh, Wisconsin

690 kc

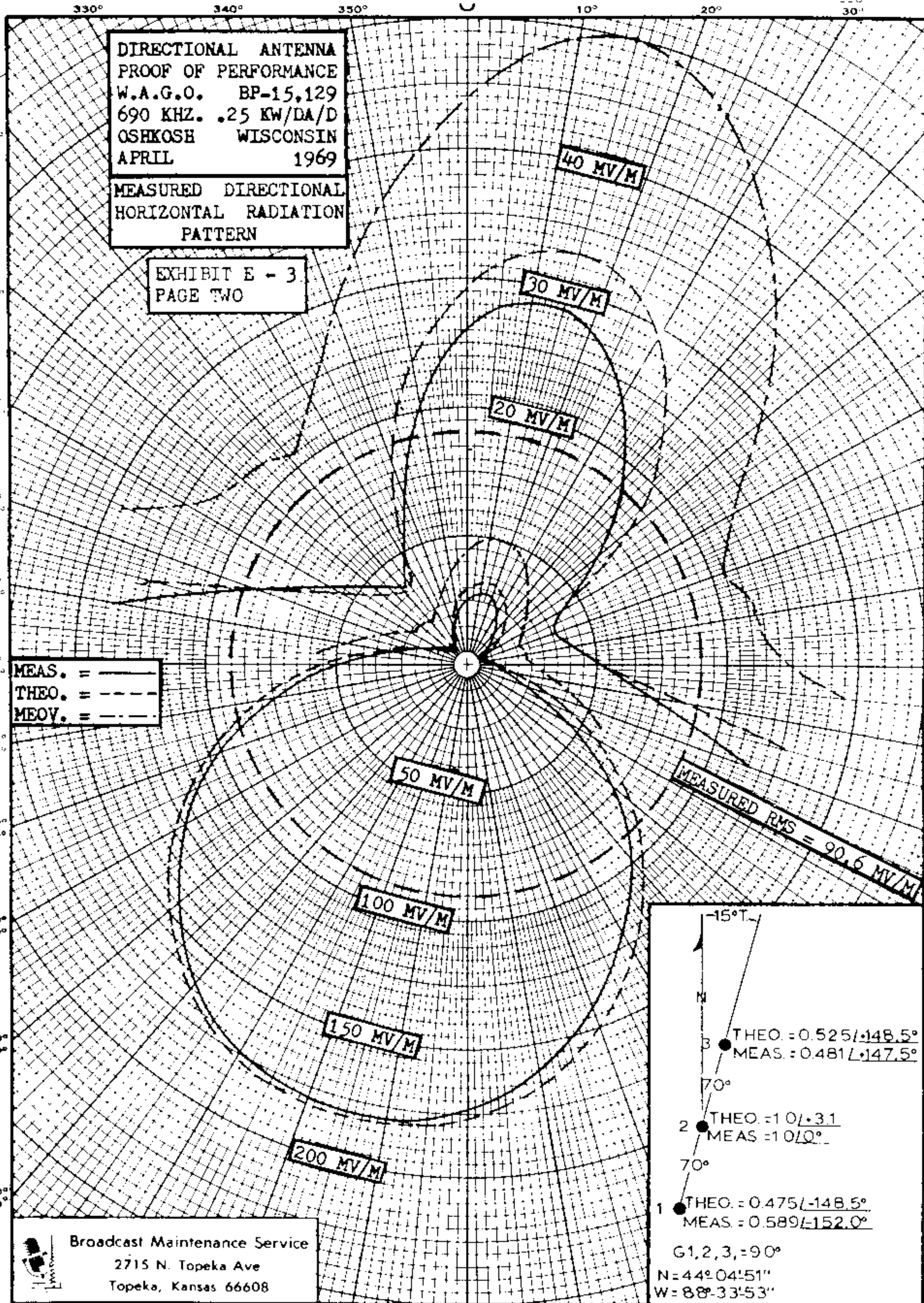
WAGO

Measured Day
(7-28-69ct)

Station WAGO
Oshkosh, Wisconsin

250w,DA-D,D
690 kc

BL-12407
Granted
8-28-69
license
covering
CP for a
new AM
station



FCC File No. BL-12407
Accepted 7-15-69

Station WAGO
Oshkosh, Wisconsin

690 kc

WAGO

Measured Non-DA (7-28-69ct)

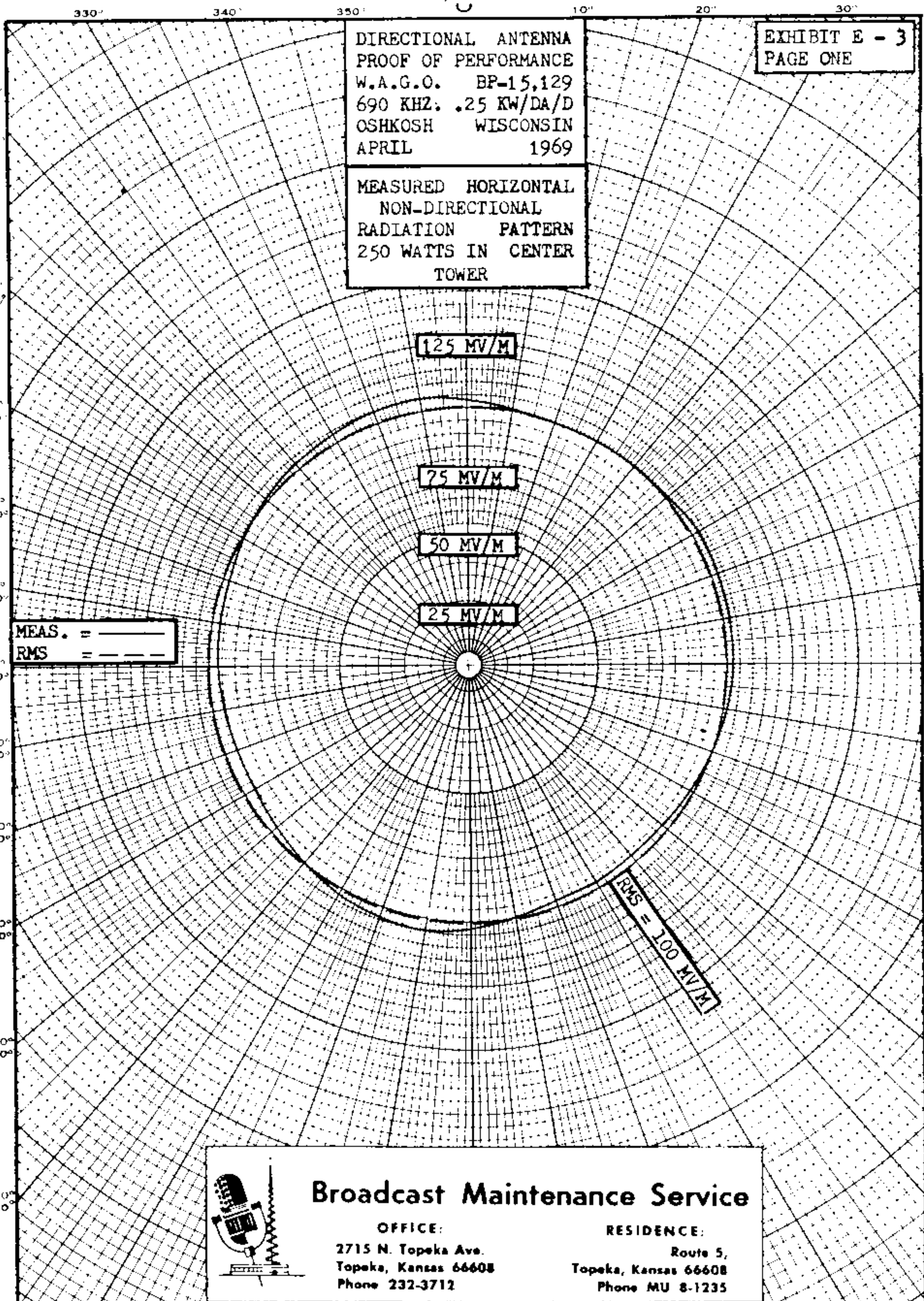
Station WAGO
Oshkosh, Wisconsin

250w, DA-D, D
690 kc

BL 12407 Granted 7/28/69 license covering CP for a new AM station

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

NO. 341-P DIETZGEN GRAPH PAPER POLAR CO-ORDINATE



FCC File No. BL-12407
Accepted 7-15-69

Station WAGO
Oshkosh, Wisconsin

690 kc

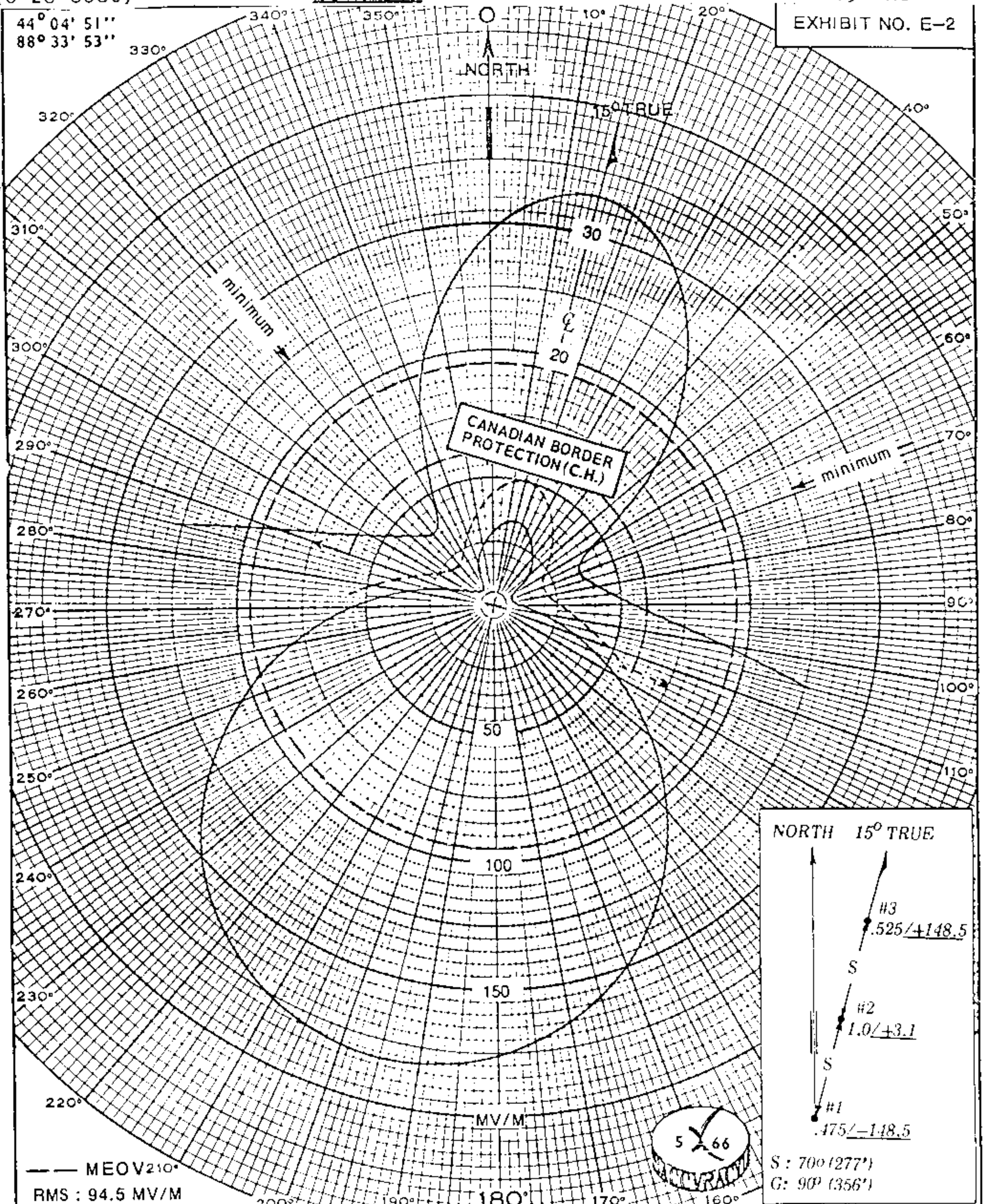
WAGO

Proposed Day
(6-28-66ct)

New; Fox River Bcstg. Co.
Oshkosh, Wisconsin

250w,DA-D,D
690 kc

EXHIBIT NO. E-2



COMMERCIAL RADIO EQUIPMENT CO.
Radio Engineering Consultants

WASHINGTON, D. C.

HORIZONTAL RADIATION PATTERN
PROPOSED NEW STATION
OSHKOSH, WISCONSIN
690 KC 0.25 KW, DA–D
Fox River Broadcasting Company

FCC File No. BP-15129 New; Fox River Bcstg. Co.
Accepted 6-16-66 Oshkosh, Wisconsin 690 kc

and installation of DA-N

WAPE

Measured Non-DA
(7-24-63ct)

Station WAPE
Jacksonville, Florida

10kw,25kw-LS,DA-N,U
690 kc

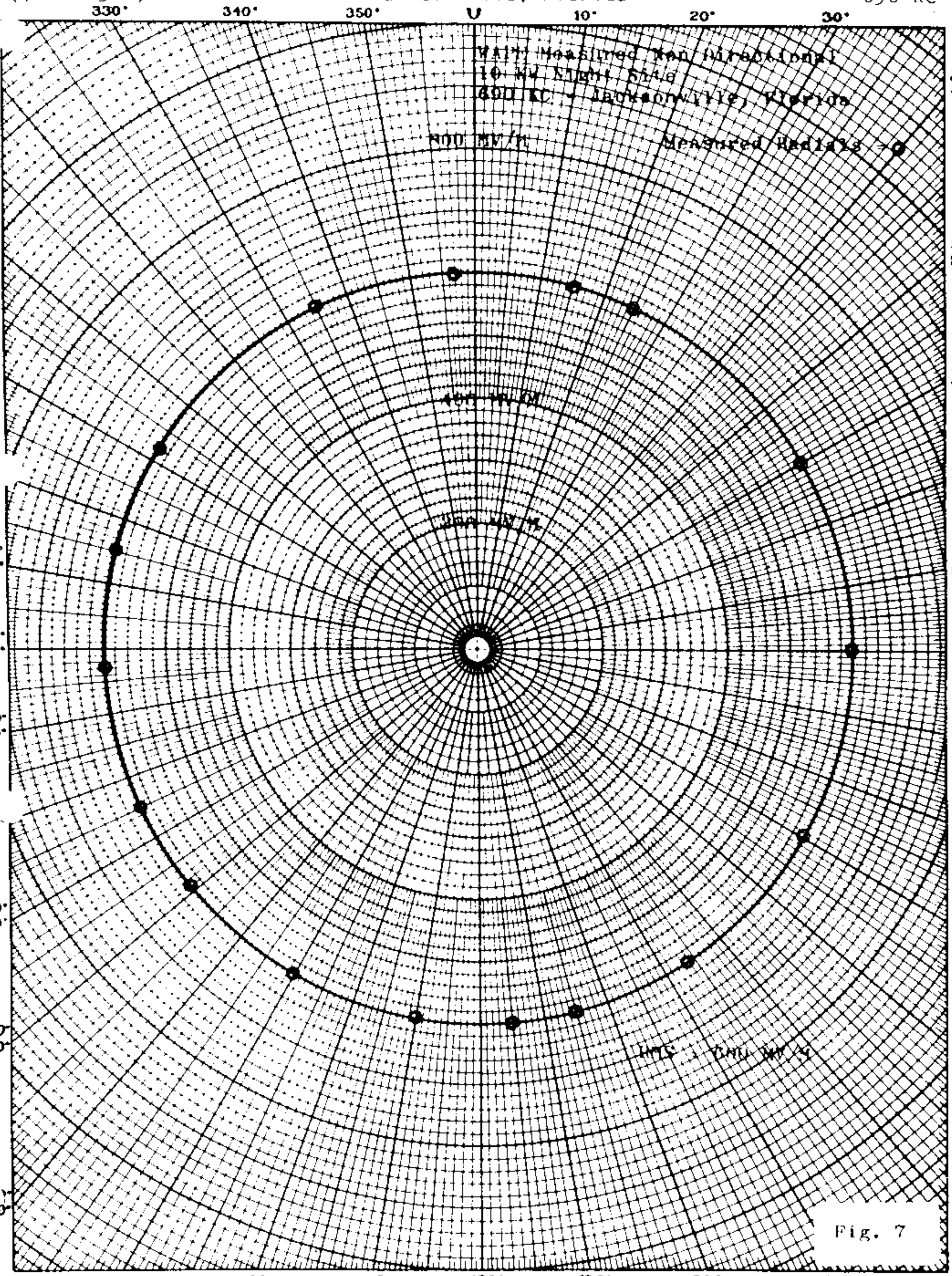


Fig. 7

FCC File No.BL-10148
Accepted 7-12-63

Station WAPE
Jacksonville, Florida

690 kc

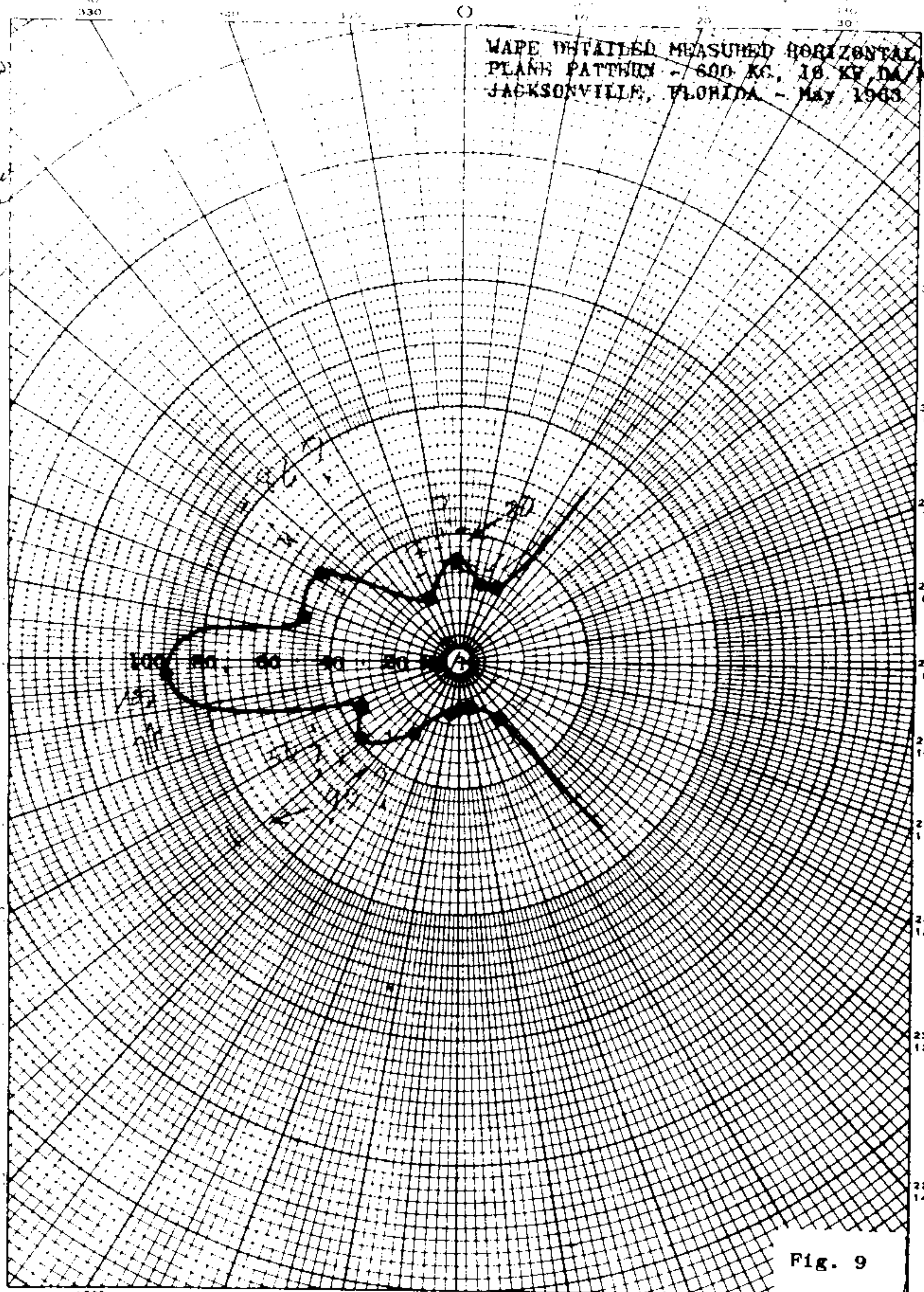
WAPE

Measured Night Nulls
(7-24-63ct)

Station WAPE
Jacksonville, Florida

10kw,25kw-LS,DA-N,U
690 kc

Treated 7-23-63 increased power to 50kw



FCC File No.BL-10148
Accepted 7-12-63

Station WAPE
Jacksonville, Florida

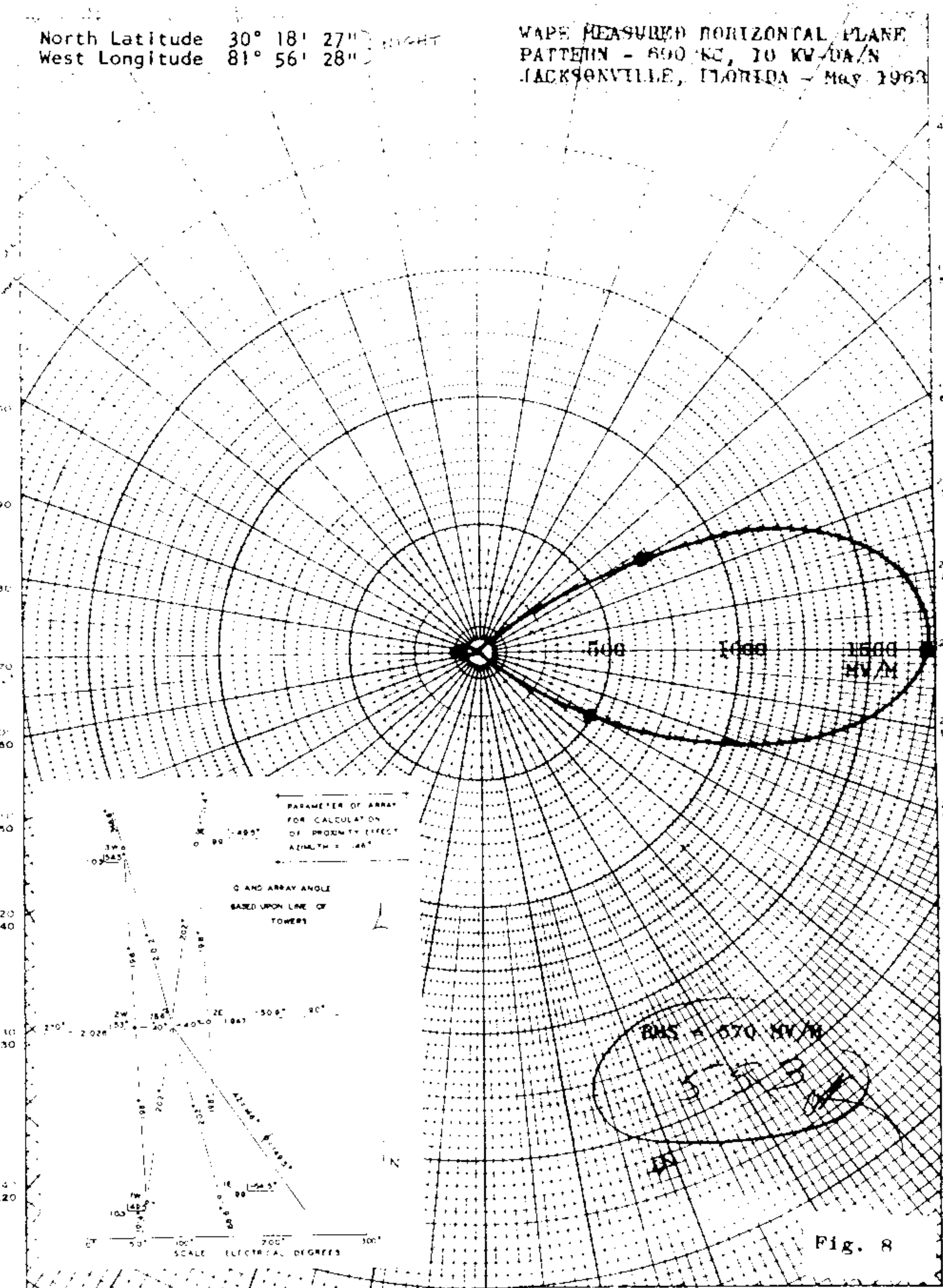
690 kc

WAPE

Measured Night
(7-24-63ct)

Station WAPE
Jacksonville, Florida

10kw, ~~25~~ 50kw-LS, DA-N, U
690 kc



FCC File No.BL-10148
Accepted 7-12-63

Station WAPE
Jacksonville, Florida

690 kc

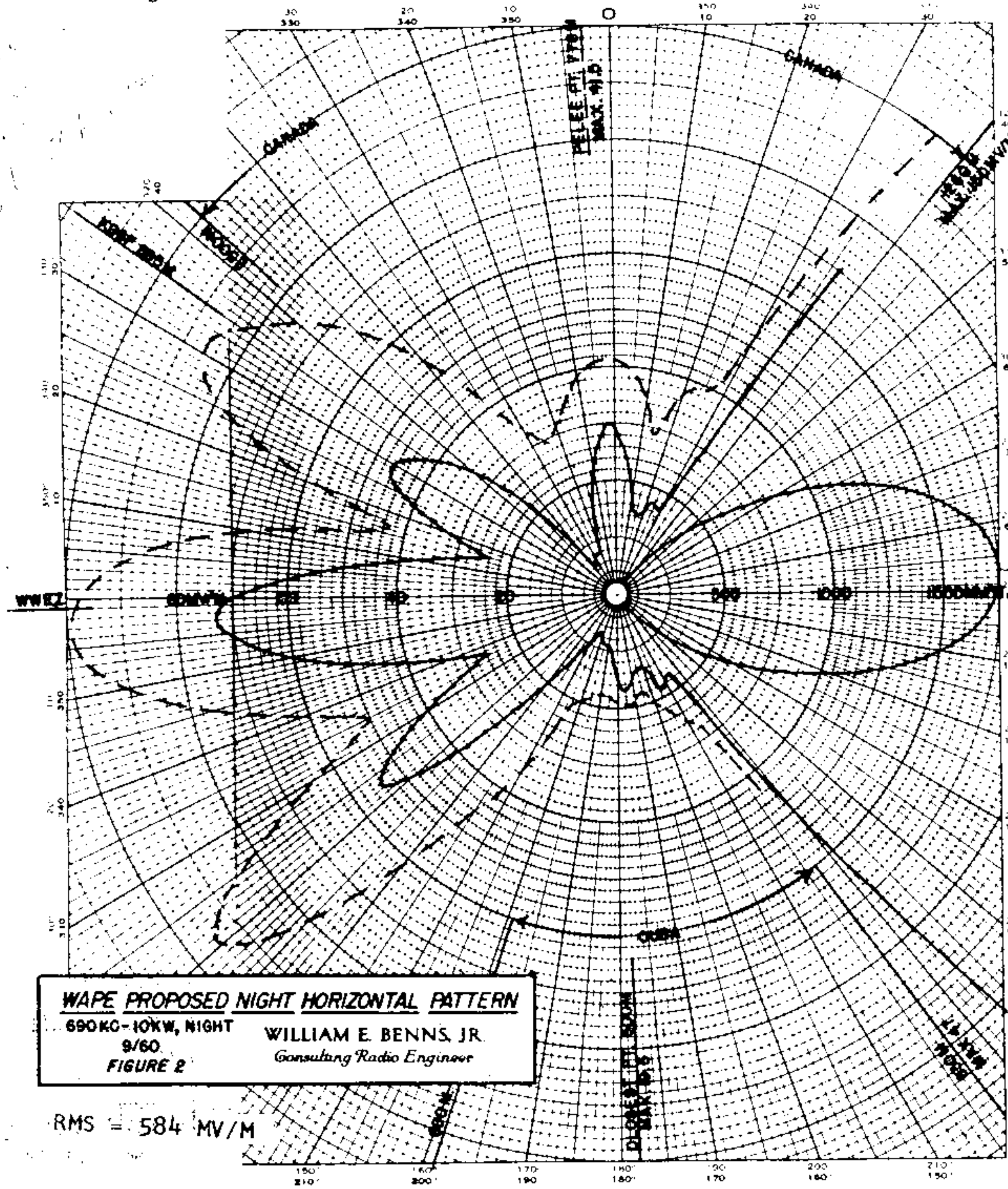
WAPE

PROPOSED NIGHT
(7-26-61ct)

Station WAPE 10kw, DA-N, U 50 D
Jacksonville, Florida 690 KC

Granted 4
Square DA-N

North Latitude 30° 18' 27" } NIGHT
West Longitude 81° 56' 28" }



WAPE PROPOSED NIGHT HORIZONTAL PATTERN
690 KC - 10 KW, NIGHT
9/60
FIGURE 2
WILLIAM E. BENNS, JR.
Consulting Radio Engineer

RMS = 584 MV/M

FCC File No. BP-6222
Amended by Docket 8584

WAPE
Jacksonville, Florida 690 KC

8584-L

WTIX

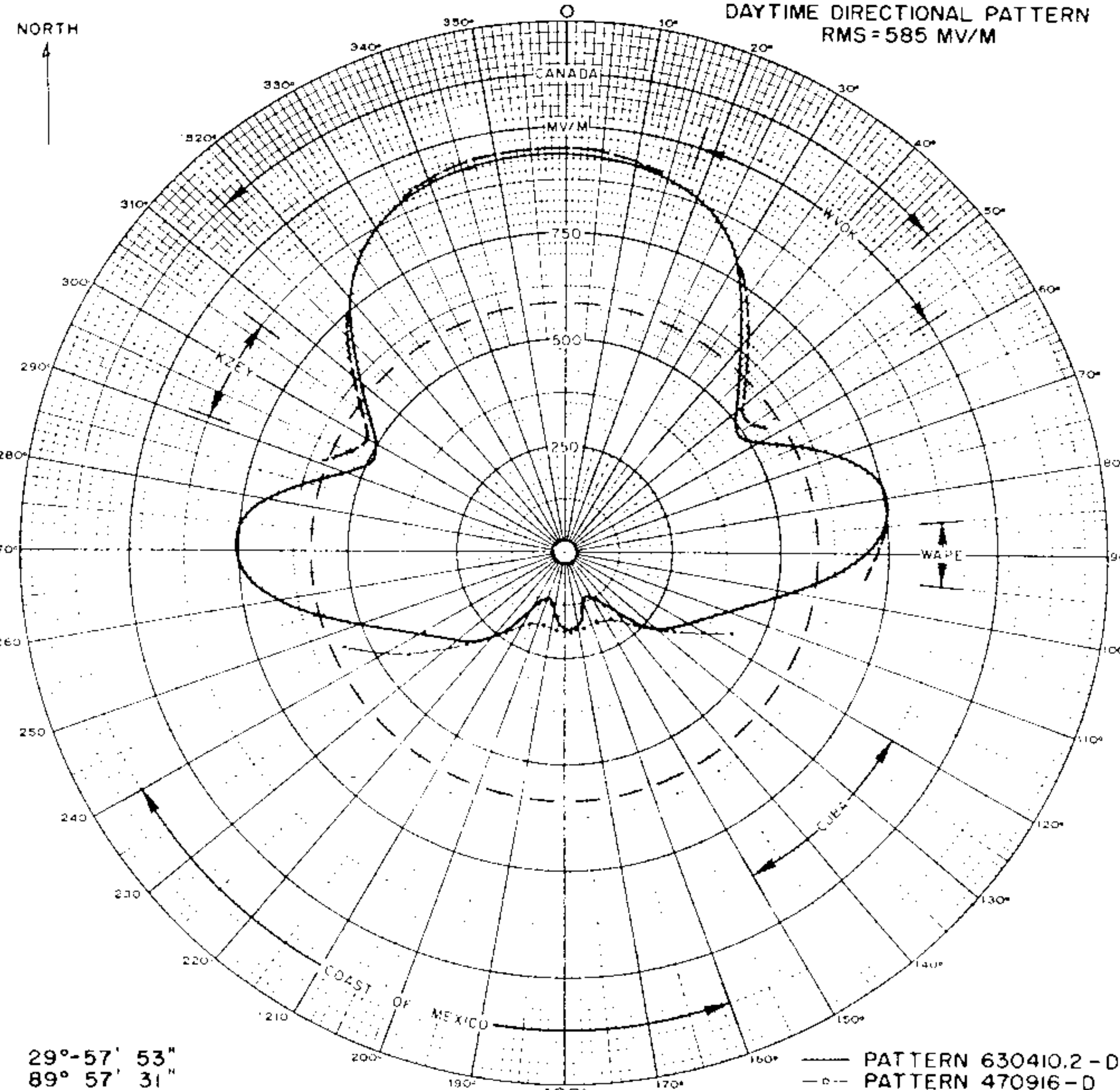
OVER

Proposed Day
(8-23-63ct)

Station WTIX
New Orleans, Louisiana

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

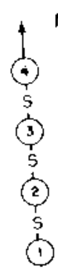
DAYTIME DIRECTIONAL PATTERN
RMS=585 MV/M



29°-57' 53"
89° 57' 31"

PATTERN 630410.2-D
PATTERN 470916-D
MEOV

N 356° E



S = 546.8' = 138°
G = 350/360 = 90°

TOWER	FIELD	PHASE
1	.47	102°
2	1.00	0°
3	.33	-77°
4	.68	36°

PREPARED BY
THE FIRM OF A. EARL CULLUM, JR.
CONSULTING ENGINEERS

RADIO STATION WTIX
690 KC 5 KW 10 KW-LS DA-2
630410.2 FIGURE 6A

FCC File No.BP-14135
Accepted 7-30-63 Amended

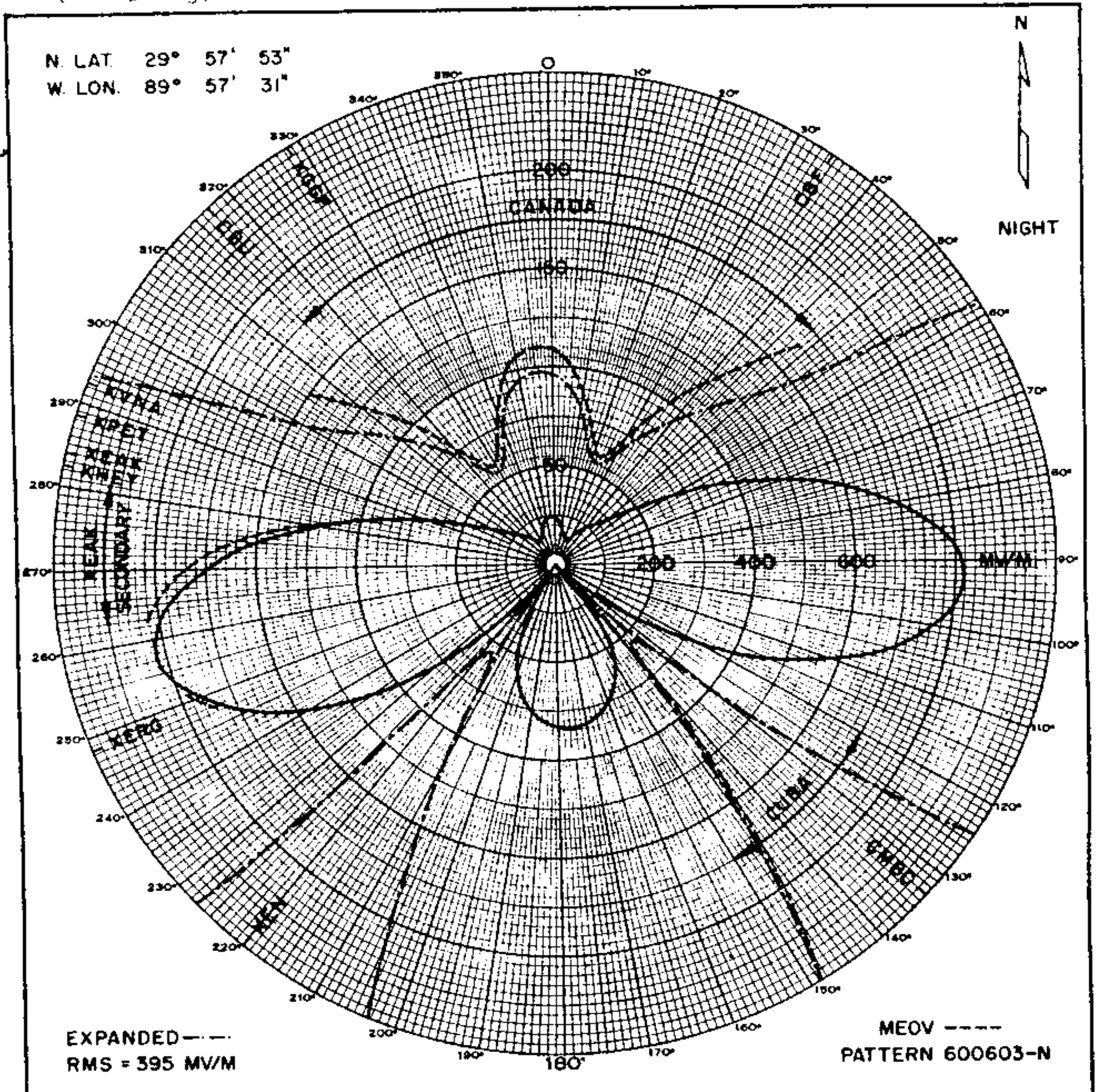
Station WTIX
New Orleans, Louisiana
690 kc

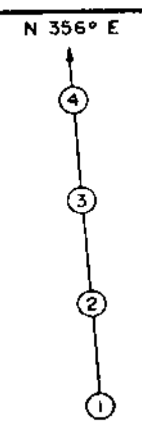
WTIX

3-1-61 granted 4-40 make changes in night DA pattern

PROPOSED NIGHT
(12-15-60g)

Station WTIX 5kw, DA-2,U
New Orleans, Louisiana 690 KC





TOWER	FIELD	PHASE
4	.93	37
3	1.00	0
2	.99	29
1	.72	-37

S = 546.8' = 138°
G = 350/360 = 90°

PREPARED BY
THE FIRM OF A. EARL CULLUM, JR.
CONSULTING ENGINEERS

RADIO STATION WTIX
690 KC 5 KW DA-N
600603.2 FIGURE 4A

FCC File No. BP-14474
Accepted 11-25-60

WTIX
New Orleans, Louisiana 690 KC

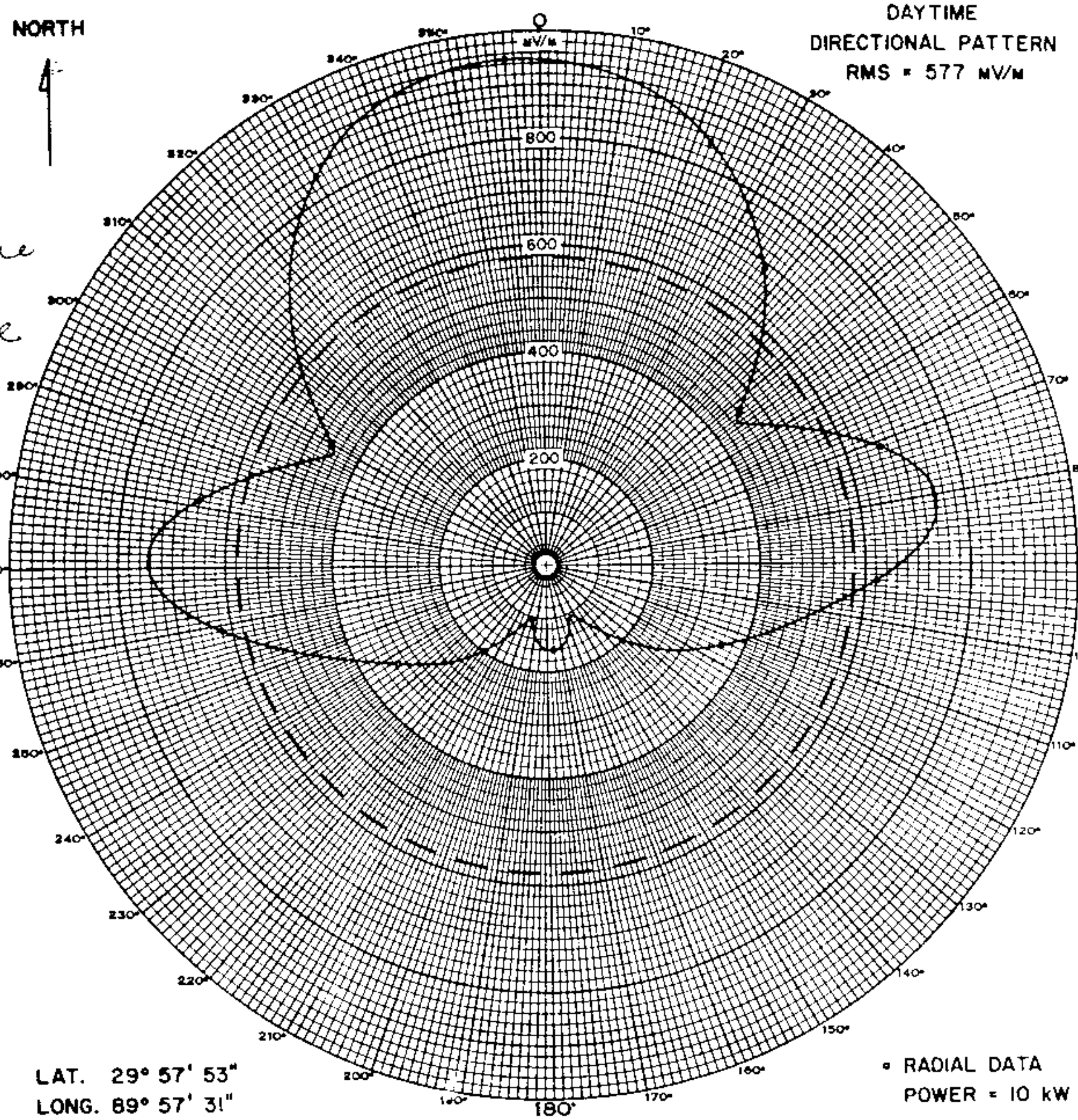
WTIX

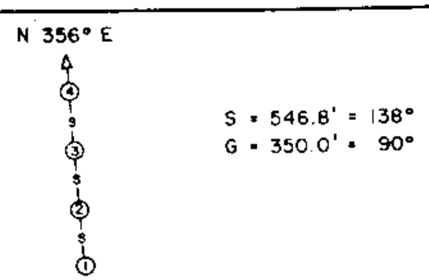
Measured Day
(11-29-68ct)

Station WTIX
New Orleans, Louisiana

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

11-26-68
BL-12169
Granted
license
covering
increase
in daytime
power
and change
in DA
pattern





ANTENNA PARAMETERS

TOWER	THEORETICAL FIELD	THEORETICAL PHASE	INDICATED FIELD	INDICATED PHASE
1	0.47	102.0°	0.413	105.0°
2	1.00	0.0°	1.000	0.0°
3	0.33	-77.0°	0.305	-74.0°
4	0.68	36.0°	0.651	42.0°

PREPARED BY
THE FIRM OF A. EARL CULLUM, JR.
CONSULTING ENGINEERS

RADIO STATION WTIX
NEW ORLEANS, LOUISIANA
680605 FIGURE 2B

FCC File No.BL-12169
Accepted 11-15-68

Station WTIX
New Orleans, Louisiana

690 kc

WTIX

Measured Night
(11-29-68ct)

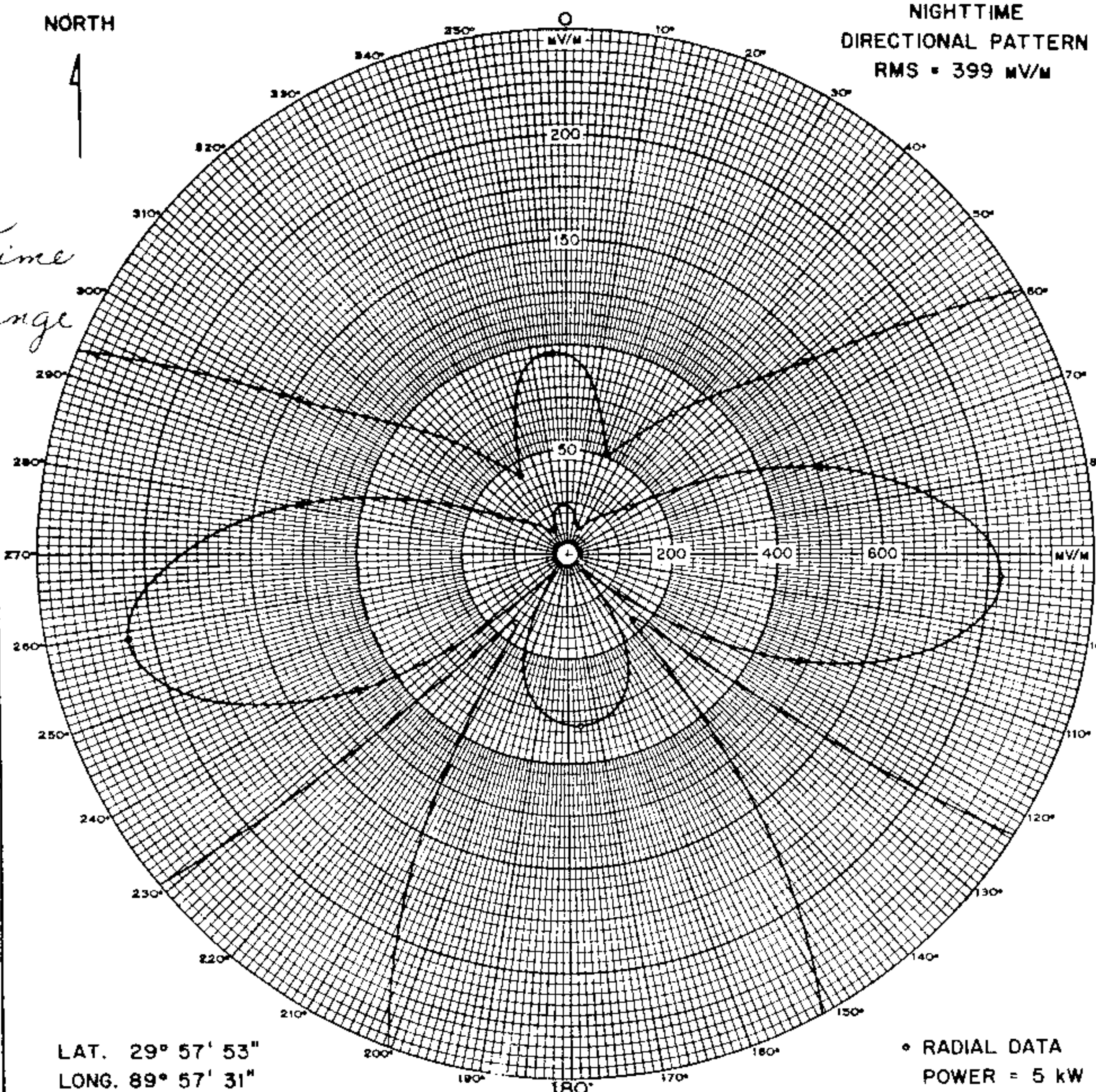
Station WTIX
New Orleans, Louisiana

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

11-26-68
BL-12169
Granted license covering increase in daytime power and change in DA pattern

NORTH

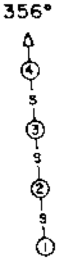
NIGHTTIME
DIRECTIONAL PATTERN
RMS = 399 mV/m



LAT. 29° 57' 53"
LONG. 89° 57' 31"

• RADIAL DATA
POWER = 5 kW

N 356° E



S = 546.8' = 138°
G = 350.0' = 90°

ANTENNA PARAMETERS

	THEORETICAL		INDICATED	
TOWER	FIELD	PHASE	FIELD	PHASE
1	0.72	−37.0°	0.691	−28.5°
2	0.99	29.0°	0.978	27.5°
3	1.00	0.0°	1.000	0.0°
4	0.93	37.0°	0.864	41.0°

PREPARED BY
THE FIRM OF A. EARL CULLUM, JR.
CONSULTING ENGINEERS

RADIO STATION WTIX
NEW ORLEANS, LOUISIANA
680605
FIGURE 2C

FCC File No.BL-12169
Accepted 11-15-68

Station WTIX
New Orleans, Louisiana

690 kc

WTIX

Measured Non-DA
(11-29-68ct)

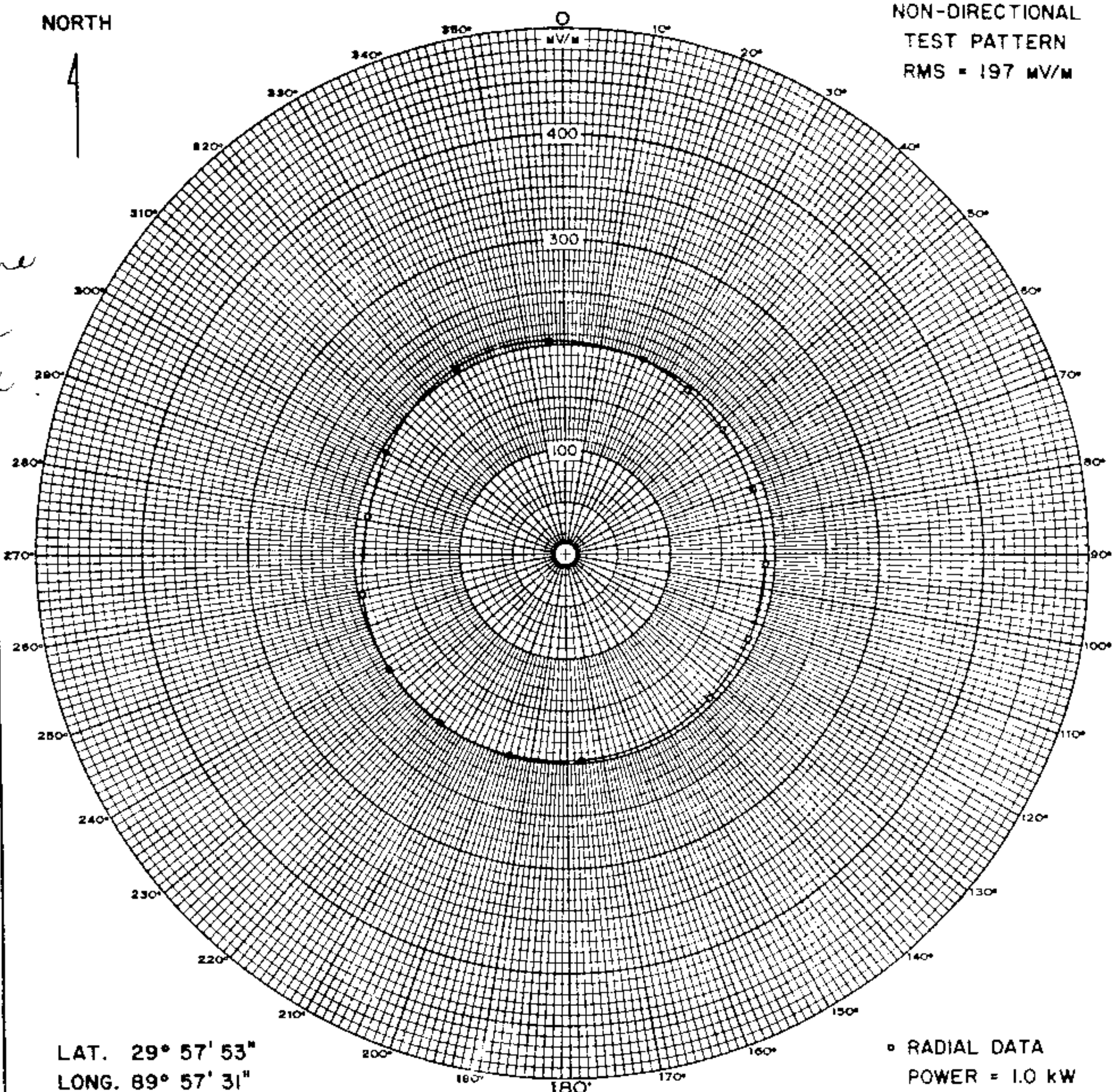
Station WTIX
New Orleans, Louisiana

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

11-26-68
BL-12169
Granted license covering increase in daytime power & change in DA pattern

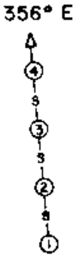
NORTH

NON-DIRECTIONAL
TEST PATTERN
RMS = 197 MV/M



LAT. 29° 57' 53"
LONG. 89° 57' 31"

∘ RADIAL DATA
POWER = 1.0 kW



S = 546.8' = 138°
G = 350.0' = 90°

RADIATING ELEMENTS

TOWER	OPERATION
1	DETUNED
2	SERIES FED
3	DETUNED
4	DETUNED

PREPARED BY
THE FIRM OF A. EARL CULLUM, JR.
CONSULTING ENGINEERS

RADIO STATION WTIX
NEW ORLEANS, LOUISIANA
680605
FIGURE 2A

FCC File No.BL-12169
Accepted 11-15-68

Station WTIX
New Orleans, Louisiana

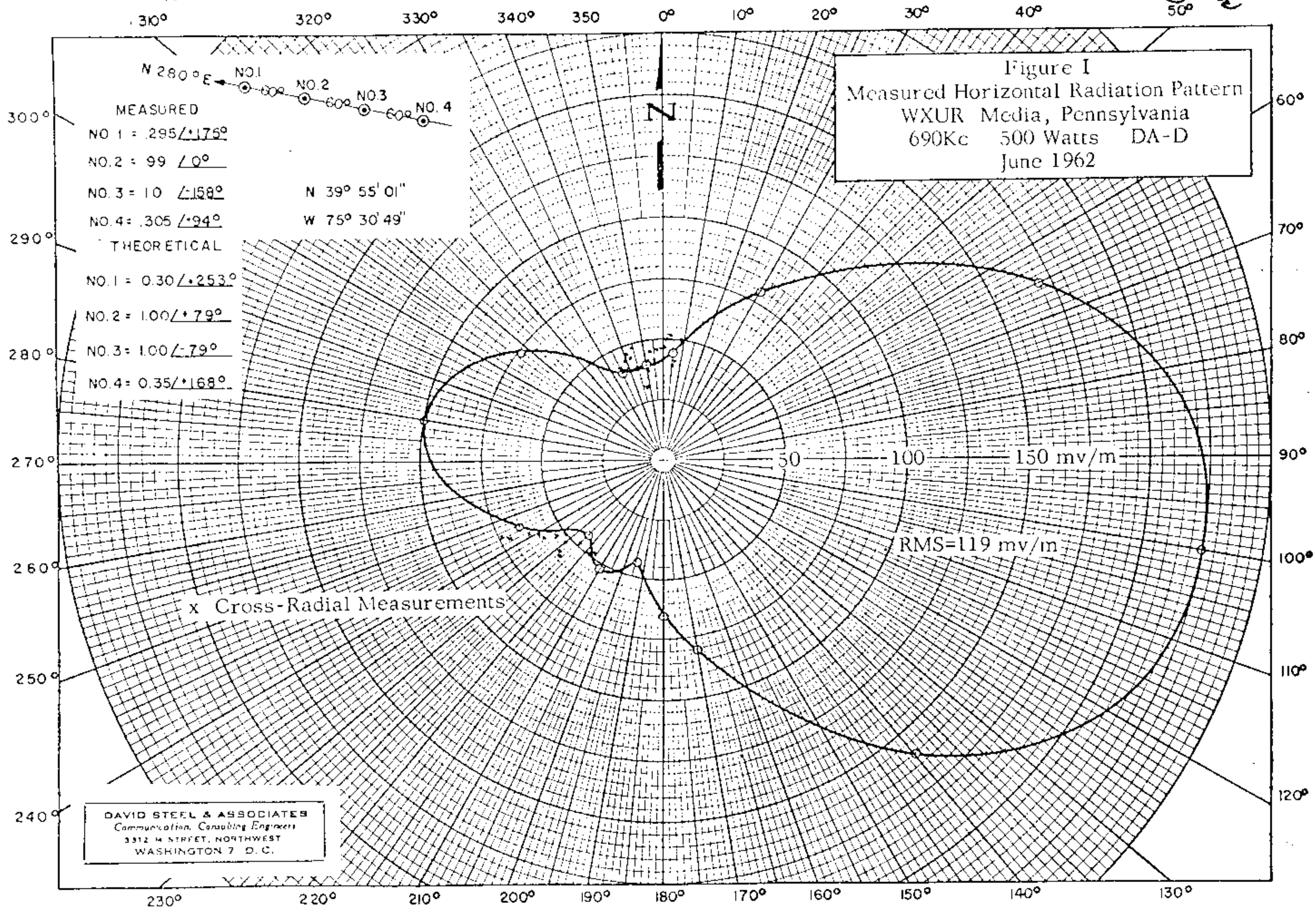
690 kc

Measured Day
(9-27-62ct)

Station WXUR
Media, Pennsylvania

500w,DA-D,D
690 kc

1/28/62
wanted L for
w station



FCC File No. BL-9570
Accepted 9-17-62

Station WXUR
Media, Pennsylvania

690 kc

WXUR

7-25-62 granted MCP for changes in DA

WXUR

Proposed Day
(7-27-62ct)

Statio 'UR
Media, Pennsylvania

500w, DA-D, D
690 kc

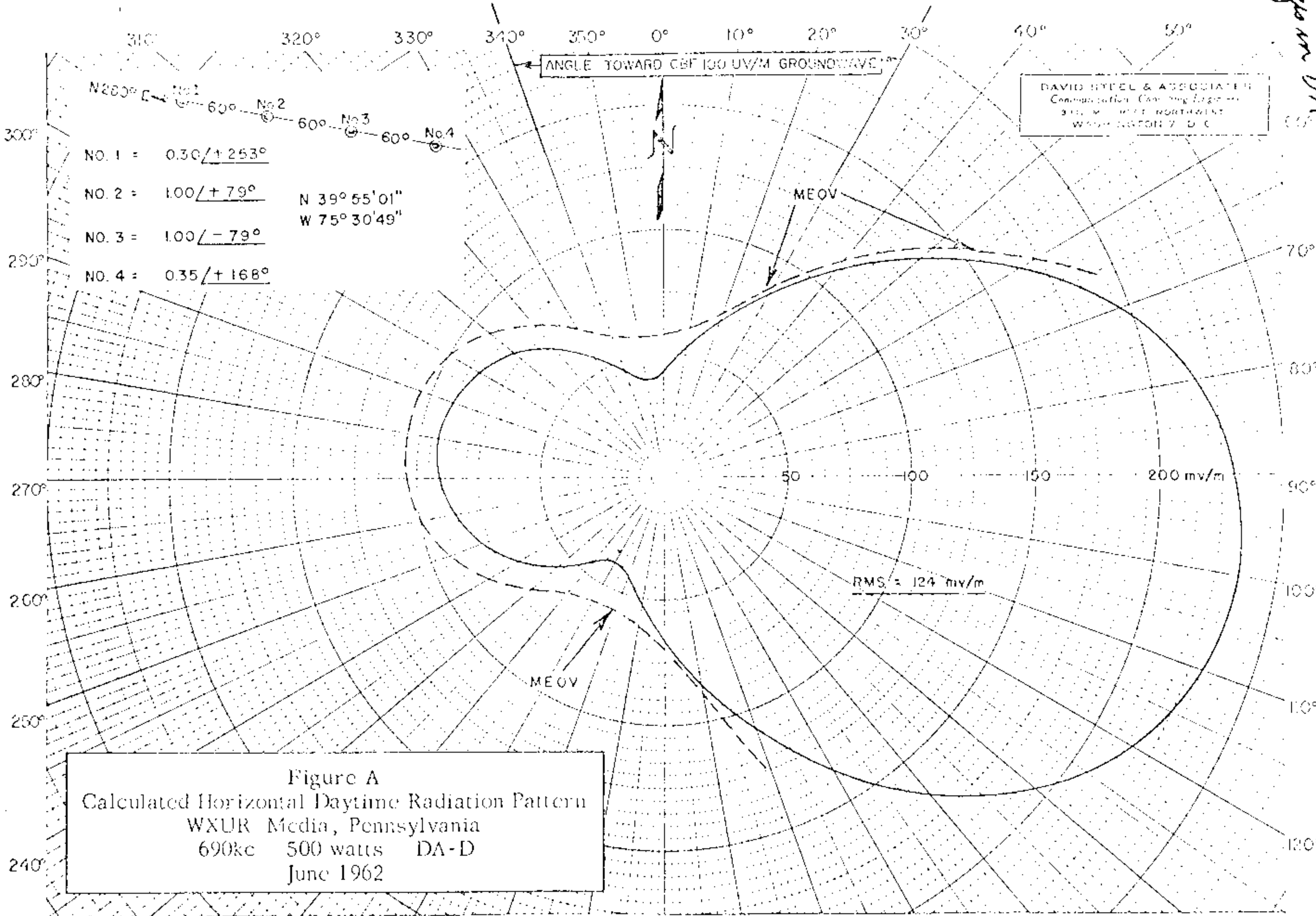


Figure A
Calculated Horizontal Daytime Radiation Pattern
WXUR Media, Pennsylvania
690kc 500 watts DA-D
June 1962

FCC File No. BMP-10308
Accepted 7-10-62 Amended

Station WXUR
Media, Pennsylvania

690 kc

WXUR

Measured Non-DA
(9-27-62ct)

Station WXUR
Media, Pennsylvania

500w,DA-D,D
690 kc

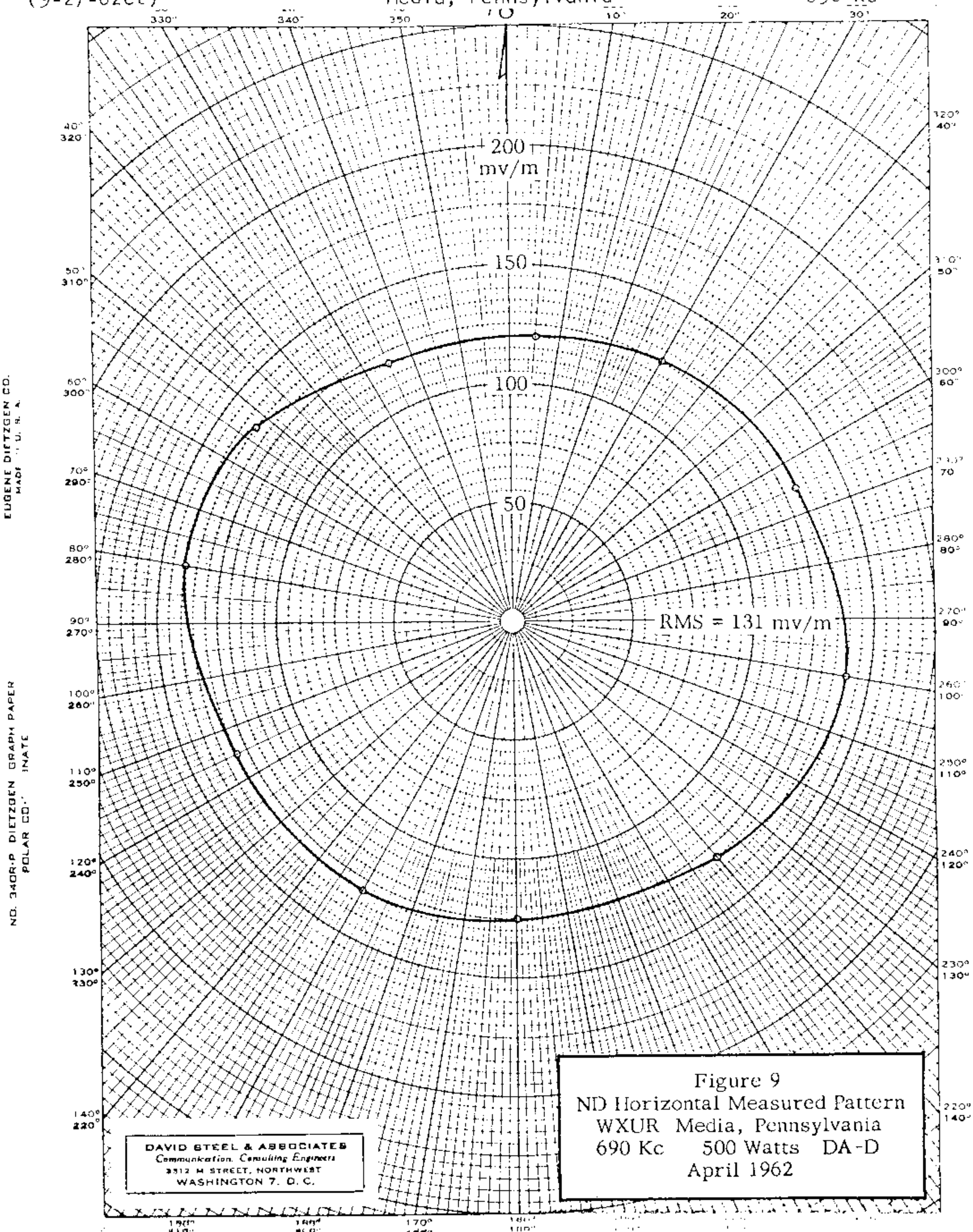


Figure 9
ND Horizontal Measured Pattern
WXUR Media, Pennsylvania
690 Kc 500 Watts DA-D
April 1962

FCC File No.BL-9570
Accepted 9-17-62

Station WXUR
Media, Pennsylvania

690 kc

Proposed and
MEASURED
DAY (7-19-56g)

STATION WVOK
BIRMINGHAM, ALA.

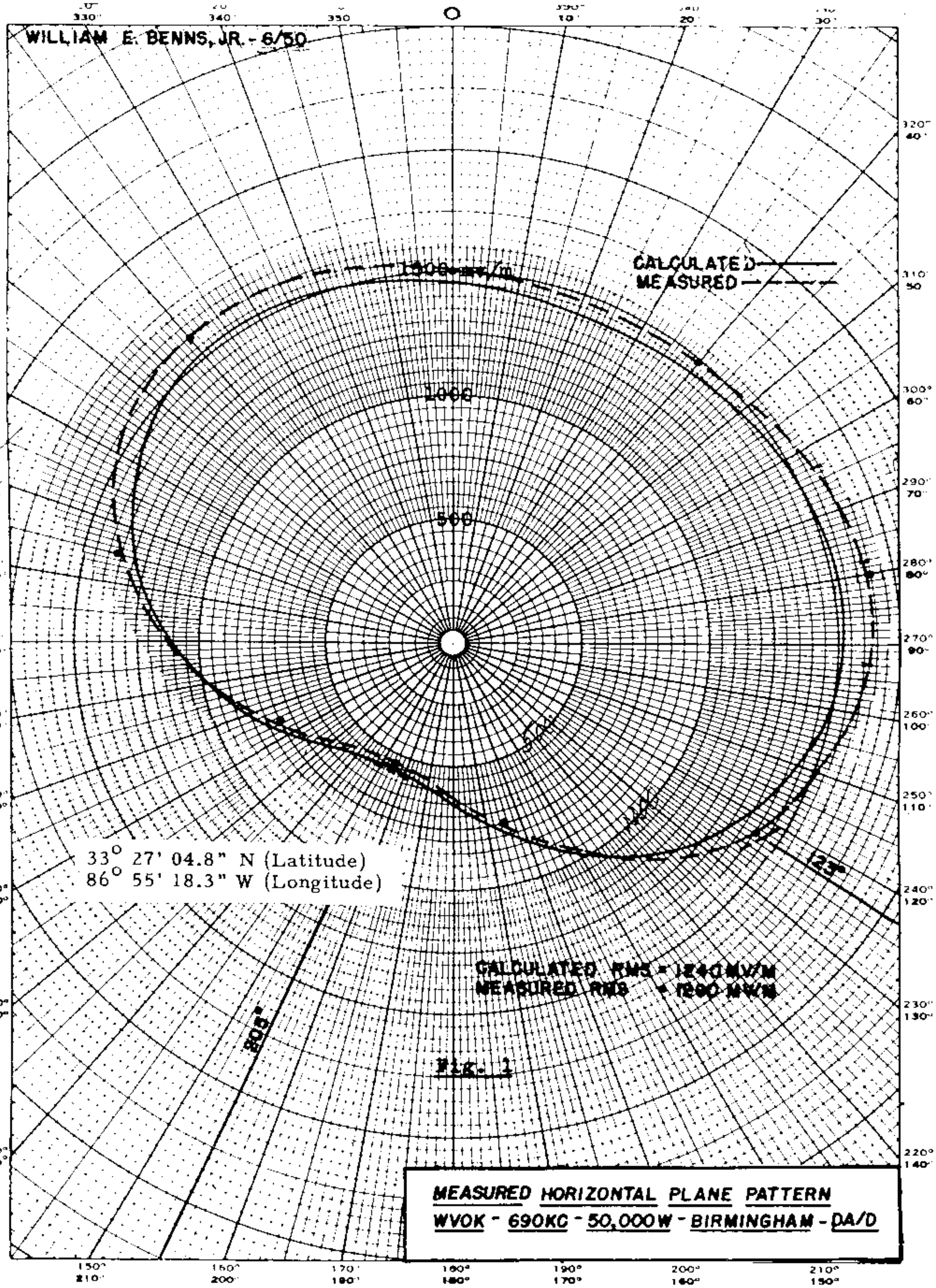
50 KW
DA-D, D

690 KC

WVOK

Granted license
10/8/56

DISMISSED BP 5526
6-2-64 NO APPL
BP-8548
REINSTATED AND
GRANTED APPL.
12-13-67 FROM
50KW DA-D
50KW NON-D



FCC File No. BL-6218   Accepted 7-10-56   WVOK, Birmingham, Ala.   690 KC

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WYIS

Main Studio: Phoenixville, Pennsylvania

Frequency: 690 kHz

Power: 0.5kw

Notification List No: 1754

Date: October 27, 1977

Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 40° 08' 08"
West Longitude: 75° 33' 37"

Authorized for Daytime operation (DA-D)

Type of elements: Series excited, uniform cross-section, guyed, vertical steel towers, top loaded by upper sections of guy wires to an effective electrical height of 109.8°

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL		STANDARD
	RMS	RSS	RMS
1/	125.4 mv/m	152.7 mv/m	131.8 mv/m

1/ By adjustment of input power

Note: Please retain the description sheet and directional antenna radiation patterns notified for a new station at Phoenixville, Pennsylvania in United States Change List Number 1746, dated August 17, 1977 and attach to this supplemental Description Sheet. This notification is for the purpose of indicating only minor changes in the directional antenna system.

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: (New) Main Studio: Phoenixville, Pennsylvania

Frequency: 690 kHz Power: 0.5 kW

Notification List No. 1746 Date: August 17, 1977 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 40° 08' 08"
West Longitude: 75° 33' 37"

ANTENNA CHARACTERISTICS

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

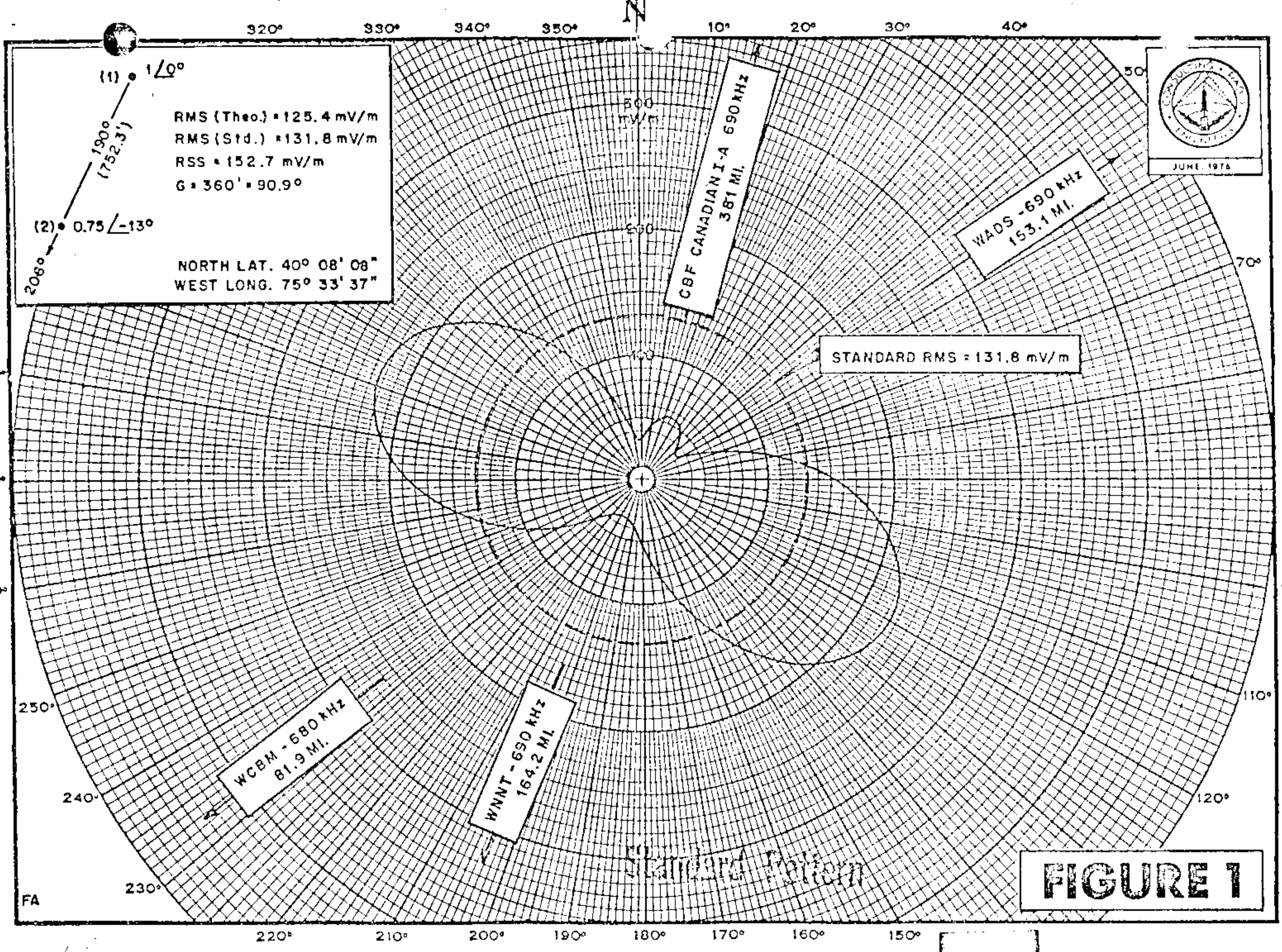
TOWER:	SW(#2)	NE(#1)
HEIGHT ABOVE INSULATORS:	360'	360' (90.9°)
PHASING:	-13°	0°
FIELD RATIO:	0.75	1

SPACING AND ORIENTATION: Towers are spaced 752.3' (190°) on a line bearing 206° true.

GROUND SYSTEM: 120-360' equally spaced copper radials about each tower. Centers of system are bonded together.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	125.4 mv/m	152.7 mv/m	131.8 mv/m



(1) 1∠0°
190°
(752.3')
(2) 0.75∠-13°
208°
RMS (Theo.) = 125.4 mV/m
RMS (Std.) = 131.8 mV/m
RSS = 152.7 mV/m
G = 360' = 90.9°
NORTH LAT. 40° 08' 08"
WEST LONG. 75° 33' 37"
N
CBF CANADIAN I-A 690 kHz
381 MI.
WADS - 690 kHz
153.1 MI.
STANDARD RMS = 131.8 mV/m
WCBM - 680 kHz
81.9 MI.
WNNT - 690 kHz
164.2 MI.
Standard Pattern
JUNE 1976
FA

FIGURE 1

XETRA ~~XEAC~~
K

PROPOSED SPEC SHEET XEAC, TIJUANA, B. C. 50kw, DA-N 690 kc

2/27/51G

ZORRILLA Y MARQUEZ

INGENIEROS.

MEXICO, D.F.

DESCRIPCION DEL SISTEMA DE ANTENA DIRECCIONAL.

ESTACION X E A C **TIJUANA BAJA CALIFORNIA**

FRECUENCIA 690 Kc/s. **POTENCIA 50 Kw. DA-N.**

LOCALIZACION 32° 30' 49" N.
117° 10' 41" W.

CARACTERISTICAS DE LA ANTENA DOS TORRES VERTICALES SOPORTADAS.

TORRES	I	II	
Altura sobre el aislador (M)	115	115	(90°)
Separación entre torres	90°		
Fase de noche	0°	102°	
Relación de corrientes de noche	1.00	1.00	

SISTEMA DE TIERRA.- 120 Radiales igualmente espaciados alrededor de cada torre. Los radiales se unirán por medio de aercha de cobre soldada en los puntos de contacto.

ORIENTACION.- Las torres estan montadas sobre una línea recta, formando ésta un ángulo de 61 grados con - la dirección del norte.

1

Intensidad de campo efectiva probable 1240 mV/m.

Oficina Interamericana de Radio (OIR)
OIR/NARBA 1051 México/C.1023
La Habana. 29. [illegible] 51. -

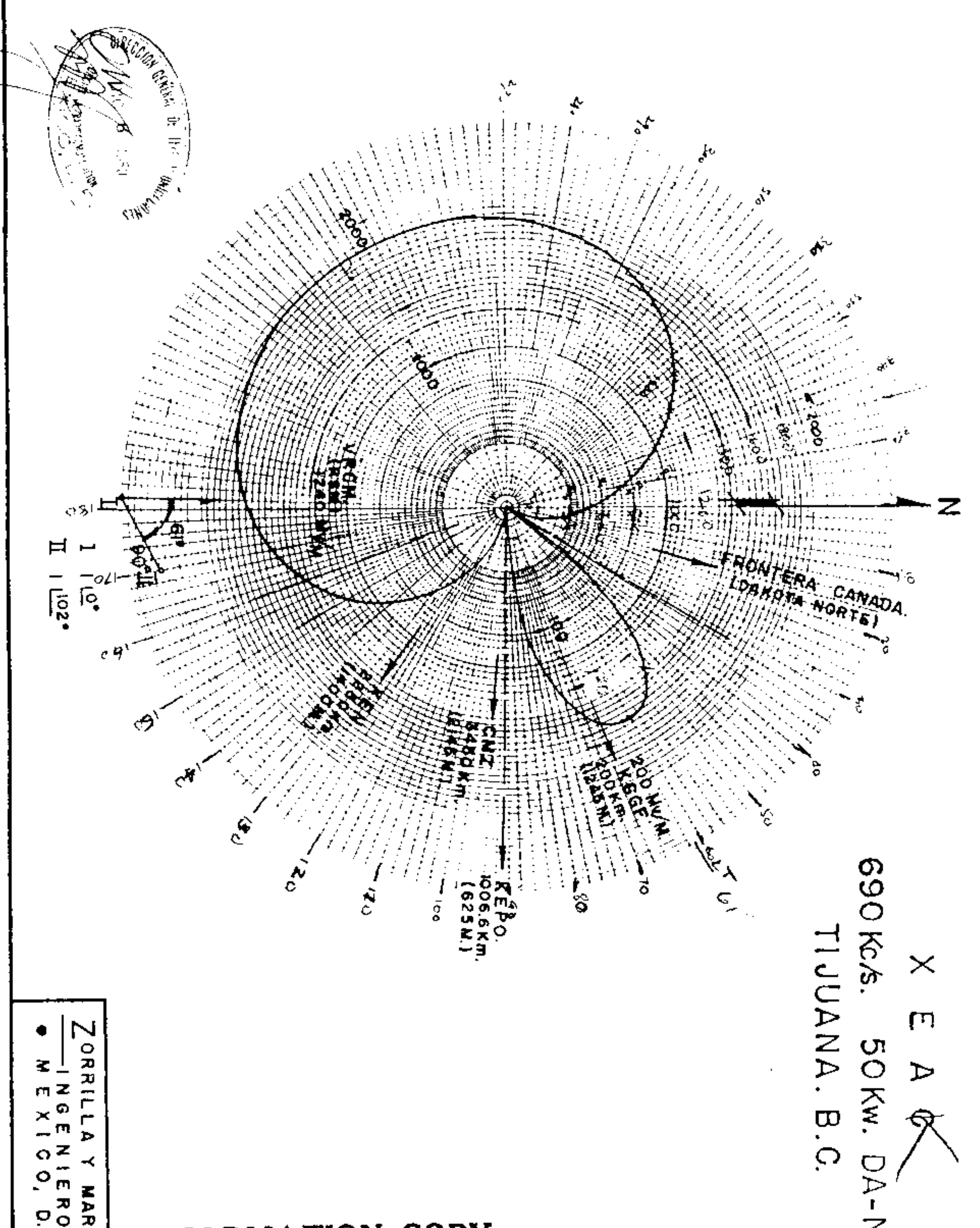
2/13/51 2/26/51
NOTE BY FCC DAYTIME OPERATION [illegible]

XEAC, Tijuana, B. C. 690 kc

XETRA ~~XEAC~~

PROPOSED NIGHT XEAC, TIJUANA, B. C. 50kw, DA-N 690 kc

2/27/51G



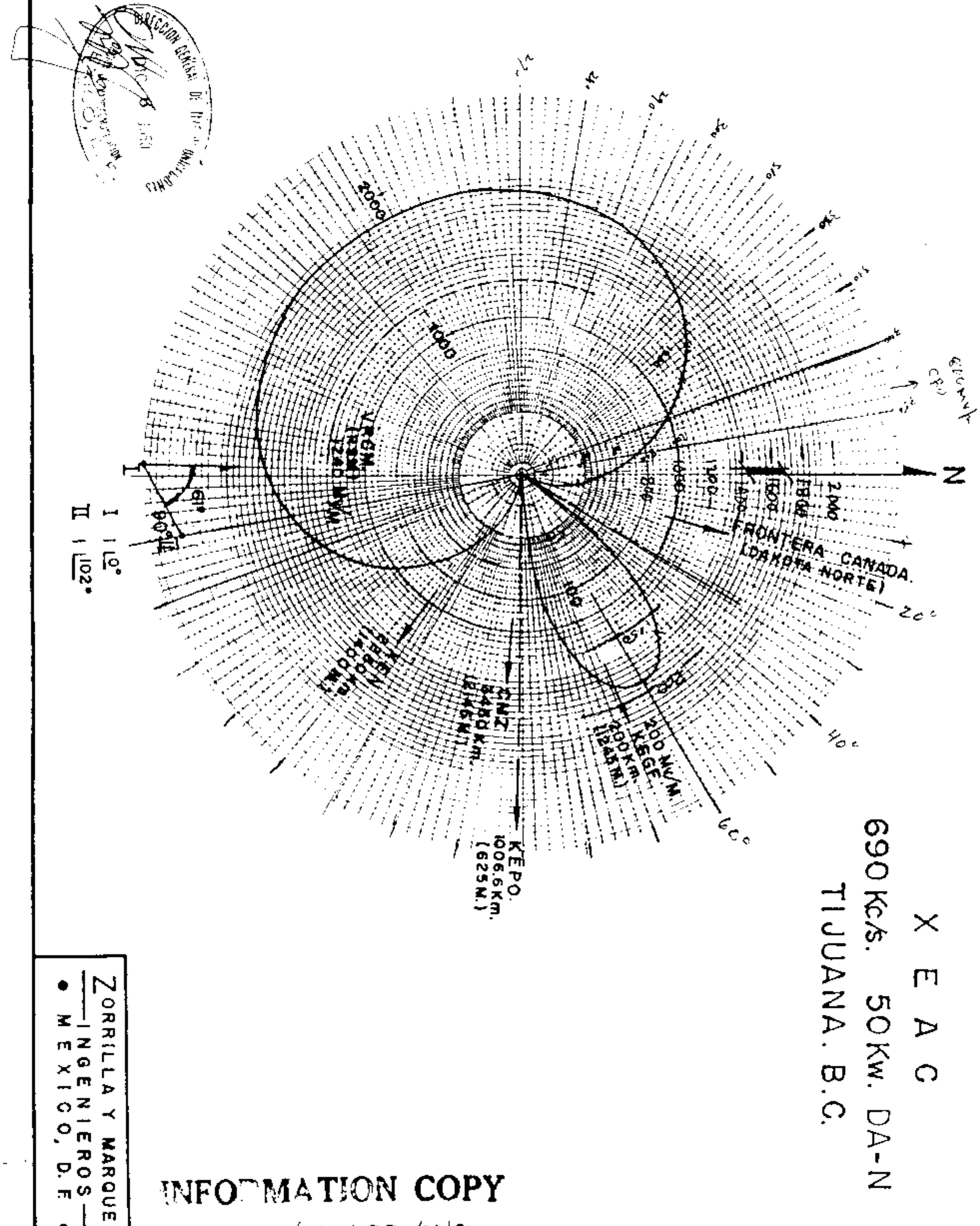
INFORMATION COPY

REC'D 2/13/51 ACC 2/26/51

NOTE BY FCC: DAYTIME OPERATION OBJECTIONABLE

XEAC, Tijuana, B. C. 690 kc

2/27/51G



INFORMATION COPY

REC'D 2/13/51 ACC 2/26/51

NOTE BY FCC: DAYTIME OPERATION OBJECTIONABLE

XETRA

PROPOSED SPEC SHEET XEAC, TIJUANA, B. C. 50kw, DA-N 690 kc

2/27/51G

ZORRILLA Y MARQUEZ

INGENIEROS.

MEXICO, D.F.

DESCRIPCION DEL SISTEMA DE ANTENA DIRECCIONAL. de la

ESTACION X E A C TIJUANA BAJA CALIFORNIA

FRECUENCIA 690 Kc/s. POTENCIA 50 Kw. DA-N.

LOCALIZACION 32° 30' 49" N. 117° 10' 41" W.

CARACTERISTICAS DE LA ANTENA DOS TORRES VERTICALES SOPORTADAS.

TORRES	I	II	
Altura sobre el aislador (M)	115	115	(90°)
Separación entre torres	90°		
Fase de noche	0°	102°	
Relación de corrientes de noche	1.00	1.00	

SISTEMA DE TIERRA.- 120 Radiales igualmente espaciados alrededor de cada torre. Los radiales se unirán por medio de sercha de cobre soldada en los puntos de contacto.

ORIENTACION.- Las torres estan montadas sobre una línea recta, formando ésta un ángulo de 61 grados con la dirección del norte.

Intensidad de campo efectiva probable 1240 mV/m.

Oficina Interamericana de Radio (OIR)
OIR/NARBA 1051 México/C. 1023
La Habana, 29. I. 51.

2/13/51 2/26/51

NOTE BY FCC: DAYTIME OPERATION OBTL

XEAC, Tijuana, B. C. 690 kc

235

XETRA

Description Sheet
(8-27-65ct)

Station XETRA
Tijuana, Baja California

50kw,DA-2,U,Class I-B
690 kc

DIRECTIONAL ANTENNA DESCRIPTION SHEET
(Issued July 21, 1965)

Station: XETRA

Frequency: 690 kc/s

Notification List No. (*) 235

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

Main Studio: Tijuana, Baja California

Power: 50kw

Class: I-B

North Latitude: 32° 25' 30"

West Longitude: 117° 05' 15"

ANTENNA CHARACTERISTICS

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

TOWER:	#1(S)	#2(SC)	#3(C)	#4(NC)	#5(N)	#6(W)
HEIGHT ABOVE INSULATORS:	356.6'	356.6'	356.6'	356.6'	356.6'	356.6' (90°)
NIGHT PHASING:	+29	-166.5°	0°	+166.5°	-29°	—
NIGHT FIELD RATIO:	0.373	0.812	1.000	0.812	0.373	—
DAY PHASING:	—	—	0°	—	—	0°
DAY FIELD RATIO:	—	—	1.000	—	—	0.784

SPACING AND ORIENTATION: Nighttime - Adjacent elements are spaced 515.1' (130°) on a line bearing 154° true.
Daytime - Elements #3 and #6 are spaced 911.5' (230°) on a line bearing 81° true.

GROUND SYSTEM: 120 - 356.6' equally spaced copper radials about each tower.

Predicted effective Night Field: 1340 mv/m at rated power.

Predicted effective Day Field: 1340 mv/m at rated power.

Note: Please retain the Daytime directional antenna radiation pattern for Station XETRA issued December 18, 1964, and attach to this Revised Description Sheet and Nighttime patterns.

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

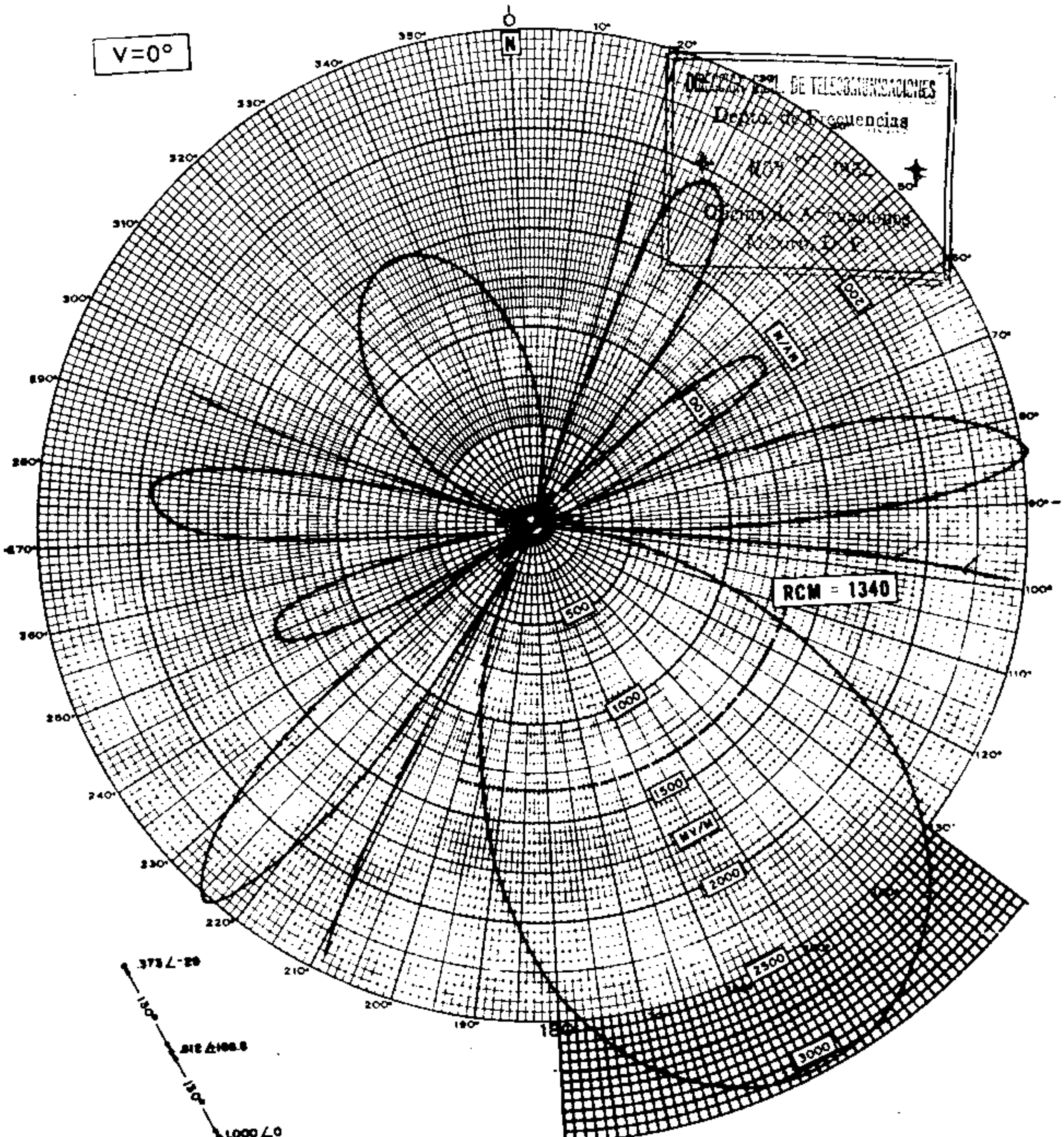
335

XETRA

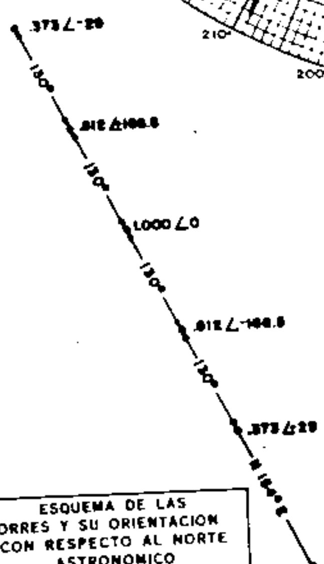
Proposed Night
(8-27-65ct)

Station XETRA
Tijuana, Baja California

50kw, DA-2, U, Class I-B
690 kc



DIRECCION GRAL. DE TELECOMUNICACIONES
Depto. de Frecuencias
Oficina de Asignaciones
México, D. F.



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

PATRON DE RADIACION HORIZONTAL CALCULADO EN MV/M A 1609 METROS

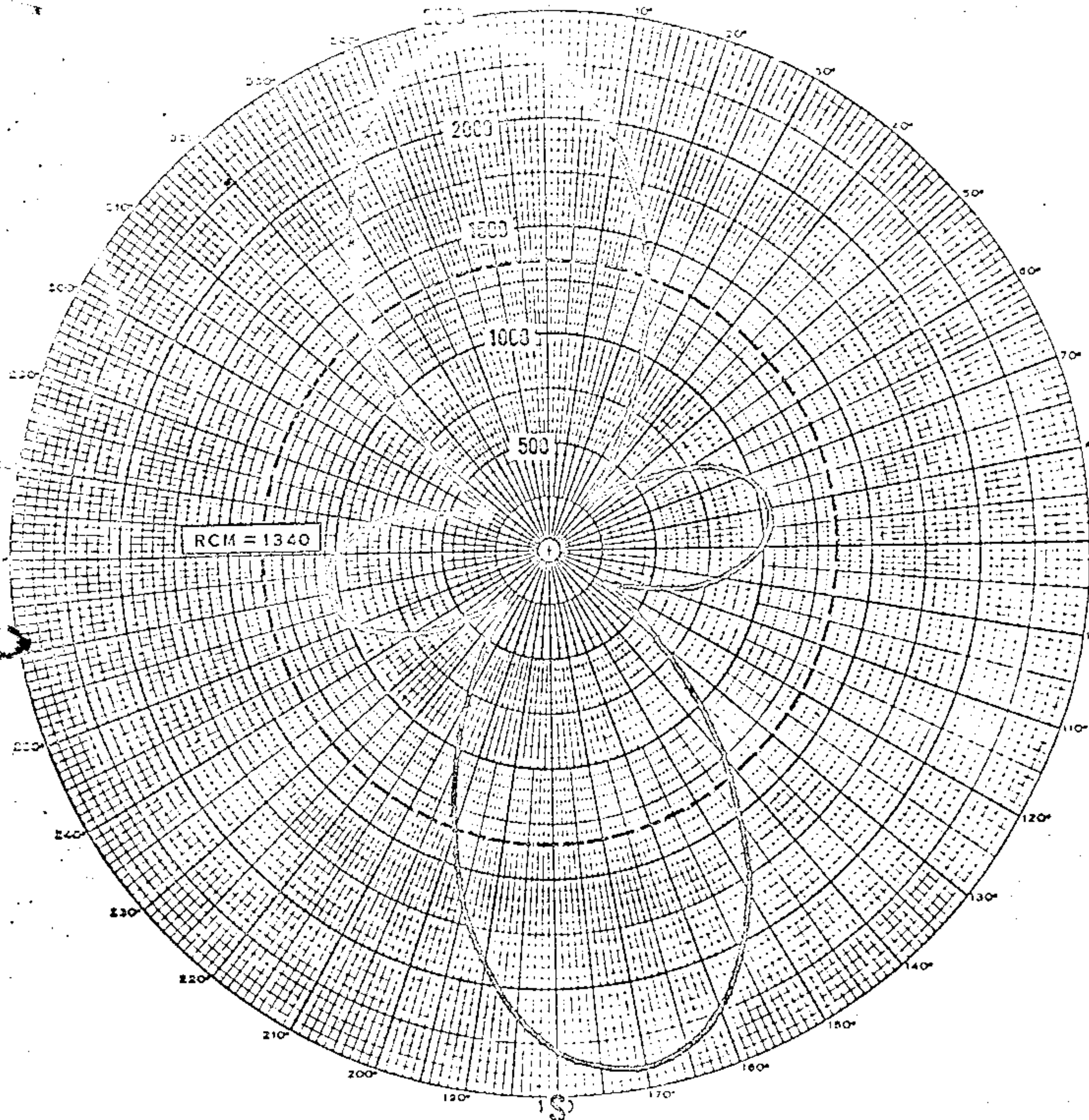
PARA EL FUNCIONAMIENTO NOCTURNO PROPUESTO
XETRA
690 KHZ - 50,000 W - AD-2

235 XETRA

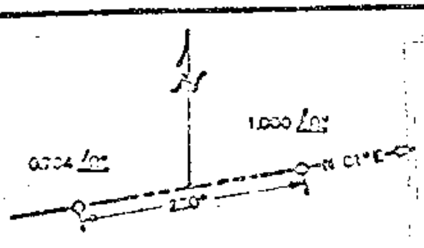
Proposed Day
(1-28-65ct)

Station XETRA
Tijuana, Baja California, Mexico

50kw,DA-2,U,Class I-B
690 kc



PATRON DE RADIACION HORIZONTAL CALCULADO EN MV/M A 1609 METROS



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

1963

XETRA

FUNCIONAMIENTO DIURNO
690 KHZ — 50,000 W

DISEÑO. ING. JOSE MARQUEZ.
CEDULA PROFESIONAL #27140

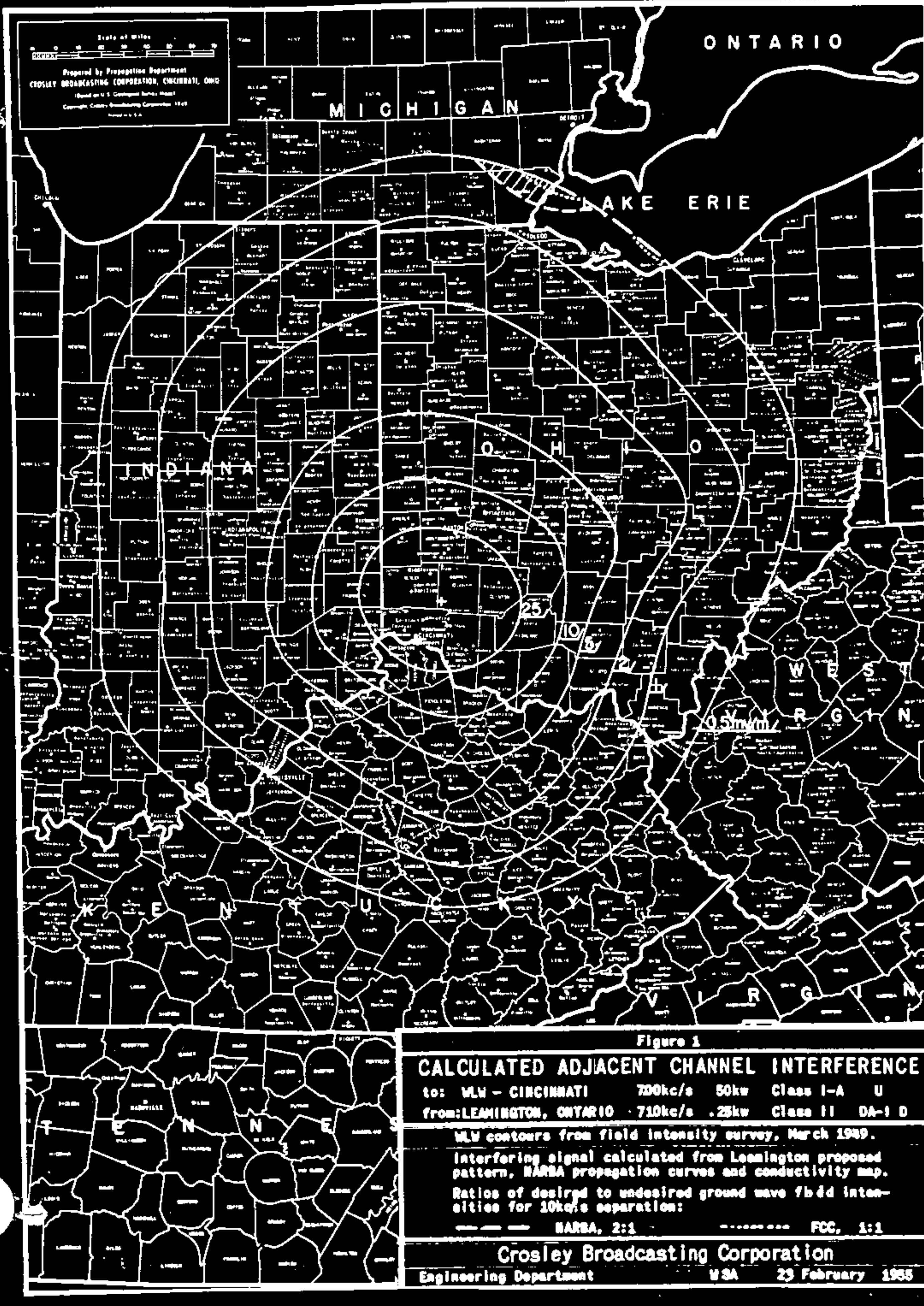


Figure 1

CALCULATED ADJACENT CHANNEL INTERFERENCE

to: WLW – CINCINNATI 700kc/s 50kw Class I-A U

from:LEAMINGTON, ONTARIO 710kc/s .25kw Class II DA-1 D

WLW contours from field intensity survey, March 1949.

Interfering signal calculated from Leamington proposed pattern, NARBA propagation curves and conductivity map.

Ratios of desired to undesired ground wave field intensities for 10kc/s separation:

— — — NARBA, 2:1 - - - - - - - - FCC, 1:1

Crosley Broadcasting Corporation

Engineering Department WSA 23 February 1955

700 KC

96

CFRG
71C

TELECOMMUNICATIONS Branch

CANADA

DEPARTMENT OF TRANSPORT

DESCRIPTIVE SHEET - OMNIDIRECTIONAL ANTENNA

Station Call: CFRG

Main Studio: Gravelbourg, Sask.

Frequency: 710 Kc.

Power: 5 Kw.

Class: II

Time: D

Notification List No. 96 Dated: October 31, 1955.

Geographical Location:

North Latitude: 49° 52' 20"

West Longitude: 106° 28' 34"

Antenna Characteristics:

Height 245 feet 63.5 degrees

Expected Efficiency: 443 mv/m at 1 mi. for 5 Kw.

or: 198 mv/m at 1 mi. for 1 Kw.

Ground System:

120 radials spaced every 3° about the tower. The length of radials over an arc of 192° will vary between 690 feet and 350 feet. The remaining radials will be 690 feet long. Effective area equals 120 radials 554 feet long equally spaced about the tower.

Type of Element:

One guyed element, base insulated, uniform cross-section, series fed.

November 23, 1956.

CIPC

I - DESCRIPTION DU SYSTEME A ANTENNE DIRECTIONNELLE

1. LETTRES D'APPEL: CIPC

2. EMPLACEMENT: Port-Cartier, Qué.

3. FREQUENCE: 710 KHz.

4. PUISSANCE: 1 KW jour et nuit.

5. CLASSE: II (U).

6. NOTIFICATION NO: 326 DATE: May 30, 1974

7. COORDONNEES: Latitude nord: 49° 58' 55"
Longitude ouest: 66° 57' 22"

8. SYSTEME D'ANTENNE:
   a) Fonctionnement: directionnel AD-1.
   b) Type: trois (3) éléments de section uniforme, haubanés et alimentés en série.
   c) Mise à la terre: 120 fils #10 par élément, espacés également, d'une longueur max. de 550' (0.4λ) et enfouis à environ 8" sous la surface.

9. MATS D'ANTENNE:

	#1 (SO)	#2 (C)	#3 (NE)
Hauteur au-dessus de l'isolateur:	190'	190'	190' (75.3°)
Orientation (Az):	Réf.	30°	30°
Espacement:	Réf.	70°	140°
Phasage:	+130°	0°	-130°
Rapport d'intensité de champ:	0.5	1.0	0.5

10. EFFICACITE PREVUE: 178.0 mV/m à 1 mille pour 1 KW.

N.B: Cette notification est rattachée seulement à un changement dans la hauteur des éléments d'antenne, amenant une correction de l'efficacité et des patrons de radiation.

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

CIPC

SUPPLEMENTAL DIRECTIONAL

ANTENNA DESCRIPTION SHEET

Station: CIPC

Main Studio: Port Cartier, Quebec

Frequency: 710kHz

Power: 1 kW, Class II

Notification List No.: 358

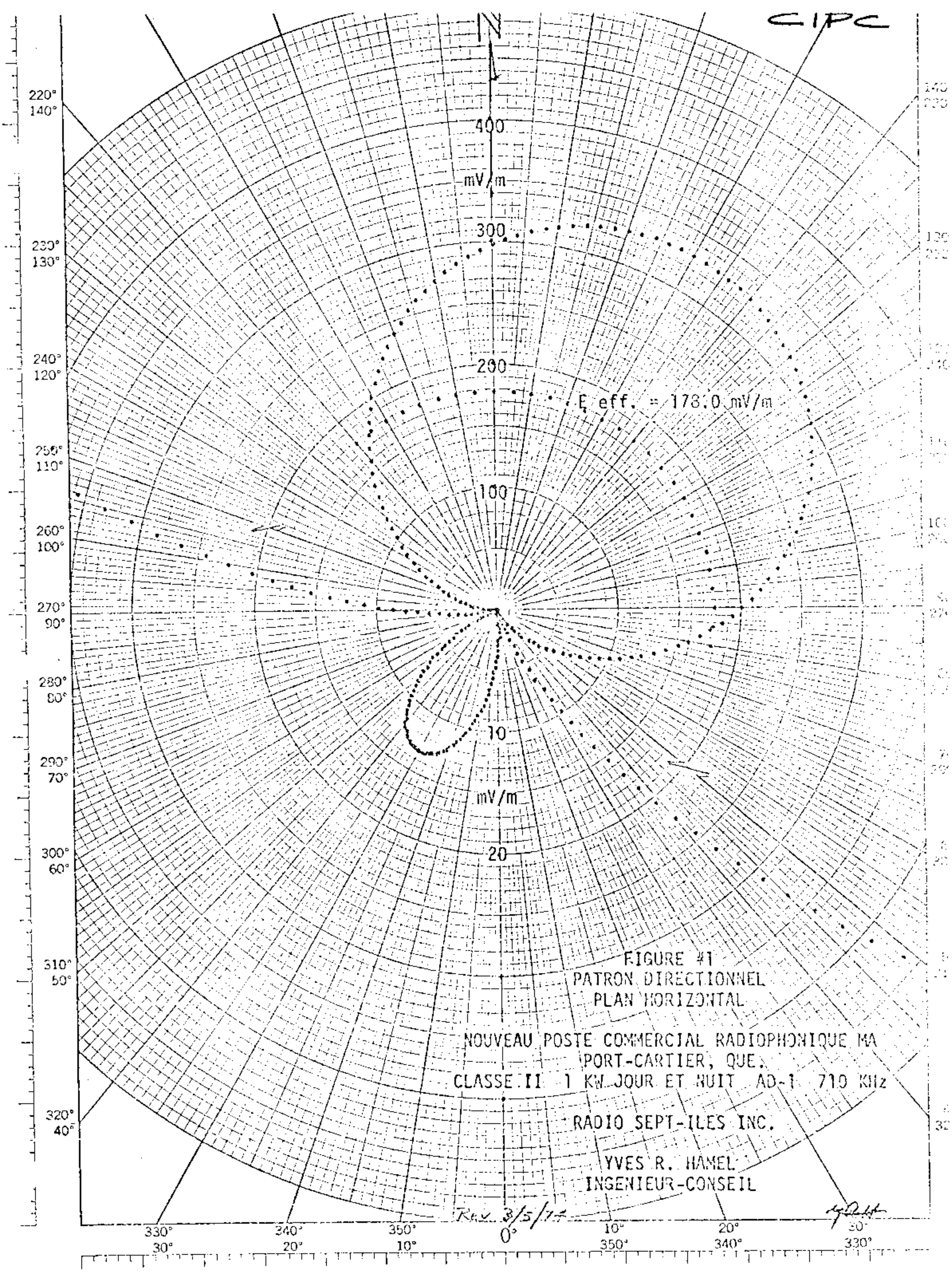
Date: August 20, 1976

Geographical Location of the Center of the Antenna System:

North Latitude: 49° 59' 20"
West Longitude: 66° 56' 59"

Mode of Operation - DA-1

Note: Please retain the description sheet and directional antenna radiation patterns notified for station CIPC in Canadian Change List Number 327 dated June 28, 1974 and attach to this supplemental description sheet. This notification is for the purpose of indicating only a correction in the geographical coordinates.


CIPC
N
400
mV/m
300
200
E eff. = 178.0 mV/m
100
10
mV/m
20
FIGURE #1
PATRON DIRECTIONNEL
PLAN HORIZONTAL
NOUVEAU POSTE COMMERCIAL RADIOPHONIQUE MA
PORT-CARTIER, QUE.
CLASSE II 1 KW JOUR ET NUIT AD-1 710 KHz
RADIO SEPT-ILES INC.
YVES R. HAMEL
INGENIEUR-CONSEIL
Rev. 3/5/77
46 4412
POLAR CO-ORDINATE
KEUFFEL & ESSER CO. MADE IN U.S.A.

CIPC

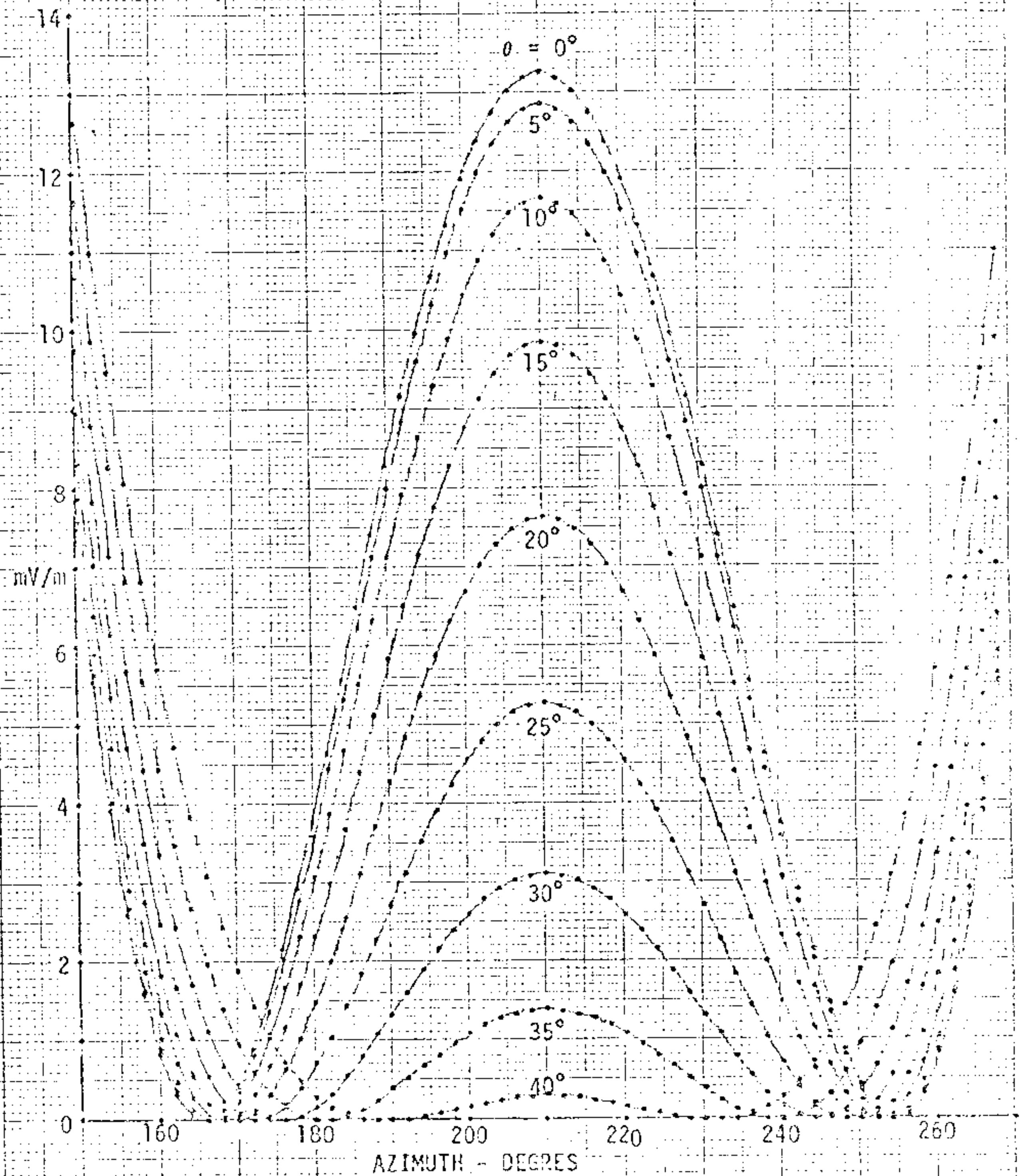


FIGURE #2
RAYONNEMENT VERTICAL POUR θ = 0° à 40°

NOUVEAU POSTE COMMERCIAL RADIOPHONIQUE MA
PORT-CARTIER, QUE.
CLASSE II 1 KW JOUR ET NUIT AD-1 710 KHz

YVES R. HAMEL
Rev. 3/5/74 INGENIEUR-CONSEIL

183

CJOX

Description Sheet
(1-29-64ct)

New Station
Grand Bank, Newfoundland

1kw,DA-1,U,Class II
710 kc

Description of Array

STATION: New (Rebroadcasting station of CJON) MAIN STUDIO: St. John's, Nfld.

POWER: 1 Kw FREQUENCY: 710 Kc/s CLASS: II

LOCATION: Grand Bank, Newfoundland.

NOTIFICATION LIST NO. 183,

DATE: December 16, 1963.

NORTH LATITUDE: 47° 05' 45"

WEST LONGITUDE: 55° 47' 00"

ANTENNA:

MODE OF OPERATION:	DA-1 (Directional day and night with the same pattern)	
ELEMENTS:	Two, uniform cross-sections, guyed steel towers, base insulated for series feed.	
TOWER:	#2 (E)	#1 (W)
HEIGHT ABOVE INSULATORS:	230' (60°)	230' (60°)
SPACING:	Ref.	346' (90°)
ORIENTATION:	Ref.	265°
PHASING:	0°	+92°
FIELD RATIO:	1	.85
GROUND SYSTEM:	120 equangularly spaced radials extend from the base of each tower to a distance of 555' (0.4 wavelength) with the exception of those joined along the common chord.	

PREDICTED EFFECTIVE FIELD:
DAY AND NIGHT OPERATION: 180 mv/m at 1 mile for 1 Kw.

Revised November 15, 1963

K183

CJOX

Proposed Day & Night
(1-29-64ct)

New Station
Grand Bank, Newfoundland

1kw,DA-1,U,Class II
710 kc

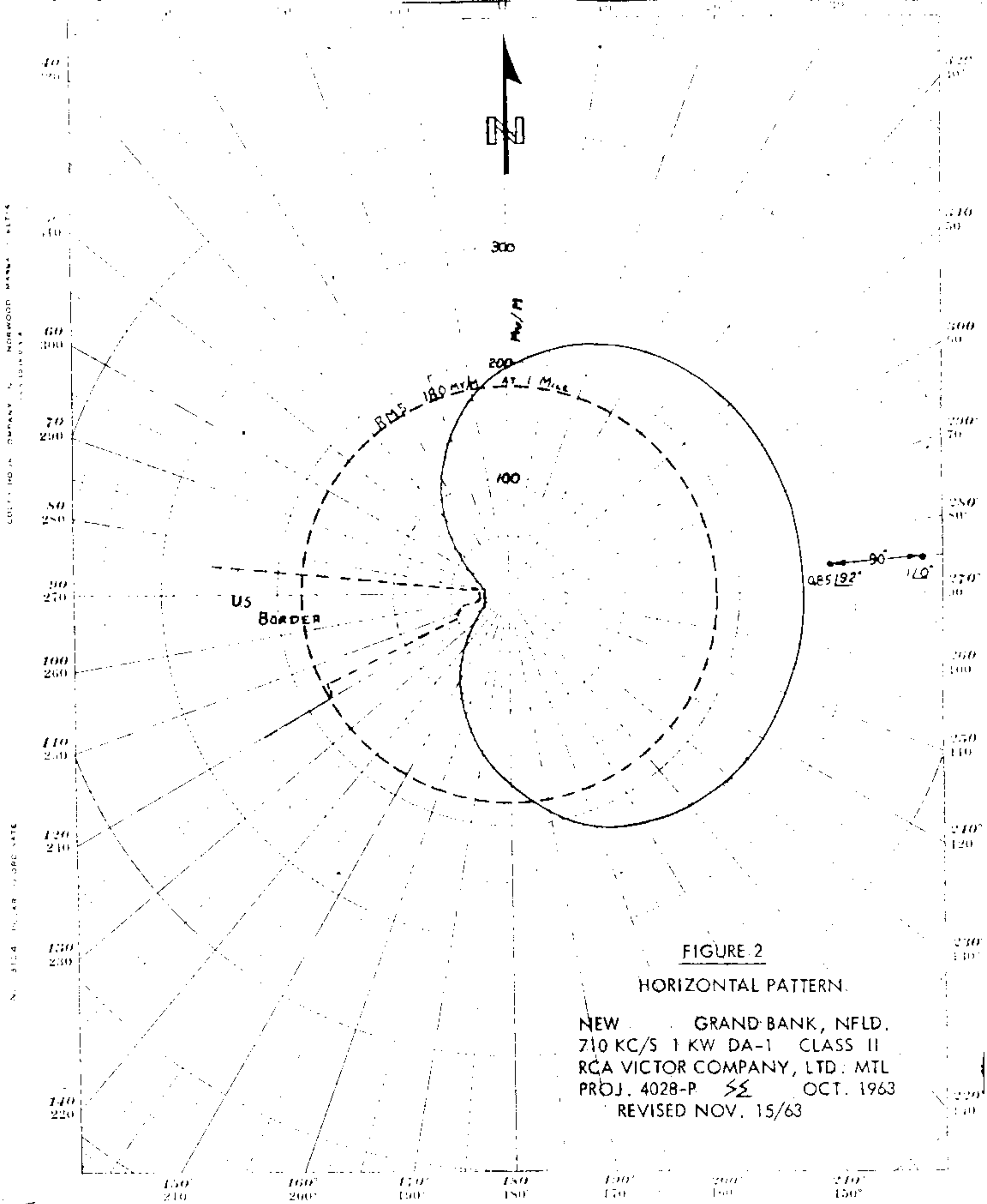


FIGURE 2

HORIZONTAL PATTERN.

NEW GRAND BANK, NFLD.
710 KC/S 1 KW DA-1 CLASS II
RCA VICTOR COMPANY, LTD. MTL
PROJ. 4028-P OCT. 1963
REVISED NOV. 15/63

CJRN

DESCRIPTION SHEET

Directional Antenna System

Station: CJRN

Main Studio: Niagara Falls, Ontario

Frequency: 710 kHz

Power: 5 kw Day
2. 5 kw Night

Time: Unlimited

Class II

Notification List No. 248

Date: October 29, 1968.

Geographic Location -	DAY	NIGHT
	42 52' 09"N. Lat.	42 53' 52"N. Lat.
	79 06' 14"W. Long.	78 57' 27"W. Long.

ANTENNA SYSTEM:

Mode of Operation: DA-2

HEIGHT:

The Day array consists of six 70°(269') towers, the Night of ten 230' towers top loaded to 70°. Towers fitted for series feed.

TOWER PARAMETERS:

DAY PATTERN

Tower	Azimuth (Deg.)	Spacing (Deg.)	Ratio	Phase (Deg.)
1	REF.	REF.	1.0	0
2	-35.0	80	1.0	-112.5
3	-69.97	280.725	1.9788	-141.465
4	-75.386	507.941	1.0	-180.278
5	-82.0	450.0	1.0	-67.7776
6	-82.0	220.0	1.9788	-28.9648

CJRN

Description Sheet P.2
(11-29-68ct)

Station CJRN 2.5kw,5kw-LS,DA-2,U,Class II
Niagara Falls, Ontario 710 kc

NIGHT PATTERN

Tower	Azimuth (Deg.)	Spacing (Deg.)	Ratio	Phase (Deg.)
1	REF.	REF.	1.0	0.0
2	-29.2	70.0	3.5982	209.069
3	-29.2	140.0	5.2127	57.8516
4	-29.2	210.0	3.5982	266.635
5	-29.2	280.0	1.0	115.703
6	258.64	416.813	0.85	221.703
7	249.073	400.944	3.0585	12.6347
8	239.023	396.962	4.4308	163.852
9	229.081	405.219	3.0585	315.069
10	219.8	425.0	0.85	106.0

Ground System: The ground system shall consist of 120 conductors about each base, the lengths will be equivalent to 0.4 λ system.

Predicted Efficiency: Day 384 mv/m for 5 kw (or 172 for 1 kw)

Night 281 mv/m for 2.5 kw (or 177 for 1 kw)

CJRN

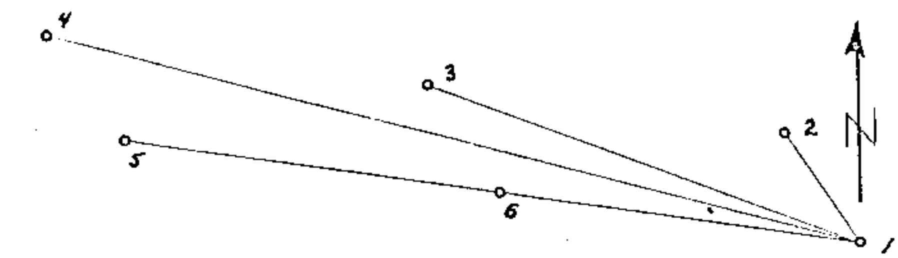
Description Sheet P.3
(11-29-68ct)

Station CJRN
Niagara Falls, Ontario

2.5kw,5kw-LS,DA-2,U,Class II
710 kc

POSITIONS OF TOWER W.R.T. #1

Tower	Azimuth (Degrees)	Distance (Feet)
2	-35.0	308.31
3	-69.97	1,081.04
4	-75.386	1,957.55
5	-82.0	1,734.25
6	-82.0	847.86



Scale 1" = 400'

HOYLES NIBLOCK ASSOCIATES LTD.
TELECOMMUNICATION CONSULTING ENGINEERS AND ATTORNEYS
8110 BOUNDARY ROAD • VANCOUVER 12, B.C., CANADA

DAY PATTERN ANTENNA
SYSTEM LAYOUT

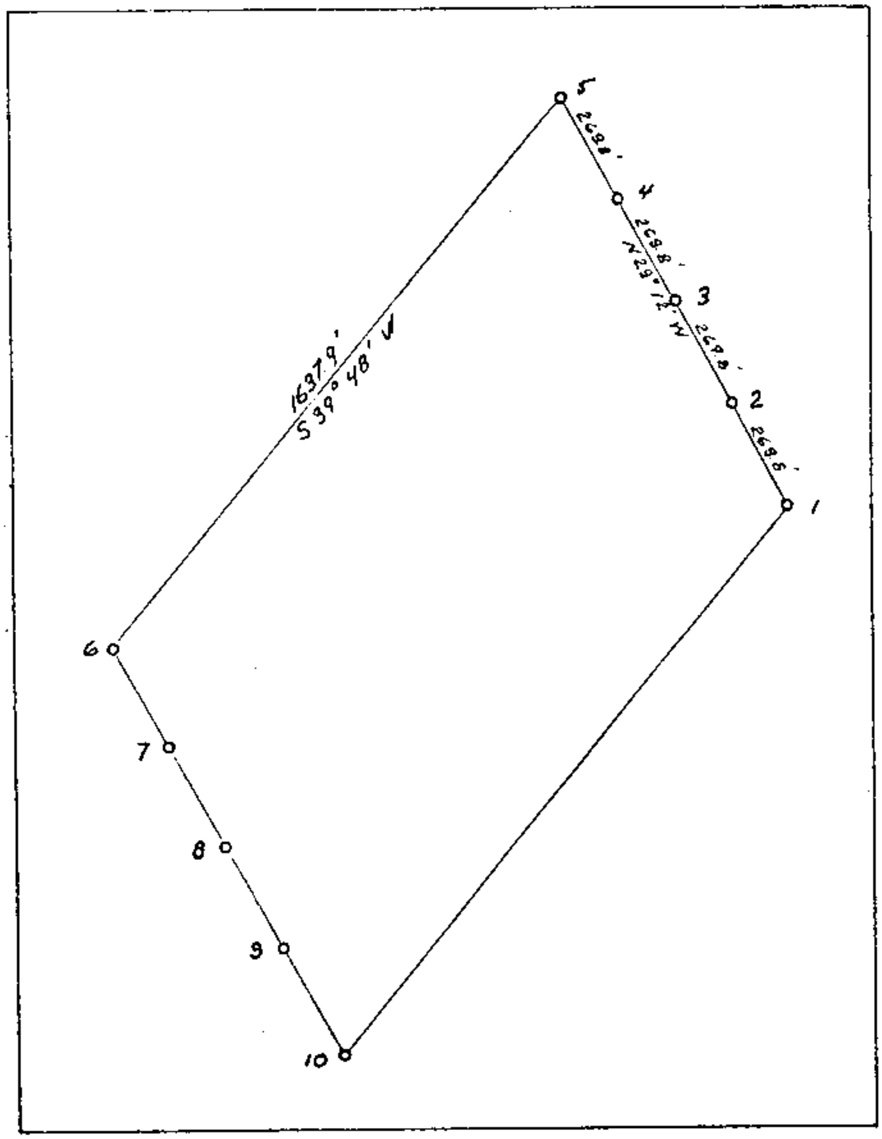
CJRN Niagara Falls, Ont.
710 kHz. 5D/2.5N, DA-2, Class II
Project: 8136-11 July 1968

CJRN

Description Sheet P.4 (11-29-68ct)

Station CJRN
Niagara Falls, Ontario

2.5kw,5kw-LS,DA-2,U,Class II
710 kc



HOYLES NIBLOCK ASSOCIATES LTD.
TELECOMMUNICATION CONSULTING ENGINEERS AND ATTORNEYS
3110 BOUNDARY ROAD • VANCOUVER 12, B.C., CANADA

NIGHT PATTERN ANTENNA SYSTEM LAYOUT

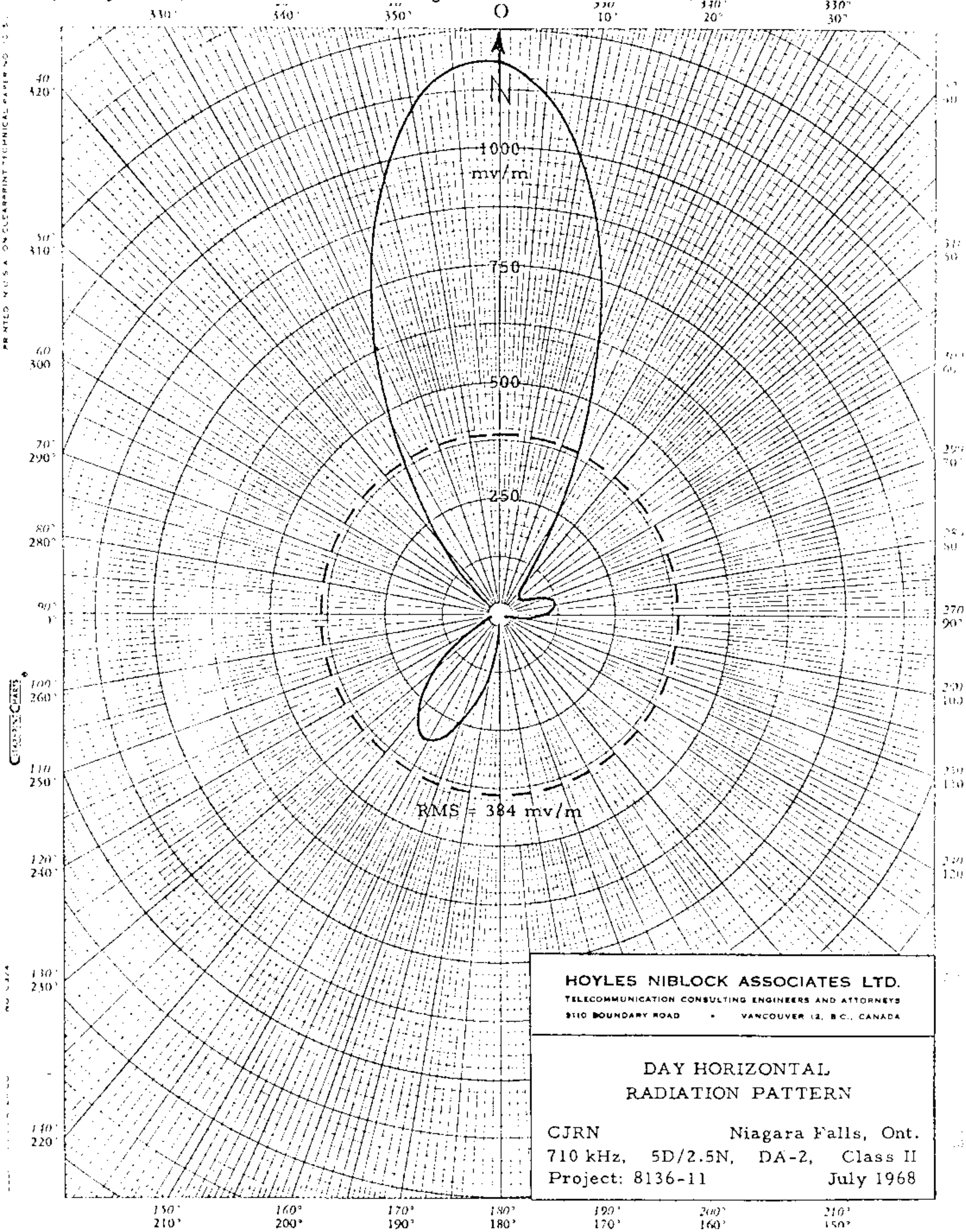
CJRN Niagara Falls, Ont.
710 kHz, 5D/2.5N, DA-2, Class II
Project: 8136-11 July 1968

CJRN

Proposed Day
(11-29-68ct)

Station CJRN
Niagara Falls, Ontario

2.5kw,5kw-LS,DA-2,U,Class II
710 kc



HOYLES NIBLOCK ASSOCIATES LTD.
TELECOMMUNICATION CONSULTING ENGINEERS AND ATTORNEYS
3110 BOUNDARY ROAD • VANCOUVER 12, B.C., CANADA

DAY HORIZONTAL
RADIATION PATTERN

CJRN Niagara Falls, Ont.
710 kHz, 5D/2.5N, DA-2, Class II
Project: 8136-11 July 1968

Proposed Day Nulls
(11-29-68ct)

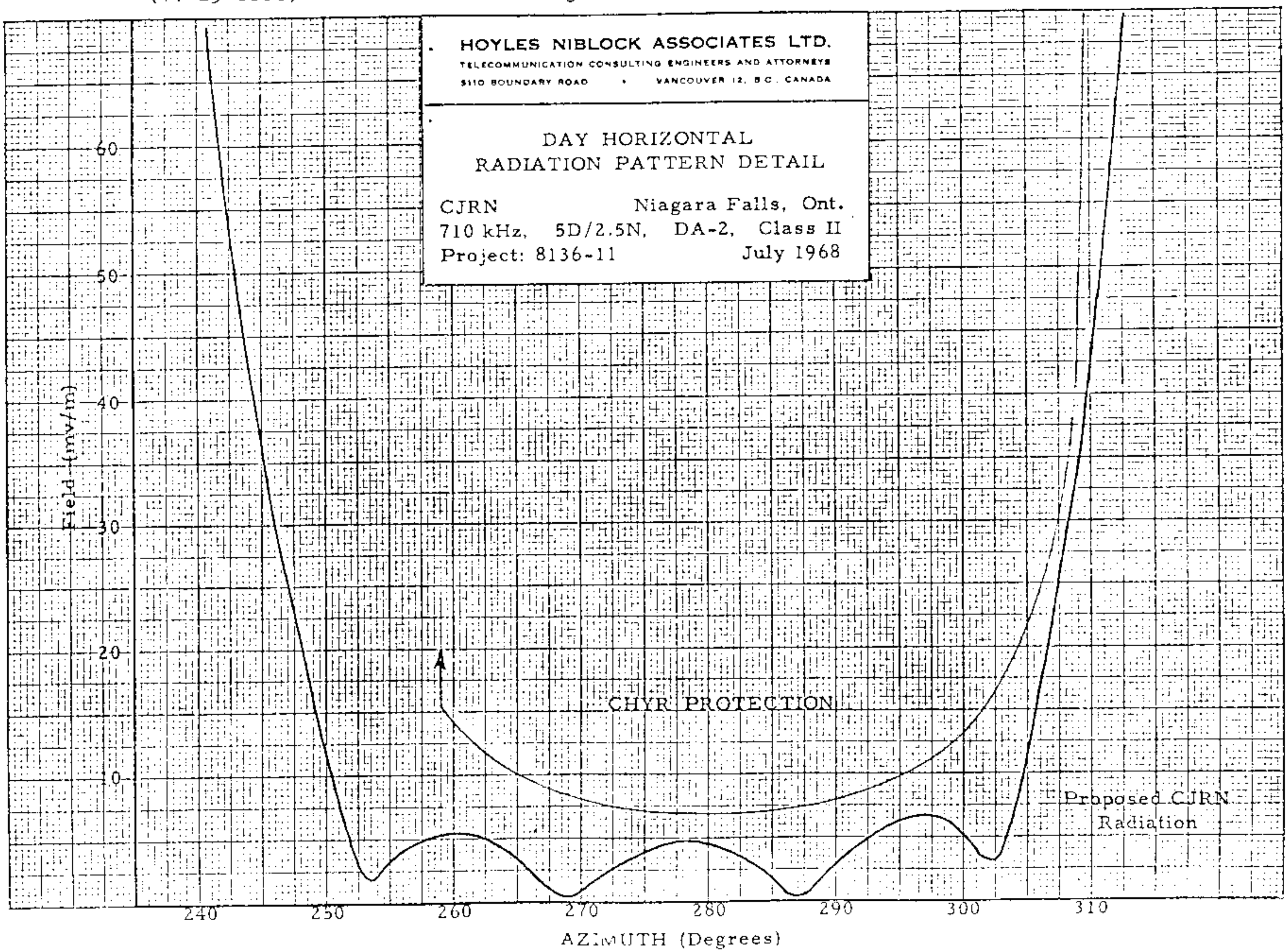
Station CJRN
Niagara Falls, Ontario

2.5kw,5kw-LS,DA-2,U,Class II
710 kc

HOYLES NIBLOCK ASSOCIATES LTD.
TELECOMMUNICATION CONSULTING ENGINEERS AND ATTORNEYS
5110 BOUNDARY ROAD • VANCOUVER 12, B.C. CANADA

DAY HORIZONTAL
RADIATION PATTERN DETAIL

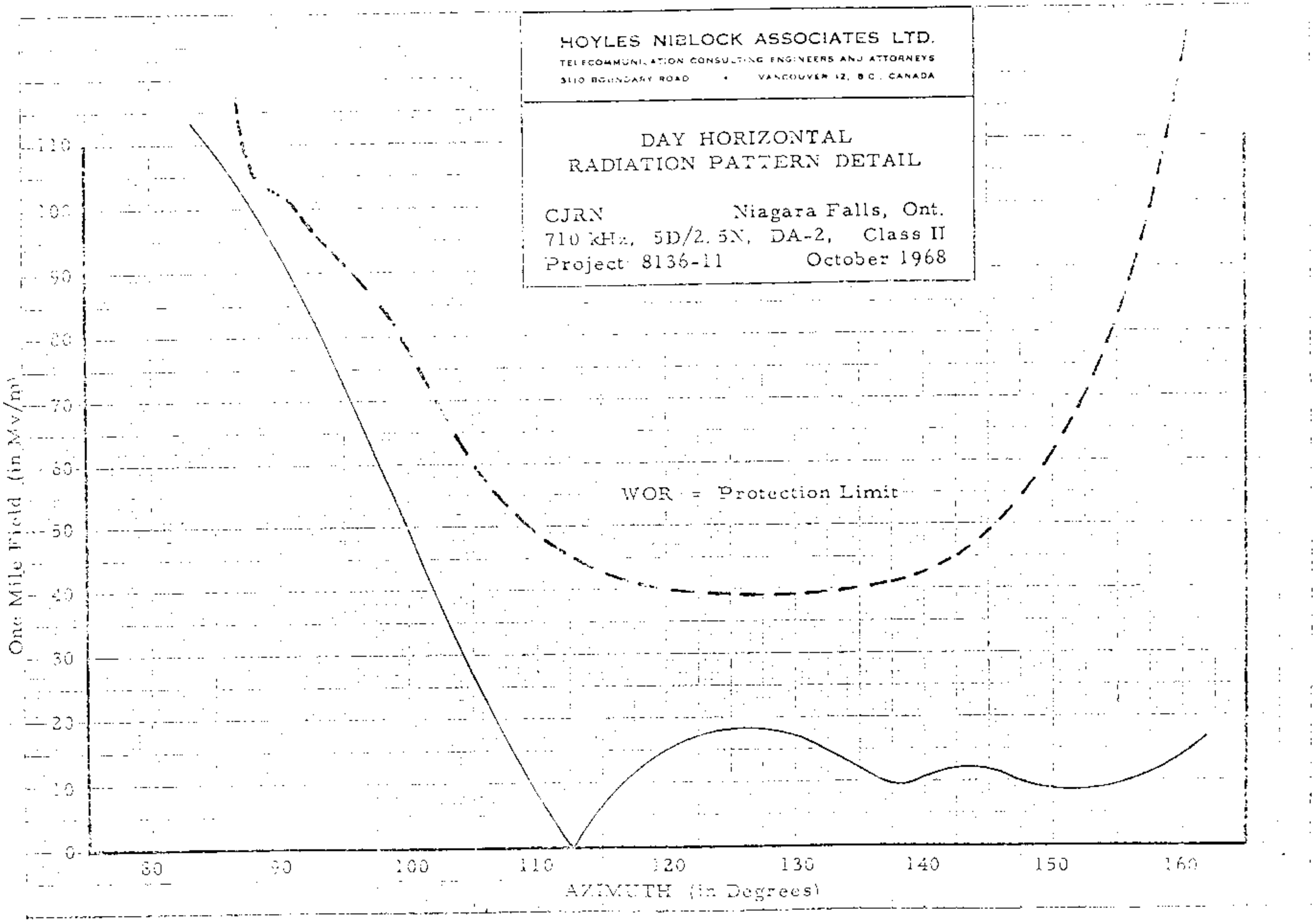
CJRN Niagara Falls, Ont.
710 kHz, 5D/2.5N, DA-2, Class II
Project: 8136-11 July 1968



CJRN

Proposed Day Nulls
(11-29-68ct)

Station CJRN 2.5kw,5kw-LS,DA-2,U,Class II
Niagara Falls, Ontario 710 kc



CJRN

CJRN

Proposed Night
(11-29-68ct)

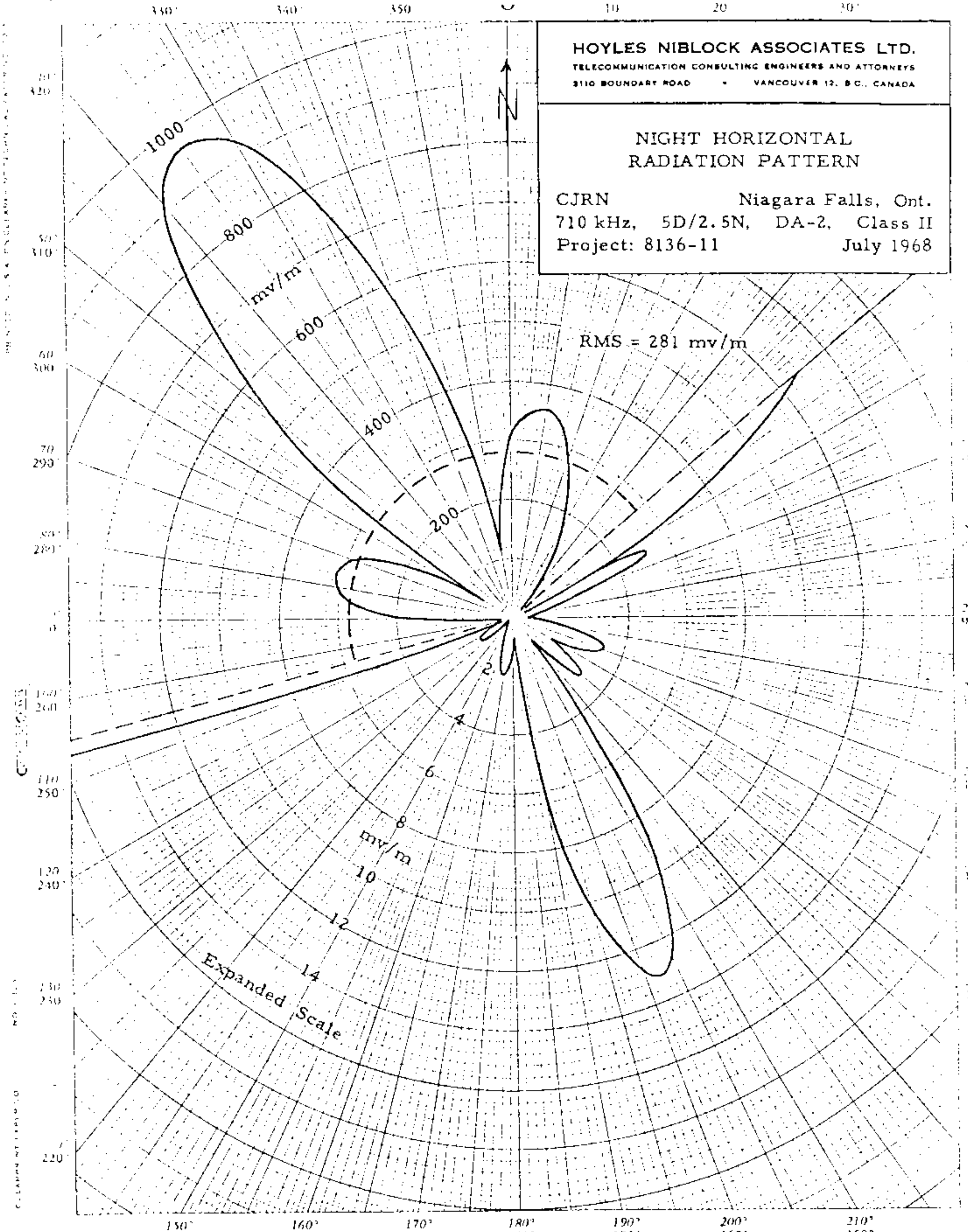
Station CJRN
Niagara Falls, Ontario

2.5kw,5kw-LS,DA-2,U,Class II
710 kc

HOYLES NIBLOCK ASSOCIATES LTD.
TELECOMMUNICATION CONSULTING ENGINEERS AND ATTORNEYS
3110 BOUNDARY ROAD • VANCOUVER 12, B.C., CANADA

NIGHT HORIZONTAL
RADIATION PATTERN

CJRN Niagara Falls, Ont.
710 kHz, 5D/2.5N, DA-2, Class II
Project: 8136-11 July 1968



218

CJSP

TABLE 1

ANTENNA DESCRIPTION SHEET

STATION CALL: CJSP

MAIN STUDIO: LEAMINGTON, ONTARIO

FREQUENCY: 710 kc/s

POWER: 10 kW

CLASS: II

MODE: DA-D

TIME: DAYTIME ONLY

NOTIFICATION LIST NO.: .218.... DATE: November 14, 1966

GEOGRAPHICAL LOCATION: Latitude: 42° 00' 35" North
Longitude: 82° 33' 45" West

ARRAY CHARACTERISTICS: Five guyed steel towers of uniform cross section; base insulated, series fed. Loaded by the top 30' of the guy wires to an effective height of approximately 69°.

TOWER #:	1 N	2 NC	3 C	4 SC	5 S
HEIGHT ABOVE INSULATOR:	250'(65°)	250'	250'	250'	250'
SPACING:	ref.	125°	250°	375°	500°
ORIENTATION:	ref.	174°	174°	174°	174°
CURRENT RATIO:	1.00	2.37	2.80	1.83	0.58
PHASE ANGLE:	0°	118°	-120°	2°	127°

GROUND SYSTEM: 120 uniformly spaced radials per tower of #10 AWG soft copper wire buried approx. 12". Radials of average length 0.40λ (555') except those joined along the common chord; plus 120 interspaced radials per tower, of length 50'.

PREDICTED EFFICIENCY: 175 mV/m at one mile for 1 kW
554 mV/m at one mile for 10 kW

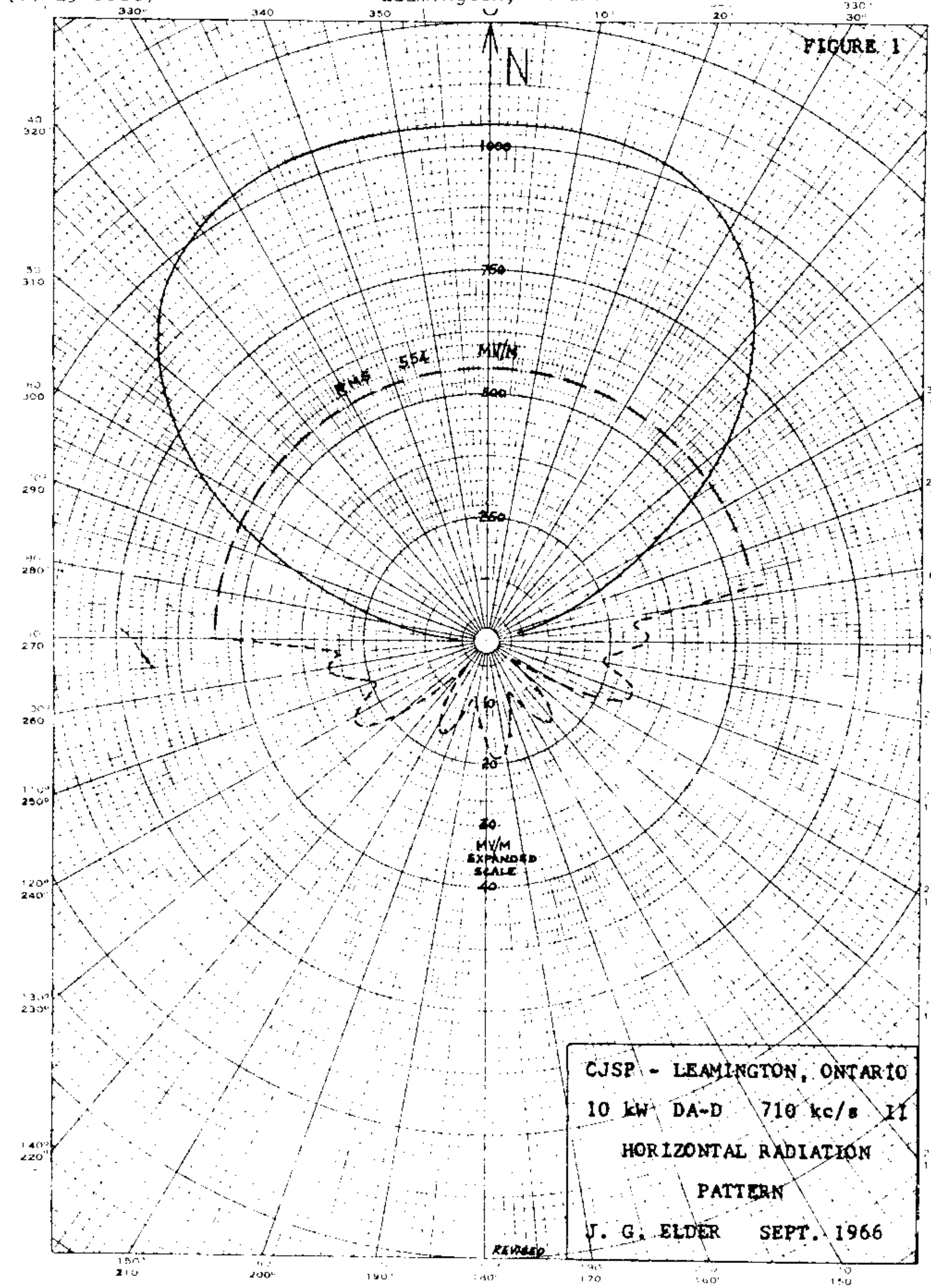
218

CJSP

Proposed Day
(11-29-66ct)

Station CJSP
Leamington, Ontario

10kw,DA-D,D,Class II
710 kc



175 [illegible]

#177 SEE 2!!

CJSP

Description Sheet
(6-28-63ct)

Station CJSP
Leamington, Ontario

10
5kw,DA-D,D,Class II
710 kc

ANTENNA DESCRIPTION SHEET

STATION CALL: CJSP

MAIN STUDIO: LEAMINGTON, ONTARIO

FREQUENCY: 710 kc/s

POWER: 5 kW

CLASS: II

MODE: DA

SCHEDULE: DAY TIME OPERATION

NOTIFICATION LIST NO.: 177...... DATE: May.7, 1963

GEOGRAPHICAL LOCATION: Latitude: 42° 03' 00" North
Longitude: 82° 39' 45" West

ARRAY CHARACTERISTICS: Six guyed steel towers of uniform cross section; base insulated, series fed. Loaded by the top 40' of the guy wires to an effective height of approx. 65°.

TOWER:	SW	CW	NW	SE	CE	NE
HEIGHT ABOVE INSULATOR:	231' (60°)	231'	231'	231'	231'	231'
SPACING:	ref.	578'	1156'	289'	690'	[illegible]
		150°	300°	75°	179°	[illegible]
TRUE BEARING:	ref.	048°	048°	128°	072.5°	061.5°
FIELD RATIO:	1.00	1.90	1.00	0.90	1.71	[illegible]
PHASE:	0°	-58°	-116°	+109°	+51°	[illegible]

GROUND SYSTEM: 120 uniformly spaced radials per tower of #10 AWG soft copper wire buried approx. 8". 24' x 24' copper mesh buried at each tower base. Radials are of average length 0.40λ and vary from 350' to 850'.

PREDICTED EFFICIENCY: 392 mV/m at one mile; or 175 mV/m per kW

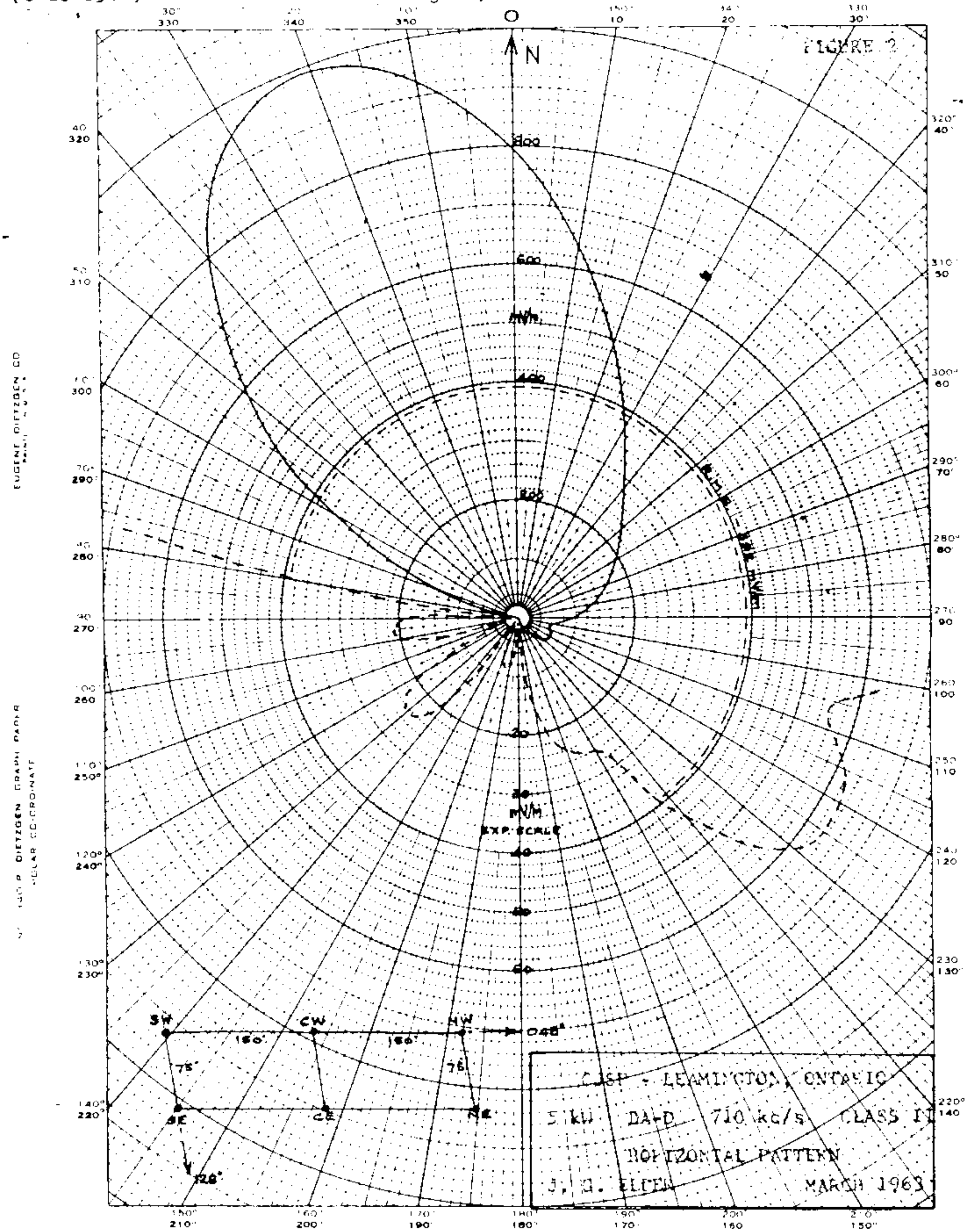
177

CJSP

Proposed Day
(6-28-63ct)

Station CJSP
Leamington, Ontario

5kw,DA-D,D,Class II
710 kc



172

Description Sheet
(8-24-62ct)

Station CJSP
Leamington, Ontario

CJSP

1kw,DA-D,D,Class II
710 kc

ANTENNA DESCRIPTION SHEET

DIRECTIONAL DA-D

STATION CALL:	C J S P
MAIN STUDIO:	Leamington, Ontario.
FREQUENCY:	710 kc/s
POWER:	1000 watts
CLASS:	II
TIME:	Daytime July 9, 1962
NOTIFICATION REFERENCE:	[illegible] ..., 1962
GEOGRAPHICAL LOCATION:	Lat 42°03'06", Lon 82°39'39"
ARRAY CHARACTERISTICS:	Four elements, guyed, uniform cross section, base insulated, series feed.

ELEMENT	ONE	TWO	THREE	FOUR
phys ht	231' 60°	231' 60°	231' 60°	231' 60°
space	ref	231' 60°	751' 195°	578' 150°
bearing	ref	90°	35°	48°
ratio	100	103	102	102
phase	ref	-144.5°	+147°	-73.5°

Ground system: 120 radials per tower, #10 AWG bare, soft copper wire, uniform spacing, depth approximately 6 inches. Radials bonded along line between towers and bonded to soft copper strap at tower base. Site 1286' x 1491' to give equivalent 0.4 wavelength ground system. Maximum radial length 810 feet.

Predicted R. M. S. 180 mV/m at 1 mile for 1 kw

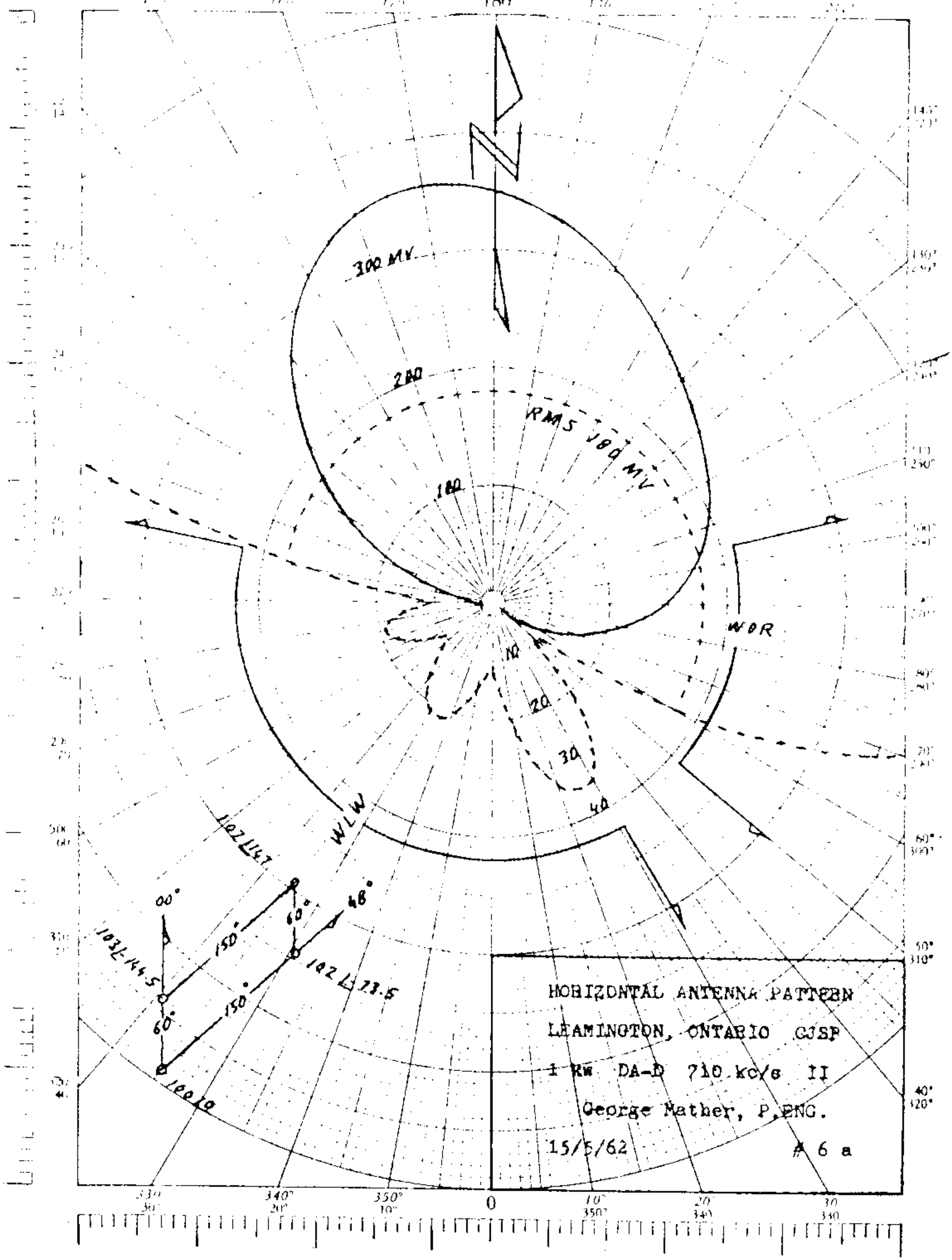
GM 15/5/62

5

172 Proposed Day
(8-24-62ct)

Station CJSP
Leamington, Ontario

CJSP
1kw,DA-D,D,Class II
710 kc



HORIZONTAL ANTENNA PATTERN
LEAMINGTON, ONTARIO CJSP
1 Kw DA-D 710 kc/s II
George Mather, P.ENG.
15/5/62 # 6 a

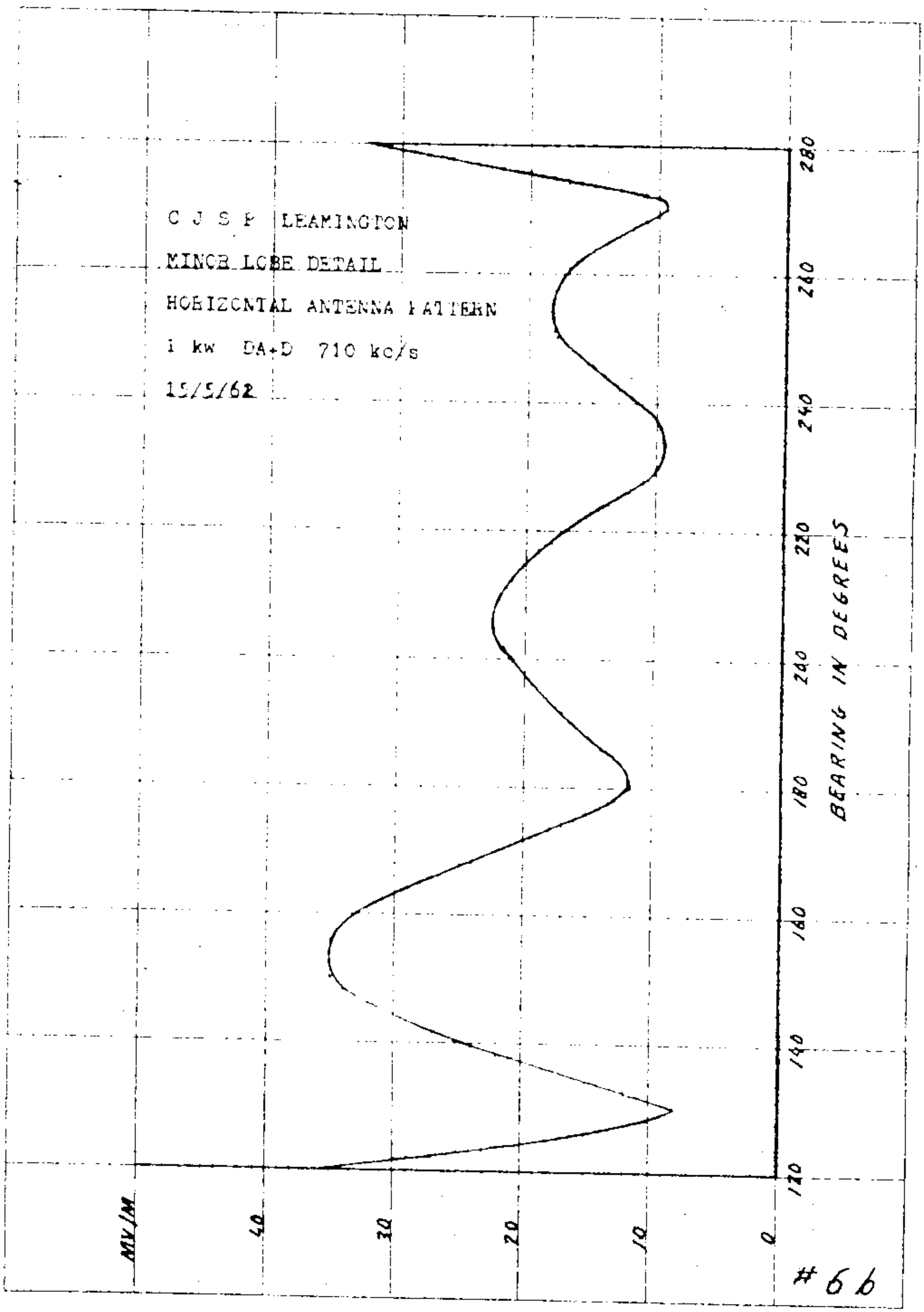
\#172

CJSP
710KC

Proposed Day Nulls
(8-24-62ct)

Station CJSP
Leamington, Ontario

1kw,DA-D,D,Class II
710 kc



\#6b

162

CKVM

DESCRIPTION SHEET (8-22-61ct)

Station CKVM Ville Marie, Quebec, Canada — 1kw, 10kw, DA-N, Class II 710 KC

AUG 1961 RECEIVED F.C.C. MAIL & FILES

DIRECTIONAL ARRAY - DESCRIPTION SHEET

STATION: CKVM — MAIN STUDIO: Ville Marie, Que.

FREQUENCY: 710 Kc. — POWER: 1 KW-N/10 KW-D — CLASS: II

Notification List No.: 162 — Date: July 26, 1961

GEOGRAPHICAL LOCATION OF THE ANTENNA SYSTEM:

North Latitude: 47°,18' 23"

West Longitude: 79° 27' 10"

ANTENNA CHARACTERISTICS:

Mode of Operation: Directional night time, omnidirectional day time (DA-N)

Number of Elements: Three (3)

Type of Elements: Square, uniform cross-section, guyed, insulated from ground, series fed, no top loading.

TOWER:	#1 (S)	#2 (C)	#3 (N)
HEIGHT ABOVE INSULATORS:	230'	230'	230' (60°)
OVERALL HEIGHT:	235'	235'	235'
SPACING:	90° between adjacent towers.		
PHASING:	0	-125°	-250°
FIELD RATIO:	1	1.55	1
ORIENTATION:	On a line bearing 24° West of True North.		
GROUND SYSTEM:	120 equally spaced radials of No.10 B & S bare copper wire per tower, extending to 550' (0.4 of a wavelength), bonded together on a line equidistant between towers and buried to an approx. depth of 3 inches.		

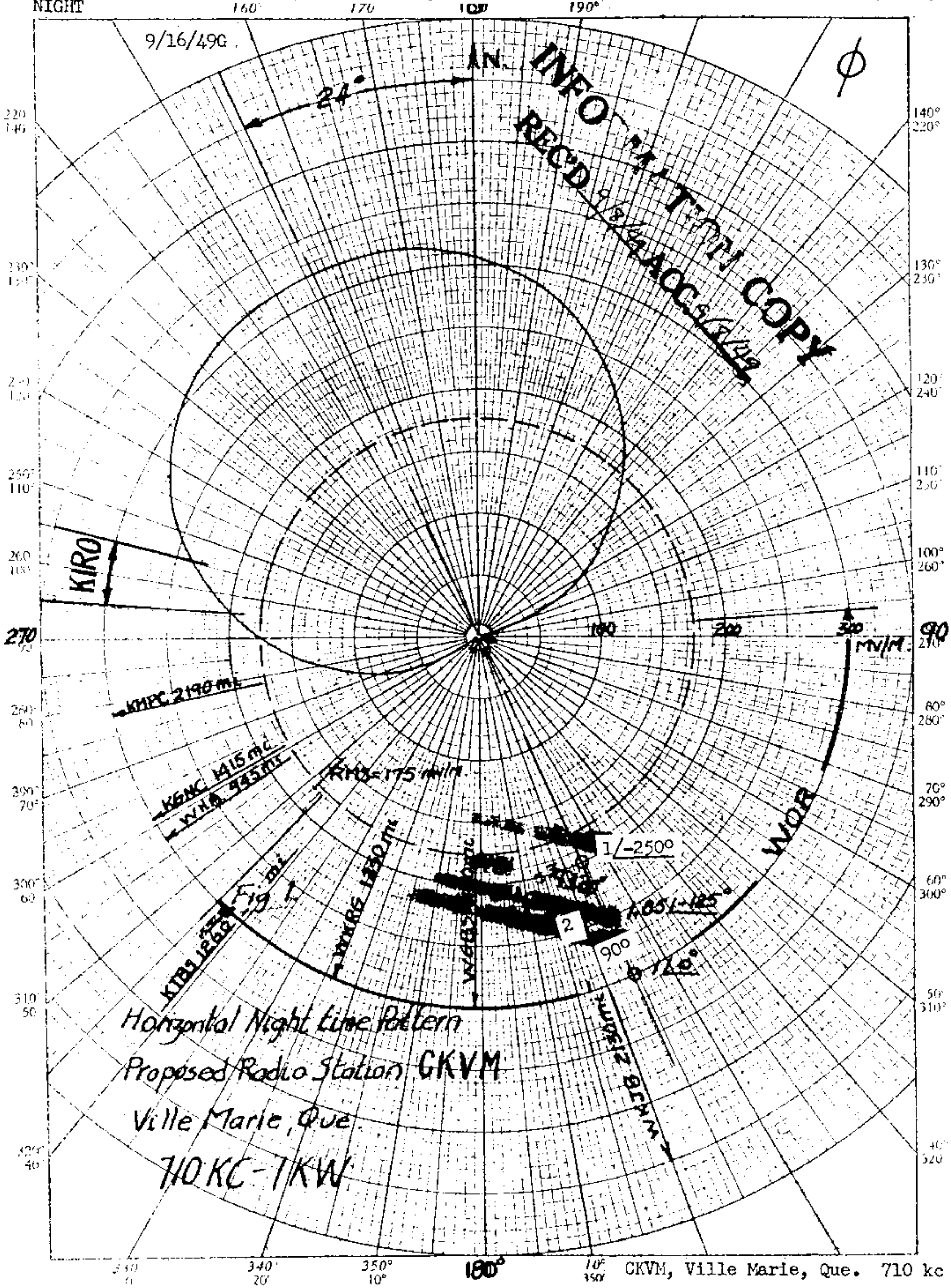
MEASURED EFFECTIVE FIELD: Night 175 mV/m at 1 mile for 1 Kw. radiated

PREDICTED EFFECTIVE FIELD: day 572 mV/m at 1 mile for 10 Kw. radiated or 181 mV/m at 1 mile per Kw. radiated.

NOTE: Please retain nighttime radiation pattern previously supplied for CKVM Ville Marie, P.Q. and attach to this revised description sheet. This notification only concerns an increase in the daytime power.

CKVM

PROPOSED NIGHT | CKVM, VILLE MARIE, QUE. | 1kw, DAN | 710 kc



Horizontal Night time Pattern
Proposed Radio Station CKVM
Ville Marie, Que
710 KC - 1KW

SECTION II

DESCRIPTION SHEET - DIRECTIONAL ANTENNA

Call Sign : New AM

Location : Clarenville, Nfld.

Frequency : 710 kHz

Class : II

Power : 10 kW

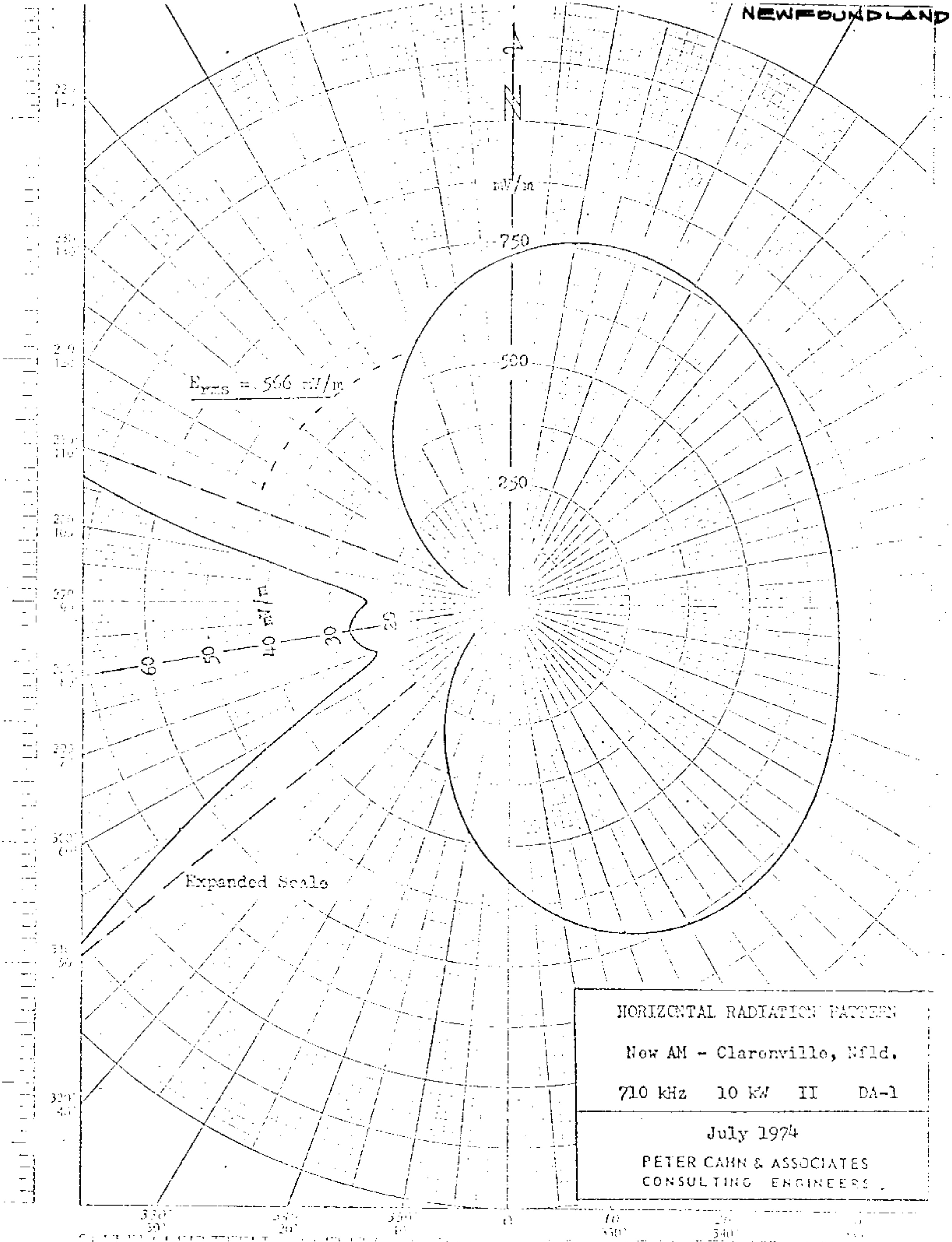
Notification List No. : 379

Date : August 9, 19[illegible]

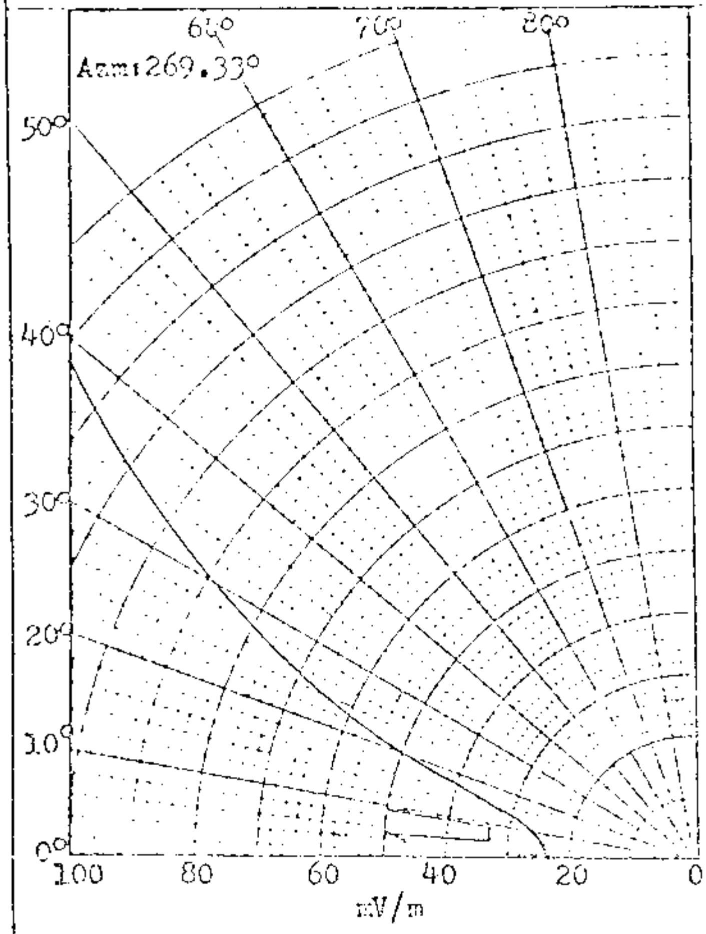
Geographical Co-Ordinates of the Antenna Location : 48° 08' 40" North Latitude, 53° 57' 30" West Longitude.

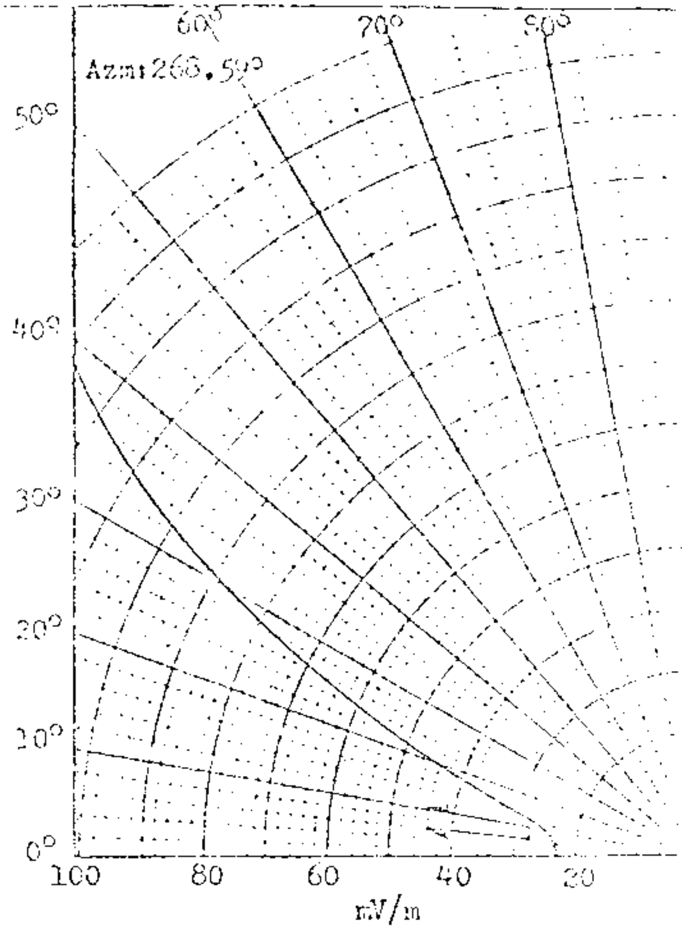
Antenna Characteristics :

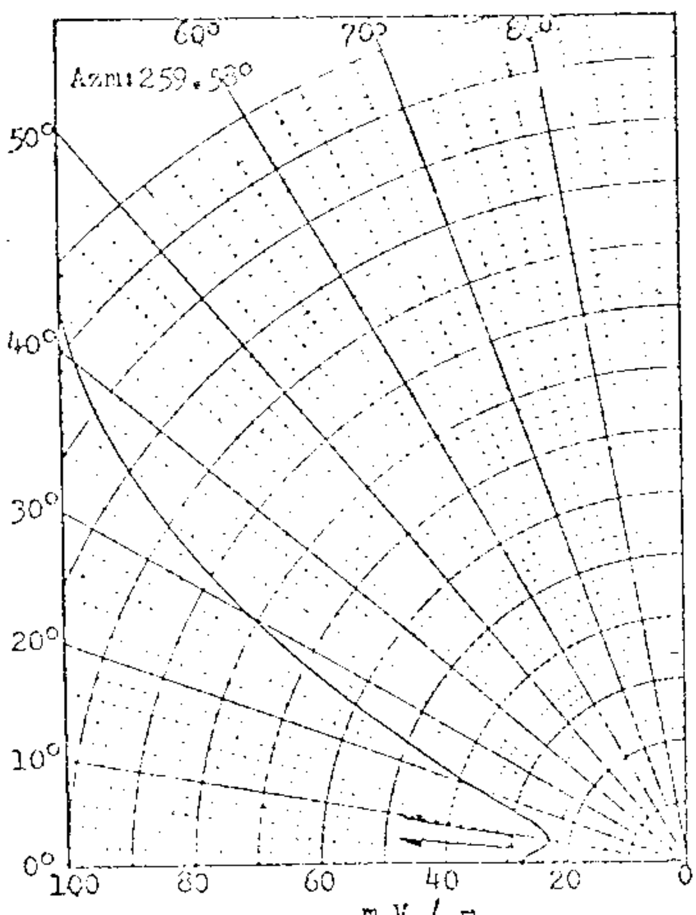
Mode of Operation	DA-1	
Number of Elements	Two (2)	
Type of Elements	Uniform cross-section, guyed, series fed, not top loading.	
Tower No.	1 (W)	2 (E)
Height above Insulator	261.78' (68°)	261.78' (68°)
Spacing	461.97' (120°)	
Field Ratio	1	0.94
Phasing	Ref.	-62°
Orientation	Line of Towers 80°E of T.N.	
Ground System	120 equiangularly spaced radials per mast extending to a maximum of 554.7' (0.4λ) and consisting of No. 10 AWG bare soft-drawn copper wire, buried approx. 8" in ground. The radials to be bonded at the intersection on a common chord; towers to be joined by No. 4 AWG copper wire.	
Expected Antenna Efficiency	566 mV/m at 1 mile for 10 kW, or 179 mV/m at 1 mile for 1 kW.	

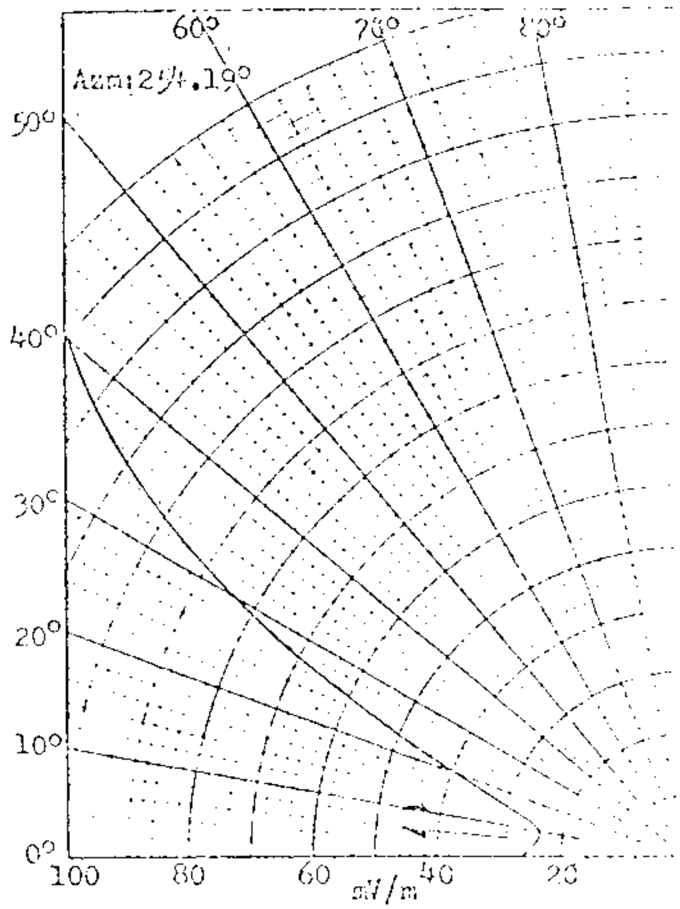

NEWFOUNDLAND
mV/m
750
500
250
E_{rms} = 566 mV/m
60
50
40 mV/m
30
20
Expanded Scale
HORIZONTAL RADIATION PATTERN
New AM - Clarenville, Nfld.
710 kHz 10 KW II DA-1
July 1974
PETER CAHN & ASSOCIATES
CONSULTING ENGINEERS

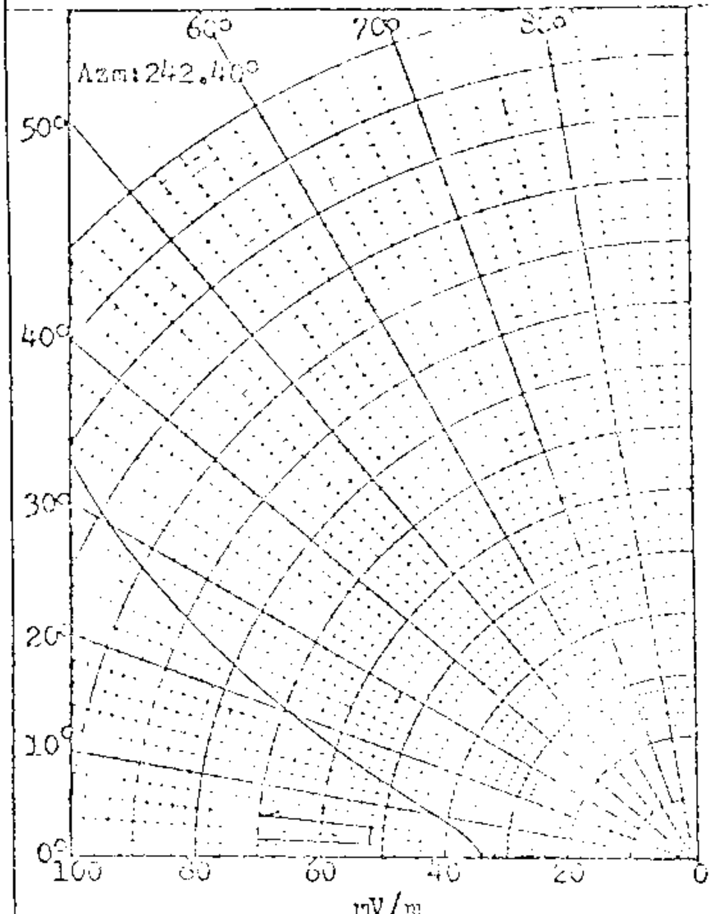
New AM - Clarenville, Nfld.

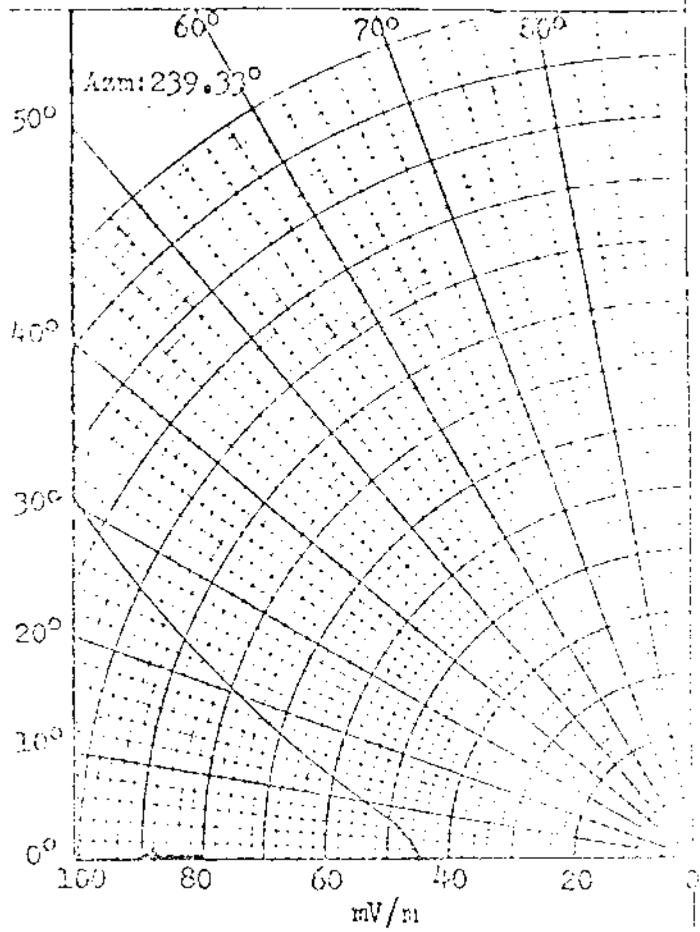


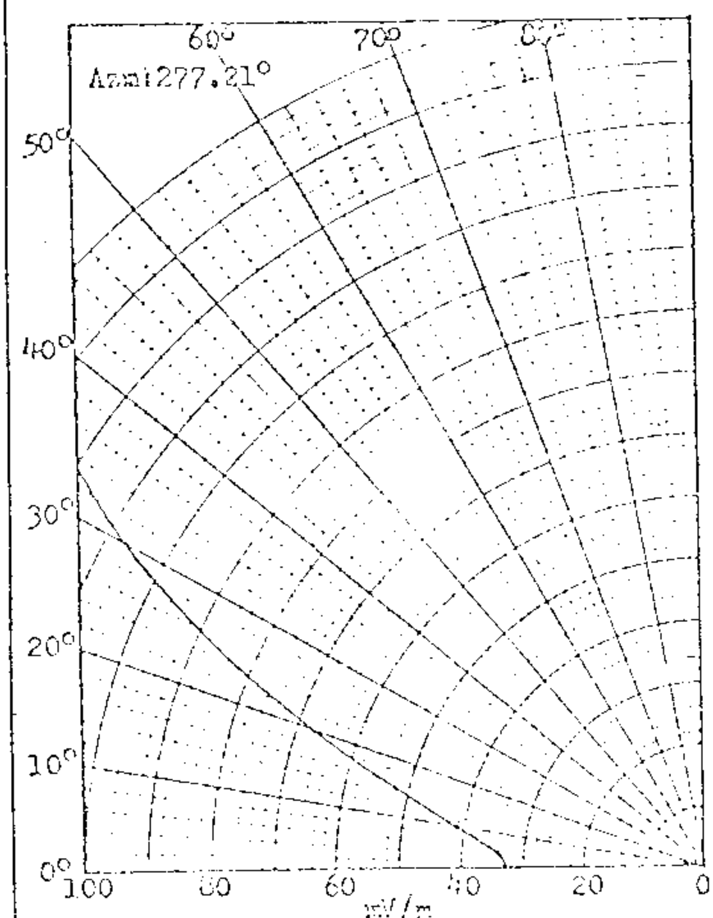


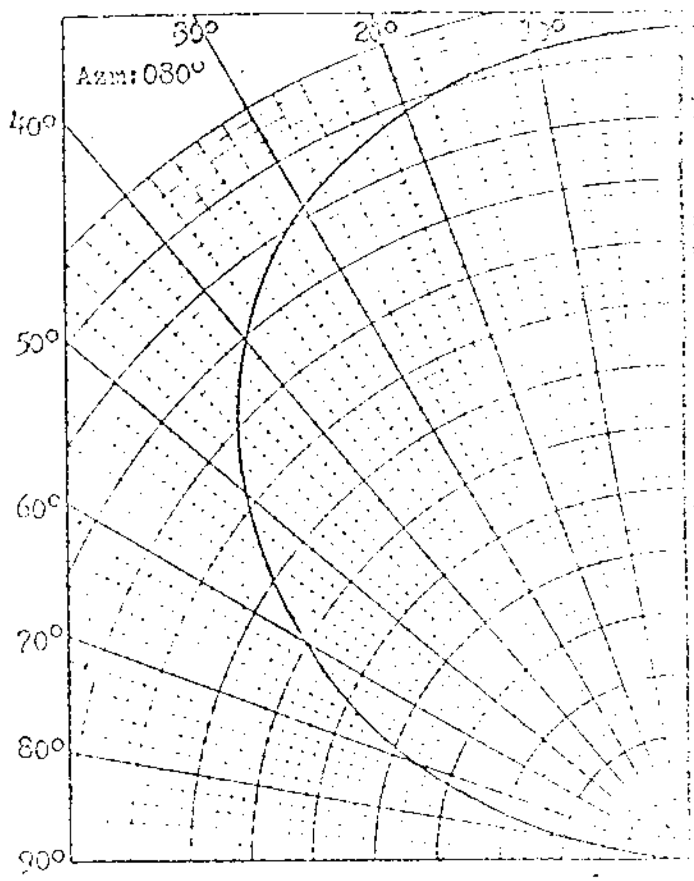





Azm:242.40°
60°
70°
80°
50°
40°
30°
20°
10°
0°
100
80
60
40
20
0
mV/m


Azm:239.33°
60°
70°
80°
50°
40°
30°
20°
10°
0°
100
80
60
40
20
mV/m


Azm:277.21°
60°
70°
80°
50°
40°
30°
20°
10°
0°
100
80
60
40
20
0
mV/m


Azm:080°
30°
20°
10°
40°
50°
60°
70°
80°
90°

KAKE
710kHz

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: New

Main Studio: Bald Knob, Arkansas

Frequency: 710 kHz

Power: 0.25 kw Day

Notification List No. 1786

Date: May 16, 1980 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 35° 16' 32"
West Longitude: 91° 33' 39"

ANTENNA CHARACTERISTICS

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

TOWER:	W(#1)	E(#2)
HEIGHT ABOVE INSULATORS:	258'	258' (67.05°)
DAY PHASING:	0°	+47.3°
DAY FIELD RATIO:	1.0	.85

SPACING AND ORIENTATION: Adjacent towers are spaced 627.7' (163°) on a line bearing 132° true.

GROUND SYSTEM: 120 - 346' equally spaced copper radials about each tower.

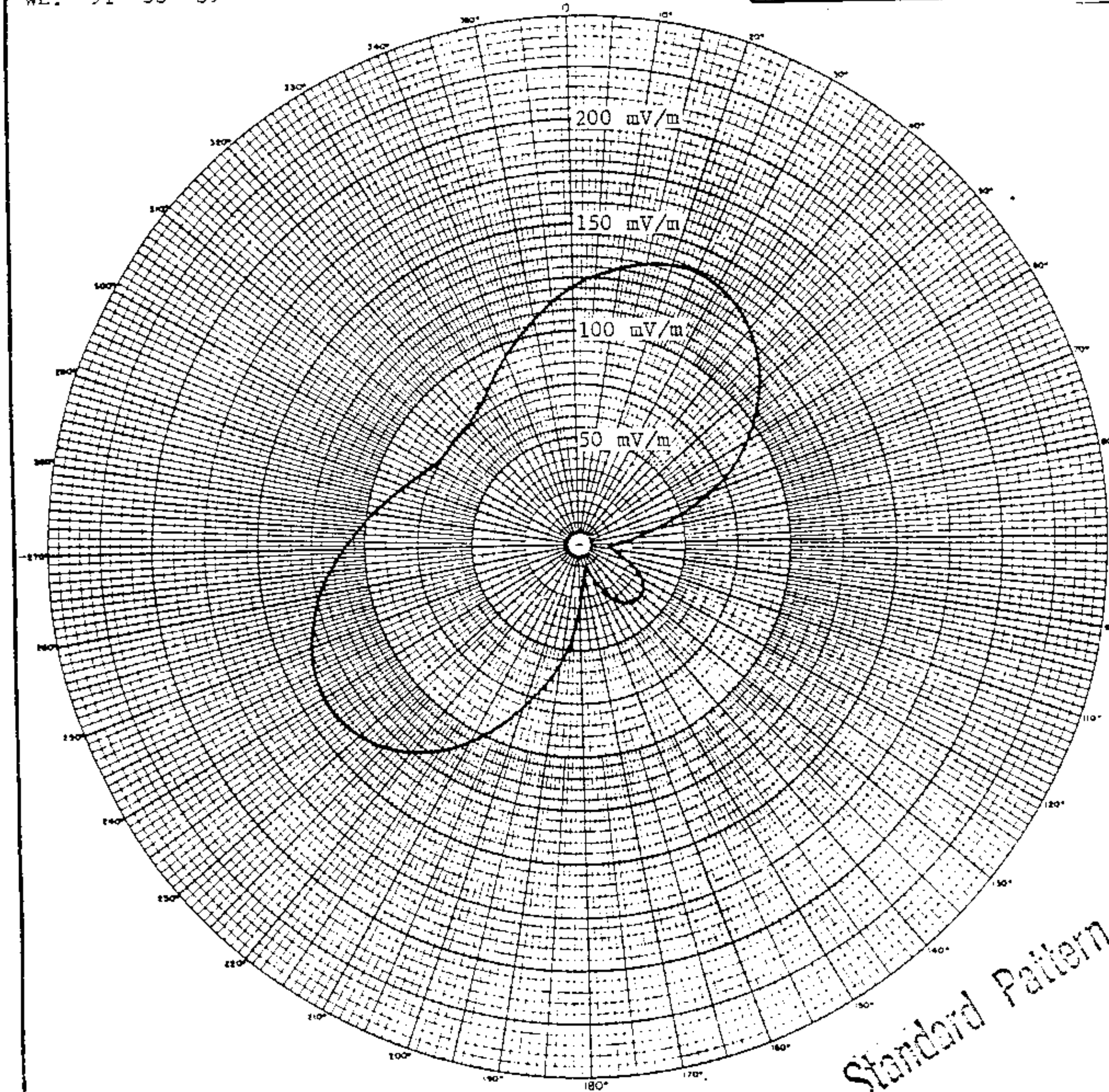
PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	87.5 mv/m	94.13 mv/m	92.09 mv/m

KAPZ
710kHz

NL: 35° 16' 32"
WL: 91° 33' 39"

EXHIBIT E-5.1



BL 800729 AG

KAPZ

STANDARD HORIZONTAL RADIATION PATTERN

PROPOSED AM STATION
JOHN PAUL CAPPS
710 KHZ - 0.25 KW DA-D
BALD KNOB, ARKANSAS
APRIL 1977

1/ 0° —— 163° 627.7 FEET —— 0.85/ 47.3° —— 132° True

K FACTOR	71.7222 mV/m
THEO. RMS	87.5 mV/m Adj.
THEO. RSS	94.1311 mV/m
STD. RMS	92.0907 mV/m
Q FACTOR	6
ELECT. HEIGHT	67° - 258 FEET

BL-800729 AG

ROBERT L. MIERS
CONSULTING RADIO ENGINEER
P.O. BOX 12 ROLLA, MISSOURI 65401 PHONE 314 ...

KEEL

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KEEL

Main Studio: Shreveport, Louisiana

Frequency: 710 kHz

Power: 5 kW Night 50 kW Day

Notification List No. 1725

Date: March 16, 1977

Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 32° 40' 35"
West Longitude: 93° 51' 35"

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:	N(#1)	(#2)	(#3)	(#4)	(#5)	S(#6)
HEIGHT ABOVE INSULATORS:	All towers 370' (96°)					
NIGHT PHASING:	+230°	+112°	±354°	+236	+118°	0°
NIGHT FIELD RATIO:	1	3.55	6.08	6.08	3.55	1
DAY PHASING:	0°	-129.2°	+116.9°	-0.9°	-	-
DAY FIELD RATIO:	1	1.5	1.13	0.47	-	-

SPACING AND ORIENTATION: Adjacent towers are spaced 532' (138°) on a line bearing 10° true.

GROUND SYSTEM: 120-350' equally spaced copper radials plus 240-50' interspaced radials about each tower. Radials are shortened and bonded to transverse straps along intersections between towers. Center of system are bonded together.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

THEORETICAL
RMS

Day ~~1~~257 mv/m 1257 mv/m
Night 446 mv/m

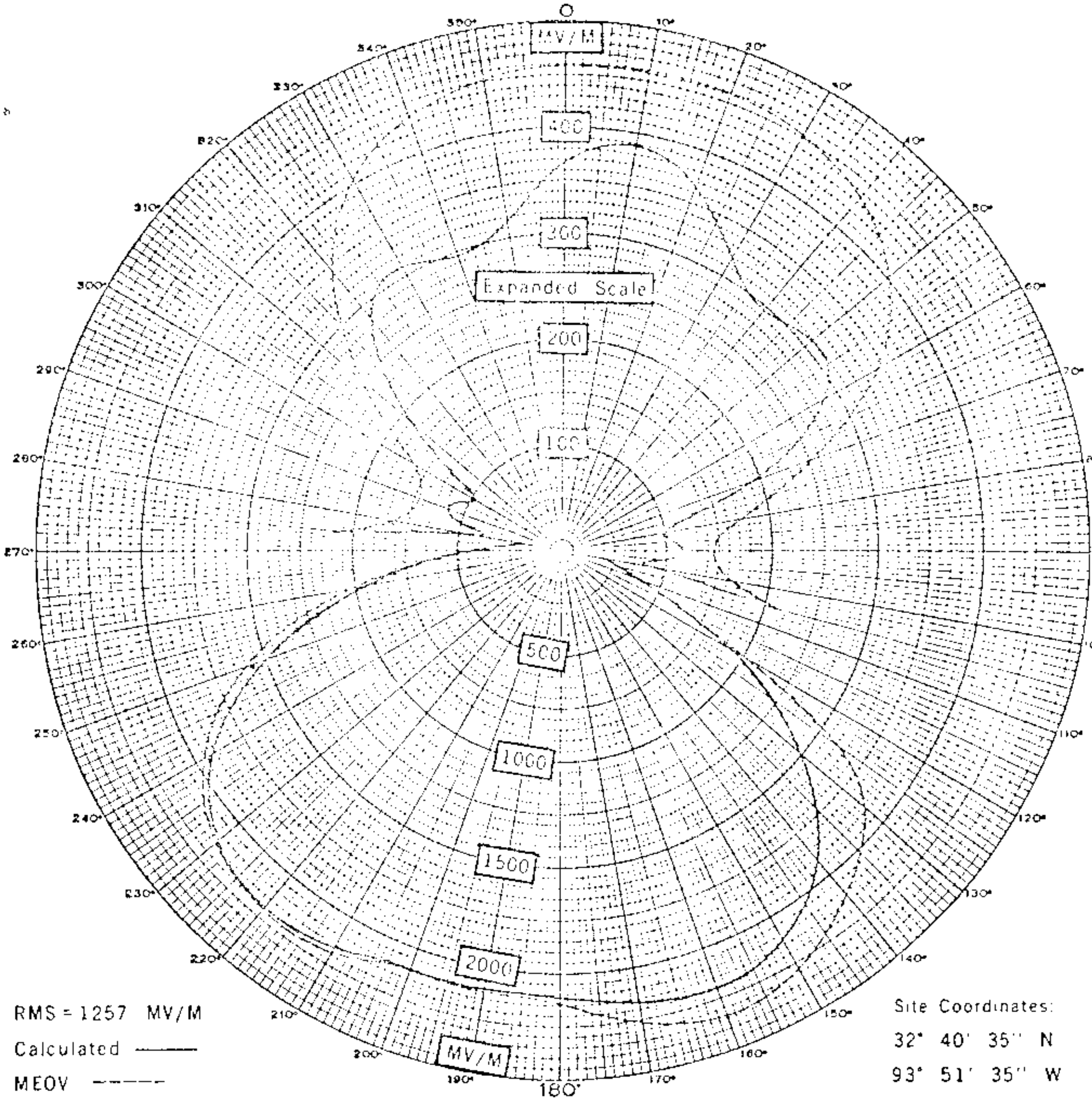
(Cont'd)

Note: Please retain the Nighttime directional antenna radiation pattern notified for Station KEEL in United States Change List Number 1660 dated November 26, 1975 and attach to this Revised Description Sheet and Daytime pattern. This notification conerns only a change in the Daytime operation of the station with Nighttime operation continued as previously notified.

CTR NO 30302A3

KEEL

The DA-D

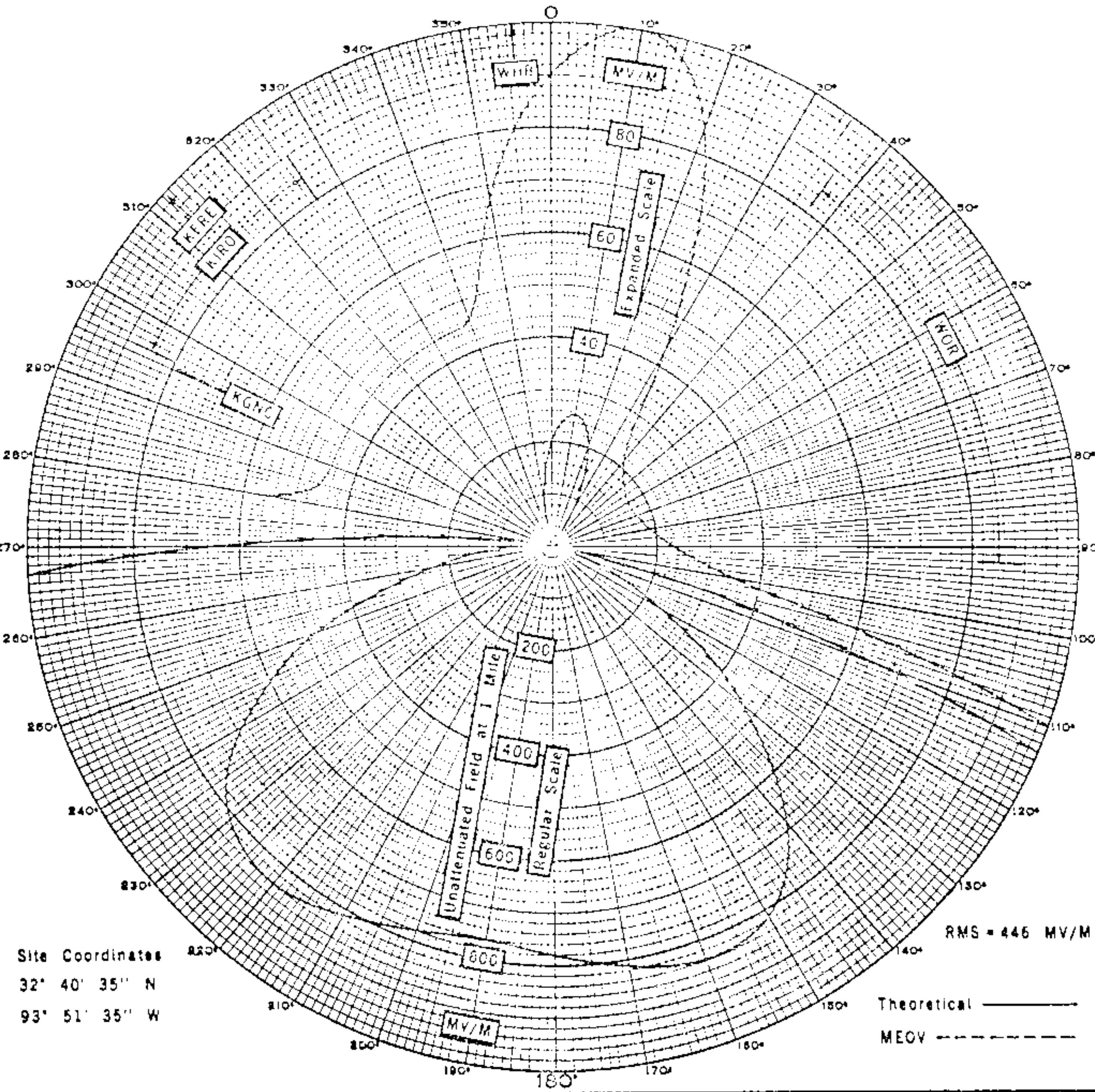


RMS = 1257 MV/M
Calculated ———
MEOV - - - - -

Site Coordinates:
32° 40' 35'' N
93° 51' 35'' W

PROPOSED DAYTIME HORIZONTAL PLANE RADIATION PATTERN

S = 138°(532') G = 90°(370') 10° True #1 1∠0° S #2 1.5∠-129.2° S #3 1.13∠116.9° S #4 0.47∠-0.9° S #5 open S #6 open	MULTIMEDIA RADIO, INC. SHREVEPORT, LOUISIANA Jules Cohen & Associates Consulting Electronics Engineers	RADIOSTATION KEEL 710 KHZ 5 KW, 50 KW-LS, U, DA-2 Pattern 760824



NIGHTTIME HORIZONTAL PLANE RADIATION PATTERN

10° T
S = 138° (532')
G = 96° (370')
#1 1/230°
#2 3.55/112°
#3 6.08/354°
#4 6.08/236°
#5 3.55/118°
#6 1/0°

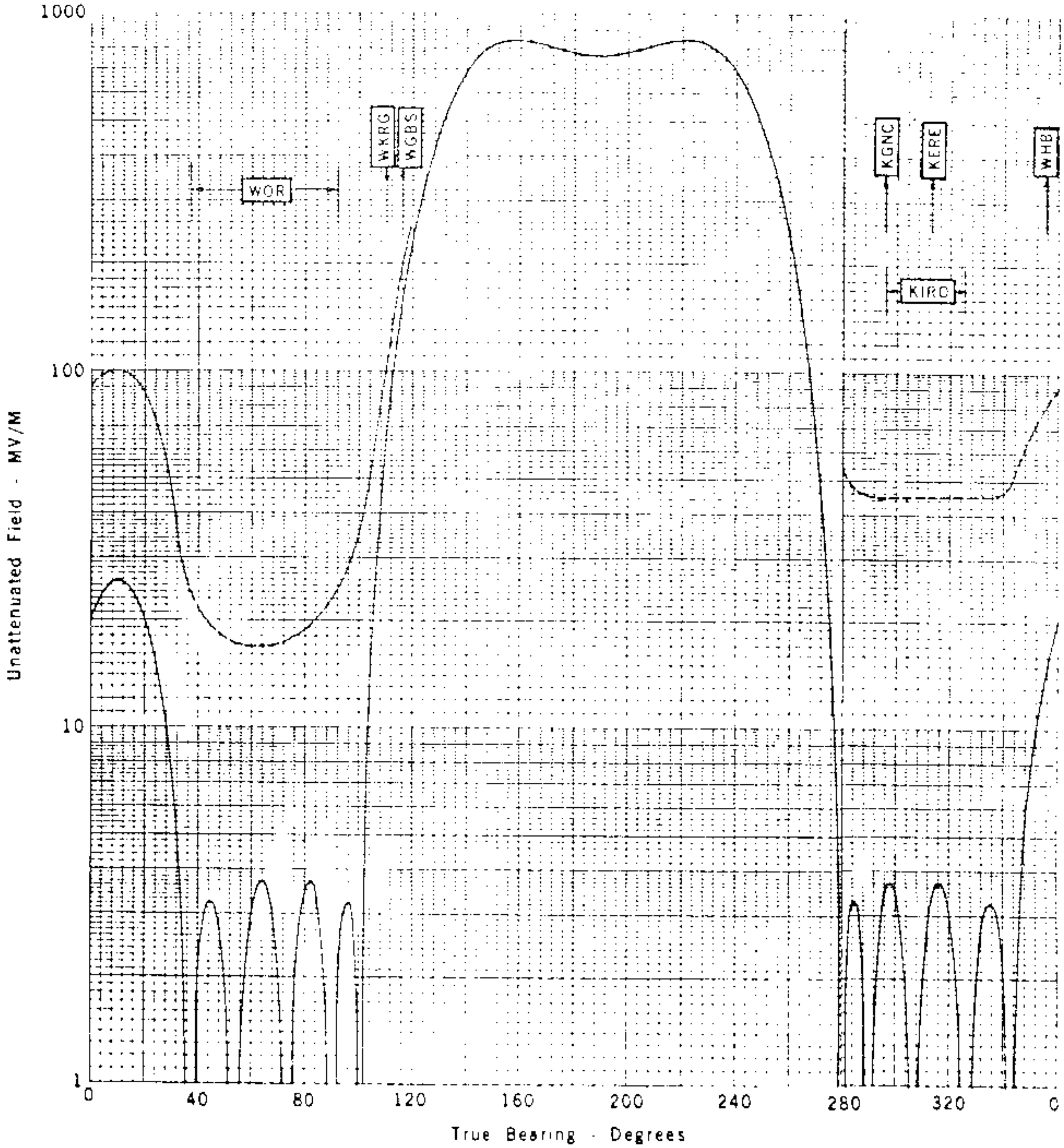
MULTIMEDIA RADIO, INC.
SHREVEPORT, LOUISIANA

Jules Cohen & Associates
Consulting Electronics Engineers

RADIO STATION KEEL
710 KHZ
5 KW, 50 KW-LS U DA-2
Pattern 750606

KEEL

JUNE 1975



PROPOSED NIGHTTIME HORIZONTAL PLANE RADIATION PATTERN

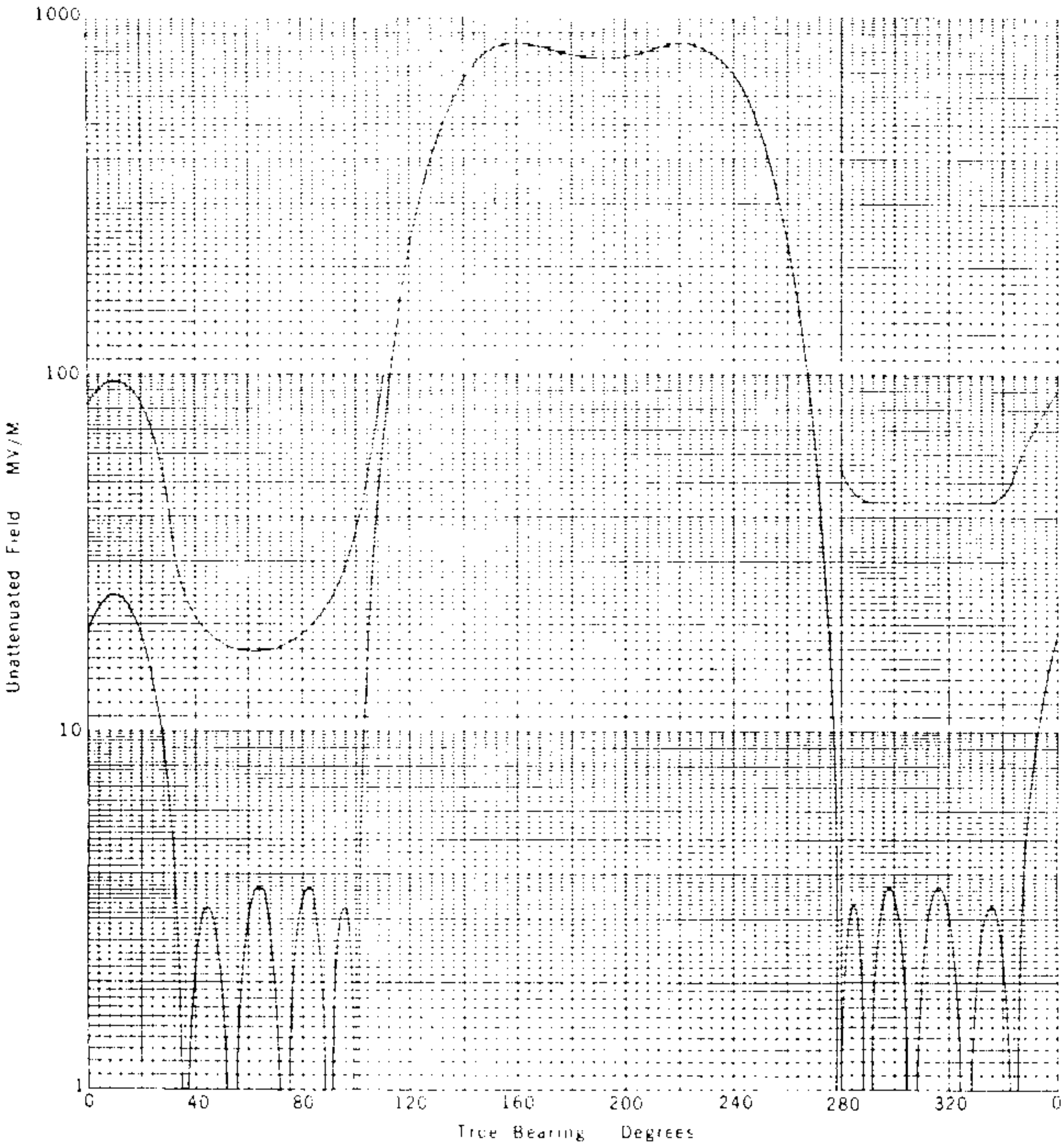
MULTIMEDIA RADIO, INC.

RADIO STATION KEEL SHREVEPORT, LOUISIANA

710 KHZ 5 KW, 50 KW-LS U DA-2

Jules Cohen & Associates Consulting Electronics Engineers

JUNE 1975



PROPOSED NIGHTTIME RADIATION PATTERN

AT VERTICAL ANGLE OF 5 DEGREES

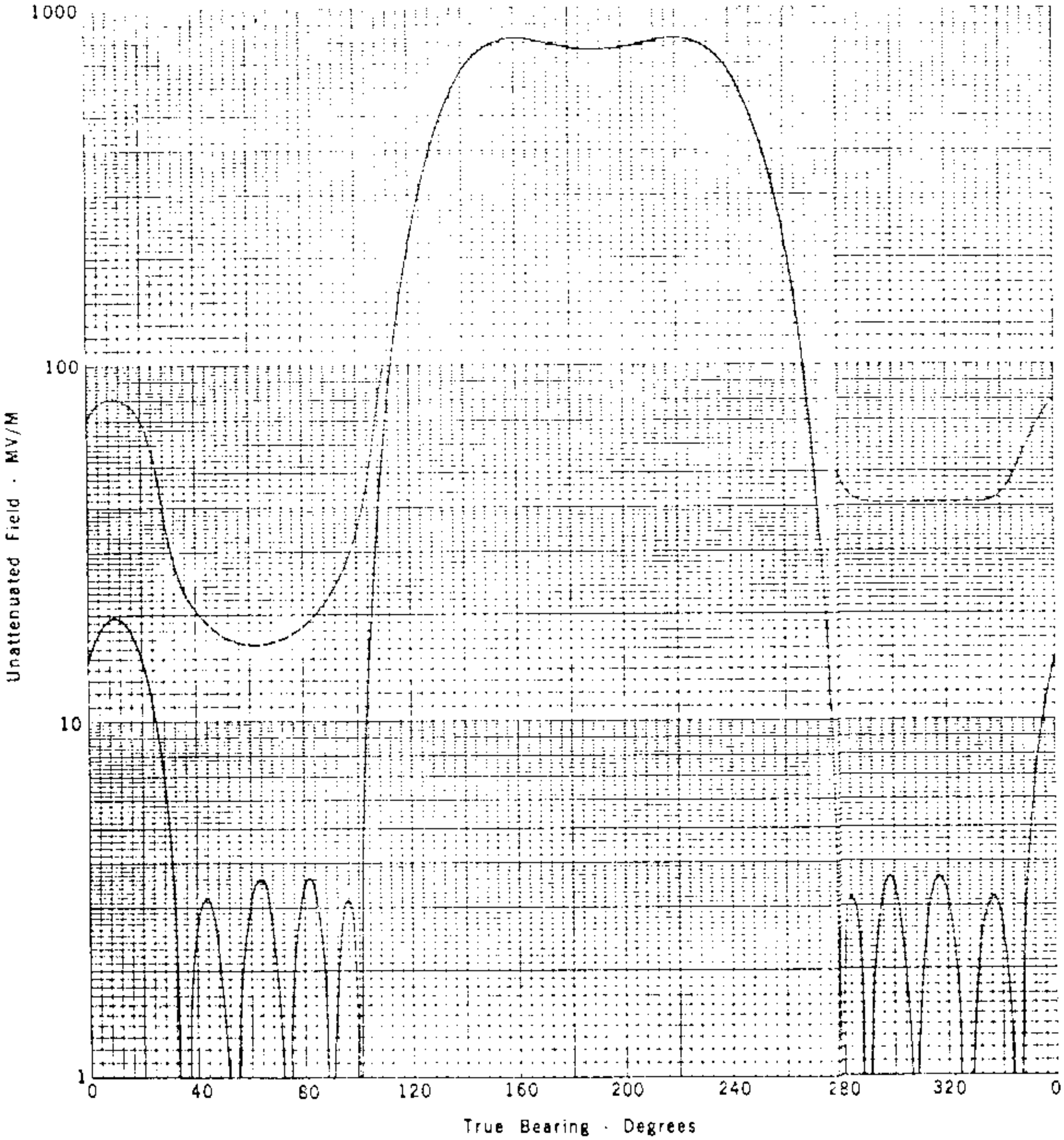
MULTIMEDIA RADIO, INC.

RADIO STATION KEEL SHREVEPORT, LOUISIANA

710 KHZ 5 KW 50 KW LS U DA-2

Jules Cohen & Associates Consulting Electronics Engineers

JUNE 1975



PROPOSED NIGHTTIME RADIATION PATTERN
AT VERTICAL ANGLE OF 10 DEGREES

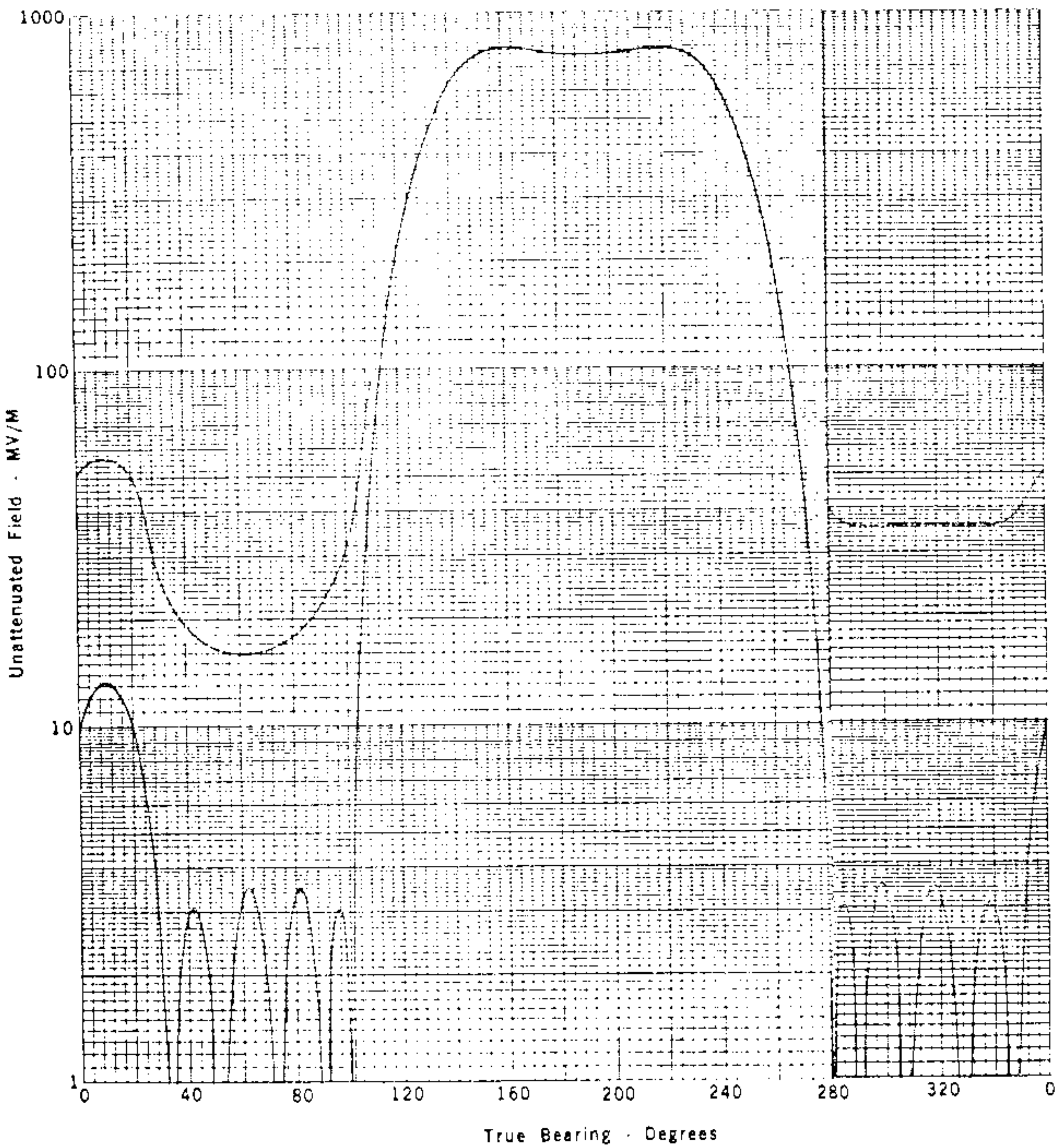
MULTIMEDIA RADIO, INC.

RADIO STATION KEEL SHREVEPORT, LOUISIANA

710 KHZ 5 KW. 50 KW-LS U DA-2

Jules Cohen & Associates Consulting Electronics Engineers

JUNE 1975



PROPOSED NIGHTTIME RADIATION PATTERN
AT VERTICAL ANGLE OF 15 DEGREES

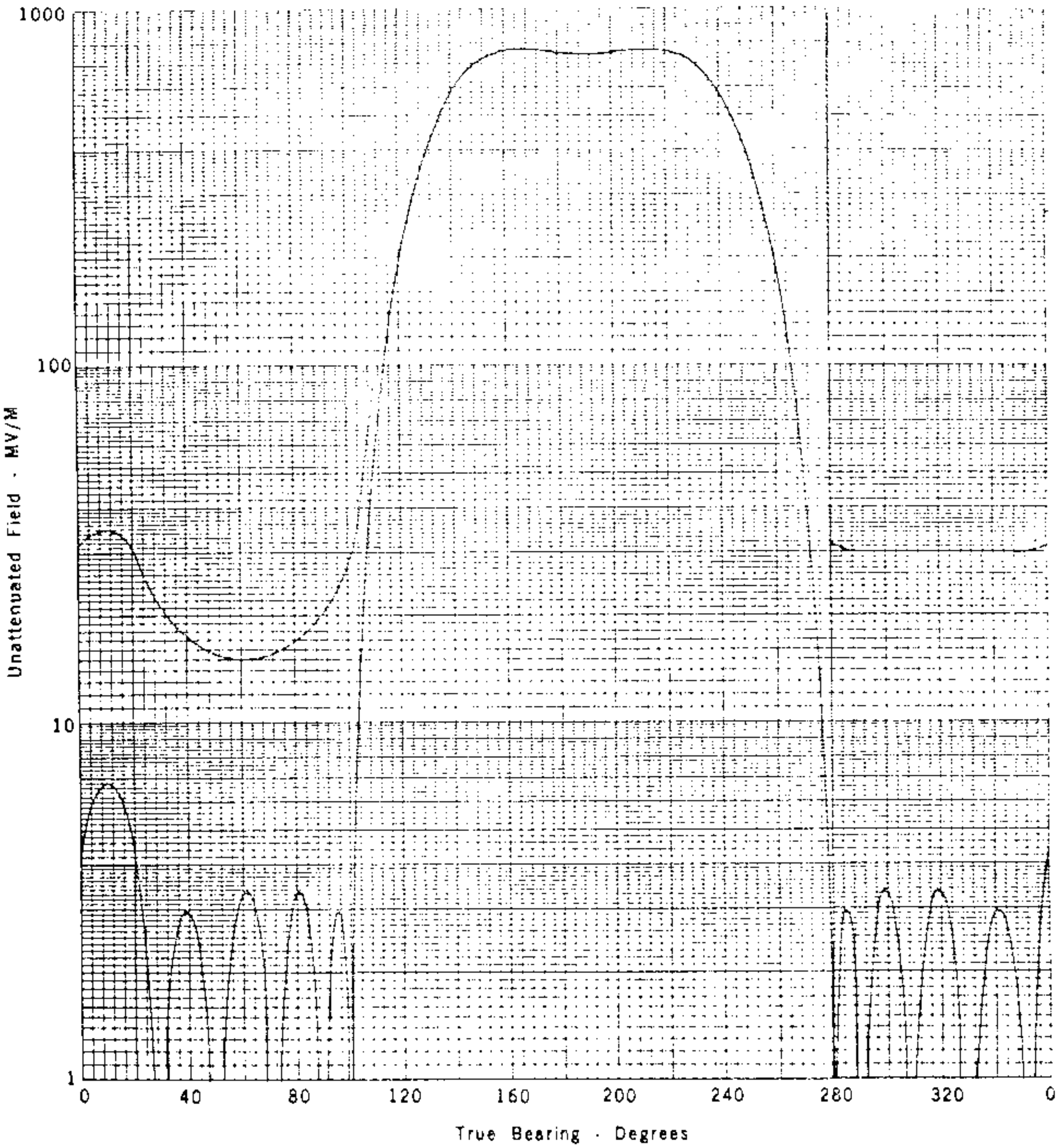
MULTIMEDIA RADIO, INC.

RADIO STATION KEEL SHREVEPORT, LOUISIANA

710 KHZ 5 KW, 50 KW-LS U DA-2

Jules Cohen & Associates Consulting Electronics Engineers

JUNE 1975



PROPOSED NIGHTTIME RADIATION PATTERN
AT VERTICAL ANGLE OF 20 DEGREES

MULTIMEDIA RADIO, INC.

RADIO STATION KEEL SHREVEPORT, LOUISIANA

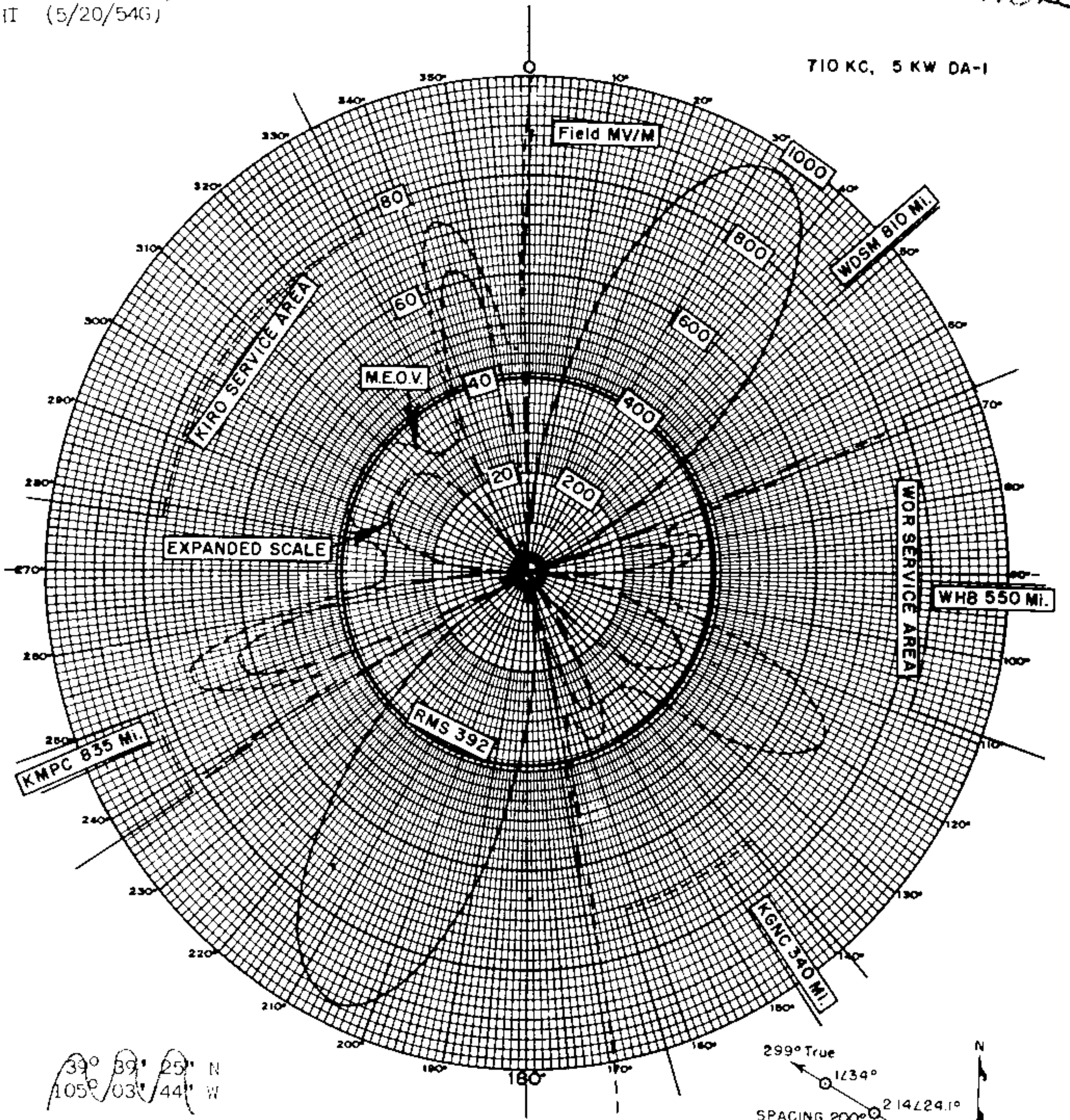
710 KHZ 5 KW, 50 KW-LS U DA-2

Jules Cohen & Associates Consulting Electronics Engineers

KERE

710 KC

PROPOSED KMYR, Denver, Color. 5KW, U, DA-1
DAY & NIGHT (5/20/54G)



39° 39' 25" N
105° 03' 44" W

KMYR BROADCASTING COMPANY DENVER, COLORADO	Figure 1 710 KC 5 KW, DA-1
DIRECTIONAL ANTENNA PATTERN	**FRANK H. McINTOSH** *Consulting Radio Engineer* Wyatt Building Washington, D. C.

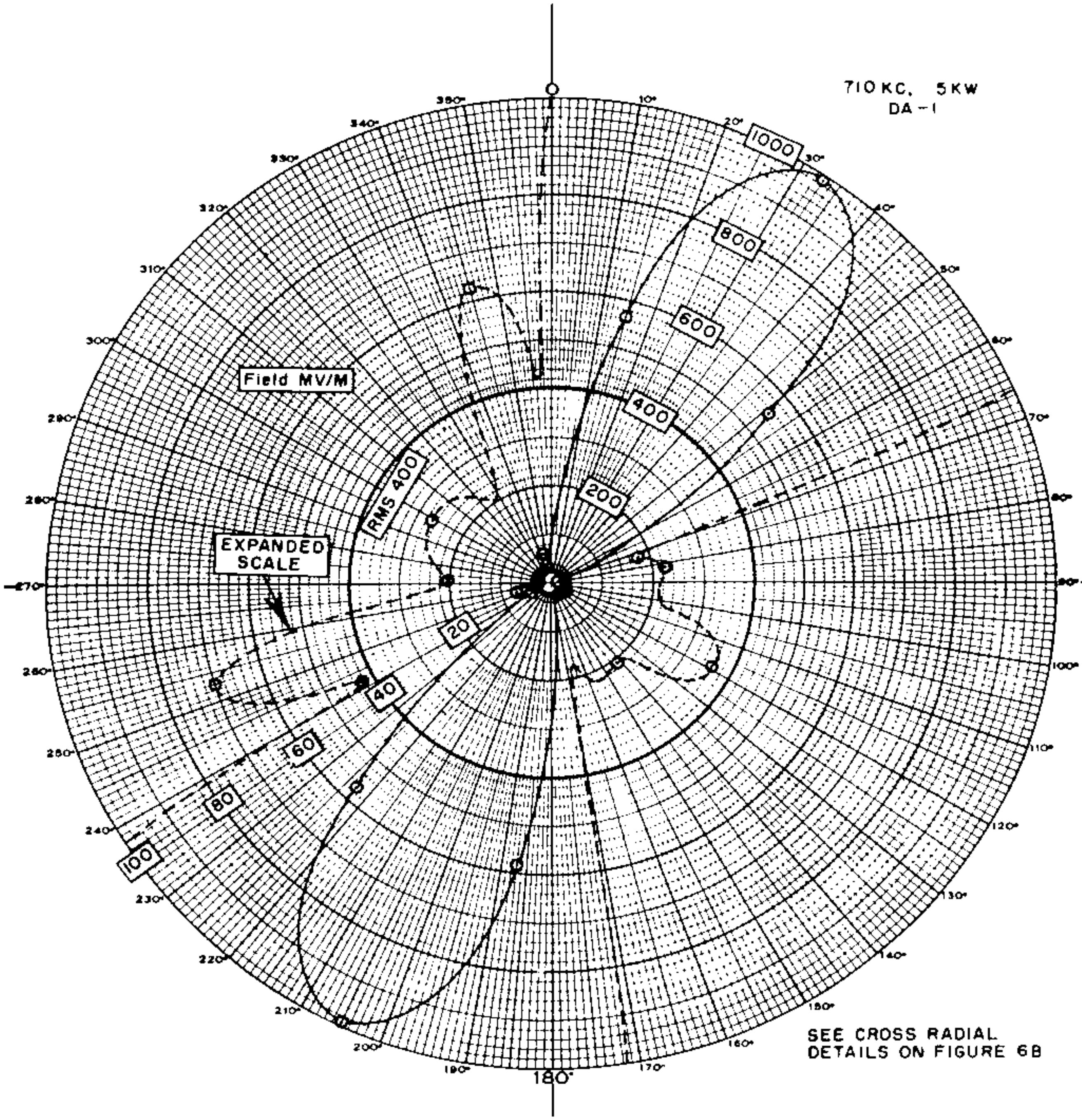
KERE

MEASURED NIGHT & DAY
(2-21-56G)

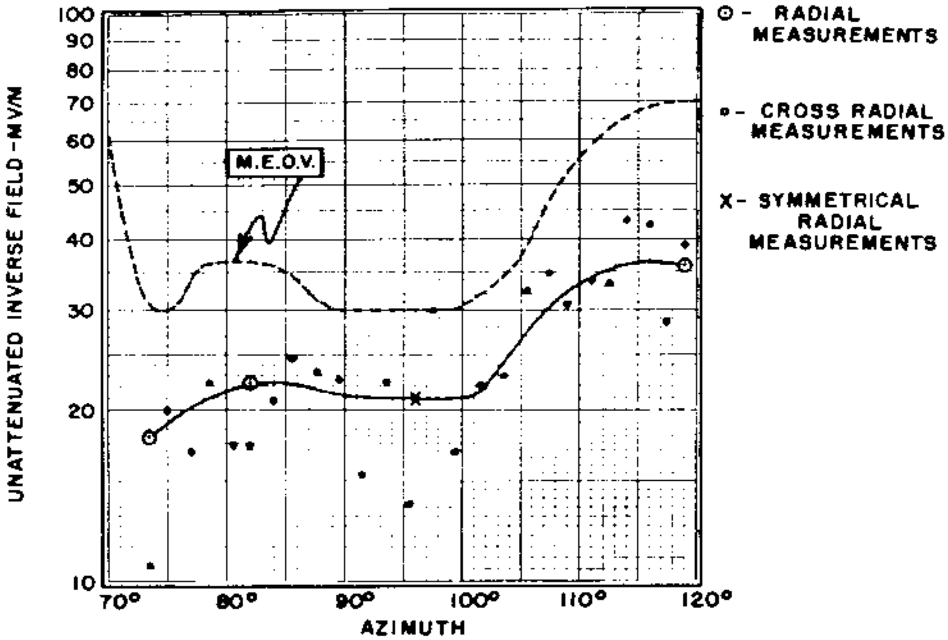
STATION KMYR
DENVER, COLORADO

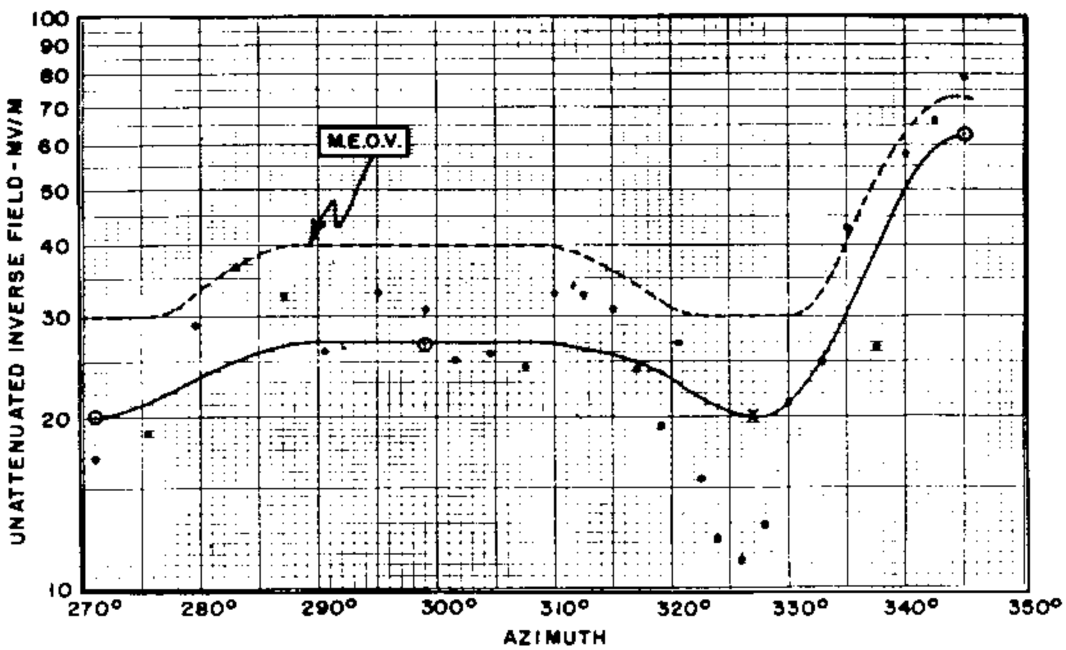
5 KW
DA-1, U

710 KC



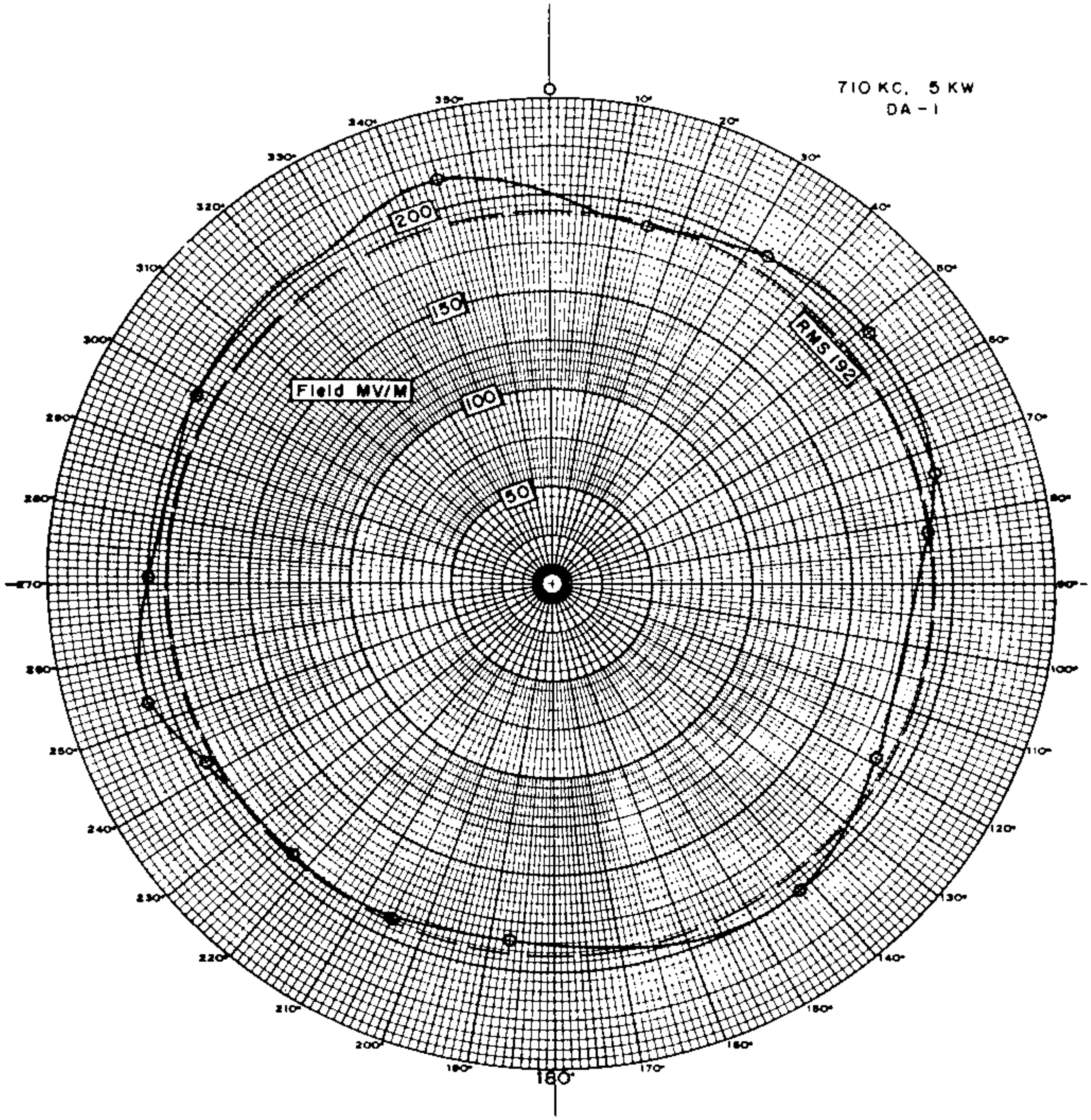
STATION KMYR DENVER, COLORADO	Figure 6 A
	710 KC 5 KW, DA-1
MEASURED DIRECTIONAL PATTERN	FRANK H. McINTOSH & ASSOCIATES Consulting Radio Engineers Wyatt Building Washington, D. C.





STATION KMYR DENVER, COLORADO	Figure 6 B
	710 KC 5 KW, DA-1
CROSS RADIAL MEASUREMENTS	FRANK H. McINTOSH & ASSOCIATES *Consulting Radio Engineers* Wyatt Building Washington, D. C.

MEASURED NON-DIRECTIONAL (2-21-56G) STATION KMYR DENVER, COLORADO 5KW DA-1, U 710 KC



STATION KMYR DENVER, COLORADO	Figure 5
	710 KC 5 KW, DA-1
MEASURED NON-DIRECTIONAL PATTERN	FRANK H. McINTOSH & ASSOCIATES *Consulting Radio Engineers* Wyatt Building Washington, D. C.

KHA

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KFIA

Main Studio: Carmichael, California

Frequency: 710 kHz

Power 0.25kw Night 0.25kw Day

Notification List No. 1773

Date: March 29, 1978 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 38° 43' 12"
West Longitude: 121° 14' 09"

ANTENNA CHARACTERISTICS

Authorized for Daytime and Nighttime operation. (DA-1)
Number of elements: 6
Type of elements: Series excited, uniform cross-section guyed, vertical steel towers.

TOWER:	SW (#3)	CW (#2)	NW (#1)	SE (#6)	CE (#5)	NE (#4)
HEIGHT ABOVE INSULATORS:	400	400	290'(75.3°)	252'(65.5°)	400	400'(103.9°)
PHASING:	-142.6°	-18.0°	+112.8°	-150.1°	0	+126.2°
FIELD RADIO:	0.610	0.715	0.545	0.785	1	0.507

SPACING AND ORIENTATION: From Reference Tower #1; Tower #2 is spaced 365' (94.8°) on a line bearing 221.1° true, Tower #3 is spaced 696' (180.8°) on a line bearing 213.6° true, Tower #4 is spaced 772' (200.5°) on a line bearing 125.6° true, Tower #5 is spaced 837' (217.4°) on a line bearing 148.3° true and Tower #6 is spaced 1043' (270.9°) on a line bearing 166.0° true.

GROUND SYSTEM: 120-350' equally spaced copper radials plus 120-50' interspaced radials about each tower. Radials are shortened and bonded to transverse straps along intersections between towers. Centers of system are bonded together.

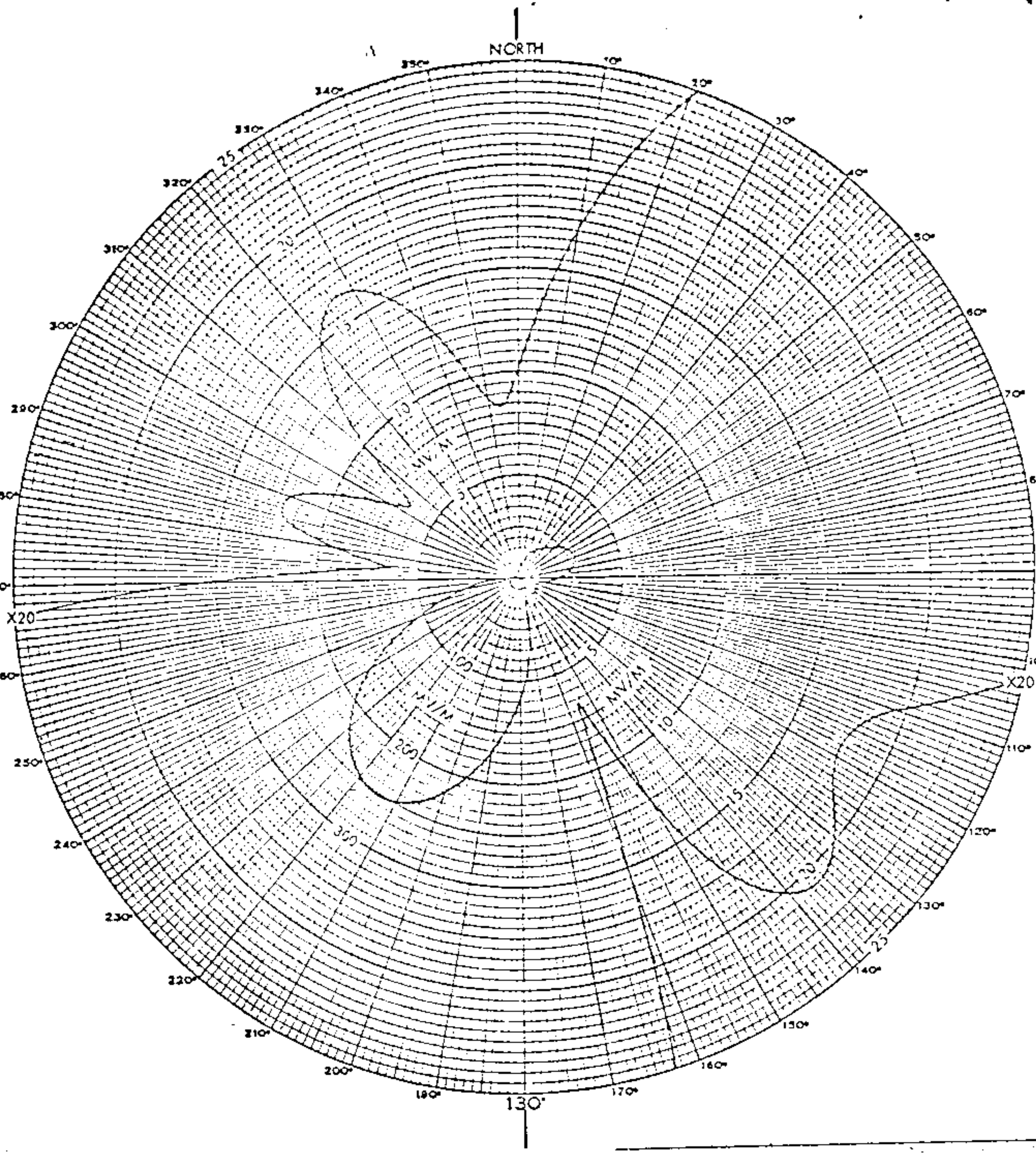
PREDICTED EFFECTIVE FIELDS AT RATED POWER:

THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
1/ 91.0 mv/m	121.9 mv/m	95.8 mv/m

1/ By adjustment of input power.

Note: This notification concerns only changes in the proposed transmitter location and directional antenna system.

KFIA



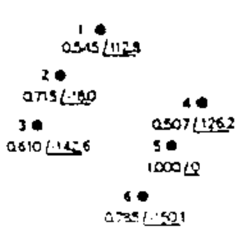
RMS_{TH} = 91.0 MV/M* ERSS = 121.9 MV/M RMS_{STD} = 95.8 MV/M*

*RMS ADJUSTED TO VALUES SHOWN BY REDUCTION OF INPUT POWER TO 209 WATTS

N. LAT. 38°43' 12"
W. LONG. 121°14' 09"

TOWER LOCATIONS RELATIVE TO TOWER 1

TOWER	HEIGHT	AZIMUTH	DISTANCE
1	75.3° 290 FT	0	0
2	103.9° 400 FT	N 221.1° E	94.8° 365 FT
3	103.9° 400 FT	N 213.6° E	180.8° 696 FT
4	103.9° 400 FT	N 125.6° E	200.5° 772 FT
5	103.9° 400 FT	N 148.3° E	217.4° 837 FT
6	65.5° 252 FT	N [illegible]° E	270.9° 1043 FT



PROPOSED STANDARD HORIZONTAL RADIATION

UNATTENUATED FIELD STRENGTH AT ONE MILE

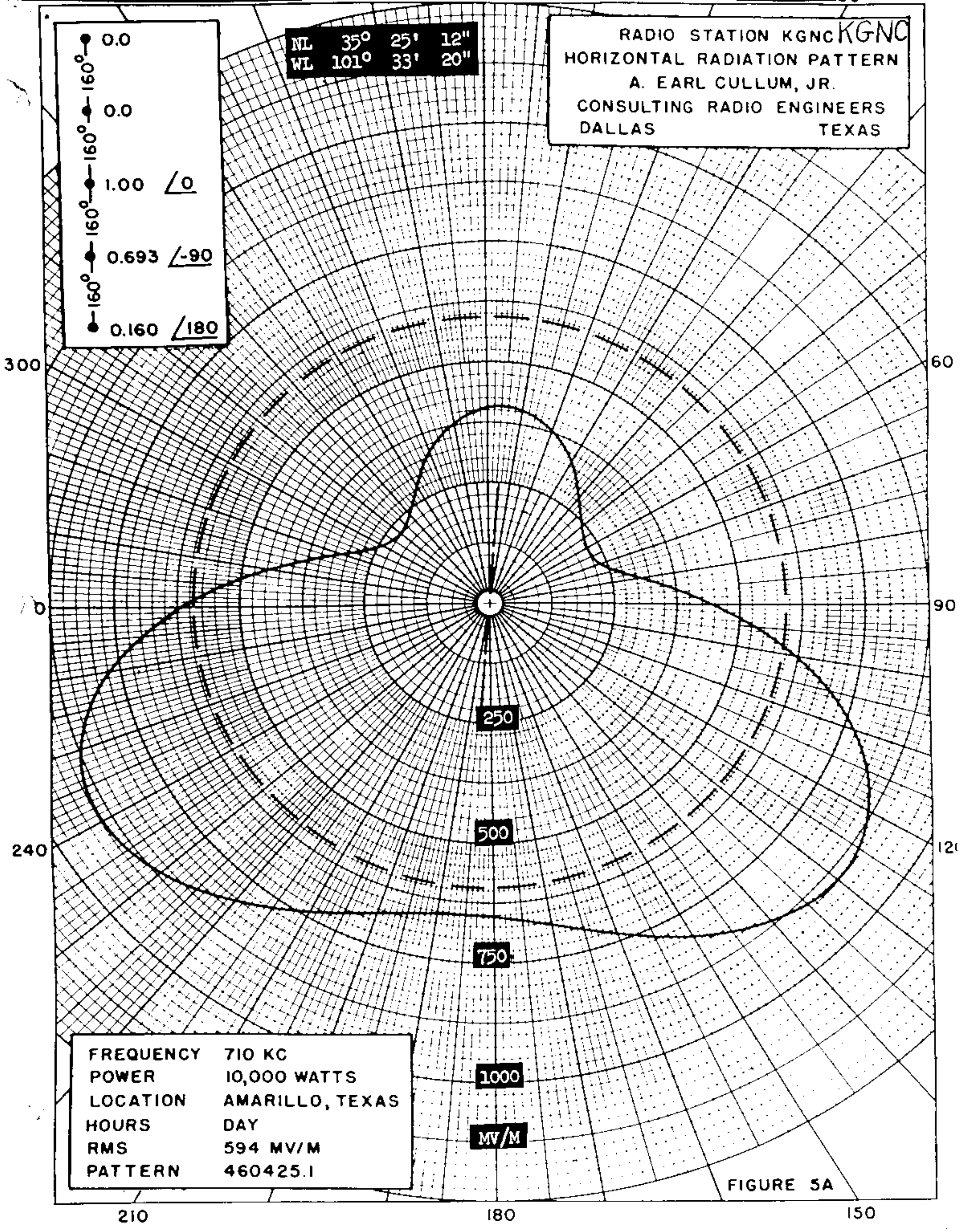
HAMMETT & EDISON, INC.
CONSULTING ENGINEERS
SAN FRANCISCO

RADIO STATION KFIA
710 KHZ 0.25 KW. DA-1
CARMICHAEL, CALIFORNIA

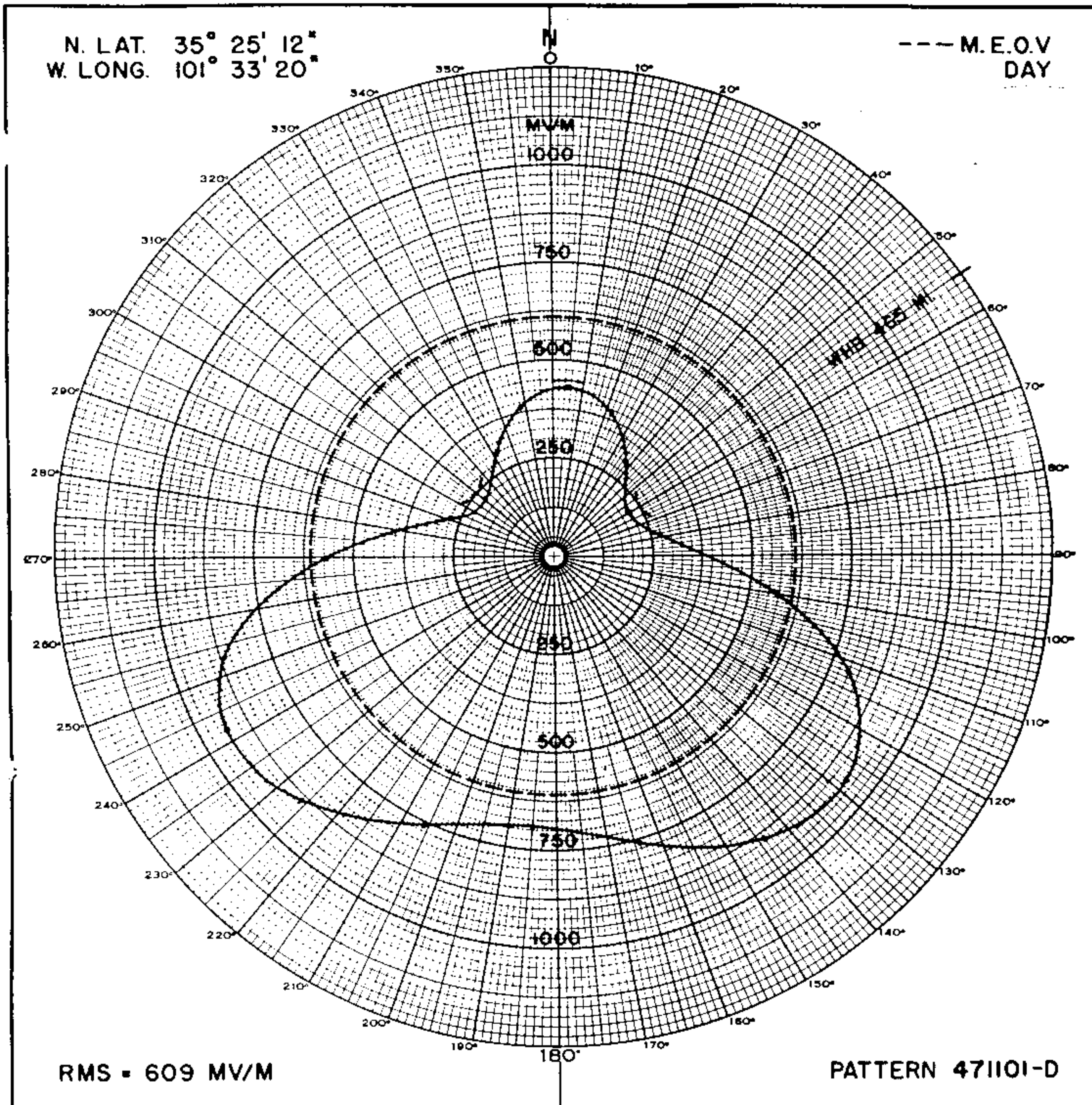
771130

FIGURE 4

PROPOSED DAY Station KGNC 10kw, DA-2,U
Amorillo, Texas 710 KC



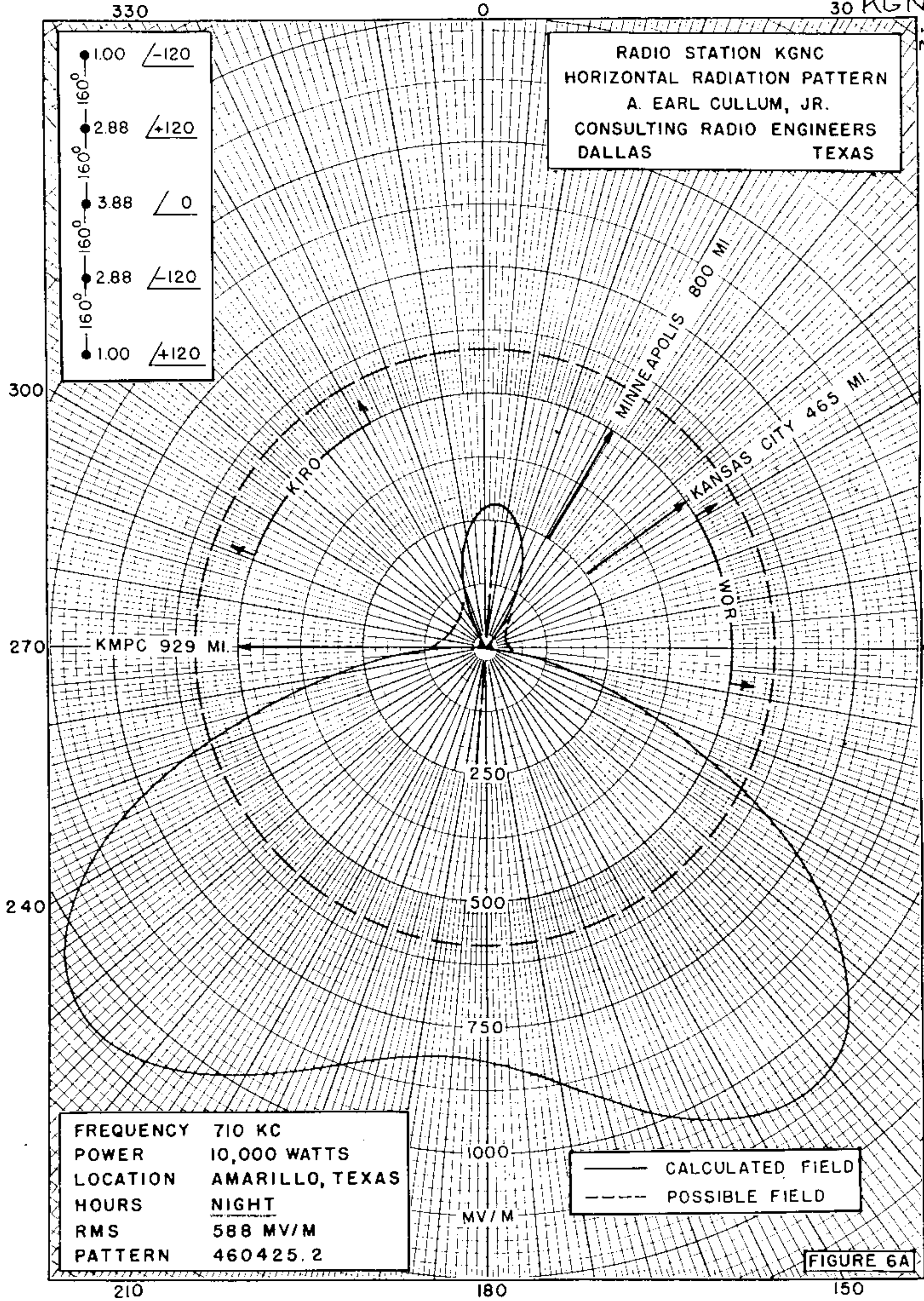
KGNC
710



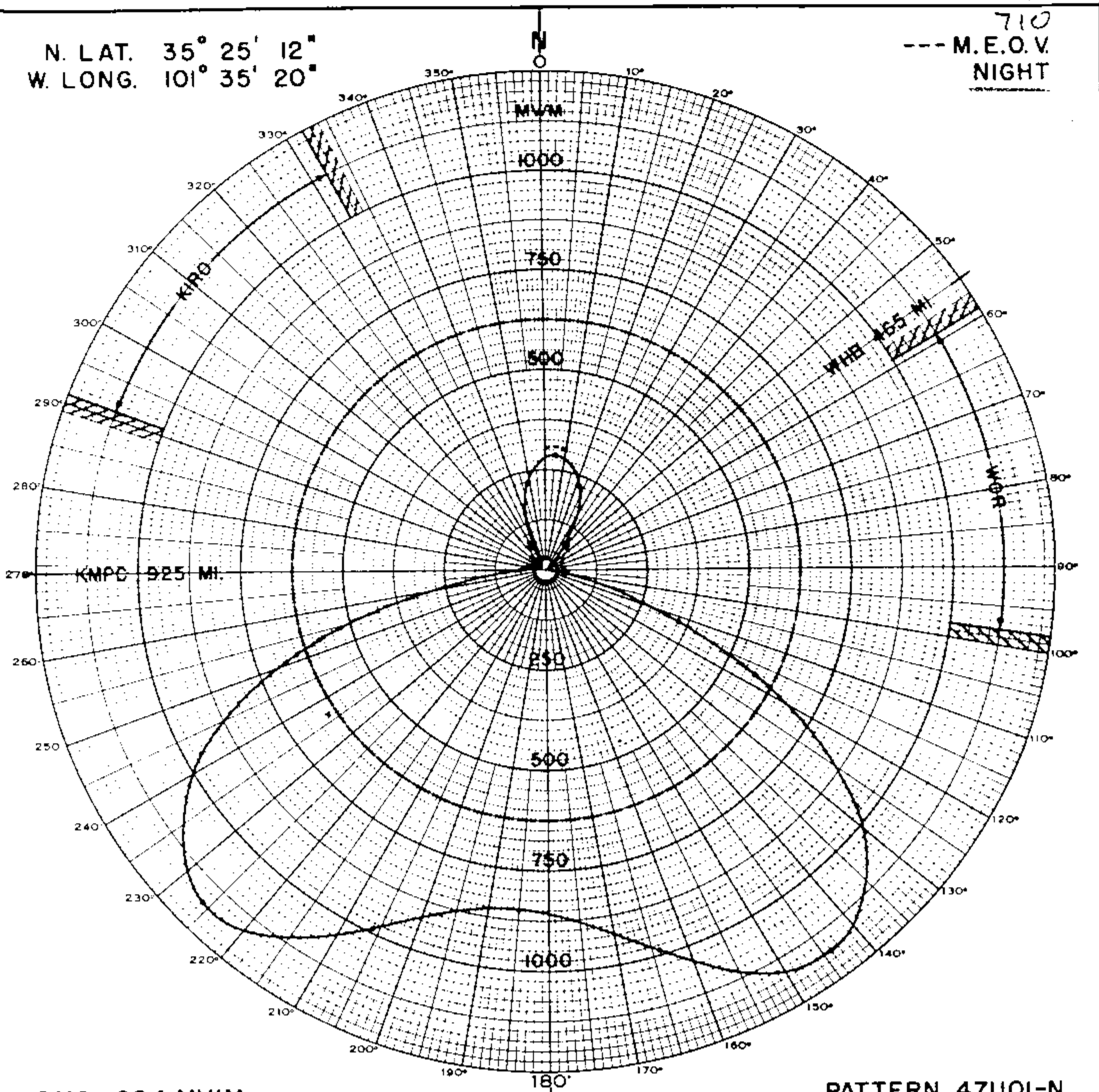
①—S—②—S—③—S—④—S—⑤→N05°E S = 160° G = 79.5°	PATTERN BASED ON FIELD INTENSITY MEASUREMENTS
A. EARL CULLUM, JR. CONSULTING RADIO ENGINEERS DALLAS 471101	RADIO STATION KGNC 710 KC 10 KW DA-D FIGURE 1C

wo2 163 122

KGNC .710 NITE



KGNC
710

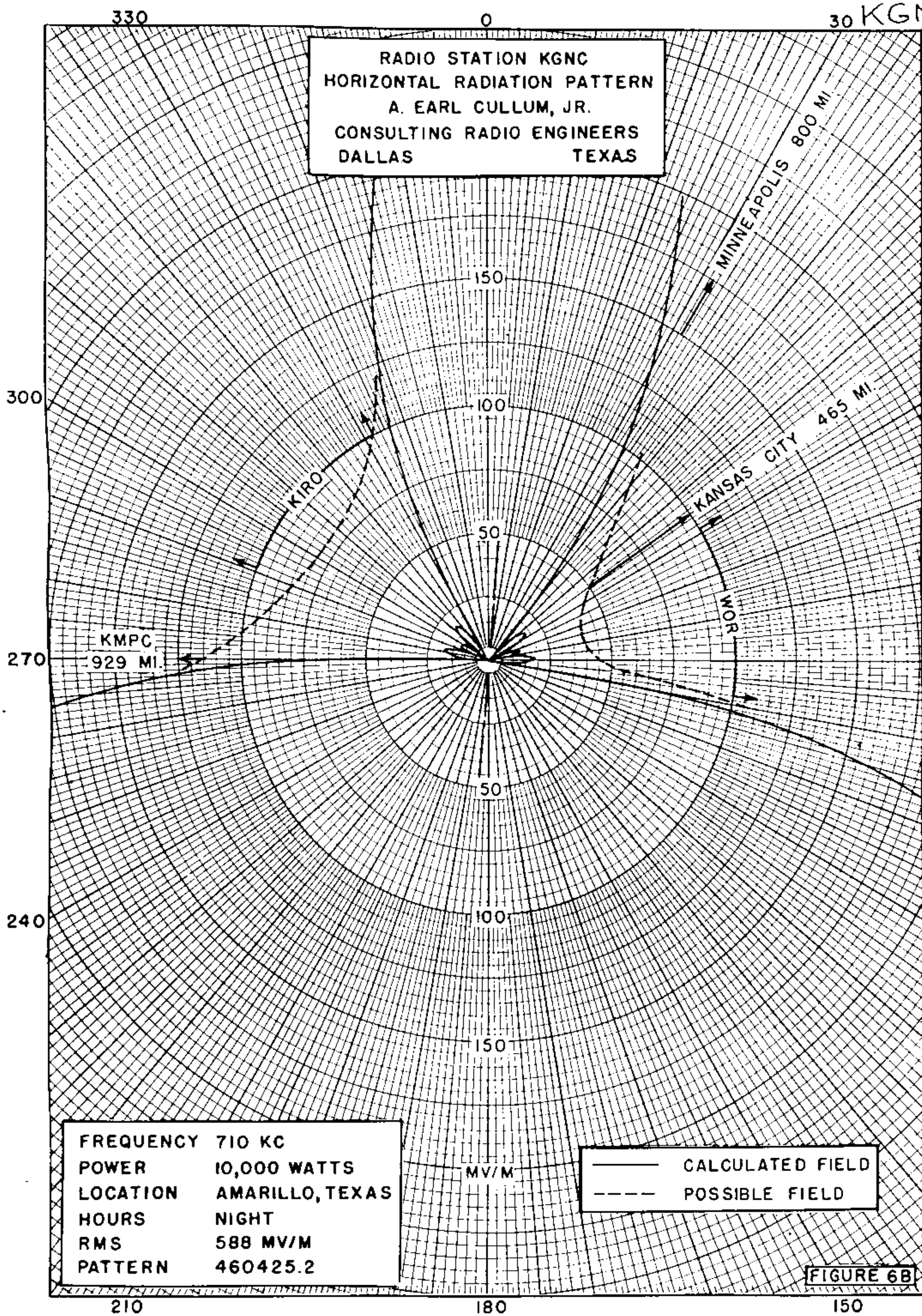


RMS = 624 MV/M

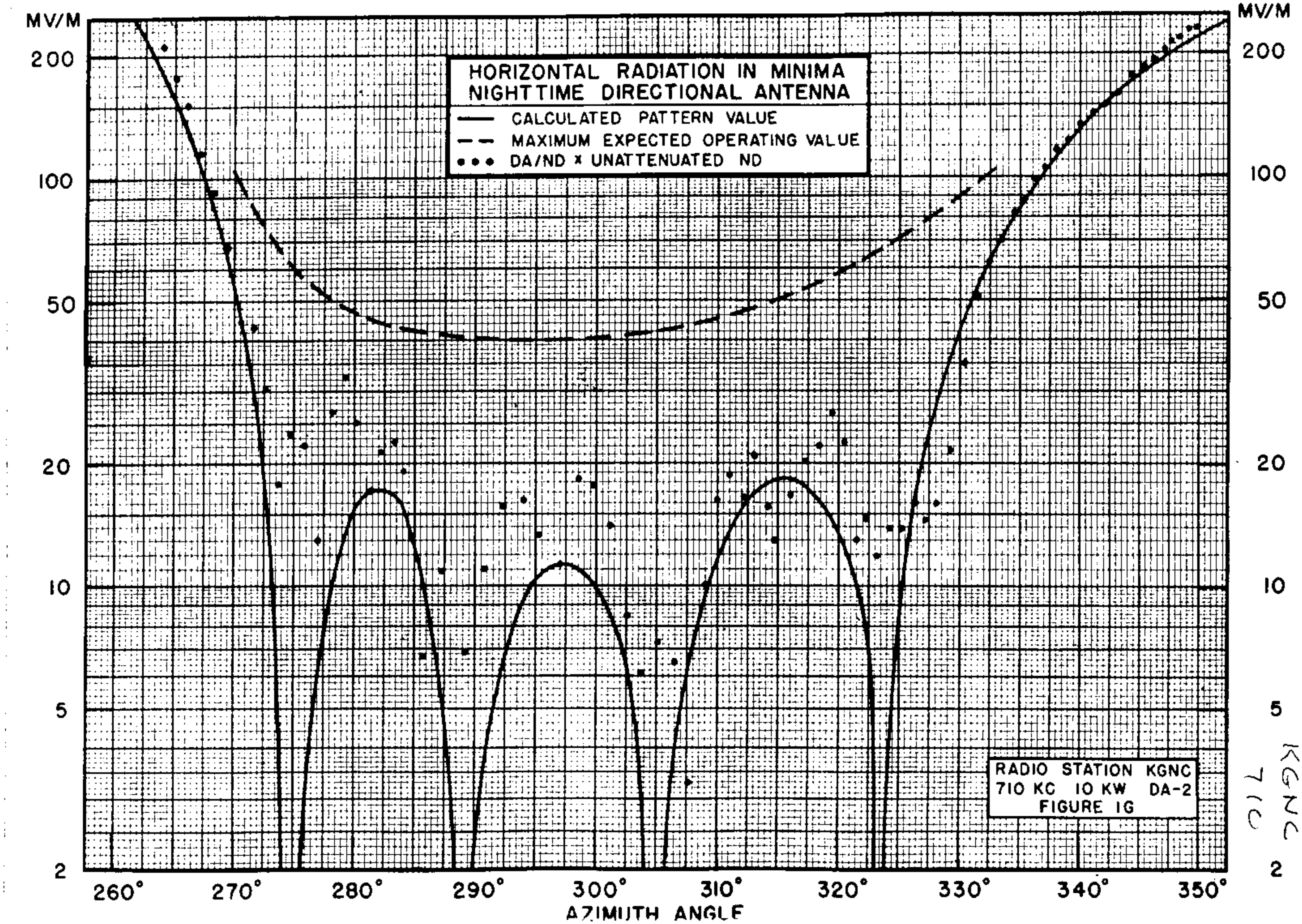
PATTERN 471101-N

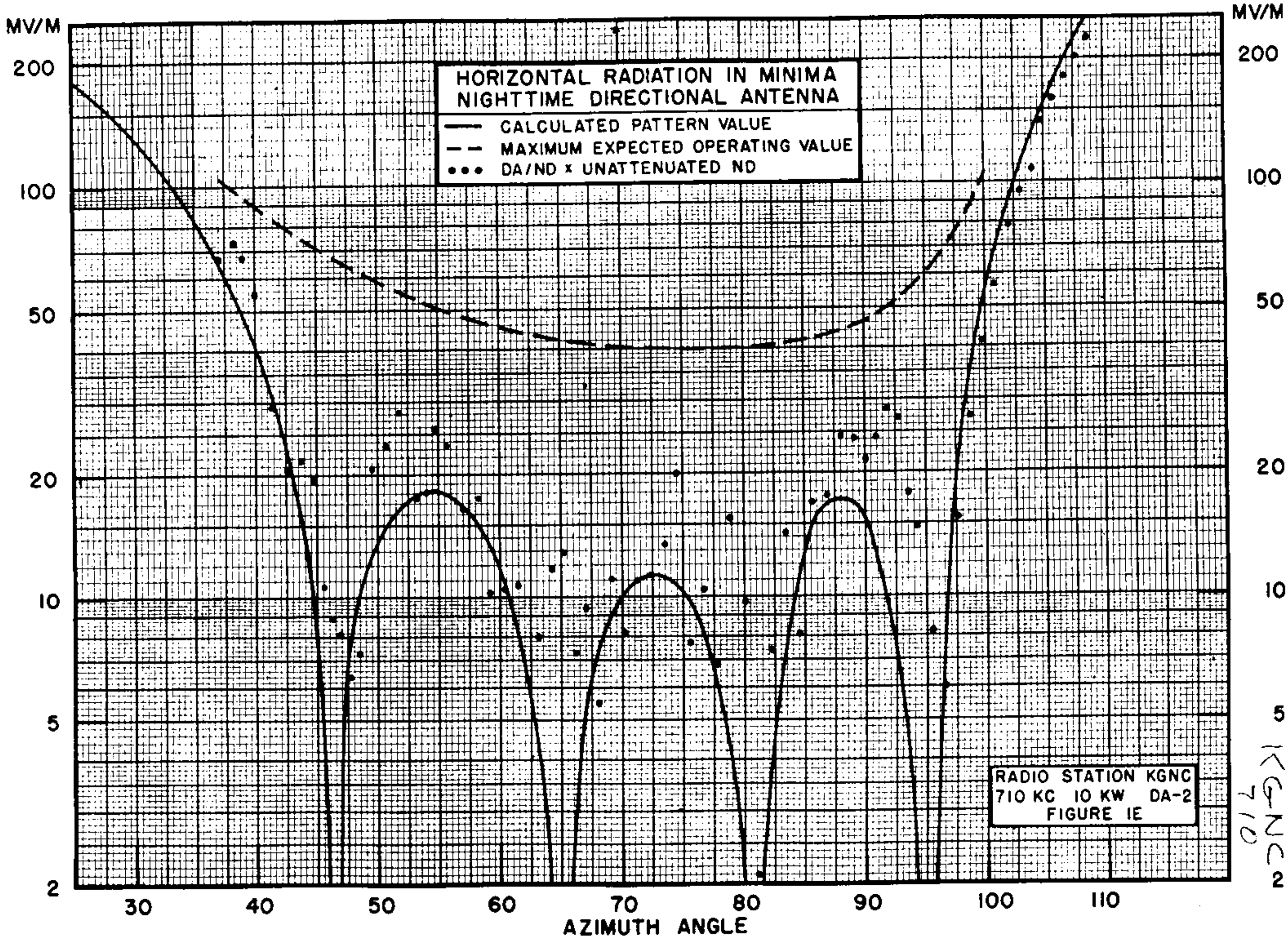
①—S—②—S—③—S—④—S—⑤→ N05°E S = 160° G = 79.5°	PATTERN BASED ON FIELD INTENSITY MEASUREMENTS
A. EARL CULLUM, JR. CONSULTING RADIO ENGINEERS DALLAS 471101	RADIO STATION KGNC 710 KC 10 KW DA-N FIGURE 1D

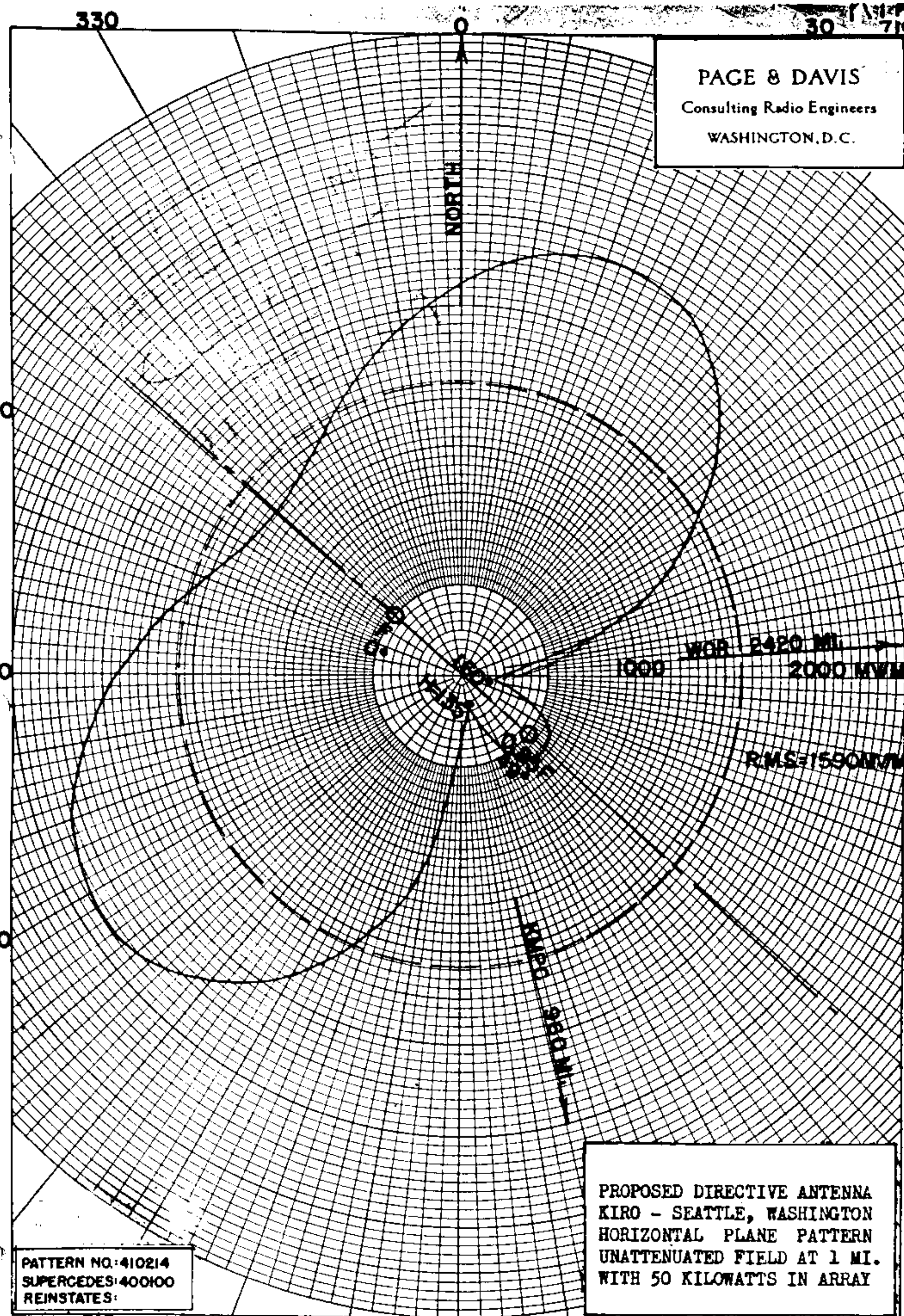
KGNC
710
NITE



Proposed night Nulls


HORIZONTAL RADIATION IN MINIMA
NIGHTTIME DIRECTIONAL ANTENNA
CALCULATED PATTERN VALUE
MAXIMUM EXPECTED OPERATING VALUE
DA/ND x UNATTENUATED ND
MV/M
200
100
50
20
10
5
2
MV/M
200
100
50
20
10
5
2
260°
270°
280°
290°
300°
310°
320°
330°
340°
350°
AZIMUTH ANGLE
RADIO STATION KGNC
710 KC 10 KW DA-2
FIGURE 1G
KGNC
710


HORIZONTAL RADIATION IN MINIMA
NIGHTTIME DIRECTIONAL ANTENNA
CALCULATED PATTERN VALUE
MAXIMUM EXPECTED OPERATING VALUE
DA/ND x UNATTENUATED ND
MV/M
200
100
50
20
10
5
2
30
40
50
60
70
80
90
100
110
AZIMUTH ANGLE
RADIO STATION KGNC
710 KC 10 KW DA-2
FIGURE 1E
KGNC
710



KEUFFEL & ESSER CO., N.Y. NO 343A
POLAR CO-ORDINATE
MADE IN U.S.A.

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KIRO

Main Studio: Seattle, Washington

Frequency: 710 kHz

Power: 50 kw

Notification List No. 1749

Date: September 15, 1977

Class: I-B

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 47° 23' 55"
West Longitude: 122° 26' 01"

ANTENNA CHARACTERISTICS

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

TOWER:	#1 (NW)	#2 (SE)	
HEIGHT ABOVE INSULATORS:	516'	516'	(134°)
PHASING	0°	+49°	
FIELD RATIO	1	0.85	

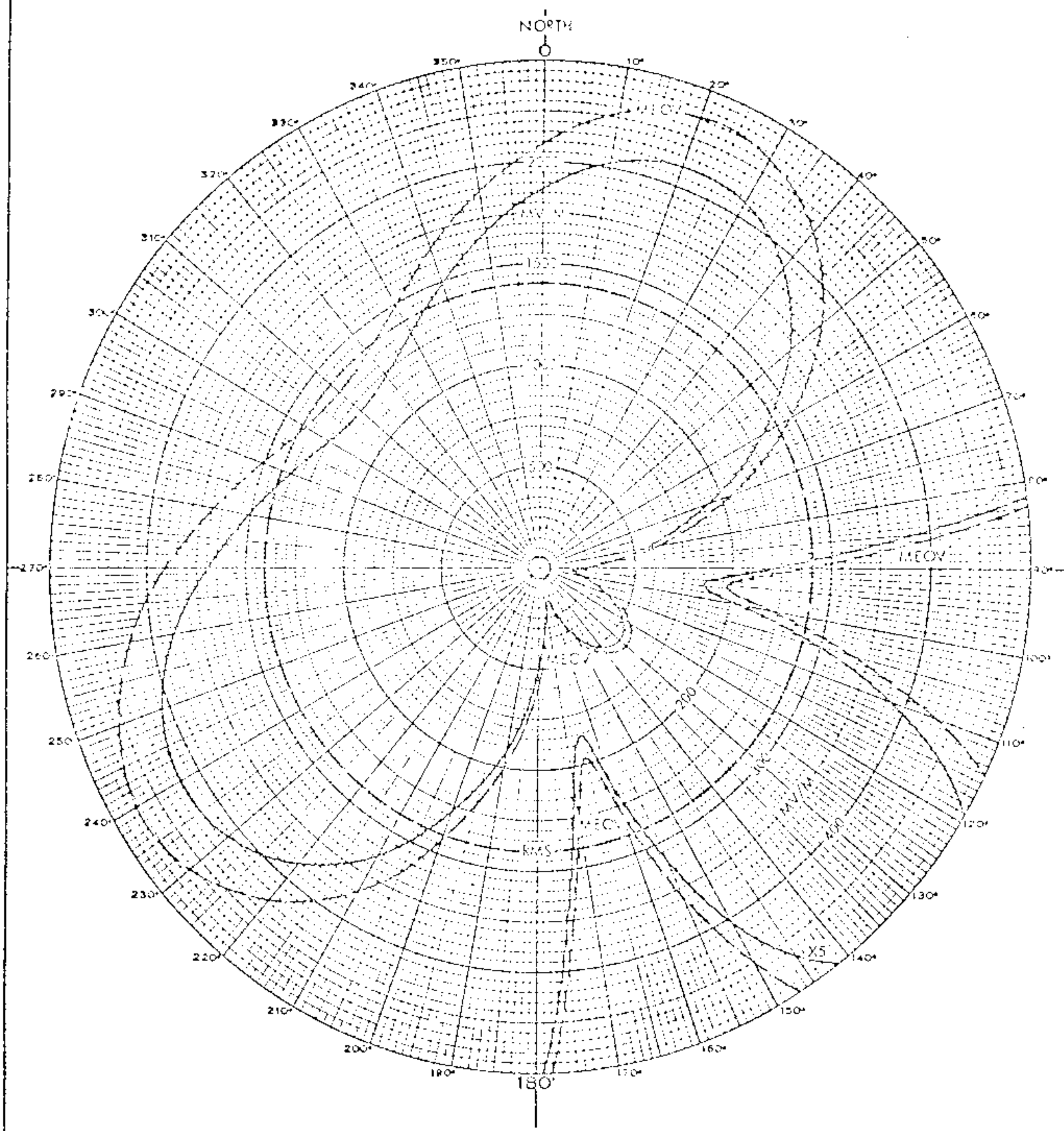
SPACING AND ORIENTATION: The towers are spaced 615' (160°) on a line bearing 130.5° true.

GROUND SYSTEM 120 - 450' equally spaced copper radials plus a 50' square ground screen about each tower. Radials are bonded to a transverse strap along intersections between towers. Centers of system are bonded together.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	
Day	1591	mv/m
Night	1407	mv/m

This notification concerns only corrections in the directional antenna parameters and in geographical coordinates description of the transmitter location.



RMS=1407 MV/M

1 1/0°

S

2 0.85/49°

N 130.5°E

N LAT 47°23'55"
W LONG 122°26'01"

S=160°=615 FT.
G=134°=516 FT

HAMMETT & EDISON, INC.
CONSULTING ENGINEERS
SAN FRANCISCO

RADIO STATION KIRO
710 KHZ 50 KW. DA-N
SEATTLE, WASHINGTON

THEORETICAL HORIZONTAL RADIATION NIGHTTIME

UNATTENUATED FIELD STRENGTH
AT ONE MILE

7704131

FIGURE 1

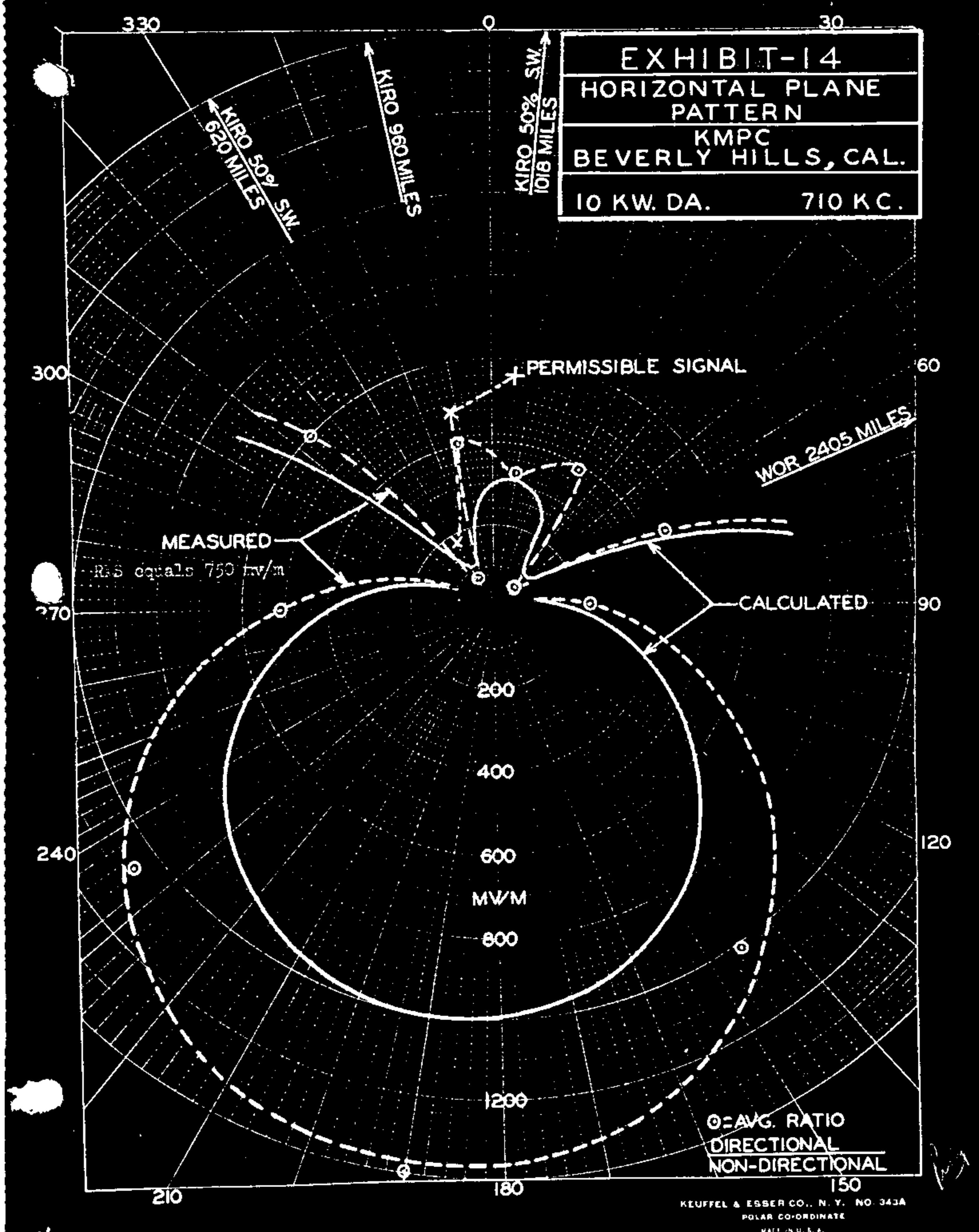


EXHIBIT-14
HORIZONTAL PLANE PATTERN
KMPC
BEVERLY HILLS, CAL.
10 KW. DA. 710 KC.
330
0
30
300
60
270
90
240
120
210
180
150
KIRO 50% SW. 620 MILES
KIRO 960 MILES
KIRO 50% SW. 1018 MILES
PERMISSIBLE SIGNAL
WOR 2405 MILES
MEASURED
RMS equals 750 mv/m
CALCULATED
200
400
600
MV/M
800
1200
⊙=AVG. RATIO
DIRECTIONAL
NON-DIRECTIONAL
KEUFFEL & ESSER CO., N. Y. NO. 343A
POLAR CO-ORDINATE
MADE IN U.S.A.

KMPC-710 KC

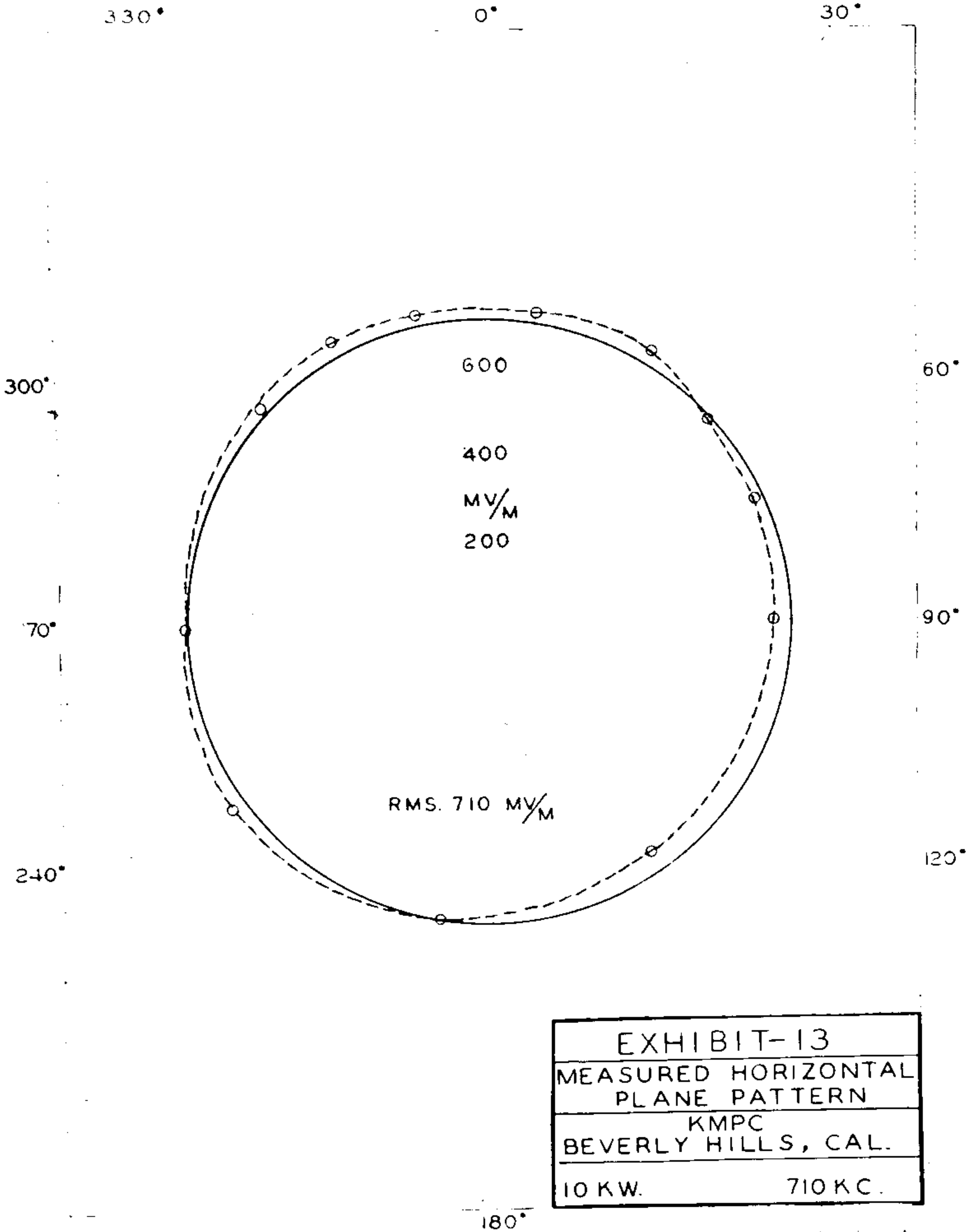


EXHIBIT-13

MEASURED HORIZONTAL PLANE PATTERN

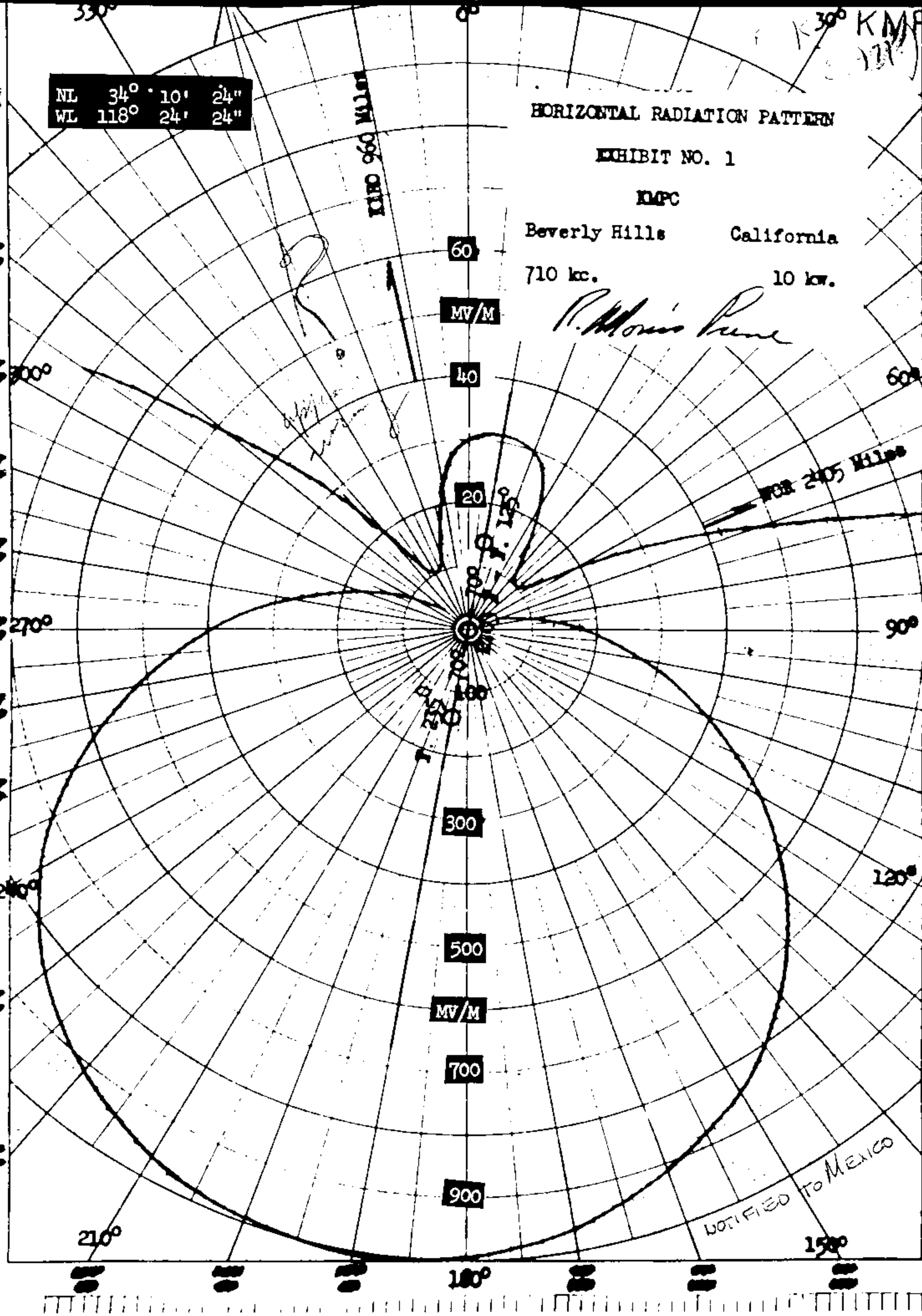
KMPC
BEVERLY HILLS, CAL.

10 KW. 710 KC.

MEASURED NIGHT Station KMPC 10KW,50KW-LS, DA-N,U
Los Angeles, California 710 KC

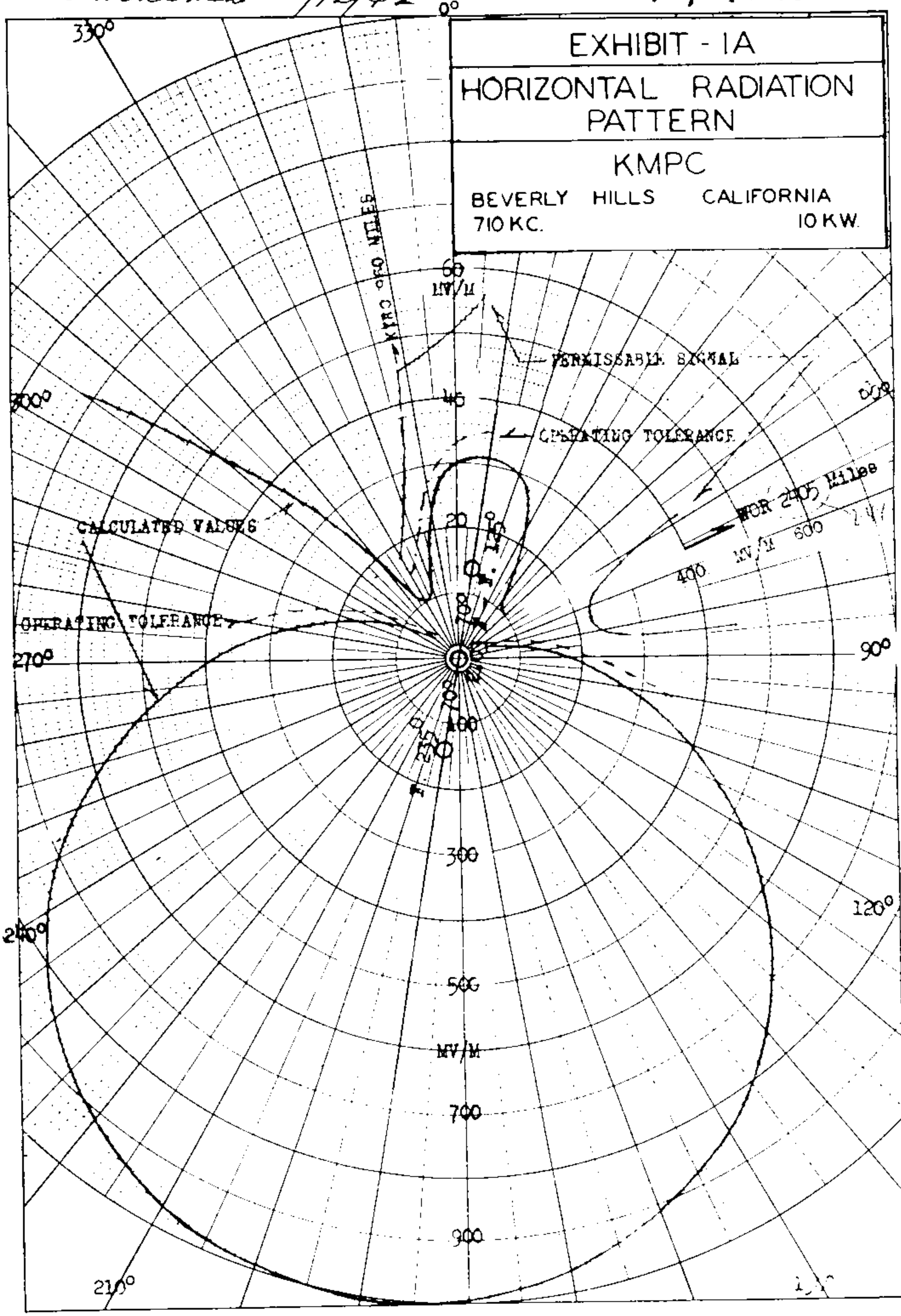
This is the only pattern listed by Gertz

Don't know the station of the remaining patterns



amendment 2/12/42

MP-1513 KMPC
710



KMPC- 710KC

BMP-3079
-4458

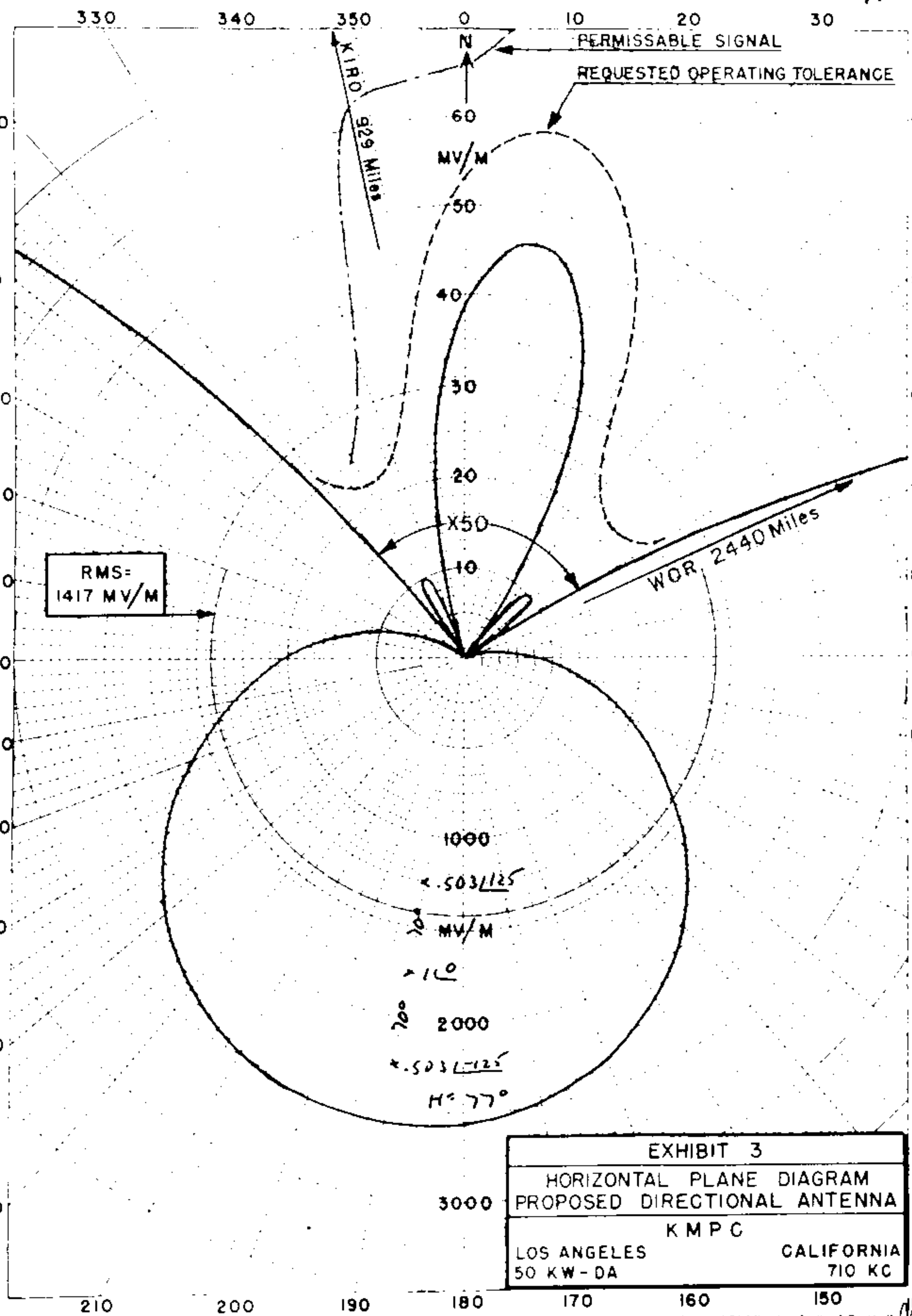


EXHIBIT 3

HORIZONTAL PLANE DIAGRAM
PROPOSED DIRECTIONAL ANTENNA

KMPC

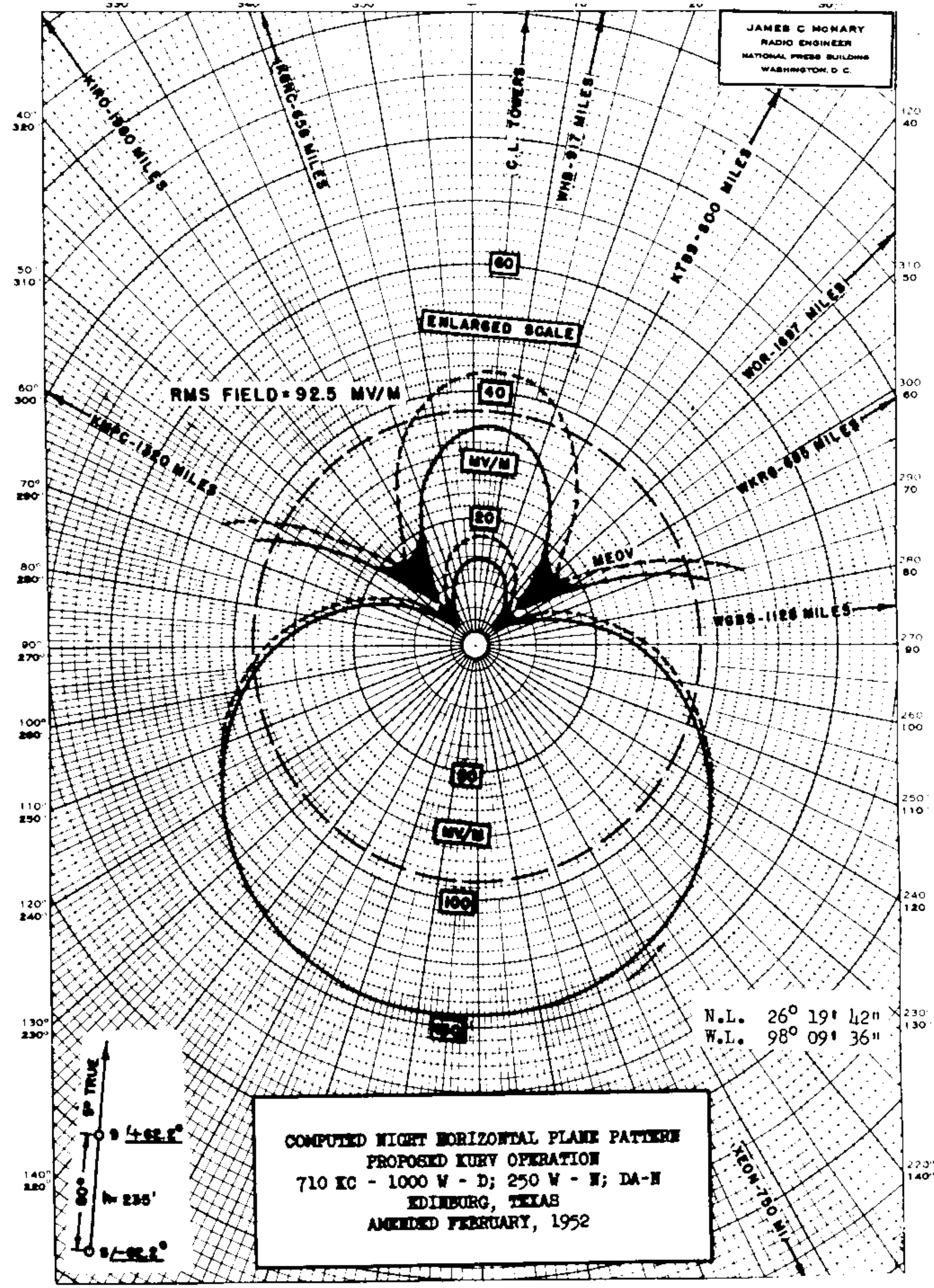
LOS ANGELES CALIFORNIA
50 KW-DA 710 KC

41

$E = 1637 \{1 + 1.006 \cos(70 \cos a + 125)\}$

KURV

PROPOSED NIGHT | KURV, EDINBURG, TEXAS 3/26/52G | 500W, 1KW-LS, U, DA-N | 710 kc



APPL RECD 2/29/52 ACC 3/14/52 BP-6473 Amended

KURV, EDINBURG, TEXAS 710 KC

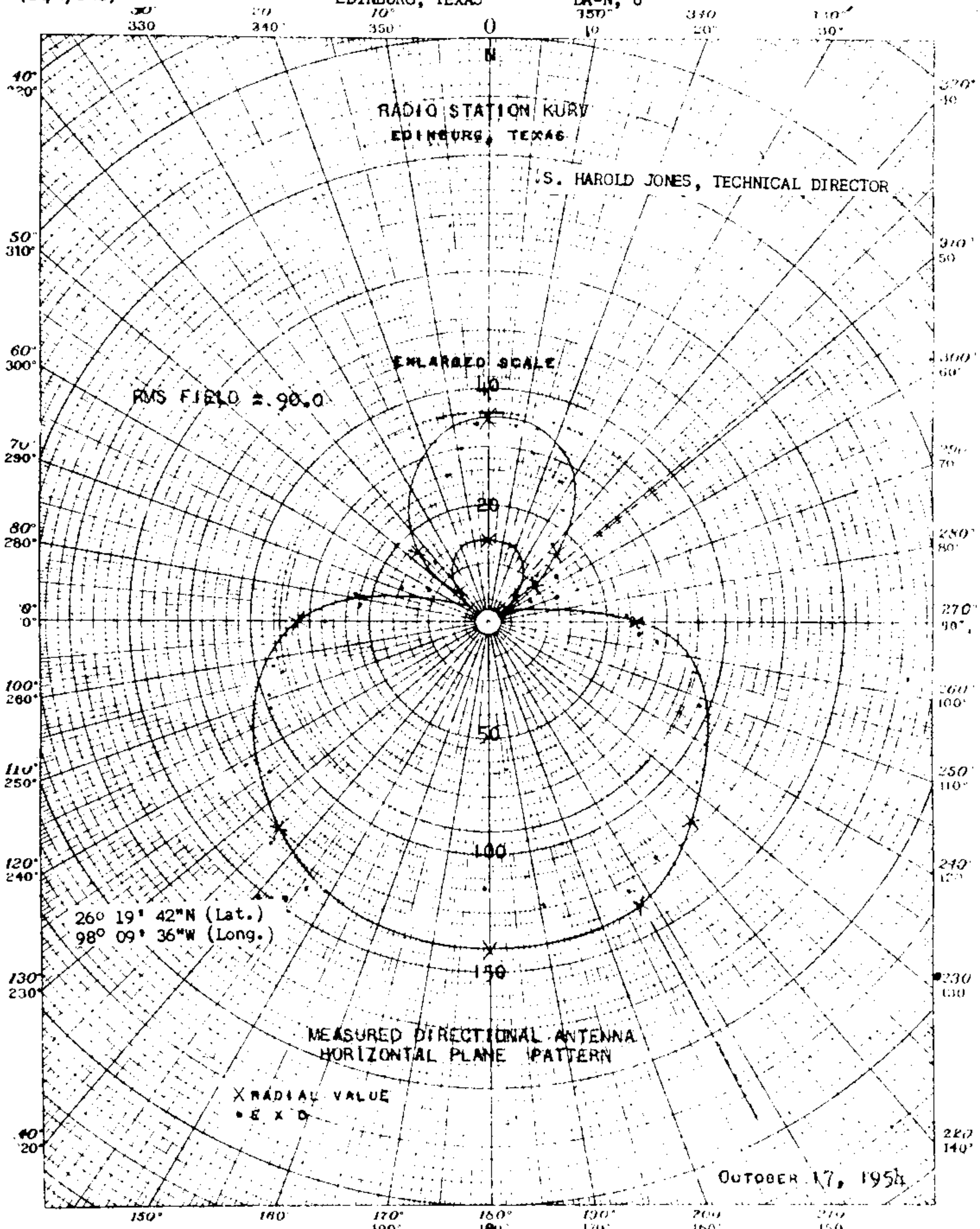
KURV

MEASURED NIGHT ~~& DAY~~ (12/7/54G)

STATION KURV
EDINBURG, TEXAS

250 W
DA-N, U

710 KC



FILE NO. BL-5513 ACCEPTED 11/16/54 KURV, EDINBURG, TEXAS 710 KC

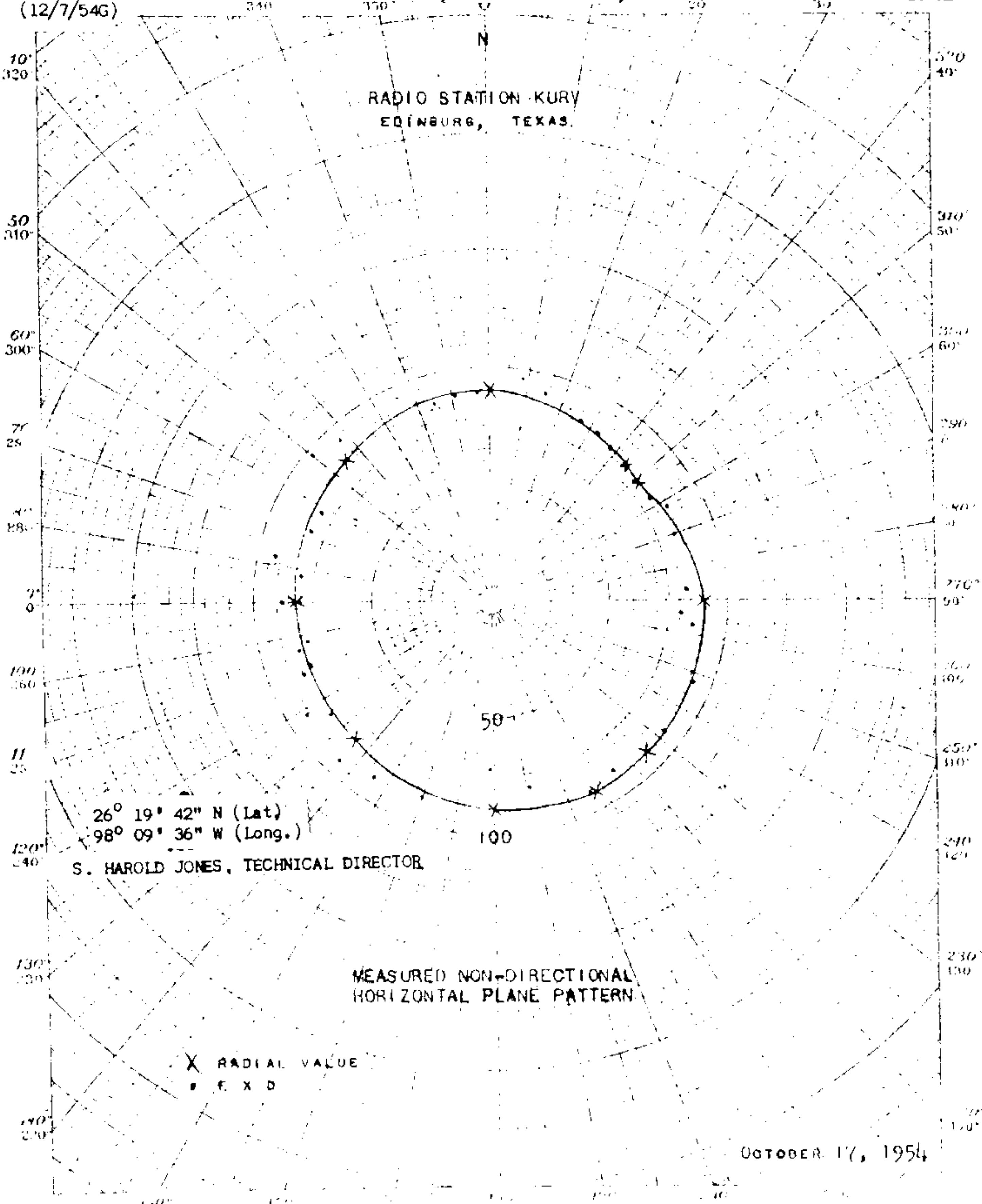
KURV

~~MEASURED NIGHT & DAY~~
MEASURED NON DIRECTIONAL
(12/7/54G)

STATION KURV
EDINBURG, TEXAS

250 W
DA-N, U

710 KC

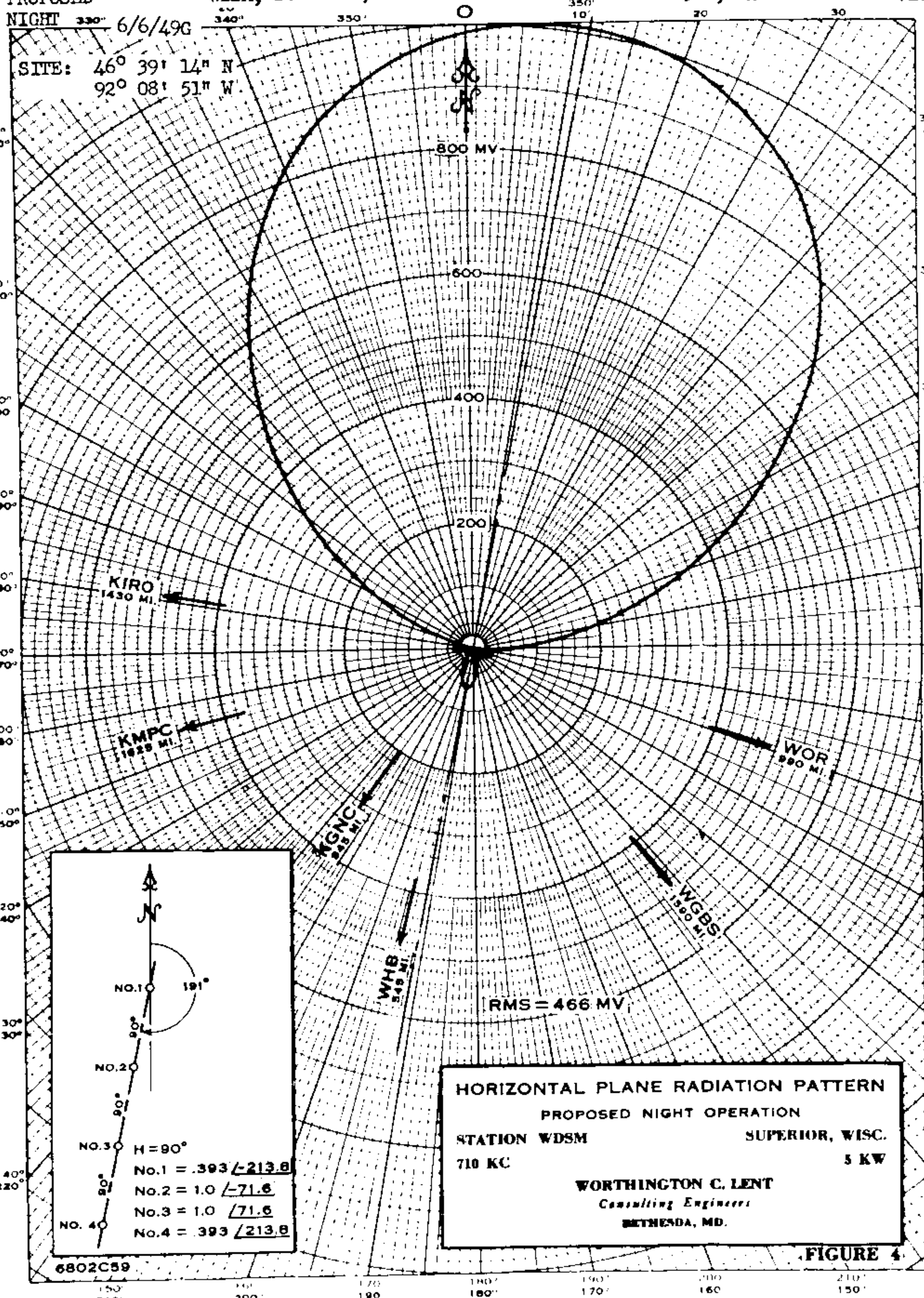


FILE NO. BL-5513   ACCEPTED 11/16/54   KURV, EDINBURG, TEXAS   710 KC

WDSM

PROPOSED WDSM, SUPERIOR, WISC. 5kw, DA1 710 kc

NIGHT 6/6/49G

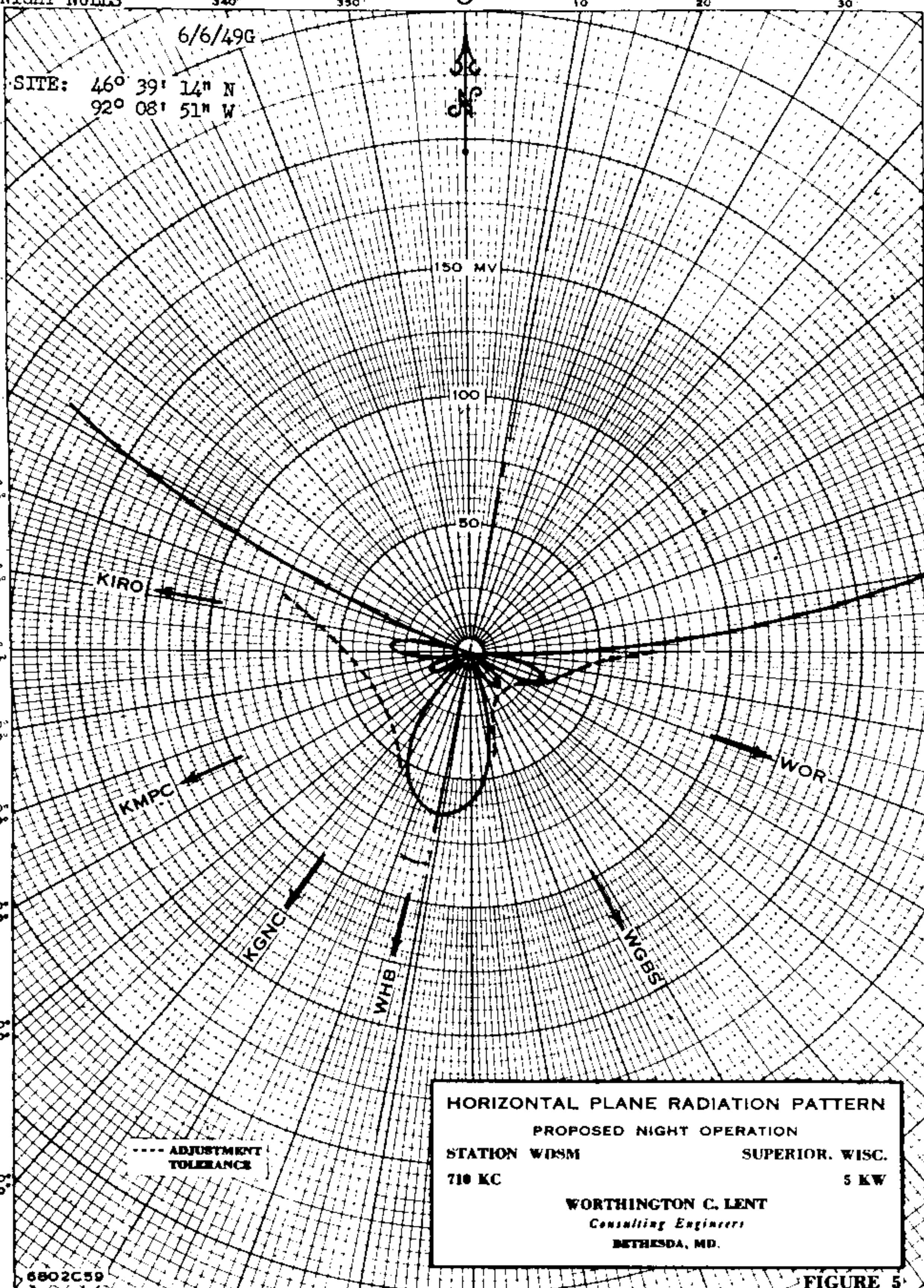


AMENDMENT RECD 6-2-49 BP-5638

WDSM, Superior, Wisc. 710 kc

WDSM

PROPOSED NIGHT NULLS   WDSM, SUPERIOR, WISC.   5kw, DA1   710 kc



HORIZONTAL PLANE RADIATION PATTERN

PROPOSED NIGHT OPERATION

STATION WDSM   SUPERIOR, WISC.

710 KC   5 KW

WORTHINGTON C. LENT

Consulting Engineers

BETHESDA, MD.

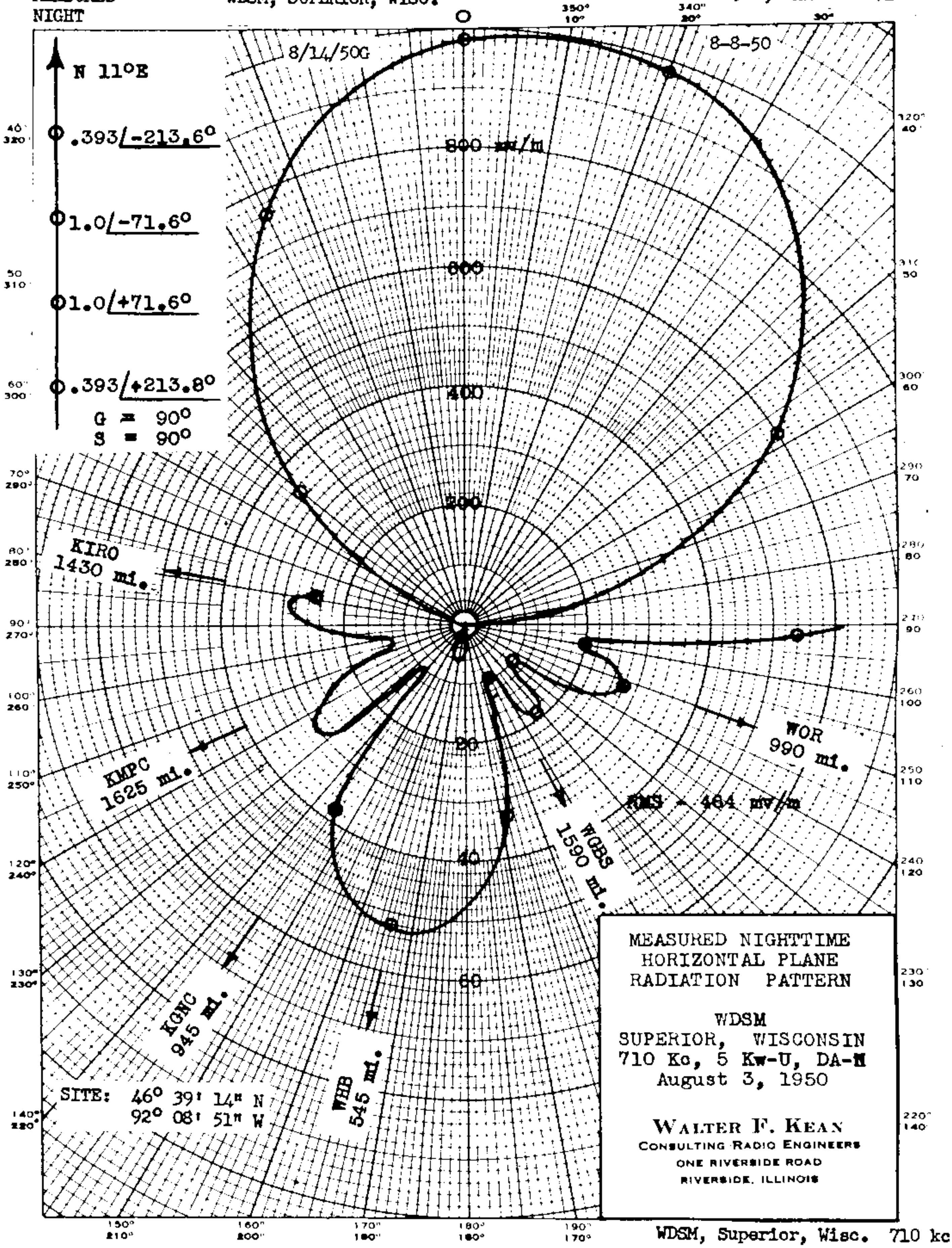
FIGURE 5

AMENDMENT RECD 6-2-49 BP-5638   WDSM, Superior, Wisc. 710 kc

WDSM

MEASURED NIGHT WDSM, SUPERIOR, WISC. 5kw, DAN 710 kc

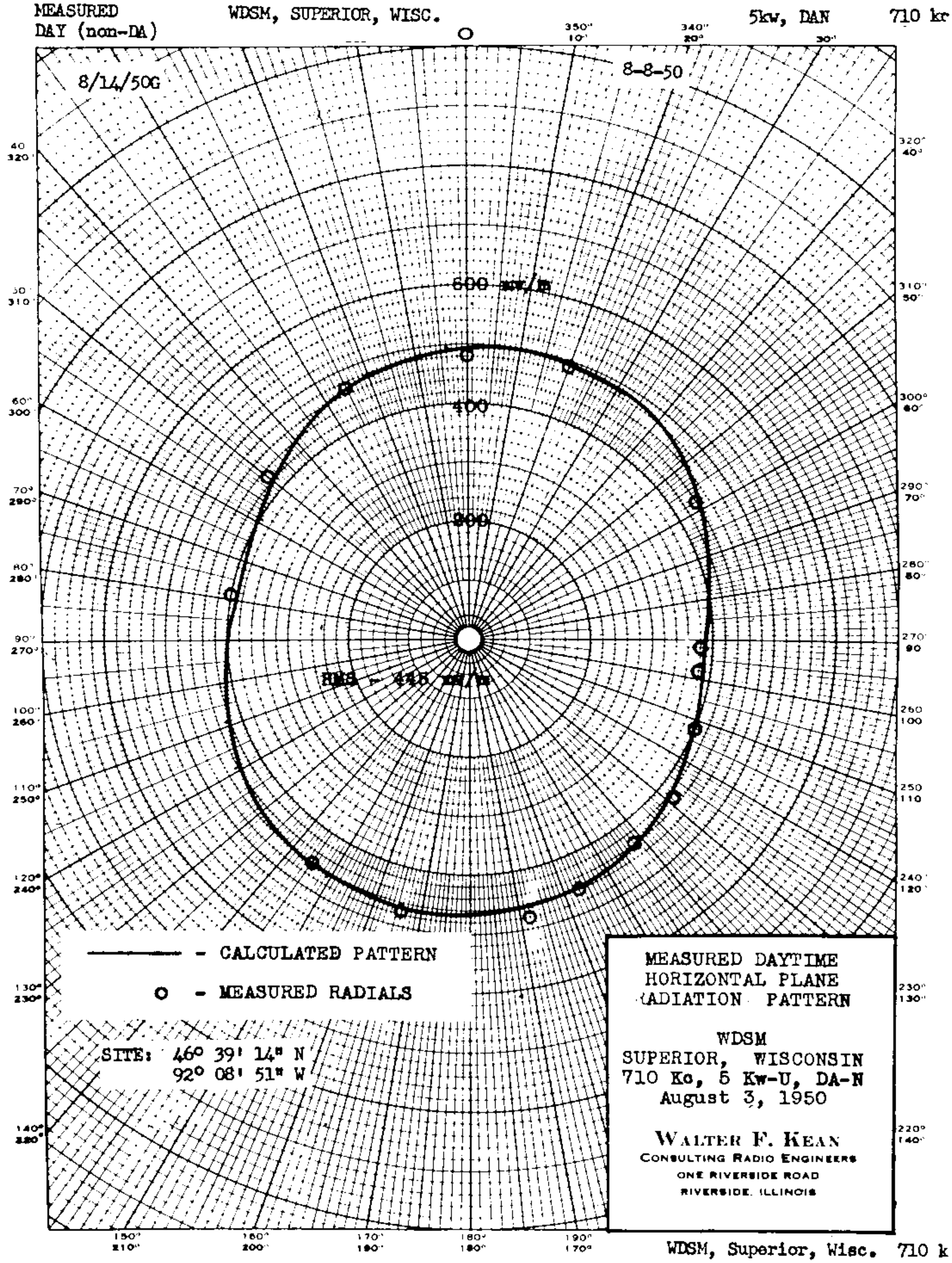
Granted MCP to move to Duluth, Minn - BML-1828 5-9-54



WDSM, Superior, Wisc. 710 kc

WDSM

granted MCP to move to Duluth, Minn
BML-1828 - 9-9-57



WDSM, Superior, Wisc. 710 k

WDSM

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WDSM

Frequency: 710 kHz

Notification List No. 1773

Main Studio: Superior, Wisconsin

Power: 5kw Night 10 kw Day

Date: March 29, 1978 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 46° 39' 14"
West Longitude: 92° 08' 51"

ANTENNA CHARACTERISTICS

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

TOWER:	NORTH	NORTH CENTER	SOUTH CENTER	SOUTH
HEIGHT ABOVE INSULATORS:	346'	346'	346'	346' (90°)
SPACING:	346' or 90° between adjacent towers			
PHASING:	-213.8°	-71.6°	71.6°	213.8°
FIELD RATIO:	.393	1.0	1.0	.393

ORIENTATION: Elements on a line bearing 191° true.

GROUND SYSTEM: 120 - 346' equally spaced radials about each tower base. Radials are shortened and bonded by transverse straps along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS
Day	600 mv/m
Night	466 mv/m

Note: Please retain the Nighttime directional antenna radiation pattern notified for Station WDSM in United States Change List Number 358 dated April 13, 1958 and attach to this Revised Description Sheet. This notification concerns only an increase in daytime power with nighttime operation continued as previously notified.

Proposed Day
(8-22-69ct)

New; Bcstg. Service of Carolina, Inc.
Graham, North Carolina

10kw,DA-D,D
710 kc

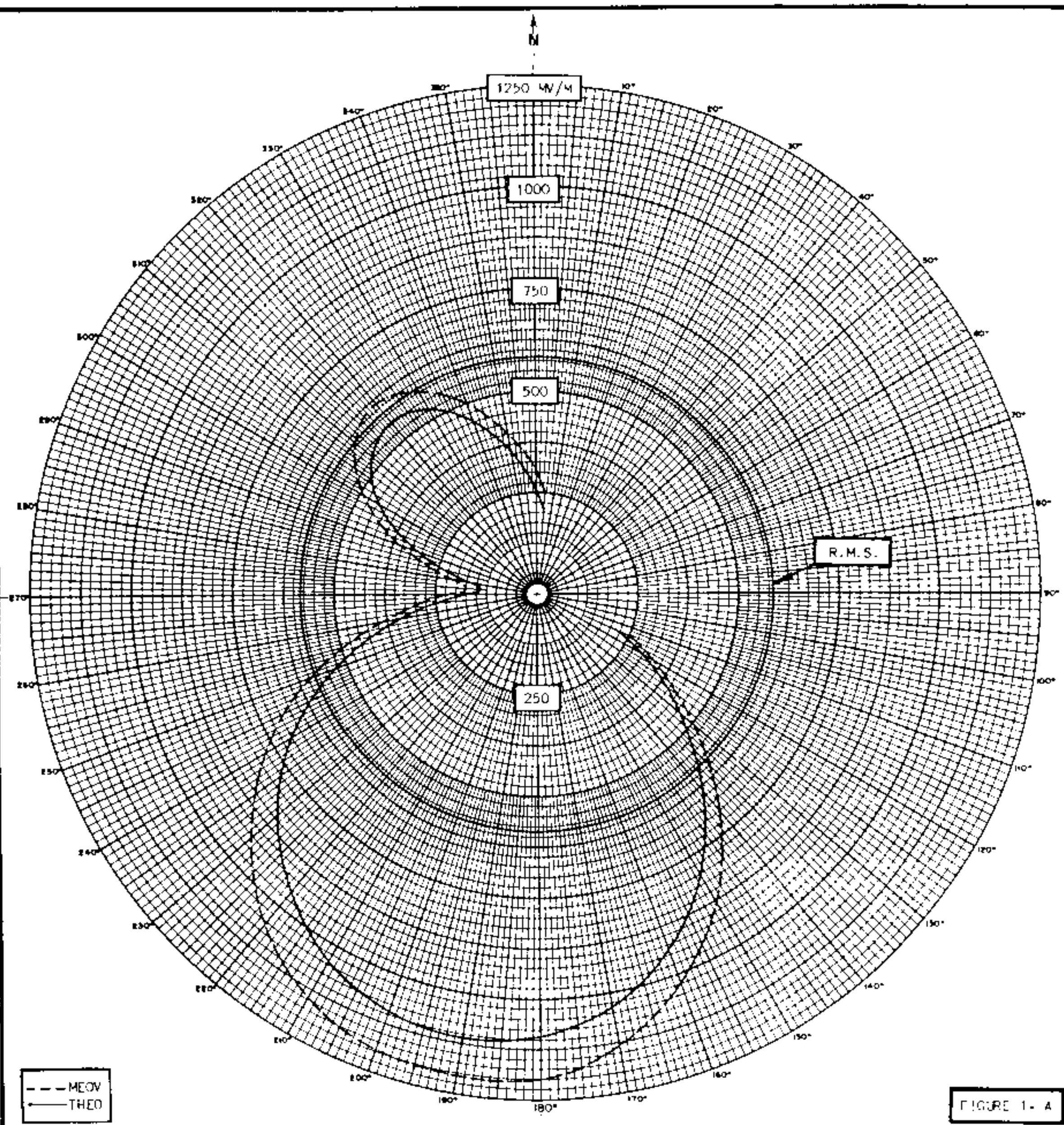
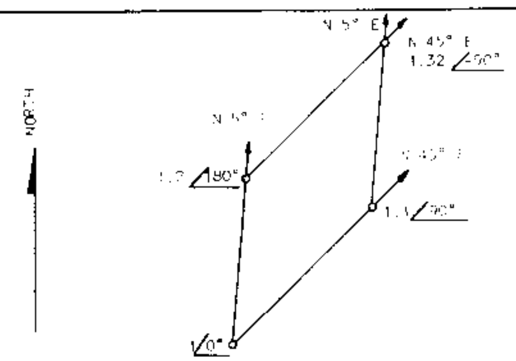


FIGURE 1- A

HORIZONTAL RADIATION PATTERN



APPLICANT: BROADCASTING SERVICE OF CAROLINA, INCORPORATED
LOCATION: GRAHAM, NORTH CAROLINA
FREQUENCY: 710 KC/S
POWER: 10 KW
LATITUDE: DEG MIN SEC.
LONGITUDE: DEG MIN SEC.
WHEN USED: DAYTIME
R M S FIELD: 583
DATE: APRIL

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

FCC File No.BP-17143
Accepted 8-12-69 Amended

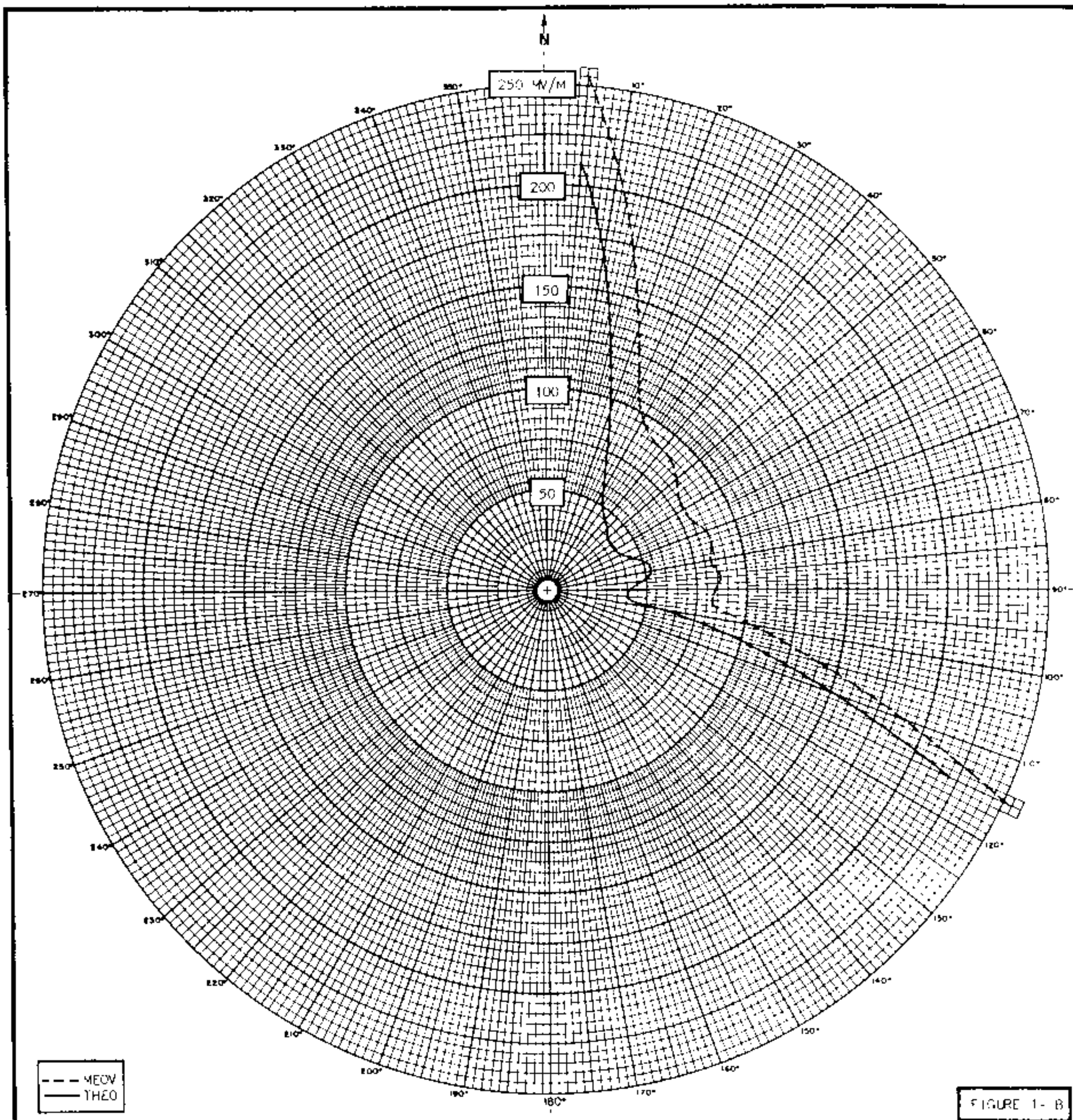
New; Bcstg. Service of Carolina, Inc.
Graham, North Carolina

710 kc

Proposed Day Nulls
(8-22-69ct)

New; Bcstg. Service of Carolina, Inc.
Graham, North Carolina

10kw,DA-D,D
710 kc



EXPANDED VIEW

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

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: (New) Main Studio: St. Matthews, South Carolina

Frequency: 710 kHz Power: 1 kW

Notification List No. 1611 Date: December 17, 1974 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM: North Latitude: 33° 36' 56"
West Longitude: 80° 46' 54"

ANTENNA CHARACTERISTICS

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

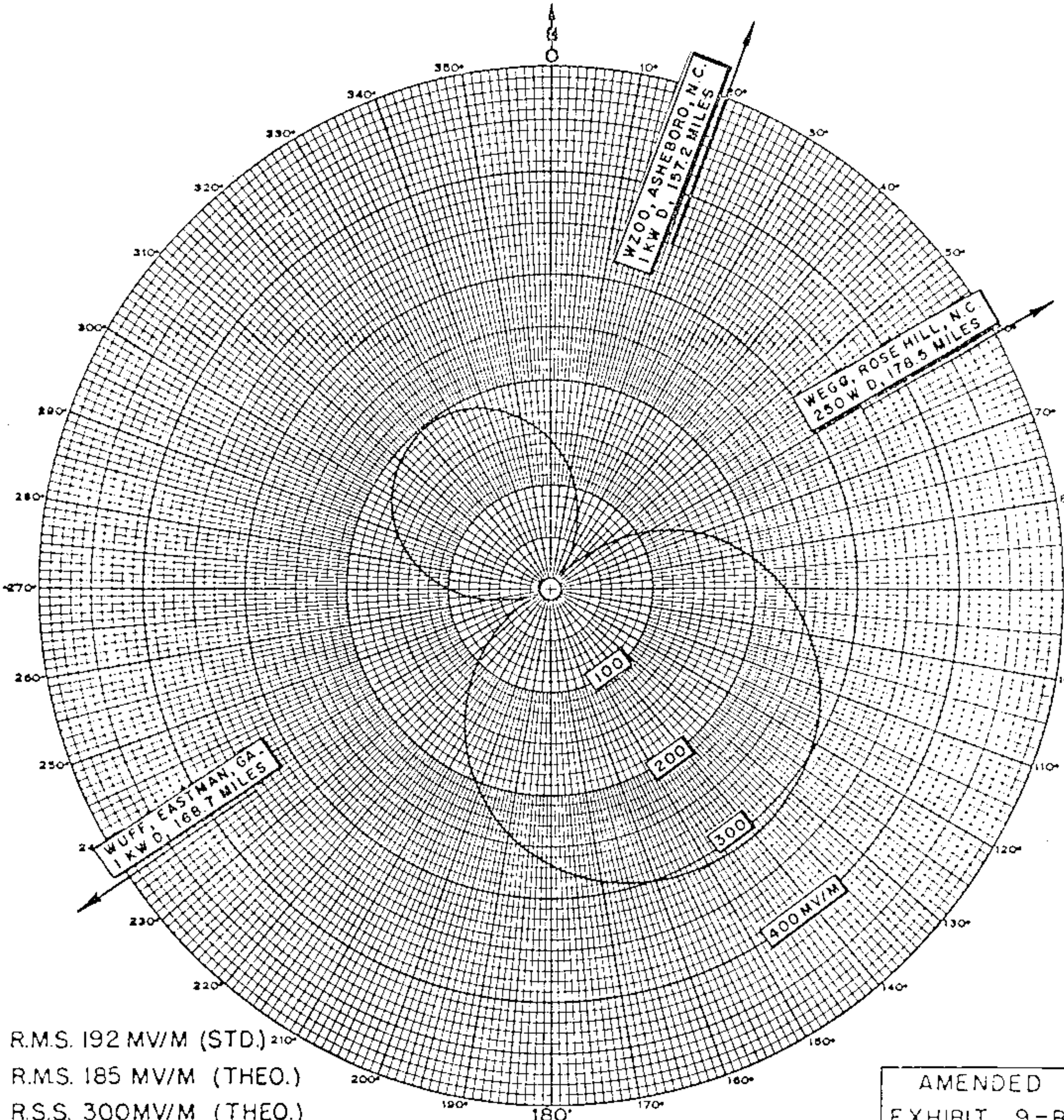
TOWER:	NW(#2)	SE(#1)
HEIGHT ABOVE INSULATORS:	229'	229' (59°)
PHASING:	+162°	0°
FIELD RATIO:	0.95	1

SPACING AND ORIENTATION: Elements are spaced 273' (71°) on a line bearing 322° true.

GROUND SYSTEM: 120-346' equally spaced copper radials about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

THEORETICAL		STANDARD
RMS	RSS	RMS
185 mv/m	300 mv/m	192 mv/m

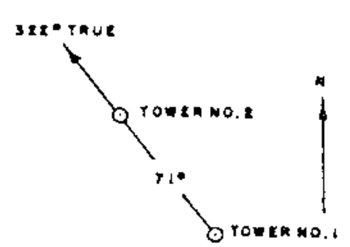


R.M.S. 192 MV/M (STD.)

R.M.S. 185 MV/M (THEO.)

R.S.S. 300MV/M (THEO.)

AMENDED
EXHIBIT 9-B



LATITUDE 33° 36' 56" North
LONGITUDE 80° 46' 54" West

ANTENNA NUMBER	AZIMUTH DEG	SPACING DEG	PHASING DEG	FIELD RATIO	MV/M FOR 1 KW	HEIGHT DEG
1	0	0	0	1		59
2	322	71	162	.95		59

STANDARD DAYTIME
HORIZONTAL PLANE
RADIATION PATTERN
FOR
PROPOSED SAINT MATTHEWS,
SOUTH CAROLINA

710 KHZ 1 KW DA-D

740214

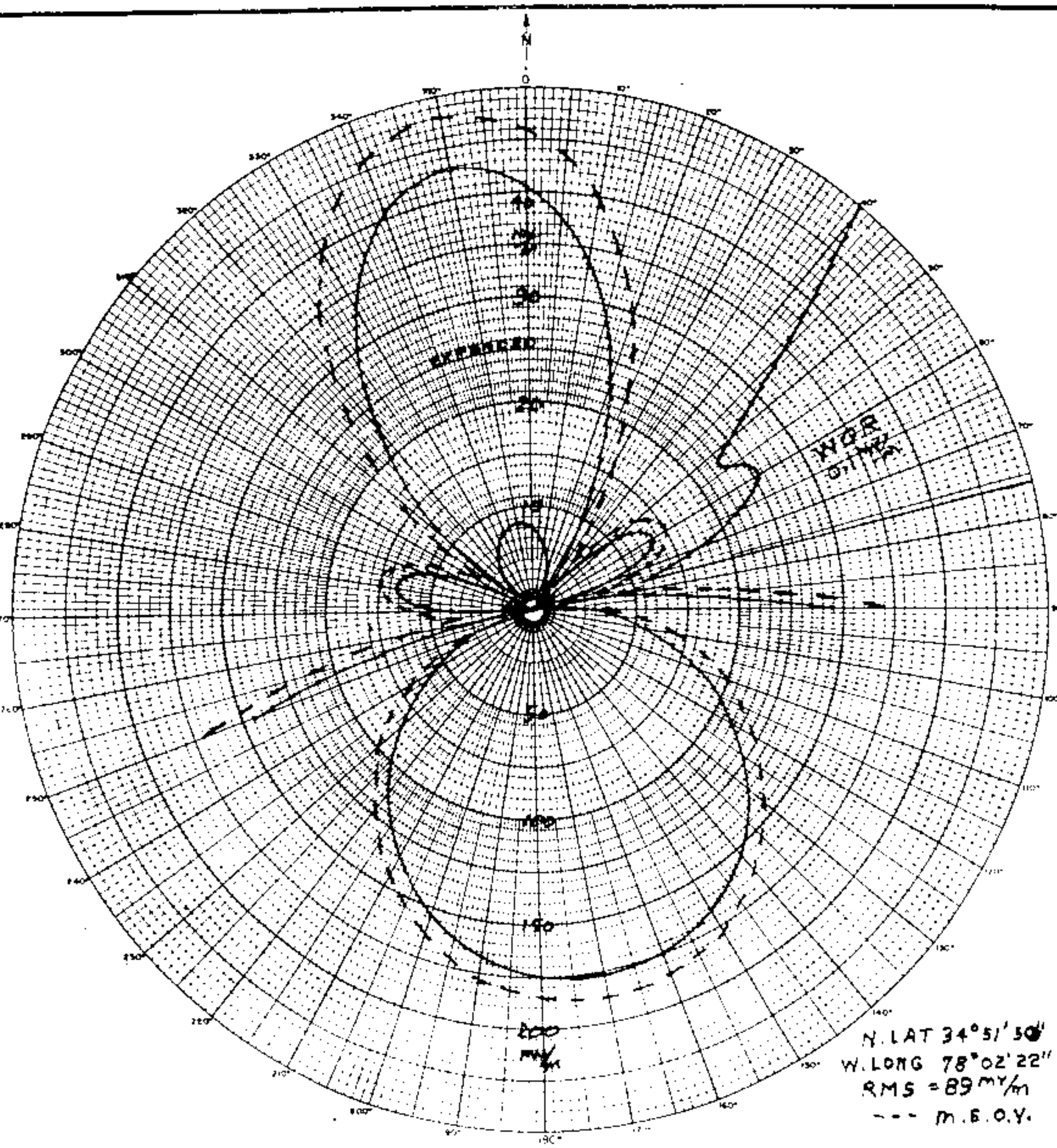
KEAR and KENNEDY
CONSULTING ENGINEERS
WASHINGTON, D.C.

WEGG

Proposed Day
(11-29-68ct)

New; Duplin County Broadcasters
Rose Hill, North Carolina

250w,DA-D,D
710 kc



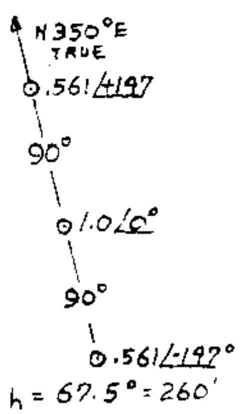


EXHIBIT V

HORIZONTAL RADIATION PATTERN

ROSE HILL, NORTH CAROLINA

710 KC. 250 WATTS [illegible]

WILLIAM L. FOSS, INC.
Electronic Consultants
WASHINGTON 5, D. C.
927 15th Street, N.W. RE 3883

PATTERN NO
SUPERSEDES
APP

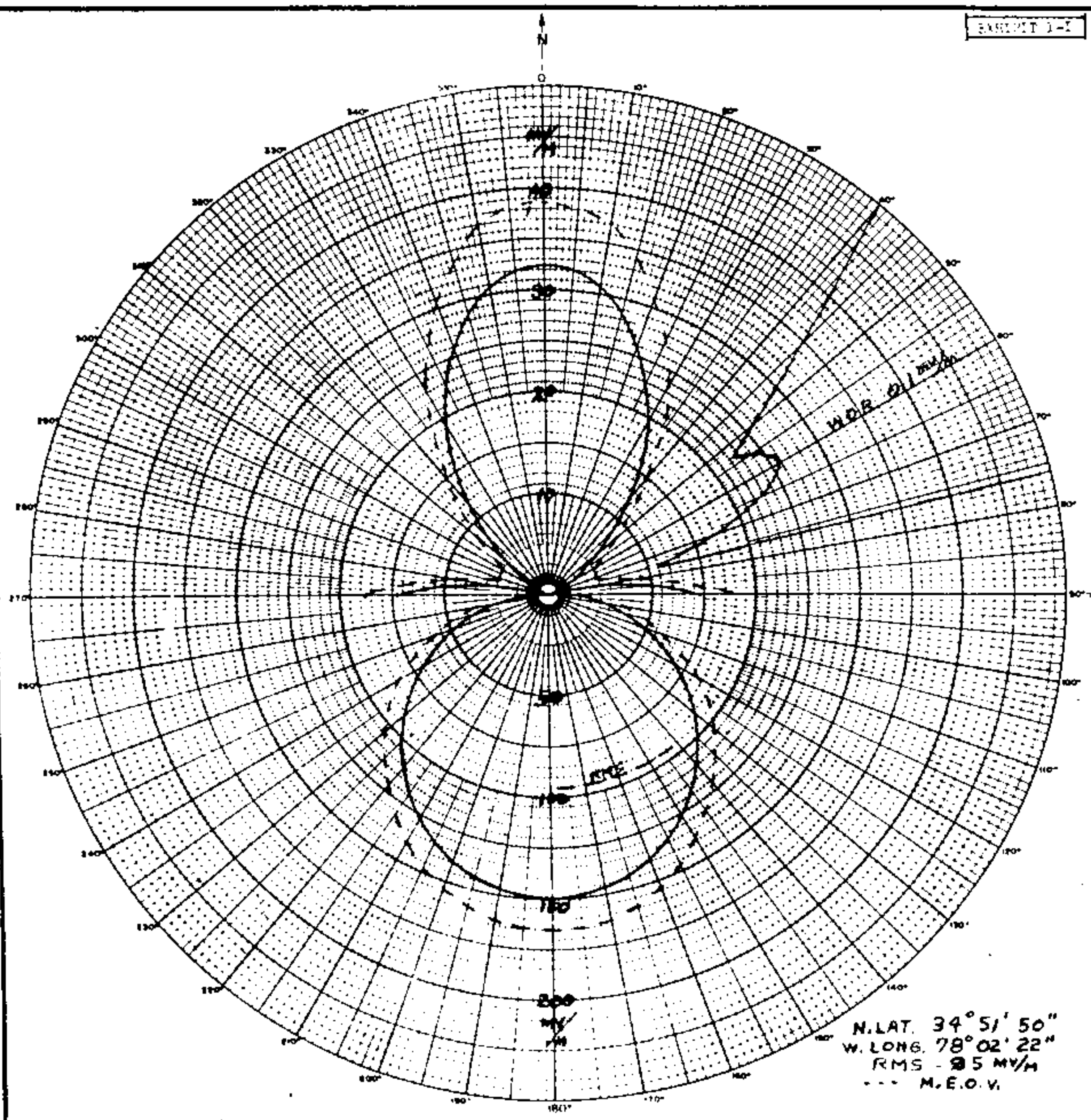
FCC File No.BP-17406 New; Duplin County Broadcasters
Accepted Amended 10-28-68 Rose Hill, North Carolina 710 kc

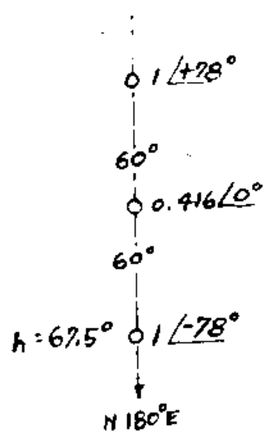
WEGG

Proposed Day
(10-28-66ct)

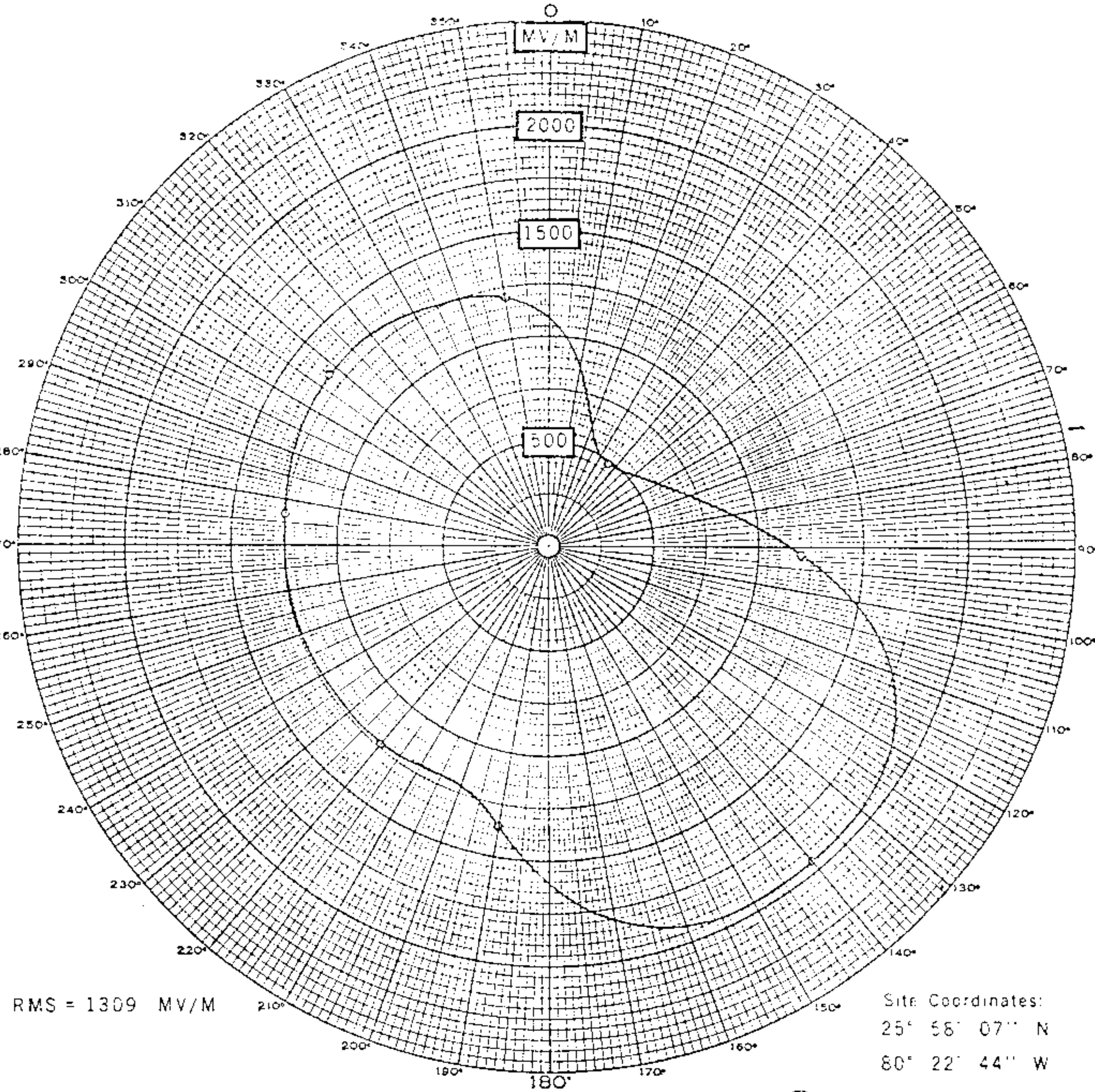
New; Duplin County Broadcasters
Rose Hill, North Carolina

250w,DA-D,D
710 kc





PATTERN NO
SUPERSEDES
APP.

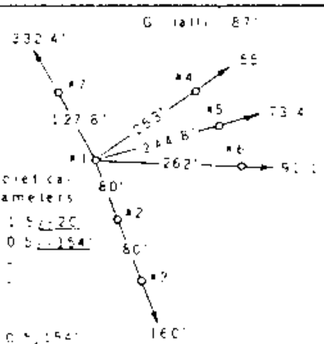


RMS = 1309 MV/M

Site Coordinates:
25° 58' 07" N
80° 22' 44" W

BZ-9063

MEASURED DAYTIME HORIZONTAL PLANE RADIATION PATTERN



Theoretical Parameters
#1 1.5 ∠ 20
#2 0.5 ∠ 154°
#3 -
#4 -
#5
#6
#7 0.5 ∠ 154°

STORER BROADCASTING COMPANY

MIAMI, FLORIDA

Jules Cohen & Associates
Consulting Electronics Engineers

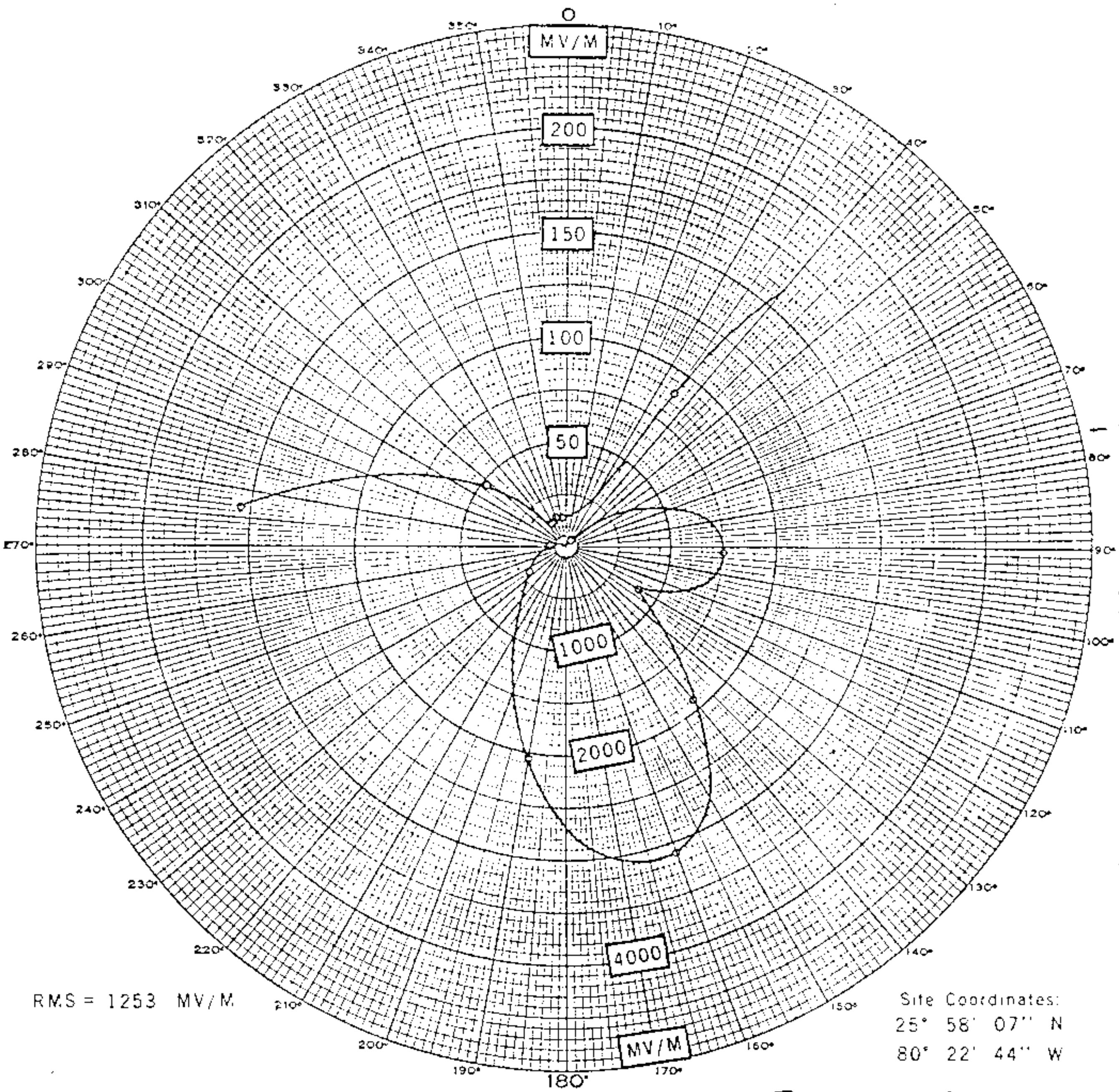
STATION WGBS

710 KHZ

50 KW U DA-2

OCTOBER 1975

WGBS Figure 1

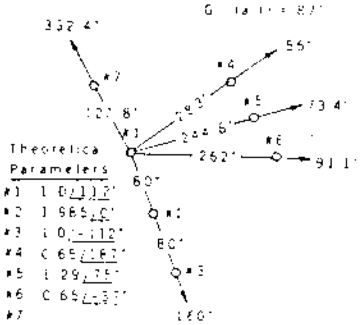


RMS = 1253 MV/M

Site Coordinates:
25° 58' 07" N
80° 22' 44" W

B2-9063

MEASURED NIGHTTIME HORIZONTAL PLANE RADIATION PATTERN



STORER BROADCASTING COMPANY

MIAMI, FLORIDA

Jules Cohen & Associates
Consulting Electronics Engineers

STATION WGBS

710 KHZ

50 KW U DA-2

OCTOBER 1975

WGBS

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

Station WGBS
Miami, Florida

50kw, DA-2, U
710 kc

LIC 10-21-66

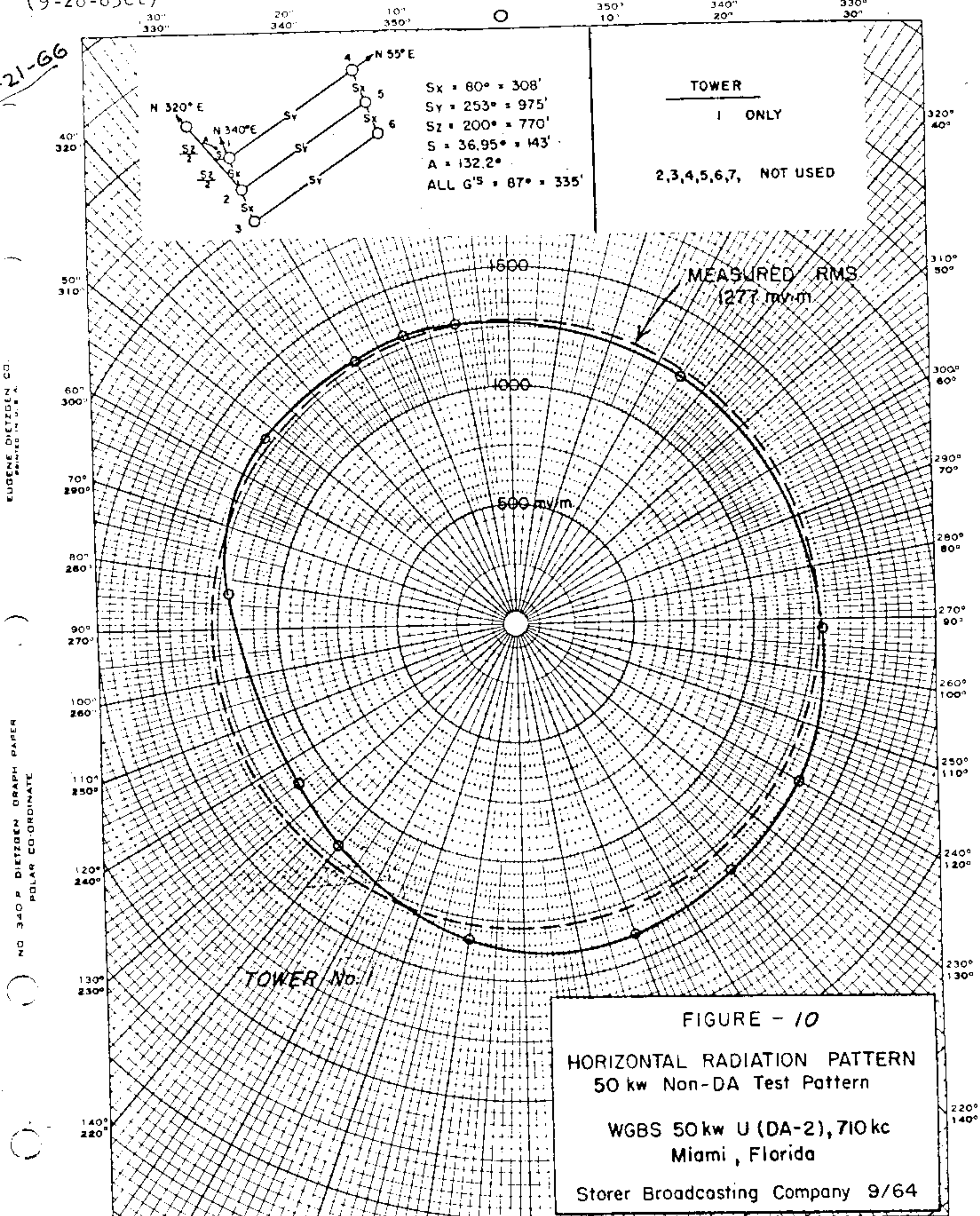


FIGURE - 10

HORIZONTAL RADIATION PATTERN
50 kw Non-DA Test Pattern

WGBS 50 kw U (DA-2), 710 kc
Miami, Florida

Storer Broadcasting Company 9/64

FCC File No. BL-11012
Accepted 9-13-65

Station WGBS
Miami, Florida

710 kc

WGBS

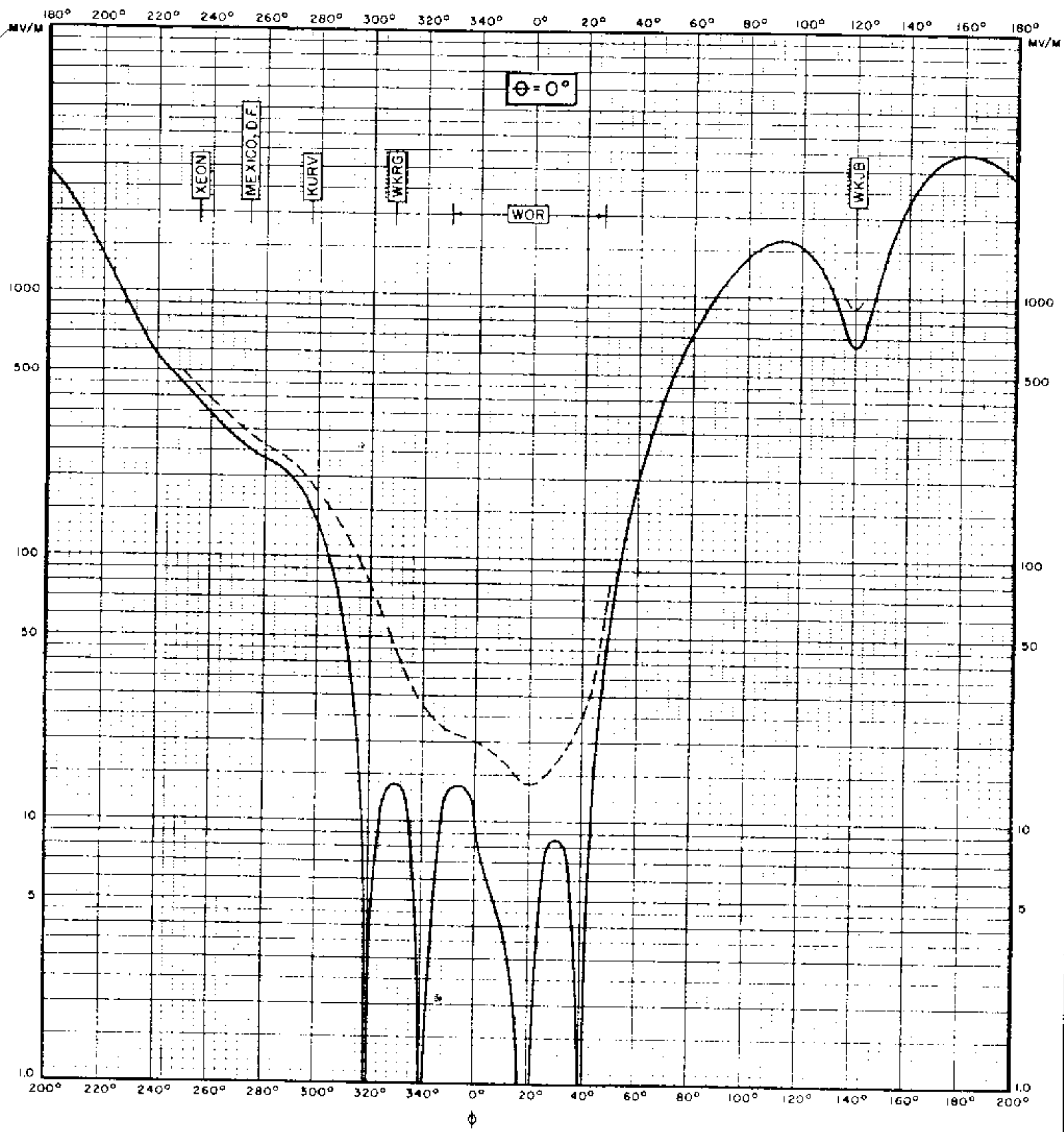
Proposed Night Null
(3-26-65ct)

Station WGBS
Miami, Florida

50kw,DA-2,U
710 kc

BMP-11470
3-30-65
MCP

AZIMUTH



PROPOSED 710 KC 50 KW NIGHTTIME

MEOV -----

PREPARED BY THE FIRM OF A. EARL CULLUM, JR. CONSULTING ENGINEERS	RADIO STATION WGBS 710 KC 50 KW DA-2 650219.3 REVISED FIGURE 6B-1

FCC File No. BMP-11470
Accepted 3-17-65

Station, WGBS
Miami, Florida

710 kc

WGBS

PROPOSED DAY
(4-10-61g)

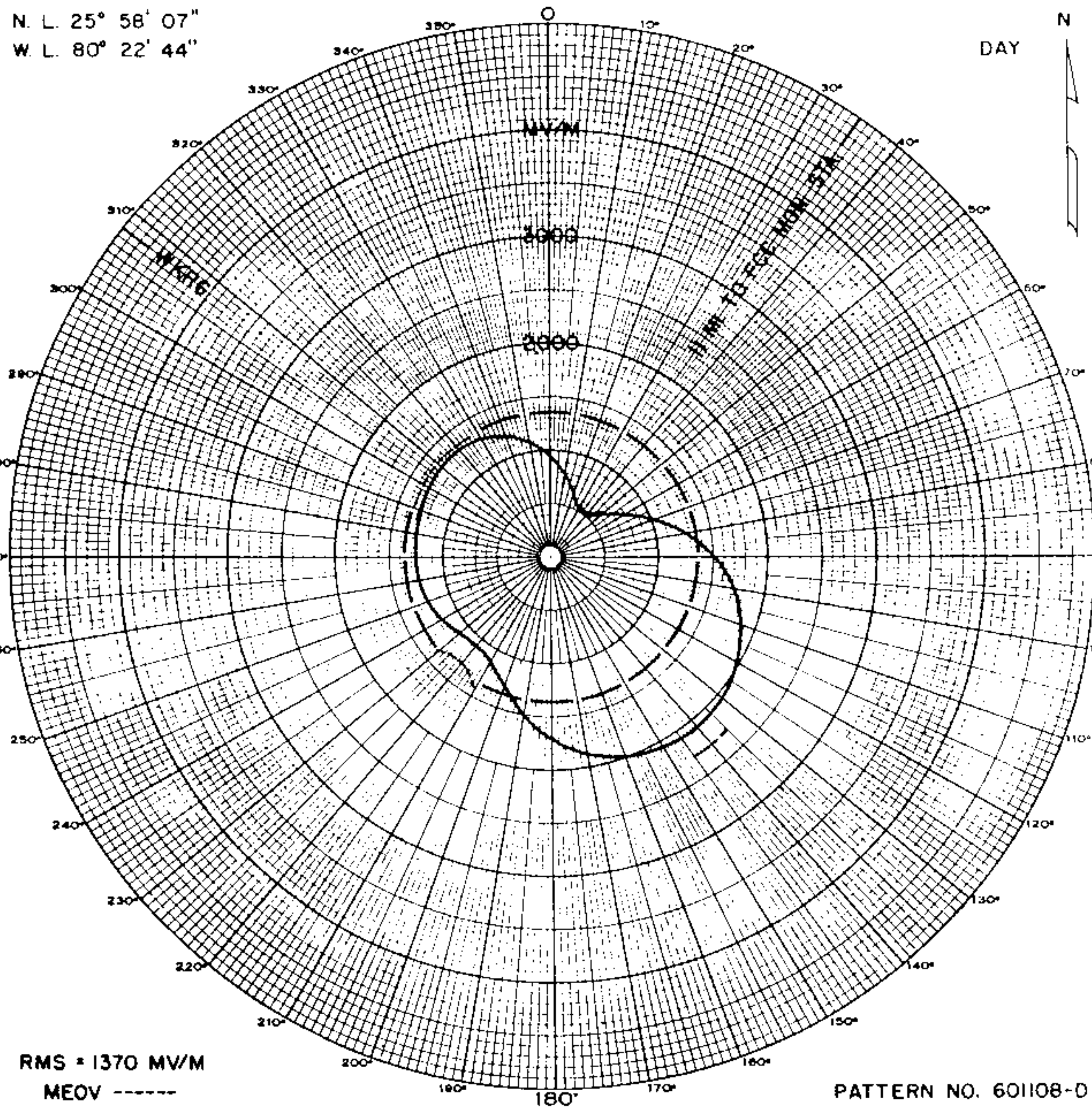
Station WGBS
Miami, Florida

50kw, DA-2,U
710 KC

6-10-62
anted CP for
0 KW DA-2

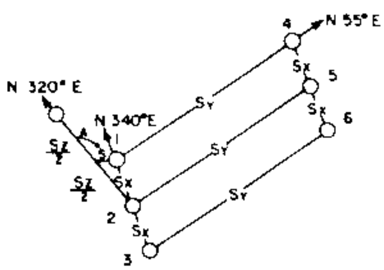
N. L. 25° 58' 07"
W. L. 80° 22' 44"

DAY



RMS = 1370 MV/M
MEOV ------

PATTERN NO. 601108-D



Sx = 80° = 308'
Sy = 253° = 975'
Sz = 200° = 770'
S = 36.95° = 143'
A = 132.2°
ALL G'S = 87° = 345'

TOWER	FIELD	PHASE
1	1.5	-20
2	.5	-154
7	.5	154
3, 4, 5, 6	NOT USED DAYTIME	

PREPARED BY
THE FIRM OF A. EARL CULLUM, JR.
CONSULTING ENGINEERS

RADIO STATION WGBS
710 KC 50 KW DA-2
601108.2 FIGURE 6A

FCC File No. BP-14591
Accepted 3-14-61

Station WGBS
Miami, Florida
710 KC

WGBS

PROPOSED NIGHT
(4-10-61g)

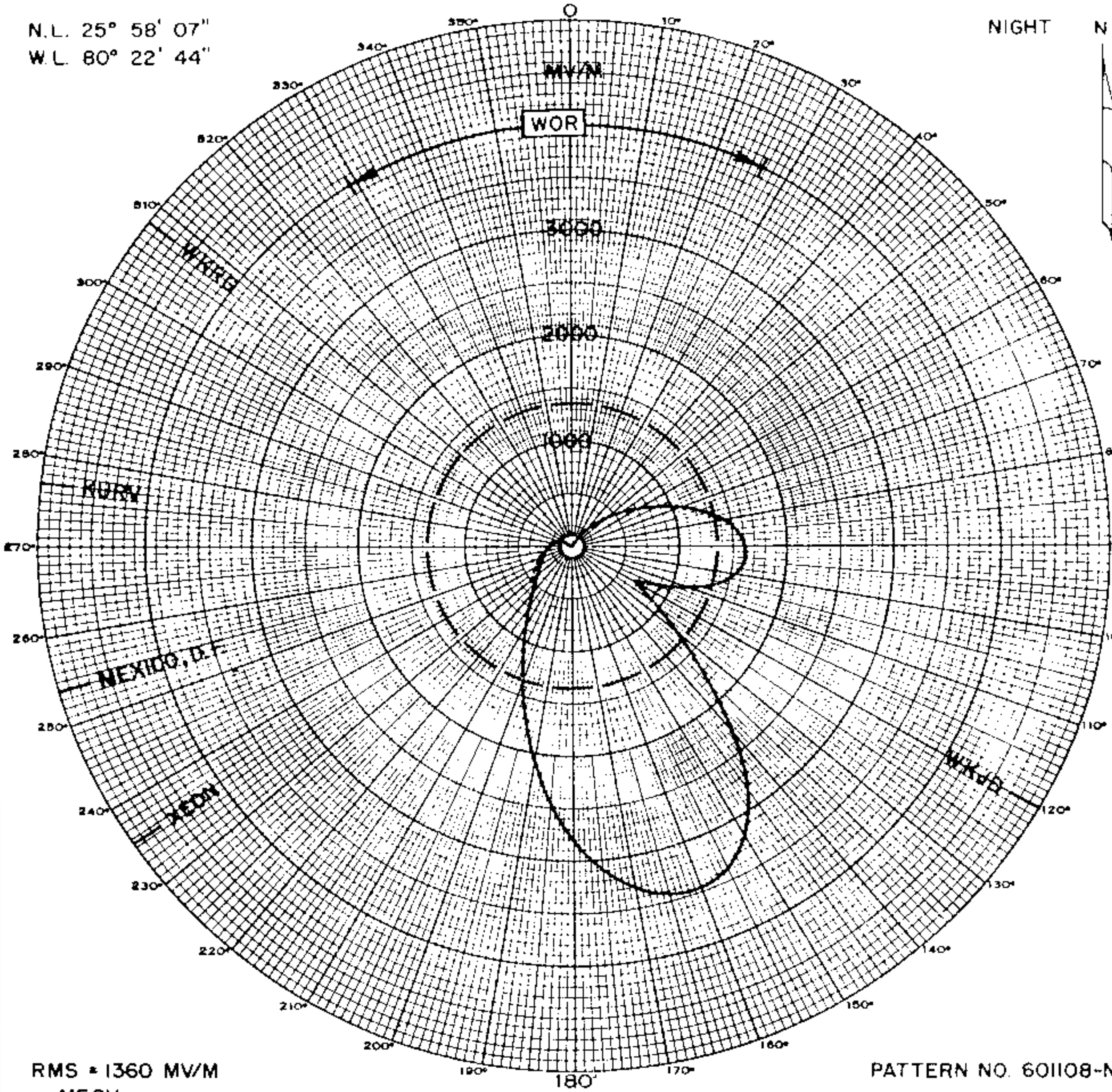
Station WGBS
Miami, Florida

50kw, DA-2,U
710 KC

granted CP for
10kw-DA-2
10-10-62

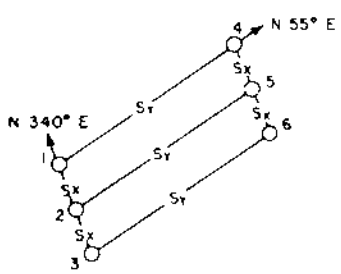
N.L. 25° 58' 07"
W.L. 80° 22' 44"

NIGHT



RMS = 1360 MV/M
MEOV ----

PATTERN NO. 601108-N



S_X = 80° = 308'
S_Y = 253° = 975'
ALL G^S = 87° = 345'

TOWER	FIELD	PHASE
1	1.000	1.2
2	1.985	0
3	1.000	-1.2
4	0.65	187
5	1.29	75
6	0.65	-37

PREPARED BY
THE FIRM OF A. EARL CULLUM, JR.
CONSULTING ENGINEERS

RADIO STATION WGBS
710 KC 50 KW DA-2
601108.3 FIGURE 6A

FCC File No. BP-14591
Accepted 3-14-61

Station WGBS
Miami, Florida

710 KC

WHB

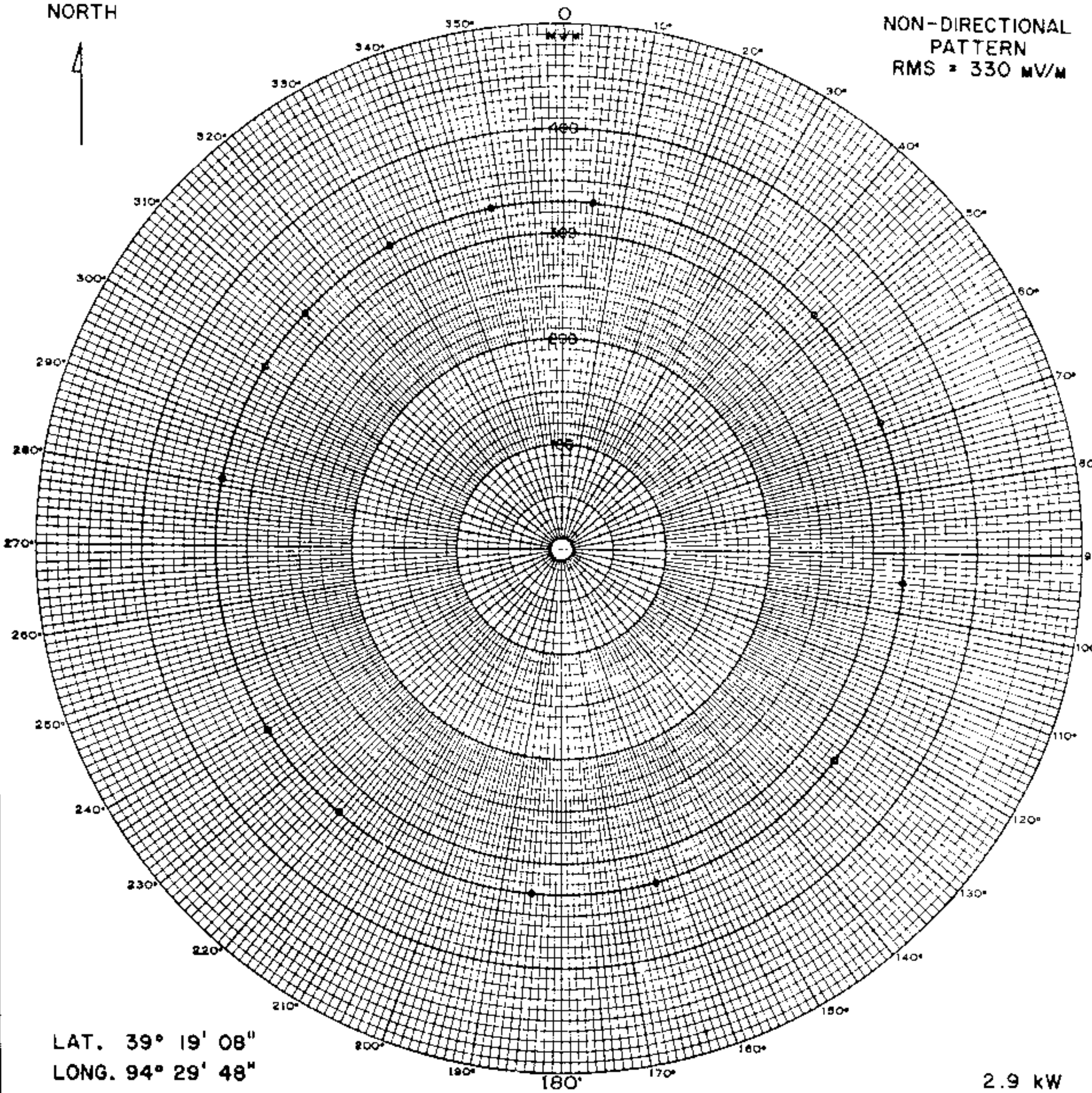
Measured Non-DA
(1-22-71ct)

Station WHB
Kansas City, Missouri

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

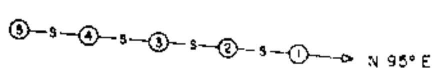
NORTH

NON-DIRECTIONAL
PATTERN
RMS = 330 mV/m



LAT. 39° 19' 08"
LONG. 94° 29' 48"

2.9 kW



S = 462' = 120°
G = 350' = 91°

NON-DIRECTIONAL OPERATION

TOWER	OPERATION
1	DETUNED
2	DETUNED
3	SERIES FED
4	DETUNED
5	DETUNED

PREPARED BY
THE FIRM OF A. EARL CULLUM, JR.
CONSULTING ENGINEERS

RADIO STATION WHB
710 kHz 5 kW 10 kW-LS DA-2
691115 FIGURE 2A

FCC File No.BZ-7721
Accepted 1-6-71

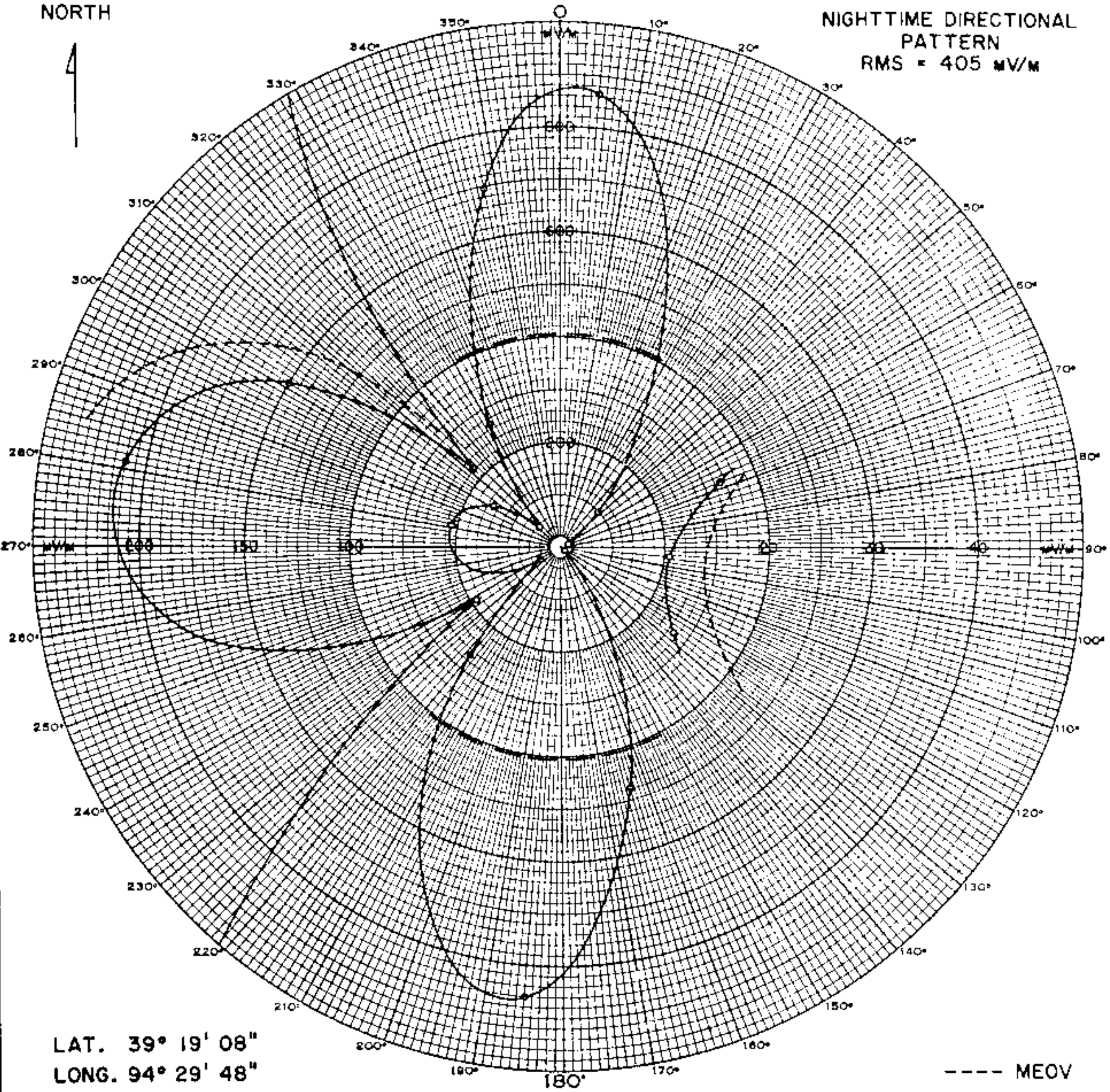
Station WHB
Kansas City, Missouri

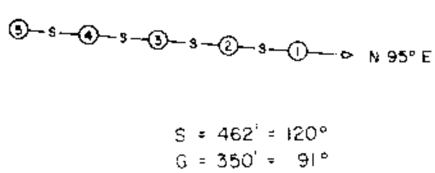
710 kc

Measured Night
(1-22-71ct)

Station WHB
Kansas City, Missouri

WHB
5kw,10kw-LS,DA-2,U
710 kc





NIGHTTIME DIRECTIONAL OPERATION

TOWER	THEORETICAL FIELD	THEORETICAL PHASE	INDICATED FIELD	INDICATED PHASE
1	1.000	31.0°	0.393	29.5°
2	1.940	−1.8°	0.983	1.0°
3	1.835	0.0°	1.000	0.0°
4	1.940	1.8°	0.920	1.5°
5	1.000	−31.0°	0.517	−21.5°

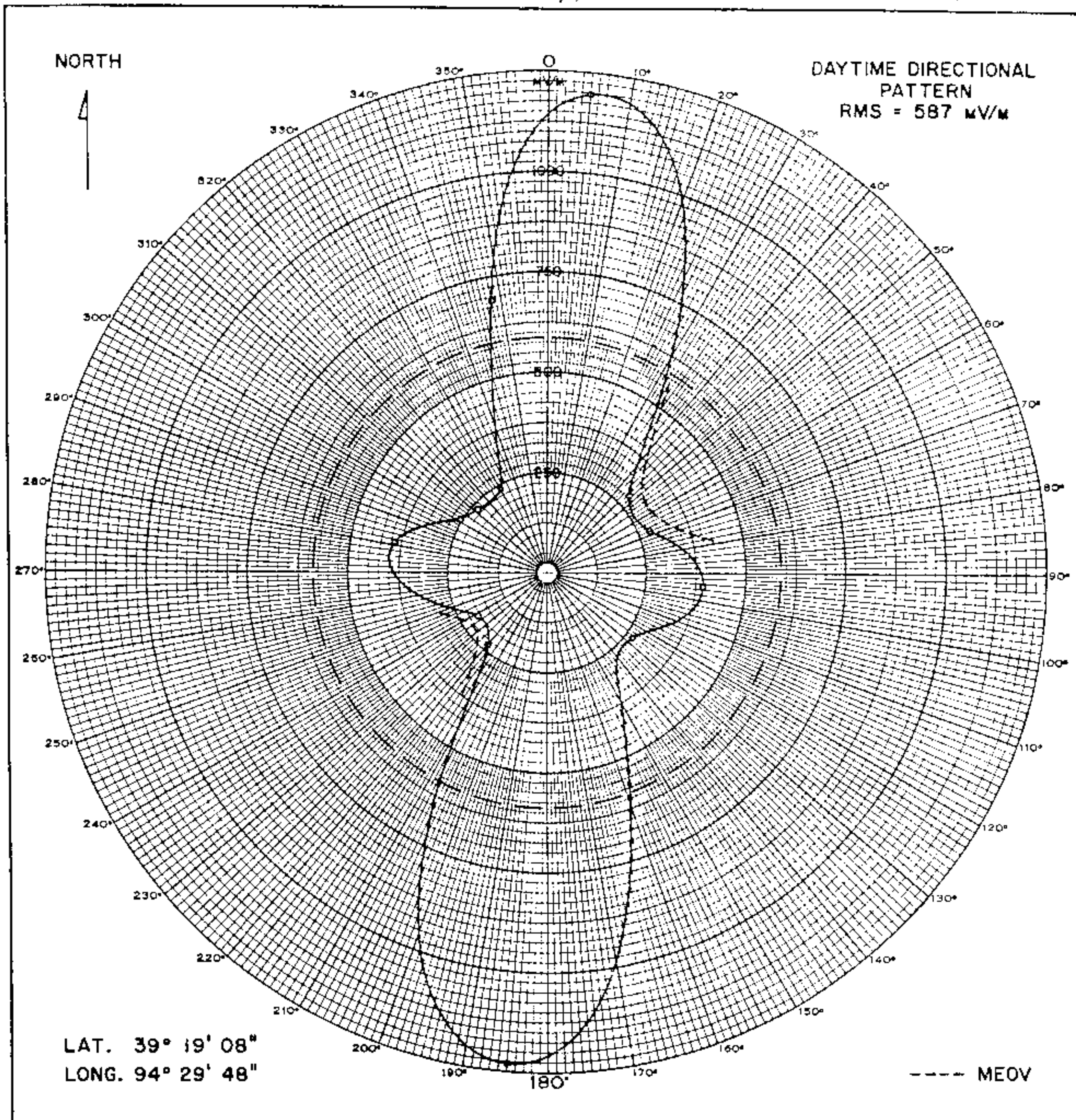
PREPARED BY
THE FIRM OF A. EARL CULLUM, JR.
CONSULTING ENGINEERS

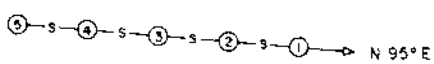
RADIO STATION WHB
710 kHz 5 kW 10 kW-LS DA-2
691115 FIGURE 2C

FCC File No.BZ-7721
Accepted 1-6-71

Station WHB
Kansas City, Missouri

710 kc





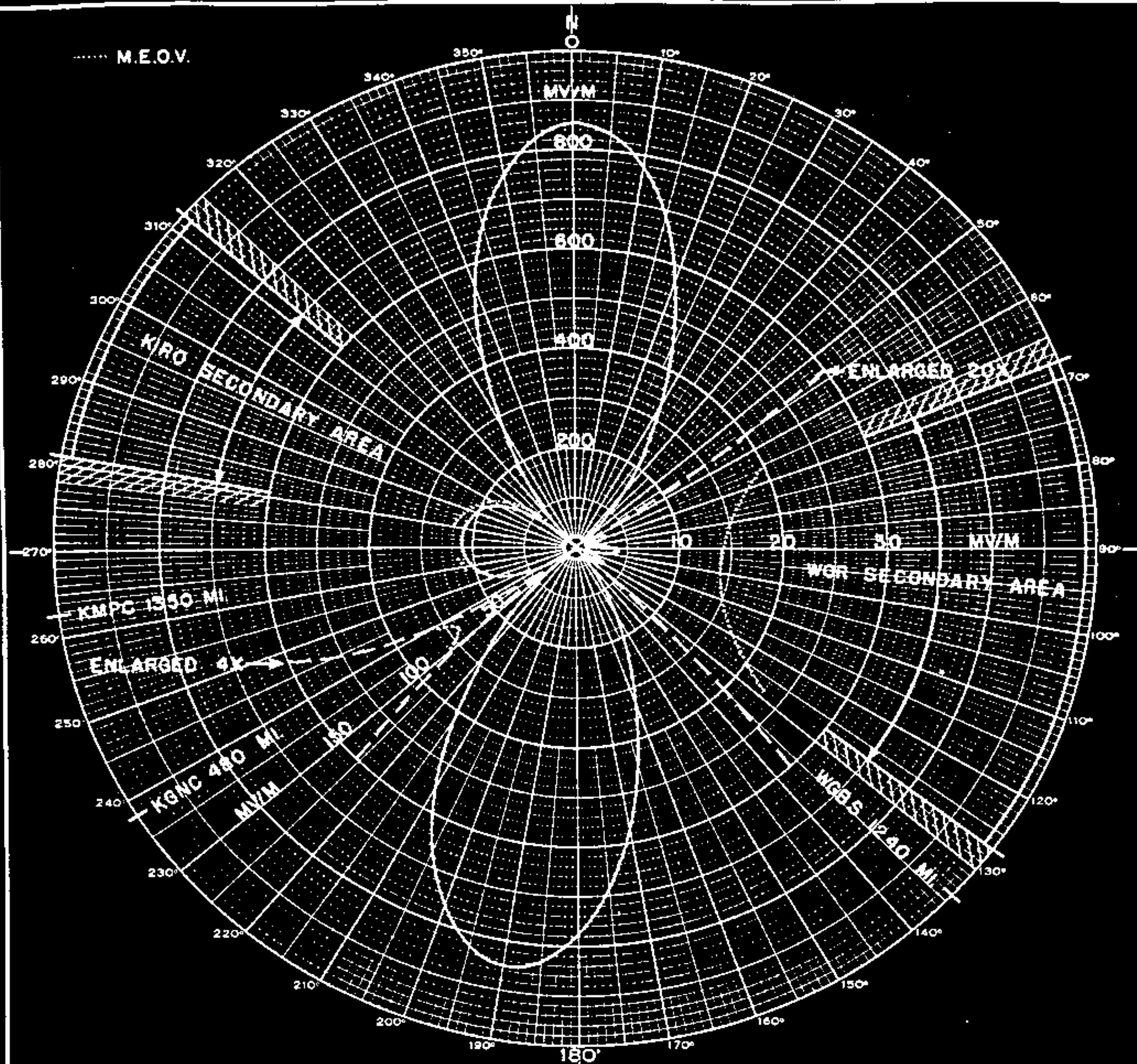
S = 462' = 120°
G = 350' = 91°

DAYTIME DIRECTIONAL PARAMETERS

	THEORETICAL		INDICATED	
TOWER	FIELD	PHASE	FIELD	PHASE
1	0.489	− 7.6°	0.468	− 4.0°
2	0.221	−13.0°	0.178	−10.0°
3	1.068	0.0°	1.000	0.0°
4	0.217	172.1°	0.180	174.0°
5	0.489	2.4°	0.472	3.5°

PREPARED BY
THE FIRM OF A. EARL CULLUM, JR.
CONSULTING ENGINEERS

RADIO STATION WHB
710 kHz 5 kW 10 kW-LS DA-2
691115 FIGURE 2B



R.M.S. = 400 MV/M

PATTERN 461212

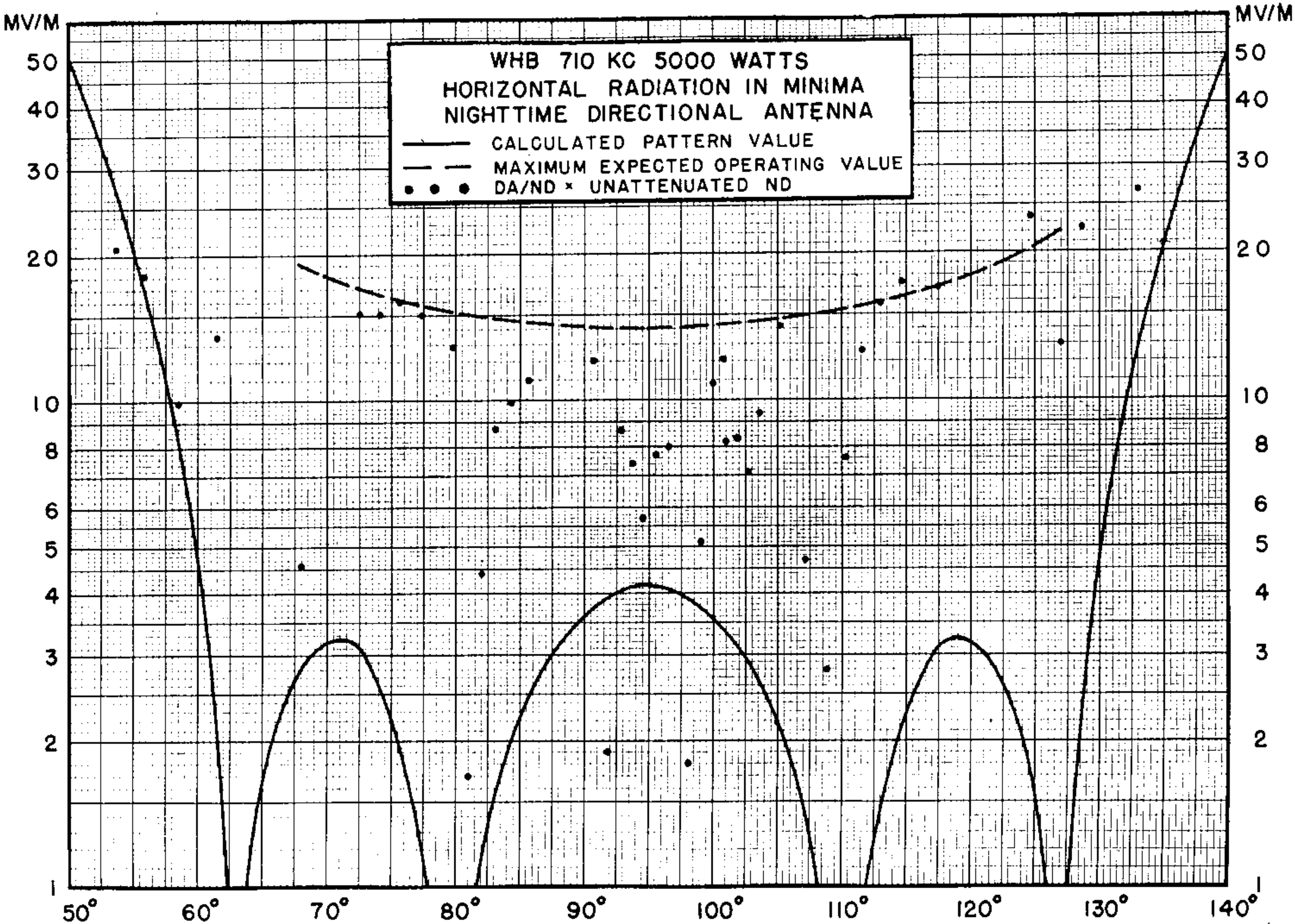
⑤—120°—④—120°—③—120°—②—120°—①→ N95E

ALL G's = 90 DEGREES

A. EARL CULLUM, JR.
CONSULTING RADIO ENGINEERS
DALLAS TEXAS

TOWER	5	4	3	2	1
FIELD	1.000	1.940	1.835	1.940	1.000
PHASE	-31.0°	+1.8°	0.0°	-1.8°	+31.0°

RADIO STATION WHB
PROPOSED 710 KC 5 KW DA-U
FIGURE 5A



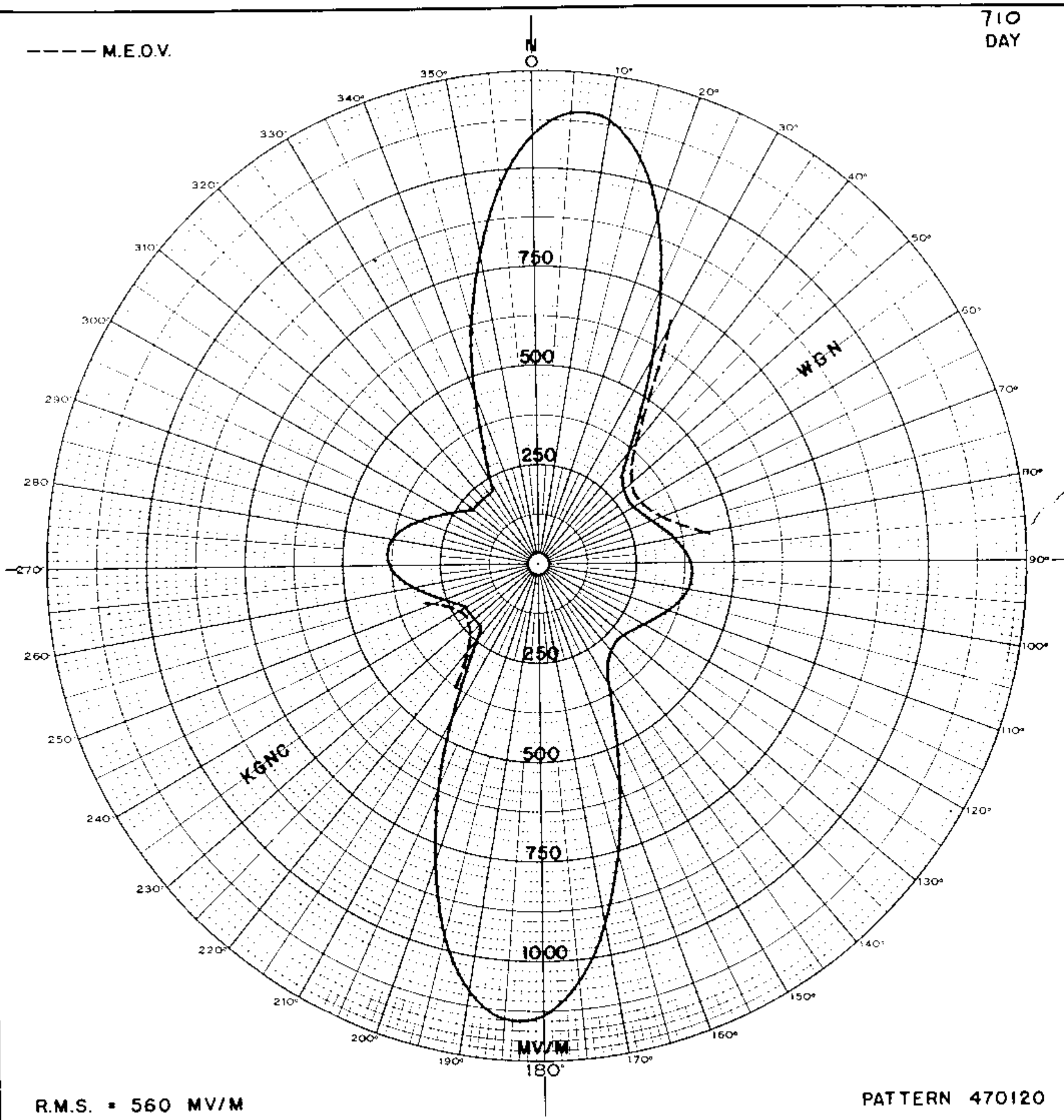
480501

FIGURE 2A

WHB
710

WHB

710
DAY



R.M.S. = 560 MV/M

PATTERN 470120

(5)—120°—(4)—120°—(3)—120°—(2)—120°—(1)—N 95° E→

ALL G'S = 90 DEGREES

A. EARL CULLUM, JR.

CONSULTING RADIO ENGINEERS

DALLAS TEXAS

TOWER	5	4	3	2	1
FIELD	0.489	0.217	1.068	0.221	0.489
PHASE	+2.4	+172.1	0.0	-13.0	-7.6

RADIO STATION WHB

PROPOSED 710 KC 10 KW DA-D

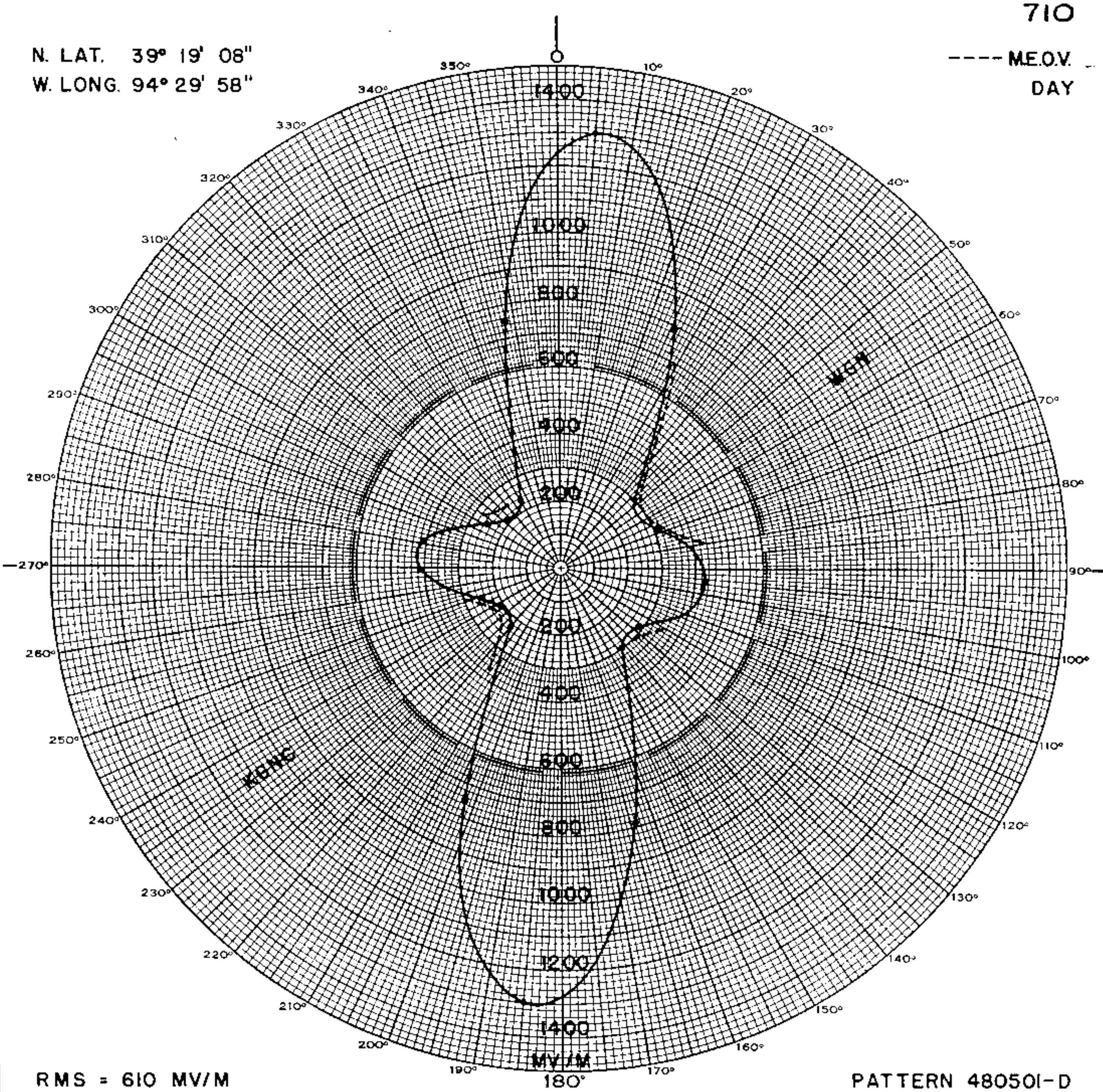
FIGURE 5A

/ WHB

710

N. LAT. 39° 19' 08"
W. LONG. 94° 29' 58"

---- M.E.O.V.
DAY



RMS = 610 MV/M

PATTERN 480501-D

⑤—S—④—S—③—S—②—S—①—→N95°E

S=120°   G=90°

PATTERN BASED ON FIELD INTENSITY MEASUREMENTS

A. EARL CULLUM, JR.
CONSULTING RADIO ENGINEERS
DALLAS   TEXAS

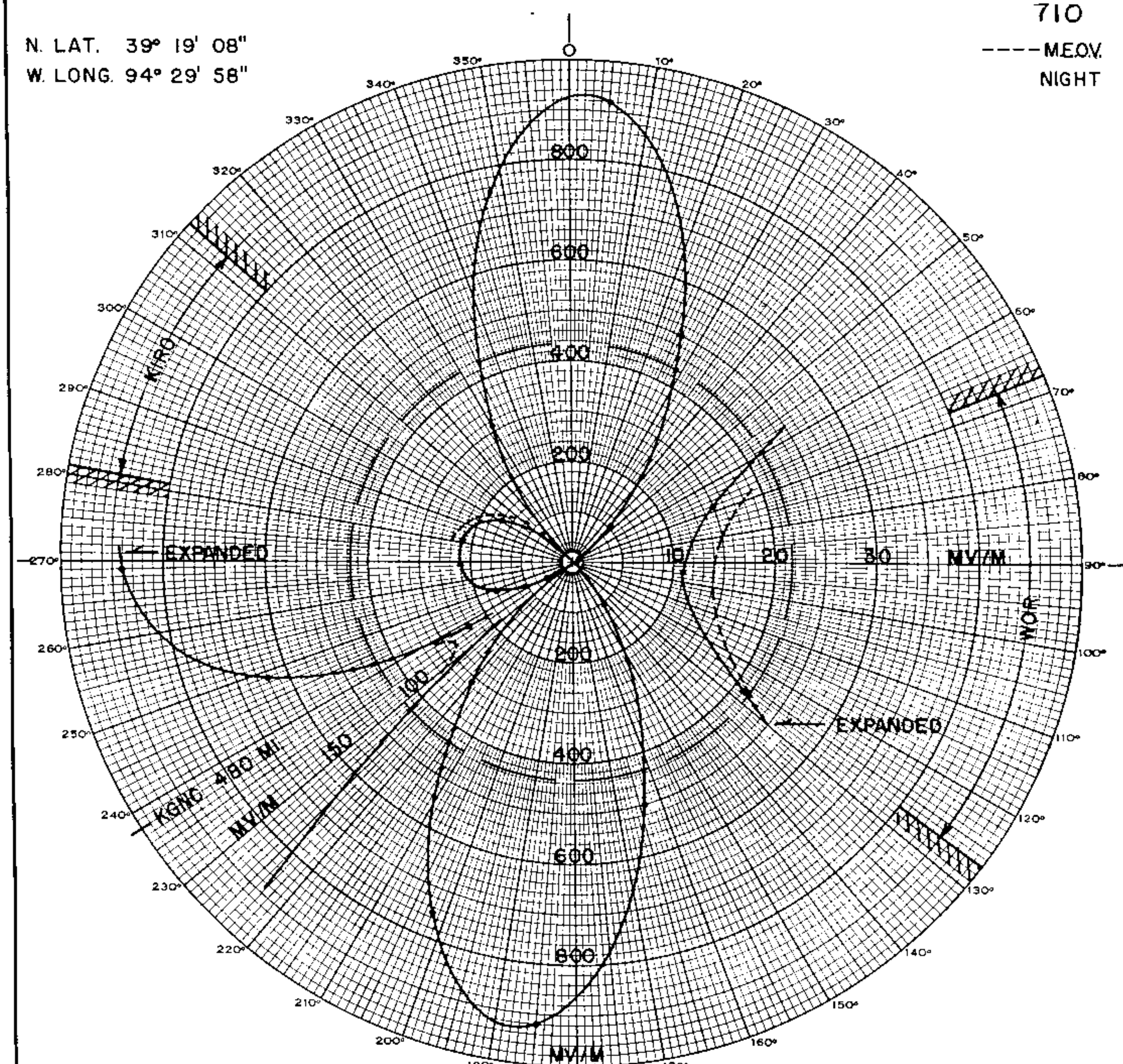
RADIO STATION WHB
710 KC 10 KW DA-D
480501   FIGURE 1B

WHB

710

N. LAT. 39° 19' 08"
W. LONG. 94° 29' 58"

----M.E.O.V.
NIGHT



RMS = 435 MV/M

PATTERN 480501-N

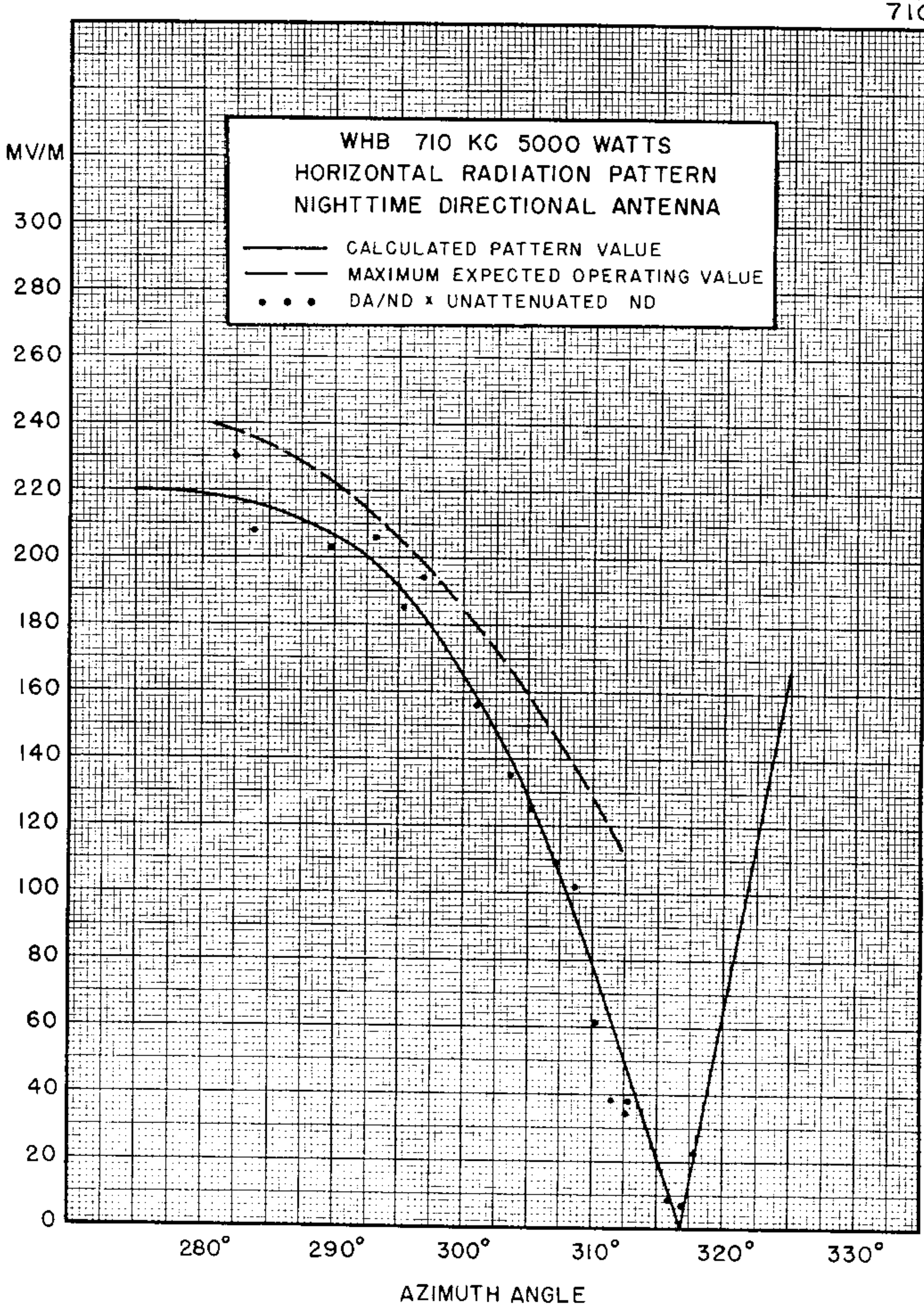
⑤—S—④—S—③—S—②—S—①→N95°E

S = 120° G = 90°

PATTERN BASED ON FIELD INTENSITY MEASUREMENTS

A. EARL CULLUM, JR.
CONSULTING RADIO ENGINEERS
DALLAS TEXAS

RADIO STATION WHB
710 KC 5 KW DA—N
480501 FIGURE 1C



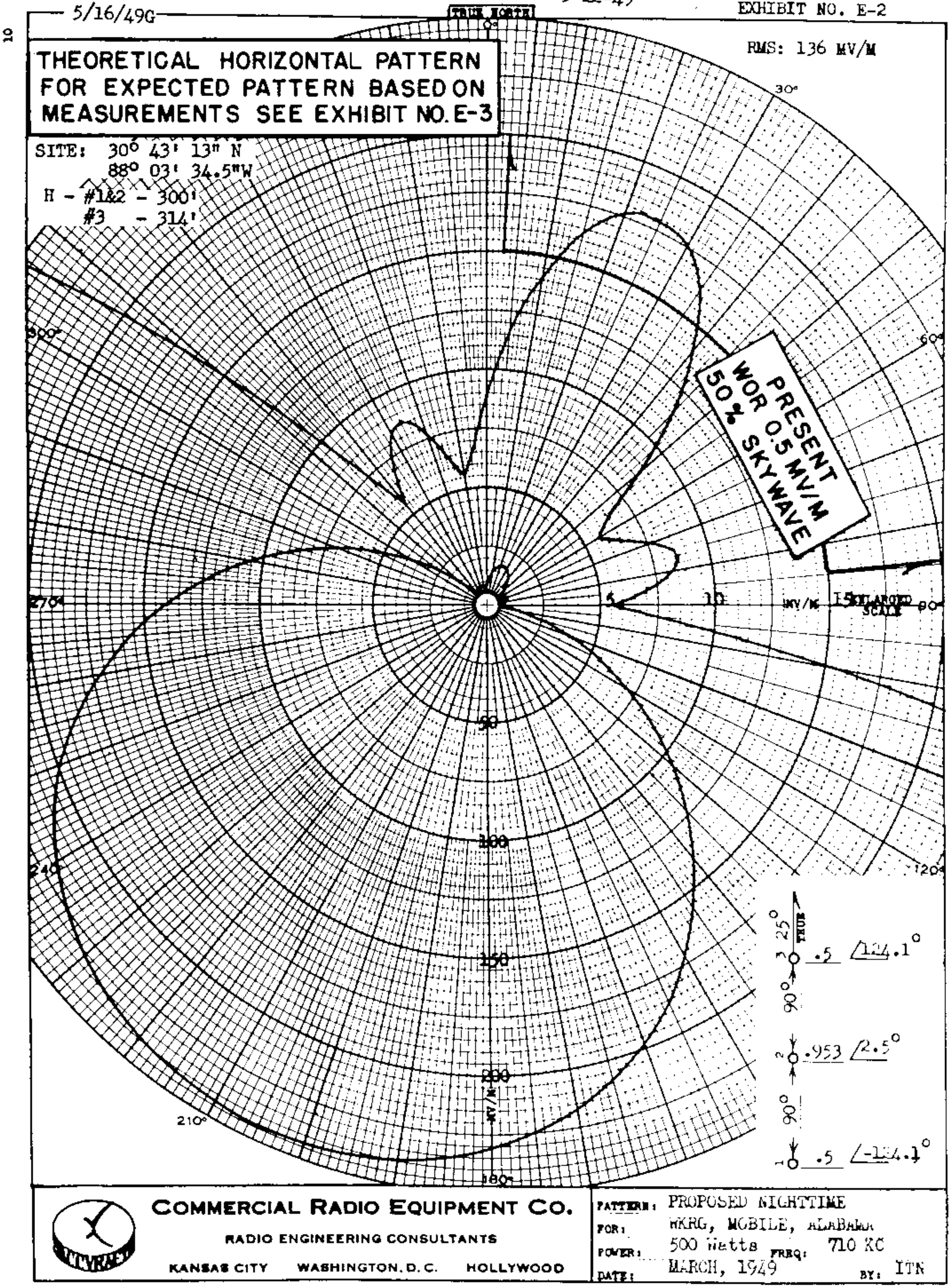
480501

FIGURE 2C

WKRG

PROPOSED NIGHT — WKRG, MOBILE, ALA. — 5-12-49 — 500w, 1kw-LS, DAN — 710 kc

EXHIBIT NO. E-2



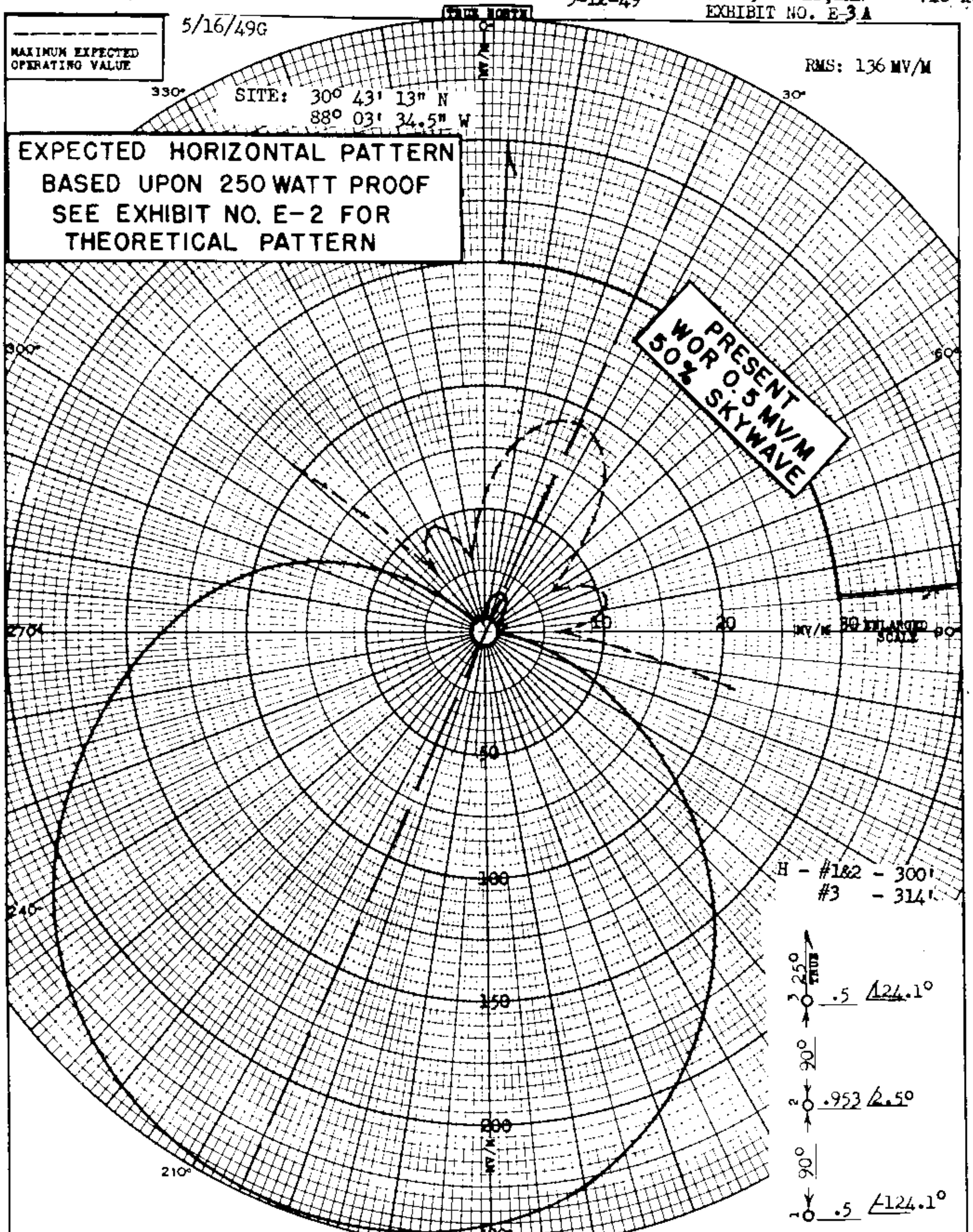
WKRG

PROPOSED
IGHT

WKRG, MOBILE, ALA.

5-12-49

500w, 1kw-LS, DAN 710 kc
EXHIBIT NO. E-3A



COMMERCIAL RADIO EQUIPMENT CO.

RADIO ENGINEERING CONSULTANTS

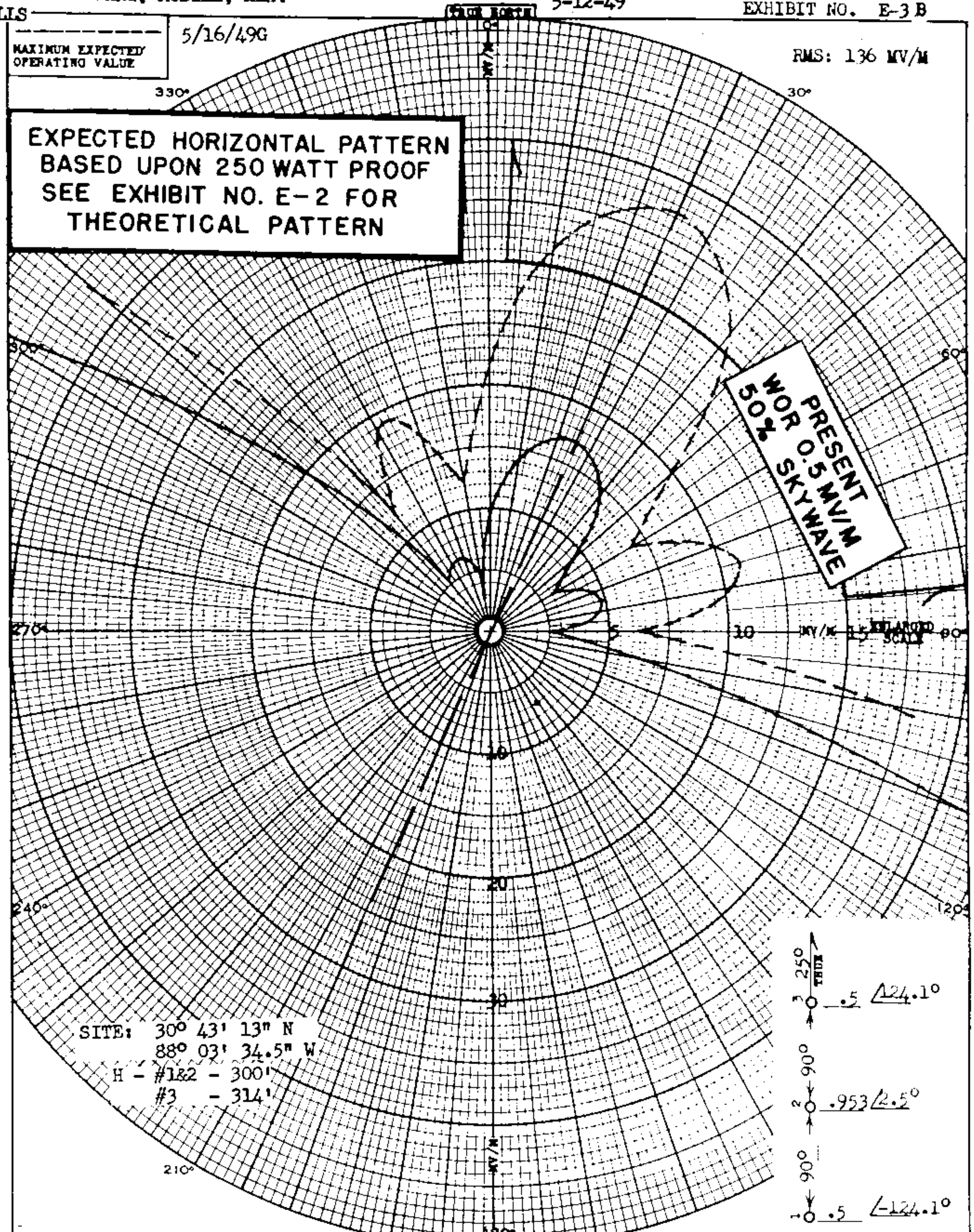
KANSAS CITY   WASHINGTON, D.C.   HOLLYWOOD

PATTERN: PROPOSED NIGHTTIME
FOR: WKRG, MOBILE, ALABAMA
POWER: 500 Watts FREQ: 710 KC
DATE: MARCH, 1949 BY: ITN

WKRG

PROPOSED NIGHT NULLS — WKRG, MOBILE, ALA. — 5-12-49 — 500w,1kw-LS,DAN — 710 kc

EXHIBIT NO. E-3 B



COMMERCIAL RADIO EQUIPMENT CO.

RADIO ENGINEERING CONSULTANTS

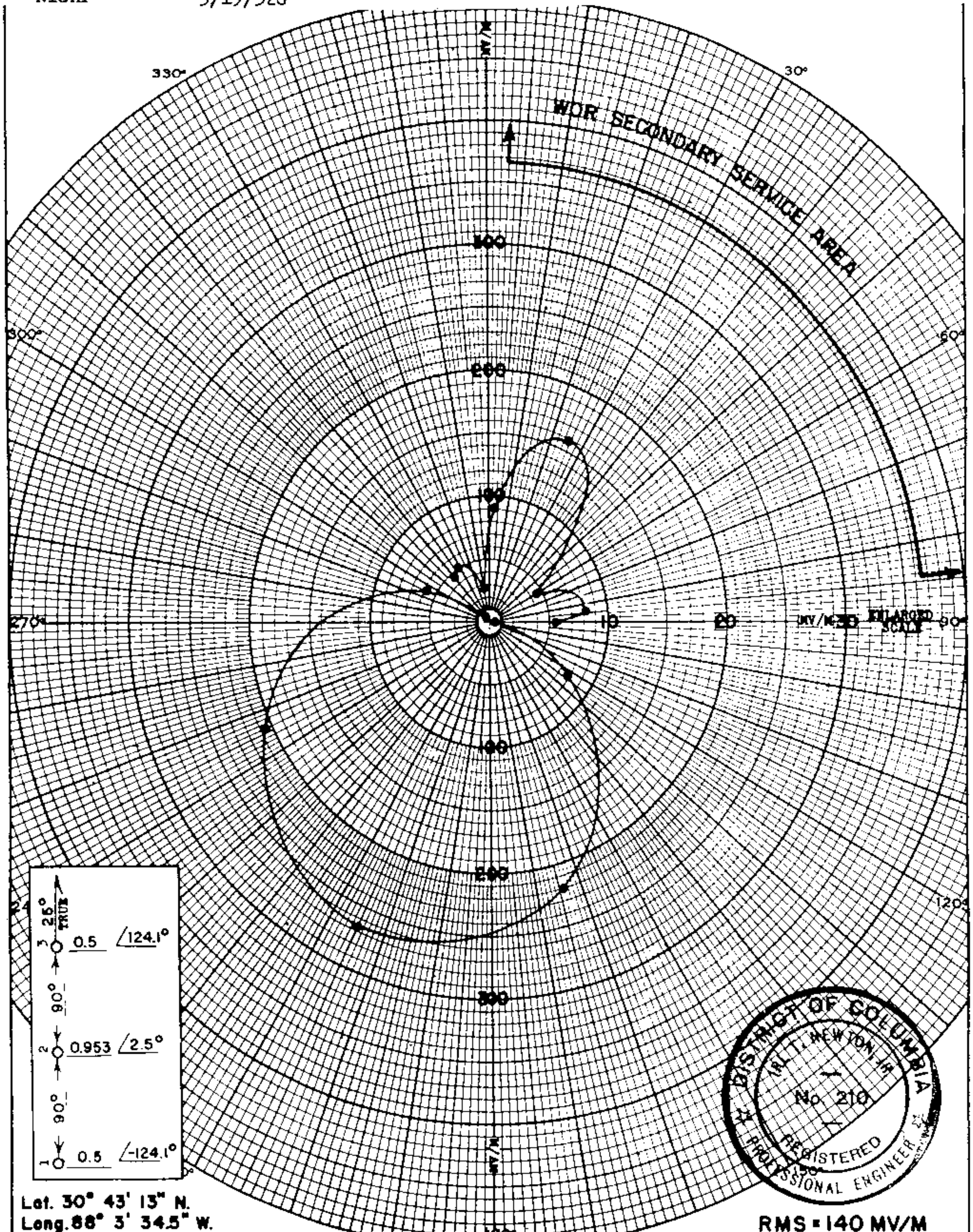
KANSAS CITY — WASHINGTON, D.C. — HOLLYWOOD

PATTERN:	PROPOSED NIGHTTIME
FOR:	WKRG, MOBILE, ALABAMA
POWER:	500 WATTS FREQ: 710 KC
DATE:	MARCH, 1949 BY: ITN

WKRG, Mobile, Ala. 710 kc.

WKKG

MEASURED NIGHT — WKRG, MOBILE, ALA. 3/19/52G — 500W, 1KW-LS, U, DA-N — 710 KC



COMMERCIAL RADIO EQUIPMENT CO.

RADIO ENGINEERING CONSULTANTS

KANSAS CITY — WASHINGTON, D. C.

PATTERN: MEASURED NIGHTTIME

FOR: WKRG, MOBILE, ALABAMA

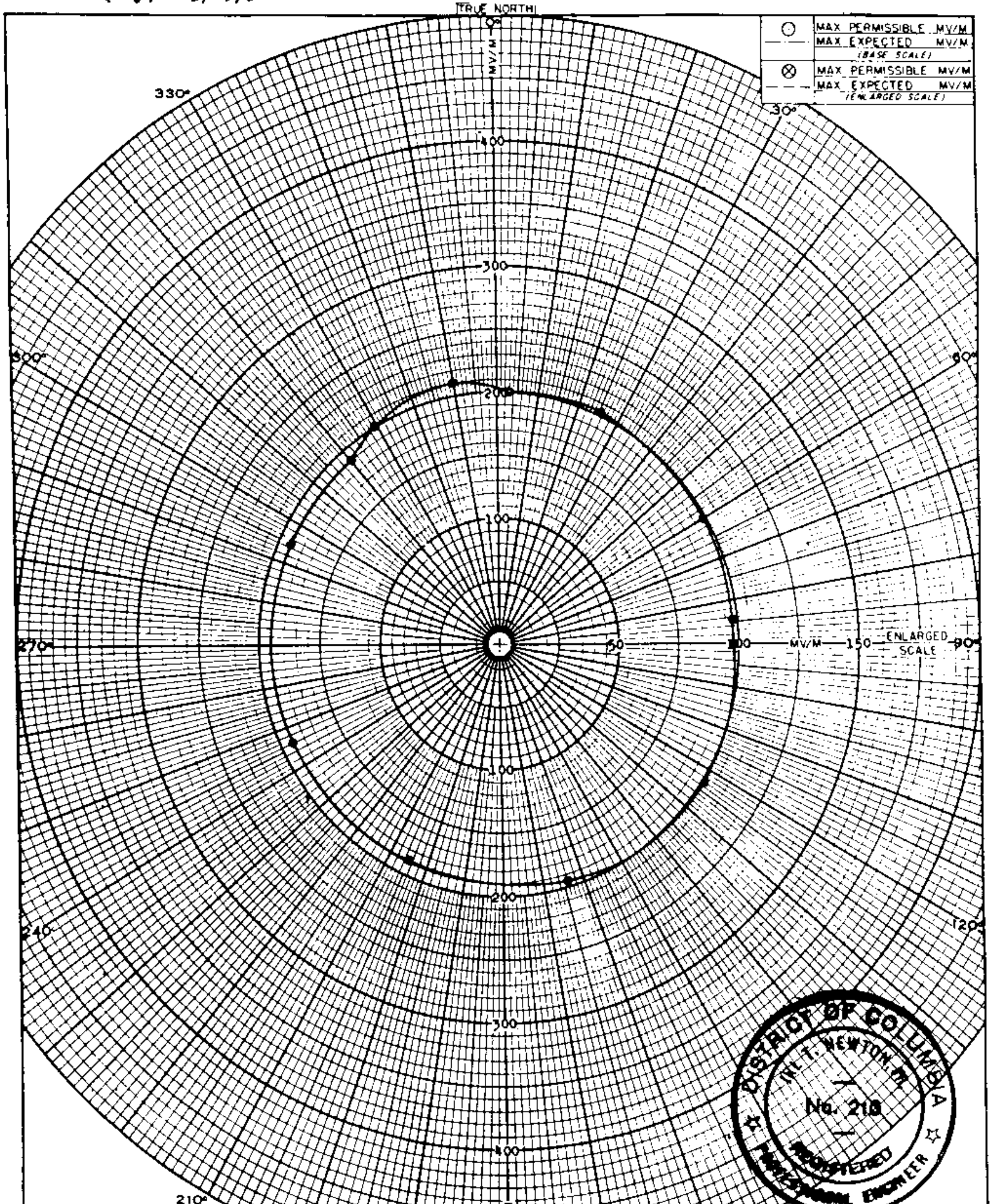
POWER: 1 Kw-D, 500 W-N FREQ: 710 KC

DATE: FEB. 15, 1952 BY: ITN

APPL RECD 2/28/52 BL-4686 — WKRG, MOBILE, ALA. — 710 KC

WKRG

MEASURED NON-DA (Day) WKRG, MOBILE, ALA. 3/19/52G 500W, 1KW-LS, U, DA-N 710 KC



Lat. 30° 43' 13" N.
Long. 88° 3' 34.5" W.

RMS = 193 MV/M

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

PATTERN MEASURED NON-DIRECTIONAL (DAY)
FOR WKRG, MOBILE, ALABAMA
POWER 1 KW-D, 500W-N FREQ. 710 KC
DATE FEB. 16. 1952 ITN

APPL RECD 2/28/52 BL-4686 WKRG, MOBILE, ALA. 710 KC

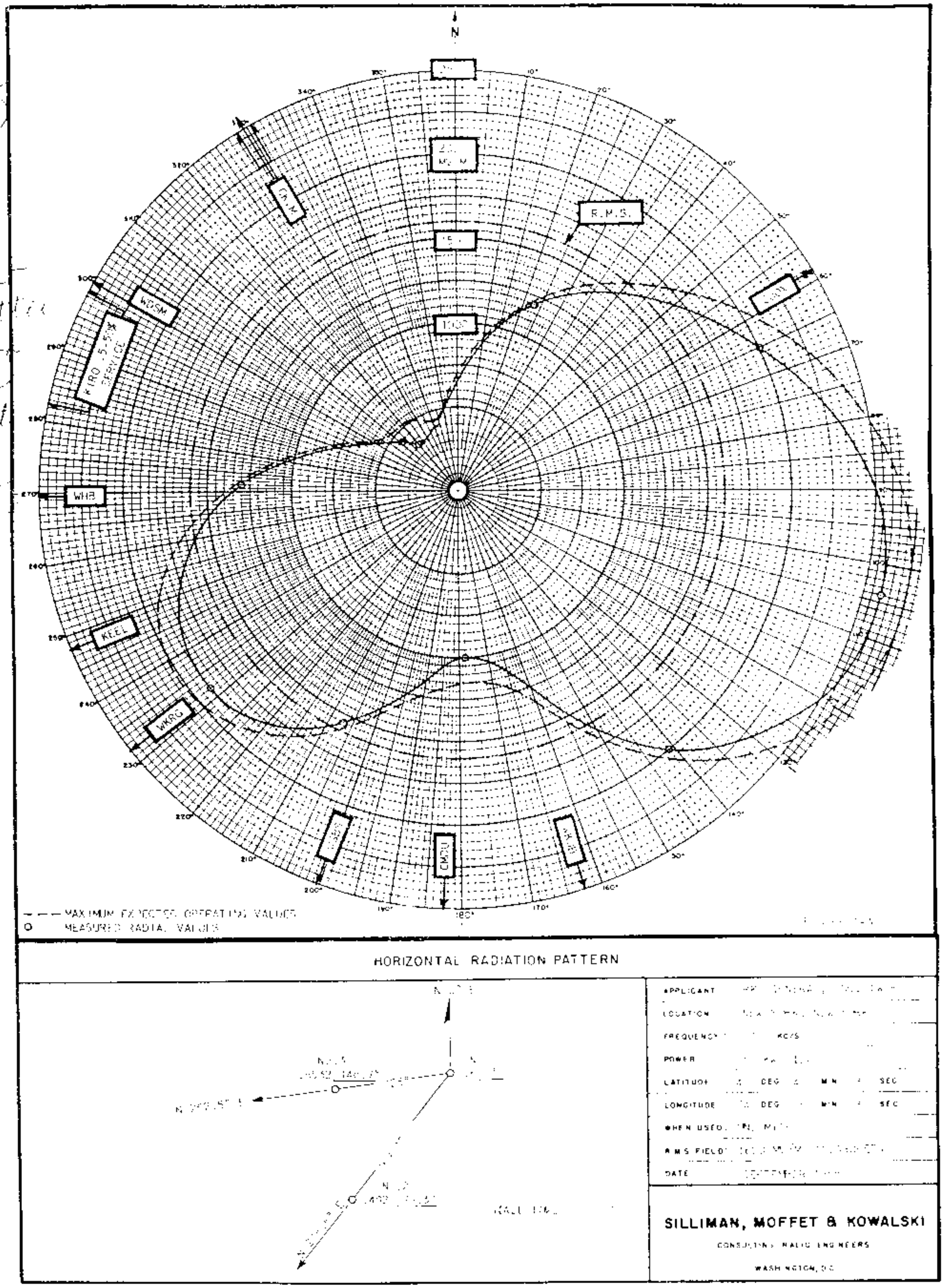
WOR

Measured Day & Night
(11-29-68ct)

Station WOR
New York, New York

50kw,DA-1,U
710 kc

BL-12144
Granted
7-8-69
License
covering
change
in antenna-
transmitter
location
change
in direct-
ional
antenna
system



FCC File No.BL-12144
Accepted 10-29-68

Station WOR
New York, New York

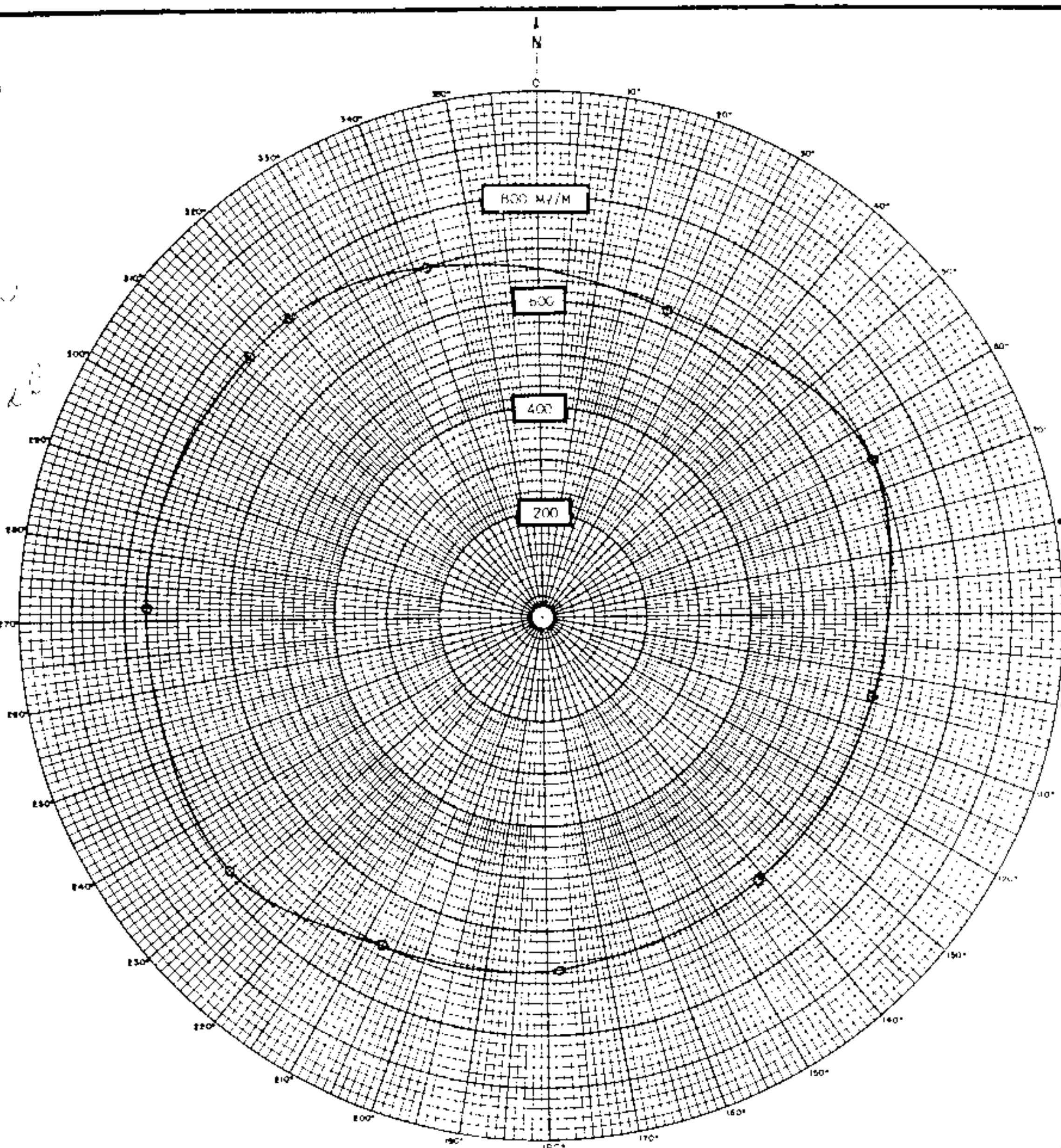
710 kc

WOR

Measured Non-DA
(11-29-68ct)

Station WOR
New York, New York

50kw,DA-1,U
710 kc



o MEASURED RADIAL VALUES

FIGURE 1-A

HORIZONTAL RADIATION PATTERN

NON-DIRECTIONAL SURVEY

APPLICANT: RKO GENERAL, INC. (WOR)
LOCATION: NEW YORK, NEW YORK
FREQUENCY: 710 KC/S
POWER: 50 KW-U (DA-1)
LATITUDE: [illegible] DEG 47 MIN [illegible] SEC
LONGITUDE: 74 DEG [illegible] MIN [illegible] SEC
WHEN USED: NON-DIRECTIONAL SURVEY ONLY
R.M.S. FIELD: [illegible] MV/M (MEASURED)
DATE: SEPTEMBER 1968

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

FCC File No.BL-12144
Accepted 10-29-68

Station WOR
New York, New York

710 kc

WOR

Proposed Day & Night (4-28-66ct)	Station WOR New York, New York	50kw,DA-1,U 710 kc

CP 9-1-66

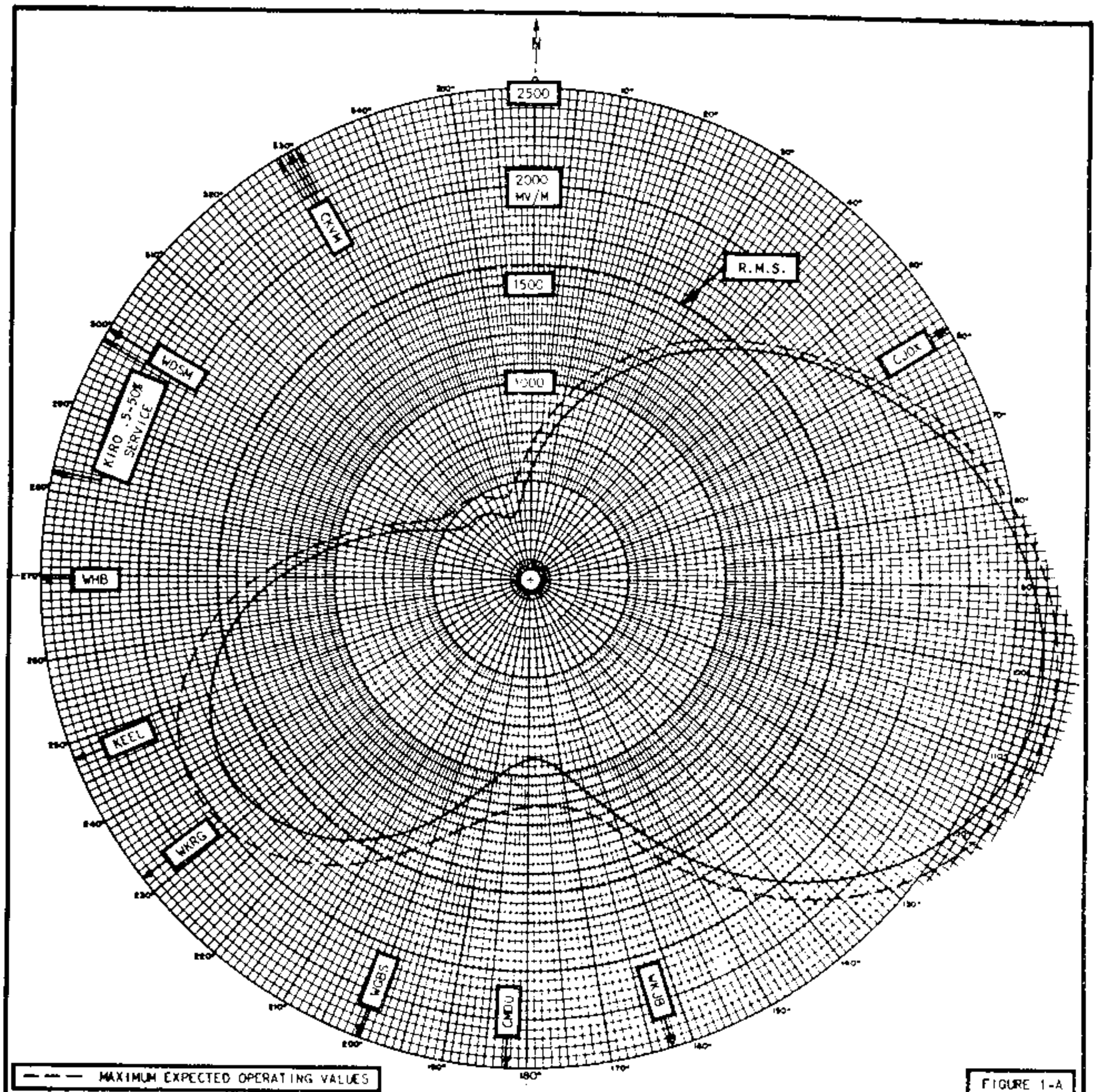
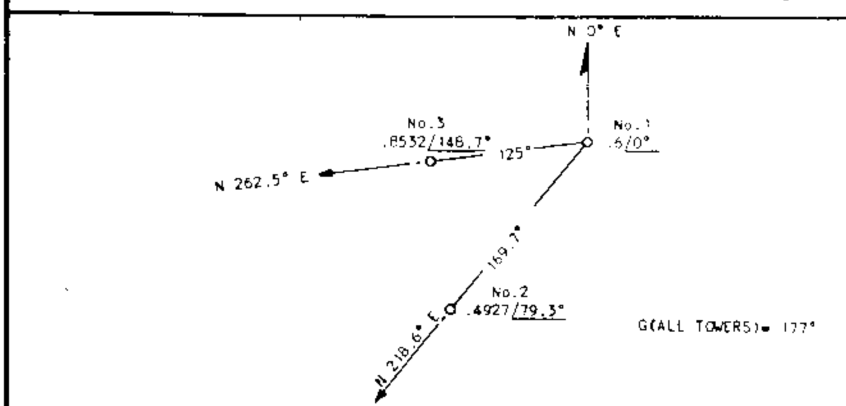


FIGURE 1-A

HORIZONTAL RADIATION PATTERN



APPLICANT	RKO GENERAL, INC.
LOCATION	NEW YORK, NEW YORK
FREQUENCY	710 KC/S
POWER	50 KW-U(DA-1)
LATITUDE	40 DEG 47 MIN 30 SEC.
LONGITUDE	74 DEG 05 MIN 38 SEC.
WHEN USED	UNLIMITED
R.M.S. FIELD	1590 MV/M
DATE	JUNE 1965

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

FCC File No.BP-16838 Accepted 4-22-66	Station WOR New York, New York	710 kc

WQBX

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WQBX

Main Studio: Blacksburg, Virginia

Frequency: 710 KHz

Power: Night 10 kW Day

Notification: 1777

Date: July 26, 1978 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 37° 08' 01"
West Longitude: 80° 21' 17"

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	:	SE (#3)	C (#2)	NW (#1)			
HEIGHT ABOVE INSULATORS	:	340'	340'	340' (88.4°)			
PHASING	:	-106°	+130.11°	0°			
FIELD RATIO	:	1	1.844	1			

SPACING AND ORIENTATION : Towers in a row are spaced 347' (90°) on a line bearing 300° true.

GROUND SYSTEM: 120 - 350' equally spaced copper radials plus 120 - 50' interspaced radials about each tower. Radials are shortened and bonded to transverse straps along intersections between towers. Centers of system are bonded together.

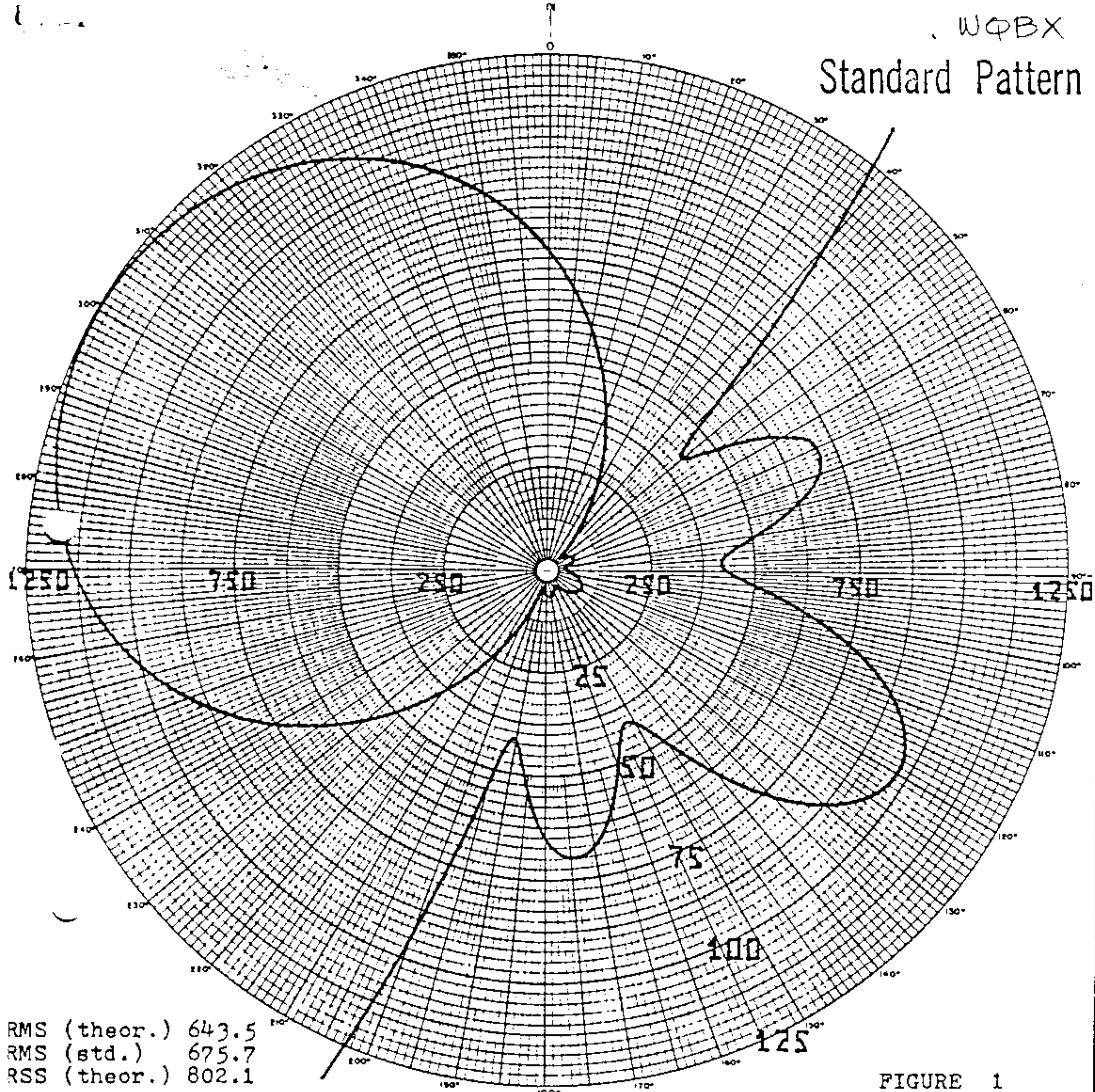
PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL		STANDARD
	RMS	RSS	RMS
Day	643.5 mv/m	802.1 mv/m	675.7 mv/m
Night			

Note: This notification concerns an increase in the Daytime power of the station with a directional standard pattern.

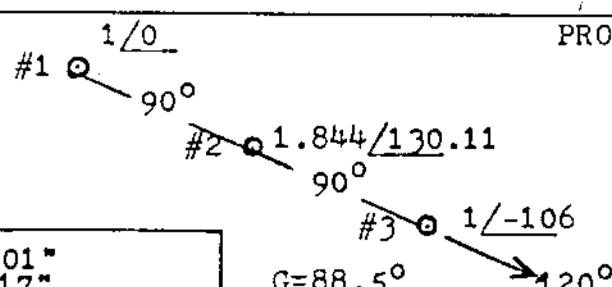
WQBX

Standard Pattern



RMS (theor.) 643.5
RMS (std.) 675.7
RSS (theor.) 802.1

FIGURE 1

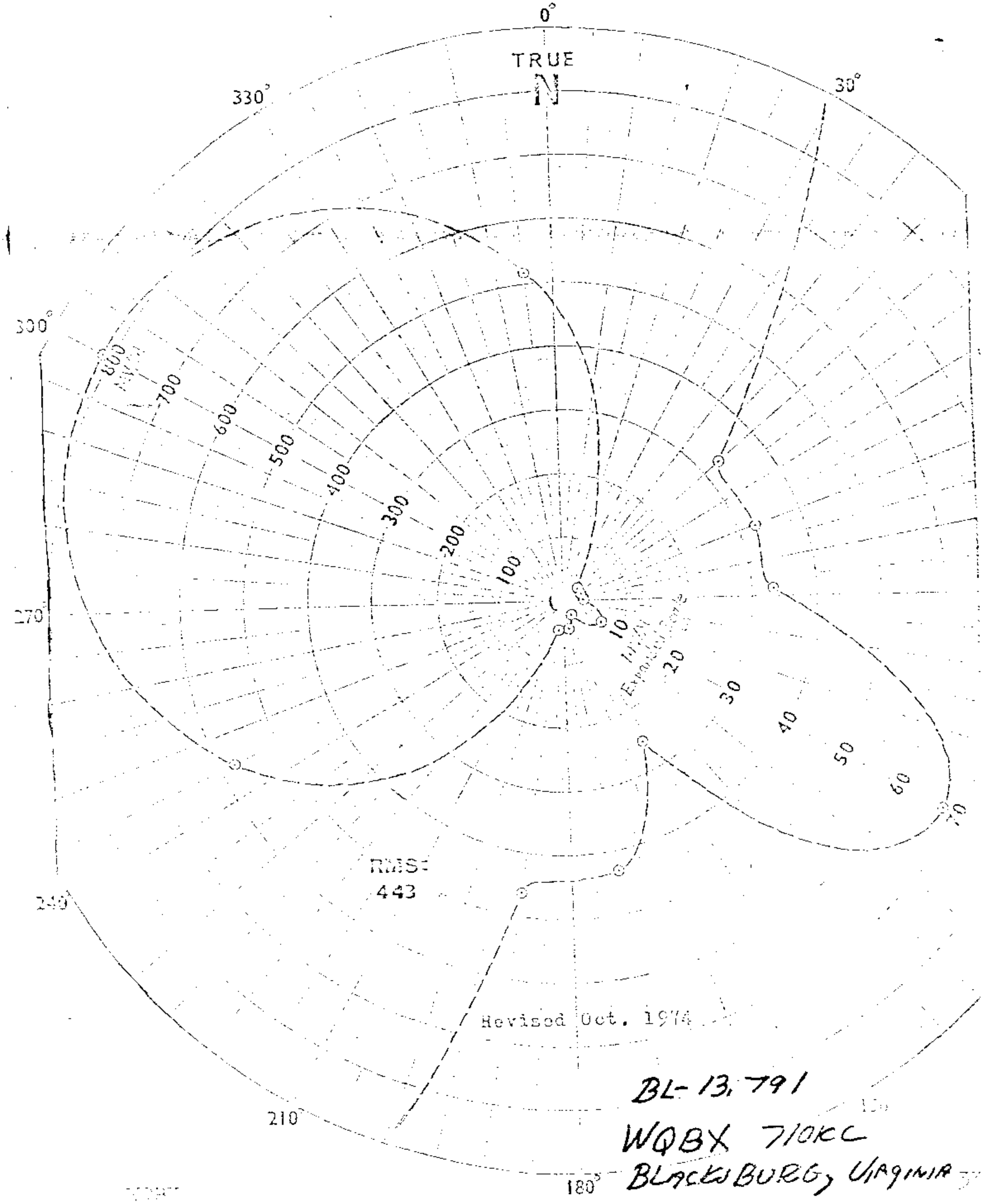


PROPOSED DAYTIME HORIZONTAL PLANE
RADIATION PATTERN
WQBX BLACKSBURG, VIRGINIA
710khz, 10kw, DA-D

N.37° 08' 01"
W.80° 21' 17"

Harold D. Russell
McLean, Virginia
June 1976

GRAPH 11-? -- DA HORIZONTAL PLANE RADIATION PATTERN



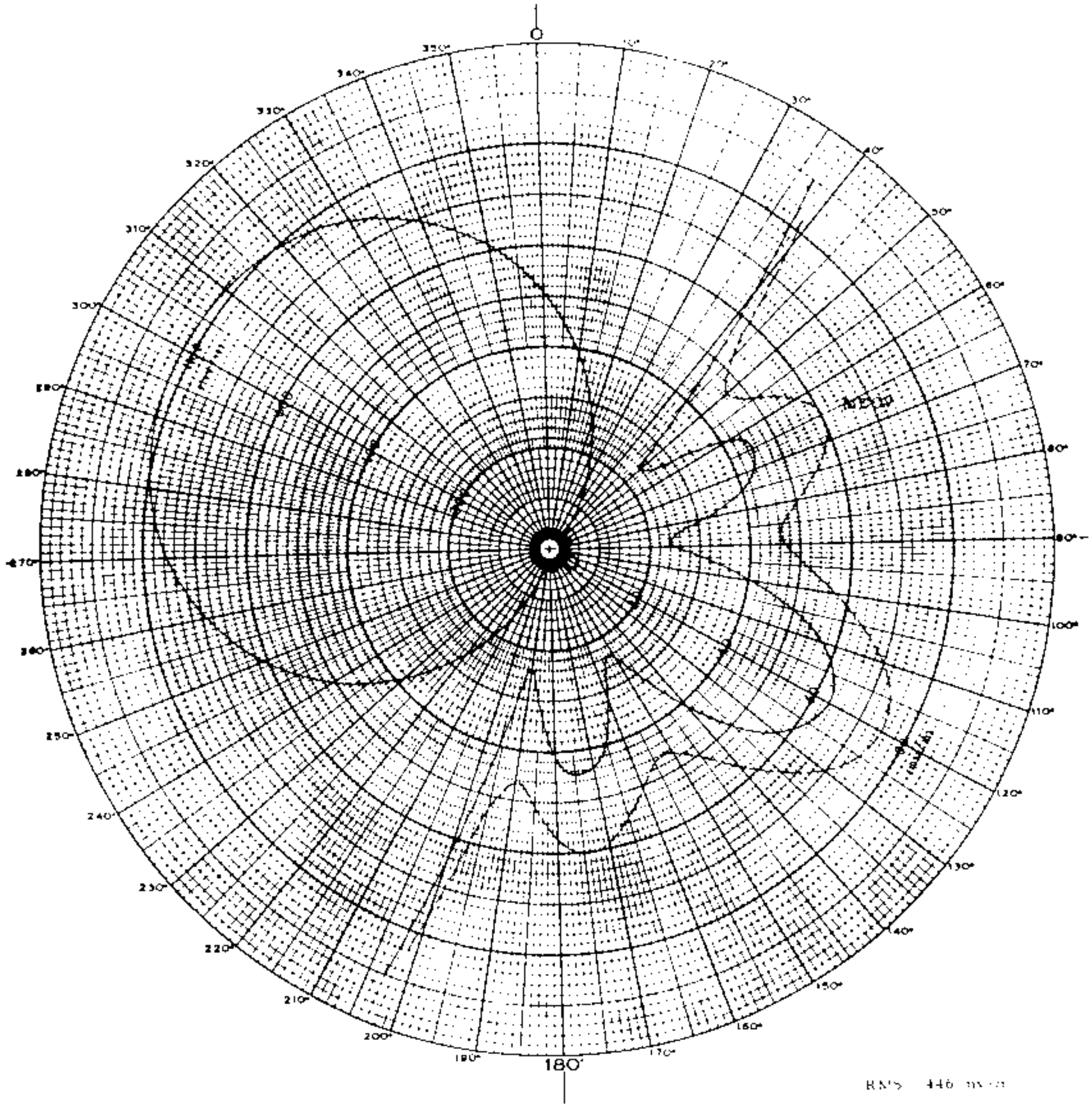
BL-13,791
WQBX 710KC
BLACKSBURG, VIRGINIA

WQBX

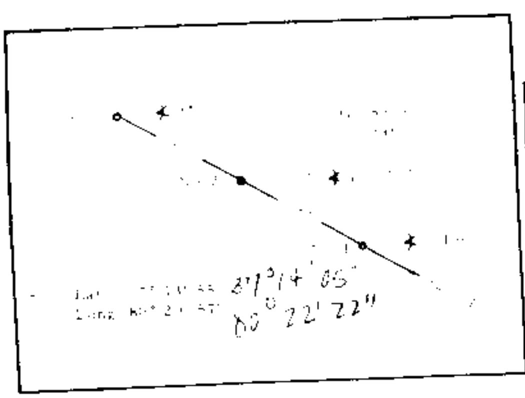
Proposed Day
(10-28-67ct)

New; Blue Ridge Broadcasting
Blacksburg, Virginia

5kw,DA-D,D
710 kc



RMS 446 mv/m



FIGURE

CALCULATED HORIZONTAL PLANE PATTERN

PROPOSED STATION

BLACKSBURG, VIRGINIA

KC 5KW D, DA-D

JULY 196

WILLIS C. BEECHER
CONSULTING ENGINEER
WASHINGTON D.C.

FCC File No.BP-17580
Accepted 10-25-67 Amended

New; Blue Ridge Broadcasting
Blacksburg, Virginia

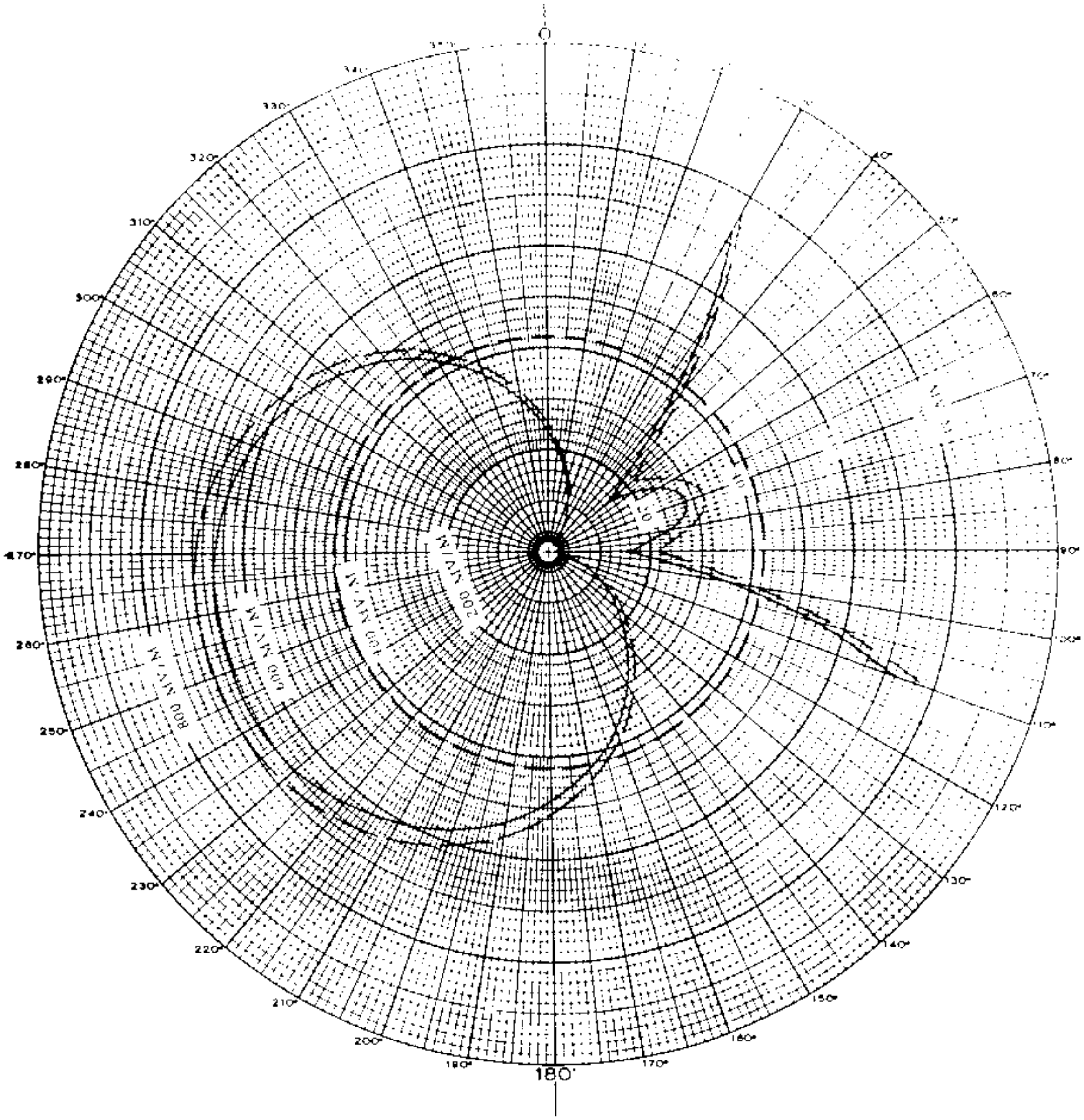
710 kc

WQBX

Proposed Day
(2-28-67ct)

New; Blue Ridge Broadcasting
Blacksburg, Virginia

5kw,DA-D,D
710 kc



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

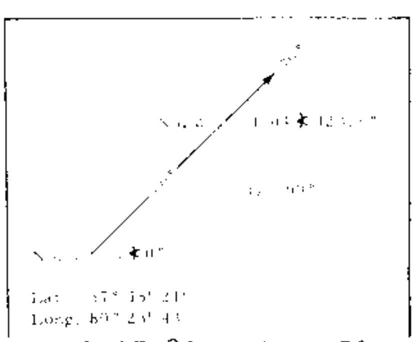


FIGURE [illegible]

CALCULATED HORIZONTAL PLANE PATTERN

PROPOSED STATION

BLACKSBURG, VIRGINIA

[illegible] KC 5 KW [illegible]

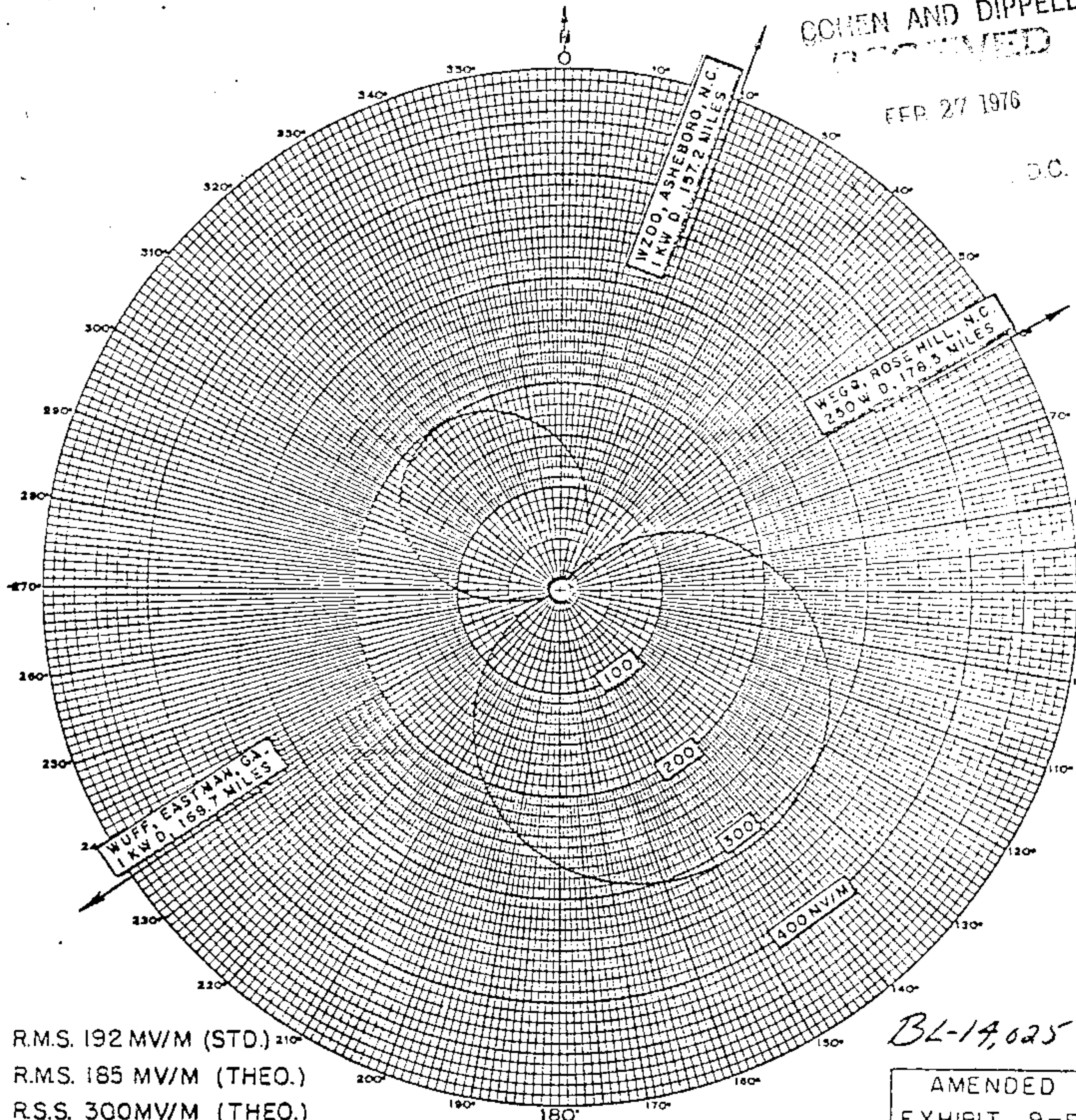
NOVEMBER [illegible]

FCC File No.BP-17580
Accepted 2-3-67

New; Blue Ridge Broadcasting
Blacksburgh, Virginia

710 kc

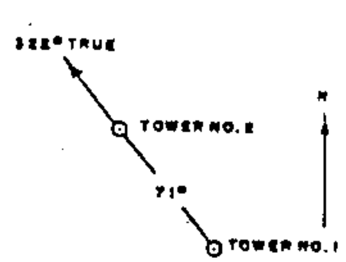
WQKI



BL-14,625

R.M.S. 192 MV/M (STD.)
R.M.S. 185 MV/M (THEO.)
R.S.S. 300MV/M (THEO.)

AMENDED
EXHIBIT 9-B



LATITUDE 33° 36' 56" North
LONGITUDE 80° 46' 54" West

ANTENNA NUMBER	AZIMUTH DEG	SPACING DEG	PHASING DEG	FIELD RATIO	MV/M FOR 1 KW	HEIGHT DEG
1	0	0	0	1		59
2	322	71	162	.95		59

STANDARD DAYTIME
HORIZONTAL PLANE
RADIATION PATTERN
WQKI FOR
PROPOSED SAINT MATTHEWS,
SOUTH CAROLINA
710 KHZ 1 KW DA-D
740214*

KEAR and KENNEDY
CONSULTING ENGINEERS
WASHINGTON, D.C.

WQKI

SUPPLEMENTAL DIRECTIONAL ANTENNA
DESCRIPTION SHEET

Station: WQKI

Main Studio: St. Mathews, South Carolina

Frequency: 710 kHz

Power 1 kW

Notification List No. 1669

Date: January 27, 1976 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 33° 37' 04"
West Longitude: 80° 46' 50"

Authorized for Daytime operation (DA-D).

Note: Please retain the description sheet and directional antenna radiation pattern notified for a new station at St. Mathews, South Carolina, in United States Change List Number 1611, dated December 17, 1974 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 antenna system.

NEW

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: (New)

Main Studio: Carmichael, California

Frequency: 710 kHz

Power: 0.25

Notification List No. 1712

Date: December 8, 1976

Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 38° 38' 00"
West Longitude: 121° 15' 33"

ANTENNA CHARACTERISTICS

Authorized for Daytime and Nighttime operation. (DA-1)
Number of elements: 4
Type of elements: Series excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	SW(#1)	CW(#2)	CE(#3)	NE(#4)
HEIGHT ABOVE INSULATORS:	365'(94.8°)	250'(64.9°)	455'(118.2°)	310'(80.5°)
PHASING:	+52.6°	-157.8°	0°	+154.4°
FIELD RATIO:	0.395	0.935	1.000	0.377

SPACING AND ORIENTATION: From tower #1, tower #2 is spaced 345'(89.6°) on a line bearing 36.2° true, tower #3 is spaced 679' (176.5°) on a line bearing 43.7° true, and tower #4 is spaced 987' (256.5°) on a line bearing 46.3° true.

GROUND SYSTEM: 120-346' equally spaced copper radials plus 120-50' interspaced radials about each tower. Radials are shortened and bonded to transverse straps along intersections between towers. Centers of system are bonded together.

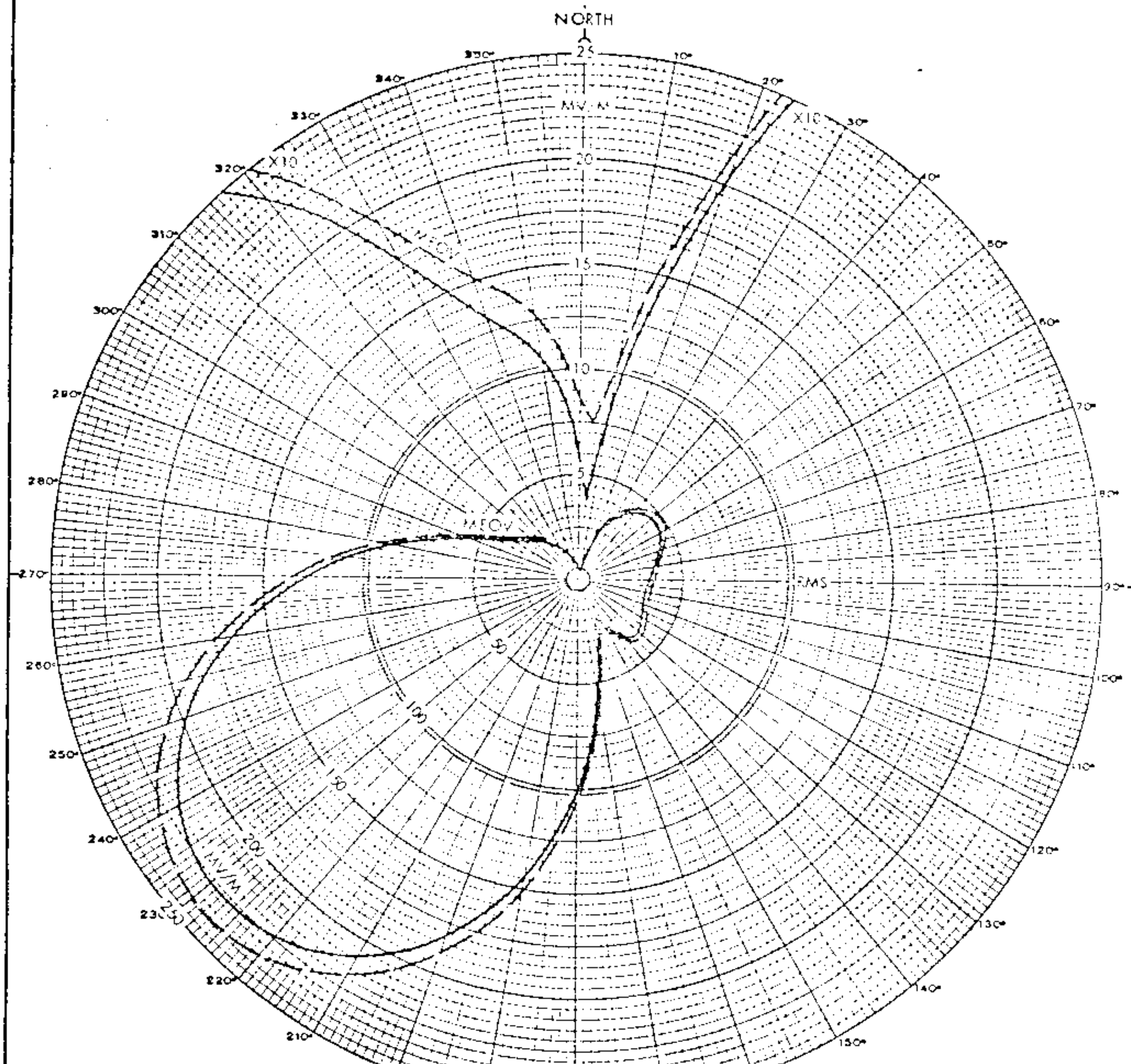
PREDICTED EFFECTIVE FIELDS AT RATED POWER:

THEORETICAL
RMS

102.4 mv/m

CTR NO 30694A3

NEW

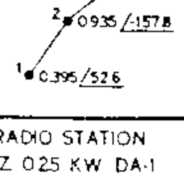


N. Lat. 38° 38' 00"
W. Long. 121° 15' 33"

RMS = 102.4 MV/M

TOWER LOCATIONS RELATIVE TO TOWER 1

TOWER	HEIGHT	AZIMUTH	DISTANCE
1	94.8° 365 FT	0	0
2	64.9° 250 FT	N 36.2°E	89.6° 345 FT
3	118.2° 455 FT	N 43.7°E	176.5° 679 FT
4	80.5° 310 FT	N 46.3°E	256.5° 987 FT



HAMMETT & EDISON INC
CONSULTING ENGINEERS
SAN FRANCISCO

NEW RADIO STATION
710 KHZ 0.25 KW DA-1
CARMICHAEL, CALIFORNIA

PROPOSED HORIZONTAL RADIATION

UNATTENUATED FIELD INTENSITY
AT ONE MILE

7501141

FIGURE 6A

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

New; Olympic Bcstrs., Inc. Carmichael, California

250w, DA-1,U 710 KC

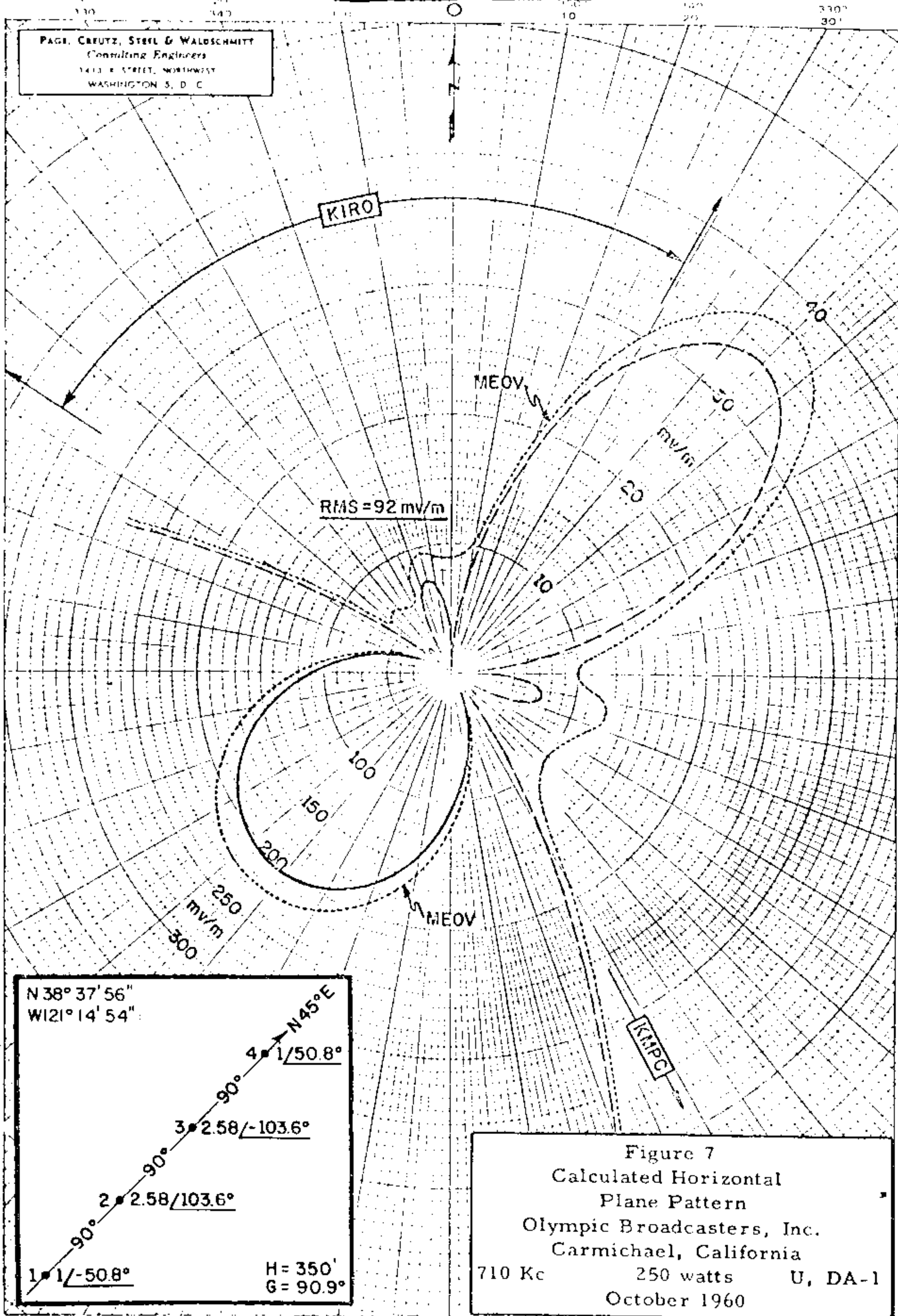


Figure 7
Calculated Horizontal
Plane Pattern
Olympic Broadcasters, Inc.
Carmichael, California
710 Kc 250 watts U, DA-1
October 1960

FCC File No. BP-14036
Accepted 12-15-60 (Amended)

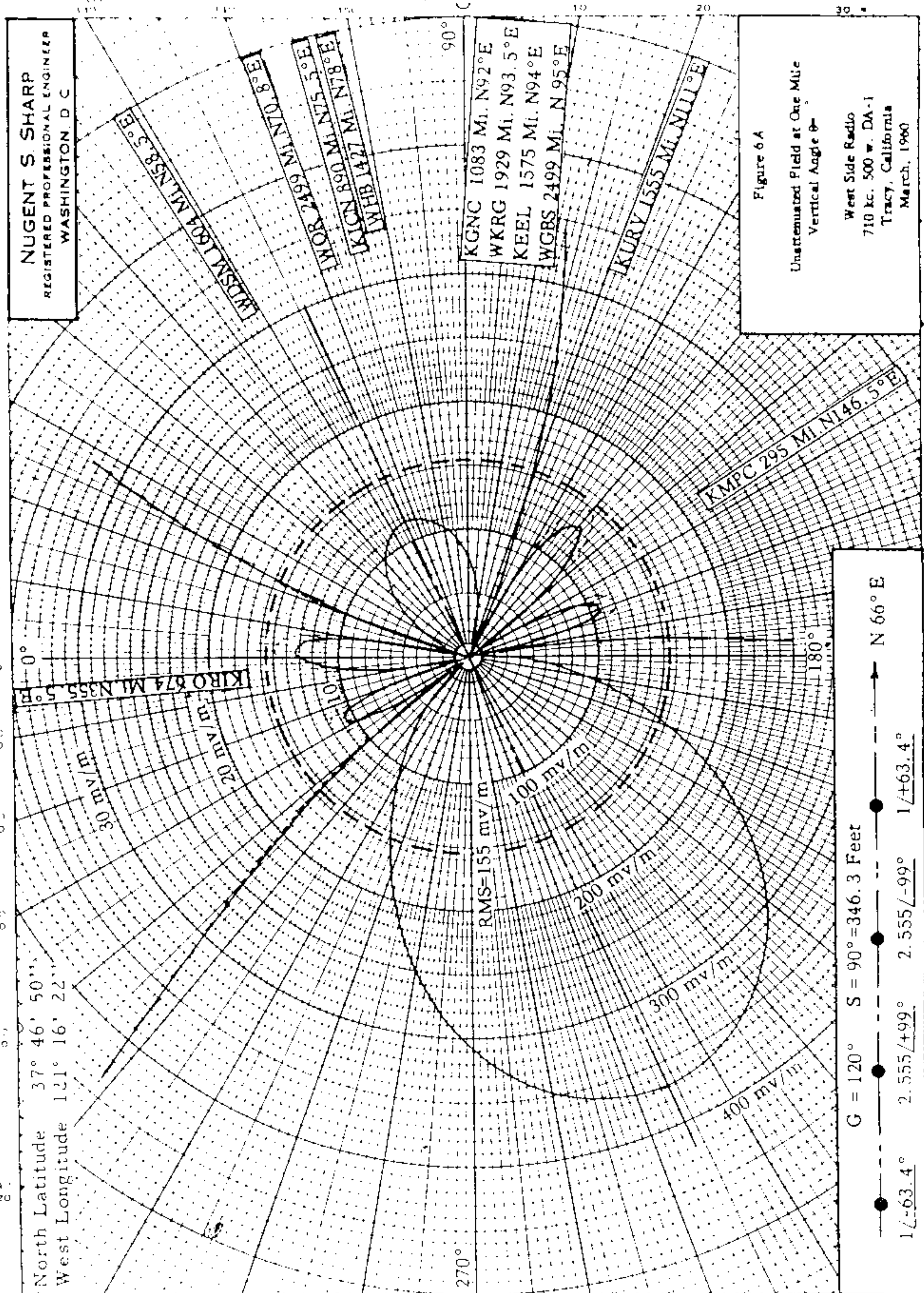
Olympic Bcstrs., Inc.
Carmichael, California 710 KC

TRACY, CAL.

PROPOSED DAY & NIGHT (4-22-60g)

New; West Side Radio
Tracy, California

500w, DA-1,U
710 KC



FCC File No. BP-14016
Accepted 4-6-60 (formerly BP-7802)

West Side Radio
Tracy, California

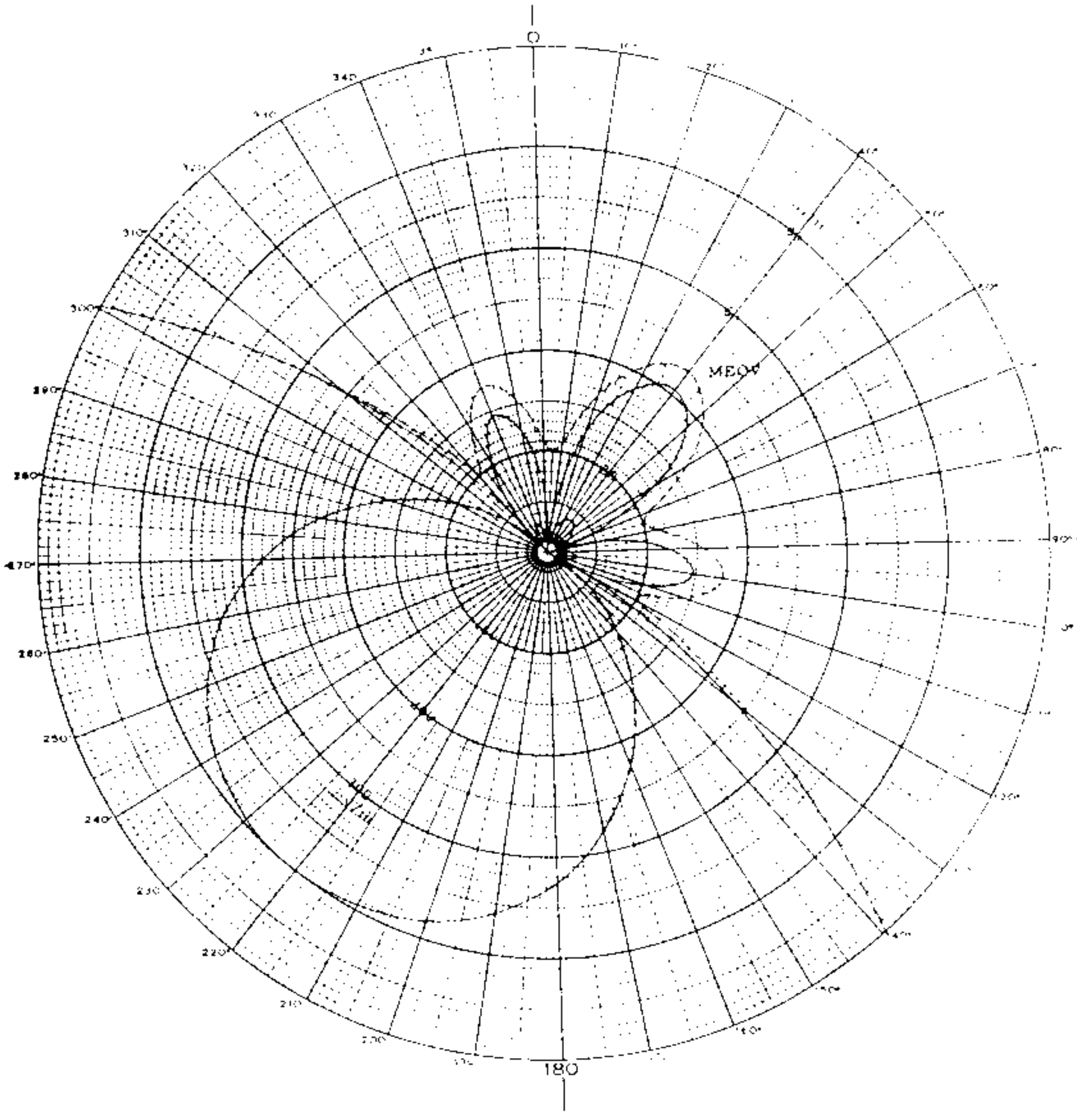
710 KC

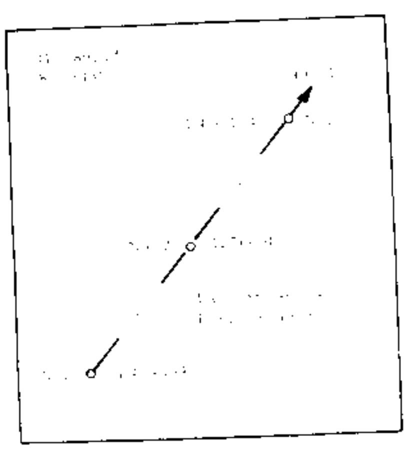
WZOO

Proposed Day
(10-28-67ct)

New; Randolph County Radio
Asheboro, North Carolina

1kw,DA-D,D
710 kc





FCC File No.BP-17273
Accepted 10-25-67 Amended

New; Randolph County Radio
Asheboro, North Carolina

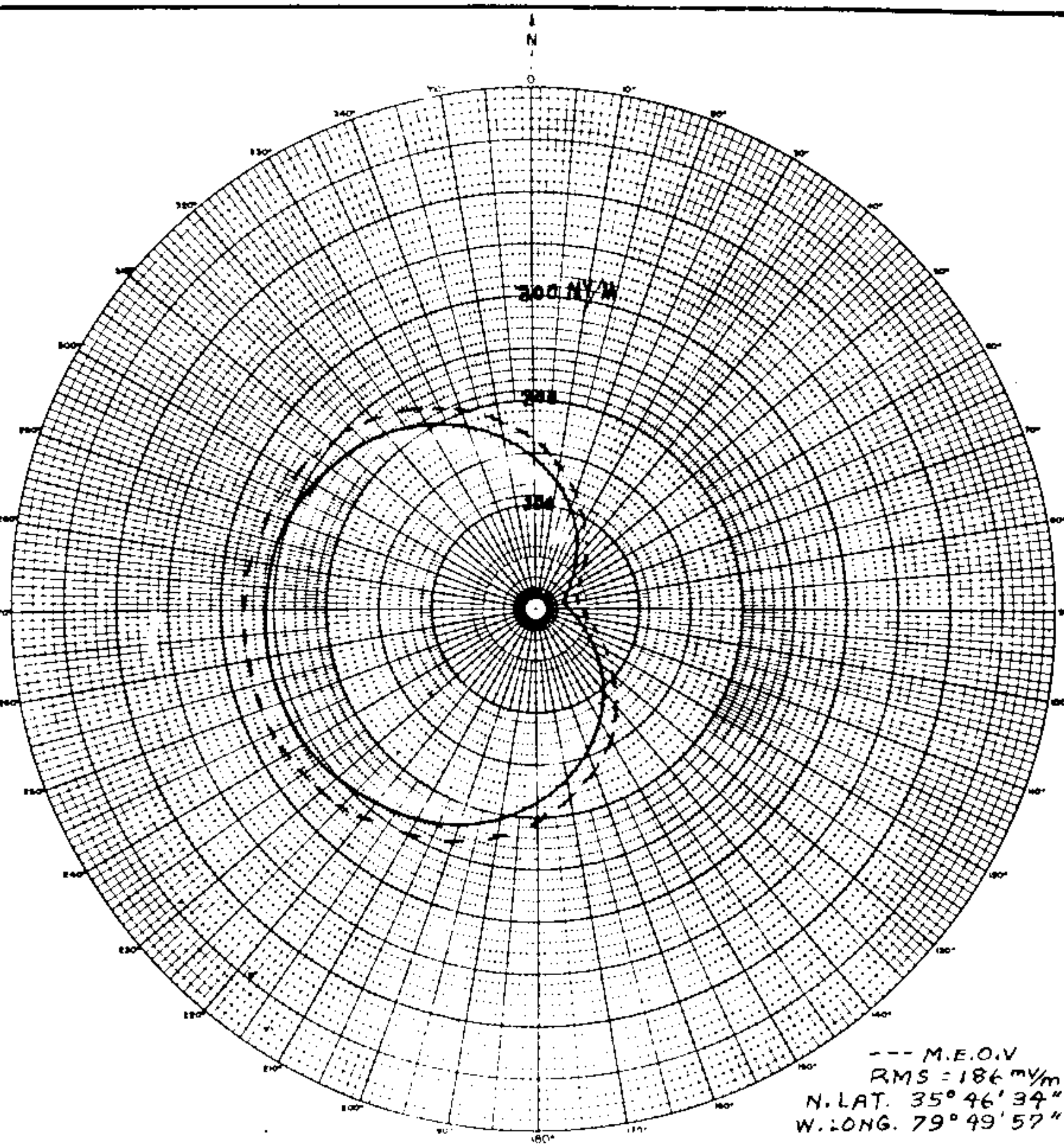
710 kc

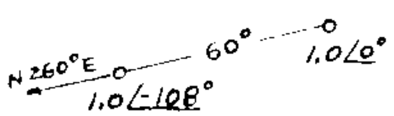
WZOO

Proposed Day
(10-28-66ct)

New; Randolph County Radio
Asheboro, North Carolina

1kw,DA-D,D
710 kc





h = 77.9°

[redacted]

PATTERN NO
SUPERSEDES
APP

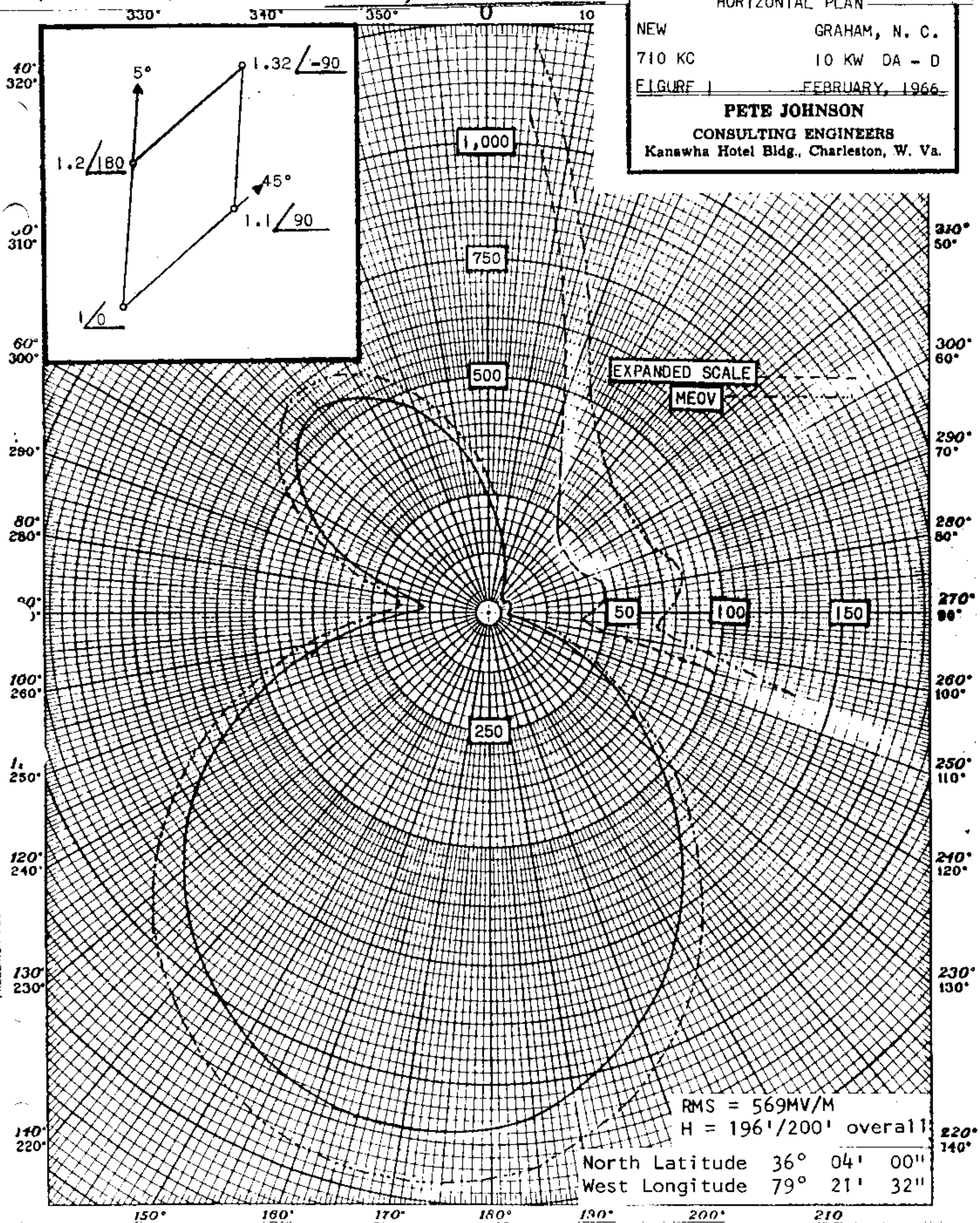
FCC File No.BP-17273
ccepted 10-13-66

New; Randolph County Radio
Asheboro, North Carolina

710 kc

Proposed Day
(10-28-66ct)

New; Bcstg. Service of North Car., Inc. 10kw,DA-D,D
Graham, North Carolina 710 kc.



FCC File No.BP-17143
Accepted 10-13-66

New; Bcstg. Service of North Car., Inc.
Graham, North Carolina

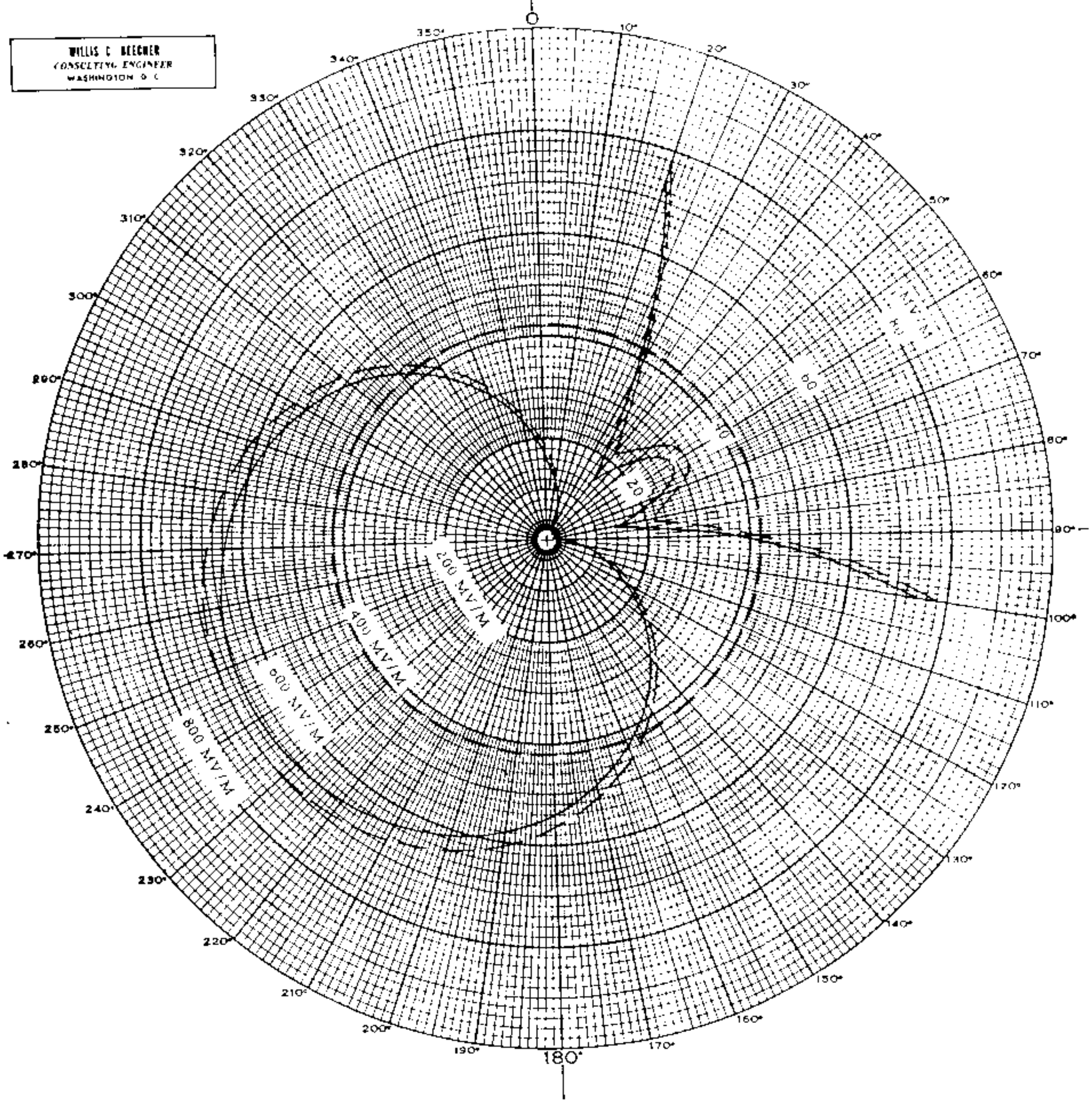
710 kc

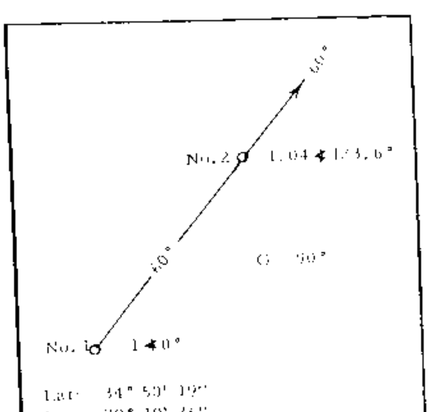
Proposed Day
(2-28-67ct)

New; K&R Broadcasting Corp.
Red Springs, North Carolina

5kw,DA-D,D
710 kc

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





FIGURE

CALCULATED HORIZONTAL PLANE PATTERN

K & R BROADCASTING CORPORATION

RED SPRINGS, NORTH CAROLINA

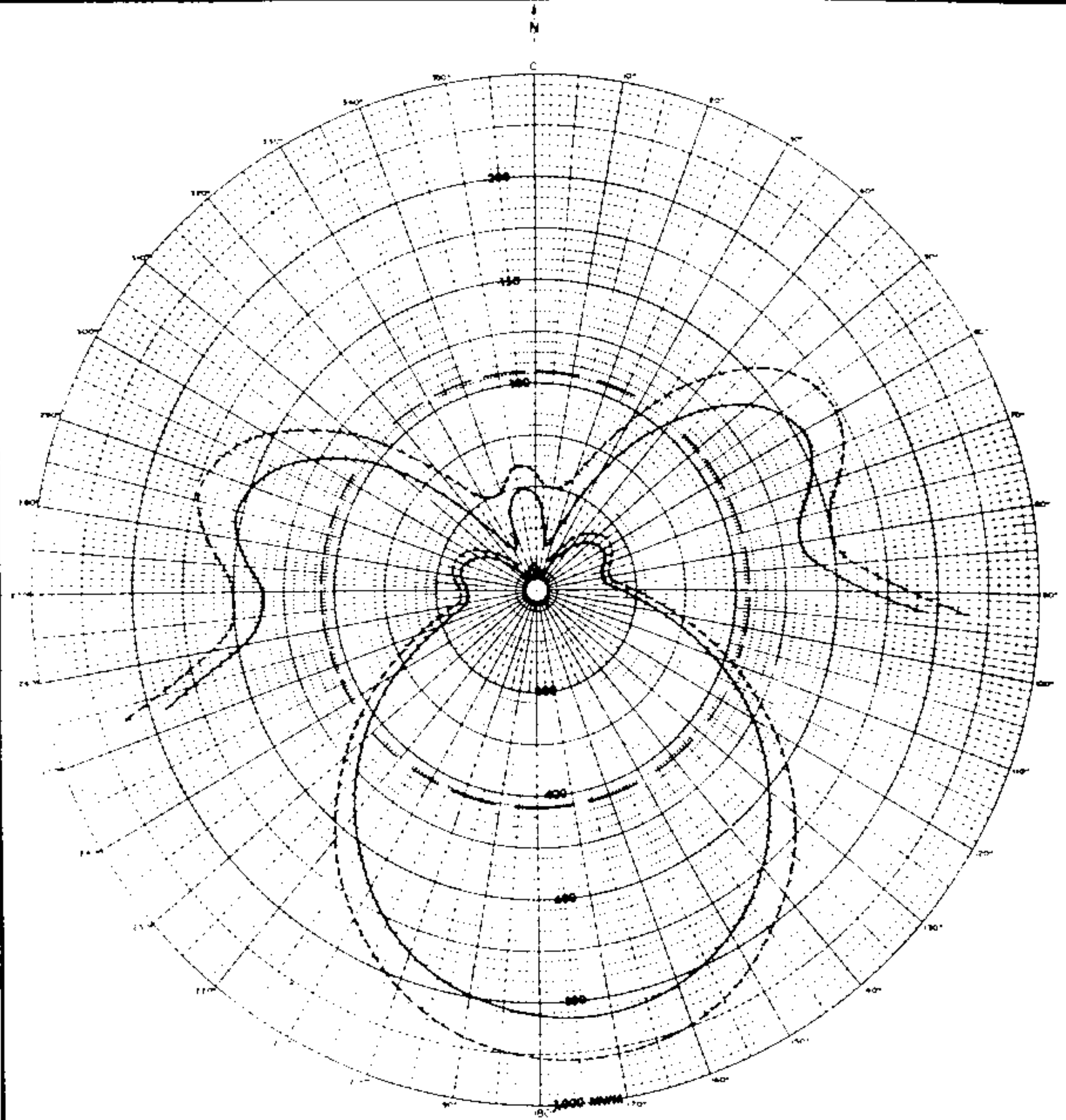
710 KC 5 KW D, DA-D

NOVEMBER 196

Proposed Day
(9-26-68ct)

New; Radio Tupelo
Tupelo, Mississippi

5kw, DA-D, D
710 kc



E_{RMS} = 426 MV/M — — —

LATITUDE	34°	18' 11"
LONGITUDE	88°	40' 58"

L. J. N. du Treil & Associates Inc.
CONSULTING RADIO ENGINEERS
[illegible]
NEW ORLEANS, LA. [illegible]

ANTENNA PARAMETERS

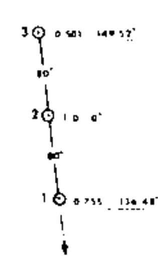


FIGURE 4

PROPOSED DAYTIME DIRECTIONAL PATTERN

RADIO TUPELO
TUPELO, MISSISSIPPI

710 KHZ 5 KW, DA-D

FCC File No.BP-18220
Accepted 9-4-68

New; Radio Tupelo
Tupelo, Mississippi

710 kc

Proposed Night
(8-28-64ct)
640525

New; Radio Nevada
~~Las Vegas, Nevada~~
θ = 0°

10kw,DA-N,U 50KW ND-D
720 kc
EXHIBIT E-1C1

ALL TOWERS: G=90° (342')

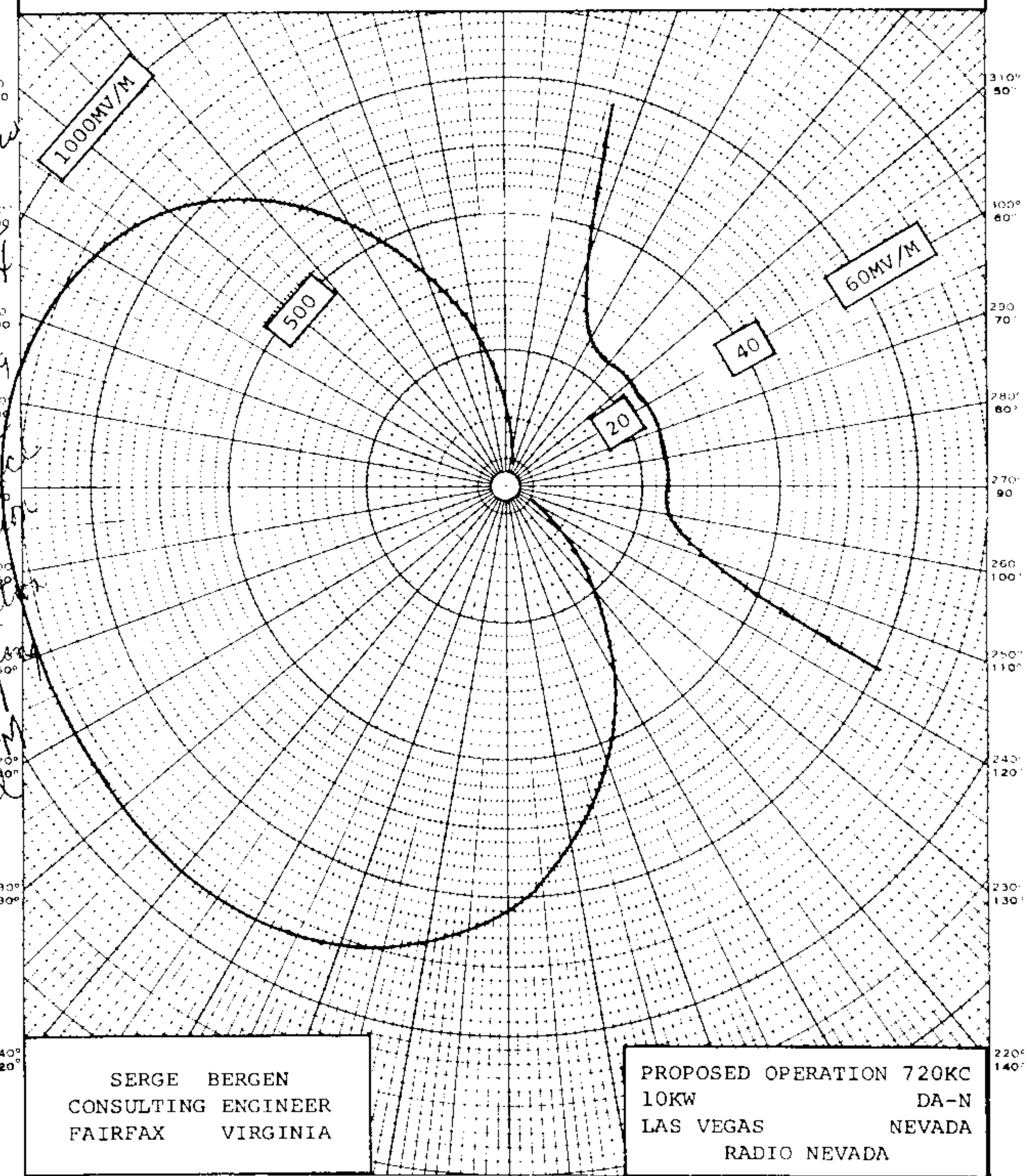
0.5/-87.5° — 380' / 100° — 0.9945/3° — 380' / 100° — 0.5/87.5° → 56°T

N. LAT. 36° 06' 26" W. LONG. 115° 01' 19" RMS=600MV/M

BP-16524 AMENDED 12-30-64 INCR. FROM 10KW, D to 50KW, ND-D

BP-16524 Granted CP for a new AM Station

BP-16524 Ordered 9/4/69 held in abeyance by Commission pending termination of proceeding on KTYM & KTYM-FM renewal app.



FCC File No. ~~BP-16246~~
Accepted 7-30-64

New; Radio Nevada
Las Vegas, Nevada

720 kc

KDWN

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KQRX　　Main Studio: Las Vegas, Nevada

Frequency: 720 kHz　　Power: 10 kW Night 50 KW Day

Notification List No. 1605　　Date: November 6, 1974　　Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM: North Latitude: 36° 04' 22"
West Longitude: 114° 58' 23"

ANTENNA CHARACTERISTICS

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

TOWER:	SW(#1)	C(#2)	NE(#3)
HEIGHT ABOVE INSULATORS:	342'	342'	342' (90°)
PHASING:	-87.5°	+3°	+87.5°
FIELD RATIO:	0.5	0.9945	0.5

SPACING AND ORIENTATION: Adjacent elements are spaced 380' (100°) on a line bearing 66° true.

GROUND SYSTEM: 120-342' equally spaced copper radials plus a 24' square ground screen about each tower. Radials are shortened and bonded to transverse straps along intersections between towers.

Predicted effective Night Field: 600 mv/m at rated power.

Predicted effective Day Field: (omnidirectional) 1342 mv/m at rated power.

Note: Please retain the Nighttime Verticle angle directional antenna radiation patterns notified for a new Station at Las Vegas, Nevada, in United States Change List Number 1271, dated June 5, 1968, and attach to this Revised Description Sheet and Nighttime horizontal pattern. This notification concerns only a change in Meovs of radiation in the directional antenna pattern with the Daytime operation continued as previously notified.

CTR NO 30522A4

KDWN

SUPPLEMENTAL DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KQRX

Main Studio: Las Vegas, Nevada

Frequency: 720 kHz

Power: 10 kW Night 50 kW Day

Notification List No. 1621

Date: February 26, 1975 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM: 36° 04' 22" North Latitude
114° 58' 20" West Longitude

Authorized for Nighttime operation (DA-N).

Predicted effective Day Field: (omnidirectional) 1342 mv/m at rated power.

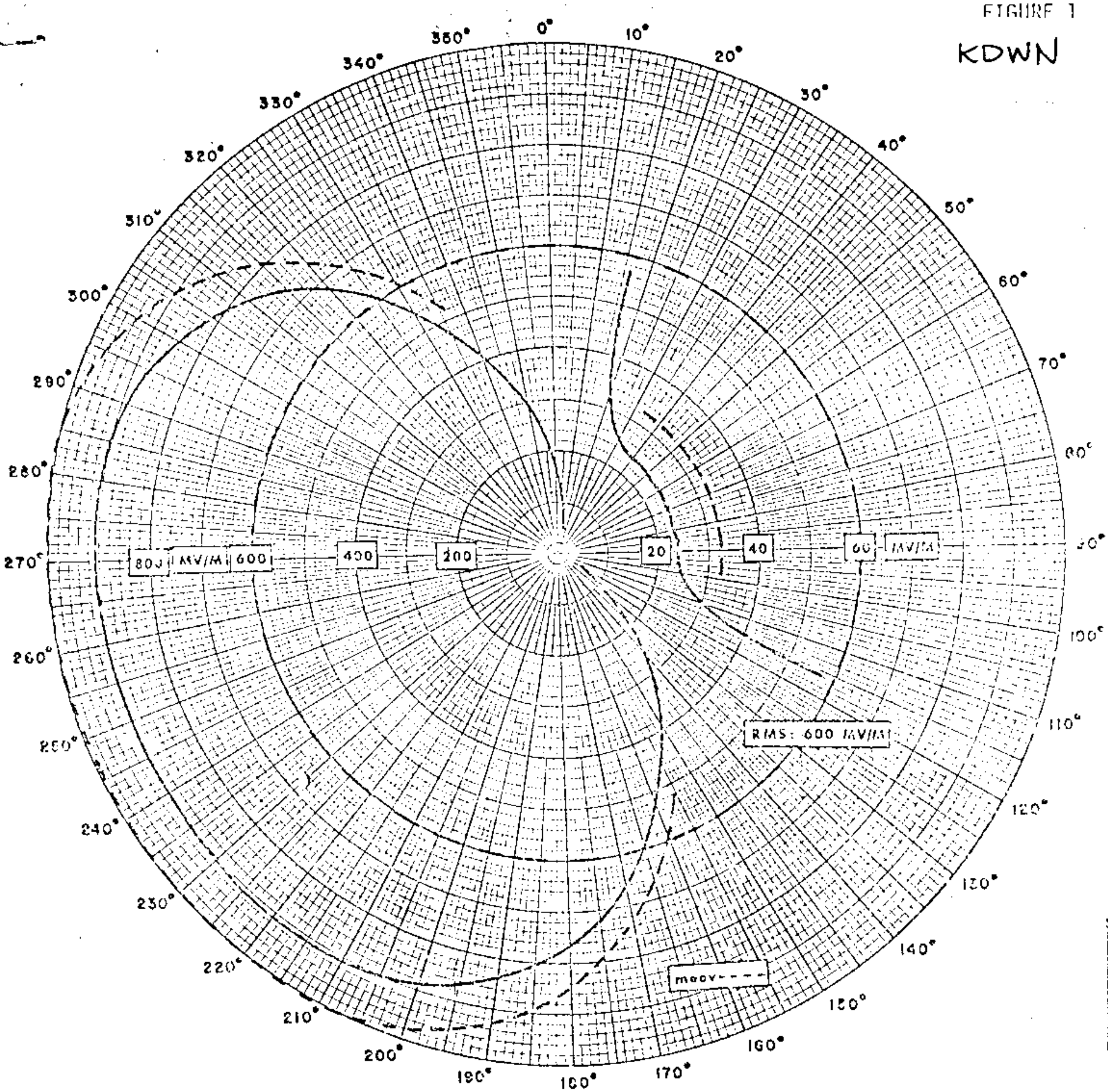
Predicted effective Night Field: 600 mv/m at rated power.

NOTE: Please retain the description sheet and horizontal directional antenna radiation pattern notified for station KQRX in United States Change List Number 1605, dated November 6, 1974, and the Nighttime vertical angle directional antenna radiation patterns notified in United States Change List Number 1271, dated June 5, 1968, 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 antenna system.

CTR NO 30522A5

FIGURE 1

KDWN



ANTENNA NO.	1	2	3
FIELD	0.5	0.9945	0.5
PHASE	-87.5°	3°	87.5°
SPACING	100°	0	100°
ORIENTATION	246°	0	66°
HEIGHT	90°	90°	90°

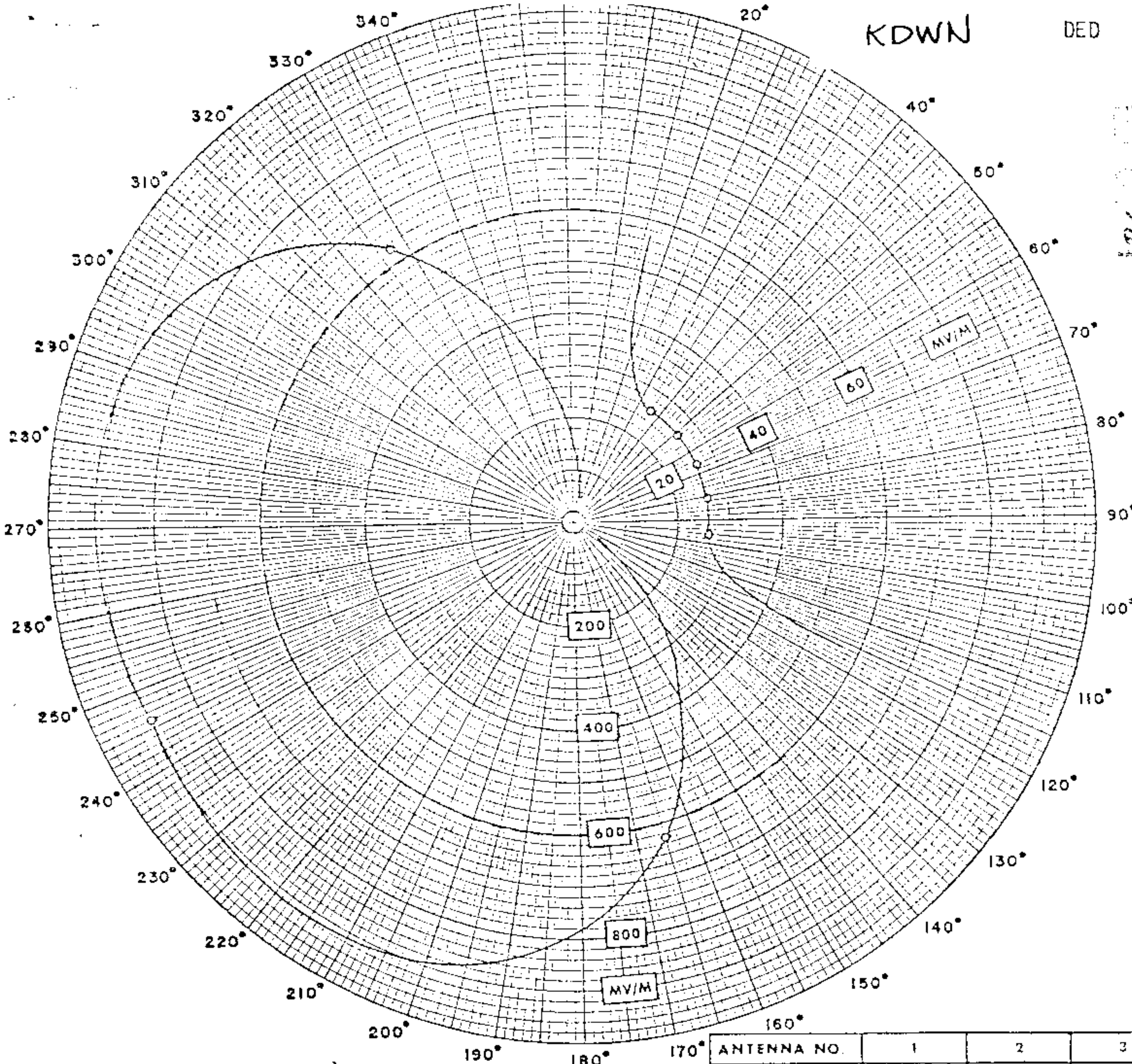
N. LAT.	36°	04'	21.5"
W. LONG.	114°	58'	23"
RMS	600	mv/m	

PROPOSED NIGHTTIME
HORIZONTAL RADIATION PATTERN
KQRX - LAS VEGAS, NEVADA
720 kHz - 10N/50D - DA-N
SEPTEMBER 1974

GAUTNEY & JONES - CONSULTING ENGINEERS

KDWN DED

BL 13,918



ANTENNA NO.	1	2	3
FIELD Meas.	.5880	1.0	.4676
PHASE Meas.	84.3	Ref.	-79.7
FIELD Theo.	0.5	0.9945	0.5
PHASE Theo.	87.5	3°	-87.5°
SPACING	100°	0	100°
ORIENTATION	66°	0	246°
HEIGHT	90°	90°	90°

N. LAT.	36 °	04 ′	21.5″
W. LONG.	114 °	58 ′	19.5″
RMS	500		mv/m

BL-13,918

MEASURED NIGHTTIME DIRECTIONAL PATTERN
KQRX - LAS VEGAS, NEVADA
720 kHz - 10 kW/50 kW-LS - DA-N

FEBRUARY, 1975

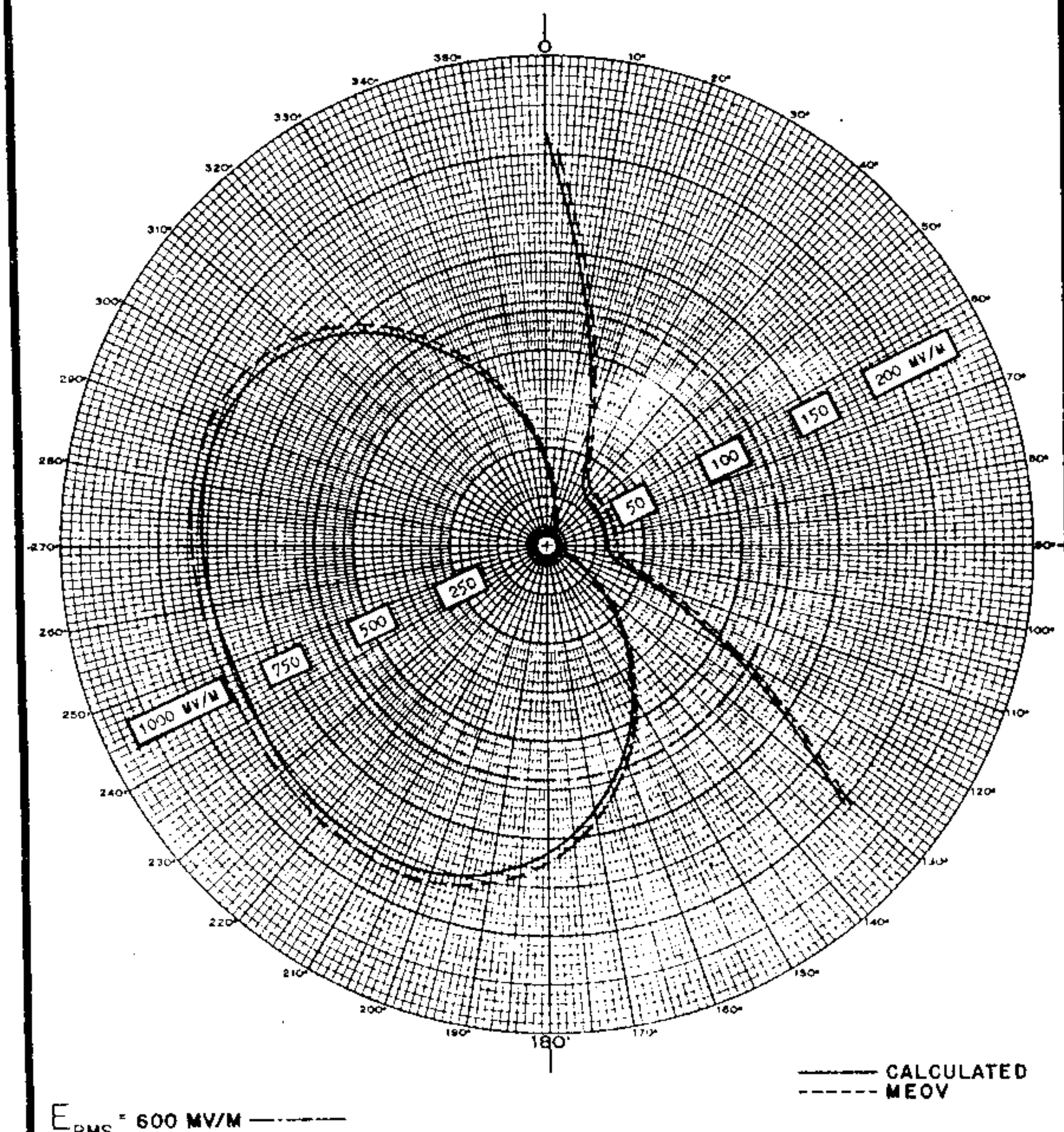
GAUTNEY & JONES—CONSULTING ENGINEERS

KDWN

Proposed Night
(10-26-64ct)

Station KLUC
Las Vegas, Nevada

10kw,DA-N,U
720 kc

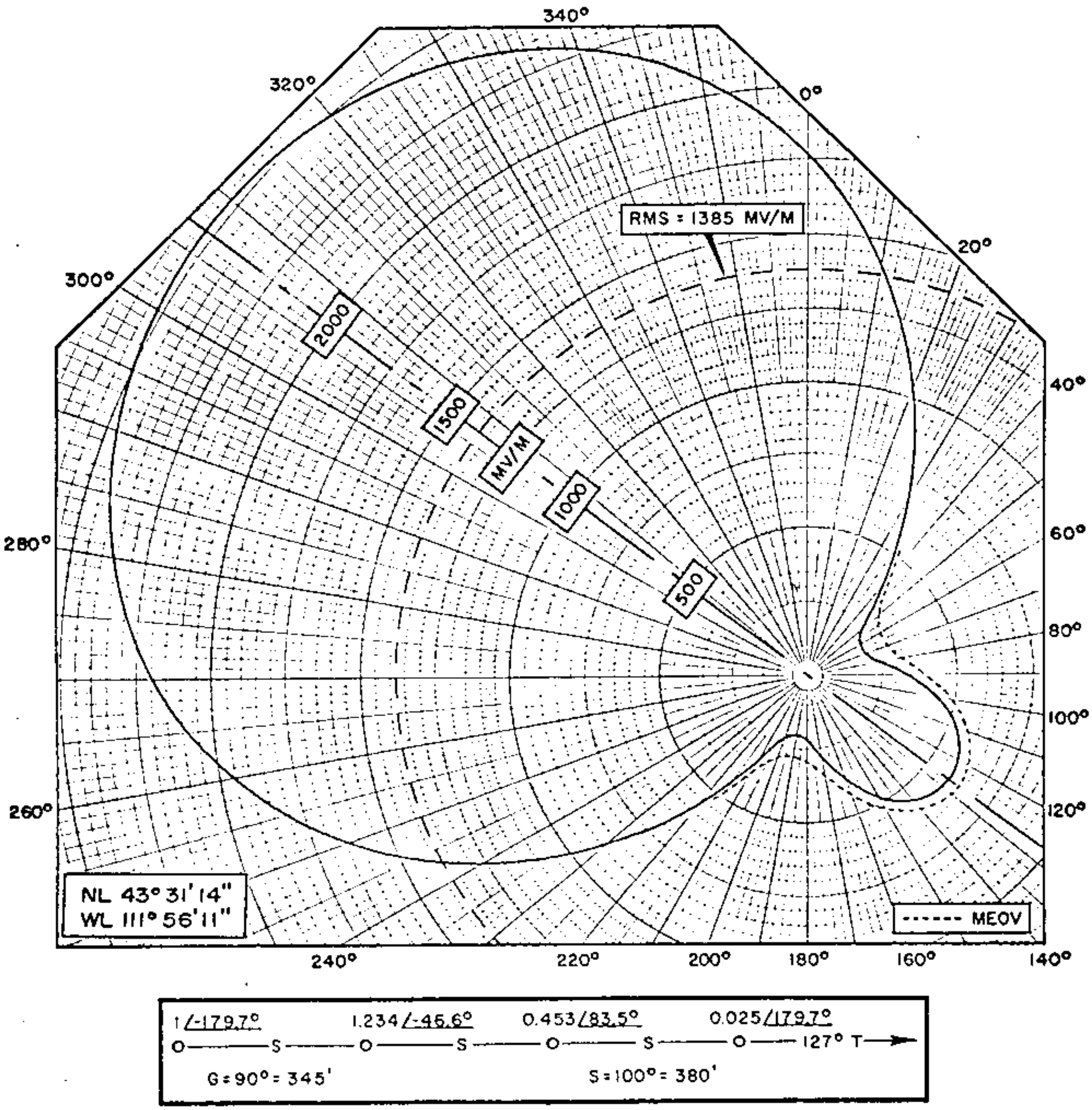


LATITUDE: 36° 06' 49" LONGITUDE 115° 02' 23"	ANTENNA PARAMETERS	FIGURE 5
JOHN H. MULLANEY AND ASSOCIATES A DIVISION OF MULTRONICS INC	N-66°-E #2 0.5∠+81° #1 1.002∠4° #3 0.5∠-81° S = 100° — 379.8' G(ALL) = 89.5° — 340'	PROPOSED NIGHTTIME DIRECTIONAL PATTERN RADIO STATION KLUC LAS VEGAS, NEVADA 720 KC 10 KW, DA-N, U.

FCC File No. BP-16401
Accepted 10-22-64

Station KLUC
Las Vegas, Nevada

720 kc



DAYTIME HORIZONTAL RADIATION PATTERN
KTEE - IDAHO FALLS, IDAHO
720 KC - 10KW/50KW-LS - DA-2

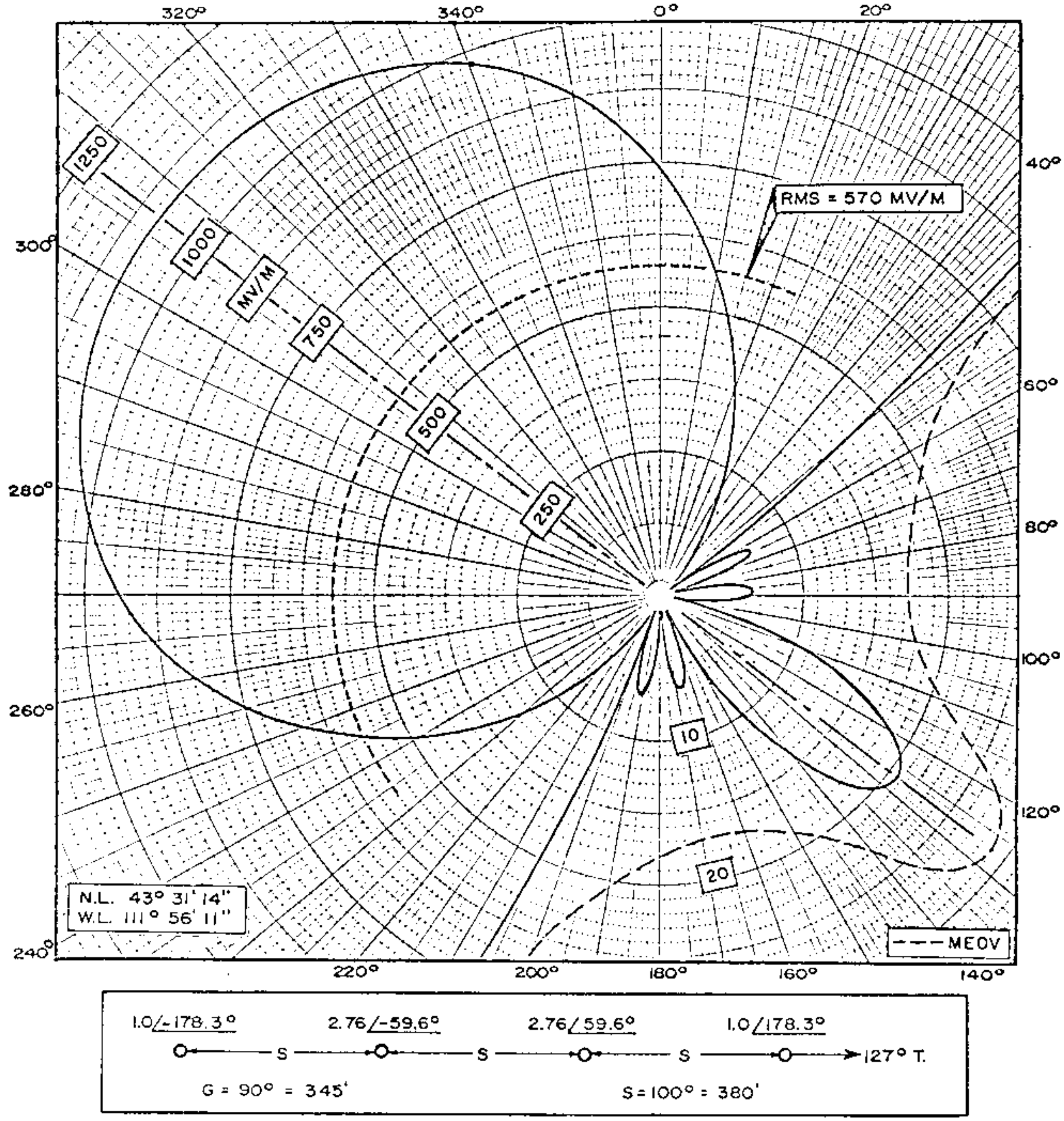
GAUTNEY & JONES
RADIO ENGINEERS WASHINGTON, D. C.
May, 1964

KTEE

Proposed Night
(10-26-64ct)

Station KTEE
Idaho Falls, Idaho

10kw,50kw-LS,DA-2,U
720 kc
(AMENDED)



NIGHTTIME HORIZONTAL RADIATION PATTERN
KTEE - IDAHO FALLS, IDAHO
720 KC - 10KW/50KW-LS - DA-2

AUGUST, 1964

Gautney & Jones — Consulting Radio Engineers

FCC File No. BP-16216
Accepted 10-12-64 Amended

Station KTEE
Idaho Falls, Idaho

720 kc